FINAL WELL REPORT

Northrock et al Summit Creek B-44

WID 1994

Final Well Report

NORTHROCK RESOURCES LTD.
A WHOLLY OWNED SUBSIDIARY OF UNOCAL CORPORATION

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NATIONAL ENERGY BOARD
Exploration and Production
JUN 15 2004

FINAL WELL REPORT

NORTHROCK RESOURCES LTD.

NORTHROCK et al SUMMIT CREEK B-44

TIGHT HOLE

Latitude: 64°23'02.352" (NAD 27)
Longitude: 125°53'22.656" (NAD 27)

UID: 300B446430125450

Date: June 7, 2004

Travis Bouchard
Drilling Engineer
Northrock Resources Ltd.

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A. INTRODUCTION

Northrock Resources Ltd. drilled a 3064 metre exploratory well (Northrock et al Summit Creek B-44) during the winter of 2004. The well was spudded on January 16, 2004 at 03:00 and reached total depth on March 18, 2004 at 14:00. The rig was released on March 24, 2004 at 12:00. The well was drilled to total depth into the Bear Rock Formation.

Akita #40 and associated equipment were trucked from Grande Prairie, Alberta to location via the government winter road and Northrock's winter road. The rig arrived on location January 9, 2004 at 18:00. After rig release the rig and associated equipment were trucked from location to Edson, Alberta via the government winter road.

The well was drilled on Exploration License #397. As per terms of the E.L. 397 benefits agreement Sahtu Dene Metis businesses received preferential treatment in the awarding of contracts.
A total of 37 northern based businesses were utilized on Northrock et al Summit Creek B-44.

Conductor:
660.4 mm hole was drilled to 27 m.
508.8 mm, 139.9 kg/m, K-55 conductor casing was landed at 26 m.
Conductor casing was cemented with 12 tonne Polarset Regular + 0.1% R-7C.
Displaced with 2.5 m^3 of water with 1 m^3 of returns.

Surface:
Cement was tagged at 14 m.
311.0 mm pilot hole was drilled to 130 m.
444.5 hole was drilled to 208 m.
339.7 mm, 81.10 kg/m, K-55 surface casing was landed at 208 m.
Surface casing was cemented with 34 tonne Polarset Regular + 0.2% R-7C.
Displaced with 16.3 m^3 of water with 13 m^3 of returns.

Intermediate #1:
311.0 mm hole was drilled to 810 m.
Logged intermediate #1 to from 207.0 m – 807.6 m
DST #1: 458m KB – 465m KB
DST #2: 238m KB – 245m KB
DST #3: 238m KB – 245m KB
244.5 mm, 59.53 kg/m, L-80 intermediate casing #1 was landed at 804 m.
Intermediate #1 was cemented with 21.5 tonne BVF-1500 + 0.9% FL-5.
Tailed in with 10.5 tonne 0:1:0 "G" + 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite.
Displaced with 31.4 m^3 of water with 8 m^3 of returns.

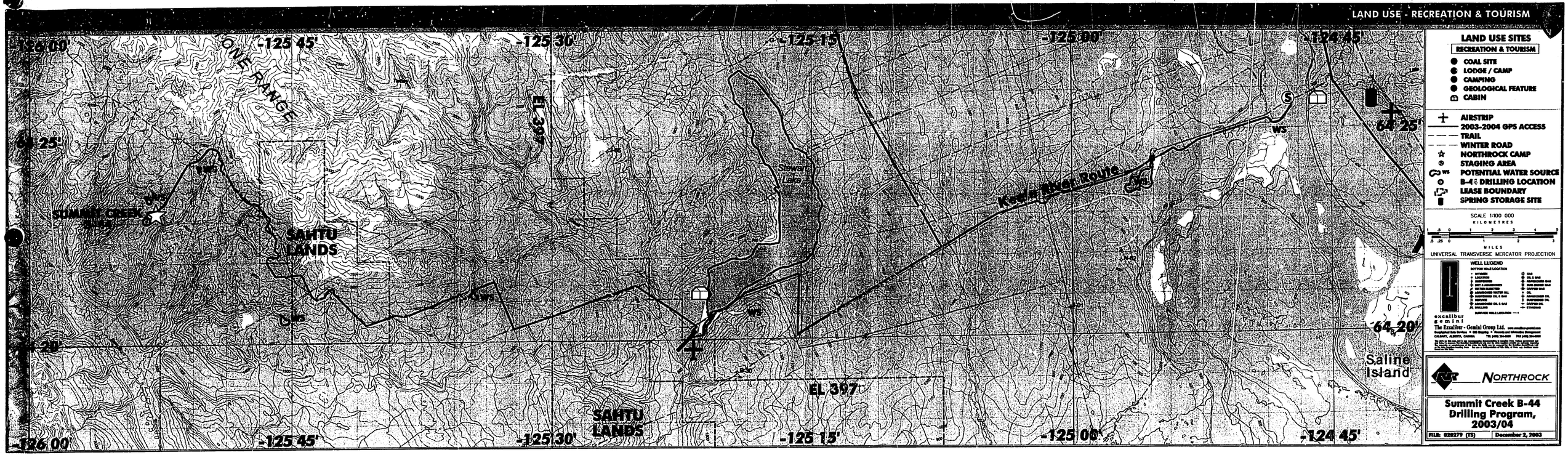
Intermediate #2
215.9 mm hole was drilled to 2505 m.
Logged intermediate #2 from 803.5 m – 2487.1 m.
177.8 mm, 38.69 kg/m, K-55 intermediate casing #2 was landed at 2450 m.
Intermediate #2 was cemented with 11.0 tonne Fill-Lite 2-125 + 1.0% CaCl2 + 1.3% R-3, 24.0 tonne Fill-Lite 2-100 + 1.0% CaCl2 + 1.3% R-3.
Tailed in with 5.0 tonne 0:1:0 "G" + 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite + 0.3% R-3.
Displaced with 48.7 m^3 of water with 5 m^3 of returns.

Tight hole at 2152 m, stuck in hole. Work stuck pipe bottom of fish at 2153 m.
Ream to 1920 m hole is tight and unloading, abandon fish.
Run in open ended and set whipstock plugs. Set whipstock plug from 1775 m – 1675 m. Cemented with 11.8 tonne of 0:1:0 "G" + 0.3% R-3 + 1.0% CD-31.
Tagged whipstock plug #1 at 1706m. Time drill off plug and whipstock around fish.

Drill ahead to 2505 m. Trip to check bit and motor. Laydown directional BHA, motor was washed out top of fish 2498 m bottom of fish 2505 m. Abandon fish #2. Run in open ended to set whipstock plugs. Set whipstock plug from 2505m – 2425m. Cemented with 4.7 tonne of 0:1:0 "G" + 1.0% CD-31 + 0.4% R-3.

Main Hole
Drill out to 2450 m and polish plug to 2464 m
NEB rig inspection March 9, 2004 – Rick Fisher.
Drill ahead to TD at 3064m on March 18, 2004 at 16:00.
Log main hole from 2447.7 m – 3043.3 m
DST #4: 2707 m – 2709 m
DST #5: 2420 m – 3064 m
114.3 mm, 17.26 kg/m, L-80 production casing liner was landed at 3059 m.
The liner was hung at 2318 m with TIW HP6 hanger.
Production casing liner was cemented with 10.0 tonne 0:1:0 "G" + 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite + 0.3% R-3.
Displaced with 19.0 m^3 of water + 1.0% CAW 132 inhibitor.
Well was displaced over to inhibited water.

Set drillable bridge plug at 2268m KB, pressure tested OK and dump bailed 7m of cement on top of the bridge plug.
Rig released March 24, 2004 at 12:00.
The wellhead was chained and locked.



LAND USE SITES
RECREATION & TOURISM

- COAL SITE
- LODGE / CAMP
- CAMPING
- GEOLOGICAL FEATURE
- CABIN
- AIRSTRIP
- 2003-2004 GPS ACCESS
- TRAIL
- WINTER ROAD
- NORTHROCK CAMP
- STAGING AREA
- POTENTIAL WATER SOURCE
- B-44 DRILLING LOCATION
- LEASE BOUNDARY
- SPRING STORAGE SITE

SCALE 1:100 000
KILOMETRES
MILES
UNIVERSAL TRANSVERSE MERCATOR PROJECTION

WELL LEGEND
BOTTOM HOLE LOCATION
SURFACE HOLE LOCATION

excalibur gemini
The Excalibur - Geminl Group Ltd.

NORTHROCK

Summit Creek B-44 Drilling Program, 2003/04

FILE: 029279 (TS) | December 2, 2003

B. GENERAL DATA

Well Name: Northrock et al Summit Creek B-44
Authority to Drill a Number: 9211-NO46-2-1
Exploration Agreement: EL 397
Location Unit: B
Section: 44
Grid Area: 64-30-125-45
Classification: Exploratory

Well Location:
Coordinates: Latitude: 64°23'02.352" (NAD 27)
Longitude: 125°53'22.656" (NAD 27)

Unique Well Identifier: 300B446430125450

Operator: Northrock Resources Ltd.
Suite 3500, 700 Second Street SW
Calgary, Alberta
T2P 2W2

Drilling Rig Contractor: Akita/Sahtu Drilling Ltd.
1110, 505 – Third Street SW
Calgary, Alberta
T2P 3E6

Drilling Unit: Akita #40

Position Keeping: Land Rig

Support Craft: Fixed Wing – North Wright Air
Helicopter – Canadian Helicopters & Sahtu Helicopters

Drilling Unit Performance: Good

Difficulties and Delays: boulders, deviation, mud rings, bit balling, tight hole, sloughing & reaming, stuck pipe, fishing, whipstock plugs and weather

Total Well Cost: $18,738,500 (includes ice bridge, road and lease construction)

C. SUMMARY OF DRILLING OPERATIONS

Elevations:
- Ground: 580.5 m
- KB: 586.7 m

Total Depth:
- Drilled: 3064 mKB
- Plugged Back: 2261 mKB

Spud: January 16, 2004 @ 03:00

Drilling Completed: March 18, 2004 @ 14:00

Rig Release: March 24, 2004 @ 12:00

Well Status: Suspended

Hole Sizes and Depths:
- Conductor Hole: 660.4mm to 27 m
- Surface Hole: 444.5 mm to 208 m
- Intermediate Hole #1: 311.0 mm to 810 m
- Intermediate Hole #2: 215.6 mm to 2505 m
- Main Hole: 155.6 mm to 3064 m

Casing and Cementing Record:
Conductor Hole:
- Casing Size: 508.8 mm
- Casing Weight: 139.9 kg/m
- Casing Grade: K-55
- Make: American Steel
- Number of Joints: 2
- Thread: Buttress
- Depth Set: 25 m
- Date Set: January 17, 2004
- Cement Volume: 12.0 tonne
- Cement Type: Polarset Regular
- Additives: 0.1% R-7C
- Cement Top: Surface
- Cement Returns: $1m^3$

Surface Hole:
- Casing Size: 339.7 mm
- Casing Weight: 81.1 kg/m
- Casing Grade: K-55
- Make: Ipsco
- Number of Joints: 18
- Thread: ST&C
- Depth Set: 208 m
- Date Set: January 21, 2004
- Cement Volume: 34.0 tonne
- Cement Type: Polarset Regular
- Additives: 0.2% R-7C
- Cement Top: Surface
- Cement Returns: 13 m^3
- Casing Bowl Size: 346 mm x 339.7 mm x 35000 kPa
- Casing Bowl Make: FMC

Intermediate Hole #1:
- Casing Size: 244.5 mm
- Casing Weight: 59.53 kg/m
- Casing Grade: L-80
- Make: Ipsco
- Number of Joints: 56
- Thread: LT&C
- Depth Set: 804 m
- Date Set: February 2, 2004
- Lead Cement Volume: 21.5 tonne
- Lead Cement Type: BVF-1500
- Additives: 0.9% FL-5
- Tail Cement Volume: 10.5 tonne
- Tail Cement Type: 0:1:0 "G"
- Additives: 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite
- Cement Top: Surface
- Cement Returns: 8 m^3

Intermediate Hole #2:
- Casing Size: 177.8 mm
- Casing Weight: 38.69 kg/m
- Casing Grade: K-55
- Make: Ipsco
- Number of Joints: 182
- Thread: LT&C
- Depth Set: 2450 m
- Date Set: March 7, 2004
- Lead Cement Volume: 35 tonne
- Lead Cement Type: Fill-Lite 2-125 & Fill-Lite 2-100

Additives: 1.0% $CaCl_2$ + 1.3% R-3
Tail Cement Volume: 5 tonne
Tail Cement Type: 0:1:0 "G"
Additives: 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite + 0.3% R-3
Cement Top: Surface
Cement Returns: $5m^3$

Main Hole:
Casing Size: 114.3 mm
Casing Weight: 17.26 kg/m
Casing Grade: L-80
Make: Ipsco
Number of Joints: 59
Thread: LT&C
Liner Top: 2318 m
Depth Set: 3059 m
Date Set: March 22, 2004
Cement Volume: 10 tonne
Cement Type: 0:1:0 "G"
Additives: 0.4% FL-63 + 0.5% CD-31 + 0.3% R-3 + 1.0% Sepiolite
Cement Top: 2318 m
Cement Returns: N/A (Displaced with inhibited water)

Sidetracked Hole:
Sidetrack #1
Cement Plug Interval: 1675 m – 1775 m
Cement Top: 1706 m
Cement Volume: 11.8 tonne
Cement Type: 0:1:0 "G"
Additives: 0.3% R-3 + 1.0% CD-31

Sidetrack #2
Cement Plug Interval: 2420 m - 2505 m
Cement Top: 2450 m
Cement Volume: 4.7 tonne
Cement Type: 0:1:0 "G"
Additives: 1.0% CD-31 + 0.4% R-3

Drilling Fluid Properties:
Surface Hole:
Type: Native Clay/Gel Slurry
Viscosity: 39 sec/L
Weight: 1070 kg/m^3 - 1260 kg/m^3
PH: 9.5

Intermediate Hole #1:

Type: Gel Polymer
Viscosity: 41 sec/L – 44 sec/L
Weight: 1090 kg/m^3 – 1110 kg/m^3
PH: 9.0 – 10.0

Intermediate Hole #2:

Type: Gel Polymer
Viscosity: 36 sec/L – 70 sec/L
Weight: 1060 kg/m^3 – 1265 kg/m^3
PH: 9.0 – 10.0

Main Hole:

Type: Visplus Polymer
Viscosity: 34 sec/L – 42 sec/L
Weight: 1010 kg/m^3 – 1040kg/m^3
PH: 10.0 – 11.0

Fishing Operations:

Fish #1:

Tight hole at 2152 m, stuck in hole. Work stuck pipe and fire jars with fisherman. Attempt to freepoint top of fish at 1981 m bottom of fish at 2153 m. Back off BHA above key seat wiper. Retrieved back off, make up BHA for clean out trip to the top of the fish. Ream to 1920 m hole is tight and unloading, abandon fish.

Fish left in the Hole:

216 mm bit
Bit Sub
175mm Shock Sub
1 – 171 mm Drill Collar
174 mm Stabilizer
5 – 171 mm Drill Collars
176 mm Drilling Jar
10 – 171 mm Drill Collars
163 mm Key Seat Wiper
161 mm Cross Over
1 – 102 mm HWDP

Fish #2:

Drill ahead to 2505 m. Trip to check bit and motor. Laydown directional BHA, motor was washed out top of fish 2498 m bottom of fish 2505 m. Abandon fish #2.

Fish Left in the Hole:
216 mm bit
Bit Sub

Wells Kicks and Well Control Operations:
None

Formation Leak-Off Tests:
Formation Leak-Off Test #1:
Depth: 216 m
Fluid Density: 1000 kg/m^3
Applied Pressure: 4700 kPa
Hydrostatic Pressure: 2119 kPa
Leak Off Pressure: 6819 kPa/m
Leak Off Gradient: 31.5 kPa/m

Formation Leak-Off Test #2:
Depth: 822 m
Fluid Density: 1000 kg/m^3
Applied Pressure: 11000 kPa
Hydrostatic Pressure: 8064 kPa
Leak Off Pressure: 19064 kPa
Leak Off Gradient: 23.2 kPa/m

Formation Leak-Off Test #3:
Depth: 2464 m
Fluid Density: 1000 kg/m^3
Applied Pressure: 11000 kPa/m
Hydrostatic Pressure: 24172 kPa
Leak Off Pressure: 41672 kPa
Leak Off Gradient: 16.9 kPa/m

Drilling Operations Time Breakdown

Activity	Hours
Drilling	468.50
Trip: Bit	104.50
Trip: Handle Tools	33.75
Wash/Ream Bit	32.25
Circulate: Bit	17.50
Trip: Slip/Cut	4.75
Survey	19.75
Rig Service	17.00
Safety	8.25
Wait on Cement	69.50
Run: Casing/Cement	69.25
Nipple Up BOP's	50.00
Trip: Casing	43.25
Circulate: Casing	22.25
Pressure Test BOP's	16.25
Drill Out	11.25
Trip: Laydown Drill Pipe	9.00
Set Bridge Plug	6.75
Drill Stem Testing	46.00
Trip: Drill Stem Testing	36.25
Circulate: Drill Stem Testing	5.50
Logging	47.75
Trip: Logging	43.25
Circulate: Logging	13.75
Plug Back/Sidetrack	159.25
Reaming	76.00
Stuck Pipe	68.75
Mud Motor Failure	46.00
Rig Repair	29.25
Casing Hole Problems	19.00
Mud Problems	17.25
Drill Stem Test Failure	16.50
MWD Failure	10.00
Waiting Time	2.75
TOTAL	1641.00

LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT
CREEK (ST #2) B-44-64-30-125-45
Wellpath: B-44-64-30-125-45 (AWP#1)
Date Printed: 29-Apr-2004

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Wellbore

Name	Created	Last Revised	Wellbore Unique Identifier
NORTHROCK ET AL SUMMIT CREEK (ST #2) B-44-64-30-125-45	11-Mar-2004	29-Apr-2004	

Well

Wellhead Local Position	Government ID	Last Revised
B-44-64-30-125-45		12-Jan-2004

Slot

Name	Grid Northing	Grid Easting	Latitude	Longitude	North	East
B-44-64-30-125-45	7142778.7550	360636.0796	N64 23 2.3500	W125 53 22.6600	0.00N	0.00E

Installation

Name	Easting	Northing	Coord System Name	North Alignment
SUMMIT CREEK	360636.0796	7142778.7550	NAD27-UTM-10N on NORTH AMERICAN DATUM 1927 datum	True

Field

	Easting	Northing	Coord System Name	North Alignment
SUMMIT CREEK	360636.0796	7142778.7550	NAD27-UTM-10N on NORTH AMERICAN DATUM 1927 datum	True

Created By

Comments

Final Directional Survey, Sidetrack #2

All data is in Metres unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (ACTUAL K.B. 586.7m above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 62.53 degrees
Bottom hole distance is 71.84 Metres on azimuth 50.96 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Baker Hughes Incorporated

LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT
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Wellpath Report

MD[m]	Inc[deg]	Azi[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]	Station Comment
0.00	0.00	0.00	0.00	0.00N	0.00E	0.00	0.00	
123.50	1.89	242.50	123.48	0.94S	1.81W	0.46	-2.04	EAST FORK SHALE (U. LIMIT)
200.00	3.06	242.50	199.91	2.46S	4.74W	0.46	-5.34	
235.50	3.11	244.92	235.35	3.31S	6.45W	0.12	-7.25	EAST FORK SANDS
300.00	3.21	249.12	299.76	4.70S	9.72W	0.12	-10.79	
352.50	3.34	254.04	352.17	5.64S	12.56W	0.18	-13.75	EAST FORK SHALE (LWR UNIT)
400.00	3.48	258.15	399.59	6.32S	15.31W	0.18	-16.49	
405.00	3.47	257.94	404.58	6.38S	15.60W	0.08	-16.79	U. LITTLE BEAR
500.00	3.37	253.87	499.41	7.76S	21.10W	0.08	-22.30	
600.00	3.23	267.81	599.24	8.68S	26.74W	0.24	-27.73	
609.00	3.21	268.47	608.23	8.70S	27.24W	0.13	-28.18	L. LITTLE BEAR
700.00	3.08	275.44	699.09	8.53S	32.23W	0.13	-32.53	
800.00	3.38	280.54	798.93	7.74S	37.80W	0.12	-37.11	
806.00	3.28	281.58	804.92	7.67S	38.14W	0.58	-37.38	SLATER RIVER
836.00	2.81	287.83	834.88	7.28S	39.68W	0.58	-38.57	
924.00	3.34	294.86	922.75	5.54S	44.06W	0.22	-41.65	
1009.00	3.60	305.05	1007.60	2.96S	48.49W	0.24	-44.39	
1095.00	2.99	328.26	1093.46	0.49N	51.88W	0.51	-45.81	
1103.00	3.19	333.42	1101.45	0.87N	52.09W	1.29	-45.82	L. SLATER SHALE
1181.00	5.89	359.90	1179.20	6.82N	53.07W	1.29	-43.94	
1267.00	6.15	11.85	1264.73	15.74N	52.13W	0.45	-39.00	
1328.00	6.67	19.50	1325.35	22.28N	50.28W	0.49	-34.33	ARCTIC RED
[illegible].00	6.77	20.64	1335.28	23.38N	49.88W	0.49	-33.47	
[illegible].10	6.50	21.70	1344.32	24.36N	49.50W	0.98	-32.68	
1356.60	6.10	27.70	1353.77	25.30N	49.07W	2.43	-31.86	
1366.20	5.90	34.70	1363.31	26.16N	48.55W	2.37	-31.00	
1375.80	6.20	43.50	1372.86	26.94N	47.91W	3.04	-30.08	
1385.30	7.90	51.20	1382.29	27.72N	47.05W	6.13	-28.95	
1394.90	10.60	54.00	1391.76	28.66N	45.82W	8.55	-27.43	
1404.40	10.50	55.40	1401.10	29.66N	44.40W	0.87	-25.71	
1414.00	8.70	58.30	1410.57	30.54N	43.06W	5.82	-24.12	
1423.50	5.40	81.50	1420.00	30.98N	42.01W	13.57	-22.98	
1433.10	4.60	112.60	1429.56	30.90N	41.21W	8.76	-22.30	
1442.90	4.60	138.10	1439.33	30.46N	40.58W	6.16	-21.96	
1451.90	4.80	145.10	1448.30	29.88N	40.13W	2.02	-21.82	
1461.90	4.60	144.40	1458.27	29.21N	39.65W	0.62	-21.71	
1471.50	5.50	145.10	1467.83	28.52N	39.16W	2.82	-21.59	
1480.80	6.80	141.90	1477.08	27.72N	38.57W	4.34	-21.43	
1490.30	8.20	125.80	1486.49	26.88N	37.67W	7.93	-21.02	
1499.80	9.80	111.00	1495.88	26.20N	36.37W	8.85	-20.18	
1509.70	9.90	107.10	1505.63	25.64N	34.77W	2.04	-19.02	
1519.30	10.40	106.10	1515.08	25.16N	33.15W	1.66	-17.80	
1528.80	11.10	105.00	1524.42	24.69N	31.44W	2.30	-16.51	
1538.40	11.10	104.30	1533.84	24.22N	29.65W	0.42	-15.14	
1548.00	10.90	101.90	1543.26	23.80N	27.87W	1.56	-13.75	
1557.50	10.70	95.20	1552.59	23.54N	26.11W	4.01	-12.31	
1567.10	10.60	92.70	1562.03	23.42N	24.34W	1.48	-10.79	
1576.60	10.30	88.80	1571.37	23.39N	22.62W	2.43	-9.28	
1586.10	10.00	87.10	1580.72	23.45N	20.95W	1.34	-7.77	
1595.70	9.90	91.30	1590.18	23.48N	19.29W	2.29	-6.28	
1605.60	10.60	94.50	1599.92	23.38N	17.53W	2.73	-4.77	

All data is in Metres unless otherwise stated
Coordinates are from Slot MD's are from Rig and TVD's are from Rig (ACTUAL K.B. 586.7m above Mean Sea Level)
Vertical Section is from 0.00N 0.00E on azimuth 62.53 degrees
Bottom hole distance is 71.84 Metres on azimuth 50.96 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Baker Hughes Incorporated

LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT
CREEK (ST #2) B-44-64-30-125-45
Wellpath: B-44-64-30-125-45 (AWP#1)
Date Printed: 29-Apr-2004

INTEQ

Wellpath Report

MD[m]	Inc[deg]	Azi[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]	Station Comment
1614.80	11.60	95.20	1608.95	23.23N	15.77W	3.29	-3.27	
1624.30	11.50	96.20	1618.25	23.05N	13.87W	0.71	-1.68	
1633.80	11.40	96.20	1627.57	22.84N	12.00W	0.32	-0.11	
1643.30	11.20	97.60	1636.88	22.62N	10.15W	1.07	1.43	
1652.70	10.00	99.40	1646.12	22.36N	8.44W	3.97	2.83	
1662.70	9.00	100.40	1655.98	22.03N	6.82W	3.04	4.14	
1672.70	8.10	95.90	1665.87	21.87N	5.34W	3.36	5.35	
1682.10	6.90	89.60	1675.19	21.80N	4.12W	4.64	6.40	
1691.20	6.30	83.60	1684.23	21.86N	3.08W	3.01	7.35	
1701.00	6.90	88.10	1693.97	21.94N	1.96W	2.42	8.39	TIE ONTO EXISTING SURVEY
1710.00	8.21	95.11	1702.89	21.90N	0.78W	5.33	9.42	
1716.10	9.30	97.60	1708.92	21.80N	0.15E	5.67	10.19	
1726.20	10.10	101.50	1718.87	21.52N	1.82E	3.07	11.54	
1735.50	10.50	100.80	1728.02	21.19N	3.46E	1.35	12.84	
1744.90	9.10	94.50	1737.29	20.97N	5.04E	5.62	14.15	
1754.50	7.90	81.80	1746.78	21.01N	6.45E	6.94	15.41	
1764.50	8.00	63.50	1756.69	21.42N	7.75E	7.57	16.76	
1774.10	9.50	50.50	1766.18	22.22N	8.96E	7.73	18.20	
1783.70	10.50	45.30	1775.63	23.34N	10.19E	4.21	19.81	
1793.30	10.40	41.40	1785.07	24.60N	11.39E	2.23	21.45	
1803.00	9.80	40.00	1794.62	25.89N	12.50E	2.00	23.03	
1812.40	9.00	44.20	1803.89	27.03N	13.53E	3.36	24.47	
1821.90	7.90	53.70	1813.29	27.95N	14.57E	5.60	25.82	
1831.10	7.60	64.20	1822.41	28.59N	15.63E	4.71	27.05	
1840.70	7.80	70.20	1831.92	29.09N	16.81E	2.59	28.33	
1850.50	8.30	73.70	1841.62	29.51N	18.11E	2.14	29.69	
1860.10	8.40	69.90	1851.12	29.95N	19.44E	1.75	31.06	
1869.80	8.70	67.10	1860.71	30.48N	20.78E	1.59	32.50	
1879.50	9.20	67.80	1870.30	31.06N	22.17E	1.58	34.00	
1889.10	9.30	67.40	1879.77	31.64N	23.60E	0.37	35.54	
1898.60	9.70	65.60	1889.14	32.27N	25.04E	1.57	37.10	
1908.10	9.60	69.20	1898.51	32.88N	26.51E	1.93	38.69	
1917.70	8.90	76.50	1907.98	33.34N	27.98E	4.27	40.20	
1927.30	8.60	83.90	1917.47	33.59N	29.41E	3.64	41.59	
1936.90	9.00	89.60	1926.96	33.67N	30.88E	3.00	42.93	
1946.50	9.80	91.00	1936.43	33.66N	32.45E	2.60	44.32	
1955.80	10.60	89.60	1945.58	33.65N	34.09E	2.70	45.77	
1965.60	10.70	85.70	1955.21	33.73N	35.90E	2.23	47.41	
1975.10	10.40	78.70	1964.55	33.96N	37.62E	4.15	49.05	
1984.60	10.30	74.10	1973.80	34.36N	39.26E	2.66	50.68	
1994.00	9.80	72.70	1983.16	34.83N	40.85E	1.76	52.31	
2004.00	9.10	67.10	1993.02	35.39N	42.39E	3.46	53.94	
2013.60	8.40	64.20	2002.51	35.99N	43.72E	2.59	55.40	
2023.20	7.70	64.20	2012.01	36.58N	44.93E	2.19	56.74	
2032.80	6.90	63.90	2021.54	37.11N	46.03E	2.50	57.96	
2042.40	6.80	68.80	2031.07	37.57N	47.08E	1.85	59.10	
2051.90	6.80	73.00	2040.50	37.94N	48.14E	1.57	60.21	
2061.50	6.90	75.50	2050.03	38.25N	49.24E	0.98	61.33	
2071.00	7.40	72.00	2059.46	38.58N	50.38E	2.09	62.49	
2080.70	6.60	67.40	2069.09	38.99N	51.48E	3.02	63.66	
2090.20	5.20	71.30	2078.53	39.34N	52.40E	4.60	64.63	

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Bottom hole distance is 71.84 Metres on azimuth 50.96 degrees from Wellhead
Calculation method uses Minimum Curvature method
Prepared by Baker Hughes Incorporated

LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT
CREEK (ST #2) B-44-04-30-125-45
Wellpath: B-44-64-30-125-45 (AWP#1)
Date Printed: 29-Apr-2004

BAKER HUGHES
INTEQ

Wellpath Report

MD[m]	Inc[deg]	Azi[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]	Station Comment
2099.80	3.80	72.00	2088.11	39.57N	53.11E	4.38	65.38	
2109.40	3.00	76.90	2097.69	39.73N	53.66E	2.66	65.94	
2118.90	2.60	93.40	2107.18	39.77N	54.12E	2.83	66.36	
2128.50	2.30	108.20	2116.77	39.70N	54.52E	2.18	66.68	
2138.10	1.90	127.90	2126.36	39.54N	54.83E	2.56	66.88	
2147.60	1.50	141.60	2135.86	39.35N	55.03E	1.79	66.97	
2157.10	0.90	149.30	2145.36	39.19N	55.14E	1.96	67.00	
2161.00	0.72	141.64	2149.26	39.14N	55.17E	1.62	67.01	CANOL BLACK SHALE
2166.60	0.50	121.50	2154.86	39.10N	55.22E	1.62	67.03	
2176.40	1.20	49.80	2164.65	39.14N	55.33E	3.51	67.15	
2185.80	2.00	44.60	2174.05	39.32N	55.52E	2.59	67.40	
2195.20	2.30	49.50	2183.44	39.56N	55.78E	1.12	67.74	
2201.00	2.18	47.59	2189.24	39.71N	55.95E	0.75	67.96	HARE INDIAN SHALE
2204.60	2.10	46.30	2192.84	39.81N	56.05E	0.75	68.09	
2214.00	1.90	49.10	2202.23	40.03N	56.29E	0.71	68.41	
2223.60	1.70	53.70	2211.83	40.21N	56.52E	0.77	68.70	
2233.70	1.50	74.10	2221.92	40.34N	56.77E	1.78	68.98	
2243.30	1.40	88.10	2231.52	40.38N	57.01E	1.15	69.21	
2252.80	1.30	102.90	2241.02	40.35N	57.23E	1.14	69.39	
2262.40	1.40	113.80	2250.61	40.29N	57.44E	0.86	69.55	
2271.60	1.60	112.10	2259.81	40.19N	57.67E	0.67	69.70	
2281.20	1.40	106.40	2269.41	40.11N	57.90E	0.78	69.88	
2290.60	1.40	102.20	2279.01	40.05N	58.13E	0.32	70.05	
2300.70	1.60	124.00	2288.90	39.95N	58.36E	1.82	70.21	
2310.30	1.90	149.30	2298.50	39.74N	58.56E	2.56	70.28	
2312.50	1.91	152.81	2300.70	39.67N	58.59E	1.60	70.28	BLUEFISH SHALE
2319.90	2.00	164.10	2308.09	39.44N	58.68E	1.60	70.26	
2329.50	1.50	154.60	2317.69	39.16N	58.78E	1.80	70.22	
2330.50	1.42	153.65	2318.69	39.14N	58.79E	2.40	70.22	HUME LIMESTONE/DOLOMITE
2339.10	0.80	138.10	2327.28	39.00N	58.86E	2.40	70.23	
2348.70	0.20	153.50	2336.89	38.94N	58.93E	1.90	70.25	
2358.30	0.60	18.20	2346.48	38.97N	58.96E	2.36	70.28	
2368.00	1.60	10.10	2356.18	39.15N	59.00E	3.12	70.40	
2377.50	2.00	12.20	2365.68	39.44N	59.05E	1.28	70.59	
2386.60	2.80	16.80	2374.97	39.82N	59.15E	2.65	70.85	
2396.40	3.10	24.10	2384.56	40.28N	59.33E	1.50	71.22	
2406.20	3.70	24.50	2394.34	40.81N	59.57E	1.84	71.68	
2415.70	4.10	27.30	2403.82	41.39N	59.85E	1.40	72.19	
2417.00	4.10	26.83	2405.11	41.47N	59.89E	0.78	72.27	HEADLESS SHALE/LIMESTONE
2425.30	4.10	23.80	2413.39	42.01N	60.15E	0.78	72.74	
2434.90	3.60	18.90	2422.97	42.61N	60.38E	1.87	73.23	
2444.40	3.30	2.00	2432.45	43.16N	60.49E	3.33	73.58	
2450.00	3.52	354.84	2438.04	43.50N	60.48E	2.56	73.72	MID-HEADLESS MKR.
2453.90	3.70	350.40	2441.94	43.74N	60.45E	2.56	73.81	
2459.70	3.00	356.70	2447.73	44.08N	60.41E	4.09	73.93	
2469.30	3.60	346.90	2457.31	44.62N	60.32E	2.57	74.11	
2488.40	4.80	64.90	2476.37	45.54N	60.91E	8.43	75.05	
2498.00	4.10	104.00	2485.95	45.63N	61.61E	9.52	75.71	
2507.60	3.40	127.90	2495.53	45.37N	62.17E	5.30	76.09	
2517.10	2.60	154.20	2505.01	45.01N	62.48E	4.96	76.20	
2526.70	3.20	133.50	2514.60	44.63N	62.77E	3.74	76.28	

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LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT CREEK (ST #2) B-44-64-30-125-45
Wellpath: B-44-64-30-125-45 (AWP#1)
Date Printed: 29-Apr-2004

INTEQ

Wellpath Report

MD[m]	Inc[deg]	Azi[deg]	TVD[m]	North[m]	East[m]	Dogleg [deg/30m]	Vertical Section[m]	Station Comment
2536.30	1.90	183.40	2524.19	44.28N	62.96E	7.66	76.29	
2541.00	1.97	200.27	2528.89	44.13N	62.92E	3.65	76.19	LANDRY MBR, BEAR ROCK FM.
2545.80	2.20	215.10	2533.69	43.98N	62.84E	3.65	76.04	
2555.40	2.70	247.40	2543.28	43.74N	62.53E	4.51	75.65	
2565.00	3.50	243.50	2552.86	43.52N	62.06E	2.58	75.14	
2574.60	4.90	244.60	2562.44	43.21N	61.42E	4.38	74.43	
2584.20	5.10	237.60	2572.00	42.81N	60.69E	2.00	73.60	
2593.70	4.31	231.20	2581.47	42.36N	60.06E	2.99	72.83	
2603.30	4.20	240.40	2591.04	41.96N	59.47E	2.16	72.12	
2612.90	3.60	233.00	2600.62	41.60N	58.93E	2.44	71.47	
2622.40	5.50	241.10	2610.09	41.20N	58.29E	6.32	70.72	
2632.00	5.40	242.10	2619.65	40.77N	57.49E	0.43	69.81	
2641.60	5.60	238.30	2629.20	40.31N	56.69E	1.30	68.89	
2643.00	5.19	236.34	2630.60	40.24N	56.58E	9.70	68.76	ARNICA MBR - TRGT
2651.20	3.00	214.40	2638.78	39.86N	56.15E	9.70	68.21	
2660.80	2.60	167.60	2648.37	39.44N	56.05E	7.04	67.93	
2671.10	2.60	180.30	2658.66	38.98N	56.10E	1.67	67.76	
2680.70	3.10	161.60	2668.24	38.51N	56.18E	3.28	67.61	
2690.20	2.40	178.80	2677.73	38.07N	56.27E	3.39	67.49	
2699.80	2.50	182.00	2687.32	37.66N	56.27E	0.53	67.29	
2709.40	1.80	219.50	2696.92	37.34N	56.16E	4.79	67.05	
2719.00	1.60	210.80	2706.51	37.10N	56.00E	1.01	66.80	
2725.00	2.42	233.37	2712.51	36.96N	55.85E	5.59	66.60	FT. NORMAN MBR
2728.60	3.00	240.40	2716.11	36.87N	55.71E	5.59	66.43	
2738.20	2.40	245.30	2725.70	36.66N	55.31E	2.01	65.98	
2747.80	3.20	243.50	2735.28	36.45N	54.89E	2.51	65.51	
2757.40	3.90	271.30	2744.87	36.34N	54.32E	5.73	64.96	
2767.00	4.10	268.50	2754.44	36.34N	53.65E	0.87	64.37	
2776.60	4.30	285.00	2764.02	36.42N	52.96E	3.81	63.79	
2786.10	4.40	282.60	2773.49	36.60N	52.26E	0.66	63.25	
2795.70	4.80	277.00	2783.06	36.73N	51.50E	1.88	62.64	
2805.30	4.60	275.20	2792.63	36.81N	50.72E	0.78	61.98	
2814.80	4.40	272.40	2802.10	36.86N	49.98E	0.94	61.34	
2853.20	3.30	273.80	2840.41	36.99N	47.40E	0.86	59.12	
2882.00	1.90	331.10	2869.18	37.47N	46.34E	2.89	58.40	
2901.20	2.30	341.30	2888.37	38.11N	46.07E	0.85	58.45	
2929.90	3.90	42.80	2917.03	39.37N	46.55E	3.61	59.46	
2968.30	6.80	44.60	2955.26	41.95N	49.03E	2.27	62.85	
3006.50	4.30	66.70	2993.28	44.13N	51.93E	2.55	66.43	
3011.50	4.00	74.10	2998.27	44.25N	52.27E	3.68	66.79	
3064.00	4.00	74.10	3050.64	45.25N	55.80E	0.00	70.38	EXTRAPOLATION TO T.D. ST #2

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LTD.,B-44-64-30-125-45
SUMMIT CREEK,
SUMMIT CREEK,NORTHWEST
TERRITORIES, CANADA

Wellbore: NORTHROCK ET AL SUMMIT
CREEK (ST #2) B-44-64-30-125-45
Wellpath: B-44-64-30-125-45 (AWP#1)
Date Printed: 29-Apr-2004

BAKER HUGHES
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Comments

MD[m]	TVD[m]	North[m]	East[m]	Comment
123.50	123.48	0.94S	1.81W	EAST FORK SHALE (U. LIMIT)
235.50	235.35	3.31S	6.45W	EAST FORK SANDS
352.50	352.17	5.64S	12.56W	EAST FORK SHALE (LWR UNIT)
405.00	404.58	6.38S	15.60W	U. LITTLE BEAR
609.00	608.23	8.70S	27.24W	L. LITTLE BEAR
806.00	804.92	7.67S	38.14W	SLATER RIVER
1103.00	1101.45	0.87N	52.09W	L. SLATER SHALE
1328.00	1325.35	22.28N	50.28W	ARCTIC RED
1701.00	1693.97	21.94N	1.96W	TIE ONTO EXISTING SURVEY
2161.00	2149.26	39.14N	55.17E	CANOL BLACK SHALE
2201.00	2189.24	39.71N	55.95E	HARE INDIAN SHALE
2312.50	2300.70	39.67N	58.59E	BLUEFISH SHALE
2330.50	2318.69	39.14N	58.79E	HUME LIMESTONE/DOLOMITE
2417.00	2405.11	41.47N	59.89E	HEADLESS SHALE/LIMESTONE
2450.00	2438.04	43.50N	60.48E	MID-HEADLESS MKR.
2541.00	2528.89	44.13N	62.92E	LANDRY MBR. BEAR ROCK FM.
2643.00	2630.60	40.24N	56.58E	ARNICA MBR - TRGT
2725.00	2712.51	36.96N	55.85E	FT. NORMAN MBR
3064.00	3050.64	45.25N	55.80E	EXTRAPOLATION TO T.D. ST #2

Hole Sections

[illegible]er	Start MD[m]	Start TVD[m]	Start North[m]	Start East[m]	End MD[m]	End TVD[m]	End North[m]	Start East[m]	Wellbore
216.000	804.00	802.93	7.70S	38.03W	2187.00	2172.14	39.35N	55.55E	NORTHROCK ETAL SUMMIT CREEK B-44-64-30-125-45
216.000	2187.00	2175.25	39.35N	55.55E	2505.00	2492.93	45.46N	62.04E	NORTHROCK ET AL SUMMIT CREEK (S.T #1.) B-44-64-30-125-45
155.600	2505.00	2492.93	45.46N	62.04E	3064.00	3050.64	45.25N	55.80E	NORTHROCK ET AL SUMMIT CREEK (ST #2) B-44-64-30-125-45

Casings

Name	Top MD[m]	Top TVD[m]	Top North[m]	Top East[m]	Shoe MD[m]	Shoe TVD[m]	Shoe North[m]	Shoe East[m]	Wellbore
244.50 mm Surface casing	0.00	0.00	0.00N	0.00E	804.00	802.93	7.70S	38.03W	NORTHROCK ETAL SUMMIT CREEK B-44-64-30-125-45
177.80 mm Intermediate casing	0.00	0.00	0.00N	0.00E	2450.00	2438.04	43.50N	60.48E	NORTHROCK ET AL SUMMIT CREEK (S.T #1.) B-44-64-30-125-45

Survey Tool Program

Reference	Survey Name	MD[m]	TVD[m]	Survey Tool	Error Model
457275	NAVITRAK 13-FEB-04	1701.00	1693.97	Navi Trak	Standard
460529	NAVITRAK S.T. SVY	2453.90	2441.94	Navi Trak	Standard

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SUMMIT CREEK,
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Survey Tool Program

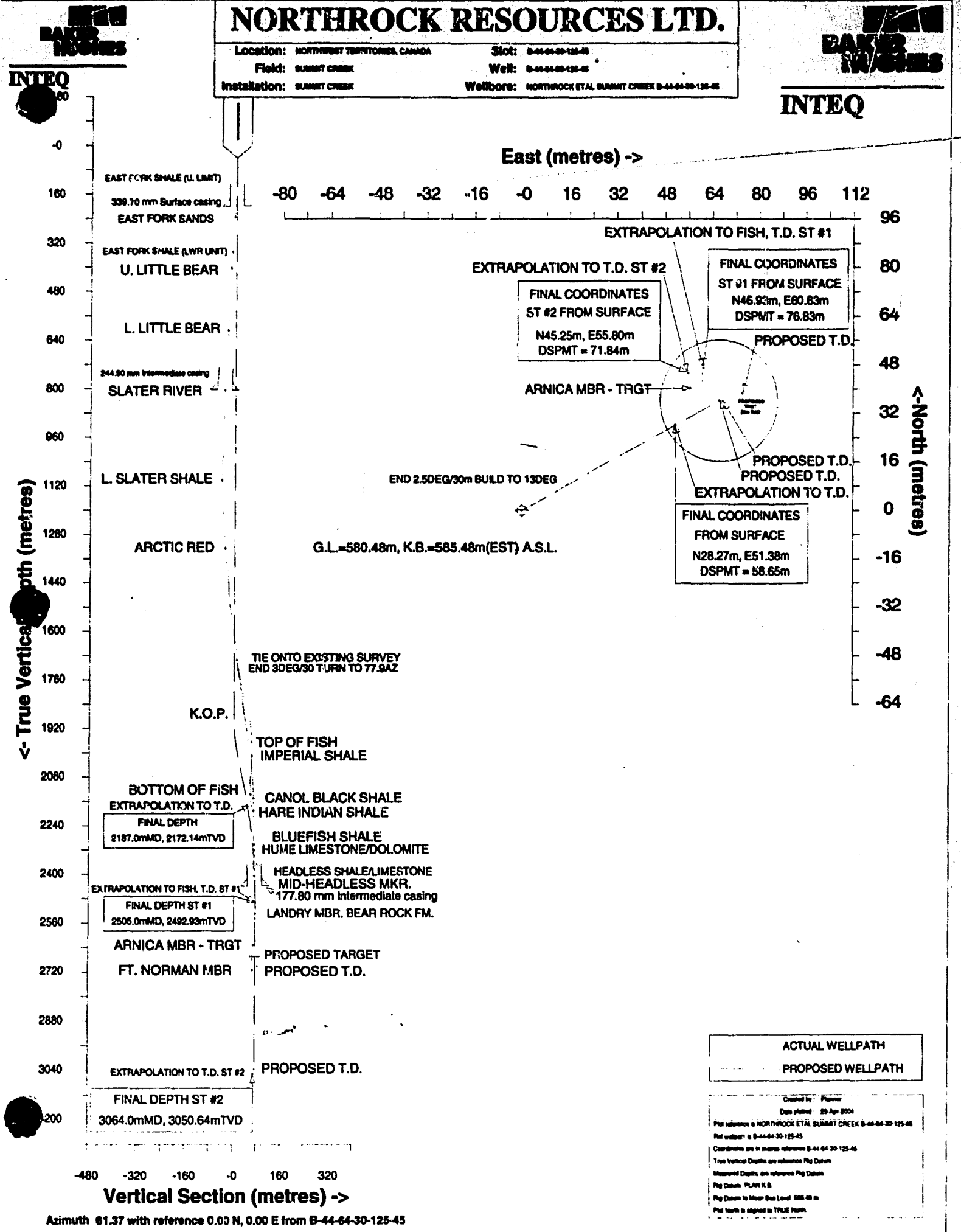
Reference	Survey Name	MD[m]	TVD[m]	Survey Tool	Error Model
469224	Navi-Trak (ST #2)	3064.00	3050.64	Navi Trak	Standard

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NORTHROCK RESOURCES LTD.

Location:	NORTHWEST TERRITORIES, CANADA	Slot:	B-44-64-30-125-45
Field:	SUMMIT CREEK	Well:	B-44-64-30-125-45
Installation:	SUMMIT CREEK	Wellbore:	NORTHROCK ETAL SUMMIT CREEK B-44-64-30-125-45

BAKER HUGHES INTEQ



ACTUAL WELLPATH

PROPOSED WELLPATH

Created by : Planner

Date plotted : 29-Apr-2004

Plot reference is NORTHROCK ETAL SUMMIT CREEK B-44-64-30-125-45

Ref wellpath is B-44-64-30-125-45

Coordinates are in metres reference B-44-64-30-125-45

True Vertical Depths are reference Rig Datum

Measured Depths are reference Rig Datum

Rig Datum: PLAN K.B.

Rig Datum is Mean Sea Level: 585.48 m

Plot North is aligned to TRUE North

Northrock et al Summit Creek B-44

Operator:	Northrock Resources Ltd.
Well:	Northrock et al Summit Creek B-44
Location:	B-44-64-30-125-45-Summit Creek-NWT
Country:	Canada
UWI D:	300B446430125450
Elevation GL:	580.50
KB:	586.00
Drilling Rig:	Akita 40
Spud Date:	16/01/2004
Print Date:	24/03/2004
Scale:	1:240

Personnel:

Jose Luis Caceres
Eyal Greenfeld
Zander Cherny

HoleData:

444.5mm Surface Hole to 208m MD
311mm 1st Intermediate Hole to 810m MD
216mm 2nd Intermediate Hole to 2450m MD

Notes:

A pilot hole was drilled untill 2188m MD where drilling was halted due to Tight Hole and Stuck Pipe at 2188m MD

CasingData:

Surface Casing: 340mm @208m MD
Intermediate # 1: 244.5mm @810m MD
Intermediate # 2: 177.8mm @2450m MD

Lithology

- Not Available
- Sandstone
- Siltstone
- Shale
- Chert
- Conglomerate
- Limestone
- Dolomite
- Anhydrite
- Gypsum
- Marlstone
- Salt
- Coal
- Metamorphic
- Granite
- Breccia
- Tuff
- Claystone
- Serpentinite
- Diabase
- Basalt
- Pillow Lava
- Leuco Granite
- Biotite Granite
- K Feldspar
- Cataclased
- Intrusive
- Extrusive
- Altered Low
- Altered Medium
- Altered High
- Clyst Green Gray
- Clyst Pale Green
- Clyst Grey
- Clyst Violet
- Clyst Yellow
- Clyst Brown
- Basalt Low
- Basalt Medium
- Basalt High
- Shale 2
- Siltstone 2

ROP
1.000 min/m 100.000

RPM
10.000 1000.000

C2
0.001 % 100.000
Hydrocarbons
0.100 units 10000.000
IC4
0.001 % 100.000
IC5
0.001 % 100.000
C1
0.001 % 100.000
NC4
0.001 % 100.000
NC5
0.001 % 100.000
C3
0.001 % 100.000

Char R

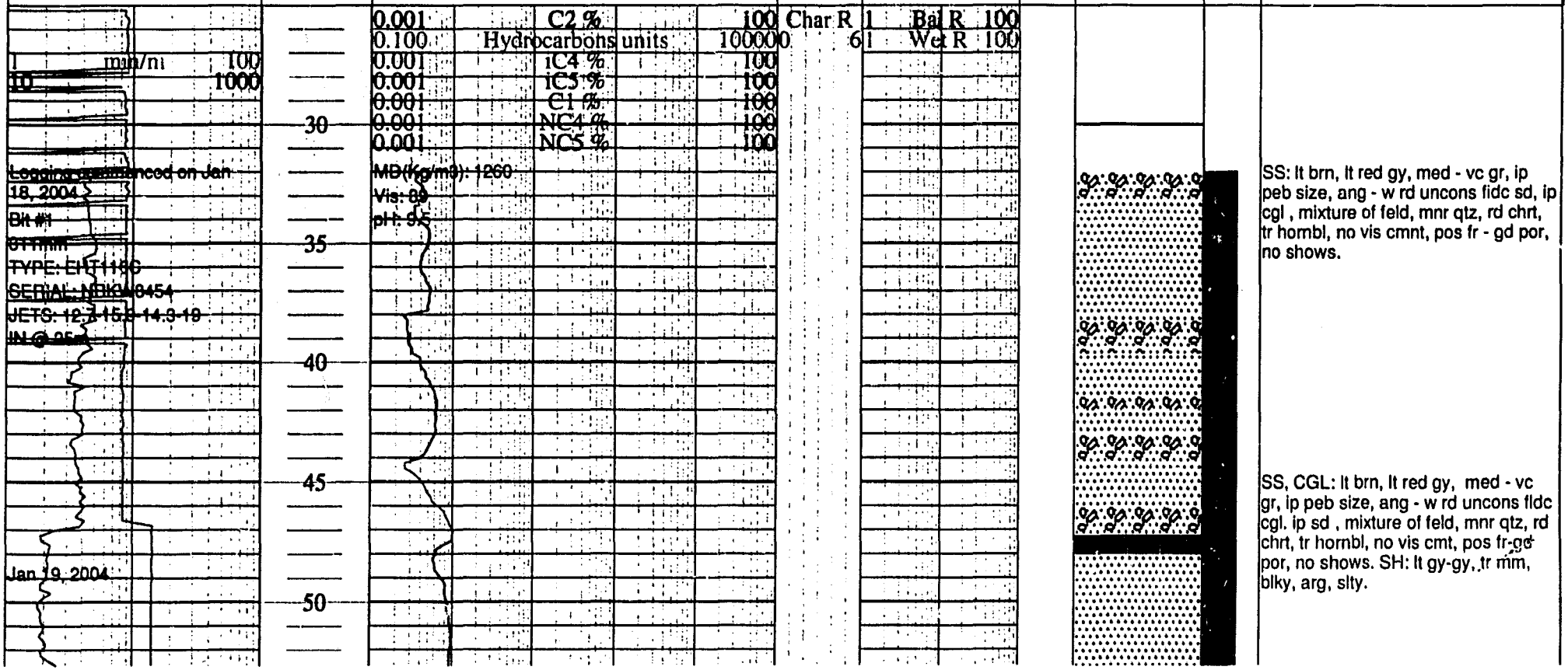
Bal R
Wet R

Porosity

Interpreted Lithology

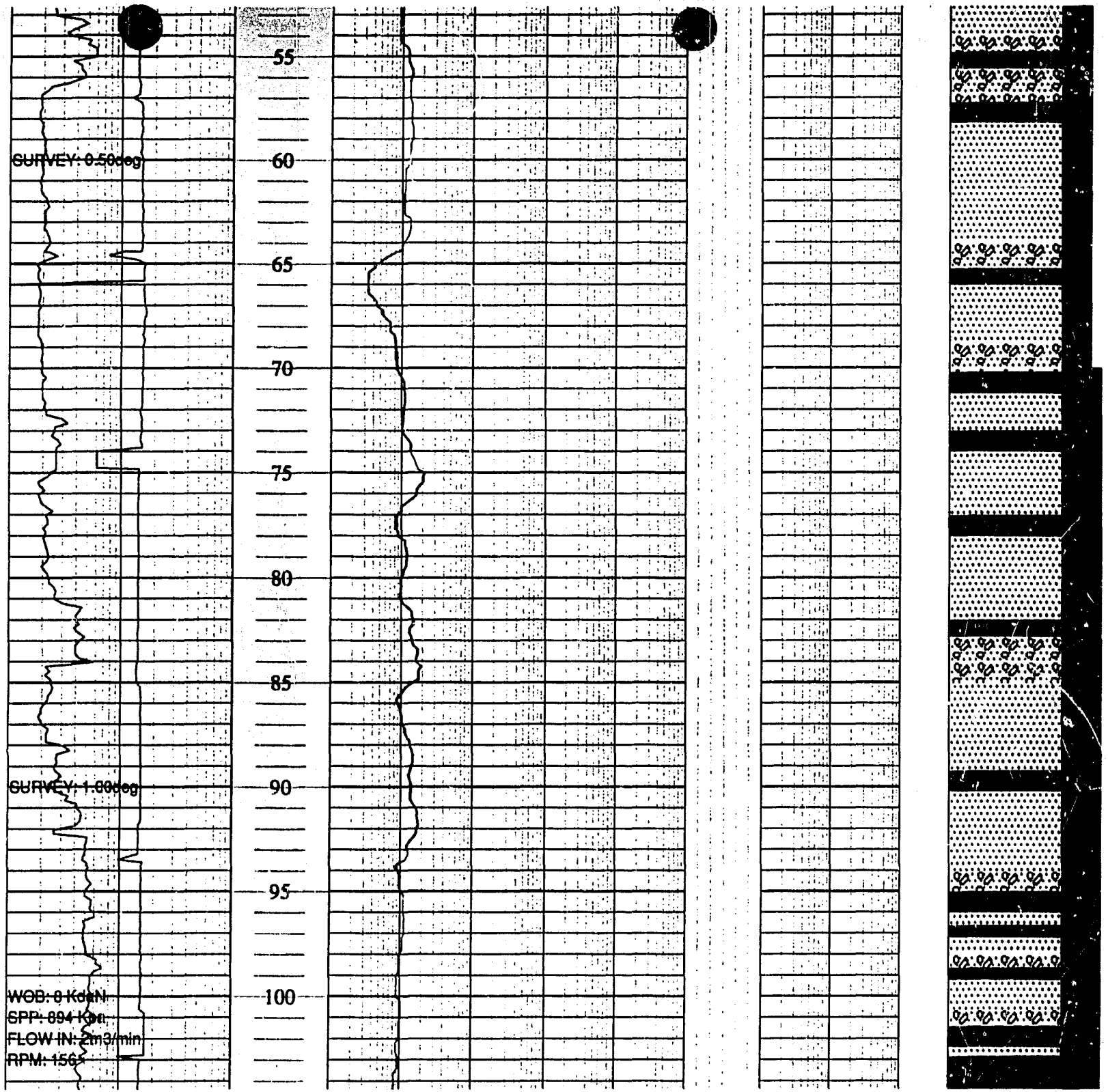
Grain Size

Stratigraphy



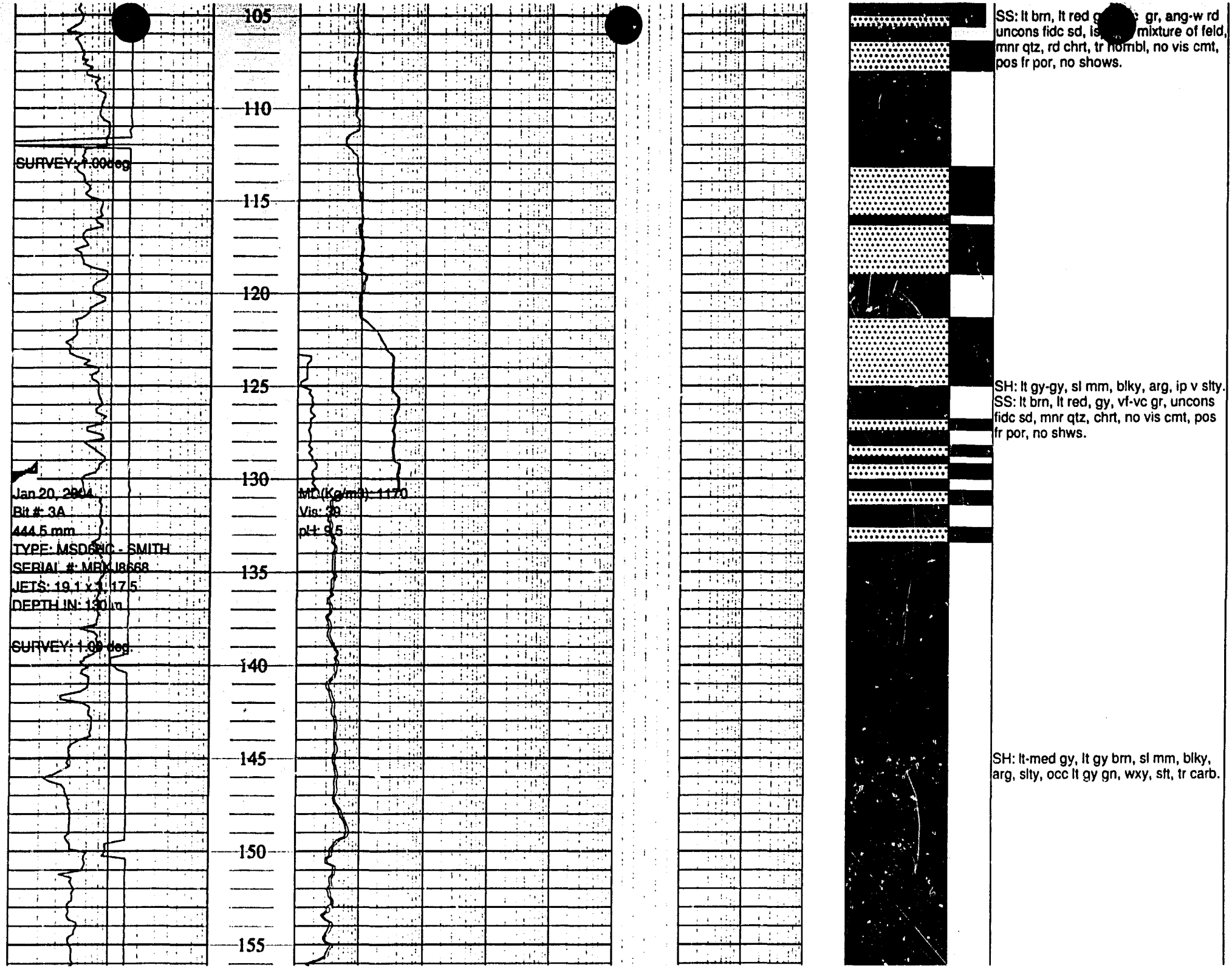
SS: lt brn, lt red gy, med - vc gr, ip peb size, ang - w rd uncons fldc sd, ip cgl , mixture of feld, mnr qtz, rd chrt, tr hornbl, no vis cmnt, pos fr - gd por, no shows.

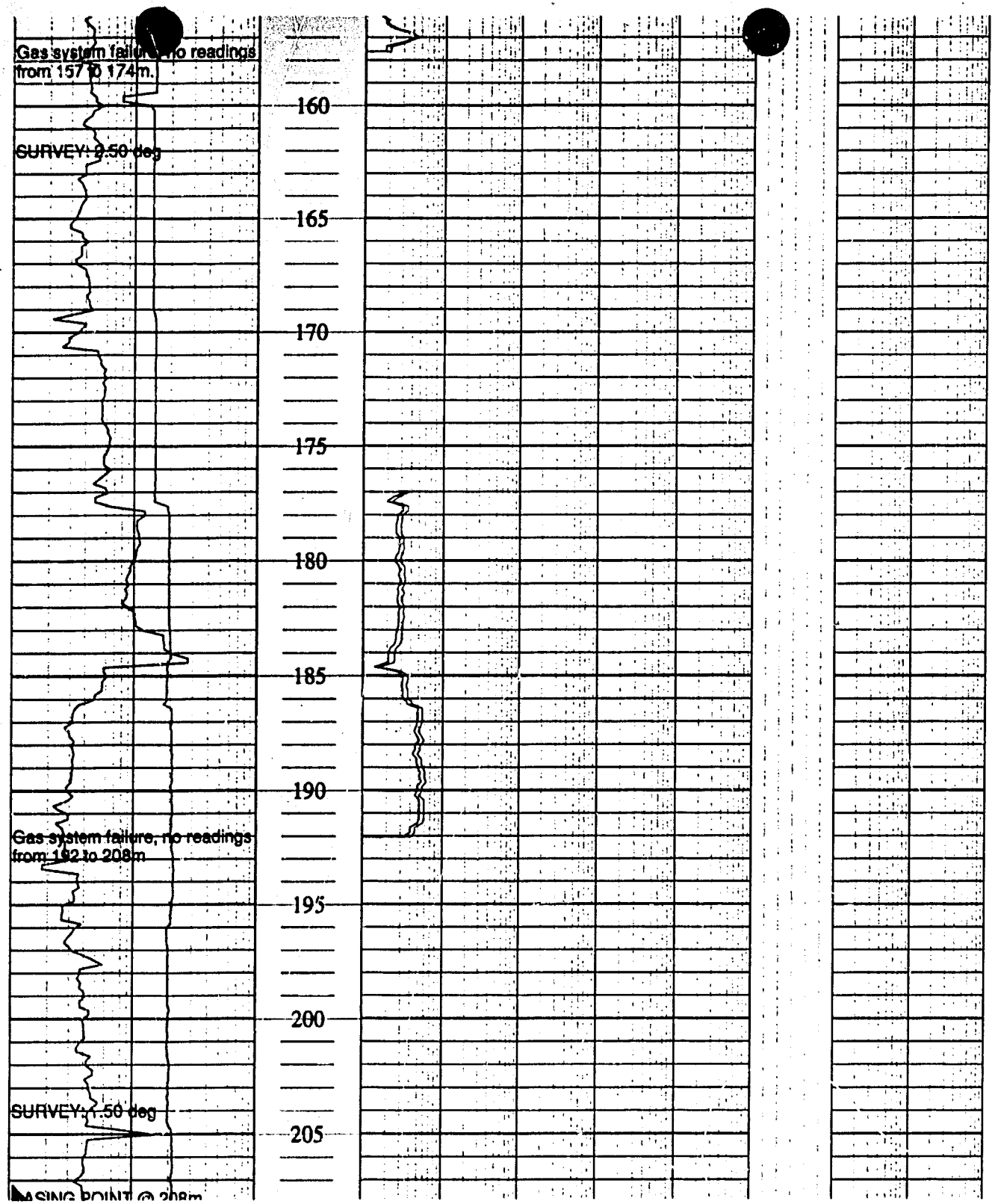
SS, CGL: lt brn, lt red gy, med - vc gr, ip peb size, ang - w rd uncons fldc cgl. ip sd , mixture of feld, mnr qtz, rd chrt, tr hornbl, no vis cmt, pos fr-gd por, no shows. SH: lt gy-gy, tr mm, blky, arg, slty.



CGL, SS: lt brn, lt red gy, med gr-peb size, ang-w rd uncons fidc cgl, ip sd, mix of feld, mnr qtz, rd chrt, tr hornbl, no vis cmnt, pos fr- gd por, no shows. SH: lt gy- gy, tr mm, blky, arg, slty.

SS: lt brn, lt red, gy, f-vc gr, ang-w rd uncons fidc sd, isp cgl, mixture of feld, mnr qtz, rd chrt, tr hornbl, no vis cmnt, pos fr-gd por, no shows. SH: lt gy-gy, tr mm, blky, arg, slty.


105
110
115
120
125
130
135
140
145
150
155
SURVEY: 1.00deg
Jan 20, 2004
Bit #: 3A
444.5 mm
TYPE: MSD6NC - SMITH
SERIAL #: MBK8668
JETS: 19,1 x 3, 17,5
DEPTH IN: 130 m
SURVEY: 1.00 deg
MW(Kg/m3): 1170
Vis: 39
pH: 9.5
SS: lt brn, lt red g gr, ang-w rd uncons fidc sd, is mixture of feld, mnr qtz, rd chrt, tr hornbl, no vis cmt, pos fr por, no shows.
SH: lt gy-gy, sl mm, blky, arg, ip v slty.
SS: lt brn, lt red, gy, vf-vc gr, uncons fidc sd, mnr qtz, chrt, no vis cmt, pos fr por, no shws.
SH: lt-med gy, lt gy brn, sl mm, blky, arg, slty, occ lt gy gn, wxy, sft, tr carb.



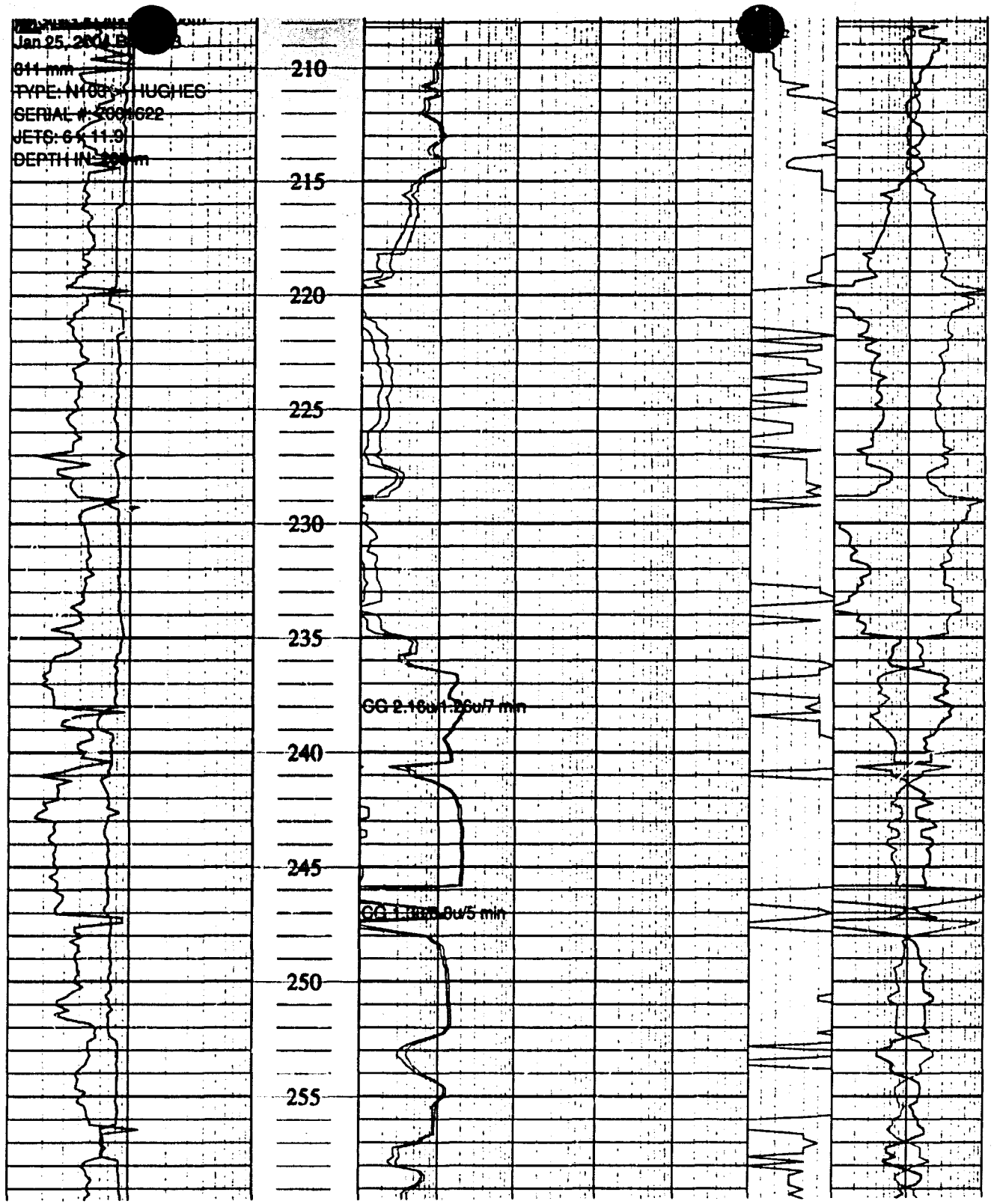


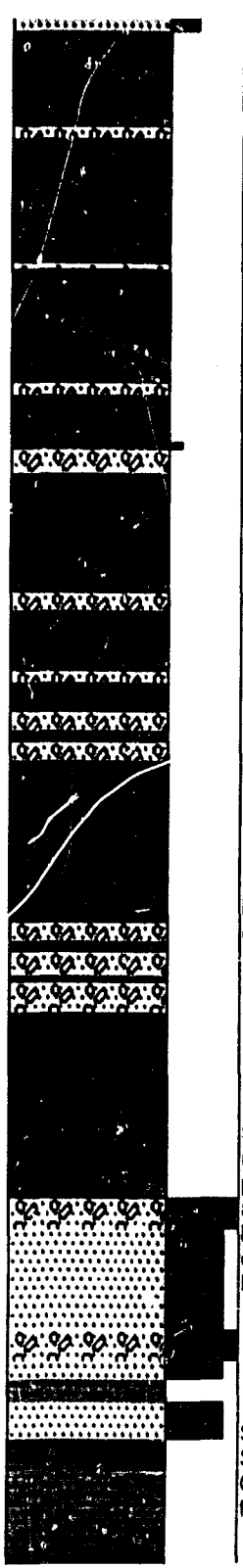
SH: lt-med gy, lt gy brn, sl mm, blky, arg, slty, occ lt gy gn, wxy, sft, tr carb, mnr pyr, occ w rd dk chrt grs.

SH: lt gy brn, sl mm, arg, slty, occ pyr, isp lt gy gn, wxy.

SS: brn, vf-f gr, v w cons, ang, lithic sd, v silc and abndt mdst mtx, tr pyr, isp calc, dns, tt. SH: lt gy, lt gy brn, sl mm, arg, slty, occ pyr, isp lt gy gn, wxy.

SS: brn, vf-f gr, v w cons, ang, lithic sd, v silc and abndt mdst mtx, bcm v pyrc, isp calc, dns, tt. SH: lt gy lt gy brn, sl mm, arg, slty, occ pyr, ip v lt





gy, bentc, isp lt g... wxy. CHRT: occ lt, dk chrt grs, frags.

SH: MUDST brn, lt brn, blky, v sdy, slyt, silc, ip calc, tr pyrc. CHRT tr, dk gy, lt brn, gy, olv, vc - peb, rd - w rd grs.

MUDST: brn, lt brn, blky, slty, silc, ip calc, tr pyrc. CHRT: tr, dk gy, lt brn, gy olv, vc - peb, rd - w rd grs. SS: tr, lt brn, brn, vf gr, v w cons, silc mudst mtx, ip calc, tt.

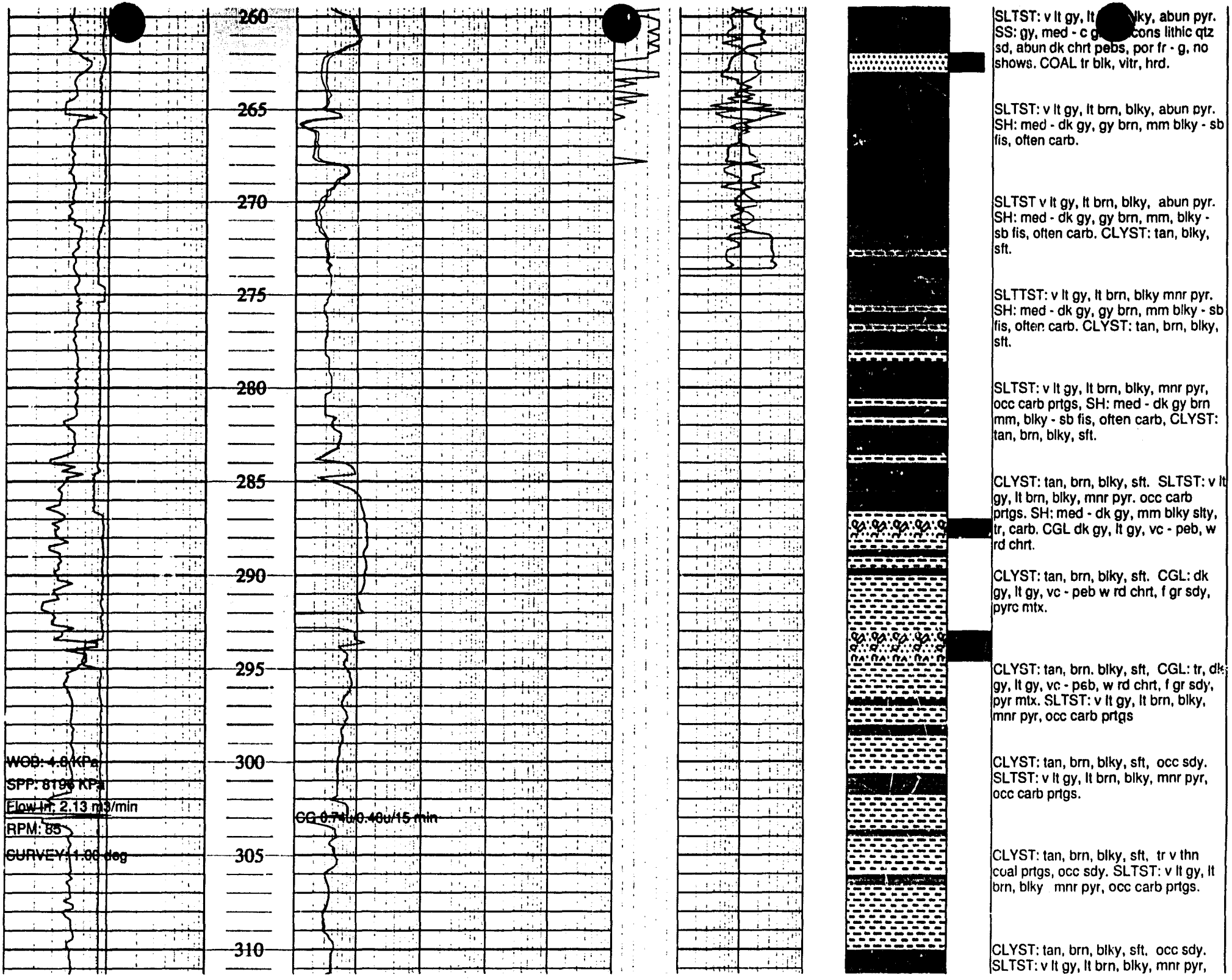
MUDST: brn, lt brn, blky, ip v slty, silc, ip calc, tr pyrc. CHRT tr, dk gy, lt brn gy, olv, vc - peb, rd - w rd grs.

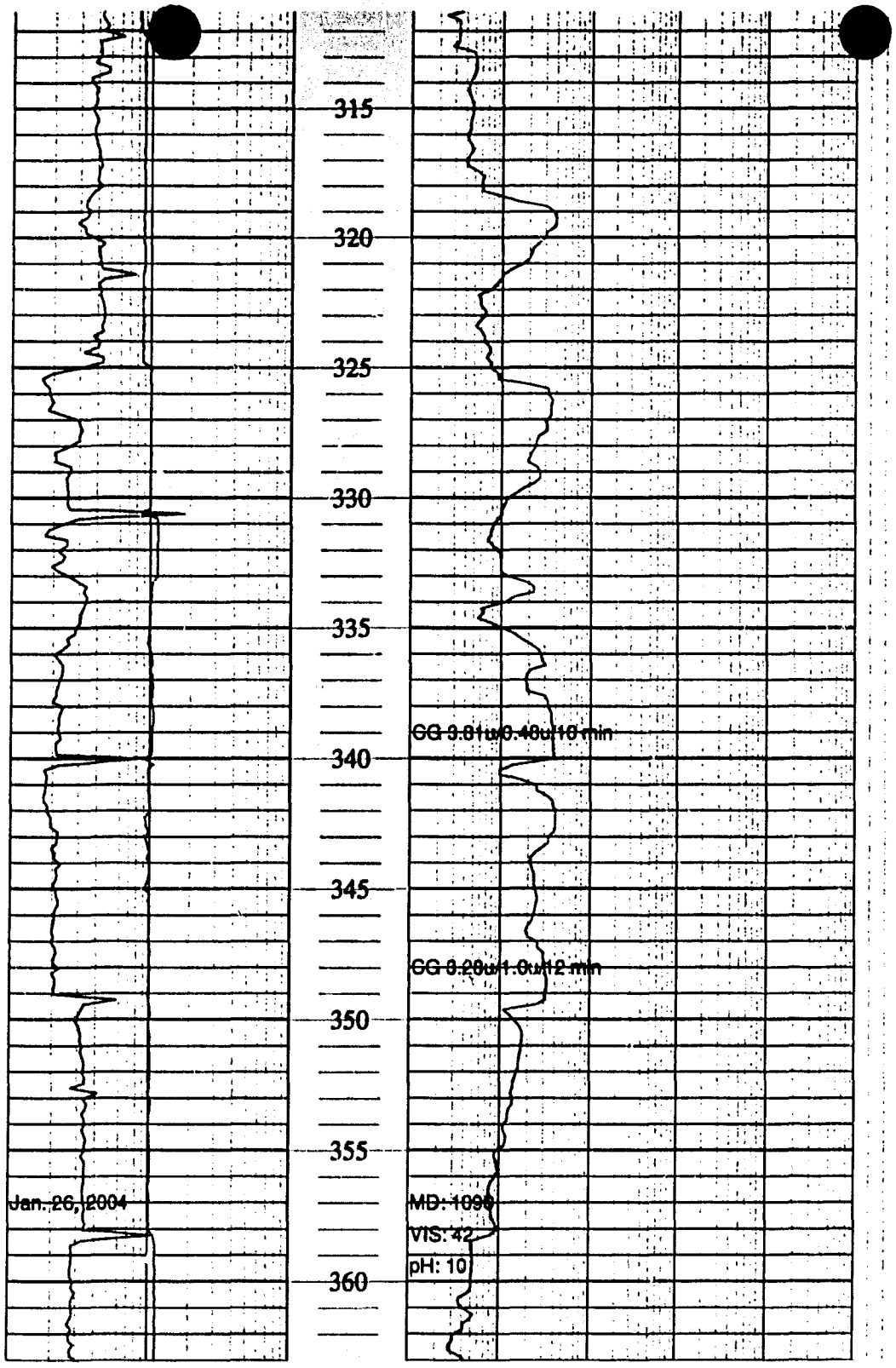
MUDST brn, lt brn, blky, ip v slty, silc, ip calc, tr pyrc . CHRT: tr, dk gy, lt brn, gy olv, vc - peb, rd - w rd grs.

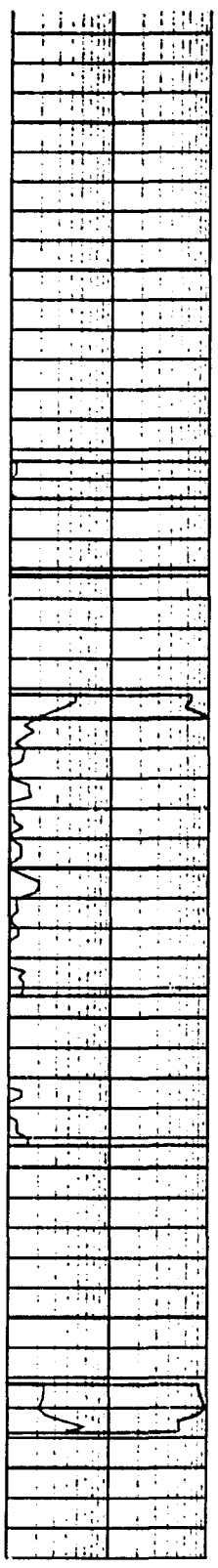
MUDST: brn, lt brn, blky, ip v slty, silc, ip calc, tr pyrc. CHRT: tr, dk gy, lt brn gy, olv, vc - peb, rd - w rd grs. SS: lt gy, f - med gr, uncons lithic sd, abun chrt grs, pos fr - g por.

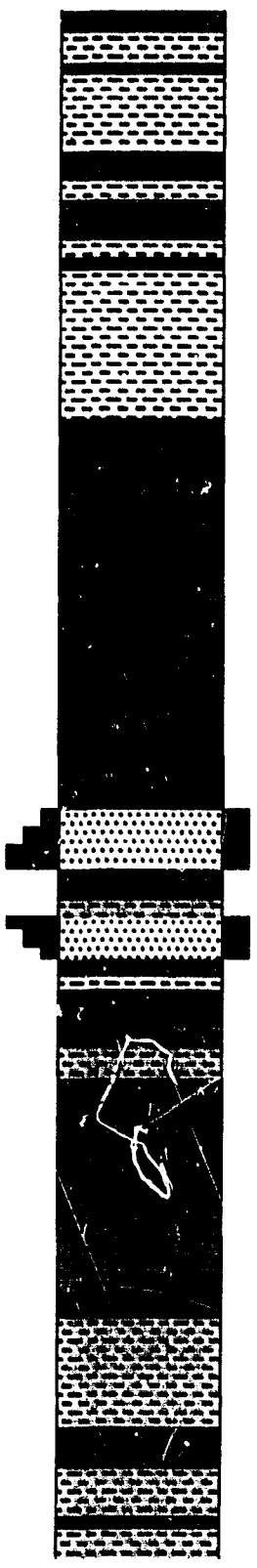
SS: gy, lt gy, med - c gr, sb rd - rd, uncons lithic qtz, sd, abun dk chrt, pos fr - g por. CGL gy, lt brn, gy brn, ang - w rd frags and grs. v c - 5 mils. MUDST: brn, lt brn blky, ip silc, ip calc, abun pyr. COAL: blk, vitr, hrd, bitns - anthracite.

SLTST: lt gy, lt b... blky, abun pyr. SH: med - dk gy, mrn, sb fis, carb. CGL tr, gy, lt brn, gy brn, ang - w rd frags and grs, v c - 5 mils.


260
265
270
275
280
285
290
295
300
305
310
WOB: 4.6 KPa
SPP: 8196 KPa
Flow In: 2.13 m3/min
RPM: 85
SURVEY: 1.00 deg
CG 0.74u/0.40u/15 min
SLTST: v lt gy, lt ... lky, abun pyr. SS: gy, med - c g... cons lithic qtz sd, abun dk chrt pebs, por fr - g, no shows. COAL tr blk, vitr, hrd.
SLTST: v lt gy, lt brn, blky, abun pyr. SH: med - dk gy, gy brn, mm blky - sb fis, often carb.
SLTST v lt gy, lt brn, blky, abun pyr. SH: med - dk gy, gy brn, mm, blky - sb fis, often carb. CLYST: tan, blky, sft.
SLTTST: v lt gy, lt brn, blky mnr pyr. SH: med - dk gy, gy brn, mm blky - sb fis, often carb. CLYST: tan, brn, blky, sft.
SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs, SH: med - dk gy brn mm, blky - sb fis, often carb, CLYST: tan, brn, blky, sft.
CLYST: tan, brn, blky, sft. SLTST: v lt gy, lt brn, blky, mnr pyr. occ carb prtgs. SH: med - dk gy, mm blky slty, tr, carb. CGL dk gy, lt gy, vc - peb, w rd chrt.
CLYST: tan, brn, blky, sft. CGL: dk gy, lt gy, vc - peb w rd chrt, f gr sdy, pyrc mtx.
CLYST: tan, brn. blky, sft, CGL: tr, dk gy, lt gy, vc - peb, w rd chrt, f gr sdy, pyr mtx. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs
CLYST: tan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs.
CLYST: tan, brn, blky, sft, tr v thn coal prtgs, occ sdy. SLTST: v lt gy, lt brn, blky mnr pyr, occ carb prtgs.
CLYST: tan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr,







occ carb prtgs. S[illegible]m, br, mudst, hrd, silc.

CLYSY: tan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: lt brn, br, mudst, hrd, silc, ipp gy brn bentc.

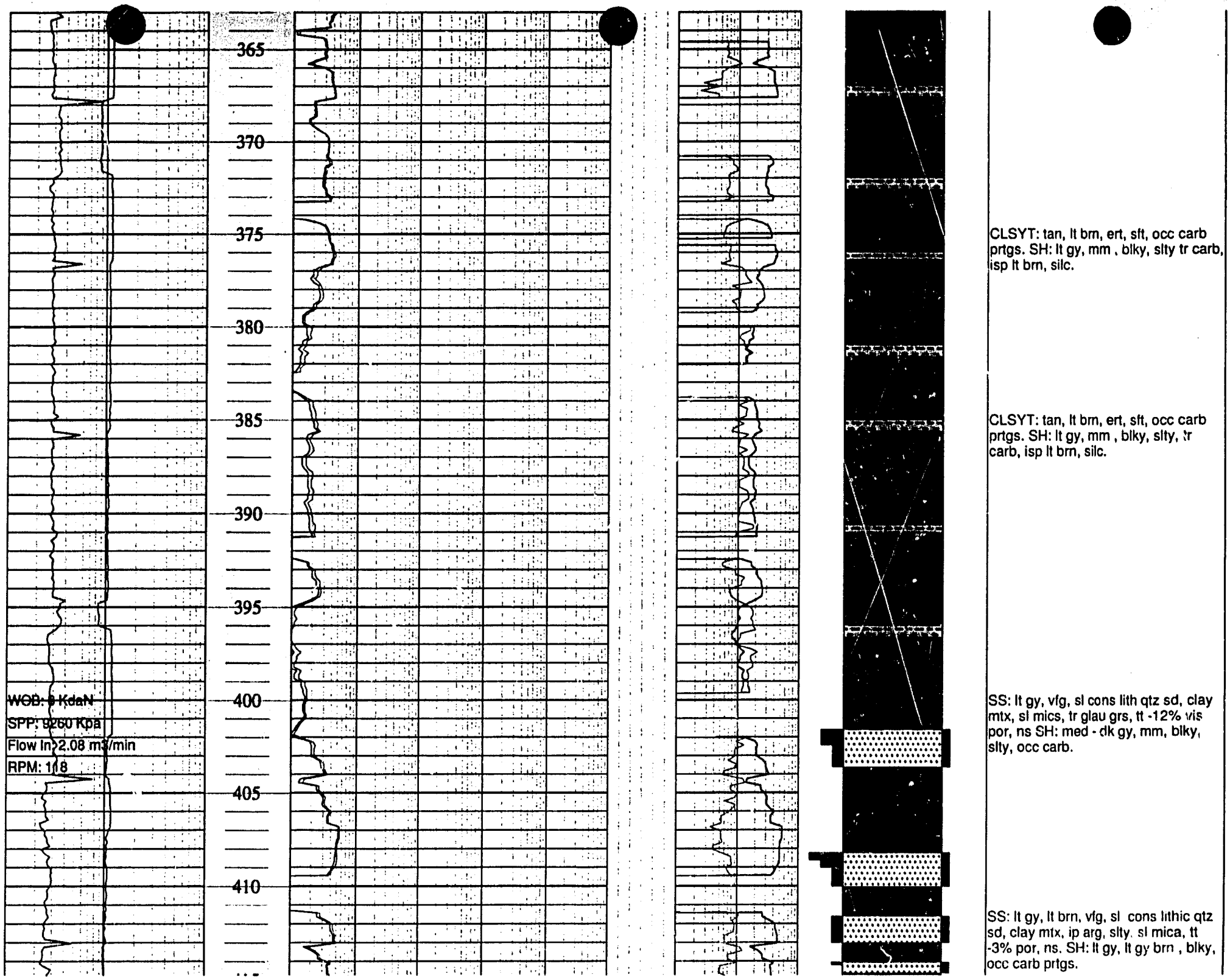
COAL: blk, vitr, hrd, bitns - antracite. CLYST: tan, brn, blky sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: med - dk gy, mm, sb fis, ip brn, silc , mudst. SS: ow, vfg, sl cons qtz, cly mtx, 3 - 8% por, ns. COAL: blk, vitr, hrd, bitns - anthracite. SLST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: md - dk gy, mm, sb fis carb, ip brn, silc , mudst.

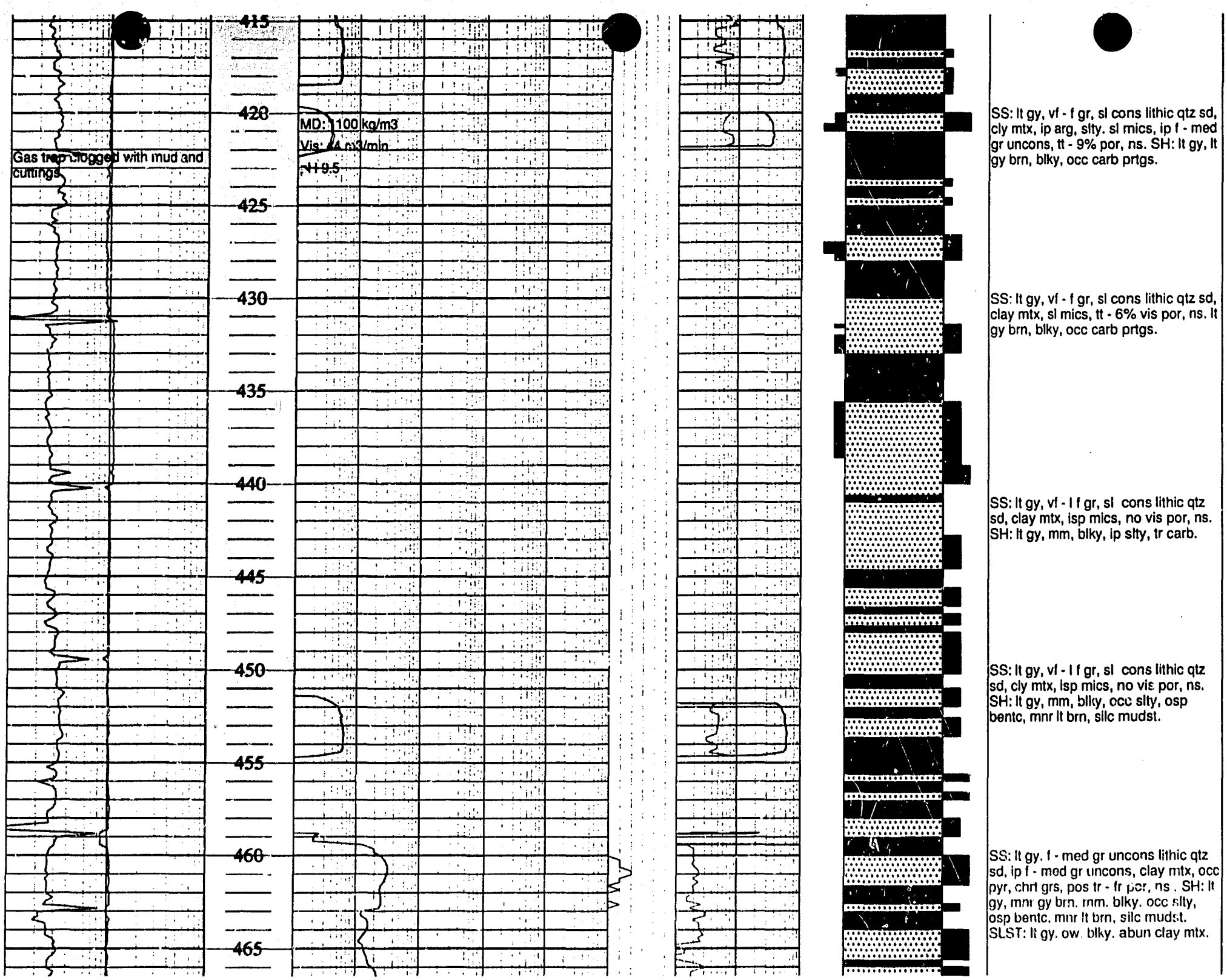
SH: md - dk gy, mm, sb fis, carb, ip brn, silc, mudst. COAL: blk, vitr, hrd, bitns - anthracite.

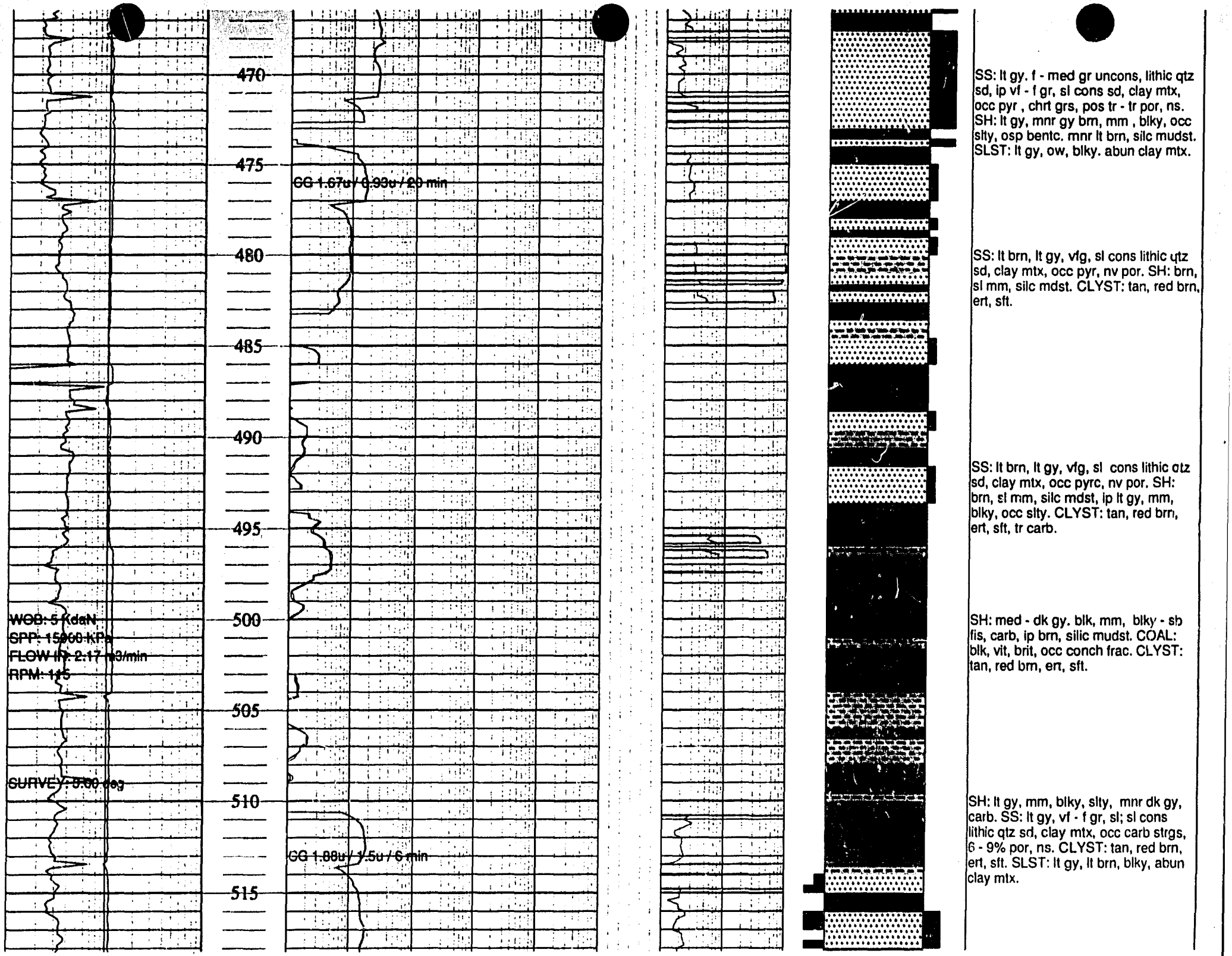
SS:lt gy, vf - f gr, si cons, lithic qtz sd, cly mtx, occ coal prtgs, 3-8% vis por in samples. SH: md - dk gy, mm, sb fis, carb, ip brn, silc, mudst. SLTST: v lt gy, lt brn , blky, mnr pyr, occ carb partgs.
SS: lt gy, vf - f gr, sl cons, lithic qtz sd, cly mtx, occ coal prtgs, 3-8% vis por in samples, SH: med - dk gy, mm, sb fis, carb, ip brn, silc, mudst. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. CLYST: tan, brn, blky, sft, oc slty. COAL: blk , vitr.

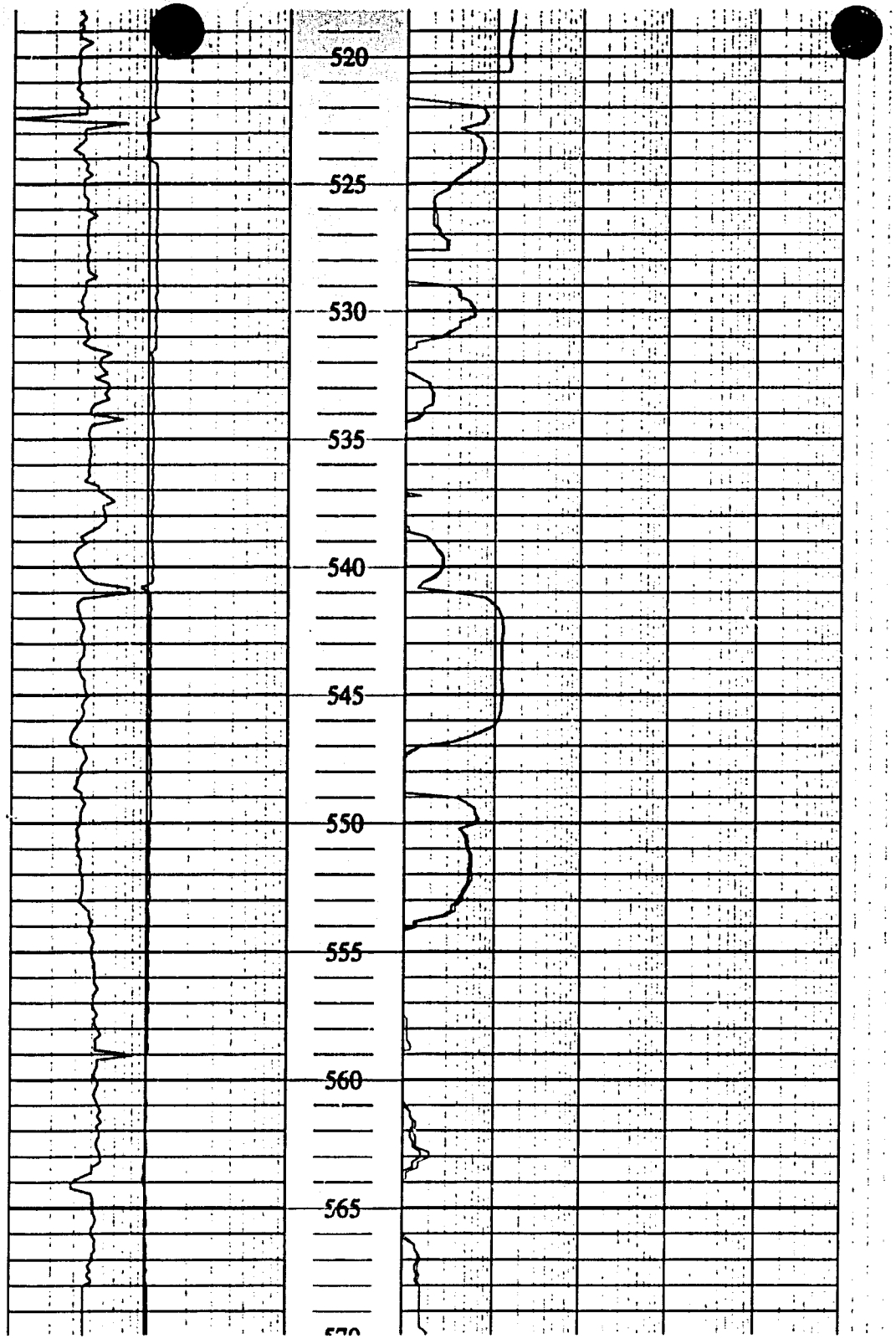
CLYST: tan, lt brn, ert, sft, carb prtgs. SH: lt gy, mm, blky, slty, tr carb.

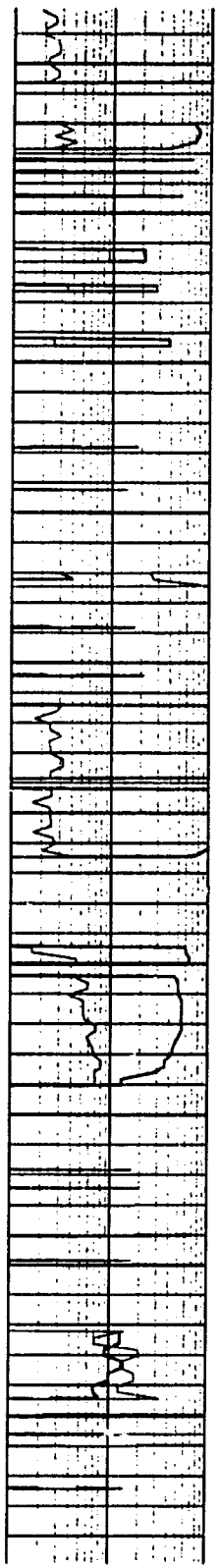
CLYST: tan, lt brn, ert, sft, occ carb prtgs. SH: lt gy, mm, blky, slty, tr carb, isp lt brn, silc.


365
370
375
380
385
390
395
400
405
410
WOB: 0 KdaN
SPP: 9260 Kpa
Flow In: 2.08 m3/min
RPM: 118
CLSYT: tan, lt brn, ert, sft, occ carb prtgs. SH: lt gy, mm , blky, slty tr carb, isp lt brn, silc.
CLSYT: tan, lt brn, ert, sft, occ carb prtgs. SH: lt gy, mm , blky, slty, tr carb, isp lt brn, silc.
SS: lt gy, vfg, sl cons lith qtz sd, clay mtx, sl mics, tr glau grs, tt -12% vis por, ns SH: med - dk gy, mm, blky, slty, occ carb.
SS: lt gy, lt brn, vfg, sl cons lithic qtz sd, clay mtx, ip arg, slty, sl mica, tt -3% por, ns. SH: lt gy, lt gy brn , blky, occ carb prtgs.


415
420
425
430
435
440
445
450
455
460
465
MD: 1100 kg/m3
Vis: 44 m3/min
PV 9.5
Gas trap clogged with mud and cuttings
SS: lt gy, vf - f gr, sl cons lithic qtz sd, cly mtx, ip arg, slty. sl mics, ip f - med gr uncons, tt - 9% por, ns. SH: lt gy, lt gy brn, blky, occ carb prtgs.
SS: lt gy, vf - f gr, sl cons lithic qtz sd, clay mtx, sl mics, tt - 6% vis por, ns. lt gy brn, blky, occ carb prtgs.
SS: lt gy, vf - l f gr, sl cons lithic qtz sd, clay mtx, isp mics, no vis por, ns. SH: lt gy, mm, blky, ip slty, tr carb.
SS: lt gy, vf - l f gr, sl cons lithic qtz sd, cly mtx, isp mics, no vis por, ns. SH: lt gy, mm, blky, occ slty, osp bentc, mnr lt brn, silc mudst.
SS: lt gy. f - med gr uncons lithic qtz sd, ip f - med gr uncons, clay mtx, occ pyr, chrt grs, pos tr - fr por, ns . SH: lt gy, mnr gy brn. mm. blky. occ slty, osp bentc, mnr lt brn, silc mudst. SLST: lt gy. ow. blky. abun clay mtx.


470
475
480
485
490
495
500
505
510
515
GG 1.67u / 0.93u / 20 min
GG 1.88u / 1.5u / 6 min
WOB: 5 KdaN
SPP: 15900 KPa
FLOW IN: 2.17 m3/min
RPM: 115
SURVEY: 0.00 deg
SS: lt gy. f - med gr uncons, lithic qtz sd, ip vf - f gr, sl cons sd, clay mtx, occ pyr , chrt grs, pos tr - tr por, ns. SH: lt gy, mnr gy brn, mm , blky, occ slty, osp bentc. mnr lt brn, silc mudst. SLST: lt gy, ow, blky. abun clay mtx.
SS: lt brn, lt gy, vfg, sl cons lithic qtz sd, clay mtx, occ pyr, nv por. SH: brn, sl mm, silc mdst. CLYST: tan, red brn, ert, sft.
SS: lt brn, lt gy, vfg, sl cons lithic qtz sd, clay mtx, occ pyrc, nv por. SH: brn, sl mm, silc mdst, ip lt gy, mm, blky, occ slty. CLYST: tan, red brn, ert, sft, tr carb.
SH: med - dk gy. blk, mm, blky - sb fis, carb, ip brn, silic mudst. COAL: blk, vit, brit, occ conch frac. CLYST: tan, red brn, ert, sft.
SH: lt gy, mm, blky, slty, mnr dk gy, carb. SS: lt gy, vf - f gr, sl; sl cons lithic qtz sd, clay mtx, occ carb strgs, 6 - 9% por, ns. CLYST: tan, red brn, ert, sft. SLST: lt gy, lt brn, blky, abun clay mtx.







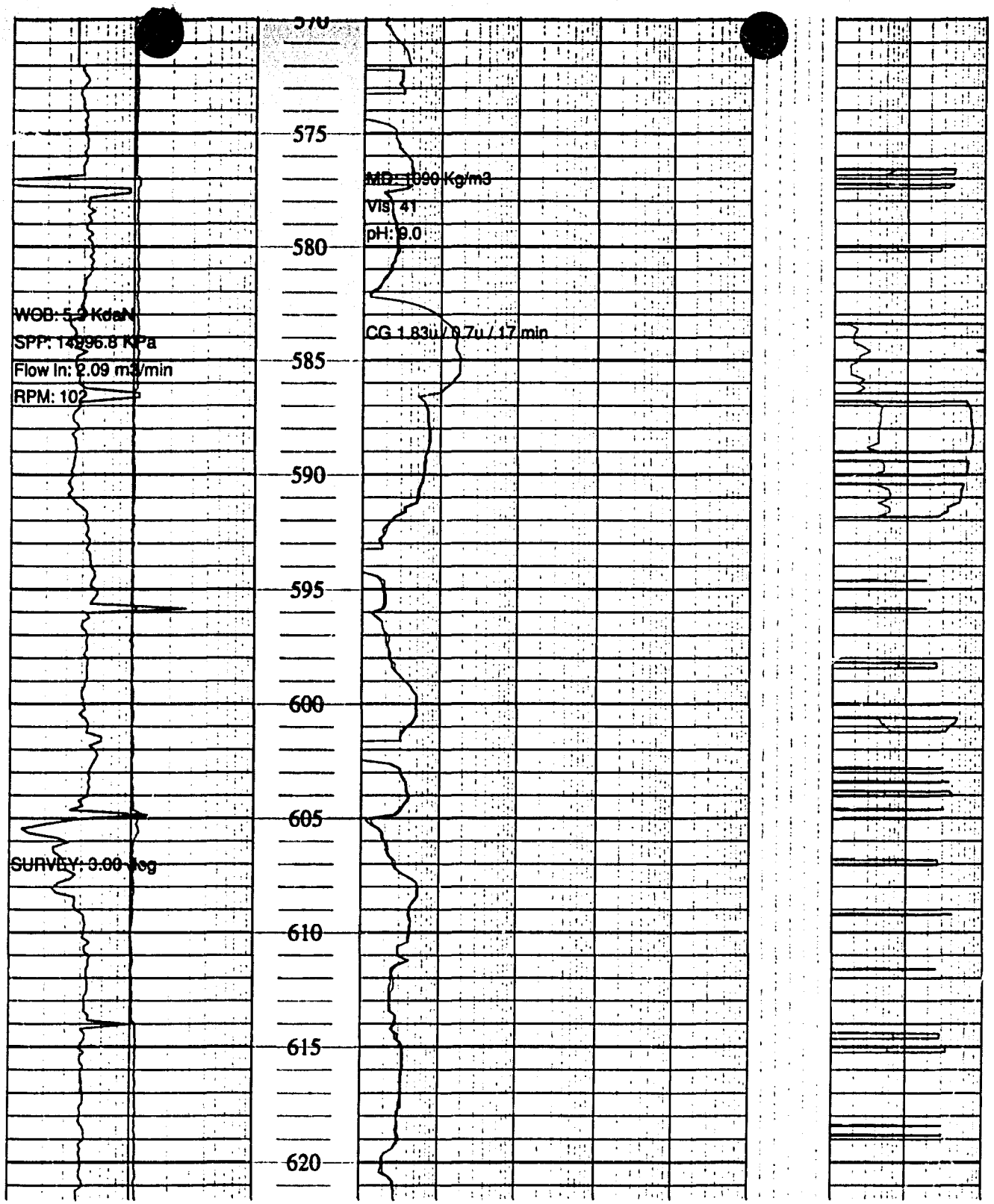
SS: lt red, brn, lt gy, vf - f gr, tr mrd gr, sl cons lithic qtz sd, clay mtx, tr - 6% por, ns. SH: lt gy, mm, blky, slty, ip lt red brn, silc mmudst. CLYST: tan, red brn, ert, sft.

SS: lt red brn, lt gy, vf - f gr, tr mrd gr, sl cons lithic qtz sd, clay mtx, tt - 6% por , ns. SH: lt red brn, silc mudst. CLYST: tan, red brn, ert, sft.

SLST: lt brn, lt gy brn, blky , sft, abun clay mtx, occ py. SH brn, gy brn, ip mm, blky, mnr silc mudst. CLYST: lt brn, red brn, ert, sft.

SS: lt red brn, lt gy, vf - f gr, sl cons lithic qtz sd, abun clay mtx, tt - tr por, ns. SH: brn, rd brn, blky, silc mudst, ip gy brn, mm, blky, slty.

SLST: lt brn red, lt brn, blky, abun clay mtx, tr pyrc. SH: brn, sl mm, blky, silic mudst, ip lt gy, gy brn, mm, blky, slty.





SS: lt gy, vfg, sl cons, lithic sd, silty, clay mtx, tr mics, nv por, ns. SLST: lt brn, blky, clay mtx. SH: lt gy, lt brn, mm, blky, isp silc.

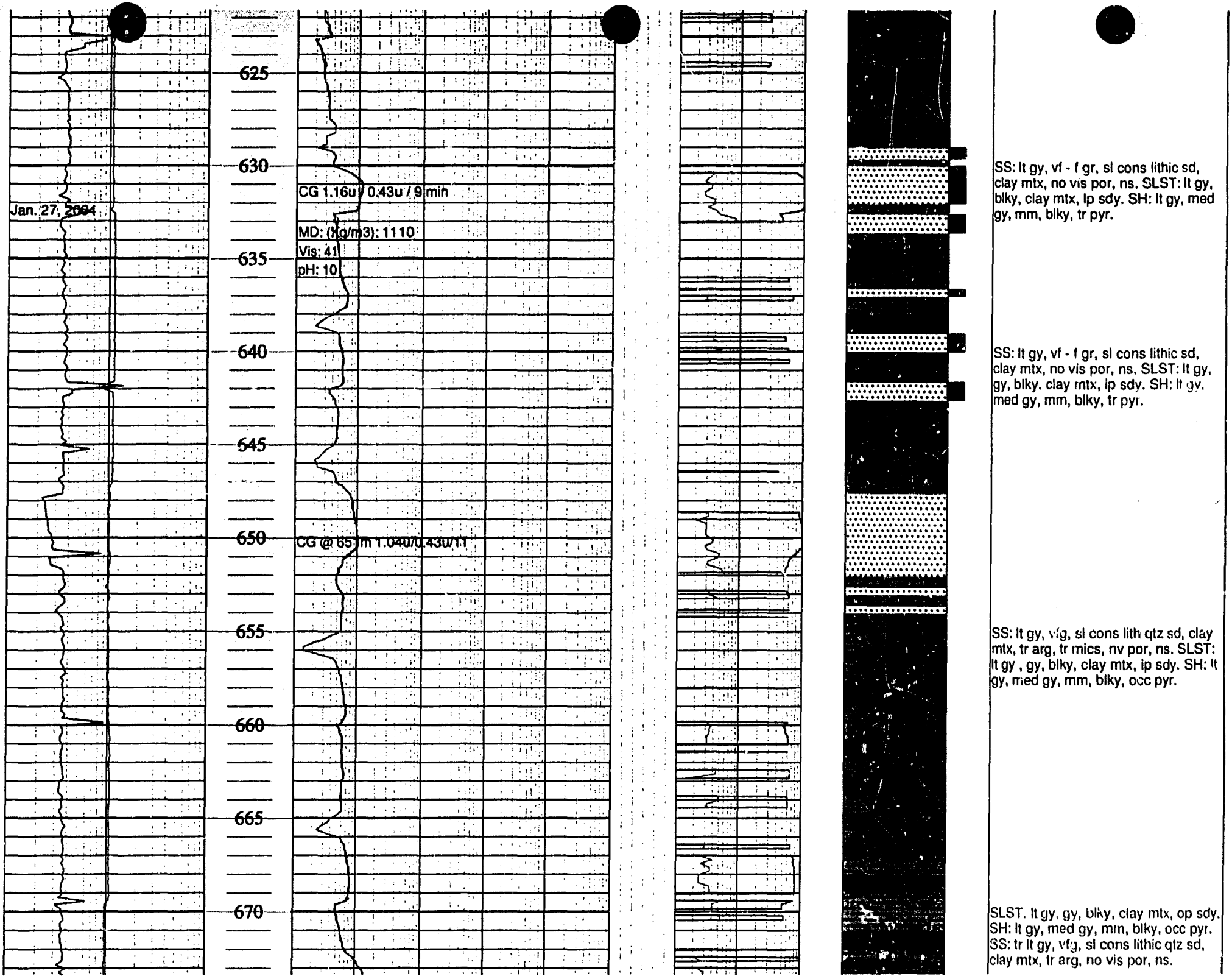
SS: lt gy, f - med gr, uncons , isp sl cons lithic qtz sd, clay mtx, tr lt, dk chrt, pos , ns. SH: lt gy, mm, blky, mnr silty. tr pyr.

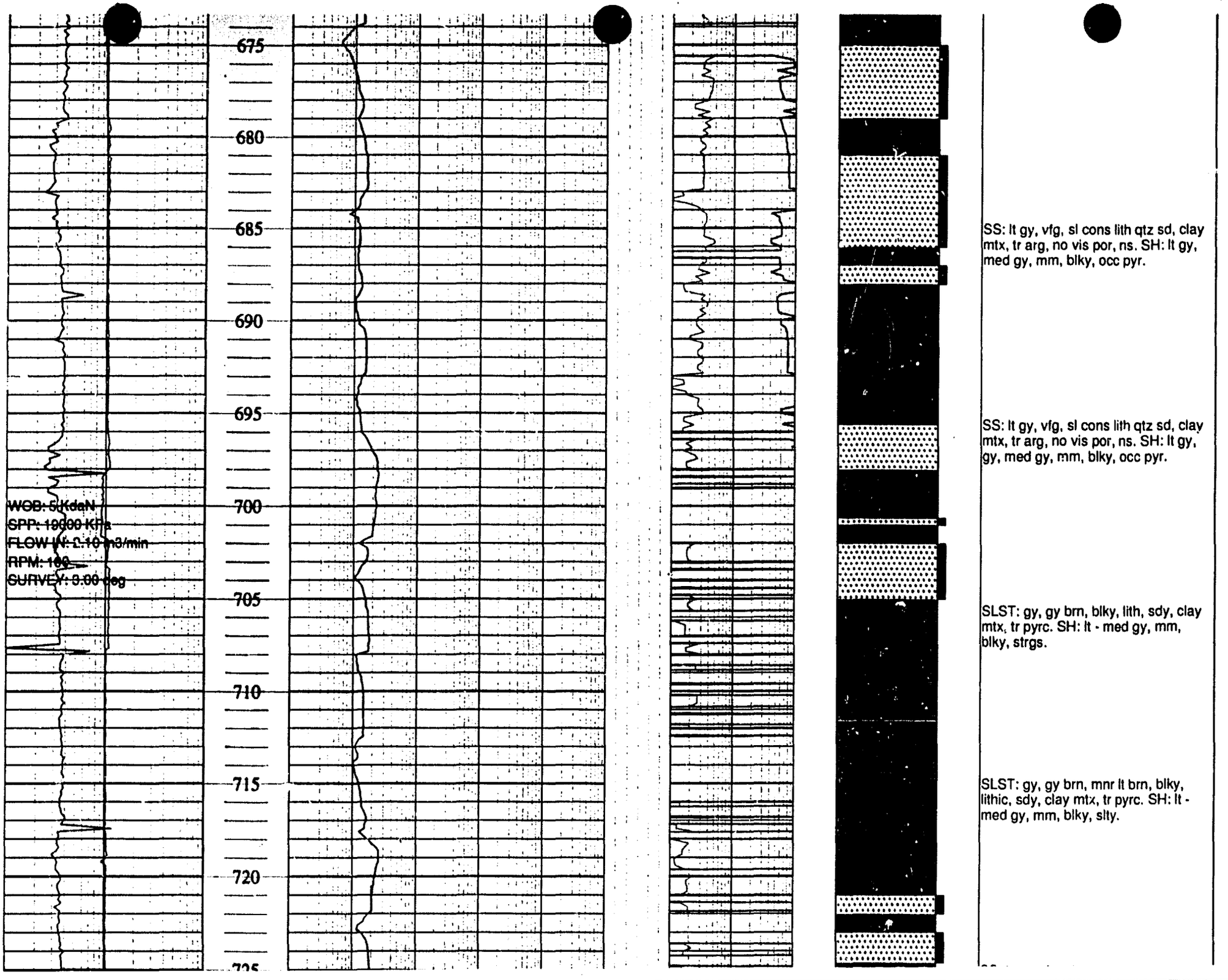
SH: lt gy, mm, blky, mnr silty , tr pyr. SLST: lt brn, lt gy , blky, clay mtx.

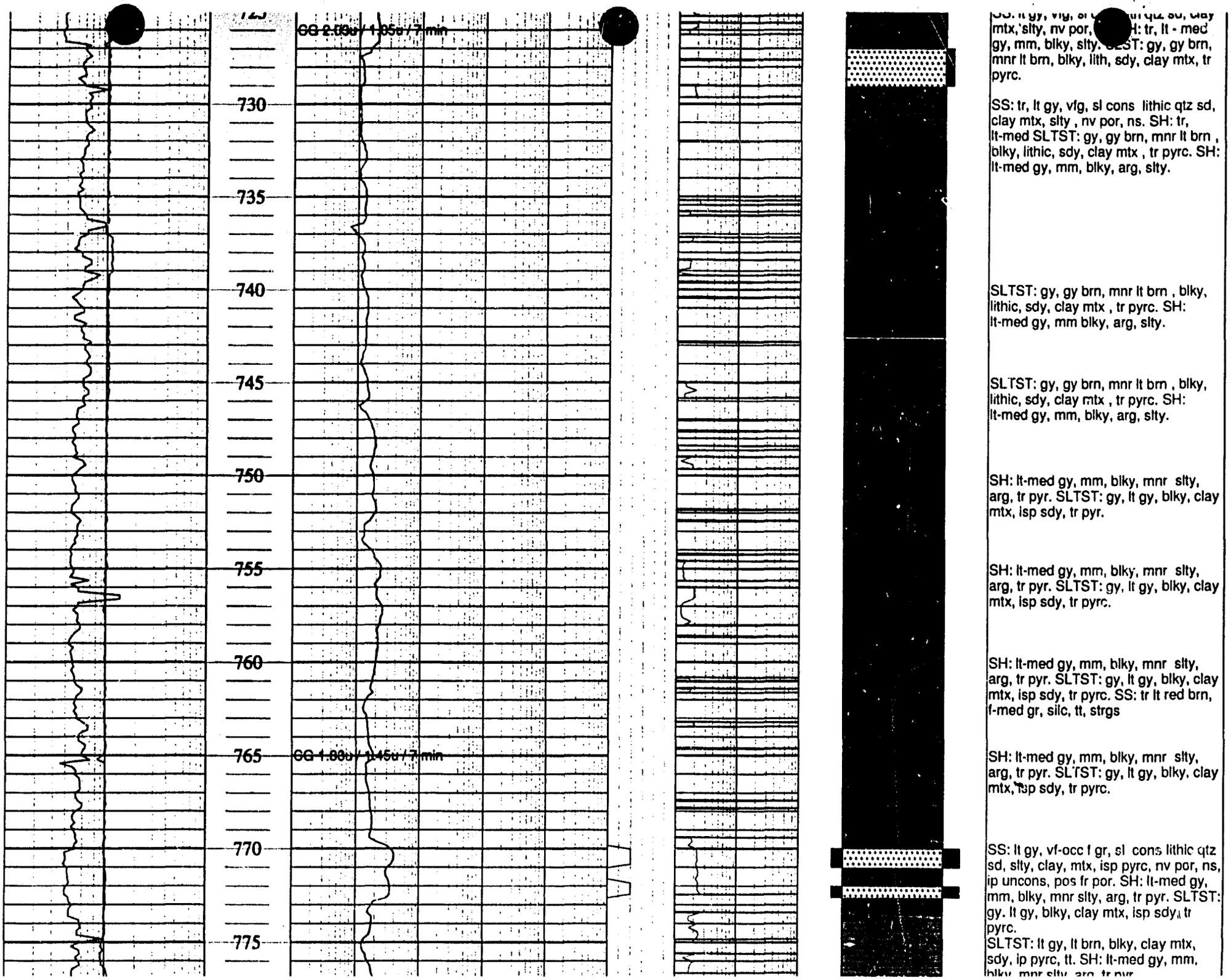
SS: tr, lt gy brn, vf - f gr, sl cons lithic sd, clay mtx, nv por, ns. SH: lt gy, mm, blky, mnr silty, tr pyr. SLST: lt brn, lt gy, blky, clay mtx.

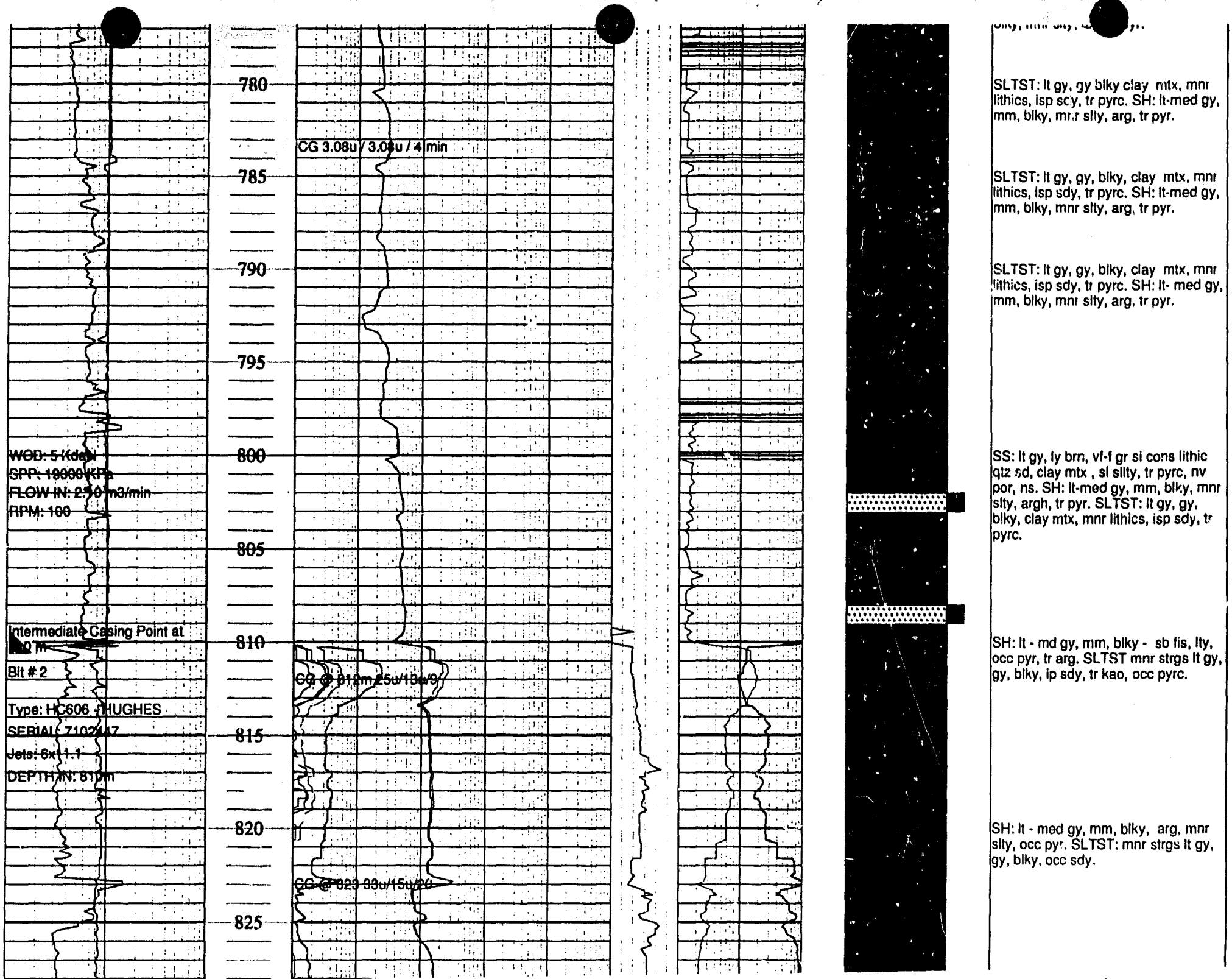
SLST: lt gy, gy, blky, clay mtx, ip sdy. SH: l gy, med gy , mm, blky, tr pyr.

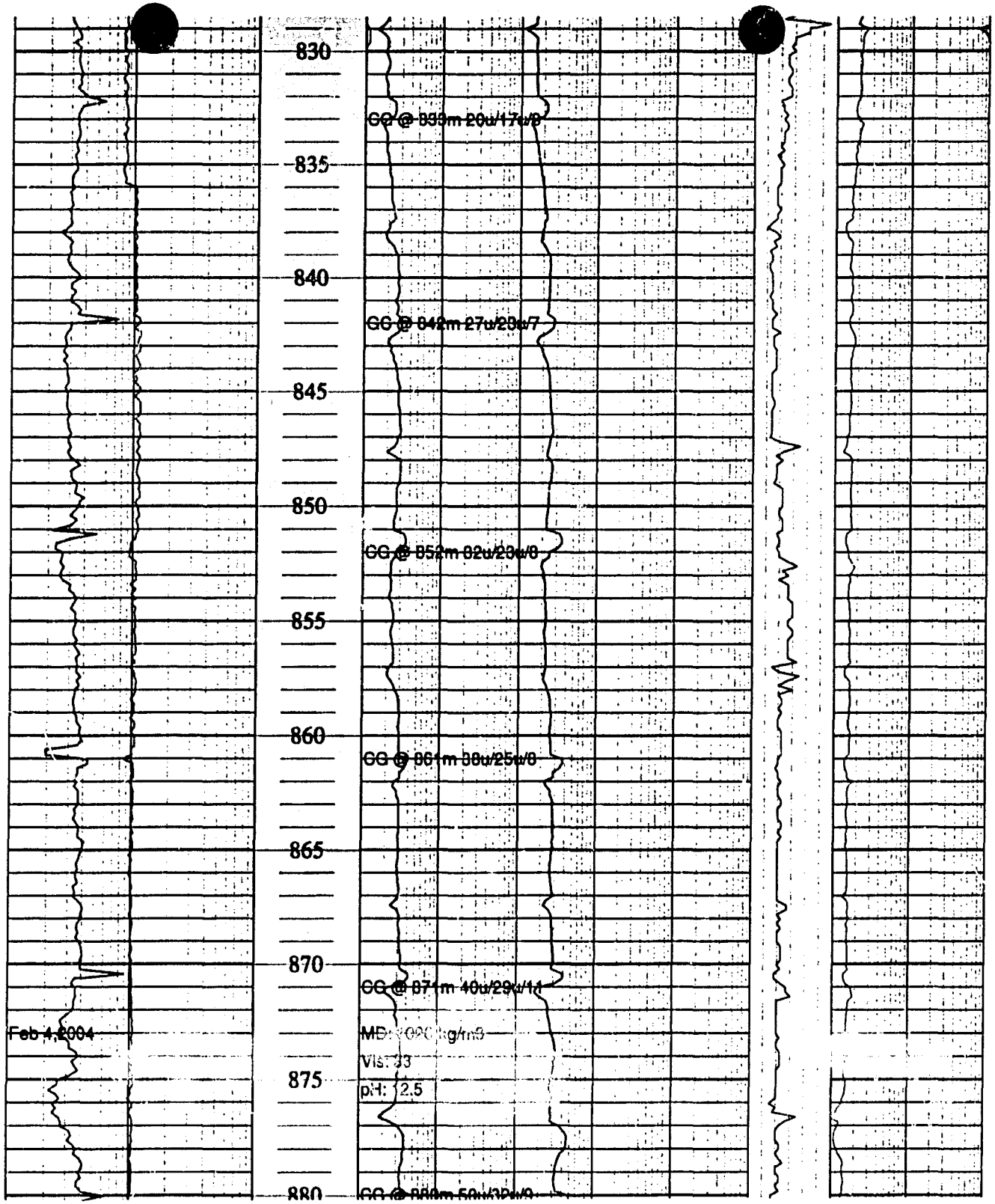
SLST: lt gy, gy, blky, clay mtx, ip sdy. SH: it gy, med gy, mm, blky, tr pyr.


625
630
635
640
645
650
655
660
665
670
Jan. 27, 2004
CG 1.16u / 0.43u / 9 min
MD: (Kg/m3): 1110
Vis: 41
pH: 10
CG @ 65 m 1.040/0.430/11
SS: lt gy, vf - f gr, sl cons lithic sd, clay mtx, no vis por, ns. SLST: lt gy, blky, clay mtx, lp sdy. SH: lt gy, med gy, mm, blky, tr pyr.
SS: lt gy, vf - f gr, sl cons lithic sd, clay mtx, no vis por, ns. SLST: lt gy, gy, blky. clay mtx, lp sdy. SH: lt gy, med gy, mm, blky, tr pyr.
SS: lt gy, vfg, sl cons lith qtz sd, clay mtx, tr arg, tr mics, nv por, ns. SLST: lt gy , gy, blky, clay mtx, lp sdy. SH: lt gy, med gy, mm, blky, occ pyr.
SLST. lt gy, gy, blky, clay mtx, op sdy. SH: lt gy, med gy, mm, blky, occ pyr. SS: tr lt gy, vfg, sl cons lithic qtz sd, clay mtx, tr arg, no vis por, ns.


675
680
685
690
695
700
705
710
715
720
WOB: 5 KdaN
SPP: 19000 KPa
FLOW IN: 2.10 m3/min
RPM: 100
SURVEY: 3.00 deg
SS: lt gy, vfg, sl cons lith qtz sd, clay mtx, tr arg, no vis por, ns. SH: lt gy, med gy, mm, blky, occ pyr.
SS: lt gy, vfg, sl cons lith qtz sd, clay mtx, tr arg, no vis por, ns. SH: lt gy, gy, med gy, mm, blky, occ pyr.
SLST: gy, gy brn, blky, lith, sdy, clay mtx, tr pyrc. SH: lt - med gy, mm, blky, strgs.
SLST: gy, gy brn, mnr lt brn, blky, lithic, sdy, clay mtx, tr pyrc. SH: lt - med gy, mm, blky, slty.


725
730
735
740
745
750
755
760
765
770
775
CG 2.00u / 1.95u / 7 min
CG 1.80u / 1.45u / 7 min
SS: lt gy, vfg, sl cons lithic qtz sd, clay mtx, slty, nv por, ns. SH: tr, lt - med gy, mm, blky, slty. SLTST: gy, gy brn, mnr lt brn, blky, lith, sdy, clay mtx, tr pyrc.
SS: tr, lt gy, vfg, sl cons lithic qtz sd, clay mtx, slty , nv por, ns. SH: tr, lt-med SLTST: gy, gy brn, mnr lt brn , blky, lithic, sdy, clay mtx , tr pyrc. SH: lt-med gy, mm, blky, arg, slty.
SLTST: gy, gy brn, mnr lt brn , blky, lithic, sdy, clay mtx , tr pyrc. SH: lt-med gy, mm blky, arg, slty.
SLTST: gy, gy brn, mnr lt brn , blky, lithic, sdy, clay mtx , tr pyrc. SH: lt-med gy, mm, blky, arg, slty.
SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr. SLTST: gy, lt gy, blky, clay mtx, isp sdy, tr pyr.
SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr. SLTST: gy, lt gy, blky, clay mtx, isp sdy, tr pyrc.
SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr. SLTST: gy, lt gy, blky, clay mtx, isp sdy, tr pyrc. SS: tr lt red brn, f-med gr, silc, tt, strgs
SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr. SLTST: gy, lt gy, blky, clay mtx, isp sdy, tr pyrc.
SS: lt gy, vf-occ f gr, sl cons lithic qtz sd, slty, clay, mtx, isp pyrc, nv por, ns, ip uncons, pos fr por. SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr. SLTST: gy. lt gy, blky, clay mtx, isp sdy, tr pyrc.
SLTST: lt gy, lt brn, blky, clay mtx, sdy, ip pyrc, tt. SH: lt-med gy, mm,


780
CG 3.08u / 3.08u / 4 min
785
790
795
WOD: 5 (deN
SPP: 19000 KPa
FLOW IN: 2.50 m3/min
RPM: 100
800
805
Intermediate Casing Point at
810
Bit # 2
CG @ 812m 25u/13u/9
Type: HC606 - HUGHES
SERIAL: 7102447
Jets: 6x11.1
DEPTH IN: 810m
815
820
CG @ 823 33u/15u/20
825
SLTST: lt gy, gy blky clay mtx, mnr lithics, isp scy, tr pyrc. SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr.
SLTST: lt gy, gy, blky, clay mtx, mnr lithics, isp sdy, tr pyrc. SH: lt-med gy, mm, blky, mnr slty, arg, tr pyr.
SLTST: lt gy, gy, blky, clay mtx, mnr lithics, isp sdy, tr pyrc. SH: lt- med gy, mm, blky, mnr slty, arg, tr pyr.
SS: lt gy, ly brn, vf-f gr si cons lithic qtz sd, clay mtx , sl slty, tr pyrc, nv por, ns. SH: lt-med gy, mm, blky, mnr slty, argh, tr pyr. SLTST: lt gy, gy, blky, clay mtx, mnr lithics, isp sdy, tr pyrc.
SH: lt - md gy, mm, blky - sb fis, lty, occ pyr, tr arg. SLTST mnr strgs lt gy, gy, blky, ip sdy, tr kao, occ pyrc.
SH: lt - med gy, mm, blky, arg, mnr slty, occ pyr. SLTST: mnr strgs lt gy, gy, blky, occ sdy.



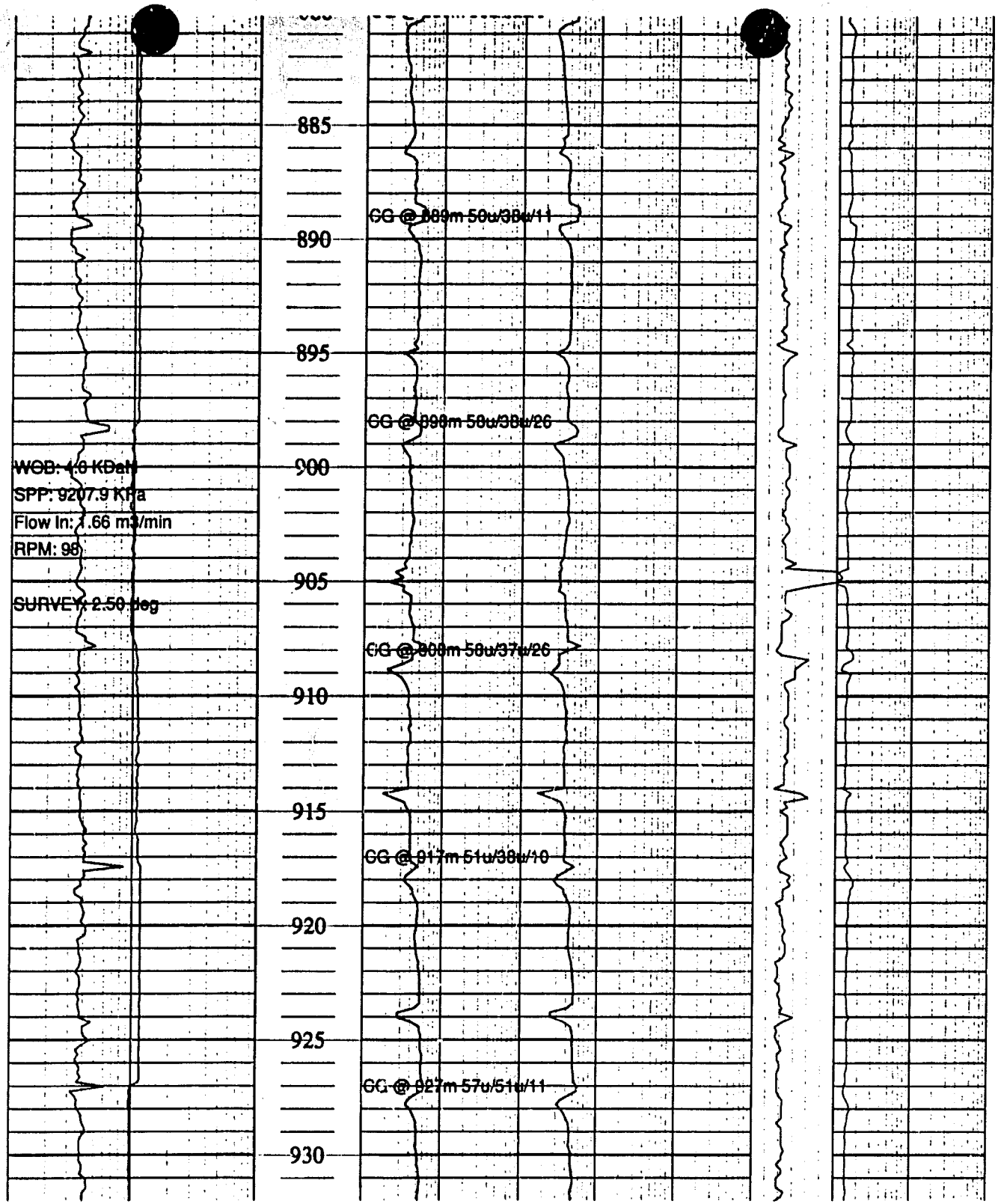


SH: lt - med gy, mm, blky, arg, mnr slty, occ pyr. SLTST: mnr strgs lt gy, gy, blky, occ sdy. SS: tr lt gy, vfg, si - modly cons lithic qtz, kao, tt.

SH: lt - med gy, mm, blky, arg, mnr, slty, tr brn mudst, occ pyr. SLTST: mnr strgs lt gy, gy, blky, occ sdy, SS: tr lt gy, vfg, si - modly cons lithic qtz, kao, tt.

SH: lt - med gy, mm, blky, arg, slty, mnr pyr. SLTST: lt gy, blky, sdy, abun lithics, tr pyrc.

SH: lt - med gy, mm, blky, arg, slty



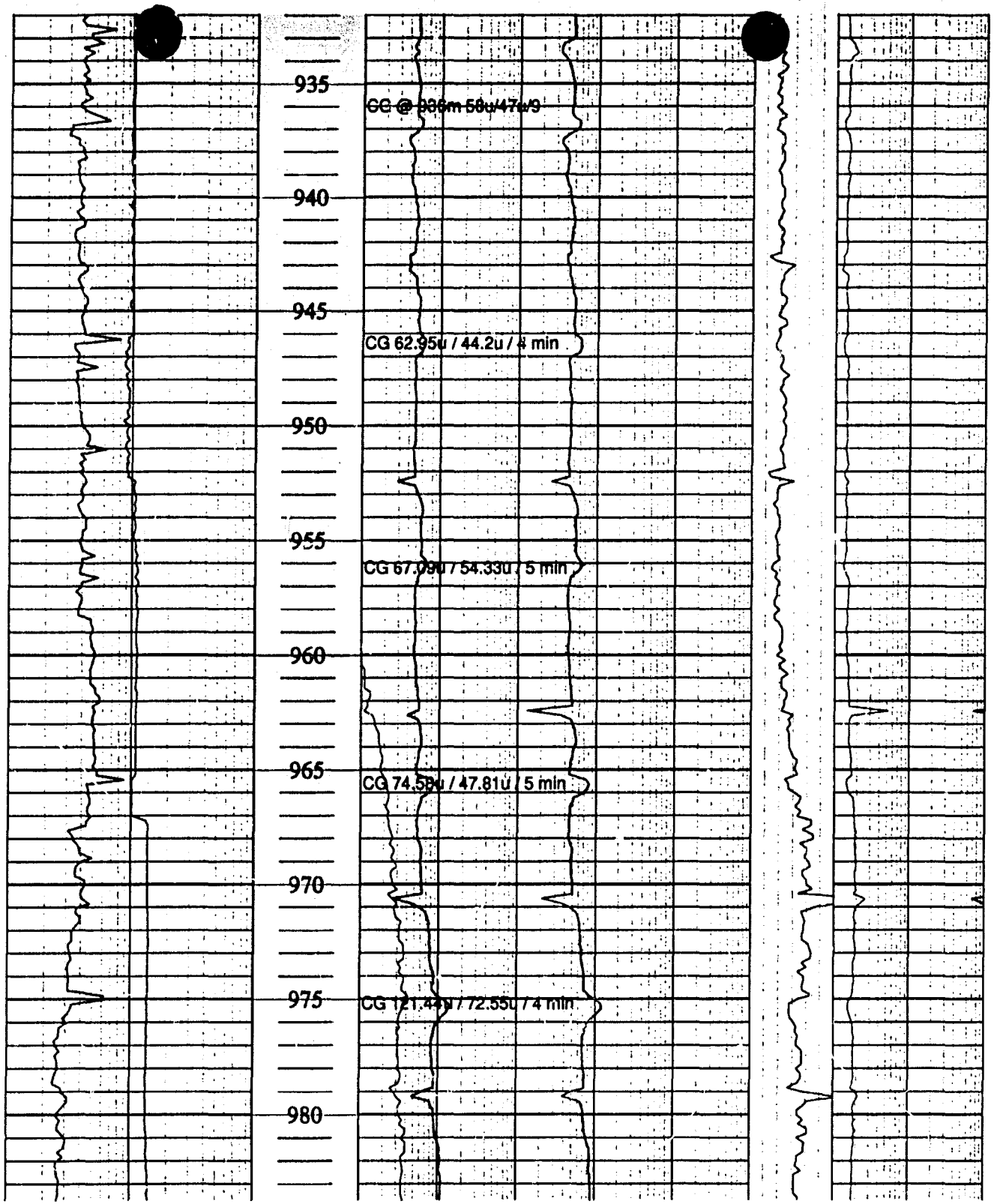


mnr pyr, tr bm ,u… LTST: lt gy, blky, sdy, sbun lit… tr pyrc.

SH: lt - med gy, mm, blky, arg, slty, mnr pyr. SLTST: lt gy, blky, sdy, abun lithics, tr pyrc.

SH: lt - med gy, mm, blky, arg, slty, mnr pyr. SLTST: lt gy, blky, sdy, abun lithics, tr pyrc. SS: lt gy, vfg, si - modly cons lithic sd, kao, slty, tt.

SH: brn, mm, sb fis, si slty, ip lt gy - gy, mm, blky, arg , mnr pyr. SLTST: lt gy, blky sdy, sbun lithics.



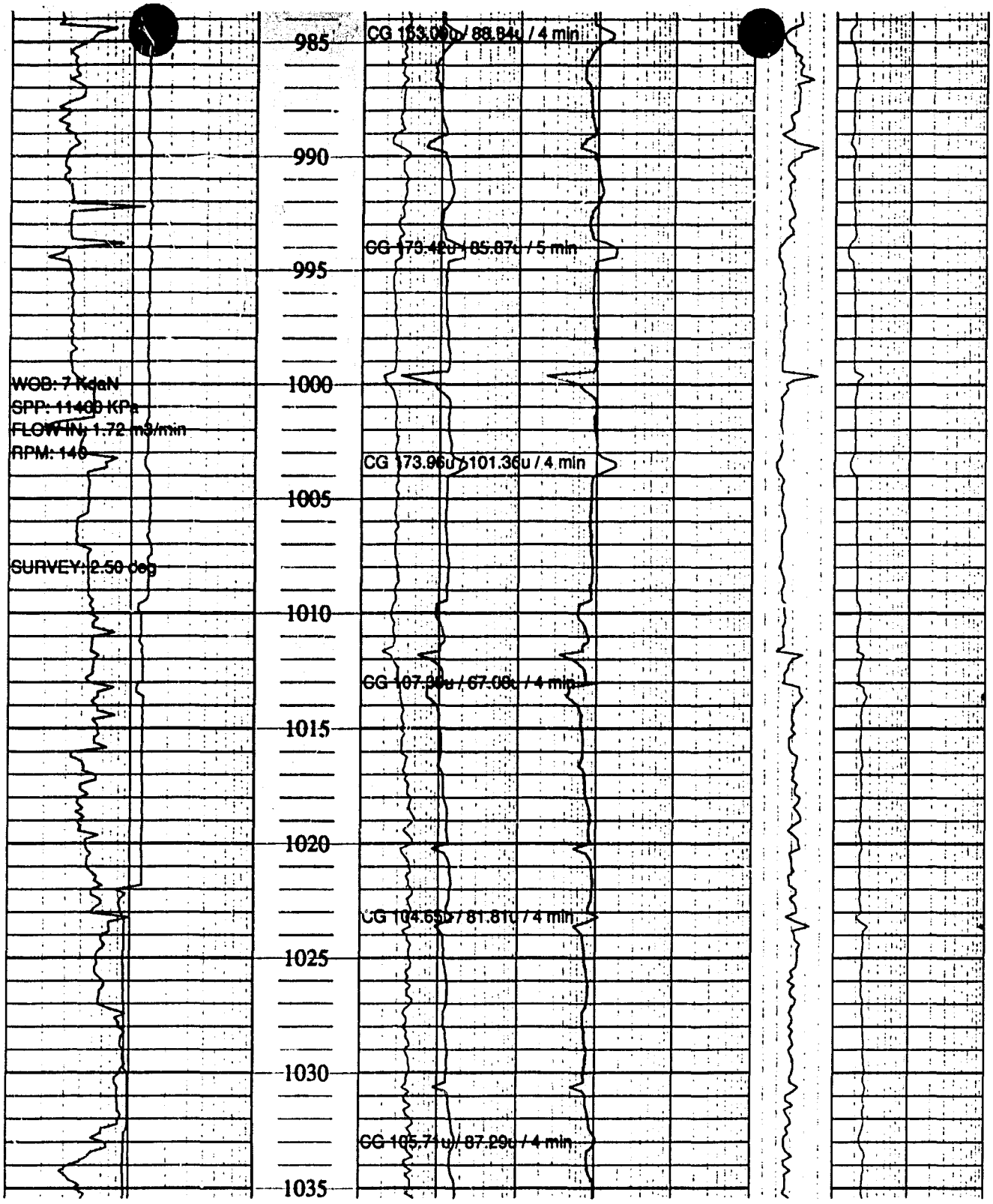


SH: gy, mm, blky - sb fis, sl slty, arg, tr carb, ip brn, mm, sb fis, dns, yt pyr. SLTST: lt gy, blky, sdy, abun lithics.

SH: gy, mm, blky - sb fis, sl slty, occ arg, tr pyr, ip brn, mm sb fis mudst, dns. SLTST lt gy, blky, sdy, abun lithics.

SH: lt gy, gy, mm, blky - sb fis, slty, mnr arg, tr brn, mm, dns, mnr pyr. SLTST: lt gy, gy, blky, sdyy, tr mics, tt.

SH: brn, lt gy - gy, mm, blky - sb fis, ip dns, hrd, mnr arg, tr slty, occ pyr, rr carb. SLTST: lt gy, gy, blky sdy, tr mics, tt.



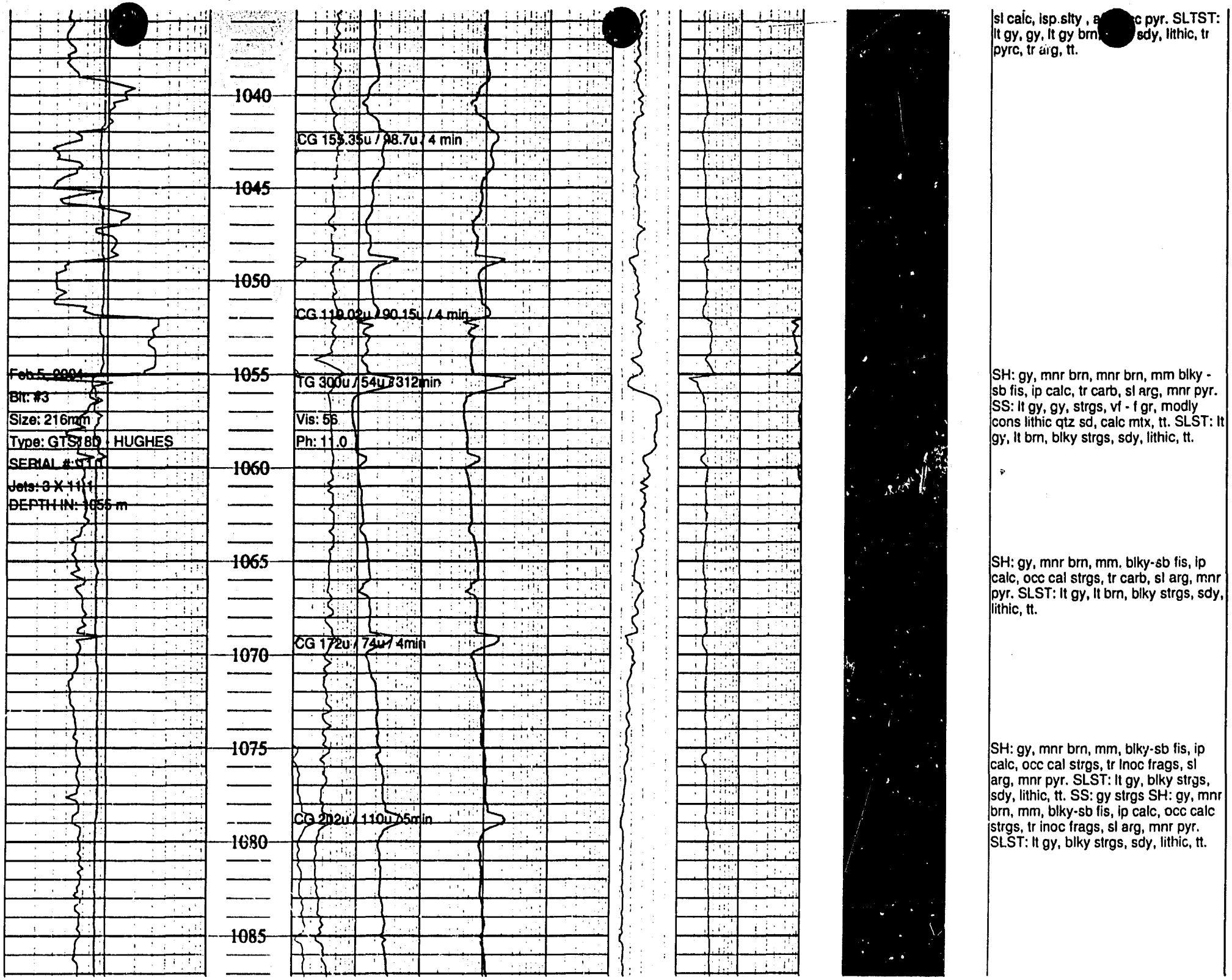


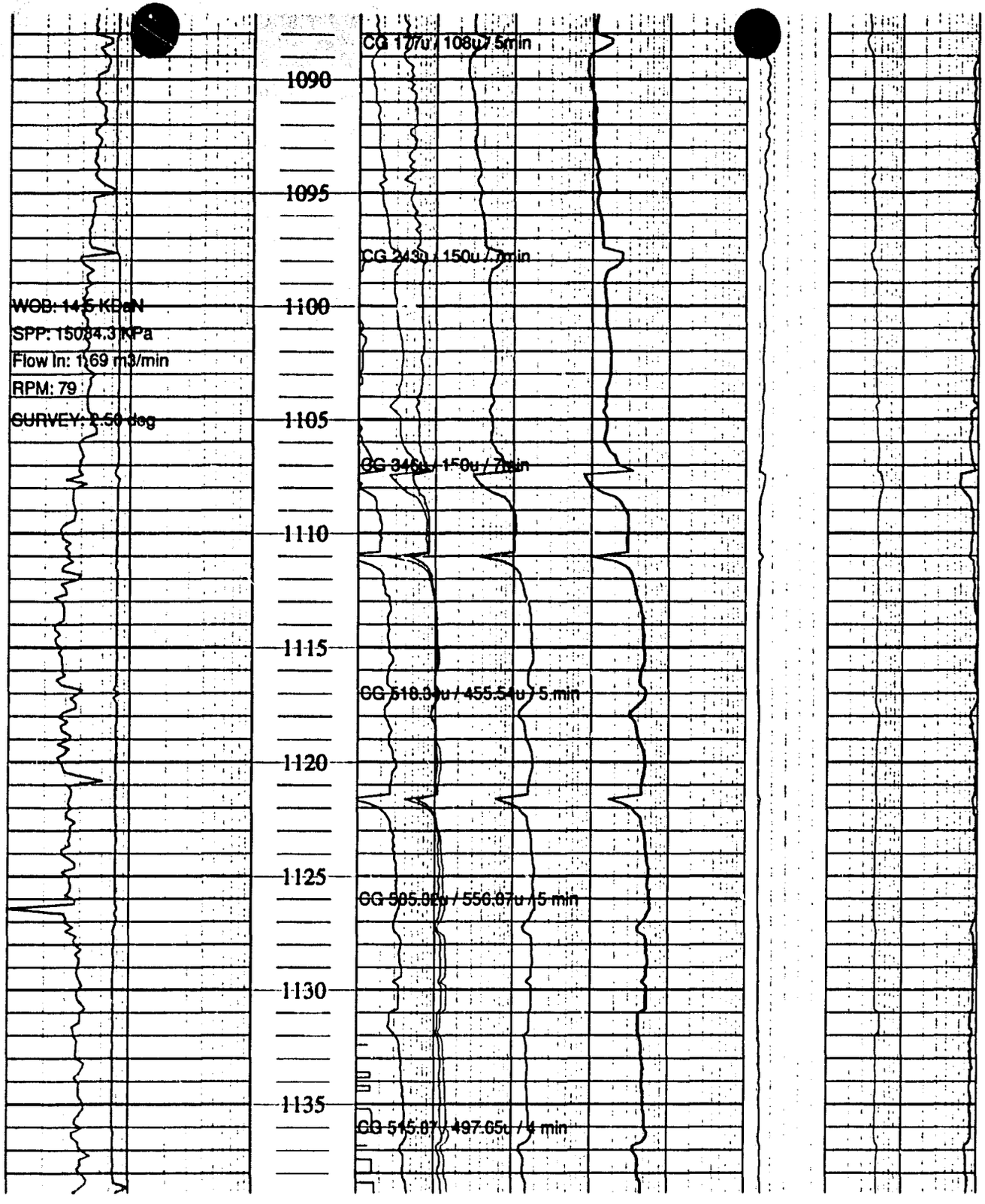
SH: brn, mnr lt gy - gy, mm, blky - sb fis, dns, v sl calc , ip slty, arg, occ pyr. SLTST: lt gy, lt gy brn, blky , tr arg, ip sdy, bcm sl more dns, tt.

SH: brn, mnr lt gy - gy, mm, blky - sb fis, dns, v sl calc , ip slty, arg, occ pyr. SLTST: lt gy, lt gy brn, blky , tr arg, ip sdy, dns, tt.

SH: brn, mnr gy, mm, blky - sb fis, dns, v sl calc, isp slty, arg, occ pyr. SLTST: lt gy, gy, lt gy brn, blky, sdy, lithic, tt.

SH: gy, brn, mm, blky - sb fis, dns, v


1040
1045
1050
1055
1060
1065
1070
1075
1080
1085
CG 153.35u / 98.7u / 4 min
CG 119.02u / 90.15u / 4 min
TG 300u / 54u / 312min
Vis: 56
Ph: 11.0
CG 172u / 74u / 4min
CG 202u / 110u / 5min
Feb 5, 2004
Bit: #3
Size: 216mm
Type: GTS18D - HUGHES
SERIAL #: 5110
Jets: 3 X 11 1
DEPTH IN: 1055 m
sl calc, lsp.slty , a c pyr. SLTST: lt gy, gy, lt gy brn sdy, lithic, tr pyrc, tr arg, tt.
SH: gy, mnr brn, mnr brn, mm blky - sb fis, ip calc, tr carb, sl arg, mnr pyr. SS: lt gy, gy, strgs, vf - f gr, modly cons lithic qtz sd, calc mtx, tt. SLST: lt gy, lt brn, blky strgs, sdy, lithic, tt.
SH: gy, mnr brn, mm. blky-sb fis, ip calc, occ cal strgs, tr carb, sl arg, mnr pyr. SLST: lt gy, lt brn, blky strgs, sdy, lithic, tt.
SH: gy, mnr brn, mm, blky-sb fis, ip calc, occ cal strgs, tr inoc frags, sl arg, mnr pyr. SLST: lt gy, blky strgs, sdy, lithic, tt. SS: gy strgs SH: gy, mnr brn, mm, blky-sb fis, ip calc, occ calc strgs, tr inoc frags, sl arg, mnr pyr. SLST: lt gy, blky strgs, sdy, lithic, tt.

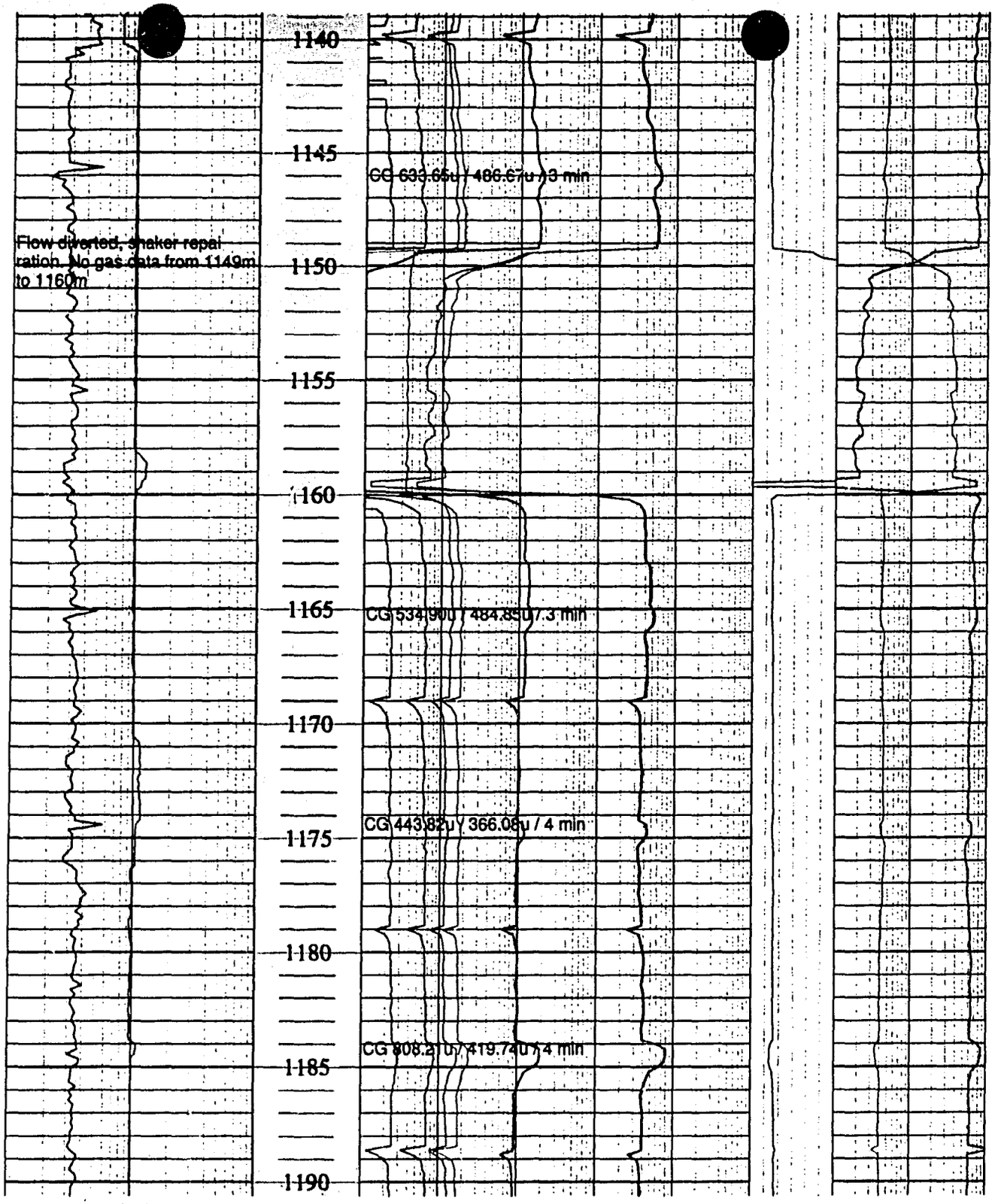




SH: gy, dk gy, mnr brn, mm, blky - sb fis, ip calc, sl arg, occ pyr. SLST: tr, lt gy , blky strgs, sdy, lithic, tt.

SH: med - dk gy, mm, sb fis, isp calc. SLST: tr, lt gy, SH: med - dk gy, mm, sb fis, non calc strgs, tr Inoc frags , mnr pyr, tr chltns fos frag , v wk pale yel C.

SH: med - dk gy, mm, sb fis, non calc, occ cal strgs, tr Inoc frags, mnr pyr, v wk pale yel C.



SH: med - dk gy, [illegible]b fis, mon calc, occ cal strgs, tr Inoc frags, rr fish sc, mnr pyr, v wk pale yel C.

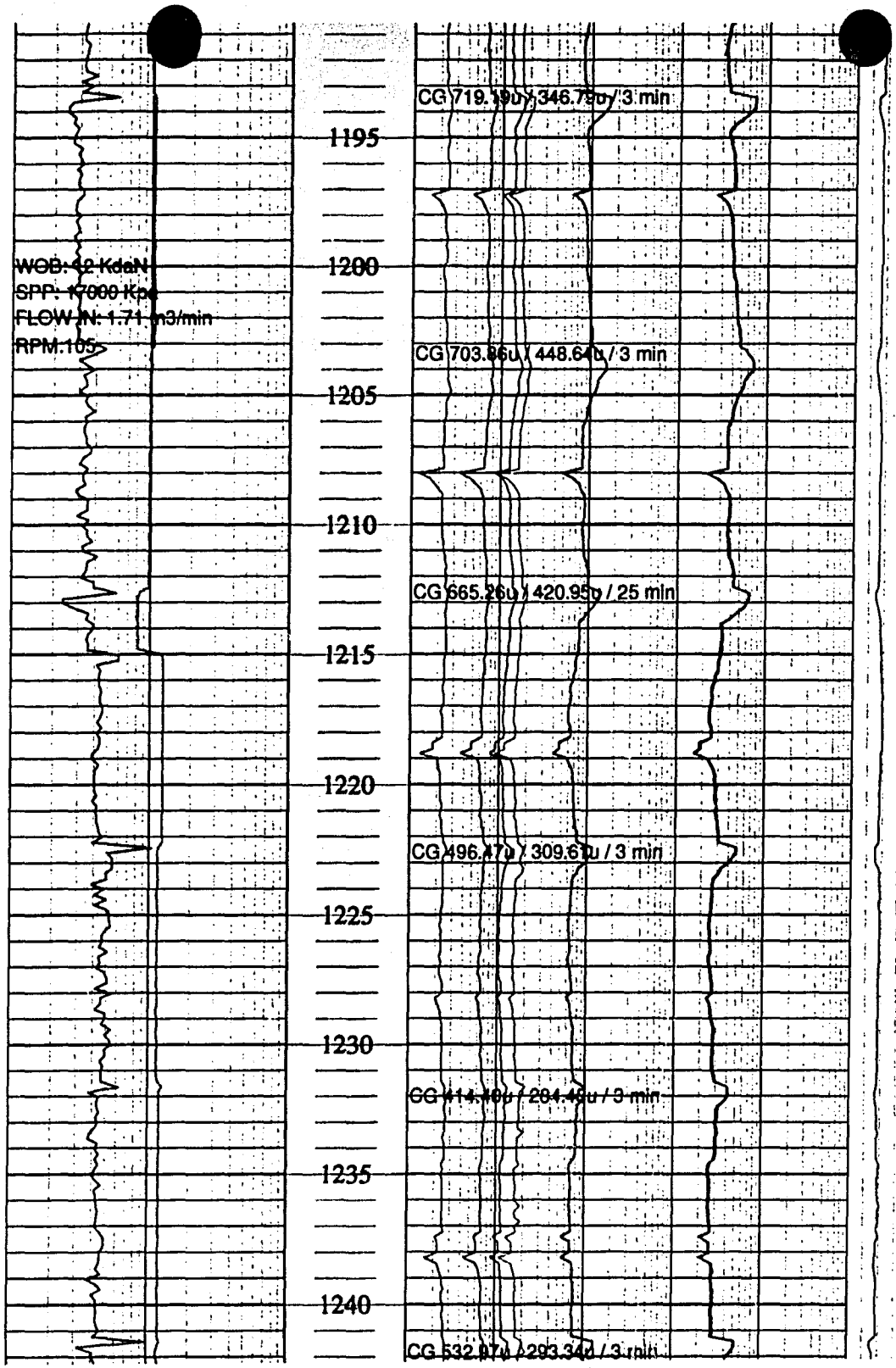
SH: med - dk gy, mm, sb fis, non calc, occ cal strgs, tr Inoc frags, mnr pyr, v wk pale yel C.

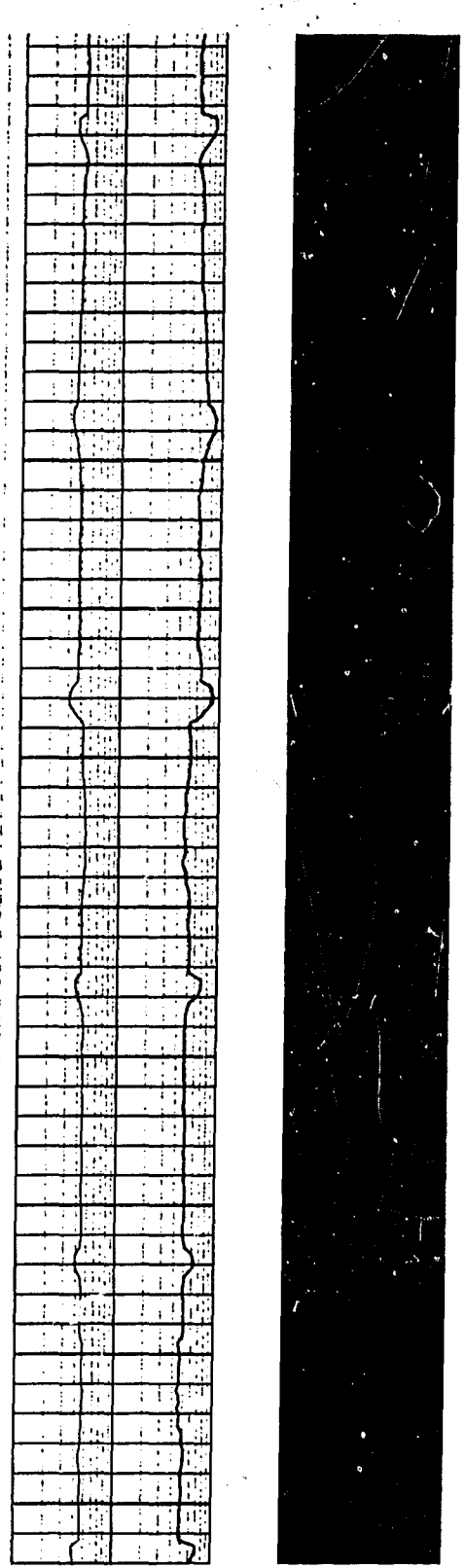
SH: med - dk gy, mm, sb fis, non calc, occ cal strgs, tr Inoc frags, mnr pyr, v wk pale yel C.

SH: med - dk gy, mm, sb fis, non calc, tr thn cal strgs, tr Inoc frags, mnr pyr, v wk pale yel C.

SH: med - dk gy, mm, sb fis, non calc, tr thn cal strgs, tr Inoc frags, mnr pyr, v wk pale yel C.

SH: med-dk gy, mm, sb fis, non calc,





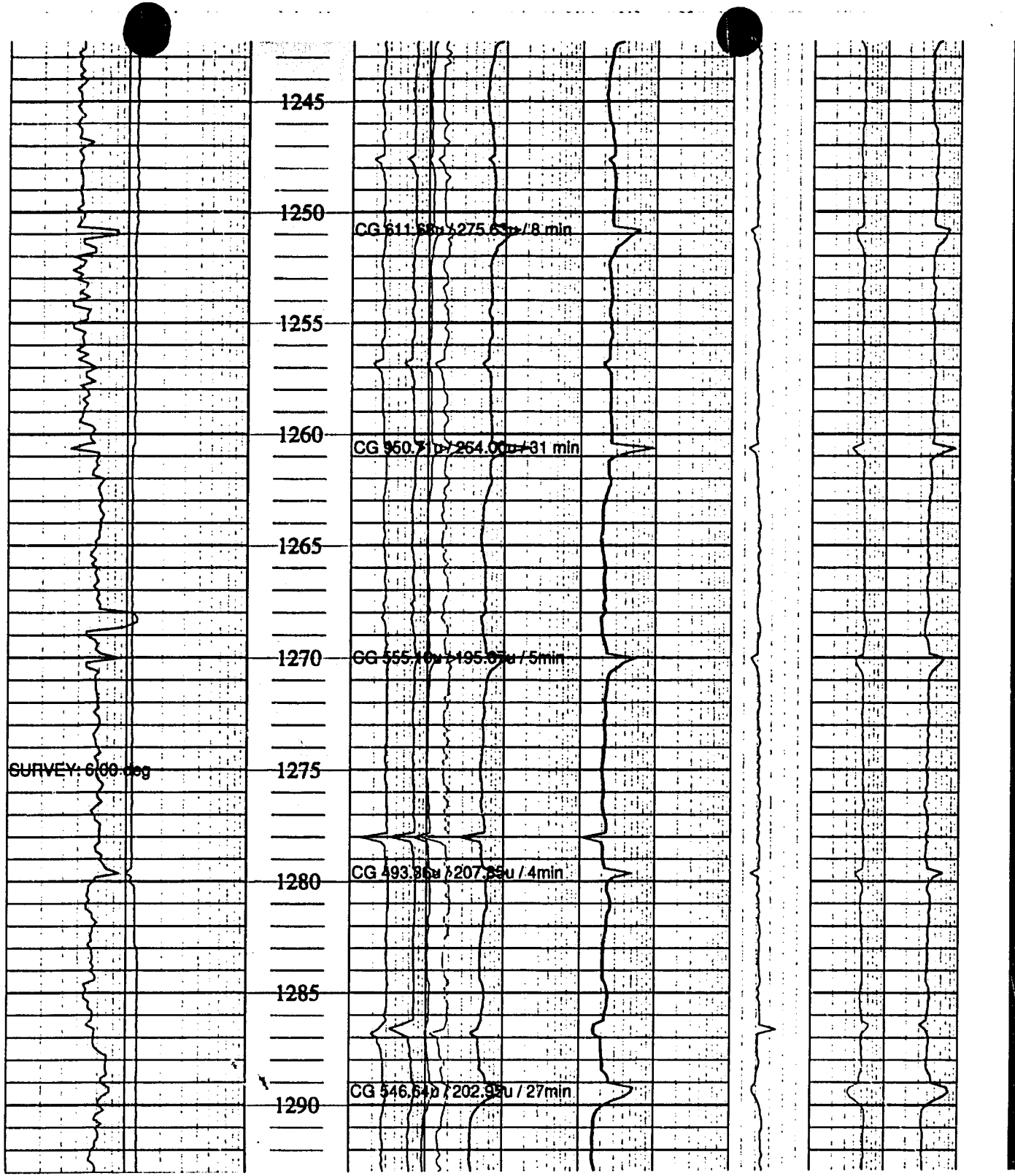
tr thn cal strgs, t rags, mnr pyr, v wk SH: med--dk mm, sb fis, occ fis, tr cal strgs, mnr pyr, tr Inoc frags, v wk pale yel C.

SH: med-dk gy, mm, sb fis, occ fis, tr cal strgs, mnr pyr, tr Inoc frags, v wk pale yel C.

SH: med-dk gy, mm, sb fis, occ fis, tr cal strgs, mnr pyr, tr Inoc frags, v wk pale yel C.

SH: med-dk gy, mm, sb fis, occ fis, tr cal strgs, mnr pyr, tr Inoc frags, v wk pale yel C.

SH: med-dk gy, mm, sb fis, occ fis, tr cal strgs, mnr pyr, tr Inoc frags, v wk pale yel C.





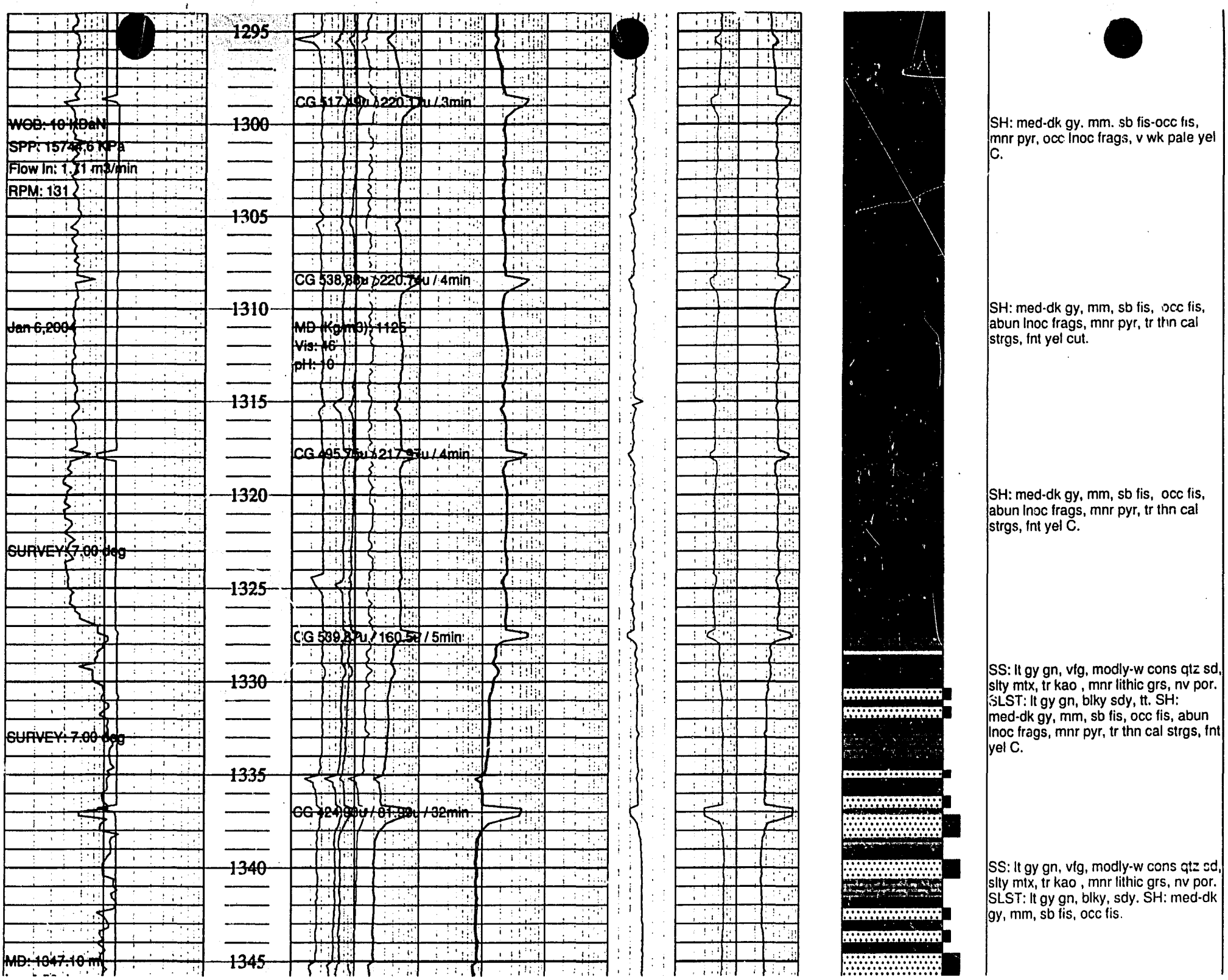
SH: med-dk gy, mm, sb fis-occ fis, tr thn cal strgs, mnr pyr, occ lnoc frags, v wk pale yel C.

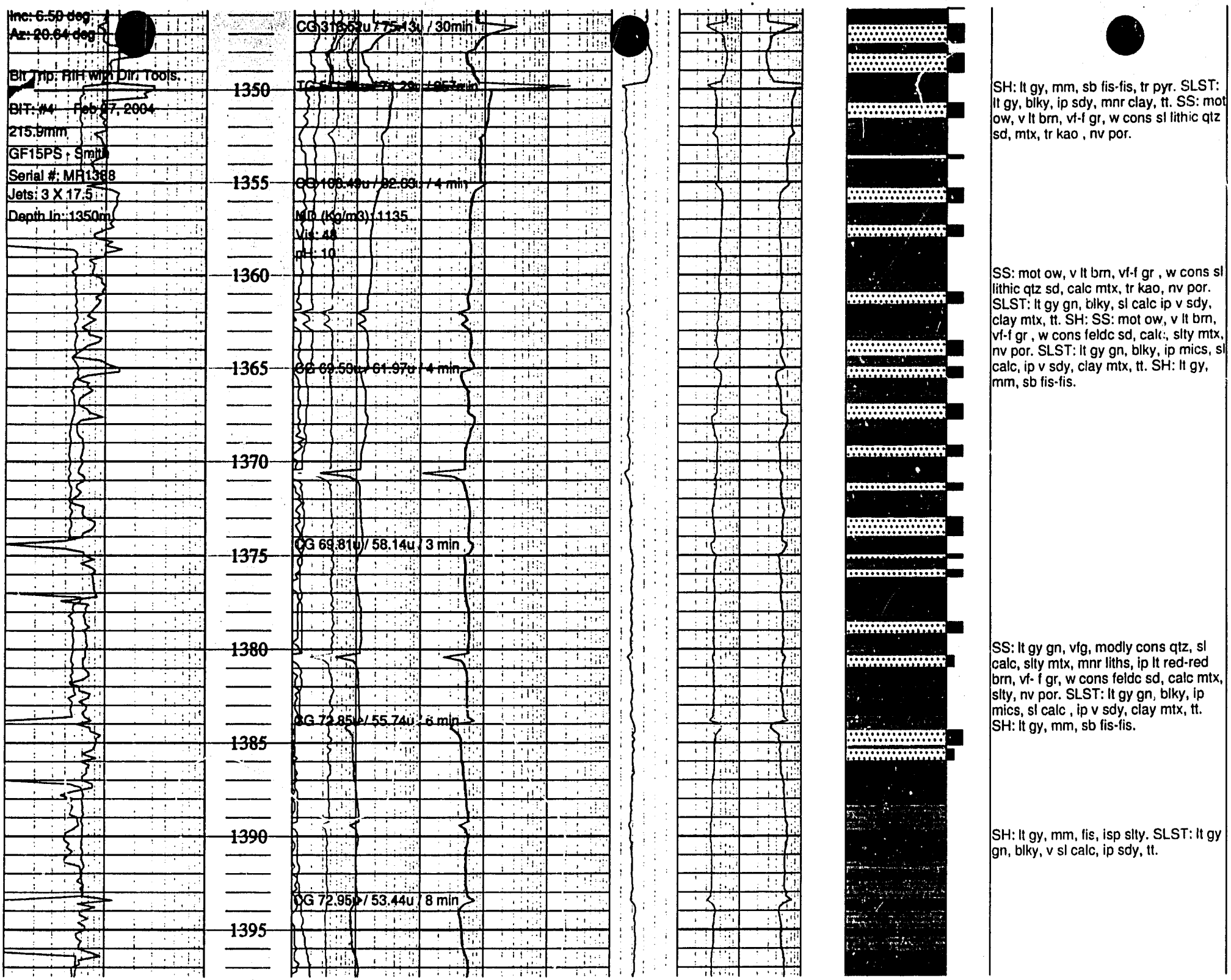
SH: med-dk gy, mm, sb fis-occ fis, tr thn cal strgs, mnr pyr, occ lnoc frags, v wk pale yel C.

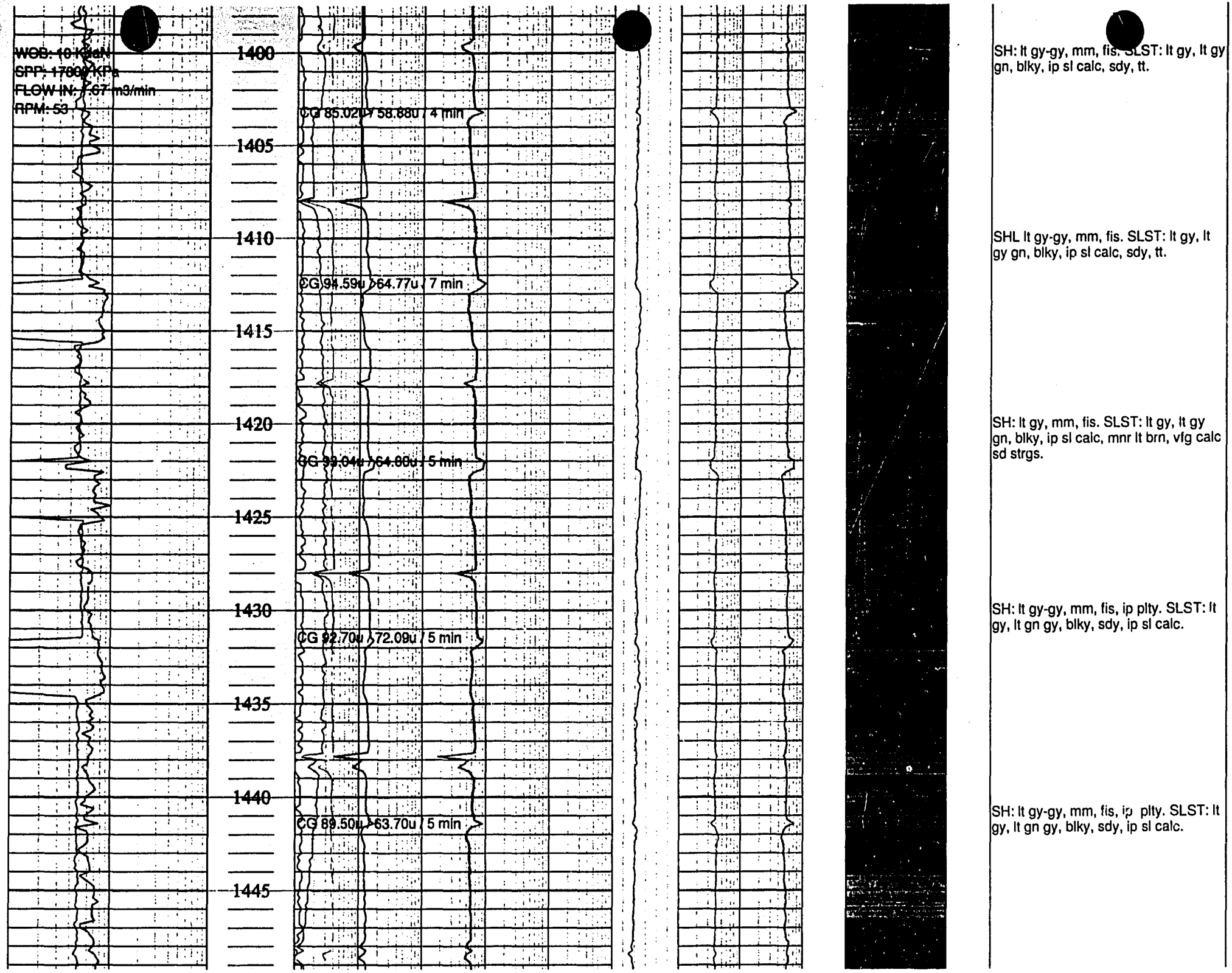
SH: med-dk gy, mm, sb fis-occ fis, tr thn cal strgs, mnr pyr, occ lnoc frags, v wk pale yel C.

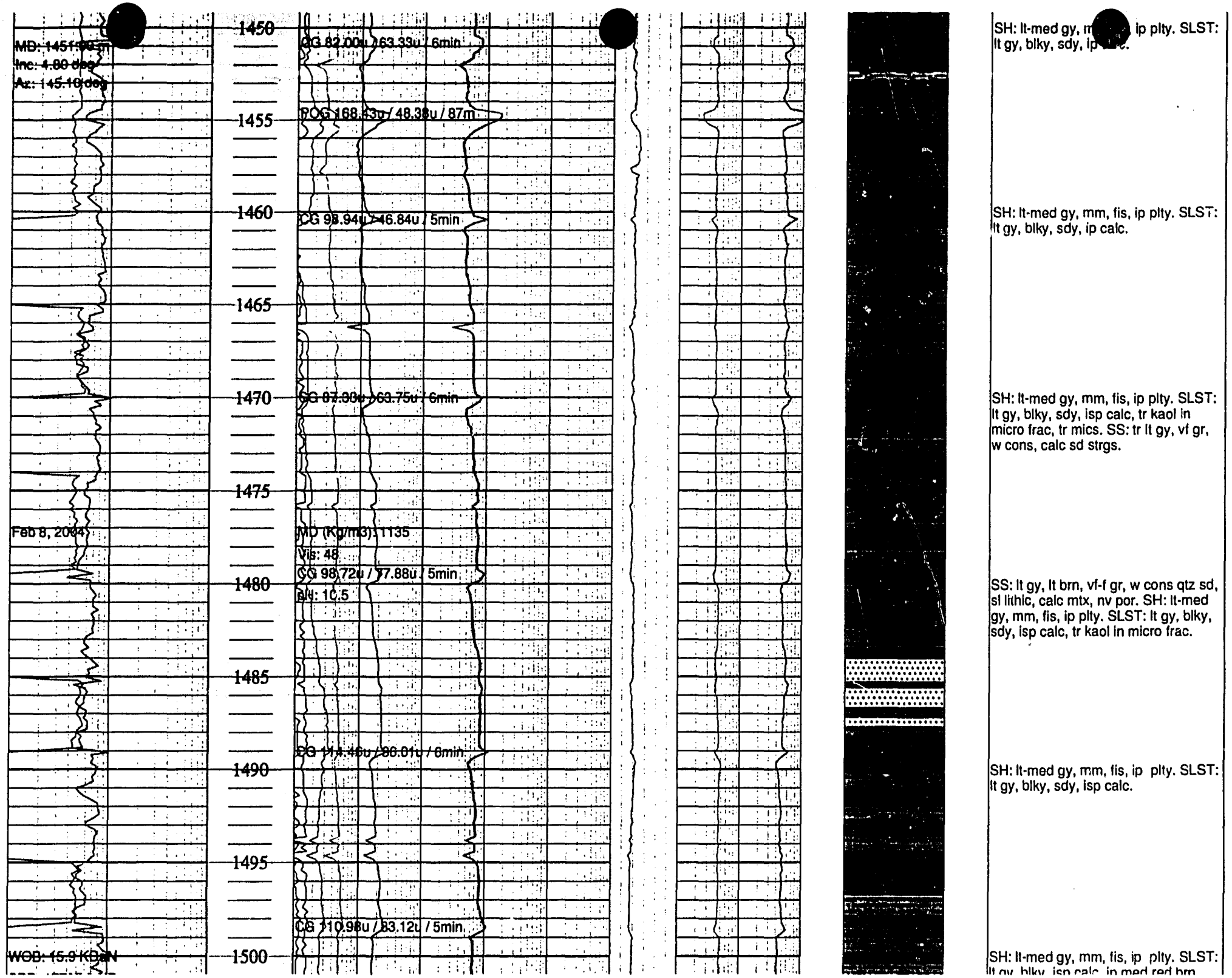
SH: med-dk gy, mm, sb fis-occ fis, tr thn cal strgs, mnr pyr, occ lnoc frags, v wk pale yel C.

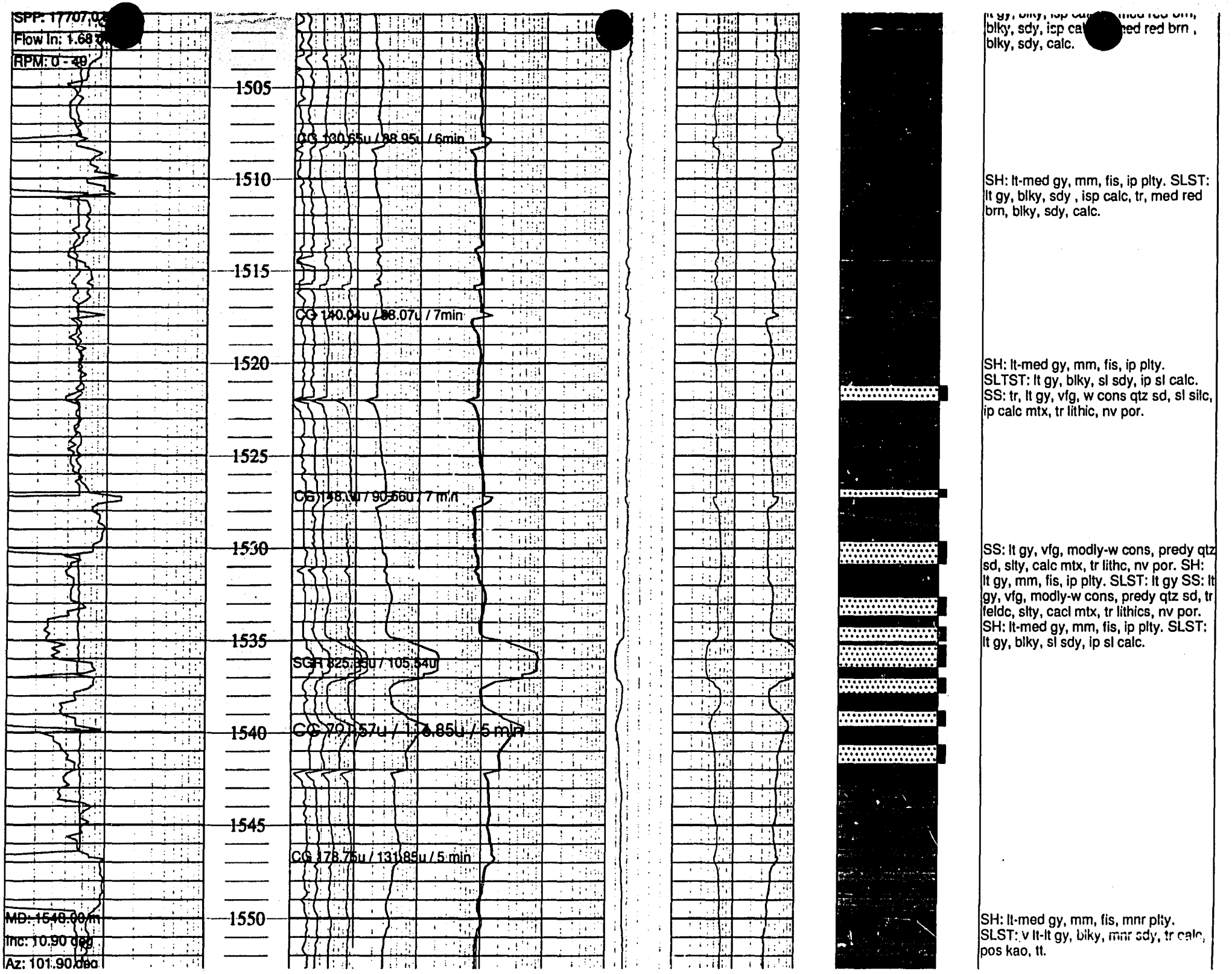
SH: med-dk gy, mm, sb fis-occ fis, mnr pyr, occ lnoc frags, v wk pale yel C.

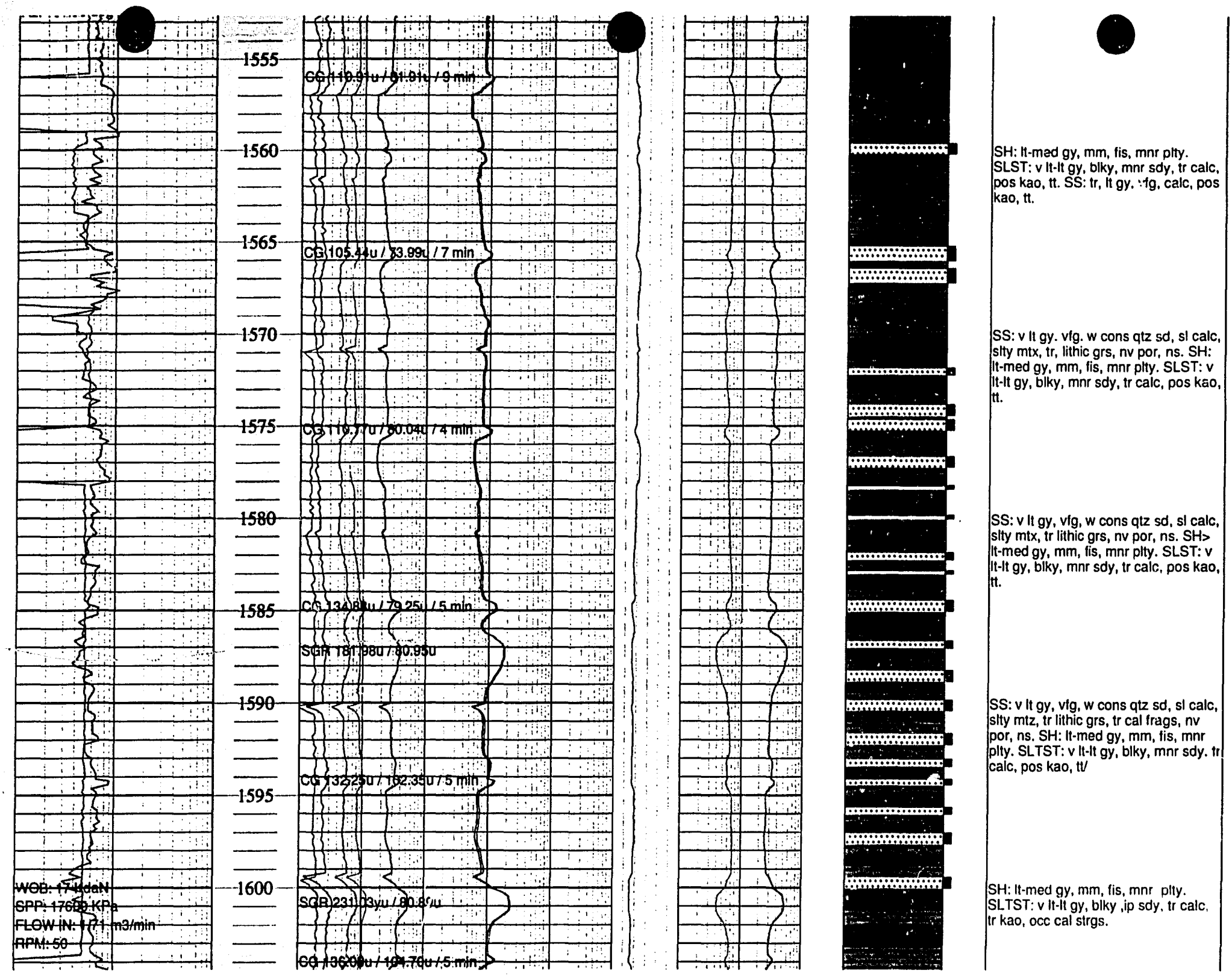

1295
1300
1305
1310
1315
1320
1325
1330
1335
1340
1345
WOB: 10 kDaN
SPP: 15748.6 KPa
Flow In: 1.71 m3/min
RPM: 131
Jan 6,2004
SURVEY: 7.00 deg
SURVEY: 7.00 deg
MD: 1947.10 m
CG 517.49u / 220.74u / 3min
CG 538.88u / 220.74u / 4min
MD (Kg/m3): 1125
Vis: 46
pH: 10
CG 495.75u / 217.93u / 4min
CG 539.37u / 160.5u / 5min
CG 524.99u / 81.99u / 32min
SH: med-dk gy. mm. sb fis-occ fis, mnr pyr, occ Inoc frags, v wk pale yel C.
SH: med-dk gy, mm, sb fis, occ fis, abun Inoc frags, mnr pyr, tr thn cal strgs, fnt yel cut.
SH: med-dk gy, mm, sb fis, occ fis, abun Inoc frags, mnr pyr, tr thn cal strgs, fnt yel C.
SS: lt gy gn, vfg, modly-w cons qtz sd, slty mtx, tr kao , mnr lithic grs, nv por. SLST: lt gy gn, blky sdy, tt. SH: med-dk gy, mm, sb fis, occ fis, abun Inoc frags, mnr pyr, tr thn cal strgs, fnt yel C.
SS: lt gy gn, vfg, modly-w cons qtz sd, slty mtx, tr kao , mnr lithic grs, nv por. SLST: lt gy gn, blky, sdy. SH: med-dk gy, mm, sb fis, occ fis.

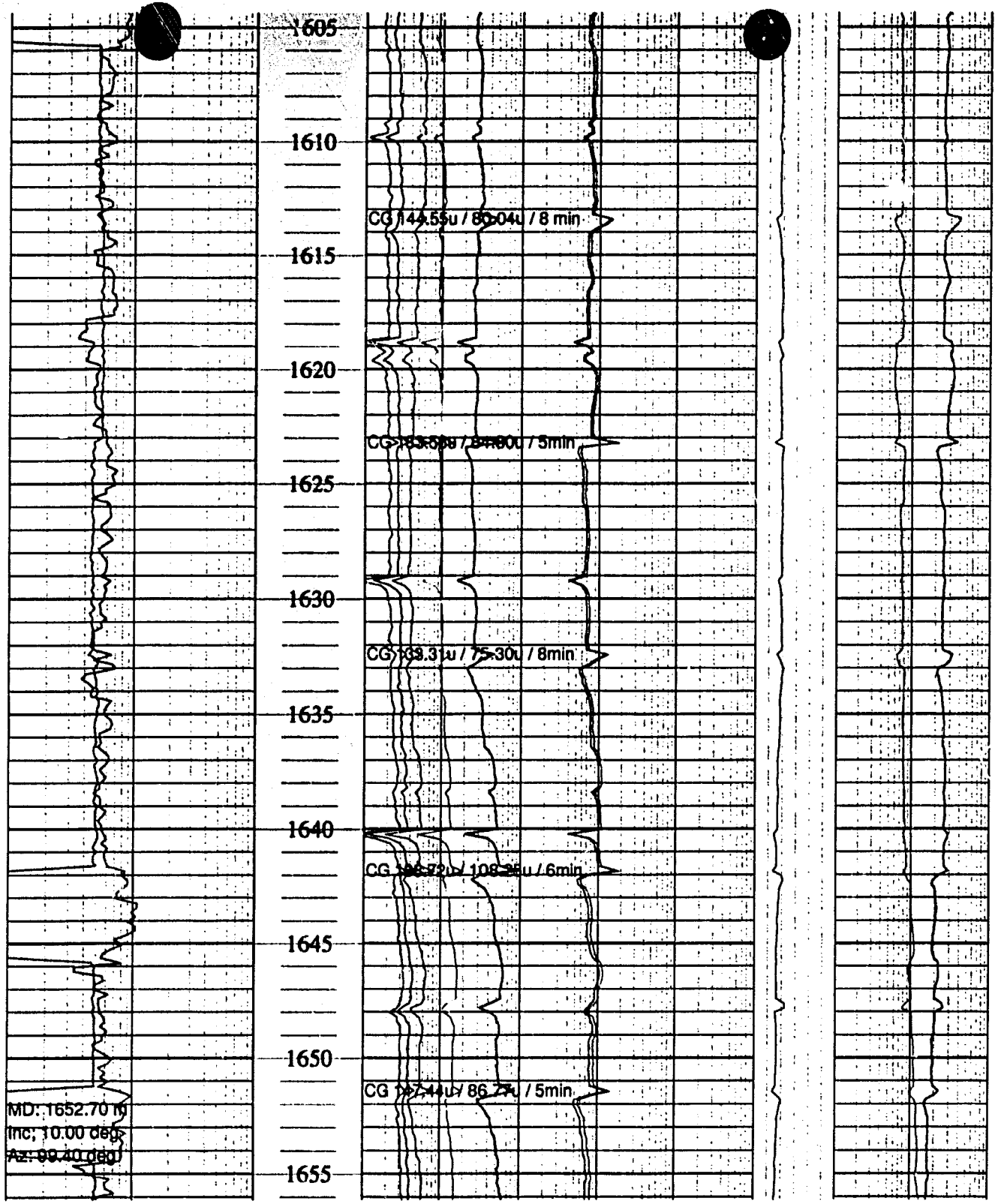

Inc: 6.58 deg
Az: 20.64 deg
Bit Trip: RIH with Dir. Tools.
BIT: #4 Feb 07, 2004
215.9mm
GF15PS , Smith
Serial #: MR1368
Jets: 3 X 17.5
Depth In: 1350m
CG 31352u / 75.43u / 30min
1350
1355
CG 108.49u / 92.63u / 4 min
MD (Kg/m3): 1135
Vis: 48
pH: 10
1360
1365
CG 69.50u / 61.97u / 4 min
1370
CG 69.81u / 58.14u / 3 min
1375
1380
CG 72.85u / 55.74u / 6 min
1385
1390
CG 72.95u / 53.44u / 8 min
1395
SH: lt gy, mm, sb fis-fis, tr pyr. SLST: lt gy, blky, ip sdy, mnr clay, tt. SS: mot ow, v lt brn, vf-f gr, w cons sl lithic qtz sd, mtx, tr kao , nv por.
SS: mot ow, v lt brn, vf-f gr , w cons sl lithic qtz sd, calc mtx, tr kao, nv por. SLST: lt gy gn, blky, sl calc ip v sdy, clay mtx, tt. SH: SS: mot ow, v lt brn, vf-f gr , w cons feldc sd, calc, slty mtx, nv por. SLST: lt gy gn, blky, ip mics, sl calc, ip v sdy, clay mtx, tt. SH: lt gy, mm, sb fis-fis.
SS: lt gy gn, vfg, modly cons qtz, sl calc, slty mtx, mnr liths, ip lt red-red brn, vf- f gr, w cons feldc sd, calc mtx, slty, nv por. SLST: lt gy gn, blky, ip mics, sl calc , ip v sdy, clay mtx, tt. SH: lt gy, mm, sb fis-fis.
SH: lt gy, mm, fis, isp slty. SLST: lt gy gn, blky, v sl calc, ip sdy, tt.

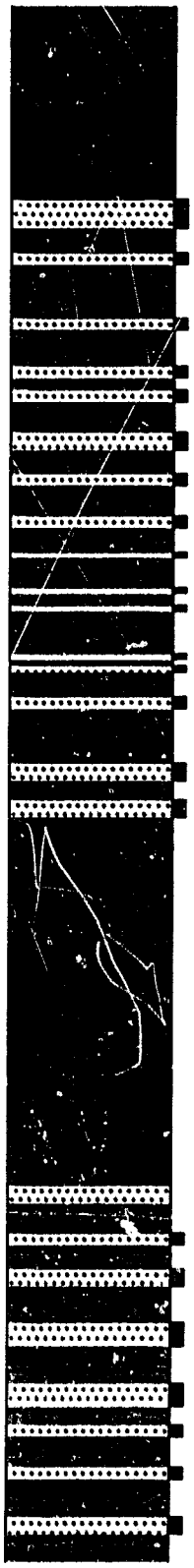

WOB: 10 KdaN
SPP: 17800 KPa
FLOW IN: 1.67 m3/min
RPM: 53
1400
1405
1410
1415
1420
1425
1430
1435
1440
1445
CG 85.02u / 58.88u / 4 min
CG 94.59u / 64.77u / 7 min
CG 93.04u / 64.80u / 5 min
CG 92.70u / 72.09u / 5 min
CG 89.50u / 63.70u / 5 min
SH: lt gy-gy, mm, fis. SLST: lt gy, lt gy gn, blky, ip sl calc, sdy, tt.
SHL lt gy-gy, mm, fis. SLST: lt gy, lt gy gn, blky, ip sl calc, sdy, tt.
SH: lt gy, mm, fis. SLST: lt gy, lt gy gn, blky, ip sl calc, mnr lt brn, vfg calc sd strgs.
SH: lt gy-gy, mm, fis, ip plty. SLST: lt gy, lt gn gy, blky, sdy, ip sl calc.
SH: lt gy-gy, mm, fis, ip plty. SLST: lt gy, lt gn gy, blky, sdy, ip sl calc.


MD: 1451.00 m
Inc: 4.80 deg
Az: 145.10 deg
1450
CG 82.00u / 63.33u / 6min
1455
POG 168.43u / 48.38u / 87m
1460
CG 98.94u / 46.84u / 5min
1465
1470
CG 87.30u / 63.75u / 6min
1475
Feb 8, 2004
MD (Kg/m3): 1135
Vis: 48
CG 98.72u / 77.88u / 5min
1480
pH: 10.5
1485
CG 114.46u / 86.01u / 6min
1490
1495
CG 110.96u / 83.12u / 5min
WOB: 15.9 KDaN
1500
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy, ip calc.
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy, ip calc.
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy, isp calc, tr kaol in micro frac, tr mics. SS: tr lt gy, vf gr, w cons, calc sd strgs.
SS: lt gy, lt brn, vf-f gr, w cons qtz sd, sl lithic, calc mtx, nv por. SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy, isp calc, tr kaol in micro frac.
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy, isp calc.
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, isp calc, ip med red brn


SPP: 1770
Flow In: 1.68
RPM: 0 - 49
1505
CG 130.55u / 98.95u / 6min
1510
1515
CG 140.04u / 98.07u / 7min
1520
1525
CG 148.0u / 90.66u / 7 min
1530
1535
SGR 825.35u / 105.54u
1540
CG 701.57u / 1.6.85u / 5 min
1545
CG 178.75u / 131.85u / 5 min
1550
MD: 1548.00 m
Inc: 10.90 deg
Az: 101.90 deg
blky, sdy, isp ca ed red brn ,
blky, sdy, calc.
SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sdy , isp calc, tr, med red brn, blky, sdy, calc.
SH: lt-med gy, mm, fis, ip plty.
SLTST: lt gy, blky, sl sdy, ip sl calc.
SS: tr, lt gy, vfg, w cons qtz sd, sl silc, ip calc mtx, tr lithic, nv por.
SS: lt gy, vfg, modly-w cons, predy qtz sd, slty, calc mtx, tr lithc, nv por. SH: lt gy, mm, fis, ip plty. SLST: lt gy SS: lt gy, vfg, modly-w cons, predy qtz sd, tr feldc, slty, cacl mtx, tr lithics, nv por. SH: lt-med gy, mm, fis, ip plty. SLST: lt gy, blky, sl sdy, ip sl calc.
SH: lt-med gy, mm, fis, mnr plty.
SLST: v lt-lt gy, blky, mnr sdy, tr calc, pos kao, tt.


1555
CG 110.91u / 81.91u / 9 min
1560
1565
CG 105.44u / 73.99u / 7 min
1570
1575
CG 119.77u / 80.04u / 4 min
1580
1585
CG 134.88u / 79.25u / 5 min
SGR 181.98u / 80.95u
1590
1595
CG 132.25u / 102.35u / 5 min
1600
SGR 231.03u / 80.85u
CG 136.09u / 104.70u / 5 min
WOB: 17 kdaN
SPP: 17600 KPa
FLOW IN: 1.71 m3/min
RPM: 50
SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, mnr sdy, tr calc, pos kao, tt. SS: tr, lt gy, vfg, calc, pos kao, tt.
SS: v lt gy. vfg. w cons qtz sd, sl calc, slty mtx, tr, lithic grs, nv por, ns. SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, mnr sdy, tr calc, pos kao, tt.
SS: v lt gy, vfg, w cons qtz sd, sl calc, slty mtx, tr lithic grs, nv por, ns. SH> lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, mnr sdy, tr calc, pos kao, tt.
SS: v lt gy, vfg, w cons qtz sd, sl calc, slty mtz, tr lithic grs, tr cal frags, nv por, ns. SH: lt-med gy, mm, fis, mnr plty. SLTST: v lt-lt gy, blky, mnr sdy. tr calc, pos kao, tt/
SH: lt-med gy, mm, fis, mnr plty. SLTST: v lt-lt gy, blky ,ip sdy, tr calc, tr kao, occ cal strgs.





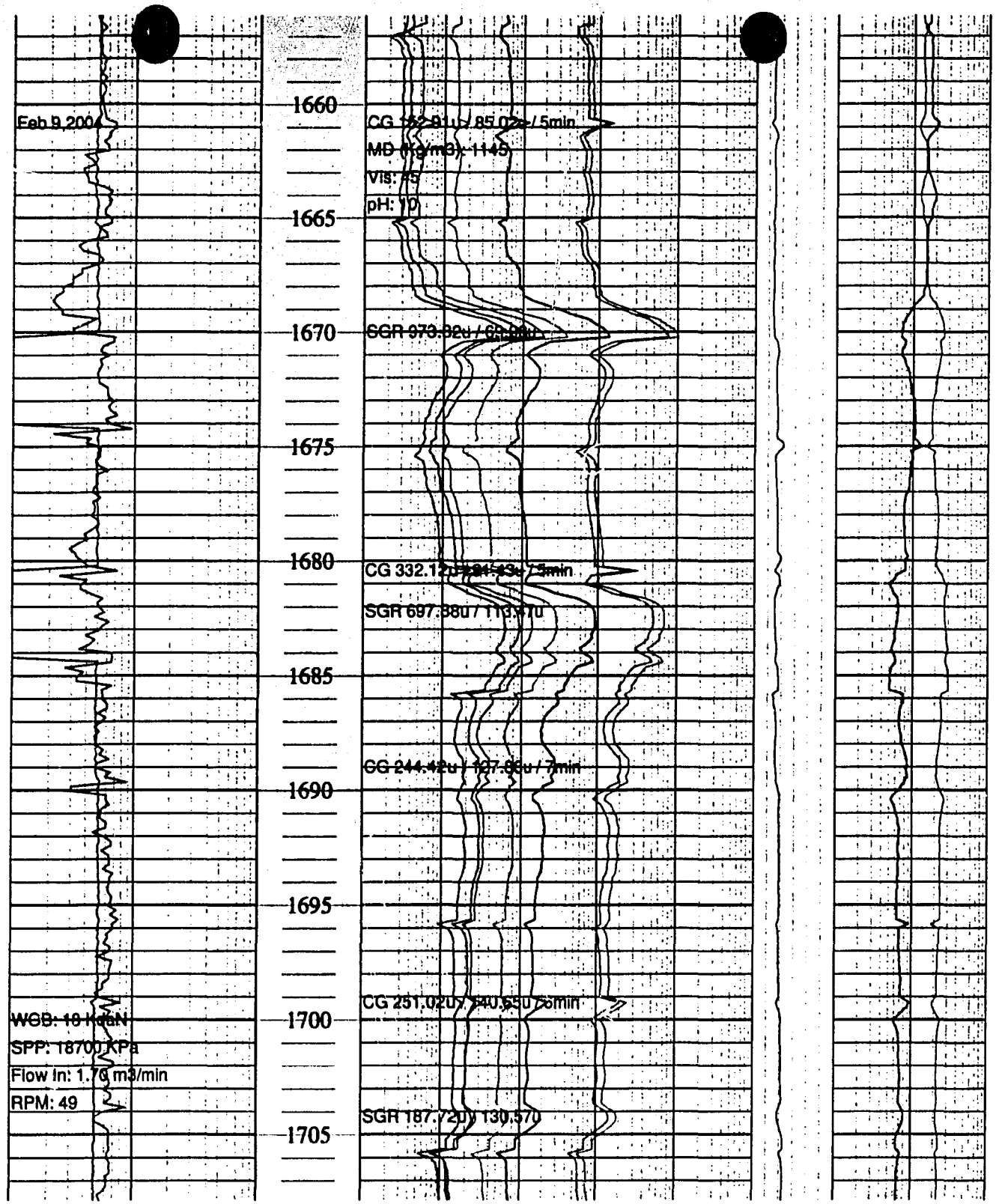
SS: v lt-lt gy, vfg, modly-w cons qtz sd, slty, sl calc mtx, mnr lithic grs, nv por, ns. SH: lt-memd gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc, tr kao.

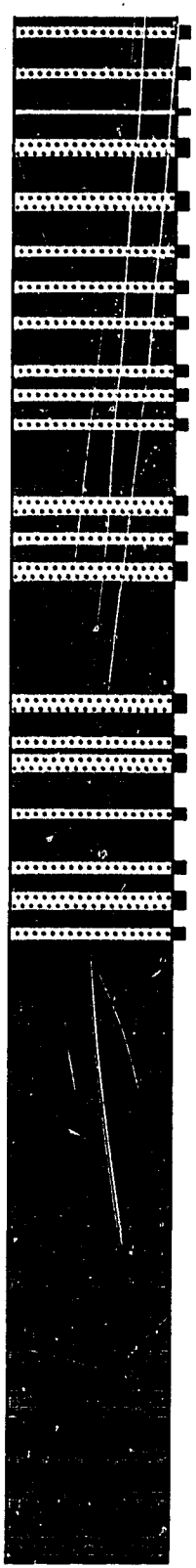
SS: v lt-lt gy, vfg, modly-w cons qtz sd, slty, sl calc mtx, mnr lithic grs, nv por, ns. SH: lt-med gy, mm, fis, mnr plty. SLTST: v lt-lt gy, blky, ip sdy, tr calc, tr kao.

SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc, tr kao.

SS: v lt-lt gy, vfg, modly- w cons qtz sd, slty, sl calc mtx, mnr lithic grs, nv por, ns. SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc, tr kao.

SS: ow, v lt gy-gy, vfg, modly cons qtz sd, sl calc, slty, tt. SH: lt-med gy, mm. fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc.





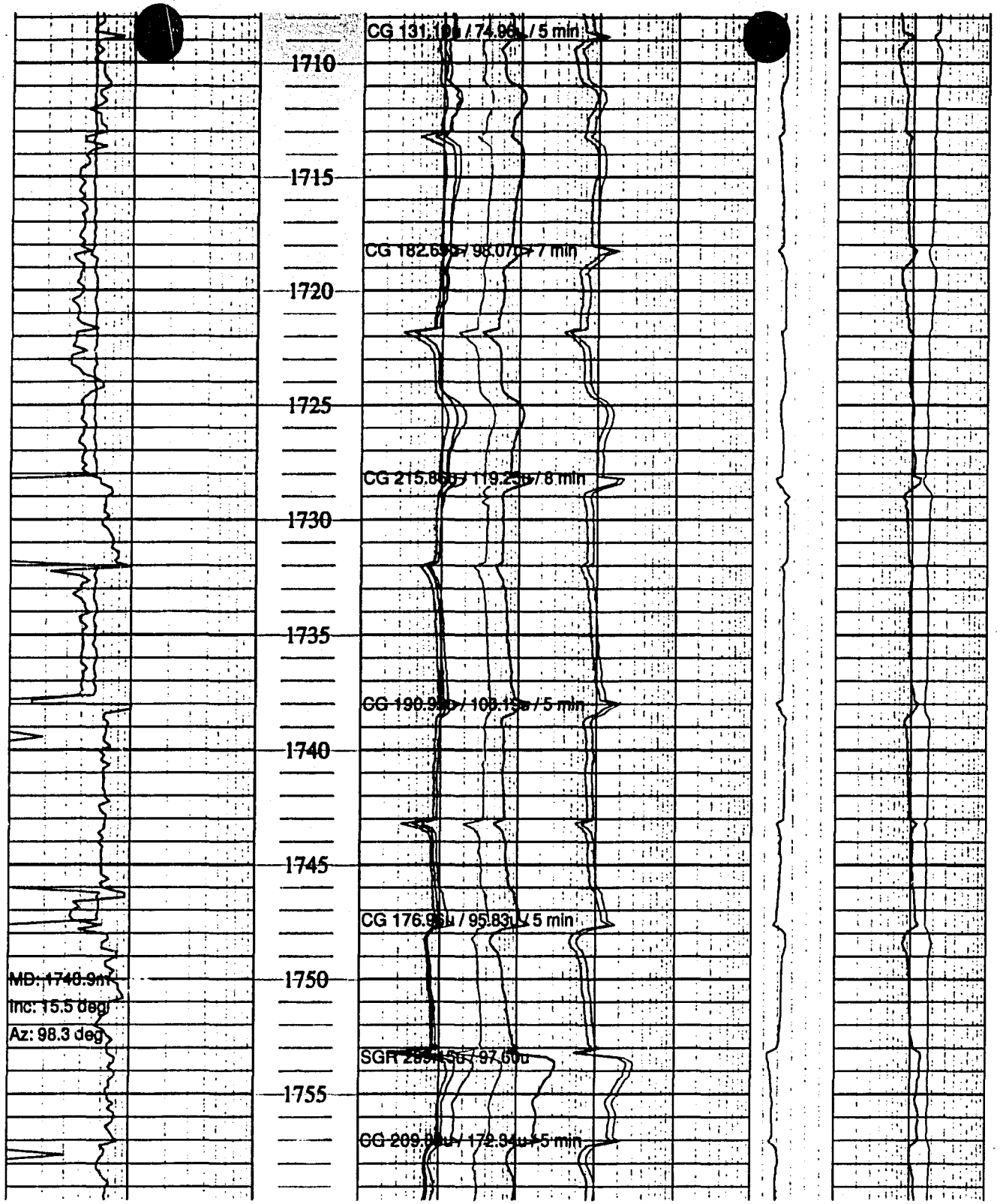
SS: lt gy, v lt brn, vf-occ f gr, w cons qtz sd, calc mtx , tr lithic grs, nv por, ns. SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc.

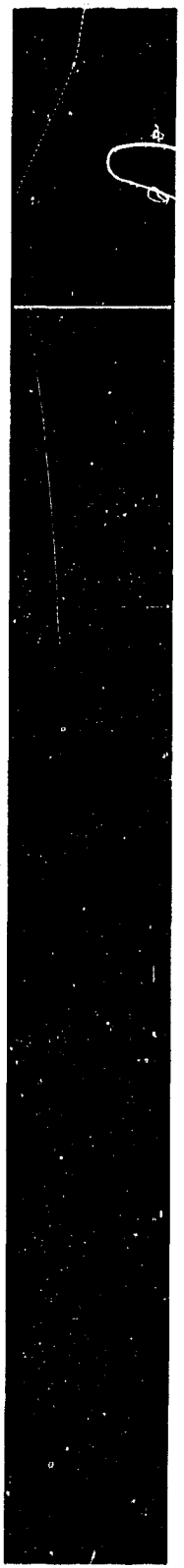
SS: lt gy, vfg, w cons qtz sd , slty calc mtx, mnr lithic grs, nv por. SH: lt-med gy, mm, fis, mnr plty. SLST: v lt-lt gy, blky, ip sdy, tr calc.

SS: lt gy, lt brn, vfg, tr f gr, w cons qtz sd, sl calc, ip slty mtx, mnr lithic grs, nv por, slow, sp, fnt yel C. SH: lt med gy, mm, fis, mnr plty. SLTST: v lt-lt gy, blky , ip sdy, tr calc.

SH: med gy, mm, fis. SLST: lt gy, lt gy brn, blky, isp sdy, tr calc..

SH: med gy, mnr dk gy, mm, fis. SLST: lt gy, lt gy brn, blky, isp sdy, tr calc.





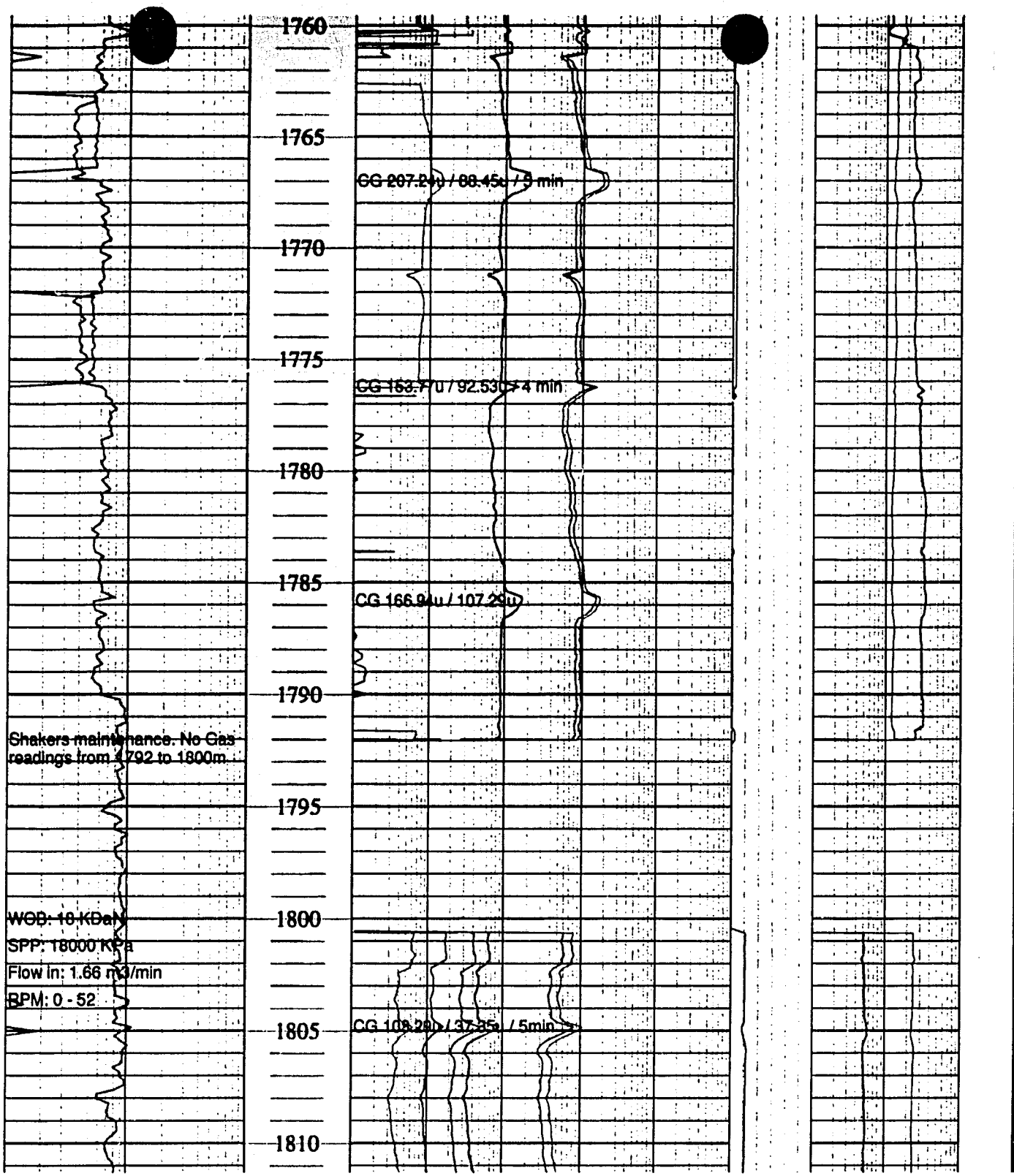
SH: med gy, mnr dk gy, mm, fis.
SLST: lt gy, lt gy brn, blky, ip sdy, tr calc, tt.

SH: med gy, mnr dk gy, mm, fis.
SLTST: lt gy, lt gy brn, blky, ip sdy tr calc, tt.

SH: med gy, mnr dk gy, mm, fis.
SLST: lt gy, lt gy brn, blky, ip sdy tr calc, tt.

SH: med gy, mm, fis, tr thn cal strgs.
SLTST: lt gy, blky strgs, isp calc, tr kao.

SH: med gy, mnr dk gy, mm, fis.
SLTST: lt gy, blky strgs , isp calc, tr kao, tr micro frac w cal.





SH: med gy, mnr [redacted] mm, fis.
SLTST: lt gy, blky [redacted], isp calc, tr kao.

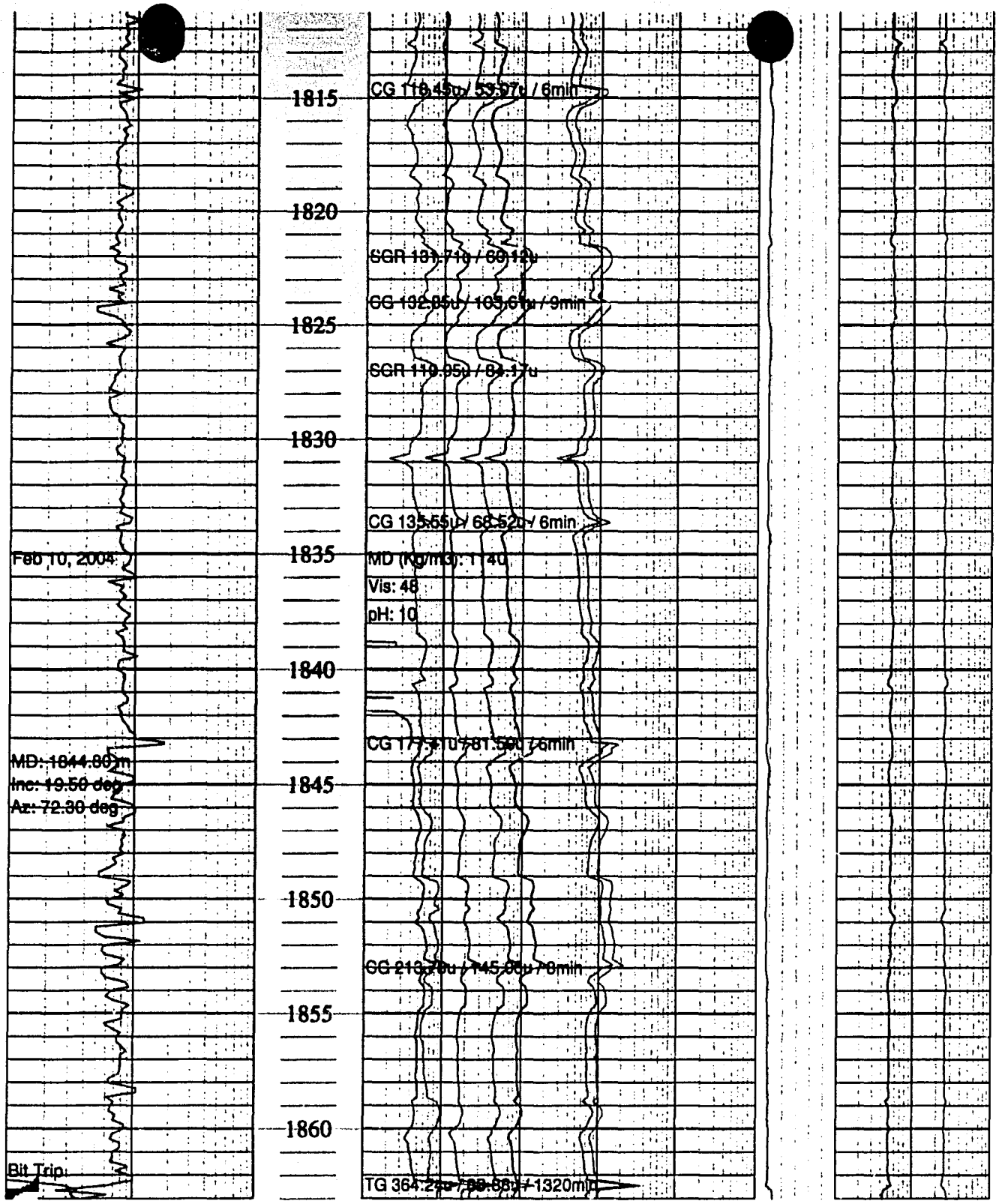
SH: med gy, mnr dk gy, mm, fis.
SLTST: lt gy, blky strgs , isp calc.

SH: med gy, mnr dk gy, mm, fis.
SLTST: lt gy, blky strgs , isp calc.

SH: med gy, mm, fis, ip calc, sl calc, sl arg. SLTST: lt gy , blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, sl arg.
SLTST: lt gy, blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, sl arg.
SLTST: lt gy, blky, ip calc, tr sdy.





SH: med gy, mm, fis, ip calc, sl arg, tr wxy. SLTST: lt gy, blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, sl arg, tr wxy. SLTST: lt gy, blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, sl calc, sl arg, tr wxy. SLTST: lt gy, blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, sl arg, tr wxy. SLTST: lt gy, blky, ip calc, tr sdy.

Bit #5
215.9 mm
TYPE: HX-520 (WESTERN)
SERIAL #: 504280
JETS: 17.5 x 3
DEPTH IN: 1863 m

MD (m3/m3x) 1150
Vis: 59
pH: 10

1865
1870
1875
1880
1885
1890
1895
1900
1905
1910

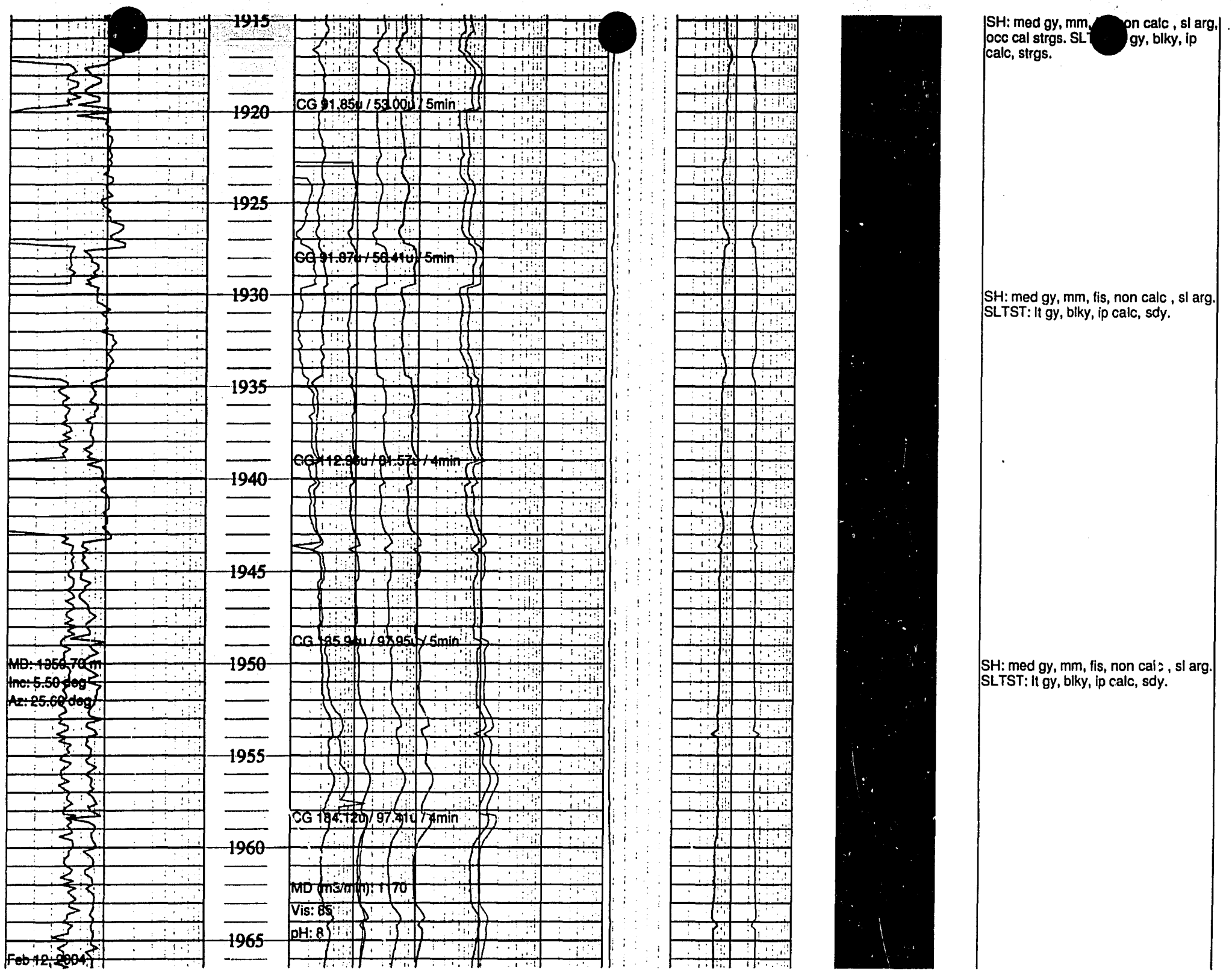
CG 135.91u / 66.58u / 18min
CG 105.93u / 75.62u / 8 min
CG 11x.00u / 7x.24u / 6 min
CG 95.06u / 72.71u / 8 min
CG 97.06u / 58.18u / 7 min

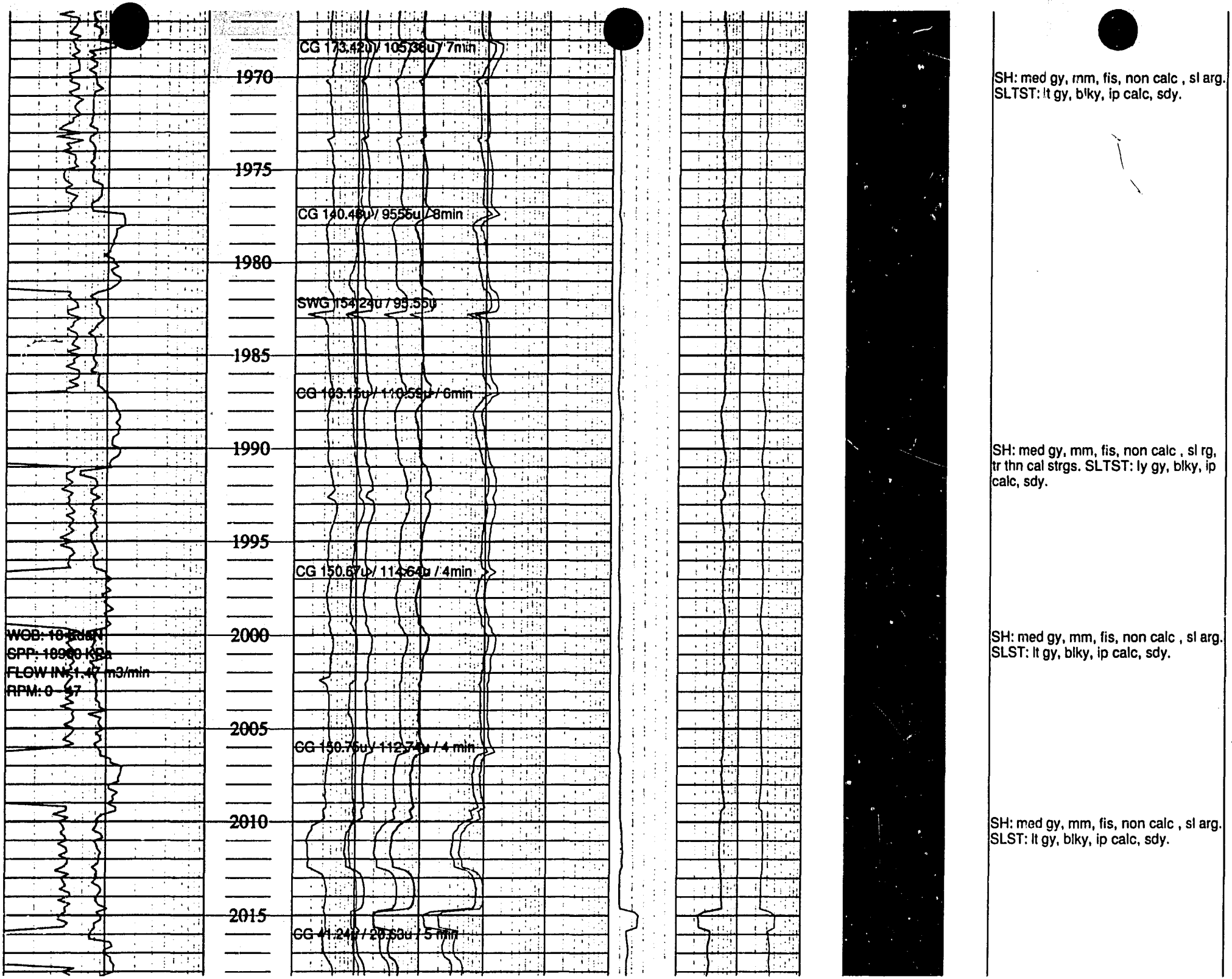


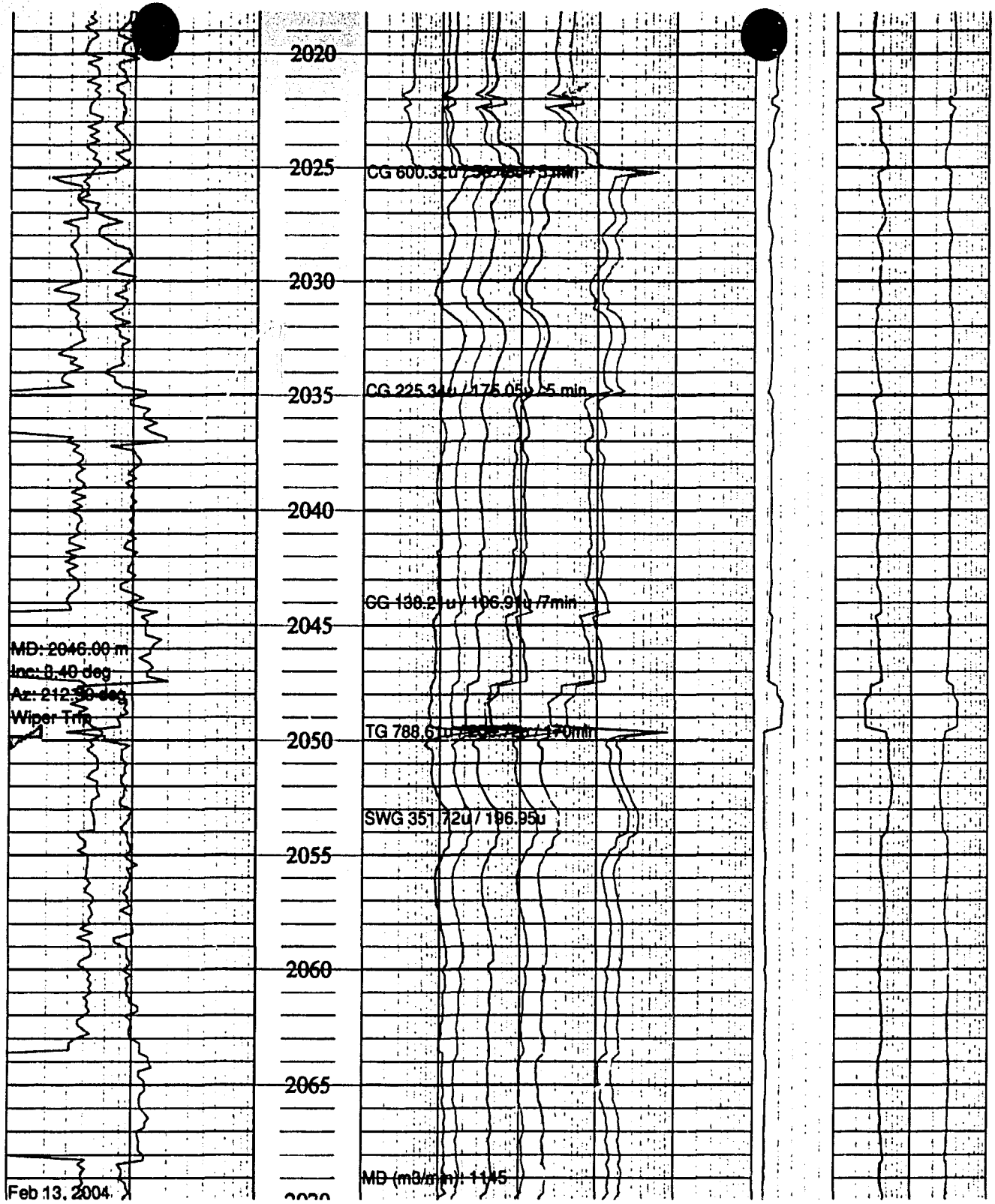
SH: med gy, mm, fis, isp calc , sl arg, tr sks on cuttings. SLTST: lt gy, blky, ip calc, tr sdy.

SH: med gy, mm, fis, ip calc, tr arg. SLTST: lt gy, blky, calc, sdy. SS: tr, lt gy strgs, vfg, w cons, sl calc, slty, tt.

SH: med gy, mm, fis, tr arg. SLTST: lt gy, lt gy gn, blky, tr sdy.


1915
1920
1925
1930
1935
1940
1945
1950
1955
1960
1965
CG 91.85u / 53.00u / 5min
CG 91.87u / 58.41u / 5min
CG 112.96u / 91.57u / 4min
CG 185.94u / 97.95u / 5min
CG 184.12u / 97.41u / 4min
MD: 1350.70 m
Inc: 5.50 deg
Az: 25.60 deg
MD (m3/min): 1.70
Vis: 65
pH: 8
Feb 12, 2004
SH: med gy, mm, on calc , sl arg, occ cal strgs. SLT gy, blky, ip calc, strgs.
SH: med gy, mm, fis, non calc , sl arg.
SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fis, non calc , sl arg.
SLTST: lt gy, blky, ip calc, sdy.


CG 173.42u / 105.36u / 7min
1970
1975
CG 140.48u / 95.55u / 8min
1980
SWG 154.24u / 99.55u
1985
CG 163.15u / 110.59u / 6min
1990
1995
CG 150.67u / 114.64u / 4min
WOB: 18 Kdan
SPP: 18900 KPa
FLOW IN: 1.47 m3/min
RPM: 0 - 97
2000
2005
CG 150.76u / 112.74u / 4 min
2010
2015
CG 41.24u / 26.53u / 5 min
SH: med gy, mm, fis, non calc , sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fis, non calc , sl rg, tr thn cal strgs. SLTST: ly gy, blky, ip calc, sdy.
SH: med gy, mm, fis, non calc , sl arg. SLST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fis, non calc , sl arg. SLST: lt gy, blky, ip calc, sdy.





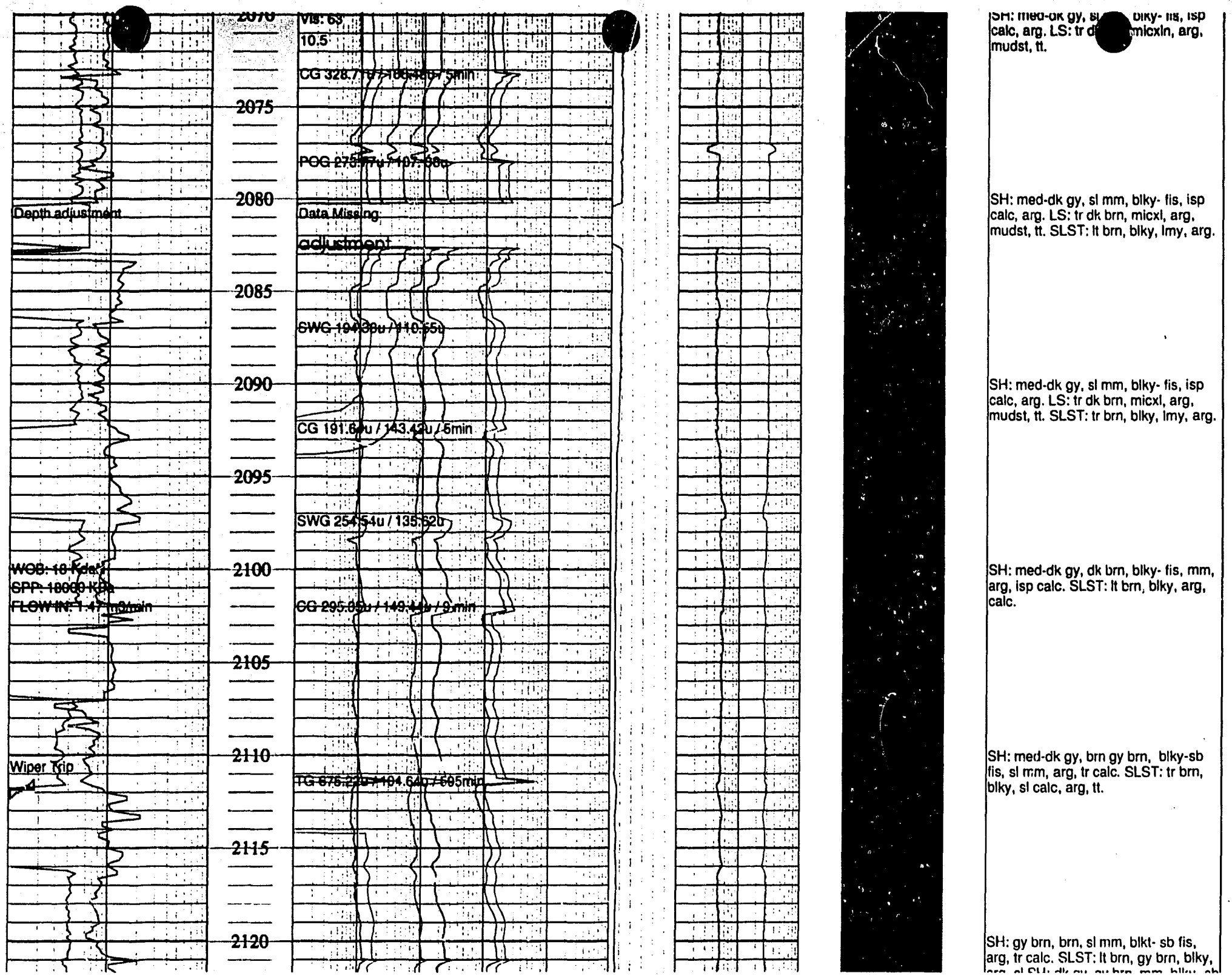
SH: med gy, mm, [illegible]non calc , sl calc, sl arg. SLST: lt gy, blky, ip calc, sdy.

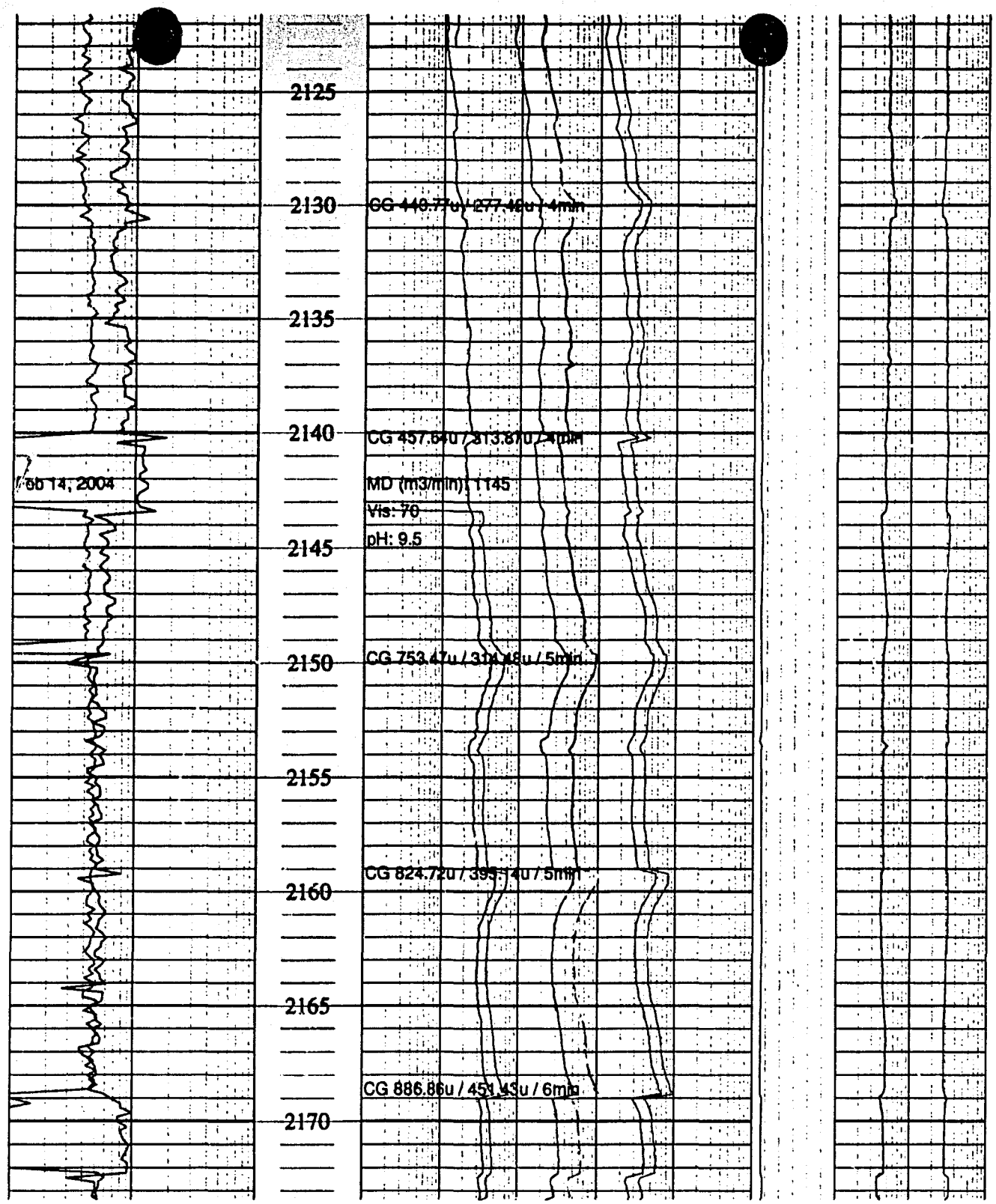
SH: dk brn, med-dk gy, brn, sl mm, blky, v lmy, arg, ip ert, occ micro fracs, sp-mas pale blue C. LS: dk brn, arg, mudst strgs.

SH: dk gy brn, dk brn, med-dk gy, sl mm, blky, ip lmy, arg, fnt pale bl C. LS: dk brn, micxl mudst, arg.

SH: med-dk gy, dk brn, dk gy brn, mm, blky-fis, ip lmy, arg. LS: tr dk brn, micxl, arg, tt.

SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: tr dk brn, micxl, arg, mudst, tt.


2070
Vis: 63
10.5
CG 328.7u / 180.48u / 5min
2075
POG 275.97u / 107.58u
2080
Depth adjustment
Data Missing
adjustment
2085
SWG 194.38u / 110.55u
2090
CG 191.64u / 143.42u / 5min
2095
SWG 254.54u / 135.62u
2100
WOB: 18 Klbf
SPP: 18000 KPa
FLOW IN: 1.47 m3/min
CG 295.85u / 149.44u / 5min
2105
2110
Wiper Trip
TG 676.23u / 194.64u / 595min
2115
2120
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: tr dk brn, micxln, arg, mudst, tt.
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: tr dk brn, micxl, arg, mudst, tt. SLST: lt brn, blky, lmy, arg.
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: tr dk brn, micxl, arg, mudst, tt. SLST: tr brn, blky, lmy, arg.
SH: med-dk gy, dk brn, blky- fis, mm, arg, isp calc. SLST: lt brn, blky, arg, calc.
SH: med-dk gy, brn gy brn, blky-sb fis, sl mm, arg, tr calc. SLST: tr brn, blky, sl calc, arg, tt.
SH: gy brn, brn, sl mm, blkt- sb fis, arg, tr calc. SLST: lt brn, gy brn, blky,





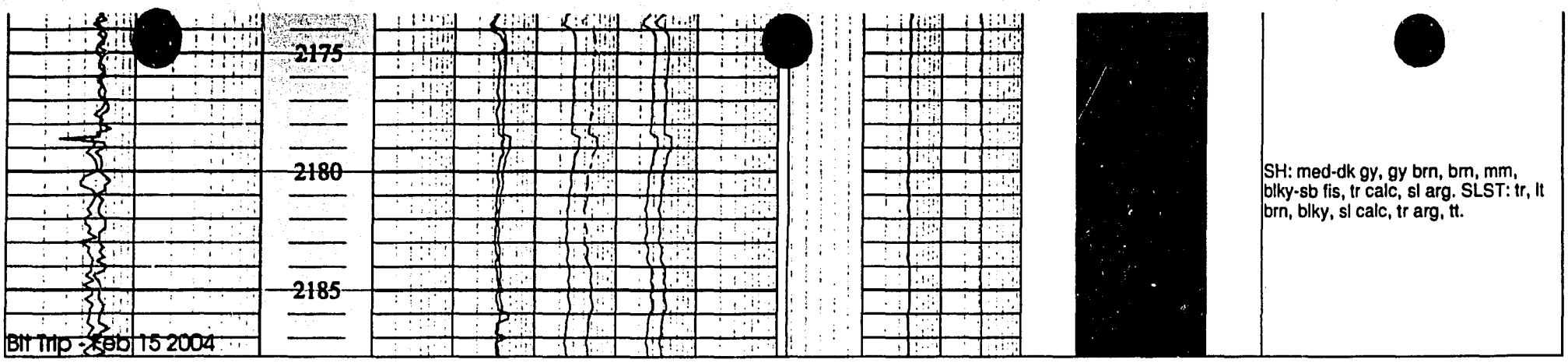
arg, sl SH: dk gy, [illegible], fis, isp calc, sl ar[illegible]T: lt brn, blky, sl arg, sl calc, tt.

SH: dk gy, gy brn, mm, blky- sb fis, isp calc, sl arg. SLST: lt brn, lt gy brn, blky , sl arg, sl calc, tt.

SH: med-dk gy, br, gy brn, mm , blky-sb fis, isp calc, sl arg. SLTST: lt gy brn, blky, sl calc, tt, tr cal filled micro fracs. SHOW: slw, wk mass pa ye cut.

SH: gy brn, med-dk gy, mm, blky-sb fis, sl arg, tr calc. SLTST: lt ben, lt gy brn, blky, sl calc, tr arg, tt. SHOW: sl, wk mass pa ye cut.

SH: brn, gy brn, ddk gy, mm, blky-sb fis, sl arg, tr calc. SLTST: tr brn, lt gy brn, blky, sl calc, tr arg, tt. SHOW: sl, wk mass pa ye cut.


2175
2180
2185
Bit Trip - Feb 15 2004
SH: med-dk gy, gy brn, brn, mm, blky-sb fis, tr calc, sl arg. SLST: tr, lt brn, blky, sl calc, tr arg, tt.

DATALOG

Northrock et al Summit Creek B44-ST1

Operator:	Northrock Resources Ltd
Well:	Northrock et al Summit Creek B44-ST1
Location:	B-44-64-30-125-45
Country:	Canada
UWI D:	300B446430125450
Elevation GL:	580.50
KB:	586.00
Drilling Rig:	Akita # 40
Spud Date:	16/01/2004
Print Date:	25/03/2004
Scale:	1:240

Personnel:

Jose Luis Caceres
Eyal Greenfeld
Zander Cherny

HoleData:

444.5mm Surface Hole to 208m MD
311mm 1st Inrermediate Hole to 810m MD
216mm 2nd Inrermediate Hole to 2450m MD
156mm to 3064m MD (TD).

Notes:

Sidetrack 1 was kicked off from 1705m MD on
Feb 20, 2004 and drilled to a depth of 2505m MD.
When pulling out a part of BHA was lost on bottom.
The fish was not retrieved.

CasingData:

Surface Casing: 340mm @ 208m MD
Intermediate # 1: 244.5mm @ 810m MD
Intermediate # 2: 177.8mm @ 2450m MD

Lithology

- Not Available
- Sandstone
- Siltstone
- Shale
- Chert
- Conglomerate
- Limestone
- Dolomite
- Anhydrite
- Gypsum
- Marlstone
- Salt
- Coal
- Motamorphic
- Granite
- Breccia
- Tuff
- Claystone
- Serpentinite
- Diabase
- Basalt
- Pillow Lava
- Leuco Granite
- Biotite Granite
- K Feldspar
- Cataclased
- Intrusive
- Extrusive
- Altered Low
- Altered Medium
- Altered High
- Clyst Green Gray
- Clyst Pale Green
- Clyst Grey
- Clyst Violet
- Clyst Yellow
- Clyst Brown
- Basalt Low
- Basalt Medium
- Basalt High
- Shale 2
- Siltstone 2

ROP
1.000 min/m 100.000

RPM
10.000 1000.000

Hydrocarbons
0.100 units 10000.000

C1
0.001 % 100.000

C2
0.001 % 100.000

C3
0.001 % 100.000

IC4
0.001 % 100.000

NC4
0.001 % 100.000

IC5
0.001 % 100.000

NC5
0.001 % 100.000

Char R

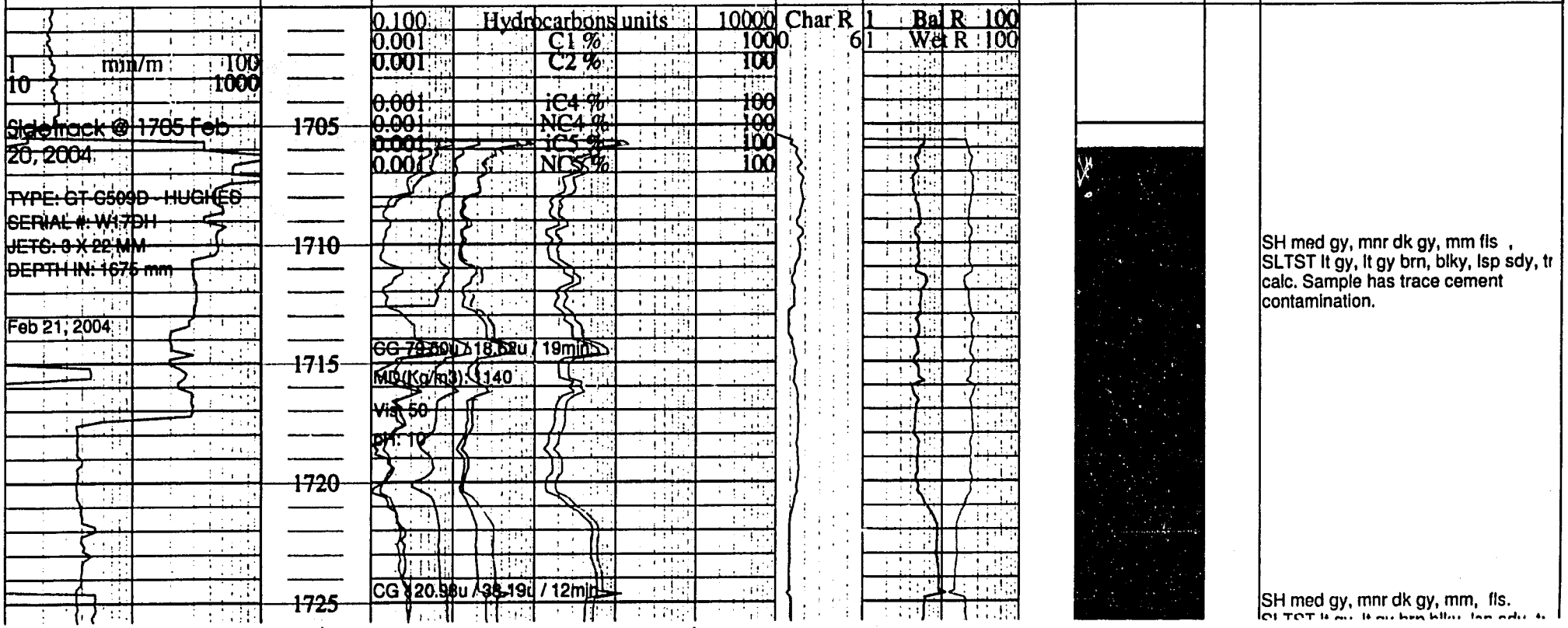
Bal R
Wet R

Porosity

Interpreted Lithology

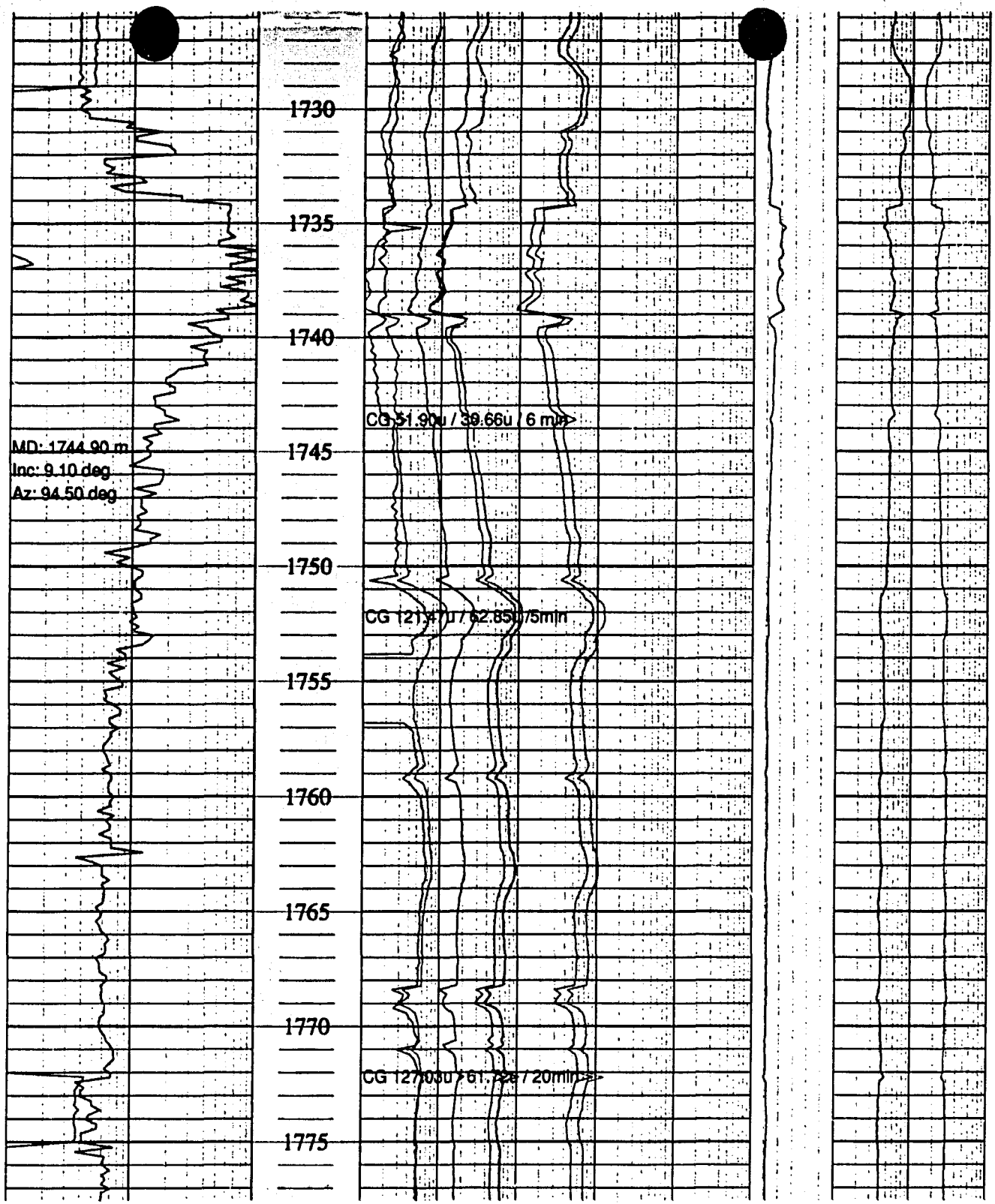
Grain Size

Stratigraphy



SH med gy, mnr dk gy, mm fls ,
SLTST lt gy, lt gy brn, blky, lsp sdy, tr calc. Sample has trace cement contamination.

SH med gy, mnr dk gy, mm, fls.



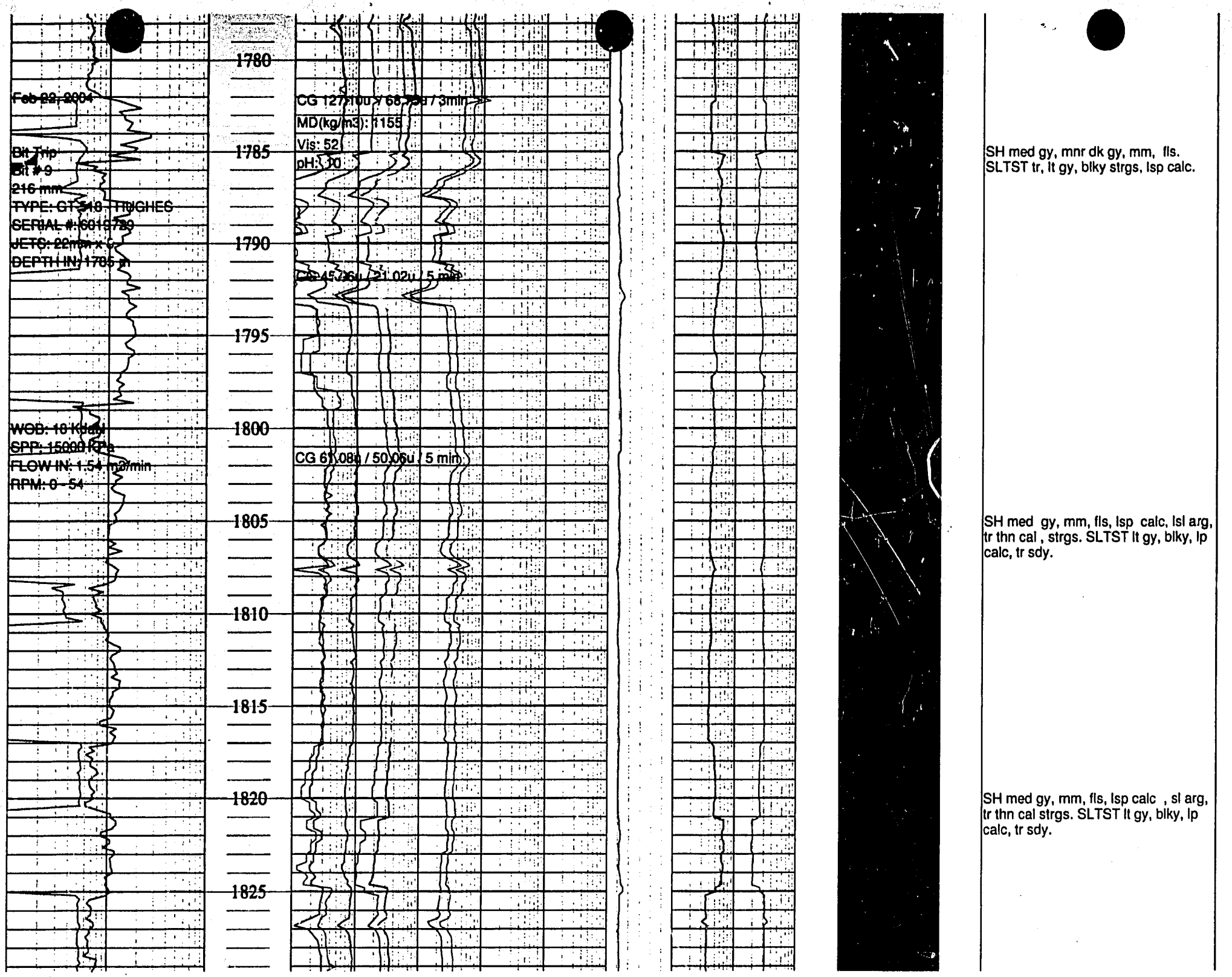


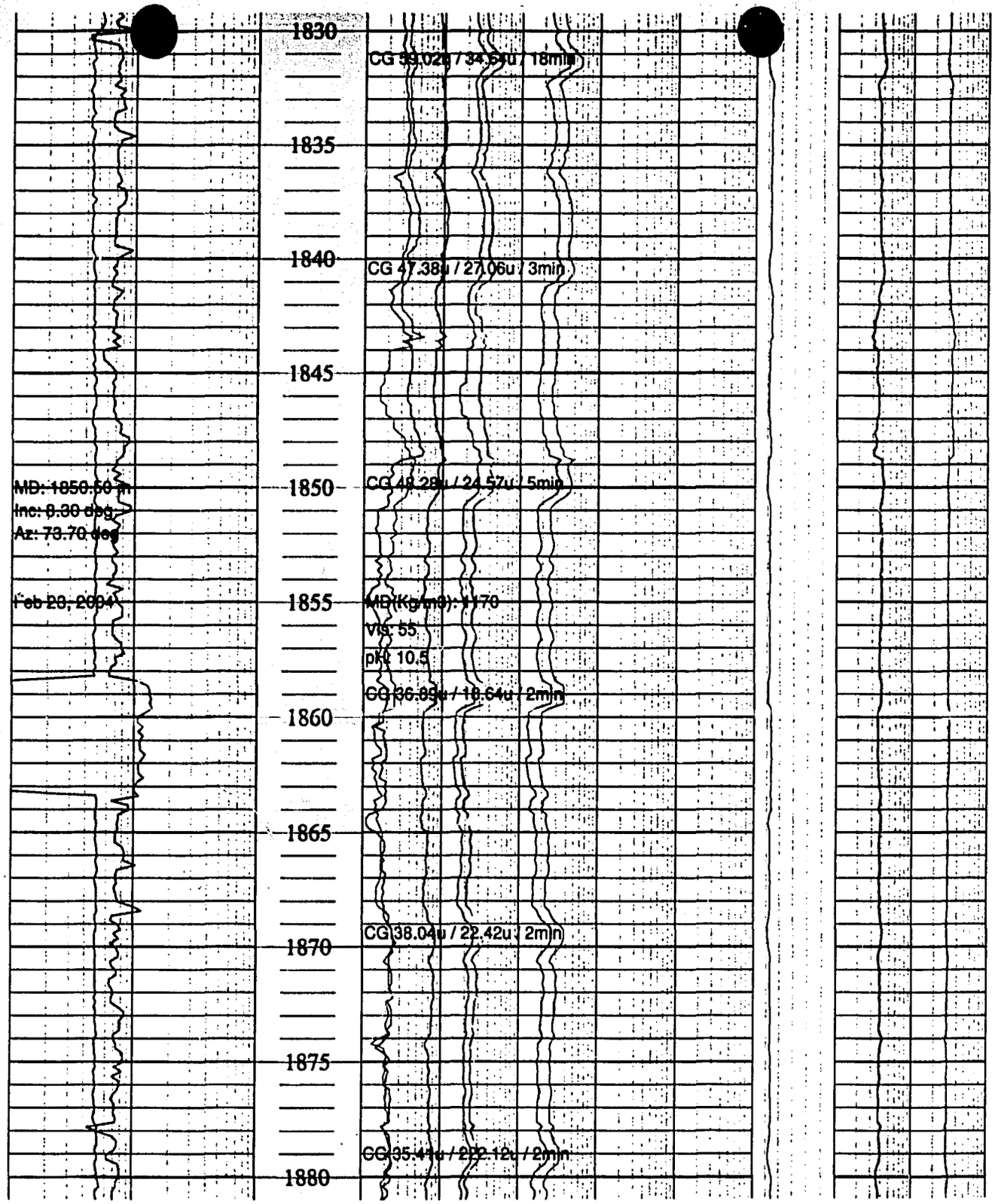
SLTST lt gy, lt gy [illegible]lky, lsp sdy, tr calc. Samples ha[illegible]jor (up to 80%) cement cont[illegible]nation.

SH med gy, mm, fls. SLTST lt gy, lt gy brn, blky, lp, sdy calc, tt. Cement 10%.

SH med gy, mnr dk gy, mm, fls. SLTST lt gy, blky strgs , lsp calc, tr kao, tr micro fracs.

SH md gy, mnr dk gy, mm, fls . SLTST lt gy, blky strgs, lsp calc.

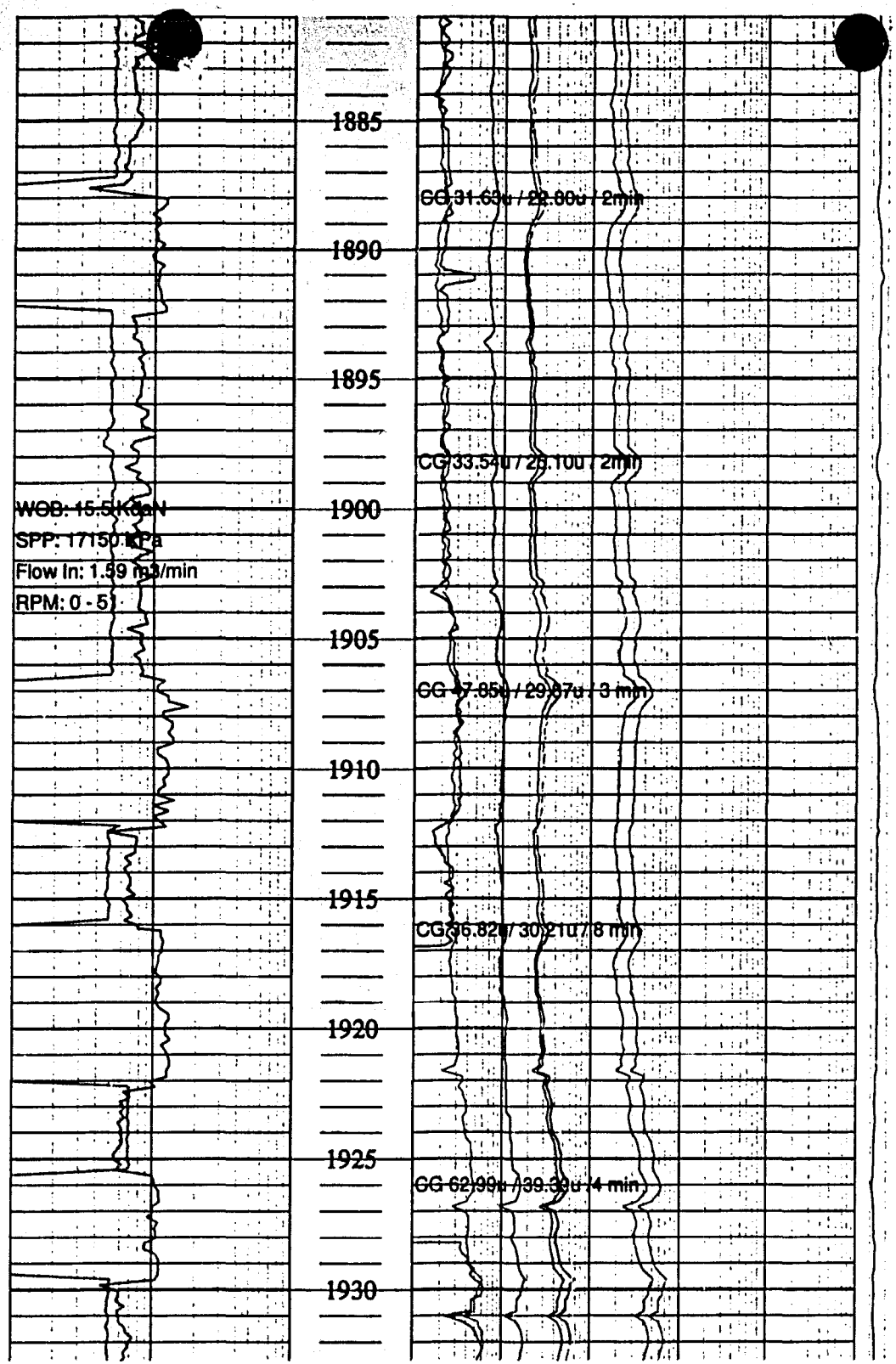

1780
1785
1790
1795
1800
1805
1810
1815
1820
1825
Feb 22, 2004
Bit Trip
Bit # 9
216 mm
TYPE: GT 518 HUGHES
SERIAL #: 6015789
JETS: 22mm x 6
DEPTH IN: 1785 m
WOB: 18 Kdaj
SPP: 15000 kPa
FLOW IN: 1.54 m3/min
RPM: 0 - 54
CG 127.10u / 68.79u / 3min
MD(kg/m3): 1155
Vis: 52
pH: 10
CG 45.06u / 21.02u / 5 min
CG 61.08u / 50.06u / 5 min
SH med gy, mnr dk gy, mm, fls. SLTST tr, lt gy, blky strgs, lsp calc.
SH med gy, mm, fls, lsp calc, lsl arg, tr thn cal , strgs. SLTST lt gy, blky, lp calc, tr sdy.
SH med gy, mm, fls, lsp calc , sl arg, tr thn cal strgs. SLTST lt gy, blky, lp calc, tr sdy.





SH med gy, mm, fls, lsp calc , sl arg, tr wi wxy surf. SLTST tr, lt gy, blky, lp calc, tr sdy.

SH med gy, mm, fls, lsp calc , sl arg,

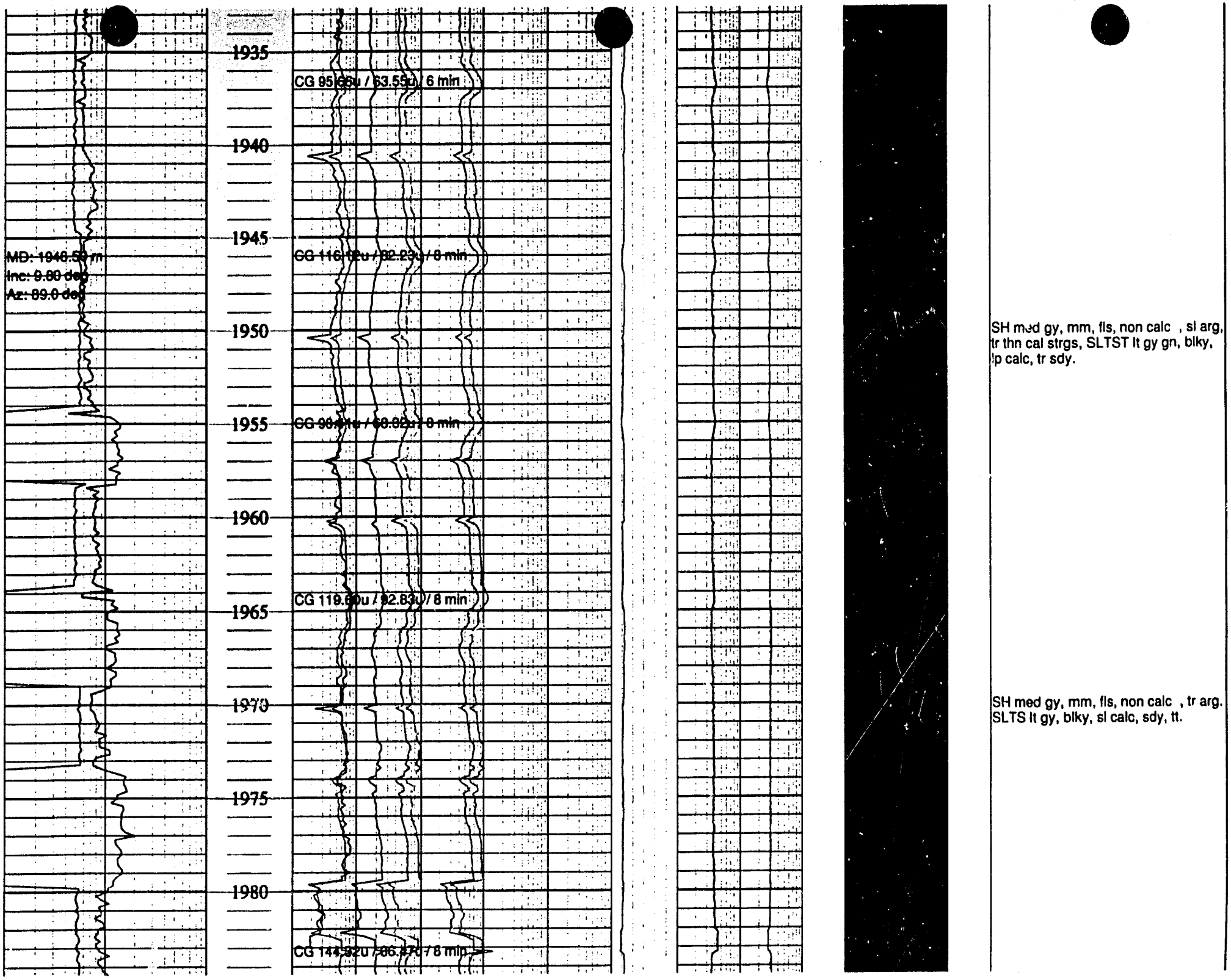




calc, tr sdy.

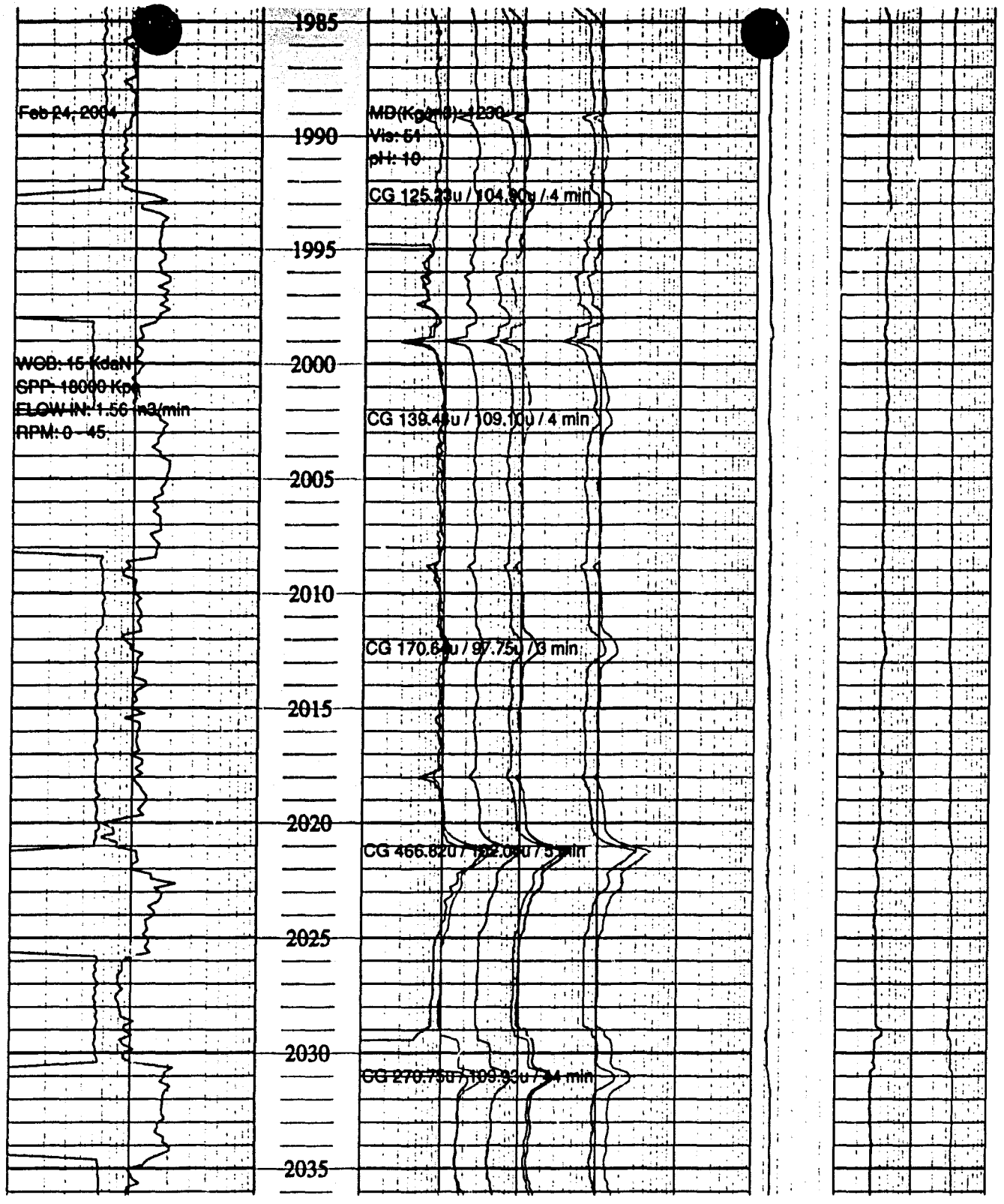
SH med gy, mm, fis, non calc , tr arg, SLTST tr, lt gy, occ lt gy gn, blky, lp calc.

SH med gy, mm, fis, sl arg, non calc, tr thn cal strgs. SLTST lt gy, blky, sdy, lp calc.



SH med gy, mm, fls, non calc , sl arg, tr thn cal strgs, SLTST lt gy gn, blky, lp calc, tr sdy.

SH med gy, mm, fls, non calc , tr arg. SLTS lt gy, blky, sl calc, sdy, tt.



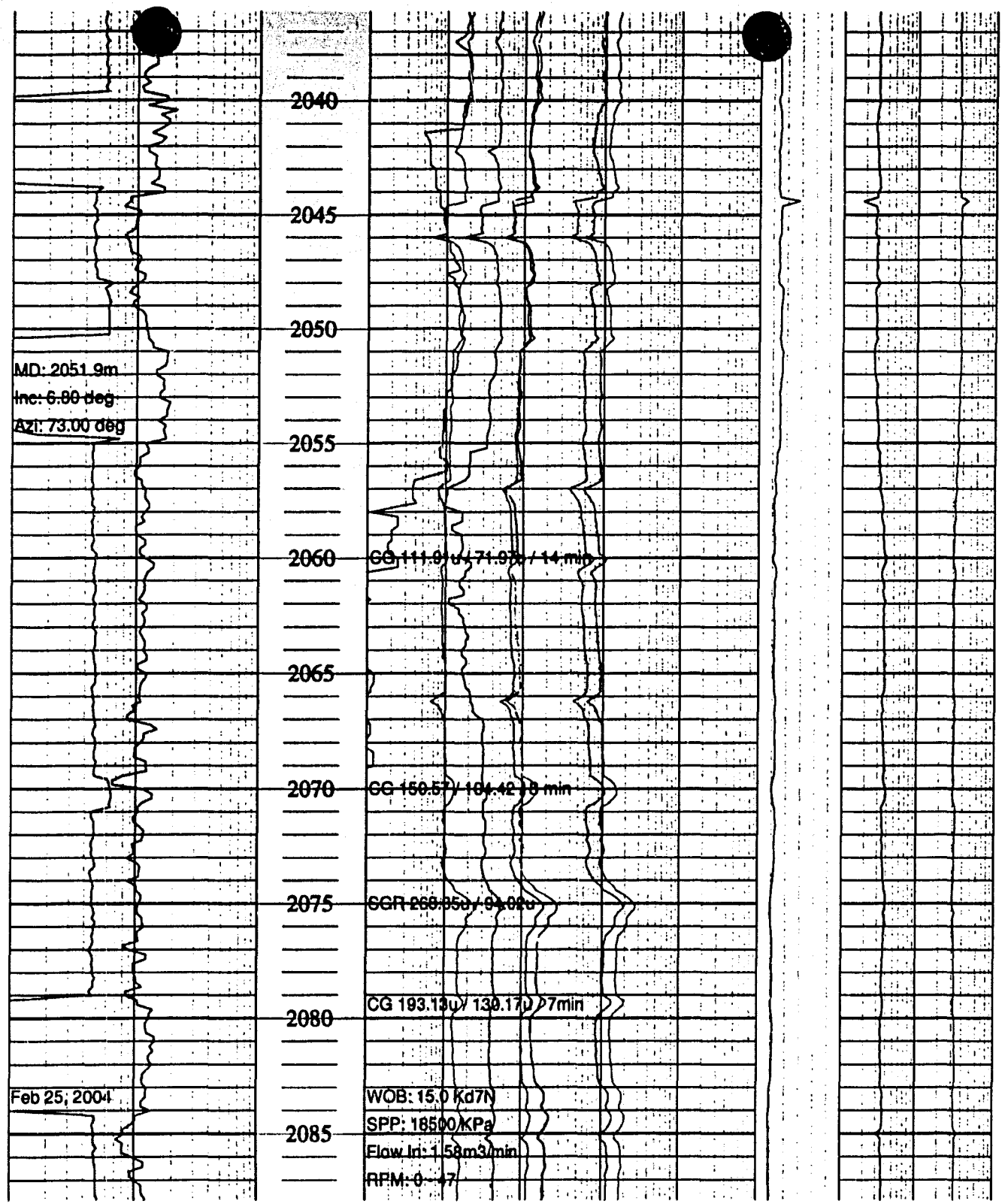


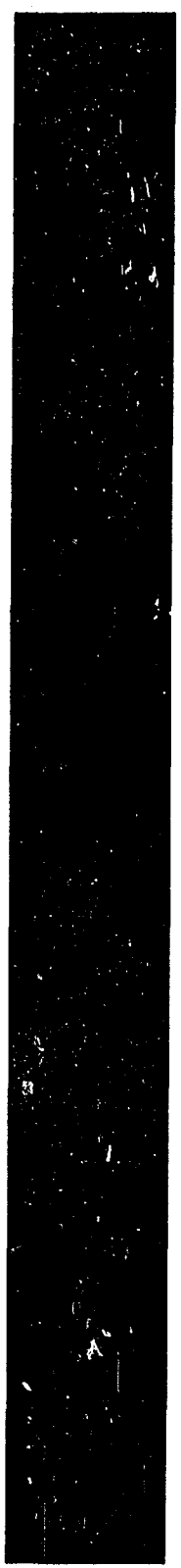
SH med gy, mm, fls, non calc , tr arg. SLTST lt gy, blky, sl calc, sdy, tt.

SH med gy, mm, fls, non calc , tr arg, mnr cal strgs. SLTST lt gy, blky, sl calc, sdy, tt.

SH: med - dk gy, dk gy brn, brn, sl mm, blky, v lmy, arg, ip ert, occ micro fracs, sp, fnt pale bl C. LS: dk brn, arg, mudst strgs.

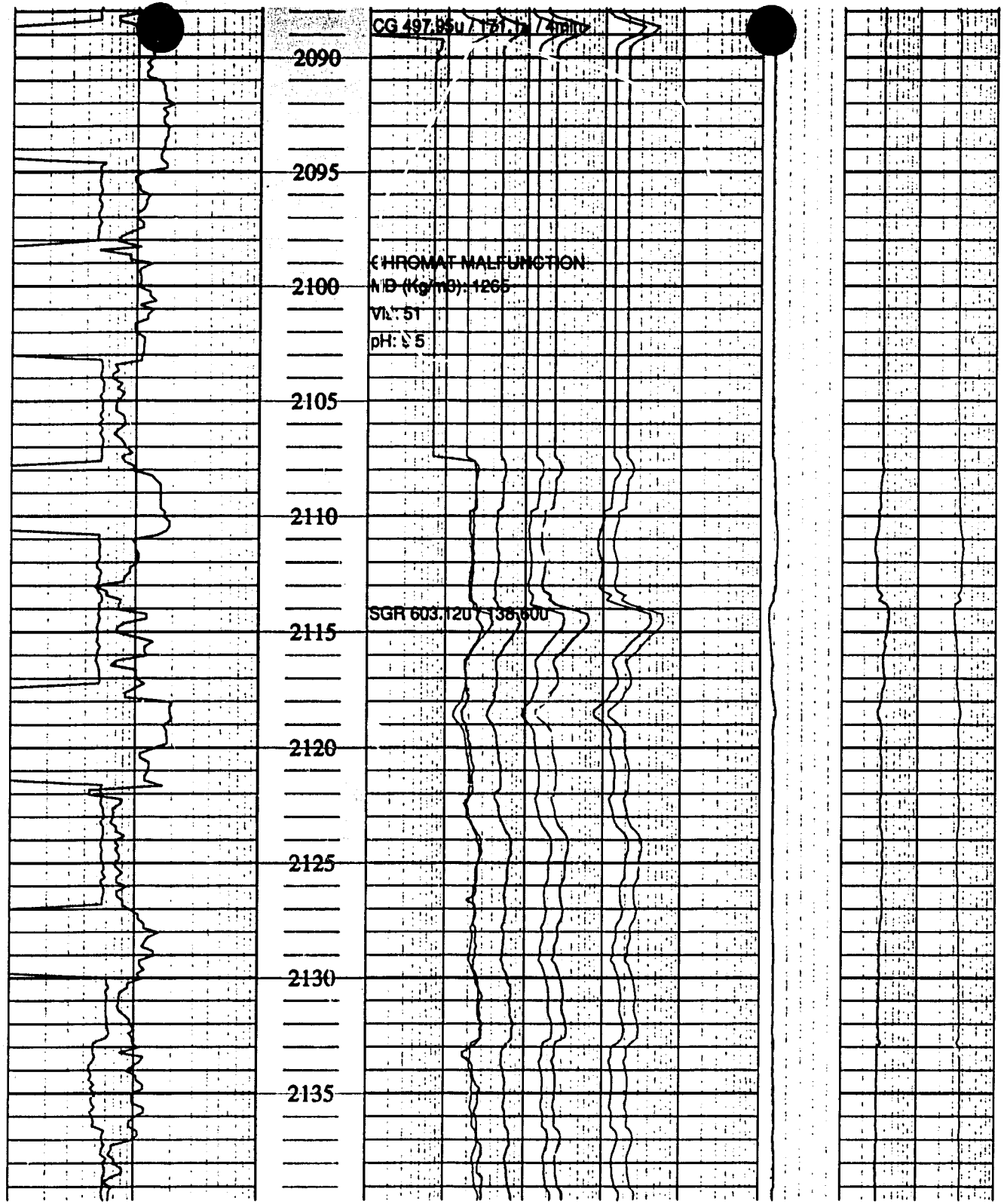
SH: dk gy brn, dk brn, sl mm, blky, ip lmy, arg, fnt bl C. LS: dk brn, micxl, arg mudst strgs.





SH: med - dk gy, dk brn, dk gy brn, m, blky - fis, ip calc. LS: tr dk brn, micxl, arg mudst.

SH: med - dk gy, mnr dk brn, mm, blky - fis, ip calc, arg. LS: tr, dk brn, micxl, arg mudst.



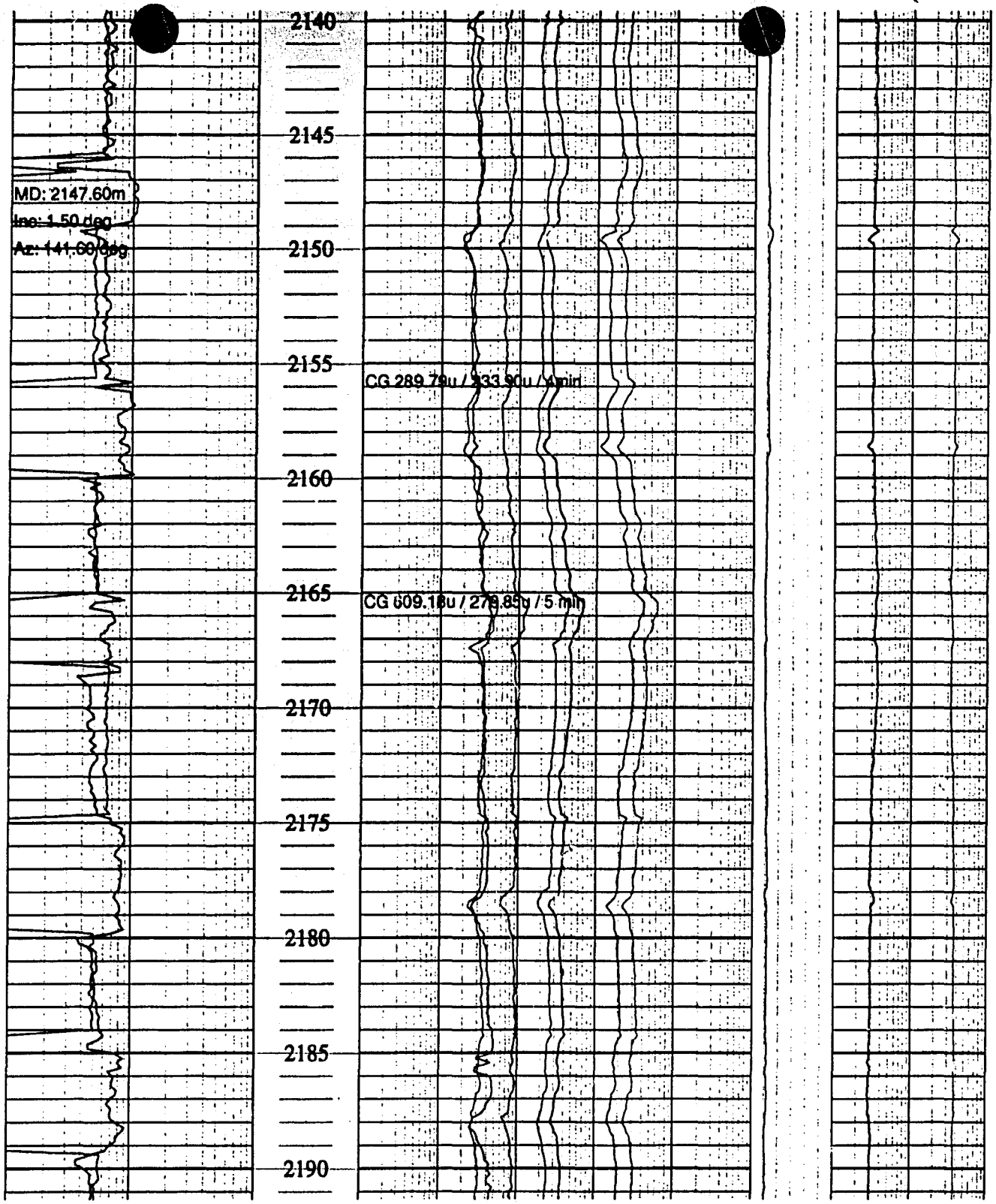


SH: med - dk gy, mnr dk brn, mm, blky - fis, ip calc, arg. LS tr, dk brn, micxl, arg mudst. SLTST: lt brn, blky, sl calc, arg.

SH: med - dk gy, brn, gy brn, mm, blky - sb fis, arg, tr calc. SLTST: lt brn, blky, sl calc, occ cal filled micro fracs.

SH: med - dk gy, brn, gy brn, mm, blky - sb fis, arg, tr calc. SLTST: lt brn, blky, sl calc, occ cal filled micro fracs.

SH: dk gy, gy brn, mm blky - sb fis, isp calc, sl arg. SLTST: lt brn, blky, sl arg, ip calc, tt.

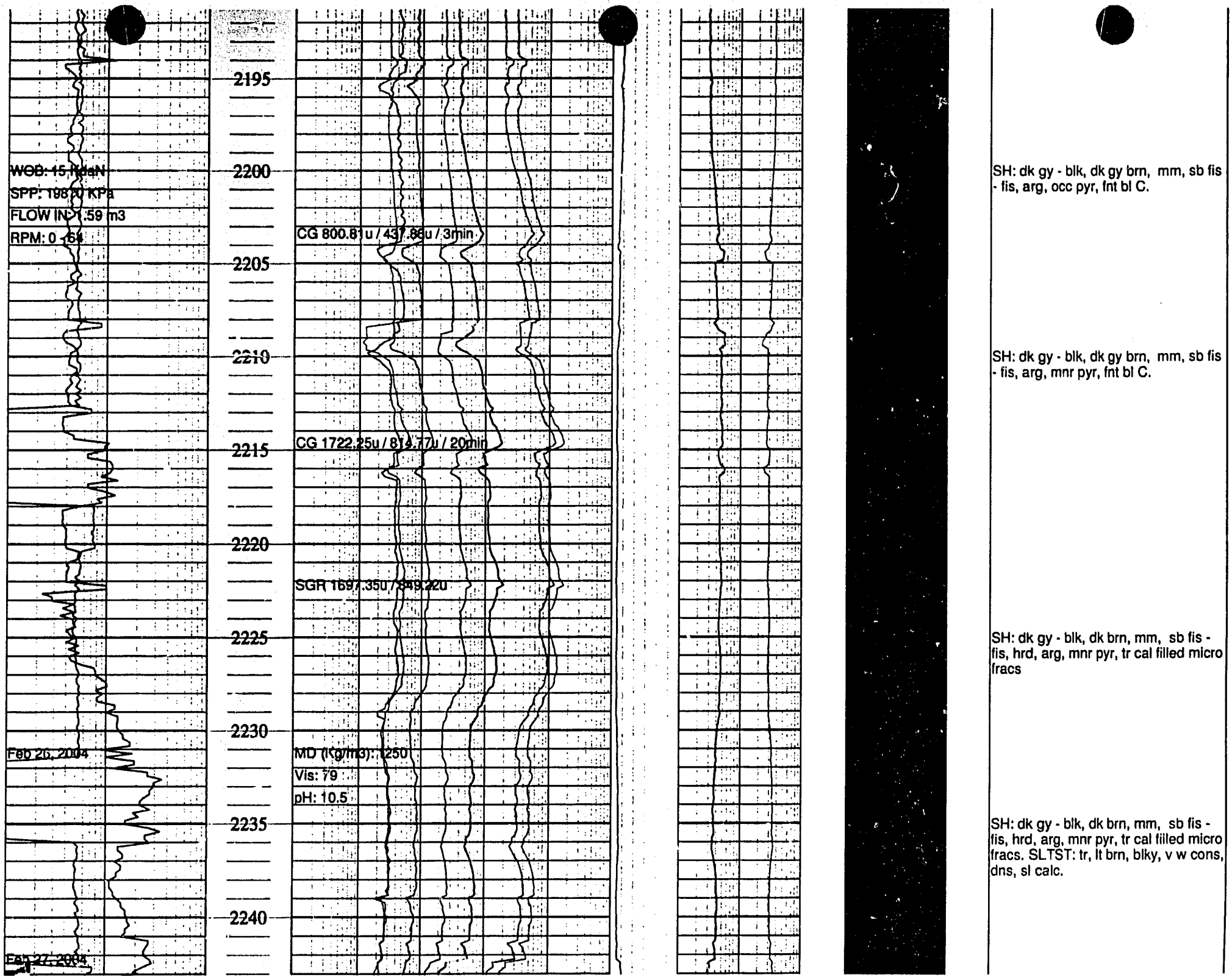


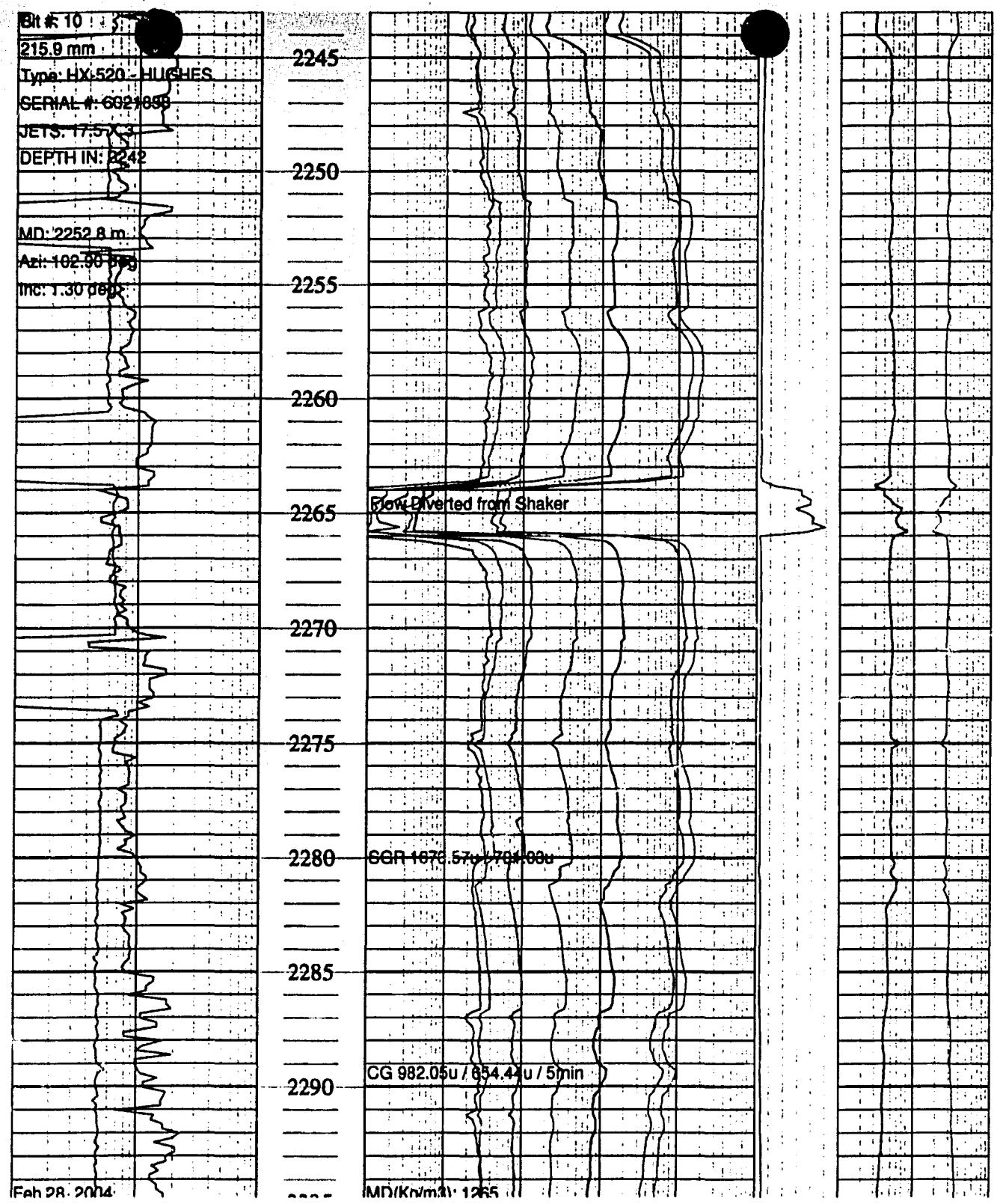


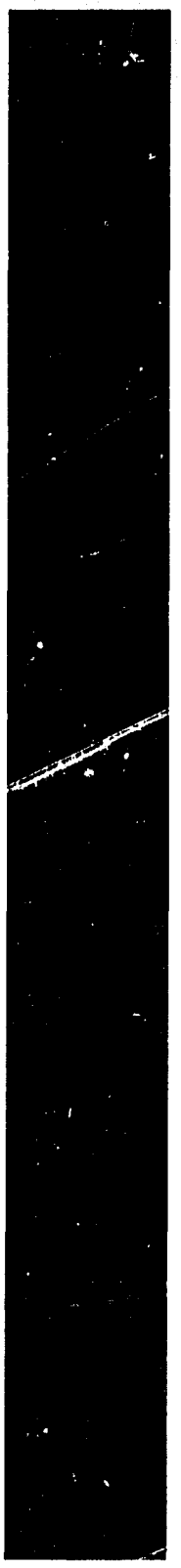
SH: brn, gy brn, dk gy, mm, blky - sb fis, isp calc, sl arg. SLTST: lt brn, blky, sl arg, calc, tt.

SH: dk gy brn, med - dk gy, brn, mm. sb fis, isp calc, sl arg. SLTST: lt grn, lt gy, blky, sl calc, ip sdy, tt.

SH: gy brn, dk gy - blk, mm, sb fis - fis, arg, fnt bl C.


2195
2200
2205
2210
2215
2220
2225
2230
2235
2240
WOB: 15 KdaN
SPP: 1980 KPa
FLOW IN: 1.59 m3
RPM: 0 - 64
CG 800.81u / 437.86u / 3min
CG 1722.25u / 814.77u / 20min
SGR 1697.35u / 849.22u
MD (Kg/m3): 1250
Vis: 79
pH: 10.5
Feb 26, 2004
Feb 27, 2004
SH: dk gy - blk, dk gy brn, mm, sb fis - fis, arg, occ pyr, fnt bl C.
SH: dk gy - blk, dk gy brn, mm, sb fis - fis, arg, mnr pyr, fnt bl C.
SH: dk gy - blk, dk brn, mm, sb fis - fis, hrd, arg, mnr pyr, tr cal filled micro fracs
SH: dk gy - blk, dk brn, mm, sb fis - fis, hrd, arg, mnr pyr, tr cal filled micro fracs. SLTST: tr, lt brn, blky, v w cons, dns, sl calc.

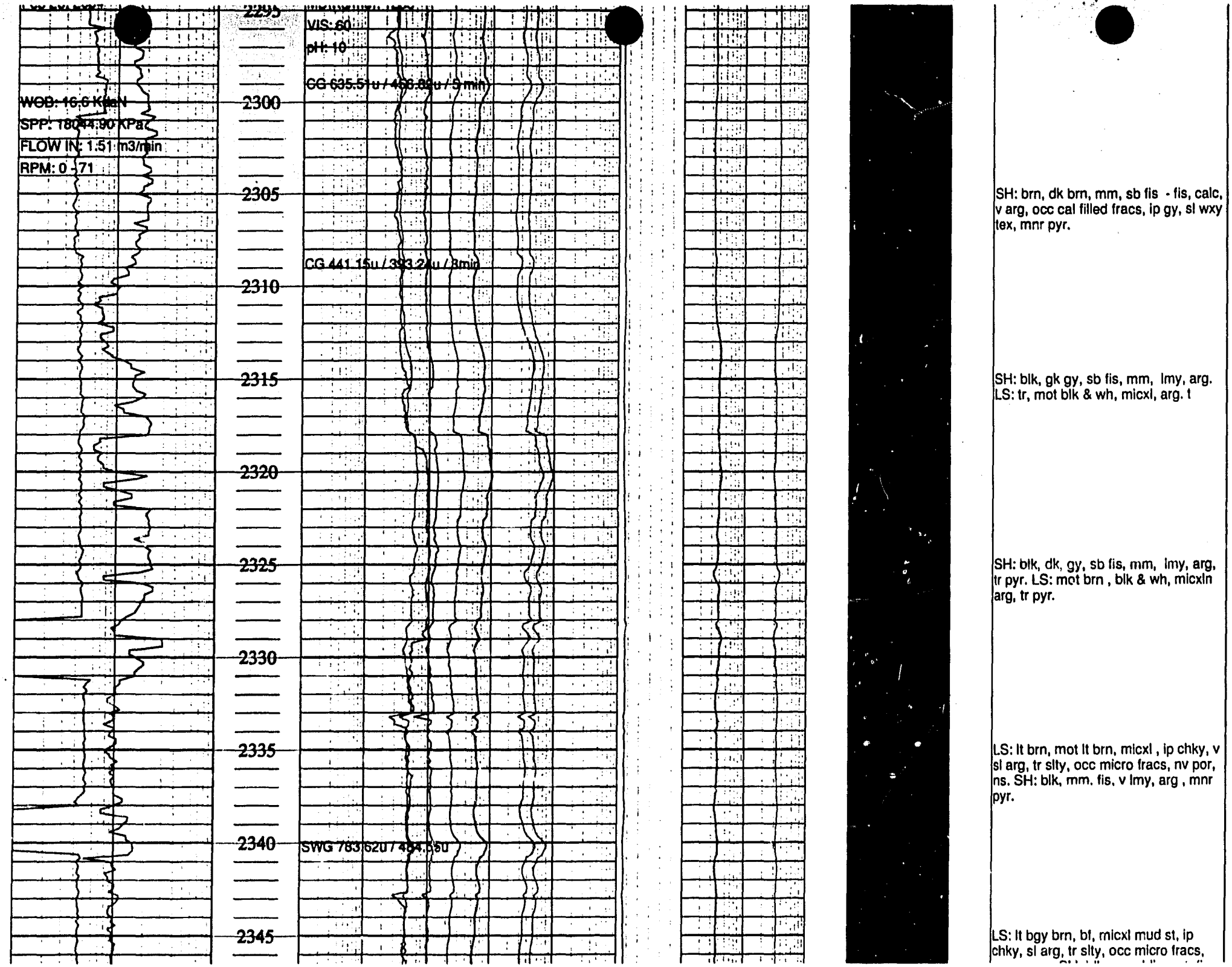


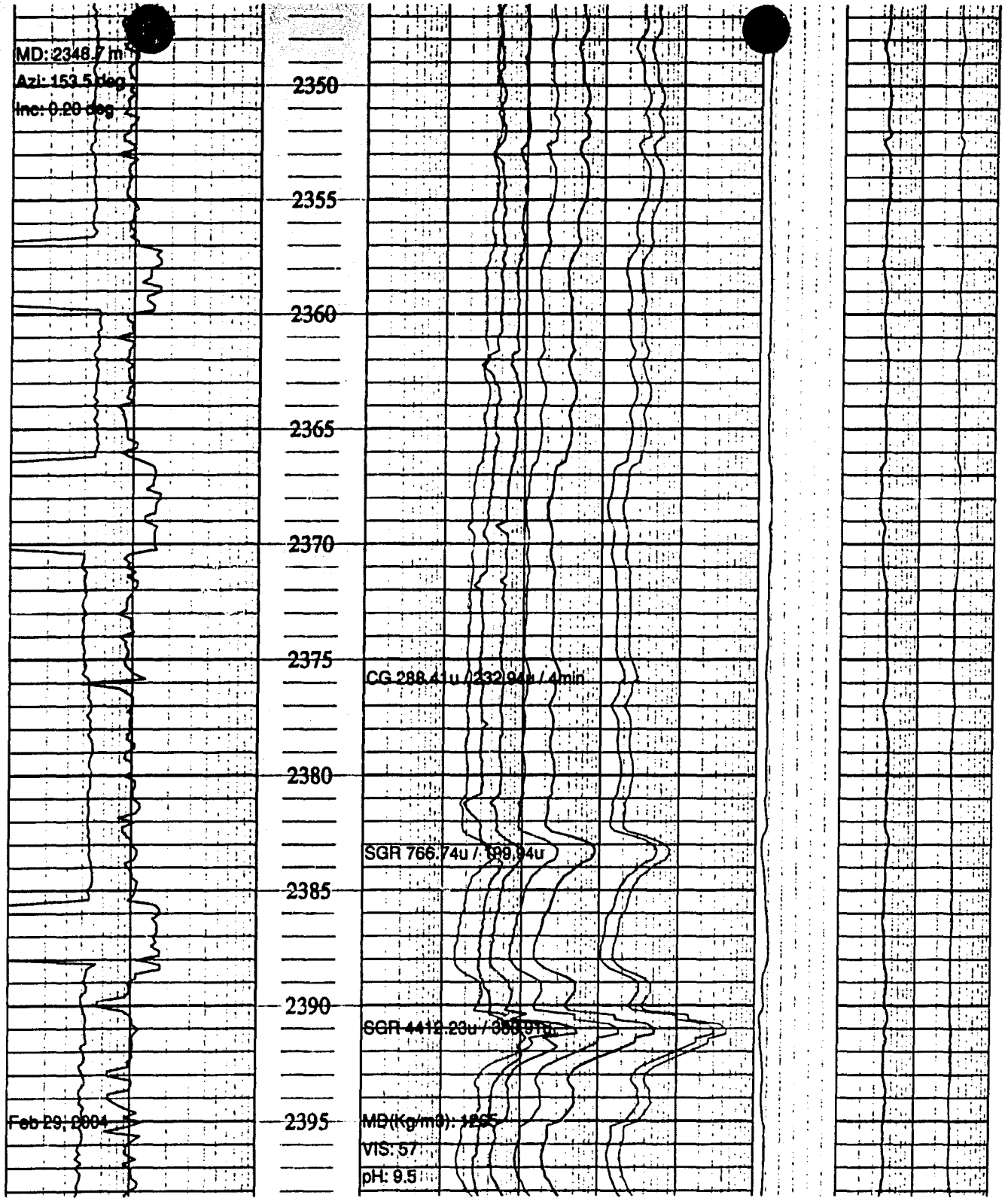


SH: dk brn, dk gy brn, mm, sb fis - fis. sl calc, arg, occ carb, tr cal filled fracs, rr pyr, fnt, pael bl C.

SH: dk brn, dk gy brn, mm, sub fis - fis, sl calc, arg, occ carb, tr cal filled fracs , rr pyr, fnt, pale bl C.

SH: brn, dk brn, mm, sb ..
v arg, tr carb, occ cal filled fra..
gy, sl wxy tex, mnr pyr.


VIS: 60
pH: 10
CG 635.51u / 466.88u / 9 min
WOB: 16.6 KiloN
SPP: 18044.90 KPa
FLOW IN: 1.51 m3/min
RPM: 0 - 71
2300
2305
CG 441.15u / 393.24u / 8min
2310
2315
2320
2325
2330
2335
2340
SWG 783.62u / 464.65u
2345
SH: brn, dk brn, mm, sb fis - fis, calc, v arg, occ cal filled fracs, ip gy, sl wxy tex, mnr pyr.
SH: blk, gk gy, sb fis, mm, lmy, arg. LS: tr, mot blk & wh, micxl, arg. t
SH: blk, dk, gy, sb fis, mm, lmy, arg, tr pyr. LS: mot brn , blk & wh, micxln arg, tr pyr.
LS: lt brn, mot lt brn, micxl , ip chky, v sl arg, tr slty, occ micro fracs, nv por, ns. SH: blk, mm, fis, v lmy, arg , mnr pyr.
LS: lt bgy brn, bf, micxl mud st, ip chky, sl arg, tr slty, occ micro fracs,





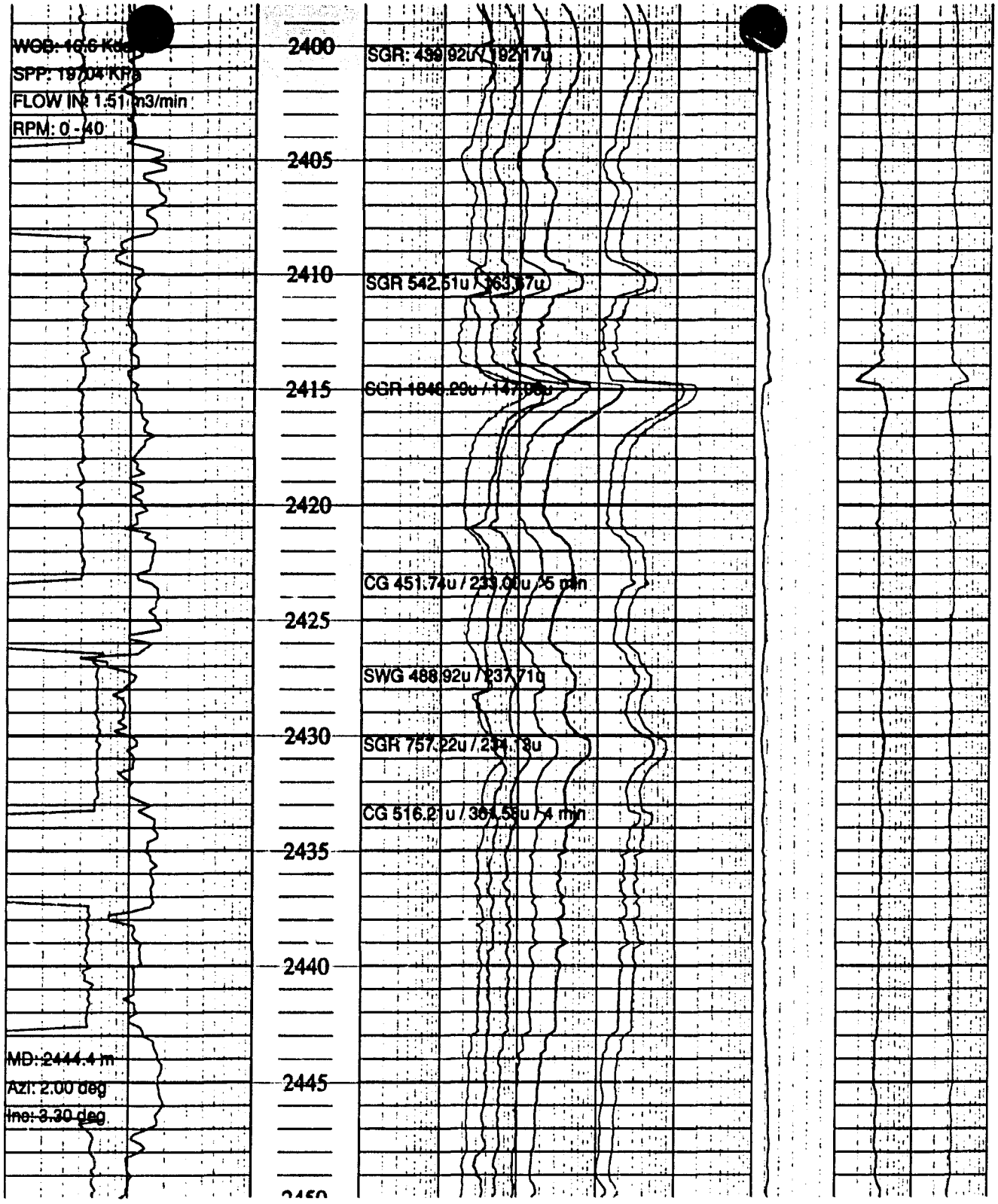
nv por, ns. SH: bl m, blky - sb fis, sl arg, lsp calc, .

LS: lt gy brn, bf, micxl muds t, ip chky, sl arg, occ micro fracs, nv por, ns. SH: tr, blk, mm, blky - sb fis, sl arg, lsp calc, occ pyr.

SH: blk, mm, blky - sb fis, lsp calc, mnr pyr, occ cal filled micro fracs. LS: lt gy brn, bf, micxl mudst, ip chk y, sl arg, occ micro fracs, tr slty, nv por, ns.

LS: lt brn, dk brn, micxl mud st, ip chky, tr slty, arg, nv por, ns. SH: blk, mm, blky - sb fis, sl arg, lsp calc, mnr pyr.

LS: lt brn, lt gy brn, mnr dk brn, micxl, ip chky, type I/ II, tr slty, arg, occ sparry cal, indications of fracs wi tr pyrbit, nv por. SH: tr, blk, mm, blky - sb fis, sl LS: bf, brn, dk brn, micxl, lp chky, sl slty, arg, occ fracs, sparry cal, type I/II nv por, ns. SH: tr, blk, mm, blky - sb fis, sl arg, lsp calc, mnr pyr.

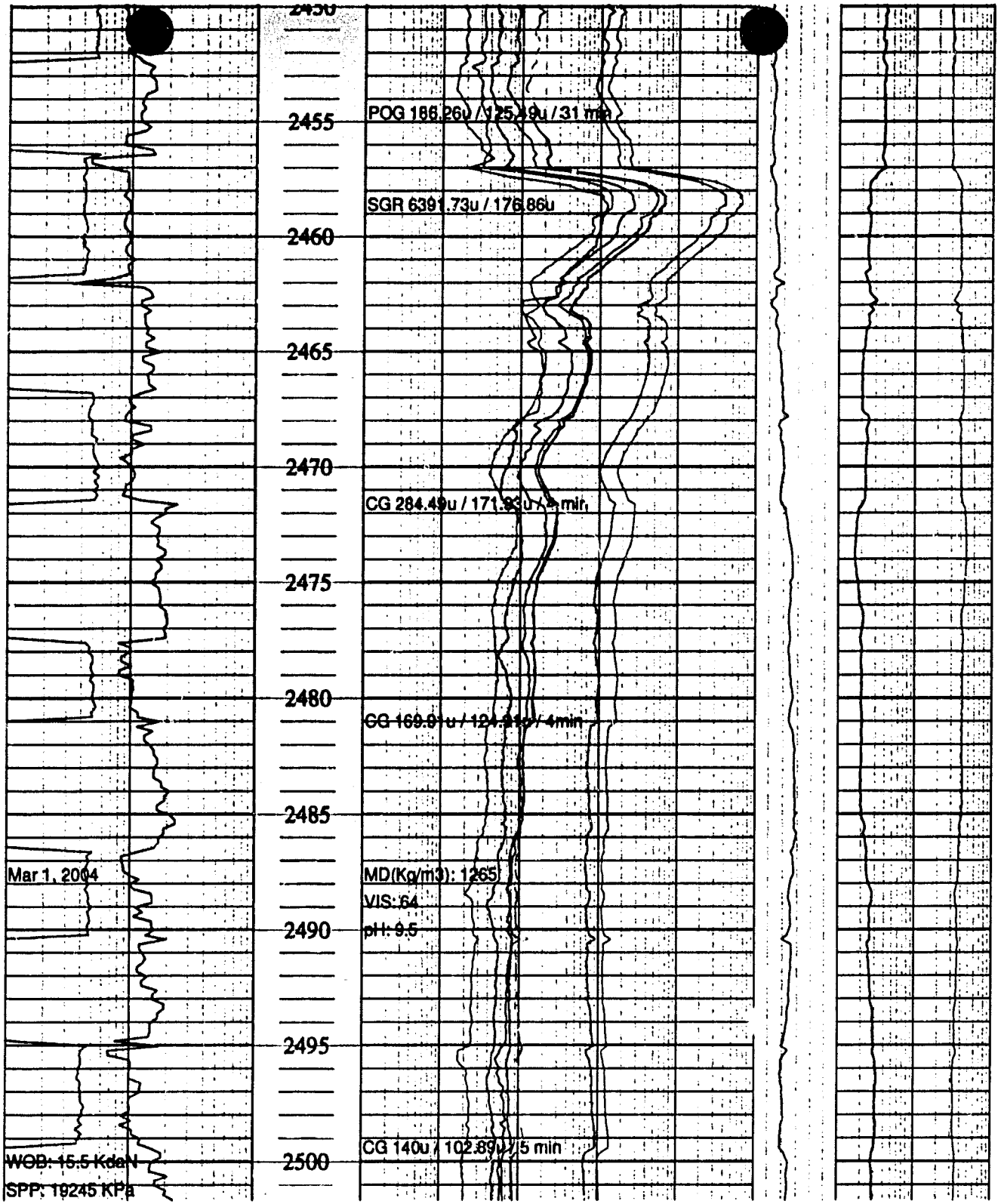


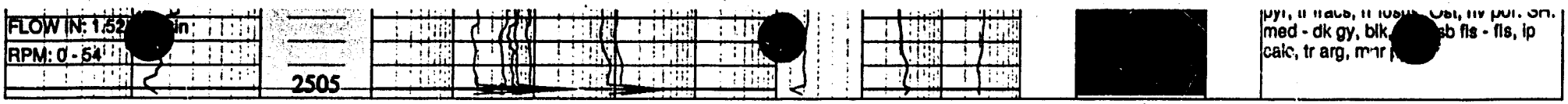
LS: bf, brn, dk brn, bicxl, lp chky, arg, occ pyr, type 1/11, nv por, ns. SH: tr, blk, mm, blky - sb fls, sl arg, isp calc, mnr pyr.

LS: bf, brn, dk brn, micxl, lp chky, arg, occ pyr, lsp slty, type 1/11, nv por, ns. SH: tr, blk, mm, blky - sb fls, sl arg, isp calc, mnr pyr.

LS: bf, brn, dk brn, micxl, lp chky, type 1/11, isp slty , sl arg, rr Ost, indst fos fracs, nv por. SH: blk, mm, blky - sb fls, sl arg, isp calc, mnr pyr.

LS: bf, brn, dk brn, micxl, lp chky, type 1/11, isp slty , sl arg, nv por. SH: blk, mm, blky - sb fls, sl arg, isp calc, mnr pyr.


2455
2460
2465
2470
2475
2480
2485
2490
2495
2500
POG 186.26u / 125.29u / 31 min
SGR 6391.73u / 176.86u
CG 284.49u / 171.93u / 4 min
CG 169.0 u / 124.91u / 4min
MD(Kg/m3): 1265
VIS: 64
pH: 9.5
CG 140u / 102.89u / 5 min
Mar 1, 2004
WOB: 15.5 KdaN
SPP: 19245 KPa


FLOW IN: 1,52
in
RPM: 0 - 54
2505
pyr, tr traces, fr fossil, Calc, friv por: SH:
med - dk gy, blk
eb fis - fis, ip
calc, tr arg, micr

Northrock et al Summit Creek B44-ST2

Operator:	Northrock Resources Ltd.
Well:	Northrock et al Summit Creek B44-ST2
Location:	B-44-64-30-125-45
Country:	Canada
UWI D:	300B446430125450
Elevation GL:	580.50
KB:	586.00
Drilling Rig:	Akita # 40
Spud Date:	16/01/2004
Print Date:	24/03/2004
Scale:	1:240

Personnel:

Jose Luis Caceres
Eyal Greenfeld
Zander Cherny

HoleData:

444.5 mm Surface Hole to 208 m MD
311 mm 1st Intermediate Hole to 810 m MD
216 mm 2nd Intermediate Hole to 2450 m MD

Notes:

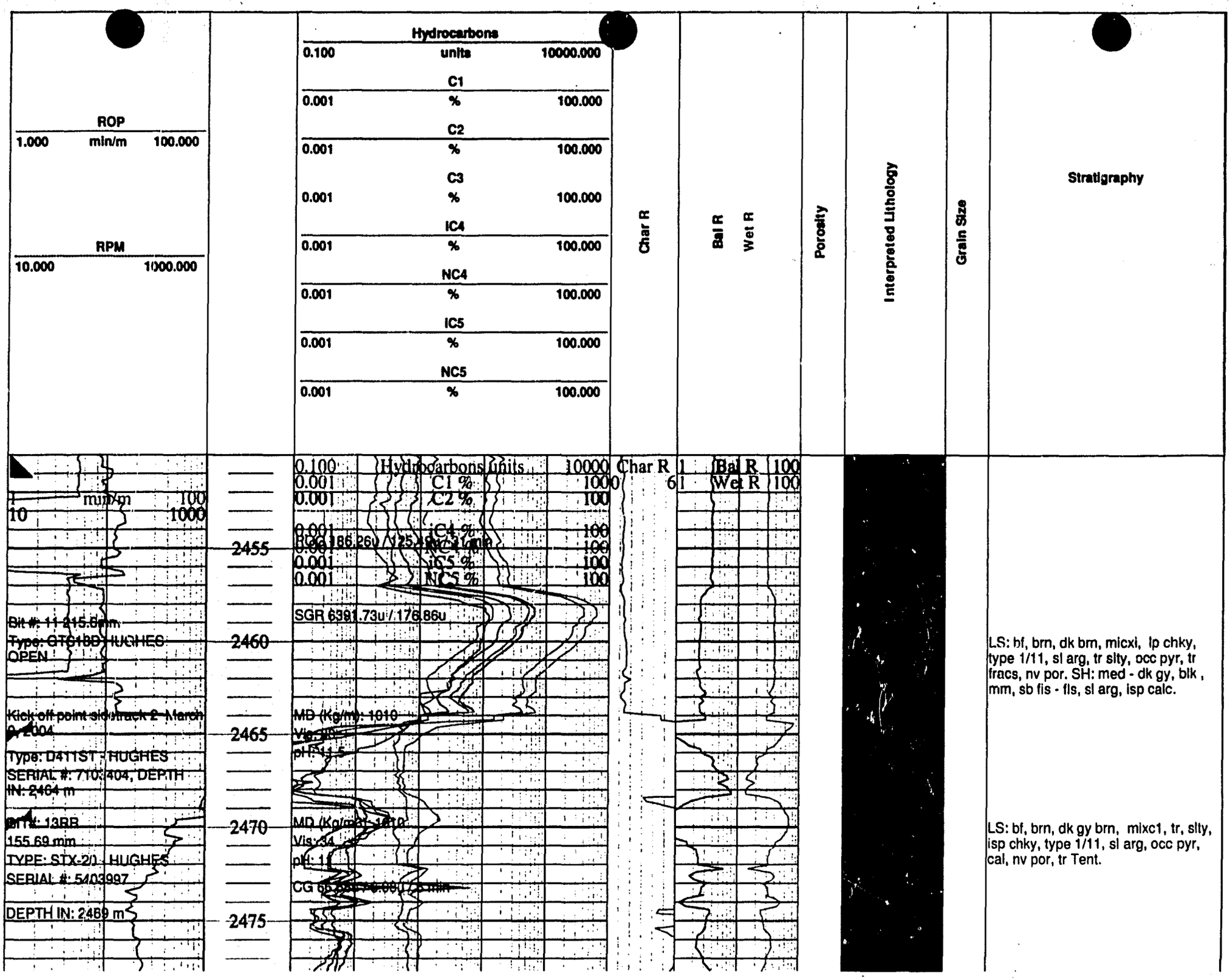
Sidetrack 2 was kicked off from 2464 m MD to TD at 3064m MD on March 8, 2004.

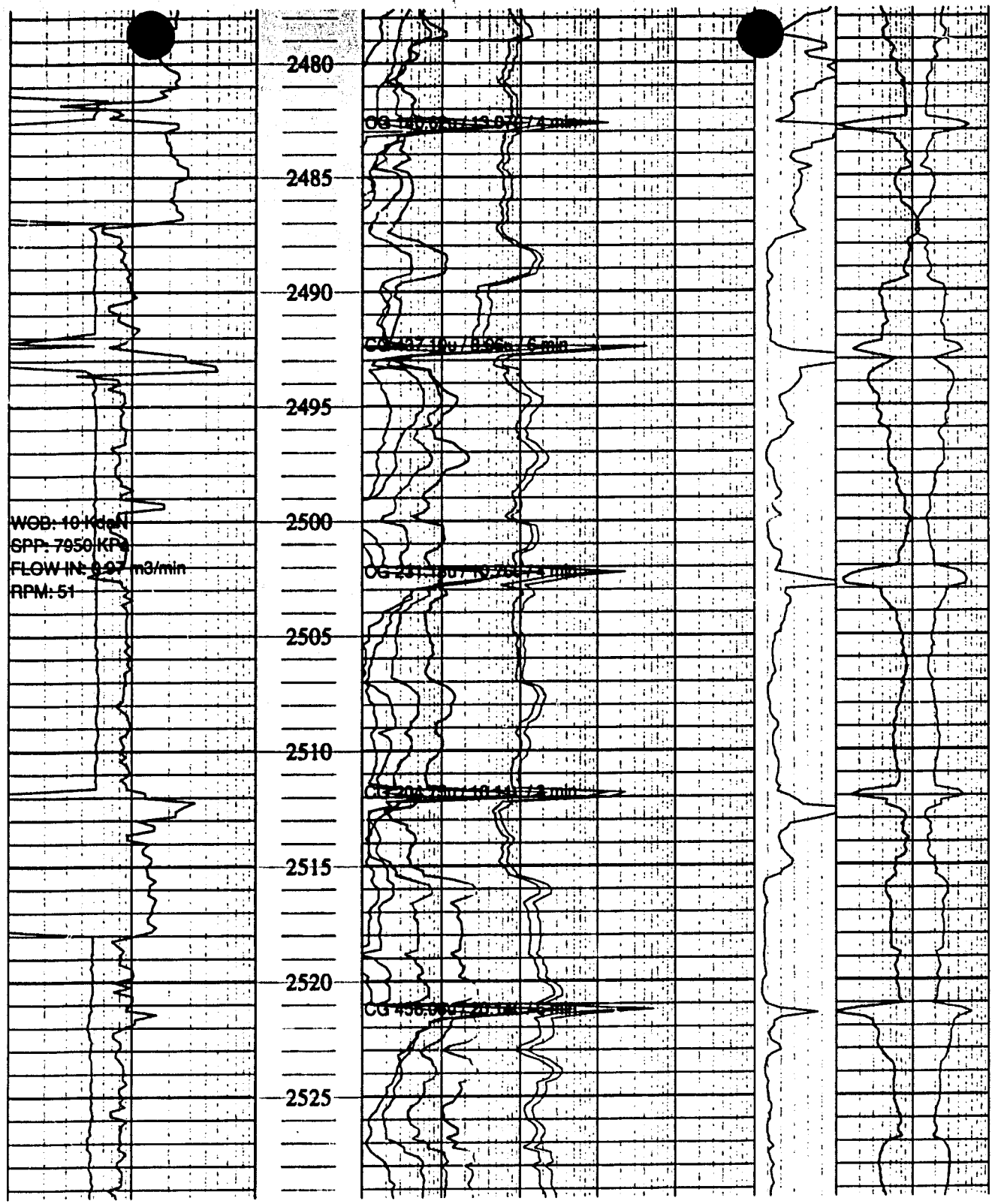
CasingData:

Surfing Casing: 340 mm @ 203 m MD
Intermediate #1: 244.5 mm @ 810 m MD
Intermediate #2: 177.8 mm @ 2450 m MD

Lithology

- Not Available
- Sandstone
- Siltstone
- Shale
- Chert
- Conglomerate
- Limestone
- Dolomite
- Anhydrite
- Gypsum
- Marlstone
- Salt
- Coal
- Metamorphic
- Granite
- Breccia
- Tuff
- Claystone
- Serpentinite
- Diabase
- Basalt
- Pillow Lava
- Leuco Granite
- Biotite Granite
- K Feldspar
- Cataclased
- Intrusive
- Extrusive
- Altered Low
- Altered Medium
- Altered High
- Clyst Green Gray
- Clyst Pale Green
- Clyst Grey
- Clyst Violet
- Clyst Yellow
- Clyst Brown
- Basalt Low
- Basalt Medium
- Basalt High
- Shale 2
- Siltstone 2


ROP
1.000 min/m 100.000
RPM
10.000 1000.000
Hydrocarbons
0.100 units 10000.000
C1
0.001 % 100.000
C2
0.001 % 100.000
C3
0.001 % 100.000
IC4
0.001 % 100.000
NC4
0.001 % 100.000
IC5
0.001 % 100.000
NC5
0.001 % 100.000
Char R
Bal R
Wet R
Porosity
Interpreted Lithology
Grain Size
Stratigraphy
0.100 Hydrocarbons units 10000
0.001 C1 % 1000
0.001 C2 % 100
0.001 iC4 % 100
0.001 nC4 % 100
0.001 iC5 % 100
0.001 nC5 % 100
Char R 1 6
Bal R 100
Wet R 100
1 min/m 100
10 1000
2455
2460
2465
2470
2475
SGR 6391.73u / 176.86u
Bit #: 11 215.9mm
Type: GTC18D HUGHES
OPEN
Kick off point sidetrack 2 March 9, 2004
Type: D411ST - HUGHES
SERIAL #: 710 404, DEPTH IN: 2464 m
Bit #: 13RR
155.69 mm
TYPE: STX-20 - HUGHES
SERIAL #: 5403997
DEPTH IN: 2469 m
MD (Kg/m3): 1010
Vis: 38
pH: 11.5
MD (Kg/m3): 1010
Vis: 34
pH: 11
LS: bf, brn, dk brn, micxl, lp chky, type 1/11, sl arg, tr slty, occ pyr, tr fracs, nv por. SH: med - dk gy, blk , mm, sb fis - fls, sl arg, isp calc.
LS: bf, brn, dk gy brn, mixc1, tr, slty, isp chky, type 1/11, sl arg, occ pyr, cal, nv por, tr Tent.



LS: bf, brn, dk gy brn, micx1, tr silty, isp chky, type 1/11, sl arg, ip pyrc, abun cal, tr fracs, nv por.

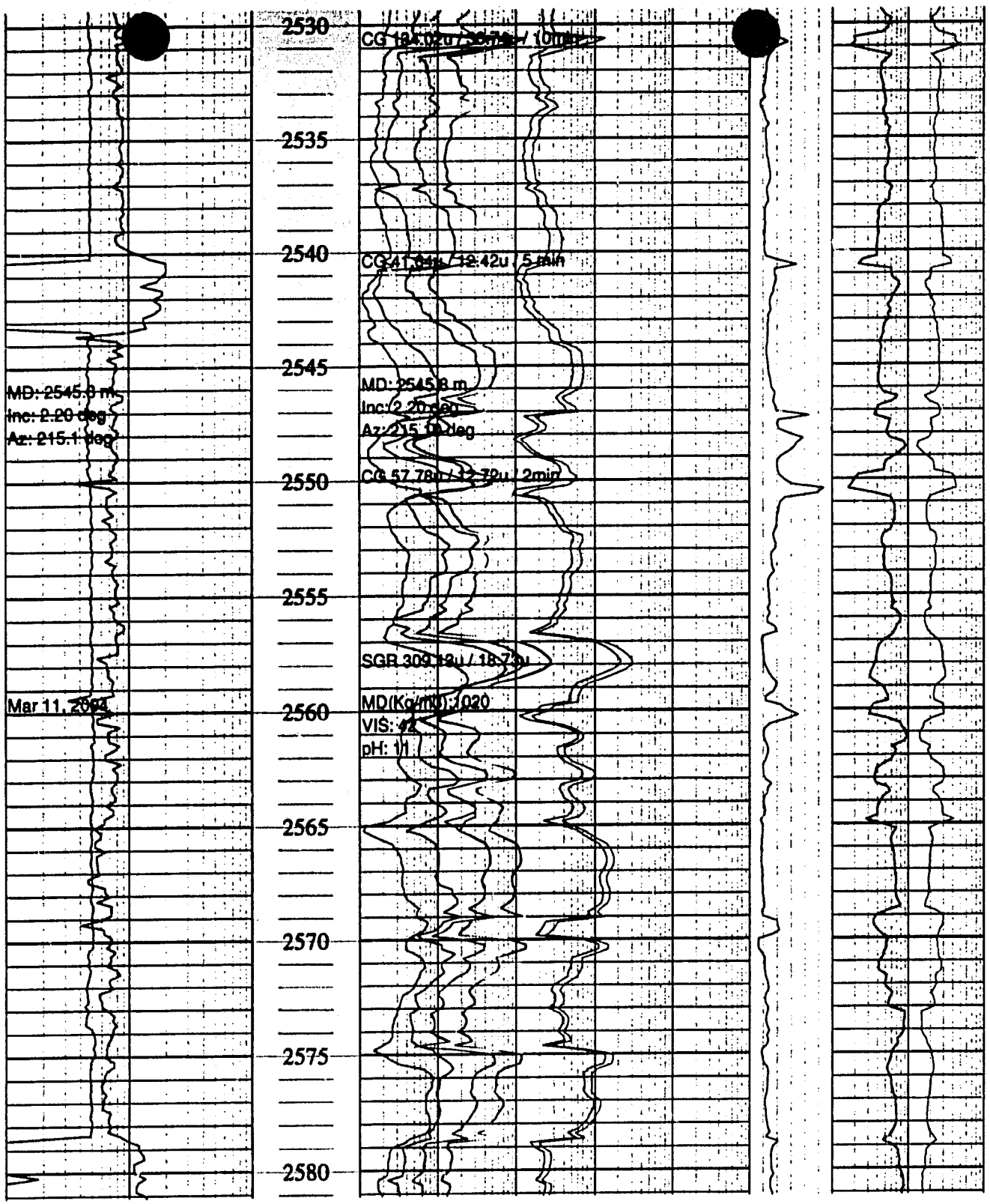
LS: dk gy bbrn, mot brn, bf, micxin tr slty, ip arg, pyrc , abun cal, tr fracs, nv por . SH: med - dk gy, mm, sb fls, calc, ls arg.

LS: dk gy brn, bf, mot brn, micxi, tr chky, type 1/11, tr slty, ip arg, occ pyrc, tr fracs, mnr cal, rr Ost, nv por. SH: med - dk gy, mm, sb fls, calc, sl arg.

LS: brn, dk gy brn, bf, micxi, tr chky, type 1/11, tr slty, ip arg, occ pyrc, tr fracs, mnr cal, nv por, SH: med - dk gy, mm, sb fls, calc, sl arg.

LS: dk gy brn, mnr bf, micxi, arg, tr, slty, ip pyrc, mnr cal, nv por. SH dk gy, blk, mm, sb fls, arg, lmy.

LS: lt gy brn, bf, dk brn, micxi, ip arg, tr slty, mnr pyrc, occ calc, nv por. SH: dk gy, blk, mm, sb fls, arg lmy.





LS: v lt - dk gy brn, micxi, mnr mict, arg, isp slty, occ cal, tr pyrc, nv por. SH: dk gy, blk, mm, sb fls, arg, lmy.

LS: lt gy, gy brn, dk gy brn , micxi, tr mict, arg, rr slty, rr fosus, nv por. SH: dk gy, blk, mm, sb fls, arg, lmy.

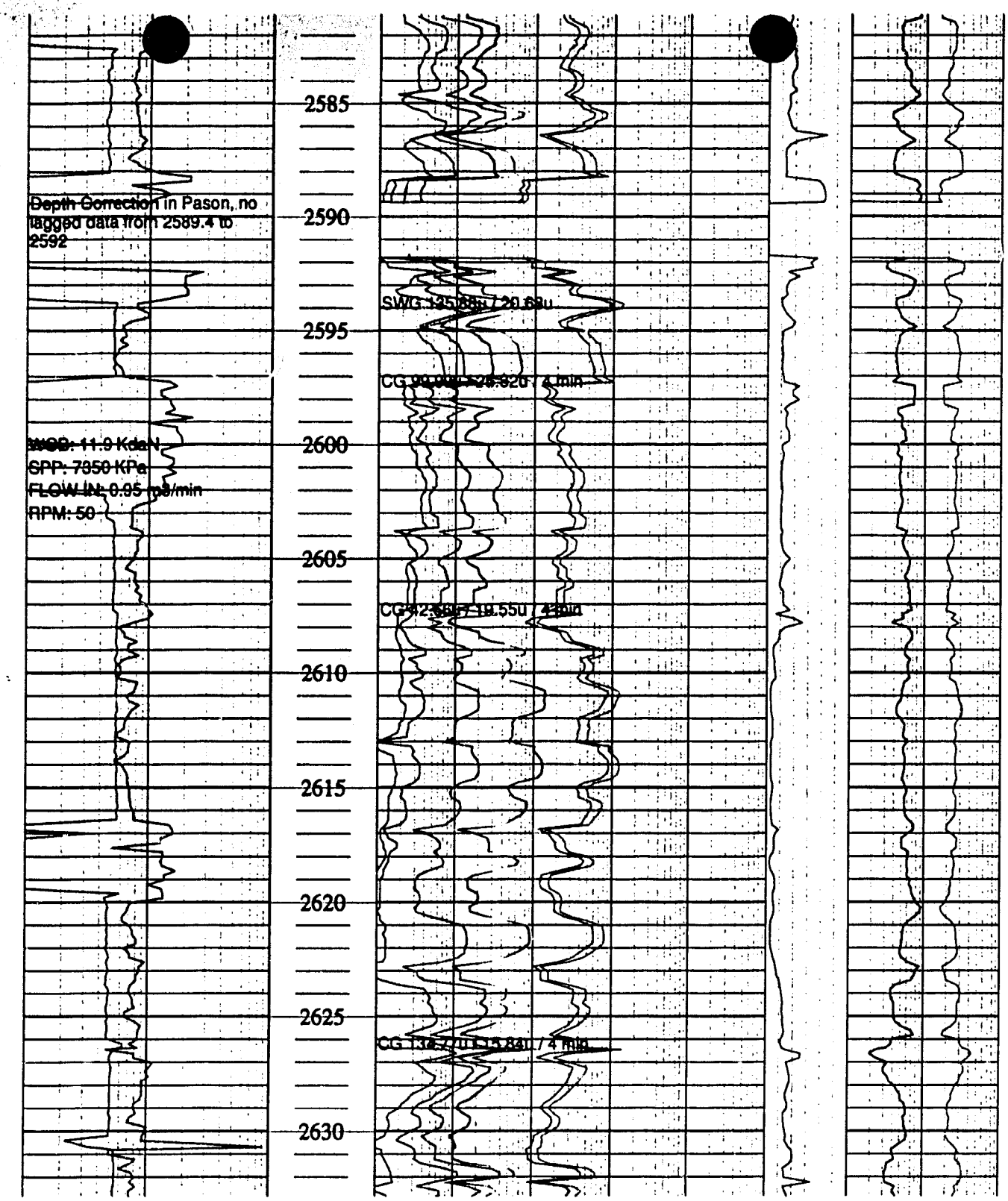
LS: bf, mot brn, mnr dk gy brn, micxi, ip mict, ip mict , chky, arg, occ cal, rr pyrc, nv por.

LS: bf, mot brn - dk brn, micxi - vf xl, ip mict, arg, sl chky, isp pelloidal, nv por.

LS: bf, dk gy, brn, mixci - mnr vf xl, arg, isp mict, tr fosus, tr pyrc, nv por. SH: tr, blk, mm, sb fls, arg, v lmy.

LS: dk brn, bf, mnr gy brn, micxi - tr vf xl, tr mict, isp mudst, sl arg, tr pyrc, nv por, SH: blk, mm, sb fls, arg, lmy.

LS: bf, mot brn, dk brn, micxi, ip mict, sl arg, isp pelloidal, occ cal, nv por. SH: blk, mm, sb fls, arg, lmy, tr fracs.



LS: dk gy brn, bf, brn, micxi - tr vf xl, isp mict, arg, tr pyrc, occ cal, tr fracs, nv por. SH: blk, mm, sb fls, arg, lmy, tr fracs.

LS: dk brn, mnr bf, micxi, isp mict, tr fosus, Ost, arg occ cal, nv por. SH: blk, mm sb fls, arg, lmy.

LS: dk gy brn, mnr bf, micxi , arg, isp mict, thin fosus layer with Ost, occ cal wl pos sksd, pos fracs, nv por. SH: blk, mm, sb fls, arg, lmy.

LS: dk gy brn, bf micxi, arg , tr mict, cal, nv por. SH: blk, mm, sb fls, arg, lmy.

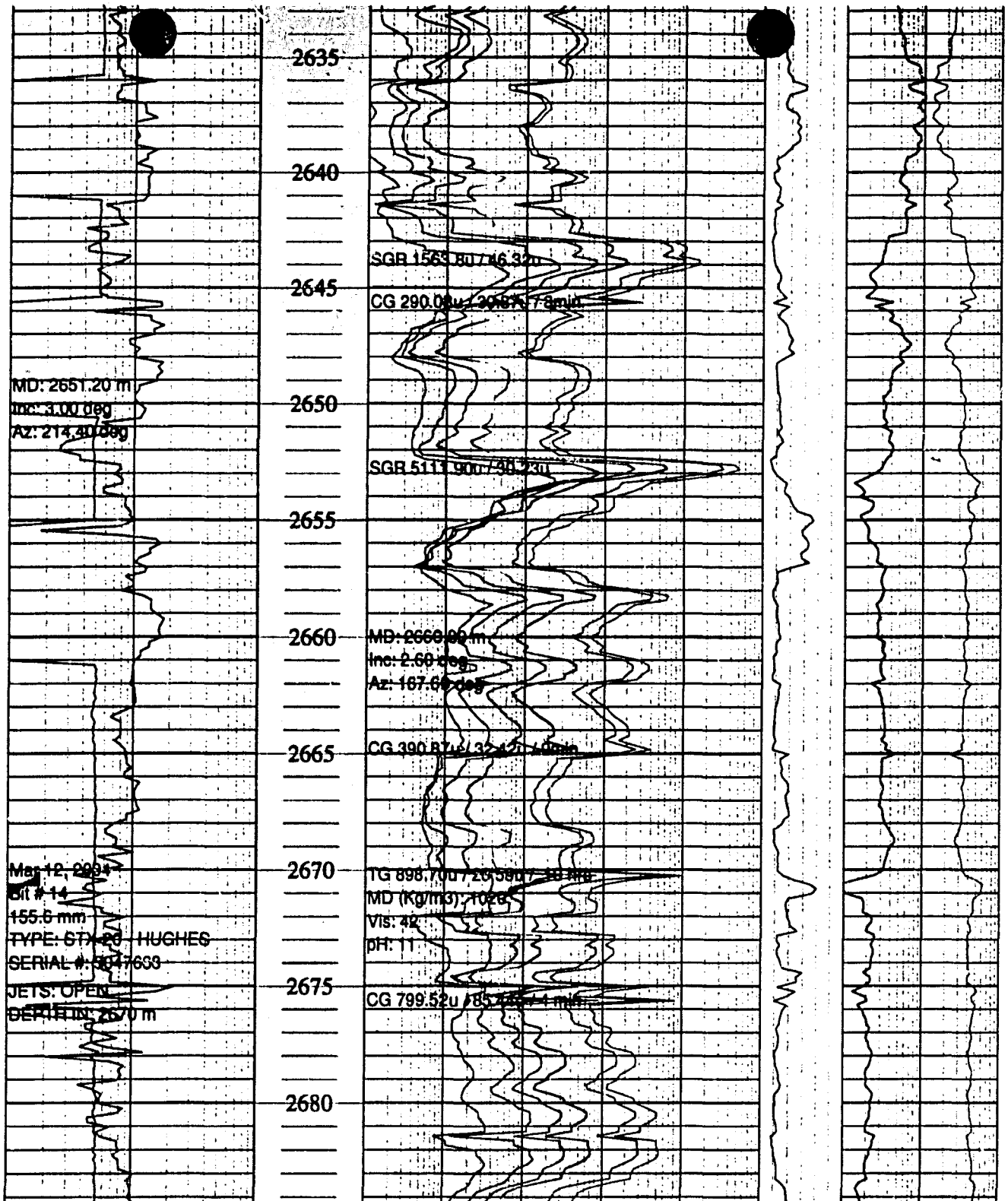
LS: dk gy brn, bf, micxi, arg, tr mict, cal, nv por. SH: blk, mm, sb fls, arg, lmy.
NO SAMPLE

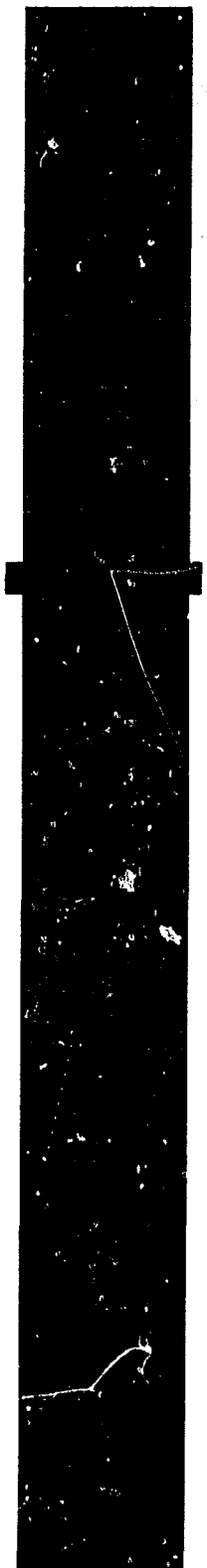
LS: dk gy brn, bf, micxi, arg, tr mict, cal, nv por. SH: blk, mm, sb fls, arg, lmy.

LS: dk gy brn, bf, mot lt brn, micxi - tr vf xl, arg, tr fosus, Ost, mnr pyr, isp lt gy brn mudst, nv por. SH: blk, mm, sb fls, arg, lmy.

LS: bf, lt brn, mnr dk brn, micxi, isp mict, sl arg, tr cal, nv por.

LS: bf, brn, mnr dk brn, micxi, ip mict,





sl arg, tr chky, nv SH: tr, blk, mm, sb fls, arg, lmy.

LS: bf, brn, crpxl - micxi, mnr vf xl, tr arg, isp dolc, occ cal, nv por. DOL: tr, lt gy, micxi, dns, tt.

LS: lt brn, bf, crpxl - micxi , dns, tr dolc, tt. DOL: bf, ow, micxi - vf xl, isp chky, nv por, occ cal, tr pyrbit, pos fracs, minaeral flor, no C.

DOL: lt brn, xf - vf xl, suc tex, tt - 3% pp, intxl por, wk slow, pale bl C. LS: lt - med gy brn, dk brn, mnr bf, crpxl - micxl, sl arg, dns, isp mict, tt.

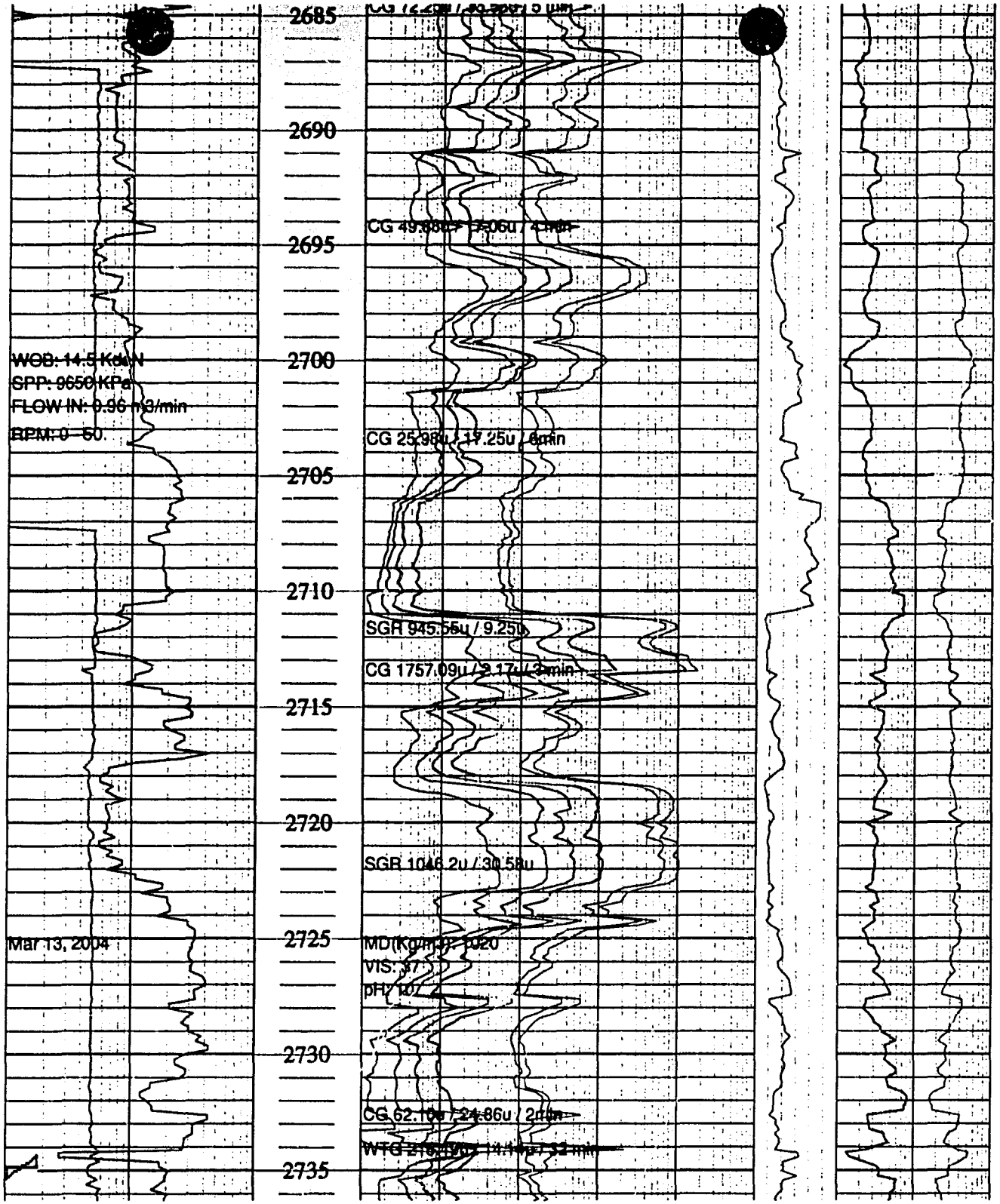
DOL: lt brn, bf, micxi - xf xl, suc tex, tr lmy, tt - tr pp, intxl por. LS: brn, dk brn, crpxl - micxi, tt.

DOL: ly ntn, ntn, micxi, tr xf xl wl suc tex, tr lmy, sl anhyc, nv, por. LS: dk brn, lt gy brn, crpxl - micxi, arg, dns.

LS: dk brn, lt gy brn, crpxl - micxi, arg, dns, tt. DOL: lt brn, bf, micxl, tr lmy, occ cal, sl anhyc, tt.

LS: dk brn, lt gy brn, crpxl - nicxl, tr lmy, occ cal, sl anhyc, tt.

DOL: bf, lt brn - brn, micxl- vf xl, tr lmy, anhy, rr drsy dol, tr cal, wk, pale yel floe, no C, tt-tr pp por. DOL: bf, br, micxl, tr xf xl, sl lmy, tr anhyc, scat wh cal , tr fracs, tt, ns. LS: dk brn, bf, brn, micxl, tr dolc, dns, ip sl chky tex, tt.





DOL: lt brn, micxl, dns, isp lmy, occ anhy filled fracs, t al, tt, ns. LS: tr, dk brn, micxl, tt. ANHY: wh, gy, micxl.

DOL: bf, brn, micxl-vf xl, tr lmy, abhyc, scat pp por plugged wi pyrbit. LS: dk brn , micxl, tt. ANHY: wh, gy.

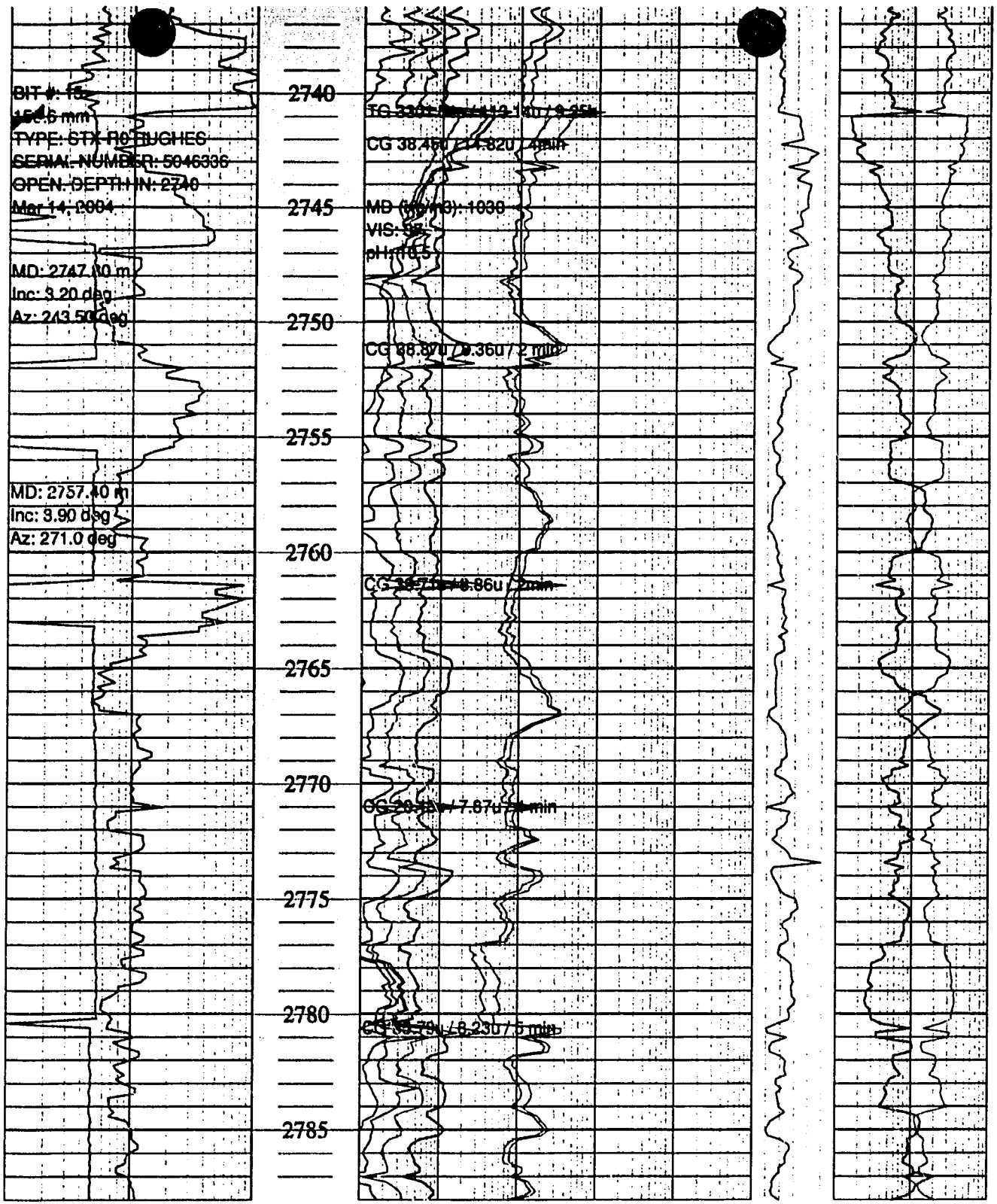
DOL: b, brn, micxl, dns, anhyc, tt. LS: dk brn, micxl, dns, tr dolc, tt. ANHY: wh-lt gy, clr, lt brn, micxl.

DOL.: lt brn, xf-mn vf xxl, sl anhyc, scat pp, intxl por, tt -3%, fnt yel gn flor, no C. ANHY: wh-lt gy, clr, lt brn, DOL: lt brn, brn, vf-occ f xl , sl anhyc, scat pp intxl por , tt-3%, fnt yel gn flor, no C. ANHY: wh - lt gy, clr, lt brn, micxl.

DOL: lt brn, brn, micxl - vf xl, anhyc, t pp po, tt - tr. ANHY: wh - gy, clr, micxl.

DOL: lt brn, brn, micxl - vf xl, anhyc, abun cal, nv por, ns. ANHY: wh - gy, clr, lt brn, micxl.

DOL: lt brn, bf, brn, micxl, isp vf xl, tr





lmy, dns, occ cal ... S: dk brn, crpxl - micxl, dns, arg ... HY: wh - gy, clr, bf, micxl.

DOL: lt brn, brn, vf-occ f xl, dns, anhyc, tr lmy, occ fracs wi cal, tt. ANHY: wh - gy, lt br, mixcl, sft.

DOL: lt brn, brn, vf xl, dns anhyc, tr lmy, tt, ns. ANHY: wh - gy, bf, lt brn, micxl, sft.

DOL: brn, lt brn, micxl - xl , anhyc, dns, tr lmy, abun cal, tr fracs, tt, ns. ANHY: wh - gy, bf, lt brn, mixcl, sft.

DOL: lt brn, micxl, tr vf xl , dns, anhyc, tr lmy, tt, ns . ANHY: wh - gy, bf, lt brn, micxl, sft.

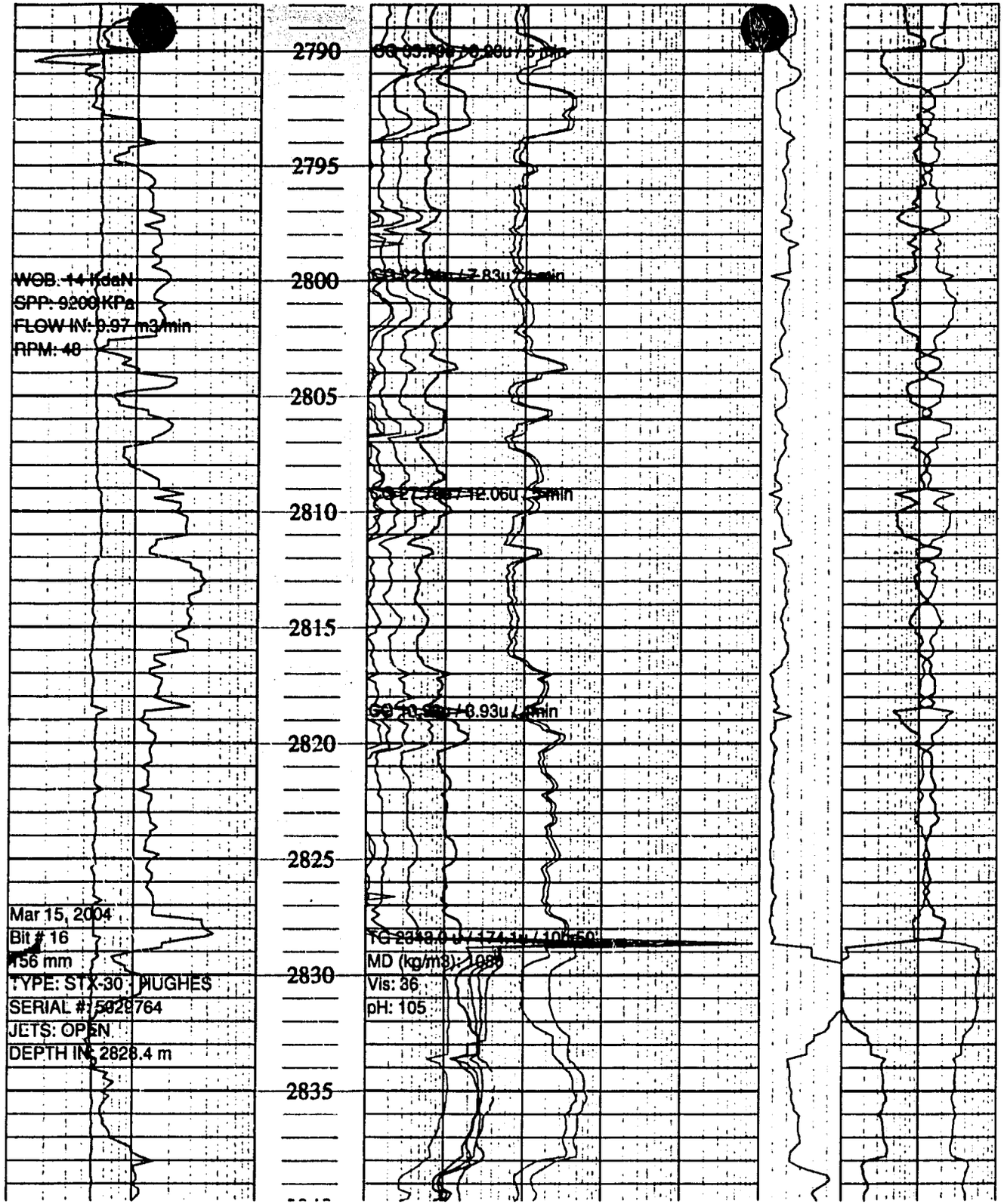
DOL: lt brn, bf, dk brn, micxl, dns, anhyc, tt, ns. ANHY: wh - gy, lt brn, sft.

DOL: lt brn, dk brn, brn, micxl, mnr vf xl, tr lmy, dns, anhyc, tt, ns. ANHY: wh - gy, lt brn, sft.

DOL: bf, lt - dk brn, micxl, dns, anhyc, tt, ns. ANHY: wh - gy. lt brn, micxl, sft.

DOL: lt brn, dk brn, micxl, dns, anhyc, tt. ANHY: wh - gy, bf, brn, micxl.

DOL: lt - dk brn, micxl, dns ip anhyc, tt. ANHY: wh - lt gy, lt brn, clr, micxl.



DOL: lt brn - dk brn, micxl - vf xl, dns, ip anhyc, occ cal, tr fracs, tt - tr pp por. ANHY: wh - gy, lt brn, clr.

DOL: lt - dk brn, micxl, anhyc, dns, tt, ns. ANHY: wh - gy, lt brn, clr, micxl.

DOL: lt - dk brn, micxl - vf xl, dns, anhyc, tr cal, sp pp por. ANHY: wh - gy, lt brn, clr, micxl.

DOL: lt dk brn, micxl - vf xl, dns, anhyc, tr cal, sp pp por. ANHY: wh - gy, lt brn, clr, micxl.

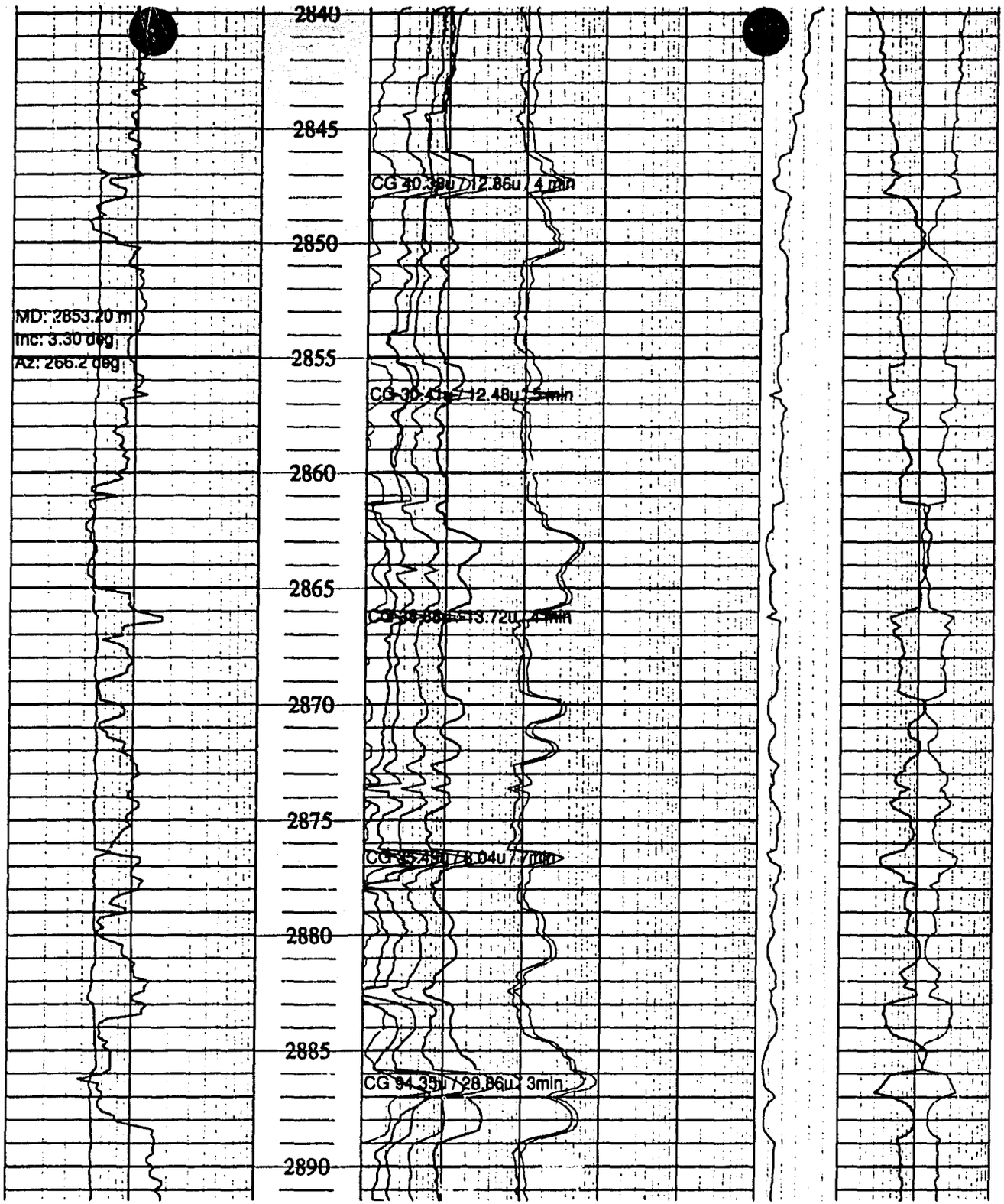
DOL: lt - dk brn, micxl, anhyc, dns, isp vf xl, wi tr pp por. ANHY: wh - gy, lt brn, clr, micxl.

DOL: lt br, brn, micxl, sl anhyc, tr fracs, cal, tt. ANHY: tr, wh - gy, lt brn, micxl.

DOL: lt br, brn, micxl - occ vf xl, abun cal, tr fracs, tr pp por, ns. ANHY: tr, wh - gy, lt brn, micxl.

DOL: lt brn - brn, micxl - occ vf xl, sl anhyc, abun cal, fracs, tr pp por. ANHY: wh - gy, lt brn, micxl.

DOL: lt brn, brn, micxl-vf xl,





DOL: lt-dk brn, mi anhyc, dns, tt, ns. ANHY: wh, t n, micxl.

DOL: lt-dk brn, micxl, mnr vf xl anhyc, dns, tt, ns. ANY:wh , bf, lt brn, micxl.

DOL: lt-dk brn, micxl. anhyc dns, tt. ANHY: wh, bf, lt brn , micxl.

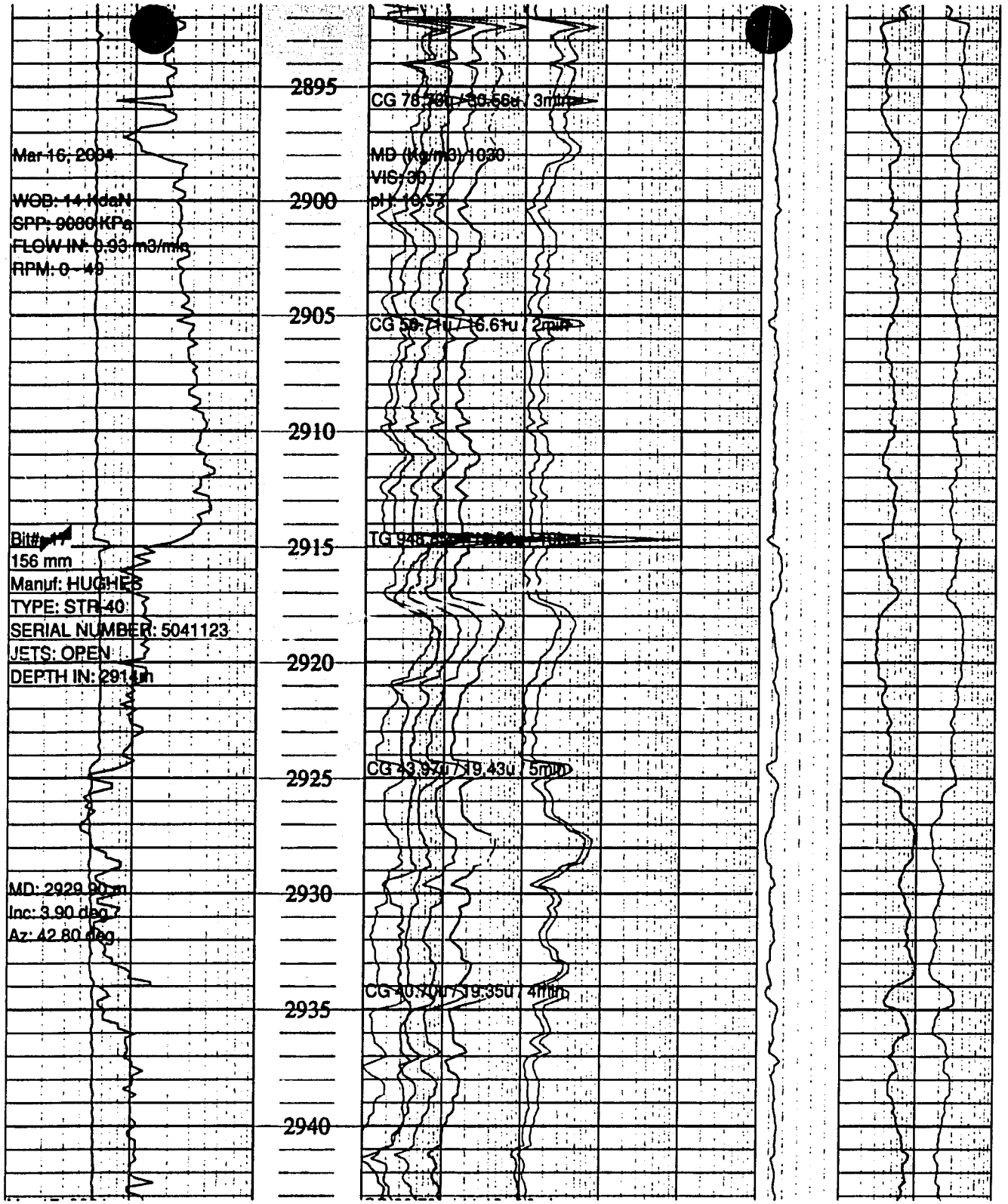
DOL: bf, lt brn, dk brn, crpxl-micxl, dns, ip anhyc, occ fracs, cal, tt. ANHY: wh, bf, lt brn, micxl.

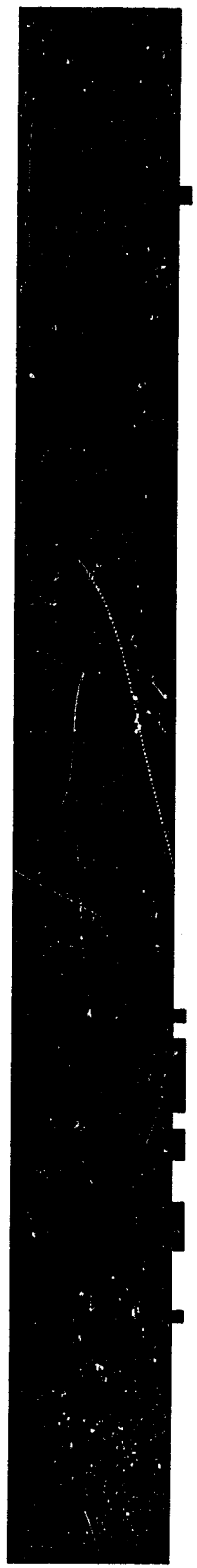
DOL: bf, lt brn, dk brn, crpxl-micxl, dns, ip anhyc, occ fracs, cal, tt. ANHY: wh, bf, lt brn, micxl. SH: blk, mm, sb fis-fis, calc, arg strgs.

DOL: lt-dk brn, micxl, dns, anhyc, tt. ANHY: wh, lt brn, gy, micxl.

DOL: lt brn, brn, vf xl, dns, ip anhyc, occ cal, fracs, scat pp por, occ pyrbit. ANHY: wh, lt brn, gy, micxl.

DOL: lt brn, brn, micxl, dns, anhyc, tt. LS: dk gy, dk brn, micxl, dns, tt. SH:





blk, mm, sb fis-fis, arg. ANHY: wh, lt brn-brn, m

DOL: brn, dk brn, micxl-mnr vf xl, dns, anhyc, tt-tr pp por. ANHY: wh, lt brn-brn, micxl.

DOL: dk brn, lt brn, micxl, mnr vf xl, dns, anhyc, tt. ANHY: wh, lt brn-brn, micxl.

DOL: dk brn, lt brn, micxl, mnr vf xl, dns, anhyc, tt. LS: dk gy, dk brn, micxl, dns , tt. ANHY: wh, lt brn-brn, micxl. SH: blk, mm, sb fis- fis, arg, calc.

DOL: dk brn, mnr lt brn, micxl, dns, anhyc, tt. LS: dk gy, dk brn, micxl, dns, tt. ANHY: wh, lt brn-brn, micxl.

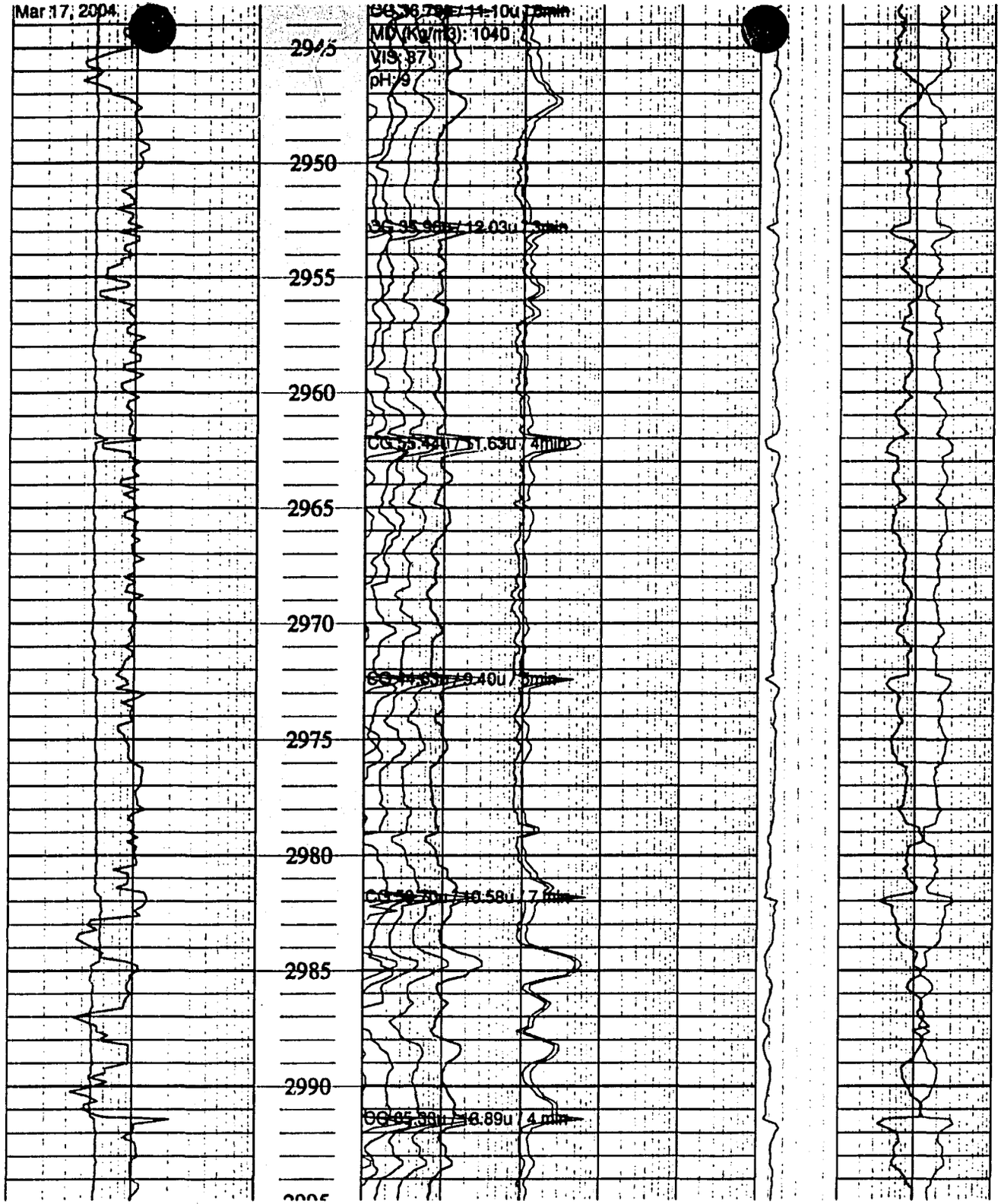
DOL: brn-dk brn, micxl, dns, anhyc, tt. LS: dk brn, micxl, dns, tr arg, tt. ANHY: wh, lt brn-brn, micxl.

DOL: brn-dk brn, micxl, dns, anhyc, tt. LS: dk brn, micxl, dns, tr arg, tt. ANHY: wh, lt brn-brn, micxl.

DOL: bf, lt br, micxl-vf xl, tr anhyc, occ cal, fracs, tt -abun pp por mostly plugged wi pyrbit. ANHY: tr, wh, lt brn-brn, micxl.

DOL: bf, lt brn, micxl, mnr vf xl, dns, anhyc, tr pp por plugged wi pyrbit, tt. ANHY: wh, lt brn-brn, micxl.

DOL: lt brn, mot gy brn, dk brn, micxl, dns, ip anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl. LS: tr dk brn, micxl. LS: tr dk brn, micxl, DOL: lt-dk





brn, micxl, dns, a[illegible] occ wh cal, tt. ANHY: wh, lt brn[illegible] crpxl-micxl.

DOL: lt-dk brn, micxl-tr vf xl, dns, sl anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl.

DOL: bf-dk brn, micxl, tr vf xl, dns, anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl.

DOL: lt-dk brn, micxl, dns, sl anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl.

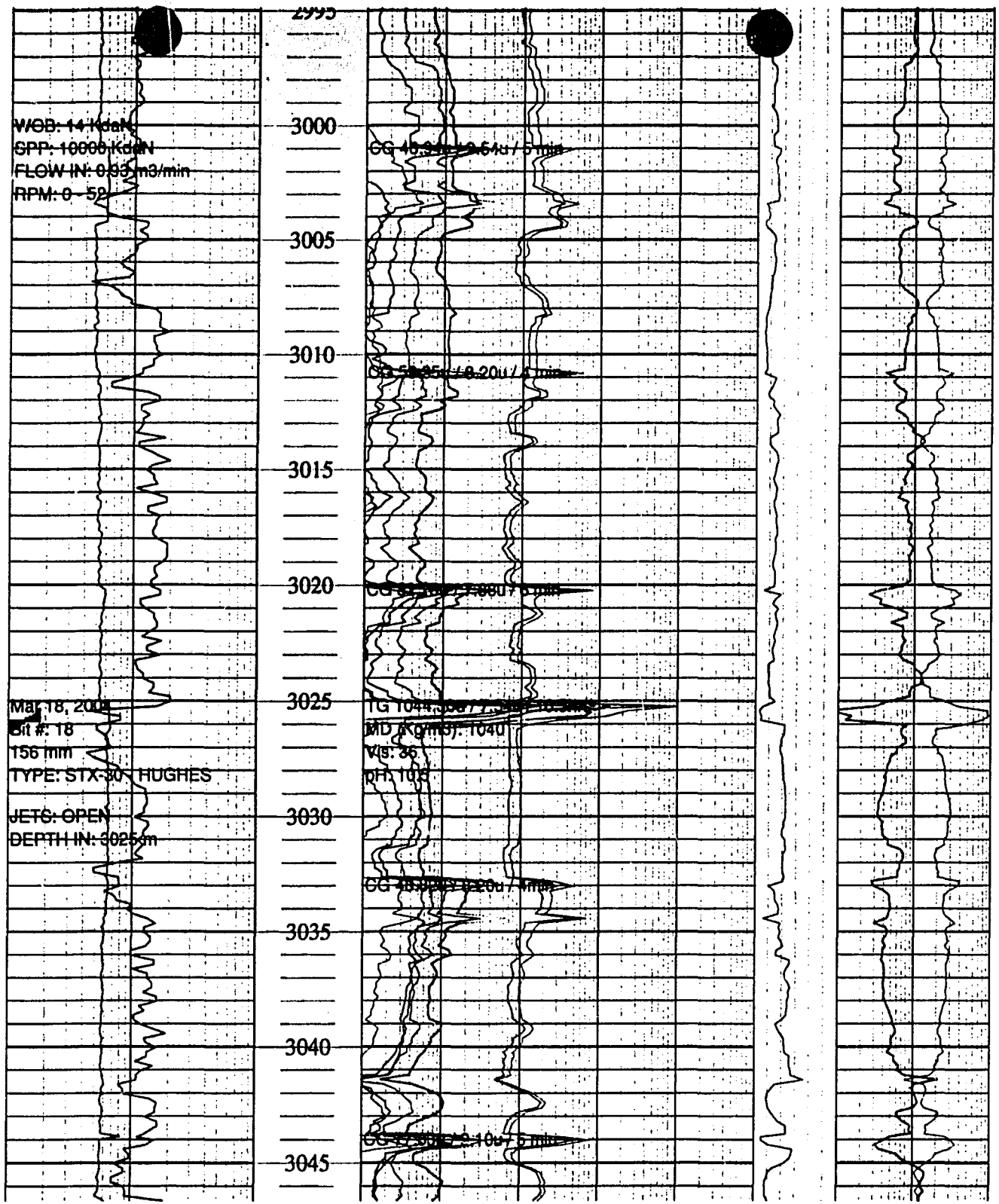
DOL: lt-dk brn, micxl, dns, sl anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl.

DOL: lt-dk brn, micxl, dns, sl anhyc, tt. ANHY: wh, lt brn-brn, crpxl-micxl.

DOL: lt gy brn, lt brn, micxl -vf xl, tr anhyc, occ wh cal, scat pp por, tr vgy wi drsy dol, ip pyrbit plugged, tt- 3%. ANHY: wh, lt brn-brn, crpxl-micxl.

DOL: lt brn, micxl - mnr f xl, anhyc, occ wh cal, scat pp por, tr vhy wi drsy dol, ip pyrbit plugged, tt - 3%. ANHY: wh, lt brn - brn, crpxl - micxl.

DOL: lt - dk brn, micxl, mnr vf - f xl, anhyc, dns, tt - tr pyrbit. ANHY: wh, lt brn - br, crpxl - micxl.





DOl: lt - dk brn, micxl - vf xl, dns, anhyc, tt. ANHY: wh lt brn, crpxl - micxi.

DOL: lt brn, micxi - vf xl, sl anhyc, occ pp por, tr pyrbit, tt - tr por. ANHY: wh, lt brn - brn, crpxl - micxl.

DOL: lt - dk brn, micxl, occ vf - f xl, dns, anhyc, tr pp por, pyrbit, tt - tr por. ANHY: wh , lt brn - brn, crpxl - micxl.

DOL: lt - dk brn, micxl, occ vf - xl, dns, anhyc, tt. ANHY: wh, lt brn - brn, crpxl - micxl.

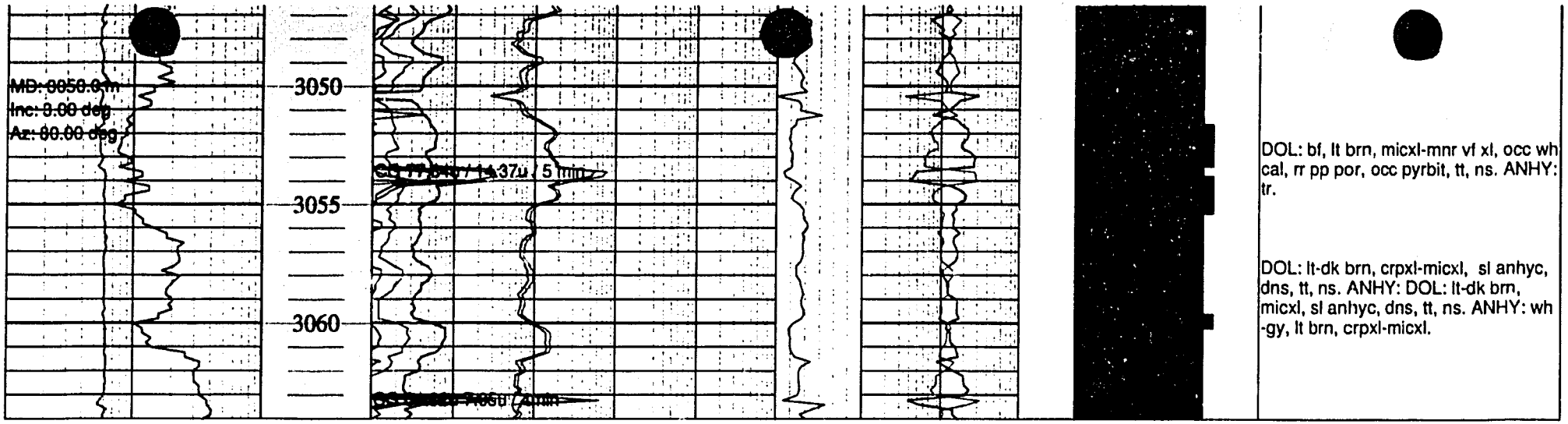
DOL: brn, dk brn, crpxl-micxl , dns, sl anhyc, tt. ANHY: wh , lt brn-brn, crpxl-micxl.

DOL: lt brn, brn, occ dk brn, micxl, mnr vf xl, sl anhyc, rr pp por wi pyrbit, tt-tr por. ANHY: wh-gy, lt brn, crpxl-micxl.

DOL: lt brn, brn, mnr dk brn, micxl, annhyc, tt. ANHY: wh- gy, lt brn, crpxl-micxl.

DOL: lt-dk brn, crpxl-micxl, anhyc, dns, tt. ANHY: wh-gy, lt brn, crpxl-micxl.

DOL: lt brn, brn, micxl-vf xl , sl anhyc, tr pp, vgy por, occ pyrbit, tt-tr por, ns. ANHY: wh-gy, lt brn, crpxl- DOL: lt-dk brn, crpxl-micxl, dns, anhyc, t. ANHY: wh-gy, lt brn, crpxl-micxl.



DOL: bf, lt brn, micxl-mnr vf xl, occ wh cal, rr pp por, occ pyrbit, tt, ns. ANHY: tr.

DOL: lt-dk brn, crpxl-micxl, sl anhyc, dns, tt, ns. ANHY: DOL: lt-dk brn, micxl, sl anhyc, dns, tt, ns. ANHY: wh -gy, lt brn, crpxl-micxl.

Abandonment Plugs:
None.

D. Geological Summary

The Northrock Summit Creek B-44 well was drilled to test a seismically defined structure to the east of the Mackenzie Mountain front south and west of the hamlet of Tulita, NT during the winter 2003/04 drilling season.

The well was spudded in recent gravels and probably a minor amount of Tertiary aged clastics. The top of the Cretaceous was encountered (based on wellsite geology descriptions) at 123.5 m. measured depth (MD) and is believed to be the East Fork Formation. The first significant sandstones were encountered at 235.5 m. Several drill stem tests were conducted over these Upper Cretaceous sands and they appear to be fresh water bearing although a log show 235 m. to 252 m. failed to recover either fluids or hydrocarbons on test.

The Cretaceous Slater River Shale was encountered at 806 m. MD and the Radioactive Shale Marker (a potential Cretaceous source rock) at 1103 m. MD. No reservoir sands were encountered in the Lower Slater River. A section between 1328 m. and 1381.2 m. may be a suspected Arctic Red or equivalent section.

The top of the unconformity bound Devonian Imperial Formation was encountered at 1381.2 m. MD (1378.5 m. TVD).

The first of the Middle Devonian source beds, the Canol Shale was encountered at 2161 m. MD (2149.4 m. TVD). The section from here to the top of the Hume Formation is predominantly black organic rich shale and includes the Hare Indian at 2201 m. MD (2189 m. (TVD) and the Bluefish Member at 2312.5 m. MD (2305.5 m. TVD). Vitrinite.

The top of the Hume Formation was encountered at 2330.5 m. MD (2318.9 m. TVD) and was comprised of a brecciated limestone. The Headless Member, comprised of limestone and shale has been picked at 2417 m. MD (2405 m. TVD).

Below the Headless, the well penetrated a tight pelleted limestone characteristic of the Landry Member (2541 m. MD, 2529 m. TVD) of the Bear Rock Formation. The first dolomites (Arnica Member) were encountered at 2643 m. MD (2630.5 m. TVD) and several good mud gas showings were recorded over the 82 m. interval. A subsequent DST attempted over the Arnica section after reaching total depth, was a misrun due to a packer rupture however a test was conducted by placing the packer in the intermediate casing and allowing the entire open hole section (2420-3064 m. MD) to be tested. Imaging logs run open hole across the section, indicate intense micro-fracturing of the dolomites.
The Fort Norman Member, comprised of predominantly anhydrite and lesser dolomites was encountered at 2725 m. MD (2713 m. TVD) and the well was

drilled to a total depth of 3064 m. MD within the Member. Very high angle dips through this section suggest the formation is highly deformed.
The well was cased with no additional testing, and the rig moved off in order to get the equipment out prior to the closing of the government winter road.

SAMPLE DESCRIPTIONS

NORTHROCK ET AL SUMMIT CREEK B-44

27-35	SANDSTONE light brown, light brown, light red. grey, medium to very coarse grained, in part pebble size, angular to well rounded unconsolidated feldspathic sand, in part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows.
35-45	SANDSTONE light brown, light brown, light red. grey, medium to very coarse grained, in part pebble size, angular to well rounded unconsolidated feldspathic sand, in part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows.
45-50	SANDSTONE, CONGLOMERATE, light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
50-55	CONGLOMERATE light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty. CLAYSTONE , off-white, slightly calcareous, chalky texture, soft.
55-60	CONGLOMERATE, SANDSTONE light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace calcareous, in small part dark grey, slightly waxy texture. SILTSTONE light grey, blocky, slightly calcareous. CLAYSTONE off-white, slightly calcareous, chalky texture, soft.
60-70	SANDSTONE, CONGLOMERATE, light brown, light grey, light red, medium to pebble, angular to well rounded, unconsolidated, feldspar, with rounded chert, minor quartz, trace hornblende, trace biotite, no visible cement, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace calcareous, in small part dark grey, slightly waxy texture.
70-75	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.

75-90	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
90-100	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
100-105	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, in part dark grey, slightly calcareous, waxy texture.
105-110	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace micaceous.
110-120	SHALE light grey to grey, slightly micromicaceous, blocky, argillaceous, in part very silty, trace calcareous, pyrite. CONGLOMERATE grey, very coarse to pebble, abundant sub rounded to well rounded dark chert, feldspar, minor quartz, trace hornblende, biotite.
EAST FORK	123.5
120-125	CONGLOMERATE grey, very coarse to pebble, abundant sub rounded to well rounded dark chert, feldspar, minor quartz, trace hornblende, biotite. SANDSTONE light grey, fine to medium grained, unconsolidated, predominantly quartz with minor feldspar. SHALE light grey, slightly micromicaceous, blocky, argillaceous, silty, trace calcareous, pyrite.
125-130	SANDSTONE trace, light grey, fine to medium grained, well consolidated quartz sand, siliceous, tight. CONGLOMERATE grey, red brown, coarse to pebble, abundant sub rounded to well rounded dark chert, occasional feldspar, minor quartz, trace biotite. SHALE light grey, slightly micromicaceous, blocky, silty, in part argillaceous, trace biotite, trace fossiliferous.
130-135	SHALE light grey, grey, light grey brown, slightly micromicaceous, blocky, argillaceous, in part very silty. SANDSTONE light grey, fine to medium grained, well consolidated quartz sand, siliceous, occasional biotite, tight. CONGLOMERATE grey, red brown, coarse to pebble, abundant sub rounded to well rounded dark chert, occasional feldspar, minor quartz, trace biotite. SHALE light grey, slightly micromicaceous, blocky, silty, in part argillaceous, trace biotite,

135-145	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, slightly calcareous, occasional light grey green, waxy, soft, trace micaceous.
145-150	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, very slightly calcareous.
150-155	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, very slightly calcareous, minor pyrite, occasional well rounded dark chert grains.
155-165	SHALE light to medium grey, light grey brown, slightly micromicaceous, calcareous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, minor pyrite, occasional well rounded dark chert grains.
165-175	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft, trace micaceous, minor pyrite, occasional well rounded dark chert grains.
175-180	SHALE light grey, light brown, trace light grey green, slightly micromicaceous, blocky, argillaceous, silty, in small part waxy, occasional pyrite. SANDSTONE trace, unconsolidated, medium to very coarse rounded to well rounded dark chert, quartz, trace feldspar
180-185	SHALE light grey, light brown, trace light grey green, slightly micromicaceous, blocky, argillaceous, silty, in small part waxy, occasional pyrite. SANDSTONE trace, unconsolidated, medium to very coarse rounded to well rounded dark chert, quartz, trace feldspar
185-190	SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy, trace micaceous
190-195	SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy, trace micaceous
195-200	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, trace pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy.
200-205	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, trace pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy. CHERT occasional light, dark chert grains, fragments.

205-208	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, becoming very pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in part very light grey, bentonitic, in small part light grey green, waxy. CHERT occasional light, dark chert grains, fragments.

SURFACE CASING POINT 208 METERS

208-215	SHALE light grey, slightly micromicaceous, blocky, trace calcareous, silty to very silty, occasional sandy, in part off-white, bentonitic. MUDSTONE brown, light brown, blocky, very sandy, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
215-220	MUDSTONE brown, light brown, blocky, very sandy, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
220-225	MUDSTONE brown, light brown, blocky, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains. SANDSTONE trace, light brown, brown, very fine grained, very well consolidated, siliceous mudstone matrix, in part calcareous, tight.
225-230	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
230-235	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
235-245	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains. SANDSTONE light grey, fine to medium grained, unconsolidated lithic sand, abundant chert grains, possible fair to good porosity.
245-250	SANDSTONE grey, light grey, medium to coarse grained, sub rounded to rounded, unconsolidated lithic quartz, sand, abundant dark chert, possible fair to good porosity. CONGLOMERATE grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters. MUDSTONE brown, light brown, blocky, in part siliceous, in part calcareous, abundant pyrite. COAL black, vitreous, hard, bituminous to anthracite.

250-255	SANDSTONE grey, light grey, medium to coarse grained, sub rounded to rounded, unconsolidated lithic quartz, sand, abundant dark chert, possible fair to good porosity. CONGLOMERATE grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters. COAL black, vitreous, hard, bituminous to anthracite. SILTSTONE light grey, blocky, very pyritic, in small part sandy.
255-260	SILTSTONE light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous. CONGLOMERATE trace, grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters.
260-265	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SANDSTONE grey, medium to coarse grained, unconsolidated lithic quartz sand, abundant dark chert pebbles, porosity fair to good porosity, no shows. COAL trace black, vitreous, hard.
265-270	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous.
270-275	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, blocky, soft.
275-280	SILTSTONE very light grey, light brown, blocky, minor pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, brown, blocky, soft.
280-285	SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, brown, blocky, soft.
285-290	CLAYSTONE tan, brown, blocky, soft. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, blocky, silty, trace carbonaceous. CONGLOMERATE dark grey, light grey, very coarse to pebble, well rounded chert.
290-295	CLAYSTONE tan, brown, blocky, soft. CONGLOMERATE dark grey, light grey, very coarse to pebble, well rounded chert, fine grained sandy, pyritic matrix.
295-300	CLAYSTONE tan, brown, blocky, soft. CONGLOMERATE trace, dark grey, light grey, very coarse to pebble, well rounded chert, fine grained sandy, pyritic matrix. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
300-305	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.

305-310	CLAYSTONE tan, brown, blocky, soft, trace very thin coal partings, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
310-315	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE light brown, brown, mudstone, hard, siliceous.
315-320	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE light brown, brown, mudstone, hard, siliceous, in part grey brown, bentonitic.
320-325	COAL black, vitreous, hard, bituminous to anthracite. CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SANDSTONE off-white, very fine grained, slightly consolidated quartz, clay matrix, 3 to 8% porosity, no shows.
325-330	COAL black, vitreous, hard, bituminous to anthracite. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone.
330-335	SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. COAL black, vitreous, hard, bituminous to anthracite.
335-340	SANDSTONE light grey, very fine to fine grained, slightly consolidated, lithic quartz sand, clay matrix, occasional coal partings, 3 to 18% visible porosity in samples. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
340-345	SANDSTONE light grey, very fine to fine grained, slightly consolidated, lithic quartz sand, clay matrix, occasional coal partings, 3 to 18% visible porosity in samples. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. CLAYSTONE tan, brown, blocky, soft, occasional silty. COAL black, vitreous.
345-350	SILTSTONE light grey, blocky, abundant clay. CLAYSTONE tan, light brown, earthy, soft, blocky, silty, trace carbonaceous.
350-355	SILTSTONE light grey, blocky, abundant clay. CLAYSTONE tan, light brown, earthy, soft, blocky, silty, trace carbonaceous.
355-360	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous.

360-375	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
375-385	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
385-400	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
400-405	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, trace glauconite grains, tight to 12% visible porosity, no shows. SHALE medium to dark grey, micromicaceous, blocky, silty, occasional carbonaceous.
UPPER LITTLE BEAR 405	
405-410	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, trace glauconite grains, becoming silty, tight to 9% visible porosity, no shows. SHALE medium to dark grey, micromicaceous, blocky, silty, occasional carbonaceous.
410-415	SANDSTONE light grey, light brown, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, tight to 3% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
415-420	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, tight to 3% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
420-425	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, in part fine to medium grained unconsolidated, tight to 9% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
425-430	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
430-435	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.

435-440	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, in part fine to medium grained unconsolidated, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
440-445	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, in part silty, trace carbonaceous.
445-450	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, light brown, micromicaceous, blocky, in part silty, in small part siliceous, trace carbonaceous.
450-455	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone.
455-460	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, in part fine to medium grained unconsolidated, clay matrix, in small part pyritic, no visible porosity but possible fair to good in unconsolidated sand, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone.
460-465	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
465-470	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
470-475	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
475-480	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone.

480-485	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
485-490	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone, in part light grey, micromicaceous, blocky, occasional silty. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
490-495	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone, in part light grey, micromicaceous, blocky, occasional silty. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
495-500	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. COAL black, vitreous, brittle, occasional conchoidal fracture. CLAYSTONE tan, red brown, earthy, soft.
500-505	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. COAL black, vitreous, brittle, occasional conchoidal fracture. CLAYSTONE tan, red brown, earthy, soft.
505-510	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
510-515	SHALE light grey, micromicaceous, blocky, silty, minor dark grey, carbonaceous. SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional carbonaceous stringers, 6 to 9% porosity, no shows. CLAYSTONE tan, red brown, earthy, soft. SILTSTONE light grey, light brown, blocky, abundant clay matrix.
515-520	SANDSTONE light grey, light red brown, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. CLAYSTONE light brown, light red brown, blocky, in part sandy. COAL black, vitreous, brittle in part sandy at contact with sand. SHALE trace, light grey, micromicaceous, blocky, silty, minor dark grey, carbonaceous.
520-525	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light grey, micromicaceous, blocky, silty, in part light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
525-530	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light grey, micromicaceous, blocky, silty, in part light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.

530-535	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
535-540	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part pyritic, tight, no shows, in small part light red brown as above. SHALE 50% light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
540-545	SILTSTONE light brown, light grey brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, grey brown, in part micromicaceous, blocky, minor siliceous mudstone. CLAYSTONE light brown, red brown, earthy, soft.
545-550	SILTSTONE light brown, light grey brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty. SANDSTONE light red brown, light grey, very fine to fine grained, slightly consolidated lithic quartz sand, abundant clay matrix, tight to trace porosity, no shows.
550-555	SANDSTONE light red brown, light grey, very fine to fine grained, slightly consolidated lithic quartz sand, abundant clay matrix, tight to trace porosity, no shows. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty.
555-560	SILTSTONE light brown, red brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty.
560-565	SILTSTONE light brown red, light brown, blocky, abundant clay matrix, trace pyritic. SHALE brown, slightly micromicaceous, blocky, siliceous mudstone, in part light grey, grey brown, micromicaceous, blocky silty.
565-570	SILTSTONE light brown red, light brown, blocky, abundant clay matrix, trace pyritic. SHALE brown, slightly micromicaceous, blocky, siliceous mudstone, in part light grey, grey brown, micromicaceous, blocky silty.
570-575	SANDSTONE light grey, very fine grained, slightly consolidated lithic sand, silty, clay matrix, trace micaceous, no visible porosity. SILTSTONE light brown, blocky, clay matrix. SHALE light grey, light brown, micromicaceous, blocky, in small part siliceous.
575-580	SANDSTONE light grey, very fine grained, slightly consolidated lithic sand, silty, clay matrix, trace micaceous, no visible porosity. SILTSTONE light brown, blocky, clay matrix. SHALE light grey, light brown, micromicaceous, blocky, in small part siliceous.

580-585	SANDSTONE light grey, fine to medium grained, unconsolidated, in small part slightly consolidated lithic quartz sand, clay matrix, trace light, dark chert, possible fair porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite.
585-590	SANDSTONE light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite.
590-595	SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
595-600	SANDSTONE light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
600-605	SANDSTONE trace, light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
LOWER LITTLE BEAR 609	
605-610	SANDSTONE trace, light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
610-615	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
615-620	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
620-625	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
625-630	SANDSTONE trace, light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
630-635	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.

635-640	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
640-645	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
645-655	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, trace micaceous, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
655-660	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, trace micaceous, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
660-670	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
670-675	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite. SANDSTONE trace light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows.
675-685	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
685-690	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
690-695	SANDSTONE trace, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite. SILTSTONE light grey, blocky, clay matrix, in part sandy.
695-700	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, grey, medium grey, micromicaceous, blocky, occasional pyrite.
700-705	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, grey, medium grey, micromicaceous, blocky, occasional pyrite.

705-710	SILTSTONE grey, grey brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, stringers.
710-715	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, stringers.
715-720	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, silty.
720-725	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, silty.
725-730	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE trace, light to medium grey, micromicaceous, blocky, silty. SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic
730-735	SANDSTONE trace, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE trace, light to medium grey, micromicaceous, blocky, argillaceous, silty. SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic
735-740	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
740-745	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
745-750	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
750-755	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
755-760	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
760-765	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic. SANDSTONE trace light red brown, fine to medium grained, siliceous, tight, stringers.

765-770	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
770-775	SANDSTONE light grey, very fine to occasional fine grained, slightly consolidated lithic quartz sand, silty, clay matrix, in small part pyritic, no visible porosity, no shows, in part unconsolidated, possible fair porosity. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
775-780	SILTSTONE light grey, light brown, blocky, clay matrix, sandy, in part pyritic, tight. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
780-785	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
785-790	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
790-800	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
800-805	SANDSTONE light grey, light brown, very fine to fine grained slightly consolidated lithic quartz sand, clay matrix, slightly silty, trace pyritic, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic.

INTERMEDIATE CASING - LANDED AT 804 METERS

SLATER RIVER	806MD, 805TVD
805-810	SANDSTONE light grey, light brown, very fine to fine grained slightly consolidated lithic quartz sand, clay matrix, slightly silty, trace pyritic, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic.
810-815	SHALE light to medium grey, micromicaceous, blocky to sub fissile, silty, occasional pyrite, trace argillaceous. SILTSTONE light grey, grey, blocky, in part sandy, trace kaolinitic, occasional pyritic.
815-820	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy.

820-830	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy.
830-835	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
835-845	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
845-855	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, trace brown mudstone, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
855-860	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, trace brown mudstone, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, silty, trace pyritic, tight.
860-870	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
870-880	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite, trace brown mudstone. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic. SANDSTONE light grey, very fine grained, slightly to moderately consolidated lithic quartz sand, kaolinitic, silty, tight.
880-885	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite, trace brown mudstone. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
885-890	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite.
890-900	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
900-910	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
910-920	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic. SANDSTONE light grey, very fine grained, slightly to moderately consolidated lithic sand, kaolinitic, silty, tight.

920-925	SHALE grey, micromicaceous, blocky, argillaceous, in part silty, minor pyrite, in part brown micromicaceous, sub fissile, dense. SILTSTONE light grey, blocky, sandy, abundant lithics.
925-930	SHALE brown, micromicaceous, sub fissile, slightly silty, in part light grey to grey, micromicaceous, blocky, argillaceous, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
930-935	SHALE brown, micromicaceous, sub fissile, slightly silty, in part light grey to grey, micromicaceous, blocky, argillaceous, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
935-940	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, argillaceous, trace carbonaceous, in part brown, micromicaceous, sub fissile, dense, trace pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
940-950	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, argillaceous, trace carbonaceous, in part brown, micromicaceous, sub fissile, dense, trace pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
950-955	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, occasional argillaceous, trace pyrite, in part brown, micromicaceous sub fissile mudstone, dense. SILTSTONE light grey, blocky, sandy, abundant lithics.
955-960	SHALE light grey to grey, micromicaceous, blocky to sub fissile, argillaceous, trace carbonaceous, minor silty, occasional pyrite, in part brown, micromicaceous, sub fissile, dense. SILTSTONE light grey, grey, blocky, sandy, tight.
960-970	SHALE light grey, grey, micromicaceous, blocky to sub fissile, silty, minor argillaceous, trace brown, micromicaceous, dense, minor pyrite. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight.
970-980	SHALE light grey, grey, micromicaceous, blocky to sub fissile, silty, minor argillaceous, rare carbonaceous, in part brown, micromicaceous, dense, minor pyrite. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight
980-985	SHALE brown, light grey to grey, micromicaceous, blocky to sub fissile, in part dense, hard, minor argillaceous, trace silty, occasional pyrite, rare carbonaceous. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight
985-995	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.
995-1000	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.

1000-1010	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.
1010-1015	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, dense, tight.
1015-1020	SHALE brown, minor grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, tight.
1020-1025	SHALE brown, minor grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, tight.
1025-1035	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1035-1045	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1045-1055	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1055-1060	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, trace carbonaceous, slightly argillaceous, minor pyrite. SANDSTONE light grey, grey, stringers, very fine to fine grained, moderately consolidated lithic quartz sand, calcareous matrix, tight. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.
1060-1065	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace carbonaceous, slightly argillaceous, minor pyrite. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.
1065-1070	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace carbonaceous, slightly argillaceous, minor pyrite. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.

1070-1075	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight. SANDSTONE grey stringers, very fine grained, well consolidated calcareous lithic sand.
1075-1085	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight. SANDSTONE grey stringers, very fine grained, well consolidated calcareous lithic sand.
1085-1090	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight.
1090-1095	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight.
1095-1100	SHALE grey, dark grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, slightly argillaceous, occasional pyrite. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
RADIOACTIVE SHALE	1103MD, 1101.5TVD
1100-1105	SHALE medium to dark grey, micromicaceous, sub fissile, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1105-1110	SHALE medium to dark grey, micromicaceous, sub fissile, minor calcite stringers, rare pyrite, trace chitinous fossil fragments, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1110-1115	SHALE medium to dark grey, micromicaceous, sub fissile, minor calcite stringers, rare pyrite, trace chitinous fossil fragments, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1115-1120	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, trace chitinous fossil fragments, very weak pale yellow cut.
1120-1130	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1130-1140	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.

1140-1150	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, rare fish scales, minor pyrite, very weak pale yellow cut.
1150-1160	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1160-1170	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1170-1180	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1180-1190	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1190-1200	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1200-1210	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1210-1220	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1220-1230	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1230-1240	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1240-1250	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1250-1260	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.

1260-1270	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1270-1280	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1280-1290	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1290-1300	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1300-1310	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1310-1320	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1320-1325	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
ARCTIC RED	1328MD, 1325TVD
1325-1330	SILTSTONE light grey green, blocky sandy, tight. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1330-1335	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, trace kaolinitic, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1335-1340	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile.
1340-1345	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile.

1345-1350	SANDSTONE light grey green, very fine grained, occasional fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE light grey, micromicaceous, sub fissile to fissile.
1350-1355	SHALE light grey, micromicaceous, sub fissile to fissile, trace pyrite. SILTSTONE light grey, blocky, in part sandy, minor clay, tight. SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity.
1355-1360	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile, trace pyrite.
1360-1365	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile.
1365-1370	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1370-1375	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, in part light red, red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous, silty matrix, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1375-1380	SANDSTONE light grey green, very fine grained, moderately consolidated quartz, slightly calcareous, silty matrix, minor lithics, in part light red to red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous matrix, silty, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1380-1385	SANDSTONE light grey green, very fine grained, moderately consolidated quartz, slightly calcareous, silty matrix, minor lithics, in part light red to red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous matrix, silty, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile

1385-1390	SHALE light grey, micromicaceous, fissile, in small part silty. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1390-1395	SHALE light grey, micromicaceous, fissile, in small part silty. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1395-1400	SHALE light grey, micromicaceous, fissile, in small part silty, rare pyrite. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1400-1405	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1405-1410	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1410-1420	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1420-1425	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, minor light brown, very fine grained calcareous sand stringers..
1425-1430	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1430-1440	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1440-1450	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1450-1455	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in part calcareous.
1455-1465	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in part calcareous.
1465-1470	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures.
1470-1475	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures, trace micaceous. SANDSTONE trace light grey, very fine to fine grained, well consolidated, calcareous sand stringers.
1475-1480	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures, trace micaceous. SANDSTONE trace light grey, very fine to fine grained, well consolidated, calcareous sand stringers.

1480-1485	SANDSTONE light grey, very light brown, very fine to fine grained, well consolidated quartz sand, slightly lithic, calcareous matrix, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures.
1485-1490	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous.
1490-1500	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous.
1500-1505	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, in part medium red brown, blocky, sandy, calcareous.
1505-1510	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1510-1515	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1515-1520	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1520-1525	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous. SANDSTONE trace, light grey, very fine grained, well consolidated quartz sand, slightly siliceous, in part calcareous matrix, trace lithics, no visible porosity.
1525-1530	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous. SANDSTONE trace, light grey, very fine grained, well consolidated quartz sand, slightly siliceous, in part calcareous matrix, trace lithics, no visible porosity.
1530-1535	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1535-1540	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.

1540-1545	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, trace feldspathic, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1545-1550	SANDSTONE light grey, very fine grained, moderately to well consolidated quartz sand, minor lithic grains, silty, slightly calcareous matrix, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1550-1555	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1555-1560	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight. SANDSTONE trace, light grey, very fine grained, calcareous, tight.
1560-1565	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight. SANDSTONE trace, light grey, very fine grained, calcareous, tight.
1565-1570	SANDSTONE light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1570-1575	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1575-1580	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1580-1590	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1590-1595	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, trace calcite fragments, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.

1595-1600	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, trace calcite fragments, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1600-1605	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic, occasional calcite stringers.
1605-1610	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1610-1620	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1620-1630	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1630-1640	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1640-1645	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1645-1650	SANDSTONE trace very light grey to grey, very fine grained, moderately consolidated quartz sand, slightly calcareous, silty, tight. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1650-1655	SANDSTONE off-white, very light grey, very fine grained, well consolidated quartz sand, in part quartzose, silty, calcareous matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.

1655-1660	SANDSTONE trace, off-white, very light grey, very fine grained, well consolidated quartz sand, in part quartzose, silty, calcareous matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1660-1665	SANDSTONE light grey, very light brown, very fine to occasional fine grained, well consolidated quartz sand, calcareous matrix, in part silty, minor lithics, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1665-1670	SANDSTONE light grey, off-white, very fine grained, well consolidated quartz sand, in small part quartzose, slightly silty, calcareous matrix, minor to trace lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1670-1675	SANDSTONE light grey, very fine grained, well consolidated quartz sand, silty calcareous matrix, minor lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1675-1680	SANDSTONE light grey, very fine grained, well consolidated quartz sand, silty calcareous matrix, minor lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1680-1685	SANDSTONE light grey, light brown, very fine grained, trace fine grained, well consolidated quartz sand, slightly calcareous, in part silty matrix, minor lithic grains, no visible porosity, slow, spotty, faint yellow cut. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1685-1690	SANDSTONE trace, light grey, light brown, very fine grained, trace fine grained, well consolidated quartz sand, slightly calcareous, in part silty matrix, minor lithic grains, no visible porosity, slow, spotty, faint yellow cut. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1690-1695	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.
1695-1700	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.
1700-1710	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.

1710-1720	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1720-1730	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1730-1740	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1740-1750	SHALE medium grey, micromicaceous, fissile, trace thin calcite stringers. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1750-1760	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic, trace micro fractures with calcite.
1760-1770	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1770-1780	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1780-1790	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1790-1795	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1795-1800	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1800-1810	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1810-1820	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1820-1830	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1830-1840	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1840-1850	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.

1850-1862	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1862-1870	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace slickensides on cuttings, possible fracture zone. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1870-1880	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous. SILTSTONE light grey, blocky, calcareous, sandy.
1880-1890	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous. SILTSTONE light grey, blocky, calcareous, sandy. SANDSTONE trace, light grey stringers, very fine grained, well consolidated, slightly calcareous, silty, tight.
1890-1900	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous, trace pyrite.. SILTSTONE light grey, blocky, calcareous, sandy. SANDSTONE trace, light grey stringers, very fine grained, well consolidated, slightly calcareous, silty, tight.
1900-1910	SHALE medium grey, micromicaceous, fissile, trace argillaceous. SILTSTONE light grey, light grey green, blocky, trace sandy.
1910-1915	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, stringers.
1915-1925	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous, occasional calcite stringers. SILTSTONE light grey, blocky, in part calcareous, stringers.
1925-1930	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous. SILTSTONE light grey, light grey green, blocky, in part calcareous, stringers. SANDSTONE trace, red, very fine grained, well consolidated, calcareous stringers.
1930-1940	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1940-1950	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1950-1960	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1960-1970	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1970-1980	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.

1980-1990	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1990-2000	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, sandy.
2000-2010	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
2010-2020	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
IMPERIAL	2024MD, 2012TVD
2020-2025	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
2025-2030	SHALE dark brown, medium to dark grey, brown, slightly micromicaceous, blocky, very limy, argillaceous, in part earthy, occasional micro fractures, spotty to massive pale blue cut. LIMESTONE dark brown, argillaceous, mudstone stringers.
2030-2035	SHALE dark brown, medium to dark grey, brown, slightly micromicaceous, blocky, very limy, argillaceous, occasional micro fractures, spotty to massive pale blue cut. LIMESTONE dark brown, argillaceous, microcrystalline, mudstone stringers.
2035-2045	SHALE dark grey brown, dark brown, medium to dark grey, slightly micromicaceous, blocky, in part limy, argillaceous, faint pale blue cut. LIMESTONE dark brown, microcrystalline mudstone, argillaceous.

SAMPLES APPEAR TO BE 80 % SLOUGHING FROM UPHOLE.

2045-2050	SHALE dark grey brown, dark brown, medium to dark grey, slightly micromicaceous, blocky, in part limy, argillaceous, faint pale blue cut. LIMESTONE dark brown, microcrystalline mudstone, argillaceous.
2050-2060	SHALE medium to dark grey, dark brown, dark grey brown, micromicaceous, blocky to fissile, in part limy, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, tight.
2060-2065	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.
2065-2075	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.

2075-2080	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.
2080-2085	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2085-2095	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2095-2100	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2100-2110	SHALE medium to dark grey, dark brown, blocky to fissile, micromicaceous, argillaceous, in small part calcareous. SILTSTONE light brown, blocky, argillaceous, calcareous.
2110-2120	SHALE medium to dark grey, brown grey brown, blocky to sub fissile, slightly micromicaceous, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, argillaceous, tight.
2120-2130	SHALE grey brown, brown, slightly micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, grey brown, blocky, argillaceous, slightly calcareous, tight.
2130-2135	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, slightly calcareous, tight.
2135-2140	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, slightly calcareous, tight.
2140-2145	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.
2145-2150	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.

SAMPLES 2150 to 2175 SHOW to SLOW, WEAK MASSIVE PALE BLUE CUT.

2150-2155	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight, trace calcite filled micro fractures.

2155-2160	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.
2160-2165	SHALE grey brown, medium to dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2165-2170	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2170-2175	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2175-2180	SHALE medium to dark grey, grey brown, brown, micromicaceous, blocky to sub fissile, trace calcareous, slightly argillaceous. SILTSTONE trace, light brown, blocky, slightly calcareous, trace argillaceous, tight.
2180-2188	SHALE medium to dark grey, grey brown, brown, micromicaceous, blocky to sub fissile, trace calcareous, slightly argillaceous. SILTSTONE trace, light brown, blocky, slightly calcareous, trace argillaceous, tight.
	STUCK IN HOLE, LEFT 174 METERS OF FISH IN HOLE HOLE SIDETRACKED FROM 1708 METERS

SAMPLE DESCRIPTIONS

B-44-64-30-125-45 (SIDETRACK)

CEMENT TOP	1705.8
1705.8-1710	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Sample has minor cement contamination.
1710-1715	SHALE medium grey, occasional dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Sample has trace cement contamination.
1715-1725	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Samples have major(upper to 80%) cement contamination.
1725-1730	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Samples have major(upper to 80%) cement contamination.
1730-1735	SHALE medium to dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy, calcareous, tight. Cement 30%
1735-1740	SHALE medium to dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy, calcareous, tight. Cement 10%
1740-1750	SHALE medium grey, micromicaceous, fissile, trace thin calcite stringers. SILTSTONE light grey, light grey brown, blocky, stringers, in part calcareous, tight. Cement <10%
1750-1760	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic, trace micro fractures.
1760-1770	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1770-1780	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1780-1785	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.

1785-1795	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE trace, light grey, blocky stringers, in small part calcareous.
1795-1805	SHALE medium grey, minor dark grey, micromicaceous, fissile, trace argillaceous. SILTSTONE trace, light grey, blocky stringers, in small part calcareous.
1805-1810	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1810-1820	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1820-1830	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1830-1840	SHALE medium grey, micromicaceous, fissile, trace waxy, in small part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1840-1850	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1850-1860	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1860-1870	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1870-1880	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1880-1890	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy. SANDSTONE trace, very light grey stringers, very fine grained, well consolidated, silty, tight.
1890-1900	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy.

1900-1910	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy. SANDSTONE trace, light grey, very fine grained, well consolidated, slightly calcareous.
1910-1920	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE trace, light grey, occasional light grey green, blocky, in part calcareous.
1920-1930	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, occasional thin calcite stringers. SILTSTONE trace, light grey, blocky, in part calcareous.
1930-1940	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, trace thin calcite stringers. SILTSTONE light grey, blocky, sandy, in part calcareous.
1940-1950	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, trace thin calcite stringers. SILTSTONE light grey, blocky, sandy, in part calcareous.
1950-1960	SHALE medium grey, micromicaceous, fissile, non calcareous, slightly argillaceous, trace thin calcite.stringers. SILTSTONE light grey, light grey green, blocky, in part calcareous, trace sandy.
1960-1970	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1970-1980	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1980-1990	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1990-2000	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
2000-2010	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous, minor calcite stringers. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
2010-2020	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous, minor calcite stringers. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.

2020-2025	SHALE medium to dark grey, dark grey brown, brown, slightly micromicaceous, blocky, very limy, argillaceous, in part earthy, occasional micro fractures, spotty, faint pale blue cut. LIMESTONE dark brown, argillaceous, mudstone stringers.
IMPERIAL	2024MD, 2012TVD
2025-2030	SHALE dark brown, brown, medium to dark grey, slightly micromicaceous, blocky, very limy, argillaceous, occasional micro fractures, spotty, faint pale blue cut. LIMESTONE dark brown, microcrystalline, argillaceous mudstone stringers.
2030-2040	SHALE dark grey brown, dark brown, slightly micromicaceous, blocky, in part limy, argillaceous, faint blue cut. LIMESTONE dark brown, microcrystalline, argillaceous, mudstone stringers.
2040-2050	SHALE medium to dark grey, dark grey brown, dark brown, slightly micromicaceous, blocky, in part calcareous, argillaceous. LIMESTONE trace, db brown, microcrystalline, argillaceous mudstone.
2050-2060	SHALE medium to dark grey, dark brown, dark grey brown, micromicaceous, blocky to fissile, in part calcareous. LIMESTONE trace dark brown, microcrystalline, argillaceous mudstone.
2060-2070	SHALE medium to dark grey, dark grey brown, micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline mudstone.
2070-2080	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone.
2080-2090	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.
2090-2100	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.
2100-2105	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.

2105-2115	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2115-2125	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2125-2135	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2135-2145	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, in part calcareous, tight.

SAMPLES 2145 to 2175 SHOW to SLOW, WEAK, MASSIVE MILKY BLUE CUT.

2145-2155	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, in part calcareous, slightly argillaceous, trace calcite fillled micro fractures
CANOL	2161MD, 2149.27VD
2155-2165	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, grey brown, blocky, slightly argillaceous, calcareous, tight.
2165-2175	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, grey brown, blocky, slightly argillaceous, calcareous, tight.
2175-2185	SHALE dark grey brown, medium to dark grey, brown, micromicaceous, sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey, blocky, slightly calcareous, in part sandy, tight.
2185-2190	SHALE dark grey brown, medium to dark grey, brown, micromicaceous, sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey, blocky, slightly calcareous, in part sandy, tight.
2190-2195	SHALE grey brown, dark grey to black, micromicaceous, sub fissile to fissile, argillaceous, faint blue cut.
2195-2200	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, occasional pyrite, faint blue cut.

HARE INDIAN	2201MD, 2189TVD
2200-2205	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, occasional pyrite, faint blue cut.
2205-2210	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite.
2210-2215	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite, faint blue cut.
2215-2225	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite, trace carbonaceous.
2225-2230	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures.
2230-2235	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures. SILTSTONE trace, light brown, blocky, very well consolidated, dense, slightly calcareous.
2235-2245	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures. SILTSTONE trace, light brown, blocky, very well consolidated, dense, slightly calcareous.
2245-2255	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, faint, pale blue cut.
2255-2265	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2265-2275	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2275-2285	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2285-2290	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, trace carbonaceous, occasional calcite filled fractures, minor pyrite, faint pale blue cut.

2290-2300	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, trace carbonaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite.
2300-2305	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite. SILTSTONE light grey green, light brown, blocky, very slightly calcareous.
2305-2310	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite.
BLUEFISH SH	2312.5MD, 2305.5TVD
2310-2315	SHALE dark brown, dark grey, black, micromicaceous, sub fissile to fissile, slightly calcareous, in part very limy, argillaceous, minor pyrite.
2315-2320	SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous. LIMESTONE trace, mottled black and white, microcrystalline, argillaceous, tight.
2320-2325	SHALE black, dark grey, sub.fissile, micromicaceous, limy, argillaceous, trace pyrite. LIMESTONE mottled black and white, brown, microcrystalline, argillaceous, tight.
2325-2330	SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous, trace pyrite. LIMESTONE mottled brown, black and white, microcrystalline, argillaceous, tight.
HUME	2330.5MD, 2318.9TVD
2330-2335	LIMESTONE light brown, buff, microcrystalline, in part chalky, occasional silty, trace micro fractures, no visible porosity. SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous, trace pyrite
2335-2340	LIMESTONE light brown, mottled light brown, microcrystalline, in part chalky, very slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, fissile, very limy, argillaceous, minor pyrite.
2340-2345	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.

2345-2350	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2350-2355	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2355-2360	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2360-2365	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, trace silty, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2365-2370	SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite, occasional calcite filled micro fractures. LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, trace silty, no visible porosity, no shows.
2370-2375	LIMESTONE light brown, light grey brown, brown, microcrystalline mudstone, in part chalky, trace argillaceous, very slightly silty, trace micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2375-2380	LIMESTONE light brown, dark brown, microcrystalline mudstone, in part chalky, trace silty, argillaceous, no visible porosity, no shows SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2380-2385	LIMESTONE light brown, dark brown, microcrystalline mudstone, in part chalky, trace silty, argillaceous, no visible porosity, no shows SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2385-2390	LIMESTONE light brown, light grey brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, argillaceous, occasional sparry calcite, indications of fractures with trace pyrobitumen, no visible porosity. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

2390-2395	LIMESTONE light brown, light grey brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, argillaceous, occasional sparry calcite, indications of fractures with trace pyrobitumen, no visible porosity. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2395-2400	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, slightly silty, argillaceous, occasional fractures, sparry calcite, type I/II, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2400-2410	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, argillaceous, occasional pyrite, type I/II, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2410-2415	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, argillaceous, occasional pyrite, in small part silty, type II/I, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous. minor pyrite.
HEADLESS	2417MD, 2405TVD
2415-2420	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, trace pyritic, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2420-2425	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2425-2430	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, rare Ostracods, indistinct fossil fragments, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2430-2435	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2435-2440	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

2440-2450	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, occasional sparry calcite, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

MID-HEADLESS MKR 2450MD, 2438TVD

2450-2455	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, occasional sparry calcite, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2455-2460	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, typeI/II, in part argillaceous, trace silty, occasional sparry calcite, trace fossil debris, rare drusy quartz, trace fracture porosity. SHALE dark grey to black, micromicaceous, sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2460-2465	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2465-2470	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2470-2475	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2475-2480	LIMESTONE buff, brown, dark brown, microcrystalline, in small part chalky, type I/II, slightly argillaceous, trace silty, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2480-2490	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.

2490-2500	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.
2500-2505	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, rare fossiliferous, Ostracods, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.

LEFT BIT AND PART OF MUDMOTOR IN HOLE - SIDETRACK AROUND FISH

SAMPLE DESCRIPTIONS

B-44-64-30-125-45 (ST2)

2470-2475	LIMESTONE buff, brown, dark grey brown, microcrystalline, trace silty, in small part chalky, type I/II, slightly argillaceous, occasional pyrite, calcite, no visible porosity, trace Tenticulites.
2475-2480	LIMESTONE buff, brown, dark grey brown, microcrystalline, trace silty, in small part chalky, type I/II, slightly argillaceous, trace pyrite, abundant calcite, trace fractures, no visible porosity.
2480-2485	LIMESTONE buff, brown, dark grey brown, microcrystalline, in small part silty, trace chalky, type I/II, slightly argillaceous, in part pyritic, abundant calcite, trace fractures, no visible porosity.
2485-2490	LIMESTONE dark grey brown, buff, minor brown, microcrystalline, trace extra fine crystalline sucrosic texture, argillaceous, trace silty, in part pyritic, occasional calcite, no visible porosity. SHALE grey, micromicaceous, blocky to sub fissile, limy, trace argillaceous.
2490-2495	LIMESTONE dark grey brown, mottled brown, buff, microcrystalline, trace silty, in part argillaceous, pyritic, abundant calcite, trace fractures, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2495-2500	LIMESTONE dark grey brown, mottled brown, buff, microcrystalline, trace silty, in part argillaceous, pyritic, abundant calcite, trace fractures, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2500-2505	LIMESTONE dark grey brown, buff, mottled brown, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, rare Ostracods, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2505-2510	LIMESTONE brown, dark grey brown, buff, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, rare Ostracods, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2510-2512.5	LIMESTONE brown, dark grey brown, buff, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.

2512.5-2515	LIMESTONE light to dark grey brown, buff, microcrystalline, rare chalky, trace silty, argillaceous, in small part pyritic, trace calcite, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2515-2520	LIMESTONE dark grey brown, brown, minor buff, microcrystalline, argillaceous, trace silty, in part pyritic, minor calcite, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2520-2525	LIMESTONE dark grey brown, buff, microcrystalline, in part argillaceous, trace silty, minor pyritic, occasional calcareous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2525-2530	LIMESTONE light grey brown, buff, dark brown, microcrystalline, in part argillaceous, trace silty, minor pyritic, occasional calcareous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2530-2535	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2535-2540	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.

LANDRY MBR, BEAR ROCK FM 2541MD, 2529TVD

2540-2545	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2545-2550	LIMESTONE light grey, grey brown, dark grey brown, microcrystalline, trace micritic, argillaceous, rare silty, rare fossiliferous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2550-2552.5	LIMESTONE buff, mottled brown, dark grey brown, microcrystalline, trace micritic, in part argillaceous, in small part chalky, trace silty, no visible porosity. SHALE trace, dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2552.5-2555	LIMESTONE buff, mottled brown, minor dark grey brown, microcrystalline, in part micritic, chalky, argillaceous, occasional calcite, rare pyritic, no visible porosity.

2555-2560	LIMESTONE buff, mottled brown, minor dark brown, microcrystalline to very fine crystalline, in part micritic, argillaceous, trace chalky, in small part slightly pelletoidal, no visible porosity.
2560-2562.5	LIMESTONE buff, mottled brown to dark brown, microcrystalline to very fine crystalline, in part micritic, argillaceous, slightly chalky, in small part pelletoidal, no visible porosity.
2562.5-2565	LIMESTONE dark grey, black, minor buff, brown, microcrystalline to trace very fine crystalline, argillaceous, in small part micritic, trace fossiliferous, no visible porosity.
2565-2567.5	LIMESTONE buff, dark grey, brown, microcrystalline to minor very fine crystalline, argillaceous, in small part micritic, trace fossiliferous, trace pyritic, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, very limy.
2567.5-2570	LIMESTONE buff, brown, mottled brown, minor grey brown, microcrystalline to minor very fine crystalline, trace micritic, in small part mudstone, slightly argillaceous, trace pyritic, slightly pelletoidal, no visible porosity.
2570-2575	LIMESTONE dark brown, buff, minor grey brown, microcrystalline to trace very fine crystalline, trace micritic, in small part mudstone, slightly argillaceous, trace pyritic, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2575-2577.5	LIMESTONE buff, mottled brown, dark grey brown, microcrystalline to trace very fine crystalline, in small part micritic, argillaceous, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, limy.
2577.5-2580	LIMESTONE buff, mottled brown, dark brown, microcrystalline, in part micritic, slightly argillaceous, in small part pelletoidal, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.
2580-2585	LIMESTONE dark grey brown, buff, brown, microcrystalline, in small part micritic, argillaceous, rare pelletoidal, occasional calcite, trace fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.
2585-2590	LIMESTONE dark grey brown, buff, brown, microcrystalline to trace very fine crystalline, in small part micritic, argillaceous, trace pyritic, occasional calcite, trace fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.

2590-2592.5	LIMESTONE brown, dark brown, minor buff, microcrystalline, in small part micritic, argillaceous, occasional calcite, trace light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2592.5-2595	LIMESTONE dark brown, minor buff, microcrystalline, in small part micritic, trace fossiliferous, Ostracods, argillaceous, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2595-2597.5	LIMESTONE dark brown, minor buff, microcrystalline, argillaceous, in small part micritic, in part light grey brown mudstone, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2597.5-2600	LIMESTONE dark grey brown, minor buff, microcrystalline, argillaceous, in small part micritic, thin fossiliferous layer with Ostracods, occasional calcite with possible slickensided, possible fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2600-2602.5	LIMESTONE dark grey brown, minor buff, microcrystalline, argillaceous, in small part micritic, occasional calcite, rare pellets, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2602.5-2605	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2605-2607.5	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2607.5-2610	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2610-2612.5	NO SAMPLE
2612.5-2615	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2615-2620	LIMESTONE dark grey brown, buff, mottled light brown, microcrystalline to trace very fine crystalline, argillaceous, trace fossiliferous, Ostracods, minor pyrite, in small part light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.

2620-2622.5	LIMESTONE dark grey brown, buff, mottled light brown, microcrystalline to trace very fine crystalline, argillaceous, trace fossiliferous, Ostracods, minor pyrite, in small part light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2622.5-2625	LIMESTONE buff, light brown, dark brown, microcrystalline to trace very fine crystalline, argillaceous, in small part micritic, occasional calcite, no visible porosity.
2625-2630	LIMESTONE buff, light brown, minor dark brown, microcrystalline, in small part micritic, slightly argillaceous, trace calcite, no visible porosity.
2630-2632.5	LIMESTONE buff, dark brown, brown, microcrystalline, argillaceous, in small part micritic, trace fossiliferous, Ostracods, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2632.5-2635	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part micritic, slightly argillaceous, trace chalky, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, limy.
2635-2637.5	LIMESTONE buff, brown, cryptocrystalline to microcrystalline, slightly argillaceous, trace micritic, in part chalky, no visible porosity.
2637.5-2640	LIMESTONE buff, brown, cryptocrystalline to microcrystalline, minor very fine crystalline, trace argillaceous, in small part dolomitic, occasional calcite, no visible porosity. DOLOMITE trace, light grey, microcrystalline, dense, tight.
2640-2642.5	LIMESTONE light brown, buff, cryptocrystalline to microcrystalline, dense, trace dolomitic, tight. DOLOMITE buff, off-white, microcrystalline to very fine crystalline, in small part chalky, no visible porosity, mineral fluorescence, no cut.
2642.5-2645	LIMESTONE light brown, buff, cryptocrystalline to microcrystalline, dense, trace dolomitic, tight. DOLOMITE buff, off-white, microcrystalline to very fine crystalline, in small part chalky, no visible porosity, occasional calcite, trace pyrobitumen, possible fractures, mineral fluorescence, no cut.
2645-2650	LIMESTONE light to medium grey brown, dark brown, minor buff, cryptocrystalline to microcrystalline, slightly argillaceous, dense, in small part micritic, tight. DOLOMITE trace, light brown, microcrystalline, in part extra fine sucrosic, tight, no shows.
2650-2652.5	DOLOMITE light brown, extra fine to very fine crystalline, sucrosic texture, tight to 3% pinpoint, intercrystalline porosity, weak slow, pale blue cut. LIMESTONE light to medium grey brown, dark brown, minor buff, cryptocrystalline to microcrystalline, slightly argillaceous, dense, in small part micritic, tight.

2652.5-2655	DOLOMITE light brown, buff, microcrystalline to extra fine crystalline, sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity, weak pale blue cut, no fluorescence. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, argillaceous, dense, minor micritic, no visible porosity.

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2655-2657.5	DOLOMITE light brown, buff, microcrystalline to extra fine crystalline, sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, tight.
2657.5-2660	DOLOMITE buff, light brown, predominantly microcrystalline, trace extra fine crystalline, in small part sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, tight. ANHYDRITE trace clear, watery luster.
2660-2662.5	DOLOMITE light brown, brown, microcrystalline, trace extra fine crystalline with sucrosic texture, trace limy, slightly anhydritic, no visible porosity. LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight.
2662.5-2665	DOLOMITE light brown, brown, buff, microcrystalline, trace extra fine crystalline, occasional calcite, slightly anhydritic, trace limy, no visible porosity. LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight.
2665-2670	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, trace limy, occasional calcite, slightly anhydritic, tight.
2670-2672.5	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, trace limy, occasional calcite, slightly anhydritic, rare euhedral quartz, no visible porosity.
2672.5-2675	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, minor extra fine crystalline, trace limy, slightly anhydritic, rare euhedral quartz, calcite, no visible porosity.
2675-2677.5	LIMESTONE light brown to brown, microcrystalline to very fine crystalline, in part dolomitic, slightly argillaceous, trace anhydritic, occasional sparry calcite, trace pinpoint porosity. DOLOMITE buff, light brown, microcrystalline to very fine crystalline, in part limy, trace anhydritic, trace drusy dolomite, rare pyrobitumen, tight to trace pinpoint, vuggy porosity, no shows.

2677.5-2680	DOLOMITE buff, light brown, microcrystalline to extra fine crystalline, trace limy, anhydrite, rare drusy dolomite, trace calcite, weak, pale yellow fluorescence, no cut, tight to trace pinpoint porosity. LIMESTONE dark brown, microcrystalline, tight.
2680-2685	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, anhydritic, scattered white calcite, trace fractures, tight, no shows. LIMESTONE dark brown, brown, microcrystalline, trace dolomitic, dense, tight.
2685-2690	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, trace anhydritic, scattered white calcite, trace fractures, tight, no shows. LIMESTONE dark brown, buff, brown, microcrystalline, trace dolomitic, dense, in part slightly chalky texture, tight.
2690-2692.5	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, anhydritic, trace calcite, tight, no shows. LIMESTONE dark brown, microcrystalline, trace dolomitic, dense, tight. ANHYDRITE white, light grey, clear, microcrystalline.
2692.5-2695	DOLOMITE light brown, microcrystalline, dense, in small part limy, occasional anhydrite filled fractures, trace calcite, tight, no shows. LIMESTONE trace, dark brown, microcrystalline, tight. ANHYDRITE white, grey, microcrystalline.
2695-2697.5	DOLOMITE buff, brown, dark brown, microcrystalline to minor very fine crystalline, dense, trace limy, very anhydritic, tight to trace pinpoint porosity, occasional pyrobitumen. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight.
2697.5-2700	DOLOMITE buff, brown, microcrystalline to very fine crystalline, trace limy, anhydritic, scattered pinpoint porosity plugged with pyrobitumen. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight.
2700-2705	DOLOMITE buff, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2705-2710	DOLOMITE buff, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2710-2712.5	DOLOMITE light brown, extra fine to minor very fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 5%, faint yellow green fluorescence, no cut.

2712.5-2715	DOLOMITE light brown, extra fine to minor very fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 3%, faint yellow green fluorescence, no cut. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2715-2717.5	DOLOMITE light brown, extra fine to very fine crystalline, slightly anhydritic, trace pinpoint porosity. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2717.5-2720	DOLOMITE light brown, brown, very fine to occasional fine crystalline, in small part anhydritic, scattered pinpoint intercrystalline porosity, tight to 3%, no fluorescence, no cut.
2720-2722.5	DOLOMITE light brown, brown, very fine to fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 5%, no fluorescence, no cut. ANHYDRITE white to light grey, clear, microcrystalline.
2722.5-2730	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, anhydritic, trace pinpoint porosity, tight to trace porosity, no shows. ANHYDRITE white to grey, clear, microcrystalline.
2730-2735	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, anhydritic, abundant calcite, no visible porosity, no shows. ANHYDRITE white to grey, clear, light brown, microcrystalline.
2735-2740	DOLOMITE light brown, buff, brown, microcrystalline, in small part very fine crystalline, trace limy, dense, occasional calcite, tight. LIMESTONE dark brown, cryptocrystalline to microcrystalline, dense, argillaceous, tight. ANHYDRITE white to grey, clear, buff, microcrystalline.
2740-2742.5	DOLOMITE dark brown, light brown, buff, microcrystalline, dense, trace limy, abundant calcite, trace fractures, tight. LIMESTONE dark brown, microcrystalline, argillaceous, tight. ANHYDRITE buff, brown, light grey, white, microcrystalline, soft..
2742.5-2745	DOLOMITE light brown, brown, very fine to occasional fine crystalline, dense, anhydritic, trace limy, occasional fractures with calcite, tight. ANHYDRITE white to grey, light brown, microcrystalline, soft.
2745-2747.5	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2747.5-2750	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.

2750-2752.5	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2752.5-2755	DOLOMITE brown, light brown, microcrystalline to very fine crystalline, anhydritic, dense, trace limy, abundant calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2755-2757.5	DOLOMITE brown, light brown, microcrystalline to very fine crystalline, anhydritic, dense, trace limy, abundant calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2757.5-2760	DOLOMITE light brown, microcrystalline, trace very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2760-2762.5	DOLOMITE light brown, dark brown, microcrystalline to very fine crystalline. dense, anhydritic, minor calcite, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2762.5-2765	DOLOMITE light brown, buff, dark brown, microcrystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2765-2767.5	DOLOMITE light brown, dark brown, brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2767.5-2770	DOLOMITE light brown, dark brown, brown, microcrystalline, minor very fine crystalline, trace limy, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2770-2772.5	DOLOMITE buff, light to dark brown, microcrystalline, dense, anhydritic, occasional calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2772.5-2775	DOLOMITE buff, light to dark brown, microcrystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, microcrystalline, soft.
2775-2777.5	DOLOMITE light brown, dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, buff, brown, microcrystalline.
2777.5-2780	DOLOMITE light brown, dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, buff, brown, microcrystalline.

2780-2785	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, microcrystalline.
2785-2787.5	DOLOMITE light to dark brown, microcrystalline, dense, in part anhydritic, tight. ANHYDRITE white to light grey, light brown, clear, microcrystalline.
2787.5-2790	DOLOMITE light to dark brown, microcrystalline, dense, in part anhydritic, minor calcite, trace fractures, tight. ANHYDRITE white to light grey, light brown, clear, microcrystalline.
2790-2792.5	DOLOMITE light brown to dark brown, microcrystalline to very fine crystalline, dense, in part anhydritic, occasional calcite, trace fractures, tight to trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2792.5-2795	DOLOMITE light to dark brown, microcrystalline to minor very fine crystalline, dense, slightly anhydritic, minor calcite, trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2795-2797.5	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2797.5-2800	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2800-2802.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2802.5-2805	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2805-2807.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2807.5-2810	DOLOMITE light to dark brown, microcrystalline to trace very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2810-2812.5	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, in small part very fine crystalline, with trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.

2812.5-2815	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, trace limy stringers, tight. ANHYDRITE white to grey, light brown, microcrystalline.
2815-2817.5	DOLOMITE light brown, brown, microcrystalline, slightly anhydritic, trace fractures, calcite, tight. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2817.5-2820	DOLOMITE light brown, brown, minor dark brown, microcrystalline to occasional very fine crystalline, abundant calcite, trace fractures, trace pinpoint porosity, no shows. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2820-2822.5	DOLOMITE light brown, brown, microcrystalline to occasional very fine crystalline, abundant calcite, trace fractures, trace pinpoint porosity, no shows. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2822.5-2825	DOLOMITE light brown, brown, microcrystalline to trace very fine crystalline, abundant calcite, trace drusy dolomite, fractures, trace pinpoint porosity. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2825-2827.5	DOLOMITE light brown to brown, microcrystalline to occasional very fine crystalline, slightly anhydritic, abundant calcite, fractures, trace pinpoint porosity. ANHYDRITE white to grey, light brown, microcrystalline.
2827.5-2830	DOLOMITE light brown, brown, microcrystalline to occasional very fine crystalline, slightly anhydritic, occasional calcite, trace pinpoint porosity. ANHYDRITE white, light brown, clear, microcrystalline.
2830-2832.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, trace anhydritic, abundant calcite, occasional pyrobitumen associated with micro fractures, scattered pinpoint porosity. ANHYDRITE trace, white, clear, microcrystalline.
2832.5-2837.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, abundant calcite, micro fractures, scattered pinpoint porosity, occasional pyrobitumen associated with fractures. ANHYDRITE trace, white, clear, light brown, microcrystalline.
2837.5-2840	DOLOMITE light to dark brown, microcrystalline, in small part very fine crystalline, slightly anhydritic, occasional calcite, fractures, rare pinpoint porosity. ANHYDRITE white, light brown, slightly dolomitic, microcrystalline.
2840-2845	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.

2845-2850	DOLOMITE light to dark brown, microcrystalline, minor very fine crystalline anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.
2850-2855	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.
2855-2860	DOLOMITE light to dark brown, microcrystalline, anhydritic dense, tight. ANHYDRITE white, buff, light brown, microcrystalline.
2860-2865	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, trace anhydritic, occasional calcite filled fractures, scattered pinpoint porosity, trace pyrobitumen plugging. ANHYDRITE white, buff, light brown, microcrystalline.
2865-2870	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, trace very fine crystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline.
2870-2875	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile. calcareous, argillaceous stringers.
2875-2877.5	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile. calcareous, argillaceous stringers.
2877.5-2880	DOLOMITE buff, light brown, microcrystalline, in part anhydritic, dense, tight to trace pinpoint porosity. ANHYDRITE white, light brown, grey, microcrystalline.
2880-2882.5	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white, light brown, grey, microcrystalline.
2882.5-2885	DOLOMITE light brown, microcrystalline to predominantly very fine crystalline, slightly anhydritic, occasional calcite, fractures, scattered pinpoint porosity, occasional pyrobitumen. ANHYDRITE white, light brown, grey, microcrystalline.
2885-2887.5	DOLOMITE light brown, brown, very fine crystalline, trace anhydritic, occasional calcite, fractures, scattered pinpoint porosity, occasional pyrobitumen. ANHYDRITE white, light brown, grey, microcrystalline.

2887.5-2890	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, dense, in part anhydritic, tight. LIMESTONE trace dark brown, brown, cryptocrystalline to microcrystalline, dense, tight. ANHYDRITE white, light brown, grey, microcrystalline.
2890-2892.5	DOLOMITE light brown, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight, SHALE black, micromicaceous, sub fissile to fissile, calcareous, argillaceous. ANHYDRITE white, light brown, grey, microcrystalline.
2892.5-2895	DOLOMITE brown, dark brown, microcrystalline to minor very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2895-2897.5	DOLOMITE brown, dark brown, microcrystalline to minor very fine crystalline, dense, anhydritic, tight to trace pinpoint porosity. ANHYDRITE white, light brown to brown, microcrystalline.
2897.5-2900	DOLOMITE light to dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2900-2905	DOLOMITE dark brown, light brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2905-2910	DOLOMITE dark brown, light brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile, argillaceous, calcareous.
2910-2915	DOLOMITE dark brown, minor light brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2915-2920	DOLOMITE brown to dark brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace argillaceous, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2920-2922.5	DOLOMITE brown to dark brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace argillaceous, tight. ANHYDRITE white, light brown to brown, microcrystalline.

2922.5-2925	DOLOMITE buff, brown, minor dark brown, microcrystalline to very fine crystalline, slightly anhydritic, trace limy, trace to abundant pinpoint porosity totally plugged with pyrobitumen. ANHYDRITE white, light brown to brown, microcrystalline.
2925-2927.5	DOLOMITE buff, light brown, microcrystalline to very fine crystalline, trace anhydritic, occasional calcite, fractures, tight to abundant pinpoint porosity mostly plugged with pyrobitumen. ANHYDRITE trace, white, light brown to brown, microcrystalline
2927.5-2932.5	DOLOMITE buff, light brown, microcrystalline to very fine crystalline, trace anhydritic, abundant white calcite, trace fractures, tight to abundant pinpoint porosity plugged with pyrobitumen.
2932.5-2935	DOLOMITE buff, light to dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, trace pinpoint porosity plugged with pyrobitumen, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2935-2940	DOLOMITE light to dark brown, microcrystalline, trace very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, microcrystalline. LIMESTONE trace dark brown, microcrystalline, trace argillaceous, dense, tight.
2940-2942.5	DOLOMITE light brown, mottled grey brown, dark brown, microcrystalline, dense, in part anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline. LIMESTONE trace dark brown, microcrystalline, dense, trace argillaceous, tight.
2942.5-2947.5	DOLOMITE buff, light brown, dark brown, microcrystalline to minor very fine crystalline, slightly anhydritic, dense, trace pyrobitumen plugged pinpoint porosity, abundant white calcite. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2947.5-2952.5	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, occasional white calcite, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2952.5-2955	DOLOMITE light to dark brown, microcrystalline, trace very fine crystalline, anhydritic, minor calcite, trace pyrobitumen plugged pinpoint porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2955-2960	DOLOMITE light to dark brown, microcrystalline to trace very fine crystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.

2960-2965	DOLOMITE buff to dark brown, microcrystalline, trace very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2965-2970	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2970-2975	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2975-2980	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2980-2982.5	DOLOMITE light grey brown, light brown, microcrystalline to very fine crystalline, trace anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2982.5-2985	DOLOMITE light grey brown, light brown, microcrystalline to very fine crystalline, trace fine crystalline, anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2985-2987.5	DOLOMITE light brown, microcrystalline to minor fine crystalline, trace fine crystalline, anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2987.5-2990	DOLOMITE light brown, light grey brown, microcrystalline to fine crystalline, trace anhydritic, minor white calcite, scattered pinpoint porosity, rare vuggy, predominantly pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2990-2995	DOLOMITE light to dark brown, microcrystalline, minor very fine to fine crystalline, anhydritic, dense, tight to trace pinpoint porosity, trace pyrobitumen. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2995-3000	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.

3000-3002.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3002.5-3005	DOLOMITE light to dark brown, microcrystalline, minor very fine to fine crystalline, anhydritic, dense, tight to trace pinpoint porosity, trace pyrobitumen. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3005-3007.5	DOLOMITE light brown, microcrystalline to very fine crystalline, slightly anhydritic, occasional pinpoint porosity, trace pyrobitumen, tight to trace porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3007.5-3010	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3010-3012.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, trace pinpoint porosity, pyrobitumen, tight to trace porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3012.5-3017.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3017.5-3022.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3022.5-3025	DOLOMITE brown, dark brown, cryptocrystalline to microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3025-3027.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, occasional pinpoint porosity, in part plugged with pyrobitumen, tight to trace porosity. ANHYDRITE white, light brown, brown, cryptocrystalline to microcrystalline.
3027.5-3030	DOLOMITE light brown, brown, occasional dark brown, microcrystalline, minor very fine crystalline, slightly anhydritic, rare pinpoint porosity with pyrobitumen, tight to trace porosity. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3030-3032.5	DOLOMITE light brown, brown, minor dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, rare pinpoint porosity, pyrobitumen, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.

3032.5-3035	DOLOMITE light brown, brown, minor dark brown, microcrystalline, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3035-3037.5	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3037.5-3040	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, anhydritic, dense, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3040-3042.5	DOLOMITE buff, grey brown, dark brown, microcrystalline, trace very fine crystalline, dense, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3042.5-3045	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, trace pinpoint, vuggy porosity, occasional pyrobitumen, tight to trace porosity, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3045-3047.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, trace pinpoint, vuggy porosity, occasional pyrobitumen, tight to trace porosity, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3047.5-3050	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3050-3052.5	DOLOMITE light brown, brown, grey brown, microcrystalline to very fine crystalline, trace fine crystalline, abundant white calcite, trace pyrobitumen, scattered pinpoint porosity, rare drusy dolomite, tight to 2% pinpoint, vuggy porosity, no shows. ANHYDRITE trace.
3052.5-3055	DOLOMITE buff, light brown, microcrystalline to minor very fine crystalline, occasional white calcite,, rare pinpoint porosity, occasional pyrobitumen, tight, no shows. ANHYDRITE trace.
3055-3057.5	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3057.5-3060	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3060-3062.5	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.

3062.5-3064	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
FTD	3064MD, 3050.8TVD

E. Well Evaluation

Logged intermediate #1 on January 29, 2004 from 207.0 m – 807.6 m as follows:
HDIL-GR-3CAL
MAC-GR-XYCAL
HDIP-GR-3CAL
CN-ZDL-XYCAL
CVL

Logged intermediate #2 on March 3, 2004 from 803.5 M – 2487.1 m as follows:
HDIL-GR-3CAL
MAC-GR-XYCAL
HDIP-GR-3CAL
CN-ZDL-XYCAL
CVL

Logged main hole on March 18, 2004 from 2447.7 m – 3043.3 m as follows:
HDIL-GR-CAL
MAC-GR-CAL
CN-ZDL-GR-CAL
STER-CBIL-GR-3CAL
CN-ZDL-GR-CAL-CVL

Copies off logs have previously been submitted to the National Energy Board.

No other logs were run.

No formation stimulation operations were conducted.

No other testing except for the 5 drill stem tests was conducted.

Appendix #1:
Daily Drilling Reports

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
90,938	6,355,458
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Overcast		

Operations at Report Time
Safety meeting with crews and truckers

Operations This Report Period
Rig move

Operations Next Report Period
Spot and rig up

Rigs - Nabi Oilfield LTD., #3

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

2, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	20:00	12.00	101	MIRU	Move rig
20:00	08:00	12.00	101	MIRU	Wait on daylight and freeze pad on lease.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Formation Pick Groups - Actual

Formation Picks Group
Actual

Formation Pick Groups - Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
141,906	141,906
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear		

Operations at Report Time
Move first 25 loads from GP to location

Operations This Report Period
Travel to location

Operations Next Report Period
Move rig

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:00	24.00	101	MIRU	Move rig from Grande Prairie

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Rigs - Akita Drilling A.T.R. 69

Rig Supervisor
Alvin Vogt

1, Gardner Denver PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

2, Gardner Denver PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear		

Operations at Report Time
Continue move to location last 20 loads left GP

Operations This Report Period
Move 3 camp shacks. Work on road

Operations Next Report Period
Move rig

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	17:00	9.00	101	MIRU	Move and spot camp
17:00	08:00	15.00	101	MIRU	Wait on daylight and build road.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

AFE No.	Total AFE Amt ($)
230004	18,540,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
6,003,781	6,145,687
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD, #30

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Overcast		

Operations at Report Time
Move rig.

Operations This Report Period
Moved and rigged up camp..

Operations Next Report Period
Move rig

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	101	MIRU	Wait on daylight
10:00	20:00	10.00	101	MIRU	Move and rig up camp
20:00	08:00	12.00	101	MIRU	Wait on daylight work.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
118,833	6,264,520
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rig Supervisor
Alvin Vogt

Pump Number | Pwr (kW) | Rod Diameter (mm)
1 | |

Pump Number | Pwr (kW) | Rod Diameter (mm)
2 | |

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
97,858	6,453,316
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Snow		

Operations at Report Time
Safety meeting with crew and truckers

Operations This Report Period
Dug celler, spot matting, sub and pinned derrick

Operations Next Report Period
Rig up to spud

Rig: Nabors Drilling Ltd. 46

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Time Log

Start Dpth	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	101	MIRU	Held safety meeting with crew and truckers
08:15	10:00	1.75	101	MIRU	Dug celler
10:00	12:00	2.00	101	MIRU	Lay felt and matting.
12:00	20:00	8.00	101	MIRU	Pin sub install drawworks and pin derrick
20:00	08:00	12.00	101	MIRU	Wait on daylight and freeze pad

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
945,635	7,398,951
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Snow		

Operations at Report Time
Rig up

Operations This Report Period
Spot mud tanks and rig up

Operations Next Report Period
Rig to spud

Rig Supervisor
Alvin Vogt

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	101	MIRU	Safety meeting with crew and truckers
08:15	14:00	5.75	101	MIRU	Spot buildings
14:00	00:00	10.00	101	MIRU	Rig up
00:00	08:00	8.00	101	MIRU	Wait on daylight

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
112,383	7,511,334
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Snow		

Operations at Report Time
Rig up pre-fabs

Operations This Report Period
Rig to spud

Operations Next Report Period
Drill conductor hole

Rigs: Air-1 Drilling LTD., #3

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	12:00	4.00	101	MIRU	Rig up mud tanks and rig
12:00	08:00	20.00	101	MIRU	Raise derrick 14:00 hrs, sub 16:00 hrs, rig up pre-fabs and steam.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	

Operations at Report Time
Make up kelly spinner

Operations This Report Period
Rig to spud, spud with rathole bit.

Operations Next Report Period
Drill mouse, rat and conductor

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	02:45	18.75	101	MIRU	Rig up floor, pick up kelly and prep mudtanks
02:45	03:00	0.25	101	MIRU	Pre-spud safety meeting with crew
03:00	06:30	3.50	201	Drill	Spud 04-01-16 03:00 hrs with rathole assembly. Drill to 15m KB
06:30	08:00	1.50	303	Trip:Handle tools	Install kelly spinner and all subs

Drill String: BHA #1, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
1B	215.0mm, Rathole, 75363	------HR	0.00	15.00	15.00	3.50	4.3

Len (m)	Max OD (mm)	String Components
11.92	171.4	Akita Rathole, Bit Sub, Drill Collar, XO Sub

Drilling Parameters: 0.00 - 15.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
0.00	15.00	3.50	3.50	2,000	100	1,200	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/s)
	30	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

AFE No.	Total AFE Amt ($)
230004	18,548,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
114,959	7,626,293
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	15.00
Depth Progress (mKB)	**Drilling Time (hrs)**
15.00	3.50

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	

Operations at Report Time
Cement conductor

Operations This Report Period
Drilled conductor and ran pipe

Operations Next Report Period
Cement conductor, WOC, drill surface hole

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:00	1.00	303	Trip:Handle tools	Install kelly spinner
09:00	12:00	3.00	201	Drill	Drill mouse hole and rat hole
12:00	12:45	0.75	303	Trip:Handle tools	Rig to drill conductor
12:45	13:00	0.25	502	Safety	Prespud safety meeting with crew
13:00	15:00	2.00	303	Trip:Handle tools	Made up BHA
15:00	21:00	6.00	201	Drill	Drill 660.4mm conductor hole
21:00	00:45	3.75	017	Reaming	Ream to straighten hole
00:45	01:00	0.25	502	Safety	Safety meeting with crew for laying down and running conductor
01:00	03:00	2.00	602	Trip:Casing	Lay down BHA
03:00	07:00	4.00	602	Trip:Casing	Ran conductor and welded joints
07:00	08:00	1.00	601	Circ:Casing	Circulate conductor

Drill Strings: BHA #2, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
1A	444.5mm, FDS+ , NRK8448	3-3-WT-A-E-0-NO-TD	0.00	27.00	27.00	6.00	4.5

Len (m)	Max OD (mm)	String Components
13.93	660.4	Smith FDS+ , Hole Opener, Bit Sub, Drill Collar, XO Sub, XO Sub

Drilling Parameters: 0.00 - 27.00 mKB

Depth (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
0.00	27.00	6.00	6.00	2,000	100	1,500	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
	7	10

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	Cum. Cost To Date ($)
198,573	7,824,866
Daily Mud Cost ($)	Mud Cum To Date ($)
0	0
Depth Start (mKB)	Depth End (mKB)
15.00	27.00
Depth Progress (mKB)	Drilling Time (hrs)
12.00	6.00

Rig: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
256,000	8,081,766
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
27.00	25.00
Depth Progress (mKB)	**Drilling Time (hrs)**
2.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Nipple up diverter

Operations This Report Period
Cemented conductor, WCC, nipple up diverter

Operations Next Report Period
Drill surface hole

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	601	Circ:Casing	Rig to circulate conductor
09:30	09:45	0.25	502	Safety	Safety meeting with crew and cementers
09:45	11:00	1.25	603	Run casing/Cement	Ran 2 joints 25.7m 508.8mm 139.9kg/m K55 New R3 Buttress Tian. Landed at 25m KB. Cemented with 12T Polarset Regular + 0.1% R-7C. Displaced with 2.5m3 H2O. 1m3 returns. Cement in place 04-01-17 10:30 hrs.
11:00	23:00	12.00	604	WOC	Wait on cement
23:00	02:00	3.00	605	NU BOP's	Cut conductor and weld diverter flange
02:00	08:00	6.00	605	NU BOP's	Nipple up diverter, gut line and modify flow T.

Wellbores

Name	VS Dir (°)	ND MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
162,792	8,244,558
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
25.00	120.00
Depth Progress (mKB)	**Drilling Time (hrs)**
95.00	10.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill 311mm pilot surface hole

Operations This Report Period
Nipple up diverter and drill surface

Operations Next Report Period
Drill surface hole and ream to 444.5mm.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	16:00	8.00	605	NU BOP's	Nipple up diverter
16:00	18:00	2.00	607	Drill Out	Made up BHA, ran in and tagged cement at 14m KB
18:00	20:00	2.00	607	Drill Out	Drill out conductor
20:00	23:30	3.50	201	Drill	Drill ahead to 50m KB
23:30	23:45	0.25	501	Rig Service	Service rig
23:45	00:00	0.25	400	Survey	Survey
00:00	02:45	2.75	201	Drill	Drill ahead to 75m KB
02:45	03:00	0.25	400	Survey	Survey
03:00	05:15	2.25	201	Drill	Drill ahead to 103m KB
05:15	05:30	0.25	501	Rig Service	Service rig
05:30	05:45	0.25	400	Survey	Survey
05:45	08:00	2.25	201	Drill	Drill ahead to 120m KB

Mud Checks: 97.00mKB, 1/18/2004 08:00

Type	Date	Depth (mKB)	T(fi) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Natural slurry	1/18/2004 08:00	97.00		1260.00		
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	9.5					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #3, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
2A	311.0mm, EHT116C, NRKW6454	3-3-WT-A-E-0-NO-BHA	25.00	120.00	95.00	10.75	8.8

Len (m)	Max OD (mm)	String Components
41.96	223.0	King Dream EHT116C, Bit Sub, Teledrift, Drill Collar, XO Sub, Drill Collar

Drilling Parameters: 25.00 – 120.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
25.00	120.00	10.75	10.75	5,000	150	2,000	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
	25	15

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original Hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD. 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Desco CF	1.0	
Amine Derivative	3.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
102,910	8,347,468
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
120.00	188.00
Depth Progress (mKB)	**Drilling Time (hrs)**
68.00	15.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill 444.5mm surface hole at 188m KB

Operations This Report Period
Drill 311mm pilot hole to 130m KB, trip ream same and drill ahead

Operations Next Report Period
TD surface hole, dummy trip, run and cement 339.7mm surface casing

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	201	Drill	Drill ahead 311mm pilot hole to 130m KB
10:30	15:30	5.00	302	Trip:Bit	Pull out of hole and made up 444.5mm and ran in same
15:30	18:45	3.25	017	Reaming	Ream 311mm pilot hole to 55m KB
18:45	19:00	0.25	400	Survey	Misrun
19:00	19:30	0.50	017	Reaming	Ream pilot hole to 65m KB
19:30	19:45	0.25	400	Survey	Survey
19:45	23:45	4.00	017	Reaming	Ream pilot hole to 130m KB
23:45	04:00	4.25	201	Drill	Drill ahead to 167m KB
04:00	04:15	0.25	400	Survey	Survey with teledrift
04:15	05:15	1.00	201	Drill	Drill ahead to 177m KB
05:15	05:30	0.25	501	Rig Service	Service rig
05:30	05:45	0.25	400	Survey	Survey wireline
05:45	08:00	2.25	201	Drill	Drill ahead to 188m KB

Mud Checks: 171.00mKB, 1/19/2004 8:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Natural slurry	1/19/2004 08:00	171.00		1210.00	44	
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
(kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	9.0					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**
		0.1				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #4, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
3A	444.5mm, MSDSSH , NRKJ8668	3-3-WT-A-E-0-NO-TD	14.00	208.00	194.00	17.75	10.9

Len (m)	Max OD (mm)	String Components
199.72	223.0	Smith MSDSSH , Bit Sub, Teledrift, Drill Collar, XO Sub, Drill Collar, HWDP

Drilling Parameters: 14.00 - 130.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
14.00	130.00	7.75	7.75	5,000	150	4,000	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)

Drilling Parameters: 130.00 - 188.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
130.00	188.00	7.50	15.25	12,000	150	5,000	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
	16	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Bicarbonate Soda	12.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
95,744	8,443,212
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
188.00	208.00
Depth Progress (mKB)	**Drilling Time (hrs)**
20.00	2.50

Weather	Road Condition	Hole Condition
Light snow	Good	Good

Operations at Report Time
Running 339.7mm surface casing

Operations This Report Period
Drilled to 208m KB TD. Dummy tripped, circulate, came out rigged to and running 339.7mm surface casing

Operations Next Report Period
Run, cement, woc, weld bowl and nipple up.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	201	Drill	Drill ahead to 208m KB
10:30	10:45	0.25	400	Survey	Survey
10:45	11:00	0.25	601	Circ:Casing	Circulate hole clean
11:00	13:45	2.75	602	Trip:Casing	Dummy trip
13:45	14:45	1.00	601	Circ:Casing	Circulate and condition for 339.7mm surface casing
14:45	17:00	2.25	602	Trip:Casing	Pull out of hole to run casing
17:00	19:00	2.00	603	Run casing/Cement	Rigged up power tongs
19:00	19:15	0.25	502	Safety	Safety meeting with crew and tong hand
19:15	01:00	5.75	603	Run casing/Cement	Ran 339.7mm surface casing double winching for stabbing
01:00	01:15	0.25	501	Rig Service	Service rig
01:15	01:30	0.25	502	Safety	Safety meeting with crew and tong hand
01:30	08:00	6.50	603	Run casing/Cement	Running 339.7mm surface casing. Double winching for stabbing

Mud Checks: 206.0mKB, 1/19/2004 10:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Natural slurry	1/19/2004 10:00	208.00		1220.00	44	
Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
Solids (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.0					
Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: PHA #4, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
3A	444.5mm, MSDSSH , NRKJ0665	3-3-WT-A-E-0-NO-TD	14.00	208.00	194.00	17.75	10.9

Len (m)	Max OD (mm)	String Components
199.72	223.0	Smith MSDSSH , Bit Sub, Teledrift, Drill Collar, XO Sub, Drill Collar, HWDP

Drilling Parameters: 188.00 - 208.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
188.00	208.00	2.50	17.75	12,000	150	5,000	2.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
	16	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
200.00	3.06	242.50					

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-6

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-6

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Light snow	Good	Good

Operations at Report Time
Nipple up BOP's

Operations This Report Period
Ran and cemented 339.7mm surface casing, WOC, nipple down diverter, cut conductor, weld bowl, nipple up BOP's

Operations Next Report Period
Nipple up, pressure test, drill out

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
09:00	09:30	1.50	603	Run casing/Cement	Ran 339.7mm surface casing
09:30	10:15	0.75	601	Circ:Casing	Circulate and condition for cementing
10:15	10:30	0.25	502	Safety	Held safety meeting with crew and cementers
10:30	12:30	2.00	603	Run casing/Cement	Ran 18 joints 209.32m 339.7mm 81.1kg/m K55 ST&C New R3 Ipsco. Landed at 208m KB. Cemented with 34T Polarset Regular + 0.2% R-7C. Displaced with 16.3m3 H2O. 13m3 returns. Plug down 04-01-21 12:30hrs. Float held OK.
12:30	17:45	5.25	604	WOC	Wait on cement
17:45	18:15	0.50	603	Run casing/Cement	Cut casing
18:15	21:30	3.25	605	NU BOP's	Nipple down diverter
21:30	03:30	6.00	605	NU BOP's	Cut conductor and surface casing, tacked bowl and preped with hot head. Weld bowl and pressure test same to 7000 kPa
03:30	08:00	4.50	605	NU BOP's	Nipple up BOP's

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
99,973	8,543,185
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
208.00	208.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD, #40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50

Surface, 208.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Pressure testing

Operations This Report Period
Nipple up BOP's and flare tank.

Operations Next Report Period
Pressure test, drill out, leak off test and drill ahead.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	00:00	16.00	605	NU BOP's	Nipple up BOP's
00:00	01:15	1.25	605	NU BOP's	Nipple up flare tank
01:15	08:00	6.75	606	PT BOP's	Pressure test blind rams 1500kPa low and 17500kPa high OK. Pressure testing manifold and inner and outer HCR.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
156,339	8,699,524
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
208.00	208.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50

Surface, 208.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
147,438	8,846,962
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
208.00	208.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Pressure test and repair pump#2

Operations This Report Period
Pressure test and repair pump #2.

Operations Next Report Period
Drill out and drill intermediate #1.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	12:00	4.00	018	Rig Repair	Change out valve in manifold
12:00	16:30	4.50	606	PT BOP's	Pressure test 1500
16:30	21:45	5.25	018	Rig Repair	Repair right angle drive on pump #2
21:45	00:00	2.25	303	Trip:Handle tools	Make up BHA
00:00	03:00	3.00	018	Rig Repair	Repair right angle drive on pump #2
03:00	03:30	0.50	302	Trip:Bit	Run in hole to pressure test
03:30	04:00	0.50	606	PT BOP's	Function test accumulator
04:00	05:00	1.00	606	PT BOP's	Pressure test lower pipe rams 1500kPa low and 17500kPa high. 10min each. OK.
05:00	08:00	3.00	018	Rig Repair	Put belts and gaurds on pump #2

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gard.wr-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50

Surface, 208.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Well Name: Northrock et al Sunset Creek

Well Type: Drilling - onshore

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 216m KB

Operations This Report Period
Thaw rig, complete pressure testing, drilled out and ahead to preform leak off test

Operations Next Report Period
Preform leak off test, drill ahead intermediate #1.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	03:00	19.00	004	Casing-Hole Problem	Thaw stand pipe, kelly hose, kelly
03:00	05:15	2.25	606	PT BOP's	Pressure test lower, upper pipe ramsand inner check valves 1500kPa high for 15 min. Annular 13800kPa for 15 min.
05:15	06:30	1.25	607	Drill Out	Drill out cement and shoe
06:30	08:00	1.50	201	Drill	Drill ahead to 216m KB

Drill Strings: BHA #5, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/hr)
1	311.0mm, HCM605, 7001622	1-1-WT-A-X-0-NO-TD	208.00	810.00	602.00	54.00	11.1

Len (m)	Max OD (mm)	String Components
206.07	305.0	Hughes HCM605, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, HWDP

Drilling Parameters: 208.00 - 216.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
208.00	216.00	1.50	1.50	5,000	80	3,000	1.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
	20	5

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
96,623	8,943,585
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
208.00	216.00
Depth Progress (mKB)	**Drilling Time (hrs)**
8.00	1.50

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Picks Groups: Actual

Formation Picks Group: Actual

Formation Picks Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50

Surface, 216.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Spud Date	Rig Release Date	KB Elevation ( )	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
151,535	9,095,120
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
216.00	480.00
Depth Progress (mKB)	**Drilling Time (hrs)**
264.00	19.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 480m KB

Operations This Report Period
Preformed leak off test and drilled ahead

Operations Next Report Period
Drill ahead to intermediate TD.

Rig: AKITA Drilling LTD., 40

Rig Supervisor: Alvin Vogt

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	607	Drill Out	Leak off test
08:30	09:15	0.75	301	Circ:Bit	Displace hole to mud
09:15	09:30	0.25	201	Drill	Drill ahead to 220m KB
09:30	09:45	0.25	502	Safety	BOP drill with crew, well secure in 100 seconds
09:45	10:00	0.25	501	Rig Service	Service rig
10:00	13:00	3.00	201	Drill	Drill ahead to245m KB
13:00	14:00	1.00	301	Circ:Bit	Circulate and thaw shaker and condition mud for samples
14:00	15:00	1.00	201	Drill	Drill ahead to 256m KB
15:00	15:15	0.25	400	Survey	Teledrift survey, misrun
15:15	21:30	6.25	201	Drill	Drill ahead to 308m KB
21:30	21:45	0.25	400	Survey	Survey
21:45	22:00	0.25	502	Safety	BOP drill with crew, well secure in 70 seconds
22:00	23:30	1.50	201	Drill	Drill ahead to 355m KB
23:30	23:45	0.25	501	Rig Service	Service rig, function upper pipe rams close in 6 seconds
23:45	04:45	5.00	201	Drill	Drill ahead to 422m KB
04:45	05:00	0.25	400	Survey	Survey
05:00	05:15	0.25	501	Rig Service	Service rig, function annular close 28 seconds
05:15	08:00	2.75	201	Drill	Drill ahead to 480m KB

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,920	Yes	116	95

Mud Checks: 419.00mKB, 1/26/2004 00:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer Gel	1/26/2004 00:00	419.00	26	1100.00	44	14.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
7.5	2.0	7.0	7.0		1	38

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5	0.400		35.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
450.000	1.5	6.3			14.9	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Desco CF	1.0	
Encapsorfloc	4.0	
Lignite	4.0	
Amine Derivative	4.0	
Bicarbonate Soda	5.0	
Soda Ash	8.0	
Bentonite	30.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00

Surface, 206.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Drill Strings: BHA #5, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
1	311.0mm, HCM605, 7001622	1-1-WT-A-X-0-NO-TD	208.00	810.00	602.00	54.00	11.1

Len (m)	Max OD (mm)	String Components
206.07	305.0	Hughes HCM605, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, HWDP

Drilling Parameters: 216.00 - 480.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
216.00	480.00	19.75	21.25	7,500	105	10,000	2.400

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
35	45	60

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
300.00	3.21	249.12					
400.00	3.48	258.15					

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
110,443	9,205,563
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
480.00	730.00
Depth Progress (mKB)	**Drilling Time (hrs)**
250.00	22.25

Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 745m KB

Operations This Report Period
Jacked rig and drilled ahead

Operations Next Report Period
Drill ahead to intermediate TD. Dummy trip and log as per program

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	400	Survey	Survey, misrun
08:15	09:00	0.75	201	Drill	Drill ahead
09:00	09:15	0.25	400	Survey	Survey
09:15	10:30	1.25	201	Drill	Drill ahead to 488m KB
10:30	10:45	0.25	018	Rig Repair	Circulate for rig jackers
10:45	14:15	3.50	201	Drill	Drill ahead to 509m KB
14:15	14:30	0.25	400	Survey	Survey
14:30	16:45	2.25	201	Drill	Drill ahead to 549m KB
16:45	17:00	0.25	501	Rig Service	Service rig, function upper pipe 4 seconds
17:00	23:45	6.75	201	Drill	Drill ahead to 622m KB
23:45	00:00	0.25	400	Survey	Survey
00:00	06:45	6.75	201	Drill	Drill ahead to 717m KB
06:45	07:00	0.25	400	Survey	Survey
07:00	08:00	1.00	201	Drill	Drill ahead to 730m KB

Mud Checks: 698.00mKB, 1/27/2004 04:45

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer Gel	1/27/2004 04:45	698.00	33	1110.00	41	11.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0	1.0	3.0	8.1		1	26

Solids (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.0			10,000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
450,000	1.0	7.0			16.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additives Amounts

Desc	Cons	Daily Cost ($)
Caustic Soda	1.0	
Lignite	1.0	
Encapsorfloc	11.0	

Drill Strings: BHA #5, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
1	311.0mm, HCM605, 7001622	1-1-WT-A-X-0-NO-TD	208.00	810.00	602.00	54.00	11.1

Len (m)	Max OD (mm)	String Components
206.07	305.0	Hughes HCM605, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, HWDP

Drilling Parameters: 480.00 - 730.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
480.00	730.00	22.25	43.50	5,000	110	15,377	2.400

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
35	45	60

Wellbore

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
500.00	3.37	253.87					
600.00	3.23	267.81					
700.00	3.08	275.44					

Rigs: Akita Drilling LTD., #9

Rig Supervisor: Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
4,950	Yes	100	95

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00

Surface, 203.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Sawtooth Creek B-41 | Rig: Akita Drilling LTD. #40

Job Type: Drilling - original | Primary Objective: Gas

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
110,278	9,315,641
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
730.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
80.00	10.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Dummy trip

Operations This Report Period
Drilled ahead to intermediate #1 TD at 810m. Circulate and dummy trip for logging.

Operations Next Report Period
Log intermediate #1, circulate and wiper trip to run casing.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:45	0.75	201	Drill	Drill ahead to 736m KB
08:45	09:00	0.25	502	Safety	BOP drill with crew, well secured in 95 seconds
09:00	11:00	2.00	201	Drill	Drill ahead to 755m KB
11:00	11:15	0.25	501	Rig Service	Service rig, function annular 21 seconds
11:15	13:00	1.75	201	Drill	Drill ahead to 774m KB
13:00	13:15	0.25	301	Circ:Bit	Circulate hole clean
13:15	15:45	2.50	201	Drill	Drill ahead to 793m KB
15:45	16:00	0.25	501	Rig Service	Service rig, function upper pipe rams 4 seconds
16:00	19:30	3.50	201	Drill	Drill ahead to 810m KB - Intermediate #1 TD
19:30	22:00	2.50	901	Circ:Log	Circulate and condition mud prior to wiper trip for logging
22:00	22:45	0.75	902	Trip:Log	Wiper trip for logging to 665m KB work tight hole.
22:45	08:00	9.25	902	Trip:Log	Dummy trip and work tight hole to casing shoe for logging

Rig: Akita Drilling LTD. #40

Rig Supervisor
Alvin Voqt

1: Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2: Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
5,678	Yes	100	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Encapsorfloc	2.0	
Lignite	4.0	
Caustic Soda	6.0	
Bentonite	65.0	

Mud Checks: 810.00mKB, 1/27/2004 21:30

Type	Date	Depth (mKB)	T (fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer Gel	1/27/2004 21:30	810.00		1130.00	75	22.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
11.0	7.0	14.0				

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Drill Strings: BHA #5, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
1	311.0mm, HCM605, 7001622	1-1-WT-A-X-0-NO-TD	208.00	810.00	602.00	54.00	11.1

Len (m)	Max OD (mm)	String Components
206.07	305.0	Hughes HCM605, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, HWDP

Surface, 208.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Drilling Parameters: 730.00 - 810.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
730.00	810.00	10.50	54.00	5,000	110	19,000	2.400

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
35	45	60

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original Hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
800.00	3.38	280.54					

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek 8-14 — Report No: 10, Report Date: 1/27/2004

Job Type: Drilling - original

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
99,678	9,415,519
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Dummy trip

Operations This Report Period
Dummy trip and circulate for logging work tight hole on the way out, RIH and dummy trip for logging and clean mud rings from flowline.

Operations Next Report Period
Log intermediate #1, dummy trip to run 244.5mm casing and run 244.4mm casing

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	902	Trip:Log	Dummy trip and work tight hole for logging, function blind rams 4 seconds
10:00	12:00	2.00	902	Trip:Log	RIH dummy trip for logging
12:00	12:15	0.25	502	Safety	Safety meeting, flow checks
12:15	13:30	1.25	902	Trip:Log	RIH dummy trip for logging
13:30	14:00	0.50	017	Reaming	Ream from 511m KB - 521m KB
14:00	15:00	1.00	902	Trip:Log	POOH dummy trip
15:00	17:45	2.75	013	Mud Problems	Condition and build mud volume
17:45	19:00	1.25	017	Reaming	Ream from 206m KB - 251m KB
19:00	21:30	2.50	902	Trip:Log	RIH dummy trip for logging to 675m KB
21:30	23:00	1.50	013	Mud Problems	Circulate hole clean and mud ring out
23:00	02:15	3.25	013	Mud Problems	Mud ring in flowline - clean flowline
02:15	03:45	1.50	013	Mud Problems	Circulate hole clean and mud ring out
03:45	04:45	1.00	902	Trip:Log	RIH dummy trip for logging to 763m KB
04:45	08:00	3.25	013	Mud Problems	Mud ring in flowline - clean flowline

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
15 .0	229.0	0.012

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Lignite	1.0	
Amine Derivative	1.0	
Caustic Soda	2.0	
Bentonite	57.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Surface, 208.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek B-46 — Day: 22.0, Ending: 1/31/2004 [illegible]

Job Type: Drilling - original — Progress: 0.00 (810.00 - 810.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Circulate and condition

Operations This Report Period
Dummy tripped, circulate and condition for logging, logged well as per program

Operations Next Report Period
Run in hole, condition, and trip to run 244.5mm intermediate casing

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	901	Circ:Log	Ream 5 joints to bottom, circulate and condition for logging.
11:45	12:00	0.25	400	Survey	Survey
12:00	16:45	4.75	902	Trip:Log	Pull out of hole to log
16:45	06:00	13.25	903	Logging	Log well as per program & tear out loggers
06:00	08:00	2.00	702	Trip:DST	Change out liners on pump #1

Mud Checks: 810.00mKB, 1/29/2004 11:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	1/29/2004 11:30	810.00	31	1120.00	86	27.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Fltr (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
14.0	4.0	18.0	7.4		1	64

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
450.000	0.6	7.5			17.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
84,528	9,500,047
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rig: Aldia Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Lignite	1.0	
Amine Derivative	1.0	
Bentonite	44.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Surface, 206.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Intial Shut-in DST #1

Operations This Report Period
Wiper trip for DST, DST #1 from 458m to 465m

Operations Next Report Period
DST #1, DST #2 and wiper trip to run 244.5mm intermediate casing

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	702	Trip:DST	Change liners
10:00	12:30	2.50	702	Trip:DST	Run in for cleanout trip
12:30	17:00	4.50	701	Circ:DST	Ream in last 2 joints to bottom, condition mud and circulate for DST
17:00	20:30	3.50	702	Trip:DST	POOH for DST, function blind rams 20 seconds
20:30	21:15	0.75	702	Trip:DST	Lay down 9" drill collars prior to DST
21:15	21:30	0.25	501	Rig Service	Service rig, function upper pipe rams 4 seconds
21:30	01:30	4.00	703	DST's	Make up DST tools
01:30	03:45	2.25	702	Trip:DST	RIH for DST, strap in
03:45	05:30	1.75	703	DST's	Rig up floor and manifold
05:30	08:00	2.50	703	DST's	Inflate packers and start DST, preflow 10 minutes & intial shut-in 60 minutes

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
148,828	9,648,875
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD., #6

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Vis-Plus	1.0	
Desco CF	2.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Surface, 268.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Sukunka Creek B-[illegible] Rig: [illegible] Report No.: [illegible]

Well Type: Drilling - original Report Start: [illegible] (810.0) - [illegible] (810.0)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Make up tools on surface for DST #3

Operations This Report Period
Run DST #1, run DST #2, dummy trip and circulate for DST #3 and make up tools for DST #3 on surface

Operations Next Report Period
DST #3, dummy trip, circulate and condition hole to run 244.5mm intermediate casing and run casing

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	13:45	5.75	703	DST's	Run DST #1 from 458m to 465m flow 60 minutes, final shut-in 180 minutes and release packer
13:45	15:00	1.25	702	Trip:DST	POOH with DST #1
15:00	17:00	2.00	702	Trip:DST	Make up DST #2 on surface
17:00	18:15	1.25	702	Trip:DST	RIH with DST #2
18:15	22:30	4.25	703	DST's	Run DST #2 from 238m to 245m, preflow 10 minutes and intial shut-in 60 minutes
22:30	03:00	4.50	702	Trip:DST	POOH with DST #2 and break apart tools on surface
03:00	04:15	1.25	703	DST's	RIH to 300m to dummy trip for DST #3, function blind rams 20 seconds
04:15	05:15	1.00	701	Circ:DST	Circulate hole clean
05:15	08:00	2.75	702	Trip:DST	POOH for DST #3, function blind rams 21 seconds, pick-up and make tools up for DST #3

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original Hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
88,028	9,736,903
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Surface, 796.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
1/21/2004	339.7	K-55	81.105

NORTHROCK RESOURCES LTD. — Daily Drilling Report

Well Name: Northrock Zama Comp. A-96 — Report #: 21 — Report Start: 2/2/2004, 06:00 — Report End: 2/3/2004, 06:00

Well Type: Drilling Completion — Primary Job Type: Drilling and Completion — Plan: DRILL AND COMPLETE

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
160,178	9,897,081
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Run 244.5mm intermediate 1 casing

Operations This Report Period
Ran DST 3. Recovered same and loaded out tester. Ran clean out and running casing

Operations Next Report Period
Run and cement 244.5mm intermediate casing. WOC

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	703	DST's	Made up DST 3
09:30	10:45	1.25	702	Trip:DST	Ran in hole with DST 3
10:45	17:30	6.75	703	DST's	Pumped up packers and tested, deflated packers
17:30	18:30	1.00	702	Trip:DST	Recover DST 3
18:30	22:30	4.00	703	DST's	Load out testers
22:30	00:00	1.50	602	Trip:Casing	Ran in hole
00:00	02:00	2.00	601	Circ:Casing	Circulate and condition
02:00	04:00	2.00	602	Trip:Casing	Pull out of hole
04:00	06:00	2.00	603	Run casing/Cement	Rig up floor to run casing
06:00	06:15	0.25	502	Safety	Safety meeting with crew and power tongs
06:15	08:00	1.75	603	Run casing/Cement	Run 244 5mm intermediate 1

Mud Checks: 810.00mKB, 2/2/2004 00:45

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer Gel	2/2/2004 00:45	810.00	30	1140.00	78	27.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
11.0	3.0	8.0	7.6		1	61

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.0					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
300.000	0.5	9.0			20.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original Hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek 8-2 | Daily Cost: 226,033 | Days: 1

Job Type: Drilling - original | Progress: 0.00 (0.00 m/hr) | AFE: 230004

Spud Date	Rig Release Date	Mid Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
WOC

Operations This Report Period
Ran and cemented 244.5mm intermediate casing. WOC

Operations Next Report Period
Drill out and drill ahead 215.9mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	12:00	4.00	603	Run casing/Cement	Ran 244.5mm casing
12:00	12:15	0.25	501	Rig Service	Service rig and function annular, close 45 seconds
12:15	16:30	4.25	603	Run casing/Cement	Ran 244.5mm casing
16:30	18:00	1.50	601	Circ:Casing	Circulate and condition for cementing
18:00	18:15	0.25	502	Safety	Safety meeting with crew and cementers
18:15	22:00	3.75	603	Run casing/Cement	Ran 56 joints 804.04m 244.5mm 59.53 kg/m L80 New R3 LT&C AST. Landed at 804m KB. Cemented with 21.5 T BVF-1500 + 0.9% FL-5, Tailed with 10.5 T 0:1:0 "G" + 0.5% CD-31 + 0.4% FL-63 + 1.0% Seplolite. Displaced with 31.4m3 H2O. 8m3 returns. Plug down 04-02-02 21:15 hours. Float held OK.
22:00	00:00	2.00	605	NU BOP's	Land casing in FMC drill through bowl and pressure test seal assembly to 35000 kPa. OK
00:00	08:00	8.00	604	WOC	Wait on cement

Mud Checks: 810.00mKB, 2/2/2004 18:05

Type	Date	Depth (mKB)	T(f) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	2/2/2004 18:05	810.00	30	1130.0	48	11.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
5.0	1.0	2.0				

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.0					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
226,033	10,123,114
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	810.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD., #9

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.0	229.0	0.012

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek B-14 | Day 27.0, Ending 2/3/2004 | Rig: [illegible]

Job Type: Drilling Original | Progress: 155.0 | [illegible]

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
115,518	10,238,632
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
810.00	965.00
Depth Progress (mKB)	**Drilling Time (hrs)**
155.00	12.25

Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 965m KB

Operations This Report Period
WOC, clean mud tanks, drilled out and drilled ahead.

Operations Next Report Period
Drill ahead 215.9mm intermediate 2 to KOP

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	12:30	4.50	604	WOC	Wait on cement and clean mud tanks
12:30	15:15	2.75	302	Trip:Bit	Made up BHA and ran in same
15:15	15:45	0.50	607	Drill Out	Drill out cement to 780m KB.
15:45	16:00	0.25	606	PT BOP's	Pressure test casing to 12000 kPa. OK
16:00	16:15	0.25	501	Rig Service	BOP drill with crew, well secure in 65 seconds, annular close 28 seconds
16:15	19:15	3.00	607	Drill Out	Drilled out cement and shoe
19:15	20:00	0.75	201	Drill	Drill ahead to 822m KB
20:00	20:15	0.25	606	PT BOP's	Leak off test, surface applied pressure 19064 kPa Gradient 23.2 kPa/m
20:15	02:45	6.50	201	Drill	Drill ahead to 906m KB
02:45	03:00	0.25	400	Survey	Survey
03:00	08:00	5.00	201	Drill	Drill ahead to 965m KB

Mud Checks: 950.00mKB, 2/3/2004 06:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/3/2004 06:00	950.00		1050.00	38	
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	11.0					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #5, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
2	215.9mm, HC606, 7102447	1-1-WT-A-X-0-NO-BHA	810.00	1,055.00	245.00	22.00	11.1

Len (m)	Max OD (mm)	String Components
617.76	203.0	Hughes HC606, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 810.00 - 965.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
810.00	965.00	12.25	12.25	5,000	80	10,000	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	44

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
836.00	2.81	287.83					
924.00	3.34	294.86					

Rigs: Pure Drilling LTD, 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Soda Ash	2.0	
Lignite	2.0	
Amine Derivative	2.0	
Bicarbonate Soda	11.0	
Bentonite	44.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00

Intermediate 1, 604.00mKB

Run Date	Max OD (mm	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. – DAILY DRILLING REPORT

Well Name: Northrock et al Sundre Creek B-64 — Rig: 40 — Report #: 3 — Date: 5/27/2004

Job TVD: 2,500.0 — Job Type: Original — Proposed TD: 2,500.0 — Start Date: 5/25/2004 — End Date:

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
272,926	10,511,558
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
965.00	1,135.00
Depth Progress (mKB)	**Drilling Time (hrs)**
170.00	17.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 1135m KB

Operations This Report Period
Drilled with PDC to 1055m KB. Bit balling trip and ran tricone. Drilling ahead.

Operations Next Report Period
Drill ahead 215.9mm intermediate 2 to KOP

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:15	2.25	201	Drill	Drill ahead to 1002m KB
10:15	10:30	0.25	501	Rig Service	Service rig, function upper pipe rams close 6 seconds
10:30	11:30	1.00	201	Drill	Drill ahead to 1012m KB
11:30	11:45	0.25	400	Survey	Survey
11:45	18:00	6.25	201	Drill	Drill ahead to 1055m KB
18:00	18:30	0.50	301	Circ:Bit	Circulate bottom hole sample
18:30	21:30	3.00	302	Trip:Bit	Pull out of hole
21:30	21:45	0.25	501	Rig Service	Service rig and change oil in floor motor
21:45	00:00	2.25	302	Trip:Bit	Made up bit #3 and ran in same
00:00	05:30	5.50	201	Drill	Drill ahead to 1107m KB
05:30	05:45	0.25	400	Survey	Survey
05:45	08:00	2.25	201	Drill	Drill ahead to 1135m KB

Mud Checks: 1,105.00mKB, 2/5/2004 00:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/5/2004 00:00	1,105.00	32	1075.00	40	12.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Fltr (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
3.0	2.0	4.0	9.8		2	47

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			30,000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
1100.000	0.3	4.7			11.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #6, Pendulum

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
2	215.9mm, HC606, 7102447	1-1-WT-A-X-0-NO-BHA	810.00	1,055.00	245.00	22.00	11.1

Len (m)	Max OD (mm)	String Components
617.76	203.0	Hughes HC606, Bit Sub, Teledrift, Drill Collar, Stabilizer, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 965.00 - 1,055.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
965.00	1,055.00	9.75	22.00	5,000	80	15,000	2.100

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
71	155	58

Drill Strings: BHA #7, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
3	215.9mm, GTS-18D, ZP45DS	3-3-WT-A-E-0-NO-BHA	1,055.00	1,350.00	295.00	29.00	10.2

Len (m)	Max OD (mm)	String Components
616.23	171.4	Hughes GTS-18D, Bit Sub, Teledrift, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,055.00 - 1,135.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,055.00	1,135.00	7.75	7.75	10,000	120	14,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	91

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,009.00	3.60	305.05					
1,095.00	2.99	328.26					

Rig: Akita Drilling LTD, 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,400	Yes	68	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Encapsorfloc	6.0	
Barite	18.0	
Bentonite	51.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
East Fork	123.50
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
105,536	10,617,094
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,135.00	1,350.00
Depth Progress (mKB)	**Drilling Time (hrs)**
215.00	21.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 1350m KB

Operations This Report Period
Drilled ahead to 1212m KB. Control drill for deviation. Drilled to 1350m KB. Circulate bottom hole sample

Operations Next Report Period
Trip for directional

Rigs: Akita Drilling LTD. #20

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:30	3.50	201	Drill	Drill ahead to 1193m KB
11:30	11:45	0.25	501	Rig Service	Service rig, function annular close 27 seconds
11:45	12:30	0.75	201	Drill	Drill ahead to 1212m KB
12:30	12:45	0.25	400	Survey	Survey
12:45	13:00	0.25	501	Rig Service	Service rig, function annular close 27 seconds
13:00	17:30	4.50	201	Drill	Drill ahead to 1260m KB, Fan for deviation
17:30	17:45	0.25	400	Survey	Survey
17:45	21:30	3.75	201	Drill	Drill ahead to 1289m KB, fan for deviation
21:30	21:45	0.25	400	Survey	Survey
21:45	03:30	5.75	201	Drill	Drill ahead to 1336m KB, fan for deviation
03:30	03:45	0.25	400	Survey	Survey
03:45	05:45	2.00	201	Drill	Drill ahead to 1346m KB, fan for deviation
05:45	06:00	0.25	400	Survey	Survey
06:00	07:00	1.00	201	Drill	Drill ahead to 1350m KB, fan for deviation
07:00	08:00	1.00	301	Circ:Bit	Circulate bottom hole sample

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,220	Yes	68	95
3,690	Yes	68	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Encapsorfloc	6.0	
Barite	36.0	

Mud Checks: 1,317.00mKB, 2/5/2004 01:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/5/2004 01:00	1,317.00	32	1125.00	44	12.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Fit (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
7.0	2.0	6.0	9.5		3	39

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
1000.000	0.4	7.8			18.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate: 1,004.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Drill Strings: BHA #7, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
3	215.9mm, GTS-18D, ZP45DS	3-3-WT-A-E-0-NO-BHA	1,055.00	1,350.00	295.00	29.00	10.2

Len (m)	Max OD (mm)	String Components
616.23	171.4	Hughes GTS-18D, Bit Sub, Teledrift, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,135.00 - 1,350.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,135.00	1,350.00	21.25	29.00	16,000	120	14,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	91

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,181.00	5.89	359.90					
1,267.00	6.15	11.85					
1,338.00	6.80	20.60					

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summer Creek 8-4

Rig: 290 Engineer: Derrick Tiessen

Job Type: Drilling - Original

Report #: 25 Days: 17.00

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,347.10	6.50	21.70					

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
168,007	10,785,101
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,350.00	1,367.00
Depth Progress (mKB)	**Drilling Time (hrs)**
17.00	3.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 1367m KB

Operations This Report Period
Trip for deviation and picked up directional tools. Ran in same and drilling ahead

Operations Next Report Period
Directional drill 215.9mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:00	3.00	303	Trip:Handle tools	Dummy trip into intermediate 1
11:00	12:00	1.00	301	Circ:Bit	Circulate bottom hole sample
12:00	13:30	1.50	303	Trip:Handle tools	Trip for directional
13:30	14:00	0.50	304	Trip: Slip/Cut	Slip and cut 20m drilling line
14:00	15:30	1.50	303	Trip:Handle tools	Pull out of hole and lay down teledrift
15:30	15:45	0.25	501	Rig Service	Service rig, function upper/lower pipe rams close 5 seconds blind rams 4 seconds
15:45	18:30	2.75	023	Waiting Time	Wait on directional
18:30	22:30	4.00	303	Trip:Handle tools	Made up directional BHA
22:30	01:15	2.75	303	Trip:Handle tools	Ran in to 400m KB
01:15	01:30	0.25	501	Rig Service	Service rig , function upper pipe rams close 5 seconds
01:30	04:15	2.75	303	Trip:Handle tools	Ran in to bottom surveying every 100m. Washed 3 singles to bottom
04:15	08:00	3.75	201	Drill	Directional drill ahead to 1367m KB

Mud Checks: 1,350.00mKB, 2/7/2004 00:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Pas Vis (cp)
Gel Polymer	2/7/2004 00:30	1,350.00	24	1120.00	42	12.0
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
4.0	2.5	6.0	10.5		4	38
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	9.0			60.000		
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**
1800.000	0.4	7.5			17.4	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #8, Rotary Build

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
4	215.9mm, GF15PS, MR1388	4-4-WT-S-5-1-FC-HR	1,350.00	1,862.00	512.00	65.00	7.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Smith GF15PS, Mud Motor - Bent Sub set @ 1.8, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,350.00 - 1,367.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,350.00	1,367.00	3.75	3.75	12,000	170	17,000	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,356.60	6.10	27.70					
1,366.20	5.90	34.70					

Rigs: Akita Drilling LTD., #8

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 404.00 mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
95,183	10,880,284
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,367.00	1,545.00
Depth Progress (mKB)	**Drilling Time (hrs)**
178.00	20.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 1545m KB

Operations This Report Period
Directional drill ahead

Operations Next Report Period
Directional drill 215.9mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	18:30	10.50	201	Drill	Drill ahead to 1450m KB
18:30	18:45	0.25	501	Rig Service	Service rig, function annular close 27 seconds
18:45	19:30	0.75	201	Drill	Drill ahead to 1454m KB
19:30	21:00	1.50	018	Rig Repair	Repair hammer union on standpipe
21:00	23:00	2.00	201	Drill	Drill ahead to 1477m KB
23:00	00:00	1.00	400	Survey	Accum. surveys
00:00	05:15	5.25	201	Drill	Drill ahead to 1517m KB
05:15	05:30	0.25	501	Rig Service	Service rig, function lower pipe rams close 5 seconds
05:30	07:15	1.75	201	Drill	Drill ahead to 1545m KB
07:15	08:00	0.75	400	Survey	Accum. surveys

Mud Checks: 1,501.00mKB, 2/8/2004 02:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/8/2004 02:30	1,501.00	33	1135.00	46	15.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
5.0	3.0	10.0	8.5		2	41

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			10.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
900.000	0.5	8.4			19.3	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Soda Ash	1.0	
Lignite	1.0	
Caustic Soda	3.0	
Bentonite	5.0	
Encapsorfloc	10.0	

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,690	Yes	68	95
2,255	Yes	50	95

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Drill Strings: BHA #8, Rotary Build

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
4	215.9mm, GF15PS, MR1388	4-4-WT-S-5-1-FC-HR	1,350.00	1,862.00	512.00	65.00	7.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Smith GF15PS, Mud Motor - Bent Sub set @ 1.8, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,367.00 - 1,545.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,367.00	1,545.00	20.25	24.00	18,000	170	17,000	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	37

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Intermediate 1, 601.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Directional Surveys: Original hole

Description: Original hole

Survey Company: Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,375.80	6.20	43.50					
1,385.30	7.90	51.20					
1,394.90	10.60	54.00					
1,404.40	10.50	55.40					
1,414.00	9.70	58.30					
1,423.50	5.40	81.50					
1,433.10	4.60	112.80					
1,442.90	4.60	138.10					
1,451.90	4.80	145.10					
1,461.90	4.60	144.40					
1,471.50	5.50	145.10					
1,480.80	6.80	141.90					

Well Name: Northrock et al Summit Creek B-66 | Day 31.0, Ending: 27/05/04 06:S:

Job Type: Drilling - Original | Progress: 17.0 (1,527.0 - 1,545.0)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,490.30	8.20	125.80					
1,499.80	9.80	111.00					
1,509.70	9.90	107.10					
1,519.30	10.40	106.10					
1,528.80	11.10	105.00					
1,538.40	11.10	104.30					

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek B-44 | Rig: 22 | Report: 2/9/2004 | AFE:
Job Type: Drilling - original | Progress: 1,545.00 (1,545.00 - 1,730.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
138,082	11,018,366
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,545.00	1,730.00
Depth Progress (mKB)	**Drilling Time (hrs)**
185.00	22.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 1730m KB

Operations This Report Period
Directional drill ahead

Operations Next Report Period
Directional drill 215.9mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:45	2.75	201	Drill	Drill ahead to 1560m KB
10:45	11:00	0.25	018	Rig Repair	Replace washed valve pump 1
11:00	21:00	10.00	201	Drill	Drill ahead to 1641m KB
21:00	21:15	0.25	501	Rig Service	Service rig, function upper pipe rams close 6 seconds
21:15	23:00	1.75	201	Drill	Drill ahead to 1660m KB
23:00	00:00	1.00	400	Survey	Accum. survey
00:00	07:30	7.50	201	Drill	Drill ahead to 1730m KB
07:30	08:00	0.50	400	Survey	Accum. survey

Mud Checks: 1,688.00mKB, 2/9/2004 02:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/9/2004 02:30	1,688.00	38	1145.00	45	14.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
6.0	3.0	10.0	8.5		2	45

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			260.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
950.000	0.5	9.0			21.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #8, Rotary Build

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
4	215.9mm, GF15PS, MR1388	4-4-WT-S-5-1-FC-HR	1,350.00	1,862.00	512.00	65.00	7.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Smith GF15PS, Mud Motor - Bent Sub set @ 1.8, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,545.00 - 1,730.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,545.00	1,730.00	22.00	46.00	18,000	170	17,000	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,548.00	10.90	101.90					
1,557.50	10.70	95.20					
1,567.10	10.60	92.70					
1,576.60	10.30	88.80					
1,586.10	10.00	87.10					
1,595.70	9.90	91.30					
1,605.60	10.60	94.50					
1,614.80	1..60	95.20					
1,624.30	11.50	96.20					
1,633.80	11.40	96.60					
1,643.30	11.20	97.60					
1,652.70	10.00	99.40					
1,662.70	9.00	100.40					
1,672.70	8.10	95.90					
1,682.10	6.90	89.60					

Rigs: Active Drilling LTD. #10

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,255	Yes	50	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Lignite	2.0	
Caustic Soda	3.0	
Encapsorfloc	4.0	
Bentonite	10.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 604.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek S-44 — Day 32.0, Ending: 2/9/2004, DFS:

Job Type: Drilling - original — Progress: 185.00 (1,545.00 - 1,730.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Summary

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,691.20	6.30	83.60					
1,701.00	6.90	88.10					
1,710.60	8.30	95.50					
1,720.20	9.90	100.40					
1,729.80	11.70	105.40					

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek B-44 — **Day 33.0, Ending:** 2/10/2004, DFS:

Job Type: Drilling - original — **Progress:** 132.00 (1,730.00 - 1,862.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Daily Summary

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Hoist For Drill Bit

Operations This Report Period
Drilled 215.9mm Directional Hole From 1730 To 1862m. Repair Pump Air Supply. Circulate Up Sample, Hoist Out For Bit. (Toolface Hard To Hold)

Operations Next Report Period
Directional Drill 215.9mm Intermeditate Hole

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	201	Drill	Drill 216mm Hole w/Directional From 1730 To 1760
11:45	12:15	0.50	501	Rig Service	Rig Service, Function Upper Pipe Rams & Function Annular
12:15	12:45	0.50	018	Rig Repair	Repair Air Line To Pump Clutch
12:45	23:30	10.75	201	Drill	Directional Drill 216mm Hole From 1760 To 1836m
23:30	00:00	0.50	400	Survey	Accumulated MWD Surveys
00:00	03:45	3.75	201	Drill	Directional Drill 216mm Hole From 1836 To 1858m
03:45	05:00	1.25	018	Rig Repair	Repair Air Supply Line To Pump
05:00	05:45	0.75	201	Drill	Directional Drill 216mm Hole From 1858 To 1862m, Toolface Becoming Hard To Hold.
05:45	06:45	1.00	301	Circ:Bit	Circulate Bottoms Up Sample Prior To Hoisting Bit
06:45	08:00	1.25	302	Trip:Bit	Hoist 5 Stands, Flow Check & Pump Pill, Hoist Out

Mud Checks: 1,855.00mKB, 2/10/2004 04:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/10/2004 04:00	1,855.00	39	1140.00	48	19.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0	5.0	12.0	8.8		2	47

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			40.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
750.000	0.5	9.0			228.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #8, Rotary Build

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
4	215.9mm, GF15PS, MR1388	4-4-WT-S-5-1-FC-HR	1,350.00	1,862.00	512.00	65.00	7.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Smith GF15PS, Mud Motor - Bent Sub set @ 1.8, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,730.00 - 1,862.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,730.00	1,862.00	19.00	65.00	18,000	170	17,000	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
56	118	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,739.30	13.90	101.20					
1,748.90	15.50	98.30					
1,758.50	15.80	94.10					
1,768.10	16.40	94.80					
1,777.70	17.00	100.40					

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
95,603	11,113,969
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,730.00	1,862.00
Depth Progress (mKB)	**Drilling Time (hrs)**
132.00	19.00

Ops Supervisors

Contact	Cell Phone
Darryl Cunningham	403-350-2649
Kevin Amy	403-650-2110
Bryce McQuillan	403 818 0416

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
1,937	Yes	46	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Soda Ash	2.0	
Caustic Soda	4.0	
Encapsorfloc	6.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 604.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Well Name: Northrock et al Summit Creek B-44 Day 33.0, Ending: 2/10/2004, DFS:

Job Type: Drilling - original Progress: 132.00 (1,730.00 - 1,862.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Summary

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,787.30	17.10	108.50					
1,797.00	16.00	107.10					
1,806.40	15.20	104.30					
1,815.90	15.00	97.60					
1,825.70	15.80	89.20					
1,835.20	18.40	79.40					
1,844.80	19.50	72.30					
1,854.40	18.30	74.10					

Daily Drilling Report

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
116,491	11,230,460
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,862.00	1,880.00
Depth Progress (mKB)	**Drilling Time (hrs)**
18.00	4.50

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Directional Drill 215.9mm Hole To 1880m

Operations This Report Period
Hoist Out Of Hole, Tight @ 1466 To 1365m, Hoist Out, Service Tools, Change Bits, Set Motor To 2.1 Degrees, Run IN Hole, Ream & Wash From 1350 To Bottom, Drill 215.9mm Hole From 1862 To 1880m

Operations Next Report Period
Directional Drill 215.9mm Intermediate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	13:00	5.00	302	Trip:Bit	Hoist Out Of Hole w/Flow Checks, Tight @ 1470 To 1380m
13:00	13:15	0.25	502	Safety	BOP Drill w/Crew
13:15	14:30	1.25	302	Trip:Bit	Finnish Out Of Hole
14:30	14:45	0.25	501	Rig Service	Rig Service, Function Pipe & Blind Rams
14:45	17:15	2.50	302	Trip:Bit	Change Bits, Service Tools, Set Motor 2.1 Degree
17:15	17:30	0.25	502	Safety	BOP Drill w/Crew
17:30	20:00	2.50	302	Trip:Bit	Run In Hole w/Directional Tools To 1286m
20:00	03:30	7.50	305	Wash/Ream Bit	Wash & Ream From 1286 To 1862m,
03:30	08:00	4.50	201	Drill	Drill 215.9mm Hole From 1862 To 1880m

Mud Checks: 1,869.00mKB, 2/10/2004 08:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/10/2004 08:00	1,869.00	40	1150.00	59	17.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
9.5	4.5	15.0	9.0		2	51

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			40.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
800.000	0.3	9.0			2.4	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additives Amounts

Des	Cons	Daily Cost ($)
Lignite	1.0	
Soda Ash	2.0	
Encapsorfloc	3.0	
Bentonite	10.0	

Drill Strings: BHA #9, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
5	215.9mm, HX-S20, 5042650	3-3-WT-A-E-0-NO-BHA	1,862.00	2,187.00	325.00	55.50	5.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,862.00 - 1,880.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,862.00	1,880.00	4.50	4.50	18	120	18,200	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
58	116	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,864.00	17.10	74.80					
1,873.60	15.90	72.70					

Ops Supervisors

Contact	Cell Phone
Darryl Cunningham	403-350-2649
Kevin Amy	403-650-2110
Bryce McQuillan	403 818 0416

Rigs: Nabors Drilling Ltd., 46

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 804.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
87,516	11,317,976
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,880.00	2,012.00
Depth Progress (mKB)	**Drilling Time (hrs)**
132.00	22.25

Weather	Road Condition	Hole Condition
Flurries	Good	Good

Operations at Report Time
Directional Drill 215.9mm Hole To 2012m

Operations This Report Period
Drill 215.9mm Hole From 1880 To 2012m, Accumulated MWD Surveys, Attempt To Lower Mud Weight w/Centrifuges & Dumping Mud, Not Working, - wt-1180kg/m3

Operations Next Report Period
Directional Drill 215.9mm Intermediate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	201	Drill	Drill 215.9mm Directional Hole From 1880 To 1900m
11:45	12:00	0.25	501	Rig Service	Rig Service Function Pipe Rams
12:00	21:30	9.50	201	Drill	Directional Drill 215.9mm Hole From 1900 To 1947m
21:30	21:45	0.25	501	Rig Service	Rig Service Function Upper Pipe Rams
21:45	23:15	1.50	201	Drill	Directional Drill 215.9mm Hole From 1947 To 1967m
23:15	00:00	0.75	400	Survey	Accumulated MWD Surveys
00:00	07:30	7.50	201	Drill	Directional Drill 215.9mm Hole From 1967 To 2012m
07:30	08:00	0.50	400	Survey	Accumulated MWD Surveys

Ops Supervisors

Contact	Cell Phone
Kevin Amy	403-650-2110
Darryl Cunningham	403-350-2649
Bryce McQuillan	403 818 0416

Rigs: Akita Drilling LTD. #10

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Checks: 1,986.00mKB, 2/12/2004 03:00

Type	Date	Depth (mKB)	T (fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/12/2004 03:00	1,986.00	40	1180.00	85	26.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
15.0	6.0	15.0	10.0		2	54

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	8.0			40.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
900.000	0.2	10.0			276.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	3.0	
Vis-Plus	3.0	
Soda Ash	4.0	
Encapsorfloc	4.0	
Bentonite	37.0	

Drill Strings: BHA #3, Stackable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
5	215.9mm, HX-S20, 5042650	3-3-WT-A-E-0-NO-BHA	1,862.00	2,187.00	325.00	55.50	5.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 1,880.00 - 2,012.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,880.00	2,012.00	22.25	26.75	18	120	18,200	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
58	116	37

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00

Wellbores

Name	V3 Dir (°)	KO MD (mKB)
Original Hole	61.37	

Intermediate 1, 1,984.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,883.10	14.50	73.00					
1,892.70	12.70	71.60					
1,902.30	11.60	76.50					
1,911.90	9.20	72.70					
1,921.40	7.00	56.50					
1,931.30	6.70	38.90					
1,940.70	6.20	31.20					
1,950.70	5.50	25.60					
1,959.80	5.70	15.40					
1,969.50	5.60	8.30					
1,979.00	4.70	7.30					

Well: Northrock et al Summit Creek P-44 — Daily Cost: — Cum Cost: — Report #: — Report Date: 5/27/2004

MD: — TVD: — Daily Footage: — Cum Footage: — Current Status: — Planned Depth: —

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,988.60	3.30	19.90					
1,998.10	1.90	49.50					
2,007.70	1.50	104.70					

Shell Canada Resources Ltd. - Daily Drilling Report

Well Name: Northern Lights Simonette 6-8-68-6 | Day 36.0 | Report #: 37 | Date: 5/27/2004

Activity At Report Time: Drilling - Rotating | Progress: 98.00 | Depth: 2,110.00

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
88,818	11,406,794
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,012.00	2,110.00
Depth Progress (mKB)	**Drilling Time (hrs)**
98.00	17.75

Summary

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Directional Drill 215.9mm Hole To 2110m

Operations This Report Period
Drill 215.9mm Hole From 2012 To 2049m, Wiper Trip To 1630m, Wash To Bottom 1946 To 2049m, Directional Drill 215.9mm Hole From 2049 To 2110m w/MWD Surveys

Operations Next Report Period
Directional Drill 215.9mm Intermediate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	201	Drill	Directional Drill 215.9mm Hole From 2012 To 2025m
10:30	10:45	0.25	501	Rig Service	Rig Service, Function Upper Pipe Rams
10:45	13:00	2.25	201	Drill	Directional Drill 215.9mm Hole From 2025 To 2035m
13:00	15:00	2.00	017	Reaming	Work Tight Hole On Connection
15:00	16:45	1.75	201	Drill	Directional Drill 215.9mm Hole From 2035 To 2049m, Dump & Clean Tanks To Lower Mud Weight. Tanks Had Excessive Solids
16:45	17:15	0.50	301	Circ:Bit	Circulate Up Sample
17:15	18:45	1.50	302	Trip:Bit	Wiper Trip To 1630m Pump Out 2 Singles.
18:45	20:00	1.25	305	Wash/Ream Bit	Wash & Ream From 1946 To 2049m
20:00	07:15	11.25	201	Drill	Directional Drill 215.9mm Hole From 2049 To 2110m Work Connections
07:15	08:00	0.75	400	Survey	Accumulated MWD Surveys

Mud Checks: 2,062.00mKB, 2/12/2004 08:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/12/2004 08:00	2,062.00	43	1145.00	63	21.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
11.0	5.0	15.0	10.5		2	50

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			40.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
1000.000	0.0	3.0			0.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
				50.00

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Vis-Plus	1.0	
Soda Ash	2.0	
Encapsorfloc	3.0	
Lignite	5.0	
Bentonite	14.0	

Drill Strings: BHA #9, Steerable

Str	Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
5		215.9mm, HX-S20, 5042650	3-3-WT-A-E-0-NO-BHA	1,862.00	2,187.00	325.00	55.50	5.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 2,012.00 - 2,110.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,012.00	2,110.00	17.75	44.50	18	120	18,200	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
58	116	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Inc. (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,017.30	2.30	155.60					
2,026.80	2.70	179.20					
2,036.40	2.80	203.40					
2,046.00	3.40	212.90					
2,055.70	3.70	224.60					
2,065.30	4.22	237.20					

Ops Supervisors

Contact	Cell Phone
Darryl Cunningham	403-350-2649
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00

Intermediate 1, 604.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,075.00	4.90	247.40					
2,084.60	4.40	260.40					
2,093.80	3.60	280.80					
2,103.40	2.00	306.50					

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek B-44 | Day 37.0 - Ending: 2/13/2004 | AFE:
Job Type: Drilling - Original | Progress: 77.00 (2,110.00 - 2,187.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
98,818	11,505,612
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,110.00	2,187.00
Depth Progress (mKB)	**Drilling Time (hrs)**
77.00	11.00

Report Summary

Weather	Road Condition	Hole Condition
Overcast	Good	Fair

Operations at Report Time
Drilling 215.9mm Directional Hole To 2190m

Operations This Report Period
Directional Drill 215.9mm Hole To 2111m, Work Tight Hole, Wiper Trip To 1552m, Ream From 2081 To 2111m, Drill 215.9mm Directional Hole From 2111 To 2190m Accumulated Time For Working Tight Connections

Operations Next Report Period
Directional Drill 215.9mm Intermediate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	201	Drill	Directional Drill From 2110 To 2111m
08:30	09:30	1.00	017	Reaming	Ream & Work Tight Hole
09:30	09:45	0.25	501	Rig Service	Rig Service Function Annular
09:45	15:15	5.50	302	Trip:Bit	Wiper Trip From 2111 To 1552m
15:15	15:45	0.50	301	Circ:Bit	Circulate & Condition Hole
15:45	18:00	2.25	305	Wash/Ream Bit	Wash & Ream From 2081 To 2111m
18:00	18:15	0.25	201	Drill	Directional Drill 215.9mm Hole From 2111 To 2113m
18:15	18:30	0.25	400	Survey	MWD Survey
18:30	18:45	0.25	501	Rig Service	Rig Service Function Upper Pipe Rams
18:45	01:15	6.50	201	Drill	Drill 215.9mm Directional Hole From 2113 To 2149m
01:15	01:30	0.25	501	Rig Service	Rig Service Function Annular
01:30	05:15	3.75	201	Drill	Directional Drill 215.9mm Hole From 2149 To 2187m
05:15	08:00	2.75	305	Wash/Ream Bit	Accumulated Time For Working Connections

Mud Checks: 2,147.00mKB, 2/13/2004 00:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/13/2004 00:30	2,147.00	43	1145.00	70	21.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
14.5	5.0	15.0	10.5		2	54

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			20.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
700.000	0.3	9.0			0.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Lignite	1.0	
Amine Derivative	1.0	
Vis-Plus	2.0	
Bentonite	34.0	

Drill Strings: BHA #9, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
5	215.9mm, HX-S20, 5042650	3-3-WT-A-E-0-NO-BHA	1,862.00	2,187.00	325.00	55.50	5.9

Len (m)	Max OD (mm)	String Components
643.88	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drill Collar, Drilling Jars - Hydraulic, Drill Collar, XO Sub, HWDP

Drilling Parameters: 2,110.00 - 2,187.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,110.00	2,187.00	11.00	55.50	18	120	18,200	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
58	116	37

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,113.00	1.60	355.70					
2,122.50	2.30	17.30					
2,131.70	2.30	18.20					
2,141.60	1.30	18.90					
2,151.10	0.90	23.10					

Ops Supervisors

Contact	Cell Phone
Kevin Amy	403-650-2110
Bryce McQuillan	403 818 0416
Darryl Cunningham	403-350-2649

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00
Canol Fm	2,149.20

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. Daily Drilling Report

Well Name: Northrock et al Summit Creek 5-14 — Day 3.0, Ensign 2/15/2004 06:00

Job Type: Drilling - original — Progress: 0.00 2,187.00 (2,187.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Work Key Seat Wiper In Tight Hole @ 2081m

Operations This Report Period
Work Tight Hole , Pump Out Singles, Hoist Out, Lay Down Directional Tools, Make Up Stab & Key Seat Wiper & Run In , Slip & Cut Drill Line, Run In Hole, Work Wiper From 1300m Down, Start Reaming From 2011 To 2084m

Operations Next Report Period
Ream To Bottom

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	305	Wash/Ream Bit	Pump Out Single From 2187 To 2040m
10:00	16:15	6.25	302	Trip:Bit	Hoist Out Of Hole
16:15	16:45	0.50	303	Trip:Handle tools	Lay Down Directional Tools
16:45	17:00	0.25	501	Rig Service	Rig Service Function Upper Pipe Rams
17:00	17:45	0.75	303	Trip:Handle tools	Make Up BHA
17:45	20:30	2.75	302	Trip:Bit	Run In Hole To 800m
20:30	21:15	0.75	304	Trip: Slip/Cut	Slip & Cut Drill Line
21:15	00:00	2.75	302	Trip:Bit	Run In Hole w/Key Seat Wiper, Work Each Stand Starting @ 1300m
00:00	08:00	8.00	017	Reaming	Pump & Work Key Seat Wiper & Stab. From 2011 To 2084m, Tight Hole @ 2082m

Mud Checks: 2,187.00mKB, 2/15/2004 04:15

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/15/2004 04:15	2,187.00	40	1150.00	60	19.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
12.0	5.0	15.0	3.0		2	51

(kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			20.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
800.000	0.3	0.0			0.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
118,758	11,624,370
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,187.00	2,187.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Ops Supervisors

Contact	Cell Phone
Kevin Amy	403-660-2110
Bryce McQuillan	403 818 0416
Darryl Cunningham	403-350-2649

Rigs: Akita Drilling LTD. 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00
Canol Fm	2,149.20

Intermediate, 1,804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,548,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
84,715	11,709,085
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,187.00	1,981.00
Depth Progress (mKB)	**Drilling Time (hrs)**
206.00	0.00

Weather	Road Condition	Hole Condition
Overcast	Good	Fair

Operations at Report Time
Work Tight Hole & Pipe

Operations This Report Period
Ream Work Key Seat Wiper In Hole From 2084 To 2152m, Work Tight Pipe & Hole @ 2152m

Operations Next Report Period
Work Tight Hole Attempt To Circulate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	017	Reaming	Ream & Work Stab & Wiper In Hole From 284 To 2086m
11:45	12:00	0.25	501	Rig Service	Rig Service Function Choke
12:00	18:00	6.00	017	Reaming	Ream & Work Wiper From 2086 To 2104m
18:00	18:15	0.25	501	Rig Service	Rig Service Function Annular
18:15	03:00	8.75	017	Reaming	Ream & Work Wiper & Stab From 2104 To 2143m
03:00	08:00	5.00	020	Stuck Pipe	Work Pipe In Tight Hole, Stuck In Hole @ 2152m

Mud Checks: 2,145.0mKB, 2/16/2004 00:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/16/2004 00:00	2,145.00	39	1170.00	82	18.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
17.0	5.0	16.0	7.8		2	55

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5					

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
900.000	0.3	0.0			0.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Operations Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
Darryl Cunningham	403-350-2649

Rig Supervisor
Alvin Vogt

Pumps: Active Unit: 1,981.00

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Vis-Plus	2.0	
Caustic Soda	3.0	
Encapsorflex	3.0	
Bentonite	40.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 804.30mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
88,367	11,797,452
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,981.00	1,981.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Poor

Operations at Report Time
Wireline For Free Point

Operations This Report Period
Work Stuck Pipe, Attempt To Circulate,Remove Kelly Hose Drain Stand Pipe To Keep From Freezing, Work Stand Pipe.Work Stuck Pipe, Hold Safety Meeting, Rig In Wireline, Thaw Froze Kelly,

Operations Next Report Period
Work Stuck Pipe, Attempt To Free Point & Shoot Off

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	020	Stuck Pipe	Work Stuck Pipe, Attempt To Circulate @ 2152m
11:45	12:00	0.25	020	Stuck Pipe	Rig Service, Function Annular
12:00	13:00	1.00	020	Stuck Pipe	REmove Kelly Hose & Drain Stand Pipe So No Freezing Will Occur.
13:00	13:45	0.75	020	Stuck Pipe	Rig Service
13:45	00:45	11.00	020	Stuck Pipe	Work Stuck Pipe & Fire Jars, Work Pipe w/Fisherman
00:45	01:00	0.25	020	Stuck Pipe	Safety Meeting w/Wireline Crew
01:00	08:00	7.00	020	Stuck Pipe	Remove Gooseneck From Keely, Rig In Wireline Sheives In Derrick, Thaw Froze Kelly, Run In Wireline To Find Free Point

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys - Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Operations Personnel

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Darryl Cunningham	403-350-2649
Kevin Amy	403-650-2110

Precision Drilling LTD.
Rig Supervisor: Alvin Vogt

1, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Encapsorfloc	2.0	
Lignite	2.0	
Bentonite	7.0	

Formation Pick Groups - Actual

Formation Picks Group: Actual

Formation Pick Groups - Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 1,974.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Poor

Operations at Report Time
Retrieve back off

Operations This Report Period
Attempt to free point and back off

Operations Next Report Period
Run in screw in jar assembly and jar fish

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
139,567	11,937,019
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,981.00	0.00
Depth Progress (mKB)	**Drilling Time (hrs)**
1,981.00	0.00

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:00	3.00	020	Stuck Pipe	Work stuck free point in kelly. Break kelly off drill string
11:00	11:15	0.25	020	Stuck Pipe	Service rig, function annular close 20 seconds
11:15	12:00	0.75	020	Stuck Pipe	Install flow T and flow line
12:00	13:45	1.75	020	Stuck Pipe	Retrieve free point
13:45	17:00	3.25	020	Stuck Pipe	Attempt free point. Tool not working
17:00	17:15	0.25	020	Stuck Pipe	BOP drill with crew, function upper pipe rams close 5 seconds
17:15	23:30	6.25	020	Stuck Pipe	Attempt free point, tool not working
23:30	00:00	0.50	020	Stuck Pipe	Safety meeting with crew and loggers on back off
00:00	03:30	3.50	020	Stuck Pipe	Wire line back off and fire same. Work back off and pull wire line
03:30	04:30	1.00	020	Stuck Pipe	Circulate bottoms up
04:30	08:00	3.50	020	Stuck Pipe	Retrieve back off checking connections

Mud Checks: 2,187.00mKB, 2/18/2004 04:00

Type	Date	Depth (mKB)	T(ft) (°C)	Density (kg/m³)	Vis (s/L)	Pres Vis (cp)
Gel Polymer	2/18/2004 04:00	2,187.00		1170.00	95	
Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #10, Packed Hole

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
6	215.9mm, GT-S18, 6019743	------	1,981.00	2,153.00	172.00	0.00	

Len (m)	Max OD (mm)	String Components
172.64	176.0	Hughes GT-S18, Bit Sub, Shock Sub, Drill Collar, Stabilizer, Drill Collar, Drilling Jars - Mechanical, Drill Collar, Key-Seat Wiper, XO Sub, HWDP

Drilling Parameters: 1,981.00 - 2,153.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,981.00	2,153.00	0.00	0.00				

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Personnel

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
Darryl Cunningham	403-350-2649

Rigs: Akita Drilling, Ltd., 49

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Intermediate, 1,980.00mKB

Run Date	Max OD (mm	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
493,307	12,430,326
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
0.00	1,920.00
Depth Progress (mKB)	**Drilling Time (hrs)**
1,920.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Poor

Operations at Report Time
Circulate and condition for whipstock plug

Operations This Report Period
Back off, RIH for cleanout trip to 1920m. POOH laydown BHA and RIH open ended for cement plug.

Operations Next Report Period
WOC

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:00	1.00	020	Stuck Pipe	Retrieve back off checking connections
09:00	09:45	0.75	020	Stuck Pipe	Slip and cut 26m
09:45	11:00	1.25	020	Stuck Pipe	Retrieve back off checking conections
11:00	11:15	0.25	020	Stuck Pipe	Rig service, fuction blind rams 5 seconds
11:15	17:45	6.50	020	Stuck Pipe	Make up BHA, clean out trip to top of the fish
17:45	21:00	3.25	020	Stuck Pipe	Ream off bottom to 1920m, hole tight and unloading. Abandon fish.
21:00	22:00	1.00	015	Plug Back/Sidetrack	POOH with cleanout bit
22:00	23:45	1.75	015	Plug Back/Sidetrack	Circulate hole clean at 1787m
23:45	00:00	0.25	015	Plug Back/Sidetrack	Service rig, function upper pipe rams close 3 seconds
00:00	00:15	0.25	015	Plug Back/Sidetrack	Circulate hole clean
00:15	03:45	3.50	015	Plug Back/Sidetrack	Pull out of hole
03:45	04:00	0.25	015	Plug Back/Sidetrack	Service rig, function annular close 21 seconds
04:00	07:00	3.00	015	Plug Back/Sidetrack	Run in open ended for whipstock plug
07:00	08:00	1.00	015	Plug Back/Sidetrack	Circulate and condition for whipstock plug

Drill Strings: BHA #10, Packed Hole

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
6	215.9mm, GT-S18, 6019743	-------	1,981.00	2,153.00	172.64	0.00	

Len (m)	Max OD (mm)	String Components
172.64	176.0	Hughes GT-S18, Bit Sub, Shock Sub, Drill Collar, Stabilizer, Drill Collar, Drilling Jars - Mechanical, Drill Collar, Key-Seat Wiper, XO Sub, HWDP

Drilling Parameters: 1,981.00 - 2,153.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,981.00	2,153.00	0.00	0.00				

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)

Drill Strings: BHA #11, Cleancut

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
7RR	215.9mm, GF15PS, MR1388	-------	0.00	1,920.00	1920.00	0.00	

Len (m)	Max OD (mm)	String Components
474.92	174.0	Smith GF15PS, Bit Sub, Drill Collar, Drilling Jars - Mechanical, Bell Sub, HWDP

Drilling Parameters: 0.00 - 1,920.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
0.00	1,920.00	0.00	0.00				

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
0.00	0.00	0.00					
200.00	3.06	242.50					
300.00	3.21	240.12					
400.00	3.48	258.15					
500.00	3.37	253.87					
600.00	3.23	267.81					
700.00	3.08	275.44					
800.00	3.38	280.54					

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
Darryl Cunningham	403-350-2649

Rigs: Mota Drilling LTD. #40

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Barite	30.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 301.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
836.00	2.81	287.83					
924.00	3.34	294.86					
1,009.00	3.60	305.05					
1,095.00	2.99	328.26					
1,181.00	5.89	352.90					
1,267.00	6.15	11.85					
1,338.00	6.80	20.60					
1,347.10	6.50	21.70					
1,356.60	6.10	27.70					
1,366.20	5.90	34.70					
1,375.80	6.20	43.50					
1,385.30	7.90	51.20					
1,394.90	10.60	54.00					
1,404.40	10.50	55.40					
1,414.00	8.70	58.30					
1,423.50	5.40	81.50					
1,433.10	4.60	112.80					
1,442.90	4.60	138.10					
1,451.90	4.80	145.10					
1,461.90	4.60	144.40					
1,471.50	5.50	145.10					
1,480.80	6.80	141.90					
1,490.30	8.20	125.80					
1,499.80	9.80	111.00					
1,509.70	9.90	107.10					
1,519.30	10.40	106.10					
1,528.80	11.10	105.00					
1,538.40	11.10	104.30					
1,548.00	10.90	101.90					
1,557.50	10.70	95.20					
1,567.10	10.60	92.70					
1,576.60	10.30	88.80					
1,586.10	10.00	87.10					
1,595.70	9.90	91.30					
1,605.60	10.60	94.50					
1,614.80	11.60	95.20					
1,624.30	11.50	96.20					
1,633.80	11.40	96.60					
1,643.30	11.20	97.60					
1,652.70	10.00	99.40					
1,662.70	9.00	100.40					
1,672.70	8.10	95.90					
1,682.10	6.90	89.60					
1,691.20	6.30	83.60					
1,701.00	6.90	88.10					
1,710.60	8.30	95.50					
1,720.20	9.90	100.40					
1,729.80	11.70	105.40					
1,739.30	13.90	101.20					
1,748.90	15.50	98.30					
1,758.50	15.80	94.10					
1,768.10	16.40	94.80					
1,777.70	17.00	100.40					
1,787.30	17.10	108.50					
1,797.00	16.00	107.10					
1,806.40	15.20	104.30					
1,815.90	15.00	97.60					
1,825.70	15.80	89.20					
1,835.20	18.40	79.40					
1,844.80	19.50	72.30					
1,854.40	18.30	74.10					

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azim (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,864.00	17.10	74.80					
1,873.60	15.90	72.70					
1,883.10	14.50	73.00					
1,892.70	12.70	71.60					
1,902.30	11.60	76.50					
1,911.90	9.20	72.70					

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
125,015	12,555,341
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,920.00	1,706.00
Depth Progress (mKB)	**Drilling Time (hrs)**
214.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Poor

Operations at Report Time
Make up BHA

Operations This Report Period
Pump cement whipstock plug. WOC

Operations Next Report Period
Directional drill 215.9 intermediate #2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:45	1.75	015	Plug Back/Sidetrack	Circulate and condition for whipstock plug
09:45	10:00	0.25	015	Plug Back/Sidetrack	Safety meeting with crew and cementers
10:00	11:00	1.00	015	Plug Back/Sidetrack	Whipstock #1 1775-1675m KB. Cemented with 11.8 T 0:1:0 "G" + 0.3% R-3 + 1.0% CD-31. Plug in place 02-04-19 10:57 hrs.
11:00	11:15	0.25	015	Plug Back/Sidetrack	Pull 4 stands
11:15	12:00	0.75	015	Plug Back/Sidetrack	Reverse circulate
12:00	12:15	0.25	015	Plug Back/Sidetrack	Service rig, function annular
12:15	13:15	1.00	015	Plug Back/Sidetrack	Unplug flow line
13:15	16:00	2.75	015	Stuck Pipe	Pull out of hole
16:00	00:00	8.00	015	Plug Back/Sidetrack	WOC and pressure test BOP's and all related equipment 1400 kPa low and 17500 kPa high. OK.
00:00	07:00	7.00	015	Plug Back/Sidetrack	Pressure test BOP's and related equipment 1400kPa low and 17500kPa high OK. Function accumulator and motor kills. OK
07:00	08:00	1.00	015	Plug Back/Sidetrack	Make up BHA

Mud Checks: 1,775.00mKB, 2/19/2004 09:00

Type	Date	Depth (mKB)	T(f) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/19/2004 09:00	1,775.00	39	1165.00	59	21.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.5	4.0	11.0	7.6		2	48

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			120.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
800.000	0.2	10.3				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #11, Cleanout

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
7RR	215.9mm, GF15PS, MR1388	-------	0.00	1,920.00	1920.00	0.00	

Len (m)	Max OD (mm)	String Components
474.92	174.0	Smith GF15PS, Bit Sub, Drill Collar, Drilling Jars - Mechanical, Bell Sub, HWDP

Drilling Parameters: 0.00 - 1,920.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
0.00	1,920.00	0.00	0.00				

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Original hole

Description	Survey Company
Original hole	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan .	403 818 0416
Kevin Amy	403-650-2110
Darryl Cunningham	403-350-2649

Rigs: Akita Drilling LTD. #8

Rig Supervisor: Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
1,937	Yes	46	95

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 904.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Poor

Operations at Report Time
Kickoff from whipstock plug

Operations This Report Period
Make up directional BHA, run in and tag cement at 1706m and kickoff from whipstock plug

Operations Next Report Period
Directional drill 215.9mm intermediate #2

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
169,903	12,725,244
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,706.00	1,735.00
Depth Progress (mKB)	**Drilling Time (hrs)**
29.00	12.50

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	015	Plug Back/Sidetrack	Make up BHA
09:30	11:00	1.50	015	Plug Back/Sidetrack	RIH to tag plug
11:00	11:45	0.75	015	Plug Back/Sidetrack	Test directional tools in hole
11:45	12:00	0.25	015	Plug Back/Sidetrack	Rig service, function lower pipe rams 6 seconds
12:00	15:30	3.50	015	Plug Back/Sidetrack	RIH to tag plug
15:30	17:30	2.00	015	Plug Back/Sidetrack	Reaming to tag plug, tag plug at 1706m
17:30	23:45	6.25	015	Plug Back/Sidetrack	Time drill to kick off plug fr/ 1706m - 1713m
23:45	00:00	0.25	015	Plug Back/Sidetrack	Rig service, function annular 19 seconds
00:00	01:15	1.25	015	Plug Back/Sidetrack	Time drill fr/ 1713m - 1715m
01:15	02:00	0.75	014	MWD Failure	Reboot MWD computer and change out sensor
02:00	06:00	4.00	015	Plug Back/Sidetrack	Time drill fr/ 1715m - 1734m
06:00	07:00	1.00	015	Plug Back/Sidetrack	Work tight hole
07:00	08:00	1.00	015	Plug Back/Sidetrack	Time drill fr/ 1734m - 1735m

Mud Checks: 1,730.00mKB, 2/21/2004 05:30

Type	Date	Depth (mKB)	T(f) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	2/21/2004 05:30	1,730.00	30	1140.00	50	18.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
6.0	4.0	15.0	9.5		1	43

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			20.000	0.000	

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
1000.000			0.0			

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
	115.80			

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Desco CF	2.0	
Bicarbonate Soda	9.0	

Drill Strings: BHA #12, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
8	215.9mm, GT-CS09D, W17DH	3-3-WT-A-E-0-NO-PR	1,706.00	1,785.00	79.00	27.75	2.8

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-CS09D, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 1,706.00 - 1,735.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,706.00	1,735.00	12.50	12.50	3	50		1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
52		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,710.00	8.21	95.11	1,702.89	21.90	-0.78	9.81	5.33
1,716.10	9.30	97.60	1,708.92	21.80	0.15	10.57	5.67
1,726.20	10.10	101.50	1,718.87	21.51	1.82	11.91	3.07

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
	403 818 0416

Rig: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 504.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
105,253	12,830,497
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,735.00	1,785.00
Depth Progress (mKB)	**Drilling Time (hrs)**
50.00	15.25

Weather	Road Condition	Hole Condition
Overcast	Good	Poor

Operations at Report Time
RIH with bit #9

Operations This Report Period
Kickoff from whipstock plug, directionally drill 215.9mm hole and trip for bit #9.

Operations Next Report Period
RIH with bit #9 and directional drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:45	3.75	015	Plug Back/Sidetrack	Time drill fr/ 1735m - 1738m
11:45	12:00	0.25	015	Plug Back/Sidetrack	Rig service, function remote choke
12:00	13:45	1.75	015	Plug Back/Sidetrack	Time drill fr/1738m -1739m
13:45	14:15	0.50	018	Rig Repair	Change head on pump #1
14:15	22:00	7.75	015	Plug Back/Sidetrack	Drill fr/ 1739m - 1772m
22:00	22:30	0.50	015	Plug Back/Sidetrack	Rig service, function lower pipe rams 5 seconds
22:30	23:30	1.00	015	Plug Back/Sidetrack	Drill fr/ 1772m - 1782m
23:30	00:00	0.50	015	Plug Back/Sidetrack	Accumulated surveys
00:00	01:00	1.00	015	Plug Back/Sidetrack	Drill fr/ 1782m - 1785m
01:00	01:45	0.75	015	Plug Back/Sidetrack	Circulate to trip bit
01:45	05:30	3.75	015	Plug Back/Sidetrack	Pull out of hole and change bit
05:30	05:45	0.25	015	Plug Back/Sidetrack	Service rig, function blind rams close 5 seconds
05:45	08:00	2.25	015	Plug Back/Sidetrack	Run in hole.

Drill Strings: BHA #12, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
8	215.9mm, GT-CS09D, W17DH	3-3-WT-A-E-0-NO-PR	1,706.00	1,785.00	79.00	27.75	2.8

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-CS09D, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 1,735.00 - 1,785.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,735.00	1,785.00	15.25	27.75	15	50		1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
52		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,735.50	10.50	100.80	1,728.02	21.19	3.46	13.19	1.35
1,744.90	9.10	94.50	1,737.29	20.97	5.04	14.47	5.62
1,754.50	7.90	81.80	1,746.78	21.01	6.45	15.73	6.94
1,764.50	8.00	63.50	1,756.69	21.42	7.75	17.07	7.57
1,774.10	9.50	50.50	1,766.18	22.22	8.96	18.51	7.73
1,783.70	10.50	45.30	1,775.63	23.34	10.19	20.13	4.21

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
	403 818 0416

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,056	Yes	70	95

Mud Additives Amounts

Des	Cons	Daily Cost ($)
Soda Ash	1.0	
Lignite	1.0	
Amine Derivative	1.0	
Vis-Plus	2.0	
Encapsorfloc	4.0	
Bentonite	64.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
102,013	12,932,510
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,785.00	1,906.00
Depth Progress (mKB)	**Drilling Time (hrs)**
121.00	20.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 1906m KB

Operations This Report Period
Ran in hole with bit #9 and drilled ahead.

Operations Next Report Period
Directional drill 215.9mm intermediate #2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	015	Plug Back/Sidetrack	Run in hole and wash 1 single to bottom.
09:30	12:00	2.50	015	Plug Back/Sidetrack	Drill ahead to 1790m KB
12:00	12:45	0.75	015	Plug Back/Sidetrack	Work on MWD
12:45	20:15	7.50	015	Plug Back/Sidetrack	Drill ahead to 1829m KB
20:15	20:30	0.25	015	Plug Back/Sidetrack	Service rig, function annular close 20 seconds
20:30	23:30	3.00	015	Plug Back/Sidetrack	Drill ahead to 1854m KB
23:30	00:00	0.50	015	Plug Back/Sidetrack	Accum. surveys
00:00	07:30	7.50	015	Plug Back/Sidetrack	Drill ahead to 1906m KB
07:30	08:00	0.50	015	Plug Back/Sidetrack	Accum. survey

Mud Checks: 1,863.00mKB, 2/27/2004 01:15

Type	Date	Depth (mKB)	T (fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/23/2004 01:15	1,863.00	39	1170.00	55	22.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
10.0	4.5	14.0	9.0		2	58

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			10.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
500.000	0.0	10.6				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #13, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
9	215.9mm, GT-S18, 6019729	7-8-BT-A-6-1-WT-PR	1,785.00	2,242.00	457.00	81.75	5.6

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-S18, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 1,785.00 – 1,906.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,785.00	1,906.00	20.50	20.50	15,000	180	15,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	113	23

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,793.30	10.40	41.40	1,785.07	24.60	11.39	21.78	2.23
1,803.00	9.80	40.00	1,794.62	25.89	12.50	23.38	2.01
1,812.40	9.00	44.20	1,803.89	27.03	13.52	24.82	3.36
1,821.90	7.90	53.70	1,813.29	27.95	14.57	26.18	5.60
1,831.10	7.60	64.20	1,822.41	28.59	15.63	27.42	4.71
1,840.70	7.80	70.20	1,831.92	29.09	16.81	28.69	2.59
1,850.50	8.30	73.70	1,841.62	29.51	18.12	30.04	2.14
1,860.10	8.40	69.90	1,851.12	29.95	19.44	31.41	1.75
1,869.80	8.70	67.10	1,860.72	30.48	20.78	32.84	1.59
1,879.80	9.20	67.80	1,870.59	31.07	22.22	34.39	1.54
1,889.10	9.30	67.40	1,879.77	31.64	23.60	35.88	0.38
1,898.60	9.70	65.60	1,889.14	32.27	25.04	37.44	1.57

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110
	403 818 0416

Rigs: AKITA Drilling LTD. #5

Rig Supervisor
Alvin Vogt

1: Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2: Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
4,383	Yes	75	95

Mud Additive Amounts

Des	Conc	Daily Cost ($)
Encapsorfloc	5.0	
Bentonite	10.0	
Barite	30.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Upper Little Bear Fm	405.00
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00

Intermediate 1, 804.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Summit Creek 3-44 — Report #: 2 — Report For: 5/27/2004

Well Type: Drilling - Vertical — Progress: 115.00 m (1,906.00 - 2,021.00)

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	Mud Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2021m KB

Operations This Report Period
Directional drill 215.9mm intermediate #2

Operations Next Report Period
Directional drill 215.9mm interdediate #2

Time Log

Start Date	End Time	Dur (hr	Code	Activity	Comment
08:00	10:00	2.00	015	Plug Back/Sidetrack	Drill ahead to 1915m KB
10:00	10:15	0.25	015	Plug Back/Sidetrack	Service rig, function annular close 35 seconds
10:15	22:15	12.00	015	Plug Back/Sidetrack	Drill ahead to 1983m KB
22:15	22:30	0.25	015	Plug Back/Sidetrack	Service rig, function lower pipe rams close 4 seconds
22:30	23:00	0.50	018	Rig Repair	Change valve seat
23:00	23:30	0.50	015	Plug Back/Sidetrack	Drill ahead to 1989m KB
23:30	00:00	0.50	015	Plug Back/Sidetrack	Accum. surveys
00:00	02:15	2.25	015	Plug Back/Sidetrack	Drill ahead to 1998m KB
02:15	02:45	0.50	018	Rig Repair	Change head in pump #2
02:45	07:30	4.75	015	Plug Back/Sidetrack	Drill ahead to 2021m KB
07:30	08:00	0.50	015	Plug Back/Sidetrack	Accum. surveys

Mud Checks: 1,992.00mKB, 2/23/2004 01:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/23/2004 01:00	1,992.00	41	1250.00	51	21.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
8.0	3.0	12.0	8.5		2	53

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
780.000	0.2	15.6			23.2	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
	141.90			

Drill Strings: BHA #13, Operable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
9	215.9mm, GT-S18, 6019729	7-8-BT-A-6-1-WT-PR	1,785.00	2,242.00	457.00	81.75	5.6

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-S18, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 1,906.00 - 2,021.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
1,906.00	2,021.00	21.50	42.00	15,000	180	15,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	113	23

Wellbore

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
1,908.10	9.60	69.20	1,898.51	32.88	26.51	39.02	1.93
1,917.70	8.90	76.50	1,907.98	33.34	27.98	40.53	4.27
1,927.30	8.60	83.90	1,917.47	33.59	29.41	41.91	3.64
1,936.90	9.00	89.60	1,926.96	33.67	30.88	43.23	3.00
1,946.50	9.80	91.00	1,936.43	33.66	32.44	44.61	2.60
1,955.80	10.60	89.60	1,945.58	33.65	34.09	46.05	2.70
1,965.60	10.70	85.70	1,955.21	33.73	35.90	47.67	2.23
1,975.10	10.40	78.70	1,964.55	33.96	37.62	49.29	4.15
1,984.50	10.30	74.10	1,973.80	34.36	39.26	50.92	2.66
1,994.00	9.80	72.70	1,983.16	34.83	40.85	52.54	1.76
2,004.00	9.10	67.10	1,993.02	35.39	42.39	54.17	3.46
2,013.60	8.40	64.20	2,002.51	35.99	43.72	55.62	2.59

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
87,953	13,020,463
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
1,906.00	2,021.00
Depth Progress (mKB)	**Drilling Time (hrs)**
115.00	21.50

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110 403 818 0416

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1: Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2: Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Stroke (spm)	Eff (%)
6,160	Yes	88	95

Mud Additive Amounts

Des	Conc	Daily Cost ($)
Lignite	4.0	
Encapsorfloc	5.0	
Bentonite	25.0	
Barite	180.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00

Intermediate, 1,804.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230094	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
100,409	13,120,872
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,021.00	2,120.00
Depth Progress (mKB)	**Drilling Time (hrs)**
99.00	21.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2120m KB

Operations This Report Period
Directional drill 215.9mm intermediate #2

Operations Next Report Period
Directional drill 215.9mm intermediate #2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	015	Plug Back/Sidetrack	Drill ahead to 2030m KB
10:00	10:15	0.25	015	Plug Back/Sidetrack	Service rig, function lower pipe rams close 5 seconds
10:15	10:45	0.50	018	Rig Repair	Replace pump seat pump 2
10:45	14:15	3.50	015	Plug Back/Sidetrack	Drill ahead to 2043m KB
14:15	14:30	0.25	015	Plug Back/Sidetrack	Held BOP drill with crew, well secure in 90 seconds
14:30	15:00	0.50	018	Rig Repair	Replace head pump 2
15:00	19:00	4.00	015	Plug Back/Sidetrack	Drill ahead to 2056m KB
19:00	19:15	0.25	015	Plug Back/Sidetrack	Held BOP drill with crew, well secure in 60 seconds
19:15	23:30	4.25	015	Plug Back/Sidetrack	Drill ahead to 2083m KB
23:30	00:00	0.50	015	Plug Back/Sidetrack	Accum. surveys
00:00	05:30	5.50	015	Plug Back/Sidetrack	Drill ahead to 2108m KB
05:30	06:00	0.50	018	Rig Repair	Replace head in pump 2
06:00	07:45	1.75	015	Plug Back/Sidetrack	Drill ahead to 2120m KB
07:45	08:00	0.25	015	Plug Back/Sidetrack	Service rig, function upper pipe rams close 6 seconds

Mud Checks: 2,[illegible]mKB, 2/25/2004 04:15

Mud Type	Date	Depth (mKB)	T(ft) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/25/2004 04:15	2,102.00	47	1265.00	51	22.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
10.5	6.5	17.0	6.8		2	51

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			40.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
600.000	0.2	16.5			26.3	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Pump 1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

Pump 2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
4,100	Yes	66	95

Mud Additives Consumed

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Lignite	4.0	
Bentonite	5.0	
Encapsorfloc	8.0	
Barite	186.0	

Drill Strings: BHA #13, Stevens 40

Bit Run	Dd	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
9	215.9mm, GT-S18, 6019729	7-8-BT-A-6-1-WT-PR	1,785.00	2,242.00	457.00	81.75	5.6

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-S18, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 2,021.00 - 2,120.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,021.00	2,120.00	21.00	63.00	15,000	180	15,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	113	23

Well Bores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,023.20	7.70	64.20	2,012.01	36.58	44.93	56.96	2.19
2,032.80	6.90	63.90	2,021.54	37.11	46.03	58.18	2.50
2,042.40	6.80	68.30	2,031.07	37.57	47.08	59.30	1.85
2,051.90	6.80	73.00	2,040.50	37.94	48.14	60.43	1.57
2,061.50	6.90	75.50	2,050.03	38.25	49.24	61.55	0.98
2,071.00	7.40	72.00	2,059.46	38.58	50.37	62.70	2.09
2,080.70	6.60	67.40	2,069.09	38.99	51.48	63.87	3.02

Rig: Precision Drilling 117 - 750

Rig Supervisor
Alvin Vogt

Job Supervisor

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403-650-2110 403 818 0416

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Lower Little Bear	609.00
Slater River	805.00
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00

Intermediate 1, 804.0 mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,090.20	5.20	71.30	2,078.54	39.34	52.39	64.84	4.60
2,099.80	3.80	72.00	2,088.11	39.57	53.11	65.58	4.38
2,109.40	3.00	76.90	2,097.69	39.73	53.66	66.13	2.66
2,118.90	2.60	93.40	2,107.18	39.77	54.11	66.55	2.83

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
90,453	13,211,325
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,120.00	2,242.00
Depth Progress (mKB)	**Drilling Time (hrs)**
122.00	18.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Trip bit #9

Operations This Report Period
Drilled ahead to 2242m KB. Circulate bottom hole sample. Trip bit

Operations Next Report Period
Trip and change bit. Run in and directional drill 215.9mm intermediate #2

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	015	Plug Back/Sidetrack	Accumulated surveys
08:30	17:45	9.25	015	Plug Back/Sidetrack	Drill ahead to 2184m KB
17:45	18:00	0.25	015	Plug Back/Sidetrack	Rig service, function upper rams 6 seconds
18:00	18:45	0.75	015	Plug Back/Sidetrack	Drill ahead to 2187m KB
18:45	21:30	2.75	201	Drill	Drill ahead to 2214m KB
21:30	21:45	0.25	018	Rig Repair	Tighten flange to discharge pump #1
21:45	23:15	1.50	201	Drill	Drill ahead to 2231m KB
23:15	00:00	0.75	400	Survey	Accum. surveys
00:00	04:30	4.50	201	Drill	Drill ahead to 2242m KB
04:30	05:30	1.00	301	Circ:Bit	Circulate bottom hole sample
05:30	08:00	2.50	302	Trip:Bit	Pull out of hole with bit #9. Pump out singles.

Mud Checks: 2,233.00mKB, 2/26/2004 01:15

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/26/2004 01:15	2,233.00		1250.00	79	29.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
17.0	5.0	24.0	6.6		2	48

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
580.000	0.2	15.6			25.8	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #13, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/hr)
9	215.9mm, GT-S18, 6019729	7-8-BT-A-6-1-WT-PR	1,785.00	2,242.00	457.00	81.75	5.6

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes GT-S18, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 2,120.00 - 2,242.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,120.00	2,242.00	18.75	81.75	15,000	180	15,500	1.600

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	113	23

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,128.50	2.30	108.20	2,116.77	39.70	54.51	63.87	2.18
2,138.10	1.90	127.90	2,126.36	39.54	54.82	67.07	2.56
2,147.60	1.50	141.60	2,135.86	39.35	55.02	67.15	1.[illegible]
2,157.10	0.90	149.30	2,145.36	39.19	55.14	67.17	
2,166.60	0.50	121.50	2,154.86	39.10	55.21	67.20	
2,176.40	1.20	49.80	2,164.65	39.14	55.33	67.32	[illegible]
2,185.80	2.00	44.60	2,174.05	39.32	55.52	67.57	2.59
2,195.20	2.30	49.50	2,183.44	39.56	55.76	67.91	1.12
2,204.60	2.10	46.30	2,192.84	39.80	56.05	68.26	0.75
2,214.00	1.90	49.10	2,202.23	40.03	56.29	68.58	0.71
2,223.60	1.70	53.70	2,211.83	40.21	56.52	68.88	0.77
2,233.70	1.50	74.10	2,221.92	40.34	56.77	69.19	1.78

Crew Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 818 0416
	403-650-2110

Rig: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,079	Yes	34	95

Mud Additive Products

Des	Cons	Daily Cost ($)
Soda Ash	2.0	
Caustic Soda	2.0	
Encapsorfloc	4.0	
Bentonite	10.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00
Canol Fm	2,149.20
Hare Indian Fm	2,189.00

Intermediate 1, 304.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
104,503	13,315,828
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,242.00	2,242.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Ream to bottom

Operations This Report Period
Tripped bit #9, ran in bit #10 reaming from 1744m KB.

Operations Next Report Period
Ream to bottom and drill ahead 215.9mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:00	1.00	302	Trip:Bit	Pump singles out of hole
09:00	09:30	0.50	301	Circ:Bit	Circulate hole clean
09:30	11:45	2.25	302	Trip:Bit	Pump out singles
11:45	12:00	0.25	501	Rig Service	Service rig, function remote choke
12:00	16:15	4.25	302	Trip:Bit	Pumped out 31 singles 2080-1780m KB, pulled tight hole to 1740m KB. Trip with flow checks
16:15	16:30	0.25	501	Rig Service	Service rig, function blind rams close 3 seconds
16:30	18:15	1.75	302	Trip:Bit	Made up bit 10 and ran into 811m KB.
18:15	19:00	0.75	304	Trip: Slip/Cut	Slip and cut 20m drilling line
19:00	21:00	2.00	302	Trip:Bit	Ran into 1735m KB.
21:00	03:15	6.25	305	Wash/Ream Bit	Ream to 2120m KB
03:15	03:30	0.25	501	Rig Service	Service rig, function upper pipe rams close 6 seconds
03:30	08:00	4.50	305	Wash/Ream Bit	Ream to bottom

Mud Check: 2,242.00mKB, 2/27/2004 04:20

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Pias Vis (cp)
Gel Polymer	2/27/2004 04:20	2,242.00		1295.00	71	27.0

d Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
14.5	3.0	16.0	6.2		1	50

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
580.000	0.2	18.4			31.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0116
Kevin Amy	403-650-2110

Rigs: Valta Drilling LTD, #2

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,500	Yes	65	95

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Radioactive Shale Mbr	1,101.50
Arctic Red Fm	1,325.00
Imperial Fm	2,012.00
Canol Fm	2,149.20
Hare Indian Fm	2,189.00

Intermediate 1, 2,242.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
140,858	13,456,686
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,242.00	2,322.00
Depth Progress (mKB)	**Drilling Time (hrs)**
80.00	18.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2322m KB

Operations This Report Period
Ran in bit #10 continued roaming to bottom, directional drill 215.9mm intermediate hole #2

Operations Next Report Period
Directional drill 215.9mm intermediate #2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	305	Wash/Ream Bit	Ream to bottom
10:30	14:45	4.25	201	Drill	Drill ahead to 2260m KB
14:45	15:00	0.25	501	Rig Service	Function upper rams 6 seconds
15:00	18:15	3.25	201	Drill	Drill ahead to 2279m KB
18:15	18:45	0.50	018	Rig Repair	Clean pump suction lines
18:45	19:30	0.75	018	Rig Repair	Change valve seats pump #2
19:30	23:00	3.50	201	Drill	Drill ahead to 2295m KB
23:00	23:30	0.50	018	Rig Repair	Change head in pump #2
23:30	00:00	0.50	400	Survey	Accum surveys
00:00	07:45	7.75	201	Drill	Drill ahead to 2322m KB
07:45	08:00	0.25	400	Survey	Accum surveys

Mud Checks: 2,242.00mKB, 2/28/2004 05:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/28/2004 05:00	2,242.00	42	1265.00	60	24.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
11.5	3.0	15.0	6.1		1	53

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
750.000	0.2	16.6			27.7	

Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
146.80			22.00

Drill String: BHA #14, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/hr)
10	215.9mm, HX-S20, 6021838	——	2,242.00	2,505.00	263.00	60.25	4.4

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 2,242.00 - 2,322.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,242.00	2,322.00	18.75	18.75	16	170	18,500	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	112	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,243.30	1.40	88.10	2,231.52	40.38	57.01	69.38	1.15
2,252.80	1.30	102.90	2,241.02	40.36	57.23	69.57	1.14
2,262.40	1.40	113.80	2,250.61	40.29	57.44	69.72	0.86
2,271.60	1.60	112.10	2,259.81	40.19	57.66	69.87	0.67
2,281.20	1.40	106.40	2,269.41	40.11	57.90	70.04	0.78
2,290.80	1.40	102.20	2,279.01	40.05	58.13	70.21	0.32
2,300.70	1.60	124.00	2,288.90	39.95	58.36	70.37	1.82
2,310.30	1.90	149.30	2,298.50	39.74	58.55	70.43	2.56
2,319.90	2.00	164.10	2,308.09	39.44	58.63	70.40	1.60

Ops Supervisor

Contact	Cell Phone
Bryce McQuillan	403 018 0416
	403 818 0416
Kevin Amy	403-650-2110

Rig: Nabi Drilling Ltd. #40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Desco CF	2.0	
Encapsorfloc	2.0	
Bentonite	20.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Imperial Fm	2,012.00
Canol Fm	2,149.20
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90

Intermediate 1, 1004.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
143,232	13,599,918
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,322.00	2,430.00
Depth Progress (mKB)	**Drilling Time (hrs)**
108.00	22.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2430m KB

Operations This Report Period
Drilled ahead to 2430m KB

Operations Next Report Period
Directional drill 215.9mm intermediate 2 to casing point

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	201	Drill	Drill ahead to 2327m KB
09:30	09:45	0.25	501	Rig Service	Service rig, function annular close 28 seconds
09:45	18:00	8.25	201	Drill	Drill ahead to 2356m KB
18:00	18:15	0.25	501	Rig Service	Service rig, function lower pipe rams close 6 seconds
18:15	23:30	5.25	201	Drill	Drill ahead to 2395m KB
23:30	00:00	0.50	400	Survey	Accum. surveys
00:00	06:30	6.50	201	Drill	Drill ahead to 2423m KB
06:30	06:45	0.25	501	Rig Service	Service rig, function upper pipe rams close 6 seconds
06:45	07:30	0.75	201	Drill	Drill ahead to 2430m KB
07:30	08:00	0.50	400	Survey	Accum. surveys

Ops Supervisor

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 818 0416
	403-650-2110

Mud Checks: 2,404.00mKB, 2/29/2004 02:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	2/29/2004 02:00	2,404.00	47	1265.00	57	25.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
11.5	5.0	13.0	6.0		1	57

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
680.000	0.1	16.6			24.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #14, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
10	215.9mm, HX-S20, 6021838	------	2,242.00	2,505.00	263.00	60.25	4.4

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 2,322.00 - 2,430.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,322.00	2,430.00	22.25	41.00	16	170	18,500	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	112	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,329.50	1.50	154.60	2,317.69	39.16	58.78	70.36	1.80
2,339.10	0.80	138.10	2,327.29	39.00	58.88	70.37	2.40
2,348.70	0.20	153.50	2,336.89	38.93	58.93	70.38	1.90
2,358.30	0.60	18.20	2,346.49	38.97	58.95	70.42	2.36
2,368.00	1.60	10.10	2,356.18	39.15	58.99	70.54	3.12
2,377.50	2.00	12.20	2,365.68	39.44	59.05	70.73	1.28
2,386.80	2.80	16.80	2,374.97	39.82	59.15	71.00	2.65
2,396.40	3.10	24.10	2,384.56	40.28	59.33	71.37	1.50
2,406.20	3.70	24.50	2,394.34	40.81	59.57	71.84	1.84
2,415.70	4.10	27.30	2,403.82	41.39	59.85	72.36	1.40
2,425.30	4.10	23.80	2,413.39	42.01	60.14	72.92	0.78

Flint Drilling LTD, #9

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,600	Yes	55	95
3,500	Yes	55	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Desco CF	1.0	
Lignite	1.0	
Amine Derivative	1.0	
Vis-Plus	1.0	
Encapsorfloc	5.0	
Bentonite	20.0	
Barite	54.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Canol Fm	2,149.20
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00

Intermediate 1, 804.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
84,008	13,683,926
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,430.00	2,505.00
Depth Progress (mKB)	**Drilling Time (hrs)**
75.00	19.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Pull out of hole

Operations This Report Period
Drilled ahead to 2505m KB. Finished slide and could not rotary drill. Trip to check bit and motor

Operations Next Report Period
Trip check motor change bit, drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	21:45	13.75	201	Drill	Drill ahead to 2480m KB
21:45	22:00	0.25	501	Rig Service	Function annular 30 seconds
22:00	22:15	0.25	201	Drill	Drill ahead to 2487m KB
22:15	23:30	1.25	018	Rig Repair	Fix pump heads and seats
23:30	00:00	0.50	400	Survey	Accumulated surveys
00:00	05:15	5.25	201	Drill	Drill ahead to 2505m KB
05:15	06:30	1.25	301	Circ:Bit	Circulate and attempt to rotary drill
06:30	07:00	0.50	400	Survey	Accum. survey
07:00	08:00	1.00	302	Trip:Bit	Trip to check bit and motor

Mud Checks: 2,505.00mKB, 3/1/2004 04:15

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/1/2004 04:15	2,505.00	48	1265.00	64	27.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
14.5	9.0	13.0	5.5		2	62

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
800.000	0.1	16.6			19.4	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Bit Strings: BHA #14, Steerable

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
10	215.9mm, HX-S20, 6021838	------	2,242.00	2,505.00	263.00	60.25	4.4

Len (m)	Max OD (mm)	String Components
494.92	181.0	Hughes HX-S20, Mud Motor Set @ 2.1 Degree, Float Sub, Drill Collar - Non Mag, UPA Sub, Drill Collar - Non Mag, XO Sub, Drilling Jars - Hydraulic, XO Sub, HWDP

Drilling Parameters: 2,430.00 - 2,505.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,430.00	2,505.00	19.25	60.25	16	170	18,500	1.500

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
55	112	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,434.90	3.60	18.90	2,422.97	42.61	60.38	73.41	1.87
2,444.40	3.30	2.00	2,432.45	43.16	60.49	73.77	3.33
2,453.90	3.70	350.40	2,441.94	43.74	60.45	74.01	2.56
2,459.70	3.00	356.70	2,447.73	44.07	60.41	74.14	4.09
2,469.30	3.60	346.90	2,457.31	44.62	60.32	74.33	2.57
2,488.40	4.80	64.90	2,476.37	45.54	60.91	75.28	8.43
2,498.00	4.10	104.00	2,485.95	45.63	61.61	75.94	9.52

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Nabors Drilling Ltd., #30

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Encapsorfloc	5.0	
Amine Derivative	1.0	
Lignite	2.0	
Vis-Plus	2.0	
Caustic Soda	3.0	
Bentonite	20.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
87,408	13,771,334
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,505.00	2,505.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Ream to bottom

Operations This Report Period
Trip to check bit and motor, laydown dirc tools, motor parted leaving 7m fish down hole. RIH dummy trip to log intermediate #2 & ream to bottom

Operations Next Report Period
Ream to bottom & POOH to log intermediate #2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	018	Rig Repair	Fix hydraulic hose
08:30	13:00	4.50	302	Trip:Bit	Trip to check bit and motor
13:00	13:15	0.25	501	Rig Service	Function upper/lower rams 6 seconds, blinds 3 seconds
13:15	15:15	2.00	303	Trip:Handle tools	Laydown dirc BHA, motor was washed out (power section & bit downhole 7m) Makeup cleanout BHA
15:15	16:00	0.75	018	Rig Repair	Change out pipe spinner
16:00	20:00	4.00	902	Trip:Log	RIH dummy trip for logging to 1950m KB
20:00	08:00	12.00	017	Reaming	Ream to bottom (1950m KB - 2045m KB)

Mud Checks: 2,037.00mKB, 3/1/2004 05:45

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/1/2004 05:45	2,037.00	30	1295.00	83	34.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
18.0	7.5	20.0	5.0		1	65

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.0			20.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
780.000	0.1	18.4			37.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Opr. Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling L10, 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Encapsorfloc	3.0	
Lignite	3.0	
Barite	45.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1; 604.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
94,783	13,866,117
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,505.00	2,505.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Dummy trip to 1900m KB

Operations This Report Period
Reamed 1848-2498m KB. Fish on bottom. Ran in circulate and condition for logging

Operations Next Report Period
Dummy trip and trip to log well as per program

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	05:15	21.25	017	Reaming	Reamed to 2498m KB
05:15	07:15	2.00	901	Circ:Log	Circulate and condition for logging
07:15	08:00	0.75	902	Trip:Log	Dummy trip to 1900m KB. Laid down 33 singles

Mud Checks: 2,496.00mKB, 3/3/2004 04:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/3/2004 04:30	2,496.00	30	1370.00	101	43.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
23.5	9.0	22.0	5.5		2	68

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
750.000	0.2	23.1			21.7	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling 1, TD, 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	2.0	
Vis-Plus	2.0	
Encapsorfloc	3.0	
Lignite	7.0	
Bentonite	40.0	
Barite	351.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
85,463	13,951,580
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,505.00	2,505.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Log well as per program

Operations This Report Period
Wiper trip to 1900m KB. Circulate and condition for logging. Trip and log as per program.

Operations Next Report Period
Log, set whipstock plug, run 177.8mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:00	2.00	902	Trip:Log	Dummy trip to 1900m KB
10:00	11:45	1.75	901	Circ:Log	Circulate and conditionfor logging
11:45	12:00	0.25	501	Rig Service	Service rig, function lower pipe rams close 3 seconds
12:00	12:30	0.50	901	Circ:Log	Circulate and condition for logging
12:30	17:30	5.00	902	Trip:Log	Pull out of hole to log well as per program
17:30	08:00	14.50	903	Logging	Log well as per program

Mud Checks: 2,505.00mKB, 3/3/2004 12:15

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel polymer	3/3/2004 12:15	2,505.00		1360.00	120	
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
24.0			7.0		1	
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	10.0					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 818 0416 403-650-2110

Rigs: Akita Drilling, 130, (M)

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des.	Cons.	Daily Cost ($)
Lignite	2.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 204.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Pull out of hole to make up bit.

Operations This Report Period
Logged well as per program. Ran in open ended and placed whipstock. Pull out of hole

Operations Next Report Period
Run in and polish plug. Pull out of hole to run 177.8mm intermediate 2

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:15	3.25	903	Logging	Log well as per program
11:15	11:30	0.25	501	Rig Service	Service rig, function blind rams close 10 seconds
11:30	12:00	0.50	502	Safety	Safety meeting ice tripping hazards
12:00	13:00	1.00	602	Trip:Casing	Run in to 600m KB
13:00	14:00	1.00	304	Trip: Slip/Cut	Slip and cut 27m drilling line
14:00	19:00	5.00	013	Mud Problems	Unplug flow line
19:00	21:30	2.50	012	Mud Motor Failure	Run in to 2496m KB
21:30	01:15	3.75	012	Mud Motor Failure	Circulate and condition for whipstock plug
01:15	01:30	0.25	502	Safety	Safety meeting with crew and cementers
01:30	02:15	0.75	012	Mud Motor Failure	Pump 4.7T 0:1:0 "G" + 1.0% CD-31 + 0.4% R-3 Displaced with 13.64m3. Plug in place 04-03-05 02:26 hours.
02:15	03:30	1.25	012	Mud Motor Failure	Pulled 10 stands
03:30	04:45	1.25	012	Mud Motor Failure	Circulate bottom hole
04:45	08:00	3.25	012	Mud Motor Failure	Pull out of hole to make up bit for clean out.

Mud Checks: 2,505.00mKB, 3/5/2004 01:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/5/2004 01:30	2,505.00	27	1360.00	95	42.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
18.0	8.0	17.0	6.2		1	70

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	9.5			10.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
660.000	0.2	24.0			21.0	

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
[illegible]004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
211,483	14,163,063
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,505.00	2,464.00
Depth Progress (mKB)	**Drilling Time (hrs)**
41.00	0.00

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD.

Rig Supervisor: Alvin Vogt

1; Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2; Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,[illegible]18.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1; 804.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	16,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
98,483	14,261,546
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,464.00	2,464.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Fair

Operations at Report Time
Circulate and condition for running 177.8mm casing

Operations This Report Period
Ran clean out trip to 2459m KB. Circulate contaminated mud. Condition mud. Dummy trip to 1850m KB. Circulate and condition. Pull out of hole tight at 1754-1750m KB. Ran to bottom circulate and condition

Operations Next Report Period
Circulate and condition. Trip run and cement 177.8mm intermediate 2

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	501	Rig Service	Service rig, function lower pipe rams close 4 seconds
08:15	14:45	6.50	602	Trip:Casing	Run in hole check for whipstock plug. Cement not set.
14:45	21:00	6.25	012	Mud Motor Failure	Circulate and condition mud for casing
21:00	22:30	1.50	602	Trip:Casing	Dummy trip 20 stands
22:30	02:00	3.50	012	Mud Motor Failure	Circulate and condition for casing
02:00	03:15	1.25	602	Trip:Casing	Pull out of hole to 1754m KB
03:15	06:00	2.75	602	Trip:Casing	Work tight hole 1754-1750m KB
06:00	07:30	1.50	602	Trip:Casing	Ran into bottom
07:30	08:00	0.50	601	Circ:Casing	Circulate and condition for casing

Mud Checks: 2,450.00mKB, 3/6/2004 01:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/6/2004 01:30	2,450.00		1375.00	92	37.0
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
21.0	9.0	19.0	5.8		1	66
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	10.5			40.000		
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**
650.000	1.5	25.0				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Survey: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rig: Precision Drilling 138 (AB)

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		
Liner Size (mm)	**Stroke (mm)**	**V/Stk (m³/stk)**
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		
Liner Size (mm)	**Stroke (mm)**	**V/Stk (m³/stk)**
139.0	229.0	0.010

Mud Additive Amounts

Des	Conc	Daily Cost ($)
Caustic Soda	1.0	
Lime	1.0	
Vis-Plus	1.0	
Desco CF	3.0	
Bicarbonate Soda	4.0	
Bentonite	30.0	
Barite	84.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 804.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum Cost To Date ($)**
106,411	14,367,957
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,464.00	2,464.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Overcast	Good	Fair

Operations at Report Time
Circulate 177.8mm casing at 2275m KB

Operations This Report Period
Circulate and condition for running casing. Pull to run and running casing

Operations Next Report Period
Run casing and cement. WOC

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:00	3.00	601	Circ:Casing	Circulate and condition
11:00	11:15	0.25	501	Rig Service	Service rig, function choke
11:15	15:00	3.75	602	Trip:Casing	Trip to run casing
15:00	15:15	0.25	501	Rig Service	Rig service, function blind rams close 4 seconds
15:15	16:15	1.00	603	Run casing/Cement	Clean uo floor and rig to run casing
16:15	16:30	0.25	502	Safety	Safety meeting with crew and tong hand
16:30	19:00	2.50	603	Run casing/Cement	Run 177.8mm casing
19:00	19:15	0.25	502	Safety	Safety meeting with crew and tong hand
19:15	07:00	11.75	603	Run casing/Cement	Run 177.8mm casing at 2275m KB.
07:00	08:00	1.00	601	Circ:Casing	Circulate casing at 2275m KB

Mud Checks: 2,505.00mKB, 3/6/2004 12:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/6/2004 12:00	2,505.00		1390.00	105	
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Flt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
21.0			5.0		1	
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calc ... (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	10.0					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 318 0416
	403-650-2110

Precision Drilling LTD., 49

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Vis-Plus	1.0	
Desco CF	2.0	
Lignite	2.0	
Bentonite	25.0	
Barite	338.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 304.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	16,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
295,158	14,663,115
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,464.00	2,464.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill out 177.8mm float and collar cement

Operations This Report Period
Ran and cemented 177.8mm casing. WOC. Drill out float and shoe

Operations Next Report Period
Polish whipstock plug. Trip for side track assembly and side track.

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	601	Circ:Casing	Circulate tight spot 2175m KB
08:30	11:15	2.75	603	Run casing/Cement	Ran 177.8mm casing
11:15	13:30	2.25	601	Circ:Casing	Circulate and condition for cementing
13:30	13:45	0.25	502	Safety	Safety meeting with crew and cementers
13:45	19:00	5.25	603	Run casing/Cement	Ran 182 joints 2450m 177.8mm 38.69kg/m K55 LT&C New R3. Landed at 2450m KB. Cemented with 11 T Fill-Lite 2-125 + 1.0% CaCl2 + 1.3% R-3, 24 T Fill-Lite 2-100 + 1.0% CaCl2 + 1.3% R-3. Tailed with 5 T 0:1:0 "G" + 0.5% CD-31 + 0.4% FL-63 + 1.0% Sepiolite + 0.3% R-3. Displaced with 48.7m3 H2O. 5m3 returns. Plug down 04-03-07 19:20 hrs. Float held OK.
19:00	21:30	2.50	603	Run casing/Cement	Set FMC pack off
21:30	01:00	3.50	604	WOC	Wait on cement
01:00	03:15	2.25	604	WOC	Make up BHA
03:15	03:30	0.25	606	PT BOP's	Pressure test casing and packoff to 17,500 kPa. OK
03:30	06:30	3.00	604	WOC	Wait on cement
06:30	08:00	1.50	607	Drill Out	Drill out from 2430m KB to 2445m KB

Mud Checks: 2,450.00mKB, 3/7/2004 13:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Gel Polymer	3/7/2004 13:00	2,450.00		1390.00	67	
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
13.0						
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	9.5					
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling Ltd. 40

Rig Supervisor: Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additives Amounts

Des	Consu	Daily Cost ($)
Amine Derivative	2.0	
Desco CF	3.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 1, 2,464.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
2/2/2004	244.5	L-80	59.527

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
122,883	14,785,998
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,464.00	2,467.00
Depth Progress (mKB)	**Drilling Time (hrs)**
3.00	10.50

Weather	Road Condition	Hole Condition
Snow	Good	Good

Operations at Report Time
Time drill off whipstock plug at 2467m KB

Operations This Report Period
Drilled out float and shoe, polished plug to 2464m KB. Tripped made up and ran in side track assembly

Operations Next Report Period
Complete side track, trip and make up steerable assembly

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	607	Drill Out	Drilled out float and shoe to 2445m KB
08:15	08:30	0.25	501	Rig Service	Service rig, function lower pipe rams close 4 seconds
08:30	08:45	0.25	607	Drill Out	Drillout to 2450m KB and polished plug to 2464m KB
08:45	09:00	0.25	601	Circ:Casing	Circulate and condition
09:00	09:30	0.50	306	PT BOP's	Leak off test. Leak off gradient 16.9 kPa/m
09:30	13:00	3.50	012	Mud Motor Failure	Tripped and made up side track assembly
13:00	17:30	4.50	303	Trip:Handle tools	Made up directional tools
17:30	21:30	4.00	012	Mud Motor Failure	Ran in to bottom
21:30	08:00	10.50	012	Mud Motor Failure	Orientate and time drill to 2467m KB

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD., #30

Rig Supervisor: Alvin Vogt

1, Gardner-Den...er, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Check: 2,465.00mKB, 3/9/2004 01:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/9/2004 01:30	2,465.00	23	1010.00	34	5.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
3.0			14.0		0	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	11.0		1.290	80.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
380.000		1.0				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Drill Strings: BHA #17, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
12	155.6mm, D411ST, 7103404	1-1-NO-A-X-0-NO-DTF	2,464.00	2,469.00	5.00	16.00	0.3

Len (m)	Max OD (mm)	String Components
459.96	135.0	Hughes D411ST, Mud Motor - Bent Sub 2.1, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,464.00 - 2,467.00mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,464.00	2,467.00	10.50	10.50	7,000	130	6,000	0.800

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
117,003	14,903,001
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,467.00	2,469.00
Depth Progress (mKB)	**Drilling Time (hrs)**
2.00	13.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2482m KB

Operations This Report Period
Time drill off whipstock plug to 2472m KB. Drill ahead to 2482m KB

Operations Next Report Period
Time drill and drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	13:30	5.50	012	Mud Motor Failure	Time drill to 2469m KB MWD failure
13:30	13:45	0.25	014	MWD Failure	Laid down 9 singles
13:45	14:15	0.50	014	MWD Failure	Pull out of hole. MWD failure
14:15	14:30	0.25	502	Safety	BOP drill with crew, well secure in 90 seconds
14:30	16:15	1.75	014	MWD Failure	Pull out of hole
16:15	16:30	0.25	502	Safety	BOP drill with crew, well secure in 85 seconds
16:30	18:15	1.75	014	MWD Failure	Pull out of hole
18:15	18:30	0.25	502	Safety	NEB rig inspection
18:30	19:45	1.25	014	MWD Failure	Change MWD, bit and adjust motor
19:45	23:00	3.25	014	MWD Failure	Run in hole
23:00	00:00	1.00	304	Trip: Slip/Cut	Slip and cut drilling line
00:00	00:30	0.50	014	MWD Failure	Ran in to bottom
00:30	04:00	3.50	201	Drill	Time drill to 2472m KB
04:00	08:00	4.00	201	Drill	Directional drill at 2482m KB

Mud Checks: 2,472.00mKB, 3/10/2004 04:30

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Pias Vis (cp)
Polymer	3/10/2004 04:30	2,472.00	26	1010.00	34	4.0
Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
2.0			16.0			
Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	11.0		0.900	120.000		
Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
300.000		2.0				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #17, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
12	155.6mm, D411ST, 7103404	1-1-NO-A-X-0-NO-DTF	2,464.00	2,469.00	5.00	16.00	0.3

Len (m)	Max OD (mm)	String Components
459.96	135.0	Hughes D411ST, Mud Motor - Bent Sub 2.1, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,467.00 - 2,469.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,467.00	2,469.00	5.50	16.00	7,000	130	6,000	0.800

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Drill Strings: BHA #18, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
13RR	155.6mm, STX-20, 5403997	5-4-BT-M-E-0-NO-HR	2,469.00	2,670.00	201.00	41.50	4.8

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,469.00 - 2,482.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,469.00	2,482.00	7.50	7.50	10,000	85	5,700	0.800

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		20

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Crew Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Nabors Drilling LTD. 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,680	Yes	51	95

Mud Additional Amounts

Des	Cons	Daily Cost ($)
Amine Derivative	8.0	
Vis-Plus	8.0	
Barite	15.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Hare Indian Fm	2,189.00
Bluefish Mbr	2,205.50
Hume Fm	2,313.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00

Intermediate 2, 2,451.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Directional Survey: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
81,033	14,984,034
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,469.00	2,594.00
Depth Progress (mKB)	**Drilling Time (hrs)**
125.00	20.25

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Directional drill at 2594m KB

Operations This Report Period
Drilled ahead to 2594m KB

Operations Next Report Period
Drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:45	2.75	201	Drill	Drill ahead to 2492m KB
10:45	11:00	0.25	501	Rig Service	Service rig, function upper pipe rams close 4 seconds
11:00	11:30	0.50	201	Drill	Drill ahead to 2494m KB
11:30	12:00	0.50	400	Survey	Accum. surveys
12:00	22:15	10.25	201	Drill	Drill ahead to 2549m KB
22:15	22:30	0.25	501	Rig Service	Service rig, function lower pipe rams close 4 seconds
22:30	23:30	1.00	201	Drill	Drill ahead to 2559m KB
23:30	00:00	0.50	400	Survey	Accum. surveys
00:00	05:15	5.25	201	Drill	Drill ahead to 2591m
05:15	07:30	2.25	018	Rig Repair	Repair power to Pason
07:30	08:00	0.50	201	Drill	Drill ahead to 2594m KB

Mud Checks: 2,579.00mKB, 3/11/2004 03:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/11/2004 03:00	2,579.00	29	1020.00	41	9.0
Yield Point (cp)	**gel 10 sec (cp)**	**gel 10 min (cp)**	**Filtrate (mL/30min)**	**HTHP Filt (mL/30min)**	**Filter Cake (mm)**	**MBT (kg/m³)**
8.5			11.8		1	
Lime (kg/m³)	**pH**	**Pm (mL/mL)**	**Pf (mL/mL)**	**Calcium (mg/L)**	**Potassium (mg/L)**	**CaCl (kg/m³)**
	11.0			40.000		
Chlorides (mg/L)	**Sand (%)**	**Solids (%)**	**Percent Oil (%)**	**Percent Water (%)**	**LG Solids (%)**	**Electric Stab (V)**
280.000	0.5	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)

Drill Strings: BHA #13, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
13RR	155.6mm, STX-20, 5403997	5-4-BT-M-E-0-NO-HR	2,469.00	2,670.00	201.00	41.50	4.8

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,482.00 - 2,594.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,482.00	2,594.00	20.25	27.75	10,000	110	5,900	1.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		20

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,469.30	3.60	346.90	2,457.31	44.62	60.32	74.33	2.57
2,488.40	4.80	64.90	2,476.37	45.54	60.91	75.28	8.43
2,498.00	4.10	104.00	2,485.95	45.63	61.61	75.94	9.52
2,507.60	3.40	127.90	2,495.53	45.37	62.17	76.30	5.30
2,517.10	2.60	154.20	2,505.01	45.01	62.48	76.41	4.96
2,526.70	3.20	133.50	2,514.60	44.62	62.77	76.48	3.74
2,536.30	1.90	183.40	2,524.19	44.28	62.96	76.48	7.66
2,545.80	2.20	215.10	2,533.69	43.97	62.84	76.23	3.65
2,555.40	2.70	247.40	2,543.28	43.74	62.53	75.84	4.51
2,565.00	3.50	243.50	2,552.86	43.52	62.06	75.32	2.58
2,574.60	4.90	244.60	2,562.44	43.21	61.42	74.62	4.38

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD, #40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Description	Consumed	Daily Cost ($)
Soda Ash	2.0	
Vis-Plus	3.0	
Amine Derivative	4.0	
Amine Derivative	4.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,584.20	5.10	237.60	2,572.00	42.81	60.69	73.78	2.01
2,593.70	4.30	231.20	2,581.47	42.36	60.06	73.01	3.02

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
RIH with bit #14

Operations This Report Period
Drilled ahead to 2670m KB & tripped for bit #13

Operations Next Report Period
RIH with bit #14 & drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	11:15	3.25	201	Drill	Drill ahead to 2610m KB
11:15	11:30	0.25	501	Rig Service	Service rig, function annular close 35 seconds
11:30	12:00	0.50	400	Survey	Accum. surveys
12:00	15:15	3.25	201	Drill	Drill ahead to 2630m KB
15:15	15:30	0.25	501	Rig Service	Change filters on floor motors
15:30	20:00	4.50	201	Drill	Drill ahead to 2655m KB
20:00	20:15	0.25	501	Rig Service	Service rig, function lower pipe rams close 5 seconds
20:15	23:00	2.75	201	Drill	Drill ahead to 2670m KB
23:00	23:30	0.50	400	Survey	Accum. surveys
23:30	00:15	0.75	301	Circ:Bit	Circulate up sample
00:15	04:30	4.25	302	Trip:Bit	POOH with bit #13
04:30	06:00	1.50	303	Trip:Handle tools	Change out motor
06:00	08:00	2.00	302	Trip:Bit	RIH with bit #14

Mud Checks: 2,670.00mKB, 3/11/2004 08:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/11/2004 08:00	2,670.00		1020.00	42	8.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
6.0	2.0	3.0	11.1		1	

Solids (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			0.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
280.000	0.5	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			10.00	

Drill Strings: BHA #15, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
13RR	155.6mm, STX-20, 5403997	5-4-BT-M-E-0-NO-HR	2,469.00	2,670.00	201.00	41.50	4.8

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,594.00 - 2,670.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,594.00	2,670.00	13.75	41.50	10,000	110	5,900	1.000

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		20

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,603.30	4.20	240.40	2,591.04	41.96	59.47	72.31	2.15
2,612.90	3.60	233.00	2,600.62	41.60	58.93	71.66	2.44
2,622.40	5.50	241.10	2,610.09	41.21	58.29	70.91	6.32
2,632.00	5.40	242.10	2,619.65	40.77	57.49	69.99	0.43
2,641.60	5.60	238.30	2,629.20	40.31	56.69	69.07	1.30
2,651.20	3.00	214.40	2,638.78	39.86	56.15	68.38	9.70
2,660.80	2.60	167.60	2,648.37	39.44	56.05	68.10	7.04

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
117,558	15,101,592
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,594.00	2,670.00
Depth Progress (mKB)	**Drilling Time (hrs)**
76.00	13.75

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling ETD_V40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,399	Yes	54	95

Mud Additive Amounts

Des	Conc	Daily Cost ($)
Lignite	2.0	
Vis-Plus	2.0	
Amine Derivative	3.0	
Amine Derivative	4.0	

Formation Picks Group: Actual

Formation Picks Group
Actual

Formation Picks Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
79,583	15,181,175
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,670.00	2,739.00
Depth Progress (mKB)	**Drilling Time (hrs)**
69.00	19.00

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Drill ahead to 2739m KB

Operations This Report Period
RIH with bit #14 & drill ahead to 2739m KB

Operations Next Report Period
Drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	302	Trip:Bit	RIH with bit # 14
10:30	11:15	0.75	201	Drill	Drill ahead to 2675m KB
11:15	11:30	0.25	501	Rig Service	Function annular 37 seconds
11:30	12:00	0.50	400	Survey	Accumulated surveys
12:00	17:15	5.25	201	Drill	Drill ahead to 2703m KB
17:15	17:30	0.25	501	Rig Service	Function lower pipe rams 4 seconds
17:30	23:30	6.00	201	Drill	Drill ahead to 2725m KB
23:30	00:00	0.50	400	Survey	Accumulated surveys
00:00	04:15	4.25	201	Drill	Drill ahead to 2733m KB
04:15	04:30	0.25	301	Circ:Bit	Circulate up sample
04:30	05:15	0.75	302	Trip:Bit	5 stand wiper trip
05:15	08:00	2.75	201	Drill	Drill ahead to 2739m KB

Mud Checks: 2,731.00mKB, 3/12/2004 08:00

Type	Date	Depth (mKB)	T(ft) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/12/2004 08:00	2,731.00	28	1030.00	38	7.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
5.0	2.0	3.0	10.0		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			160.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
200.000	0.0	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			15.00	

Drill Strings: BHA #13, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/hr)
14	155.6mm, STX-R20, 5047668	8-8-BT-A-F-5-WT-PR	2,670.00	2,740.00	70.00	21.75	3.2

Len (m)	Max OD (mm)	String Components
919.79	135.0	Hughes STX-R20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,670.00 - 2,739.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,670.00	2,739.00	19.00	19.00	12	120	10,000	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73	88	

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	N/S (m)	E/W (m)	VS (m)	DLS (°/30m)
2,671.10	2.60	180.30	2,668.66	38.98	56.10	67.92	1.67
2,680.70	3.10	161.60	2,668.24	38.51	56.18	67.77	3.28
2,690.20	2.40	178.80	2,677.73	38.07	56.27	67.63	3.39
2,699.80	2.50	182.00	2,687.32	37.66	56.26	67.43	0.53
2,709.40	1.80	219.50	2,696.92	37.34	56.16	67.18	4.79
2,719.00	1.60	210.80	2,706.51	37.10	56.00	66.93	1.02
2,728.60	3.00	240.40	2,716.11	36.87	55.71	66.56	5.60
2,738.20	2.40	245.30	2,725.70	36.66	55.31	66.11	2.01

Ops. Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 818 0416
	403-650-2110

Rig: Nabi Drilling LTD., 50

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,400	Yes	50	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Barite	20.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Fishe Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

NORTHROCK RESOURCES LTD. - Daily Drilling Report

Well Name: Northrock et al Steamh Creek 8-14 | Rig: | Report #: | Date: | Report For: | Proposed TD (mKB):

Job Type: Drilling - original

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
96,423	15,277,598
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,739.00	2,769.00
Depth Progress (mKB)	**Drilling Time (hrs)**
30.00	12.75

Operations Summary

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Directional drill at 2769m KB

Operations This Report Period
Drilled to 2740m KB. Tripped for bit #14 and made up bit #15. Ran in and drilled to 2769m KB

Operations Next Report Period
Drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:45	2.75	201	Drill	Drill ahead to 2740m KB
10:45	11:15	0.50	301	Circ:Bit	Circulate mix and pump pill
11:15	11:30	0.25	501	Rig Service	Service rig function HCR open 3 seconds
11:30	16:00	4.50	302	Trip:Bit	Pull out of hole and change bit
16:00	16:15	0.25	501	Rig Service	Service rig, function blind rams close 11 seconds
16:15	20:45	4.50	301	Circ:Bit	Ran in to 2700m KB
20:45	22:00	1.25	305	Wash/Ream Bit	Wash 3 singles to bottom 2700-2740m KB
22:00	08:00	10.00	201	Drill	Drill ahead to 2769m KB

Mud Checks: 2,755.00mKB, 3/13/2004 08:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/13/2004 08:00	2,755.00	27	1030.00		7.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt. (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0	2.0	2.0	9.5		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			120.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
200.000	0.0	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			15.00	

Drill Strings: BHA #14, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
14	155.6mm, STX-R20, 5047668	8-8-BT-A-F-5-WT-PR	2,670.00	2,740.00	70.00	21.75	3.2

Len (m)	Max OD (mm)	String Components
919.79	135.0	Hughes STX-R20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,739.00 - 2,740.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,739.00	2,740.00	2.75	21.75	12	120	10,000	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73	88	

Drill Strings: BHA #20, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
15	155.6mm, STX-R20, 5046336	8-8-BT-A-F-3-WT-PR	2,740.00	2,828.00	88.00	24.50	3.6

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-R20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,740.00 - 2,769.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,740.00	2,769.00	10.00	10.00	12,000	120	7,000	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,747.80	3.20	243.50	2,735.28	36.45	54.89	65.64	2.51

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD., 40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additives Amounts

Drs	Cons	Daily Cost ($)
Caustic Soda	1.0	
Amine Derivative	1.0	
Vis-Plus	1.0	
Barite	20.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Report Printed: 5/27/2004

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,757.40	3.90	271.30	2,744.87	36.34	54.32	65.09	5.73
2,767.00	4.10	268.50	2,754.44	36.34	53.65	64.50	0.87

Report Printed: 5/27/2004

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	16,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
145,423	15,423,021
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,769.00	2,828.00
Depth Progress (mKB)	**Drilling Time (hrs)**
59.00	14.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
RIH with bit #16

Operations This Report Period
Drilled to 2828m KB & tripped for bit

Operations Next Report Period
Drill ahead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:15	0.25	201	Drill	Drill ahead to 2770m KB
08:15	08:30	0.25	501	Rig Service	Service rig, function lower pipe rams close 5 seconds
08:30	11:45	3.25	201	Drill	Drill ahead to 2789m KB
11:45	12:00	0.25	400	Survey	Accum. surveys
12:00	20:15	8.25	201	Drill	Drill ahead to 2818m KB
20:15	20:30	0.25	501	Rig Service	Service rig, function annular close 21 seconds
20:30	23:15	2.75	201	Drill	Drill ahead to 2828m KB
23:15	23:30	0.25	400	Survey	Accum surveys
23:30	01:45	2.25	302	Trip:Bit	POOH with bit #15
01:45	02:15	0.50	018	Rig Repair	Chnage out U-joint on the floor motor
02:15	04:45	2.50	302	Trip:Bit	POOH with bit #15
04:45	05:00	0.25	303	Trip:Handle tools	Layout MWD, change motor setting to 0 bend
05:00	05:15	0.25	501	Rig Service	Function blind rams, upper pipe rams
05:15	05:30	0.25	303	Trip:Handle tools	Test MWD tool
05:30	08:00	2.50	302	Trip:Bit	RIH with bit #16

Mud Checks: 2,828.00mKB, 3/14/2004 01:00

Type	Date	Depth (mKB)	T(f) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/14/2004 01:00	2,828.00		1030.00	37	7.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0	2.0	3.0	9.1		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5			120.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
200.000	0.0	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			15.00	

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,750	Yes	50	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Amine Derivative	1.0	
Vis-Plus	4.0	
Amine Derivative	30.0	

Drill Strings: BHA #20, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h)
15	155.6mm, STX-R20, 5046336	8-8-BT-A-F-3-WT-PR	2,740.00	2,828.00	88.00	24.50	3.6

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-R20, Mud Motor - Bent Sub 1.5, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,769.00 - 2,828.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr)	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,769.00	2,828.00	14.50	24.50	12,000	120	7,000	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,776.60	4.30	285.00	2,764.02	36.42	52.96	63.94	3.81
2,786.10	4.40	282.60	2,773.49	36.60	52.26	63.41	0.66
2,795.70	4.80	277.00	2,783.05	36.73	51.50	62.80	1.88
2,805.30	4.60	275.20	2,792.63	36.81	50.72	62.16	0.78
2,814.80	4.40	272.40	2,802.10	36.86	49.98	61.53	0.94

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Precision Drilling LTD., 30

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Report Printed: 5/27/2004

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
77,583	15,500,604
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,828.00	2,914.00
Depth Progress (mKB)	**Drilling Time (hrs)**
86.00	20.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead to 2914m KB

Operations This Report Period
RIH with bit #16 and drill ahead

Operations Next Report Period
Drill ahead

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	302	Trip:Bit	Run in hole with bit #16 to 2790m KB
09:30	11:00	1.50	305	Wash/Ream Bit	Ream 3 singles to bottom 2790-2828m KB
11:00	17:00	6.00	201	Drill	Drill ahead to 2876m KB.
17:00	17:15	0.25	501	Rig Service	Service rig, function lower pipe rams close 5 seconds
17:15	23:45	6.50	201	Drill	Drill ahead to 2897m KB
23:45	00:00	0.25	400	Survey	Accum. survey
00:00	08:00	8.00	201	Drill	Drill ahead to 2914m KB

Mud Checks: 2,900.00mKB, 3/15/2004 01:00

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/15/2004 01:00	2,900.00	29	1030.00	36	6.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Fil (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0	2.0	2.0	9.2		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.0			80.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
200.000	0.0	2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			10.00	

Drill Strings: BHA #21, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
16	155.6mm, STX-30, 5029764	8-6-BT-A-E-0-WT-PR	2,828.00	2,914.00	86.00	20.50	4.2

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STX-30, Mud Motor - Bent Sub 0.0, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Drilling Parameters: 2,828.00 - 2,914.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,828.00	2,914.00	20.50	20.50	14,000	120	8,500	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,853.20	3.30	273.80	2,840.41	36.99	47.40	59.33	0.86
2,882.00	1.90	331.10	2,869.18	37.47	46.34	58.63	2.89
2,901.20	2.30	341.30	2,888.37	38.11	46.07	58.70	0.85

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rig: Akita Drilling LTD. #80

Rig Supervisor
Alvin Vogt

1, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,700	Yes	49	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Lignite	1.0	
Vis-Plus	3.0	
Amine Derivative	20.0	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
99,763	15,600,357
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,914.00	2,987.00
Depth Progress (mKB)	**Drilling Time (hrs)**
73.00	12.50

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drilled ahead to 2987m KB

Operations This Report Period
POOH with bit #16, RIH with bit #17 & drill ahead to 2987m KB

Operations Next Report Period
Drill ahead to TD

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD #40

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8 Triplex

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
2,960	Yes	51	95

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:00	1.00	301	Circ:Bit	Circulate up bottom hole sample
09:00	10:00	1.00	302	Trip:Bit	POOH with bit #16
10:00	10:15	0.25	502	Safety	BOP drill well secure in 55 seconds
10:15	11:00	0.75	304	Trip: Slip/Cut	Slip & cut
11:00	14:45	3.75	302	Trip:Bit	POOH with bit #16
14:45	15:00	0.25	501	Rig Service	Function blind rtam 6 seconds
15:00	17:30	2.50	302	Trip:Bit	RIH with bit #17
17:30	17:45	0.25	502	Safety	BOP drill well secure in 65 seconds
17:45	19:30	1.75	302	Trip:Bit	RIH with bit #17, wash 2 singles to bottom
19:30	08:00	12.50	201	Drill	Drill ahead to 2987m KB

Mud Checks: 2,968.00mKB, 3/17/2004 04:45

Type	Date	Depth (mKB)	T(fl) (°C)	Density (kg/m³)	Vis (s/L)	Pias Vis (cp)
Polymer	3/17/2004 04:45	2,968.00	28	1035.00	36	7.0

Yield Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30min)	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0			9.2		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.3		0.110	80.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
280.000		2.5				

Active Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			10.00	

Drill Strings: BHA #22, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
17	155.6mm, STR-40 , 5041123	4-4-WT-A-E-0-BT-PR	2,914.00	3,025.00	111.00	20.25	5.5

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STR-40 , Mud Motor - Bent Sub 0.0, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, Drilling Jars - Mechanical, HWDP

Mud Additives Amounts

Des	Cons	Daily Cost ($)
Caustic Soda	1.0	
Vis-Plus	3.0	
Barite	20.0	

Drilling Parameters: 2,914.00 - 2,987.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,914.00	2,987.00	12.50	12.50	14,000	120	9,500	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
2,929.90	3.90	42.80	2,917.04	39.37	46.55	59.72	3.61
2,968.30	6.80	44.60	2,955.26	41.95	49.03	63.14	2.27

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Daily Drilling Report

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
95,203	15,695,570
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
2,987.00	3,025.00
Depth Progress (mKB)	**Drilling Time (hrs)**
38.00	11.75

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Drill ahead at 2045m KB

Operations This Report Period
Drill ahead to 3025m KB. Trip to lay down directional and change bit. Ran in bit #18 and drill ahead to 3045m KB

Operations Next Report Period
Drill ahead to TD 3050m KB

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:15	2.25	201	Drill	Drill ahead to 3000m KB
10:15	10:30	0.25	501	Rig Service	Service rig, function remote choke
10:30	11:45	1.25	201	Drill	Drill ahead to 3010m KB
11:45	12:00	0.25	400	Survey	Survey
12:00	16:15	4.25	201	Drill	Drill ahead to 3025m KB
16:15	17:30	1.25	301	Circ:Bit	Circulate bottom hole sample
17:30	22:00	4.50	302	Trip:Bit	Pull out of hole to lay down directional and change bit. Noise in motor when drained.
22:00	23:00	1.00	303	Trip:Handle tools	Laid down directional tools
23:00	23:15	0.25	501	Rig Service	Service rig and function blind rams close 6 seconds
23:15	03:30	4.25	302	Trip:Bit	Ran in with bit #18
03:30	04:00	0.50	305	Wash/Ream Bit	Wash from 3005-3025m KB
04:00	08:00	4.00	201	Drill	Drill ahead to 3045m KB

Mud Checks: 3,034.00mKB, 3/18/2004 06:00

Type	Date	Depth (mKB)	T(f) (°C)	Density (kg/m³)	Vis (s/L)	Plas Vis (cp)
Polymer	3/18/2004 06:00	3,034.00	29	1040.00	35	7.0

Yld Point (cp)	gel 10 sec (cp)	gel 10 min (cp)	Filtrate (mL/30	HTHP Filt (mL/30min)	Filter Cake (mm)	MBT (kg/m³)
4.0			9.0		1	

Lime (kg/m³)	pH	Pm (mL/mL)	Pf (mL/mL)	Calcium (mg/L)	Potassium (mg/L)	CaCl (kg/m³)
	10.5		0.800	80.000		

Chlorides (mg/L)	Sand (%)	Solids (%)	Percent Oil (%)	Percent Water (%)	LG Solids (%)	Electric Stab (V)
300.000		2.5				

Reserve Mud Volume (m³)	Active Mud Volume (m³)	Mud Added (m³)	Mud Lost to Hole (m³)	Mud Lost to Surface (m³)
			15.00	

Drill Strings: BHA #22, Directional BHA

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
17	155.6mm, STR-40 , 5041123	4-4-WT-A-E-0-BT-PR	2,914.00	3,025.00	111.00	20.25	5.5

Len (m)	Max OD (mm)	String Components
459.99	135.0	Hughes STR-40 , Mud Motor - Bent Sub 0.0, Float Sub, Drill Collar - Non Mag, Orientation Sub, Drill Collar - Non Mag, Drill Collar - Non Mag, XO Sub, HWDP, [illegible] - Mechanical, HWDP

Drilling Parameters: 2,987.00 - 3,025.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
2,987.00	3,025.00	7.75	20.25	14,000	120	9,500	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Drill Strings: BHA #23, Stick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
18	155.6mm, STX-30, 5045955	8-4-BT-M-2-0-WT-TD	3,025.00	3,064.00	39.00	10.00	3.9

Len (m)	Max OD (mm)	String Components
427.02	134.0	Hughes STX-30, Bit Sub, HWDP, Drilling Jars - Hydraulic, HWDP

Drilling Parameters: 3,025.00 - 3,045.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
3,025.00	3,045.00	4.00	4.00	14,000	60	7,500	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD. #30

Rig Supervisor: Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Pump Checks

P (kPa)	Slow Spd	Strokes (spm)	Eff (%)
3,825	Yes	54	95
2,125	Yes	47	95

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Vis-Plus	3.0	
Amine Derivative	4.0	
Amine Derivative	10.0	
Barite	25.0	

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
3,006.50	4.30	66.70	2,993.29	44.13	51.93	66.73	2.55
3,011.50	4.00	74.10	2,998.27	44.25	52.27	67.08	3.68

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
116,353	15,811,923
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,025.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
39.00	6.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Logging well as per program

Operations This Report Period
Drilled to TD 3064m KB. Dummy tripped, tripped to log and logging well as per program

Operations Next Report Period
Evaluate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	14:00	6.00	201	Drill	Drill ahead to 3064m KB - TD
14:00	15:00	1.00	901	Circ:Log	Circulate up bottom hole sample
15:00	15:30	0.50	902	Trip:Log	Wiper trip 5 stands for logging
15:30	17:45	2.25	901	Circ:Log	Circulate to log
17:45	22:30	4.75	902	Trip:Log	POOH to log well
22:30	23:00	0.50	902	Trip:Log	Rig up loggers
23:00	23:15	0.25	502	Safety	Log well as per program
23:15	08:00	8.75	903	Logging	

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD No.

Rig Supervisor
Alvin Vogt

Drill Strings: BHA #23, Slick

Bit Run	Bit	IADC Bit Dull	From (mKB)	To (mKB)	Drilled (m)	Drill Time	ROP (m/h
18	155.6mm, STX-30, 5045955	8-4-BT-M-2-0-WT-TD	3,025.00	3,064.00	39.00	10.00	3.9

Len (m)	Max OD (mm)	String Components
427.02	134.0	Hughes STX-30, Bit Sub, HWDP, Drilling Jars - Hydraulic, HWDP

1, Gardner-Den ver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

Drilling Parameters: 3,045.00 - 3,064.00 mKB

From (mKB)	Depth To (mKB)	Bit Hours (hrs)	Cum Drill Time (hr	WOB (daN)	RPM (rpm)	SPP (kPa)	Q(flow) (m³/min)
3,045.00	3,064.00	6.00	10.00	14,000	60	7,500	0.900

Annular Velocity DP (m/min)	Annular Velocity DC (m/min)	Nozzle Velocity (m/min)
73		

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Mud Additive Amounts

Des	Cons	Daily Cost ($)
Barite	20.0	

Wellbores

Name	VS Dir (°)	TD MD (mKB)
Original Hole	61.37	

Formation Pick Groups: Actual

Formation Picks Group
Actual

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Survey Data

MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	NS (m)	EW (m)	VS (m)	DLS (°/30m)
3,050.00	3.00	80.00	3,036.70	44.79	54.56	69.35	0.83

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.50
Headless Mbr	2,405.00
Mid Headless Mbr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00 mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	32.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
POOH with DST #4

Operations This Report Period
Log well a per program, make up DST #4, unable to inflate packers & POOH

Operations Next Report Period
Evaluate

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	16:00	8.00	903	Logging	Log well as per logging program
16:00	17:15	1.25	902	Trip:Log	Laydown tools and rig out loggers
17:15	21:00	3.75	702	Trip:DST	Pick up and make up DST BHA
21:00	01:45	4.75	008	DST Failure/Misrun	RIH for DST #4, strap in
01:45	03:30	1.75	008	DST Failure/Misrun	Rig up floor for DST #4
03:30	03:45	0.25	502	Safety	Safety meeting with rig crew & DST hand
03:45	05:45	2.00	008	DST Failure/Misrun	Unable to inflate packer - 3 attempts
05:45	08:00	2.25	008	DST Failure/Misrun	POOH with DST #4

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
198,042	16,009,965
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD. 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Recover DST #5

Operations This Report Period
POOH with DST #4, RIH with DST #5, run DST #5 & POOH with DST #5

Operations Next Report Period
Run clean out trip and condition for 114.3mm production liner

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	09:30	1.50	008	DST Failure/Misrun	POOH with DST #4
09:30	09:45	0.25	501	Rig Service	Function lower/upper pipe rams 6 seconds, blind rams 4 seconds
09:45	12:00	2.25	008	DST Failure/Misrun	Test packers on surface - top packer would not inflate
12:00	14:00	2.00	008	DST Failure/Misrun	Break down DST #4
14:00	16:00	2.00	703	DST's	Make up DST #5
16:00	18:15	2.25	703	DST's	RIH with DST #5
18:15	18:45	0.50	703	DST's	Rig up floor for DST #5
18:45	19:00	0.25	502	Safety	Safety meeting with crew and DSt hand
19:00	19:15	0.25	501	Rig Service	Function annular 35 seconds
19:15	03:00	7.75	703	DST's	DST #5
03:00	08:00	5.00	702	Trip:DST	POOH with DST #5

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
80,173	16,090,138
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rigs: Akita Drilling LTD., 39

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (mm)	Grade	Wt. (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
135,053	16,225,191
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Clear	Good	Good

Operations at Report Time
Run 114.3mm production liner

Operations This Report Period
Ran in clean out trip. Pulled to run 114.3mm production liner and running same

Operations Next Report Period
Cement 114.3 production liner. Lay down drill pipe. Set bridge plug and dump bail 7m cement.

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:30	0.50	702	Trip:DST	Recover DST #5
08:30	10:15	1.75	703	DST's	Tear out DST tools
10:15	10:30	0.25	501	Rig Service	Service rig, function upper pipe rams close 6 seconds
10:30	13:45	3.25	602	Trip:Casing	Run in hole to 2436m KB.
13:45	14:30	0.75	601	Circ:Casing	Circulate through manifold
14:30	15:15	0.75	602	Trip:Casing	Run in to 3064m KB. Circulate bottom s up through manifold. Circulate and condition for 114.3mm production liner
15:15	17:30	2.25	601	Circ:Casing	Circulate bottoms up gas cut mud through choke, circulate and condition for casing
17:30	20:00	2.50	602	Trip:Casing	Pull out of hole to run 114.3mm liner
20:00	20:30	0.50	601	Circ:Casing	Blow manifold and degasser line
20:30	22:00	1.50	602	Trip:Casing	Pull out of hole
22:00	22:30	0.50	613	Trip: Lay down Drill Pipe	Rig up lay down
22:30	22:45	0.25	502	Safety	Safety meeting with crew and lay down
22:45	00:45	2.00	613	Trip: Lay down Drill Pipe	Lay down 30 joints drill pipe and HWDP
00:45	01:15	0.50	603	Run casing/Cement	Rig up to run liner
01:15	01:30	0.25	502	Safety	Safety meeting with crew, tong hand, tool hand & laydown truck
01:30	08:00	6.50	603	Run casing/Cement	Ran 59 joints 740.75m 114.3mm 17.26kg/m L-80 LT&C New. Run in liner on drill pipe

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
	403 818 0416
Kevin Amy	403-650-2110

Rig: Akita Drilling LTD. 40

Rig Supervisor
Alvin Vogt

1: Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2: Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Intermediate 2, 2,450.00mKB

Run Date	Max OD (m	Grade	Wt (kg/m)
3/8/2004	177.8	K-55	38.692

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
183,453	16,408,644
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Tear out

Operations This Report Period
Landed and set production liner and cemented same. Laid down drill pipe and set drillable bridge plugs

Operations Next Report Period
Rig released

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	10:30	2.50	602	Trip:Casing	Ran in with 114.3mm production liner
10:30	11:45	1.25	601	Circ:Casing	Circulate and condition for cementing
11:45	12:00	0.25	502	Safety	Safety meeting with crew, tool hand and cementers
12:00	12:15	0.25	603	Run casing/Cement	Hang 114.3mm production liner
12:15	13:15	1.00	603	Run casing/Cement	Ran 59 joints 740.75m 114.3mm 17.26 kg/m L80 LT&C New R3. Landed at 3059m KB. Liner hung at 2318m KB with TIW HP6. Cemented with 10T 0:1:0 "G" + 0.4% FL-63 + 0.5% CD-31 + 0.3% R-3 + 1.0% Sepiolite. Displaced with 19 m3 H2O + 1.0% CAW132. Plug down 04 03-22 13:17 hrs. Float held OK.
13:15	14:15	1.00	601	Circ:Casing	Reverse circulate
14:15	15:15	1.00	601	Circ:Casing	Pump inhibited water 1% CAW132
15:15	15:30	0.25	502	Safety	Safety meeting with crew and lay down
15:30	21:30	6.00	613	Trip: Lay down Drill Pipe	Laid down drill pipe
21:30	22:00	0.50	613	Trip: Lay down Drill Pipe	Rig out lay down
22:00	22:15	0.25	502	Safety	Safety meeting with loggers and crew
22:15	05:00	6.75	612	Set Bridge Plug	Set drillable bridge plug at 2268m KB. Pressure test 7000 kPa for 15 minutes. OK. Dump bailed 7m cement on top of bridge plug.
05:00	08:00	3.00	604	WOC	Tear out BOP's and drilling rig

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Ops Supervisors

Contact	Cell Phone
Bryce McQuillan	403 818 0416
Kevin Amy	403 818 0416
	403-650-2110

Rigs: Akita Drilling LTD, 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headlass Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,059.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Tear out

Operations This Report Period
Tear out

Operations Next Report Period
Tear out & install wellhead

Time Log

Start Date	End Time	Dur (hrs)	Code	Activity	Comment
08:00	08:00	24.00	604	WOC	Tear out kelly, BOP's and mud tanks. Rig out sub, pason lines and rig floor. Laydown sub and derrick. Tear out & move rig.

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
253,793	16,662,437
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Ops Supervisors

Contact	Cell Phone
Kevin Amy	403-650-2110

Precision Drilling LTD, #0

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,059.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
Overcast	Good	Good

Operations at Report Time
Rig release 04/03/24 12:00 hours

Operations This Report Period
Tear out, move rig & mix/bury cover sump

Operations Next Report Period
Cleanup lease

Time Log

Start Time	End Time	Dur (hrs)	Code	Activity	Comment
08:00	12:00	4.00	604	WOC	Rig Release 04/03/24 12:00

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
1,001,230	17,663,668
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Ops Supervisors

Contact	Cell Phone
Kevin Amy	403-650-2110

Rig: Akita Drilling LTD. 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,059.00m, A,B

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
	Good	Good

Operations at Report Time
Lease cleanup

Operations This Report Period
Lease cleanup - finish mixing off sump, cap sump & clean out kitchen sump

Operations Next Report Period
Lease cleanup

Wellbore #1

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
336,332	18,000,000
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rig: Akita Drilling LTD., 10

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,050.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
	Good	Good

Operations at Report Time
Lease cleanup

Operations This Report Period
Lease cleanup - cleanup sumps on lease

Operations Next Report Period
Lease cleanup

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
448,033	18,448,032
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rig: Akita Drilling LTD. 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-8

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,059.0mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Well Name: Mackenzie et al Summit Set B-...

Job Type: Drilling - original

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
20,000	18,468,032
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Weather	Road Condition	Hole Condition
	Good	Good

Operations at Report Time
Lease cleanup

Operations This Report Period
Lease cleanup - start to pull out fills and culvarts along the road

Operations Next Report Period
Leae cleanup

Rig: Akita Drilling LTD 900

Rig Supervisor
Alvin Vogt

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

Formation Pick Groups: Actual

Formation Picks Group: Actual

Formation Pick Groups: Log

Formation Picks Group: Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,053.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Spud Date	Rig Release Date	KB Elevation (m)	Ground Elevation (m)	KB-Ground Distance (m)

Weather	Road Condition	Hole Condition
	Good	Good

Operations at Report Time
Lease cleanup

Operations This Report Period
Lease cleanup - continue pulling out snow fills along the road

Operations Next Report Period
Final Report

Wellbores

Name	VS Dir (°)	KO MD (mKB)
Original Hole	61.37	

Directional Surveys: Whipstock

Description	Survey Company
Whipstock	Baker Hughes INTEQ

AFE No.	Total AFE Amt ($)
230004	18,546,142
Daily Cost Total ($)	**Cum. Cost To Date ($)**
270,468	18,738,500
Daily Mud Cost ($)	**Mud Cum To Date ($)**
0	0
Depth Start (mKB)	**Depth End (mKB)**
3,064.00	3,064.00
Depth Progress (mKB)	**Drilling Time (hrs)**
0.00	0.00

Rigs: Akita Drilling LTD., 40

Rig Supervisor
Alvin Vogt

1, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
1		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
152.4	229.0	0.010

2, Gardner-Denver, PZ-9

Pump Number	Pwr (kW)	Rod Diameter (mm)
2		

Liner Size (mm)	Stroke (mm)	V/Stk (m³/stk)
139.0	229.0	0.010

Formation Pick Groups: Actual

Formation Picks Group
Actual

Formation Pick Groups: Log

Formation Picks Group
Log

Name	Top (mKB)
Bluefish Mbr	2,305.50
Hume Fm	2,318.90
Headless Mbr	2,405.00
Mid Headless Mkr	2,450.00
Bear Rock Fm	2,535.00

Production, 3,064.00mKB

Run Date	Max OD (mm)	Grade	Wt (kg/m)
3/23/2004	114.3	L-80	17.263

Type	Prim Legal Loc	Current Status	Field Name	State/Province	Surface File Number	Northrock Supervisor
Wellsite	07-11-042-03-W5	Scout and survey	Gilby South	Alberta	06602	Eddie Anderson

Comment

Location will be built on the center of a section so the location will be on four quarters, therefore, the site is 115 x 135. A road must be built on the north side of the location so the landowners can move through. There is .800 meters of road to build into this location, all access roads must be gravelled. Some trees to be removed on the fence line.The trees that will be removed will be replaced with 5ft spruce once the location is cleaned up. Approx. 1/2 mile of fence must also be removed and replaced.

Wells: Gilby 8-11-42-3 W5

Well Name		Well Type	Current Status	Location
Gilby 8-11-42-3 W5		Wellsite	Scout and survey	Well site
Legal Location	**UWI / API**	**Original Land Use**	**Owner/Occupant Name**	
07-11-042-03-W5	100/08-11-042-03 W5M	Farming	Mark Trautman	

Comment

Site Pre-Construction: 4/28/2004

Date	Assessed By	Survey	Access Road Type	Rd Length Klms (m)	Cattleguard Note
4/28/2004	Eddie Anderson	Completed	Low Profile	0.0	No

Estimated Days (days)	Location Type	Water Well within 500m?	100m of Sfc Imp	Wildlife Restrictions?	Timber Salvage Type & Amount
10.00	Cut / Fill	Yes	No	None	None

Brush Disposal Method	Underground Utilities?	Water Access	Water Source	# of water body crossings/Diversions & types
Burn on-site	Yes	Private (name)	Dugout	Culvert #3

Comment

The locaion will not have to be fenced. Two 10ft steel gates at the start of the road instead of a texas gate.

Environmental Assessments: Pre-Disturbance, 4/28/2004, Eddie Anderson

Type	Sub Type	Nearest Water Body	Direction to Nearest Water Body	Km to Water (m)	Surface Gradient (%)
Pre-Disturbance	Wellsite	Creek	SE	0.0	5

Contour Problems?	Contour Notes	Surface Gradient Direction
No		SW

Erosion Problems?	Erosion Notes
No	

Drainage Problems?	Drainage Notes
No	

Vegetation Assessment: 1

	Species	Health	Height (Meters) (cm)	Density (per dm²)	Live (%)	Litter (%)	Bare (%)	Compatible?
1	Wheat grass	Fair			80		20	Yes

Comment

Hilly terrain with pasture land and brush patches

Waste Disposal: <Waste Disposal?>, <Status?>

Waste Disposal	Waste Type	Disposal Method	Environmental Company
	Drilling Fluid	Land Spray	

Comment

Gel Chemical

Waste Disposal: Sump, <Status?>

Waste Disposal	Waste Type	Disposal Method	Environmental Company
Sump	Drill Cuttings	MBC-Onsite	

Comment

Gel Chemical Mud

Waste Disposal: Sump, <Status?>

Waste Disposal	Waste Type	Disposal Method	Environmental Company
Sump	Cement	MBC-Onsite	

Comment

Type	Prim Legal Loc	Field Name	State/Province	Current Status	Surface File Number	Northrock Supervisor
Wellsite	07-11-042-03-W5	Gilby South	Alberta	Scout and survey	06602	Eddie Anderson

Comment

The location will be built on the center of a section so the location will be on four quarters, therefore the site is 115 x 135. A road must be built on the north side of the location so the landowners can move through. There is .800 meters of road to build into this location, all access roads must be gravelled. Some trees to be removed on the fence line.The trees that will be removed will be replaced with 5ft spruce once the location is cleaned up. Approx. 1/2 mile of fence must also be removed and replaced.

Jobs: Clean-up, <Start Date?>

Type	Primary Status	Start Date	End Date	Northrock Supervisor	Contractor Foreman
Clean-up	Not started			Eddie Anderson	

AFE/CC Reference Number	Estimate - Net ($)	Estimate ($)	Active Estimate	Estimate 1	Estimate 2
Various	59,450.00	59,450.00	1	D & A	Producer

AFE: Various

Working Interest (%)	Estimate Amt 1 ($)	Estimate Amt 2 ($)
100	59,450.00	79,500.00

Job AFE Cost Summary

Cost Code	Operation	Estimate Amt 1- Gross ($)	Estimate Amt 2 - Gross ($)
207	Access Road Clean-up	8,000.00	15,000.00
207	Misc.	2,500.00	4,500.00
207	Seeding	2,500.00	3,500.00
207	Sump Disposal	3,000.00	3,000.00
207	Supervision	5,950.00	8,500.00
207	Wellsite Clean-up	34,000.00	45,000.00
407		3,500.00	0.00

Type	Prim Legal Loc	Field Name	State/Province	Current Status	Surface File Number	Northrock Supervisor
[illegible]site	07-11-042-03-W5	Gilby South	Alberta	Scout and survey	06602	Eddie Anderson

This location will be built on the center of a section so the location will be on four quarters, therefore, the site is 115 x 135. A road must be built on the north side of the location so the landowners can move through. There is .800 meters of road to build into this location, all access roads must be gravelled. Some trees to be removed on the fence line.The trees that will be removed will be replaced with 5ft spruce once the location is cleaned up. Approx. 1/2 mile of fence must also be removed and replaced.

Jobs: Service Rig Prep, <Start Date?>

Type	Primary Status	Start Date	End Date	Northrock Supervisor	Contractor Foreman
Service Rig Prep	Not started			Eddie Anderson	

AFE/CC Reference Number	Estimate - Net ($)	Estimate ($)	Active Estimate	Estimate 1	Estimate 2
			1	Summer	Winter

Type	Prim Legal Loc	Field Name	State/Province	Current Status	Surface File Number	Northrock Supervisor
[illegible]site	07-11-042-03-W5	Gilby South	Alberta	Scout and survey	06602	Eddie Anderson

[illegible]t

This location will be built on the center of a section so the location will be on four quarters, therefore, the site is 115 x 135. A road must be built on the north side of the location so the landowners can move through. There is .800 meters of road to build into this location, all access roads must be gravelled. Some trees to be removed on the fence line.The trees that will be removed will be replaced with 5ft spruce once the location is cleaned up. Approx. 1/2 mile of fence must also be removed and replaced.

Jobs: Construction, 6/1/2004

Type	Primary Status	Start Date	End Date	Northrock Supervisor	Contractor Foreman
Construction	Not started	6/1/2004	6/9/2004	Eddie Anderson	

AFE/CC Reference Number	Estimate - Net ($)	Estimate ($)	Active Estimate	Estimate 1	Estimate 2
Various	95,840.00	95,840.00	1	Summer	Winter

AFE: Various

Working Interest (%)	Estimate Amt 1 ($)	Estimate Amt 2 ($)
100	95,840.00	66,140.00

Job AFE Cost Summary

Cost Code	Operation	Estimate Amt 1- Gross ($)	Estimate Amt 2 - Gross ($)
202	Gravel	5,000.00	0.00
202	Line Locators	450.00	450.00
202	Logging	1,200.00	1,200.00
202	Materials	9,800.00	6,800.00
202	Misc.	2,000.00	2,000.00
202	Road Construction	28,000.00	1,000.00
202	Supervision	7,650.00	5,950.00
202	Trucking	3,240.00	3,240.00
202	Wellsite Construction	33,000.00	40,000.00
222	Conductor, Mouse & Rat Hole	5,500.00	5,500.00

NORTHROCK RESOURCES LTD. - Bit Summary

Well Name: Northrock et al ED Summit Creek B-64

Job Type: Drilling - original

Stm Hole UWI	Field	Area	Operator	KB Elevation (m)	Gr Elev (m)
B44-64-30-125-45 Construction			Northrock Resources Ltd.		

Bits

Bit Run	BHA No.	Bit	Bit Drill	Nozzles (mm)	From (mKB)	To (mKB)	Drilled (m)	Drill Time (hrs)	ROP (m/hr)	WOB (max) (daN)	WOB (min) (daN)	RPM (max) (rpm)	RPM (min) (rpm)	Q(max) (m³/min)	Q(min) (m³/min)	SPP(max) (kPa)	SPP(min) (kPa)
1B	1	215.0mm, Rathole, 75363	-------HR		0.00	15.00	15.00	3.50	4.3	2,000	2,000	100	100	2.000	2.000	1,200	1,200
1A	2	444.5mm, FDS+ , NRK8448	3-3-WT-A-E-0-NO-TD	12.7/12.7/12.7/12	0.00	27.00	27.00	6.00	4.5	2,000	2,000	100	100	2.000	2.000	1,500	1,500
2A	3	311.0mm, EHT116C, NRKW8454	3-3-WT-A-E-0-NO-BHA	12.7/14.3/15.9/19	25.00	120.00	95.00	10.75	8.8	5,000	5,000	150	150	2.000	2.000	2,000	2,000
3A	4	444.5mm, MSDSSH , NRKJ8668	3-3-WT-A-E-0-NO-TD	19.1/19.1/19.1/17	14.00	208.00	194.00	17.75	10.9	12,000	5,000	150	150	2.000	2.000	5,000	4,000
1	5	311.0mm, HCM605, 7001622	1-1-WT-A-X-0-NO-TD	11.9/11.9/11.9/11	208.00	810.00	602.00	54.00	11.1	7,500	5,000	110	80	2.400	1.000	19,000	3,000
2	6	215.9mm, HC606, 7102447	1-1-WT-A-X-0-NO-BHA	11.1/11.1/11.1/11	810.00	1,055.00	245.00	22.00	11.1	5,000	5,000	80	80	2.100	1.600	15,000	10,000
3	7	215.9mm, GTS-18D, ZP45DS	3-3-WT-A-E-0-NO-BHA	11.1/11.1/11.1	1,055.00	1,350.00	295.00	29.00	10.2	16,000	16,000	120	120	1.600	1.600	14,500	14,500
4	8	215.9mm, GF15PS, MR1388	4-4-WT-S-5-1-FC-HR	17.5/17.5/17.5	1,350.00	1,862.00	512.00	65.00	7.9	18,000	12,000	170	170	1.600	1.600	17,000	17,000
5	9	215.9mm, HX-S20, 5042650	3-3-WT-A-E-0-NO-BHA	17.5/17.5/17.5	1,862.00	2,187.00	325.00	55.50	5.9	18	18	120	120	1.500	1.500	18,200	18,200
6	10	215.9mm, GT-S18, 6019743	-------	17.5/17.5/17.5				0.00									
RR	11	215.9mm, GF15PS, MR1388	-------	17.5/17.5/17.5				0.00									
8	12	215.9mm, GT-CS09D, W17DH	3-3-WT-A-E-0-NO-PR	17.5/17.5	1,706.00	1,785.00	79.00	27.75	2.8	15	3	50	50	1.600	1.500		
9	13	215.9mm, GT-S18, 6019729	7-8-BT-A-6-1-WT-PR	17.5/17.5	1,785.00	2,242.00	457.00	81.75	5.6	15,000	15,000	180	180	1.600	1.600	15,500	15,500
10	14	215.9mm, HX-S20, 6021838	-------	17.5/17.5/17.5	2,242.00	2,505.00	263.00	60.25	4.4	16	16	170	170	1.500	1.500	18,500	18,500
11	16	155.6mm, STX-20, 5403997	1-1-NO-A-E-0-NO-BHA														
12	17	155.6mm, D411ST, 7103404	1-1-NO-A-X-0-NO-DTF		2,464.00	2,469.00	5.00	16.00	0.3	7,000	7,000	130	130	0.800	0.800	6,000	6,000
RR	18	155.6mm, STX-20, 5403997	5-4-BT-M-E-0-NO-HR		2,469.00	2,670.00	201.00	41.50	4.8	10,000	10,000	110	85	1.000	0.800	5,900	5,700
14	19	155.6mm, STX-R20, 5047668	8-8-BT-A-F-5-WT-PR		2,670.00	2,740.00	70.00	21.75	3.2	12	12	120	120	0.900	0.900	10,000	10,000
15	20	155.6mm, STX-R20, 5046336	8-8-BT-A-F-3-WT-PR		2,740.00	2,828.00	88.00	24.50	3.6	12,000	12,000	120	120	0.900	0.900	7,000	7,000
16	21	155.6mm, STX-30, 5029764	8-8-BT-A-E-0-WT-PR		2,828.00	2,914.00	86.00	20.50	4.2	14,000	14,000	120	120	0.900	0.900	8,500	8,500
17	22	155.6mm, STR-40 , 5041123	4-4-WT-A-E-0-BT-PR		2,914.00	3,025.00	111.00	20.25	5.5	14,000	14,000	120	120	0.900	0.900	9,500	9,500
18	23	155.6mm, STX-30, 5045955	8-4-BT-M-2-0-WT-TD		3,025.00	3,064.00	39.00	10.00	3.9	14,000	14,000	60	60	0.900	0.900	7,500	7,500

Appendix #3:
Daily Mud Reports

Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE 17-01-04	CHECK NUMBER 1
SPUD DATE 16-01-04	DAYS FROM SPUD 1
DRILL OUT DATE	MUD UP DEPTH
PRESENT ACTIVITY DRLG. FOR CONDUCTOR	

OPERATOR: NORTHROCK RESOURCES
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR. KEVIN AMY
REPORT FOR: MR ALVIN VOGT
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK A-44 — PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR		BIT NO		DRILL COLLAR OD/ID mm	222/71.4	m	m/min	m		
DEPTH m	S	SIZE mm		DRILL COLLAR OD/ID mm	171/57.2	m	m/min	m		
T.V. DEPTH	P	TYPE		DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	U	NOZZLE 1 mm		DRILL PIPE OD/ID mm	102/84.8	m	m/min	m		
GRADIENT kPa/m	O	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH		NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	R	DEPTH IN m		HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	E	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	P	R.P.M.								
GEL STRENGTH Pa 10s/10 min	O	BIT HYDRAULICS								
pH	R	NOZZLE VEL m/sec								
FILTRATE cm³ 30 min 700 kPa	T	BIT PRESS LOSS kPa								
CAKE THICKNESS mm		H H P kW/cm²								
ALKALINITY Pf		HOURS ON BIT								
ALKALINITY Mf		BIT WT daN								
CHLORIDES mg/L		CASING PROGRAM								
CALCIUM mg/L		SURFACE LENGTH m								
SAND CONTENT VOL. FRAC. 0		OD/ID mm		COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0		INTERMEDIATE LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³		OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³		INTERMEDIATE LENGTH m		SUGGEST FOR SURFACE HOLE						
LOW DENS kg/m³		OD/ID mm		① FILL TANKS WITH 30-40m³ WATER						
POLYMER kg/m³		LINER LENGTH m		② ADD 1 SK CAUSTIC + 1 SK SODA ASH (NO LIME)						
FLOWLINE TEMP °C		OD/ID mm		③ ADD GEL 3 TO 5 MIN/SK FOR INITIAL VISCOSITY @ 35-40 SEC/L						
HYDROXYL		PRODUCTION LENGTH m		④ NATIVE CLAYS WILL FURTHER INCREASE VISCOSITY AS YOU DRILL AHEAD						
CARBONATE		OD/ID mm		⑤ RAISE VISCOSITY AS HOLE CONDITION DICTATES						
BICARBONATE				GRAVEL/BOULDERS MAY BE ENCOUNTERED						
SHAKER 6x84 SCREENS		PUMP PERFORMANCE		⑥ THERE IS A GOOD CHANCE OF LOST RETURNS.						
		PUMP NO.	1+2	IN THE EVENT OF LOST RETURNS, SECLUDE						
		MODEL	G. DRZ®	SUCTION TANK, INCREASE VISCOSITY 60-80SEC						
ANNULAR HYDRAULICS		LINER SIZE mm	152	SLUG WITH SAWDUST + KWIKSEAL - RATIO						
"N" MED.		STROKE mm	229	10 SKS SAWDUST TO 1 KWIKSEAL						
"K" MED.		DISPLACEMENT PER STR m³	.01	⑦ WATCH FOR MUD RINGS - IF NECESSARY						
"N" LOW		STROKES PER MIN.		TRICKLE IN 1 OR 2 PAILS DETERGENT AT						
"K" LOW		OUTPUT m³/min		SUCTION						
ANN. PRESS. LOSS kPa		PRESSURE ☐ kPa ☐ MPa		⑧ TO CONDITION HOLE FOR SURFACE CASING						
E.C.D. kg/m³		MUD SYSTEM DATA		GRADUALLY INCREASE VISCOSITY TO 80 SEC/L						
"Z" DC		ANNULAR VOLUME m³		⑨ RUN BOTH CENTRIFUGES						
"Z" DP		DRILL STRING CAPACITY m³								
Dxc EXP		TANK VOLUME m³								
VG 600 RPM		TOTAL VOLUME m³								
VG 300 RPM		VOL. DUMPED m³								
VG 3 RPM		DILUTION RATE L/min		THANKS.						
		CIRCULATION TIME MINS.								
		BOTTOMS UP min.								

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

IN CONSIDERATION OF THE FURNISHING OF THIS REPORT AND ORAL SUGGESTIONS IT IS AGREED THAT NO RECOMMENDATIONS MADE HEREON SHALL BE CONSTRUED AS AUTHORIZING THE INFRINGEMENT OF ANY VALID PATENT, AND IT IS AGREED THAT CONCORD DRILLING FLUIDS LTD. SHALL NOT BE LIABLE FOR ANY DAMAGES RESULTING FROM THE FURNISHING OF THIS REPORT AND ORAL SUGGESTIONS AND IS TO BE HELD HARMLESS.

Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE 18-01-04	CHECK NUMBER 2
SPUD DATE 16-01-04 0500	DAYS FROM SPUD 2
DRILL OUT DATE	MUD UP DEPTH
PRESENT ACTIVITY R.I.H TO DRL COND CEMENT	

OPERATOR: NORTHROCK RESOURCES
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMY
REPORT FOR: MR ALVIN VOGT
WELL NAME AND LOCATION: NORTHROCK etal SUMMIT CREEK B-44 — PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.		BIT NO		DRILL COLLAR OD/ID mm	222/71.4	m	m/min	m		
DEPTH m		SIZE mm		DRILL COLLAR OD/ID mm	171/57.2	m	m/min	m		
T.V. DEPTH	W	TYPE		DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	A	NOZZLE 1 mm		DRILL PIPE OD/ID mm	102/84.8	m	m/min	m		
GRADIENT kPa/m	T	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	E	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS. s/L	R	DEPTH IN m		HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s		DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa		R.P.M								
GEL STRENGTH Pa 10s 10 min		BIT HYDRAULICS								
pH		NOZZLE VEL m/sec								
FILTRATE cm³ 30 min 700 kPa		BIT PRESS LOSS kPa								
CAKE THICKNESS mm		H.H.P kW/cm²								
ALKALINITY Pf		HOURS ON BIT								
ALKALINITY Mf		BIT WT. daN								
CHLORIDES mg/L		CASING PROGRAM								
CALCIUM mg/L		SURFACE LENGTH m								
SAND CONTENT VOL. FRAC. 0		OD/ID mm		COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0		INTERMEDIATE LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³		OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³		INTERMEDIATE LENGTH m		SUGGEST: TO DRILL OUT CONDUCTOR						
LOW DENS kg/m³		OD/ID mm								
POLYMER kg/m³		LINER LENGTH m		① SECLUDE #1 COMPARTMENT IN SUCTION TANK						
FLOWLINE TEMP °C		OD/ID mm		② MIX 3 SACKS BICARBONATE OF SODA						
HYDROXYL		PRODUCTION LENGTH m		③ USE WATER FROM OTHER TANK COMPARTMENTS TO MAINTAIN VOLUME						
CARBONATE		OD/ID mm		④ WHEN THRU CEMENT + SHOE YOU MAY USE 2 COMPARTMENTS IN SUCTION TANK. USE WATER FROM OTHER COMPARTMENTS FOR VOLUME CONTROL						
BICARBONATE										
		PUMP PERFORMANCE								
		PUMP NO	1+2							
		MODEL	O.D. P29							
ANNULAR HYDRAULICS		LINER SIZE mm	152							
"N" MED		STROKE mm	229	⑤ VISCOSITY AND PH WILL BE HIGH DUE TO CEMENT CONTAMINATION, BUT SHOULD GRADUALLY COME DOWN WITH BICARB. TREATMENT AND DILUTION						
"K" MED		DISPLACEMENT PER STK m³	.01							
"N" LOW		STROKES PER MIN	2X74							
"K" LOW		OUTPUT m³/min	1.48							
ANN. PRESS LOSS kPa		PRESSURE ☐ kPa ☐		⑥ WHEN VISCOSITY DROPS TO 35 SEC/L YOU MAY ADD GEL SLOWLY AT 10 MIN/SK TO MAINTAIN VISCOSITY AT 35-40 SEC/L INCREASE AS HOLE CONDITION DICTATES. TO INSURE GOOD CLEANING.						
E.C.D kg/m³		MUD SYSTEM DATA								
"Z" DC		ANNULAR VOLUME m³								
"Z" DP		DRILL STRING CAPACITY m³								
Drc EXP		TANK VOLUME m³								
VG 600 RPM		TOTAL VOLUME m³		⑦ MUD RINGS COULD BE A PROBLEM. WHEN YOU START ADDING GEL, TRICKLE IN 2 CANS DETERGENT SLOWLY AT SUCTION						
VG 300 RPM		VOL. DUMPED m³								
VG 3 RPM		DILUTION RATE L/min								
		CIRCULATION TIME MINS.		⑧ WATCH CLOSELY FOR LOST RETURNS.						
		BOTTOMS UP min.								

T.S.R. ERNIE KUDRICK		PHONE	THANKS
RESIDENCE ON LOCATION		MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAYS DATE 19-01-04	CHECK NUMBER 3
SPUD DATE 16-01-04 0300	DAYS FROM SPUD 3
DRILL OUT DATE	MUD UP DEPTH
PRESENT ACTIVITY DRILLING 311mm HOLE	

OPERATOR NORTHROCK RESOURCES	CONTRACTOR AKITA DRILLING	RIG NO 40
REPORT FOR: MR KEVIN AMY	REPORT FOR: MR ALVIN VOGT	
WELL NAME AND LOCATION NORTHROCK et al SUMMIT CREEK A-44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	0500	BIT NO	1	DRILL COLLAR OD/ID mm	222/71.4	28 m	51 m/min	30 m	1°	
DEPTH m	97	SIZE mm	311	DRILL COLLAR OD/ID mm	171/57.2	69 m	35.8 m/min	m		
T.V. DEPTH	—	TYPE	EHT116C	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1260	NOZZLE 1 mm	12.7 14.3	DRILL PIPE OD/ID mm	/	m	m/min	m		
GRADIENT kPa/m	12.4	NOZZLE 2 mm	15.9 19	DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	1199	NOZZLE mm	19.0 20.6	DP TOOL JT TYPE						
FUNNEL VIS. s/L	39	DEPTH IN m	25	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	—	DRILL RATE m/h	11.8	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	—	R.P.M.		BICARB : 6			DRILLED OUT CEMENT AND			
GEL STRENGTH Pa 10s/10 min	—	BIT HYDRAULICS		DETERGENT 3			SHOE FROM CONDUCTOR			
pH	9.5	NOZZLE VEL m/sec	31.7				TREATED CEMENT CONTAM-			
FILTRATE cm³ 30 min 700 kPa	—	BIT PRESS LOSS kPa	700				INATION W/BICARB.			
CAKE THICKNESS mm	-	H H P kW/cm²	.029				MIXED DETERGENT TO AID			
ALKALINITY Pf	0	HOURS ON BIT	3.75 (mid)				IN MUD RING BUILDING			
ALKALINITY Mf	1.6	BIT WT daN					TENDENCY			
CHLORIDES mg/L	0	CASING PROGRAM								
CALCIUM mg/L	-	SURFACE LENGTH m								
SAND CONTENT VOL. FRAC. %	.5	OD/ID mm		COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	4.	INTERMEDIATE LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³	0	OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³	0	INTERMEDIATE LENGTH m		SUGGEST:						
LOW DENS kg/m³	0	OD/ID mm								
POLYMER kg/m³	4	LINER LENGTH m		① IF SHAKER SCREENS START GETTING STICKY,						
FLOWLINE TEMP °C	17°C	OD/ID mm		TRICKLE IN ANOTHER PAIL OF DETERGENT						
HYDROXYL	-	PRODUCTION LENGTH m		SLOWLY AT SUCTION						
CARBONATE	-	OD/ID mm								
BICARBONATE	-			② USE ONLY FIRST TWO COMPARTMENTS IN						
SHAKER SCREENS	6X84	PUMP PERFORMANCE		SUCTION TANK. TO MAINTAIN VOLUME ADD						
		PUMP NO	142	WATER FROM OTHER SECLUDED COMPARTMENTS						
		MODEL	GD P29							
ANNULAR HYDRAULICS		LINER SIZE mm	152	③ IF VISCOSITY DROPS TO 35 SEC/L ADD						
"N" MED.		STROKE mm	229	GEL SLOWLY 8 TO 10 MIN/SACK TO ADJUST						
"K" MED.		DISPLACEMENT PER STR m³	.01	VISCOSITY TO 35-40 SEC/L.						
"N" LOW		STROKES PER MIN	2X95							
"K" LOW		OUTPUT m³/min	1.9	④ IF ANY HOLE CLEANING PROBLEMS, INCREASE						
ANN. PRESS. LOSS kPa		PRESSURE ☐kPa ☐MPa	1000	VISCOSITY AS HOLE CONDITION DICTATES.						
E.C.D kg/m³		MUD SYSTEM DATA								
"Z" DC		ANNULAR VOLUME m³	4.7	⑤ WATCH CLOSELY FOR LOST RETURNS.						
"Z" DP		DRILL STRING CAPACITY m³	.5	IN THE EVENT OF LOST RETURNS, SECLUDE						
Dnc. EXP		TANK VOLUME m³	35	1/1 SUCTION COMPARTMENT, INCREASE VISCOSITY						
VG 600 RPM		TOTAL VOLUME m³	40	60-80 SEC/L WITH GEL + SMALL AMOUNT OF						
VG 300 RPM		VOL. DUMPED m³	NIL	LIME. SLUG WITH SAWDUST + KWIKSEAL						
VG 3 RPM		DILUTION RATE L/min	NIL	RATIO 10 SAWDUST TO 1 KWIKSEAL						
		CIRCULATION TIME MINS.	21							
		BOTTOMS UP min.	3	⑥ RUN BOTH CENTRIFUGES WHEN SERVICABLE						

T.S.R. ERNIE KUDRICK		PHONE	
RESIDENCE ON LOCATION		MOBILE	THANKS
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAY'S DATE 20-01-04	CHECK NUMBER 4
SPUD DATE 16-01-04 0230	DAYS FROM SPUD 4
DRILL OUT DATE	MUD UP DEPTH
PRESENT ACTIVITY DRILLING 445.5 HOLE	

OPERATOR: NORTHROCK RESOURCES — CONTRACTOR: AKITA DRILLING — RIG NO. 40

REPORT FOR: MR KEVIN AMY — REPORT FOR: MR ALVIN VOGT

WELL NAME AND LOCATION: NORTHROCK etc / SUMMIT CREEK A-44 — PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY			LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	0445	BIT NO.	3A	DRILL COLLAR OD/ID mm	3 222	71.4	28 m	15.8 m/min	139 m	1°	
DEPTH m	171	SIZE mm	445.5	DRILL COLLAR OD/ID mm	24 171	57.2	143 m	14 m/min	162 m	2.5	
T.V. DEPTH	171	TYPE Sm	M50DGNC	DRILL COLLAR OD/ID mm	/		m	m/min	m		
DENSITY kg/m³	1210	NOZZLE 1 mm	19·1 19·1	DRILL PIPE OD/ID mm	/		m	m/min	m		
GRADIENT kPa/m	11·87	NOZZLE 2 mm	19·1 17·5	DRILL PIPE OD/ID mm	/		m	m/min	m		
HYDROSTATIC kPa @ DEPTH	2030	NOZZLE 3 mm	BR 9548 (24·9)	DP TOOL JT TYPE							
FUNNEL VIS. s/L	44	DEPTH IN m	130	HOLE VOLUME WITH DRILL PIPE IN HOLE				m³/m			
PLASTIC VIS mPa s	-	DRILL RATE m/h	10±	MATERIALS ADDED SINCE LAST CHECK				REMARKS			
YIELD POINT Pa	-	R.P.M.	150	19-01				DRILLED 311mm HOLE TO 130m			
GEL STRENGTH Pa 10s/10 min	-	BIT HYDRAULICS		BICARB 6		136	20	REAMED 444.5 TO 130m.			
pH	9·0	NOZZLE VEL m/sec	21	DETERGENT 3		316	20	ALL FLUID + WATER FROM			
FILTRATE cm³ 30 min 700 kPa		BIT PRESS LOSS kPa	295			452	40	SECLUDED TANKS HAS BEEN			
CAKE THICKNESS mm	S	H.H.P. kW/cm²		20-01				TRANSFERRED TO SUCTION			
ALKALINITY Pf	L	HOURS ON BIT		BICARB 6		136	20	TANK - TOTAL VOLUME NOW			
ALKALINITY Mf	U	BIT WT daN						IN SUCTION TANK = 33m³			
CHLORIDES mg/L	R	CASING PROGRAM									
CALCIUM mg/L	R	SURFACE LENGTH m						CENTRIFE. #2 ON LINE			
SAND CONTENT VOL. FRAC. O		OD/ID mm		COST SINCE LAST CHECK		136	20	O/F 1180 U/F 1810			
SOLIDS CONT VOL. FRAC. O	·13	INTERMEDIATE LENGTH m		TOTAL COST TO DATE		588	60	(ON LINE 1600 hrs - 19-01)			
BENTONITE kg/m³		OD/ID mm		RECOMMENDATIONS:							
BARITE kg/m³		INTERMEDIATE LENGTH m									
LOW DENS. kg/m³	331	OD/ID mm		SUGGEST:							
POLYMER kg/m³		LINER LENGTH m									
FLOWLINE TEMP °C	19°	OD/ID mm		SURFACE HOLE TO. - 205± m							
HYDROXYL		PRODUCTION LENGTH m		LEAVE SYSTEM AS IS, NO ADDITIVES							
CARBONATE		OD/ID mm		REQUIRED AT PRESENT TIME.							
BICARBONATE											
SHAKER SCREENS	6 x 84	PUMP PERFORMANCE		IMPORTANT TO WASH DOWN SHAKER							
		PUMP NO.	1+2	SCREENS TO KEEP THEM FROM RAMMING							
		MODEL	GD P29	AND BLINDING UP DUE TO FREEZING.							
ANNULAR HYDRAULICS		LINER SIZE mm	152								
"N" MED		STROKE mm	229								
"K" MED		DISPLACEMENT PER STR m³	·01								
"N" LOW		STROKES PER MIN.	2 x 92								
"K" LOW		OUTPUT m³/min	1·84								
ANN. PRESS. LOSS kPa		PRESSURE ☐ kPa ☐ MPa	6057								
E.C.D. kg/m³	1216	MUD SYSTEM DATA									
"Z" DC		ANNULAR VOLUM.: m³	23	THANKS							
"Z" DP		DRILL STRING CAPACITY m³	1								
Dxc. EXP		TANK VOLUME m³	33								
VG 600 RPM		TOTAL VOLUME mS³	57								
VG 300 RPM		VOL. DUMPED m³	0								
VG 3 RPM		DILUTION RATE L/min	0								
		CIRCULATION TIME MINS.	31								
		BOTTOMS UP min.	12								

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAY'S DATE 25-01-04	CHECK NUMBER 5
SPUD DATE 16-01-04 0500	DAYS FROM SPUD 9
DRILL OUT DATE 25-01-04 0600	MUD UP DEPTH 216
PRESENT ACTIVITY DRILLING 311mm HOLE	

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: ARITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMY
REPORT FOR: MR ALVIN VOGT
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK B-44 — PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	1830	BIT NO.	1	DRILL COLLAR OD/ID mm	222/71.4	18 m	66.2 m/min	m		
DEPTH m	290	SIZE mm	311	DRILL COLLAR OD/ID mm	171/57.2	150 m	46.6 m/min	m		
T.V. DEPTH	290	TYPE	H. HCM605	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1090	NOZZLE 1 mm		DRILL PIPE OD/ID mm	HW 102/64	122 m	36.4 m/min	m		
GRADIENT kPa/m	10.7	NOZZLE 2 mm	6x11-9	DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	3101	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS. s/L	42	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³				
PLASTIC VIS mPa s	15	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	6	R.P.M.	90	22-01			SURFACE HOLE MUD SAVED.			
GEL STRENGTH Pa 10s/10 min	2-7	BIT HYDRAULICS		BICARB 5 x 46 30. 23150			CENTRIFUGED FROM 1210 Kg			
pH	10	NOZZLE VEL m/sec	30.8	DESCO 2 x 11 60. 22120			TO 1070 Kg/m³			
FILTRATE cm³ 30 min 700 kPa	7.4	BIT PRESS LOSS kPa	549				DRILLED OUT CEMENT			
CAKE THICKNESS mm	1.0 FIRM	H H P kW/cm²	.031				TREATED W/BICARB + SODA			
ALKALINITY Pf	.5	HOURS ON BIT					ASH INITIAL VISCOSITY			
ALKALINITY Mf	1.45	BIT WT. daN	4.8				38 SEC/L, INCREASED			
CHLORIDES mg/L	450	CASING PROGRAM					WITH ADDITIONS OF GEL			
CALCIUM mg/L	40	SURFACE LENGTH m	208				TO 42 SEC/L. LOWERED			
SAND CONTENT VOL. FRAC. Q	.015	O/D/D	339.7-316	COST SINCE LAST CHECK			FILTRATE			
SOLIDS CONT VOL. FRAC. Q	.06	INTERMED. O/D LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³		O/D/D mm		RECOMMENDATIONS: CENTRIFUGE O/F = 1040 Kg						
BARITE kg/m³	—	INTERMEDIATE LENGTH m		SUGGEST						
LOW DENS kg/m³	142	O/D/D mm		① RUN 10 LITRES/MINUTE WATER AT SHAKER						
POLYMER kg/m³ ADDING		LINER LENGTH m								
FLOWLINE TEMP °C	23	O/D/D mm		② CONTROL VISCOSITY WITH ADDITIONS OF GEL AS REQUIRED. DESIRED VISCOSITY IS 40-45 SEC/L. IF VISCOSITY DROPS TO 40 SEC/L MIX 10 SACKS GEL AT 5 MIN PER SACK.						
HYDROXYL		PRODUCTION LENGTH m								
CARBONATE		O/D/D mm								
BICARBONATE										
SHAKER SCREENS 6x140		PUMP PERFORMANCE								
		PUMP NO.	1+2							
		MODEL	GR F7.9	③ CONTINUE TO ADD ENCAPSORFLOC AT SUCTION AT 1 HR PER PAIL, REQUIRE TOTAL OF 10 PAILS INTO THIS SYSTEM						
ANNULAR HYDRAULICS		LINER SIZE m/m	152							
"N" MED	.637	STROKE mm	229							
"K" MED	.508	DISPLACEMENT PER STR m³	.012							
"N" LOW	.344	STROKES PER MIN	2X103	④ WATERLOSS IS GOOD - DO NOT ADD ANYMORE AQUAPAC						
"K" LOW	2.28	OUTPUT m³/min	2.47							
ANN. PRESS LOSS kPa	82	PRESSURE ☐ kPa ☐ MPa								
E.C.D. kg/m³	1119	MUD SYSTEM DATA		⑤ PH IS GOOD AT PRESENT DUE TO SODA ASH ADDITION. WHEN PH DROPS BELOW 9.5 MIX 2 SACKS CAUSTIC + 2 SACKS LIGNITE - MIX THRU CHEM ABL 50/50 2 BATCHES SLOWLY AT 80-90 MIN PER BATCH. PLEASE NOTE THAT THE ADDITION OF CAUSTIC WILL CAUSE VISCOSITY TO RISE.						
"Z" DC	674/439	ANNULAR VOLUME m³	17							
"Z" DP	336	DRILL STRING CAPACITY m³	1							
Dxc. EXP	—	TANK VOLUME m³	74							
VG 600 RPM	42	TOTAL VOLUME m³	92							
VG 300 RPM	27	VOL. DUMPED m³	—							
VG 3 RPM	4	DILUTION RATE L/min	10							
		CIRCULATION TIME MINS.	40							
		BOTTOMS UP min.	7							
				⑥ KEEP SHAKER SCREENS CLEAN, WATCH FOR ANY SCREEN BLINDING WITH ADDITIONS OF ENCAPSORFLOC						

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAY'S DATE	26-01-04	CHECK NUMBER	6
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	10
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	DRILLING 311mm HOLE		

OPERATOR: NORTHROCK RESOURCES LTD — CONTRACTOR: AKITA DRILLING — RIG NO. 40

REPORT FOR: MR KEVIN AMY — REPORT FOR: MR ALVIN VOGT

WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK B-44 — PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	0430	BIT NO	1	DRILL COLLAR OD/ID mm	222/71.4	18 m	64.4 m/min	m		
DEPTH m	419	SIZE mm	311	DRILL COLLAR OD/ID mm	171/57.2	150 m	45.3 m/min	m		
T.V. DEPTH	419	TYPE	H. HCM605	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1100	NOZZLE 1 mm		DRILL PIPE OD/ID mm	102/64	251 m	35.4 m/min	m		
GRADIENT kPa/m	10.8	NOZZLE 2 mm	6X11.9	DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	4521	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS. s/L	44	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE		.07 m³/m				
PLASTIC VIS mPa s	14	DRILL RATE m/h	19.5	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	7.5	R.P.M.	100	TO MIDNITE 25-01-04			HOLE CONDITION STABLE			
GEL STRENGTH Pa 10s/10 min	2-7	BIT HYDRAULICS								
pH	9.5	NOZZLE VEL m/sec	30	gel 30			MUD PROPERTIES O.K.			
FILTRATE cm³ 30 min 700 kPa	7.0	BIT PRESS LOSS kPa	547	SODA ASH 8			CONTINUE TO INCREASE			
CAKE THICKNESS mm	1.0 FIRM	H.H.P. kW/cm²	.029	AQUAPAC 4			POLYMER (ENCAPSORFLOC)			
ALKALINITY Pf	.4	HOURS ON BIT		LIGNITE 4			ADDITIONS SLOWLY 2 hrs			
ALKALINITY Mf	1.2	BIT WT. daN	6.9	ENCAPSORFLOC 3			PER PAIL.			
CHLORIDES mg/L	450	CASING PROGRAM								
CALCIUM mg/L	35	SURFACE LENGTH m	208				CENTRIFUGE ONE ON LINE			
SAND CONTENT VOL. FRAC. 0	.015	OD/ID 339.7	316	COST SINCE LAST CHECK			O/F: 1080 Kg/m3			
SOLIDS CONT VOL. FRAC. 0	.063	INTERMEDIATE LENGTH m		TOTAL COST TO DATE			U/F: 1680 Kg/m3			
BENTONITE kg/m³ FLUSH	38	OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³	—	INTERMEDIATE LENGTH m		SUGGEST:						
LOW DENS kg/m³	164	OD/ID mm								
POLYMER kg/m³	.8	LINER LENGTH m		① CONTINUE TO RUN 10 LITRES WATER PER MINUTE AT ALL TIMES WHILE DRILLING.						
FLOWLINE TEMP °C	26°C	OD/ID mm								
HYDROXYL	0	PRODUCTION LENGTH m		② CONTROL VISCOSITY AT 40-45 SEC/L. WITH GEL AS REQUIRED. IF VISCOSITY DROPS TO 40 SEC/L MIX 10 SKS GEL AT 5 MIN PER SACK						
CARBONATE	480	OD/ID mm								
BICARBONATE	488									
SHAKER SCREENS	6X140	PUMP PERFORMANCE								
		PUMP NO.	1+2							
		MODEL	GD PZ9							
ANNULAR HYDRAULICS		LINER SIZE mm	152	③ TODAY ON DAYLIGHTS, MIX 2 SACKS CAUSTIC WITH 2 SACKS LIGNITE 50/50 THRU CHEM BAL. RUN IN SLOWLY OVER 4 HOURS SINCE CAUSTIC WILL RESULT IN VISCOSITY JUMP.						
'N' MED.	.568	STROKE mm	229							
'K' MED.	.840	DISPLACEMENT PER STR m³	.012							
'N' LOW	.387	STROKES PER MIN.	2X100							
'K' LOW	2.129	OUTPUT m³/min	2.4							
ANN PRESS LOSS kPa	114.8	PRESSURE ☐ kPa ☐ MPa	10428	④ CONTINUE TO ADD ENCAPSORFLOC SLOWLY. TRICKLE IN A PAIL OVER 2 hrs, SHOULD BE ABLE TO GET 5 OR 6 PAILS INTO SYSTEM OVER NEXT 12 HRS.						
E.C.D kg/m³	1128	MUD SYSTEM DATA								
'Z' DC 559/377		ANNULAR VOLUME m³	26							
'Z' DP	296	DRILL STRING CAPACITY m³	1.5							
Dxc EXP	—	TANK VOLUME m³	85							
VG 600 RPM	43	TOTAL VOLUME mS'	112	⑤ KEEP SHAKER SCREENS CLEAN AND WATCH FOR BLINDING						
VG 300 RPM	29	VOL. DUMPED m³	0							
VG 3 RPM	4	DILUTION RATE L/min	10							
		CIRCULATION TIME MINS.	50	⑥ WATERLOSS IS GOOD. DO NOT MIX AQUAPAC UNTIL ADVISED						
		BOTTOMS UP min.	11							

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	THANKS
WAREHOUSE		PHONE	
TRUCKING		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE 26-01-04	CHECK NUMBER 7
SPUD DATE 16-01-04 0300	DAYS FROM SPUD 10
DRILL OUT DATE 25-01-04 0600	MUD UP DEPTH 216
PRESENT ACTIVITY DRILLING 311 MM. HOLE	

OPERATOR: NORTHROCK RESOURCES LTD — CONTRACTOR: AKITA DRILLING — RIG NO. 40

REPORT FOR: MR KEVIN AMY — REPORT FOR: MR ALVIN VOGT

WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK B-44 — PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY			LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	1900	BIT NO	1	DRILL COLLAR OD/ID mm	222	71.4	18 m	65.7 m/min	405 m	3°	
DEPTH m	577	SIZE mm	311	DRILL COLLAR OD/ID mm	176	57.2	150 m	46.2 m/min	463 m	2 7/8°	
T.V. DEPTH	577	TYPE M	HCM605	DRILL COLLAR OD/ID mm	/		m	m/min	509 m	3°	
DENSITY kg/m³	1090	NOZZLE 1 mm		DRILL PIPE OD/ID mm	HW	102/64	409 m	36.1 m/min	m		
GRADIENT kPa/m	10.7	NOZZLE 2 mm	(6x11.9)	DRILL PIPE OD/ID mm		/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	6170	NOZZLE 3 mm		DP TOOL JT TYPE							
FUNNEL VIS. s/L	41	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE			m³/m				
PLASTIC VIS mPa s	13	DRILL RATE m/h	15±	MATERIALS ADDED SINCE LAST CHECK				REMARKS			
YIELD POINT Pa	4.5	RPM	100	TO MINITE 26-01				HOLE CONDITION STABLE			
GEL STRENGTH Pa 10s/10 min	1-4.5	BIT HYDRAULICS									
pH	9.0	NOZZLE VEL m/sec	31	ENCAPSOREFLOC II				pH IS DOWN			
FILTRATE cm³ 30 min 700 kPa	7.9	BIT PRESS LOSS kPa	565	CAUSTIC 1				WATCH VISCOSITY, KEEP			
CAKE THICKNESS mm	1.0 FIRM	H.H.P. kW/cm²	.031	LIGNITE 1				AT 40-45 SEC/L.			
ALKALINITY Pf	.2	HOURS ON BIT									
ALKALINITY Mf	1.1	BIT WT. daN	5.2								
CHLORIDES mg/L	450	CASING PROGRAM						2 CENTRIFUGES ON			
CALCIUM mg/L	20	SURFACE LENGTH m	208					LINE EACH OVERFLOW			
SAND CONTENT VOL. FRAC. %	.01	OD/ID	337-316	COST SINCE LAST CHECK				= 1075 kg/m³			
SOLIDS CONT VOL. FRAC. %	.056	INTERMEDIATE LENGTH m		TOTAL COST TO DATE							
BENTONITE kg/m³	31	OD/ID mm		RECOMMENDATIONS:							
BARITE kg/m³	—	INTERMEDIATE LENGTH m		SUGGEST:							
LOW DENS. kg/m³	146	OD/ID mm									
POLYMER kg/m³	1.7	LINER LENGTH m		① CONTINUE TO RUN 10 LITRES/MIN. WATER							
FLOWLINE TEMP °C	31	OD/ID mm									
HYDROXYL	0	PRODUCTION LENGTH m		② pH IS DOWN - TONIGHT MIX 2 SACKS							
CARBONATE	240	OD/ID mm		CAUSTIC + 2 SACKS LIGNITE MIX 50/50							
BICARBONATE	854			AT 45 MIN PER BATCH							
SHAKER SCREENS	6x140	PUMP PERFORMANCE									
		PUMP NO.	1+2	③ POLYMER CONTENT O.K TONIGHT MIX							
		MODEL	GD P29	ONLY 2 PAILS ENCAPSOREFLOC, TRICKLE							
ANNULAR HYDRAULICS		LINER SIZE mm	152	IN AT SUCTION VERY SLOWLY 2 TO 3 hrs							
"H" MED.	.669	STROKE mm	229	PER PAIL.							
"K" MED.	.338	DISPLACEMENT PER STR m³	.012								
"N" LOW	.474	STROKES PER MIN	2x102	④ WATCH VISCOSITY - WHEN VISCOSITY DROPS							
"K" LOW	.924	OUTPUT m³/min	2.45	TO 40 SEC/L. MIX 10 SACKS GEL AT 5 MIN/SK.							
ANN. PRESS LOSS kPa	87	PRESSURE ☐kPa ☐MPa	16200								
E.C.D kg/m³	1105	MUD SYSTEM DATA		⑤ WATERLOSS IS GOOD. DO NOT MIX							
"Z" DC	853.617	ANNULAR VOLUME m³	37	AQUAPAC							
"Z" DP	512	DRILL STRING CAPACITY m³	2								
Dxc EXP	—	TANK VOLUME m³	74								
VG 600 RPM	35	TOTAL VOLUME m³	113								
VG 300 RPM	22	VOL. DUMPED m³	—	THANKS							
VG 3 RPM	2	DILUTION RATE L/min	10								
		CIRCULATION TIME MINS.	46								
		BOTTOMS UP min	15								

T.S.F.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAYS DATE	27-01-04	CHECK NUMBER	8
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	11
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	DRILLING 311mm HOLE		

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMI
REPORT FOR: MR ALVIN VOGT
WELL NAME AND LOCATION: NORTHROCK etal SUMMIT CREEK B-44
PROVINCE: N.W.T

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY			LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	0445	BIT NO	1	DRILL COLLAR OD/ID mm	222	71.4	18 m	62.5 m/min	m		
DEPTH m	698	SIZE mm	311	DRILL COLLAR OD/ID mm	171	57.2	150 m	44 m/min	m		
T.V. DEPTH	698	TYPE	HCM605	DRILL COLLAR OD/ID mm	/		m	m/min	m		
DENSITY kg/m³	1110	NOZZLE 1 mm	(6x11.9)	DRILL PIPE OD/ID mm	102	64	530 m	34.4 m/min	m		
GRADIENT kPa/m	10.9	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/		m	m/min	m		
HYDROSTATIC kPa @ DEPTH	7600	NOZZLE 3 mm		DP TOOL JT TYPE							
FUNNEL VIS. s/L	41	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE			m³/m				
PLASTIC VIS mPa.s	11	DRILL RATE m/h	15-20	MATERIALS ADDED SINCE LAST CHECK				REMARKS			
YIELD POINT Pa	4	R.P.M.	95					HOLE CONDITION STABLE			
GEL STRENGTH Pa 10s/10 min	1-3	BIT HYDRAULICS									
pH	9.0	NOZZLE VEL m/sec	29					YIELD POINT SHOULD BE			
FILTRATE cm³ 30 min 700 kPa	8.1	BIT PRESS LOSS kPa	520					INCREASED WITH ADDITION			
CAKE THICKNESS mm	1.0	H.H.P. kW/cm²	.027					OF GEL.			
ALKALINITY Pf	.2	HOURS ON BIT						INCREASE pH TO 9.5-10.			
ALKALINITY Mf	1.0	BIT WT. daN	5.1								
CHLORIDES mg/L	450	CASING PROGRAM						CENTRIFUGES 2 ON LINE			
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208					O/F BOTH 1090 Kg/m3			
SAND CONTENT VOL. FRAC. %	.01	OD/ID mm	339.7-316	COST SINCE LAST CHECK							
SOLIDS CONT VOL. FRAC. %	.07	INTERMEDIATE LENGTH m		TOTAL COST TO DATE							
BENTONITE kg/m³	26	OD/ID mm		RECOMMENDATIONS:							
BARITE kg/m³	—	INTERMEDIATE LENGTH m		Suggest:							
LOW DENS kg/m³	182	OD/ID mm		1. CONTINUE RUNNING 10 LITRES WATER/MINUTE							
POLYMER kg/m³	1.7	LINER LENGTH m		2. ADD NOW 12 SACKS GEL AT 5 MIN/SK							
FLOWLINE TEMP °C	33	OD/ID mm		3. ADD 2 SKS CAUSTIC WITH 2 SACKS LIGNITE							
HYDROXYL	0	PRODUCTION LENGTH m		SC/SO AT 60 MIN./BATCH							
CARBONATE	240	OD/ID mm									
BICARBONATE	732			4. DURING THE DAY TRICKLE IN 2 PAILS							
SHAKER SCREENS	6x140	PUMP PERFORMANCE		ENCAPSORELOC SLOWLY AT 2 OR 3 HOURS							
		PUMP NO	142	PER PAIL.							
		MODEL	GD P29								
ANNULAR HYDRAULICS		LINER SIZE mm	152								
"N" MED.	.659	STROKE mm	229								
"K" MED.	.313	DISPLACEMENT PER STR m³	.012								
"N" LOW	.435	STROKES PER MIN	2x97	5. WATER LOSS OK AT PRESENT AND APIAPAC							
"K" LOW	.983	OUTPUT m³/min	2.33	IS NOT REQUIRED							
ANN. PRESS LOSS kPa	40.5	PRESSURE ☐ kPa ☐ MPa	16095								
E.C.D. kg/m³	1123	MUD SYSTEM DATA		DESIRED VISCOSITY 42-45 SEC/L.							
"Z" DC	912-640	ANNULAR VOLUME m³	45								
"Z" DP	518	DRILL STRING CAPACITY m³	3								
Dxc. EXP		TANK VOLUME m³ PIT	82								
VG 600 RPM	30	TOTAL VOLUME m³	130	THANKS							
VG 300 RPM	19	VOL. DUMPED m³	—								
VG 3 RPM	2	DILUTION RATE L/min	10								
		CIRCULATION TIME MINS.	56								
		BOTTOMS UP min.	20								

T.S.R	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE 27-01-04	CHECK NUMBER 9
SPUD DATE 16-01-04 0300	DAYS FROM SPUD 11
DRILL OUT DATE 25-01-04 0600	MUD UP DEPTH 216
PRESENT ACTIVITY CIRC. PRIOR TO WIPER TRIP	

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO 40
REPORT FOR: MR KEVIN AMY
REPORT FOR: MR ALVIN VOGT
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK B-44 — PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY			LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	DEVIATION	DIRECTION
TIME 24 HR.	2120	BIT NO	1	DRILL COLLAR OD/ID mm	222	71.4	18 m	58 m/min	m		
DEPTH m	810	SIZE mm	311	DRILL COLLAR OD/ID mm	171	57.2	150 m	40.7 m/min	m		
T.V. DEPTH	810	TYPE	HCM605	DRILL COLLAR OD/ID mm	/		m	m/min	m		
DENSITY kg/m³	1140	NOZZLE 1 mm		DRILL PIPE OD/ID mm	114	69	642 m	32.8 m/min	m		
GRADIENT kPa/m	11.1	NOZZLE 2 mm	(6X11.9)	DRILL PIPE OD/ID mm	/		m	m/min	m		
HYDROSTATIC kPa @ DEPTH	9059	NOZZLE 3 mm	-	DP TOOL JT TYPE							
FUNNEL VIS. s/L	76	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE				m³/m			
PLASTIC VIS mPa s	20	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK				REMARKS			
YIELD POINT Pa	11	R.P.M.		TO MIDNIGHT 27-01-04				INCREASED VISCOSITY			
GEL STRENGTH Pa 10s/10 min	3-14	BIT HYDRAULICS						FROM 41 SEC/L TO			
pH	10	NOZZLE VEL m/sec		GEL: 65				76 SEC/L WITH GEL			
FILTRATE cm³ 30 min 700 kPa	8.4	BIT PRESS LOSS kPa		LIGNITE: 4				TO CONDITION HOLE			
CAKE THICKNESS mm	1.0	H.H.P. kW/cm²		CAUSTIC: 6				FOR LOGGING.			
ALKALINITY Pf	.4	HOURS ON BIT		ENCAPSULATOR: 2							
ALKALINITY Mf	1.2	BIT WT daN									
CHLORIDES mg/L	450	CASING PROGRAM									
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208								
SAND CONTENT VOL. FRAC. 0	.01	OD/ID 339 mm	- 316	COST SINCE LAST CHECK							
SOLIDS CONT VOL. FRAC. 0	.09	INTERMEDIATE LENGTH m		TOTAL COST TO DATE							
BENTONITE kg/m³	62	OD/ID mm		RECOMMENDATIONS:							
BARITE kg/m³	-	INTERMEDIATE LENGTH m									
LOW DENS. kg/m³	234	OD/ID mm		ALL PROPERTIES O.K							
POLYMER kg/m³	1.8	LINER LENGTH m		VISCOSITY WILL PROBABLY INCREASE TO							
FLOWLINE TEMP °C	35	OD/ID mm		80-90 SEC/L AS FRESH ADDITION OF							
HYDROXYL	0	PRODUCTION LENGTH m		GEL CONTINUES TO YIELD.							
CARBONATE	480	OD/ID mm									
BICARBONATE	488										
SHAKER 6X140		PUMP PERFORMANCE									
SCREENS		PUMP NO	1+2								
		MODEL	GD PZ9								
ANNULAR HYDRAULICS		LINER SIZE mm	152								
"N" MED	.562	STROKE mm	229								
"K" MED	1.26	DISPLACEMENT PER STR m³	.012								
"N" LOW	.431	STROKES PER MIN.	2X90								
"K" LOW	2.48	OUTPUT m³/min	2.16								
ANN. PRESS. LOSS kPa	2.2	PRESSURE ☐ kPa ☐ MPa									
E.C.D kg/m³	1173	MUD SYSTEM DATA									
"Z" DC	338	ANNULAR VOLUME m³	52								
"Z" DP	195	DRILL STRING CAPACITY m³	4								
Dxc EXP		TANK VOLUME m³	70								
VG 600 RPM	62	TOTAL VOLUME m³	126								
VG 300 RPM	42	VOL. DUMPED m³	-								
VG 3 RPM	5	DILUTION RATE L/min	-								
		CIRCULATION TIME MINS.	60								
		BOTTOMS UP min.	24								

T.S Fr.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAYS DATE	28-1-04	CHECK NUMBER	10
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	12
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	CLEANING 311 MM HOLE		

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMI
REPORT FOR: MR BOB ROLFES
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK E-44
PROVINCE: N.W.T.

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	2230	BIT NO	1	DRILL COLLAR OD/ID mm	222/71.4	18 m	64.4 m/min	m		
DEPTH m	810	SIZE mm	311	DRILL COLLAR OD/ID mm	171/57.2	150 m	45.2 m/min	m		
T.V. DEPTH	810	TYPE	HC616S	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1120	NOZZLE 1 mm		DRILL PIPE OD/ID mm	114/69	642 m	36.5 m/min	m		
GRADIENT kPa/m	10.99	NOZZLE 2 mm	(6x11.9)	DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	8899	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS s/L	78	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³				
PLASTIC VIS mPa s	26	DRILL BITS OUT	810	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	12	(602m:54hrs)					PULLED TITE SHORTLY AFTER			
GEL STRENGTH Pa 10s/10 min	3-16	BIT HYDRAULICS					COMING OFF BOTTOM DURING			
pH	9.5	NOZZLE VEL m/sec		TO MIDNIGHT 28-01			WIPER TRIP. REGAINED			
FILTRATE cm³ 30 min 700 kPa	7.2	BIT PRESS LOSS kPa					TITE THROUGHT 810-208M			
CAKE THICKNESS mm	1.0	H H P kW/cm²		GEL : 57			INTERVAL, AT CASING SHOE			
ALKALINITY Pf	.4	HOURS ON BIT		CAUSTIC 2			PIPE CAME FREE. MUD			
ALKALINITY Mf	1.3	BIT WT daN		LIGNITE 1			LOST BY PUMPING INTO			
CHLORIDES mg/L	450	CASING PROGRAM		AQUAPAC 1			FORMATIONS, WHILE			
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208				RUNNING IN hole TITE			
SAND CONTENT VOL FRAC %	.0075	OD/ID 339 mm	7-316	COST SINCE LAST CHECK			AT 500m, DEPLETED MUD			
SOLIDS CONT VOL FRAC %	.075	INTERMEDIATE LENGTH m		TOTAL COST TO DATE			FROM TANKS. PULLED UP			
BENTONITE kg/m³	62	OD/ID mm		RECOMMENDATIONS:			INTO CASING, ADDED			
BARITE kg/m³	—	INTERMEDIATE LENGTH m					45m³ FRESH WATER AND			
LOW DENS. kg/m³	195	OD/ID mm					MIXED MUD TO OBTAIN			
POLYMER kg/m³	1.5	LINER LENGTH m					68 SEC/L VISCOSITY.			
FLOWLINE TEMP °C	31°C	OD/ID mm					WHILE RUNNING IN TO			
HYDROXYL	0	PRODUCTION LENGTH m					CONDITION HOLE LAST			
CARBONATE	450	OD/ID mm					PIECES OF MUD RINGS			
BICARBONATE	616						WERE CLEANED OUT			
SHAKER 6X140 SCREENS		PUMP PERFORMANCE					OVER SHAKER SCREENS			
		PUMP NO	1+2				(AT 450m + 500'm)			
		MODEL	GP P29				+657m.			
ANNULAR HYDRAULICS		LINER SIZE mm	152	2230 hrs : MUD CHECK WHILE CIRCULATING						
"N" MED	.604	STROKE mm	229	OUT MUD RINGS @ 657m.						
"C" MED	1.159	DISPLACEMENT PER STR m³	.012							
"N" LOW	.415	STROKES PER MIN	2x100	Suggest:						
"K" LOW	3.05	OUTPUT m³/min	2A'							
ANN PRESS LOSS kPa	318	PRESSURE kPa / MPa	17,800	① CONTINUE TO RUN 20-25 LITRES WATER PER						
E.C.D kg/m³	1160	MUD SYSTEM DATA		MINUTE TO KEEP VOLUME UP.						
"Z" DC	344-237	ANNULAR VOLUME m³	51							
"Z" DP	194	DRILL STRING CAPACITY m³	3	② VISCOSITY WILL VARY AS WE INCORPORATE						
Dxc EXP	—	TANK VOLUME m³	42	MUD IN THE HOLE BUT SHOULD EVEN OUT						
VG 600 RPM	76	TOTAL VOLUME m³	96	AT 75 TO 80 SEC/L						
VG 300 RPM	50	VOL DUMPED m³	—							
VG 3 RPM	6	DILUTION RATE L/min	25	③ WILL CONDITION MUD WHEN HOLE IS CLEANED						
		CIRCULATION TIME MINS.	45	UP TO T.D						
		BOTTOMS UP min.	22							

T.S.R.	ERNIE KUDRICK	PHONE	THANKS
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE	29-1-04	CHECK NUMBER	11
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	13
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	CIRC. COND. MUD TO LOG		

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMI - TRAVIS BOUCHARD
REPORT FOR: BOB ROLFES
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK 13-44
PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY			LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	11:30	BIT NO	1	DRILL COLLAR OD/ID mm	222	71.4	18 m	58 m/min	m		
DEPTH m	810	SIZE mm	311	DRILL COLLAR OD/ID mm	171	57.2	150 m	40.7 m/min	m		
T.V. DEPTH	810	TYPE	HCM605	DRILL COLLAR OD/ID mm	/		m	m/min	m		
DENSITY kg/m³	1120	NOZZLE 1 mm	6x11.9	DRILL PIPE OD/ID mm	114	69	642 m	32.8 m/min	m		
GRADIENT kPa/m	10.99	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/		m	m/min	m		
HYDROSTATIC kPa @ DEPTH	8900	NOZZLE 3 mm		DP TOOL JT TYPE							
FUNNEL VIS. s/L	86	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE			m³/m				
PLASTIC VIS mPa s	27	DRILL RATE m/h	CIRC.	MATERIALS ADDED SINCE LAST CHECK				REMARKS			
YIELD POINT Pa	14	R.P.M.						RAN 50 LITERS WATER PER MINUTE TO BUILD VOLUME. INCREASED VISCOSITY FROM 62-86 SEC/L WITH GEL + VISPLUS			
GEL STRENGTH Pa 10s/10 mn	4-18	BIT HYDRAULICS									
pH	9.5	NOZZLE VEL m/sec									
FILTRATE cm³ 30 min 700 kPa	7.4	BIT PRESS LOSS kPa									
CAKE THICKNESS mm	1.0 FIRM	H.H.P. kW/cm²									
ALKALINITY Pf	.35	HOURS ON BIT						SHAKER SCREENS ARE CLEAR OF MUD RING			
ALKALINITY Mf	1.2	BIT WT. daN						REMOVE. NO SIGNS OF SLOUGHED SHALE.			
CHLORIDES mg/L	450	CASING PROGRAM									
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208								
SAND CONTENT VOL. FRAC. %	.06	OD/ID 339 mm	7-316	COST SINCE LAST CHECK				MUD PROPERTIES O.K.			
SOLIDS CONT VOL. FRAC. %	.075	INTERMEDIATE LENGTH m		TOTAL COST TO DATE							
BENTONITE kg/m³	64	OD/ID mm		RECOMMENDATIONS:							
BARITE kg/m³	—	INTERMEDIATE LENGTH m									
LOW DENS kg/m³	195	OD/ID mm		SAMPLE OF DRILLING MUD AS PER THIS REPORT SAVED FOR LOGGERS (MUD, FILTRATE, FILTERCAKE)							
POLYMER kg/m³	1.0	LINER LENGTH m									
FLOWLINE TEMP °C	31	OD/ID mm									
HYDROXYL	0	PRODUCTION LENGTH m									
CARBONATE	420	OD/ID mm									
BICARBONATE	610										
SHAKER SCREENS	6x140	PUMP PERFORMANCE									
		PUMP NO	1+2								
		MODEL	PZ9								
ANNULAR HYDRAULICS		LINER SIZE mm	152								
'N' MED.	.576	STROKE mm	229								
'K' MED.	1.516	DISPLACEMENT PER STR m³	.012								
'N' LOW	.369	STROKES PER MIN	2x 90								
'K' LOW	4.38	OUTPUT m³/min	2.16								
ANN. PRESS LOSS kPa	370	PRESSURE ☐ kPa ☐ MPa									
E.C.D. kg/m³	1166	MUD SYSTEM DATA									
'Z' DC	254-169	ANNULAR VOLUME m³	51								
'Z' DP	135	DRILL STRING CAPACITY m³	3								
Dxc EXP	—	TANK VOLUME m³	240								
VG 600 RPM	82	TOTAL VOLUME m³	94								
VG 300 RPM	55	VOL. DUMPED m³	—								
VG 3 RPM	8	DILUTION RATE L/min	50								
		CIRCULATION TIME MINS.	45								
		BOTTOMS UP min.	24								

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE 30-01-04	CHECK NUMBER 12
SPUD DATE 16-01-04 0300	DAYS FROM SPUD 14
DRILL OUT DATE 25-01-04 0600	MUD UP DEPTH 216
PRESENT ACTIVITY CIRCULATING	

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO 40
REPORT FOR: MR KEVIN AMY MR TRAVIS BOUCHARD
REPORT FOR: MR BOB ROLFES
WELL NAME AND LOCATION: NORTHROCK et al SUMMIT CREEK B-44
PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	1615	BIT NO	1	DRILL COLLAR OD/ID mm	3 228 / 74.5	28 m	61.4 m/min	m		
DEPTH m	810	SIZE mm	311	DRILL COLLAR OD/ID mm	16 171 / 57.2	150 m	40.7 m/min	m		
T.V. DEPTH	810	TYPE	HCM405	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1135	NOZZLE 1 mm		DRILL PIPE OD/ID mm	HW 102 / 65	642 m	31.9 m/min	m		
GRADIENT kPa/m	11.13	NOZZLE 2 mm	(6x11.9)	DRILL PIPE OD/ID mm	102 / 84.8	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	9019	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS. s/L	82	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	31	DRILL RATE m/h	CIRC.	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	13	R.P.M	43	TO MIDNITE 29-01-02			LOGGED HOLE TO T.D.			
GEL STRENGTH Pa 10s/10 min	3-10	BIT HYDRAULICS					WITH NO PROBLEMS.			
pH	9.5	NOZZLE VEL m/sec		GEL: 44			R.I.H, WASHED 15m. TO			
FILTRATE cm³ 30 min 700 kPa	7.5	BIT PRESS LOSS kPa		AQUAPAC: 1			BOTTOM, ½M FILL.			
CAKE THICKNESS mm	1.0 FIRM	H.H.P. kW/cm²		CAUSTIC: 1						
ALKALINITY Pf	.30	HOURS ON BIT		LIGNITE: 1			INITIAL BOTTOMS UP			
ALKALINITY Mf	1.1	BIT WT. daN		VISPLUS: 1			VISCOSITY 132 SEC/L			
CHLORIDES mg/L	450	CASING PROGRAM					MIX 2 SACKS DESCO WHILE			
CALCIUM mg/L	Trace	SURFACE LENGTH m	208				ADDING 15 LITRES WATER			
SAND CONTENT VOL. FRAC. Q	.006	OD/ID mm	339.7-316	COST SINCE LAST CHECK			PER MINUTE TO REDUCE			
SOLIDS CONT VOL. FRAC. Q	.08	INTERMEDIATE LENGTH m		TOTAL COST TO DATE			VISCOSITY TO 82 SEC/L			
BENTONITE kg/m³	63	OD/ID mm		RECOMMENDATIONS:			ALL OTHER PROPERTIES OK.			
BARITE kg/m³	—	INTERMEDIATE LENGTH m								
LOW DENS kg/m³	208	OD/ID mm		SUGGEST:						
POLYMER kg/m³	.9	LINER LENGTH m								
FLOWLINE TEMP °C	30	OD/ID mm		① DESIRED VISCOSITY 80-85 SEC/L. IT SHOULD REMAIN IN THAT RANGE WITHOUT FURTHER ADDITIONS.						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	360	OD/ID mm								
BICARBONATE	610									
SHAKER	3/ 3/	PUMP PERFORMANCE		② YOU MAY TURN WATER OFF NOW.						
SCREENS	84 140	PUMP NO.	1+2							
ANNULAR HYDRAULICS		MODEL	60 PZ9							
		LINER SIZE mm	140							
"N" MED	.526	STROKE mm	229							
"K" MED	1.148	DISPLACEMENT PER STR m³	.0106	THANKS						
"N" LOW	.445	STROKES PER MIN	2x102							
"K" LOW	2.9	OUTPUT m³/min	2.16							
ANN. PRESS. LOSS kPa	322	PRESSURE ☐ kPa ☐ MPa	15847							
E.C.D kg/m³	1175	MUD SYSTEM DATA								
"Z" DC	284-189	ANNULAR VOLUME m³	53							
"Z" DP	155	DRILL STRING CAPACITY m³	3							
Dnc EXP		TANK VOLUME m³	144							
VG 600 RPM	88	TOTAL VOLUME mS³	100							
VG 300 RPM	57	VOL. DUMPED m³	—							
VG 3 RPM	6	DILUTION RATE L/min	15							
		CIRCULATION TIME MINS.	46							
		BOTTOMS UP m/m.	25							

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE	02-02-04	CHECK NUMBER	13
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	15
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	CIRC HOLE CLEAN FOR CASING		

OPERATOR	NORTHROCK RESOURCES LTD	CONTRACTOR	AKITA DRILLING — RIG NO. 40
REPORT FOR:	MR KEVIN AMY/TRAVIS BOUCHARD	REPORT FOR:	MR BOB ROLFES
WELL NAME AND LOCATION	NORTHROCK et al/SUMMIT CREEK B-44	PROVINCE	NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	0045	BIT NO	1	DRILL COLLAR OD/ID mm	228/74.5	28 m	60.3 m/min	m		
DEPTH m	810	SIZE mm	311	DRILL COLLAR OD/ID mm	171/57.2	150 m	40 m/min	m		
T.V. DEPTH	810	TYPE	HCM605	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1140	NOZZLE 1 mm	(6X11.9)	DRILL PIPE OD/ID mm	102/65	642 m	31.3 m/min	m		
GRADIENT kPa/m	11.18	NOZZLE 2 mm		DRILL PIPE OD/ID mm	102/64.3	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	9059	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS. s/L	78	DEPTH IN m	208	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	27	DRILL RATE m/h	CIRC.	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	11	R.P.M.		TAN 30			RAN 3 DST'S			
GEL STRENGTH Pa 10s/10 min	3-8	BIT HYDRAULICS		DESCO 2						
pH	9.0	NOZZLE VEL m/sec					R.I.H TO CONDITION			
FILTRATE cm³ 30 min 700 kPa	7.6	BIT PRESS LOSS kPa					FOR 244.5 CASING			
CAKE THICKNESS mm	1.0 FIRM	H.H.P. kW/cm²					HOLE CONDITION GOOD			
ALKALINITY Pm	.15	HOURS ON BIT					NO FILL -			
ALKALINITY Mf	.9	BIT WT. daN								
CHLORIDES mg/L	300	CASING PROGRAM								
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	.005	OD/ID	339.7-316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.09	INTERMEDIATE LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³	61	OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m								
LOW DENS. kg/m³	234	OD/ID mm		MUD PROPERTIES O.K.						
POLYMER kg/m³	.7	LINER LENGTH m								
FLOWLINE TEMP °C	30	OD/ID mm		SUGGEST						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	190	OD/ID mm		WHEN ON BOTTOM CIRCULATING CASING						
BICARBONATE	732			PRIOR TO CEMENTING, YOU MAY REDUCE						
		PUMP PERFORMANCE		VISCOSITY AND YIELD POINT BY MIXING						
		PUMP NO.	1+2	2 SACKS DESCO AND RUNNING 1" STREAM						
		MODEL	GD P29	WATER. THIS SHOULD LOWER VISCOSITY						
ANNULAR HYDRAULICS		LINER SIZE mm	140	TO 50-55 SEC/L.						
"N" MED	.633	STROKE mm	229							
"K" MED	.947	DISPLACEMENT PER STR m³	.0106							
"N" LOW	.400	STROKES PER MIN.	2X100							
"K" LOW	3.124	OUTPUT m³/min	2.12	THANKS						
ANN. PRESS LOSS kPa	292	PRESSURE ☐ kPa ☐ MPa	15,500							
E.C.D kg/m³	1176	MUD SYSTEM DATA								
"Z" DC	322-206	ANNULAR VOLUME m³	53							
"Z" DP	163	DRILL STRING CAPACITY m³	3							
Dxc EXP		TANK VOLUME m³ PIT	31							
VG 600 RPM	76	TOTAL VOLUME m³	87							
VG 300 RPM	49	VOL. DUMPED m³	-							
VG 3 RPM	6	DILUTION RATE L/min	-							
		CIRCULATION TIME MINS.	41							
		BOTTOMS UP min.	25							

T.S.R.	ERNIE KUDRICK	PHONE	
RESIDENCE	ON LOCATION	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE	02-02-04	CHECK NUMBER	14
SPUD DATE	16-01-04 0300	DAYS FROM SPUD	18
DRILL OUT DATE	25-01-04 0600	MUD UP DEPTH	216
PRESENT ACTIVITY	CIRC CASING PRIOR TO CEMENT		

OPERATOR: NORTHROCK RESOURCES LTD
CONTRACTOR: AKITA DRILLING — RIG NO. 40
REPORT FOR: MR KEVIN AMY / TRAVIS BOUCHARD
REPORT FOR: MR. BOB ROLFES
WELL NAME AND LOCATION: NORTHROCK etc. / SUMMIT CREEK B-44
PROVINCE: NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	1130	BIT NO		DRILL COLLAR OD/ID mm	228/74.5	m	m/min	m		
DEPTH m	810	SIZE mm		DRILL COLLAR OD/ID mm	171/57.2	m	m/min	m		
T.V. DEPTH	810	TYPE		DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1130	NOZZLE 1 mm		DRILL PIPE OD/ID mm	NM 102/65	m	m/min	m		
GRADIENT kPa/m	11.09	NOZZLE 2 mm		DRILL PIPE OD/ID mm	102/84.8	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	8979	NOZZLE 3 mm		DP TOOL JT TYPE						
FUNNEL VIS s/L	48	DEPTH IN m		HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	11	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	5	R.P.M.		TO MIONITE 02-02-04			WHILE CIRCULATING CASING VISCOSITY AND YIELD POINT REDUCED BY ADDING 3 SKS DESCO + 50 LITRES/MIN WATER			
GEL STRENGTH Pa 10s/10 mm	1-2	BIT HYDRAULICS								
pH	9.0	NOZZLE VEL m/sec		DESCO: 3						
FILTRATE cm³ 30 min 700 kPa	8.0±	BIT PRESS LOSS kPa					VISCOSITY PRIOR TO CEMENTING = 48 SEC/L			
CAKE THICKNESS mm		H.H.P. kW/cm²					YIELD POINT = 5			
ALKALINITY Pf		HOURS ON BIT								
ALKALINITY Mf		BIT WT. daN								
CHLORIDES mg/L		CASING PROGRAM								
CALCIUM mg/L		SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %		OD/ID	339.7-316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %		INTERMEDIATE LENGTH m		TOTAL COST TO DATE						
BENTONITE kg/m³		OD/ID mm		RECOMMENDATIONS:						
BARITE kg/m³		INTERMEDIATE LENGTH m		DRILLOUT REPORT: SUGGEST:						
LOW DENS. kg/m³		OD/ID mm		① WHILE W.O.C. AND NIPPLING UP, REMOVE ALL SOLIDS AS POSSIBLE BY TRANSFERRING MUD THAT CAN BE SALVAGED TO OTHER COMPARTMENTS						
POLYMER kg/m³		LINER LENGTH m								
FLOWLINE TEMP °C		OD/ID mm								
HYDROXYL		PRODUCTION LENGTH m								
CARBONATE		OD/ID mm		② DRILL OUT CEMENT AND SHOE WITH WATER. SECLUDE ONE OF THE SUCTION TANKS. RUN BOTH CENTRIFUGES.						
BICARBONATE										
SHAKER SCREEN	6X84	PUMP PERFORMANCE		③ AS SOON AS YOU START CIRCULATING MIX: 6 SACKS BICARBONATE OF SODA AT 10 MIN/SK 3 SACKS SODA ASH AT 20 MIN/SK						
		PUMP NO	1+2							
		MODEL	GD P29							
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED		STROKE mm	229							
"K" MED.		DISPLACEMENT PER STR m³	.0106							
"N" LOW		STROKES PER MIN.								
"K" LOW		OUTPUT m³/min		④ WHEN THRU DRILLING CEMENT, GRADUALLY INCORPORATE SALVAGED MUD INTO SYSTEM CIRCULATING ENTIRE SYSTEM.						
ANN. PRESS LOSS kPa		PRESSURE ☐kPa ☐MPa								
E.C.D kg/m³		MUD SYSTEM DATA								
"Z" DC		ANNULAR VOLUME m³								
"Z" DP		DRILL STRING CAPACITY m³		⑤ MIX GEL AT 5 MIN/SK. WHILE MIXING GEL ALSO MIX 3 SACKS AQUAPAC + 3 SACKS LIGNITE AT 60 MIN/SK.						
Dxc. EXP.		TANK VOLUME m³								
VG 600 RPM	32	TOTAL VOLUME m³								
VG 300 RPM	21	VOL. DUMPED m³								
VG 3 RPM	2	DILUTION RATE L/min		⑥ ONCE VISCOSITY IS AT 40 SEC/L START TO TRICKLE IN ENCAPSORFLOC. TOTAL 10 PAILS NO FASTER THAN 60 MIN/PAIL. WATCH FOR SCREEN BLINDING.						
		CIRCULATION TIME MINS.								
		BOTTOMS UP min.								
T.S.R. ERNIE KUDRICK		PHONE		⑦ CONTROL VISCOSITY WITH GEL AT 40-45 SEC/L						
RESIDENCE ON LOCATION		PHONE								
WAREHOUSE		PHONE								
TRUCKER		PHONE		⑧ pH AT 9.5-10 WITH CAUSTIC/LIGNITE 50/50						

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Concord Drilling Fluids Ltd.

Concord Field Service Report

WELL NAME:	North Rock et al Bennett Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04
WELL NUMBER:	B-44	REPORT FOR:	Mr Bob Rollies	DRILL OUT DATE:	Jan 25 04
REPORT FOR:	Mr Kevin Amy / Travis Bouchard	PROVINCE:	NWT	MUD UP DEPTH:	216

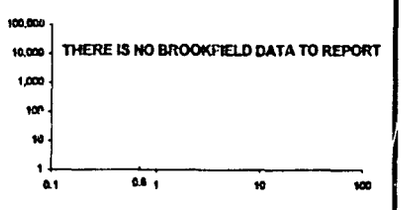
			DRILL STRING	OD (mm)	ID (mm)	Length (m)
DATE:	Feb 04 04					
REPORT:	15		DRILLPIPE	102	65	313
			HEVI-WATE	102	65	457
			DRILLCOLLAR #1			
BIT DATA			DRILLCOLLAR #2	171	57	172
NUMBER	2		BHA			629
SIZE:	222	mm	CASING	Depth (m)	Size (mm)	ID (mm)
TYPE:			SURFACE	208	340	316
DEPTH IN:	810	m	INTERMEDIATE #1	810	244.5	224
W.O.B (daN)	42,278	daN	INTERMEDIATE #2			
RPM:	96		CURRENT Length / OD * ID	810	244.5	224
NOZZLE SIZE	11.1	\mm	ANNULAR VELOCITY	Casing	Open Hole	
	11.1	mm	DRILL PIPE	0	0	m/min
	11.1	mm	HEVI-WATE	56	0	m/min
	11.1	mm	DRILLCOLLAR #1	0	0	m/min
	11.1	mm	DRILLCOLLAR #2	107	112	m/min
	11.1	mm	ECD	1073	kg/m³	
NOZZLE VELOCITY	51	m/sec	HYDROSTATIC	10 919	kPa	
PUMP NUMBER	1	2	CENTRIFUGE			
MAKE	Ipsco	Ipsco	OVERFLOW		kg/m³	
MODEL	PZ9	PZ9	UNDERFLOW		kg/m³	
LINER (mm)	140	140	OUTPUT		L/min	
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_o (DC)	0
STROKES / minute	83	83				
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING			
m³ / minute	0.8798	0.8798	0.3			
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6			
SAMPLE - FLOWLINE	@		6			
SAMPLE - TANKS			20			
FLOWLINE TEMP.	32	°C	60			
STANDPIPE PRESS.	11066	kPa	100			
TIME SAMPLE TAKEN	5:30		Slope "N"	0.81	DEPTH	m
DEPTH	942	m	Slope "K"	0.08	TVD	1050
DENSITY	1060	kg/m³	Low "n"	0.14	TMD	1500
MUD GRADIENT	10.40	kPa/m	Low "k"	2.38		
FUNNEL VISCOSITY	36	s/L	RESISTIVITY	2.64	ohms	
600 RPM	21					
300 RPM	12					
200 RPM	7					
100 RPM	4					
6 RPM	5					
3 RPM	3					
PLASTIC VISCOSITY	9	mPa.s				
YIELD POINT	1.5	Pa				
GEL STRENGTH 10sec	1.5	Pa				
GEL STRENGTH 10min	4	Pa				
pH	9.0					
FILTRATE	10.4	mL/30min				
CAKE THICKNESS	3	mm				
SAND CONTENT	0.0015	Vol. Frac.				
SOLIDS CONTENT	0.0375	Vol. Frac.				
OIL CONTENT	0	Vol. Frac.				
DRILL SOLIDS	57	kg/m³				
TOTAL SOLIDS	98	kg/m³				
HGS	0	kg/m³				
LGS	98	kg/m³				
M.B.T. (Bentonite Equiv	41	kg/m³				
ALKALINITY (Pf / Mf)	0.9	1.54				
CHLORIDES	1,500	mg/L				
CALCIUM	10	mg/L				
POTASSIUM	n/a	mg/L				
PHPA POLYMER	Trace	kg/m³				
SPURT LOSS	0.1	mL/15sec				

MUD VOLUMES - INPUT WASHOUT	5	%
STRING DISPLACEMENT:	6.2	m³
STRING CAPACITY:	4.1	m³
TANKS:	82.3	m³
ANNULAR:	27.2	m³
TOTAL:	113.6	m³
BOTTOMS UP:	15.5	minutes
CIRCULATION TIME:	64.5	minutes

DAILY PRODUCT USAGE

Product	Amount	Cost	Total
Sicarb	11		0.00
Soda Ash	2		0.00
Aquapac	4		0.00
Lig	2		0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
DAILY TOTAL			0.00
PREVIOUS COST			0.00
TOTAL COST			0.00

BROOKFIELD GRAPH



WELL HISTORY

Drill out cement @ 19:15 hrs with water and mud up on the fly

RECOMMENDATIONS

1. Maintain vis at 40-45 s/l with gel as required

2. Maintain pH @ 9.5 to 10 with caustic and lignite 1:1 ratio as required

3. Mix 8-10 pails Encapsorfloc over next 12 hours watch for screen blinding, mixes best through chem bbl with hot Water
4. Lower and control water loss below 10 ml with aquapac and lignite in 1:1 ratio as required
5. Control weight as low as possible with all available solids control equipment and dilution at 5-10 l/min below shaker or as require

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)	250 262 8069 / 403 987 2323	PHONE (24 HR.) 403 234 7771

In consideration of this report and oral suggestions it is agreed that no recommendations made herein shall be construed as authorizing the infringement of any valid patent, and it is agreed that Concord Drilling Fluids Ltd. Shall not be liable for any damages resulting from the furnishing of this report and oral suggestions and is to be held harmless

Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock Recources Ltd	ACTIVITY:	Drill Ahead	RIG NO.:	0
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04
WELL NUMBER:	B-44	REPORT FOR:	Mr Bob Rolfes	DRILL OUT DATE:	Jan 25 04
REPORT FOR:	Mr Kevin Amy / Travis Boucha	PROVINCE:	NWT	MUD UP DEPTH:	216

			DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	5	%
DATE:	Feb 05 04		DRILL PIPE	102	65	476	STRING DISPLACEMENT:	7.0	m^3
REPORT:	16		HEVI-WATE	102	85	457	STRING CAPACITY:	4.6	m^3
			DRILLCOLLAR #1	0	0	0	TANKS:	78	m^3
BIT DATA			DRILLCOLLAR #2	171	57	172	ANNULAR:	32.3	m^3
NUMBER:	3		BHA			629	TOTAL:	114.9	m^3
SIZE:	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	18.4	minutes
TYPE:	0		SURFACE	208	340	316	CIRCULATION TIME:	65.3	minutes
DEPTH IN:	1055	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	5-15	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM:	96		CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg	61		0.00
NOZZLE SIZE	11.1	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	0		0.00
	11.1	mm	DRILL PIPE	56	0	m/min	Encapsorfloc	6		0.00
	11.1	mm	HEVI-WATE	56	62	m/min	Barite	18		0.00
		mm	DRILLCOLLAR #1	0	0	m/min				0.00
		mm	DRILLCOLLAR #2	0	129	m/min				0.00
		mm	ECD	1098	kg/m³					0.00
NOZZLE VELOCITY	101	m/sec	HYDROSTATIC	11,073	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_o (DC)	0	DAILY TOTAL			0.00
STROKES / minute	83	83					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.8798	0.8798	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Rad. Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0	THERE IS NO BROOKFIELD DATA TO REPORT			
SAMPLE - TANKS	--		20	0	0	0				
FLOWLINE TEMP.	32	°C	60	0	0	0				
STANDPIPE PRESS.	14251	kPa	100	0	0	0				
TIME SAMPLE TAKEN	5:15		Mod "N"	0.74	DEPTH	m				
DEPTH	1105	m	Mod "K"	0.18	TVD	1050				
DENSITY	1075	kg/m³	Low "n"	0.20	TMD	1500				
MUD GRADIENT	10.55	kPa/m	Low "k"	2.90						
FUNNEL VISCOSITY	40	s/L	RESISTIVITY	2.84	ohms					
600 RPM	30						WELL HISTORY			
300 RPM	18									
200 RPM	10									
100 RPM	6									
6 RPM	7									
3 RPM	4									
PLASTIC VISCOSITY	12	mPa.s					RECOMMENDATIONS			
YIELD POINT	3	Pa	1. Maintain vis at 40-45 s/l with gel as req'd							
GEL STRENGTH 10sec	2	Pa	2. Maintain Ph at 9.5 - 10 with caustic as req'd							
GEL STRENGTH 10min	4	Pa	3. Mix 2-3 pails encapsorfloc per 12 hr tour							
pH	10		4. Control wt as low as possible with all available solids control equipment and dilution at 5-10 l/min below shaker or as req'd							
FILTRATE	9.8	mL/30min								
CAKE THICKNESS	1.6	mm								
SAND CONTENT	0.003	Vol. Frac.	5.Control water loss at 10 cc or less with aquapac and lignite 1:1 ratio as required							
SOLIDS CONTENT	0.0469	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	75	kg/m³								
TOTAL SOLIDS	122	kg/m³								
HGS	0	kg/m³								
LGS	122	kg/m³								
M.B.T. (Bentonite Equiv	47	kg/m³								
ALKALINTY (Pf / Mf)	0.2	0.35								
CHLORIDES	1100	mg/L								
CALCIUM	30	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.2	kg/m³								
SPURT LOSS	0.1	mL/15sec								

TECHNICAL REPRESENTATIVE PHONE (Cell)	Troy Godsman 250 262 8069 / 403 987 2323	Concord PHONE (24 HR.) (403) 234 7771

Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40		
WELL NAME:	North Rock et al Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 18 04		
WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr Kevin Amy / Travis Borchard		PROVINCE:	NWT		MUD UP DEPTH:	216		
DATE:	Feb 06 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	5	%	
REPORT:	17	DRILLPIPE	102	65	688	STRING DISPLACEMENT:	8.0	m³	
		HEVI-WATE	102	85	457	STRING CAPACITY:	5.3	m³	
		DRILLCOLLAR #1	0	0	0	TANKS:	75	m³	
BIT DATA		DRILLCOLLAR #2	171	57	172	ANNULAR:	39.5	m³	
NUMBER	3	BHA			629	TOTAL:	119.0	m³	
SIZE:	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	23.0	minutes
TYPE:	GTS18D		SURFACE	208	340	316	CIRCULATION TIME:	69.8	minutes
DEPTH IN	1055	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	15	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	96		CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural		0.00
NOZZLE SIZE	11.1	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda		0.00
	11.1	mm	DRILL PIPE	55	0	m/min	Encapsorfloc	8	0.00
	11.1	mm	HEVI-WATE	55	60	m/min			0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min			0.00
	0	mm	DRILLCOLLAR #2	0	126	m/min			0.00
	0	mm	ECD	1157	kg/m³				0.00
NOZZLE VELOCITY	99	m/sec	HYDROSTATIC	14.535	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1025	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	1910	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_p (DC)	0	DAILY TOTAL		0.00
STROKES / minute	81	81					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TREND/HG				TOTAL COST		0.00
m³ / minute	0.8586	0.8586	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE	8		6	0	0	0			
SAMPLE - TANKS	–		20	0	0	0			
FLOWLINE TEMP.	32	°C	60	0	0	0			
STANDPIPE PRESS.	16420	kPa	100	0	0	0			
TIME SAMPLE TAKEN	0:51		Bingham "K"	0.55	DEPTH	m			
DEPTH	1317	m	Bingham "K"	0.86	TVD	1317			
DENSITY	1125	kg/m³	Flow "n"	0.36	TMD	1317			
MUD GRADIENT	11.04	kPa/m	Flow "K"	2.22					
FUNNEL VISCOSITY	44	s/L	RESISTIVITY	2.84	ohms				
600 RPM	38								
300 RPM	26								
200 RPM	15								
100 RPM	8								
6 RPM	7								
3 RPM	4								
PLASTIC VISCOSITY	12	mPa.s							
YIELD POINT	7	Pa							
GEL STRENGTH 10sec	2	Pa							
GEL STRENGTH 10min	6	Pa							
pH	9.5								
FILTRATE	9.5	mL/30min							
CAKE THICKNESS	3.2	mm							
SAND CONTENT	0.004	Vol. Frac.							
SOLIDS CONTENT	0.0781	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	164	kg/m³							
TOTAL SOLIDS	203	kg/m³							
HGS	0	kg/m³							
LGS	203	kg/m³							
M.B.T. (Bentonite Equiv	39.215	kg/m³							
ALKALINTY (Pf / Mf)	0.25	0.64							
CHLORIDES	1000	mg/L							
CALCIUM	40	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	1.1	kg/m³							
SPURT LOSS	0.1	mL/15sec							

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

86h drill 22.5 hrs 1068-1310m's / survey @1106 5.2 / Centrifuges not putting out as they should/ break shows more underflow hopefully lower wt by morning .

RECOMMENDATIONS

1. Maintain vis @ 45 - 50 s/l w/gel as required for sloughing or hole problems raise vis to 60+ w/gel and visplus in a 20:1 Ratio as required./ Mix a minimum of 5 to 10 sx's gel per 24 hrs if needed mix 1sx of lignite to maintain lower vis.
2. Raise and Maintain ph @ 10 to 10.5 w/ caustic as required
3. Control water loss at 10 cc or less with aquapac and lignite in a 1:1 ratio as required
4. Maintain wieght as low as possible with all available solids control equipment and dilution at 5- 10 l/min below shaker or as required
5. Mix 2-3 pails encapsorfloc per 12 hr tour

TECHNICAL REPRESENTATIVE PHONE (Cell)	Troy Godsman 250 262 8069 / 403 987 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	RIH w dir tools	RIG NO.:	40		
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04		
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr Kevin Kary / Travis Douchard	PROVINCE:	NWT	MUD UP DEPTH:	216		

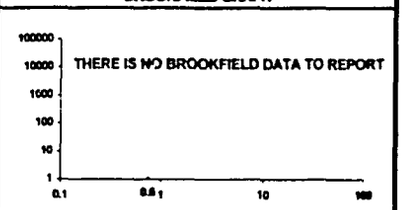
			DRILL STRING	OD (mm)	ID (mm)	Length (m)
DATE:	Feb 07 04		DRILLPIPE	102	65	720
REPORT:	18		HEVI-WATE	102	85	457
			DRILLCOLLAR #1	0	0	0
BIT DATA			DRILLCOLLAR #2	171	57	172
NUMBER	4		BHA			629
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)
TYPE	GTS18D		SURFACE	205	340	316
DEPTH IN	1349	m	INTERMEDIATE #1	810	244.5	224
WOB (daN)	n/a	daN	INTERMEDIATE #2	0	0	0
RPM	n/a		CURRENT Length / OD / ID	810	244.5	224
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole	
	17.5	mm	DRILL PIPE	0	0	m/min
	17.5	mm	HEVI-WATE	0	0	m/min
	0	mm	DRILLCOLLAR #1	0	0	m/min
	0	mm	DRILLCOLLAR #2	0	0	m/min
	0	mm	ECD	1120	kg/m³	
NOZZLE VELOCITY	0	m/sec	HYDROSTATIC	14.822	kPa	
PUMP NUMBER	1	2	CENTRIFUGE			
MAKE	Ipsco	Ipsco	OVERFLOW	1120	kg/m³	
MODEL	PZ9	PZ9	UNDERFLOW	1720	kg/m³	
LINER (mm)	140	140	OUTPUT	0	L/min	
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_o (DC)	0
STROKES / minute	0	0				
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING			
m³ / minute	0	0		0.3	0	0
MUD SYSTEM:	Gel/XCD/PHPA			0.6	0	0
SAMPLE - FLOWLINE				6	0	0
SAMPLE - TANKS	0			20	0	0
FLOWLINE TEMP.	28	°C		60	0	0
STANDPIPE PRESS.	0	kPa		100	0	0
TIME SAMPLE TAKEN	0:30		Fitted "N"		0.68	DEPTH m
DEPTH	1349	m	Fitted "K"		0.29	TVD 1349
DENSITY	1120	kg/m³	Flow "n"		0.18	TMD 1349
MUD GRADIENT	10.99	kPa/m	Flow "k"		3.71	
FUNNEL VISCOSITY	42	s/L	RESISTIVITY		0	ohms
600 RPM	32					
300 RPM	20					
200 RPM	11					
100 RPM	7					
6 RPM	9					
3 RPM	8					
PLASTIC VISCOSITY	12	mPa.s				
YIELD POINT	4	Pa				
GEL STRENGTH 10sec	2.5	Pa				
GEL STRENGTH 10min	6	Pa				
pH	9					
FILTRATE	10.5	mL/30min				
CAKE THICKNESS	3.8	mm				
SAND CONTENT	0.004	Vol. Frac.				
SOLIDS CONTENT	0.0750	Vol. Frac.				
OIL CONTENT	0	Vol. Frac.				
DRILL SOLIDS	157	kg/m³				
TOTAL SOLIDS	195	kg/m³				
HGS	0	kg/m³				
LGS	195	kg/m³				
M.B.T. (Bentonite Equiv	38	kg/m³				
ALKALINITY (Pf / Mf)	0.2	0.45				
CHLORIDES	1800	mg/L				
CALCIUM	60	mg/L				
POTASSIUM	n/a	mg/L				
PHPA POLYMER	1	kg/m³				
SPURT LOSS	0.1	ml /15sec				

MUD VOLUMES - BPUT WASHOUT			
		5	%
STRING DISPLACEMENT:		8.1	m³
STRING CAPACITY:		5.4	m³
TANKS:		80	m³
ANNULAR:		40.6	m³
TOTAL:		126.1	m³
BOTTOMS UP:	approx16	#DIV/0!	minutes
CIRCULATION TIME:	approx50	#DIV/0!	minutes

DAILY PRODUCT USAGE

Product	Amount	Cost	Total
Bentonite 40 Kg Natural			0.00
Caustic Soda			0.00
Barite	36		0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
DAILY TOTAL			0.00
PREVIOUS COST			0.00
TOTAL COST			0.00

BROOKFIELD GRAPH



WELL HISTORY

00th drill 6.5 hrs 1310-1369 m's/Survey out 7 deg/cross trip to csg rih circ 1 hr pook for dir. Tools/ Bit 63 29 hrs

RECOMMENDATIONS

1. Maintain vis @ 45 - 50 s/l w/gel as required for sloughing or hole problems raise vis to 60+ w/gel and viaplus in a 20:1 Ratio as required./ Mix a minimum of 5 to 10 sx's gel per 24 hrs if needed mix 1sx of lignite to maintain lower vis.
2. Raise and Maintain ph @ 10 to 10.5 w/ caustic as required
3. Control water loss at 10 cc or less with aquapac and lignite in a 1:1 ratio as required
4. Maintain wtaght as low as possible with all available solids control equipment and dilution at 5- 10 l/min below shaker or as required
5. Mix 2-3 pails encapsorfloc per 12 hr tour

TECHNICAL REPRESENTATIVE	Troy Gorisman	Concord Drilling Fluids
PHONE (Dail) / (Sat)	250 262 6069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

In consideration of this report and oral suggestions it is agreed that no recommendations made herein shall be construed as authorizing the infringement of any valid patent, and it is agreed that Concord Drilling Fluids Ltd. Shall not be liable for any damages resulting from the furnishing of this report and oral suggestions and is to be held harmless

Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	Drill Ahead	RIG NO.:	40
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 15 04
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Voght	DRILL OUT DATE:	Jan 25 04
REPORT FOR:	Mr Kevin Amy / Tra le Boeckland	PROVINCE:	NWT	MUD UP DEPTH:	215

			DRILL STRING	OD (mm)	ID (mm)	Length (m)
DATE:	Feb 08 04		DRILLPIPE	102	65	872
REPORT:	19		HEVI-WATE	102	85	457
			DRILLCOLLAR #1	0	0	0
BIT DATA			DRILLCOLLAR #2	171	57	172
NUMBER:	4		BHA			629
SIZE:	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)
TYPE:	GF1PS		SURFACE	208	340	316
DEPTH IN:	1349	m	INTERMEDIATE #1	810	244.5	224
W.O.B (daN)	16	daN	INTERMEDIATE #2	0	0	0
RPM:	mm+		CURRENT Length / OD / ID	810	244.5	224
NOZZLE SIZE:	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole	
	17.5	mm	DRILL PIPE	54	60	m/min
	17.5	mm	HEVI-WATE	0	60	m/min
	0	mm	DRILLCOLLAR #1	0	0	m/min
	0	mm	DRILLCOLLAR #2	0	124	m/min
	0	mm	ECD	1164	kg/m³	
NOZZLE VELOCITY	39	m/sec	HYDROSTATIC	16,713	kPa	
PUMP NUMBER	1	2	CENTRIFUGE			
MAKE	Ipsco	Ipsco	OVERFLOW	1130	kg/m³	
MODEL	PZ9	PZ9	UNDERFLOW	1910	kg/m³	
LINER (mm)	140	140	OUTPUT	0	L/min	
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0
STROKES / minute	80	80				
m³ / STROKE	0.0106	0.0106				
m³ / minute	0.848	0.848				

MUD VOLUMES - INPUT WASHOUT	5 %
STRING DISPLACEMENT:	8.9 m³
STRING CAPACITY:	5.9 m³
TANKS:	88.6 m³
ANNULAR:	46.5 m³
TOTAL:	140.6 m³
BOTTOMS UP:	27.0 minutes
CIRCULATION TIME:	82.9 minutes

DAILY PRODUCT USAGE

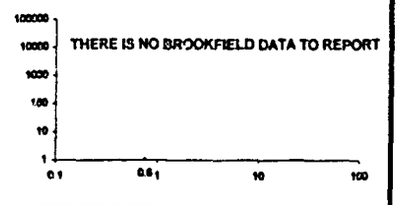
Product	Amount	Cost	Total
Bentonite 40 Kg Natural	5		0.00
Caustic Soda	3		0.00
Lignite	1		0.00
Soda Ash	1		0.00
Encapsorfloc	10		0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
DAILY TOTAL			0.00
PREVIOUS COST			0.00
TOTAL COST			0.00

MUD SYSTEM:	Red. Gel/XCD/PHPA
SAMPLE - FLOWLINE	-
SAMPLE - TANKS	
FLOWLINE TEMP.	33 °C
STANDPIPE PRESS.	17651 kPa
TIME SAMPLE TAKEN	2:30
DEPTH	1501 m
DENSITY	1135 kg/m³
MUD GRADIENT	11.13 kPa/m
FUNNEL VISCOSITY	46 s/L
600 RPM	40
300 RPM	25
200 RPM	14
100 RPM	8
6 RPM	11
3 RPM	6
PLASTIC VISCOSITY	15 mPa.s
YIELD POINT	5 Pa
GEL STRENGTH 10sec	3 Pa
GEL STRENGTH 10min	10 Pa
pH	9.5
FILTRATE	8.5 mL/30min
CAKE THICKNESS	1.6 mm
SAND CONTENT	0.005 Vol. Frac.
SOLIDS CONTENT	0.0844 Vol. Frac.
OIL CONTENT	0 Vol. Frac.
DRILL SOLIDS	178 kg/m³
TOTAL SOLIDS	219 kg/m³
HGS	0 kg/m³
LGS	219 kg/m³
M.B.T. (Bentonite Equiv	41 kg/m³
ALKALINITY (Pf / Mf)	0.47 0.8
CHLORIDES	900 mg/L
CALCIUM	Trace mg/L
POTASSIUM	n/a mg/L
PHPA POLYMER	1.3 kg/m³
SPURT LOSS	0.1 mL/15sec

BROOKFIELD READINGS - TRENDING

0.3	0	0	0
0.6	0	0	0
6	0	0	0
20	0	0	0
60	0	0	0
100	0	0	0
Shear "N"	0.63	DEPTH	m
Shear "K"	0.37	TVD	1501
Low "n"	0.19	TMD	1501
Low "k"	4.37		
RESISTIVITY		ohms	

BROOKFIELD GRAPH



WELL HISTORY

Drill 18 hrs 1360 to 1477m's

RECOMMENDATIONS

1. Maintain vis @ 45 - 50 s/l w/gel as required for sloughing or hole problems raise vis to 60+ w/gel and visplus in a 20:1 Ratio as required./ Mix a minimum of 5 to 10 sx's gel per 24 hrs if needed mix 1sx of lignite to maintain lower vis.
2. Raise and Maintain ph @ 10 to 10.5 w/ caustic as required
3. Control water loss at 10 cc or less with aquapac and lignite in a 1:1 ratio as required
4. Maintain wieght as low as possible with all available solids control equipment and dilution at 5- 10 l/min below shaker or as required
5. Mix 2-3 pails encapsorfloc per 12 hr tour

Raise vis to 100 + s/l with gel / [illegible] in a 20:1 ratio prior to csg point / TD

TECHNICAL REPRESENTATIVE:	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	Drill Ahead	RIG NO.:	40	
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04	
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Voght	DRILL OUT DATE:	Jan 25 04	
REPORT FOR:	Mr Kevin Amy / Travis Bouchard	PROVINCE:	NWT	MUD UP DEPTH:	216	

DATE:	Feb 09 04	
REPORT:	20	
BIT DATA		
NUMBER	4	
SIZE	215.9	mm
TYPE	GF1PS	
DEPTH IN	1349	m
WOB (daN)	16	daN
RPM	mm+	
NOZZLE SIZE	17.5	mm
	17.5	mm
	17.5	mm
	0	mm
Bit HRS 38	0	mm
	0	mm
NOZZLE VELOCITY	40	m/sec
PUMP NUMBER	1	2
MAKE	Ipsco	Ipsco
MODEL	PZ9	PZ9
LINER (mm)	140	140
STROKE (mm)	229	229
STROKES / minute	81	81
m³ / STROKE	0.0106	0.0106
m³ / minute	0.8583	0.8585

DRILL STRING	OD (mm)	ID (mm)	Length (m)
DRILLPIPE	102	65	1059
HEVI-WATE	102	85	457
DRILLCOLLAR #1	0	0	0
DRILLCOLLAR #2	171	57	172
BHA			629
CASING	Depth (m)	Size (mm)	ID (mm)
SURFACE	208	340	316
INTERMEDIATE #1	810	244.5	224
INTERMEDIATE #2	0	0	0
CURRENT Length / OD / ID	810	244.5	224
ANNULAR VELOCITY	Casing	Open Hole	
DRILL PIPE	55	50	m/min
HEVI-WATE	0	60	m/min
DRILLCOLLAR #1	0	0	m/min
DRILLCOLLAR #2	0	126	m/min
ECD	1178	kg/m³	
HYDROSTATIC	15,950	kPa	
CENTRIFUGE			
OVERFLOW	1135	kg/m³	
UNDERFLOW	1900	kg/m³	
OUTPUT	0	L/min	
FLOW TYPE (DC)	L	R_2 (DC)	0

MUD VOLUMES - INPUT WASHOUT	5	%
STRING DISPLACEMENT:	9.8	m³
STRING CAPACITY:	6.5	m³
TANKS:	81	m³
ANNULAR:	52.2	m³
TOTAL:	139.8	m³
BOTTOMS UP:	30.4	minutes
CIRCULATION TIME:	81.4	minutes

DAILY PRODUCT USAGE

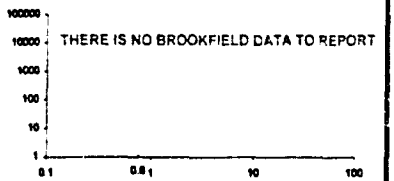
Product	Amount	Cost	Total
Bentonite 40 Kg Natural	10		0.00
Caustic Soda	3		0.00
Soda Ash	1		0.00
Lignite	2		0.00
Encapsorfloc	7		0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
			0.00
DAILY TOTAL			0.00
PREVIOUS COST			0.00
TOTAL COST			0.00

MUD SYSTEM:	Gel/XCD/PHPA	
SAMPLE - FLOWLINE	–	
SAMPLE - TANKS		
FLOWLINE TEMP.	38	°C
STANDPIPE PRESS.	18036	kPa
TIME SAMPLE TAKEN	2:30	
DEPTH	1688	m
DENSITY	1145	kg/m³
MUD GRADIENT	11.23	kPa/m
FUNNEL VISCOSITY	45	s/L
600 RPM	40	
300 RPM	26	
200 RPM	15	
100 RPM	8	
6 RPM	11	
3 RPM	6	
PLASTIC VISCOSITY	14	mPa s
YIELD POINT	6	Pa
GEL STRENGTH 10sec	3	Pa
GEL STRENGTH 10min	10	Pa
pH	10	
FILTRATE	8.5	mL/30min
CAKE THICKNESS	1.8	mm
SAND CONTENT	0.005	Vol. Frac.
SOLIDS CONTENT	0.0906	Vol. Frac.
OIL CONTENT	0	Vol. Frac.
DRILL SOLIDS	191	kg/m³
TOTAL SOLIDS	236	kg/m³
HGS	0	kg/m³
LGS	236	kg/m³
M.B.T. (Bentonite Equiv	45	kg/m³
ALKALINITY (Pf / Mf)	0.55	1.3
CHLORIDES	950	mg/L
CALCIUM	260	mg/L
POTASSIUM	n/a	mg/L
PHPA POLYMER	1.05	kg/m³
SPURT LOSS	0.1	mL/15sec

BROOKFIELD READINGS - TRENDING

0.3	0	0	0
0.5	0	0	0
6	0	0	0
20	0	0	0
60	0	0	0
100	0	0	0
Mod "N"	0.62	DEPTH	m
Mod "K"	0.54	TVD	
Low "n"	0.22	TMD	
Low "k"	4.17		
RESISTIVITY		ohms	

BROOKFIELD GRAPH



WELL HISTORY

9th drill 21.5 hrs 1477-1688m's / Dumped 33 m3 added 18m3 fresh volumetiake up water @200 mg/l calcium / Centrifuges flushed still only taking 10 point cut

RECOMMENDATIONS

1. Maintain vis @ 45 - 50 s/l w/gel as required for sloughing or hole problems raise vis to 60+ w/gel and visplus in a 20:1 Ratio as required./ Mix a minimum of 5 to 10 sx's gel per 24 hrs if needed mix 1sx of lignite to maintain lower v.s.
2. Raise and Maintain ph @ 10 to 10.5 w/ caustic as required
3. Control water loss at 10 cc or less with aquapac and lignite in a 1:1 ratio as required
4. Maintain wieght as low as possible with all available solids control equipment and dilution at 5- 10 l/min below shaker or as required
5. Mix 2-3 pails encapsorfloc per 12 hr tour

Raise vis to 100 + s/l with: gel and visplus in a 20:1 ratio prior to csg point + /- 2660m's

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 937 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock	ACTIVITY:	Circ Repair Pump	RIG NO.:	40
	WELL NAME:	North Rock etal Sennett Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04
	WELL NUMBER:	D-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04
	REPORT FOR:	Mr. Darryl Cunningham	PROVINCE:	NWT	MUD UP DEPTH:	216

	DATE:	Feb 10 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	5	%
	REPORT:	21	DRILLPIPE	102	85	[illegible]	STRING DISPLACEMENT:	10.6	m³
			HEVI-WATE	102	85	457	STRING CAPACITY:	7.1	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	99.9	m³
BIT DATA			DRILLCOLLAR #2	171	57	172	ANNULAR:	58.0	m³
NUMBER	4		BHA			629	TOTAL:	165.0	m³
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	33.8	minutes
TYPE	GF1PS		SURFACE	208	340	316	CIRCULATION TIME:	96.1	minutes
DEPTH IN	1349	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	16	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm+		CURRENT Length / OD / ID	[illegible]	244.5	[illegible]	Bentonite 40 Kg Natural			0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	2		0.00
BIT HRS 60.5	17.5	mm	DRILL PIPE	[illegible]	60	m/min	Encapsorfloc	6		0.00
	17.5	mm	HEVI-WATE	[illegible]	60	m/min	Soda Ash	2		0.00
	0	mm	DRILLCOLLAR #1	[illegible]	[illegible]	m/min				0.00
	0	mm	DRILLCOLLAR #2	[illegible]	[illegible]	m/min				0.00
	0	mm	ECD	[illegible]	kg/m³					0.00
NOZZLE VELOCITY	45	m/sec	HYDROSTATIC	[illegible]	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1135	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1900	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_e (DC)	[illegible]	DAILY TOTAL			0.00
STROKES / minute	81	81					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENCING				TOTAL COST			0.00
m³ / minute	0.8583	0.8583	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE	-		6	0	0	0	THERE IS NO BROOKFIELD DATA TO REPORT			
SAMPLE - TANKS			29	0	0	0				
FLOWLINE TEMP.	39	°C	60	0	0	0				
STANDPIPE PRESS.	18036	kPa	100	0	0	0				
TIME SAMPLE TAKEN	4:00		filled "H"	0.77	DEPTH	m				
DEPTH	1858	m	filled "K"	0.22	TVD	1858				
DENSITY	1140	kg/m³	Low "n"	0.04	TMD	1858				
MUD GRADIENT	11.18	kPa/m	Low "k"	9.33						
FUNNEL VISCOSITY	48	s/L	RESISTIVITY	0	ohms					
600 RPM	46						WELL HISTORY			
300 RPM	27		98TH Drill 22hrs, 1699-1836m's / pumps shown as both on for circ. times and other calculations							
200 RPM	16									
100 RPM	9									
6 RPM	18									
3 RPM	10									
PLASTIC VISCOSITY	19	mPa s					RECOMMENDATIONS			
YIELD POINT	4	Pa	1. Maintain vis @ 45 - 50 s/l w/gel as required for sloughing or hole problems raise vis to 60+ w/gel and visplus in a 20:1 Ratio as required./ Mix a minimum of 5 to 10 sx's gel per 24 hrs if needed mix 1sx of lignite to maintain lower vis. 2. Raise and Maintain ph @ 10 to 10.5 w/ caustic as required 3. Control water loss at 10 cc or less with aquapac and lignite in a 1:1 ratio as required 4. Maintain wieght as low as possible with all available solids control equipment and dilution at 8- 10 l/min below shaker or as required 5. Mix 2-3 pails encapsorfloc per 12 hr tour							
GEL STRENGTH 10sec	5	Pa								
GEL STRENGTH 10min	12	Pa								
pH	10									
FILTRATE	8.8	mL/30min								
CAKE THICKNESS	2.4	mm								
SAND CONTENT	0.005	Vol. Frac.								
SOLIDS CONTENT	0.0875	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	181	kg/m³								
TOTAL SOLIDS	228	kg/m³								
HGS	0	kg/m³								
LGS	228	kg/m³								
M.B.T. (Bentonite Equiv	46.5	kg/m³								
ALKALINTY (Pf / Mf)	0.85	1.3								
CHLORIDES	750	mg/L								
CALCIUM	40	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.12	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	660	CO_3								
BICARBONTATES	244	HCO_3								
HYDROXYL	0	OH								

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 0069 / 403 987 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

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Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40		
WELL NAME:	North Rock et al Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
WELL NUMBER:	B-44		REPORT FOR:	Mr. Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr. Darryl Cunningham		PROVINCE:	NWT		MUD UP DEPTH:	216		
DATE:	Feb 11 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	5	%	
REPORT:	22	DRILLPIPE	102	65	1039	STRING DISPLACEMENT:	10.4	m³	
		HEVI-WATE	102	85	644	STRING CAPACITY:	7.6	m³	
		DRILLCOLLAR #1	0	0	0	TANKS:	94.9	m³	
		DRILLCOLLAR #2	171	57	186	ANNULAR:	56.1	m³	
NUMBER	5	BHA			830	TOTAL:	160.6	m³	
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	35.2	minutes
TYPE	HX520		SURFACE	208	340	316	CIRCULATION TIME:	97.1	minutes
DEPTH #4	1862	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	17	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost / Total
RPM	mm+		CURRENT Length / OD / ID	510	244.4	224	Bentonite 40 Kg Natural	10	0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda		0.00
BIT HRS	17.5	mm	DRILL PIPE	57	55	m/min	Desco CF		0.00
	17.5	mm	HEVI-WATE	0	56	m/min	Encapsorfloc	3	0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min	Soda Ash	2	0.00
	0	mm	DRILLCOLLAR #2	0	107	m/min	Lignite	1	0.00
	0	mm	ECD	1182	kg/m³				0.00
NOZZLE VELOCITY	88	m/sec	HYDROSTATIC	21055	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1150	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	1750	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0	DAILY TOTAL		0.00
STROKES / minute	78	78					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.8268	0.8268	6.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE	–		6	0	0	0			
SAMPLE - TANKS			20	0	0	0			
FLOWLINE TEMP.	40	°C	60	0	0	0			
STANDPIPE PRESS.	19320	kPa	100	0	0	0			
TIME SAMPLE TAKEN	4:00		Fitted "N"	0.56	DEPTH	m			
DEPTH	1869	m	Fitted "K"	1.11	TVD				
DENSITY	1150	kg/m³	Flow "n"	0.22	TMD				
MUD GRADIENT	11.28	kPa/m	Flow "k"	6.28					
FUNNEL VISCOSITY	58	s/L	RESISTIVITY	0	ohms				
600 RPM	63								
300 RPM	36								
200 RPM	21								
100 RPM	12								
6 RPM	16								
3 RPM	9								
PLASTIC VISCOSITY	17	mPa s							
YIELD POINT	9.5	Pa							
GEL STRENGTH 10sec	4.5	Pa							
GEL STRENGTH 10min	15	Pa							
pH	10								
FILTRATE	9	mL/30min							
CAKE THICKNESS	1.8	mm							
SAND CONTENT	0.002	Vol. Frac.							
SOLIDS CONTENT	0.0937	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	193	kg/m³							
TOTAL SOLIDS	244	kg/m³							
HGS	0	kg/m³							
LGS	244	kg/m³							
M.B.T. (Bentonite Equiv	50.5	kg/m³							
ALKALINTY (Pf / Mf)	0.31	0.9							
CHLORIDES	800	mg/L							
CALCIUM	40	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	0.9	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	372	CO3							
BICARBONATES	342	HCO3							
HYDROXYL	0	OH							

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

Trip bit 4 69.3 hrs change angle on motor rih reams 7 hrs 1256-1305, 1460-1481, 1544-1566, 1601-1634, 1697-1862/ Drill 4.5 hrs 1836-1862m/w/ Hole unloading slowed pumps to keep on shaker

RECOMMENDATIONS

1. Maintain vis at 65-75 s/l with gel and viaplus 20:1 ratio as required. Mix a minimum of 5-10sx's gel per 24 hrs.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control wieght as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix 2-3 pails encapsorfloc per 12 hr tour.

Raise vis to 100 + s/l with gel and viaplus in a 20:1 ratio prior to csg point + /- 2660m's

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40		
WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
WELL NUMBER:	B-44		REPORT FOR:	Mr. Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr. Darryl Cunningham		PROVINCE:	NWT		MUD UP DEPTH:	216		
DATE:	Feb 12 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - IN-OUT WASHOUT	20	%	
REPORT:	23	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	11.0	m³	
		HEVI-WATE	102	85	644	STRING CAPACITY:	8.0	m³	
		DRILLCOLLAR #1	0	0	0	TANKS:	63	m³	
BIT DATA		DRILLCOLLAR #2	171	57	186	ANNULAR:	62.1	m³	
NUMBER	5	BHA			830	TOTAL:	133.1	m³	
SIZE	215.9 mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	41.3	min [illegible]	
TYPE	HXS20	SURFACE	208	340	316	CIRCULATION TIME:	88.4	minutes	
DEPTH IN	1862 m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W O B (daN)	17 daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm+	CURRENT Length / OD / ID	[illegible]	244.5	[illegible]	Bentonite 40 Kg	37		0.00
NOZZLE SIZE	17.5 mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	3		0.00
Bit hrs 19.25	17.5 mm	DRILL PIPE	43	53	m/min	VisPlus	3		0.00
	17.5 mm	HEVI-WATE	[illegible]	53	m/min	Soda Ash	2		0.00
	0 mm	DRILLCOLLAR #1	[illegible]	[illegible]	m/min	Encapsorfloc	4		0.00
	0 mm	DRILLCOLLAR #2	[illegible]	[illegible]	m/min				0.00
	0 mm	ECD	[illegible]	kg/m³					0.00
NOZZLE VELOCITY	[illegible] m/sec	HYDROSTATIC	[illegible]	kPa					0.00
PUMP NUMBER	1 2	CENTRIFUGE							0.00
MAKE	Ipsco Ipsco	OVERFLOW	1170	kg/m³					0.00
MODEL	PZ9 PZ9	UNDERFLOW	1750	kg/m³					0.00
LINER (mm)	140 140	OUTPUT	0	L/min					0.00
STROKE (mm)	229 229	FLOW TYPE (DC)	L	R_e (DC)	[illegible]	DAILY TOTAL			0.00
STROKES / minute	71 71					PREVIOUS COST			0.00
m³ / STROKE	0.0106 0.0106	BROOKFIELD READINGS - TRENCHING				TOTAL COST			0.00
m³ / minute	[illegible] [illegible]	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red. Gel/XCD/PHPA	0.6	0	0	0				
SAMPLE - FLOWLINE		6	0	0	0				
SAMPLE - TANKS		30	0	0	0				
FLOWLINE TEMP.	40 °C	60	0	0	0				
STANDPIPE PRESS.	18526 kPa	100	0	0	0				
TIME SAMPLE TAKEN	3:00	Mod "N"	0.55	DEPTH	m				
DEPTH	1986 m	Mod "K"	1.82	TVD					
DENSITY	1170 kg/m³	Low "n"	0.27	TVD					
MUD GRADIENT	11.48 kPa/m	Low "k"	7.75						
FUNNEL VISCOSITY	85 s/L	RESISTA	0	ohms					
600 RPM	82								
300 RPM	56								
200 RPM	32								
100 RPM	18								
6 RPM	21								
3 RPM	12								
PLASTIC VISCOSITY	26 mPa s								
YIELD POINT	15 Pa								
GEL STRENGTH 10sec	6 Pa								
GEL STRENGTH 10min	15 Pa								
pH	8								
FILTRATE	10 mL/30min								
CAKE THICKNESS	1.8 mm								
SAND CONTENT	0.0015 Vol. Frac.								
SOLIDS CONTENT	0.1063 Vol. Frac.								
OIL CONTENT	0 Vol. Frac.								
DRILL SOLIDS	222 kg/m³								
TOTAL SOLIDS	276 kg/m³								
HGS	0 kg/m³								
LGS	276 kg/m³								
M.B.T. (Bentonite Equiv	54 kg/m³								
ALKALINTY (Pf / Mf)	0.5 1.64								
CHLORIDES	900 mg/L								
CALCIUM	40 mg/L								
POTASSIUM	n/a mg/L								
PHPA POLYMER	1.1 kg/m³								
SPURT LOSS	0.1 mL/15sec								
CARBONATES	0 CO3								
BICARBONTATES	1678.8 HCO3								
HYDROXYL	0 OH								

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

11th drill 19.25 hrs 1862-1967m's/ raise vis to 60 and yp to 10 hole still tight raise vis to 75 and yp to 13 hole cleaning well! High calcium in make up water and higher down hole temp. combined with retardedly high wt. Causing dehydration. Mixing lignite to control filter cake.

RECOMMENDATIONS

1. Maintain vis at 65-75 s/l with gel and visplus 20:1 ratio as required. Mix a minimum of 6-10sx's gel per 24 hrs.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control weight as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix 2-3 pails encapsorfloc per 12 hr tour.

Raise vis to 100 + s/l with gel and visplus in a 20:1 ratio prior to csg point + /- 2660m's

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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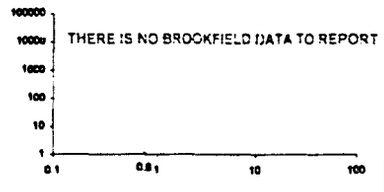
Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock			ACTIVITY:	Drill Ahead		RIG NO.:	40	
WELL NAME:	North Rock etal Summit Creek			CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
WELL NUMBER:	B-44			REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
REPORT FOR:	Mr. Darryl Cunningham			PROVINCE:	NWT		MUD UP DEPTH:	216	

DATE:	Feb 13 04		DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
REPORT:	24		DRILLPIPE	102	85	1262	STRING DISPLACEMENT:	11.5	m³
			HEVI-WATE	102	85	644	STRING CAPACITY:	8.3	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	49.2	m³
BIT DATA			DRILLCOLLAR #2	171	57	186	ANNULAR:	65.7	m³
NUMBER:	5		BHA			830	TOTAL:	123.3	m³
SIZE:	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	46.3	minutes
TYPE:	HXS20		SURFACE	208	340	316	CIRCULATION TIME:	56.8	minutes
DEPTH IN:	1862	m	INTERMEDIATE #1	610	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	17	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
R.P.M	mm+		CURRENT Length / OD / ID	610	244.5	224	Bentonite 40 Kg Natural	14		0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	1		0.00
Bit Hrs 35.75	17.5	mm	DRILL PIPE	46	50	m/min	Visplus	1		0.00
	17.5	mm	HEVI-WATE	0	50	m/min	Lignite	5		0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min	Soda Ash	2		0.00
	0	mm	DRILLCOLLAR #2	0	109	m/min	Encapsorfloc	3		0.00
	0	mm	ECD	1192	kg/m³					0.00
NOZZLE VELOCITY	82	m/sec	HYDROSTATIC	20 499	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1135	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1750	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	1	DAILY TOTAL			0.00
STROKES / minute	67	67					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.7102	0.7102	6.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Gel/XCD/PHPA		6.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	–		20	0	0	0				
FLOWLINE TEMP.	43	°C	60	0	0	0				
STANDPIPE PRESS.	16653	kPa	100	0	0	0				
TIME SAMPLE TAKEN	3:15		Bfield "N"	0.57	DEPTH	m				
DEPTH	2092	m	Bfield "K"	1.20	TVD					
DENSITY	1145	kg/m³	iLow "n"	0.24	TMD					
MUD GRADIENT	11.23	kPa/m	iLow "k"	6.80						
FUNNEL VISCOSITY	63	s/L	RESISTIVITY	0	ohms					
600 RPM	64									
300 RPM	43									
200 RPM	26									
100 RPM	14									
6 RPM	18									
3 RPM	10									
PLASTIC VISCOSITY	21	mPa s								
YIELD POINT	11	Pa								
GEL STRENGTH 10sec	5	Pa								
GEL STRENGTH 10min	15	Pa								
pH	10.5									
FILTRATE	10.5	mL/30min								
CAKE THICKNESS	1.8	mm								
SAND CONTENT	0.0015	Vol. Frac.								
SOLIDS CONTENT	0.0906	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	186	kg/m³								
TOTAL SOLIDS	236	kg/m³								
HGS	0	kg/m³								
LGS	236	kg/m³								
M.B.T. (Bentonite Equiv	50	kg/m³								
ALKALINTY (Pf / Mf)	0.5	1.5								
CHLORIDES	1000	mg/L								
CALCIUM	40	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.2	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	600	CO3								
BICARBONATES	610	HCO3								
HYDROXYL	0	OH								



WELL HISTORY

Feb 12 drill 1967-2068m's 17.75hrs dump 38 m3 wt down to 1130kg m3/ wiper trip rih wt climbed back to 1170kg/m3 drill ahead feed centrifuges off of mud row / wt dropped back to 1145

RECOMMENDATIONS

1. Maintain vis at 65-75 s/l with gel and visplus 20:1 ratio as required. Mix a minimum of 5-10sx's gel per 24 hrs.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control wieght as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix 2-3 pails encapsorfloc per 12 hr tour.

* Build volume to 60 m3 in tanks do not allow vis to drop below 65 s/l
* Rais vis to 100s/l with gel and visplus in a 20:1 ratio prior to csg plont approx. 2600m's

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40	
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
	REPORT FOR:	Mr. Darryl Cunningham		PROVINCE:	NWT		MUD UP DEPTH:	215	

			DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
DATE:	Feb 14 04		DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	11.8	m³
REPORT:	25		HEVI-WATE	102	85	644	STRING CAPACITY:	8.5	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	56.6	m³
BIT DATA			DRILLCOLLAR #2	171	57	186	ANNULAR:	67.6	m³
NUMBER	5		BHA			830	TOTAL:	132.7	m³
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	104.6	minutes
TYPE	HXS20		SURFACE	208	340	316	CIRCULATION TIME:	205.3	minutes
DEPTH IN	1862	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	17	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm+		CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural	34		0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Aquapac	1		0.00
Bit Hrs 49.25	17.5	mm	DRILL PIPE	27	23	m/min	Lignite	1		0.00
	17.5	mm	HEVI-WATE	0	23	m/min	Visplus	2		0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	0	47	m/min				0.00
	0	mm	ECD	[illegible]	kg/m³					0.00
NOZZLE VELOCITY	5	m/sec	HYDROSTATIC	[illegible]	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1140	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1750	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_s (DC)	0	DAILY TOTAL			0.00
STROKES / minute	61	0					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.6466	0	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	–		20	0	0	0				
FLOWLINE TEMP.	43	°C	60	0	0	0				
STANDPIPE PRESS.	18366	kPa	100	0	0	0				
TIME SAMPLE TAKEN	12:30		Mod "N"		0.51	DEPTH	m			
DEPTH	2147	m	Mod "K"		2.14	TVD	2147			
DENSITY	1145	kg/m³	Low "n"		0.30	TMD	2147			
MUD GRADIENT	11.23	kPa/m	Low "k"		6.13					
FUNNEL VISCOSITY	70	s/L	RESISTIVITY	0	ohms					
600 RPM	71									
300 RPM	50									
200 RPM	29									
100 RPM	16									
6 RPM	18									
3 RPM	10									
PLASTIC VISCOSITY	21	mPa s								
YIELD POINT	14.5	Pa								
GEL STRENGTH 10sec	5	Pa								
GEL STRENGTH 10min	15	Pa								
pH	9.5									
FILTRATE	10.5	mL/30min								
CAKE THICKNESS	1.5	mm								
SAND CONTENT	0.002	Vol. Frac.								
SOLIDS CONTENT	0.0906	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	182	kg/m³								
TOTAL SOLIDS	236	kg/m³								
HGS	0	kg/m³								
LGS	236	kg/m³								
M.B.T. (Bentonite Equiv	54	kg/m³								
ALKALINTY (Pf / Mf)	0.44	1.3								
CHLORIDES	700	mg/L								
CALCIUM	20	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	0.8	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	528	CO3								
BICARBONTATES	512	HCO3								
HYDROXYL	0	OH								

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

13th drill 13.5 hrs 2068-2142m's, wiper trip 10 stands(tight hole via 60s/l yp @ 11, raised to 70 s/l and yp back to 13+) ream 2.25 hrs rih 2081-2111m's/ temperature wt and fresh additions of product dehydrationg mud system.

RECOMMENDATIONS

1. Maintain vis at 65-75 s/l with gel and visplus 20:1 ratio as required. Mix a minimum of 5-10sx's gel per 24 hrs.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control wieght as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix 2-3 pails encapsorfloc per 12 hr tour.

* Prior to csg point approx 2600m's raise vis to 100+ s/l with gel and visplus in a 20:1 ratio as required over complete circulations.
* Watch shaker screens for blinding when mixing visplus

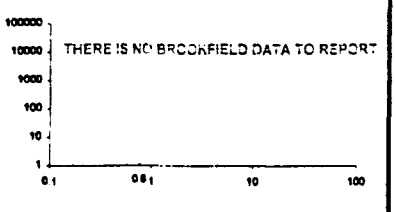
TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	*Concord Drilling Fluids* PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Ream to btm(2083)		RIG NO.:	40	
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
	REPORT FOR:	Mr. Darryl Cunningham		PROVINCE:	NWT		MUD UP DEPTH:	215	
	DATE:	Feb 15 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
	REPORT:	26	DRILLPIPE	102	85	[illegible]	STRING DISPLACEMENT:	12.0	m³
			HEVI-WATE	102	85	644	STRING CAPACITY:	8.6	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	56.6	m³
BIT DATA			DRILLCOLLAR #2	171	57	186	ANNULAR:	69.0	m³
NUMBER	6		BHA			830	TOTAL:	134.2	m³
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	105.7	minutes
TYPE	GTS18		SURFACE	208	340	316	CIRCULATION TIME:	207.6	minutes
DEPTH IN	2187	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	n/a	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	n/a		CURRENT Length / OD / ID	810	244.5	224	Aquapac	1	0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Lignite	2	0.00
	22	mm	DRILL PIPE	27	33	m/min			0.00
	22	mm	HEVI-WATE	0	23	m/min			0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min			0.00
	0	mm	DRILLCOLLAR #2	0	47	m/min			0.00
	0	mm	ECD	[illegible]	kg/m³				0.00
NOZZLE VELOCITY	0	m/sec	HYDROSTATIC	24 870	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1145	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	1750	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)		DAILY TOTAL		0.00
STROKES / minute	61	0					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.6468	0	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0			
SAMPLE - TANKS	-		20	0	0	0			
FLOWLINE TEMP.	40	°C	60	0	0	0			
STANDPIPE PRESS.	3805	kPa	100	0	0	0			
TIME SAMPLE TAKEN	4:15		Med "N"	0.53	DEPTH	m			
DEPTH	2187	m	Med "K"	1.60	TVD				
DENSITY	1150	kg/m³	Low "n"	0.25	TMD				
MUD GRADIENT	11.28	kPa/m	Low "k"	6.65					
FUNNEL VISCOSITY	60	s/L	RESISTIVITY	0	ohmm				
600 RPM	62								
300 RPM	43								
200 RPM	25								
100 RPM	14								
6 RPM	18								
3 RPM	10								
PLASTIC VISCOSITY	19	mPa.s							
YIELD POINT	12	Pa							
GEL STRENGTH 10sec	5	Pa							
GEL STRENGTH 10min	15	Pa							
pH	9.5								
FILTRATE	9	mL/30min							
CAKE THICKNESS	1.2	mm							
SAND CONTENT	0.002	Vol. Frac.							
SOLIDS CONTENT	0.0937	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	193	kg/m³							
TOTAL SOLIDS	244	kg/m³							
HGS	0	kg/m³							
LGS	244	kg/m³							
M.B.T. (Bentonite Equiv	51	kg/m³							
ALKALINTY (Pf / Mf)	0.2	0.65							
CHLORIDES	800	mg/L							
CALCIUM	20	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	0.6	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	240	CO3							
BICARBONTATES	305	HCO3							
HYDROXYL	0	OH							



WELL HISTORY

14th drill 6hrs 2142-2187m's tight hole(deviation) pooh pump out 2187-2040m's 2hrs rih to 2000m's no problems ream to btm

RECOMMENDATIONS

* Once back to drilling
1. Maintain vis at 65-75 s/l with gel and visplus 20:1 ratio as required. Mix a minimum of 6-10sx's gel per 24 hrs.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control wieght as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix 2-3 pails encapsorfloc per 12 hr tour.

* Mix now 1sx caustic ph at 10-10.5 and slowly add encapsorfloc at 2-3 hrs per pail while reaming
* Prior to csg point approx 2600m's raise vis to 100+ s/l with gel and visplus in a 20:1 ratio as required over complete circulations.
* Watch shaker screens for blinding when mixing visplus

TECHNICAL REPRESENTATIVE PHONE (Cell)(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	*Concord Drilling Fluids* PHONE (24 HR.) (403) 234 7771

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Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	Ream @ 2140m's	RIG NO.:	40	
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04	
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04	
REPORT FOR:	Mr. Darryl Cunningham	PROVINCE:	NWT	MUD UP DEPTH:	216	

			DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
DATE:	Feb 16 04		DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	12.0	m³
REPORT:	27		HEVI-WATE	102	65	644	STRING CAPACITY:	8.6	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	69.3	m³
BIT DATA			DRILLCOLLAR #2	171	57	186	ANNULAR:	69.0	m³
NUMBER	6		BHA			830	TOTAL:	136.9	m³
SIZE	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	46.5	minutes
TYPE	GTS18		SURFACE	208	340	316	CIRCULATION TIME:	92.3	minutes
DEPTH IN	2187	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	7	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	71		CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural	40		0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	3		0.00
	22	mm	DRILL PIPE	47	50	m/min	Vis-Plus	2		0.00
	22	mm	HEVI-WATE	0	50	m/min	Encapsorfloc	3		0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	0	113	m/min				0.00
	0	mm	ECD	1225	kg/m³					0.00
NOZZLE VELOCITY	00	m/sec	HYDROSTATIC	25.02	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1170	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1820	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	1	DAILY TOTAL			0.00
STROKES / minute	70	70					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.742	0.742	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	-		20	0	0	0				
FLOWLINE TEMP.	39	°C	60	0	0	0				
STANDPIPE PRESS.	13276	kPa	100	0	0	0				
TIME SAMPLE TAKEN	12:45		Filed "n"	0.43	DEPTH	m				
DEPTH	2187	m	Filed "K"	3.59	TVD					
DENSITY	1170	kg/m³	Low "n"	0.34	TMD					
MUD GRADIENT	11.48	kPa/m	Low "K"	5.75						
FUNNEL VISCOSITY	82	s/L	RESISTIVITY	0	ohms					
600 RPM	70									
300 RPM	52									
200 RPM	30									
100 RPM	17									
6 RPM	18									
3 RPM	10									
PLASTIC VISCOSITY	18	mPa.s								
YIELD POINT	17	Pa								
GEL STRENGTH 10sec	5	Pa								
GEL STRENGTH 10min	16	Pa								
pH	9.5									
FILTRATE	7.8	mL/30min								
CAKE THICKNESS	2.4	mm								
SAND CONTENT	0.002	Vol. Frac.								
SOLIDS CONTENT	0.1063	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	221	kg/m³								
TOTAL SOLIDS	276	kg/m³								
HGS	0	kg/m³								
LGS	276	kg/m³								
M.B.T. (Bentonite Equiv	55	kg/m³								
ALKALINTY (Pf / Mf)	0.48	1.37								
CHLORIDES	900	mg/L								
CALCIUM	60	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	0.85	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	576	CO3								
BICARBONTATES	600	HCO3								
HYDROXYL	0	OH								

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

16th Ream 23.5 hrs 2011-2143m's

RECOMMENDATIONS

1. Maintain vis at 70-80 s/l with gel and visplus 20:1 ratio as required.
2. Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Lower and control weight as low as possible with all available solids control equipment and dilution at 5-10 l/min or as required below shaker.
5. Mix encapsorfloc @ 4 hrs per pail

* Mix now 1sx caustic ph at 10-10.5, 2 sxs lignite and add encapsorfloc at 2-3 hrs per pail while reaming
* Prior to csg point approx 2600m's raise vis to 100+ s/l with gel and visplus in a 20:1 ratio as required over complete circulations.
* Watch shaker screens for blinding when mixing visplus

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	*Concord Drilling Fluids* PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report										
	OPERATOR:	North Rock		ACTIVITY:	Ream @ 1920m's		RIG NO.:	40		
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
	WELL NUMBER:	B-64		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216		
	DATE:	Feb 18 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%	
	REPORT:	29	DRILLPIPE	102	65	1445	STRING DISPLACEMENT:	8.5	m³	
			HEVI-WATE	102	85	439	STRING CAPACITY:	7.4	m³	
			DRILLCOLLAR #1	0	0	0	TANKS:	67	m³	
BIT DATA			DRILLCOLLAR #2	171	57	35	ANNULAR:	52.6	m³	
NUMBER:	7RR		BHA			474	TOTAL:	126.9	m³	
SIZE:	215.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	37.4	minutes	
TYPE:	F15PS		SURFACE	208	340	316	CIRCULATION TIME:	75.8	minutes	
DEPTH IN:	1979	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W.O.B (daN)	15	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	71		CURRENT Length / OD / ID	510	244.5	224				0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole					0.00
	17.5	mm	DRILL PIPE	54	58	m/min				0.00
	17.5	mm	HEVI-WATE	0	58	m/min				0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	0	120	m/min				0.00
	0	mm	ECD	1215	kg/m³					0.00
NOZZLE VELOCITY	38	m/sec	HYDROSTATIC	22 007	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1170	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1800	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	F_a (DC)	0	DAILY TOTAL			0.00
STROKES / minute	79	79					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TREND&G				TOTAL COST			0.00
m³ / minute	0.8374	0.8374	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/KCL/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	-		20	0	0	0				
FLOWLINE TEMP.	37	°C	60	0	0	0				
STANDPIPE PRESS.	13641	kPa	100	0	0	0				
TIME SAMPLE TAKEN	20:00		Mod "N"	0.45	DEPTH	m				
DEPTH	1920	m	Mod "K"	3.16	TVD					
DENSITY	1170	kg/m³	Low "n"	0.33	TMD					
MUD GRADIENT	11.48	kPa/m	Low "K"	5.84						
FUNNEL VISCOSITY	93	s/L	RESISTIVITY	0	ohms					
600 RPM	71		WELL HISTORY							
300 RPM	52		17th free point and back off, 16th rih clean out ream @1871m's							
200 RPM	30									
100 RPM	17									
6 RPM	18									
3 RPM	10									
PLASTIC VISCOSITY	19	mPa.s	RECOMMENDATIONS							
YIELD POINT	16.5	Pa	* Prior to drilling cement isolate to one suction tank, while circulating pretreat with 6 sxs bicarb , 2 sxs soda ash and 1 sx desco * While drilling cement maintain ph below 11 * Control vis below 70 s/l with desco @ 30 min/ex and dilution as required				* Once off cement plug incorporate rest of mud into system evenly 1. Maintain vis @ 65 -75 s/l with gel and visplus ina20:1 ratio as required 2. Control ph at 10 to 10.5 with caustic as required. 3. Contol water loss as low as possible below 10 cc's with aquapac and lignite in a 1:1 ratio as required. 4. Control wt. as low as possible with all available solids control equipment and dilution at 6-10 l/min below shaker(or as required) 5. Mix 2-3 pails encapsorfloc per 12 hr tour			
GEL STRENGTH 10sec	5	Pa								
GEL STRENGTH 10min	14	Pa								
pH	9.5									
FILTRATE	8.2	mL/30min								
CAKE THICKNESS	2.4	mm								
SAND CONTENT	0.002	Vol. Frac.								
SOLIDS CONTENT	0.1063	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	223	kg/m³								
TOTAL SOLIDS	276	kg/m³								
HGS	0	kg/m³								
LGS	276	kg/m³								
M.B.T. (Bentonite Equiv	53	kg/m³								
ALKALINTY (Pf / Mf)	0.35	1.1								
CHLORIDES	1900	mg/L								
CALCIUM	80	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.1	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	420	CO_3								
BICARBONTATES	488	HCO_3								
HYDROXYL	0	OH								

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.): Troy Godsman 250 262 8069 / 403 987 2323

Concord Drilling Fluids PHONE (24 HR.) (403) 254 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Circ Prior to Cement	Report No.:	40		
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04		
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04		
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT	MUD UP DEPTH:	216		
	DATE:	Feb 19/04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - BIT/T WASHOUT	20	%
	REPORT:	29	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	7.6	m³
			HEVI-WATE	102	85	439	STRING CAPACITY:	6.9	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	13.5	m³
BIT DATA			DRILLCOLLAR #2	0	0	0	ANNULAR:	25.3	m³
NUMBER			BHA			439	TOTAL:	45.7	m³
SIZE	102	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	15.3	minutes
TYPE			SURFACE	208	340	316	CIRCULATION TIME:	27.7	minutes
DEPTH IN		m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)		daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM			CURRENT Length / OD / ID	810	244.5	224			0.00
NOZZLE SIZE	85	mm	ANNULAR VELOCITY	Casing	Open Hole				0.00
	0	mm	DRILL PIPE	[illegible]	#DIV/0!	m/min			0.00
	0	mm	HEVI-WATE	[illegible]	#DIV/0!	m/min			0.00
	0	mm	DRILLCOLLAR #1	[illegible]	[illegible]	m/min			0.00
	0	mm	DRILLCOLLAR #2	[illegible]	[illegible]	m/min			0.00
	0	mm	ECD	[illegible]	kg/m³				0.00
NOZZLE VELOCITY	[illegible]	m/sec	HYDROSTATIC	[illegible]	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW		kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW		kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0	DAILY TOTAL		0.00
STROKES / minute	78	78					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TREATED				TOTAL COST		0.00
m³ / minute	0.8268	0.8268	600	0.3	0	0	0	BROOKFIELD GRAPH	
MUD SYSTEM:	Red Gel/XCD/PHPA		300	0.5	0	0	0		
SAMPLE - FLOWLINE			200	6	0	0	0		
SAMPLE - TANKS	–		100	29	0	0	0		
FLOWLINE TEMP.	39	°C	6	80	0	0	0		
STANDPIPE PRESS.	9982	kPa	3	100	0	0	0		
TIME SAMPLE TAKEN	9:00		Mud "n"		0.77	DEPTH	m		
DEPTH	1776	m	Mud "k"		0.25	TVD	1050		
DENSITY	1165	kg/m³	Low "n"		0.14	TMD	1500		
MUD GRADIENT	11.43	kPa/m	Low "k"		6.40				
FUNNEL VISCOSITY	59	s/L	RESISTIVITY		0	ohms			
600 RPM	51								
300 RPM	30								
200 RPM	17								
100 RPM	10								
6 RPM	14								
3 RPM	8								
PLASTIC VISCOSITY	21	mPa.s							
YIELD POINT	4.5	Pa							
GEL STRENGTH 10sec	4	Pa							
GEL STRENGTH 10min	11	Pa							
pH	9.5								
FILTRATE	7.6	mL/30min							
CAKE THICKNESS	1.8	mm							
SAND CONTENT	0.002	Vol. Frac.							
SOLIDS CONTENT	0.1031	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	220	kg/m³							
TOTAL SOLIDS	268	kg/m³							
HGS	0	kg/m³							
LGS	268	kg/m³							
M.B.T. (Bentonite Equiv	48	kg/m³							
ALKALINTY (Pf / Mf)	0.2	0.6							
CHLORIDES	800	mg/L							
CALCIUM	120	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	0.6	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	240	CO3							
BICARBONTATES	244	HCO3							
HYDROXYL	0	OH							

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

RIH open ended

RECOMMENDATIONS

* While drilling cement maintain ph below 11 with bicarb at 20 min/sx as required.
* Maintain vis as below 70 s/l with desco at 30 min / sx as required

* Once off cement plug incorporate rest of mud into system evenly , Build volume back to 60 +m3
1. Maintain vis @ 65 -75 s/l with gel and vis plus ina20:1 ratio as required,Mix a minimum of 10 to 15 sxs gel per 12 hr tour 2.
Control ph at 10 to 10.5 with caustic as required. 3.
Contol water loss as low as possible below 10 cc's with aquapac and lignite in a 1:1 ratio as required. 4.
Control wt. as low as possible with all available solids control equipment and dilution at 5-10 l/min below shaker(or as required)
5. Mix 2-3 pails encapsorfloc per 12 hr tour

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40	
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216	
	DATE:	Feb 21 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
	REPORT:	30	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	8.0	m³
			HEVI-WATE	102	65	421	STRING CAPACITY:	5.7	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	70.3	m³
BIT DATA			DRILLCOLLAR #2	171	57	38	ANNULAR:	56.4	m³
NUMBER	8		BHA			459	TOTAL:	133.4	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	37.5	minutes
TYPE	GTCS09X		SURFACE	206	340	316	CIRCULATION TIME:	66.6	minutes
DEPTH IN	1706	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	5	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	mm+		CURRENT Length / OD / ID	810	244.5	224			0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Bicarb of Soda	14	0.00
	17.5	mm	DRILL PIPE	48	82	m/min	Desco CF	4	0.00
	17.5	mm	HEVI-WATE	0	52	m/min	-		0.00
	0	mm	DRILLCOLLAR-#1	0	0	m/min	-		0.00
	0	mm	DRILLCOLLAR #2	0	108	m/min			0.00
	0	mm	ECD	1160	kg/m³				0.00
NOZZLE VELOCITY	39	m/sec	HYDROSTATIC	15.94	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1880	kg/m³				0.00
MODEL	FZ9	PZ9	UNDERFLOW	1130	kg/m³				0.00
LINER (mm)	140	140	OUTPUT		L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_0 (DC)	0	DAILY TOTAL		0.00
STROKES / minute	71	71					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.7526	0.7526	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0			
SAMPLE - TANKS	–		20	0	0	0			
FLOWLINE TEMP.	30	°C	60	0	0	0			
STANDPIPE PRESS.	11306	kPa	100	0	0	0			
TIME SAMPLE TAKEN	3:45		Fitted "N"	0.68	DEPTH	m			
DEPTH	1730	m	Fitted "K"	0.44	TVD	1730			
DENSITY	1140	kg/m³	Low "n"	0.16	TMD	1730			
MUD GRADIENT	11.18	kPa/m	Low "a"	6.12					
FUNNEL VISCOSITY	60	s/L	RESISTIVITY	0	ohms				
600 RPM	48								
300 RPM	30								
200 RPM	17								
100 RPM	10								
6 RPM	14								
3 RPM	8								
PLASTIC VISCOSITY	18	mPa.s							
YIELD POINT	6	Pa							
GEL STRENGTH 10sec	4	Pa							
GEL STRENGTH 10min	15	Pa							
pH	10								
FILTRATE	9.5	mL/30min							
CAKE THICKNESS	1.2	mm							
SAND CONTENT	0.001	Vol. Frac.							
SOLIDS CONTENT	0.0875	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	185	kg/m³							
TOTAL SOLIDS	228	kg/m³							
HGS	0	kg/m³							
LGS	228	kg/m³							
M.B.T. (Bentonite Equiv	43	kg/m³							
ALKALINITY (Pf / Mf)	0.76	1.2							
CHLORIDES	1000	mg/L							
CALCIUM	20	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	0.9	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	640	CO_3							
BICARBONATES	0	HCO_3							
HYDROXYL	102	OH							

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

250+ rih tag cement @1706 m's, ream 2hrs 1620 to 1706, Drill 6.25 hrs 1706 to 1713m's

RECOMMENDATIONS

1. Raise and Maintain vis @ 55 -65 s/l with gel and visplus in a 20:1 ratio as required,Mix a minimum of 10 to 15 sxs gel per 12 hr tour
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss as low as possible below 10 cc's with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. as low as possible with all available solids control equipment and dilution at10-15 l/min below shaker(or as required)
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and visplus in a 20:1 ratio as required

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)(Satt)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Services Report	OPERATOR:	North Rock	ACTIVITY:	Circ Bottoms up	RIG NO.:	40			
	WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04			
	WELL NUMBER:	B-44	REPORT FOR:	Mr Alwin Vogt	DRILL OUT DATE:	Jan 25 04			
	REPORT FOR:	Mr Kevin Army	PROVINCE:	NWT	MUD UP DEPTH:	216			

	DATE:	Feb 22 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
	REPORT:	31	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	8.3	m³
			HEVI-WATE	102	65	421	STRING CAPACITY:	6.9	m³
			DRILL COLLAR #1	0	0	0	TANKS:	79.7	m³
BIT DATA			DRILLCOLLAR #2	171	57	38	ANNULAR:	58.4	m³
NUMBER	8		BHA			459	TOTAL:	145.0	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	35.7	minutes
TYPE	GTC509D		SURFACE	208	340	316	CIRCULATION TIME:	91.2	minutes
DEPTH IN	1706	m	INTERMEDIATE #1	610	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	5	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost / Total
RPM	mm+		CURRENT Length / OD / ID	610	244.5	224	Bentonite 40 Kg Natural	64	0.00
NOZZLE SIZE	17.5	mm	ANNULAR VELOCITY	Casing	Open Hole		Encap	4	0.00
Bit Hrs 27.75	17.5	mm	DRILL PIPE	51	55	m/min	Aquapac	1	0.00
	17.5	mm	HEVI-WATE	0	55	m/min	Lignite	1	0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min	Soda Ash	1	0.00
	0	mm	DRILLCOLLAR #2	0	114	m/min	Visplus	2	0.00
	0	mm	ECD	1180	kg/m³				0.00
NOZZLE VELOCITY	87	m/sec	HYDROSTATIC	20045	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1810	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	1150	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0	DAILY TOTAL		0.00
STROKES / minute	75	75					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.795	0.795	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0			
SAMPLE - TANKS	–		20	0	0	0	THERE IS NO BROOKFIELD DATA TO REPORT		
FLOWLINE TEMP.	30	°C	60	0	0	0			
STANDPIPE PRESS.	13963	kPa	100	0	0	0			
TIME SAMPLE TAKEN	1:15		Fitted "N"	0.69	DEPTH	m			
DEPTH	1787	m	Fitted "K"	0.45	TVD				
DENSITY	1165	kg/m³	Flow "n"	0.23	TMD				
MUD GRADIENT	11.33	kPa/m	Flow "k"	4.78					
FUNNEL VISCOSITY	52	s/L	RESISTIVITY	0	ohms				
600 RPM	55		WELL HISTORY						
300 RPM	34		21st Drill 20.5 hrs 1713 to 1782 m's / Centifuges sowed up and wt raising						
200 RPM	19								
100 RPM	11								
6 RPM	12								
3 RPM	7								
PLASTIC VISCOSITY	21	mPa.s	RECOMMENDATIONS						
YIELD POINT	6.5	Pa	1. Raise and Maintain vis @ 50 -60 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 12 hr tour 2. Control ph at 10 to 10.5 with caustic as required. 3. Control water loss as low as possible below 10 cc's with aquapac and lignite in a 1:1 ratio as required. 4. Lower and Control wt. as low as possible with all available solids control equipment and dilution at 10-15 l/ min below shaker (or as required) / Dump volumes as required 5. Mix 2-3 pails encapsorfloc per 12 hr tour				* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required. * Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and visplus in a 20:1 ratio as required			
GEL STRENGTH 10sec	3.5	Pa							
GEL STRENGTH 10min	9	Pa							
pH	10								
FILTRATE	9	mL/30min							
CAKE THICKNESS	1.5	mm							
SAND CONTENT	0.0015	Vol. Frac.							
SOLIDS CONTENT	0.0969	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	196	kg/m³							
TOTAL SOLIDS	252	kg/m³							
HGS	0	kg/m³							
LGS	252	kg/m³							
M.B.T. (Bentonite Equiv	56	kg/m³							
ALKALINTY (Pf / Mf)	0.52	1.32							
CHLORIDES	600	mg/L							
CALCIUM	60	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	1.1	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	624	CO_3							
BICARBONTATES	342	HCO_3							
HYDROXYL	0	OH							

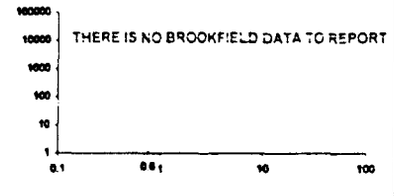
TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	*Concord Drilling Fluids* PHONE (24 HR.) (403) 234 7771

In consideration of this report and oral suggestions it is agreed that no recommendations made theron shall be construed as authorizing the infringement of any valid patent, and it is agreed that Concord Drilling Fluids Ltd. Shall not be liable for any damages resulting from the furnishing of this report and oral suggestions and is to be held han -less

Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40		
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216		
	DATE:	Feb 23 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%	
	REPORT:	32	DRILLPIPE	102	85	1425	STRING DISPLACEMENT:	8.6	m³	
			HEVI-WATE	102	85	421	STRING CAPACITY:	7.1	m³	
			DRILLCOLLAR #1	0	0	0	TANKS.	60	m³	
BIT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:	61.0	m³	
NUMBER	9		BHA			458	TOTAL:	125.2	m³	
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	38.4	minutes	
TYPE	GTS18		SURFACE	208	340	316	CIRCULATION TIME:	80.6	minutes	
DEPTH IN	1785	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W.O.B (daN)	15	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm+50		CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural	10		0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Barite	30		0.00
Bit hrs 13.5	22	mm	DRILL PIPE	5	55	m/min	Encapsorfloc	5		0.00
	22	mm	HEVI-WATE	5	55	m/min				0.00
	0	mm	DRILLCOLLAR #1	5	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	5	0	m/min				0.00
	0	mm	ECD	1003	kg/m³					0.00
NOZZLE VELOCITY	33	m/sec	HYDROSTATIC	21353	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	1810	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	1165	kg/m³					0.00
LINER (mm)	140	140	OUTPUT		L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_o (DC)	0	DAILY TOTAL			0.00
STROKES / minute	75	75					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TREATING				TOTAL COST			0.00
m³ / minute	0.795	0.795	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	–		20	0	0	0				
FLOWLINE TEMP.	39	°C	60	0	0	0				
STANDPIPE PRESS.	16956	kPa	100	0	0	0				
TIME SAMPLE TAKEN	1:15		Mod "N"	0.61	DEPTH	m				
DEPTH	1863	m	Mod "K"	0.95	TVD	1863				
DENSITY	1170	kg/m³	Low "n"	0.25	TMD	1863				
MUD GRADIENT	11.48	kPa/m	Low "k"	6.00						
FUNNEL VISCOSITY	55	s/L	RESISTIVITY	0	ohms					
600 RPM	64									
300 RPM	42									
200 RPM	24									
100 RPM	14									
6 RPM	16									
3 RPM	9									
PLASTIC VISCOSITY	22	mPa.s								
YIELD POINT	10	Pa								
GEL STRENGTH 10sec	4.5	Pa								
GEL STRENGTH 10min	14	Pa								
pH	10.5									
FILTRATE	9	mL/30min								
CAKE THICKNESS	1.8	mm								
SAND CONTENT	0.0015	Vol. Frac.								
SOLIDS CONTENT	0.1063	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	218	kg/m³								
TOTAL SOLIDS	276	kg/m³								
HGS	0	kg/m³								
LGS	276	kg/m³								
M.B.T. (Bentonite Equiv	58	kg/m³								
ALKALINTY (Pf / Mf)	0.34	0.78								
CHLORIDES	600	mg/L								
CALCIUM	Trace	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.2	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	408	CO3								
BICARBONATES	122	HCO3								
HYDROXYL	0	OH								



WELL HISTORY

22nd Drill 14 hrs 1782-1864m's trip bit & no problems

RECOMMENDATIONS

1. Maintain vis @ 60 -60 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 24 hrs
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss as low as possible below 10 cc's with aquapac and lignite in a 1:1 ratio as required.
4. Lower and Control wt. as low as possible with all available solids control equipment and dilution at 10-15 l/ min below shaker (or as required) / Dump volumes as required (once wt'd up centrifuges should be cycled for 1 circulation every 24 hrs to try and control drilled solids)
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* STRONGLY RECOMMEND LOWERING WT. AS LOW AS POSSIBLE BY DILUTION AND DUMPING PRIOR TO WT. UP W/BARITE
* For wt. up @ 1900m's On Eng. Req'st raise wt. to 1300 kg/m3 w/ barite. Approx. 615 sxs from 1170 kg/m3. Mix 1sx lignite per pallet Barite and add full dilution stream to hydrate barite. Volume gain from barite alone = 4.5 m3 (shaker screen's changed for barite additions?)
* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and visplus in a 20:1 ratio as required

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	Drill Ahead	RIG NO.:	40	
WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04	
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04	
REPORT FOR:	Mr Kevin Amy	PROVINCE:	NWT	MUD UP DEPTH:	216	

			DRILL STRING	OD (mm)	ID (mm)	Length (m)
DATE:	Feb 24 04					
REPORT:	33		DRILLPIPE	102	85	[illegible]
			HEVI-WATE	102	85	421
			DRILLCOLLAR #1	0	0	0
BIT DATA			DRILLCOLLAR #2	171	57	37
NUMBER	9		BHA			[illegible]
SIZE	216 9	mm	CASING	Depth (m)	Size (mm)	ID (mm)
TYPE	GTS1B		SURFACE	208	340	316
DEPTH IN	1785	m	INTERMEDIATE #1	810	244 5	224
W O B (daN)	15	daN	INTERMEDIATE #2	0	0	0
RPM	mm+50		CURRENT Length / OD / ID	[illegible]	[illegible]	[illegible]
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole	
Bit hrs 35	22	mm	DRILL PIPE	[illegible]	[illegible]	m/min
	22	mm	HEVI-WATE	[illegible]	[illegible]	m/min
	0	mm	DRILLCOLLAR #1	[illegible]	[illegible]	m/min
	0	mm	DRILLCOLLAR #2	[illegible]	[illegible]	m/min
	0	mm	ECD	[illegible]	kg/m³	
NOZZLE VELOCITY	[illegible]	m/sec	HYDROSTATIC	[illegible]	kPa	
PUMP NUMBER	1	2	CENTRIFUGE			
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³	
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³	
LINER (mm)	140	140	OUTPUT	0	L/min	
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_p (DC)	[illegible]
STROKES / minute	76	76				
m³ / STROKE	0 0106	0 0106	BROOKFIELD READINGS - TRENDING			
m³ / minute	[illegible]	[illegible]	6.3	0	0	0
MUD SYSTEM:	Res Gel/XCD/PHPA		6.6	0	0	0
SAMPLE - FLOWLINE			3	0	0	0
SAMPLE - TANKS	–		20	0	0	0
FLOWLINE TEMP.	41	°C	60	0	0	0
STANDPIPE PRESS.	17440	kPa	100	0	0	0
TIME SAMPLE TAKEN	0:30		filled "n"	0 65	DEPTH	m
DEPTH	1992	m	filled "K"	0 65	TVD	1992
DENSITY	1250	kg/m³	Low "n"	0 32	TMD	1992
MUD GRADIENT	12.26	kPa/m	Low "k"	3 59		
FUNNEL VISCOSITY	51	s/L	RESISTIVITY	0	ohms	

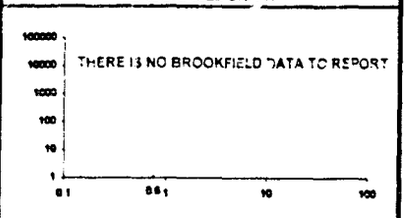
MUD VOLUMES - INPUT WASHOUT 20 %

STRING DISPLACEMENT:	9.3	m³
STRING CAPACITY:	7.6	m³
TANKS:	86.5	m³
ANNULAR:	65.5	m³
TOTAL:	159.5	m³
BOTTOMS UP:	40.6	minutes
CIRCULATION TIME:	89.0	minutes

DAILY PRODUCT USAGE

Product	Amount	Cost	Total
Bentonite 40 Kg Natural	25		0 00
Barite	180		0 00
Encapsorfloc	5		0 00
Lignite	4		0 00
			0 00
			0 00
			0 00
			0 00
			0 00
			0 00
			0 00
DAILY TOTAL			0.00
PREVIOUS COST			0.00
TOTAL COST			0.00

BROOKFIELD GRAPH



600 RPM	58	
300 RPM	37	
200 RPM	21	
100 RPM	12	
6 RPM	11	
3 RPM	6	
PLASTIC VISCOSITY	21	mPa s
YIELD POINT	8	Pa
GEL STRENGTH 10sec	3	Pa
GEL STRENGTH 10min	12	Pa
pH	9.5	
FILTRATE	8.5	mL/30min
CAKE THICKNESS	2.4	mm
SAND CONTENT	0.0015	Vol. Frac.
SOLIDS CONTENT	0.1563	Vol. Frac.
OIL CONTENT	0	Vol. Frac.
DRILL SOLIDS	372	kg/m³
TOTAL SOLIDS	425	kg/m³
HGS	82	kg/m³
LGS	290	kg/m³
M.B.T. (Bentonite Equiv	53	kg/m³
ALKALINTY (Pf / Mf)	0.18	0.97
CHLORIDES	700	mg/L
CALCIUM	Trace	mg/L
POTASSIUM	n/a	mg/L
PHPA POLYMER	1.1	kg/m³
SPURT LOSS	0.1	mL/15sec
CARBONATES	216	CO3
BICARBONATES	744	HCO3
HYDROXYL	0	OH

WELL HISTORY

23rd drill 22 hrs 1084-1989m's / wt up with barite from 1190kg/m3 to 1250 kg/m3

RECOMMENDATIONS

1. Maintain vis @ 60 -60 s/l with gel and viaplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 12 hr tour
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 10-15 l/ min below shaker (once wt'd up centrifuges should be cycled for 1 circulation every 24 hrs to try and control drilled solids)
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and viaplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and viaplus in a 20:1 ratio as required

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 232 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40	
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
	WELL NUMBER:	B-44		REPORT FOR:	Mr. Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216	
	DATE:	Feb 25 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%
	REPORT:	34	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	9.7	m³
			HEVI-WATE	102	65	421	STRING CAPACITY:	7.9	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	62.9	m³
WT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:	68.6	m³
NUMBER	9		BHA			458	TOTAL:	139.4	m³
SIZE	216 9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	42.6	minutes
TYPE	GTS18		SURFACE	208	340	316	CIRCULATION TIME:	85.5	minutes
DEPTH IN	1785	m	INTERMEDIATE #1	810	244 5	224	DAILY PRODUCT USAGE		
W O B (daN)	15	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	mm+50		CURRENT Length / OD / ID	810	244 5	224	Bentonite 40 Kg Natural	5	0 00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	1	0 00
Bty hrs 55 75	22	mm	DRILL PIPE	52	55	m/min	Barite	186	0 00
	22	mm	HEVI-WATE	[illegible]	[illegible]	m/min	Encapsorfloc	8	0 00
	0	mm	DRILLCOLLAR #1	[illegible]	[illegible]	m/min	Lignite	4	0 00
	0	mm	DRILLCOLLAR #2	[illegible]	[illegible]	m/min			0 00
	0	mm	ECD	[illegible]	kg/m³				0 00
NOZZLE VELOCITY	[illegible]	m/sec	HYDROSTATIC	25 943	kPa				0 00
PUMP NUMBER	1	2	CENTRIFUGE						0 00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³				0 00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³				0 00
LINER (mm)	140	140	OUTPUT	0	L/min				0 00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	[illegible]	DAILY TOTAL		0.00
STROKES / minute	76	76					PREVIOUS COST		0.00
m³/ STROKE	0 0106	0 0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³/ minute	0 8056	0 8056	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0	100000		
SAMPLE - TANKS	–		20	0	0	0	10000 THERE IS NO BROOKFIELD DATA TO REPORT		
FLOWLINE TEMP.	47	°C	60	0	0	0	1000		
STANDPIPE PRESS.	19686	kPa	100	0	0	0	100		
TIME SAMPLE TAKEN	4:15		Mod "N"	0 60	DEPTH	m	10		
DEPTH	2083	m	Mod "K"	1.05	TVD	2083	1		
DENSITY	1265	kg/m³	Low "n"	0.15	TMD	2083	0.1 0.6 1 10 100		
MUD GRADIENT	12.41	kPa/m	Low "k"	10.11					
FUNNEL VISCOSITY	51	s/L	RESISTIVITY	0	ohms				
600 RPM	65		WELL HISTORY						
300 RPM	43		24th drill 20.75 hrs 1988-2083m's/ mud slightly dehydrated from high temp and drilled solids						
200 RPM	25								
100 RPM	14								
6 RPM	23								
3 RPM	13								
PLASTIC VISCOSITY	22	mPa.s	RECOMMENDATIONS						
YIELD POINT	10.5	Pa	1. Maintain vis @ 60 -60 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 12 hr tour 2. Control ph at 10 to 10.5 with caustic as required. 3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required. 4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 10-15 l/ min below shaker (once wt'd up centrifuges should be cycled for 1 circulation every 24 hrs to try and control drilled solids) 5. Mix 2-3 pails encapsorfloc per 12 hr tour				* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required. * Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and visplus in a 20:1 ratio as required			
GEL STRENGTH 10sec	6.5	Pa							
GEL STRENGTH 10min	17	Pa							
pH	9.5								
FILTRATE	6.8	mL/30min							
CAKE THICKNESS	2.4	mm							
SAND CONTENT	0.0015	Vol. Frac.							
SOLIDS CONTENT	0.1656	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	431	kg/m³							
TOTAL SOLIDS	482	kg/m³							
HGS	98	kg/m³							
LGS	333	kg/m³							
M.B.T. (Bentonite Equiv	51	kg/m³							
ALKALINTY (Pf / Mf)	0.28	0 93							
CHLORIDES	600	mg/L							
CALCIUM	40	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	1.2	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	336	CO3							
BICARBONATES	451	HCO3							
HYDROXYL	0	OH							

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

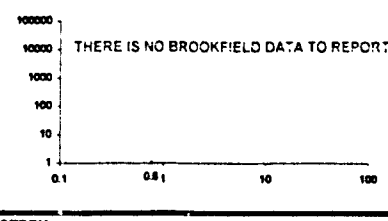
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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report									
OPERATOR:	Horse Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40		
WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr Kevin Arty		PROVINCE:	NWT		MUD UP DEPTH:	216		
DATE:	Feb 26 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	20	%	
REPORT:	35	DRILLPIPE	102	65	[illegible]	STRING DISPLACEMENT:	10.4	m³	
		HEVI-WATE	102	55	421	STRING CAPACITY:	8.4	m³	
		DRILLCOLLAR #1	0	0	0	TANKS:	66.8	m³	
BIT DATA		DRILLCOLLAR #2	171	57	37	ANNULAR:	73.8	m³	
NUMBER	9	BHA			458	TOTAL:	149.0	m³	
SIZE	216.9 mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	47.0	minutes	
TYPE	GTS18	SURFACE	208	340	316	CIRCULATION TIME:	94.5	minutes	
DEPTH IN	1785 m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W O B (daN)	15 daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm	CURRENT Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural	10		0.00
NOZZLE SIZE	22 mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	2		0.00
Bit hrs 77.25	22 mm	DRILL PIPE	55	55	m/min	Encapsorfloc	4		0.00
	22 mm	HEVI-WATE	0	55	m/min	Soda Ash	2		0.00
	0 mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0 mm	DRILLCOLLAR #2	0	112	m/min				0.00
	0 mm	ECD	1288	kg/m³					0.00
NOZZLE VELOCITY	83 m/sec	HYDROSTATIC	27052	kPa					0.00
PUMP NUMBER	1 2	CENTRIFUGE							0.00
MAKE	Ipsco Ipsco	OVERFLOW	0	kg/m³					0.00
MODEL	PZ9 PZ9	UNDERFLOW	0	kg/m³					0.00
LINER (mm)	140 140	OUTPUT	0	L/min					0.00
STROKE (mm)	229 229	FLOW TYPE (DC)	L	R_2 (DC)		DAILY TOTAL			0.00
STROKES / minute	74 74					PREVIOUS COST			0.00
m³ / STROKE	0.0106 0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.7844 0.7844	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/XCD/PHPA	0.6	0	0	0				
SAMPLE - FLOWLINE		6	0	0	0				
SAMPLE - TANKS	–	20	0	0	0				
FLOWLINE TEMP.	47 °C	60	0	0	0				
STANDPIPE PRESS.	18604 kPa	100	0	0	0				
TIME SAMPLE TAKEN	1:15	Mod "N"	0.55	DEPTH	m				
DEPTH	2233 m	Mod "K"	2.09	TVD	2233				
DENSITY	1250 kg/m³	Low "n"	0.35	TMD	2233				
MUD GRADIENT	12.26 kPa/m	Low "k"	5.62						
FUNNEL VISCOSITY	79 s/L	RESISTIVITY	0	ohms					
600 RPM	92								
300 RPM	63								
200 RPM	14								
100 RPM	8								
6 RPM	18								
3 RPM	10								
PLASTIC VISCOSITY	29 mPa.s								
YIELD POINT	17 Pa								
GEL STRENGTH 10sec	5 Pa								
GEL STRENGTH 10min	24 Pa								
pH	10.5								
FILTRATE	6.6 mL/30min								
CAKE THICKNESS	2.4 mm								
SAND CONTENT	0.0015 Vol. Frac.								
SOLIDS CONTENT	0.1563 Vol. Frac.								
OIL CONTENT	0 Vol. Frac.								
DRILL SOLIDS	389 kg/m³								
TOTAL SOLIDS	437 kg/m³								
HGS	66 kg/m³								
LGS	323 kg/m³								
M.B.T. (Bentonite Equiv	48 kg/m³								
ALKALINITY (Pf / Mf)	0.42 1.32								
CHLORIDES	580 mg/L								
CALCIUM	0 mg/L								
POTASSIUM	n/a mg/L								
PHPA POLYMER	1.3 kg/m³								
SPURT LOSS	0.1 mL/15sec								
CARBONATES	504 CO3								
BICARBONTATES	586 HCO3								
HYDROXYL	0 OH								

BROOKFIELD GRAPH



WELL HISTORY

24th drill 21.6 hrs 2063-2231m's/ cycled centrifuges wt dropped 30 points mbt dropped 6 points/ Plastic vis dropped 1point/ Reology sho ws dehydration fl Low n high l Needs fresh water and fresh gel / Wt must be lowered centrifuge not drilling it, taking out hgs l Dump and dilute!

RECOMMENDATIONS

* Lower vis to 60 -65 s/l with 2sxs desco and dilution as required
1. Maintain vis @ 60 -60 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 12 hr tour
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 15-25 l/ min below shaker (once wt'd up centrifuges should be cycled for 1 circulation every 24 hrs to try and control drilled solids)
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's Raise vis to 90 s/l + with gel and visplus in a 20:1 ratio as requ'd

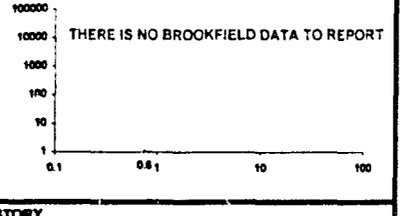
TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Ream to btm @2160		RIG NO.:	40		
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04		
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216		
	DATE:	Feb 27 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT		5	%
	REPORT:	36	DRILLPIPE	102	65	1784	STRING DISPLACEMENT:		10.5	m³
			HEVI-WATE	102	85	421	STRING CAPACITY:		8.4	m³
			DRILLCOLLAR #1	0	0	0	TANKS:		63.1	m³
BIT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:		74.1	m³
NUMBER	10		BHA			458	TOTAL:		145.6	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:		49.2	minutes
TYPE	HXS20		SURFACE	208	340	316	CIRCULATION TIME:		96.7	minutes
DEPTH IN	2242	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W O B (daN)	4	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	mm		CURRENT Length / OD / ID	810	244.5	224	Barite	30		0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	2		0.00
	22	mm	DRILL PIPE	48	50	m/min	Desco CF	2		0.00
	22	mm	HEVI-WATE	0	82	m/min	Encapsorfloc	3		0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	0	105	m/min				0.00
	0	mm	ECD	1035	kg/m³					0.00
NOZZLE VELOCITY	22	m/sec	HYDROSTATIC	25 482	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0	DAILY TOTAL			0.00
STROKES / minute	71	71					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.7525	0.7526	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	–		20	0	0	0				
FLOWLINE TEMP.	42	°C	60	0	0	0				
STANDPIPE PRESS.	12392	kPa	100	0	0	0				
TIME SAMPLE TAKEN	4:20		Mod "n"	0.57	DEPTH	m				
DEPTH	2242	m	Mod "K"	1.63	TVD	2242				
DENSITY	1295	kg/m³	Low "n"	0.46	TMD	2242				
MUD GRADIENT	12.70	kPa/m	Low "k"	2.8						
FUNNEL VISCOSITY	71	s/L	RESISTIVITY	0	ohms					
600 RPM	83									
300 RPM	56									
200 RPM	32									
100 RPM	18									
6 RPM	11									
3 RPM	6									
PLASTIC VISCOSITY	27	mPa.s								
YIELD POINT	14.5	Pa								
GEL STRENGTH 10sec	3	Pa								
GEL STRENGTH 10min	16	Pa								
pH	10									
FILTRATE	6.2	mL/30min								
CAKE THICKNESS	1.2	mm								
SAND CONTENT	0.1	Fract.								
SOLIDS CONTENT										
OIL CONTENT										
DRILL SOLIDS	424	kg/m³								
TOTAL SOLIDS	474	kg/m³								
HGS	50	kg/m³								
LGS	404	kg/m³								
M.B.T. (Bentonite Equiv	50	kg/m³								
ALKALINTY (Pf / Mf)	0.54	1.42								
CHLORIDES	580	mg/L								
CALCIUM	0	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	1.2	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	648	CO3								
BICARBONTATES	415	HCO3								
HYDROXYL	0	OH								



WELL HISTORY

20th drill 4.0hrs 2231-2242m's/ trip bit 9 81.75 hrs/ pooh to 2080m's pump pill and pump out singles 2080-1965m's 5.75hrs, 1945-1783m's 3.0hrs / pull tight @ 1740m's / RIH Ream 3 hrs 1720-1900m's

RECOMMENDATIONS

1. Maintain vis @ 60 -70 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 24hrs
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with [illegible]uc and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 15-25 l/ min below shaker (cycle centrifuges on Eng. Request (Daily)) If Centrifuges shutdown sandtrap should be dumped regularly.
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required.
* Prior to TD Approx 2160 m's Raise vis to 60 s/l + with gel and visplus in a 20:1 ratio as required

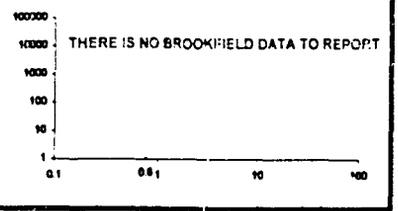
TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock		ACTIVITY:	Drill Ahead		RIG NO.:	40	
	WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04	
	WELL NUMBER:	B-44		REPORT FOR:	Mr Alvin Vogt		DRILL OUT DATE:	Jan 25 04	
	REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216	
	DATE:	Feb 28 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	25	%
	REPORT:	37	DRILLPIPE	102	65	1950	STRING DISPLACEMENT:	10.9	m³
			HEVI-WATE	102	85	421	STRING CAPACITY:	8.6	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	61.7	m³
BIT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:	76.4	m³
NUMBER	10		BHA			458	TOTAL:	146.8	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	48.7	minutes
TYPE	HXS20		SURFACE	208	340	316	CIRCULATION TIME:	93.6	minutes
DEPTH IN	2242	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	4	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	mm		CURRENT: Length / OD / ID	810	244.5	224	Bentonite 40 Kg Natural	20	0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	1	0.00
11 Bit hrs	22	mm	DRILL PIPE	50	55	m/min	Desco CF	2	0.00
	22	mm	HEVI-WATE	0	55	m/min	Encapsorfloc	2	0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min			0.00
	0	mm	DRILLCOLLAR #2	0	110	m/min			0.00
	0	mm	ECD	1295	kg/m³				0.00
NOZZLE VELOCITY	83	m/sec	HYDROSTATIC	28666	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_e (DC)	0	DAILY TOTAL		0.00
STROKES / minute	74	74					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.7844	0.7844	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0			
SAMPLE - TANKS	-		20	0	0	0			
FLOWLINE TEMP.	42	°C	60	0	0	0			
STANDPIPE PRESS.	18797	kPa	100	0	0	0			
TIME SAMPLE TAKEN	4:45		filled "N"	0.59	DEPTH	m			
DEPTH	2310	m	filled "K"	1.15	TVD	2310			
DENSITY	1265	kg/m³	Low "n"	0.40	TMD	2310			
MUD GRADIENT	12.41	kPa/m	Low "k"	3.12					
FUNNEL VISCOSITY	60	s/L	RESISTIVITY	0	ohms				
600 RPM	71								
300 RPM	47								
200 RPM	27								
100 RPM	15								
6 RPM	11								
3 RPM	6								
PLASTIC VISCOSITY	24	mPa.s							
YIELD POINT	11.5	Pa							
GEL STRENGTH 10sec	3	Pa							
GEL STRENGTH 10min	15	Pa							
pH	10								
FILTRATE	6.1	mL/30min							
CAKE THICKNESS	1.2	mm							
SAND CONTENT	0.002	Vol. Frac.							
SOLIDS CONTENT	0.1656	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	412	kg/m³							
TOTAL SOLIDS	465	kg/m³							
HGS	62	kg/m³							
LGS	350	kg/m³							
M.B.T. (Bentonite Equiv	53	kg/m³							
ALKALINITY (Pf / Mf)	0.3	0.95							
CHLORIDES	750	mg/L							
CALCIUM	0	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	1	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	360	CO3							
BICARBONATES	427	HCO3							
HYDROXYL	0	OH							



WELL HISTORY

27th drill 11 hrs 2242-2296m's, room 1900-2342m's

RECOMMENDATIONS

* Mix now 1sx visplus over 2 complete circulations
1. Maintain vis @ 60 -70 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 24hrs
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 15-25 l/ min below shaker (cycle centrifuges on Eng. Request (Daily)) If Centrifuges shutdown sandtrap should be dumped regularly.
5. Mix 2-3 pails encapsorfloc per 12 hr tour

TECHNICAL REPRESENTATIVE PHONE (Cell)(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	*Concord Drilling Fluids* PHONE (24 HR.) (403) 234 7771

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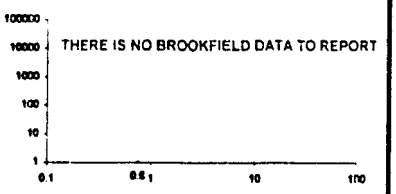
Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock	ACTIVITY:	Drill Ahead	FBG NO.:	40
	WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04
	WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 26 04
	REPORT FOR:	Mr Kevin Amy	PROVINCE:	M/T	MUD UP DEPTH:	216

			DRILL STRING	OD (mm)	ID (mm)	Length (m)
	DATE:	Feb 29 04				
	REPORT:	38	DRILLPIPE	102	65	1946
			HEVI-WATE	102	85	421
			DRILLCOLLAR #1	0	0	0
BIT DATA			DRILLCOLLAR #2	171	57	37
NUMBER	10		BHA			458
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)
TYPE	HXS20		SURFACE	208	340	316
DEPTH IN	2242	m	INTERMEDIATE #1	810	244.5	224
W.O.B (daN)	4	daN	INTERMEDIATE #2	0	0	0
RPM	mm		CURRENT Length / OD / ID	810	244.5	224
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole	
Bit hrs 32.25	22	mm	DRILL PIPE	50	55	m/min
	22	mm	HEVI-WATE	0	55	m/min
	0	mm	DRILLCOLLAR #1	0	0	m/min
	0	mm	DRILLCOLLAR #2	0	112	m/min
	0	mm	ECD	1300	kg/m³	
NOZZLE VELOCITY	00	m/sec	HYDROSTATIC	29 633	kPa	
PUMP NUMBER	1	2	CENTRIFUGE			
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³	
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³	
LINER (mm)	140	140	OUTPUT	0	L/min	
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_o (DC)	0
STROKES / minute	74	74				
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING			
m³ / minute	0.7844	0.7544	0.3	0	0	0
MUD SYSTEM:	Red. Gel/XCD/PHPA		0.6	0	0	0
SAMPLE - FLOWLINE			6	0	0	0
SAMPLE - TANKS	–		20	0	0	0
FLOWLINE TEMP.	47	°C	60	0	0	0
STANDPIPE PRESS.	17878	kPa	100	0	0	0
TIME SAMPLE TAKEN	2:00		Med "N"	0.60	DEPTH	m
DEPTH	2404	m	Med "K"	1.11	TVD	2404
DENSITY	1265	kg/m³	Low "n"	0.26	TMD	2404
MUD GRADIENT	12.41	kPa/m	Low "k"	6.57		
FUNNEL VISCOSITY	67	s/L	RESISTIVITY	0	ohms	
600 RPM	73					
300 RPM	48					
200 RPM	27					
100 RPM	16					
6 RPM	18					
3 RPM	10					
PLASTIC VISCOSITY	25	mPa.s				
YIELD POINT	11.5	Pa				
GEL STRENGTH 10sec	5	Pa				
GEL STRENGTH 10min	13	Pa				
pH	9.5					
FILTRATE	6	mL/30min				
CAKE THICKNESS	1.2	mm				
SAND CONTENT	0.001	Vol. Frac.				
SOLIDS CONTENT	0.1656	Vol. Frac.				
OIL CONTENT	0	Vol. Frac.				
DRILL SOLIDS	405	kg/m³				
TOTAL SOLIDS	462	kg/m³				
HGS	106	kg/m³				
LGS	299	kg/m³				
M.B.T. (Bentonite Equiv	57	kg/m³				
ALKALINITY (Pf / Mf)	0.28	0.88				
CHLORIDES	680	mg/L				
CALCIUM	0	mg/L				
POTASSIUM	n/a	mg/L				
PHPA POLYMER	0.8	kg/m³				
SPURT LOSS	0.1	mL/15 sec				
CARBONATES	336	CO3				
BICARBONTATES	390	HCO3				
HYDROXYL	0	OH				

DAILY PRODUCT USAGE			
Product	Amount	Cost	Total
Bentonite 40 Kg Natural	20		0.00
Caustic Soda	1		0.00
Desco CF	1		0.00
Lignite	1		0.00
Barite	54		0.00
Encapsorfloc	5		0.00
Visplus	1		0.00
Detergent	1		0.00
			0.00
			0.00
			0.00
			0.00
DAILY TOTAL			0.00
PREVIOUS C(Y)T			0.00
TOTAL COST			0.00

MUD VOLUMES - INPUT WASHOUT		
	25	%
STRING DISPLACEMENT:	11.2	m³
STRING CAPACITY:	8.9	m³
TANKS:	81	m³
ANNULAR:	79.7	m³
TOTAL:	169.6	m³
BOTTOMS UP:	50.8	minutes
CIRCULATION TIME:	108.1	minutes

BROOKFIELD GRAPH



WELL HISTORY

28th drill 22.75 hrs 2296-2386m's /

RECOMMENDATIONS

1. Maintain vis @ 60 -70 s/l with gel and visplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 24hrs
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 15-25 l/ min below shaker (cycle centrifuges on Eng. Request (Daily)) If Centrifuges shutdown sandtrap should be dumped regularly.
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and visplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's Raise vis to 70 s/l + with gel and visplus in a 20:1 ratio as required

TECHNICAL REPRESENTATIVE PHONE (Cell)/(Satt.)	Troy Godsman 250 262 8069 / 403 987 2323	Concord Drilling Fluids PHONE (24 HR.) (403) 234 7771

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Thank you

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Concord Drilling Fluids Field Service Report	OPERATOR:	North Rock	ACTIVITY:	Drill Ahead	RIG NO.:	40			
	WELL NAME:	North Rock etal Summit Creek	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04			
	WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04			
	REPORT FOR:	Mr Kevin Amy	PROVINCE:	NWT	MUD UP DEPTH:	216			
	DATE:	March 01 04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	25	%
	REPORT:	39	DRILLPIPE	102	85	2044	STRING DISPLACEMENT:	11.7	m³
			HEVI-WATE	102	85	421	STRING CAPACITY:	9.3	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	81	m³
BIT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:	83.1	m³
NUMBER	10		BHA			455	TOTAL:	173.3	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	53.7	minutes
TYPE	HX520		SURFACE	208	340	316	CIRCULATION TIME:	112.0	minutes
DEPTH IN	2242	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W O B (daN)	15	daN	INTERMEDIATE #2	0	0	0	Product / Amount / Cost / Total		
RPM	mm		CURRENT Length / OD / ID	510	244.5	224	Bentonite 40 Kg Natural	20	0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	3	0.00
55 Bit Hrs	22	mm	DRILL PIPE	53	54	m/min	Viaplus	2	0.00
	22	mm	HEVI-WATE	0	54	m/min	Lignite	2	0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min	Encapsorfloc	5	0.00
	0	mm	DRILLCOLLAR #2	0	0	m/min	Detergent	1	0.00
	0	mm	ECD	1251	kg/m³				0.00
NOZZLE VELOCITY	23	m/sec	HYDROSTATIC	21247	kPa				0.00
PUMP NUMBER	1	2	CENTRIFUGE						0.00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³				0.00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³				0.00
LINER (mm)	140	140	OUTPUT	0	L/min				0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_p (DC)	0	DAILY TOTAL		0.00
STROKES / minute	73	73					PREVIOUS COST		0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST		0.00
m³ / minute	0.7736	0.7736	0.3	0	0	0	BROOKFIELD GRAPH		
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0			
SAMPLE - FLOWLINE			6	0	0	0			
SAMPLE - TANKS	–		20	0	0	0			
FLOWLINE TEMP.	48	°C	60	0	0	0			
STANDPIPE PRESS.	19504	kPa	100	0	0	0			
TIME SAMPLE TAKEN	4:15		Mod "N"	0.57	DEPTH	m			
DEPTH	2502	m	Mod "K"	1.63	TVD	2502			
DENSITY	1265	kg/m³	Low "n"	0.24	TMD	2502			
MUD GRADIENT	12.41	kPa/m	Low "K"	6.81					
FUNNEL VISCOSITY	64	s/L	RESISTIVITY	0	ohms				
600 RPM	83								
300 RPM	56								
200 RPM	32								
100 RPM	18								
6 RPM	23								
3 RPM	13								
PLASTIC VISCOSITY	27	mPa s							
YIELD POINT	14.5	Pa							
GEL STRENGTH 10sec	9	Pa							
GEL STRENGTH 10min	13	Pa							
pH	9.5								
FILTRATE	5.5	mL/30min							
CAKE THICKNESS	1.6	mm							
SAND CONTENT	0.001	Vol. Frac.							
SOLIDS CONTENT	0.1656	Vol. Frac.							
OIL CONTENT	0	Vol. Frac.							
DRILL SOLIDS	403	kg/m³							
TOTAL SOLIDS	465	kg/m³							
HGS	157	kg/m³							
LGS	246	kg/m³							
M.B.T. (Bentonite Equiv	62	kg/m³							
ALKALINTY (Pf / Mf)	0.33	0.83							
CHLORIDES	800	mg/L							
CALCIUM	20	mg/L							
POTASSIUM	n/a	mg/L							
PHPA POLYMER	0.9	kg/m³							
SPURT LOSS	0.1	mL/15sec							
CARBONATES	396	CO3							
BICARBONATES	207	HCO3							
HYDROXYL	0	OH							

THERE IS NO BROOKFIELD DATA TO REPORT

WELL HISTORY

29th drill 21.25hrs 2396-2457m's , dumped 25m3 built volume down to 13 percent solids

RECOMMENDATIONS

1. Maintain vis @ 60 -70 s/l with gel and viaplus in a 20:1 ratio as required, Mix a minimum of 10 to 15 sxs gel per 24hrs
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1250 kg/m3 w/ barite as required(or as requested by Eng.) dilution at 15-25 l/ min below shaker (cycle centrifuges on Eng. Request (Daily)) If Centrifuges shutdown sandtrap should be dumped regularly.
5. Mix 2-3 pails encapsorfloc per 12 hr tour

* For Hole problems raise vis to 70 + s/l with gel and viaplus in a 20:1 ratio as required.
* Prior to TD Approx 2660 m's isolate tanks to minimul surface volume ! ie: isolate to one suction and lowest possible circulating volume. Raise vis to 90 s/l + with gel and viaplus in a 20:1 ratio as required
* Raise wt to 1300 kg/m3 with barite as required, mix 1sx lignite per pallet barite mixed, approx 1 pallet barite raises 100m3 10 points
* Once casing has landed and hole is clean lower vis to 60 s/l with 2-3 sxs dextro and full dilution stream as required for cementing
* W.O.C Dump and clean tanks

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

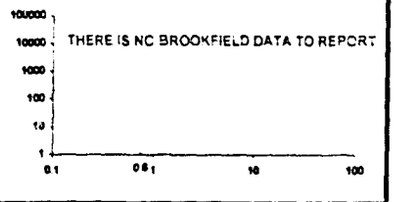
Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock	ACTIVITY:	Ream and clean	RIG NO.:	40	
WELL NAME:	North Rock etal Summit Cree	CONTRACTOR:	Akita	SPUD DATE:	Jan 16 04	
WELL NUMBER:	B-44	REPORT FOR:	Mr Alvin Vogt	DRILL OUT DATE:	Jan 25 04	
REPORT FOR:	Mr Kevin Amy	PROVANCE:	NWT	MUD UP DEPTH:	2116	

			DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	25	%
DATE:	March2/04		DRILLPIPE	102	65	1578	STRING DISPLACEMENT:	9.5	m³
REPORT:	40		HEVI-WATE	102	85	421	STRING CAPACITY:	7.7	m³
			DRILLCOLLAR #1	0	0	0	TANKS:	34.9	m³
BIT DATA			DRILLCOLLAR #2	171	57	37	ANNULAR:	67.0	m³
NUMBER	11		BHA			458	TOTAL:	109.6	m³
SIZE	216.9	mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	48.6	minutes
TYPE			SURFACE	208	340	316	CIRCULATION TIME:	79.6	minutes
DEPTH IN	2505	m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE		
W.O.B (daN)	1	daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	70		CURRENT Length / OD / ID	810	244.5	224	Barite	45		0.00
NOZZLE SIZE	22	mm	ANNULAR VELOCITY	Casing	Open Hole		Encapsorfloc	3		0.00
	22	mm	DRILL PIPE	44	45	m/min	Lignite	3		0.00
	22	mm	HEVI-WATE	0	48	m/min				0.00
	0	mm	DRILLCOLLAR #1	0	0	m/min				0.00
	0	mm	DRILLCOLLAR #2	0	69	m/min				0.00
	0	mm	ECD	1350	kg/m³					0.00
NOZZLE VELOCITY	20	m/sec	HYDROSTATIC	25676	kPa					0.00
PUMP NUMBER	1	2	CENTRIFUGE							0.00
MAKE	Ipsco	Ipsco	OVERFLOW	0	kg/m³					0.00
MODEL	PZ9	PZ9	UNDERFLOW	0	kg/m³					0.00
LINER (mm)	140	140	OUTPUT	0	L/min					0.00
STROKE (mm)	229	229	FLOW TYPE (DC)	L	R_2 (DC)	0	DAILY TOTAL			0.00
STROKES / minute	65	65					PREVIOUS COST			0.00
m³ / STROKE	0.0106	0.0106	BROOKFIELD READINGS - TRENDING				TOTAL COST			0.00
m³ / minute	0.689	0.689	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red Gel/XCD/PHPA		0.6	0	0	0				
SAMPLE - FLOWLINE			6	0	0	0				
SAMPLE - TANKS	-		20	0	0	0				
FLOWLINE TEMP.	30	°C	60	0	0	0				
STANDPIPE PRESS.	14034	kPa	100	0	0	0				
TIME SAMPLE TAKEN	5:45		Med "n"	0.67	DEPTH	m				
DEPTH	2037	m	Med "K"	1.99	TVD					
DENSITY	1295	kg/m³	Low "n"	0.26	TMD					
MUD GRADIENT	12.70	kPa/m	Low "k"	9.81						
FUNNEL VISCOSITY	83	s/L	RESISTIVITY	0	ohms					
600 RPM	104									
300 RPM	70									
200 RPM	40									
100 RPM	23									
6 RPM	26									
3 RPM	18									
PLASTIC VISCOSITY	34	mPa s								
YIELD POINT	18	Pa								
GEL STRENGTH 10sec	7.5	Pa								
GEL STRENGTH 10min	20	Pa								
pH	9									
FILTRATE	5	mL/30min								
CAKE THICKNESS	1.2	mm								
SAND CONTENT	0.001	Vol. Frac.								
SOLIDS CONTENT	0.1844	Vol. Frac.								
OIL CONTENT	0	Vol. Frac.								
DRILL SOLIDS	409	kg/m³								
TOTAL SOLIDS	474	kg/m³								
HGS	183	kg/m³								
LGS	291	kg/m³								
M.B.T. (Bentonite Equiv	65	kg/m³								
ALKALINTY (Pf / Mf)	0.2	0.75								
CHLORIDES	780	mg/L								
CALCIUM	20	mg/L								
POTASSIUM	n/a	mg/L								
PHPA POLYMER	0.8	kg/m³								
SPURT LOSS	0.1	mL/15sec								
CARBONATES	240	CO3								
BICARBONTATES	427	HCO3								
HYDROXYL	0	OH								

BROOKFIELD GRAPH



WELL HISTORY

1st drill 2487 - 2906 m's / pooh minus bit +/- rih for clean out trip ream 1960-2000m's 4 hrs

RECOMMENDATIONS

1. Maintain vis @ 90 -100 s/l with gel and visplus in a 20:1 ratio as required
2. Control ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Control wt. at 1300 kg/m3 w/ barite as required(or as requested by Eng.)
5. Mix 2 pails encapsorfloc per 12 hr tour

* Once csg has landed and hole is clean lower vis to 60 s/l with 2-3 sxs desco and dilution full dilution stream as required.
* W.O.C dump and clean tanks

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids	
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.)	(403) 234 7771

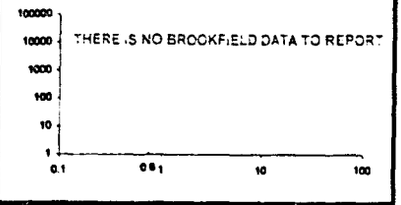
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Thank you

Concord Drilling Fluids Ltd.

Concord Drilling Fluids Field Service Report

OPERATOR:	North Rock		ACTIVITY:	Ream and clean		RIG NO.:	40		
WELL NAME:	North Rock etal Summit Creek		CONTRACTOR:	Akita		SPUD DATE:	Jan 16 04		
WELL NUMBER:	B-44		REPORT FOR:	Mr Bob Rolfes		DRILL OUT DATE:	Jan 25 04		
REPORT FOR:	Mr Kevin Amy		PROVINCE:	NWT		MUD UP DEPTH:	216		
DATE:	Mar/03/04	DRILL STRING	OD (mm)	ID (mm)	Length (m)	MUD VOLUMES - INPUT WASHOUT	25	%	
REPORT:	41	DRILLPIPE	102	85	2039	STRING DISPLACEMENT:	11.7	m^3	
		HEVI-WATE	102	85	421	STRING CAPACITY:	9.2	m^3	
		DRILLCOLLAR #1	0	0	0	TANKS:	45.2	m^3	
BIT DATA		DRILLCOLLAR #2	171	57	37	ANNULAR:	82.9	m^3	
NUMBER	11	BHA			458	TOTAL:	137.3	m^3	
SIZE	216.9 mm	CASING	Depth (m)	Size (mm)	ID (mm)	BOTTOMS UP:	56.6	minutes	
TYPE	C	SURFACE	208	340	316	CIRCULATION TIME:	93.9	minutes	
DEPTH IN	2505 m	INTERMEDIATE #1	810	244.5	224	DAILY PRODUCT USAGE			
W O B (daN)	1 daN	INTERMEDIATE #2	0	0	0	Product	Amount	Cost	Total
RPM	70	CURRENT Length / OD / ID	2497	244.5	224	Bentonite 40 Kg Natural	40		0.00
NOZZLE SIZE	22 mm	ANNULAR VELOCITY	Casing	Open Hole		Caustic Soda	2		0.00
	22 mm	DRILL PIPE	47	51	m/min	Barite	351		0.00
	22 mm	HEVI-WATE	0	51	m/min	Lignite	7		0.00
	0 mm	DRILLCOLLAR #1	0	0	m/min	Visplus	2		0.00
	0 mm	DRILLCOLLAR #2	0	105	m/min	Encapsorfloc	3		0.00
	0 mm	ECD	1550	kg/m³					0.00
NOZZLE VELOCITY	0 m/sec	HYDROSTATIC	33445	kPa					0.00
PUMP NUMBER	1 2	CENTRIFUGE							0.00
MAKE	Ipsco Ipsco	OVERFLOW	0	kg/m³					0.00
MODEL	PZ9 PZ9	UNDERFLOW	0	kg/m³					0.00
LINER (mm)	140 140	OUTPUT	0	/min					0.00
STROKE (mm)	229 229	FLOW TYPE (DC)	L	R_p (DC)	C	DAILY TOTAL			0.00
STROKES / minute	69 69					PREVIOUS COST			0.00
m³ / STROKE	0.0106 0.0106	BROOKFIELD READINGS - TREND'NG				TOTAL COST			0.00
m³ / minute	0.7314 0.7314	0.3	0	0	0	BROOKFIELD GRAPH			
MUD SYSTEM:	Red. Gel/XCD/PHPA	0.6	0	0	0				
SAMPLE - FLOWLINE		6	0	0	0				
SAMPLE - TANKS	–	20	0	0	0				
FLOWLINE TEMP.	30 °C	60	0	0	0				
STANDPIPE PRESS.	2496 kPa	100	0	0	0				
TIME SAMPLE TAKEN	4:30	Med "N"	0.56	DEPTH	m				
DEPTH	2496 m	Med "K"	2.69	TVD	2496				
DENSITY	1370 kg/m³	Low "n"	0.28	TMD	2496				
MUD GRADIENT	13.44 kPa/m	Low "k"	11.35						
FUNNEL VISCOSITY	101 s/L	RESISTIVITY	0	ohms					
600 RPM	133					WELL HISTORY			
300 RPM	90	02 04 ream 24hrs 2000-2352m's raised vis to 90 + and YP to 20 +							
200 RPM	13								
100 RPM	7								
6 RPM	32								
3 RPM	18								
PLASTIC VISCOSITY	43 mPa s								
YIELD POINT	23.5 Pa								
GEL STRENGTH 10sec	8 Pa								
GEL STRENGTH 10min	22 Pa								
pH	9.5								
FILTRATE	5.6 mL/30min								
CAKE THICKNESS	1.8 mm								
SAND CONTENT	0.0015 Vol Frac.								
SOLIDS CONTENT	0.2313 Vol Frac.								
OIL CONTENT	0 Vol Frac.								
DRILL SOLIDS	601 kg/m³								
TOTAL SOLIDS	669 kg/m³								
HGS	304 kg/m³								
LGS	297 kg/m³								
M.B.T. (Bentonite Equiv	68 kg/m³								
ALKALINTY (Pf / Mf)	0.2 0.83								
CHLORIDES	750 mg/L								
CALCIUM	20 mg/L								
POTASSIUM	n/a mg/L								
PHPA POLYMER	0.9 kg/m³								
SPURT LOSS	0.1 mL/15sec								
CARBONATES	240 CO3								
BICARBONTATES	525 HCO3								
HYDROXYL	0 OH								



RECOMMENDATIONS

* Mix now 2 sxs lignite over 1 complete circulation.
1. Maintain vis @ 90 -100 s/l with gel and visplus in a 20:1 ratio as required
2. Raise and Maintain ph at 10 to 10.5 with caustic as required.
3. Control water loss at 10 cc's or less with aquapac and lignite in a 1:1 ratio as required.
4. Raise and maintin wt. at 1450 kg/m3 w/ barite as required, mix 1 sx lignite per pallet barite mixed/or as requested by Eng.) Dump sand trap regularly/ dilution at 10-20l/min below shaker or as required

* Once csg has landed and hole is clean lower vis to 60 s/l with 2-3 sxs desco and dilution full dilution stream as required.
* W.O.C dump and clean tanks

TECHNICAL REPRESENTATIVE	Troy Godsman	Concord Drilling Fluids
PHONE (Cell)/(Satt.)	250 262 8069 / 403 987 2323	PHONE (24 HR.) (403) 234 7771

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Thank you

Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE mar 4 2004	CHECK NUMBER 42
SPUD DATE JAN 16 2004	DAYS FROM SPUD
DRILL OUT DATE JAN 25 2004	MUD UP DEPTH 2116
PRESENT ACTIVITY Logging	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy	REPORT FOR Bob Rolfes	
WELL NAME AND LOCATION North Rock et al Summit Creek B.44		PROVINCE N.W.T

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	04:00	BIT NO	16	DRILL COLLAR OD/ID mm	170/57	6.32 m	102 m/min	m		
DEPTH m	2505	SIZE mm	216.9	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	HKS20	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1380	NOZZLE 1 mm	3	DRILL PIPE OD/ID mm	102/85	421 m	50 m/min	m		
GRADIENT kPa/m	13.24	NOZZLE 2 mm	x	DRILL PIPE OD/ID mm	102/85	2078 m	50 m/min	m		
HYDROSTATIC kPa @ DEPTH	33174	NOZZLE 3 mm	17.5	DP TOOL JT TYPE						
FUNNEL VIS. s/L	91	DEPTH IN m	2242	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa s	42	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	21	RPM		LIGNITE 2			(3) Rm 2352 - 2498m DN			
GEL STRENGTH Pa 10s/10 min	8/20	BIT HYDRAULICS		GEL 20			To 2505 Wiper To 1900m			
pH	10	NOZZLE VEL m/sec	33.72				Pob To Log 6 HRS Rm			
FILTRATE cm³ 30 min 700 kPa	5.8	BIT PRESS LOSS kPa	860				Logging			
CAKE THICKNESS mm	2.0	H H P kW/cm²	.056							
ALKALINITY Pf	.02	HOURS ON BIT								
ALKALINITY Mf	.62	BIT WT daN								
CHLORIDES mg/L	750	CASING PROGRAM								
CALCIUM mg/L	TRACE	SURFACE LENGTH m	208							
SAND CONTENT VOL FRAC 0	.0015	OD/ID mm	340/318	COST SINCE LAST CHECK						
SOLIDS CONT VOL FRAC 0	.123	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	66.9	OD/ID mm	244/224	RECOMMENDATIONS:						
BARITE kg/m³	301	INTERMEDIATE LENGTH m		MAINTAIN						
LOW DENS kg/m³	290	OD/ID mm								
POLYMER kg/m³	.9	LINER LENGTH m		1) Viscosity @ 90 s/L + with gel: Visplus						
CHLORIDE TEMP °C	23	OD/ID mm		20:1 ratio						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	24	OD/ID mm		2) PH @ 10-10.5 with Caustic Soda						
BICARBONATE	708									
PUPA	.75	PUMP PERFORMANCE		3) Waterloss @ 10mLs or less Aquapac!						
		PUMP NO	1 & 2	Lignite 1:1 Ratio						
		MODEL	P29							
ANNULAR HYDRAULICS		LINER SIZE mm	140	4) Water @ 1360+ with Barite add						
"N" MED	.585	STROKE mm	229	1sx Lignite / 2 pits Barite, when mixing						
"K" MED	2.193	DISPLACEMENT PER STR m³	69.0106	Barite add 3-5 L/min water @ Hopper Discharge						
"N" LOW	.789	STROKES PER MIN	69/69	Add 10-15 L/m water @ Shaker while						
"K" LOW	9.983	OUTPUT m³/min	1.46	Circ. or Drilling (Ream)						
ANN. PRESS LOSS kPa	3832	PRESSURE kPa MPa								
E.C.D kg/m³	1605	MUD SYSTEM DATA								
"Z" DC	334	ANNULAR VOLUME m³	82.9							
"Z" DP	175.92	DRILL STRING CAPACITY m³	9.2							
Dxc. EXP		TANK VOLUME m³	45							
VG 600 RPM	126	TOTAL VOLUME m³	137							
VG 300 RPM	84	VOL. DUMPED m³								
VG 3 RPM	16	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	94							
		BOTTOMS UP min	56							

T.S.R. Barry Saulnier		PHONE 780 263 1477	
RESIDENCE	Camp	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

IN CONSIDERATION OF THE FURNISHING OF THIS REPORT AND ORAL SUGGESTIONS IT IS AGREED THAT NO RECOMMENDATIONS MADE HEREON SHALL BE CONSTRUED AS AUTHORIZING THE INFRINGEMENT OF ANY VALID PATENT AND IT IS AGREED THAT CONCORD DRILLING FLUIDS LTD SHALL NOT BE LIABLE FOR ANY DAMAGES RESULTING FROM THE FURNISHING OF THIS REPORT AND ORAL SUGGESTIONS AND IS TO BE HELD HARMLESS

Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE Mar 5 2004	CHECK NUMBER 43
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE Jan 25 2004	MUD UP DEPTH 216
PRESENT ACTIVITY Set Plug	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy	REPORT FOR: Bob Rolfes	
WELL NAME AND LOCATION NorthRock et al Summit Creek B-44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	DEVIATION	DIRECTION
TIME 24 HR.	01:30	BIT NO.	D.P	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DEPTH m	2605	SIZE mm	open	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	END	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1360	NOZZLE 1 mm		DRILL PIPE OD/ID mm	102/85	2078 m	m/min	m		
GRADIENT kPa/m	13.34	NOZZLE 2 mm		DRILL PIPE OD/ID mm	102/65	421 m	m/min	m		
HYDROSTATIC kPa @ DEPTH	33420	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	95	DEPTH IN m		HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	42	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	18	R.P.M.					Log Hole Rih w/ open End Pipe Circ & Cond Rig up Cmt'r Pump & Set Plug Approx 55m POH			
GEL STRENGTH Pa 10s/10 min	8/17	BIT HYDRAULICS								
pH	9.5	NOZZLE VEL m/sec								
FILTRATE cm³ 30 min 700 kPa	6.2	BIT PRESS LOSS kPa								
CAKE THICKNESS mm	1.5	H.H.P. kW/cm²								
ALKALINITY Pf	.05	HOURS ON BIT								
ALKALINITY Mf	1.3	BIT WT. daN								
CHLORIDES mg/L	660	CASING PROGRAM								
CALCIUM mg/L	Trace	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. 0	.0015	OD/ID mm	346/318	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.24	INTERMEDIATE LENGTH m	2610	TOTAL COST TO DATE						
BENTONITE kg/m³	166.9	OD/ID mm	244/224	RECOMMENDATIONS:						
BARITE kg/m³	307	INTERMEDIATE LENGTH m								
LOW DENS. kg/m³	291	OD/ID mm		Maintain for Csg & polish plug						
POLYMER kg/m³	.75	LINER LENGTH m								
FLOWLINE TEMP °C	27	OD/ID mm		1) Viscosity @ 90 s/L with Gel : Visplus 20:1 Ratio ! Lower Viscosity with 4 Sx Fresco & 40-50 Litre Water Prior To Cementing Csg.						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	36	OD/ID mm		2) PH @ 10-10.5 with Caustic Soda & Lime						
BICARBONATE	817									
		PUMP PERFORMANCE								
		PUMP NO.	1 & 2	3) Waterloss No Further Additions At This Time						
		MODEL	P29							
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.		STROKE mm	229							
"K" MED.		DISPLACEMENT PER STR m³	.0106							
"N" LOW		STROKES PER MIN.		4) Weight @ 1360 kg/m³ with Barite Add 15x Lignite / 2 pits Barite As Needed						
"K" LOW		OUTPUT m³/min								
ANN. PRESS. LOSS kPa		PRESSURE ☐ kPa ☐ MPa								
E.C.D. kg/m³		MUD SYSTEM DATA								
"Z" DC		ANNULAR VOLUME m³								
"Z" DP		DRILL STRING CAPACITY m³								
Dxc. EXP		TANK VOLUME m³								
VG 600 RPM	120	TOTAL VOLUME m³								
VG 300 RPM	78	VOL. DUMPED m³								
VG 3 RPM	12	DILUTION RATE L/min								
		CIRCULATION TIME MINS.								
		BOT. TOMS UP min.								

T.S.R.	Barry Saulnier	PHONE	
RESIDENCE	Camp	MOBILE	
WAREHOUSE		PHONE	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE mar 6 2004	CHECK NUMBER 43
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE Jan 25 2004	MUD UP DEPTH 216
PRESENT ACTIVITY Circ & cond Trip To Run Csg	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kelly Army	REPORT FOR: Bob Boles	
WELL NAME AND LOCATION North Rock et al Summit Creek B-44		PROVINCE N.W.T

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	01:30	BIT NO.	RR	DRILL COLLAR OD/ID mm	170 / 57	6.32 m	102 m/min	m		
DEPTH m	2450	SIZE mm	216	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	9TC5180	DRILL COLLAR OD/ID mm	114 / 65	42.1 m	50 m/min	m		
DENSITY kg/m³	1375	NOZZLE 1 mm	3	DRILL PIPE OD/ID mm	102 / 85	2023 m	46 m/min	m		
GRADIENT kPa/m	13.48	NOZZLE 2 mm	X	DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	33047	NOZZLE 3 mm	20	DP TOOL JT. TYPE						
FUNNEL VIS. s/L	92	DEPTH IN m	2505	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	37	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS (Dump 10m³ content)			
YIELD POINT Pa	21	R.P.M.					Cont out of Hole m/up			
GEL STRENGTH Pa 10s/10 min	9/19	BIT HYDRAULICS				2	Bit RIH To 2024m Wash			
pH	10.5	NOZZLE VEL m/sec					& Rm ON 2450m Circ &			
FILTRATE cm³ 30 min 700 kPa	5.8	BIT PRESS LOSS kPa					Cond. Inc Wiper Trip			
CAKE THICKNESS mm	1.5	H.H.P. kW/cm²					2035m. RIH Circ & cond.			
ALKALINITY Pf	.36	HOURS ON BIT					Pol To Run Csg.			
ALKALINITY Mf	1.7	BIT WT. daN					Rm			
CHLORIDES mg/L	1650	CASING PROGRAM								
CALCIUM mg/L	40	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. 0	.015	OD/ID mm	340/346	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.25	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE			BIT #1 @ 2042-2505m 55 HRS.			
BENTONITE kg/m³	66	OD/ID mm	244/224	RECOMMENDATIONS:						
BARITE kg/m³	337	INTERMEDIATE LENGTH m								
LOW DENS. kg/m³	302	OD/ID mm								
POLYMER kg/m³	.5	LINER LENGTH m		Prior To Cementing						
FLOWLINE TEMP °C	29	OD/ID mm								
HYDROXYL	7	PRODUCTION LENGTH m		Lower Viscosity To 60 s/L or less						
CARBONATE	408	OD/ID mm		With 4 sacks Desco, also 20-40 Lpm						
BICARBONATE	0			Water						
Pulp	.5	PUMP PERFORMANCE								
		PUMP NO.	1 & 2	Dump & Clean Tanks						
		MODEL	R-9							
ANNULAR HYDRAULICS		LINER SIZE mm	140	Fill With Water To Drill Out (40-45m³)						
"N" MED.	.554	STROKE mm	229	After Drilling Out:						
"K" MED.	2.498	DISPLACEMENT PER STR m³	.0106	Mix 1) Visplus & Aquapac To Vis.						
"N" LOW	.446	STROKES PER MIN.	140	@ 33-35						
"K" LOW	4.351	OUTPUT m³/min	1.41							
ANN. PRESS. LOSS kPa	3070	PRESSURE ☐ kPa ☐ MPa	14600	Visplus 1/2 Hour Per Sack						
E.C.D. kg/m³	1502	MUD SYSTEM DATA								
"Z" DC	189.44	ANNULAR VOLUME m³	82	Aquapac 1/2 Hour Per Sack						
"Z" DP	178.05	DRILL STRING CAPACITY m³	9	Mix Effectively So Not To Blind						
Dxc. EXP		TANK VOLUME m³	33	Shaker Screens						
VG 600 RPM	116	TOTAL VOLUME m³	124							
VG 300 RPM	79	VOL. DUMPED m³		pH @ 10-10.5 With Caustic						
VG 3 RPM	9	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	88							
		BOTTOMS UP min.	58							

T.S.R.	Barry Sawwier	PHONE 250 763 1477	
RESIDENCE	Camp	MOBILE	
WAREHOUSE	Concord Drlg Fluids	PHONE 403 2347771	
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAY'S DATE	Mar 7 2004	CHECK NUMBER	44
SPUD DATE	JAN 16 2004	DAYS FROM SPUD	
DRILL OUT DATE	JAN 25 2004	MUD UP DEPTH	216
PRESENT ACTIVITY	SET & CMT 177mm CSG		

OPERATOR	NORTH ROCK	CONTRACTOR	AKITA RIG NO. 40
REPORT FOR:	KEVIN AMY / DONALD CUNNINGHAM	REPORT FOR:	BOB RALPH
WELL NAME AND LOCATION	NORTHROCK et al SUMMIT CREEK B-44	PROVINCE	NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	DEVIATION	DIRECTION
TIME /24 HR.	14:00	BIT NO.	CSG	DRILL COLLAR OD/ID mm	OSING 177	m	60 m/min	m		
DEPTH m CSG	2450	SIZE mm	177	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE		DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1380	NOZZLE 1 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
GRADIENT kPa/m	13.53	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	33167	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	67	DEPTH IN m		HOLE VOLUME WITH DRILL PIPE IN HOLE		m³				
PLASTIC VIS η mPa s	33	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	13	R.P.M.		(5)		(6)	RIH W 177mm CSG BHA,			
GEL STRENGTH Pa 10s/10 mn	6/14	BIT HYDRAULICS		CAUS 1	BAR 338		CIRC, LOWER YP CIRC.			
pH	10	NOZZLE VEL m/sec		DESCO 2	GEL 25		& COND. RIG UP CMTR			
FILTRATE cm³ 30 min 700 kPa	6.9	BIT PRESS LOSS kPa		LIME 1	VISPLUS 1		PUMP CMT. DROP PLUG			
CAKE THICKNESS mm	2.0	H.H.P. kW/cm²		GEL 30	DESCO 2		& DISPL. WOC.			
ALKALINITY Pf	.78	HOURS ON BIT		VISPLUS 1	LIG 2					
ALKALINITY Mf	.16	BIT WT. daN		BAR 84			CSG SET @ 2450m 177mm			
CHLORIDES mg/L	620	CASING PROGRAM		BICARB 4	(7)					
CALCIUM mg/L	40	SURFACE LENGTH m	208		DESCO 3					
SAND CONTENT VOL. FRAC. %	.015	OD/ID mm	340/324	COST SINCE LAST CHECK	SAPP 2					
SOLIDS CONT VOL. FRAC. %	.125	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	60	OD/ID mm	244/224	RECOMMENDATIONS:						
BARITE kg/m³	321	INTERMEDIATE LENGTH m	2450							
LOW DENS. kg/m³	298	OD/ID mm	177/161	DUMP & CLEAN TANKS						
POLYMER kg/m³	TRACE	LINER LENGTH m								
FLOWLINE TEMP °C	28	OD/ID mm		FILL TANKS WITH 40-45m³ OF WATER						
HYDROXYL	0	PRODUCTION LENGTH m		DRILL OUT WITH WATER.						
CARBONATE	336	OD/ID mm								
BICARBONATE	49			MUD UP:						
		PUMP PERFORMANCE								
		PUMP NO.	1 & 2	MIX 1> VISPLUS 8SX6 @ ½ HOUR/SX						
		MODEL	PZ 9							
ANNULAR HYDRAULICS		LINER SIZE mm	140	2> AQUAPAC 7SXS @ ¾ HOUR/SX						
"N" MED.	.641	STROKE mm	229							
"K" MED.	1.087	DISPLACEMENT PER STR m³	.0106	3> CAUSTIC TO PHP 10-10.5						
"N" LOW	.451	STROKES PER MIN.	80							
"K" LOW	2.877	OUTPUT m³/min	.80	MAINTAIN						
ANN. PRESS. LOSS kPa	9951.5	PRESSURE ☐ kPa ☐ MPa	2400							
E.C.D. kg/m³	1795	MUD SYSTEM DATA		1> VISCOSITY @ 34-36 S/L WITH VISPLUS						
"Z" DC	278	ANNULAR VOLUME m³	32	MIX SLOWLY @ 1 HOUR/SX						
"Z" DP		DRILL STRING CAPACITY m³	50							
Dxc. EXP		TANK VOLUME m³	33	2> WATERLOSS @ 5mls WITH AQUAPAC						
VG 600 RPM	92	TOTAL VOLUME m³	115							
VG 300 RPM	59	VOL. DUMPED m³		3> PHP 10-10.5 WITH CAUSTIC						
VG 3 RPM	6	DILUTION RATE L/min								
		CIRCULATION TIME MINS.		4> WEIGHT @ AS LOW AS POSSIBLE WITH						
		BOTTOMS UP min.	40.	CENTRIFUGES & DILUTION 10 Lpm.						

T.S.R.	BARRY SAULNIER	PHONE	CAMP
RESIDENCE		MOBILE	
WAREHOUSE	CONCORDE DRLG FLUIDS	PHONE	403 2347771
TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAYS DATE Mar 9 2004	CHECK NUMBER 45
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE Jan 25 2004	MUD UP DEPTH 216
PRESENT ACTIVITY TIME DRILL KICK OFF	

OPERATOR NORTH ROCK	CONTRACTOR AKITA	RIG NO. 40
REPORT FOR: KEVIN AMY / DARRYL CUNNINGHAM	REPORT FOR: BOB ROGERS	
WELL NAME AND LOCATION NORTHROCK et al SUMMIT CREEK B-44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	01:30	BIT NO.	12	DRILL COLLAR OD/ID mm	114/65	421 m	94 m/min	m		
DEPTH m	2563	SIZE mm	155.6	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	DU11ST	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1010	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	102/85	2044 m	78 m/min	m		
GRADIENT kPa/m	9.9	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	24,423	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	34	DEPTH IN m	2464	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	5	DRILL RATE m/h	12	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	3	R.P.M.	MOTOR				M/UP BIT #11 RIH DRILL OUT PUSH			
GEL STRENGTH Pa 10s/10 min	1/2	BIT HYDRAULICS					CMT TO 2464 KOP TIME			
pH	11	NOZZLE VEL m/sec	14				DRILL			
FILTRATE cm³ 30 min 700 kPa	14	BIT PRESS LOSS kPa	109							
CAKE THICKNESS mm	.05	H.H.P. kW/cm²	.009				LEAK OFF TEST			
ALKALINITY Pf	1.29	HOURS ON BIT								
ALKALINITY Mf	1.4	DIT WT. dpN	5-8				MIX PRODUCT TO RAISE			
CHLORIDES mg/L	380	CASING PROGRAM					VISCOSITY			
CALCIUM mg/L	80	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	TR	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.01	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	0	OD/ID mm	244/224	RECOMMENDATIONS:						
BARITE kg/m³	0	INTERMEDIATE LENGTH m	2460							
LOW DENS. kg/m³	6.3	OD/ID mm	177/161	MAINTAIN						
POLYMER kg/m³		LINER LENGTH m								
FLOWLINE TEMP °C	23	OD/ID mm		1) VISCOSITY @ 33-36 S/L WITH VISPLUS						
HYDROXYL	401	PRODUCTION LENGTH m		1SX / 1HOUR OR AS THE SHAKERS WILL						
CARBONATE	132	OD/ID mm		HANDLE						
BICARBONATE	0									
		PUMP PERFORMANCE		2) PH @ 10-10.5 WITH CAUSTIC SODA						
		PUMP NO.	1&2							
		MODEL	PZ9	3) WATERLOSS @ 6ML'S WITH AQUAPAC						
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.	1540	STROKE mm	229	4) WEIGHT @ AS LOW AS POSSIBLE WITH						
"K" MED.	.379	DISPLACEMENT PER STR m³	.01066	CENTRIFUGES. DILUTE WITH WATER AS						
"N" LOW	.316	STROKES PER MIN.	96	REQUIRED						
"K" LOW	1.184	OUTPUT m³/min	.916							
ANN. PRESS. LOSS kPa	1625	PRESSURE ☐kPa ☐MPa	5690	5) VOLUME @ 40m³ WHEN ADDING						
E.C.D. kg/m³	1072	MUD SYSTEM DATA		WATER MAINTAIN 3 kg/m³ VISPLUS						
"Z" DC	1667.26	ANNULAR VOLUME m³	29							
"Z" DP	1443.73	DRILL STRING CAPACITY m³	13	CONTINUE TO LOWER WATERLOSS WITH						
Dxc. EXP		TANK VOLUME m³	31	AQUAPAC.						
VG 600 RPM	16	TOTAL VOLUME m³	373							
VG 300 RPM	11	VOL. DUMPED m³		Thanks						
VG 3 RPM	2	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	76							
		BOTTOMS UP min.	31							

T.S.R. Barry Sauvier		PHONE Camp	
RESIDENCE		MOBILE	
WAREHOUSE CONCORD DRLG FLUIDS		PHONE 403 2347771	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE mar 10 2004	CHECK NUMBER 96
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE mar 8 / Jan 25	MUD UP DEPTH 216
PRESENT ACTIVITY Time Drill	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy / Darrell Cunningham	REPORT FOR: Bob Rolfes	
WELL NAME AND LOCATION North Rock et al Summit Creek B-44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	04:30	BIT NO.	13 RR	DRILL COLLAR OD/ID m/m	114 / 65	421 m	88 m/min	m		
DEPTH m	2472	SIZE mm	15½	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STX20	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1010	NOZZLE 1 mm	open	DRILL PIPE OD/ID mm	102 / 85	2051 m	73 m/min	m		
GRADIENT kPa/m	9.9	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	24492	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	34	DEPTH IN m	2469	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	4	DRILL RATE m/h	2.0	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	2	R.P.M.	90	(9)			(8) Time Drill 2464 - 2469 m			
GEL STRENGTH Pa 10s/10 mn	1/2	BIT HYDRAULICS		Aqua 8			13.5 Hrs. Poh m/up New			
pH	11	NOZZLE VEL m/sec	13.15	Visplus 8			mwd & Bit #13RR RIH			
FILTRATE cm³ 30 min 700 kPa	16	BIT PRESS LOSS kPa	96	Bar 15			2m Fill Time Drill Ahead			
CAKE THICKNESS mm	.05	H.H.P. kW/cm²	.008							
ALKALINITY Pf	.9	HOURS ON BIT								
ALKALINITY Mf	1.2	BIT WT. daN	10							
CHLORIDES mg/L	300	CASING PROGRAM								
CALCIUM mg/L	120	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	TRACE	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.02	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	2450	Maintain						
LOW DENS. kg/m³	6.3	OD/ID mm	177/161							
POLYMER kg/m³		LINER LENGTH m		1) Viscosity @ 33-36 s/L with Visplus						
FLOWLINE TEMP °C	26	OD/ID mm		Stock over 2-3 Hours or as shakers						
HYDROXYL	204	PRODUCTION LENGTH m		can Handle						
CARBONATE	360	OD/ID mm								
BICARBONATE	0			2) PH @ 10-10.5 with Caustic Soda						
		PUMP PERFORMANCE								
		PUMP NO.	1 & 2	3) Waterloss @ 10 mls or less with						
		MODEL	PZ 9	Aqua pac						
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.	.585	STROKE mm	229	4) Weight @ as low as possible with						
"K" MED.	.209	DISPLACEMENT PER STR m³	.0106	centrifuges. Dilute with water as						
"N" LOW	.212	STROKES PER MIN.	90	required						
"K" LOW	1.416	OUTPUT m³/min	.9							
ANN. PRESS. LOSS kPa		PRESSURE ☐ kPa ☐ MPa	6200	To-Day mix (24) Hrs ~~mix~~ add 2 sx						
E.C.D. kg/m³		MUD SYSTEM DATA		Visplus / 12 Hrs.						
"Z" DC	2142	ANNULAR VOLUME m³	34							
"Z" DP	1889	DRILL STRING CAPACITY m³	15							
Dxc. EXP		TANK VOLUME m³	42							
VG 600 RPM	18.12	TOTAL VOLUME m³	91							
VG 300 RPM	8	VOL. DUMPED m³		Hobbs						
VG 3 RPM	2	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	101							
		BOTTOMS UP min.	37							

T.S.R. Barry Saulnier		PHONE Camp	
RESIDENCE		MOBILE	
WAREHOUSE Concord Drg Fluids		PHONE 403 234 7771	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAYS DATE Mar 11 2004	CHECK NUMBER 47
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE Mar 8 / Jan 25	MUD UP DEPTH 216
PRESENT ACTIVITY Drilling	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy	REPORT FOR: Alvin Lost	
WELL NAME AND LOCATION North Rock et al Summit Creek B.44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME IN HR.	03:00	BIT NO.	13RR	DRILL COLLAR OD/ID mm	114/65	421 m	88 m/min	m		
DEPTH m	2579	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STC 20	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1020	NOZZLE 1 mm	open	DRILL PIPE OD/ID mm	102/85	2158 m	73 m/min	m		
GRADIENT kPa/m	10.0	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	25805	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	41	DEPTH IN m	2469	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa·s	9	DRILL RATE m/h	B-9	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	8.5	R.P.M.	50/90	Aqua 4			Drill 2469-2659m 22 Hrs.			
GEL STRENGTH Pa 10s/10 mn	1.5/3	BIT HYDRAULICS		Soda 2			Time Drill 3.5 Hrs			
pH	11	NOZZLE VEL m/sec	13.15	Visplus 3						
FILTRATE cm³ 30 min 700 kPa	11.8	BIT PRESS LOSS kPa	97.7	Sapp 4			Drill 156 mm Hole Ahead			
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.008							
ALKALINITY Pf	.62	HOURS ON BIT								
ALKALINITY Mf	1.0	BIT WT. daN	11-15							
CHLORIDES mg/L	280	CASING PROGRAM								
CALCIUM mg/L	40	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	.005	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.025	INTERMEDIATE LENGTH m	244/226	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	2450	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	177/161	Maintain						
LOW DENS. kg/m³	12.69	OD/ID mm								
POLYMER kg/m³	1.8	LINER LENGTH m		1) Viscosity @ 35-40 s/L with Visplus To Raise, Lignite To Lower 1-2 kg						
FLOWLINE TEMP °C	29	OD/ID mm								
HYDROXYL	82	PRODUCTION LENGTH m								
CARBONATE	456	OD/ID mm		2) PH @ 10-10.5 with Caustic Soda						
BICARBONATE	0									
		PUMP PERFORMANCE		3) Waterloss @ 10 or less with Aqua Pac						
		PUMP NO.	1 & 2							
		MODEL	PZ9	4) Weight as low as possible with						
ANNULAR HYDRAULICS		LINER SIZE mm	140	centrifuges. Dilute with water as						
"N" MED.	.429	STROKE mm	229	required						
"K" MED.	1.796	DISPLACEMENT PER STR m³	.0106							
"N" LOW	.481	STROKES PER MIN.	90	5) Maintain 40-45 m³ mud in tanks						
"K" LOW	1.368	OUTPUT m³/min	.9							
ANN. PRESS. LOSS kPa	4298	PRESSURE ☐ kPa ☐ MPa	7300							
E.C.D. kg/m³	1189	MUD SYSTEM DATA								
"Z" DC	624.74	ANNULAR VOLUME m³	30.57							
"Z" DP	546.76	DRILL STRING CAPACITY m³	13.64							
Dxc. EXP		TANK VOLUME m³	43							
VG 600 RPM	35	TOTAL VOLUME m³	87.22	Thanks						
VG 300 RPM	26	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	96							
		BOTTOMS UP min.	34							

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TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE mar 12 2004	CHECK NUMBER 48
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE mar 8 / 2004 26	MUD UP DEPTH 216
PRESENT ACTIVITY TIH	

OPERATOR NorthRock	CONTRACTOR AKITA	RIG NO. 40
REPORT FOR: Kevin Arly	REPORT FOR: Allin Vogt	
WELL NAME AND LOCATION North Rock et al Summit Creek B:44		PROVINCE N.W.T

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME IN HR.	02:00	BIT NO.	14	DRILL COLLAR OD/ID mm	114/65	421 m	88 m/min	m		
DEPTH m	2670	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	ST 40	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1020	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	102/85	2249 m	73 m/min	m		
GRADIENT kPa/m	10.0	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	26716	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	42	DEPTH IN m	2670	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa.s	8	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	6	R.P.M.		Aqua 4			(1) Drill 2559-2670m 19.5 Hr.			
GEL STRENGTH Pa 10s/10 min	2/3	BIT HYDRAULICS		Visplus 2			Bit #13 41.5 Hr 201m			
pH	10.5	NOZZLE VEL m/sec	13.15	Def 3			4.8m/Hr Ave.			
FILTRATE cm³ 30 min 700 kPa	11.1	BIT PRESS LOSS kPa	97.7	Lig 2						
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.008				Drill 156mm Hole - 2670m			
ALKALINITY Pf	.24	HOURS ON BIT					Poh For Bit			
ALKALINITY Mf	.62	BIT WT. daN								
CHLORIDES mg/L	280	CASING PROGRAM								
CALCIUM mg/L	Trace	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. 0	.005	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.025	INTERMEDIATE LENGTH m	816	TOTAL COST TO DATE						
BENTONITE kg/m³	—	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	—	INTERMEDIATE LENGTH m	1450	Maintain						
LOW DENS. kg/m³	12.169	OD/ID mm	177/161							
POLYMER kg/m³	1.4	LINER LENGTH m		1) Viscosity @ 40-42 s/L with Visplus						
FLOWLINE TEMP °C		OD/ID mm		Lignite To Lower.						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	288	OD/ID mm		2) PH @ 10-10.5 with Caustic Soda						
BICARBONATE	171									
		PUMP PERFORMANCE		3) Waterloss @ 10 or less with Aqua Pac						
		PUMP NO.	1 & 2	To lower Below 5mls mix 20 kg/m³ gel						
		MODEL	PZ9	To system (45 sx) also mix 2 sx Lignite						
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.	.486	STROKE mm	229	4) Weight as low as possible with						
"K" MED.	.971	DISPLACEMENT PER STR m³	.0106	centrifuges, Dilute with water as						
"N" LOW	.386	STROKES PER MIN.	90	Required						
"K" LOW	1.851	OUTPUT m³/min	.19							
ANN. PRESS. LOSS kPa	3161	PRESSURE ☐kPa ☐MPa	7250	For Seepage mix Cal Carb 325 & Fine @						
E.C.D. kg/m³	1140	MUD SYSTEM DATA		1:1 Ratio as required						
"Z" DC	827.48	ANNULAR VOLUME m³	31.68							
"Z" DP	700.52	DRILL STRING CAPACITY m³	14.16	For Lost Circ. mix in 10m³ mud Vis						
Dec. EXP		TANK VOLUME m³	40	@ 120 s/L with gel (approx 20 sks) & Cal Carb						
VG 600 RPM	28	TOTAL VOLUME m³	85.8	325 Fine 1:1 Ratio with 10-15 sacks sawdust						
VG 300 RPM	20	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min		If needed use mud from Sump						
		CIRCULATION TIME MINS.	95							
		BOTTOMS UP min.	35							

Thanks

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FIELD SERVICE REPORT

TODAY'S DATE mar. 13 2004	CHECK NUMBER 49
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE mar 8 / Jan 25	MUD UP DEPTH 216
PRESENT ACTIVITY Drilling	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy	REPORT FOR: Alvin Vogt	
WELL NAME AND LOCATION North Rock etal Summit Creek B.44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	04:00	BIT NO	14	DRILL COLLAR OD/ID mm	114 / 65	421 m	88 m/min	m		
DEPTH m	2731	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	ST-40	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1030	NOZZLE 1 mm	open	DRILL PIPE OD/ID mm	102 / 85	2310 m	73 m/min	m		
GRADIENT kPa/m	10.10	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	27,594	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s	36.	DEPTH IN m	2670	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS mPa.s	7	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	5	R.P.M.	50 / 100	Bar 20			12 Drill 2670-2725 11.25 hrs.			
GEL STRENGTH Pa 10s/10 min	2/3	BIT HYDRAULICS								
pH	10.3	NOZZLE VEL m/sec	13.15				Rig up New Bit #14 & Jars			
FILTRATE cm³ 30 min 700 kPa	10	BIT PRESS LOSS kPa	98.7				D/A			
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.008				Drag 15 up 7 on			
ALKALINITY Pf	.12	HOURS ON BIT								
ALKALINITY Mf	.28	BIT WT. daN	10-12							
CHLORIDES mg/L	200	CASING PROGRAM								
CALCIUM mg/L	160	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	TRACE	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.025	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	2450	Maintain						
LOW DENS. kg/m³	19	OD/ID mm	177/161							
POLYMER kg/m³	1.4	LINER LENGTH m		1) Viscosity @ 40-42 s/L with Jispens						
FLOWLINE TEMP °C	28	OD/ID mm		Lignite to lower						
HYDROXYL	0	PRODUCTION LENGTH m								
CARBONATE	144	OD/ID mm		2) Waterloss @ 10 or less with Aquapac						
BICARBONATE	24			to lower w/L Below 5 mLs. Mix (3 sx Soda Ash)						
		PUMP PERFORMANCE		20 kg/m³ gel Approx 45 sx & 2 sx Lignite						
		PUMP NO.	1							
		MODEL	P-9	3) PH @ 10-10.5 with Caustic						
ANNULAR HYDRAULICS		LINER SIZE mm	149							
"n" MED.	.497	STROKE mm	229	4) Weight @ 1030 kg/m³ or less with						
"K" MED.	.765	DISPLACEMENT PER STR m³	.0106	centrifuges. Dilute with water as						
"n" LOW	.338	STROKES PER MIN.	90	needed						
"K" LOW	1.727	OUTPUT m³/min	.9							
ANN. PRESS. LOSS kPa	2762.	PRESSURE ☐ kPa ☐ MPa	8750	For seepage mix Cal Carb 325 & Fine @						
E.C.D. kg/m³	1133	MUD SYSTEM DATA		1:1 ratio as needed						
"Z" DC	987.7	ANNULAR VOLUME m³	32.4							
"Z" DP	840.3	DRILL STRING CAPACITY m³	14.5	For Lost Circ. mix 10 m³ pill. ½ sx Soda Ash						
Dec. EXP		TANK VOLUME m³	48	& gel to Vis 120 s/L. Add Cal Carb 10 sxs						
VG 600 RPM	24	TOTAL VOLUME m³	94.9	325 & 20 sxs Fine. 10-15 sacks Sawdust						
VG 300 RPM	17	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	105							
		BOTTOMS UP min.	36							

Thanks

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FIELD SERVICE REPORT

TODAY'S DATE MAR 14 2004	CHECK NUMBER 50
SPUD DATE JAN 16 2004	DAYS FROM SPUD
DRILL OUT DATE MAR 8 / JAN 25	MUD UP DEPTH 216
PRESENT ACTIVITY DRILLING	

OPERATOR NORTH ROCK	CONTRACTOR AKITA	RIG NO. 40
REPORT FOR: KEVIN AMY	REPORT FOR: ALWIN VOGT	
WELL NAME AND LOCATION NORTH ROCK et al SUMMIT CREEK B144		PROVINCE N.B.T.

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR	04:00	BIT NO.	15	DRILL COLLAR OD/ID mm	114/65	421 m	88 m/min	m		
DEPTH m	2755	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STR R20	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1030	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	102/85	2334 m	73 m/min	m		
GRADIENT kPa/m	10.10	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	27837	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	36	DEPTH IN m	2740	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	7	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	4	R.P.M.	50/100	LIG 1			(13) DRLG. 2725 - 2740 m 9.75			
GEL STRENGTH Pa 10s/10 min	2/2	BIT HYDRAULICS		CAUS 1			TOTAL #14 BIT 70m 21.75 HRS			
pH	10.5	NOZZLE VEL m/sec	13.15	BAR 20			13 HOURS DRLG ON 13TH			
FILTRATE cm³ 30 min 700 kPa	9.5	BIT PRESS LOSS kPa	98.7	PAC L						
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.008	USPUS 1			POH m/up BIT #15 RIH			
ALKALINITY Pf	.1	HOURS ON BIT					DRLG AHEAD.			
ALKALINITY Mf	.18	BIT WT. daN	10-13				CIRC 2700-2740 ON			
CHLORIDES mg/L	200	CASING PROGRAM								
CALCIUM mg/L	120	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. 0	TRACE	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.025	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	2450	MAINTAIN						
LOW DENS. kg/m³	19.0	OD/ID mm	177/161							
POLYMER kg/m³	1.0	LINER LENGTH m		1) VISCOSITY @ 40-42 S/L WITH USPUS LIGNITE TO LOWER						
FLOWLINE TEMP °C	27	OD/ID mm								
HYDROXYL	7	PRODUCTION LENGTH m								
CARBONATE	90	OD/ID mm		2) PH @ 10-10.5 WITH CAUSTIC SODA						
BICARBONATE	0									
		PUMP PERFORMANCE		3) WATERLOSS @ 10 OR LESS WITH AQUAPAC TO LOWER W/L BELOW 5 mLS MIX (2 SX SODA ASH) 20 KG/m³ GEL. 45 SX APPROX & 2 LIGNITE						
		PUMP NO.	1							
		MODEL	P29							
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.	.552	STROKE mm	229	4) WEIGHT @ 1080 KG/m³ OR LESS WITH CENTRIFUGES. DILUTE AS NEEDED						
"K" MED.	.479	DISPLACEMENT PER STR m³	.0106							
"N" LOW	.401	STROKES PER MIN.	90							
"K" LOW	1.04	OUTPUT m³/min	.9	FOR SEEPAGE MIX CAL-CARB. 325 & FINE @ 1:1 RATIO AS NEEDED						
ANN. PRESS. LOSS kPa	2345	PRESSURE ☐kPa ☐MPa	7300							
E.C.D. kg/m³	1116	MUD SYSTEM DATA								
"Z" DC	1146.85	ANNULAR VOLUME m³	33	FOR LOST CIRC. MIX 10m³ PILL. ½ SX SODA ASH & GEL TO VIS. 120 S/L. ADD CAL-CARB. 10 SX 325 & 20 SXS FINE 10-15 SX SAWDUST						
"Z" DP	992	DRILL STRING CAPACITY m³	14.6							
Dxc. EXP		TANK VOLUME m³	38							
VG 600 RPM	22	TOTAL VOLUME m³	85.6							
VG 300 RPM	15	VOL. DUMPED m³								
VG 3 RPM	2	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	95	Thanks						
		BOTTOMS UP min.	36							

T.S.R. BARRY SAULNIER		PHONE Camp	
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TRUCKER		PHONE	

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FIELD SERVICE REPORT

TODAY'S DATE mar 15 2004	CHECK NUMBER 51
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE mar 8 / Jan 25	MUD UP DEPTH 216
PRESENT ACTIVITY Trip For Bit	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO 40
REPORT FOR: Kevin Amy	REPORT FOR: Alvin Yost	
WELL NAME AND LOCATION North Rock et al Summit Creek B.44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	01:00	BIT NO.	15	DRILL COLLAR OD/ID mm	171 / 64	57.2 m	117 m/min	m		
DEPTH m	2828	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STK R20	DRILL COLLAR OD/ID mm	114 / 65	421 m	88 m/min	m		
DENSITY kg/m³	1030	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	102 / 85	2350 m	93 m/min	m		
GRADIENT kPa/m	10.10	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	28574	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. sec.	37	DEPTH IN m	2740	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³				
PLASTIC VIS. mPa.s	7	DRILL RATE m/h	3.99	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	4	R.P.M.	50/100	PAC L			Drill 2740 - 2828 22.5			
GEL STRENGTH Pa 10s/10 min	2/3	BIT HYDRAULICS		Vispus 4			Total Hrs. 24.5 on Bit # 15			
pH	10.5	NOZZLE VEL m/sec	13.15	Cal 20			88m 3.59 m/hr.			
FILTRATE cm³ 30 min 700 kPa	9.1	BIT PRESS LOSS kPa	98.7	Caus 1						
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.058				Drill 156 mm Hole To 2828			
ALKALINITY Pf	.12	HOURS ON BIT	24.5				circ up samples poh for Bit			
ALKALINITY Mf	.23	BIT WT. daN	14							
CHLORIDES mg/L	200	CASING PROGRAM								
CALCIUM mg/L	120	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. 0	Trace	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.025	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	2450	Maintain						
LOW DENS. kg/m³	19	OD/ID mm	171/161							
POLYMER kg/m³	1.2	LINER LENGTH m		1) Viscosity @ 40 s/L with Vispus						
FLOWLINE TEMP °C		OD/ID mm								
HYDROXYL	0	PRODUCTION LENGTH m		2) Waterloss @ 10 with Aqua pac						
CARBONATE	120	OD/ID mm		To Lower w/L Below 8 mls mix 2 sk Soda Ash						
BICARBONATE	37			20 kg/m³ gel 45 sk & 2 sk Lignite						
		PUMP PERFORMANCE								
		PUMP NO.	1	3) PH @ 10-10.5 with Caustic						
		MODEL	P29							
ANNULAR HYDRAULICS		LINER SIZE n.m	140	4) Weight @ 1030 kg/m³ or less with						
"N" MED.	.552	STROKE mm	229	centrifuges, Dilution 5 Lpm as needed						
"K" MED.	.479	DISPLACEMENT PER STR m³	.0106							
"N" LOW	.285	STROKES PER MIN.	90	For Seepage: mix Calcarb 325 & Fine @						
"K" LOW	1.883	OUTPUT m³/min	.9	1:1 Ratio as needed						
ANN. PRESS. LOSS kPa	2493	PRESSURE ☐ kPa ☐ MPa	7400							
E.C.D. kg/m³	1119	MUD SYSTEM DATA		For Lost Circ. Mix 10m³ pill ½ sk Soda Ash						
"Z" DC	1146.86	ANNULAR VOLUME m³	33.3	& gel To Vis @ 120+ s/L Add Cal Carb.						
"Z" DP	997.91	DRILL STRING CAPACITY m³	14.9	10 sk 325 & 20 sk Fine, 10-15 sk Sawdust						
Dec. EXP		TANK VOLUME m³	40							
VG 600 RPM	22	TOTAL VOLUME m³	88.2							
VG 300 RPM	15	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	98							
		BOTTOMS UP min.	37							

Thanks

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TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE MAR 16 2004	CHECK NUMBER 62
SPUD DATE JAN 16 2004	DAYS FROM SPUD
DRILL OUT DATE MAR 8 / JAN 25	MUD UP DEPTH 216
PRESENT ACTIVITY DRILLING	

OPERATOR	NORTH ROCK	CONTRACTOR	AKITA RIG NO. 40
REPORT FOR:	KEVIN AMY	REPORT FOR:	DEVIN VOGT
WELL NAME AND LOCATION	NORTH ROCK et al SUMMIT CREEK B-44		PROVINCE NWT

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME (24 HR)	01:00	BIT NO.	16	DRILL COLLAR OD/ID mm	114 / 65	421 m	88 m/min	m		
DEPTH m	2900	SIZE mm	156	DRILL COLLAR OD/ID mm	121 / 61	39 m	117 m/min	m		
T.V. DEPTH		TYPE	STC 30	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1030	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	/	m	m/min	m		
GRADIENT kPa/m	10.10	NOZZLE 2 mm		DRILL PIPE OD/ID mm	102/85	2440 m	73 m/min	m		
HYDROSTATIC kPa @ DEPTH	29302	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	36	DEPTH IN m	2828	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	6	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	4	R.P.M.	50/100	VISPLUS 3			DRILL 2828-2897 12.5			
GEL STRENGTH Pa 10s/10 min	2/2	BIT HYDRAULICS		CAUS 1			RM 1.5 HRS			
pH	10	NOZZLE VEL m/sec	13.15	LIG 1						
FILTRATE cm³ 30 min 700 kPa	9.2	BIT PRESS LOSS kPa		CALCARB 20			RIH WITH BIT #16			
CAKE THICKNESS mm	.75	H.H.P. kW/cm²					TO 2790 RM DN 2828 m			
ALKALINITY Pf	.8	HOURS ON BIT					D/A			
ALKALINITY Mf	1.7	BIT WT. daN	14							
CHLORIDES mg/L	200	CASING PROGRAM					BIT #15 88 m			
CALCIUM mg/L	80	SURFACE LENGTH m	208							
SAND CONTENT VOL. FRAC. %	TRACE	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. %	.085	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	-	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	-	INTERMEDIATE LENGTH m	2450	MAINTAIN						
LOW DENS. kg/m³	19	OD/ID mm	177/161							
POLYMER kg/m³	1.0	LINER LENGTH m		1) VISCOSITY @ 35-40 S/L WITH VISPLUS						
FLOWLINE TEMP °C	29	OD/ID mm								
HYDROXYL	0	PRODUCTION LENGTH m		2) WATERLOSS @ 10 mLS. WITH AQUAPAC						
CARBONATE	915	OD/ID mm		TO LOWER W/L BELOW 5 mLS MIX 2 SODA						
BICARBONATE	122			20 kg/m³ GEL & 2 SK LIGNITE						
		PUMP PERFORMANCE								
		PUMP NO.	1	3) PH @ 10-10.5 WITH CAUSTIC						
		MODEL	P29							
ANNULAR HYDRAULICS		LINER SIZE mm	140	4) WEIGHT @ 1030 kg/m³ OR LESS WITH						
"N" MED.	.514	STROKE mm	229	CENTRIFUGES. DILUTE 5 L/m AS NEEDED						
"K" MED.	.567	DISPLACEMENT PER STR m³	.0106							
"N" LOW	.393	STROKES PER MIN.	90	FOR SEEPAGE: MIX CALCARB 325 & FINE						
"K" LOW	1.053	OUTPUT m³/min	.9	1:1 RATIO AS NEEDED						
ANN. PRESS. LOSS kPa	2370	PRESSURE ☐ kPa ☐ MPa	9000							
E.C.D. kg/m³	1113	MUD SYSTEM DATA		FOR LOST CIRC. MIX 10 m³ PILL ½ SK SODA						
"Z" DC	1207	ANNULAR VOLUME m³	34	& GEL TO VIS @ 120 S/L ADD CAL CARB.						
"Z" DP	1034	DRILL STRING CAPACITY m³	15.5	10 SK 325 & 20 SK FINE 10-15 SK SAWDUST						
Dec. EXP		TANK VOLUME m³	38							
VG 600 RPM	20	TOTAL VOLUME m³	87.5							
VG 300 RPM	14	VOL. DUMPED m³								
VG 3 RPM	2	DILUTION RATE L/min		Tanks						
		CIRCULATION TIME MINS.	98							
		BOTTOMS UP min.	38							

T.S.R.	BARRY SAULNIER	PHONE	CAMP
RESIDENCE		MOBILE	
WAREHOUSE	CONCORD	PHONE	403
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAY'S DATE Mar 17 2004	CHECK NUMBER 53
SPUD DATE Jan 16 2004	DAYS FROM SPUD
DRILL OUT DATE Mar 8 / Jan 25	MUD UP DEPTH 216
PRESENT ACTIVITY	

OPERATOR North Rock	CONTRACTOR Akita	RIG NO. 40
REPORT FOR: Kevin Amy	REPORT FOR: Alvin West	
WELL NAME AND LOCATION North Rock et al Summit Creek B-44		PROVINCE Nwt

MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	DEVIATION	DIRECTION
TIME 24 HR.	04:45	BIT NO.	1F	DRILL COLLAR OD/ID mm	121 / 61	48 m	115 m/min	m		
DEPTH m	2966	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STX 40	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1035	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	114 / 68	421 m	98 m/min	m		
GRADIENT kPa/m	10.15	NOZZLE 2 mm		DRILL PIPE OD/ID mm	102 / 85	2499 m	73 m/min	m		
HYDROSTATIC kPa @ DEPTH	30,135	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL Vis. s/L	36	DEPTH IN m	2914	HOLE VOLUME WITH DRILL PIPE IN HOLE		m/m				
PLASTIC VIS. mPa.s	7	DRILL RATE m/h	5.0	MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	4	R.P.M.	50	Usplus 3			TC Drlg 2817-2947 12.5 Hrs			
GEL STRENGTH Pa 10s/10 min	2/3	BIT HYDRAULICS		Caus 1						
pH	10.3	NOZZLE VEL m/sec	13.15	Bar 20			Pch for Bit. RIH m/up			
FILTRATE cm³ 30 min 700 kPa	9.2	BIT PRESS LOSS kPa	98.7				Bit #17 with 2 s/l - Btm			
CAKE THICKNESS mm	.75	H.H.P. kW/cm²	.008				1 Hr. D/a			
ALKALINITY Pf	.11	HOURS ON BIT								
ALKALINITY Mf	.2	BIT WT. daN	14							
CHLORIDES mg/L	280	CASING PROGRAM								
CALCIUM mg/L	80	SURFACE LENGTH m	216							
SAND CONTENT VOL. FRAC. 0	Trace	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.025	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	—	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	—	INTERMEDIATE LENGTH m	2450	Maintain						
LOW DENS. kg/m³	22.2	OD/ID mm	177/161							
POLYMER kg/m³	1.0	LINER LENGTH m		1) Viscosity @ 40 s/L with Usplus						
FLOWLINE TEMP °C	28	OD/ID mm		2) Waterloss @ 10mls with Aquapac						
HYDROXYL	7	PRODUCTION LENGTH m								
CARBONATE	108	OD/ID mm		3) PH @ 10-10.5 with Caustic Soda						
BICARBONATE	0									
		PUMP PERFORMANCE								
		PUMP NO.	1	4) Weight @ 1030 or less with						
		MODEL	P29	centrifuges & dilution as required						
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"n" MED.	.552	STROKE mm	229	To weight up mix Cal Carb 325 & Fine @						
"K" MED.	.479	DISPLACEMENT PER STR m³	.0106	1 minute/sack add Usplus slowly						
"n" LOW	.285	STROKES PER MIN.	90	while mixing (over 2 circ.)						
"K" LOW	1.883	OUTPUT m³/min	.9							
ANN. PRESS. LOSS kPa	2538	PRESSURE ☐ kPa ☐ MPa	9800	For seepage mix Cal Carb 325 & Fine						
E.C.D. kg/m³	1132	MUD SYSTEM DATA		1:1 ratio as required						
"Z" DC	1162	ANNULAR VOLUME m³	35							
"Z" DP	1002	DRILL STRING CAPACITY m³	15.7	For Lost Circ. mix 10 m³ Pill - 20 sx 325						
Dec. EXP		TANK VOLUME m³	40	10 sx Fine, 5 sx Poultry grit & 10-15 sx						
VG 600 RPM	22	TOTAL VOLUME m³	90.7	Sawdust.						
VG 300 RPM	15	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	101							
		BOTTOMS UP min.	39							

Thanks

T.S.R. Barry Soulnier		PHONE Camp	
RESIDENCE		MOBILE	
WAREHOUSE Concord		PHONE 405 234 7771	
TRUCKER		PHONE	

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Concord DRILLING FLUIDS LTD.

FIELD SERVICE REPORT

TODAYS DATE MAR 18 2004	CHECK NUMBER 8854
SPUD DATE JAN 16 2004	DAYS FROM SPUD
DRILL OUT DATE MARCH / JAN 25	MUD UP DEPTH 216
PRESENT ACTIVITY	

OPERATOR: NORTH ROCK	CONTRACTOR: AKITA	RIG NO. 40
REPORT FOR: KEVIN AMY	REPORT FOR: ALVIN VOGT	
WELL NAME AND LOCATION: NORTH ROCK et al SUMMIT CREEK B-44		PROVINCE: NWT

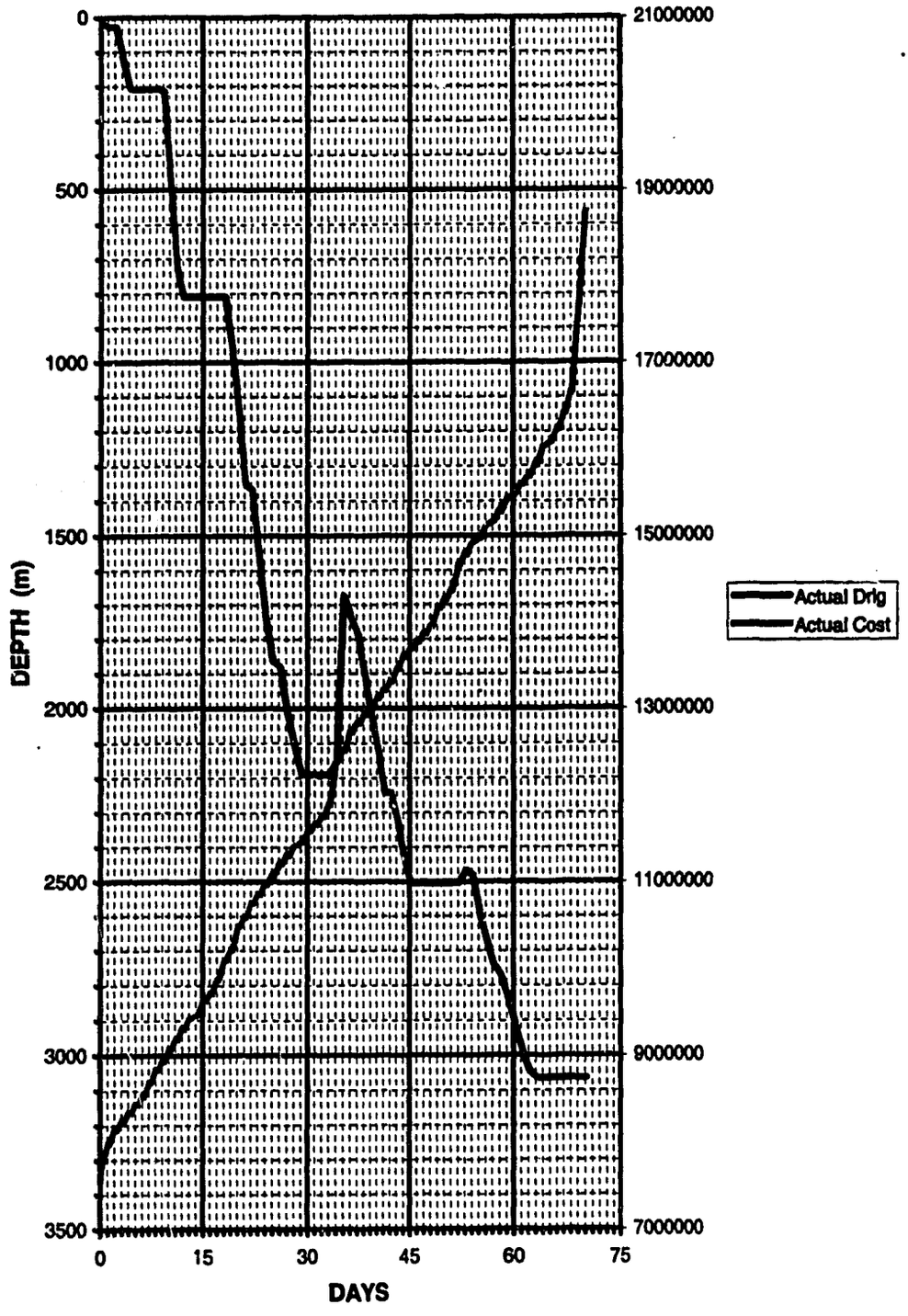
MUD PROPERTIES		BIT RECORD		DRILLING ASSEMBLY		LENGTH	ANNULAR VELOCITY	SURVEYS DEPTH	SURVEYS DEVIATION	SURVEYS DIRECTION
TIME 24 HR.	06:00	BIT NO.	1B	DRILL COLLAR OD/ID mm	146/85	42.1 m	86 m/min	m		
DEPTH m	3034	SIZE mm	156	DRILL COLLAR OD/ID mm	/	m	m/min	m		
T.V. DEPTH		TYPE	STK 30	DRILL COLLAR OD/ID mm	/	m	m/min	m		
DENSITY kg/m³	1040	NOZZLE 1 mm	OPEN	DRILL PIPE OD/ID mm	102/85	2613 m	73 m/min	m		
GRADIENT kPa/m	10.20	NOZZLE 2 mm		DRILL PIPE OD/ID mm	/	m	m/min	m		
HYDROSTATIC kPa @ DEPTH	30954	NOZZLE 3 mm		DP TOOL JT. TYPE						
FUNNEL VIS. s/L	35	DEPTH IN m	3025	HOLE VOLUME WITH DRILL PIPE IN HOLE		m³/m				
PLASTIC VIS. mPa.s	7	DRILL RATE m/h		MATERIALS ADDED SINCE LAST CHECK			REMARKS			
YIELD POINT Pa	4	R.P.M.	60	pac 4			DRL 2957-3025 KELLY			
GEL STRENGTH Pa 10s/10 min	2/3	BIT HYDRAULICS		Jispkus 3						
pH	10.5	NOZZLE VEL m/sec	13.15	carb 10			pch for BIT m/u BIT # 1B			
FILTRATE cm³ 30 min 700 kPa	9.0	BIT PRESS LOSS kPa	99.69	Bar 25			RIH wsh 1 SGL TO BTM			
CAKE THICKNESS mm	.75	H.H.P kW/cm²	.008				DRL AHEAD			
ALKALINITY Pf	.8	HOURS ON BIT								
ALKALINITY Mf	1.4	BIT WT. 000's	14							
CHLORIDES mg/L	300	CASING PROGRAM								
CALCIUM mg/L	80	SURFACE LENGTH m	214							
SAND CONTENT VOL. FRAC. 0	TRACE	OD/ID mm	340/316	COST SINCE LAST CHECK						
SOLIDS CONT VOL. FRAC. 0	.025	INTERMEDIATE LENGTH m	810	TOTAL COST TO DATE						
BENTONITE kg/m³	—	OD/ID mm	244/226	RECOMMENDATIONS:						
BARITE kg/m³	—	INTERMEDIATE LENGTH m	2450	MAINTAIN						
LOW DENS. kg/m³	25.3	OD/ID mm	177/161							
POLYMER kg/m³	1.4	LINER LENGTH m		1) VISCOSITY @ 40 S/L WITH JISPKUS						
FLOWLINE TEMP °C		OD/ID mm								
HYDROXYL	68	PRODUCTION LENGTH m		2) AQUAPAC TO KEEP WATERLOSS @ 10 mLS						
CARBONATE	720	OD/ID mm								
BICARBONATE	0			3) PH @ 10-10.5 WITH CAUSTIC SODA						
		PUMP PERFORMANCE								
		PUMP NO.	1	4) WEIGHT AS LOW AS POSSIBLE WITH						
		MODEL	B-9	CENTRIFUGES & DILUTION AS NEEDED						
ANNULAR HYDRAULICS		LINER SIZE mm	140							
"N" MED.	.562	STROKE mm	229	TO WEIGHT UP MIX CAL CARB 325 & FINE						
"K" MED.	.479	DISPLACEMENT PER STR m³	.0106	1:1 RATIO 1 min/SK ADD JISPKUS SLOWLY						
"N" LOW	1286	STROKES PER MIN.	90	OVER 2 CIRC.						
"K" LOW	1.955	OUTPUT m³/min	.9							
ANN. PRESS. LOSS kPa		PRESSURE ☐ kPa ☐ MPa	7800	FOR SEEPAGE: CAL CARB 325 & FINE 1:1 RATIO						
E.C.D. kg/m³		MUD SYSTEM DATA		AS NEEDED						
"Z" DC	457.98	ANNULAR VOLUME m³	36.5							
"Z" DP	1007.666	DRILL STRING CAPACITY m³	16.2	FOR LOST CIRC. : MIX 10 m³ PILL 20SK - 325						
Dec. EXP		TANK VOLUME m³	40	10SK FINE, 8SK POULTRY QNT & 10-15 SK						
VG 600 RPM	22	TOTAL VOLUME m³	92.7	SAWDUST						
VG 300 RPM	15	VOL. DUMPED m³								
VG 3 RPM	3	DILUTION RATE L/min								
		CIRCULATION TIME MINS.	40							
		BOTTOMS UP min.	102							

Thanks

T.S.R. BARRY SAULNIER		PHONE camp	
RESIDENCE		MOBILE	
WAREHOUSE CONCORD		PHONE 403 234 7771	
TRUCKER		PHONE	

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Drilling Curve/Cost
Northrock et al Summit Creek B-44



Appendix #5:
Drill Stem Test Reports

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1

BAKER HUGHES

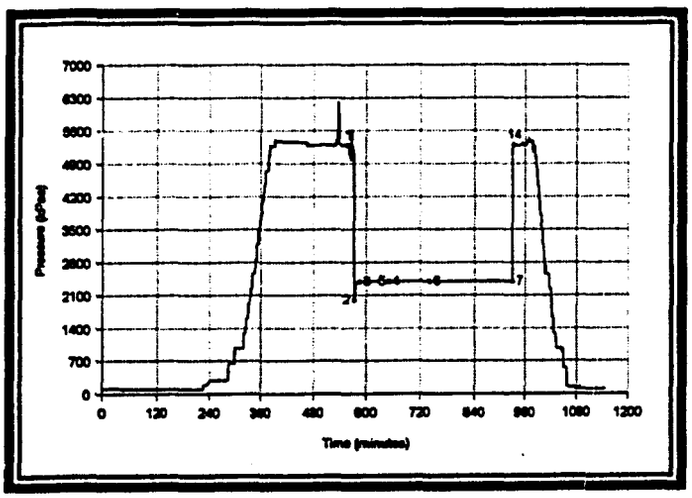
Baker Oil Tools

CONFIDENTIAL

Formation: Little Bear
Interval - from: 458.00 **to:** 465.00 meters

Test Date: 2004-01-31
Test Type : Inflate Straddle

Recorder# 70390 at 461.00 meters



Max Btm Hole Temperature @ FSI: 21.9 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	5281		
2	Start of 1st Flow	1988		
3	End of 1st Flow	2373	10.5	
4	End of 1st Shut-in	2380	61.5	2380.6
5	Start of 2nd Flow	2377		
6	End of 2nd Flow	2378	90.0	
7	End of 2nd Shut-in	2381	189.0	2380.4
14	Final Hydrostatic	5279		

Liquid Recovery 225.00 meters

Salinity : 300 g/m3 Mud Tank Salinity: 300 g/m3

Recovery	*Description*
30.00 m	DRILLING MUD
90.00 m	MUDDY WATER
105.00 m	FRESH WATER

Blow Description:

PREFLOW: Weak air blow in 10 seconds increasing to fair in 3 minutes then slowly decreasing to very weak. No gas to surface.

FINAL FLOW: No air blow. No gas to surface.

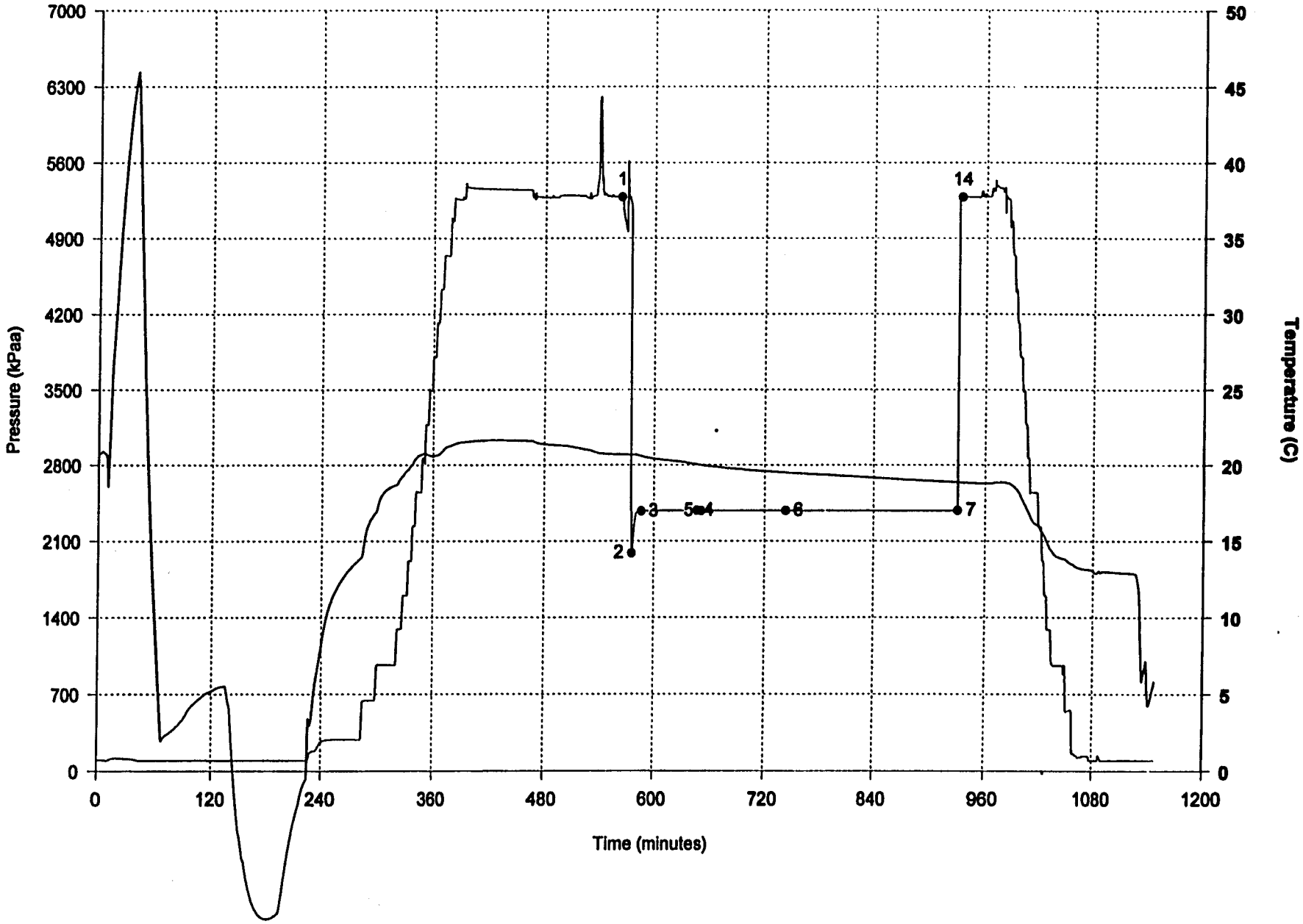
Remarks:

Mechanically successful test. Results suggest high permeability within the interval tested. The hydrostatic pressure of the fluid recovery equalized with the formation pressure during the final flow. Did not obtain a packer seat on the initial inflation.

BAKER OIL TOOLS / LYNES DRILL STEM TESTING

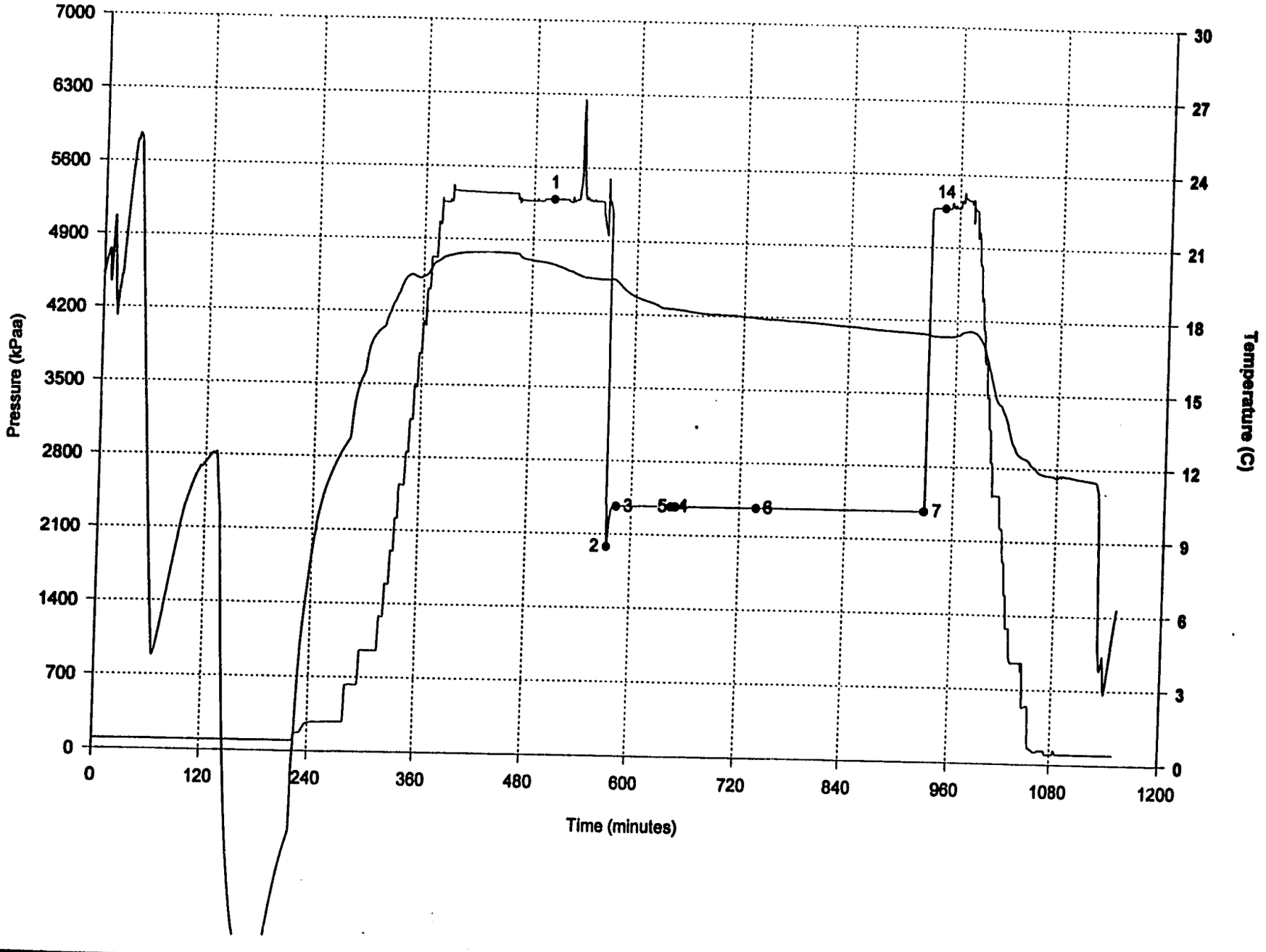
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 1
Recorder: 70390

Pressure (kPaa) at Critical Points:
1: 5281 4: 2380 7: 2381
2: 1988 5: 2377 14: 5279
3: 2373 6: 2378



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 1
Recorder: 75436

Pressure (kPaa) at Critical Points:
1: 5290 4: 2368 7: 2368
2: 1974 5: 2365 14: 5271
3: 2362 6: 2366



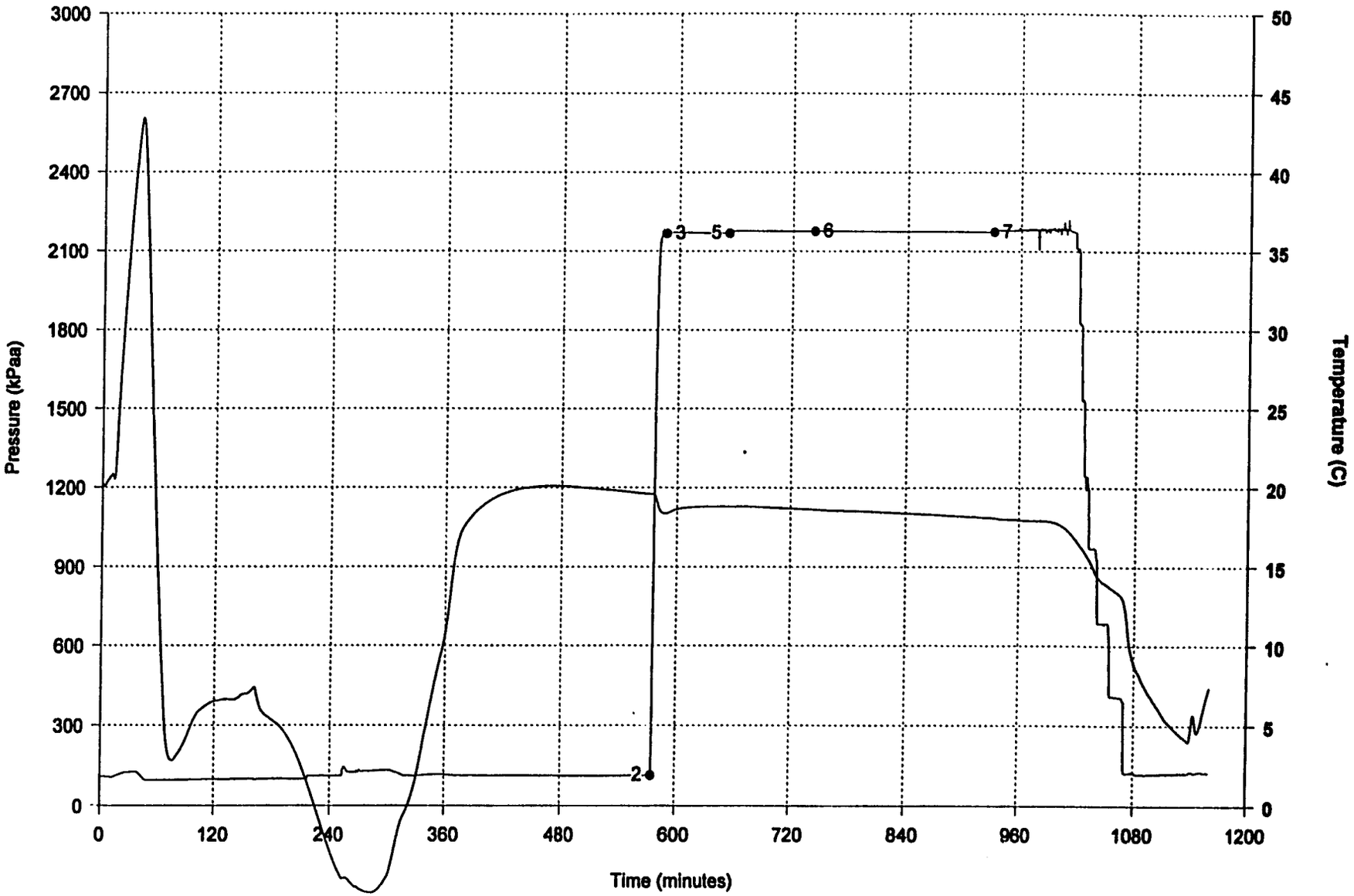
BAKER OIL TOOLS / LYNES DRILL STEM TESTING

BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 1
Recorder: 70115

Pressure (kPaa) at Critical Points:
2: 112 6: 2175
3: 2166 7: 2173
5: 2167

Recovery recorder



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1

General Information:

Operator: Northrock Resources Ltd.
3500, 700 - 2nd Street S.W.
Calgary Alberta T2P 2W2

Licence#: 1948

Tester: Nolin S

Ticket#: 816602

Reverse Circulated? N

KB Elevation: 586.90 meters

Ground Elevat'n: 580.50 meters

Total Depth: 810.00 meters

Mud Data:

Weight: 1130 kg/m3

Type: Gel Chemical

Viscosity: 132 s/l

Water Loss: 7.4 cc/s

Hole Data:

Drilled Hole Size: 311 mm

Calipered Hole Size: 311 mm

Hole Condition at Test Time: Fair

Conditioned prior to this test? Y

Recorder Summary:

Recorder#	*Type*	*Position*	*Capacity*	*Units*	*Depth*	*Comments*
70115	SPAR	Inside	34500	kPaa	440.00	Recovery recorder
70390	SPAR	Outside	68900	kPaa	461.00	
75436	SPAR	Outside	34500	kPaa	461.00	

Distributions:

Reports Sent To: Brian Merchant

Fluid Samples - no of: 6 Sent To: Core Labs

Bottom Hole Sampler#	*Sent To*
630	Core Labs

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1

Tool Sequence:



Description	*Length*
Pump Out Sub	0.33 m
Cross Over Sub	0.30 m
Pump Out Sub	0.83 m
Recorder Carrier	1.38 m
Hydraulic Tool	1.50 m
Bottom Hole Sampler	1.03 m
Recorder Carrier	1.38 m
Real Time Gauge	6.60 m
Hydraulic Jars	2.22 m
Safety Joint	0.65 m
Inflate Pump	2.38 m
Screen	1.16 m
Top Inflate Packer	1.78 m
Packer Stick Down	0.82 m
Port Sub	0.42 m
Recorder Carrier	2.02 m
Spacing	3.30 m
Packer Stick Up	0.42 m
Bottom Inflate Packer	1.90 m
Spacing	0.31 m
Belly Spring	2.00 m

Tool String Length:	32.73 m
Drill Collar I.D.: 57 mm	84.64 m
Drill Pipe O.D.: 102 mm	0.00 m
Heavyweight O.D.:102 mm	358.10 m
Heavyweight I.D.:65 mm	
Collar Pipe Total:	84.64 m
Stick Up:	6.28 m
Tool Above:	21.54 m
Interval Tested:	7.00 m
Bottom Hole Choke Size:	25.40 mm

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1
Recorder#70390

Build-up and Flow Curve Increments

Flow# 1

Chart Label	Time (min)	Pressure (kPaa)
2	0.0	1988
	1.0	2085
	2.0	2199
	3.0	2279
	4.0	2335
	5.0	2358
	6.0	2366
	7.0	2369
	8.0	2372
	9.0	2373
	10.0	2374
3	10.5	2373

Shut-in# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	0.0		2373		
	2.0	2	2376	6.2500	
	4.0	3	2376	3.6250	
	6.0	4	2377	2.7500	
	8.0	4	2378	2.3125	
	10.0	5	2378	2.0500	
	12.0	5	2378	1.8750	
	14.0	5	2379	1.7500	*
	16.0	5	2379	1.6563	*
	18.0	5	2379	1.5833	*
	20.0	6	2379	1.5250	*
	22.0	6	2379	1.4773	*
	24.0	6	2379	1.4375	*
	26.0	6	2379	1.4038	*
	28.0	6	2379	1.3750	*
	30.0	6	2379	1.3500	*
	32.0	6	2380	1.3281	*
	34.0	6	2380	1.3088	*
	36.0	6	2380	1.2917	*
	38.0	6	2380	1.2763	*
	40.0	7	2380	1.2625	*
	42.0	7	2380	1.2500	*
	44.0	7	2380	1.2386	*
	46.0	7	2380	1.2283	*
	48.0	7	2380	1.2188	*
	50.0	6	2380	1.2100	*
	52.0	6	2380	1.2019	*
	54.0	6	2380	1.1944	*
	56.0	6	2380	1.1875	*
	58.0	6	2380	1.1810	*
	60.0	7	2380	1.1750	*
4	61.5	6	2380	1.1707	*

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
5	0.0	2377
	2.0	2379

Shut-in# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	0.0		2378		
	4.0	2	2380	26.1250	

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1
Recorder#70390

Build-up and Flow Curve Increments

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
	4.0	2380
	6.0	2380
	8.0	2380
	10.0	2380
	12.0	2380
	14.0	2380
	16.0	2380
	18.0	2380
	20.0	2380
	22.0	2380
	24.0	2380
	26.0	2380
	28.0	2380
	30.0	2380
	32.0	2380
	34.0	2380
	36.0	2380
	38.0	2380
	40.0	2380
	42.0	2380
	44.0	2380
	46.0	2380
	48.0	2380
	50.0	2380
	52.0	2380
	54.0	2380
	56.0	2380
	58.0	2380
	60.0	2380
	62.0	2380
	64.0	2380
	66.0	2380
	68.0	2380
	70.0	2380
	72.0	2380
	74.0	2380
	76.0	2380
	78.0	2380
	80.0	2380
	82.0	2380
	84.0	2380

Shut-in# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	8.0	2	2380	13.5625	
	12.0	2	2380	9.3750	
	16.0	2	2380	7.2813	*
	20.0	2	2380	6.0250	*
	24.0	2	2380	5.1875	*
	28.0	2	2380	4.5893	*
	32.0	2	2380	4.1406	*
	36.0	2	2380	3.7917	*
	40.0	2	2380	3.5125	*
	44.0	2	2380	3.2841	*
	48.0	2	2380	3.0938	*
	52.0	2	2380	2.9327	*
	56.0	2	2380	2.7946	
	60.0	2	2380	2.6750	
	64.0	2	2380	2.5703	
	68.0	2	2380	2.4779	
	72.0	2	2380	2.3958	
	76.0	2	2380	2.3224	
	80.0	2	2380	2.2563	
	84.0	2	2380	2.1964	
	88.0	2	2380	2.1420	
	92.0	2	2380	2.0924	
	96.0	2	2380	2.0469	
	100.0	2	2380	2.0050	
	104.0	2	2380	1.9663	
	108.0	2	2380	1.9306	
	112.0	2	2380	1.8973	
	116.0	2	2380	1.8664	
	120.0	2	2380	1.8375	
	124.0	2	2380	1.8105	
	128.0	2	2380	1.7852	
	132.0	2	2380	1.7614	
	136.0	2	2380	1.7390	
	140.0	2	2380	1.7179	
	144.0	2	2380	1.6979	
	148.0	2	2380	1.6791	
	152.0	2	2380	1.6612	
	156.0	2	2380	1.6442	
	160.0	2	2380	1.6281	
	164.0	2	2380	1.6128	

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1
Recorder#70390

Build-up and Flow Curve Increments

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
	86.0	2380
	88.0	2380
6	90.0	2378

Shut-in# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	168.0	2	2380	1.5982	
	172.0	2	2380	1.5843	
	176.0	2	2380	1.5710	
	180.0	2	2380	1.5583	
	184.0	2	2380	1.5462	
	188.0	2	2380	1.5346	
7	189.0	2	2381	1.5317	

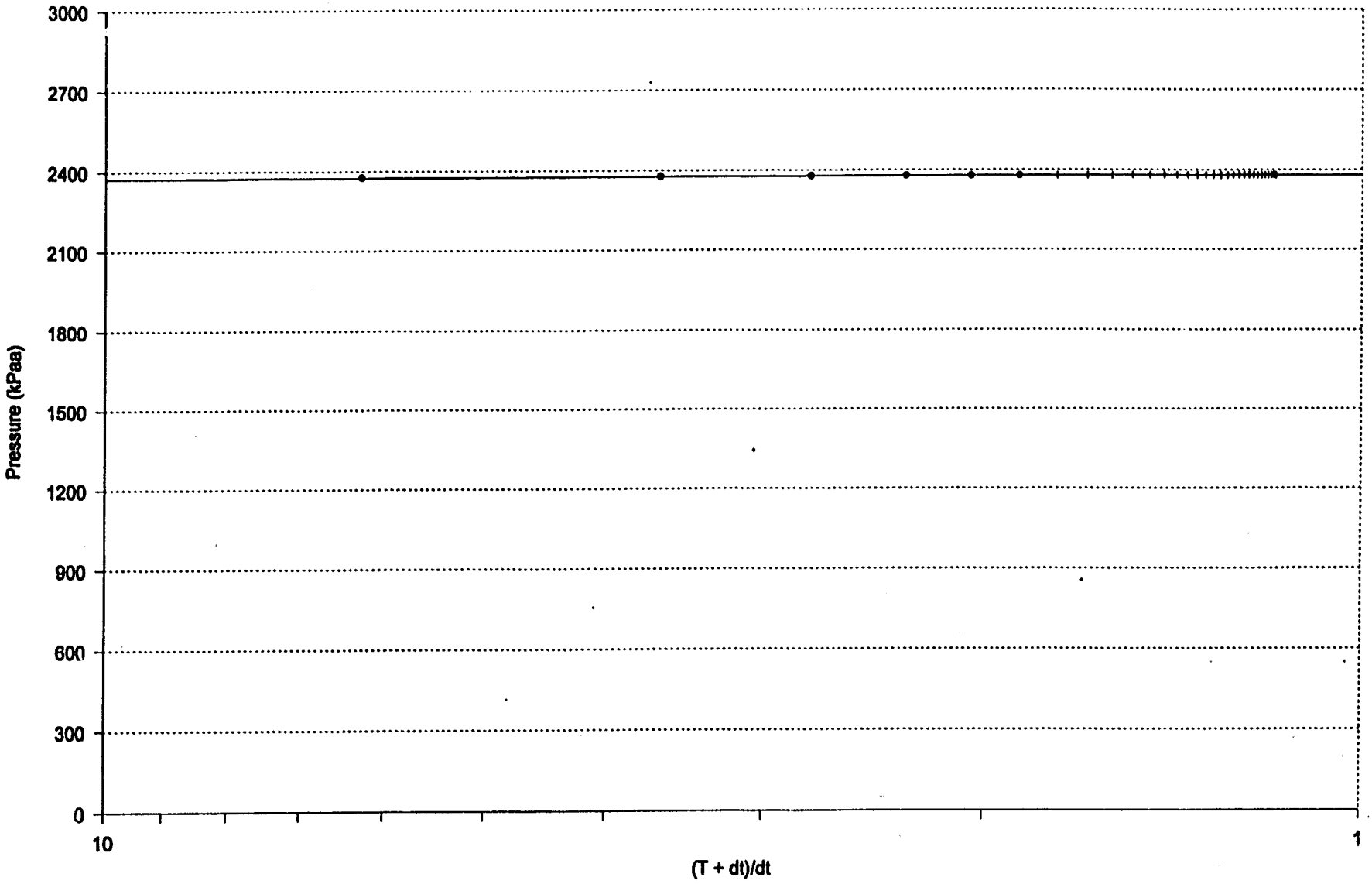
Horner Extrapolation:

Shut-in#	Extrapolated Pressure (kPaa)	Extrapolated Slope ((kPaa/cycle)
1	2380.6	8.59891
2	2380.4	0.05229

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

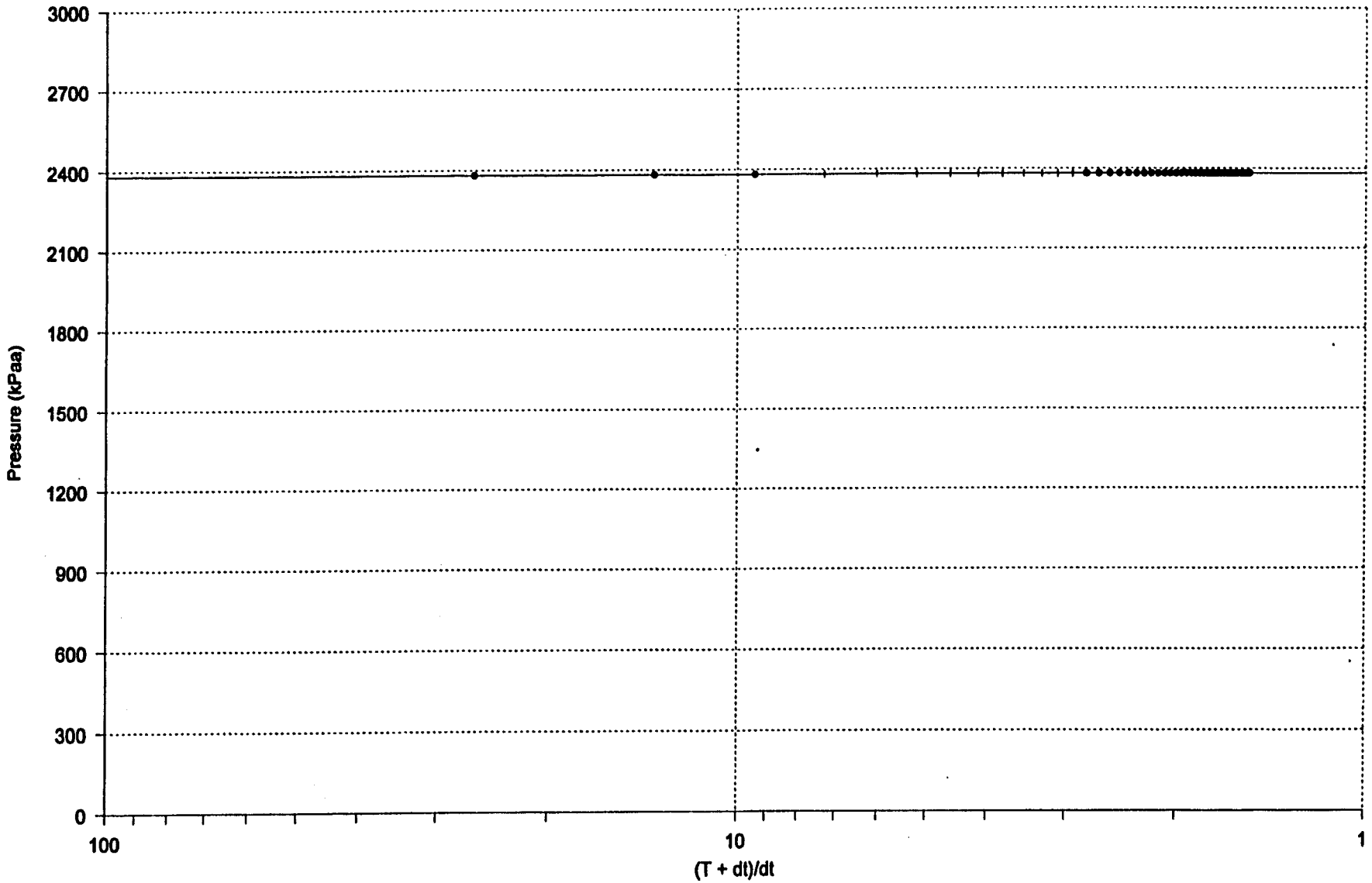
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 1
Recorder: 70390

Shut-in #1
Slope = 8.60 kPaa/cycle
Extrapolated Pressure = 2380.62 kPaa



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 1
Recorder: 70390

Shut-in #2
Slope = 0.05 kPaa/cycle
Extrapolated Pressure = 2380.36 kPaa

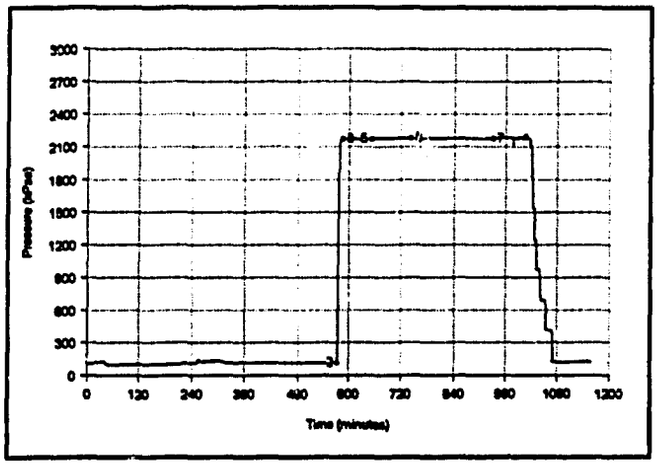


NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1

Recorder# 70115

Depth: 440.00 m
Temperature: 19.9 C
Location: Inside

Recorder Type: SPAR
Capacity: 34,500 kPaa
Comments: Recovery recorder

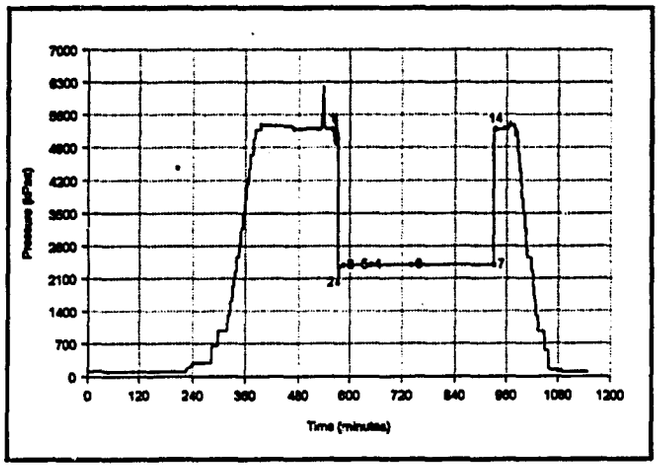


		Pressure (kPaa)	Time (min)
2	Start of 1st Flow	112	
3	End of 1st Flow	2166	10.5
5	Start of 2nd Flow	2167	
6	End of 2nd Flow	2175	90.0
7	End of 2nd Shut-in	2173	189.0

Recorder# 70390

Depth: 461.00 m
Temperature: 21.9 C
Location: Outside

Recorder Type: SPAR
Capacity: 68,900 kPaa



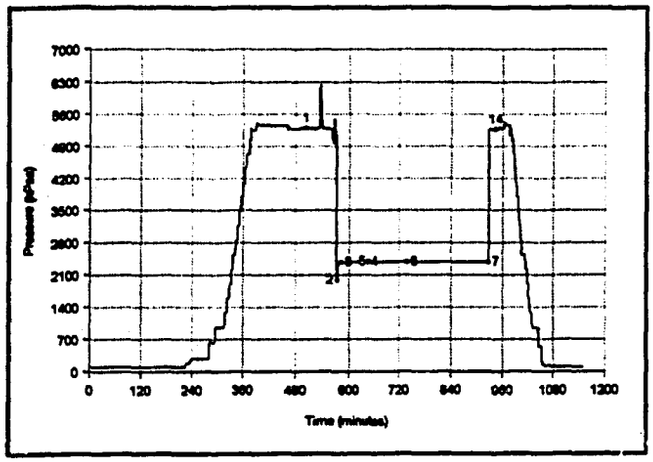
		Pressure (kPaa)	Time (min)
1	Initial Hydrostatic	5281	
2	Start of 1st Flow	1988	
3	End of 1st Flow	2373	10.5
4	End of 1st Shut-in	2380	61.5
5	Start of 2nd Flow	2377	
6	End of 2nd Flow	2378	90.0
7	End of 2nd Shut-in	2381	189.0
14	Final Hydrostatic	5279	

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 1

Recorder# 75436

Depth: 461.00 m
Temperature: 20.3 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	5290	
2	Start of 1st Flow	1974	
3	End of 1st Flow	2362	10.5
4	End of 1st Shut-in	2368	61.5
5	Start of 2nd Flow	2365	
6	End of 2nd Flow	2366	90.0
7	End of 2nd Shut-in	2368	189.0
14	Final Hydrostatic	5271	

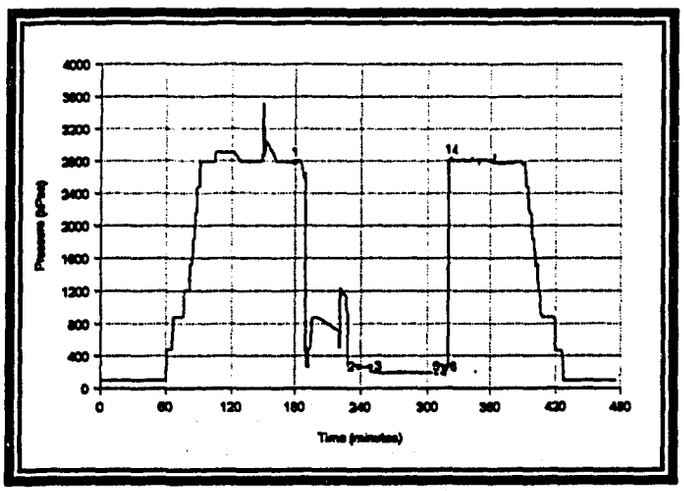
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 2

Baker Oil Tools CONFIDENTIAL

Formation: Little Bear
Interval - from: 238.00 **to:** 245.00 meters

Test Date: 2004-01-31
Test Type : Inflate Straddle

Recorder# 70390 at 461.00 meters



Blow Description:

PREFLOW: No air blow. No gas to surface.

FINAL FLOW: No air blow. No gas to surface.

Remarks:

The available results suggest virtually no permeability within the interval tested. Opened the tool and the packers skidded. Tool was open as there were bubbles in the pail and the chart shows the hydrostatic being relieved. Reset the packers and had a good seat. The formation pressure drops when the tool is closed as the fluid recovery (while not much) is removed from the formation.

Max Btm Hole Temperature @ FSI: 14.0 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	2775		
2	Start of 1st Flow	257		
3	End of 1st Flow	257	11.0	
4	End of 1st Shut-in	183	59.5	
5	Start of 2nd Flow	252		
6	End of 2nd Flow	250	2.5	
14	Final Hydrostatic	2802		

Liquid Recovery 2.00 meters

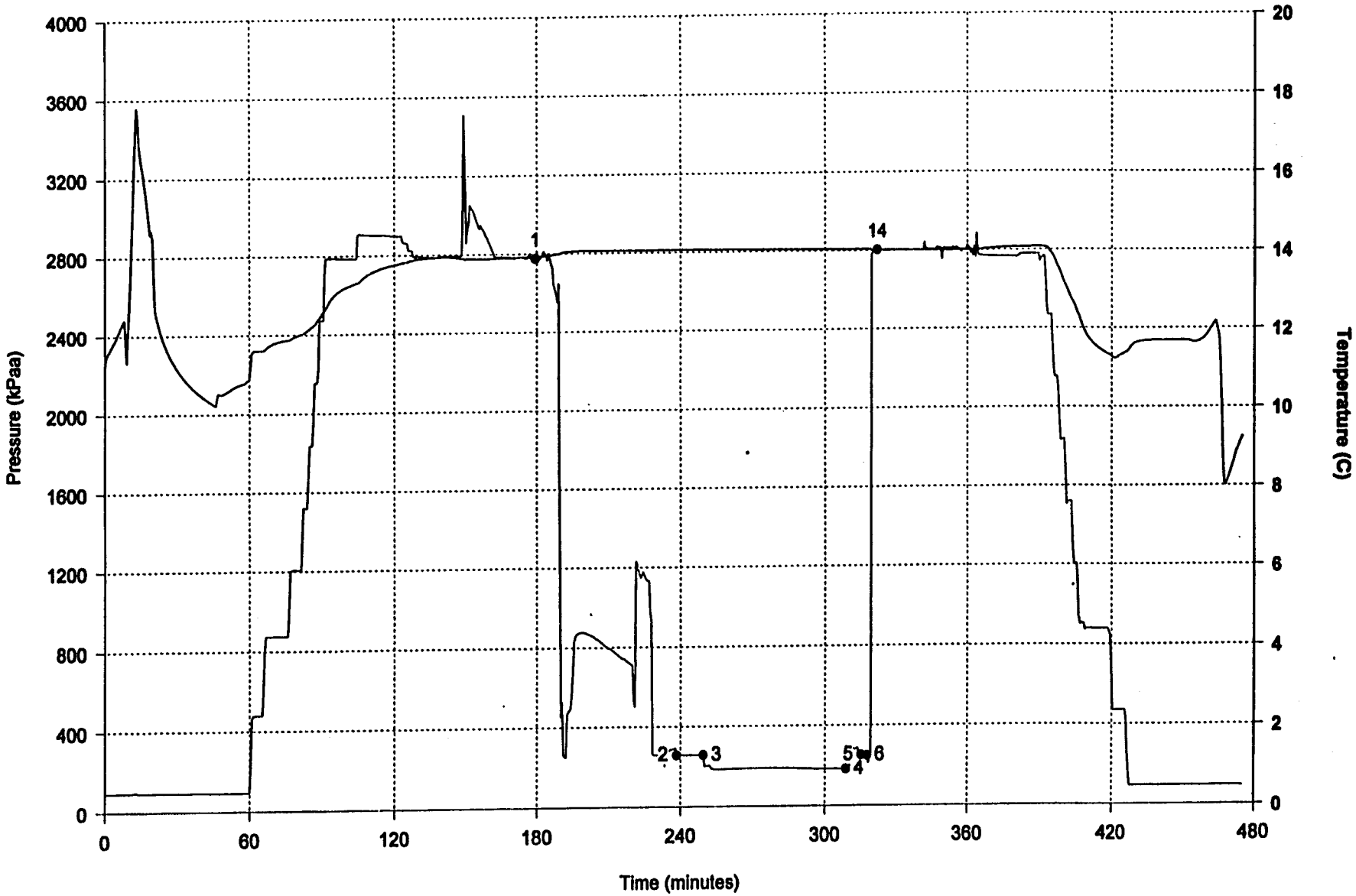
Mud Tank Salinity: 300 g/m3

Recovery	*Description*
2.00 m	DRILLING MUD

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 2
Recorder: 70390

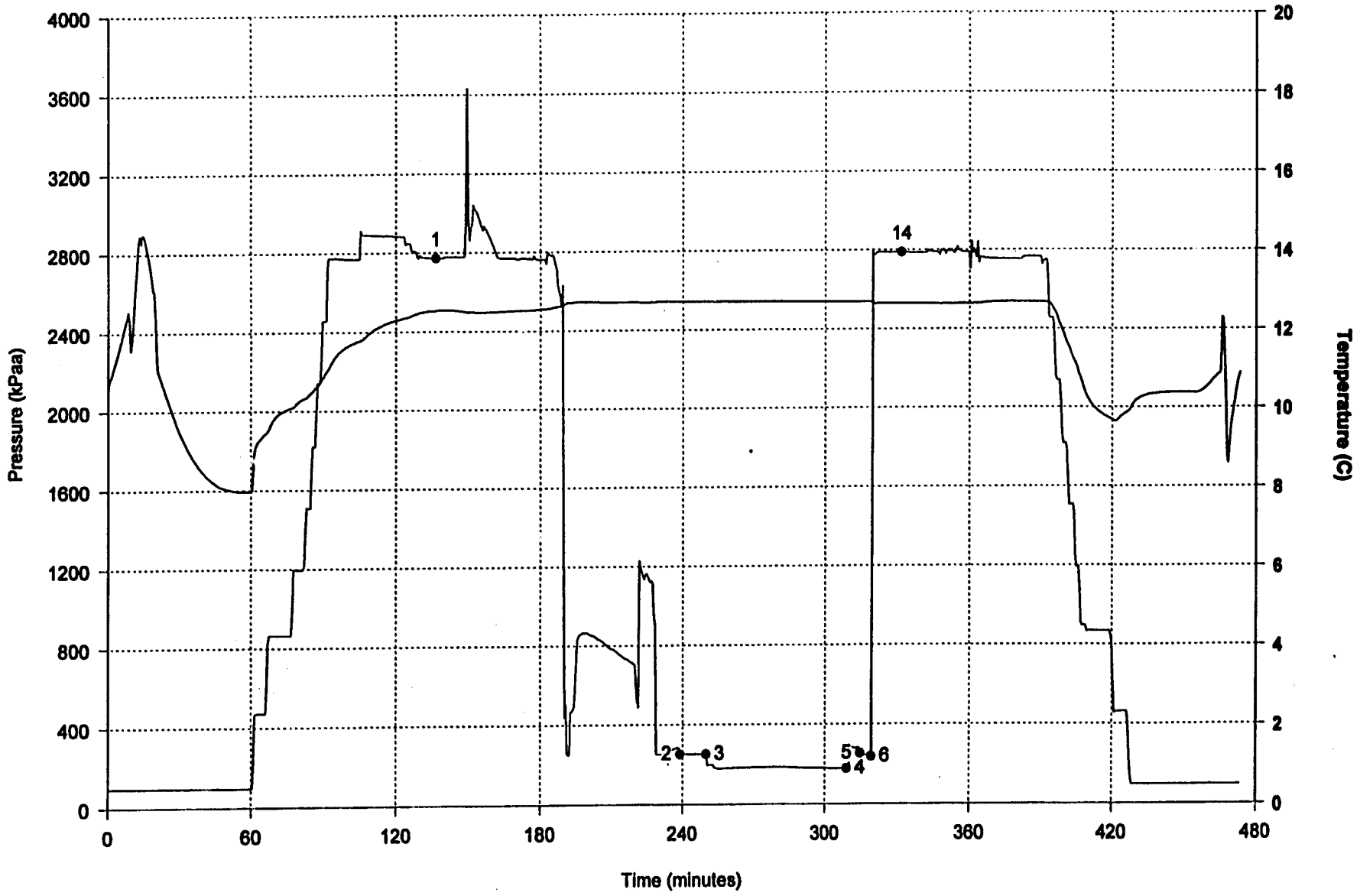
Pressure (kPaa) at Critical Points:

1:	2775	4:	183	14:	2802
2:	257	5:	252		
3:	257	6:	250		



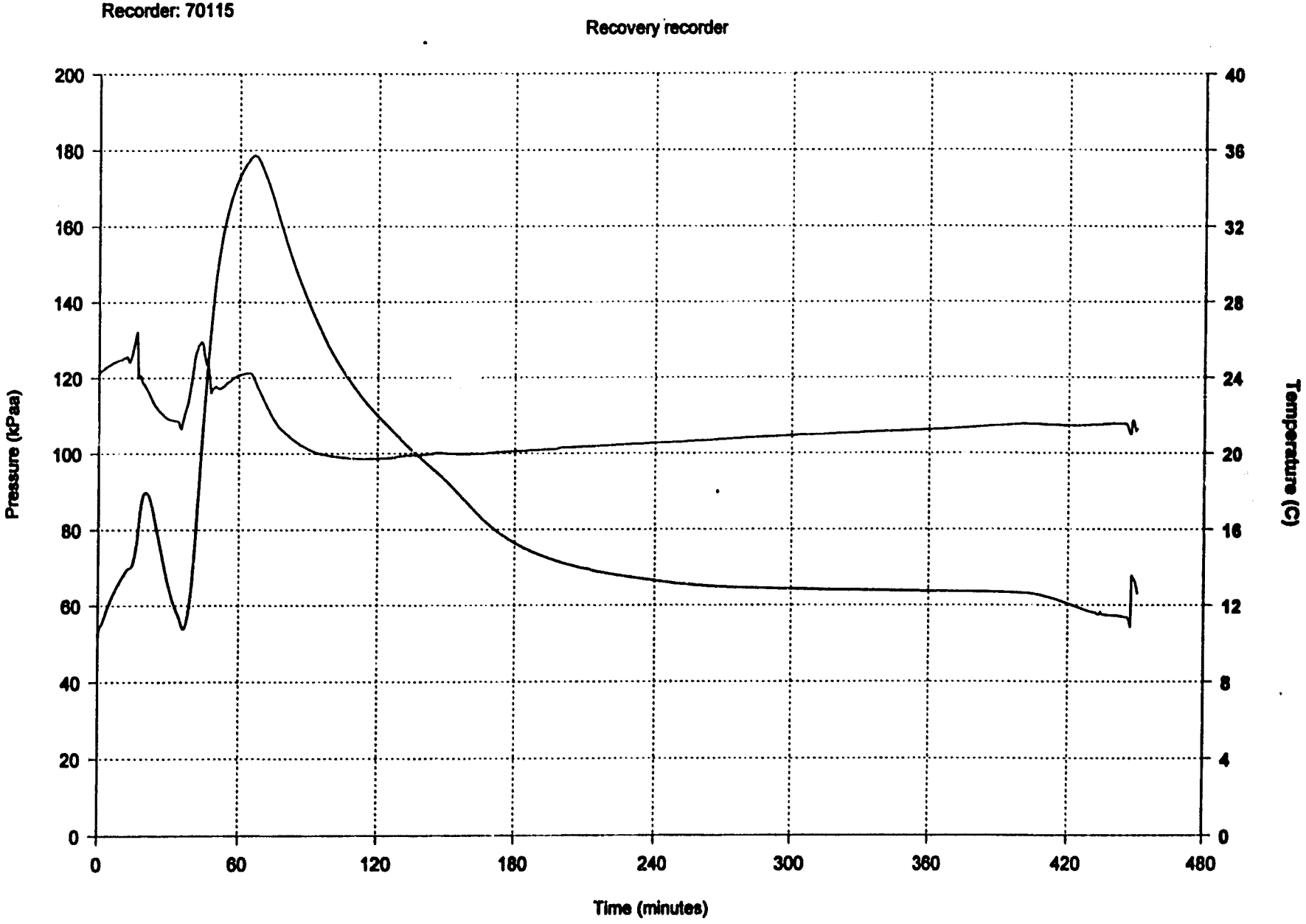
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 2
Recorder: 75436

Pressure (kPaa) at Critical Points:
1: 2772 4: 175 14: 2787
2: 248 5: 251
3: 249 6: 234



BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 2
Recorder: 70115



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 2

General Information:

Operator: Northrock Resources Ltd.
3500, 700 - 2nd Street S.W.
Calgary Alberta T2P 2W2

Licence#: 1948

Tester: Nolin S

Ticket#: 816603

Reverse Circulated? N

KB Elevation: 586.90 meters

Ground Elevat'n: 580.50 meters

Total Depth: 810.00 meters

Mud Data:

Weight: 1130 kg/m3

Type: Gel Chemical

Viscosity: 132 s/l

Water Loss: 7.4 cc/s

Hole Data:

Drilled Hole Size: 311 mm

Calipered Hole Size: 311 mm

Hole Condition at Test Time: Fair

Conditioned prior to this test? Y

Recorder Summary:

Recorder#	*Type*	*Position*	*Capacity*	*Units*	*Depth*	*Comments*
70115	SPAR	Inside	34500	kPaa	440.00	Recovery recorder
70390	SPAR	Outside	68900	kPaa	461.00	
75436	SPAR	Outside	34500	kPaa	461.00	

Distributions:

Reports Sent To: Brian Merchant

Bottom Hole Sampler#	*Sent To*
625	Core Labs

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 2

Tool Sequence:



Description	*Length*
Pump Out Sub	0.33 m
Cross Over Sub	0.30 m
Pump Out Sub	0.83 m
Recorder Carrier	1.38 m
Hydraulic Tool	1.50 m
Bottom Hole Sampler	1.03 m
Recorder Carrier	1.38 m
Hydraulic Jars	2.22 m
Safety Joint	0.65 m
Inflate Pump	2.38 m
Screen	1.16 m
Top Inflate Packer	1.78 m
Packer Stick Down	0.82 m
Port Sub	0.42 m
Recorder Carrier	2.02 m
Spacing	3.30 m
Packer Stick Up	0.42 m
Bottom Inflate Packer	1.90 m
Spacing	0.31 m
Belly Spring	2.00 m

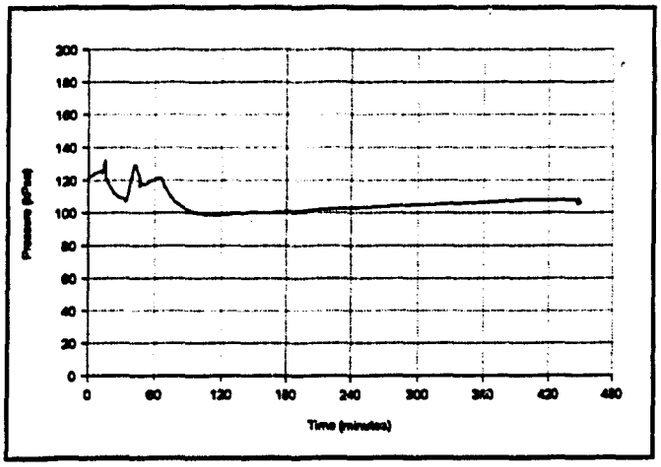
Tool String Length:	26.13 m
Drill Collar I.D.: 57 mm	84.64 m
Drill Pipe O.D.: 102 mm	9.59 m
Heavyweight O.D.:102 mm	138.37 m
Heavyweight I.D.:65 mm	
Collar Pipe Total:	94.23 m
Stick Up:	9.54 m
Tool Above:	14.94 m
Interval Tested:	7.00 m
Bottom Hole Choke Size:	25.40 mm

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 2

Recorder# 70115

Depth: 440.00 m
Temperature: 12.8 C
Location: Inside

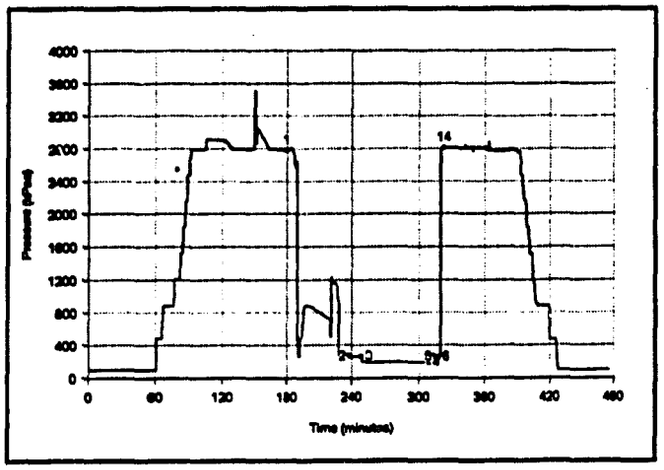
Recorder Type: SPAR
Capacity: 34,500 kPaa
Comments: Recovery recorder



Recorder# 70390

Depth: 461.00 m
Temperature: 14.0 C
Location: Outside

Recorder Type: SPAR
Capacity: 68,900 kPaa



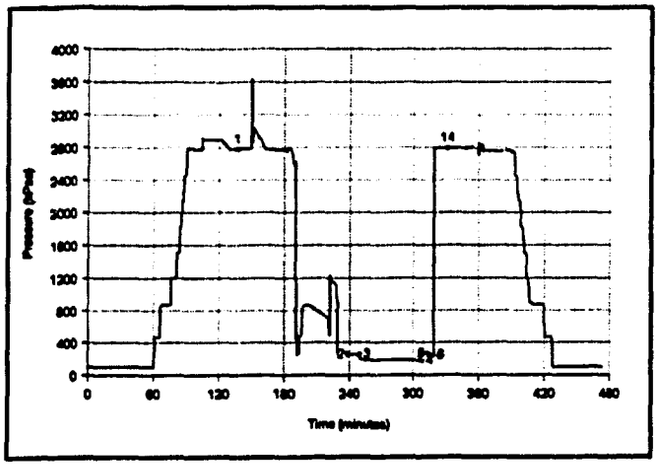
		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	2775	
2	Start of 1st Flow	257	
3	End of 1st Flow	257	11.0
4	End of 1st Shut-in	183	59.5
5	Start of 2nd Flow	252	
6	End of 2nd Flow	250	2.5
14	Final Hydrostatic	2802	

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 2

Recorder# 75436

Depth: 461.00 m
Temperature: 12.7 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



		Pressure (kPaa)	Time (min)
1	Initial Hydrostatic	2772	
2	Start of 1st Flow	248	
3	End of 1st Flow	249	11.0
4	End of 1st Shut-in	175	59.5
5	Start of 2nd Flow	251	
6	End of 2nd Flow	234	2.5
14	Final Hydrostatic	2787	

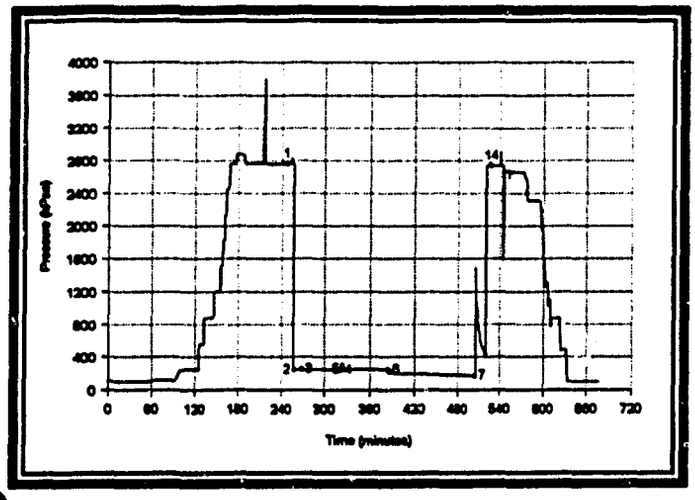
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 3

Baker Oil Tools CONFIDENTIAL

Formation: Little Bear
Interval - from: 238.00 **to:** 245.00 meters

Test Date: 2004-02-01
Test Type : Inflate Straddle

Recorder# 70390 at 241.00 meters



Blow Description:

PREFLOW: Weak air blow decreasing to nil in 3.5 minutes. No gas to surface.

FINAL FLOW: No blow throughout.

Remarks:

The available results suggest virtually no permeability within the interval tested. The formation pressure drops when the tool is closed as the fluid recovery (while not much) is removed from the formation. The recovery recorder indicates that virtually all of the fluid recovered was picked up when the tool was opened while trying to free the packers.

Max Btm Hole Temperature @ FSI: 13.4 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	2754		
2	Start of 1st Flow	241		
3	End of 1st Flow	244	10.5	
4	End of 1st Shut-in	234	53.0	
5	Start of 2nd Flow	249		
6	End of 2nd Flow	242	59.5	
7	End of 2nd Shut-in	168	121.0	
14	Final Hydrostatic	2731		

Liquid Recovery 85.00 meters

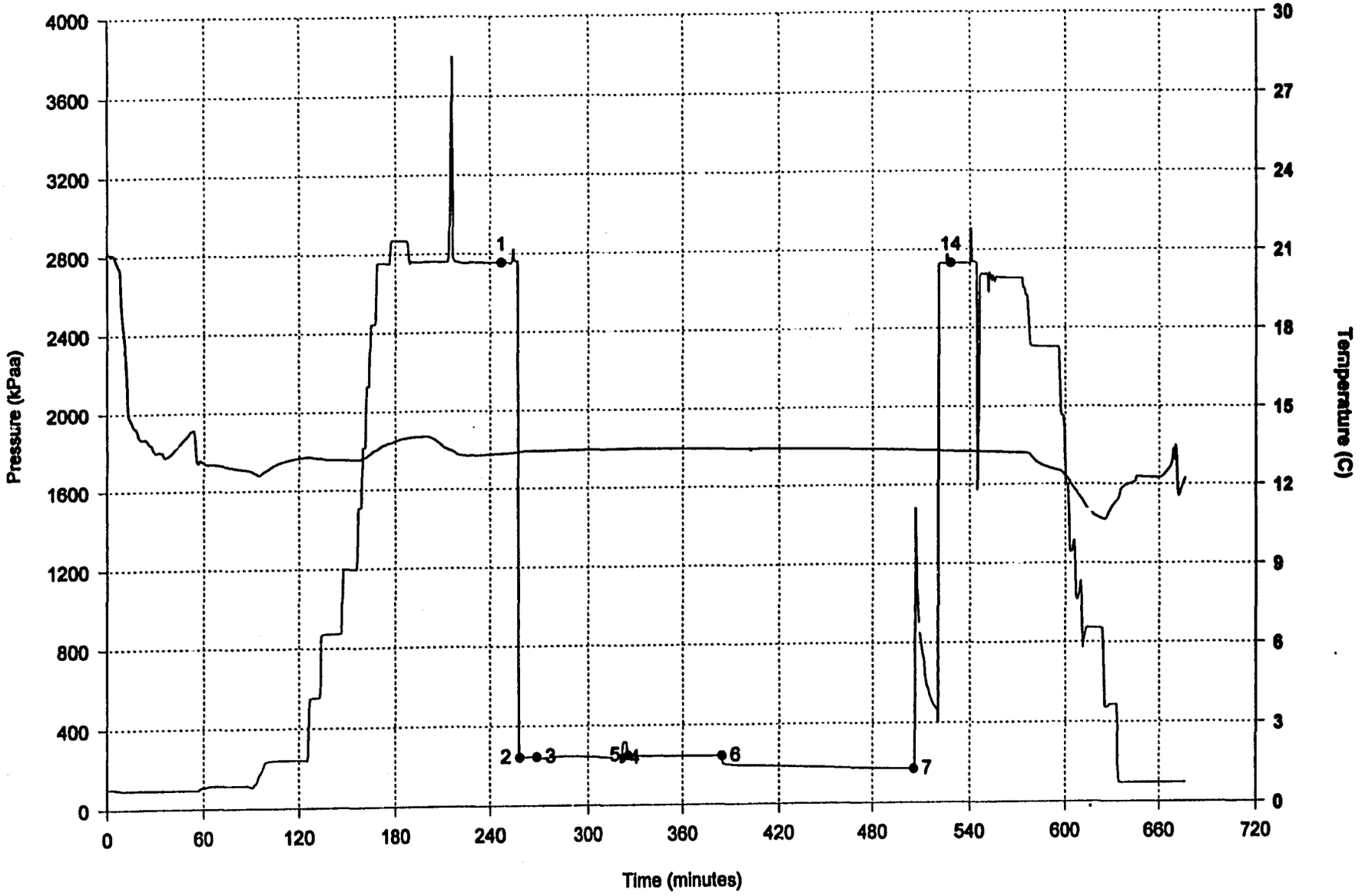
Mud Tank Salinity: 300 g/m3

Recovery	*Description*
85.00 m	DRILLING MUD

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 3
Recorder: 70390

Pressure (kPaa) at Critical Points:

1:	2754	4:	234	7:	168
2:	241	5:	249	14:	2731
3:	244	6:	242		

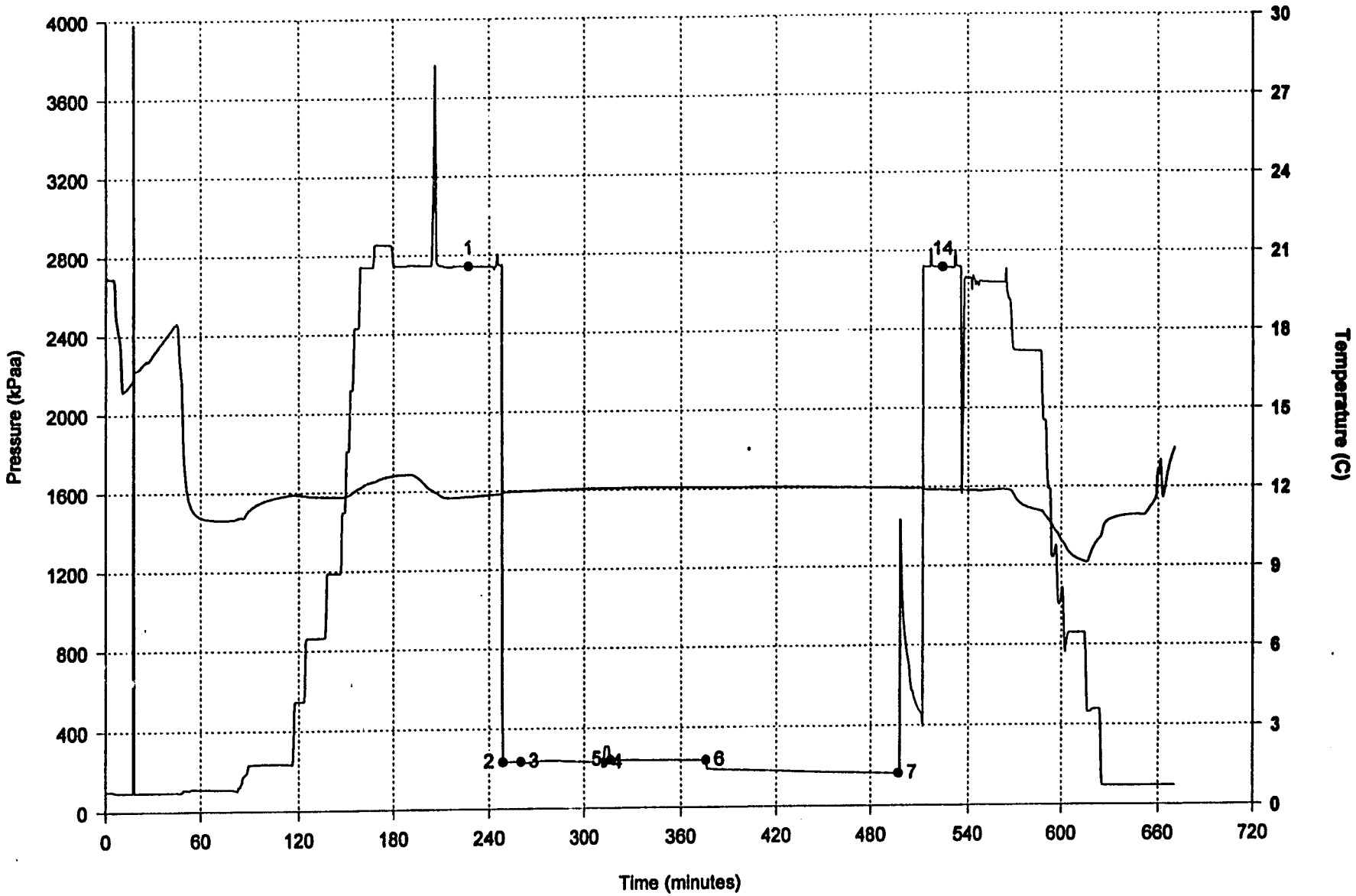


BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 3
Recorder: 75436

Pressure (kPaa) at Critical Points:

1:	2741	4:	226	7:	160
2:	233	5:	241	14:	2715
3:	235	6:	234		

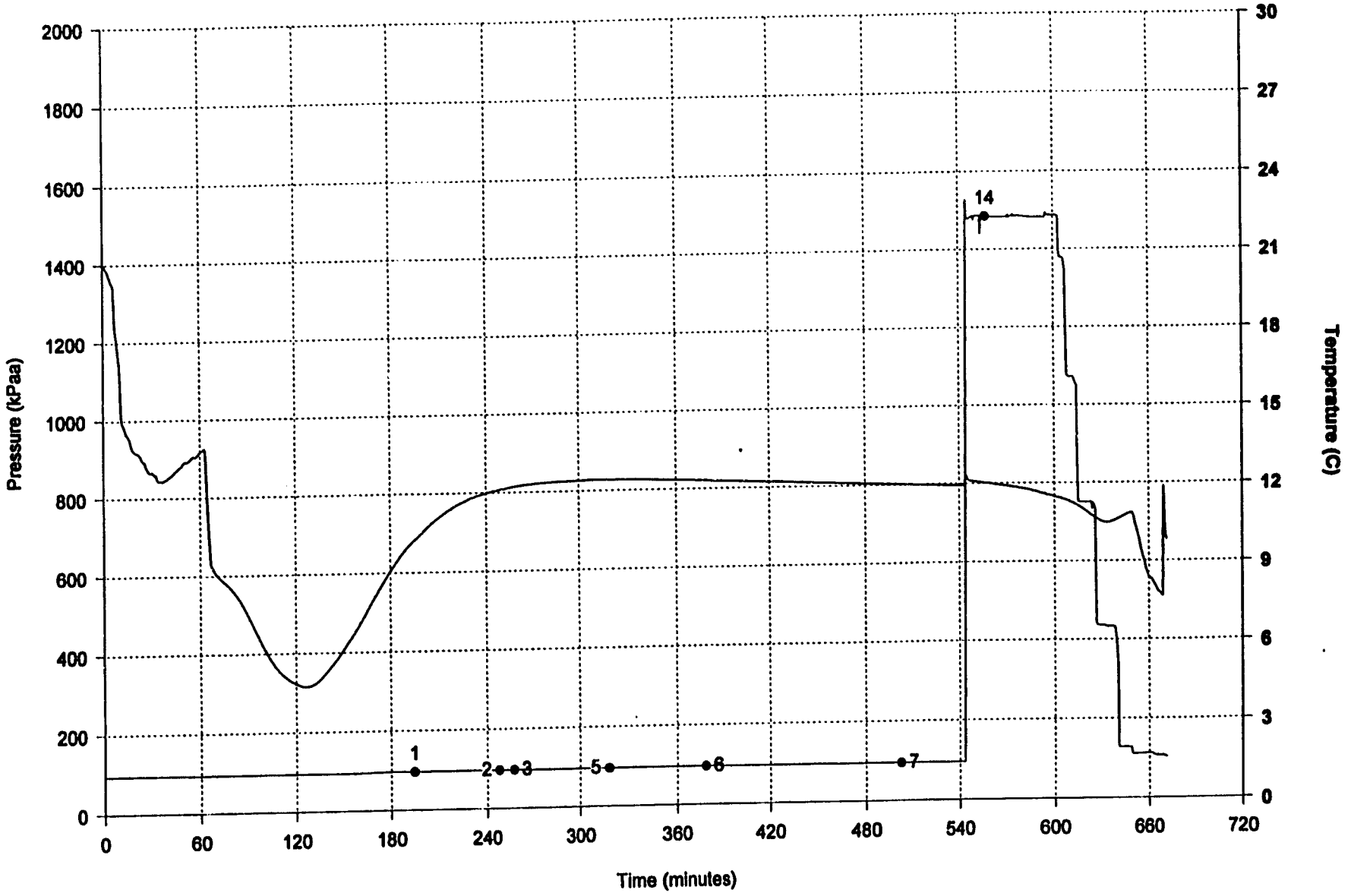


NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 3
Recorder: 70115

Recovery recorder

Pressure (kPaa) at Critical Points:

1:	95	5:	94	14:	1434
2:	95	6:	94		
3:	95	7:	94		



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 3

General Information:

Operator:	Northrock Resources Ltd. 3500, 700 - 2nd Street S.W. Calgary Alberta T2P 2W2
Licence#:	1948
Tester:	Nolin S
Ticket#:	816604
Reverse Circulated?	N
KB Elevation:	586.90 meters
Ground Elevat'n:	580.50 meters
Total Depth:	810.00 meters

Mud Data:

Weight:	1130 kg/m3
Type:	Gel Chemical
Viscosity:	132 s/l
Water Loss:	7.4 cc/s

Hole Data:

Drilled Hole Size:	311 mm
Calipered Hole Size:	311 mm
Hole Condition at Test Time:	Fair
Conditioned prior to this test?	Y

Recorder Summary:

Recorder#	*Type*	*Position*	*Capacity*	*Units*	*Depth*	*Comments*
70115	SPAR	Inside	34500	kPaa	226.00	Recovery recorder
70390	SPAR	Outside	68900	kPaa	241.00	
75436	SPAR	Outside	34500	kPaa	241.00	

Distributions:

Reports Sent To: Brian Merchant

Bottom Hole Sampler#	*Sent To*
625	Core Labs

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 3

Tool Sequence:



Description	*Length*
Pump Out Sub	0.33 m
Cross Over Sub	0.30 m
Pump Out Sub	0.83 m
Recorder Carrier	1.38 m
Hydraulic Tool	1.50 m
Bottom Hole Sampler	1.03 m
Recorder Carrier	1.38 m
Hydraulic Jars	2.22 m
Safety Joint	0.65 m
Inflate Pump	2.38 m
Screen	1.16 m
Top Inflate Packer	1.78 m
Packer Stick Down	0.82 m
Port Sub	0.42 m
Recorder Carrier	2.02 m
Spacing	3.30 m
Packer Stick Up	0.42 m
Bottom Inflate Packer	1.90 m
Spacing	0.31 m
Belly Spring	2.00 m

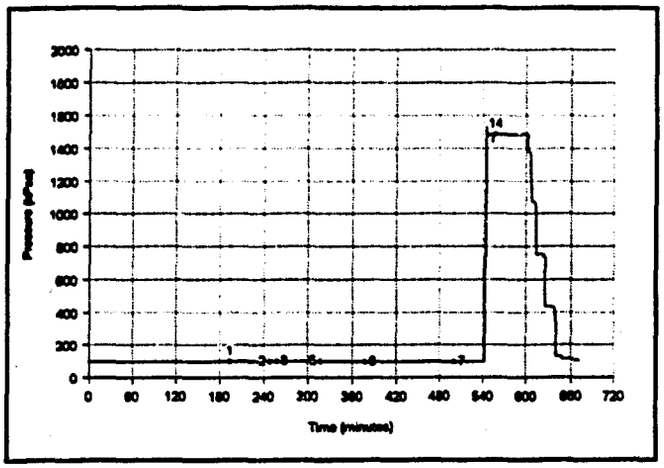
Tool String Length:	26.13 m
Drill Collar I.D.: 57 mm	84.64 m
Drill Pipe O.D.: 102 mm	9.59 m
Heavyweight O.D.:102 mm	138.28 m
Heavyweight I.D.:65 mm	
Collar Pipe Total:	94.23 m
Stick Up:	9.45 m
Tool Above:	14.94 m
Interval Tested:	7.00 m
Bottom Hole Choke Size:	25.40 mm

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 3

Recorder# 70115

Depth: 226.00 m
Temperature: 12.1 C
Location: Inside

Recorder Type: SPAR
Capacity: 34,500 kPaa
Comments: Recovery recorder

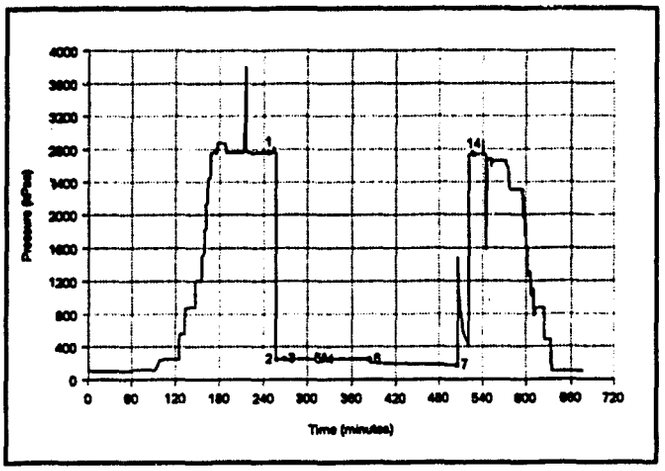


		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	95	
2	Start of 1st Flow	95	
3	End of 1st Flow	95	10.5
5	Start of 2nd Flow	95	
6	End of 2nd Flow	94	59.5
7	End of 2nd Shut-in	94	121.0
14	Final Hydrostatic	1484	

Recorder# 70390

Depth: 241.00 m
Temperature: 13.4 C
Location: Outside

Recorder Type: SPAR
Capacity: 68,900 kPaa



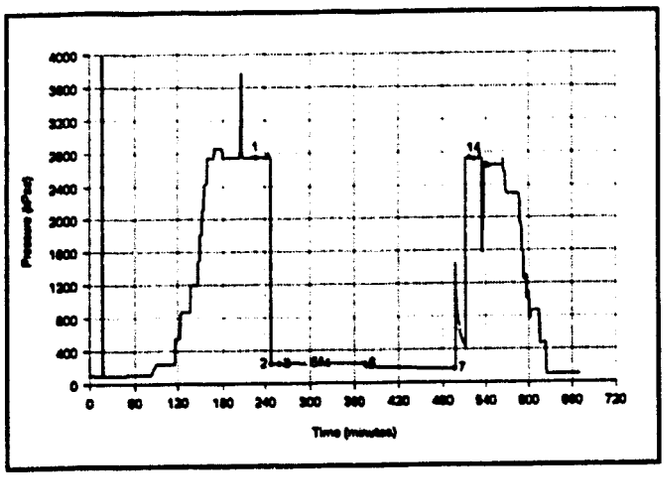
		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	2754	
2	Start of 1st Flow	241	
3	End of 1st Flow	244	10.5
4	End of 1st Shut-in	234	53.0
5	Start of 2nd Flow	249	
6	End of 2nd Flow	242	59.5
7	End of 2nd Shut-in	168	121.0
14	Final Hydrostatic	2731	

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 3

Recorder# 75436

Depth: 241.00 m
Temperature: 12.0 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	2741	
2	Start of 1st Flow	233	
3	End of 1st Flow	235	10.5
4	End of 1st Shut-in	226	53.0
5	Start of 2nd Flow	241	
6	End of 2nd Flow	234	59.5
7	End of 2nd Shut-in	160	121.0
14	Final Hydrostatic	2715	

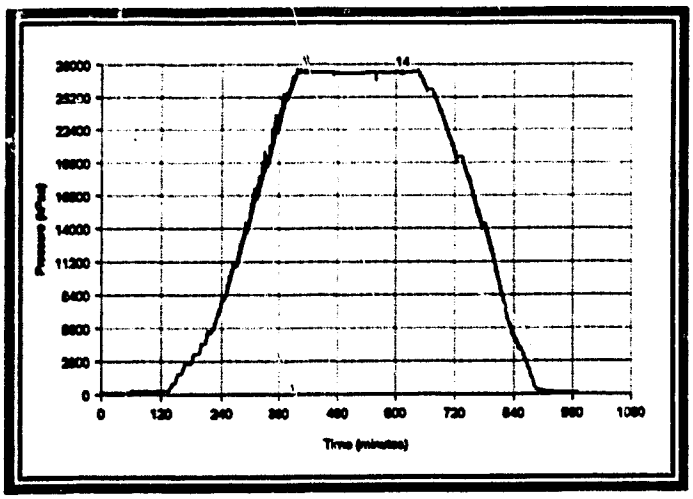
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 4

Baker Oil Tools CONFIDENTIAL

Formation: Bear Rock
Interval - from: 2,707.00 **to:** 2,727.00 meters

Test Date: 2004-03-20
Test Type : Inflate Straddle

Recorder# 75064 at 2,709.00 meters



Blow Description:
Misrun

Remarks:
Misrun - unable to obtain a packer seat. Pumped 3 times with no success. Pulled out of hole to find a ruptured top packer.

Max Btm Hole Temperature @ FSI: 91.1 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	27318		
14	Final Hydrostatic	27270		

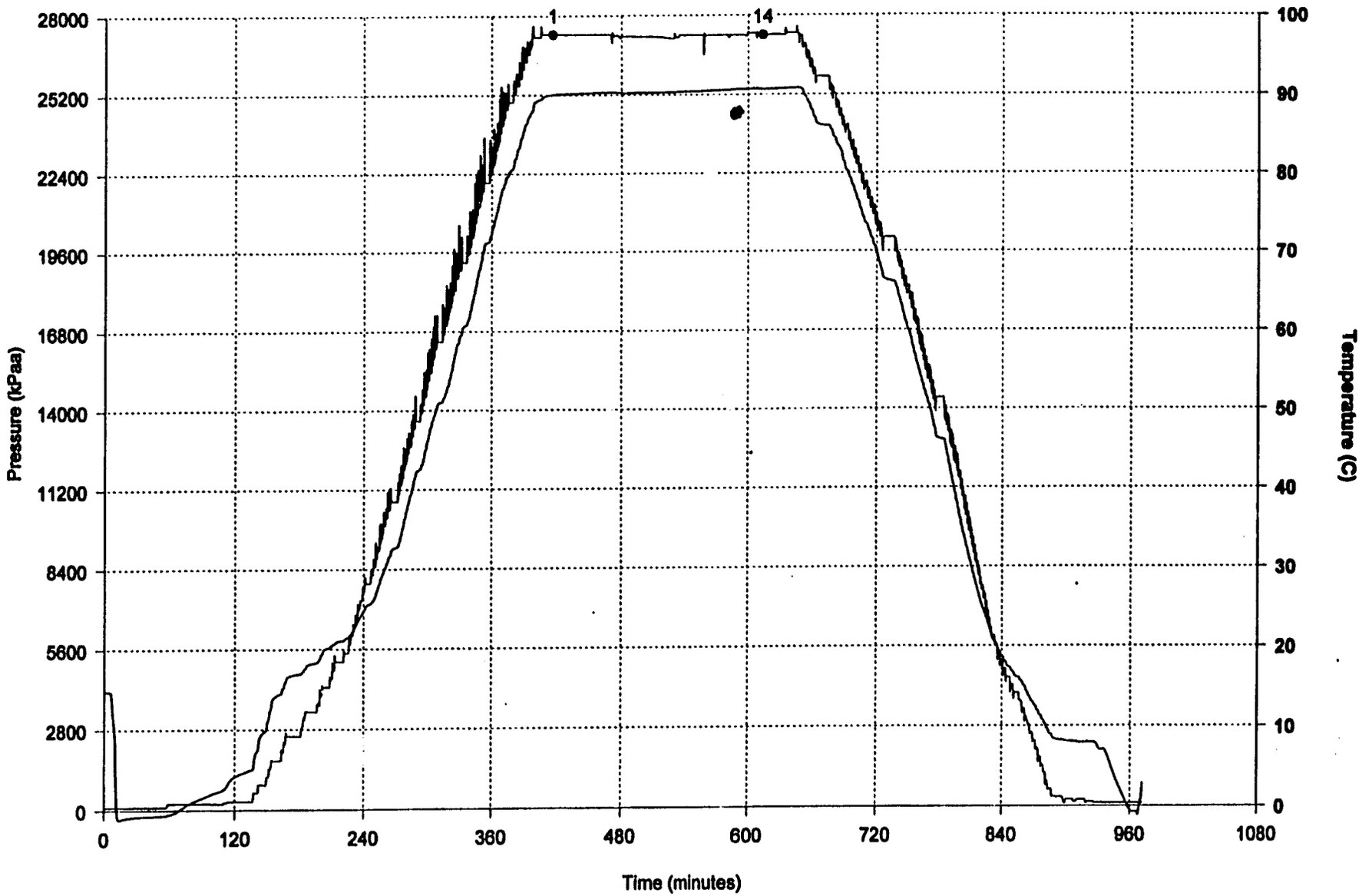
Liquid Recovery 500.00 meters

Salinity : 0 g/m3 Mud Tank Salinity: 0 g/m3

Recovery	*Description*
500.00 m	CUSHION FLUID

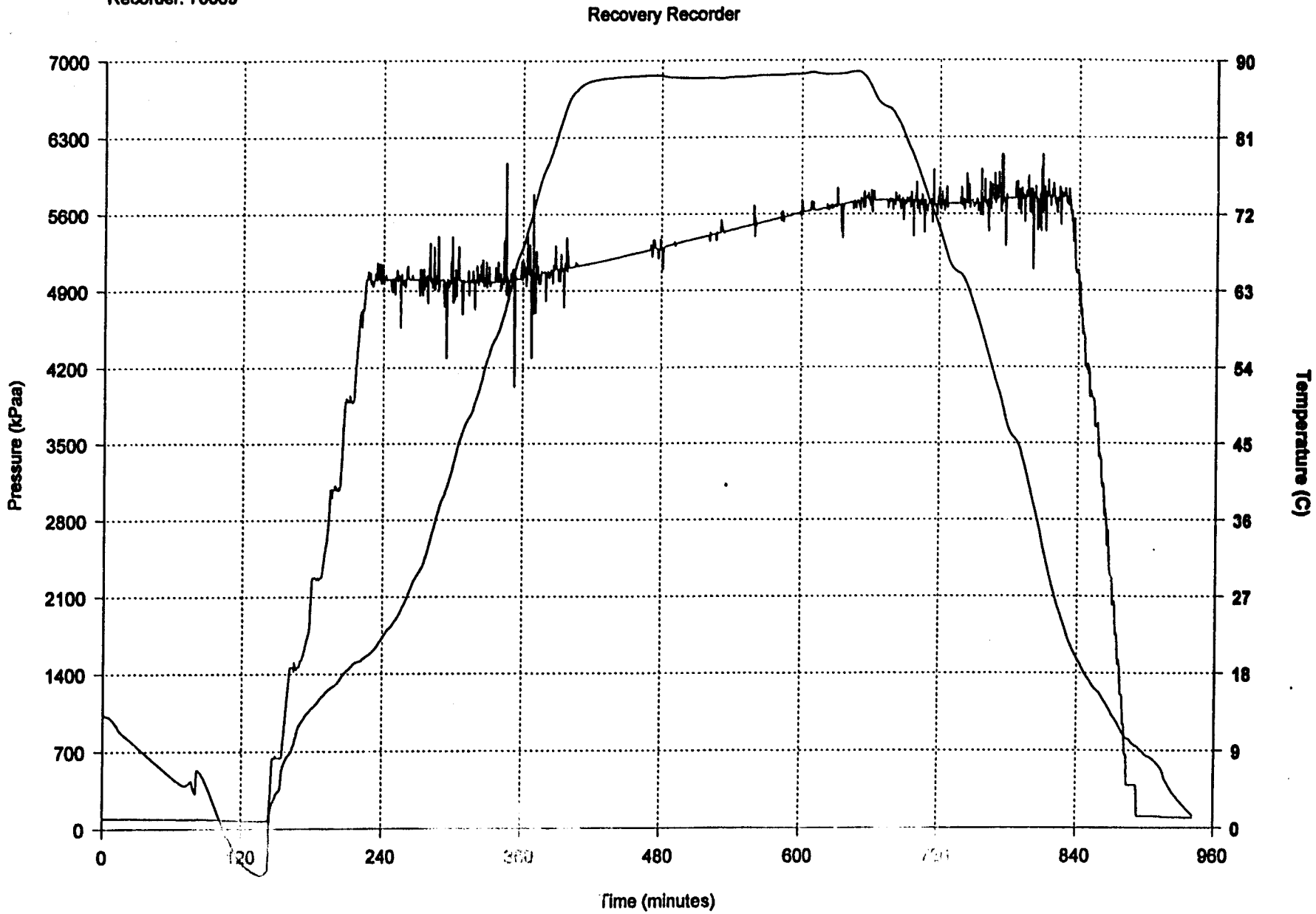
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 4
Recorder: 75064

Pressure (kPaa) at Critical Points:
1: 27318
14: 27270



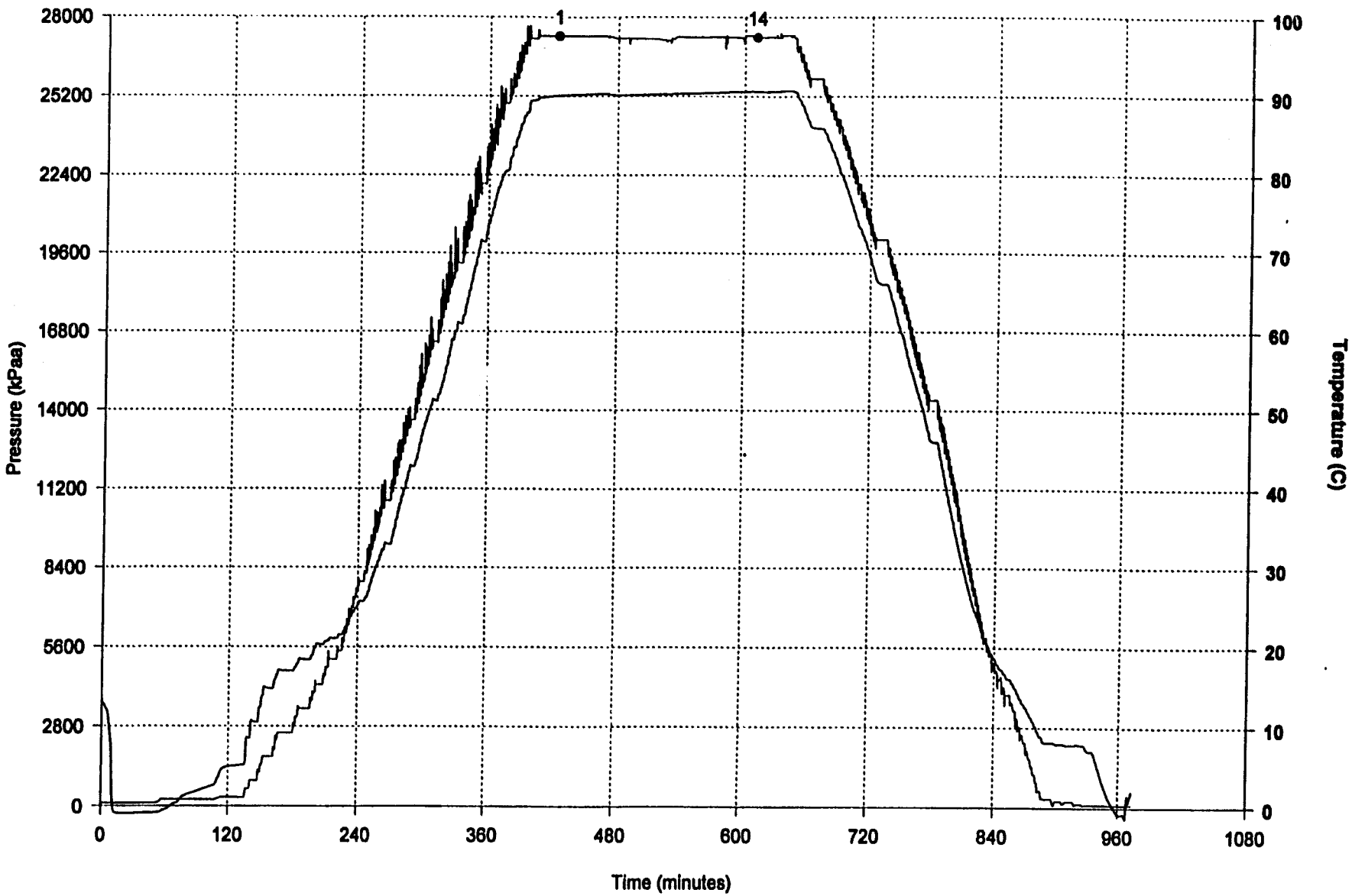
BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 4
Recorder: 70069



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 4
Recorder: 75129

Pressure (kPaa) at Critical Points:
1: 27322
14: 27274



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 4

General Information:

Operator: Northrock Resources Ltd.
3500, 700 - 2nd Street S.W.
Calgary Alberta T2P 2W2

Licence#: 1948

Tester: Constantinoff C

Ticket#: 816551

Reverse Circulated? N

KB Elevation: 586.90 meters

Ground Elevat'n: 580.50 meters

Total Depth: 3,064.00 meters

Cushion: Water 500.00 meters

Mud Data:

Weight: 1040 kg/m3

Type: Gel Chemical

Viscosity: 36 s/l.

Water Loss: 8.5 cc/s

Filter Cake: 0.3 mm

Hole Data:

Drilled Hole Size: 156 mm

Calipered Hole Size: 156 mm

Hole Condition at Test Time: Fair

Conditioned prior to this test? N

Recorder Summary:

Recorder#	*Type*	*Position*	*Capacity*	*Units*	*Depth*	*Comments*
70069	SPAR	Inside	34500	kPaa	2,689.00	Recovery Recorder
75064	SPAR	Outside	34500	kPaa	2,709.00	
75129	SPAR	Outside	34500	kPaa	2,709.00	

Distributions:

Reports Sent To: Geoff Ireland

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 4

Tool Sequence:



Description	Length
Pump Out Sub	0.33 m
Bit Sub	0.97 m
Double Pin Sub	0.30 m
Pump Out Sub	0.83 m
Recorder Carrier	1.38 m
Hydraulic Tool	1.50 m
Bottom Hole Sampler	1.03 m
Recorder Carrier	1.38 m
Real Time Gauge	6.71 m
Hydraulic Jars	2.22 m
Safety Joint	0.65 m
Inflate Pump	2.38 m
Screen	1.16 m
Top Inflate Packer	1.78 m
Packer Stick Down	0.82 m
Port Sub	0.42 m
Recorder Carrier	2.02 m
Spacing	6.69 m
Cross Over Sub	0.30 m
Drill Collar	9.04 m
Cross Over Sub	0.30 m
Packer Stick Up	0.42 m
Bottom Inflate Packer	1.90 m
Perforations	0.31 m
Belly Spring	2.00 m

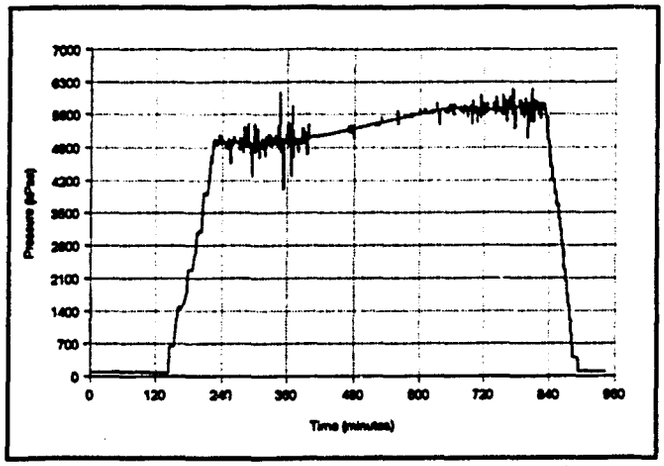
Tool String Length:	46.84 m
Drill Pipe O.D.: 102 mm	0.00 m
Heavyweight O.D.:102 mm	2,280.86 m
Heavyweight I.D.:65 mm	412.52 m
Collar Pipe Total:	2,280.86 m
Stick Up:	9.00 m
Tool Above:	22.62 m
Interval Tested:	20.00 m
Bottom Hole Choke Size:	25.40 mm

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 4

Recorder# 70069

Depth: 2,689.00 m
Temperature: 88.8 C
Location: Inside

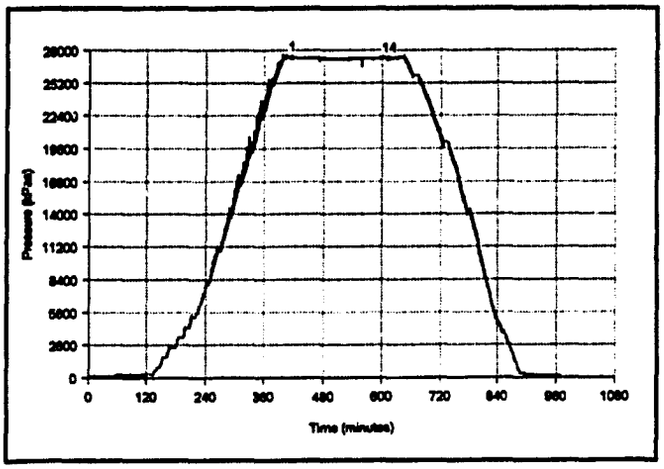
Recorder Type: SPAR
Capacity: 34,500 kPaa
Comments: Recovery Recorder



Recorder# 75064

Depth: 2,709.00 m
Temperature: 91.1 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



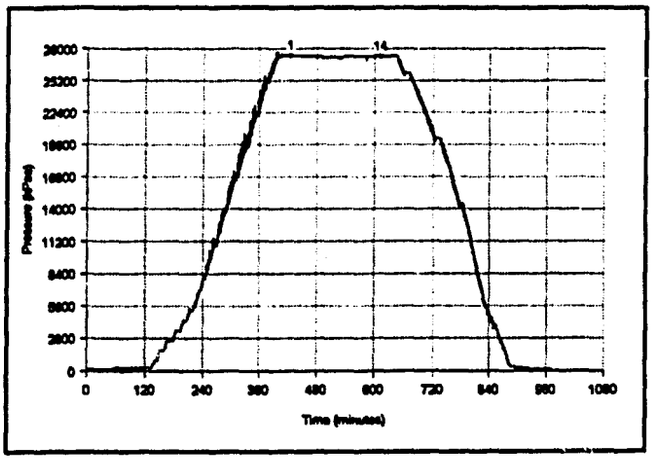
		Pressure (kPaa)	*Time (min)*
1	Initial Hydrostatic	27318	
14	Final Hydrostatic	27270	

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 4

Recorder# 75129

Depth: 2,709.00 m
Temperature: 90.8 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



		Pressure (kPaa)	Time (min)
1	Initial Hydrostatic	27322	
14	Final Hydrostatic	27274	

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5

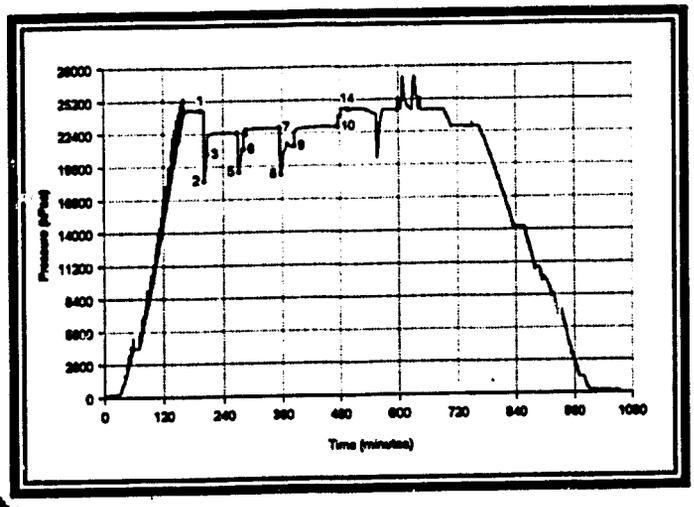
BAKER HUGHES

Baker Oil Tools CONFIDENTIAL

Formation: Not Available
Interval - from: 2,420.00 **to:** 3,064.00 meters

Test Date: 2004-03-20
Test Type : Casing Test

Recorder# 75064 at 2,422.00 meters



Blow Description:

PREFLOW: Weak air blow increasing to strong in 30 seconds, steady throughout. No gas to surface.
SECOND FLOW - Mud to surface in 7 minutes. Approximately 5 m3 of mud sucked out of flare tank.

FINAL FLOW: Gas to surface immediately. Minimal mud cut condensate spray.

Remarks:

Results suggest high permeablity within the interval tested. Initial shut-in pressures decreasing slightly thoughout, use extrapolated pressure with caution.

Max Btm Hole Temperature @ FSI: 86.4 C

		Pressure (kPaa)	Time (min)	Extrapolated Pressure (kPaa)
1	Initial Hydrostatic	24375		
2	Start of 1st Flow	18351		
3	End of 1st Flow	20600	5.5	
4	End of 1st Shut-in	22406	60.0	22449.6
5	Start of 2nd Flow	19084		
6	End of 2nd Flow	20994	9.5	
7	End of 2nd Shut-in	22816	73.5	22843.9
8	Start of 3rd Flow	18855		
9	End of 3rd Flow	21238	28.5	
10	End of 3rd Shut-in	22881	90.5	22926.8
14	Final Hydrostatic	24371		

Gas Measured with Floor Manifold

Flow#	Time (min)	Surface Choke (mm)	Surface Pressure (kPag)	Gas Rate (m3/day)
3	5	19.05	7000	460 870
3	10	19.05	10000	678 248
3	15	19.05	11000	752 002
3	20	19.05	10000	678 248
3	25	19.05	10000	678 248
3	30	19.05	10000	678 248

Liquid Recovery 310.00 meters

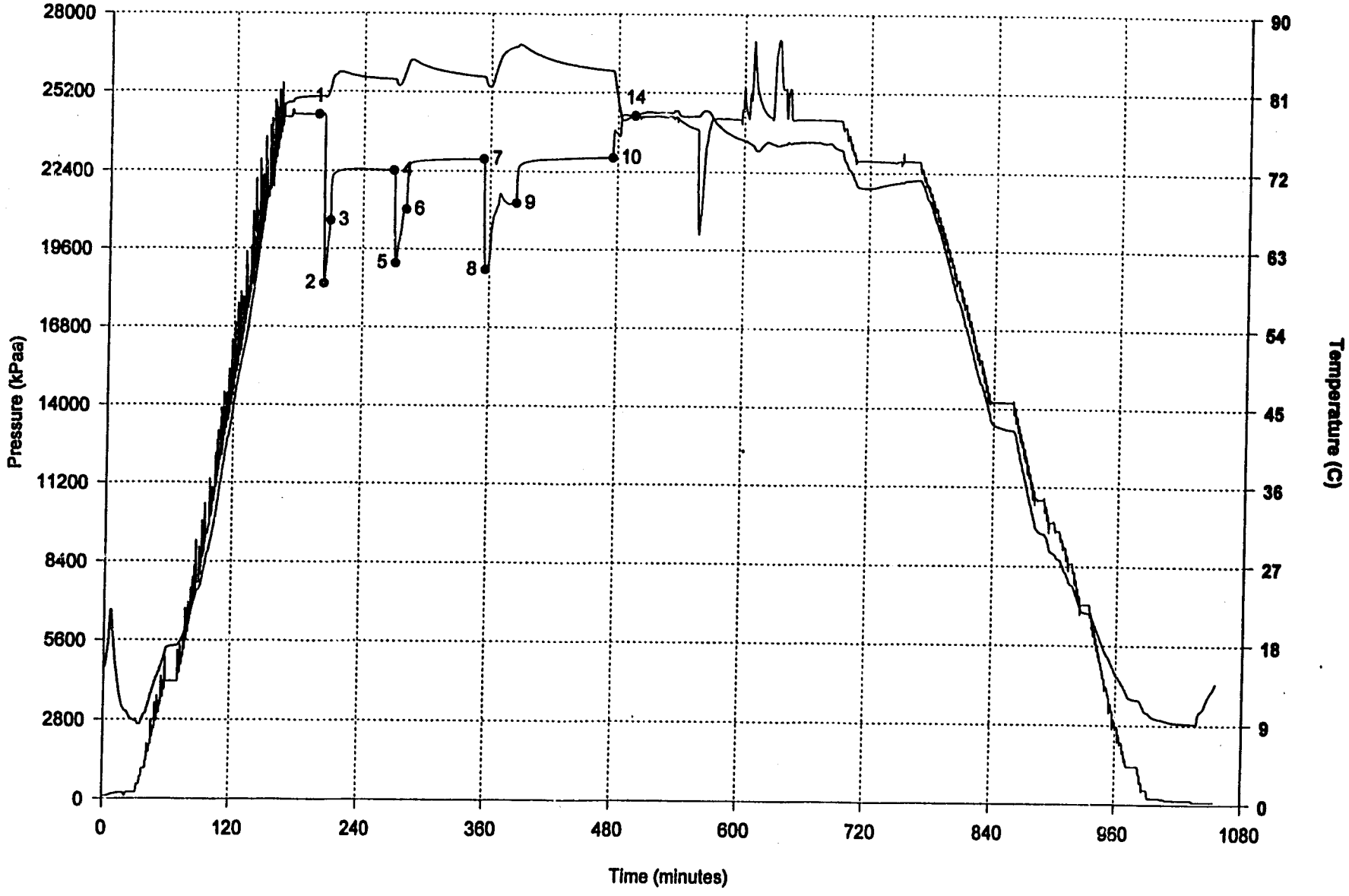
Salinity : 0 g/m3 Mud Tank Salinity: 0 g/m3

Recovery	Description
310.00 m	CONDENSATE

BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 75064

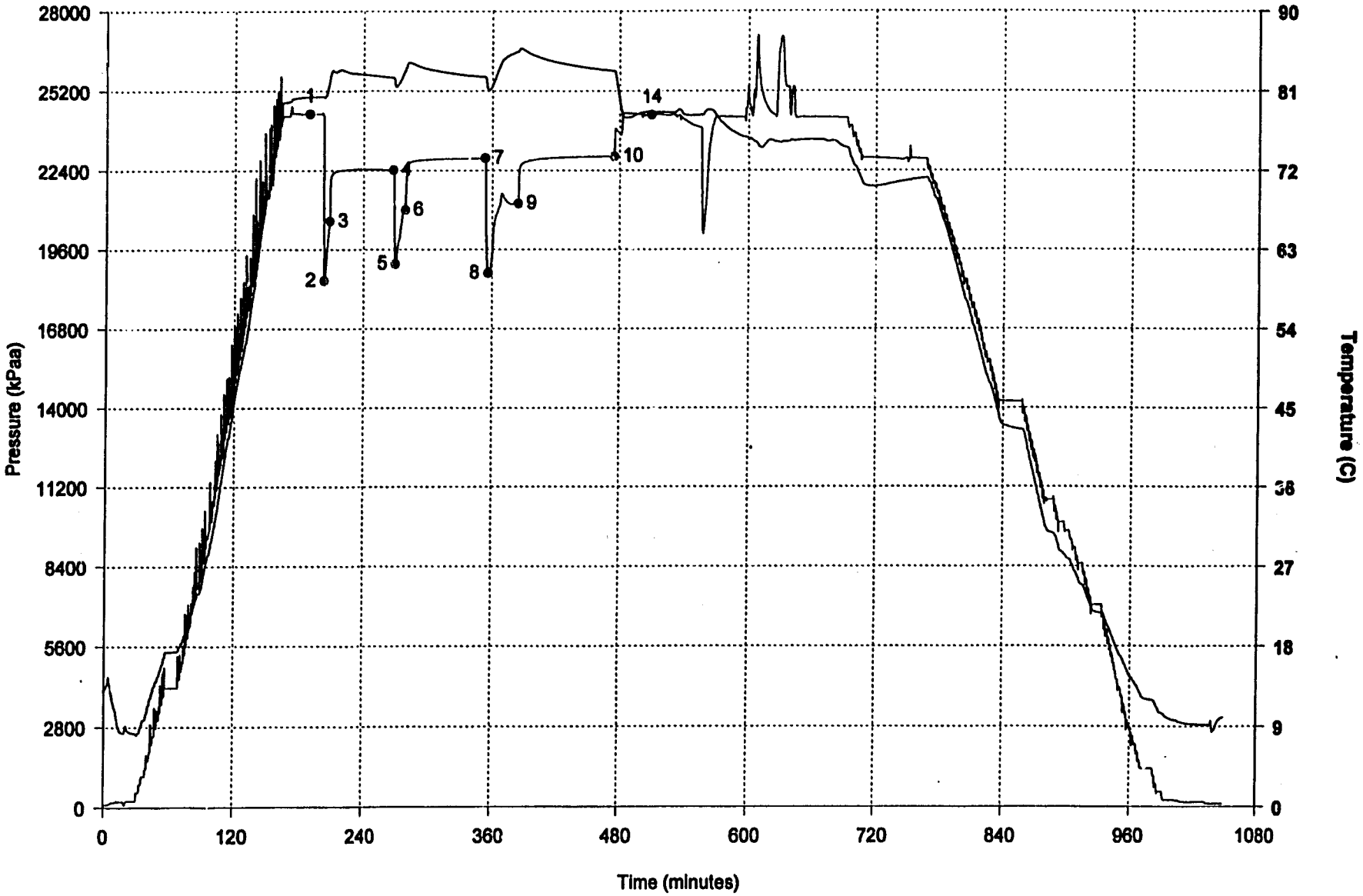
1: 24375	4: 22406	7: 22816	10: 22881
2: 18351	5: 19084	8: 18855	14: 24371
3: 20600	6: 20994	9: 21238	



BAKER OIL TOOLS / LYNES DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 75129

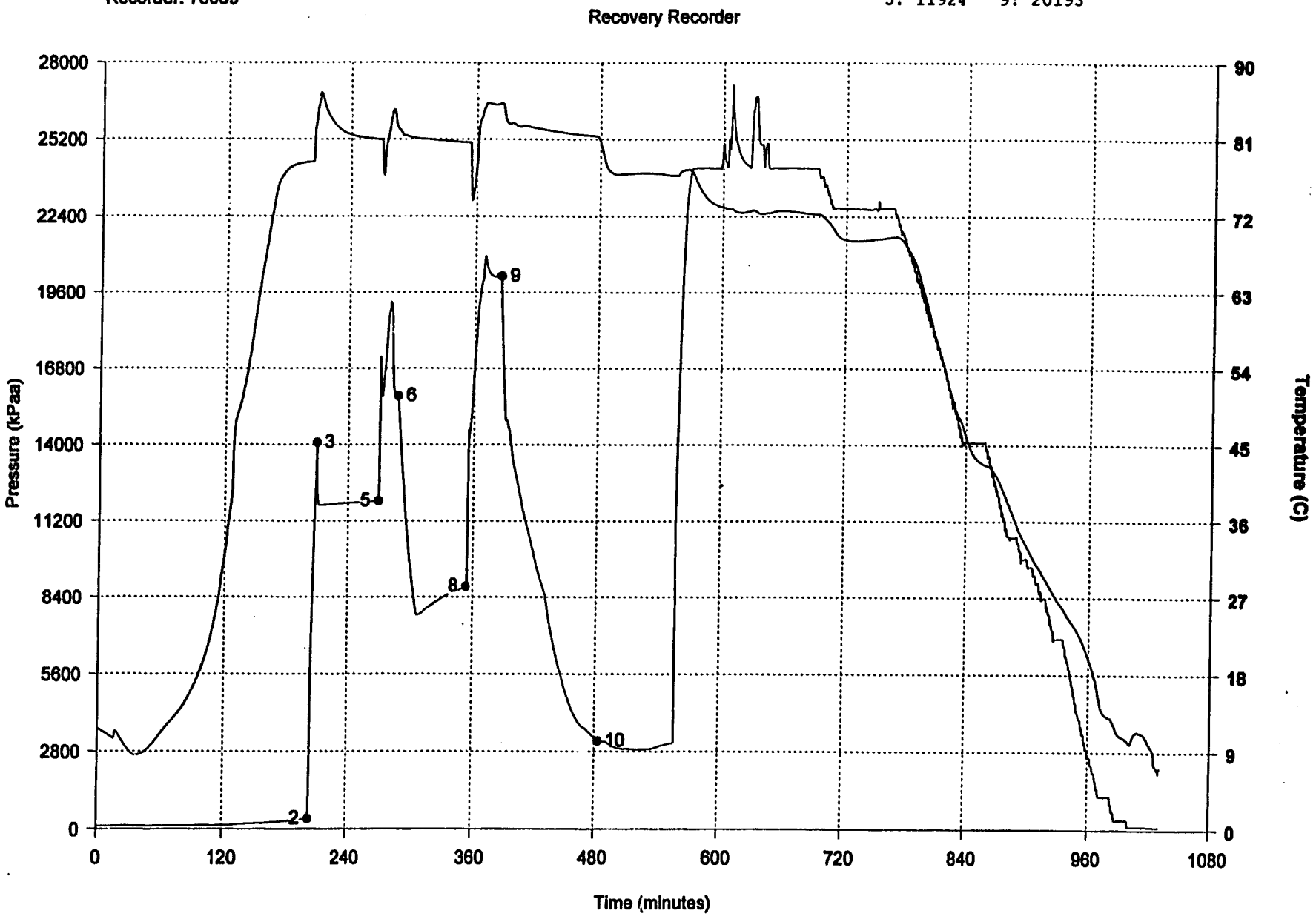
1: 24378	4: 22404	7: 22814	10: 22880
2: 18502	5: 19096	8: 18770	14: 24341
3: 20596	6: 20994	9: 21227	



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 70069

Pressure (kPaa) at Critical Points:

2:	361	6:	15768	10:	3161
3:	14068	8:	8771		
5:	11924	9:	20193		



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5

General Information:

Operator: Northrock Resources Ltd.
3500, 700 - 2nd Street S.W.
Calgary Alberta T2P 2W2

Licence#: 1948

Tester: Constantinoff C

Ticket#: 816552

Reverse Circulated? Y

KB Elevation: 586.90 meters

Ground Elevat'n: 580.50 meters

Total Depth: 3,064.00 meters

Mud Data:

Weight: 1040 kg/m3

Type: Gel Chemical

Viscosity: 36 s/l

Water Loss: 8.5 cc/s

Filter Cake: 0.3 mm

Hole Data:

Drilled Hole Size: 156 mm

Calipered Hole Size: 156 mm

Hole Condition at Test Time: Fair

Conditioned prior to this test? N

Recorder Summary:

Recorder#	*Type*	*Position*	*Capacity*	*Units*	*Depth*	*Comments*
70069	SPAR	Inside	34500	kPaa	2,409.00	Recovery Recorder
75064	SPAR	Outside	34500	kPaa	2,422.00	
75129	SPAR	Outside	34500	kPaa	2,422.00	

Distributions:

Reports Sent To: Geoff Ireland

Fluid Samples - no of: 8 Sent To: Core Labs

Gas Bomb#	*Sent To*
Z0000667	Core Labs
Z0000995	Core Labs

Bottom Hole Sampler#	*Sent To*
611	Core Labs

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5

Tool Sequence:



Description	Length
Pump Out Sub	0.33 m
Bit Sub	0.97 m
Double Pin Sub	0.30 m
Pump Out Sub	0.83 m
Recorder Carrier	1.38 m
Rotating Shut-in Tool	2.58 m
Bottom Hole Sampler	1.03 m
Hydraulic Tool	1.50 m
Recorder Carrier	1.38 m
Hydraulic Jars	2.22 m
Safety Joint	0.65 m
Casing Packer	1.44 m
Packer Stick Down	1.09 m
Recorder Carrier	2.02 m
Perforations	3.00 m
Cross Over Sub	0.30 m
Drill Collar	36.39 m
Cross Over Sub	0.30 m
Real Time Gauge	6.71 m
Belly Spring	1.10 m

Tool String Length:	65.52 m
Drill Pipe O.D.: 102 mm	0.00 m
Heavyweight O.D.:102 mm	2,022.10 m
Heavyweight I.D.:65 mm	385.17 m
Collar Pipe Total:	2,022.10 m
Stick Up:	1.88 m
Tool Above:	14.61 m
Interval Tested:	644.00 m
Bottom Hole Choke Size:	25.40 mm

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5
Recorder#70069

Build-up and Flow Curve Increments

Flow# 1

Chart Label	Time (min)	Pressure (kPaa)
2	0.0	18351
	1.0	18691
	2.0	19169
	3.0	19619
	4.0	20054
	5.0	20423
3	5.5	20600

Shut-in# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
	0.0		20600			
	1.5	1608	22208	4.6667		493.1954
	3.0	1690	22290	2.8333		496.8450
	4.5	1735	22334	2.2222		498.8172
	6.0	1758	22358	1.9167		499.8677
	7.5	1774	22373	1.7333		500.5561
	9.0	1789	22388	1.6111	*	501.2403
	10.5	1804	22404	1.5238	*	501.9195
	12.0	1811	22411	1.4583	*	502.2441
	13.5	1816	22416	1.4074	*	502.4548
	15.0	1819	22418	1.3667	*	502.5868
	16.5	1822	22421	1.3333	*	502.7093
	18.0	1825	22424	1.3056	*	502.8422
	19.5	1827	22426	1.2821	*	502.9426
	21.0	1830	22430	1.2619	*	503.0875
	22.5	1833	22433	1.2444	*	503.2312
	24.0	1837	22436	1.2292	*	503.3886
	25.5	1841	22441	1.2157	*	503.5817
	27.0	1842	22441	1.2037	*	503.6061
	28.5	1843	22442	1.1930	*	503.6502
	30.0	1842	22442	1.1833	*	503.6387
	31.5	1839	22439	1.1746	*	503.5087
	33.0	1838	22437	1.1667	*	503.4389
	34.5	1833	22433	1.1594	*	503.2172
	36.0	1831	22430	1.1528	*	503.1263
	37.5	1831	22430	1.1467	*	503.1069
	39.0	1829	22428	1.1410	*	503.0225
	40.5	1828	22428	1.1358	*	503.0125
	42.0	1828	22427	1.1310	*	502.9724
	43.5	1828	22427	1.1264	*	502.9742
	45.0	1828	22427	1.1222	*	502.9763
	46.5	1823	22422	1.1183		502.7513
	48.0	1819	22419	1.1146		502.5925
	49.5	1817	22417	1.1111		502.5165
	51.0	1814	22414	1.1078		502.3805
	52.5	1813	22412	1.1048		502.3112
	54.0	1811	22410	1.1019		502.2098
	55.5	1809	22409	1.0991		502.1634
	57.0	1808	22408	1.0965		502.1122
	58.5	1808	22407	1.0940		502.0871

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5
Recorder#75064

Build-up and Flow Curve Increments

Flow# 1

Shut-in# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
4	60.0	1806	22406	1.0917		502.0266

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
5	0.0	19084
	1.0	19355
	2.0	19692
	3.0	19877
	4.0	20048
	5.0	20329
	6.0	20660
	7.0	20925
	8.0	21023
	9.0	20984
6	9.5	20994

Shut-in# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
	0.0		20994			
	2.0	1599	22593	8.5000		510.4377
	4.0	1672	22666	4.7500		513.7456
	6.0	1702	22695	3.5000		515.0847
	8.0	1720	22714	2.8750		515.9153
	10.0	1734	22727	2.5000		516.5304
	12.0	1744	22738	2.2500		516.9986
	14.0	1753	22746	2.0714		517.3978
	16.0	1759	22753	1.9375		517.7004
	18.0	1765	22759	1.8333		517.9736
	20.0	1770	22764	1.7500		518.1805
	22.0	1776	22769	1.6818		518.4470
	24.0	1780	22774	1.6250		518.6494
	26.0	1784	22778	1.5769		518.8338
	28.0	1788	22781	1.5357		518.9895
	30.0	1791	22785	1.5000		519.1505
	32.0	1793	22787	1.4688		519.2398
	34.0	1795	22789	1.4412		519.3489
	36.0	1797	22791	1.4167		519.4388
	38.0	1800	22794	1.3947		519.5515
	40.0	1802	22795	1.3750		519.6338
	42.0	1803	22797	1.3571	*	519.6937
	44.0	1805	22799	1.3409	*	519.7788
	46.0	1807	22801	1.3261	*	519.8716
	48.0	1808	22802	1.3125	*	519.9333
	50.0	1809	22803	1.3000	*	519.9821
	52.0	1811	22804	1.2885	*	520.0439
	54.0	1812	22806	1.2778	*	520.0990
	56.0	1813	22807	1.2679	*	520.1395
	58.0	1814	22808	1.2586	*	520.1949
	60.0	1815	22809	1.2500	*	520.2426
	62.0	1816	22810	1.2419	*	520.3012
	64.0	1817	22811	1.2344	*	520.3518

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5
Recorder#75064

Build-up and Flow Curve Increments

Flow# 2

Shut-in# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
	66.0	1818	22812	1.2273	*	520.3886
	68.0	1820	22813	1.2206	*	520.4474
	70.0	1820	22814	1.2143	*	520.4784
	72.0	1821	22815	1.2083	*	520.5302
7	73.5	1822	22816	1.2041	*	520.5513

Flow# 3

Shut-in# 3

Chart Label	Time (min)	Pressure (kPaa)	Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
8	0.0	18855		0.0	.	21238			
	1.0	18746		2.5	1361	22599	18.4000		510.7074
	2.0	18829		5.0	1427	22664	9.7000		513.6658
	3.0	19073		7.5	1465	22702	6.8000		515.3996
	4.0	19390		10.0	1491	22729	5.3500		516.5852
	5.0	20104		12.5	1511	22749	4.4800		517.5109
	6.0	20502		15.0	1528	22765	3.9000		518.2567
	7.0	20736		17.5	1542	22779	3.4857		518.8990
	8.0	20822		20.0	1553	22791	3.1750		519.4283
	9.0	20924		22.5	1563	22800	2.9333		519.8543
	10.0	21042		25.0	1571	22808	2.7400		520.2229
	11.0	21137		27.5	1578	22815	2.5818		520.5378
	12.0	21274		30.0	1584	22821	2.4500		520.8037
	13.0	21561		32.5	1588	22826	2.3385		521.0239
	14.0	21533		35.0	1592	22830	2.2429		521.1869
	15.0	21440		37.5	1596	22834	2.1600		521.3788
	16.0	21372		40.0	1600	22838	2.0875		521.5647
	17.0	21319		42.5	1605	22842	2.0235		521.7650
	18.0	21281		45.0	1608	22846	1.9667		521.9322
	19.0	21253		47.5	1612	22850	1.9158		522.1067
	20.0	21229		50.0	1616	22853	1.8700		522.2758
	21.0	21205		52.5	1619	22857	1.8286	*	522.4250
	22.0	21185		55.0	1622	22860	1.7909	*	522.5681
	23.0	21209		57.5	1625	22862	1.7565	*	522.6815
	24.0	21227		60.0	1627	22865	1.7250	*	522.7999
	25.0	21239		62.5	1630	22867	1.6960	*	522.9074
	26.0	21242		65.0	1632	22870	1.6692	*	523.0146
	27.0	21248		67.5	1634	22871	1.6444	*	523.0948
	28.0	21237		70.0	1635	22873	1.6214	*	523.1592

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5
Recorder#75064

Build-up and Flow Curve Increments

Flow# 3

Chart Label	Time (min)	Pressure (kPaa)
9	28.5	21238

Shut-in# 3

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap	Pressure**2 (kPaa^2/10^6)
	72.5	1636	22874	1.6000	*	523.2183
	75.0	1638	22876	1.5800	*	523.2893
	77.5	1639	22877	1.5613	*	523.3494
	80.0	1640	22878	1.5438	*	523.3905
	82.5	1641	22879	1.5273	*	523.4292
	85.0	1642	22880	1.5118	*	523.4737
	87.5	1643	22880	1.4971	*	523.5036
	90.0	1643	22881	1.4833	*	523.5300
10	90.5	1643	22881	1.4807	*	523.5355

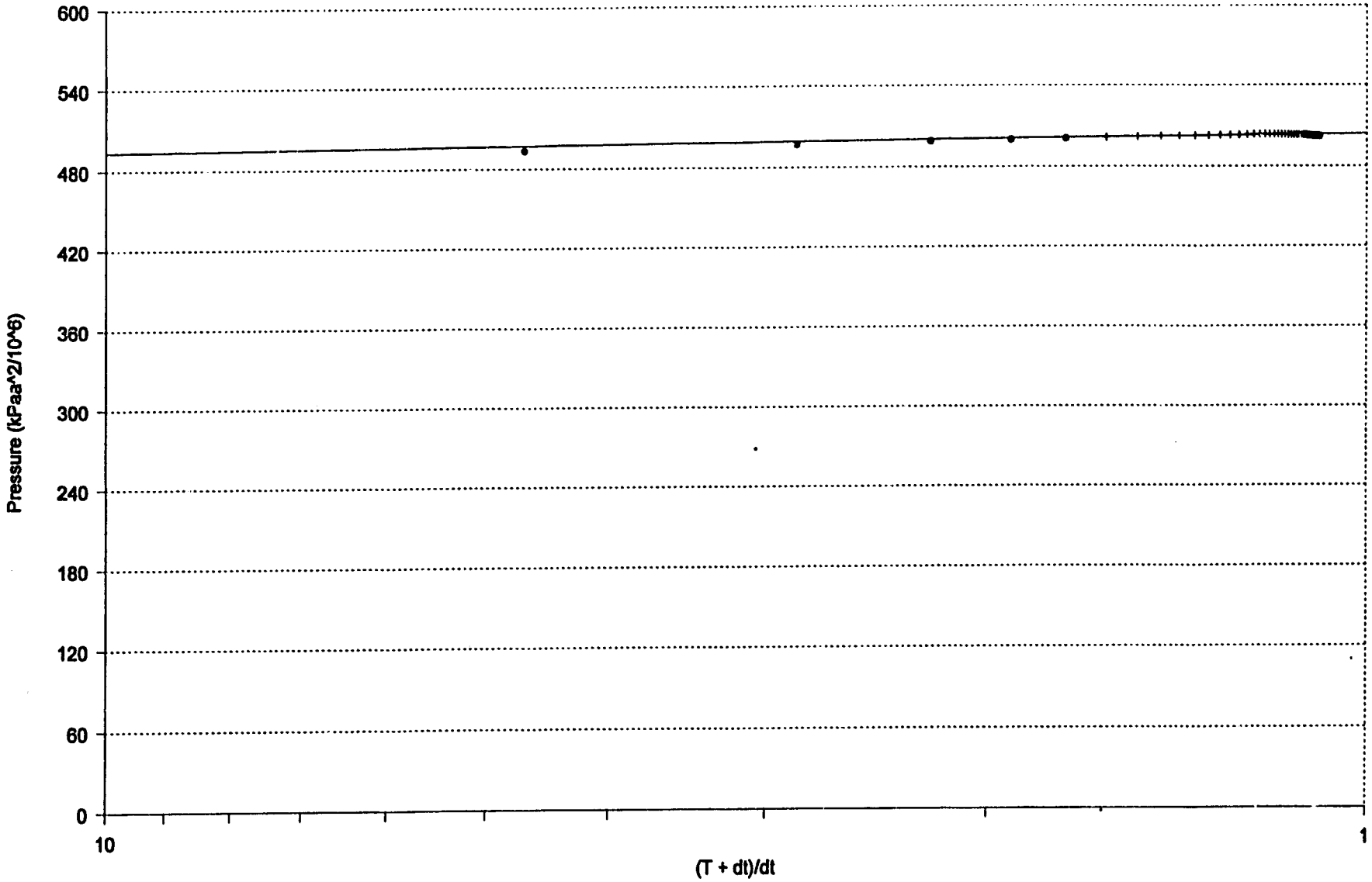
Horner Extrapolation:

Shut-in#	Extrapolated Pressure (kPaa)	Extrapolated Slope ((kPaa^2/10^6)/cycle)
1	22449.6	10.59256
2	22843.9	16.26003
3	22926.8	11.99587

Note: Increment listing is filtered to include critical data only. Complete time/pressure data is available in electronic or printed format.

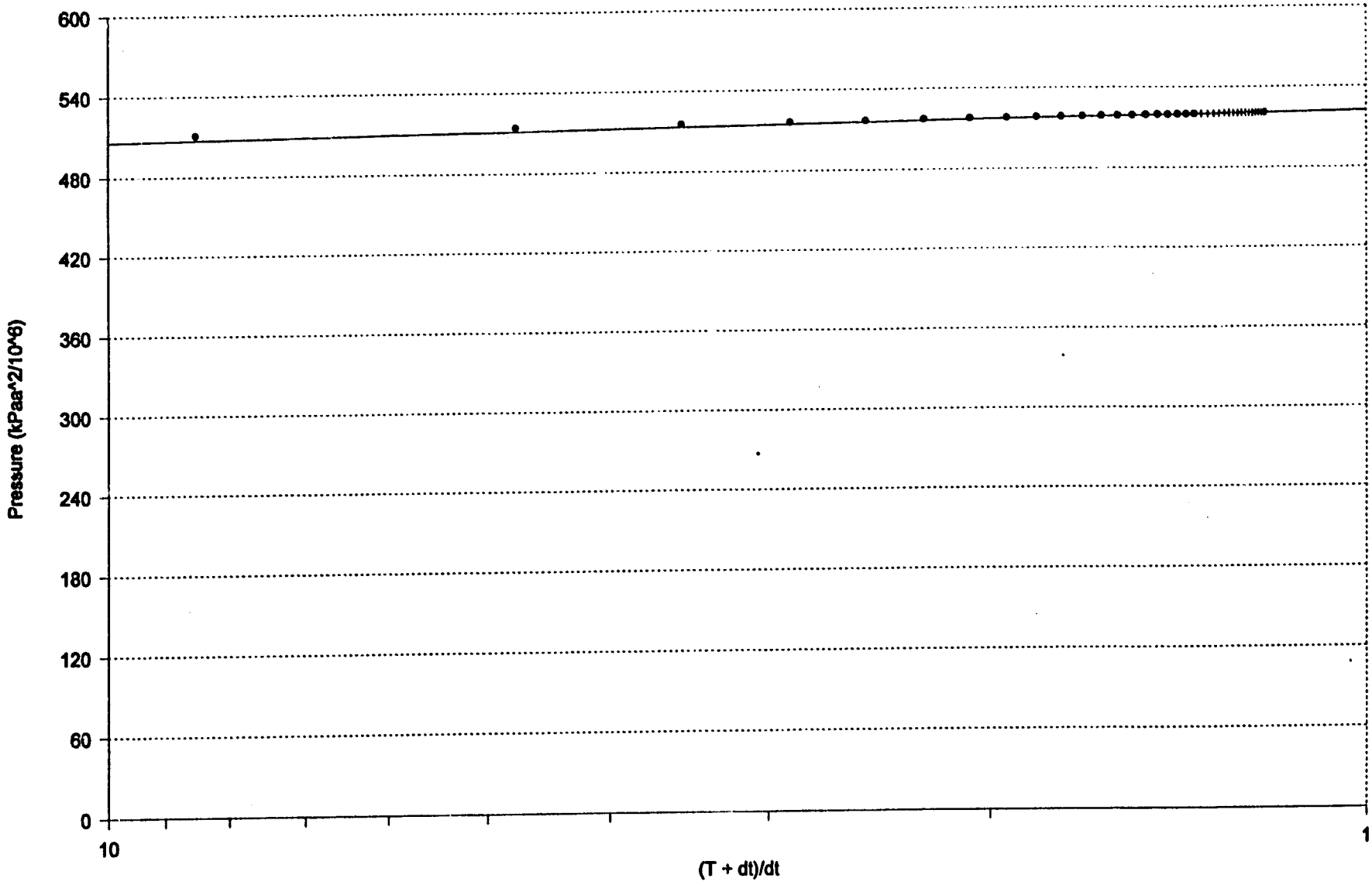
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 75064

Shut-in #1
Slope = 10.59 kPaa^2/10^6/cycle
Extrapolated Pressure = 22449.64 kPaa



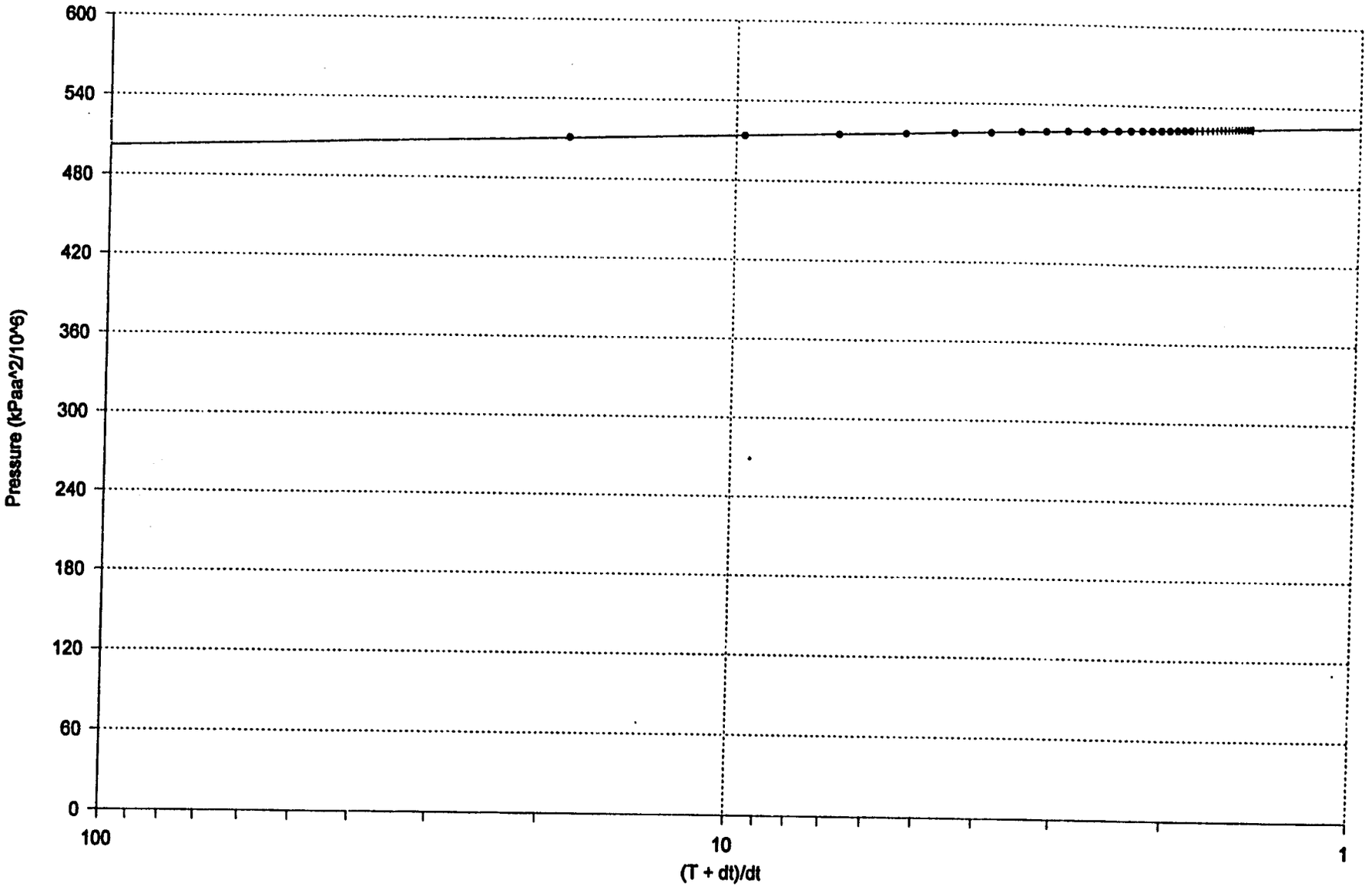
NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 75064

Shut-in #2
Slope = 16.26 kPaa^2/10^6/cycle
Extrapolated Pressure = 22843.85 kPaa



NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST #: 5
Recorder: 75064

Shut-In #3
Slope = 12.00 kPaa^2/10^6/cycle
Extrapolated Pressure = 22928.78 kPaa

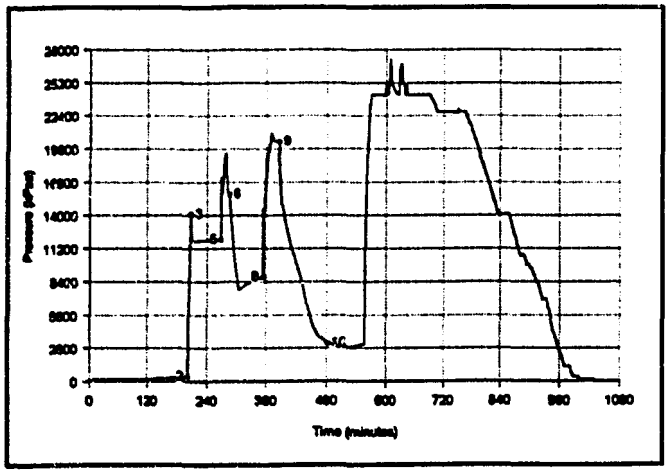


NORTHROCK ET AL SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5

Recorder# 70069

Depth: 2,409.00 m
Temperature: 86.4 C
Location: Inside

Recorder Type: SPAR
Capacity: 34,500 kPaa
Comments: Recovery Recorder

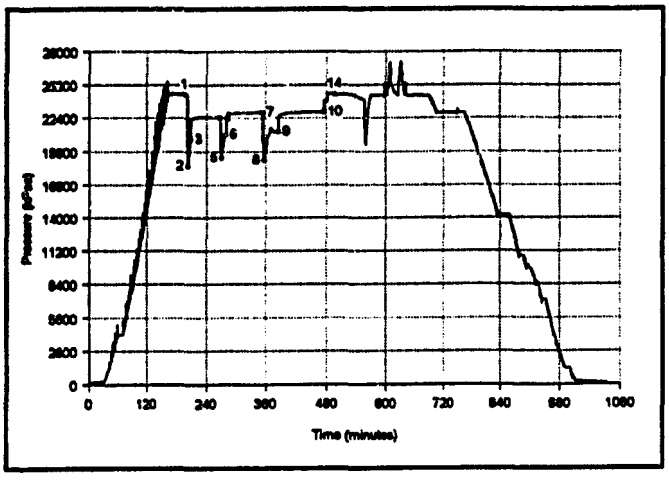


		Pressure (kPaa)	Time (min)
2	Start of 1st Flow	361	
3	End of 1st Flow	14068	5.5
5	Start of 2nd Flow	11924	
6	End of 2nd Flow	15768	9.5
8	Start of 3rd Flow	8771	
9	End of 3rd Flow	20193	28.5
10	End of 3rd Shut-in	3161	90.5

Recorder# 75064

Depth: 2,422.00 m
Temperature: 86.4 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



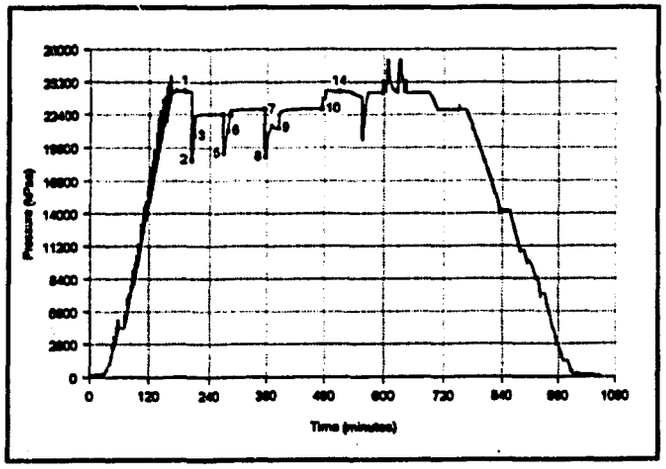
		Pressure (kPaa)	Time (min)
1	Initial Hydrostatic	24375	
2	Start of 1st Flow	18351	
3	End of 1st Flow	20600	5.5
4	End of 1st Shut-in	22406	60.0
5	Start of 2nd Flow	19084	
6	End of 2nd Flow	20994	9.5
7	End of 2nd Shut-in	22816	73.5
8	Start of 3rd Flow	18855	
9	End of 3rd Flow	21238	28.5
10	End of 3rd Shut-in	22881	90.5

NORTHROCK ET AL. SUMMIT CREEK B-44
00/ 64.230 / 125.532 /0
DST# 5

Recorder# 75129

Depth: 2,422.00 m
Temperature: 86.4 C
Location: Outside

Recorder Type: SPAR
Capacity: 34,500 kPaa



		Pressure (kPaa)	Time (min)
1	Initial Hydrostatic	24378	
2	Start of 1st Flow	18502	
3	End of 1st Flow	20596	5.5
4	End of 1st Shut-in	22404	60.0
5	Start of 2nd Flow	19096	
6	End of 2nd Flow	20994	9.5
7	End of 2nd Shut-in	22814	73.5
8	Start of 3rd Flow	18770	
9	End of 3rd Flow	21227	28.5
10	End of 3rd Shut-in	22880	90.5

Appendix #6:
Current Wellbore Schematic

Surface Legal Location	Field	Area	Province	License No.	Current Well Status

Elevation (m)	Ground Elevation (m)	Casing Flange Elevation (m)	KB-Ground Distance (m)	KB-Casing Flange Distance (m)	Plug Back Total Depth (mKB)

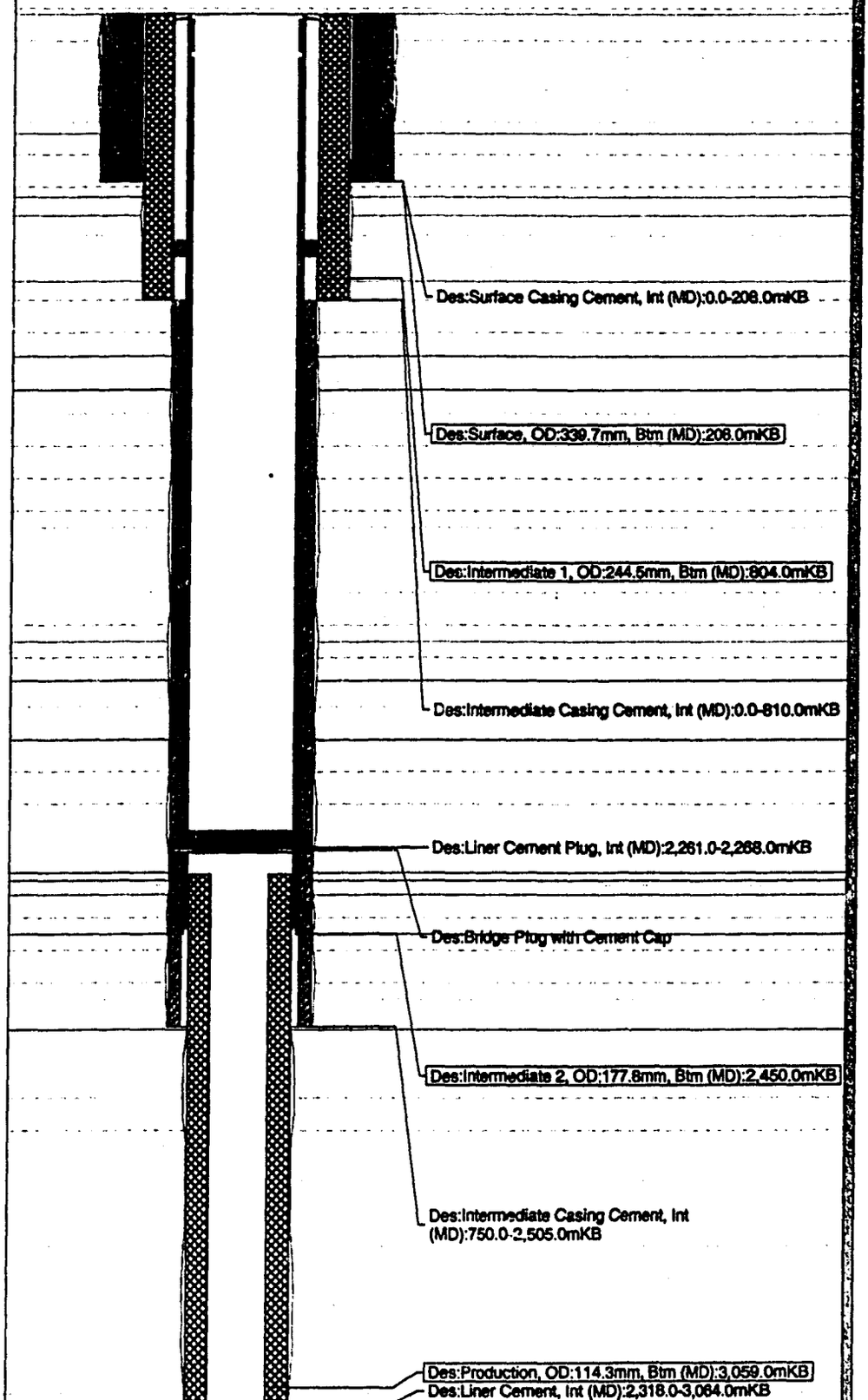
Most Recent Job

Primary Job Type	Start Date	End Date
Drilling - original	1/8/2004	3/29/2004

Original Hole: 4/1/2004 (KB-Grd: 0.0m)

mKB (MD)	Incl	mKB (TVD)
0		
13	0.2	13
24	0.4	24
87	1.3	87
175	2.7	175
207	3.1	207
458	3.4	457
734	3.2	733
796	3.4	795
810	3.2	809
1042	3.4	1040
1193	5.9	1191
1349	6.4	1346
1676	7.7	1669
1748	8.8	1740
1775	9.6	1767
1831	7.6	1822
1862	8.5	1853
1920	8.8	1910
2001	9.3	1990
2086	5.8	2075
2153	1.2	2141
2177	1.2	2165
2210	2.0	2198
2232	1.5	2220
2246	1.4	2234
2269	1.5	2257
2325	1.8	2313
2435	3.6	2423
2454	3.7	2442
2474	3.9	2462
2498	4.1	2486
2635	5.5	2623
2663	2.6	2650
2705	2.1	2693
2727	2.8	2715
2784	4.4	2771
2821	4.2	2808
2879	2.0	2866
2908	2.7	2895
2981	6.0	2968
3018	3.8	3004
3050	3.0	3037

Schematic - Actual



END OF WELL REPORT

N.E.B. COPY

End of Well Report

For:

Northrock Resources Ltd.

Northrock et al Summit Creek B-44
B-44-64-30-125-45
NWT, Canada

PREPARED BY

Datalog Canada Ltd.

DATALOG

March 2004

DATALOG

Northrock et al Summit Creek B44-ST1

Operator: Northrock Resources Ltd
Well: Northrock et al Summit Creek B44-ST1
Location: B-44-64-30-125-45
Country: Canada
UWID: 300B444643012545O
Elevation GL: 580.50
KB: 586.00
Drilling Rig: Akita # 40
Spud Date: 16/01/2004
Print Date: 28/03/2004
Scale: 1:240

Personnel:

Jose Luis Caceres
Eyal Greenfeld
Zandar Cherny

HoleData:

444.5mm Surface Hole to 208m MD
311mm 1st Inrermediate Hole to 810m MD
216mm 2nd Inrermediate Hole to 2450m MD
156mm to 3064m MD (TD).

Notes:

Sidetrack 1 was kicked off from 1705m MD on Feb 20, 2004 and drilled to a depth of 2505m MD. When pulling out a part of BHA was lost on bottom. The fish was not retrieved.

CasingData:

Surface Casing: 340mm @ 208m MD
Intermediate # 1: 244.5mm @ 810m MD
Intermediate # 2: 177.8mm @ 2450m MD

Lithology

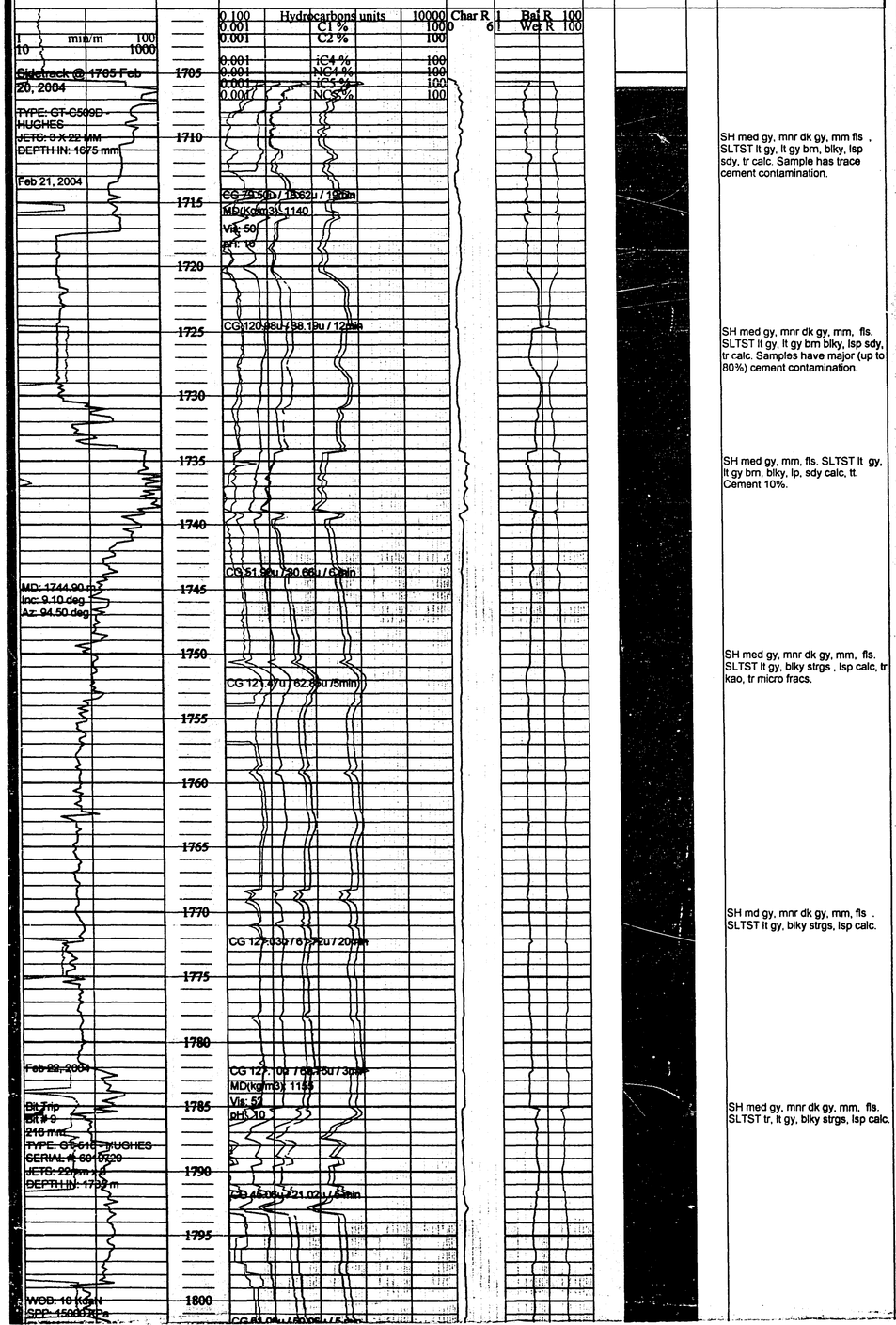
Not Available	Gypsum	Serpentinite	Extrusive	Clyst Brown
Sandstone	Marlstone	Diabase	Altered Low	Basalt Low
Siltstone	Salt	Basalt	Altered Medium	Basalt Medium
Shale	Coal	Pillow Lava	Altered High	Basalt High
Chert	Metamorphic	Leuco Granite	Clyst Green Gray	Shale 2
Conglomerate	Granite	Biotite Granite	Clyst Pale Green	Siltstone 2
Limestone	Breccia	K Feldspar	Clyst Grey	
Dolomite	Tuff	Cataclased	Clyst Violet	
Anhydrite	Claystone	Intrusive	Clyst Yellow	

ROP
1.000 min/m 100.000

RPM
10.000 1000.000

Hydrocarbons
0.100 units 10000.000
C1
0.001 % 100.000
C2
0.001 % 100.000
C3
0.001 % 100.000
iC4
0.001 % 100.000
NC4
0.001 % 100.000
iC5
0.001 % 100.000
NC5
0.001 % 100.000

Char R
Bal R
Wet R
Porosity
Interpreted Lithology
Grain Size
Stratigraphy



SH med gy, mnr dk gy, mm fls , SLTST lt gy, lt gy brn, blky, lsp sdy, tr calc. Sample has trace cement contamination.

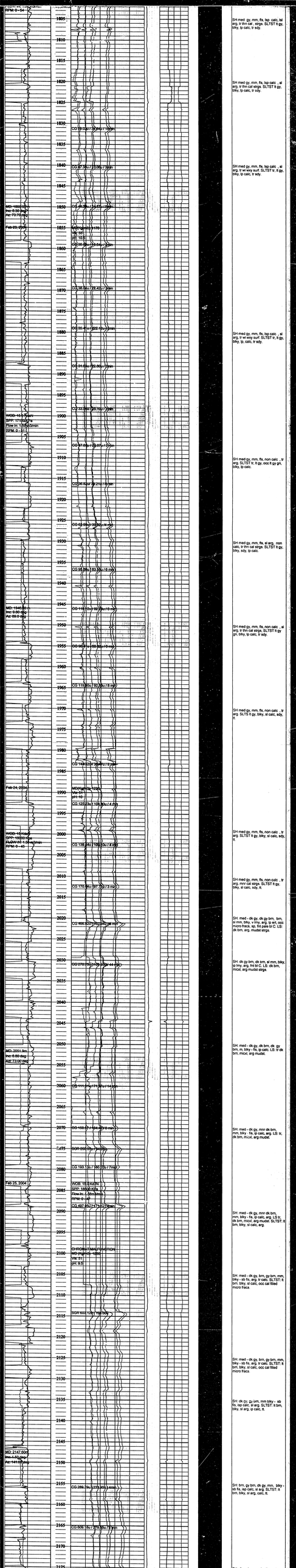
SH med gy, mnr dk gy, mm, fls. SLTST lt gy, lt gy brn blky, lsp sdy, tr calc. Samples have major (up to 80%) cement contamination.

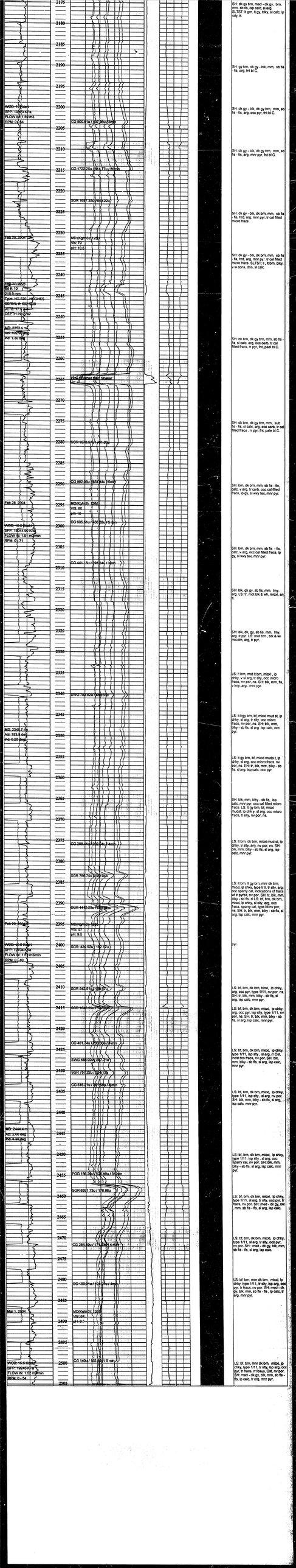
SH med gy, mm, fls. SLTST lt gy, lt gy brn, blky, lp, sdy calc, tt. Cement 10%.

SH med gy, mnr dk gy, mm, fls. SLTST lt gy, blky strgs , lsp calc, tr kao, tr micro fracs.

SH md gy, mnr dk gy, mm, fls . SLTST lt gy, blky strgs, lsp calc.

SH med gy, mnr dk gy, mm, fls. SLTST tr, lt gy, blky strgs, lsp calc.


RPM: 0 - 54
1805
1810
1815
1820
1825
1830
CG 970 (0)/7 720u / 7 190m
1835
1840
CG 97.3u / 7 510u / 7.90m
1845
1850
CG 98.8u / 7.44u / 7.90m
MD: 1060.0m
Inc: 0.00 deg
Az: 73.70 deg
1855
Feb 23, 2004
WOB: 15 kDaN
Wt: 9.0
SPP: 1050 kPa
1860
CG 98.0u / 7.59u / 7.90m
1865
1870
CG 98.0u / 7.45u / 7.90m
1875
1880
CG 95.4u / 7.22u / 7.90m
1885
CG 94.6u / 7.85u / 7.90m
1890
1895
CG 93.0u / 7.82u / 7.90m
1900
WOB: 15.5 kDaN
SPP: 17100 kPa
Flow In: 1.045 l/min
RPM: 0 - 51
1905
CG 97.6u / 7.87u / 7.90m
1910
1915
CG 96.8u / 7.91u / 7.90m
1920
1925
CG 94.0u / 7.96u / 8 m3
1930
1935
CG 95.3u / 7.83u / 8 m3
1940
1945
MD: 1946.0m
Inc: 0.00 deg
Az: 69.0 deg
CG 119.7u / 9.67u / 8 m3
1950
1955
CG 96.5u / 7.66u / 8 m3
1960
1965
CG 119.0u / 9.20u / 8 m3
1970
1975
1980
CG 139.2u / 10.90u / 8 m3
1985
MD: 1987.0m
Inc: 0.00 deg
Az: 69.0 deg
1990
Feb 24, 2004
WOB: 15 kDaN
SPP: 18000 kPa
Flow In: 1.045 l/min
RPM: 0 - 45
CG 122.2u / 10.10u / 4 m3
1995
2000
CG 138.4u / 10.10u / 4 m3
2005
2010
CG 170.9u / 97.70u / 3 m3
2015
2020
CG 406.4u / 29.20u / 8 m3
2025
2030
CG 270.7u / 20.20u / 4 m3
2035
2040
2045
2050
MD: 2051.0m
Inc: 0.00 deg
Az: 73.00 deg
2055
2060
CG 111.4u / 9.30u / 4 m3
2065
2070
CG 150.0 / 11.40u / 6 m3
2075
SGR 600u
2080
CG 193.1u / 180.20u / 7 m3
Feb 25, 2004
WOB: 15.0 kDaN
SPP: 18500 kPa
Flow In: l/min
RPM: 0 - 0
2085
CG 497.6u / 247.30u / 8 m3
2090
2095
CHROMATOGRAPH FUNCTION
MD: 2140.0m
Inc: 0.00
Az: 91
WT: 9.5
2100
2105
2110
SGR 600u 120u 180u
2115
2120
2125
2130
2135
2140
2145
MD: 2147.60m
Inc: 1.40 deg
Az: 141.90 deg
2150
CG 289.3u / 233.90u / 4 m3
2155
2160
2165
CG 609.1u / 370.90u / 8 m3
2170
2175
SH med gy, mm, fis, tsp calc, bl arg, tr thn cal . strgs. SLTST fi gy, blky, lp calc, tr sdy.
SH med gy, mm, fis, tsp calc , sl arg, tr thn cal strgs. SLTST fi gy, blky, lp calc, tr sdy.
SH med gy, mm, fis, tsp calc , sl arg, tr wi wxy surf. SLTST tr, fi gy, blky, lp calc, tr sdy.
SH med gy, mm, fis, tsp calc , sl arg, tr wi wxy surf. SLTST tr, fi gy, blky, lp, calc, tr sdy.
SH med gy, mm, fis, non calc , tr arg, SLTST tr, fi gy, occ fi gy grn, blky, lp calc.
SH med gy, mm, fis, sl arg, non calc, tr thn cal strgs. SLTST fi gy, blky, sdy, lp calc.
SH med gy, mm, fis, non calc , sl arg, tr thn cal strgs. SLTST fi gy grn, blky, lp calc, tr sdy.
SH med gy, mm, fis, non calc , tr arg, SLTS fi gy, blky, sl calc, sdy, tr
SH med gy, mm, fis, non calc , tr arg, mnr cal strgs. SLTST fi gy, blky, sl calc, sdy, tr.
SH med - dk gy, dk gy brn, brn, sl mm, blky, v imy, arg, lp art, occ micro frace, sp, fnt pale bl C. LS: dk brn, arg. mudst strgs.
SH dk gy brn, dk brn, sl mm, blky, lp imy, arg, fnt bl C. LS: dk brn, micol, arg mudst strgs.
SH med - dk gy, dk brn, dk gy brn, m, blky - fis, lp calc. LS: tr dk brn, micol, arg mudst.
SH med - dk gy, mnr dk brn, mm, blky - fis, lp calc, arg. LS: tr, dk brn, micol, arg mudst.
SH med - dk gy, mnr dk brn, mm, blky - fis, lp calc, arg. LS tr, dk brn, micol, arg mudst. SLTST: fi brn, blky, sl calc, arg.
SH med - dk gy, brn, gy brn, mm, blky - slo fis, arg, tr calc. SLTST: fi brn, blky, sl calc, occ cal filled micro frace.
SH med - dk gy, brn, gy brn, mm, blky - slo fis, arg, tr calc. SLTST: fi brn, blky, sl calc, occ cal filled micro frace.
SH dk gy, gy brn, mm blky - slo fis, lsp calc, sl arg. SLTST: fi brn, blky, sl arg, lp calc, fi.
SH, brn, gy brn, dk gy, mm, blky - slo fis, lsp calc, sl arg. SLTST: fi brn, blky, sl arg, calc, fi.


2175
2180
2185
2190
2195
2200
2205
2210
2215
2220
2225
2230
2235
2240
2245
2250
2255
2260
2265
2270
2275
2280
2285
2290
2295
2300
2305
2310
2315
2320
2325
2330
2335
2340
2345
2350
2355
2360
2365
2370
2375
2380
2385
2390
2395
2400
2405
2410
2415
2420
2425
2430
2435
2440
2445
2450
2455
2460
2465
2470
2475
2480
2485
2490
2495
2500
2505
SH: dk gy brn, med - dk gy, brn, mm, sb fis, isp calc, sl arg
SLTST: fi gm, fi gy, blky, sl calc, ip sdy, fi
SH: gy brn, dk gy - blk, mm, sb fis - fis, arg, trn bt C
SH: dk gy - blk, dk gy brn, mm, sb fis - fis, arg, occ pyr, trn bt C
SH: dk gy - blk, dk gy brn, mm, sb fis - fis, arg, mm pyr, trn bt C
SH: dk gy - blk, dk brn, mm, sb fis - fis, hvd, arg, mm pyr, tr cal filled micro fracs
SH: dk gy - blk, dk brn, mm, sb fis - fis, hvd, arg, mm pyr, tr cal filled micro fracs, SLTST: i - fi brn, blky, v w cons, dns, sl calc
SH: dk brn, dk gy brn, mm, sb fis - fis, sl calc, arg, occ carb, tr cal filled fracs, rr pyr, frd, pael bt C
SH: dk brn, dk gy brn, mm, sub fis - fis, sl calc, arg, occ carb, tr cal filled fracs , rr pyr, frs, pale bt C
SH: brn, dk brn, mm, sb fis - fis, calc, v arg, tr carb, occ cal filled fracs, ip gy, sl wxy tex, mnr pyr.
SH: brn, dk brn, mm, sb fis - fis, calc, v arg, occ cal filled fracs, ip gy, sl wxy tex, mnr pyr.
SH: blk, gk gy, sb fis, mm, lmy, arg, LS: f, mot blk & wh, micd, an fl
SH: blk, dk, gy, sb fis, mm, lmy, arg, ir pyr, LS: mot brn , blk & wh, mic-dm, arg, tr pyr.
LS: f brn, mot f brn, micd , ip chky, v sl arg, ir sity, occ micro fracs, nv por, ns. SH: blk, mm, fis, r lmy, arg , mnr pyr.
LS: fi bgy brn, bf, micd mud st, ip chky, sl arg, ir sity, occ micro fracs, nv por, ns. SH: blk, mm, blky - sb fis, sl arg. isp calc, occ pyr.
LS: fi gy brn, bf, micd mudst, ip chky, sl arg, occ micro fracs, nv por, ns. SH: blk, mm, blky - sb fis, sl arg, isp calc, occ pyr.
SH: blk, mm, blky - sb fis, isp calc, mnr pyr, occ cal filled micro fracs. LS: fi gy brn, bf, micd mudst, ip chk y, sl arg, occ micro fracs, ir sity, nv por, ns.
LS: fi brn, dk brn, micd mud st, ip chky, tr sity, arg, nv por, ns. SH: blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
LS: fi brn, fi gy brn, mnr dk brn, micd, ip chky, type I/II, tr sity, arg, occ sparry cal, indications of trace oil fr pyrbit, nv por. SH: fi blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr. micd, to chky, sl sity, arg, occ fracs, sparry cal, type I/II nv por, ns. SH: fi blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
pyr.
LS: bf, brn, dk brn, micd, ip chky, arg, occ pyr, type I/11, nv por, ns. SH: fi blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
LS: bf, brn, dk brn, micd, ip chky, arg, occ pyr, type I/11, nv por, ns. SH: fi blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
LS: bf, brn, dk brn, micd, ip chky, type I/11, isp sity, sl arg, occ pyr, nv por. SH: blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
LS: bf, brn, dk brn, micd, ip chky, type I/11, isp sity, sl arg, occ pyr, nv por. SH: blk, mm, blky - sb fis, sl arg, isp calc, mnr pyr.
LS: bf, brn, dk brn, micd, ip chky, type I/11, isp sity, sl arg, occ pyr, nv por. SH: med - dk gy, blk, mm, sb fis - fis, sl arg, isp calc.
LS: bf, brn, dk brn, micd, ip chky, type I/11, sl arg, ir sity, occ pyr, tr frac, nv por. SH: med - dk gy, blk, mm, sb fis - fis, sl arg, isp calc, mnr pyr.
LS: bf, brn, dk brn, micd, ip chky, type I/11, sl arg, ir sity, occ pyr, tr frac, nv por. SH: med - dk gy, blk, mm, sb fis - fis, ip calc, tr arg, mnr pyr.
LS: bf, brn, mnr dk brn, micd, ip chky, type I/11, tr sity, isp arg, occ pyr, tr frac, n fosm. Cht, nv por. SH: med - dk gy, blk, mm, sb fis - fis, ip calc, tr arg, mnr pyr.
WOD: 15.0 mud
SPP: 19704 kPa
FLOW IN: 1.57 m3/min
RPM: 0 - 60
CG 800.6u / 267.36u / 3.0gas
CG 1722.25u (Bit 17u / 3.0gas
MD (kgl/m3): 1284
Vis: 79
pH: 10.5
Feb 26, 2004
MD: 2352 m
Azi: 102.90 deg
Inc: 1.30 deg
Feb 27, 2004
MD: 2352 m
BS: 8 1/2 in
215.9 mm
Rigs: HX-500 - HUGHES
GEORAM: 0.00 m
26 ft 11 in
DEPTH RIG: 0.00 m
MD: 2352 m
Azi: 102.90 deg
Inc: 1.30 deg
Shaker Sample Interval
Flow Recorded from Shaker
GGR 1015.6u / 21.45u
CG 982.05u / 850.48u / 5.0gas
MD(Km3): 2360
VIS: 60
pH: 10
CG 635.1u / 356.32u / 5.0gas
Feb 28, 2004
MD: 2360 m
Azi: 103.5 deg
Inc: 0.20 deg
CG 441.5u / 270.04u / 3.0gas
SWG 787.92u / 499.93u
MD: 2365.7 m
Azi: 103.5 deg
Inc: 0.20 deg
CG 398.4u / 253.2u / 4.0gas
SGR 760.76u / 539.92u
SGR 442.03u / 252.89u
Feb 29, 2004
MD(kg/m3): 1284
Vis: 57
pH: 9.5
WOD: 15.0 mud
SPP: 19704 kPa
FLOW IN: 1.57 m3/min
RPM: 0 - 60
SGR: 429.92u / 152.91u
SGR 542.51u / 158.92u
SGR 1045.0u / 713.92u
CG 451.4u / 293.00u / 3.0gas
SWG 488.92u / 297.51u
SGR 787.22u / 508.39u
CG 516.2u / 397.26u / 4.0gas
MD: 2444.4 m
Azi: 2.00 deg
Inc: 3.30 deg
POG 1R: 0u / 1.2E-02u / 3.0gas
SGR 630.73u / 170.89u
CG 284.6u / 175.32u / 4.0gas
CG 1208.01u / 753.21u / 4.0gas
MD(kg/m3): 1284
Vis: 64
pH: 9.5
Mar 1, 2004
MD: 2500 m
Azi: 2.00 deg
Inc: 3.30 deg
CG 1404u / 912.26u / 5.0gas
WOD: 15.0 mud
SPP: 19245 kPa
FLOW IN: 1.53 m3/min
RPM: 0 - 54

DATALOG

Northrock et al Summit Creek B44-ST2

Operator: Northrock Resources Ltd.
Well: Northrock et al Summit Creek B44-ST2
Location: 8-44-04-30-120-4S
Country: Canada
UWI: 300B044043012S450
Elevations: KB: 586.00
GL: 566.00
Drilling Rig: Akita # 40
Spud Date: 18/01/2004
Print Date: 24/03/2004
Scale: 1:240

Personnel:
Jose Luis Cacerse
Eyal Greenfeld
Zander Cherry

HoleData:
444.5 mm Surface Hole to 208 m MD
311 mm 1st Intermediate Hole to 810 m MD
216 mm 2nd Intermediate Hole to 2450 m MD

Notes:
Sidetrack 2 was kicked off from 2454 m MD to TD at 3004m MD on March 8, 2004.

CasingData:
Surface Casing: 340 mm @ 206 m MD
Intermediate #1: 244.5 mm @ 810 m MD
Intermediate #2: 177.8 mm @ 2450 m MD

Lithology
Not Available
Sandstone
Limestone
Shale
Chert
Conglomerate
Limestone
Dolomite
Anhydrite
Gypsum
Marlstone
Salt
Coal
Metamorphic
Granite
Breccia
Tuff
Claystone
Serpentinite
Diabase
Basalt
Pillow Lava
Lasco Granite
Biotite Granite
K Feldspar
Cataclasest
Intrusive
Extrusive
Altered Low
Altered Medium
Altered High
Clyst Green Grey
Clyst Pale Green
Clyst Grey
Clyst Violet
Clyst Yellow
Basalt Low
Basalt Medium
Basalt High
Shale 2
Siltstone 2

ROP 1.000 min/m 100.000
RPM 10.000 1000.000

Hydrocarbon Units
0.100 units 10000.000
C1 0.001 % 100.000
C2 0.001 % 100.000
C3 0.001 % 100.000
IC4 0.001 % 100.000
NC4 0.001 % 100.000
IC5 0.001 % 100.000
NC5 0.001 % 100.000

Char R
Bad R
Wet R
Porosity
Interpreted Lithology
Grain Size
Stratigraphy

Gas Units 0.100 10000 Char R 1000 Bad R 100 Wet R 100
Background 0.001 % C1 % 1 100
0.001 % C2 % 1 100
0.001 % C3 % 1 100
0.001 % IC4 % 1 100
0.001 % NC4 % 1 100
0.001 % IC5 % 1 100
0.001 % NC5 % 1 100

Oil-in: 11:215 mm
Type: DYSON-HUGHES
OPEN

Out of port sidetrack 2
March 8, 2004
Type: D411S1 - HUGHES
SERIAL #: 7193UK DEPTH IN: 2454 m

MWD: 13mD
MM:89 mm
TYPE: STX-06 - HUGHES
SERIAL #: 5459457
DEPTH IN: 2459 m

WOB: 10-15 KD
RPM: 75(0+70)
FLOW RATE: 1000 l/min
SPM: 54 - 60

MD: 2546.0 m
Inc: 2.26 deg
Az: 215.4 deg

Max 11.7 gas

Slight Connection in Pason, no logged data from 2589.4 to 2592

MWD: 11-9 Hours
GPM: 750-975 l/min
(1 stand= 0.5-0.6 hours)
RPM: 60

MD: 2601.2 m
Inc: 1.06 deg
Az: 214.4 deg

Max 12.4 gas

Oil-in: 14:45
166.6 mm
TYPE: DS50M - HUGHES
SERIAL #: 7193UK
DEPTH IN: 2670 m

MWD: 14.5 HRS
GPM: 950 l/m
FLOW RATE: 1000 l/min
SPM: 0 - 60

Mar 13, 2004

LS: bf, brn, dk brn, micxl, lp chky, type 1/11, sl arg, tr slty, occ pyr, tr fracs, nv por, SH: med - dk gy, blk , mm, sb fis - fis, sl arg, lap calc.

LS: bf, brn, dk gy brn, micxl, tr, slty, lap chky, type 1/11, sl arg, lp pync, abun cal, tr fracs, nv por.

LS: bf, brn, dk gy brn, micxl t, slty, lap chky, type 1/11, sl arg, lp pync, abun cal, tr fracs, nv por, SH: med - dk gy, mm, sb fis, calc, ls arg.

LS: dk gy brn, mot brn, bf, micxl-fr slty, lp arg, occ pync, abun cal, tr fracs, nv por, SH: med - dk gy, mm, sb fis, calc, ls arg.

LS: dk gy brn, bf, mot brn, micxl, tr chky, type 1/11, tr slty, lp arg, occ pync, tr fracs, nv por, SH: med - dk gy, mm, sb fis, calc, sl arg.

LS: brn, dk gy brn, bf, micxl, tr chky, type 1/11, tr slty, lp arg, occ pync, tr fracs, nv por, SH: med - dk gy, mm, sb fis, calc, sl arg.

LS: dk gy brn, mnr bf, micxl, arg, fr, sly, lp pync, mnr cal, nv por, SH: dk gy, blk, mm, sb fis, arg, imy.

LS: lt gy brn, bf, dk brn, micxl, lp arg, tr slty, mnr pync, occ calc, nv por, SH: dk gy, blk, mm, sb fis, arg, imy.

LS: v lt - dk gy brn, micxl, mnr micxl, arg, slp slty, occ cal, tr pync, nv por, SH: dk gy, blk, mm, sb fis, arg, imy.

LS: lt gy, gy brn, dk gy brn , micxl, tr micxl, arg, fr slty, tr fossil, nv por, SH: dk gy, blk, mm, sb fis, arg, imy.

LS: bf, mot brn, mnr dk gy, brn, micxl, sp micxl, tr chky, arg, slp pelloidal, nv por.

LS: bf, dk gy, brn, micxl - mnr vf xl, arg, slp micxl, tr fossil, tr pync, nv por, SH: tr, blk, mm, sb fis, arg, imy.

LS: bf, brn, bf, mnr gy brn, micxl - tr vf xl, tr micxl, slp mudst, sl arg, tr pync, nv por, SH: blk, mm, sb fis, arg, imy.

LS: bf, mot brn, dk brn, micxl, lp micxl, sl arg, slp pelloidal, occ cal, nv por, SH: blk, mm, sb fis, arg, imy, tr fracs.

LS: dk gy brn, bf, brn, micxl - tr vf xl, lap micxl, arg, tr pync, occ cal, tr fracs, nv por, SH: blk, mm, sb fis, arg, imy, tr fracs.

LS: dk brn, mnr bf, micxl, lap micxl, tr fossil, Chd, arg micxl, cal, nv por, SH: blk, mm sb fis, arg, imy.

LS: dk gy brn, mnr bf, micxl , arg, sp micxl, thin fossil layer with Chd, occ cal wf pore sized, poss fracs, nv por, SH: blk, mm, sb fis, arg, imy.

LS: dk gy brn, bf micxl, arg , , tr micxl, cal, nv por, SH: blk, mm, sb fis, arg, imy.

LS: dk gy brn, bf, micxl, arg, tr micxl, cal, nv por, SH: blk, mm, sb fis, arg, imy.

LS: dk gy brn, bf, micxl, arg, tr micxl, cal, nv por, SH: blk, mm, sb fis, arg, imy.

LS: dk gy brn, bf, mot lt brn, micxl - tr vf xl, arg, tr fossil, nv por, SH: blk, mm, sb fis, arg, imy.

LS: bf, lt brn, mnr dk brn, micxl, sp micxl, sl arg, tr cal, nv por.

LS: bf, brn, mnr dk brn, micxl, lp micxl, sl arg, tr chky, nv por, SH: tr, blk, mm, sb fis, arg, imy.

LS: bf, brn, crpxl - micxl, mnr vf xl, tr arg, slp dolc, occ cal, nv por, DOL: tr, lt gy, micxl, dns, lt.

LS: lt brn, bf, crpxl - micxl , dns, tr dolc, lt, DOL: bf, ow, micxl - vf xl, slp chky, nv por, occ cal, tr pyrbit, poss fracs, minearal flor, no C.

DOL: lt brn, vf - vf xl, suc tex, lt - chky, pp, intxl por, wk stain, pale bl C, LS: lt - med gy brn, dk brn, mnr bf, crpxl - micxl, lt arg, dns, lse, micxl, lt.

DOL: lt brn, bf, micxl - xf xl, suc tex, lt limy, lt - tr pp, intxl por, LS: brn, dk brn, crpxl - micxl, lt.

DOL: sy non, ntn, micxl, tr - xf xl wf suc tex, lt limy, sl anhyc, nv por, LS: dk brn, lt gy brn, crpxl - micxl, arg, dns.

LS: dk brn, lt gy brn, crpxl - micxl, arg, dns, lt, DOL: lt brn, bf, micxl, tr limy, occ cal, sl anhyc, ft.

LS: dk brn, lt gy brn, crpxl - micxl, tr limy, occ cal, sl anhyc, ft.

DOL: bf, lt brn - brn, micxl- vf xl, tr limy, anhyc, tr dmy cal, tr cal, wk, pale yel floe, no C, tr-lt pp por, DOL: bf, lt, micxl, tr vf xl, tr limy, tr anhyc, scat wh cal , tr fracs, lt, na, LS: dk brn, bf, brn, micxl, tr dolc, dns, sl sl chky tex, lt.

DOL: lt brn, micxl, dns, slp limy, occ anhy filled fracs, t st, lt, na, LS: lt, dk brn, micxl, lt, ANHY: wh, gy, micxl.

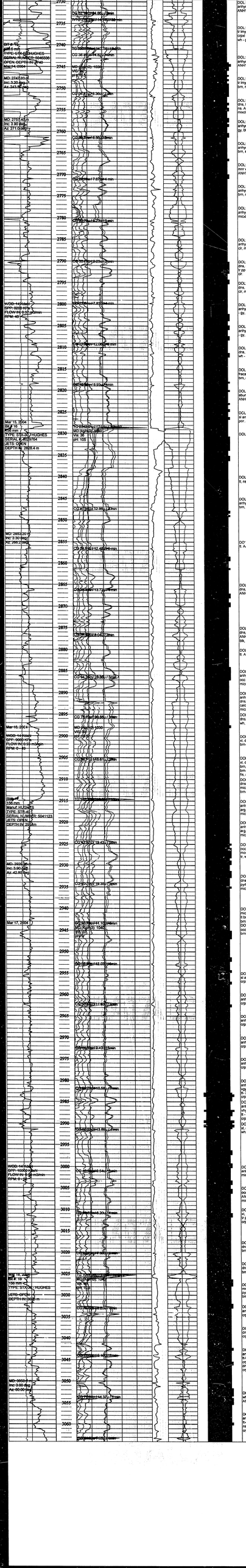
DOL: bf, brn, micxl-vf xl, tr limy, anhyc, scat pp por plugged wt pyrbit, LS: dk brn , micxl, lt, ANHY: wh, gy.

DOL: lt, brn, micxl, dns, anhyc, lt, LS: dk brn, micxl, dns, tr dolc, lt, ANHY: wh-lt gy, clr, lt brn, micxl.

DOL: t brn, sft-mm vf xl, sl anhyc, scat pp, intxl por, lt -3%, fre yel gn flor, no C, ANHY: wh-lt gy, pt, lt brn, DOL: t brn, brn, vf,occ f xl , sl anhyc, scat pp intxl por , 5-3%, fre yel gn flor, no C, ANHY: wh - lt gy, clr, lt brn, micxl.

DOL: lt brn, brn, micxl - vf xl, anhyc, t pp, pp, lt - tr, ANHY: wh - gy, clr, micxl.

DOL: lt brn, brn, micxl - vf xl, anhyc, t pp, pp, lt - tr, ANHY: wh - gy, clr, micxl.


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DOL: lt brn, brn, micol - vf sl, anhyc, abun cal, nv por, ns, ANHY: wh - gy, cir, lt brn, micol.
DOL: lt brn, blf, brn, micol, sup vf sl, cr lmy, dns, occ anhyc, lt, LS: ch brn, crpxl - micol, dns, arg, lt, ANHY: wh - gy, cir, blf, micol.
DOL: lt brn, brn, vf-occ f sl, dns, anhyc, tr lmy, occ fnca wl cal, lt, ANHY: wh - gy, lt br, micol, slt.
DOL: lt brn, brn, vf sl, dns anhyc, cr lmy, lt, ns, ANHY: wh - gy, blf, lt brn, micol, slt.
DOL: brn, lt brn, micpl - sl , anhyc, dns, tr lmy, abun cal, sl fnca, lt, ns, ANHY: wh - gy, bf, lt brn, micol, slt.
DOL: lt brn, dk brn, brn, micol, mnr vf sl, tr lmy, dns, anhyc, lt, ns, ANHY: wh - gy, lt brn, slt.
DOL: blf, lt - dk brn, micol, dns, anhyc, lt, ns, ANHY: wh - gy, lt brn, micl, slt.
DOL: lt brn, dk brn, micol, dns, anhyc, lt, ANHY: wh - gy, blf, brn, micol.
DOL: lt - dk brn, micol, dns ip anhyc, lt, ANHY: wh - lt gy, lt brn, clr, micol.
DOL: lt brn - dk brn, micol - vf sl, dns, sl anhyc, occ cal, lt fnca, lt - tr pp por, ANHY: wh - gy, lt brn, clr.
DOL: lt - dk brn, micol, anhyc, dns, lt, ns, ANHY: wh - gy, lt brn, clr, micol.
DOL: lt - dk brn, micol - vf sl, dns, anhyc, tr cal, sp pp por, ANHY: wh - gy, lt brn, clr, micol.
DOL: lt dk brn, micol - vf sl, dns, anhyc, tr cal, sp pp por, ANHY: wh - gy, lt brn, clr, micol.
DOL: lt - dk brn micol, anhyc, dns, lsp vf sl, w tr pp por. ANHY: wh - gy. lt brn, slt, micol.
DOL: lt br, brn, micol, sl anhyc, tr fnca, cal, lt, ANHY: lt, wh - gy, lt brn, micol.
DOL: lt br, brn, micol - occ vf sl, abun cal, lt fnca, tr pp por, ns, ANHY: lt, wh - gy, lt brn, micol.
DOL: lt brn - brn, micol - occ vf sl, sl vf, abun cal, fnca - tr pp por. ANHY: wh - gy, lt brn, micol.
DOL: lt brn, brn, micol-vf sl,
DOL: lt-dk brn, micol, anhyc, dns, lt, ns. ANHY: wh, bf, lt brn, micol.
DOL: lt-dk brn, micol, mnr vf sl anhyc, dns, lt, ns. ANFwh, bf, lt brn, micol.
DO' lt-dk brn, micol. anhyc dns, lt. A-HY: wh, bf, lt brn . micol.
DOL: bf, lt brn, dk brn, crpxl-micol, dns, ip anhyc, occ fnca, cal, lt. ANHY: wh, bf, lt brn, micol.
DOL: bf, lt brn, dk brn, crpxl-micol, dns, ip anhyc, occ fnca, cal, lt, ANHY: wh, bf, lt brn, micol. SH: blk, mm, sb fis-fis, calc, arg strga.
DOL: lt-dk brn, micol, dns, anhyc, lt. ANHY: wh, lt brn, gy, micol.
DOL: lt brn, brn, vf sl, dns, ip anhyc, occ cal, fnca, scat pp por, occ pyrbit. ANHY: wh, lt brn, gy, micol.
DOL: lt brn, brn, micol, dns, anhyc, lt. LS: dk gy, dk brn, micol, dns, lt. SH: blk, mm, sb fis-fis, calc, arg. ANHY: wh, lt brn-brn, micol.
DOL: brn, dk brn, micol-mnr vf sl, dns, anhyc, tr-lr pp por. ANHY: wh, lt brn-brn, micol.
DOL: dk brn, lt brn, micol, mnr vf sl, dns, anhyc, lt. ANHY: wh, lt brn-brn, micol.
DOL: dk brn, lt brn, micol, mnr vf sl, dns, anhyc, lt. LS: dk gy, dk brn, micol, dns, lt. ANHY: wh, lt brn-brn, micol. SH: blk, mm, sb fis-fis, arg, calc.
DOL: dk brn, mnr lt brn, micol, dns, anhyc, lt. LS: dk gy, dk brn, micol, dns, lt. ANHY: wh, lt brn-brn, micol.
DOL: brn-dk brn, micol, dns, anhyc, lt. LS: dk brn, micol, dns, lr arg, lt. ANHY: wh, lt brn-brn, micol.
DOL: bf, lt br, micol-vf sl, lr anhyc, occ cal, fnca, lt -abun pp por mostly plugged wi pyrbit. ANHY: lr, wh, lt brn-brn, micol.
DOL: bf, lt brn, micol, mnr vf sl, dns, anhyc, tr pp por plugged wi pyrbit, lt. ANHY: wh, lt brn-brn, micol.
DOL: lt brn, mot gy brn, dk brn, micol, dns, ip anhyc, lt. ANHY: wh, lt brn-brn, crpxl-micol. LS: lt gy, brn, micol. LS: tr dk brn, micol. DOL: lt-dk brn, micol, dns, anhyc, occ wh cal, lt. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: lt-dk brn, micol-lr vf sl, dns, sl anhyc, lt. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: bf-dk brn, micol, tr vf sl, dns, anhyc, lt. AN-Y: wh, lt brn-brn, crpxl-micol.
DOL: lt-dk brn, micol, dns, sl anhyc, lt. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: lt-dk brn, micol, dns, sl anhyc, lt. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: lt-dk brn, micol, dns, sl anhyc, lt. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: lt gy brn, lt brn, micol -vf sl, lt anhyc, occ wh cal, scat pp por, tr vgy wi grey dol, lt pyrbit plugged, lt- 3%. ANHY: wh, lt brn-brn, crpxl-micol.
DOL: lt brn, micol - mnr f sl, anhyc, occ wh cal, scat pp por, tr vhy wi drey dol, lp pyrbit plugged, lt - 3%. ANHY: wh, lt brn - brn, crpxl - micol.
DOL: lt - dk brn, micol, mnr vf - f sl, anhyc, dns, lt - tr pyrbit. ANHY: wh, lt brn - br, crpxl - micol.
DOT lt - dk brn, micol - vf sl, dns, anhyc, lt. ANHY: wh, lt brn, crpxl - micol.
DOL: lt brn, micol - vf sl, sl anhyc, occ pp pyrbit, lt - tr por. ANHY: wh, lt brn - brn, crpxl - micol.
DOL: lt - dk brn, micol, occ vf - f sl, dns, anhyc, tr pp por, pyrbit, lt - tr por. ANHY: wh , lt brn - brn, crpxl - micol.
DOL: lt - dk brn, micol, occ vf - sl, dns, anhyc, lt. ANHY: wh, lt brn - brn, crpxl - micol.
DOL: brn, dk brn, crpxl-micol , dns, sl anhyc, lt. ANHY: wh , lt brn-brn, crpxl-micol.
DOL: lt brn, brn, occ dk brn, micol, mnr vf sl, sl anhyc, tr pp por wi pyrbit, lt-lr por. ANHY: wh-gy, lt brn, crpxl-micol.
DOL: lt brn, brn, mnr dk brn, micol, anhyc, lt. ANHY: wh-gy, lt brn, crpxl-micol.
DOL: lt-dk brn, crpxl-micol, anhyc, dns, lt. ANHY: wh-gy, lt brn, crpxl-micol.
DOL: lt brn, brn, micol-vf sl , sl anhyc, tr pp-lp por, occ pyrbit, lt-lr por, ns. ANHY: wh-gy, lt brn crpxl- DOL: lt-dk brn, crpxl-micol, dns, anhyc, t. ANHY: wh-gy, lt brn, crpxl-micol.
DOL: bf, lt brn, micol-mnr vf sl, occ wh cal, tr pp por, occ pyrbit, lt, ns. ANHY: lr
DOL: lt-dk brn, crpxl-micol, sl anhyc, dns, lt, ns. ANHY: DOL: lt-dk brn, micol, sl anhyc, dns, lt, ns. ANHY: wh-gy, lt brn, crpxl-micol.
Mar 15, 2004
Mud Up
4900 mm
Hand / SLOUGHUGHES
SERIAL NUMBER:7754
JETS: OPEN
DEPTH IN: 2828.4 m
MD: 2853.20 m
Inc: 3.30 deg
Az: 290.23 deg
Mar 16, 2004
WOB: 14 kNm
SPP: 9000 kPa
FLOW IN: 0.01 m3/min
RPM: 0 - 80
Mar 17, 2004
MD: 3026.30 m
Inc: 3.90 deg
Az: 42.60 deg
Mar 18, 2004
WOB: 14 kNm
SPP: 10000 kPa
FLOW IN: 0.01 m3/min
RPM: 0 - 80
MD: 3050.00 m
Inc: 3.00 deg
Az: 60.00 deg

DATALOG

Northrock et al Summit Creek B-44

Operator: Northrock Resources Ltd.
Well: Northrock et al Summit Creek B-44
Location: 8-44-54-20-120-6-2.smnk Creek-NWT
Country: Canada
UWI/ID: 300B445430120450
Elevation: GL: 586.00
KB: 594.50
Drilling Rig: Akita 49
Spud Date: 18/01/2004
Print Date: 25/02/2004
Scale: 1:240

Personnel:
Jose Luis Canseco
Ryal Greenfield
Zander Cherny

HoleDate:
444.5mm Surface Hole to 208m MD
311mm 1st Intermediate Hole to 810m MD
216mm 2nd Intermediate Hole to 2400m MD

Notes:
A pilot hole was drilled until 2180m MD where drilling was halted due to Tight Hole and Stuck Pipe at 2180m MD

CasingDate:
Surface Casing: 340mm @ 208m MD
Intermediate # 1: 244.5mm @ 810m MD
Intermediate # 2: 177.8mm @ 2400m MD

Lithology

Not Available	Gypsum	Serpentinite	Extrusive	Clyst Brown	
Sandstone	Marlstone	Diabase	Altered Low	Basalt Low	
Siltstone	Silt	Basalt	Altered Medium	Basalt Medium	
Shale	Coal	Pillow Lava	Altered High	Basalt High	
Chert	Metamorphic	Lasco Granite	Clyst Green Grey	Shale 2	
Conglomerate	Granite	Diotite Granite	Clyst Pale Green	Siltstone 2	
Limestone	Breccia	K Feldspar	Clyst Grey		
Dolomite	Tuff	Cataclased	Clyst Violet		
Anhydrite	Claystone	Intrusive	Clyst Yellow		

ROP: 1.000 min/m 100.000
RPM: 10.000 1000.000
Hydrocarbons: units 10000.000
C1 0.001 % 100.000
C2 0.001 % 100.000
C3 0.001 % 100.000
IC4 0.001 % 100.000
NC4 0.001 % 100.000
IC5 0.001 % 100.000
NC5 0.001 % 100.000
Hydrocarbon units 0.100 10000 / 0.001 100 / 0.001 100 / 0.001 100 / 0.001 100
Char R 1 100
Bal R. 1 100
Wet R. 1 100
Porosity 2
Interpreted Lithology
Core Dia
Strat Symphy

JUN 55 100
MD 0 2400

Spudded/Diamond on Jan 18, 2004
GR-RT
PWD
SVRC - EQ1140
GEOMAC - MWD454
GEOS - 1[2]-1[3]-1[4]-3-1[5]
BHA#1

Jan 19, 2004

SURVEY - 0.50deg

SURVEY - 1.00deg

MWD - 0.00m
GPM - 454.5lpm
FLOW From MWD
RPM - 100

SURVEY - 1.00deg

Jan 20, 2004
RIH @ 0m
444.5 mm
ZONE: MISSION - SMITH
REGINA - MAY SAND
JETS - 18-18-18-17
DEPTH IN: 208.0

SURVEY - 1.50 deg

Gas system failure, no measurements from 317m to 374m

SURVEY - 2.00 deg

Gas system failure, no measurements from 510 to 2090m

SURVEY - 2.50 deg

Jan 22, 2004 @ 2000m
444.25, 444.5 @ 2.18
TYPE: HUGHES
SERIAL: 5018102
JETS: 18-18-18
DEPTH IN: 2090.0

MOD - 44.1lpm
SPP: 9138 kPa
Flow: 1,443.0lpm
RPM: 80

SURVEY - 0.50 deg

OG 0.0% - 40m³/ min

OG 0.0% - 0.0 m³/ min

SS: f.sm, lt red gy, mod. - vc gr, lg peb size, ang. - w rd uncons fdc sd, lg cgl. ; mixture of feld, mnr qtz, rd chrt, lr hornbl, no vis cmt, poo fr - gd por, no shows.

SS, COL: lt brn, lt red gy, mod. - vc gr, lg peb size, ang. - w rd uncons fdc cgl, lg sd. ; mixture of feld, mnr qtz, lt chrt, lr hornbl, no vis cmt, poo fr-gd por, no shows.

COL, SS: lt brn, lt red gy, med gr-peb size, ang-w rd uncons fdc cgl, lg sd, mix of feld, mnr qtz, rd chrt, lr hornbl, no vis cmt, poo fr-gd por, no shows. SH: lt gy, lr mm, blky, arg, sty.

SS: lt brn, lt red, gy, f-vc gr, ang-w rd uncons fdc sd, sb cgl; mixture of feld, mnr qtz, rd chrt, lr hornbl, no vis cmt, poo fr-gd por, no shows. SH: lt gy-gy, lr mm, blky, arg, sty.

SS: lt brn, lt red, gy, f-vc gr, ang-w rd uncons fdc sd, lag cgl; mixture of feld, mnr qtz, rd chrt, lr hornbl, no vis cmt, poo fr por, no shows.

SH: lt gy-gy, lr mm, blky, arg, lg-v sty; SS: lt brn, f. red, gy, vf-vf gr, uncons fdc sd, mnr qtz, chrt, no vis cmt, poo fr por, no shes.

SH: lt-med gy, lt gy brn, sl mm, blky, arg, sty, occ lt gy grn, wxy, slt, lr carb.

SH: lt-med gy, lt gy brn, sl mm, blky, arg, sty, occ lt gy grn, wxy, slt, lr carb, mnr pyr, occ w rd dk chrt grs.

SH: lt gy brn, sl mm, arg, sty, occ pyr, lsp lt gy grn, wxy.

SS: brn, vf-f gr, v w cons, ang, slnc sd, v slc and abndt mdst mix, lr pyr, occ calc, dns, lt, SH: lt gy, lt gy brn, cl mm, arg, sty, occ pyr, lsp lt gy grn, wxy.

SS: brn, vf-f gr, v w cons, ang, slnc sd, v slc and abndt mdst mix, bcm v pyrc, lsp calc, dns, lt, SH: lt gy-lt gy brn, sl mm, arg, sty, occ pyr, lg v lt gy, bentc, lsp lt gy grn, wxy, CHRT: occ lt, dk chrt grs, fragg.

SH: MUDST brn, lt brn, blky, v sty, slvy, slc, sl calc, lt pyrc, CHRT lt, dk gy, lt brn gy, div, vc - pwb, rd - w rd grs.

MUDST: brn, lt brn, blky, sltc, sl sp calc, lt pyrc, CHRT: lt, dk gy, lt brn, gy div, vc - pwb, rd - w rd grs. SS: lt brn, sm, vf gr, v w cons, slic mudst mix, lp calc, lt.

MUDST: brn, lt brn, blky, lp - v sfty, slc, lp calc, lt pyrc, CHRT lt, dk gy, lt brn gy, div, vc - pwb, rd - w rd grs.

MUDST brn, lt brn, blky, lp v sfty, slc, lp calc, lt pyrc, CHRT lt, dk gy, lt brn, gy div, vc - pwb, rd - w rd grs.

MUDST: brn, lt brn, blky, lp v sfty, slc, lp calc, lt pyrc, CHRT: lt, dk gy, lt brn, gy div, vc - pwb, rd - w rd grs. SS: lt gy, f - med gr, uncons lithic sd, abun chrt grs, occ fr - v por.

SS: gy, lt gy, med - v gr, sb rd - rd, occ w rnd grs, occ calc, abn dk chrt, occ lt - lt brn, occ lt - dk brn, ang - w rd frags and grs, v c - sl mas. MUDST: brn, lt brn, lt gy slic, lp calc, abun pyr. COAL: blk, sft, incl, bdns - anthracite.

SLTST: lt gy, lt brn, blky, abun pyr. SH: med - dk gy, mm, sb fis, carb. COL: lt, gy, lt brn, gy brn, ang - w rd frags and grs, v c - s mas.

SLTST: v lt gy, lt brn, blky, abun pyr. SH: med - dk gy, gy brn, mm blky - sb fis, often carb.

SLTST: v lt gy, lt brn, blky, abun pyr. SH: med - dk gy, gy brn, mm, blky - sb fis, often carb. CLYST: lan, blky, sft.

SLTST: v lt gy, lt brn, blky mnr pyr. SH: med - dk gy, gy brn, mm blky - sb fis, often carb. CLYST: lan, blky, sft.

SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: med - dk gy brn mm, blky - sb fis, often carb. CLYST: lan, brn, blky, sft.

CLYST: lan, brn, blky, sft. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: med - dk gy, mm, sb fis, blky, tr, carb. COL: dk gy, lt gy, lt - pwb, w rd dmt.

CLYST: lan, brn, blky, sft. COL: dk gy, lt gy, vc - pwb w rd dmt, lt gy, pyr, mix.

CLYST: lan, brn, blky, sft. COL: lt, dk gy, lt gy, vc - pwb, w rd dmt, lt gy, blky, pyr mix. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs

CLYST: lan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs.

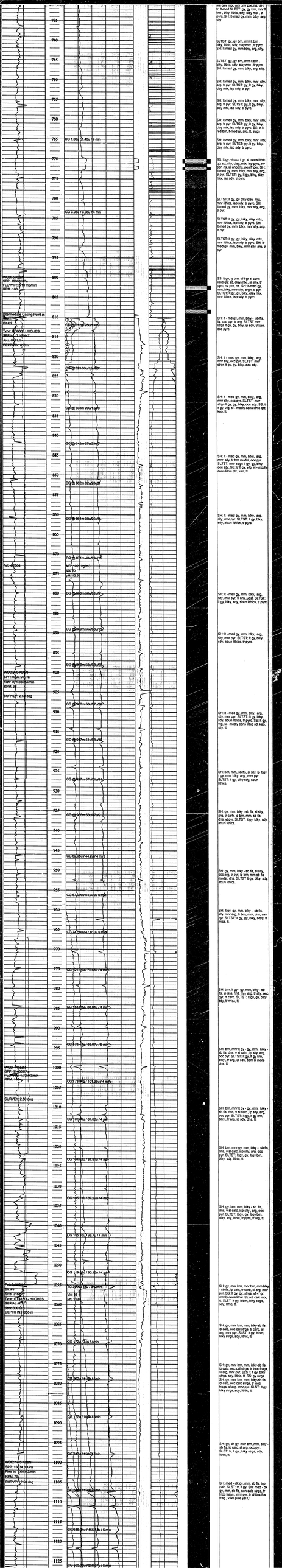
CLYST: lan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: lt brn, sc, mudst, frst, slc, dpp pa brn mtrx.

CLYST: lan, brn, blky, sft, occ sdy. SLTST: v lt gy, lt brn, blky, mnr pyr, occ carb prtgs. SH: lt brn, sc, mudst, frst, slc, dpp pa brn mtrx.

COAL: blk, vtr, brit, frac, bdns - anthracite. SH: med - dk gy, mm, sb fis, carb, sp brn, slic, mudst. COAL: blk, vtr, brit, bdns - anthracite.

SH: med - dk gy, mm, sb fis, carb, sp brn, slic, mudst. COAL: blk, vtr, brit, bdns - anthracite.

SS: f-gr, vf - f gr, v conx, slnc sd wt, vg mix, occ coal prtgs. 3-dk gy, sft, sbblky, sl calc, sl carb, sl pyr - sft


mb bkg mnr, wkr / mr por, tra 'stnr'
tr, lt-med SLTST; gy, gy brn, mnr fi
brn, bkg, ltbkg, sdy, clay mtx, tr
pyr; SH: fi-med gy, mm, bkg, arg, sty
SLTST; gy, gy brn, mnr lt brn ,
bkg, ltbkg, sdy, clay mtx, tr pyr;
SH: fi-med gy, mm, bkg, arg, sty
SH: fi-med gy, mm, bkg, mnr slty,
arg, tr pyr; SLTST: gy, fi gy, bkg,
clay mtx, lap sdy, tr pyr
SH: fi-med gy, mm, bkg, mnr slty,
arg, tr pyr; SLTST: gy, fi gy, bkg,
clay mtx, lap sdy, tr pyr
SH: fi-med gy, mm, bkg, mnr slty,
arg, tr pyr; SLTST: gy, fi gy, bkg,
clay mtx, lap sdy, tr pyr; SS: lt-
med brn, fi-med gy, sbrz, fi, strgs
SH: fi-med gy, mm, bkg, mnr slty,
arg, tr pyr; SLTST: gy, fi gy, bkg,
clay mtx, lap sdy, tr pyr
SS: lt gy, vf-occ f gr, sl conv ltbkd
qtz sd, slty, clay, mtx, lap pyrc, mv
por, na, sp uniuvza, poss lt por; SH:
fi-med gy, mm, bkg, mnr slty, arg,
tr pyr; SLTST: gy, fi gy, bkg, clay
mtx, lap sdy, tr pyr;
SLTST: lt gy, gy bkg clay mtx,
mnr ltbrck, lap sdy, tr pyr; SH:
fi-med gy, mm, bkg, mnr slty, arg,
tr pyr
SLTST: lt gy, gy, bkg, clay mtx,
mnr ltbrck, lap sdy, tr pyr; SH: fi-
med gy, mm, bkg, mnr slty, arg, tr
pyr;
SLTST: lt gy, gy bkg clay mtx,
mnr ltbrck, lap sdy, tr pyr; SH: fi-
mer gy, mm, bkg, mnr slty, arg, tr
pyr;
SS: lt gy, lt brn, vf-f gr si cons
ltbrc qtz sd, clay mtx , si slty, tr
pyr, mv por, na; SH: fi-med gy,
mm, bkg, mnr slty, arg, tr pyr;
SLTST: lt gy, gy, bkg, clay mtx,
mnr ltbrck, lap sdy, tr pyr;
SH: fi - md gy, mm, bkg - sb fis,
fly, occ pyr, tr arg; SLTST mnr
strgs lt gy, gy, bkg, sy sdy, tr kao,
occ pyrs
SH: fi - med gy, mm, bkg, arg,
mnr slty, occ pyr; SLTST: mnr
strgs lt gy, gy, bkg, occ sdy
SH: fi - med gy, mm, bkg, arg,
mnr slty, occ pyr; SLTST: mnr
strgs lt gy, gy, bkg, occ sdy; SS: lt
gy, vfg, si - modly cons ltbrc qtz,
kao, ti,
SH: fi - med gy, mm, bkg, arg,
mnr slty, occ pyr; SLTST: mnr
strgs lt gy, gy, bkg, occ sdy; SS: lt
gy, vfg, si - modly cons ltbrc qtz,
kao, ti,
SH: fi - med gy, mm, bkg, arg,
slty, mnr pyr; SLTST: lt gy, bkg,
sdy, sbuh ltbrck, tr pyrc;
SH: fi - med gy, mm, bkg, arg,
slty, mnr pyr, tr brn ucbl; SLTST:
lt gy, bkg, sdy, sbuh ltbrck, tr pyrc;
SH: fi - med gy, mm, bkg, arg,
slty, mnr pyr; SLTST: lt gy, bkg,
sdy, sbuh ltbrck, tr pyrc;
SH: fi - med gy, mm, bkg, arg,
slty, mnr pyr,

Sh: mod - dk gy, mm, sb fis, non
calc, s f-m cal clsts, v foss frags,
mm pyr; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, non
calc, s f-m cal clsts, v foss frags,
mm pyr; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, non
calc, s f-m cal clsts, v foss frags,
mm pyr; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, non
calc, s f-m cal clsts, v foss frags,
mm pyr; v wk pale yel C

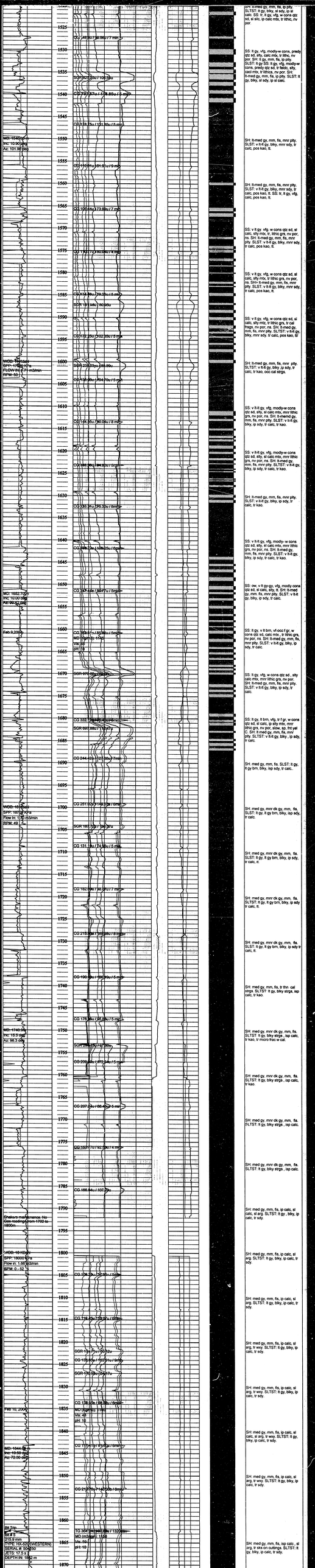
Sh: mod - dk gy, mm, sb fis, non
calc, s f-m cal clsts, v foss frags,
mm pyr; v wk pale yel C

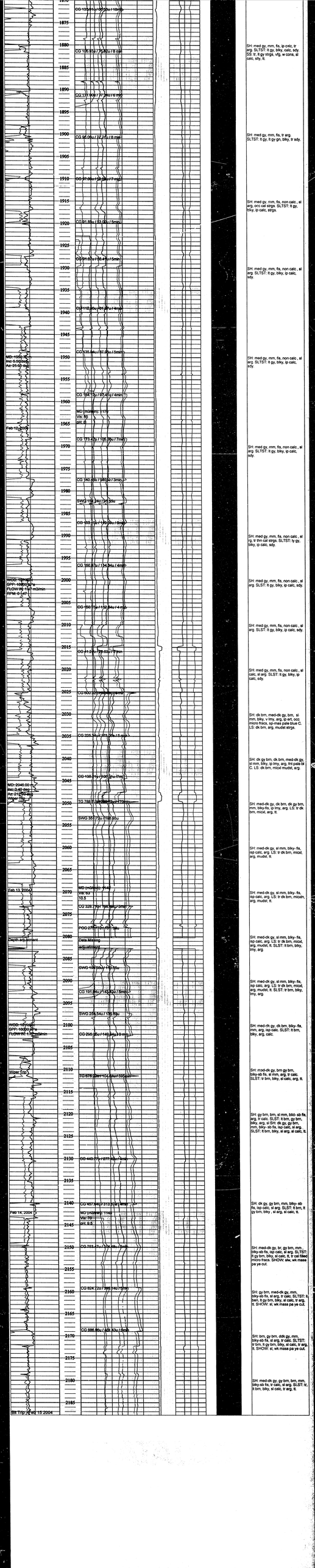
Sh: mod - dk gy, mm, sb fis, occ
lt brn cal clsts, mm pyr; occ foss
frags; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, occ
fis, lt v/ dk gy, mm pyr; occ foss
frags; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, occ
fis, lt v/ dk gy, mm pyr; occ foss
frags; v wk pale yel C

Sh: mod - dk gy, mm, sb fis, occ
lt brn cal clsts


SH: fi-med gy, mm, fis, tr pty, SLTST: fi gy, bky, sl sdy, ip sl calc. SS: tr-fi gy, vfg, w cons qtz sd, sl silc, ip calc mtx, tr lithic, mv por
SS: fi gy, vfg, mod/w cons, predy qtz sd, sity, calc mtx, tr lithic, mv por. SH: fi gy, mm, fis, ip sity. SLST: fi gy SS: fi gy, vfg, mod/w cons, predy qtz sd, tr biotic, sity, calc mtx, tr lithics, mv por. SH: fi-med gy, mm, fis, ip pty. SLST: fi gy, bky, tr sdy, ip sl calc.
SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, mnr sdy, fr calc, pos kao, tr.
SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, mnr sdy, fr calc, pos kao, tr. SS: tr fi gy, vfg, calc, pos kao, tr.
SS: v fi gy, vfg, w cons qtz sd, sl calc, sity mtx, tr, lithic grs, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, mnr sdy, tr calc, pos kao, tr.
SS: v fi gy, vfg, w cons qtz sd, sl calc, sity mtx, tr lithic grs, tr cal frags, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, mnr sdy, tr calc, pos kao, tr
SH: fi-med gy, mm, fis, mnr pty. SLTST: v fi-fi gy, bky, ip sdy, tr calc, tr kao, occ cal strgs.
SS: v fi-fi gy, vfg, mod/w cons qtz sd, sty, sl calc mtx, mnr lithic grs, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc, tr kao.
SS: v fi-fi gy, vfg, mod/w cons qtz sd, sty, sl calc mtx, mnr lithic grs, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLTST: v fi-fi gy, bky, ip sdy, tr calc, tr kao.
SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc, tr kao.
SS: v fi-fi gy, vfg, mod/w cons qtz sd, sty, sl calc mtx, mnr lithic grs, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc, tr kao.
SS: ow, v fi gy-gy, vfg, mod/y cons qtz sd, sl calc, sity, tr. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc.
SS: fi gy, fi brn, vf-occ f gr, w cons qtz sd, calc mtx, tr lithic grs, mv por, ns. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc.
SS: fi gy, vfg, w cons qtz sd , sity calc mtx, mnr lithic grs, mv por. SH: fi-med gy, mm, fis, mnr pty. SLST: v fi-fi gy, bky, ip sdy, tr calc.
SS: fi gy, fi brn, vfg, tr f gr, w cons qtz sd, sl calc, ip sty mtx, mnr lithic grs, mv por, slow, sp, frt yel fl. SH: fi med gy, mm, fis, mnr pty. SLTST: v fi-fi gy, bky , ip sdy, tr calc.
SH: med gy, mm, fs, SLST: fi gy, fi gy brn, bky, ip sdy, tr calc..
SH: med gy, mnr dk gy, mm, fs, SLST: fi gy, fi gy brn, bky, ip sdy, tr calc.
SH: med gy, mnr dk gy, mm, fs, SLST: fi gy, fi gy brn, bky, ip sdy, tr calc, tr.
SH: med gy, mnr dk gy, mm, fs, SLST: fi gy, fi gy brn, bky, ip sdy tr calc, tr.
SH: med gy, mnr dk gy, mm, fs, SLST: fi gy, fi gy brn, bky, ip sdy tr calc, tr.
SH: med gy, mm, fs, tr thn cal strgs. SLTST: fi gy, bky strgs, isp calc, tr kao.
SH: med gy, mnr dk gy, mm, fs, SLTST: fi gy, bky strgs , isp calc, tr kao, tr micro frac w cal.
SH: med gy, mnr dk gy, mm, fs, SLTST: fi gy, bky strgs , isp calc, tr kao.
SH: med gy, mnr dk gy, mm, fs, SLTST: fi gy, bky strgs , isp calc.
SH: med gy, mnr dk gy, mm, fs, SLTST: fi gy, bky strgs , isp calc.
SH: med gy, mm, fs, ip calc, sl calc, sl arg. SLTST: fi gy , bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg. SLTST: fi gy, bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg. SLTST: fi gy, bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg, tr wxy. SLTST: fi gy, bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg, tr wxy. SLTST: fi gy, bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg, tr wxy. SLTST: fi gy, bky, ip calc, tr sdy.
SH: med gy, mm, fs, ip calc, sl arg, tr wxy. SLTST: fi gy, bky, ip calc, tr sdy.
SH: fi-med gy, mm, fs, isp calc , sl arg, tr xas on cuttings. SLTST: fi gy, bky, ip calc, tr sdy.
WOB: 15-18klbf
SPP: 1850 kPa
Flow in: 1.66 m3/min
RPM: 60
MD: 1640.0m
Inc: 10.90 deg
Az: 101.90 deg
WOB: 15-18klbf
SPP: 1850 kPa
Flow in: 1.66 m3/min
RPM: 60
MD: 1682.0m
Inc: 10.00 deg
Az: 99.00 deg
Feb 9,2005
WOB: 15-18klbf
SPP: 1870 kPa
Flow in: 1.70 m3/min
RPM: 45
MD: 1740.0m
Inc: 10.9 deg
Az: 98.3 deg
Shakers malfunction. No Geo readings from 1702 to 1800m
WOB: 18-19klbf
SPP: 18000 kPa
Flow in: 1.66 m3/min
RPM: 0 - 52
Feb 10, 2005
MD: 1844.0m
Inc: 10.50 deg
Az: 72.00 deg
BHA:
Bit 8
215.9 mm
TYPE: HX-GX(WESTERN)
SERIAL #: 504750
JETS: 17.5 x 3
DEPTH IN: 1682 m
Bit Top
Bit Bottom
CG: 49.9u / 38.96u / 7 min
SGR: 225.2u / 109.3u
CG: 210.3u / 78.85u / 5 min
CG: 178.7u / 131.95u / 5 min
CG: 193.7u / 151.5u / 9 min
CG: 100.4u / 173.65u / 7 min
CG: 174.1u / 160.6u / 8 min
CG: 173.8u / 79.25u / 5 min
SGR: 191.34u / 80.0u
CG: 179.2u / 102.35u / 5 min
SGR: 330.02u / 86.66u
CG: 138.8u / 104.7u / 5 min
CG: 164.5u / 90.6u / 8 min
CG: 186.3u / 196.62u / 5 min
CG: 233.1u / 95.2u / 6min
CG: 188.2u / 126.25u / 6min
CG: 149.4u / 89.7u / 5min
CG: 193.1u / 85.8u / 5min
WOB: 15-18klbf
RPM: 45-50
PP: 18
SGR: 191.3u / 89.8u
CG: 332.2u / 89.4u / 6min
SGR: 691.86u / 124.7u
CG: 244.4u / 121.8u / 7 min
CG: 251.7u / 119.2u / 6min
SGR: 191.3u / 90.3u
CG: 131.7u / 74.6u / 5 min
CG: 192.7u / 76.0u / 7 min
CG: 218.8u / 139.2u / 8 min
CG: 196.9u / 150.9u / 5 min
CG: 176.9u / 95.6u / 5 min
SGR: 288.9u / 97.20u
CG: 209.4u / 172.2u / 5 min
CG: 207.3u / 88.4u / 5 min
CG: 197.7u / 102.5u / 4 min
CG: 186.4u / 107.3u
SGR: 191.7u / 90.3u
SGR: 191.7u / 90.3u
CG: 179.6u / 98.3u / 6min
CG: 178.0u / 79.0u / 6min
MD (bg/min): 1744
Vis: 48
pH: 10
CG: 177.7u / 97.9u / 6min
CG: 213.7u / 140.0u / 6min
TG: 304.3 units gas / 1320min
MD (m3/min): 1744
Vis: 48
pH: 10


1870
CG 1354 hu / 1972 bu / 10 min
1875
1880
CG 105.60u / 70.40u / 8 min
1885
1890
CG 171.60u / 77.22u / 6 min
1895
1900
CG 96.06u / 72.71u / 8 min
1905
1910
CG 87.65u / 39.08u / 9 min
1915
1920
CG 81.85u / 53.13u / 5min
1925
CG 91.67u / 76.47u / 5min
1930
1935
CG 112.20u / 91.91u / 4min
1940
1945
CG 135.04u / 107.95u / 5min
1950
MD: 1955.00m
Inc: 5.50deg
Az: 25.00 deg
1955
CG 184.12u / 97.47u / 4min
1960
MD (mkb): 1717
Vis: 50
pH: 8
Feb 12, 2004
1965
CG 173.42u / 118.39u / 7min
1970
1975
CG 140.00u / 98.52u / 3min
1980
SWG 139.24u / 95.30u
1985
CG 169.10u / 140.30u / 6min
1990
1995
CG 160.87u / 134.94u / 4min
2000
WOB: 0kg/klb
GPP: 1600kPa
FLOW IN: 1+/- m3/min
RPM: 0 rpm
2005
CG 150.70u / 142.36u / 4 min
2010
2015
CG 141.20u / 128.60u / 5 min
2020
2025
CG 600.00u / 0.00u / 5 min
2030
2035
CG 235.54u / 204.06u / 6 min
2040
2045
CG 138.31u / 105.20u / 7min
MD: 2046.00 m
Inc: 2.40 deg
Az: 21.00 deg
Water Trip
2050
TG 782 u - 2046m - 2nd 470min
2055
SWG 35.72u / 169.80u
2060
2065
Feb 13, 2004
2070
MD (mkb): 2064
Vis: 52
10.5
CG 328.70u / 196.98u / 5min
2075
POG 276.00u / 0.00u / 5h
2080
Depth adjustment
Data Missing
adjustment
2085
2090
SWG 194.00u / 142.30u
2095
CG 191.84u / 143.92u / 6min
SWG 254.54u / 136.80u
2100
WOB: 10 klb/in
GPP: 1400kPa
FLOW IN: 1 m3/min
2105
CG 295.25u / 146.34u / 9 min
2110
Water Trip
TG 878.22m - 104.64u - 595 min
2115
2120
CG 442.77u / 277.00u / 5min
2125
2130
CG 407.84u / 313.21u / 4min
MD (mkb): 2134
Vis: 70
pH: 9.5
Feb 14, 2004
2135
2140
CG 753.12u / 574.16u / 5min
2145
2150
2155
CG 824.72u / 598.19u / 6min
2160
2165
CG 886.96u / 628.93u / 6min
2170
2175
2180
2185
Bit Trip 2 at 16 15 2004
SH: med gy, mm, fs, ip calc, tr arg. SLTST: lt gy, blky, calc, sdy, SS: tr, lt gy strgs, vfg, w cons, sl calc, slty, tt.
SH: med gy, mm, fs, tr arg. SLTST: lt gy, lt gy gn, blky, tr sdy.
SH: med gy, mm, fs, non calc , sl arg, occ cal strgs. SLTST: lt gy, blky, ip calc, strgs.
SH: med gy, mm, fs, non calc , sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc, sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc , sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc , sl arg, tr thn cal strgs. SLTST: ly gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc , sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc , sl arg. SLTST: lt gy, blky, ip calc, sdy.
SH: med gy, mm, fs, non calc , sl calc, sl arg. SLST: lt gy, blky, ip calc, sdy.
SH: dk brn, med-dk gy, brn, sl mm, blky, v lmy, arg, ip ert, occ micro fracs, sp-mas pale blue C. LS: dk brn, arg, mudst strgs.
SH: dk gy brn, dk brn, med-dk gy, sl mm, blky, lp dmy, arg, fnt pale bl C. LS: dk brn, micd mudst, arg.
SH: med-dk gy, dk brn, dk gy brn, mm, blky-fis, lp lmy, arg. LS: lt dk brn, micd, arg, tt.
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: lt dk brn, micd, arg, mudst. tr
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: lt dk brn, micd, arg, mudst, lt. SLST: lt brn, blky, lmy, arg.
SH: med-dk gy, sl mm, blky- fis, isp calc, arg. LS: lt dk brn, micd, arg, mudst, lt. SLST: tr brn, blky, lmy, arg.
SH: med-dk gy, dk brn, blky- fis, mm, arg, isp calc. SLST: lt brn, blky, arg, calc.
SH: med-dk gy, brn gy brn, blky-sb fis, isp calc, sl arg. SLST: lt brn, lt gy brn, blky , sl arg, sl calc, tt.
SH: dk gy, gy brn, mm, blky- sb fis, isp calc, sl arg. SLST: lt brn, lt gy brn, blky , sl arg, sl calc, tt.
SH: med-dk gy, br, gy brn, mm , blky-sb fis, isp calc, sl arg. SLTST: lt gy brn, blky, sl calc, lt. tr cal filled micro fracs. SHOW: elec, wk mass pa ye cut.
SH: gy brn, med-dk gy, mm, blky-sb fis, sl arg, tr calc. SLTST: lt, brn, lt gy brn, blky, sl calc, tr arg, tt. SHOW: sl, wk mass pa ye cut.
SH: brn, gy brn, ddk gy, mm, blky-sb fis, sl arg, tr calc. SLTST: tr brn, lt gy brn, blky, sl calc, tr arg, tt. SHOW: sl, wk mass pa ye cut.
SH: med-dk gy, gy brn, brn, mm, blky-sb fis, tr calc, sl arg. SLST: tr, lt brn, blky, sl calc, tr arg, tt.

GEOLOGICAL REPORT

N.E.B. COPY



K.C. WAUNCH PETROLEUM CONSULTANTS LTD.

WELLSITE GEOLOGICAL SERVICES

CALGARY, ALBERTA

NORTHROCK RESOURCES LTD

NORTHROCK ET AL SUMMIT CREEK

B-44-64-30-125-45

Prepared for: Geoff Ireland

Wellsite Geologist: Bryce McQuillan

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SUMMARY OF PERTINENT DATA

WELL NAME:	NORTHROCK ET AL SUMMIT CREEK
SURFACE LOCATION:	B-44-64-30-125-45
SURFACE COORDINATES:	Lat 64° 23' 02.352", Long 125° 53' 22.656" NAD27
ELEVATIONS:	GRD: 580.5m; K.B: 586.7m
OPERATOR:	NORTHROCK RESOURCES LTD.
CONTRACTOR:	AKITA RIG #40
TOOLPUSHER:	ALVIN VOGT
DRILL FOREMAN:	KEVIN AMY/DARRYL CUNNINGHAM
MUD COMPANY:	CONCORD
GEOLOGICAL SUPERVISION:	BRYCE MCQUILLAN for K.C. Waunch Petroleum Consultants
DATE SPUDDED:	2004/01/16/03:00
COMPLETE DRILLING:	2004/03/18/14:00
TOTAL DEPTH:	3064 meters
STATUS OF WELL:	
HOLE SIZE:	444.5mm to 208m, 311mm to 810m, 215.9mm to 2505, 155.6mm to TD
CASING RECORD:	339.7mm to 208m, 244.5mm to 804m, 177.8mm to 2450m
CORES:	none
DRILL STEM TEST:	458-465, 238-245, 238-245
LOGGING PROGRAM:	Baker Atlas

FORMATION TOPS

B-44-64-30-125-45

K.B.	**586.70**
GRD	**580.50**

FORMATION	PROGNOSIS		SAMPLES			LOGS		
	TVD	SS	MD	TVD	SS	MD	TVD	SS
SUMMIT CREEK	2.7	584.0	np					
EAST FORK	162.7	424.0	123.5	123.5	463.2	123.5	123.5	463.2
SURF CASING POINT	202.7	384.0	208.0	208.0	378.7	208.0	208.0	378.7
U. LITTLE BEAR	242.7	344.0	405.0	405.0	181.7	405.0	405.0	181.7
L. LITTLE BEAR	742.7	-156.0	609.0	609.0	-22.3	609.0	609.0	-22.3
INTMD CASING POINT	802.7	-216.0	804.0	802.9	-216.2	804.0	802.9	-216.2
SLATER RIVER	912.7	-326.0	806.0	805.0	-218.3	806.0	805.0	-218.3
RADIOACTIVE SHALE	1225.7	-639.0	1103.0	1101.5	-514.8	1103.0	1101.5	-514.8
BASAL SAND MEMBER	1482.7	-896.0	np			np		
ARCTIC RED	1594.7	-1008.0	1328.0	1325.0	-738.3	1328.0	1325.0	-738.3
IMPERIAL	2121.7	-1535.0	2024.0	2012.0	-1425.3	2024.0	2012.0	-1425.3
CANOL	2479.7	-1893.0	2161.0	2149.2	-1562.5	2161.0	2149.2	-1562.5
HARE INDIAN	2547.7	-1961.0	2201.0	2189.0	-1602.3	2201.0	2189.0	-1602.3
BLUEFISH MEMBER	2658.7	-2072.0	2312.0	2305.5	-1718.8	2312.0	2305.5	-1718.8
INTMD CASING POINT	2662.7	-2076.0	2450.0	2438.2	-1851.5	2450.0	2438.2	-1851.5
HUME	2677.7	-2091.0	2330.5	2318.9	-1732.2	2330.5	2318.9	-1732.2
HEADLESS	2757.7	-2171.0	2417.0	2405.0	-1818.3	2417.0	2405.0	-1818.3
BEAR ROCK	2862.7	-2276.0	2541.0	2529.0	-1942.3	2541.0	2529.0	-1942.3
FTD	3037.7	-2451.0	3064.0	3050.7	-2464.0	3064.0	3050.7	-2464.0

DAILY DRILLING SUMMARY

NORTHROCK ET AL SUMMIT CREEK B-44

DATE 2004	HOLE DEPTH	06:00 ACTIVITY	MUD DEN	VIS	WOB	RPM	PUMP PRESS	SPM	FORMATION
Jan 16		Spud @ 03:00							
Jan 17	27	Run Conductor							Surface
Jan 18	27	Rig to drill out from Conductor - set at 25 meters							Surface
Jan 19	105	Drill 311mm pilot hole	1260	39	8	150	5000	190	Summit Creek
Jan 20	177	Drill 444.5mm hole	1200	47	5/10	200	5100	190	East Fork?
Jan 21	208	Run 339.7mm Surface casing	Casing landed at 208 meters at 09:30						
Jan 22	208	Nippling up BOP							East Fork
Jan 23	208	Pressure testing							East Fork
Jan 24	208	Repairs, pressure test							East Fork
Jan 25	208	Drill out cement, drill out under shoe @ 06:30							East Fork
Jan 26	440	Drill 311mm hole	1100	42	5	100	10180	200	U. Little Bear
Jan 27	707	Drill 311mm hole	1110	42	5	100	10600	200	U. Little Bear
Jan 28	810	Wiper trip tight hole	1140	76	5	100	16000	200	L. Little Bear
Jan 29	810	Wash to bottom, circ.	1120	78					L. Little Bear
Jan 30	810	Rig out loggers	1120	83					L. Little Bear
Jan 31	810	DST #1 458 - 465m	1135	82					L. Little Bear
Feb 01	810	DST #2rr 238 -245m							L. Little Bear
Feb 02	810	Rig to & run 244.5mm casing							L. Little Bear
Feb 03	810	WOC							L. Little Bear
Feb 04	946	Dr wi Bit #2 216mm	1060	38	5	100	11200	160	Slater River
Feb 05	1114	Drill wi Bit #3	1075	40	15	80	14000	160	Slater River
Feb 06	1346	Drill 216mm hole	1125	46	10	130	15000	160	Basal Sand
Feb 07	1356	Dir Drill wi Bit #4	1135	48	12	50+M	15000	160	Basal Sand
Feb 08	1521	Dir drill 216mm hole	1135	46	18	50+M	16400	160	Arctic Red
Feb 09	1711	Dir drill 216mm hole	1135	48	18	50+M	17600	160	Arctic Red
Feb 10	1862	Circ samp to POH	1140	48	18	50+M	18300	160	Arctic Red
Feb 11	1872	Dir dr wi Bit #5	1150	60	17	45+M	18600	140	Arctic Red
Feb 12	2000	Dir drill 216mm hole	1180	80	17.5	45+M	18800	140	Arctic Red
Feb 13	2101	Dir drill 216mm hole	1145	70	17.5	50+M	17100	140	Imperial
Feb 14	2178	Dir drill 216mm hole	1150	83	19	45+m	18200	140	Imperial

DAILY DRILLING SUMMARY

NORTHROCK ET AL SUMMIT CREEK B-44

DATE 2004	HOLE DEPTH	06:00 ACTIVITY	MUD DEN	VIS	WOB	RPM	PUMP PRESS	SPM	FORMATION
Feb 15	2188	Work tight hole at 2085 on trip in with bit # 6							Imperial
Feb 16	2188	Work stuck pipe at 2154 m							Imperial
Feb 17	2188	Rig to run free point tool							Imperial
Feb 18	2188	POH with 1978 m of drill string after backing off							Imperial
Feb 19	2188	RIH to set cement plug from 1775 to 1675m							Imperial
Feb 20	1675	Pressure test BOP stack							Arctic Red
Feb 21	1734	Time drill from k/o 1706	1140	53	4	120	12077	140	Arctic Red
Feb 22	1785	RIH wi Bit #9	1155	50	15	50+M	15484	150	Arctic Red
Feb 23	1892	Dir dr 216mm side track	1175	50	15	50+M	15467	150	Arctic Red
Feb 24	2012	Dir dr 216mm side track	1250	50	15	50+M	17397	150	Arctic Red
Feb 25	2109	Dir dr 216mm side track	1265	50	15	50+M	17300	150	Imperial
Feb 26	2242	Trip for bit	1260	61	15	50+M	17200	150	Hare Indiann
Feb 27	2242	Ream to btm wi Bit #10	1285	71	15	50+M	16000	150	Hare Indiann
Feb 28	2315	Dir dr wi Bit #10	1265	60	16	45+M	17100	150	Bluefish
Feb 29	2421	Dir dr wi bit # 10	1260	60	15	45+M	17400	150	Hume
Mar 01	2505	Circ samp to POH	1265	64	15	45+M	17800	150	Headless
Mar 02	2505	Ream to bottom	1275	67	10	90	14000	145	Headless
Mar 03	2505	Cond mud & circ	1360	120	15	100	17555	140	Headless
Mar 04	2505	Log run #2	1350	120					
Mar 05	2505	POH after running cement plug 2498 - 2460mkb on top of fish							
Mar 06	2459	POH to run intermediate casing #2							
Mar 07	2459	Run 177.8mm casing	1390	105					Headless
Mar 08	2459	WOC	177.8mm casing landed at 2450m						Headless
Mar 09	2466	Time drill from k/o 2464	1110	34	7	M	5987	90	Headless
Mar 10	2476	Dir dr wi bit #13RR	1010	35	10	45+M	5678	90	Headless
Mar 11	2591	Dir dr wi bit #13RR	1020	42	12	50+M	5843	90	Headless
Mar 12	2670	RIH wi Bit #14	1020	42	12	50+M	7356	90	Bear Rock
Mar 13	2737	Dir dr wi bit #14	1030	37	12	50+M	7482	90	Bear Rock
Mar 14	2762	Dir dr wi bit #15	1030	38	12	50+M	7344	90	Bear Rock
Mar 15	2828	RIH wi Bit #16	1030	39	14	50+M	7500	90	Bear Rock
Mar 16	2911	Dir dr wi bit #16	1030	35	14	50+M	7500	90	Bear Rock

DAILY DRILLING SUMMARY

NORTHROCK ET AL SUMMIT CREEK B-44

DATE 2004	HOLE DEPTH	06:00 ACTIVITY	MUD DEN	VIS	WOB	RPM	PUMP PRESS	SPM	FORMATION
Mar 17	2977	Dir dr wi bit #17	1040	34	14	50+M	9100	90	Bear Rock
Mar 18	3035	Drill wi Bit #18	1040	35	14	60	7470	90	Bear Rock
	3064	FTD @ 14:00							
Mar 19	3064	POH wi log run #1	1040	35					Bear Rock
Mar 20	3064	POH with test tools. failed to set packer for DST #4 2707 - 2727mkb							Bear Rock

BIT RECORD

BIT #	TYPE	SIZE (mm)	DPTH IN	DPTH OUT	MTRS	HRS	ROP (m/hr)	CUM HRS	CONDITION I	O	D	L	B	G	O	R
1B	Rathole	304	0	15	15	3.00	5.0	3.00	2	2	WT	A	E	0.00	NO	TD
1A	FDS	311	0	27	27	9.00	3.0	12.00	2	2	WT	A	E	0.00	NO	TD
2A	EHT116C	311	27	130	103	11.00	9.4	23.00	2	1	WT	A	E	0.00	NO	BHA
3A	MSDGHC	444.5	130	208	78	10.00	7.8	33.00	2	2	WT	A	E	0.00	NO	TD
1	HCM605	311	208	810	602	54.00	11.1	87.00	1	2	WC	A	X	0.00	NO	TD
2	HC606	215.9	810	1055	245	21.75	11.3	108.75	NO DAMAGE							PR
3	GTS18D	215.9	1055	1350	295	29.00	10.2	137.75	3	3	WT	A	E	0.00	NO	BHA
4	GF15PS	215.9	1350	1862	512	65.00	7.9	202.75	4	4	WT	H	5	0.00	FC	BHA
5	HX-S20	215.9	1862	2188	326	55.50	5.9	278.25	3	3	WT	A	1	1.00	WT	BHA
6	GTS18	215.9	2188		0	0.00	0.0	278.25					Left in hole			
7RR	F15PS	215.9	1979		0	0.00	0.0	278.25					Reaming bit			
8	GTCS09D	215.9	1706	1785	79	27.75	2.8	306.00	3	3	WT	A	E	0.00	NO	PR
9	GTS18	215.9	1785	2242	457	81.75	5.6	387.75	7	8	BT	A	6	1.00	WT	PR
10	HXS20	215.9	2242	2505	263	60.25	4.4	448.00					Left in hole			
11	GTS18D	215.9	2459		0	0	0.0	448.00					Reaming bit			
	STX-20	155.6	2450	2464									Polish cement plug			
12	D411ST	155.6	2464	2469	5	14.50	0.3	462.50					Side track bit			
13RR	STX-20	155.6	2469	2670	201	41.50	4.8	504.00	5	4	BT	A	E	0.00	WT	PR
14	STX-R20	155.6	2670	2740	70	21.75	3.2	525.75	8	8	BT	A	F	5.00	WT	PR
15	STX-R20	155.6	2740	2828	88	24.50	3.6	550.00	8	8	BT	A	F	3.00	WT	PR
16	STX-30	155.6	2828	2914	86	20.50	4.2	570.50	8	6	BT	A	E	0.00	WT	PR
17	STR-40	155.6	2914	3025	111	20.25	5.5	590.75	4	4	WT	A	E	0.00	BT	PR
18	STX-30	155.6	3025	3064	39	10	3.9	600.75	8	4	BT	M	E	0.00	NO	TD

17-Mar-2004

BAKER HUGHES INTEQ
MINIMUM CURVATURE SURVEY CALCULATIONS
DIRDRIL Version 3.2
For
NORTHROCK RESOURCES LTD.
B-44-64-30-125-45
UNITS in METERS

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
0.00	0.00	0.00	N00.00E	0.00	0.00	0.00	0.00N	0.00E
200.00	3.06	242.50	S62.50W	199.90	-5.34	0.46	2.47S	4.74W
300.00	3.21	249.12	S69.12W	299.76	-10.78	0.12	4.70S	9.72W
400.00	3.48	258.15	S78.15W	399.59	-16.46	0.18	6.32S	15.31W
500.00	3.37	253.87	S73.87W	499.41	-22.24	0.08	7.76S	21.10W
600.00	3.23	267.81	S87.81W	599.24	-27.63	0.24	8.68S	26.74W
700.00	3.08	275.44	N84.56W	699.09	-32.38	0.13	8.53S	32.23W
800.00	3.38	280.54	N79.46W	798.93	-36.89	0.12	7.74S	37.80W
836.00	2.81	287.83	N72.17W	834.88	-38.32	0.58	7.28S	39.68W
924.00	3.34	294.86	N65.14W	922.75	-41.33	0.22	5.54S	44.06W
1009.00	3.60	305.05	N54.95W	1007.60	-43.99	0.24	2.96S	48.49W
1095.00	2.99	328.26	N31.74W	1093.46	-45.30	0.51	0.49N	51.89W
1181.00	5.89	359.90	N00.10W	1179.20	-43.32	1.29	6.82N	53.07W
1267.00	6.15	11.85	N11.85E	1264.73	-38.22	0.45	15.74N	52.14W
1338.00	6.77	20.64	N20.64E	1335.28	-32.58	0.49	23.38N	49.88W
1347.10	6.50	21.70	N21.70E	1344.32	-31.78	0.98	24.36N	49.50W
1356.60	6.10	27.70	N27.70E	1353.77	-30.94	2.43	25.30N	49.07W
1366.20	5.90	34.70	N34.70E	1363.31	-30.08	2.37	26.16N	48.55W
1375.80	6.20	43.50	N43.50E	1372.86	-29.14	3.04	26.94N	47.91W
1385.30	7.90	51.20	N51.20E	1382.29	-28.01	6.13	27.72N	47.05W
1394.90	10.60	54.00	N54.00E	1391.76	-26.49	8.55	28.66N	45.82W
1404.40	10.50	55.40	N55.40E	1401.10	-24.76	0.87	29.66N	44.40W
1414.00	8.75	58.36	N58.36E	1410.57	-23.16	5.68	30.54N	43.06W
1423.50	5.40	81.50	N81.50E	1419.99	-22.02	13.69	30.99N	42.00W
1433.10	4.60	112.80	S67.20E	1429.56	-21.35	8.76	30.90N	41.20W
1442.90	4.60	138.10	S41.90E	1439.33	-21.02	6.16	30.46N	40.57W
1451.90	4.80	145.10	S34.90E	1448.30	-20.89	2.02	29.88N	40.12W
1461.90	4.60	144.40	S35.60E	1458.27	-20.80	0.62	29.21N	39.64W
1471.50	5.50	145.10	S34.90E	1467.83	-20.70	2.82	28.52N	39.16W
1480.80	6.80	141.90	S38.10E	1477.07	-20.56	4.34	27.72N	38.56W
1490.30	8.20	125.80	S54.20E	1486.49	-20.18	7.93	26.88N	37.67W
1499.80	9.80	111.00	S69.00E	1495.88	-19.36	8.85	26.20N	36.36W
1509.70	9.90	107.10	S72.90E	1505.63	-18.22	2.04	25.65N	34.76W
1519.30	10.40	106.10	S73.90E	1515.08	-17.03	1.66	25.16N	33.14W
1528.80	11.10	105.00	S75.00E	1524.41	-15.76	2.30	24.69N	31.43W
1538.40	11.10	104.30	S75.70E	1533.84	-14.41	0.42	24.22N	29.64W
1548.00	10.90	101.90	S78.10E	1543.26	-13.05	1.56	23.81N	27.86W
1557.50	10.70	95.20	S84.80E	1552.59	-11.63	4.01	23.54N	26.10W
1567.10	10.60	92.70	S87.30E	1562.03	-10.14	1.48	23.42N	24.33W
1576.60	10.30	88.80	N88.80E	1571.37	-8.64	2.43	23.40N	22.61W
1586.10	10.00	87.10	N87.10E	1580.72	-7.14	1.34	23.45N	20.94W

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
1595.70	9.90	91.30	S88.70E	1590.18	-5.67	2.29	23.48N	19.28W
1605.60	10.60	94.50	S85.50E	1599.92	-4.17	2.73	23.39N	17.52W
1614.80	11.60	95.20	S84.80E	1608.95	-2.70	3.29	23.24N	15.76W
1624.30	11.50	96.20	S83.80E	1618.25	-1.13	0.71	23.05N	13.87W
1633.80	11.40	96.60	S83.40E	1627.56	0.42	0.40	22.84N	11.99W
1643.30	11.20	97.60	S82.40E	1636.88	1.93	0.88	22.61N	10.14W
1652.70	10.00	99.40	S80.60E	1646.12	3.31	3.97	22.35N	8.43W
1662.70	9.00	100.40	S79.60E	1655.98	4.60	3.04	22.07N	6.81W
1672.70	8.10	95.90	S84.10E	1665.87	5.79	3.36	21.86N	5.34W
1682.10	6.90	89.60	N89.60E	1675.19	6.83	4.64	21.79N	4.11W
1691.20	6.30	83.60	N83.60E	1684.23	7.77	3.01	21.85N	3.07W
1701.00	6.90	88.10	N88.10E	1693.96	8.80	2.42	21.93N	1.95W
1710.60	8.30	95.50	S84.50E	1703.48	9.89	5.33	21.89N	0.68W
1720.20	9.90	100.40	S79.60E	1712.96	11.10	5.55	21.67N	0.82E
1729.80	11.70	105.40	S74.60E	1722.39	12.44	6.34	21.26N	2.57E
1739.30	13.90	101.20	S78.80E	1731.65	14.01	7.54	20.78N	4.62E
1748.90	15.50	98.30	S81.70E	1740.94	15.92	5.50	20.38N	7.02E
1758.50	15.80	94.10	S85.90E	1750.18	18.05	3.66	20.10N	9.59E
1768.10	16.40	94.80	S85.20E	1759.41	20.28	1.97	19.89N	12.24E
1777.70	17.00	100.40	S79.60E	1768.60	22.50	5.36	19.52N	14.98E
1787.30	17.10	108.50	S71.50E	1777.78	24.55	7.42	18.82N	17.69E
1797.00	16.00	107.10	S72.90E	1787.08	26.45	3.62	17.98N	20.33E
1806.40	15.20	104.30	S75.70E	1796.13	28.26	3.51	17.29N	22.76E
1815.90	15.00	97.60	S82.40E	1805.31	30.16	5.54	16.82N	25.18E
1825.70	15.80	89.20	N89.20E	1814.76	32.37	7.25	16.67N	27.77E
1835.20	18.40	79.40	N79.40E	1823.84	34.94	12.23	16.97N	30.54E
1844.80	19.50	72.30	N72.30E	1832.92	37.95	7.98	17.73N	33.56E
1854.40	18.30	74.10	N74.10E	1842.00	41.00	4.17	18.63N	36.53E
1864.00	17.10	74.80	N74.80E	1851.14	43.84	3.81	19.41N	39.35E
1873.60	15.90	72.70	N72.70E	1860.35	46.50	4.19	20.18N	41.96E
1883.10	14.50	73.00	N73.00E	1869.52	48.94	4.43	20.91N	44.34E
1892.70	12.70	71.60	N71.60E	1878.85	51.16	5.72	21.60N	46.49E
1902.30	11.60	76.50	N76.50E	1888.23	53.13	4.71	22.15N	48.43E
1911.90	9.20	72.70	N72.70E	1897.67	54.81	7.80	22.61N	50.11E
1921.40	7.00	56.50	N56.50E	1907.08	56.13	9.95	23.15N	51.31E
1931.30	6.70	38.90	N38.90E	1916.91	57.27	6.40	23.94N	52.18E
1940.70	6.20	31.20	N31.20E	1926.25	58.21	3.19	24.80N	52.79E
1950.70	5.50	25.60	N25.60E	1936.20	59.07	2.71	25.69N	53.27E
1959.80	5.70	15.40	N15.40E	1945.26	59.74	3.34	26.52N	53.58E
1969.50	5.60	8.30	N08.30E	1954.91	60.36	2.18	27.45N	53.78E
1979.00	4.70	7.30	N07.30E	1964.37	60.86	2.86	28.30N	53.90E
1988.60	3.30	19.90	N19.90E	1973.95	61.30	5.14	28.95N	54.04E
1998.10	1.90	49.50	N49.50E	1983.44	61.66	5.99	29.31N	54.25E
2007.70	1.50	104.70	S75.30E	1993.03	61.91	5.05	29.38N	54.49E
2017.30	2.30	155.60	S24.40E	2002.63	61.99	5.58	29.17N	54.70E
2026.80	2.70	179.20	S00.80E	2012.12	61.87	3.46	28.77N	54.78E
2036.40	2.80	203.40	S23.40W	2021.71	61.58	3.61	28.33N	54.69E
2046.00	3.40	212.90	S32.90W	2031.30	61.14	2.46	27.88N	54.44E
2055.70	3.70	224.60	S44.60W	2040.98	60.59	2.42	27.41N	54.06E
2065.30	4.20	237.20	S57.20W	2050.55	59.94	3.12	27.00N	53.55E

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
2075.00	4.90	247.40	S67.40W	2060.22	59.18	3.30	26.65N	52.87E
2084.60	4.40	260.40	S80.40W	2069.79	58.42	3.63	26.43N	52.13E
2093.80	3.60	280.80	N79.20W	2078.97	57.86	5.28	26.43N	51.50E
2103.40	2.00	306.50	N53.50W	2088.56	57.56	6.24	26.58N	51.07E
2113.00	1.60	355.70	N04.30W	2098.15	57.54	4.82	26.82N	50.92E
2122.50	2.30	17.30	N17.30E	2107.65	57.74	3.17	27.13N	50.97E
2131.70	2.30	18.20	N18.20E	2116.84	58.00	0.12	27.48N	51.08E
2141.60	1.30	18.90	N18.90E	2126.74	58.23	3.03	27.78N	51.18E
2151.10	0.90	23.10	N23.10E	2136.24	58.37	1.29	27.95N	51.24E
2160.70	0.50	24.90	N24.90E	2145.83	58.46	1.25	28.05N	51.29E

VERTICAL SECTION CALCULATED ON PLANE OF 61.36999999999999 °

7-Mar-2004

BAKER HUGHES INTEQ
MINIMUM CURVATURE SURVEY CALCULATIONS
DIRDRIL Version 3.2
For
NORTHROCK RESOURCES LTD.
SUMMIT CR.B-44-64-30-125-45ST
UNITS in METERS

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
1710.00	8.21	95.11	S84.89E	1702.89	9.41	0.00	21.90N	0.78W
1716.10	9.30	97.60	S82.40E	1708.92	10.18	5.67	21.80N	0.14E
1726.20	10.10	101.50	S78.50E	1718.87	11.54	3.07	21.51N	1.82E
1735.50	10.50	100.80	S79.20E	1728.02	12.84	1.35	21.19N	3.45E
1744.90	9.10	94.50	S85.50E	1737.29	14.14	5.62	20.97N	5.03E
1754.50	7.90	81.80	N81.80E	1746.78	15.41	6.94	21.01N	6.44E
1764.50	8.00	63.50	N63.50E	1756.69	16.75	7.57	21.41N	7.75E
1774.10	9.50	50.50	N50.50E	1766.18	18.19	7.73	22.22N	8.96E
1783.70	10.50	45.30	N45.30E	1775.63	19.80	4.21	23.34N	10.19E
1793.30	10.40	41.40	N41.40E	1785.07	21.45	2.23	24.60N	11.38E
1803.00	9.80	40.00	N40.00E	1794.62	23.03	2.00	25.89N	12.49E
1812.40	9.00	44.20	N44.20E	1803.90	24.46	3.36	27.03N	13.52E
1821.90	7.90	53.70	N53.70E	1813.29	25.81	5.60	27.95N	14.56E
1831.10	7.60	64.20	N64.20E	1822.41	27.05	4.71	28.59N	15.62E
1840.70	7.80	70.20	N70.20E	1831.92	28.33	2.59	29.09N	16.81E
1850.50	8.30	73.70	N73.70E	1841.63	29.68	2.14	29.51N	18.11E
1860.10	8.40	69.90	N69.90E	1851.12	31.06	1.75	29.94N	19.43E
1869.80	8.70	67.10	N67.10E	1860.72	32.49	1.59	30.47N	20.78E
1879.50	9.20	67.80	N67.80E	1870.30	33.99	1.58	31.05N	22.17E
1889.10	9.30	67.40	N67.40E	1879.77	35.53	0.37	31.64N	23.60E
1898.60	9.70	65.60	N65.60E	1889.14	37.09	1.57	32.27N	25.03E
1908.10	9.60	69.20	N69.20E	1898.51	38.68	1.93	32.88N	26.50E
1917.70	8.90	76.50	N76.50E	1907.98	40.20	4.27	33.34N	27.97E
1927.30	8.60	83.90	N83.90E	1917.47	41.59	3.64	33.59N	29.41E
1936.90	9.00	89.60	N89.60E	1926.96	42.92	3.00	33.67N	30.87E
1946.50	9.80	91.00	S89.00E	1936.43	44.31	2.60	33.66N	32.44E
1955.80	10.60	89.60	N89.60E	1945.58	45.77	2.70	33.65N	34.09E
1965.60	10.70	85.70	N85.70E	1955.22	47.41	2.23	33.72N	35.90E
1975.10	10.40	78.70	N78.70E	1964.56	49.04	4.15	33.96N	37.62E
1984.50	10.30	74.10	N74.10E	1973.80	50.68	2.66	34.35N	39.26E
1994.00	9.80	72.70	N72.70E	1983.16	52.31	1.76	34.83N	40.85E
2004.00	9.10	67.10	N67.10E	1993.02	53.93	3.46	35.39N	42.39E
2013.60	8.40	64.20	N64.20E	2002.51	55.39	2.59	35.99N	43.72E
2023.20	7.70	64.20	N64.20E	2012.02	56.73	2.19	36.57N	44.93E
2032.80	6.90	63.90	N63.90E	2021.54	57.95	2.50	37.11N	46.03E
2042.40	6.80	68.80	N68.80E	2031.07	59.09	1.85	37.57N	47.07E
2051.90	6.80	73.00	N73.00E	2040.50	60.21	1.57	37.94N	48.14E
2061.50	6.90	75.50	N75.50E	2050.03	61.33	0.98	38.25N	49.24E
2071.00	7.40	72.00	N72.00E	2059.46	62.49	2.09	38.58N	50.37E
2080.70	6.60	67.40	N67.40E	2069.09	63.66	3.02	38.98N	51.48E
2090.20	5.20	71.30	N71.30E	2078.54	64.63	4.60	39.33N	52.39E

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
2099.80	3.80	72.00	N72.00E	2088.11	65.37	4.38	39.57N	53.11E
2109.40	3.00	76.90	N76.90E	2097.69	65.93	2.66	39.73N	53.65E
2118.90	2.60	93.40	S86.60E	2107.18	66.36	2.83	39.77N	54.11E
2128.50	2.30	108.20	S71.80E	2116.77	66.68	2.18	39.70N	54.51E
2138.10	1.90	127.90	S52.10E	2126.36	66.88	2.56	39.54N	54.82E
2147.60	1.50	141.60	S38.40E	2135.86	66.97	1.79	39.34N	55.02E
2157.10	0.90	149.30	S30.70E	2145.36	66.99	1.96	39.18N	55.14E
2166.60	0.50	121.50	S58.50E	2154.86	67.02	1.62	39.10N	55.21E
2176.40	1.20	49.80	N49.80E	2164.66	67.14	3.51	39.14N	55.32E
2185.80	2.00	44.60	N44.60E	2174.05	67.39	2.59	39.32N	55.52E
2195.20	2.30	49.50	N49.50E	2183.45	67.73	1.12	39.56N	55.77E
2204.60	2.10	46.30	N46.30E	2192.84	68.08	0.75	39.80N	56.04E
2214.00	1.90	49.10	N49.10E	2202.23	68.40	0.71	40.02N	56.28E
2223.60	1.70	53.70	N53.70E	2211.83	68.70	0.77	40.21N	56.52E
2233.70	1.50	74.10	N74.10E	2221.92	68.97	1.78	40.34N	56.77E
2243.30	1.40	88.10	N88.10E	2231.52	69.20	1.15	40.37N	57.01E
2252.80	1.30	102.90	S77.10E	2241.02	69.39	1.14	40.35N	57.23E
2262.40	1.40	113.80	S66.20E	2250.62	69.55	0.86	40.28N	57.44E
2271.60	1.60	112.10	S67.90E	2259.81	69.70	0.67	40.19N	57.66E
2281.20	1.40	106.40	S73.60E	2269.41	69.87	0.78	40.11N	57.90E
2290.80	1.40	102.20	S77.80E	2279.01	70.05	0.32	40.05N	58.13E
2300.70	1.60	124.00	S56.00E	2288.90	70.20	1.82	39.94N	58.36E
2310.30	1.90	149.30	S30.70E	2298.50	70.28	2.56	39.73N	58.55E
2313.90	2.00	164.10	S15.90E	2302.10	70.27	4.27	39.62N	58.60E
2329.50	1.50	154.60	S25.40E	2317.69	70.21	1.11	39.17N	58.76E
2339.10	0.80	138.10	S41.90E	2327.29	70.22	2.40	39.01N	58.86E
2348.70	0.20	153.50	S26.50E	2336.89	70.23	1.90	38.95N	58.91E
2358.30	0.60	18.20	N18.20E	2346.49	70.27	2.36	38.98N	58.93E
2368.00	1.60	10.10	N10.10E	2356.19	70.39	3.12	39.16N	58.97E
2377.50	2.00	12.20	N12.20E	2365.68	70.58	1.28	39.45N	59.03E
2386.80	2.80	16.80	N16.80E	2374.97	70.84	2.65	39.83N	59.13E
2396.40	3.10	24.10	N24.10E	2384.56	71.20	1.50	40.29N	59.31E
2406.20	3.70	24.50	N24.50E	2394.34	71.66	1.84	40.82N	59.55E
2415.70	4.10	27.30	N27.30E	2403.82	72.18	1.40	41.40N	59.83E
2425.30	4.10	23.80	N23.80E	2413.40	72.73	0.78	42.02N	60.12E
2434.90	3.60	18.90	N18.90E	2422.97	73.21	1.87	42.62N	60.36E
2444.40	3.30	2.00	N02.00E	2432.46	73.56	3.33	43.18N	60.47E
2453.90	3.70	350.40	N09.60W	2441.94	73.79	2.56	43.75N	60.42E
2459.70	3.00	356.70	N03.30W	2447.73	73.91	4.09	44.09N	60.38E
2469.30	3.60	346.90	N13.10W	2457.31	74.09	2.57	44.63N	60.30E
2488.40	4.80	64.90	N64.90E	2476.38	75.04	8.43	45.55N	60.89E
2498.00	4.10	104.00	S76.00E	2485.95	75.70	9.52	45.64N	61.59E
2507.60	3.40	127.90	S52.10E	2495.53	76.07	5.30	45.38N	62.14E
2517.10	2.60	154.20	S25.80E	2505.02	76.18	4.96	45.02N	62.46E
2526.70	3.20	133.50	S46.50E	2514.60	76.27	3.74	44.64N	62.75E
2536.30	1.90	183.40	S03.40W	2524.19	76.27	7.66	44.29N	62.93E
2545.80	2.20	215.10	S35.10W	2533.69	76.03	3.65	43.99N	62.82E
2555.40	2.70	247.40	S67.40W	2543.28	75.64	4.51	43.75N	62.51E
2565.00	3.50	243.50	S63.50W	2552.87	75.12	2.58	43.53N	62.04E
2574.60	4.90	244.60	S64.60W	2562.44	74.42	4.38	43.22N	61.40E

MEASURED DEPTH	DRIFT	DIRECTION AZIMUTH	QUADRANT	TVD	VERTICAL SECTION	DLS	NORTH SOUTH	EAST WEST
2584.20	5.10	237.60	S57.60W	2572.00	73.58	2.00	42.82N	60.67E
2593.70	4.30	231.20	S51.20W	2581.47	72.81	3.02	42.37N	60.04E
2603.30	4.20	240.40	S60.40W	2591.05	72.11	2.15	41.97N	59.45E
2612.90	3.60	233.00	S53.00W	2600.62	71.46	2.44	41.62N	58.91E
2622.40	5.50	241.10	S61.10W	2610.09	70.71	6.32	41.22N	58.27E
2632.00	5.40	242.10	S62.10W	2619.65	69.80	0.43	40.78N	57.47E
2641.60	5.60	238.30	S58.30W	2629.21	68.88	1.30	40.33N	56.67E
2651.20	3.00	214.40	S34.40W	2638.78	68.19	9.70	39.87N	56.13E
2660.80	2.60	167.60	S12.40E	2648.37	67.91	7.04	39.45N	56.03E
2671.10	2.60	180.30	S00.30W	2658.66	67.74	1.67	38.99N	56.08E
2680.70	3.10	161.60	S18.40E	2668.25	67.60	3.28	38.53N	56.16E
2690.20	2.40	178.80	S01.20E	2677.74	67.47	3.39	38.08N	56.25E
2699.80	2.50	182.00	S02.00W	2687.33	67.28	0.53	37.67N	56.24E
2709.40	1.80	219.50	S39.50W	2696.92	67.04	4.79	37.35N	56.14E
2719.00	1.60	210.80	S30.80W	2706.52	66.79	1.02	37.12N	55.98E
2728.60	3.00	240.40	S60.40W	2716.11	66.42	5.60	36.88N	55.69E
2738.20	2.40	245.30	S65.30W	2725.70	65.97	2.01	36.67N	55.29E
2747.80	3.20	243.50	S63.50W	2735.29	65.50	2.51	36.47N	54.87E
2757.40	3.90	271.30	N88.70W	2744.87	64.95	5.73	36.35N	54.30E
2767.00	4.10	268.50	S88.50W	2754.44	64.35	0.87	36.35N	53.63E
2776.60	4.30	285.00	N75.00W	2764.02	63.78	3.81	36.44N	52.94E
2786.10	4.40	282.60	N77.40W	2773.49	63.24	0.66	36.61N	52.24E
2795.70	4.80	277.00	N83.00W	2783.06	62.62	1.88	36.74N	51.48E
2805.30	4.60	275.20	N84.80W	2792.63	61.97	0.78	36.82N	50.70E
2814.80	4.40	272.40	N87.60W	2802.10	61.33	0.94	36.87N	49.96E
2853.20	3.30	273.80	N86.20W	2840.41	59.11	0.86	37.01N	47.38E
2882.00	1.90	331.10	N28.90W	2869.19	58.39	2.89	37.48N	46.32E
2901.20	2.30	341.30	N18.70W	2888.37	58.44	0.85	38.12N	46.05E
2929.90	3.90	42.80	N42.80E	2917.04	59.45	3.61	39.38N	46.53E
2968.30	6.80	44.60	N44.60E	2955.27	62.84	2.27	41.96N	49.01E
3006.50	4.30	66.70	N66.70E	2993.29	66.42	2.55	44.14N	51.91E
3011.50	4.00	74.10	N74.10E	2998.27	66.78	3.68	44.26N	52.25E
» 3050.00	3.00	80.00	N80.00E	3036.70	69.06	0.83	44.80N	54.54E

VERTICAL SECTION CALCULATED ON PLANE OF 62.53000000000001 °

(») DENOTES EXTRAPOLATED OR INTERPOLATED STATION - NOT AN ACTUAL SURVEY

DRILL STEM TEST REPORT

DST NO: One **INTERVAL:** 458 - 465

FORMATION: **U. Little Bear**

WELL NAME: Northrock et al Summit Creek **DATE:** 2004/01/31
LOCATION: B-44-64-30-125-45

TESTING COMPANY: Baker **TESTER:** Shane Nolin

TYPE AND AMOUNT OF CUSHION USED: Nil

		TIMES IN MINUTES
TIME PREFLOW STARTED:	07:05	10.5
TIME INITIAL SHUT IN STARTED:	07:15.5	61.5
TIME FLOW PERIOD STARTED:	08:17	90
TIME FINAL SHUT IN STARTED:	09:47	189
TIME PACKER PULLED LOOSE:	12:56	

DESCRIPTION OF BLOW: **PF:** Weak air blow in 10 secs, increasing to a fair blow in 3 mins, After 3 mins, it slowly decreased to a very weak air blow, N.G.T.S

VO: No air blow, N.G.T.S.

FLUID TO SURFACE IN: **MINUTES** **RATE:**
GAS TO SURFACE IN: **MINUTES** **RATE:**

PRESSURES

IHP	Start PF	End PF	End ISI	IFP	FFP	FSIP	FHP	
5281	1988	2373	2380	2377	2378	2381	5279	

PIPE RECOVERY: 30m drill mud, 90m muddy water, 105m fresh water

PROBLEMS: Real Time equipment failed prior to running test.

REMARKS: Packer seat failed to start, reset - good seat. Initial observation was that tool was plugging. After recovery of charts it was indicated to be a valid test of this zone.

DRILL STEM TEST REPORT

DST NO: 2 **INTERVAL:** 238 - 245

FORMATION: **U. Little Bear**

WELL NAME: Northrock et al Summit Creek **DATE:** 2004/01/31
LOCATION: B-44-64-30-125-45

TESTING COMPANY: Baker **TESTER:** Shane Nolin

TYPE AND AMOUNT OF CUSHION USED: Nil

		TIMES IN MINUTES
TIME PREFLOW STARTED:	19:50	10
TIME INITIAL SHUT IN STARTED:	20:00	60
TIME FLOW PERIOD STARTED:	21:00	10
TIME FINAL SHUT IN STARTED:		
TIME PACKER PULLED LOOSE:		

DESCRIPTION OF BLOW: **PF:** Weak air blow immediately, decreasing to dead in 3 mins N.G.T.S

VO: No air blow, N.G.T.S.

FLUID TO SURFACE IN: **MINUTES** **RATE:**
GAS TO SURFACE IN: **MINUTES** **RATE:**

PRESSURES

IHP	Start PF	End PF	End ISI	IFP	FFP	FSIP	FHP	

PIPE RECOVERY:

PROBLEMS: Real Time equipment failed prior to running test.

REMARKS: DST #2 was terminated 10 min into valve open
Believed at the time to be a misrun.

DRILL STEM TEST REPORT

DST NO: 3 **INTERVAL:** 238 - 245

FORMATION: **U. Little Bear**

WELL NAME: Northrock et al Summit Creek **DATE:** 2004/02/01
LOCATION: B-44-64-30-125-45

TESTING COMPANY: Baker **TESTER:** Shane Nolin

TYPE AND AMOUNT OF CUSHION USED: Nil

		TIMES IN MINUTES
TIME PREFLOW STARTED:	12:07	10
TIME INITIAL SHUT IN STARTED:	12:17	53.5
TIME FLOW PERIOD STARTED:	13:11.5	59.5
TIME FINAL SHUT IN STARTED:	14:11	121
TIME PACKER PULLED LOOSE:	16:12	

DESCRIPTION OF BLOW: **PF:** Weak air blow immediately, decreasing to dead in 3 mins 30 secs. N.G.T.S

VO: No air blow, N.G.T.S.

FLUID TO SURFACE IN: **MINUTES** **RATE:**
GAS TO SURFACE IN: **MINUTES** **RATE:**

PRESSURES

IHP	Start PF	End PF	End ISI	IFP	FFP	FSIP	FHP	
2754	241	244	234	249	242	168	2731	

PIPE RECOVERY: 85 meters drill mud

PROBLEMS: Real Time equipment failed prior to running test.

REMARKS: The fluid was brought in while getting packers free.

LOG REPORT #1

Log Company:	BAKER ATLAS	Engineer:	K. SNIDER
K.B. Elevation:	586.7	Grd. Elevation:	580.5
Depth Driller:	810	Depth Logger:	810
Bit Size:	311	Casing Depth:	208
Mud Type:	GEL/POLY	Mud Density:	1120
Viscosity:	86	pH:	9.5
Fluid Loss:	7.4	Btm Hole Temp:	30.5°C
Hole Condition:	GOOD		

OPERATION SUMMARY

Alerted Loggers:	ON SITE		
Notified Loggers:	ON SITE	To be on Lease:	ON SITE
Loggers Arrived:	ON SITE		
Drilling Stopped:	2004/01/27/19:30	Circulation Stopped:	2004/01/29/12:00
Logging Started:	2004/01/29/17:00	Logging Finished:	2004/01/30/05:00
Printing Finished:	2004/01/30/07:00	Hours Actual Logging:	12

SEQUENCE OF LOGGING OPERATIONS

LOG RUN	TIME SPENT	REMARKS
MAC/CN-2ZDL/XYCAL/GR	7.0	No problems - hole in good shape
HDIL/HDIP/GR/SP/3CAL	5.0	Temperature log done on both runs

LOGS RUN FROM 810m TO SURFACE CASING
COMPENSATED NEUTRON AND GAMMA WERE ALSO LOGGED IN CASING

LOG REPORT #2

Log Company:	BAKER ATLAS	Engineer:	K. SNIDER
K.B. Elevation:	586.7	Grd. Elevation:	580.5
Depth Driller:	2505	Depth Logger:	2487.2
Bit Size:	215.9	Casing Depth:	804
Mud Type:	GEL/POLY	Mud Density:	1360
Viscosity:	105	pH:	10.0
Fluid Loss:	6.0	Btm Hole Temp:	76.8°C
Hole Condition:	Poor - Sticky in places		

OPERATION SUMMARY

Alerted Loggers:	ON SITE		
Notified Loggers:	ON SITE	To be on Lease:	ON SITE
Loggers Arrived:	ON SITE		
Drilling Stopped:	2004/03/01/05:10	Circulation Stopped:	2004/03/03/11:30
Logging Started:	2004/03/03/17:30	Logging Finished:	2004/03/04/11:15
Printing Finished:	2004/03/04/13:00	Hours Actual Logging:	17

SEQUENCE OF LOGGING OPERATIONS

LOG RUN	TIME SPENT	REMARKS
HDIL/MAC/GR/CAL	9.8	Logs sticking on both runs
HDIP/2DC/CN/GR/3CAL	7.2	Temperature log done on both runs

LOGS RUN FROM 2487m TO SURFACE CASING
COMPENSATED NEUTRON AND GAMMA WERE ALSO LOGGED IN CASING
DRILLERS DEPTH 2505 METERS WITH 7.0 METERS FISH IN HOLE

LOG REPORT #3

Log Company:	BAKER ATLAS	Engineer:	K. SNIDER
K.B. Elevation:	586.7	Grd. Elevation:	580.5
Depth Driller:	3064	Depth Logger:	3064
Bit Size:	155.6	Casing Depth:	2450
Mud Type:	POLY	Mud Density:	1040
Viscosity:	36	pH:	10
Fluid Loss:	8.5	Btm Hole Temp:	95.7°C
Hole Condition:	fair		

OPERATION SUMMARY

Alerted Loggers:	ON SITE		
Notified Loggers:	ON SITE	To be on Lease:	ON SITE
Loggers Arrived:	ON SITE		
Drilling Stopped:	2004/03/18/14:00	Circulation Stopped:	2004/03/18/17:30
Logging Started:	2004/03/19/00:45	Logging Finished:	2004/03/19/15:30
Printing Finished:	2004/03/19/17:15	Hours Actual Logging:	12.75

SEQUENCE OF LOGGING OPERATIONS

LOG RUN	TIME SPENT	REMARKS
1) HDIL/MAC/ZDL/CN/GR	7.00	Stuck 2 hrs on bottom, sticky on bottom 1/3 of hole
2) CBIL/STAR/GR/6CAL	7.75	No problems, sticky off bottom

LOGS RUN FROM TD TO INTERMEDIATE CASING AT 2450 METERS
TEMPERATURE LOGS ON BOTH RUNS.

SAMPLE DESCRIPTIONS

NORTHROCK ET AL SUMMIT CREEK B-44

27-35	SANDSTONE light brown, light brown, light red. grey, medium to very coarse grained, in part pebble size, angular to well rounded unconsolidated feldspathic sand, in part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows.
35-45	SANDSTONE light brown, light brown, light red. grey, medium to very coarse grained, in part pebble size, angular to well rounded unconsolidated feldspathic sand, in part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows.
45-50	SANDSTONE, CONGLOMERATE, light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
50-55	CONGLOMERATE light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty. CLAYSTONE , off-white, slightly calcareous, chalky texture, soft.
55-60	CONGLOMERATE, SANDSTONE light brown, light brown, light red. grey, medium grained to pebble size, angular to well rounded unconsolidated feldspathic conglomerate, in part sand, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace calcareous, in small part dark grey, slightly waxy texture. SILTSTONE light grey, blocky, slightly calcareous. CLAYSTONE off-white, slightly calcareous, chalky texture, soft.
60-70	SANDSTONE, CONGLOMERATE, light brown, light grey, light red, medium to pebble, angular to well rounded, unconsolidated, feldspar, with rounded chert, minor quartz, trace hornblende, trace biotite, no visible cement, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace calcareous, in small part dark grey, slightly waxy texture.
70-75	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.

75-90	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
90-100	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty.
100-105	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, in part dark grey, slightly calcareous, waxy texture.
105-110	SANDSTONE light brown, light brown, light red. grey, fine to very coarse grained, angular to well rounded unconsolidated feldspathic sand, in small part conglomerate, mixture of feldspar, minor quartz, rounded chert, trace hornblende, no visible cement, possible fair to good porosity, no shows. SHALE light grey to grey, trace micromicaceous, blocky, argillaceous, silty, trace micaceous.
110-120	SHALE light grey to grey, slightly micromicaceous, blocky, argillaceous, in part very silty, trace calcareous, pyrite. CONGLOMERATE grey, very coarse to pebble, abundant sub rounded to well rounded dark chert, feldspar, minor quartz, trace hornblende, biotite.
EAST FORK	123.5
120-125	CONGLOMERATE grey, very coarse to pebble, abundant sub rounded to well rounded dark chert, feldspar, minor quartz, trace hornblende, biotite. SANDSTONE light grey, fine to medium grained, unconsolidated, predominantly quartz with minor feldspar. SHALE light grey, slightly micromicaceous, blocky, argillaceous, silty, trace calcareous, pyrite.
125-130	SANDSTONE trace, light grey, fine to medium grained, well consolidated quartz sand, siliceous, tight. CONGLOMERATE grey, red brown, coarse to pebble, abundant sub rounded to well rounded dark chert, occasional feldspar, minor quartz, trace biotite. SHALE light grey, slightly micromicaceous, blocky, silty, in part argillaceous, trace biotite, trace fossiliferous.
130-135	SHALE light grey, grey, light grey brown, slightly micromicaceous, blocky, argillaceous, in part very silty. SANDSTONE light grey, fine to medium grained, well consolidated quartz sand, siliceous, occasional biotite, tight. CONGLOMERATE grey, red brown, coarse to pebble, abundant sub rounded to well rounded dark chert, occasional feldspar, minor quartz, trace biotite. SHALE light grey, slightly micromicaceous, blocky, silty, in part argillaceous, trace biotite,

135-145	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, slightly calcareous, occasional light grey green, waxy, soft, trace micaceous.
145-150	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, very slightly calcareous.
150-155	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, very slightly calcareous, minor pyrite, occasional well rounded dark chert grains.
155-165	SHALE light to medium grey, light grey brown, slightly micromicaceous, calcareous, blocky, argillaceous, silty, occasional light grey green, waxy, soft. trace micaceous, minor pyrite, occasional well rounded dark chert grains.
165-175	SHALE light to medium grey, light grey brown, slightly micromicaceous, blocky, argillaceous, silty, occasional light grey green, waxy, soft, trace micaceous, minor pyrite, occasional well rounded dark chert grains.
175-180	SHALE light grey, light brown, trace light grey green, slightly micromicaceous, blocky, argillaceous, silty, in small part waxy, occasional pyrite. SANDSTONE trace, unconsolidated, medium to very coarse rounded to well rounded dark chert, quartz, trace feldspar
180-185	SHALE light grey, light brown, trace light grey green, slightly micromicaceous, blocky, argillaceous, silty, in small part waxy, occasional pyrite. SANDSTONE trace, unconsolidated, medium to very coarse rounded to well rounded dark chert, quartz, trace feldspar
185-190	SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy, trace micaceous
190-195	SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy, trace micaceous
195-200	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, trace pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy.
200-205	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, trace pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in small part light grey green, waxy. CHERT occasional light, dark chert grains, fragments.

205-208	SANDSTONE brown, very fine to fine grained, very well consolidated, angular, lithic sand, very siliceous and abundant mudstone matrix, becoming very pyritic, in small part calcareous, dense, tight. SHALE light grey, light grey brown, slightly micromicaceous, argillaceous, silty, occasional pyrite, in part very light grey, bentonitic, in small part light grey green, waxy. CHERT occasional light, dark chert grains, fragments.

SURFACE CASING POINT 208 METERS

208-215	SHALE light grey, slightly micromicaceous, blocky, trace calcareous, silty to very silty, occasional sandy, in part off-white, bentonitic. MUDSTONE brown, light brown, blocky, very sandy, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
215-220	MUDSTONE brown, light brown, blocky, very sandy, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
220-225	MUDSTONE brown, light brown, blocky, silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains. SANDSTONE trace, light brown, brown, very fine grained, very well consolidated, siliceous mudstone matrix, in part calcareous, tight.
225-230	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
230-235	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains.
235-245	MUDSTONE brown, light brown, blocky, in part very silty, siliceous, in part calcareous, trace pyritic. CHERT trace, dark grey, light brown, grey, olive, very coarse to pebble, rounded to well rounded grains. SANDSTONE light grey, fine to medium grained, unconsolidated lithic sand, abundant chert grains, possible fair to good porosity.
245-250	SANDSTONE grey, light grey, medium to coarse grained, sub rounded to rounded, unconsolidated lithic quartz, sand, abundant dark chert, possible fair to good porosity. CONGLOMERATE grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters. MUDSTONE brown, light brown, blocky, in part siliceous, in part calcareous, abundant pyrite. COAL black, vitreous, hard, bituminous to anthracite.

250-255	SANDSTONE grey, light grey, medium to coarse grained, sub rounded to rounded, unconsolidated lithic quartz, sand, abundant dark chert, possible fair to good porosity. CONGLOMERATE grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters. COAL black, vitreous, hard, bituminous to anthracite. SILTSTONE light grey, blocky, very pyritic, in small part sandy.
255-260	SILTSTONE light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous. CONGLOMERATE trace, grey, light brown, grey brown, angular to well rounded fragments and grains, very coarse to 5 millimeters.
260-265	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SANDSTONE grey, medium to coarse grained, unconsolidated lithic quartz sand, abundant dark chert pebbles, porosity fair to good porosity, no shows. COAL trace black, vitreous, hard.
265-270	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous.
270-275	SILTSTONE very light grey, light brown, blocky, abundant pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, blocky, soft.
275-280	SILTSTONE very light grey, light brown, blocky, minor pyrite. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, brown, blocky, soft.
280-285	SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, grey brown, micromicaceous, blocky to sub fissile, often carbonaceous. CLAYSTONE tan, brown, blocky, soft.
285-290	CLAYSTONE tan, brown, blocky, soft. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, blocky, silty, trace carbonaceous. CONGLOMERATE dark grey, light grey, very coarse to pebble, well rounded chert.
290-295	CLAYSTONE tan, brown, blocky, soft. CONGLOMERATE dark grey, light grey, very coarse to pebble, well rounded chert, fine grained sandy, pyritic matrix.
295-300	CLAYSTONE tan, brown, blocky, soft. CONGLOMERATE trace, dark grey, light grey, very coarse to pebble, well rounded chert, fine grained sandy, pyritic matrix. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
300-305	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.

305-310	CLAYSTONE tan, brown, blocky, soft, trace very thin coal partings, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
310-315	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE light brown, brown, mudstone, hard, siliceous.
315-320	CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE light brown, brown, mudstone, hard, siliceous, in part grey brown, bentonitic.
320-325	COAL black, vitreous, hard, bituminous to anthracite. CLAYSTONE tan, brown, blocky, soft, occasional sandy. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SANDSTONE off-white, very fine grained, slightly consolidated quartz, clay matrix, 3 to 8% porosity, no shows.
325-330	COAL black, vitreous, hard, bituminous to anthracite. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone.
330-335	SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. COAL black, vitreous, hard, bituminous to anthracite.
335-340	SANDSTONE light grey, very fine to fine grained, slightly consolidated, lithic quartz sand, clay matrix, occasional coal partings, 3 to 18% visible porosity in samples. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings.
340-345	SANDSTONE light grey, very fine to fine grained, slightly consolidated, lithic quartz sand, clay matrix, occasional coal partings, 3 to 18% visible porosity in samples. SHALE medium to dark grey, micromicaceous, sub fissile, carbonaceous, in part brown, siliceous, mudstone. SILTSTONE very light grey, light brown, blocky, minor pyrite, occasional carbonaceous partings. CLAYSTONE tan, brown, blocky, soft, occasional silty. COAL black, vitreous.
345-350	SILTSTONE light grey, blocky, abundant clay. CLAYSTONE tan, light brown, earthy, soft, blocky, silty, trace carbonaceous.
350-355	SILTSTONE light grey, blocky, abundant clay. CLAYSTONE tan, light brown, earthy, soft, blocky, silty, trace carbonaceous.
355-360	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous.

360-375	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
375-385	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
385-400	CLAYSTONE tan, light brown, earthy, soft, occasional carbonaceous partings. SHALE light grey, micromicaceous, blocky, silty, trace carbonaceous, in small part light brown, siliceous.
400-405	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, trace glauconite grains, tight to 12% visible porosity, no shows. SHALE medium to dark grey, micromicaceous, blocky, silty, occasional carbonaceous.
UPPER LITTLE BEAR 405	
405-410	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, trace glauconite grains, becoming silty, tight to 9% visible porosity, no shows. SHALE medium to dark grey, micromicaceous, blocky, silty, occasional carbonaceous.
410-415	SANDSTONE light grey, light brown, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, tight to 3% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
415-420	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, tight to 3% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
420-425	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in part argillaceous, silty, slightly micaceous, in part fine to medium grained unconsolidated, tight to 9% porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
425-430	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
430-435	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.

435-440	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, slightly micaceous, in part fine to medium grained unconsolidated, tight to 6% visible porosity, no shows. SHALE light grey, light grey brown, blocky, occasional carbonaceous partings.
440-445	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, in part silty, trace carbonaceous.
445-450	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, light brown, micromicaceous, blocky, in part silty, in small part siliceous, trace carbonaceous.
450-455	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part micaceous, no visible porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone.
455-460	SANDSTONE light grey, very fine to lower fine grained, slightly consolidated lithic quartz sand, in part fine to medium grained unconsolidated, clay matrix, in small part pyritic, no visible porosity but possible fair to good in unconsolidated sand, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone.
460-465	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
465-470	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
470-475	SANDSTONE light grey, fine to medium grained unconsolidated lithic quartz sand, in part very fine to fine grained, slightly consolidated sand, clay matrix, occasional pyrite, chert grains, possible trace to fair porosity, no shows. SHALE light grey, minor grey brown, micromicaceous, blocky, occasional silty, in small part bentonitic, minor light brown, siliceous mudstone. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
475-480	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone.

480-485	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
485-490	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone, in part light grey, micromicaceous, blocky, occasional silty. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
490-495	SANDSTONE light brown, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional pyritic, no visible porosity. SHALE brown, slightly micromicaceous, siliceous mudstone, in part light grey, micromicaceous, blocky, occasional silty. CLAYSTONE tan, red brown, earthy, soft, trace carbonaceous.
495-500	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. COAL black, vitreous, brittle, occasional conchoidal fracture. CLAYSTONE tan, red brown, earthy, soft.
500-505	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. COAL black, vitreous, brittle, occasional conchoidal fracture. CLAYSTONE tan, red brown, earthy, soft.
505-510	SHALE medium to dark grey, black, micromicaceous, blocky to sub fissile, carbonaceous, in part brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft. SILTSTONE light grey, off-white, blocky, abundant clay matrix.
510-515	SHALE light grey, micromicaceous, blocky, silty, minor dark grey, carbonaceous. SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic quartz sand, clay matrix, occasional carbonaceous stringers, 6 to 9% porosity, no shows. CLAYSTONE tan, red brown, earthy, soft. SILTSTONE light grey, light brown, blocky, abundant clay matrix.
515-520	SANDSTONE light grey, light red brown, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. CLAYSTONE light brown, light red brown, blocky, in part sandy. COAL black, vitreous, brittle in part sandy at contact with sand. SHALE trace, light grey, micromicaceous, blocky, silty, minor dark grey, carbonaceous.
520-525	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light grey, micromicaceous, blocky, silty, in part light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
525-530	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light grey, micromicaceous, blocky, silty, in part light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.

530-535	SANDSTONE light red brown, light grey, very fine to fine grained, trace medium grained, slightly consolidated lithic quartz sand, clay matrix, tight to 6% porosity, no shows. SHALE light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
535-540	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, in small part pyritic, tight, no shows, in small part light red brown as above. SHALE 50% light red brown, siliceous mudstone. CLAYSTONE tan, red brown, earthy, soft.
540-545	SILTSTONE light brown, light grey brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, grey brown, in part micromicaceous, blocky, minor siliceous mudstone. CLAYSTONE light brown, red brown, earthy, soft.
545-550	SILTSTONE light brown, light grey brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty. SANDSTONE light red brown, light grey, very fine to fine grained, slightly consolidated lithic quartz sand, abundant clay matrix, tight to trace porosity, no shows.
550-555	SANDSTONE light red brown, light grey, very fine to fine grained, slightly consolidated lithic quartz sand, abundant clay matrix, tight to trace porosity, no shows. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty.
555-560	SILTSTONE light brown, red brown, blocky, soft, abundant clay matrix, occasional pyritic. SHALE brown, rounded brown, blocky, siliceous mudstone, in part grey brown, micromicaceous, blocky, silty.
560-565	SILTSTONE light orown red, light brown, blocky, abundant clay matrix, trace pyritic. SHALE brown, slightly micromicaceous, blocky, siliceous mudstone, in part light grey, grey brown, micromicaceous, blocky silty.
565-570	SILTSTONE light brown red, light brown, blocky, abundant clay matrix, trace pyritic. SHALE brown, slightly micromicaceous, blocky, siliceous mudstone, in part light grey, grey brown, micromicaceous, blocky silty.
570-575	SANDSTONE light grey, very fine grained, slightly consolidated lithic sand, silty, clay matrix, trace micaceous, no visible porosity. SILTSTONE light brown, blocky, clay matrix. SHALE light grey, light brown, micromicaceous, blocky, in small part siliceous.
575-580	SANDSTONE light grey, very fine grained, slightly consolidated lithic sand, silty, clay matrix, trace micaceous, no visible porosity. SILTSTONE light brown, blocky, clay matrix. SHALE light grey, light brown, micromicaceous, blocky, in small part siliceous.

580-585	SANDSTONE light grey, fine to medium grained, unconsolidated, in small part slightly consolidated lithic quartz sand, clay matrix, trace light, dark chert, possible fair porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite.
585-590	SANDSTONE light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite.
590-595	SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
595-600	SANDSTONE light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
600-605	SANDSTONE trace, light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
LOWER LITTLE BEAR 609	
605-610	SANDSTONE trace, light grey brown, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SHALE light grey, micromicaceous, blocky, minor silty, trace pyrite. SILTSTONE light brown, light grey, blocky, clay matrix.
610-615	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
615-620	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
620-625	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
625-630	SANDSTONE trace, light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
630-635	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.

635-640	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
640-645	SANDSTONE light grey, very fine to fine grained, slightly consolidated lithic sand, clay matrix, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
645-655	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, trace micaceous, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, trace pyrite.
655-660	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, trace micaceous, no visible porosity, no shows. SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
660-670	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
670-675	SILTSTONE light grey, grey, blocky, clay matrix, in part sandy. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite. SANDSTONE trace light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows.
675-685	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
685-690	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite.
690-695	SANDSTONE trace, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, medium grey, micromicaceous, blocky, occasional pyrite. SILTSTONE light grey, blocky, clay matrix, in part sandy.
695-700	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, grey, medium grey, micromicaceous, blocky, occasional pyrite.
700-705	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, trace argillaceous, no visible porosity, no shows. SHALE light grey, grey, medium grey, micromicaceous, blocky, occasional pyrite.

705-710	SILTSTONE grey, grey brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, stringers.
710-715	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, stringers.
715-720	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, silty.
720-725	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, silty.
725-730	SANDSTONE light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE trace, light to medium grey, micromicaceous, blocky, silty. SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic
730-735	SANDSTONE trace, light grey, very fine grained, slightly consolidated lithic quartz sand, clay matrix, silty, no visible porosity, no shows. SHALE trace, light to medium grey, micromicaceous, blocky, argillaceous, silty. SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic
735-740	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
740-745	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
745-750	SILTSTONE grey, grey brown, minor light brown, blocky, lithic, sandy, clay matrix, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty.
750-755	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
755-760	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
760-765	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic. SANDSTONE trace light red brown, fine to medium grained, siliceous, tight, stringers.

765-770	SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
770-775	SANDSTONE light grey, very fine to occasional fine grained, slightly consolidated lithic quartz sand, silty, clay matrix, in small part pyritic, no visible porosity, no shows, in part unconsolidated, possible fair porosity. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE grey, light grey, blocky, clay matrix, in small part sandy, trace pyritic.
775-780	SILTSTONE light grey, light brown, blocky, clay matrix, sandy, in part pyritic, tight. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
780-785	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
785-790	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
790-800	SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite.
800-805	SANDSTONE light grey, light brown, very fine to fine grained slightly consolidated lithic quartz sand, clay matrix, slightly silty, trace pyritic, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic.

INTERMEDIATE CASING - LANDED AT 804 METERS

SLATER RIVER	806MD, 805TVD
805-810	SANDSTONE light grey, light brown, very fine to fine grained slightly consolidated lithic quartz sand, clay matrix, slightly silty, trace pyritic, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, blocky, minor silty, argillaceous, trace pyrite. SILTSTONE light grey, grey, blocky, clay matrix, minor lithics, in small part sandy, trace pyritic.
810-815	SHALE light to medium grey, micromicaceous, blocky to sub fissile, silty, occasional pyrite, trace argillaceous. SILTSTONE light grey, grey, blocky, in part sandy, trace kaolinitic, occasional pyritic.
815-820	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy.

820-830	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy.
830-835	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
835-845	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
845-855	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, trace brown mudstone, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, tight.
855-860	SHALE light to medium grey, micromicaceous, blocky, argillaceous, minor silty, trace brown mudstone, occasional pyrite. SILTSTONE minor stringers light grey, grey, blocky, occasional sandy. SANDSTONE trace light grey, very fine grained, slightly to moderately consolidated lithic quartz, kaolinitic, silty, trace pyritic, tight.
860-870	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
870-880	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite, trace brown mudstone. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic. SANDSTONE light grey, very fine grained, slightly to moderately consolidated lithic quartz sand, kaolinitic, silty, tight.
880-885	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite, trace brown mudstone. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
885-890	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite.
890-900	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
900-910	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic.
910-920	SHALE light to medium grey, micromicaceous, blocky, argillaceous, silty, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics, trace pyritic. SANDSTONE light grey, very fine grained, slightly to moderately consolidated lithic sand, kaolinitic, silty, tight.

920-925	SHALE grey, micromicaceous, blocky, argillaceous, in part silty, minor pyrite, in part brown micromicaceous, sub fissile, dense. SILTSTONE light grey, blocky, sandy, abundant lithics.
925-930	SHALE brown, micromicaceous, sub fissile, slightly silty, in part light grey to grey, micromicaceous, blocky, argillaceous, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
930-935	SHALE brown, micromicaceous, sub fissile, slightly silty, in part light grey to grey, micromicaceous, blocky, argillaceous, minor pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
935-940	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, argillaceous, trace carbonaceous, in part brown, micromicaceous, sub fissile, dense, trace pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
940-950	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, argillaceous, trace carbonaceous, in part brown, micromicaceous, sub fissile, dense, trace pyrite. SILTSTONE light grey, blocky, sandy, abundant lithics.
950-955	SHALE grey, micromicaceous, blocky to sub fissile, slightly silty, occasional argillaceous, trace pyrite, in part brown, micromicaceous sub fissile mudstone, dense. SILTSTONE light grey, blocky, sandy, abundant lithics.
955-960	SHALE light grey to grey, micromicaceous, blocky to sub fissile, argillaceous, trace carbonaceous, minor silty, occasional pyrite, in part brown, micromicaceous, sub fissile, dense. SILTSTONE light grey, grey, blocky, sandy, tight.
960-970	SHALE light grey, grey, micromicaceous, blocky to sub fissile, silty, minor argillaceous, trace brown, micromicaceous, dense, minor pyrite. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight.
970-980	SHALE light grey, grey, micromicaceous, blocky to sub fissile, silty, minor argillaceous, rare carbonaceous, in part brown, micromicaceous, dense, minor pyrite. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight
980-985	SHALE brown, light grey to grey, micromicaceous, blocky to sub fissile, in part dense, hard, minor argillaceous, trace silty, occasional pyrite, rare carbonaceous. SILTSTONE light grey, grey, blocky, sandy, trace micaceous, tight
985-995	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.
995-1000	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.

1000-1010	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, becoming slightly more dense, tight.
1010-1015	SHALE brown, minor light grey to grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in part silty, argillaceous, occasional pyrite. SILTSTONE light grey, light grey brown, blocky, trace argillaceous, in part sandy, dense, tight.
1015-1020	SHALE brown, minor grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, tight.
1020-1025	SHALE brown, minor grey, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, tight.
1025-1035	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1035-1045	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1045-1055	SHALE grey, brown, micromicaceous, blocky to sub fissile, dense, very slightly calcareous, in small part silty, argillaceous, occasional pyrite. SILTSTONE light grey, grey, light grey brown, blocky, sandy, lithic, trace pyritic, trace argillaceous, tight.
1055-1060	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, trace carbonaceous, slightly argillaceous, minor pyrite. SANDSTONE light grey, grey, stringers, very fine to fine grained, moderately consolidated lithic quartz sand, calcareous matrix, tight. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.
1060-1065	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace carbonaceous, slightly argillaceous, minor pyrite. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.
1065-1070	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace carbonaceous, slightly argillaceous, minor pyrite. SILTSTONE light grey, light brown, blocky stringers, sandy, lithic, tight.

1070-1075	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight. SANDSTONE grey stringers, very fine grained, well consolidated calcareous lithic sand.
1075-1085	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight. SANDSTONE grey stringers, very fine grained, well consolidated calcareous lithic sand.
1085-1090	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, occasional calcite stringers, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight.
1090-1095	SHALE grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, trace Inoceramous fragments, slightly argillaceous, minor pyrite. SILTSTONE light grey, blocky stringers, sandy, lithic, tight.
1095-1100	SHALE grey, dark grey, minor brown, micromicaceous, blocky to sub fissile, in part calcareous, slightly argillaceous, occasional pyrite. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.

RADIOACTIVE SHALE 1103MD, 1101.5TVD

1100-1105	SHALE medium to dark grey, micromicaceous, sub fissile, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1105-1110	SHALE medium to dark grey, micromicaceous, sub fissile, minor calcite stringers, rare pyrite, trace chitinous fossil fragments, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1110-1115	SHALE medium to dark grey, micromicaceous, sub fissile, minor calcite stringers, rare pyrite, trace chitinous fossil fragments, in small part calcareous. SILTSTONE trace, light grey, blocky stringers, sandy, lithic, tight.
1115-1120	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, trace chitinous fossil fragments, very weak pale yellow cut.
1120-1130	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1130-1140	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.

1140-1150	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, rare fish scales, minor pyrite, very weak pale yellow cut.
1150-1160	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, occasional calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1160-1170	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1170-1180	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1180-1190	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1190-1200	SHALE medium to dark grey, micromicaceous, sub fissile, non calcareous, trace thin calcite stringers, trace Inoceramous fragments, minor pyrite, very weak pale yellow cut.
1200-1210	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1210-1220	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1220-1230	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1230-1240	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1240-1250	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, trace calcite stringers, minor pyrite, trace Inoceramous fragments, very weak pale yellow cut.
1250-1260	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.

1260-1270	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1270-1280	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, trace thin calcite stringers, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1280-1290	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1290-1300	SHALE medium to dark grey, micromicaceous, sub fissile to occasional fissile, minor pyrite, occasional Inoceramous fragments, very weak pale yellow cut.
1300-1310	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1310-1320	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1320-1325	SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
ARCTIC RED	1328MD, 1325TVD
1325-1330	SILTSTONE light grey green, blocky sandy, tight. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1330-1335	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, trace kaolinitic, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile, abundant Inoceramous fragments, minor pyrite, trace thin calcite stringers, faint yellow cut.
1335-1340	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile.
1340-1345	SANDSTONE light grey green, very fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE medium to dark grey, micromicaceous, sub fissile, occasional fissile.

1345-1350	SANDSTONE light grey green, very fine grained, occasional fine grained, moderately to well consolidated quartzose sand, silty matrix, in small part light red brown, very fine to fine grained, well consolidated calcareous matrix, minor lithic grains, no visible porosity. SILTSTONE light grey green, blocky, sandy. SHALE light grey, micromicaceous, sub fissile to fissile.
1350-1355	SHALE light grey, micromicaceous, sub fissile to fissile, trace pyrite. SILTSTONE light grey, blocky, in part sandy, minor clay, tight. SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity.
1355-1360	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile, trace pyrite.
1360-1365	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile.
1365-1370	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1370-1375	SANDSTONE mottled off-white, very light brown, very fine to fine grained, well consolidated slightly lithic quartz sand, calcareous matrix, trace kaolinitic, in part light red, red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous, silty matrix, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1375-1380	SANDSTONE light grey green, very fine grained, moderately consolidated quartz, slightly calcareous, silty matrix, minor lithics, in part light red to red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous matrix, silty, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile
1380-1385	SANDSTONE light grey green, very fine grained, moderately consolidated quartz, slightly calcareous, silty matrix, minor lithics, in part light red to red brown, very fine to fine grained, well consolidated feldspathic sand, calcareous matrix, silty, no visible porosity. SILTSTONE light grey green, blocky, in part micaceous, slightly calcareous, in part very sandy, clay matrix, tight. SHALE light grey, micromicaceous, sub fissile to fissile

1385-1390	SHALE light grey, micromicaceous, fissile, in small part silty. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1390-1395	SHALE light grey, micromicaceous, fissile, in small part silty. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1395-1400	SHALE light grey, micromicaceous, fissile, in small part silty, rare pyrite. SILTSTONE light grey green, blocky, very slightly calcareous, in part sandy, tight.
1400-1405	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1405-1410	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1410-1420	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, sandy, tight.
1420-1425	SHALE light grey to grey, micromicaceous, fissile. SILTSTONE light grey, light grey green, blocky, in part slightly calcareous, minor light brown, very fine grained calcareous sand stringers..
1425-1430	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1430-1440	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1440-1450	SHALE light grey to grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, light green grey, blocky, sandy, in part slightly calcareous.
1450-1455	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in part calcareous.
1455-1465	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in part calcareous.
1465-1470	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures.
1470-1475	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures, trace micaceous. SANDSTONE trace light grey, very fine to fine grained, well consolidated, calcareous sand stringers.
1475-1480	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures, trace micaceous. SANDSTONE trace light grey, very fine to fine grained, well consolidated, calcareous sand stringers.

1480-1485	SANDSTONE light grey, very light brown, very fine to fine grained, well consolidated quartz sand, slightly lithic, calcareous matrix, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace kaolinite in micro fractures.
1485-1490	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous.
1490-1500	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous.
1500-1505	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, in part medium red brown, blocky, sandy, calcareous.
1505-1510	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1510-1515	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1515-1520	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, sandy, in small part calcareous, trace, medium red brown, blocky, sandy, calcareous.
1520-1525	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous. SANDSTONE trace, light grey, very fine grained, well consolidated quartz sand, slightly siliceous, in part calcareous matrix, trace lithics, no visible porosity.
1525-1530	SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous. SANDSTONE trace, light grey, very fine grained, well consolidated quartz sand, slightly siliceous, in part calcareous matrix, trace lithics, no visible porosity.
1530-1535	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1535-1540	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.

1540-1545	SANDSTONE light grey, very fine grained, moderately to well consolidated, predominantly quartz sand, trace feldspathic, silty, calcareous matrix, trace lithics, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1545-1550	SANDSTONE light grey, very fine grained, moderately to well consolidated quartz sand, minor lithic grains, silty, slightly calcareous matrix, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, in part platy. SILTSTONE light grey, blocky, slightly sandy, in part slightly calcareous.
1550-1555	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1555-1560	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight. SANDSTONE trace, light grey, very fine grained, calcareous, tight.
1560-1565	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight. SANDSTONE trace, light grey, very fine grained, calcareous, tight.
1565-1570	SANDSTONE light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1570-1575	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1575-1580	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1580-1590	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1590-1595	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, trace calcite fragments, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.

1595-1600	SANDSTONE very light grey, very fine grained, well consolidated quartz sand, slightly calcareous, silty matrix, trace lithic grains, trace calcite fragments, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, minor sandy, trace calcareous, possible kaolinitic, tight.
1600-1605	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic, occasional calcite stringers.
1605-1610	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1610-1620	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1620-1630	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1630-1640	SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1640-1645	SANDSTONE very light to light grey, very fine grained, moderately to well consolidated quartz sand, silty, slightly calcareous matrix, minor lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous, trace kaolinitic.
1645-1650	SANDSTONE trace very light grey to grey, very fine grained, moderately consolidated quartz sand, slightly calcareous, silty, tight. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1650-1655	SANDSTONE off-white, very light grey, very fine grained, well consolidated quartz sand, in part quartzose, silty, calcareous matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.

1655-1660	SANDSTONE trace, off-white, very light grey, very fine grained, well consolidated quartz sand, in part quartzose, silty, calcareous matrix, trace lithic grains, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1660-1665	SANDSTONE light grey, very light brown, very fine to occasional fine grained, well consolidated quartz sand, calcareous matrix, in part silty, minor lithics, no visible porosity, no shows. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1665-1670	SANDSTONE light grey, off-white, very fine grained, well consolidated quartz sand, in small part quartzose, slightly silty, calcareous matrix, minor to trace lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1670-1675	SANDSTONE light grey, very fine grained, well consolidated quartz sand, silty calcareous matrix, minor lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1675-1680	SANDSTONE light grey, very fine grained, well consolidated quartz sand, silty calcareous matrix, minor lithic grains, no visible porosity. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1680-1685	SANDSTONE light grey, light brown, very fine grained, trace fine grained, well consolidated quartz sand, slightly calcareous, in part silty matrix, minor lithic grains, no visible porosity, slow, spotty, faint yellow cut. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1685-1690	SANDSTONE trace, light grey, light brown, very fine grained, trace fine grained, well consolidated quartz sand, slightly calcareous, in part silty matrix, minor lithic grains, no visible porosity, slow, spotty, faint yellow cut. SHALE light to medium grey, micromicaceous, fissile, minor platy. SILTSTONE very light to light grey, blocky, in small part sandy, trace calcareous.
1690-1695	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.
1695-1700	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.
1700-1710	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous.

1710-1720	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1720-1730	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1730-1740	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy trace calcareous, tight.
1740-1750	SHALE medium grey, micromicaceous, fissile, trace thin calcite stringers. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1750-1760	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic, trace micro fractures with calcite.
1760-1770	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1770-1780	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1780-1790	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1790-1795	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1795-1800	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1800-1810	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1810-1820	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1820-1830	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1830-1840	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1840-1850	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.

1850-1862	SHALE medium grey, micromicaceous, fissile, in part calcareous, slightly argillaceous, trace waxy. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1862-1870	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace slickensides on cuttings, possible fracture zone. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1870-1880	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous. SILTSTONE light grey, blocky, calcareous, sandy.
1880-1890	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous. SILTSTONE light grey, blocky, calcareous, sandy. SANDSTONE trace, light grey stringers, very fine grained, well consolidated, slightly calcareous, silty, tight.
1890-1900	SHALE medium grey, micromicaceous, fissile, in part calcareous, trace argillaceous, trace pyrite.. SILTSTONE light grey, blocky, calcareous, sandy. SANDSTONE trace, light grey stringers, very fine grained, well consolidated, slightly calcareous, silty, tight.
1900-1910	SHALE medium grey, micromicaceous, fissile, trace argillaceous. SILTSTONE light grey, light grey green, blocky, trace sandy.
1910-1915	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, stringers.
1915-1925	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous, occasional calcite stringers. SILTSTONE light grey, blocky, in part calcareous, stringers.
1925-1930	SHALE medium grey. micromicaceous. fissile, non calcareous, slightly argillaceous. SILTSTONE light grey, light grey green, blocky, in part calcareous, stringers. SANDSTONE trace, red, very fine grained, well consolidated, calcareous stringers.
1930-1940	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1940-1950	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1950-1960	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1960-1970	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1970-1980	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.

1980-1990	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
1990-2000	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, sandy.
2000-2010	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
2010-2020	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
IMPERIAL	2024MD, 2012TVD
2020-2025	SHALE medium grey, micromicaceous, fissile, on calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, sandy.
2025-2030	SHALE dark brown, medium to dark grey, brown, slightly micromicaceous, blocky, very limy, argillaceous, in part earthy, occasional micro fractures, spotty to massive pale blue cut. LIMESTONE dark brown, argillaceous, mudstone stringers.
2030-2035	SHALE dark brown, medium to dark grey, brown, slightly micromicaceous, blocky, very limy, argillaceous, occasional micro fractures, spotty to massive pale blue cut. LIMESTONE dark brown, argillaceous, microcrystalline, mudstone stringers.
2035-2045	SHALE dark grey brown, dark brown, medium to dark grey, slightly micromicaceous, blocky, in part limy, argillaceous, faint pale blue cut. LIMESTONE dark brown, microcrystalline mudstone, argillaceous.

SAMPLES APPEAR TO BE 80 % SLOUGHING FROM UPHOLE.

2045-2050	SHALE dark grey brown, dark brown, medium to dark grey, slightly micromicaceous, blocky, in part limy, argillaceous, faint pale blue cut. LIMESTONE dark brown, microcrystalline mudstone, argillaceous.
2050-2060	SHALE medium to dark grey, dark brown, dark grey brown, micromicaceous, blocky to fissile, in part limy, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, tight.
2060-2065	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.
2065-2075	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.

2075-2080	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight.
2080-2085	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2085-2095	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2095-2100	SHALE medium to dark grey, slightly micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline, argillaceous, mudstone, tight. SILTSTONE light brown, blocky, limy, argillaceous.
2100-2110	SHALE medium to dark grey, dark brown, blocky to fissile, micromicaceous, argillaceous, in small part calcareous. SILTSTONE light brown, blocky, argillaceous, calcareous.
2110-2120	SHALE medium to dark grey, brown grey brown, blocky to sub fissile, slightly micromicaceous, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, argillaceous, tight.
2120-2130	SHALE grey brown, brown, slightly micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, grey brown, blocky, argillaceous, slightly calcareous, tight.
2130-2135	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, slightly calcareous, tight.
2135-2140	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, slightly calcareous, tight.
2140-2145	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.
2145-2150	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.

SAMPLES 2150 to 2175 SHOW to SLOW, WEAK MASSIVE PALE BLUE CUT.

2150-2155	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight, trace calcite filled micro fractures.

2155-2160	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, slightly argillaceous, slightly calcareous, tight.
2160-2165	SHALE grey brown, medium to dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2165-2170	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2170-2175	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, slightly argillaceous, trace calcareous. SILTSTONE light brown, light grey brown, blocky, slightly calcareous, trace argillaceous, tight.
2175-2180	SHALE medium to dark grey, grey brown, brown, micromicaceous, blocky to sub fissile, trace calcareous, slightly argillaceous. SILTSTONE trace, light brown, blocky, slightly calcareous, trace argillaceous, tight.
2180-2188	SHALE medium to dark grey, grey brown, brown, micromicaceous, blocky to sub fissile, trace calcareous, slightly argillaceous. SILTSTONE trace, light brown, blocky, slightly calcareous, trace argillaceous, tight.
	STUCK IN HOLE, LEFT 174 METERS OF FISH IN HOLE HOLE SIDETRACKED FROM 1708 METERS

SAMPLE DESCRIPTIONS

B-44-64-30-125-45 (SIDETRACK)

CEMENT TOP	1705.8
1705.8-1710	SHALE medium grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Sample has minor cement contamination.
1710-1715	SHALE medium grey, occasional dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Sample has trace cement contamination.
1715-1725	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Samples have major(upper to 80%) cement contamination.
1725-1730	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in small part sandy, trace calcareous. Samples have major(upper to 80%) cement contamination.
1730-1735	SHALE medium to dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy, calcareous, tight. Cement 30%
1735-1740	SHALE medium to dark grey, micromicaceous, fissile. SILTSTONE light grey, light grey brown, blocky, in part sandy, calcareous, tight. Cement 10%
1740-1750	SHALE medium grey, micromicaceous, fissile, trace thin calcite stringers. SILTSTONE light grey, light grey brown, blocky, stringers, in part calcareous, tight. Cement <10%
1750-1760	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic, trace micro fractures.
1760-1770	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous, trace kaolinitic.
1770-1780	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.
1780-1785	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE light grey, blocky stringers, in small part calcareous.

1785-1795	SHALE medium grey, minor dark grey, micromicaceous, fissile. SILTSTONE trace, light grey, blocky stringers, in small part calcareous.
1795-1805	SHALE medium grey, minor dark grey, micromicaceous, fissile, trace argillaceous. SILTSTONE trace, light grey, blocky stringers, in small part calcareous.
1805-1810	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1810-1820	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1820-1830	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1830-1840	SHALE medium grey, micromicaceous, fissile, trace waxy, in small part calcareous, slightly argillaceous. SILTSTONE light grey, blocky, in part calcareous, trace sandy.
1840-1850	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1850-1860	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1860-1870	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1870-1880	SHALE medium grey, micromicaceous, fissile, in small part calcareous, slightly argillaceous, trace thin calcite stringers, trace with waxy surface. SILTSTONE trace, light grey, blocky, in part calcareous, trace sandy.
1880-1890	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy. SANDSTONE trace, very light grey stringers, very fine grained, well consolidated, silty, tight.
1890-1900	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy.

1900-1910	SHALE medium grey, micromicaceous, fissile, in small part calcareous, trace argillaceous, occasional waxy surface. SILTSTONE light grey, blocky, calcareous, trace sandy. SANDSTONE trace, light grey, very fine grained, well consolidated, slightly calcareous.
1910-1920	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE trace, light grey, occasional light grey green, blocky, in part calcareous.
1920-1930	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, occasional thin calcite stringers. SILTSTONE trace, light grey, blocky, in part calcareous.
1930-1940	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, trace thin calcite stringers. SILTSTONE light grey, blocky, sandy, in part calcareous.
1940-1950	SHALE medium grey, micromicaceous, fissile, slightly argillaceous, non calcareous, trace thin calcite stringers. SILTSTONE light grey, blocky, sandy, in part calcareous.
1950-1960	SHALE medium grey, micromicaceous, fissile, non calcareous, slightly argillaceous, trace thin calcite stringers. SILTSTONE light grey, light grey green, blocky, in part calcareous, trace sandy.
1960-1970	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1970-1980	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1980-1990	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
1990-2000	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
2000-2010	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous, minor calcite stringers. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.
2010-2020	SHALE medium grey, micromicaceous, fissile, non calcareous, trace argillaceous, minor calcite stringers. SILTSTONE light grey, blocky, slightly calcareous, sandy, tight.

2020-2025	SHALE medium to dark grey, dark grey brown, brown, slightly micromicaceous, blocky, very limy, argillaceous, in part earthy, occasional micro fractures, spotty, faint pale blue cut. LIMESTONE dark brown, argillaceous, mudstone stringers.
IMPERIAL	2024MD, 2012TVD
2025-2030	SHALE dark brown, brown, medium to dark grey, slightly micromicaceous, blocky, very limy, argillaceous, occasional micro fractures, spotty, faint pale blue cut. LIMESTONE dark brown, microcrystalline, argillaceous mudstone stringers.
2030-2040	SHALE dark grey brown, dark brown, slightly micromicaceous, blocky, in part limy, argillaceous, faint blue cut. LIMESTONE dark brown, microcrystalline, argillaceous, mudstone stringers.
2040-2050	SHALE medium to dark grey, dark grey brown, dark brown, slightly micromicaceous, blocky, in part calcareous, argillaceous. LIMESTONE trace, db brown, microcrystalline, argillaceous mudstone.
2050-2060	SHALE medium to dark grey, dark brown, dark grey brown, micromicaceous, blocky to fissile, in part calcareous. LIMESTONE trace dark brown, microcrystalline, argillaceous mudstone.
2060-2070	SHALE medium to dark grey, dark grey brown, micromicaceous, blocky to fissile, in small part calcareous, argillaceous. LIMESTONE trace dark brown, microcrystalline mudstone.
2070-2080	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone.
2080-2090	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.
2090-2100	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.
2100-2105	SHALE medium to dark grey, minor dark brown, micromicaceous, blocky to fissile, in part calcareous, argillaceous. LIMESTONE trace, dark brown, microcrystalline, argillaceous mudstone. SILTSTONE light brown, blocky, slightly calcareous, argillaceous.

2105-2115	SHALE medium to dark g own, grey brown, micromicaceous, blocky to sub fissile, argilla s, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2115-2125	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2125-2135	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, argillaceous, trace calcareous. SILTSTONE light brown, blocky, slightly calcareous, occasional calcite filled micro fractures.
2135-2145	SHALE dark grey, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, blocky, slightly argillaceous, in part calcareous, tight.

SAMPLES 2145 to 2175 SHOW to SLOW, WEAK, MASSIVE MILKY BLUE CUT.

2145-2155	SHALE medium to dark grey, brown, grey brown, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey brown, blocky, in part calcareous, slightly argillaceous, trace calcite fillled micro fractures
CANOL	2161MD, 2149.2TVD
2155-2165	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, grey brown, blocky, slightly argillaceous, calcareous, tight.
2165-2175	SHALE brown, grey brown, dark grey, micromicaceous, blocky to sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, grey brown, blocky, slightly argillaceous, calcareous, tight.
2175-2185	SHALE dark grey brown, medium to dark grey, brown, micromicaceous, sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey, blocky, slightly calcareous, in part sandy, tight.
2185-2190	SHALE dark grey brown, medium to dark grey, brown, micromicaceous, sub fissile, in small part calcareous, slightly argillaceous. SILTSTONE light brown, light grey, blocky, slightly calcareous, in part sandy, tight.
2190-2195	SHALE grey brown, dark grey to black, micromicaceous, sub fissile to fissile, argillaceous, faint blue cut.
2195-2200	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, occasional pyrite, faint blue cut.

HARE INDIAN	2201MD, 2189TVD
2200-2205	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, occasional pyrite, faint blue cut.
2205-2210	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite.
2210-2215	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite, faint blue cut.
2215-2225	SHALE dark grey to black, dark grey brown, micromicaceous, sub fissile to fissile, argillaceous, minor pyrite, trace carbonaceous.
2225-2230	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures.
2230-2235	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures. SILTSTONE trace, light brown, blocky, very well consolidated, dense, slightly calcareous.
2235-2245	SHALE dark grey to black, dark brown, micromicaceous, sub fissile to fissile, hard, argillaceous, minor pyrite, trace calcite filled micro fractures. SILTSTONE trace, light brown, blocky, very well consolidated, dense, slightly calcareous.
2245-2255	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, faint, pale blue cut.
2255-2265	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2265-2275	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2275-2285	SHALE dark brown, dark grey brown, micromicaceous, sub fissile to fissile, slightly calcareous, argillaceous, occasional carbonaceous, trace calcite filled fractures, rare pyrite, faint, pale blue cut.
2285-2290	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, trace carbonaceous, occasional calcite filled fractures, minor pyrite, faint pale blue cut.

2290-2300	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, trace carbonaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite.
2300-2305	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite. SILTSTONE light grey green, light brown, blocky, very slightly calcareous.
2305-2310	SHALE brown, dark brown, micromicaceous, sub fissile to fissile, calcareous, very argillaceous, occasional calcite filled fractures, in part grey, slightly waxy texture, minor pyrite.
BLUEFISH SH	2312.5MD, 2305.5TVD
2310-2315	SHALE dark brown, dark grey, black, micromicaceous, sub fissile to fissile, slightly calcareous, in part very limy, argillaceous, minor pyrite.
2315-2320	SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous. LIMESTONE trace, mottled black and white, microcrystalline, argillaceous, tight.
2320-2325	SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous, trace pyrite. LIMESTONE mottled black and white, brown, microcrystalline, argillaceous, tight.
2325-2330	SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous, trace pyrite. LIMESTONE mottled brown, black and white, microcrystalline, argillaceous, tight.
HUME	2330.5MD, 2318.9TVD
2330-2335	LIMESTONE light brown, buff, microcrystalline, in part chalky, occasional silty, trace micro fractures, no visible porosity. SHALE black, dark grey, sub fissile, micromicaceous, limy, argillaceous, trace pyrite
2335-2340	LIMESTONE light brown, mottled light brown, microcrystalline, in part chalky, very slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, fissile, very limy, argillaceous, minor pyrite.
2340-2345	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.

2345-2350	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, trace silty, occasional micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2350-2355	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2355-2360	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2360-2365	LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, trace silty, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, occasional pyrite.
2365-2370	SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite, occasional calcite filled micro fractures. LIMESTONE light grey brown, buff, microcrystalline mudstone, in part chalky, slightly argillaceous, occasional micro fractures, trace silty, no visible porosity, no shows.
2370-2375	LIMESTONE light brown, light grey brown, brown, microcrystalline mudstone, in part chalky, trace argillaceous, very slightly silty, trace micro fractures, no visible porosity, no shows. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2375-2380	LIMESTONE light brown, dark brown, microcrystalline mudstone, in part chalky, trace silty, argillaceous, no visible porosity, no shows SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2380-2385	LIMESTONE light brown, dark brown, microcrystalline mudstone, in part chalky, trace silty, argillaceous, no visible porosity, no shows SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2385-2390	LIMESTONE light brown, light grey brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, argillaceous, occasional sparry calcite, indications of fractures with trace pyrobitumen, no visible porosity. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

2390-2395	LIMESTONE light brown, light grey brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, argillaceous, occasional sparry calcite, indications of fractures with trace pyrobitumen, no visible porosity. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2395-2400	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, slightly silty, argillaceous, occasional fractures, sparry calcite, type I/II, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2400-2410	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, argillaceous, occasional pyrite, type I/II, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2410-2415	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, argillaceous, occasional pyrite, in small part silty, type II/I, no visible porosity, no shows. SHALE trace, black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
HEADLESS	2417MD, 2405TVD
2415-2420	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, trace pyritic, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2420-2425	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2425-2430	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, rare Ostracods, indistinct fossil fragments, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2430-2435	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2435-2440	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

2440-2450	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, occasional sparry calcite, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.

MID-HEADLESS MKR 2450MD, 2438TVD

2450-2455	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, in small part silty, slightly argillaceous, occasional sparry calcite, no visible porosity. SHALE black, micromicaceous, blocky to sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2455-2460	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, typeI/II, in part argillaceous, trace silty, occasional sparry calcite, trace fossil debris, rare drusy quartz, trace fracture porosity. SHALE dark grey to black, micromicaceous, sub fissile, slightly argillaceous, in small part calcareous, minor pyrite.
2460-2465	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2465-2470	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2470-2475	LIMESTONE buff, brown, dark brown, microcrystalline, in part chalky, type I/II, slightly argillaceous, trace silty, occasional pyrite, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2475-2480	LIMESTONE buff, brown, dark brown, microcrystalline, in small part chalky, type I/II, slightly argillaceous, trace silty, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, slightly argillaceous, in small part calcareous.
2480-2490	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.

2490-2500	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.
2500-2505	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part chalky, type I/II, trace silty, in small part argillaceous, occasional pyrite, trace fractures, rare fossiliferous, Ostracods, no visible porosity. SHALE medium to dark grey, black, micromicaceous, sub fissile to fissile, in part calcareous, trace argillaceous, minor pyrite.

LEFT BIT AND PART OF MUDMOTOR IN HOLE - SIDETRACK AROUND FISH

SAMPLE DESCRIPTIONS

B-44-64-30-125-45 (ST2)

2470-2475	LIMESTONE buff, brown, dark grey brown, microcrystalline, trace silty, in small part chalky, type I/II, slightly argillaceous, occasional pyrite, calcite, no visible porosity, trace Tenticulites.
2475-2480	LIMESTONE buff, brown, dark grey brown, microcrystalline, trace silty, in small part chalky, type I/II, slightly argillaceous, trace pyrite, abundant calcite, trace fractures, no visible porosity.
2480-2485	LIMESTONE buff, brown, dark grey brown, microcrystalline, in small part silty, trace chalky, type I/II, slightly argillaceous, in part pyritic, abundant calcite, trace fractures, no visible porosity.
2485-2490	LIMESTONE dark grey brown, buff, minor brown, microcrystalline, trace extra fine crystalline sucrosic texture, argillaceous, trace silty, in part pyritic, occasional calcite, no visible porosity. SHALE grey, micromicaceous, blocky to sub fissile, limy, trace argillaceous.
2490-2495	LIMESTONE dark grey brown, mottled brown, buff, microcrystalline, trace silty, in part argillaceous, pyritic, abundant calcite, trace fractures, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2495-2500	LIMESTONE dark grey brown, mottled brown, buff, microcrystalline, trace silty, in part argillaceous, pyritic, abundant calcite, trace fractures, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2500-2505	LIMESTONE dark grey brown, buff, mottled brown, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, rare Ostracods, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2505-2510	LIMESTONE brown, dark grey brown, buff, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, rare Ostracods, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2510-2512.5	LIMESTONE brown, dark grey brown, buff, microcrystalline, trace chalky, type I/II, trace silty, in part argillaceous, occasional pyritic, trace fractures, minor calcite, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.

2512.5-2515	LIMESTONE light to dark grey brown, buff, microcrystalline, rare chalky, trace silty, argillaceous, in small part pyritic, trace calcite, no visible porosity. SHALE medium to dark grey, micromicaceous, sub fissile, calcareous, slightly argillaceous.
2515-2520	LIMESTONE dark grey brown, brown, minor buff, microcrystalline, argillaceous, trace silty, in part pyritic, minor calcite, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2520-2525	LIMESTONE dark grey brown, buff, microcrystalline, in part argillaceous, trace silty, minor pyritic, occasional calcareous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2525-2530	LIMESTONE light grey brown, buff, dark brown, microcrystalline, in part argillaceous, trace silty, minor pyritic, occasional calcareous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2530-2535	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2535-2540	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.

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2540-2545	LIMESTONE very light to dark grey brown, microcrystalline, minor micritic, argillaceous, in small part silty, occasional calcite, trace pyritic, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2545-2550	LIMESTONE light grey, grey brown, dark grey brown, microcrystalline, trace micritic, argillaceous, rare silty, rare fossiliferous, no visible porosity. SHALE dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2550-2552.5	LIMESTONE buff, mottled brown, dark grey brown, microcrystalline, trace micritic, in part argillaceous, in small part chalky, trace silty, no visible porosity. SHALE trace, dark grey, black, micromicaceous, sub fissile, argillaceous, limy.
2552.5-2555	LIMESTONE buff, mottled brown, minor dark grey brown, microcrystalline, in part micritic, chalky, argillaceous, occasional calcite, rare pyritic, no visible porosity.

2555-2560	LIMESTONE buff, mottled brown, minor dark brown, microcrystalline to very fine crystalline, in part micritic, argillaceous, trace chalky, in small part slightly pelletoidal, no visible porosity.
2560-2562.5	LIMESTONE buff, mottled brown to dark brown, microcrystalline to very fine crystalline, in part micritic, argillaceous, slightly chalky, in small part pelletoidal, no visible porosity.
2562.5-2565	LIMESTONE dark grey, black, minor buff, brown, microcrystalline to trace very fine crystalline, argillaceous, in small part micritic, trace fossiliferous, no visible porosity.
2565-2567.5	LIMESTONE buff, dark grey, brown, microcrystalline to minor very fine crystalline, argillaceous, in small part micritic, trace fossiliferous, trace pyritic, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, very limy.
2567.5-2570	LIMESTONE buff, brown, mottled brown, minor grey brown, microcrystalline to minor very fine crystalline, trace micritic, in small part mudstone, slightly argillaceous, trace pyritic, slightly pelletoidal, no visible porosity.
2570-2575	LIMESTONE dark brown, buff, minor grey brown, microcrystalline to trace very fine crystalline, trace micritic, in small part mudstone, slightly argillaceous, trace pyritic, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2575-2577.5	LIMESTONE buff, mottled brown, dark grey brown, microcrystalline to trace very fine crystalline, in small part micritic, argillaceous, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, limy.
2577.5-2580	LIMESTONE buff, mottled brown, dark brown, microcrystalline, in part micritic, slightly argillaceous, in small part pelletoidal, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.
2580-2585	LIMESTONE dark grey brown, buff, brown, microcrystalline, in small part micritic, argillaceous, rare pelletoidal, occasional calcite, trace fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.
2585-2590	LIMESTONE dark grey brown, buff, brown, microcrystalline to trace very fine crystalline, in small part micritic, argillaceous, trace pyritic, occasional calcite, trace fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy, trace fractures.

2590-2592.5	LIMESTONE brown, dark brown, minor buff, microcrystalline, in small part micritic, argillaceous, occasional calcite, trace light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2592.5-2595	LIMESTONE dark brown, minor buff, microcrystalline, in small part micritic, trace fossiliferous, Ostracods, argillaceous, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2595-2597.5	LIMESTONE dark brown, minor buff, microcrystalline, argillaceous, in small part micritic, in part light grey brown mudstone, occasional calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2597.5-2600	LIMESTONE dark grey brown, minor buff, microcrystalline, argillaceous, in small part micritic, thin fossiliferous layer with Ostracods, occasional calcite with possible slickensided, possible fractures, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2600-2602.5	LIMESTONE dark grey brown, minor buff, microcrystalline, argillaceous, in small part micritic, occasional calcite, rare pellets, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2602.5-2605	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2605-2607.5	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2607.5-2610	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2610-2612.5	NO SAMPLE
2612.5-2615	LIMESTONE dark grey brown, buff, microcrystalline, argillaceous, trace micritic, calcite, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2615-2620	LIMESTONE dark grey brown, buff, mottled light brown, microcrystalline to trace very fine crystalline, argillaceous, trace fossiliferous, Ostracods, minor pyrite, in small part light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.

2620-2622.5	LIMESTONE dark grey brown, buff, mottled light brown, microcrystalline to trace very fine crystalline, argillaceous, trace fossiliferous, Ostracods, minor pyrite, in small part light grey brown mudstone, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2622.5-2625	LIMESTONE buff, light brown, dark brown, microcrystalline to trace very fine crystalline, argillaceous, in small part micritic, occasional calcite, no visible porosity.
2625-2630	LIMESTONE buff, light brown, minor dark brown, microcrystalline, in small part micritic, slightly argillaceous, trace calcite, no visible porosity.
2630-2632.5	LIMESTONE buff, dark brown, brown, microcrystalline, argillaceous, in small part micritic, trace fossiliferous, Ostracods, no visible porosity. SHALE black, micromicaceous, sub fissile, argillaceous, limy.
2632.5-2635	LIMESTONE buff, brown, minor dark brown, microcrystalline, in part micritic, slightly argillaceous, trace chalky, no visible porosity. SHALE trace, black, micromicaceous, sub fissile, argillaceous, limy.
2635-2637.5	LIMESTONE buff, brown, cryptocrystalline to microcrystalline, slightly argillaceous, trace micritic, in part chalky, no visible porosity.
2637.5-2640	LIMESTONE buff, brown, cryptocrystalline to microcrystalline, minor very fine crystalline, trace argillaceous, in small part dolomitic, occasional calcite, no visible porosity. DOLOMITE trace, light grey, microcrystalline, dense, tight.
2640-2642.5	LIMESTONE light brown, buff, cryptocrystalline to microcrystalline, dense, trace dolomitic, tight. DOLOMITE buff, off-white, microcrystalline to very fine crystalline, in small part chalky, no visible porosity, mineral fluorescence, no cut.
2642.5-2645	LIMESTONE light brown, buff, cryptocrystalline to microcrystalline, dense, trace dolomitic, tight. DOLOMITE buff, off-white, microcrystalline to very fine crystalline, in small part chalky, no visible porosity, occasional calcite, trace pyrobitumen, possible fractures, mineral fluorescence, no cut.
2645-2650	LIMESTONE light to medium grey brown, dark brown, minor buff, cryptocrystalline to microcrystalline, slightly argillaceous, dense, in small part micritic, tight. DOLOMITE trace, light brown, microcrystalline, in part extra fine sucrosic, tight, no shows.
2650-2652.5	DOLOMITE light brown, extra fine to very fine crystalline, sucrosic texture, tight to 3% pinpoint, intercrystalline porosity, weak slow, pale blue cut. LIMESTONE light to medium grey brown, dark brown, minor buff, cryptocrystalline to microcrystalline, slightly argillaceous, dense, in small part micritic, tight.

2652.5-2655	DOLOMITE light brown, buff, microcrystalline to extra fine crystalline, sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity, weak pale blue cut, no fluorescence. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, argillaceous, dense, minor micritic, no visible porosity.

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2655-2657.5	DOLOMITE light brown, buff, microcrystalline to extra fine crystalline, sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, tight.
2657.5-2660	DOLOMITE buff, light brown, predominantly microcrystalline, trace extra fine crystalline, in small part sucrosic texture, trace limy, tight to trace pinpoint, intercrystalline porosity. LIMESTONE brown, dark brown, cryptocrystalline to microcrystalline, tight. ANHYDRITE trace clear, watery luster.
2660-2662.5	DOLOMITE light brown, brown, microcrystalline, trace extra fine crystalline with sucrosic texture, trace limy, slightly anhydritic, no visible porosity. LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight.
2662.5-2665	DOLOMITE light brown, brown, buff, microcrystalline, trace extra fine crystalline, occasional calcite, slightly anhydritic, trace limy, no visible porosity. LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight.
2665-2670	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, trace limy, occasional calcite, slightly anhydritic, tight.
2670-2672.5	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, trace limy, occasional calcite, slightly anhydritic, rare euhedral quartz, no visible porosity.
2672.5-2675	LIMESTONE dark brown, light grey brown, cryptocrystalline to microcrystalline, argillaceous, dense, tight. DOLOMITE light brown, buff, microcrystalline, minor extra fine crystalline, trace limy, slightly anhydritic, rare euhedral quartz, calcite, no visible porosity.
2675-2677.5	LIMESTONE light brown to brown, microcrystalline to very fine crystalline, in part dolomitic, slightly argillaceous, trace anhydritic, occasional sparry calcite, trace pinpoint porosity. DOLOMITE buff, light brown, microcrystalline to very fine crystalline, in part limy, trace anhydritic, trace drusy dolomite, rare pyrobitumen, tight to trace pinpoint, vuggy porosity, no shows.

2677.5-2680	DOLOMITE buff, light brown, microcrystalline to extra fine crystalline, trace limy, anhydrite, rare drusy dolomite, trace calcite, weak, pale yellow fluorescence, no cut, tight to trace pinpoint porosity. LIMESTONE dark brown, microcrystalline, tight.
2680-2685	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, anhydritic, scattered white calcite, trace fractures, tight, no shows. LIMESTONE dark brown, brown, microcrystalline, trace dolomitic, dense, tight.
2685-2690	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, trace anhydritic, scattered white calcite, trace fractures, tight, no shows. LIMESTONE dark brown, buff, brown, microcrystalline, trace dolomitic, dense, in part slightly chalky texture, tight.
2690-2692.5	DOLOMITE buff, brown, microcrystalline, trace extra fine crystalline, slightly limy, anhydritic, trace calcite, tight, no shows. LIMESTONE dark brown, microcrystalline, trace dolomitic, dense, tight. ANHYDRITE white, light grey, clear, microcrystalline.
2692.5-2695	DOLOMITE light brown, microcrystalline, dense, in small part limy, occasional anhydrite filled fractures, trace calcite, tight, no shows. LIMESTONE trace, dark brown, microcrystalline, tight. ANHYDRITE white, grey, microcrystalline.
2695-2697.5	DOLOMITE buff, brown, dark brown, microcrystalline to minor very fine crystalline, dense, trace limy, very anhydritic, tight to trace pinpoint porosity, occasional pyrobitumen. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight.
2697.5-2700	DOLOMITE buff, brown, microcrystalline to very fine crystalline, trace limy, anhydritic, scattered pinpoint porosity plugged with pyrobitumen. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight.
2700-2705	DOLOMITE buff, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2705-2710	DOLOMITE buff, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace dolomitic, tight. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2710-2712.5	DOLOMITE light brown, extra fine to minor very fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 5%, faint yellow green fluorescence, no cut.

2712.5-2715	DOLOMITE light brown, extra fine to minor very fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 3%, faint yellow green fluorescence, no cut. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2715-2717.5	DOLOMITE light brown, extra fine to very fine crystalline, slightly anhydritic, trace pinpoint porosity. ANHYDRITE white to light grey, clear, light brown, microcrystalline.
2717.5-2720	DOLOMITE light brown, brown, very fine to occasional fine crystalline, in small part anhydritic, scattered pinpoint intercrystalline porosity, tight to 3%, no fluorescence, no cut.
2720-2722.5	DOLOMITE light brown, brown, very fine to fine crystalline, slightly anhydritic, scattered pinpoint, intercrystalline porosity, tight to 5%, no fluorescence, no cut. ANHYDRITE white to light grey, clear, microcrystalline.
2722.5-2730	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, anhydritic, trace pinpoint porosity, tight to trace porosity, no shows. ANHYDRITE white to grey, clear, microcrystalline.
2730-2735	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, anhydritic, abundant calcite, no visible porosity, no shows. ANHYDRITE white to grey, clear, light brown, microcrystalline.
2735-2740	DOLOMITE light brown, buff, brown, microcrystalline, in small part very fine crystalline, trace limy, dense, occasional calcite, tight. LIMESTONE dark brown, cryptocrystalline to microcrystalline, dense, argillaceous, tight. ANHYDRITE white to grey, clear, buff, microcrystalline.
2740-2742.5	DOLOMITE dark brown, light brown, buff, microcrystalline, dense, trace limy, abundant calcite, trace fractures, tight. LIMESTONE dark brown, microcrystalline, argillaceous, tight. ANHYDRITE buff, brown, light grey, white, microcrystalline, soft..
2742.5-2745	DOLOMITE light brown, brown, very fine to occasional fine crystalline, dense, anhydritic, trace limy, occasional fractures with calcite, tight. ANHYDRITE white to grey, light brown, microcrystalline, soft.
2745-2747.5	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2747.5-2750	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.

2750-2752.5	DOLOMITE light brown, brown, very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2752.5-2755	DOLOMITE brown, light brown, microcrystalline to very fine crystalline, anhydritic, dense, trace limy, abundant calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2755-2757.5	DOLOMITE brown, light brown, microcrystalline to very fine crystalline, anhydritic, dense, trace limy, abundant calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2757.5-2760	DOLOMITE light brown, microcrystalline, trace very fine crystalline, dense, anhydritic, trace limy, tight, no shows. ANHYDRITE white to grey, buff, light brown, microcrystalline, soft.
2760-2762.5	DOLOMITE light brown, dark brown, microcrystalline to very fine crystalline. dense, anhydritic, minor calcite, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2762.5-2765	DOLOMITE light brown, buff, dark brown, microcrystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2765-2767.5	DOLOMITE light brown, dark brown, brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2767.5-2770	DOLOMITE light brown, dark brown, brown, microcrystalline, minor very fine crystalline, trace limy, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2770-2772.5	DOLOMITE buff, light to dark brown, microcrystalline, dense, anhydritic, occasional calcite, trace fractures, tight, no shows. ANHYDRITE white to grey, light brown, soft.
2772.5-2775	DOLOMITE buff, light to dark brown, microcrystalline, dense, anhydritic, tight, no shows. ANHYDRITE white to grey, light brown, microcrystalline, soft.
2775-2777.5	DOLOMITE light brown, dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, buff, brown, microcrystalline.
2777.5-2780	DOLOMITE light brown, dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, buff, brown, microcrystalline.

2780-2785	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, microcrystalline.
2785-2787.5	DOLOMITE light to dark brown, microcrystalline, dense, in part anhydritic, tight. ANHYDRITE white to light grey, light brown, clear, microcrystalline.
2787.5-2790	DOLOMITE light to dark brown, microcrystalline, dense, in part anhydritic, minor calcite, trace fractures, tight. ANHYDRITE white to light grey, light brown, clear, microcrystalline.
2790-2792.5	DOLOMITE light brown to dark brown, microcrystalline to very fine crystalline, dense, in part anhydritic, occasional calcite, trace fractures, tight to trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2792.5-2795	DOLOMITE light to dark brown, microcrystalline to minor very fine crystalline, dense, slightly anhydritic, minor calcite, trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2795-2797.5	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2797.5-2800	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2800-2802.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2802.5-2805	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2805-2807.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2807.5-2810	DOLOMITE light to dark brown, microcrystalline to trace very fine crystalline, dense, anhydritic, trace calcite, spotty pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.
2810-2812.5	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, in small part very fine crystalline, with trace pinpoint porosity. ANHYDRITE white to grey, light brown, clear, microcrystalline.

2812.5-2815	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, trace limy stringers, tight. ANHYDRITE white to grey, light brown, microcrystalline.
2815-2817.5	DOLOMITE light brown, brown, microcrystalline, slightly anhydritic, trace fractures, calcite, tight. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2817.5-2820	DOLOMITE light brown, brown, minor dark brown, microcrystalline to occasional very fine crystalline, abundant calcite, trace fractures, trace pinpoint porosity, no shows. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2820-2822.5	DOLOMITE light brown, brown, microcrystalline to occasional very fine crystalline, abundant calcite, trace fractures, trace pinpoint porosity, no shows. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2822.5-2825	DOLOMITE light brown, brown, microcrystalline to trace very fine crystalline, abundant calcite, trace drusy dolomite, fractures, trace pinpoint porosity. ANHYDRITE trace, white to grey, light brown, microcrystalline.
2825-2827.5	DOLOMITE light brown to brown, microcrystalline to occasional very fine crystalline, slightly anhydritic, abundant calcite, fractures, trace pinpoint porosity. ANHYDRITE white to grey, light brown, microcrystalline.
2827.5-2830	DOLOMITE light brown, brown, microcrystalline to occasional very fine crystalline, slightly anhydritic, occasional calcite, trace pinpoint porosity. ANHYDRITE white, light brown, clear, microcrystalline.
2830-2832.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, trace anhydritic, abundant calcite, occasional pyrobitumen associated with micro fractures, scattered pinpoint porosity. ANHYDRITE trace, white, clear, microcrystalline.
2832.5-2837.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, abundant calcite, micro fractures, scattered pinpoint porosity, occasional pyrobitumen associated with fractures. ANHYDRITE trace, white, clear, light brown, microcrystalline.
2837.5-2840	DOLOMITE light to dark brown, microcrystalline, in small part very fine crystalline, slightly anhydritic, occasional calcite, fractures, rare pinpoint porosity. ANHYDRITE white, light brown, slightly dolomitic, microcrystalline.
2840-2845	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.

2845-2850	DOLOMITE light to dark brown, microcrystalline, minor very fine crystalline anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.
2850-2855	DOLOMITE light to dark brown, microcrystalline, anhydritic, dense, tight, no shows. ANHYDRITE white, buff, light brown, microcrystalline.
2855-2860	DOLOMITE light to dark brown, microcrystalline, anhydritic dense, tight. ANHYDRITE white, buff, light brown, microcrystalline.
2860-2865	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, trace anhydritic, occasional calcite filled fractures, scattered pinpoint porosity, trace pyrobitumen plugging. ANHYDRITE white, buff, light brown, microcrystalline.
2865-2870	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, trace very fine crystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline.
2870-2875	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile. calcareous, argillaceous stringers.
2875-2877.5	DOLOMITE buff, light brown, dark brown, cryptocrystalline to microcrystalline, dense, in part anhydritic, occasional fractures, calcite, tight. ANHYDRITE white, buff, light brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile. calcareous, argillaceous stringers.
2877.5-2880	DOLOMITE buff, light brown, microcrystalline, in part anhydritic, dense, tight to trace pinpoint porosity. ANHYDRITE white, light brown, grey, microcrystalline.
2880-2882.5	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, tight. ANHYDRITE white, light brown, grey, microcrystalline.
2882.5-2885	DOLOMITE light brown, microcrystalline to predominantly very fine crystalline, slightly anhydritic, occasional calcite, fractures, scattered pinpoint porosity, occasional pyrobitumen. ANHYDRITE white, light brown, grey, microcrystalline.
2885-2887.5	DOLOMITE light brown, brown, very fine crystalline, trace anhydritic, occasional calcite, fractures, scattered pinpoint porosity, occasional pyrobitumen. ANHYDRITE white, light brown, grey, microcrystalline.

2887.5-2890	DOLOMITE light brov ⁻ brown, microcrystalline to very fine crystalline, dense, in part anhydritic, tight. LIMESTONE trace dark brown, brown, cryptocrystalline to microcrystalline, dense, tight. ANHYDRITE white, light brown, grey, microcrystalline.
2890-2892.5	DOLOMITE light brown, brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight, SHALE black, micromicaceous, sub fissile to fissile, calcareous, argillaceous. ANHYDRITE white, light brown, grey, microcrystalline.
2892.5-2895	DOLOMITE brown, dark brown, microcrystalline to minor very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2895-2897.5	DOLOMITE brown, dark brown, microcrystalline to minor very fine crystalline, dense, anhydritic, tight to trace pinpoint porosity. ANHYDRITE white, light brown to brown, microcrystalline.
2897.5-2900	DOLOMITE light to dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2900-2905	DOLOMITE dark brown, light brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2905-2910	DOLOMITE dark brown, light brown, microcrystalline, minor very fine crystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline. SHALE black, micromicaceous, sub fissile to fissile, argillaceous, calcareous.
2910-2915	DOLOMITE dark brown, minor light brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark grey, dark brown, microcrystalline, dense, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2915-2920	DOLOMITE brown to dark brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace argillaceous, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2920-2922.5	DOLOMITE brown to dark brown, microcrystalline, dense, anhydritic, tight. LIMESTONE dark brown, microcrystalline, dense, trace argillaceous, tight. ANHYDRITE white, light brown to brown, microcrystalline.

2922.5-2925	DOLOMITE buff, brown, minor dark brown, microcrystalline to very fine crystalline, slightly anhydritic, trace limy, trace to abundant pinpoint porosity totally plugged with pyrobitumen. ANHYDRITE white, light brown to brown, microcrystalline.
2925-2927.5	DOLOMITE buff, light brown, microcrystalline to very fine crystalline, trace anhydritic, occasional calcite, fractures, tight to abundant pinpoint porosity mostly plugged with pyrobitumen. ANHYDRITE trace, white, light brown to brown, microcrystalline
2927.5-2932.5	DOLOMITE buff, light brown, microcrystalline to very fine crystalline, trace anhydritic, abundant white calcite, trace fractures, tight to abundant pinpoint porosity plugged with pyrobitumen.
2932.5-2935	DOLOMITE buff, light to dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, trace pinpoint porosity plugged with pyrobitumen, tight. ANHYDRITE white, light brown to brown, microcrystalline.
2935-2940	DOLOMITE light to dark brown, microcrystalline, trace very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, microcrystalline. LIMESTONE trace dark brown, microcrystalline, trace argillaceous, dense, tight.
2940-2942.5	DOLOMITE light brown, mottled grey brown, dark brown, microcrystalline, dense, in part anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline. LIMESTONE trace dark brown, microcrystalline, dense, trace argillaceous, tight.
2942.5-2947.5	DOLOMITE buff, light brown, dark brown, microcrystalline to minor very fine crystalline, slightly anhydritic, dense, trace pyrobitumen plugged pinpoint porosity, abundant white calcite. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2947.5-2952.5	DOLOMITE light to dark brown, microcrystalline, dense, anhydritic, occasional white calcite, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2952.5-2955	DOLOMITE light to dark brown, microcrystalline, trace very fine crystalline, anhydritic, minor calcite, trace pyrobitumen plugged pinpoint porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2955-2960	DOLOMITE light to dark brown, microcrystalline to trace very fine crystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.

2960-2965	DOLOMITE buff to dark brown, microcrystalline, trace very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2965-2970	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2970-2975	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2975-2980	DOLOMITE light to dark brown, microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2980-2982.5	DOLOMITE light grey brown, light brown, microcrystalline to very fine crystalline, trace anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2982.5-2985	DOLOMITE light grey brown, light brown, microcrystalline to very fine crystalline, trace fine crystalline, anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2985-2987.5	DOLOMITE light brown, microcrystalline to minor fine crystalline, trace fine crystalline, anhydritic, occasional white calcite, scattered pinpoint porosity, trace vuggy with drusy dolomite, in part pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2987.5-2990	DOLOMITE light brown, light grey brown, microcrystalline to fine crystalline, trace anhydritic, minor white calcite, scattered pinpoint porosity, rare vuggy, predominantly pyrobitumen plugged, tight to 3%. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2990-2995	DOLOMITE light to dark brown, microcrystalline, minor very fine to fine crystalline, anhydritic, dense, tight to trace pinpoint porosity, trace pyrobitumen. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
2995-3000	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.

3000-3002.5	DOLOMITE light to dark brown, microcrystalline to very fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3002.5-3005	DOLOMITE light to dark brown, microcrystalline, minor very fine to fine crystalline, anhydritic, dense, tight to trace pinpoint porosity, trace pyrobitumen. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3005-3007.5	DOLOMITE light brown, microcrystalline to very fine crystalline, slightly anhydritic, occasional pinpoint porosity, trace pyrobitumen, tight to trace porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3007.5-3010	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3010-3012.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, trace pinpoint porosity, pyrobitumen, tight to trace porosity. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3012.5-3017.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3017.5-3022.5	DOLOMITE light to dark brown, microcrystalline, occasional very fine to fine crystalline, dense, anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3022.5-3025	DOLOMITE brown, dark brown, cryptocrystalline to microcrystalline, dense, slightly anhydritic, tight. ANHYDRITE white, light brown to brown, cryptocrystalline to microcrystalline.
3025-3027.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, occasional pinpoint porosity, in part plugged with pyrobitumen, tight to trace porosity. ANHYDRITE white. light brown, brown, cryptocrystalline to microcrystalline.
3027.5-3030	DOLOMITE light brown, brown, occasional dark brown, microcrystalline, minor very fine crystalline, slightly anhydritic, rare pinpoint porosity with pyrobitumen, tight to trace porosity. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3030-3032.5	DOLOMITE light brown, brown, minor dark brown, microcrystalline, minor very fine crystalline, dense, anhydritic, rare pinpoint porosity, pyrobitumen, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.

3032.5-3035	DOLOMITE light brown, brown, minor dark brown, microcrystalline, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3035-3037.5	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3037.5-3040	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, anhydritic, dense, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3040-3042.5	DOLOMITE buff, grey brown, dark brown, microcrystalline, trace very fine crystalline, dense, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3042.5-3045	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, trace pinpoint, vuggy porosity, occasional pyrobitumen, tight to trace porosity, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3045-3047.5	DOLOMITE light brown, brown, microcrystalline to very fine crystalline, slightly anhydritic, trace pinpoint, vuggy porosity, occasional pyrobitumen, tight to trace porosity, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3047.5-3050	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3050-3052.5	DOLOMITE light brown, brown, grey brown, microcrystalline to very fine crystalline, trace fine crystalline, abundant white calcite, trace pyrobitumen, scattered pinpoint porosity, rare drusy dolomite, tight to 2% pinpoint, vuggy porosity, no shows. ANHYDRITE trace.
3052.5-3055	DOLOMITE buff, light brown, microcrystalline to minor very fine crystalline, occasional white calcite,, rare pinpoint porosity, occasional pyrobitumen, tight, no shows. ANHYDRITE trace.
3055-3057.5	DOLOMITE light to dark brown, cryptocrystalline to microcrystalline, dense, anhydritic, tight. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3057.5-3060	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
3060-3062.5	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.

3062.5-3064	DOLOMITE light to dark brown, microcrystalline, slightly anhydritic, dense, tight, no shows. ANHYDRITE white to grey, light brown, cryptocrystalline to microcrystalline.
FTD	3064MD, 3050.8TVD

LITHOLOGY STRIP LOG
WellSight Systems Inc.
Scale 1:240 (5"=100') Metric

Well Name:	NORTHROCK ET AL SUMMIT CREEK B-44 (ST2)
Location:	B-44-64-20-120-W6
Licence Number:	9211-ROAB-2-1
Licensee:	NORTHROCK RESOURCES LTD
Surface Coordinates:	LAT 54° 37' 33.102" LONG 120° 23' 22.658" NAD27
Bottom Hole Coordinates:	44.7 METERS NORTH 53.4 METERS EAST
Ground Elevation (m):	598.0 K.B. Elevation (m): 606.7
Logged Interval (m):	2470 To:3064 Total Depth (m): 3064
Formation:	BEAR ROCK
Type of Drilling Fluid:	GEL/H2O

Region: SUMMIT CREEK
Drilling Completed: 2004/03/28/16:00

Printed by STRIP LOG from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

OPERATOR

Company: NORTHROCK RESOURCES LTD
Address: Suite 3500, 700 - 2nd Street S.W.
Calgary, Alberta T2P 2W2

GEOLOGIST

Name: BRYCE MCQUILLAN
Company: K.C. WAUNCH PETROLEUM CONSULTANTS LTD
Address: 58 Barclay Rise N.W.
Calgary, Alberta

DSTs

DST #1 2707 -2727 RUN #1 FAILED TO GET PACKER SEAT

Comments

SIDETRACK #2

ROCK TYPES

Anhy	Congl	Mrlst	Sa	TS
Dol	Gyp	Shale	Sltst	Tuff
Brec	Gyp	Shale	Bitum	
Chk	Limest	Shale		
Clyst	Limst	Shgy		
Coal	Marl	Shgy		

ACCESSORIES

MINERAL							
Anhy	Marl	Coral	Dol				
Argqtn	Nodule	Cris	Gyp				
Arg	Phos	Echin	Ls				
Bent	Pyr	Fossm	Sltstrg				
Bit	Salt	Foram	Slty/Sdy				
Brecfrag	Sandy	Gastro	**FOSSIL**				
Calc	Silt	Oolite	Boundst				
Carb	Sil	Pelec	Chalky				
Chtdk	Sulphur	Pellet	Cryptn				
Chtlt	Tuff	Plantfr	Earthy				
Dol	**FOSSIL**	Spicule	Flintstn				
Feldspar	Algae	Stmtpr	Grainst				
Ferrpel	Amph	Strom	Lithogr				
Gils	Belem	Tube	Packst				
Glau	Bioclst	**ACCESSORY**	Mudst				
Gyp	Brach	Anhy	Packst				
Hvymin	Bryozoa	Bent	Wackest				
Kaol	Cephal	Coal					

OTHER SYMBOLS

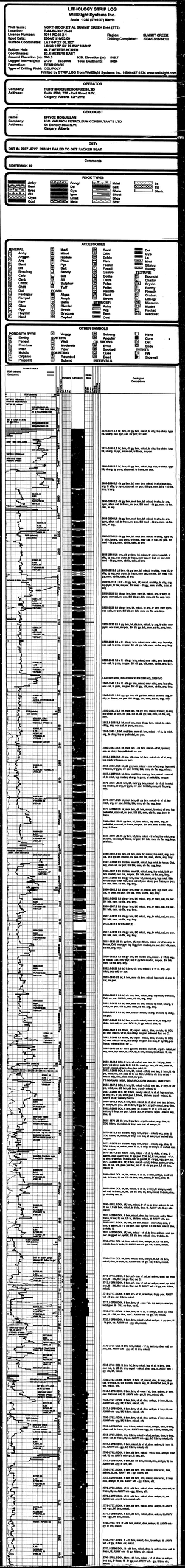
POROSITY TYPE							
Earthy	Vuggy	Subang	Angular	None			
Fenestral	Vug	Subrnd	Rounded	Cav			
Fracture	Well Separate	**OIL SHOWS**		Dst			
Inter	Rock	Even	Spotted	Slide			
Moldic	**ROUNDING**	Show	Stain	**EVENTS**			
Organic	Rounded	Sltstrg	Sidewall	Core			
Pinpoint	Subrnd			Sidewall			

INTERVALS

Curve Track 1

ROP (min/m)
Gas (units)

Porosity | Lithology | Rock Type | Geological Descriptions



LANDRY MBR, BEAR ROCK FM 2641MD, 2637VD

2640-2645 LS fr - ltt gy brn, med crxl, occ arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2645-2650 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2650-2655 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2655-2660 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2660-2665 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2665-2670 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2670-2675 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2675-2680 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2680-2685 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2685-2690 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2690-2695 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2695-2700 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2700-2705 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2705-2710 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2710-2715 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2715-2720 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2720-2725 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2725-2730 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2730-2735 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2735-2740 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2740-2745 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2745-2750 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2750-2755 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2755-2760 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2760-2765 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2765-2770 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2770-2775 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2775-2780 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2780-2785 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2785-2790 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2790-2795 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2795-2800 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2800-2805 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2805-2810 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2810-2815 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2815-2820 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2820-2825 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2825-2830 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2830-2835 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2835-2840 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2840-2845 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2845-2850 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2850-2855 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2855-2860 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2860-2865 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2865-2870 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2870-2875 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2875-2880 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2880-2885 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2885-2890 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2890-2895 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2895-2900 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2900-2905 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2905-2910 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2910-2915 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2915-2920 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2920-2925 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2925-2930 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2930-2935 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2935-2940 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2940-2945 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2945-2950 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2950-2955 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2955-2960 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2960-2965 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2965-2970 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2970-2975 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2975-2980 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2980-2985 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

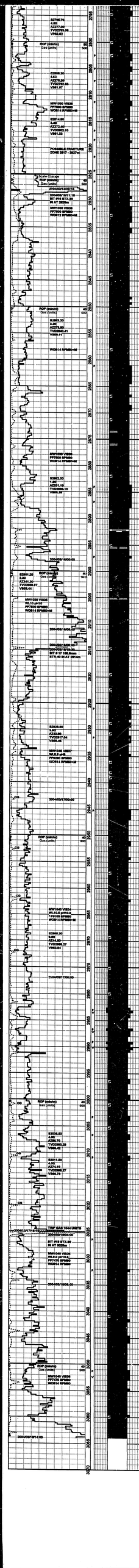
2985-2990 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2990-2995 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

2995-3000 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

3000-3005 LS bf, med brn, ofg gy brn, vslcrxl, tr arg, tr shy, occ pyrn, occ cod, no por, fair gy, occ bitty - ex fra, no fluor.

3005-3010 LS bf,



2792.5-2795 DOL lt - dk brn, mlcst - mnr vf st, dns, sl anhyc, mnr cal, tr pyr, sl pp por, ANHY wh - gy, lt brn, clr, mlcst.

2795-2797.5 DOL lt - dk brn, mlcst, anhyc, dns, tt, ns. ANHY wh - gy, lt brn, clr, mlcst.

2797.5-2800 DOL lt - dk brn, mlcst, anhyc, dns, tt, ns. ANHY wh - gy, lt brn, clr, mlcst.

2800-2802.5 DOL lt - dk brn, mlcst - vf st, dns, anhyc, tr cal, sp pp por. ANHY wh - gy, lt brn, clr, mlcst.

2802.5-2805 DOL lt - dk brn, mlcst - vf st, dns, anhyc, tr cal, sp pp por. ANHY wh - gy, lt brn, clr, mlcst.

2805-2807.5 DOL lt - dk brn, mlcst - vf st, dns, anhyc, tr cal, sp pp por. ANHY wh - gy, lt brn, clr, mlcst.

2807.5-2810 DOL lt - dk brn, mlcst - fr vf st, dns, anhyc, tr cal, sp pp por. ANHY wh - gy, lt brn, clr, mlcst.

2810-2812.5 DOL lt - dk brn, mlcst, anhyc, dns, lap vf st, wt tr pp por. ANHY wh - gy, lt brn, clr, mlcst.

2812.5-2815 DOL lt - dk brn, mlcst, dns, anhyc, tr lmy strgs, tt. ANHY wh - gy, lt brn, mlcst.

2815-2817.5 DOL lt br, brn, mlcst, sl anhyc, tr fracs, cal, tt. ANHY lt, wh - gy, lt brn, mlcst.

2817.5-2820 DOL lt brn, br, mnr dk brn, mlcst - occ vf st, abun cal, tr fracs, tr pp por, ns. ANHY tr, wh - gy, lt brn, mlcst.

2820-2822.5 DOL lt brn, br, mlcst - occ vf st, abun cal, tr fracs, tr pp por, ns. ANHY tr, wh - gy, lt brn, mlcst.

2822.5-2825 DOL lt brn, brn, mlcst - br vf st, abun cal, tr dray dol, fracs, tr pp por. ANHY tr, wh - gy, lt brn, mlcst.

2825-2827.5 DOL lt brn - brn, mlcst - occ vf st, sl anhyc, abun cal, fracs, tr pp por. ANHY wh - gy, lt brn, mlcst.

2827.5-2830 DOL lt brn, brn, mlcst - occ vf st, sl anhyc, occ cal, tr pp por. ANHY wh, lt brn, clr, mlcst.

2830-2832.5 DOL lt brn, brn, mlcst - vf st, tr anhyc, abun cal, occ pyritst associatedwi micro fracs, scat pp por. ANHY fr, wh, clr, mlcst.

2832.5-2837.5 DOL lt brn, brn, mlcst - vf st, abun cal, micro frace, scat pp por, occ pyritst associated with fracs. ANHY tr, wh, clr, lt brn, mlcst.

2837.5-2840 DOL lt - dk brn, mlcst, lap vf st, sl anhyc, occ cal, fracs, rr pp por. ANHY wh, lt brn, sl dolo, mlcst.

2840-2845 DOL lt - dk brn, mlcst, anhyc, dns, tt, ns. ANHY wh, bf, lt brn, mlcst.

2845-2850 DOL lt - dk brn, mlcst, mnr vf st anhyc, dns, tt, ns. ANHY wh, bf, lt brn, mlcst.

2850-2855 DOL lt - dk brn, mlcst, anhyc, dns, tt, ns. ANHY wh, bf, lt brn, mlcst.

2855-2860 DOL lt - dk brn, mlcst, anhyc dns, tt. ANHY wh, bf, lt brn, mlcst.

2860-2865 DOL lt br, brn, mlcst - vf st, lt anhyc, occ cal filled fracs, scat pp por, tr pyritst plugging. ANHY wh, bf, lt brn, mlcst.

2865-2870 DOL bf, lt brn, dk brn, crpst - mlcst, tr vf st, dns, lp anhyc, occ fracs, cal, tt. ANHY wh, bf, lt brn, mlcst.

2870-2875 DOL bf, lt brn, dk brn, crpst - mlcst, dns, lp anhyc, occ fracs, cal, tt. ANHY wh, bf, lt brn, mlcst. SH blk, mm, sb fis - fis. calc, arg strgs.

2875-2877.5 DOL bf, lt brn, dk brn, crpst - mlcst, dns, lp anhyc, occ fracs, cal, tt. ANHY wh, bf, lt brn, mlcst. SH blk, mm, sb fis - fis. calc, arg strgs.

2877.5-2880 DOL bf, lt brn, mlcst, lp anhyc, dns, tt - tr pp por. ANHY wh, brn, gry, mlcst.

2880-2882.5 DOL lt - dk brn, mlcst, dns, anhyc, tt. ANHY wh, lt brn, gry, mlcst.

2882.5-2885 DOL lt brn, mlcst - predy vf st, sl anhyc, occ cal, fracs, scat pp por, occ pyritst. ANHY wh, lt brn, gry, mlcst.

2885-2887.5 DOL lt brn, brn, vf st, lt anhyc, occ cal, fracs, scat pp por, occ pyritst. ANHY wh, lt brn, gry, mlcst.

2887.5-2890 DOL lt brn, brn, mlcst - vf st, dns, lp anhyc, tt. LS lt cl's brn, br, crpst - mlcst, dns, tt. ANHY wh, lt brn, gry.

2890-2892.5 DOI lt brn, brn, mlcst, dns, anhyc, tt. LS clr gy, dk brn, mlcst, dns, tt. SH blk, mm, sb fis - fis. calc, arg. ANHY wh, lt brn, gy, mlcst.

2892.5-2895 DOL brn, dk brn, mlcst - mnr vf st, dns, anhyc, tt. ANHY wh, lt brn - brn, mlcst.

2895-2897.5 DOL brn, dk brn, mlcst - mnr vf st, dns, anhyc, tt - tr pp por. ANHY wh, lt brn - brn, mlcst.

2897.5-2900 DOL lt - dk brn, brn, mlcst, mnr vf st, dns, anhyc, tt. LS clr gy, dk brn, mlcst, dns, tt. ANHY wh, lt brn - brn, mlcst.

2900-2905 DOL dk brn, lt brn, mlcst, mnr vf st, dns, anhyc, tt. LS clr gy, dk brn, mlcst, dns, tt. ANHY wh, lt brn - brn, mlcst.

2905-2910 DOL dk brn, lt brn, mlcst, mnr vf st, dns, anhyc, tt. LS clr gy, dk brn, mlcst, dns, tt. ANHY wh, lt brn - brn, mlcst. SH blk, mm, sb fis - fis, arg, calc.

2910-2915 DOL dk brn, mnr lt brn, mlcst, dns, anhyc, tt. LS dk gy, clr brn, mlcst, dns, tt. ANHY wh, lt brn - brn, mlcst.

2915-2920 DOL brn - dk brn, mlcst, dns, anhyc, tt. LS clr brn, mlcst, dns, tr arg, tt. ANHY wh, lt brn - brn, mlcst.

2920-2922.5 DOL brn - dk brn, mlcst, dns, anhyc, tt. LS dk brn, mlcst, dns, tr arg, tt. ANHY wh, lt brn - brn, mlcst.

2922.5-2925 DOL bf, brn, mnr dk brn, mlcst - vf st, sl anhyc, tr lmy, tr - abun pp por totally plugged wi pyritst. ANHY wh, lt br - brn - brn, mlcst.

2925-2927.5 DOL bf, lt br, mlcst - vf st, tr anhyc, occ cal, fracs, tt - abun pp por mostly plugged wi pyritst. ANHY tr, wh, lt br - brn, mlcst

2927.5-2932.5 DOL bf, lt brn, mlcst - vf st, tr anhyc, abun wh cal, tr fracs, tr - abun pp por plugged wi pyritst.

2932.5-2935 DOL bf, lt - dk brn, mlcst, mnr vf st, dns, anhyc, tr pp por plugged wi pyritst, tt. ANHY wh, lt br - brn, mlcst.

2935-2940 DOL lt - dk brn, mlcst, tr vf st, dns, anhyc, tt. ANHY wh, lt brn - brn, mlcst. LS lt cl's brn, mlcst, tr arg, dns, tt.

2940-2942.5 DOL lt brn, mod gy brn, dk brn, mlcst, dns, lp anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst. LS lt cl's brn, mlcst, dns, tr arg, tt.

2942.5-2947.5 DOL bf, lt brn, dk brn, mlcst - mnr vf st, sl anhyc, dns, tr pyritst plugged pp por, abun wh cal. ANHY wh, lt brn - brn, crpst - mlcst.

2947.5-2962.5 DOL lt - dk brn, mlcst, dns, anhyc, occ wh cal, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2962.5-2965 DOL lt - dk brn, mlcst, tr vf st, anhyc, mnr cal, tr pyritst plugged pp por. ANHY wh, lt brn - brn, crpst - mlcst.

2965-2960 DOL lt - dk brn, mlcst - tr vf st, dns, sl anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2960-2962 DOL bf - dk brn, mlcst, tr vf st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2965-2970 DOL lt - dk brn, mlcst, dns, sl anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2970-2975 DOL lt - dk brn, mlcst, dns, sl anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2975-2980 DOL lt - dk brn, mlcst, dns, sl anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

2980-2982.5 DOL lt gy brn, lt brn, mlcst - vf st, lt anhyc, occ wh cal, scat pp por, tr vgy wf dray dol, lp pyritst plugged, tt - 3%. ANHY wh, lt brn - brn, crpst - mlcst.

2982.5-2985 DOL lt gy brn, lt brn, mlcst - vf st, fr sl, anhyc, occ wh cal, scat pp por, tr vgy wf dray dol, lp pyritst plugged, tt - 3%. ANHY wh, lt brn - brn, crpst - mlcst.

2985-2987.5 DOL lt brn, lt gy brn, mlcst - mnr f st, fr sl anhyc, occ wh cal, scat pp por, tr vgy wf dray dol, lp pyritst plugged, tt - 3%. ANHY wh, lt brn - brn, crpst - mlcst.

2987.5-2990 DOL lt brn, lt gy brn, mlcst - f sl, lr anhyc, mnr wh cal, scat pp por, rr vgy, predy pyritst plugged, tt - 3%. ANHY wh, lt brn - brn, crpst - mlcst.

2990-2995 DOL lt - dk brn, mlcst, mnr vf - f st, anhyc, dns, tt - tr pp por, tr pyritst. ANHY wh, lt brn - brn, crpst - mlcst.

2995-3000 DOL lt - dk brn, mlcst - vf st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3000-3002.5 DOL lt - dk brn, mlcst - vf st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3002.5-3005 DOL lt - dk brn, mlcst, mnr vf - f st, anhyc, dns, tt - tr pp por, tr pyritst. ANHY wh, lt brn - brn, crpst - mlcst.

3005-3007.5 DOL lt brn, mlcst - vf st, sl anhyc, occ pp por, tr pyritst, tt - tr por. ANHY wh, lt brn - brn, crpst - mlcst.

3007.5-3010 DOL lt - dk brn, mlcst, occ vf - f st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3010-3012.5 DOL lt - dk brn, mlcst, occ vf - f st, dns, anhyc, tr pp por, pyritst, tt - tr por. ANHY wh, lt brn - brn, crpst - mlcst.

3012.5-3017.5 DOL lt - dk brn, mlcst, occ vf - f st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3017.5-3022.5 DOL lt - dk brn, mlcst, occ vf - f st, dns, anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3022.5-3025 DOL brn, dk brn, crpst - mlcst, dns, sl anhyc, tt. ANHY wh, lt brn - brn, crpst - mlcst.

3025-3027.5 DOL lt brn, brn, mlcst - vf st, sl anhyc, occ pp por, lp plugged wi pyritst, tt - tr por. ANHY wh, lt brn, brn, crpst - mlcst.

3027.5-3030 DOL lt brn, brn, mlcst, dns, anhyc, mnr vf st, sl anhyc, rr pp por wi pyritst, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3030-3032.5 DOL lt brn, brn, mnr dk brn, mlcst, mnr vf st, dns, anhyc, rr pp por, pyritst, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3032.5-3035 DOL lt brn, brn, mnr dk brn, mlcst, anhyc, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3035-3037.5 DOL lt - dk brn, crpst - mlcst, dns, anhyc, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3037.5-3040 DOL lt - dk brn, crpst - mlcst, anhyc, dns, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3040-3042.5 DOL bf, gy brn, dk brn, mlcst, lt vf st, dns, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3042.5-3045 DOL lt brn, brn, mlcst - vf st, sl anhyc, tr pp, vgy por, occ pyritst, tt - tr por, ns. ANHY wh - gy, lt brn, crpst - mlcst.

3045-3047.5 DOL lt brn, brn, mlcst - vf st, sl anhyc, tr pp, vgy por, occ pyritst, tt - tr por, ns. ANHY wh - gy, lt brn, crpst - mlcst.

3047.5-3050 DOL lt - dk brn, crpst - mlcst, dns, anhyc, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3050-3052.5 DOL lt brn, brn, gy brn, mlcst - vf st, tr f st, abun wh cal, tr pyritst, scat pp por, tr dray dol, tt - 2% pp, vgy por, ns. ANHY tr,

3052.5-3055 DOL bf, lt brn, mlcst - fr vf st, occ wh cal, - rr pp por, occ pyritst, tt, ns. ANHY tr.

3055-3057.5 DOL lt - dk brn, crpst - mlcst, dns, anhyc, tt. ANHY wh - gy, lt brn, crpst - mlcst.

3057.5-3060 DOL lt - dk brn, mlcst, sl anhyc, dns, tt, ns. ANHY wh - gy, lt brn, crpst - mlcst.

3060-3062.5 DOL lt - dk brn, mlcst, sl anhyc, dns, tt, ns. ANHY wh - gy, lt brn, crpst - mlcst.

3062.5-3064 DOL lt - dk brn, mlcst, sl anhyc, dns, tt, ns. ANHY wh - gy, lt brn, crpst - mlcst.

FTD 3064MD, 3050.6TVD

LITHOLOGY STRIP LOG
WellSight Systems Inc.
Scale 1:240 (5"=100') Metric

Well Name: NORTHROCK ET AL SUMMIT CREEK 8-44 9T
Location: 8-44-64-20-1/2-all
Licence number: 0211-0046-01
Spud Date: 2005/03/29 00:00
Surface Coordinates: LAT 54 27' 02.302"
LONG 120 52' 22.656" NAD27

Region: SUMMIT CREEK
Drilling Completed: 2005/03/31/16:00

Bottom Hole
Coordinates:
Ground Elevation (m): 880.50 K.B. Elevation (m): 886.30
Logged Interval (m): 1708 To: 2956 Total Depth (m): 3064
Formation: HEADLESS
Type of Drilling Fluid: GEL/POLY

Printed by STRIP.LOG from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

OPERATOR

Company: NORTHROCK RESOURCES LTD
Address: Suite 3500, 700 - 2nd Street S.W.
Calgary, Alberta T2P 2W2

GEOLOGIST

Name: BRYCE MCQUILLAN
Company: K.C. WAUKON PETROLEUM CONSULTANTS LTD
Address: 91 Starkey Rise N.W.
Calgary, Alberta

Comments

SIDE TRACK - HOLE PLUGGED BACK TO 1670 METERS AND SIDE TRACKED FROM THAT POINT

ROCK TYPES

Anhy, Bent, Bres, Clyst, Coal, Congl, Dol, Gyp, Lmst, Mrst, Salt, Shale, Shcol, Shgy, Silst, Ss, Till, Blank

ACCESSORIES

MINERAL: Amky, Argsm, Arsc, Bit, Brwhrg, Calc, Carb, Chrt, Dol, Feldspar, Ferrpyr, Flint, Gyp, Hvymin, Kaol, Marl, Mrcl, Nodule, Phos, Pyr, Salt, Sandy, Slt, Sulphur, Tuff

FOSSIL: Algae, Amph, Belm, Bioclst, Brach, Bryozoa, Cephal, Coral, Crin, Echin, Fish, Foram, Fossil, Gastro, Ostra, Pelecy, Plant, Pororib, Spicule, Strom

STRUCTURE: Bioturbd, Chalky, Crystln, Fenfrg, Fissile, Laminar, Lithogr, Microstln, Mudclst, Packst, Wackest

OTHER SYMBOLS

POROSITY TYPE: Earthy, Fenestl, Fracture, Inter, Moldic, Pinpoint, Vuggy, Wkhdrwl, Wvd

POROSITY: Moderate, Poor, Rubbly, Sucrosic, Submrsbl

OIL SHOWS: Even, Spotted, Cvrss, Dead, Stain

EVENTS: RR, Sidewall

INTERVALS

Curve Track 1

TVD (metres) from (units)

Geologic Descriptions

CEMENT TOP 1708.8

1708.8-1710 SH cmnt gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Sample has minor cement contamination.

1710-1712 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Sample has trace cement contamination.

1712-1714 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Samples have majority(up to 50%) cement contamination.

1714-1716 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Samples have majority(up to 50%) cement contamination.

1716-1718 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Samples have majority(up to 50%) cement contamination.

1718-1720 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Samples have majority(up to 50%) cement contamination.

1720-1722 SH cmnt - dk gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Cement 30%

1722-1724 SH cmnt - dk gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam. Cement 10%

1724-1726 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, fr gy bro, bby, wy sm, f sam, fr stone flecs.

1726-1728 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 30%

1728-1730 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1730-1732 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1732-1734 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1734-1736 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1736-1738 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1738-1740 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1740-1742 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1742-1744 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1744-1746 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1746-1748 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr cmnt 10%

1748-1750 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1750-1752 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1752-1754 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1754-1756 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1756-1758 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1758-1760 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1760-1762 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr lam.

1762-1764 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr lam.

1764-1766 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr lam, fr stone flecs.

1766-1768 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr lam.

1768-1770 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc, fr lam.

1770-1772 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1772-1774 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1774-1776 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1776-1778 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr gy, bby wspy, lsp calc.

1778-1780 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1780-1782 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1782-1784 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1784-1786 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1786-1788 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1788-1790 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1790-1792 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1792-1794 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1794-1796 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1796-1798 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1798-1800 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1800-1802 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1802-1804 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1804-1806 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1806-1808 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1808-1810 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1810-1812 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1812-1814 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1814-1816 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1816-1818 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1818-1820 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1820-1822 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1822-1824 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1824-1826 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1826-1828 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1828-1830 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1830-1832 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1832-1834 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1834-1836 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1836-1838 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1838-1840 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1840-1842 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1842-1844 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1844-1846 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1846-1848 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1848-1850 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1850-1852 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1852-1854 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1854-1856 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1856-1858 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1858-1860 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1860-1862 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1862-1864 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1864-1866 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1866-1868 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1868-1870 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1870-1872 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1872-1874 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1874-1876 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1876-1878 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1878-1880 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1880-1882 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1882-1884 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1884-1886 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1886-1888 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1888-1890 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1890-1892 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1892-1894 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1894-1896 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1896-1898 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1898-1900 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1900-1902 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1902-1904 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1904-1906 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1906-1908 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1908-1910 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1910-1912 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1912-1914 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1914-1916 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1916-1918 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1918-1920 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1920-1922 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1922-1924 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1924-1926 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1926-1928 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1928-1930 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1930-1932 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1932-1934 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1934-1936 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1936-1938 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1938-1940 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1940-1942 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1942-1944 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1944-1946 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1946-1948 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1948-1950 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1950-1952 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1952-1954 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1954-1956 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1956-1958 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1958-1960 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1960-1962 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1962-1964 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1964-1966 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1966-1968 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1968-1970 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1970-1972 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1972-1974 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1974-1976 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1976-1978 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1978-1980 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1980-1982 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1982-1984 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1984-1986 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1986-1988 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1988-1990 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1990-1992 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1992-1994 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1994-1996 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1996-1998 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

1998-2000 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2000-2002 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2002-2004 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2004-2006 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2006-2008 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2008-2010 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2010-2012 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2012-2014 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2014-2016 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2016-2018 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2018-2020 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2020-2022 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2022-2024 SH cmnt gy, mm dy gy, mm, fis, 0.757 fr, fr gy, bby wspy, lsp calc.

2024-2026 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2026-2028 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2028-2030 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2030-2032 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2032-2034 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2034-2036 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2036-2038 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2038-2040 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2040-2042 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2042-2044 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2044-2046 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2046-2048 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2048-2050 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2050-2052 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2052-2054 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2054-2056 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2056-2058 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2058-2060 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2060-2062 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2062-2064 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2064-2066 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2066-2068 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2068-2070 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2070-2072 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2072-2074 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2074-2076 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2076-2078 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2078-2080 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2080-2082 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2082-2084 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2084-2086 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2086-2088 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2088-2090 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2090-2092 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2092-2094 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2094-2096 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2096-2098 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2098-2100 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2100-2102 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2102-2104 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2104-2106 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2106-2108 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2108-2110 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2110-2112 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2112-2114 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2114-2116 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2116-2118 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2118-2120 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2120-2122 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2122-2124 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2124-2126 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2126-2128 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2128-2130 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2130-2132 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2132-2134 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

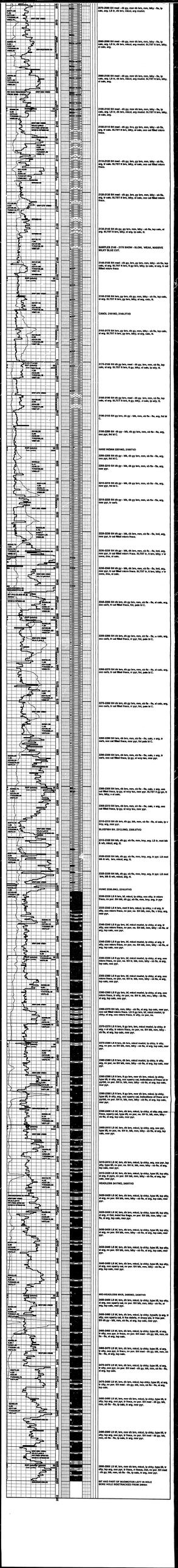
2134-2136 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2136-2138 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2138-2140 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

2140-2142 SH cmnt - dk gy, mm dy gy brn, sm, slty, v wspy, lsp calc, sft sm calc micro frac, sp, fst pale bl C. LS dk brn, sm, arg, moist dry, sm, stone, 2026ft, 2027ft)

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2870-2886 Sh/ med - dk gy, occ dol bs, occ lam, occ bby - fis, ly calc, wg, LS fr, sh bm, micrxl, wg modstr.
2886-2896 Sh/ med - dk gy, occ dol bs, occ lam, bby - fis, ly calc, wg, LS fr, sh bm, micrxl, wg modstr, SLTST fr bm, bby, sl calc, wg.
2896-2936 Sh/ med - dk gy, occ dol bs, occ lam, bby - fis, ly calc, wg, LS fr, sh bm, micrxl, wg modstr, SLTST fr bm, bby, sl calc, wg.
2936-2938 Sh/ med - dk gy, occ dol bs, occ lam, bby - fis, ly calc, wg, LS fr, sh bm, micrxl, wg modstr, SLTST fr bm, bby, sl calc, wg.
2938-2118 Sh/ med - dk gy, occ dol bs, occ lam, bby - fis, ly calc, wg, sl calc, SLTST fr bm, bby, sl calc, occ cal filled micro fract.
2118-2120 Sh/ med - dk gy, brn, gy brn, occ lam, bby - sh fis, wg, lt calc, SLTST fr brn, bby, sl calc, occ cal filled micro fract.
2120-2122 Sh/ med - dk gy, brn, gy brn, occ lam, bby - sh fis, wg, lt calc, SLTST fr brn, bby, sl calc, occ cal filled micro fract.
2122-2140 Sh/ dk gy, gy brn, occ lam, bby - sh fis, lcy calc, sl wg, SLTST fr brn, bby, sl wg, ly calc, lt.
SAMPLE# 2140 - 2170 SHOW - SLOW, WEAK, MASSIVE MILKY BLUE CUT.
2140-2160 Sh/ med - dk gy brn, gy brn, occ lam, bby - sh fis, lcy calc, sl wg, SLTST fr brn, lt gy brn, bby, ly calc, sl wg, lt cal filled micro fract.
2160-2162 Sh/ brn, gy brn, dk gy, occ lam, bby - sh fis, lcy calc, sl wg, SLTST fr brn, gy brn, bby, sl wg, calc, lt.
CANOL 2161MD, 2140.27VD
2162-2172 Sh/ brn, gy brn, dk gy, occ lam, bby - sh fis, lcy calc, sl wg, SLTST fr brn, gy brn, bby, sl wg, calc, lt.
2172-2184 Sh/ dk gy brn, med - dk gy, brn, occ sh fis, lcy calc, sl wg, SLTST fr brn, lt gy, bby, sl calc, ly wtz, lt.
2184-2190 Sh/ dk gy brn, med - dk gy, brn, occ sh fis, lcy calc, sl wg, SLTST fr brn, lt gy, bby, sl calc, ly wtz, lt.
2190-2192 Sh/ dk gy brn, dk gy - blk, occ sh fis - fis, wg, fst bl C.
2192-2200 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, wg, occ pyr, fst bl C.
HARE INDIAN 2201MD, 2187VD
2200-2208 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, wg, occ pyr, fst bl C.
2208-2210 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, wg, occ pyr.
2210-2214 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, wg, occ pyr, fst bl C.
2214-2216 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, wg, occ pyr, fr carb.
2216-2220 Sh/ dk gy - blk, dk gy brn, occ sh fis - fis, bst, wg, occ pyr, fr cal filled micro fract.
2220-2222 Sh/ dk gy - blk, dk brn, occ sh fis - fis, bst, wg, occ pyr, fr cal filled micro fract. SLTST fr brn, bby, v w cmnt, occ, sl calc.
2228-2240 Sh/ dk gy - blk, dk brn, occ sh fis - fis, bst, wg, occ pyr, fr cal filled micro fract. SLTST fr brn, bby, v w cmnt, occ, sl calc.
2240-2242 Sh/ dk brn, dk gy brn, occ sh fis - fis, sl calc, wg, occ carb, fr cal filled fract, frt, pale bl C.
2242-2244 Sh/ dk brn, dk gy brn, occ sh fis - fis, sl calc, wg, occ carb, fr cal filled fract, fr pyr, frt, pale bl C.
2244-2272 Sh/ dk brn, dk gy brn, occ sh fis - fis, sl calc, wg, occ carb, fr cal filled fract, fr pyr, frt, pale bl C.
2272-2288 Sh/ dk brn, dk gy brn, occ sh fis - fis, sl calc, wg, occ carb, fr cal filled fract, fr pyr, frt, pale bl C.
2288-2290 Sh/ brn, dk brn, occ sh fis - fis, calc, v wtz, sl carb, occ cal filled fract, occ pyr, frt pale bl C.
2290-2298 Sh/ brn, dk brn, occ sh fis - fis, calc, v wtz, sl carb, occ cal filled fract, fr gy, sl wxy bst, occ pyr.
2298-2300 Sh/ brn, dk brn, occ sh fis - fis, calc, v wtz, occ cal filled fract, fr wxy bst, occ pyr, SLTST fr gy grn, lt brn, bby, v sl calc.
2300-2312 Sh/ brn, dk brn, occ sh fis - fis, calc, v wtz, occ cal filled fract, fr gy, sl wxy bst, occ pyr.
EL GISFEH BK. 2312.6MD, 2300.87VD
2312-2320 Sh/ blk, dk gy, sh fis, occ lam, bby, wg, LS fr, mot blk & wh, micrxl, wg, tr.
2320-2328 Sh/ blk, dk gy, sh fis, occ lam, bby, wg, fr pyr, LS mot blk & wh, lam, micrxl, wg, tr.
2328-2336 Sh/ blk, dk gy, sh fis, occ lam, bby, wg, fr pyr, LS mot blk, blk & wh, micrxl, wg, tr.
HUME 2336.84D, 2318.87VD
2336-2338 LS fr brn, bf, micrxl, ly calc, occ sity, fr micro fract, no por, frt SH, fr gy, sh fis, occ lam, bby, wg, fr pyr.
2338-2342 LS fr brn, mod fr brn, micrxl, ly calc, v sity, occ micro fract, no por, no frt SH, occ fis, v bby, wg, occ pyr.
2342-2344 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2344-2346 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2346-2348 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2348-2350 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2350-2352 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2352-2354 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2354-2356 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2356-2358 LS fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2358-2370 Sh/ brn, occ bby, sh fis, wg, occ calc, occ pyr, occ cal filled micro fract, LS fr gy brn, micrxl mudst, ly calc, v sity, v wt micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2370-2372 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, v wt micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2372-2374 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2374-2376 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2376-2378 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2378-2380 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2380-2382 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2382-2384 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2384-2386 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2386-2388 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2388-2390 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2390-2392 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2392-2394 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2394-2396 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2396-2398 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2398-2400 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2400-2402 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2402-2404 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2404-2406 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2406-2408 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2408-2410 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2410-2412 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2412-2414 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2414-2416 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2416-2418 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2418-2420 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2420-2422 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2422-2424 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2424-2426 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2426-2428 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2428-2430 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2430-2432 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2432-2434 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2434-2436 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2436-2438 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2438-2440 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2440-2442 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2442-2444 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2444-2446 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2446-2448 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2448-2450 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2450-2452 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2452-2454 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2454-2456 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2456-2458 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2458-2460 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2460-2462 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2462-2464 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2464-2466 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2466-2468 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2468-2470 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2470-2472 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2472-2474 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2474-2476 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2476-2478 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2478-2480 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2480-2482 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2482-2484 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2484-2486 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2486-2488 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2488-2490 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2490-2492 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2492-2494 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2494-2496 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2496-2498 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2498-2500 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2500-2502 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2502-2504 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2504-2506 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2506-2508 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2508-2510 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2510-2512 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2512-2514 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2514-2516 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2516-2518 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2518-2520 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2520-2522 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2522-2524 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2524-2526 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2526-2528 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2528-2530 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2530-2532 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2532-2534 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2534-2536 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2536-2538 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2538-2540 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2540-2542 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2542-2544 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2544-2546 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2546-2548 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2548-2550 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2550-2552 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2552-2554 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2554-2556 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2556-2558 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2558-2560 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2560-2562 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2562-2564 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2564-2566 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2566-2568 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2568-2570 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2570-2572 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2572-2574 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2574-2576 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2576-2578 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2578-2580 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2580-2582 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2582-2584 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2584-2586 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2586-2588 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2588-2590 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2590-2592 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2592-2594 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2594-2596 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2596-2598 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2598-2600 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2600-2602 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2602-2604 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2604-2606 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2606-2608 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2608-2610 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2610-2612 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2612-2614 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2614-2616 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2616-2618 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2618-2620 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2620-2622 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2622-2624 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2624-2626 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2626-2628 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2628-2630 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2630-2632 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2632-2634 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2634-2636 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2636-2638 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2638-2640 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2640-2642 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2642-2644 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2644-2646 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2646-2648 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2648-2650 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2650-2652 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2652-2654 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2654-2656 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2656-2658 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2658-2660 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2660-2662 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2662-2664 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2664-2666 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
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2668-2670 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2670-2672 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2672-2674 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2674-2676 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr calc, occ pyr.
2676-2678 LS fr brn, fr gy brn, fr micrxl mudst, ly calc, v sity, occ micro fract, no por, no frt SH, occ, bby - sh fis, wg, lyr cal

LITHOLOGY STRIP LOG

WellSight Systems Inc.

Scale 1:240 (5"=100') Metric

Well Name:	NORTHROCK ET AL SUMMIT CREEK B-44		
Location:	B-44-A/94-30-126-25		
Licence Number:	9211-NO46-2-1-1994	Region:	SUMMIT CREEK
Spud Date:	2004/01/16\03:00	Drilling Completed:	2004/03/18\14:00
Surface Coordinates:	LAT 54° 23' 02.352" LONG 125° 53' 22.656" NAD27		
Bottom Hole Coordinates:			
Ground Elevation (m):	580.5	K.B. Elevation (m):	586.7
Logged Interval (m):	27 To: 2188	Total Depth (m):	3064
Formation:	CANOL		
Type of Drilling Fluid:	GEL/POLYMER		

Printed by STRIP.LOG from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

OPERATOR

Company: NORTHROCK RESOURCES LTD
Address: Suite 3500, 700 - 2nd Street S.W.
Calgary, Alberta T2P 2W2

GEOLOGIST

Name: BRYCE MCQUILLAN
Company: K.C. WAUNCH PETROLEUM CONSULTANTS LTD
Address: 96 Berkley Rise N.W.
Calgary, Alberta

DSTs

#1 458-465m
#2 238-245m -misrun
#3 238-245m

ROCK TYPES

Anhy, Bent, Bmec, Cht, Clyst, Coal, Congl, Dol, Gyp, Igns, Lmst, Meta, Mrlst, Salt, Shale, Shcol, Shgy, Sltst, Ss, Till, Blank

ACCESSORIES

MINERAL: Anhy, Arggrn, Arg, Bent, Blt, Brecfrag, Calc, Carb, Chtclt, Chtlt, Col, Feldspar, Ferrpel, Ferr, Glau, Gyp, Hvymin, Kaol, Marl, Mixed, Nodule, Phos, Pyr, Salt, Sandy, Slt, Sil, Sulphur, Tuff

FOSSIL: Algae, Amph, Belm, Bioclst, Brach, Bryozoa, Cephal, Coral, Crin, Echin, Fish, Foram, Fossil, Gastro, Oolite, Ostra, Pelec, Pellet, Pisolite, Plant, Strom

STRINGER: Anhy, Arg, Bent, Coal

TEXTURE: Boundst, Chalky, Cryxln, Earthy, Finexln, Grainst, Lithogr, Microxln, Mudst, Packst, Wackest

OTHER SYMBOLS

POROSITY TYPE: Earthy, Fenest, Fracture, Intxr, Moldic, Organic, Pinpoint, Vuggy

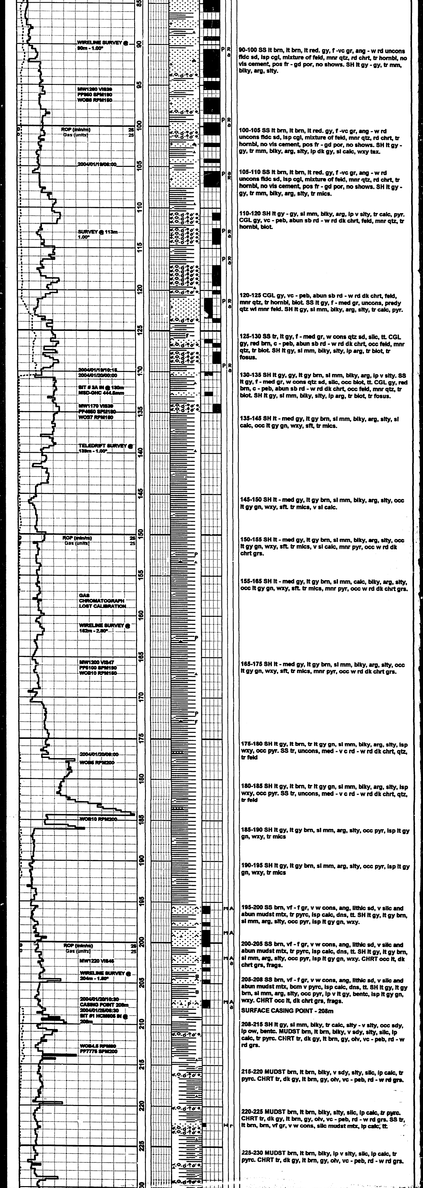
SORTING: Well, Moderate, Poor

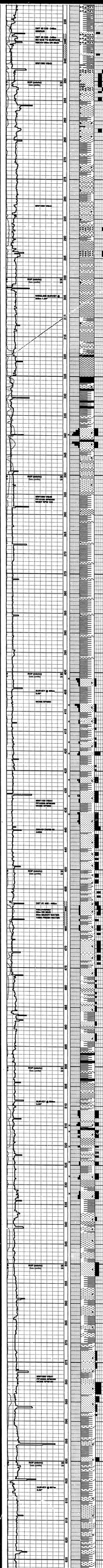
ROUNDING: Rounded, Subrnd, Subang, Angular

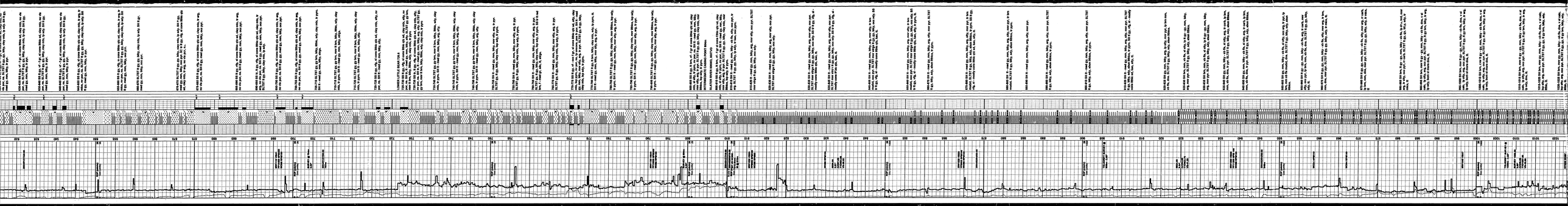
OIL SHOWS: Even, Spotted, Ques, Dead

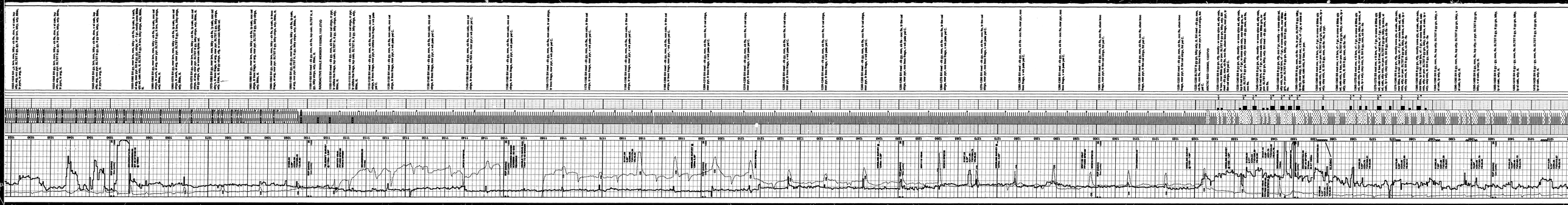
INTERVALS: None, Core, Dst, Slide, Slide, Rft, Sidewall

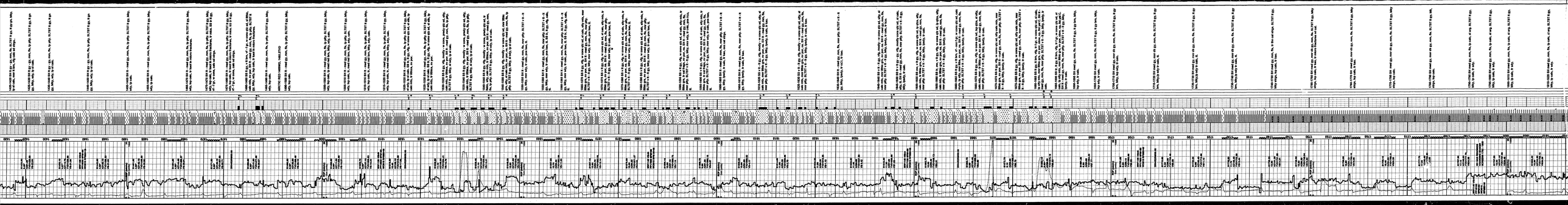
EVENTS: Rft

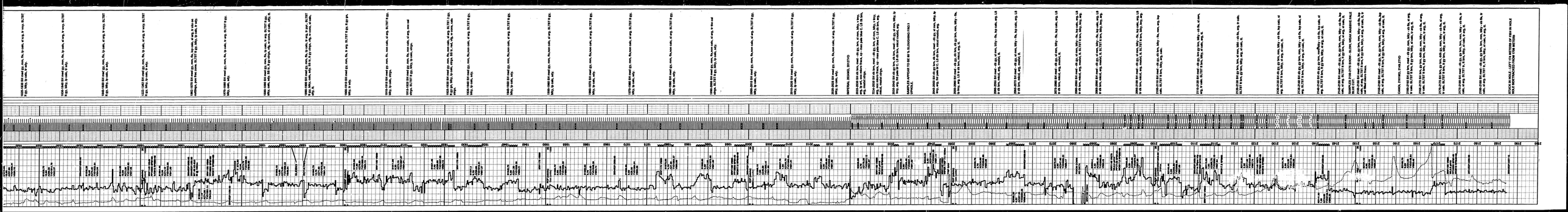

Curve Track 1
ROP (min/m)
Gas (units)
Porosity
Lithology
Grain Size
Geological Descriptions
3064/01/18\00:00
FP480 SP81/90
WC0858 RP480
WIRELINE SURVEY @ 33m - 1.00°
SET #1
SHT1180 - 311mm IH @ 36m
FP960 SP81/90
WC0858 RP1410
3064/01/18\00:00
ROP (min/m)
Gas (units)
WIRELINE SURVEY @ 90m - 1.00°
MW1390 VIS58
FP960 SP81/90
WC0858 RP81/90
ROP (min/m)
Gas (units)
SURVEY @ 113m - 1.00°
TELESCOPIT SURVEY @ 138m - 1.00°
ROP (min/m)
Gas (units)
CALC CORPORATIOGRAPH LOST CALIBRATION
WIRELINE SURVEY @ 182m - 3.00°
3064/01/20\00:00
WC0858 RP4320
WIRELINE SURVEY @ 204m - 1.00°
MW1370 VIS45
FP3100 SP81/90
WC0915 RP81/90
3064/01/20\00:00
CASING POINT 208m
3064/01/20\06:30
SET #1 WC0858 RP
WC0915 RP4320
WIRELINE SURVEY @ 204m - 1.00°
MW1230 VIS45
FP3100 SP81/90
WC0915 RP81/90
3064/01/20\06:30


DAT #3 330 - 345m
SWDMST
DAT #3 330 - 345m
NO GAS TO BURN/OIL
TRACE thin Dil SHOT
BENTONS YRAU
ROP (mm/hr)
Dxn (cm/hr)
BENTONS YRAU
ROP (mm/hr)
Dxn (cm/hr)
WORLAND BURNOUT #4
345m 1.5%*
ROP (mm/hr)
Dxn (cm/hr)
BENTONS YRAU
TRACE thin Dil SHOT
WORLAND BURNOUT #4
345m 1.5%*
ROP (mm/hr)
Dxn (cm/hr)
BENTONS SPARKS









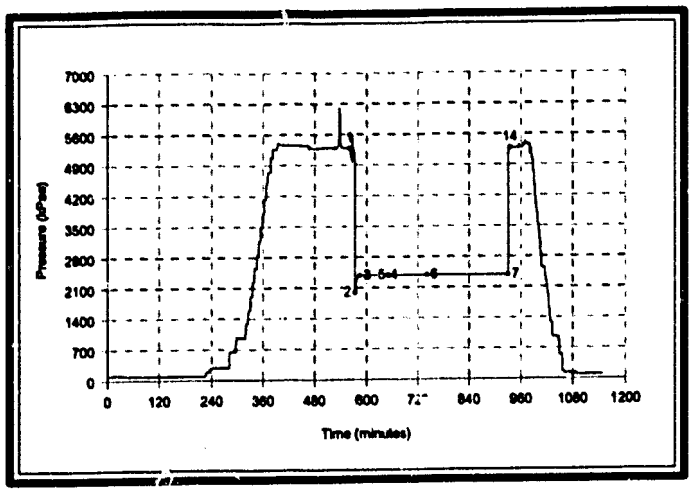
DST'S
(1,3-5)

NORTHROCK ET AL SUMMIT CREEK - DRILL STEM TEST
B-44-64-30-125-45
DST# 1

BAKER HUGHES
Baker Oil Tools

Formation: LITTLE BEAR
Interval - from: 458.00 **to:** 465.00 m

Recorder# 70390 at 461.00 m



Maximum Btm Hole Temperature @ FSI: 21.9 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	5281		
2	Start of 1st Flow	1988		
3	End of 1st Flow	2373	10.5	
4	End of 1st Shut-in	2380	61.5	2380.6
5	Start of 2nd Flow	2377		
6	End of 2nd Flow	2378	90.0	
7	End of 2nd Shut-in	2381	189.0	2380.4
14	Final Hydrostatic	5279		

Liquid Recovery of 225.00 m

Recovery	*Description*	*Salinity*
30.00 m	DRILLING MUD	
90.00 m	MUDDY WATER	300
105.00 m	FRESH WATER	300

Test Date: 2004-01-31
Test Type: INFLATE STRADDLE
Tester Name: SHANE NOLIN
Drill Pipe O.D.: 102.00 mm
Drill Collar I.D.: 57.00 mm
Drill Collar Length: 84.64 m
Hole Size: 311.00 mm

Blow Description:

PREFLOW - Weak air blow in 10o seconds increasing to fair in 3 minutes then slowly decreasing to very weak. No gas to surface.

FINAL FLOW - No air blow. No gas to surface.

Remarks:

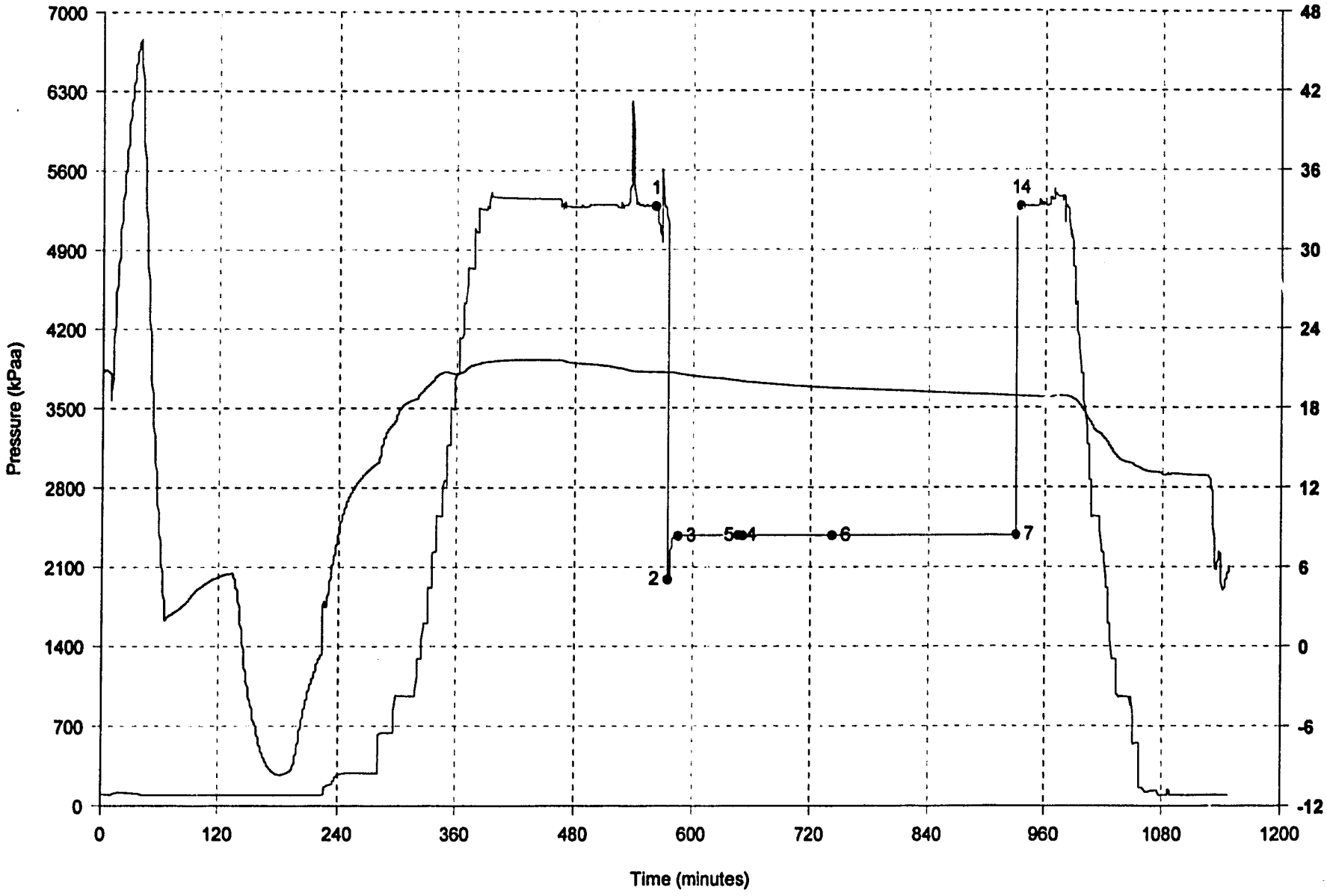
Mechanically successful test. Results suggest high permeability within the interval tested. The hydorstatic pressure of the fluid recovery equalized with the formation pressure during the final flow. Did not obtain a packer seat on the initial inflation.

BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 1
Recorder: 70390

Pressure (kPaa) at Critical Points:

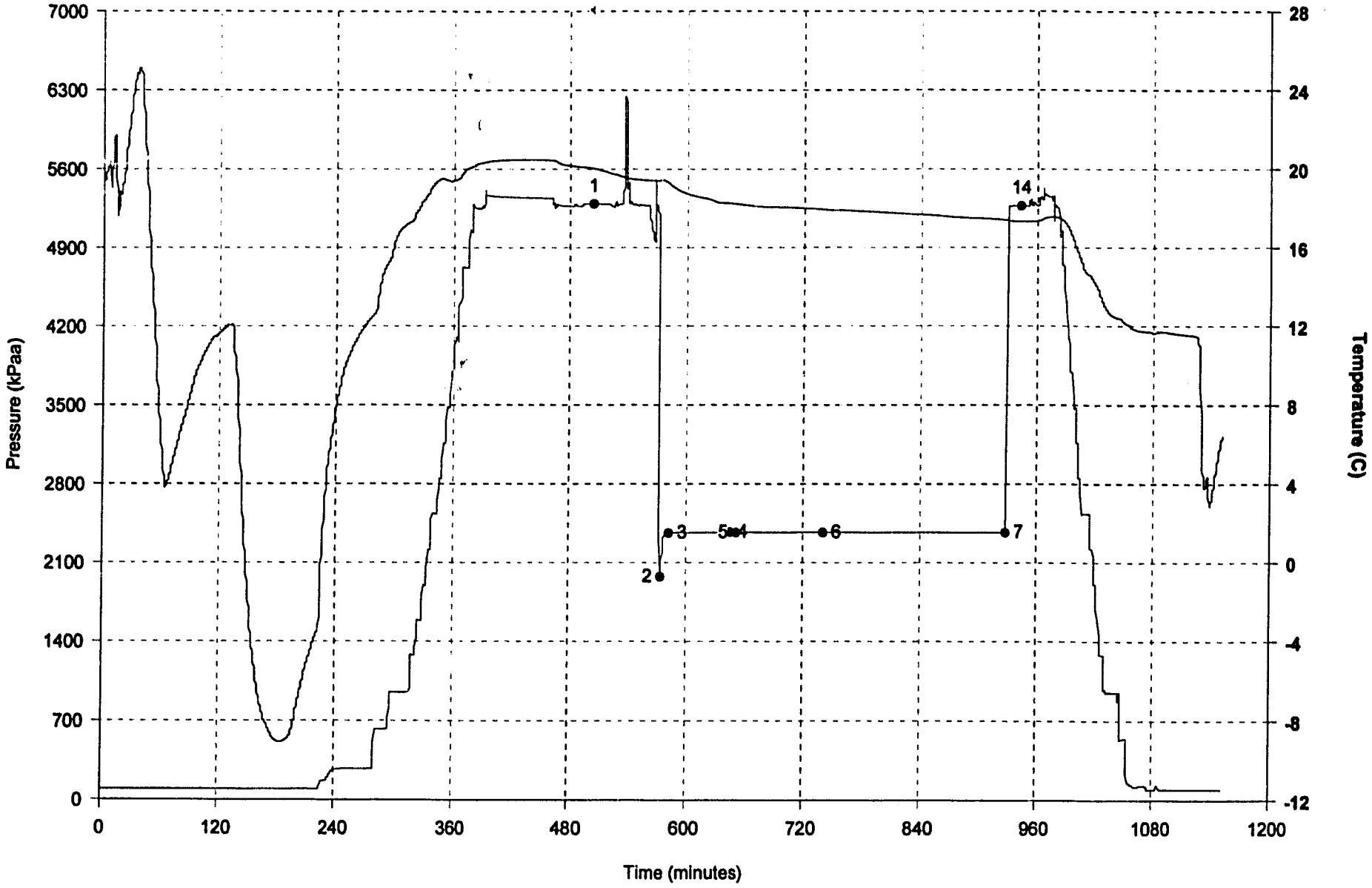
1: 5281	4: 2380	7: 2381
2: 1988	5: 2377	14: 5279
3: 2373	6: 2378	



NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 1
Recorder: 75436

Pressure (kPaa) at Critical Points:

1: 5290	4: 2368	7: 2368
2: 1974	5: 2365	14: 5271
3: 2362	6: 2366	

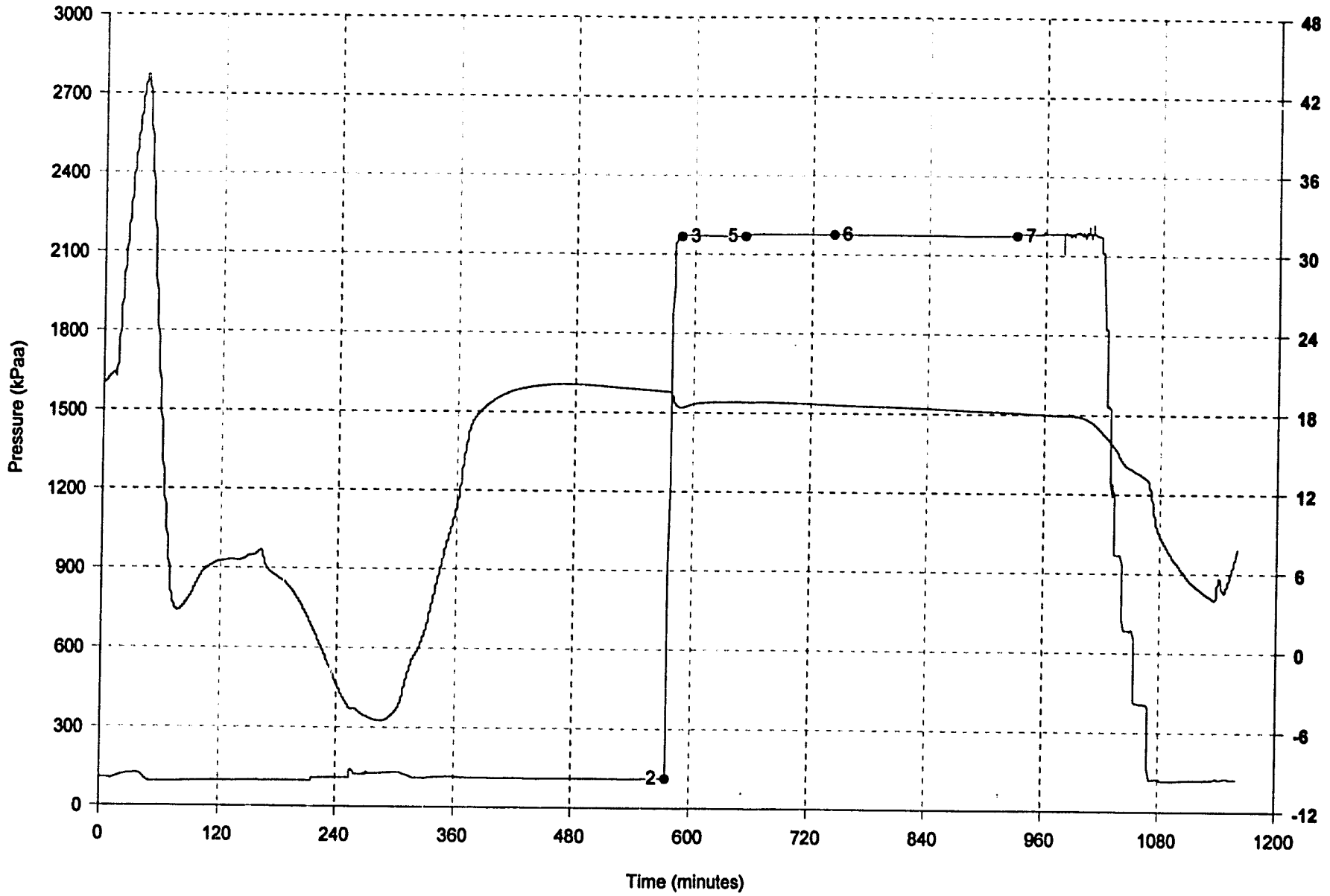


BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 1
Recorder: 70115

Pressure (kPaa) at Critical Points:
2: 112 6: 2175
3: 2166 7: 2173
5: 2167

Recovery recorder



NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST# 1
Recorder 70390

Build-up and Flow Curve Increments

Flow# 1

Chart Label	Time (min)	Pressure (kPaa)
2	0.0	1988
	1.0	2085
	2.0	2199
	3.0	2279
	4.0	2335
	5.0	2358
	6.0	2366
	7.0	2369
	8.0	2372
	9.0	2373
	10.0	2374
3	10.5	2373

Shutin# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	0.0		2373		
	2.0	2	2376	6.2500	
	4.0	3	2376	3.6250	
	6.0	4	2377	2.7500	
	8.0	4	2378	2.3125	
	10.0	5	2378	2.0500	
	12.0	5	2378	1.8750	
	14.0	5	2379	1.7500	*
	16.0	5	2379	1.6562	*
	18.0	5	2379	1.5833	*
	20.0	6	2379	1.5250	*
	22.0	6	2379	1.4773	*
	24.0	6	2379	1.4375	*
	26.0	6	2379	1.4038	*
	28.0	6	2379	1.3750	*
	30.0	6	2379	1.3500	*
	32.0	6	2380	1.3281	*
	34.0	6	2380	1.3088	*
	36.0	6	2380	1.2917	*
	38.0	6	2380	1.2763	*
	40.0	7	2380	1.2625	*
	42.0	7	2380	1.2500	*
	44.0	7	2380	1.2386	*
	46.0	7	2380	1.2283	*
	48.0	7	2380	1.2188	*
	50.0	6	2380	1.2100	*
	52.0	6	2380	1.2019	*
	54.0	6	2380	1.1944	*
	56.0	6	2380	1.1875	*
	58.0	6	2380	1.1810	*
	60.0	7	2380	1.1750	*
4	61.5	6	2380	1.1707	*

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST# 1
Recorder 70390

Build-up and Flow Curve Increments

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
5	0.0	2377
	2.0	2379
	4.0	2380
	6.0	2380
	8.0	2380
	10.0	2380
	12.0	2380
	14.0	2380
	16.0	2380
	18.0	2380
	20.0	2380
	22.0	2380
	24.0	2380
	26.0	2380
	28.0	2380
	30.0	2380
	32.0	2380
	34.0	2380
	36.0	2380
	38.0	2380
	40.0	2380
	42.0	2380
	44.0	2380
	46.0	2380
	48.0	2380
	50.0	2380
	52.0	2380
	54.0	2380
	56.0	2380
	58.0	2380
	60.0	2380
	62.0	2380
	64.0	2380
	66.0	2380
	68.0	2380
	70.0	2380
	72.0	2380
	74.0	2380

Shutin# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	0.0		2378		
	4.0	2	2380	26.1250	
	8.0	2	2380	13.5625	
	12.0	2	2380	9.3750	
	16.0	2	2380	7.2812	*
	20.0	2	2380	6.0250	*
	24.0	2	2380	5.1875	*
	28.0	2	2380	4.5893	*
	32.0	2	2380	4.1406	*
	36.0	2	2380	3.7917	*
	40.0	2	2380	3.5125	*
	44.0	2	2380	3.2841	*
	48.0	2	2380	3.0938	*
	52.0	2	2380	2.9327	*
	56.0	2	2380	2.7946	
	60.0	2	2380	2.6750	
	64.0	2	2380	2.5703	
	68.0	2	2380	2.4779	
	72.0	2	2380	2.3958	
	76.0	2	2380	2.3224	
	80.0	2	2380	2.2563	
	84.0	2	2380	2.1964	
	88.0	2	2380	2.1420	
	92.0	2	2380	2.0924	
	96.0	2	2380	2.0469	
	100.0	2	2380	2.0050	
	104.0	2	2380	1.9663	
	108.0	2	2380	1.9306	
	112.0	2	2380	1.8973	
	116.0	2	2380	1.8664	
	120.0	2	2380	1.8375	
	124.0	2	2380	1.8105	
	128.0	2	2380	1.7852	
	132.0	2	2380	1.7614	
	136.0	2	2380	1.7390	
	140.0	2	2380	1.7179	
	144.0	2	2380	1.6979	
	148.0	2	2380	1.6791	

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST# 1
Recorder 70390

Build-up and Flow Curve Increments

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
	76.0	2380
	78.0	2380
	80.0	2380
	82.0	2380
	84.0	2380
	86.0	2380
	88.0	2380
6	90.0	2378

Shutin# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Used for Extrap
	152.0	2	2380	1.6612	
	156.0	2	2380	1.6442	
	160.0	2	2380	1.6281	
	164.0	2	2380	1.6128	
	168.0	2	2380	1.5982	
	172.0	2	2380	1.5843	
	176.0	2	2380	1.5710	
	180.0	2	2380	1.5583	
	184.0	2	2380	1.5462	
	188.0	2	2380	1.5346	
7	189.0	2	2381	1.5317	

Horner Extrapolation

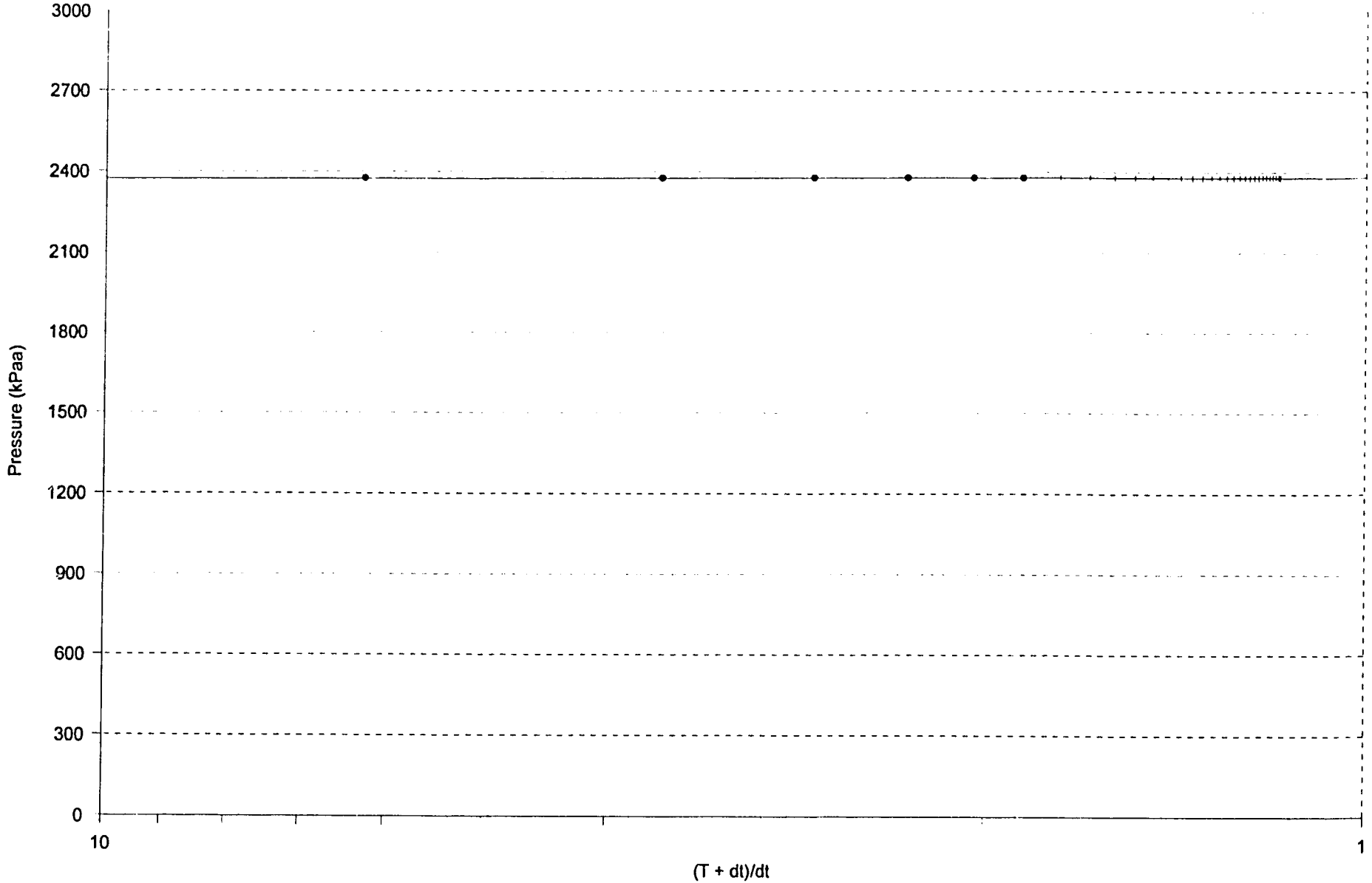
Shut-in#	Extrapolated Pressure (kPaa)	Extrapolated Slope (kPaa/cycle)
1	2380.6	8.59912
2	2380.4	0.05247

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 1
Recorder: 70390

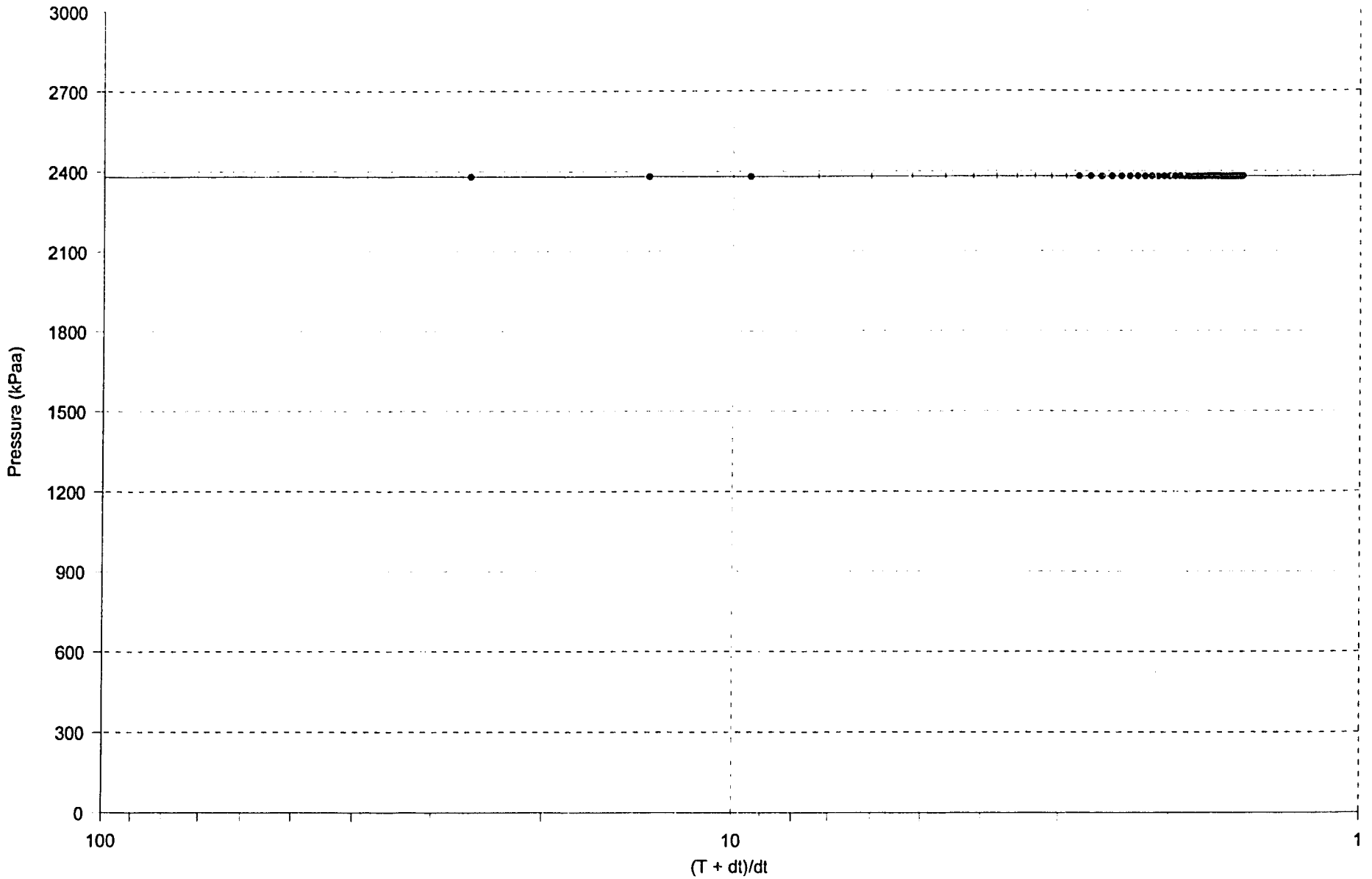
Shut-in #1
Slope = 8.60 kPaa/cycle
Extrapolated Pressure = 2380.62 kPaa



BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 1
Recorder: 70390

Shut-in #2
Slope = 0.05 kPaa/cycle
Extrapolated Pressure = 2380.36 kPaa

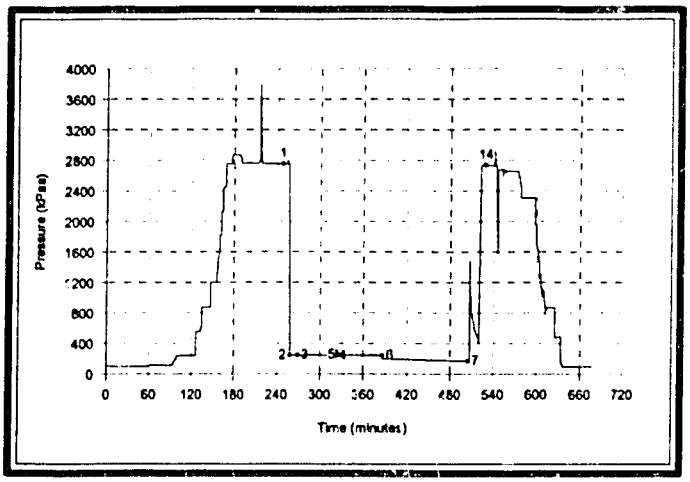


NORTHROCK ET AL SUMMIT CREEK - DRILL STEM TEST
B-44-64-30-125-45
DST# 3

BAKER HUGHES
Baker Oil Tools

Formation: LITTLE BEAR
Interval - from: 238.00 **to:** 245.00 m

Recorder# 70390 at 241.00 m



Maximum Btm Hole Temperature @ FSI: 13.4 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	2754		
2	Start of 1st Flow	241		
3	End of 1st Flow	244	10.5	
4	End of 1st Shut-in	234	53.0	
5	Start of 2nd Flow	249		
6	End of 2nd Flow	242	59.5	
7	End of 2nd Shut-in	168	121.0	
14	Final Hydrostatic	2731		

Liquid Recovery of 85.00 m

Recovery	*Description*	*Salinity*
85.00 m	DRILLING MUD	

Test Date: 2004-02-01
Test Type: INFLATE STRADDLE
Tester Name: SHANE NOLIN
Drill Pipe O.D.: 102.00 mm
Drill Collar I.D.: 57.00 mm
Drill Collar Length: 84.64 m
Hole Size: 311.00 mm

Blow Description:

PREFLOW - Weak air blow decreasing to nil in 3.5 minutes. No gas to surface. FINAL FLOW - No blow throughout.

Remarks:

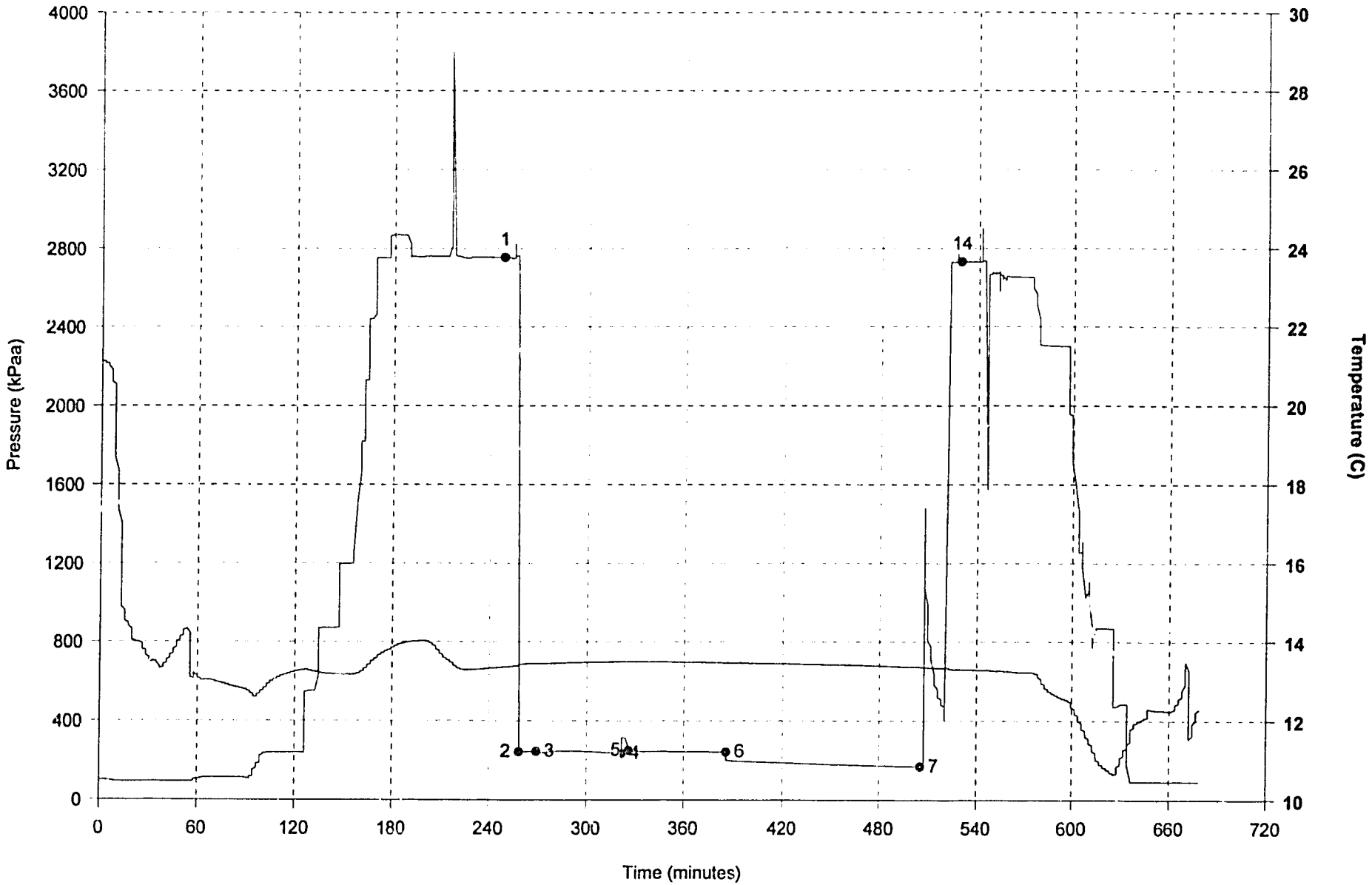
The available results suggest virtually no permeability within the interval tested. The formation pressure drops when the tool is closed as the fluid recovery (while not much) is removed from the formation. The recovery recorder indicates that virtually all of the fluid recovered was picked up when the tool was opened while trying to free the packers.

BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 3
Recorder: 70390

Pressure (kPaa) at Critical Points:

1:	2754	4:	234	7:	168
2:	241	5:	249	14:	2731
3:	244	6:	242		

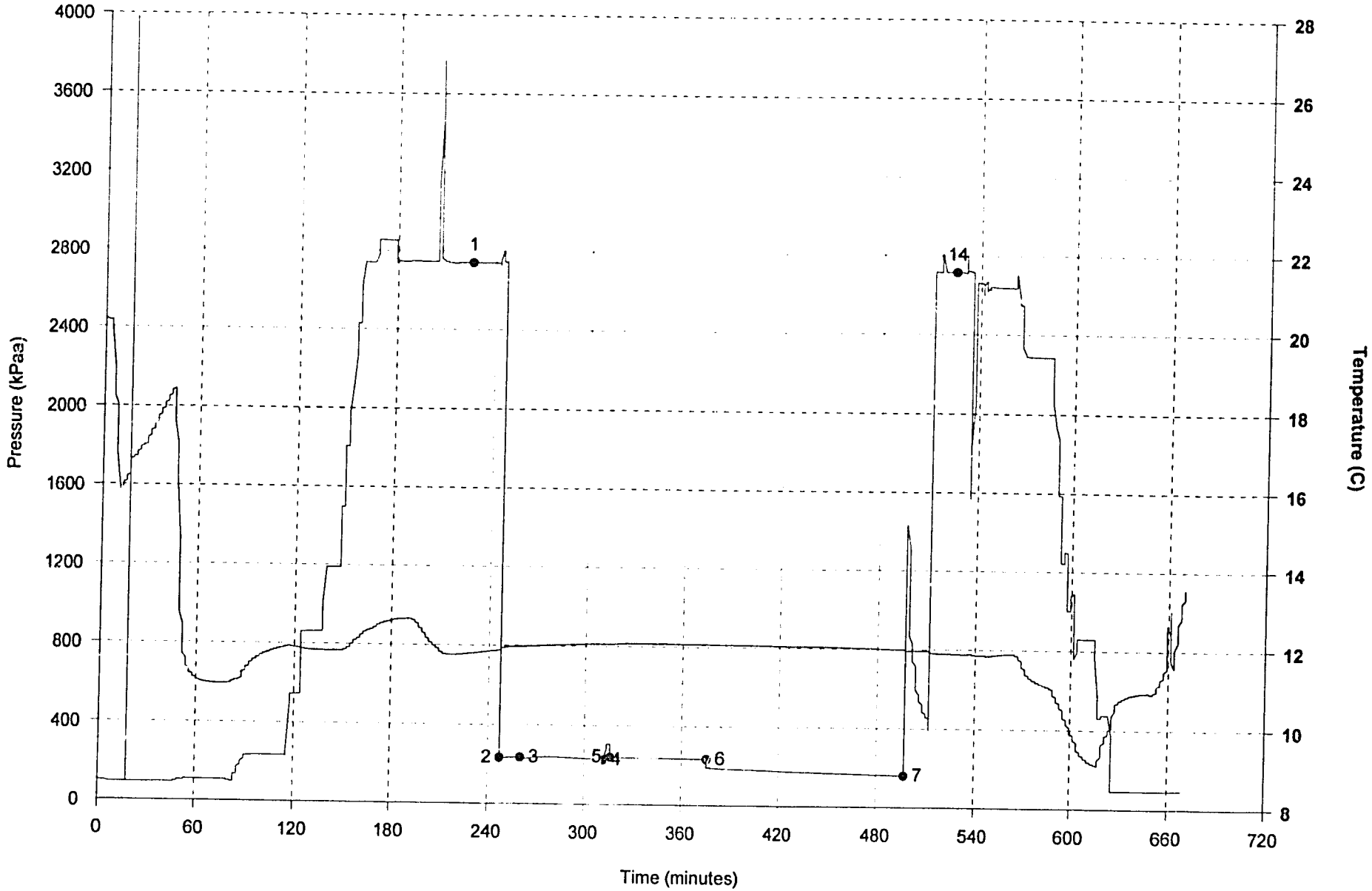


BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30 125-45
DST #: 3
Recorder: 75436

Pressure (kPaa) at Critical Points:

1:	2741	4:	226	7:	160
2:	233	5:	241	14:	2715
3:	235	6:	234		



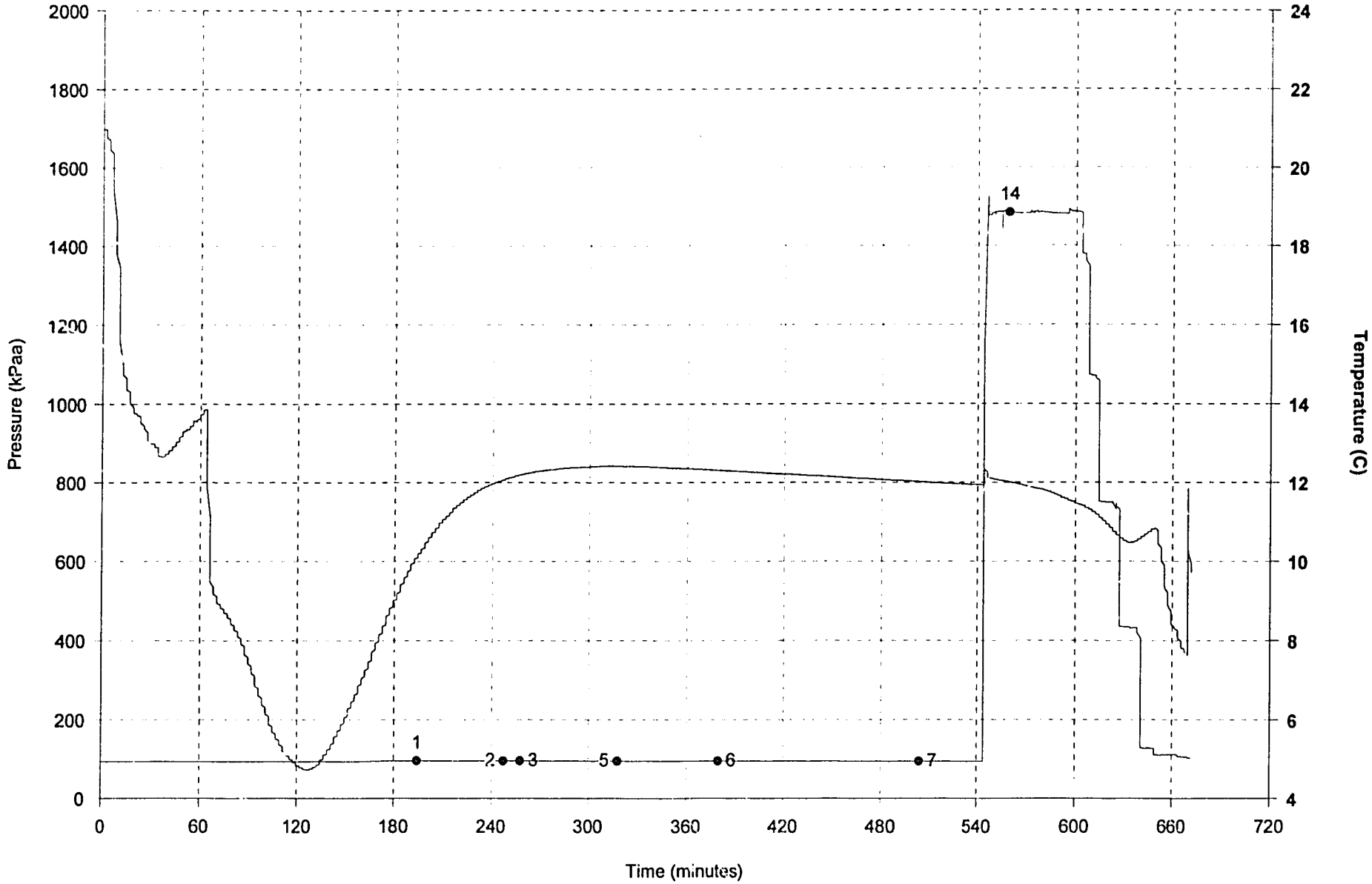
BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CREEK
B-44-64-30-125-45
DST #: 3
Recorder: 70115

Pressure (kPaa) at Critical Points:

1:	95	5:	94	14: 1484
2:	95	6:	94	
3:	95	7:	94	

Recovery recorder



NORTHROCK ET AL SUMMIT CRK B-44 - DRILL STEM TEST

BAKER HUGHES

Baker Oil Tools

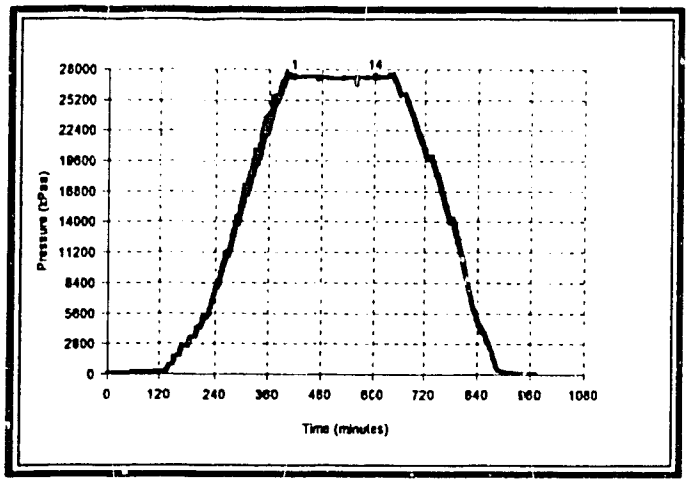
B-44-64-30-124-45

DST# 4

Formation: BEAR ROCK
Interval - from: 2707 **to:** 2727 m

Test Date: 2004-03-20
Test Type: INFLATE
Tester Name: CLAY CONSTANTINOFF
Cushion Type: WATER
Cushion Amount: 500 m
Drill Pipe O.D.: 102.00 mm
Drill Collar I.D.: 0.00 mm
Drill Collar Length: 0.00 m
Hole Size: 156.00 mm

Recorder# 75064 at 2709 m



Maximum Btm Hole Temperature @ FSI: 91.1 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	27318		
14	Final Hydrostatic	27333		

Blow Description:

Remarks:

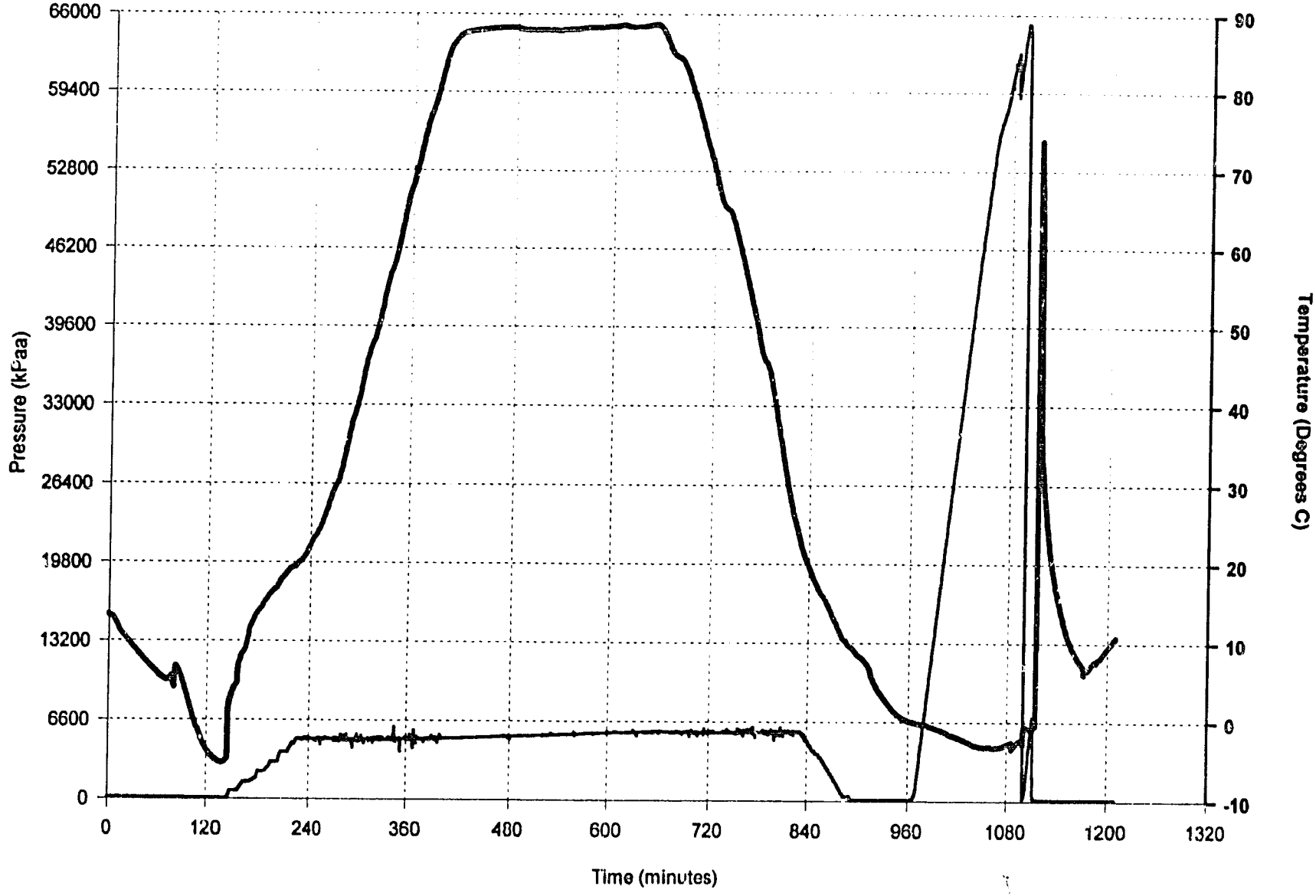
COULD NOT ESTABLISH A PACKER SEAT. PUMPED 3 TIMES. P.O.O.H. AND HAD A BLOWN TOP PACKER.

Liquid Recovery of 500.00 m

Recovery	*Description*	*Salinity*
500.00 m	CUSHION FLUID	0

Baker Oil Tools Drill Stem Testing

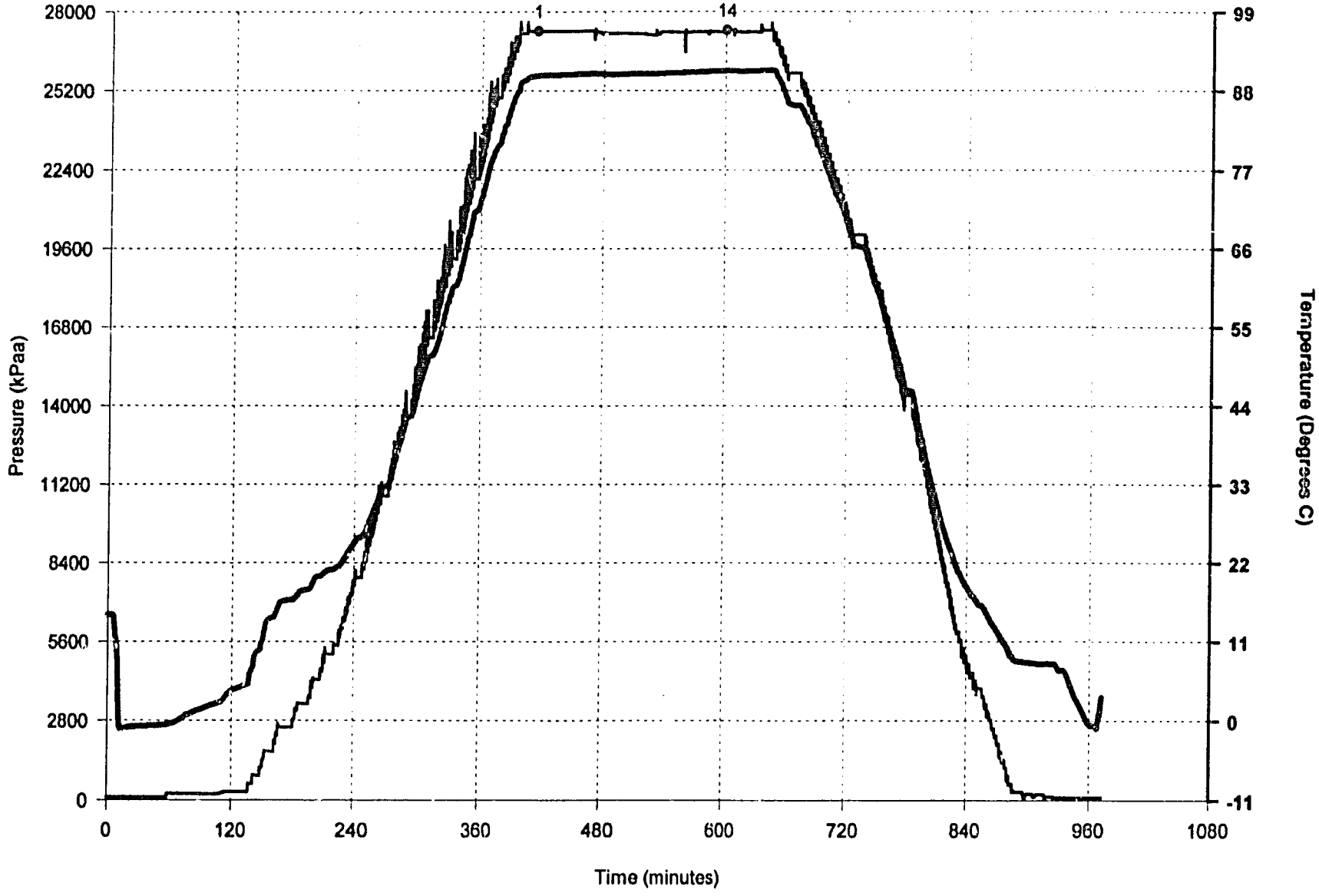
NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 4
Recorder: 70069



Baker Oil Tools Drill Stem Testing

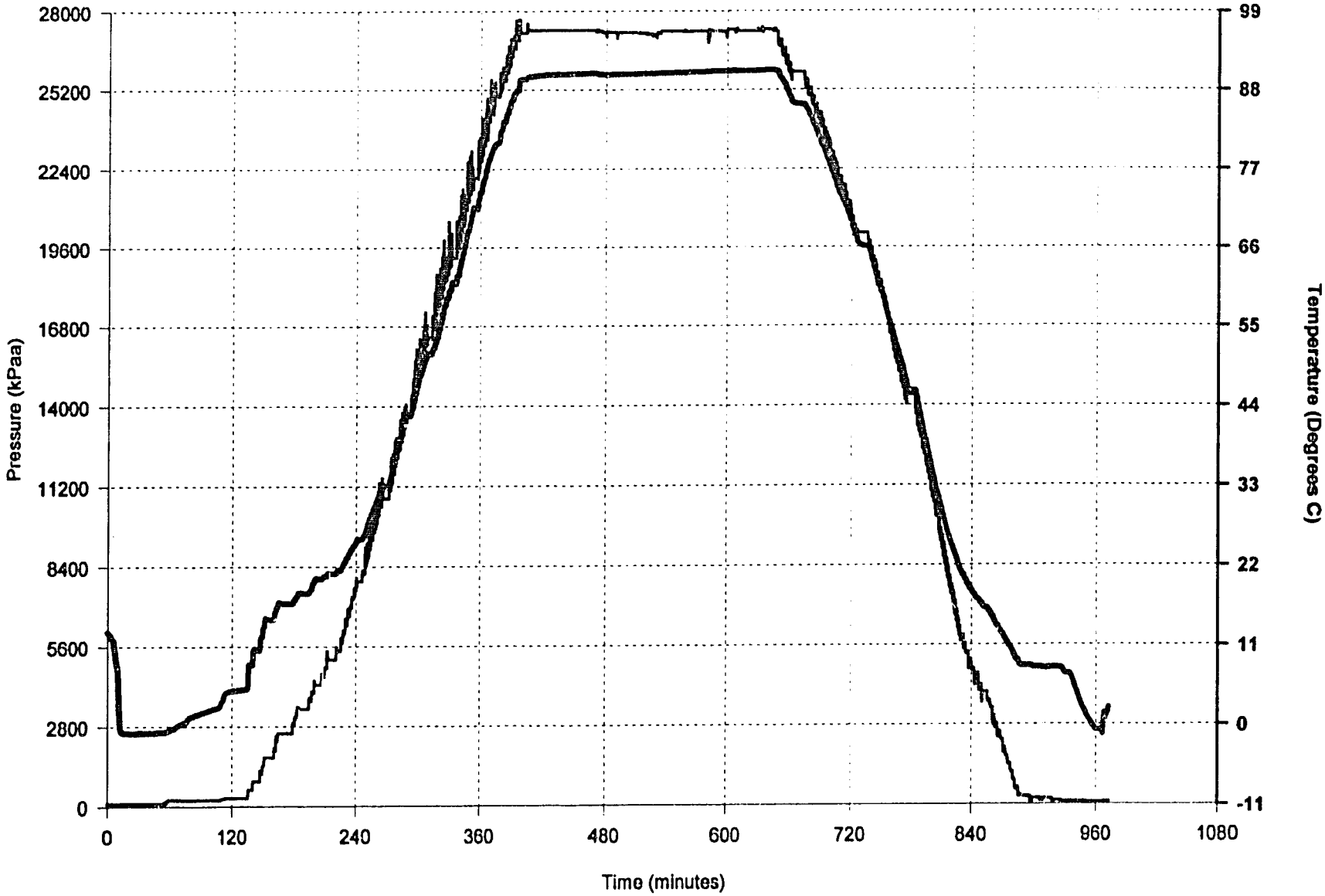
NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 4
Recorder: 75064

Pressure (kPaa) at Critical Points:
1: 27318
14: 27333



Baker Oil Tools Drill Stem Testing

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 4
Recorder: 75129

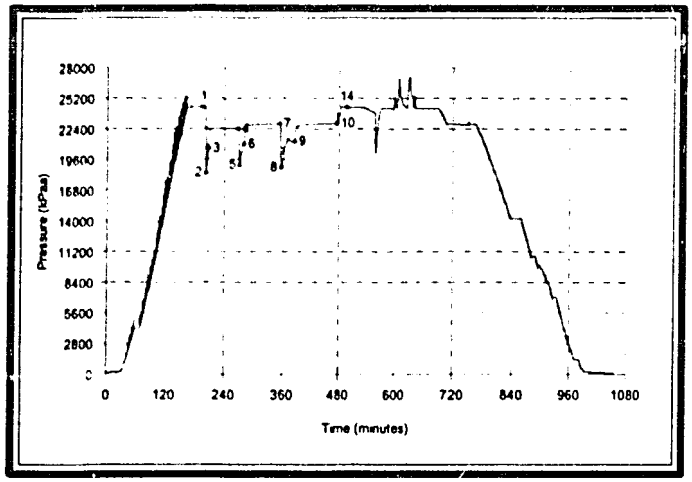


NORTHROCK ET AL SUMMIT CRK B-44 - DRILL STEM TEST
B-44-64-30-124-45
DST# 5

Baker Oil Tools

Formation: TIGHT
Interval - from: 2420.00 **to:** 3064.00 m

Recorder# **75064 at 2422.00 m**



Maximum Btm Hole Temperature @ FSI: 86.4 C

		Pressure (kPaa)	*Time (min)*	*Extrapolated Pressure (kPaa)*
1	Initial Hydrostatic	24375		
2	Start of 1st Flow	18351		
3	End of 1st Flow	20600	5.5	
4	End of 1st Shut-in	22406	60.0	22449.6
5	Start of 2nd Flow	19084		
6	End of 2nd Flow	20994	9.5	
7	End of 2nd Shut-in	22816	73.5	22843.9
8	Start of 3rd Flow	18855		
9	End of 3rd Flow	21238	28.5	
10	End of 3rd Shut-in	22881	90.5	22926.8
14	Final Hydrostatic	24371		

Liquid Recovery of 310.00 m

Test was reversed out.

Recovery	*Description*	*Salinity*
310.00 m	CONDENSATE	0

Test Date: 2004-03-20
Test Type: INFLATE
Tester Name: CLAY CONSTANTINOFF
Cushion Type: WATER
Cushion Amount: 500 m
Drill Pipe O.D.: 102.00 mm
Drill Collar I.D.: 0.00 mm
Drill Collar Length: 0.00 m
Hole Size: 156.00 mm

Blow Description:

PREFLOW - WEakair blow increasing to strong in 30 seconds, steady throughout. No gas to surface.

SECOND FLOW - Mud to surface in 7 minutes. Approximately 5 m3 of mud sucked out of flare tank.

FINAL FLOW - Gas to surface immediately. Minimal mud cut condensate spray.

Remarks:

Results suggest high permeablity within the interval tested. Initial shut-in pressures decreasing slightly thoughout, used extrapolated pressure with caution. Ran a 500 meter water cushion.

Gas Measured with FLOOR MANIFOLD

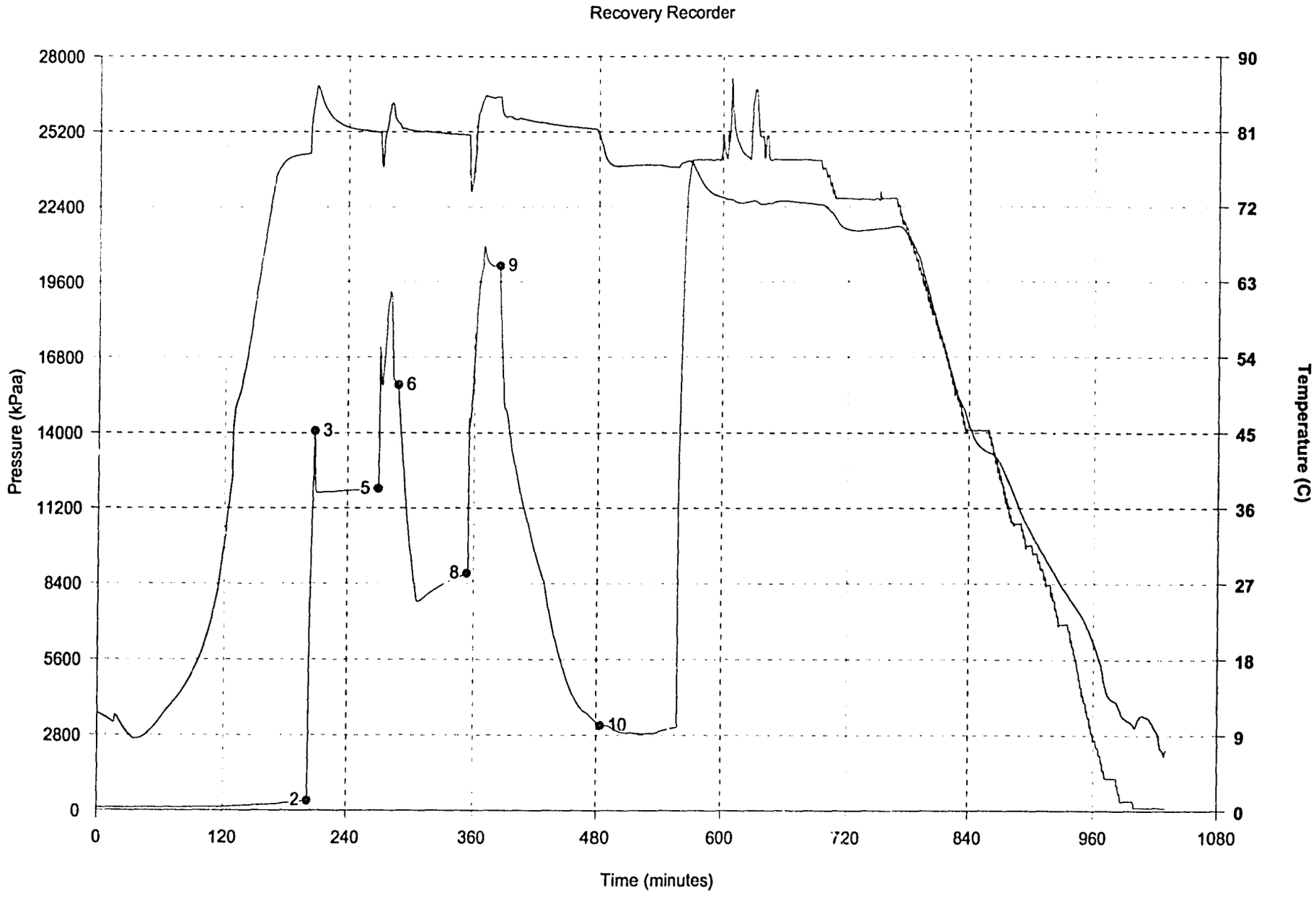
Flow#	*Time (min)*	*Surface Choke (mm)*	*Surface Pressure (kPaa)*	*Gas Rate (m3/day)*
3	5	19.05	7000	460 870
3	10	19.05	10000	678 248
3	15	19.05	11000	752 002
3	20	19.05	10000	678 248
3	25	19.05	10000	678 248
3	30	19.05	10000	678 248

BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 70069

Pressure (kPaa) at Critical Points:

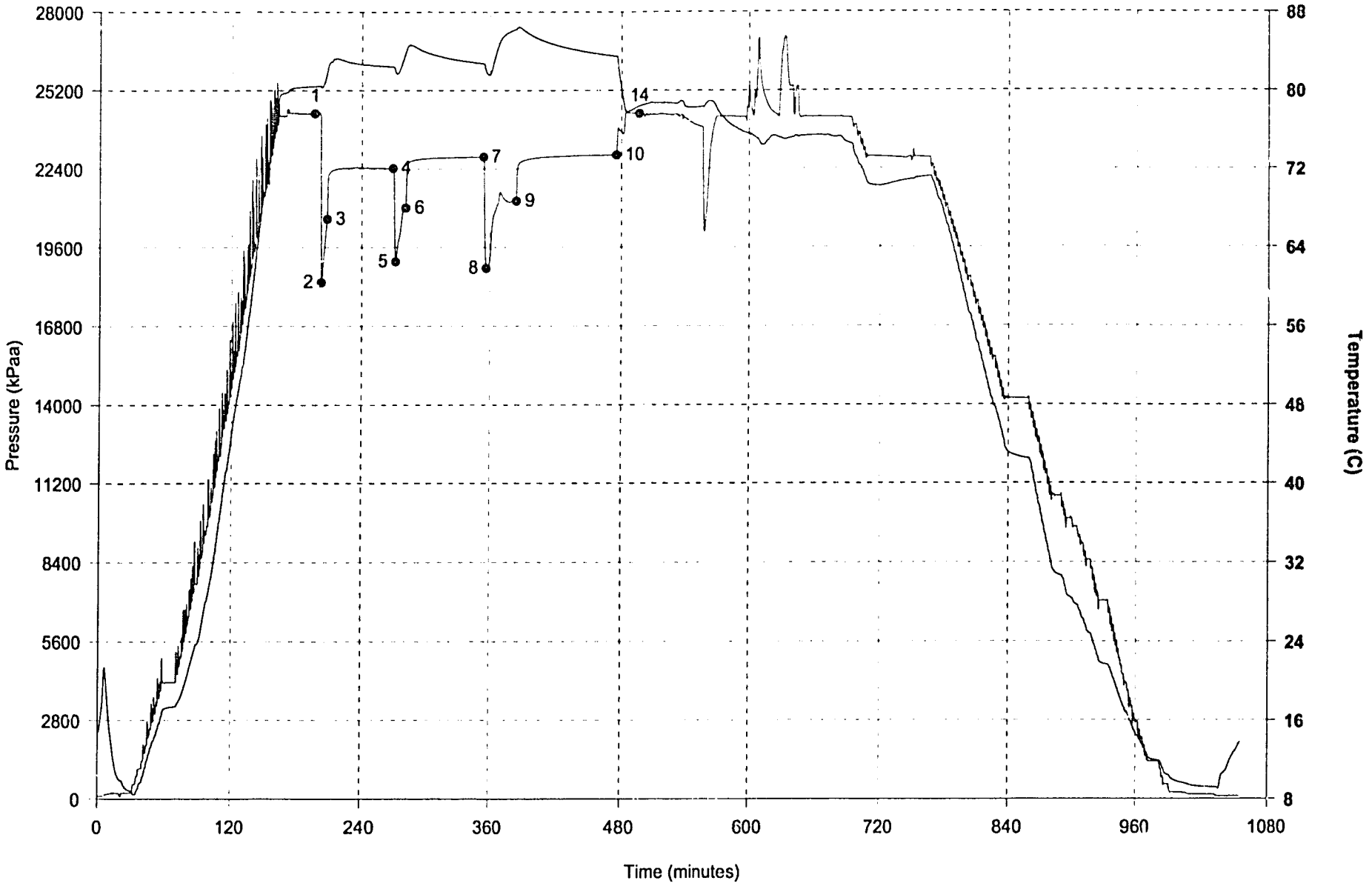
2: 361	6: 15768	10: 3161
3: 14068	8: 8771	
5: 11924	9: 20193	



BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 75064

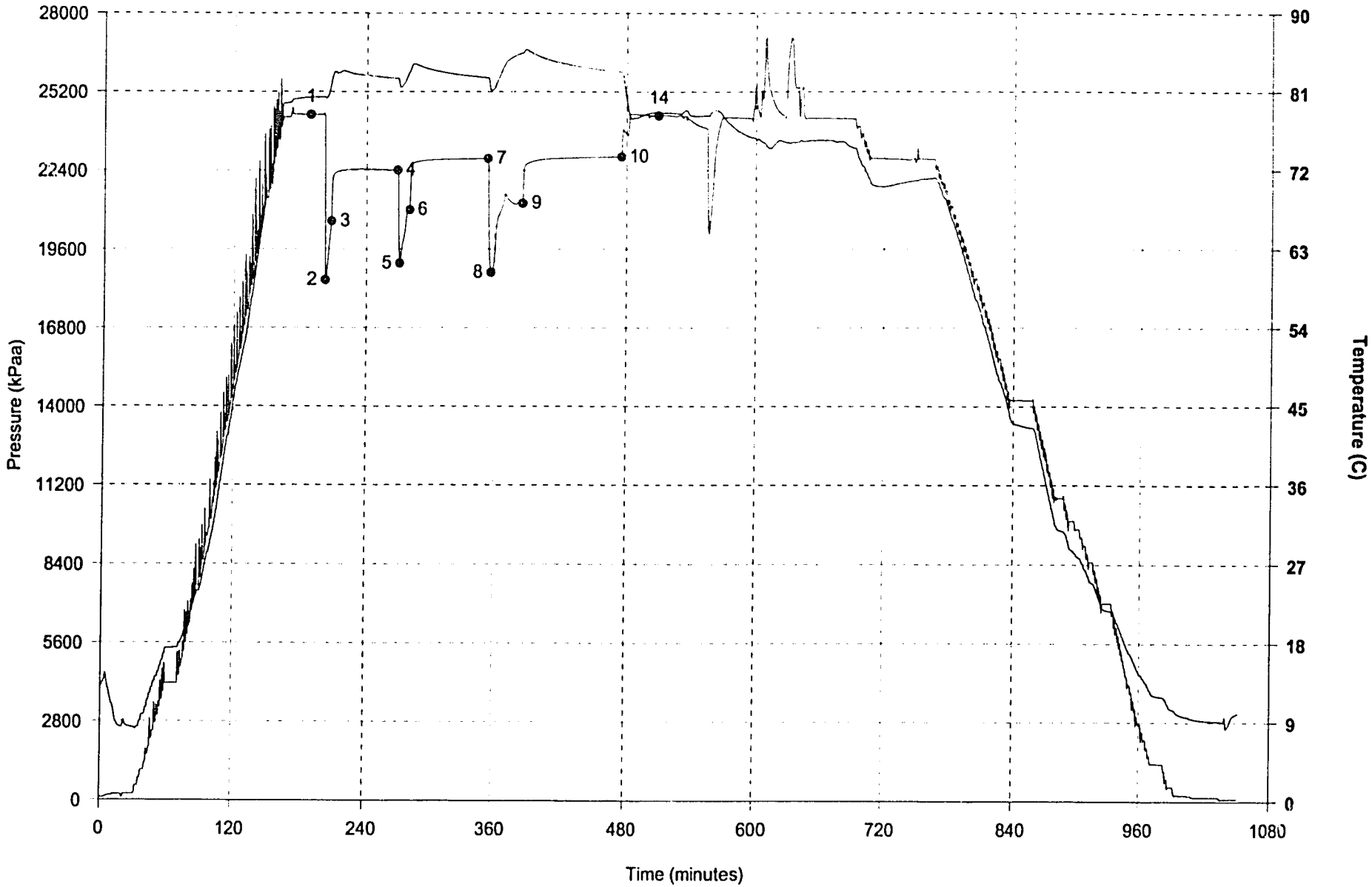
1: 24375	4: 22406	7: 22816	10: 22881
2: 18351	5: 19084	8: 18855	14: 24371
3: 20600	6: 20994	9: 21238	



BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 75129

1: 24378	4: 22404	7: 22814	10: 22880
2: 18502	5: 19096	8: 18770	14: 24341
3: 20596	6: 20994	9: 21227	



NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST# 5
Recorder 75064

Build-up and Flow Curve Increments

Flow# 1

Chart Label	Time (min)	Pressure (kPaa)
2	0.0	18351
	1.0	18691
	2.0	19169
	3.0	19619
	4.0	20054
	5.0	20423
3	5.5	20600

Shutin# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	0.0		20600		424.3405	
	1.5	1608	22208	4.6667	493.1954	*
	3.0	1690	22290	2.8333	496.8450	*
	4.5	1735	22334	2.2222	498.8172	*
	6.0	1758	22358	1.9167	499.8677	*
	7.5	1774	22373	1.7333	500.5561	*
	9.0	1789	22388	1.6111	501.2403	*
	10.5	1804	22404	1.5238	501.9195	*
	12.0	1811	22411	1.4583	502.2441	*
	13.5	1816	22416	1.4074	502.4548	*
	15.0	1819	22418	1.3667	502.5868	*
	16.5	1822	22421	1.3333	502.7093	*
	18.0	1825	22424	1.3056	502.8422	*
	19.5	1827	22426	1.2821	502.9426	*
	21.0	1830	22430	1.2619	503.0876	*
	22.5	1833	22433	1.2444	503.2313	*
	24.0	1837	22436	1.2292	503.3886	*
	25.5	1841	22441	1.2157	503.5817	*
	27.0	1842	22441	1.2037	503.6061	*
	28.5	1843	22442	1.1930	503.6502	*
	30.0	1842	22442	1.1833	503.6386	*
	31.5	1839	22439	1.1746	503.5087	*
	33.0	1838	22437	1.1667	503.4390	*
	34.5	1833	22433	1.1594	503.2172	*
	36.0	1831	22430	1.1528	503.1263	*
	37.5	1831	22430	1.1467	503.1069	*
	39.0	1829	22428	1.1410	503.0225	*
	40.5	1828	22428	1.1358	503.0126	*
	42.0	1828	22427	1.1310	502.9724	*
	43.5	1828	22427	1.1264	502.9742	*
	45.0	1828	22427	1.1222	502.9763	*
	46.5	1823	22422	1.1183	502.7513	
	48.0	1819	22419	1.1146	502.5926	
	49.5	1817	22417	1.1111	502.5165	
	51.0	1814	22414	1.1078	502.3805	
	52.5	1813	22412	1.1048	502.3112	
	54.0	1811	22410	1.1019	502.2098	
	55.5	1809	22409	1.0991	502.1634	

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST# 5
Recorder 75064

Build-up and Flow Curve Increments

Shutin# 1

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	57.0	1808	22408	1.0965	502.1122	
	58.5	1808	22407	1.0940	502.0871	
4	60.0	1806	22406	1.0917	502.0266	

Flow# 2

Chart Label	Time (min)	Pressure (kPaa)
5	0.0	19084
	1.0	19355
	2.0	19692
	3.0	19877
	4.0	20048
	5.0	20329
	6.0	20660
	7.0	20925
	8.0	21023
	9.0	20984
6	9.5	20994

Shutin# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	0.0		20994		440.7397	
	2.0	1599	22593	8.5000	510.4377	
	4.0	1672	22666	4.7500	513.7456	
	6.0	1702	22695	3.5000	515.0847	
	8.0	1720	22714	2.8750	515.9153	
	10.0	1734	22727	2.5000	516.5304	
	12.0	1744	22738	2.2500	516.9986	
	14.0	1753	22746	2.0714	517.3978	
	16.0	1759	22753	1.9375	517.7004	
	18.0	1765	22759	1.8333	517.9736	
	20.0	1770	22764	1.7500	518.1805	
	22.0	1776	22769	1.6818	518.4470	
	24.0	1780	22774	1.6250	518.6494	
	26.0	1784	22778	1.5769	518.8338	
	28.0	1788	22781	1.5357	518.9895	
	30.0	1791	22785	1.5000	519.1505	
	32.0	1793	22787	1.4688	519.2398	
	34.0	1795	22789	1.4412	519.3488	
	36.0	1797	22791	1.4167	519.4389	
	38.0	1800	22794	1.3947	519.5515	
	40.0	1802	22795	1.3750	519.6338	
	42.0	1803	22797	1.3571	519.6937	*
	44.0	1805	22799	1.3409	519.7788	*
	46.0	1807	22801	1.3261	519.8716	*
	48.0	1808	22802	1.3125	519.9333	*
	50.0	1809	22803	1.3000	519.9821	*
	52.0	1811	22804	1.2885	520.0439	*
	54.0	1812	22806	1.2778	520.0990	*
	56.0	1813	22807	1.2679	520.1396	*

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST# 5
Recorder 75064

Build-up and Flow Curve Increments

Shutin# 2

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	58.0	1814	22808	1.2586	520.1949	*
	60.0	1815	22809	1.2500	520.2426	*
	62.0	1816	22810	1.2419	520.3012	*
	64.0	1817	22811	1.2344	520.3518	*
	66.0	1818	22812	1.2273	520.3886	*
	68.0	1820	22813	1.2206	520.4474	*
	70.0	1820	22814	1.2143	520.4784	*
	72.0	1821	22815	1.2083	520.5302	*
7	73.5	1822	22816	1.2041	520.5513	*

Flow# 3

Chart Label	Time (min)	Pressure (kPaa)
8	0.0	18855
	1.0	18746
	2.0	18829
	3.0	19073
	4.0	19390
	5.0	20104
	6.0	20502
	7.0	20736
	8.0	20822
	9.0	20924
	10.0	21042
	11.0	21137
	12.0	21274
	13.0	21561
	14.0	21533
	15.0	21440
	16.0	21372
	17.0	21319
	18.0	21281
	19.0	21253
	20.0	21229
	21.0	21205
	22.0	21185

Shutin# 3

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	0.0		21238		451.0354	
	2.5	1361	22599	18.4000	510.7074	
	5.0	1427	22664	9.7000	513.6658	
	7.5	1465	22702	6.8000	515.3996	
	10.0	1491	22729	5.3500	516.5852	
	12.5	1511	22749	4.4800	517.5109	
	15.0	1528	22765	3.9000	518.2567	
	17.5	1542	22779	3.4857	518.8990	
	20.0	1553	22791	3.1750	519.4283	
	22.5	1563	22800	2.9333	519.8543	
	25.0	1571	22808	2.7400	520.2230	
	27.5	1578	22815	2.5818	520.5378	
	30.0	1584	22821	2.4500	520.8037	
	32.5	1588	22826	2.3385	521.0240	
	35.0	1592	22830	2.2429	521.1869	
	37.5	1596	22834	2.1600	521.3788	
	40.0	1600	22838	2.0875	521.5647	
	42.5	1605	22842	2.0235	521.7650	
	45.0	1608	22846	1.9667	521.9322	
	47.5	1612	22850	1.9158	522.1067	
	50.0	1616	22853	1.8700	522.2759	
	52.5	1619	22857	1.8286	522.4250	*
	55.0	1622	22860	1.7909	522.5681	*

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electronic or printed format.

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST# 5
Recorder 75064

Build-up and Flow Curve Increments

Flow# 3

Chart Label	Time (min)	Pressure (kPaa)
	23.0	21209
	24.0	21227
	25.0	21239
	26.0	21242
	27.0	21248
	28.0	21237
9	28.5	21238

Shutin# 3

Chart Label	Time (min)	Delta P (kPaa)	Pressure (kPaa)	Abscissa (T+dT)/dT	Pressure² (kPaa²/10^6)	Used for Extrap
	57.5	1625	22862	1.7565	522.6815	*
	60.0	1627	22865	1.7250	522.7999	*
	62.5	1630	22867	1.6960	522.9074	*
	65.0	1632	22870	1.6692	523.0146	*
	67.5	1634	22871	1.6444	523.0948	*
	70.0	1635	22873	1.6214	523.1592	*
	72.5	1636	22874	1.6000	523.2183	*
	75.0	1638	22876	1.5800	523.2893	*
	77.5	1639	22877	1.5613	523.3494	*
	80.0	1640	22878	1.5438	523.3905	*
	82.5	1641	22879	1.5273	523.4292	*
	85.0	1642	22880	1.5118	523.4737	*
	87.5	1643	22880	1.4971	523.5036	*
	90.0	1643	22881	1.4833	523.5300	*
10	90.5	1643	22881	1.4807	523.5355	*

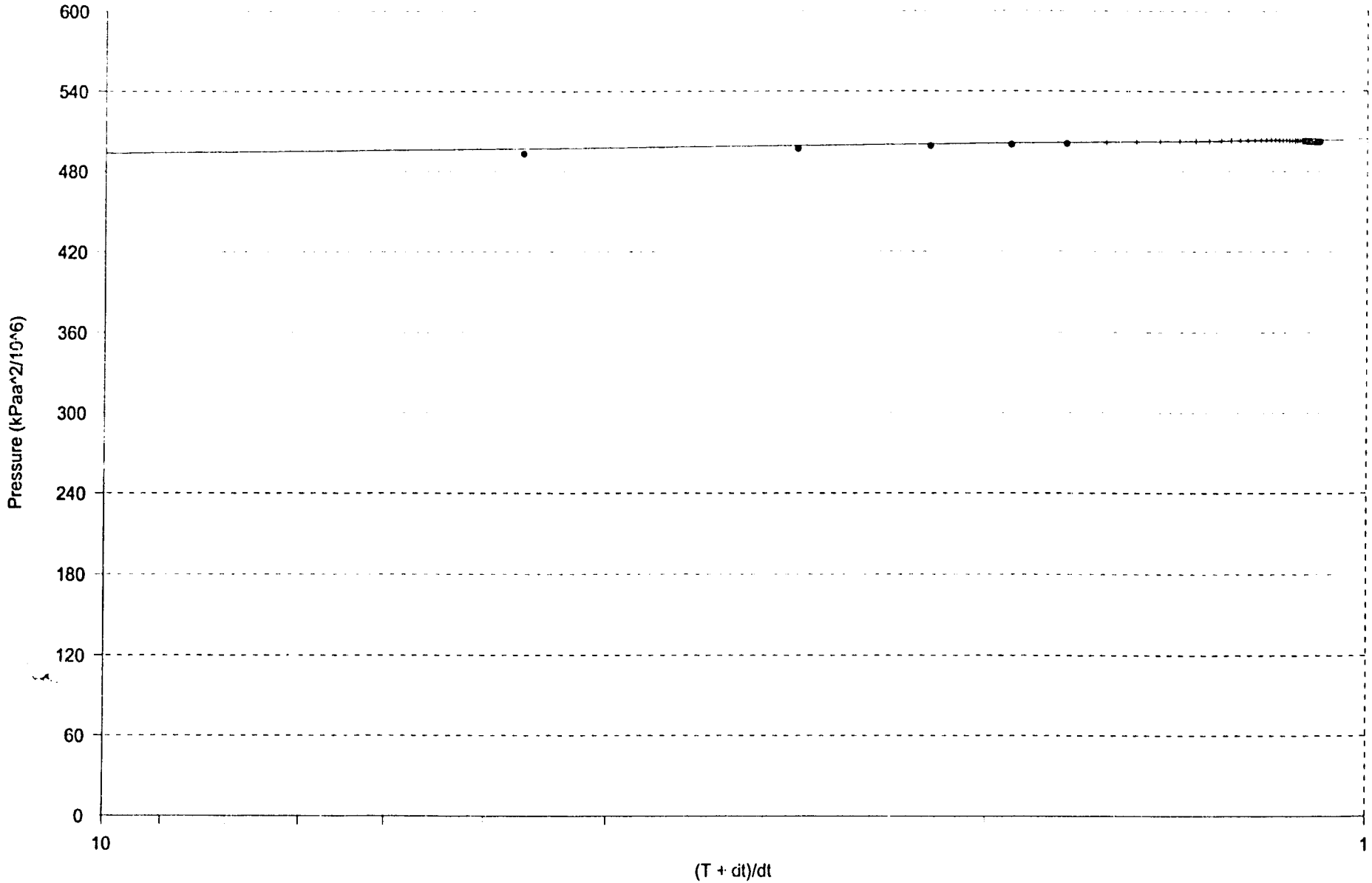
Horner Extrapolation

Shut-in#	Extrapolated Pressure (kPaa)	Extrapolated Slope (kPaa/cycle)
1	22461.6	16.45962
2	22843.9	16.26013
3	22926.8	11.99598

Note: Increment listing is filtered to include critical data only. Complete time/pressure data are available in electroni : or printed format.

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 75064

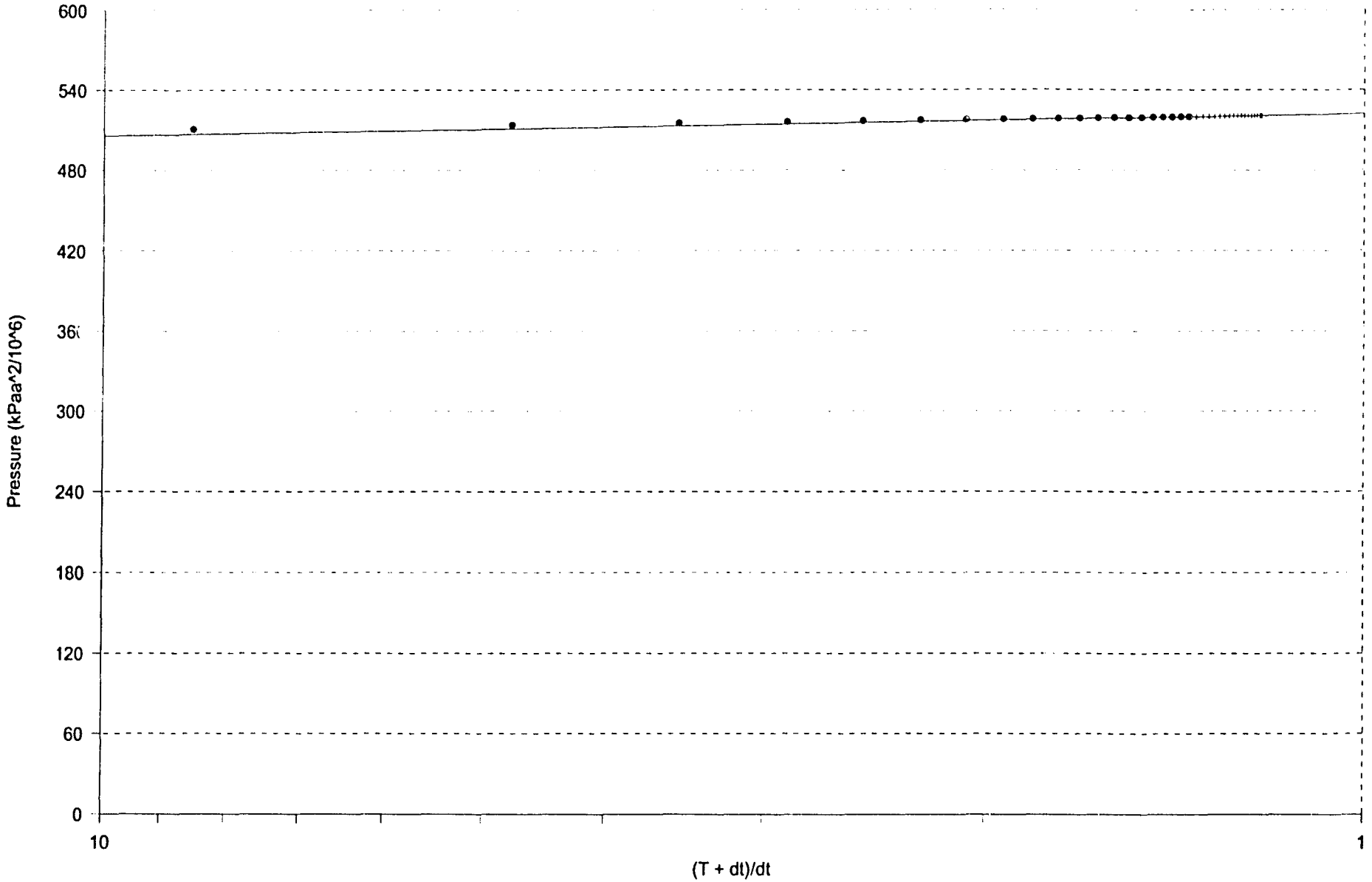
Shut-in #1
Slope = 10.59 kPaa^2/10^6/cycle
Extrapolated Pressure = 22449.64 kPaa



BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 75064

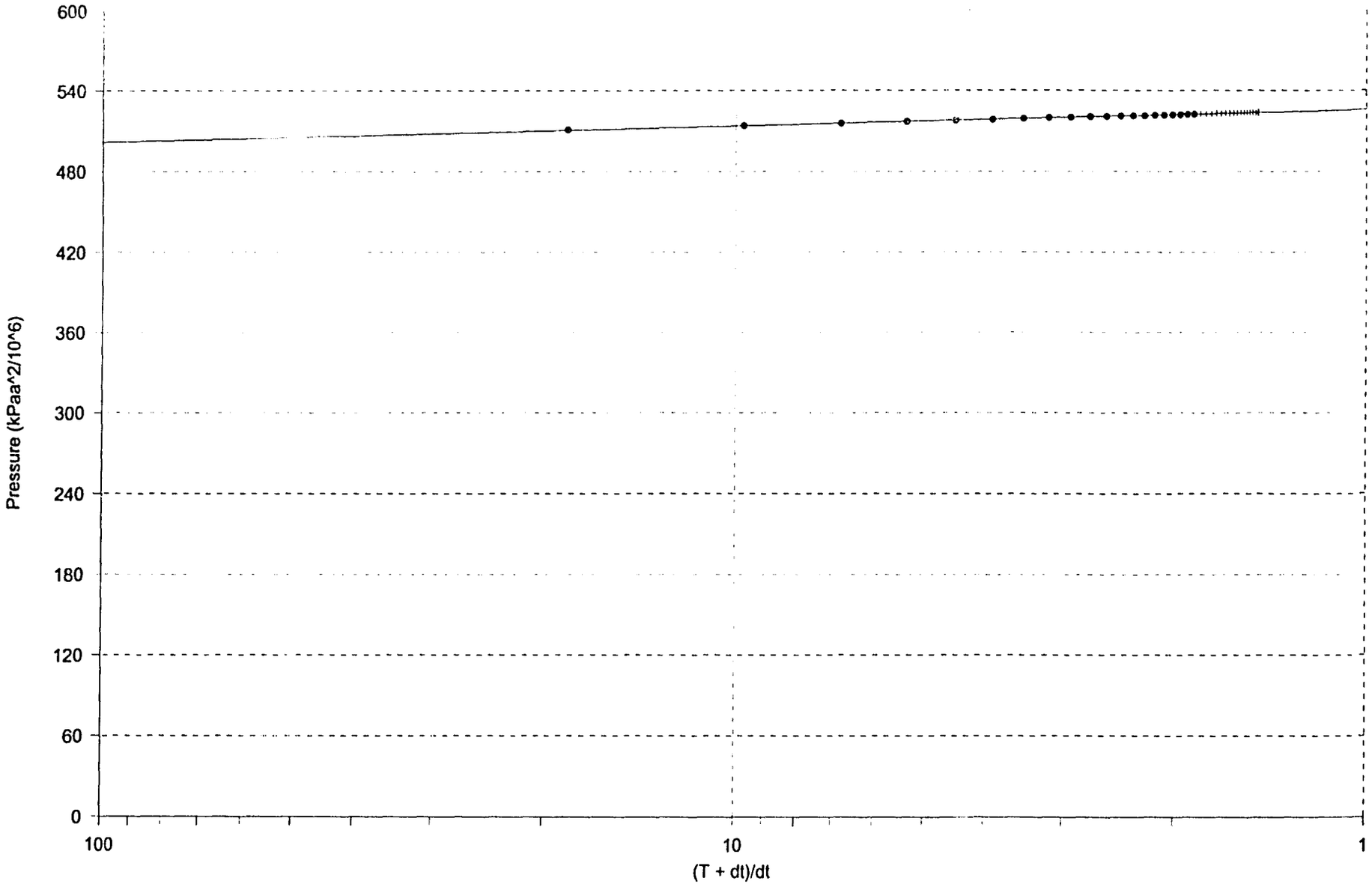
Shut-in #2
Slope = 16.26 kPaa^2/10^6/cycle
Extrapolated Pressure = 22843.86 kPaa



BAKER OIL TOOLS DRILL STEM TESTING

NORTHROCK ET AL SUMMIT CRK B-44
B-44-64-30-124-45
DST #: 5
Recorder: 75064

Shut-in #3
Slope = 12.00 kPaa^2/10^6/cycle
Extrapolated Pressure = 22926.78 kPaa



FLARE AND PLUME DISPERSION ANALYSIS

BEHR
Energy Services Ltd.

NATIONAL ENERGY BOARD
Exploration and Production
APR 0 5 2005

2005 03 28

Northrock Resources Ltd.
3500, 700 - 2 Street S.W.
Calgary, AB T2P 2W2

Attention: Diane Shirra

Dear Diane

RE: NORTHROCK et al SUMMIT CREEK B-44-64-30-125-45
FLARE AND PLUME DISPERSION ANALYSIS

Enclosed for your review is the H_2S Release Rate Determination, EUB Well Test Spreadsheet, EUB Model Sour Well EPZ Calculation Spreadsheet, a representative gas analysis and a 1:50 000 topographical map. In summary, flaring modelling reveals that the well should meet air-quality guidelines at 60 $10^3m^3/d$ when flaring is conducted through a 12-m flare stack. The emergency planning zone radius for an unignited release is 1000 m.

Please call me or Todd Wilson at 403-444-6940 if you have any questions regarding the enclosures.

Yours truly
BEHR Energy Services Ltd.

K. Niewinski

Kris Niewinski, M.Sc.F.

Enclosures

510, 736 - 8th Avenue S.W., Calgary, AB T2P 1H4
Office: 403-444-6940 Fax: 403-261-8965

NORTHROCK et al SUMMIT CREEK B-44-64-30-125-45

H_2S RELEASE RATE DETERMINATION

An H_2S concentration of 7200 ppm was found from a production test dated 2005 02 23. This H_2S concentration has been rounded up to 1.00% and applied to both the upper and lower zones in determining the H_2S release rate. The sandface AOF of 4745.7 $10^3m^3/d$ for the upper zone was calculated from DST 5. From the pressure test after the lower zone was acid simulated, a shut in pressure of 23980.37 kPa and flowing pressure of 17470.99 kPa along with a flow rate of 202.58 $10^3m^3/d$ was used in calculating a sandface AOF of 431.7 $10^3m^3/d$.

The H_2S concentration of 1.00% was used, along with the AOF of 4745.7 $10^3m^3/d$ to calculate a release rate of 0.5493 m^3/s for the upper zone. The H_2S concentration of 1.00% was used, along with the AOF of 431.7 $10^3m^3/d$ to calculate a release rate of 0.0500 m^3/s for the lower zone. The cumulative H_2S release rate for the well is 0.5993 m^3/s and is used in determining the Emergency Planning Zone.

FLARE AND PLUME DISPERSION ANALYSIS

FLARING

1. Well ground elevation – 580 m.
2. Maximum ground elevation within 7 km radius – 790 m.
3. Distance to maximum elevation – 6850 m northeast.
4. Model was run for 12.2 m flare stack. Stable plume criterion elevation was exceeded, complex terrain modelling is required.
5. Proposed flaring parameters, heating value and thermal radiation are acceptable.
6. Prediction of ground SO_2 – 20 microgram/m^3 does not exceed guidelines.

EUB MODELS

1. Requested H_2S concentration – 1%.
2. H_2S release rate – 0.5993 m^3/s.
3. Maximum terrain elevation for the release to flow over is 614 m, otherwise the plume flows around the terrain.
4. Worst Case Screening Meteorology – maximum distance 3700 m for outdoor evacuation. (20 ppm for 3 min.) at Stability Class F.
5. Emergency Planning Zone – maximum distance 1000 m (100 ppm for 60 min.).
6. EPZ is the maximum downwind distance to the concentration threshold that defines the EPZ.
7. There are no residents within an approximate 40 km radius.
8. The rivervalley to the southwest is about 6 km from the well.
9. Although the release is dense and unignited, the H_2S release initially will not rise due to buoyancy.
10. Dense sour gas releases will mix and be diluted with fresh air as the release travels downwind and eventually behave as a neutrally buoyant or passive release.
11. Based on modelling, maximum distances for concentrations specified in EUB risk assessment guidelines do not exceed distance to the nearest residence.

SUPPORTING INFORMATION

Attachment 1 H_2S Release Rate Determination
Attachment 2 EUB Well Test Ver 1.xls Sour Well Test Flaring Permit Spreadsheet
Attachment 3 EUB Model Sour Well EPZ Calculation Spreadsheet
Attachment 4 Gas Analysis
Attachment 5 Topographical Map

BEHR

ATTACHMENT 1

MAXIMUM POTENTIAL H_2S RELEASE RATE DETERMINATION - AUDIT SHEETS

POTENTIAL H_2S RELEASE RATE SUMMARY SHEET - MAIN HOLE

Operator Name:	Northrock Resources Ltd	**Prepared by:**	Yi Gang
Well Location:	B-44-64-30-125-45		BEHR Energy Services Ltd
Wellbore Section (eg. Intermediate, Main):	Main	**Date:**	2005 03 01 **Page:** -
			Revision: -
Nearest Urban Centre:	**Name:** Unknown[1]	**Distance From Well:**	- km

H_2S RELEASE RATE SUMMARY

Formation Name	H_2S Concentration		AOF Potential		H_2S	Adjusted H_2S Release Rates[B]			Foot-notes
	Reference Well Unique ID	H_2S Conc. %	Reference Well Unique ID	Sandface AOF $10^3m^3/d$	Release Rate m^3/s	Drilling m^3/s	Servicing[A] m^3/s	Susp/Prod[A] m^3/s	
Upper Zone	B-44-64-30-125-45	1 00	B-44-64-30-125-45	4745 7	0 5493	-	0 3949	0 1291	2, 3
Lower Zone	B-44-64-30-125-45	1 00	B-44-64-30-125-45	431 7	0 0500	-	0 0497	0 0449	4, 5
					Total	-	0 4446	0 1739	

EMERGENCY PLANNING ZONE SUMMARY

Operation Type	Adjusted H_2S Release Rate - m^3/s	Calculated EPZ km	Footnotes
Drilling	-	-	
Completion/Servicing	0 4446	-	2, 4
Suspended/Producing	0 1739	-	3, 5

LEVEL DESIGNATION SUMMARY

Operation Type	Adjusted H_2S Release Rate - m^3/s	Facility Level (1,2,3 or 4)	Footnotes
Suspended/Producing	0.1739	-	3, 5

Refer to Alberta Guide G-56 or BC Oil and Gas Handbook for land-use set-back requirements corresponding to each facility level

Footnotes:
1. A survey plan was not available when this report was prepared
2. Wellhead AOF for Upper Zone up Casing is 3412 2 $10^3m^3/d$
3. Wellhead AOF for Upper Zone up Tubing is 1115 1 $10^3m^3/d$
4. Wellhead AOF for Lowerr Zone up Casing is 429 4 $10^3m^3/d$
5. Wellhead AOF for Lowerr Zone up Tubing is 387.6 $10^3m^3/d$
6. H_2S concentration has been rounded up from 7200 ppm

Supplemental Instructions:

A. All formations may not be open to the wellbore during servicing and producing operations. Therefore, the potential H_2S release rate for servicing may be limited to the formation or formations that are anticipated to be open to the wellbore during the planned operations. Similarly, the potential H_2S release rate for producing operations should be based on the formation or formations that contribute the maximum producing H_2S release rate throughout the life of the well. The H_2S release rate potential for formations not open to the wellbore for the servicing or producing calculations may be shown as 0 m^3/s.

B. Any adjustments to the H_2S release rates must be supported with appropriate calculations and assumptions.

C. All critical (special) sour wells require a full ERP and a detailed drilling program. Refer to Alberta Guide G-56 (or BC Oil and Gas Handbook) for definitions of critical (special) sour wells.

D. Complete one sheet for each grouping of formations that may be simultaneously produced.

Form A3

SOUR WELL RELEASE INPUT PARAMETERS

Administrative		*User Inputs*	*Comments*	*Warnings (if applicable)*
Licensee/Applicant		NORTHROCK RESOURCES LTD	as per well licence or application	
Mailing Address		3500,700-2nd Street S.W.		
City and Province		Calgary, Alberta		
Postal Code		T2P 2W2		
Contact Person	Name	Diane Shirra		
	Phone	403 2137-447		
	Fax	403 213-5479		
	eMail	shirra@northrock.ab.ca		
Analysis Type		BASE CASE	select "BASE CASE" or "ALTERNATE"	
Phase of Well Operations		Drilling	(Drilling, Servicing or Producing)	
Scenario Name		Drilling	used for 2nd label	
Well Details	***Units***		***Comments***	
Well Name		Northrock et al Summit Creek	name as per well licence, do not include location numbers (used for 1st label)	
Well Licence or Application Number		9211-N046-2-1 1994		
Oil or Gas Well ?		O Oil ◉ Gas	(OIL or GAS)	
Is Well Classified as Critical ?		O Yes ◉ No	(YES or NO)	
Well Bottom Hole Location		B-44-64-30-125-45	(LSD-SEC-TWP-RGE W7M)	
Well Surface Location		B-44-64-30-125-45	(LSD-SEC-TWP-RGE W7M) (used for 2nd label)	
Well Centre Elevation	m (ASL)	586		
Casing or Tubing Inside Diameter at Exit	mm	177.8		
Requested H_2S Concentration	% (dry)	1.00		
H_2S Release Rate	m³/s at 15°C and 101.325 kPa	0.60		
Sour Gas Composition	*mole fraction (dry, based on reference analysis)*			
H_2		0.0000		
He		0.0000		
N_2		0.0128		
CO_2		0.0151		
H_2S		0.0100	(spreadsheet will adjust reference analysis to requested H_2S and H_2O)	
CH_4		0.6895		
C_2H_6		0.1700		
C_3H_8		0.0677		
$i\text{-}C_4H_{10}$		0.0113		
$n\text{-}C_4H_{10}$		0.0155		
$i\text{-}C_5H_{12}$		0.0039		
$n\text{-}C_5H_{12}$		0.0033		
$n\text{-}C_6H_{14}$		0.0009		
$n\text{-}C_7H_{16}^+$		0.0000		
Total		1.00000		
Water Content at Reservoir Conditions				
H_2O (default is zero)	mg of water/Sm³ of wet gas			

WELL ALTERNATE INPUT PARAMETERS

User Inputs if Alternate Analysis		No Inputs Required	DEFAULTS	BASE CASE INPUTS
Wellhead Stagnation Temperature T	°C		-35.9	-35.9
Well Release Height h	m		1.0	1.0
Well Release Duration Before Ignition	minutes		15	15
Release Angle			HORIZONTAL	HORIZONTAL
D Plane Drag Coefficient			1.0	1.0
Ambient Temperature Ta	°C		5.0	5.0
Relative Humidity rh	%		50	50
Uref Ambient Wind Speed at measurement height ua	m/s		1.0	1.0
Ambient Measurement Height za	m		10.0	10.0
Stability Class (A=1, B=2, C=3, D=4, E=5, F=6)		F (Very Stable)	6	6
Surface Roughness Height Zo	m		0.1	0.1
Planning Endpoint Exposure TLeC (TLeC=Toxic Load Equivalent Concentration)	H2S ppm		100	100
Planning Endpoint Exposure Duration	minutes		60	60
Planning Concentration Exponent for Toxic Load, n			4.36	4.36
Evacuation Endpoint Exposure Concentration	H2S ppm		20	20
Evacuation Endpoint Exposure Averaging Time	minutes		3	3
Building Air Changes per Hour ACH			0.50	0.50
EUB Default Inputs			**DEFAULT**	**INPUT**
Maximum Exposure Time	minutes		180	180
Reference Total Fluctuation Intensity Iref			0.25	0.25
Reference Time for Reference Total Fluctuation Intensity	minutes		3	3
Stability Class F Plume Rise Wind Speed for Complex Terrain Criteria	m/s		1.0	1.0
Stability Class F Vertical Potential Temperature Gradient for Complex Terrain Criteria	K/m		0.035	0.035
Constants			**DEFAULT**	**INPUT**
Reference Temperature	°C		15.0	15.0
Reference Pressure	kPa		101.325	101.325
Ru - Universal Gas Constant	J/kmol/K or Pa*m³/K/kmol		8314.5	8314.5
Ru - Universal Gas Constant at reference conditions	m³/kmol		23.645	23.645
Gravitational Constant	m/s²		9.80665	9.80665
Average Vertical Temperature Gradient in Atmosphere	K/m		0.0065	0.0065

UNIGNITED H2S INPUT CALCULATIONS

NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Analysis: BASE CASE
Well Phase: DRILLING

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Moist Air Properties			DEFAULT	INPUT
Site Atmospheric Pressure (function of elev.)	kPa		94.481	94.481
Ambient temperature Tair ta	K		278.15	278.15
Relative Humidity, rh	%		50	0
Molar mass dry air, mma*1000	kg/kmol		28.9625	28.9625
Cp dry Air, cpa	J/kg/K		1004.0	1004.0
Molar mass water, mmw*1000	kg/kmol		18.0153	18.0153
Density Water Liquid rhow	kg/m³		999.1	999.1
Cp Water Vapour, cpwv	J/kg/K		1861.7	1861.7
Cp Water Liquid, cpwl	J/kg/K		4186.3	4186.3
Latent Heat Water, dhw	J/kg		2465900	2465900
SHAW Intercept			14.07	14.07
SPEW slope			5209	5209
SPCW correction			-1.08	-1.08
Water Boiling Point for Site Pressure	°C		98.15	98.15
Water partial pressure, rpwa			0.44%	0.44%
Mass fraction water, cmwa			0.27%	0.27%
Mass fraction dry air, cmdaa			99.73%	99.73%
Cp moist air, cpaa	J/kg/K		1006.36	1006.36
Molar mass moist air, wmaa	kg/kmol		28.9142	28.9142
rho moist air, rhoa	kg/m³		1.1812	1.1812

Well Release Description				INPUT
Operator				NORTHROCK RESOURCES LTD
Well Name				NorthRock et al Summit Creek
Well Surface Location				[illegible]
Analysis type				[illegible]
Requested H_2S Concentration (input)	%H_2S, dry			[illegible]
Requested H_2S Concentration (calculated from below)	%H_2S, wet			[illegible]
H_2S Release Rate (at 15°C and 101.325 kPa)	m³/s			[illegible]
Total Dry Release Rate (Qdry) (at 15°C and 101.325 kPa)	10³m³/d			[illegible]
Total Wet Release Rate (Q... (at 15°C and 101.325 kPa)	10³m³/d			[illegible]
Well Release Height (h)	m			0
Exit Diameter (DT)	m			177.8

Adjusted Compositions and Properties	Dry	Wet	Molar Mass	Specific Heat	Net Heating Value	Specific Heat
	mole fraction	mole fraction	kg/kmol	kJ/kmol/K	MJ/m³ at 15°C and 101.325 kPa	kJ/kg/K
H_2	0.0000	0.00000	2.0159	29.136	10.784	14.4581
He	0.0000	0.00000	4.0026	20.786	0.000	5.1931
N_2	0.0188	0.01880	28.014	29.125	0.000	1.0396
CO_2	0.0151	0.01510	44.010	37.135	0.000	0.8438
H_2S	0.0100	0.01000	34.076	34.018	15.037	0.9979
CH_4	0.0995	0.09950	16.043	35.309	36.943	2.2010
C_2H_6	0.1700	0.17000	30.070	51.272	64.734	1.7052
C_3H_8	0.0677	0.06770	44.097	71.622	93.418	1.6243
i-C_4H_{10}	0.0113	0.01130	58.123	93.950	122.097	1.6164
n-C_4H_{10}	0.0155	0.01550	58.123	95.782	121.780	1.6514
i-C_5H_{12}	0.0039	0.00390	72.150	116.332	150.837	1.6171
n-C_5H_{12}	0.0033	0.00330	72.150	117.121	151.855	1.6233
n-C_6H_{14}	0.0009	0.00090	86.177	139.184	174.809	1.6151
n-C_7H_{16}	0.0000	0.00000	100.204	161.095	202.388	1.6076
H_2O	0.0000	0.00266	18.0153	33.642	0.000	1.8617
Total	1.0000	1.00000				

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Source Calculations		
Total Volume Release Rate (wet)	m3/s	
Total Mass Release Rate (wet)	kg/s	
Molar Mass mix	kg/kmol	
Ro - Gas Constant	J/kg/K	
Cpi ideal gas at 15C and 101 kPa	J/kg/K	
ki ratio ideal gas specific heats at 15C and 101 kPa		
2/(ki+1)		
Atmospheric Pressure	kPa	
Release Diameter	m	
Ae	m^2	
Mass Flux at Exit mo/Ae	$kg/s/m^2$	
Stagnation Temp Tos	K	
Zo guess		
Tc/g choked	K	
Pc/g choked	kPa	
Po/g choked	kPa	
Zo guess		
Tc/g	K	
Pc/g	kPa	
Po/g	kPa	

Receptor Exposure Calculations		
Source Duration tso	s	
Fluctuation Meteorological Averaging Time	s	
Total Fluctuation Intensity i		
Conditional Fluctuation Intensity ip		
Intermittency Factor gamma		
Toxic Load Factor to account for Fluctuations TXL		
Fluctuation Factor for effective concentration		
TPL Toxic Load Endpoint for Planning (steady ppm of H_2S for 3 minutes)	ppm	

Complex Terrain Criteria			
Criterion Wind Speed at Release Height for F Stability	m/s		
Criterion Stability Parameter N	rad^2/s^2		
Stable Plume Rise at Criterion Wind Speed and Stability	m		
Stable Plume Criterion Elevation (Elevation+Hs+3/5*Plume Rise) for use EUB/AENV/CAPP	m		Note: Parallel airflow approach acceptable for all terrain elevations as plume is ground-based
Maximum terrain elevation for release to flow over otherwise flows around (term 1 height for Froude Number = 1 at criterion conditions)	m		

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

From EUB FLASH		EUBFlash Real gas output	
Initial pressure, Po	kPa abs		
Initial temperature, To	K		
Density at Po and To, po	kg/m³		
Speed of sound at Po and To, co	m/s		not used
Liquid fraction at Po and To, Xo	--		not used
Initial exit pressure, Pei	kPa abs		
Initial exit temperature, Tei	K		
Initial exit density at Pei and Tei, pei	kg/m³		
Initial exit speed of sound at Pei and Tei, cei	m/s		
Initial exit liquid fraction at Pei and Tei, Xei	--		not used
Average ratio of Cp/Cv, k	--		not used
Isenthalpic flash temperature, Ti	K		
Isenthalpic flash density at Pa and Ti, pi	kg/m³		
Isenthalpic flash liquid mass fraction, Xi	--		
R-plane velocity, Vr	m/s		
R-plane temperature, Tr	K		
pr R-plane density, kg/m3	kg/m³		
R-plane liquid mass fraction, Xr	--		
Dew point temperature, Tdew	K		
Vapour specific heat capacity, CPS	J/kgK		
Boiling point temperature, TBP	K		
Liquid heat of vaporization, Hg	J/kg		
Liquid specific heat capacity, CPSL	J/kgK		
Liquid density, RHOSL	kg/m³		
Saturation pressure constant slope, SPS	--		
Saturation pressure constant correction, SPC	--		
Data calculated from real fluid properties		**CHOKED FLOW**	
DHE from SPS Saturation pressure constant	J/kg		
DHE based on Hg adjusted for energy to increase from Tr to Tdew	J/kg		
adjusted DHE based on Tdew at F-plane equal to R-plane and CPS	J/kg		

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Buoyancy Flux		Using Real Gas EUBFlash Output	
Toss Effective Stagnation Temperature using R-plane and adjusted DHE (ultimate method)	K		
Toss Effective Stagnation Temperature using R-plane and Tss with big (alternate method)	K		
Toss Effective Stagnation Temperature using R-plane and adjusted DHE (as performed in EUBSLAB)	K		
Common Unit form	m³/s³		
		Real Gas	Ideal Gas
Stagnation Enthalpy Ratio (Source/Air)	--		
Specific Heat Ratio (Source/Air)	--		
Molar Mass Ratio (Air/Source)	--		
Total molar	--		
Buoyancy Flux based on WS Method	m⁴/s³		
Lower Limit on water (Ratio equivalent of ratio to 4 times air)	--		
Equivalent Source Density for correct Fb at Infinity	kg/m³		Release is Dense

Approximate Ambient Ta for Fb=0 Real Gas at Ts input

	C

Source To for Fb=0 Ideal Gas at Ta input

	C

Approximate Source To for Fb=0 Real Gas with Ta input

	slope
	intercept
	Toasmax K
	Tmax C
	Tonew

Inputs to EUBSLAB		
Molar Mass wmol	kg/mol	
Xi R-plane liquid mass fraction from EUBFLASH		
DHE Liquid heat of vaporization (best of three methods)	J/kg	
R-plane source vapour density rho	kg/m³	
R-plane source liquid density rho	kg/m³	
R-plane source mixture density rho from EUBFLASH	kg/m³	
R-plane source mixture density rho as calculated in SLAB (different than real BAT, adjust amb to maintain momentum)	kg/m³	
change in amb to maintain momentum (ratio of Real/SLAB density, note area based on SLAB density)	%	

Jet Expansion Planes

		I Plane	E Plane	Q Plane	D Plane	R Plane
Mass Flow Rate	kg/s					
Velocity	m/s					
Area	m²					
Height of Centre of Box if Horizontal	m					
Pressure	kPa					
Temperature	K					
Density	kg/m³					
Square Box Dimension	m					

Drag Test Calculations			
Velocity at D	m/s	100.0	(user can input)
Specified ratio of Vd/Vq	--	0.60	(user can input)
Drag Coefficient (as velocity at D is 1.0)	--		
Drag Coefficient (as velocities at E and D are equal)	--		
Drag Coefficient (as ratio of Vd/Vs is 0.6)	--		
Force for no bend in flow	N		
	kg		
Force for 90 degree bend in flow (at 31 degrees)	N		
	kg		

EUBFLASH INPUT (Single Pass)

NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

For manual operation: CUT and PASTE contents of box into EUB_Flash.inp

1st Pass INPUT		*Composition as mole fraction*	**Value**
	NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125		DRILLING
		hydrogen_(normal)	0.000000
		helium	0.000000
		nitrogen	[illegible]
		carbon_dioxide	0.010100
		hydrogen_sulfide	0.010000
		methane	[illegible]
		ethane	0.070000
		propane	0.067700
		isobutane	0.011400
		n-butane	0.015500
		isopentane	0.009900
		n-pentane	0.003300
		n-hexane	0.000000
		n-heptane	0.000000
		water	0.000000
		Total	1.000000
	Conditions		WELL
		Po_Initial_Pressure_kPa(abs)	17240
		To_Initial_Temperature_K	297.25
		me/Ae_Mass_Flux_At_Exit_kg/s/m^2	4644.21
		Pe_Exit_Pressure_kPa(abs)	4000
		Te_Exit_Temperature_K	277.05
		Cd_Drag_Coefficient	0.10
		Pa_Atmospheric_Pressure_kPa(abs)	94.461
		Ta_Atmospheric_Temperature_K	270.15

EUBFLASH OUTPUT (Single Pass)

EUB WELL H2S EPZ draft1.xls

NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

For manual operation: PASTE EUB_Flash.out here

Value

```
********** EUB FLASH PROGRAM OUTPUT **********


+++++++++ INPUT DATA ++++++++++++++++++++++++++++++++++
EUB_Flash.inp ECHO                                              NORTHROCK ET
The Composition of Gas in mole fraction :

hydrogen (normal)      0.0000
helium                 0.0000
nitrogen               0.0128
carbon dioxide         0.0151
hydrogen sulfide       0.0100
methane                0.6895
ethane                 0.1700
propane                0.0677
isobutane              0.0113
n-butane               0.0155
isopentane             0.0039
n-pentane              0.0033
n-hexane               0.0009
n-heptane              0.0000
water                  0.0000
Total                  1.0000


Conditions                      WELL
Po_Initial_Pressure_kPa(abs)          1039.851
To_Initial_Temperature_K              237.25
me/Ae_Mass_Flux_At_Exit_kg/s/m^2      2314.61
Pe_Exit_Pressure_kPa(abs)             578.681
Te_Exit_Temperature_K                 211.68
Cd_Drag_Coefficient                   1.00
Pa_Atmospheric_Pressure_kPa(abs)      94.481
Ta_Atmospheric_Temperature_K          278.15


++++++++++++++++++ END OF INPUT DATA ++++++++++++++++++++


This program for flash was developed by Clearstone Engineering Limited
700, 900 - 6th Avenue S.W. Calgary, AB, T2P 3K2 to the specifications set by
Alberta Energy and Utilities Board, 640 - 5th Avenue S.W., Calgary, Alberta, T2P 3G4
It is to be used for the purpose mentioned in the manual provided with this software.
This is a copyrighted material and all the rights are reserved. Please read the
disclaimer and the license agreement in the manual carefully.


+++++++++++++++++ OUTPUT RESULT FROM FLASH +++++++++++++++
EUB_Flash
CALCULATED VALUES
P0 Initial Pressure                                          1000
T0 Initial Temperature                                       237.25
rho0 Initial Density at T0 and P0                            13.1383
c0 Initial Speed of Sound at T0 and P0                       295.36
X0 Initial Liquid Fraction at T0 and P0                      0.1202
Pei Initial Exit Pressure                                    573
Tei Initial Exit Temperature                                 219.51
rhoei Initial Exit Density at Tei and Pei                    8.0916
cei Initial Exit Sound Speed at Tei and Pei                  286.05
Xei Initial Exit Liquid Fraction at Tei and Pei              0.1562
Pea Average Exit Pressure                                    573
Tea Average Exit Temperature                                 219.51
rhoea Average Exit Density at Tea and Pea                    8.0916
cea Average Exit Sound Speed at Tea and Pea                  286.05
Xea Average Exit Liquid Fraction at Tea and Pea              0.1562
k Average ratio of Cp/Cv                                     1.1489
Tf Isenthalpic Flash Temperature                             209.34
rhof Isenthalpic Flash Density at Pa and Tf                  1.2614
Xf Isenthalpic Flash Liquid Mass Fraction at Pa and Tf       0.0372
Vr R Plane Velocity                                          295.7
Tr R Plane Temperature                                       197.93
rhor R Plane Density                                         1.37
Xr R Plane Liquid Mass Fraction                              0.0933
Tdew Dew Point Temperature                                   223.7
CPS Vapour Specific Heat Capacity                            1808
TBP Boiling Point Temperature                                197.93
DHE Heat of Vaporization                                     898380.4
CPSL Liquid Specific Heat                                    1845.8
RHOSL Liquid Density                                         691.1
SPB saturation pressure constant                             1061.49
SPC saturation pressure constant                             -90.83


++++++++++++++ END OF OUTPUT RESULT FROM FLASH ++++++++++++
END
```

EUBSLAB INPUT

EUB WELL H2S EPZ draft1.xls

539.28 m3 of H2S released at 0.5092 m3/s for 15 minutes	Release is Dense

For manual operation: CUT and PASTE contents of box into EUBslab.inp

			Units
Comments		NORTHROCK ET AL SUMMIT CREEK B-44-64-30	--
Run Options	IDSPL Spill source type (2 Horizontal or 3 Vertical)	2	--
	NCALC Numerical substep parameter	1	--
	IHOPT 0=SLAB, 1=DFC, 2=Briggs plume rise	2	--
Source Properties	WMS Molar mass of source material	0.0[illegible]78	kg/mole
	CPS Vapour heat capacity	1800.0	J/kg/K
	TBP Boiling point temperature	165.43	K
	CMEDO Initial liquid mass fraction	0.0[illegible]	--
	DHE Heat of vaporization	411.8[illegible]	J/kg
	CPSL Liquid specific heat	2815.8	J/kg/K
	RHOSL liquid density	691.1	kg/m3
	SPB saturation pressure constant	1051.19	-
	SPC saturation pressure constant	[illegible]	--
Exposure Parameters	**xxAlpha Time factor (-1.0 for wells)**	[illegible]	--
	xxBeta Time constant (-1.0 for wells)	[illegible].0	s
	TN Concentration exponent for toxic load	[illegible]	--
	TKL Toxic load factor to account for fluctuations	[illegible]	--
	TACH Building air changes per hour	[illegible]	1/hr
	TH2S Percent H2S in source mixture	[illegible]	%
	TPL Toxic load endpoint for planning (steady ppm for 3 minutes)	[illegible]	ppm
	CEV Concentration endpoint for evacuation	[illegible]	ppm
	TAEV Time Average for concentration endpoint for evacuation	[illegible]	sec
Spill Parameters	TS Temperature of source material	[illegible]	K
	QS Mass source rate	[illegible]	kg/s
	AS Source area	[illegible]	m2
	TSD Continuous source duration	[illegible].0	s
	QTIS Instantaneous source mass (always zero)	0.0	kg
	HS Source height	[illegible]	m
Field Parameters	TAV Concentration averaging time	[illegible].0	s
	XFFM Maximum downwind distance	[illegible].0	m
	ZP (1) Height of concentration calculation	[illegible].0	m
Meteorological Parameters	ZO Surface roughness height	[illegible]	m
	ZA Ambient measurement height	10.0	m
	UA Ambient wind speed	[illegible].0	m/s
	TA Ambient temperature	278.15	K
	RH Relative humidity	[illegible]	%
	PA Atmospheric pressure	[illegible].0	Pa
	STAB Stability class values	[illegible]	--
	ALA Inverse Monin-Obukhov length (always -1.0)	-1.0	1/m
END (always -1.0)	End	-1.0	--



IGNITED SO2 INPUT CALCULATIONS

NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

DRAFT, this sheet is currently under development.

SO_2 Hazard Modelling Inputs	units	User Input	EUB Default	INPUTS
Combustion Efficiency (CO&HC fraction) (as per G-60)				
Conversion Efficiency (SO_2/H2S fraction) (as per G-60)				
Flame Radiation Loss (H2S fraction) (as per G-60)				
Pseudo Stack Exit Velocity (as per G-60)	m/s			
Pseudo Stack Exit Temperature (as per G-60)	°C			

Adjusted Compositions and Release Properties (15°C and 101.325 kPa)	Mole Fraction y=f	Net Heating Value MJ/m³
H_2		
He		
N_2		
CO_2		
H_2S		
CH_4		
C_2H_6		
C_3H_8		
$i\text{-}C_4H_{10}$		
$n\text{-}C_4H_{10}$		
$i\text{-}C_5H_{12}$		
$n\text{-}C_5H_{12}$		
$n\text{-}C_6H_{14}$		
$n\text{-}C_7H_{16}$		
H_2O		
Total		

Well Release Description		
Operator		
Well Name		
Well Surface Location		
Maximum Reported H2S Concentration (TU123, dry)		
H2S Release Rate (at 15°C and 101.325 kPa)	m³/s	
Total Dry Release Rate (QDRY) (at 15°C and 101.325 kPa)	10³m³/d	
Total Wet Release Rate (QWET) (at 15°C and 101.325 kPa)	10³m³/d	
Well Centre Elevation	m	
Well Release Height (h)	m	
Site Atmospheric Pressure	kPa	
Ambient temperature Tair (a	K	
Specific Heat of moist air (cpa)	J/kg/K	
Molar Mass of moist air (mwa)	kg/kmol	

Emissions at Release Rate		
Heat Release Rate Constant - K1	(cal/s)/(10³m³/d) (MJ/m³)	
SO2 Emission Rate Constant - K2	(g/s)/(10³m³/d*%H2S)	
Buoyancy Flux - Heat Release Rate Constant - K3 (based on moist air at site pressure)	m⁴s³/J	
Net Heating Value (vcn) (at 15°C and 101.325 kPa)	MJ/m³	
Maximum Heat Release Rate (EM)	J/s	
Maximum Heat Release Rate (EL)	cal/s	
Sensible Heat Release Rate to Rise(ES) (based on combustion efficiency and radiation loss)	J/s	
Buoyancy Flux (FE) (based on sensible heat release rate to rise)	m⁴/s³	
SO2 Emission Rate (with conversion efficiency)	g/s	
SO2 Emission Rate (with conversion efficiency)	t/d	
H2S Emission Rate (with conversion efficiency)	g/s	

Ignited SO2 Stable Plume Criterion Height		
Flame Rise (hf) (portion of flame, based on heat release rate, as per SCREEN3)	m	
Reflective (hr)	m	
Stability Class F Plume Rise Criterion Wind Speed (criterion wind speed at 10 m reference height as per EUB)	m/s	
Criterion Wind Speed at Reflective for F Stability (Ucriterion)	m/s	
Stability Class F Vertical Potential Temperature Gradient (as per ISCST3)	K/m	
Stability Parameter N2	rad²/s²	
Plume Rise above Reflective at Criterion Wind Speed (hr)	m	
Stack Plume Criterion Height (Reflective+hr) Plume Rise (as per EUB/AENV/CAPP)	m	

Calculations for Scenario: NORTHROCK ET AL. SUMMIT CREEK B-44-64-30-125-45 DRILLING

Ignited SO_2 Pseudo-Stack Input Parameters		SO_2 MODEL INPUTS
Parallel Airflow Assumption (if applicable) & Maximum Terrain elevation within SO_2 Zone in Iron Creek	m	
Maximum SO_2 Emission Rate	g/s	
Pseudo-Stack Height (h_s)	m	
Pseudo-Stack Inside Diameter (D_s)	m	
Pseudo-Stack Gas Exit Velocity (V_s)	m/s	
Pseudo-Stack Gas Exit Temperature (T_s)	K	
Assumed Ambient Air Temperature (T_a)	K	

Notes

If SLAB/DENS is used, model as POINT sources using above inputs, do not use FLARE option.

Above parameters should also be used in SCSTA, RTDM, AERMOD and CALPUFF when modelling to reflect EUB Guide 60 assumptions.

Make sure no stack tip downwash or building effects included.

Note that ambient air temperature in hour by hour meteorological data inputs to model should be set to assumed constant or some value to match pseudo-stack temperature.

This results in a constant equivalent flaring heat release rate being modelled, otherwise it would vary by the hour with the air temperature.

Alternately, the pseudo-stack inside diameter can change hourly with the ambient air temperature, based on a constant specific heat into plume rise.

Output Adjustments

Dispersion Models predict µg/m³ at Pamb and Tamb. Ambient Measurements are in ppm at Pamb and Tamb

Site Specific Unit Adjustment Factors		
(ppm at Pamb and Tamb) / (µg/m³ at Pamb and Tamb)	-	
(µg/m³ at Pamb and Tamb) / (ppm at Pamb and Tamb)	-	

Air Quality Guidelines are in µg/m³ at Pguide and Tguide

Guideline Pressure Pguide	kPa	
Guideline Temperature Tguide	C	
Site Specific Model to Guideline Adjustment Factor (µg/m3 at Pguide and Tguide) / (µg/m3 at Pamb and Tamb)	-	
Guideline to Site Specific Model Adjustment Factor (µg/m3 at Pamb and Tamb) / (µg/m3 at Pguide and Tguide)	-	

SO_2 Conversions	Model µg/m³	Ambient Measurement ppm	Averaging time	
AAAQG at Pguide and Tguide				hour
AAAQG at Pamb and Tamb as modelled				hour
WHO at Pguide and Tguide				minutes
WHO at Pamb and Tamb as modelled				minutes
WHO at Pguide and Tguide				minutes
WHO at Pamb and Tamb as modelled				minutes
	Model µg/m³ at P_{amb} and T_{amb}	**Ambient Measurement ppm**	**Averaging time**	
Current Emergency Response Action Level 3				hours
Current Emergency Response Action Level 2				hours
Current Emergency Response Action Level 2 as modelled for 1 hour				hour
Current Emergency Response Action Level 1				minutes
Current Emergency Response Action Level 1 as modelled for one hour				minutes

Outdoor to Indoor Adjustment Factors (depends on input ACH)	
Indoors after 24 hours / outdoor for 24 hour average	
Indoors after 3 hours / outdoor for 3 hour average	
Indoors after 15 minutes / outdoor for 15 minutes	

Required Outdoor Concentration for Indoor to be Unacceptable	µg/m³ at P_{amb} and T_{amb}	ppm
Current Emergency Response Action Level 3 as modelled for 24 hours		
Current Emergency Response Action Level 2 as modelled for 3 hours		
Current Emergency Response Action Level 2 as modelled for 1 hour		
Current Emergency Response Action Level 1 as modelled for 15 minutes		
Current Emergency Response Action Level 1 as modelled for one hour		

EUB-SLAB 1.00 025

PROBLEM INPUT

stitle1	=	NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING
idopt	=	2
ncalc	=	1
ihopt	=	2
wms	=	0 022678
cps	=	1808
tbp	=	197 93
cmed0	=	0 093
dhe	=	411586
cpsl	=	1945 8
rhosl	=	691 1
spb	=	1061 49
spc	=	-90 83
xxAlpha	=	-1
xxBeta	=	-1
Tn	=	4 36
Tkl	=	15 298
Tach	=	0 5
Th2s	=	1
Tcpl	=	198 793
Cev	=	20
Taev	=	180
ts	=	197 93
qs	=	57 469
as	=	0 135
tsd	=	900
qts	=	0
hs	=	1
tav	=	900
xffm	=	30000
zp	=	0
z0	=	0 1
za	=	10
ua	=	1
ta	=	278 15
rh	=	50
pa	=	94481
stab	=	6
ala	=	-1

RELEASE GAS PROPERTIES

molecular weight of source gas (kg)	-	wms	=	2.27E-02
vapor heat capacity, const. p (j/kg-k)	-	cps	=	1.81E+03
temperature of source (vap and liq) (K)	-	ts	=	1.98E+02
stagnation temperature of source (K)	-	tsss	=	2.01E+02
density at exit (vap and liq) (kg/m3)	-	rhom	=	1.44E+00
equivalent density (kg/m3)	-	rhoeq	=	1.52E+00
boiling point temperature	-	tbp	=	1.98E+02
liquid mass fraction	-	cmed0	=	9.33E-02
liquid heat capacity (j/kg-k)	-	cpsl	=	1.85E+03
heat of vaporization (j/kg)	-	dhe	=	4.12E+05
liquid source density (kg/m3)	-	rhosl	=	6.91E+02
saturation pressure constant	-	spa	=	9.91E+00
saturation pressure constant (k)	-	spb	=	1.06E+03
saturation pressure constant (k)	-	spc	=	-9.06E+01
final plume rise (m)	-	hprf	=	0.00E+00
distance to final plume rise (m)	-	xpr	=	0.00E+00

EXPOSURE CHARACTERISTICS

pipeline time constant 1 (s)	-	xxalpha	=	-1.00E+00
pipeline time constant 2 (s)	-	xxbeta	=	-1.00E+00
concentration exponent for toxic load	-	tn	=	4.36E+00
toxic load fluctuations (min-ppm^n)	-	tkl	=	1.53E+01
building air changes per hour (1/h)	-	tach	=	5.00E-01
percent h2s in source mixture (%)	-	th2s	=	1.00E+00
toxic equivalent conc planning (ppm)	-	tcpl	=	1.99E+02
concentration evacuation (ppm)	-	cev	=	2.00E+01
averaging time evacuation (ppm)	-	taev	=	1.80E+02

SPILL CHARACTERISTICS

spill type	-	idspl	=	2
mass source rate (kg/s)	-	qs	=	5.75E+01
continuous source duration (s)	-	tsd	=	9.00E+02
continuous source mass (kg)	-	qtcs	=	5.17E+04
instantaneous source mass (kg)	-	qtis	=	0.00E+00
source area (m2)	-	as	=	1.35E-01
vertical vapor velocity (m/s)	-	ws	=	0.00E+00
source half width (m)	-	bs	=	1.84E-01
source height (m)	-	hs	=	1.00E+00
horizontal vapor velocity (m/s)	-	us	=	2.96E+02

FIELD PARAMETERS

concentration averaging time (s)	-	tav	=	9.00E+02
mixing layer height (m)	-	hmx	=	2.60E+02
maximum downwind distrace (m)	-	xfm	=	3.00E+04
concentration measurement height (m)	-	zp	=	0.00E+00

AMBIENT METEOROLOGICAL PROPERTIES

molecular weight of ambient air (kg)	-	wmae	=	2.89E-02
heat capacity of ambient air at const p (j/kg-k)	-	cpaa	=	1.01E+03
density of ambient air (kg/m3)	-	rhoa	=	1.18E+00
ambient measurement height (m)	-	za	=	1.00E+01
ambient atmospheric pressure (pa)	-	pa	=	9.45E+04
ambient wind speed (m/s)	-	ua	=	1.00E+00
ambient temperature (k)	-	ta	=	2.78E+02
relative humidity (percent)	-	rh	=	5.00E+01
ambient friction velocity (m/s)	-	uastr	=	4.09E-02
atmospheric stability class value		stab	=	6.00E+00
inverse monin-obukhov length (1/m)	-	ala	=	5.71E-02
surface roughness height (m)	-	z0	=	1.00E-01

ADDITIONAL PARAMETERS

sub-step multiplier	-	ncalc	=	1
number of calculational sub-steps	-	nssm	=	3
acceleration of gravity (m/s2)	-	grav	=	9.81E+00
gas constant (j/mol- k)	-	rr	=	8.31E+00
von karman constant	-	xk	=	4.10E-01
plume rise option	-	ihopt	=	2

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Instantaneous spatially averaged cloud parameters

	zc	h	bb	b	L	bx	cv	rho	t	u	ua
1.00E+00	1.00E+00	3.68E-01	1.84E-01	1.66E-01	0.00E+00	0.00E+00	1.00E+00	1.44E+00	1.98E+02	2.96E+02	3.24E-01
1.02E+00	1.00E+00	3.86E-01	1.93E-01	1.70E-01	1.72E-02	1.72E-02	9.65E-01	1.43E+00	1.98E+02	2.82E+02	3.24E-01
1.05E+00	1.00E+00	4.09E-01	2.05E-01	1.75E-01	3.84E-02	3.84E-02	9.25E-01	1.42E+00	1.97E+02	2.66E+02	3.25E-01
1.09E+00	1.00E+00	4.38E-01	2.19E-01	1.81E-01	6.45E-02	6.45E-02	8.79E-01	1.42E+00	1.97E+02	2.49E+02	3.25E-01
1.13E+00	1.00E+00	4.74E-01	2.37E-01	1.88E-01	9.68E-02	9.68E-02	8.28E-01	1.41E+00	1.96E+02	2.31E+02	3.26E-01
1.19E+00	1.00E+00	5.18E-01	2.59E-01	1.97E-01	1.37E-01	1.37E-01	7.73E-01	1.40E+00	1.96E+02	2.11E+02	3.27E-01
1.25E+00	1.00E+00	5.75E-01	2.87E-01	2.08E-01	1.86E-01	1.86E-01	7.14E-01	1.38E+00	2.02E+02	1.91E+02	3.26E-01
1.34E+00	1.00E+00	6.46E-01	3.23E-01	2.21E-01	2.46E-01	2.46E-01	6.52E-01	1.36E+00	2.09E+02	1.71E+02	3.30E-01
1.44E+00	1.00E+00	7.36E-01	3.68E-01	2.37E-01	3.21E-01	3.21E-01	5.89E-01	1.33E+00	2.15E+02	1.50E+02	3.32E-01
1.56E+00	1.00E+00	8.49E-01	4.24E-01	2.55E-01	4.14E-01	4.14E-01	5.25E-01	1.31E+00	2.23E+02	1.31E+02	3.35E-01
1.72E+00	1.00E+00	9.89E-01	4.94E-01	2.77E-01	5.27E-01	5.27E-01	4.64E-01	1.29E+00	2.30E+02	1.13E+02	3.38E-01
1.91E+00	1.00E+00	1.16E+00	5.81E-01	3.02E-01	6.68E-01	6.68E-01	4.05E-01	1.27E+00	2.36E+02	9.61E+01	3.43E-01
2.15E+00	1.00E+00	1.38E+00	6.89E-01	3.30E-01	8.41E-01	8.41E-01	3.51E-01	1.25E+00	2.43E+02	8.12E+01	3.49E-01
2.44E+00	1.00E+00	1.64E+00	8.20E-01	3.62E-01	1.06E+00	1.06E+00	3.02E-01	1.24E+00	2.49E+02	6.82E+01	3.57E-01
2.80E+00	1.00E+00	1.96E+00	9.77E-01	3.96E-01	1.32E+00	1.32E+00	2.59E-01	1.23E+00	2.53E+02	5.71E+01	3.66E-01
3.24E+00	1.00E+00	2.21E+00	1.11E+00	4.23E-01	1.65E+00	1.65E+00	2.32E-01	1.22E+00	2.56E+02	5.03E+01	3.80E-01
3.79E+00	1.00E+00	2.50E+00	1.26E+00	4.51E-01	2.05E+00	2.05E+00	2.07E-01	1.21E+00	2.59E+02	4.41E+01	3.98E-01
4.46E+00	1.00E+00	2.85E+00	1.45E+00	4.81E-01	2.54E+00	2.54E+00	1.84E-01	1.21E+00	2.61E+02	3.84E+01	4.19E-01
5.30E+00	9.99E-01	3.26E+00	1.67E+00	5.14E-01	3.16E+00	3.16E+00	1.62E-01	1.20E+00	2.63E+02	3.32E+01	4.42E-01
6.33E+00	9.99E-01	3.74E+00	1.94E+00	5.50E-01	3.91E+00	3.91E+00	1.43E-01	1.20E+00	2.65E+02	2.86E+01	4.68E-01
7.59E+00	9.98E-01	4.30E+00	2.27E+00	5.89E-01	4.84E+00	4.84E+00	1.25E-01	1.20E+00	2.67E+02	2.45E+01	4.96E-01
9.16E+00	9.97E-01	4.95E+00	2.67E+00	6.33E-01	5.99E+00	5.99E+00	1.08E-01	1.19E+00	2.69E+02	2.09E+01	5.27E-01
1.11E+01	9.96E-01	5.71E+00	3.16E+00	6.80E-01	7.41E+00	7.41E+00	9.38E-02	1.19E+00	2.71E+02	1.78E+01	5.60E-01
1.35E+01	9.94E-01	6.59E+00	3.76E+00	7.31E-01	9.16E+00	9.16E+00	8.13E-02	1.19E+00	2.72E+02	1.51E+01	5.96E-01
1.64E+01	9.91E-01	7.61E+00	4.48E+00	7.86E-01	1.13E+01	1.13E+01	6.97E-02	1.19E+00	2.73E+02	1.28E+01	6.33E-01
2.01E+01	9.88E-01	8.78E+00	5.35E+00	8.43E-01	1.40E+01	1.40E+01	5.99E-02	1.18E+00	2.74E+02	1.09E+01	6.73E-01
2.45E+01	9.83E-01	1.01E+01	6.39E+00	9.04E-01	1.73E+01	1.73E+01	5.13E-02	1.18E+00	2.75E+02	9.23E+00	7.13E-01
3.01E+01	9.80E-01	1.17E+01	7.63E+00	9.67E-01	2.13E+01	2.13E+01	4.39E-02	1.18E+00	2.76E+02	7.86E+00	7.56E-01
3.69E+01	9.76E-01	1.35E+01	9.06E+00	1.03E+00	2.64E+01	2.64E+01	3.75E-02	1.18E+00	2.76E+02	6.71E+00	8.00E-01
4.53E+01	9.76E-01	1.55E+01	1.08E+01	1.09E+00	3.25E+01	3.25E+01	3.21E-02	1.18E+00	2.77E+02	5.76E+00	8.44E-01
5.57E+01	9.76E-01	1.78E+01	1.27E+01	1.15E+00	4.02E+01	4.02E+01	2.74E-02	1.18E+00	2.77E+02	4.98E+00	8.89E-01
6.85E+01	9.76E-01	2.03E+01	1.50E+01	1.21E+00	4.96E+01	4.96E+01	2.35E-02	1.18E+00	2.77E+02	4.34E+00	9.33E-01
8.43E+01	9.76E-01	2.32E+01	1.75E+01	1.26E+00	6.12E+01	6.12E+01	2.01E-02	1.18E+00	2.78E+02	3.81E+00	9.77E-01
1.04E+02	9.76E-01	2.62E+01	2.03E+01	1.31E+00	7.55E+01	7.55E+01	1.72E-02	1.18E+00	2.78E+02	3.38E+00	1.02E+00
1.28E+02	9.76E-01	2.94E+01	2.36E+01	1.35E+00	9.32E+01	9.32E+01	1.48E-02	1.18E+00	2.78E+02	3.03E+00	1.06E+00
1.58E+02	9.76E-01	3.27E+01	2.72E+01	1.40E+00	1.15E+02	1.15E+02	1.27E-02	1.18E+00	2.78E+02	2.75E+00	1.10E+00
1.94E+02	9.76E-01	3.61E+01	3.12E+01	1.43E+00	1.42E+02	1.42E+02	1.09E-02	1.18E+00	2.78E+02	2.52E+00	1.13E+00
2.39E+02	9.76E-01	3.95E+01	3.56E+01	1.47E+00	1.75E+02	1.75E+02	9.46E-03	1.18E+00	2.78E+02	2.33E+00	1.17E+00
2.95E+02	9.76E-01	4.30E+01	4.05E+01	1.50E+00	2.16E+02	2.16E+02	8.20E-03	1.18E+00	2.78E+02	2.18E+00	1.20E+00
3.64E+02	9.76E-01	4.64E+01	4.57E+01	1.52E+00	2.67E+02	2.67E+02	7.14E-03	1.18E+00	2.78E+02	2.05E+00	1.22E+00
4.49E+02	9.76E-01	4.97E+01	5.13E+01	1.53E+00	3.29E+02	3.29E+02	6.23E-03	1.18E+00	2.78E+02	1.95E+00	1.25E+00
5.54E+02	9.76E-01	5.30E+01	5.75E+01	1.55E+00	4.06E+02	4.06E+02	5.45E-03	1.18E+00	2.78E+02	1.87E+00	1.27E+00
6.83E+02	9.76E-01	5.61E+01	6.44E+01	1.56E+00	5.01E+02	5.01E+02	4.77E-03	1.18E+00	2.78E+02	1.80E+00	1.29E+00
8.43E+02	9.76E-01	5.91E+01	7.19E+01	1.57E+00	6.18E+02	6.18E+02	4.19E-03	1.18E+00	2.78E+02	1.74E+00	1.31E+00
1.04E+03	9.76E-01	6.20E+01	8.02E+01	1.58E+00	7.63E+02	7.63E+02	3.68E-03	1.18E+00	2.78E+02	1.70E+00	1.33E+00
1.34E+03	0.00E+00	5.38E+01	9.09E+01	1.58E+00	8.36E+02	7.63E+02	2.88E-03	1.18E+00	2.78E+02	1.61E+00	1.34E+00
1.70E+03	0.00E+00	6.54E+01	1.02E+02	1.58E+00	9.26E+02	7.63E+02	2.27E-03	1.18E+00	2.78E+02	1.56E+00	1.35E+00
2.13E+03	0.00E+00	6.69E+01	1.13E+02	1.58E+00	1.04E+03	7.63E+02	1.78E-03	1.18E+00	2.78E+02	1.51E+00	1.35E+00
2.64E+03	0.00E+00	6.85E+01	1.26E+02	1.58E+00	1.17E+03	7.63E+02	1.38E-03	1.18E+00	2.78E+02	1.48E+00	1.36E+00
3.27E+03	0.00E+00	7.01E+01	1.39E+02	1.58E+00	1.34E+03	7.63E+02	1.06E-03	1.18E+00	2.78E+02	1.46E+00	1.37E+00
4.03E+03	0.00E+00	7.20E+01	1.55E+02	1.58E+00	1.55E+03	7.63E+02	8.07E-04	1.18E+00	2.78E+02	1.44E+00	1.38E+00
4.96E+03	0.00E+00	7.40E+01	1.73E+02	1.58E+00	1.81E+03	7.63E+02	6.04E-04	1.18E+00	2.78E+02	1.44E+00	1.39E+00
6.10E+03	0.00E+00	7.64E+01	1.93E+02	1.58E+00	2.13E+03	7.63E+02	4.45E-04	1.18E+00	2.78E+02	1.43E+00	1.40E+00
7.52E+03	0.00E+00	7.92E+01	2.17E+02	1.58E+00	2.52E+03	7.63E+02	3.23E-04	1.18E+00	2.78E+02	1.44E+00	1.41E+00
9.26E+03	0.00E+00	8.24E+01	2.44E+02	1.58E+00	3.00E+03	7.63E+02	2.31E-04	1.18E+00	2.78E+02	1.44E+00	1.43E+00
1.14E+04	0.00E+00	8.63E+01	2.76E+02	1.58E+00	3.60E+03	7.63E+02	1.63E-04	1.18E+00	2.78E+02	1.45E+00	1.44E+00
1.41E+04	0.00E+00	9.09E+01	3.13E+02	1.58E+00	4.34E+03	7.63E+02	1.13E-04	1.18E+00	2.78E+02	1.47E+00	1.46E+00
1.75E+04	0.00E+00	9.63E+01	3.55E+02	1.58E+00	5.24E+03	7.63E+02	7.79E-05	1.18E+00	2.78E+02	1.49E+00	1.48E+00
2.17E+04	0.00E+00	1.03E+02	4.04E+02	1.58E+00	6.35E+03	7.63E+02	5.30E-05	1.18E+00	2.78E+02	1.51E+00	1.50E+00
2.70E+04	0.00E+00	1.10E+02	4.60E+02	1.58E+00	7.72E+03	7.63E+02	3.58E-05	1.18E+00	2.78E+02	1.53E+00	1.53E+00
3.36E+04	0.00E+00	1.19E+02	5.24E+02	1.58E+00	9.40E+03	7.63E+02	2.39E-05	1.18E+00	2.78E+02	1.55E+00	1.55E+00

1

	cm	cmv	cmda	cmw	cmwv	wc	vg	ug	w	v	vs
1.00E+00	1.00E+00	9.07E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.95E+01	2.11E+01	0.00E+00
1.02E+00	9.56E-01	8.78E-01	4.38E-02	1.21E-04	2.85E-06	-1.36E-04	0.00E+00	0.00E+00	1.06E+02	2.02E+01	1.11E-01
1.05E+00	9.06E-01	8.46E-01	9.40E-02	2.59E-04	2.69E-06	-3.02E-04	0.00E+00	0.00E+00	1.00E+02	1.92E+01	1.11E-01
1.09E+00	8.50E-01	8.10E-01	1.49E-01	4.11E-04	2.52E-06	-5.03E-04	0.00E+00	0.00E+00	9.35E+01	1.81E+01	1.12E-01
1.13E+00	7.91E-01	7.72E-01	2.09E-01	5.76E-04	2.34E-06	-7.50E-04	0.00E+00	0.00E+00	8.53E+01	1.68E+01	1.12E-01
1.19E+00	7.28E-01	7.28E-01	2.72E-01	7.49E-04	2.53E-06	-1.05E-03	0.00E+00	0.00E+00	7.88E+01	1.55E+01	1.12E-01
1.25E+00	6.62E-01	6.62E-01	3.37E-01	9.23E-04	5.36E-06	-1.42E-03	0.00E+00	0.00E+00	7.14E+01	1.42E+01	1.13E-01
1.34E+00	5.95E-01	5.95E-01	4.04E-01	1.11E-03	1.17E-05	-1.85E-03	0.00E+00	0.00E+00	6.37E+01	1.29E+01	1.13E-01
1.44E+00	5.29E-01	5.29E-01	4.70E-01	1.30E-03	2.56E-05	-2.36E-03	0.00E+00	0.00E+00	5.60E+01	1.16E+01	1.14E-01
1.56E+00	4.65E-01	4.65E-01	5.34E-01	1.47E-03	5.47E-05	-2.96E-03	0.00E+00	0.00E+00	4.85E+01	1.02E+01	1.14E-01
1.72E+00	4.04E-01	4.04E-01	5.94E-01	1.64E-03	1.12E-04	-3.65E-03	0.00E+00	0.00E+00	4.13E+01	8.94E+00	1.15E-01
1.91E+00	3.48E-01	3.48E-01	6.50E-01	1.79E-03	2.15E-04	-4.45E-03	0.00E+00	0.00E+00	3.46E+01	7.74E+00	1.16E-01
2.15E+00	2.98E-01	2.98E-01	7.00E-01	1.93E-03	3.81E-04	-5.35E-03	0.00E+00	0.00E+00	2.86E+01	6.63E+00	1.18E-01
2.44E+00	2.53E-01	2.53E-01	7.45E-01	2.05E-03	6.19E-04	-6.39E-03	0.00E+00	0.00E+00	2.33E+01	5.62E+00	1.19E-01
2.80E+00	2.15E-01	2.15E-01	7.83E-01	2.16E-03	9.18E-04	-7.59E-03	0.00E+00	0.00E+00	1.89E+01	4.75E+00	1.21E-01
3.24E+00	1.91E-01	1.91E-01	8.07E-01	2.22E-03	1.16E-03	-9.65E-03	1.07E-02	0.00E+00	7.08E+00	4.20E+00	1.24E-01
3.79E+00	1.70E-01	1.70E-01	8.28E-01	2.28E-03	1.42E-03	-1.12E-02	1.42E-02	0.00E+00	5.73E+00	3.70E+00	1.27E-01
4.46E+00	1.50E-01	1.50E-01	8.48E-01	2.34E-03	1.70E-03	-1.25E-02	1.81E-02	0.00E+00	4.60E+00	3.23E+00	1.31E-01
5.30E+00	1.32E-01	1.32E-01	8.66E-01	2.39E-03	1.98E-03	-1.35E-02	2.25E-02	0.00E+00	3.66E+00	2.80E+00	1.35E-01
6.33E+00	1.15E-01	1.15E-01	8.82E-01	2.43E-03	2.26E-03	-1.42E-02	2.76E-02	0.00E+00	2.90E+00	2.41E+00	1.39E-01
7.59E+00	1.00E-01	1.00E-01	8.97E-01	2.47E-03	2.47E-03	-1.48E-02	3.36E-02	0.00E+00	2.29E+00	2.06E+00	1.44E-01
9.16E+00	8.70E-02	8.70E-02	9.11E-01	2.51E-03	2.51E-03	-1.48E-02	3.97E-02	0.00E+00	1.80E+00	1.76E+00	1.49E-01
1.11E+01	7.51E-02	7.51E-02	9.22E-01	2.54E-03	2.54E-03	-1.43E-02	4.54E-02	0.00E+00	1.41E+00	1.49E+00	1.55E-01
1.35E+01	6.46E-02	6.46E-02	9.33E-01	2.57E-03	2.57E-03	-1.33E-02	5.03E-02	0.00E+00	1.10E+00	1.26E+00	1.60E-01
1.64E+01	5.55E-02	5.55E-02	9.42E-01	2.60E-03	2.60E-03	-1.19E-02	5.38E-02	0.00E+00	8.63E-01	1.06E+00	1.66E-01
2.01E+01	4.76E-02	4.76E-02	9.50E-01	2.62E-03	2.62E-03	-1.02E-02	5.52E-02	0.00E+00	6.75E-01	8.86E-01	1.72E-01
2.45E+01	4.07E-02	4.07E-02	9.57E-01	2.64E-03	2.64E-03	-8.23E-03	5.34E-02	0.00E+00	5.30E-01	7.41E-01	1.78E-01
3.01E+01	3.48E-02	3.48E-02	9.63E-01	2.65E-03	2.65E-03	-6.46E-03	0.00E+00	0.00E+00	4.17E-01	6.18E-01	1.84E-01
3.69E+01	2.97E-02	2.97E-02	9.68E-01	2.67E-03	2.67E-03	-1.21E-03	0.00E+00	0.00E+00	3.26E-01	5.15E-01	1.90E-01
4.53E+01	2.53E-02	2.53E-02	9.72E-01	2.68E-03	2.68E-03	1.20E-02	0.00E+00	0.00E+00	2.56E-01	4.29E-01	1.96E-01
5.57E+01	2.16E-02	2.16E-02	9.76E-01	2.69E-03	2.69E-03	3.56E-02	0.00E+00	0.00E+00	2.01E-01	3.57E-01	2.02E-01
6.85E+01	1.85E-02	1.85E-02	9.79E-01	2.70E-03	2.70E-03	7.29E-02	0.00E+00	0.00E+00	1.58E-01	2.97E-01	2.06E-01
8.43E+01	1.58E-02	1.58E-02	9.82E-01	2.71E-03	2.71E-03	1.28E-01	0.00E+00	0.00E+00	1.24E-01	2.48E-01	2.11E-01
1.04E+02	1.35E-02	1.35E-02	9.84E-01	2.71E-03	2.71E-03	2.04E-01	0.00E+00	0.00E+00	9.81E-02	2.07E-01	2.15E-01
1.28E+02	1.16E-02	1.16E-02	9.86E-01	2.72E-03	2.72E-03	3.07E-01	0.00E+00	0.00E+00	7.74E-02	1.73E-01	2.18E-01
1.58E+02	9.98E-03	9.98E-03	9.87E-01	2.72E-03	2.72E-03	4.43E-01	0.00E+00	0.00E+00	6.11E-02	1.45E-01	2.21E-01
1.94E+02	8.60E-03	8.60E-03	9.89E-01	2.73E-03	2.73E-03	6.17E-01	0.00E+00	0.00E+00	4.82E-02	1.22E-01	2.24E-01
2.39E+02	7.43E-03	7.43E-03	9.90E-01	2.73E-03	2.73E-03	8.32E-01	0.00E+00	0.00E+00	3.79E-02	1.03E-01	2.26E-01
2.95E+02	6.45E-03	6.45E-03	9.91E-01	2.73E-03	2.73E-03	1.11E+00	0.00E+00	0.00E+00	2.96E-02	8.78E-02	2.27E-01
3.64E+02	5.61E-03	5.61E-03	9.92E-01	2.73E-03	2.73E-03	1.44E+00	0.00E+00	0.00E+00	2.28E-02	7.50E-02	2.28E-01
4.49E+02	4.89E-03	4.89E-03	9.92E-01	2.74E-03	2.74E-03	1.84E+00	0.00E+00	0.00E+00	1.78E-02	6.45E-02	2.29E-01
5.54E+02	4.28E-03	4.28E-03	9.93E-01	2.74E-03	2.74E-03	2.31E+00	0.00E+00	0.00E+00	1.40E-02	5.58E-02	2.30E-01
6.83E+02	3.75E-03	3.75E-03	9.94E-01	2.74E-03	2.74E-03	2.87E+00	0.00E+00	0.00E+00	1.10E-02	4.85E-02	2.31E-01
8.43E+02	3.29E-03	3.29E-03	9.94E-01	2.74E-03	2.74E-03	3.53E+00	0.00E+00	0.00E+00	8.63E-03	4.25E-02	2.31E-01
1.04E+03	2.89E-03	2.89E-03	9.94E-01	2.74E-03	2.74E-03	4.29E+00	0.00E+00	0.00E+00	6.85E-03	3.74E-02	2.31E-01
1.34E+03	2.26E-03	2.26E-03	9.95E-01	2.74E-03	2.74E-03	4.96E+00	0.00E+00	0.00E+00	4.84E-03	3.04E-02	2.30E-01
1.70E+03	1.78E-03	1.78E-03	9.96E-01	2.74E-03	2.74E-03	5.59E+00	0.00E+00	0.00E+00	3.63E-03	2.56E-02	2.30E-01
2.13E+03	1.39E-03	1.39E-03	9.96E-01	2.75E-03	2.75E-03	6.15E+00	0.00E+00	0.00E+00	2.88E-03	2.21E-02	2.30E-01
2.64E+03	1.08E-03	1.08E-03	9.96E-01	2.75E-03	2.75E-03	6.61E+00	0.00E+00	0.00E+00	2.41E-03	1.97E-02	2.30E-01
3.27E+03	8.34E-04	8.34E-04	9.96E-01	2.75E-03	2.75E-03	6.95E+00	0.00E+00	0.00E+00	2.11E-03	1.73E-02	2.30E-01
4.03E+03	6.33E-04	6.33E-04	9.97E-01	2.75E-03	2.75E-03	7.15E+00	0.00E+00	0.00E+00	1.91E-03	1.64E-02	2.30E-01
4.96E+03	4.74E-04	4.74E-04	9.97E-01	2.75E-03	2.75E-03	7.19E+00	0.00E+00	0.00E+00	1.77E-03	1.53E-02	2.30E-01
6.10E+03	3.49E-04	3.49E-04	9.97E-01	2.75E-03	2.75E-03	7.08E+00	0.00E+00	0.00E+00	1.67E-03	1.44E-02	2.30E-01
7.52E+03	2.53E-04	2.53E-04	9.97E-01	2.75E-03	2.75E-03	6.84E+00	0.00E+00	0.00E+00	1.59E-03	1.35E-02	2.30E-01
9.26E+03	1.81E-04	1.81E-04	9.97E-01	2.75E-03	2.75E-03	6.47E+00	0.00E+00	0.00E+00	1.52E-03	1.27E-02	2.30E-01
1.14E+04	1.28E-04	1.28E-04	9.97E-01	2.75E-03	2.75E-03	6.02E+00	0.00E+00	0.00E+00	1.46E-03	1.19E-02	2.30E-01
1.41E+04	9.88E-05	8.88E-05	9.97E-01	2.75E-03	2.75E-03	5.51E+00	0.00E+00	0.00E+00	1.40E-03	1.11E-02	2.29E-01
1.75E+04	6.11E-05	6.11E-05	9.97E-01	2.75E-03	2.75E-03	4.96E+00	0.00E+00	0.00E+00	1.33E-03	1.04E-02	2.29E-01
2.17E+04	4.16E-05	4.16E-05	9.97E-01	2.75E-03	2.75E-03	4.40E+00	0.00E+00	0.00E+00	1.26E-03	9.64E-03	2.28E-01
2.70E+04	2.80E-05	2.80E-05	9.97E-01	2.75E-03	2.75E-03	3.86E+00	0.00E+00	0.00E+00	1.19E-03	8.93E-03	2.27E-01
3.36E+04	1.88E-05	1.88E-05	9.97E-01	2.75E-03	2.75E-03	3.34E+00	0.00E+00	0.00E+00	1.11E-03	8.25E-03	2.25E-01

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time averaged (tav = 900 s) volume concentration: concentration contour parameters

c(x,y,z,t) = cc(x) * (erf(xa)-erf(xb)) * (erf(ya)-erf(yb)) * (exp(-za*za)+exp(-zb*zb))

c(x,y,z,t) = concentration (volume fraction) at (x,y,z,t)
x = downwind distance (m)
y = crosswind horizontal distance (m)
z = height (m)
t = time (s)

erf = error function
xa = (x-xc+bx)/(sr2*betax)
xb = (x-xc-bx)/(sr2*betax)
ya = (y+b) (sr2*betac)
yb = (y-b) (sr2*betac)
exp = exponential function
za = (z-zc) (sr2*sig)
zb = (z+zc)/(sr2*sig)
sr2 = sqrt(2.0)

x	cc(x)	b(x)	betac(x)	zc(x)	sig(x)	t	xc(t)	bx(t)	betax(t)
1.00E+00	0.00E+00	1.66E-01	4.63E-02	1.00E+00	1.06E-01	0.00E+00	1.00E+00	0.00E+00	0.00E+00
1.02E+00	3.80E-01	1.70E-01	5.32E-02	1.00E+00	1.12E-01	1.62E-04	1.02E+00	1.72E-02	1.40E-04
1.05E+00	3.74E-01	1.75E-01	6.15E-02	1.00E+00	1.18E-01	3.73E-04	1.05E+00	3.84E-02	3.13E-04
1.09E+00	3.68E-01	1.81E-01	7.13E-02	1.00E+00	1.27E-01	6.49E-04	1.09E+00	6.45E-02	5.27E-04
1.13E+00	3.60E-01	1.88E-01	8.30E-02	1.00E+00	1.37E-01	1.02E-03	1.13E+00	9.68E-02	7.90E-04
1.19E+00	3.51E-01	1.97E-01	9.71E-02	1.00E+00	1.50E-01	1.51E-03	1.19E+00	1.37E-01	1.12E-03
1.25E+00	3.41E-01	2.08E-01	1.15E-01	1.00E+00	1.66E-01	2.18E-03	1.25E+00	1.86E-01	1.52E-03
1.34E+00	3.30E-01	2.21E-01	1.36E-01	1.00E+00	1.87E-01	3.09E-03	1.34E+00	2.46E-01	2.01E-03
1.44E+00	3.17E-01	2.37E-01	1.63E-01	1.00E+00	2.12E-01	4.37E-03	1.44E+00	3.21E-01	2.62E-03
1.56E+00	3.02E-01	2.55E-01	1.96E-01	1.00E+00	2.45E-01	6.16E-03	1.56E+00	4.14E-01	3.38E-03
1.72E+00	2.86E-01	2.77E-01	2.36E-01	1.00E+00	2.85E-01	8.72E-03	1.72E+00	5.27E-01	4.31E-03
1.91E+00	2.70E-01	3.02E-01	2.87E-01	1.00E+00	3.36E-01	1.24E-02	1.91E+00	6.68E-01	5.45E-03
2.15E+00	2.53E-01	3.30E-01	3.49E-01	1.00E+00	3.98E-01	1.78E-02	2.15E+00	8.41E-01	6.87E-03
2.44E+00	2.36E-01	3.62E-01	4.25E-01	1.00E+00	4.74E-01	2.56E-02	2.44E+00	1.06E+00	8.62E-03
2.80E+00	2.20E-01	3.96E-01	5.16E-01	1.00E+00	5.64E-01	3.72E-02	2.80E+00	1.32E+00	1.08E-02
3.24E+00	1.92E-01	4.23E-01	5.92E-01	1.00E+00	6.99E-01	5.39E-02	3.24E+00	1.65E+00	1.34E-02
3.79E+00	1.67E-01	4.51E-01	6.81E-01	1.00E+00	8.69E-01	7.72E-02	3.79E+00	2.05E+00	1.67E-02
4.46E+00	1.47E-01	4.81E-01	7.88E-01	1.00E+00	1.07E+00	1.10E-01	4.46E+00	2.54E+00	2.08E-02
5.30E+00	1.31E-01	5.14E-01	9.17E-01	9.99E-01	1.31E+00	1.57E-01	5.30E+00	3.16E+00	2.58E-02
6.33E+00	1.19E-01	5.50E-01	1.08E+00	9.99E-01	1.58E+00	2.24E-01	6.33E+00	3.91E+00	3.19E-02
7.59E+00	1.08E-01	5.89E-01	1.27E+00	9.98E-01	1.91E+00	3.20E-01	7.59E+00	4.84E+00	3.95E-02
9.16E+00	9.90E-02	6.33E-01	1.50E+00	9.97E-01	2.28E+00	4.59E-01	9.16E+00	5.99E+00	4.89E-02
1.11E+01	9.13E-02	6.80E-01	1.78E+00	9.96E-01	2.72E+00	6.60E-01	1.11E+01	7.41E+00	6.05E-02
1.35E+01	8.47E-02	7.31E-01	2.13E+00	9.94E-01	3.23E+00	9.52E-01	1.35E+01	9.16E+00	7.48E-02
1.64E+01	7.90E-02	7.85E-01	2.55E+00	9.91E-01	3.82E+00	1.38E+00	1.64E+01	1.13E+01	9.25E-02
2.01E+01	7.39E-02	8.43E-01	3.05E+00	9.88E-01	4.50E+00	1.99E+00	2.01E+01	1.40E+01	1.14E-01
2.45E+01	6.94E-02	9.04E-01	3.65E+00	9.83E-01	5.28E+00	2.89E+00	2.45E+01	1.73E+01	1.41E-01
3.01E+01	6.53E-02	9.67E-01	4.37E+00	9.80E-01	6.18E+00	4.19E+00	3.01E+01	2.13E+01	1.74E-01
3.69E+01	6.17E-02	1.03E+00	5.20E+00	9.76E-01	7.22E+00	6.08E+00	3.69E+01	2.63E+01	2.15E-01
4.53E+01	5.84E-02	1.09E+00	6.17E+00	9.76E-01	8.40E+00	8.80E+00	4.53E+01	3.25E+01	2.66E-01
5.57E+01	5.54E-02	1.15E+00	7.31E+00	9.76E-01	9.71E+00	1.27E+01	5.57E+01	4.02E+01	3.28E-01
6.85E+01	5.27E-02	1.21E+00	8.61E+00	9.76E-01	1.12E+01	1.82E+01	6.85E+01	4.96E+01	4.05E-01
8.43E+01	5.02E-02	1.26E+00	1.01E+01	9.76E-01	1.28E+01	2.60E+01	8.43E+01	6.12E+01	5.00E-01
1.04E+02	4.80E-02	1.31E+00	1.17E+01	9.76E-01	1.46E+01	3.69E+01	1.04E+02	7.55E+01	6.16E-01
1.28E+02	4.59E-02	1.35E+00	1.36E+01	9.76E-01	1.64E+01	5.20E+01	1.28E+02	9.32E+01	7.61E-01
1.58E+02	4.41E-02	1.40E+00	1.57E+01	9.76E-01	1.83E+01	7.27E+01	1.58E+02	1.15E+02	9.39E-01
1.94E+02	4.24E-02	1.43E+00	1.80E+01	9.76E-01	2.03E+01	1.01E+02	1.94E+02	1.42E+02	1.16E+00
2.39E+02	4.08E-02	1.47E+00	2.06E+01	9.76E-01	2.23E+01	1.38E+02	2.39E+02	1.75E+02	1.43E+00
2.95E+02	3.94E-02	1.50E+00	2.35E+01	9.76E-01	2.42E+01	1.88E+02	2.95E+02	2.16E+02	1.76E+00
3.64E+02	3.82E-02	1.52E+00	2.65E+01	9.76E-01	2.62E+01	2.53E+02	3.64E+02	2.67E+02	2.18E+00
4.49E+02	3.71E-02	1.53E+00	2.99E+01	9.76E-01	2.82E+01	3.38E+02	4.49E+02	3.29E+02	2.69E+00
5.54E+02	3.62E-02	1.55E+00	3.37E+01	9.76E-01	3.00E+01	4.48E+02	5.54E+02	4.06E+02	3.32E+00
6.83E+02	3.54E-02	1.56E+00	3.80E+01	9.76E-01	3.18E+01	5.89E+02	6.83E+02	5.01E+02	4.09E+00
8.43E+02	3.48E-02	1.57E+00	4.28E+01	9.76E-01	3.36E+01	7.70E+02	8.43E+02	6.18E+02	5.05E+00
1.04E+03	3.43E-02	1.58E+00	4.83E+01	9.76E-01	3.52E+01	9.99E+02	1.04E+03	7.63E+02	6.23E+00
1.34E+03	3.36E-02	1.58E+00	5.62E+01	0.00E+00	3.68E+01	1.08E+03	1.34E+03	7.63E+02	1.97E+02
1.70E+03	3.40E-02	1.58E+00	6.51E+01	0.00E+00	3.78E+01	1.31E+03	1.70E+03	7.63E+02	3.03E+02
2.13E+03	3.47E-02	1.58E+00	7.58E+01	0.00E+00	3.86E+01	1.59E+03	2.13E+03	7.63E+02	4.06E+02
2.64E+03	3.58E-02	1.58E+00	8.88E+01	0.00E+00	3.96E+01	1.93E+03	2.64E+03	7.63E+02	5.16E+02
3.27E+03	3.73E-02	1.58E+00	1.05E+02	0.00E+00	4.05E+01	2.36E+03	3.27E+03	7.63E+02	6.39E+02
4.03E+03	3.89E-02	1.58E+00	1.25E+02	0.00E+00	4.15E+01	2.88E+03	4.03E+03	7.63E+02	7.81E+02
4.96E+03	4.07E-02	1.58E+00	1.50E+02	0.00E+00	4.27E+01	3.53E+03	4.96E+03	7.63E+02	9.47E+02
6.10E+03	4.23E-02	1.58E+00	1.80E+02	0.00E+00	4.41E+01	4.33E+03	6.10E+03	7.63E+02	1.15E+03
7.52E+03	4.36E-02	1.58E+00	2.16E+02	0.00E+00	4.57E+01	5.31E+03	7.52E+03	7.63E+02	1.39E+03
9.26E+03	4.45E-02	1.58E+00	2.59E+02	0.00E+00	4.76E+01	6.53E+03	9.26E+03	7.63E+02	1.68E+03
1.14E+04	4.49E-02	1.58E+00	3.08E+02	0.00E+00	4.98E+01	8.03E+03	1.14E+04	7.63E+02	2.03E+03
1.41E+04	4.47E-02	1.58E+00	3.66E+02	0.00E+00	5.25E+01	9.88E+03	1.41E+04	7.63E+02	2.46E+03
1.75E+04	4.38E-02	1.58E+00	4.32E+02	0.00E+00	5.56E+01	1.22E+04	1.75E+04	7.63E+02	2.99E+03
2.17E+04	4.25E-02	1.58E+00	5.08E+02	0.00E+00	5.92E+01	1.50E+04	2.17E+04	7.63E+02	3.64E+03
2.70E+04	4.07E-02	1.58E+00	5.93E+02	0.00E+00	6.35E+01	1.85E+04	2.70E+04	7.63E+02	4.44E+03
3.36E+04	3.86E-02	1.58E+00	6.90E+02	0.00E+00	6.84E+01	2.27E+04	3.36E+04	7.63E+02	5.41E+03

1

time averaged (tav = 900 s) volume concentration: concentration in the z = 0.00 plane.

downwind distance x (m)	time of max conc (s)	cloud duration (s)	effective half width bbc (m)	average concentration (volume fraction) at (x,y,z) y/bbc= 0	y/bbc= 0.5	y/bbc= 1	y/bbc= 1.5	y/bbc= 2	y/bbc= 2.5
1.00E+00	4.50E+02	9.00E+02	1.84E-01	1.73E-19	1.64E-19	5.98E-20	1.48E-21	1.07E-24	0.00E+00
1.02E+00	4.50E+02	9.00E+02	1.93E-01	1.03E-17	9.43E-18	3.40E-18	1.24E-19	2.41E-22	0.00E+00
1.05E+00	4.50E+02	9.00E+02	2.05E-01	8.43E-16	7.46E-16	2.65E-16	1.33E-17	5.77E-20	2.52E-23
1.09E+00	4.50E+02	9.00E+02	2.19E-01	7.70E-14	6.55E-14	2.31E-14	1.50E-15	1.21E-17	1.16E-20
1.13E+00	4.50E+02	9.00E+02	2.37E-01	6.83E-12	5.59E-12	1.95E-12	1.55E-13	2.05E-15	3.96E-18
1.19E+00	4.50E+02	9.00E+02	2.59E-01	5.23E-10	4.13E-10	1.43E-10	1.33E-11	2.60E-13	9.61E-16
1.25E+00	4.50E+02	9.00E+02	2.87E-01	3.31E-08	2.53E-08	8.66E-09	9.15E-10	2.44E-11	1.50E-13
1.34E+00	4.50E+02	9.00E+02	3.23E-01	1.36E-06	1.01E-06	3.44E-07	4.01E-08	1.36E-09	1.25E-11
1.44E+00	4.50E+02	9.00E+02	3.68E-01	3.34E-05	2.43E-05	8.20E-06	1.03E-06	4.20E-08	5.23E-10
1.56E+00	4.50E+02	9.00E+02	4.24E-01	4.68E-04	3.36E-04	1.12E-04	1.49E-05	7.03E-07	1.11E-08
1.72E+00	4.50E+02	9.00E+02	4.94E-01	3.75E-03	2.66E-03	8.82E-04	1.22E-04	6.45E-06	1.23E-07
1.91E+00	4.50E+02	9.00E+02	5.81E-01	1.81E-02	1.27E-02	4.19E-03	5.98E-04	3.44E-05	7.61E-07
2.15E+00	4.51E+02	9.00E+02	6.89E-01	5.62E-02	3.92E-02	1.29E-02	1.88E-03	1.15E-04	2.86E-06
2.44E+00	4.51E+02	9.00E+02	8.20E-01	1.23E-01	8.55E-02	2.80E-02	4.15E-03	2.67E-04	7.21E-06
2.80E+00	4.51E+02	9.00E+02	9.77E-01	2.04E-01	1.41E-01	4.62E-02	6.93E-03	4.60E-04	1.32E-05
3.24E+00	4.51E+02	9.00E+02	1.11E+00	2.90E-01	2.00E-01	6.53E-02	9.83E-03	6.66E-04	1.98E-05
3.79E+00	4.51E+02	9.00E+02	1.26E+00	3.39E-01	2.34E-01	7.61E-02	1.15E-02	7.92E-04	2.43E-05
4.46E+00	4.52E+02	9.00E+02	1.45E+00	3.49E-01	2.40E-01	7.83E-02	1.19E-02	8.28E-04	2.61E-05
5.30E+00	4.52E+02	9.00E+02	1.67E+00	3.33E-01	2.29E-01	7.46E-02	1.14E-02	8.00E-04	2.57E-05
6.33E+00	4.52E+02	9.00E+02	1.94E+00	3.04E-01	2.09E-01	6.80E-02	1.04E-02	7.36E-04	2.41E-05
7.59E+00	4.53E+02	9.00E+02	2.27E+00	2.70E-01	1.86E-01	6.03E-02	9.22E-03	6.58E-04	2.18E-05
9.16E+00	4.54E+02	9.00E+02	2.67E+00	2.35E-01	1.62E-01	5.26E-02	8.04E-03	5.77E-04	1.93E-05
1.11E+01	4.54E+02	9.00E+02	3.16E+00	2.03E-01	1.40E-01	4.53E-02	6.94E-03	4.99E-04	1.68E-05
1.35E+01	4.55E+02	9.00E+02	3.76E+00	1.74E-01	1.19E-01	3.88E-02	5.94E-03	4.28E-04	1.45E-05
1.64E+01	4.57E+02	9.00E+02	4.48E+00	1.48E-01	1.02E-01	3.30E-02	5.06E-03	3.66E-04	1.24E-05
2.01E+01	4.58E+02	9.00E+02	5.35E+00	1.26E-01	8.64E-02	2.81E-02	4.30E-03	3.11E-04	1.06E-05
2.45E+01	4.60E+02	9.00E+02	6.39E+00	1.07E-01	7.33E-02	2.38E-02	3.65E-03	2.64E-04	9.01E-06
3.01E+01	4.63E+02	9.00E+02	7.63E+00	9.04E-02	6.21E-02	2.02E-02	3.09E-03	2.24E-04	7.64E-06
3.69E+01	4.66E+02	9.00E+02	9.06E+00	7.66E-02	5.26E-02	1.71E-02	2.62E-03	1.90E-04	6.50E-06
4.53E+01	4.69E+02	9.00E+02	1.08E+01	6.49E-02	4.46E-02	1.45E-02	2.22E-03	1.61E-04	5.50E-06
5.57E+01	4.74E+02	9.00E+02	1.27E+01	5.51E-02	3.79E-02	1.23E-02	1.89E-03	1.37E-04	4.68E-06
6.85E+01	4.79E+02	9.00E+02	1.50E+01	4.69E-02	3.22E-02	1.05E-02	1.60E-03	1.16E-04	3.97E-06
8.43E+01	4.86E+02	9.00E+02	1.75E+01	3.99E-02	2.74E-02	8.90E-03	1.36E-03	9.88E-05	3.39E-06
1.04E+02	4.95E+02	9.00E+02	2.04E+01	3.40E-02	2.34E-02	7.59E-03	1.16E-03	8.43E-05	2.88E-06
1.28E+02	5.05E+02	9.00E+02	2.36E+01	2.91E-02	2.00E-02	6.49E-03	9.95E-04	7.21E-05	2.47E-06
1.58E+02	5.18E+02	9.00E+02	2.72E+01	2.49E-02	1.71E-02	5.56E-03	8.52E-04	6.18E-05	2.12E-06
1.94E+02	5.34E+02	9.00E+02	3.13E+01	2.14E-02	1.47E-02	4.78E-03	7.33E-04	5.31E-05	1.81E-06
2.39E+02	5.53E+02	9.00E+02	3.57E+01	1.85E-02	1.27E-02	4.12E-03	6.31E-04	4.57E-05	1.56E-06
2.95E+02	5.78E+02	9.00E+02	4.06E+01	1.59E-02	1.10E-02	3.56E-03	5.46E-04	3.95E-05	1.36E-06
3.61E+02	6.07E+02	9.00E+02	4.60E+01	1.38E-02	9.50E-03	3.08E-03	4.73E-04	3.43E-05	1.17E-06
4.49E+02	6.44E+02	9.00E+02	5.19E+01	1.20E-02	8.25E-03	2.68E-03	4.11E-04	2.98E-05	1.02E-06
5.54E+02	6.90E+02	9.00E+02	5.84E+01	1.04E-02	7.17E-03	2.33E-03	3.57E-04	2.59E-05	8.91E-07
6.83E+02	7.46E+02	9.00E+02	6.58E+01	9.08E-03	6.24E-03	2.03E-03	3.11E-04	2.25E-05	7.67E-07
8.43E+02	8.15E+02	9.00E+02	7.42E+01	7.89E-03	5.42E-03	1.76E-03	2.70E-04	1.96E-05	6.67E-07
1.04E+03	9.00E+02	9.00E+02	8.37E+01	6.82E-03	4.69E-03	1.52E-03	2.34E-04	1.69E-05	5.77E-07
1.34E+03	1.08E+03	1.04E+03	9.73E+01	5.15E-03	3.54E-03	1.15E-03	1.76E-04	1.28E-05	4.39E-07
1.70E+03	1.31E+03	1.19E+03	1.13E+02	4.12E-03	2.83E-03	9.18E-04	1.41E-04	1.02E-05	3.49E-07
2.13E+03	1.59E+03	1.37E+03	1.31E+02	3.25E-03	2.24E-03	7.26E-04	1.11E-04	8.06E-06	2.74E-07
2.64E+03	1.93E+03	1.59E+03	1.54E+02	2.52E-03	1.73E-03	5.62E-04	8.62E-05	6.24E-06	2.17E-07
3.27E+03	2.36E+03	1.84E+03	1.82E+02	1.90E-03	1.30E-03	4.23E-04	6.49E-05	4.70E-06	1.60E-07
4.03E+03	2.88E+03	2.15E+03	2.17E+02	1.39E-03	9.55E-04	3.10E-04	4.75E-05	3.45E-06	1.19E-07
4.96E+03	3.53E+03	2.52E+03	2.59E+02	9.93E-04	6.82E-04	2.22E-04	3.40E-05	2.46E-06	8.44E-08
6.10E+03	4.33E+03	2.97E+03	3.11E+02	6.94E-04	4.77E-04	1.55E-04	2.39E-05	1.72E-06	5.91E-08
7.52E+03	5.31E+03	3.51E+03	3.74E+02	4.78E-04	3.28E-04	1.07E-04	1.64E-05	1.18E-06	3.90E-08
9.26E+03	6.53E+03	4.17E+03	4.48E+02	3.25E-04	2.23E-04	7.24E-05	1.11E-05	8.06E-07	2.78E-08
1.14E+04	8.03E+03	4.96E+03	5.34E+02	2.18E-04	1.50E-04	4.87E-05	7.47E-06	5.40E-07	1.91E-08
1.41E+04	9.88E+03	5.91E+03	6.34E+02	1.46E-04	1.00E-04	3.25E-05	4.99E-06	3.61E-07	1.26E-08
1.75E+04	1.22E+04	7.06E+03	7.49E+02	9.68E-05	6.65E-05	2.16E-05	3.31E-06	2.40E-07	7.92E-09
2.17E+04	1.50E+04	8.45E+03	8.79E+02	6.39E-05	4.39E-05	1.43E-05	2.19E-06	1.58E-07	5.38E-09
2.70E+04	1.85E+04	1.01E+04	1.03E+03	4.21E-05	2.89E-05	9.39E-06	1.44E-06	1.04E-07	3.54E-09
3.36E+04	2.27E+04	1.21E+04	1.19E+03	2.76E-05	1.90E-05	6.16E-06	9.45E-07	6.85E-08	2.71E-09

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time averaged (tav = 900 s) volume concentration: maximum concentration (volume fraction) along centerline

downwind distance x (m)	height z (m)	maximum concentration c(x,0,z)	time of max con (s)	cloud duration (s)	mode	Fb	Ri
1.00E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	jet	-2.69E+01	1.00E+03
1.02E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-2.76E+01	4.77E+02
1.05E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-2.84E+01	4.91E+02
1.09E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-2.95E+01	5.08E+02
1.13E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-3.07E+01	5.29E+02
1.19E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-3.20E+01	5.51E+02
1.25E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-3.25E+01	5.57E+02
1.34E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-3.28E+01	5.60E+02
1.44E+00	1.00E+00	1.00E+00	4.50E+02	9.00E+02	near	-3.29E+01	5.59E+02
1.56E+00	1.00E+00	9.75E-01	4.50E+02	9.00E+02	near	-3.26E+01	5.52E+02
1.72E+00	1.00E+00	8.68E-01	4.50E+02	9.00E+02	near	-3.19E+01	5.39E+02
1.91E+00	1.00E+00	7.63E-01	4.50E+02	9.00E+02	near	-3.08E+01	5.19E+02
2.15E+00	1.00E+00	6.63E-01	4.51E+02	9.00E+02	near	-2.94E+01	4.95E+02
2.44E+00	1.00E+00	5.72E-01	4.51E+02	9.00E+02	near	-2.78E+01	4.68E+02
2.80E+00	9.96E-01	4.92E-01	4.51E+02	9.00E+02	near	-2.62E+01	4.41E+02
3.24E+00	9.62E-01	4.10E-01	4.51E+02	9.00E+02	near	-2.50E+01	4.23E+02
3.79E+00	7.69E-01	3.58E-01	4.51E+02	9.00E+02	near	-2.39E+01	4.05E+02
4.46E+00	0.00E+00	3.49E-01	4.52E+02	9.00E+02	near	-2.30E+01	3.89E+02
5.30E+00	0.00E+00	3.33E-01	4.52E+02	9.00E+02	near	-2.22E+01	3.76E+02
6.33E+00	0.00E+00	3.04E-01	4.52E+02	9.00E+02	near	-2.16E+01	3.67E+02
7.59E+00	0.00E+00	2.70E-01	4.53E+02	9.00E+02	near	-2.07E+01	3.51E+02
9.16E+00	0.00E+00	2.35E-01	4.54E+02	9.00E+02	near	-1.81E+01	3.05E+02
1.11E+01	0.00E+00	2.03E-01	4.54E+02	9.00E+02	near	-1.53E+01	2.56E+02
1.35E+01	0.00E+00	1.74E-01	4.55E+02	9.00E+02	near	-1.24E+01	2.05E+02
1.64E+01	0.00E+00	1.48E-01	4.57E+02	9.00E+02	near	-9.30E+00	1.52E+02
2.01E+01	0.00E+00	1.26E-01	4.58E+02	9.00E+02	near	-6.11E+00	9.88E+01
2.45E+01	0.00E+00	1.07E-01	4.60E+02	9.00E+02	near	-2.82E+00	4.49E+01
3.01E+01	0.00E+00	9.04E-02	4.63E+02	9.00E+02	near	5.59E-01	8.79E+00
3.69E+01	0.00E+00	7.66E-02	4.66E+02	9.00E+02	near	4.00E+00	6.18E+01
4.53E+01	0.00E+00	6.49E-02	4.69E+02	9.00E+02	near	7.48E+00	1.14E+02
5.57E+01	0.00E+00	5.51E-02	4.74E+02	9.00E+02	near	1.10E+01	1.63E+02
6.85E+01	0.00E+00	4.69E-02	4.79E+02	9.00E+02	near	1.45E+01	2.10E+02
8.43E+01	0.00E+00	3.99E-02	4.86E+02	9.00E+02	near	1.80E+01	2.55E+02
1.04E+02	0.00E+00	3.40E-02	4.95E+02	9.00E+02	near	2.16E+01	2.94E+02
1.28E+02	0.00E+00	2.91E-02	5.05E+02	9.00E+02	near	2.50E+01	3.29E+02
1.58E+02	0.00E+00	2.49E-02	5.18E+02	9.00E+02	near	2.85E+01	3.59E+02
1.94E+02	0.00E+00	2.14E-02	5.34E+02	9.00E+02	near	3.19E+01	3.82E+02
2.39E+02	0.00E+00	1.85E-02	5.53E+02	9.00E+02	near	3.52E+01	4.00E+02
2.95E+02	0.00E+00	1.59E-02	5.78E+02	9.00E+02	near	3.85E+01	4.12E+02
3.64E+02	0.00E+00	1.38E-02	6.07E+02	9.00E+02	near	4.17E+01	4.19E+02
4.49E+02	0.00E+00	1.20E-02	6.44E+02	9.00E+02	near	4.49E+01	4.21E+02
5.54E+02	0.00E+00	1.04E-02	6.90E+02	9.00E+02	near	4.79E+01	4.19E+02
6.83E+02	0.00E+00	9.08E-03	7.46E+02	9.00E+02	near	5.10E+01	4.14E+02
8.43E+02	0.00E+00	7.89E-03	8.15E+02	9.00E+02	near	5.40E+01	4.05E+02
1.04E+03	0.00E+00	6.82E-03	9.00E+02	9.00E+02	near	5.69E+01	3.94E+02
1.34E+03	0.00E+00	5.15E-03	1.08E+03	1.04E+03	puff	6.24E+01	3.48E+02
1.70E+03	0.00E+00	4.12E-03	1.31E+03	1.19E+03	puff	6.77E+01	3.04E+02
2.13E+03	0.00E+00	3.25E-03	1.59E+03	1.37E+03	puff	7.31E+01	2.64E+02
2.64E+03	0.00E+00	2.52E-03	1.93E+03	1.59E+03	puff	7.66E+01	2.25E+02
3.27E+03	0.00E+00	1.90E-03	2.36E+03	1.84E+03	puff	8.42E+01	1.90E+02
4.03E+03	0.00E+00	1.39E-03	2.88E+03	2.15E+03	puff	9.01E+01	1.59E+02
4.96E+03	0.00E+00	9.93E-04	3.53E+03	2.52E+03	puff	9.60E+01	1.30E+02
6.10E+03	0.00E+00	6.94E-04	4.33E+03	2.97E+03	puff	1.02E+02	1.05E+02
7.52E+03	0.00E+00	4.78E-04	5.31E+03	3.51E+03	puff	1.09E+02	8.40E+01
9.26E+03	0.00E+00	3.25E-04	6.53E+03	4.17E+03	puff	1.15E+02	6.61E+01
1.14E+04	0.00E+00	2.18E-04	8.03E+03	4.96E+03	puff	1.21E+02	5.15E+01
1.41E+04	0.00E+00	1.46E-04	9.88E+03	5.91E+03	puff	1.27E+02	3.97E+01
1.75E+04	0.00E+00	9.68E-05	1.22E+04	7.06E+03	puff	1.33E+02	3.02E+01
2.17E+04	0.00E+00	6.39E-05	1.50E+04	8.45E+03	puff	1.38E+02	2.28E+01
2.70E+04	0.00E+00	4.21E-05	1.85E+04	1.01E+04	puff	1.43E+02	1.71E+01
3.36E+04	0.00E+00	2.76E-05	2.27E+04	1.21E+04	puff	1.48E+02	1.27E+01

!SUB-SLAB 1 00 025
'title1= NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING
Steady-state plume
Toxic Load for release duration (tsd = 900 s)
Concentration in the z = 3 00 plane

Planning Distances (primary, secondary)

Distances to	(ppm)	198 793	
Outdoor toxic load	(m)	9 42E+02	9 42E+02
Indoor toxic load	(m)	2 42E+01	2 42E+01

Evacuation Distances (primary, secondary)

Distances to	(ppm)	20	
Outdoor concentration	(m)	3 74E+03	3 74E+03
Indoor concentration	(m)	2 71E+02	2 71E+02

1

x = downwind distance, m
co = outdoor maximum H2S conc (ppm) on centreline
ci = indoor maximum H2S conc (ppm) on centreline
to = outdoor toxicload [equivalent 3min H2S conc(ppm)]
ti = indoor toxicload [equivalent 3min H2S conc(ppm)]
cota=outdoor concentration [time average corrected]

x	co(x)	ci(x)	tco(x)	tci(x)	cota(x)
1 00E+00	1.73E-15	2 03E-16	0 00E+00	0 00E+00	1 73E-15
1 02E+00	1.03E-13	1.21E-14	0 00E+00	0 00E+00	1 03E-13
1 05E+00	8 43E-12	9 91E-13	0 00E+00	0 00E+00	8 43E-12
1 09E+00	7.70E-10	9 05E-11	0 00E+00	1.41E-10	7.70E-10
1.13E+00	6 83E-08	8 03E-09	1 85E-07	1.26E-08	6 83E-08
1 19E+00	5 23E-06	6 15E-07	1 42E-05	9 63E-07	5 23E-06
1 25E+00	3 31E-04	3 89E-05	8 95E-04	6 08E-05	3 31E-04
1.34E+00	1.36E-02	1.60E-03	3 68E-02	2.51E-03	1 36E-02
1.44E+00	3 34E-01	3 93E-02	9 03E-01	6 14E-02	3 34E-01
1 56E+00	4.68E+00	5 50E-01	1.27E+01	8 61E-01	4 68E+00
1.72E+00	3.75E+01	4.41E+00	1 02E+02	6 90E+00	3 75E+01
1 91E+00	1 81E+02	2.12E+01	4 88E+02	3 32E+01	1 81E+02
2.15E+00	5.62E+02	6 61E+01	1.52E+03	1.03E+02	5 62E+02
2 44E+00	1.23E+03	1.45E+02	3.33E+03	2.27E+02	1 23E+03
2 80E+00	2.04E+03	2.40E+02	5 53E+03	3 76E+02	2 04E+03
3 24E+00	2.90E+03	3 40E+02	7.83E+03	5 33E+02	2.90E+03
3 79E+00	3.39E+03	3 98E+02	9.16E+03	6 23E+02	3 39E+03
4 46E+00	3 49E+03	4.10E+02	9.43E+03	6 41E+02	3.49E+03
5 30E+00	3.33E+03	3.91E+02	9.01E+03	6 13E+02	3.33E+03
6 33E+00	3.04E+03	3 57E+02	8.22E+03	5 59E+02	3.04E+03
7.59E+00	2.70E+03	3.17E+02	7.30E+03	4.96E+02	2.70E+03
9 16E+00	2.35E+03	2.76E+02	6.36E+03	4 33E+02	2.35E+03
1.11E+01	2.03E+03	2.38E+02	5.49E+03	3.73E+02	2.03E+03
1.35E+01	1.74E+03	2.04E+02	4.70E+03	3.19E+02	1.74E+03
1.64E+01	1.48E+03	1.74E+02	4.00E+03	2.72E+02	1.48E+03
2.01E+01	1.26E+03	1.48E+02	3.40E+03	2.31E+02	1.26E+03
2.45E+01	1.07E+03	1.25E+02	2.88E+03	1.96E+02	1.07E+03
3.01E+01	9.04E+02	1.06E+02	2.44E+03	1.66E+02	9.04E+02
3.69E+01	7.66E+02	9.00E+01	2.07E+03	1.41E+02	7.66E+02
4.53E+01	6.49E+02	7.63E+01	1.76E+03	1.19E+02	6.49E+02
5.57E+01	5.51E+02	6.48E+01	1.49E+03	1.01E+02	5.51E+02
6.85E+01	4.69E+02	5.51E+01	1.27E+03	8.62E+01	4.69E+02
8.43E+01	3.99E+02	4.69E+01	1.08E+03	7.33E+01	3.99E+02
1.04E+02	3.40E+02	4.00E+01	9.20E+02	6.26E+01	3.40E+02
1.28E+02	2.91E+02	3.42E+01	7.86E+02	5.36E+01	2.91E+02
1.58E+02	2.49E+02	2.93E+01	6.74E+02	4.58E+01	2.49E+02
1.94E+02	2.14E+02	2.52E+01	5.79E+02	3.94E+01	2.14E+02
2.39E+02	1.85E+02	2.17E+01	4.99E+02	3.39E+01	1.85E+02
2.95E+02	1.59E+02	1.87E+01	4.31E+02	2.93E+01	1.60E+02
3.64E+02	1.38E+02	1.62E+01	3.74E+02	2.54E+01	1.39E+02
4.49E+02	1.20E+02	1.41E+01	3.25E+02	2.21E+01	1.21E+02
5.54E+02	1.04E+02	[illegible]	[illegible]	1.92E+01	1.05E+02
6.83E+02	9.08E+01	[illegible]	[illegible]	1.67E+01	9.19E+01
8.43E+02	7.89E+01	9.2[illegible]	[illegible]	1.45E+01	8.03E+01
1.04E+03	6.82E+01	8.02E+00	1.65E+02	1.26E+01	7.01E+01
1.34E+03	5.15E+01	6.91E+00	1.44E+02	1.09E+01	5.85E+01
1.70E+03	4.12E+01	6.27E+00	1.19E+02	1.01E+01	4.94E+01
2.13E+03	3.25E+01	5.64E+00	9.69E+01	9.24E+00	4.03E+01
2.64E+03	2.52E+01	4.98E+00	7.75E+01	8.28E+00	3.16E+01
3.27E+03	1.90E+01	4.28E+00	6.04E+01	7.30E+00	2.40E+01
4.03E+03	1.39E+01	3.59E+00	4.59E+01	6.21E+00	1.77E+01
4.96E+03	9.93E+00	2.93E+00	3.40E+01	5.15E+00	1.27E+01
6.10E+03	6.94E+00	2.35E+00	2.47E+01	4.19E+00	8.99E+00
7.52E+03	4.78E+00	1.84E+00	1.77E+01	3.34E+00	6.24E+00
9.26E+03	3.25E+00	1.43E+00	1.25E+01	2.62E+00	4.28E+00
1.14E+04	2.18E+00	1.09E+00	8.73E+00	2.03E+00	2.90E+00
1.41E+04	1.46E+00	8.16E-01	6.07E+00	1.56E+00	1.95E+00
1.75E+04	9.68E-01	6.05E-01	4.20E+00	1.18E+00	1.30E+00
2.17E+04	6.39E-01	4.41E-01	2.89E+00	8.69E-01	8.66E-01
2.70E+04	4.21E-01	3.18E-01	1.96E+00	6.25E-01	5.72E-01
3.36E+04	2.76E-01	2.25E-01	1.32E+00	4.16E-01	3.77E-01

EUBMODELS
SOUR WELL EPZ CALCULATION SPREADSHEET
Alberta Energy and Utilities Board

Administrative

Licensee/Applicant		NORTHROCK RESOURCES LTD
Mailing Address		3500,700-2nd Street S.W.
City and Province		Calgary, Alberta
Postal Code		T2P 2W2
Contact Person	Name	Diana Shirra
	Phone	403 2137-447
	Fax	403 213-5479
	eMail	shirra@northrock.ab.ca
Well Name		Northrock et al Summit Creek
Well Licence or Application Number		9211-N046-2-1 1994

Release Description

Title		NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING
Release type, Ideal		Well Steady State
Release Direction		Horizontal
Analysis Type		BASE CASE
H_2S Release Amount		539 m3 H2S at 0.6 m3/s for 15 minutes
Molar Mass		
Source	kg/kmol	22.6780
Air	kg/kmol	28.9140
Density		
Source at exit	kg/m^3	1.4356
Source mixed with Ambient air	kg/m^3	1.5225
Ambient air	kg/m^3	1.1812
Near Field		Initially Dense
Far Field		Dense

Individual Meteorology Case

Plume Rise		
Maximum plume rise, HPr	m	0

Limit (TLeC = Toxic Load Equivalent Concentration at 3 min)	ppm	Primary Hazard			Secondary Hazard		
		Distance (m)	*Wind Speed (m/s)*	*Stability Class*	*Distance (m)*	*Wind Speed (m/s)*	*Stability Class*
Planning Outdoor TLeC (100 ppm for 60 minutes)	199	900	1.0	Class F			
Planning Indoor TLeC (100 ppm for 60 minutes)	199	100	1.0	Class F			
Evacuation Outdoor Concentration (20 ppm Tav= 3 minutes)	20	3700	1.0	Class F			
Evacuation Indoor Concentration (20 ppm Tav= 15 minutes)	20	300	1.0	Class F			

Worst Case Screening Meteorology

Limit (TLeC = Toxic Load Equivalent Concentration at 3 min)	ppm	Primary Hazard			Secondary Hazard		
		Maximum Distance (m)	*Wind Speed (m/s)*	*Stability Class*	*Maximum Distance (m)*	*Wind Speed (m/s)*	*Stability Class*
Planning Outdoor TLeC (100 ppm for 60 minutes)	199	1000	2.0	Class F	--	--	--
Planning Indoor TLeC (100 ppm for 60 minutes)	199	100	4.0	Class F	--	--	--
Evacuation Outdoor Concentration (20 ppm Tav= 3 minutes)	20	3800	2.5	Class F	--	--	--
Evacuation Indoor Concentration (20 ppm Tav= 15 minutes)	20	300	4.0	Class F	--	--	--

Emergency Planning Zone

Limit (TLeC = Toxic Load Equivalent Concentration at 3 min)	ppm	Emergency Planning Zone			Secondary Hazard		
		Maximum Distance (m)	*Wind Speed (m/s)*	*Stability Class*	*Maximum Distance (m)*	*Wind Speed (m/s)*	*Stability Class*
Planning Outdoor TLeC (100 ppm for 60 minutes)	199	**1000**	2.0	Class F	--	--	--

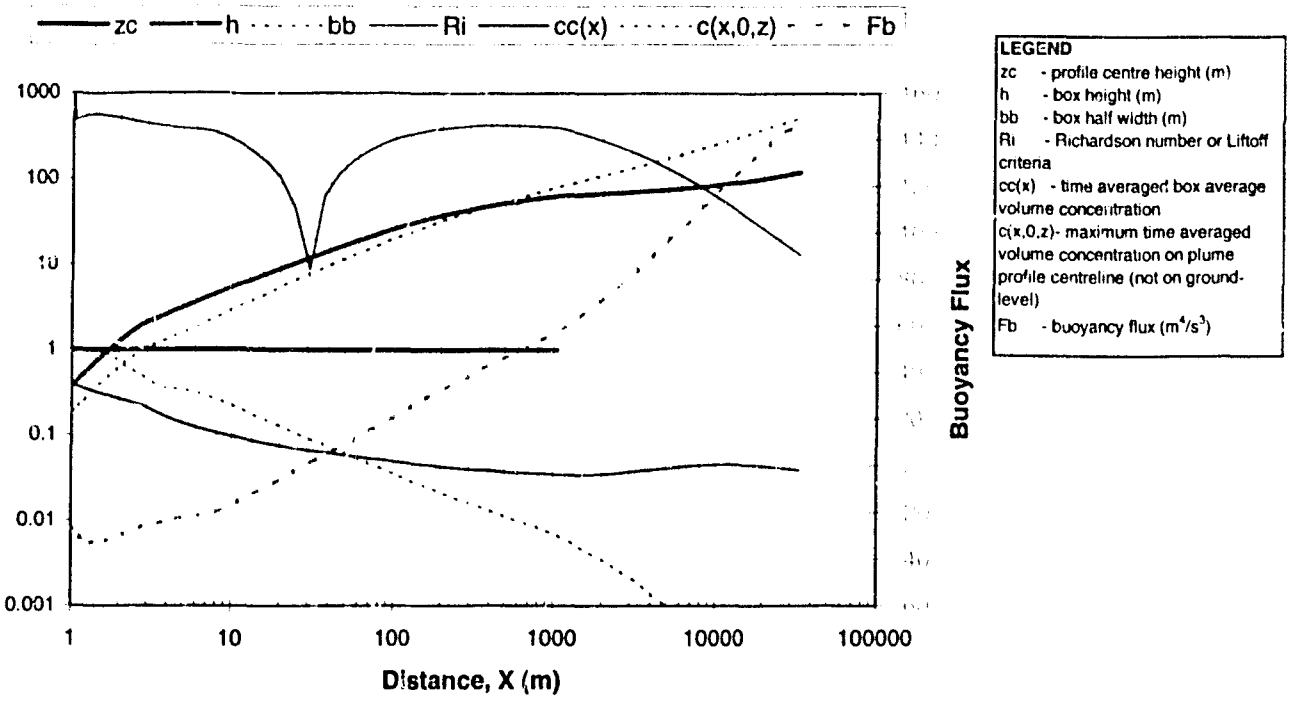
THIS IS A DRAFT, EPZ SUBMISSIONS MUST CONTINUE TO FOLLOW EUB GUIDE 71

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

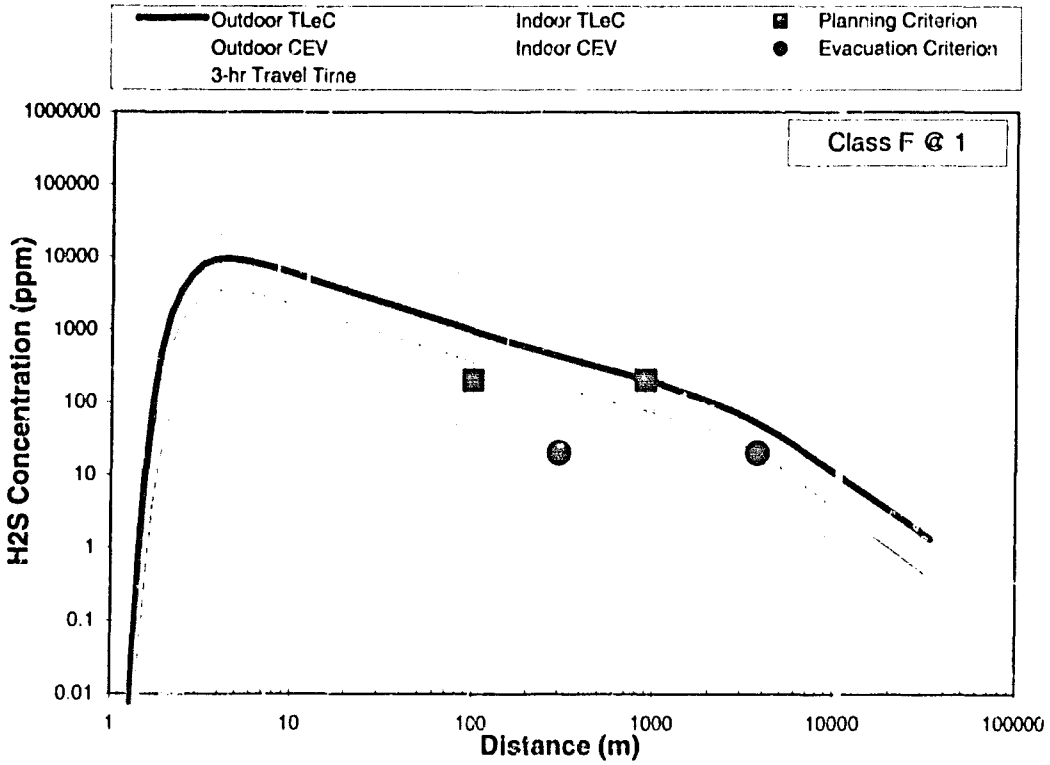
539.28 m3 of H2S released at 0.5992 m3/s for 15 minutes Class F @ 1 m/s

Buoyancy Flux based on WS Method is -34 m4/s3

Release is Dense



Transformed Transient Pipeline Maximum Concentrations



Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Hazard Distances for Meteorological Matrix

539 m3 H2S at 0.6 m3/s for 15 minutes

Legend: [T]Toxic Load Equiv. Concentration [C] Concentration [o]Outdoor [i]Indoor [Ha]Hazard [Ev]Evacuation

		Primary Hazard Distance (m)				Secondary Hazard Distance (m)			
Stability Class	Wind Speed (m/s)	ToHa	TiHa	CoEv	CiEv	ToHa	TiHa	CoEv	CiEv
1	1	260	21	566	142	260	21	566	142
1	1.5	217	21	455	125	217	21	455	125
1	2	188	21	394	114	188	21	394	114
1	2.5	169	21	349	104	169	21	349	104
1	3	153	21	317	97	153	21	317	97
2	1	342	22	833	167	342	22	833	167
2	1.5	290	22	675	153	290	22	675	153
2	2	258	22	584	143	258	22	584	143
2	2.5	232	22	521	133	232	22	521	133
2	3	214	22	471	125	214	22	471	125
2	3.5	197	22	434	118	197	22	434	118
2	4	185	22	407	112	185	22	407	112
2	4.5	176	22	379	107	176	22	379	107
2	5	166	21	358	102	166	21	358	102
3	1	468	22	1329	194	468	22	1329	194
3	1.5	418	22	1113	190	418	22	1113	190
3	2	375	23	962	183	375	23	962	183
3	2.5	344	23	845	176	344	23	845	176
3	3	319	23	778	169	319	23	778	169
3	3.5	294	23	713	161	294	23	713	161
3	4	279	23	664	155	279	23	664	155
3	4.5	265	23	629	149	265	23	629	149
3	5	252	23	594	145	252	23	594	145
3	8	201	23	461	121	201	23	461	121
3	10	181	23	414	111	181	23	414	111
4	1	583	23	1982	214	583	23	1982	214
4	1.5	541	23	1693	217	541	23	1693	217
4	2	505	23	1493	216	505	23	1493	216
4	2.5	469	23	1332	213	469	23	1332	213
4	3	439	23	1220	208	439	23	1220	208
4	3.5	416	23	1131	203	416	23	1131	203
4	4	395	24	1044	197	395	24	1044	197
4	4.5	374	24	992	192	374	24	992	192
4	5	357	24	943	188	357	24	943	188
4	8	289	24	738	162	289	24	738	162
4	10	289	24	738	162	289	24	738	162
4	15	216	24	530	127	216	24	530	127
4	20	187	24	452	113	187	24	452	113
5	1	732	23	2784	238	732	23	2784	238
5	1.5	712	24	2599	249	712	24	2599	249
5	2	678	24	2387	254	678	24	2387	254
5	2.5	649	24	2204	257	649	24	2204	257
5	3	619	24	2020	256	619	24	2020	256
5	3.5	591	24	1881	255	591	24	1881	255
5	4	563	24	1772	252	563	24	1772	252
5	4.5	542	24	1667	248	542	24	1667	248
5	5	524	25	1571	244	524	25	1571	244
6	1	942	24	3744	271	942	24	3744	271
6	1.5	979	24	3830	288	979	24	3830	288
6	2	**981**	25	3841	302	**981**	25	3841	302
6	2.5	967	25	**3843**	314	967	25	**3843**	314
6	3	947	25	3697	323	947	25	3697	323
6	3.5	924	25	3617	329	924	25	3617	329
6	4	900	**25**	3459	**333**	900	**25**	3459	**333**
	MAXIMUMS	**981**	25	3843	333	**981**	25	3843	333

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 DRILLING

Hazard Distances for Meteorological Matrix

Planning Outdoor TLeC

(100 ppm for 60 minutes)

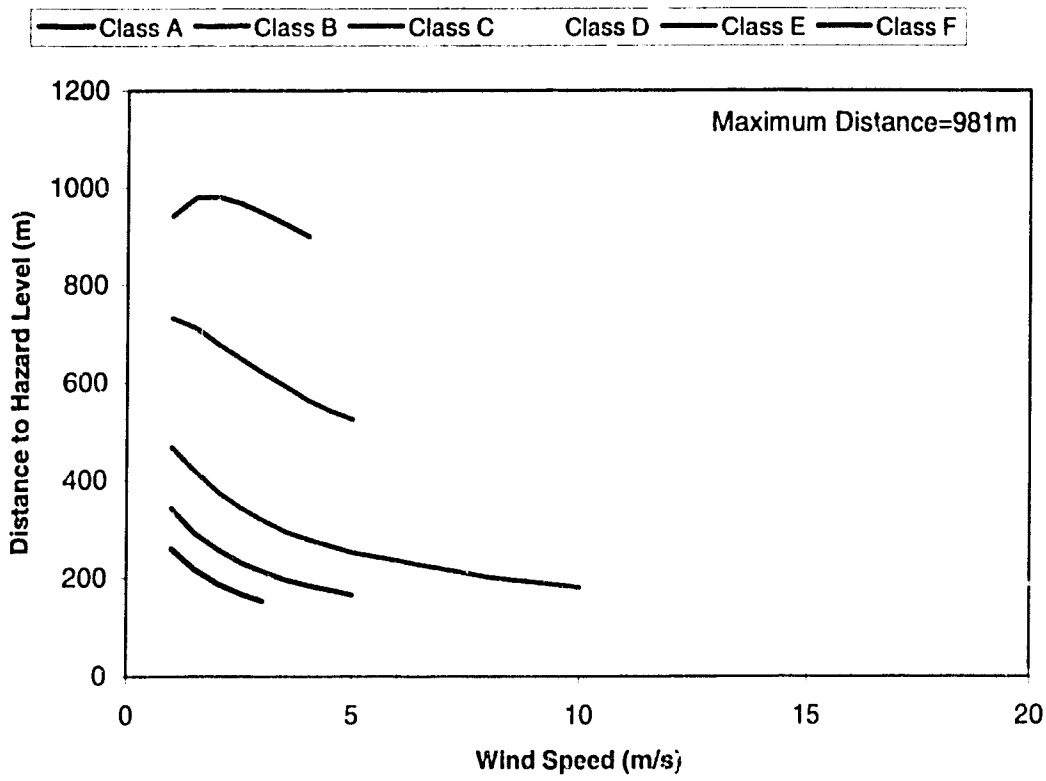
539 m3 H2S at 0.6 m3/s for 15 minutes

SteadyState-Outdoor Hazard (m)

Wind Speed (m/s)	Class A	Class B	Class C	Class D	Class E	Class F
1	260	342	468	583	732	942
1.5	217	290	418	541	712	979
2	188	258	375	505	678	**981**
2.5	169	232	344	469	649	967
3	153	214	319	439	619	947
3.5		197	294	416	591	924
4		185	279	395	563	900
4.5		176	265	374	542	
5		166	252	357	524	
8			201	289		
10			181	289		
15				216		
20				187		

indicates a windspeed that is unlikely for the given stability class

SteadyState-Outdoor Hazard (m)



REQUESTED FLARING PARAMETERS

EUB-WellTest Ver 1.xls

Administrative:	INPUTS (X3)		Warnings
Operator Corporate Name:	NORTHROCK RESOURCES LTD	(as per well licence)	
Mailing Address:	3500, 700 2nd Street SW		
City and Province:	Calgary, AB		
Postal Code:	T2P 2W2		
Responsible Person:			**MUST ENT**
Phone:	403 213-7447		
Fax:	403 213-5479		
Email:	shirt@northrockab.ca		
Flaring Details:		Units and Comments	
Well Name (as per well licence):	NORTHROCK ET AL SUMMIT CREEK	(words only, do not include location numbers in name)	
Well Licence Number:	0211-NO46 2-1-1994		
Oil or Gas Well ?	GAS	(OIL or GAS)	
Is Well Classified as Critical ?	No	(YES or NO)	
Well Bottom Hole Location:	B-44-64-30-125-45	(LSD-SEC-TWP-RGE W?M)	
Well Surface Location:	B-44-64-30-125-45	(LSD-SEC-TWP-RGE W?M)	
Well Centre Elevation:	580	m	
Scenario Name:	Testing	(purpose/operation/variable)	
Flare Stack Tip Exit Height:	12.2	m	
Flare Stack Tip Exit Diameter:	154	mm	
Subject Zone(s) of Test:		(provide separate spreadsheets)	**PLEASE EN**
Number of Zones to be Tested:	1	(1, 2, 3)	
Requested Maximum H_2S Concentration:	1.0	% (round up to 0.5% increments)	
Maximum Flaring Rate:	60	$10^3m^3/d$ at 15°C and 101.325 kPa	
Expected Average Flaring Rate:	40	$10^3m^3/d$ at 15°C and 101.325 kPa	
Routine Flare Volume Allowance Tier:	3	(1, 2 or 3 as per G-60 U&C)	
Total Volume to be Flared during Clean-up and Testing of Subject Zone(s):	100	10^3m^3 at 15°C and 101.325 kPa	
Total Volume to be Flared during Clean-up and Testing of ALL Zones:	100	10^3m^3 at 15°C and 101.325 kPa	
Anticipated Flaring Permit Start Date:	March 15, 2005	m/d/y (best-case)	
Anticipated Flaring Permit End Date:	May 13, 2005	m/d/y (worst-case)	

Flare Gas Composition: (based on submitted analysis) — mole fraction

H_2	0.0000
He	0.0000
N_2	0.0128
CO_2	0.0151
H_2S	0.0100
CH_4	0.6895
C_2H_6	0.1700
C_3H_8	0.0677
i-C_4H_{10}	0.0113
n-C_4H_{10}	0.0155
i-C_5H_{12}	0.0039
n-C_5H_{12}	0.0033
n-C_6H_{14}	0.0099
n-$C_7H_{16}^+$	0.0000
Total	1.00000

(spreadsheet will adjust reference analysis, to maximum requested H_2S)

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BASIC TERRAIN INPUT

Operator: NORTHROCK RESOURCES LTD
Well Name: NORTHROCK ET AL SUMMIT CREEK
Well Surface Location: B-44-64-30-125-45
Scenario Name: Testing

Topographical Map Details and Maximum Terrain:	**INPUTS**		Comments
1:50,000 topographical map(s) for terrain within 7 km of well centre:	83M/East	(i.e. 82 O/1)	
Contour units of map with maximum elevation within 7 km (metres or feet):	metres		
Contour interval of map with maximum elevation:	10	metres	
Is maximum elevation a surveyed peak? (Y/N):	N		
Maximum contour elevation or surveyed peak elevation within 140 mm radius on map:	790	metres	
Map distance from well centre to centre of maximum contour or maximum surveyed peak elevation (**mm**):	137		

Complex Terrain Criteria Summary:	metres	feet
Maximum Terrain Elevation:	795	2608
Stable Plume Criterion Elevation:	639	2098
Stack Height Criterion Elevation:	592	1943
Well Centre Elevation:	580	1903
Maximum Terrain Height Above Well Centre:	215	705
Stable Plume Criterion Height Above Well Centre:	59	195
Stack Height Criterion Above Well Centre:	12	40
	km	miles
Stack Height Criterion Extends from Well Centre to:	0.24	0.15
Slope Criterion Extends from Stack Height Criterion (above) to Stable Plume Height Criterion at:	4.30	2.67

STABLE PLUME CRITERION ELEVATION EXCEEDED, COMPLEX TERRAIN MODELLING REQUIRED

Distance from well centre to maximum elevation (m):	6850
Slope to maximum elevation:	3.1%

FILL IN WORST CASE TERRAIN INPUTS TO CHECK ELEVATIONS AND SLOPES BETWEEN WELL AND MAXIMUM ELEVATION

WORST CASE TERRAIN INPUT

Operator: NORTHROCK RESOURCES LTD
Well Name: NORTHROCK ET AL SUMMIT CREEK
Well Surface Location: B-44-64-30-125-45
Scenario Name: Testing

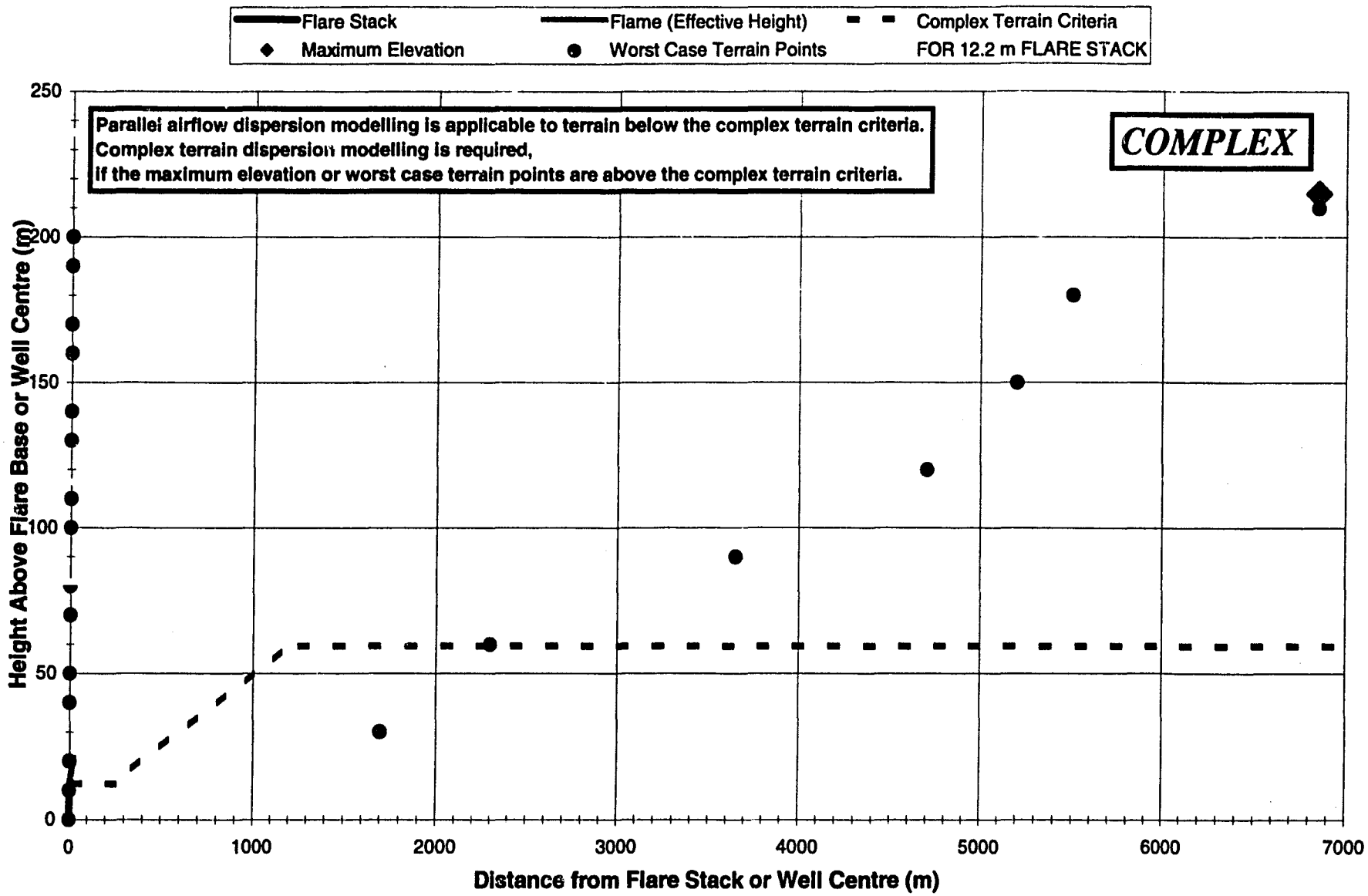
Worst Case Terrain and Complex Terrain Criteria Parameters:
ENTER SHORTEST DISTANCE ON MAP(S) (mm), FROM WELL CENTRE TO INDICATED CONTOUR ELEVATIONS TO DETERMINE IF:

COMPLEX TERRAIN CRITERIA EXCEEDED,
COMPLEX TERRAIN MODELLING REQUIRED

Contour Elevation metres	INPUTS Enter Map Distance mm	Contour Elevation feet	Complex Terrain Criteria Parameters	Warnings
580	0	1903	Above Well Centre/Flare Base	
590		1936	10 m (stack)	MUST ENTE
600		1969	20 m (stack)	MUST ENTE
610	34	2001	30 m (plume)	
620		2034	40 m (stack)	MUST ENTE
630		2067	50 m (stack)	MUST ENTE
640	46	2100	60 m (plume)	
650		2133	70 m (stack)	MUST ENTE
660		2165	80 m (stack)	MUST ENTE
670	73	2198	90 m (plume)	
680		2231	100 m (stack)	MUST ENTE
690		2264	110 m (stack)	MUST ENTE
700	94	2297	120 m (plume)	
710		2329	130 m (stack)	MUST ENTE
720		2362	140 m (stack)	MUST ENTE
730	104	2395	150 m (plume)	
740		2428	160 m (stack)	MUST ENTE
750		2461	170 m (stack)	MUST ENTE
760	110	2493	180 m (plume)	
770		2526	190 m (stack)	MUST ENTE
780		2559	200 m (stack)	MUST ENTE
790	137	2592	210 m (plume)	

COMPLEX TERRAIN CRITERIA COMPARED TO WORST CASE TERRAIN

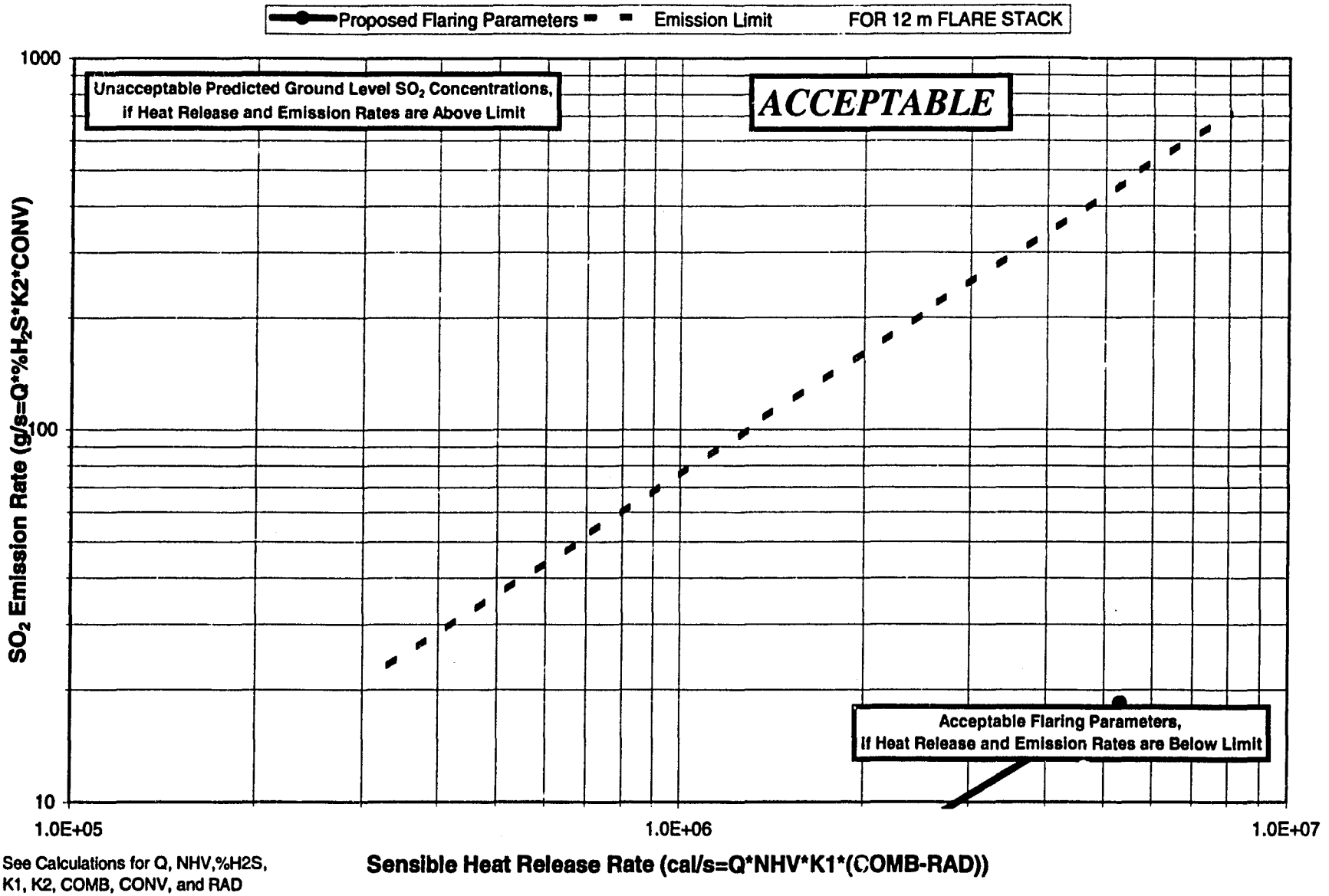
NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING



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PARALLEL AIRFLOW NOMOGRAPH 1 - SO_2 vs HEAT RELEASE FOR EMISSION LIMIT COMPARED TO PROPOSED FLARING PARAMETERS

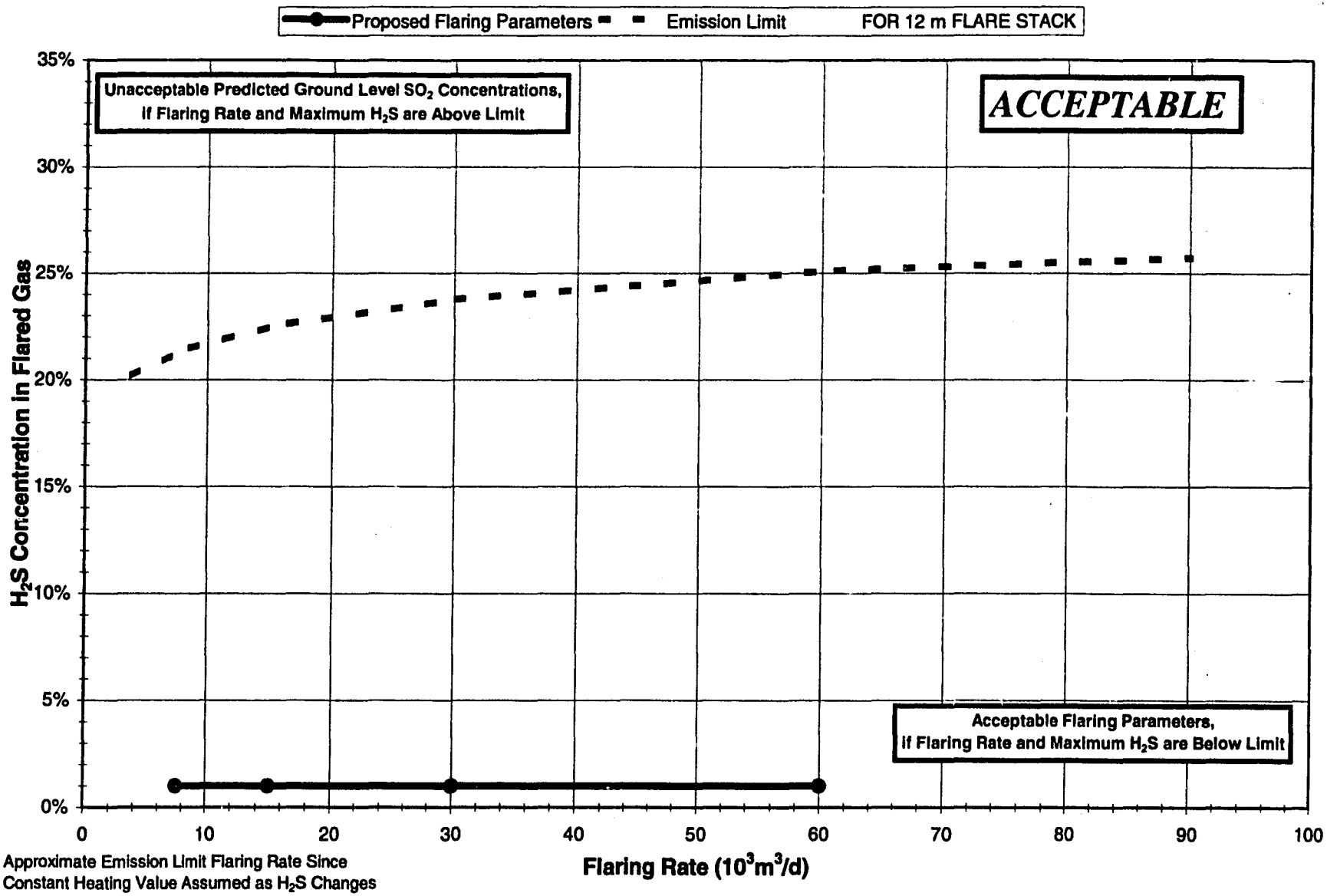
NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING



See Calculations for Q, NHV,%H2S, K1, K2, COMB, CONV, and RAD

PARALLEL AIRFLOW NOMOGRAPH 2 - H_2S vs FLARING RATE FOR EMISSION LIMIT COMPARED TO PROPOSED FLARING PARAMETERS

NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING



Approximate Emission Limit Flaring Rate Since Constant Heating Value Assumed as H_2S Changes

FLARE PERMIT SUMMARY

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Operator:	NORTHROCK RESOURCES LTD
Well Name:	NORTHROCK ET AL SUMMIT CREEK
Well Surface Location:	B-44-64-30-125-45
Zone to be Flared:	0
Scenario Name:	Testing

Permit Conditions:	Value	Units and Comments
Is Flare Permit Required?	NO	GAS
Proposed Flare Stack Tip Exit Height	12.2	m
Maximum Flaring Rate	60	$10^3m^3/d$ at 15°C and 101.325 kPa
Maximum H_2S Concentration	1.0%	(rounded up to nearest 0.5%)
Routine Flare Volume Allowance for Subject Zone(s)	200	10^3m^3 at 15°C and 101.325 kPa
Incremental Flare Volume Allowance for Additional Zones	0	10^3m^3 at 15°C and 101.325 kPa
Total Volume for Testing and Cleanup of Subject Zone(s)	100	10^3m^3 at 15°C and 101.325 kPa
Total Volume for Testing and Cleanup of All Zones	100	10^3m^3 at 15°C and 101.325 kPa
Flaring Permit Start Date	March 15, 2005	
Flaring Permit Finish Date	May 13, 2005	
Flaring Permit Duration	60	days
Notification Requirements for Temporary Flare:		
Estimated Duration of Planned Flaring Operations	60	hours
Must Notify 24 hours in Advance of Planned Flaring Operations	Public Within Minimum 3.0 km Radius & EUB Field Centre	
Heating Value:		
Heating Value of Flared Gas	43.9	MJ/m^3
Is Heating Value Acceptable?	YES	
Thermal Radiation:		
Maximum Total Thermal Radiation at Ground Level	2.43	kW/m^2
Is Thermal Radiation Acceptable?	YES	
Exit Diameter:		
Proposed Flare Stack Tip Exit Diameter	154	mm
Maximum Exit Velocity	37	m/s
Average Exit Velocity	25	m/s
Does Proposed Flare Stack Tip Exit Diameter Result in Exit Velocities Within Well Test Guidelines?	YES	
Minimum Recommended Flare Stack Tip Diameter	85	mm
Maximum Recommended Flare Stack Tip Diameter	204	mm
Complex Terrain Criteria:		
Is Stack Height Criterion Met?	YES	
Is Slope Criterion Met?	YES	
Is Stable Plume Height Criterion Met?	NO	HIGHER STACK HEIGHT MAY HELP
Is Parallel Airflow Modelling Applicable to Worst Case Elevated Terrain Within 7 km?	NO	COMPLEX TERRAIN MODELLING REQUIRED
SO_2 Dispersion:		
Does Dispersion Modelling have to be Considered?	NO	
Can the Spreadsheet Nomographs be used for the Flare Permit Dispersion Modelling?	NO	NOMOGRAPH ONLY APLICABLE TO TERRAIN LESS THAN COMPLEX TERRAIN CRITERIA
Proposed Maximum SO_2 Emission Rate	18	g/s
Nominal Adjusted Flare Stack Height for Emission Limit	12	m (No Change in Nominal Height From Input)

For Terrain where Parallel Airflow Modelling is Applicable:

Maximum SO_2 Emission Limit for Month of :	March	April	May
from Adjusted Flare Stack Height (g/s)	463	468	467

99^{th} Percentile Prediction of Ground Level SO_2 Concentration for Month with Lowest Emission Limit, using Nomograph based on Parallel Airflow Modelling	20	$microgram/m^3$
Do SO_2 Predictions, for Terrain where Parallel Airflow is Applicable, meet EUB Low Risk Criteria of 99^{th} Percentile less than 450 ug/m^3 and Maximum less than 900 ug/m^3 ?	YES	BUT, COMPLEX TERRAIN MODELLING ALSO REQUIRED

Dispersion Model Input at the Maximum Flaring Rate

Operator: NORTHROCK RESOURCES LTD
Well Name: NORTHROCK ET AL SUMMIT CREEK
Well Surface Location: B-44-64-30-125-45
Scenario Name: Testing

NOTE, it is not necessary to provide additional dispersion modelling for temporary flare if Parallel Airflow Modelling is applicable and proposed flaring parameters meet AAAQG (see FLARE PERMIT SUMMARY sheet), as nomographs reflect extensive modelling using ISCST3.

Modelling Parameters:	Value	Units	Comments
SO_2 Emission Rate:	18.4	g/s	(based on assumed conversion efficiency)
Effective Pseudo-Stack Height:	20.89	m	(flare stack height plus portion of flame length)
Pseudo-Stack Inside Diameter:	1.668	m	(based on sensible heat into plume rise and assumed temperatures and velocity)
Pseudo-Stack Gas Exit Velocity:	37.28	m/s	(actual exit velocity from flare tip used due to downwash considerations)
Pseudo-Stack Gas Exit Temperature:	1273	K	(assumed value that is typical temperature within flame)
Pseudo Ambient Air Temperature:	288	K	(NOTE, meteorological data input must match this assumption for ALL models)

If SCREEN3 is used, Flares are to be modelled as POINT sources using above inputs, do not use FLARE option.

Above parameters should also be used in ISCST3, RTDM, AERMOD and CALPUFF when modelling flares to reflect EUB Guide 60 assumptions.

Note that ambient air temperature in hour-by-hour meteorological data inputs to model should be set to 288K to match pseudo-stack assumptions. This results in a constant equivalent flaring heat release rate being modelled, otherwise it would vary by the hour with the air temperature. Alternately, the pseudo-stack inside diameter can change hourly with the ambient air temperature, based on a constant sensible heat into plume rise.

CALCULATIONS

Input Summary:

Assumptions, Guidelines and Criteria:	EUB INPUTS	Units and Comments
Combustion Efficiency (COMB fraction):	98%	(as per G-60)
Conversion Efficiency (CONV fraction):	98%	(as per G-60)
Flame Radiation Loss (RAD fraction):	25%	(as per G-60 U&C, SCREEN3 assumes 55%, AENV recommends 25%)
Release Temperature before Combustion:	15	°C (same as reference temperature)
Ambient Air Temperature:	15	°C (same as heating value datum)
Flare Combustion Temperature:	1000	°C (same as ISCST3 assumption)
Minimum Recommended Net Heating Value:	20.0	MJ/m^3 (as per G-60, for continuous acid gas flares)
Background Thermal Radiation:	1.04	kW/m^2 (as per GPSA)
Maximum Recommended Total Thermal Radiation:	4.73	kW/m^2 (as per G-60)
Maximum Recommended Exit Velocity:	122	m/s (as per G-60 and USEPA)
Minimum Recommended Exit Velocity at Reference Height:	10.3	m/s (99^{th} percentile wind speed at 10 m reference height as per AENV and UofA)
Stability Class F Plume Rise Criterion Wind Speed:	1.0	m/s (criterion wind speed at 10 m reference height as per EUB)
Stability Class F Vertical Potential Temperature Gradient:	0.035	K/m (as per ISCST3)
Stable Plume Criterion Height:	59	m (as per EUB/AENV/CAPP)
Maximum Slope Criterion:	5%	(as per EUB/AENV/CAPP)

Well Test Flaring Description:

Operator:	NORTHROCK RESOURCES LTD	
Well Name:	NORTHROCK ET AL SUMMIT CREEK	
Well Surface Location:	B-44-64-30-125-45	
Scenario Name:	Testing	
Maximum Requested H_2S Concentration (%H_2S):	1.0%	(may be different than requested due to rounding up)
Maximum Flaring Rate (Q_{MAX}):	60	$10^3m^3/d$ at 15°C and 101.325 kPa
Average Flaring Rate (Q_{AVG}):	40	$10^3m^3/d$ at 15°C and 101.325 kPa
Flare Stack Tip Height (h):	12.20	m
Flare Stack Tip Diameter (D_T):	154.0	mm

Composition Adjusted to Maximum Requested H_2S:

	mole fraction	
H_2	0.0000	
He	0.0000	
N_2	0.0128	
CO_2	0.0151	
H_2S	**0.0100**	(rounded up to nearest 0.5%)
CH_4	0.6895	
C_2H_6	0.1700	
C_3H_8	0.0677	
i-C_4H_{10}	0.0113	
n-C_4H_{10}	0.0155	
i-C_5H_{12}	0.0039	
n-C_5H_{12}	0.0033	
n-C_6H_{14}	0.0009	
n-$C_7H_{16}^+$	0.0000	
Total	1.0000	

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING

		Units and Comments
Emissions at the Maximum Flaring Rate:		
Heat Release Rate Constant - K1:	2764	(cal/s)/(10^3m³/d)/(MJ/m³)
SO_2 Emission Rate Constant - K2:	0.3136	(g/s)/(10^3m³/d; 1%H_2S)
Maximum Flaring Rate:	0.69	m³/s at 15°C and 101.325 kPa
Maximum H_2S Release Rate:	0.01	m³/s at 15°C and 101.325 kPa
Net Heating Value of Adjusted Composition (NHV):	43.90	MJ/m³ at 15°C and 101.325 kPa
Maximum Heat Release Rate (E_M):	7.282E+06	cal/s
Sensible Heat Release Rate to Rise(E_S):	5.316E+06	cal/s (based on combustion efficiency and radiation loss)
Maximum Buoyancy Flux (F_B):	197	m^4s^{-3} (based on sensible heat release rate to rise)
Maximum SO_2 Emission Rate:	19	g/s (100% conversion)
Maximum SO_2 Emission Rate:	2	t/d (100% conversion)
Maximum Sulphur Emission Rate:	1	t/d (100% conversion)
Maximum Sulphur Emission:	1	t (100% conversion)
Stable Plume Criterion Height:		
Criterion Flaring Rate:	7.5	10^3m³/d at 15°C and 101.325 kPa (minimum of $Q_{MAX}/8$ or Q_{AVG})
Hflame (h_f):	3.2	m (portion of flame, based on heat release rate, as per SCREEN3)
Heffective (h_s):	15.4	m
Stability Class F Plume Rise Criterion Wind Speed:	1.0	m/s (criterion wind speed at 10 m reference height as per EUB)
Criterion Wind Speed at Heffective for F Stability (Ucriterion):	1.27	m/s
Stability Class F Vertical Potential Temperature Gradient:	0.035	K/m (as per ISCST3)
Buoyancy Flux:	25	m^4s^{-3} (one half of maximum buoyancy flux)
Plume Rise above Heffective at Criterion Wind Speed (hr):	66	m
Stable Plume Criterion Height (Heffective+2/3*Plume Rise):	59	m (as per EUB/AENV/CAI P)
Criterion Plume Rise above Flare Base (Hs=hs+hr):	81	m
Stability Parameter N^2:	0.0012	rad^2/s^2
Brunt-Vaisala Frequency N:	0.005	1/s
Froude Number using Stable Plume Criterion Parameters:	0.62	(if greater than 1, all of the air flows over the terrain obstacle)
Terrain Height for Froude Number = 1:	37	m (maximum obstacle height, relative to plume, for plume to flow over terrain)
Dividing Streamline for Stable Plume Criterion Parameters (Hd):	23	m (above this interface height, air at Ucriterion flows over terrain obstacle)
Elevation of Plume above Dividing Streamline (Separation Height):	59	m (if plume above dividing streamline, plume flows over terrain obstacle)
Minimum Wind Speed for Dividing Streamline Equal to Heffective:	1.19	m/s (at 10 m reference height, higher wind speeds move dividing streamline down)
Minimum Wind Speed for Dividing Streamline Equal to Flare Base:	1.61	m/s (at 10 m reference height, lower wind speeds move dividing streamline up)
Critical Wind Speed for Minimum Separation Height:	1.00	m/s (at 10 m reference height, 1 m/s minimum)
Critical Terrain Height for Minimum Separation Height:	116	m (highest terrain obstacle for plume above interface and thus plume flows over)
Minimum Separation Height Between Plume and Dividing Streamline:	2	m (at critical wind speed and terrain height)
Exit Velocity Considerations:		
Maximum Exit Velocity (V_E):	37.3	m/s (at assumed release temperature and reference pressure)
Average Exit Velocity at One Half of Maximum Flow (V_A):	18.6	m/s (at assumed release temperature and reference pressure)
Maximum Recommended Exit Velocity (V_{MAX}):	122.0	m/s (as per G-60 and USEPA)
Minimum Recommended Exit Velocity at Exit Height (V_{MIN}):	10.6	m/s (99th percentile wind speed at flare stack tip exit height)
Minimum Flare Stack Diameter (D_{MIN} ~Q_{MAX}/V_{MAX}):	85	mm
Maximum Flare Stack Diameter (D_{MAX} ~$0.5*Q_{MAX}/V_{MIN}$):	204	mm
Pseudo-Stack Parameters:		
Effective Pseudo-Stack Height (h_S):	20.89	m (flare stack exit height plus portion of flame)
Pseudo-Stack Gas Exit Velocity (V_E):	37.28	m/s (actual exit velocity from flare tip)
Pseudo-Stack Gas Exit Temperature (T_E):	1273	K (assumed value)
Assumed Ambient Air Temperature (T_A):	288	K (assumed value)
Pseudo-Stack Inside Diameter (D_E):	1.668	m (based on maximum buoyancy flux and assumed temperatures and velocity)
Nomograph Flaring Parameters:		
Requested Flare Stack Tip Diameter (D_T):	154	mm
Requested Flare Stack Tip Height (h):	12.20	m
Adjusted Flare Stack Height With Stack Tip Downwash at V_A (h_A):	12.20	m (No Flare Tip Downwash Adjustment Made)
Nominal Adjusted Flare Stack Height for Nomograph Lookup Table:	12	m (No Change in Nominal Height From Input)
Proposed Maximum SO_2 Emission Rate (SO_2):	18	g/s (based on conversion efficiency)
Proposed Maximum Sensible Heat Release Rate:	5.316E+06	cal/s (based on combustion efficiency and radiation loss)

Start to End Month Number:	3	4	5	
Constant for Month:	2.581E-05	5.185E-05	4.450E-05	
Exponent for Month:	1.0785	1.0342	1.0439	
Allowable SO_2 Emission Limit for Month at Maximum Flow:	463	468	467	g/s

Thermal Radiation Considerations:		
Heat Released as Radiation:	7622	kW
Maximum Thermal Radiation Due to Flare at Ground Level (I_R):	1.39	kW/m^2
Background Thermal Radiation:	1.04	kW/m^2
Total Thermal Radiation Including Background:	2.43	kW/m^2

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING

Complex Terrain Template:

		Comments
	81	(m, citerion plume rise)
	116	(m, critical terrain height)
	236	(m, Y scale range to avoid text box)
X-Distance from Flare Stack or Well Centre (metres)	*Z-Height Above Flare Base or Well Centre (metres)*	
Complex Terrain Criteria		
23	12	(origin (but flame tip used for graphics), stack height)
244	12	((stack height)/slope, stack height)
1187	59	((criterion plume rise height)/slope, criterion plume rise height)
7000	59	(maximum distance, criterion plume rise height)
Maximum Elevation		
6850	215	
Worst Case Terrain Points		Complex Terrain Criteria Check
0	0	origin, base of flare
0	10	
0	20	
1700	30	pass stable plume height
0	40	
0	50	
2300	60	fail stable plume height
0	70	
0	80	
3650	90	fail stable plume height
0	100	
0	110	
4700	120	fail stable plume height
0	130	
0	140	
5200	150	fail stable plume height
0	160	
0	170	
5500	180	fail stable plume height
0	190	
0	200	
6850	210	fail stable plume height
0	0	
0	0	
0	0	
0	0	
Flare Stack		
0	0	
0	12	
2	12	
2	0	
Flame (Effective Height)		(based on centre of flame at maximum flare rate)
2	12	
23	21	(X includes radius and is exaggerated by scaling factor for graphics)
19	21	(X includes radius and is exaggerated by scaling factor for graphics)
0	12	
	2.4	(scaling factor for graphics, to make flame look better)
Complex Terrain Criteria Test Result:	COMPLEX	FOR 12.2 m FLARE STACK

Calculations for Scenario: NORTHROCK ET AL SUMMIT CREEK B-44-64-30-125-45 TESTING

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Nomograph 1:

	Comments	
	0.5	(range factor)

Bolded Values are Unacceptable

X-Sensible Heat Release Rate (cal/s)	*Y-SO_2 Emission Rate (g/s)* March	April	May	Emission Limit
3.32E+05	**23**	27	26	23
6.64E+05	**49**	54	53	49
1.33E+06	**104**	112	110	104
2.66E+06	**219**	229	226	219
5.32E+06	**463**	468	467	463
7.97E+06	**716**	**712**	713	712
3.54E+06	**299**	308	306	299

Proposed Flaring Parameters			99* Percentile SO_2 Concentration (ug/m^3)
6.64E+05	2	1/8 Maximum	21
1.33E+06	5	1/4 Maximum	20
2.66E+06	9	1/2 Maximum	19
5.32E+06	18	Maximum	18
3.54E+06	12	Average	19

Proposed Flaring Parameters are: ACCEPTABLE FOR 12 m FLARE STACK (No Change in Nominal Height From Input)

Nomograph 2:

28.7% (max for Y scale range to avoid text box)

X-Flaring Rate (10^{3}m^3/d)	*Y-H_2S Concentration in Flared Gas (%)* Emission Limit	(Approximate as constant heating value assumed as H_2S changes)
3.8	20.2%	1/8 Maximum*Range Factor
7.5	21.3%	1/8 Maximum
15.0	22.5%	1/4 Maximum
30.0	23.8%	1/2 Maximum
60.0	25.1%	Maximum
90.0	25.7%	Maximum*(1+ Range Factor)

Proposed Flaring Parameters		
7.5	1.0%	1/8 Maximum
15.0	1.0%	1/4 Maximum
30.0	1.0%	1/2 Maximum
60.0	1.0%	Maximum

POWER LAW BEST FIT LINES TO ISCST3 DISPERSION MODELLING FOR 99TH PERCENTILE = 450 ug/m^3

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SO_2 Emission Limit, g/s (height, month) = Constant (height, month) * (Sensible Heat Release Rate, cal/s)^Exponent (height, month)

Adjusted Constants to prevent over-predicting emissions in 100-300 $10^3m^3/d$ range but results in under-predictions for 10-100 and 300-1000 $10^3m^3/d$ range.

CONSTANT (height, month)

Nominal Height	Annual	January	February	March	April	May	June	July	August	September	October	November	December
(m)	0	1	2	3	4	5	6	7	8	9	10	11	12
12	2.98E-05	2.01E-05	2.06E-05	2.58E-05	5.18E-05	4.45E-05	4.00E-05	4.88E-05	4.99E-05	4.10E-05	2.11E-05	2.09E-05	2.40E-05
18	6.22E-05	4.49E-05	3.85E-05	5.44E-05	1.17E-04	1.05E-04	1.01E-04	1.06E-04	9.79E-05	7.92E-05	3.92E-05	3.62E-05	4.15E-05
24	1.24E-04	8.12E-05	6.06E-05	1.09E-04	2.26E-04	2.02E-04	1.91E-04	1.93E-04	1.68E-04	1.49E-04	6.92E-05	5.57E-05	6.53E-05
30	2.21E-04	1.21E-04	1.04E-04	2.01E-04	3.91E-04	3.58E-04	3.35E-04	3.53E-04	2.83E-04	2.44E-04	1.11E-04	5.39E-05	8.71E-05
36	3.42E-04	2.55E-04	2.21E-04	2.97E-04	5.85E-04	5.26E-04	4.98E-04	5.24E-04	4.19E-04	3.67E-04	2.35E-04	8.40E-05	7.68E-05
42	3.58E-04	3.19E-04	2.44E-04	3.27E-04	6.54E-04	5.89E-04	5.39E-04	5.58E-04	4.55E-04	3.76E-04	2.90E-04	9.12E-05	7.02E-05
48	3.85E-04	4.70E-04	2.86E-04	3.56E-04	6.89E-04	6.53E-04	5.83E-04	5.90E-04	4.81E-04	3.82E-04	4.19E-04	1.15E-04	5.39E-05
54	4.26E-04	6.04E-04	3.08E-04	3.76E-04	6.94E-04	7.16E-04	6.33E-04	6.53E-04	5.30E-04	4.22E-04	5.51E-04	1.08E-04	5.65E-05
63	4.76E-04	8.93E-04	4.23E-04	4.08E-04	7.16E-04	8.26E-04	6.21E-04	7.22E-04	5.97E-04	4.64E-04	9.23E-04	9.95E-05	9.38E-05

EXPONENT (height, month)

Nominal Height	Annual	January	February	March	April	May	June	July	August	September	October	November	December
(m)	0	1	2	3	4	5	6	7	8	9	10	11	12
12	1.0693	1.0945	1.0929	1.0785	1.0342	1.0439	1.0507	1.0381	1.0366	1.0491	1.0912	1.0919	1.0831
18	1.0315	1.0522	1.0620	1.0401	0.9867	0.9940	1.0010	0.9935	0.9981	1.0127	1.0609	1.0659	1.0572
24	0.9953	1.0237	1.0423	1.0048	0.9468	0.9553	0.9630	0.9566	0.9640	0.9758	1.0339	1.0477	1.0376
30	0.9606	1.0079	1.0174	0.9701	0.9143	0.9207	0.9286	0.9207	0.9315	0.9456	1.0133	1.0591	1.0286
36	0.9350	0.9698	0.9779	0.9485	0.8913	0.8968	0.9054	0.8957	0.9065	0.9200	0.9742	1.0404	1.0461
42	0.9328	0.9643	0.9739	0.9456	0.8845	0.8928	0.9017	0.8919	0.9016	0.9187	0.9627	1.0431	1.0615
48	0.9317	0.9426	0.9658	0.9419	0.8818	0.8870	0.8973	0.8889	0.8986	0.9182	0.9413	1.0302	1.0883
54	0.9253	0.9291	0.9629	0.9400	0.8813	0.8815	0.8920	0.8825	0.8924	0.9119	0.9239	1.0341	1.0905
63	0.9189	0.9080	0.9449	0.9359	0.8797	0.8732	0.8936	0.8764	0.8852	0.9063	0.8929	1.0400	1.0604

COMPOSITIONAL ANALYSIS

Summit Creek
B-44
NEB

PARTNER

COMPOSITIONAL ANALYSIS

TABLE OF CONTENTS

TABLE 1 GAS SAMPLE COLLECTION DATA 2
TABLE 2 COMPOSITIONAL ANALYSIS OF FLASHED GAS 3

TABLE 1
NORTHROCK RESOURCES - TIGHTHOLE
WELL TIGHTHOLE - TIGHTHOLE - SAMPLE V3512
SAMPLE VALIDATION
GAS SAMPLE COLLECTION DATA

Project File:	2004-049	
Company:	NORTHROCK RESOURCES	
Pool:	TIGHTHOLE	
Field:	TIGHTHOLE	
Well Location:	TIGHTHOLE	
Fluid Sample:	V3512	
Sample Description:	GAS	
Sampling Company:	N/A	
Name of Sampler:	N/A	
Sampling Date:	26-Mar-04	
Sampling Point:	OTHER	
Sampling Temperature:	81.0 F	300.4 K
Sampling Pressure:	3335.9 psia	23.00 MPa
Reservoir Temperature:	N/A F	N/A K
Reservoir Pressure:	N/A psia	N/A MPa
Initial Reservoir Pressure (Pi)	N/A psia	N/A MPa
Depth of Reported Pi	N/A mMD	N/A mss

TABLE 2
NORTHROCK RESOURCES - TIGHTHOLE
WELL TIGHTHOLE - TIGHTHOLE - SAMPLE V3512
SAMPLE VALIDATION
COMPOSITIONAL ANALYSIS OF FLASHED GAS

Component Name	Chemical Symbol	Mole Fraction		Liquid Volume	
		As Analyzed	Acid Gas Free	STB/MMscf	mL/m3
Nitrogen	N_2	0.0128	0.0130		
Carbon Dioxide	CO_2	0.0151	0.0000		
Hydrogen Sulphide	H_2S	0.0000	0.0000		
Methane	C_1	0.6995	0.7102		
Ethane	C_2	0.1700	0.1726		
Propane	C_3	0.0677	0.0687	44.195	248.131
i-Butane	i-C_4	0.0113	0.0115	8.770	49.240
n-Butane	n-C_4	0.0155	0.0158	11.626	65.277
i-Pentane	i-C_5	0.0039	0.0039	3.356	18.840
n-Pentane	n-C_5	0.0033	0.0033	2.803	15.740
Hexanes	C_6	0.0009	0.0010	0.914	5.133
Heptanes	C_7	0.0000	0.0000	0.000	0.000
Octanes	C_8	0.0000	0.0000	0.000	0.000
Nonanes	C_9	0.0000	0.0000	0.000	0.000
Decanes	C_{10}	0.0000	0.0000	0.000	0.000
Undecane	C_{11}	0.0000	0.0000	0.000	0.000
Dodecanes Plus	C_{12+}	0.0000	0.0000	0.000	0.000
Total		1.0000	1.0000	71.664	402.360
Propanes Plus	C_{3+}	0.1026	0.1041	71.664	402.360
Butanes Plus	C_{4+}	0.0349	0.0354	27.470	154.230
Pentanes Plus	C_{5+}	0.0081	0.0082	7.073	39.713

Calculated Gas Properties @ Standard Conditions			Calculated Pseudocritical Properties		
Molecular Weight	22.50 kg/kmol	22.50 lb/lb-mol	Ppc	670.1 psia	4.62 MPa
Specific Gravity	0.7767 (Air = 1)	0.7767 (Air = 1)	Tpc	416.7 R	231.5 K
MW of C7+	96.00 kg/kmol	96.00 lb/lbmol	Ppc*	665.9 psia	4.59 MPa
Density of C7+	0.7220 g/cc	722.0 kg/m3	Tpc*	414.0 R	230.0 K

Calculated Gross Heating Value @ Standard Conditions			Calculated Net Heating Value @ Standard Conditions		
Dry	1,297.9 Btu/scf	48.45 MJ/m3	Dry	1,178.9 Btu/scf	44.01 MJ/m3
Wet	1,275.3 Btu/scf	47.60 MJ/m3	Wet	1,158.4 Btu/scf	43.24 MJ/m3

* - Corrected for Acid Gas Content

Standard Conditions: 60 F (288.7 K) @ 14.696 psia (0.101325 MPa)

GC ID: 1681

ID: 307

CLEAN UP TESTS

(FEB 20 – 4 MAR. MAR.4 – 6, MAR.15-26)

PRECISION ENERGY SERVICES

Precision Drilling

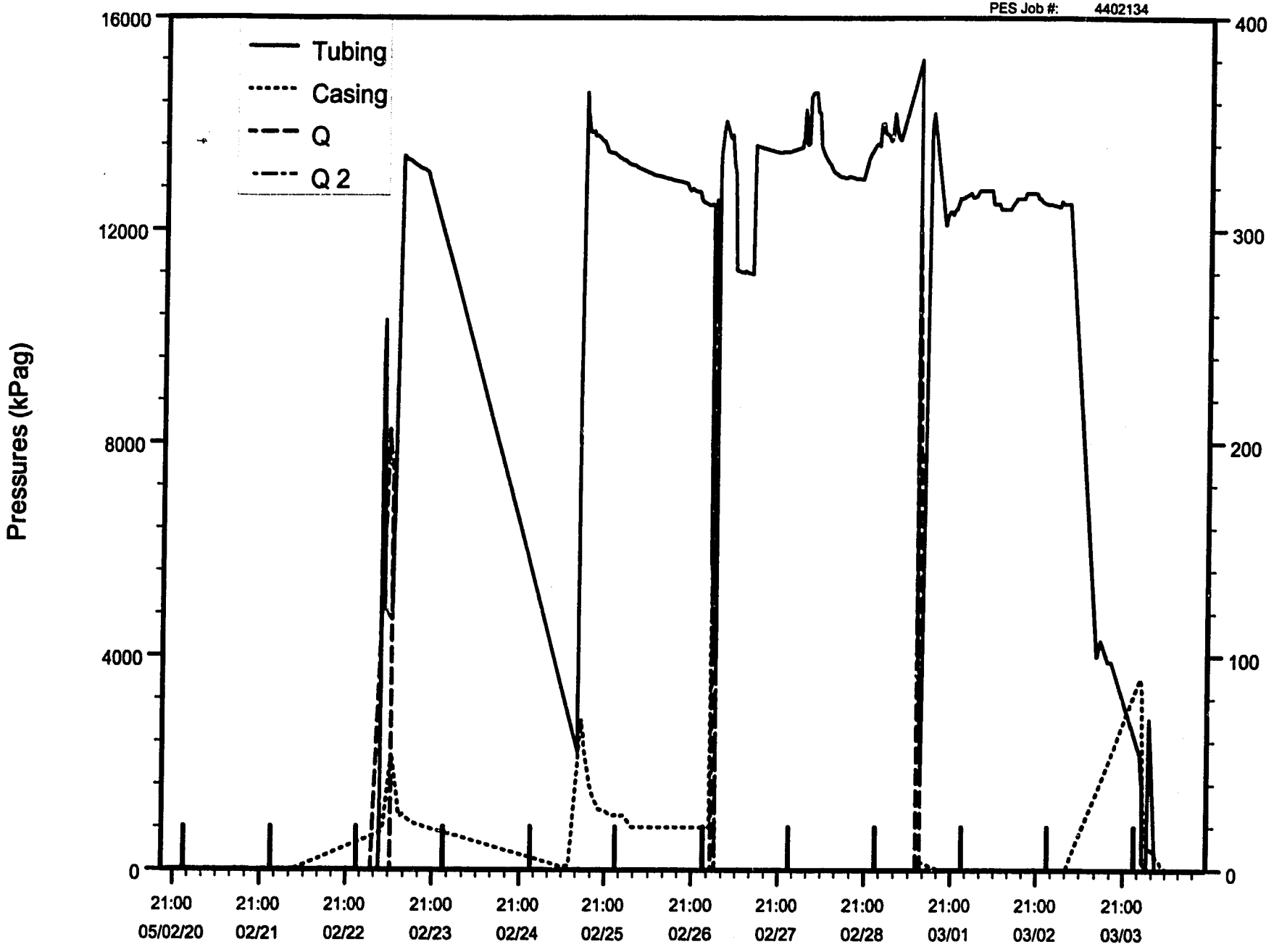
Northrock Resources Ltd.
B44 Bear Lake
B44-64-30-125-45
Tight Hole

Testing Operation Performed:	Clean Up \ Test
Customer Representative(s) on Location:	Peter Engelman
Precision Energy Supervisor(s):	Martin Mueller, Darren Bittorf
Test Start and End Dates:	05/02/20 - 05/03/04
Precision Energy Job Number:	4402134
Interval Top and Base:	
Precision Energy Representative:	Jim Sutherland
Report Prepared By:	Jason Zhu
Date Prepared:	05/06/15

PRECISION ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45

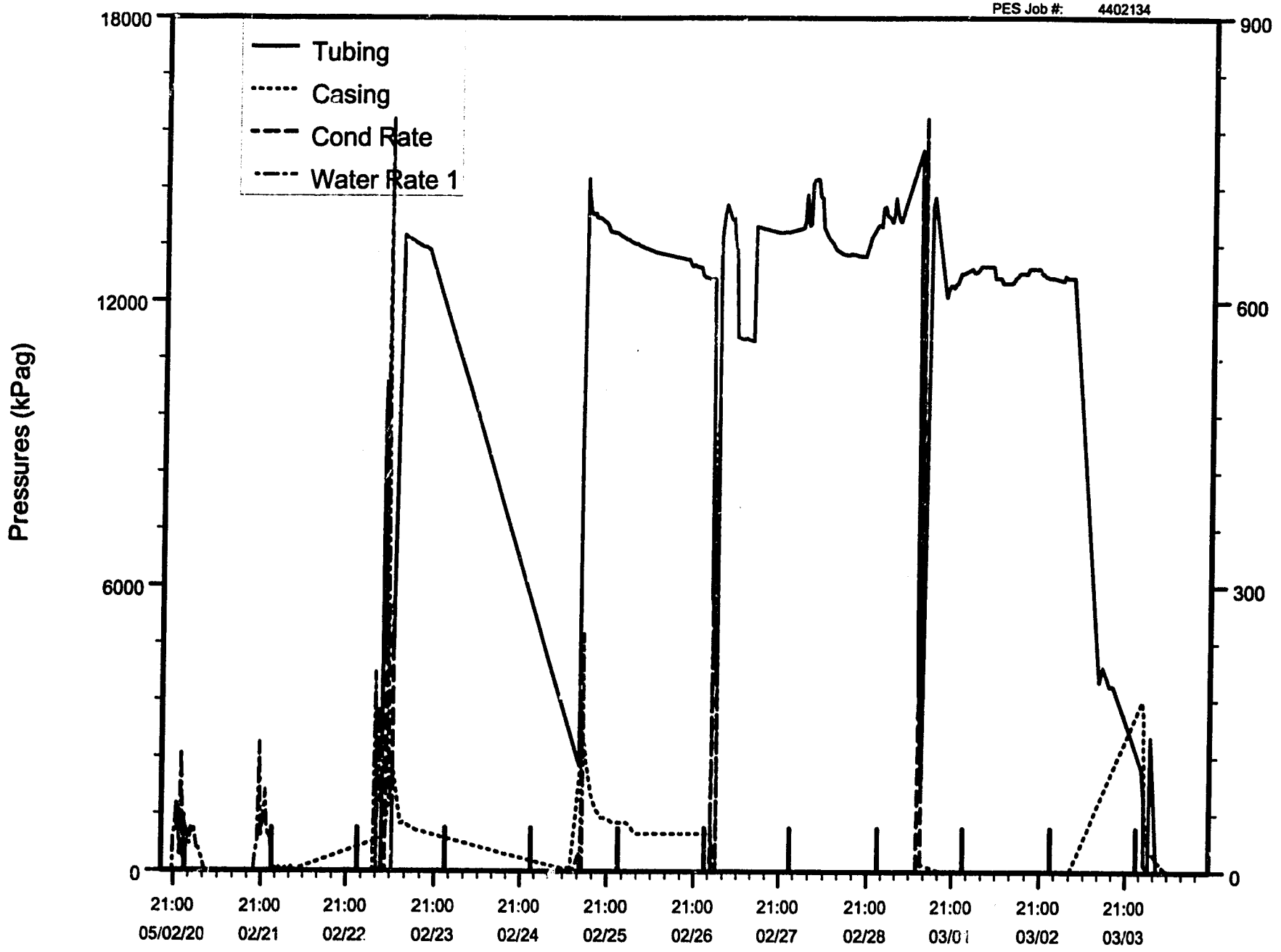
Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134



PRECISION ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134



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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Company:	Northrock Resources Ltd.
Company Representative:	Peter Engelman
Wellname:	B44 Bear Lake
UWI:	B44-64-30-125-45
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Operation:	Clean Up \ Test
Test Supervisors:	Martin Mueller, Darren Bittorf
PES Job #:	4402134
Precision Drilling Corporation division:	Precision Energy Services
Fluid 1 Type:	Condensate
Tank Measurement:	Incremental
Fluid 2 Type:	Water
Tank Measurement:	Incremental
Flow Duration:	38.68 hours
Final Gas Production Rate:	122.65 E³m³/d
Cumulative Gas Produced:	23.95 E³m³
Cumulative Water Produced:	77.09 m³
Cumulative Condensate/Oil Produced:	68.57 m³
Initial Tubing Pressure:	
Final Tubing Pressure:	

1 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	T-148
Upstream Meter Internal Diameter:	145.87 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0095
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	0.0002
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.749
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Beer Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

2 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-10
Upstream Meter Internal Diameter:	102.34 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0095
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	0.0002
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.749
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/01/25																			
10:00		Leave Grande Prairie and travel to Fort Simpson.																	
21:30		Arrive in Fort Simpson.																	
05/01/26																			
09:00		Leave Fort Simpson and travel to location.																	
19:30		Arrive at camp, stop for the night.																	
05/01/27																			
08:00		Arrive at location, hold safety meeting, assist with spotting rig as needed.																	
18:00		Shutdown for the night, return to camp.																	
05/01/28																			
07:00		Arrive at location, hold safety meeting, proceed with spotting test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/01/29																			
07:00		Arrive at location, hold safety meeting, proceed with standing of flarestack and incinerator.																	
19:00		Shutdown for the night, return to camp.																	
05/01/30																			
07:00		Arrive on location, hold safety meeting, proceed with spotting of third stage separation vessels.																	
19:00		Shutdown for the night, return to camp.																	
05/01/31																			
07:00		Arrive on location, hold safety meeting, proceed with rig in of test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/02/01																			
07:00		Arrive on location, hold safety meeting, continue rig in of test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/02/02																			
07:00		Arrive on location, hold safety meeting, continue rig in of test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/02/03																			
06:30		Arrive on location, hold safety meeting, continue rig in of test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/02/04																			
06:30		Arrive on location, hold safety meeting, continue rig in of test equipment.																	
19:00		Shutdown for the night, return to camp.																	
05/02/05																			
06:30		Arrive on location, hold safety meeting, complete rig in of test equipment.																	

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/05																			
19:00		Shutdown for the night, return to camp.																	
05/02/06																			
06:30		Arrive on location, hold safety meeting, wait on completion.																	
19:00		Shutdown for the night, return to camp.																	
05/02/07																			
06:30		Arrive on location, hold safety meeting, wait on completion.																	
19:00		Shutdown for the night, return to camp.																	
05/02/08																			
06:30		Arrive on location, hold safety meeting, wait on completion.																	
19:00		Shutdown for the night, return to camp.																	
05/02/09																			
06:30		Arrive on location, hold safety meeting, wait on completion.																	
19:00		Shutdown for the night, return to camp.																	
05/02/10																			
03:30		Arrive on location, hold safety meeting, wait on completion.																	
19:00		Shutdown for the night, return to camp.																	
05/02/11																			
07:00		Dayshift on location, hold safety meeting, begin perforating operations.																	
11:00		First gun fired, well is static, monitor pressure continuously.																	
13:55		Perf gun # 2 fired, well remains static, monitor pressure.																	
15:30		Perf gun # 3 fired, well remains static, monitor pressure.																	
16:45		Perf gun # 4 fired, well remains static, monitor pressure.																	
18:20		Miss fire, wireline pull out of hole and disarm gun.																	
18:30		Night shift arrive on location, hold safety meeting.																	
19:55		Perf gun # 5 fired, well remains static, monitor pressure.																	
23:30		Perf gun # 6 fired, well remains static, monitor pressure.																	
05/02/12																			
01:15		Hold safety meeting.																	
04:05		Perf gun # 7 fired, well remains static, monitor pressure.																	
06:30		Day shift arrive on location, hold safety meeting.																	
06:31		Perf gun # 8 fired, well remains static, monitor pressure.																	
08:29		Miss fire, wire line pull out of the hole and disarm gun.																	
11:00		Perf gun # 9 fired, well remains static, monitor pressure.																	
12:33		Miss fire, wireline pull out of the hole and disarm gun.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/12																			
15:23		Perf gun #10 fired, well remains static, monitor pressure.																	
17:12		Perf gun # 11 fired, well remains static, monitor pressure.																	
18:30		Night shift arrive on location, hold safety meeting.																	
21:32		Perf gun # 12 fired, well remains static, monitor pressure.																	
22:30		Wireline at surface, rig out.																	
23:00		Start to purge test equipment.																	
23:45		Pressure test high stage to 7000 kPa.																	
24:00		Pressure test low stage to 900 kPa.																	
05/02/13																			
00:20		Start to purge third stage vessels.																	
05:00		Purging of third stage vessels complete.																	
06:30		Day shift arrive on location, hold safety meeting, rig tripping pipe.																	
18:30		Night shift arrive on location, hold safety meeting, continue tripping pipe.																	
05/02/14																			
01:55		Finished tripping in, attach top drive.																	
08:50		Start dressing linner top.																	
13:40		Top of the linner dressed, get ready to trip out tubing. Total fluid lost during circulation = 3.5m3.																	
18:30		Night shift arrive on location, hold safety meeting.																	
21:50		Finished tripping out, rig up wireline.																	
22:30		Safety meeting.																	
22:45		Wireline run in hole with gauge ring.																	
05/02/15																			
00:05		Wireline at surface.																	
00:30		Wireline running in hole with Junk Basket.																	
01:45		Wireline at surface.																	
02:00		Lay down lubricator and pick up tools.																	
03:00		Start to trip in hole.																	
11:00		Set packer and pressure test.																	
16:00		Unable to pressure test packer, start to pull out of hole.																	
18:30		Night shift arrive on location, hold safety meeting, continue to trip pipe.																	
23:30		Finished tripping out of the hole.																	
05/02/16																			
00:40		Trip in tubing with packer assembly.																	
06:30		Day shift arrive on location, hold safety meeting, continue to trip in hole.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				W[illegible] Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/16																			
09:30		Set packer to pressure test.																	
10:15		Unable to set packer, rig up to circulate.																	
10:31		Begin circulating at 0.3 m3/min.																	
11:18		Finished circulating, set packer and pressure test. Total fluid lost during circulation was 2.5 m3.																	
14:00		Pressure test good, continue in hole.																	
15:00		Rig in wireline and run in hole to log packer on depth.																	
16:45		Wireline out of hole and rig off. Space out and set bottom packer.																	
17:15		Rig in BJ for acid Squeeze.																	
18:30		Night shift arrive, hold safety meeting.																	
19:30		Begin acid squeeze operations.																	
19:45		Pressure test BJ lines.																	
21:10		Acid spotted, packer set, begin squeeze. 9.5 m3 acid and 1.5 m3 water in hole.																	
05/02/17																			
01:20		Unable to squeeze acid away, hold safety meeting and flush acid out of hole with 28 m3 water.																	
03:35		Flush complete. Move packer and continue with second stage.																	
05:30		Hold safety meeting, begin second stage stimulation.																	
05:58		Pressure test BJ lines.																	
06:30		Day shift on location, hold safety meeting.																	
07:00		Acid spotted. packer set, begin squeeze. 8.5 m3 acid and 3.06 m3 water in hole.																	
18:30		Night shift arrive, hold safety meeting, continue to squeeze stage #2.																	
22:30		Pressure drop on tubing, suspect Packer or tubing leak.																	
23:30		Unset from packer and circulate out acid to acid tank #2.																	
05/02/18																			
01:05		Acid circulated out.																	
01:15		Run in and try resetting packer and pressure testing.																	
06:30		Packer pressure test unsuccessful.																	
06:30		Day shift arrive on location, hold safety meeting.																	
08:00		Trip out of hole.																	
18:00		Trip in hole with scraper and tapered mill.																	
18:30		Night shift on location, hold safety meeting continue tripping in.																	
05/02/19																			
02:00		Finished trip in with scraper rig up to circulate.																	
02:15		Circulate 16m3.																	
03:05		Finished circulating.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/19																			
03:50		Start to trip out of the hole.																	
06:30		Day shift arrive on location, hold safety meeting, continue out of hole.																	
10:00		Finished trip out of hole, make up BHA and trip back in hole.																	
18:30		Night shift on location, hold safety meeting and continue in hole.																	
21:45		14 joints left to go, stop tripping.																	
22:20		Set packer, pressure test and continue in hole.																	
05/02/20																			
00:15		Continue to trip in hole.																	
02:20		Finished tripping in the hole, tag bottom.																	
03:00		Trip out 7 joints to stage #3.																	
04:15		Safety meeting.																	
04:40		Pressure test BJ lines and continue with squeeze.																	
05:40		Acid Spotted, packer set, begin squeeze. 5m3 of acid and 6.31 m3 of water in hole.																	
06:30		Day shift on location, hold safety meeting, continue acid squeeze.																	
15:20		Unable to squeeze acid away, bleed off tubing, release packer, and circulate acid out of hole with 13 m3 water.																	
16:08		Circulation complete, release lower packer and get ready to swab.																	
18:30		Nightshift arrive on location, hold safety meeting, prepare for swabbing.																	
20:35		Start swabbing.																	
20:35		Open well.																	
20:45		Swab #1, tag fluid at surface, pull from 175m.																	
20:45	0.2	0												0.00	0.00	0.25	0.25	7.0	9000
21:00		Swab #2, tagged fluid at 175m, pulled from 300m.																	
21:00	0.4	0												0.00	0.00	0.40	0.65	6.0	2000
21:20		Swab #3, tagged fluid at 300m, pulled from 375m.																	
21:20	0.8	0												0.00	0.00	0.73	1.38	6.0	2000
21:35		Swab #4, tagged fluid at 410m, pulled from 618m.																	
21:35	1.0	0												0.00	0.00	0.74	2.12	6.0	2000
21:50		Swab #5, tagged fluid at 570m, pulled from 713m.																	
21:50	1.3	0												0.00	0.00	0.44	2.56	6.0	2000
22:05		Swab #6, tagged fluid at 617m, pulled from 807m.																	
22:05	1.5	0												0.00	0.00	0.68	3.24	7.0	2000
22:20		Swab #7, tagged fluid at 617m, pulled from 945m.																	
22:20	1.8	0												0.00	0.00	0.45	3.69	7.0	2100
22:35		Swab #8, tagged fluid at 852m, pulled from 1035m.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/20																			
22:35	2.0	0												0.00	0.00	0.18	3.87	7.0	2000
22:50		Swab #9, tagged fluid at 945m, pulled from 1125m.																	
22:50	2.3	0												0.00	0.00	1.31	5.18	6.0	2000
23:30		Swab #10, tagged fluid at 1080m, pulled from 1300m.																	
23:30	2.9	0												0.00	0.00	0.41	5.59	6.0	2000
23:45		Swab #11, tagged fluid at 1257, pulled from 1511m.																	
23:45	3.2	0												0.00	0.00	0.61	6.20	6.0	2000
05/02/21																			
00:15		Swab #12, tagged fluid at 1300m, pulled from 1635m.																	
00:15	3.7	0												0.00	0.00	0.54	6.74	6.0	2000
00:50		Swab #13, tagged fluid at 1300m, pulled from 1511m.																	
00:50	4.3	0												0.00	0.00	1.02	7.76	6.0	2000
01:15		Swab #14, tagged fluid at 1427m, pulled from 1594m.																	
01:15	4.7	0												0.00	0.00	0.49	8.25	6.0	2000
01:30		Swab #15, tagged fluid at 1553m, pulled from 1755m.																	
01:30	4.9	0												0.00	0.00	0.47	8.72	6.0	2000
02:00		Swab #16, tagged fluid at 1635m, pulled from 1873m.																	
02:00	5.4	0												0.00	0.00	0.85	9.57	6.0	2000
02:25		Swab #17, tagged fluid at 1795m, pulled from 2000m.																	
02:25	5.8	0												0.00	0.00	0.80	10.37	6.0	2000
03:20		Swab #18, tagged fluid at 1872m, pulled from 2100m.																	
03:20	6.8	0												0.00	0.00	0.93	11.30	6.0	2200
03:20		Trace of black hydrocarbons.																	
03:45		Swab #19, tagged fluid at 1950m, pulled from 2173m.																	
03:45	7.2	0												0.00	0.00	0.42	11.72	7.0	2400
03:45		Trace of black hydrocarbons.																	
03:45		100 ppm of sour or acid gas detected on tri-head monitor.																	
04:00		Hold safety meeting.																	
05:20		Swab #20, tagged fluid at 2173m, pulled from 2190m.																	
05:20	8.8	0												0.00	0.00	0.20	11.92	6.0	2000
05:20		Trace of black hydrocarbons.																	
06:00		Swab #21, tagged fluid at 2173m, pulled from 2190m.																	
06:00	9.4	0												0.00	0.00	0.00	11.92		
06:00		Dry swab. Rig down swab tree. Pull next swab at 07:00.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/21																			
06:00		Total fluid recovered during swabbing = 11.92m3.																	
06:30		Day shift arrive on location, hold safety meeting.																	
07:10		Swab #22, no tag, pulled from 2190m, swab was dry.																	
07:10	10.6	vac		vac										0.00	0.00				
08:08		Swab #23, no tag, pulled from 2190m, swab was dry. Slight blow on tubing changes to vac quickly. No LEL 100ppm acid gas detected.																	
08:08	11.6	vac		vac										0.00	0.00				
08:57		Swab #24, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.																	
08:57	12.4	vac		vac										0.00	0.00			8.0	42000
09:57		Swab #25, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.																	
09:57	13.4	vac		vac										0.00	0.00			8.0	94000
10:54		Swab #26, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.																	
10:54	14.3	vac		vac										0.00	0.00			8.0	108000
12:50		Swab #27, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.																	
12:50	16.3	vac		vac										0.00	0.00			8.0	114000
13:47		Swab #28, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.																	
13:47	17.2	vac		vac										0.00	0.00	0.00	11.92	7.0	164000
13:50		End of swabbing, rig out swab equipment, and move packer up hole. Total fluid recovered swabbing was 11.92m3.																	
17:45		Packer set, pressure test and rig up to swab.																	
18:30		Night shift arrive on location, hold safety meeting, prepare for swabbing.																	
18:50		Start swabbing.																	
19:15		Swab #1, tagged fluid at 87m, pulled from 262m.																	
19:15	0.4	vac		0										0.00	0.00	0.29	0.29	7.0	8000
19:55		Swab #2, tagged fluid at 262m, pulled from 472m.																	
19:55	1.1	vac		0										0.00	0.00	0.97	1.26	7.0	8000
20:10		Swab #3, tagged fluid at 423m, pulled from 712m.																	
20:10	1.3	vac		0										0.00	0.00	1.12	2.38	7.0	8000
20:20		Swab #4, tagged fluid at 660m, pulled from 898m.																	
20:20	1.5	vac		0										0.00	0.00	0.94	3.32	7.0	8000
20:50		Swab #5, tagged fluid at 1035m, pulled from 1256m.																	
20:50	2.0	vac		0										0.00	0.00	0.77	4.09	7.0	8000
21:15		Swab #6, tagged fluid at 1035m, pulled from 1256m.																	
21:15	2.4	vac		0										0.00	0.00	0.87	4.96	7.0	8000
21:40		Swab #7, tagged fluid at 1168m, pulled from 1385m.																	
21:40	2.8	vac		0										0.00	0.00	1.17	6.13	7.0	8000

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/21																			
22:00		Swab #8, tagged fluid at 1385m, pulled from 1593m.																	
22:00	3.2	vac		0										0.00	0.00	1.18	7.31	7.0	8000
22:25		Swab #9, tagged fluid at 1552m, pulled from 1755m.																	
22:25	3.6	vac		0										0.00	0.00	0.85	8.16	7.0	8000
23:05		Swab #10, tagged fluid at 1715m, pulled from 1911m.																	
23:05	4.3	vac		0										0.00	0.00	0.96	9.12	7.0	8000
23:35		Swab #11, tagged fluid at 1872m, pulled from 1990m.																	
23:35	4.8	vac		0										0.00	0.00	0.80	9.92	7.0	8000
23:55		Swab #12, tagged fluid at 1900m, pulled from 1990m.																	
23:55	5.1	vac		0										0.00	0.00	0.01	9.93	7.0	8000
05/02/22																			
00:30		Swab #13, tagged fluid at 1940m, pulled from 1990m.																	
00:30	5.7	vac		0										0.00	0.00	0.04	9.97	7.0	8000
01:30		Swab #14, tagged fluid at 1872m, pulled from 1990m.																	
01:30	6.7	vac		0										0.00	0.00	0.25	10.22	7.0	2000
02:30		Swab #15, tagged fluid at 1940m, pulled from 1990m.																	
02:30	7.7	vac		0										0.00	0.00	0.09	10.31	7.0	6000
02:30		No LEL's detected.																	
03:00	8.2	vac		0															
03:45		Swab #16, tagged fluid at 1900m, pulled from 1990m.																	
03:45	8.9	vac		0										0.00	0.00	0.18	10.49	7.0	2000
03:45		No LEL's detected.																	
04:30		Swab #17, no fluid tag, pulled from 1990m.																	
04:30	9.7	vac		0										0.00	0.00	0.00	10.49		
04:30		Swab was dry.																	
05:30		Swab #18, no fluid tag, pulled from 1990m.																	
05:30	10.7	vac		0										0.00	0.00	0.18	10.67	7.0	1000
05:30		No LEL's detected.																	
06:05		Rig out swab gear, fill the hole to unset packer and change intervals.																	
06:30		Day shift arrive, hold safety meeting.																	
13:25		Break circulation and proceed with stimulation.																	
13:42		Pressure test BJ surface lines.																	
14:07		Pressure test complete, circulate acid in hole. 10 m3 acid followed with 0.7 m3 water.																	
14:38		Acid displaced in hole, shut in annulus and proceed with squeeze. Total volume circulated to surface was 11.5 m3 of water.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/22																			
18:30		Night shift arrive, hold safety meeting.																	
21:10		Formation broke.																	
21:40		Acid squeeze complete.																	
21:40		Formation is on vacuum.																	
22:00		Rig BJ lines off tubing, unlatch packer, move up hole and reset at next interval.																	
24:00		Safety meeting.																	
05/02/23																			
00:15		Try and break circulation.																	
00:25		Unable to overcome formation vacuum, no returns at test unit, +/- 12m3 water pumped.																	
00:40		Pressure test BJ surface lines.																	
00:50		Pressure test complete, spot 10m3 of acid followed with 0.5m3 of water.																	
01:30		Start acid squeeze.																	
01:55		Squeeze complete.																	
01:55		Formation is on vacuum.																	
02:30		Latch onto lower packer.																	
03:00		Pressure test BJ surface lines and annulus to 7MPa.																	
03:30		Rig in swab gear.																	
04:05		Start swabbing.																	
04:20		Swab #1, tagged fluid at 275m, pulled 512m.																	
04:20	0.3	0												0.00	0.00	0.42	0.42	5.0	6000
04:30		Swab #2, tagged fluid at 275m, pulled from 570m.																	
04:30	0.4	0												0.00	0.00	0.93	1.35	6.0	6000
04:40		Swab #3, tagged fluid at 325m, pulled from 665m.																	
04:40	0.6	0												0.00	0.00	1.45	2.80	6.0	6000
04:50		Swab #4, tagged fluid at 375m, pulled from 617m.																	
04:50	0.8	0												0.00	0.00	0.91	3.71	6.0	6000
05:05		Swab #5, thought they tagged fluid at 50m, pulled from 325m.																	
05:05	1.0	0												0.00	0.00	0.00	3.71		
05:20		Swab #6, tagged fluid at 375m, pulled from 612m.																	
05:20	1.3	0												0.00	0.00	0.95	4.66	6.0	8000
05:30		Swab #7, tagged fluid at 375m, pulled from 617m.																	
05:30	1.4	0												0.00	0.00	1.20	5.86	6.0	8000
06:00		Swab #8, tagged fluid at 600m, pulled from 945m.																	
06:00	1.9	0												0.00	0.00	1.52	7.38	6.0	4000

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Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/23																			
06:20		Swab #9, tagged fluid at 275m, pulled from 473m.																	
06:20	2.3	0												0.00	0.00	1.15	8.53	6.0	4000
06:30		Swab #10, tagged fluid at 175m, pulled from 375m.																	
06:30		Well starting to flow on it's own.																	
06:30	2.4	640												0.00	0.00	1.47	10.00	6.0	4000
06:30		Change choke to 50.80 mm.																	
06:35	2.5	1350	14	700										0.00	0.00				
06:40	2.6	4700	18	700															
06:45	2.7	9400	18	775										0.00	0.00	4.20	4.20	6.0	8000
07:00	2.9	10300	17	775												3.90	8.10	6.0	10000
07:15	3.2	8185	14	800												2.30	10.40	6.0	11000
07:30	3.4	4900	16	850										0.00	0.00	2.85	13.25	6.0	13000
07:31		Change choke to 25.4000 mm.																	
07:45		Heavy fluid returns.																	
08:00	3.9	4865	16	1200										5.63	5.63	16.51	29.76	6.0	132000
08:00		Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.																	
08:00		Gas bomb # V0003625 & V0002554, Condensate bomb # V0002634 & V0007627.																	
08:25		Meter in service on 50.8000 mm orifice plate.																	
08:30	4.4	4820	18	1500	2000	86.00	42	206.13					0.72	5.58	11.21	2.04	31.80	6.0	146000
08:30		Condensate API = 61 at 15°C.																	
08:30		H2S by Gastec = 6000 ppm.																	
09:00	4.9	4730	19	1800	2000	73.00	42	189.67					4.67	5.64	16.85	1.70	33.50	5.0	140000
09:00		H2S by Gastec= 7200 ppm.																	
09:00		Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.																	
09:00		Gas bomb # V0006901 & V0003995, Condensate bomb # V0004082 & V0002217.																	
09:30	5.4	4720	19	2175	2000	74.00	42	190.98					8.65	5.85	22.70	1.38	34.88	5.0	130000
09:30		Shut in well. Meter out of service.																	
09:30		Ship fluid, blow down system and rig off swab tree.																	
11:20		Begin monitoring pressures.																	
11:20	1.8	13389		1200															
11:30	2.0	13377		1100															
11:45	2.3	13360		1000															
12:00	2.5	13330		1000															
12:30	3.0	13310		1040															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/23																			
13:00	3.5	13208		1000															
13:30	4.0	13282		975															
14:00	4.5	13247		940															
15:00	5.5	13205		900															
16:00	6.5	13158		860															
17:00	7.5	13135		850															
18:00	8.5	13091		820															
18:00		Rig to kill well, release packer and trip out of hole.																	
22:00		Start to trip out.																	
05/02/24																			
03:30		At surface.																	
03:45		Rig in wireline.																	
05:10		Wireline run in hole with bridge plug.																	
06:10		Wireline at surface.																	
06:30		Day shift arrive, hold safety meeting.																	
10:00		Start to trip in.																	
18:30		Night shift arrive on location, hold safety meeting.																	
18:40		Land Dognut.																	
19:00		Wireline running in hole with Gauge Ring.																	
19:50		Wireline at surface.																	
20:00		Rig out wireline.																	
20:30		Rig out BOP'S, head up.																	
05/02/25																			
00:30		Well head on.																	
03:00		Rig in slickline.																	
04:15		Pull PX Prong and Plug.																	
04:30	43.0	vac		vac															
05:00	43.5	vac		vac															
05:30		Wireline at surface, rig out. Monitor pressures.																	
06:00	44.5	vac																	
07:00	45.5	vac																	
08:00	46.5	vac																	
09:00	47.5	vac		58															
10:00	48.5	vac		75															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/25																			
11:00	49.5	vac		86															
11:30		Rig in to pull swab.																	
13:20		Swab #1, tagged fluid at 185m, pulled from 500m.																	
13:20	1.8	2213														1.40	1.40	6.0	0
13:20		Well flowing.																	
13:20		Change choke to 6.35 mm.																	
13:30	2.0	8647	12																
13:45	2.3	10642	13																
14:00	2.5	12692	13											0.00	0.00	5.00	6.40	6.0	0
14:15	2.8	14584	15	2810										0.00	0.00	2.60	9.00	6.0	0
14:15		Shut in well. Meter out of service.																	
14:15		Sour to surface. Shut in well and monitor pressures.																	
14:30	0.3	14222		2661															
14:45	0.5	14045		2567															
15:00	0.8	13906		2301															
15:15	1.0	13847		2169															
15:15		Ship fluid. Blow down system. Rig off wellhead. Continue to monitor pressures.																	
16:15	2.0	13863		1755															
16:30	2.3	13775		1625															
17:00	2.8	13775		1479															
17:30	3.3	13762		1373															
18:00	3.8	13734		1287															
18:30	4.3	13691		1231															
18:30		Night shift arrive, hold safety meeting.																	
19:00	4.8	13676		1143															
19:30	5.3	13610		1125															
20:00	5.8	13492		1125															
20:30	6.3	13474		1100															
21:00	6.8	13462		1100															
21:30	7.3	13458		1075															
22:00	7.8	13451		1050															
22:30	8.3	13421		1025															
23:00	8.8	13393		1025															
23:30	9.3	13367		1025															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/25																			
24:00	9.8	13343		1030															
05/02/26																			
00:30	10.3	13321		1030															
01:00	10.8	13316		1000															
01:30	11.3	13279		1025															
02:00	11.8	13255		1025															
02:30	12.3	13238		1000															
03:00	12.8	13222		950															
03:30	13.3	13223		900															
04:00	13.8	13191		850															
04:30	14.3	13174		800															
05:00	14.8	13161		800															
05:30	15.3	13141		800															
06:00	15.8	13125		800															
06:30	16.3	13110		800															
06:30		Day shift arrive, hold safety meeting.																	
07:00	16.8	13091		800															
07:30	17.3	13077		800															
08:00	17.8	13064		800															
08:30	18.3	13046		800															
09:00	18.8	13033		800															
09:30	19.3	13026		800															
10:00	19.8	13019		800															
10:30	20.3	13012		800															
11:00	20.8	13002		800															
11:30	21.3	12992		800															
12:00	21.8	12984		800															
12:30	22.3	12973		800															
13:00	22.8	12970		800															
13:30	23.3	12957		800															
14:00	23.8	12947		800															
14:30	24.3	12938		800															
15:00	24.8	12932		800															
15:30	25.3	12923		800															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/26																			
16:00	25.8	12918		800															
16:30	26.3	12910		800															
17:00	26.8	12897		800															
17:30	27.3	12890		800															
18:00	27.8	12886		800															
18:30	28.3	12792		800															
18:30		Night shift arrive, hold safety meeting.																	
19:00	28.8	12743		800															
19:30	29.3	12786		800															
20:00	29.8	12745		800															
20:30	30.3	12736		800															
21:00	30.8	12725		800															
21:30	31.3	12728		800															
22:00	31.8	12575		800															
22:30	32.3	12530		800															
23:00	32.8	12515		800															
23:30	33.3	12499		800															
24:00	33.8	12469		800															
05/02/27																			
00:30	34.3	12478		800															
01:00	34.8	12490		800															
01:30	35.3	12480		800	0	0.00	0		0	0.00	0	0.00	8.65						
01:30		Open well on 25.40 mm choke.																	
01:35	0.1	9739	3	800															
01:40	0.2	5733	2	2200															
01:45	0.3	6087	4	3100										1.14	1.14	0.47	0.47	6.0	62000
02:00	0.5	5555	5	5400	0	0.00	0	0.00					8.65	3.07	4.21	0.16	0.62		
02:01		Meter in service on 57.1500 mm orifice plate.																	
02:15	0.8	5107	7	7300	3350	70.00	32	315.21					11.71	4.07	8.28	0.00	0.62		
02:30	1.0	4390	7	8800	3000	56.00	32	265.54					14.48	4.16	12.44	0.00	0.62		
02:35		Increase choke to 50.8000 mm.																	
02:35		Increase choke due to downhole hydrates forming.																	
02:36		Increase back pressure due to fluid production.																	
03:00	1.5	4000	7	9500	3200	57.00	32	277.29					20.25	8.01	21.35	0.00	0.62		

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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/27																			
03:01		Shut in well. Meter out of service.																	
03:05	0.1	12868		9400															
03:05		Bleed off casing pressure.																	
03:10	0.2	13147		0															
03:15	0.2	13372		0															
03:30	0.5	13550		0															
03:45	0.7	13704		0															
04:00	1.0	13867		0															
04:30	1.5	14042		0															
05:00	2.0	13943		0															
05:30	2.5	13825		0															
06:00	3.0	13732		0															
06:30	3.5	13793		0															
07:00	4.0	13287		0															
07:30	4.5	13054		0															
08:00	5.0	11250		0															
08:30	5.5	11241		0															
09:00	6.0	11227		0															
09:30	6.5	11211		0															
10:00	7.0	11208		0															
10:30	7.5	11230		0															
11:00	8.0	11203		0															
11:30	8.5	11194		0															
12:00	9.0	11187		0															
12:30	9.5	11177		0															
13:00	10.0	13588		0															
13:30	10.5	13578		0															
14:00	11.0	13569		0															
14:05		Rig in wireline to run gauge ring.																	
15:15		Unable to get in hole due to hydrates in tubing.																	
16:00		Rig flowline and ESD off wellhead.																	
18:30		Night shift on location, hold safety meeting.																	
19:00	16.0	13470		0															
19:30	16.5	13463		0															

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Northmck Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/27																			
20:00	17.0	13457		0															
20:30	17.5	13470		0															
21:00	18.0	13474		0															
21:30	18.5	13473		0															
22:00	19.0	13470		0															
22:30	19.5	13477		0															
22:45		Rig in wireline to run gauge ring.																	
05/02/28																			
01:15		Start methanol injection, of approx. 3L/min.																	
01:30		Wireline run in hole to try and break hydrate.																	
01:30		Stop methanol injection.																	
02:00	23.0	13560		0															
02:00		Start methanol injection.																	
02:30	23.5	13748		0															
02:30		Wireline run in and out.																	
03:00	24.0	14261		0															
03:30	24.5	13610		0															
04:00	25.0	13640		0															
04:15		Stop methanol injection.																	
04:15		Rig off wireline.																	
04:30	25.5	14500		0															
04:30		Start methanol injection at approx. 3L/min.																	
05:00	26.0	14575		0															
05:30	26.5	14580		0															
06:00	27.0	14580		0															
06:30	27.5	14225		0															
07:00	28.0	14200		0															
07:30	28.5	13570		0															
08:00	29.0	13476		0															
08:30	29.5	13395		0															
09:00	30.0	13330		0															
09:30	30.5	13287		0															
10:00	31.0	13241		0															
10:30	31.5	13156		0															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/02/28																			
11:00	32.0	13100		0															
11:30	32.5	13077		0															
12:00	33.0	13052		0															
12:30	33.5	13025		0															
13:00	34.0	13014		0															
13:30	34.5	13004		0															
14:00	35.0	12992		0															
14:30	35.5	12987		0															
15:00	36.0	13015		0															
15:30	36.5	13007		0															
16:00	37.0	13003		0															
16:30	37.5	12934		0															
17:00	38.0	12972		0															
17:30	38.5	12970		0															
18:00	39.0	12975		0															
18:30		Night shift arrive, hold safety meeting.																	
19:00	40.0	12960		0															
19:15		Shut in well and bleed off wellhead to rig up wireline.																	
19:45		Wireline start to run in.																	
19:45		Start methanol injection of approx 3L/min.																	
20:00	41.0	13220		0															
20:30	41.5	13360		0															
21:00		Rig out wireline, prepare for diesel injection, shutdown methanol injection.																	
21:30		Purge flowline and install ESD.																	
22:05		Start methanol injection at approx 3L/min.																	
22:10		Start to preheat diesel to +/- 35°C.																	
22:30	43.5	13610		0															
23:00	44.0	13630		0															
23:30	44.5	13590		0															
24:00	45.0	13987		0															
05/03/01																			
00:30	45.5	14013		0															
01:00	46.0	13825		0															
01:30	46.5	13810		0															

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B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/01																			
02:00	47.0	13775		0															
02:30	47.5	13690		0															
03:00	48.0	13825		0															
03:30	48.5	14190		0															
04:00	49.0	13925		0															
04:30	49.5	13755		0															
05:00	50.0	13702		0															
05:15		Shutdown methanol injection, bleed off wellhead and prepare to pump warm diesel.																	
07:45		Pump diesel down tubing.																	
08:50		Flow back diesel.																	
09:16		Gas to surface, shut in well, 5.73m3 returned.																	
09:20		Rig in wireline to run gauge ring.																	
10:05		Wireline at surface. Rig off wireline.																	
11:00	56.0	15200		0															
11:00		Open well on 50.80 mm choke.																	
11:02		Meter in service on 57.1500 mm orifice plate.																	
11:05	0.1	5000	4	0	2600	86.00	32	305.96					20.89						
11:10	0.2	4400	4	10	2450	84.00	38	289.55					21.90						
11:10		Meter out of service. Problems with meter run.																	
11:15	0.3	4000	4	30															
11:30	0.5	3500	4	75															
11:45	0.8	2750	4	100															
11:50		Meter in service on 57.1500 mm orifice plate.																	
12:00	1.0	2250	3	140	1000	72.00	40	172.72					23.10	19.00	19.00	0.00	0.00		
12:00		Core Labs obtain samples.																	
12:10	1.2	1800	3	160	600	57.00	38	122.65					23.95	5.52	24.52	0.00	0.00		
12:10		Shut in well. Meter out of service.																	
12:10		Shut in due to hydrates in tubing.																	
12:30		Rig in wireline to run gauge ring.																	
13:15		Wireline unable to run in hole due to hydrates in tubing.																	
13:30		Heat diesel to pump down tubing.																	
14:00	1.8	14000																	
14:30	2.3	14200																	
14:50		Pump 6.0m3 hot diesel down tubing.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/01																			
15:30		Flow back diesel.																	
16:50		Shut in well, gas to surface, 5.67m3 returned.																	
17:00		Rig in wireline to run in hole with gauge ring.																	
17:45		Wireline at surface. Rig out wireline. Monitor pressures.																	
18:00	5.8	12100		0															
18:30	6.3	12250		0															
18:45	6.6	12300		0															
19:00	6.8	12340		0															
19:30	7.3	12350		0															
20:00	7.8	12300		0															
20:30	8.3	12375		0															
21:00	8.8	12400		0															
21:00		Rig in wireline to run a static gradient, with real time measurement.																	
22:00		Run in hole.																	
22:00	9.8	12600		0															
22:30	10.3	12600																	
22:50		Wireline unable to get in the hole.																	
23:00		Wireline at surface, bleed off.																	
23:30		Rig in wireline to run gauge ring.																	
05/03/02																			
00:05		Wireline run in hole.																	
00:30		Wireline at surface, bleed off.																	
01:00		Wireline run in with static gradient.																	
01:00	12.8	12700		0															
01:30	13.3	12625		0															
02:00	13.8	12625		0															
02:30	14.3	12650		0															
03:00	14.8	12700		0															
03:30	15.3	12750		0															
04:00	15.8	12750		0															
04:30	16.3	12750		0															
05:00	16.8	12750		0															
05:30	17.3	12750		0															
06:00	17.8	12750		0															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Area: Artic Bear Lake
Test Start: 20 Feb 2005
Test End: 4 Mar 2005
PES Job #: 4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/02																			
06:30	18.3	12750		0															
06:30		Wireline at surface, bleed off.																	
07:00	18.8	12750		0															
07:30	19.3	12500		0															
08:00	19.8	12500		0															
08:30	20.3	12500		0															
09:00	20.8	12500		0															
09:30	21.3	12400		0															
10:00	21.8	12400		0															
10:30	22.3	12400		0															
11:00	22.8	12400		0															
11:30	23.3	12400		0															
12:00	23.8	12400		0															
12:30	24.3	12450		0															
13:00	24.8	12500		0															
13:30	25.3	12550		0															
14:00	25.8	12600		0															
14:30	26.3	12600		0															
15:00	26.8	12600		0															
15:30	27.3	12600		0															
16:00	27.8	12600		0															
16:30	28.3	12700		0															
17:00	28.8	12700		0															
17:30	29.3	12700		0															
18:00	29.8	12700		0															
18:30	30.3	12700		0															
18:30		Night shift arrive, hold safety meeting.																	
19:00	30.8	12700		0															
19:30	31.3	12700		0															
20:00	31.8	12600		0															
20:00		Wireline run in hole with brush.																	
20:30	32.3	12600		0															
21:00		Wireline at surface, bleed off.																	
21:00	32.8	12550		0															

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/02																			
22:30	34.3	12500		0															
23:00	34.8	12500		0															
23:00		Wireline run in hole with dart.																	
23:25		Wireline at surface, bleed off.																	
23:30	35.3	12500		0															
05/03/03																			
01:45		Wireline run in hole with recorders.																	
02:00	37.8	12450		0															
02:30	38.3	12550		0															
02:45		Wireline at surface, bleed off.																	
03:00		Wireline run in hole with PX Locking Plug.																	
03:00	38.8	12500		0															
03:25		Wireline at surface, bleed off.																	
03:30	39.3	12500		0															
04:00	39.8	12500		0															
04:15		Wireline at surface, bleed off.																	
04:45		Wireline running in hole with Locking Prong.																	
05:00	40.8	12500		0															
06:30		Dayshift arrive, hold safety meeting.																	
07:00		Fill hole with fluid and pressure test plug.																	
09:00		Wireline run in hole to tag collar stop.																	
10:10		Wireline at surface, miss run.																	
10:30		Wireline run in hole with gauge ring.																	
10:45		Wireline at surface, unable to get in hole.																	
11:15		Wireline run in hole with 1.75" blind box.																	
11:35		Wireline at surface, tag collar stop at 985m. Monitor pressure.																	
13:00	48.8	4000																	
14:00	49.8	4300																	
15:00	50.8	4100																	
16:00	51.8	3900																	
16:00		Hotshot on location with gun.																	
17:00	52.8	3900																	
17:35		Hold safety meeting.																	
17:50		Bleed off tubing from 3800 kPa.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.		Water Production		pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/03																			
18:20		Shut in well.																	
18:30		Wireline run in hole with gauge ring.																	
18:55		Wireline at surface.																	
19:00		Attend safety meeting.																	
19:45		Wireline run in hole to shoot hole in tubing.																	
20:15		Pressure tubing to 4 MPa.																	
20:20		Shoot hole.																	
20:45		Wireline at surface.																	
22:00		Circulate down casing and up tubing to confirm hole is shot.																	
22:35		Wireline run in hole to retrieve collar stop.																	
23:00		Wireline at surface.																	
23:35		Attend safety meeting.																	
23:55		Fill casing with methanol, fluid returns to pressure tank.																	
05/03/04																			
01:15		Finish pumping, 12.7m3 returned to separator, Intermittent sour gas throughout.																	
01:30	61.3	2150		3600															
01:40		Wireline run in hole to retrieve prong.																	
02:00	61.8	1640		3250															
02:10		Prong pulled.																	
02:10	62.0	1750		2000															
02:20	62.2	140		1300															
02:21		Wireline at surface.																	
02:45		Wireline run in hole to pull plug.																	
02:47	62.6	97		750															
03:00	62.8	114		750															
03:30	63.3	39		400															
03:35		Wireline out of hole.																	
03:55		Wireline run in hole.																	
04:00	63.8	2818		400															
04:30	64.3	TSTM		400															
04:45		Wireline on surface.																	
05:45		Hold safety meeting.																	
06:00	65.8	0		225															
06:05		Rig up to swab and inject methanol.																	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas				Well Gas					Cond/Oil Prod.		Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cum Cond 1	Incr Water Volume 1	Cum Water 1	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	kPag	kPa	°C	E³m³/d	E³m³	m³	m³	m³	m³		ppm
05/03/04																			
06:30	66.3	0		190															
07:00	66.8	0		180															
07:30	67.3	0		100															
09:00	68.8	0		0															
09:00		End of file. New file started for test portion of program.																	

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Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/01/25	
10:00	Leave Grande Prairie and travel to Fort Simpson.
21:30	Arrive in Fort Simpson.
05/01/26	
09:00	Leave Fort Simpson and travel to location.
19:30	Arrive at camp, stop for the night.
05/01/27	
08:00	Arrive at location, hold safety meeting, assist with spotting rig as needed.
18:00	Shutdown for the night, return to camp.
05/01/28	
07:00	Arrive at location, hold safety meeting, proceed with spotting test equipment.
19:00	Shutdown for the night, return to camp.
05/01/29	
07:00	Arrive at location, hold safety meeting, proceed with standing of flarestack and incinerator.
19:00	Shutdown for the night, return to camp.
05/01/30	
07:00	Arrive on location, hold safety meeting, proceed with spotting of third stage separation vessels.
19:00	Shutdown for the night, return to camp.
05/01/31	
07:00	Arrive on location, hold safety meeting, proceed with rig in of test equipment.
19:00	Shutdown for the night, return to camp.
05/02/01	
07:00	Arrive on location, hold safety meeting, continue rig in of test equipment.
19:00	Shutdown for the night, return to camp.
05/02/02	
07:00	Arrive on location, hold safety meeting, continue rig in of test equipment.
19:00	Shutdown for the night, return to camp.
05/02/03	
06:30	Arrive on location, hold safety meeting, continue rig in of test equipment.
19:00	Shutdown for the night, return to camp.
05/02/04	
06:30	Arrive on location, hold safety meeting, continue rig in of test equipment.
19:00	Shutdown for the night, return to camp.
05/02/05	
06:30	Arrive on location, hold safety meeting, complete rig in of test equipment.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/05	
19:00	Shutdown for the night, return to camp.
05/02/06	
06:30	Arrive on location, hold safety meeting, wait on completion.
19:00	Shutdown for the night, return to camp.
05/02/07	
06:30	Arrive on location, hold safety meeting, wait on completion.
19:00	Shutdown for the night, return to camp.
05/02/08	
06:30	Arrive on location, hold safety meeting, wait on completion.
19:00	Shutdown for the night, return to camp.
05/02/09	
06:30	Arrive on location, hold safety meeting, wait on completion.
19:00	Shutdown for the night, return to camp.
05/02/10	
06:30	Arrive on location, hold safety meeting, wait on completion.
19:00	Shutdown for the night, return to camp.
05/02/11	
07:00	Dayshift on location, hold safety meeting, begin perforating operations.
11:00	First gun fired, well is static, monitor pressure continuously.
13:55	Perf gun # 2 fired, well remains static, monitor pressure.
15:30	Perf gun # 3 fired, well remains static, monitor pressure.
16:45	Perf gun # 4 fired, well remains static, monitor pressure.
18:20	Miss fire, wireline pull out of hole and disarm gun.
18:30	Night shift arrive on location, hold safety meeting.
19:55	Perf gun # 5 fired, well remains static, monitor pressure.
23:30	Perf gun # 6 fired, well remains static, monitor pressure.
05/02/12	
01:15	Hold safety meeting.
04:05	Perf gun # 7 fired, well remains static, monitor pressure.
06:30	Day shift arrive on location, hold safety meeting.
06:31	Perf gun # 8 fired, well remains static, monitor pressure.
08:29	Miss fire, wire line pull out of the hole and disarm gun.
11:00	Perf gun # 9 fired, well remains static, monitor pressure.
12:33	Miss fire, wireline pull out of the hole and disarm gun.

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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/12	
15:23	Perf gun #10 fired, well remains static, monitor pressure.
17:12	Perf gun # 11 fired, well remains static, monitor pressure.
18:30	Night shift arrive on location, hold safety meeting.
21:32	Perf gun # 12 fired, well remains static, monitor pressure.
22:30	Wireline at surface, rig out.
23:00	Start to purge test equipment.
23:45	Pressure test high stage to 7000 kPa.
24:00	Pressure test low stage to 900 kPa.
05/02/13	
00:20	Start to purge third stage vessels.
05:00	Purging of third stage vessels complete.
06:30	Day shift arrive on location, hold safety meeting, rig tripping pipe.
18:30	Night shift arrive on location, hold safety meeting, continue tripping pipe.
05/02/14	
01:55	Finished tripping in, attach top drive.
08:50	Start dressing linner top.
13:40	Top of the linner dressed, get ready to trip out tubing. Total fluid lost during circulation = 3.5m3.
18:30	Night shift arrive on location, hold safety meeting.
21:50	Finished tripping out, rig up wireline.
22:30	Safety meeting.
22:45	Wireline run in hole with gauge ring.
05/02/15	
00:05	Wireline at surface.
00:30	Wireline running in hole with Junk Basket.
01:45	Wireline at surface.
02:00	Lay down lubricator and pick up tools.
03:00	Start to trip in hole.
11:00	Set packer and pressure test.
16:00	Unable to pressure test packer, start to pull out of hole.
18:30	Night shift arrive on location, hold safety meeting, continue to trip pipe.
23:30	Finished tripping out of the hole.
05/02/16	
00:40	Trip in tubing with packer assembly.
06:30	Day shift arrive on location, hold safety meeting, continue to trip in hole.

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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/16	
09:30	Set packer to pressure test.
10:15	Unable to set packer, rig up to circulate.
10:31	Begin circulating at 0.3 m3/min.
11:18	Finished circulating, set packer and pressure test. Total fluid lost during circulation was 2.5 m3.
14:00	Pressure test good, continue in hole.
15:00	Rig in wireline and run in hole to log packer on depth.
16:45	Wireline out of hole and rig off. Space out and set bottom packer.
17:15	Rig in BJ for acid Squeeze.
18:30	Night shift arrive, hold safety meeting.
19:30	Begin acid squeeze operations.
19:45	Pressure test BJ lines.
21:10	Acid spotted, packer set, begin squeeze. 9.5 m3 acid and 1.5 m3 water in hole.
05/02/17	
01:20	Unable to squeeze acid away, hold safety meeting and flush acid out of hole with 28 m3 water.
03:35	Flush complete. Move packer and continue with second stage.
05:30	Hold safety meeting, begin second stage stimulation.
05:58	Pressure test BJ lines.
06:30	Day shift on location, hold safety meeting.
07:00	Acid spotted. packer set, begin squeeze. 8.5 m3 acid and 3.06 m3 water in hole.
18:30	Night shift arrive, hold safety meeting, continue to squeeze stage #2.
22:30	Pressure drop on tubing, suspect Packer or tubing leak.
23:30	Unset from packer and circulate out acid to acid tank #2.
05/02/18	
01:05	Acid circulated out.
01:15	Run in and try resetting packer and pressure testing.
06:30	Packer pressure test unsuccessful.
06:30	Day shift arrive on location, hold safety meeting.
08:00	Trip out of hole.
18:00	Trip in hole with scraper and tapered mill.
18:30	Night shift on location, hold safety meeting continue tripping in.
05/02/19	
02:00	Finished trip in with scraper rig up to circulate.
02:15	Circulate 16m3.
03:05	Finished circulating.

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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/19	
03:50	Start to trip out of the hole.
06:30	Day shift arrive on location, hold safety meeting, continue out of hole.
10:00	Finished trip out of hole, make up BHA and trip back in hole.
18:30	Night shift on location, hold safety meeting and continue in hole.
21:45	14 joints left to go, stop tripping.
22:20	Set packer, pressure test and continue in hole.
05/02/20	
00:15	Continue to trip in hole.
02:20	Finished tripping in the hole, tag bottom.
03:00	Trip out 7 joints to stage #3.
04:15	Safety meeting.
04:40	Pressure test BJ lines and continue with squeeze.
05:40	Acid Spotted, packer set, begin squeeze. 5m3 of acid and 6.31 m3 of water in hole.
06:30	Day shift on location, hold safety meeting, continue acid squeeze.
15:20	Unable to squeeze acid away, bleed off tubing, release packer, and circulate acid out of hole with 13 m3 water.
16:08	Circulation complete, release lower packer and get ready to swab.
18:30	Nightshift arrive on location, hold safety meeting, prepare for swabbing.
20:35	Start swabbing.
20:35	Open well.
20:45	Swab #1, tag fluid at surface, pull from 175m.
21:00	Swab #2, tagged fluid at 175m, pulled from 300m.
21:20	Swab #3, tagged fluid at 300m, pulled from 375m.
21:35	Swab #4, tagged fluid at 410m, pulled from 618m.
21:50	Swab #5, tagged fluid at 570m, pulled from 713m.
22:05	Swab #6, tagged fluid at 617m, pulled from 807m.
22:20	Swab #7, tagged fluid at 617m, pulled from 945m.
22:35	Swab #8, tagged fluid at 852m, pulled from 1035m.
22:50	Swab #9, tagged fluid at 945m, pulled from 1125m.
23:30	Swab #10, tagged fluid at 1080m, pulled from 1300m.
23:45	Swab #11, tagged fluid at 1257, pulled from 1511m.
05/02/21	
00:15	Swab #12, tagged fluid at 1300m, pulled from 1635m.
00:50	Swab #13, tagged fluid at 1300m, pulled from 1511m.
01:15	Swab #14, tagged fluid at 1427m, pulled from 1594m.

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Operation:	Clean Up \ Test
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Test Start:	20 Feb 2005
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Time	Description
hh:mm	
05/02/21	
01:30	Swab #15, tagged fluid at 1553m, pulled from 1755m.
02:00	Swab #16, tagged fluid at 1635m, pulled from 1873m.
02:25	Swab #17, tagged fluid at 1795m, pulled from 2000m.
03:20	Swab #18, tagged fluid at 1872m, pulled from 2100m.
03:20	Trace of black hydrocarbons.
03:45	Swab #19, tagged fluid at 1950m, pulled from 2173m.
03:45	Trace of black hydrocarbons.
03:45	100 ppm of sour or acid gas detected on tri-head monitor.
04:00	Hold safety meeting.
05:20	Swab #20, tagged fluid at 2173m, pulled from 2190m.
05:20	Trace of black hydrocarbons.
06:00	Swab #21, tagged fluid at 2173m, pulled from 2190m.
06:00	Dry swab. Rig down swab tree. Pull next swab at 07:00.
06:00	Total fluid recovered during swabbing = 11.92m3.
06:30	Day shift arrive on location, hold safety meeting.
07:10	Swab #22, no tag, pulled from 2190m, swab was dry.
08:08	Swab #23, no tag, pulled from 2190m, swab was dry. Slight blow on tubing changes to vac quickly. No LEL 100ppm acid gas detected.
08:57	Swab #24, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
09:57	Swab #25, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
10:54	Swab #26, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
12:50	Swab #27, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
13:47	Swab #28, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
13:50	End of swabbing, rig out swab equipment, and move packer up hole. Total fluid recovered swabbing was 11.92m3.
17:45	Packer set, pressure test and rig up to swab.
18:30	Night shift arrive on location, hold safety meeting, prepare for swabbing.
18:50	Start swabbing.
19:15	Swab #1, tagged fluid at 87m, pulled from 262m.
19:55	Swab #2, tagged fluid at 262m, pulled from 472m.
20:10	Swab #3, tagged fluid at 423m, pulled from 712m.
20:20	Swab #4, tagged fluid at 660m, pulled from 898m.
20:50	Swab #5, tagged fluid at 1035m, pulled from 1256m.
21:15	Swab #6, tagged fluid at 1035m, pulled from 1256m.
21:40	Swab #7, tagged fluid at 1168m, pulled from 1385m.
22:00	Swab #8, tagged fluid at 1385m, pulled from 1593m.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/21	
22:25	Swab #9, tagged fluid at 1552m, pulled from 1755m.
23:05	Swab #10, tagged fluid at 1715m, pulled from 1911m.
23:35	Swab #11, tagged fluid at 1872m, pulled from 1990m.
23:55	Swab #12, tagged fluid at 1900m, pulled from 1990m.
05/02/22	
00:30	Swab #13, tagged fluid at 1940m, pulled from 1990m.
01:30	Swab #14, tagged fluid at 1872m, pulled from 1990m.
02:30	Swab #15, tagged fluid at 1940m, pulled from 1990m.
02:30	No LEL's detected.
03:45	Swab #16, tagged fluid at 1900m, pulled from 1990m.
03:45	No LEL's detected.
04:30	Swab #17, no fluid tag, pulled from 1990m.
04:30	Swab was dry.
05:30	Swab #18, no fluid tag, pulled from 1990m.
05:30	No LEL's detected.
06:05	Rig out swab gear, fill the hole to unset packer and change intervals.
06:30	Day shift arrive, hold safety meeting.
13:25	Break circulation and proceed with stimulation.
13:42	Pressure test BJ surface lines.
14:07	Pressure test complete, circulate acid in hole. 10 m3 acid followed with 0.7 m3 water.
14:38	Acid displaced in hole, shut in annulus and proceed with squeeze. Total volume circulated to surface was 11.5 m3 of water.
18:30	Night shift arrive, hold safety meeting.
21:10	Formation broke.
21:40	Acid squeeze complete.
21:40	Formation is on vacuum.
22:00	Rig BJ lines off tubing, unlatch packer, move up hole and reset at next interval.
24:00	Safety meeting.
05/02/23	
00:15	Try and break circulation.
00:25	Unable to overcome formation vacuum, no returns at test unit, +/- 12m3 water pumped.
00:40	Pressure test BJ surface lines.
00:50	Pressure test complete, spot 10m3 of acid followed with 0.5m3 of water.
01:30	Start acid squeeze.
01:55	Squeeze complete.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/23	
01:55	Formation is on vacuum.
02:30	Latch onto lower packer.
03:00	Pressure test BJ surface lines and annulus to 7MPa.
03:30	Rig in swab gear.
04:05	Start swabbing.
04:20	Swab #1, tagged fluid at 275m, pulled 512m.
04:30	Swab #2, tagged fluid at 275m, pulled from 570m.
04:40	Swab #3, tagged fluid at 325m, pulled from 665m.
04:50	Swab #4, tagged fluid at 375m, pulled from 617m.
05:05	Swab #5, thought they tagged fluid at 50m, pulled from 325m.
05:20	Swab #6, tagged fluid at 375m, pulled from 612m.
05:30	Swab #7, tagged fluid at 375m, pulled from 617m.
06:00	Swab #8, tagged fluid at 600m, pulled from 945m.
06:20	Swab #9, tagged fluid at 275m, pulled from 473m.
06:30	Swab #10, tagged fluid at 175m, pulled from 375m.
06:30	Well starting to flow on it's own.
06:30	Change choke to 50.80 mm.
07:31	Change choke to 25.4000 mm.
07:45	Heavy fluid returns.
08:00	Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.
08:00	Gas bomb # V0003625 & V0002554, Condensate bomb # V0002634 & V0007627.
08:25	Meter in service on 50.8000 mm orifice plate.
08:30	Condensate API = 61 at 15°C.
08:30	H2S by Gastec = 6000 ppm.
09:00	H2S by Gastec= 7200 ppm.
09:00	Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.
09:00	Gas bomb # V0006901 & V0003995, Condensate bomb # V0004082 & V0002217.
09:30	Shut in well. Meter out of service.
09:30	Ship fluid, blow down system and rig off swab tree.
11:20	Begin monitoring pressures.
18:00	Rig to kill well, release packer and trip out of hole.
22:00	Start to trip out.
05/02/24	
03:30	At surface.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/24	
03:45	Rig in wireline.
05:10	Wireline run in hole with bridge plug.
06:10	Wireline at surface.
06:30	Day shift arrive, hold safety meeting.
10:00	Start to trip in.
18:30	Night shift arrive on location, hold safety meeting.
18:40	Land Dognut.
19:00	Wireline running in hole with Gauge Ring.
19:50	Wireline at surface.
20:00	Rig out wireline.
20:30	Rig out BOP'S, head up.
05/02/25	
00:30	Well head on.
03:00	Rig in slickline.
04:15	Pull PX Prong and Plug.
05:30	Wireline at surface, rig out. Monitor pressures.
11:30	Rig in to pull swab.
13:20	Swab #1, tagged fluid at 185m, pulled from 500m.
13:20	Well flowing.
13:20	Change choke to 6.35 mm.
14:15	Shut in well. Meter out of service.
14:15	Sour to surface. Shut in well and monitor pressures.
15:15	Ship fluid. Blow down system. Rig off wellhead. Continue to monitor pressures.
18:30	Night shift arrive, hold safety meeting.
05/02/26	
06:30	Day shift arrive, hold safety meeting.
18:30	Night shift arrive, hold safety meeting.
05/02/27	
01:30	Open well on 25.40 mm choke.
02:01	Meter in service on 57.1500 mm orifice plate.
02:35	Increase choke to 50.8000 mm.
02:35	Increase choke due to downhole hydrates forming.
02:36	Increase back pressure due to fluid production.
03:01	Shut in well. Meter out of service.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/27	
03:05	Bleed off casing pressure.
14:05	Rig in wireline to run gauge ring.
15:15	Unable to get in hole due to hydrates in tubing.
16:00	Rig flowline and ESD off wellhead.
18:30	Night shift on location, hold safety meeting.
22:45	Rig in wireline to run gauge ring.
05/02/28	
01:15	Start methanol injection, of approx. 3L/min.
01:30	Wireline run in hole to try and break hydrate.
01:30	Stop methanol injection.
02:00	Start methanol injection.
02:30	Wireline run in and out.
04:15	Stop methanol injection.
04:15	Rig off wireline.
04:30	Start methanol injection at approx. 3L/min.
18:30	Night shift arrive, hold safety meeting.
19:15	Shut in well and bleed off wellhead to rig up wireline.
19:45	Wireline start to run in.
19:45	Start methanol injection of approx 3L/min.
21:00	Rig out wireline, prepare for diesel injection, shutdown methanol injection.
21:30	Purge flowline and install ESD.
22:05	Start methanol injection at approx 3L/min.
22:10	Start to preheat diesel to +/- 35°C.
05/03/01	
05:15	Shutdown methanol injection, bleed off wellhead and prepare to pump warm diesel.
07:45	Pump diesel down tubing.
08:50	Flow back diesel.
09:16	Gas to surface, shut in well, 5.73m3 returned.
09:20	Rig in wireline to run gauge ring.
10:05	Wireline at surface. Rig off wireline.
11:00	Open well on 50.80 mm choke.
11:02	Meter in service on 57.1500 mm orifice plate.
11:10	Meter out of service. Problems with meter run.
11:50	Meter in service on 57.1500 mm orifice plate.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/01	
12:00	Core Labs obtain samples.
12:10	Shut in well. Meter out of service.
12:10	Shut in due to hydrates in tubing.
12:30	Rig in wireline to run gauge ring.
13:15	Wireline unable to run in hole due to hydrates in tubing.
13:30	Heat diesel to pump down tubing.
14:50	Pump 6.0m3 hot diesel down tubing.
15:30	Flow back diesel.
16:50	Shut in well, gas to surface, 5.67m3 returned.
17:00	Rig in wireline to run in hole with gauge ring.
17:45	Wireline at surface. Rig out wireline. Monitor pressures.
21:00	Rig in wireline to run a static gradient, with real time measurement.
22:00	Run in hole.
22:50	Wireline unable to get in the hole.
23:00	Wireline at surface, bleed off.
23:30	Rig in wireline to run gauge ring.
05/03/02	
00:05	Wireline run in hole.
00:30	Wireline at surface, bleed off.
01:00	Wireline run in with static gradient.
06:30	Wireline at surface, bleed off.
18:30	Night shift arrive, hold safety meeting.
20:00	Wireline run in hole with brush.
21:00	Wireline at surface, bleed off.
23:00	Wireline run in hole with dart.
23:25	Wireline at surface, bleed off.
05/03/03	
01:45	Wireline run in hole with recorders.
02:45	Wireline at surface, bleed off.
03:00	Wireline run in hole with PX Locking Plug.
03:25	Wireline at surface, bleed off.
04:15	Wireline at surface, bleed off.
04:45	Wireline running in hole with Locking Prong.
06:30	Dayshift arrive, hold safety meeting.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/03	
07:00	Fill hole with fluid and pressure test plug.
09:00	Wireline run in hole to tag collar stop.
10:10	Wireline at surface, miss run.
10:30	Wireline run in hole with gauge ring.
10:45	Wireline at surface, unable to get in hole.
11:15	Wireline run in hole with 1.75" blind box.
11:35	Wireline at surface, tag collar stop at 985m. Monitor pressure.
16:00	Hotshot on location with gun.
17:35	Hold safety meeting.
17:50	Bleed off tubing from 3800 kPa.
18:20	Shut in well.
18:30	Wireline run in hole with gauge ring.
18:55	Wireline at surface.
19:00	Attend safety meeting.
19:45	Wireline run in hole to shoot hole in tubing.
20:15	Pressure tubing to 4 MPa.
20:20	Shoot hole.
20:45	Wireline at surface.
22:00	Circulate down casing and up tubing to confirm hole is shot.
22:35	Wireline run in hole to retrieve collar stop.
23:00	Wireline at surface.
23:35	Attend safety meeting.
23:55	Fill casing with methanol, fluid returns to pressure tank.
05/03/04	
01:15	Finish pumping, 12.7m3 returned to separator, Intermittent sour gas throughout.
01:40	Wireline run in hole to retrieve prong.
02:10	Prong pulled.
02:21	Wireline at surface.
02:45	Wireline run in hole to pull plug.
03:35	Wireline out of hole.
03:55	Wireline run in hole.
04:45	Wireline on surface.
05:45	Hold safety meeting.
06:05	Rig up to swab and inject methanol.

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/04 09:00	End of file. New file started for test portion of program.

PRECISION ENERGY SERVICES

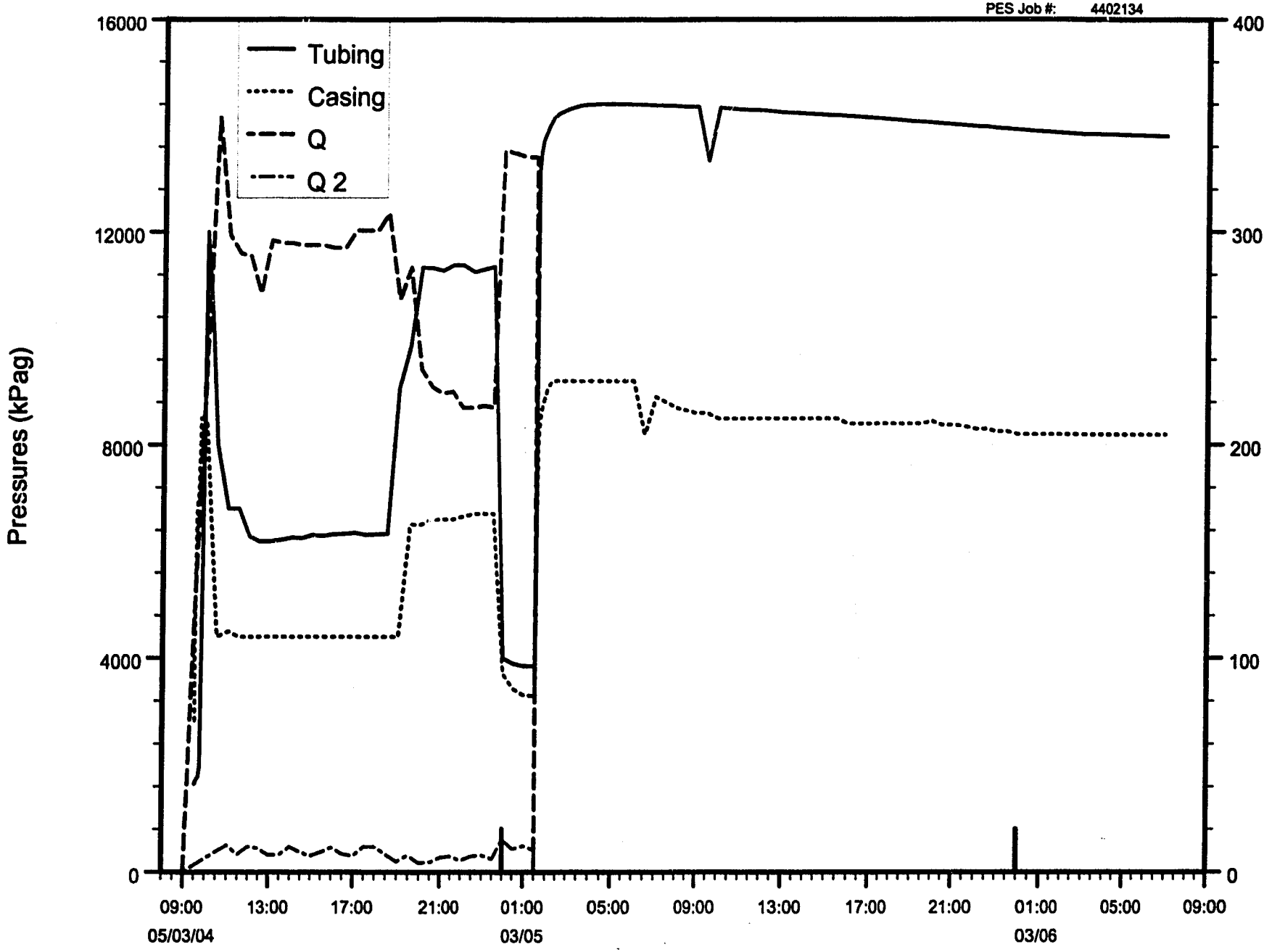
Precision Drilling

Northrock Resources Ltd.
B44 Bear Lake
B44-64-30-125-45
Tight Hole

Testing Operation Performed:	Clean Up \ Test
Customer Representative(s) on Location:	Peter Engelman
Precision Energy Supervisor(s):	Martin Mueller, Darren Bittorf
Test Start and End Dates:	05/03/04 - 05/03/06
Precision Energy Job Number:	4402134
Interval Top and Base:	
Precision Energy Representative:	Jim Sutherland
Report Prepared By:	Jason Zhu
Date Prepared:	05/06/15

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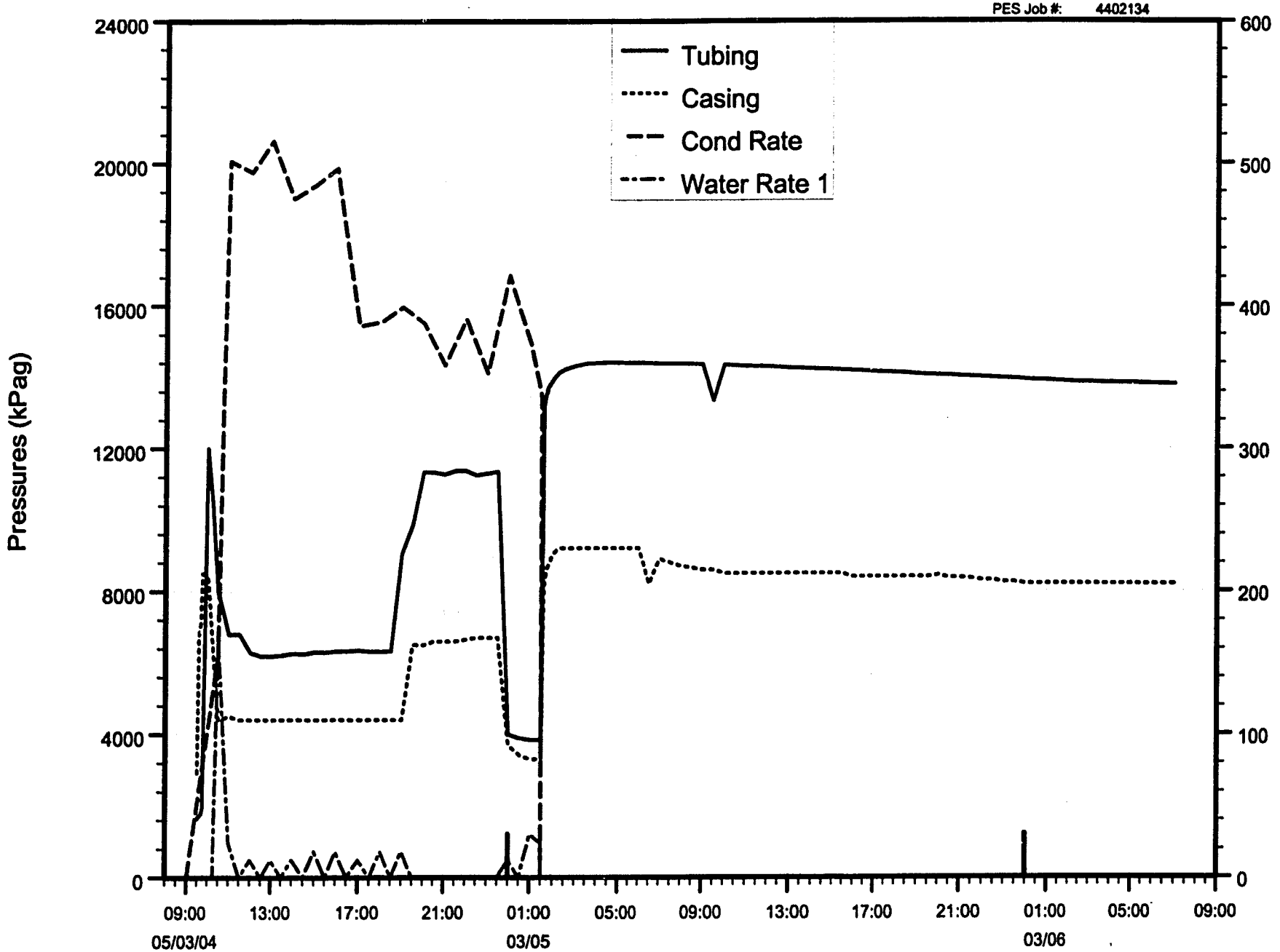
Northrock Resources Ltd.
B44-64-30-125-45
Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Pool: Artic Bear Lake
Test Start: 4 Mar 2005
Test End: 6 Mar 2005
PES Job #: 4402134



PRECISION
ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134



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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	8 Mar 2005
PES Job #:	4402134

Company:	Northrock Resources Ltd.
Company Representative:	Peter Engelman
Wellname:	B44 Bear Lake
UWI:	B44-64-30-125-45
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Operation:	Clean Up \ Test
Test Supervisors:	Martin Mueller, Darren Bittorf
PES Job #:	4402134
Precision Drilling Corporation division:	Precision Energy Services
Fluid 1 Type:	Condensate
Tank Measurement:	Incremental
Fluid 2 Type:	Water
Tank Measurement:	Incremental
Flow Duration:	16.50 hours
Final Gas Production Rate:	335.05 E³m³/d
Cumulative Gas Produced:	180.12 E³m³
Cumulative Water Produced:	15.75 m³
Cumulative Condensate/Oil Produced:	271.72 m³
Initial Tubing Pressure:	1647 kPaa
Final Tubing Pressure:	13799 kPaa

1 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	T-148
Upstream Meter Internal Diameter:	145.67 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0095
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.748
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

2 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-10
Upstream Meter Internal Diameter:	102.34 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0095
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.748
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

		Well Head Data				Well Gas				Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/04																								
09:00		New file for test portion of program.																						
09:20		Begin swabbing.																						
09:30		Swab #1 out of hole, no tag, pulled from 340m. Well begins to flow.																						
09:30		Change choke to 38.10 mm choke.																						
09:30	0.2	1647		2800																0.00				
09:35	0.3	1726		6800																0.00				
09:40	0.3	1771		7100																0.00				
09:45	0.4	1976		8500																0.00				
09:45		Decrease choke to 19.0500 mm.																						
09:47		Decrease choke to 12.7000 mm.																						
09:57		Increase choke to 19.0500 mm.																						
10:00	0.7	12000	16	8400																0.00				
10:15		Increase choke to 21.4300 mm.																						
10:15	0.9	10300	16	6400																0.00				
10:20		Increase choke to 23.0188 mm.																						
10:30		Meter in service on 88.9000 mm orifice plate.																						
10:30		Core Lab obtain samples.																						
10:30	1.2	8000	14	4400	2200	21.00	38	353.67							7.50	154.29	7.50		8.00	164.57	8.00			
11:00		Meter in service on 25.4000 mm orifice plate.																						
11:00		Core Lab obtain samples.																						
11:00	1.7	6800	22	4500	1800	18.00	34	298.19		320	26.00	34	12.49	6.21	10.45	501.80	17.95		0.50	24.00	8.50			
11:30	2.2	6800	24	4400	1700	18.00	34	289.82		380	10.00	34	8.23	12.42						0.00				
11:30		Core Lab obtained samples.																						
12:00	2.7	6292	28	4400	1700	18.00	36	288.71		450	18.00	34	11.85	18.68	20.67	493.68	38.52		0.50	12.00	9.00			
12:30	3.2	6191	32	4400	1700	16.00	38	271.14		390	18.00	38	11.11	24.56						0.00				
13:00	3.7	6188	32	4400	1800	18.00	38	295.91		405	9.00	33	8.02	30.90	21.49	515.76	60.01		0.50	12.00	9.50			
13:30	4.2	6219	36	4400	1800	18.00	40	294.79		420	9.00	34	8.12	37.21						0.00				
14:00	4.7	6260	36	4400	1800	18.00	40	294.79		420	19.00	35	11.82	43.59	19.80	475.20	79.81	55.2	0.50	12.00	10.00			
14:00		API = 55.2 at 15°C.																						
14:30		Core Lab obtained samples.																						
14:30	5.2	6253	36	4400	1800	18.00	42	293.69		420	12.00	35	9.37	49.91						0.00				
15:00	5.7	6312	38	4400	1800	18.00	42	293.69		410	8.00	38	7.53	56.18	20.21	485.04	100.02		0.75	18.00	10.75			
15:30	6.2	6295	36	4400	1800	18.00	42	293.69		420	12.00	36	9.36	62.50						0.00				
16:00	6.7	6326	38	4400	1800	18.00	44	292.60		420	18.00	36	11.48	68.83	20.68	496.32	120.70		0.75	18.00	11.50			

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.				Water Production					
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/04																								
16:30	7.2	6330	38	4400	1800	18.00	44	292.60		410	10.00	36	8.45	75.10						0.00				
17:00	7.7	6350	42	4400	1800	19.00	44	300.63		410	8.00	38	7.53	81.52	16.08	385.92	136.78		0.50	12.00	12.00			
17:30	8.2	6315	42	4400	1800	19.00	44	300.63		420	19.00	38	11.76	88.03						0.00				
18:00	8.7	6322	42	4400	1800	19.00	44	300.63		420	19.00	38	11.76	94.54	16.19	388.56	152.97	55.5	0.75	18.00	12.75		6.0	48000
18:00		API=55.5 at 15°C.																						
18:30	9.2	6330	40	4400	1900	19.00	44	308.83		390	10.00	37	8.27	101.15						0.00				
18:30		Core Lab obtain samples.																						
18:30		Begin decreasing choke to obtain rate of 250 E3m3/d, Second stage solution gas of approximately 10 E3m3 not included.																						
18:40		Decrease choke to 17.4600 mm.																						
19:00	9.7	9072	40	4400	1650	16.50	44	268.33		330	4.00	36	4.90	106.84	16.62	398.88	169.59		0.75	18.00	13.50			
19:30	10.2	9675	39	6500	1800	17.00	46	283.30		335	10.00	36	7.80	112.90	#					0.00				
19:30		Core Lab obtain samples. H2S = 9200 ppm.																						
19:37		Decrease choke to 15.0800 mm.																						
20:00	10.7	11330	38	6500	1400	15.00	46	235.28		330	3.00	34	4.25	117.89	16.15	387.60	185.74	54.8	0.00	0.00	13.50			
20:00		API = 54.8 at 15°C.																						
20:30	11.2	11325	38	6600	1400	14.00	46	227.29		300	4.00	34	4.74	122.73						0.00				
21:00	11.7	11275	37	6600	1350	14.00	44	224.13		310	8.00	35	6.78	127.54	14.93	358.32	200.67		0.00	0.00	13.50			
21:30	12.2	11375	37	6600	1350	13.80	38	224.92		310	9.50	34	7.41	132.38						0.00				
22:00	12.7	11375	37	6650	1300	13.00	30	217.54		295	5.50	33	5.53	137.03	16.28	390.72	216.95	56.8	0.00	0.00	13.50			
22:00		API = 56.8 at 15.6°C.																						
22:30	13.2	11250	37	6700	1300	13.00	30	217.54		295	10.00	33	7.47	141.71						0.00				
22:30		Inject methanol down casing at a rate of 5L/min.																						
23:00	13.7	11300	37	6700	1300	13.00	28	218.36		295	11.00	33	7.84	146.43	14.69	352.56	231.64		0.00	0.00	13.50			
23:30	14.2	11350	36	6700	1300	13.00	30	217.54	0.009000	290	7.00	33	6.20	151.09						0.00				
23:30		Increase methanol rate to 10L/min.																						
23:30		Core Lab obtain samples. H2S = 9000 ppm.																						
23:30		Increase choke to 50.8000 mm.																						
24:00	14.7	4000	39	3700	1800	23.50	38	338.22		325	37.50	32	15.21	158.45	17.55	421.20	249.19		0.50	12.00	14.00			
24:00		API = 56.5@15.6°C																						
05/03/05																								
00:30	15.2	3900	40	3425	1800	23.50	40	336.94		305	20.50	33	10.88	165.70						0.00				
01:00	15.7	3850	40	3300	1800	23.50	43	335.05		310	25.50	35	12.20	172.93	15.55	373.20	264.74		1.25	30.00	15.25			
01:00		Start Real Time Data surface recorders.																						
01:15		Shut down methanol injection.																						

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Northrock Resources Ltd.
B44-64-30-125-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	8 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 68 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/05																								
01:30	16.2	3850	40	3300	1800	23.50	43	335.05	0.009000	310	18.00	35	10.21	180.12	6.96	335.04	271.72	56.6	0.50	24.00	15.75			
01:30		API = 56.6 at 15.6°C.																						
01:30		Core Lab obtain samples. H2S = 9000 ppm.																						
01:30		Shut in well. Meter out of service.																						
01:30		Monitor well pressures.																						
01:35	0.1	13137		8050																0.00				
01:40	0.2	13491		8500																0.00				
01:45	0.3	13708		8700																0.00				
02:00	0.5	13955		9050																0.00				
02:15	0.8	14132		9200																0.00				
02:30	1.0	14222		9200																0.00				
03:00	1.5	14310		9200																0.00				
03:30	2.0	14372		9200																0.00				
04:00	2.5	14393		9200																0.00				
04:30	3.0	14400		9200																0.00				
05:00	3.5	14400		9200																0.00				
05:30	4.0	14396		9200																0.00				
06:00	4.5	14393		9200																0.00				
06:30	5.0	14387		8200																0.00				
07:00	5.5	14377		8900																0.00				
07:30	6.0	14373		8800																0.00				
08:00	6.5	14366		8700																0.00				
08:30	7.0	14358		8650																0.00				
09:00	7.5	14352		8600																0.00				
09:30	8.0	13341		8600																0.00				
10:00	8.5	14334		8500																0.00				
10:30	9.0	14320		8500																0.00				
11:00	9.5	14304		8500																0.00				
11:30	10.0	14293		8500																0.00				
12:00	10.5	14288		8500																0.00				
12:30	11.0	14266		8500																0.00				
13:00	11.5	14247		8500																0.00				
13:30	12.0	14239		8500																0.00				
14:00	12.5	14226		8500																0.00				

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Northrock Resources Ltd.
B44-64-36-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	8 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.					Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F		Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API		m³	m³/d	m³	%H₂O		ppm
05/03/05																									
14:30	13.0	14214		8500																	0.00				
15:00	13.5	14202		8500																	0.00				
15:30	14.0	14194		8500																	0.00				
16:00	14.5	14178		8400																	0.00				
16:30	15.0	14165		8400																	0.00				
17:00	15.5	14149		8400																	0.00				
17:30	16.0	14134		8400																	0.00				
18:00	16.5	14116		8400																	0.00				
18:30	17.0	14099		8400																	0.00				
19:00	17.5	14081		8400																	0.00				
19:30	18.0	14068		8400																	0.00				
20:00	18.5	14053		8450																	0.00				
20:30	19.0	14036		8375																	0.00				
21:00	19.5	14021		8375																	0.00				
21:30	20.0	14003		8350																	0.00				
22:00	20.5	13987		8300																	0.00				
22:30	21.0	13976		8300																	0.00				
23:00	21.5	13962		8250																	0.00				
23:30	22.0	13935		8250																	0.00				
24:00	22.5	13919		8200																	0.00				
05/03/06																									
00:30	23.0	13903		8200																	0.00				
01:00	23.5	13890		8200																	0.00				
01:30	24.0	13872		8200																	0.00				
02:00	24.5	13863		8200																	0.00				
02:30	25.0	13849		8200																	0.00				
03:00	25.5	13842		8200																	0.00				
03:30	26.0	13837		8200																	0.00				
04:00	26.5	13833		8200																	0.00				
04:30	27.0	13829		8200																	0.00				
05:00	27.5	13824		8200																	0.00				
05:30	28.0	13818		8200																	0.00				
06:00	28.5	13815		8200																	0.00				
06:30		Hold safety meeting, proceed with wireline operations.																							

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/06																								
06:30	29.0	13808		8200																0.00				
07:00	29.5	13799		8200																0.00				
07:00		Rig out surface recorder, proceed with completion of intervals 3 and 4.																						
07:00		End of file, new file started for next portion of program.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/04	
09:00	New file for test portion of program.
09:20	Begin swabbing.
09:30	Swab #1 out of hole, no tag, pulled from 340m. Well begins to flow.
09:30	Change choke to 38.10 mm choke.
09:45	Decrease choke to 19.0500 mm.
09:47	Decrease choke to 12.7000 mm.
09:57	Increase choke to 19.0500 mm.
10:15	Increase choke to 21.4300 mm.
10:20	Increase choke to 23.0188 mm.
10:30	Meter in service on 88.9000 mm orifice plate.
10:30	Core Lab obtain samples.
11:00	Meter in service on 25.4000 mm orifice plate.
11:00	Core Lab obtain samples.
11:30	Core Lab obtained samples.
14:00	API = 55.2 at 15°C.
14:30	Core Lab obtained samples.
18:00	API=55.5 at 15°C.
18:30	Core Lab obtain samples.
18:30	Begin decreasing choke to obtain rate of 250 E3m3/d, Second stage solution gas of approximately 10 E3m3 not included.
18:40	Decrease choke to 17.4600 mm.
19:30	Core Lab obtain samples. H2S = 9200 ppm.
19:37	Decrease choke to 15.0800 mm.
20:00	API = 54.8 at 15°C.
22:00	API = 56.8 at 15.6°C.
22:30	Inject methanol down casing at a rate of 5L/min.
23:30	Increase methanol rate to 10L/min.
23:30	Core Lab obtain samples. H2S = 9000 ppm.
23:30	Increase choke to 50.8000 mm.
24:00	API = 56.5@15.6`C
05/03/05	
01:00	Start Real Time Data surface recorders.
01:15	Shut down methanol injection.
01:30	API = 56.6 at 15.6°C.
01:30	Core Lab obtain samples. H2S = 9000 ppm.

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Northrock Resources Ltd.
B44-64-30-125-65

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End.	6 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/05	
01:30	Shut in well. Meter out of service.
01:30	Monitor well pressures.
05/03/06	
06:30	Hold safety meeting, proceed with wireline operations.
07:00	Rig out surface recorder, proceed with completion of intervals 3 and 4.
07:00	End of file, new file started for next portion of program.

PRECISION ENERGY SERVICES

Precision Drilling

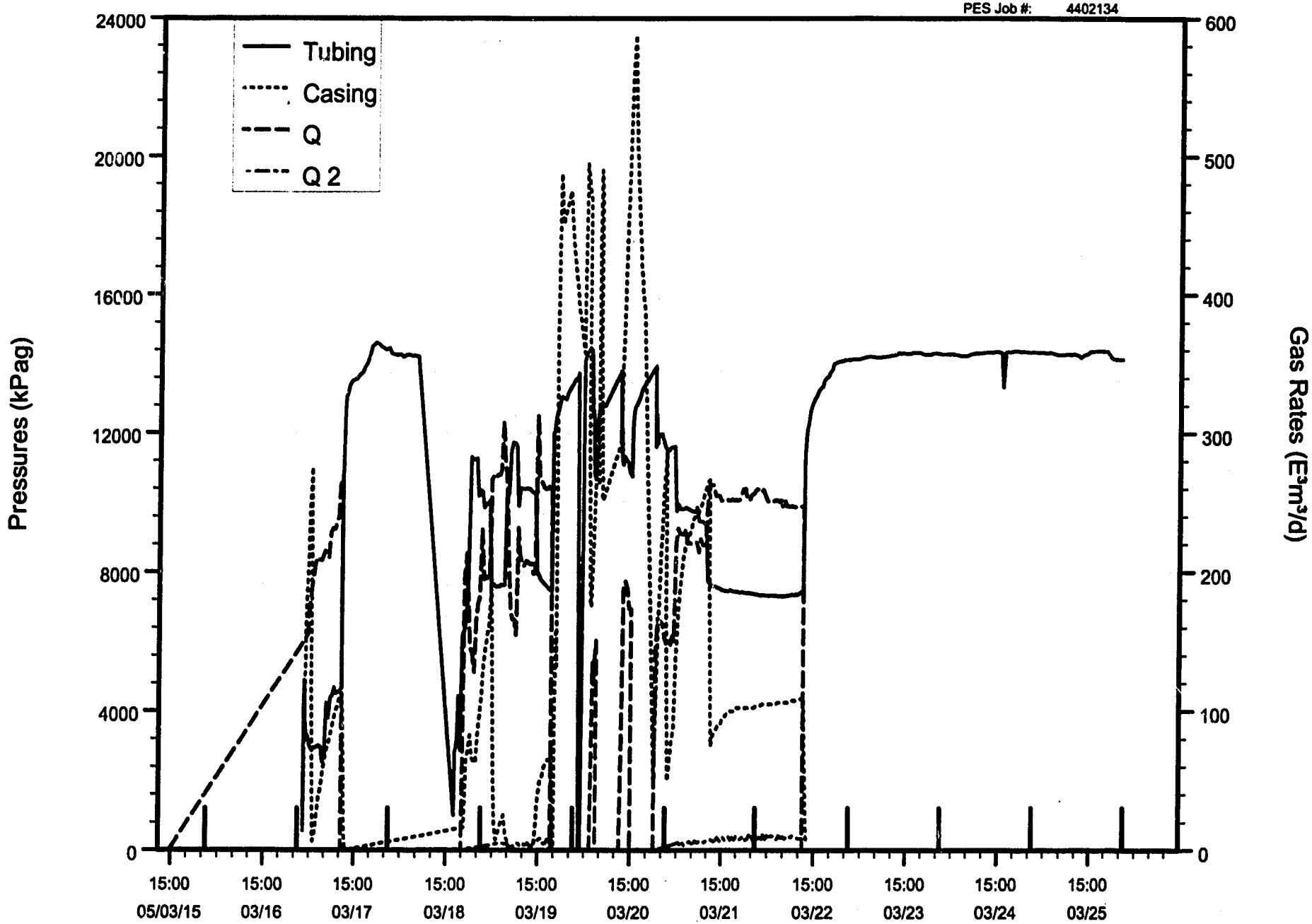
Northrock Resources Ltd.
B44 Bear Lake
B44-64-30-125-45
Tight Hole

Testing Operation Performed:	Clean Up \ Test
Customer Representative(s) on Location:	Peter Engelman
Precision Energy Supervisor(s):	Martin Mueller, Darren Bittorf
Test Start and End Dates:	05/03/15 - 05/03/26
Precision Energy Job Number:	4402134
Interval Top and Base:	
Precision Energy Representative:	Jim Sutherland
Report Prepared By:	Jason Zhu
Date Prepared:	05/06/15

PRECISION ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45

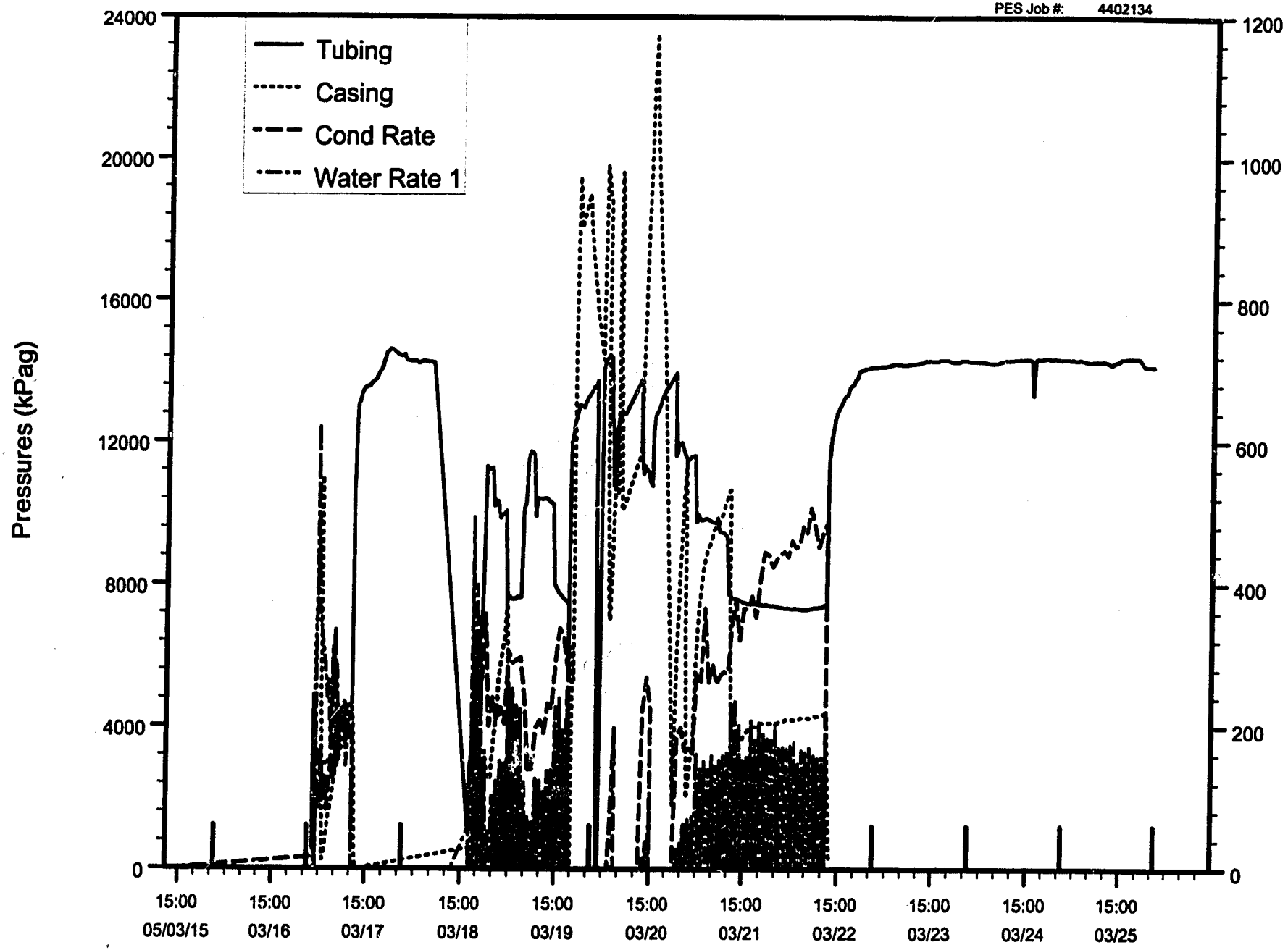
Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134



PRECISION ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134



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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Company:	Northrock Resources Ltd.
Company Representative:	Peter Engelman
Wellname:	B44 Bear Lake
UWI:	B44-64-30-125-45
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Operation:	Clean Up \ Test
Test Supervisors:	Martin Mueller, Darren Bittorf
PES Job #:	4402134
Precision Drilling Corporation division:	Precision Energy Services
Fluid 1 Type:	Condensate
Tank Measurement:	Incremental
Fluid 2 Type:	Water
Tank Measurement:	Incremental
Flow Duration:	92.75 hours
Final Gas Production Rate:	247.37 E³m³/d
Cumulative Gas Produced:	709.75 E³m³
Cumulative Water Produced:	587.86 m³
Cumulative Condensate/Oil Produced:	941.19 m³
Initial Tubing Pressure:	13799 kPaa
Final Tubing Pressure:	14147 kPaa

1 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	T-148
Upstream Meter Internal Diameter:	145.67 mm
N_2	0.0227
CO_2	0.0116
H_2S	0.0090
H_2O	
He	
C1	0.7461
C2	0.1171
C3	0.0518
nC4	0.0188
iC4	0.0102
nC5	0.0051
iC5	0.0060
C6	0.0015
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.754
pPc:	4720.87 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

2 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-10
Upstream Meter Internal Diameter:	102.34 mm
N_2	0.0227
CO_2	0.0116
H_2S	0.0090
H_2O	
He	
C1	0.7461
C2	0.1171
C3	0.0518
nC4	0.0188
iC4	0.0102
nC5	0.0051
iC5	0.0060
C6	0.0015
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.754
pPc:	4720.87 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2006
Test End:	28 Mar 2006
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/06																								
07:00		New file for completion of intervals 3 & 4.																						
07:00		Monitor pressure.																						
07:00		13799		8200																0.00				
07:30				8200																0.00				
08:00				8200																0.00				
08:15		Wireline rigging in and running in hole.																						
08:35		Latch slip stop and pull out of hole.																						
08:35		14800		8200																0.00				
09:20		Wireline on surface.																						
09:20		14700		8200																0.00				
09:45		Wireline run in hole.																						
09:45		14800		8200																0.00				
10:07		Wireline latch recorders.																						
10:07		14800		8200																0.00				
10:30		Wireline on surface with recorders.																						
10:30		14800		8200																0.00				
10:47		Wireline run in hole to pull dart.																						
10:47		14800		8200																0.00				
11:50		Wireline at bottom latching onto dart.																						
11:50		14800		8200																0.00				
12:17		Wireline at surface with dart.																						
12:17		14800		8200																0.00				
14:06		Wireline going in hole with recorders to do a static gradient.																						
14:06		14800		8100																0.00				
15:15		Wireline is at midway of perfs.																						
15:15		14800		8100																0.00				
17:05		Wireline out of hole.																						
17:05		14800		8000																0.00				
17:30		Wireline run in hole with No Go.																						
18:00		14500		8000																0.00				
18:50		14500		8000																0.00				
18:50		Wireline at surface.																						
19:55		Wireline run in hole with recorders.																						
20:00		14400		8000																0.00				

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	28 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	G.r/md Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/06																								
21:00		14400		8000																0.00				
21:30		14400		8000																0.00				
21:30		Wireline at surface.																						
21:45		Wireline run in hole to set plug.																						
22:00		14400		8000																0.00				
22:30		14400		8000																0.00				
23:00		14400		8000																0.00				
23:30		14400		8000																0.00				
24:00		14400		8000																0.00				
24:00		Wireline at surface, plug set at wrong depth.																						
05/03/07																								
00:15		Wireline run in hole to retrieve plug.																						
00:30		14300		7900																0.00				
01:00		14300		7900																0.00				
01:05		Wireline at surface.																						
01:15		Wireline run in hole to set plug.																						
01:30		14300		7900																0.00				
02:00		14300		7900																0.00				
03:00		Wireline at surface.																						
03:10		Wireline run in hole with prong.																						
03:30		14200		7800																0.00				
04:00		14200		7800																0.00				
04:20		14250		7800																0.00				
04:22		Prong set.																						
04:30		14250		7800																0.00				
04:45		Wireline at surface.																						
04:55		Open well to bleed off.																						
05:40		Start pumping water down hole to circulate.																						
06:45		Bleed down well.																						
07:40		Shut in well, rig up to pump down tubing.																						
08:20		Shut down rig pump. 19.5m3 total fluid pumped away.																						
08:33		Shut in wing valve and pressure test plug.																						
08:55		Pressure test complete bleed off. Total fluid returned to surface was 15.22 m3.																						
09:45		Rig off wellhead, rig on BOP's.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/07																								
11:35		Pressure test BOP's.																						
14:30		Begin to circulate hole.																						
15:30		Circulation complete. 15 m3 pumped, 13 m3 returned.																						
16:00		Start out of hole.																						
18:30		Attend safety meeting. Continue with tripping out of hole.																						
20:15		Start to circulate gas bubble out of hole.																						
20:40		Stop pumping and bleed off. Pumped 11m3 down casing and returned 7m3 to seperator.																						
21:00		Continue out of hole.																						
23:45		Prepare to circulate gas bubble out of well.																						
05/03/08																								
00:25		Stop pumping. Pumped 4m3 down casing and returned 1m3 to seperator.																						
00:50		Continue out of hole.																						
01:45		Tubing out of hole. Pressure test casing to 5500 kPa.																						
02:10		Pressure test good. Bleed off casing.																						
02:15		Attend safety meeting.																						
02:30		Rig in wireline.																						
03:30		Wireline run in hole to dump bail sand.																						
05:03		Wireline at surface.																						
05:27		Wireline run in hole to perforate.																						
06:06		Guns fired.																						
06:06				Vac																0.00				
06:45				250																0.00				
06:50		Wireline at surface.																						
07:15				410																0.00				
08:30				475																0.00				
09:30				710																0.00				
09:30		Wireline run in hole to dump bail cement.																						
11:00				1875																0.00				
11:00		Wireline at surface.																						
11:45		Wireline run in hole with perf gun #2.																						
12:54				3390																0.00				
12:55		Perf gun fired.																						
12:56				3410																0.00				
13:00				3475																0.00				

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Northrock Resources Ltd.
B44-64-30-12S-4E

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data				Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPa	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/08																								
13:40				3350																0.00				
13:40		Wireline at surface.																						
14:15				4100																0.00				
14:15		Wireline run in hole with perf gun #3.																						
15:39				4550																0.00				
15:40		Perf gun fired.																						
15:41				4600																0.00				
16:15				4850																0.00				
16:15		Wireline at surface.																						
16:59				5000																0.00				
16:59		Wireline run in hole with perf gun #4.																						
18:15				6000																0.00				
18:16		Perf gun fired.																						
18:17				6250																0.00				
18:50				6275																0.00				
18:50		Wireline at surface.																						
19:30				6500																0.00				
19:30		Wireline run in hole with perf gun #5.																						
20:30				6950																0.00				
20:31		Perf gun fired.																						
20:32				6995																0.00				
21:10				7250																0.00				
21:10		Wireline at surface.																						
21:45				7450																0.00				
21:45		Wireline run in hole with perf gun #6.																						
22:48				7500																0.00				
22:49		Miss fire on perf gun #6.																						
23:35		Attend safety meeting.																						
23:45				8000																0.00				
23:46		Wireline at surface.																						
05/03/09																								
00:15				8250																0.00				
00:15		Wireline run in hole with perf gun #6.																						
01:14				8500																0.00				

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/09																								
01:15		Perf gun fired.																						
01:16				8500																0.00				
01:55				8700																0.00				
01:55		Wireline at surface.																						
02:21				8700																0.00				
02:22		Wireline run in hole with perf gun #7.																						
03:24				8750																0.00				
03:25		Perf gun fired.																						
03:26				8750																0.00				
04:05				8750																0.00				
04:06		Wireline at surface.																						
04:27				8850																0.00				
04:27		Wireline run in hole with perf gun #8.																						
05:53				9100																0.00				
05:55		Perf gun fired.																						
05:57				9100																0.00				
06:39				9450																0.00				
06:39		Wireline at surface.																						
06:50				10300																0.00				
06:50		Wireline run in hole with perf gun # 9.																						
09:55				10200																0.00				
09:57		Perf gun fired.																						
10:00				10250																0.00				
10:45				10400																0.00				
10:45		Wireline at surface.																						
11:10				10400																0.00				
11:10		Wireline run in hole with gamma ray and gauge ring.																						
13:05				10600																0.00				
13:05		Wireline out of hole to service pack off.																						
13:48				10600																0.00				
13:48		Wireline run in hole with gamma ray and gauge ring.																						
15:10				11100																0.00				
15:10		Wireline stuck in hole.																						
15:15				11200																0.00				

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Northrock Resources Ltd.
B44-64-30-125-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.					Water Production				pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/09																								
15:15		Open well on 24/64 choke to dislodge tool.																						
15:20				10900																0.00				
15:25			6	10700																0.00				
15:30			6	10600																0.00				
15:33		Shut in well wireline is free no fluid returned to surface.																						
15:35				10600																0.00				
15:40				10600																0.00				
15:45				10700																0.00				
16:00				10900																0.00				
16:15				10900																0.00				
16:30				10900																0.00				
16:30		Wireline at surface.																						
17:00				10900																0.00				
17:30				10800																0.00				
18:00				10800																0.00				
18:30				10900																0.00				
18:45		Attend safety meeting.																						
19:00		Prepare to run packer.																						
20:08		Wireline run in hole with packer assembly.																						
20:30				11500																0.00				
21:00				11700																0.00				
21:30				11750																0.00				
22:00				11750																0.00				
22:25		Wireline at surface. Lost tool string from surface.																						
22:25				11750																0.00				
22:30				11600																0.00				
22:30		Bleed off casing pressure.																						
23:30				50																0.00				
23:30		Leave casing open to vent. Recovered 0.5m3 of water during bleed off.																						
05/03/10																								
00:30		Prepare tools for fishing.																						
02:40		Wireline run in hole with gauge ring.																						
04:00		Wireline at surface.																						
04:11		Wireline run in hole with overshot.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	28 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				Salinity	pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Gr/Ind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/10																								
07:20				10500																0.00				
07:20		Well pressured up, open to bleed off.																						
07:25				10200																0.00				
07:30				10000																0.00				
07:45				8100																0.00				
07:50		Shut in, well returned 3.51 m3 of condensate on bleed off.																						
08:00				9200																0.00				
09:00				11600																0.00				
10:00				11700																0.00				
10:20		Begin pumping to kill well.																						
11:23		Tools moving down hole, shut down pump and attempt to pull out of hole.																						
11:35		Unable to pull out, continue to pump to kill well.																						
13:20		Shut down pump and monitor pressure. 50 m3 was pumped.																						
13:30		Attempt to pull out of hole.																						
13:45		Well bleeds down to 500 kPa, pump to maintain pressure as directed, continue to attempt to pull out of hole.																						
18:30		Still trying to pull out of hole, total fluid pumped to this point is 59 m3.																						
19:00		Continue to pump fluid to maintain pressure.																						
22:00		Prepare to bleed off gas head.																						
22:10		Unable to bleed off, ice plug in flowline.																						
22:50		Bleed off casing.																						
22:50				8100																0.00				
22:50		Choke at 10/64.																						
23:00				4700																0.00				
23:15				4300																0.00				
23:30				3450																0.00				
23:40		Increase choke to 15/64.																						
23:50		Change out rig pump.																						
24:00				2600																0.00				
05/03/11																								
00:30				1750																0.00				
00:30		Increase choke to 18/64.																						
01:00				1300																0.00				
01:30				1100																0.00				
01:40		Shut in casing.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/11																								
01:45		Fill hole.																						
01:45		Wireline continue to try and pull out of hole.																						
03:30		Wireline at surface with broken skirt, bleed off lubricator.																						
03:30				1500																0.00				
03:45		Lay down lubricator.																						
04:00				2200																0.00				
05:00				2900																0.00				
06:00				3500																0.00				
07:00				4000																0.00				
08:00				4300																0.00				
09:00				4500																0.00				
10:00				4600																0.00				
11:00				4800																0.00				
12:00				5000																0.00				
12:15		Wireline run in hole with magnet.																						
13:00				5050																0.00				
13:30		Wireline out of hole, metal filings retrieved. Rig methanol injection to wireline lubricator.																						
14:00				5100																0.00				
14:05		Wireline run in hole with magnet.																						
15:00				5150																0.00				
15:00		Wireline out of hole, metal filings retrieved.																						
16:00				5250																0.00				
16:30		Wireline run in hole with pulling tool.																						
17:00				5400																0.00				
17:15		Wireline out of hole, nothing recovered.																						
17:36		Wireline run in hole with pulling tool.																						
18:00				5400																0.00				
18:10		Wireline out of hole sheared off.																						
18:45		Bleed off well.																						
19:00				4000																0.00				
19:05				3700																0.00				
19:05		Shut in, wireline run in hole.																						
20:00				5100																0.00				
21:00				5100																0.00				

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Northrock Resources Ltd.
B44-84-36-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #	4402134

Time	Elapsed Time	Well Head Data				Well Gas				Well Gas					Cond/Oil Prod.					Water Production					
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/11																								
22:00				5300																0.00				
23:00				5600																0.00				
24:00				6000																0.00				
05/03/12																								
00:25		Wireline at surface, bleed off lubricator.																						
00:30				6500																0.00				
00:30		Bleed on well.																						
00:30		Choke at 15/64.																						
00:35				6000																0.00				
00:40				5500																0.00				
00:45				4900																0.00				
00:50				4500																0.00				
00:50		Fluid to surface, shut in. Wait to see if fluid drops.																						
01:00				4600																0.00				
01:30		Bleed off well.																						
01:30				5200																0.00				
01:35				5150																0.00				
01:40				5000																0.00				
01:40		Fluid to surface, shut in.																						
02:00		Pump to kill well.																						
06:00		Well is on vacuum. Total fluid pumped = 52m3.																						
06:30		Start to trip pipe in hole with overshot.																						
10:20		Slight blow on tubing, rig up to circulate.																						
10:25		Begin reverse circulating.																						
11:15		Finished circulating, 21 m3 pumped, 13 m3 returned. Rig up to bull head down tubing.																						
11:25		Begin pumping down tubing.																						
13:30		Finished pumping down tubing. 30 m3 was pumped, continue in hole.																						
16:35		Tagged fish, latch on.																						
17:05		Suspect fish on string, pull 5 stands and rig in wireline to run impression block.																						
18:10		Wireline run in hole with impression block.																						
18:45		Wireline out of hole, retrieved impression of top of fish.																						
19:30		Bleed off tubing and pump to kill.																						
19:35		Bleed off casing until fluid to surface.																						
20:25		Kill casing.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data					Well Gas				Well Gas				Cond/Oil Prod.					Water Production					
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/12																								
20:45		Trip out 1 stand, rig up wireline to run a dart.																						
21:15		Wireline run in hole with dart.																						
22:30		Wireline at surface.																						
23:00		Wireline run in hole to punch a hole in tubing.																						
05/03/13																								
00:30		Wireline at surface.																						
01:15		Pump 10m3 to circulate tubing.																						
01:35		1.9m3 water recovered from circulating.																						
01:40		Pump 15m3 down casing.																						
02:30		Trip out tubing, kill well as required.																						
06:00		Total water pumped on shift = 44m3.																						
07:40		Out of hole with fish.																						
08:55		Wireline run in hole with magnet.																						
09:45		Wireline at surface.																						
09:50		Wireline run in hole with magnet.																						
10:25		Wireline at surface.																						
10:55		Wireline run in hole with impression block.																						
11:27		Wireline at surface.																						
11:40		Wireline run in hole with impression block.																						
12:30		Wireline at surface.																						
16:15		Wireline run in hole to retrieve prong.																						
16:53		Wireline at surface, prong not retrieved.																						
17:05		Wireline run in hole to retrieve prong.																						
17:43		Wireline at surface.																						
18:10		Wireline running in hole to retreive prong.																						
19:45		Wireline at surface, no prong.																						
20:10		Wireline running in hole.																						
21:03		Wireline at surface.																						
21:20		Wireline running in hole.																						
22:00		Wireline at surface.																						
22:10		Wireline run in hole to retreive prong.																						
23:45		Wireline at surface, no prong.																						
05/03/14																								
00:15		Wireline run in hole to retrive prong.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2006
Test End:	26 Mar 2006
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas					Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2			Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³		m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/14																									
02:45		Wireline at surface.																							
03:00		Wireline run in hole to retrive prong.																							
04:00		Wireline at surface with prong.																							
04:20		Wireline run in hole to retreive plug.																							
05:00		Wireline at surface, no plug.																							
05:15		Wireline run in hole to retreive plug.																							
06:00		Wireline at surface with plug, rig out wireline.																							
07:00		Rig to pump 52 m³ down casing to kill well.																							
08:30		Finished pumping, rig to trip pipe in hole.																							
17:35		Finished tripping in, land tubing hanger.																							
18:00		Pressure test casing.																							
18:25		Pressure test good, rerig to pressure test tubing.																							
19:05		Wireline running in hole.																							
20:35		Wireline at surface with recorders.																							
20:50		Wireline running in to set plug.																							
21:50		Wireline at surface.																							
22:10		Wireline running in hole to set prong.																							
23:30		Wireline at surface.																							
06/03/15																									
00:10		Pressure test plug to 14MPa.																							
00:40		Pressure test fail.																							
00:50		Wireline running in hole to retreive prong.																							
01:25		Wireline at surface.																							
01:40		Wireline running in hole to retreive plug.																							
02:15		Wireline at surface, plug retreived.																							
02:20		Wireline run in to set plug.																							
03:10		Wireline at surface.																							
03:15		Wireline run in with prong.																							
04:00		Wireline at surface, rig out wireline.																							
04:15		Pressure test plug to 14MPa.																							
04:30		Pressure test good.																							
04:35		Head up.																							
05:45		Well head in.																							
06:00		Pressure test well head.																							

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

		Well Head Data				Well Gas				Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H2O	ppm	
05/03/15																								
06:30		Pressure test good, rig up wireline to open sliding sleeve.																						
07:15		Wireline run in hole to open sliding sleeve.																						
08:10		Wireline at surface, tool sheared.																						
08:20		Wireline run in hole to open sliding sleeve.																						
09:15		Wireline at surface, tool sheared.																						
09:45		Wireline run in hole to open sliding sleeve.																						
10:37		Wireline at surface, tool sheared.																						
10:50		Wireline run in hole to open sliding sleeve.																						
11:35		Wireline at surface, tool sheared.																						
12:25		Pumped fluid and discovered sleeve is only partially open.																						
12:30		Wireline run in hole to open sliding sleeve.																						
13:45		Wireline at surface, tool sheared.																						
13:50		Pumped fluid and determined sleeve is open.																						
14:05		Rig out wireline and rig up to swab.																						
14:40		Begin swabbing.																						
14:48		Swab #1 out of hole, tag = surface, pull = 175m, fluid recovered = 0.75m3.																						
14:56		Swab #2 out of hole, tag = 45m, pull = 210m, fluid recovered = 0.75m3.																						
15:03		Swab #3 out of hole, tag = 90m, pull = 290m, fluid recovered = 1.0m3.																						
15:11		Swab #4 out of hole, tag = 130m, pull = 375m, fluid recovered = 1.0m3.																						
15:19		Swab #5 out of hole, tag = 175m, pull = 425m, fluid recovered = 1.0m3.																						
15:27		Swab #6 out of hole, tag = 265m, pull = 475m, fluid recovered = 0.75m3.																						
15:41		Swab #7 out of hole, tag = 265m, pull = 525m, fluid recovered = 1.25m3.																						
15:52		Swab #8 out of hole, tag = 306m, pull = 570m, fluid recovered = 0.75m3.																						
16:02		Swab #9 out of hole, tag = 375m, pull = 667m, fluid recovered = 1.0m3.																						
16:15		Swab #10 out of hole, tag = 425m, pull = 718m, fluid recovered = 1.0m3. Cum fluid recovered 1st 10 swabs = 9.25m3.																						
16:27		Swab #11 out of hole, tag = 475m, pull = 760m, fluid recovered = 1.0 n3.																						
16:39		Swab #12 out of hole, tag = 525m, pull = 807m, fluid recovered = 1.0m3.																						
17:01		Swab #13 out of hole, tag = 573m, pull = 903m, fluid recovered = 1.0m3.																						
17:18		Swab #14 out of hole, tag = 665m, pull = 945m, fluid recovered = 0.75m3.																						
17:41		Swab #15 out of hole, tag = 715m, pull = 990m, fluid recovered = 1.25m3.																						
17:56		Sw[illegible] out of hole, tag = 760m, pull = 1038m, fluid recovered = 1.0m3.																						
18:13		Swab #1[illegible] out of hole, tag = 807m, pull = 1084m, fluid recovered = 1.0m3.																						
18:31		Swab #18 out of hole, tag = 855m, pull = 1125m, fluid recovered = 1.0m3.																						
18:47		Swab #19 out of hole, tag = 900m, pull = 1170m, fluid recovered = 1.0m3.																						

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Northrock Resources Ltd.
B44-84-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data						Well Gas		Well Gas				Cum. Q Total	Cond/Oil Prod.					Water Production				pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/15																								
19:05		Swab #20 out of hole, tag = 945m, pull = 1125m, fluid recovered = 0.8m3. Cum fluid recovered past 20 swabs = 19.05m3.																						
19:25		Swab #21 out of hole, tag = 990m, pull = 1169m, fluid recovered = 0.7m3.																						
19:42		Swab #22 out of hole, tag = 1035m, pull = 1213m, fluid recovered = 0.75m3.																						
19:56		Swab #23 out of hole, tag = 1080m, pull = 1343m, fluid recovered = 1.0m3.																						
20:10		Swab #24 out of hole, tag = 1169m, pull = 1427.5m, fluid recovered = 1.25m3.																						
20:20		Swab #25 out of hole, tag = 1256.25m, pull = 1552.5m, fluid recovered = 1.25m3.																						
20:48		Swab #26 out of hole, tag = 1300m, pull = 1593.75m, fluid recovered = 1.5m3.																						
21:19		Swab #27 out of hole, tag = 1342.5m, pull = 1511.25m, fluid recovered = 0.5m3.																						
21:38		Swab #28 out of hole, tag = 1385m, pull = 1593.75m, fluid recovered = 0.5m3.																						
21:58		Swab #29 out of hole, tag = 1427.5m, pull = 1675m, fluid recovered = 1.25m3.																						
22:15		Swab #30 out of hole, tag = 1470m, pull = 1755m, fluid recovered = 1.0m3. Cum fluid recovered past 30 swabs = 32.75m3.																						
22:37		Swab #31 out of hole, tag = 1552.5m, pull = 1751.25m, fluid recovered = 1.25m3.																						
22:57		Swab #32 out of hole, tag = 1635m, pull = 1911.25m, fluid recovered = 1.50m3.																						
23:20		Swab #33 out of hole, tag = 1675m, pull = 1950m, fluid recovered = 0.75m3.																						
23:45		Swab #34 out of hole, tag = 1755m, pull = 2025m, fluid recovered = 1.25m3.																						
05/03/16																								
00:06		Swab #35 out of hole, tag = 1833.75m, pull = 2100m, fluid recovered = 1.0m3.																						
00:06		Total fluid recovered during swabbing = 38.50m3.																						
00:15		Rig out swab equipment. Rig up wireline.																						
00:15		Wireline running in hole to close sleeve.																						
02:30		Wireline at surface.																						
02:40		Fill tubing to pressure test sliding sleeve.																						
02:55		Sleeve pressure tested to 10MPa.																						
03:10		Wireline running in hole to retreive prong.																						
03:45		Wireline at surface, unable to get through 2 3/8" tubing,no prong retreived.																						
03:55		Wireline running in hole to retreive prong.																						
04:25		Wireline at surface, no prong.																						
04:30		Wireline running in hole with internal wire grab.																						
05:25		Wireline at surface, nothing grabbed.																						
05:40		Wireline running in hole with spear.																						
06:15		Wireline at surface, nothing retreived.																						
06:30		Wireline run in hole with bailer.																						
07:20		Wireline at surface, nothing recovered.																						
07:45		Wireline run in hole with impression block.																						

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Northrock Resources Ltd.
B44-64-36-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	16 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/16																								
08:12		Wireline on surface.																						
10:10		Begin pumping to fill casing.																						
11:55		Casing full, rig off wellhead, rig on BOP's.																						
13:30		Pressure test BOP's																						
14:00		Pressure test good, come off packer and circulate well.																						
15:10		Circulation complete, rig on wireline.																						
15:47		Wireline run in hole with guage ring.																						
16:23		Wireline on surface, unable to get to bottom.																						
16:45		Latch onto packer.																						
16:55		Rig on wirelinn and run in guage ring.																						
17:30		Wireline on surface, unable to get to bottom.																						
17:35		Come off packer and change out 2 foot pup for 1 foot pup.																						
18:05		Wireline run in hole with gauge ring.																						
18:45		Wireline at surface.																						
19:00		Pressure test tubing to 14MPa.																						
19:20		Pressure test casing to 14MPa.																						
19:35		Remove BOP's.																						
20:05		Attach wellhead and pressure test.																						
21:00		Rig up wireline.																						
22:00		Wireline run in hole to retreive prong.																						
22:55		Wireline at surface with prong.																						
23:00		Wireline run in hole to retreive plug.																						
24:00		Wireline at surface with plug.																						
05/03/17																								
00:05		Rig out wireline, rig up swab equiptment.																						
00:10		Preflow safety meeting.																						
00:45		Run in hole with swab #1.																						
00:50		Swab #1 at surface, tag fluid at surface, pull from 225m, fluid recovered = 0.25m3.																						
01:00		Swab #2, tag fluid at 44m, pull from 275m, fluid recovered = 0.25m3.																						
01:17		Swab #3, taged fluid at 132m, pull from 375m, fluid recovered = 0.5m3.																						
01:17		Well starting to flow, total fluid recovered while swabing = 1.0m3.																						
01:17		Change choke to 50.80 mm.																						
01:25	0.7	566	16	625																0.00				
01:25		Heavy fluid returns.																						

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Northrock Resources Ltd.
B44-64-36-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Bumvat Creek
Test Start:	15 Mar 2 05
Test End:	26 Mar 2 05
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				Salinity	pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/17																								
01:26		Change choke to 30.1600 mm.																						
01:30	0.8	4040	17	1550																0.00				
01:30		Burnable gas to surface.																						
01:35	0.8	4879	18	2200																0.00				
01:36		Increase choke to 34.1300 mm.																						
01:45	1.0	3790	18	4000																0.00				
01:55		Increase choke to 50.8000 mm.																						
02:00	1.3	3500	20	5900											0.89	17.09	0.89		10.50	201.60	10.50		12000	7.0
02:15	1.5	3200	22	7400																0.00				
02:25		Meter in service on 63.5000 mm orifice plate.																						
02:30		6200ppm H2S, by Gastec tube.																						
02:30		API = 57 at 60°F.																						
02:30	1.8	3300	23	7900	1825	22.00	47	154.94	0.006200					0.54	2.54	121.92	3.43	57.0	13.00	624.00	23.50		12000	7.0
03:00	2.3	3000	26	9900	1350	38.00	46	176.39						4.21	1.79	85.92	5.22		7.50	360.00	31.00		12000	7.0
03:00		Cuts show 20% cond, 80% water.																						
03:30	2.8	2900	27	11000	1125	51.00	44	188.43						8.14	3.50	168.00	8.72		7.00	336.00	38.00			
03:35		Bleed off casing.																						
04:00	3.3	2950	30	250	1050	60.00	44	198.21						12.27	2.02	96.96	10.74		6.50	312.00	44.50		10000	8.0
04:30	3.8	2950	32	500	1050	65.00	43	206.83						16.58	2.66	128.64	13.42		6.00	288.00	50.50			
05:00	4.3	2975	34	1000	1075	66.00	44	210.37						20.96	1.72	82.56	15.14		5.00	240.00	55.50		16000	8.0
05:30	4.8	3000	35	1500	1075	65.00	44	208.73						25.31	2.67	128.16	17.81		5.50	264.00	61.00			
06:00	5.3	2975	35	1800	1075	65.00	45	208.37	0.006300					29.65	3.00	144.00	20.81	56.6	3.50	168.00	64.50		15000	8.0
06:00		H2S by Gastec = 6300ppm.																						
06:00		API = 56.6 at 60°F.																						
06:30	5.8	2842	37	2200	1075	67.00	45	211.62						34.06	5.39	258.72	26.20		6.50	312.00	71.00			
07:00	6.3	2788	36	2550	1100	68.00	46	215.14						38.54	6.97	334.56	33.17		5.00	240.00	76.00		16000	8.0
07:25		Decrease choke to 25.4000 mm.																						
07:30	6.8	4240	38	2900	1100	66.00	42	213.36						42.98	4.34	208.32	37.51		6.00	288.00	82.00			
08:00	7.3	3792	38	3000	1000	70.00	43	210.05						47.36	3.17	152.16	40.68		3.50	168.00	85.50		18000	7.0
08:30	7.8	4369	39	3300	1200	70.00	44	228.19						52.11	4.71	226.08	45.39		4.50	216.00	90.00			
09:00	8.3	4463	38	3500	1300	66.00	41	231.21						56.93	4.73	227.04	50.12		4.00	192.00	94.00		18000	8.0
09:30	8.8	4667	36	3800	1200	73.00	50	230.71						61.74	4.04	193.92	54.16		4.50	216.00	98.50			
10:00	9.3	4501	38	4000	1200	76.00	52	234.71						66.63	4.73	227.04	58.89		3.00	144.00	101.50		18000	8.0
10:30	9.8	4539	38	4200	1225	78.00	53	239.74						71.62	4.00	192.00	62.89		4.00	192.00	105.50			

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Northrock Resources Ltd.
B44-84-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/17																								
11:00	10.3	4597	38	4400	1500	79.00	52	266.05						77.17	4.55	218.40	67.44		4.00	192.00	109.50		18000	9.0
11:00		Fluid gains changed to hourly.																						
11:30	10.8	4660	37	4500	1300	79.00	52	248.56	0.006500					82.34	4.43	212.64	71.87	56.6	3.50	168.00	113.00		16000	8.0
11:30		H2S by Gastec = 6500ppm.																						
11:30		API = 56.6 at 60°F.																						
11:30		Shut in well. Meter out of service.																						
11:30		Start buildups.																						
11:30		Total gas produced to date = 82.34 E3m3.																						
11:30		Total oil produced to date = 71.87m3.																						
11:30		Total water produced to date = 113.0m3.																						
11:35	0.1	10775		4200																0.00				
11:40	0.2	10877		4200																0.00				
11:45	0.3	11502		3600																0.00				
12:00	0.5	12600		2400																0.00				
12:15	0.8	13055		500																0.00				
12:30	1.0	13112		100																0.00				
13:00	1.5	13365		0																0.00				
13:30	2.0	13472		vac																0.00				
14:00	2.5	13534		vac																0.00				
14:30	3.0	13558		vac																0.00				
15:00	3.5	13572		vac																0.00				
15:30	4.0	13661		vac																0.00				
16:00	4.5	13706		vac																0.00				
16:00		RTM running in hole w/h temp/pressure gauge.																						
16:30	5.0	13758		vac																0.00				
17:00	5.5	13892		vac																0.00				
17:30	6.0	13992		vac																0.00				
18:00	6.5	14106		vac																0.00				
18:30	7.0	14306		vac																0.00				
19:00	7.5	14509		vac																0.00				
19:30	8.0	14543		vac																0.00				
20:00	8.5	14610		vac																0.00				
20:30	9.0	14588		vac																0.00				
21:00	9.5	14543		vac																0.00				

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Northrock Resources Ltd.
B44-64-36-125-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.					Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm		
05/03/17																									
21:30	10.0	14488		vac																0.00					
22:00	10.5	14464		vac																0.00					
22:30	11.0	14412		vac																0.00					
23:00	11.5	14423		vac																0.00					
23:30	12.0	14452		vac																0.00					
24:00	12.5	14306		vac																0.00					
05/03/18																									
00:30	13.0	14285		vac																0.00					
01:00	13.5	14268		vac																0.00					
01:30	14.0	14257		vac																0.00					
02:00	14.5	14271		vac																0.00					
02:30	15.0	14261		vac																0.00					
03:00	15.5	14206		vac																0.00					
03:30	16.0	14233		vac																0.00					
04:00	16.5	14268		vac																0.00					
04:30	17.0	14261		vac																0.00					
05:00	17.5	14254		vac																0.00					
05:30	18.0	14244		vac																0.00					
06:30		RTM start reverse gradient out of hole.																							
08:00	18.5	14248		vac																0.00					
08:30	19.0	14230		vac																0.00					
08:45		Attend safety meeting.																							
07:00	19.5	14230		vac																0.00					
07:55		Wireline at surface. Rig out wireline.																							
08:10		Rig in for acid job.																							
08:45		Attend safety meeting.																							
09:00		Pressure test surface lines. Proceed with acid job.																							
12:30		Finish acid job. Rig in to swab.																							
13:31		Swab #1, Tag 219m, Pulled from 525m, Fluid recovered = 0.75m3. Salinity = 20000ppm, ph = 1.																							
13:46		Swab #2, Tag 263m, Pulled from 570m, Fluid recovered = 1.75m3.																							
13:57		Swab #3, Tag 308m, Pulled from 668m, Fluid recovered = 1.25m3.																							
14:07		Swab #4, Tag 375m, Pulled from 668m, Fluid recovered = 1.0m3. Salinity = 16000ppm, ph = 1																							
14:22		Swab #5, Tag 425m, Pulled from 760m, Fluid recovered = 1.0m3.																							
14:34		Swab #6, Tag 475m, Pulled from 808m, Fluid recovered = 0.75m3.																							

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Northrock Resources Ltd.
B44-64-30-125-4E

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data				Well Gas				Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/18																								
14:45		Swab #7, Tag 425m, Pulled from 668m, Fluid recovered = 1.5m3. Salinity = 28000ppm, ph = 1																						
14:54		Swab #8, Tag 263m, Pulled from 475m, Fluid recovered = 0.75m3.																						
15:14		Swab #9, Tag 375m, Pulled from 668m, Fluid recovered = 1.5m3.																						
16:55		Swab #10, Tag 85m, Pulled from 375m, Fluid recovered = 1.0m3. Salinity = 110000ppm, ph = 2																						
17:00		Total fluid recovered while swabbing = 11.0m3.																						
17:00		Well flowing.																						
17:00	4.5	1000		vac	0	0.00	0	0.00		0	0.00	0	0.00	82.34					11.00	58.67	124.00			
17:00		Change choke to 38.10 mm.																						
17:05	4.6	2750		vac	0	0.00	0	0.00						82.34						0.00				
17:10	4.7	2854		vac																0.00				
17:15	4.8	2910		vac																0.00				
17:30	5.0	3033		vac																0.00				
17:30		Trace of burnable gas to surface.																						
17:45	5.3	3218		vac																0.00				
18:00	5.5	4432		vac											0.00	0.00	71.87		20.57	493.68	144.57			3.0
18:00		Salinity is off scale.																						
18:30	6.0	2875	16	vac																0.00				
19:00	6.5	6195	22	vac	0	0.00	0	0.00		0	0.00	0	0.00	82.34	2.11	50.64	73.98		16.60	398.40	161.17			4.0
19:02		Meter in service on 88.9000 mm orifice plate.																						
19:30	7.0	6319	23	650	2275	6.00	28	195.65						86.15						0.00				
20:00	7.5	6683	28	2550	2500	6.50	29	213.42						90.59	10.12	242.88	84.10	57.6	14.15	339.60	175.32		250000	4.0
20:00		API = 57.6 at 15.6°C.																						
20:20		Meter out of service due to foam production.																						
20:30	8.0	8122	32																	0.00				
20:30		Decrease choke to 19.0500 mm.																						
20:35		Decrease choke to 12.7000 mm.																						
21:00		Meter in service on 88.9000 mm orifice plate.																						
21:00	8.5	11310	30	3300	3800	2.00	39	144.91							14.93	358.32	99.03		6.18	148.32	181.50		164000	5.0
21:30	9.0	11224	30	2650	3725	2.00	44	141.72						93.55						0.00				
21:45		Start incinerator at 80 liters/min.																						
22:00	9.5	11245	29	2550	3100	2.00	46	127.95	0.008000					96.21	8.37	200.88	107.40	56.1	2.18	52.32	183.68		128000	5.0
22:00		Incinerator total burned = 2.5m3.																						
22:00		API = 56.1at 15.6°C.																						
22:00		H2S by Core = 8000ppm.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

	Well Head Data							Well Gas						Well Gas				Cond/Oil Prod.			Water Production			
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/18																								
22:00		CORE obtain samples.																						
22:30	10.0	11265	30	2500	3350	3.00	42	164.63						99.64						0.00				
22:30		Increase choke to 15.8750 mm.																						
22:30		Increase burn rate to 100 liters/min.																						
23:00	10.5	10192	31	3300	1575	7.75	49	177.48						103.34	10.02	240.48	117.42		4.25	102.00	187.93		146000	5.0
23:30	11.0	10351	32	3900	1625	8.00	49	183.10						107.15						0.00				
24:00	11.5	10316	33	4400	1600	13.00	50	231.26						111.97	8.68	208.32	126.10	55.4	5.24	125.76	193.17		140000	6.0
24:00		Increase choke to 19.0500 mm.																						
24:00		API = 55.4 at 15.6°C.																						
24:00		Increase burn rate to 120 liters/min.																						
05/03/19																								
00:30	12.0	9857	34	5375	1400	10.50	50	194.75						116.03						0.00				
00:40		Changed orifice plate to 76.2000 mm.																						
01:00	12.5	9967	36	5800	1400	21.50	51	197.01						120.13	9.44	226.56	135.54		6.37	152.88	199.54		140000	5.0
01:00		Burn total = 15.9m3.																						
01:30	13.0	9984	37	6200	1400	21.00	50	195.03						124.20						0.00				
02:00	13.5	10054	37	6500	1400	21.00	50	195.03	0.008000					128.26	8.50	204.00	144.04	55.5	6.18	148.32	205.72		130000	6.0
02:00		API = 55.5 at 15.6°C.																						
02:00		H2S by CORE = 8000ppm.																						
02:00		CORE obtain samples.																						
02:01		Increase choke to 25.4000 mm.																						
02:30	14.0	7641	39	7750	1550	35.50	50	266.78						133.82						0.00				
02:40		Bleed off casing.																						
02:40		Increase burn rate to 150liters/min.																						
03:00	14.5	7652	41	3300	1575	36.00	52	269.82						139.44	12.71	305.04	156.75		10.87	260.88	216.59		134000	6.0
03:30	15.0	7576	42	750	1575	35.50	52	267.92						145.02						0.00				
04:00	15.5	7579	42	300	1575	36.00	52	269.82						150.64	12.05	289.20	168.80	55.4	10.51	252.24	227.10		114000	6.0
04:00		API = 55.4 at 15.6°C.																						
04:30	16.0	7582	44	500	1575	36.00	52	269.82						156.26						0.00				
05:00	16.5	7630	44	700	1600	36.50	53	273.31						161.96	12.23	293.52	181.03		9.55	229.20	236.65		104000	6.0
05:01		Meter in service on 25.4000 mm orifice plate.																						
05:30	17.0	7617	44	850	1600	46.50	53	308.79		300	5.00	41	5.22	168.50						0.00				
06:00	17.5	7641	45	1000	1650	37.00	52	279.84		285	4.00	40	4.58	174.42	12.37	296.88	193.40	54.9	9.32	223.68	245.97		96000	6.0
06:00		API = 54.9 at 15.6°C.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data				Well Gas				Well Gas					Cond/Oil Prod					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/19																								
06:00		CORE obtain samples																						
06:00		Total condensate burned = 53.0m3.																						
06:01		Decrease choke to 19.0500 mm.																						
06:30	18.0	10126	38	500	2150	26.00	56	265.30		585	2.00	20	4.49	180.04						0.00				
06:50		Decrease burn rate to 80 liters/min.																						
07:00	18.5	10278	44	250	1500	23.00	53	209.98		270	5.00	37	5.05	184.52	10.04	240.96	203.44		5.14	123.36	251.11		64000	7.0
07:01		Decrease choke to 12.7000 mm as requested.																						
07:30	19.0	11503	42	0	1300	18.00	54	173.01		220	2.00	35	2.98	188.19						0.00				
08:00	19.5	11724	44	0	1200	18.00	56	165.99		135	1.00	36	1.80	191.68	5.63	135.12	209.07		3.04	72.96	254.15		40000	7.0
08:30	20.0	11714	40	0	1200	18.00	56	165.99		180	2.00	37	2.77	195.20						0.00				
09:00	20.5	11621	38	0	1100	17.00	56	154.82		200	2.00	37	2.87	198.48	5.89	141.36	214.96		2.71	65.04	256.86		46000	7.0
09:25		Increase choke to 19.0500 mm.																						
09:30	21.0	9915	40	vac	1800	23.00	48	231.65		300	4.00	38	4.69	203.41						0.00				
10:00	21.5	10420	40	vac	1700	20.00	44	211.48		300	4.00	38	4.69	207.91	8.25	198.00	223.21	55.4	5.28	126.72	262.14		72000	7.0
10:00		API = 55.4 at 15.6°C.																						
10:30	22.0	10406	40	vac	1600	20.00	44	205.26		240	2.00	37	3.06	212.25						0.00				
11:00	22.5	10395	40	vac	1600	20.00	46	204.52		300	4.00	38	4.69	216.61	8.70	208.80	231.91		5.14	123.36	267.28		64000	7.0
11:30	23.0	10402	40	0	1600	21.00	50	208.10		270	3.00	38	3.90	221.03						0.00				
12:00	23.5	10413	42	0	1600	21.00	52	207.37		270	3.00	39	3.90	225.43	7.94	190.56	239.85	54.8	4.57	109.68	271.85		60000	7.0
12:00		API = 54.8 at 15.6°C.																						
12:30	24.0	10392	42	0	1550	21.00	48	205.62		280	5.00	39	5.10	229.82						0.00				
13:00	24.5	10326	42	50	1550	21.00	46	206.36		240	2.00	39	3.05	234.18	9.68	232.32	249.53		5.73	137.52	277.58		60000	7.0
13:30	25.0	10265	42	75	1500	20.00	44	198.88		270	2.00	38	3.19	238.39						0.00				
14:00	25.5	10243	42	100	1500	20.00	42	199.60		300	4.00	40	4.67	242.65	9.33	223.92	258.86	56.0	5.83	139.92	283.41		58000	7.0
14:00		API = 56 at 15.6°C.																						
14:10		Increase choke to 25.4000 mm.																						
14:30	26.0	7997	42	800	2000	37.00	42	313.50		330	8.00	38	6.88	249.32						0.00				
15:00	26.5	7880	44	1600	2000	27.00	44	266.58		330	8.00	38	6.88	255.02	12.16	291.84	271.02		9.46	227.04	292.87		59000	7.0
15:30	27.0	7762	46	2000	2000	27.00	48	264.59		340	11.00	40	8.15	260.70						0.00				
16:00	27.5	7707	47	2100	2000	27.00	54	261.71		340	11.00	40	8.15	266.32	14.05	337.20	285.07	56.0	10.02	240.48	302.89		68000	7.0
16:00		API = 56 at 15.6°C.																						
16:30	28.0	7634	50	2400	2000	27.00	58	259.86		300	4.00	41	4.66	271.83						0.00				
17:00	28.5	7593	50	2500	2000	27.00	58	259.86		300	4.00	41	4.66	277.34	13.62	326.88	298.69		8.12	194.88	311.01		64000	7.0
17:30	29.0	7515	50	2600	2000	27.00	55	261.24		330	10.00	42	7.65	282.95						0.00				

PRECISION

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data						Well Gas		Well Gas				Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Stabc Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H2O	ppm	
05/03/19																								
18:00	29.5	7472	50	2600	2000	26.00	54	256.80		330	6.00	42	5.92	288.42	11.87	284.88	310.56	55.0	10.60	254.40	321.61		58000	7.0
18:00		API = 55 at 15.6°C.																						
18:15	29.8	7450	49	2600	2000	26.00	50	258.67		330	6.00	42	5.92	291.18	3.87	371.52	314.43		2.64	253.44	324.25		56000	7.0
18:15		Shut in well. Meter out of service.																						
18:15		Rig in wireline.																						
18:20	0.1			2500																0.00				
18:25	0.2			2000																0.00				
18:30	0.3	12002		1200																0.00				
18:35		Wireline run in hole with gauge ring.																						
18:45	0.5	12100		0																0.00				
19:00	0.8	12377		0																0.00				
19:15		Pressure casing as req. ired for wireline.																						
19:15	1.0	12520		6250																0.00				
19:30	1.3	12627		5300																0.00				
20:00	1.8	12870		19500																0.00				
20:30	2.3	13058		18050																0.00				
20:31		Wireline at surface, bleed off.																						
21:25		Wireline running in hole with CORE downhole sample tool.																						
21:30	3.3	12976																		0.00				
22:00	3.8	13128																		0.00				
22:30	4.3	13259		19000																0.00				
23:00	4.8	13353		18100																0.00				
23:30	5.3	13441		17300																0.00				
24:00	5.8	13556		16700																0.00				
05/03/20																								
00:30	6.3	13572		16200																0.00				
01:00	6.8	13732		15500																0.00				
01:01		Wireline at surface, bleed off.																						
01:30	7.3	0		15200																0.00				
02:00	7.8	0		14700																0.00				
02:15		Wireline runnining hole in attempt to reach bottom.																						
02:30	8.3	14076		14300																0.00				
03:00	8.8	14301		19800																0.00				
03:20		Wireline at surface, reached bottom, bleed off.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data				Well Gas				Well Gas				Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/20																								
03:50		Wireline running in hole with CORE sample tool.																						
03:50	9.6	14419		18350																0.00				
04:00	9.8	14421		18800																0.00				
04:30	10.3	14408		7050																0.00				
04:30		Open well on 3.175 mm choke.																						
04:32		Increase choke to 6.3500 mm.																						
04:35	0.1	14240	18	7000																0.00				
04:37		Change choke to 7.9380 mm.																						
04:40	0.2	13522	20	7100																0.00				
04:45	0.3	12588	20	7400																0.00				
04:45		Meter in service on 73.2000 mm orifice plate.																						
04:50		Change choke to 11.1120 mm.																						
05:00	0.5	12636	20	8250	800	17.00	50	135.02						292.58	1.14	54.72	315.57		0.10	4.80	324.35			
05:15	0.8	10867	20	9000	700	15.00	50	119.43						293.83						0.00				
05:21	0.9	10768	20	9400																0.00				
05:21		CORE tool take first sample.																						
05:25		Increase choke to 12.7000 mm.																						
05:30	1.0	10935	22	10100	750	18.00	49	135.21						295.23						0.00				
05:45	1.3	11327	24	11000																0.00				
05:51	1.4	11375	24	11350																0.00				
05:51		CORE tool take second sample.																						
06:00	1.5	11436	23	12000	800	21.00	48	150.67						298.37	8.32	199.68	323.89		0.63	15.12	324.98		40000	7.0
06:01		Shut in well. Meter out of service.																						
06:01		API = 53.4 at 15.6°C.																						
06:01		CORE tool take second sample.																						
06:01		Total condensate burned = 208m3.																						
06:05	0.1	12377		11900																0.00				
06:10	0.2	12452		11600																0.00				
06:15	0.2	12536		11300																0.00				
06:30	0.5	12688		10500																0.00				
06:40		Pressure casing as required for wireline.																						
06:45	0.7	12741		19600																0.00				
07:00	1.0	12760		19000																0.00				
07:00		Wireline at surface.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data					Well Gas				Well Gas				Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/20																								
07:21		Wireline run in hole with simulated production log string.																						
07:30	1.5	12781		10050																0.00				
08:00	2.0	12804																		0.00				
08:05		Wireline at surface.																						
09:10		Attend safety meeting.																						
09:40		Wireline run in hole to do production log.																						
12:00		Wireline on bottom. Prepare to flow well.																						
12:10	6.2	13800		11700																0.00				
12:10		Open well on 12.70 mm choke.																						
12:15	0.1	11804	18	12300	0	0.00	0	0.00						298.37						0.00				
12:15		Meter in service on 76.2000 mm orifice plate.																						
12:20	0.2	11775	18	12700																0.00				
12:25	0.3	12157	18	13200																0.00				
12:30	0.3	11312	18	13400																0.00				
12:45	0.6	11106	20	14700																0.00				
12:55		Increase choke to 14.2900 mm.																						
13:00	0.8	11330	18	15600	1600	17.00	48	187.84						304.24	7.74	222.91	331.63		0.68	19.58	325.66		50000	7.0
13:30	1.3	11225	20	18000	1600	18.00	48	193.30						308.27						0.00				
14:00	1.8	11174	22	19700	1600	17.00	48	187.84						312.18	11.21	269.04	342.84	55.1	1.59	38.16	327.25		44000	8.0
14:00		API = 55.1 at 15.6°C.																						
14:30	2.3	10876	24	22000	1500	15.50	48	173.77						315.80						0.00				
15:00	2.8	10763	28	23200	1500	15.50	49	173.47						319.42	9.35	224.40	352.19	54.7	3.43	82.32	330.68		46000	7.0
15:00		API = 54.7 at 15.6°C.																						
15:00		Shut in well. Meter out of service.																						
15:10	0.2	12112		23500																0.00				
15:15	0.3	12265		23000																0.00				
15:30	0.5	12610		21500																0.00				
15:45	0.8	12761		20250																0.00				
16:00	1.0	12828		19500																0.00				
16:30	1.5	12949		18100																0.00				
17:00	2.0	13113		16800																0.00				
17:30	2.5	13290		16000																0.00				
18:00	3.0	13387		15500																0.00				
18:01		Wireline at surface.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data					Well Gas				Well Gas					Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grnd Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/kr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/20																								
18:35		Wireline run in hole with dart.																						
19:15		Wireline at surface, bleed off.																						
19:30		Wireline run in hole with recorders.																						
20:30		Wireline at surface, bleed off, rig out wireline, attach wellhead cap, prepare to flow.																						
21:00	6.0	13948		1800																0.00				
21:01		Open well on 12.70 mm choke.																						
21:05	0.1	11611	16	2500																0.00				
21:05		Fluid to surface.																						
21:05		Meter in service on 76.2000 mm orifice plate.																						
21:11	0.2	12356	17	3200																0.00				
21:15	0.2	12556	19	3600	900	17.00	50	142.46						320.41						0.00				
21:30	0.5	11707	20	4900	800	22.00	50	153.73						322.01						0.00				
21:45	0.7	11952	20	6000	850	24.50	50	166.81						323.75						0.00				
22:00	1.0	11962	20	6800	850	23.50	50	163.34						325.45	7.72	188.42	359.91		1.16	28.31	331.64		40000	8.0
22:30	1.5	11986	22	8300	850	23.80	49	164.66						328.88						0.00				
23:00	2.0	11787	22	9550	850	23.00	48	162.12						332.26	8.28	198.72	368.19	53.5	1.59	38.16	333.43		38000	8.0
23:00		API = 53.5 at 15.6°C.																						
23:30	2.5	11624	24	10600	850	20.50	49	152.74						335.44						0.00				
24:00	3.0	11528	26	11500	850	19.50	50	148.70						338.54	6.97	167.28	375.16		2.64	63.36	336.07		46000	8.0
05/03/21																								
00:10		Bleed casing to 2000kPa.																						
00:30	3.5	11507	27	2000	850	20.00	50	150.61						341.67						0.00				
01:00	4.0	11586	28	2600	850	19.00	51	146.53						344.73	7.12	170.88	382.28		2.92	70.08	338.99		46000	8.0
01:30	4.5	11604	30	3150	900	20.00	52	154.08						347.94						0.00				
01:55		CORE obtain samples.																						
02:00	5.0	11617	30	3500	850	20.00	52	150.11	0.007660					351.06	6.67	160.08	388.95	53.5	3.05	73.20	342.04		44000	8.0
02:00		API = 53.5 at 15.6°C.																						
02:00		H2S by CORE Tutweiler = 7660ppm.																						
02:01		Increase choke to 25.4000 mm.																						
02:30	5.5	9757	34	5500	1300	29.00	50	221.37						355.68						0.00				
02:45		Heavy fluid returns.																						
02:45		Meter in service on 25.4000 mm orifice plate.																						
03:00	6.0	9964	36	6600	1350	30.50	50	231.20		240	5.00	35	4.85	360.54	11.43	274.32	400.38		6.66	164.64	348.90		52000	8.0
03:30	6.5	9809	38	7500	1350	29.50	50	227.36		290	5.75	36	5.57	365.40						0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data					Well Gas								Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/F	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/21																								
04:00	7.0	9812	40	8000	1350	29.60	51	227.35	0.007000	300	1.75	34	3.12	370.20	10.99	263.76	411.37	53.5	6.06	145.44	354.96		50000	8.0
04:00		H2S by Gastec = 7000ppm.																						
04:00		API = 53.5 at 15.6°C.																						
04:30	7.5	9829	40	8500	1350	29.60	51	227.35		310	5.00	37	5.32	375.04						0.00				
05:00	8.0	9857	42	8750	1350	30.50	50	231.20		380	2.00	37	3.64	379.94	15.24	365.76	426.61		6.34	152.16	361.30		48000	8.0
05:25		Adjust back pressure.																						
05:30	8.5	9826	43	9000	1400	27.00	52	220.52		330	4.80	37	5.34	384.64						0.00				
06:00	9.0	9802	44	9100	1400	27.00	50	221.28	0.007000	310	5.00	37	5.32	389.36	10.86	260.64	437.47	53.5	5.85	140.40	367.15		48000	8.0
06:00		H2S by Gastec = 7000ppm.																						
06:00		API = 53.5 at 15.6°C.																						
06:30	9.5	9764	44	9250	1400	26.50	48	219.98		295	7.00	37	6.18	394.07						0.00				
07:00	10.0	9746	44	9500	1400	26.50	46	220.75		330	4.00	37	4.87	398.77	12.05	289.20	449.52		6.67	160.08	373.82		48000	8.0
07:30	10.5	9736	44	9600	1400	26.50	44	221.54		340	4.00	36	4.93	403.49						0.00				
08:00	11.0	9867	44	9600	1400	26.50	45	221.15		300	8.00	34	6.68	408.24	10.84	260.16	460.36		6.04	144.96	379.86		48000	8.0
08:05		Increase choke to 26.9875 mm.																						
08:30	11.5	9486	45	9750	1400	25.00	46	214.38		240	6.00	34	5.33	412.82						0.00				
09:00	12.0	9470	46	9900	1400	27.00	44	223.63		300	7.00	36	6.23	417.61	11.32	271.68	471.68		6.44	154.56	386.30		50000	8.0
09:30	12.5	9456	47	10000	1400	26.00	44	219.43		285	7.00	37	6.10	422.30						0.00				
10:00	13.0	9404	46	10250	1400	26.00	43	219.82	0.009000	310	7.00	37	6.29	427.01	11.56	277.44	483.24	54.1	6.62	158.88	392.92		48000	8.0
10:00		H2S by Gastec = 9000ppm.																						
10:00		API = 54.1 at 15.6°C.																						
10:30	13.5	9370	46	10400	1400	26.00	43	219.82		255	6.00	36	5.43	431.71						0.00				
10:40		Open choke to free obstruction and reset to same.																						
11:00	14.0	7735	48	10600	1600	31.00	44	255.81		330	8.00	37	6.90	437.18	11.47	275.28	494.71		6.80	163.20	399.72		50000	8.0
11:30	14.5	7676	48	10650	1700	31.00	44	263.55		330	8.00	35	6.92	442.81						0.00				
11:45		Bleed casing pressure to 3000 kPa.																						
12:00	15.0	7614	48	3000	1700	31.00	46	262.58		420	8.00	37	7.59	448.44	14.21	341.04	508.92		9.68	232.32	409.40		48000	8.0
12:30	15.5	7600	49	3300	1700	31.00	46	262.58		390	8.00	36	7.39	454.07						0.00				
13:00	16.0	7583	50	3400	1600	31.00	46	254.89		255	8.00	36	6.27	459.51	15.79	378.96	524.71		9.97	239.28	419.37		48000	8.0
13:30	16.5	7558	50	3500	1600	31.00	46	254.89		255	11.00	36	7.37	464.97						0.00				
14:00	17.0	7538	50	3600	1600	31.00	46	254.89	0.009000	300	15.00	37	9.13	470.47	13.42	322.08	538.13	55.1	8.54	204.96	427.91		45000	8.0
14:00		H2S by Gastec = 9000 ppm.																						
14:00		API = 55.1 at 15.6°C.																						
14:30	17.5	7506	50	3600	1600	30.00	44	251.63		255	10.00	36	7.02	475.86						0.00				

PRECISION

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Northrock Resources Ltd.
B44-34-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data					Well Gas				Well Gas				Cond/Oil Prod					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out.	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/F	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/21																								
15:00	18.0	7486	50	3750	1600	30.00	44	251.63		255	9.00	36	6.66	481.24	15.26	366.24	553.39		6.39	153.36	434.30		42000	8.0
15:30	18.5	7468	50	3800	1600	30.00	44	251.63		285	16.00	37	9.26	486.68						0.00				
16:00	19.0	7465	50	3900	1600	30.00	42	252.55		270	11.00	37	7.51	492.09	15.23	365.52	568.62		6.66	159.84	440.96		42000	8.0
16:30	19.5	7455	50	3950	1600	30.00	44	251.63		300	17.00	37	9.73	497.54						0.00				
17:00	20.0	7486	50	4000	1600	30.00	44	251.63		290	17.00	37	9.61	502.98	15.97	383.28	584.59		8.68	208.32	449.64		42000	8.0
17:30	20.5	7458	50	4000	1600	30.00	42	252.55		270	11.00	38	7.50	508.40						0.00				
18:00	21.0	7448	50	4000	1600	30.00	44	251.63	0.009200	300	16.00	38	9.42	513.84	14.75	354.00	599.34	55.3	7.56	181.44	457.20		42000	8.0
18:00		H2S by Gastec = 9200 ppm.																						
18:00		API = 55.3 at 15.6°C.																						
18:30	21.5	7444	50	4100	1600	30.00	43	252.08		270	11.00	37	7.51	519.25						0.00				
19:00	22.0	7451	50	4100	1600	30.00	44	251.63		300	17.00	37	9.73	524.69	16.94	406.56	616.28		8.60	206.40	465.80		42000	8.0
19:30	22.5	7413	49	4100	1600	30.00	43	252.08		290	18.00	33	9.96	530.15						0.00				
20:00	23.0	7430	49	4100	1650	30.00	43	255.92	0.009000	300	11.00	34	7.84	535.65	18.55	445.20	634.83		7.93	190.32	473.73		41000	7.0
20:00		CORE obtain samples.																						
20:00		H2S by Gastec = 9000ppm.																						
20:30	23.5	7420	49	4100	1650	31.00	44	259.70		320	13.00	36	8.72	541.24						0.00				
21:00	24.0	7403	50	4100	1600	32.00	44	259.93		300	18.00	36	10.03	546.86	18.38	441.12	653.21		7.64	183.36	481.37		42000	7.0
21:30	24.5	7392	48	4100	1600	30.00	44	251.63		300	10.00	38	7.43	552.26						0.00				
22:00	25.0	7400	48	4100	1600	30.00	44	251.63		290	12.00	36	8.07	557.67	17.69	424.56	670.90		7.56	181.44	488.93		41000	7.0
22:30	25.5	7390	48	4100	1650	30.00	44	255.45		310	20.00	37	10.70	563.21						0.00				
23:00	26.0	7382	48	4100	1600	31.00	44	255.81		300	18.00	37	10.02	568.75	18.12	434.88	689.02		8.55	205.20	497.48		40000	7.0
23:30	26.5	7365	48	4100	1600	31.50	44	257.88		280	10.00	34	7.29	574.28						0.00				
24:00	27.0	7361	48	4150	1650	31.00	44	259.70	0.009100	280	16.00	30	9.30	579.88	18.44	442.56	707.46	54.9	7.11	170.64	504.59		40000	7.0
24:00		H2S by Gastec = 9100ppm.																						
24:00		API = 54.9 at 15.6°C.																						
05/03/22																								
00:30	27.5	7340	48	4150	1700	30.00	44	259.24		270	12.00	30	7.94	585.45						0.00				
01:00	28.0	7334	48	4150	1700	29.50	44	257.05		330	14.00	30	9.25	590.99	18.60	446.40	726.06		7.26	174.24	511.85		42000	7.0
01:30	28.5	7344	48	4200	1700	30.00	44	259.24		340	7.00	30	6.60	596.53						0.00				
02:00	29.0	7334	48	4200	1650	30.00	44	255.45		300	22.00	35	11.13	602.09	18.30	439.20	744.36		7.06	169.44	518.91		41000	7.0
02:30	29.5	7328	49	4200	1600	30.00	44	251.63		280	13.00	36	8.29	607.50						0.00				
03:00	30.0	7320	49	4200	1600	29.70	44	250.36		300	20.00	37	10.57	612.94	19.23	461.52	763.59		7.31	175.44	526.22		40000	7.0
03:30	30.5	7334	50	4200	1600	30.00	44	251.63		270	13.00	36	8.18	618.35						0.00				
04:00	31.0	7330	50	4200	1600	29.80	44	250.78	0.009000	300	20.00	36	10.58	623.79	18.84	452.16	782.43	53.5	7.41	177.84	533.63		39000	7.0

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B44-34-30-125-4S

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

	Well Head Data				Well Gas					Well Gas				Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/22																								
04:00		H2S by Gastec = 9000ppm.																						
04:00		API = 53.5 at 15.6°C.																						
04:30	31.5	7327	50	4200	1600	30.00	44	251.63		300	19.00	44	10.18	629.25						0.00				
05:00	32.0	7323	50	4200	1600	30.00	44	251.63		300	18.00	44	9.90	634.70	18.96	455.04	801.39		6.28	150.72	539.91		38000	7.0
05:30	32.5	7309	50	4250	1600	29.80	44	250.78		260	12.00	36	7.96	640.09						0.00				
06:00	33.0	7304	50	4250	1600	30.00	44	251.63		300	20.00	35	10.60	645.55	20.07	481.68	821.46		6.94	166.56	546.85		38000	7.0
06:00		Total gas produced to date on top zone test = 351.47 E3m3.																						
06:00		Total oil produced to date on top zone test = 469.27m3.																						
06:00		Total water produced to date on top zone test = 216.17m3.																						
06:30	33.5	7305	48	4250	1600	29.00	44	247.37		360	12.00	35	8.78	650.89						0.00				
07:00	34.0	7304	48	4250	1600	30.00	44	251.63		310	16.00	35	9.58	656.33	19.70	472.80	841.16		6.92	166.08	553.77		39000	7.0
07:30	34.5	7320	50	4250	1600	29.00	44	247.37		270	13.00	35	8.20	661.65						0.00				
08:00	35.0	7327	50	4250	1600	29.00	44	247.37	0.006854	330	16.00	36	9.80	667.01	21.15	507.60	862.31		7.10	170.40	560.87		40000	8.0
08:00		H2S by Core Labs tutwielor = 6854ppm.																						
08:30	35.5	7337	50	4300	1600	29.00	44	247.37		360	17.00	36	10.45	672.38						0.00				
09:00	36.0	7358	50	4300	1600	29.00	44	247.37		330	14.00	36	9.16	677.73	20.01	480.24	882.32		6.66	159.84	567.53		40000	8.0
09:30	36.5	7347	50	4300	1600	29.00	45	246.92		345	17.00	36	10.28	683.09						0.00				
10:00	37.0	7365	50	4300	1600	29.00	46	246.48	0.009000	330	15.00	36	9.48	688.42	18.87	452.88	901.19	55.1	6.50	156.00	574.03		40000	8.0
10:00		H2S by Gastec = 9000ppm.																						
10:00		API = 55.1 at 15.6°C.																						
10:30	37.5	7353	50	4350	1600	29.00	44	247.37		315	14.00	36	9.00	693.76						0.00				
11:00	38.0	7396	50	4350	1600	29.00	44	247.37		300	13.00	37	8.49	699.09	19.72	473.28	920.91		6.54	156.96	580.57		40000	8.0
11:30	38.5	7437	50	4350	1600	29.00	44	247.37		330	12.00	37	8.46	704.42						0.00				
12:00	39.0	7438	50	4400	1600	29.00	44	247.37		330	12.00	37	8.46	709.75	20.28	486.72	941.19		7.29	174.96	587.86		40000	8.0
12:00		Shut in well. Meter out of service.																						
12:00		Monitor pressures.																						
12:05	0.1	9805		4400																0.00				
:)	0.2	11083		4100																0.00				
5	0.3	11400		3500																0.00				
:0	0.5	11914		2000																0.00				
12:45	0.8	12162		1000																0.00				
13:00	1.0	12214		200																0.00				
13:30	1.5	12676		vac																0.00				
14:00	2.0	12878		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data			Well Gas					Well Gas				Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/22																								
14:30	2.5	12983		vac																0.00				
15:00	3.0	13083		vac																0.00				
15:30	3.5	13214		vac																0.00				
16:00	4.0	13297		vac																0.00				
16:30	4.5	13342		vac																0.00				
17:00	5.0	13524		vac																0.00				
17:30	5.5	13598		vac																0.00				
18:00	6.0	13634		vac																0.00				
18:30	6.5	13759		vac																0.00				
19:00	7.0	13827		vac																0.00				
19:30	7.5	14010		vac																0.00				
20:00	8.0	14034		vac																0.00				
20:30	8.5	14069		vac																0.00				
21:00	9.0	14076		vac																0.00				
21:30	9.5	14088		vac																0.00				
22:00	10.0	14100		vac																0.00				
22:30	10.5	14120		vac																0.00				
23:00	11.0	14124		vac																0.00				
23:30	11.5	14127		vac																0.00				
24:00	12.0	14134		vac																0.00				
05/03/23																								
00:30	12.5	14134		vac																0.00				
01:00	13.0	14137		vac																0.00				
01:30	13.5	14141		vac																0.00				
02:00	14.0	14141		vac																0.00				
02:30	14.5	14162		vac																0.00				
03:00	15.0	14175		vac																0.00				
03:30	15.5	14191		vac																0.00				
04:00	16.0	14206		vac																0.00				
04:30	16.5	14210		vac																0.00				
05:00	17.0	14209		vac																0.00				
05:30	17.5	14206		vac																0.00				
06:00	18.0	14206		vac	0	0.00	0			0	0.00	0	0.00	709.75	0.00	0.00	941.19		0.00	0.00	587.66			
06:00		Total gas flared to date on top zone test = 420.38 E3m³.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

		Well Head Data				Well Gas				Well Gas				Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Stabc Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/23																								
06:00		Total oil produced to date on top zone test = 589.0m3.																						
06:00		Total water produced to date on top zone test = 257.18m3.																						
06:30	18.5	14194		vac																0.00				
07:00	19.0	14196		vac																0.00				
07:30	19.5	14196		vac																0.00				
08:00	20.0	14210		vac																0.00				
08:30	20.5	14210		vac																0.00				
09:00	21.0	14224		vac																0.00				
09:30	21.5	14230		vac																0.00				
10:00	22.0	14241		vac																0.00				
10:30	22.5	14246		vac																0.00				
11:00	23.0	14257		vac																0.00				
11:30	23.5	14268		vac																0.00				
12:00	24.0	14292		vac																0.00				
12:30	24.5	14327		vac																0.00				
13:00	25.0	14301		vac																0.00				
13:30	25.5	14320		vac																0.00				
14:00	26.0	14306		vac																0.00				
14:30	26.5	14299		vac																0.00				
15:00	27.0	14306		vac																0.00				
15:30	27.5	14303		vac																0.00				
16:00	28.0	14330		vac																0.00				
16:30	28.5	14327		vac																0.00				
17:00	29.0	14330		vac																0.00				
17:30	29.5	14327		vac																0.00				
18:00	30.0	14331		vac																0.00				
18:30	30.5	14317		vac																0.00				
19:00	31.0	14286		vac																0.00				
19:30	31.5	14278		vac																0.00				
20:00	32.0	14282		vac																0.00				
20:30	32.5	14272		vac																0.00				
21:00	33.0	14292		vac																0.00				
21:30	33.5	14313		vac																0.00				
22:00	34.0	14313		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

	Well Head Data				Well Gas					Well Gas				Cond/Oil Prod.					Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Stabc Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/23																								
22:30	34.5	14313		vac																0.00				
23:00	35.0	14313		vac																0.00				
23:30	35.5	14296		vac																0.00				
24:00	36.0	14288		vac																0.00				
05/03/24																								
00:30	36.5	14282		vac																0.00				
01:00	37.0	14283		vac																0.00				
01:30	37.5	14282		vac																0.00				
02:00	38.0	14282		vac																0.00				
02:30	38.5	14283		vac																0.00				
03:00	39.0	14286		vac																0.00				
03:30	39.5	14271		vac																0.00				
04:00	40.0	14267		vac																0.00				
04:30	40.5	14250		vac																0.00				
05:00	41.0	14244		vac																0.00				
05:30	41.5	14244		vac																0.00				
06:00	42.0	14241		vac																0.00				
06:30	42.5	14237		vac																0.00				
07:00	43.0	14258		vac																0.00				
07:30	43.5	14282		vac																0.00				
08:00	44.0	14296		vac																0.00				
08:30	44.5	14313		vac																0.00				
09:00	45.0	14320		vac																0.00				
09:30	45.5	14317		vac																0.00				
10:00	46.0	14323		vac																0.00				
10:30	46.5	14323		vac																0.00				
11:00	47.0	14330		vac																0.00				
11:30	47.5	14332		vac																0.00				
12:00	48.0	14337		vac																0.00				
12:30	48.5	14341		vac																0.00				
13:00	49.0	14332		vac																0.00				
13:30	49.5	14344		vac																0.00				
14:00	50.0	14344		vac																0.00				
14:30	50.5	14344		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clear Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

	Well Head Data					Well Gas				Well Gas				Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/24																								
15:00	51.0	14340		vac																0.00				
15:30	51.5	14327		vac																0.00				
16:00	52.0	13334		vac																0.00				
16:30	52.5	14341		vac																0.00				
17:00	53.0	14354		vac																0.00				
17:30	53.5	14348		vac																0.00				
18:00	54.0	14351		vac																0.00				
18:30	54.5	14368		vac																0.00				
19:00	55.0	14375		vac																0.00				
19:30	55.5	14383		vac																0.00				
20:00	56.0	14365		vac																0.00				
20:30	56.5	14354		vac																0.00				
21:00	57.0	14351		vac																0.00				
21:30	57.5	14350		vac																0.00				
22:00	58.0	14345		vac																0.00				
22:30	58.5	14340		vac																0.00				
23:00	59.0	14337		vac																0.00				
23:30	59.5	14340		vac																0.00				
24:00	60.0	14340		vac																0.00				
05/03/25																								
00:30	60.5	14337		vac																0.00				
01:00	61.0	14330		vac																0.00				
01:30	61.5	14327		vac																0.00				
02:00	62.0	14332		vac																0.00				
02:30	62.5	14329		vac																0.00				
03:00	63.0	14310		vac																0.00				
03:30	63.5	14321		vac																0.00				
04:00	64.0	14340		vac																0.00				
04:30	64.5	14320		vac																0.00				
05:00	65.0	14309		vac																0.00				
05:30	65.5	14294		vac																0.00				
06:00	66.0	14275		vac																0.00				
06:30	66.5	14268		vac																0.00				
07:00	67.0	14268		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	4402134

	Well Head Data					Well Gas				Well Gas				Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	DrT	Temp.	Q	H2S	Static Pressure2	Dif2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol-Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/25																								
07:30	67.5	14271		vac																0.00				
08:00	68.0	14279		vac																0.00				
08:30	68.5	14282		vac																0.00				
09:00	69.0	14284		vac																0.00				
09:30	69.5	14275		vac																0.00				
10:00	70.0	14294		vac																0.00				
10:30	70.5	14286		vac																0.00				
11:00	71.0	14268		vac																0.00				
11:30	71.5	14251		vac																0.00				
12:00	72.0	14193		vac																0.00				
12:30	72.5	14230		vac																0.00				
13:00	73.0	14261		vac																0.00				
13:30	73.5	14289		vac																0.00				
14:00	74.0	14306		vac																0.00				
14:30	74.5	14351		vac																0.00				
15:00	75.0	14362		vac																0.00				
15:30	75.5	14365		vac																0.00				
16:00	76.0	14375		vac																0.00				
16:30	76.5	14382		vac																0.00				
17:00	77.0	14385		vac																0.00				
17:30	77.5	14382		vac																0.00				
18:00	78.0	14379		vac																0.00				
18:00		Shut in well and rig up wireline.																						
18:30		Wireline running in hole to retreive recorders.																						
18:50	78.8	14371		vac																0.00				
19:20	79.3	14370		vac																0.00				
19:20		Retreived recorders, at surface, bleed off.																						
20:35		Wireline running in hole with forward gradient.																						
20:35	80.6	14170		vac																0.00				
21:00	81.0	14161		vac																0.00				
21:30	81.5	14150		vac																0.00				
22:00	82.0	14144		vac																0.00				
22:30	82.5	14147		vac																0.00				
23:00	83.0	14146		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area	Summit Creek
Test Start	15 Mar 2005
Test End	26 Mar 2005
PES Job #	44Q2134

		Well Head Data				Well Gas				Well Gas				Cond/Oil Prod.						Water Production				
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/25																								
23:10		Wireline at surface, rig out wireline.																						
23:10	83.2	14147		vac																0.00				
23:50		Rig up to kill well.																						
05/03/26																								
04:30		Finished pumping water.																						
05:30		Rig up wireline.																						
06:00		Wireline running in hole.																						
06:50		Wireline on surface.																						
07:00		Wireline run in hole with recorders.																						
07:45		Wireline on surface.																						
07:55		Wireline run in hole with plug.																						
08:36		Wireline on surface.																						
08:45		Wireline run in hole with prong.																						
09:00		Wireline on surface, rig out wireline and pressure test plug.																						
09:45		Pressure test good, purge and rig out test equipment.																						
09:45		End of test.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/06	
07:00	New file for completion of intervals 3 & 4.
07:00	Moniter pressure.
08:15	Wireline rigging in and running in hole.
08:35	Latch slip stop and pull out of hole.
09:20	Wireline on surface.
09:45	Wireline run in hole.
10:07	Wireline latch recorders.
10:30	Wireline on surface with recorders.
10:47	Wireline run in hole to pull dart.
11:50	Wireline at bottom latching onto dart.
12:17	Wireline at surface with dart.
14:05	Wireline going in hole with recorders to do a static gradiant.
15:15	Wireline is at midway of perfs.
17:05	Wireline out of hole.
17:30	Wireline run in hole with No Go.
18:50	Wireline at surface.
19:55	Wireline run in hole with recorders.
21:30	Wireline at surface.
21:45	Wireline run in hole to set plug.
24:00	Wireline at surface, plug set at wrong depth.
05/03/07	
00:15	Wireline run in hole to retrieve plug.
01:05	Wireline at surface.
01:15	Wireline run in hole to set plug.
03:00	Wireline at surface.
03:10	Wireline run in hole with prong.
04:22	Prong set.
04:45	Wireline at surface.
04:55	Open well to bleed off.
05:40	Start pumping water down hole to circulate.
06:45	Bleed down well.
07:40	Shut in well, rig up to pump down tubing.
08:20	Shut down rig pump. 19.5m3 total fluid pumped away.
08:33	Shut in wing valve and pressure test plug.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/07	
08:55	Pressure test complete bleed off. Total fluid returned to surface was 15.22 m3.
09:45	Rig off wellhead, rig on BOP's.
11:35	Pressure test BOP's.
14:30	Begin to circulate hole.
15:30	Circulation complete. 15 m3 pumped, 13 m3 returned.
16:00	Start out of hole.
18:30	Attend safety meeting. Continue with tripping out of hole.
20:15	Start to circulate gas bubble out of hole.
20:40	Stop pumping and bleed off. Pumped 11m3 down casing and returned 7m3 to seperator.
21:00	Continue out of hole.
23:45	Prepare to circulate gas bubble out of well.
05/03/08	
00:25	Stop pumping. Pumped 4m3 down casing and returned 1m3 to seperator.
00:50	Continue out of hole.
01:45	Tubing out of hole. Pressure test casing to 5500 kPa.
02:10	Pressure test good. Bleed off casing.
02:15	Attend safety meeting.
02:30	Rig in wireline.
03:30	Wireline run in hole to dump bail sand.
05:03	Wireline at surface.
05:27	Wireline run in hole to perforate.
06:06	Guns fired.
06:50	Wireline at surface.
09:30	Wireline run in hole to dump bail cement.
11:00	Wireline at surface.
11:45	Wireline run in hole with purf gun #2.
12:55	Perf gun fired.
13:40	Wireline at surface.
14:15	Wireline run in hole with perf gun #3.
15:40	Perf gun fired.
16:15	Wireline at surface.
16:59	Wireline run in hole with perf gun #4.
18:16	Perf gun fired.
18:50	Wireline at surface.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/08	
19:30	Wireline run in hole with perf gun #5.
20:31	Perf gun fired.
21:10	Wireline at surface.
21:45	Wireline run in hole with perf gun #6.
22:49	Miss fire on perf gun #6.
23:35	Attend safety meeting.
23:46	Wireline at surface.
05/03/09	
00:15	Wireline run in hole with perf gun #6.
01:15	Perf gun fired.
01:55	Wireline at surface.
02:22	Wireline run in hole with perf gun #7.
03:25	Perf gun fired.
04:05	Wireline at surface.
04:27	Wireline run in hole with perf gun #8.
05:55	Perf gun fired.
06:39	Wireline at surface.
08:50	Wireline run in hole with perf gun # 9.
09:57	Perf gun fired.
10:45	Wireline at surface.
11:10	Wireline run in hole with gamma ray and gauge ring.
13:05	Wireline out of hole to service pack off.
13:48	Wireline run in hole with gamma ray and gauge ring.
15:10	Wireline stuck in hole.
15:15	Open well on 24/64 choke to dislodge tool.
15:33	Shut in well wireline is free no fluid returned to surface.
16:30	Wireline at surface.
18:45	Attend safety meeting.
19:00	Prepare to run packer.
20:08	Wireline run in hole with packer assembly.
22:25	Wireline at surface. Lost tool string from surface.
22:30	Bleed off casing pressure.
23:30	Leave casing open to vent. Recovered 0.5m3 of water during bleed off.
05/03/10	

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Northrock Resources Ltd.
B44-G4-30-125-45

Operation:	Clean Up \ Test
Pool or Zone	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh mm	
05/03/10	
00:30	Prepare tools for fishing.
02:40	Wireline run in hole with gauge ring.
04:00	Wireline at surface.
04:11	Wireline run in hole with overshot.
07:20	Well pressured up, open to bleed off.
07:50	Shut in, well returned 3.51 m3 of condensate on bleed off.
10:20	Begin pumping to kill well.
11:23	Tools moving down hole, shut down pump and attempt to pull out of hole.
11:35	Unable to pull out, continue to pump to kill well.
13:20	Shut down pump and moniter pressure. 50 m3 was pumped.
13:30	Attempt to pull out of hole.
13:45	Well bleeds down to 500 kPa, pump to maintain pressure as directed, continue to attempt to pull out of hole.
18:30	Still trying to pull out of hole, total fluid pumped to this point is 59 m3.
19:00	Continue to pump fluid to maintain pressure.
22:00	Prepare to bleed off gas head.
22:10	Unable to bleed off, ice plug in flowline.
22:50	Bleed off casing.
22:50	Choke at 10/64.
23:40	Increase choke to 15/64.
23:50	Change out rig pump.
05/03/11	
00:30	Increase choke to 18/64.
01:40	Shut in casing.
01:45	Fill hole.
01:45	Wireline continue to try and pull out of hole.
03:30	Wireline at surface with broken skirt, bleed off lubricator.
03:45	Lay down lubricator.
12:15	Wireline run in hole with magnet.
13:30	Wireline out of hole, metal filings retrieved. Rig methanol injection to wireline lubricator.
14:05	Wireline run in hole with magnet.
15:00	Wireline out of hole, metal filings retrieved.
16:30	Wireline run in hole with pulling tool.
17:15	Wireline out of hole, nothing recovered.
17:36	Wireline run in hole with pulling tool.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh mm	
05/03/11	
18:40	Wireline out of hole sheared off.
18:45	Bleed off well.
19:05	Shut in, wireline run in hole.
05/03/12	
00:25	Wireline at surface, bleed off lubricator.
00:30	Bleed off well.
00:30	Choke at 15/64.
00:50	Fluid to surface, shut in. Wa... to see if fluid drops.
01:30	Bleed off well.
01:40	Fluid to surface, shut in.
02:00	Pump to kill well.
06:00	Well is on vacuum. Total fluid pumped = 52m3.
06:30	Start to trip pipe in hole with overshot.
10:20	Slight blow on tubing, rig up to circulate.
10:25	Begin reverse circulating.
11:15	Finished circulating, 21 m3 pumped, 13 m3 returned. Rig up to bull head down tubing.
11:25	Begin pumping down tubing.
13:30	Finished pumping down tubing, 30 m3 was pumped, continue in hole.
16:35	Tagged fish, latch on.
17:05	Suspect fish on string, pull 5 stands and rig in wireline to run impression block.
18:10	Wireline run in hole with impression block.
18:45	Wireline out of hole, retrieved impression of top of fish.
19:30	Bleed off tubing and pump to kill
19:35	Bleed off casing until fluid to surface.
20:25	Kill casing.
20:45	Trip out 1 stand, rig up wireline to run a dart.
21:15	Wireline run in hole with dart.
22:30	Wireline at surface.
23:00	Wireline run in hole to punch a hole in tubing.
05/03/13	
00:30	Wireline at surface.
01:15	Pump 10m3 to circulate tubing.
01:35	1.9m3 water recovered from circulating.
01:40	Pump 15m3 down casing.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/13	
02:30	Trip out tubing, kill well as required.
06:00	Total water pumped on shift = 44m3.
07:40	Out of hole with fish.
08:55	Wireline run in hole with magnet.
09:45	Wireline at surface.
09:50	Wireline run in hole with magnet.
10:25	Wireline at surface.
10:55	Wireline run in hole with impression block.
11:27	Wireline at surface.
11:40	Wireline run in hole with impression block.
12:30	Wireline at surface.
16:15	Wireline run in hole to retrieve prong.
16:53	Wireline at surface, prong not retrieved.
17:05	Wireline run in hole to retrieve prong.
17:43	Wireline at surface.
18:10	Wireline running in hole to retreive prong.
19:45	Wireline at surface, no prong.
20:10	Wireline running in hole.
21:05	Wireline at surface.
21:20	Wireline running in hole.
22:00	Wireline at surface.
22:10	Wireline run in hole to retroive prong.
23:45	Wireline at surface, no prong.
05/03/14	
00:15	Wireline run in hole to retrive prong.
02:45	Wireline at surface.
03:00	Wireline run in hole to retrive prong.
04:00	Wireline at surface with prong.
04:20	Wireline run in hole to retreive plug.
05:00	Wireline at surface, no plug.
05:15	Wireline run in hole to retreive plug.
06:00	Wireline at surface with plug, rig out wireline.
07:00	Rig to pump 52 m^3 down casing to kill well.
08:30	Finished pumping, rig to trip pipe in hole.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/14	
17:35	Finished tripping in, land tubing hanger.
18:00	Pressure test casing.
18:25	Pressure test good, rerig to pressure test tubing.
19:05	Wireline running in hole.
20:35	Wireline at surface with recorders.
20:50	Wireline running in to set plug.
21:50	Wireline at surface.
22:10	Wireline running in hole to set prong.
23:30	Wireline at surface.
05/03/15	
00:10	Pressure test plug to 14MPa.
00:40	Pressure test fail.
00:50	Wireline running in hole to retreive prong.
01:25	Wireline at surface.
01:40	Wireline running in hole to retreive plug.
02:15	Wireline at surface, plug retreived.
02:20	Wireline run in to set plug.
03:10	Wireline at surface.
03:15	Wireline run in with prong.
04:00	Wireline at surface, rig out wireline.
04:15	Pressure test plug to 14MPa.
04:30	Pressure test good.
04:35	Head up.
05:45	Well head in.
06:00	Pressure test well head.
06:30	Pressure test good, rig up wireline to open sliding sleeve.
07:15	Wireline run in hole to open sliding sleeve.
08:10	Wireline at surface, tool sheared.
08:20	Wireline run in hole to open sliding sleeve.
09:15	Wireline at surface, tool sheared.
09:45	Wireline run in hole to open sliding sleeve.
10:37	Wireline at surface, tool sheared.
10:50	Wireline run in hole to open sliding sleeve.
11:35	Wireline at surface, tool sheared.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/15	
12:25	Pumped fluid and discovered sleeve is only partially open.
12:30	Wireline run in hole to open sliding sleeve.
13:45	Wireline at surface, tool sheared.
13:50	Pumped fluid and determined sleeve is open.
14:05	Rig out wireline and rig up to swab.
14:40	Begin swabbing.
14:48	Swab #1 out of hole, tag = surface, pull = 175m, fluid recovered = 0.75m3.
14:55	Swab #2 out of hole, tag = 45m, pull = 210m, fluid recovered = 0.75m3.
15:03	Swab #3 out of hole, tag = 90m, pull = 290m, fluid recovered = 1.0m3.
15:11	Swab #4 out of hole, tag = 130m, pull = 375m, fluid recovered = 1.0m3.
15:19	Swab #5 out of hole, tag = 175m, pull = 425m, fluid recovered = 1.0m3.
15:27	Swab #6 out of hole, tag = 265m, pull = 475m, fluid recovered = 0.75m3.
15:41	Swab #7 out of hole, tag = 265m, pull = 525m, fluid recovered = 1.25m3.
15:52	Swab #8 out of hole, tag = 306m, pull = 570m, fluid recovered = 0.75m3.
16:02	Swab #9 out of hole, tag = 375m, pull = 667m, fluid recovered = 1.0m3.
16:15	Swab #10 out of hole, tag = 425m, pull = 716m, fluid recovered = 1.0m3. Cum fluid recovered 1st 10 swabs = 9.25m3.
16:27	Swab #11 out of hole, tag = 475m, pull = 760m, fluid recovered = 1.0m3.
16:39	Swab #12 out of hole, tag = 525m, pull = 807m, fluid recovered = 1.0m3.
17:01	Swab #13 out of hole, tag = 570m, pull = 903m, fluid recovered = 1.0m3.
17:18	Swab #14 out of hole, tag = 665m, pull = 945m, fluid recovered = 0.75m3.
17:41	Swab #15 out of hole, tag = 715m, pull = 990m, fluid recovered = 1.25m3.
17:56	Swab #16 out of hole, tag = 760m, pull = 1038m, fluid recovered = 1.0m3.
18:13	Swab #17 out of hole, tag = 807m, pull = 1084m, fluid recovered = 1.0m3.
18:31	Swab #18 out of hole, tag = 855m, pull = 1125m, fluid recovered = 1.0m3.
18:47	Swab #19 out of hole, tag = 900m, pull = 1170m, fluid recovered = 1.0m3.
19:05	Swab #20 out of hole, tag = 945m, pull = 1125m, fluid recovered = 0.8m3. Cum fluid recovered past 20 swabs = 19.05m3.
19:25	Swab #21 out of hole, tag = 990m, pull = 1169m, fluid recovered = 0.7m3.
19:42	Swab #22 out of hole, tag = 1035m, pull = 1213m, fluid recovered = 0.75m3.
19:56	Swab #23 out of hole, tag = 1080m, pull = 1343m, fluid recovered = 1.0m3.
20:10	Swab #24 out of hole, tag = 1169m, pull = 1427.5m, fluid recovered = 1.25m3.
20:28	Swab #25 out of hole, tag = 1256.25m, pull = 1552.5m, fluid recovered = 1.25m3.
20:48	Swab #26 out of hole, tag = 1300m, pull = 1593.75m, fluid recovered = 1.5m3.
21:19	Swab #27 out of hole, tag = 1342.5m, pull = 1511.25m, fluid recovered = 0.5m3.
21:38	Swab #28 out of hole, tag = 1385m, pull = 1593.75m, fluid recovered = 0.5m3.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/15	
21:58	Swab #29 out of hole, tag = 1427.5m, pull = 1675m, fluid recovered = 1.25m3.
22:15	Swab #30 out of hole, tag = 1470m, pull = 1755m, fluid recovered = 1.0m3. Cum fluid recovered past 30 swabs = 32.75m3.
22:37	Swab #31 out of hole, tag = 1552.5m, pull = 1751.25m, fluid recovered = 1.25m3.
22:57	Swab #32 out of hole, tag = 1635m, pull = 1911.25m, fluid recovered = 1.50m3.
23:20	Swab #33 out of hole, tag = 1675m, pull = 1950m, fluid recovered = 0.75m3.
23:45	Swab #34 out of hole, tag = 1755m, pull = 2025m, fluid recovered = 1.25m3.
05/03/16	
00:08	Swab #35 out of hole, tag = 1833.75m, pull = 2100m, fluid recovered = 1.0m3.
00:08	Total fluid recovered during swabbing = 38.50m3.
00:15	Rig out swab equipment. Rig up wireline.
00:15	Wireline running in hole to close sleeve.
02:30	Wireline at surface.
02:40	Fill tubing to pressure test sliding sleeve.
02:55	Sleeve pressure tested to 10[illegible]a.
03:10	Wireline running in hole to retreive prong.
03:45	Wireline at surface, unable to get through 2 3/8" tubing,no prong retreived.
03:55	Wireline running in hole to retreive prong.
04:25	Wireline at surface, no prong.
04:30	Wireline running in hole with internal wire grab.
05:25	Wireline at surface, nothing grabbed.
05:40	Wireline running in hole with spear.
06:15	Wireline at surface, nothing retreived.
06:30	Wireline run in hole with bailer.
07:20	Wireline at surface, nothing recovered.
07:45	Wireline run in hole with impression block.
09:12	Wireline on surface.
10:10	Begin pumping to fill casing.
11:55	Casing full, rig off wellhead, rig on BOP's.
13:30	Pressure test BOP's
14:00	Pressure test good, come off packer and circulate well.
15:10	Circulation complete, rig on wireline.
15:47	Wireline run in hole with guage ring.
16:23	Wireline on surface, unable to get to bottom.
16:45	Latch onto packer.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/16	
16:55	Rig on wirelinn and run in guage ring.
17:30	Wireline on surface, unable to get to bottom.
17:35	Come off packer and change out 2 foot pup for 1 foot pup.
18:05	Wireline run in hole with gauge ring.
18:45	Wireline at surface.
19:00	Pressure test tubing to 14MPa.
19:20	Pressure test casing to 14MPa.
19:35	Remove BOP's.
20:05	Attach wellhead and pressure test.
21:00	Rig up wireline.
22:00	Wireline run in hole to retreive prong.
22:55	Wireline at surface with prong.
23:00	Wireline run in hole to retreive plug.
24:00	Wireline at surface with plug.
05/03/17	
00:05	Rig out wireline, rig up swab equiptment.
00:10	Preflow safety meeting.
00:45	Run in hole with swab #1.
00:50	Swab #1 at surface, tag fluid at surface, pull from 225m, fluid recovered = 0.25m3.
01:00	Swab #2, tag fluid at 44m, pull from 275m, fluid recovered = 0.25m3.
01:17	Swab #3, taged fluid at 132m, pull from 375m, fluid recovered = 0.5m3.
01:17	Well starting to flow, total fluid recovered while swabing = 1.0m3.
01:17	Change choke to 50.80 mm.
01:25	Heavy fluid returns.
01:26	Change choke to 30.1600 mm.
01:30	Burnable gas to surface.
01:36	Increase choke to 34.1300 mm.
01:55	Increase choke to 50.8000 mm.
02:25	Meter in service on 63.5000 mm orifice plate.
02:30	6200ppm H2S, by Gastec tube.
02:30	API = 57 at 60°F.
03:00	Cuts show 20% cond, 80% water.
03:35	Bleed off casing.
06:00	H2S by Gastec = 6300ppm.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh.mm	
05/03/17	
06:00	API = 56.6 at 60°F.
07:25	Decrease choke to 25.4000 mm.
11:00	Fluid gains changed to hourly.
11:30	H2S by Gastec = 6500ppm.
11:30	API = 56.6 at 60°F.
11:30	Shut in well. Meter out of service.
11:30	Start buildups.
11:30	Total gas produced to date = 82.34 E3m3.
11:30	Total oil produced to date = 71.87m3.
11:30	Total water produced to date = 113.0m3.
16:00	RTM running in hole with temp/pressure gauge.
05/03/18	
05:30	RTM start reverse gradient out of hole.
06:45	Attend safety meeting.
07:55	Wireline at surface. Rig out wireline.
08:10	Rig in for acid joh.
08:45	Attend safety meeting.
09:00	Pressure test surface lines. Proceed with acid job.
12:30	Finish acid job. Rig in to swab.
13:31	Swab #1, Tag 219m, Pulled from 525m, Fluid recovered = 0.75m3. Salinity = 20000ppm, ph = 1.
13:46	Swab #2, Tag 263m, Pulled from 570m, Fluid recovered = 1.75m3.
13:57	Swab #3, Tag 306m, Pulled from 668m, Fluid recovered = 1.25m3.
14:07	Swab #4, Tag 375m, Pulled from 668m, Fluid recovered = 1.5m3. Salinity = 16000ppm, ph = 1
14:22	Swab #5, Tag 425m, Pulled from 760m, Fluid recovered = 1.0m3.
14:34	Swab #6, Tag 475m, Pulled from 808m, Fluid recovered = 0.75m3.
14:45	Swab #7, Tag 425m, Pulled from 668m, Fluid recovered = 1.5m3. Salinity = 28000ppm, ph = 1
14:54	Swab #8, Tag 263m, Pulled from 475m, Fluid recovered = 0.75m3.
15:14	Swab #9, Tag 375m, Pulled from 668m, Fluid recovered = 1.5m3.
16:55	Swab #10, Tag 85m, Pulled from 375m, Fluid recovered = 1.0m3. Salinity = 110000ppm, ph = 2
17:00	Total fluid recovered while swabbing = 11.0m3.
17:00	Well flowing.
17:00	Change choke to 38.10 mm.
17:30	Trace of burnable gas to surface.
18:00	Salinity is off scale.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/18	
19:02	Meter in service on 88.9000 mm orifice plate.
20:00	API = 57.6 at 15.6°C.
20:20	Meter out of service due to foam production.
20:30	Decrease choke to 19.0500 mm.
20:35	Decrease choke to 12.7000 mm.
21:00	Meter in service on 88.9000 mm orifice plate.
21:45	Start incinerator at 80 liters/min.
22:00	Incinerator total burned = 2.5m3.
22:00	API = 56.1at 15.6°C.
22:00	H2S by Core = 8000ppm.
22.00	CORE obtain samples.
22:30	Increase choke to 15.8750 mm.
22:30	Increase burn rate to 100 liters/min.
24:00	Increase choke to 19.0500 mm.
24:00	API = 55.4 at 15.6°C.
24:00	Increase burn rate to 120 liters/min.
05/03/19	
00:40	Changed orifice plate to 76.2000 mm.
01:00	Burn total = 15.9m3.
02:00	API = 55.5 at 15.6°C.
02:00	H2S by CORE = 8000ppm.
02:00	CORE obtain samples.
02:01	Increase choke to 25.4000 mm.
02:40	Bleed off casing.
02:40	Increase burn rate to 150liters/min.
04:00	API = 55.4 at 15.6°C.
05:01	Meter in service on 25.4000 mm orifice plate.
06:00	API = 54.9 at 15.6°C.
06:00	CORE obtain samples.
06:00	Total condensate burned = 53.0m3.
06:01	Decrease choke to 19.0500 mm.
06:50	Decrease burn rate to 80 liters/min.
07:01	Decrease choke to 12.7000 mm as requested.
09:25	Increase choke to 19.0500 mm.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh mm	
05/03/19	
10:00	API = 55.4 at 15.6°C.
12:00	API = 54.8 at 15.6°C.
14:00	API = 56 at 15.6°C.
14:10	Increase choke to 25.4000 mm.
16:00	API = 56 at 15.6°C.
18:00	API = 55 at 15.6°C.
18:15	Shut in well. Meter out of service.
18:15	Rig in wireline.
18:35	Wireline run in hole with gauge ring.
19:15	Pressure casing as required for wireline.
20:31	Wireline at surface, bleed off.
21:25	Wireline running in hole with CORE downhole sample tool.
05/03/20	
01:01	Wireline at surface, bleed off.
02:15	Wireline runnining hole in attempt to reach bottom.
03:20	Wireline at surface, reached bottom, bleed off.
03:50	Wireline running in hole with CORE sample tool.
04:30	Open well on 3.175 mm choke.
04:32	Increase choke to 6.3500 mm.
04:37	Change choke to 7.9380 mm.
04:45	Meter in service on 76.2000 mm orifice plate.
04:50	Change choke to 11.1120 mm.
05:21	CORE tool take first sample.
05:25	Increase choke to 12.7000 mm.
05:51	CORE tool take second sample.
06:01	Shut in well. Meter out of service.
06:01	API = 53.4 at 15.6°C.
06:01	CORE tool take second sample.
06:01	Total condensate burned = 208m3.
06:40	Pressure casing as required for wireline.
07:00	Wireline at surface.
07:21	Wireline run in hole with simulated production log string.
08:05	Wireline at surface.
09:10	Attend safety meeting.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh mm	
05/03/20	
09:40	Wireline run in hole to do production log.
12:00	Wireline on bottom. Prepare to flow well.
12:10	Open well on 12.70 mm choke.
12:15	Meter in service on 76.2000 mm onfice plate.
12:55	Increase choke to 14.2900 mm.
14:00	API = 55.1 at 15.6°C.
15:00	API = 54.7 at 15.6°C.
15:00	Shut in well. Meter out of service.
18:01	Wireline at surface.
18:35	Wireline run in hole with dart.
19:15	Wireline at surface, bleed off.
19:30	Wireline run in hole with recorders.
20:30	Wireline at surface, bleed off, rig out wireline, attach wellhead cap, prepare to flow.
21:01	Open well on 12.70 mm choke.
21:05	Fluid to surface.
21:05	Meter in service on 76.2000 mm orifice plate.
23:00	API = 53.5 at 15.6°C.
05/03/21	
00:10	Bleed casing to 2000kPa.
01:55	CORE obtain samples.
02:00	API = 53.5 at 15.6°C.
02:00	H2S by CORE Tutweiler = 7660ppm.
02:01	Increase choke to 25.4000 mm.
02:45	Heavy fluid returns.
02:45	Meter in service on 25.4000 mm orifice plate.
04:00	H2S by Gastec = 7000ppm.
04:00	API = 53.5 at 15.6°C.
05:25	Adjust back pressure.
06:00	H2S by Gastec = 7000ppm.
06:00	API = 53.5 at 15.6°C.
08:05	Increase choke to 26.9875 mm.
10:00	H2S by Gastec = 9000ppm.
10:00	API = 54.1 at 15.6°C.
10:40	Open choke to free obstruction and reset to same.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job. #:	4402134

Time	Description
hh:mm	
05/03/21	
11:45	Bleed casing pressure to 3000 kPa.
14:00	H2S by Gastec = 9000 ppm.
14:00	API = 55.1 at 15.6°C.
18:00	H2S by Gastec = 9200 ppm.
18:00	API = 55.3 at 15.6°C.
20:00	CORE obtain samples.
20:00	H2S by Gastec = 9000ppm.
24:00	H2S by Gastec = 9100ppm.
24:00	API = 54.9 at 15.6°C.
05/03/22	
04:00	H2S by Gastec = 9000ppm.
04:00	API = 53.5 at 15.6°C.
06:00	Total gas produced to date on top zone test = 351.47 E3m3.
06:00	Total oil produced to date on top zone test = 469.27m3.
06:00	Total water produced to date on top zone test = 216.17m3.
08:00	H2S by Core Labs tutwieler = 6854ppm.
10:00	H2S by Gastec = 9000ppm.
10:00	API = 55.1 at 15.6°C.
12:00	Shut in well. Meter out of service.
12:00	Monitor pressures.
05/03/23	
06:00	Total gas flared to date on top zone test = 420.38 E3m3.
06:00	Total oil produced to date on top zone test = 589.0m3.
06:00	Total water produced to date on top zone test = 257.18m3.
05/03/24	
05/03/25	
18:00	Shut in well and rig up wireline.
18:30	Wireline running in hole to retreive recorders.
19:20	Retreived recorders, at surface, bleed off.
20:35	Wireline running in hole with forward gradient.
23:10	Wireline at surface, rig out wireline.
23:50	Rig up to kill well.
05/03/26	
04:30	Finished pumping water.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/26	
05:30	Rig up wireline.
06:00	Wireline running in hole.
06:50	Wireline on surface.
07:00	Wireline run in hole with recorders.
07:45	Wireline on surface.
07:55	Wireline run in hole with plug.
08:36	Wireline on surface.
08:45	Wireline run in hole with prong.
09:00	Wireline on surface, rig out wireline and pressure test plug.
09:45	Pressure test good, pu ge and rig out test equipment.
09:45	End of test.

FLOW AND BUILD-UP DATED MAR. 20 - MAR. 25, 2005

Northrock Resources Ltd.

3500, 700 - 2 Street SW Calgary, AB T2P 2W2

NATIONAL ENERGY BOARD
Exploration and Production
APR 0 5 2005

Northrock et al Summit Creek

B-44-64-30-125-45

Fort Norman

2643.00 - 2723.50 mKB MD

Flow & Build-Up

Mar 20, 2005 to Mar 25, 2005

Grande Prairie
Fox Creek
Hinton
Manning
Slave Lake
Fort St. John
Fort Nelson
Calgary

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Northrock et al Summit Creek

B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Flow & Build-Up
Production Interval:	2643.00 - 2723.50 mKB MD
Midpoint:	2683.25 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure	13800	14236
Casing Pressure:	93	93

Test Date:	Mar 20, 2005
On Bottom:	Mar 20, 2005 20:00
Off Bottom:	Mar 25, 2005 18:27
Shut In	Mar 22, 2005 12:00
Gauge Start:	Mar 20, 2005 18:11:00
Gauge Stop:	Mar 25, 2005 19:45:30

	Bottom
Run Depth:	2634.20 mKB MD
Serial No:	90277
Max Range:	41364 kPa
Manufacturer	CalScan/9001
Last Calibration:	Mar 17, 2005

Sent To: Dan Kamieniecki

Comments:

Casing liner starts at 2329 mKB
Tubing crossover starts at 2295 mKB

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
1	05/03/20 20:00:00	0.000	22907.33	87.29
31	05/03/20 20:15:00	0.250	22912.77	89.31
61	05/03/20 20:30:00	0.500	22916.79	89.45
91	05/03/20 20:45:00	0.750	22922.83	89.48
121	05/03/20 21:00:00	1.000	22866.73	89.45
151	05/03/20 21:15:00	1.250	22264.20	90.14
181	05/03/20 21:30:00	1.500	22080.54	90.41
211	05/03/20 21:45:00	1.750	21980.09	90.52
241	05/03/20 22:00:00	2.000	21896.89	90.66
271	05/03/20 22:15:00	2.250	21831.39	90.78
301	05/03/20 22:30:00	2.500	21780.65	90.85
331	05/03/20 22:45:00	2.750	21731.92	90.90
361	05/03/20 23:00:00	3.000	21719.19	90.96
391	05/03/20 23:15:00	3.250	21688.58	91.03
421	05/03/20 23:30:00	3.500	21669.96	91.11
451	05/03/20 23:45:00	3.750	21656.98	91.17
481	05/03/21 00:00:00	4.000	21653.52	91.22
511	05/03/21 00:15:00	4.250	21642.42	91.25
541	05/03/21 00:30:00	4.500	21636.80	91.29
571	05/03/21 00:45:00	4.750	21629.07	91.32
601	05/03/21 01:00:00	5.000	21628.51	91.35
631	05/03/21 01:15:00	5.250	21614.43	91.38
661	05/03/21 01:30:00	5.500	21603.71	91.40
691	05/03/21 01:45:00	5.750	21593.45	91.43
721	05/03/21 02:00:00	6.000	21599.08	91.45
751	05/03/21 02:15:00	6.250	21108.65	91.50
781	05/03/21 02:30:00	6.500	20960.90	91.56
811	05/03/21 02:45:00	6.750	20836.61	91.61
841	05/03/21 03:00:00	7.000	20768.04	91.66
871	05/03/21 03:15:00	7.250	20676.66	91.72
901	05/03/21 03:30:00	7.500	20615.00	91.76
931	05/03/21 03:45:00	7.750	20565.69	91.81
961	05/03/21 04:00:00	8.000	20524.93	91.83
991	05/03/21 04:15:00	8.250	20488.91	91.86
1021	05/03/21 04:30:00	8.500	20457.79	91.89
1051	05/03/21 04:45:00	8.750	20435.14	91.92
1081	05/03/21 05:00:00	9.000	20406.03	91.93
1111	05/03/21 05:15:00	9.250	20392.30	91.96
1141	05/03/21 05:30:00	9.500	20377.18	91.98
1171	05/03/21 05:45:00	9.750	20358.89	91.99
1201	05/03/21 06:00:00	10.000	20343.23	92.01
1231	05/03/21 06:15:00	10.250	20325.35	92.03
1261	05/03/21 06:30:00	10.500	20310.50	92.04
1291	05/03/21 06:45:00	10.750	20296.33	92.06
1321	05/03/21 07:00:00	11.000	20280.52	92.07
1351	05/03/21 07:15:00	11.250	20264.21	92.08
1381	05/03/21 07:30:00	11.500	20248.67	92.09
1411	05/03/21 07:45:00	11.750	20231.70	92.11
1441	05/03/21 08:00:00	12.000	20295.07	92.12
1471	05/03/21 08:15:00	12.250	20175.63	92.12
1501	05/03/21 08:30:00	12.500	20144.61	92.14
1531	05/03/21 08:45:00	12.750	20116.27	92.14
1561	05/03/21 09:00:00	13.000	20093.64	92.16
1591	05/03/21 09:15:00	13.250	20074.23	92.16
1621	05/03/21 09:30:00	13.500	20056.69	92.17
1651	05/03/21 09:45:00	13.750	20044.09	92.18
1681	05/03/21 10:00:00	14.000	20032.08	92.19
1711	05/03/21 10:15:00	14.250	20021.28	92.19
1741	05/03/21 10:30:00	14.500	20012.11	92.20
1771	05/03/21 10:45:00	14.750	19819.44	92.19
1801	05/03/21 11:00:00	15.000	19574.03	92.21
1831	05/03/21 11:15:00	15.250	19448.11	92.23
1861	05/03/21 11:30:00	15.500	19355.27	92.23
1891	05/03/21 11:45:00	15.750	19288.64	92.24
1921	05/03/21 12:00:00	16.000	19233.46	92.25
1951	05/03/21 12:15:00	16.250	19188.49	92.26
1981	05/03/21 12:30:00	16.500	19150.38	92.27
2011	05/03/21 12:45:00	16.750	19119.33	92.28
2041	05/03/21 13:00:00	17.000	19094.20	92.29
2071	05/03/21 13:15:00	17.250	19072.72	92.30
2101	05/03/21 13:30:00	17.500	19053.16	92.31
2131	05/03/21 13:45:00	17.750	19035.15	92.32
2161	05/03/21 14:00:00	18.000	19018.96	92.32
2191	05/03/21 14:15:00	18.250	19005.45	92.33
2221	05/03/21 14:30:00	18.500	18994.44	92.34
2251	05/03/21 14:45:00	18.750	18982.89	92.35
2281	05/03/21 15:00:00	19.000	18972.60	92.35
2311	05/03/21 15:15:00	19.250	18966.12	92.36
2341	05/03/21 15:30:00	19.500	18954.32	92.36
2371	05/03/21 15:45:00	19.750	18947.21	92.37
2401	05/03/21 16:00:00	20.000	18940.81	92.38
2431	05/03/21 16:15:00	20.250	18934.25	92.38
2461	05/03/21 16:30:00	20.500	18928.14	92.39
2491	05/03/21 16:45:00	20.750	18919.78	92.40
2521	05/03/21 17:00:00	21.000	18912.85	92.40
2551	05/03/21 17:15:00	21.250	18907.93	92.41
2581	05/03/21 17:30:00	21.500	18903.96	92.42
2611	05/03/21 17:45:00	21.750	18899.10	92.42
2641	05/03/21 18:00:00	22.000	18893.76	92.43
2671	05/03/21 18:15:00	22.250	18888.81	92.44
2701	05/03/21 18:30:00	22.500	18882.58	92.44
2731	05/03/21 18:45:00	22.750	18877.76	92.45
2761	05/03/21 19:00:00	23.000	18873.30	92.45
2791	05/03/21 19:15:00	23.250	18870.31	92.46
2821	05/03/21 19:30:00	23.500	18865.52	92.47
2851	05/03/21 19:45:00	23.750	18860.50	92.48
2881	05/03/21 20:00:00	24.000	18855.15	92.49
2911	05/03/21 20:15:00	24.250	18849.88	92.49
2941	05/03/21 20:30:00	24.500	18845.26	92.50
2971	05/03/21 20:45:00	24.750	18839.46	92.50
3001	05/03/21 21:00:00	25.000	18834.32	92.51
3031	05/03/21 21:15:00	25.250	18829.94	92.52

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
3061	05/03/21 21:30:00	25.500	18826.14	92.53
3091	05/03/21 21:45:00	25.750	18823.04	92.53
3121	05/03/21 22:00:00	26.000	18819.88	92.54
3151	05/03/21 22:15:00	26.250	18817.02	92.54
3181	05/03/21 22:30:00	26.500	18814.07	92.55
3211	05/03/21 22:45:00	26.750	18809.82	92.54
3241	05/03/21 23:00:00	27.000	18806.94	92.55
3271	05/03/21 23:15:00	27.250	18804.10	92.55
3301	05/03/21 23:30:00	27.500	18800.81	92.55
3331	05/03/21 23:45:00	27.750	18798.06	92.56
3361	05/03/22 00:00:00	28.000	18795.58	92.56
3391	05/03/22 00:15:00	28.250	18791.85	92.56
3421	05/03/22 00:30:00	28.500	18789.86	92.56
3451	05/03/22 00:45:00	28.750	18787.68	92.57
3481	05/03/22 01:00:00	29.000	18785.06	92.57
3511	05/03/22 01:15:00	29.250	18782.19	92.57
3541	05/03/22 01:30:00	29.500	18779.34	92.57
3571	05/03/22 01:45:00	29.750	18776.13	92.57
3601	05/03/22 02:00:00	30.000	18772.68	92.57
3631	05/03/22 02:15:00	30.250	18769.32	92.58
3661	05/03/22 02:30:00	30.500	18766.42	92.58
3691	05/03/22 02:45:00	30.750	18763.85	92.58
3721	05/03/22 03:00:00	31.000	18760.98	92.59
3751	05/03/22 03:15:00	31.250	18759.05	92.59
3781	05/03/22 03:30:00	31.500	18757.39	92.59
3811	05/03/22 03:45:00	31.750	18755.96	92.59
3841	05/03/22 04:00:00	32.000	18754.78	92.60
3871	05/03/22 04:15:00	32.250	18752.78	92.60
3901	05/03/22 04:30:00	32.500	18751.90	92.60
3931	05/03/22 04:45:00	32.750	18750.21	92.61
3961	05/03/22 05:00:00	33.000	18749.13	92.61
3991	05/03/22 05:15:00	33.250	18747.87	92.61
4021	05/03/22 05:30:00	33.500	18747.29	92.62
4051	05/03/22 05:45:00	33.750	18746.64	92.62
4081	05/03/22 06:00:00	34.000	18746.05	92.62
4111	05/03/22 06:15:00	34.250	18745.54	92.62
4141	05/03/22 06:30:00	34.500	18745.58	92.63
4171	05/03/22 06:45:00	34.750	18745.18	92.62
4201	05/03/22 07:00:00	35.000	18745.86	92.63
4231	05/03/22 07:15:00	35.250	18744.74	92.63
4261	05/03/22 07:30:00	35.500	18744.12	92.64
4291	05/03/22 07:45:00	35.750	18742.94	92.64
4321	05/03/22 08:00:00	36.000	18741.55	92.64
4351	05/03/22 08:15:00	36.250	18740.41	92.64
4381	05/03/22 08:30:00	36.500	18739.71	92.65
4411	05/03/22 08:45:00	36.750	18738.05	92.65
4441	05/03/22 09:00:00	37.000	18736.35	92.65
4471	05/03/22 09:15:00	37.250	18735.49	92.66
4501	05/03/22 09:30:00	37.500	18733.88	92.66
4531	05/03/22 09:45:00	37.750	18732.13	92.66
4561	05/03/22 10:00:00	38.000	18730.33	92.66
4591	05/03/22 10:15:00	38.250	18728.35	92.66
4621	05/03/22 10:30:00	38.500	18725.95	92.67
4651	05/03/22 10:45:00	38.750	18723.35	92.67
4681	05/03/22 11:00:00	39.000	18720.04	92.67
4711	05/03/22 11:15:00	39.250	18717.40	92.68
4741	05/03/22 11:30:00	39.500	18713.18	92.67
4771	05/03/22 11:45:00	39.750	18709.85	92.68
4801	05/03/22 12:00:00	40.000	18708.64	92.68
4831	05/03/22 12:15:00	40.250	19936.03	92.81
4861	05/03/22 12:30:00	40.500	20514.87	92.68
4891	05/03/22 12:45:00	40.750	20750.87	92.40
4921	05/03/22 13:00:00	41.000	20950.95	92.20
4951	05/03/22 13:15:00	41.250	21074.63	91.96
4981	05/03/22 13:30:00	41.500	21194.51	91.79
5011	05/03/22 13:45:00	41.750	21299.40	91.68
5041	05/03/22 14:00:00	42.000	21389.81	91.58
5071	05/03/22 14:15:00	42.250	21455.38	91.50
5101	05/03/22 14:30:00	42.500	21508.98	91.44
5131	05/03/22 14:45:00	42.750	21557.19	91.37
5161	05/03/22 15:00:00	43.000	21600.11	91.32
5191	05/03/22 15:15:00	43.250	21638.77	91.27
5221	05/03/22 15:30:00	43.500	21675.07	91.22
5251	05/03/22 15:45:00	43.750	21708.79	91.18
5281	05/03/22 16:00:00	44.000	21740.13	91.14
5311	05/03/22 16:15:00	44.250	21771.52	91.09
5341	05/03/22 16:30:00	44.500	21802.49	91.05
5371	05/03/22 16:45:00	44.750	21834.24	91.00
5401	05/03/22 17:00:00	45.000	21864.22	90.96
5431	05/03/22 17:15:00	45.250	21895.92	90.95
5461	05/03/22 17:30:00	45.500	21926.87	90.92
5491	05/03/22 17:45:00	45.750	21958.18	90.90
5521	05/03/22 18:00:00	46.000	21991.66	90.88
5551	05/03/22 18:15:00	46.250	22025.03	90.86
5581	05/03/22 18:30:00	46.500	22056.69	90.84
5611	05/03/22 18:45:00	46.750	22087.00	90.82
5641	05/03/22 19:00:00	47.000	22116.50	90.81
5671	05/03/22 19:15:00	47.250	22140.79	90.79
5701	05/03/22 19:30:00	47.500	22161.42	90.77
5731	05/03/22 19:45:00	47.750	22182.54	90.75
5761	05/03/22 20:00:00	48.000	22201.02	90.74
5791	05/03/22 20:15:00	48.250	22218.63	90.74
5821	05/03/22 20:30:00	48.500	22240.24	90.74
5851	05/03/22 20:45:00	48.750	22265.70	90.74
5881	05/03/22 21:00:00	49.000	22286.63	90.75
5911	05/03/22 21:15:00	49.250	22300.24	90.76
5941	05/03/22 21:30:00	49.500	22306.14	90.76
5971	05/03/22 21:45:00	49.750	22311.36	90.76
6001	05/03/22 22:00:00	50.000	22338.54	90.76
6031	05/03/22 22:15:00	50.250	22371.80	90.78
6061	05/03/22 22:30:00	50.500	22385.68	90.78
6091	05/03/22 22:45:00	50.750	22387.09	90.76

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

DONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/03/22 23:00:00	51.000	22391.61	90.76
6151	05/03/22 23:15:00	51.250	22399.54	90.75
6181	05/03/22 23:30:00	51.500	22404.89	90.75
6211	05/03/22 23:45:00	51.750	22410.14	90.74
6241	05/03/23 00:00:00	52.000	22414.79	90.74
6271	05/03/23 00:15:00	52.250	22418.11	90.73
6301	05/03/23 00:30:00	52.500	22424.74	90.72
6331	05/03/23 00:45:00	52.750	22431.67	90.72
6361	05/03/23 01:00:00	53.000	22437.27	90.72
6391	05/03/23 01:15:00	53.250	22442.87	90.72
6421	05/03/23 01:30:00	53.500	22447.19	90.71
6451	05/03/23 01:45:00	53.750	22452.60	90.70
6481	05/03/23 02:00:00	54.000	22461.76	90.70
6511	05/03/23 02:15:00	54.250	22482.92	90.70
6541	05/03/23 02:30:00	54.500	22504.57	90.71
6571	05/03/23 02:45:00	54.750	22525.70	90.71
6601	05/03/23 03:00:00	55.000	22548.70	90.71
6631	05/03/23 03:15:00	55.250	22580.85	90.71
6661	05/03/23 03:30:00	55.500	22584.74	90.71
6691	05/03/23 03:45:00	55.750	22588.50	90.69
6721	05/03/23 04:00:00	56.000	22591.96	90.68
6751	05/03/23 04:15:00	56.250	22595.45	90.68
6781	05/03/23 04:30:00	56.500	22598.97	90.68
6811	05/03/23 04:45:00	56.750	22602.15	90.67
6841	05/03/23 05:00:00	57.000	22605.12	90.66
6871	05/03/23 05:15:00	57.250	22608.58	90.66
6901	05/03/23 05:30:00	57.500	22611.94	90.66
6931	05/03/23 05:45:00	57.750	22615.48	90.66
6961	05/03/23 06:00:00	58.000	22618.24	90.65
6991	05/03/23 06:15:00	58.250	22621.37	90.65
7021	05/03/23 06:30:00	58.500	22623.13	90.64
7051	05/03/23 06:45:00	58.750	22626.58	90.64
7081	05/03/23 07:00:00	59.000	22629.73	90.64
7111	05/03/23 07:15:00	59.250	22632.56	90.63
7141	05/03/23 07:30:00	59.500	22635.31	90.64
7171	05/03/23 07:45:00	59.750	22637.88	90.63
7201	05/03/23 08:00:00	60.000	22640.96	90.63
7231	05/03/23 08:15:00	60.250	22643.88	90.63
7261	05/03/23 08:30:00	60.500	22646.47	90.63
7291	05/03/23 08:45:00	60.750	22648.85	90.62
7321	05/03/23 09:00:00	61.000	22651.12	90.62
7351	05/03/23 09:15:00	61.250	22653.62	90.61
7381	05/03/23 09:30:00	61.500	22656.24	90.61
7411	05/03/23 09:45:00	61.750	22658.58	90.61
7441	05/03/23 10:00:00	62.000	22661.04	90.61
7471	05/03/23 10:15:00	62.250	22663.38	90.61
7501	05/03/23 10:30:00	62.500	22665.62	90.60
7531	05/03/23 10:45:00	62.750	22668.01	90.60
7561	05/03/23 11:00:00	63.000	22670.01	90.60
7591	05/03/23 11:15:00	63.250	22672.28	90.60
7621	05/03/23 11:30:00	63.500	22674.53	90.60
7651	05/03/23 11:45:00	63.750	22676.57	90.60
7681	05/03/23 12:00:00	64.000	22678.68	90.60
7711	05/03/23 12:15:00	64.250	22680.60	90.59
7741	05/03/23 12:30:00	64.500	22682.54	90.59
7771	05/03/23 12:45:00	64.750	22684.79	90.59
7801	05/03/23 13:00:00	65.000	22686.86	90.59
7831	05/03/23 13:15:00	65.250	22689.13	90.59
7861	05/03/23 13:30:00	65.500	22690.79	90.58
7891	05/03/23 13:45:00	65.750	22692.68	90.58
7921	05/03/23 14:00:00	66.000	22694.72	90.58
7951	05/03/23 14:15:00	66.250	22696.28	90.58
7981	05/03/23 14:30:00	66.500	22697.99	90.58
8011	05/03/23 14:45:00	66.750	22700.02	90.57
8041	05/03/23 15:00:00	67.000	22701.82	90.58
8071	05/03/23 15:15:00	67.250	22703.72	90.58
8101	05/03/23 15:30:00	67.500	22705.41	90.58
8131	05/03/23 15:45:00	67.750	22707.28	90.58
8161	05/03/23 16:00:00	68.000	22708.90	90.57
8191	05/03/23 16:15:00	68.250	22710.59	90.57
8221	05/03/23 16:30:00	68.500	22712.22	90.57
8251	05/03/23 16:45:00	68.750	22713.84	90.57
8281	05/03/23 17:00:00	69.000	22715.44	90.57
8311	05/03/23 17:15:00	69.250	22717.35	90.57
8341	05/03/23 17:30:00	69.500	22719.03	90.57
8371	05/03/23 17:45:00	69.750	22720.47	90.57
8401	05/03/23 18:00:00	70.000	22722.01	90.57
8431	05/03/23 18:15:00	70.250	22723.48	90.57
8461	05/03/23 18:30:00	70.500	22724.83	90.56
8491	05/03/23 18:45:00	70.750	22726.86	90.57
8521	05/03/23 19:00:00	71.000	22728.07	90.56
8551	05/03/23 19:15:00	71.250	22729.49	90.56
8581	05/03/23 19:30:00	71.500	22731.16	90.57
8611	05/03/23 19:45:00	71.750	22732.68	90.57
8641	05/03/23 20:00:00	72.000	22733.81	90.56
8671	05/03/23 20:15:00	72.250	22735.16	90.56
8701	05/03/23 20:30:00	72.500	22736.66	90.56
8731	05/03/23 20:45:00	72.750	22738.20	90.56
8761	05/03/23 21:00:00	73.000	22739.70	90.56
8791	05/03/23 21:15:00	73.250	22740.52	90.56
8821	05/03/23 21:30:00	73.500	22742.05	90.56
8851	05/03/23 21:45:00	73.750	22743.68	90.56
8881	05/03/23 22:00:00	74.000	22744.67	90.56
8911	05/03/23 22:15:00	74.250	22745.94	90.56
8941	05/03/23 22:30:00	74.500	22747.27	90.56
8971	05/03/23 22:45:00	74.750	22748.46	90.55
9001	05/03/23 23:00:00	75.000	22749.70	90.56
9031	05/03/23 23:15:00	75.250	22751.06	90.56
9061	05/03/23 23:30:00	75.500	22752.17	90.56
9091	05/03/23 23:45:00	75.750	22753.37	90.55
9121	05/03/24 00:00:00	76.000	22754.30	90.55
9151	05/03/24 00:15:00	76.250	22755.86	90.55

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

BONNETTS

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
9181	05/03/24 00:30:00	76.500	22757.01	90.55
9211	05/03/24 00:45:00	76.750	22758.41	90.56
9241	05/03/24 01:00:00	77.000	22759.43	90.55
9271	05/03/24 01:15:00	77.250	22760.51	90.55
9301	05/03/24 01:30:00	77.500	22761.78	90.56
9331	05/03/24 01:45:00	77.750	22762.66	90.55
9361	05/03/24 02:00:00	78.000	22763.87	90.55
9391	05/03/24 02:15:00	78.250	22765.08	90.56
9421	05/03/24 02:30:00	78.500	22766.23	90.55
9451	05/03/24 02:45:00	78.750	22767.40	90.56
9481	05/03/24 03:00:00	79.000	22768.37	90.56
9511	05/03/24 03:15:00	79.250	22769.18	90.55
9541	05/03/24 03:30:00	79.500	22770.56	90.56
9571	05/03/24 03:45:00	79.750	22771.45	90.56
9601	05/03/24 04:00:00	80.000	22772.48	90.55
9631	05/03/24 04:15:00	80.250	22773.45	90.55
9661	05/03/24 04:30:00	80.500	22774.41	90.55
9691	05/03/24 04:45:00	80.750	22775.41	90.55
9721	05/03/24 05:00:00	81.000	22776.47	90.56
9751	05/03/24 05:15:00	81.250	22777.38	90.55
9781	05/03/24 05:30:00	81.500	22778.18	90.55
9811	05/03/24 05:45:00	81.750	22779.08	90.56
9841	05/03/24 06:00:00	82.000	22779.72	90.55
9871	05/03/24 06:15:00	82.250	22780.60	90.55
9901	05/03/24 06:30:00	82.500	22781.77	90.55
9931	05/03/24 06:45:00	82.750	22782.01	90.55
9961	05/03/24 07:00:00	83.000	22783.95	90.56
9991	05/03/24 07:15:00	83.250	22784.83	90.55
10021	05/03/24 07:30:00	83.500	22786.01	90.56
10051	05/03/24 07:45:00	83.750	22786.62	90.55
10081	05/03/24 08:00:00	84.000	22787.36	90.55
10111	05/03/24 08:15:00	84.250	22788.40	90.55
10141	05/03/24 08:30:00	84.500	22789.64	90.56
10171	05/03/24 08:45:00	84.750	22790.39	90.56
10201	05/03/24 09:00:00	85.000	22790.95	90.55
10231	05/03/24 09:15:00	85.250	22791.88	90.55
10261	05/03/24 09:30:00	85.500	22793.09	90.56
10291	05/03/24 09:45:00	85.750	22793.82	90.56
10321	05/03/24 10:00:00	86.000	22794.69	90.56
10351	05/03/24 10:15:00	86.250	22795.56	90.56
10381	05/03/24 10:30:00	86.500	22796.21	90.56
10411	05/03/24 10:45:00	86.750	22797.48	90.56
10441	05/03/24 11:00:00	87.000	22797.96	90.56
10471	05/03/24 11:15:00	87.250	22798.87	90.56
10501	05/03/24 11:30:00	87.500	22799.30	90.55
10531	05/03/24 11:45:00	87.750	22800.55	90.56
10561	05/03/24 12:00:00	88.000	22801.13	90.56
10591	05/03/24 12:15:00	88.250	22802.12	90.56
10621	05/03/24 12:30:00	88.500	22802.74	90.56
10651	05/03/24 12:45:00	88.750	22803.56	90.56
10681	05/03/24 13:00:00	89.000	22804.31	90.56
10711	05/03/24 13:15:00	89.250	22805.15	90.56
10741	05/03/24 13:30:00	89.500	22805.94	90.56
10771	05/03/24 13:45:00	89.750	22806.61	90.56
10801	05/03/24 14:00:00	90.000	22807.47	90.56
10831	05/03/24 14:15:00	90.250	22808.12	90.56
10861	05/03/24 14:30:00	90.500	22808.81	90.56
10891	05/03/24 14:45:00	90.750	22809.30	90.56
10921	05/03/24 15:00:00	91.000	22810.24	90.56
10951	05/03/24 15:15:00	91.250	22811.10	90.56
10981	05/03/24 15:30:00	91.500	22811.30	90.56
11011	05/03/24 15:45:00	91.750	22812.52	90.57
11041	05/03/24 16:00:00	92.000	22813.18	90.57
11071	05/03/24 16:15:00	92.250	22813.90	90.57
11101	05/03/24 16:30:00	92.500	22814.69	90.57
11131	05/03/24 16:45:00	92.750	22815.33	90.56
11161	05/03/24 17:00:00	93.000	22816.14	90.57
11191	05/03/24 17:15:00	93.250	22816.53	90.57
11221	05/03/24 17:30:00	93.500	22817.22	90.56
11251	05/03/24 17:45:00	93.750	22817.87	90.56
11281	05/03/24 18:00:00	94.000	22818.47	90.56
11311	05/03/24 18:15:00	94.250	22819.20	90.57
11341	05/03/24 18:30:00	94.500	22819.90	90.57
11371	05/03/24 18:45:00	94.750	22820.67	90.57
11401	05/03/24 19:00:00	95.000	22821.20	90.57
11431	05/03/24 19:15:00	95.250	22821.98	90.57
11461	05/03/24 19:30:00	95.500	22822.69	90.57
11491	05/03/24 19:45:00	95.750	22823.32	90.57
11521	05/03/24 20:00:00	96.000	22823.70	90.57
11551	05/03/24 20:15:00	96.250	22824.57	90.57
11581	05/03/24 20:30:00	96.500	22824.98	90.57
11611	05/03/24 20:45:00	96.750	22825.66	90.57
11641	05/03/24 21:00:00	97.000	22826.51	90.57
11671	05/03/24 21:15:00	97.250	22826.89	90.57
11701	05/03/24 21:30:00	97.500	22827.39	90.57
11731	05/03/24 21:45:00	97.750	22828.23	90.57
11761	05/03/24 22:00:00	98.000	22828.80	90.57
11791	05/03/24 22:15:00	98.250	22829.42	90.57
11821	05/03/24 22:30:00	98.500	22829.94	90.57
11851	05/03/24 22:45:00	98.750	22830.57	90.57
11881	05/03/24 23:00:00	99.000	22831.15	90.57
11911	05/03/24 23:15:00	99.250	22831.58	90.57
11941	05/03/24 23:30:00	99.500	22832.04	90.57
11971	05/03/24 23:45:00	99.750	22833.44	90.58
12001	05/03/25 00:00:00	100.000	22833.38	90.57
12031	05/03/25 00:15:00	100.250	22834.14	90.58
12061	05/03/25 00:30:00	100.500	22834.57	90.57
12091	05/03/25 00:45:00	100.750	22835.29	90.58
12121	05/03/25 01:00:00	101.000	22835.56	90.57
12151	05/03/25 01:15:00	101.250	22836.36	90.58
12181	05/03/25 01:30:00	101.500	22836.93	90.58
12211	05/03/25 01:45:00	101.750	22837.66	90.58

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
12241	05/03/25 02:00:00	102.000	22838.03	90.58
12271	05/03/25 02:15:00	102.250	22838.52	90.58
12301	05/03/25 02:30:00	102.500	22839.03	90.58
12331	05/03/25 02:45:00	102.750	22839.85	90.58
12361	05/03/25 03:00:00	103.000	22840.35	90.58
12391	05/03/25 03:15:00	103.250	22840.90	90.59
12421	05/03/25 03:30:00	103.500	22841.16	90.58
12451	05/03/25 03:45:00	103.750	22841.72	90.58
12481	05/03/25 04:00:00	104.000	22842.33	90.58
12511	05/03/25 04:15:00	104.250	22842.65	90.58
12541	05/03/25 04:30:00	104.500	22843.63	90.59
12571	05/03/25 04:45:00	104.750	22844.09	90.59
12601	05/03/25 05:00:00	105.000	22844.46	90.59
12631	05/03/25 05:15:00	105.250	22844.92	90.59
12661	05/03/25 05:30:00	105.500	22845.19	90.59
12691	05/03/25 05:45:00	105.750	22845.85	90.59
12721	05/03/25 06:00:00	106.000	22846.39	90.59
12751	05/03/25 06:15:00	106.250	22846.81	90.59
12781	05/03/25 06:30:00	106.500	22847.58	90.59
12811	05/03/25 06:45:00	106.750	22847.96	90.59
12841	05/03/25 07:00:00	107.000	22848.36	90.59
12871	05/03/25 07:15:00	107.250	22848.94	90.59
12901	05/03/25 07:30:00	107.500	22849.44	90.59
12931	05/03/25 07:45:00	107.750	22850.13	90.60
12961	05/03/25 08:00:00	108.000	22850.31	90.59
12991	05/03/25 08:15:00	108.250	22851.05	90.60
13021	05/03/25 08:30:00	108.500	22851.44	90.60
13051	05/03/25 08:45:00	108.750	22851.65	90.60
13081	05/03/25 09:00:00	109.000	22852.38	90.60
13111	05/03/25 09:15:00	109.250	22852.75	90.59
13141	05/03/25 09:30:00	109.500	22853.29	90.60
13171	05/03/25 09:45:00	109.750	22853.58	90.60
13201	05/03/25 10:00:00	110.000	22853.96	90.60
13231	05/03/25 10:15:00	110.250	22853.90	90.60
13261	05/03/25 10:30:00	110.500	22852.72	90.60
13291	05/03/25 10:45:00	110.750	22850.49	90.60
13321	05/03/25 11:00:00	111.000	22848.34	90.60
13351	05/03/25 11:15:00	111.250	22845.94	90.60
13381	05/03/25 11:30:00	111.500	22843.78	90.60
13411	05/03/25 11:45:00	111.750	22841.25	90.60
13441	05/03/25 12:00:00	112.000	22838.91	90.60
13471	05/03/25 12:15:00	112.250	22836.96	90.60
13501	05/03/25 12:30:00	112.500	22835.06	90.60
13531	05/03/25 12:45:00	112.750	22832.86	90.60
13561	05/03/25 13:00:00	113.000	22830.76	90.60
13591	05/03/25 13:15:00	113.250	22829.02	90.60
13621	05/03/25 13:30:00	113.500	22827.06	90.60
13651	05/03/25 13:45:00	113.750	22825.70	90.60
13681	05/03/25 14:00:00	114.000	22824.12	90.60
13711	05/03/25 14:15:00	114.250	22822.70	90.60
13741	05/03/25 14:30:00	114.500	22822.30	90.60
13771	05/03/25 14:45:00	114.750	22822.09	90.60
13801	05/03/25 15:00:00	115.000	22821.50	90.60
13831	05/03/25 15:15:00	115.250	22822.83	90.61
13861	05/03/25 15:30:00	115.500	22823.52	90.61
13891	05/03/25 15:45:00	115.750	22824.01	90.61
13921	05/03/25 16:00:00	116.000	22824.38	90.61
13951	05/03/25 16:15:00	116.250	22825.33	90.61
13981	05/03/25 16:30:00	116.500	22825.40	90.61
14011	05/03/25 16:45:00	116.750	22826.14	90.61
14041	05/03/25 17:00:00	117.000	22827.05	90.62
14071	05/03/25 17:15:00	117.250	22827.22	90.61
14101	05/03/25 17:30:00	117.500	22827.67	90.62
14131	05/03/25 17:45:00	117.750	22828.39	90.62
14161	05/03/25 18:00:00	118.000	22828.49	90.61
14191	05/03/25 18:15:00	118.250	22829.10	90.62

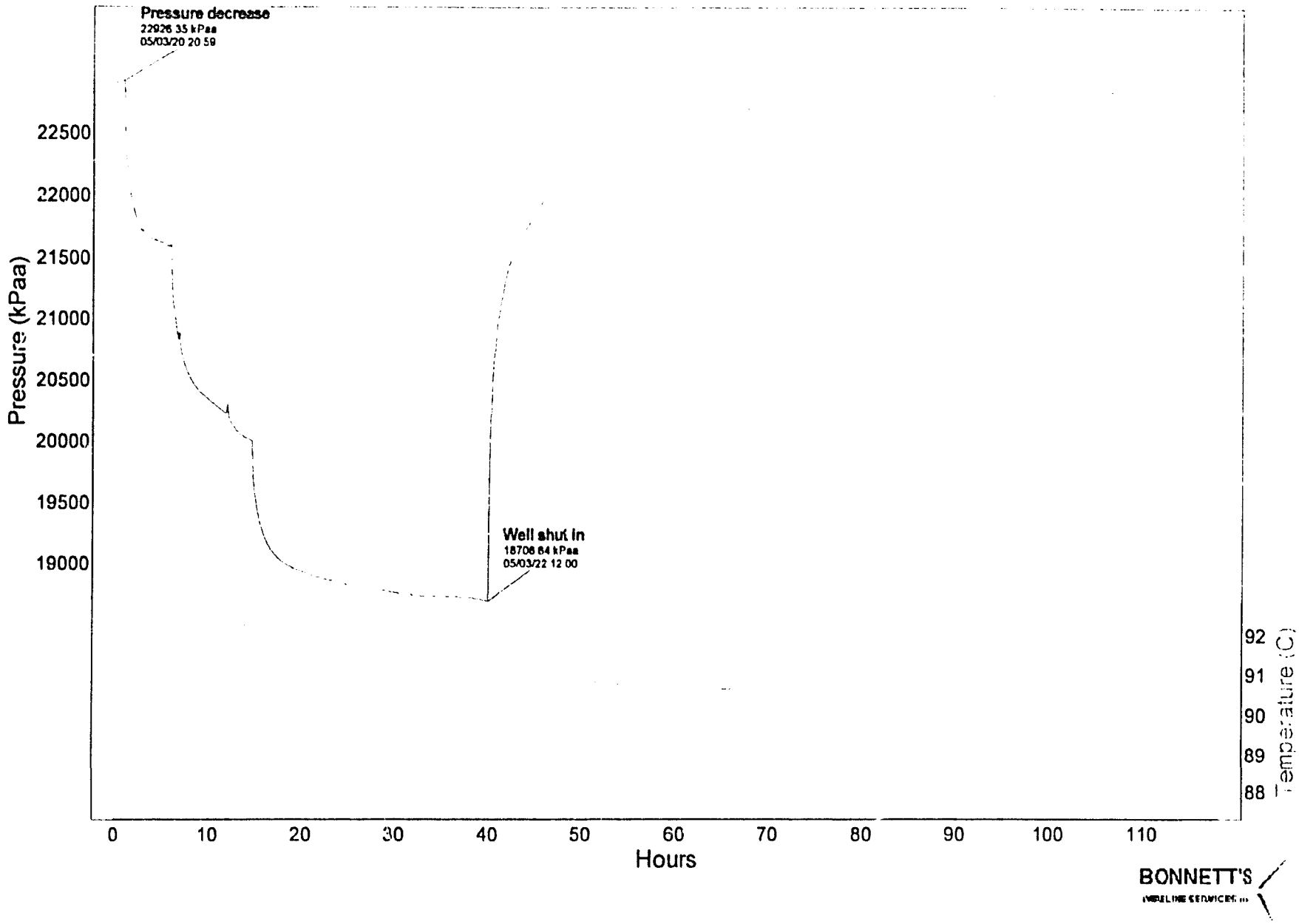
Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90277 - Bottom

BONNETTS

Northrock Resources Ltd.
B-44-64-30-125-45 Flow & Build-Up
Northrock et al Summit Creek

On Bottom:	Mar 20, 2005 20:00 (22907 kPaa)
Off Bottom:	Mar 25, 2005 16:27 (22827 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	90277
Depth:	2626.00 mKB MD
Ticket:	50036



BONNETT'S
WIRELINE SERVICES

Northrock Resources Ltd.

Northrock et al Summit Creek

B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Flow & Build-Up
Production Interval:	2643.00 - 2723.50 mKB MD
Midpoint:	2683.25 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure	13800	14236
Casing Pressure:	93	93

Test Date:	Mar 20, 2005
On Bottom:	Mar 20, 2005 20:00
Off Bottom:	Mar 25, 2005 18:27
Shut In	Mar 22, 2005 12:00
Gauge Start:	Mar 20, 2005 17:19:00
Gauge Stop:	Mar 25, 2005 19:46:30

Recorder 2

Run Depth:	2633.70 mKB MD
Serial No:	8023
Max Range:	110479 kPa
Manufacturer	CalScan/9006
Last Calibration:	Jan 17, 2005
Sent To:	Dan Kamieniecki

Comments:

Casing liner starts at 2329 mKB
Tubing crossover starts at 2295 mKB

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
1	05/03/20 20:00:00	0.000	22900.12	88.14
31	05/03/20 20:15:00	0.250	22905.02	89.02
61	05/03/20 20:30:00	0.500	22912.10	89.57
91	05/03/20 20:45:00	0.750	22918.04	89.64
121	05/03/20 21:00:00	1.000	22862.13	89.63
151	05/03/20 21:15:00	1.250	22252.58	90.25
181	05/03/20 21:30:00	1.500	22072.53	90.57
211	05/03/20 21:45:00	1.750	21972.05	90.69
241	05/03/20 22:00:00	2.000	21889.29	90.82
271	05/03/20 22:15:00	2.250	21823.73	90.94
301	05/03/20 22:30:00	2.500	21773.32	91.02
331	05/03/20 22:45:00	2.750	21725.08	91.08
361	05/03/20 23:00:00	3.000	21711.75	91.14
391	05/03/20 23:15:00	3.250	21681.94	91.20
421	05/03/20 23:30:00	3.500	21662.78	91.28
451	05/03/20 23:45:00	3.750	21650.32	91.34
481	05/03/21 00:00:00	4.000	21646.48	91.39
511	05/03/21 00:15:00	4.250	21636.21	91.43
541	05/03/21 00:30:00	4.500	21630.50	91.47
571	05/03/21 00:45:00	4.750	21622.76	91.50
601	05/03/21 01:00:00	5.000	21621.56	91.53
631	05/03/21 01:15:00	5.250	21607.61	91.56
661	05/03/21 01:30:00	5.500	21596.96	91.58
691	05/03/21 01:45:00	5.750	21586.98	91.61
721	05/03/21 02:00:00	6.000	21592.46	91.63
751	05/03/21 02:15:00	6.250	21100.82	91.68
781	05/03/21 02:30:00	6.500	20952.36	91.74
811	05/03/21 02:45:00	6.750	20828.82	91.79
841	05/03/21 03:00:00	7.000	20759.24	91.84
871	05/03/21 03:15:00	7.250	20669.25	91.90
901	05/03/21 03:30:00	7.500	20607.59	91.95
931	05/03/21 03:45:00	7.750	20558.02	91.99
961	05/03/21 04:00:00	8.000	20517.68	92.02
991	05/03/21 04:15:00	8.250	20480.92	92.05
1021	05/03/21 04:30:00	8.500	20451.47	92.07
1051	05/03/21 04:45:00	8.750	20427.87	92.10
1081	05/03/21 05:00:00	9.000	20400.80	92.12
1111	05/03/21 05:15:00	9.250	20[illegible]91	92.14
[illegible]	[illegible]/03/21 05:30:00	[illegible]	[illegible]	92.16
[illegible]	[illegible]/03/21 05:45:00	[illegible]	[illegible]	92.18
[illegible]	05/03/21 06:00:00	10.000	20[illegible]	92.19
1231	05/03/21 06:15:00	10.250	20[illegible]	92.21
1261	05/03/21 06:30:00	10.500	20302.70	92.23
1291	05/03/21 06:45:00	10.750	20289.08	92.24
1321	05/03/21 07:00:00	11.000	20273.44	92.26
1351	05/03/21 07:15:00	11.250	20257.38	92.27
1381	05/03/21 07:30:00	11.500	20241.02	92.28
1411	05/03/21 07:45:00	11.750	20224.22	92.29
1441	05/03/21 08:00:00	12.000	20292.41	92.31
1471	05/03/21 08:15:00	12.250	20167.88	92.30
1501	05/03/21 08:30:00	12.500	20137.36	92.32
1531	05/03/21 08:45:00	12.750	20108.47	92.33
1561	05/03/21 09:00:00	13.000	20085.85	92.35
1591	05/03/21 09:15:00	13.250	20066.67	92.35
1621	05/03/21 09:30:00	13.500	20048.77	92.36
1651	05/03/21 09:45:00	13.750	20036.25	92.37
1681	05/03/21 10:00:00	14.000	20024.62	92.37
1711	05/03/21 10:15:00	14.250	20014.35	92.38
1741	05/03/21 10:30:00	14.500	20004.67	92.39
1771	05/03/21 10:45:00	14.750	19807.97	92.38
1801	05/03/21 11:00:00	15.000	19564.83	92.39
1831	05/03/21 11:15:00	15.250	19440.27	92.41
1861	05/03/21 11:30:00	15.500	19346.78	92.42
1891	05/03/21 11:45:00	15.750	19280.71	92.43
1921	05/03/21 12:00:00	16.000	19225.48	92.43
1951	05/03/21 12:15:00	16.250	19180.09	92.45
1981	05/03/21 12:30:00	16.500	19142.22	92.46
2011	05/03/21 12:45:00	16.750	19111.88	92.47
2041	05/03/21 13:00:00	17.000	19086.32	92.48
2071	05/03/21 13:15:00	17.250	19065.05	92.49
2101	05/03/21 13:30:00	17.500	19045.89	92.50
2131	05/03/21 13:45:00	17.750	19028.38	92.50
2161	05/03/21 14:00:00	18.000	19012.17	92.51
2191	05/03/21 14:15:00	18.250	18996.74	92.52
2221	05/03/21 14:30:00	18.500	18985.43	92.53
2251	05/03/21 14:45:00	18.750	18974.13	92.53
2281	05/03/21 15:00:00	19.000	18964.71	92.54
2311	05/03/21 15:15:00	19.250	18957.91	92.55
2341	05/03/21 15:30:00	19.500	18945.10	92.55
2371	05/03/21 15:45:00	19.750	18938.56	92.56
2401	05/03/21 16:00:00	20.000	18932.45	92.57
2431	05/03/21 16:15:00	20.250	18925.97	92.57
2461	05/03/21 16:30:00	20.500	18919.78	92.58
2491	05/03/21 16:45:00	20.750	18911.54	92.58
2521	05/03/21 17:00:00	21.000	18904.28	92.59
2551	05/03/21 17:15:00	21.250	18900.27	92.60
2581	05/03/21 17:30:00	21.500	18895.33	92.60
2611	05/03/21 17:45:00	21.750	18890.41	92.61
2641	05/03/21 18:00:00	22.000	18885.87	92.61
2671	05/03/21 [illegible]	22.250	18880.78	92.62
2701	05/03/[illegible]	[illegible]	18874.10	92.63
2731	05/03/21 18:45:00	22.750	18869.29	92.64
2761	05/03/21 19:00:00	23.000	18865.34	92.65
2791	05/03/21 19:15:00	23.250	18862.18	92.65
2821	05/03/21 19:30:00	23.500	18857.75	92.66
2851	05/03/21 19:45:00	23.750	18851.91	92.67
2881	05/03/21 20:00:00	24.000	18847.04	92.68
2911	05/03/21 20:15:00	24.250	18841.63	92.68
2941	05/03/21 20:30:00	24.500	18836.89	92.69
2971	05/03/21 20:45:00	24.750	18831.16	92.69
3001	05/03/21 21:00:00	25.000	18826.12	92.70
3031	05/03/21 21:15:00	25.250	18821.46	92.71

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
3061	05/03/21 21:30:00	25.500	18818.09	92.72
3091	05/03/21 21:45:00	25.750	18814.86	92.72
3121	05/03/21 22:00:00	26.000	18811.91	92.72
3151	05/03/21 22:15:00	26.250	18808.58	92.73
3181	05/03/21 22:30:00	26.500	18805.65	92.73
3211	05/03/21 22:45:00	26.750	18801.79	92.73
3241	05/03/21 23:00:00	27.000	18798.54	92.74
3271	05/03/21 23:15:00	27.250	18795.86	92.74
3301	05/03/21 23:30:00	27.500	18792.50	92.74
3331	05/03/21 23:45:00	27.750	18789.67	92.74
3361	05/03/22 00:00:00	28.000	18787.45	92.75
3391	05/03/22 00:15:00	28.250	18783.42	92.75
3421	05/03/22 00:30:00	28.500	18781.84	92.75
3451	05/03/22 00:45:00	28.750	18779.27	92.75
3481	05/03/22 01:00:00	29.000	18776.94	92.76
3511	05/03/22 01:15:00	29.250	18773.62	92.76
3541	05/03/22 01:30:00	29.500	18770.72	92.76
3571	05/03/22 01:45:00	29.750	18767.88	92.76
3601	05/03/22 02:00:00	30.000	18764.53	92.76
3631	05/03/22 02:15:00	30.250	18760.97	92.77
3661	05/03/22 02:30:00	30.500	18758.42	92.77
3691	05/03/22 02:45:00	30.750	18755.50	92.77
3721	05/03/22 03:00:00	31.000	18752.80	92.78
3751	05/03/22 03:15:00	31.250	18750.94	92.78
3781	05/03/22 03:30:00	31.500	18749.40	92.78
3811	05/03/22 03:45:00	31.750	18748.22	92.78
3841	05/03/22 04:00:00	32.000	18746.53	92.79
3871	05/03/22 04:15:00	32.250	18744.94	92.79
3901	05/03/22 04:30:00	32.500	18743.77	92.79
3931	05/03/22 04:45:00	32.750	18741.96	92.80
3961	05/03/22 05:00:00	33.000	18741.03	92.80
3991	05/03/22 05:15:00	33.250	18739.82	92.80
4021	05/03/22 05:30:00	33.500	18739.08	92.81
4051	05/03/22 05:45:00	33.750	18738.35	92.81
4081	05/03/22 06:00:00	34.000	18737.86	92.81
4111	05/03/22 06:15:00	34.250	18737.69	92.81
4141	05/03/22 06:30:00	34.500	18737.57	92.82
4171	05/03/22 06:45:00	34.750	18737.30	92.82
4201	05/03/22 07:00:00	35.000	18737.84	92.82
4231	05/03/22 07:15:00	35.250	18736.91	92.82
4261	05/03/22 07:30:00	35.500	18736.00	92.83
4291	05/03/22 07:45:00	35.750	18734.95	92.83
4321	05/03/22 08:00:00	36.000	18733.46	92.83
4351	05/03/22 08:15:00	36.250	18732.23	92.83
4381	05/03/22 08:30:00	36.500	18731.54	92.84
4411	05/03/22 08:45:00	36.750	18729.60	92.84
4441	05/03/22 09:00:00	37.000	18728.49	92.84
4471	05/03/22 09:15:00	37.250	18727.27	92.84
4501	05/03/22 09:30:00	37.500	18725.74	92.85
4531	05/03/22 09:45:00	37.750	18724.60	92.85
4561	05/03/22 10:00:00	38.000	18722.35	92.85

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
4591	05/03/22 10:15:00	38.250	18720.26	92.85
4621	05/03/22 10:30:00	38.500	18717.86	92.86
4651	05/03/22 10:45:00	38.750	18715.39	92.86
4681	05/03/22 11:00:00	39.000	18712.03	92.86
4711	05/03/22 11:15:00	39.250	18709.02	92.86
4741	05/03/22 11:30:00	39.500	18705.21	92.86
4771	05/03/22 11:45:00	39.750	18701.76	92.87
4801	05/03/22 12:00:00	40.000	18699.42	92.87
4831	05/03/22 12:15:00	40.250	19922.63	92.99
4861	05/03/22 12:30:00	40.500	20504.62	92.87
4891	05/03/22 12:45:00	40.750	20742.99	92.62
4921	05/03/22 13:00:00	41.000	20944.23	92.42
4951	05/03/22 13:15:00	41.250	21068.43	92.17
4981	05/03/22 13:30:00	41.500	21188.32	92.01
5011	05/03/22 13:45:00	41.750	21293.54	91.89
5041	05/03/22 14:00:00	42.000	21384.21	91.78
5071	05/03/22 14:15:00	42.250	21450.02	91.70
5101	05/03/22 14:30:00	42.500	21504.03	91.63
5131	05/03/22 14:45:00	42.750	21552.19	91.57
5161	05/03/22 15:00:00	43.000	21595.01	91.51
5191	05/03/22 15:15:00	43.250	21633.79	91.46
5221	05/03/22 15:30:00	43.500	21670.28	91.41
5251	05/03/22 15:45:00	43.750	21704.13	91.36
5281	05/03/22 16:00:00	44.000	21735.93	91.31
5311	05/03/22 16:15:00	44.250	21767.25	91.26
5341	05/03/22 16:30:00	44.500	21798.04	91.22
5371	05/03/22 16:45:00	44.750	21829.51	91.18
5401	05/03/22 17:00:00	45.000	21860.06	91.15
5431	05/03/22 17:15:00	45.250	21891.05	91.13
5461	05/03/22 17:30:00	45.500	21922.93	91.11
5491	05/03/22 17:45:00	45.750	21953.92	91.09
5521	05/03/22 18:00:00	46.000	21986.81	91.07
5551	05/03/22 18:15:00	46.250	22020.51	91.04
5581	05/03/22 18:30:00	46.500	22052.38	91.03
5611	05/03/22 18:45:00	46.750	22083.20	91.01
5641	05/03/22 19:00:00	47.000	22112.43	91.00
5671	05/03/22 19:15:00	47.250	22136.71	90.98
5701	05/03/22 19:30:00	47.500	22157.52	90.96
5731	05/03/22 19:45:00	47.750	22178.43	90.94
5761	05/03/22 20:00:00	48.000	22197.51	90.93
5791	05/03/22 20:15:00	48.250	22214.68	90.93
5821	05/03/22 20:30:00	48.500	22236.26	90.93
5851	05/03/22 20:45:00	48.750	22261.65	90.93
5881	05/03/22 21:00:00	49.000	22282.90	90.94
5911	05/03/22 21:15:00	49.250	22296.63	90.94
5941	05/03/22 21:30:00	49.500	22302.58	90.94
5971	05/03/22 21:45:00	49.750	22307.62	90.94
6001	05/03/22 22:00:00	50.000	22334.18	90.95
6031	05/03/22 22:15:00	50.250	22367.95	90.96
6061	05/03/22 22:30:00	50.500	22381.90	90.96
6091	05/03/22 22:45:00	50.750	22383.37	90.95

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/03/22 23:00:00	51.000	22387.99	90.94
6151	05/03/22 23:15:00	51.250	22395.98	90.94
6181	05/03/22 23:30:00	51.500	22401.41	90.93
6211	05/03/22 23:45:00	51.750	22406.46	90.93
6241	05/03/23 00:00:00	52.000	22411.09	90.92
6271	05/03/23 00:15:00	52.250	22414.43	90.92
6301	05/03/23 00:30:00	52.500	22421.38	90.91
6331	05/03/23 00:45:00	52.750	22428.30	90.91
6361	05/03/23 01:00:00	53.000	22433.70	90.90
6391	05/03/23 01:15:00	53.250	22439.15	90.90
6421	05/03/23 01:30:00	53.500	22443.77	90.90
6451	05/03/23 01:45:00	53.750	22449.28	90.89
6481	05/03/23 02:00:00	54.000	22458.06	90.89
6511	05/03/23 02:15:00	54.250	22479.14	90.89
6541	05/03/23 02:30:00	54.500	22501.01	90.89
6571	05/03/23 02:45:00	54.750	22522.16	90.89
6601	05/03/23 03:00:00	55.000	22544.92	90.89
6631	05/03/23 03:15:00	55.250	22577.79	90.89
6661	05/03/23 03:30:00	55.500	22581.54	90.89
6691	05/03/23 03:45:00	55.750	22585.02	90.88
6721	05/03/23 04:00:00	56.000	22588.62	90.87
6751	05/03/23 04:15:00	56.250	22592.33	90.87
6781	05/03/23 04:30:00	56.500	22595.53	90.86
6811	05/03/23 04:45:00	56.750	22598.76	90.86
6841	05/03/23 05:00:00	57.000	22601.95	90.85
6871	05/03/23 05:15:00	57.250	22605.17	90.85
6901	05/03/23 05:30:00	57.500	22608.44	90.84
6931	05/03/23 05:45:00	57.750	22611.67	90.84
6961	05/03/23 06:00:00	58.000	22614.80	90.84
6991	05/03/23 06:15:00	58.250	22617.88	90.83
7021	05/03/23 06:30:00	58.500	22620.53	90.83
7051	05/03/23 06:45:00	58.750	22623.43	90.83
7081	05/03/23 07:00:00	59.000	22626.32	90.82
7111	05/03/23 07:15:00	59.250	22629.21	90.82
7141	05/03/23 07:30:00	59.500	22631.87	90.82
7171	05/03/23 07:45:00	59.750	22634.64	90.82
7201	05/03/23 08:00:00	60.000	22637.48	90.81
7231	05/03/23 08:15:00	60.250	22640.49	90.81
7261	05/03/23 08:30:00	60.500	22643.14	90.81
7291	05/03/23 08:45:00	60.750	22645.64	90.81
7321	05/03/23 09:00:00	61.000	22648.07	90.80
7351	05/03/23 09:15:00	61.250	22650.54	90.80
7381	05/03/23 09:30:00	61.500	22653.01	90.80
7411	05/03/23 09:45:00	61.750	22655.42	90.80
7441	05/03/23 10:00:00	62.000	22657.80	90.79
7471	05/03/23 10:15:00	62.250	22660.11	90.79
7501	05/03/23 10:30:00	62.500	22662.39	90.79
7531	05/03/23 10:45:00	62.750	22664.65	90.79
7561	05/03/23 11:00:00	63.000	22666.93	90.79
7591	05/03/23 11:15:00	63.250	22669.13	90.79
7621	05/03/23 11:30:00	63.500	22671.28	90.78
7651	05/03/23 11:45:00	63.750	22673.39	90.78
7681	05/03/23 12:00:00	64.000	22675.46	90.78
7711	05/03/23 12:15:00	64.250	22677.57	90.78
7741	05/03/23 12:30:00	64.500	22679.70	90.78
7771	05/03/23 12:45:00	64.750	22681.71	90.78
7801	05/03/23 13:00:00	65.000	22683.70	90.77
7831	05/03/23 13:15:00	65.250	22685.64	90.77
7861	05/03/23 13:30:00	65.500	22687.58	90.77
7891	05/03/23 13:45:00	65.750	22689.50	90.77
7921	05/03/23 14:00:00	66.000	22691.36	90.77
7951	05/03/23 14:15:00	66.250	22693.23	90.77
7981	05/03/23 14:30:00	66.500	22695.09	90.77
8011	05/03/23 14:45:00	66.750	22696.93	90.76
8041	05/03/23 15:00:00	67.000	22698.76	90.76
8071	05/03/23 15:15:00	67.250	22700.55	90.76
8101	05/03/23 15:30:00	67.500	22702.29	90.76
8131	05/03/23 15:45:00	67.750	22704.04	90.76
8161	05/03/23 16:00:00	68.000	22705.75	90.76
8191	05/03/23 16:15:00	68.250	22707.44	90.76
8221	05/03/23 16:30:00	68.500	22709.15	90.76
8251	05/03/23 16:45:00	68.750	22710.81	90.76
8281	05/03/23 17:00:00	69.000	22712.48	90.75
8311	05/03/23 17:15:00	69.250	22714.14	90.75
8341	05/03/23 17:30:00	69.500	22715.77	90.75
8371	05/03/23 17:45:00	69.750	22717.35	90.75
8401	05/03/23 18:00:00	70.000	22718.96	90.75
8431	05/03/23 18:15:00	70.250	22720.54	90.75
8461	05/03/23 18:30:00	70.500	22722.04	90.75
8491	05/03/23 18:45:00	70.750	22723.56	90.75
8521	05/03/23 19:00:00	71.000	22725.04	90.75
8551	05/03/23 19:15:00	71.250	22726.54	90.75
8581	05/03/23 19:30:00	71.500	22727.99	90.75
8611	05/03/23 19:45:00	71.750	22729.39	90.75
8641	05/03/23 20:00:00	72.000	22730.82	90.75
8671	05/03/23 20:15:00	72.250	22732.26	90.75
8701	05/03/23 20:30:00	72.500	22733.65	90.75
8731	05/03/23 20:45:00	72.750	22735.02	90.74
8761	05/03/23 21:00:00	73.000	22736.35	90.74
8791	05/03/23 21:15:00	73.250	22737.70	90.74
8821	05/03/23 21:30:00	73.500	22738.99	90.74
8851	05/03/23 21:45:00	73.750	22740.34	90.74
8881	05/03/23 22:00:00	74.000	22741.63	90.74
8911	05/03/23 22:15:00	74.250	22742.88	90.74
8941	05/03/23 22:30:00	74.500	22744.14	90.74
8971	05/03/23 22:45:00	74.750	22745.39	90.74
9001	05/03/23 23:00:00	75.000	22746.65	90.74
9031	05/03/23 23:15:00	75.250	22747.90	90.74
9061	05/03/23 23:30:00	75.500	22749.08	90.74
9091	05/03/23 23:45:00	75.750	22750.33	90.74
9121	05/03/24 00:00:00	76.000	22751.55	90.74
9151	05/03/24 00:15:00	76.250	22752.77	90.74

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
D-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
9181	05/03/24 00:30:00	76.500	22753.98	90.74
9211	05/03/24 00:45:00	76.750	22755.14	90.74
9241	05/03/24 01:00:00	77.000	22756.32	90.74
9271	05/03/24 01:15:00	77.250	22757.46	90.74
9301	05/03/24 01:30:00	77.500	22758.60	90.74
9331	05/03/24 01:45:00	77.750	22759.71	90.74
9361	05/03/24 02:00:00	78.000	22760.84	90.74
9391	05/03/24 02:15:00	78.250	22761.93	90.74
9421	05/03/24 02:30:00	78.500	22763.05	90.74
9451	05/03/24 02:45:00	78.750	22764.13	90.74
9481	05/03/24 03:00:00	79.000	22765.23	90.74
9511	05/03/24 03:15:00	79.250	22766.26	90.74
9541	05/03/24 03:30:00	79.500	22767.30	90.74
9571	05/03/24 03:45:00	79.750	22768.36	90.74
9601	05/03/24 04:00:00	80.000	22769.39	90.74
9631	05/03/24 04:15:00	80.250	22770.40	90.74
9661	05/03/24 04:30:00	80.500	22771.40	90.74
9691	05/03/24 04:45:00	80.750	22772.39	90.74
9721	05/03/24 05:00:00	81.000	22773.38	90.74
9751	05/03/24 05:15:00	81.250	22774.36	90.74
9781	05/03/24 05:30:00	81.500	22775.20	90.74
9811	05/03/24 05:45:00	81.750	22776.05	90.74
9841	05/03/24 06:00:00	82.000	22776.92	90.74
9871	05/03/24 06:15:00	82.250	22777.91	90.74
9901	05/03/24 06:30:00	82.500	22778.90	90.74
9931	05/03/24 06:45:00	82.750	22779.87	90.74
9961	05/03/24 07:00:00	83.000	22780.84	90.74
9991	05/03/24 07:15:00	83.250	22781.81	90.74
10021	05/03/24 07:30:00	83.500	22782.74	90.74
10051	05/03/24 07:45:00	83.750	22783.67	90.74
10081	05/03/24 08:00:00	84.000	22784.56	90.74
10111	05/03/24 08:15:00	84.250	22785.48	90.74
10141	05/03/24 08:30:00	84.500	22786.37	90.74
10171	05/03/24 08:45:00	84.750	22787.28	90.74
10201	05/03/24 09:00:00	85.000	22788.16	90.74
10231	05/03/24 09:15:00	85.250	22789.07	90.74
10261	05/03/24 09:30:00	85.500	22789.97	90.74
10291	05/03/24 09:45:00	85.750	22790.86	90.74
10321	05/03/24 10:00:00	86.000	22791.72	90.74
10351	05/03/24 10:15:00	86.250	22792.57	90.74
10381	05/03/24 10:30:00	86.500	22793.43	90.74
10411	05/03/24 10:45:00	86.750	22794.26	90.74
10441	05/03/24 11:00:00	87.000	22795.08	90.74
10471	05/03/24 11:15:00	87.250	22795.93	90.74
10501	05/03/24 11:30:00	87.500	22796.75	90.74
10531	05/03/24 11:45:00	87.750	22797.55	90.74
10561	05/03/24 12:00:00	88.000	22798.31	90.74
10591	05/03/24 12:15:00	88.250	22799.08	90.74
10621	05/03/24 12:30:00	88.500	22799.88	90.74
10651	05/03/24 12:45:00	88.750	22800.66	90.74
10681	05/03/24 13:00:00	89.000	22801.44	90.74
10711	05/03/24 13:15:00	89.250	22802.18	90.74
10741	05/03/24 13:30:00	89.500	22802.94	90.74
10771	05/03/24 13:45:00	89.750	22803.70	90.74
10801	05/03/24 14:00:00	90.000	22804.44	90.74
10831	05/03/24 14:15:00	90.250	22805.17	90.74
10861	05/03/24 14:30:00	90.500	22805.89	90.74
10891	05/03/24 14:45:00	90.750	22806.59	90.74
10921	05/03/24 15:00:00	91.000	22807.33	90.74
10951	05/03/24 15:15:00	91.250	22808.05	90.74
10981	05/03/24 15:30:00	91.500	22808.79	90.75
11011	05/03/24 15:45:00	91.750	22809.51	90.75
11041	05/03/24 16:00:00	92.000	22810.22	90.75
11071	05/03/24 16:15:00	92.250	22810.93	90.75
11101	05/03/24 16:30:00	92.500	22811.64	90.75
11131	05/03/24 16:45:00	92.750	22812.32	90.75
11161	05/03/24 17:00:00	93.000	22813.03	90.75
11191	05/03/24 17:15:00	93.250	22813.71	90.75
11221	05/03/24 17:30:00	93.500	22814.43	90.75
11251	05/03/24 17:45:00	93.750	22815.11	90.75
11281	05/03/24 18:00:00	94.000	22815.78	90.75
11311	05/03/24 18:15:00	94.250	22816.43	90.75
11341	05/03/24 18:30:00	94.500	22817.09	90.75
11371	05/03/24 18:45:00	94.750	22817.77	90.75
11401	05/03/24 19:00:00	95.000	22818.44	90.75
11431	05/03/24 19:15:00	95.250	22819.10	90.75
11461	05/03/24 19:30:00	95.500	22819.77	90.75
11491	05/03/24 19:45:00	95.750	22820.43	90.75
11521	05/03/24 20:00:00	96.000	22821.08	90.75
11551	05/03/24 20:15:00	96.250	22821.70	90.75
11581	05/03/24 20:30:00	96.500	22822.33	90.75
11611	05/03/24 20:45:00	96.750	22822.95	90.75
11641	05/03/24 21:00:00	97.000	22823.56	90.75
11671	05/03/24 21:15:00	97.250	22824.16	90.75
11701	05/03/24 21:30:00	97.500	22824.77	90.75
11731	05/03/24 21:45:00	97.750	22825.38	90.75
11761	05/03/24 22:00:00	98.000	22826.00	90.75
11791	05/03/24 22:15:00	98.250	22826.61	90.76
11821	05/03/24 22:30:00	98.500	22827.24	90.76
11851	05/03/24 22:45:00	98.750	22827.83	90.76
11881	05/03/24 23:00:00	99.000	22828.44	90.76
11911	05/03/24 23:15:00	99.250	22829.04	90.76
11941	05/03/24 23:30:00	99.500	22829.57	90.76
11971	05/03/24 23:45:00	99.750	22830.16	90.76
12001	05/03/25 00:00:00	100.000	22830.73	90.76
12031	05/03/25 00:15:00	100.250	22831.32	90.76
12061	05/03/25 00:30:00	100.500	22831.89	90.76
12091	05/03/25 00:45:00	100.750	22832.47	90.76
12121	05/03/25 01:00:00	101.000	22833.02	90.76
12151	05/03/25 01:15:00	101.250	22833.57	90.76
12181	05/03/25 01:30:00	101.500	22834.12	90.76
12211	05/03/25 01:45:00	101.750	22834.71	90.76

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BONNETTS

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
12241	05/03/25 02:00:00	102.000	22835.26	90.76
12271	05/03/25 02:15:00	102.250	22835.83	90.76
12301	05/03/25 02:30:00	102.500	22836.36	90.76
12331	05/03/25 02:45:00	102.750	22836.93	90.76
12361	05/03/25 03:00:00	103.000	22837.48	90.76
12391	05/03/25 03:15:00	103.250	22837.99	90.77
12421	05/03/25 03:30:00	103.500	22838.56	90.77
12451	05/03/25 03:45:00	103.750	22839.07	90.77
12481	05/03/25 04:00:00	104.000	22839.62	90.77
12511	05/03/25 04:15:00	104.250	22840.15	90.77
12541	05/03/25 04:30:00	104.500	22840.64	90.77
12571	05/03/25 04:45:00	104.750	22841.14	90.77
12601	05/03/25 05:00:00	105.000	22841.65	90.77
12631	05/03/25 05:15:00	105.250	22842.14	90.77
12661	05/03/25 05:30:00	105.500	22842.69	90.77
12691	05/03/25 05:45:00	105.750	22843.20	90.77
12721	05/03/25 06:00:00	106.000	22843.67	90.77
12751	05/03/25 06:15:00	106.250	22844.19	90.77
12781	05/03/25 06:30:00	106.500	22844.72	90.77
12811	05/03/25 06:45:00	106.750	22845.23	90.77
12841	05/03/25 07:00:00	107.000	22845.74	90.77
12871	05/03/25 07:15:00	107.250	22846.19	90.78
12901	05/03/25 07:30:00	107.500	22846.70	90.78
12931	05/03/25 07:45:00	107.750	22847.22	90.78
12961	05/03/25 08:00:00	108.000	22847.67	90.78
12991	05/03/25 08:15:00	108.250	22848.18	90.78
13021	05/03/25 08:30:00	108.500	22848.63	90.78
13051	05/03/25 08:45:00	108.750	22849.12	90.78
13081	05/03/25 09:00:00	109.000	22849.56	90.78
13111	05/03/25 09:15:00	109.250	22850.05	90.78
13141	05/03/25 09:30:00	109.500	22850.54	90.78
13171	05/03/25 09:45:00	109.750	22851.00	90.78
13201	05/03/25 10:00:00	110.000	22851.38	90.78
13231	05/03/25 10:15:00	110.250	22851.36	90.78
13261	05/03/25 10:30:00	110.500	22849.97	90.78
13291	05/03/25 10:45:00	110.750	22847.97	90.78
13321	05/03/25 11:00:00	111.000	22845.70	90.78
13351	05/03/25 11:15:00	111.250	22843.30	90.78
13381	05/03/25 11:30:00	111.500	22840.90	90.78
13411	05/03/25 11:45:00	111.750	22838.54	90.78
13441	05/03/25 12:00:00	112.000	22836.20	90.78
13471	05/03/25 12:15:00	112.250	22834.27	90.78
13501	05/03/25 12:30:00	112.500	22832.32	90.78
13531	05/03/25 12:45:00	112.750	22830.16	90.78
13561	05/03/25 13:00:00	113.000	22828.19	90.78
13591	05/03/25 13:15:00	113.250	22826.30	90.78
13621	05/03/25 13:30:00	113.500	22824.54	90.78
13651	05/03/25 13:45:00	113.750	22822.89	90.78
13681	05/03/25 14:00:00	114.000	22821.35	90.78
13711	05/03/25 14:15:00	114.250	22820.30	90.78
13741	05/03/25 14:30:00	114.500	22819.56	90.79
13771	05/03/25 14:45:00	114.750	22819.29	90.79
13801	05/03/25 15:00:00	115.000	22819.05	90.79
13831	05/03/25 15:15:00	115.250	22820.08	90.79
13861	05/03/25 15:30:00	115.500	22820.68	90.79
13891	05/03/25 15:45:00	115.750	22821.32	90.79
13921	05/03/25 16:00:00	116.000	22821.92	90.79
13951	05/03/25 16:15:00	116.250	22822.49	90.79
13981	05/03/25 16:30:00	116.500	22823.03	90.79
14011	05/03/25 16:45:00	116.750	22823.51	90.79
14041	05/03/25 17:00:00	117.000	22824.02	90.79
14071	05/03/25 17:15:00	117.250	22824.52	90.80
14101	05/03/25 17:30:00	117.500	22825.05	90.80
14131	05/03/25 17:45:00	117.750	22825.57	90.80
14161	05/03/25 18:00:00	118.000	22826.06	90.80
14191	05/03/25 18:15:00	118.250	22826.54	90.80

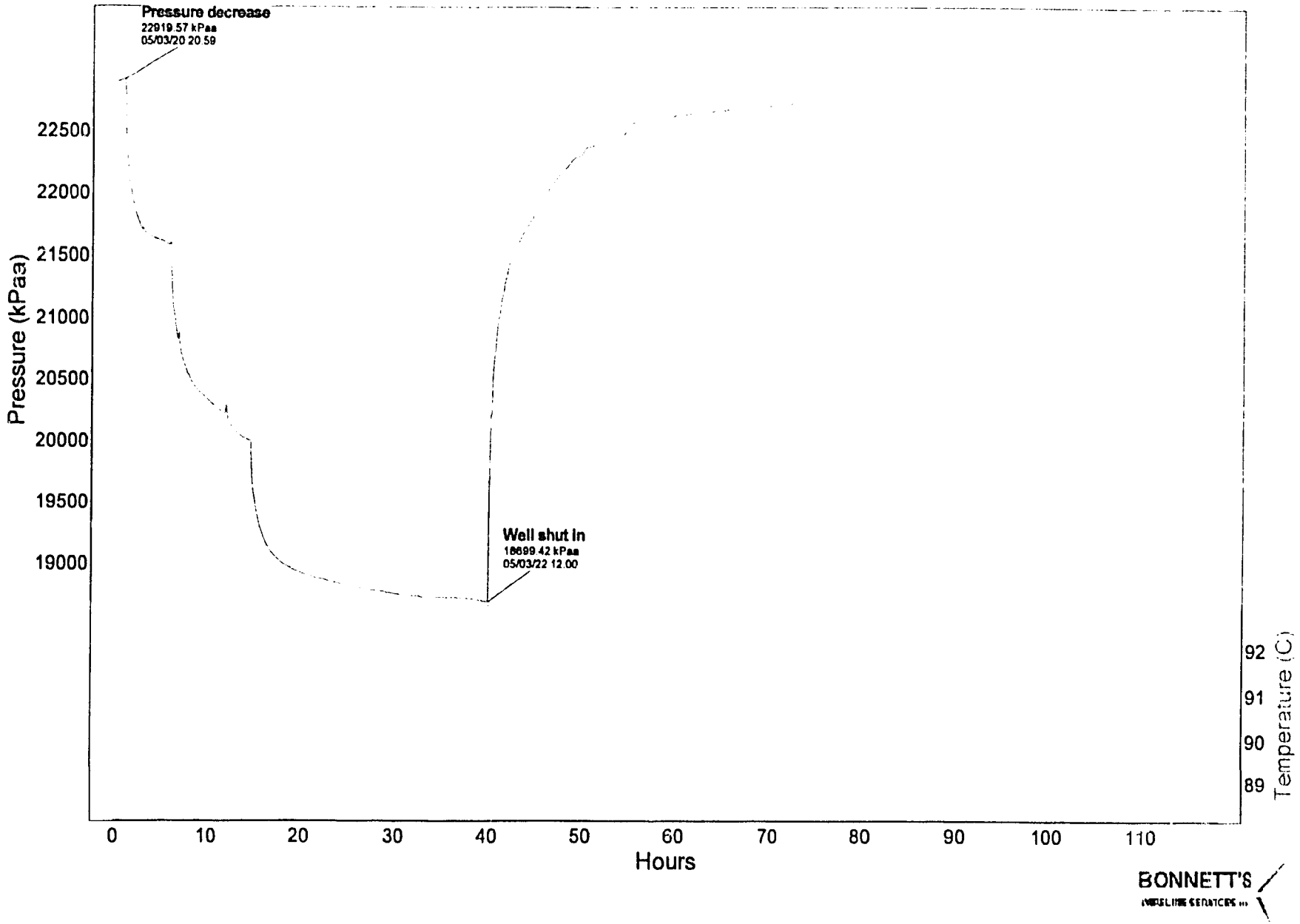
Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 8023 - Recorder 2

BENNETT'S

Northrock Resources Ltd.
B-44-64-30-125-45 Flow & Build-Up
Northrock et al Summit Creek

On Bottom:	Mar 20, 2005 20:00 (22900 kPaa)
Off Bottom:	Mar 25, 2005 18:27 (22827 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8023
Depth:	2627.50 mKB MD
Ticket:	50036



BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Flow & Build-Up
Production Interval:	2643.00 - 2723.50 mKB MD
Midpoint:	2683.25 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure	13800	14236
Casing Pressure:	93	93

Test Date:	Mar 20, 2005
On Bottom:	Mar 20, 2005 20:00
Off Bottom:	Mar 25, 2005 18:27
Shut In	Mar 22, 2005 12:00
Gauge Start:	Mar 20, 2005 18:11:00
Gauge Stop:	Mar 25, 2005 19:45:30

	Top
Run Depth:	2633.20 mKB MD
Serial No:	90276
Max Range:	41364 kPa
Manufacturer	CalScan/9001
Last Calibration:	Mar 17, 2005

Sent To: Dan Kamieniecki

Comments:

Casing liner starts at 2329 mKB
Tubing crossover starts at 2295 mKB

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
1	05/03/20 20:00:00	0.000	22891.85	87.79
31	05/03/20 20:15:00	0.250	22896.38	89.39
61	05/03/20 20:30:00	0.500	22900.99	89.46
91	05/03/20 20:45:00	0.750	22906.43	89.48
121	05/03/20 21:00:00	1.000	22849.62	89.44
151	05/03/20 21:15:00	1.250	22247.72	90.18
181	05/03/20 21:30:00	1.500	22063.99	90.42
211	05/03/20 21:45:00	1.750	21963.64	90.53
241	05/03/20 22:00:00	2.000	21880.04	90.66
271	05/03/20 22:15:00	2.250	21814.28	90.78
301	05/03/20 22:30:00	2.500	21763.83	90.85
331	05/03/20 22:45:00	2.750	21715.01	90.90
361	05/03/20 23:00:00	3.000	21702.52	90.97
391	05/03/20 23:15:00	3.250	21672.27	91.04
421	05/03/20 23:30:00	3.500	21652.65	91.11
451	05/03/20 23:45:00	3.750	21640.01	91.17
481	05/03/21 00:00:00	4.000	21636.95	91.22
511	05/03/21 00:15:00	4.250	21626.01	91.26
541	05/03/21 00:30:00	4.500	21620.79	91.30
571	05/03/21 00:45:00	4.750	21612.45	91.32
601	05/03/21 01:00:00	5.000	21612.07	91.36
631	05/03/21 01:15:00	5.250	21597.67	91.38
661	05/03/21 01:30:00	5.500	21587.18	91.41
691	05/03/21 01:45:00	5.750	21576.76	91.43
721	05/03/21 02:00:00	6.000	21582.33	91.45
751	05/03/21 02:15:00	6.250	21092.34	91.51
781	05/03/21 02:30:00	6.500	20944.33	91.56
811	05/03/21 02:45:00	6.750	20819.95	91.62
841	05/03/21 03:00:00	7.000	20751.05	91.66
871	05/03/21 03:15:00	7.250	20660.11	91.72
901	05/03/21 03:30:00	7.500	20598.84	91.77
931	05/03/21 03:45:00	7.750	20548.87	91.81
961	05/03/21 04:00:00	8.000	20508.31	91.84
991	05/03/21 04:15:00	8.250	20472.74	91.87
1021	05/03/21 04:30:00	8.500	20441.78	91.89
1051	05/03/21 04:45:00	8.750	20418.66	91.92
1081	05/03/21 05:00:00	9.000	20391.31	91.94
1111	05/03/21 05:15:00	9.250	20376.21	91.96
1141	05/03/21 05:30:00	9.500	20360.61	91.98
1171	05/03/21 05:45:00	9.750	20343.05	92.00
1201	05/03/21 06:00:00	10.000	20326.61	92.01
1231	05/03/21 06:15:00	10.250	20308.86	92.03
1261	05/03/21 06:30:00	10.500	20294.03	92.05
1291	05/03/21 06:45:00	10.750	20280.29	92.06
1321	05/03/21 07:00:00	11.000	20264.43	92.07
1351	05/03/21 07:15:00	11.250	20248.50	92.09
1381	05/03/21 07:30:00	11.500	20232.33	92.10
1411	05/03/21 07:45:00	11.750	20215.32	92.11
1441	05/03/21 08:00:00	12.000	20279.63	92.12
1471	05/03/21 08:15:00	12.250	20159.21	92.11
1501	05/03/21 08:30:00	12.500	20128.63	92.14
1531	05/03/21 08:45:00	12.750	20099.30	92.15
1561	05/03/21 09:00:00	13.000	20077.00	92.16
1591	05/03/21 09:15:00	13.250	20058.13	92.17
1621	05/03/21 09:30:00	13.500	20039.70	92.17
1651	05/03/21 09:45:00	13.750	20027.67	92.18
1681	05/03/21 10:00:00	14.000	20015.32	92.18
1711	05/03/21 10:15:00	14.250	20005.29	92.19
1741	05/03/21 10:30:00	14.500	19996.06	92.20
1771	05/03/21 10:45:00	14.750	19802.42	92.19
1801	05/03/21 11:00:00	15.000	19556.65	92.21
1831	05/03/21 11:15:00	15.250	19432.11	92.23
1861	05/03/21 11:30:00	15.500	19339.17	92.23
1891	05/03/21 11:45:00	15.750	19272.97	92.24
1921	05/03/21 12:00:00	16.000	19217.17	92.25
1951	05/03/21 12:15:00	16.250	19171.97	92.25
1981	05/03/21 12:30:00	16.500	19134.58	92.27
2011	05/03/21 12:45:00	16.750	19103.71	92.28
2041	05/03/21 13:00:00	17.000	19078.40	92.29
2071	05/03/21 13:15:00	17.250	19056.24	92.30
2101	05/03/21 13:30:00	17.500	19037.41	92.31
2131	05/03/21 13:45:00	17.750	19020.11	92.32
2161	05/03/21 14:00:00	18.000	19004.00	92.32
2191	05/03/21 14:15:00	18.250	18988.97	92.33
2221	05/03/21 14:30:00	18.500	18977.90	92.34
2251	05/03/21 14:45:00	18.750	18965.94	92.35
2281	05/03/21 15:00:00	19.000	18956.92	92.35
2311	05/03/21 15:15:00	19.250	18948.80	92.36
2341	05/03/21 15:30:00	19.500	18937.94	92.37
2371	05/03/21 15:45:00	19.750	18930.99	92.37
2401	05/03/21 16:00:00	20.000	18924.19	92.38
2431	05/03/21 16:15:00	20.250	18917.91	92.38
2461	05/03/21 16:30:00	20.500	18912.09	92.39
2491	05/03/21 16:45:00	20.750	18903.52	92.40
2521	05/03/21 17:00:00	21.000	18896.64	92.40
2551	05/03/21 17:15:00	21.250	18891.89	92.41
2581	05/03/21 17:30:00	21.500	18887.42	92.41
2811	05/03/21 17:45:00	21.750	18882.26	92.42
2641	05/03/21 18:00:00	22.000	18877.85	92.43
2671	05/03/21 18:15:00	22.250	18872.72	92.44
2701	05/03/21 18:30:00	22.500	18866.06	92.44
2731	05/03/21 18:45:00	22.750	18861.37	92.45
2761	05/03/21 19:00:00	23.000	18857.08	92.46
2791	05/03/21 19:15:00	23.250	18853.77	92.47
2821	05/03/21 19:30:00	23.500	18849.69	92.47
2851	05/03/21 19:45:00	23.750	18843.91	92.48
2881	05/03/21 20:00:00	24.000	18839.09	92.49
2911	05/03/21 20:15:00	24.250	18833.55	92.50
2941	05/03/21 20:30:00	24.500	18828.59	92.50
2971	05/03/21 20:45:00	24.750	18823.15	92.51
3001	05/03/21 21:00:00	25.000	18818.34	92.51
3031	05/03/21 21:15:00	25.250	18813.37	92.52

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
3061	05/03/21 21:30:00	25.500	18810.00	92.53
3091	05/03/21 21:45:00	25.750	18806.62	92.53
3121	05/03/21 22:00:00	26.000	18803.50	92.53
3151	05/03/21 22:15:00	26.250	18800.52	92.54
3181	05/03/21 22:30:00	26.500	18797.42	92.54
3211	05/03/21 22:45:00	26.750	18793.62	92.54
3241	05/03/21 23:00:00	27.000	18790.59	92.55
3271	05/03/21 23:15:00	27.250	18787.50	92.55
3301	05/03/21 23:30:00	27.500	18784.18	92.56
3331	05/03/21 23:45:00	27.750	18781.98	92.56
3361	05/03/22 00:00:00	28.000	18778.98	92.55
3391	05/03/22 00:15:00	28.250	18775.50	92.56
3421	05/03/22 00:30:00	28.500	18773.42	92.56
3451	05/03/22 00:45:00	28.750	18771.20	92.57
3481	05/03/22 01:00:00	29.000	18768.70	92.57
3511	05/03/22 01:15:00	29.250	18765.70	92.57
3541	05/03/22 01:30:00	29.500	18762.81	92.57
3571	05/03/22 01:45:00	29.750	18759.81	92.57
3601	05/03/22 02:00:00	30.000	18756.22	92.57
3631	05/03/22 02:15:00	30.250	18752.68	92.58
3661	05/03/22 02:30:00	30.500	18750.35	92.59
3691	05/03/22 02:45:00	30.750	18747.53	92.59
3721	05/03/22 03:00:00	31.000	18744.76	92.59
3751	05/03/22 03:15:00	31.250	18742.62	92.59
3781	05/03/22 03:30:00	31.500	18741.07	92.60
3811	05/03/22 03:45:00	31.750	18739.71	92.60
3841	05/03/22 04:00:00	32.000	18738.33	92.60
3871	05/03/22 04:15:00	32.250	18736.81	92.60
3901	05/03/22 04:30:00	32.500	18735.66	92.60
3931	05/03/22 04:45:00	32.750	18733.81	92.61
3961	05/03/22 05:00:00	33.000	18732.36	92.61
3991	05/03/22 05:15:00	33.250	18731.46	92.61
4021	05/03/22 05:30:00	33.500	18730.80	92.62
4051	05/03/22 05:45:00	33.750	18730.21	92.62
4081	05/03/22 06:00:00	34.000	18729.48	92.62
4111	05/03/22 06:15:00	34.250	18728.94	92.62
4141	05/03/22 06:30:00	34.500	18729.28	92.63
4171	05/03/22 06:45:00	34.750	18728.79	92.62
4201	05/03/22 07:00:00	35.000	18729.38	92.63
4231	05/03/22 07:15:00	35.250	18728.65	92.63
4261	05/03/22 07:30:00	35.500	18727.55	92.64
4291	05/03/22 07:45:00	35.750	18726.42	92.64
4321	05/03/22 08:00:00	36.000	18725.21	92.64
4351	05/03/22 08:15:00	36.250	18724.04	92.65
4381	05/03/22 08:30:00	36.500	18723.23	92.64
4411	05/03/22 08:45:00	36.750	18721.65	92.65
4441	05/03/22 09:00:00	37.000	18719.99	92.65
4471	05/03/22 09:15:00	37.250	18719.03	92.65
4501	05/03/22 09:30:00	37.500	18717.40	92.66
4531	05/03/22 09:45:00	37.750	18716.04	92.66
4561	05/03/22 10:00:00	38.000	18714.07	92.66
4591	05/03/22 10:15:00	38.250	18711.97	92.66
4621	05/03/22 10:30:00	38.500	18709.78	92.67
4651	05/03/22 10:45:00	38.750	18707.01	92.67
4681	05/03/22 11:00:00	39.000	18703.89	92.67
4711	05/03/22 11:15:00	39.250	18700.85	92.67
4741	05/03/22 11:30:00	39.500	18697.09	92.68
4771	05/03/22 11:45:00	39.750	18693.54	92.68
4801	05/03/22 12:00:00	40.000	18692.35	92.68
4831	05/03/22 12:15:00	40.250	19923.43	92.81
4861	05/03/22 12:30:00	40.500	20499.28	92.65
4891	05/03/22 12:45:00	40.750	20735.05	92.38
4921	05/03/22 13:00:00	41.000	20935.24	92.18
4951	05/03/22 13:15:00	41.250	21058.57	91.93
4981	05/03/22 13:30:00	41.500	21178.39	91.78
5011	05/03/22 13:45:00	41.750	21282.88	91.67
5041	05/03/22 14:00:00	42.000	21373.71	91.57
5071	05/03/22 14:15:00	42.250	21439.86	91.49
5101	05/03/22 14:30:00	42.500	21492.96	91.43
5131	05/03/22 14:45:00	42.750	21541.78	91.37
5161	05/03/22 15:00:00	43.000	21583.43	91.31
5191	05/03/22 15:15:00	43.250	21623.00	91.26
5221	05/03/22 15:30:00	43.500	21658.81	91.20
5251	05/03/22 15:45:00	43.750	21692.58	91.15
5281	05/03/22 16:00:00	44.000	21723.92	91.09
5311	05/03/22 16:15:00	44.250	21755.76	91.04
5341	05/03/22 16:30:00	44.500	21786.67	91.00
5371	05/03/22 16:45:00	44.750	21818.16	90.96
5401	05/03/22 17:00:00	45.000	21848.72	90.95
5431	05/03/22 17:15:00	45.250	21879.45	90.93
5461	05/03/22 17:30:00	45.500	21911.51	90.92
5491	05/03/22 17:45:00	45.750	21942.37	90.89
5521	05/03/22 18:00:00	46.000	21975.24	90.87
5551	05/03/22 18:15:00	46.250	22008.91	90.85
5581	05/03/22 18:30:00	46.500	22040.30	90.84
5611	05/03/22 18:45:00	46.750	22071.36	90.82
5641	05/03/22 19:00:00	47.000	22100.65	90.81
5671	05/03/22 19:15:00	47.250	22124.36	90.79
5701	05/03/22 19:30:00	47.500	22145.85	90.76
5731	05/03/22 19:45:00	47.750	22165.78	90.75
5761	05/03/22 20:00:00	48.000	22185.63	90.74
5791	05/03/22 20:15:00	48.250	22202.40	90.74
5821	05/03/22 20:30:00	48.500	22223.56	90.73
5851	05/03/22 20:45:00	48.750	22249.79	90.75
5881	05/03/22 21:00:00	49.000	22270.97	90.75
5911	05/03/22 21:15:00	49.250	22284.36	90.75
5941	05/03/22 21:30:00	49.500	22290.39	90.75
5971	05/03/22 21:45:00	49.750	22295.31	90.75
6001	05/03/22 22:00:00	50.000	22322.69	90.76
6031	05/03/22 22:15:00	50.250	22355.58	90.77
6061	05/03/22 22:30:00	50.500	22369.56	90.77
6091	05/03/22 22:45:00	50.750	22371.02	90.76

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C		Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/03/22 23:00:00	51.000	22375.42	90.75	7651	05/03/23 11:45:00	63.750	22660.51	90.59
6151	05/03/22 23:15:00	51.250	22383.40	90.75	7681	05/03/23 12:00:00	64.000	22662.90	90.59
6181	05/03/22 23:30:00	51.500	22388.85	90.74	7711	05/03/23 12:15:00	64.250	22664.80	90.58
6211	05/03/22 23:45:00	51.750	22394.13	90.74	7741	05/03/23 12:30:00	64.500	22666.92	90.58
6241	05/03/23 00:00:00	52.000	22398.30	90.73	7771	05/03/23 12:45:00	64.750	22668.89	90.58
6271	05/03/23 00:15:00	52.250	22401.92	90.72	7801	05/03/23 13:00:00	65.000	22671.09	00.58
6301	05/03/23 00:30:00	52.500	22408.77	90.72	7831	05/03/23 13:15:00	65.250	22672.92	90.58
6331	05/03/23 00:45:00	52.750	22415.61	90.72	7861	05/03/23 13:30:00	65.500	22674.59	90.57
6361	05/03/23 01:00:00	53.000	22421.04	90.71	7891	05/03/23 13:45:00	65.750	22676.49	90.57
6391	05/03/23 01:15:00	53.250	22426.49	90.71	7921	05/03/23 14:00:00	66.000	22678.56	90.58
6421	05/03/23 01:30:00	53.500	22431.40	90.71	7951	05/03/23 14:15:00	66.250	22680.59	90.56
6451	05/03/23 01:45:00	53.750	22436.59	90.69	7981	05/03/23 14:30:00	66.500	22682.16	90.57
6481	05/03/23 02:00:00	54.000	22445.10	90.70	8011	05/03/23 14:45:00	66.750	22684.23	90.57
6511	05/03/23 02:15:00	54.250	22466.51	90.70	8041	05/03/23 15:00:00	67.000	22685.88	90.57
6541	05/03/23 02:30:00	54.500	22488.11	90.70	8071	05/03/23 15:15:00	67.250	22687.61	90.57
6571	05/03/23 02:45:00	54.750	22510.00	90.70	8101	05/03/23 15:30:00	67.500	22689.55	90.57
6601	05/03/23 03:00:00	55.000	22533.00	90.70	8131	05/03/23 15:45:00	67.750	22691.15	90.57
6631	05/03/23 03:15:00	55.250	22564.92	90.70	8161	05/03/23 16:00:00	68.000	22692.94	90.57
6661	05/03/23 03:30:00	55.500	22568.70	90.70	8191	05/03/23 16:15:00	68.250	22694.69	90.57
6691	05/03/23 03:45:00	55.750	22572.35	90.69	8221	05/03/23 16:30:00	68.500	22696.21	90.56
6721	05/03/23 04:00:00	56.000	22576.06	90.68	8251	05/03/23 16:45:00	68.750	22698.07	90.56
6751	05/03/23 04:15:00	56.250	22579.41	90.67	8281	05/03/23 17:00:00	69.000	22699.47	90.56
6781	05/03/23 04:30:00	56.500	22582.86	90.67	8311	05/03/23 17:15:00	69.250	22701.53	90.56
6811	05/03/23 04:45:00	56.750	22586.18	90.67	8341	05/03/23 17:30:00	69.500	22702.89	90.56
6841	05/03/23 05:00:00	57.000	22589.17	90.66	8371	05/03/23 17:45:00	69.750	22704.52	90.56
6871	05/03/23 05:15:00	57.250	22592.34	90.65	8401	05/03/23 18:00:00	70.000	22706.08	90.56
6901	05/03/23 05:30:00	57.500	22595.47	90.65	8431	05/03/23 18:15:00	70.250	22707.66	90.56
6931	05/03/23 05:45:00	57.750	22599.00	90.65	8461	05/03/23 18:30:00	70.500	22709.17	90.56
6961	05/03/23 06:00:00	58.000	22602.20	90.65	8491	05/03/23 18:45:00	70.750	22710.60	90.55
6991	05/03/23 06:15:00	58.250	22604.89	90.64	8521	05/03/23 19:00:00	71.000	22712.00	90.55
7021	05/03/23 06:30:00	58.500	22607.74	90.63	8551	05/03/23 19:15:00	71.250	22713.65	90.55
7051	05/03/23 06:45:00	58.750	22610.53	90.63	8581	05/03/23 19:30:00	71.500	22715.32	90.56
7081	05/03/23 07:00:00	59.000	22613.77	90.63	8611	05/03/23 19:45:00	71.750	22716.47	90.55
7111	05/03/23 07:15:00	59.250	22616.44	90.63	8641	05/03/23 20:00:00	72.000	22717.88	90.55
7141	05/03/23 07:30:00	59.500	22618.96	90.62	8671	05/03/23 20:15:00	72.250	22719.25	90.55
7171	05/03/23 07:45:00	59.750	22621.71	90.62	8701	05/03/23 20:30:00	72.500	22720.72	90.55
7201	05/03/23 08:00:00	60.000	22624.48	90.62	8731	05/03/23 20:45:00	72.750	22722.19	90.55
7231	05/03/23 08:15:00	60.250	22627.71	90.62	8761	05/03/23 21:00:00	73.000	22723.42	90.55
7261	05/03/23 08:30:00	60.500	22630.22	90.61	8791	05/03/23 21:15:00	73.250	22724.89	90.55
7291	05/03/23 08:45:00	60.750	22632.91	90.61	8821	05/03/23 21:30:00	73.500	22726.12	90.55
7321	05/03/23 09:00:00	61.000	22635.42	90.61	8851	05/03/23 21:45:00	73.750	22727.46	90.55
7351	05/03/23 09:15:00	61.250	22637.76	90.61	8881	05/03/23 22:00:00	74.000	22728.85	90.55
7381	05/03/23 09:30:00	61.500	22640.34	90.61	8911	05/03/23 22:15:00	74.250	22729.99	90.54
7411	05/03/23 09:45:00	61.750	22642.57	90.60	8941	05/03/23 22:30:00	74.500	22731.39	90.55
7441	05/03/23 10:00:00	62.000	22645.11	90.61	8971	05/03/23 22:45:00	74.750	22732.50	90.54
7471	05/03/23 10:15:00	62.250	22647.35	90.60	9001	05/03/23 23:00:00	75.000	22733.73	90.54
7501	05/03/23 10:30:00	62.500	22649.49	90.59	9031	05/03/23 23:15:00	75.250	22734.90	90.54
7531	05/03/23 10:45:00	62.750	22651.72	90.59	9061	05/03/23 23:30:00	75.500	22736.06	90.54
7561	05/03/23 11:00:00	63.000	22653.95	90.59	9091	05/03/23 23:45:00	75.750	22737.43	90.54
7591	05/03/23 11:15:00	63.250	22656.34	90.59	9121	05/03/24 00:00:00	76.000	22738.80	90.54
7621	05/03/23 11:30:00	63.500	22658.45	90.59	9151	05/03/24 00:15:00	76.250	22740.03	90.54

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
9181	05/03/24 00:30:00	76.500	22741.04	90.54
9211	05/03/24 00:45:00	76.750	22742.24	90.54
9241	05/03/24 01:00:00	77.000	22743.36	90.54
9271	05/03/24 01:15:00	77.250	22744.64	90.54
9301	05/03/24 01:30:00	77.500	22745.62	90.54
9331	05/03/24 01:45:00	77.750	22746.78	90.54
9361	05/03/24 02:00:00	78.000	22748.03	90.54
9391	05/03/24 02:15:00	78.250	22748.91	90.54
9421	05/03/24 02:30:00	78.500	22749.89	90.54
9451	05/03/24 02:45:00	78.750	22750.94	90.54
9481	05/03/24 03:00:00	79.000	22752.14	90.54
9511	05/03/24 03:15:00	79.250	22753.23	90.54
9541	05/03/24 03:30:00	79.500	22754.41	90.54
9571	05/03/24 03:45:00	79.750	22755.30	90.54
9601	05/03/24 04:00:00	80.000	22756.23	90.54
9631	05/03/24 04:15:00	80.250	22757.31	90.54
9661	05/03/24 04:30:00	80.500	22758.39	90.54
9691	05/03/24 04:45:00	80.750	22759.39	90.54
9721	05/03/24 05:00:00	81.000	22760.31	90.54
9751	05/03/24 05:15:00	81.250	22761.48	90.54
9781	05/03/24 05:30:00	81.500	22762.24	90.54
9811	05/03/24 05:45:00	81.750	22763.06	90.54
9841	05/03/24 06:00:00	82.000	22764.01	90.54
9871	05/03/24 06:15:00	82.250	22764.95	90.54
9901	05/03/24 06:30:00	82.500	22765.87	90.54
9931	05/03/24 06:45:00	82.750	22766.78	90.54
9961	05/03/24 07:00:00	83.000	22767.94	90.54
9991	05/03/24 07:15:00	83.250	22768.81	90.54
10021	05/03/24 07:30:00	83.500	22769.92	90.54
10051	05/03/24 07:45:00	83.750	22770.56	90.54
10081	05/03/24 08:00:00	84.000	22771.75	90.54
10111	05/03/24 08:15:00	84.250	22772.49	90.54
10141	05/03/24 08:30:00	84.500	22773.47	90.54
10171	05/03/24 08:45:00	84.750	22774.33	90.54
10201	05/03/24 09:00:00	85.000	22775.09	90.54
10231	05/03/24 09:15:00	85.250	22775.90	90.54
10261	05/03/24 09:30:00	85.500	22777.09	90.54
10291	05/03/24 09:45:00	85.750	22777.83	90.54
10321	05/03/24 10:00:00	86.000	22778.48	90.54
10351	05/03/24 10:15:00	86.250	22779.59	90.54
10381	05/03/24 10:30:00	86.500	22780.58	90.55
10411	05/03/24 10:45:00	86.750	22781.27	90.54
10441	05/03/24 11:00:00	87.000	22782.10	90.54
10471	05/03/24 11:15:00	87.250	22783.27	90.55
10501	05/03/24 11:30:00	87.500	22783.66	90.54
10531	05/03/24 11:45:00	87.750	22784.53	90.54
10561	05/03/24 12:00:00	88.000	22785.17	90.54
10591	05/03/24 12:15:00	88.250	22786.13	90.54
10621	05/03/24 12:30:00	88.500	22786.87	90.54
10651	05/03/24 12:45:00	88.750	22787.52	90.54
10681	05/03/24 13:00:00	89.000	22788.41	90.54
10711	05/03/24 13:15:00	89.250	22788.97	90.55
10741	05/03/24 13:30:00	89.500	22789.78	90.54
10771	05/03/24 13:45:00	89.750	22790.60	90.55
10801	05/03/24 14:00:00	90.000	22791.19	90.54
10831	05/03/24 14:15:00	90.250	22792.32	90.55
10861	05/03/24 14:30:00	90.500	22792.87	90.55
10891	05/03/24 14:45:00	90.750	22793.54	90.54
10921	05/03/24 15:00:00	91.000	22794.29	90.55
10951	05/03/24 15:15:00	91.250	22795.02	90.55
10981	05/03/24 15:30:00	91.500	22795.57	90.54
11011	05/03/24 15:45:00	91.750	22796.35	90.55
11041	05/03/24 16:00:00	92.000	22797.25	90.55
11071	05/03/24 16:15:00	92.250	22798.23	90.55
11101	05/03/24 16:30:00	92.500	22798.56	90.55
11131	05/03/24 16:45:00	92.750	22799.38	90.55
11161	05/03/24 17:00:00	93.000	22799.83	90.55
11191	05/03/24 17:15:00	93.250	22800.76	90.55
11221	05/03/24 17:30:00	93.500	22801.45	90.55
11251	05/03/24 17:45:00	93.750	22802.08	90.55
11281	05/03/24 18:00:00	94.000	22802.72	90.55
11311	05/03/24 18:15:00	94.250	22803.44	90.55
11341	05/03/24 18:30:00	94.500	22803.98	90.55
11371	05/03/24 18:45:00	94.750	22804.66	90.55
11401	05/03/24 19:00:00	95.000	22805.61	90.55
11431	05/03/24 19:15:00	95.250	22805.96	90.55
11461	05/03/24 19:30:00	95.500	22806.63	90.55
11491	05/03/24 19:45:00	95.750	22807.54	90.56
11521	05/03/24 20:00:00	96.000	22807.86	90.55
11551	05/03/24 20:15:00	96.250	22808.77	90.56
11581	05/03/24 20:30:00	96.500	22809.10	90.55
11611	05/03/24 20:45:00	96.750	22810.04	90.56
11641	05/03/24 21:00:00	97.000	22810.41	90.56
11671	05/03/24 21:15:00	97.250	22811.11	90.56
11701	05/03/24 21:30:00	97.500	22811.76	90.56
11731	05/03/24 21:45:00	97.750	22812.38	90.56
11761	05/03/24 22:00:00	98.000	22812.85	90.56
11791	05/03/24 22:15:00	98.250	22813.40	90.56
11821	05/03/24 22:30:00	98.500	22814.30	90.56
11851	05/03/24 22:45:00	98.750	22814.91	90.56
11881	05/03/24 23:00:00	99.000	22815.52	90.56
11911	05/03/24 23:15:00	99.250	22816.07	90.56
11941	05/03/24 23:30:00	99.500	22816.14	90.56
11971	05/03/24 23:45:00	99.750	22816.84	90.56
12001	05/03/25 00:00:00	100.000	22817.72	90.56
12031	05/03/25 00:15:00	100.250	22818.20	90.56
12061	05/03/25 00:30:00	100.500	22818.68	90.57
12091	05/03/25 00:45:00	100.750	22819.44	90.56
12121	05/03/25 01:00:00	101.000	22819.84	90.56
12151	05/03/25 01:15:00	101.250	22820.44	90.56
12181	05/03/25 01:30:00	101.500	22821.06	90.57
12211	05/03/25 01:45:00	101.750	22821.51	90.56

Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
12241	05/03/25 02:00:00	102.000	22822.10	90.57
12271	05/03/25 02:15:00	102.250	22822.77	90.57
12301	05/03/25 02:30:00	102.500	22823.18	90.57
12331	05/03/25 02:45:00	102.750	22824.02	90.57
12361	05/03/25 03:00:00	103.000	22824.40	90.57
12391	05/03/25 03:15:00	103.250	22824.60	90.57
12421	05/03/25 03:30:00	103.500	22825.38	90.57
12451	05/03/25 03:45:00	103.750	22826.02	90.57
12481	05/03/25 04:00:00	104.000	22826.43	90.57
12511	05/03/25 04:15:00	104.250	22827.00	90.57
12541	05/03/25 04:30:00	104.500	22827.69	90.57
12571	05/03/25 04:45:00	104.750	22828.03	90.57
12601	05/03/25 05:00:00	105.000	22828.38	90.57
12631	05/03/25 05:15:00	105.250	22828.99	90.57
12661	05/03/25 05:30:00	105.500	22829.74	90.58
12691	05/03/25 05:45:00	105.750	22830.16	90.58
12721	05/03/25 06:00:00	106.000	22830.55	90.57
12751	05/03/25 06:15:00	106.250	22831.22	90.58
12781	05/03/25 06:30:00	106.500	22831.50	90.57
12811	05/03/25 06:45:00	106.750	22832.01	90.57
12841	05/03/25 07:00:00	107.000	22832.57	90.58
12871	05/03/25 07:15:00	107.250	22833.14	90.58
12901	05/03/25 07:30:00	107.500	22833.26	90.57
12931	05/03/25 07:45:00	107.750	22834.16	90.58
12961	05/03/25 08:00:00	108.000	22834.42	90.58
12991	05/03/25 08:15:00	108.250	22835.08	90.58
13021	05/03/25 08:30:00	108.500	22835.26	90.58
13051	05/03/25 08:45:00	108.750	22836.10	90.58
13081	05/03/25 09:00:00	109.000	22836.31	90.58
13111	05/03/25 09:15:00	109.250	22836.90	90.58
13141	05/03/25 09:30:00	109.500	22837.33	90.58
13171	05/03/25 09:45:00	109.750	22837.64	90.58
13201	05/03/25 10:00:00	110.000	22838.27	90.58
13231	05/03/25 10:15:00	110.250	22837.99	90.58
13261	05/03/25 10:30:00	110.500	22837.01	90.58
13291	05/03/25 10:45:00	110.750	22834.58	90.58
13321	05/03/25 11:00:00	111.000	22832.55	90.58
13351	05/03/25 11:15:00	111.250	22830.36	90.58
13381	05/03/25 11:30:00	111.500	22827.86	90.59
13411	05/03/25 11:45:00	111.750	22825.58	90.58
13441	05/03/25 12:00:00	112.000	22822.95	90.58
13471	05/03/25 12:15:00	112.250	22821.19	90.58
13501	05/03/25 12:30:00	112.500	22819.04	90.58
13531	05/03/25 12:45:00	112.750	22816.88	90.58
13561	05/03/25 13:00:00	113.000	22815.00	90.58
13591	05/03/25 13:15:00	113.250	22813.24	90.58
13621	05/03/25 13:30:00	113.500	22811.32	90.58
13651	05/03/25 13:45:00	113.750	22809.57	90.58
13681	05/03/25 14:00:00	114.000	22808.05	90.58
13711	05/03/25 14:15:00	114.250	22806.87	90.58
13741	05/03/25 14:30:00	114.500	22806.51	90.59
13771	05/03/25 14:45:00	114.750	22806.37	90.59
13801	05/03/25 15:00:00	115.000	22805.92	90.59
13831	05/03/25 15:15:00	115.250	22806.96	90.59
13861	05/03/25 15:30:00	115.500	22807.58	90.59
13891	05/03/25 15:45:00	115.750	22808.11	90.59
13921	05/03/25 16:00:00	116.000	22808.90	90.59
13951	05/03/25 16:15:00	116.250	22809.36	90.60
13981	05/03/25 16:30:00	116.500	22809.69	90.59
14011	05/03/25 16:45:00	116.750	22810.23	90.60
14041	05/03/25 17:00:00	117.000	22810.75	90.60
14071	05/03/25 17:15:00	117.250	22811.37	90.60
14101	05/03/25 17:30:00	117.500	22812.05	90.60
14131	05/03/25 17:45:00	117.750	22812.43	90.60
14161	05/03/25 18:00:00	118.000	22812.84	90.60
14191	05/03/25 18:15:00	118.250	22813.43	90.60

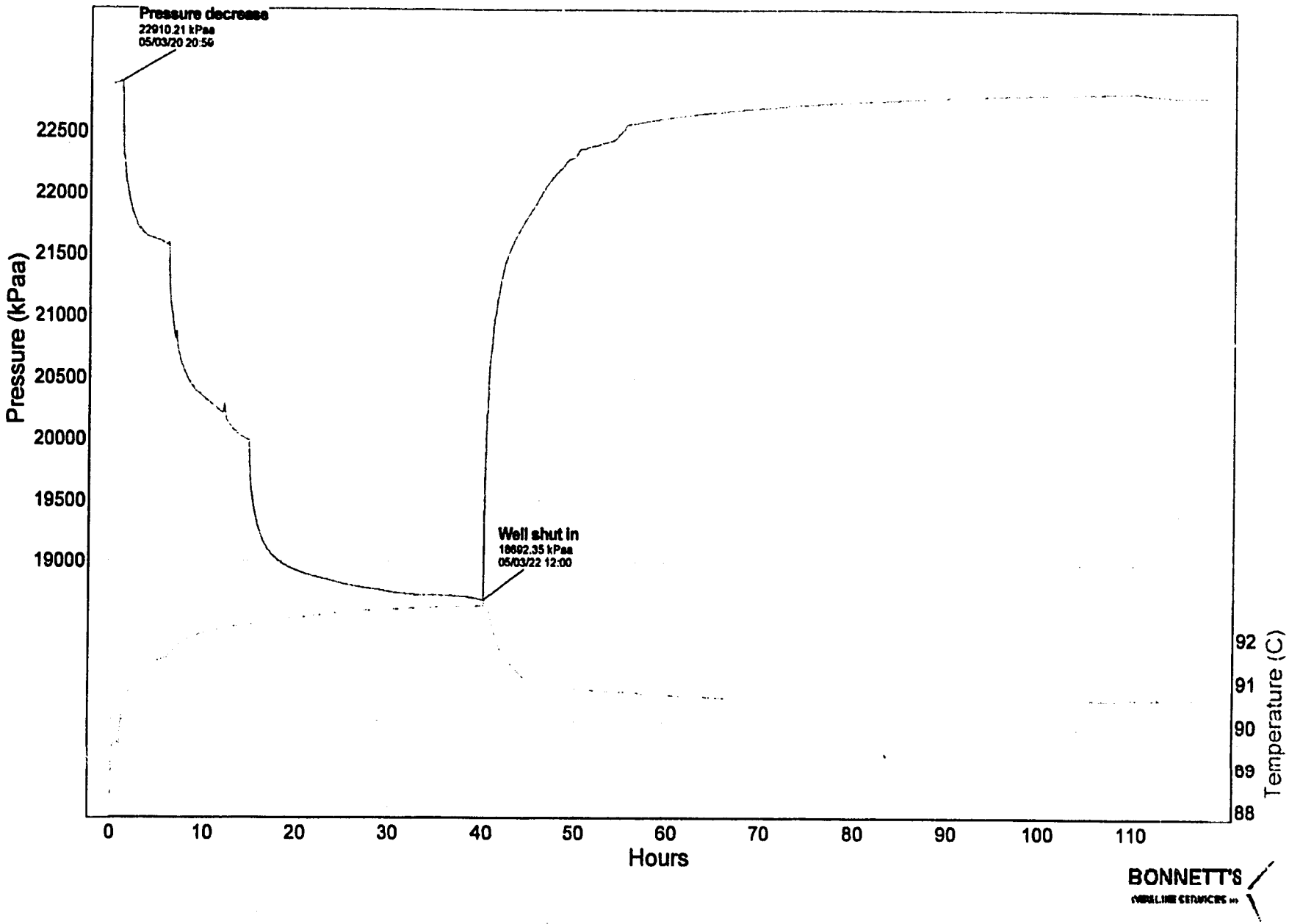
Ticket: 50036
Ran/Pulled: Mike Munro

Recorder: 90276 - Top

BONNETT'S

Northrock Resources Ltd.
B-44-64-30-125-45 Flow & Build-Up
Northrock et al Summit Creek

On Bottom:	Mar 20, 2005 20:00 (22892 kPaa)
Off Bottom:	Mar 25, 2005 18:27 (22811 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	90276
Depth:	2627.00 mKB MD
Ticket:	50036



BONNETT'S
WIRELINE SERVICES

NORTHROCK RESOURCES LTD.
3500, 700 - 2nd Street Sw
Calgary, Alberta T2P 2W2
Phone: (403) 213-7600
Fax: (403) 269-2217

TRANSMITTAL

DATE: April 1, 2005

COMPANY: NEB
TO: Terry Baker

COMPANY:
TO:

COMPANY:
TO:

FROM: Lori Berarducci
Drilling & Completions

WELL: Northrock et al Summit Creek B-44

300B446430125

PRE-SPUD PACKAGE	COPIES	COMPLETION/WORKOVER DATA	COPIES
Well Licence Application			
Well Licence			
Survey Plat			
Drilling Program			
Geological Program			
Directional Survey Plan			
DRILLING DATA	**COPIES**	**GOVERNMENT FORMS**	**COPIES**
Daily Drilling Reports			
Drilling Summary Reports			
DST Report #1, #2, #3, #4, #5, #6, #7			
Final Directional Surveys			
Final Core Analysis Report			
LOGS		**MISCELLANEOUS**	**COPIES**
		Flare & Plume Dispersion Analysis	1

Well file
1994

Northrock Resources Ltd.

3500, 700 - 2 St SW Calgary, AB T2P 2W2

Northrock et al Summit Creek

300/B-44-64-30-125-45

Fort Norman

2924.50 - 2933.50 mKB MD

Acid Stimulation

Feb 20, 2005 to Feb 23, 2005

Grande Prairie
Fox Creek
Hinton
Manning
Slave Lake
Fort St. John
Fort Nelson
Calgary

BONNETT'S
WIRELINE SERVICES LTD

Ph: (780) 513-3400 Fax: (780) 532-9266 www.bonnettswireline.com

Northrock Resources Ltd.

Northrock et al Summit Creek

300/B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Acid Stimulation
Production Interval:	2924.50 - 2933.50 mKB MD
Midpoint:	2929.00 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure		
Casing Pressure:		

Test Date:	Feb 20, 2005
On Bottom:	Feb 20, 2005 05:20
Off Bottom:	Feb 23, 2005 19:00
Shut In	
Gauge Start:	Feb 19, 2005 08:27:00
Gauge Stop:	Feb 24, 2005 08:34:30

	Bottom
Run Depth:	2945.24 mKB MD
Serial No:	8010
Max Range:	110479 kPa
Manufacturer	CalScan/9006
Last Calibration:	Jan 17, 2005

Sent To: Darren Devenny

Comments:

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C		Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
1	05/02/20 05:20:00	0.000	32171.52	98.83	1531	05/02/20 18:05:00	12.750	28527.24	98.52
31	05/02/20 05:35:00	0.250	29459.17	98.31	1561	05/02/20 18:20:00	13.000	28517.61	98.55
61	05/02/20 05:50:00	0.500	49409.46	98.10	1591	05/02/20 18:35:00	13.250	28543.66	98.58
91	05/02/20 06:05:00	0.750	54798.71	97.55	1621	05/02/20 18:50:00	13.500	28578.98	98.61
121	05/02/20 06:20:00	1.000	56547.33	97.14	1651	05/02/20 19:05:00	13.750	28615.12	98.62
151	05/02/20 06:35:00	1.250	56381.28	97.12	1681	05/02/20 19:20:00	14.000	28648.26	98.64
181	05/02/20 06:50:00	1.500	58579.89	97.29	1711	05/02/20 19:35:00	14.250	28690.51	98.65
211	05/02/20 07:05:00	1.750	59446.52	97.41	1741	05/02/20 19:50:00	14.500	28729.09	98.66
241	05/02/20 07:20:00	2.000	59770.37	97.55	1771	05/02/20 20:05:00	14.750	28762.28	98.66
271	05/02/20 07:35:00	2.250	59823.39	97.66	1801	05/02/20 20:20:00	15.000	28547.07	98.67
301	05/02/20 07:50:00	2.500	60074.64	97.76	1831	05/02/20 20:35:00	15.250	28552.73	98.70
331	05/02/20 08:05:00	2.750	60412.87	97.85	1861	05/02/20 20:50:00	15.500	27291.59	98.73
361	05/02/20 08:20:00	3.000	60352.30	97.93	1891	05/02/20 21:05:00	15.750	25031.09	98.74
391	05/02/20 08:35:00	3.250	60185.11	97.99	1921	05/02/20 21:20:00	16.000	24015.68	98.74
421	05/02/20 08:50:00	3.500	58410.51	98.01	1951	05/02/20 21:35:00	16.250	22785.53	98.75
451	05/02/20 09:05:00	3.750	57199.59	98.03	1981	05/02/20 21:50:00	16.500	21878.41	98.74
481	05/02/20 09:20:00	4.000	29496.54	97.42	2011	05/02/20 22:05:00	16.750	20949.03	98.76
511	05/02/20 09:35:00	4.250	30365.38	97.30	2041	05/02/20 22:20:00	17.000	19858.00	98.77
541	05/02/20 09:50:00	4.500	31192.82	97.49	2071	05/02/20 22:35:00	17.250	19454.95	98.80
571	05/02/20 10:05:00	4.750	31926.33	97.71	2101	05/02/20 22:50:00	17.500	20361.89	98.85
601	05/02/20 10:20:00	5.000	32515.03	97.89	2131	05/02/20 23:05:00	17.750	17159.06	98.83
631	05/02/20 10:35:00	5.250	59295.29	98.26	2161	05/02/20 23:20:00	18.000	15674.65	98.86
661	05/02/20 10:50:00	5.500	57271.72	98.82	2191	05/02/20 23:35:00	18.250	14063.80	98.87
691	05/02/20 11:05:00	5.750	58321.67	98.81	2221	05/02/20 23:50:00	18.500	15948.86	98.91
721	05/02/20 11:20:00	6.000	58746.38	98.74	2251	05/02/21 00:05:00	18.750	13639.95	98.89
751	05/02/20 11:35:00	6.250	58778.84	98.65	2281	05/02/21 00:20:00	19.000	15254.94	98.88
781	05/02/20 11:50:00	6.500	59148.18	98.60	2311	05/02/21 00:35:00	19.250	13730.00	98.88
811	05/02/20 12:05:00	6.750	59284.60	98.55	2341	05/02/21 00:50:00	19.500	14287.40	98.94
841	05/02/20 12:20:00	7.000	59430.83	98.52	2371	05/02/21 01:05:00	19.750	12720.34	98.93
871	05/02/20 12:35:00	7.250	59598.24	98.51	2401	05/02/21 01:20:00	20.000	11592.46	98.93
901	05/02/20 12:50:00	7.500	59571.03	98.50	2431	05/02/21 01:35:00	20.250	12499.80	98.93
931	05/02/20 13:05:00	7.750	60166.26	98.46	2461	05/02/21 01:50:00	20.500	10117.36	98.92
961	05/02/20 13:20:00	8.000	60459.75	98.54	2491	05/02/21 02:05:00	20.750	11181.68	98.90
991	05/02/20 13:35:00	8.250	60641.02	98.53	2521	05/02/21 02:20:00	21.000	8631.84	98.92
1021	05/02/20 13:50:00	8.500	60849.04	98.52	2551	05/02/21 02:35:00	21.250	9438.51	99.05
1051	05/02/20 14:05:00	8.750	60877.96	98.52	2581	05/02/21 02:50:00	21.500	9633.26	99.02
1081	05/02/20 14:20:00	9.000	61028.34	98.53	2611	05/02/21 03:05:00	21.750	7316.30	98.98
1111	05/02/20 14:35:00	9.250	61031.31	98.53	2641	05/02/21 03:20:00	22.000	8024.22	98.94
1141	05/02/20 14:50:00	9.500	59753.84	98.52	2671	05/02/21 03:35:00	22.250	6757.05	98.96
1171	05/02/20 15:05:00	9.750	58283.06	98.52	2701	05/02/21 03:50:00	22.500	7955.34	98.88
1201	05/02/20 15:20:00	10.000	57756.97	98.48	2731	05/02/21 04:05:00	22.750	8281.98	98.85
1231	05/02/20 15:35:00	10.250	31577.34	97.71	2761	05/02/21 04:20:00	23.000	8361.37	98.90
1261	05/02/20 15:50:00	10.500	29852.03	97.78	2791	05/02/21 04:35:00	23.250	8436.55	98.96
1291	05/02/20 16:05:00	10.750	30380.15	97.89	2821	05/02/21 04:50:00	23.500	8581.67	98.99
1321	05/02/20 16:20:00	11.000	28566.11	97.96	2851	05/02/21 05:05:00	23.750	7429.77	98.98
1351	05/02/20 16:35:00	11.250	28733.79	98.24	2881	05/02/21 05:20:00	24.000	7735.46	99.00
1381	05/02/20 16:50:00	11.500	28517.73	98.37	2911	05/02/21 05:35:00	24.250	7452.71	98.97
1411	05/02/20 17:05:00	11.750	28790.95	98.64	2941	05/02/21 05:50:00	24.500	7983.49	99.00
1441	05/02/20 17:20:00	12.000	28814.48	98.93	2971	05/02/21 06:05:00	24.750	8688.68	98.97
1471	05/02/20 17:35:00	12.250	28490.76	98.87	3001	05/02/21 06:20:00	25.000	8839.27	98.96
1501	05/02/20 17:50:00	12.500	28504.68	98.52	3031	05/02/21 06:35:00	25.250	8921.86	98.97

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
3061	05/02/21 06:50:00	25.500	9060.69	98.99
3091	05/02/21 07:05:00	25.750	7667.09	99.00
3121	05/02/21 07:20:00	26.000	8182.47	98.99
3151	05/02/21 07:35:00	26.250	8410.03	98.98
3181	05/02/21 07:50:00	26.500	8583.14	98.97
3211	05/02/21 08:05:00	26.750	7772.90	99.00
3241	05/02/21 08:20:00	27.000	8343.18	99.00
3271	05/02/21 08:35:00	27.250	8590.07	98.98
3301	05/02/21 08:50:00	27.500	7647.83	98.98
3331	05/02/21 09:05:00	27.750	7999.77	99.00
3361	05/02/21 09:20:00	28.000	8417.53	98.99
3391	05/02/21 09:35:00	28.250	8524.29	98.97
3421	05/02/21 09:50:00	28.500	7510.32	98.97
3451	05/02/21 10:05:00	28.750	7832.80	99.00
3481	05/02/21 10:20:00	29.000	8243.31	98.99
3511	05/02/21 10:35:00	29.250	8418.15	98.98
3541	05/02/21 10:50:00	29.500	7708.50	98.99
3571	05/02/21 11:05:00	29.750	8188.00	99.00
3601	05/02/21 11:20:00	30.000	8450.70	98.98
3631	05/02/21 11:35:00	30.250	8537.55	98.97
3661	05/02/21 11:50:00	30.500	8589.29	98.98
3691	05/02/21 12:05:00	30.750	8636.26	98.99
3721	05/02/21 12:20:00	31.000	8681.62	98.99
3751	05/02/21 12:35:00	31.250	8743.58	99.00
3781	05/02/21 12:50:00	31.500	7818.74	99.00
3811	05/02/21 13:05:00	31.750	8258.98	98.99
3841	05/02/21 13:20:00	32.000	8488.74	98.98
3871	05/02/21 13:35:00	32.250	8645.17	98.97
3901	05/02/21 13:50:00	32.500	7862.46	98.99
3931	05/02/21 14:05:00	32.750	8297.79	98.99
3961	05/02/21 14:20:00	33.000	8473.19	98.97
3991	05/02/21 14:35:00	33.250	13813.16	98.97
4021	05/02/21 14:50:00	33.500	29364.90	98.61
4051	05/02/21 15:05:00	33.750	29155.94	98.29
4081	05/02/21 15:20:00	34.000	28962.96	98.21
4111	05/02/21 15:35:00	34.250	28805.86	98.21
4141	05/02/21 15:50:00	34.500	28680.39	98.23
4171	05/02/21 16:05:00	34.750	28573.48	98.25
4201	05/02/21 16:20:00	35.000	28539.67	98.30
4231	05/02/21 16:35:00	35.250	28486.26	98.33
4261	05/02/21 16:50:00	35.500	27633.82	97.98
4291	05/02/21 17:05:00	35.750	26700.50	96.38
4321	05/02/21 17:20:00	36.000	26279.63	94.95
4351	05/02/21 17:35:00	36.250	26251.38	94.70
4381	05/02/21 17:50:00	36.500	26213.92	94.65
4411	05/02/21 18:05:00	36.750	26159.92	94.65
4441	05/02/21 18:20:00	37.000	26113.51	94.64
4471	05/02/21 18:35:00	37.250	26070.76	94.62
4501	05/02/21 18:50:00	37.500	26158.46	94.60
4531	05/02/21 19:05:00	37.750	23405.50	94.59
4561	05/02/21 19:20:00	38.000	23773.97	94.64
4591	05/02/21 19:35:00	38.250	23788.07	94.64
4621	05/02/21 19:50:00	38.500	21559.12	94.62
4651	05/02/21 20:05:00	38.750	19843.74	94.64
4681	05/02/21 20:20:00	39.000	18423.29	94.66
4711	05/02/21 20:35:00	39.250	15386.81	94.66
4741	05/02/21 20:50:00	39.500	16030.17	94.74
4771	05/02/21 21:05:00	39.750	14204.08	94.73
4801	05/02/21 21:20:00	40.000	14911.36	94.77
4831	05/02/21 21:35:00	40.250	12718.78	94.78
4861	05/02/21 21:50:00	40.500	10752.44	94.78
4891	05/02/21 22:05:00	40.750	11206.13	94.82
4921	05/02/21 22:20:00	41.000	9027.11	94.85
4951	05/02/21 22:35:00	41.250	9566.81	94.89
4981	05/02/21 22:50:00	41.500	7663.85	94.90
5011	05/02/21 23:05:00	41.750	7956.61	94.94
5041	05/02/21 23:20:00	42.000	7255.87	94.94
5071	05/02/21 23:35:00	42.250	8098.44	95.02
5101	05/02/21 23:50:00	42.500	7631.42	95.02
5131	05/02/22 00:05:00	42.750	8262.94	95.01
5161	05/02/22 00:20:00	43.000	7692.00	95.02
5191	05/02/22 00:35:00	43.250	7985.58	95.01
5221	05/02/22 00:50:00	43.500	8174.92	95.00
5251	05/02/22 01:05:00	43.750	8255.92	95.01
5281	05/02/22 01:20:00	44.000	7038.49	95.01
5311	05/02/22 01:35:00	44.250	7806.95	95.04
5341	05/02/22 01:50:00	44.500	8191.92	95.03
5371	05/02/22 02:05:00	44.750	8301.98	95.02
5401	05/02/22 02:20:00	45.000	7366.87	95.02
5431	05/02/22 02:35:00	45.250	7914.01	95.04
5461	05/02/22 02:50:00	45.500	8196.91	95.02
5491	05/02/22 03:05:00	45.750	8286.96	95.00
5521	05/02/22 03:20:00	46.000	8402.16	95.01
5551	05/02/22 03:35:00	46.250	7414.86	95.02
5581	05/02/22 03:50:00	46.500	7887.67	95.03
5611	05/02/22 04:05:00	46.750	8069.27	95.01
5641	05/02/22 04:20:00	47.000	8357.85	95.02
5671	05/02/22 04:35:00	47.250	8193.96	95.05
5701	05/02/22 04:50:00	47.500	8308.09	95.04
5731	05/02/22 05:05:00	47.750	8354.15	95.02
5761	05/02/22 05:20:00	48.000	7302.72	95.00
5791	05/02/22 05:35:00	48.250	7719.83	95.04
5821	05/02/22 05:50:00	48.500	8281.46	95.03
5851	05/02/22 06:05:00	48.750	8431.75	95.01
5881	05/02/22 06:20:00	49.000	27005.18	94.97
5911	05/02/22 06:35:00	49.250	26859.41	94.37
5941	05/02/22 06:50:00	49.500	26656.74	94.21
5971	05/02/22 07:05:00	49.750	26628.10	94.24
6001	05/02/22 07:20:00	50.000	26603.72	94.34
6031	05/02/22 07:35:00	50.250	26581.81	94.39
6061	05/02/22 07:50:00	50.500	26570.59	94.42
6091	05/02/22 08:05:00	50.750	26595.16	94.45

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/02/22 08:20:00	51.000	26649.26	94.39
6151	05/02/22 08:35:00	51.250	26585.62	94.29
6181	05/02/22 08:50:00	51.500	26507.05	94.27
6211	05/02/22 09:05:00	51.750	26484.57	94.28
6241	05/02/22 09:20:00	52.000	26469.60	94.29
6271	05/02/22 09:35:00	52.250	26458.65	94.31
6301	05/02/22 09:50:00	52.500	26449.04	94.35
6331	05/02/22 10:05:00	52.750	26721.25	94.67
6361	05/02/22 10:20:00	53.000	20912.51	95.40
6391	05/02/22 10:35:00	53.250	26632.25	95.40
6421	05/02/22 10:50:00	53.500	26626.61	95.11
6451	05/02/22 11:05:00	53.750	26639.59	95.07
6481	05/02/22 11:20:00	54.000	26554.23	95.08
6511	05/02/22 11:35:00	54.250	26621.03	95.05
6541	05/02/22 11:50:00	54.500	26621.01	95.05
6571	05/02/22 12:05:00	54.750	26620.62	95.06
6601	05/02/22 12:20:00	55.000	26619.46	95.09
6631	05/02/22 12:35:00	55.250	26624.44	95.13
6661	05/02/22 12:50:00	55.500	26883.91	95.55
6691	05/02/22 13:05:00	55.750	26868.49	95.62
6721	05/02/22 13:20:00	56.000	26979.48	95.77
6751	05/02/22 13:35:00	56.250	26950.42	95.86
6781	05/02/22 13:50:00	56.500	28905.68	95.43
6811	05/02/22 14:05:00	56.750	28181.97	95.03
6841	05/02/22 14:20:00	57.000	30798.90	94.20
6871	05/02/22 14:35:00	57.250	30837.43	92.94
6901	05/02/22 14:50:00	57.500	38941.43	92.19
6931	05/02/22 15:05:00	57.750	46631.53	91.01
6961	05/02/22 15:20:00	58.000	40413.81	91.90
6991	05/02/22 15:35:00	58.250	46001.22	92.61
7021	05/02/22 15:50:00	58.500	43898.46	92.60
7051	05/02/22 16:05:00	58.750	47119.34	93.18
7081	05/02/22 16:20:00	59.000	48382.18	93.21
7111	05/02/22 16:35:00	59.250	49500.30	93.31
7141	05/02/22 16:50:00	59.500	29086.98	93.82
7171	05/02/22 17:05:00	59.750	44068.85	96.64
7201	05/02/22 17:20:00	60.000	44303.93	97.47
7231	05/02/22 17:35:00	60.250	45483.16	97.30
7261	05/02/22 17:50:00	60.500	48650.47	97.05
7291	05/02/22 18:05:00	60.750	45722.05	96.35
7321	05/02/22 18:20:00	61.000	44124.88	96.41
7351	05/02/22 18:35:00	61.250	47913.09	95.88
7381	05/02/22 18:50:00	61.500	46811.18	96.00
7411	05/02/22 19:05:00	61.750	49709.59	95.42
7441	05/02/22 19:20:00	62.000	49131.95	95.00
7471	05/02/22 19:35:00	62.250	47234.43	95.53
7501	05/02/22 19:50:00	62.500	50570.07	95.37
7531	05/02/22 20:05:00	62.750	48593.66	95.14
7561	05/02/22 20:20:00	63.000	47095.27	95.62
7591	05/02/22 20:35:00	63.250	50274.85	95.63
7621	05/02/22 20:50:00	63.500	46061.01	95.12
7651	05/02/22 21:05:00	63.750	42977.29	94.64
7681	05/02/22 21:20:00	64.000	27569.07	95.86
7711	05/02/22 21:35:00	64.250	25517.60	96.35
7741	05/02/22 21:50:00	64.500	24832.85	96.52
7771	05/02/22 22:05:00	64.750	24346.21	95.31
7801	05/02/22 22:20:00	65.000	24209.89	83.67
7831	05/02/22 22:35:00	65.250	24196.45	84.21
7861	05/02/22 22:50:00	65.500	24434.15	90.27
7891	05/02/22 23:05:00	65.750	24199.66	90.42
7921	05/02/22 23:20:00	66.000	24192.68	89.48
7951	05/02/22 23:35:00	66.250	24195.55	89.96
7981	05/02/22 23:50:00	66.500	24199.23	90.50
8011	05/02/23 00:05:00	66.750	24200.72	91.10
8041	05/02/23 00:20:00	67.000	25185.34	89.93
8071	05/02/23 00:35:00	67.250	26963.14	79.50
8101	05/02/23 00:50:00	67.500	25185.65	71.57
8131	05/02/23 01:05:00	67.750	25308.68	70.18
8161	05/02/23 01:20:00	68.000	26655.51	61.79
8191	05/02/23 01:35:00	68.250	26852.14	54.87
8221	05/02/23 01:50:00	68.500	26516.87	52.58
8251	05/02/23 02:05:00	68.750	25118.55	55.53
8281	05/02/23 02:20:00	69.000	24587.95	58.85
8311	05/02/23 02:35:00	69.250	24542.75	77.40
8341	05/02/23 02:50:00	69.500	24150.50	75.95
8371	05/02/23 03:05:00	69.750	24105.47	72.14
8401	05/02/23 03:20:00	70.000	24091.32	74.00
8431	05/02/23 03:35:00	70.250	24086.49	75.79
8461	05/02/23 03:50:00	70.500	24084.57	77.36
8491	05/02/23 04:05:00	70.750	24093.83	78.71
8521	05/02/23 04:20:00	71.000	24096.13	80.29
8551	05/02/23 04:35:00	71.250	23689.74	80.67
8581	05/02/23 04:50:00	71.500	24020.55	81.59
8611	05/02/23 05:05:00	71.750	24059.63	82.15
8641	05/02/23 05:20:00	72.000	24083.21	82.82
8671	05/02/23 05:35:00	72.250	24038.86	83.41
8701	05/02/23 05:50:00	72.500	21839.40	83.93
8731	05/02/23 06:05:00	72.750	24007.66	84.07
8761	05/02/23 06:20:00	73.000	23714.71	84.46
8791	05/02/23 06:35:00	73.250	21841.26	84.59
8821	05/02/23 06:50:00	73.500	23471.54	85.61
8851	05/02/23 07:05:00	73.750	23580.09	86.01
8881	05/02/23 07:20:00	74.000	19882.91	85.90
8911	05/02/23 07:35:00	74.250	18370.97	86.51
8941	05/02/23 07:50:00	74.500	17793.31	87.05
8971	05/02/23 08:05:00	74.750	17622.02	87.52
9001	05/02/23 08:20:00	75.000	17520.02	87.92
9031	05/02/23 08:35:00	75.250	17466.87	88.26
9061	05/02/23 08:50:00	75.500	17586.26	88.72
9091	05/02/23 09:05:00	75.750	17672.72	89.16
9121	05/02/23 09:20:00	76.000	17601.30	89.39
9151	05/02/23 09:35:00	76.250	21944.91	90.67

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

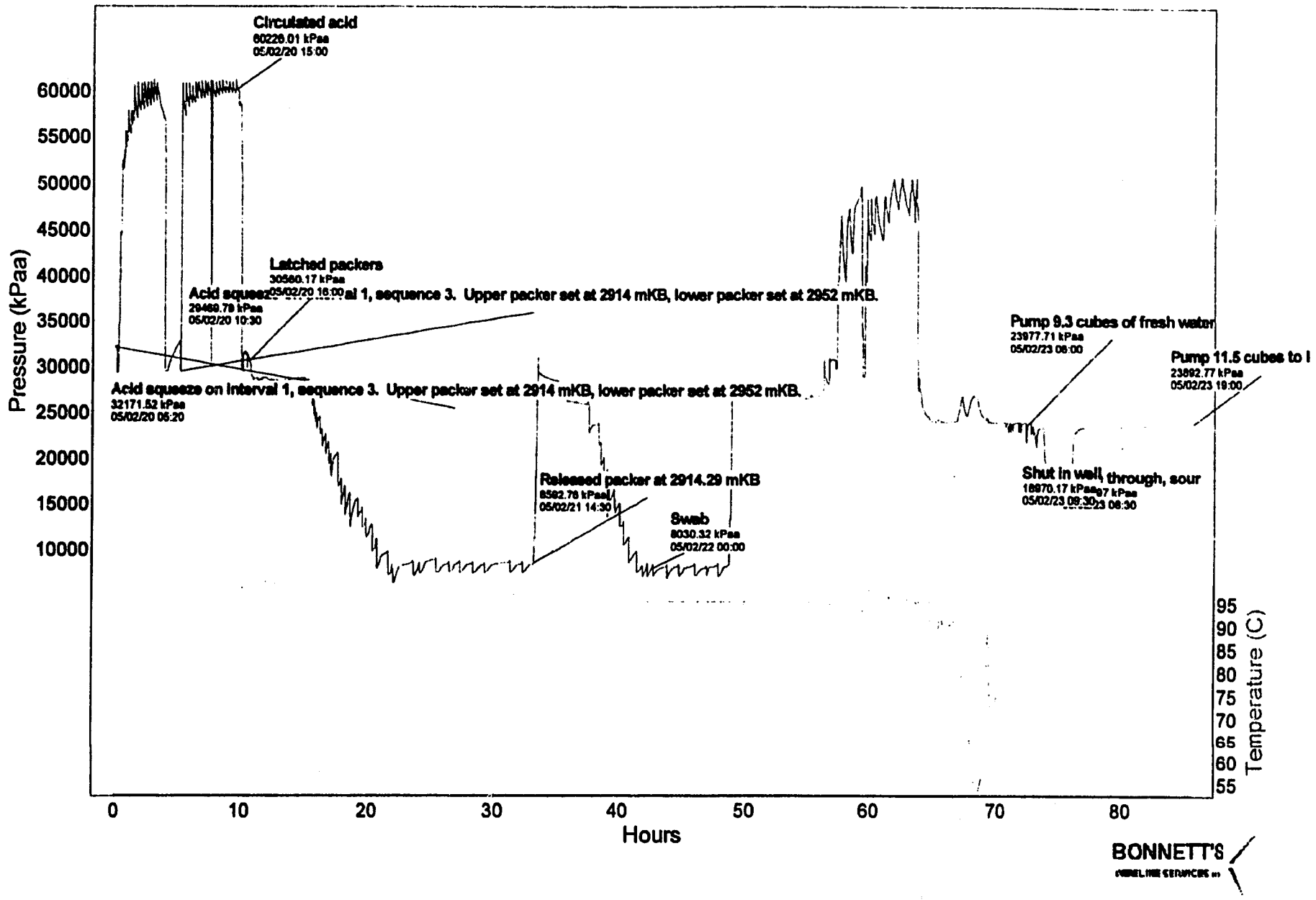
BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
9181	05/02/23 09:50:00	76.500	23189.78	91.96
9211	05/02/23 10:05:00	76.750	23458.01	91.69
9241	05/02/23 10:20:00	77.000	23580.18	91.48
9271	05/02/23 10:35:00	77.250	23656.47	91.37
9301	05/02/23 10:50:00	77.500	23694.81	91.31
9331	05/02/23 11:05:00	77.750	23720.87	91.29
9361	05/02/23 11:20:00	78.000	23743.54	91.24
9391	05/02/23 11:35:00	78.250	23758.74	91.25
9421	05/02/23 11:50:00	78.500	23766.20	91.26
9451	05/02/23 12:05:00	78.750	23761.71	91.28
9481	05/02/23 12:20:00	79.000	23749.41	91.29
9511	05/02/23 12:35:00	79.250	23723.33	91.32
9541	05/02/23 12:50:00	79.500	23722.73	91.42
9571	05/02/23 13:05:00	79.750	23729.01	91.46
9601	05/02/23 13:20:00	80.000	23739.61	91.51
9631	05/02/23 13:35:00	80.250	23751.02	91.57
9661	05/02/23 13:50:00	80.500	23761.75	91.63
9691	05/02/23 14:05:00	80.750	23770.95	91.68
9721	05/02/23 14:20:00	81.000	23779.24	91.74
9751	05/02/23 14:35:00	81.250	23788.75	91.79
9781	05/02/23 14:50:00	81.500	23796.65	91.84
9811	05/02/23 15:05:00	81.750	23804.94	91.89
9841	05/02/23 15:20:00	82.000	23813.61	91.94
9871	05/02/23 15:35:00	82.250	23820.54	91.98
9901	05/02/23 15:50:00	82.500	23826.11	92.03
9931	05/02/23 16:05:00	82.750	23832.47	92.07
9961	05/02/23 16:20:00	83.000	23839.09	92.12
9991	05/02/23 16:35:00	83.250	23845.70	92.16
10021	05/02/23 16:50:00	83.500	23852.81	92.21
10051	05/02/23 17:05:00	83.750	23859.13	92.25
10081	05/02/23 17:20:00	84.000	23865.58	92.29
10111	05/02/23 17:35:00	84.250	23870.68	92.32
10141	05/02/23 17:50:00	84.500	23876.26	92.36
10171	05/02/23 18:05:00	84.750	23881.19	92.40
10201	05/02/23 18:20:00	85.000	23886.46	92.44
10231	05/02/23 18:35:00	85.250	23888.58	92.48
10261	05/02/23 18:50:00	85.500	23891.15	92.51

Northrock Resources Ltd.
300/B-44-64-30-125-45 Acid Stimulation
Northrock et al Summit Creek

On Bottom:	Feb 20, 2005 05:20 (32172 kPaa)
Off Bottom:	Feb 23, 2005 19:00 (23893 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8010
Depth:	2939.04 mKB MD
Ticket:	50007



BONNETT'S
WIRELINE SERVICES

Northrock Resources Ltd.

Northrock et al Summit Creek

300/B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES Ltd.

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Acid Stimulation
Production Interval:	2924.50 - 2933.50 mKB MD
Midpoint:	2929.00 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure		
Casing Pressure:		

Test Date:	Feb 20, 2005
On Bottom:	Feb 20, 2005 05:20
Off Bottom:	Feb 23, 2005 19:00
Shut In	
Gauge Start:	Feb 19, 2005 08:27:00
Gauge Stop:	Feb 24, 2005 08:34:00

	Top
Run Depth:	2944.74 mKB MD
Serial No:	8009
Max Range:	110479 kPa
Manufacturer	CalScan/9006
Last Calibration:	Jan 17, 2005

Sent To: Darren Devenny

Comments:

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
30/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp		Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C		yy/mm/dd	hours	kPaa	°C
1	05/02/20 05:20:00	0.000	32210.72	98.79	1531	05/02/20 18:05:00	12.750	28524.68	98.46
31	05/02/20 05:35:00	0.250	29425.31	97.90	1561	05/02/20 18:20:00	13.000	28517.76	98.48
61	05/02/20 05:50:00	0.500	49389.58	97.21	1591	05/02/20 18:35:00	13.250	28540.65	98.50
91	05/02/20 06:05:00	0.750	54770.77	96.90	1621	05/02/20 18:50:00	13.500	28575.89	98.53
121	05/02/20 06:20:00	1.000	56526.88	96.77	1651	05/02/20 19:05:00	13.750	28611.88	98.54
151	05/02/20 06:35:00	1.250	56366.08	96.89	1681	05/02/20 19:20:00	14.000	28644.92	98.56
181	05/02/20 06:50:00	1.500	58561.44	97.11	1711	05/02/20 19:35:00	14.250	28687.02	98.57
211	05/02/20 07:05:00	1.750	59427.95	97.29	1741	05/02/20 19:50:00	14.500	28725.54	98.58
241	05/02/20 07:20:00	2.000	59752.19	97.44	1771	05/02/20 20:05:00	14.750	28758.49	98.58
271	05/02/20 07:35:00	2.250	59800.36	97.57	1801	05/02/20 20:20:00	15.000	28541.95	98.59
301	05/02/20 07:50:00	2.500	60058.39	97.68	1831	05/02/20 20:35:00	15.250	28545.85	98.61
331	05/02/20 08:05:00	2.750	60395.86	97.77	1861	05/02/20 20:50:00	15.500	27303.10	98.65
361	05/02/20 08:20:00	3.000	60338.14	97.86	1891	05/02/20 21:05:00	15.750	25039.91	98.69
391	05/02/20 08:35:00	3.250	60173.10	97.92	1921	05/02/20 21:20:00	16.000	24025.04	98.71
421	05/02/20 08:50:00	3.500	58403.45	97.94	1951	05/02/20 21:35:00	16.250	22788.59	98.72
451	05/02/20 09:05:00	3.750	57194.45	97.96	1981	05/02/20 21:50:00	16.500	21888.76	98.72
481	05/02/20 09:20:00	4.000	29494.46	97.35	2011	05/02/20 22:05:00	16.750	20952.49	98.73
511	05/02/20 09:35:00	4.250	30371.42	97.31	2041	05/02/20 22:20:00	17.000	19875.79	98.74
541	05/02/20 09:50:00	4.500	31194.20	97.47	2071	05/02/20 22:35:00	17.250	19464.38	98.78
571	05/02/20 10:05:00	4.750	31929.40	97.64	2101	05/02/20 22:50:00	17.500	20357.07	98.82
601	05/02/20 10:20:00	5.000	32516.93	97.79	2131	05/02/20 23:05:00	17.750	17159.20	98.80
631	05/02/20 10:35:00	5.250	59857.39	98.12	2161	05/02/20 23:20:00	18.000	15680.11	98.83
661	05/02/20 10:50:00	5.500	57260.77	98.72	2191	05/02/20 23:35:00	18.250	14078.53	98.85
691	05/02/20 11:05:00	5.750	58310.27	98.75	2221	05/02/20 23:50:00	18.500	15948.15	98.90
721	05/02/20 11:20:00	6.000	58735.63	98.67	2251	05/02/21 00:05:00	18.750	13654.86	98.86
751	05/02/20 11:35:00	6.250	58769.45	98.58	2281	05/02/21 00:20:00	19.000	15255.35	98.85
781	05/02/20 11:50:00	6.500	59138.98	98.52	2311	05/02/21 00:35:00	19.250	13725.30	98.84
811	05/02/20 12:05:00	6.750	59275.88	98.48	2341	05/02/21 00:50:00	19.500	14287.07	98.92
841	05/02/20 12:20:00	7.000	59422.56	98.46	2371	05/02/21 01:05:00	19.750	12718.01	98.91
871	05/02/20 12:35:00	7.250	59590.28	98.44	2401	05/02/21 01:20:00	20.000	11589.91	98.90
901	05/02/20 12:50:00	7.500	59563.67	98.43	2431	05/02/21 01:35:00	20.250	12497.77	98.91
931	05/02/20 13:05:00	7.750	60156.90	98.37	2461	05/02/21 01:50:00	20.500	10111.48	98.89
961	05/02/20 13:20:00	8.000	60451.11	98.45	2491	05/02/21 02:05:00	20.750	11180.15	98.88
991	05/02/20 13:35:00	8.250	60632.27	98.46	2521	05/02/21 02:20:00	21.000	8631.80	98.89
1021	05/02/20 13:50:00	8.500	60836.61	98.46	2551	05/02/21 02:35:00	21.250	9433.04	99.03
1051	05/02/20 14:05:00	8.750	60871.83	98.47	2581	05/02/21 02:50:00	21.500	9625.11	99.00
1081	05/02/20 14:20:00	9.000	61037.54	98.47	2611	05/02/21 03:05:00	21.750	7301.70	98.96
1111	05/02/20 14:35:00	9.250	61034.14	98.48	2641	05/02/21 03:20:00	22.000	8022.29	98.92
1141	05/02/20 14:50:00	9.500	60178.99	98.47	2671	05/02/21 03:35:00	22.250	6758.86	98.93
1171	05/02/20 15:05:00	9.750	58608.57	98.47	2701	05/02/21 03:50:00	22.500	7955.31	98.85
1201	05/02/20 15:20:00	10.000	56434.20	98.42	2731	05/02/21 04:05:00	22.750	8272.93	98.81
1231	05/02/20 15:35:00	10.250	31578.74	97.67	2761	05/02/21 04:20:00	23.000	8352.14	98.86
1261	05/02/20 15:50:00	10.500	29591.63	97.76	2791	05/02/21 04:35:00	23.250	8427.61	98.91
1291	05/02/20 16:05:00	10.750	30375.67	97.83	2821	05/02/21 04:50:00	23.500	8570.39	98.95
1321	05/02/20 16:20:00	11.000	28531.47	97.88	2851	05/02/21 05:05:00	23.750	7391.55	98.95
1351	05/02/20 16:35:00	11.250	28734.64	98.10	2881	05/02/21 05:20:00	24.000	7732.36	98.98
1381	05/02/20 16:50:00	11.500	28516.94	98.23	2911	05/02/21 05:35:00	24.250	7445.13	98.94
1411	05/02/20 17:05:00	11.750	28796.58	98.53	2941	05/02/21 05:50:00	24.500	7979.67	98.97
1441	05/02/20 17:20:00	12.000	28812.95	98.85	2971	05/02/21 06:05:00	24.750	8680.58	98.95
1471	05/02/20 17:35:00	12.250	28492.06	98.84	3001	05/02/21 06:20:00	25.000	8329.91	98.93
1501	05/02/20 17:50:00	12.500	28502.22	98.47	3031	05/02/21 06:35:00	25.250	8912.05	98.93

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
3061	05/02/21 06:50:00	25.500	9063.34	98.95
3091	05/02/21 07:05:00	25.750	7660.44	98.98
3121	05/02/21 07:20:00	26.000	8175.62	98.97
3151	05/02/21 07:35:00	26.250	8402.36	98.95
3181	05/02/21 07:50:00	26.500	8574.12	98.94
3211	05/02/21 08:05:00	26.750	7764.37	98.97
3241	05/02/21 08:20:00	27.000	8337.95	98.98
3271	05/02/21 08:35:00	27.250	8580.82	98.96
3301	05/02/21 08:50:00	27.500	7644.03	98.94
3331	05/02/21 09:05:00	27.750	7994.21	98.97
3361	05/02/21 09:20:00	28.000	8409.03	98.96
3391	05/02/21 09:35:00	28.250	8514.35	98.94
3421	05/02/21 09:50:00	28.500	7500.86	98.94
3451	05/02/21 10:05:00	28.750	7826.43	98.98
3481	05/02/21 10:20:00	29.000	8236.70	98.96
3511	05/02/21 10:35:00	29.250	8410.19	98.95
3541	05/02/21 10:50:00	29.500	7702.05	98.96
3571	05/02/21 11:05:00	29.750	8183.66	98.97
3601	05/02/21 11:20:00	30.000	8440.61	98.95
3631	05/02/21 11:35:00	30.250	8527.33	98.94
3661	05/02/21 11:50:00	30.500	8578.95	98.95
3691	05/02/21 12:05:00	30.750	8625.85	98.96
3721	05/02/21 12:20:00	31.000	8671.22	98.96
3751	05/02/21 12:35:00	31.250	8733.20	98.97
3781	05/02/21 12:50:00	31.500	7818.28	98.98
3811	05/02/21 13:05:00	31.750	8252.56	98.97
3841	05/02/21 13:20:00	32.000	8478.10	98.95
3871	05/02/21 13:35:00	32.250	8807.41	98.94
3901	05/02/21 13:50:00	32.500	7859.72	98.96
3931	05/02/21 14:05:00	32.750	8289.65	98.96
3961	05/02/21 14:20:00	33.000	8463.46	98.95
3991	05/02/21 14:35:00	33.250	14025.86	98.95
4021	05/02/21 14:50:00	33.500	29357.88	98.61
4051	05/02/21 15:05:00	33.750	29142.42	98.27
4081	05/02/21 15:20:00	34.000	28951.21	98.19
4111	05/02/21 15:35:00	34.250	28795.30	98.18
4141	05/02/21 15:50:00	34.500	28670.35	98.20
4171	05/02/21 16:05:00	34.750	28564.04	98.23
4201	05/02/21 16:20:00	35.000	28452.56	98.27
4231	05/02/21 16:35:00	35.250	28478.41	98.31
4261	05/02/21 16:50:00	35.500	27625.55	98.10
4291	05/02/21 17:05:00	35.750	26636.73	96.66
4321	05/02/21 17:20:00	36.000	26271.95	95.19
4351	05/02/21 17:35:00	36.250	26242.27	94.75
4381	05/02/21 17:50:00	36.500	26202.74	94.65
4411	05/02/21 18:05:00	36.750	26151.15	94.63
4441	05/02/21 18:20:00	37.000	26105.47	94.61
4471	05/02/21 18:35:00	37.250	26062.75	94.59
4501	05/02/21 18:50:00	37.500	26183.55	94.57
4531	05/02/21 19:05:00	37.750	23407.57	94.54
4561	05/02/21 19:20:00	38.000	23768.49	94.59
4591	05/02/21 19:35:00	38.250	23780.47	94.61
4621	05/02/21 19:50:00	38.500	21552.41	94.58
4651	05/02/21 20:05:00	38.750	19845.80	94.60
4681	05/02/21 20:20:00	39.000	18428.79	94.62
4711	05/02/21 20:35:00	39.250	15275.20	94.62
4741	05/02/21 20:50:00	39.500	16033.45	94.70
4771	05/02/21 21:05:00	39.750	14203.71	94.72
4801	05/02/21 21:20:00	40.000	14909.29	94.74
4831	05/02/21 21:35:00	40.250	12715.89	94.74
4861	05/02/21 21:50:00	40.500	10751.61	94.76
4891	05/02/21 22:05:00	40.750	11205.37	94.80
4921	05/02/21 22:20:00	41.000	9021.18	94.81
4951	05/02/21 22:35:00	41.250	9563.75	94.86
4981	05/02/21 22:50:00	41.500	7650.15	94.87
5011	05/02/21 23:05:00	41.750	7952.31	94.91
5041	05/02/21 23:20:00	42.000	7258.24	94.91
5071	05/02/21 23:35:00	42.250	8099.36	94.98
5101	05/02/21 23:50:00	42.500	7628.99	94.99
5131	05/02/22 00:05:00	42.750	8264.55	94.99
5161	05/02/22 00:20:00	43.000	7689.50	94.99
5191	05/02/22 00:35:00	43.250	7980.29	94.99
5221	05/02/22 00:50:00	43.500	8165.59	94.99
5251	05/02/22 01:05:00	43.750	8245.96	94.98
5281	05/02/22 01:20:00	44.000	7058.65	94.98
5311	05/02/22 01:35:00	44.250	7802.39	95.01
5341	05/02/22 01:50:00	44.500	8183.32	95.00
5371	05/02/22 02:05:00	44.750	8291.66	95.00
5401	05/02/22 02:20:00	45.000	7362.60	94.99
5431	05/02/22 02:35:00	45.250	7915.55	95.02
5461	05/02/22 02:50:00	45.500	8187.37	95.00
5491	05/02/22 03:05:00	45.750	8276.41	94.98
5521	05/02/22 03:20:00	46.000	8393.19	94.98
5551	05/02/22 03:35:00	46.250	7409.71	94.99
5581	05/02/22 03:50:00	46.500	7881.74	95.01
5611	05/02/22 04:05:00	46.750	8059.16	94.99
5641	05/02/22 04:20:00	47.000	8356.36	94.99
5671	05/02/22 04:35:00	47.250	8186.91	95.02
5701	05/02/22 04:50:00	47.500	8296.95	95.02
5731	05/02/22 05:05:00	47.750	8342.95	95.01
5761	05/02/22 05:20:00	48.000	7298.18	94.98
5791	05/02/22 05:35:00	48.250	7727.62	95.01
5821	05/02/22 05:50:00	48.500	8272.68	95.01
5851	05/02/22 06:05:00	48.750	8422.43	94.99
5881	05/02/22 06:20:00	49.000	27086.80	95.03
5911	05/02/22 06:35:00	49.250	26845.73	94.46
5941	05/02/22 06:50:00	49.500	26645.71	94.22
5971	05/02/22 07:05:00	49.750	26617.08	94.21
6001	05/02/22 07:20:00	50.000	26592.65	94.31
6031	05/02/22 07:35:00	50.250	26571.29	94.37
6061	05/02/22 07:50:00	50.500	26560.20	94.39
6091	05/02/22 08:05:00	50.750	26585.74	94.41

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/02/22 08:20:00	51.000	26628.66	94.33
6151	05/02/22 08:35:00	51.250	26576.01	94.24
6181	05/02/22 08:50:00	51.500	26498.56	94.22
6211	05/02/22 09:05:00	51.750	26474.50	94.24
6241	05/02/22 09:20:00	52.000	26460.63	94.25
6271	05/02/22 09:35:00	52.250	26449.85	94.28
6301	05/02/22 09:50:00	52.500	26440.38	94.31
6331	05/02/22 10:05:00	52.750	26720.21	94.56
6361	05/02/22 10:20:00	53.000	26926.02	95.25
6391	05/02/22 10:35:00	53.250	26616.82	95.38
6421	05/02/22 10:50:00	53.500	26618.61	95.10
6451	05/02/22 11:05:00	53.750	26631.60	95.05
6481	05/02/22 11:20:00	54.000	26600.76	95.06
6511	05/02/22 11:35:00	54.250	26613.20	95.03
6541	05/02/22 11:50:00	54.500	26613.19	95.02
6571	05/02/22 12:05:00	54.750	26612.90	95.03
6601	05/02/22 12:20:00	55.000	26686.83	95.05
6631	05/02/22 12:35:00	55.250	26747.57	95.09
6661	05/02/22 12:50:00	55.500	26875.83	95.47
6691	05/02/22 13:05:00	55.750	26860.62	95.57
6721	05/02/22 13:20:00	56.000	26971.34	95.71
6751	05/02/22 13:35:00	56.250	26942.65	95.82
6781	05/02/22 13:50:00	56.500	28884.61	95.38
6811	05/02/22 14:05:00	56.750	28147.80	94.76
6841	05/02/22 14:20:00	57.000	30766.74	94.03
6871	05/02/22 14:35:00	57.250	30826.01	92.50
6901	05/02/22 14:50:00	57.500	39185.70	91.79
6931	05/02/22 15:05:00	57.750	46248.13	90.96
6961	05/02/22 15:20:00	58.000	40341.69	91.71
6991	05/02/22 15:35:00	58.250	45952.39	92.47
7021	05/02/22 15:50:00	58.500	43814.32	92.50
7051	05/02/22 16:05:00	58.750	47180.47	93.05
7081	05/02/22 16:20:00	59.000	48404.39	93.15
7111	05/02/22 16:35:00	59.250	49563.26	93.24
7141	05/02/22 16:50:00	59.500	29075.78	93.53
7171	05/02/22 17:05:00	59.750	43927.43	95.95
7201	05/02/22 17:20:00	60.000	44251.64	97.35
7231	05/02/22 17:35:00	60.250	45430.43	97.36
7261	05/02/22 17:50:00	60.500	48526.20	97.13
7291	05/02/22 18:05:00	60.750	45678.81	96.45
7321	05/02/22 18:20:00	61.000	44093.02	96.46
7351	05/02/22 18:35:00	61.250	47843.17	96.04
7381	05/02/22 18:50:00	61.500	46946.30	96.12
7411	05/02/22 19:05:00	61.750	49739.76	95.53
7441	05/02/22 19:20:00	62.000	49077.39	95.05
7471	05/02/22 19:35:00	62.250	47409.05	95.56
7501	05/02/22 19:50:00	62.500	50584.01	95.43
7531	05/02/22 20:05:00	62.750	48553.90	95.19
7561	05/02/22 20:20:00	63.000	47065.64	95.67
7591	05/02/22 20:35:00	63.250	50333.82	95.71
7621	05/02/22 20:50:00	63.500	45948.18	95.19
7651	05/02/22 21:05:00	63.750	40139.71	94.70
7681	05/02/22 21:20:00	64.000	27512.29	95.52
7711	05/02/22 21:35:00	64.250	25494.24	96.20
7741	05/02/22 21:50:00	64.500	24832.54	96.44
7771	05/02/22 22:05:00	64.750	24338.65	95.49
7801	05/02/22 22:20:00	65.000	24207.23	85.10
7831	05/02/22 22:35:00	65.250	24191.99	84.29
7861	05/02/22 22:50:00	65.500	24433.58	88.96
7891	05/02/22 23:05:00	65.750	24192.12	90.63
7921	05/02/22 23:20:00	66.000	24189.10	89.57
7951	05/02/22 23:35:00	66.250	24191.39	89.93
7981	05/02/22 23:50:00	66.500	24195.01	90.43
8011	05/02/23 00:05:00	66.750	24195.90	90.93
8041	05/02/23 00:20:00	67.000	25220.59	90.47
8071	05/02/23 00:35:00	67.250	26975.81	81.48
8101	05/02/23 00:50:00	67.500	25155.47	72.88
8131	05/02/23 01:05:00	67.750	25335.89	70.61
8161	05/02/23 01:20:00	68.000	26659.15	63.50
8191	05/02/23 01:35:00	68.250	26829.83	56.00
8221	05/02/23 01:50:00	68.500	26477.61	52.99
8251	05/02/23 02:05:00	68.750	25091.71	55.10
8281	05/02/23 02:20:00	69.000	24573.66	58.24
8311	05/02/23 02:35:00	69.250	24548.32	71.40
8341	05/02/23 02:50:00	69.500	24135.98	77.75
8371	05/02/23 03:05:00	69.750	24099.52	72.64
8401	05/02/23 03:20:00	70.000	24084.24	73.55
8431	05/02/23 03:35:00	70.250	24079.15	75.34
8461	05/02/23 03:50:00	70.500	24077.43	76.92
8491	05/02/23 04:05:00	70.750	24040.60	78.32
8521	05/02/23 04:20:00	71.000	24103.95	80.01
8551	05/02/23 04:35:00	71.250	23722.83	80.72
8581	05/02/23 04:50:00	71.500	24017.05	81.43
8611	05/02/23 05:05:00	71.750	24053.65	82.00
8641	05/02/23 05:20:00	72.000	24074.51	82.69
8671	05/02/23 05:35:00	72.250	24032.88	83.29
8701	05/02/23 05:50:00	72.500	22922.40	83.80
8731	05/02/23 06:05:00	72.750	24004.57	84.03
8761	05/02/23 06:20:00	73.000	23730.75	84.44
8791	05/02/23 06:35:00	73.250	21752.94	84.54
8821	05/02/23 06:50:00	73.500	23472.21	85.41
8851	05/02/23 07:05:00	73.750	23573.22	85.92
8881	05/02/23 07:20:00	74.000	19782.09	85.91
8911	05/02/23 07:35:00	74.250	18350.27	86.37
8941	05/02/23 07:50:00	74.500	17776.92	86.94
8971	05/02/23 08:05:00	74.750	17615.50	87.40
9001	05/02/23 08:20:00	75.000	17512.43	87.82
9031	05/02/23 08:35:00	75.250	17466.97	88.17
9061	05/02/23 08:50:00	75.500	17582.48	88.61
9091	05/02/23 09:05:00	75.750	17663.05	89.05
9121	05/02/23 09:20:00	76.000	17591.31	89.32
9151	05/02/23 09:35:00	76.250	22018.96	90.21

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

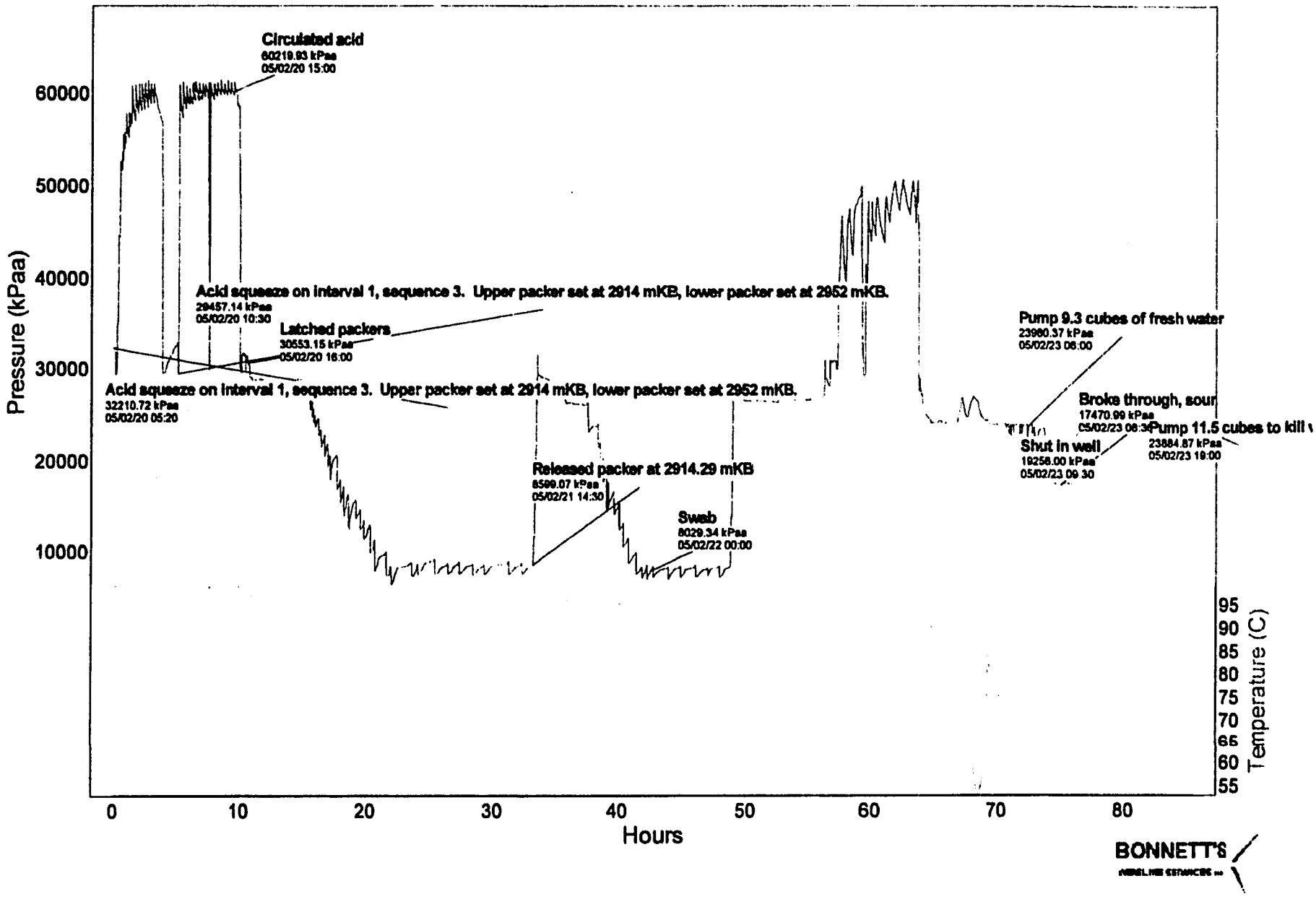
BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
9181	05/02/23 09:50:00	76.500	23191.40	91.75
9211	05/02/23 10:05:00	76.750	23454.72	91.70
9241	05/02/23 10:20:00	77.000	23575.40	91.50
9271	05/02/23 10:35:00	77.250	23650.28	91.38
9301	05/02/23 10:50:00	77.500	23688.31	91.30
9331	05/02/23 11:05:00	77.750	23713.83	91.27
9361	05/02/23 11:20:00	78.000	23736.50	91.22
9391	05/02/23 11:35:00	78.250	23751.53	91.22
9421	05/02/23 11:50:00	78.500	23758.53	91.23
9451	05/02/23 12:05:00	78.750	23754.02	91.25
9481	05/02/23 12:20:00	79.000	23741.11	91.26
9511	05/02/23 12:35:00	79.250	23715.09	91.28
9541	05/02/23 12:50:00	79.500	23714.85	91.37
9571	05/02/23 13:05:00	79.750	23721.55	91.41
9601	05/02/23 13:20:00	80.000	23732.19	91.46
9631	05/02/23 13:35:00	80.250	23743.57	91.52
9661	05/02/23 13:50:00	80.500	23754.23	91.57
9691	05/02/23 14:05:00	80.750	23763.37	91.63
9721	05/02/23 14:20:00	81.000	23771.68	91.68
9751	05/02/23 14:35:00	81.250	23781.15	91.73
9781	05/02/23 14:50:00	81.500	23789.03	91.78
9811	05/02/23 15:05:00	81.750	23797.32	91.83
9841	05/02/23 15:20:00	82.000	23805.99	91.88
9871	05/02/23 15:35:00	82.250	23812.80	91.93
9901	05/02/23 15:50:00	82.500	23818.40	91.97
9931	05/02/23 16:05:00	82.750	23824.73	92.02
9961	05/02/23 16:20:00	83.000	23831.35	92.06
9991	05/02/23 16:35:00	83.250	23837.95	92.11
10021	05/02/23 16:50:00	83.500	23845.09	92.15
10051	05/02/23 17:05:00	83.750	23851.35	92.19
10081	05/02/23 17:20:00	84.000	23857.78	92.23
10111	05/02/23 17:35:00	84.250	23862.89	92.27
10141	05/02/23 17:50:00	84.500	23868.45	92.31
10171	05/02/23 18:05:00	84.750	23873.38	92.35
10201	05/02/23 18:20:00	85.000	23878.56	92.39
10231	05/02/23 18:35:00	85.250	23880.66	92.43
10261	05/02/23 18:50:00	85.500	23883.20	92.47

Northrock Resources Ltd.
300/B-44-64-30-125-45 Acid Stimulation
Northrock et al Summit Creek

On Bottom:	Feb 20, 2005 05:20 (32211 kPaa)
Off Bottom:	Feb 23, 2005 19:00 (23885 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8009
Depth:	2938.54 mKB MD
Ticket:	50007

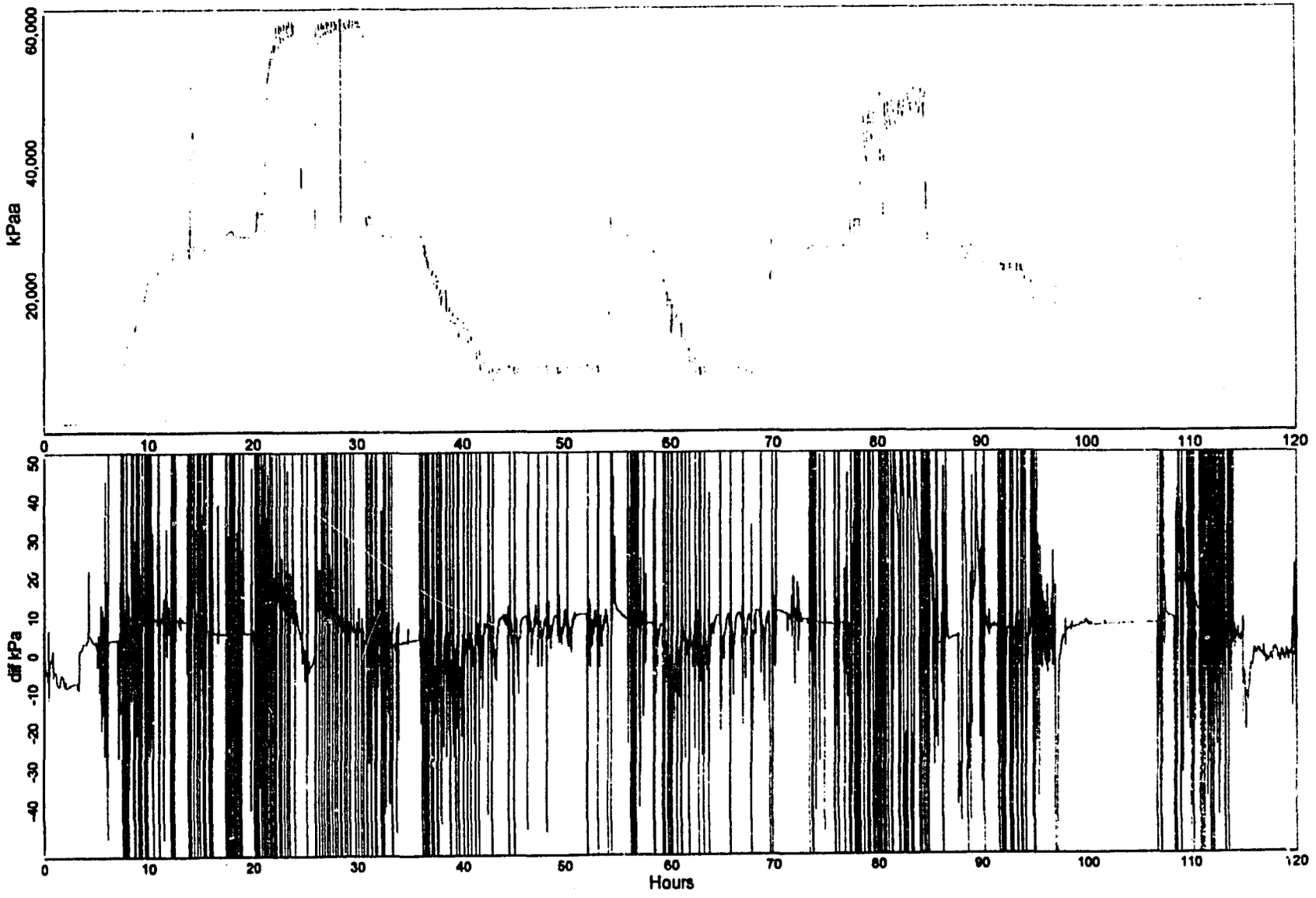


BONNETT'S

Northrock Resources Ltd.
300/B-44-64-30-125-45
Northrock et al Summit Creek

Start Date: 19 Feb 2005
Formation: Fort Norman
Field: Summit Creek
Recorders: 8010, 8009

Ticket: 50007



BONNETT'S
WIRELINE SERVICES

Well File
1994

Northrock Resources Ltd.

3500, 700 - 2 St SW Calgary, AB T2P 2W2

Northrock et al Summit Creek

B-44-64-30-125-45

Fort Norman

2737.48 - 2998.77 mKB TVD

Reverse Static Gradient

Mar 1, 2005

Grande Prairie
Fox Creek
Hinton
Manning
Slave Lake
Fort St. John
Fort Nelson
Calgary

BONNETT'S
WIRELINE SERVICES LTD

Ph: (780) 513-3400 Fax: (780) 532-9266 www.bonnettswireline.com

Northrock Resources Ltd.

Northrock et al Summit Creek

B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES

Field:	Summit Creek
Formation:	Fort Norman
Status:	Gas
Well Type:	Deviated
Test Type:	Reverse Static Gradient
Production Interval:	2737.48 - 2998.77 mKB TVD
Midpoint:	2868.13 mKB TVD
Elevations (m):	GL: 580.5 KB: 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	Final (kPaa)
Tubing Pressure		
Casing Pressure:		

Test Date:	Mar 1, 2005
On Bottom:	Mar 2, 2005 01:54
Off Bottom:	Mar 2, 2005 02:04
Shut In	Mar 1, 2005 18:00
Gauge Start:	Mar 1, 2005 20:25:00
Gauge Stop:	Mar 2, 2005 06:53:10

	Top
Run Depth:	2753.64 mKB TVD
Serial No:	8041
Max Range:	68947 kPa
Manufacturer	Spartek/SS2500-s
Last Calibration:	Jan 11, 2005
B H Pressure	24137.96 kPaa
B H Temperature	94.61 C
B H Gradient	4.94 kPa/m
MPP Pressure:	24703.78 kPaa

Sent To: Dan Kamieniecki

Comments:

Gradient Change at 777.99 mKB TVD
Gradient Change at 2718.23 mKB TVD

Ticket: 50013
Ran/Pulled: Mike Munro

Recorder: 8041 - Top

BONNETT'S

Northrock Resources Ltd.

Northrock et al Summit Creek

B-44-64-30-125-45

Reverse Static Gradient

Depth (mKB MD)	Depth (mKB TVD)	Time	Duration (min)	Pressure (kPaa)	Temp (C)	Pres Grad (kPa/m)	Temp Grad (C/m)
6.20	6.20	06:11	10	12907.63	-10.96	0.000	0.000
506.20	505.60	05:48	10	13594.12	14.85	1.375	0.052
1006.20	1004.80	05:28	10	15233.45	28.19	3.284	0.027
1506.20	1502.18	05:08	10	18007.32	49.28	5.577	0.042
2006.20	1995.19	04:47	10	20506.83	69.48	5.070	0.041
2206.20	2194.44	04:31	10	21474.50	78.04	4.857	0.043
2406.20	2394.34	04:16	10	22415.54	84.63	4.708	0.033
2506.20	2494.13	04:03	10	22874.70	87.95	4.601	0.033
2606.20	2593.93	03:50	10	23324.64	90.80	4.508	0.029
2656.20	2643.77	03:37	10	23546.84	92.26	4.458	0.029
2706.20	2693.72	03:24	10	23767.13	93.27	4.410	0.020
2731.20	2718.71	03:12	10	23878.73	93.88	4.466	0.024
2756.20	2743.67	03:00	10	24061.16	95.09	7.309	0.048
2761.20	2748.66	02:06	53	24113.35	95.21	10.459	0.024
2766.20	2753.64	01:54	10	24137.96	94.61	4.942	0.120

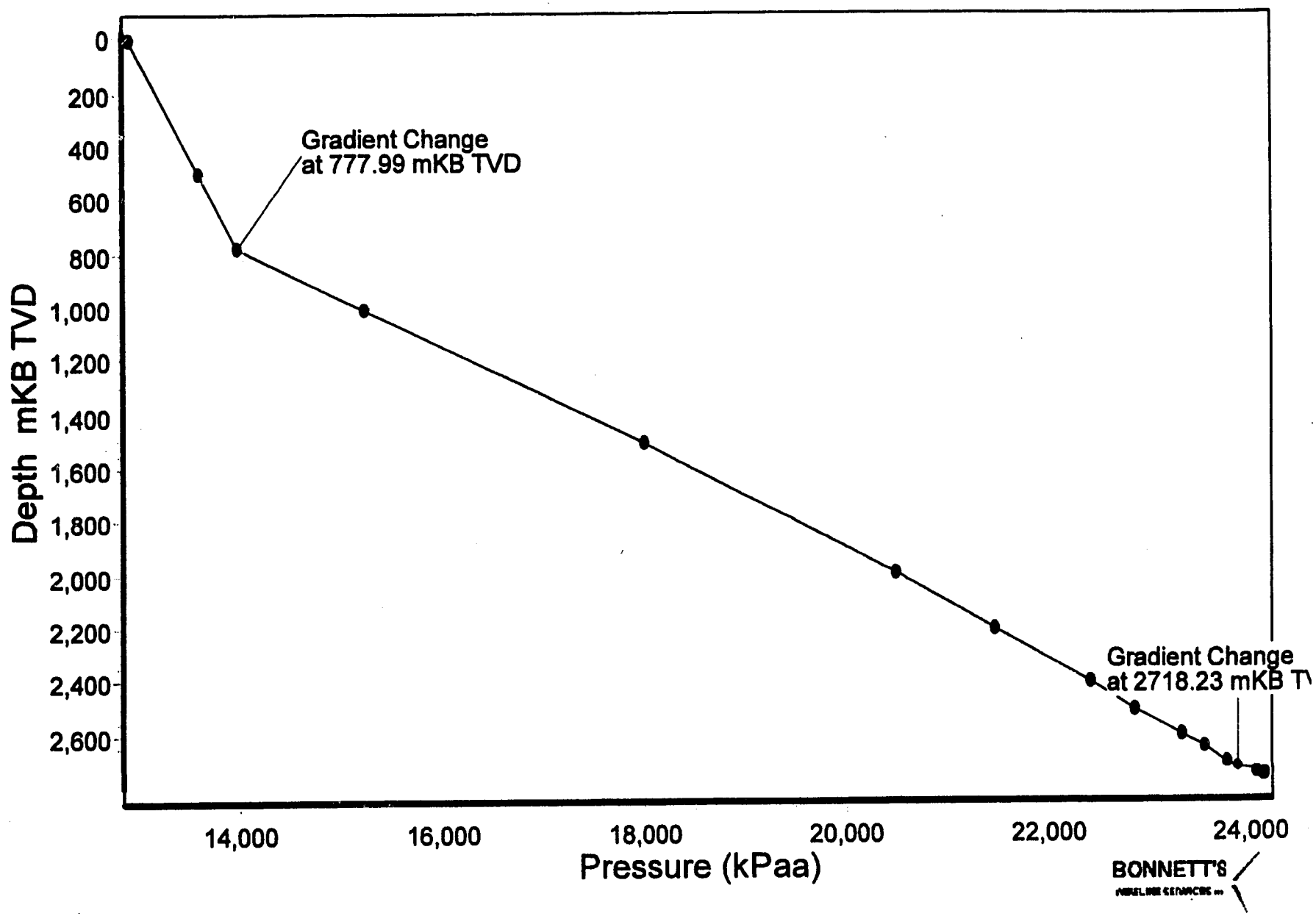
Ticket: 50013
Ran/Pulled: Mike Munro

Recorder: 8041 - Top

BONNETT'S

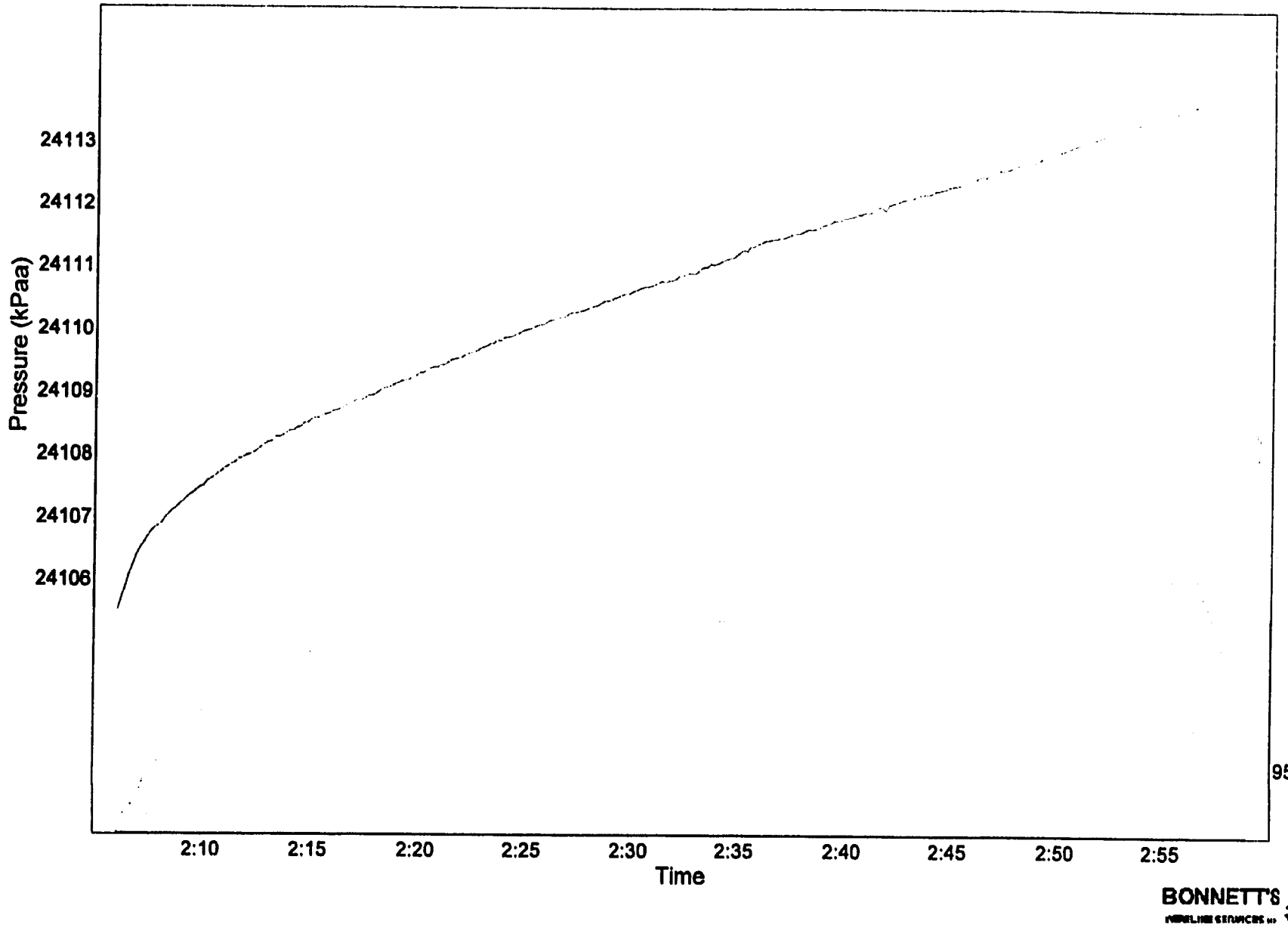
Northrock Resources Ltd.
B-44-64-30-125-45 **Reverse Static Gradient**
Northrock et al Summit Creek

Test Start:	Feb 28, 2005 00:00
Test End:	Mar 2, 2005 06:21
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8041 (Top)
Depth:	2753.64 mKB TVD
Ticket:	50013



Northrock Resources Ltd.
B-44-64-30-125-45 **Reverse Static Gradient**
Northrock et al Summit Creek

Begin Stop:	Mar 2, 2005 02:06
End Stop:	Mar 2, 2005 02:59
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8041 (Top)
Depth:	2748.66 mKB TVD
Ticket:	50013



BONNETT'S
WIRELINE SERVICES

PRESSURE BUILD-UP PLOTS

DATED FEB. 20- 23, 2005

1994

NORTHROCK et al SUMMIT CREEK
300/B-44-64-30-125-45
FORT NORMAN
PRESSURE BUILDUP PLOTS
FEBRUARY 20 - 23, 2005

Prepared for: Ms. Diane Shirra
Northrock Resources Ltd.

Prepared by: Alex Oykhman, P.Eng.
Pure Energy Services Ltd.

March 7, 2005

Northrock Resources Ltd.
3500, 700 - 2 Street S.W.
Calgary, Alberta
T2P 2W2

Attention: Ms. Diane Shirra

Dear Ms. Shirra:

Please find attached a copy of a Flow and Pressure Buildup Analysis on a Pressure Buildup Survey conducted from February 20 - 23, 2005 on well NORTHROCK et al SUMMIT CREEK, 300/B-44-64-30-125-45.

We would be pleased to meet with you, at your convenience, should you have any questions regarding the contents of this report.

Sincerely,
Pure Energy Services Ltd.

Alex Oykhman, P.Eng.
AYO/ao
encl.

NORTHROCK et al SUMMIT CREEK
300/B-44-64-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

TEST RESULTS	Metric (SI) Units		Imperial Units	
Pressure Buildup Analysis				
Average Reservoir Pressure (P_R)	24421.6	kPaa	3542.0	psia
Compressibility Factor (z) @ 24421.55 kPaa & 94.2°C	0.863		0.863	
Formation Flow Capacity (kh)	48.62	mD.m	161.63	md.ft
Average Effective Permeability (k)	1.39	mD	1.41	md
Apparent Skin Factor (s') @ 203.99 x10^3 m^3/d	1.88		1.88	

OPERATIONS SUMMARY

NORTHROCK et al SUMMIT CREEK
300/B-44-64-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

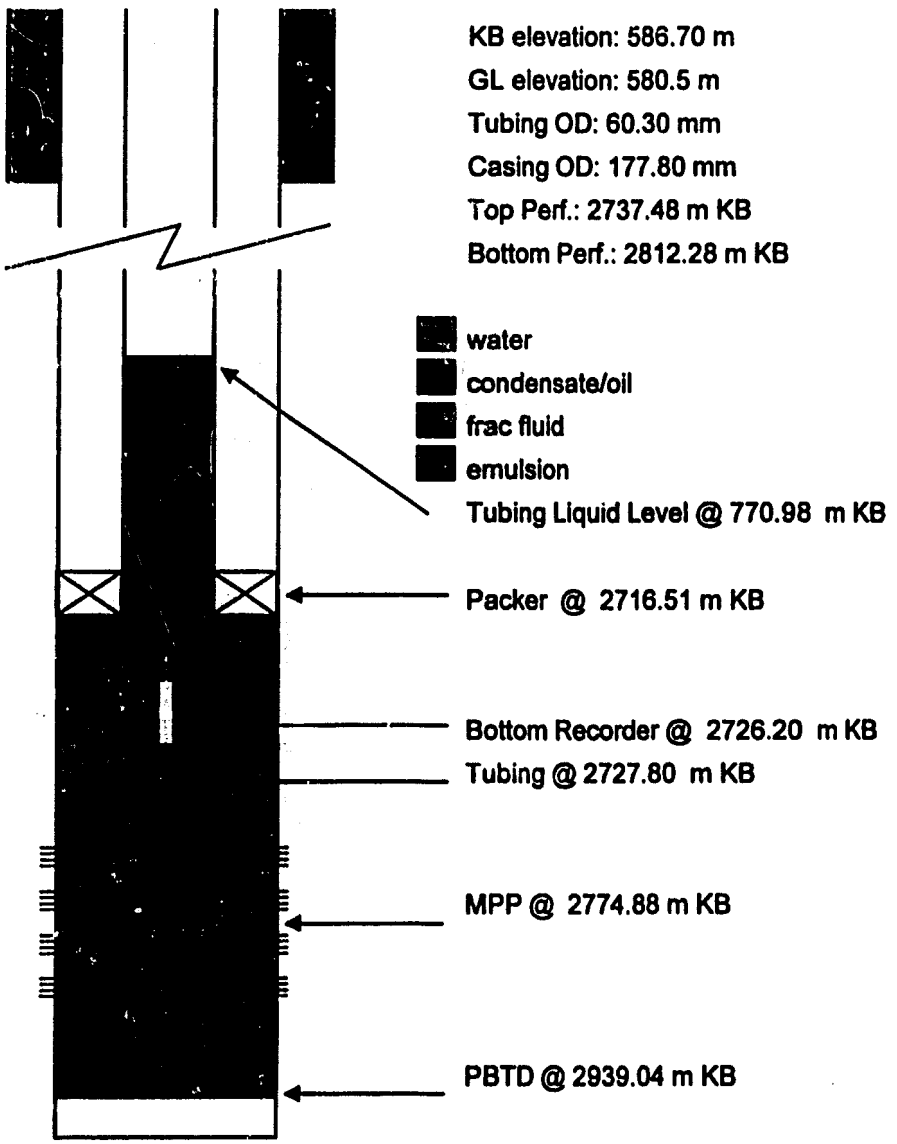
February 20, 2005	
0520 hours	Set tandem electronic recorders at 2726.2 m KB
February 23, 2005	
0630 hours	Opened well to flow
0930 hours	Shut-in well to record pressure buildup
1900 hours	Recovered recorders
March 2, 2005	
0203 hours	Conducted a reverse static gradient while pulling recorders from 2766.2 m KB to surface

End of Test

DOWNHOLE DEPTH SCHEMATIC
to determine pressure correction to MPP

NORTHROCK et al SUMMIT CREEK
300/B-44-S4-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

Deviated well; all depths are corrected to TVD.

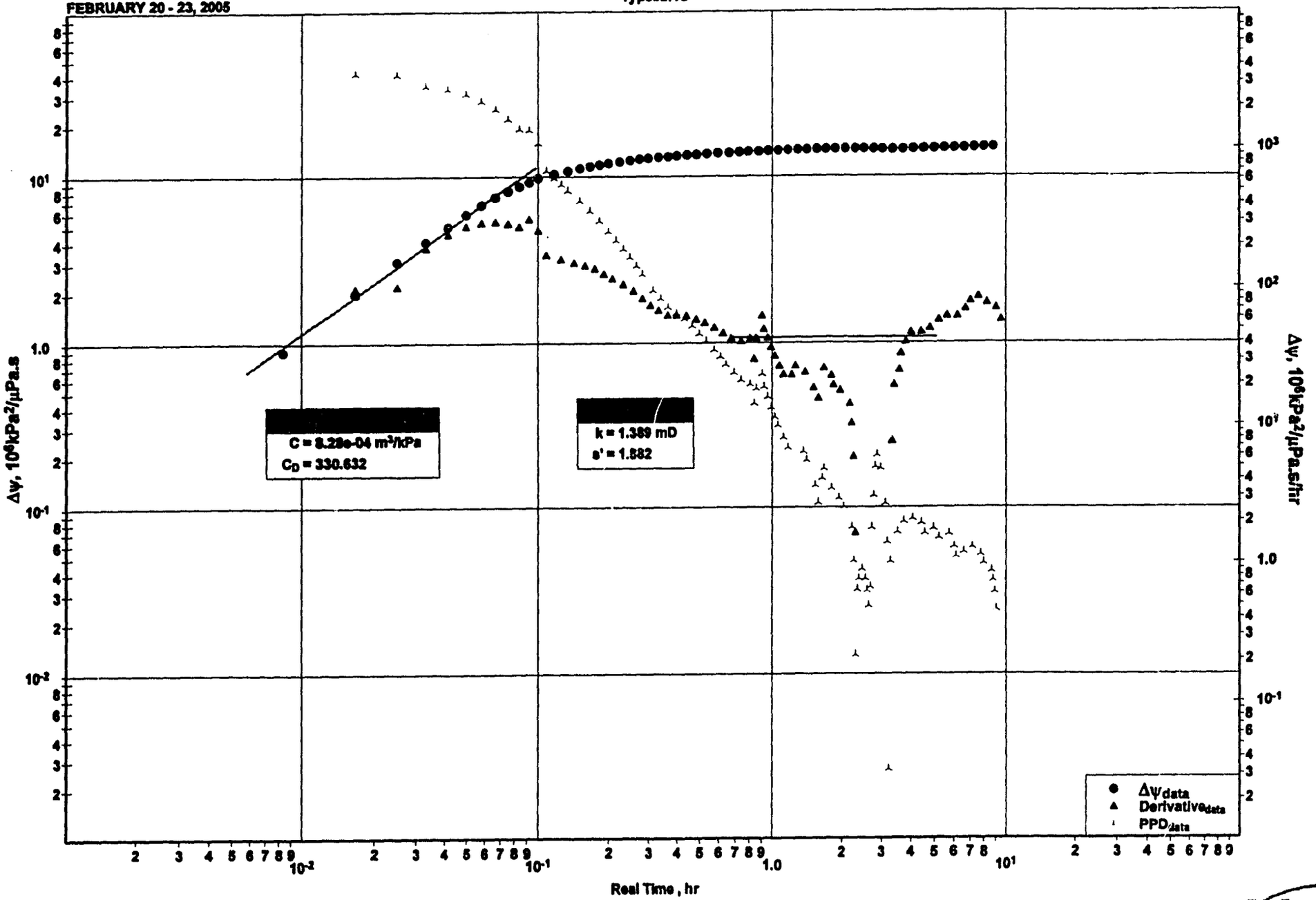


Pressure Correction : (2774.88 - 2726.2) m x 7.303 kPa/m = 355.51 kPa (based on the FSG)

NORTHROCK et al SUMMIT CREEK
300/B-44-64-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

Diagnostic Analysis

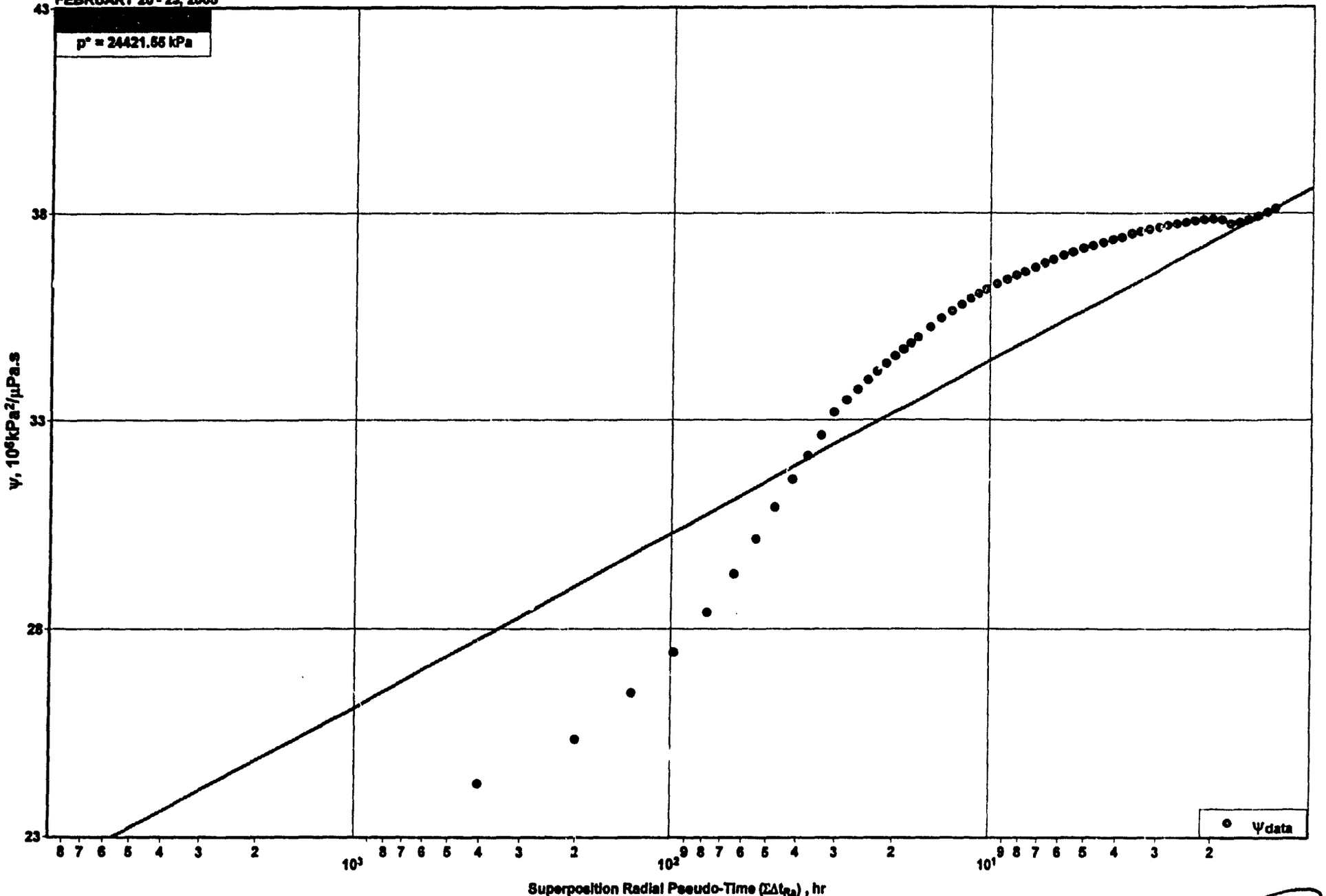
Typecurve



NORTHROCK et al SUMMIT CREEK
300/B-44-B4-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

Diagnostic Analysis

Radial

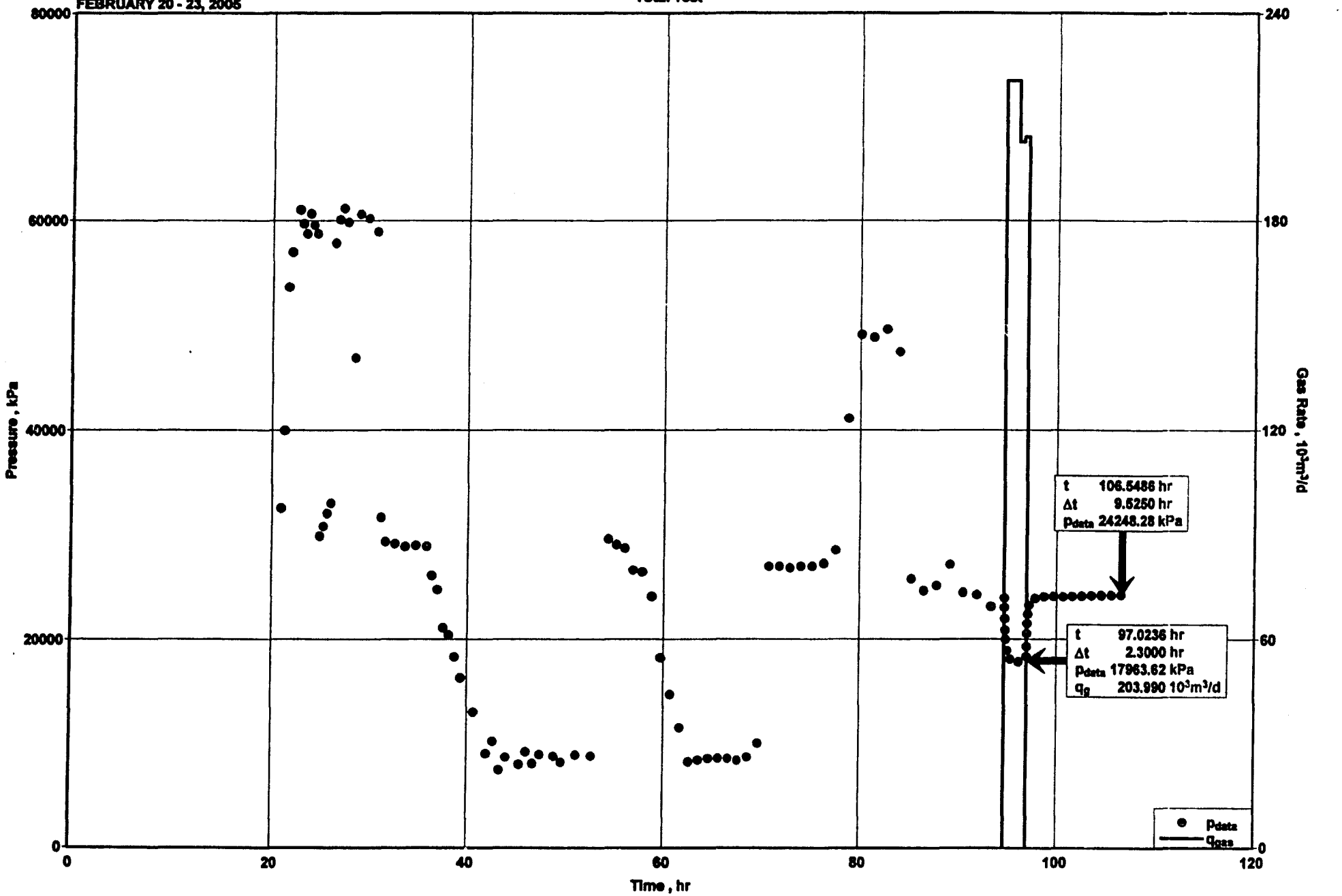


PureEnergy

NORTHROCK et al SUMMIT CREEK
300/B-44-64-30-125-45
FORT NORMAN
FEBRUARY 20 - 23, 2005

Diagnostic Analysis

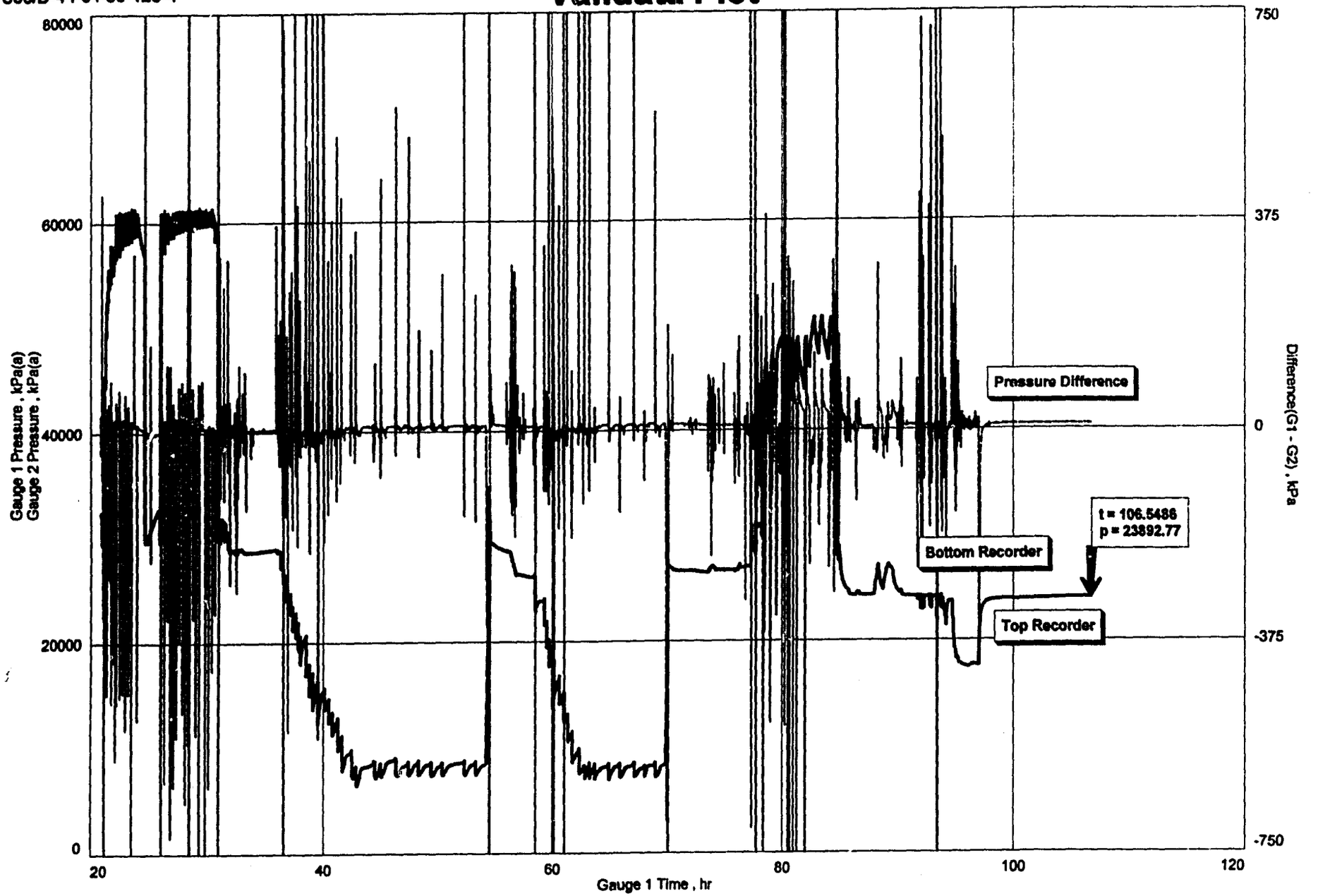
Total Test



Northrock Resources Ltd.
300/B-44-64-30-125-4

Validata Plot

NORTHROCK et al SUMMIT CREEK
Formation: FORT NORMAN



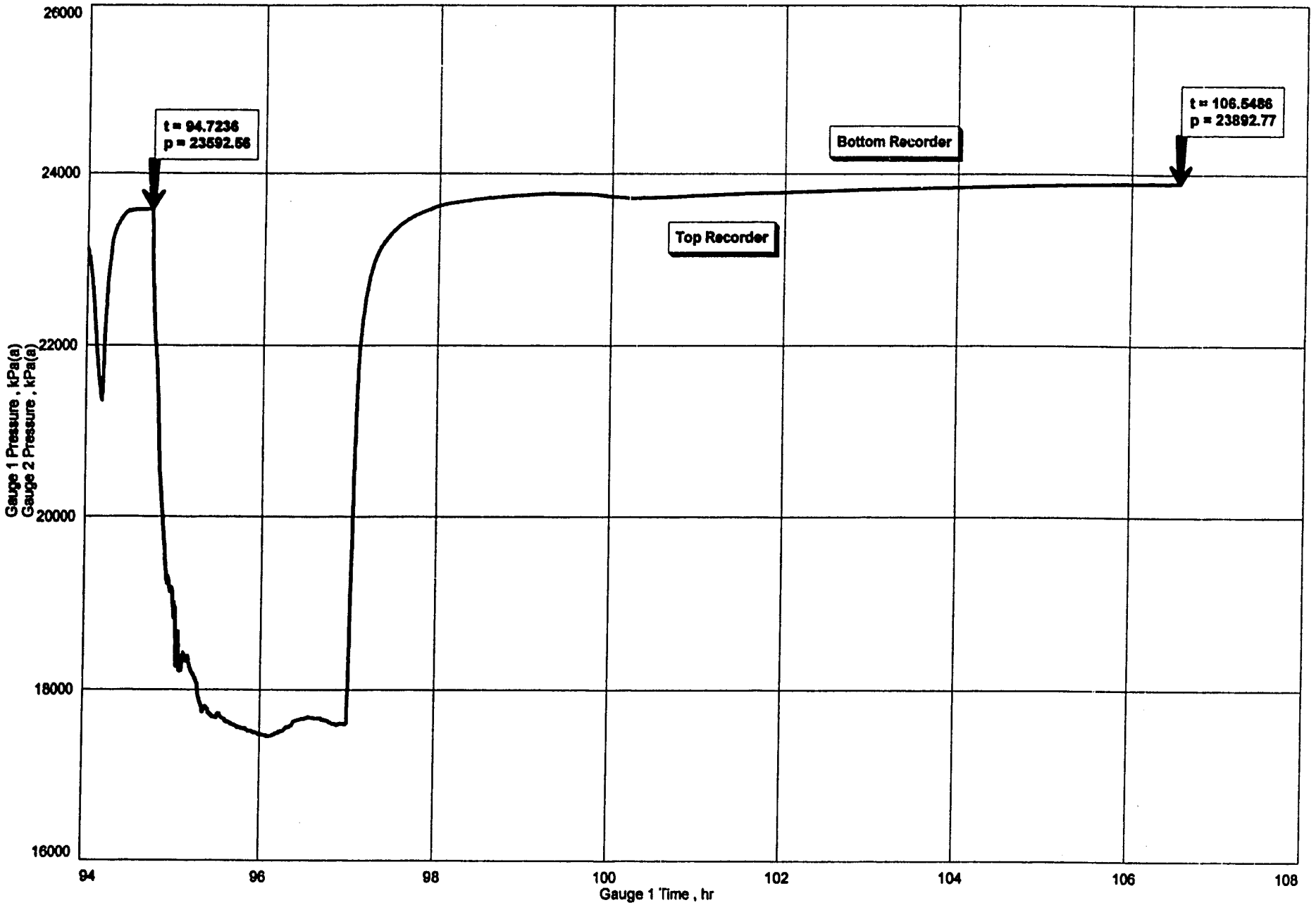
P:\Welltest Data\welltest 2005\NORTHROCK\300-B-44-64-30-125-45-FORT NORMAN\NRB4464.fkt 02-Mar-05 Ver 5.067

Fast

Northrock Resources Ltd.
300/B-44-64-30-125-4

Validata Plot

NORTHROCK et al SUMMIT CREEK
Formation: FORT NORMAN



Fast

Generated by Northland Energy Corporation
Northrock Resources Ltd.
B44 Bear Lake
D44-A4-J0-I25-J5

Date/Time	Elapsed Time	Comment	Tubing Pressure	Tubing Temperature	Casing Pressure	Static Pressure	Differential Pressure	Meter Run Temperature	Q	Q Gas Total	Incr Fluid Volume (BS&W) (T)	BS&W (T)	Incr Cond Volume (T)	Cond Rate (T)
	Hours		kPag	°C	kPag	kPa	kPa	°C	10^3m3/d	10^3m3	m³	%	m³	m³/d
06/01/25 10:00		30 Leave Grande Prairie and travel to Fort Simpson.												
06/01/25 21:30		21.5 Arrive in Fort Simpson.												
06/01/26 09:00		31 Leave Fort Simpson and travel to location.												
06/01/26 19:30		43.5 Arrive at camp, stay for the night.												
06/01/27 08:00		56 Arrive at location, hold safety meeting, assist with spotting rig as needed.												
06/01/27 18:00		66 Shutdown for the night, return to camp.												
06/01/28 07:00		79 Arrive at location, hold safety meeting, proceed with spotting test equipment.												
06/01/28 19:00		91 Shutdown for the night, return to camp.												
06/01/29 07:00		103 Arrive at location, hold safety meeting, proceed with unloading of flowback and testequip.												
06/01/29 19:00		115 Shutdown for the night, return to camp.												
06/01/30 07:00		127 Arrive on location, hold safety meeting, proceed with spotting of third stage separation vessels.												
06/01/30 19:00		139 Shutdown for the night, return to camp.												
06/01/31 07:00		151 Arrive on location, hold safety meeting, proceed with rig in of test equipment.												
06/01/31 19:00		163 Shutdown for the night, return to camp.												
06/02/01 07:00		175 Arrive on location, hold safety meeting, continue rig in of test equipment.												
06/02/01 19:00		187 Shutdown for the night, return to camp.												
06/02/02 07:00		199 Arrive on location, hold safety meeting, continue rig in of test equipment.												
06/02/02 19:00		211 Shutdown for the night, return to camp.												
06/02/03 06:30		222.5 Arrive on location, hold safety meeting, continue rig in of test equipment.												
06/02/03 19:00		235 Shutdown for the night, return to camp.												
06/02/04 06:30		246.5 Arrive on location, hold safety meeting, continue rig in of test equipment.												
06/02/04 18:00		259 Shutdown for the night, return to camp.												
06/02/05 06:30		270.5 Arrive on location, hold safety meeting, complete rig in of test equipment.												
06/02/05 19:00		283 Shutdown for the night, return to camp.												
06/02/06 06:00		294.5 Arrive on location, hold safety meeting, wait on completion.												
06/02/06 19:00		307 Shutdown for the night, return to camp.												
06/02/07 06:00		318.5 Arrive on location, hold safety meeting, wait on completion.												
06/02/07 19:00		331 Shutdown for the night, return to camp.												
06/02/08 06:30		342.5 Arrive on location, hold safety meeting, wait on completion.												
06/02/08 19:00		355 Shutdown for the night, return to camp.												
06/02/09 06:30		366.5 Arrive on location, hold safety meeting, wait on completion.												
06/02/09 19:00		379 Shutdown for the night, return to camp.												
06/02/10 06:30		390.5 Arrive on location, hold safety meeting, wait on completion.												
06/02/10 19:00		403 Shutdown for the night, return to camp.												
06/02/11 07:00		413 Dogshift on location, hold safety meeting, begin perforating operations.												
06/02/11 11:00		419 Pres gun fired, well is static, monitor pressure continuously												
06/02/11 13:30		423.9 Perf gun # 2 fired, well remains static, monitor pressure.												
06/02/11 15:30		427.5 Perf gun # 3 fired, well remains static, monitor pressure.												
06/02/11 16:45		430.1 Perf gun # 4 fired, well remains static, monitor pressure.												
06/02/11 18:30		436.3 Misc fire, wireline pull out of hole and disarm gun.												
06/02/11 18:30		436.5 Night shift arrive on location, hold safety meeting.												
06/02/11 19:30		437.9 Perf gun # 5 fired, well remains static, monitor pressure.												
06/02/11 20:00		436.5 Perf gun # 6 fired, well remains static, monitor pressure.												
06/02/12 01:15		438.3 Hold safety meeting.												
06/02/12 04:00		438.1 Perf gun # 7 fired, well remains static, monitor pressure.												
06/02/12 05:00		438.5 Day shift arrive on location, hold safety meeting.												
06/02/12 08:21		438.9 Perf gun # 8 fired, well remains static, monitor pressure.												
06/02/12 09:30		440.3 Misc fire, wire line pull out of the hole and disarm gun.												
06/02/12 11:00		440 Perf gun # 9 fired, well remains static, monitor pressure.												
06/02/12 12:30		444.6 Misc fire, wireline pull out of the hole and disarm gun.												
06/02/12 15:23		447.4 Perf gun #10 fired, well remains static, monitor pressure.												
06/02/12 17:22		448.5 Perf gun # 11 fired, well remains static, monitor pressure.												
06/02/12 18:30		450.3 Night shift arrive on location, hold safety meeting.												
06/02/12 21:02		450.5 Perf gun # 12 fired, well remains static, monitor pressure.												
06/02/12 23:30		454.5 Wireline at surface, rig out.												
06/02/13 23:00		460 Start to purge test equipment.												
06/02/13 23:45		460.6 Pressure test high stage to 7000 kPa.												
06/02/13 00:00		460 Pressure test low stage to 900 kPa.												
06/02/13 00:30		460.3 Start to purge third stage vessels.												
06/02/13 03:00		461 Purging of third stage vessels complete.												
06/02/13 05:30		463.3 Day shift arrive on location, hold safety meeting, rig tripping pipe.												
06/02/13 10:30		474.5 Night shift arrive on location, hold safety meeting, continue tripping pipe.												
07/02/14 01:00		485.8 Finished tripping in, attach top drive.												
07/02/14 02:30		485.8 Start cleaning linear top.												
07/02/14 13:40		485.7 Top of the linear cleaned, got ready to trip out tubing. Total fluid lost during circulation = 3.5m^3												
07/02/14 15:30		485.5 Night shift arrive on location, hold safety meeting.												
07/02/14 21:00		501.8 Finished tripping out, rig up wireline.												
07/02/14 22:30		502.5 Safety meeting.												
07/02/14 23:00		503.5 Wireline run in hole with gauge ring.												
08/02/15 00:00		504.1 Wireline at surface.												
08/02/15 00:30		504.5 Wireline running in hole with Perk Packer.												
08/02/15 01:45		502.5 Wireline at surface.												
08/02/15 03:00		506 Lay down lubricator and pick up tools.												
08/02/15 03:00		509 Start to trip in hole.												
08/02/15 11:00		515 Set packer and pressure test.												
08/02/15 14:00		520 Unable to pressure test packer, start to pull out of hole.												
08/02/15 18:30		522.5 Night shift arrive on location, hold safety meeting, continue to trip pipe.												
08/02/15 23:30		527.5 Finished tripping out of the hole.												
09/02/16 00:45		528.7 Trip in tubing with packer assembly.												
09/02/16 05:30		534.5 Day shift arrive on location, hold safety meeting, continue to trip in hole.												
09/02/16 09:30		539.5 Set packer to pressure test.												
09/02/16 10:15		538.3 Unable to set packer, rig up to circulate.												
09/02/16 10:31		538.9 Begin circulating at 0.3 m^3/Min.												
09/02/16 11:30		538.3 Finished circulating, set packer and pressure test. Total fluid lost during circulation was 3.5 m^3.												
09/02/16 14:00		542 Pressure test good, continue in hole.												
09/02/16 15:00		540 Rig in wireline and run in hole to tag packer on depth.												
09/02/16 16:45		544.5 Wireline out of hole and rig off. Spear out and set bottom packer.												
09/02/16 17:15		540.3 Rig in BJ for acid injection.												
09/02/16 18:30		546.5 Night shift arrive, hold safety meeting.												
09/02/16 19:30		547.3 Begin acid squeeze operations.												
09/02/16 19:45		547.5 Pressure test BJ lines.												
09/02/16 21:30		548.3 Acid spotted, packer set, begin squeeze. 9.3 m^3 acid and 1.5 m^3 water in hole.												
09/02/17 01:30		553.3 Unable to squeeze acid away, hold safety meeting and flush acid out of hole with 30 m^3 water.												
09/02/17 09:05		555.6 Flush complete. Move packer and continue with second stage.												
09/02/17 09:30		557.3 Hold safety meeting, begin second stage stimulation.												
09/02/17 01:30		559 Pressure test BJ lines.												
09/02/17 09:30		560.5 Day shift on location, hold safety meeting.												
09/02/17 07:00		559 Acid spotted, packer set, begin squeeze. 8.5 m^3 acid and 3.00 m^3 water in hole.												
09/02/17 10:30		570.5 Night shift arrive, hold safety meeting, continue to squeeze stage #2.												
09/02/17 12:30		574.5 Pressure drop on tubing, suspect Packer or tubing leak.												
09/02/17 23:30		575.3 Unset from packer and circulate out acid to cold tank #2.												
09/02/18 01:30		577.1 Acid circulated out.												

05/02/21	01:15	577.3 Run in and try reaming packer and pressure testing.				
05/02/21	01:30	582.5 Packer pressure test unsuccessful				
05/02/21	01:30	582.5 Dry shift notes on location, hold safety meeting				
05/02/21	08:00	584 Trip out of hole.				
05/02/21	13:00	594 Trip in hole with scraper and ripped mill				
05/02/21	16:30	594.5 Night shift on location, hold safety meeting continue tripping in.				
05/02/21	02:00	602 Finished trip in with scraper rig up to circulate.				
05/02/21	02:15	602.3 Circulate 16m^3				
05/02/21	03:05	603.1 Finished circulating				
05/02/21	03:30	603.8 Start to trip out of the hole.				
05/02/21	06:30	606.5 Dry shift notes on location, hold safety meeting, continue out of hole.				
05/02/21	10:00	610 Finished trip out of hole, make up BHA and trip back in hole.				
05/02/21	16:30	616.3 Night shift on location, hold safety meeting and continue in hole.				
05/02/21	21:45	621.8 14 joints left to go, stop tripping.				
05/02/21	22:30	622.3 Set packer, pressure test and continue in hole.				
05/03/21	00:15	634.3 Continue to trip in hole.				
05/03/21	02:30	636.3 Finished tripping in the hole, tag bottom				
05/03/21	03:00	637 Trip out 7 joints to stage #3				
05/03/21	04:15	638.3 Safety meeting.				
05/03/21	04:45	638.7 Pressure test lift lines and continue with squeeze.				
05/03/21	05:45	639.7 Acid Squeeze, packer set, begin squeeze 5m^3 of acid and 6.31 m^3 of water in hole.				
05/03/21	06:30	640.5 Dry shift on location, hold safety meeting, continue acid squeeze.				
05/03/21	13:30	650.3 Unable to squeeze acid away, bleed off tubing, release packer, and circulate acid out of hole with 13 m^3 water				
05/03/21	14:00	648.1 Circulation complete, release lower packer and get ready to swab.				
05/03/21	18:30	652.5 Nightshift notes on location, hold safety meeting, prepare for swabbing.				
05/03/21	20:35	654.6 Start swabbing.				
05/03/21	20:45	644.8 Swab #1, tag fluid at surface, pull from 175m.			0	0
05/03/21	20:45	644.8 0				
05/03/21	21:00	645 Swab #2, tagged fluid at 175m, pulled from 300m.			0	0
05/03/21	21:00	645 0				
05/03/21	21:20	645.3 Swab #3, tagged fluid at 300m, pulled from 375m.			0	0
05/03/21	21:20	645.3 0				
05/03/21	21:35	645.6 Swab #4, tagged fluid at 410m, pulled from 610m.			0	0
05/03/21	21:35	645.6 0				
05/03/21	21:50	645.8 Swab #5, tagged fluid at 570m, pulled from 713m.			0	0
05/03/21	21:50	645.8 0				
05/03/21	22:05	646.1 Swab #6, tagged fluid at 617m, pulled from 807m			0	0
05/03/21	22:05	646.1 0				
05/03/21	22:20	646.3 Swab #7, tagged fluid at 617m, pulled from 943m.			0	0
05/03/21	22:20	646.3 0				
05/03/21	22:35	646.6 Swab #8, tagged fluid at 857m, pulled from 1025m.			0	0
05/03/21	22:35	646.6 0				
05/03/21	22:50	646.8 Swab #9, tagged fluid at 945m, pulled from 1125m.			0	0
05/03/21	22:50	646.8 0				
05/03/21	23:30	647.5 Swab #10, tagged fluid at 1086m, pulled from 1300m.			0	0
05/03/21	23:30	647.5 0				
05/03/21	23:45	647.8 Swab #11, tagged fluid at 1257, pulled from 1311m			0	0
05/03/21	23:45	647.8 0				0
06/03/21	00:00					
06/03/21	00:15	648.3 Swab #12, tagged fluid at 1300m, pulled from 1433m.			0	0
06/03/21	00:15	648.3 0				
06/03/21	00:30	648.8 Swab #13, tagged fluid at 1302m, pulled from 1511m.			0	0
06/03/21	00:30	648.8 0				
06/03/21	01:15	649.3 Swab #14, tagged fluid at 1427m, pulled from 1594m.			0	0
06/03/21	01:15	649.3 0				
06/03/21	01:30	649.5 Swab #15, tagged fluid at 1533m, pulled from 1735m.			0	0
06/03/21	01:30	649.5 0				
06/03/21	02:00	650 Swab #16, tagged fluid at 1635m, pulled from 1873m.			0	0
06/03/21	02:00	650 0				
06/03/21	02:25	650.4 Swab #17, tagged fluid at 1793m, pulled from 2000m.			0	0
06/03/21	02:25	650.4 0				
06/03/21	02:30	651.3 Swab #18, tagged fluid at 1872m, pulled from 2108m.			0	0
06/03/21	02:30	651.3 0				
06/03/21	02:30	651.3 Trace of black hydrocarbons.				
06/03/21	02:45	651.8 Swab #19, tagged fluid at 1908m, pulled from 2173m.			0	0
06/03/21	02:45	651.8 0				
06/03/21	02:45	651.8 Trace of black hydrocarbons.				
06/03/21	02:45	651.8 100 ppm of sour or acid gas detected on at-hand monitor.				
06/03/21	04:00	653 Weld safety meeting.				
06/03/21	05:30	653.3 Swab #20, tagged fluid at 2173m, pulled from 2190m.			0	0
06/03/21	05:30	653.3 0				
06/03/21	05:30	653.3 Trace of black hydrocarbons.				
06/03/21	06:00	654 Swab #21, tagged fluid at 2173m, pulled from 2190m.			0	0
06/03/21	06:00	654 0				
06/03/21	06:00	654 Dry swab. Rig down swab run. Pull next swab at 07:00.				
06/03/21	06:00	654 Total fluid recovered during swabbing = 11.92m^3.				
06/03/21	06:30	654.5 Dry shift notes on location, hold safety meeting.				
06/03/21	07:10	655.2 Swab #22, no tag, pulled from 2190m, swab was dry			0	0
06/03/21	07:10	655.2 vac vac				
06/03/21	08:05	656.1 Swab #23, no tag, pulled from 2190m, swab was dry. Slight blow on tubing changes to vac quickly. No LEL 140ppm acid gas detected.			0	0
06/03/21	08:05	656.1 vac vac				
06/03/21	08:57	657 Swab #24, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.			0	0
06/03/21	08:57	657 vac vac				
06/03/21	08:57	658 Swab #25, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.			0	0
06/03/21	09:57	658 vac vac				
06/03/21	10:54	658.9 Swab #26, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.			0	0
06/03/21	10:54	658.9 vac vac				
06/03/21	12:30	660.8 Swab #27, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.			0	0
06/03/21	12:30	660.8 vac vac				
06/03/21	13:47	661.8 Swab #28, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.			0	0
06/03/21	13:47	661.8 vac vac				
06/03/21	13:50	661.8 End of swab log, rig out swab equipment, and move packer up hole. Total fluid recovered swabbing was 11.92m^3.				
06/03/21	17:45	665.8 Packer set, pressure test and rig up to swab.				
06/03/21	18:30	666.5 Night shift notes on location, hold safety meeting, prepare for swabbing.				
06/03/21	18:30	666.8 Start swabbing.				0
06/03/21	18:50					
06/03/21	19:15	667.3 Swab #1, tagged fluid at 0.0m, pulled from 263m.			0	0
06/03/21	19:15	667.3 vac 0				
06/03/21	19:53	667.9 Swab #2, tagged fluid at 262m, pulled from 472m.			0	0
06/03/21	19:53	667.9 vac 0				
06/03/21	20:10	668.3 Swab #3, tagged fluid at 421m, pulled from 712m.			0	0
06/03/21	20:10	668.3 vac 0				
06/03/21	20:30	668.3 Swab #4, tagged fluid at 660m, pulled from 890m.			0	0
06/03/21	20:30	668.3 vac 0				
06/03/21	20:50	668.8 Swab #5, tagged fluid at 1035m, pulled from 1256m.			0	0
06/03/21	20:50	668.8 vac 0				
06/03/21	21:15	669.3 Swab #6, tagged fluid at 1035m, pulled from 1256m.			0	0
06/03/21	21:15	669.3 vac 0				
06/03/21	21:40	669.7 Swab #7, tagged fluid at 1186m, pulled from 1382m.			0	0
06/03/21	21:40	669.7 vac 0				
06/03/21	22:00	670 Swab #8, tagged fluid at 1382m, pulled from 1592m.			0	0
06/03/21	22:00	670 vac 0				

| | | |

Gas and Total Oil	Gas Water Volume	Water Rate	Gas Water All Total	Salinity	pH	H2S
				ppm		mol%

0	0.25	0.01	0.25	9000	7
0	0.4	38.4	0.65	3000	6
0	0.73	52.56	1.38	3000	6
0	0.74	53.01	2.12	3000	6
0	0.44	43.24	2.56	3000	6
0	0.68	65.28	3.24	3000	7
0	0.45	43.2	3.69	2100	7
0	0.18	17.28	3.87	3000	7
0	1.31	125.76	5.18	3000	6
0	0.41	14.76	5.59	3000	6
0	0.61	58.56	6.2	3000	6
0	0.54	25.93	6.74	3000	6
0	1.88	41.97	7.76	3000	6
0	0.49	28.32	8.25	3000	6
0	0.47	43.12	8.72	3000	6
0	0.85	40.8	9.57	3000	6
0	0.8	46.08	10.37	3000	6
0	0.93	24.35	11.3	2200	6
0	0.43	24.19	11.72	3400	7
0	0.2	3.83	11.92	2000	6
0	0		11.92		
0					
0					
0				43000	8
0				94000	8
0				108000	8
0				114000	8
0	0		11.92	164000	7
0	0.39	1.27	12.21	8000	7
0	0.97	34.92	13.18	8000	7
0	1.12	107.52	14.3	8000	7
0	0.94	135.36	15.24	8000	7
0	0.77	36.96	16.01	8000	7
0	0.87	30.11	16.88	8000	7
0	1.11	67.39	18.09	8000	7
0	1.16	84.98	19.23	8000	7

0	0.85	46.96	20.08	8000	7
0	0.96	34.56	21.04	8000	7
0	0.8	30.4	21.84	8000	7
0	0.04	0.72	21.85	8000	7
0	0.04	1.65	21.89	8000	7
0	0.25	6	22.14	2000	7
0	0.09	2.16	22.23	6000	7
0	0.18	3.46	22.41	2000	7
0	0		22.41		
0	0.18	4.32	22.59	1600	7

0	0.42	0.84	23.04	6000	5
0	0.93	133.92	23.94	6000	6
0	1.45	208.8	25.39	6000	6
0	0.91	131.04	26.3	6000	6
0	0		26.3		
0	0.95	91.2	27.25	8000	6
0	1.2	172.8	28.45	8000	6
0	1.32	72.96	29.97	4000	6
0	1.15	82.8	31.12	4000	6
0	1.47	211.68	32.59	4000	6
0					
0	4.3	468.2	36.79	8000	6
	3.9	374.4	40.69	10000	6
	3.3	220.8	43.99	11000	6
0	2.85	273.6	46.84	12000	6
5.63	16.51	792.48	63.35	132000	6
11.21	2.04	97.92	64.39	146000	6
16.85	1.7	81.6	66.09	140000	5
22.9	1.38	66.24	67.47	130000	5

Summit

md MD (mKB)	inclination Incl (°)	azimuth Azm (°)	tvdcalc * TVD (mKB)	vscalc * VS (m)	nscalc * NS (m)	ewcalc * EW (m)	dlscalc * DLS (°/30m)
0	0	0	0	0	0	0	0
200	3.06	242.5	199.9	-5.34	-2.47	-4.74	0.46
300	3.21	249.12	299.76	-10.78	-4.7	-9.72	0.12
400	3.48	258.15	399.59	-16.46	-6.32	-15.31	0.18
500	3.37	253.87	499.41	-22.24	-7.76	-21.1	0.08
600	3.23	267.81	599.24	-27.63	-8.68	-26.74	0.24
700	3.08	275.44	699.09	-32.38	-8.53	-32.23	0.13
800	3.38	280.54	798.93	-36.89	-7.74	-37.8	0.12
836	2.81	287.83	834.88	-38.32	-7.28	-39.68	0.58
924	3.34	294.86	922.75	-41.33	-5.54	-44.06	0.22
1,009.00	3.6	305.05	1,007.60	-43.99	-2.88	-48.49	0.24
1,095.00	2.99	328.26	1,093.46	-45.3	0.49	-51.89	0.51
1,181.00	5.89	359.9	1,179.20	-43.32	6.82	-53.07	1.29
1,267.00	6.15	11.85	1,264.73	-38.22	15.74	-52.14	0.45
1,338.00	6.77	20.64	1,335.28	-32.58	23.38	-49.88	0.49
1,347.10	6.5	21.7	1,344.32	-31.78	24.36	-49.5	0.98
1,356.60	6.1	27.7	1,353.77	-30.94	25.3	-49.07	2.43
1,366.20	5.9	34.7	1,363.31	-30.08	26.16	-48.55	2.37
1,375.80	6.2	43.5	1,372.86	-29.14	26.94	-47.91	3.04
1,385.30	7.9	51.2	1,382.29	-28.01	27.72	-47.05	6.13
1,394.90	10.6	54	1,391.76	-26.49	28.66	-45.82	8.55
1,404.40	10.5	55.4	1,401.10	-24.76	29.66	-44.4	0.87
1,414.00	8.7	58.3	1,410.57	-23.16	30.54	-43.06	5.82
1,423.50	5.4	81.5	1,420.00	-22.03	30.96	-42.01	13.57
1,433.10	4.6	112.8	1,429.56	-21.36	30.9	-41.21	8.76
1,442.90	4.6	138.1	1,439.33	-21.03	30.46	-40.58	6.16
1,451.90	4.8	145.1	1,448.30	-20.9	29.88	-40.13	2.02
1,461.90	4.6	144.4	1,458.27	-20.81	29.21	-39.65	0.63
1,471.50	5.5	145.1	1,467.83	-20.71	28.52	-39.17	2.82
1,480.80	6.8	141.9	1,477.08	-20.57	27.72	-38.57	4.34
1,490.30	8.2	125.8	1,486.50	-20.19	26.88	-37.67	7.93
1,499.80	9.8	111	1,495.88	-19.37	26.2	-36.37	8.85
1,509.70	9.9	107.1	1,505.63	-18.23	25.64	-34.77	2.04
1,519.30	10.4	106.1	1,515.08	-17.04	25.16	-33.15	1.66
1,528.80	11.1	105	1,524.42	-15.77	24.69	-31.44	2.3
1,538.40	11.1	104.3	1,533.84	-14.42	24.22	-29.65	0.42
1,548.00	10.9	101.9	1,543.26	-13.06	23.8	-27.87	1.56
1,557.50	10.7	95.2	1,552.59	-11.64	23.54	-26.11	4.01
1,567.10	10.6	92.7	1,562.03	-10.15	23.42	-24.34	1.48
1,576.60	10.3	88.8	1,571.37	-8.65	23.39	-22.62	2.43
1,586.10	10	87.1	1,580.72	-7.15	23.45	-20.95	1.34
1,595.70	9.9	91.3	1,590.18	-5.68	23.48	-19.29	2.29
1,605.60	10.6	94.5	1,599.92	-4.18	23.38	-17.53	2.73
1,614.80	11.6	95.2	1,608.95	-2.71	23.23	-15.77	3.29
1,624.30	11.5	96.2	1,618.25	-1.14	23.05	-13.87	0.71
1,633.80	11.4	96.2	1,627.57	0.41	22.84	-12	0.32

1,643.30	11.2	97.6	1,636.88	1.93	22.62	-10.15	1.07
1,652.70	10	99.4	1,646.12	3.31	22.36	-8.44	3.97
1,662.70	9	100.4	1,655.98	4.6	22.08	-6.81	3.04
1,672.70	8.1	95.9	1,665.87	5.79	21.87	-5.34	3.36
1,682.10	6.9	89.6	1,675.19	6.83	21.8	-4.12	4.64
1,691.20	6.3	83.6	1,684.23	7.77	21.86	-3.08	3.01
1,701.00	6.9	88.1	1,693.97	8.8	21.94	-1.96	2.42
1,710.00	8.21	95.11	1,702.89	9.81	21.9	-0.78	5.33
1,716.10	9.3	97.6	1,708.92	10.57	21.8	0.15	5.67
1,726.20	10.1	101.5	1,718.87	11.91	21.51	1.82	3.07
1,735.50	10.5	100.8	1,728.02	13.19	21.19	3.46	1.35
1,744.90	9.1	94.5	1,737.29	14.47	20.97	5.04	5.62
1,754.50	7.9	81.8	1,746.78	15.73	21.01	6.45	6.94
1,764.50	8	63.5	1,756.69	17.07	21.42	7.75	7.57
1,774.10	9.5	50.5	1,766.18	18.51	22.22	8.96	7.73
1,783.70	10.5	45.3	1,775.63	20.13	23.34	10.19	4.21
1,793.30	10.4	41.4	1,785.07	21.78	24.6	11.39	2.23
1,803.00	9.8	40	1,794.62	23.38	25.89	12.5	2.01
1,812.40	9	44.2	1,803.89	24.82	27.03	13.52	3.36
1,821.90	7.9	53.7	1,813.29	26.18	27.95	14.57	5.6
1,831.10	7.6	64.2	1,822.41	27.42	28.59	15.63	4.71
1,840.70	7.8	70.2	1,831.92	28.69	29.09	16.81	2.59
1,850.50	8.3	73.7	1,841.62	30.04	29.51	18.12	2.14
1,860.10	8.4	69.9	1,851.12	31.41	29.95	19.44	1.75
1,869.80	8.7	67.1	1,860.72	32.84	30.48	20.78	1.59
1,879.80	9.2	67.8	1,870.59	34.39	31.07	22.22	1.54
1,889.10	9.3	67.4	1,879.77	35.88	31.64	23.6	0.38
1,898.60	9.7	65.6	1,889.14	37.44	32.27	25.04	1.57
1,908.10	9.6	69.2	1,898.51	39.02	32.88	26.51	1.93
1,917.70	8.9	76.5	1,907.98	40.53	33.34	27.98	4.27
1,927.30	8.6	83.9	1,917.47	41.91	33.59	29.41	3.64
1,936.90	9	89.6	1,926.96	43.23	33.67	30.88	3
1,946.50	9.8	91	1,936.43	44.61	33.66	32.44	2.6
1,955.80	10.6	89.6	1,945.58	46.05	33.65	34.09	2.7
1,965.60	10.7	85.7	1,955.21	47.67	33.73	35.9	2.23
1,975.10	10.4	78.7	1,964.55	49.29	33.96	37.62	4.15
1,984.50	10.3	74.1	1,973.80	50.92	34.36	39.26	2.66
1,994.00	9.8	72.7	1,983.16	52.54	34.83	40.85	1.76
2,004.00	9.1	67.1	1,993.02	54.17	35.39	42.39	3.46
2,013.60	8.4	64.2	2,002.51	55.62	35.99	43.72	2.59
2,023.20	7.7	64.2	2,012.01	56.96	36.58	44.93	2.19
2,032.80	6.9	63.9	2,021.54	58.18	37.11	46.03	2.5
2,042.40	6.8	68.8	2,031.07	59.32	37.57	47.08	1.85
2,051.90	6.8	73	2,040.50	60.43	37.94	48.14	1.57
2,061.50	6.9	75.5	2,050.03	61.55	38.25	49.24	0.98
2,071.00	7.4	72	2,059.46	62.7	38.58	50.37	2.09
2,080.70	6.6	67.4	2,069.09	63.87	38.99	51.48	3.02
2,090.20	5.2	71.3	2,078.54	64.84	39.34	52.39	4.6
2,099.80	3.8	72	2,088.11	65.58	39.57	53.11	4.38
2,109.40	3	76.9	2,097.69	66.13	39.73	53.66	2.66
2,118.90	2.6	93.4	2,107.18	66.55	39.77	54.11	2.83
2,128.50	2.3	108.2	2,116.77	66.87	39.7	54.51	2.18

2,138.10	1.9	127.9	2,126.36	67.07	39.54	54.82	2.56
2,147.60	1.5	141.6	2,135.86	67.15	39.35	55.02	1.79
2,157.10	0.9	149.3	2,145.36	67.17	39.19	55.14	1.96
2,166.60	0.5	121.5	2,154.86	67.2	39.1	55.21	1.62
2,176.40	1.2	49.8	2,164.65	67.32	39.14	55.33	3.51
2,185.80	2	44.6	2,174.05	67.57	39.32	55.52	2.59
2,195.20	2.3	49.5	2,183.44	67.91	39.56	55.78	1.12
2,204.60	2.1	46.3	2,192.84	68.26	39.8	56.05	0.75
2,214.00	1.9	49.1	2,202.23	68.58	40.03	56.29	0.71
2,223.60	1.7	53.7	2,211.83	68.88	40.21	56.52	0.77
2,233.70	1.5	74.1	2,221.92	69.16	40.34	56.77	1.78
2,243.30	1.4	88.1	2,231.52	69.38	40.38	57.01	1.15
2,252.80	1.3	102.9	2,241.02	69.57	40.36	57.23	1.14
2,262.40	1.4	113.8	2,250.61	69.72	40.29	57.44	0.86
2,271.60	1.6	112.1	2,259.81	69.87	40.19	57.66	0.67
2,281.20	1.4	106.4	2,269.41	70.04	40.11	57.9	0.78
2,290.80	1.4	102.2	2,279.01	70.21	40.05	58.13	0.32
2,300.70	1.6	124	2,288.90	70.37	39.95	58.36	1.82
2,310.30	1.9	149.3	2,298.50	70.43	39.74	58.55	2.56
2,319.90	2	164.1	2,308.09	70.4	39.44	58.68	1.6
2,329.50	1.5	154.6	2,317.69	70.36	39.16	58.78	1.8
2,339.10	0.8	138.1	2,327.29	70.37	39	58.88	2.4
2,348.70	0.2	153.5	2,336.89	70.38	38.93	58.93	1.9
2,358.30	0.6	18.2	2,346.49	70.42	38.97	58.95	2.36
2,368.00	1.6	10.1	2,356.18	70.54	39.15	58.99	3.12
2,377.50	2	12.2	2,365.68	70.73	39.44	59.05	1.28
2,386.80	2.8	16.8	2,374.97	71	39.82	59.15	2.65
2,396.40	3.1	24.1	2,384.56	71.37	40.28	59.33	1.5
2,406.20	3.7	24.5	2,394.34	71.84	40.81	59.57	1.84
2,415.70	4.1	27.3	2,403.82	72.36	41.39	59.85	1.4
2,425.30	4.1	23.8	2,413.39	72.92	42.01	60.14	0.78
2,434.90	3.6	18.9	2,422.97	73.41	42.61	60.38	1.87
2,444.40	3.3	2	2,432.45	73.77	43.16	60.49	3.33
2,453.90	3.7	350.4	2,441.94	74.01	43.74	60.45	2.56
2,459.70	3	356.7	2,447.73	74.14	44.07	60.41	4.09
2,469.30	3.6	346.9	2,457.31	74.33	44.62	60.32	2.57
2,488.40	4.8	64.9	2,476.37	75.28	45.54	60.91	8.43
2,498.00	4.1	104	2,485.95	75.94	45.63	61.61	9.52
2,507.60	3.4	127.9	2,495.53	76.3	45.37	62.17	5.3
2,517.10	2.6	154.2	2,505.01	76.41	45.01	62.48	4.96
2,526.70	3.2	133.5	2,514.60	76.48	44.62	62.77	3.74
2,536.30	1.9	183.4	2,524.19	76.48	44.28	62.96	7.66
2,545.80	2.2	215.1	2,533.69	76.23	43.97	62.84	3.65
2,555.40	2.7	247.4	2,543.28	75.84	43.74	62.53	4.51
2,565.00	3.5	243.5	2,552.86	75.32	43.52	62.06	2.58
2,574.60	4.9	244.6	2,562.44	74.62	43.21	61.42	4.38
2,584.20	5.1	237.6	2,572.00	73.78	42.81	60.69	2.01
2,593.70	4.3	231.2	2,581.47	73.01	42.36	60.06	3.02
2,603.30	4.2	240.4	2,591.04	72.31	41.96	59.47	2.15
2,612.90	3.6	233	2,600.62	71.66	41.6	58.93	2.44
2,622.40	5.5	241.1	2,610.09	70.91	41.21	58.29	6.32
2,632.00	5.4	242.1	2,619.65	69.99	40.77	57.49	0.43

2,641.60	5.6	238.3	2,629.20	69.07	40.31	56.69	1.3
2,651.20	3	214.4	2,638.78	68.38	39.86	56.15	9.7
2,660.80	2.6	167.6	2,648.37	68.1	39.44	56.05	7.04
2,671.10	2.6	180.3	2,658.66	67.92	38.98	56.1	1.67
2,680.70	3.1	161.6	2,668.24	67.77	38.51	56.18	3.28
2,690.20	2.4	178.8	2,677.73	67.63	38.07	56.27	3.39
2,699.80	2.5	182	2,687.32	67.43	37.66	56.26	0.53
2,709.40	1.8	219.5	2,696.92	67.18	37.34	56.16	4.79
2,719.00	1.6	210.8	2,706.51	66.93	37.1	56	1.02
2,728.60	3	240.4	2,716.11	66.56	36.87	55.71	5.6
2,738.20	2.4	245.3	2,725.70	66.11	36.66	55.31	2.01
2,747.80	3.2	243.5	2,735.28	65.64	36.45	54.89	2.51
2,757.40	3.9	271.3	2,744.87	65.09	36.34	54.32	5.73
2,767.00	4.1	268.5	2,754.44	64.5	36.34	53.65	0.87
2,776.60	4.3	285	2,764.02	63.94	36.42	52.96	3.81
2,786.10	4.4	282.6	2,773.49	63.41	36.6	52.26	0.66
2,795.70	4.8	277	2,783.06	62.8	36.73	51.5	1.88
2,805.30	4.6	275.2	2,792.63	62.16	36.81	50.72	0.78
2,814.80	4.4	272.4	2,802.10	61.53	36.86	49.98	0.94
2,853.20	3.3	273.8	2,840.41	59.33	36.99	47.4	0.86
2,882.00	1.9	331.1	2,869.18	58.63	37.47	46.34	2.89
2,901.20	2.3	341.3	2,888.37	58.7	38.11	46.07	0.85
2,929.90	3.9	42.8	2,917.04	59.72	39.37	46.55	3.61
2,968.30	6.8	44.6	2,955.26	63.14	41.95	49.03	2.27
3,006.50	4.3	66.7	2,993.29	66.73	44.13	51.93	2.55
3,011.50	4	74.1	2,998.27	67.08	44.25	52.27	3.68
3,050.00	3	80	3,036.70	69.35	44.79	54.56	0.83

Northrock Resources Ltd.

3500, 700 - 2 St SW Calgary, AB T2P 2W2

Northrock et al Summit Creek

300/B-44-64-30-125-45

Fort Norman

2924.50 - 2933.50 mKB MD

Acid Stimulation

Feb 20, 2005 to Feb 23, 2005

Grande Prairie
Fox Creek
Hinton
Manning
Slave Lake
Fort St. John
Fort Nelson
Calgary

BONNETT'S
WIRELINE SERVICES LTD.

Ph: (780) 513-3400 Fax: (780) 532-9266 www.bonnettswireline.com

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES Ltd.

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Acid Stimulation
Production Interval:	2924.50 - 2933.50 mKB MD
Midpoint:	2929.00 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure		
Casing Pressure:		

Test Date:	Feb 20, 2005
On Bottom:	Feb 20, 2005 05:20
Off Bottom:	Feb 23, 2005 19:00
Shut In	
Gauge Start:	Feb 19, 2005 08:27:00
Gauge Stop:	Feb 24, 2005 08:34:30

	Bottom
Run Depth:	2945.24 mKB MD
Serial No:	8010
Max Range:	110479 kPa
Manufacturer	CalScan/9006
Last Calibration:	Jan 17, 2005

Sent To: Darren Devenny

Comments:

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
1	05/02/20 05:20:00	0.000	32171.52	98.83
31	05/02/20 05:35:00	0.250	29459.17	98.31
61	05/02/20 05:50:00	0.500	49409.46	98.10
91	05/02/20 06:05:00	0.750	54798.71	97.55
121	05/02/20 06:20:00	1.000	56547.33	97.14
151	05/02/20 06:35:00	1.250	56381.28	97.12
181	05/02/20 06:50:00	1.500	58579.89	97.29
211	05/02/20 07:05:00	1.750	59446.52	97.41
241	05/02/20 07:20:00	2.000	59770.37	97.55
271	05/02/20 07:35:00	2.250	59823.39	97.66
301	05/02/20 07:50:00	2.500	60074.64	97.75
331	05/02/20 08:05:00	2.750	60412.87	97.85
361	05/02/20 08:20:00	3.000	60352.30	97.93
391	05/02/20 08:35:00	3.250	60185.11	97.99
421	05/02/20 08:50:00	3.500	58410.51	98.01
451	05/02/20 09:05:00	3.750	57199.59	98.03
481	05/02/20 09:20:00	4.000	29496.54	97.42
511	05/02/20 09:35:00	4.250	30365.38	97.30
541	05/02/20 09:50:00	4.500	31192.82	97.49
571	05/02/20 10:05:00	4.750	31926.33	97.71
601	05/02/20 10:20:00	5.000	32515.03	97.89
631	05/02/20 10:35:00	5.250	59295.29	98.26
661	05/02/20 10:50:00	5.500	57271.72	98.82
691	05/02/20 11:05:00	5.750	58321.67	98.81
721	05/02/20 11:20:00	6.000	58746.38	98.74
751	05/02/20 11:35:00	6.250	58778.84	98.65
781	05/02/20 11:50:00	6.500	59148.18	98.60
811	05/02/20 12:05:00	6.750	59284.60	98.55
841	05/02/20 12:20:00	7.000	59430.83	98.52
871	05/02/20 12:35:00	7.250	59598.24	98.51
901	05/02/20 12:50:00	7.500	59571.03	98.50
931	05/02/20 13:05:00	7.750	60166.26	98.46
961	05/02/20 13:20:00	8.000	60459.75	98.54
991	05/02/20 13:35:00	8.250	60641.02	98.53
1021	05/02/20 13:50:00	8.500	60849.04	98.52
1051	05/02/20 14:05:00	8.750	60877.96	98.52
1081	05/02/20 14:20:00	9.000	61028.34	98.53
1111	05/02/20 14:35:00	9.250	61031.31	98.53
1141	05/02/20 14:50:00	9.500	59753.84	98.52
1171	05/02/20 15:05:00	9.750	58283.06	98.52
1201	05/02/20 15:20:00	10.000	57756.97	98.48
1231	05/02/20 15:35:00	10.250	31577.34	97.71
1261	05/02/20 15:50:00	10.500	29852.03	97.78
1291	05/02/20 16:05:00	10.750	30380.15	97.89
1321	05/02/20 16:20:00	11.000	28566.11	97.96
1351	05/02/20 16:35:00	11.250	28733.79	98.24
1381	05/02/20 16:50:00	11.500	28517.73	98.37
1411	05/02/20 17:05:00	11.750	28790.95	98.64
1441	05/02/20 17:20:00	12.000	28814.48	98.93
1471	05/02/20 17:35:00	12.250	28490.76	98.87
1501	05/02/20 17:50:00	12.500	28504.68	98.52

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
1531	05/02/20 18:05:00	12.750	28527.24	98.52
1561	05/02/20 18:20:00	13.000	28517.61	98.55
1591	05/02/20 18:35:00	13.250	28543.66	98.58
1621	05/02/20 18:50:00	13.500	28578.98	98.61
1651	05/02/20 19:05:00	13.750	28615.12	98.62
1681	05/02/20 19:20:00	14.000	28648.26	98.64
1711	05/02/20 19:35:00	14.250	28690.51	98.65
1741	05/02/20 19:50:00	14.500	28729.09	98.66
1771	05/02/20 20:05:00	14.750	28762.28	98.66
1801	05/02/20 20:20:00	15.000	28547.07	98.67
1831	05/02/20 20:35:00	15.250	28552.73	98.70
1861	05/02/20 20:50:00	15.500	27291.59	98.73
1891	05/02/20 21:05:00	15.750	25031.09	98.74
1921	05/02/20 21:20:00	16.000	24015.68	98.74
1951	05/02/20 21:35:00	16.250	22785.53	98.75
1981	05/02/20 21:50:00	16.500	21878.41	98.74
2011	05/02/20 22:05:00	16.750	20949.03	98.76
2041	05/02/20 22:20:00	17.000	19858.00	98.77
2071	05/02/20 22:35:00	17.250	19454.95	98.80
2101	05/02/20 22:50:00	17.500	20361.89	98.85
2131	05/02/20 23:05:00	17.750	17159.06	98.83
2161	05/02/20 23:20:00	18.000	15674.65	98.86
2191	05/02/20 23:35:00	18.250	14063.80	98.87
2221	05/02/20 23:50:00	18.500	15948.86	98.91
2251	05/02/21 00:05:00	18.750	13639.95	98.89
2281	05/02/21 00:20:00	19.000	15254.94	98.88
2311	05/02/21 00:35:00	19.250	13730.00	98.88
2341	05/02/21 00:50:00	19.500	14287.40	98.94
2371	05/02/21 01:05:00	19.750	12720.34	98.93
2401	05/02/21 01:20:00	20.000	11592.46	98.93
2431	05/02/21 01:35:00	20.250	12499.80	98.93
2461	05/02/21 01:50:00	20.500	10117.36	98.92
2491	05/02/21 02:05:00	20.750	11181.68	98.90
2521	05/02/21 02:20:00	21.000	8631.84	98.92
2551	05/02/21 02:35:00	21.250	9438.51	99.05
2581	05/02/21 02:50:00	21.500	9633.26	99.02
2611	05/02/21 03:05:00	21.750	7316.30	98.98
2641	05/02/21 03:20:00	22.000	8024.22	98.94
2671	05/02/21 03:35:00	22.250	6757.05	98.96
2701	05/02/21 03:50:00	22.500	7955.34	98.88
2731	05/02/21 04:05:00	22.750	8281.98	98.85
2761	05/02/21 04:20:00	23.000	8361.37	98.90
2791	05/02/21 04:35:00	23.250	8436.55	98.96
2821	05/02/21 04:50:00	23.500	8581.67	98.99
2851	05/02/21 05:05:00	23.750	7429.77	98.98
2881	05/02/21 05:20:00	24.000	7735.46	99.00
2911	05/02/21 05:35:00	24.250	7452.71	98.97
2941	05/02/21 05:50:00	24.500	7983.49	99.00
2971	05/02/21 06:05:00	24.750	8688.68	98.97
3001	05/02/21 06:20:00	25.000	8839.27	98.96
3031	05/02/21 06:35:00	25.250	8921.86	98.97

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETTS

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
3061	05/02/21 06:50:00	25.500	9060.69	98.99
3091	05/02/21 07:05:00	25.750	7667.09	99.00
3121	05/02/21 07:20:00	26.000	8182.47	98.99
3151	05/02/21 07:35:00	26.250	8410.03	98.98
3181	05/02/21 07:50:00	26.500	8583.14	98.97
3211	05/02/21 08:05:00	26.750	7772.90	99.00
3241	05/02/21 08:20:00	27.000	8343.18	99.00
3271	05/02/21 08:35:00	27.250	8590.07	98.98
3301	05/02/21 08:50:00	27.500	7647.83	98.98
3331	05/02/21 09:05:00	27.750	7999.77	99.00
3361	05/02/21 09:20:00	28.000	8417.53	98.99
3391	05/02/21 09:35:00	28.250	8524.29	98.97
3421	05/02/21 09:50:00	28.500	7510.32	98.97
3451	05/02/21 10:05:00	28.750	7832.80	99.00
3481	05/02/21 10:20:00	29.000	8243.31	98.99
3511	05/02/21 10:35:00	29.250	8418.15	98.98
3541	05/02/21 10:50:00	29.500	7708.50	98.99
3571	05/02/21 11:05:00	29.750	8188.00	99.00
3601	05/02/21 11:20:00	30.000	8450.70	98.98
3631	05/02/21 11:35:00	30.250	8537.55	98.97
3661	05/02/21 11:50:00	30.500	8589.29	98.98
3691	05/02/21 12:05:00	30.750	8636.26	98.99
3721	05/02/21 12:20:00	31.000	8681.62	98.99
3751	05/02/21 12:35:00	31.250	8743.58	99.00
3781	05/02/21 12:50:00	31.500	7818.74	99.00
3811	05/02/21 13:05:00	31.750	8258.98	98.99
3841	05/02/21 13:20:00	32.000	8488.74	98.98
3871	05/02/21 13:35:00	32.250	8645.17	98.97
3901	05/02/21 13:50:00	32.500	7862.46	98.99
3931	05/02/21 14:05:00	32.750	8297.79	98.99
3961	05/02/21 14:20:00	33.000	8473.19	98.97
3991	05/02/21 14:35:00	33.250	13813.16	98.97
4021	05/02/21 14:50:00	33.500	29364.90	98.61
4051	05/02/21 15:05:00	33.750	29155.94	98.29
4081	05/02/21 15:20:00	34.000	28962.96	98.21
4111	05/02/21 15:35:00	34.250	28805.86	98.21
4141	05/02/21 15:50:00	34.500	28680.39	98.23
4171	05/02/21 16:05:00	34.750	28573.48	98.25
4201	05/02/21 16:20:00	35.000	28539.67	98.30
4231	05/02/21 16:35:00	35.250	28486.26	98.33
4261	05/02/21 16:50:00	35.500	27633.82	97.98
4291	05/02/21 17:05:00	35.750	26700.50	96.38
4321	05/02/21 17:20:00	36.000	26279.63	94.95
4351	05/02/21 17:35:00	36.250	26251.38	94.70
4381	05/02/21 17:50:00	36.500	26213.92	94.65
4411	05/02/21 18:05:00	36.750	26159.92	94.65
4441	05/02/21 18:20:00	37.000	26113.51	94.64
4471	05/02/21 18:35:00	37.250	26070.76	94.62
4501	05/02/21 18:50:00	37.500	26158.46	94.60
4531	05/02/21 19:05:00	37.750	23405.50	94.59
4561	05/02/21 19:20:00	38.000	23773.97	94.64
4591	05/02/21 19:35:00	38.250	23788.07	94.64
4621	05/02/21 19:50:00	38.500	21559.12	94.62
4651	05/02/21 20:05:00	38.750	19843.74	94.64
4681	05/02/21 20:20:00	39.000	18423.29	94.66
4711	05/02/21 20:35:00	39.250	15386.81	94.66
4741	05/02/21 20:50:00	39.500	16030.17	94.74
4771	05/02/21 21:05:00	39.750	14204.08	94.73
4801	05/02/21 21:20:00	40.000	14911.36	94.77
4831	05/02/21 21:35:00	40.250	12718.78	94.78
4861	05/02/21 21:50:00	40.500	10752.44	94.78
4891	05/02/21 22:05:00	40.750	11206.13	94.82
4921	05/02/21 22:20:00	41.000	9027.11	94.85
4951	05/02/21 22:35:00	41.250	9566.81	94.89
4981	05/02/21 22:50:00	41.500	7663.85	94.90
5011	05/02/21 23:05:00	41.750	7956.61	94.94
5041	05/02/21 23:20:00	42.000	7255.07	94.94
5071	05/02/21 23:35:00	42.250	8098.44	95.02
5101	05/02/21 23:50:00	42.500	7631.42	95.02
5131	05/02/22 00:05:00	42.750	8262.94	95.01
5161	05/02/22 00:20:00	43.000	7692.00	95.02
5191	05/02/22 00:35:00	43.250	7985.58	95.01
5221	05/02/22 00:50:00	43.500	8174.92	95.00
5251	05/02/22 01:05:00	43.750	8255.92	95.01
5281	05/02/22 01:20:00	44.000	7038.49	95.01
5311	05/02/22 01:35:00	44.250	7806.95	95.04
5341	05/02/22 01:50:00	44.500	8191.92	95.03
5371	05/02/22 02:05:00	44.750	8301.98	95.02
5401	05/02/22 02:20:00	45.000	7366.87	95.02
5431	05/02/22 02:35:00	45.250	7914.01	95.04
5461	05/02/22 02:50:00	45.500	8196.91	95.02
5491	05/02/22 03:05:00	45.750	8286.96	95.00
5521	05/02/22 03:20:00	46.000	8402.16	95.01
5551	05/02/22 03:35:00	46.250	7414.86	95.02
5581	05/02/22 03:50:00	46.500	7887.67	95.03
5611	05/02/22 04:05:00	46.750	8069.27	95.01
5641	05/02/22 04:20:00	47.000	8357.85	95.02
5671	05/02/22 04:35:00	47.250	8193.96	95.05
5701	05/02/22 04:50:00	47.500	8308.09	95.04
5731	05/02/22 05:05:00	47.750	8354.15	95.02
5761	05/02/22 05:20:00	48.000	7302.72	95.00
5791	05/02/22 05:35:00	48.250	7719.83	95.04
5821	05/02/22 05:50:00	48.500	8281.46	95.03
5851	05/02/22 06:05:00	48.750	8431.75	95.01
5881	05/02/22 06:20:00	49.000	27005.18	94.97
5911	05/02/22 06:35:00	49.250	26859.41	94.37
5941	05/02/22 06:50:00	49.500	26656.74	94.21
5971	05/02/22 07:05:00	49.750	26628.10	94.24
6001	05/02/22 07:20:00	50.000	26603.72	94.34
6031	05/02/22 07:35:00	50.250	26581.81	94.39
6061	05/02/22 07:50:00	50.500	26570.59	94.42
6091	05/02/22 08:05:00	50.750	26595.16	94.45

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8010 - Bottom

BONNETTS

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
6121	05/02/22 08:20:00	51.000	26649.26	94.39
6151	05/02/22 08:35:00	51.250	26585.62	94.29
6181	05/02/22 08:50:00	51.500	26507.05	94.27
6211	05/02/22 09:05:00	51.750	26484.57	94.28
6241	05/02/22 09:20:00	52.000	26469.60	94.29
6271	05/02/22 09:35:00	52.250	26458.65	94.31
6301	05/02/22 09:50:00	52.500	26449.04	94.35
6331	05/02/22 10:05:00	52.750	26721.25	94.67
6361	05/02/22 10:20:00	53.000	26912.51	95.40
6391	05/02/22 10:35:00	53.250	26632.25	95.40
6421	05/02/22 10:50:00	53.500	26626.61	95.11
6451	05/02/22 11:05:00	53.750	26639.59	95.07
6481	05/02/22 11:20:00	54.000	26554.23	95.08
6511	05/02/22 11:35:00	54.250	26621.03	95.05
6541	05/02/22 11:50:00	54.500	26621.01	95.05
6571	05/02/22 12:05:00	54.750	26620.62	95.06
6601	05/02/22 12:20:00	55.000	26619.46	95.09
6631	05/02/22 12:35:00	55.250	26824.44	95.13
6661	05/02/22 12:50:00	55.500	26883.91	95.55
6691	05/02/22 13:05:00	55.750	26868.49	95.62
6721	05/02/22 13:20:00	56.000	26979.48	95.77
6751	05/02/22 13:35:00	56.250	26950.42	95.86
6781	05/02/22 13:50:00	56.500	28905.68	95.43
6811	05/02/22 14:05:00	56.750	28181.97	95.03
6841	05/02/22 14:20:00	57.000	30798.90	94.20
6871	05/02/22 14:35:00	57.250	30837.43	92.94
6901	05/02/22 14:50:00	57.500	38941.43	92.19
6931	05/02/22 15:05:00	57.750	46631.53	91.01
6961	05/02/22 15:20:00	58.000	40413.81	91.90
6991	05/02/22 15:35:00	58.250	46001.22	92.61
7021	05/02/22 15:50:00	58.500	43898.46	92.60
7051	05/02/22 16:05:00	58.750	47119.34	93.18
7081	05/02/22 16:20:00	59.000	48382.18	93.21
7111	05/02/22 16:35:00	59.250	49500.30	93.31
7141	05/02/22 16:50:00	59.500	29086.98	93.82
7171	05/02/22 17:05:00	59.750	44068.85	96.64
7201	05/02/22 17:20:00	60.000	44303.93	97.47
7231	05/02/22 17:35:00	60.250	45483.16	97.30
7261	05/02/22 17:50:00	60.500	48650.47	97.05
7291	05/02/22 18:05:00	60.750	45722.05	96.35
7321	05/02/22 18:20:00	61.000	44124.88	96.41
7351	05/02/22 18:35:00	61.250	47913.09	95.88
7381	05/02/22 18:50:00	61.500	46811.18	96.00
7411	05/02/22 19:05:00	61.750	49709.59	95.42
7441	05/02/22 19:20:00	62.000	49131.95	95.00
7471	05/02/22 19:35:00	62.250	47234.43	95.53
7501	05/02/22 19:50:00	62.500	50570.07	95.37
7531	05/02/22 20:05:00	62.750	48593.66	95.14
7561	05/02/22 20:20:00	63.000	47095.27	95.62
7591	05/02/22 20:35:00	63.250	50274.65	95.63
7621	05/02/22 20:50:00	63.500	46061.01	95.12

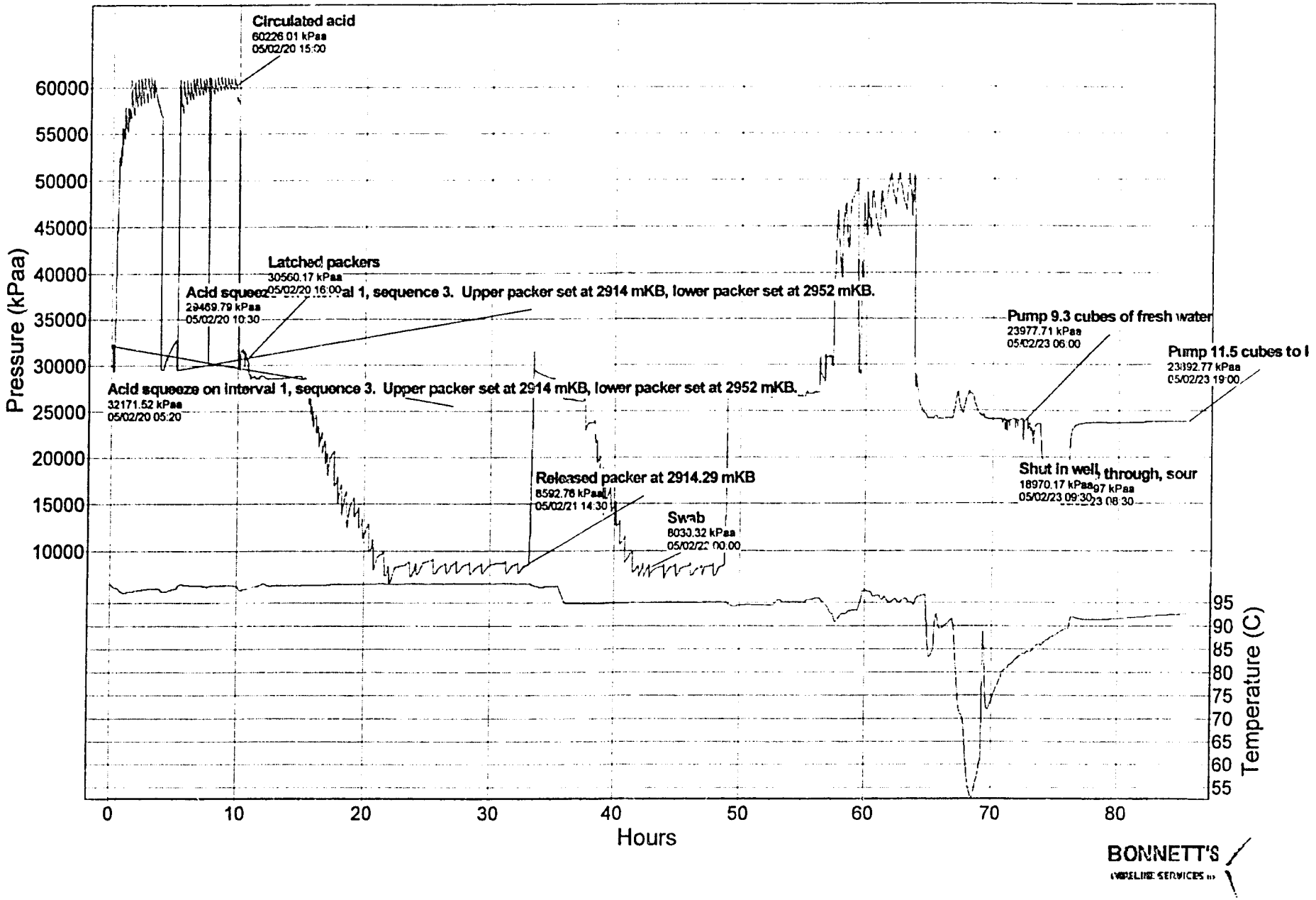
	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
7651	05/02/22 21:05:00	63.750	42977.29	94.64
7681	05/02/22 21:20:00	64.000	27566.07	95.86
7711	05/02/22 21:35:00	64.250	25517.60	96.35
7741	05/02/22 21:50:00	64.500	24832.85	96.52
7771	05/02/22 22:05:00	64.750	24346.21	95.31
7801	05/02/22 22:20:00	65.000	24209.89	83.67
7831	05/02/22 22:35:00	65.250	24196.45	84.21
7861	05/02/22 22:50:00	65.500	24434.15	90.27
7891	05/02/22 23:05:00	65.750	24199.66	90.42
7921	05/02/22 23:20:00	66.000	24192.68	89.48
7951	05/02/22 23:35:00	66.250	24195.55	89.98
7981	05/02/22 23:50:00	66.500	24199.23	90.50
8011	05/02/23 00:05:00	66.750	24200.72	91.10
8041	05/02/23 00:20:00	67.000	25185.34	89.93
8071	05/02/23 00:35:00	67.250	26963.14	79.50
8101	05/02/23 00:50:00	67.500	25185.65	71.57
8131	05/02/23 01:05:00	67.750	25306.68	70.18
8161	05/02/23 01:20:00	68.000	26655.51	61.79
8191	05/02/23 01:35:00	68.250	26852.14	54.87
8221	05/02/23 01:50:00	68.500	26516.87	52.58
8251	05/02/23 02:05:00	68.750	25118.55	55.53
8281	05/02/23 02:20:00	69.000	24587.95	58.85
8311	05/02/23 02:35:00	69.250	24542.75	77.40
8341	05/02/23 02:50:00	69.500	24150.50	75.95
8371	05/02/23 03:05:00	69.750	24105.47	72.14
8401	05/02/23 03:20:00	70.000	24091.32	74.00
8431	05/02/23 03:35:00	70.250	24086.49	75.79
8461	05/02/23 03:50:00	70.500	24084.57	77.36
8491	05/02/23 04:05:00	70.750	24093.83	78.71
8521	05/02/23 04:20:00	71.000	24096.13	80.29
8551	05/02/23 04:35:00	71.250	23689.74	80.87
8581	05/02/23 04:50:00	71.500	24020.55	81.59
8611	05/02/23 05:05:00	71.750	24059.63	82.15
8641	05/02/23 05:20:00	72.000	24083.21	82.82
8671	05/02/23 05:35:00	72.250	24038.86	83.41
8701	05/02/23 05:50:00	72.500	21839.40	83.93
8731	05/02/23 06:05:00	72.750	24007.66	84.07
8761	05/02/23 06:20:00	73.000	23714.71	84.46
8791	05/02/23 06:35:00	73.250	21841.26	84.59
8821	05/02/23 06:50:00	73.500	23471.54	85.61
8851	05/02/23 07:05:00	73.750	23580.09	86.01
8881	05/02/23 07:20:00	74.000	19882.91	85.90
8911	05/02/23 07:35:00	74.250	18370.97	86.51
8941	05/02/23 07:50:00	74.500	17793.31	87.05
8971	05/02/23 08:05:00	74.750	17622.02	87.52
9001	05/02/23 08:20:00	75.000	17520.02	87.92
9031	05/02/23 08:35:00	75.250	17466.87	88.26
9061	05/02/23 08:50:00	75.500	17586.26	88.72
9091	05/02/23 09:05:00	75.750	17672.72	89.16
9121	05/02/23 09:20:00	76.000	17601.30	89.39
9151	05/02/23 09:35:00	76.250	21944.91	90.67

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
9181	05/02/23 09:50:00	76.500	23189.78	91.96
9211	05/02/23 10:05:00	76.750	23458.01	91.69
9241	05/02/23 10:20:00	77.000	23580.18	91.48
9271	05/02/23 10:35:00	77.250	23656.47	91.37
9301	05/02/23 10:50:00	77.500	23694.81	91.31
9331	05/02/23 11:05:00	77.750	23720.87	91.29
9361	05/02/23 11:20:00	78.000	23743.54	91.24
9391	05/02/23 11:35:00	78.250	23758.74	91.25
9421	05/02/23 11:50:00	78.500	23766.20	91.26
9451	05/02/23 12:05:00	78.750	23761.71	91.28
9481	05/02/23 12:20:00	79.000	23749.41	91.29
9511	05/02/23 12:35:00	79.250	23723.33	91.32
9541	05/02/23 12:50:00	79.500	23722.73	91.42
9571	05/02/23 13:05:00	79.750	23729.01	91.46
9601	05/02/23 13:20:00	80.000	23739.61	91.51
9631	05/02/23 13:35:00	80.250	23751.02	91.57
9661	05/02/23 13:50:00	80.500	23761.75	91.63
9691	05/02/23 14:05:00	80.750	23770.95	91.68
9721	05/02/23 14:20:00	81.000	23779.24	91.74
9751	05/02/23 14:35:00	81.250	23788.75	91.79
9781	05/02/23 14:50:00	81.500	23796.65	91.84
9811	05/02/23 15:05:00	81.750	23804.94	91.89
9841	05/02/23 15:20:00	82.000	23813.61	91.94
9871	05/02/23 15:35:00	82.250	23820.54	91.98
9901	05/02/23 15:50:00	82.500	23826.11	92.03
9931	05/02/23 16:05:00	82.750	23832.47	92.07
9961	05/02/23 16:20:00	83.000	23839.09	92.12
9991	05/02/23 16:35:00	83.250	23845.70	92.16
10021	05/02/23 16:50:00	83.500	23852.81	92.21
10051	05/02/23 17:05:00	83.750	23859.13	92.25
10081	05/02/23 17:20:00	84.000	23865.58	92.29
10111	05/02/23 17:35:00	84.250	23870.68	92.32
10141	05/02/23 17:50:00	84.500	23876.26	92.36
10171	05/02/23 18:05:00	84.750	23881.19	92.40
10201	05/02/23 18:20:00	85.000	23886.46	92.44
10231	05/02/23 18:35:00	85.250	23888.58	92.48
10261	05/02/23 18:50:00	85.500	23891.15	92.51

Northrock Resources Ltd.
300/B-44-64-30-125-45 Acid Stimulation
Northrock et al Summit Creek

On Bottom:	Feb 20, 2005 05:20 (32172 kPaa)
Off Bottom:	Feb 23, 2005 19:00 (23893 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8010
Depth:	2939.04 mKB MD
Ticket:	50007



BONNETT'S
WIRELINE SERVICES

Northrock Resources Ltd.

Northrock et al Summit Creek

300/B-44-64-30-125-45

BONNETT'S WIRELINE SERVICES LTD.

Field:	Summit Creek
Formation:	Fort Norman
Status:	Standing Gas
Well Type:	Vertical
Test Type:	Acid Stimulation
Production Interval:	2924.50 - 2933.50 mKB MD
Midpoint:	2929.00 mKB MD
Elevations (m):	**GL:** 580.5 **KB:** 586.7
Pool Datum Depth:	
Well Datum Depth:	

	Initial (kPaa)	**Final (kPaa)**
Tubing Pressure		
Casing Pressure:		

Test Date:	Feb 20, 2005
On Bottom:	Feb 20, 2005 05:20
Off Bottom:	Feb 23, 2005 19:00
Shut In	
Gauge Start:	Feb 19, 2005 08:27:00
Gauge Stop:	Feb 24, 2005 08:34:00

	Top
Run Depth:	2944.74 mKB MD
Serial No:	8009
Max Range:	110479 kPa
Manufacturer	CalScan/9006
Last Calibration:	Jan 17, 2005

Sent To: Darren Devenny

Comments:

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
1	05/02/20 05:20:00	0.000	32210.72	98.79
31	05/02/20 05:35:00	0.250	29425.31	97.90
61	05/02/20 05:50:00	0.500	49389.58	97.21
91	05/02/20 06:05:00	0.750	54770.77	96.90
121	05/02/20 06:20:00	1.000	56526.88	96.77
151	05/02/20 06:35:00	1.250	56366.08	96.89
181	05/02/20 06:50:00	1.500	58561.44	97.11
211	05/02/20 07:05:00	1.750	59427.95	97.29
241	05/02/20 07:20:00	2.000	59752.19	97.44
271	05/02/20 07:35:00	2.250	59806.36	97.57
301	05/02/20 07:50:00	2.500	60058.39	97.68
331	05/02/20 08:05:00	2.750	60395.86	97.77
361	05/02/20 08:20:00	3.000	60338.14	97.86
391	05/02/20 08:35:00	3.250	60173.10	97.92
421	05/02/20 08:50:00	3.500	58403.45	97.94
451	05/02/20 09:05:00	3.750	57194.45	97.96
481	05/02/20 09:20:00	4.000	29494.46	97.35
511	05/02/20 09:35:00	4.250	30371.42	97.31
541	05/02/20 09:50:00	4.500	31194.20	97.47
571	05/02/20 10:05:00	4.750	31929.40	97.64
601	05/02/20 10:20:00	5.000	32516.93	97.79
631	05/02/20 10:35:00	5.250	59857.39	98.12
661	05/02/20 10:50:00	5.500	57260.77	98.72
691	05/02/20 11:05:00	5.750	58310.27	98.75
721	05/02/20 11:20:00	6.000	58735.63	98.67
751	05/02/20 11:35:00	6.250	58769.45	98.58
781	05/02/20 11:50:00	6.500	59138.98	98.52
811	05/02/20 12:05:00	6.750	59275.88	98.48
841	05/02/20 12:20:00	7.000	59422.56	98.46
871	05/02/20 12:35:00	7.250	59590.28	98.44
901	05/02/20 12:50:00	7.500	59563.67	98.43
931	05/02/20 13:05:00	7.750	60156.90	98.37
961	05/02/20 13:20:00	8.000	60451.11	98.45
991	05/02/20 13:35:00	8.250	60632.27	98.46
1021	05/02/20 13:50:00	8.500	60836.61	98.46
1051	05/02/20 14:05:00	8.750	60871.83	98.47
1081	05/02/20 14:20:00	9.000	61037.54	98.47
1111	05/02/20 14:35:00	9.250	61034.14	98.48
1141	05/02/20 14:50:00	9.500	60178.99	98.47
1171	05/02/20 15:05:00	9.750	58608.57	98.47
1201	05/02/20 15:20:00	10.000	56434.20	98.42
1231	05/02/20 15:35:00	10.250	31578.74	97.67
1261	05/02/20 15:50:00	10.500	29591.63	97.76
1291	05/02/20 16:05:00	10.750	30375.67	97.83
1321	05/02/20 16:20:00	11.000	28531.47	97.88
1351	05/02/20 16:35:00	11.250	28734.64	98.10
1381	05/02/20 16:50:00	11.500	28516.94	98.23
1411	05/02/20 17:05:00	11.750	28796.58	98.53
1441	05/02/20 17:20:00	12.000	28812.95	98.85
1471	05/02/20 17:35:00	12.250	28492.06	98.84
1501	05/02/20 17:50:00	12.500	28502.22	98.47
1531	05/02/20 18:05:00	12.750	28524.68	98.46
1561	05/02/20 18:20:00	13.000	28517.76	98.48
1591	05/02/20 18:35:00	13.250	28540.65	98.50
1621	05/02/20 18:50:00	13.500	28575.89	98.53
1651	05/02/20 19:05:00	13.750	28611.88	98.54
1681	05/02/20 19:20:00	14.000	28644.92	98.56
1711	05/02/20 19:35:00	14.250	28687.02	98.57
1741	05/02/20 19:50:00	14.500	28725.54	98.58
1771	05/02/20 20:05:00	14.750	28758.49	98.58
1801	05/02/20 20:20:00	15.000	28541.95	98.59
1831	05/02/20 20:35:00	15.250	28545.85	98.61
1861	05/02/20 20:50:00	15.500	27303.10	98.65
1891	05/02/20 21:05:00	15.750	25039.91	98.69
1921	05/02/20 21:20:00	16.000	24025.04	98.71
1951	05/02/20 21:35:00	16.250	22788.59	98.72
1981	05/02/20 21:50:00	16.500	21888.76	98.72
2011	05/02/20 22:05:00	16.750	20962.49	98.73
2041	05/02/20 22:20:00	17.000	19875.79	98.74
2071	05/02/20 22:35:00	17.250	19464.38	98.78
2101	05/02/20 22:50:00	17.500	20357.07	98.82
2131	05/02/20 23:05:00	17.750	17159.20	98.80
2161	05/02/20 23:20:00	18.000	15680.11	98.83
2191	05/02/20 23:35:00	18.250	14078.53	98.85
2221	05/02/20 23:50:00	18.500	15948.15	98.90
2251	05/02/21 00:05:00	18.750	13654.86	98.86
2281	05/02/21 00:20:00	19.000	15255.35	98.85
2311	05/02/21 00:35:00	19.250	13725.30	98.84
2341	05/02/21 00:50:00	19.500	14287.07	98.92
2371	05/02/21 01:05:00	19.750	12718.01	98.91
2401	05/02/21 01:20:00	20.000	11589.91	98.90
2431	05/02/21 01:35:00	20.250	12497.77	98.91
2461	05/02/21 01:50:00	20.500	10111.48	98.89
2491	05/02/21 02:05:00	20.750	11180.15	98.88
2521	05/02/21 02:20:00	21.000	8631.80	98.89
2551	05/02/21 02:35:00	21.250	9433.04	99.03
2581	05/02/21 02:50:00	21.500	9625.11	99.00
2611	05/02/21 03:05:00	21.750	7301.70	98.96
2641	05/02/21 03:20:00	22.000	8022.29	98.92
2671	05/02/21 03:35:00	22.250	6758.86	98.93
2701	05/02/21 03:50:00	22.500	7955.31	98.85
2731	05/02/21 04:05:00	22.750	8272.93	98.81
2761	05/02/21 04:20:00	23.000	8352.14	98.86
2791	05/02/21 04:35:00	23.250	8427.61	98.91
2821	05/02/21 04:50:00	23.500	8570.39	98.95
2851	05/02/21 05:05:00	23.750	7391.55	98.95
2881	05/02/21 05:20:00	24.000	7732.36	98.98
2911	05/02/21 05:35:00	24.250	7445.13	98.94
2941	05/02/21 05:50:00	24.500	7979.67	98.97
2971	05/02/21 06:05:00	24.750	8680.58	98.95
3001	05/02/21 06:20:00	25.000	8829.91	98.93
3031	05/02/21 06:35:00	25.250	8912.05	98.93

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
3061	05/02/21 06:50:00	25.500	9063.34	98.95
3091	05/02/21 07:05:00	25.750	7660.44	98.98
3121	05/02/21 07:20:00	26.000	8175.62	98.97
3151	05/02/21 07:35:00	26.250	8402.36	98.95
3181	05/02/21 07:50:00	26.500	8574.12	98.94
3211	05/02/21 08:05:00	26.750	7764.37	98.97
3241	05/02/21 08:20:00	27.000	8337.95	98.98
3271	05/02/21 08:35:00	27.250	8580.82	98.96
3301	05/02/21 08:50:00	27.500	7644.03	98.94
3331	05/02/21 09:05:00	27.750	7994.21	98.97
3361	05/02/21 09:20:00	28.000	8409.03	98.96
3391	05/02/21 09:35:00	28.250	8514.35	98.94
3421	05/02/21 09:50:00	28.500	7500.86	98.94
3451	05/02/21 10:05:00	28.750	7826.43	98.98
3481	05/02/21 10:20:00	29.000	8236.70	98.96
3511	05/02/21 10:35:00	29.250	8410.19	98.95
3541	05/02/21 10:50:00	29.500	7702.05	98.96
3571	05/02/21 11:05:00	29.750	8183.66	98.97
3601	05/02/21 11:20:00	30.000	8440.61	98.95
3631	05/02/21 11:35:00	30.250	8527.33	98.94
3661	05/02/21 11:50:00	30.500	8578.95	98.95
3691	05/02/21 12:05:00	30.750	8625.85	98.96
3721	05/02/21 12:20:00	31.000	8671.22	98.96
3751	05/02/21 12:35:00	31.250	8733.20	98.97
3781	05/02/21 12:50:00	31.500	7818.28	98.98
3811	05/02/21 13:05:00	31.750	8252.56	98.97
3841	05/02/21 13:20:00	32.000	8478.10	98.95
3871	05/02/21 13:35:00	32.250	8807.41	98.94
3901	05/02/21 13:50:00	32.500	7859.72	98.96
3931	05/02/21 14:05:00	32.750	8289.65	98.96
3961	05/02/21 14:20:00	33.000	8463.46	98.95
3991	05/02/21 14:35:00	33.250	14025.86	98.95
4021	05/02/21 14:50:00	33.500	29357.88	98.61
4051	05/02/21 15:05:00	33.750	29142.42	98.27
4081	05/02/21 15:20:00	34.000	28951.21	98.19
4111	05/02/21 15:35:00	34.250	28795.30	98.18
4141	05/02/21 15:50:00	34.500	28670.35	98.20
4171	05/02/21 16:05:00	34.750	28564.04	98.23
4201	05/02/21 16:20:00	35.000	28452.56	98.27
4231	05/02/21 16:35:00	35.250	28478.41	98.31
4261	05/02/21 16:50:00	35.500	27625.55	98.10
4291	05/02/21 17:05:00	35.750	26636.73	96.66
4321	05/02/21 17:20:00	36.000	26271.95	95.19
4351	05/02/21 17:35:00	36.250	26242.27	94.75
4381	05/02/21 17:50:00	36.500	26202.74	94.65
4411	05/02/21 18:05:00	36.750	26151.15	94.63
4441	05/02/21 18:20:00	37.000	26105.47	94.61
4471	05/02/21 18:35:00	37.250	26062.75	94.59
4501	05/02/21 18:50:00	37.500	26183.55	94.57
4531	05/02/21 19:05:00	37.750	23407.57	94.54
4561	05/02/21 19:20:00	38.000	23768.49	94.59
4591	05/02/21 19:35:00	38.250	23780.47	94.61
4621	05/02/21 19:50:00	38.500	21552.41	94.58
4651	05/02/21 20:05:00	38.750	19845.80	94.60
4681	05/02/21 20:20:00	39.000	18428.79	94.62
4711	05/02/21 20:35:00	39.250	15275.20	94.62
4741	05/02/21 20:50:00	39.500	16033.45	94.70
4771	05/02/21 21:05:00	39.750	14203.71	94.72
4801	05/02/21 21:20:00	40.000	14909.29	94.74
4831	05/02/21 21:35:00	40.250	12715.89	94.74
4861	05/02/21 21:50:00	40.500	10751.61	94.76
4891	05/02/21 22:05:00	40.750	11205.37	94.80
4921	05/02/21 22:20:00	41.000	9021.18	94.81
4951	05/02/21 22:35:00	41.250	9563.75	94.86
4981	05/02/21 22:50:00	41.500	7650.15	94.87
5011	05/02/21 23:05:00	41.750	7952.31	94.91
5041	05/02/21 23:20:00	42.000	7258.24	94.91
5071	05/02/21 23:35:00	42.250	8099.36	94.98
5101	05/02/21 23:50:00	42.500	7628.99	94.99
5131	05/02/22 00:05:00	42.750	8264.55	94.99
5161	05/02/22 00:20:00	43.000	7689.50	94.99
5191	05/02/22 00:35:00	43.250	7980.29	94.99
5221	05/02/22 00:50:00	43.500	8165.59	94.99
5251	05/02/22 01:05:00	43.750	8245.96	94.98
5281	05/02/22 01:20:00	44.000	7058.65	94.98
5311	05/02/22 01:35:00	44.250	7802.39	95.01
5341	05/02/22 01:50:00	44.500	8183.32	95.00
5371	05/02/22 02:05:00	44.750	8291.66	95.00
5401	05/02/22 02:20:00	45.000	7362.60	94.99
5431	05/02/22 02:35:00	45.250	7915.55	95.02
5461	05/02/22 02:50:00	45.500	8187.37	95.00
5491	05/02/22 03:05:00	45.750	8276.41	94.98
5521	05/02/22 03:20:00	46.000	8393.19	94.98
5551	05/02/22 03:35:00	46.250	7409.71	94.99
5581	05/02/22 03:50:00	46.500	7881.74	95.01
5611	05/02/22 04:05:00	46.750	8059.16	94.99
5641	05/02/22 04:20:00	47.000	8356.36	94.99
5671	05/02/22 04:35:00	47.250	8186.91	95.02
5701	05/02/22 04:50:00	47.500	8296.95	95.02
5731	05/02/22 05:05:00	47.750	8342.95	95.01
5761	05/02/22 05:20:00	48.000	7298.18	94.98
5791	05/02/22 05:35:00	48.250	7727.62	95.01
5821	05/02/22 05:50:00	48.500	8272.68	95.01
5851	05/02/22 06:05:00	48.750	8422.43	94.99
5881	05/02/22 06:20:00	49.000	27086.80	95.03
5911	05/02/22 06:35:00	49.250	26845.73	94.46
5941	05/02/22 06:50:00	49.500	26645.71	94.22
5971	05/02/22 07:05:00	49.750	26617.08	94.21
6001	05/02/22 07:20:00	50.000	26592.05	94.31
6031	05/02/22 07:35:00	50.250	26571.29	94.37
6061	05/02/22 07:50:00	50.500	26560.20	94.39
6091	05/02/22 08:05:00	50.750	26585.74	94.41

Ticket: 50007
Ran/Pulled: Mike Munro

Recordor: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time yy/mm/dd	Elapsed hours	Pressure kPaa	Temp °C
6121	05/02/22 08:20:00	51.000	26628.66	94.33
6151	05/02/22 08:35:00	51.250	26576.01	94.24
6181	05/02/22 08:50:00	51.500	26498.56	94.22
6211	05/02/22 09:05:00	51.750	26474.50	94.24
6241	05/02/22 09:20:00	52.000	26460.63	94.25
6271	05/02/22 09:35:00	52.250	26449.85	94.28
6301	05/02/22 09:50:00	52.500	26440.38	94.31
6331	05/02/22 10:05:00	52.750	26720.21	94.56
6361	05/02/22 10:20:00	53.000	26926.02	95.25
6391	05/02/22 10:35:00	53.250	26616.82	95.38
6421	05/02/22 10:50:00	53.500	26618.61	95.10
6451	05/02/22 11:05:00	53.750	26631.60	95.05
6481	05/02/22 11:20:00	54.000	26600.76	95.06
6511	05/02/22 11:35:00	54.250	26613.20	95.03
6541	05/02/22 11:50:00	54.500	26613.19	95.02
6571	05/02/22 12:05:00	54.750	26612.90	95.03
6601	05/02/22 12:20:00	55.000	26686.83	95.05
6631	05/02/22 12:35:00	55.250	26747.57	95.09
6661	05/02/22 12:50:00	55.500	26875.83	95.47
6691	05/02/22 13:05:00	55.750	26860.62	95.57
6721	05/02/22 13:20:00	56.000	26971.34	95.71
6751	05/02/22 13:35:00	56.250	26942.65	95.82
6781	05/02/22 13:50:00	56.500	28884.61	95.38
6811	05/02/22 14:05:00	56.750	28147.80	94.76
6841	05/02/22 14:20:00	57.000	30766.74	94.03
6871	05/02/22 14:35:00	57.250	30826.01	92.50
6901	05/02/22 14:50:00	57.500	39185.70	91.79
6931	05/02/22 15:05:00	57.750	46248.13	90.96
6961	05/02/22 15:20:00	58.000	40341.69	91.71
6991	05/02/22 15:35:00	58.250	45952.39	92.47
7021	05/02/22 15:50:00	58.500	43814.32	92.50
7051	05/02/22 16:05:00	58.750	47180.47	93.05
7081	05/02/22 16:20:00	59.000	48404.39	93.15
7111	05/02/22 16:35:00	59.250	49563.26	93.24
7141	05/02/22 16:50:00	59.500	29075.78	93.53
7171	05/02/22 17:05:00	59.750	43927.43	95.95
7201	05/02/22 17:20:00	60.000	44251.64	97.35
7231	05/02/22 17:35:00	60.250	45430.43	97.36
7261	05/02/22 17:50:00	60.500	48526.20	97.13
7291	05/02/22 18:05:00	60.750	45678.81	96.45
7321	05/02/22 18:20:00	61.000	44093.02	96.46
7351	05/02/22 18:35:00	61.250	47843.17	96.04
7381	05/02/22 18:50:00	61.500	46946.30	96.12
7411	05/02/22 19:05:00	61.750	49739.76	95.53
7441	05/02/22 19:20:00	62.000	49077.39	95.05
7471	05/02/22 19:35:00	62.250	47409.05	95.56
7501	05/02/22 19:50:00	62.500	50584.01	95.43
7531	05/02/22 20:05:00	62.750	48553.90	95.19
7561	05/02/22 20:20:00	63.000	47065.64	95.67
7591	05/02/22 20:35:00	63.250	50333.82	95.71
7621	05/02/22 20:50:00	63.500	45948.18	95.19
7651	05/02/22 21:05:00	63.750	40139.71	94.70
7681	05/02/22 21:20:00	64.000	27512.29	95.52
7711	05/02/22 21:35:00	64.250	25494.24	96.20
7741	05/02/22 21:50:00	64.500	24832.54	96.44
7771	05/02/22 22:05:00	64.750	24338.65	95.49
7801	05/02/22 22:20:00	65.000	24207.23	85.10
7831	05/02/22 22:35:00	65.250	24191.99	84.29
7861	05/02/22 22:50:00	65.500	24433.58	88.96
7891	05/02/22 23:05:00	65.750	24192.12	90.63
7921	05/02/22 23:20:00	66.000	24189.10	89.57
7951	05/02/22 23:35:00	66.250	24191.39	89.93
7981	05/02/22 23:50:00	66.500	24195.01	90.43
8011	05/02/23 00:05:00	66.750	24195.90	90.93
8041	05/02/23 00:20:00	67.000	25220.59	90.47
8071	05/02/23 00:35:00	67.250	26975.81	81.48
8101	05/02/23 00:50:00	67.500	25155.47	72.88
8131	05/02/23 01:05:00	67.750	25335.89	70.61
8161	05/02/23 01:20:00	68.000	26659.15	63.50
8191	05/02/23 01:35:00	68.250	26829.83	56.00
8221	05/02/23 01:50:00	68.500	26477.61	52.99
8251	05/02/23 02:05:00	68.750	25091.71	55.10
8281	05/02/23 02:20:00	69.000	24573.66	58.24
8311	05/02/23 02:35:00	69.250	24548.32	71.40
8341	05/02/23 02:50:00	69.500	24135.98	77.75
8371	05/02/23 03:05:00	69.750	24099.52	72.64
8401	05/02/23 03:20:00	70.000	24084.24	73.55
8431	05/02/23 03:35:00	70.250	24079.15	75.34
8461	05/02/23 03:50:00	70.500	24077.43	76.92
8491	05/02/23 04:05:00	70.750	24040.60	78.32
8521	05/02/23 04:20:00	71.000	24103.95	80.01
8551	05/02/23 04:35:00	71.250	23722.83	80.72
8581	05/02/23 04:50:00	71.500	24017.05	81.43
8611	05/02/23 05:05:00	71.750	24053.65	82.00
8641	05/02/23 05:20:00	72.000	24074.51	82.69
8671	05/02/23 05:35:00	72.250	24032.88	83.29
8701	05/02/23 05:50:00	72.500	22922.40	83.80
8731	05/02/23 06:05:00	72.750	24004.57	84.03
8761	05/02/23 06:20:00	73.000	23730.75	84.44
8791	05/02/23 06:35:00	73.250	21752.94	84.54
8821	05/02/23 06:50:00	73.500	23472.21	85.41
8851	05/02/23 07:05:00	73.750	23573.22	85.92
8881	05/02/23 07:20:00	74.000	19782.09	85.91
8911	05/02/23 07:35:00	74.250	18350.27	86.37
8941	05/02/23 07:50:00	74.500	17776.92	86.94
8971	05/02/23 08:05:00	74.750	17615.50	87.40
9001	05/02/23 08:20:00	75.000	17512.43	87.82
9031	05/02/23 08:35:00	75.250	17466.97	88.17
9061	05/02/23 08:50:00	75.500	17582.48	88.61
9091	05/02/23 09:05:00	75.750	17663.05	89.05
9121	05/02/23 09:20:00	76.000	17591.31	89.32
9151	05/02/23 09:35:00	76.250	22018.96	90.21

Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
Northrock et al Summit Creek
300/B-44-64-30-125-45

	Date Time	Elapsed	Pressure	Temp
	yy/mm/dd	hours	kPaa	°C
9181	05/02/23 09:50:00	76.500	23191.40	91.75
9211	05/02/23 10:05:00	76.750	23454.72	91.70
9241	05/02/23 10:20:00	77.000	23575.40	91.50
9271	05/02/23 10:35:00	77.250	23650.28	91.38
9301	05/02/23 10:50:00	77.500	23688.31	91.30
9331	05/02/23 11:05:00	77.750	23713.83	91.27
9361	05/02/23 11:20:00	78.000	23736.50	91.22
9391	05/02/23 11:35:00	78.250	23751.53	91.22
9421	05/02/23 11:50:00	78.500	23758.53	91.23
9451	05/02/23 12:05:00	78.750	23754.02	91.25
9481	05/02/23 12:20:00	79.000	23741.11	91.26
9511	05/02/23 12:35:00	79.250	23715.09	91.28
9541	05/02/23 12:50:00	79.500	23714.85	91.37
9571	05/02/23 13:05:00	79.750	23721.55	91.41
9601	05/02/23 13:20:00	80.000	23732.19	91.46
9631	05/02/23 13:35:00	80.250	23743.57	91.52
9661	05/02/23 13:50:00	80.500	23754.23	91.57
9691	05/02/23 14:05:00	80.750	23763.37	91.63
9721	05/02/23 14:20:00	81.000	23771.68	91.68
9751	05/02/23 14:35:00	81.250	23781.15	91.73
9781	05/02/23 14:50:00	81.500	23789.03	91.78
9811	05/02/23 15:05:00	81.750	23797.32	91.83
9841	05/02/23 15:20:00	82.000	23805.99	91.88
9871	05/02/23 15:35:00	82.250	23812.80	91.93
9901	05/02/23 15:50:00	82.500	23818.40	91.97
9931	05/02/23 16:05:00	82.750	23824.73	92.02
9961	05/02/23 16:20:00	83.000	23831.35	92.06
9991	05/02/23 16:35:00	83.250	23837.95	92.11
10021	05/02/23 16:50:00	83.500	23845.09	92.15
10051	05/02/23 17:05:00	83.750	23851.35	92.19
10081	05/02/23 17:20:00	84.000	23857.78	92.23
10111	05/02/23 17:35:00	84.250	23862.89	92.27
10141	05/02/23 17:50:00	84.500	23868.45	92.31
10171	05/02/23 18:05:00	84.750	23873.38	92.35
10201	05/02/23 18:20:00	85.000	23878.56	92.39
10231	05/02/23 18:35:00	85.250	23880.66	92.43
10261	05/02/23 18:50:00	85.500	23883.20	92.47

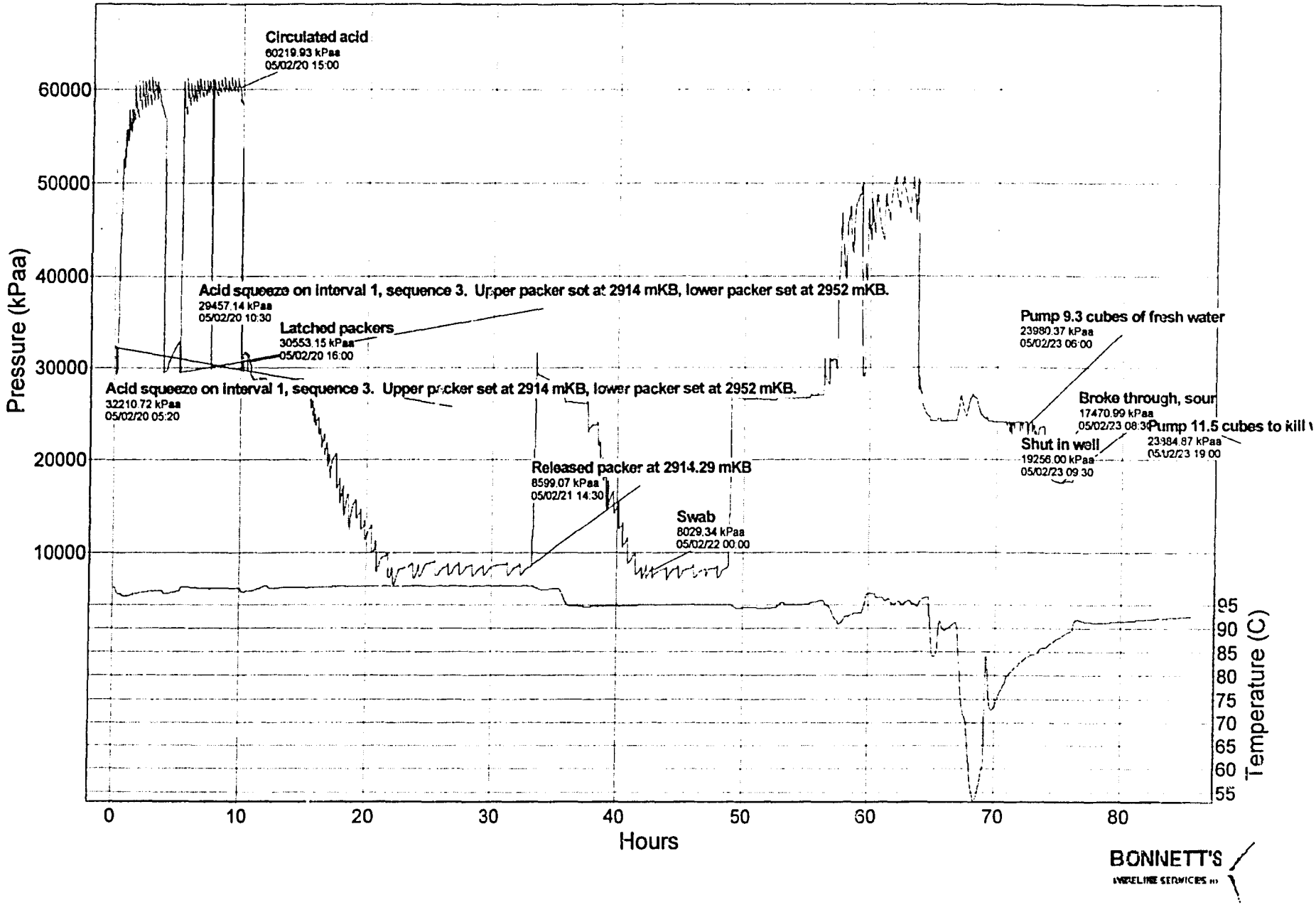
Ticket: 50007
Ran/Pulled: Mike Munro

Recorder: 8009 - Top

BONNETT'S

Northrock Resources Ltd.
300/B-44-64-30-125-45 Acid Stimulation
Northrock et al Summit Creek

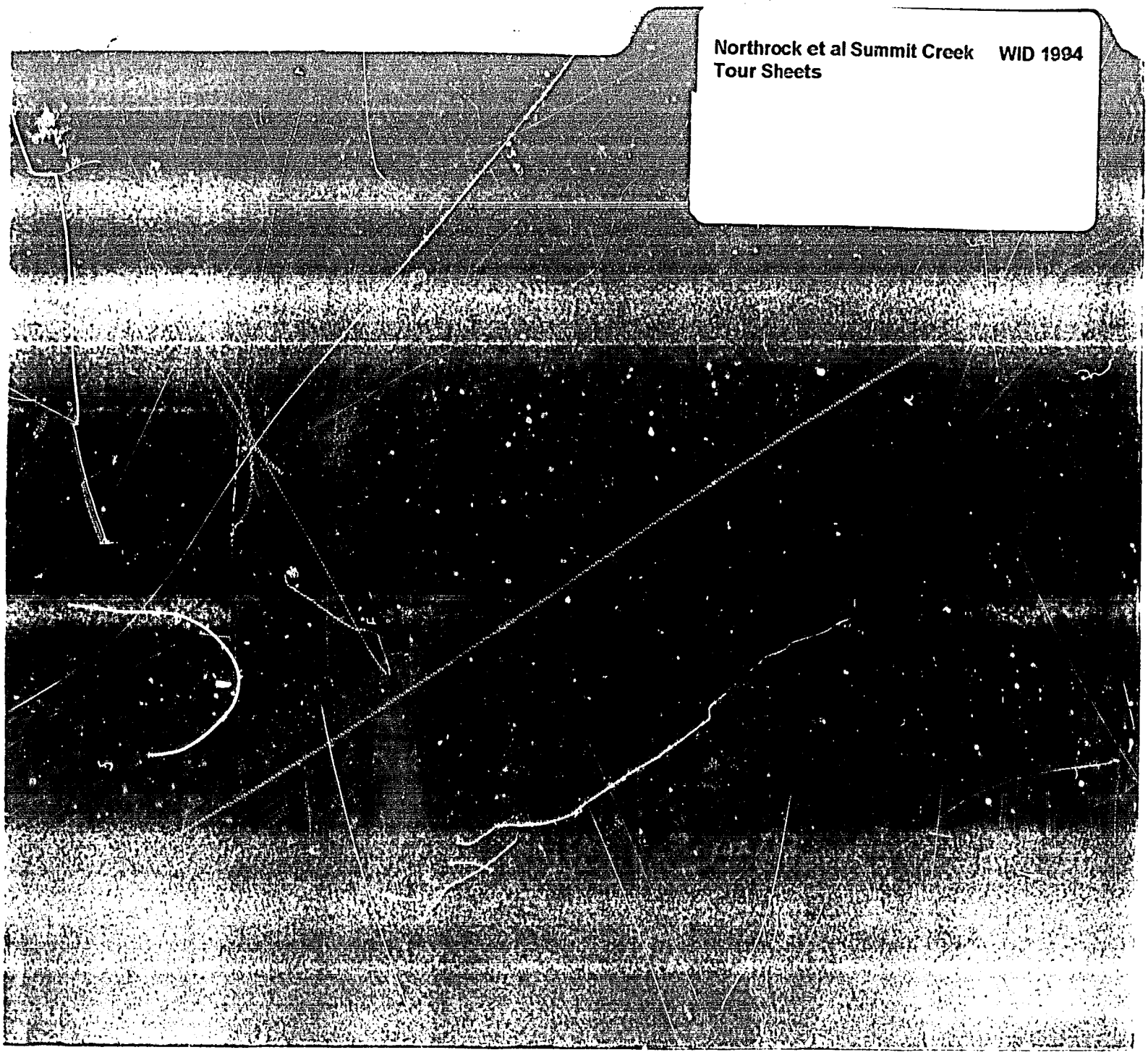
On Bottom:	Feb 20, 2005 05:20 (32211 kPaa)
Off Bottom:	Feb 23, 2005 19:00 (23885 kPaa)
Formation:	Fort Norman
Field:	Summit Creek
Recorder:	8009
Depth:	2938.54 mKB MD
Ticket:	50007



BONNETT'S
WIRELINE SERVICES

TOUR SHEETS

Northrock et al Summit Creek Tour Sheets WID 1994



LICENCE NO: 9311-N046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: W44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

YEAR: 2004 MONTH: 1 DAY: 9

RIG NO: 46

RIG: PASON

| | | |

LICENCE NO: 9211-Wo46-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD

SURFACE LOCATION: B44-64-30-126-46

UNIQUE ID: 300B444430126460

SIGNATURE OF OPERATOR'S REPRESENTATIVE

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Allyn Vogt

DAILY CHECKS

1	Daily Work Permit Inspection	
2	Derrick Inspection - Weekly - using Check List	
3	H2S Signs Posted if Required	
4	Well Licence & Site Diagram Posted	
5	Pipe Lines Tested	
6	BOP Drills Performed	
7	Weekly Report BOPs, Pipe Lines & Diagram Lines	
8	Rig Site Health & Safety Meeting - documentation	
9	CADC Rig Site Inspection Checklist - completed each	
10	Wear Inspection of the Rotating or Lowering	
11	Crown Saver Checked	
12	Motor Kills Checked	

PAETON

| | | |

LICENCE NO: 9211-N046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12B-4S

UWI/LSD ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allan Vogt

DAILY CHECKS

- (1) Daily Walk Around Inspection
- (2) Weekly Inspection - Monthly (using Check List)
- (3) H2S Sign Posted if Required
- (4) Well Location & Site Diagram Posted
- (5) Flare Lines Shrouded
- (6) BOP Tests Performed
- (7) Weekly Inspect BOPs, Flare Lines & Diagram Lines
- (1) Rig Site Health & Safety Meeting (environmental)
- (2) CAODC Rig Safe Inspection (Bronze / Gold/Platinum)
- (3) Weld Inspection before Running or Lowering
- (4) Crown Saver Checked
- (5) Bit or Hole Checked

	SPUD	RIG RELEASE	TOTAL
DATE	2004 / 1 / 11		
RIG NO	60		

	BIT	CORE	DST	SURVEY	DRILLING	RUN / SET CASING	SAFETY MEETING														TOTALS	MORNING	DAY
HOURS																							
DAY																					12.00		
TOTAL																					12.00		

	BIT	CORE
BIT NO		
SIZE		
IADC CODE		
MANUFACTURER		
TYPE		
SERIAL NO		
JETS		
DEPTH OUT (m)		
DEPTH IN (m)		
TOTAL DRILLED (m)		
TOTAL HRS RUN		

OUTER STRUCTURE

T1	T2	DC	LC	IN	GA	OC	REASON PULLED	TOTAL DRILLING HRS

HOLE CONDITION

DRILL PIPE	GRADE
DRILL PIPE	SIZE/LBS
KELLY DOWN	
TO BAIL	
WT OF DC	
WT OF STRING	
HOLE DRAG	
TORQUE AT BOTTOM	
FILL ON BOTTOM (m)	

MORNING TOUR

MUD TYPE: ____ WATER BASED ☐ OIL BASED ☐

	FROM	TO	CHG	WT#	VIS
TIME					
DENSITY (kg/m3)					
FUNNEL VISCOSITY					
FLUID LOSS (cm3)					
pH					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	0	HRS RUN 0
BOILER psi		BOILER psi
SPACE TEMP		SPACE TEMP

CIRCULATION PRESSURE kPa

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Paul Backney

FROM	TO	HOURS TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS

NOTES

SPECIAL EVENT | RIG REPAIR | SAFETY TOPIC | HRS | MOP

RATE SCHEDULE: X REGULAR ☐ REPAIR ☐ INVERT ☐

CREW SAFETY DAYS: 14

CREW	BOC ENG. NO.	NAME	HRS		YES	NO

DAY TOUR

MUD TYPE: ____ WATER BASED ☐ OIL BASED ☐

	FROM	TO	CHG	WT#	VIS
TIME					
DENSITY (kg/m3)					
FUNNEL VISCOSITY					
FLUID LOSS (cm3)					
pH					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	0	HRS RUN 0
BOILER psi		BOILER psi
SPACE TEMP		SPACE TEMP

CIRCULATION PRESSURE kPa

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Brent Williams

FROM	TO	HOURS TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	2400	12.00	22	FLY TO CAMP & WAIT ON LOCATION

NOTES

SPECIAL EVENT | RIG REPAIR | SAFETY TOPIC | HRS | MOP

RATE SCHEDULE: X REGULAR ☐ REPAIR ☐ INVERT ☐

CREW SAFETY DAYS: 14

CREW	BOC ENG. NO.	NAME	HRS		YES	NO
DRILLER		Brent Williams	12			BW
DRILLER		Paul Backney	12			PB
DERRICK HAND		Terry Sanderson	12			TS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		David Bregg	12			DB
Well Site Coordinator		Rick Tachuk	12			RJ

CAODC

PASON

EDR_3-0_HP4 ETE 2.2

LICENCE NO: 9211-N040-2-3

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-126-45

UNIQUE ID: 300B444430126450

SIGNATURE OF OPERATOR'S REPRESENTATIVE

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

AM 3184 DAYS 1 DAY 12

BOP TEST

DRILL

CLEAN

CAODC

PASON

| | | |

LICENSE NO: 9211-N046-2-9

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

	DATE	I/O
(1) Daily Walk Around Inspection		
(2) Detailed Inspection - Weekly (Wiring Check List)		
(3) H2S Signs Posted (Hospital)		
(4) Well Licenses & Well Program Posted		
(5) Flare Lines Staked		
(6) BOP Drills Performed		
(7) Weekly Inspect BOPs, Flare Lines & Diagnostic Lines		
(1) Rig Site Health & Safety Meeting (weekly/monthly)		
(2) CNOOC Rig Safety Inspection Checklist (monthly/quarterly)		
(3) Weld Inspection Before Rigging or Lowering		
(4) Crown Saver Checked		
(5) Water Wits Checked		

	RIG	MONTH	DAY
	2504	1	13

	DRILLING	MIXING	DAY
HOURS	3.75		
DAY	12.0		
TOTAL	15.75		0.25

TOTALS	16.00
	4.00
	12.00
	16.00

PASON

AKTA40_20040113_1C

ECR_3-0-7_HP4 ETS 2.2

Northrock et al Summit Creek B-44 300B444430125450 2504 1 13

NORTHROCK RESOURCES LTD. AKITA DRILLING LTD.

Allyn Vogt 40

NWT

MORNING TOUR

BIT: ID / OD / LENGTH

BIT NO / SIZE / IADC CODE / MANUFACTURER / TYPE / SERIAL NO / JETS / DEPTH OUT (m) / DEPTH IN (m) / TOTAL DRILLED (m) / TOTAL HRS RUN

CUTTING STRUCTURE: T1 / T2 / DC / LOC / BRG / GAGE / OC / REASON PULLED / TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG / TORQUE AT BOTTOM / FILL ON BOTTOM (m)

DRILL PIPE: SIZE / GRADE / DRILL PIPE: SIZE / GRADE

KELLY DOWN / TOTAL / WT OF DC / WT OF STRING

MUD TYPE / WATER BASED / OIL BASED / FROM / TO / D+C / RPM / WOB

TIME / DENSITY (kg/m3) / FUNNEL VISCOSITY / FLUID LOSS (cm3) / pH

MUD MATERIALS ADDED: PRODUCT / AMOUNT / UNIT

SOLIDS CONTROL: CENTRIFUGE: HOURS RUN / INTAKE DENSITY (kg/m3) / OVER FLOW DENSITY / UNDER FLOW DENSITY

BOILERS: 1 HRS RUN 0 / 2 HRS RUN 0 / BOILER pH / BOILER TEMP

CIRCULATION PRESSURE kPa: PUMP NO. 1 LINER SIZE / SPM; PUMP NO. 2 LINER SIZE / SPM

REDUCED PUMP SPEED: @ / @

DEVIATION SURVEYS: DEPTH (m) / DEVIATION / DIRECTION

DRILLER SIGNATURE: Paul Sackney

FROM	TO	SURVEY TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
800	815	0.25	7	SAFETY MEETING
815	1200	3.75	1	SPOT BUILDINGS

NOTES

RATE SCHEDULE: X / REGULAR / REPAIR / INVERT

CREW SAFETY DAYS: 16

DRIVERS

MORNING TOUR 0 1200

CREW	SOC SEC NO.	NAME	HRS		YES	NO
DRILLER		Paul Sackney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
FLOOR HAND		David Bragg	12			DB
FLOOR HAND		Leonard Masuzumi	8			LM
LEASE HAND		Roddy Modeste	8			RM
LEASE HAND		Matthew Betsuda	8			MB

DAY TOUR

BIT: ID / OD / LENGTH

BIT NO / SIZE / IADC CODE / MANUFACTURER / TYPE / SERIAL NO / JETS / DEPTH OUT (m) / DEPTH IN (m) / TOTAL DRILLED (m) / TOTAL HRS RUN

CUTTING STRUCTURE: T1 / T2 / DC / LOC / BRG / GAGE / OC / REASON PULLED / TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG / TORQUE AT BOTTOM / FILL ON BOTTOM (m)

DRILL PIPE: SIZE / GRADE / DRILL PIPE: SIZE / GRADE

KELLY DOWN / TOTAL / WT OF DC / WT OF STRING

MUD TYPE / WATER BASED / OIL BASED / FROM / TO / D+C / RPM / WOB

TIME / DENSITY (kg/m3) / FUNNEL VISCOSITY / FLUID LOSS (cm3) / pH

MUD MATERIALS ADDED: PRODUCT / AMOUNT / UNIT

SOLIDS CONTROL: CENTRIFUGE: HOURS RUN / INTAKE DENSITY (kg/m3) / OVER FLOW DENSITY / UNDER FLOW DENSITY

BOILERS: 1 HRS RUN 0 / 2 HRS RUN 0 / BOILER pH 10 / BOILER pH / STACK TEMP 180 / STACK TEMP

CIRCULATION PRESSURE kPa: PUMP NO. 1 LINER SIZE / SPM; PUMP NO. 2 LINER SIZE / SPM

REDUCED PUMP SPEED: @ / @

DEVIATION SURVEYS: DEPTH (m) / DEVIATION / DIRECTION

DRILLER SIGNATURE: Brent Williams

FROM	TO	SURVEY TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1400	2.00	1	SPOT RIG - TRUCKS LEFT AT 1345:00 HR
1400	2400	10.00	1	RIG UP
2400				

NOTES: FIRED BOILER AT 18:00 HR

RATE SCHEDULE: X / REGULAR / REPAIR / INVERT

CREW SAFETY DAYS: 16

DRIVERS

DAY TOUR 1200 2400

CREW	SOC SEC NO.	NAME	HRS		YES	NO
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jonathan Andrew	8			JA
LEASE HAND		Jason Ayah	8			JA
LEASE HAND		George Kenny	8			GK
Well Site Coordinator		Rick Techuk	12			RJ

LICENCE NO: 9211-N040(-2-)
WELL NAME & NO: Northrock et al Summit Creek B-44
OPERATOR: NORTHROCK RESOURCES LTD.
CONTRACTOR: AKITA DRILLING LTD.
SURFACE LOCATION: B44-64-30-12S-4B
UNIQUE ID: 300N4464301/5460
SIGNATURE OF OPERATIVE REPRESENTATIVE: Kevin Amy
SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

YEAR 2004 MONTH 1 DAY 14
RIG NO 60
DATE 14/01/04
CLIENT
WELL SERIAL NO
CALL
DRILLING HOURS THIS 24 HRS

TOTALS	12.00	12.00
MORNING	12.0	
DAY	12.0	
TOTAL	24.00	24.00

SPUD DATE 2004/01/16 TIME 03:00
RIG RELEASED TIME
TRUE VERTICAL DEPTH RE-ENTRY
OPERATOR'S AFE
TOTAL DEPTH PBTD
PROGRAM NUMBER & JOB NUMBER 70
TOUR SHEET SUPPLY NAME AKTA40_20040114_1B
REPORT SOFTWARE VERSION EDR_3-0-8 ETS 2.2

PASON

NORTHROCK RESOURCES LTD | AKITA DRILLING LTD
Allyn Vogt
N.W.T.
KB ELEVATION 46
CASING FLANGE ELEVATION
LAMP [X] YES [ ] NO

MORNING TOUR 0 – 1200

CREW	ROC INS. NO	NAME	HRS		YRS	NO
DRILLER		Paul Sackney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
FLOOR HAND		David Bragg	12			DB
FLOOR HAND		Leonard Masuzumi	12			LM
LEASE HAND		Roddy Modeste	12			RM
LEASE HAND		Matthew Betsidee	12			MF

RATE SCHEDULE: X REGULAR | REPAIR | INVERT
CREW SAFETY DAYS: 17
DRIVERS

DAY TOUR 1200 – 2400

CREW	ROC INS. NO.	NAME	HRS		YRS	NO
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sladz	12			WS
FLOOR HAND		Jonathan Andrew	12			JA
LEASE HAND		Jason Ayah	12			JA
LEASE HAND		George Kenny	12			GK
Well Site Coordinator		Rick Tachuk	12			RJ

RATE SCHEDULE: X REGULAR | REPAIR | INVERT
CREW SAFETY DAYS: 17
DRIVERS

MORNING TOUR

BIT | O.D. | LENGTH

BIT NO | SIZE | ROC CODE | MANUFACTURER | TYPE | SERIAL NO | JETS | DEPTH OUT (m) | DEPTH IN (m) | TOTAL DRILLED (m) | TOTAL HRS RUN

CUTTING STRUCTURE: T1 | T2 | ROC | LOC | BRG | GAUGE | OTC | REASON PULLED | TOTAL BHA HRS

DRILL PIPE | SPARES | DRILL PIPE | SPARES | KELLY DOWN | TOTAL | WT OF D.C | WT OF STRING

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE | WATER BASED | OIL BASED | FROM | TO | D.A.C. | RPM | WOB

TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INFEED DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1		2
HRS RUN	0	HRS RUN	12
SIZE gal		SIZE gal	10
STEAM TEMP		STEAM TEMP	180

CIRCULATION PRESSURE kPa | PUMP NO. 1 LINER SIZE | SPM | PUMP NO. 2 LINER SIZE | SPM

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Paul Sackney

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	1200	12.00	1	RIG UP MUD TANKS TARPS PUMP HOUSE

NOTES

SPECIAL EVENT | TIME (HH:MM) | SAFETY TOPIC | MIN. | SIGN

DAY TOUR

BIT | O.D. | LENGTH

BIT NO | SIZE | ROC CODE | MANUFACTURER | TYPE | SERIAL NO | JETS | DEPTH OUT (m) | DEPTH IN (m) | TOTAL DRILLED (m) | TOTAL HRS RUN

CUTTING STRUCTURE: T1 | T2 | ROC | LOC | BRG | GAUGE | OTC | REASON PULLED | TOTAL BHA HRS

DRILL PIPE | SPARES | DRILL PIPE | SPARES | KELLY DOWN | TOTAL | WT OF D.C | WT OF STRING

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE | WATER BASED | OIL BASED | FROM | TO | D.A.C. | RPM | WOB

TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INFEED DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1		2
HRS RUN	0	HRS RUN	12
SIZE gal		SIZE gal	10.5
STEAM TEMP		STEAM TEMP	180

CIRCULATION PRESSURE kPa | PUMP NO. 1 LINER SIZE | SPM | PUMP NO. 2 LINER SIZE | SPM

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Brent Williams

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	2400	12.00	1	RAISE DERRICK @ 1400, RAISE SUB @ 1800, RIG UP TARPS & STEAM

NOTES

SPECIAL EVENT | TIME (HH:MM) | SAFETY TOPIC | MIN. | SIGN

LICENSE NO: 9211-N046-2-2

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-126-16

UNIQUE ID: 300B446430126450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

CAODC

| | BRAKE & TELEMETRY | DRILL ASSY | REAMERS | STABILIZERS | CORE BBL & CORE | TRIPS | BHA SERVICED | RETRIEVE BHA | OUT OF HOLE BBL | DEPTH SURVEY | WIRELINE LOGS | RUN CSG & CEMENT | WAIT ON CEMENT | NIPPLE UP B.O.P. | TEST B.O.P. | DRILLSTEM TEST | PLUG BACK | REQUIRED CEMENT | FISHING | RIG SLIPS | SAFETY MEETING | | |

LICENCE NO: 9211-N046-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Arry

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N044-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45 | UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allvn Vogt

DAILY CHECKS

| | | |

LICENCE NO: B211-N046-2-0

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-46

UNIQUE ID: 300B446430125460

SIGNATURE OF OPERATOR'S IN PRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allvn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 0211-N048-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

SURFACE LOCATION: B44-44-39-126-46

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

CONTRACTOR: AKITA DRILLING LTD.

UNIQUE ID: 300B444439125460

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENSE NO: 9211-N046-2

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-126-46

UNIQUE ID: 300B444430126460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

YEAR: 2004 MONTH: 4 DAY: 29

RIG NO: 69

AFE NO: 10178

| | | |

LICENSE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-118 45 | UNIQUE ID: 300B446430125463

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N045-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK REBOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12E-4S

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alivn Vogt

DAILY CHECKS

1	Daily Work Around Vehicle	
2	Derrick Inspection - Weekly	Visual Check List
3	H2S Signs Posted	Required
4	Well Location & Site Diagram Posted	
5	Pipe Liners Slotted	
6	BOP Drills Performed	
7	Manually Inspect BOPs, Pipe Liners & Diagonal Lines	
8	Rig Site Health & Safety Meeting	
9	CAODC Rig Safe Inspection Checklist	
10	Wind Indicators before Testing or Unloading	
11	Choke Valve Checked	
12	Mono Rite Checked	

| | | |

LICENCE NO: 9211-N048-2-) | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-1; 6-45 | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

(1) (C) Well, Derrick & Foundation
(2) (Daily Inspection - Monthly) using Check List
(3) HOS Sign & Posted if Required
(4) Well Location & Site Diagram Posted
(5) Flare Lines Staked
(6) BOP Tests Performed
(7) (Weekly Inspect BOPs, Flare Lines & Diagnostic Lines
(1) Rig Site Hazard & Safety Meeting (documented)
(2) CAODC Rig Safety Inspection Checklist (monthly/bi-monthly)
(3) Blow Preventer Function Testing or Licensing
(4) Crown Saver Checked
(5) Brake Rite Checked

| | | |

LICENSE NO: 9211-N048-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NO..THROCK RESOURCES LTD.

SURFACE LOCATION: B44-44-30-125-45

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin. Amy

CONTRACTOR: ARKITA DRILLING LTD.

UNIQUE ID: 200B044430125450

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alivn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD

SURFACE LOCATION: B44-44-30-125-45 | UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B-44-44-30-125-45 | UNIQUE ID: 300h444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allvn Vogt

DAILY CHECKS

| | | |

LICENSE NO: 0211-R046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rollies

DAILY CHECKS

- 1 | Daily Walk Around Inspection
- 2 | Detailed Inspection - Weekly | Utility Check List |
- 3 | H2S Signs Posted | Reported
- 4 | Well Location & Work Program Posted
- 5 | Pipe Lines Bolted
- 6 | BOP Drills Performed
- 7 | Weekly Inspect BOPs, Pipe Lines & Diagram Lines
- 8 | Rig Site Health & Safety Meeting | environmental |
- 9 | CAODC Rig Safe Inspection Checklist | Audit/Internal |
- 10 | Work Inspection Before Rigging In | Leaving
- 11 | Crown Saver Checked
- 12 | Motor Mtr Checked

| | | |

WELL NAME & NO.: 9211-N046-2-J — Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-128-45

UNIQUE ID: 300B444430128450

REPRESENTATIVE: Kevin Amy

CONTRACTOR'S REPRESENTATIVE: Bob RoRee

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-0

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

1	Daily Walk Around Inspection	5	Pason Alarms & Settings
2	Derrick Inspection - Weekly - Using Check List	6	Pason Operational
3	H2S Signs Posted if Required	7	Flare Lines Staked
4	Well Licence & Blow Program Posted	8	BOP Drills Performed
5	Flare Lines Staked	9	Weekly Inspect BOPs, Flare Lines & Diversion Lines
6	BOP Drills Performed	10	Rig Site Health & Safety Meeting (minimum weekly)
7	Weekly Inspect BOPs, Flare Lines & Diversion Lines	11	CNOOC Rig Safety Inspection Checklist (monthly/quarterly)
8	Rig Site Health & Safety Meeting (minimum weekly)	12	Blow Out Prevention Equipment Inspection (Before Spudding or Commencing)
9	CNOOC Rig Safety Inspection Checklist (monthly/quarterly)	13	Choke Manifold Pressure Test
10	Blow Out Prevention Equipment Inspection (Before Spudding or Commencing)	14	Choke Manifold Pressure Test
11	Choke Manifold Pressure Test	15	Choke Manifold Pressure Test
12	Choke Manifold Pressure Test	16	Choke Manifold Pressure Test

DATE: 2004 / 1 / 29

RIG NO: 68

RIG PHONE: 11204

| | | |

LICENCE NO: 9211-N046-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rollies

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-46 | UNIQUE ID: 300B446430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

(1) Daily Visit Around Separator
(2) Detailed Inspection - Weekly / Using Check List)
(3) H2S Signs Posted If Required
(4) Wire Lifelines & Step Diagram Posted
(5) Flare Lines Staked
(6) BOP Drills Performed
(7) Visually Inspect BOPs, Flare Lines & Diagnostic Lines

(1) Rig Site Health & Safety Meeting (documented)
(2) CNSOC Rig Safety Inspection Checklist (documented)
(3) Visual Inspection Before Raising or Lowering
(4) Choke Skids Checked
(5) Water Kits Checked

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12B-4S

UNIQUE ID: 300B444430123450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

( ) Daily Walk Around Inspection
( ) Detailed Inspection - Monthly (Using Check List)
( ) HOS Eyes Posted If Required
( ) Well Locations & Blow Diagram Posted
( ) Floor Lines Blocked
( ) BOP Drills Performed
( ) Weekly Inspect BOPs, Floor Lines & Diagram Lines
( ) Rig Site Health & Safety Meeting (environmental)
( ) CAODC Rig Safety Inspection Checklist (monthly/bi-annual)
( ) Weld Inspection Before Raising or Lowering
( ) Crown Saver Checked
( ) Water Tank Checked

PASON

| | | |

LICENCE NO: 9211-A/046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12E-4S

UNIQUE ID: 301B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Alvn Vogt

DAILY CHECKS

| | | |

LICENCE #: 9211-NOC J-2-3

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N048-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-46 | UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allen Vogt

S.A.F.E.T.Y. CHECKS

PASON

MORNING TOUR

MUD TYPE: | WATER BASED ☐ OIL BASED ☐

	FROM	TO	WOB
TIME	200	800	1400
DENSITY (kg/m3)	1090	1075	1080
FUNNEL VISCOSITY	44	40	40
FLUID LOSS (cm3)			
pH	11	11	10.5
PVT	78.8	80.8	

FROM	TO	BIT HRS	DRC	RPM	WOB
1085	1207	D		80	15

FROM	TO	HOURS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	530	5.50	2	DRILL F/1085- 1107m
530	545	0.25	10	DEVIATION SURVEY 2.5 DEG TELE DRIFT
545	1130	5.75	2	DRILL F/1107- 1160
1130	1145	0.25	7	RIG SERVICE FUNC UPPER RAMS
1145	1200	0.25	2	DRILL ACTUAL 1165-1200

CREW	SOC SEC NO	NAME	HRS		WBS
DRILLER		Paul Sackney	12		7hr
DERRICK HAND		Andre Habel	12		6hr
MOTOR HAND		Steve Pringle	12		8hr
FLOOR HAND		David Bragg	12		LB
FLOOR HAND		Leonard Masuzumi	6		LM
LEASE HAND		Roddy Modeste	12		Rm
LEASE HAND		Matthew Betsidee	12		MB

BIT	O.D.	LENGTH
BIT SUB	178	0.81
TELEDRIFT S.S.	172	2.62
6.75 D.C.	171	80.87
JAR	178	4.77
6.75 D.C.	171	56.08
SCLL S.S.	168	1.3
H.W.D.P.	168	457.43

BIT NO: 3 | SIZE: 215.9 | MFG CODE: 4 4 7 | MANUFACTURER: HUGHES | TYPE: GTS16C | SERIAL NO: P4836 | JETS: 11 11 11 | DEPTH OUT (m): 1207 | DEPTH IN (m): 1085 | TOTAL DRILLED (m): 148.00 | TOTAL HRS RUN: 11.5

CUTTING STRUCTURE: T1 | T2 | WEAR | LOCATION | BEARINGS | GAUGE | OTHER | REASON PULLED | TOTAL BLADE WEAR

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

DRILL PIPE: SPACING 3 1/2 | DRILL PIPE: GRADE

WEIGHT DOWN: 17.67 | TOTAL: 1203.00 | BIT OP HRS: 20 | BIT OP STRING: 30

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
ENCAPSORFLOC	4	PAILS

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
SOLUTE ppt	10.5	SPLR ppt	10.5
STACK TEMP	168	STACK TEMP	160

CIRCULATION PRESSURE kPa: 14000 | PUMP NO. 1: LINER SIZE 140, SPM 78 | PUMP NO. 2: LINER SIZE 140, SPM 78

REDUCED PUMP SPEED: 3230 @ 34 @ 34

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
1102	2.5	TELE DRIFT

NOTES: FUNCTION CROWN SAVER INSPECT BRAKE LINKAGE DEADLINE ANCHOR CLAMP FLARE & DEGASSER

BLEW ALL BOILERS 2X

DRILLER SIGNATURE: Paul Sackney

SPECIAL EVENT					SAFETY TOPIC	MPL	MHP
TIME / DEPTH						55	6779

RATE SCHEDULE: X | REGULAR | | REPAIR | | INVENT

CREW SAFETY DAYS: 39 | DRIVERS

DAY TOUR

MUD TYPE: | WATER BASED ☐ OIL BAY BS ☐

	FROM	TO	WOB
TIME	1400	1800	2400
DENSITY (kg/m3)	1080	1110	1125
FUNNEL VISCOSITY	43	40	47
FLUID LOSS (cm3)	10	10	10
pH	10.5	10.5	10
PVT			75.8

FROM	TO	BIT HRS	DRC	RPM	WOB
1203	1310	D		120	12

FROM	TO	HOURS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1230	0.50	2	DRILL ACTUAL 1203-1212
1230	1245	0.25	10	DEVIATION SURVEY @ 1300 5.25
1245	1300	0.25	7	RIG SERVICE FUNC ANN 27 SEC/CLOSE
1300	1730	4.50	2	DRILL ACTUAL F/1212-1280
1730	1745	0.25	10	DEVIATION SURVEY @ 1245m 6.25 DEG
1745	2130	3.75	2	DRILL ACTUAL F/1280- 1288m
2130	2145	0.25	10	DEVIATION SURVEY @ 1275m DEV 8.0 DEG
2145	2400	2.25	2	DRILL ACTUAL F/ 1288- 1310m

CREW	SOC SEC NO	NAME	HRS		WBS
DRILLER		Brent Williams	12		6hr
DERRICK HAND		Terry Sanderson	12		7h
MOTOR HAND		Kenneth Lauck	12		6L
FLOOR HAND		Wade Sledz	12		WS
FLOOR HAND		Jason Ayah	12		JA
LEASE HAND		Jonathan Andrew	12		JA
WELL SITE COORDINATOR		BARRY DUNN	12		BD

BIT	O.D.	LENGTH
BIT SUB	178	0.81
TELEDRIFT S.S.	172	2.62
6.75 D.C.	171	80.87
JAR	178	4.77
6.75 D.C.	171	56.08
SCLL S.S.	168	1.3
H.W.D.P.	168	457.43

BIT NO: 3 | SIZE: 215.9 | MFG CODE: 4 4 7 | MANUFACTURER: HUGHES | TYPE: GTS16C | SERIAL NO: P4836 | JETS: 11 11 11 | DEPTH OUT (m): 1310 | DEPTH IN (m): 1085 | TOTAL DRILLED (m): 225 | TOTAL HRS RUN: 22.5

CUTTING STRUCTURE: T1 | T2 | WEAR | LOCATION | BEARINGS | GAUGE | OTHER | REASON PULLED | TOTAL BLADE WEAR

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

DRILL PIPE: SPACING 4 1/2 | DRILL PIPE: GRADE

WEIGHT DOWN: 3.38 | TOTAL: 1310.00 | BIT OP HRS: 22 | BIT OP STRING: 52

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
ENCAPSORFLOC	2	PAILS

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
SOLUTE ppt	10.5	SPLR ppt	10.5
STACK TEMP	170	STACK TEMP	175

CIRCULATION PRESSURE kPa: 15300 | PUMP NO. 1: LINER SIZE 140, SPM 80 | PUMP NO. 2: LINER SIZE 140, SPM 80

REDUCED PUMP SPEED: 3400 @ 34 @ 34

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
1300	5.25	WIRELINE
1248	6.25	WIRELINE
1275	8.0	WIRELINE

NOTES: PMP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINE & TEST CROWN SAVER

BLEW BOILERS 3X EACH FOR 4 SEC

SPECIAL EVENT					SAFETY TOPIC	MPL	MHP
TIME / DEPTH						55	5722

RATE SCHEDULE: X | REGULAR | | REPAIR | | INVENT

CREW SAFETY DAYS: 39 | DRIVERS

LICENCE NO: 9211-N046-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: PORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: P41-64-30-12S-4E | UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATIONS REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

| | | |

LICENCE NO: 9211-N046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-36-125-45

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

9211-N046-2-J | Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-46-30-125-45

UNIQUE ID: 300B446430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45 | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryt Cunningham | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

| | | |

LICENSE NO: 9211-N046-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12S-4E | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryl Cunningham | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alivn Vogt

DAILY CHECKS

PASON

| | | |

LICENCE # NO: 9211-N046-2-9

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12S-4E

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATIVE REPRESENTATIVE: Derryl Cunningham

SIGNATURE OF CONTRACTOR'S REP. MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENSE NO: 9211-N046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-128-45

UNIQUE ID: 300B444439128450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryl Cunningham

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 5211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-66-30-125-46

UNIQUE ID: 300B446630125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryl Cunningham

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvyn Vogt

DAILY CHECKS

RIG NO: 46

	OD	WEIGHT	GRADE	CONN	LENGTH
DP	139.7	19.5	PSCO	XSR	3018
DP	127.0	16.6	PSCO	XSR	3004

	BIT	GRADE	JETS	TYPE	SERIAL NO	IN	OUT	FTG	HRS	ROP
DC	171	HC506	DC	57.2	171	5 HRS	71	PZ-9	GARDNER DENVER	220
DP	XV	30 6	5 BB	84 8	117	4 FH	200	PZ-9	GARDNER DENVER	220
DP	HO	41 64	HWDP	85 09	133	4 FH	50			

	BIT	GRADE	JETS	TYPE	SERIAL NO	IN	OUT	FTG	HRS	ROP
DC	171	HC506	DC	57.2	171	5 HRS	71	PZ-9	GARDNER DENVER	220
DP	XV	30 6	5 BB	84 8	117	4 FH	200	PZ-9	GARDNER DENVER	220
DP	HO	41 64	HWDP	85 09	133	4 FH	50			

		DRILL ACTUAL	REAMING	CORE BBL & CHK	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRILL LINE	SURVEY	WIRELINE LOGS	TUB CSG CEMENT	SHUT DN CEMENT	RIPPLE UP B O P	TEST B O P	DRILL STEM TEST	PLUG BACK	MISCELLANEOUS	REPAIRS	SR WORK	SAFETY MEETING	TOTALS
MORN		8.0				2.25	0.25			0.5											1.0	
DAY		5.5	2.25		0.5	3.25	0.25			0.25												
TOTAL		13.50	2.25		0.50	5.50	0.50	0.00		0.75											1.00	

	MORNING	DAY
MEGAJOULES	276767	13081
ACCUMULATOR	34	
BOILER # 3		

WELL NAME & NO	Northrock et al Summit Creek B-44
OPERATOR	NORTHROCK RESOURCES LTD.
CONTRACTOR	AKITA DRILLING LTD.
RIG MANAGER	Alvyn Vogt
RIG NO	46
PROVINCE	N.W.T.

MORNING TOUR

BIT	OD	LENGTH
MOTOR	6.37	24
FLOAT SUB	7.69	30
NMDC	8.42	9.42
UPR SUB	1.69	1.69
NMDC	8.42	9.42
X O	9.21	1.00
6 7/8 D C	6.77	92.87
JAR	6.77	6.77
6 7/8 D C	6.77	30.09
X O	9.21	1.00
H W D P	5.00	667.43
DRILL PIPE	BY HOOK	1435.24
DRILL PIPE	SINGLES	18.00
KELLY DOWN		12.00
TOTAL		2111.00
WT OF D C	20	
WT OF STRING	73	

BIT NO	5
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	WESTERN
TYPE	HR-530
SERIAL NO	504250
JETS	17.5 17.5 17.5
DEPTH OUT (m)	2111
DEPTH IN (m)	1662
TOTAL BHA 70 (m)	348.00
TOTAL HRS RUN	43.75

CUTTING STRUCTURE: T1 | T2 | IADC | LOC | BRG | GAUGE | ODC | REASON PULLED | TOTAL RUN (HRS)

HOLE CONDITION: HOLE DRAG: 30 UP 15 DOWN; TORQUE AT BOTTOM; FILL ON BOTTOM (m)

MUD TYPE	From	To	GEL/POLY	WATER BASED	OIL BASED
TIME	2088	2111	D	50	18
DENSITY (kg/m3)	1120	1145	1145		
FUNNEL VISCOSITY	64	70	68		
FLUID LOSS (cm3)	8	10	8.5		
PH	10	10	10		

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
GEL	16	SX
XB PLUS	1	SX
AQUAPAC	1	SX
LIGNITE	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	SUPERCHARGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
11	1130	1140	1170
HOURS RUN	SUPERCHARGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	11	HRS RUN 12
GALS per	9.5	GALS per 10.5
STM PRESS kpa	170	STM PRESS kpa 180

CIRCULATION PRESSURE kPa: 17143

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	70	140	70

REDUCED PUMP SPEED: 9103 @ @ 70

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2044.86	3.4	212.8
2084.33	4.2	237.2
2083.37	4.4	280.4

DRILLER SIGNATURE: Brent Williams

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	730	7.50	7	DRILL F 2088m-2110
730	800	0.50	10	DEVIATION SURVEY
800	830	0.50	2	DRILL ACTUAL F/2110-2111
830	930	1.00	22	WORK TIGHT HOLE
930	945	0.25	1	RIG SERVICE FUNC ANN 20 SEC C/O
945	1200	2.25	6	10 STAND WIPER TRIP

NOTES: PMP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LVT'S TEST CROWN SAVER

ADDED 2166 LITRES OF DIESEL TO RIG TANK

SPECIAL EVENT | TIME / DEPTH | SAFETY TOPIC | MEN | MHRS

RATE SCHEDULE	X	REGULAR		REPAIR		IDLE		INVENT

CREW SAFETY DAYS: 47

DRIVERS: Brent Williams; Wade Sledz

CREW	DOC BIG NO.	NAME	HRS		YES	NO
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jason Ayre	12			JA
LEASE HAND		Jonathan Andrew	12			JA
LEASE HAND		Clarence Tutcho	12			CT

DAY TOUR

BIT	OD	LENGTH
MOTOR	6.37	24
FLOAT SUB	7.69	30
NMDC	8.42	9.42
UPR SUB	1.69	1.69
NMDC	8.42	9.42
X O	9.21	1.00
6 7/8 D C	6.77	92.87
JAR	6.77	6.77
6 7/8 D C	6.77	30.09
X O	9.21	1.00
H W D P	5.00	667.43
DRILL PIPE	BY HOOK	1482.57
DRILL PIPE	SINGLES	0.00
KELLY DOWN		3.50
TOTAL		2142.00
WT OF D C	21	
WT OF STRING	73	

BIT NO	5
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	WESTERN
TYPE	HR-530
SERIAL NO	504250
JETS	17.5 17.5 17.5
DEPTH OUT (m)	2142
DEPTH IN (m)	1662
TOTAL DRILLED (m)	380.00
TOTAL HRS RUN	48.25

CUTTING STRUCTURE: T1 | T2 | IADC | LOC | BRG | GAUGE | ODC | REASON PULLED | TOTAL RUN (HRS)

HOLE CONDITION: HOLE DRAG: 15-20 UP/DOWN; TORQUE AT BOTTOM; FILL ON BOTTOM (m)

MUD TYPE	From	To	GEL/POLY	WATER BASED	OIL BASED
TIME	1400	1800	2200	2081	
DENSITY (kg/m3)	1140	1130	1140	2111	
FUNNEL VISCOSITY	70	63	73		
FLUID LOSS (cm3)	9.5	10	9		
PH	10	10	10		

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
GEL	20	SX
XB PLUS	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	SUPERCHARGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1145	1130	1140
HOURS RUN	SUPERCHARGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
	1145	1130	1140

BOILERS

	1	2
HRS RUN	12	HRS RUN 12
BOILER gal	10	BOILER gal 10
STM PRESS kpa	180	STM PRESS kpa 180

CIRCULATION PRESSURE kPa: 17985

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	70	140	70

REDUCED PUMP SPEED: 4998 @ @ 70

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2103.40	2.0	308.5
2113.01	1.8	350.7
2122.58	2.3	17.1

DRILLER SIGNATURE: Mike Webe

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1230	0.50	8	CIRC CLEAN HOLE
1230	1545	3.25	8	WIPER TRIP TO 1952
1545	1800	2.25	3	REAMING F/2081-2111
1800	1815	0.25	2	DRILL ACTUAL F/2111-2113
1815	1830	0.25	10	DEVIATION SURVEY
1830	1845	0.25	7	RIG SERVICE FUNC UPPER RAMS 3 SEC
1845	2400	5.25	2	DRILL ACTUAL F/2113-2142

NOTES: PMP DEADLINE ANCHOR BRAKE LINKAGE TEST CROWN SAVER ANCHOR BOLTS

WIPER TRIP MEA 1.95 CAL 1.82 DIFF .05

BLEW ALL 3 BOILERS DOWN 3 TIMES FOR 5 SECONDS

SPECIAL EVENT | TIME / DEPTH | SAFETY TOPIC: HOUSE KEEPING | MEN: 115 | MHRS: 5980

RATE SCHEDULE	X	REGULAR		REPAIR		IDLE		INVENT

CREW SAFETY DAYS: 47

DRIVERS: Mike Webe; Lee Tutcho

CREW	DOC BIG NO.	NAME	HRS		YES	NO
DRILLER		Mike Webe	12			MW
DERRICK HAND		Clarke Starre	12			CS
MOTOR HAND		Nathan Surnak	12			NS
FLOOR HAND		Tim Barrett	12			TB
FLOOR HAND		Chris Tourangeau	12			CT
LEASE HAND		Lee Tutcho	12			LT
WELL SITE COORDINATOR		BARRY DUNN	12			BD

LICENCE NO: 8211-N046-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-F4-38-125-18 | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATIONS REPRESENTATIVE: Darryl Cunningham | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

2004 | 2 | 16 | RIG NO: 40 | 24 HOUR CLOCK

	OD	WEIGHT	GRADE	NO OF JOINTS	TOTAL LENGTH	KB TO CSG HEAD	SET AT (m)
	339.7	216.5	J55	FBCO		K55	18	208.52	6.2	208
	244.5	220.45	98.5	FBCO		K55	58	804	6.2	804

	BIT NO	SIZE	MAKE	TYPE	JETS	IN	OUT	FTG	HRS	ROP
DC	171	160.6	DC	517J	3 HBO	21	PZ-9	GARDNER DENVER	228
DP	102	20.9	3 BB	84.8	117	4 TH	300	PZ-9	GARDNER DENVER	228
DP	101	41.84	HMCP	85.09	123	4 FH	90			

	WEIGHT	SPUD	REAMING	CORING	FORM SURV & CSG	TRIPS	RIG SERVICE	REPAIR RIG	CUT OFF DRLG LINE	DRY SURVEY	REPAIR BOPE	SLIP CUT & CONDITION	RAN CSG & CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILLSTEM TEST	PLUG BACK	DRILLING CEMENT	PERFING	SQ WORK	SAFETY MEETING	MIRU T/D			
MORN		5.0				4.0	0.25															2.75			
DAY						8.75	0.25		0.75											0.5				0.75	
TOTAL		5.00				13.75	0.50		0.75											0.50		2.75	0.00	0.75	

	MORNING	DAY
MEGAJOULES	276767	13091
ACCUMULATOR	34	
BOILER # 3		
TOTALS	12.00	12.00	24.00

DRILLING CONTRACTOR: AKITA DRILLING LTD. | RIG NO: 40 | RIG MANAGER: Alvin Vogt | PHONE: RW 7

MORNING TOUR | 0 | 1200 | MANNING

CREW	DOC INS. NO.	NAME	HRS		YRS	IND
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jason Ayah	12			JA
LEASE HAND		Jonathan Andrew	12			JA
LEASE HAND		Clarence Tutcho	12			CT

RATE SCHEDULE: X | REGULAR | | REPAIR | | SHORT

CREW SAFETY DAYS: 48 | DRILLERS: Brent Williams, Wade Sledz

DAY TOUR | 1200 | 2400 | MANNING

CREW	DOC INS. NO.	NAME	HRS		YRS	IND
DRILLER		Mike Wiebe	12			MW
DERRICK HAND		Clarke Starre	12			CS
MOTOR HAND		Nathan Sunniak	12			NS
FLOOR HAND		Tim Barrett	12			TB
FLOOR HAND		Duane Norwegian	12			DN
LEASE HAND		Peter Andrew	12			PA
WELL SITE COORDINATOR		BARRY DUNN	12			BD

RATE SCHEDULE: X | REGULAR | | REPAIR | | SHORT

CREW SAFETY DAYS: 48 | DRILLERS: Mike Wiebe, Lee Tutcho

PAGE: ON

EDR_3-0-6 ETS 2.2

MORNING TOUR

BIT	OD	LENGTH
MONEL		8.31
FLOAT SUB	197	1.36
MWD	171	8.41
UPR SUB	197	1.48
MWD	171	8.42
X-O	171	.96
6 3/4 DC	171	30.59
JAR	178	9.41
6 3/4 DC	171	30.59
X-O	168	1.76
HWDP	168	457.43
DRILL PIPE	DP 4500	1921.14
DRILL PIPE	DP 4500	0.91
KELLY DRIVE		12.61
TOTAL		2317.06
NO OF BIT	20	
NO OF STRING	73	

BIT NO: 5 | SIZE: 215.9 | IADC CODE: 5 1 7 | MANUFACTURER: WESTERN | TYPE: HR-830 | SERIAL NO: 804250 | JETS: 17.5 17.5 17.5 | DEPTH OUT (m): 2187 | DEPTH IN (m): 1882 | TOTAL DRILLED (m): 325.00 | TOTAL HRS RUN: 54.25

CUTTING STRUCTURE: T1 | T2 | DGC | LOC | BRG | GAGE | OBC | REASON PULLED | TOTAL BHA HRS

HOLE CONDITION: HOLE GRAD: 15-30 U/G | TORQUE AT BOTTOM: | FILL ON BOTTOM (m):

MUD TYPE: GEL CHEM | WATER BASED: X | OIL BASED: | PIT SAMPLE:

	FROM	TO	D-H-C	RPM	WOB
TIME	2142	2187	D	45	19
DENSITY (kg/m3)	1130	1150			
FUNNEL VISCOSITY	72	82			
FLUID LOSS (cm3)	6.5	6.5			
pH	10	10			

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
AQUAPAC	1	BX
LIGNITE	2	BX

SOLIDS CONTROL — CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1150	1147	1776
11	1150	1140	1770

BOILERS

	1	2
HRS RUN	12	12
BOILER pH	9.5	10.5
STACK TEMP	170	165

CIRCULATION PRESSURE (kPa): 18210

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	70	140	70

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2132.90	2.3	16.2
2141.83	1.3	16.9

DRILLER SIGNATURE: Brent Williams

FROM	TO	HOURS THIS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	115	1.25	3	DRILL ACTUAL F 2142 2149
115	130	0.75	*	RIG SERVICE FUNC ANN 36 SEC C/O
130	515	3.75	2	DRILL ACTUAL F 2149 2187
515	800	2.75	22	WORK TIGHT HOLE
800	1000	2.00	6	PUMP OUT F 2187 2040
1000	1200	2.00	6	POOH FLOW CHECK @ 1741

NOTES: INSP DEADLINE CLAMP BRAKE LINKAGE FLARE & DEGASSER LINE S TEST CROWN SAVER

ADDED 1139 LITRES OF FUEL

BLEW BOILERS AT 5 SEC EACH

SPECIAL EVENT				SAFETY TOPIC	MIN	SHCP
TIME / DEPTH				HOUSE CLEANING	125	8825

DAY TOUR

BIT	OD	LENGTH
BIT SUB		.92
STAB SUB	178	3.20
6 3/4 DC	171	9.34
STAB	178	1.48
6 3/4 DC	171	30.75
JAR	178	9.87
6 3/4 DC	171	92.87
X-O		
KEY SEAT WIPER	165	2.48
X-O	161	1.32
HWDP	162	457.80
DRILL PIPE	DP 4500	
DRILL PIPE	DP 4500	
KELLY DRIVE		
TOTAL		821.01
NO OF DC	21	
NO OF STRING	73	

BIT NO: 6 | 6 | SIZE: 215.9 | 215.9 | IADC CODE: 5 1 7 | 4 4 7 | MANUFACTURER: WESTERN | HUGHES | TYPE: HR-830 | GT-616 | SERIAL NO: 804250 | 6018743 | JETS: 17.5 17.5 22 22 | 17.5 22 | DEPTH OUT (m): 2187 | DEPTH IN (m): 1882 | TOTAL DRILLED (m): 325.00 | TOTAL HRS RUN: 54.25

CUTTING STRUCTURE: T1 | T2 | DGC | LOC | BRG | GAGE | OBC | REASON PULLED | TOTAL BHA HRS

1	1	WT	A	E	I	WT	BHA	E		

HOLE CONDITION: HOLE GRAD: | TORQUE AT BOTTOM: | FILL ON BOTTOM (m):

MUD TYPE: | WATER BASED: | OIL BASED:

	FROM	TO	D-H-C	RPM	WOB
TIME					
DENSITY (kg/m3)					
FUNNEL VISCOSITY					
FLUID LOSS (cm3)					
pH					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL — CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	12	12
BOILER pH	10	10.5
STACK TEMP	180	180

CIRCULATION PRESSURE (kPa):

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140		140	

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Mike Wiebe

FROM	TO	HOURS THIS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1615	4.25	6	POOH FLOW CHECK @ 1336 889 BANK FUNC BLIND 21 SEC C/O
1615	1645	0.50	20	DR WORK LAY DOWN MOTOR
1645	1700	0.25	7	RIG SERVICE FINC UPPER PIPE 3 SEC C/O
1700	1745	0.75	24	PICK UP TOOLS
1745	2030	2.75	6	RIH
2030	2115	0.75	9	CUT OFF DRILL LINE 29.6 M
2115	2400	2.75	6	TRIPS RIH WITH KEY SEAT WIPER FILL PIPE @ 1134

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE TEST CROWN SAVER MANCHOR BLS TS

HOLE FILL CALC 10.464 ACC 10.46 DIFF 2.43

SPECIAL EVENT				SAFETY TOPIC	MIN	SHCP
TIME / DEPTH					125	

LICENCE NO: 9211-N046-2-)

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B44464)0125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryl Cunningham

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin '/ogt

DAILY CHECKS

AQDC

PASON

MORNING TOUR

MUD TYPE: GEL CHEM WATER BASED: X OIL BASED:

BIT	O.D.	LENGTH
BIT SUB		92
8"DCR SUB	175	3.20
8.75 D.C.	171	9.34
STAB	174	1.48
8.75 D.C.	171	88.75
JAR	178	4.87
8.75 D.C.	171	92.87
X.O.	191	1.30
KEY SEAT WIPER	165	2.48
X.O.	161	1.30
H.W.D.P.	165	467.80
DRILL PIPE	SPARES	1521.14
DRILL PIPE	SPARES	8.57
KELLY DOWN		
TOTAL		2131.72
WT. OF D.C.	25	
WT. OF STRING	73	

BIT NO: 6
SIZE: 215.9
IADC CODE: 4 4 7
MANUFACTURER: HUGHES
TYPE: GT-616
SERIAL NO: 8016743
JETS: 17.5 17.5 17.5
DEPTH OUT (m): 2187
DEPTH IN (m):
TOTAL DRILLED (m):
TOTAL HRS RUN:

CUTTING STRUCTURE: T1 | T2 | DC | LOC | BRG | GAGE | PEC | REASON PULLED | TOTAL SUB HRS

HOLE CONDITION
HOLE DRAG: 30 UP/DOWN
TORQUE AT BOTTOM:
FILL ON BOTTOM (m):

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	1145	11.75	1	REAMING F/3011 T/3.3088
1145	1200	0.25	7	RIG SERVICE FUNC CHOKE

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINE S TEST CROWN SAVER

BLEW BOILERS dn 6 SEC EACH

MUD TYPE	TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH	FROM	TO	D/A/C	RPM	WOB
GEL CHEM	300	1150	60	9	9	3011	3088	R	50	
	600	1150	60	9	10					
	1100	1170	77	9	10					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
CAUSTIC SODA	2	SX
VIS PLUS	1	SX
GEL	6	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	DITCH DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
SOLIDS pH	10	SOLIDS pH	10.5
STACK TEMP	180	STACK TEMP	180

CIRCULATION PRESSURE (kPa): 13583

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	70	140	70

REDUCED PUMP SPEED: 8472 @ 70

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Brent Williams

SPECIAL EVENT	SAFETY TOPIC	MIN.	MAX.
TIME / DEPTH			5384

RATE SCHEDULE: X REGULAR REPAIR INVERT

CREW SAFETY DAYS: 49

DRIVERS: Brent Williams, Wade Sledz

CREW	BOC BIS. NO.	NAME	HRS		VEH	INT
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jason Ayah	12			JA
LEASE HAND		Jonathan Andrew	12			JA
LEASE HAND		Clarence Tutcho	12			CT

DAY TOUR

MUD TYPE: GEL/POLY WATER BASED: X OIL BASED:

BIT	O.D.	LENGTH
BIT SUB		92
8"DCR SUB	175	3.20
8.75 D.C.	171	9.34
STAB	174	1.48
8.75 D.C.	171	88.75
JAR	178	4.87
8.75 D.C.	171	92.87
X.O.	191	1.30
KEY SEAT WIPER	165	2.48
X.O.	161	1.30
H.W.D.P.	165	467.80
DRILL PIPE	SPARES	1521.14
DRILL PIPE	SPARES	8.57
KELLY DOWN		
TOTAL		2131.72
WT. OF D.C.	25	
WT. OF STRING	73	

BIT NO: 6
SIZE: 215.9
IADC CODE: 4 4 7
MANUFACTURER: HUGHES
TYPE: GT-616
SERIAL NO: 8016743
JETS: 17.5 17.5 17.5
DEPTH OUT (m): 3137
DEPTH IN (m):
TOTAL DRILLED (m):
TOTAL HRS RUN:

CUTTING STRUCTURE: T1 | T2 | DC | LOC | BRG | GAGE | PEC | REASON PULLED | TOTAL SUB HRS

HOLE CONDITION
HOLE DRAG: 15-30 U/D
TORQUE AT BOTTOM:
FILL ON BOTTOM (m):

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1800	6.00	3	REAMING F/3088- 2104
1800	1815	0.25	7	RIG SERVICE FUNC ANN OC 20 BFC
1815	2400	5.75	3	REAMING F/2104- 2143

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE TEST CROWN SAVER ANCHOR BOLTS

BLEW 3 BOILERS DOWN 3X5SEC

MUD TYPE	TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH	FROM	TO	D/A/C	RPM	WOB
GEL/POLY	1400	1170	72	8	10	3088	2143	R	50	
	1800	1175	67	8	10					
	2200	1170	90	8	10.5					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
ENCAPSORB FLOC	3	PAILS
GEL	34	SX
VIS PLUS	1	SX
CAUSTIC SODA	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	DITCH DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1175	1170	1700
	1175	1170	1700

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
SOLIDS pH	10	SOLIDS pH	10.5
STACK TEMP	181	STACK TEMP	180

CIRCULATION PRESSURE (kPa): 13472

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	74	140	74

REDUCED PUMP SPEED: 4078 @ 31

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Mike Webb

SPECIAL EVENT	SAFETY TOPIC	MIN.	MAX.
TIME / DEPTH	WORK AT HEIGHTS		5384

RATE SCHEDULE: X REGULAR REPAIR INVERT

CREW SAFETY DAYS: 49

DRIVERS: Mike Webb, Lee Tutcho

CREW	BOC BIS. NO.	NAME	HRS		VEH	INT
DRILLER		Mike Webb	12			MDT
DERRICK HAND		Clarke Starre	12			CS
MOTOR HAND		Nathan Surinak	12			NS
FLOOR HAND		Tim Barrett	12			TB
FLOOR HAND		Duane Norwegian	12			DN
LEASE HAND		Peter Andrew	12			PA
WELL SITE COORDINATOR		BARRY DUNN	12			BD

LICENCE NO: 0211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-46-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Derryl Cunningham

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENSE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-48 | UNIQUE ID: 300B446430125480

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-W040-2-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

	DRILLING & TRANSFERS	DRILL RETURN	REAMING	CORING	CORE GUN & CORE	TRIPS	RIG SERVICE	SURVEY	OUT OF HOLE LOGS	SURVEY	WIRELINE LOGS	RUN CSG & CEMENT	WAIT ON CEMENT	SURFACE B.O.P.	TEST B.O.P.	DRILLSTEM TEST	PLUG BACK	DRILLING CEMENT	FISHING	RIG REPAIR	SAFETY MEETING						
MORN					1.0	6.5	0.25		0.75		3.0											0.5						
DAY			3.25		1.75	6.75	0.25																					
TOTAL			3.25		2.75	13.25	0.50		0.75		3.00											0.50						

	HOURS	DAYS
TOTALS	12.00	
	12.00	
	24.00	

	MORNING	DAY
MEGAJOULES	288313	1316
ACCUMULATOR	34	
BOILER # 3		

	BIT	O.D.	LENGTH
	BIT SUB		0.92
	[illegible] BUB	6.75	3.25
	6.75 D.C.	[illegible]	6.34
	BIT SUB	6.75	1.48
	6.75 D.C.	[illegible]	46.75
	JAR	6.75	9.87
6	6.75 D.C.	[illegible]	30.87
	REV. CIRC. WASHER	6.63	2.48
	X.O.	6.63	1.30
6	H.W.D.P.	5.00	60.60

LICENCE NO: 9211-N046-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12B-46 | UWI/LSD ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATIVE REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvn Vogt

DAILY CHECKS

YEAR: 2004 | MONTH: 3 | DAY: 29

RIG NO: 40

DATE: 15708

	DB (mm)	MW LD (mm)	MWE (kg/m)	MAKE	GRADE	NO of JOINTS	TOTAL LENGTH	KB TO CSG HEAD	SET AT (m)
	338.7	310.5	81.1	IPSCO	K55	10	208.32	6.2	208
	244.5	220.45	59.5	IPSCO	K55	56	804	6.2	804

	BC TOP SIZE	BC TOP THDS	BHA ID	BHA OD	BHA CONN SIZE	T JNT O.D.	TYPE THREAD	NO of JOINTS	PUMP TYPE	PUMP MANUFACTURER	SPROCKET LENGTH
DC	171	NC 50	DC	97.2	171	5 1/2 H90	21	PZ-9	GARDNER DENVER		228
DP	102	4.5 XH	95.68	84.8	117	4 FH	302	PZ-9	GARDNER DENVER		228
DP	102	4.5 XH	41.84	HWDP	85.09	133	4 FH	60			

	RIG UP & TEARDOWN	DRILL ACTUAL	REAMING	DRILLING	CORE BBL & DISC	TRIPS	RIG SERVICE	SURVEY	BOP DRILL	CIRC & CONDITION	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILL STEM TEST	PLUG BACK	DIRECTIONAL CONTROL	REPAIR	SLIP & CUT DRILL LINE	SAFETY MEETING					
MORN						1.5	0.25						7.0					3.25						
DAY		6.25	2.0			3.5	0.25																	
TOTAL		6.25	2.00			5.00	0.50						7.00					3.25						

TOTALS	BOP TYPE	BOP TYPE	MORNING	DAY
	ANNULAR ONLY / RAM	RAM / DIVERTER	MEGAJOULES	291811	3616
	ANNULAR ONLY / RAM	RAM / DIVERTER	ACCUMULATOR	34	
12.00	TOP 210	TOP 210	BOILER # 3		
12.00	MIDDLE 210	MIDDLE 210			
24.00	BOTTOM 210	BOTTOM 210			

SPUD DATE: 2004/01/16 | TIME: 03:00

RIG RELEASE: | TIME:

WELL TYPE: HORIZ | MULTI-ENTRY: NO

OPERATOR'S AFE:

ROTARY TABLE: | KB ELEV:

CONTRACTOR'S JOB NO: 70

YOUR VERT. CONTROL NO: AKITA40_20040220_19

SERVICE SUPPLIED VERSION: EDM_3-0-0 ETS 2.2

PASON

WELL NAME & NO: Northrock et al Summit Creek B-44 300B444630125450 | LICENCE: | FIELD: | UNIT:

OPERATION: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD

RIG MANAGER: Alvn Vogt | RIG NO: 40

PROVINCE: N.W.T. | CAMP: X YES NO | RIG SAFETY INCPN: 1121

MORNING TOUR

0 | 1200 | RUN 0000

CREW	BOC RIG NO	NAME	HRS		VOL	RIG
DRILLER		Mike Wiebe	12			MCH
DERRICK HAND		Clarke Starrs	12			LS
MOTOR HAND		Nathan Burrows	12			NB
FLOOR HAND		Steve Pringle	12			ST
FLOOR HAND		Duane Norwegian	12			DN
LEASE HAND		Peter Andrew	12			PA
LEASE HAND		Alban Menacho	12			AM

BIT	O.D.	LENGTH
MOTOR	165	9.39
FLOAT SUB	165	0.96
NMDC	171	8.42
UPR SUB	161	1.48
NMDC	171	8.42
X.O	178	0.92
JAR	178	9.77
X.O	165	1.12
H.W.D.P	165	421.02
TOTAL BHA 456.53		
DRILL PIPE GRADE		1178.51
DRILL PIPE GRADE		
KELLY DOWN		
TOTAL		1634.81
WT. OF B.C.		
WT. OF STRING	84	

BIT NO: 8 | SIZE: 215.9 | IADC CODE: 4 3 7 | MANUFACTURER: HUGHES | TYPE: GT-C50D | SERIAL NO: W170H | JETS: 22 22 22 | DEPTH OUT (m): | DEPTH IN (m): 1708 | TOTAL DRILLED (m): | TOTAL HRS RUN:

CUTTING STRUCTURE: T1 | T2 | DC | LOC | BRG | GAGE | OC | REASON PULLED | TOTAL RUN (kms)

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE: GEL/POLY | WATER BASED: X | OIL BASED: | FROM | TO | D/HC | RPM | WOB

	TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH
	0900	1170	60	8	9.5

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	12	12
WATER pH	10	10.5
STACK TEMP	182	180

CIRCULATION PRESSURE kPa: 140

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
		140	

REDUCED PUMP SPEED: @ @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Mike Wiebe

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	700	7.00	15	TEST B.O.P. BLIND LOWER PIPE UPPER PIPE RAMS LOW 1400KPA HIGH 17500KPA
				ANN 1400 KPA LOW 10500KPA HIGH UPPER& LOWER KILL VALVE 1400KPA LOW
				17500 HIGH FUNC MOTOR KILL 3 SEC FUNC ACC ANN 18 CLOSE UPPER PIPE 8 SEC
				CLOSE LOWER PIPE 8 SEC CLOSE HCR 1 SEC CLOSE PUMP UP 2MIN 55 SEC PRECHARGE 6800
				ACC 20,000KPA FUNC ANN 13500kPA UPPER PIPE 12500KPA LOWER PIPE 11500 KPA
				HCR 11250 KPA STABBING VALVE 1400 KPALOW 175000 KPA HIGH
				UPPER& LOWER KELLY COCK 1400 KPA LOW 17500 KPA HIGH
700	830	2.50	30	DIR WORK MAKE UP MUD MOTOR/BIT
830	1100	1.50	8	TRIPS RIH-1815m
1100	1145	0.75	30	DIR WORK KELLY UP/TEST TOOLS
1145	1700	0.25	7	RIG SERVICE FUNCTION LOWER PIPE RAM DIC 8 SEC

REMARKS: INSP DEADLINE ANCHOR BRAKE LINKAGE TEST CROWN SAVER/ANCHOR BOLTS

NITROGEN EX 2000

BLEW BOILERS DOWN/30 SEC

SPECIAL EVENT		SAFETY TOPIC	MSH	MOP
TIME / DEPTH				

RATE SCHEDULE: | X | REGULAR | | REPEAT | | INVERT

CREW SAFETY DAYS: 84

DRIVERS: Mike Wiebe / Duane Norwegian

DAY TOUR

1200 | 2400 | RUN 0000

CREW	BOC RIG NO	NAME	HRS		VOL	RIG
DRILLER		Paul Sackney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
FLOOR HAND		David Bragg	12			DB
FLOOR HAND		Chris Tourangeau	12			CT
WELL SITE CORDINATOR		Brent Williams	12			BW

BIT	O.D.	LENGTH
MOTOR	165	9.39
FLOAT SUB	165	0.96
NMDC	171	8.42
UPR SUB	161	1.48
NMDC	171	8.42
X.O	178	0.92
JAR	178	9.77
X.O	165	1.12
H.W.D.P	165	421.02
TOTAL BHA 456.53		
DRILL PIPE GRADE		1234.02
DRILL PIPE GRADE		8.30
KELLY DOWN		11.04
TOTAL		1711.00
WT. OF B.C.		
WT. OF STRING	90	

BIT NO: 8 | SIZE: 215.9 | IADC CODE: 4 3 7 | MANUFACTURER: HUGHES | TYPE: GT-C50D | SERIAL NO: W170H | JETS: 22 22 22 | DEPTH OUT (m): 1713 | DEPTH IN (m): 1708 | TOTAL DRILLED (m): 7.00 | TOTAL HRS RUN: 8.25

CUTTING STRUCTURE: T1 | T2 | DC | LOC | BRG | GAGE | OC | REASON PULLED | TOTAL RUN (kms)

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE: GEL/POLY | WATER BASED: X | OIL BASED: | FROM | TO | D/HC | RPM | WOB

	TIME	DENSITY (kg/m3)	FUNNEL VISCOSITY	FLUID LOSS (cm3)	pH
	1800	1165	55	8	10
	2100	1165	55	8	10
	1708	1713	D		1

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
BICARBONATE OF SODA	9	BX
DEBCO	2	BX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
1			
1			

BOILERS

	1	2
HRS RUN	12	12
WATER pH	10	10
STACK TEMP	181	180

CIRCULATION PRESSURE kPa: 10384

PUMP NO. 1		PUMP NO. 2	
LINER SIZE	SPM	LINER SIZE	SPM
140	64	140	61

REDUCED PUMP SPEED: 4352 @ 64 @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Paul Sackney

FROM	TO	RUNNING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1530	3.50	8	TRIPS RIH-1620/FILL@ 1000 LAY DOWN 33 SINGLES
1530	1730	2.00	3	REAMING TO TAG CEMENT @ 1708m
1730	2345	6.25	2	PLUG 1708M TIME DRILL TO KICK OFF F/1708- 1713
2345	2400	0.25	7	RIG SERVICE FUNC ANN 19 SEC C/O

REMARKS: FUNCTION CROWN SAVER INSPECT DEADLINE ANCHOR BRAKE LINKAGE FLARE/DEGASSER LINES

BLEW BOILERS DOWN 4X5SEC

SPECIAL EVENT		SAFETY TOPIC	MSH	MOP
TIME / DEPTH				5444

RATE SCHEDULE: | X | REGULAR | | REPEAT | | INVERT

CREW SAFETY DAYS: 84

DRIVERS: Paul Sackney / Duane Norwegian

WELL NAME & NO.: 9211-N046-2-J — Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-128-48

UNIQUE ID: 300B444430128450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

	SUBSIP & TEARDOWN	DRILL ACTUAL	CIRCULATE	FISHING	H2S DRILL & CIRC	TRIPS	RIG SERVICE	SURVEY DEPTH	CUT OFF DRLG LINE	DRY SURVEY	WIRELINE LOGS	RUN CSG & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILLSTEM TEST	FLUID EACH	DEVIATED COUNTRY	REPAIRS	RIG WORK	SAFETY MEETING	PUMP REPAIR					TOTALS
NOON		10.0					0.25													0.75			1.0				12.00
DAY		10.5					0.5			0.5													P.R.				12.00
TOTAL		20.50					0.75			0.50										0.75		0.50	1.00				24.00

	MORNING	DAY
MEGAJOULES	282581	42868
ACCUMULATOR	34	
BOILER # 3		

DAILY COSTS

STARTED	2004/05/16 @ 0300
RIG RELEASED	TIME
WELL TYPE	HORIZ — NEW ENTRY: NO
OPEN PERFS AFE	
DAILY $	CP PSIG
DISTRIBUTION JOB NO.	70
FIELD / DIRECT $	J-CTA40_20040221_19
VERSION / DATE / TIME	EDR_3-0-6 ETS 2.2

PASON

Well Name & No.: Northrock et al Summit Creek B-44 300B444430128450 — Licence: 28044 — Spud: 3 — Date: 21

Operator: NORTHROCK RESOURCES LTD. — Contractor: AKITA DRILLING LTD

Rig Manager: Alvin Vogt — Rig No.: 68

Pit Volume: RIVT — Sump: X Yes ☐ No — Rig Supply Tk No.: 1122

BIT

BIT	O.D.	LENGTH
MOTOR	165	9.39
FLOAT SUB	165	1.86
NMDC	171	9.42
LIPA SUB	161	1.48
NMDC	171	9.42
X-O	171	1.82
JAR	171	9.77
X-O	165	1.13
H.W.D.P.	165	421.02
TOTAL BHA	456.53	
DRILL PIPE	5" HWDP	1262.79
DRILL PIPE	5" DP	0.94
KELLY DOWN		7.39
TOTAL		1736.00
WT OF D.C.		
WT OF STRING		90

MORNING TOUR

BIT NO.	6
SIZE	215.9
IADC CODE	4 3 7
MANUFACTURER	HUGHES
TYPE	GT-C506D
SERIAL NO.	W170H
JETS	22 22 22
DEPTH OUT (m)	1736
DEPTH IN (m)	1706
TOTAL DRLG (m)	32.00
TOTAL HRS RUN	16.25

CUTTING STRUCTURE: T1 | T2 | BC | LOC | SFA | SAND | GC | REASON PULLED | TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG: 7 UP 4 DOWN; TORQUE AT BOTTOM; FILL ON BOTTOM (m)

SOLID TYPE: DEL/POLY — WATER BASED: X — OIL BASED: ☐

	FROM	TO	DARC	RPM	WOB
TIME	200	530	1000	1713	1738
DENSITY (kg/m3)	1150	1140	1140		
FUNNEL VISCOSITY	47	53	46		
FLUID LOSS (ml/3)	10	8.8	10.4		
pH	10	10	11		
			71.8		

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
ENCAPSORFLOC	4	PAILS
DEL	23	SX
VIS PLUS	1	SX
BODA ASH	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1140	1130	1880
12	1140	1130	1880

BOILERS

	1		3
HRS RUN	12	HRS RUN	12
BOILER pH	10	BOILER pH	10.5
STACK TEMP	170	STACK TEMP	180

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 3 LINER SIZE	PUMP NO. 3 SPM
13077	140	71	140	71

REDUCED PUMP SPEED: 3000 @ 34 @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
1708.02	7.8	82
1715.39	8.3	87.8

DRILLER SIGNATURE: Mike Wiebe

FROM	TO	HOURS THIS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	115	1.25	3	DRILL F/1713- 1715
115	200	0.75	20	DIR. WORK REBOOT MWD COMPUTER CHANGE OUT CENCOR
200	600	4.00	2	DRILL F/1715- 1734
600	700	1.00	23	WORK TIGHT HOLE
700	1145	4.75	2	DRILL ACTUAL F/1734-1738
1145	1200	0.25	7	RIG SERVICE FUNC REMOTE CHOKE

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE TEST CROWN SAVER/ANCHOR BOLTS

SLEW BOILERS DOWN 33.5 SEC. EACH

SPECIAL EVENT					SAFETY TOPIC	MDH	MHCP
TIME / DEPTH					HOUSE CLEANING	65	0002

MORNING TOUR

0 to 1200 — RUN#36

CREW	BOC BIS NO.	NAME	HRS		YES	NO
DRILLER		Mike Wiebe	12			MOH
DERRICK HAND		Clarke Starrs	12			CS
MOTOR HAND		Nathan Sunnek	12			NS
FLOOR HAND		Steve Pringle	12			SP
FLOOR HAND		Duane Norwegan	12			DN
LEASE HAND		Peter Andrew	12			PA
LEASE HAND		Allan Menacho	12			AM

RATE SCHEDULE: X REGULAR ☐ REPAIR ☐ INVERT ☐

CREW SAFETY DAYS: 65

DRIVERS: Mike Wiebe; Duane Norwegan

DAY TOUR

BIT	O.D.	LENGTH
MOTOR	165	9.39
FLOAT SUB	165	1.86
NMDC	171	9.42
LIPA SUB	161	1.48
NMDC	171	9.42
X-O	171	1.82
JAR	171	9.77
X-O	165	1.13
H.W.D.P.	165	421.02
TOTAL BHA	456.53	
DRILL PIPE	5" HWDP	1320.87
DRILL PIPE	5" DP	
KELLY DOWN		2.73
TOTAL		1782.00
WT OF D.C.		
WT OF STRING		90

BIT NO.	6
SIZE	215.9
IADC CODE	4 3 7
MANUFACTURER	HUGHES
TYPE	GT-C506D
SERIAL NO.	W170H
JETS	22 22 22
DEPTH OUT (m)	1782
DEPTH IN (m)	1706
TOTAL DRILLED (m)	76.00
TOTAL HRS RUN	29.75

CUTTING STRUCTURE: T1 | T2 | BC | LOC | SFA | GAUGE | GC | REASON PULLED | TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG: 7 UP 4 DOWN; TORQUE AT BOTTOM; FILL ON BOTTOM (m)

SOLID TYPE: POLY/GEL — WATER BASED: X — OIL BASED: ☐

	FROM	TO	DARC	RPM	WOB
TIME	1400	1800	2100	1738	1782
DENSITY (kg/m3)	1140	1140	1140		
FUNNEL VISCOSITY	54	54	50		
FLUID LOSS (ml/3)	7.5	7.9	8		
pH	11	11	10.5		

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
AQUAPAC	1	SX
DEL	41	SX
LIGNITE	1	SX
VIS PLUS	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1140	1140	1800
12	1140	1140	1800

BOILERS

	1		3
HRS RUN	12	HRS RUN	12
BOILER pH	10.5	BOILER pH	10
STACK TEMP	180	STACK TEMP	180

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 3 LINER SIZE	PUMP NO. 3 SPM
12200	140	71	140	71

REDUCED PUMP SPEED: 3056 @ @ 70

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
1734.45	10.5	100.8
1743.88	9.1	84.5
1753.64	7.8	81.8

DRILLER F.O.NATURE: Paul Sackney

FROM	TO	HOURS THIS	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1345	1.75	2	DRILL ACTUAL F/1776- 1738m
1345	1415	0.50	23	CHANGE HEAD ON PUMP #1
1415	2200	7.75	2	DRILL ACTUAL F/1738m- 1772
2200	2230	0.50	7	RIG SERVICE FUNC LOWER PIPE S SEC C/O
2230	2330	1.00	2	DRILL ACTUAL F/1772- 1782
2330	2400	0.50	10	DEVIATION SURVEY

NOTES: FUNCTION CROWN SAVER INSPECT BRAKE LINKAGE DEADLINE ANCHOR FLARE/DEGASSER LINES

BLEW BOILERS DOWN 4.5 SEC

SPECIAL EVENT					SAFETY TOPIC	MDH	MHCP
TIME / DEPTH						65	0002

DAY TOUR

1200 to 2400 — RUN#36

CREW	BOC BIS NO.	NAME	HRS		YES	NO
DRILLER		Paul Sackney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
FLOOR HAND		David Bragg	12			DB
FLOOR HAND		Chris Tourangeau	12			CT
LEASE HAND		Derek Widow	12			
WELL SITE CORDINATOR		Brent Williams	12			BW

RATE SCHEDULE: X REGULAR ☐ REPAIR ☐ INVERT ☐

CREW SAFETY DAYS: 65

DRIVERS: Paul Sackney; Chris Tourangeau

LICENSE NO: 9211-N048-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45 | UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-HG48-3-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-48-30-125-45

UNIQUE ID: 300B448430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

WELL NO	9211-N046-2-J
WELL NAME & NO	Northrock et al Summit Creek B-44
OPERATOR	NORTHROCK RESOURCES LTD.
CONTRACTOR	AKITA DRILLING LTD.
SURFACE LOCATION	B44-64-30-125 45
UNIQUE ID	300B446430125450
SIGNATURE OF OPERATOR'S REPRESENTATIVE	Kevin Amy
SIGNATURE OF CONTRACTOR'S RIG MANAGER	Allyn Vogt

DAILY CHECKS

| | | |

LIC. WELL NAME & NO.: 9211-NW46-2-3 — Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12S-4E

UNIQUE ID: 300B446430128440

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N048-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-128-48 | UNIQUE ID: 300B4464301284 80

SIGNATURE OF OPERATOR'S ON-SITE REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45 | UNIQUE ID: 30CB444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

	MORNING	CAT
MEGAJOULES	303014	3308
ACCUMULATOR	34	

Northrock et al Summit Creek U-44 300B444643012545B | 3934 | 12 | 20

NORTHROCK RESOURCES LTD | AKITA DRILLING LTD

Alvin Vogt | 68

NWT | 1139

MORNING TOUR

BIT	O.D.	LENGTH
MOTOR	165	8.39
FLOAT SUB	165	1.00
NMDC	171	8.42
UPR SUB	161	1.48
NMDC	171	8.42
S.D.	175	1.52
JAR	175	4.77
S.D.	165	1.13
H.W.D.P.	165	421.82
TOTAL BHA 456.53		
DRILL PIPE	DP/HWDP	1899.97
DRILL PIPE	SH/JAR	
KELLY DOWN		12.98
TOTAL		2337.80
WT OF D.C.		
WT OF STRING		80

BIT NO	10
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	HUGHES
TYPE	HR-830
SERIAL NO	8021838
JETS	17.5 17.5
DEPTH OUT (m)	2337
DEPTH IN (m)	2242
TOTAL DRILLED (m)	86.00
TOTAL HRS RUN	22.5

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRG | GAUGE | OTHER | REASON PULLED | TOTAL RUN (HRS)

HOLE CONDITION: HOLE DRAG: 25 UP 7 DOWN | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE	WATER BASED [X]	OIL BASED [ ]		
TIME	300	900	1000	
DENSITY (kg/m3)	1260	1260	1260	
FUNNEL VISCOSITY	92	90	90	
FLUID LOSS (cm3)	6	6	6.5	
pH	10	10	10	
PVT	58.4	60.5	65	

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
CAUSTIC SODA	1	SX
KB PLUS	1	SX
ENCAPSORB FLOC	3	PAILS

SOLIDS CONTROL — CENTRIFUGE

HOURS RUN	AVERAGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			

HOURS RUN	AVERAGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	12	HRS RUN 12
WATER pH	10	WATER pH 10.5
BRINE TEMP	180	BRINE TEMP 180

CIRCULATION PRESSURE (kPa)	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
17100	140	75	140	75

REDUCED PUMP SPEED: 3800 @ | @ | 95

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2280.33	1.4	108.4
2308.84	1.4	102.2
2288.17	1.8	124.0
2310.34	1.8	148.3
2330.02	2.0	164.1

DRILLER SIGNATURE: Paul Sackney

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	745	7.75	2	DRILL F/ 2285- 2327
745	800	0.25	10	DEVIATION SURVEY TAKEN EVERY KELLY
800	930	1.50	2	DRILL ACTUAL 2322-2327
930	945	0.25	7	RIG SERVICE FUNC ANN 26 SEC
945	1200	2.25	2	DRILL ACTUAL F/2327-2337

NOTES: FUNC CROWN SAVER INSPECT DEADLINE ANCHOR BRAKE LINKAGE FLARE/DEGASSER LINES

BLEW DOWN BOILERS 4X5 SEC

SPECIAL EVENT		SAFETY TOPIC	MIN.	MAX.
TIME / DEPTH			95	4849

RATE SCHEDULE	X	REGULAR		REPAIR		SWEPT
CREW SAFETY DAYS: 62			DRIVERS: Paul Sackney; Harry Beyonnie			

CREW	BOC INS. NO.	NAME	HRS		YRS	INS
DRILLER		Paul Sackney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Nathan Sunnak	12			NS
FLOOR HAND		Chris Tourangeau	12			CT
FLOOR HAND		David Bragg	12			DB
LEASE HAND		Harry Beyonnie	12			HB
LEASE HAND		Clarence Tutcho	12			CT
WELL SITE COORDINATOR		BARRY D' ANN	14			BD

DAY TOUR

BIT	O.D.	LENGTH
1 MOTOR	165	8.39
2 FLOAT SUB	165	1.00
3 NMDC	171	8.42
4 UPR SUB	161	1.48
5 NMDC	171	8.42
6 S.D.	175	1.52
7 JAR	175	4.77
8 S.D.	165	1.13
9 H.W.D.P.	165	421.82
TOTAL BHA 456.53		
DRILL PIPE	DP/HWDP	1927.99
DRILL PIPE	SH/JAR	9.56
KELLY DOWN		12.98
TOTAL		2399.00
WT OF D.C.		
WT OF STRING		84

BIT NO	10
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	HUGHES
TYPE	HR-830
SERIAL NO	8021838
JETS	17.5 17.5
DEPTH OUT (m)	2385
DEPTH IN (m)	2242
TOTAL DRILLED (m)	153.00
TOTAL HRS RUN	33.75

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRG | GAUGE | OTHER | REASON PULLED | TOTAL RUN (HRS)

HOLE CONDITION: HOLE DRAG: 30 UP 8 DOWN | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE	GEL CHEM	WATER BASED [X]	OIL BASED [ ]		
TIME	1400	1800	2200		
DENSITY (kg/m3)	1245	1249	1256		
FUNNEL VISCOSITY	91	91	94		
FLUID LOSS (cm3)	6	6.5			
pH	10	10	10		
PVT	73.4	73.8	77.7		

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
DRILLING DETERGENT	1	PAILS
BARITE	84	SX
GEL	30	SX
ENCAPSORB FLOC	2	PAILS
DESCO	1	SX
LIGNITE	1	SX
SHAKER SCREEN	210	SHACK

SOLIDS CONTROL — CENTRIFUGE

HOURS RUN	AVERAGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			

HOURS RUN	AVERAGE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY

BOILERS

	1	2
HRS RUN	12	HRS RUN 12
WATER pH	10.5	WATER pH 10.5
BRINE TEMP	181	BRINE TEMP 180

CIRCULATION PRESSURE (kPa)	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
17300	140	75	140	75

REDUCED PUMP SPEED: 1775 @ 35 @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2320.02	2.0	164.1
2329.57	1.5	154.8
2338.22	0.8	136.1
2348.78	0.2	153.5
2357.47	0.6	18.2
2368.97	1.6	10.1

DRILLER SIGNATURE: Brent Williams

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1800	6.00	2	DRILL ACTUAL F/2337- 2385M
1800	1815	0.25	7	RIG SERVICE FUNC LOWER PIPE 8 SEC
1815	2330	5.25	2	DRILL ACTUAL F/ 2359- 2385M
2330	2400	0.50	10	DEVIATION SURVEY TAKEN EVERY KELLY

NOTES: INP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINES TEST CROWN SAVER

BLEW BOILERS 3X 6 SEC EACH

SPECIAL EVENT		SAFETY TOPIC	MIN.	MAX.
TIME / DEPTH			95	4758

RATE SCHEDULE	X	REGULAR		REPAIR		SWEPT
CREW SAFETY DAYS: 62			DRIVERS: Brent Williams; Wade Sledz			

DAY TOUR

CREW	BOC INS. NO.	NAME	HRS		YRS	INS
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jonathan Andrew	12			JA
LEASE HAND		Paul MacCauley	12			PM
LEASE HAND		William Andrew	12			WA

LICENSE NO: 9211-N046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-46-30-12E-4S | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

SPUD DATE: 2004/01/16 | TIME: 0100 | RIG RELEASED: | TIME: | WELL TYPE: HORIZ | HEATING: NO | OPERATOR'S SITE: | ENTRY FORM: | OP PERS: | WEATHER/ROAD REPORT: 70 | TIME SAFETY MEETING HELD: AKITA01_20040229_18 | TOURSHEET VERSION: EDR_3-0-0 ETS 2.2

PASON

	DRILL ACTUAL	DRILLING	CIRCULATING	TRIPPING	WIPER TRIPS & CIRC	TRIPPING	REPAIR RIG	OUT OF/IN DRILL LINE	SERVICE RIG	SURVEY	REAMING LOGS	RUN CSG & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILLSTEM TEST	PLUG BACK	DIG SITE CLEANUP	FISHING	SIDE TRACK	SAFETY MEETING	P/U PUMP					TOTALS
NOON	11.25						0.25			0.5																	12.00
DAY	10.0						0.25			0.5												1.25					12.00
TOTAL	21.25						0.50			1.00												1.25					24.00

	TYPE	SERIAL NO	MEGAJOULES	MORNING	DAY
			MEGAJOULES	303851	4263
			ACCUMULATOR	34	

WELL NAME & NO: Northrock et al Summit Creek B-44 | LICENSE NO: 300B446430125450 | SPUD: / | AFE: | DEPTH:

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

RIG MANAGER: Allyn Vogt | RIG NO: 46

PRESENCE: N W T | SAMP: X YES NO | RIG SAFETY DAYS: 1130

BIT

	O.D.	LENGTH
BIT	311	.34
MOTOR	165	9.38
FLOAT SUB	165	.94
NMDC	171	9.42
UPR SUB	161	.68
NMDC	171	9.42
S.C.	178	.82
JAR	178	9.77
S.O.	165	1.12
H.W.D.P.	146	421.92
TOTAL BHA 456.53		
DRILL PIPE	DP 4500	1881.02
DRILL PIPE	SWDP	
KELLY DOWN		3.93
TOTAL		2445.38
WT OF D.C.		
WT OF STRING		94

BIT NO: 10 | SIZE: 215.9 | IADC CODE: 5 1 7 | MANUFACTURER: HUGHES | TYPE: HR-620 | SERIAL NO: 6021638 | JETS: 17.5 17.5 17.5 | DEPTH OUT (m): 3445 | DEPTH IN (m): 2342 | TOTAL $ HRS ON BIT: 303.00 | TOTAL HRS RUN: 45

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRNG | GAGE | OTHER | REASON PULLED | TOTAL DULL GAGE

HOLE CONDITION: HOLE DRAG: 30 UP 0 DOWN | TORQUE AT BOTTOM: | FILL ON BOTTOM (m):

MORNING TOUR

MUD TYPE: | WATER BASED ☐ OIL BASED ☐

	200	800	1000
TIME			
DENSITY (kg/m3)	1295	1290	1280
FUNNEL VISCOSITY	58	64	61
FLUID LOSS (cm3)	6	6	6
pH	10	10	10
PVT	79.8	81.7	77.4

PRODUCT	AMOUNT	UNIT
ENCAPSORB FLOC	3	PAILS
VIS PLUS	1	SX
CAUSTIC SODA	1	SX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			
HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			

BOILERS

	1	2
HRS RUN	12	12
WATER pH	10.5	10
STACK TEMP	457	481

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
17600	140	75	140	75

REDUCED PUMP SPEED: 3536 | @ | | @ | 95

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2378.3	2.0	12.2
2385.80	2.8	16.3
2395.41	3.1	24.2
2404.73	3.7	24.8
3415.78	4.1	27.3
3424.78	4.1	23.8

DRILLER SIGNATURE: Paul Sadney

DRILLING EVENT					SAFETY TOPIC	MIN	MAX
TIME FROM/TO						100	4548

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	630	6.50	2	FLOW CHECK @ 2385 DRILL F 2385-2423M
630	645	0.25	7	RIG SERVICE FUNC UPPER PIPE RAM OIC 8 SEC
645	730	0.75	2	DRILL ACTUAL F/ 2423-2430 M
730	801	0.50	10	DEVIATION SURVEY TAKEN EVERY KELLY
800	1200	4.00	2	DRILL ACTUAL F/ 2430-2445

NOTES: FUNC CROWN SAVER INSP BRAKE LINKAGE/DEADLINE ANCHOR/FLARE&DEGASSER LINE 8

TRANS 21 m3 DIESEL TO RIG TANK

BLOW BOILERS DOWN 4X/HEC

RATE SCHEDULE: X | REGULAR | | REPAIR | | RAVERT

CREW SAFETY DAYS: 63

DRIVERS: Paul Sadney | Harry Beyonnie

CREW	BOC INS. NO.	NAME	HRS		YES	NO
DRILLER		Paul Sadney	12			PS
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Nathan Sunnak	12			NS
FLOOR HAND		Chris Tourangeau	12			CT
FLOOR HAND		David Bragg	12			DB
LEASE HAND		Harry Beyonnie	12			HB
LEASE HAND		Clarence Tutcho	8			CT
WELL SITE COORDINATOR		BARRY DUNN	12			BD

DAY TOUR

BIT NO: 10 | SIZE: 215.9 | IADC CODE: 5 1 7 | MANUFACTURER: HUGHES | TYPE: HR-620 | SERIAL NO: 6021638 | JETS: 17.5 17.5 17.5 | DEPTH OUT (m): 3487 | DEPTH IN (m): 3342 | TOTAL DRILLED (m): 345.00 | TOTAL HRS RUN: 55

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRNG | GAGE | OTHER | REASON PULLED | TOTAL DULL GAGE

HOLE CONDITION: HOLE DRAG: 35 UP 0 DOWN | TORQUE AT BOTTOM: | FILL ON BOTTOM (m):

	O.D.	LENGTH
BIT	311	.34
MOTOR	165	9.38
FLOAT SUB	165	.94
NMDC	171	9.42
UPR SUB	161	1.68
NMDC	171	9.42
S.O.	178	.82
JAR	178	9.77
S.O.	165	1.12
H.W.D.P.	146	421.92
TOTAL BHA 456.53		
DRILL PIPE	DP 4500	2009.67
DRILL PIPE	SWDP	3.94
KELLY DOWN		3.6
TOTAL		2441.00
WT OF D.C.		
WT OF STRING		95

DAY TOUR

MUD TYPE: GEL CHEM | WATER BASED X | OIL BASED ☐

	1400	1800	2200
TIME			
DENSITY (kg/m3)	1290	1290	1270
FUNNEL VISCOSITY	58	65	64
FLUID LOSS (cm3)	9.5	6	6
pH	10	10	10
PVT		79	81.7

PRODUCT	AMOUNT	UNIT
GEL	70	SX
ENCAPSORB FLOC	7	PAILS
CAUSTIC SODA	2	SX
LIGNITE	2	SX
VIS PLUS	1	SX
DRILLING DETERGENT	1	PAILS

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			
HOURS RUN	INTAKE DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
0			

BOILERS

	1	2
HRS RUN	12	12
WATER pH	10	10
STACK TEMP	175	180

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
20405	140	75	140	75

REDUCED PUMP SPEED: 3920 | @ | 55 | @ |

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
3414.84	3.8	18.9
2444.18	2.0	3.3
3458.88	3.7	350.4
2482.36	4.0	351.8

DRILLER SIGNATURE: Brent Williams

DRILLING EVENT					SAFETY TOPIC	MIN	MAX
TIME FROM/TO						110	4548

FROM	TO	DURATION (hrs)	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	2145	9.75	2	DRILL ACTUAL F/ 2445-2480m
2145	2230	0.25	7	RIG SERVICE FUNC ANNULAR OIC 30 SEC
2300	2215	0.25	2	DRILL ACTUAL F/ 2480-3487m
2215	2330	1.25	22	TIME FIXING PUMP HEADS/SEATS
2330	2400	0.50	10	DEVIATION SURVEY TAKEN EVERY KELLY

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINE 8 TEST CROWN SAVER

BLOW BOILERS 4X 5 SEC EACH

RATE SCHEDULE: X | REGULAR | | REPAIR | | RAVERT

CREW SAFETY DAYS: 63

DRIVERS: Brent Williams | Wade Sledz

CREW	BOC INS. NO.	NAME	HRS		YES	NO
DRILLER		Brent Williams	12			BW
DERRICK HAND		Terry Sanderson	12			TS
MOTOR HAND		Kenneth Lauck	12			KL
FLOOR HAND		Wade Sledz	12			WS
FLOOR HAND		Jonathan Andrew	12			JA
LEASE HAND		Paul MacCauley	12			PM
LEASE HAND		William Andrew	12			WA

LICENCE NO: 9211-N046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-39-12B-4B | UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

YEAR: 2004 | MONTH: 3 | DAY: 1

	OD (mm)	WEIGHT (kg/m)	GRADE	CONNECTION	NO. OF JOINTS	TOTAL LENGTH	KB TO CASING HEAD	SET AT (m)
	339.7	316.5	81.1	IPSCO	K55	18	209.32	6.3
	244.5	220.45	59.5	IPSCO	K55	19	804	6.2

	BIT OR DP	BIT OR HOLE SIZE (mm)	MAKE	GRADE	SERIAL NO. OR CLASS	1 JNT O.D. (mm)	TYPE THREAD	NO. OF JOINTS	PUMP TYPE	PUMP MANUFACTURER	STROKE LENGTH (mm)
	DC	171	HMD	DC	S7.2	171	6 HMD	21	PZ-8	GARDNER DENVER	229
	DP	102	X 95	X-95	84.8	117	4 FH	300	PZ-8	GARDNER DENVER	229
	DP	102	41.04	HANDP	68.08	133	4" FH	50			

	SHOP & TRANSPORT	RIG ACTUAL	DRAWWORKS	CASING	FORM SURV & CSG	TRIPS	RIG SERVICE	REPAIR RIG	DVT SPT WHILE DRLG	DEV SURVEY	CIRCULATING LOSS	SURFACE EQUIP	SURF CSG CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILLSTEM TEST	PLUG BACK	DIRECTIONAL CEMENT	PERMIT	SAFE WORK	SAFETY MEETING					TOTALS
MORN		8.25			1.25	3.5	0.25			0.5												1.25					12.00
DAY			4.0			7.0	0.25	0.75																			12.00
TOTAL		8.25	4.00		1.25	10.50	0.50	0.75		0.50												1.25					24.00

	MORNING	DAY
MEGAJOULES	307080	7372
ACCUMULATOR	34	

TOP 210 | MIDDLE 210 | BOTTOM 210

Northrock et al Summit Creek B-44 300B444430125460 | 2004 | 3 | 1

OPERATOR: NORTHROCK RESOURCES LTD | CONTRACTOR: AKITA DRILLING LTD

Allyn Vogt | 46

PROVINCE: NWT | 1131

MORNING TOUR

	LENGTH
BIT	0.0
MOTOR	9.35
FLOAT SUB	1.54
NMDC	9.42
UPR SUB	1.48
NMDC	9.42
X.O.	0.82
JAR	9.77
X.O.	1.13
9 H.W.D.P.	421.02
TOTAL BHA 464.33	
DRILL PIPE	2238.45
DRILL PIPE	
KELLY DOWN	8.25
TOTAL	2905.89
WT OF DC	
WT OF STRING	69

BIT NO	10
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	HUGHES
TYPE	HX-620
SERIAL NO	8021839
JETS	17.5 17.5 17.5
DEPTH OUT (m)	2905
DEPTH IN (m)	2742
TOTAL DRILLED (m)	163.00
TOTAL HRS RUN	95

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRG | GAUGE | OTHER | REASON PULLED | TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG: 30 UP 0 DOWN | TORQUE AT BIT FLOW | FILL ON BOTTOM (m)

MUD TYPE	WATER BASED ☐	OIL BASED ☐	FROM	TO	D/AC	RPM	WOB
TIME	202		2487	2905	D	45	15
DENSITY (kg/m3)	1290						
FUNNEL VISCOSITY	82						
FLUID LOSS (cm3)	6						
pH	10						
PVT	95.4						

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
BARITE	45	SX
LIGNITE	3	SX
ENCAPSULOC	3	PAIL

SOLIDS CONTROL: CENTRIFUGE | HOURS RUN | DRILL FLUID DENSITY (kg/m3) | OVER FLOW DENSITY | UNDER FLOW DENSITY

	1	2
HRS RUN	12	12
SCREEN (#)	10.5	10
STACK TEMP	180	180

CIRCULATION PRESSURE (kPa) | PUMP NO. 1 LINER SIZE | PUMP NO. 1 SPM | PUMP NO. 2 LINER SIZE | PUMP NO. 2 SPM

17800	140	75	140	75

REDUCED PUMP SPEED: 3820 | 68 | 58 | 68

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2471.35	4.0	2.0
2492.77	3.5	17.5

DRILLER SIGNATURE: Paul Sackney

FROM	TO	BLOWING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	515	5.75	2	DRILL ACTUAL F/ 2487-2905
515	830	1.25	1	CONDITION MUD & CIRC
830	700	0.50	10	ACCUM SURVEYS
700	715	0.25	7	RIG SERVICE
715	830	1.25	22	FIX HYDRAULIC HOSE ON MAIN SYSTEM
830	1200	3.50	6	TRIPS POOH 10 & HANDS PUMP PILL/FLOW CHECK @ 2486.3 I/O 2905 491 BANK

REMARKS: FUNC CROWN SAVER INSPECT DEADLINE ANCHOR BRAKE LINKAGE FLARE&DEGASSER LINES

HOLE FILL-CALC 0.22M3/A/B-7 80/OFF-84

BLEW BOILERS DOWN 4.5 SEC

SPECIAL EVENT | SAFETY TOPIC | MIN. | MAX.: 103 | 4548

MORNING TOUR

CREW	SOC SEC NO.	NAME	HRS	VOL	SIG
DRILLER		Paul Sackney	12		PS
DERRICK HAND		Andre Habel	12		AH
MOTOR HAND		Nathan Sunnak	12		NS
FLOOR HAND		Chris Tourangeau	12		CT
FLOOR HAND		David Bragg	12		DB
LEASE HAND		Harry Beyonne	12		HB
WELL SITE COORDINATOR		BARRY DUNN	12		BD

0 | 1208

RATE SCHEDULE | X | REGULAR | | REPAIR | | INVENT

CREW SAFETY DAYS: 64

DRILLER: Paul Sackney | Harry Beyonne

DAY TOUR

	LENGTH
BIT	0.0
BIT SUB	1.16
X.O.	1.12
H.W.D.P.	73.35
JAR	9.84
H.W.D.P.	347.87
TOTAL BHA 537.39	
DRILL PIPE	2014.46
DRILL PIPE	
KELLY DOWN	8.25
TOTAL	2574.23
WT OF DC	
WT OF STRING	80

BIT NO	10
SIZE	215.9
IADC CODE	5 1 7
MANUFACTURER	HUGHES
TYPE	HX-620
SERIAL NO	8021839
JETS	17.5 17.5 17.5
DEPTH OUT (m)	2905
DEPTH IN (m)	2742
TOTAL DRILLED (m)	260.00
TOTAL HRS RUN	95

CUTTING STRUCTURE: T1 | T2 | WEAR | LOC | BRG | GAUGE | OTHER | REASON PULLED | TOTAL RUN HRS

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MUD TYPE	WATER BASED ☐	OIL BASED ☐	FROM	TO	D/AC	RPM	WOB
TIME							
DENSITY (kg/m3)							
FUNNEL VISCOSITY							
FLUID LOSS (cm3)							
pH							

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL: CENTRIFUGE | HOURS RUN | DRILL FLUID DENSITY (kg/m3) | OVER FLOW DENSITY | UNDER FLOW DENSITY

	1	2
HRS RUN	12	12
SCREEN (#)	10.5	10.5
STACK TEMP	180	180

CIRCULATION PRESSURE (kPa) | PUMP NO. 1 LINER SIZE | PUMP NO. 1 SPM | PUMP NO. 2 LINER SIZE | PUMP NO. 2 SPM

14500	140	75	140	75

REDUCED PUMP SPEED

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Brent Williams

FROM	TO	BLOWING TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1300	1.00	6	TRIPS POOH TO BIT
1300	1315	0.25	7	RIG SERVICE FUNC UPPER/LOWER RAMS 6 SEC/BLINDS 3 SEC
1315	1515	2.00	6	TRIPS BREAK DOWN BOTTOM END BHA MOTOR WAS WASHED/SWAPPED @ POWER SECTION
				LAY OUT MONELS/JARS/PICK UP NEW JARS/MAKE UP BIT
1515	1600	0.75	8	REPAIR RIG PUT ON NEW SPINNER
1600	2000	4.00	6	TRIPS MAKE UP NEW BHA POR CLEAN OUT TRIP/RIH TO 1950
2000	2400	4.00	3	REAMING F/1950- 2020M

REMARKS: INSP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINES

BLEW BOILERS 4 X 5 SEC

SPECIAL EVENT | SAFETY TOPIC | MIN. | MAX.: 85 | 4548

DAY TOUR

CREW	SOC SEC NO.	NAME	HRS	VOL	SIG
DRILLER		Brent Williams	12		BW
DERRICK HAND		Terry Sanderson	12		TS
MOTOR HAND		Kenneth Lauck	12		KL
FLO. HAND		Wade Sledz	12		WS
FLOOR HAND		Jonathan Andrew	12		JA
LEASE HAND		Paul MacCauley	12		PM
LEASE HAND		William Andrew	12		WA

1208 | 2400

RATE SCHEDULE | X | REGULAR | | REPAIR | | INVENT

CREW SAFETY DAYS: 64

DRILLERS: Brent Williams | Wade Sledz

PASON

LOCATION NO: 0211-N046-2-1

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-46-30-12B-46

UNIQUE ID: 300B446430126460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

SURFACE LOCATION: B44-44-3-U-125-45

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

CONTRACTOR: AKITA DRILLING LTD.

UNIQUE ID: 300B444430125450

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-J/046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Bob Rollos

DAILY CHECKS

| | | |

LICENCE NO: 9211-N048-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-126-45 | LAHEE ID: 300B444430126450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-46

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S TOOL MANAGER: Bob Rolfes

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-0 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-12E-4E | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Bob Rolfes

DAILY CHECKS

(1) Daily Work Permit Instruction
(2) Derrick Inspection - Weekly / Mthly Check List
(3) H2S Signs Posted if Required
(4) Well Location & Sign Diagram Posted
(5) Flare Lines Staked
(6) BOP Skills Performed
(7) Weekly Inspect BOPs, Pipe Lines & Diagram Lines
(1) Rig Site Hazard & Safety Meeting (mo/thursmonth)
(2) CAODC Rig Safe Inspection Checklist (mo/thursmonth)
(3) Mud Instruction before Testing or Lowering
(4) Crown Saver Checked
(5) Motor Kills Checked

YEAR 2004 | MONTH 3 | DAY 9 | RIG NO 69 | RIG TYPE | SPUD | RELEASE | TEST | RIG MOVE | DAYS

	BIT SIZE	BIT MFG	BIT TYPE	SERIAL NO	JETS	DEPTH OUT	FTG	HRS	ROP
1	311.2	HUGHES	STR30	5043887	3 x 18	3484	1558	14.00	111.29
2	311.2	PDC	D411ST	7103404	3 x 18	3484	0.00	2.5	0.00

	BIT SIZE	MFG	TYPE	SERIAL NO	JETS	DEPTH OUT	FTG	HRS	ROP
1	311.2	PDC	D411ST	7103404	3 x 18	3484	0.00	2.5	0.00
2	311.2	HUGHES	STR30	5043887	3 x 18	3484	1558	14.00	111.29

	MOTOR	MFG	TYPE	SERIAL NO	BEND	REV/GAL	LOBES	STAGES	OD	LENGTH
1	MOTOR	PDM	172	5	1.5	0.24	7/8	5.43	172	8.35
2	MOTOR	PDM	172	5	1.5	0.24	7/8	5.43	172	8.35

	BIT	OD	LENGTH
1	BIT	13.0	0.18
1	MOTOR	120	8.35
1	FLOAT SUB	120	1.79
1	NMDC	121	9.10
1	HANG OFF SUB	121	0.89
1	NMDC	121	17.68
1	X-O	120	0.96
1	HWDP	120	9.19
1	JAR	120	4.01
9	HWDP	120	111.93
	BHA=256.98		

	BIT	OD	LENGTH
1	BIT	13.0	0.18
1	MOTOR	120	8.35
1	FLOAT SUB	120	1.79
1	NMDC	121	9.10
1	HANG OFF SUB	121	0.89
1	NMDC	121	17.68
1	X-O	120	0.96
1	HWDP	120	9.19
1	JAR	120	4.01
9	HWDP	120	111.93
	BHA=256.98		

	DRILL PIPE	SPACER	LENGTH
1	DRILL PIPE	SPACER	1961.16
1	DRILL PIPE	SPACER	19.07
	KELLY DOWN		3.81
	TOTAL		2461.00

	DRILL PIPE	SPACER	LENGTH
	DRILL PIPE	SPACER	422.17
	KELLY DOWN		
	TOTAL		422.17

WT OF DC | WT OF STRING

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

MORNING TOUR — MUD TYPE | WATER BASED | OIL BASED | FROM | TO | D.R.C. | RPM | WOB | TIME | DENSITY (kg/m3) | FUNNEL VISCOSITY | FLUID LOSS (cm3) | pH

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
SHAKER SCREEN	3	210

SOLIDS CONTROL — CENTRIFUGE: HOURS RUN | INTAKE DENSITY (kg/m3) | OVER FLOW DENSITY | UNDER FLOW DENSITY

BOILERS

1		2	
H2S RUN	12	H2S RUN	12
BOILER pH	8.5	BOILER pH	10.5
STACK TEMP	180	STACK TEMP	170

CIRCULATION PRESSURE kPa | PUMP NO. 1 (LINER SIZE | SPM) | PUMP NO. 2 (LINER SIZE | SPM)

4108	140	60	140	60

REDUCED PUMP SPEED: MIN | | | | SPM

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Brent Williams

FROM	TO	ELAPSED TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	100	1.00	13	WAIT ON CEMENT
100	315	2.25	6	TRIPS MAKE UP BHA TO POLISH CEMENT F/R
315	330	0.25	15	PRESS TEST CASING TO 17300kpa FOR 15min TEST OK
330	630	3.00	13	WAIT ON CEMENT
630	815	1.75	22	DRILL OUT CEMENT F/ 2400- 2445
815	830	0.25	7	RIG SERVICE FUNC LOWER PIPE & SEC C/O
830	845	0.25	22	DRILL OUT F/2445-2480 POLISH PLUG TO 2484m KB
845	800	0.25	5	CONDITION MUD & CIRC
800	930	0.80	21	LEAK OFF TEST
930	1300	2.80	6	POOH FLOW CHECK@2451,2305,1448
				J&A MAKING CONNECTION,POOH,RIG SERVICE HANDLING TONGS,LEAK OFF TEST

NOTES: INSP DEADLINE ANCHOR BRAKE LINKAGE FLARE & DESAMPR LINES TEST CROWN SAVER

BLEW BOILERS @ AT 5 SECS EACH

SPECIAL EVENT | TIME / DEPTH | SAFETY TOPIC | MIN | SHOP 20011

DAY TOUR — MUD TYPE | WATER BASED | OIL BASED | FROM 3484 | TO 3484 | D.R.C. 0 | RPM | WOB 7 | TIME | DENSITY (kg/m3) | FUNNEL VISCOSITY | FLUID LOSS (cm3) | pH

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT

SOLIDS CONTROL — CENTRIFUGE: HOURS RUN | INTAKE DENSITY (kg/m3) | OVER FLOW DENSITY | UNDER FLOW DENSITY

BOILERS

1		2	
H2S RUN	12	H2S RUN	12
BOILER pH	10	BOILER pH	10
STACK TEMP	180	STACK TEMP	180

CIRCULATION PRESSURE kPa | PUMP NO. 1 (LINER SIZE | SPM) | PUMP NO. 2 (LINER SIZE | SPM)

5775	140	45	140	45

REDUCED PUMP SPEED: MIN | | | | SPM

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION

DRILLER SIGNATURE: Mike Wiebe

FROM	TO	ELAPSED TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1300	1330	1.00	6	POOH FLOW CHECK @445, BANK FUNC BLIND RAMS 22 SEC C/O
1330	1730	4.00	20	PICK UP DIRC TOOLS SET MOTOR & UANG & TEST
1730	2130	4.00	6	TIH/FILL PIPE @ 1691
2130	2400	2.50	2	ORIENTATE AND TIME DRILL FOR SIDE TRACK FRC M 2484m KB
				J&V S RIH,RIG SERVICE,MAKING CONNECTION,HANDLING TONGS,LAYDOWN DRILLPIPE
				PICK UPMAKE UP DIRECTIONAL TOOLS AND BIT

NOTES: INSP BRAKE LINKAGE DEADLINE ANCHOR TEST BOLTS@CROWN SAVER

TRANSFERED 16000L FROM TANKFARM TO RIGTANK

TRIP MUD CAL 4.28 MEAS @ 0.0KG/M3 - 11

BLEW BOILERS DOWN 4/5SEC EACH

SPECIAL EVENT | TIME / DEPTH | SAFETY TOPIC | MIN | SHOP 20011

HOLE CONDITION: HOLE DRAG | TORQUE AT BOTTOM | FILL ON BOTTOM (m)

	MEGAJOULES	MORNING	DAY
TOTALS		336395	12736
	ACCUMULATOR	34	

	TOP	BOTTOM
12.00	210	217
12.00	210	2°0
24.00	210	210

| | | | |

LICENCE NO: 9211-NC48-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-126-45 | UNIQUE ID: 300N464430126450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N048-2-0 | WELL NAME & NO: Northrock et al Summit Creek D-44

OPERATOR: NORTHROCK RESOURCES LTD | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12B-45 | UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

1	Daily Work Permit / Inspection	DPS	Y/N
2	Detailed Inspection - Monthly / Using Check List	CS	
3	H2S Signs Posted if Required	PV	
4	Work Licenses & Shot Diagram Posted	SA	
5	Pipe Lines Tested	SS	
6	BOP Drills Performed	EA	
7	Weekly Inspect BOPs, Pipe Lines & Diagram Lines	EM	
1	Rig Site Health & Safety Meeting / environmental		
2	CAODC Rig Safe Inspection Checklist		
3	Short Inspection before Moving or Lowering		
4	Crown Saver Checked		
5	Other ABs Checked		

| | | |

LICENCE NO: 9211-N046-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-6/-30-125-4E | UNIQUE ID: 300B446430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

	DRILL ACTUAL	REAMING	CASING	FLOAT EQUIP & CORE	TRIPS	BHA SERVICE	SLIP/CUT DRILL LINE	SURVEYS	WIRELINE LOGS	RUN CSG & CEMENT	WAIT ON CEMENT	NIPPLE UP B.O.P.	TEST B.O.P.	DRILLSTEM TEST	FLUID SWCO	REPAIRS	RIG WORK	SAFETY MEETING	
MORN	6.0					0.25	2.25		0.5										
AFT	10.75			0.5		0.25			0.5										
TOTAL	19.75			0.50		0.50	2.25		1.00									0.50	

	BIT	O.D.	LENGTH
1	MOTOR	120	6.39
2	FLOAT SUB	122	7.5
3	NMDC	121	9.15
4	HANG OFF SUB	121	89
5	NMDC	121	17.08
6	X-O	120	96
7	HWDP	120	9.19
8	JAR	120	4.94
9	HWDP	120	311.83
10			
11			
12			
13			
14			
15			

LICENSE NO: 9211-N046-2-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD. | CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-10-125-45 | UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 0211-NC46-2-2 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-46-36-126-4E

UWI: 300B444430125460

SIGNATURE OF OPERATOR'S WELLSITE REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

PASON

MORNING TOUR

BIT		LENGTH
BIT	0.00	14
MOTOR	1.70	9.32
FLOAT SUB	1.50	0.78
NMDC	1.21	9.15
HANG OFF SUB	1.21	0.89
NMDC	1.21	17.89
S.D.	1.25	30
HWDP	1.00	9.19
JAR	1.25	4.84
HWDP	1.00	611.83
DRILL PIPE	DP MIXED	2289.91
DRILL PIPE	SINGLES	
KELLY DOWN		10.00
TOTAL		2745.00
WT OF DC		
WT OF STRING	85	

BIT NO	14
SIZE	155.6
IADC CODE	5 1 7
MANUFACTURER	HUGHES
TYPE	6TX R30
SERIAL NO	5047888
JETS	OPEN
DEPTH OUT (m)	2745
DEPTH IN (m)	2670
TOTAL DRILLED (m)	70.00
TOTAL HRS RUN	21.75

CUTTING STRUCTURE

T1	T2	DC	LOC	BG	GAUGE	OC	REASON PULLED	TOTAL DRILL HRS

HOLE CONDITION

HOLE DRAG: 30 UP 4 DOWN

TORQUE AT BOTTOM:

FILL ON BOTTOM (m):

MUD TYPE: POLYMER	WATER BASED: X	OIL BASED:						
	FROM	TO	0400	0800	1200	1600	2000	2400
TIME	2000	0330	0400	0800	1200			
DENSITY (kg/m3)	1030	1030	1030	1030	1030			
FUNNEL VISCOSITY	37	37	37	37	37			
FLUID LOSS (cm3)	10	10						
pH	11	11	10.5					
PVT			39.1					

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
CAUSTIC SODA	1	BX
LIGNITE	1	BX
AQUAPAC	1	BX
VIS PLUS	1	BX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	DRAIN DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1030	1010	1080

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
BOILER psi	105	BOILER psi	105
BOILER TEMP	160	BOILER TEMP	170

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
7482	140		140	85

REDUCED PUMP SPEED: @ | @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2717.80	1.8	210.8

DRILLER SIGNATURE: Mike Wiebe

FROM	TO	CUMULATIVE TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
0	415	4.25	7	DRILL ACTUAL F/2725-2733
415	430	0.25	9	CIRC SAMPLE UP
430	915	0.75	6	FLOW CHECK@2729 5 STAND WIPER
915	1045	5.50	7	DRILL ACTUAL F/2733- 2740 M
1045	1115	0.50	5	CIRC MIX PILL
1115	1130	0.25	7	RIG SERVICE FUNC HCR OIC 3 SEC
1130	1200	0.50	6	TRIPS POOH FLOW CHECK @ 2740 2580 PUMP PILL

REVIEW JSA 5 RIG SERVICE CHANGING LIGHT BULBS HANDLING TONGS

NOTES: INSP BRAKE LINKAGE DEADLINE ANCHOR TEST BOLT&CROWN SAVER

BLOW DOWN BOILERS 1 AND 2 TWICE EACH

FUEL TRANSFER 4882 LITTERS TO RIG FROM 400 TANK

CONFINED SPACE ENTRY: NO

CREW	DOC ING. NO.	NAME	HRS		VOL	NO
DRILLER		Mike Wiebe	12			MCH
DERRICK HAND		Clarke Starrs	12			CS
MOTOR HAND		Steve Pringle	12			ST
FLOOR HAND		Peter Andrew	12			PA
FLOOR HAND		Randy Krushelnwau	12			RK
LEASE HAND		Colin Perrot	8			CP

RATE SCHEDULE: X | REGULAR | REPAIR | INVERT

CREW SAFETY DAYS: 76

DRIVERS: Mike Wiebe; Randy Krushelnwau

DAY TOUR

BIT		LENGTH
BIT	0.00	14
MOTOR	1.70	9.32
FLOAT SUB	1.50	0.78
NMDC	1.21	9.15
HANG OFF SUB	1.21	0.89
NMDC	1.21	17.89
S.D.	1.25	30
HWDP	1.00	9.19
JAR	1.25	4.84
HWDP	1.00	611.83
DRILL PIPE	DP MIXED	2289.84
DRILL PIPE	SINGLES	5.80
KELLY DOWN		8.21
TOTAL		2745.00
WT OF DC		
WT OF STRING	70	

BIT NO	14	15
SIZE	155.6	155.6
IADC CODE	5 1 7	5 1 7
MANUFACTURER	HUGHES	HUGHES
TYPE	6TX R30	6TX R30
SERIAL NO	5047888	5048338
JETS	OPEN	OPEN
DEPTH OUT (m)	2745	2745
DEPTH IN (m)	2670	2740
TOTAL DRILLED (m)	70.00	5.00
TOTAL HRS RUN	21.75	2

CUTTING STRUCTURE

T1	T2	DC	LOC	BG	GAUGE	OC	REASON PULLED	TOTAL DRILL HRS
1	1	BT	A	-	G	WT	PR	1.5

HOLE CONDITION

HOLE DRAG: 30 UP 6 DOWN

TORQUE AT BOTTOM:

FILL ON BOTTOM (m): 80

MUD TYPE: POLYMER	WATER BASED: X	OIL BASED:						
	FROM	TO	0400	0800	1200	1600	2000	2400
TIME	2200				2700			
DENSITY (kg/m3)	1030				2740			
FUNNEL VISCOSITY	37							
FLUID LOSS (cm3)	8.5							
pH	10.5							

MUD MATERIALS ADDED

PRODUCT	AMOUNT	UNIT
BARITE	20	BX

SOLIDS CONTROL

CENTRIFUGE

HOURS RUN	DRAIN DENSITY (kg/m3)	OVER FLOW DENSITY	UNDER FLOW DENSITY
12	1030	1010	1030
0			

BOILERS

	1		2
HRS RUN	12	HRS RUN	12
BOILER psi	105	BOILER psi	105
BOILER TEMP	170	BOILER TEMP	175

CIRCULATION PRESSURE kPa	PUMP NO. 1 LINER SIZE	PUMP NO. 1 SPM	PUMP NO. 2 LINER SIZE	PUMP NO. 2 SPM
7659	140		140	91

REDUCED PUMP SPEED: @ | @

DEVIATION SURVEYS

DEPTH (m)	DEVIATION	DIRECTION
2727.66	3.0	340.4

DRILLER SIGNATURE: Paul Backhey

FROM	TO	CUMULATIVE TIME	CODE	DETAILS OF OPERATIONS IN SEQUENCE & REMARKS
1200	1600	4.00	6	TRIPS POOH FLOW CHECK @ 1580, 470M & ON BANK/BREAK BIT
1600	1615	0.25	7	RIG SERVICE FUNC BLIND RAMS 22 SEC C/O
1615	2045	4.50	6	SURFACE TEST MOTOR RIH #PILL PIPE @1000,2030 2478M
2045	2200	1.25	3	WASH 3 SINGLES TO BOTTOM 2700-2740m KB
2200	2400	2.00	2	DRILL ACTUAL F/2740-2745

JSA 8 CONFINED SPACE ENTRY CLEANING MUD TANKS FUELING CREW TRUCK

NOTES: FUNC CROWN SAVER INSPECT DEADLINE ANCHOR BRAKE LINKAGE FLARE & DEGASSER LINES

BLEW BOILER DOWN 10 BY 2

TRIP MUD CAL @ 2744M A 1.11 G/CC F 1.10

CONFINED SPACE ENTRY: NO

CREW	DOC ING. NO.	NAME	HRS		VOL	NO
DRILLER		Paul Backhey	12			PB
DERRICK HAND		Andre Habel	12			AH
MOTOR HAND		Tim Barrett	12			TB
FLOOR HAND		Chris Tourangeau	12			CT
FLOOR HAND		Bill Hethennington	12			BH
LEASE HAND		Jason Ayah	12			JA
LEASE HAND		Terrence Kelly	12			TH

RATE SCHEDULE: X | REGULAR | REPAIR | INVERT

CREW SAFETY DAYS: 76

DRIVERS: Paul Backhey; Chris Tourangeau

WELL NAME & NO. 9211-N046-2-2 Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-126-45

UNIQUE ID: 300B444430126450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N046-2-)

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300B44464301254S8

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

| | | |

LICENCE NO. 0211-N046-2-J

WELL NAME & NO. Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12S-4-6

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N946-2-3 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44 64-30-126-46

UNIQUE ID: 300P446430126440

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: 9211-N044-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-45

UNIQUE ID: 300N446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

| | | |

LICENCE NO: 9211-N346-2-9

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-4S

UNIQUE ID: 300B444430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENSE NO: 9211-N046-2-J | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-64-30-125-45

UNIQUE ID: 300B446430125450

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

PASON

| | | |

LICENCE NO: 9211-N046-2

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-12E-4S

UNIQUE ID: 300B444430126480

SIGNATURE OF OPERATIONS REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Allyn Vogt

DAILY CHECKS

| | | |

LICENCE NO: E211-N046-2-J

WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-118-48

UNIQUE ID: 300B444430118480

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE: Allyn Vogt

DAILY CHECKS

YEAR: 2004 MONTH: 1 DAY: 22

	BIT #	SIZE	MAKE	TYPE	JETS	DEPTH OUT	FTG	HRS	ROP
	1	311.2	HTC	GT1	3 x 18	1195	1195	23.5	50.8
	2	311.2	HTC	GT1	3 x 18	2400	1205	23.5	51.3
	3	311.2	HTC	GT1	3 x 18	3450	1050	23.5	44.7

	BIT #	SIZE	MAKE	TYPE	JETS	DEPTH OUT	FTG	HRS	ROP
	1	311.2	IPSCO		3 x 18	1195	1195	23.5	50.8
	2	311.2	IPSCO		3 x 18	2400	1205	23.5	51.3
	3	311.2	IPSCO

LICENCE NO: 9211-N046-2-1 | WELL NAME & NO: Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD | CONTRACTOR: AKITA DRILLING LTD

SURFACE LOCATION: B44-44-30-128-46 | UNIQUE ID: 300B444430128460

SIGNATURE OF OPERATIVE OR HIS REPRESENTATIVE: Kevin Amy | SIGNATURE OF CONTRACTOR'S WELL RIG REPRESENTATIVE: Allyn Vogt

DAILY CHECKS

PASON

| | | |

WELL NAME & NO.: 9211-N046-2-9 Northrock et al Summit Creek B-44

OPERATOR: NORTHROCK RESOURCES LTD.

CONTRACTOR: AKITA DRILLING LTD.

SURFACE LOCATION: B44-44-30-125-46

UNIQUE ID: 300B444430125460

SIGNATURE OF OPERATOR'S REPRESENTATIVE: Kevin Amy

SIGNATURE OF CONTRACTOR'S RIG MANAGER: Alvin Vogt

DAILY CHECKS

(1) Daily Visual Accurate Inspection		
(2) Derrick Inspection - Monthly, using Check List		
(3) HSE Signs Posted at Required		
(4) Weld Lockout & Blow Diagram Posted		
(5) Rotary Lockout Secured		
(6) BOP Daily Performance		
(7) Weekly Inspect BOPs, Pipe Rams & Diagram Lines		
(1) Rig Site Health & Safety Meeting - conducted/held		
(2) CAODC Rig Daily Inspection Checklist - completed/held		
(3) Weld Inspection before Raising or Lowering		
(4) Crown Saver Checked		
(5) Water Hits Checked		

| | | |

LICENCE NO.	9211-N046-2-3
WELL NAME & NO.	Northrock et al Summit Creek B-44
OPERATOR	NORTHROCK RESOURCES LTD.
CONTRACTOR	AKITA DRILLING LTD.
SURFACE LOCATION	B44-44-30-125-45
UNIQUE ID	300B444430125450
SIGNATURE OF OPERATOR'S REPRESENTATIVE	Kevin Amy
SIGNATURE OF CONTRACTOR'S RIG MANAGER	Allyn Vogt

DAILY CHECKS

| | | |

RESISTIVITY/

CONDUCTIVITY

BAKER HUGHES

HIGH DEFINITION INDUCTION LOG SM
GAMMA RAY LOG
CALIPER LOG

Baker Atlas

N.E.B. COPY

FILE NO:	
NO:	
3.87	
3006446430125450	

COMPANY	NORTHROCK RESOURCES LT
WELL	NORTHROCK ET AL SUMMIT
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

LOCATION:
LIC: 9211-MD46-2-1

OTHER SERVICES

60°-09-10"N/L
124°-22'0..."W/L
60°-09-30"
124°-22'-0..."

ELEVATIONS:

PERMANENT DATUM	GL	ELEVATION 580.5 M
LOG MEASURED FROM	KB	5.8 M ABOVE P.D.
DRILL MEAS. FROM	KELLY BUSHING	

KB	586.3 M
GL	580.5 M

DATE	30-JAN-04		
RUN	1		
SERVICE ORDER	202851		
DEPTH DRILLER	810.0 M		
DEPTH LOGGER	808.7 M		
BOTTOM LOGGED INTERVAL	795.8 M		
TOP LOGGED INTERVAL	207.0 M		
CASING DRILLER	339.7 M @208.0 M		
CASING LOGGER	207.0 M		
BIT SIZE	311.0 MM		
TYPE OF FLUID IN HOLE	GELCHEM		
DENSITY	VISCOSITY	1150.0 G/L	66.0 S
PH	FLUID LOSS	9.5	7.4 ML
SOURCE OF SAMPLE	CIRCULATION		
RM AT MEAS. TEMP	3.1 OHMM	@20.5 DEGC	
RMF AT MEAS. TEMP	3.1 OHMM	@21.0 DEGC	
RMC AT MEAS. TEMP	3.1 OHMM	@21.0 DEGC	
SOURCE OF RMF	RMC	MEASURED	
RM AT BHT		2.8 OHMM	@25.8 DEGC
TIME SINCE CIRC		14.0 HOURS	
MAX. RECORDED		70.5 DEGC	
LOGGER NO.		8572	N1962
RECORDED BY		S. DRIVER	
WITNESSED BY		B. MCQUILLAN	

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGMENT, BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES OR EXPENSE INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD

BIT SIZE	FROM	TO
311 MM	207.0 M	810.0 M

CASING RECORD

SIZE	WT/GRT	GRADE	FROM	TO
244.5 MM	59.5 KG/M	J55	0.0 M	339.7 M

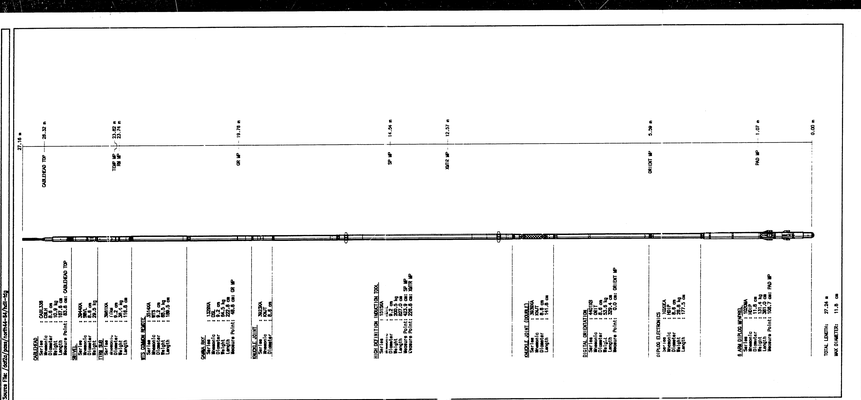
REMARKS

RUN 1 TOP 1: TIME STOP CIRCULATION: 21:00, 29-JAN-04
MUD WAS CIRCULATED BEFORE LOGGING
VOLUME AND WEIGHT FROM TIME HOSEY CALLED
VOLUME AND WEIGHT FROM TIME MUD WAS CIRCULATED
INTEGRATED CEMENT VOLUME (1ST DUMP) 811.1 M, 810.0 M.
ALL RECORDED BHTS NO CORRECTED TO 21.0 DEGC (MWD TRANSMIT)
****
TOOL STRING (TOP TO BOTTOM): CCL, DGR, HDIL, ZDL-DSN, CNS
TOOLS RAN TOP OF STRING AT 207.0 M, BOTTOM OF STRING AT 808.7 M.
TOOLS RAN TOP OF LOGGED INTERVAL AT 207.0 M, BOTTOM OF LOGGED INTERVAL AT 795.8 M.
DEPTH OF INDICATION (DI) OF SONDE CENTER 2.0 M, 1.5 M FROM BOTTOM.
DEPTH OF INDICATION (DI) OF SONDE CENTER 2.0 M, 1.5 M FROM BOTTOM.
****
CCL RECORDED WITH DGR, HDIL, ZDL-DSN, CNS
****
ORDER # : S. MCDONALD A. RUTLEDGE

EQUIPMENT DATA

RUN	TOP	TOOL	SERIAL NO.	POSITION
1	1	CCL	1004	RIG
		DGR	1004	RIG
		HDIL	1004	RIG
		ZDL	1004	RIG
		CNS	1004	RIG
		DGR	1004	SONDE
		HDIL	1004	SONDE
		ZDL	1004	SONDE
		CNS	1004	SONDE

INSTRUMENT CONFIGURATION



QUALITY CONTROL PLOT ONLY

ECLIPS 3.0 Nov 25, 2003

Proj: /mnt/fp

Date: 4.21
Plot: 30/Jan/16

Fri Jan 30 14:16:48 2004
Hawk 4.60

PARAMETER AND FILTER SUMMARY REPORT

File: /mnt/fp/misc/matlab/AIT/ait_sum.tcm
Log: AIT Run 1 Pass 1 @ 811.875 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
RT	FILTER (1)	median (11)		TOP BOTTOM
TEMPERATURE	FILTER (1)	median (11)		: :
SP-SPIN	FILTER (1)	median (11)		: :

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
BIT SIZE	BIT SIZE	222.250	mm	TOP BOTTOM
BOREHOLE COMP DIAMETER SOURCE	CALIPER(ID2 DIA_cal*)	USE CALIPER		: :
BOREHOLE COMP DIAMETER	CALIPER(ID2 DIA_cal*)	222.250	mm	: :
MUD VALUES SOURCE	MUD SOURCE (MSS)	USER SUMP ENTERED		: :
MUD VALUES	MUD RESISTIVITY	0.200	ohm	: :
	MUD SAMPLE SG	1.200	sg	: :
	MUD SAMPLE TEMP	21.000	deg C	: :
	TEMP GRADIENT	1.200	deg C/100m	: :

HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	CAL RECAP		TOP BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		: :
	ABC TOOL POSITION	ECCENTERED	m	: :
	TOOL POSITION	ECCENTERED		: :
	DIFF TENSION LIMIT	500		: :

CURVE MEASURE POINT OFFSET

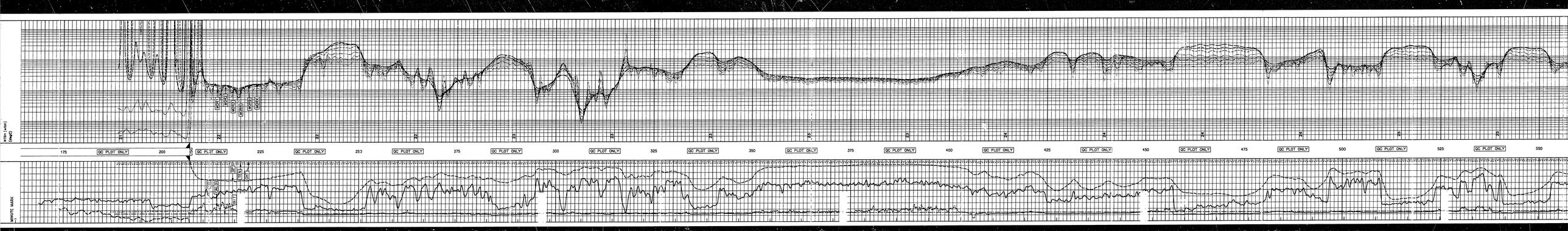
CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	ABO3	12.80	TEN	0.00
CAL	0.20	ABO2	12.80		
DIT	0.20	ABO1	12.80		
		SP	14.50		

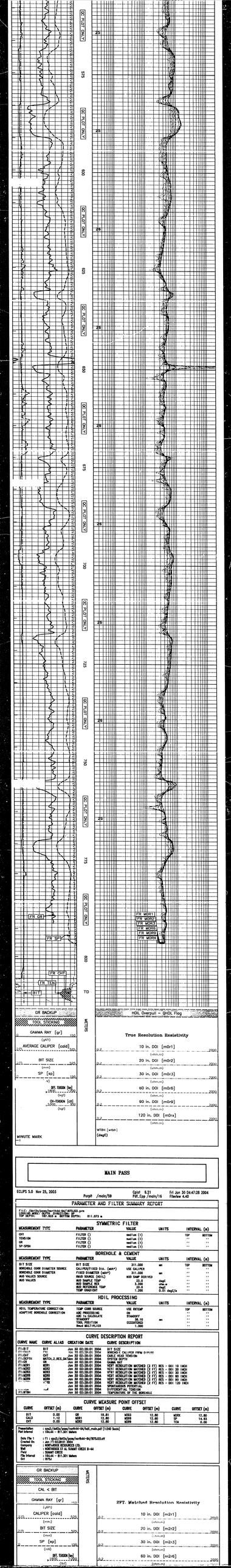
Parameters
Not Stored

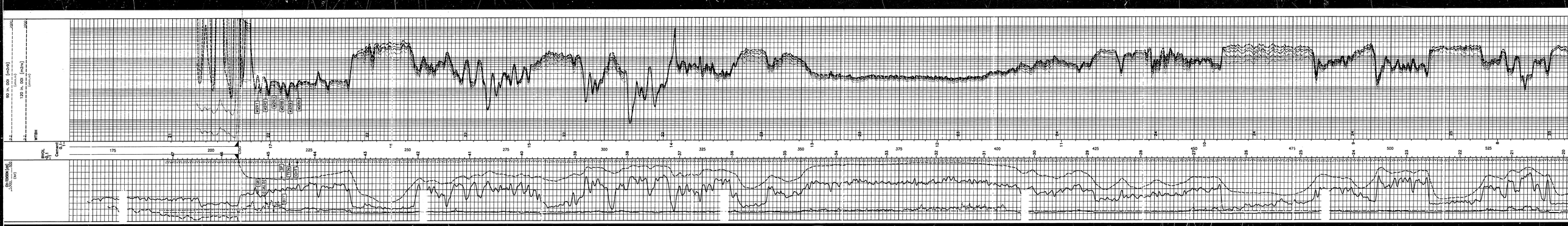
Processing Info:
Created By
Company
Path
Log Stored

: /mnt/fp/misc/matlab/AIT/ait_sum.tcm [1234 Data]
: 30/Jan/16 16:48
: Jan 30 01:48:11 2004
: /mnt/fp/misc/matlab/AIT/ait_sum.tcm
: Schlumberger
: /mnt/fp/misc/matlab/AIT/
: 1 RUN(S) FROM 1 WELL(S)
: 1 RUN(S) FROM 1 BOREHOLE(S)
: 1 RUN(S) FROM 1 BOREHOLE(S) IN SUBJECT DOCK
: 1 RUN(S) FROM 1 BOREHOLE(S) IN SUBJECT DOCK
: 811.875 - 811.361 Meters
: 1 RUN(S) FROM 1 BOREHOLE(S) IN SUBJECT DOCK
: 811.875 - 811.361 Meters

: /mnt/fp/misc/matlab/AIT/ait_sum.tcm [1234 Data]


WTEMP (+000)
(degC)
MINUTE MARK
QC PLOT ONLY
175
200
225
250
275
300
325
350
375
400
425
450
475
500
525
550


CAL + BIT
GAMMA RAY [gr]
CALIPER [cald]
BIT SIZE
SP [sp]
2FT. TDGSN [ke]
2FT. TDGSN [cpd]
2FT. Matched Resolutions Resistivity
10 in. DOI [m2r1]
20 in. DOI [m2r2]
30 in. DOI [m2r3]
60 in. DOI [m2r6]
(ohm.m)
0.2
2000


90 in. 09 (mV/s)
120 in. 00 (mV/s)
WTBH
EKGL
Carneal
Dp-Tronics (psi)



GAMMA RAY [gr]
(gAPI)
0 150
CALIPER [cald]
6 in 20
(mm)
BIT SIZE
6 in 20
(mm)
SP [sp]
0 150
(mV)
BIT_TDSON [bs]
>19000 <23000
(lbf)
CH-TENSION [ch]
5000 30000
(lbf)

RVOL
0_1
Cement
0_1

2FT. Matched Resolution Resistivity

10 in. DOI [m2r1]
0.2 2000
(ohm.m)
20 in. DOI [m2r2]
0.2 2000
(ohm.m)
30 in. DOI [m2r3]
0.2 2000
(ohm.m)
60 in. DOI [m2r6]
0.2 2000
(ohm.m)
90 in. DOI [m2r9]
0.2 2000
(ohm.m)
120 in. DOI [m2rx]
0.2 2000
(ohm.m)

WTBH

REPEAT PASS

2003

Color 6.21
Plot_Cpp /main/59

Fri Jan 30 04:52:30 2004
Flexlex 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dsk2b/pase/wor1h44-94/BTSJ20.prm
LOG MODE: DEPTH, DOWNHOLE
TOP DEPTH: 735.369 m BOTTOM DEPTH: 812.209 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
BIT	FILTER 1	median (1)		"	"
TENSION	FILTER 1	median (1)		"	"
CH	FILTER 1	median (1)		"	"
SP-SPSH	FILTER 1	median (1)		"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
BIT SIZE	BIT SIZE	311.000	mm	"	"
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (mm*)	USE CALIPER		"	"
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mm*)	311.000	mm	"	"
MUD VALUES SOURCE	MUD SOURCE (GEL)	MUD SHOP DERIVED		"	"
MUD VALUES	MUD SAMPLE TEMP	23.0	degC	"	"
	MUD RESISTIVITY	0.30	ohm.m	"	"
	MUD REFERENCE TEMP	23.0	degC	"	"
	TEMP GRADIENT	1.200	0.01 degC/m	"	"

HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
Mnemonic Translation, CONNECTION	TEMP CORR SOURCE	USE BOTTOMP		"	"
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		"	"
	ABC to CALCULATE	STANDOFF		"	"
	STANDOFF	38.10	mm	"	"
	TRACK FILTERING	ECCENTERING		"	"
	Mnemonic MULTIPLIER	1.000		"	"

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jan 30 03:05:36 2004	BIT SIZE
F1:CALD	CALD	Jan 30 03:05:36 2004	CABLE CALIPER FROM DIPLOG
F1:CHT	CHT	Jan 30 03:05:36 2004	CABLE HEAD TENSION
F1:DEPTH	MATCH_2_RES_DATAset	Jan 30 03:05:36 2004	SYSTEM DEPTH
F1:GR	GR	Jan 30 03:05:36 2004	GAMMA RAY
F1:M2R1	M2R1	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 10 INCH
F1:M2R2	M2R2	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 20 INCH
F1:M2R3	M2R3	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 30 INCH
F1:M2R6	M2R6	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 60 INCH
F1:M2R9	M2R9	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 90 INCH
F1:M2RX	M2RX	Jan 30 03:05:36 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 120 INCH
F1:SP	SP	Jan 30 03:05:36 2004	SPONTANEOUS POTENTIAL
F1:TDN	TDN	Jan 30 03:05:36 2004	DIFFERENTIAL TENSION

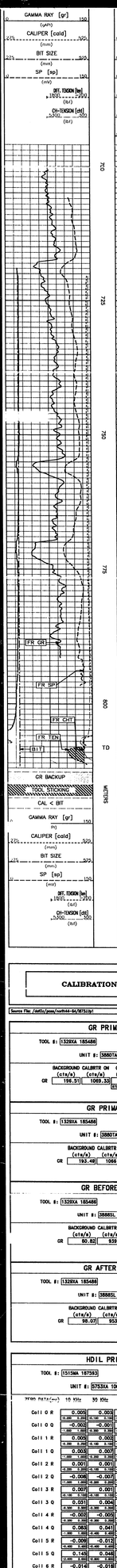
CURVE MEASURE POINT OFFSET

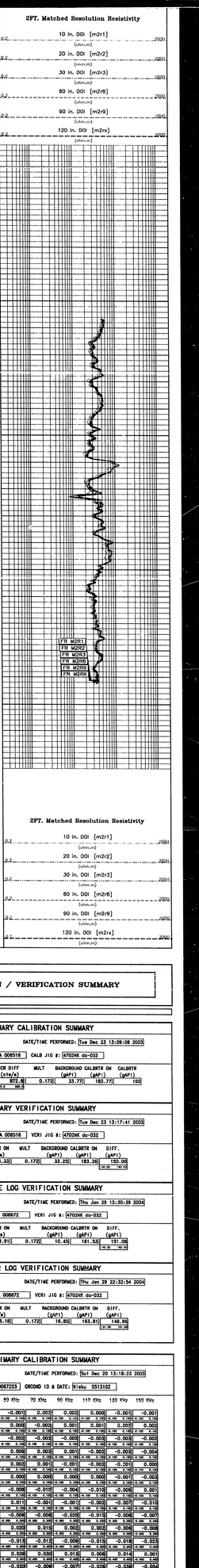
CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	GR	10.81	M2R3	12.80	M2RX	12.80
CALD	1.12	M2R1	12.80	M2R6	12.80	SP	14.53
CHT	0.00	M2R2	12.80	M2R9	12.80	TDN	0.00

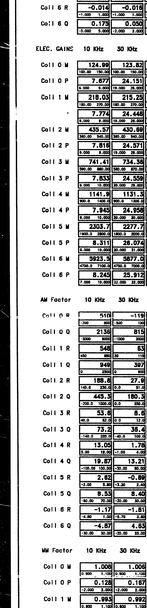
Presentation : ops2:/dsk2b/pase/wor1h44-94/hdil_ryt.ppf [1:240 Scale]
Ref Interval : 388.468 - 817.778 Meters

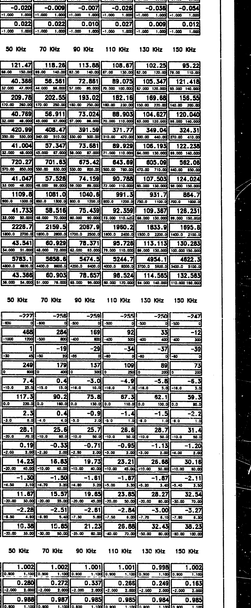
Data File 1 : F1 : ops2:/dsk2b/pase/wor1h44-94/BTSJ20.prf
Created On : Jan 30 03:05:36 2004
Company : NORTHSTAR RESOURCES LTD.
Well : NORTHSTAR ET AL SUNRISE B-64
Field : SUNRISE
File Interval : 388.239 - 817.53 Meters
Dir : WTSJ

GR BACKUP
TDN TENSION
CAL < BIT
METERS









CALIBRATION / VERIFICATION SUMMARY

Source File: /data/pass/northx4-4a/MAIN.lyt

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 185486 — DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003

UNIT #: 38807A 006516 — CALIB JIG #: 4702NK da-032

	BACKGROUND CALIBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND CALIBRTR ON (gAPI)	CALIBRTR (gAPI)
GR	196.51 / 1069.33	872.8 (872.82)	0.172	33.77 / 183.77	150

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185486 — DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 38807A 006516 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBRTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBRTR ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	193.49	1066.33	0.172	33.25	183.26	150.00 (150.00 / 150.00)

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 — DATE/TIME PERFORMED: Thu Jan 29 15:30:39 2004

UNIT #: 38885L 008672 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBRTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBRTR ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	90.82	959.91	0.172	10.43	181.50	171.06 (171.06 / 171.06)

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 — DATE/TIME PERFORMED: Thu Jan 29 22:32:54 2004

UNIT #: 38885L 008672 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBRTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBRTR ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	98.07	953.18	0.172	16.85	163.81	146.96 (146.96 / 146.96)

HDIL PRIMARY CALIBRATION SUMMARY

TOOL #: 1515MA 187593 — DATE/TIME PERFORMED: Sat Dec 20 13:18:23 2003

UNIT #: 5753XA 10067203 — GROUND ID & DATE: Hiku 0513102

Tron Rate (sec)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil O R	0.000	0.000	-0.001	0.002	0.002	0.000	-0.001	-0.001
Coil O Q	-0.002	-0.001	-0.000	-0.000	0.001	0.001	0.000	0.000
Coil I R	0.000	0.002	-0.002	-0.003	-0.003	-0.003	-0.003	-0.002
Coil I Q	0.000	0.000	0.000	0.000	0.000	0.000	-0.000	-0.000
Coil 2 R	0.000	0.001	0.000	0.001	-0.001	-0.001	-0.001	0.000
Coil 2 Q	-0.006	-0.007	0.000	0.000	0.000	0.000	-0.001	-0.003
Coil 3 R	0.007	0.001	-0.006	-0.010	-0.004	-0.010	-0.006	0.001
Coil 3 Q	0.031	0.004	0.011	-0.001	-0.002	-0.002	-0.001	-0.010
Coil 4 R	-0.002	-0.005	-0.009	-0.006	-0.003	-0.015	-0.006	-0.007
Coil 4 Q	0.065	0.041	0.035	0.015	0.000	0.002	-0.006	-0.008
Coil 5 R	-0.009	0.013	-0.015	-0.013	-0.009	-0.013	-0.016	-0.013
Coil 5 Q	0.143	0.048	0.038	0.030	0.013	0.006	0.014	0.001
Coil 6 R	-0.014	-0.018	-0.025	-0.009	-0.007	-0.026	-0.036	-0.054
Coil 6 Q	0.175	0.056	0.022	0.022	0.010	0.027	0.009	0.011

ELEC. GAINC	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil O M	124.99	133.82	121.47	118.26	113.86	108.67	102.25	95.22
Coil O P	7.697	24.151	40.366	58.561	72.861	89.075	105.347	121.418
Coil I M	218.03	215.25	209.78	202.55	193.02	183.16	169.66	156.52
-	7.774	24.448	40.788	58.911	73.024	89.243	104.827	120.040
Coil 2 M	435.37	420.66	420.98	408.47	391.06	371.77	349.06	324.31
Coil 2 P	7.816	24.371	41.002	57.340	73.561	89.929	106.193	122.238
Coil 3 M	741.41	734.35	720.77	701.83	675.42	643.69	605.06	562.06
Coil 3 P	7.853	24.559	41.047	57.528	74.159	90.788	107.503	124.024
Coil 4 M	1141.9	1131.3	1109.8	1081.0	1040.5	991.3	931.7	864.7
Coil 4 P	7.943	24.858	41.733	58.516	75.436	92.350	109.387	126.251
Coil 5 M	2303.7	2277	2225.9	2156.2	2057.5	1940.2	1833.2	1692.6
Coil 5 P	8.311	25.976	43.541	60.929	78.315	95.753	113.113	130.363
Coil 6 M	5923.5	5877.0	5783.1	5658.4	5474.5	5244.7	4954.1	4623.8
Coil 6 P	8.245	25.913	43.366	60.955	78.557	96.524	114.585	132.583

AM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil O M	5191	-119	-999	-256	-256	-255	-256	-247
Coil O Q	2136	815	468	264	169	92	35	-12
Coil I R	548	63	1	-19	-29	-34	-37	-39
Coil I Q	949	387	248	178	137	100	88	73
Coil 2 R	189.4	27.9	7.4	0.4	-3.0	-5.0	-5.8	-6.3
Coil 2 Q	445.3	180.3	117.9	80.2	59.1	37.3	52.1	59.3
Coil 3 R	53.6	8.6	2.3	0.4	-0.9	-1.4	-1.5	-2.2
Coil 3 Q	73.2	38.4	28.1	25.6	25.7	28.6	28.7	31.4
Coil 4 R	13.05	1.76	0.19	-0.33	-0.71	-0.95	-1.13	-1.20
Coil 4 Q	19.87	13.31	14.25	16.85	19.72	23.21	26.58	30.10
Coil 5 R	2.82	-0.98	-1.30	-1.50	-1.45	-1.67	-1.87	-2.13
Coil 5 Q	5.53	8.40	11.67	15.37	19.45	23.93	28.77	33.54
Coil 6 R	-1.17	-1.61	-2.28	-2.51	-2.61	-2.84	-3.00	-3.37
Coil 6 Q	-4.67	4.53	10.38	16.85	21.23	26.86	32.43	38.23

AM Factor	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil O M	1.008	1.008	1.002	1.002	1.001	1.001	0.998	1.002
Coil O P	0.128	0.167	0.260	0.272	0.337	0.286	0.249	0.163
Coil I R	0.993	0.992	0.998	0.987	0.983	0.980	0.984	0.980

Cal 1 P	0.982	0.224	0.310	0.396	0.482	0.568	0.654	0.740	0.826
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
J	1.015	1.013	1.012	1.011	1.011	1.010	1.010	1.010	1.009
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 2 P	0.004	0.054	0.102	0.155	0.185	0.201	0.240	0.240	0.229
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 3 M	1.022	1.021	1.020	1.020	1.019	1.018	1.017	1.017	1.017
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 3 P	0.000	0.063	0.163	0.223	0.261	0.282	0.268	0.268	0.212
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 4 M	1.018	1.018	1.018	1.017	1.017	1.016	1.016	1.015	1.015
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 4 P	0.011	0.088	0.099	0.178	0.200	0.220	0.208	0.208	0.242
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 5 M	1.018	1.018	1.018	1.018	1.018	1.017	1.017	1.016	1.016
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 5 P	0.040	0.021	0.105	0.152	0.133	0.111	0.181	0.181	0.195
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Cal 6 M	1.021	1.022	1.021	1.018	1.017	1.022	1.020	1.017	
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	
Cal 6 P	0.017	0.143	0.114	0.248	0.189	0.119	0.180	0.180	0.134
	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

PARMS	TCID 0	TCID 1	Cal Temp deg C	T Factor
IDs	1.808	0.902	15.6	1.00

HDIL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1515MA 107593 DATE/TIME PERFORMED: Fri Jan 30 01:47:06 2004

UNIT #: 5888SL 008672

ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	0.008	0.007	-0.004	-0.002	-0.002	-0.002	-0.001	-0.001
Coil 0 Q	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Coil 1 R	0.003	0.012	-0.009	-0.011	-0.011	-0.010	-0.009	-0.008
Coil 1 Q	0.003	0.012	0.018	0.007	0.003	-0.004	-0.005	-0.006
Coil 2 R	0.012	0.036	-0.011	-0.017	-0.012	-0.009	-0.002	0.003
Coil 2 Q	-0.024	0.017	0.028	0.007	-0.003	-0.008	-0.008	-0.009
Coil 3 R	0.016	0.031	-0.032	-0.023	-0.015	-0.011	-0.004	-0.001
Coil 3 Q	0.014	0.027	0.022	0.008	-0.005	-0.009	-0.009	-0.011
Coil 4 R	0.007	0.027	-0.033	-0.030	-0.021	-0.016	-0.008	-0.006
Coil 4 Q	0.043	0.065	0.069	-0.004	-0.042	-0.023	-0.008	-0.009
Coil 5 R	0.011	0.053	-0.069	-0.054	-0.042	-0.023	-0.008	-0.009
Coil 5 Q	0.120	0.139	0.085	0.011	-0.004	-0.011	0.000	0.000
Coil 6 R	0.067	0.340	-0.147	-0.213	-0.187	-0.106	-0.048	0.012
Coil 6 Q	0.054	0.312	0.340	0.123	-0.010	-0.091	-0.083	-0.074

NS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	124.87	123.48	121.11	117.84	113.37	108.08	101.53	94.54
Coil 0 P	7.864	24.163	40.371	58.565	72.800	89.056	105.289	121.355
Coil 1 M	217.78	214.56	209.30	202.15	193.21	181.56	169.20	155.94
Coil 1 P	7.778	24.445	40.746	58.902	73.040	89.846	104.374	119.906
Coil 2 M	434.99	429.99	420.33	407.64	390.71	370.69	348.05	322.92
Coil 2 P	7.820	24.578	40.993	57.347	73.656	89.876	108.146	122.196
Coil 3 M	742.00	734.80	720.72	701.81	675.29	643.02	604.39	561.15
Coil 3 P	7.836	24.509	41.033	57.520	74.131	90.741	107.428	123.968
Coil 4 M	1137.5	1129.6	1104.4	1079.3	1036.9	985.0	924.1	859.2
Coil 4 P	7.948	24.653	41.713	58.504	75.389	91.946	109.314	126.113
Coil 5 M	2097.2	2070.3	2219.9	2151.7	2059.2	1951.1	1824.3	1686.4
Coil 5 P	8.318	26.077	43.528	60.921	78.356	95.897	113.067	130.184
Coil 6 M	5907.7	5860.7	5787.4	5659.8	5453.2	5220.8	4930.7	4598.0
Coil 6 P	8.246	25.904	43.345	60.865	78.622	96.455	114.490	132.429

HDIL AFTER LOG VERIFICATION SUMMARY

TOOL #: 1515MA 107593 DATE/TIME PERFORMED: Fri Jan 30 03:54:08 2004

UNIT #: 5888SL 008672

ZERO DATA(mv)	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 R	0.008	0.008	-0.004	-0.002	-0.002	-0.002	-0.001	-0.001
Coil 0 Q	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
Coil 1 R	0.013	0.010	-0.008	-0.012	-0.014	-0.010	-0.008	-0.004
Coil 1 Q	0.003	0.014	0.016	0.007	0.001	-0.005	-0.006	-0.005
Coil 2 R	0.024	0.024	-0.013	-0.019	-0.012	-0.009	-0.003	0.003
Coil 2 Q	-0.025	0.020	0.026	0.007	-0.003	-0.010	-0.009	-0.008
Coil 3 R	0.026	0.011	-0.021	-0.022	-0.014	-0.010	-0.005	0.001
Coil 3 Q	0.019	0.032	0.022	0.006	-0.006	-0.010	-0.010	-0.010
Coil 4 R	0.028	0.042	-0.034	-0.032	-0.022	-0.015	-0.007	-0.009
Coil 4 Q	0.066	0.110	0.083	0.029	-0.001	-0.020	-0.013	-0.022
Coil 5 R	0.034	0.018	-0.052	-0.054	-0.044	-0.018	-0.010	-0.015
Coil 5 Q	0.124	0.142	0.078	0.018	-0.004	-0.008	-0.011	-0.009
Coil 6 R	0.149	0.224	-0.139	-0.222	-0.180	-0.107	-0.048	-0.004
Coil 6 Q	0.084	0.368	0.298	0.098	-0.015	-0.078	-0.103	-0.070

ELEC. GAINS	10 KHz	30 KHz	50 KHz	70 KHz	90 KHz	110 KHz	130 KHz	150 KHz
Coil 0 M	124.73	123.53	121.17	117.90	113.51	108.21	101.62	94.62
Coil 0 P	7.888	24.177	40.385	58.580	72.815	89.069	105.302	121.417
Coil 1 M	217.62	214.48	209.24	202.11	193.18	181.53	169.41	156.17
Coil 1 P	7.788	24.466	40.800	58.926	73.036	89.860	104.904	120.034
Coil 2 M	435.20	430.27	420.51	407.92	390.90	371.28	348.54	323.66
Coil 2 P	7.828	24.598	41.037	57.372	73.690	89.934	108.214	122.299
Coil 3 M	742.17	735.01	720.89	701.85	675.50	643.61	605.19	562.02
Coil 3 P	7.845	24.581	41.080	57.566	74.187	90.798	107.497	124.096
Coil 4 M	1139.7	1129.8	1107.3	1078.2	1037.7	986.0	925.3	860.4
Coil 4 P	7.956	24.725	41.764	58.559	75.455	92.033	109.406	126.193
Coil 5 M	2301.9	2275.7	2224.5	2156.2	2064.2	1957.2	1829.6	1692.3
Coil 5 P	8.319	26.096	43.571	60.955	78.382	95.733	113.128	130.300
Coil 6 M	5916.8	5871.1	5776.6	5648.9	5452.6	5236.1	4943.0	4611.7
Coil 6 P	8.252	25.924	43.391	60.928	78.660	96.515	114.550	132.554

DIPCAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1020MA 173155 DATE/TIME PERFORMED: Mon Dec 29 15:30:26 2003

UNIT #: 5888SA 008672

	SMALL RING LARGE RING (cnt)	(cnt)	MULT (mm/cnt)	ADD (mm)	SMALL RING LARGE RING (mm)	(mm)
RADIUS 1	1332.9	2909.8	0.0553	33.3713	101.600	177.800
RADIUS 2	1289.3	2846.3	0.0553	31.3447	101.600	177.800
RADIUS 3	1304.0	2858.7	0.0562	28.2563	101.600	177.800
RADIUS 4	1328.6	2880.7	0.0564	26.7209	101.600	177.800
RADIUS 5	1318.2	2880.4	0.0554	28.6218	101.600	177.800
RADIUS 6	1647.9	3037.1	0.0549	11.2045	101.600	177.800
CALIPER 1					203.200	355.600
CALIPER 2					203.200	355.600
CALIPER 3					203.200	355.600

	SMALL RING	LARGE RING
PAD FORCE %	17.067	28.204
DC MOTOR V	1.5	1.3

DIPCAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1020MA 173155 DATE/TIME PERFORMED: Fri Jan 30 01:38:04 2004

UNIT #: 5888SL 008672

	I.D. (mv)	MULT	ADD	I.D. (mm pol V)	CASING SIZE (mm)
RADIUS 1	2748.4	0.05534	33.37127	152.265	
RADIUS 2	2270.5	0.05534	31.34468	156.994	
RADIUS 3	2482.9	0.05625	28.25630	167.915	
RADIUS 4	2558.1	0.05648	26.72091	169.764	
RADIUS 5	2446.3	0.05542	28.62182	164.263	
RADIUS 6	2358.9	0.05485	11.20457	151.458	
CALIPER 1				322.029	320.000
CALIPER 2				321.257	
CALIPER 3				319.371	
PAD FORCE				14.199	
DC MOTOR V				1.3	

DIPCAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 1020MA 173155 DATE/TIME PERFORMED: Fri Jan 30 03:47:12 2004

UNIT #: 5888SL 008672

	I.D. (mv)	MULT	ADD	I.D. (mm pol V)	CASING SIZE (mm)
RADIUS 1	2248.1	0.05534	33.37127	157.669	
RADIUS 2	2258.8	0.05534	31.34468	156.345	
RADIUS 3	2297.4	0.05625	28.25630	157.476	
RADIUS 4	2351.1	0.05638	26.72091	159.266	
RADIUS 5	2453.4	0.05545	28.62182	165.211	
RADIUS 6	2778.3	0.05485	11.20457	183.605	
CALIPER 1				318.839	320.000
CALIPER 2				321.556	
CALIPER 3				321.081	
PAD FORCE				13.561	
DC MOTOR V				1.3	

BAKER HUGHES / Baker Atlas

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES
FILE NO:	
API NO:	
LOCATION:	
LIC: 9211-M048-2-1	
LSD: 04-30-125-45	
LAT 64 23' 02.351" LONG 125 53' 22.66"	
ELEVATIONS: KB 508.3 m DF GL 480.5 m DATE 30-JAN-04	
UWI: 300M464430125450	

BAKER HUGHES

HIGH DEFINITION INDUCTION LOG™
GAMMA RAY LOG
CALIPER LOG

Baker Atlas

N.E.B. COPY

FILE NO:	
API NO:	
COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK D-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES
Ver. 5.87	
RUN NO.	ONE
5000446302 "1ST"	

LOCATION:
14-30-125-4S
64° 32' 40.46" LONG 125° 53' 32.68"

OTHER SERVICES
HDIL-GR-CAL
MICRO-CAL
3-ARM CAL
STAR-DI
DSI

PERMANENT DATUM	GL	ELEVATION 580.9 M	ELEVATIONS
LOG MEASURED FROM	KB	6.2 M ABOVE P.D.	KB 587.1 M
DRILL MEAS. FROM	KELLY BUSHING		DF
			GL 580.9 M

DATE		
RUN		1
SERVICE ORDER		20864
DEPTH DRILLER		3064.0 M
DEPTH LOGGER		3064.1 M
BOTTOM LOGGED INTERVAL		3062.3 M
TOP LOGGED INTERVAL		2447.7 M
CASING DRILLER		177.8 MM @ 2450.0 M
CASING LOGGER		2447.7 M
BIT SIZE		158.8 MM
TYPE OF FLUID IN HOLE		GELCHEM
DENSITY	VISCOSITY	1040 G/CC 36.0 S
PH	FLUID LOSS	10.0 8.5 ML
SOURCE OF SAMPLE		CIRCULATION
RM AT MEAS. TEMP.		1.7 OHMM @ 18.0 DEGC
RMF AT MEAS. TEMP.		1.5 OHMM @ 18.0 DEGC
RMC AT MEAS. TEMP.		1.9 OHMM @ 18.0 DEGC
SOURCE OF RMF	RMC	MEASURED MEASURED
RM AT BHT		0.5 OHMM @ 69.7 DEGC
TIME SINCE CIRC.	ON	12.0 HOURS
MAX. RECORDED T	AT ON	69.7 DEGC
EQUIP. NO.		8872 TK1561
RECORDED BY		D.SNYDER
WITNESSED BY		L.HARDER

	TEMP
1	
2	
3	

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CASING RECORD

	ID	FROM
339.7 MM @ 177.8	323.8	0.0
244.5 MM @ 2450.0	222.3	177.8

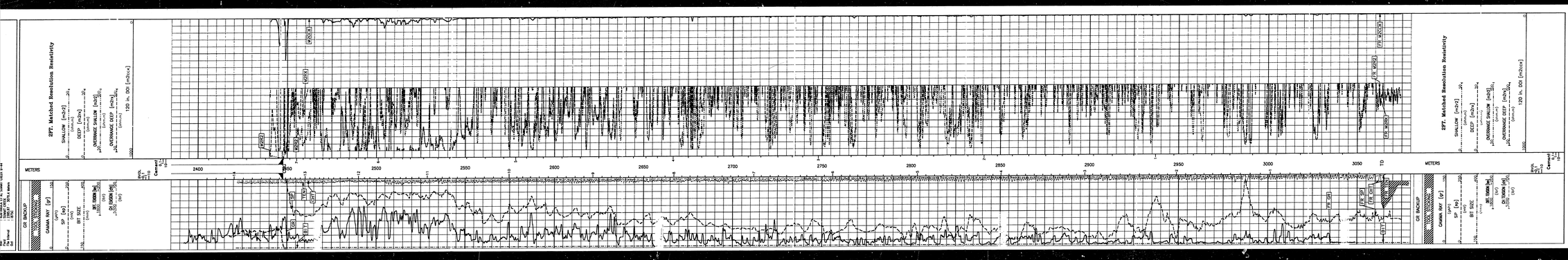
BOREHOLE RECORD

BIT SIZE	ID	FROM	TO
311.1 MM	311.1	177.8	1000.0
158.8 MM	158.8	1000.0	3064.0

REMARKS

RUN 1 TOP 1 1

LINE SPEED CIRCULATION 15 MIN. @ MAX.
SONDE ADDED TO UNIT 1.69 M ABOVE TOP OF BHA.
SONDE ADDED TO UNIT 2.43 M ABOVE TOP OF BHA.
DSI RUN WITH 3 ARM CALIPER, 1 ARM CALIPER AND MICRO-CALIPER.
DSI RUN WITH 3 ARM CALIPER AND MICRO-CALIPER.
DSI RUN WITH MICRO-CALIPER.
DSI RUN WITH 3 ARM



QUALITY CONTROL PLOT ONLY

PARAMETER AND FILTER SUMMARY REPORT

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
5 AXIS CALIPER	FILTER (")	light (1)		
5 AXIS CALIPER	FILTER (")	medium (1)		
5 AXIS CALIPER	FILTER (")	medium (1)		
5 AXIS CALIPER	FILTER (")	medium (1)		
SP (MPH)	FILTER (")	medium (1)		

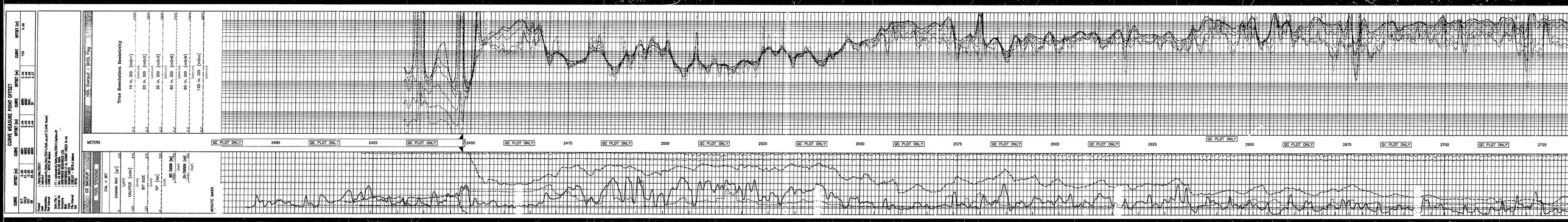
MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
SFF CALIPER PROCESSING	BHA Geometry			
BOREHOLE CORR DIAMETER	CALIPER USED (IN, MM)	IN		
BOREHOLE CORR DIAMETER	CALIPER USED (IN, MM)	MM		
MUD VALUES SOURCE	MUD SAMPLE (SMP)			
MUD VALUES	MUD SAMPLE TEMP	DEGC		
MUD VALUES	SAMPLE SOURCE	PUMP		

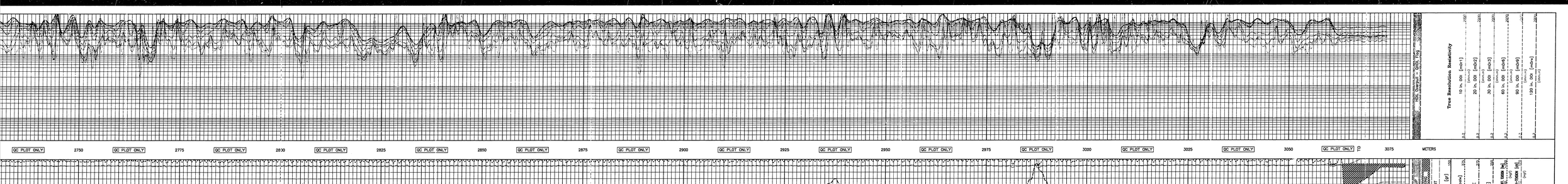
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
MEASUREMENT COMBINATION	ACQUISITION RUN	1			
ELECTRIC BOREHOLE CORRECTION	ARC PROCESSING	ON			
	BOREHOLE CORRECTION	BOREHOLE			
	TEMPERATURE	20.00	DEGC		
	SALINITY	200.00	KPPM		
	DRY BOREHOLE LIMIT	1000			

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON			
	BOREHOLE CORRECTION	BOREHOLE			
	TEMPERATURE	20.00	DEGC		
	SALINITY	200.00	KPPM		
	DRY BOREHOLE LIMIT	1000			

MERGED SFF ECN LIGHT

| | | |


CURVE MEASURE POINT OFFSET
CURVE OFFSET (ft) CURVE OFFSET (ft) CURVE OFFSET (ft) CURVE OFFSET (ft)
BIT 0.00 GR 0.00 HDRS 2.44 HDRS 2.44 TEN 0.00
DDT 0.00 SP 0.00 HMRS 2.44 HMRS 2.44
Thrust / Mag Rel 23311
Thruster / Mag Rel 23311
Formation / Mag Rel 23311
Sde Fltr 1 / Schlumberger Mag Rel 23311 MudLevel 13,958 feet
Sde Fltr 2 / Schlumberger Mag Rel 23311 mpSet off
Logging Engineer / MICHAEL STEVENS
Operating Rig Time / Schlumberger Mag Rel 23311 9+0
Max Recorded Temperature / 260.0 F, Meters
Elapsed Time / 2:00:0, 0 Meters
GR BACKUP
CAL < BIT
GAMMA RAY (gr) 0 150
CALIPER (cals) 6 16
BIT SIZE 6 16
SP (sp) -100 100
BR BORA (bra) 1.95 2.95
ZD-THICK (zd) 0 .500
HDRS, HMRS, DDT, SDN, TEN
True Resolution Resistivity
10 in. DOI (md1) .2 2000
20 in. DOI (md2) .2 2000
30 in. DOI (md3) .2 2000
60 in. DOI (md6) .2 2000
90 in. DOI (md9) .2 2000
120 in. DOI (mdw) .2 2000
HDRS Overgut = Quick Flag
METERS
QC PLOT ONLY
2400
2425
2450
2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2725
MINUTE MARK



MAIN PASS

EDTS 5.0 Nov 25, 2003

Depth Scale 1:240

Fri Nov 19 09:53:58 2004

PARAMETER AND FILTER SUMMARY REPORT

File: /dat/logs/nor/nor164-64_run1/1875015.prn
Logging Company: SCHLUMBERGER
TOP DEPTH: 2973.324 m BOTTOM DEPTH: 3077.185 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		--	--
CHT	FILTER ()	medium (1)		--	--
TENSION	FILTER ()	medium (1)		--	--
GR	FILTER ()	medium (1)		--	--
SP-SPSH	FILTER ()	medium (1)		--	--

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	--	--
X-Y CALIPER PROCESSING	ABC PROCESSING	ON		--	--
BIT SIZE	BIT SIZE	156.000	mm	--	--
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (mm*)	USE CALIPER		--	--
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mm*)	156.000	mm	--	--
	MUD SOURCE (WDIL)	MUD SAMP DERIVED		--	--
	MUD SAMPLE TEMP	18.0	degC	--	--
	MUD SAMPLE RES	1.790	ohm.m	--	--
	MUD REFERENCE TEMP	18.0	degC	--	--
	TEMP GRADIENT	0.200	0.01 degC/m	--	--

HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RWTEMP		--	--
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		--	--
	ABC RX CALCULATE	STANDOFF	mm	--	--
	STANDOFF	10.00		--	--
	TOOL POSITION	ECCENTERED		--	--
	Mnud MULTIPLIER	1.000		--	--

PARAMETER AND FILTER SUMMARY REPORT

File: /dat/logs/nor/nor164-64_run1/1875015.prn
Logging Company: SCHLUMBERGER
TOP DEPTH: 2431.776 m BOTTOM DEPTH: 3044.676 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		--	--
CHT	FILTER ()	medium (1)		--	--
TENSION	FILTER ()	medium (1)		--	--
GR	FILTER ()	medium (1)		--	--
SP-SPSH	FILTER ()	medium (1)		--	--

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	--	--
X-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density cal)		--	--
BIT SIZE	BIT SIZE	156.000	mm	--	--
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (mm*)	USE CALIPER		--	--
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mm*)	156.000	mm	--	--
MUD VALUES SOURCE	MUD SOURCE (WDIL)	MUD SAMP DERIVED		--	--
MUD VALUES	MUD SAMPLE TEMP	18.0	degC	--	--
	MUD SAMPLE RES	1.790	ohm.m	--	--
	MUD REFERENCE TEMP	18.0	degC	--	--
	TEMP GRADIENT	0.200	0.01 degC/m	--	--

HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RWTEMP		--	--
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON		--	--
	ABC Rx CALCULATE	STANDOFF	mm	--	--
	STANDOFF	10.10		--	--
	TOOL POSITION	ECCENTERED		--	--
	Mnud MULTIPLIER	1.000		--	--

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Mar 19 03:07:56 2004	BIT SIZE
F1:BVOL	BVOL	Mar 19 03:07:56 2004	BOREHOLE VOLUME
F1:CALX	CAL	Mar 19 03:07:56 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:CHT	CHT	Mar 19 03:07:56 2004	CABLE HEAD TENSION
F1:CHTY	CHTY	Mar 19 03:07:56 2004	CEMENT VOLUME
F1:DEPTH	DEPTH, 2.RS3,DA	Mar 19 03:07:56 2004	DEPTH IN METERS
F1:GR	GR	Mar 19 03:07:56 2004	GAMMA RAY
F1:M2R1	M2R1	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 10 INCH
F1:M2R2	M2R2	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 20 INCH
F1:M2R3	M2R3	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 30 INCH
F1:M2R6	M2R6	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 60 INCH
F1:M2R9	M2R9	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 90 INCH
F1:M2RX	M2RX	Mar 19 03:07:56 2004	VERT RESOLUTION MATCHED (2 FT) RES - 001 120 INCH
F1:SP	SP	Mar 19 03:07:56 2004	SPONTANEOUS POTENTIAL
F1:TEN	TEN	Mar 19 03:07:56 2004	DIFFERENTIAL TENSION
F1:WTEMP		Mar 19 03:07:56 2004	TEMPERATURE OF THE BOREHOLE

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	GR	25.44	M2R3	2.44	M2RX	2.44
CALX	21.45	M2R1	2.44	M2R6	2.44	SP	0.00
CHT	0.00	M2R2	2.44	M2R9	2.44	TEN	0.00

/n3/dat/logs/nor/nor164-64_run1/mlt_mdt.pdf (1240 Scale)
2973.324 - 3077.185 (Meters)

Data File : f1:/opv2/dat/logs/nor/nor164-64_run1/opfa.wf
Created On : Mar 19 2004/15:2004
Company : SCHLUMBERGER WELL LTD.
Well : NORTHSIDE ET AL SUNAT CREEK D-44
Field : SUNAT CREEK
File Interval : 2385.97 - 3076.6 Meters
Unit : METRIC

GR BACKUP

METRIC

CAL < BIT

GAMMA RAY [gr] 0 150 (gAPI)

CALIPER [calx] 100 350 (mm)

BIT SIZE 190 390 (mm)

SP [sp] 190 290 (mV)

BIT TENSION [ten] 13000 15000 (lbs)

CHT TENSION [cht] 13000 17000 (lbs)

2FT. Matched Resolution Resistivity

10 in. DOI [m2r1] 0.2 2000 (ohm.m)

20 in. DOI [m2r2] 0.2 2000 (ohm.m)

30 in. DOI [m2r3] 0.2 2000 (ohm.m)

60 in. DOI [m2r6] 0.2 2000 (ohm.m)

90 in. DOI [m2r9] 0.2 2000 (ohm.m)

120 in. DOI [m2rx] 0.2 2000 (ohm.m)

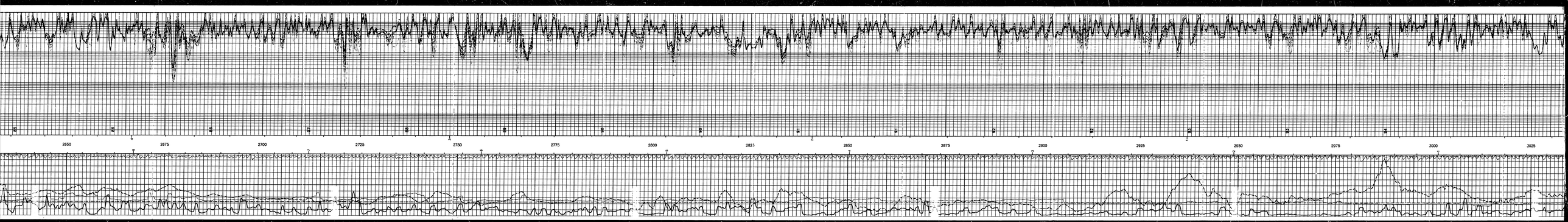
WTBH

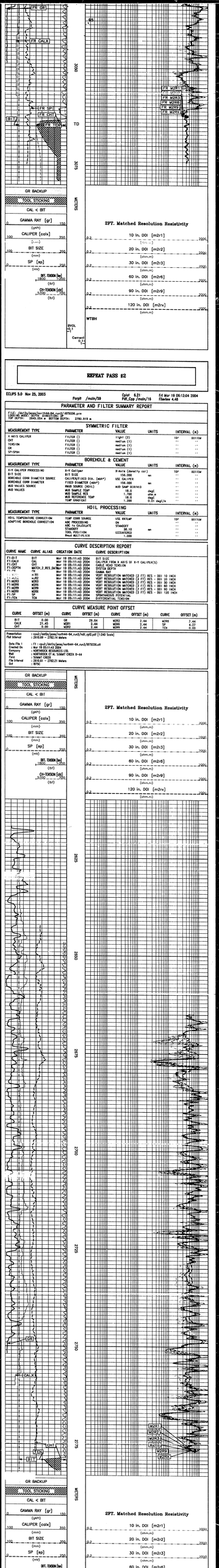
BVOL 0 1 Cement 0 1

CALX
GR
BIT
SP
TENT
CHTY

M2R1
M2R2
M2R3
M2R6
M2R9
M2RX

2425
2450
2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2725
2750
2775
2800
2825


2650
2675
2700
2725
2750
2775
2800
2825
2850
2875
2900
2925
2950
2975
3000
3025



REPEAT PASS #2

ECLIPS 5.0 Nov 25, 2003 | Purpit /main/59 | Cpiet 6.31 PAK.Cpy /main/16 | Fri Mar 19 08:12:04 2004 Fileview 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /data2p/geoan/mr1n44-64_run5/RT5006.pre
LOGGING MODE: DIRECTION: DOWN
TOP DEPTH: 2645.504 m BOTTOM DEPTH: 2780.919 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
X-AXIS CALIPER	FILTER ()	light (2)	10^	0.01150#
CNT	FILTER ()	medium (1)	--	--
TENS-ION	FILTER ()	medium (1)	--	--
GR	FILTER ()	medium (1)	--	--
SP-SPAH	FILTER ()	medium (1)	--	--

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
X-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density cal)	10^	0.01150#
BIT SIZE	BIT SIZE	156.000	mm	-- --
BOREHOLE CORR DIAMETER SOURCE	CALIPER/EXTIRED DIA. (mm*)	USE CALIPER	--	-- --
BOREHOLE CORR DIAMETER	FIXED DIAMETER (mm*)	156.000	mm	-- --
MUD VALUES SOURCE	MUD SOURCE (MDH:)	MUD SAMP DERIVED	--	-- --
MUD VALUES	MUD SALINITY	0.00	degC	-- --
	MUD SAMPLE TEMP	15.0	degC	-- --
	MUD REFERENCE TEMP	15.0	degC	-- --
	TEMP GRADIENT	1.200	0.01 degC/m	-- --

HDIL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
HDIL TEMPERATURE CORRECTION	TEMP CORR SOURCE	USE RATSAP	10^	0.01150#
ADAPTIVE BOREHOLE CORRECTION	ABC PROCESSING	ON	--	-- --
	ABC To CALCULATE	STANDOFF	--	-- --
	STANDOFF	38.10	mm	-- --
	ECCENTRIC POSITION	ECCENTRIC	--	-- --
	Mesh MULTIPLIER	1.000	--	-- --

CURVE DESCRIPTION REPORT

CURVE DESCRIPTION

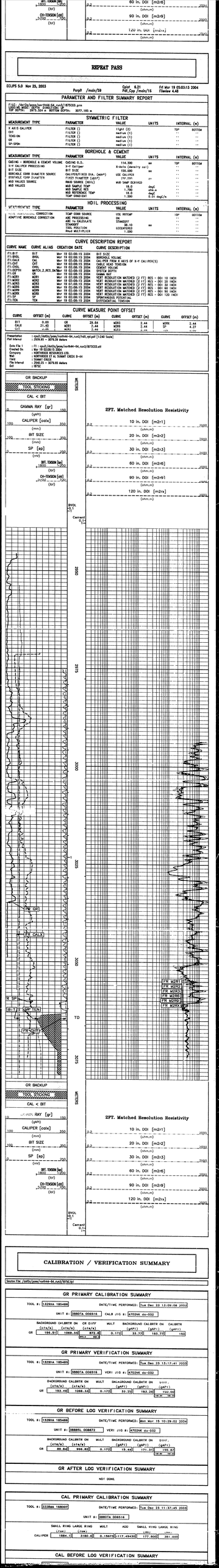
CURVE NAME	CURVE ALIAS	CREATION DATE
F1:BIT	BIT	Wed 19 05:11:43 2004
F1:CALX	CAL	Wed 19 05:11:43 2004
F1:CNT	CNT	Wed 19 05:11:43 2004
F1:DEPTH	WATCH_2.REG_DATE	Wed 19 05:11:43 2004
F1:GR	GR	Wed 19 05:11:43 2004
F1:M2R1	M2R1	Wed 19 05:11:43 2004
F1:M2R2	M2R2	Wed 19 05:11:43 2004
F1:M2R3	M2R3	Wed 19 05:11:43 2004
F1:M2R6	M2R6	Wed 19 05:11:43 2004
F1:M2R9	M2R9	Wed 19 05:11:43 2004
F1:SP	SP	Wed 19 05:11:43 2004
F1:TEN	TEN	Wed 19 05:11:43 2004

BIT SIZE
CALIPER FROM X AXIS OF X-Y CALIPER(S)
CABLE HEAD TENSION
SYSTEM DEPTH
GAMMA RAY
VERT RESOLUTION MATCHED (2 FT) RES = 001 10 INCH
VERT RESOLUTION MATCHED (2 FT) RES = 001 20 INCH
VERT RESOLUTION MATCHED (2 FT) RES = 001 30 INCH
VERT RESOLUTION MATCHED (2 FT) RES = 001 60 INCH
VERT RESOLUTION MATCHED (2 FT) RES = 001 90 INCH
VERT RESOLUTION MATCHED (2 FT) RES = 001 120 INCH
SPONTANEOUS POTENTIAL
DIFFERENTIAL TENSION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	GR	29.64	M2R2	2.44	M2R9	2.44
CALX	21.43	M2R1	2.44	M2R6	2.44	SP	4.27
CNT	0.00	M2R3	2.44	M2R9	2.44	TEN	0.00

Presentation	: run2:/data/geoan/mr1n44-64_run5/mdt_rpt2.pdf [1:240 Scale]
Plot Interval	: 2810.88 - 2782.14 Meters
Data File 1	: FT : run2:/data/geoan/mr1n44-64_run5/RT5006.rdf
Created On	: Wed 19 05:11:43 2004
Company	: NORTHROCK RESOURCES LTD.
Well	: NORTHROCK ET AL SUMMIT CREEK D-44
Field	: SUMMIT CREEK
Log Interval	: 2810.88 - 2782.31 Meters
Cut	: DISC.


60 in, DOI [m2r6]
90 in, DOI [m2r9]
120 in, DOI [m2rx]
(ohm.m)
REPEAT PASS
ECLIPS 5.0 Nov 25, 2003
Cplot 6.31
PdfLibr 7.00
Frl Mar 19 05:03:13 2004
Filelaser 4.48
Purge /main/59
PdfLcpy /main/16
PARAMETER AND FILTER SUMMARY REPORT
FILE: /data2p/geoservices/stad-64_nad3/6f3503.pre
TOP DEPTH: 3073.324 m BOTTOM DEPTH: 3077.185 m
SYMMETRIC FILTER
MEASUREMENT TYPE
PARAMETER
VALUE
UNITS
INTERVAL (m)
TOP
BOTTOM
X-RAYS CALIPER
FILTER ()
light (2)
--
--
BIT SIZE
FILTER ()
medium (3)
--
--
TENSION
FILTER ()
medium (3)
--
--
GR
FILTER ()
medium (3)
--
--
SP-SPSH
FILTER ()
medium (3)
--
--
BOREHOLE & CEMENT
MEASUREMENT TYPE
PARAMETER
VALUE
UNITS
INTERVAL (m)
TOP
BOTTOM
CASING+ BOREHOLE & CEMENT VOLUME
CASING O.D.
114.300
mm
--
--
X-Y CALIPER PROCESSING
BIT SIZE
X-Axis (density cal)
156.00
mm
--
--
BOREHOLE CORR DIAMETER SOURCE
CALIPER/FIXED DIA. (mm*)
USE CALIPER
--
--
BOREHOLE FLUID SALINITY
FIXED DIAMETER (mm*)
216.000
mm
--
--
MUD VALUES SOURCE
RMOB SOURCE (MEAS.)
MUD SAMP DERIVED
--
--
MUD VALUES
MUD SAMPLE TEMP
18.0
degC
--
--
MUD SAMPLE RES
1.700
ohm.m
--
--
MUD REFERENCE TEMP
18.0
degC
--
--
TEMP GRADIENT
1.200
0.01 degC/m
--
--
HDIL PROCESSING
MEASUREMENT TYPE
PARAMETER
VALUE
UNITS
INTERVAL (m)
TOP
BOTTOM
ACTIVE/PASSIVE CONNECTION
TEMP CORR SOURCE
USE XRTEMP
--
--
ADAPTIVE BOREHOLE CORRECTION
MUD TYPE CORR
OFF
--
--
ARC TO CALCULATE
STANDOFF
STANDOFF
--
--
STANDOFF
38.10
mm
--
--
TOOL POSITION
DECENTERED
--
--
Rmud MULTIPLIER
1.000
--
--
CURVE DESCRIPTION REPORT
CURVE NAME
CURVE ALIAS
CREATION DATE
CURVE DESCRIPTION
F1:BIT
BIT
Mar 19 02:08:15 2004
BIT SIZE
F1:BVOL
BVOL
Mar 19 02:08:15 2004
BOREHOLE VOLUME
F1:CALI
CALI
Mar 19 02:08:15 2004
CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:CNC
CNC
Mar 19 02:08:15 2004
CORRECTED NEUTRON
F1:CVOL
CVOL
Mar 19 02:08:15 2004
CEMENT VOLUME
F1:DEPTH
MATCH_2_RES_3a
Mar 19 02:08:15 2004
SYSTEM DEPTH
F1:GR
GR
Mar 19 02:08:15 2004
GAMMA RAY
F1:M2R1
M2R1
Mar 19 02:08:15 2004
VERT RESOLUTION MATCHED (2 FT) RES = 001 10 INCH
F1:M2R2
M2R2
Mar 19 02:08:15 2004
VERT RESOLUTION MATCHED (2 FT) RES = 001 20 INCH
F1:M2R3
M2R3
Mar 19 02:08:15 2004
VERT RESOLUTION MATCHED (2 FT) RES = 001 30 INCH
F1:M2R6
M2R6
Mar 19 02:08:15 2004
VERT RESOLUTION MATCHED (2 FT) RES = 001 60 INCH
F1:M2R9
M2R9
Mar 19 02:08:15 2004
VERT RESOLUTION MATCHED (2 FT) RES = 001 90 INCH
F1:SP
SP
Mar 19 02:08:15 2004
SPONTANEOUS POTENTIAL
F1:TEN
TEN
Mar 19 02:08:15 2004
DIFFERENTIAL TENSION
CURVE MEASURE POINT OFFSET
CURVE
OFFSET (m)
CURVE
OFFSET (m)
CURVE
OFFSET (m)
CURVE
OFFSET (m)
BIT
0.00
GR
29.64
M2R1
2.44
M2RX
2.44
CALI
21.45
M2R2
2.44
M2R6
2.44
SP
4.27
CNC
0.00
M2R3
2.44
M2R9
2.44

Presentation : cpc2:/data/pres/nad64-64_nad3/hdil_rpt.ppf [1240 Scale]
Plot Interval : 3539.90 - 3078.29 Meters
Data File 1 : FT: cpc2:/data/pres/nad64-64_nad3/6f3503.efl
Created On : Mar 19 02:08:15 2004
Company : NORTHSIDE RESOURCES LTD.
Well : NORTHSIDE ET AL SUMMIT CREEK B-44
Field : SUMMIT CREEK
Top Interval : 3042.35 = 3078.85 Meters
Unit : METSC
GR BACKUP
CAL < BIT
GAMMA RAY [gr]
CALIPER [calx]
BIT SIZE
SP [sp]
TENSION [ten]
2PT. Matched Resolution Resistivity
10 in, DOI [m2r1]
20 in, DOI [m2r2]
30 in, DOI [m2r3]
60 in, DOI [m2r6]
90 in, DOI [m2r9]
120 in, DOI [m2rx]
BVOL
Cement
GR [GR]
CALX [CALX]
SP [SP]
TEN [TEN]
BIT
FR M2R1
FR M2R2
FR M2R3
FR M2R6
FR M2R9
TD
CALIBRATION / VERIFICATION SUMMARY
Source File: /data/pres/nad64-64_nad3/6f3c.tp
GR PRIMARY CALIBRATION SUMMARY
TOOL #: 13269A 185486
DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003
UNIT #: 38807A 006516
CALB JIG #: 47026K dx-032
BACKGROUND CALIBR ON (cts/s) | CR (cts/s) | CR DIFF (cts/s) | MULT | BACKGROUND CALIBR ON (gAPI) | CALIBR (gAPI) | CALIBR (gAPI)
GR 186.51 1069.33 872.8 0.172 33.72 183.73 150
GR PRIMARY VERIFICATION SUMMARY
TOOL #: 13269A 185486
DATE/TIME PERFORMED: Tue Dec 23 15:17:41 2003
UNIT #: 38807A 006516
VERI JIG #: 47026K dx-032
BACKGROUND CALIBR ON (cts/s) | CR (cts/s) | MULT | BKGROUND CALIBR ON (gAPI) | CALIBR (gAPI) | Units (gAPI)
GR 193.49 1068.33 0.172 33.30 183.20 150.00
GR BEFORE LOG VERIFICATION SUMMARY
TOOL #: 13269A 185486
DATE/TIME PERFORMED: Mon Mar 15 10:29:02 2004
UNIT #: 38885L 008872
VERI JIG #: 47026K dx-032
BACKGROUND CALIBR ON (cts/s) | CR (cts/s) | MULT | BACKGROUND CALIBR ON (gAPI) | CALIBR (gAPI) | Units (gAPI)
GR 89.84 990.83 0.172 15.46 171.31 155.97
GR AFTER LOG VERIFICATION SUMMARY
NOT DONE
CAL PRIMARY CALIBRATION SUMMARY
TOOL #: 2228MA 188007
DATE/TIME PERFORMED: Tue Dec 23 11:37:45 2003
UNIT #: 38807A 006516
SMALL RING (cnts) | LARGE RING (cnts) | MULT | ADD | SMALL RING (mm) | LARGE RING (mm)
CALIPER 1884.1 3180.6 0.156875 -117.49450 177.800 381.000
CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 166007 | DATE/TIME PERFORMED: Fri Mar 19 01:49:54 2004

UNIT #: 388851, 008672

CALIPER	I.D. (raw)	MULT	ADD	I.D. (in)
	1815.2	0.15873	-124.49582	160.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 166007 | DATE/TIME PERFORMED: Fri Mar 19 04:58:45 2004

UNIT #: 388851, 008672

CALIPER	I.D. (raw)	MULT	ADD	I.D. (in)
	1801.5	0.15873	-124.49582	157.853

HDIL PRIMARY CALIBRATION SUMMARY

TOOL #: 1515MA 167993 | DATE/TIME PERFORMED: Sat Dec 20 13:18:23 2003

UNIT #: 37534A 10067203 | GROUND ID & DATE: Nitsku 0513102

ZERO DATA(mv) 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q R	0.008	0.003	-0.001	0.002	0.003	0.000	-0.001	-0.001
Coil Q Q	-0.002	-0.001	0.000	-0.001	0.001	0.001	0.002	0.002
Coil I R	0.000	0.002	-0.002	-0.005	-0.003	-0.003	-0.003	-0.004
Coil I Q	0.003	0.002	0.006	0.003	0.001	-0.002	-0.003	-0.004
Coil Z R	0.001	0.000	0.002	0.001	-0.001	-0.002	-0.001	0.000
Coil Z Q	-0.006	-0.007	0.000	-0.002	-0.003	-0.004	-0.004	-0.004
Coil X R	0.000	-0.001	-0.006	-0.010	-0.009	-0.009	-0.009	-0.009
Coil X Q	0.000	0.004	0.011	-0.001	-0.002	-0.002	-0.007	-0.010
Coil 4 R	-0.002	-0.005	-0.009	-0.006	-0.012	-0.015	-0.008	-0.007
Coil 4 Q	0.083	0.041	0.020	0.015	0.002	-0.002	-0.008	-0.008
Coil 5 R	-0.009	-0.013	-0.013	-0.012	-0.009	0.015	0.018	-0.022
Coil 5 Q	0.145	0.048	0.029	0.030	0.011	0.000	-0.006	-0.008
Coil 6 R	0.000	-0.002	0.022	0.012	0.010	0.027	0.009	0.013
Coil 6 Q	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

ELEC. GAINS 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q M	124.98	123.82	121.47	119.29	113.58	108.07	102.22	95.72
Coil Q P	7.972	24.151	40.366	56.561	72.651	89.075	105.347	121.418
Coil I M	218.03	215.19	209.78	203.55	193.03	182.16	169.58	156.55
Coil I P	7.774	24.446	40.789	56.911	73.026	88.903	104.627	120.040
Coil Z M	435.57	430.66	420.99	408.47	391.56	371.77	350.40	324.81
Coil Z P	7.816	24.372	40.777	56.911	73.026	88.903	104.627	120.040
Coil X M	741.11	734.36	717.10	697.10	667.44	633.04	595.09	552.06
Coil X P	7.833	24.536	41.047	57.326	74.159	90.788	107.555	124.026
Coil 4 M	1141.9	1131.3	1109.6	1081.0	1040.9	991.5	931.7	864.1
Coil 4 P	7.843	24.958	41.743	58.518	75.439	92.359	109.387	126.231
Coil 5 M	2303.2	2277.7	2228.7	2159.5	2067.9	1960.2	1833.5	1695.8
Coil 5 P	8.311	26.074	43.541	60.930	78.742	95.726	112.886	129.843
Coil 6 M	3923.6	3877.0	3793.1	3678.8	3518.7	3344.2	3124.4	2872.2
Coil 6 P	8.343	26.812	43.346	60.905	78.657	96.524	114.565	132.345

AM Factor 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q R	510	-118	-237	-256	-256	-255	-255	-247
Coil Q Q	2136	815	466	284	169	92	33	-12
Coil I R	548	83	11	-29	-34	-37	-32	-30
Coil I Q	949	397	249	178	137	109	85	72
Coil Z R	188	27.5	7.4	0.4	-3.0	-4.0	-3.4	-3.8
Coil Z Q	445.0	150.5	117.5	83.1	75.0	59.2	47.2	36.0
Coil X R	333	33.2	3.0	-0.4	-2.0	-1.6	-1.5	-2.3
Coil X Q	73.2	38.4	28.1	25.9	25.7	26.8	28.7	31.4
Coil 4 R	13.00	-1.78	0.19	-0.33	-0.73	-0.93	-1.18	-1.20
Coil 4 Q	19.67	13.21	14.33	16.83	19.72	23.21	29.58	30.18
Coil 5 R	2.42	-0.89	-1.30	-1.50	-1.61	-1.67	-1.87	-2.11
Coil 5 Q	8.537	4.402	3.744	3.777	3.914	4.111	4.139	4.243
Coil 6 R	-1.181	-2.000	-2.131	-2.411	-2.643	-2.844	-3.006	-3.377
Coil 6 Q	-4.87	4.83	10.36	19.85	21.23	26.66	32.43	38.33

XM Factor 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q M	1.008	1.008	1.002	1.001	1.001	1.000	0.998	1.002
Coil Q P	0.128	0.187	0.280	0.372	0.337	0.288	0.248	0.185
Coil I M	0.993	0.992	0.988	0.987	0.985	0.985	0.986	0.985
Coil I P	0.082	0.234	0.319	0.390	0.348	0.288	0.218	0.204
Coil Z M	1.018	1.018	1.017	1.018	1.018	1.018	1.018	1.018
Coil Z P	0.000	0.084	0.160	0.224	0.281	0.282	0.286	0.217
Coil X M	1.018	1.021	1.020	1.020	1.019	1.018	1.017	1.017
Coil X P	0.000	0.083	0.162	0.225	0.281	0.282	0.286	0.217
Coil 4 M	1.018	1.019	1.018	1.017	1.017	1.016	1.015	1.015
Coil 4 P	0.011	0.086	0.099	0.173	0.200	0.228	0.208	0.242
Coil 5 M	1.018	1.018	1.018	1.017	1.017	1.017	1.016	1.016
Coil 5 P	0.000	0.091	0.100	0.168	0.201	0.228	0.208	0.242
Coil 6 M	1.021	1.022	1.021	1.020	1.019	1.022	1.020	1.017
Coil 6 P	0.012	0.143	0.114	0.248	0.183	0.119	0.180	0.134

PARMS	TC1D D	TC1D 1	Cal Temp deg C	T Factor
IDs	1.808	0.902	15.6	1.00

HDIL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1515MA 167993 | DATE/TIME PERFORMED: Fri Mar 19 01:28:16 2004

UNIT #: 388851, 008672

ZERO DATA(mv) 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q R	0.000	0.003	0.000	0.001	0.000	-0.001	-0.001	-0.001
Coil Q Q	0.000	0.003	0.002	0.002	0.001	0.000	0.000	0.000
Coil I R	0.007	0.000	-0.001	-0.004	-0.002	-0.002	-0.002	-0.003
Coil I Q	0.004	0.004	0.010	0.006	0.004	-0.001	-0.002	-0.003
Coil Z R	0.000	0.000	0.002	-0.003	-0.002	-0.003	-0.002	-0.001
Coil Z Q	-0.013	-0.007	0.007	0.005	0.003	0.003	0.004	0.004
Coil X R	0.010	0.002	-0.004	-0.013	-0.011	-0.014	-0.009	-0.007
Coil X Q	0.033	0.006	0.014	0.003	-0.004	-0.005	-0.011	-0.011
Coil 4 R	0.005	-0.003	-0.017	-0.033	-0.018	-0.018	-0.018	-0.018
Coil 4 Q	0.106	0.054	0.035	0.027	0.016	0.009	0.002	0.000
Coil 5 R	-0.006	-0.014	-0.022	-0.031	-0.017	-0.018	-0.015	-0.022
Coil 5 Q	0.176	0.072	0.041	0.014	0.011	0.000	0.000	0.001
Coil 6 R	0.003	0.009	-0.020	-0.071	-0.061	-0.076	-0.031	-0.031
Coil 6 Q	0.222	0.118	0.128	0.061	0.018	-0.030	-0.037	-0.030

ELEC. GAINS 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q M	124.54	123.30	121.04	117.92	113.64	108.41	102.03	95.13
Coil Q P	7.720	24.288	40.592	56.887	73.250	89.546	105.972	122.090
Coil I M	217.26	215.02	209.61	203.41	193.01	182.19	169.62	156.61
Coil I P	7.561	24.583	41.030	57.232	73.399	89.299	105.221	120.723
Coil Z M	435.41	430.80	421.30	408.90	392.26	372.79	350.49	325.14
Coil Z P	7.571	24.720	41.244	57.548	74.065	90.431	106.798	122.992
Coil X M	743.79	738.46	722.74	704.04	678.30	648.81	616.46	585.23
Coil X P	7.583	24.706	41.287	57.836	74.568	91.290	108.113	124.772
Coil 4 M	1145.7	1135.3	1114.7	1086.4	1046.3	996.9	937.1	869.5
Coil 4 P	7.593	25.132	41.983	58.809	75.859	92.829	109.957	126.852
Coil 5 M	2314.6	2289.1	2239.1	2172.1	2082.7	1974.8	1849.1	1710.7
Coil 5 P	8.342	26.189	43.736	61.213	78.777	96.230	113.765	131.007
Coil 6 M	3941.5	3895.8	3808.5	3682.2	3524.6	3347.4	3127.4	2875.2
Coil 6 P	8.378	26.936	43.567	61.199	79.068	97.032	115.226	133.307

HDIL AFTER LOG VERIFICATION SUMMARY

TOOL #: 1515MA 167993 | DATE/TIME PERFORMED: Fri Mar 19 05:03:34 2004

UNIT #: 388851, 008672

ZERO DATA(mv) 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q R	0.003	0.003	0.001	0.000	0.000	-0.002	0.000	-0.001
Coil Q Q	-0.001	-0.001	0.000	0.000	0.000	0.000	0.000	0.000
Coil I R	0.006	0.006	0.004	-0.003	-0.008	-0.005	-0.005	-0.001
Coil I Q	0.003	0.010	0.007	0.009	0.010	-0.001	-0.005	-0.006
Coil Z R	0.000	0.004	0.003	-0.003	-0.006	-0.004	-0.004	-0.001
Coil Z Q	-0.010	-0.011	-0.007	0.001	0.014	-0.002	-0.008	-0.008
Coil X R	0.004	0.000	-0.006	-0.014	-0.014	-0.013	-0.010	-0.007
Coil X Q	0.113	0.041	0.018	0.015	0.033	-0.010	-0.017	-0.014
Coil 4 R	-0.000	-0.035	-0.010	-0.014	-0.055	-0.031	-0.023	-0.024
Coil 4 Q	0.193	0.094	0.035	0.029	0.034	0.012	-0.006	-0.008
Coil 5 R	-0.018	-0.031	-0.014	-0.010	-0.010	-0.018	-0.015	-0.022
Coil 5 Q	0.320	0.046	0.029	0.030	0.011	0.000	-0.006	-0.008
Coil 6 R	0.000	-0.002	0.022	0.012	0.010	0.027	0.009	0.013
Coil 6 Q	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

ELEC. GAINS 10 KHz 30 KHz 50 KHz 70 KHz 90 KHz 110 KHz 130 KHz 150 KHz

Coil Q M	124.98	123.45	121.13	117.54	113.20	107.98	102.04	95.18
Coil Q P	7.742	24.427	40.825	57.183	73.351	89.604	105.879	122.337
Coil I M	218.06	215.16	209.72	203.76	192.92	181.80	169.77	156.81
Coil I P	7.559	24.730	41.338	57.554	73.545	89.486	105.161	120.831
Coil Z M	436.22	431.11	421.35	407.30	390.45	371.16	349.82	325.39
Coil Z P	7.936	24.871	41.501	57.976	74.222	90.356	106.715	123.128
Coil X M	744.46	738.60	723.05	704.13	677.52	648.03	616.07	585.16
Coil X P	7.951	24.852	41.553	58.313	74.669	91.340	107.957	124.798
Coil 4 M	1148.6	1137.4	1118.0	1089.1	1047.4	994.7	938.5	872.6
Coil 4 P	8.007	25.222	42.183	59.086	75.900	92.866	109.850	126.999
Coil 5 M	2319.6	2291.9	2240.5	2164.6	2073.5	1987.2	1847.0	1710.6
Coil 5 P	8.387	26.369	44.026	61.556	78.905	96.338	113.648	131.136
Coil 6 M	3952.1	3901.5	3814.2	3688.0	3530.4	3353.2	3133.2	2881.0
Coil 6 P	8.378	26.936	43.567	61.199	79.068	97.032	115.226	133.466

COMPANY: NORTHROCK RESOURCES LTD.
WELL: NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
PROVINCE: NORTHWEST TERRITORIES

FILE NO:
API NO:

LOCATION:
LIC: 9211-NO66-2-1
LSD: 04-30-125-4-5
LAT: 64 23' 02.251" LONG 125 53' 22.68"

ELEVATIONS:
KB 586.1 M
DF
GL 560.9 M

UWI: 300B144A130125450

DATE: 16-MAR-04

BAKER HUGHES

TRUE VERTICAL DEPTH
HIGH DEFINITION INDUCTION LOG ™
GAMMA RAY LOG
CALIPER LOG

N.E.B. COPY

Baker Atlas

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
	WELL	NORTHROCK ET AL SUMMIT CREEK B-44
API NO:	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES

Ver: 5.87
UTO:
300844630125450
TRUE VERTICAL DEPTH

LOCATION:
LIC: 9211-14D48-2-1
UID: 64-30-123-45
LAT 64 23' 30.251" LONG 125 53' 22.66"

OTHER SERVICES
MDT-GR-CAL
MCFL-GR-CAL
CSNG-GR-CAL
STAR-DEL-GR-CAL
CHL

PERMANENT DATUM: GL ELEVATION: 580.3 M
LOG MEASURED FROM: KB 5.2 M ABOVE P.D.
DRILL MEAS. FROM: KELLY BUSHING

ELEVATIONS:
KB 585.7 M
DF
GL 580.5 M

DATE		15-MAY-04		TVD
RUN	TRIP	1	1	1
SERVICE ORDER		20088		
DEPTH DRILLER		3064.0 M		3060.7 M
DEPTH LOGGER		3064.0 M		3061.4 M
BOTTOM LOGGED INTERVAL		3062.3 M		3059.0 M
TOP LOGGED INTERVAL		247.1 M		243.8 M
CASING DRILLER		177.8 MM @2650.0 M		177.8 MM @2430.1 M
CASING LOGGER		244.7 M		243.8 M
BIT SIZE		156.0 MM		156.0 MM
TYPE OF FLUID IN HOLE		CELLOSAL		
DENSITY	VISCOSITY	1040.0 G/L	39.0 S	
PH	FLUID LOSS	10.0	10.0 ML	
SOURCE OF SAMPLE		CIRCULATION		
RM AT MEAS. TEMP.		1.1 OHM @ 19.0 DEGC		@
RMF AT MEAS. TEMP.		1.0 OHM @ 19.0 DEGC		@
RMC AT MEAS. TEMP.		1.8 OHM @ 19.0 DEGC		@
SOURCE OF RMF	RMC	MEASURED	MEASURED	
RM AT BHT		0.5 OHM @ 65.7 DEGC		@
TIME SINCE CIRC	ON	12.0 HOURS		
MAX. RECORDED		95.7 DEGC		
EQUIP. NO.	ATION	8672	11950	
RECORDED BY		K. SNIDER		
WITNESSED BY		J. UNGER		

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE THEIR BEST JUDGEMENT BASED UPON THE DATA AVAILABLE TO THEM. HOWEVER, BECAUSE OF UNCERTAINTIES OF GEOLOGICAL INTERPRETATION, ETC., WE, OUR EMPLOYEES AND AGENTS ASSUME NO RESPONSIBILITY FOR ERRORS MADE BY ANY OF OUR EMPLOYEES.

BIT RUN	FROM	TO
1	243.8	3064.0
2	3064.0	3064.0
3	3064.0	3064.0

BOREHOLE RECORD

BIT RUN	BIT SIZE	FROM	TO
1	156.0 MM	243.8	3064.0
2	156.0 MM	3064.0	3064.0
3	156.0 MM	3064.0	3064.0

CASING RECORD

	SIZE	WEIGHT	GRADE	FROM	TO
1	177.8 MM	34.23 KG/M	J-55	0.0	243.8
2	177.8 MM	34.23 KG/M	J-55	0.0	2430.1

REMARKS

RUN 1 TRIP 1 | THE TOP OF BOLT HOLE = 580.3 MABOVE MEAN SEA LEVEL (ASSUMED FROM MAP).
CORRELATED TO BHC SONIC LOG OF 15-MAY-04.
ELEVATIONS: KB = 585.7 M, DF = , GL = 580.5 M
TD DRILLER = 3064.0 M, TD LOGGER = 3061.4 M
CASING DRILLER = 177.8 MM @ 2650.0 M, CASING LOGGER = 243.8 M
MAX HOLE AT 3059.8 M = 156.0 MM
ALL LOGS RECORDED WITH NO CORRECTIONS.
DATA RECORDED BELOW 2430.1 M IS OPEN HOLE.
DATA RECORDED ABOVE 2430.1 M IS CASED HOLE.
DIRECTIONAL DATA PROVIDED ABOVE LOG TAIL.

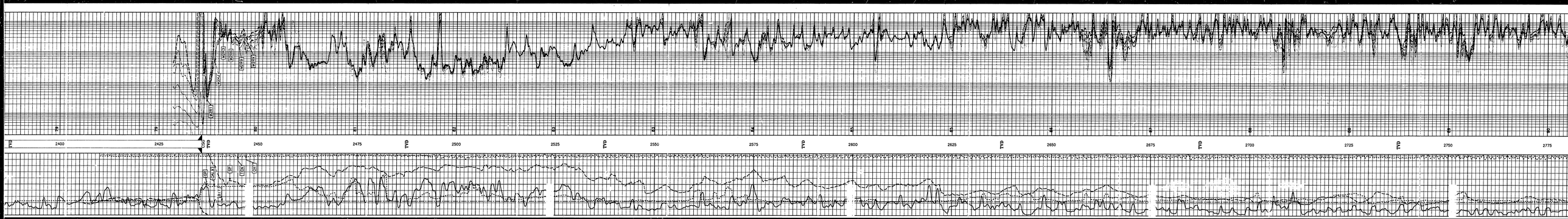
RUN 1 TRIP 1 | CREW = B. MCDONALD A. ATTLEBOY

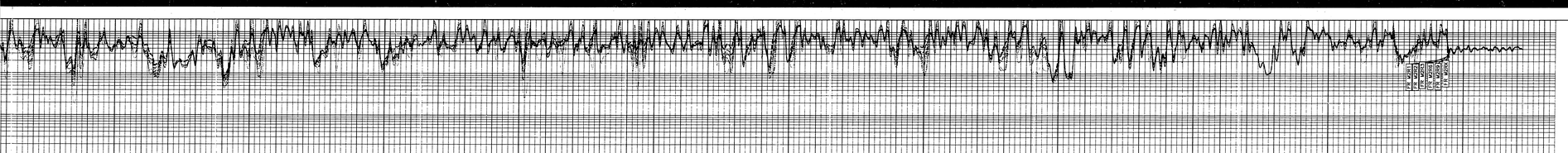
RUN 1 TRIP 1

RUN	TRIP	
1	1	
2	1	
3	1	

EQUIPMENT DATA

TOOL NO.	POSITION
CDGC-AA	
CDGC-AA	
CDGC-AA	


TVD
2400
2425
2450
2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2725
2750
2775



DIRECTIONAL DATA AS SUPPLIED BY CUSTOMER

Data By: Baker Hughes INTEQ
Client: Anadarko Petroleum Corporation
Field: Deadhorse
Well: Test Data
Location: Alaska
Rig: Nabors 9ES
Date: 10-Jan-2007
Time: 00:00:00
Depth: (ft) 9.00 - 10,000.00
Type: Surface
Coordinates: NAD83

MD	Inc	Azi	TVD	VSec	NS	EW	DLS
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00
100.00	0.20	180.00	100.00	-0.09	-0.18	0.00	0.20
200.00	0.30	180.00	200.00	-0.26	-0.53	0.00	0.10
300.00	0.40	180.00	300.00	-0.53	-1.06	0.00	0.10
400.00	0.50	180.00	400.00	-0.97	-1.94	0.00	0.10
500.00	0.60	180.00	500.00	-1.59	-3.18	0.00	0.10
600.00	0.70	180.00	599.99	-2.39	-4.78	0.00	0.10
700.00	0.80	180.00	699.99	-3.37	-6.74	0.00	0.10
800.00	0.90	180.00	799.98	-4.53	-9.06	0.00	0.10
900.00	1.00	180.00	899.98	-5.87	-11.74	0.00	0.10
1000.00	1.10	180.00	999.97	-7.39	-14.78	0.00	0.10
1100.00	1.20	180.00	1099.96	-9.09	-18.18	0.00	0.10
1200.00	1.30	180.00	1199.95	-10.97	-21.94	0.00	0.10
1300.00	1.40	180.00	1299.94	-13.03	-26.06	0.00	0.10
1400.00	1.50	180.00	1399.93	-15.27	-30.54	0.00	0.10
1500.00	1.60	180.00	1499.92	-17.69	-35.38	0.00	0.10
1600.00	1.70	180.00	1599.91	-20.29	-40.58	0.00	0.10
1700.00	1.80	180.00	1699.89	-23.07	-46.14	0.00	0.10
1800.00	1.90	180.00	1799.88	-26.03	-52.06	0.00	0.10
1900.00	2.00	180.00	1899.87	-29.17	-58.34	0.00	0.10
2000.00	2.10	180.00	1999.85	-32.49	-64.98	0.00	0.10
2100.00	2.20	180.00	2099.84	-35.99	-71.98	0.00	0.10
2200.00	2.30	180.00	2199.82	-39.67	-79.34	0.00	0.10
2300.00	2.40	180.00	2299.81	-43.53	-87.06	0.00	0.10
2400.00	2.50	180.00	2399.79	-47.57	-95.14	0.00	0.10
2500.00	2.60	180.00	2499.77	-51.79	-103.58	0.00	0.10
2600.00	2.70	180.00	2599.75	-56.19	-112.38	0.00	0.10
2700.00	2.80	180.00	2699.73	-60.77	-121.54	0.00	0.10
2800.00	2.90	180.00	2799.71	-65.53	-131.06	0.00	0.10
2900.00	3.00	180.00	2899.69	-70.47	-140.94	0.00	0.10
3000.00	3.10	180.00	2999.67	-75.59	-151.18	0.00	0.10
3100.00	3.20	180.00	3099.64	-80.89	-161.78	0.00	0.10
3200.00	3.30	180.00	3199.62	-86.37	-172.74	0.00	0.10
3300.00	3.40	180.00	3299.60	-92.03	-184.06	0.00	0.10
3400.00	3.50	180.00	3399.57	-97.87	-195.74	0.00	0.10
3500.00	3.60	180.00	3499.55	-103.89	-207.78	0.00	0.10
3600.00	3.70	180.00	3599.52	-110.09	-220.18	0.00	0.10
3700.00	3.80	180.00	3699.50	-116.47	-232.94	0.00	0.10
3800.00	3.90	180.00	3799.47	-123.03	-246.06	0.00	0.10
3900.00	4.00	180.00	3899.44	-129.77	-259.54	0.00	0.10
4000.00	4.10	180.00	3999.42	-136.69	-273.38	0.00	0.10
4100.00	4.20	180.00	4099.39	-143.79	-287.58	0.00	0.10
4200.00	4.30	180.00	4199.36	-151.07	-302.14	0.00	0.10
4300.00	4.40	180.00	4299.33	-158.53	-317.06	0.00	0.10
4400.00	4.50	180.00	4399.30	-166.17	-332.34	0.00	0.10
4500.00	4.60	180.00	4499.27	-173.99	-347.98	0.00	0.10
4600.00	4.70	180.00	4599.24	-181.99	-363.98	0.00	0.10
4700.00	4.80	180.00	4699.21	-190.17	-380.34	0.00	0.10
4800.00	4.90	180.00	4799.18	-198.53	-397.06	0.00	0.10
4900.00	5.00	180.00	4899.15	-207.07	-414.14	0.00	0.10
5000.00	5.10	180.00	4999.12	-215.79	-431.58	0.00	0.10
5100.00	5.20	180.00	5099.09	-224.69	-449.38	0.00	0.10
5200.00	5.30	180.00	5199.06	-233.77	-467.54	0.00	0.10
5300.00	5.40	180.00	5299.03	-243.03	-486.06	0.00	0.10
5400.00	5.50	180.00	5398.99	-252.47	-504.94	0.00	0.10
5500.00	5.60	180.00	5498.96	-262.09	-524.18	0.00	0.10
5600.00	5.70	180.00	5598.93	-271.89	-543.78	0.00	0.10
5700.00	5.80	180.00	5698.90	-281.87	-563.74	0.00	0.10
5800.00	5.90	180.00	5798.87	-292.03	-584.06	0.00	0.10
5900.00	6.00	180.00	5898.84	-302.37	-604.74	0.00	0.10
6000.00	6.10	180.00	5998.81	-312.89	-625.78	0.00	0.10
6100.00	6.20	180.00	6098.78	-323.59	-647.18	0.00	0.10
6200.00	6.30	180.00	6198.75	-334.47	-668.94	0.00	0.10
6300.00	6.40	180.00	6298.72	-345.53	-691.06	0.00	0.10
6400.00	6.50	180.00	6398.69	-356.77	-713.54	0.00	0.10
6500.00	6.60	180.00	6498.66	-368.19	-736.38	0.00	0.10
6600.00	6.70	180.00	6598.63	-379.79	-759.58	0.00	0.10
6700.00	6.80	180.00	6698.60	-391.57	-783.14	0.00	0.10
6800.00	6.90	180.00	6798.57	-403.53	-807.06	0.00	0.10
6900.00	7.00	180.00	6898.54	-415.67	-831.34	0.00	0.10
7000.00	7.10	180.00	6998.51	-427.99	-855.98	0.00	0.10
7100.00	7.20	180.00	7098.48	-440.49	-880.98	0.00	0.10
7200.00	7.30	180.00	7198.45	-453.17	-906.34	0.00	0.10
7300.00	7.40	180.00	7298.42	-466.03	-932.06	0.00	0.10
7400.00	7.50	180.00	7398.39	-479.07	-958.14	0.00	0.10
7500.00	7.60	180.00	7498.36	-492.29	-984.58	0.00	0.10
7600.00	7.70	180.00	7598.33	-505.69	-1011.38	0.00	0.10
7700.00	7.80	180.00	7698.30	-519.27	-1038.54	0.00	0.10
7800.00	7.90	180.00	7798.27	-533.03	-1066.06	0.00	0.10
7900.00	8.00	180.00	7898.24	-546.97	-1093.94	0.00	0.10
8000.00	8.10	180.00	7998.21	-561.09	-1122.18	0.00	0.10
8100.00	8.20	180.00	8098.18	-575.39	-1150.78	0.00	0.10
8200.00	8.30	180.00	8198.15	-589.87	-1179.74	0.00	0.10
8300.00	8.40	180.00	8298.12	-604.53	-1209.06	0.00	0.10
8400.00	8.50	180.00	8398.09	-619.37	-1238.74	0.00	0.10
8500.00	8.60	180.00	8498.06	-634.39	-1268.78	0.00	0.10
8600.00	8.70	180.00	8598.03	-649.59	-1299.18	0.00	0.10
8700.00	8.80	180.00	8698.00	-664.97	-1329.94	0.00	0.10
8800.00	8.90	180.00	8797.97	-680.53	-1361.06	0.00	0.10
8900.00	9.00	180.00	8897.94	-696.27	-1392.54	0.00	0.10
9000.00	9.10	180.00	8997.91	-712.19	-1424.38	0.00	0.10
9100.00	9.20	180.00	9097.88	-728.29	-1456.58	0.00	0.10
9200.00	9.30	180.00	9197.85	-744.57	-1489.14	0.00	0.10
9300.00	9.40	180.00	9297.82	-761.03	-1522.06	0.00	0.10
9400.00	9.50	180.00	9397.79	-777.67	-1555.34	0.00	0.10
9500.00	9.60	180.00	9497.76	-794.49	-1588.98	0.00	0.10
9600.00	9.70	180.00	9597.73	-811.49	-1622.98	0.00	0.10
9700.00	9.80	180.00	9697.70	-828.67	-1657.34	0.00	0.10
9800.00	9.90	180.00	9797.67	-846.03	-1692.06	0.00	0.10
9900.00	10.00	180.00	9897.64	-863.57	-1727.14	0.00	0.10
10000.00	10.10	180.00	9997.61	-881.29	-1762.58	0.00	0.10

1754.50	7.80	61.60	9.60	1746.78
1764.50	8.00	63.50	10.00	1756.69
1774.10	9.50	50.50	9.60	1766.18
1783.70	10.50	45.30	9.60	1775.63
1793.30	10.40	41.40	9.60	1785.07
1803.00	9.80	40.00	9.70	1794.62
1812.40	9.00	44.20	9.40	1803.89
1821.90	7.90	53.70	9.50	1813.29
1831.10	7.60	64.20	9.20	1822.41
1840.70	7.80	70.20	9.60	1831.92
1850.50	8.30	73.70	9.80	1841.62
1860.10	8.40	69.90	9.60	1851.12
1869.80	8.70	67.10	9.70	1860.71
1879.50	9.20	67.80	9.70	1870.30
1889.10	9.30	67.40	9.60	1879.77
1898.80	9.70	65.60	9.50	1889.14
1908.10	9.60	69.20	9.50	1898.51
1917.70	8.90	76.50	9.60	1907.98
1927.30	8.60	83.90	9.60	1917.47
1936.90	9.00	89.60	9.60	1926.96
1946.50	9.80	91.00	9.60	1936.43
1955.80	10.60	89.60	9.30	1945.58
1965.60	10.70	85.70	9.80	1955.21
1975.10	10.40	78.70	9.50	1964.55
1984.50	10.30	74.10	9.40	1973.80
1994.00	9.80	72.70	9.50	1983.15
2004.00	9.10	67.10	10.00	1993.02
2013.60	8.40	64.20	9.60	2002.51
2023.20	7.70	64.20	9.60	2012.01
2032.80	6.90	63.90	9.60	2021.54
2042.40	6.80	68.80	9.60	2031.07
2051.90	6.80	73.00	9.50	2040.50
2061.50	6.90	75.50	9.60	2050.03
2071.00	7.40	72.00	9.50	2059.46
2080.70	6.60	67.40	9.70	2069.09
2090.20	5.20	71.30	9.50	2078.53
2099.80	3.80	72.00	9.60	2088.10
2109.40	3.00	76.90	9.60	2097.69
2118.90	2.60	93.40	9.50	2107.18
2128.50	2.30	108.20	9.60	2116.77
		127.90	9.60	2126.36
		141.60	9.50	2135.86
2157.10	0.50	149.30	9.50	2145.36
2166.60	0.50	121.50	9.50	2154.85
2176.40	1.20	49.80	9.80	2164.65
2185.80	2.00	44.60	9.40	2174.05
2195.20	2.30	49.50	9.40	2183.44
2204.60	2.10	46.30	9.40	2192.84
2214.00	1.90	49.10	9.40	2202.23
2223.60	1.70	53.70	9.60	2211.83
2233.70	1.50	74.10	10.10	2221.92
2243.30	1.40	88.10	9.60	2231.52
2252.80	1.30	102.90	9.50	2241.02
2262.40	1.40	113.80	9.60	2250.61
2271.60	1.60	112.10	9.20	2259.81
2281.20	1.40	108.40	9.60	2269.41
2290.80	1.40	102.20	9.60	2279.00
2300.70	1.60	124.00	9.90	2288.90
2310.30	1.90	149.30	9.60	2298.50
2319.90	2.00	164.10	9.60	2308.09
2329.50	1.50	154.60	9.60	2317.69
2339.10	0.80	138.10	9.60	2327.28
2348.70	0.20	153.50	9.60	2336.88
2358.30	0.60	18.20	9.60	2346.48
2368.00	1.60	10.10	9.70	2356.18
2377.50	2.00	12.20	9.50	2365.68
2386.80	2.60	16.80	9.30	2374.97
2396.40	3.10	24.10	9.60	2384.56
2406.20	3.70	24.50	9.80	2394.34
2415.70	4.10	27.30	9.50	2403.82
2425.30	4.10	23.80	9.60	2413.39
2430.00	3.85	21.56	4.70	2418.08
2444.40	3.30	2.00	14.40	2432.45
2453.90	3.70	350.40	9.50	2441.94
2459.70	3.00	356.70	5.80	2447.73
2469.30	3.60	346.90	9.60	2457.31
2488.40	4.80	64.90	19.10	2476.37
2498.00	4.10	104.00	9.60	2485.95
2507.60	3.40	122.90	9.60	2495.53
2517.10	2.60	154.20	9.50	2505.01
2526.70	3.20	133.50	9.60	2514.60
2536.30	1.90	183.40	9.60	2524.19
2545.80	2.20	215.10	9.50	2533.69
2555.40	2.70	247.40	9.60	2543.28
2565.00	3.50	243.50	9.60	2552.86
2574.60	4.90	244.60	9.60	2562.44
2584.20	5.10	237.60	9.60	2572.00
2593.70	4.31	231.20	9.50	2581.47
2603.30	4.20	240.40	9.60	2591.04
2612.90	3.60	233.00	9.60	2600.62
2622.40	5.50	241.10	9.50	2610.09
2632.00	5.40	242.10	9.60	2619.65
2641.60	5.60	238.30	9.60	2629.20
2651.20	3.00	214.40	9.60	2638.78
2660.80	2.60	167.60	9.60	2648.37
2671.10	2.60	180.30	10.30	2658.65
2680.70	3.10	161.60	9.60	2668.24
2690.20	2.40	178.80	9.50	2677.73
2699.80	2.50	182.00	9.60	2687.32
2709.40	1.80	219.50	9.60	2696.92
2719.00	1.60	210.90	9.60	2706.51
2728.60	3.00	240.40	9.60	2716.11
2738.20	2.40	245.30	9.60	2725.69
2747.80	3.20	243.50	9.60	2735.28
2757.40	3.90	271.30	9.60	2744.87
2767.00	4.10	268.50	9.60	2754.44
2776.60	4.30	285.00	9.60	2764.02
2786.10	4.40	282.60	9.50	2773.49
2795.70	4.80	277.00	9.60	2783.06
2805.30	4.60	275.20	9.60	2792.63
2814.80	4.40	272.40	9.50	2802.10
2853.20	3.30	273.80	38.40	2840.41
2882.00	1.90	331.10	28.80	2869.18
2901.20	2.30	341.30	19.20	2888.37
2929.90	3.90	42.80	28.70	2917.03
2968.30	6.80	44.60	38.40	2955.26
3006.50	4.30	36.70	38.20	2993.28
3011.50	4.00	74.10	5.00	2998.27
3050.00	3.00	80.00	38.50	3036.70
3064.00	3.00	90.00	14.00	3050.68

DIRECTIONAL DATA AS COMPUTED BY BAKER ATLAS

Source File: /dat2a/pass/north44-84_run3/baker.lst

COMPANY: NORTHROCK RESOURCES LTD.
WELL: NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
DATA FILE: splice.xtf
LIST DATE: Fr 19 Mar 2004 11:51
INTERVAL: 2390.00 - 3080.00

DEPMEAS meters	TVDEP meters
2390.0	2378.2
2400.0	2388.2
2410.0	2398.2
2420.0	2408.1
2430.0	2418.1
2440.0	2428.1
2450.0	2438.1
2460.0	2448.1
2470.0	2458.0
2480.0	2468.0
2490.0	2478.0
2500.0	2488.0
2510.0	2497.9
2520.0	2507.9
2530.0	2517.9
2540.0	2527.9
2550.0	2537.9
2560.0	2547.9
2570.0	2557.9
2580.0	2567.8
2590.0	2577.8
2600.0	2587.8
2610.0	2597.7
2620.0	2607.7
2630.0	2617.7
2640.0	2627.6
2650.0	2637.6
2660.0	2647.6
2670.0	2657.6
2680.0	2667.6
2690.0	2677.5
2700.0	2687.5
2710.0	2697.5
2720.0	2707.5
2730.0	2717.5
2740.0	2727.5
2750.0	2737.5
2760.0	2747.5
2770.0	2757.4
2780.0	2767.4
2790.0	2777.4
2800.0	2787.3
2810.0	2797.3
2820.0	2807.3
2830.0	2817.3
2840.0	2827.2
2850.0	2837.2
2860.0	2847.2
2870.0	2857.2
2880.0	2867.2
2890.0	2877.2
2900.0	2887.2
2910.0	2897.2
2920.0	2907.1
2930.0	2917.1
2940.0	2927.1
2950.0	2937.1
2960.0	2947.0
2970.0	2956.9
2980.0	2966.9
2990.0	2976.8
3000.0	2986.8
3010.0	2996.8
3020.0	3006.7
3030.0	3016.7
3040.0	3026.7
3050.0	3036.7
3060.0	3046.7
3070.0	3056.7

BAKER HUGHES

COMPANY	NORTHROCK RESOURCES LTD.	FILE NO:	
WELL	NORTHROCK ET AL SUMMIT CREEK B-44		
FIELD	SUMMIT CREEK	API NO:	
PROVINCE	NORTHWEST TERRITORIES		
LOCATION: LIC: 9211-N046-2-1		ELEVATIONS: KB 586.7 M	UID: 300B446430125450
LSD: 64-30-125-45		DF	TRUE VERTICAL DEPTH
LAT 64 23' 02.351" LONG 125 53' 22.66"		GL 580.5 M	
		DATE 18-MAR-04	

N.E.B. COPY

BAKER HUGHES

Baker Atlas

HDIL

Dual Laterlog

1D Inversion

HDIL 1D Inversion

COMPANY NORTHROCK RESOURCES LTD.

WELL NORTHROCK ET AL SUMMIT CREEK B-44

FIELD SUMMIT CREEK

PROVINCE NORTHWEST TERRITORIES

LOCATION: LIC-1924-1-NWAB-2-1-

LAT 64° 32' 02.35"N LONG 125° 53' 22.69"W

ELEVATIONS: KB 596.7 M DF GL 590.5 M

DATE 18-MAR-04 RIG# 25311

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD

BIT SIZE	FROM	TO
311.0 MM	208.0 M	810.0 M
216.0 MM	810.0 M	2464.0 M
156.0 MM	2464.0 M	3064.0 M

CASING RECORD

SIZE	WEIGHT	GRADE	FROM	TO
339.7 MM	81.1 KG/M	J-55	0.0 M	208.0 M
244.5 MM	59.5 KG/M	L-80	0.0 M	810.0 M
177.8 MM	34.89 KG/M	K-55	0.0 M	2450.0 M

REMARKS

TIME STOP CIRCULATING: 14:00, 18-MAR-04
MAXIMUM DEVIATION 11.6 DEGREES AT 1613.9 METRES.

CREW : B. MACDONALD/ A. MITTLESTAD

LOG ANALYST: NASR HAMMOU

NO-INVASION CUTOFF : GR = 100 API

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
3	1	SHVA	3044XB	10002938	FREE
3	1	CHPA	4430XA	305798	FREE
3	1	YCAL	4209XA	071365	PAD DEVICE Y-AXIS
3	1	TTEM	3081XA	160587	FREE
3	1	COM REM	1514XA	180182	FREE
3	1	DCR	1350XA	185486	FREE
3	1	KNUT	3921XA	168630	FREE
3	1	CN	2446XA	168630	FREE
3	1	ZDL E	2228RA	179923	DECENTRALIZED
3	1	ZDL M	2228MA	168007	PAD DEVICE X-AXIS
3	1	KNUT	3921XA	166627	FREE
3	1	DAL ELEC	1667EA	167639	CENTRALIZED
3	1	MAC BX	1668MA	154294	CENTRALIZED
3	1	MAC ISO	1668PA	154122	CENTRALIZED
3	1	MAC TX	1668BA	171074	CENTRALIZED
3	1	MAC TX ELEC	1668F	188368	CENTRALIZED
3	1	KNUT	3921XA	168223	CENTRALIZED
3	1	HDIL E	1515EA	178565	38MM STANDOFF
3	1	HDIL M	1515MA	167593	38MM STANDOFF

1D Inversion Corrected Data

Project : /data/hammnas/25311_1d_inversion
User : hammnas
Presentation : catusnarv2:/data/hammnas/25311_1d_inversion/hdil_1D_Tnorm.pdf [1:240 Scale]
Plot Interval : 2450 - 3075 Meters

Data File 1 : F1 : catusnarv2:/data/hammnas/25311_1d_inversion/1/final.xtf
Created On : Mar 19 08:01:39 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK B-44
Field : SUMMIT CREEK
File Interval : 2385.97 - 3079.4 Meters
Oct : 1875C

CAL < BIT

Flush

Transition

GAMMA RAY [gr] 0 150 (gAPI)

CALIPER [cal1] 150 300 (mm)

BIT SIZE 150 400 (mm)

SP [sp] -80 20 (mV)

Length of Invasion [l1dn] 400 0 (cm)

[l11dm] 400 0

METERS

[rod1d] -100 100

[rod1d] 100 -100

Invasion Image -100 100

DVL 10 1000

Cool 10 1000

1 100

0.6M MATCHED RESOLUTION RESISTIVITY

10 in. DOI [m2r1] 0.2 2000 (ohm.m)

20 in. DOI [m2r2] 0.2 2000 (ohm.m)

30 in. DOI [m2r3] 0.2 2000 (ohm.m)

60 in. DOI [m2r6] 0.2 2000 (ohm.m)

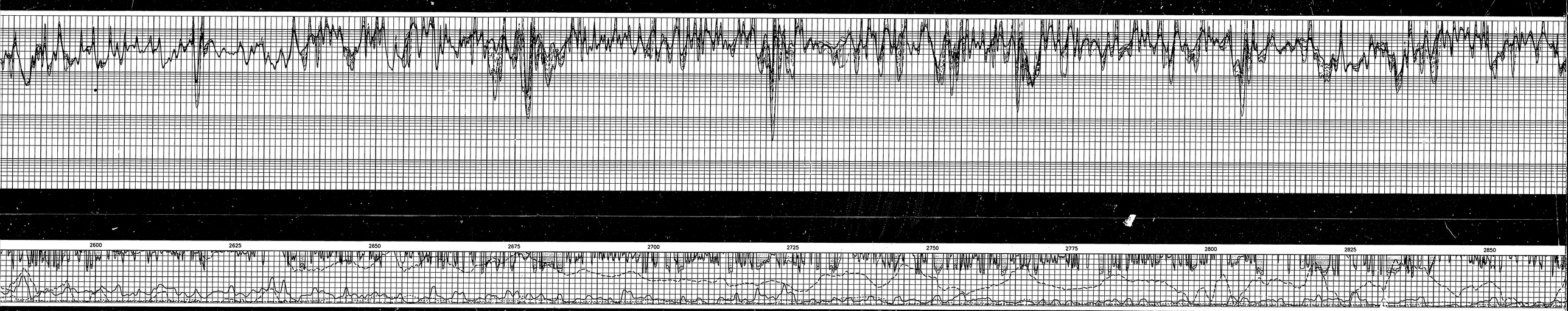
90 in. DOI [m2r9] 0.2 2000 (ohm.m)

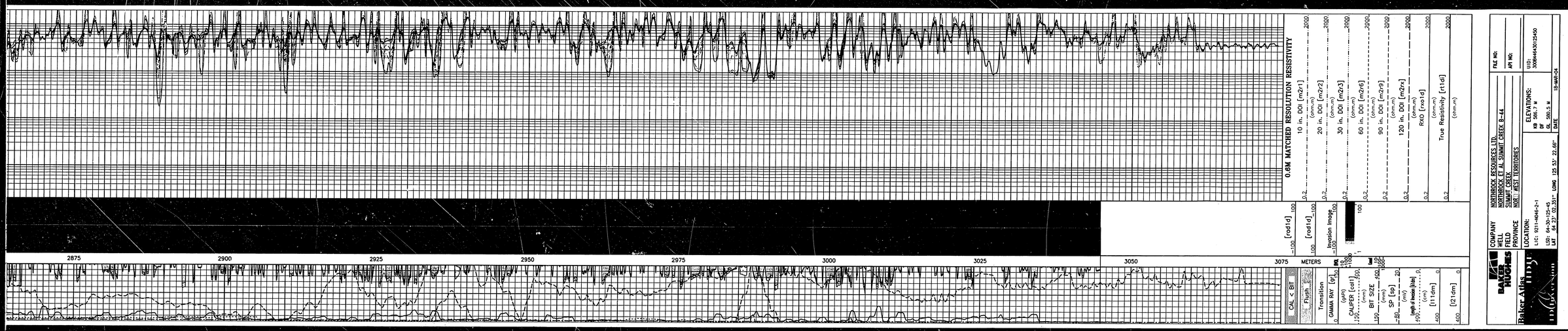
120 in. DOI [m2rx] 0.2 2000 (ohm.m)

RXO [rxo1d] 0.2 2000 (ohm.m)

True Resistivity [rt1di] 0.2 2000 (ohm.m)

2450 2475 2500 2525 2550 2575


2600
2625
2650
2675
2700
2725
2750
2775
2800
2825
2850



COMPANY NORTHROCK RESOURCES LTD.
WELL NORTHROCK ET AL SUMMIT CREEK B-44
FIELD SUMMIT CREEK
PROVINCE NORTH WEST TERRITORIES
LOCATION:
LIC: 9211-H046-2-1
LSD: 04-30-126-15
LAT 64 27' 02.391" LONG 125 53' 22.69"

ELEVATIONS:
KB 586.7 M
DF
GL 580.5 M
DATE 18-MAR-04

FILE NO:
API NO:
UID: 300H046430125450

Baker Atlas

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

SONIC

BAKER HUGHES

MULTIPOLE ARRAY ACOUSTILOG ™
GAMMA RAY LOG
XY CALIPER LOG

Baker Atlas

N.E.B. COPY

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
API NO:	WELL	NORTHROCK ET AL SUMMIT CREEK B-44
	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES

Ver. 3.87
UID:
'000446430125450

LOCATION:
LIC: 9211-N046-2-1

LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 53' 22.66"

OTHER SERVICES
HDIL-QR-3CAL
HDIL-QR-3QAL
CN-DSL-HYDAL
CVL

PERMANENT DATUM	GL	ELEVATION	580.5 M
LOG MEASURED FROM	KB	5.8 M	ABOVE P.D.
DRILL MEAS FROM	KELLY BUSHING		

ELEVATIONS:
KB 586.3 M
GL 580.5 M

DATE			29-JAN-04	
RUN		TRIP	1	
SERVICE ORDER			202951	
DEPTH DRILLER			810.0 M	
DEPTH LOGGER			810.0 M	
BOTTOM LOGGED INTERVAL			805.1 M	
TOP LOGGED INTERVAL			25.0 M	
CASING DRILLER			339.7 M	@339.0 M
CASING LOGGER			207.0 M	
BIT SIZE			311.0 M	
TYPE OF FLUID IN HOLE			GELCHEM	
DENSITY	VISCOSITY		1130.0 G/L	86.0 S
PH	FLUID LOSS		9.5	17.4 M
SOURCE OF SAMPLE			CIRCULATION	
RM AT MEAS. TEMP.			3.7 OHM	@20.5 DEGC
RMF AT MEAS. TEMP.			2.4 OHM	@21.0 DEGC
RMC AT MEAS. TEMP.			3.1 OHM	@21.0 DEGC
SOURCE OF RMF		RMC	MEASURED	MEASURED
RM AT BHT			2.3 OHM	@30.5 DEGC
TIME SINCE CIRC		IN	8.0 HOURS	
MAX. RECORDED			30.5 DEGC	
EQUIP. NO.		LOCATION	8672	NISKU
RECORDED BY			K. SNYDER	
WITNESSED BY			B. MCQUILLAN	

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL USE THEIR BEST JUDGEMENT, BUT BAKER ATLAS INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD

BIT SIZE	FROM	TO
311.0 M	207.0	810.0

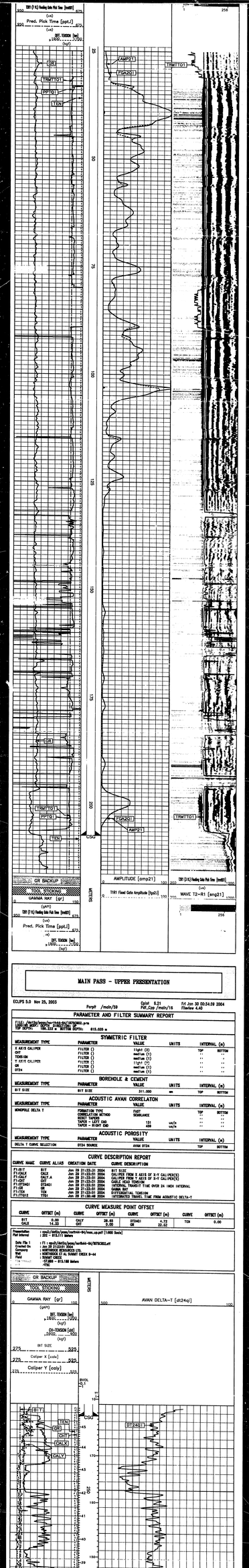
CASING RECORD

SIZE	WEIGHT	FROM	TO
244.5 MM	53.57 KG/M	25.0	207.0

REMARKS

RUN 1 TRIP 1: TIME STOP CIRCULATED 12:00, 29-JAN-04.
ROTARY ELEVATION / DERRICK FLOOR.
MULTIPOLE ARRAY ACOUSTILOG / GAMMA RAY COMBINATION.
WITNESSED BY MR. BRIAN MCQUILLAN (NORTHROCK RESOURCES LTD.).
CALIPER RUN FROM BOTTOM LOGGED INTERVAL TO CASING SHOE.
TRANSMITTER-RECEIVER SPACING USED.
CREW : S. MCDONALD/ A. MITTLESTADT

RUN	TRIP	EQUIPMENT DATA	SERIAL NO.	POSITION
		TOOL		
		GAMMA RAY CARTRIDGE	2	
		GAMMA RAY SONDE	2	
		ACOUSTILOG CARTRIDGE	2	
		ACOUSTILOG SONDE	2	
		CENTRALIZER		
		CENTRALIZER		
		CENTRALIZER



PARAMETER AND FILTER SUMMARY REPORT

FILE: /data/logging/run-2144-04/RECORDS.prm
TOP LOG INT.: 198.324 m BOTTOM LOG INT.: 815.035 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
X AXIS CALIPER	FILTER (1)	light (0)			
CHT	FILTER (1)	medium (1)		"	"
TENSION	FILTER (1)	medium (1)		"	"
Y AXIS CALIPER	FILTER (1)	light (0)		"	"
GR	FILTER (1)	light (0)		"	"
DT24	FILTER (1)	medium (1)		"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
BIT SIZE	BIT SIZE	311.000	mm	TOP	BOTTOM

ACOUSTIC AVAN CORRELATON

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
MONOPOLE DELTA T	FORMATION TYPE	FAST		TOP	BOTTOM
	CORRELATION METHOD	SEMBLANCE		"	"
	RESET TAPERS			"	"
	TAPER - LEFT END	131	us/e	"	"
	TAPER - RIGHT END	459	us/e	"	"

ACOUSTIC POROSITY

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
DELTA T CURVE SELECTION	DT24 SOURCE	AVAN DT24		TOP	BOTTOM

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jun 29 21:23:31 2004	BIT SIZE
F1:CALX	CALX	Jun 29 21:23:31 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:CALY	CALY.A	Jun 29 21:23:31 2004	CALIPER FROM Y AXIS OF X-Y CALIPER(S)
F1:CHT	CHT	Jun 29 21:23:31 2004	CABLE HEAD TENSION
F1:DT24AJ	DT24AJ	Jun 29 21:23:31 2004	ACOUSTIC TRANSIT TIME OVER 24 INCH INTERVAL
F1:GR	GR	Jun 29 21:23:31 2004	GAMMA RAY
F1:TEN	TEN	Jun 29 21:23:31 2004	DIFFERENTIAL TENSION
F1:TTR1	TTR1	Jun 29 21:36:46 2004	INTERPOLATED TRAVEL TIME FROM ACOUSTIC DELTA-T

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CALY	20.85	DT24AJ	4.72	TEN	0.00
CALX	14.33	CHT	0.00	GR	22.22		

Presentation File: /data/logging/run-2144-04/mcm_ca.pef [1:600 Scale]
Data File 1: /f1/ecdt/data/run-2144-04/RECORDS.set
Created On: Jun 29 21:23:31 2004
Well: ANADARKO ET AL WABAMUN CREEK D-44
Field: WAPITI CREEK
Surface Location: 127.888 - 815.188 Meters
NAD83



MAIN PASS - 100-500 DELTA T SCALE - QC PLOT

ECLIPS 5.3 Nov 25, 2003

Purpit /main/59 Cplot 5.21 Fri Jan 30 00:36:21 2004
Pdf_Cpp /main/16 Fileview 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE1: /dat2d/pemsbm/rtsm-04/RTSM002.pro
FILE2: /dat2d/pemsbm/rtsm-04/RTSM002.pro
TOP DEPTH: 184.224 m BOTTOM DEPTH: 813.035 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		"	"
CHT	FILTER ()	medium (1)		"	"
TENSION	FILTER ()	medium (1)		"	"
Y AXIS CALIPER	FILTER ()	light (2)		"	"
GR	FILTER ()	medium (1)		"	"
DT24	FILTER ()	medium (1)		"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
BIT SIZE	BIT SIZE	311.000	mm	TOP	BOTTOM

ACOUSTIC AVAN CORRELATON

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
MONOPOLE DELTA T	FORMATION TYPE	FAST		"	"
	CORRELATION METHOD	SEMBLANCE		"	"
	SEMBLANCE TAPERS			"	"
	TAPER - LEFT END	131	us/m	"	"
	TAPER - RIGHT END	439	us/m	"	"

ACOUSTIC POROSITY

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
DELTA T CURVE SELECTION	DT24 SOURCE	AVAN DT24		TOP	BOTTOM

ACOUSTIC WAVEFORM FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
WAVEFORM FILTER - DELTA T	SURFACE WAVE FILTER	ON		"	"
	LOW FREQ CUTOFF	1500	Hz	"	"
	HIGH FREQ CUTOFF	20000	Hz	"	"

CURVE DESCRIPTION REPORT

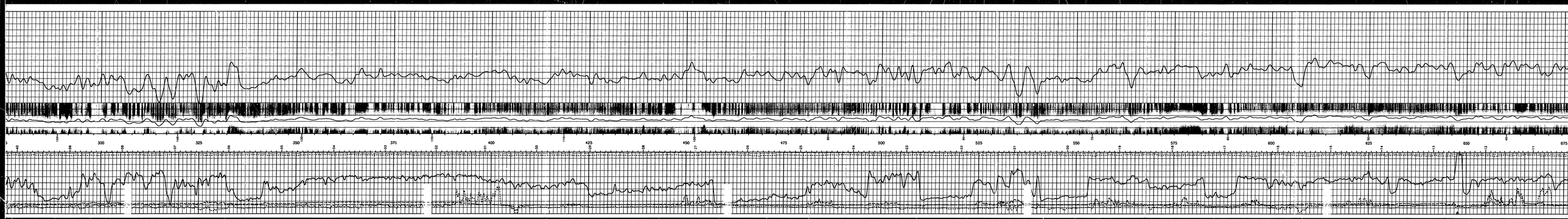
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jan 28 21:25:51 2004	BIT SIZE
F1:CALY	CALY	Jan 28 21:25:51 2004	CALIPER FROM Y AXIS OF X-Y CALIPER(S)
F1:CALX	CALX	Jan 28 21:25:51 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:DT24Q1R	RANGE	Jan 28 21:25:51 2004	RANGE OF DELTA T CORRELATION FOR MONOPOLE COMPRESSIONAL (4 WAVE)
F1:CHT	CHT	Jan 28 21:25:51 2004	CABLE HEAD TENSION
F1:DT24Q1	DT24Q1	Jan 28 21:25:51 2004	INTERVAL TRANSIT TIME OVER 24 INCH INTERVAL
F1:GR	GR	Jan 28 21:25:51 2004	GAMMA RAY
F1:TEN	TEN	Jan 28 21:25:51 2004	DIFFERENTIAL TENSION
F1:TT0Q1	TT01	Jan 28 21:25:51 2004	EXTRAPOLATED TRAVEL TIME FROM ACOUSTIC DELTA-T

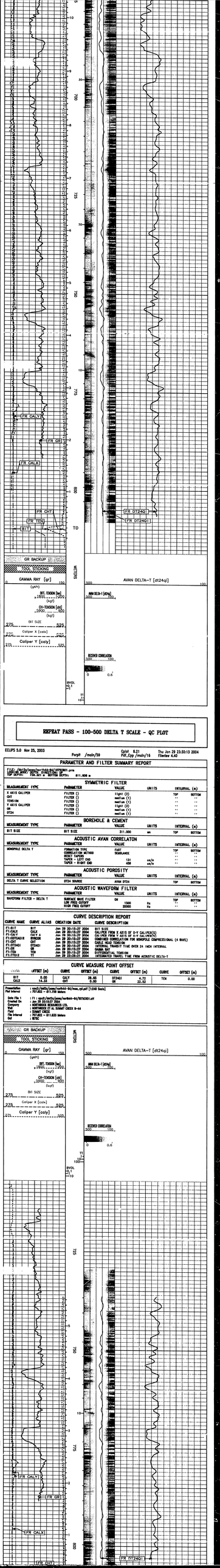
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CALY	38.60	DT24Q1	4.72	TCH	0.00
CALX	14.33	CHT	0.00	GR	22.32		

/dat2d/pemsbm/rtsm-04/mac_main.pdf [1:240 Scale]
-50 > 813.111 Meters

Data File 1 : F1 : /dat2d/data/mac/rtsm-04/RTSM002.elf
Created On : Jan 28 21:25:51 2004
Company : NORTHRIDGE RESOURCES LTD.
Well : NORTHRIDGE ET AL SUMMIT CREEK D-44
Field : SUMMIT CREEK
Top Interval : 177.800 > 813.100 Meters
Cat : RTSC


300
325
350
375
400
425
450
475
500
525
550
575
600
625
650
675



REPEAT PASS - 100-500 DELTA T SCALE - QC PLOT

ECLIPS 5.0 Nov 25, 2003

Paygit /main/59

Cplot 6.21
PdfZpp /main/16

Thu Jan 29 23:30:13 2004
Filedev 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /data/logs/wamsutter/wam44-84/WP00001.pro
COMPANY: BP AMOCO EXPLORATION (U.S.)
TOP DEPTH: 730.021 m BOTTOM DEPTH: 811.606 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
				TOP	BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		**	**
CALX	FILTER ()	medium (1)		**	**
SONIC/GR	FILTER ()	medium (1)		**	**
Y AXIS CALIPER	FILTER ()	light (2)		**	**
GR	FILTER ()	medium (1)		**	**
DT24	FILTER ()	medium (1)		**	**

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
				TOP	BOTTOM
BIT SIZE	BIT SIZE	311.000	mm	**	**

ACOUSTIC AVAN CORRELATON

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
				TOP	BOTTOM
MONOPOLE DELTA T	FORMATION TYPE	FAST		**	**
	CORRELATION METHOD	SEMBLANCE		**	**
	TAPER - LEFT END	131	usec/m	**	**
	TAPER - RIGHT END	439	usec/m	**	**

ACOUSTIC POROSITY

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
				TOP	BOTTOM
DELTA T CURVE SELECTION	DT24 SOURCE	AVAN DT24		**	**

ACOUSTIC WAVEFORM FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
				TOP	BOTTOM
WAVEFORM FILTER - DELTA T	SURFACE WAVE FILTER	GR		**	**
	LOW FREQ CUTOFF	1500	Hz	**	**
	HIGH FREQ CUTOFF	20000	Hz	**	**

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jan 29 23:13:27 2004	BIT SIZE
F1:CALX	CALX	Jan 29 23:13:27 2004	CALIPER FROM X AXIS OF 3-FT CALIPER(S)
F1:CALY	CALY A	Jan 29 23:13:27 2004	CALIPER FROM Y AXIS OF 3-FT CALIPER(S)
F1:CDTCOR1R	RMSCOR	Jan 29 23:13:27 2004	COMBINED CORRELATION FOR MONOPOLE COMPRESSIONAL (4 WAVE)
F1:CHT	CHT	Jan 29 23:13:27 2004	CABLE HEAD TENSION
F1:DT24QJ	DT24QJ	Jan 29 23:13:27 2004	COMPRESSIONAL TRANSIT TIME OVER 24 INCH INTERVAL
F1:GR	GR	Jan 29 23:13:27 2004	GAMMA RAY
F1:TEN	TEN	Jan 29 23:13:27 2004	DIFFERENTIAL TENSION
F1:TT0212	TT	Jan 29 23:13:21 2004	INTEGRATED TRAVEL TIME FROM ACOUSTIC DELTA-T

CURVE MEASURE POINT OFFSET

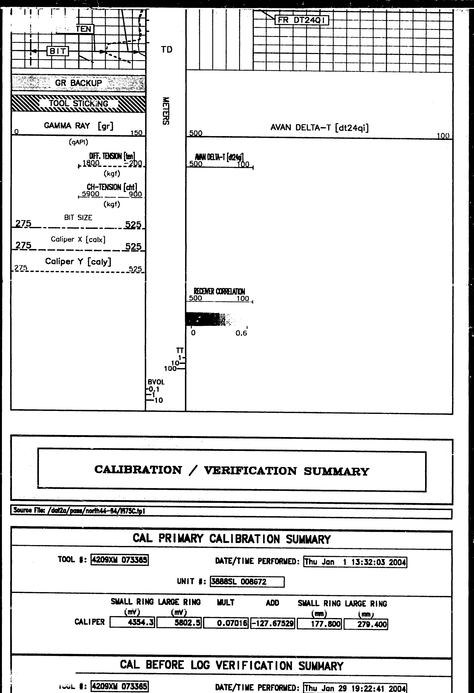
Units: Offset (m)

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CALY	28.65	DT24QI	4.72
CALX	14.33	CHT	0.00	GR	22.52
				TEN	0.00

Presentation : /mnt/data/logs/wamsutter/wam44-84/WP00001.pro
Plot Interval : 707.822 - 811.736 Meters

Data File 1 : F1 : gpit/data/logs/wamsutter/wam44-84/RPS0001.dlis
Logged On : 11-NOV-2003 00:00:00
Contractor : SCHLUMBERGER WELL SERVICES LTD.
Well : NORTHWOOD ET AL SUMMIT CREEK D-44
Field : SUMMIT CREEK
File Interval : 707.822 - 811.839 Meters
Filed : 03/DEC

GR BACKUP
GAMMA RAY [gr]
0
150
(gAPI)
DIT_TENSION [lbs]
1000
2000
(lvqf)
CH-TENSION [ah]
2000
500
(lvqf)
BIT SIZE
275
525
Caliper X [calx]
275
525
Caliper Y [caly]
275
525
AVAN DELTA-T [dt24qj]
500
100
AVAN DELTA-T [qf24q]
500
100
RECOMB CORRELATION
500
100
0
0.6
SVOL
1
0
FR CALY
FR GR
FR CALX
FR CHT
FR TEN
BIT
TD
FR DT24QJ
FR DT24QI
METERS
700
725
750
775
800



CALIBRATION / VERIFICATION SUMMARY

Source File: /dat2c/pass/north44-54/f175C.tp1

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 4209XM 073365 DATE/TIME PERFORMED: Thu Jan 1 13:32:03 2004

UNIT #: 3888SL 008672

	SMALL RING (mV)	LARGE RING (mV)	MULT	ADD	SMALL RING (mm)	LARGE RING (mm)
CALIPER	4354.3	5802.5	0.07016	-127.67529	177.800	279.400

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 4209XM 073365 DATE/TIME PERFORMED: Thu Jan 29 19:22:41 2004

UNIT #: 3888SL 008672

	I.D. (mV)	MULT	ADD	I.D. (mm)
CALIPER	6345.2	0.07016	-125.15389	320.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 4209XM 073365 DATE/TIME PERFORMED: Thu Jan 29 21:21:41 2004

UNIT #: 3888SL 008872

	I.D. (mV)	MULT	ADD	I.D. (mm)
CALIPER	6396.0	0.07016	-125.15389	323.583
				327.300 332.700

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003

UNIT #: 3880TA 006516 CALB JIG #: 4702NK da-032

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	186.91	1069.33	872.5	0.172	33.77	183.77	150
			870.0 880.0				

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 3880TA 006516 VERI JIG #: 4702NK da-032

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	193.49	1068.33	0.172	33.25	183.28	150.00
					140.00 160.00	

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Thu Jan 29 15:30:39 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	80.82	939.91	0.172	10.45	161.53	151.08
					140.00 160.00	

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Thu Jan 29 22:32:54 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	98.07	953.18	0.172	16.85	163.81	146.96
					141.08 161.96	

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 11:37:45 2003

UNIT #: 3880TA 006516

	SMALL RING (raw)	LARGE RING (raw)	MULT	ADD	SMALL RING (mm)	LARGE RING (mm)
CALIPER	1884.1	3180.6	0.15673	-117.49430	177.800	381.000

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 19:22:53 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	2827.3	0.15673	-123.12170	320.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 21:21:44 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	2832.9	0.15673	-123.12170	320.676
				327.300 332.700

Baker Atlas

COMPANY: NORTHROCK RESOURCES LTD.
WELL: NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
PROVINCE: NORTHWEST TERRITORIES

FILE NO:
API NO:

LOCATION:
LIC: 9211-MD46-2-1
LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 53' 22.68"

ELEVATIONS:
KB 586.3 M
DF
GL 580.5 M

UID:

DATE 29-JAN-04

Baker Atlas

MULTIPOLE ARRAY ACOUSTILOG™
GLOVER BAY 29E
L.L.[UPPER LOG

N.E.B. COPY

FILE NO:	
API NO:	
COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL. SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

Rev. 3.07
SITE: 300N940X312S402

LOCATION:
LAT: 57° 10' 40.96"-2-1
LONG: 125° 15' 22.68"
LOC: 1A-3G-72S-4W

OTHER SERVICES
<SEC=29-72-4>
<SEC=29-72-4>
<TWP=29-72-4>
<RGE=29-72-4>

PERMANENT DATUM: G.L. ELEVATION: 580.3 K
LOG MEASURED FROM: K.B. 5.2 M ABOVE P.D.
DRILL MEAS. FROM: K.B.

ELEVATIONS:
K.B. 585.7 M
D.F. M
G.L. 580.3 M

DATE	19-MAR-04		
RUN	1		
SERVICE ORDER	200062		
DEPTH DRILLER	2064.3 M		
DEPTH LOGGER	2064.7 M		
BOTTOM LOG INTERVAL	2064.7 M		
TOP LOGGED INTERVAL	1747.7 M		
CASING DRILLER	177.8 MM @ 240.0 M	@	
CASING LOGGER	244.7 M		
BIT SIZE	156.0 MM		
TYPE OF FLUID IN HOLE	GEL CHEM		
SALINITY	1.0 PPM	N/A	
DENSITY	1.01 KG/M3	8.5 LB/G	
SOURCE OF SAMPLE	CIRCULATION		
RM AT MEAS. TEMP.	0.1 OHM @ 18.0 DEGC	@	
RMF AT MEAS. TEMP.	0.1 OHM @ 18.0 DEGC	@	
RMC AT MEAS. TEMP.	0.1 OHM @ 18.0 DEGC	@	
SOURCE OF RM	MEAS.	MEASURED	MEASURED
RM AT BHT	0.1 OHM	@ 65.0 DEGC	@
TIME SINCE CIRC.	12.0 HOURS		
MAX. RECORDED T.	65.0 DEGC		
EQUIPMENT NO.	TEN	5139	
RECORDED BY	L. HOOK		
WITNESSED BY	L. HOOK		

RESULTS, STATEMENTS, INTERPRETATIONS AND RECOMMENDATIONS CONTAINED IN THIS REPORT ARE THE BEST JUDGEMENT OF BAKER ATLAS (ALL ERRORS AND OMISSIONS EXCEPTED) BUT BAKER ATLAS AND ITS OFFICERS AND EMPLOYEES ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATION AS TO THE PRODUCTIVITY, PROPER OPERATION OR PROFITABLENESS OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAND IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON. THIS REPORT IS SUBJECT TO BAKER ATLAS' STANDARD TERMS AND CONDITIONS AS SET OUT IN ITS CURRENT PRICE SCHEDULE.

CASING RECORD

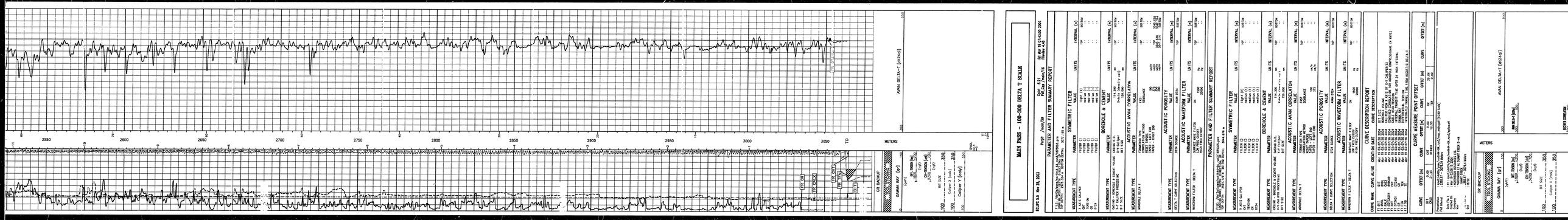
	SIZE	WEIGHT	GRADE	FROM	TO
SURF. STRING	177.8 MM	34.23 KG/M	J-55	0.0 M	240.0 M
PROD. STRING					
LINER					
LINER					

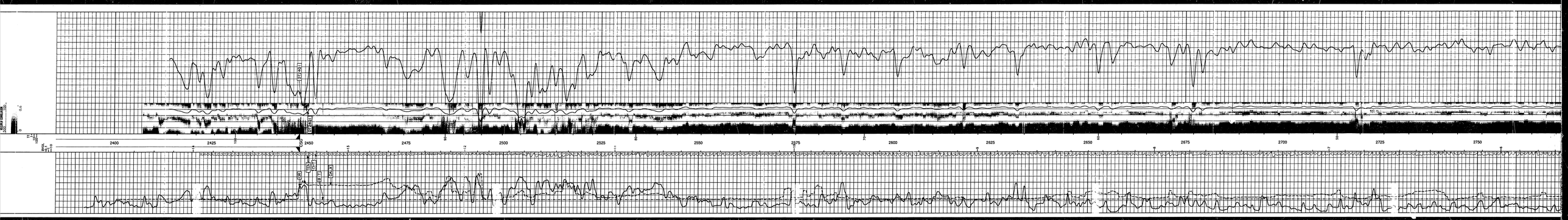
BOREHOLE RECORD

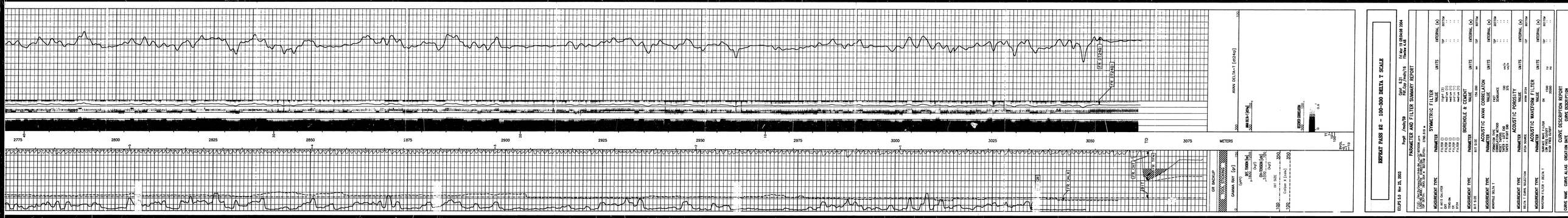
	BIT SIZE	FROM	TO
RUN 1	156.0 MM	240.0 M	2064.7 M
RUN 2			
RUN 3			

REMARKS

RUN 1 TOP: 1747.7 M
DRILLER'S TD: 2064.3 M
LOGGER'S TD: 2064.7 M
DRILLING FLUID: GEL CHEM
MAX HOLE DEVIATION: 0.5 DEGS @ 1900.0 M
MAX DOGLEG SEVERITY: 0.5 DEGS/30.0 M @ 1900.0 M
RUN 1 LOGGED WITH 1 PASS ACOUSTILOG, 1 PASS CALIPER, 1 PASS GAMMA RAY


2550
2600
2650
2700
2750
2800
2850
2900
2950
3000
3050
TD
METERS
AVAN DELTA-T (dt24q)
GAMMA RAY (gr)
0
150
ON BACKUP
CALIPER (cal)
6
16
Caliper X (cal)
Caliper Y (cal)
100
350
BIT SIZE
BVTL
BVTU
FR_CAL1
FR_CAL2
FR_TRL
FR_TRU
Cable 27.47 (m)
MAIN PASS - 100-300 DELTA T SCALE
ECLIPS 5.5 Nov 25, 2003
Depth Rel.Corr.Prods/ns
Dpt Rel: 9.97-4139.39m
Prefer 4.46
PARAMETER AND FILTER SUMMARY REPORT
SYMETRIC FILTER
MEASUREMENT TYPE
PARAMETER
UNITS
INTERVAL (m)
X AXIS CALIPER
FILTER (1)
FILTER (2)
DELTA T
FILTER (1)
FILTER (2)
BOREHOLE & CEMENT
CASING O.D.
CEMENT VOLUME
ACOUSTIC AVAN CORRELATN
CONNECTION TYPE
SEARCH WINDOW
TAPER - EDGE TAB
ACOUSTIC POROSITY
MATRIX TRAVEL TIME
ACOUSTIC WAVEFORM FILTER
LOW PASS CORNER
HIGH PASS CORNER
CURVE DESCRIPTION REPORT
CURVE DESCRIPTION
CURVE NAME
CURVE ALIAS
DEPTH TOP
DEPTH BOTTOM
CURVE DESCRIPTION
CURVE SPECIFICATIONS
CURVE
OFFSET (m)
CURVE
OFFSET (m)
Permanent
Real-time
Measured
Computed
Estimated
Other
Plotted by: Schlumberger Eclipse 5.5 (Nov 25 2003) on ECLIPS-5-44
Data from well file: C:\Program Files\Schlumberger\Eclipse\Data\Wells\Well-44.wls
Well: 9.97-4139.39 m
Bottom hole: 9.97-4139.39 m
Drilled: Dec 31 1899
Logged: Dec 31 1899
Depth reference: KB
Elevations: KB: 0.00 m
DF: 0.00 m
GL: 0.00 m
Permanent datum: MEAN SEA LEVEL
Log measured from: KB, 0.00 m above perm. datum
Drilling measured from: KB
Run number: 1
Depth control: DRILLER'S DEPTH
Bit size: 311.1 mm
Casing: CASING 1 @ 344.69 m
Fluid in hole: WATER
Density: 1.00 g/cm3
Salinity: 0 ppm
Source of sample: FLOWLINE
Rm @ measured temp: 0.000 ohmm @ 0.00 degC
Rmf @ measured temp: 0.000 ohmm @ 0.00 degC
Rmc @ measured temp: 0.000 ohmm @ 0.00 degC
Source of Rmf/Rmc: MEASURED
Rm @ BHT: 0.000 ohmm @ 0.00 degC
Time since circulation: 0.00 hr
Max rec temp: 0.00 degC
Equipment: SLB 3944 Truck
Recorded by: SCHLUMBERGER
Witnessed by: SCHLUMBERGER
Run 1
9.97
4139.39
311
344.69
0.00
0.00
0.00
25.64
2.50
METERS
AVAN DELTA-T (dt24q)
100
300
ARRIVED 1 (Amp)
ARRIVED CORRELATION
RECEIVED CORRELATION


2400
2425
2450
2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2725
2750
07:45:11
07:50:11
07:55:11
08:00:11
08:05:11
08:10:11
08:15:11
08:20:11
08:25:11
08:30:11
08:35:11
08:40:11
08:45:11
08:50:11
08:55:11
09:00:11
09:05:11
09:10:11
09:15:11
09:20:11
09:25:11
09:30:11
09:35:11
09:40:11
09:45:11
09:50:11
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04:40:11
04:45:11
04:50:11
04:55:11
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05:15:11
05:20:11
05:25:11
05:30:11
05:35:11
05:40:11
05:45:11
05:50:11
05:55:11
06:00:11
06:05:11
06:10:11
06:15:11
06:20:11
06:25:11
06:30:11
06:35:11
06:40:11
06:45:11
06:50:11
06:55:11
07:00:11
07:05:11
07:10:11
07:15:11
07:20:11
07:25:11
07:30:11
07:35:11
07:40:11



REPEAT PASS #2 - 100-800 DELTA T SCALE

ECLIPS 5.0 Nov 25, 2003

Prog#: /mnt/p

Plotted: 19-Feb-2004 08:44

Depth Scale 1/5

PARAMETER AND FILTER SUMMARY REPORT

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m)
BOREHOLE & CEMENT			TOP BOTTOM
BIT SIZE	156.000	mm	: :

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m)
ACOUSTIC ARAY CORRELATION			TOP BOTTOM
BOREHOLE DELTA T	CORRECTION TYPE		: :
	CORRELATION METHOD	FAST	: :
	TAPER LENGTH	100	: :
	TAPER - LEFT OR RIGHT	n/a	: :
	SEARCH WINDOW	n/a	: :

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m)
ACOUSTIC POROSITY	VALUE		TOP BOTTOM
DELTA T SONIC POROSITY	MATRIX DELTA T	us/ft	: :

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m)
ACOUSTIC WAVEFORM FILTER	VALUE		TOP BOTTOM
WAVEFORM FILTER - DELTA T	PARAMETER		: :
	LOW FREQ ROLLOFF	2K	1000 Hz : :
	HIGH FREQ ROLLOFF		5000 Hz : :

MEASUREMENT TYPE	PARAMETER	UNITS	INTERVAL (m)
ACOUSTIC SYMMETRIC FILTER	VALUE		TOP BOTTOM
DELTA T	FILTER (T)		: :
	FILTER (1)		: :
	FILTER (2)		: :
	FILTER (3)		: :
	FILTER (4)		: :

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE SOURCE

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
FI:BIT	BIT	Mar 19 05:11:43 2004	BIT SIZE
FI:CALS	CALX	Mar 19 05:11:43 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
FI:FCDTC4018	SYMCOR	Mar 19 05:11:43 2004	COMBINED CORRELATION FOR MONOPOLE COMPRESSIONAL (4 WAVE)
FI:CHT	CHT	Mar 19 05:11:43 2004	CABLE HEAD TENSION
FI:DT24Q1	DT24Q1	Mar 19 05:11:43 2004	INTERVAL TRANSIT TIME OVER 24 INCH INTERVAL
FI:GR	GR	Mar 19 05:11:43 2004	GAMMA RAY
FI:TEN	TEN	Mar 19 05:11:43 2004	DIFFERENTIAL TENSION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CHT	0.00	GR	29.64		
CALX	21.45	DT24Q1	12.50	TEN	0.00		

Presentation Plot Interval : cpu2:/data/pass/north44-54_run3/mac_rpt.pdf [1:240 Scale]
: 2810.81 – 2782.21 Meters

Data File 1 : cpu2:/data/pass/north44-54_run3/81TC05.xtf
Created On : Mar 19 05:11:43 2004
Company : NORTHROCK RESOURCES LTD.
Field : SUMMIT CREEK
Well : NORTHROCK ET AL SUMMIT CREEK D-44
Flle Interval : 2810.81 – 2782.21 Meters
Out : 81TC

GR BACKUP
CALX
GAMMA RAY [gr]
0 150
(gAPI)
BIT, TENSION [lbs]
1500 2200
(kgf)
CHI-TENSION [cbl]
1500 2200
(kgf)
BIT SIZE
100 350
Caliper X [cala]
100 350

AVAN DELTA-T [dt24qj]
300 100
AVAN DELTA-T [dt24qj]
500 150
BCORR CORRELATION
500 100
0 0.6

2825
2850
2875
2900
2925
2950
2975
3000
3025
3050
3075
3100
3125
3150
3175
3200
3225
3250
3275
3300

CALX
DT24Q1
CHT
TEN
BIT

GR BACKUP
GAMMA RAY [gr]
0 150
(gAPI)
BIT, TENSION [lbs]
1500 2200
(kgf)
CHI-TENSION [cbl]
1500 2200
(kgf)
BIT SIZE
100 350
Caliper X [cala]
100 350

AVAN DELTA-T [dt24qj]
300 100
AVAN DELTA-T [dt24qj]
500 150
BCORR CORRELATION
500 100
0 0.6

REPEAT PASS - 100-300 DELTA T SCALE

ECLIPS 5.0 Nov 25, 2003 — Cplot 6.21 Fri Mar 19 05:06:04 2004
Forpit /main/59 Pdf_Cop /main/16 Flowlev 4.48

PARAMETER AND FILTER SUMMARY REPORT

File: /data/pass/northdd-54_run3/81TC03.prn
Top Depth: 2825.00 ft Bottom Depth: 3077.185 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (n)
X-Y CAL CALIPER	FILTER (1)	light (1)	mm	TOP BOTTOM
CHT	FILTER (1)	medium (1)	--	-- --
TENSION	FILTER (1)	medium (1)	--	-- --
GR	FILTER (1)	medium (1)	--	-- --
DT24	FILTER (1)	medium (1)	--	-- --

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (n)
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP BOTTOM
X-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density cal)	--	-- --
BIT SIZE	BIT SIZE	156.000	mm	-- --

ACOUSTIC AVAN CORRELATON

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (n)
MONOPOLE DELTA T	FORMATION TYPE	FAST		TOP BOTTOM
	CORRELATION METHOD	SEMBLANCE		-- --
	RESET WATERS			-- --
	TAPLN - LEFT END	100	us/m	2243.618
	TAPLN - RIGHT END	300	us/m	3045.638 3243.618
		400	us/m	3547.374 BOTTOM

ACOUSTIC POROSITY

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (n)
DELTA T CURVE SELECTION	DT24 SOURCE	AVAN DT24		TOP BOTTOM

ACOUSTIC WAVEFORM FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (n)
WAVEFORM FILTER - DELTA T	SURFACE WAVE FILTER	ON		TOP BOTTOM
	LOW FREQ CUTOFF	1500	Hz	-- --
	HIGH FREQ CUTOFF	20000	Hz	-- --

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
FI:BIT	BIT	Mar 19 02:08:15 2004	BIT SIZE
FI:VOL	VOL1	Mar 19 02:08:15 2004	BOREHOLE VOLUME
FI:CALS	CALX	Mar 19 02:08:15 2004	CALIPER FROM X AXIS OF X-Y CAL(IPER)(S)
FI:FCDTC4018	SYMCOR	Mar 19 02:08:15 2004	COMBINED CORRELATION FOR MONOPOLE COMPRESSIONAL (4 WAVE)
FI:CHT	CHT	Mar 19 02:08:15 2004	CABLE HEAD TENSION
FI:DT24Q1	DT24Q1	Mar 19 02:08:15 2004	INTERVAL TRANSIT TIME OVER 24 INCH INTERVAL
FI:GR	GR	Mar 19 02:08:15 2004	GAMMA RAY
FI:TEN	TEN	Mar 19 02:08:15 2004	DIFFERENTIAL TENSION
FI:TT01	TT	Mar 19 02:08:15 2004	INTEGRATED TRAVEL TIME FROM ACOUSTIC DELTA-T

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CHT	0.00	GR	29.64		
CALX	21.45	DT24Q1	12.50	TEN	0.00		

Presentation Plot Interval : cpu2:/data/pass/north44-54_run3/mac_rpt.pdf [1240 Scale]
: 2928.0 – 3079.39 Meters

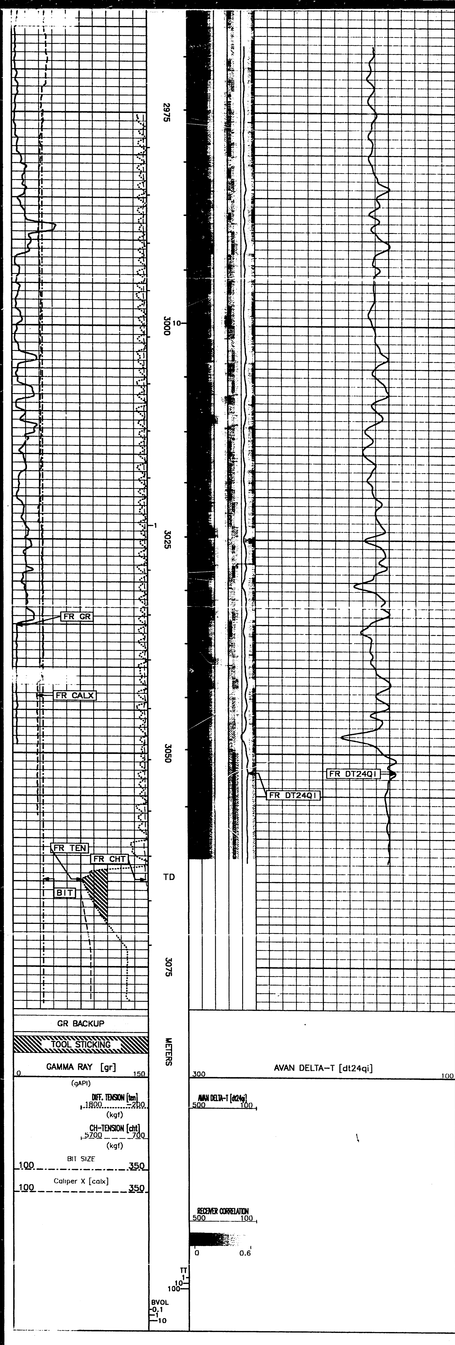
Data File 1 : cpu2:/data/pass/north44-54_run3/81TC03.xtf
Created On : Mar 19 02:08:15 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK D-44
Field : SUMMIT CREEK
Flle Interval : 2940.35 – 3079.85 Meters
Out : 81TC

GR BACKUP
CALX
GAMMA RAY [gr]
0 150
(gAPI)
BIT, TENSION [lbs]
1500 2200
(kgf)
CHI-TENSION [cbl]
1500 2200
(kgf)
BIT SIZE
100 350
Caliper X [cala]
100 350

AVAN DELTA-T [dt24qj]
300 100
AVAN DELTA-T [dt24qj]
500 150
BCORR CORRELATION
500 100
0 0.6

TT
150
BVOL
10.1
110

2950



CALIBRATION / VERIFICATION SUMMARY

Source File: /dat2a/pass/north44-84_run3/8375C.tp1

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003

UNIT #: 3880TA 006516 CALB JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	BACKGROUND CALBRTR OFF (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR (gAPI)	CALBRTR (gAPI)
GR	196.51	1089.33	872.8	0.172	33.77	183.77	150

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 3880TA 006516 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	BACKGROUND CALBRTR OFF (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	193.49	1066.33	0.172	33.25	183.26	150.00

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Mon Mar 15 10:29:02 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	BACKGROUND CALBRTR OFF (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	89.84	996.82	0.172	15.44	171.31	155.87

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Fri Mar 19 07:03:16 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	BACKGROUND CALBRTR OFF (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	97.93	978.22	0.172	16.83	167.77	150.94

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 188007 DATE/TIME PERFORMED: Tue Dec 23 11:37:49 2003

UNIT #: 3880TA 006516

	SMALL RING (raw)	LARGE RING (raw)	MULT	ADD	SMALL RING (mm)	LARGE RING (mm)
CALIPER	1884.1	3180.6	0.15673	-117.49430	177.800	381.000

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 188007 DATE/TIME PERFORMED: Fri Mar 19 01:49:54 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	1815.2	0.15673	-124.49592	160.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 188007 DATE/TIME PERFORMED: Fri Mar 19 04:58:45 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	1801.5	0.15673	124.49592	157.852

BAKER HUGHES

Baker Atlas

COMPANY NORTHROCK RESOURCES LTD.
WELL NORTHROCK ET AL SUMMIT CREEK B-44
FIELD SUMMIT CREEK
PROVINCE NORTHWEST TERRITORIES

LOCATION:
LIC: 9711-N046-2-1
LSD: 44-30-125-45
LAT 64 23' 02.351" LONG 125 31' 22.66"

ELEVATIONS.
KB
DF
GL
DATE

BAKER HUGHES

Baker Atlas

TRUE VERTICAL DEPTH
MULTIPOLE ARRAY ACOUSTILOG™
GAMMA RAY IN
CASING LOG

N.E.B. COPY

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
DATE	WELL	NORTHROCK ET AL SUMMIT CREEK D-44
API NO:	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES

Ver: 3.87
UWI: 300N44A3215A00
TRUE VERT.LOG DEPTH

LOCATION:
L/C: 5011-N044-3-1
LSD: 04-32D-125-4W5
LAT 64 22' 22.301" LONG 125 51' 22.06"

OTHER SERVICES
HDLL-GR-CAL
MAC-GR-CAL
DSN-SDL-GR-CAL
CSAT-GR-CCL-GR-SCAL
CCL

PERMANENT DATUM	SL	ELEVATION	580.3 M
LOG MEASURED FROM	KB	6.2 M	ABOVE PERM DATUM
DRILL MEAS. FROM	KELLY BUSHING		

ELEVATIONS:
KB 586.7 M
DF
GL 580.5 M

DATE	13-MAR-04		
RUN	ONE	TWO	THREE
CASING DRILLER	2328.0		
DEPTH DRILLER	2364.0 M	3050.0 M	
DEPTH LOGGER	2364.0 M	3051.0 M	
BTM LOGGED INTERVAL	2347.0 M	3050.0 M	
TOP LOGGED INTERVAL	2037.0 M	2429.0 M	
CASING DRILLER	177.8 @	9 2429.0 M @	9 2429.0 M @
CASING LOGGER	2427.0 M	2429.0 M	
BIT SIZE	156.0 M	156.0 M	
TYPE OF FLUID IN HOLE	GLOBAL		
DENSITY / VISCOSITY	1.20 G/C3	56.0 S	
PH	FLUID LOSS	10.0 C3	6.4 ML
SOURCE OF SAMPLE		CIRCULATION	
RM @ MEAS. TEMP		0.5 OHMM	@ 19.0 DEGC
RMF @ MEAS. TEMP		0.5 OHMM	@ 19.0 DEGC
RMC @ MEAS. TEMP		0.5 OHMM	@ 19.0 DEGC
SOURCE OF RMF	RMC	MEASURED	
RM @ BHT		0.5 OHMM	@ 90.7 DEGC
TIME SINCE CIRC	2H	12.0 HOURS	
MAX. RECORDED TEMP.		90.7 DEGC	
EQUIP. NO.	5729	11392	
RECORDED BY		FLOOD	
WITNESSED BY		J. HARDER	

I ACKNOWLEDGE RECEIPT OF LOGS AND SUPPLIED THEM WITH ORIGINAL REPRODUCIBLES OF ALL LOGS REQUESTED. I UNDERSTAND THAT THE INTERPRETATIONS CONTAINED THEREIN ARE THE OPINIONS OF BAKER ATLAS AND ARE SUBJECT TO THE TERMS AND CONDITIONS AS SET OUT IN OUR CONTRACT. NO WARRANTY OR GUARANTEE IS MADE, EITHER EXPRESSED OR IMPLIED, AS TO THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. BAKER ATLAS SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES.

RUN 1 TOP: 2.1

RUN 2 TOP: 2.1

RUN 3 TOP: 2.1

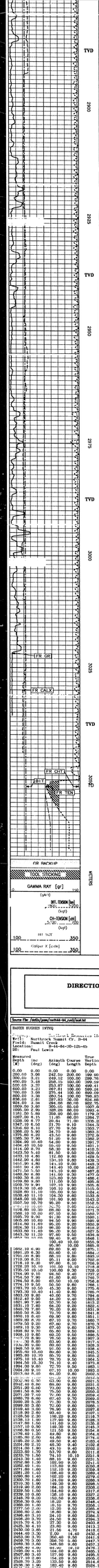
RUN	RECEIVED	RETURNED
1		
2		
3		

RUN	RECEIVED	RETURNED
1		
2		
3		

REMARKS

THE ACOUSTILOG HAS BEEN RUN IN CASING AFTER CASING WAS CEMENTED IN PLACE.
THE CASING WAS CEMENTED WITH 1000 SACKS OF CLASS G CEMENT.
THE CEMENT WAS CIRCULATED TO SURFACE.
THE CASING WAS PRESSURE TESTED TO 2000 PSI AFTER CEMENTING.
THE CASING WAS PERFORATED AT 2429 M.
THE CASING WAS PRESSURE TESTED TO 2000 PSI AFTER PERFORAT


TVD
2500
2525
TVD
2550
2575
TVD
2600
2625
TVD
2650
2675
TVD
2700
2725
TVD
2750
2775
TVD
2800
2825
TVD
2850
2875



DIRECTIONAL DATA AS SUPPLIED BY CUSTOMER

Source File: /data/pwa/wells/44-pad/44.pad

BAKER HUGHES INTEQ

Company: Calvert Demonstration Ltd
Well: Northrock Summit Cr. B-44
Field: Summit Creek
API#: 100-44-84-20-125-45
Loc: Paul Lewis

Co. Man: Kevin Any
Sta: Akita 10

MWD: Hampton Isabel

Measured Depth [m]	Inc [deg]	Azimuth Course [deg]	Course Length	True Vertical Depth	Closure COORDINATES
0.00	0.00	0.00	0.00	0.00	
300.00	3.00	248.59	300.00	299.93	
350.00	3.21	249.12	50.00	349.76	
400.00	3.48	252.15	100.00	399.59	
450.00	3.27	257.87	100.00	449.41	
500.00	3.22	260.81	100.00	499.24	
700.00	3.09	270.44	100.00	599.09	
650.00	3.39	280.54	100.00	648.93	
600.00	3.81	287.83	50.00	824.68	
750.00	3.67	289.03	100.00	749.01	
1809.00	3.66	305.00	59.00	1007.56	
1995.00	2.89	329.28	86.00	1092.66	
1987.00	0.15	11.66	92.00	1094.72	
1987.00	0.15	11.66	0.00	1094.72	
1928.00	0.77	20.04	71.00	1936.08	
1947.00	0.54	21.76	9.00	1944.32	
1956.00	0.10	21.76	9.00	1953.77	
1965.00	0.10	24.78	9.00	1963.77	
1975.00	0.20	43.50	9.00	1973.98	
1985.00	0.36	51.00	9.00	1983.98	
1994.00	0.50	54.00	9.00	1992.98	
1404.00	10.00	66.00	9.00	1401.10	
1414.00	0.70	58.30	9.00	1410.57	
1424.00	0.80	70.00	9.00	1420.57	
1433.00	0.80	110.00	9.00	1429.56	
1442.00	0.80	124.10	9.00	1438.33	
1451.00	0.80	141.10	9.00	1445.30	
1461.00	1.60	143.40	10.00	1456.27	
1470.00	1.60	141.50	9.00	1465.24	
1480.00	0.80	141.50	10.00	1475.22	
1489.00	0.20	121.60	9.00	1484.48	
1499.00	0.20	121.60	10.00	1494.48	
1509.00	0.30	107.10	10.00	1504.48	
1519.00	10.40	105.10	9.00	1515.36	
1528.00	11.10	100.50	9.00	1524.46	
1538.00	10.00	97.10	10.00	1534.32	
1548.00	10.90	101.90	9.00	1543.96	
1557.00	10.70	96.80	9.00	1552.58	
1568.00	10.00	96.50	9.00	1562.93	
1578.00	10.10	96.50	10.00	1572.93	
1588.00	10.00	97.10	10.00	1582.72	
1598.70	9.00	91.30	9.00	1592.18	
1607.00	9.00	90.50	9.00	1600.82	
1614.00	11.69	94.00	9.00	1609.46	
1624.30	11.58	96.20	9.00	1619.35	
1633.00	11.49	96.10	9.00	1627.56	
1643.00	11.20	97.60	9.50	1636.88	
1652.70	11.00	97.80	9.50	1646.38	
		100.40	10.00	1656.08	
		95.90	10.00	1665.97	
1676.10	9.40	93.00	9.00	1675.78	
1684.00	9.30	93.80	9.00	1684.18	
1701.00	8.80	88.10	9.80	1693.07	
1710.00	8.21	90.11	9.00	1702.09	
1719.10	9.20	91.10	9.10	1711.27	
1729.00	10.10	101.50	9.90	1720.97	
1738.00	10.10	100.80	9.00	1730.00	
1744.00	9.10	94.50	9.40	1737.39	
1753.00	8.70	93.50	9.00	1746.14	
1764.00	8.60	93.50	9.00	1754.89	
1774.10	9.50	96.50	9.80	1763.18	
1783.00	10.60	91.30	9.80	1773.43	
1793.00	10.50	91.30	9.80	1783.62	
1803.00	9.00	95.00	9.70	1793.62	
1812.40	9.00	94.20	9.80	1803.09	
1821.90	7.90	93.30	9.50	1813.29	
1831.80	7.90	92.20	9.90	1822.91	
1842.70	7.90	90.30	9.80	1832.82	
1850.50	8.30	73.30	9.80	1841.62	
1860.50	8.30	73.30	9.80	1851.51	
1869.90	8.00	67.10	9.70	1860.71	
1879.50	9.20	67.90	9.70	1870.30	
1889.10	9.20	67.40	9.80	1879.77	
1898.80	9.70	69.60	9.50	1889.14	
1908.50	9.70	69.60	9.80	1898.74	
1917.70	8.90	78.50	9.80	1907.98	
[illegible]	8.60	83.90	9.80	1917.67	
1936.50	8.00	91.00	9.80	1926.63	
1945.50	8.00	91.00	9.80	1935.63	
1955.00	10.60	89.60	9.30	1945.58	
1965.00	10.40	89.30	9.80	1955.21	
1975.10	10.10	89.00	9.80	1965.11	
1985.50	10.30	74.10	9.40	1973.90	
1994.00	9.80	72.70	9.40	1983.15	
2004.00	9.10	67.10	10.00	1993.02	
2013.00	8.10	64.00	9.00	2001.97	
2022.90	6.90	63.00	9.80	2011.54	
2032.80	6.90	64.00	9.80	2021.34	
2041.90	6.60	69.00	9.80	2030.37	
2051.50	6.90	75.00	9.80	2039.93	
2061.00	7.10	70.00	9.80	2049.48	
2070.70	8.00	67.40	9.70	2059.09	
2080.40	8.00	67.40	9.70	2068.80	
2089.00	3.80	72.00	9.80	2078.52	
2109.40	3.00	78.90	9.80	2097.89	
2118.50	2.30	188.00	9.80	2107.11	
2128.50	2.30	198.00	9.80	2116.72	
2138.10	1.90	177.90	9.60	2126.36	
2147.50	1.80	181.00	9.40	2135.68	
2157.10	0.80	141.50	9.60	2145.32	
2166.80	0.50	121.50	9.80	2154.83	
2176.40	1.20	62.80	9.60	2164.05	
2185.90	2.60	64.80	9.40	2174.05	
2195.50	2.60	64.80	9.60	2183.74	
2204.90	2.10	65.30	9.40	2193.04	
2214.00	1.90	49.10	9.40	2202.23	
2223.70	1.50	51.10	9.70	2211.82	
2233.30	1.50	51.10	9.60	2221.52	
2243.30	1.40	88.10	9.80	2231.52	
2252.80	1.30	105.90	9.50	2241.02	
2262.40	1.60	113.60	9.60	2250.61	
2271.90	1.40	119.80	9.50	2260.11	
2281.20	1.50	108.40	9.80	2269.41	
2290.90	1.40	102.20	9.80	2279.00	
2300.50	1.50	102.20	9.60	2288.60	
2310.20	1.90	109.30	9.80	2298.30	
2319.90	2.00	104.10	9.80	2308.09	
2329.50	1.80	104.60	9.60	2317.69	
2339.10	0.50	120.10	9.60	2327.29	
2348.70	0.30	148.30	9.60	2336.88	
2358.30	0.10	18.00	9.60	2346.48	
2368.00	1.60	10.10	9.70	2356.18	
2377.60	2.00	10.00	9.60	2365.87	
2387.20	2.80	8.80	9.60	2375.47	
2396.80	3.10	24.10	9.60	2384.96	
2406.40	3.60	24.10	9.60	2394.54	
2416.00	4.10	27.30	9.60	2404.02	
2425.50	4.10	25.80	9.80	2413.39	
2435.00	3.80	21.56	9.80	2418.08	
2444.60	3.30	5.00	14.40	2432.45	
2454.20	3.30	358.70	9.60	2442.03	
2463.70	3.50	354.50	9.50	2451.52	
2473.30	3.60	348.00	9.60	2461.31	
2482.90	4.00	341.00	9.60	2470.91	
2492.50	4.10	334.00	9.60	2480.50	
2502.00	3.40	327.90	9.50	2490.00	
2511.70	3.10	327.00	9.70	2499.63	
2521.30	3.00	326.00	9.60	2509.22	
2530.90	3.10	322.40	9.60	2518.81	
2540.50	2.20	316.10	9.60	2528.39	
2550.40	2.70	297.40	9.90	2538.28	
2560.00	3.50	284.00	9.60	2547.83	
		284.60	9.60	2557.44	
		287.60	9.90	2567.06	
2021.30	4.10	245.40	9.80	2576.67	
2812.90	3.60	240.40	9.60	2586.24	
2822.50	3.50	233.60	9.60	2595.82	
2832.10	3.50	241.10	9.60	2605.39	
2841.80	3.60	252.10	9.80	2615.05	
2851.40	3.50	254.10	9.60	2624.70	
2861.10	3.50	244.40	9.70	2634.36	
2870.80	2.60	187.60	9.80	2643.97	
2880.40	2.10	183.60	9.60	2653.68	
2889.70	2.10	181.60	9.40	2663.34	
2899.30	2.40	178.80	9.60	2672.73	
2908.90	1.50	182.00	9.60	2682.32	
2918.50	1.20	182.00	9.60	2691.92	
2719.00	1.60	210.90	9.80	2701.51	
2728.60	3.00	240.40	9.60	2711.11	
2738.20	2.40	245.30	9.60	2720.82	
2747.80	2.50	252.00	9.60	2730.42	
2757.40	3.30	271.30	9.60	2744.07	
2767.00	4.10	268.50	9.80	2754.44	
2776.60	4.20	277.00	9.60	2764.04	
2786.10	4.40	282.60	9.50	2773.49	
2795.70	4.60	277.00	9.60	2783.06	
2805.30	4.60	275.10	9.60	2792.61	
2814.90	4.40	272.40	9.60	2802.10	
2824.50	4.20	272.40	9.60	2811.69	
2862.00	1.80	331.19	38.00	2779.49	
2901.00	2.30	341.30	19.00	2889.37	
2939.00	2.80	341.30	38.00	2927.26	
2978.00	4.60	44.80	39.00	2965.98	
3008.50	4.30	66.70	30.50	2993.98	
3011.00	4.30	74.10	2.50	2998.37	
3044.00	3.00	90.00	33.00	3030.88	
3064.00	3.00	90.00	16.00	3050.80	

DIRECTIONAL DATA AS COMPUTED BY BAKER ATLAS

Source File: /data/pwa/wells/44-pad/baker.tat

COMPANY: NORTHROCK RESOURCES LTD.
WELL: NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
DATA FILE: splice.xtf
LIST DATE: Fr 19 Mar 2004 11:51
INTERVAL: 2390.00 - 3080.00

DEPMEAS meters	TVDEP meters
2390.0	2378.2
2400.0	2388.2
2410.0	2398.2
2420.0	2408.1
2430.0	2418.1
2440.0	2428.1
2450.0	2438.1
2460.0	2448.1
2470.0	2458.0
2480.0	2468.0
2490.0	2478.0
2500.0	2488.0
2510.0	2497.9
2520.0	2507.9
2530.0	2517.9
2540.0	2527.9
2550.0	2537.9
2560.0	2547.9
2570.0	2557.9
2580.0	2567.8
2590.0	2577.8
2600.0	2587.8
2610.0	2597.7
2620.0	2607.7
2630.0	2617.7
2640.0	2627.6
2650.0	2637.6
2660.0	2647.6
[illegible]	2657.6
[illegible]	2667.6
[illegible]	2677.5
2700.0	2687.5
2710.0	2697.5
2720.0	2707.5
2730.0	2717.5
2740.0	2727.5
2750.0	2737.5
2760.0	2747.5
2770.0	2757.4
2780.0	2767.4
2790.0	2777.4
2800.0	2787.3
2810.0	2797.3
2820.0	2807.3
2830.0	2817.3
2840.0	2827.2
2850.0	2837.2
2860.0	2847.2
2870.0	2857.2
2880.0	2867.2
2890.0	2877.2
2900.0	2887.2
2910.0	2897.2
2920.0	2907.1
2930.0	2917.1
2940.0	2927.1
2950.0	2937.1
2960.0	2947.0
2970.0	2956.9
2980.0	2966.9
2990.0	2976.8
3000.0	2986.8
3010.0	2996.8
3020.0	3006.7
3030.0	3016.7
3040.0	3026.7
3050.0	3036.7
3060.0	3046.7
3070.0	3056.7

BAKER HUGHES

Baker Atlas

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

FILE NO:

API NO:

LOCATION:
LIC: 9211-N046-2-1
LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 53' 22.66"

ELEVATIONS:
KB 586.7 M
DF
GL 580.5 M

UID:
3008446430125450
TRUE VERTICAL DEPTH

DATE 18-MAR-04

DENSITY

BAKER HUGES

Baker Atlas

COMPENSATED Z-DENSILOG™
COMPENSATED NEUTRON LOG
GAMMA RAY LOG
XY CALIPER LOG

N.E.B. COPY

FILE NO:	COMPANY	NORTH ROCK RESOURCES LTD.
API NO:	WELL	NORTH ROCK ET AL SUMMIT CREEK B-44
	FIELD	SUMMIT CREEK
	PROVINCE	NOR WEST TERRITORIES

Ver. 5.87
JOB:
3006446430125450

LOCATION:
LIC: 2711-M046-2-1
LSD: 14-30-125-05
LAT 64 23' 00.381" LONG 125 51' 22.66"

OTHER SERVICES
HDIL-QR-3DAL
BHC-GR-MYDAL
CPLT-PQR-3DAL
CVL

PERMANENT DATUM	GL	ELEVATION	580.5 M
LOG MEASURED FROM	KB	5.8 M	ABOVE P.D.
DRILL MEAS. FROM	KELLY BUSHING		

ELEVATIONS:
KB 586.3 M
GL 580.5 M

DATE		25-JAN-04	
RUN	TRIP	1	
SERVICE ORDER		207851	
DEPTH DRILLER		810.0 M	
DEPTH LOGGER		810.0 M	
BOTTOM LOG INTERVAL		795.6 M	
TOP LOGGED INTERVAL		25.0 M	
CASING DRILLER		339.7 MM @208.0 M	
CASING LOGGER		207.0 M	
BIT SIZE		311.0 MM	
TYPE OF FLUID IN HOLE		GELCHEM	
DENSITY	VISCOSITY	1120.0 G/L	86.0 S
PH	FLUID LOSS	9.5	7.4 ML
SOURCE OF SAMPLE		CIRCULATION	
RM AT MEAS. TEMP.		5.1 OHMM @20.5 DEGC	
RMF AT MEAS. TEMP.		4 OHMM @21.0 DEGC	
RMC AT MEAS. TEMP.		OHMM @ DEGC	
SOURCE OF RMF	RMC	2.3 OHMM	
RM AT BHT		2.3 OHMM	
TIME SINCE CIRCULATION		8.0 HOURS	
MAX. REC. TEMP.		30.5 DEGC	
EQUIPMENT LOCATION		8872	NISKU
RECORDED BY		K.SNIDER	
WITNESSED BY		I.D. MCMILLAN	

BOREHOLE RECORD

BIT SIZE	FROM	TO
311.0 MM	208.0 M	810.0 M

CASING RECORD

SIZE	WEIGHT	GRADE	FROM	TO
339.7 MM	811.7 KG/M	J-55	GL	208.0 M

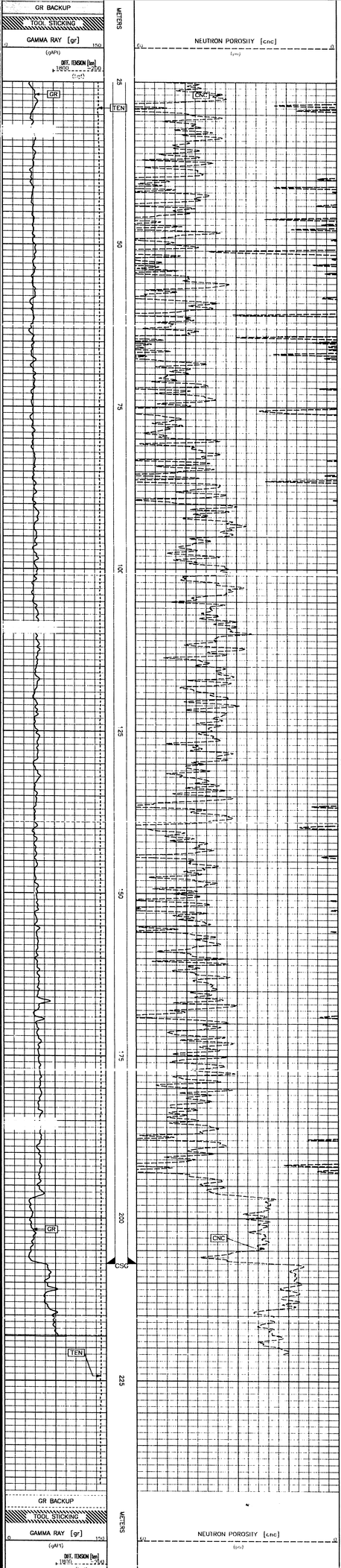
REMARKS

RUN 1 TRIP 1: TIME STOP CIRCULATING: 12:00, 25-JAN-04.
MATRIX EQUATION 1 DESITY, NEUTRON.
CNC IS WITHOUT SALINITY CORRECTION.
CNC IS WITHOUT CALIPER CORRECTION.
INTEGRATED DENSITY VOLUME (T1 - ENTRY): 0.1 G/C3 @ 10.0 M/S.
INTEGRATED DENSITY VOLUME (T2 - EXIT): 0.1 G/C3 @ 10.0 M/S.
CN CASING PASS PRESENTED; CN CASING CORRECTED.

CREW 1: B. MACDONALD A. MITTELSTADT

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	POSITION
1	1	GAMMA RAY	10566	PULLED
		SONDE	10566	2ND DOWN CARRY
		CARTRIDGE	10566	
		CPLT	10566	
		CVL	10566	
		CVL	10566	
		CVL



MAIN PASS - UPPER PRESENTATION

ECLIPS 5.0 Nov 25, 2003

Perpit /main/59

Cplot 5.21
Pdf_Cpp /main/16

Fri Jan 30 00:40:42 2004
fileview 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat2p/pcas/nor1h44-84/1875C002.prm
LOGGING MODE: DEPTH, DIRECTION: UP
TOP DEPTH: 186.233 m BOTTOM DEPTH: 815.035 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		..	..
CHT	FILTER ()	medium (1)		..	..
SPEED	FILTER ()	medium (1)		..	..
TENSION	FILTER ()	medium (1)		..	..
Y AXIS CALIPER	FILTER ()	light (2)		..	..
GR	FILTER ()	medium (1)		..	..
ZDL	FILTER ()	medium (1)		..	..

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
BIT SIZE	BIT SIZE	311.000	mm	TOP	BOTTOM

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
ZDL CHI-SMOOTH FILTER	BCH CHISM ()	ON		TOP	BOTTOM
	PE CHISM ()	OFF		..	..
ZDL	ZDL TRACKING	ON		..	..

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jan 29 21:23:51 2004	BIT SIZE
F1:CALX	CALX	Jan 29 21:23:51 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:CALY	CALY	Jan 29 21:23:51 2004	CALIPER FROM Y AXIS OF X-Y CALIPER(S)
F1:CHT	CHT	Jan 29 21:23:51 2004	CABLE HEAD TENSION
F1:GR	GR	Jan 29 21:23:51 2004	GAMMA RAY
F1:PE	PE	Jan 29 21:23:51 2004	PHOTO ELECTRIC CROSS-SECTION
F1:TEN	TEN	Jan 29 21:23:51 2004	DIFFERENTIAL TENSION
F1:ZCOR	ZCOR	Jan 29 21:23:51 2004	DENSITY CORRECTION
F1:ZDEN	ZDEN	Jan 29 21:23:51 2004	FORMATION BULK DENSITY

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CHT	0.00	TEN	0.00		
CALX	14.55	GR	22.53	ZDEN	14.33		
CALY	28.65	PE	16.33	ZCOR	14.33		

Presentation : ejes2:/data/jones/northb44-84/edt.sp.pdf [1:600 Scale]
Plot Interval : 197.080 - 815.111 Metres

Date File 1 : FR : ejes2:/data/jones/northb44-84/RST0802.ert
Created On : Jan 29 21:23:51 2004
Company : NORTHBROOK RESOURCES LTD.
Well : NORTHBROOK ET AL SUMMIT CREEK B-44
Field : SUMMIT CREEK
File Interval : 197.080 - 815.188 Metres
Unit : METRIC

GR BACKUP

TWO STACKED

XCAL < BIT

YCAL < BIT

GAMMA RAY [gr]
0 150

Caliper X [calx]
6 24
(inch)

Caliper Y [caly]
6 24
(inch)

BIT SIZE
6 24
(inch)

BIT_DIXON [bit]
▲ 10000 ▼ 40000
(kJ)

DR-DIXON [dr]
▲ 10000 ▼ 30000
(kJ)

BVOL
0_1
Cement
0_1

METRES

BULK DENSITY [rden]
2000 3000
(kg/m3)

P.E. [pe]
0 10
(b/e)

Z-CORR [zcor]
-250 250
(kg/m3)

CALX
GR
CALY
TEN
BIT
CHT
PE
ZDEN
ZCOR

FR CALX
FR GR
FR CALY
FR CHT
FR TEN
BIT
FR PE
FR ZDEN
FR ZCOR

GR BACKUP

XCAL < BIT

YCAL < BIT

GAMMA RAY [gr]
0 150

Caliper X [calx]
6 24
(inch)

Caliper Y [caly]
6 24
(inch)

BIT SIZE
6 24
(inch)

BIT_DIXON [bit]
▲ 10000 ▼ 40000
(kJ)

DR-DIXON [dr]
▲ 10000 ▼ 30000
(kJ)

BVOL
0_1
Cement
0_1

METRES

BULK DENSITY [rden]
2000 3000
(kg/m3)

P.E. [pe]
0 10
(b/e)

Z-CORR [zcor]
-250 250
(kg/m3)

MAIN PASS SANDSTONE MATRIX

PARAMETER and FILTER SUMMARY REPORT

File: /data/jones/northb44-84/RST0802.pre
Logging Mode: OPEN HOLE Direction: DOWN
TOP DEPTH: 180.339 m BOTTOM DEPTH: 815.035 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
X AXIS CALIPER	FILTER [ ]	light [2]		--	--
CHT	FILTER [ ]	medium [3]		--	--
SPEED	FILTER [ ]	medium [3]		--	--
TENSION	FILTER [ ]	medium [3]		--	--
Y AXIS CALIPER	FILTER [ ]	light [2]		--	--
GR	FILTER [ ]	medium [4]		--	--
TEN	FILTER [ ]	medium [4]		--	--
ZDL	FILTER [ ]	medium [4]		--	--

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	244.500	mm	--	--

CASING - BOREHOLE & CEMENT VOLUME					
	CASING O.D.	244.500	mm	TOP	BOTTOM
	CASING THICKNESS	8.000	mm	‘‘	‘‘
X-Y CALIPER PROCESSING	X+Y Caliper	Average	‘‘	‘‘	‘‘
BIT SIZE	BIT SIZE	311.000	mm	‘‘	‘‘
BOREHOLE CORR DIAMETER SOURCE	BOREHOLE CORR Dia. (cosbr*)	USE CALIPER	‘‘	‘‘	‘‘
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cosbf*)	311.000	mm	‘‘	‘‘

CN PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
CN SALINITY CORRECTION	SALINITY			TOP	BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	0	ppm	‘‘	‘‘
	BIT SIZE BEHIND CSNG	444.000	mm	‘‘	‘‘

ZDL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
ZDL MUD CAKE FILTER	BDK CH13M (*)	ON		TOP	BOTTOM
	PE CH13M (*)	OFF		‘‘	‘‘
DENSITY POROSITY	BMUDFLG (zmud)	1.000	g/cm3	‘‘	‘‘
	BMudDrlFlu (zmd)	2.650	g/cm3	‘‘	‘‘
ZDL	ZDL TRACKING	ON		‘‘	‘‘

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Jan 29 21:23:51 2004	BIT SIZE
F1:CALX	CALX	Jan 29 21:23:51 2004	CALIPER FROM X AXIS OF X-Y CALIPER[S]
F1:CALY	CALY	Jan 29 21:23:51 2004	CALIPER FROM Y AXIS OF X-Y CALIPER[S]
F1:CHT	CHT	Jan 29 21:23:51 2004	CABLE HEAD TENSION
F1:CNCSS	CNCSS	Jan 29 21:23:51 2004	BIT SIZE CORR. SANDSTONE COMPENSATED NEUTRON POROSITY
F1:GR	GR	Jan 29 21:23:51 2004	GAMMA RAY
F1:PE	PE	Jan 29 21:23:51 2004	PHOTO ELECTRIC CROSS-SECTION
F1:PORZSS	PORZSS	Jan 29 21:23:51 2004	POROSITY IN SANDSTONE MATRIX
F1:TEN	TEN	Jan 29 21:23:51 2004	DIFFERENTIAL TENSION
F1:TEMP		Jan 29 21:23:51 2004	TEMPERATURE OF THE BOREHOLE
F1:ZCOR	ZCOR	Jan 29 21:23:51 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CHT	0.00	PE	14.33	ZCOR	14.33
CALX	14.33	CNCSS	19.70	PORZSS	14.33		
CALY	28.65	GR	22.52	TEN	0.00		

Presentation	: epsc_data\jpcrs\north44-64\fdl_mdls_ss.pdf (1240 Scale)
Plot Interval	: 137.888 - 815.111 Metres
Data File 1	: F1 - epsc_data\jpcrs\north44-64\78352003.xtf
Created On	: Jan 29 21:53:51 2004
Company	: NORTHROCK RESOURCES LTD.
Well	: NORTH 44-64 SUMMIT CREEK D-64
Field	: SUMMIT CREEK
File Interval	: 137.888 - 815.188 Metres
Run	: BOTTOM

GR BACKUP

TENSION

XCAL < BIT

YCAL < BIT

GAMMA RAY [gr]

BIT SIZE

Caliper X [calx]

Caliper Y [caly]

BIT TORQUE [kn]

CH-TORQUE [ch]

METRES

Z-DENSITY SANDSTONE POROSITY [porzss]

NEUTRON SANDSTONE POROSITY [cncss]

P.E. [pe]

Z-CORR [zcor]

WTBH

ENVOL

Cement

CHT

PORZSS

CNCSS

PE

ZCOR

GR

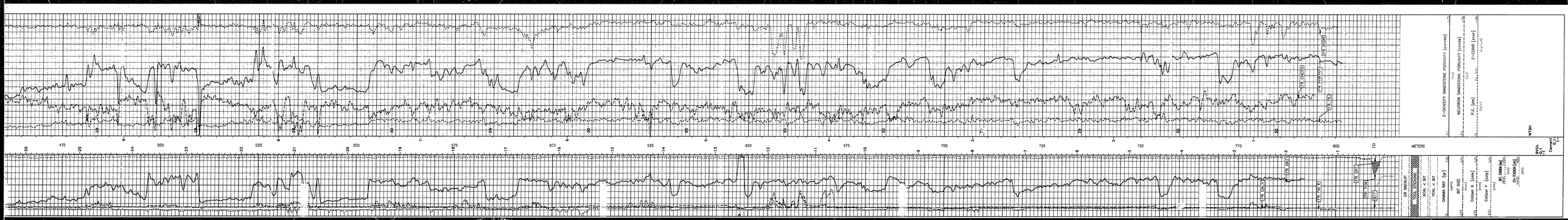
BIT

CALX

CALY

TEN

TEMP


Z-DENSITY SANDSTONE POROSITY [porcas]
NEUTRON SANDSTONE POROSITY [circle]
P.E. [pe]
Z-CORR [corz]
WTBH
DEVIL
Cement
GR BACKUP
CALIPER [cal]
BIT SIZE
GAMMA RAY [gr]
Caliper X [cax]
Caliper Y [cay]
DEVIATION [dv]
METERS

REPEAT PASS SANDSTONE MATRIX

ECLIPS 5.0 Nov 25, 2003

Cplot 6.21
Perpl /main/29 Pdf_Cpy /main/16

Thu Jun 29 20:40:19 2024
Rlwiew 4.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dsk1b/pems/ver1144-64/RTPCORS.pre
CURVE MODE: Pre-Processed Data
TOP DEPTH: 230.321 m BOTTOM DEPTH: 811.806 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
X AXIS CALIPER	FILTER ()	light (2)		"	"
CNT	FILTER ()	medium (1)		"	"
SPEED	FILTER ()	medium (1)		"	"
TENSION	FILTER ()	medium (1)		"	"
Y AXIS CALIPER	FILTER ()	light (2)		"	"
GR	FILTER ()	medium (1)		"	"
CN	FILTER ()	medium (1)		"	"
ZDL	FILTER ()	medium (1)		"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	244.500	mm	TOP	BOTTOM
	CASING THICKNESS	0.000	mm	"	"
X-Y CALIPER PROCESSING	X-Y Caliper	Average		"	"
BIT SIZE	BIT SIZE	311.000	mm	"	"
BOREHOLE COMP DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER		"	"
BOREHOLE COMP DIAMETER	FIXED DIAMETER (cnbh*)	311.000	mm	"	"

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP	BOTTOM
CN CASING & STANDOFF CORRECTION	CORRECTION	OFF		"	"
	BIT SIZE BEHIND CSNG	444.000	mm	"	"

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
ZDL CNI-SMOOTH FILTER	SDN CNISM ()	ON		TOP	BOTTOM
	SDN CNISM ()	OFF		"	"
DENSITY POROSITY	Matrix	2.650	g/cm3	"	"
	Hydrocarbon (None)	2.650	g/cm3	"	"
ZDL	ZDL TRACE MIC	ON		"	"

CURVE DESCRIPTION REPORT

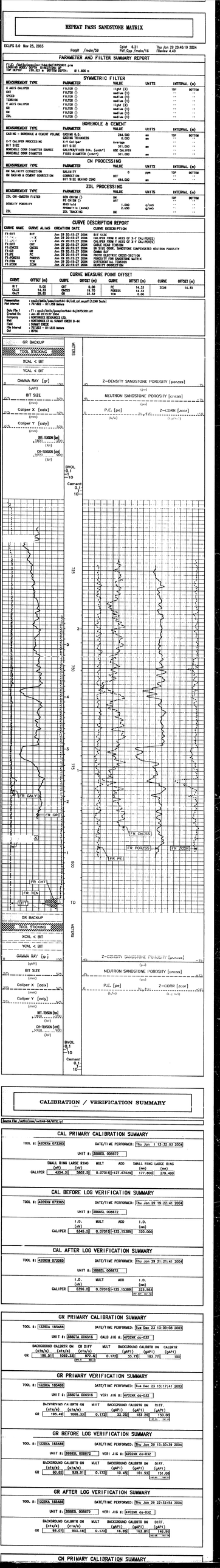
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
P1:BIT	BIT	Jun 29 20:15:27 2004	BIT SIZE
P1:CNI	CNI	Jun 29 20:15:27 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
P1:CNT	CNT	Jun 29 20:15:27 2004	CALIPER FROM Y AXIS OF X-Y CALIPER(S)
P1:CNCS	CNCSS	Jun 29 20:15:27 2004	2N SI/SI CORR. SANDSTONE COMPENSATED NEUTRON POROSITY
P1:GR	GR	Jun 29 20:15:27 2004	GAMMA RAY
P1:PE	PE	Jun 29 20:15:27 2004	PHOTO ELECTRIC CROSS-SECTION
P1:PORZSS	PORZSS	Jun 29 20:15:27 2004	POROSITY FOR SANDSTONE MATRIX
P1:TEN	TEN	Jun 29 20:15:27 2004	DIFFERENTIAL TENSION
P1:ZCOR	ZCOR	Jun 29 20:15:27 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNT	0.00	PE	14.33	ZCOR	14.33
GAIZ	14.33	CNCSS	19.70	PORZSS	14.33		
CALT	29.40	GR	22.52	TEN	0.00		

Presentation: cook2/dsk1b/pems/ver1144-64/edt_rpt.ps.pdf (1240 Scale)
Pert Interval: 707.822 - 811.739 Meters

Data File 1: FI : cook2/dsk1b/pems/ver1144-64/RTPCORS.ctf
Created On: Jun 29 20:15:27 2004
Company: NORTHROCK RESOURCES LTD.
Well: NORTHROCK ET AL SUMMIT CREEK D-64
Pool: SUMMIT CREEK
File Interval: 707.822 - 811.835 Meters
Run: RTPCRT



CALIBRATION / VERIFICATION SUMMARY

Source File /cook2/pems/ver1144-64/RTPC.tp

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 4200XW 073365 — DATE/TIME PERFORMED: Thu Jun 1 13:32:05 2004

UNIT #: 3888SL 008672

	SMALL RING (air)	LARGE RING (air)	MULT	ADD	SMALL RING (mv)	LARGE RING (mv)
CALIPER	4354.3	5802.5	0.07016	-127.67529	177.800	279.400

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 4200XW 073365 — DATE/TIME PERFORMED: Thu Jun 29 19:22:41 2004

UNIT #: 3888SL 008672

	I.D. (air)	MULT	ADD	I.D. (mv)
CALIPER	6345.2	0.07016	-125.15389	320.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 4200XW 073365 — DATE/TIME PERFORMED: Thu Jun 29 21:21:41 2004

UNIT #: 3888SL 008672

	I.D. (air)	MULT	ADD	I.D. (mv)
CALIPER	6396.0	0.07016	-125.15389	323.563

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 185468 — DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003

UNIT #: 3888TA 005516 — CALB JIG #: 4702NK da-032

	BACKGROUND CALIBTR ON (cts/s)	CR DIFF (cts/s)	(cts/s)	MULT	BACKGROUND CALIBTR ON (gAPI)	CALIBTR ON (gAPI)	DIFF. (gAPI)
GR	196.51	1069.33	872.8	0.172	33.77	183.77	150
			Min = 800.0				

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185468 — DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 3888TA 005516 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBTR ON (gAPI)	CALIBTR ON (gAPI)	DIFF. (gAPI)
GR	193.49	1066.33	0.172	33.25	183.28	150.00
				Min = 140.00		Max = 160.00

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185468 — DATE/TIME PERFORMED: Thu Jun 29 15:30:39 2004

UNIT #: 3888SL 008672 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBTR ON (gAPI)	CALIBTR ON (gAPI)	DIFF. (gAPI)
GR	60.82	939.91	0.172	10.45	161.53	151.08
				Min = 140.00		Max = 160.00

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185468 — DATE/TIME PERFORMED: Thu Jun 29 22:32:54 2004

UNIT #: 3888SL 008672 — VERI JIG #: 4702NK da-032

	BACKGROUND CALIBTR ON (cts/s)	(cts/s)	MULT	BACKGROUND CALIBTR ON (gAPI)	CALIBTR ON (gAPI)	DIFF. (gAPI)
GR	56.07	954.16	0.172	10.65	163.81	146.99
				Min = 140.00		Max = 160.00

CN PRIMARY CALIBRATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Tue Dec 23 13:43:36 2003

UNIT #: 3880TA 006516 CALIBRATOR #: 2437XB 112675 SOURCE #: 4717XS 039273

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	NOMINAL SSN/LSN	CORRECTION FACTOR	POROSITY (pu)
LSN	878.83	888.01				
SSN	1778.62	1844.22				
RATIO			2.68052	2.75100	1.02629	
				0.97000	1.07000	
CN						21.358

CN PRIMARY VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Tue Dec 23 13:54:59 2003

UNIT #: 3880TA 006516 ICE BLOCK #: 4717ND 0d-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	998.86	1021.32				
SSN	1605.40	1658.69				
RATIO			1.62406	1.02629	1.66907	
CN						7.580

CN BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Thu Jan 29 15:40:58 2004

UNIT #: 3888SL 008672 ICE BLOCK #: 4717ND 0d-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	897.66	917.44				
SSN	1555.38	1605.31				
RATIO			1.74978	1.02629	1.79739	
CN						9.070
					7.580	9.580

CN AFTER LOG VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Thu Jan 29 22:27:51 2004

UNIT #: 3888SL 008672 ICE BLOCK #: 4717ND 0d-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	678.51	697.46				
SSN	1570.28	1621.20				
RATIO			1.80843	1.02629	1.85701	
CN						9.776
					7.070	11.870

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 11:37:45 2003

UNIT #: 3880TA 006516

	SMALL RING (raw)	LARGE RING (raw)	MULT	ADD	SMALL RING (mm)	LARGE RING (mm)
CALIPER	1884.1	3180.6	0.15673	-117.49430	177.800	381.000

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 19:22:53 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	2827.3	0.15673	-123.12170	320.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 21:21:44 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	2832.9	0.15673	-123.12170	320.878
				307.200 332.700

ZDL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 12:29:52 2003

UNIT #: 3880TA 006516 CALB. BLOCK SET: 2225XA 094290 CS SOURCE #: 4703MT 000985

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
MG BLOCK (LO PE)	10587.3	4116.5	4921.8	0.698	1688.000	7.000	2.240
				0.625 0.725			
AL BLOCK	5242.4	420.5	530.6		2697.000	-9.000	
AL+SHIM (CORR)	7295.2	722.4	895.1		2605.000	165.000	
MG+SHIM (HI PE)		1948.9	2491.1	0.280			10.530
				0.270 0.310			
RATIO MG/AL	2.02	9.79	9.28				
	1.97 2.07	9.30 10.40	8.75 9.75				

	BACKGROUND (cts/s)	CS PEAK CHANNEL #	AM PEAK CHANNEL #
	893.5	230.3	23.3
		229.8 230.5	21.0 25.5

ZDL PRIMARY VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 12:38:38 2003

UNIT #: 3880TA 006516 VERI. JIG #: 4704NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10651.1	952.2	2824.9	0.182	2375.839	285.970	15.754

ZDL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 15:34:46 2004

UNIT #: 3888SL 008672 VERI. JIG #: 4704NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10404.9	941.3	2804.3	0.190	2358.805	265.098	15.868
				0.162 0.250	2250.539 2400.539	250.970 310.970	

ZDL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Thu Jan 29 22:22:20 2004

UNIT #: 3888SL 008672 VERI. JIG #: 4704NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10844.9	958.2	2815.8	0.185	2375.832	285.618	15.599
				0.160 0.260	2333.005 2363.805	240.068 290.068	

BAKER HUGHES / Baker Atlas	COMPANY: NORTHROCK RESOURCES LTD.		FILE NO:
	WELL: NORTHROCK ET AL SUMMIT CREEK B-44		
	FIELD: SUMMIT CREEK		API NO:
	PROVINCE: NORTHWEST TERRITORIES		
	LOCATION: LIC: 9211-N046-2-1 LSD: 64-30-125-45 LAT 64 23' 02.351" LONG 125 53' 22.66"	ELEVATIONS: KB 588.3 M DF GL 580.5 M	UID: 300844643012545O
		DATE 29-JAN-04	

BAKER HUGHES

"COMPENSATED Z-DENSITY"
"COMPENSATED NEUTRON LOG"
"GAMMA RAY LOG"
"CALIPER LOG"

N.E.B. COPY

Baker Atlas

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
API NO:	WELL	NORTHROCK ET AL SUMMIT CREEK D-64
	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES

Run: 3.007

LOCATION1: 1-H-52-13-W5
2038'FNL 1927'FWL

LOCATION2: 64-H-52-13-W5
2038'FNL 1927'FWL

PERMANENT DATUM: GL
LOG MEASURED FROM: KB
DRILL MEASURED FROM: KB

ELEVATION: 393.5 M
ABOVE P.D.: 397.7 M

ELEVATIONS: KB 397.7 M, GL 393.5 M

DATE	15-MAR-03
DEPTH DRILLER	2684 M
DEPTH LOGGER	2684 M
BTM LOG INTERVAL	2684 M
TOP LOG INTERVAL	1700 M
CASING DRILLER	244.5 MM @ 40.0 M
CASING LOGGER	244.5 MM @ 40.0 M
BIT SIZE	222.3 MM
TYPE FLUID IN HOLE	GEL CHEM
DENSITY	1220 KG/M3
VISCOSITY	41 S
PH / FLUID LOSS	9.5 PH
SOURCE OF SAMPLE	CIRCULATION
RM @ MEAS TEMP	0.1 @ 20 DEGC
RMF @ MEAS TEMP	0.1 @ 20 DEGC
RMC @ MEAS TEMP	0.1 @ 20 DEGC
SOURCE RMF / RMC	MEASURED
RM @ BHT	0.1 @ 20 DEGC
TIME CIRC ENDED	15:00
TIME LOGGER ON BOTTOM	17:30
MAXIMUM TEMP RECORDED	20 DEGC
EQUIPMENT NUMBER	3007
LOCATION	CALGARY
RECORDED BY	MARTIN
WITNESSED BY	MR. BOYCE

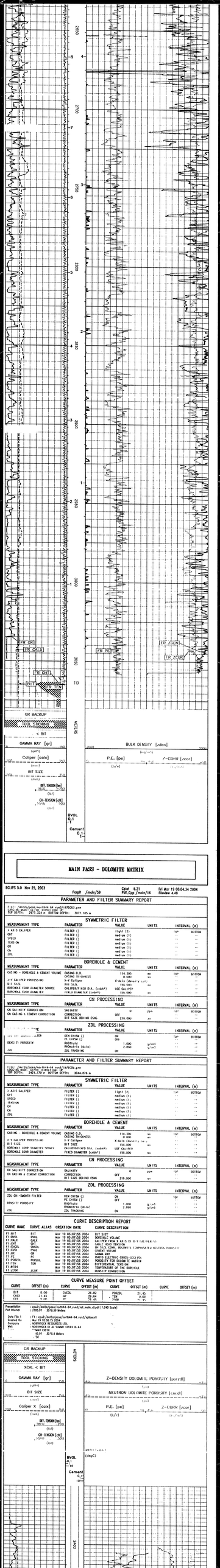
FLAGGED RESULTS ARE USUALLY CAUSED BY BAD HOLE CONDITIONS. THEY SHOULD NOT BE USED IN ANY QUANTITATIVE INTERPRETATION. THE INTERPRETATION OF LOGS IS THE OPINION OF BAKER ATLAS PERSONNEL AND IS NOT INFALLIBLE AND CANNOT BE GUARANTEED. BAKER ATLAS ASSUMES NO RESPONSIBILITY FOR ANY LOSS OR DAMAGE RESULTING FROM THE USE OF THIS DATA.

ERROR RECORD

RUN	TOOL STRING	ERROR
1	3007	NONE

REMARKS

RUN 1 : THE FOLLOWING TOOLS WERE RUN IN COMBINATION:
ZDL-CN-GR-CAL-AMS
(ZDL-CN-GR-CAL-AMS) = (ZDL-CN-GR-CAL-AMS)
ZDL-CN-GR-CAL-AMS



MAIN PASS - DOLOMITE MATRIX

ECLIPS 5.0 Nov 25, 2003

Fri Mar 19 08:04:34 2004
Filename 4.48

Cplot 0.21
Pdf.cpp /main/16

Perpdf /main/59

PARAMETER AND FILTER SUMMARY REPORT

FILE: /opt2p/data/pass/northbl44-54_run3/dfs005.prn
LOG:/el_main_1/ctlfile_dolo/ctlfile
TOP DEPTH: 2973.324 m BOTTOM DEPTH: 3077.185 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
X AXIS CALIPER	FILTER ()	light (2)	TOP	BOTTOM
CHT	FILTER ()	medium (3)	"	"
SPEED	FILTER ()	medium (3)	"	"
TENSION	FILTER ()	medium (3)	"	"
GR	FILTER ()	medium (3)	"	"
CN	FILTER ()	medium (3)	"	"
ZDL	FILTER ()	medium (3)	"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP BOTTOM
	CASING THICKNESS	0.000	mm	" "
X-Y CALIPER PROCESSING	X-Y Caliper	X-axis (density cor)	"	" "
BIT SIZE	BIT SIZE	156.000	mm	" "
BOREHOLE CORR DIAMETER SOURCE	CALIPER/CFD DIA. (cobl*)	USE CALIPER	"	" "
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cobr*)	156.000	mm	" "

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF	"	" "
	BIT SIZE BEHIND CSNG	216.000	mm	" "

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
ZDL CHT-SMOOTH FILTER	ZDN CHTSM ()	ON	TOP	BOTTOM
	PE CHTSM ()	OFF	"	" "
DENSITY POROSITY	Matrix	1.000	g/cm3	" "
	Rhomatrix (dolo)	2.860	g/cm3	" "
ZDL	ZDL TRACKING	ON	"	" "

PARAMETER AND FILTER SUMMARY REPORT

FILE: /opt2p/data/pass/northbl44_run3/dfs005.prn
LOG:/el_main_1/ctlfile_dolo/ctlfile
TOP DEPTH: 2421.179 m BOTTOM DEPTH: 3044.875 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
X AXIS CALIPER	FILTER ()	light (2)	TOP	BOTTOM
CHT	FILTER ()	medium (3)	"	"
SPEED	FILTER ()	medium (3)	"	"
TENSION	FILTER ()	medium (3)	"	"
GR	FILTER ()	medium (3)	"	"
CN	FILTER ()	medium (3)	"	"
ZDL	FILTER ()	medium (3)	"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP BOTTOM
	CASING THICKNESS	0.000	mm	" "
X-Y CALIPER PROCESSING	X-Y Caliper	X-axis (density cor)	"	" "
BIT SIZE	BIT SIZE	156.000	mm	" "
BOREHOLE CORR DIAMETER SOURCE	CALIPER/CFD DIA. (cobl*)	USE CALIPER	"	" "
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cobr*)	156.000	mm	" "

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF	"	" "
	BIT SIZE BEHIND CSNG	216.000	mm	" "

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
ZDL CHT-SMOOTH FILTER	ZDN CHTSM ()	ON	TOP	BOTTOM
	PE CHTSM ()	OFF	"	" "
DENSITY POROSITY	Matrix	1.000	g/cm3	" "
	Rhomatrix (dolo)	2.860	g/cm3	" "
ZDL	ZDL TRACKING	ON	"	" "

CURVE DESCRIPTION REPORT

CURVE MNAC	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Mar 19 08:07:56 2004	BIT SIZE
F1:BVOL	BVOL	Mar 19 08:07:56 2004	BOREHOLE VOLUME
F1:CHT	CHT	Mar 19 08:07:56 2004	CALIPER FROM X AXIS OF X-Y CALIPER(S)
F1:CNCOR	CNCOR	Mar 19 08:07:56 2004	CN SALINITY CORRECTION
F1:CNSOL	CNSOL	Mar 19 08:07:56 2004	GR SALT CSNG, DOLOMITE, COMPENSATED NEUTRON PURPOSES
F1:CVOL	CVOL	Mar 19 08:07:56 2004	CEMENT VOLUME
F1:GR	GR	Mar 19 08:07:56 2004	GAMMA RAY
F1:LSPD	LSPD	Mar 19 08:07:56 2004	LINE SPEED ELECTRIC CROSS-SECTION
F1:PZDOLC	PZDOLC	Mar 19 08:07:56 2004	POROSITY FOR DOLOMITE MATRIX
F1:TEN	TEN	Mar 19 08:07:56 2004	DIFFERENTIAL TENSION
F1:TMTEM	TMTEM	Mar 19 08:07:56 2004	TEMPERATURE OF THE BOREHOLE
F1:ZCOR	ZCOR	Mar 19 08:07:56 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNSOL	26.62	TMREM	21.45		
CALX	21.45	GR	29.64	- TEN	0.00		
CHT	21.45	LSPD	29.45	- TTEM	71.44		

Presentation Plot Manual

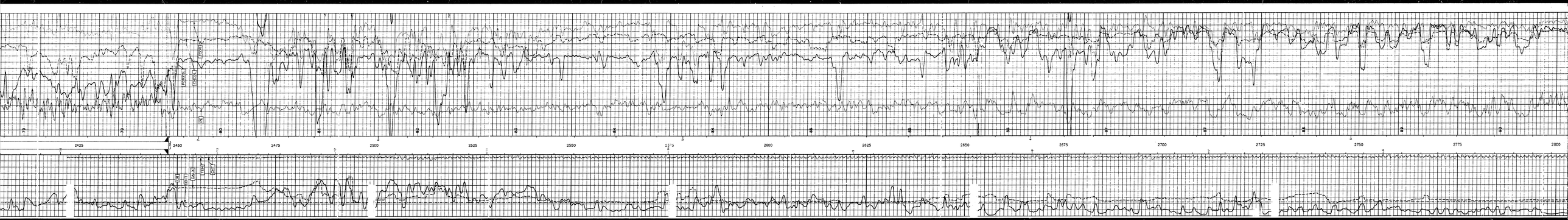
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2385.97 3074.39 meters

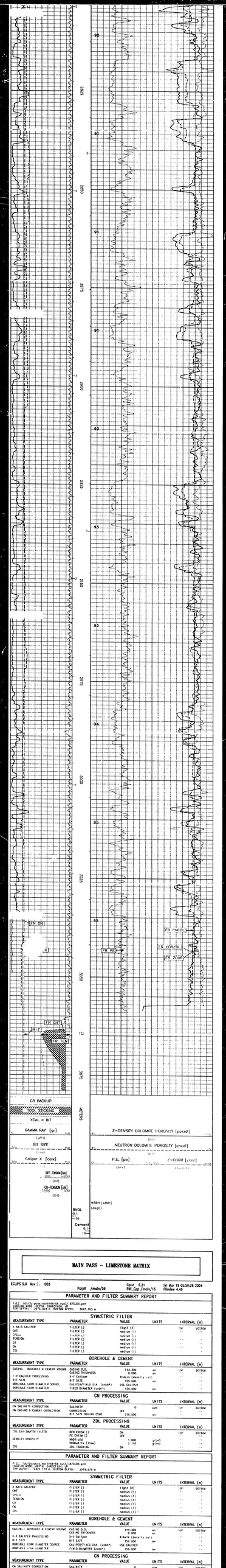
Date File 1 Created On Company Well

: /f1 : cpu2:/data/pass/northbl44-54_run3/xplus.ml : Mar 19 08:08:15 2004 : NORTHROCK II L.P. : NORTHROCK II et al SOUTH 6844 B-44

END DATA

0.50 3074.4 Meters


2425
2450
2475
2500
2525
2550
2600
2625
2650
2675
2700
2725
2750
2775
2800
RR
LL
OA
RA
OV


2815
2850
2875
2900
2925
2950
2975
3000
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3125
3150
3175
3200
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3675
3700
3725
3750
3775
3800
3825

Ch SALINITY CORRECTION	SALINITY		0	ppm	TOP	BOTTOM
Ch GAS-HOLE CEMENT CORRECTION	CORRECTION	OFF				
	BIT SIZE (MATRIX) (CM)	ON	200.000	cm		

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
ZDL CH-SMOOTH FILTER	ECN CHSTM ()	ON	cb*	BOTTOM
	PE CHSTM ()	OFF		
DENSITY POROSITY	MATRIX	2.710	g/cm3	
	MUDWATER (filter)		g/cm3	
ZDL	ZDL TRACKING	ON		

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Mar 19 03:07:56 2004	BIT SIZE
F1:BVOL	BVOL	Mar 19 03:07:56 2004	BOREHOLE VOLUME
F1:CALX	CALX	Mar 19 03:07:56 2004	CALIPER FROM THE AXIS OF X3 CALIPER(in)
F1:CNT	CNT	Mar 19 03:07:56 2004	CABLE HEAD TENSION
F1:CNCLS	CNCLS	Mar 19 03:07:56 2004	BH SIZE CORR, LIMESTONE COMPENSATED NEUTRON POROSITY
F1:CVOL	CVOL	Mar 19 03:07:56 2004	CEMENT VOLUME
F1:GR	GR	Mar 19 03:07:56 2004	GAMMA RAY
F1:PE	PE	Mar 19 03:07:56 2004	PHOTOELECTRIC CROSS-SECTION
F1:PORZLS	PORZLS	Mar 19 03:07:56 2004	POROSITY FOR LIMESTONE MATRIX
F1:TEN	TEN	Mar 19 03:07:56 2004	DIFFERENTIAL TENSION
F1:WTEN		Mar 19 03:07:56 2004	COMPENSATED SP TOOL BOREHOLE
F1:ZCOR	ZCOR	Mar 19 03:07:56 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNCLS	26.62	PORZLS	21.45		
CALX	21.45	GR	29.84	TEN	0.00		
CNT	0.00	PE	21.45	ZCOR	21.45		

Prepared by: [illegible]
Witnessed by: [illegible]

Data File 1 : F1 : cpu2:/data/pans/northb44-54_run3/calc.mst
Created On : Mar 19 02:08:15 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK D-64
Field : SUMMIT CREEK
Log Interval : 1700.97 - 3079.6 Meters
Unit : METRIC

Prepared by: [illegible]
Witnessed by: [illegible]

: cpu2:/data/pans/northb44-54_run3/calc.mst (1:240 Scale)
: 1700.97 - 3079.6 Meters

GR BACKUP

TOOL TENSION

XCAL < BIT

GAMMA RAY [gr]

Tool: CALX

Caliper X [calx]

DIFF. TENSION [ten]

CH-TENSION [wten]

BVOL

Cement

METERS

Z-DENSITY LIMESTONE POROSITY [porzls]

NEUTRON LIMESTONE POROSITY [cncls]

P.E. [pe]

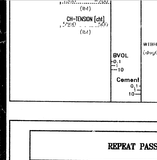
Z-CORR [zcor]

WTEN [wten]

GR
BIT
CALX
TEN
CNT

PORZLS
CNCLS
PE
ZCOR


2725
2750
2775
2800
2825
2850
2875
2900
2925
2950
2975
3000
3025
3050
3075
METERS
Z-DENSITY LIMESTONE POROSITY [v/v]
NEUTRON LIMESTONE POROSITY [v/v]
P.E. [pe]
CALIPER [cm]
GR BACKUP
GAMMA RAY [gr]
CALIPER X [cm]
CALIPER Y [cm]
BIT SIZE



REPEAT PASS - LIMESTONE MATRIX

ECLIPS 5.0 Nov 25, 2003

Cplot 6.21 Fri Mar 19 04:57:55 2004
Purpt /main/59 Pdf_Cpp /main/16 Fileview 4.48

PARAMETER and FILTER SUMMARY REPORT

File: /data/pass/pass0644-64.run4/AP050A.pre
LOGGING MODE: DEPTH; DIRECTION: DOWN
TOP DEPTH: 2973.324 m BOTTOM DEPTH: 3077.105 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
	FILTER ()	flight (2)		TOP	BOTTOM
* AXIS CALIPER	FILTER ()	medium (1)			
CALI	FILTER ()	medium (1)			
SPEED	FILTER ()	medium (1)			
TENSION	FILTER ()	medium (1)			
GR	FILTER ()	medium (1)			
CN	FILTER ()	medium (1)			
ZDL	FILTER ()	medium (1)			

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP	BOTTOM
	CASING THICKNESS	8.000	mm		
Y-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density run)			
BIT SIZE	BIT SIZE	156.000	mm		
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER			
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cnbh*)	156.000	mm		

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP	BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF			
	BIT SIZE BEHIND CSNG	216.000	mm		

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
ZDL CNI-SMOOTH FILTER	DEN CNTSM ()	ON		TOP	BOTTOM
	PE CNTSM ()	OFF			
DENSITY PORosity	BHOI=Sand	1.000	g/cc		
	MHOma=Fix (Lime)	2.750	g/cc		
ZDL	ZDL THICKNESS	ON			

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
FI:BIT	BIT	Wed 19 02:08:15 2004	BIT SIZE
FI:BVOL	BVOL	Wed 19 02:08:15 2004	BOREHOLE VOLUME
FI:CALI	CALX	Wed 19 02:08:15 2004	CALIPER FROM X AXIS OF X-Y CALIPERS
FI:CCOR	CCOR	Wed 19 02:08:15 2004	CN SALINITY CORRECTION
FI:CNCLS	CNCLS	Wed 19 02:08:15 2004	SM SIZE CORR. LIMESTONE COMPENSATED NEUTRON POROSITY
FI:CVOL	CVOL	Wed 19 02:08:15 2004	CEMENT VOLUME
FI:GR	GR	Wed 19 02:08:15 2004	GAMMA RAY
FI:PE	PE	Wed 19 02:08:15 2004	PHOTO ELECTRIC CROSS-SECTION
FI:PORZLS	PORZLS	Wed 19 02:08:15 2004	POROSITY FROM LIMESTONE MATRIX
FI:TEN	TEN	Wed 19 02:08:15 2004	DIFFERENTIAL TENSION
FI:ZCOR	ZCOR	Wed 19 02:08:15 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNCLS	26.42	PORZLS	21.45		
CALX	21.45	GR	29.64	TEN	0.00		
CCOR	21.45	PE	21.45	ZCOR	21.45		

Presentation: /cpu1/data/pass/pass0644-64.run5/edt.spl.ls.pal [1240 Scale]
Plot Interval: 2939.51 - 3079.39 Meters

Data File : /1 - /cpu1/data/pass/pass0644-64.run5/AP050A.edt
Created On : Mar 19 02:08:15 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK D-44
Field : SUMMIT CREEK
File Interval : 2939.20 - 3079.85 Meters
Bit : 0156C

REPEAT PASS - DOLOMITE MATRIX

ECLIPS 5.0 Nov 25, 2003

Cplot 6.21 Fri Mar 19 05:05:39 2004
Purpt /main/59 Pdf_Cpp /main/16 Fileview 4.48

PARAMETER and FILTER SUMMARY REPORT

File: /data/pass/pass0644-64.run4/AP050A.pre
LOGGING MODE: DEPTH; DIRECTION: DOWN
TOP DEPTH: 2973.324 m BOTTOM DEPTH: 3077.105 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
	FILTER ()	flight (2)		TOP	BOTTOM
* AXIS CALIPER	FILTER ()	medium (1)			
CALI	FILTER ()	medium (1)			
SPEED	FILTER ()	medium (1)			
TENSION	FILTER ()	medium (1)			
GR	FILTER ()	medium (1)			
CN	FILTER ()	medium (1)			
ZDL	FILTER ()	medium (1)			

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP	BOTTOM
	CASING THICKNESS	8.000	mm		
Y-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density run)			
BIT SIZE	BIT SIZE	156.000	mm		
BOREHOLE CORR DIAMETER SOURCE	CALIPER/FIXED DIA. (cnbh*)	USE CALIPER			
BOREHOLE CORR DIAMETER	FIXED DIAMETER (cnbh*)	156.000	mm		

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP	BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF			
	BIT SIZE BEHIND CSNG	216.000	mm		

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)	
ZDL CNI-SMOOTH FILTER	DEN CNTSM ()	ON		TOP	BOTTOM
	PE CNTSM ()	OFF			
DENSITY PORosity	BHOI=Sand	1.000	g/cc		
	MHOma=Fix (Lime)	2.850	g/cc		
ZDL	ZDL THICKNESS	ON			

CURVE DESCRIPTION REPORT

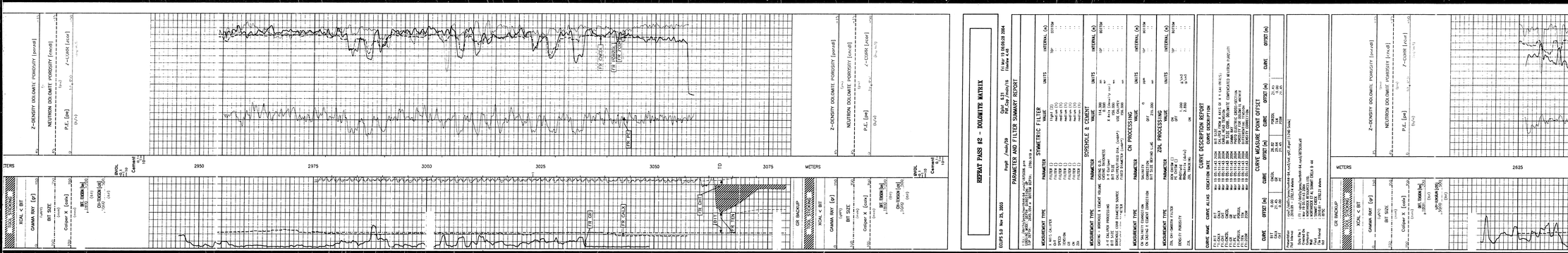
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
FI:BIT	BIT	Wed 19 02:08:15 2004	BIT SIZE
FI:BVOL	BVOL	Wed 19 02:08:15 2004	BOREHOLE VOLUME
FI:CALI	CALX	Wed 19 02:08:15 2004	CALIPER FROM X AXIS OF X-Y CALIPERS
FI:CCOR	CCOR	Wed 19 02:08:15 2004	CN SALINITY CORRECTION
FI:CNCDL	CNCDL	Wed 19 02:08:15 2004	SM SIZE CORR. DOLOMITE COMPENSATED NEUTRON POROSITY
FI:CVOL	CVOL	Wed 19 02:08:15 2004	CEMENT VOLUME
FI:GR	GR	Wed 19 02:08:15 2004	GAMMA RAY
FI:PE	PE	Wed 19 02:08:15 2004	PHOTO ELECTRIC CROSS-SECTION
FI:PORZDL	PORZDL	Wed 19 02:08:15 2004	POROSITY FROM DOLOMITE MATRIX
FI:TEN	TEN	Wed 19 02:08:15 2004	DIFFERENTIAL TENSION
FI:ZCOR	ZCOR	Wed 19 02:08:15 2004	DENSITY CORRECTION

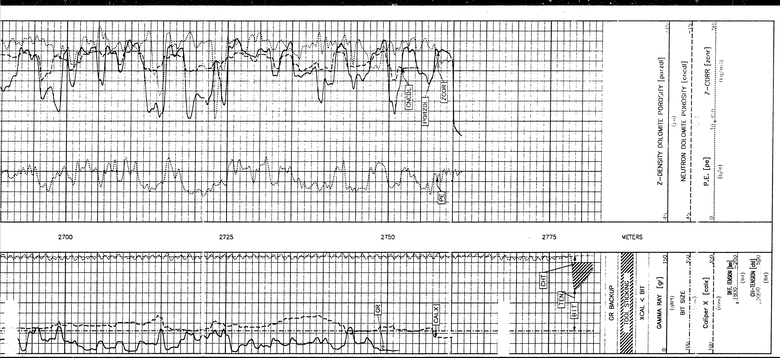
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNCDL	26.42	PORZDL	21.45		
CALX	21.45	GR	29.64	TEN	0.00		
CCOR	21.45	PE	21.45	ZCOR	21.45		

Presentation: /cpu1/data/pass/pass0644-64.run5/edt.spl.dl.pal [1240 Scale]
Plot Interval: 2939.51 - 3079.39 Meters

Data File : /1 - /cpu1/data/pass/pass0644-64.run5/AP050A.edt
Created On : Mar 19 02:08:15 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK D-44
Field : SUMMIT CREEK
File Interval : 2939.20 - 3079.85 Meters
Bit : 0156C


Z-DENSITY DOLOMITE POROSITY [pu/cu]
NEUTRON DOLOMITE POROSITY [cu/cu]
P.E. [pe]
Z-CORE [mm]
XCAL < BIT
GAMMA RAY [gr]
BIT SIZE
Caliper X [cms]
BIT SIZE [in]
CN POROSITY [cu/cu]
DEVIATION [deg]
Cement
METERS
2950
2975
3000
3025
3050
3075
FR CN(1)
FR CN(2)
FR DEN(1)
FR DEN(2)
CN BACKUP
REPEAT PASS #2 - DOLOMITE MATRIX
ECLIPS 5.0 Nov 25, 2003
Engr. /mnte/ra
Opr. /mnte/ra
File Mar 11 08:56:28 2004
Version 4.0B
PARAMETER AND FILTER SUMMARY REPORT
PARAMETER SYMMETRIC FILTER
PARAMETER DOPPLER & FORMAT
CN PROCESSING
CURVE DESCRIPTION REPORT
CURVE MEASURE POINT OFFSET
2625
2650
2675



REPEAT PASS – LIMESTONE MATRIX

ECLIPS 5.0 Nov 25, 2003

Purp: Purpose

Oper: KJH

FU Mar 19 08:07:27 2004
Plotted: 4.48

PARAMETER AND FILTER SUMMARY REPORT

1101	06/03/04/Schlumberger/Log Interpretation.prm		
1CP 29.01	Jan 5, 2004 at 08:58 Eltrm: 2250.169 s		

MEASUREMENT TYPE	PARAMETER	SYMMETRIC FILTER	UNITS	INTERVAL (m)
Z_GAIC-CALIPER	FILTYP (1)	high (3)		TOP BOTTOM
ZDEN	FILTYP (2)	median (1)		" "
PEF	FILTYP (3)	median (1)		" "
CN	FILTYP (4)	median (1)		" "
CN	FILTYP (5)	median (1)		" "
	FILTYP (6)	median (1)		" "

MEASUREMENT TYPE	PARAMETER	BOREHOLE & CEMENT	UNITS	INTERVAL (m)
CASING - BOREHOLE # CASING #CASAR	CASTHC 6.5	114.300	mm	TOP BOTTOM
	CASWGT 6.5 (lb/ft)	17.300	kg/m	" "
-G-AC	BIT SIZE (mm)	8 Matrix Density (mm)		" "
	MUD TYPE	WBM		" "
	CALIBRATION (CAL)	LOG CALIPER	mm	" "
BOREHOLE CORR DIAMETER SOURCE	CALIBRATION (CAL)	LOG CALIPER	mm	" "
BOREHOLE CORR DIAMETER	CALIBRATION (CAL)	200		" "

MEASUREMENT TYPE	PARAMETER	CN PROCESSING VALUE	UNITS	INTERVAL (m)
CN ENVIRONMENT TYPE	CNENVT	0		TOP BOTTOM
CN CNS/MS-1 CDARY CORRECTION	CORRECTION	OFF		" "
	CNSTND CORR	2650.000	m	" "

MEASUREMENT TYPE	PARAMETER	ZDL PROCESSING VALUE	UNITS	INTERVAL (m)
ZDL ZDL/MS-1 ZDENSITY TOOL	PE Curve (*)	OFF		TOP BOTTOM
	PE Curve	OFF		" "
DENSITY PORosity	Matrix Density (mm)	2.710	g/cc	" "
ZDL	Adv. Matrix (mm)			" "

CURVE	CURVE	OFFSET (m)	CURVE	CURVE	OFFSET (m)
FILTYP	FILE		FILTYP	FILE	
FILTYP	FILE		FILTYP	FILE	
FILTYP	FILE		FILTYP	FILE	
FILTYP	FILE		FILTYP	FILE	
FILTYP	FILE		FILTYP	FILE	
FILTYP	FILE		FILTYP	FILE	

CURVE	CURVE	OFFSET (m)	CURVE	CURVE	OFFSET (m)
CALI	CALI	0.00	PEF	PEF	0.00
GR	GR	0.00	ZDEN	ZDEN	0.00
RES	RES	0.00	CNDL	CNDL	0.00

CURVE DESCRIPTION REPORT

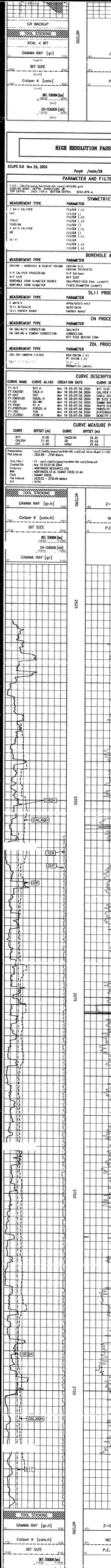
CURVE MNAC	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
FILE1	ALI	Mar 19 08:11:43 2004	BIT SIZE
FILE2	GRCAL	Mar 19 08:11:43 2004	CALIBRATED GAMMA RAY API 1 CAL (RES1)
FILE3	GRCAL	Mar 19 08:11:43 2004	CALIBRATED GAMMA RAY API 1 CAL (RES1)
FILE4	RES1	Mar 19 08:11:43 2004	BP 8 IN. BOREHOLE CORRECTED MEDIUM RESISTIVITY
FILE5	RES1	Mar 19 08:11:43 2004	PROCESSED RESISTIVITY
FILE6	RES1	Mar 19 08:11:43 2004	PROCESSED RESISTIVITY CROSS-SECTION
FILE7	ZCOR	Mar 19 08:11:43 2004	DENSITY CORRECTION (ZCOR) (g/cc)
			DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
CALI	0.00	PEF	0.00	CNDL	0.00
GR	0.00	ZDEN	0.00		
RES	0.00				

Depth Offset
Gamma Ray Offset
Neutron Offset
Density Offset
Pef Offset
Caliper Offset
Bit Size
Other Curves

Well Data Filename: C:\Program Files\Schlumberger\Eclipse 5.0 Data\Well Data\Repeat Pass.wdb
Well Name: Repeat Pass
Field: Unknown
Location: Unknown
Province: Unknown
Country: Unknown
Service Company: Schlumberger
Log Date: Nov 25, 2003
Log Number: 1
Run Number: 1
Drilling Measured From: Kelly Bushing
Permanent Datum: Mean Sea Level
Elevation: 0.000 m
Elevation of Kelly Bushing: 0.000 m
Elevation of Derrick Floor: 0.000 m
Elevation of Ground: 0.000 m
Elevation of Magnetic Declination: 0.000 m
Elevation of Other: 0.000 m
Log Measured From: Kelly Bushing
Above Permanent Datum: 0.000 m
Drilling Measured From: Kelly Bushing
Casing Driller: 0.000 m @ 0.000 m
Casing Logger: 0.000 m @ 0.000 m
Bit Size: 8.000 in @ 0.000 m
Type Fluid in Hole: WBM
Density: 0.000 g/cc
Viscosity: 0.000 cp
Fluid Loss: 0.000 cc
Source of Sample: Unknown
Rm @ Measured Temp: 0.000 ohmm @ 0.000 degC
Rmf @ Measured Temp: 0.000 ohmm @ 0.000 degC
Rmc @ Measured Temp: 0.000 ohmm @ 0.000 degC
Source of Rmf and Rmc: Unknown
Rm @ BHT: 0.000 ohmm @ 0.000 degC
Time Since Circulation: 0.000 hr
Max Recorded Temp: 0.000 degC
Equipment Number: Unknown
Location: Unknown
Recorded By: Unknown
Witnessed By: Unknown


GR BACKUP
XCAL < BIT
GAMMA RAY [gr]
BIT SIZE
Caliper X [calx]
BIT_TENSION [lbf]
CH-TENSION [ctn]
METERS
Z-DENSITY LIMESTONE POROSITY [porlls]
NEUTRON LIMESTONE POROSITY [ncnlls]
P.E. [pe]
Z-CORR [zcor]
HIGH RESOLUTION PASS - DOLOMITE MATRIX
ECLIPS 5.0 Nov 25, 2003
Rcrpt: /main/50
Cplot 5.21
Pdl_Cpp /main/16
Fri Mar 19 05:06:52 2004
Filedev 4.48
PARAMETER AND FILTER SUMMARY REPORT
SYMMETRIC FILTER
BOREHOLE & CEMENT
SLIT PROCESSING
ZDL PROCESSING
CN PROCESSING
CURVE DESCRIPTION REPORT
CURVE MEASURE POINT OFFSET
GAMMA RAY [gr,h]
Caliper X [calx,h]
BIT SIZE
CH-TENSION [ctn,h]
Z-DENSITY DOLOMITE POROSITY [porzdlqh]
NEUTRON DOLOMITE POROSITY [ncnzdlqh]
P.E. [peqh]
Z-CORR [zcorqh]
2625
2650
2675
2700
2725
2750
CRDH
CALXQH
TEN
CHT
GR
PEQH
ZCORQH
CNDH_QH
PORZDL_QH
BIT

CH-TENSION [lbf]
5245
5000
GAMMA RAY [gr]
0
150

HIGH RESOLUTION PASS - LIMESTONE MATRIX

ECLIPS 5.0 Nov 25, 2003

Cplot 6.21 Fri Mar 19 05:07:01 2004
Prpjit /mdh/59 Plot.cpp /mdh/15 Flenlow 4.45

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat2c/jpos/nor1h44-54_run3/d2SDS.prn
WELL: NOR1H44-54 FIELD: SUMMIT CREEK
TOP DEPTH: 2421.179 m BOTTOM DEPTH: 3044.976 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
X AXIS CALIPER	FILTER (.A)	tight (2)		
CBD	FILTER (.B)	medium (1)		
	FILTER (.C)	medium (1)		
SPEED	FILTER (.D)	medium (1)		
TENSION	FILTER (.E)	medium (1)		
Y AXIS CALIPER	FILTER (.F)	tight (2)		
GR	FILTER (.G)	medium (1)		
	FILTER (.H)	tight (2)		
SL-III	FILTER	medium (1)		
Rx	FILTER (.J)	tight (2)		
CNL	FILTER (.K)	tight (2)		

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CASING - BOREHOLE & CEMENT VOLUME	CASING O.D.	114.300	mm	TOP: BOTTOM
	CASING THICKNESS	0.000	mm	" "
X-Y CALIPER PROCESSING	X-Y Caliper	X-Axis (density cal)		" "
BIT SIZE	BIT SIZE	156.000	mm	" "
AETER SOURCE	CALIPER/HOLE DIA. (cable*)	USE CALIPER		" "
AETER	FIXED DIAMETER (cable*)	156.000	mm	" "

SLIM PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
R MATRIX	OPEN/CASED HOLE	OPEN HOLE		TOP: BOTTOM
SLIM AUTOGAIN	AUTO GAIN	AUTO GAIN ON		" "
SLIM ENERGY RANGE	ENERGY RANGE	15-3.0 MeV		" "

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP: BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF		" "
	BIT SIZE BEHIND CSNG	216.000	mm	" "

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
ZDL CNI SMOOTH FILTER	DEN SMTH (.N)	OFF		TOP: BOTTOM
	PE SMTH (.P)	OFF		" "
DENSITY POROSITY	MINERALOG	1.000	g/cm3	" "
	MINERALOG (lime)	2.710	g/cm3	" "

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
BIT	BIT_H	Mar 19 05:07:56 2004	BIT SIZE
CALIXCH	CALIX_H	Mar 19 05:07:56 2004	CALIPER FROM X AXIS OF B-T CALIPERS
CHT	CHT	Mar 19 05:07:56 2004	CABLE HEAD TENSION
CNCLSGH	CNCLS_H	Mar 19 05:07:56 2004	CN SIZE CORR, LIMESTONE COMPENSATED NEUTRON POROSITY
CNLSGH	CNL_HMT	Mar 19 05:07:56 2004	GAMMA RAY
GR	GR	Mar 19 05:07:56 2004	PHOTO ELECTRIC CROSS-SECTION
PORLSGH	PORLS_H	Mar 19 05:07:56 2004	LIMESTONE POROSITY, GAMMA MATRIX
TEN	TEN	Mar 19 05:07:56 2004	DIFFERENTIAL TENSION
ZCORGH	ZCOR_H	Mar 19 05:07:56 2004	DENSITY CORRECTION

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNCLSGH	26.82	PEGH	21.45	ZCORGH	21.45
CALIXCH	21.45	GR	29.64	PORLSGH	21.45		
CHT	0.00	GRGH	29.64	TEN	0.00		

Presentation : cpsz:/dat2c/jpos/nor1h44-54_run3/zdl_hires_hi.pdf [1120 Scale]
Plot Interval : 2820.58 - 2740 Meters

Data File 1 : ff1: cpsz:/dat2c/jpos/nor1h44-54_run3/hires.ctf
Created On : Mon 19 05:07:01 2004
Company : NORTHRIDGE RESOURCES LTD.
Well : NORTHRIDGE ET AL SUMMIT CREEK D 44
Field : SUMMIT CREEK
File Interval : 2820.52 - 2730.06 Meters
Units : METRIC

TOOL STRING

GAMMA RAY [gr.h]
0
150

Caliper X [calx.h]
110
270

BIT SIZE
216
216

CH-TENSION [lbf]
4000
5000

GAMMA RAY [gr]
0
150

METRIC

Z-DENSITY LIMESTONE POROSITY [porzsgh]
(fm/m)
45
-15

NEUTRON LIMESTONE POROSITY [cnclsgh]
(frac)
0
0.45

P.E. [pegh]
0
10

Z-CORR [zcorgh]
-0.25
0.25

2825
2800
2775
2750
2725
2700

DRQH
CALXQH
TEN
CHT
CORQH
CALXQH
PORZLSGH
BIT
PORZLSGH
PEGH
CNCLSGH
ZCORQH
PEQH

TOOL STRING

GAMMA RAY [gr.h]
0
150

Caliper X [calx.h]
110
270

BIT SIZE
216
216

CH-TENSION [lbf]
4000
5000

GAMMA RAY [gr]
0
150

METRIC

Z-DENSITY LIMESTONE POROSITY [porzsgh]
(fm/m)
45
-15

NEUTRON LIMESTONE POROSITY [cnclsgh]
(frac)
0
0.45

P.E. [pegh]
0
10

Z-CORR [zcorgh]
-0.25
0.25

CALIBRATION / VERIFICATION SUMMARY

Source File: /dat2c/jpos/nor1h44-54_run3/d2SC.txt

GR PRIMARY CALIBRATION SUMMARY

TOOL # : 3329NA 5804886 DATE/TIME PERFORMED : Tue Dec 23 13:09:00 2003

UNIT #: 3880TA 006516 CALB JIG #: 4702NK 00-032

	BACKGROUND CALBRTN ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND CALBRTN ON (gAPI)	CALBRTN (gAPI)
GR	196.51	1069.33	872.8 0.172	33.77	185.77 152

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 3880TA 006516 VERI JIG #: 4702NK 00-032

	BACKGROUND CALBRTN ON (cts/s)	(cts/s)	MULT	BACKGROUND CALBRTN ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	193.49	1086.33	0.172	33.26	183.48	150.06

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Mon Mar 15 10:29:02 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK 00-032

	BACKGROUND CALBRTN ON (cts/s)	(cts/s)	MULT	BACKGROUND CALBRTN ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	89.84	996.82	0.177	15.44	171.31	155.87

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Fri Mar 19 07:03:16 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK 00-032

	BACKGROUND CALBRTN ON (cts/s)	(cts/s)	MULT	BACKGROUND CALBRTN ON (gAPI)	(gAPI)	DIFF. (gAPI)
GR	97.93	976.22	0.172	16.83	167.77	150.94

CN PRIMARY CALIBRATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Tue Dec 23 13:43:36 2003

UNIT #: 3880TA 006516 CALIBRATOR #: 2437XB 112675 SOURCE #: 4717XS 039273

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	NOMINAL SSN/LSN	CORRECTION FACTOR	POROSITY (pu)
LSN	876.83	888.01				
SSN	1778.62	1844.22				
RATIO			2.68052	2.75100	1.07629	
CN						21.558

CN PRIMARY VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Tue Dec 23 13:54:59 2003

UNIT #: 3880TA 006516 ICE BLOCK #: 4717ND 00-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	996.86	1021.32				
SSN	1605.40	1658.69				
RATIO			1.62406	1.02629	1.66702	
CN						7.584

CN BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Mon Mar 15 10:40:41 2004

UNIT #: 3888SL 008672 ICE BLOCK #: 4717ND 00-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	974.36	997.71				
SSN	1571.28	1622.29				
RATIO			1.62401	1.02629	1.66760	
CN						7.594

CN AFTER LOG VERIFICATION SUMMARY

TOOL #: 2446XA 168030 DATE/TIME PERFORMED: Fri Mar 19 07:00:23 2004

UNIT #: 3888SL 008672 ICE BLOCK #: 4717ND 00-216

	MEASURED CPS	DEADTM CORR CPS	DTC SSN/LSN	CORRECTION FACTOR	DTC CORR SSN/LSN	POROSITY (pu)
LSN	894.54	914.20				
SSN	1583.24	1635.05				
RATIO			1.76892	1.02629	1.81510	
CN						7.201

CAL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 11:37:49 2003

UNIT #: 3880TA 006516

	SMALL RING (raw)	LARGE RING (raw)	MULT	ADD	SMALL RING TANCE RESP (mm)	(mm)
CALIPER	1884.1	3180.6	0.15673	-117.49436	177.000	381.000

CAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Fri Mar 19 01:49:54 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	1815.2	0.15673	-124.49562	160.000

CAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Fri Mar 19 04:58:45 2004

UNIT #: 3888SL 008672

	I.D. (raw)	MULT	ADD	I.D. (mm)
CALIPER	1801.5	0.15673	124.49562	157.000

ZDL PRIMARY CALIBRATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 12:29:52 2003

UNIT #: 3880TA 006516 CALB. BLOCK SET: 2225XA 094290 CS SOURCE #: 4710NT 000980

	SSD-NDTC WELL (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
MG BLOCK (LO PE)	10587.3	4116.5	4921.6	0.694 0.695	1668.000	7.000	2.240
AL BLOCK	5242.4	420.5	530.6		2697.000	-9.000	
AL+SHIM (CORR)	7295.2	722.4	895.1		2605.000	165.000	
MG+SHIM (HI PE)		1948.9	2491.1	0.280 0.279			10.530
RATIO MG/AL	2.02 1.452	9.79 7.09	9.28 7.02				

	BOUND (cts/s)	C PEAK (cts/s)	AM PEAK CHANNEL	S
	893.5	9.3 9.3	23.4 23.4	

ZDL PRIMARY VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Tue Dec 23 12:58:58 2003

UNIT #: 3880TA 006516 VERI JIG #: 4702NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10651.1	952.2	2824.9	0.183	2375.859	285.000	15.754

ZDL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Mon Mar 15 10:22:18 2004

UNIT #: 3888SL 006672 VERI. JIG #: 4704NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10862.4	947.9	2792.7	0.182 0.182	2384.229 2376.765	280.965 280.965	15.733

ZDL AFTER LOG VERIFICATION SUMMARY

TOOL #: 2228MA 168007 DATE/TIME PERFORMED: Fri Mar 19 06:56:16 2004

UNIT #: 3888SL 008672 VERI. JIG #: 4704NA 142941

	SSD-NDTC (cts/s)	HRD1-NDTC (cts/s)	HRD2-NDTC (cts/s)	SHR	DEN (kg/m3)	CORR (kg/m3)	PE (b/e)
FIELD BLOCK	10934.5	959.7	2819.3	0.186 0.185	2388.474 2384.646	276.390 276.390	15.842

BAKER HUGHES

Baker Atlas

COMPANY NORTHROCK RESOURCES LTD.
WELL NORTHROCK ET AL SUMMIT CREEK B-44
FIELD SUMMIT CREEK
PROVINCE NORTHWEST TERRITORIES

API NO.:

LOCATION:

ELEVATIONS:

LAT 56 [illegible] LONG [illegible]

BAKER HUGHES

Baker Atlas

TRUE VERTICAL DEPTH
COMPENSATED NEUTRON
COMPENSATED THERMAL NEUTRON
GAMMA RAY ON CASING
CALIPER LOG

N.E.B. COPY

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
API NO:	WELL	NORTHROCK ET AL SUMMIT CREEK B-44
	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES

Ver. 5.07
SCU:
300N46A3125402
TRUE VERT DAL
DEPTH

LOCATION:
U.D. 927-40N6-2-1

LSD: 04-30-122-44
LAT 64 22 39.307" LONG 123 51' 22.66"

OTHER SERVICES
NEC-GR-DAL
TNC-GR-DAL
TNC-GR-CAL
DTAM-CB-L-GR-3CAL

PERMANENT DATUM: G.L. ELEVATION 385.3 K
LOG MEASURED FROM: KB 6.4 M ABOVE P.D.
DRILL MEAS. FROM: KELLY BUSHING

ELEVATIONS:
KB 391.7 M
DF
GL 385.3 M

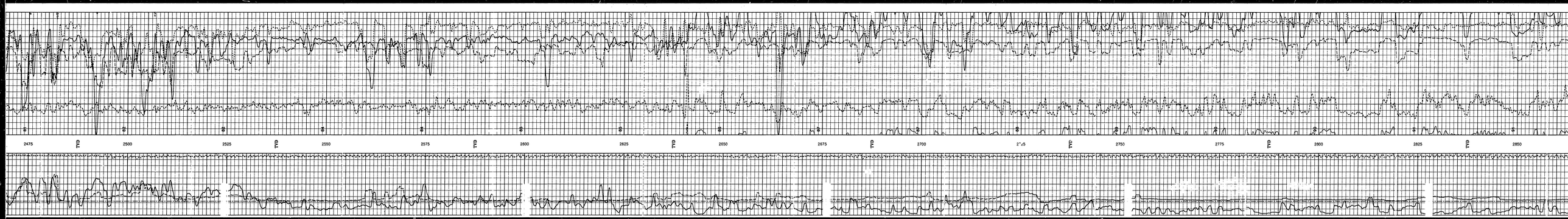
DATE	TRIP		TRIP
TIME			
EXTERNAL ORDER			
DEPTH DRILLER	3060.0 M		3060.7 M
DEPTH LOGGER	3060.0 M		3061.1 M
BOTTOM LOGGED INTERVAL	3043.5 M		3030.5 M
TOP LOGGED INTERVAL	2400.0 M		2400.0 M
CASING DRILLER	914.0@ 0 M	9-5/8@ 0 M	914.0@ 0 M
CASING LOGGER	914.0 M		914.0 M
BIT SIZE	216.0 MM		216.0 MM
TYPE OF FLUID IN HOLE	SALINEGEL		
DENSITY / VISCOSITY	1.09 G/CC	38.0 S	
PH / FLUID LOSS	11.0	0 C3	
SOURCE OF SAMPLE	CIRCULATION		
RM AT MEAS. TEMP	0.17 OHM	@ 18.0 DEGC	
RMF AT MEAS. TEMP	0.12 OHM	@ 18.0 DEGC	
RMC AT MEAS. TEMP	0.23 OHM	@ 18.0 DEGC	
RM AT BHT	0.13 OHM	@ 83.3 DEGC	
TIME SINCE CIRC	12.0 HOURS		
MAX. RECORDED	83.3 DEGC		
EQUIP. NO.	2007	11950	
RECORDED BY	A. SKINNER		
WITNESSED BY	J. HARDY		

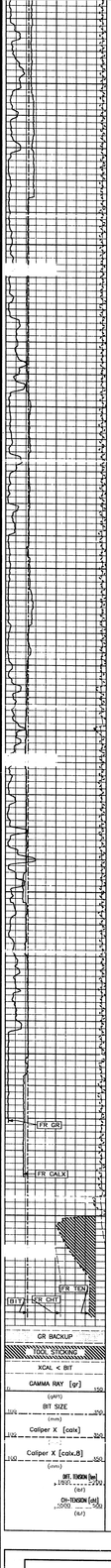
CASING RECORD

	SIZE	WEIGHT	GRADE	FROM	TO
SURFACE STRING	9-5/8"	53.5	K-55	0 M	914.0 M
PRODUCTION STRING					

REMARKS

RUN 1 TOP TO BOTTOM WITH 1 SOLID CENTRALIZER ON CASING.


2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2750
2775
2800
2825
2850



MAIN PASS - DOLOMITE MATRIX - TVD

ECLIPS 5.0 Nov 25, 2003

Purpit /main/59 Cplot 5.21 Pdf_Cpp /main/15 Fri Mar 19 12:18:33 2004 Filename 4.48

PARAMETER AND FILTER SUMMARY REPORT

LIS: /data/projects/ar444-04_run3/107205.pro
LOGGING COMPANY: SCHLUMBERGER
TOP DEPTH: 2421.719 m BOTTOM DEPTH: 3044.874 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
R AXIS CALIPER	FILTER (1)	light (2)			
CHT	FILTER (1)	medium (1)			
SPBLU	FILTER (1)	medium (1)			
TENSION	FILTER (1)	medium (1)			
GR	FILTER (1)	medium (1)			
CN	FILTER (1)	medium (1)			
CDL	FILTER (1)	medium (1)			

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
B CEMENT VOLUME	CASING O.D.	114.300	mm	TOP	BOTTOM
	CASING THICKNESS	0.000	mm		
S+Y CALIPER PROCESSING	S+Y Caliper	X-axis (density cal)			
BIT SIZE	BIT SIZE	158.000	mm		
BOREHOLE COMP DIAMETER SOURCE	CALIPER/FIXED Dia. (comp*)	USE CALIPER			
BOREHOLE COMP DIAMETER	FIXED DIAMETER (comp*)	158.000	mm		

CN PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
CN SALINITY CORRECTION	SALINITY	0	ppm	TOP	BOTTOM
CN CASING & CEMENT CORRECTION	CORRECTION	OFF			
	BIT SIZE BEHIND CSNG	216.000	mm		

ZDL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	INTERVAL (m) BOTTOM
ZDL CH-SMOOTH FILTER	ZDN CH/SM (*)	ON		TOP	BOTTOM
	PE CH/SM (*)	OFF			
DENSITY POROSITY	MATRIX	1.000	g/cm3		
	DOLOMITE (data)	2.900	g/cm3		
ZDL	ZDL TRACKING	ON			

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	BIT	Mar 19 08:01:48 2004	BIT SIZE
F1:CALX	CALX	Mar 19 08:01:48 2004	CALIPER FROM X AXIS OF S+Y CALIPER(S)
F1:CHT	CHT	Mar 19 08:01:48 2004	CABLE TENSION
F1:CNCDL	CNCDL	Mar 19 08:01:48 2004	CN ELEM.CORR. DOLOMITE COMPENSATED NEUTRON POROSITY
F1:GR	GR	Mar 19 08:01:48 2004	GAMMA RAY
F1:PE	PE	Mar 19 08:01:48 2004	PHOTO ELECTRIC CROSS-SECTION
F1:PORZDL	PORZDL	Mar 19 08:01:53 2004	POROSITY FOR DOLOMITE MATRIX
F1:TEN	TEN	Mar 19 08:01:53 2004	CABLE TENSION
F1:WTEM	WTEM	Mar 19 08:01:53 2004	TEMPERATURE IN THE BOREHOLE
F1:ZCOR	ZCOR	Mar 19 08:01:53 2004	DENSITY CORRECTION

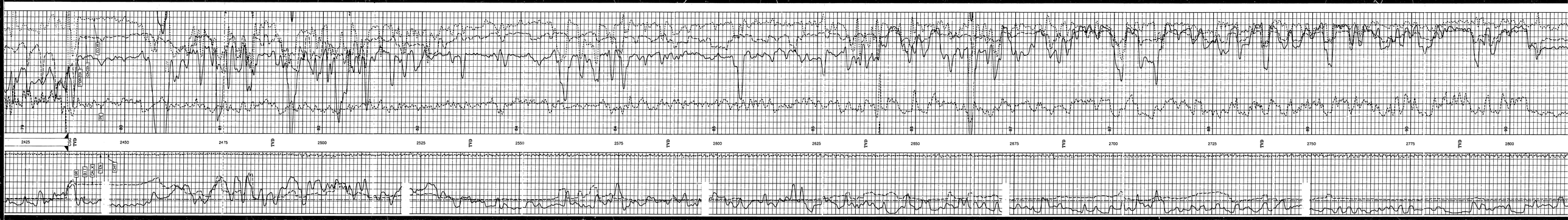
CURVE MEASURE POINT OFFSET

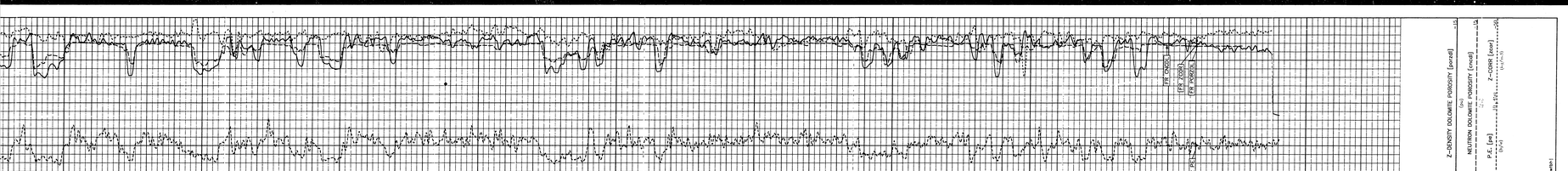
CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CNCDL	38.82	PORZDL	21.40		
CALX	21.40	GR	29.84	TEN	21.40		
CHT	0.00	PE	21.40	ZCOR	21.40		

Presentation Pdf Informat : ccpc2:/data/pro/ar444-04_run3/fcd_main.dlis (1240 Scale)
: 2274.19 - 3058.06 Metres

Data File 1 : F1 : cpc2:/data/pro/ar444-04_run3/epfus.dlis
Created On : Mar 19 08:01:48 2004
Company : SCHLUMBERGER OF CANADA LTD.
Well : SUNCOR ET AL SUMMIT CREEK D-64
Field : SUMMIT CREEK
File Interval : 2274.19 - 3058.06 Metres
Unit : METRIC




CASING
CASING
CASING
BIT
BIT
CASING
CASING
DRY
2425
TVD
2450
2475
TVD
2500
2525
TVD
2550
2575
TVD
2600
2625
TVD
2650
2675
TVD
2700
2725
TVD
2750
2775
TVD
2800



DIRECTIONAL DATA AS SUPPLIED BY CUSTOMER

Data for reference purposes only

| | | |

2252.80	1.30	102.90	9.50	2241.02
2262.40	1.40	113.80	9.60	2250.61
2271.60	1.60	112.10	9.20	2259.81
2281.20	1.40	106.40	9.60	2269.41
2290.80	1.40	102.20	9.60	2279.00
2300.70	1.60	124.00	9.90	2288.90
2310.30	1.90	149.30	9.60	2298.50
2319.90	2.00	164.10	9.60	2308.09
2329.50	1.50	154.60	9.60	2317.69
2339.10	0.80	138.10	9.60	2327.28
2348.70	0.20	153.50	9.60	2336.88
2358.30	0.60	18.20	9.60	2346.48
2368.00	1.60	10.10	9.70	2356.18
2377.50	2.00	12.20	9.50	2365.68
2386.80	2.80	16.80	9.30	2374.97
2396.40	3.10	24.10	9.60	2384.56
2406.20	3.70	24.50	9.80	2394.34
2415.70	4.10	27.30	9.50	2403.82
2425.30	4.10	23.80	9.60	2413.39
2430.00	3.85	21.56	4.70	2418.08
2444.40	3.30	2.00	14.40	2432.45
2453.90	3.70	350.40	9.50	2441.94
2459.70	3.00	356.70	5.80	2447.73
2469.30	3.60	346.90	9.60	2457.31
2488.40	4.80	64.90	19.10	2476.37
2498.00	4.10	104.00	9.60	2485.95
2507.60	3.40	127.90	9.60	2495.53
2517.10	2.60	154.20	9.50	2505.01
2526.70	3.20	133.50	9.60	2514.60
2536.30	1.90	183.40	9.60	2524.19
2545.80	2.20	215.10	9.50	2533.69
2555.40	2.70	247.40	9.60	2543.28
2565.00	3.50	243.50	9.60	2552.86
2574.60	4.90	244.60	9.60	2562.44
2584.20	5.10	237.60	9.60	2572.00
2593.70	4.31	231.20	9.50	2581.47
2603.30	4.20	240.40	9.60	2591.04
2612.90	3.60	233.00	9.60	2600.62
2622.40	5.50	241.10	9.50	2610.09
2632.00	5.40	242.10	9.60	2619.65
2641.60	5.60	238.30	9.60	2629.20
2651.20	3.00	214.40	9.60	2638.78
2660.80	2.60	167.60	9.60	2648.37
2671.10	2.60	180.30	10.30	2658.65
2680.70	3.10	161.60	9.60	2668.24
2690.20	2.40	178.80	9.50	2677.73
2699.80	2.50	182.00	9.60	2687.32
2709.40	1.80	219.50	9.60	2696.92
2719.00	1.60	210.90	9.60	2706.51
2728.60	3.00	240.40	9.60	2716.11
2738.20	2.40	245.30	9.60	2725.69
2747.80	3.20	243.50	9.60	2735.28
2757.40	3.90	271.30	9.60	2744.87
2767.00	4.10	268.50	9.60	2754.44
2776.60	4.30	285.00	9.60	2764.02
2786.10	4.40	282.60	9.50	2773.49
2795.70	4.80	277.00	9.60	2783.06
2805.30	4.60	275.20	9.60	2792.63
2814.80	4.40	272.40	9.50	2802.10
2853.20	3.30	273.80	38.40	2840.41
2882.00	1.90	331.10	28.80	2869.18
2901.20	2.30	341.30	19.20	2888.37
2929.90	3.90	42.80	28.70	2917.03
2968.30	6.80	44.60	38.40	2955.26
3006.50	4.30	66.70	38.20	2993.28
3011.50	4.00	74.10	5.00	2998.27
3050.00	3.00	80.00	38.50	3036.70
3084.00	3.00	90.00	14.00	3050.68

DIRECTIONAL DATA AS COMPUTED
BY BAKER ATLAS

Source File: /dat2a/pass/north44-64_run3/baker.lst

NORTHROCK RESOURCES LTD.
NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
DATA FILE: splice.xtf
LIST DATE: Fr 19 Mar 2004 11:51
INTERVAL: 2390.00 - 3080.00

DEPMEAS meters	TVDEP meters
2390.0	2378.2
2400.0	2388.2
2410.0	2398.2
2420.0	2408.1
2430.0	2418.1
2440.0	2428.1
2450.0	2438.1
2460.0	2448.1
2470.0	2458.0
2480.0	2468.0
2490.0	2478.0
2500.0	2488.0
2510.0	2497.9
2520.0	2507.9
2530.0	2517.9
2540.0	2527.9
2550.0	2537.9
2560.0	2547.9
2570.0	2557.9
2580.0	2567.8
2590.0	2577.8
2600.0	2587.8
2610.0	2597.7
2620.0	2607.7
2630.0	2617.7
2640.0	2627.6
2650.0	2637.6
2660.0	2647.6
2670.0	2657.6
2680.0	2667.6
2690.0	2677.5
2700.0	2687.5
2710.0	2697.5
2720.0	2707.5
2730.0	2717.5
2740.0	2727.5
2750.0	2737.5
2760.0	2747.5
2770.0	2757.4
2780.0	2767.4
2790.0	2777.4
2800.0	2787.3
2810.0	2797.3
2820.0	2807.3
2830.0	2817.3
2840.0	2827.2
2850.0	2837.2
2860.0	2847.2
2870.0	2857.2
2880.0	2867.2
2890.0	2877.2
2900.0	2887.2
2910.0	2897.2
2920.0	2907.1
2930.0	2917.1
2940.0	2927.1
2950.0	2937.1
2960.0	2947.0
2970.0	2956.9
2980.0	2966.9
2990.0	2976.8
3000.0	2986.8
3010.0	2996.8
3020.0	3006.7
3030.0	3016.7
3040.0	3026.7
3050.0	3036.7
3060.0	3046.7
3070.0	3056.7

BAKER HUGHES
Baker Atlas

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

FILE NO:

API NO:

LOCATION:
LIC: 9211-N046-2-1
LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 55' 22.66"

ELEVATIONS:
KB 586.7 M
DF
GL 580.5 M

UID:
300B446430125450
TRUE VERTICAL DEPTH

DATE 18-MAR-04

DIPMETER/

CALIPER

Baker Atlas

BAKER HUGHES

N.E.B. COPY

HEXAGONAL DIPDOC GAMMA RAY LOG 3-ARM CALIPER LOG

FILE NO:	
COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES
LOCATION:	LIC: 1211-140-46-2-1
	LSD: 44-30-125-45
	LAT 64° 30' 02.831" LONG: 125° 45' 45.68"
API NO:	
Ver. 3.87 UID:	30064640013540

PERMANENT DATUM	GL	ELEVATION	580.5 M
LOG MEASURED FROM	KB		5.8 M
DRILL MEAS. FROM	KELLY BUSHING	ABOVE P.D.	

ELEVATIONS:	
KB	586.3 M
DF	
GL	580.5 M

OTHER SERVICES: BHC-GR-ACAL; DI-GR-ACAL; CNL-GR-ACAL

| | | |

CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
AZDP	1.12	BTN4	1.12	CAL3	1.12	RBDP	1.12
BIT	0.00	BTN5	1.12	CHT	0.00	TEN	0.00
BTN1	1.12	BTN6	1.12	DAZDP	1.12		
BTN2	1.12	CAL1	1.12	DEVDP	1.12		
BTN3	1.12	CAL2	1.12	GR	19.81		

Presentation	: opu2:/dat2a/pass/north44-64/hdlp_main.pdf [1:240 Scale]
Plot Interval	: 164.44 - 811.301 Meters
Data File 1	: f1 : opu2:/dat2a/pass/north44-64/1875J03.xtf
Created On	: Jan 30 02:28:01 2004
Company	: NORTHROCK RESOURCES LTD.
Well	: NORTHROCK ET AL SUMMIT CREEK B-44
Field	: SUMMIT CREEK
File Interval	: 164.44 - 811.301 Meters
Oct	: 1875J

GR BACKUP

GAMMA RAY [gr] 0 150

AZIMUTH [azdp] 0 360

DRIFT AZIMUTH [dazdp] 0 90

DEVIATION [devdp] 0 18

RELATIVE BEARING [rbdp] 0 360

METERS

BVOL 0.1 1

Cement 0.1 1

BIT 1 [bit] 6000 6500

BTN 4 [btn4] 6000 6500 BTN 5 [btn5] 6000 6500 BTN 6 [btn6] 6000 6500

BTN 2 [btn2] 6000 6500 BTN 3 [btn3] 6000 6500

TOOL STICKING

CALIPER 1 [cal1] 5 15

BIT SIZE 5 15 CALIPER 2 [cal2] 5 15

BIT SIZE 5 15

CALIPER 3 [cal3] 5 15

DIFF. TENSION [ten] 0 6000

CH-TENSION [cht] 0 6000

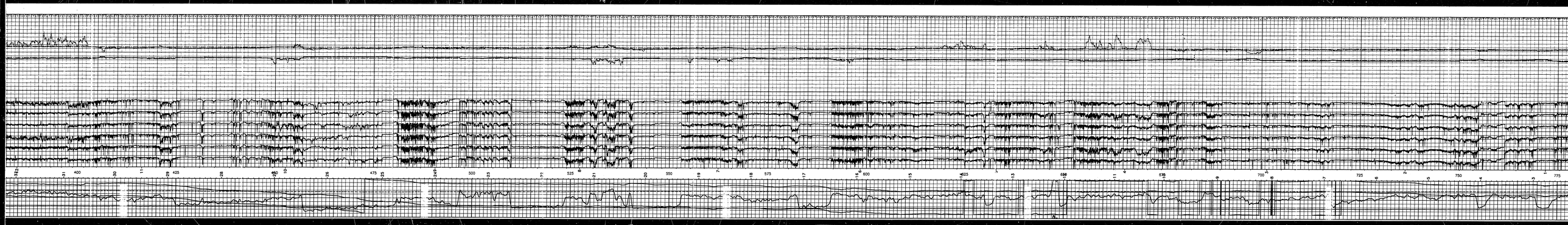
175 47 200 46 CSG 45 17 225 44 43 16 250 42 41 275 40 15 39 300 38 14 37 325 36 35 350 13 34 33 375

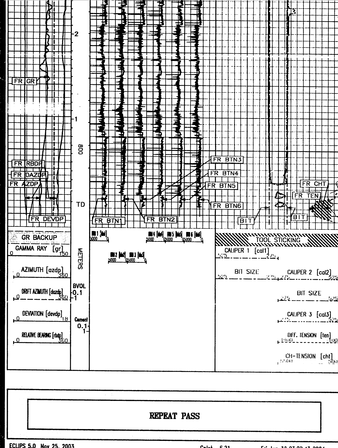
GR AZDP DAZDP DEVDP RBDP

BTN4 BTN5 BTN6 BTN1 BTN2 BTN3

CAL1 BIT

CAL2 BIT CAL3 TEN CHT


400
425
450
475
500
525
550
575
600
625
650
675
700
725
750
775



REPEAT PASS

ECLIPS 5.0 Nov 25, 2003

Prog# /main/59

Cplot 6.21
Pdf_Cpp /main/16

Fri Jun 30 03:22:43 2004
Fileview 6.40

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat2d/pass/nor844-64/edt.pp
TOP DEPTH: 735.3m ▼ BOTTOM DEPTH: 812.309 m

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
DIST	FILTER []	median [3]		TOP BOTTOM
TENSION	FILTER []	median [3]		" "
GR	FILTER []	median [3]		" "

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m)
BIT SIZE		311.000	mm	TOP BOTTOM

CURVE DESCRIPTION REPORT

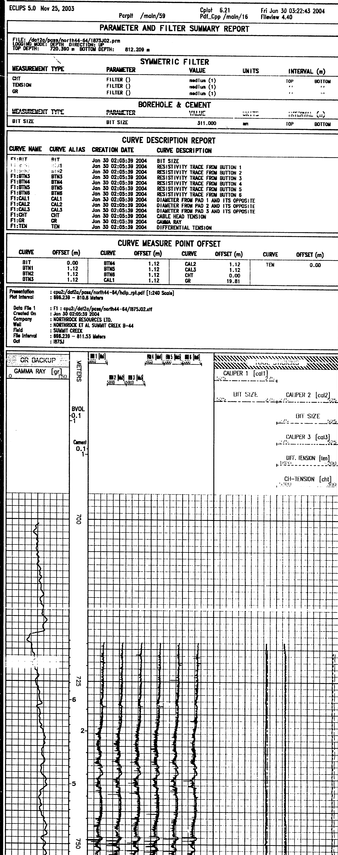
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT1	BIT	Jun 30 02:05:39 2004	BIT SIZE
F1:BTN1	BTN1	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 1
F1:BTN2	BTN2	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 2
F1:BTN3	BTN3	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 3
F1:BTN4	BTN4	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 4
F1:BTN5	BTN5	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 5
F1:BTN6	BTN6	Jun 30 02:05:39 2004	RESISTIVITY TRACE FROM BUTTON 6
F1:CAL1	CAL1	Jun 30 02:05:39 2004	DIAMETER FROM PAD 1 AND ITS OPPOSITE
F1:CAL2	CAL2	Jun 30 02:05:39 2004	DIAMETER FROM PAD 2 AND ITS OPPOSITE
F1:CAL3	CAL3	Jun 30 02:05:39 2004	DIAMETER FROM PAD 3 AND ITS OPPOSITE
F1:CHT	CHT	Jun 30 02:05:39 2004	CABLE HEAD TENSION
F1:GR	GR	Jun 30 02:05:39 2004	GAMMA RAY
F1:TEN	TEN	Jun 30 02:05:39 2004	DIFFERENTIAL TENSION

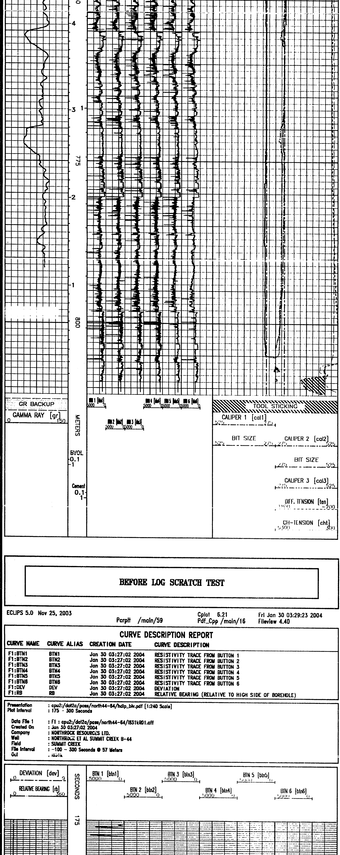
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT1	0.00	BTN4	1.12	CAL2	1.12	TEN	0.00
BTN1	1.12	BTN5	1.12	CAL3	1.12		
BTN2	1.12	BTN6	1.12	CHT	0.00		
BTN3	1.12	CAL1	1.12	GR	19.81		

Presentation : run2/dat2d/pass/nor844-64/hdtp_rp5.pdf [1:240 Scale]
Hist Interval : 809.238 – 810.8 Meters

Data File 1 : f1 : run2/dat2d/pass/nor844-64/RST5.dat
Created On : Jun 30 02:05:39 2004
Company : NORTHRIDGE RESOURCES LTD.
Well : NORTHRIDGE ET AL SUMMIT CREEK D-64
Field : SUMMIT CREEK
File Interval : 808.238 – 811.53 Meters
Qui : RPSU





BEFORE LOG SCRATCH TEST

ECLIPS 5.0 Nov 25, 2003

Prog# /main/59

Cplot 6.21
Pdf_Cpp /main/16

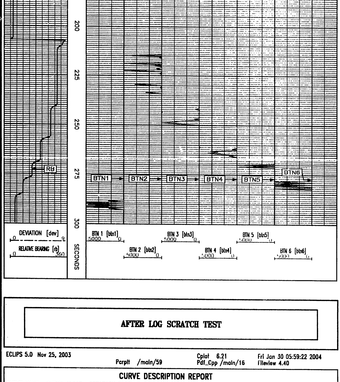
Fri Jun 30 03:29:23 2004
Fileview 6.40

CURVE DESCRIPTION REPORT

CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BTN1	BTN1	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 1
F1:BTN2	BTN2	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 2
F1:BTN3	BTN3	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 3
F1:BTN4	BTN4	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 4
F1:BTN5	BTN5	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 5
F1:BTN6	BTN6	Jun 30 03:27:02 2004	RESISTIVITY TRACE FROM BUTTON 6
F1:DEV	DEV	Jun 30 03:27:02 2004	DEVIATION
F1:RB	RB	Jun 30 03:27:02 2004	RELATIVE BEARING (RELATIVE TO HIGH SIDE OF BOREHOLE)

Presentation : run2/dat2d/pass/nor844-64/hdtp_bfr.pdf [1:240 Scale]
Hist Interval : 175 – 300 Seconds

Data File 1 : f1 : run2/dat2d/pass/nor844-64/RST01601.stf
Created On : Jun 30 03:29:23 2004
Company : NORTHRIDGE RESOURCES LTD.
Well : NORTHRIDGE ET AL SUMMIT CREEK D-64
Field : SUMMIT CREEK
File Interval : 1-100 – 300 Seconds @ 57 Meters
Qui : RPSU



AFTER LOG SCRATCH TEST

ECLIPS 5.0 Nov 25, 2003

Prog# /main/59

Cplot 6.21
Pdf_Cpp /main/16

Fri Jun 30 05:59:22 2004
Fileview 6.40

CURVE DESCRIPTION REPORT

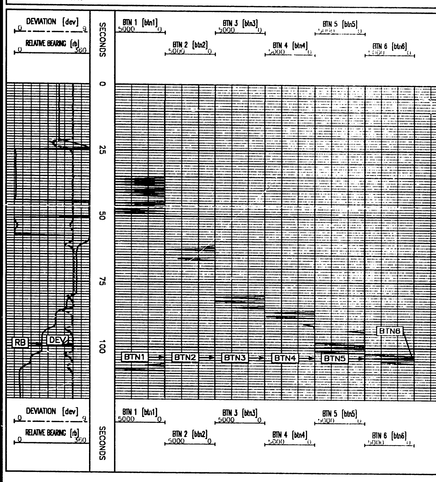
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BTN1	BTN1	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 1
F1:BTN2	BTN2	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 2
F1:BTN3	BTN3	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 3
F1:BTN4	BTN4	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 4
F1:BTN5	BTN5	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 5
F1:BTN6	BTN6	Jun 30 04:22:43 2004	RESISTIVITY TRACE FROM BUTTON 6
F1:DEV	DEV	Jun 30 04:22:43 2004	DEVIATION
F1:RB	RB	Jun 30 04:22:43 2004	RELATIVE BEARING (RELATIVE TO HIGH SIDE OF BOREHOLE)

Presentation : run2/dat2d/pass/nor844-64/hdtp_aft.pdf [1:240 Scale]
Hist Interval : 175 – 300 Seconds

Data File 1 : f1 : run2/dat2d/pass/nor844-64/RST01602.stf
Created On : Jun 30 05:59:22 2004
Company : NORTHRIDGE RESOURCES LTD.
Well : NORTHRIDGE ET AL SUMMIT CREEK D-64
Field : SUMMIT CREEK
File Interval : 1-100 – 300 Seconds @ 57 Meters
Qui : RPSU



Source File : cpu2:/dat2a/pem/north44-84/8875.dat
Created On : Jan 30 04:22:42 2004
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK B-44
Field : SUMMIT CREEK
File Interval : 0 - 120 Seconds @ 1.42421 Meters
Dat : 8875J



CALIBRATION / VERIFICATION SUMMARY

Source File: /dat2a/pem/north44-84/8875J.by1

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:09:08 2003

UNIT #: 3880TA 006516 CALB JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	CALBRTR ON (cts/s)	CR DIFF (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	196.51	1069.33	872.8	0.172	33.77	183.77	150
			MIN: 0 MAX: 0				

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Tue Dec 23 13:17:41 2003

UNIT #: 3880TA 006516 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	193.49	1066.33	0.172	33.25	183.26	150.00
				140.00	160.00	

GR BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Thu Jan 29 15:30:39 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	60.82	939.91	0.172	10.45	161.53	151.08
				140.00	160.00	

GR AFTER LOG VERIFICATION SUMMARY

TOOL #: 1329XA 185486 DATE/TIME PERFORMED: Thu Jan 29 22:32:54 2004

UNIT #: 3888SL 008672 VERI JIG #: 4702NK da-032

	BACKGROUND CALBRTR ON (cts/s)	CALBRTR ON (cts/s)	MULT	BACKGROUND CALBRTR ON (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	98.07	953.18	0.172	16.85	163.81	146.96
				140.00	160.00	

DIP_OR PRIMARY CALIBRATION SUMMARY

TOOL #: 1020MA 173135 DATE/TIME PERFORMED: Mon Dec 29 15:50:36 2003

UNIT #: 3888SA 008672 ORIENTATION #: 4401XB 10054379

	DEV (deg)	QA (mG)	MEAS RB (deg)	RB OFFSET (deg)	ROTATED RB (deg)
ORIT TBM CHECK	89.7	1001.9	0.6		
	MIN: 0	MAX: 1800.0			
HDIP ORIENTATION			9.6	9.6	0.0

DIPCAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1020MA 173135 DATE/TIME PERFORMED: Mon Dec 29 15:30:26 2003

UNIT #: 3888SA 008672

	SMALL RING (dV)	LARGE RING (dV)	MULT (mm/mv)	ADD (mm)	SMALL RING (mm)	LARGE RING (mm)
RADIUS 1	1232.9	2609.9	0.0553	33.3713	101.600	177.800
RADIUS 2	1269.5	2646.5	0.0553	31.3447	101.600	177.800
RADIUS 3	1304.0	2658.7	0.0562	28.2563	101.600	177.800
RADIUS 4	1328.6	2680.7	0.0564	26.7209	101.600	177.800
RADIUS 5	1316.2	2690.4	0.0554	28.6218	101.600	177.800
RADIUS 6	1647.9	3037.1	0.0549	11.2046	101.600	177.800
CALIPER 1					203.200	355.600
CALIPER 2					203.200	355.600
CALIPER 3					203.200	355.600

	SMALL RING	LARGE RING
PAD FORCE %	17.057	26.204
DC MOTOR V	1.3	1.3

DIPCAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1020MA 173135 DATE/TIME PERFORMED: Fri Jan 30 01:38:04 2004

UNIT #: 3888SL 008672

	I.D. (mV)	MULT	ADD	I.D. (mm pct V)	CASING SIZE (mm)
RADIUS 1	2148.4	0.05534	33.37127	152.265	
RADIUS 2	2270.5	0.05534	31.34468	156.994	
RADIUS 3	2482.9	0.05625	28.25630	167.913	
RADIUS 4	2538.1	0.05638	26.72091	169.764	
RADIUS 5	2446.3	0.05545	28.62182	164.263	
RADIUS 6	2755.9	0.05482	11.20457	151.460	
CALIPER 1				322.029	320.000
CALIPER 2				321.257	
CALIPER 3				319.371	
PAD FORCE				14.199	
DC MOTOR V				1.3	

DIPCAL AFTER LOG VERIFICATION SUMMARY

TOOL #: 1020MA 173135 DATE/TIME PERFORMED: Fri Jan 30 03:47:12 2004

UNIT #: 3888SL 008672

	I.D. (mV)	MULT	ADD	I.D. (mm pct V)	CASING SIZE (mm)
RADIUS 1	2246.1	0.05534	33.37127	157.669	
RADIUS 2	2258.8	0.05534	31.34468	156.345	
RADIUS 3	2297.4	0.05625	28.25630	157.476	
RADIUS 4	2351.8	0.05638	26.72091	159.266	
RADIUS 5	2453.4	0.05545	28.62182	165.211	
RADIUS 6	2778.3	0.05482	11.20457	163.605	
CALIPER 1				316.935	320.000
CALIPER 2				321.558	
CALIPER 3				321.081	
PAD FORCE				13.561	
DC MOTOR V				1.3	

BAKER HUGHES / Baker Atlas

COMPANY: NORTHROCK RESOURCES LTD.
WELL: NORTHROCK ET AL SUMMIT CREEK B-44
FIELD: SUMMIT CREEK
PROVINCE: NORTHWEST TERRITORIES

FRF NO:
API NO:

LOCATION:
LIC: 9211 NO46-2-1
LSD: 64 30 125 45
LAT 64 23' 02.351" LONG 125 55' 22.06"

ELEVATIONS:
KB 586.3 M
DF
GL 580.5 M
DATE 30-JAN-04

UID: 30884464301254S0

N.E.B. Core

Baker Atlas



Hexagonal Diplog
Structural Dip Analysis

COMPANY: NORTHROCK RESOURCES LTD.

WELL: NORTHROCK ET AL SUMMIT B-44

FIELD: SUMMIT CREEK

PROVINCE: NORTHWEST TERRITORIES

LOCATION: LSD:04-30-135-45

SEC N/A TWP N/A RGE N/A

ELEVATIONS: KB 586.3 M DF ____ GL 580.5 M

DATE: 31-JAN-2004 ECC 24718

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

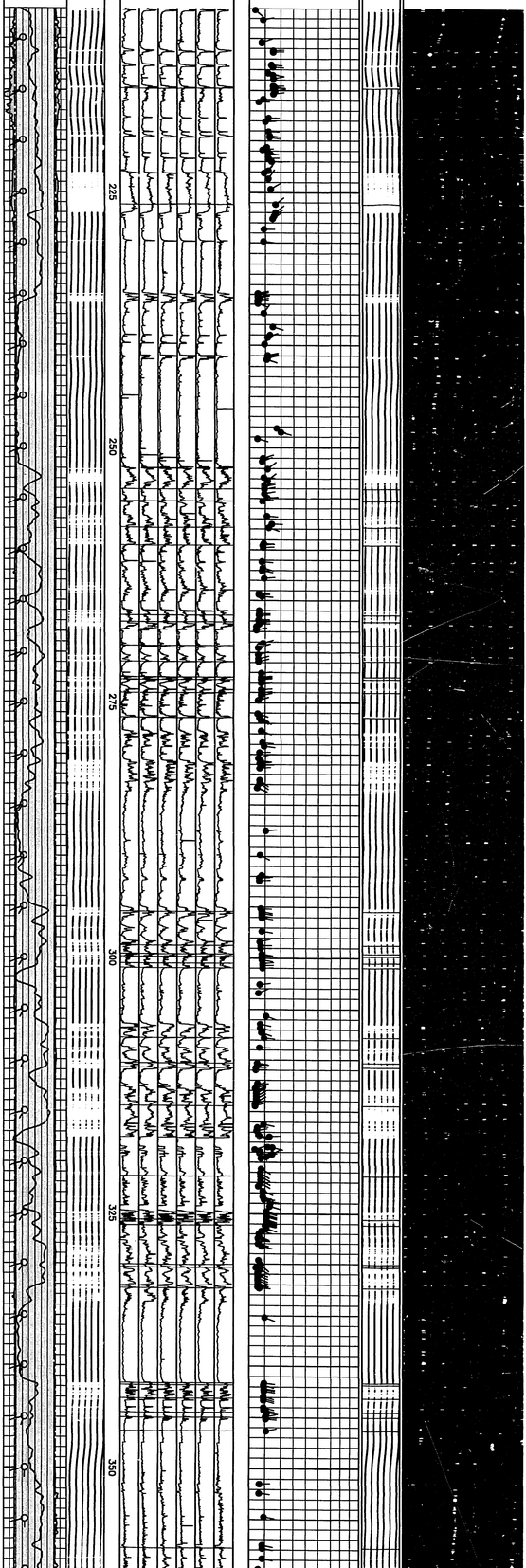
REMARKS

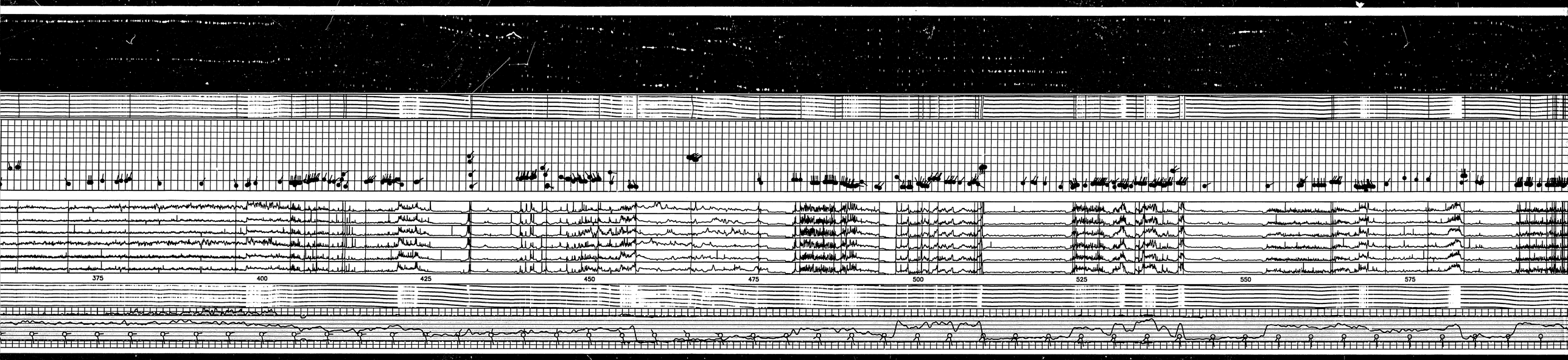
LOG ANALYST: IULIANA CRAICIU
DIPS VISUALLY PICKED ON BOTH RAW HDIP BUTTON CURVES AND HDIP SYNTHETIC RESISTIVITY IMAGE.

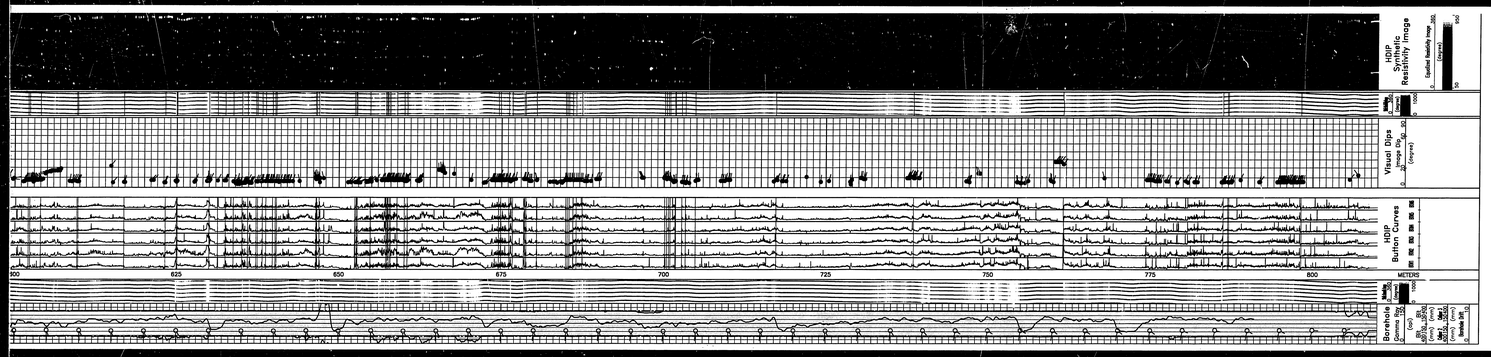
EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION

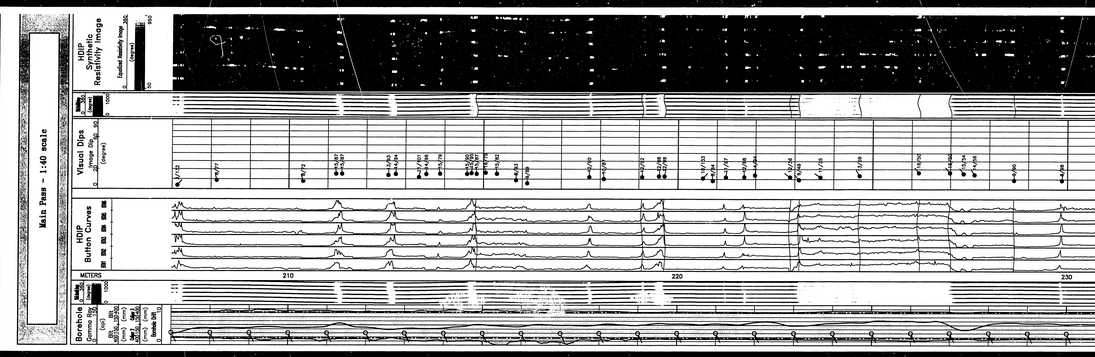
Main Pass - 1:240 scale

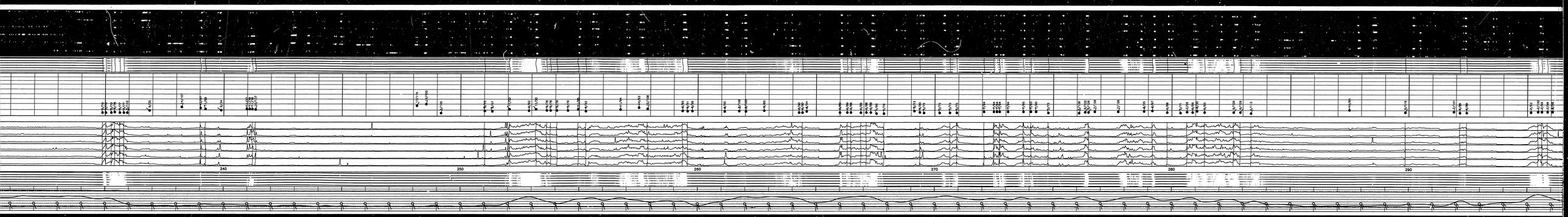


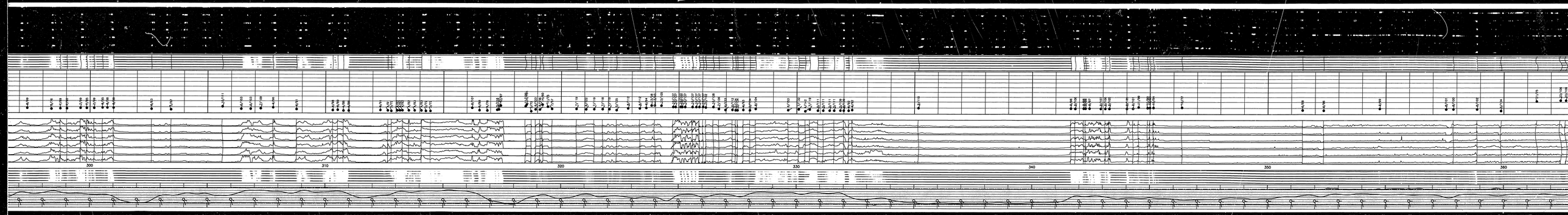

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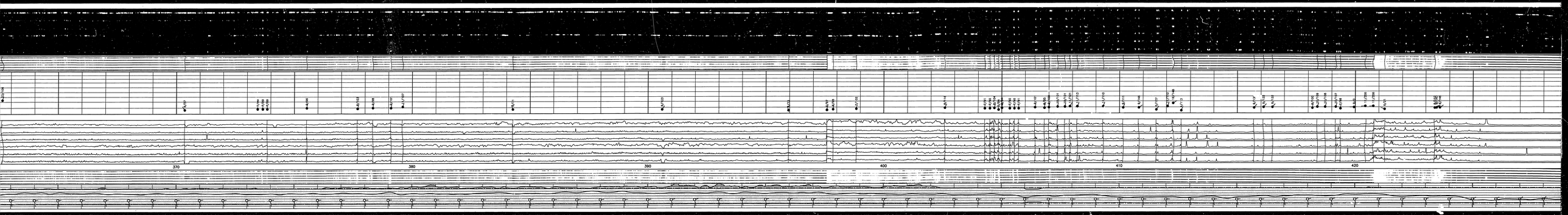


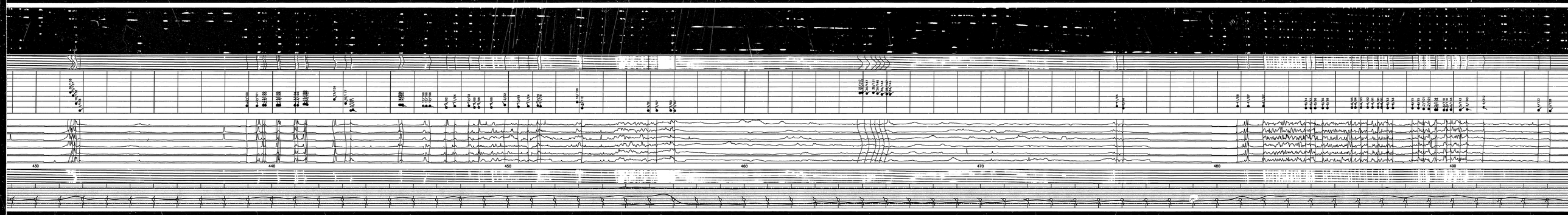
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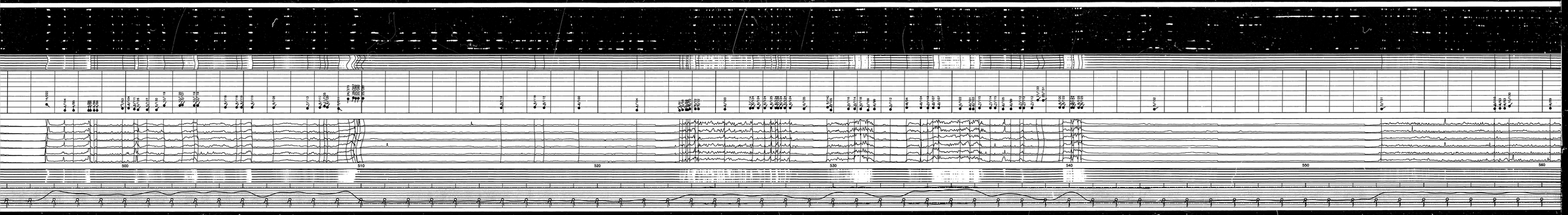


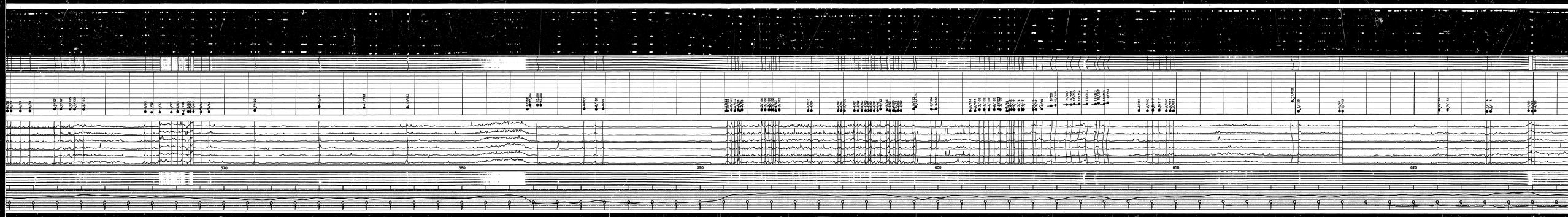

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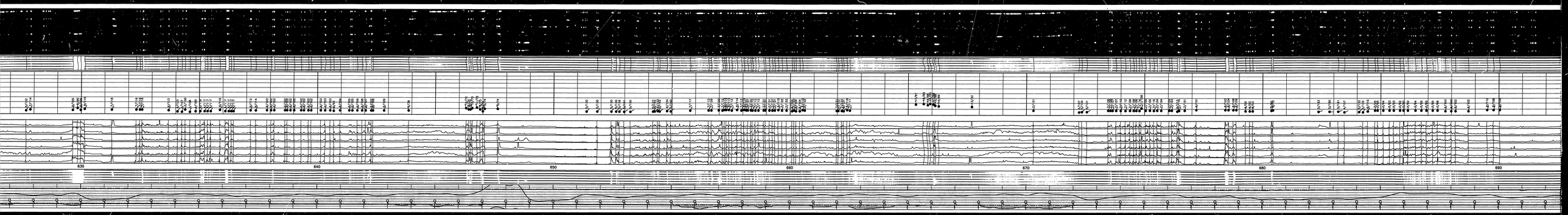

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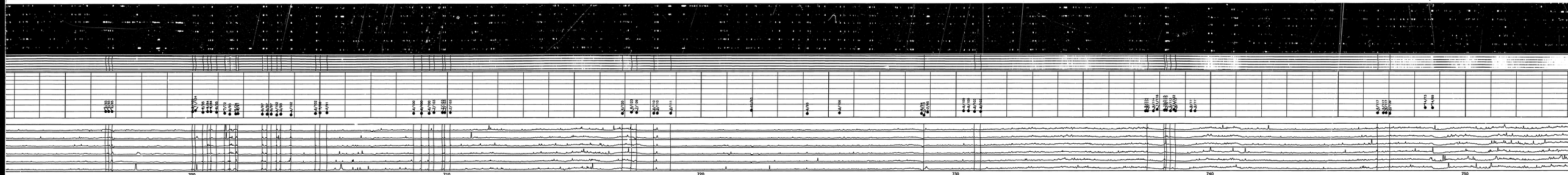

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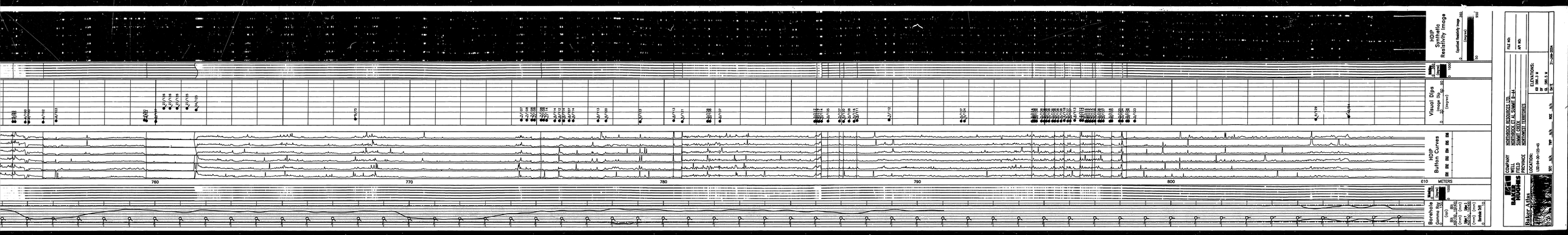

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630
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720
730
740
750


HDIP Synthetic Resistivity Image
Visual Dips
HDIP Button Curves
Borehole
750
770
780
790
800
810
METERS
COMPANY NOTEBOOK RESOURCES LTD.
WELL NOTEBOOK ET AL SOMME B-44
FIELD SOMME
PROVINCE NORTHWEST TERRITORIES
LOCATION: 120-H-10-10-45
ELEVATIONS: KB 386.3 m
GL 380.9 m
DATE 21-JAN-2004
Baker Atlas
BAKER HUGHES

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

HEF Petrophysical Consulting Inc.

WELL NAME: NORTHROCK ET AL SUMMIT CREEK B-44

N.E.B COPY

HAZI & P1AZ ←
−1 DEG:H DEV 9
0 GR 150
GA:PI
100 DMIN 350
MM
100 DMAX 350
MM

STATIC CBIL IMAGE
BLACK LINE INDICATES THE HIGH SIDE OF THE HOLE
FRACTURES
0 CBIL(A) 360

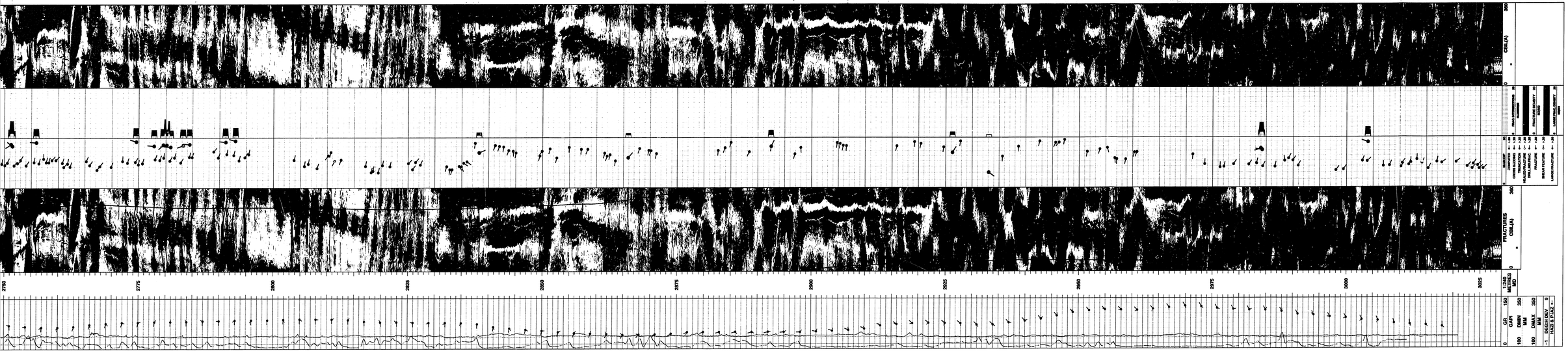
1:240 METRES MD

COMPUTED ←→ >.30
CROSS BEDDING ←→ >.30
TRUNCATION ←→ >.30
HEALED FRACTURE ←→ >.30
DRILLING FRAC. ←→ >.30
FRACTURE ←→ >.30
SHEAR FEATURE ←→ >.30
LARGE FRACTURE ←→ >.30
0 MARKDIP 90

STATISTICALLY CORRECTED FRACTURE DENSITY
0 FRAC INTERSECTIONS/M 20
0 FRACTURE DENSITY 20
M2/M3
0 LARGE FRAC DENSITY 20
M2/M3

STATIC CBIL IMAGE
BLACK LINE INDICATES THE HIGH SIDE OF THE HOLE
0 CBIL(A) 360

2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
2725
2750


CBIL(A)
0
90
FRACTURES
CBIL(A)
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90
2750
2775
2800
2825
2850
2875
2900
2925
2950
2975
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3025
1:240
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LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

MISCELLANEOUS

BAKER HUGHES

N.E.B. COPY

Baker Atlas

MAC SM

Multipole Array Acoustilog

Slowness Analysis

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES
LOCATION:	LIC: 9211-ND46-2-1
	LAT 64 53' 05.351" LONG 125 53' 22.66"
ELEVATIONS:	KB 586.3 M DF GL 580.6 M
DATE	29-JAN-04 ECC 24718

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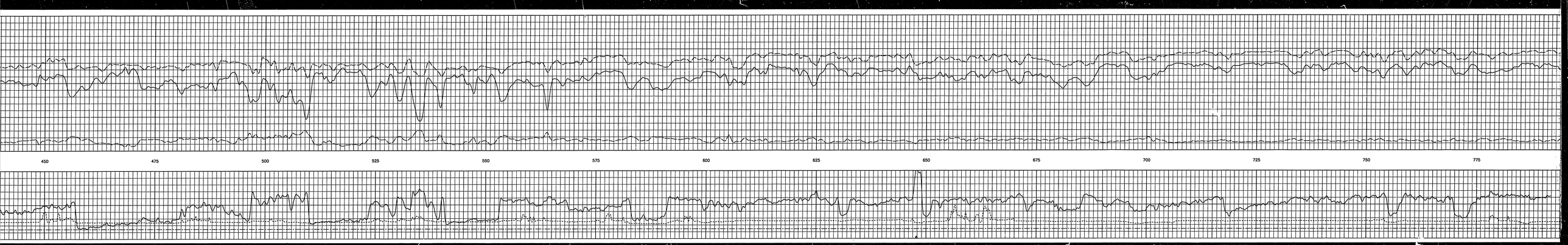
BOREHOLE RECORD			
BIT SIZE	222.3	TO	1524.0
MUD WT.	1.04	VISC	50.0

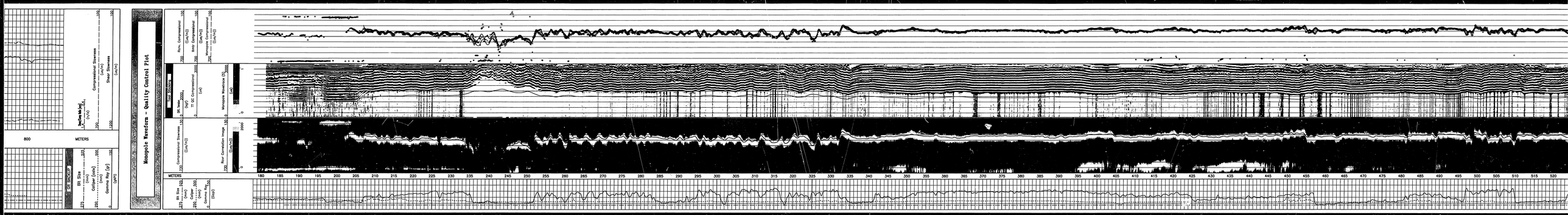
CASING RECORD			
SIZE	WGHT	GRDE	DPTH
339.7 MM	81.5KG/M		222.3

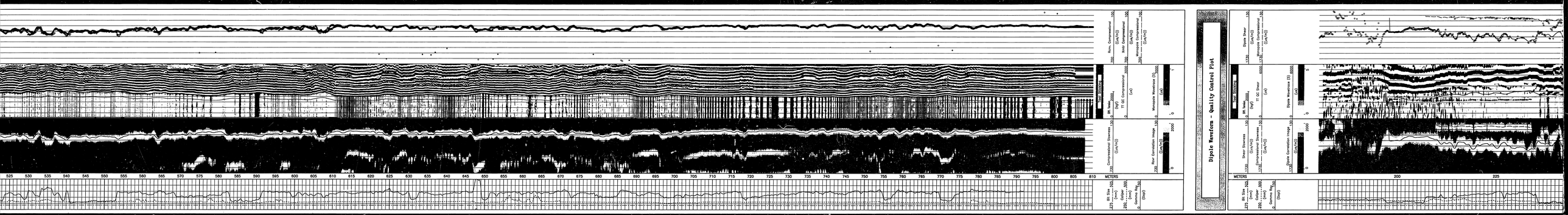
REMARKS

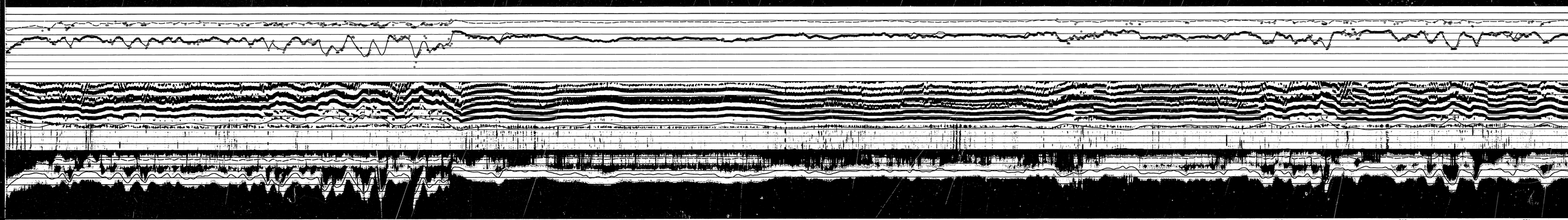
TIME STOP CIRCULATION: 13:20, 29-JAN-04.
RUN NO. 1 LOGGING RUN.
RUN COMBINATION: MAC-A
VOLUME SAT OPERATED FROM GL 5.4315 GL/FT AT 3 VOLUTES.
VOLUME SAT OPERATED FROM GL 5.4315 GL/FT AT 3 VOLUTES.
CLIENT STATED MUD WEIGHT WAS 1.04 KG/L AT TD.
CLIENT STATED MUD WEIGHT WAS 1.04 KG/L AT TD.
DOG LEG SEVERITY SCALE IN DEGREES PER 30 METRES.
DOG LEG SEVERITY SCALE IN DEGREES PER 30 METRES.
TRANSMITTER-RECEIVER SPACING USED.
TRANSMITTER-RECEIVER SPACING USED.
DOG LEG SEVERITY CALCULATED USING MINIMUM CURVATURE METHOD.
DOG LEG SEVERITY CALCULATED USING MINIMUM CURVATURE METHOD.
LOGGED AT CLIENT'S REQUEST
LOGGED AT CLIENT'S REQUEST
LOGGED AT 1 FOOT
LOGGED AT 1 FOOT
LOG VALUES READ AT 0.5 FOOT INTERVALS.
LOG VALUES READ AT 0.5 FOOT INTERVALS.
DSI 18 - MCGOWAN / A. WITTLESHOT
DSI 18 - MCGOWAN / A. WITTLESHOT
LOG VALUES READ AT 1 FOOT
LOG VALUES READ AT 1 FOOT
(UP HOLE TO MAIN PASS)
(UP HOLE TO MAIN PASS)

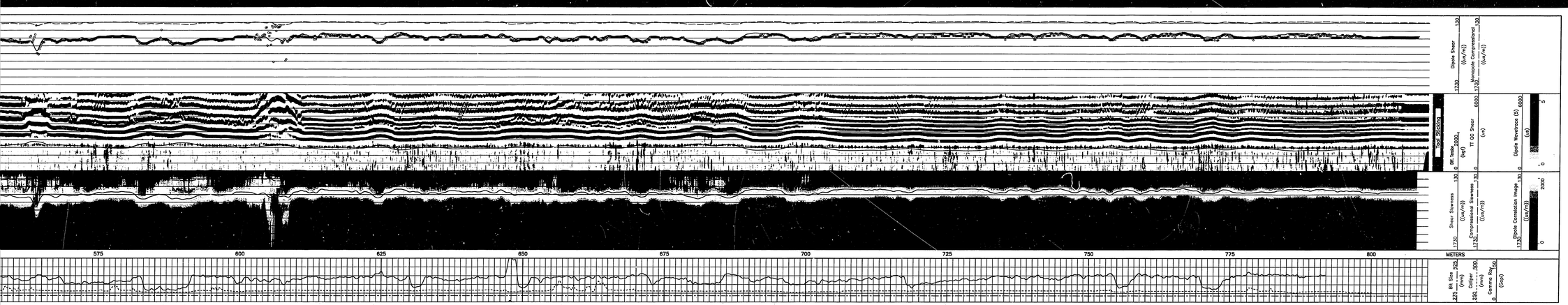
| EQUIPMENT DATA | | |


450
475
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525
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575
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625
650
675
700
725
750
775


Monopole Waveform - Quality Control Plot
Rec. Compressional (us/m)
Xmtr Compressional (us/m)
Monopole Compressional (us/m)
Bit Size (mm)
TT QC Compressional (us)
Monopole Reverence (us)
Compressional Slowness (us/m)
Rcvr Correlation Image (Counts)
METERS
Bit Size (mm)
Caliper (mm)
Gamma Ray (gAPI)
Compressional Slowness (us/m)
Shear Slowness (us/m)
Caliper (mm)
Gamma Ray (gAPI)
METERS


Dipole Waveform - Quality Control Plot
Mono. Compressional
Xmit. Compressional
Monopole Compressional
Monopole Waveform (2)
Mon Correlation Image
Slow Shear
Compressional Slowness
Dipole Waveform (2)
Dipole Correlation Image
Bit Size
Caliper
Gamma Ray
METERS
525 530 533 540 545 550 555 560 565 570 575 580 585 590 595 600 605 610 615 620 625 630 635 640 645 650 655 660 665 670 675 680 685 690 695 700 705 710 715 720 725 730 735 740 745 750 755 760 765 770 775 780 785 790 795 800 805 810
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COMPANY NORTHROCK RESOURCES LTD.
WELL NORTHROCK ET AL SUMMIT CREEK B-44
FIELD
PROVINCE NORTHWEST TERRITORIES
LOCATION:
LSD: 13-TWP-096-R-1
LAT 56° 22' 02.31" LONG 125° 53' 23.68"

ELEVATIONS:
KB 396.9 M
DF
GL 386.9 M

UWI
300B445N1254S0
DATE 29-JAN-04

FILE NO:
API NO:

BAKER HUGHES
Baker Atlas

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

BAKER HUGHES

CEMENT VOLUME LOG FOR 311.0 MM BOREHOLE AND 244.5 MM CASING ORIENTED TO TRUE NORTH

Baker Atlas

N.F.B. COPY

FILE NO:	COMPANY	NORTHROCK RESOURCES LTD.
API NO:	WELL	NORTHROCK ET AL SUMMIT CREEK B-44
	FIELD	SUMMIT CREEK
	PROVINCE	NORTHWEST TERRITORIES
Ver. 3.57	LOCATION:	OTHER SERVICES
3320446430125450	L/C: 9211-HDAS-2-1	HDIL-GR-CAL
	LSD: 64-30-125W6-45	BHC-GR-VOL
	LAT 64 23' 02.351" LONG 125 53' 22.087"	CN-2DSL-VOL
		HDIL-GR-CAL

PERMANENT DATUM	GL	ELEVATION	580.5 M
LOG MEASURED FROM	KB	5.8 M	ABOVE P.D.
DRILL MEAS. FROM	KELLY BUSHING		

ELEVATIONS:
K.B. 586.3 M
G.L. 580.5 M

DATE		30-JAN-04	
RUN	TRIP	1	
SERVICE ORDER		203851	
DEPTH DRILLER		815.0 M	
DEPTH LOGGER		806.7 M	
BOTTOM LOGGED INTERVAL		807.4 M	
TOP LOGGED INTERVAL		207.0 M	
CASING DRILLER		339.7 @ 0 DEG	298.0 M
CASING LOGGER		0 DEG	M
BIT SIZE		311 MM	
TYPE OF FLUID IN HOLE		CHEM	
DENSITY	VISCOSITY	1125.0 KG/M3	86.0 S
PH	FLUID LOSS	9.5	7.4 ML
SOURCE OF SAMPLE		CIRCULATION	
RM AT MEAS. TEMP.		3.1 OHM @ 25.5 DEGC	
RMF AT MEAS. TEMP.		2.4 OHM @ 21.0 DEGC	
RMC AT MEAS. TEMP.		3.1 OHM @ 21.0 DEGC	
SOURCE OF RMF	RMC	MEASURED	MEASURED
RM AT BHT		2.8 OHM @ 26.8 DEGC	
TIME SINCE CIRC.		16.5 HOURS	
MAX. RECORDED TEMP.		26.8 DEGC	
EQUIPMENT LOCATION		6070	NISKU
RECORDED BY		J. BUCKER	
WITNESSED BY		B. MCMILLAN	

IN MAKING INTERPRETATIONS OF LOG OUR EMPLOYEES WILL GIVE OUTMOST THE BENEFIT OF THEIR BEST JUDGEMENT, BUT FOR ALL INTERPRETATIONS ARE GIVEN WITHOUT GUARANTEE OF ANY KIND, EXPRESSED OR IMPLIED, AND WE SHALL NOT BE LIABLE FOR ANY LOSS OR EXPENSE INCURRED BY YOU IN CONNECTION WITH ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD			
BIT SIZE	FROM	TO	
311 MM	207.0	815.0	

CASING RECORD			
SIZE	WEIGHT	GRADE	TOP
244.5 MM	47.6 KG/M	J-55	0.0

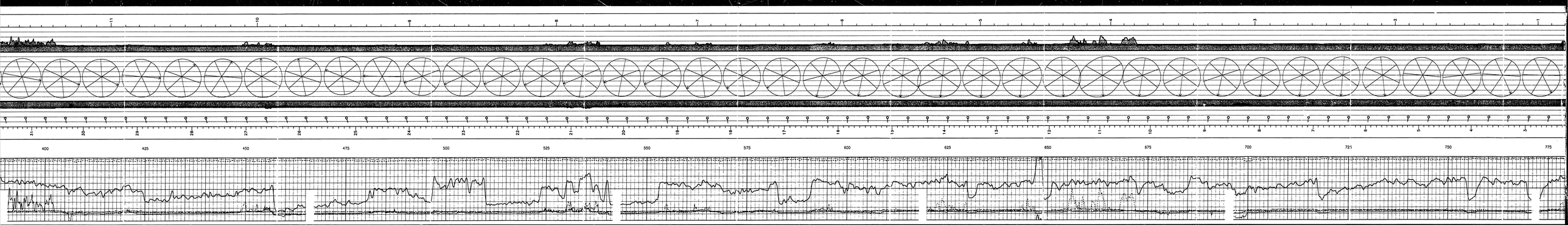
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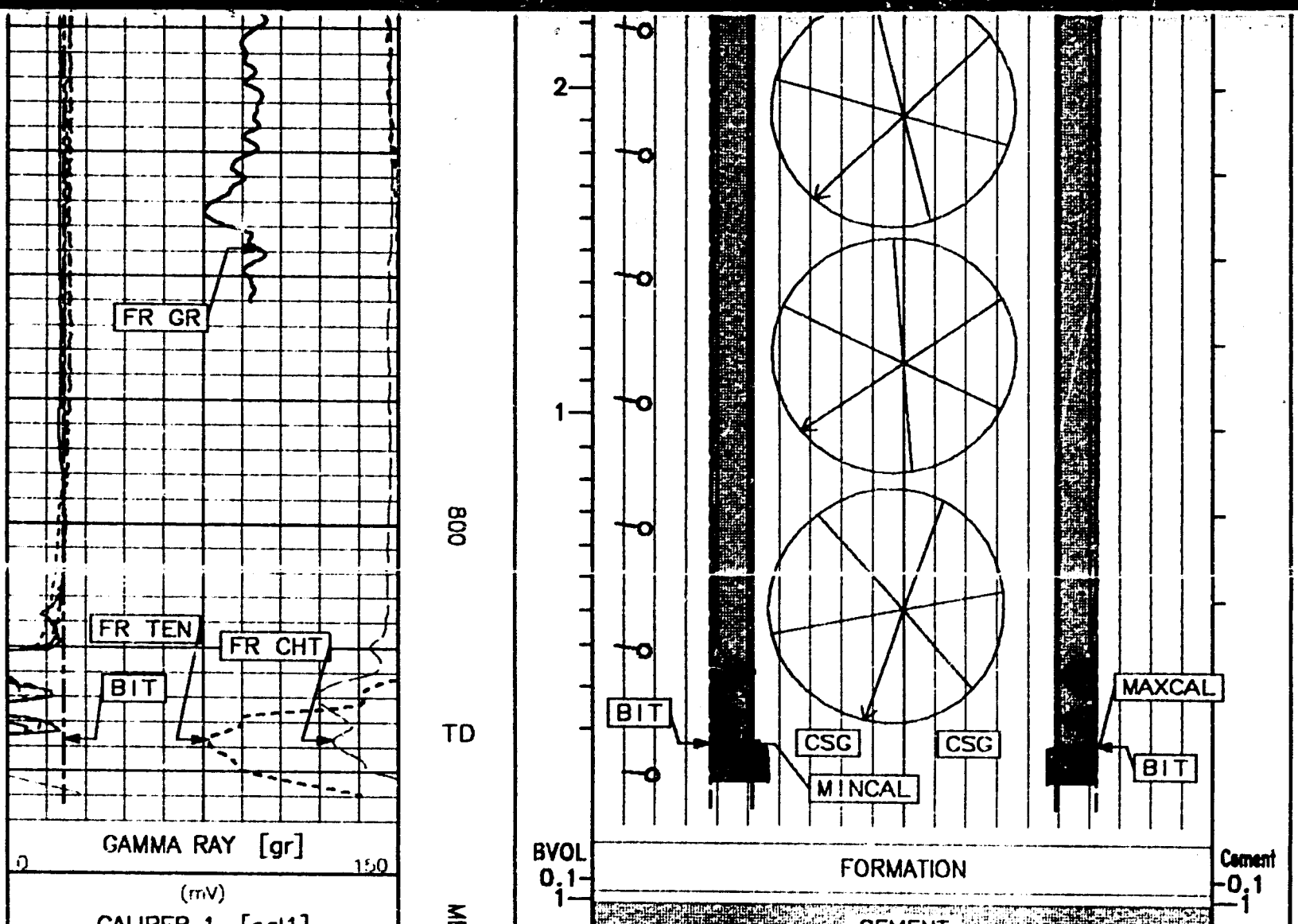
RUN 1 TRIP 1 :

TAM (TOP OF CEMENT AND STUCK) 29-JAN-04
HDIL-GR-CAL-SP-CN-2DSL-BHC-GR-VOL
HOLE VOLUME CALCULATED FROM CALIPER 1
HOLE VOLUME CALCULATED FROM BIT SIZE
INTERVAL OF CEMENT VOLUME TAKEN FROM 1.0 TO 815.0 M.

CREW = R. MCDONALD / A. MITTLESTADT

RUN	TRIP	EQUIPMENT DATA	SERIAL NO.	POSITION
1	1	TOOL	9211	
		HDIL	9211-HDAS-2-1	
		BHC	9211-BHC-2-1	
		CN	9211-CN-2-1	
		2DSL	9211-2DSL-2-1	
		GR	9211-GR-2-1	
		CAL	9211-CAL-2-1	
		SP	9211-SP-2-1	
		CART	9211-CART-2-1	
		CART	9211-CART-2-2	
		CART	9211-CART-2-3	
		CART	9211-CART-2-4	
		CART	9211-CART-2-5	
		CART


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575
600
625
650
675
700
721
750
775



Baker Atlas

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

FILE NO:

API NO:

LOCATION:
LIC: 9211-N046-2-1
LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 53' 22.66"

ELEVATIONS:
KB 586.3 M
DF
GL 580.5 M

UID:
3008446430125450

DATE 30-JAN-04

Baker Atlas

Segmented Bond Log GR-CCL

File No:	
API No:	
Well	NORTHROCK RESOURCES LTD. SMART CREEK D-44
Field	WILDMONEY
Province	NORTHWEST TERRITORIES
Location	1,000' FSL & 1,000' FWL SMART CREEK D-44
	SEC 14 TWP 49 RGE 6 W4M
Country	CANADA
Permanent Datum	GROUND LEVEL
Log Measured From	KELLY BUSHING
Drilling Measured From	KELLY BUSHING
Elevation	GL 384.0 m KB 388.5 m
Date	10-Jan-04
Run No.	ONE
Depth Driller	3064 m
Depth Logger	3064 m
Bottom Logged Interval	3064 m
Top Logged Interval	2310 m
Type Fluid in Hole	WATER
Salinity	N.A.
Density	N.A.
Fluid Level	FULL
Max Rec. Temp.	93 deg C
Equipment No.	1604
Location	EDMONTON
Recorded By	M. MCGILP
Witnessed By	MR. BOB MAC DONALD

Run No.	Bit No.	From	To
1	1	0 m	25 m
1	2	25 m	880 m
1	3	880 m	3064 m

Run No.	Tool Type (Specify Sensor or Source)	Tool No.	Diameter	Length	Weight
1	GR/CCL	1604	3.625 in	3.66 m	45 kg
1	SEGMENTED BOND TOOL	1424	3.625 in	6.71 m	136 kg
1	ACOUSTIC ELECTRONICS	1803	3.625 in	2.04 m	45 kg
1	CENTRALIZER		4.5 in	1.22 m	30 kg

Max Rec. Temp.	93 deg C
Equipment No.	1604
Location	EDMONTON
Recorded By	M. MCGILP
Witnessed By	MR. BOB MAC DONALD

RUN 1 - 10-Jan-04

CCL to Surface

Primary Depth Control

Type Fluid in Hole: WATER

Max Rec. Temp: 93 deg C

Equipment No.: 1604

Location: EDMONTON

Recorded By: M. MCGILP

Witnessed By: MR. BOB MAC DONALD

Bit No. 1 | From 0 m | To 25 m

Bit No. 2 | From 25 m | To 880 m

Bit No. 3 | From 880 m | To 3064 m

Type	Size	Weight	Grade	From	To
SURFACE	508 mm	139.3 kg/m	K-55	0 m	25 m
INTERMEDIATE	406.4 mm	60.1 kg/m	J-55	0 m	880 m
PRODUCTION	244.5 mm	59.5 kg/m	L-80	0 m	880 m
LINER	177.8 mm	34.83 kg/m	N-80	0 m	2458 m
LINER	114.3 mm	17.26 kg/m	L-80	2310 m	3064 m

Logged Interval: 3064 m To 2310 m

Max Rec. Temp.: 93 deg C

Equipment No.: 1604

Location: EDMONTON

Recorded By: M. MCGILP

Witnessed By: MR. BOB MAC DONALD

Primary Depth Control: CCL to Surface

Type Fluid in Hole: WATER

Salinity: N.A.

Density: N.A.

Fluid Level: FULL

Max Rec. Temp.: 93 deg C

Equipment No.: 1604

Location: EDMONTON

Recorded By: M. MCGILP

Witnessed By: MR. BOB MAC DONALD

Run No. 1 | Bit No. 1 | From 0 m | To 25 m

Run No. 1 | Bit No. 2 | From 25 m | To 880 m

Run No. 1 | Bit No. 3 | From 880 m | To 3064 m

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	CCL	2530HA	1488804	CENTRALIZED
1	1	GAMMA RAY	1809SA	2021950	CENTRALIZED
1	1	TELEMETRY	1803EA	2198346	CENTRALIZED
1	1	RANGER	3923SA	2179262	CENTRALIZED
1	1	ONLINE CENTRALIZER			CENTRALIZED
1	1	SWT PAD	1424SA	2198512	CENTRALIZED
1	1	ONLINE CENTRALIZER			CENTRALIZED
1	1	VDL	1424TA	2198533	CENTRALIZED
1	1	CENTRALIZER	4341SA	2154597	CENTRALIZED

Equipment Data

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	CCL	2530HA	1488804	CENTRALIZED
1	1	GAMMA RAY	1809SA	2021950	CENTRALIZED
1	1	TELEMETRY	1803EA	2198346	CENTRALIZED
1	1	RANGER	3923SA	2179262	CENTRALIZED
1	1	ONLINE CENTRALIZER			CENTRALIZED
1	1	SWT PAD	1424SA	2198512	CENTRALIZED
1	1	ONLINE CENTRALIZER			CENTRALIZED
1	1	VDL	1424TA	2198533	CENTRALIZED
1	1	CENTRALIZER	4341SA	2154597	CENTRALIZED

Remarks

LOG CORRELATED TO BAKER ATLAS 5" 25 MARCH 1998 LOG DATED 30 MAR 04.

CEMENTING: CEMENTED WITH 121 POLARSET REGULAR WITH 0.1% R-7C TO RETURNS.

SURFACE CASING: CEMENTED WITH 341 POLARSET REGULAR WITH 0.2% R-7C 15.5% RETURNS

INTERMEDIATE CASING #1: CEMENTED WITH 21.5% WH-10SD WITH 0.8% FL-34,

TAILED WITH 10.5% D-13 CLASS "G" WITH 0.5% CD-31 & 0.4% FL-52 & 1% SUSPENDLITE.

No 14 RETURNS TO SURFACE

INTERMEDIATE CASING #2: CEMENTED WITH 111 D-13+WH-10 3-12% WITH 1% CaCl & 0.1% R-5, FOLLOWED BY 240 FULL LITE 2-500 WITH 1% CaCl & 0.1% R-5. TAILED WITH 54 D-13 CLASS "G" WITH 0.5% CD-31, 0.4% FL-52, 1% SUSPENDLITE & 0.25% D-AIR 3.

LINER: CEMENTED WITH 180 D-13 CLASS "G" WITH 0.4% FL-52, 0.5% CD-31, 2.5% B-3 & 1% SUSPENDLITE. FLOATS HELD.

PURPOSE OF THIS LOG IS TO DETERMINE INTEGRITY OF THE CEMENT BOND FOR THE PURPOSE OF PERFORATING.

COMPRESSIVE STRENGHT OF 3000PSI USED FOR LOGGING PURPOSES.

When RIH had PROBE TO LOGGING. NO SCRAPER.

FIRST PASS WITH ZERO PRESSURE AT SURFACE. GOT STUCK TRYING TO ENTER THE LINER FOR THE PRESSURE PASS. PULLED 4000LBS ON THE CABLE HEAD. FREED THE TOOL BY [illegible]

Remarks

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No 14 RETURNS TO SURFACE

INTERMEDIATE CASING #2: CEMENTED WITH 111 D-13+WH-10 3-12% WITH 1% CaCl & 0.1% R-5, FOLLOWED BY 240 FULL LITE 2-500 WITH 1% CaCl & 0.1% R-5. TAILED WITH 54 D-13 CLASS "G" WITH 0.5% CD-31, 0.4% FL-52, 1% SUSPENDLITE & 0.25% D-AIR 3.

LINER: CEMENTED WITH 180 D-13+0.5% CLASS "G" WITH 0.4% FL-52, 0.5% CD-31, 2.5% B-3 & 1% SUSPENDLITE. FLOATS HELD.

PURPOSE OF THIS LOG IS TO DETERMINE INTEGRITY OF THE CEMENT BOND FOR THE PURPOSE OF PERFORATING.

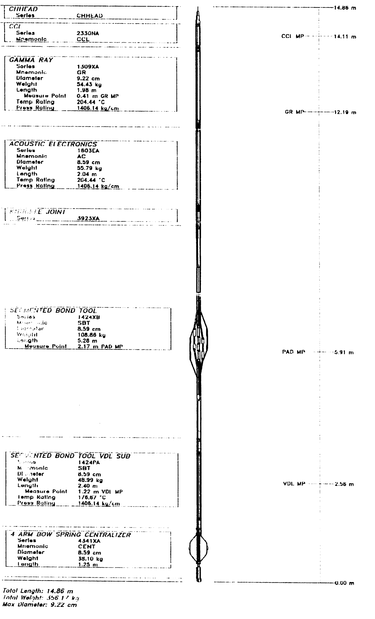
COMPRESSIVE STRENGHT OF 3000PSI USED FOR LOGGING PURPOSES.

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FIRST PASS WITH ZERO PRESSURE AT SURFACE. GOT STUCK TRYING TO ENTER THE LINER FOR THE PRESSURE PASS. PULLED 4000LBS ON THE CABLE HEAD. FREED THE TOOL BY [illegible]

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

TOOL SKETCH



Total Length: 14.86 m
Total Weight: 458.17 kg
Max Diameter: 9.22 cm

HIGH SPEED OVERVIEW

SBT NORMALIZATION RESULTS

CURVE	PARAMETER	VALUE	UNITS	TOP	BOTTOM	COMMENT
AVG1	segt amount1	0.000	dB/ft	10.321	3020.184	
AVG2	segt amount2	0.000	dB/ft	10.321	3020.184	
AVG3	segt amount3	0.000	dB/ft	10.321	3020.184	
AVG4	segt amount4	0.000	dB/ft	10.321	3020.184	
AVG5	segt amount5	0.000	dB/ft	10.321	3020.184	
AVG6	segt amount6	0.000	dB/ft	10.321	3020.184	
AVG1	segt amount1	-0.047	dB/ft	10.321	3020.184	Good Confidence
AVG2	segt amount2	-1.405	dB/ft	10.321	3020.184	Good Confidence
AVG3	segt amount3	-0.879	dB/ft	10.321	3020.184	Good Confidence
AVG4	segt amount4	-3.186	dB/ft	10.321	3020.184	Questionable
AVG5	segt amount5	-1.330	dB/ft	10.321	3020.184	Good Confidence
AVG6	segt amount6	-3.547	dB/ft	10.321	3020.184	Questionable

SBT PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
dep	tdep	10.515	m	10.157	3016.733
amp	tpatt	1.795	dB/ft	10.157	3016.733
atc	depgrad	6.586	dB/ft	10.157	3016.733
cft	spacing	11.904	feet	10.157	3016.733
cmc	casing rad	177.203	millimeters	10.157	3016.733
cwt	casing wt	34.540	kg/m	10.157	3016.733
cwt	compress	2040.040	psi	10.157	3016.733
CN	DII Size	200.025	millimeters	10.321	3020.184
CN	Casing Thickness	9.177	millimeters	10.157	3016.733
CN	CasingTension Correction	No		10.321	3020.184
CN	CN Chan	No		10.321	3020.184
CN	Matrix	Limestone		10.321	3020.184
CN	Salinity	0.000	ppm	10.321	3020.184

SBT PARAMETERS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES						
2530XA	-11.915	CCL						
1809XA	9.305	GR						
1424XA	-3.459	AVG1	AVG2	AVG3	AVG4	AVG5	AVG6	
		AVGw	FANG	AVGm	DEV	DTHR		
		DTMK	MA	AMAT	TAVE			
2530XA	11.000	TEN						
2530XA	0.000	MRKR	CCL					
1424XA	0.000	TIME	SIG					

Created by : SBT, v4.7 016
Plotted by : Plotlgr, v5.3.213
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SMART CREEK D-44
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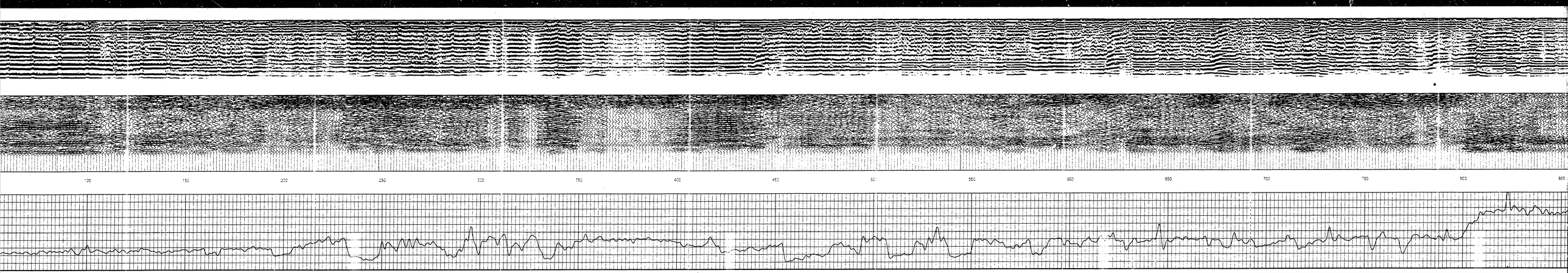
Baker Atlas

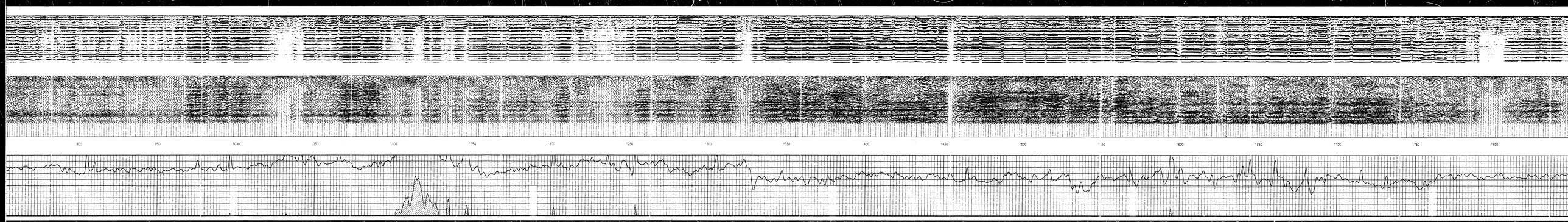
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GR	100
GAPI	

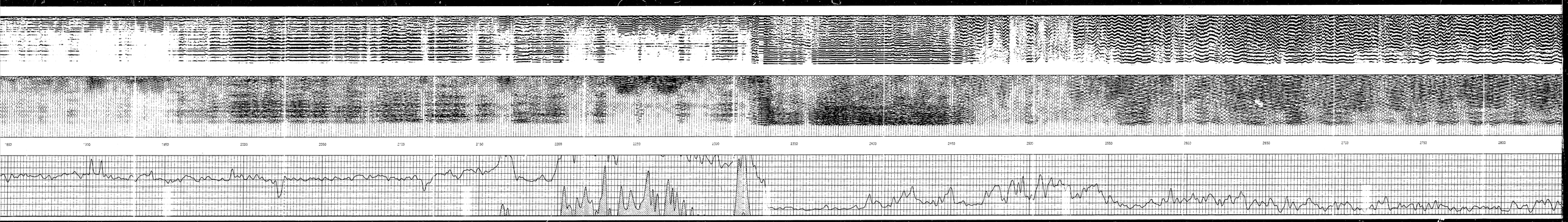
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Variable Density: 200 — us — 1200

meters 1:600


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2700
2750
2800

MAIN PASS
ZERO PRESSURE @ SURFACE

SBT NORMALIZATION RESULTS

CURVE	PARAMETER	VALUE	UNITS	TOP	BOTTOM	COMMENT
AT1	sngl channel	11.795	dB/ft	2514.710	3020.705	
AT2	sngl channel2	10.550	dB/ft	2514.710	3020.705	
AT3	sngl channel3	7.745	dB/ft	2514.710	3020.705	
AT4	sngl channel4	6.835	dB/ft	2514.710	3020.705	
ATAV	sngl channel5	9.125	dB/ft	2514.710	3020.705	
AMIN	sngl channel6	40.186	dB/ft	2514.710	3020.705	
AT1	sngl channel	0.748	dB/ft	2514.710	3020.705	Good Confidence
AT2	sngl channel2	10.550	dB/ft	2514.710	3020.705	Good Confidence
AT3	sngl channel3	41.385	dB/ft	2514.710	3020.705	Good Confidence
AT4	sngl channel4	10.835	dB/ft	2514.710	3020.705	Good Confidence
ATAV	sngl channel5	9.125	dB/ft	2514.710	3020.705	Good Confidence
AMIN	sngl channel6	40.186	dB/ft	2514.710	3020.705	Good Confidence

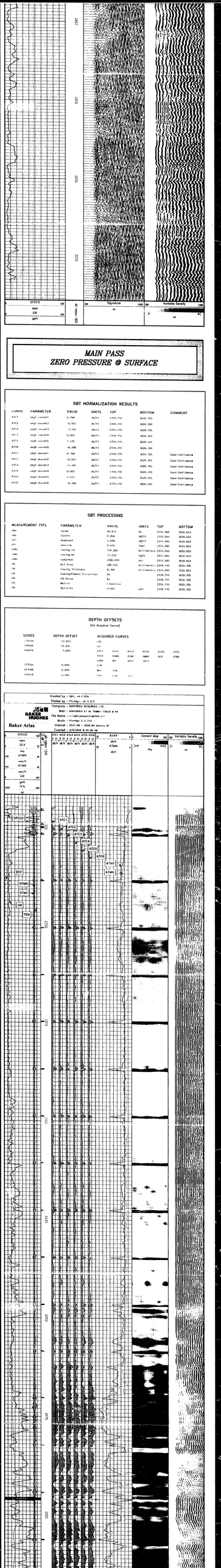
SBT PROCESSING

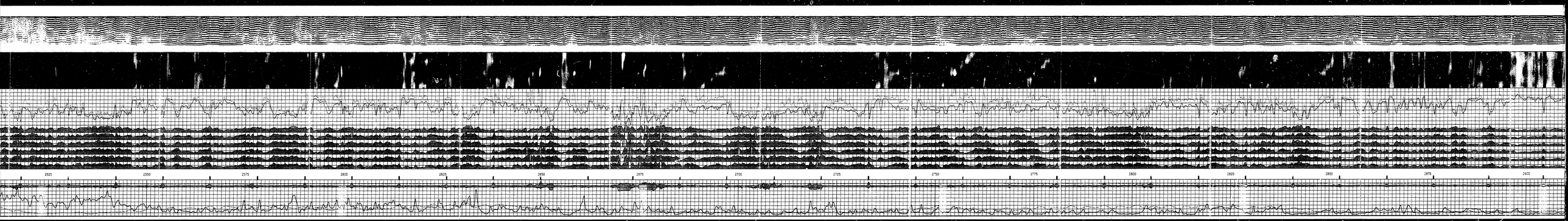
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
CPRP	Pump	90.852	psi	2515.260	3020.653
CPRV	Option	0.456	dB/ft	2515.260	3020.653
CPRI	Dispersion	4.249	dB/ft	2515.260	3020.653
CPRC	Velocity	0.679	feet	2515.260	3020.653
CPRR	Fluid Id	114.280	millimeters	2515.260	3020.653
CPRW	Casing Wt	17.263	kg/m	2515.260	3020.653
CPRD	Comment	2480.049	psi	2515.260	3020.653
CN	Bit Size	200.025	millimeters	2514.710	3020.705
CN	Casing Thickness	8.348	millimeters	2515.260	3020.653
CN	CasingCement Correction	No		2514.710	3020.705
CN	CN Chisel	No		2514.710	3020.705
CN	Matrix	Limestone		2514.710	3020.705
CN	Salinity	0.000	ppk	2514.710	3020.705

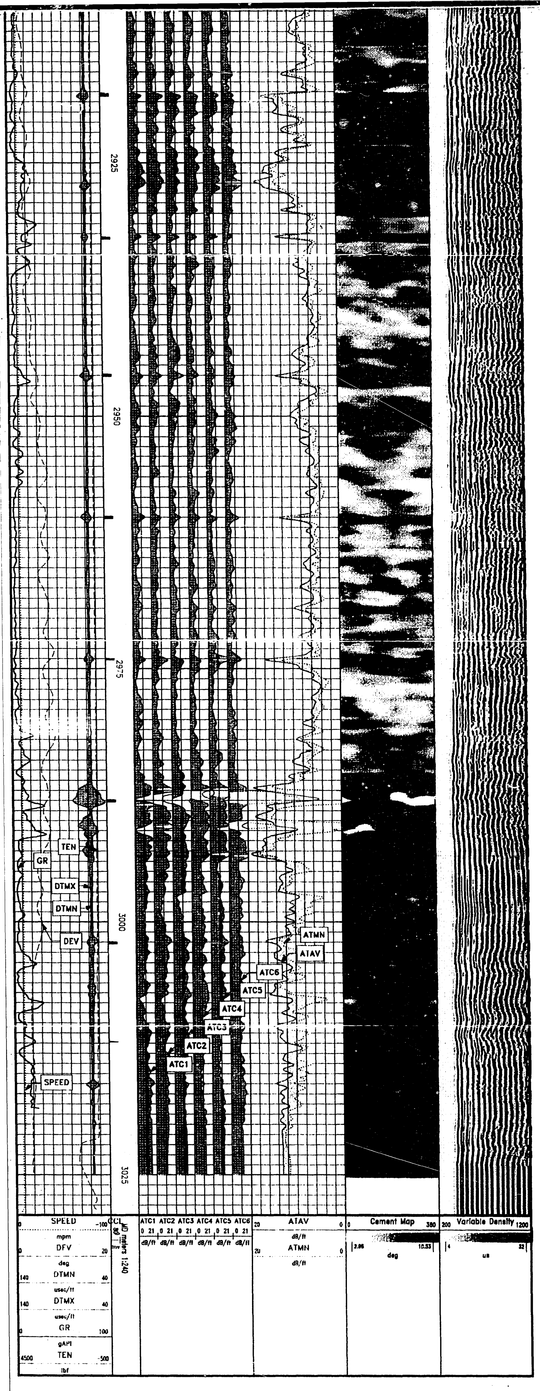
DEPTH OFFSETS
(Not Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES
CNAVA	-11.315	CCL
SPDVA	+0.635	GR
TENVA	3.450	AT1 AT2 AT3 AT4 ATAV AMIN
		RAT1 RAT2 RAT3 RAT4 RATV DEV
		SPDV TEN
TTIVA	0.000	CCL
PVIVA	0.000	TT1
TENVA	0.000	TTIV

Created by : SBT, v4.7.006
Plotted by : PlotAgr, v5.3.213
Company : NORTHSEA RESOURCES LTD.
Well : NORTHSEA 47 AL 3SWAY CHILK B 44
File Name : F:\ARCHIVES\FILES\04.scr
Mode : PlotAgr 5.3.213
Interval : 2517.00 - 3020.00 meters GP
Created : 2/9/2005 8:20:00 AM




2525
2550
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2875
2900



CALIBRATION SUMMARY

RB

Calibration Files: C:\CASE\CALVER\RB\1195702.cal

CALIBRATION SUMMARY

DATE/TIME PERFORMED: Thu Jan 06 18:31:49 2005 TOOL SERIES: 1424XA ASSET: 119572 SEQ: 02

	X-Alt [row]	Y-Alt [row]	RB [deg]	X-Max [deg]	Y-Max [deg]	OFFSET [deg]
PAD 2	-90.10	-354.40	0.00			
PAD 3	351.80	121.60	179.23	-467.62	-350.76	78.88

Verification Files: C:\CASE\CALVER\RB\1195703.vp

PRIMARY VERIFICATION

DATE/TIME PERFORMED: Thu Jan 06 18:36:08 2005 TOOL SERIES: 1424XA ASSET: 119572 SEQ: 03

	Pad 1	Pad 2	Pad 3	Pad 4	Pad 5	Pad 6
RB [deg]	302.81	4.31	62.56	124.75	183.11	242.06

GAMMA RAY

Calibration Files: C:\CASE\CALVER\GR\075001.cal

CALIBRATION SUMMARY

DATE/TIME PERFORMED: Thu Jan 06 19:23:07 2005 TOOL SERIES: 1509XA ASSET: 072550 SEQ: 01

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
SN 0447	53.13	289.22	0.635	33.76	183.76	150.00

Verification Files: C:\CASE\CALVER\GR\075001.vp

PRIMARY VERIFICATION

DATE/TIME PERFORMED: Thu Jan 06 19:25:35 2005 TOOL SERIES: 1509XA ASSET: 072550 SEQ: 01

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
SN 0447	51.27	287.81	0.635	32.57	182.90	150.32

PAD

Verification Files: C:\CASE\CALVER\PAD\1195703.VR

DATE/TIME PERFORMED: Thu Jan 06 18:39:52 2005 TOOL SERIES: 1424XA ASSET: 119572 SEQ: 03

	Pad 1	Pad 2	Pad 3	Pad 4	Pad 5	Pad 6
Noise Level	0.00	2.00	1.80	2.00	2.00	2.05
PAD Sensitivity	410.20	278.20	462.75	181.35	260.40	332.20

BAKER HUGHES
Baker Atlas

Company	NORTHROCK RESOURCES LTD.
Well	NORTHROCK ET AL SUMMIT CREEK B-44
Field	SUMMIT CREEK
Province	NORTHWEST
Country	CANADA
File No:	
API No:	

Location
LICENSE: 9211-1046-2-1
LSD: 44-30-125 45
SEC TWP RGE

Elevations
KB 566.7 m
DF
GL 560.5 m

UTM:
300 844 6430 1 23430
LAT: 64 23' 02.351"
LONG: 125 53' 22.66"

BAKER HUGHES

Baker Atlas

PERFORATING RECORD INTERVALS 1 & 2

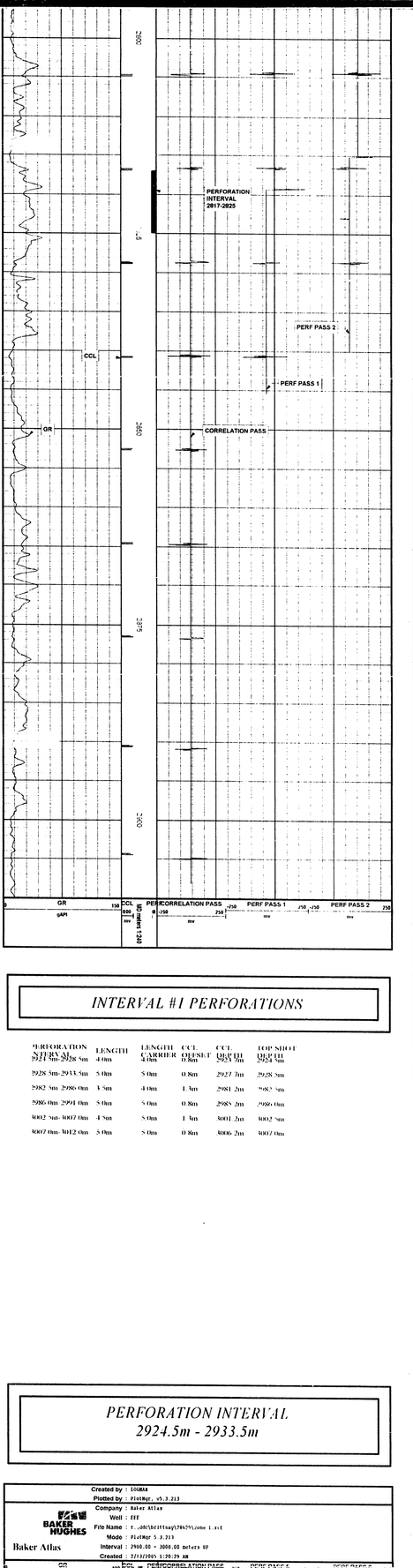
Company	HUSKY OIL OPERATIONS LTD.		
Well	6-15-70-10 W. 6th DIRECT INDEX 6-15		
Field	DIRECT INDEX		
Boundary	WESTWEST	Country	CANADA
Location			Other Services
	NEB COPY		NIL
Permanent Datum	MEAN SEA LEVEL	Elevation	701.5 ft
Log Measured From	KELLY BUSHING	11.0 ft	Above Perm. Datum
Drill Measured From	KELLY BUSHING		Elev.: K.B. 701.5 ft G.L. 690.5 ft

Date	23-DEC-02
Run	ONE
Service Order	62934
Depth Driller	2793.0 m
Depth Logger	2793.5 m
Bottom Logged Interval	2791.1 m
Top Logged Interval	2770.0 m
Type Fluid in Hole	FRESH WATER
Date Time Ref.	23-DEC-02 23:59:59
Max Rec. Temp.	100 deg. C
Time Circ. Stopped	23:30
Equipment No.	1004
Location	6-15-70-10 W6
Recorded By	D. MCKAY
Witnessed By	DAVE JOHNSON

We hereby acknowledge receipt of the well and enclose a copy of this report for your records. We further acknowledge that we have been informed that all interpretations are opinions based on inferences from electrical or other measurements, that we cannot, and do not guarantee the accuracy or correctness of any interpretation, and that we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by us resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions set out in our current price schedule.

Run	Top	Bottom	Feet	Meters
ONE	2770.0	2791.1	69.0	21.0

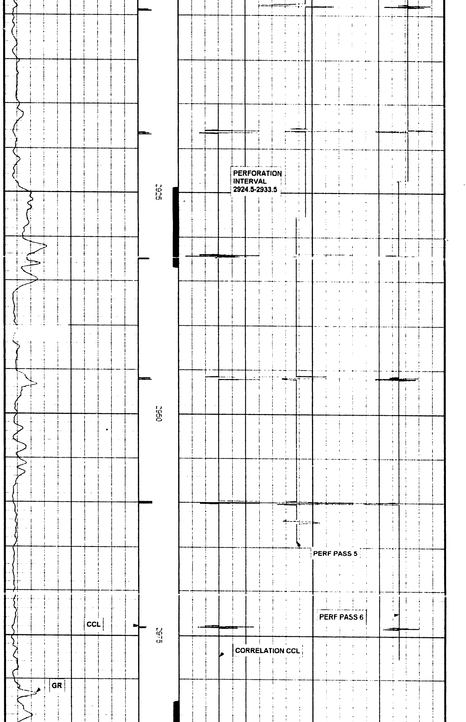
Run	Tool	Serial No.	Diameter	Length	Weight
ONE	GR	1004	43.0 mm	1.7 m	45.0 kg
	CCL	1004	43.0 mm	0.5 m	45.0 kg
	PERFORATING	1004	43.0 mm	1.7 m	45.0 kg

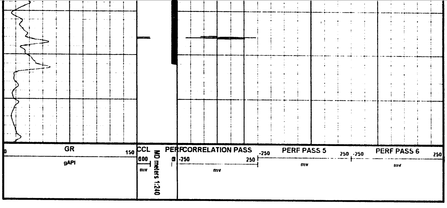


INTERVAL #1 PERFORATIONS

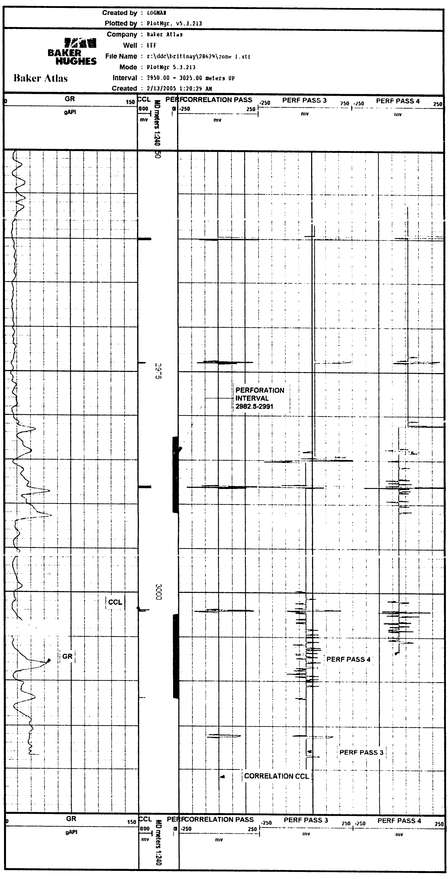
PERFORATION INTERVAL	LENGTH	LENGTH CARRIER	CCL OFFSET	CCL DEPTH	TOP SHOT DEPTH
2924.5m-2928.5m	4.0m	5.0m	0.8m	2923.7m	2928.5m
2928.5m-2933.5m	5.0m	5.0m	0.8m	2927.7m	2928.5m
2982.5m-2986.0m	3.5m	4.0m	1.3m	2981.2m	2985.5m
2986.0m-2991.0m	5.0m	5.0m	0.8m	2985.2m	2986.0m
3002.5m-3007.0m	4.5m	5.0m	1.3m	3001.2m	3002.5m
3007.0m-3012.0m	5.0m	5.0m	0.8m	3006.2m	3007.0m

PERFORATION INTERVAL 2924.5m - 2933.5m

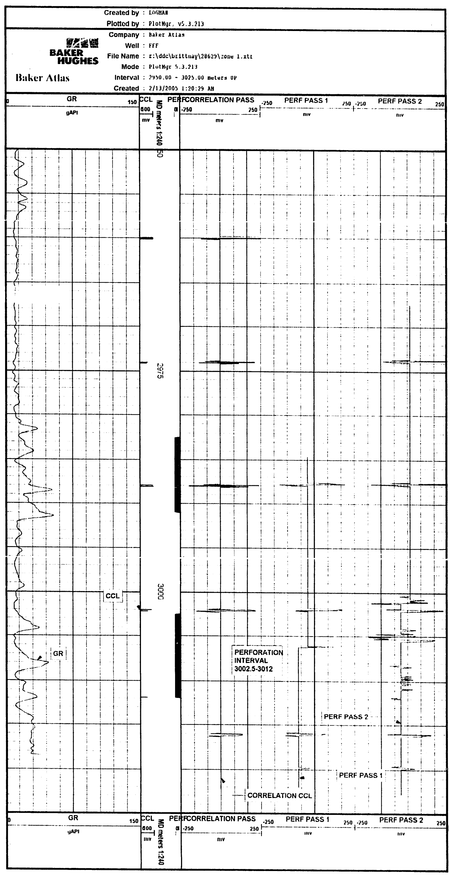


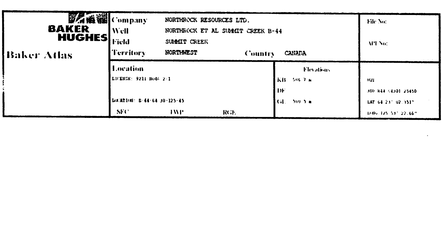


PERFORATION INTERVAL
2982.5m - 2991.0m



PERFORATION INTERVAL
3002.0m - 3012.0m





JUNK BASKET RECORD

Baker Atlas

File No:	Company	NORTHROCK RESOURCES LTD.	
	Well	NORTHROCK et al SUMMIT CREEK B-44	
API No:	Field	SUMMIT CREEK	
	Territories	NORTHWEST	Country CANADA
	Location	LICENSE: 9211-NOAB-2-1	Other Services
		LSD: 8-44-64-30-125-45	NONE
	SEC	TWP	RGE
Permanent Datum	GROUND LEVEL	Elevation 580.5 m	Elevations
Log Measured From	KELLY BUSHING 8.2 m	Above P. D.	KB 588.7 m
Drill Measured From	KELLY BUSHING		DF
			GL 580.5 m

Date	14-FEB-05
Run	1
Service Order	415886
Depth Driller	3035 m
Depth Logger	3022.7 m
Bottom Logged Interval	3020.2 m
Top Logged Interval	2800 m
Time Started	22:00
Time Finished	02:00
Operator Rig Time	4
Type of Fluid in Hole	WATER
Fluid Density	N/A
Salinity	N/A
Fluid Level	FULL
Log Measured From Cement Top	N/A
Well Head Pressure	0 kPa
Maximum Hole Deviation	9 deg
Nominal Logging Speed	10 mpm
Maximum Recorded Temperature	95.7 degC
Reference Log	BAKER ATLAS SEGMENTED BOND LOG
Reference Log Date	09-FEB-05
Equipment No. Location	C-4154 NISKU
Recorded By	SHANE WHITE
Witnessed By	DUSTY SCHNEIDER

FOLD HERE

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on interences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Borehole Record

Bit Size	From	To
660.4 mm	0 m	25 m
444.5 mm	0 m	208 m
311 mm	208 m	810 m
216 mm	810 m	2464 m
156 mm	2464 m	3064 m

Casing Record

Size	Weight	Grade	From	To
508 mm	139.9 kg/m	K-55	0 m	25 m
339.7 mm	81.1 kg/m	J-55	0 m	208 m
244.5 mm	59.5 kg/m	L-80	0 m	810 m
177.8 mm	38.69 kg/m	K-55	0 m	2450 m
114.3 mm	17.26 kg/m	L-80	2319 m	3064 m

Perforation Record

Perforation Type	Position	Phasing	Spacing	Density	From	To
86mm EXPENDABLE	FREE	60 deg		20 spm	3012 m	3002.5 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2991 m	2982.5 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2933.5 m	2924.5 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2825 m	2817 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2793.5 m	2778.5 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2768 m	2765 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2760 m	2750 m

Remarks

LOG CORRELATED TO BAKER ATLAS SEGMENTED BOND LOG DATED 09-FEB-05.

PURPOSE OF THIS LOG IS TO VERIFY THAT THE LINER TOP HAS BEEN CONDITIONED.

RIG HAS DRILLED ON TOP OF THE LINER WITH MILL OVER 3 METERS.

JUNK BASKET GAUGE RING (86 mm O.D.) RAN TO 3022.7 METERS.

Equipment Data

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	PTC	736XA	Z183308	FREE
0	0				

MAIN PASS

DEPTH OFFSETS

(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
2315NA	-0.902	CCL	ACCL
[illegible]	[illegible]	[illegible]	[illegible]

Created by : (UNKNOWN)

Plotted by : PlotMgr, v5.3.213

Company : NORTHROCK RESOURCES LTD

Well : NORTHROCK et al SUMMIT CREEK B 44

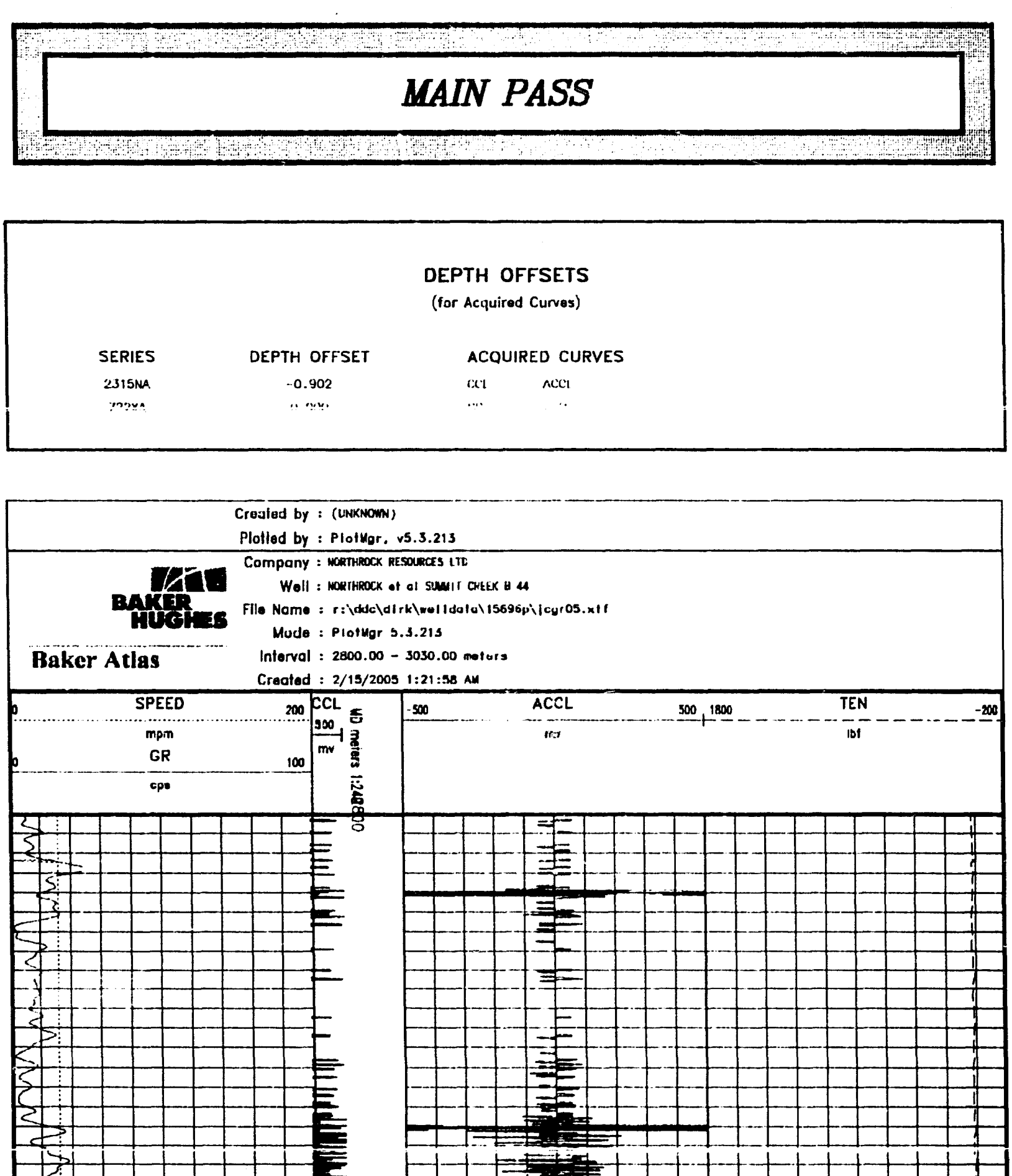
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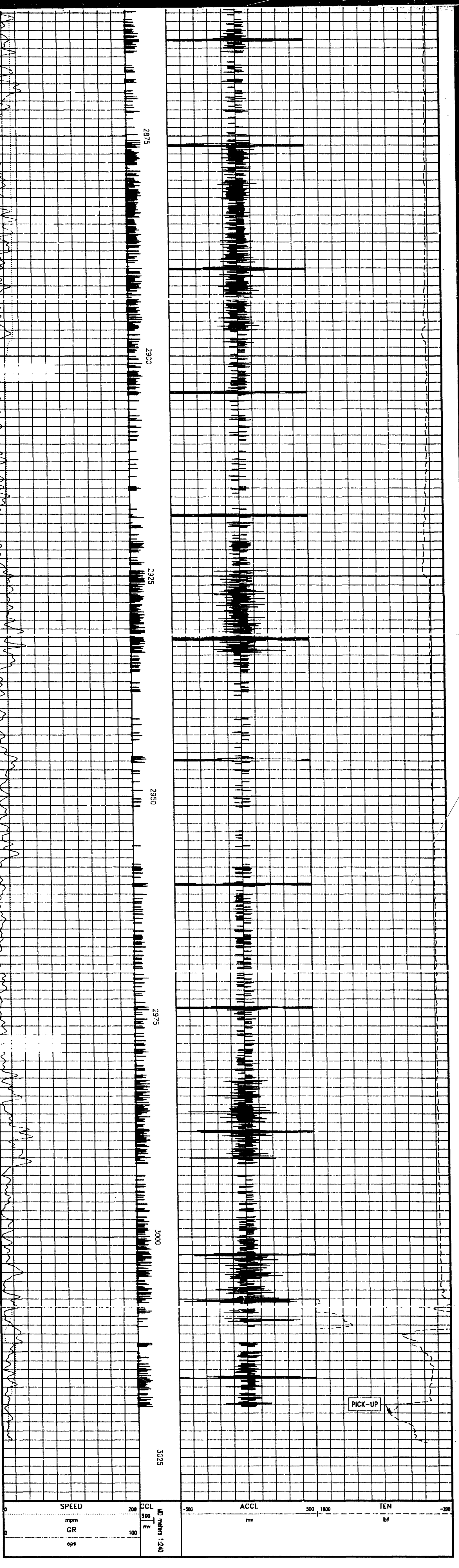
Mode : PlotMgr 5.3.213

Interval : 2800.00 - 3030.00 meters

Created : 2/15/2005 1:21:58 AM

Baker Atlas





BAKER HUGHES

Baker Atlas

CASE

Company	NORTHROCK RESOURCES LTD.
Well	NORTHROCK et al SUMMIT CREEK B-44
Field	SUMMIT CREEK
Territories	NORTHWEST Country CANADA

File No:

API No:

Location

LICENSE: 9211-NOAB-2-1

LSD: B-44-84-10-125-4b

SEC TWP RGE

Elevations

KB 586.7 m

DF

GL 580.5 m

UWI:

300 B44 84301 25430

LAT:84 33' 02.351"

LONG:129 55' 22.68"

GR–CCL Correlation Log

Baker Atlas

Company	NORTHROCK RESOURCES LTD.
Well	NORTHROCK et al SUMMIT CREEK B-44
Field	SUMMIT CREEK
Territories	NORTHWEST — Country: CANADA
Location	LICENCE: 5211-NOAB-2-1
	NEB COPY
SEC	TWP — RGE
Elevations	KB 566.7 m; DF; GL 563.5 m
Other Services	NONE

File No:
API No:
UWI: 300 B44 64301 25B60
LAT:64 23' 02.251"
LONG:123 54' 22.98"

Date: 02-FEB-05
Run: ONE
Depth Driller: 3000 m
Depth Logger: 3001 m
Bottom Logged Interval: 2997 m
Top Logged Interval: 2400 m
Drill Fluid Type: WATER
Salinity: N/A
Density: N/A
Fluid Level: FULL
Max Recorded Temperature: 0 deg
Max Recorded Pressure: 0 kPa
Max Recorded Rate: 0 mpm
Equipment / Base Location: SHERWOOD PARK
Recorded By: P. PORTEL
Witnessed By: M. HEBERT

Permanent Datum: GROUND LEVEL
Elevation: 563.5 m
Log Measured From: KELLY BUSHING
6.8 m Above Perm. Datum

Rig Name: PRECISION DRILLING #161
Type: TRIPLE
Drilling Measured From: KELLY BUSHING
Casing Driller: 339.7 mm @ 0 m
Casing Logger: 339.7 mm @ 0 m
Bit Size: 311 mm
Type Fluid in Hole: WATER
Density: N/A
Viscosity: N/A
Ph: N/A
Fluid Loss: N/A
Source of Sample: N/A
Rm @ Meas. Temp: N/A
Rmf @ Meas. Temp: N/A
Rmc @ Meas. Temp: N/A
Source of Rmf / Rmc: N/A
Rm @ BHT: N/A
Time Since Circulation: N/A
Time on Location: 02-FEB-05 15:00
Unit Number: 5211
Location: 5211-NOAB-2-1
Recorded By: P. PORTEL
Witnessed By: M. HEBERT

Run Number: ONE
Depth Driller: 3000 m
Schlumberger Depth: 3001 m
Bottom Log Interval: 2997 m
Top Log Interval: 2400 m
Casing Driller Size @ Depth: 339.7 mm @ 0 m
Casing Logger Size @ Depth: 339.7 mm @ 0 m
Bit Size: 311 mm
Type Fluid in Hole: WATER
Density / Viscosity: N/A
PH / Fluid Loss: N/A
Source of Sample: N/A
Rm @ Meas. Temp: N/A
Rmf @ Meas. Temp: N/A
Rmc @ Meas. Temp: N/A
Source of Rmf / Rmc: N/A
Rm @ BHT: N/A
Time Circulation Stopped: 02-FEB-05 15:00
Time Logger on Bottom: 02-FEB-05 19:00
Maximum Recorded Temperature: 0 deg
Equipment / Base Location: SHERWOOD PARK
Recorded By: P. PORTEL
Witnessed By: M. HEBERT

Run Number: ONE
Depth Driller: 3000 m
Schlumberger Depth: 3001 m
Bottom Log Interval: 2997 m
Top Log Interval: 2400 m
Casing Driller Size @ Depth: 339.7 mm @ 0 m
Casing Logger Size @ Depth: 339.7 mm @ 0 m
Bit Size: 311 mm
Type Fluid in Hole: WATER
Density / Viscosity: N/A
PH / Fluid Loss: N/A
Source of Sample: N/A
Rm @ Meas. Temp: N/A
Rmf @ Meas. Temp: N/A
Rmc @ Meas. Temp: N/A
Source of Rmf / Rmc: N/A
Rm @ BHT: N/A
Time Circulation Stopped: 02-FEB-05 15:00
Time Logger on Bottom: 02-FEB-05 19:00
Maximum Recorded Temperature: 0 deg
Maximum Recorded Pressure: 0 kPa
Maximum Recorded Rate: 0 mpm

GR-CCL Correlation Log

Baker Atlas

Company	NORTHROCK RESOURCES LTD.
Well	NORTHROCK et al SUMMIT CREEK B-44
Field	SUMMIT CREEK
Territories	NORTHWEST Country CANADA
Location	LSD:NE/ 11-1-40-2-1 W
	LOCATION: B-44-84-30-123-43
SEC	TWP RGE
	NEBCOPY
Elevations	KB 0 m, DF , GL 580.5 m
Other Services	NONE

File No:

API No:

Run: ONE
Service Order: 51996
Depth Logged: MEASURED
Bottom Logged Interval: 2700 m
Top Logged Interval: 2600 m
Type Fluid in Hole: SALT MUD
Density: N/A
Viscosity: N/A
Fluid Loss: N/A
Maximum Recorded Temp.: N/A
Maximum Hole Deviation: 5 deg
Equipment Location: 5 km
Recorded By: BAKER ATLAS SEQUENTIAL BRHD - DC
Witnessed By: MR. KOSTIUK

Permanent Datum	Log Measured From	Drill Measured From
GROUND LEVEL	KELLY BUSHING	KELLY BUSHING
Elevation 0 m	6.2 m Above P. D.	580.5 m Above P. D.

Bit Size	From	To
660.4 mm	0 m	25 m
444.5 mm	0 m	208 m
311 mm	208 m	810 m
216 mm	810 m	2484 m
156 mm	2484 m	3084 m

Borehole Record

Size	Weight	Grade	From	To
508 mm	139.5 kg/m	K-55	0 m	25 m
339.7 mm	81.1 kg/m	J-55	0 m	208 m
244.5 mm	59.5 kg/m	J-55	0 m	810 m
177.8 mm	34.68 kg/m	K-55	0 m	2430 m
114.3 mm	17.26 kg/m	L-80	2319 m	3084 m
88 mm			0 m	2000 m
63 mm			2000 m	3700 m

Casing Record

Perforation Type	Position	Phasing	Spacing	Density	From	To
86mm EXPENDABLE	FREE	60 deg		20 spm	3612 m	3852.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2981 m	3162.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2552.5 m	2924.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	3825 m	3917 m
86mm EXPENDABLE	FREE	60 deg		20 spm	3763.5 m	3778.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2768 m	2783 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2782 m	2798 m

Perforation Record

Remarks

CORRELATED TO A BAKER ATLAS SBT LOG DATED 08-FEB-05.

PURPOSE OF THIS LOG IS TO CORRELATE TUBING ON DEPTH.

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	GR	8282XA	102785	CENTRALIZED
1	1	CENT	8232MA	189662	CENTRALIZED
1	1	CCL	8048SA	136893	CENTRALIZED

Equipment Data

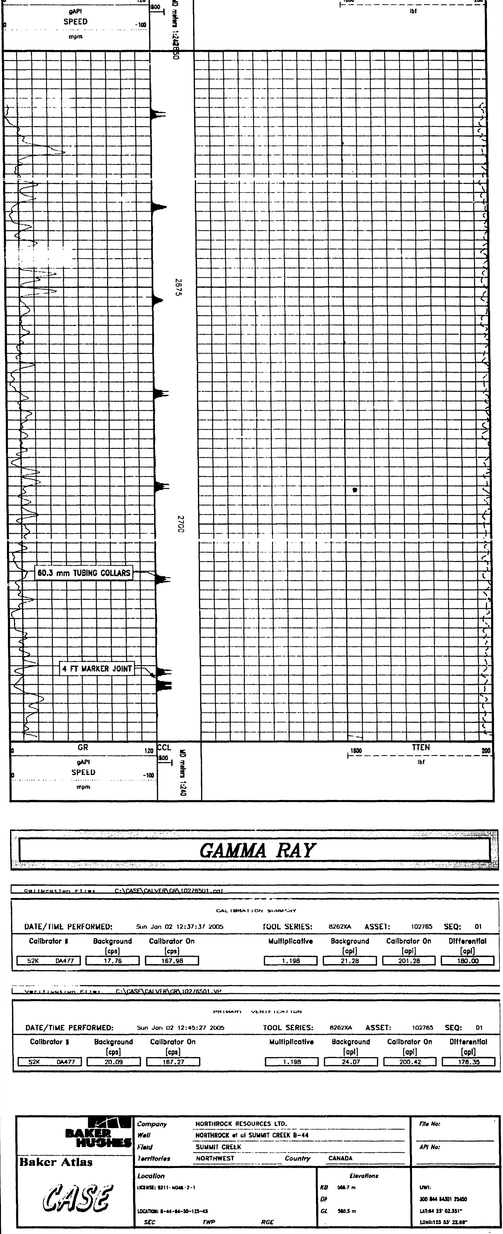
MAIN PASS

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES	
[illegible]	[illegible]	[illegible]	
8248SA	-1.969	GR	CCL
8282XA	0.000	GR	TTEN
SYSTEM	0.000	TEN	TTEN

Created by : UNDEFINED
Plotted by : PlotMgr, v5.3.213
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK et al SUMMIT CREEK B-44
File Name : r:\ddd\ellis\welldata\15698g\grccl01.xtf
Mode : PlotMgr 5.3.213
Interval : 2650.00 - 2723.02 meters
Created : 7/22/2005 8:59:34 AM

Baker Atlas



GAMMA RAY

Calibration File: C:\CASE\CALVER\GR\102785\01.cal

CALIBRATION SUMMARY

DATE/TIME PERFORMED: Sun Jan 02 12:37:37 2005 TOOL SERIES: 8282XA ASSET: 102785 SEQ: 01

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
S2K DA477	17.79	167.98	1.198	21.29	201.28	180.00

Verification File: C:\CASE\CALVER\GR\102785\01.VF

PRIMARY VERIFICATION

DATE/TIME PERFORMED: Sun Jan 02 12:45:27 2005 TOOL SERIES: 8282XA ASSET: 102785 SEQ: 01

Calibrator #	Background [cps]	Calibrator On [cps]	Multiplicative	Background [api]	Calibrator On [api]	Differential [api]
S2K DA477	20.09	167.27	1.198	24.07	200.42	176.35

BAKER HUGHES

Baker Atlas

CASE

Company	NORTHROCK RESOURCES LTD.
Well	NORTHROCK et al SUMMIT CREEK B-44
Field	SUMMIT CREEK
Territories	NORTHWEST Country CANADA
Location	LSD:NE/ 11-1-40-2-1 W
	LOCATION: B-44-84-30-123-43
SEC	TWP RGE
Elevations	KB 586.7 m, DF , GL 580.5 m

File No:

API No:

Run: ONE
Service Order: 51996
Depth Logged: MEASURED
Bottom Logged Interval: 2700 m
Top Logged Interval: 2600 m
Type Fluid in Hole: SALT MUD
Density: N/A
Viscosity: N/A
Fluid Loss: N/A
Maximum Recorded Temp.: N/A
Maximum Hole Deviation: 5 deg
Equipment Location: 5 km
Recorded By: BAKER ATLAS SEQUENTIAL BRHD - DC
Witnessed By: MR. KOSTIUK

Permanent Datum	Log Measured From	Drill Measured From
GROUND LEVEL	KELLY BUSHING	KELLY BUSHING
Elevation 0 m	6.2 m Above P. D.	580.5 m Above P. D.

Bit Size	From	To
660.4 mm	0 m	25 m
444.5 mm	0 m	208 m
311 mm	208 m	810 m
216 mm	810 m	2484 m
156 mm	2484 m	3084 m

Borehole Record

Size	Weight	Grade	From	To
508 mm	139.5 kg/m	K-55	0 m	25 m
339.7 mm	81.1 kg/m	J-55	0 m	208 m
244.5 mm	59.5 kg/m	J-55	0 m	810 m
177.8 mm	34.68 kg/m	K-55	0 m	2430 m
114.3 mm	17.26 kg/m	L-80	2319 m	3084 m
88 mm			0 m	2000 m
63 mm			2000 m	3700 m

Casing Record

Perforation Type	Position	Phasing	Spacing	Density	From	To
86mm EXPENDABLE	FREE	60 deg		20 spm	3612 m	3852.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2981 m	3162.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2552.5 m	2924.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	3825 m	3917 m
86mm EXPENDABLE	FREE	60 deg		20 spm	3763.5 m	3778.5 m
86mm EXPENDABLE	FREE	90 deg		20 spm	2768 m	2783 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2782 m	2798 m

Perforation Record

Remarks

CORRELATED TO A BAKER ATLAS SBT LOG DATED 08-FEB-05.

PURPOSE OF THIS LOG IS TO CORRELATE TUBING ON DEPTH.

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	GR	8282XA	102785	CENTRALIZED
1	1	CENT	8232MA	189662	CENTRALIZED
1	1	CCL	8048SA	136893	CENTRALIZED

Equipment Data

In making interpretations of logs, our employees will give the customer the benefit of their best judgement. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and we do not guarantee the accuracy or correctness of any interpretation. We shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

FOLD HERE

N.E.R. COPY

1994

BAKER HUGHES

Collar Log Packer

Baker Atlas

File No:	Company	NORTHROCK RESOURCES LTD.
	Well	NORTHROCK et al SUMMIT CREEK B-44
API No:	Field	SUMMIT CREEK
	Territories	NORTHWEST Country CANADA

Location	Other Services
UWI: 300 B44 S4391 I3458	LICENSE: 1211-NO46-2-1
LAT: 64 23' 02.351"	NONE
LONG:123 17' 22.66"	LOCATION: B-44-44-28-125-45
SEC TWP RGE	

Elevations		
Permanent Datum	GROUND LEVEL	Elevation 588.5 m
Log Measured From	KELLY BUSHING	6.0 m Above P. D.
Drill Measured From	KELLY BUSHING	
	KB	594.7 m
	DF	
	GL	588.5 m

Date	24FEB95	
Run	ONE	
Service Order	613899	
Depth Driller	3450 m	
Depth Logger	NOT_TAGGED	
Bottom Logged Interval	3740 m	
Top Logged Interval	2380 m	
Time Started	04:30	
Time Finished	09:00	
Operator Rig Time	4.5hrs	
Type of Fluid in Hole	WATER	
Fluid Density	N/A	
Salinity	N/A	
Fluid Level	374 m	
Logged Cement Top	N/S	
Wellhead Pressure	0 kPa	
Maximum Hole Deviation	5 deg	
Nominal Logging Speed	10 mpm	
Maximum Recorded Temperature	N/A	
Reference Log	BAKER ATLAS SEGMENTED BOND LOG	
Reference Log Date	09-FEB-95	
Equipment No. Location	C-414 NSWU	
Recorded By	SHANE WHITE	
Witnessed By	DUSTY SCHNEIDER	

In making interpretations of logs, our employees will give the customer the benefit of their best judgements. But since all interpretations are opinions based on inferences from electrical or other measurements, we cannot guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our employees' part, be liable or responsible for any loss, cost, damage, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

Borehole Record

Bit Size	From	To
660.4 mm	0 m	28 m
444.5 mm	28 m	396 m
311.1 mm	396 m	2380 m
216 mm	2380 m	3450 m
190 mm	3450 m	3740 m

Casing Record

Size	Weight	From	To
508 mm	139.3 kg/m	0 m	28 m
298.7 mm	81.1 kg/m	0 m	396 m
244.5 mm	59.5 kg/m	0 m	2380 m
177.8 mm	34.8 kg/m	2380 m	3450 m
114.3 mm	17.26 kg/m	3450 m	3740 m

Perforation Record

Perforation Type	Position	Phasing	Spacing	Density	From	To
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2760 m	2760 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2729 m	2729 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2695 m	2695 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2417 m	2417 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2403 m	2403 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2401 m	2401 m
89mm EXPENDABLE	FREE	60 deg	30 mm	30 spm	2383 m	2383 m
WL PACKER	FREE				2729 m	2729 m
CCL CORRELATE MARKER	FREE				2729 m	2729 m

Remarks

CORRELATED TO BAKER ATLAS BHT LOG DATED 09-FEB-95

CCL TO TOP OF PACKER 2.50m
CCL TO CENTER ELEMENT 3.70m
CCL TO BOTTOM OF PACK 5.10m

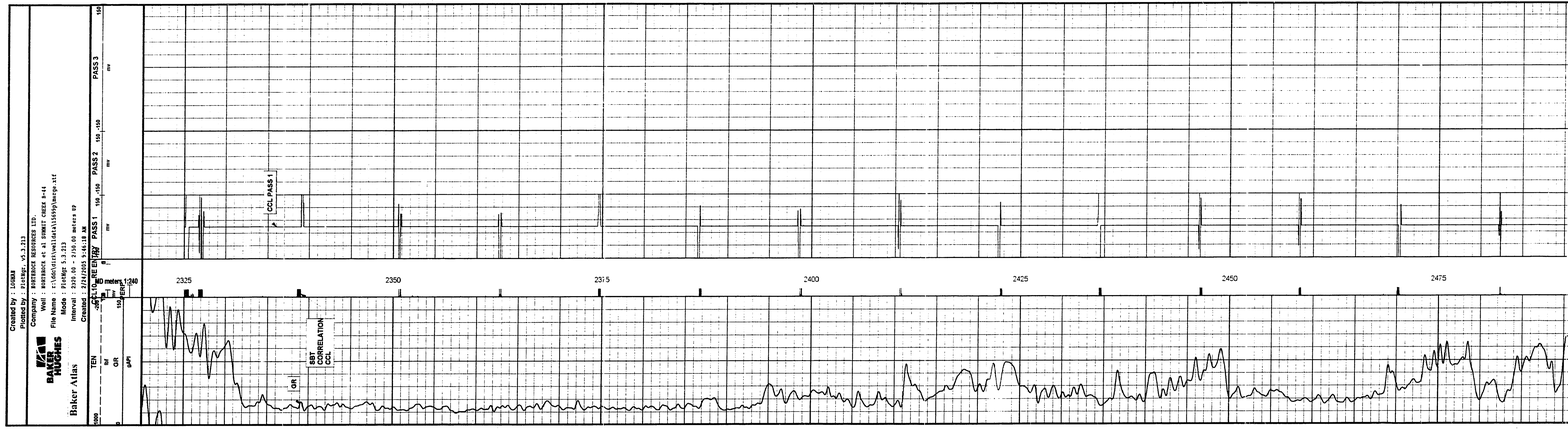
RE-ENTRY GUIDE SET AT 2740.0m

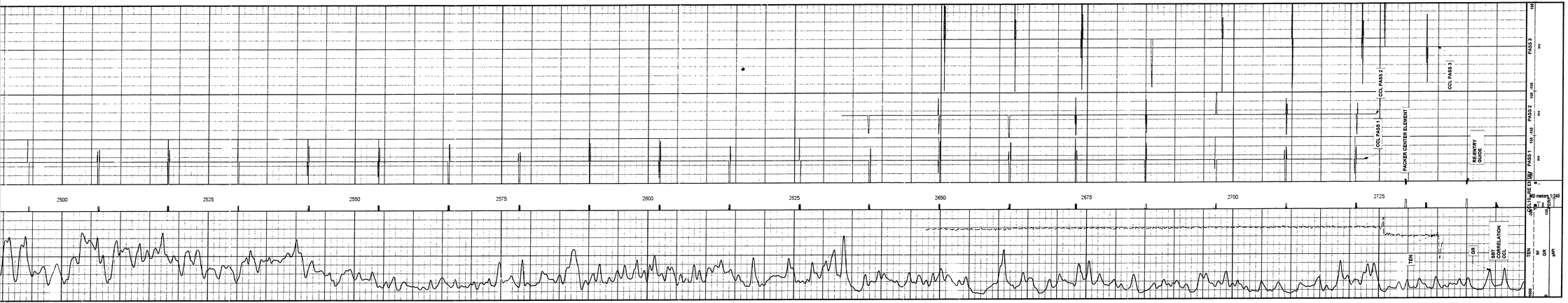
FIRST CORRELATION PASS LOGGED UP FROM 2729.7m TO 2680m
SECOND CORRELATION PASS LOGGED UP FROM 2729.7m TO 2680m
THEN PASS LOGGED INTO POSITION. LOST TBB IN TENSION AFTER WE SET THE PACKER.

Equipment Data

Run	Top	Tool	Serial Number	Position
1	2380 m	CCL	1442	

CCL COLLAR RECORD
PACKER SET DEPTH 2729.6m
RE-ENTRY SET DEPTH 2740m





Baker Atlas

BAKER HUGHES

Company: NORTHROCK RESOURCES LTD.
Well: NORTHROCK et al SUMMIT CREEK B-44
Field: SUMMIT CREEK
Location: NW/4 SEC 7 TWP 1 RGE 4 W5M
Country: CANADA

File No:
API No:

Elevation
KB 1846.4 m
DF
GL 1825.9 m

LSD
SEC TWP RGE W5M
LAT 49.4°28'30.87"
LONG 109°31'0.93"

BAKER HUGHES

Baker Atlas

Perforating Record
Intervals 3 & 4

File No:	Company	NORTHROCK RESOURCES LTD	
	Well	NORTHROCK et al SUMMIT CREEK B-44	
API No:	Field	SUMMIT CREEK	
	Country	NORTHWEST	Province CANADA

UWI:
300 B44 B4301 25450
LAT:64 23' 02.331"
LONG:125 53' 22.56"

Location
LICENSE: 9211-ND48-2-1
LOCATION: B-44-64-20-125-45
SEC TWP RGE

NEB COPY

Other Services
JUNK BASKET
PACKER
DUMP BAILER SAND/CEMENT

Permanent Datum	GROUND LEVEL	Elevation 580.5 m	
Log Measured From	KELLY BUSHING 5.2 m		Above P. D.
Drill Measured From	KELLY BUSHING		

Elevations
KB 586.7 m
DF
GL 580.5 m

Date	06/MAR/05
Run	12
Service Order	415700
Depth Driller	3035 m
Depth Logger	PBTD 2721.5 m
Bottom Logged Interval	2718 m
Top Logged Interval	2500 m
Time Started	3:00 AM
Time Finished	12:50 AM
Operator Rig Time	43.5
Type of Fluid In Hole	WATER/GAS
Fluid Density	N/A
Salinity	N/A
Fluid Level	SEE REMARKS
Logged Cement Top	N/A
Wellhead Pressure	SEE REMARKS
Maximum Hole Deviation	9 deg
Nominal Logging Speed	10 mpm
Maximum Recorded Temperature	N/A
Reference Log	BAKER ATLAS SEGMENTED BOND LOG
Reference Log Date	09-FEB-05
Equipment No. Location	C-4154 NISKU
Recorded By	VE WHITE
Witnessed By	DUSTY [illegible]NEIDER

Date	10/MAR/05
Run	1
Service Order	415700
Depth Driller	2720 m
Depth Logger	2718 m
Bottom Logged Interval	2718 m
Top Logged Interval	2500 m
Time Started	6:00 AM
Time Finished	8:30 AM
Operator Rig Time	2.5
Type of Fluid In Hole	WATER/GAS
Fluid Density	N/A
Salinity	N/A
Fluid Level	SEE REMARKS
Logged Cement Top	N/A
Wellhead Pressure	SEE REMARKS
Maximum Hole Deviation	9 deg
Nominal Logging Speed	10 mpm
Maximum Recorded Temperature	N/A
Reference Log	BAKER ATLAS SEGMENTED BOND LOG
Reference Log Date	09-FEB-05
Equipment No. Location	C-4154 NISKU
Recorded By	VE WHITE
Witnessed By	DUSTY [illegible]NEIDER

– FOLD HERE

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Borehole Record

Bit Size	From	To
660.4 mm	0 m	25 m
444.5 mm	0 m	208 m
311 mm	208 m	810 m
216 mm	810 m	2464 m
156 mm	2464 m	3064 m

Casing Record

Size	Weight	Grade	From	To
508 mm	139.9 kg/m	K-55	0 m	25 m
339.7 mm	81.1 kg/m	J-55	0 m	208 m
244.5 mm	59.5 kg/m	L-80	0 m	810 m
177.8 mm	38.69 kg/m	K-55	0 m	2450 m
114.3 mm	17.26 kg/m	L-80	2319 m	3064 m

Perforation Record

Perforation Type	Position	Phasing	Spacing	Density	From	To
86mm EXPENDABLE	FREE	60 deg		20 spm	2643 m	2655 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2658 m	2666 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2671 m	2684 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2686 m	2702 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2711.5 m	2717.5 m
86mm EXPENDABLE	FREE	60 deg		20 spm	2717.5 m	2723.5 m
WL COATED PACKER	FREE				2611.9 m	2612.1 m

Remarks

LOG CORRELATED TO BAKER ATLAS SEGMENTED BOND LOG DATED 09-FEB-05.

DB SAND RAN PRIOR TO PERFORATING WITH GR-CCL TOOL. MARKED THE LINE AT 2720m.

GUN #1 INTERVAL 2717.5m - 2723.5m - AFTER PERFORATING WELL WENT ON A VACUUM.

PACKER SET DEPTH CENTRE ELEMENT 2612mKB. RE-ENTRY GUIDE SET DEPTH @ 2622.48mKB.

MARKED LINE AT 2646mKB. CONFIRMED DEPTH AT LINER TOP WHEN RUNNING INTO THE WELL

GUNS 4 TO 9 HAD LOTS OF STICK AND PULL WHILE LOGGING.

DB CEMENT RAN AFTER FIRST GUN PERFORATIONS.

2.5m OF SAND AND 2m OF CEMENT WERE DUMPED ONTO PACKER SET AT 2740mKB.

ALL LOGS MERGED WITH GR-CCL FROM SBT LOG.

GR-CCL TOOL RAN WITH JUNK BASKET TO CONFIRM PERFORATIONS AT SET DEPTHS

CCL TO CENTER ELEMENT ON PACKER 3.7m

Equipment Data

Run	Trip	Tool	Series Number	Serial Number	Position
1	1	CCL	2315NA		FREE

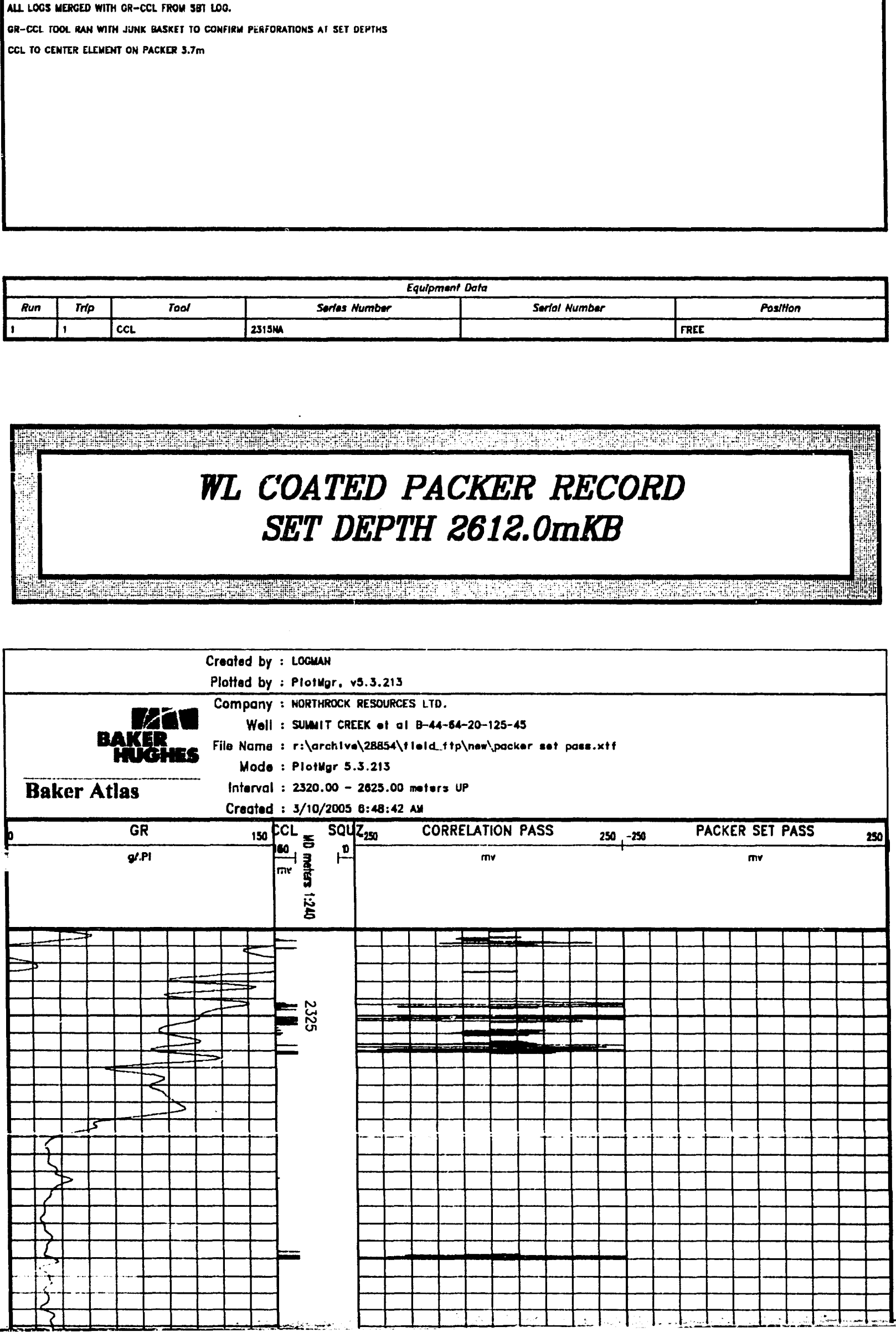
WL COATED PACKER RECORD
SET DEPTH 2612.0mKB

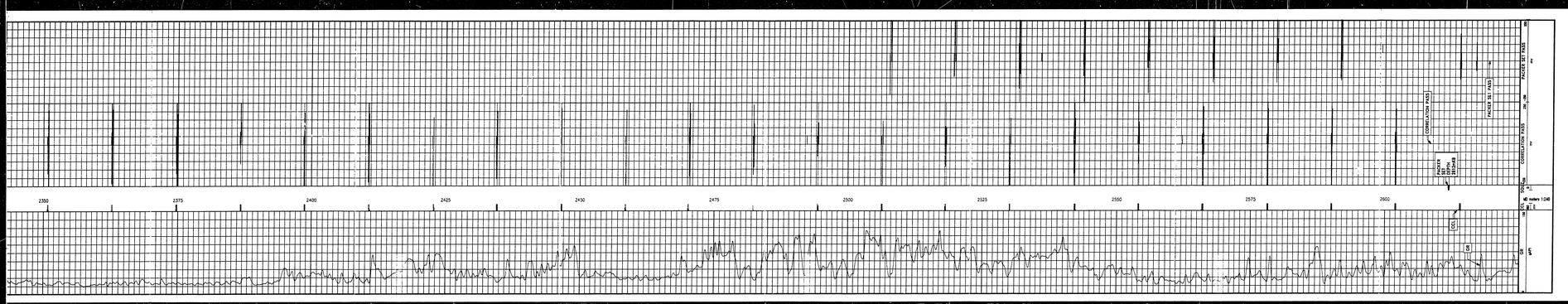
Created by : LOGMAN
Plotted by : PlotMgr, v5.3.213

BAKER HUGHES

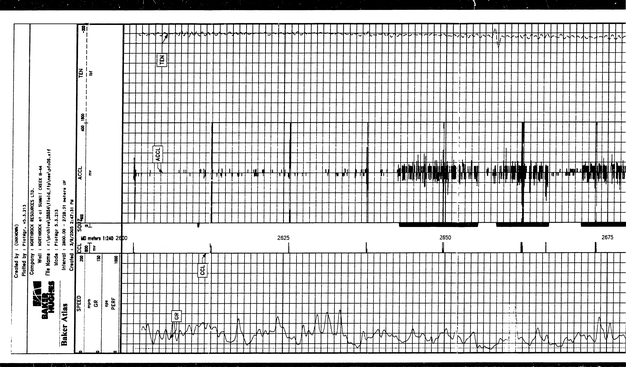
Baker Atlas

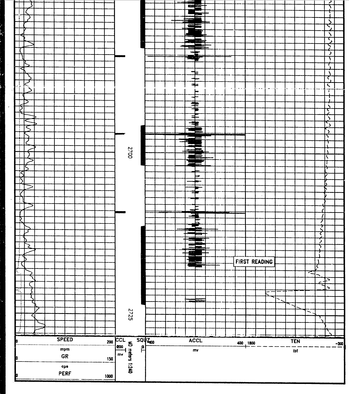
Company : NORTHROCK RESOURCES LTD.
Well : SUMMIT CREEK et al B-44-64-20-125-45
File Name : r:\archive\28854\field_ftp\new\packer set pass.xtf
Mode : PlotMgr 5.3.213
Interval : 2320.00 - 2625.00 meters UP
Created : 3/10/2005 8:48:42 AM





PERFORATION CONFIRMATION PASS

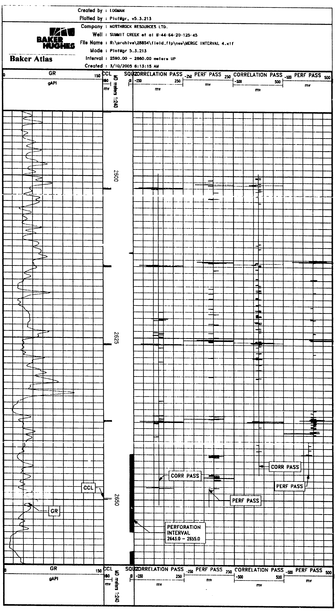




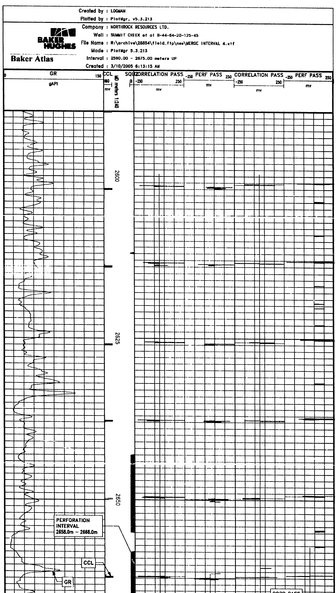
INTERVAL #4 PERFORATIONS

PERFORATION INTERVAL	LENGTH	LENGTH CARRIER	CCL OFFSET	CCL DEPTH	TOP SHOT DEPTH
2643.0m–2649.0m	6.0m	6.0m	1.0	2641.1m	2643.0m
2649.0m–2655.0m	6.0m	6.0m	0.6m	2648.2m	2649.0m
2656.0m–2662.0m	4.0m	4.0m	0.6m	2657.2m	2658.0m
2662.0m–2666.0m	4.0m	4.0m	0.6m	2661.2m	2662.0m
2671.0m–2677.0m	6.0m	6.0m	0.6m	2670.2m	2671.0m
2677.0m–2684.0m	7.0m	7.0m	0.6m	2676.2m	2677.0m

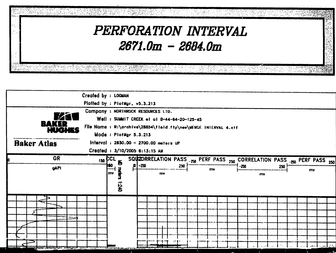
PERFORATION INTERVAL
2643.0m – 2655.0m

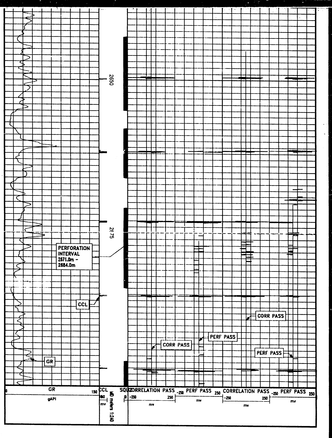


PERFORATION INTERVAL
2658.0m – 2666.0m



PERFORATION INTERVAL
2671.0m – 2684.0m

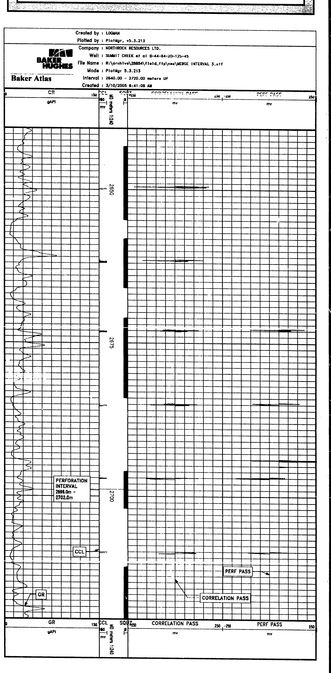




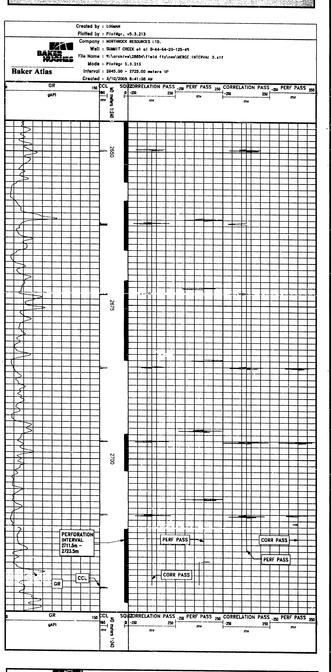
INTERVAL #3 PERFORATIONS

PERFORATION INTERVAL	LENGTH	LENGTH CARRIER	CCL OFFSET	CCL DEPTH	TOP SHOT DEPTH
2696.0m-2702.0m	6.0m	6.0m	0.0m	2695.2m	2696.0m
2711.5m-2717.5m	6.0m	6.0m	0.0m	2710.7m	2711.5m
2717.5m-2723.5m	6.0m	6.0m	0.0m	2716.7m	2717.5m

PERFORATION INTERVAL 2696.0m - 2702.0m



PERFORATION INTERVAL 2711.5m - 2723.5m



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CASE

Company	NORTHROCK RESOURCES LTD
Well	NORTHROCK et al SUMMIT CREEK S-44
Field	SUMMIT CREEK
Country	NORTHWEST Province CANADA
Location	Elevations
2650FSL 1011.4FWL S-7	KB 1867.4m
	DF
44-20-125-25 W6M	GL 1852.9
SEC TWP RGE	

File No:

API No:

LOG MEASURED FROM KB 14.5m ABOVE PERMANENT DATUM

LOG DRILLED MEASURED FROM KB

LAT/N 55 20.021"

LON/W 120 48.94"

N.E.B. COPY

BAKER HUGHES

Baker Atlas

MAC SM

Multipole Array Acoustilog

Slowness Analysis

COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES
LOCATION:	LIC: 9211-ND46-2-1
	LAT 64 23' 03.351" LONG 125 53' 22.66"
ELEVATIONS:	KB 586.7 M DF GL 560.5 M
DATE	16-MAR-04 ECC 25311

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT BUT BECAUSE OF THE UNCERTAINTY OF VARIABLE WELL CONDITIONS AND THE NECESSITY OF RELYING ON FACTS AND CIRCUMSTANCES OVER WHICH WE HAVE NO CONTROL, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES.

BOREHOLE RECORD	BS	
BIT SIZE	311.1	MM
BIT SIZE	244.5	MM
BIT SIZE	200.0	MM

CASING RECORD			
	WEIGHT	TYPE	
SIZE	(LB/FT)	GRADE	TOP
339.7 MM	72.00	J-55	0.0 M
244.5 MM	53.57	K-55	0.0 M

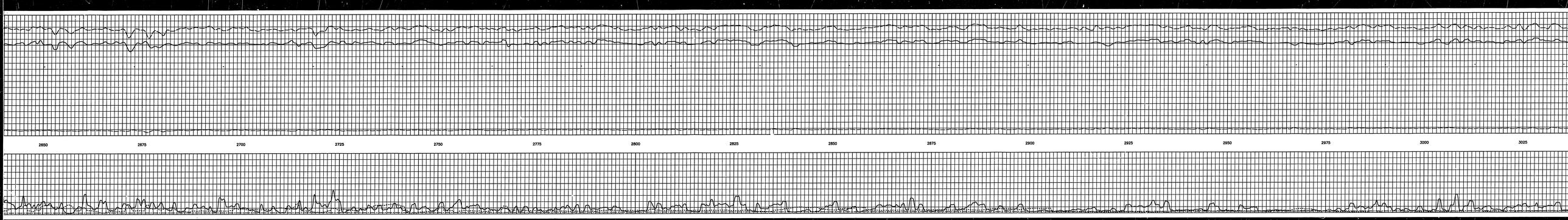
REMARKS

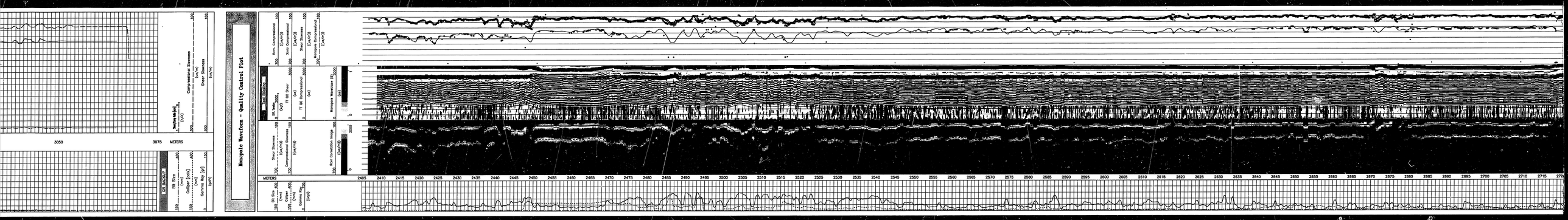
TIME STOP CIRCULATING: 1400, 15-MAR-04
LOGGING TIME ON BOTTOM: 0230, 16-MAR-04
CORRECTED TO DRILLER'S DEPTH OF 2650.0 M
CORRECTED TO CASED HOLE GR-CCL DATED 02-MAR-04.
TD TAGGED 2650.0 M, PBTD 2647.0 M.
TD FLUID DENSITY 2.0 G/CC, VISCOSITY 70 S, PH 9.5, FLUID LOSS 10 CC.
MAXIMUM BOTTOM HOLE TEMPERATURE 110 DEGC.
MAXIMUM SURFACE PRESSURE 20.0 MPA.
RUN 1: MAC-SM/GR/CAL TOOL STRING, 3.5 X 15.0 M.
STOP OPERATIONS FOR 1 HOUR DURING RUN 1 DUE TO POWER LOSS AND RESTART.
RUN 1: 2 PASSES AT 1800 M/HR, 1 PASS AT 900 M/HR, 1 PASS AT 600 M/HR.
REPEAT PASS IS PRESENTED OVER HIGH RESOLUTION INTERVAL AT CUSTOMER'S REQUEST.

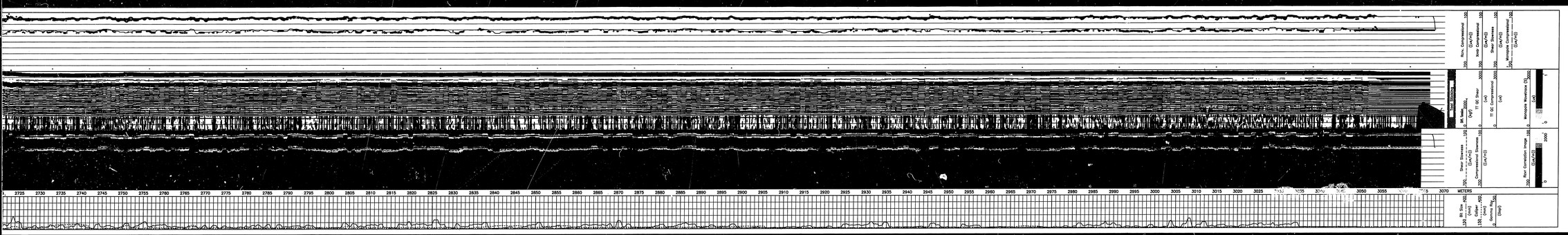
LOG ENGR: MARK MABBO

LOG ENGR: MICDONALD / A. BITTLESTONE

EQUIPMENT DATA				POSITION
TOOL	SERIAL NO.			FEET
TYPE	LOCATION			ALL MEASUREMENTS
MAC-SM	10006			FROM
GR-CCL	10006			
CAL	10006			
MAC-SM	10006		


2650
2675
2700
2725
2750
2775
2800
2825
2850
2875
2900
2925
2950
2975
3000
3025


Monopole Waveform - Quality Control Plot
Rcm. Compressional
Xcm. Compressional
Shear Stiness
Monopole Attenuation
Shear Stiness
Compressional Slowness
Bit Size
Caliper
Gamma Ray
Rcr Correlation Image
Monopole Amplitude
TT DC Compressional
TT DC Shear
METERS
3050
3075


Bit Size
Caliper
Hole Deviation
Max. Compressional
Min. Shear
TT DC Compressional
TT DC Shear
Vp/Vs
Shear Slowness
Compressional Slowness
Monopole Reflection
Near Correlation Image
METERS

FILE NO.
API NO.
COMPANY NORCOAL RESOURCES LTD.
WELL NORCOAL ET AL SUNNI CREEK E-54
FIELD WILDCAT
PROVINCE NORTHWEST TERRITORIES
LOCATION 60°46'45.2"N 123°30'25.9"W
LSD: 04-30-135-19
LAT: 60°46'45.2"N LONG: 123°30'25.9"W
ELEVATIONS: KB: 0 m
DF: 380.9 m
GL: 0 m
DATE: 16-SEP-05
Baker Atlas

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

BAKER HUGHES

Baker Atlas

CEMENT VOLUME LOG I'OE 156.0 MM BOREHOLE AND 114.3 MM CASING ORIENTED TO TRUE NORTH

N.E.B. COPY

FILE NO:	
API NO:	
COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	SUMMIT CREEK
PROVINCE	NORTHWEST TERRITORIES

Ver. 3.87
UID:
3006446430125450

LOCATION:
LIC: 9211-M046-2-1

LSD: 64-30-125-45
LAT 64 23' 02.351" LONG 125 53' 22.66"

OTHER SERVICES
HDI-GR-CAL
MAC-GR-CAL
CN-ZDL-GR-CAL
STAR-DSI1L-GR-XCAL
TVD

PERMANENT DATUM	GL	ELEVATION	580.5 M
LOG MEASURED FROM	KB	5.2 M	ABOVE P.D.
DRILL MEAS. FROM	KELLY BUSHING		

ELEVATIONS:
KB 585.7 M
DF
GL 580.5 M

DATE		18-MAR-04	
RUN	TRIP	1	1
SERVICE ORDER		702854	
DEPTH DRILLER		3064.0 M	
DEPTH LOGGER		3064.7 M	
BOTTOM LOGGED INTERVAL		3043.3 M	
TOP LOGGED INTERVAL		2447.7 M	
CASING DRILLER		177.8 MM @2450.0 M	@
CASING LOGGER		2447.7 M	
BIT SIZE		156.0 MM	
TYPE OF FLUID IN HOLE		GELCHEM	
DENSITY	VISCOSITY	1040.0 G/L 38.0 S	
PH	FLUID LOSS	10.0 8.5 ML	
SOURCE OF SAMPLE		CIRCULATION	
RM AT MEAS. TEMP.		1.7 OHM @18.0 DEGC	@
RMF AT MEAS. TEMP.		1.6 OHM @18.0 DEGC	@
RMC AT MEAS. TEMP.		1.8 OHM @18.0 DEGC	@
SOURCE OF RMF	RMC	MEASURED MEASURED	
RM AT BHT		0.4 OHM @97.2 DEGC	@
TIME SINCE CIRCULATION		20.0 HOURS	
MAX. RECORDED TEMP.		97.2 DEGC	
EQUIP. NO.	LOCATION	8872 N19KU	
RECORDED BY		K.SNIDER	
WITNESSED BY		J.HARDER	

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT BUT BAKER ATLAS AND ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR ANY ERROR OR OTHER MEASUREMENTS. WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS AND WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

BOREHOLE RECORD

BIT SIZE	@	TO
311.0 MM	2450.0 M	3100.0 M
156.0 MM	2450.0 M	3064.0 M

CASING RECORD

SIZE	WEIGHT	GRADE	FROM	TO
339.7 MM	81.5 KG/M	J-55	0.0 M	2450.0 M
244.5 MM	59.5 KG/M	J-55	0.0 M	1700.0 M
177.8 MM	34.2 KG/M	J-55	0.0 M	2450.0 M

REMARKS

RUN 3 TRIP 1:
TIME STOP CIRCULATING: 14:00, 18-MAR-04
BOREHOLE CONDITION AS REPORTED AT 1813 18-MAR-04.
DRILLER'S TD REPORTED AS 3064.0 M AT 1813 18-MAR-04.
156 MM SIDETRACK STARTED AT 2447.0 M AND JACKED UP.
HOLE CONDITIONS WERE GOOD.
STAB/DRILLER RUN IN COMBINATION.
HOLE VOLUME CALCULATED USING 100% CALIPER.
INTEGRATED BOREHOLE VOLUME TOS ENTRY 0.1 TO 10.0 M3.
INTEGRATED CASING VOLUME TOS ENTRY 0.1 TO 10.0 M3.
STUCK AND PULL AFTER DRILL MEASUREMENT.
LIMITED LOGGING FROM 3030 M SO AS NOT TO ENCOUNTER HOLE PROBLEMS AS IN FIRST RUN.
STAB/DRILLER RUN BUT SIDE USED FROM TD TO 3029 FOR VOLUME CALCULATIONS.
CSNG = BOREHOLE & CEMENT VOLUME CASING O.D. BIT SIZE
CSEN = B. MACDONALD/ A. MITTELSTAEDT

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIAL NO.	POSITION
3	1	ZDL	3455HA	PAD
3	1	APS	3455HA	PAD
3	1	HNGS	3455HA	PAD
3	1	DSI-B	3455HA	PAD
3	1	XMAC	3455HA	PAD
3	1	SDM	3455HA	PAD
3	1	SDM-HILT	3455HA	PAD
3	1	ACC-B	3455HA	PAD
3	1	ACC-C	3455HA	PAD
3	1	ACC-D	3455HA	PAD
3	1	DUAL-SUT	3455HA	PAD
3	1	CNA-K	3455HA	PAD
3	1	CNA-K	3455HA	PAD

CEMENT VOLUME LOG ORIENTED TO TRUE NORTH

ECLIPS 5.0 Nov 25, 2003

Perp# /main/59 Cplot 6.21 Pdf_Cop /main/16 Fri Mar 19 15:12:09 2004 Filename 4.48

PARAMETER AND FILTER SUMMARY REPORT

FILE: /data/pas/northrock/b44-m.cas1/MERGED.prm
DEPTH MODE: DEPTH DIRECTION: DOWN
DEPTH: 2450.0 M - BOTTOM DEPTH: 3032.455 M

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
CHT	FILTER ()	median (1)		"	"
TENSION	FILTER ()	median (1)		"	"
GR	FILTER ()	median (1)		"	"

BOREHOLE & CEMENT

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (m) TOP	BOTTOM
CASING O.D.		114.300	mm	"	"
BIT SIZE		156.000	mm	"	"

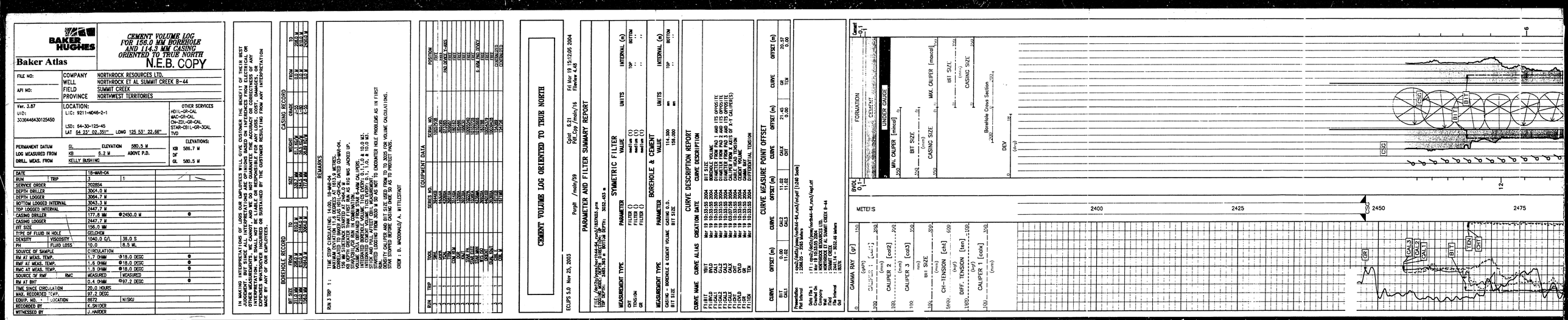
CURVE DESCRIPTION REPORT

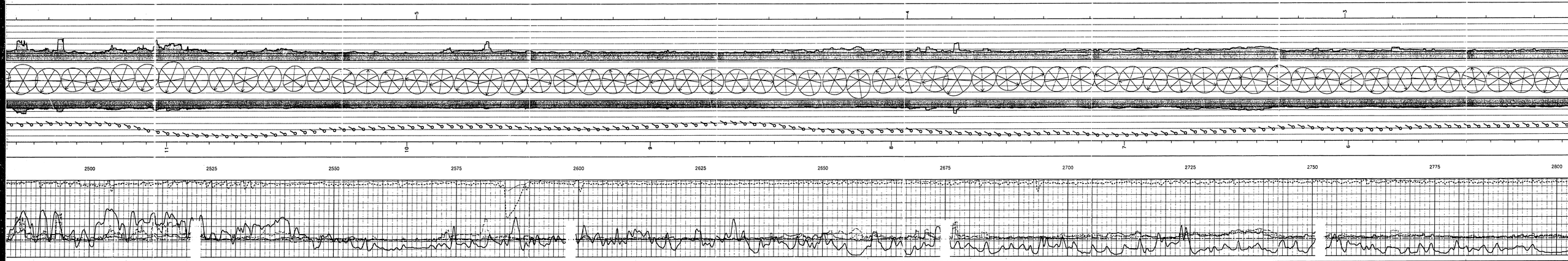
CURVE NAME	CURVE ALIAS	CREATION DATE	CURVE DESCRIPTION
F1:BIT	YBIT	Mar 19 10:33:55 2004	BIT SIZE
F1:BVLD	BVLD	Mar 19 10:33:55 2004	BOREHOLE VOLUME
F1:CAL2	CAL2	Mar 19 10:33:55 2004	DIAMETER FROM PAD 2 AND ITS OPPOSITE
F1:CAL3	CAL3	Mar 19 10:33:55 2004	DIAMETER FROM PAD 3 AND ITS OPPOSITE
F1:CALI	CALI	Mar 19 10:33:55 2004	DIAMETER FROM PAD 1 AND ITS OPPOSITE
F1:CHT	CHT	Mar 19 10:33:55 2004	CABLE HEAD TENSION
F1:CSVD	CSVD	Mar 19 10:33:55 2004	CASING VOLUME
F1:GR	GR	Mar 19 10:33:55 2004	GAMMA RAY
F1:TEN	TEN	Mar 19 10:33:55 2004	DIFFERENTIAL TENSION

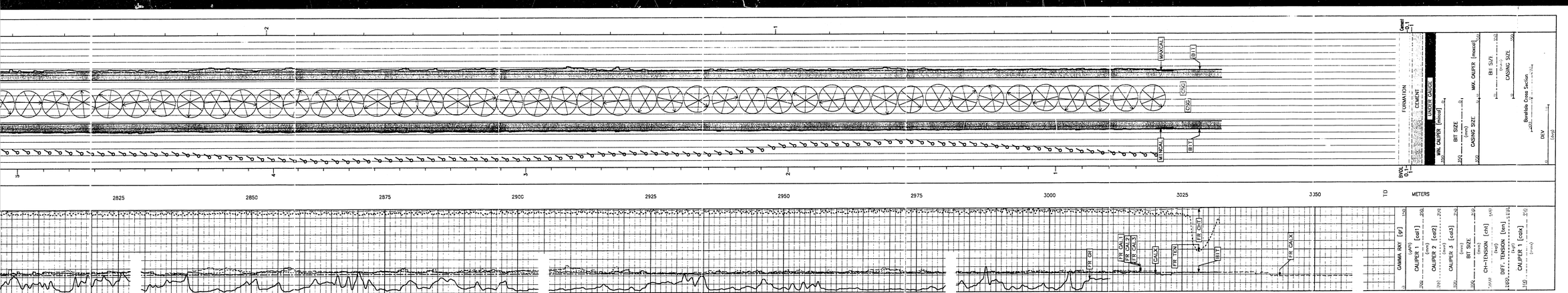
CURVE MEASURE POINT OFFSET

CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)	CURVE	OFFSET (m)
BIT	0.00	CAL2	11.02	CALX	21.45	GR	20.57
CALI	11.02	CAL3	11.02	CHT	0.00	TEN	0.00

Presentation : cpp2:/data/pas/northrock-b44-m.cas1/actual [1:240 Scale]
Data Source : 1: cpp2:/data/pas/northrock-b44-m.cas1/wpt.dlis
Company : NORTHROCK RESOURCES LTD.
Well : NORTHROCK ET AL SUMMIT CREEK B-44
Field : SUMMIT CREEK
Run Number : 3 Trip Number : 1 Depth : 2032.46 Meters
Date : 18JUL04




5
4
3
11
10
9
8
7
6
2500
2525
2550
2575
2600
2625
2550
2675
2700
2725
2750
2775
2800



COMPANY	NORTHROCK RESOURCES LTD.
WELL	NORTHROCK ET AL SUMMIT CREEK B-44
FIELD	WILDCAT
PROVINCE	NORTHWEST TERRITORIES
LOCATION:	UWI:
LTC: 59-11-49-46-2-1	300H149L307D450
SEC. 11 TWP. 49 RGE. 2 W6M	ELEVATIONS:
LSD: 64-30-125-45	KB 566.7 M
LAT 59° 21' 02.30" LONG 125° 51' 22.68"	GL 560.5 M
	DATE 15-MAR-04

FILE NO.

API NO.

Baker Atlas

Production Logging Services

Baker Atlas

File No.	**Company**	PACIFICO RESOURCES LTD.
API No.	**Well**	FORTUNEX #1 A2 SUNCT CREEK B-44
	Field	SUNCT CREEK
	Territories	FORTUNEX **Country** CANADA
SEC	**Location**	**Other Services**
265 444 meNG 19403	LEGAL: NEB COPY ons	
LAT: 44 23' 32.352"	LOCATION: B-44-44-39-22E-43	
LONG: 121 51' 19.46"		

Permanent Datum	GROUND LEVEL	Elevation 380.9 m	Elevations
Log Measured From	RELLY BUSHING	4.2 m Above P. D.	KB 384.7 m
Drill Measured From	RELLY BUSHING		DF
			GL 380.9 m

Date	17 JAN 03		
Run Number	ONE		
Depth Driller	3704.50MD		
Depth Logger	3695.70MD		
Bottom Logged Interval	3589.5 m		
Top Logged Interval	3395.0 m		
Time Started	08:00		
Time Finished	12:00		
Operator Rig Time	4		
Type of Fluid in Hole	SWG		
Fluid Density	N/A		
Salinity	N/A		
Fluid Level	N/A		
Logged Casing/ Top	N/A		
Wellhead Pressure	13350 kPa		
Maximum Hole Deviation	6 deg		
Nominal Logging Speed	15 mpm		
Maximum Recorded Temperature	98 deg C		
Reference Log	GR/CCL/PGAM/PEMP/PEMT/PDK 12/01		
Reference Log Date	14 DEC 01		
Equipment No. - Location	N/A	N/A	
Recorded By	P. HARRIS		
Witnessed By	L. LOGAN		

Wireline Rental

Hrs	From	To
3.5 hr	08 hr	11.5 hr
1 hr	11.5 hr	12.5 hr
1 hr	12.5 hr	13.5 hr
1 hr	13.5 hr	14.5 hr
1 hr	14.5 hr	15.5 hr

Perforation Type

Type	Position	Date
Not Applicable	PRE	
Not Applicable	PRE	
Not Applicable	PRE	
Not Applicable	PRE	
Not Applicable	PRE	

Casing Record

Size	Weight	From
244.5 mm	59.5 kg/m	0 m
177.8 mm	34.2 kg/m	0 m
139.7 mm	20.8 kg/m	0 m
114.3 mm	17.1 kg/m	0 m
88.9 mm	13.4 kg/m	0 m

Perforation Record

Top Perforation	Bottom Perforation	Date
3589.5 m	3589.5 m	
3589.5 m	3589.5 m	
3589.5 m	3589.5 m	
3589.5 m	3589.5 m	
3589.5 m	3589.5 m	

Tubing Record

Size	From
88.9 mm	3589.5 m
73.0 mm	3589.5 m
60.3 mm	3589.5 m
48.3 mm	3589.5 m
33.4 mm	3589.5 m

Remarks

Indicates in base pass log on depth from rt.

Indicates up pass shut in and tubing pressure.

In making interpretations of logs, our employees will give the customer the benefit of their best judgement (but may all interpretations are opinions based on inferences from electrical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretation, and we shall not be liable or responsible for any loss, cost, damages, or expenses whatsoever incurred or sustained by the customer resulting from any interpretation made by any of our employees.

TOOL DIAGRAM

DOWNLOGGING 127m/m
TWO STRING GAUGES @ 4.25 m apart



SHUT IN BASE PASS LOGGING DOWN AT 16 m/min

TUBING SHUT IN PRESSURE 14.5 MPa

SPL PROCESSING

PARAMETER	VALUE	UNITS	DEPTH
Magnetic Declination	0.000	DEG	TVD

MEASUREMENT TYPE

Bit Diameter

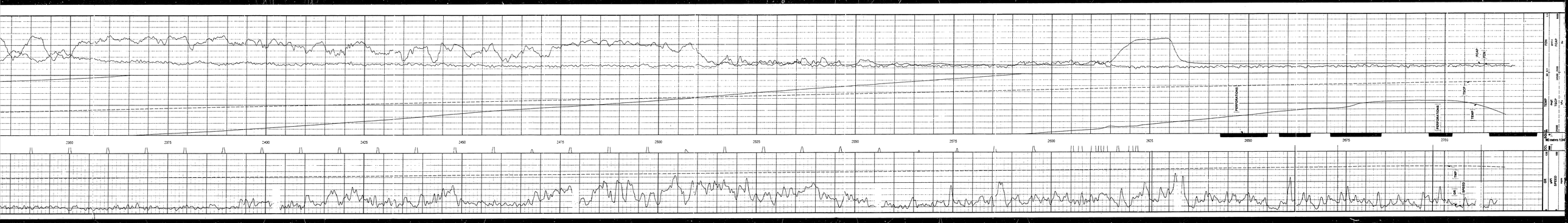
DEPTH OFFSETS
(Bit Size: 152.4 mm)

SERVICE	DRILLER'S DEPTH	MEASUREMENTS WITH
W Mark	3704	PDK
PGAM	3.352	GR
PEMP	3.352	GR
PEMT	3.352	GR
PDK	3.352	GR
PDK	8.153	PEMP
PDK	8.153	PEMT
PDK	8.153	PGAM
PDK	3.429	PGAM
PDK	8.153	PGAM
PDK	8.400	PGAM

Created by : HARRIS
Schlumberger GeoQuest IndigoSuite v2.204
Company : pacificos exxmore 1m
Well : FORTUNEX #1 A2 SUNCT CREEK B-44
File Name : C:\SLB\DBFS\wellSites\2385\logs\fin.wfl
Interval : 3395.00 - 3725.00 meters
Created : 2003-01-20 08:37

Baker Atlas

GR: API, 0, 150
TEMP: deg C, 100, 0
TEMP: deg C, 100, 0
FGR: gAPI, 0, 150
FDN: gAPI, 0, 150
FGR
FDN
TEMP
TEMP
CCL
TMP
TMP
Scales 1:240
2200
2225
2250
2275
2300
2325


FCIP
FDN
FCIP
FDN
PERFORATIONS
TSCP
TEMP
TSCP
TEMP
PERFORATIONS
TEMP
SPEED
2350
2375
2400
2425
2450
2475
2500
2525
2550
2575
2600
2625
2650
2675
2700
MD metres 1:240

PRESSURE DRAWDOWN SURVEY
TOOL STOP DEPTH 2641.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOOL	HOLE(S)
TEC Pressure	Temperature Corr. Source	Borehole Temperature	degC	0.Min	All_Hole

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES			
0.0001A	0.0ft	FLOW			
0.0001A	0.0ft	CCL	CCL		
0.0625A	0.15ft	GR			
0.1250A	0.12ft	PTC2	PTC2		
0.1250A	-0.12ft	ZDT1	ZDT1	TQCP	TSCP
0.1250A	0.12ft	QTEM	TQAV	TEM	
0.1250A	0.12ft	TEMP			
0.1250A	0.12ft				
0.2500A	1.83ft	FQM	RQM		
0.5000A	0.00ft	SPNR	SPNR	ZDT2	
0.5000A	0.00ft	TEM	TPSR		

Created by : DRUMP1005
Plotted by : FloExp: v5.2.204
Company : RIDGEBACK RESOURCES LTD.
Well : RIDGEBACK et al ARMATT CREEK D-64
File Name : r:\1005\2005\well\64\al\20052d\wp204.stf
Mode : FloExp 5.2.204
Interval : 0 to 4200
Created : 3/29/2005 12:16:32 PM

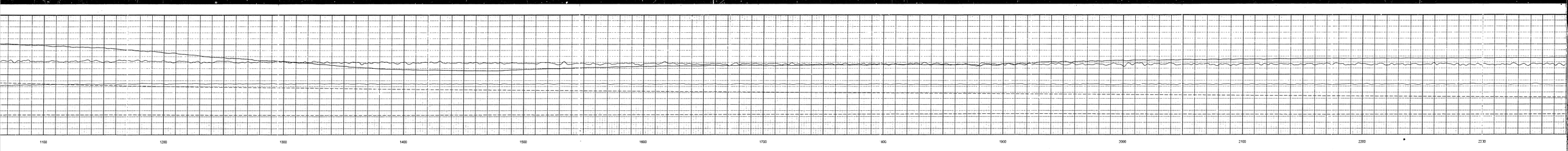
BAKER HUGHES
Baker Atlas

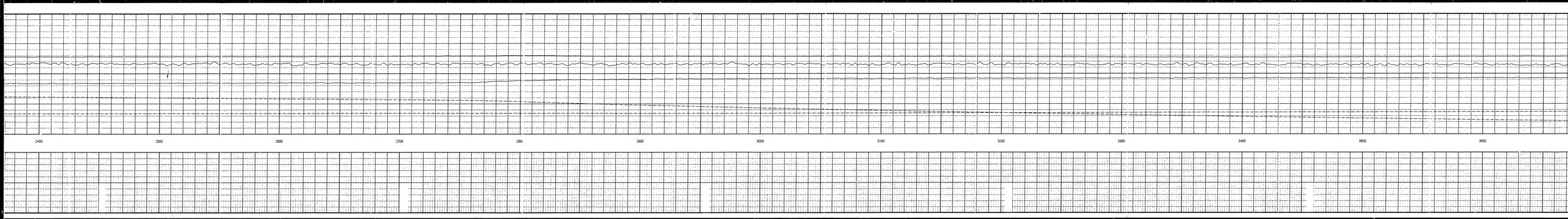
125	SPNR	25.01	FQM
	TPR		gpm/s
80	TEMP		FCAP
	degC	80.3000	Hz
22500	TSCP		24000
	kPa		

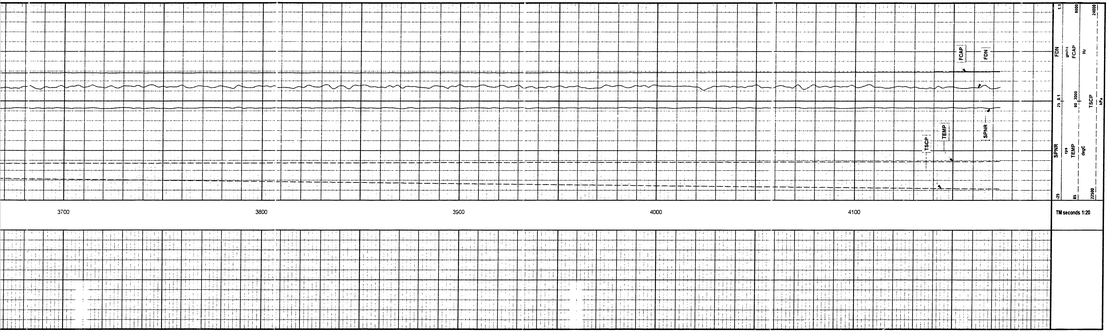
MEASURED DEPTH (m)

SPNR
FQM
TEMP
FCAP
TSCP

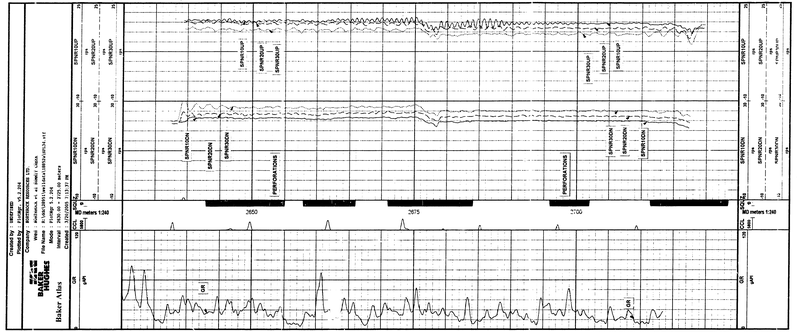
0.00
100.00
200.00
300.00
400.00
500.00
600.00
700.00
800.00
900.00
1000.00


1100
1200
1300
1400
1500
1600
1700
600
1900
2000
2100
2200
2230

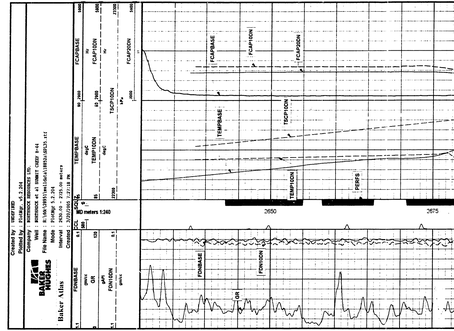

2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
3400
3500
3600

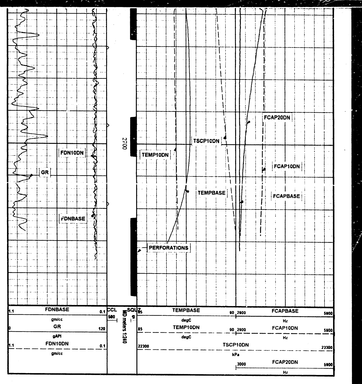


WELL FLOWING
LOGGED up/down AT 10,20,30 m/min
TBN PRESSURE 11.3 MPa
201 E3M3/DAY



WELL FLOWING
LOG DOWN PASSES





STATIONARY SPINNER PASSES

SPINNER STOP DEPTH 2642.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	DIP	DEVIATI
TPI Pressure	Temperature Corr. Source	Borehole Temperature	degF	0.500	100.500

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES			
0.0500	2.362	FLOW			
0.0500	2.152	CCL	CCL		
0.0500	0.152	GR			
0.0500	0.394	PPRT	PPRT		
0.0500	0.130	TEMP	TEMP	TEMP	TEMP
0.0500	0.135	DPHR	PDRT	TEM	
0.0500	1.503	PDRT			
0.0500	2.839	RHB	RHB		
0.0500	0.000	SPNR	SPNR	SPNR	
0.0500	0.000	TEM	TEMA		

Created by : SWEETSER
Plotted by : FloMap, v5.2.204
Company : HUNTSMAN RESOURCES LTD.
Well : HUNTSMAN et al SUMMIT CREEK B-44
File Name : R:\ddc\2005\welldata\a\10052a5202d.xtf
Mode : FloMap 5.2.204
Interval : 0 to 300
Created : 3/20/2005 3:01:40 PM

BAKER HUGHES
Baker Atlas

TPI SPINNER 1.75

SPNR
rps
15
30
FDN
gas/c
FCAP
Hz
TSCP
kPa
0.1
1.1
3000
8000
23000
27000

SPNR
FDN
FCAP
TSCP

100
200
300

SPINNER STOP DEPTH 2657.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	DIP	DEVIATI
TPI Pressure	Temperature Corr. Source	Borehole Temperature	degF	0.500	100.500

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES			
0.0500	2.362	FLOW			
0.0500	2.152	CCL	CCL		
0.0500	0.152	GR			
0.0500	0.394	PPRT	PPRT		
0.0500	0.130	TEMP	TEMP	TEMP	TEMP
0.0500	0.135	DPHR	PDRT	TEM	
0.0500	1.503	PDRT			
0.0500	2.839	RHB	RHB		
0.0500	0.000	SPNR	SPNR	SPNR	
0.0500	0.000	TEM	TEMA		

Created by : SWEETSER
Plotted by : FloMap, v5.2.204
Company : HUNTSMAN RESOURCES LTD.
Well : HUNTSMAN et al SUMMIT CREEK B-44
File Name : R:\ddc\2005\welldata\a\10052a5203.xtf
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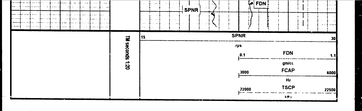
BAKER HUGHES
Baker Atlas

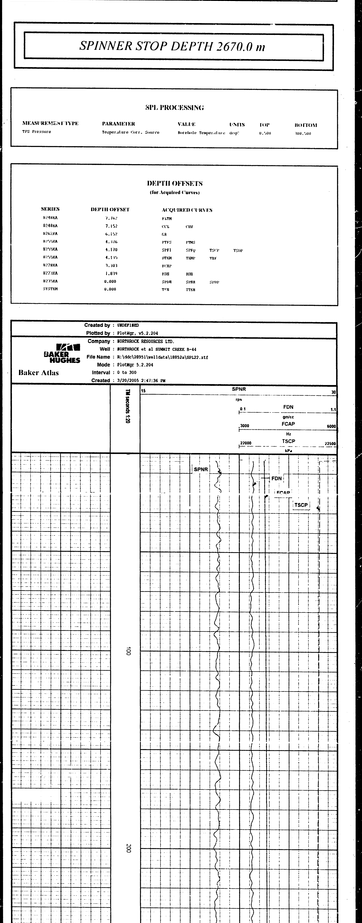
TPI SPINNER 1.75

SPNR
rps
15
30
FDN
gas/c
FCAP
Hz
TSCP
kPa
0.1
1.1
3000
8000
23000
27000

SPNR
FDN
FCAP
TSCP

100
200
300





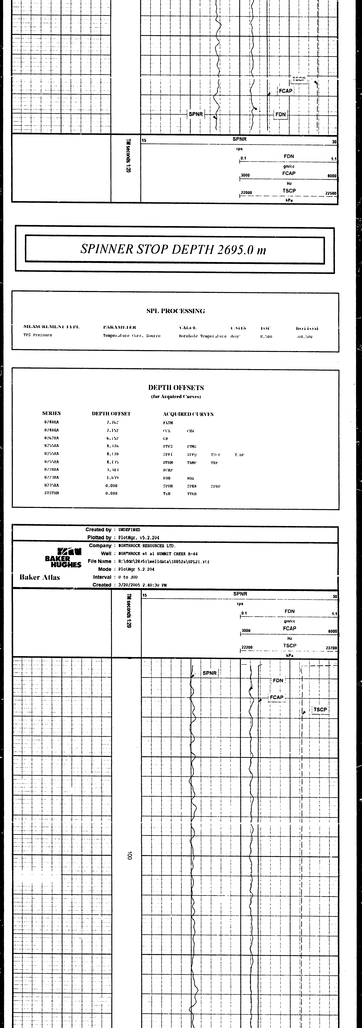
SPINNER STOP DEPTH 2670.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
TPT Pressure	TemperatureVert_Source	BottleHole TemperatureAver	degF	0.500	900.500

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES				
8:9968A	2.362	FLOW				
8:9854A	2.152	CCL	CHV			
8:9634A	6.152	GR				
8:9749A	6.136	PTP2	PTP1			
8:9750A	6.136	DPH1	TEP2	TEP1	TEMP	
8:9760A	6.136	SPIN	TEMP	TEP		
8:9780A	5.103	PTEP				
8:9710A	1.839	FHR	RHR			
8:9750A	0.000	DPHR	DPHR	DPHP		
19:9760	0.000	TPR	TPHR			



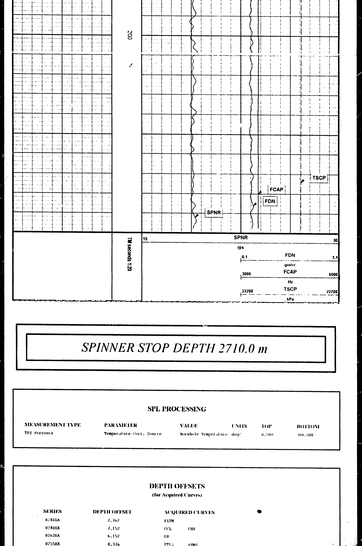
SPINNER STOP DEPTH 2695.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
TPT Pressure	TemperatureVert_Source	BottleHole TemperatureAver	degF	0.500	900.500

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES				
8:9968A	2.362	FLOW				
8:9854A	2.152	CCL	CHV			
8:9634A	6.152	GR				
8:9749A	6.136	PTP2	PTP1			
8:9750A	6.136	DPH1	TEP2	TEP1	TEMP	
8:9760A	6.136	SPIN	TEMP	TEP		
8:9780A	5.103	PTEP				
8:9710A	2.839	FHR	RHR			
8:9750A	0.000	DPHR	DPHR	DPHP		
19:9760	0.000	TPR	TPHR			



SPINNER STOP DEPTH 2710.0 m

SPL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	TOP	BOTTOM
TPT Pressure	TemperatureVert_Source	BottleHole TemperatureAver	degF	0.500	900.500

DEPTH OFFSETS
(for Acquired Curves)

SERIES	DEPTH OFFSET	ACQUIRED CURVES				
8:9968A	2.362	FLOW				
8:9854A	2.152	CCL	CHV			
8:9634A	6.152	GR				
8:9749A	6.136	PTP2	PTP1			

PRECISION ENERGY SERVICES

Precision Energy Services
4500, 150 - 6th Avenue S.W.
Calgary, AB T2P 3Y7
Telephone: 403.716.4500
Facsimile: 403.716.4580
www.precision-es.com

Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/16	
09:30	Set packer to pressure test.
10:15	Unable to set packer, rig up to circulate.
10:31	Begin circulating at 0.3 m3/min.
11:18	Finished circulating, set packer and pressure test. Total fluid lost during circulation was 2.5 m3.
14:00	Pressure test good, continue in hole.
15:00	Rig in wireline and run in hole to log packer on depth.
16:45	Wireline out of hole and rig off. Space out and set bottom packer.
17:15	Rig in BJ for acid Squeaze.
18:30	Night shift arrive, hold safety meeting.
19:30	Begin acid squeeze operations.
19:45	Pressure test BJ lines.
21:10	Acid spotted, packer set, begin squeeze. 9.5 m3 acid and 1.5 m3 water in hole.
05/02/17	
01:20	Unable to squeeze acid away, hold safety meeting and flush acid out of hole with 28 m3 water.
03:35	Flush complete. Move packer and continue with second stage.
05:30	Hold safety meeting, begin second stage stimulation.
05:58	Pressure test BJ lines.
06:30	Day shift on location, hold safety meeting.
07:00	Acid spotted. packer set, begin squeeze. 8.5 m3 acid and 3.06 m3 water in hole.
18:30	Night shift arrive, hold safety meeting, continue to squeeze stage #2.
22:30	Pressure drop on tubing, suspect Packer or tubing leak.
23:30	Unset from packer and circulate out acid to acid tank #2.
05/02/18	
01:05	Acid circulated out.
01:15	Run in and try resetting packer and pressure testing.
06:30	Packer pressure test unsuccessful.
06:30	Day shift arrive on location, hold safety meeting.
08:00	Trip out of hole.
18:00	Trip in hole with scraper and tapered mill.
18:30	Night shift on location, hold safety meeting continue tripping in.
05/02/19	
02:00	Finished trip in with scraper rig up to circulate.
02:15	Circulate 16m3.
03:05	Finished circulating.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/19	
03:50	Start to trip out of the hole.
06:30	Day shift arrive on location, hold safety meeting, continue out of hole.
10:00	Finished trip out of hole, make up BHA and trip back in hole.
18:30	Night shift on location, hold safety meeting and continue in hole.
21:45	14 joints left to go, stop tripping.
22:20	Set packer, pressure test and continue in hole.
05/02/20	
00:15	Continue to trip in hole.
02:20	Finished tripping in the hole, tag bottom.
03:00	Trip out 7 joints to stage #3.
04:15	Safety meeting.
04:40	Pressure test BJ lines and continue with squeeze.
05:40	Acid Spotted, packer set, begin squeeze. 5m3 of acid and 6.31 m3 of water in hole.
06:30	Day shift on location, hold safety meeting, continue acid squeeze.
15:20	Unable to squeeze acid away, bleed off tubing, release packer, and circulate acid out of hole with 13 m3 water.
16:08	Circulation complete, release lower packer and get ready to swab.
18:30	Nightshift arrive on location, hold safety meeting, prepare for swabbing.
20:35	Start swabbing.
20:35	Open well.
20:45	Swab #1, tag fluid at surface, pull from 175m.
21:00	Swab #2, tagged fluid at 175m, pulled from 300m.
21:20	Swab #3, tagged fluid at 300m, pulled from 375m.
21:35	Swab #4, tagged fluid at 410m, pulled from 618m.
21:50	Swab #5, tagged fluid at 570m, pulled from 713m.
22:05	Swab #6, tagged fluid at 617m, pulled from 807m.
22:20	Swab #7, tagged fluid at 617m, pulled from 945m.
22:35	Swab #8, tagged fluid at 852m, pulled from 1035m.
22:50	Swab #9, tagged fluid at 945m, pulled from 1125m.
23:30	Swab #10, tagged fluid at 1080m, pulled from 1300m.
23:45	Swab #11, tagged fluid at 1257, pulled from 1511m.
05/02/21	
00:15	Swab #12, tagged fluid at 1300m, pulled from 1635m.
00:50	Swab #13, tagged fluid at 1300m, pulled from 1511m.
01:15	Swab #14, tagged fluid at 1427m, pulled from 1594m.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/21	
01:30	Swab #15, tagged fluid at 1553m, pulled from 1755m.
02:00	Swab #16, tagged fluid at 1635m, pulled from 1873m.
02:25	Swab #17, tagged fluid at 1795m, pulled from 2000m.
03:20	Swab #18, tagged fluid at 1872m, pulled from 2100m.
03:20	Trace of black hydrocarbons.
03:45	Swab #19, tagged fluid at 1950m, pulled from 2173m.
03:45	Trace of black hydrocarbons.
03:45	100 ppm of sour or acid gas detected on tri-head monitor.
04:00	Hold safety meeting.
05:20	Swab #20, tagged fluid at 2173m, pulled from 2190m.
05:20	Trace of black hydrocarbons.
06:00	Swab #21, tagged fluid at 2173m, pulled from 2190m.
06:00	Dry swab. Rig down swab tree. Pull next swab at 07:00.
06:00	Total fluid recovered during swabbing = 11.92m3.
06:30	Day shift arrive on location, hold safety meeting.
07:10	Swab #22, no tag, pulled from 2190m, swab was dry.
08:08	Swab #23, no tag, pulled from 2190m, swab was dry. Slight blow on tubing changes to vac quickly. No LEL 100ppm acid gas detected.
08:57	Swab #24, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
09:57	Swab #25, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
10:54	Swab #26, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
12:50	Swab #27, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
13:47	Swab #28, no tag, pulled from 2190m, trace fluid at end of swab, volume was TSTM.
13:50	End of swabbing, rig out swab equipment, and move packer up hole. Total fluid recovered swabbing was 11.92m3.
17:45	Packer set, pressure test and rig up to swab.
18:30	Night shift arrive on location, hold safety meeting, prepare for swabbing.
18:50	Start swabbing.
19:15	Swab #1, tagged fluid at 87m, pulled from 262m.
19:55	Swab #2, tagged fluid at 262m, pulled from 472m.
20:10	Swab #3, tagged fluid at 423m, pulled from 712m.
20:20	Swab #4, tagged fluid at 660m, pulled from 898m.
20:50	Swab #5, tagged fluid at 1035m, pulled from 1256m.
21:15	Swab #6, tagged fluid at 1035m, pulled from 1256m.
21:40	Swab #7, tagged fluid at 1168m, pulled from 1385m.
22:00	Swab #8, tagged fluid at 1385m, pulled from 1593m.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/21	
22:25	Swab #9, tagged fluid at 1552m, pulled from 1755m.
23:05	Swab #10, tagged fluid at 1715m, pulled from 1911m.
23:35	Swab #11, tagged fluid at 1872m, pulled from 1990m.
23:55	Swab #12, tagged fluid at 1900m, pulled from 1990m.
05/02/22	
00:30	Swab #13, tagged fluid at 1940m, pulled from 1990m.
01:30	Swab #14, tagged fluid at 1872m, pulled from 1990m.
02:30	Swab #15, tagged fluid at 1940m, pulled from 1990m.
02:30	No LEL's detected.
03:45	Swab #16, tagged fluid at 1900m, pulled from 1990m.
03:45	No LEL's detected.
04:30	Swab #17, no fluid tag, pulled from 1990m.
04:30	Swab was dry.
05:30	Swab #18, no fluid tag, pulled from 1990m.
05:30	No LEL's detected.
06:05	Rig out swab gear, fill the hole to unset packer and change intervals.
06:30	Day shift arrive, hold safety meeting.
13:25	Break circulation and proceed with stimulation.
13:42	Pressure test BJ surface lines.
14:07	Pressure test complete, circulate acid in hole. 10 m3 acid followed with 0.7 m3 water.
14:38	Acid displaced in hole, shut in annulus and proceed with squeeze. Total volume circulated to surface was 11.5 m3 of water.
18:30	Night shift arrive, hold safety meeting.
21:10	Formation broke.
21:40	Acid squeeze complete.
21:40	Formation is on vacuum.
22:00	Rig BJ lines off tubing, unlatch packer, move up hole and reset at next interval.
24:00	Safety meeting.
05/02/23	
00:15	Try and break circulation.
00:25	Unable to overcome formation vacuum, no returns at test unit, +/- 12m3 water pumped.
00:40	Pressure test BJ surface lines.
00:50	Pressure test complete, spot 10m3 of acid followed with 0.5m3 of water.
01:30	Start acid squeeze.
01:55	Squeeze complete.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/23	
01:55	Formation is on vacuum.
02:30	Latch onto lower packer.
03:00	Pressure test BJ surface lines and annulus to 7MPa.
03:30	Rig in swab gear.
04:05	Start swabbing.
04:20	Swab #1, tagged fluid at 275m, pulled 512m.
04:30	Swab #2, tagged fluid at 275m, pulled from 570m.
04:40	Swab #3, tagged fluid at 325m, pulled from 665m.
04:50	Swab #4, tagged fluid at 375m, pulled from 617m.
05:05	Swab #5, thought they tagged fluid at 50m, pulled from 325m.
05:20	Swab #6, tagged fluid at 375m, pulled from 612m.
05:30	Swab #7, tagged fluid at 375m, pulled from 617m.
06:00	Swab #8, tagged fluid at 600m, pulled from 945m.
06:20	Swab #9, tagged fluid at 275m, pulled from 473m.
06:30	Swab #10, tagged fluid at 175m, pulled from 375m.
06:30	Well starting to flow on it's own.
06:30	Change choke to 50.80 mm.
07:31	Change choke to 25.4000 mm.
07:45	Heavy fluid returns.
08:00	Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.
08:00	Gas bomb # V0003625 & V0002554, Condensate bomb # V0002634 & V0007627.
08:25	Meter in service on 50.8000 mm orifice plate.
08:30	Condensate API = 61 at 15°C.
08:30	H2S by Gastec = 6000 ppm.
09:00	H2S by Gastec= 7200 ppm.
09:00	Samples taken, 2 H.P. gas, 2 H.P. condensate, 2 liters atmospheric condensate, 2 liters atmospheric water.
09:00	Gas bomb # V0006901 & V0003995, Condensate bomb # V0004082 & V0002217.
09:30	Shut in well. Meter out of service.
09:30	Ship fluid, blow down system and rig off swab tree.
11:20	Begin monitoring pressures.
18:00	Rig to kill well, release packer and trip out of hole.
22:00	Start to trip out.
05/02/24	
03:30	At surface.

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Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/24	
03:45	Rig in wireline.
05:10	Wireline run in hole with bridge plug.
06:10	Wireline at surface.
06:30	Day shift arrive, hold safety meeting.
10:00	Start to trip in.
18:30	Night shift arrive on location, hold safety meeting.
18:40	Land Dognut.
19:00	Wireline running in hole with Gauge Ring.
19:50	Wireline at surface.
20:00	Rig out wireline.
20:30	Rig out BOP'S, head up.
05/02/25	
00:30	Well head on.
03:00	Rig in slickline.
04:15	Pull PX Prong and Plug.
05:30	Wireline at surface, rig out. Monitor pressures.
11:30	Rig in to pull swab.
13:20	Swab #1, tagged fluid at 185m, pulled from 500m.
13:20	Well flowing.
13:20	Change choke to 6.35 mm.
14:15	Shut in well. Meter out of service.
14:15	Sour to surface. Shut in well and monitor pressures.
15:15	Ship fluid. Blow down system. Rig off wellhead. Continue to monitor pressures.
18:30	Night shift arrive, hold safety meeting.
05/02/26	
06:30	Day shift arrive, hold safety meeting.
18:30	Night shift arrive, hold safety meeting.
05/02/27	
01:30	Open well on 25.40 mm choke.
02:01	Meter in service on 57.1500 mm orifice plate.
02:35	Increase choke to 50.8000 mm.
02:35	Increase choke due to downhole hydrates forming.
02:36	Increase back pressure due to fluid production.
03:01	Shut in well. Meter out of service.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/02/27	
03:05	Bleed off casing pressure.
14:05	Rig in wireline to run gauge ring.
15:15	Unable to get in hole due to hydrates in tubing.
16:00	Rig flowline and ESD off wellhead.
18:30	Night shift on location, hold safety meeting.
22:45	Rig in wireline to run gauge ring.
05/02/28	
01:15	Start methanol injection, of approx. 3L/min.
01:30	Wireline run in hole to try and break hydrate.
01:30	Stop methanol injection.
02:00	Start methanol injection.
02:30	Wireline run in and out.
04:15	Stop methanol injection.
04:15	Rig off wireline.
04:30	Start methanol injection at approx. 3L/min.
18:30	Night shift arrive, hold safety meeting.
19:15	Shut in well and bleed off wellhead to rig up wireline.
19:45	Wireline start to run in.
19:45	Start methanol injection of approx 3L/min.
21:00	Rig out wireline, prepare for diesel injection, shutdown methanol injection.
21:30	Purge flowline and install ESD.
22:05	Start methanol injection at approx 3L/min.
22:10	Start to preheat diesel to +/- 35°C.
05/03/01	
05:15	Shutdown methanol injection, bleed off wellhead and prepare to pump warm diesel.
07:45	Pump diesel down tubing.
08:50	Flow back diesel.
09:16	Gas to surface, shut in well, 5.73m3 returned.
09:20	Rig in wireline to run gauge ring.
10:05	Wireline at surface. Rig off wireline.
11:00	Open well on 50.80 mm choke.
11:02	Meter in service on 57.1500 mm orifice plate.
11:10	Meter out of service. Problems with meter run.
11:50	Meter in service on 57.1500 mm orifice plate.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/01	
12:00	Core Labs obtain samples.
12:10	Shut in well. Meter out of service.
12:10	Shut in due to hydrates in tubing.
12:30	Rig in wireline to run gauge ring.
13:15	Wireline unable to run in hole due to hydrates in tubing.
13:30	Heat diesel to pump down tubing.
14:50	Pump 6.0m3 hot diesel down tubing.
15:30	Flow back diesel.
16:50	Shut in well, gas to surface, 5.67m3 returned.
17:00	Rig in wireline to run in hole with gauge ring.
17:45	Wireline at surface. Rig out wireline. Monitor pressures.
21:00	Rig in wireline to run a static gradient, with real time measurement.
22:00	Run in hole.
22:50	Wireline unable to get in the hole.
23:00	Wireline at surface, bleed off.
23:30	Rig in wireline to run gauge ring.
05/03/02	
00:05	Wireline run in hole.
00:30	Wireline at surface, bleed off.
01:00	Wireline run in with static gradient.
06:30	Wireline at surface, bleed off.
18:30	Night shift arrive, hold safety meeting.
20:00	Wireline run in hole with brush.
21:00	Wireline at surface, bleed off.
23:00	Wireline run in hole with dart.
23:25	Wireline at surface, bleed off.
05/03/03	
01:45	Wireline run in hole with recorders.
02:45	Wireline at surface, bleed off.
03:00	Wireline run in hole with PX Locking Plug.
03:25	Wireline at surface, bleed off.
04:15	Wireline at surface, bleed off.
04:45	Wireline running in hole with Locking Prong.
06:30	Dayshift arrive, hold safety meeting.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/03	
07:00	Fill hole with fluid and pressure test plug.
09:00	Wireline run in hole to tag collar stop.
10:10	Wireline at surface, miss run.
10:30	Wireline run in hole with gauge ring.
10:45	Wireline at surface, unable to get in hole.
11:15	Wireline run in hole with 1.75" blind box.
11:35	Wireline at surface, tag collar stop at 985m. Monitor pressure.
16:00	Hotshot on location with gun.
17:35	Hold safety meeting.
17:50	Bleed off tubing from 3800 kPa.
18:20	Shut in well.
18:30	Wireline run in hole with gauge ring.
18:55	Wireline at surface.
19:00	Attend safety meeting.
19:45	Wireline run in hole to shoot hole in tubing.
20:15	Pressure tubing to 4 MPa.
20:20	Shoot hole.
20:45	Wireline at surface.
22:00	Circulate down casing and up tubing to confirm hole is shot.
22:35	Wireline run in hole to retrieve collar stop.
23:00	Wireline at surface.
23:35	Attend safety meeting.
23:55	Fill casing with methanol, fluid returns to pressure tank.
05/03/04	
01:15	Finish pumping, 12.7m3 returned to separator, Intermittent sour gas throughout.
01:40	Wireline run in hole to retrieve prong.
02:10	Prong pulled.
02:21	Wireline at surface.
02:45	Wireline run in hole to pull plug.
03:35	Wireline out of hole.
03:55	Wireline run in hole.
04:45	Wireline on surface.
05:45	Hold safety meeting.
06:05	Rig up to swab and inject methanol.

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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	20 Feb 2005
Test End:	4 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/04 09:00	End of file. New file started for test portion of program.

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Precision Drilling

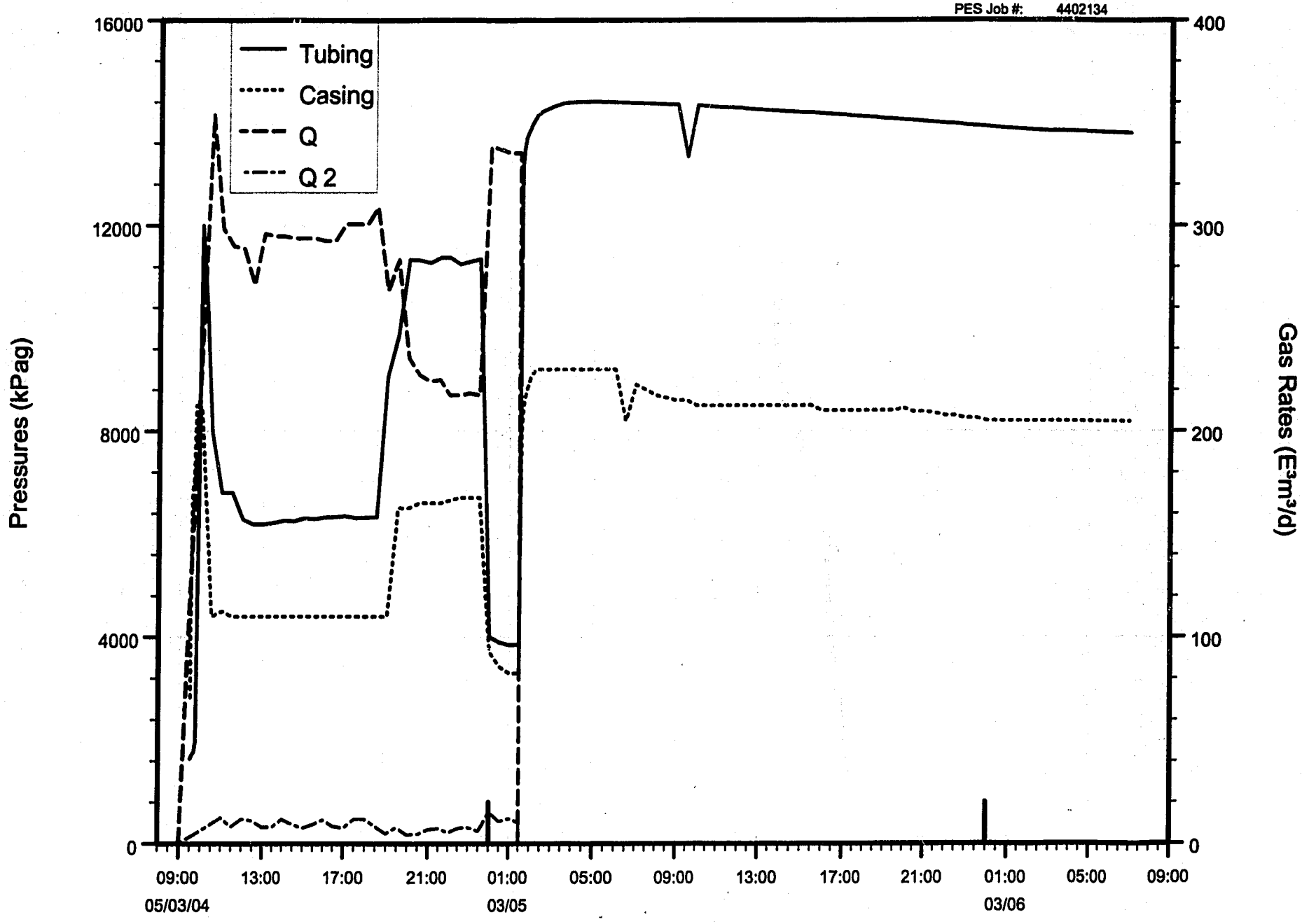
Northrock Resources Ltd.
B44 Bear Lake
B44-64-30-125-45
Tight Hole

Testing Operation Performed:	Clean Up \ Test
Customer Representative(s) on Location:	Peter Engelman
Precision Energy Supervisor(s):	Martin Mueller, Darren Bittorf
Test Start and End Dates:	05/03/04 - 05/03/06
Precision Energy Job Number:	4402134
Interval Top and Base:	
Precision Energy Representative:	Jim Sutherland
Report Prepared By:	Jason Zhu
Date Prepared:	05/06/15

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Northrock Resources Ltd.
B44-64-30-125-45

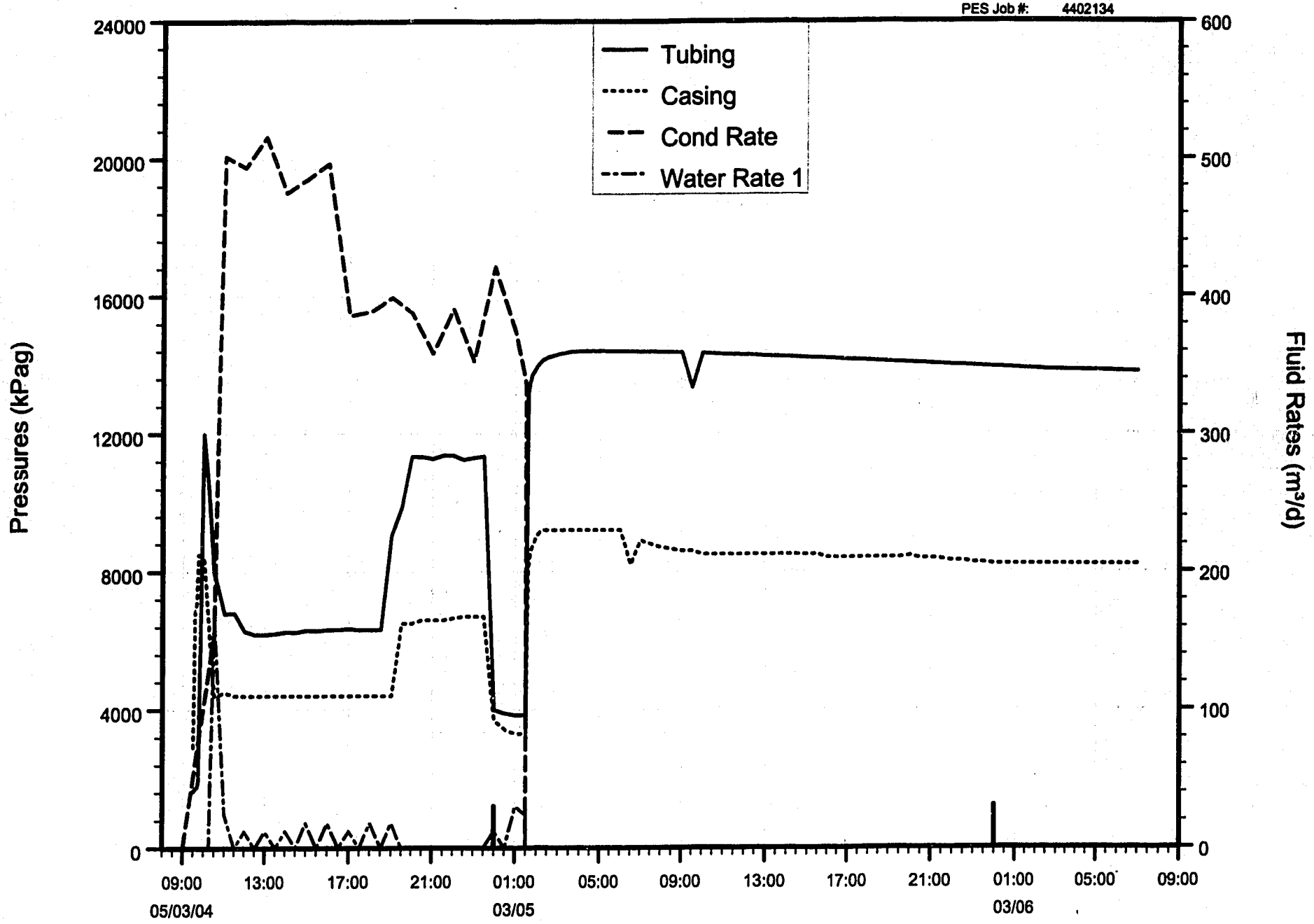
Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134



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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134



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B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	8 Mar 2005
PES Job #:	4402134

Company:	Northrock Resources Ltd.
Company Representative:	Peter Engelman
Wellname:	B44 Bear Lake
UWI:	B44-64-30-125-45
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Operation:	Clean Up \ Test
Test Supervisors:	Martin Mueller, Darren Bittorf
PES Job #:	4402134
Precision Drilling Corporation division:	Precision Energy Services
Fluid 1 Type:	Condensate
Tank Measurement:	Incremental
Fluid 2 Type:	Water
Tank Measurement:	Incremental
Flow Duration:	16.50 hours
Final Gas Production Rate:	335.05 E³m³/d
Cumulative Gas Produced:	180.12 E³m³
Cumulative Water Produced:	15.75 m³
Cumulative Condensate/Oil Produced:	271.72 m³
Initial Tubing Pressure:	1647 kPaa
Final Tubing Pressure:	13799 kPaa

1 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	T-148
Upstream Meter Internal Diameter:	145.87 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0095
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.748
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	8 Mar 2005
PES Job #:	4402134

2 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-10
Upstream Meter Internal Diameter:	102.34 mm
N_2	0.0248
CO_2	0.0114
H_2S	0.0035
H_2O	
He	
C1	0.7490
C2	0.1163
C3	0.0496
nC4	0.0183
iC4	0.0099
nC5	0.0045
iC5	0.0053
C6	0.0012
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.748
pPc:	4723.63 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/04																								
09:00		New file for test portion of program.																						
09:20		Begin swabbing.																						
09:30		Swab #1 out of hole, no tag, pulled from 340m. Well begins to flow.																						
09:30		Change choke to 38.10 mm choke.																						
09:30	0.2	1647		2800																0.00				
09:35	0.3	1726		6800																0.00				
09:40	0.3	1771		7100																0.00				
09:45	0.4	1976		8500																0.00				
09:45		Decrease choke to 19.0500 mm.																						
09:47		Decrease choke to 12.7000 mm.																						
09:57		Increase choke to 19.0500 mm.																						
10:00	0.7	12000	16	8400																0.00				
10:15		Increase choke to 21.4300 mm.																						
10:15	0.9	10300	16	6400																0.00				
10:20		Increase choke to 23.0188 mm.																						
10:30		Meter in service on 88.9000 mm orifice plate.																						
10:30		Core Lab obtain samples.																						
10:30	1.2	8000	14	4400	2200	21.00	38	353.67							7.50	154.29	7.50		8.00	164.57	8.00			
11:00		Meter in service on 25.4000 mm orifice plate.																						
11:00		Core Lab obtain samples.																						
11:00	1.7	6800	22	4500	1800	18.00	34	298.19		320	26.00	34	12.49	6.21	10.45	501.60	17.95		0.50	24.00	8.50			
11:30	2.2	6800	24	4400	1700	18.00	34	289.82		380	10.00	34	8.23	12.42						0.00				
11:30		Core Lab obtained samples.																						
12:00	2.7	6292	28	4400	1700	18.00	36	288.71		450	18.00	34	11.85	18.68	20.57	493.68	38.52		0.50	12.00	9.00			
12:30	3.2	6191	32	4400	1700	18.00	38	271.14		390	18.00	38	11.11	24.56						0.00				
13:00	3.7	6188	32	4400	1800	18.00	38	295.91		405	9.00	33	6.02	30.90	21.49	515.76	60.01		0.50	12.00	9.50			
13:30	4.2	6219	36	4400	1800	18.00	40	294.79		420	9.00	34	8.12	37.21						0.00				
14:00	4.7	6260	36	4400	1800	18.00	40	294.79		420	19.00	35	11.82	43.59	19.80	475.20	79.81	55.2	0.50	12.00	10.00			
14:00		API = 55.2 at 15°C.																						
14:30		Core Lab obtained samples.																						
14:30	5.2	6253	36	4400	1800	18.00	42	293.69		420	12.00	35	9.37	49.91						0.00				
15:00	5.7	6312	38	4400	1800	18.00	42	293.69		410	8.00	38	7.53	56.18	20.21	485.04	100.02		0.75	18.00	10.75			
15:30	6.2	6295	36	4400	1800	18.00	42	293.69		420	12.00	36	9.36	62.50						0.00				
16:00	6.7	6326	38	4400	1800	18.00	44	292.60		420	18.00	36	11.48	68.83	20.68	496.32	120.70		0.75	18.00	11.50			

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/04																				0.00				
16:30	7.2	6330	38	4400	1800	18.00	44	292.60		410	10.00	36	8.45	75.10										
17:00	7.7	6350	42	4400	1800	19.00	44	300.63		410	8.00	38	7.53	81.52	16.08	385.92	136.78		0.50	12.00	12.00			
17:30	8.2	6315	42	4400	1800	19.00	44	300.63		420	19.00	38	11.76	88.03						0.00				
18:00	8.7	6322	42	4400	1800	19.00	44	300.63		420	19.00	38	11.76	94.54	16.19	388.56	152.97	55.5	0.75	18.00	12.75		6.0	48000
18:00		API=55.5 at 15°C.																						
18:30	9.2	6330	40	4400	1900	19.00	44	308.83		390	10.00	37	8.27	101.15						0.00				
18:30		Core Lab obtain samples.																						
18:30		Begin decreasing choke to obtain rate of 250 E3m3/d, Second stage solution gas of approximately 10 E3m3 not included.																						
18:40		Decrease choke to 17.4600 mm.																						
19:00	9.7	9072	40	4400	1650	16.50	44	268.33		330	4.00	36	4.90	106.84	16.62	398.88	169.59		0.75	18.00	13.50			
19:30	10.2	9875	39	6500	1800	17.00	46	283.30		335	10.00	36	7.80	112.90	#					0.00				
19:30		Core Lab obtain samples. H2S = 9200 ppm.																						
19:37		Decrease choke to 15.0800 mm.																						
20:00	10.7	11330	38	6500	1400	15.00	46	235.28		330	3.00	34	4.25	117.89	16.15	387.60	185.74	54.8	0.00	0.00	13.50			
20:00		API = 54.8 at 15°C.																						
20:30	11.2	11325	38	6600	1400	14.00	46	227.29		300	4.00	34	4.74	122.73						0.00				
21:00	11.7	11275	37	6600	1350	14.00	44	224.13		310	8.00	35	6.78	127.54	14.93	358.32	200.67		0.00	0.00	13.50			
21:30	12.2	11375	37	6600	1350	13.80	38	224.92		310	9.50	34	7.41	132.38						0.00				
22:00	12.7	11375	37	6650	1300	13.00	30	217.54		295	5.50	33	5.53	137.03	16.28	390.72	216.95	56.8	0.00	0.00	13.50			
22:00		API = 56.8 at 15.6°C.																						
22:30	13.2	11250	37	6700	1300	13.00	30	217.54		295	10.00	33	7.47	141.71						0.00				
22:30		Inject methanol down casing at a rate of 5L/min.																						
23:00	13.7	11300	37	6700	1300	13.00	28	218.36		295	11.00	33	7.84	146.43	14.69	352.56	231.64		0.00	0.00	13.50			
23:30	14.2	11350	36	6700	1300	13.00	30	217.54	0.009000	290	7.00	33	6.20	151.09						0.00				
23:30		Increase methanol rate to 10L/min.																						
23:30		Core Lab obtain samples. H2S = 9000 ppm.																						
23:30		Increase choke to 50.8000 mm.																						
24:00	14.7	4000	39	3700	1800	23.50	38	338.22		325	37.50	32	15.21	158.45	17.55	421.20	249.19		0.50	12.00	14.00			
24:00		API = 56.5@15.6°C																						
05/03/05																				0.00				
00:30	15.2	3900	40	3425	1800	23.50	40	336.94		305	20.50	33	10.88	165.70										
01:00	15.7	3850	40	3300	1800	23.50	43	335.05		310	25.50	35	12.20	172.93	15.55	373.20	264.74		1.25	30.00	15.25			
01:00		Start Real Time Data surface recorders.																						
01:15		Shut down methanol injection.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/05																								
01:30	16.2	3050	40	3300	1800	23.50	43	335.05	0.009000	310	18.00	35	10.21	180.12	6.98	335.04	271.72	56.6	0.50	24.00	15.75			
01:30		API = 56.6 at 15.6°C.																						
01:30		Core Lab obtain samples. H2S = 9000 ppm.																						
01:30		Shut in well. Meter out of service.																						
01:30		Monitor well pressures.																						
01:35	0.1	13137		8050																0.00				
01:40	0.2	13491		8500																0.00				
01:45	0.3	13708		8700																0.00				
02:00	0.5	13955		9050																0.00				
02:15	0.8	14132		9200																0.00				
02:30	1.0	14222		9200																0.00				
03:00	1.5	14310		9200																0.00				
03:30	2.0	14372		9200																0.00				
04:00	2.5	14393		9200																0.00				
04:30	3.0	14400		9200																0.00				
05:00	3.5	14400		9200																0.00				
05:30	4.0	14396		9200																0.00				
06:00	4.5	14393		9200																0.00				
06:30	5.0	14387		8200																0.00				
07:00	5.5	14377		8900																0.00				
07:30	6.0	14373		8800																0.00				
08:00	6.5	14366		8700																0.00				
08:30	7.0	14358		8650																0.00				
09:00	7.5	14352		8600																0.00				
09:30	8.0	13341		8600																0.00				
10:00	8.5	14334		8500																0.00				
10:30	9.0	14320		8500																0.00				
11:00	9.5	14304		8500																0.00				
11:30	10.0	14293		8500																0.00				
12:00	10.5	14288		8500																0.00				
12:30	11.0	14266		8500																0.00				
13:00	11.5	14247		8500																0.00				
13:30	12.0	14239		8500																0.00				
14:00	12.5	14226		8500																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				pH	Salinity
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/05																								
14:30	13.0	14214		8500																0.00				
15:00	13.5	14202		8500																0.00				
15:30	14.0	14194		8500																0.00				
16:00	14.5	14178		8400																0.00				
16:30	15.0	14165		8400																0.00				
17:00	15.5	14149		8400																0.00				
17:30	16.0	14134		8400																0.00				
18:00	16.5	14116		8400																0.00				
18:30	17.0	14099		8400																0.00				
19:00	17.5	14081		8400																0.00				
19:30	18.0	14066		8400																0.00				
20:00	18.5	14053		8450																0.00				
20:30	19.0	14036		8375																0.00				
21:00	19.5	14021		8375																0.00				
21:30	20.0	14003		8350																0.00				
22:00	20.5	13987		8300																0.00				
22:30	21.0	13976		8300																0.00				
23:00	21.5	13952		8250																0.00				
23:30	22.0	13935		8250																0.00				
24:00	22.5	13919		8200																0.00				
05/03/05																								
00:30	23.0	13903		8200																0.00				
01:00	23.5	13890		8200																0.00				
01:30	24.0	13872		8200																0.00				
02:00	24.5	13863		8200																0.00				
02:30	25.0	13849		8200																0.00				
03:00	25.5	13842		8200																0.00				
03:30	26.0	13837		8200																0.00				
04:00	26.5	13833		8200																0.00				
04:30	27.0	13829		8200																0.00				
05:00	27.5	13824		8200																0.00				
05:30	28.0	13818		8200																0.00				
06:00	28.5	13815		8200																0.00				
06:30		Hold safety meeting, proceed with wireline operations.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Arbc Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.				Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	pH	Salinity
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O		ppm
05/03/06																								
06:30	29.0	13808		8200																0.00				
07:00	29.5	13799		8200																0.00				
07:00		Rig out surface recorder, proceed with completion of intervals 3 and 4.																						
07:00		End of file, new file started for next portion of program.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/04	
09:00	New file for test portion of program.
09:20	Begin swabbing.
09:30	Swab #1 out of hole, no tag, pulled from 340m. Well begins to flow.
09:30	Change choke to 38.10 mm choke.
09:45	Decrease choke to 19.0500 mm.
09:47	Decrease choke to 12.7000 mm.
09:57	Increase choke to 19.0500 mm.
10:15	Increase choke to 21.4300 mm.
10:20	Increase choke to 23.0188 mm.
10:30	Meter in service on 88.9000 mm orifice plate.
10:30	Core Lab obtain samples.
11:00	Meter in service on 25.4000 mm orifice plate.
11:00	Core Lab obtain samples.
11:30	Core Lab obtained samples.
14:00	API = 55.2 at 15°C.
14:30	Core Lab obtained samples.
18:00	API=55.5 at 15°C.
18:30	Core Lab obtain samples.
18:30	Begin decreasing choke to obtain rate of 250 E3m3/d, Second stage solution gas of approximately 10 E3m3 not included.
18:40	Decrease choke to 17.4600 mm.
19:30	Core Lab obtain samples. H2S = 9200 ppm.
19:37	Decrease choke to 15.0800 mm.
20:00	API = 54.8 at 15°C.
22:00	API = 56.8 at 15.6°C.
22:30	Inject methanol down casing at a rate of 5L/min.
23:30	Increase methanol rate to 10L/min.
23:30	Core Lab obtain samples. H2S = 9000 ppm.
23:30	Increase choke to 50.8000 mm.
24:00	API = 56.5@15.6`C
05/03/05	
01:00	Start Real Time Data surface recorders.
01:15	Shut down methanol injection.
01:30	API = 56.6 at 15.6°C.
01:30	Core Lab obtain samples. H2S = 9000 ppm.

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Artic Bear Lake
Test Start:	4 Mar 2005
Test End:	6 Mar 2005
PES Job #:	4402134

Time	Description
hh:mm	
05/03/05	
01:30	Shut in well. Meter out of service.
01:30	Monitor well pressures.
05/03/06	
06:30	Hold safety meeting, proceed with wireline operations.
07:00	Rig out surface recorder, proceed with completion of intervals 3 and 4.
07:00	End of file, new file started for next portion of program.

PRECISION ENERGY SERVICES

Precision Drilling

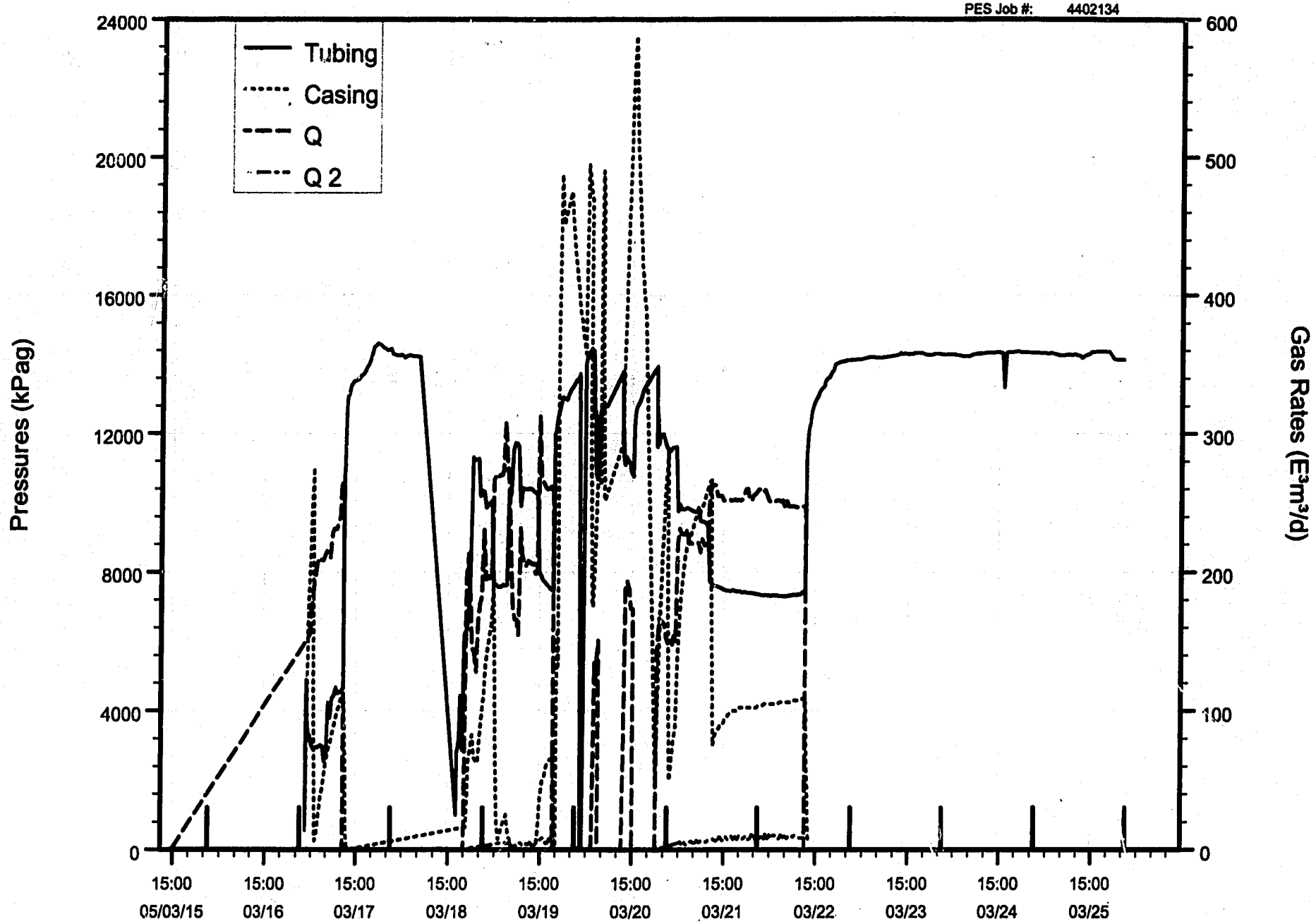
Northrock Resources Ltd.
B44 Bear Lake
B44-64-30-125-45
Tight Hole

Testing Operation Performed:	Clean Up \ Test
Customer Representative(s) on Location:	Peter Engelman
Precision Energy Supervisor(s):	Martin Mueller, Darren Bittorf
Test Start and End Dates:	05/03/15 - 05/03/26
Precision Energy Job Number:	4402134
Interval Top and Base:	
Precision Energy Representative:	Jim Sutherland
Report Prepared By:	Jason Zhu
Date Prepared:	05/06/15

PRECISION ENERGY SERVICES

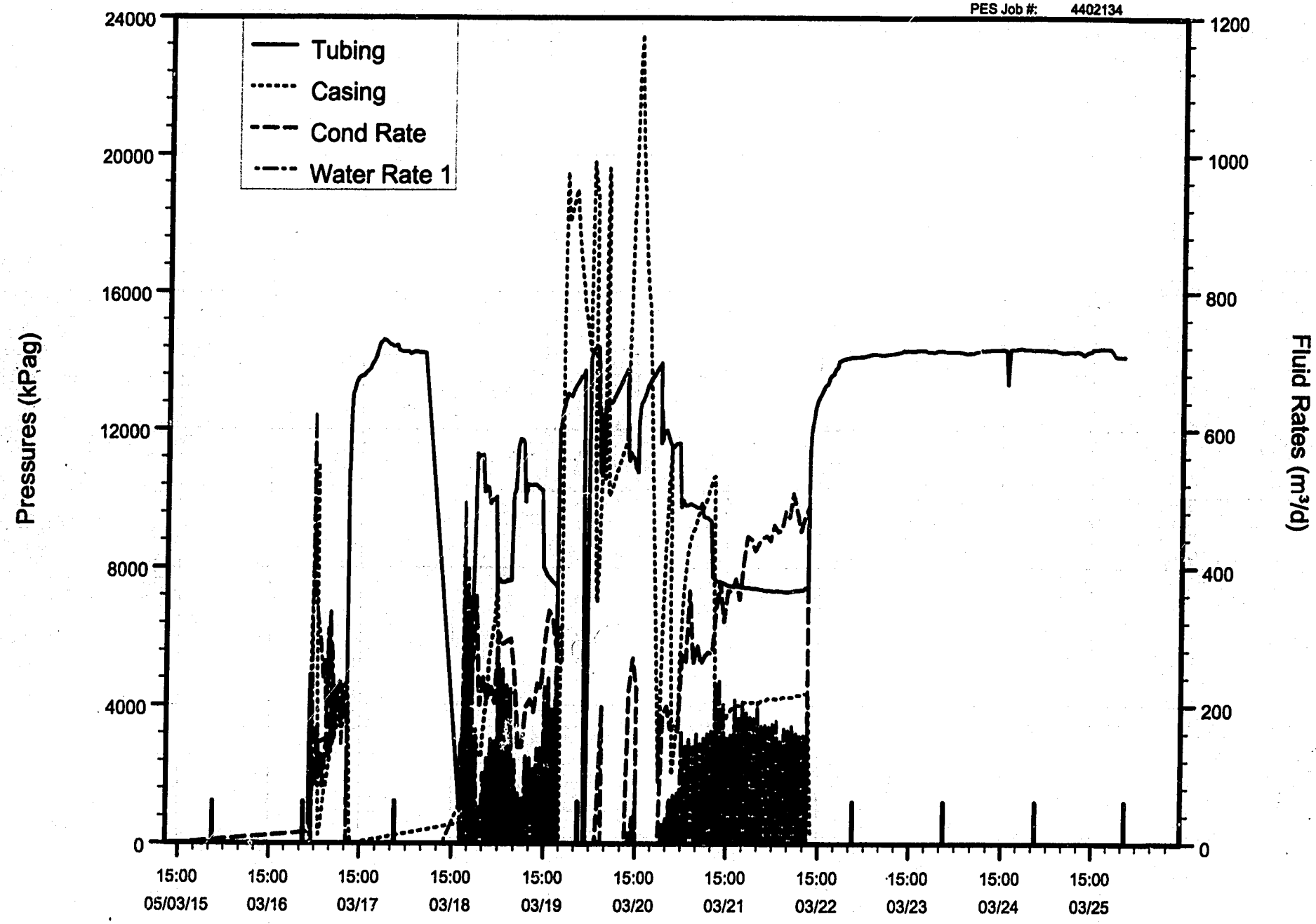
Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Pool:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134



PRECISION ENERGY SERVICES

Northrock Resources Ltd.
B44-64-30-125-45
Operation: Clean Up \ Test
Pool or Zone: Tight Hole
Field or Pool: Summit Creek
Test Start: 15 Mar 2005
Test End: 26 Mar 2005
PES Job #: 4402134



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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Company:	Northrock Resources Ltd.
Company Representative:	Peter Engelman
Wellname:	B44 Bear Lake
UWI:	B44-64-30-125-45
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Operation:	Clean Up \ Test
Test Supervisors:	Martin Mueller, Darren Bittorf
PES Job #:	4402134
Precision Drilling Corporation division:	Precision Energy Services
Fluid 1 Type:	Condensate
Tank Measurement:	Incremental
Fluid 2 Type:	Water
Tank Measurement:	Incremental
Flow Duration:	92.75 hours
Final Gas Production Rate:	247.37 E³m³/d
Cumulative Gas Produced:	709.75 E³m³
Cumulative Water Produced:	587.86 m³
Cumulative Condensate/Oil Produced:	941.19 m³
Initial Tubing Pressure:	13799 kPaa
Final Tubing Pressure:	14147 kPaa

1 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	T-148
Upstream Meter Internal Diameter:	145.87 mm
N_2	0.0227
CO_2	0.0116
H_2S	0.0090
H_2O	
He	
C1	0.7481
C2	0.1171
C3	0.0518
nC4	0.0188
iC4	0.0102
nC5	0.0051
iC5	0.0060
C6	0.0015
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.754
pPc:	4720.87 kPaa
pTc:	

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	28 Mar 2005
PES Job #:	4402134

2 - MeterType:	Meter Run
Tap Type:	Flange
Tap Location:	Down Stream
Test Unit:	FS-10
Upstream Meter Internal Diameter:	102.34 mm
N_2	0.0227
CO_2	0.0116
H_2S	0.0090
H_2O	
He	
C1	0.7461
C2	0.1171
C3	0.0518
nC4	0.0188
iC4	0.0102
nC5	0.0051
iC5	0.0060
C6	0.0015
C7	
C8	
C9	
C10	
O	
CO	
H_2	
Specific Gravity:	0.754
pPc:	4720.87 kPaa
pTc:	

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B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/06																								
07:00		New file for completion of intervals 3 & 4.																						
07:00		Monitor pressure.																						
07:00		13799		8200																0.00				
07:30				8200																0.00				
08:00				8200																0.00				
08:15		Wireline rigging in and running in hole.																						
08:35		Latch slip stop and pull out of hole.																						
08:35		14800		8200																0.00				
09:20		Wireline on surface.																						
09:20		14700		8200																0.00				
09:45		Wireline run in hole.																						
09:45		14600		8200																0.00				
10:07		Wireline latch recorders.																						
10:07		14600		8200																0.00				
10:30		Wireline on surface with recorders.																						
10:30		14600		8200																0.00				
10:47		Wireline run in hole to pull dart.																						
10:47		14600		8200																0.00				
11:50		Wireline at bottom latching onto dart.																						
11:50		14600		8200																0.00				
12:17		Wireline at surface with dart.																						
12:17		14600		8200																0.00				
14:05		Wireline going in hole with recorders to do a static gradiant.																						
14:05		14600		8100																0.00				
15:15		Wireline is at midway of perfs.																						
15:15		14600		8100																0.00				
17:05		Wireline out of hole.																						
17:05		14600		8000																0.00				
17:30		Wireline run in hole with No Go.																						
18:00		14500		8000																0.00				
18:50		14500		8000																0.00				
18:50		Wireline at surface.																						
19:55		Wireline run in hole with recorders.																						
20:00		14400		8000																0.00				

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/06																								
21:00		14400		8000																0.00				
21:30		14400		8000																0.00				
21:30		Wireline at surface.																						
21:45		Wireline run in hole to set plug.																						
22:00		14400		8000																0.00				
22:30		14400		8000																0.00				
23:00		14400		8000																0.00				
23:30		14400		8000																0.00				
24:00		14400		8000																0.00				
24:00		Wireline at surface, plug set at wrong depth.																						
05/03/07																								
00:15		Wireline run in hole to retrieve plug.																						
00:30		14300		7900																0.00				
01:00		14300		7900																0.00				
01:05		Wireline at surface.																						
01:15		Wireline run in hole to set plug.																						
01:30		14300		7900																0.00				
02:00		14300		7900																0.00				
03:00		Wireline at surface.																						
03:10		Wireline run in hole with prong.																						
03:30		14200		7800																0.00				
04:00		14200		7800																0.00				
04:20		14250		7800																0.00				
04:22		Prong set.																						
04:30		14250		7800																0.00				
04:45		Wireline at surface.																						
04:55		Open well to bleed off.																						
05:40		Start pumping water down hole to circulate.																						
06:45		Bleed down well.																						
07:40		Shut in well, rig up to pump down tubing.																						
08:20		Shut down rig pump. 19.5m3 total fluid pumped away.																						
08:33		Shut in wing valve and pressure test plug.																						
08:55		Pressure test complete bleed off. Total fluid returned to surface was 15.22 m3.																						
09:45		Rig off wellhead, rig on BOP's.																						

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	28 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/07																								
11:35		Pressure test BOP's.																						
14:30		Begin to circulate hole.																						
15:30		Circulation complete. 16 m3 pumped, 13 m3 returned.																						
16:00		Start out of hole.																						
18:30		Attend safety meeting. Continue with tripping out of hole.																						
20:15		Start to circulate gas bubble out of hole.																						
20:40		Stop pumping and bleed off. Pumped 11m3 down casing and returned 7m3 to seperator.																						
21:00		Continue out of hole.																						
23:45		Prepare to circulate gas bubble out of well.																						
05/03/08																								
00:25		Stop pumping. Pumped 4m3 down casing and returned 1m3 to seperator.																						
00:50		Continue out of hole.																						
01:45		Tubing out of hole. Pressure test casing to 5500 kPa.																						
02:10		Pressure test good. Bleed off casing.																						
02:15		Attend safety meeting.																						
02:30		Rig in wireline.																						
03:30		Wireline run in hole to dump bail sand.																						
05:03		Wireline at surface.																						
05:27		Wireline run in hole to perforate.																						
06:06		Guns fired.																						
06:06				Vac																0.00				
06:45				250																0.00				
06:50		Wireline at surface.																						
07:15				410																0.00				
08:30				475																0.00				
09:30				710																0.00				
09:30		Wireline run in hole to dump bail cement.																						
11:00				1875																0.00				
11:00		Wireline at surface.																						
11:45		Wireline run in hole with purf gun #2.																						
12:54				3390																0.00				
12:55		Perf gun fired.																						
12:56				3410																0.00				
13:00				3475																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/08																								
13:40				3350																0.00				
13:40		Wireline at surface.																						
14:15				4100																0.00				
14:15		Wireline run in hole with perf gun #3.																						
15:39				4550																0.00				
15:40		Perf gun fired.																						
15:41				4600																0.00				
16:15				4850																0.00				
16:15		Wireline at surface.																						
16:59				5000																0.00				
16:59		Wireline run in hole with perf gun #4.																						
18:15				6000																0.00				
18:16		Perf gun fired.																						
18:17				6250																0.00				
18:50				6275																0.00				
18:50		Wireline at surface.																						
19:30				6500																0.00				
19:30		Wireline run in hole with perf gun #5.																						
20:30				6950																0.00				
20:31		Perf gun fired.																						
20:32				6995																0.00				
21:10				7250																0.00				
21:10		Wireline at surface.																						
21:45				7450																0.00				
21:45		Wireline run in hole with perf gun #6.																						
22:48				7500																0.00				
22:49		Miss fire on perf gun #6.																						
23:35		Attend safety meeting.																						
23:45				8000																0.00				
23:46		Wireline at surface.																						
05/03/09																								
00:15				8250																0.00				
00:15		Wireline run in hole with perf gun #6.																						
01:14				8500																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/09																								
01:15		Perf gun fired.																						
01:16				8500																0.00				
01:55				8700																0.00				
01:55		Wireline at surface.																						
02:21				8700																0.00				
02:22		Wireline run in hole with perf gun #7.																						
03:24				8750																0.00				
03:25		Perf gun fired.																						
03:26				8750																0.00				
04:05				8750																0.00				
04:05		Wireline at surface.																						
04:27				8850																0.00				
04:27		Wireline run in hole with perf gun #8.																						
05:53				9100																0.00				
05:55		Perf gun fired.																						
05:57				9100																0.00				
06:39				9450																0.00				
06:39		Wireline at surface.																						
06:50				10000																0.00				
06:50		Wireline run in hole with perf gun # 9.																						
09:55				10200																0.00				
09:57		Perf gun fired.																						
10:00				10250																0.00				
10:45				10400																0.00				
10:45		Wireline at surface.																						
11:10				10400																0.00				
11:10		Wireline run in hole with gamma ray and gauge ring.																						
13:05				10600																0.00				
13:05		Wireline out of hole to service pack off.																						
13:48				10800																0.00				
13:48		Wireline run in hole with gamma ray and gauge ring.																						
15:10				11100																0.00				
15:10		Wireline stuck in hole.																						
15:15				11200																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/09																								
15:15		Open well on 24/64 choke to dislodge tool.																						
15:20				10900																0.00				
15:25			6	10700																0.00				
15:30			6	10600																0.00				
15:33		Shut in well wireline is free no fluid returned to surface.																						
15:35				10600																0.00				
15:40				10600																0.00				
15:45				10700																0.00				
16:00				10900																0.00				
16:15				10900																0.00				
16:30				10900																0.00				
16:30		Wireline at surface.																						
17:00				10900																0.00				
17:30				10800																0.00				
18:00				10800																0.00				
18:30				10900																0.00				
18:45		Attend safety meeting.																						
19:00		Prepare to run packer.																						
20:08		Wireline run in hole with packer assembly.																						
20:30				11500																0.00				
21:00				11700																0.00				
21:30				11750																0.00				
22:00				11750																0.00				
22:25		Wireline at surface. Lost tool string from surface.																						
22:25				11750																0.00				
22:30				11600																0.00				
22:30		Bleed off casing pressure.																						
23:30				50																0.00				
23:30		Leave casing open to vent. Recovered 0.5m3 of water during bleed off.																						
05/03/10																								
00:30		Prepare tools for fishing.																						
02:40		Wireline run in hole with gauge ring.																						
04:00		Wireline at surface.																						
04:11		Wireline run in hole with overshot.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	28 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/10																								
07:20				10500																0.00				
07:20		Well pressured up, open to bleed off.																						
07:25				10250																0.00				
07:30				10000																0.00				
07:45				8100																0.00				
07:50		Shut in, well returned 3.51 m3 of condensate on bleed off.																						
08:00				9200																0.00				
09:00				11600																0.00				
10:00				11700																0.00				
10:20		Begin pumping to kill well.																						
11:23		Tools moving down hole, shut down pump and attempt to pull out of hole.																						
11:35		Unable to pull out, continue to pump to kill well.																						
13:20		Shut down pump and monitor pressure. 50 m3 was pumped.																						
13:30		Attempt to pull out of hole.																						
13:45		Well bleeds down to 500 kPa, pump to maintain pressure as directed, continue to attempt to pull out of hole.																						
16:30		Still trying to pull out of hole, total fluid pumped to this point is 59 m3.																						
19:00		Continue to pump fluid to maintain pressure.																						
22:00		Prepare to bleed off gas head.																						
22:10		Unable to bleed off, ice plug in flowline.																						
22:50		Bleed off casing.																						
22:50				5100																0.00				
22:50		Choke at 10/64.																						
23:00				4700																0.00				
23:15				4300																0.00				
23:30				3450																0.00				
23:40		Increase choke to 15/64.																						
23:50		Change out rig pump.																						
24:00				2600																0.00				
05/03/11																								
00:30				1750																0.00				
00:30		Increase choke to 18/64.																						
01:00				1300																0.00				
01:30				1100																0.00				
01:40		Shut in casing.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/11																								
01:45		Fill hole.																						
01:45		Wireline continue to try and pull out of hole.																						
03:30		Wireline at surface with broken skirt, bleed off lubricator.																						
03:30				1500																0.00				
03:45		Lay down lubricator.																						
04:00				2200																0.00				
05:00				2900																0.00				
06:00				3500																0.00				
07:00				4000																0.00				
08:00				4300																0.00				
09:00				4500																0.00				
10:00				4600																0.00				
11:00				4800																0.00				
12:00				5000																0.00				
12:15		Wireline run in hole with magnet.																						
13:00				5050																0.00				
13:30		Wireline out of hole, metal filings retrieved. Rig methanol injection to wireline lubricator.																						
14:00				5100																0.00				
14:05		Wireline run in hole with magnet.																						
15:00				5150																0.00				
15:00		Wireline out of hole, metal filings retrieved.																						
16:00				5250																0.00				
16:30		Wireline run in hole with pulling tool.																						
17:00				5400																0.00				
17:15		Wireline out of hole, nothing recovered.																						
17:36		Wireline run in hole with pulling tool.																						
18:00				5400																0.00				
18:40		Wireline out of hole sheared off.																						
18:45		Bleed off well.																						
19:00				4000																0.00				
19:05				3700																0.00				
19:05		Shut in, wireline run in hole.																						
20:00				5100																0.00				
21:00				5100																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/11																								
22:00				5300																0.00				
23:00				5600																0.00				
24:00				6000																0.00				
05/03/12																								
00:25		Wireline at surface, bleed off lubricator.																						
00:30				6500																0.00				
00:30		Bleed off well.																						
00:30		Choke at 15/64.																						
00:35				6000																0.00				
00:40				5500																0.00				
00:45				4900																0.00				
00:50				4500																0.00				
00:50		Fluid to surface, shut in. Wait to see if fluid drops.																						
01:00				4600																0.00				
01:30		Bleed off well.																						
01:30				5200																0.00				
01:35				5150																0.00				
01:40				5000																0.00				
01:40		Fluid to surface, shut in.																						
02:00		Pump to kill well.																						
06:00		Well is on vacuum. Total fluid pumped = 52m3.																						
06:30		Start to trip pipe in hole with overshot.																						
10:20		Slight blow on tubing, rig up to circulate.																						
10:25		Begin reverse circulating.																						
11:15		Finished circulating, 21 m3 pumped, 13 m3 returned. Rig up to bull head down tubing.																						
11:25		Begin pumping down tubing.																						
13:30		Finished pumping down tubing. 30 m3 was pumped, continue in hole.																						
16:35		Tagged fish, latch on.																						
17:05		Suspect fish on string, pull 5 stands and rig in wireline to run impression block.																						
18:10		Wireline run in hole with impression block.																						
18:45		Wireline out of hole, retrieved impression of top of fish.																						
19:30		Bleed off tubing and pump to kill.																						
19:35		Bleed off casing until fluid to surface.																						
20:25		Kill casing.																						

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/12																								
20:45		Trip out 1 stand, rig up wireline to run a dart.																						
21:15		Wireline run in hole with dart.																						
22:30		Wireline at surface.																						
23:00		Wireline run in hole to punch a hole in tubing.																						
05/03/13																								
00:30		Wireline at surface.																						
01:15		Pump 10m3 to circulate tubing.																						
01:35		1.9m3 water recovered from circulating.																						
01:40		Pump 15m3 down casing.																						
02:30		Trip out tubing, kill well as required.																						
06:00		Total water pumped on shift = 44m3.																						
07:40		Out of hole with fish.																						
08:55		Wireline run in hole with magnet.																						
09:45		Wireline at surface.																						
09:50		Wireline run in hole with magnet.																						
10:25		Wireline at surface.																						
10:55		Wireline run in hole with impression block.																						
11:27		Wireline at surface.																						
11:40		Wireline run in hole with impression block.																						
12:30		Wireline at surface.																						
16:15		Wireline run in hole to retrieve prong.																						
16:53		Wireline at surface, prong not retrieved.																						
17:05		Wireline run in hole to retrieve prong.																						
17:43		Wireline at surface.																						
18:10		Wireline running in hole to retreive prong.																						
19:45		Wireline at surface, no prong.																						
20:10		Wireline running in hole.																						
21:05		Wireline at surface.																						
21:20		Wireline running in hole.																						
22:00		Wireline at surface.																						
22:10		Wireline run in hole to retreive prong.																						
23:45		Wireline at surface, no prong.																						
05/03/14																								
00:15		Wireline run in hole to retrive prong.																						

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Northrock Resources Ltd.
B44-84-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/14																								
02:45		Wireline at surface.																						
03:00		Wireline run in hole to retrive prong.																						
04:00		Wireline at surface with prong.																						
04:20		Wireline run in hole to retreive plug.																						
05:00		Wireline at surface, no plug.																						
05:15		Wireline run in hole to retreive plug.																						
06:00		Wireline at surface with plug, rig out wireline.																						
07:00		Rig to pump 52 m³ down casing to kill well.																						
08:30		Finished pumping, rig to trip pipe in hole.																						
17:35		Finished tripping in, land tubing hanger.																						
18:00		Pressure test casing.																						
18:25		Pressure test good, rerig to pressure test tubing.																						
19:05		Wireline running in hole.																						
20:35		Wireline at surface with recorders.																						
20:50		Wireline running in to set plug.																						
21:50		Wireline at surface.																						
22:10		Wireline running in hole to set prong.																						
23:30		Wireline at surface.																						
05/03/15																								
00:10		Pressure test plug to 14MPa.																						
00:40		Pressure test fail.																						
00:50		Wireline running in hole to retreive prong.																						
01:25		Wireline at surface.																						
01:40		Wireline running in hole to retreive plug.																						
02:15		Wireline at surface, plug retreived.																						
02:20		Wireline run in to set plug.																						
03:10		Wireline at surface.																						
03:15		Wireline run in with prong.																						
04:00		Wireline at surface, rig out wireline.																						
04:15		Pressure test plug to 14MPa.																						
04:30		Pressure test good.																						
04:35		Head up.																						
05:45		Well head in.																						
06:00		Pressure test well head.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				Grind Out	Salinity	pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total			
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/15																									
06:30		Pressure test good, rig up wireline to open sliding sleeve.																							
07:15		Wireline run in hole to open sliding sleeve.																							
08:10		Wireline at surface, tool sheared.																							
08:20		Wireline run in hole to open sliding sleeve.																							
09:15		Wireline at surface, tool sheared.																							
09:45		Wireline run in hole to open sliding sleeve.																							
10:37		Wireline at surface, tool sheared.																							
10:50		Wireline run in hole to open sliding sleeve.																							
11:35		Wireline at surface, tool sheared.																							
12:25		Pumped fluid and discovered sleeve is only partially open.																							
12:30		Wireline run in hole to open sliding sleeve.																							
13:45		Wireline at surface, tool sheared.																							
13:50		Pumped fluid and determined sleeve is open.																							
14:05		Rig out wireline and rig up to swab.																							
14:40		Begin swabbing.																							
14:48		Swab #1 out of hole, tag = surface, pull = 175m, fluid recovered = 0.75m3.																							
14:55		Swab #2 out of hole, tag = 45m, pull = 210m, fluid recovered = 0.75m3.																							
15:03		Swab #3 out of hole, tag = 90m, pull = 290m, fluid recovered = 1.0m3.																							
15:11		Swab #4 out of hole, tag = 130m, pull = 375m, fluid recovered = 1.0m3.																							
15:19		Swab #5 out of hole, tag = 175m, pull = 425m, fluid recovered = 1.0m3.																							
15:27		Swab #6 out of hole, tag = 265m, pull = 475m, fluid recovered = 0.75m3.																							
15:41		Swab #7 out of hole, tag = 265m, pull = 525m, fluid recovered = 1.25m3.																							
15:52		Swab #8 out of hole, tag = 306m, pull = 570m, fluid recovered = 0.75m3.																							
16:02		Swab #9 out of hole, tag = 375m, pull = 667m, fluid recovered = 1.0m3.																							
16:15		Swab #10 out of hole, tag = 425m, pull = 718m, fluid recovered = 1.0m3. Cum fluid recovered 1st 10 swabs = 9.25m3.																							
16:27		Swab #11 out of hole, tag = 475m, pull = 760m, fluid recovered = 1.0m3.																							
16:39		Swab #12 out of hole, tag = 525m, pull = 807m, fluid recovered = 1.0m3.																							
17:01		Swab #13 out of hole, tag = 570m, pull = 903m, fluid recovered = 1.0m3.																							
17:18		Swab #14 out of hole, tag = 665m, pull = 945m, fluid recovered = 0.75m3.																							
17:41		Swab #15 out of hole, tag = 715m, pull = 990m, fluid recovered = 1.25m3.																							
17:56		Swab #16 out of hole, tag = 760m, pull = 1038m, fluid recovered = 1.0m3.																							
18:13		Swab #17 out of hole, tag = 807m, pull = 1084m, fluid recovered = 1.0m3.																							
18:31		Swab #18 out of hole, tag = 855m, pull = 1125m, fluid recovered = 1.0m3.																							
18:47		Swab #19 out of hole, tag = 900m, pull = 1170m, fluid recovered = 1.0m3.																							

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/15																								
19:05		Swab #20 out of hole, tag = 945m, pull = 1125m, fluid recovered = 0.8m3. Cum fluid recovered past 20 swabs = 19.05m3.																						
19:25		Swab #21 out of hole, tag = 990m, pull = 1169m, fluid recovered = 0.7m3.																						
19:42		Swab #22 out of hole, tag = 1035m, pull = 1213m, fluid recovered = 0.75m3.																						
19:56		Swab #23 out of hole, tag = 1080m, pull = 1343m, fluid recovered = 1.0m3.																						
20:10		Swab #24 out of hole, tag = 1169m, pull = 1427.5m, fluid recovered = 1.25m3.																						
20:26		Swab #25 out of hole, tag = 1256.25m, pull = 1552.5m, fluid recovered = 1.25m3.																						
20:48		Swab #26 out of hole, tag = 1300m, pull = 1593.75m, fluid recovered = 1.5m3.																						
21:19		Swab #27 out of hole, tag = 1342.5m, pull = 1511.25m, fluid recovered = 0.5m3.																						
21:38		Swab #28 out of hole, tag = 1385m, pull = 1593.75m, fluid recovered = 0.5m3.																						
21:58		Swab #29 out of hole, tag = 1427.5m, pull = 1675m, fluid recovered = 1.25m3.																						
22:15		Swab #30 out of hole, tag = 1470m, pull = 1755m, fluid recovered = 1.0m3. Cum fluid recovered past 30 swabs = 32.75m3.																						
22:37		Swab #31 out of hole, tag = 1552.5m, pull = 1751.25m, fluid recovered = 1.25m3.																						
22:57		Swab #32 out of hole, tag = 1635m, pull = 1911.25m, fluid recovered = 1.50m3.																						
23:20		Swab #33 out of hole, tag = 1675m, pull = 1950m, fluid recovered = 0.75m3.																						
23:45		Swab #34 out of hole, tag = 1755m, pull = 2025m, fluid recovered = 1.25m3.																						
05/03/16																								
00:08		Swab #35 out of hole, tag = 1833.75m, pull = 2100m, fluid recovered = 1.0m3.																						
00:08		Total fluid recovered during swabbing = 38.50m3.																						
00:15		Rig out swab equipment. Rig up wireline.																						
00:15		Wireline running in hole to close sleeve.																						
02:30		Wireline at surface.																						
02:40		Fill tubing to pressure test sliding sleeve.																						
02:55		Sleeve pressure tested to 10MPa.																						
03:10		Wireline running in hole to retreive prong.																						
03:45		Wireline at surface, unable to get through 2 3/8" tubing,no prong retreived.																						
03:55		Wireline running in hole to retreive prong.																						
04:25		Wireline at surface, no prong.																						
04:30		Wireline running in hole with internal wire grab.																						
05:25		Wireline at surface, nothing grabbed.																						
05:40		Wireline running in hole with spear.																						
06:15		Wireline at surface, nothing retreived.																						
06:30		Wireline run in hole with baller.																						
07:20		Wireline at surface, nothing recovered.																						
07:45		Wireline run in hole with impression block.																						

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/Fr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/16																								
08:12		Wireline on surface.																						
10:10		Begin pumping to fill casing.																						
11:55		Casing full, rig off wellhead, rig on BOP's.																						
13:30		Pressure test BOP's																						
14:00		Pressure test good, come off packer and circulate well.																						
15:10		Circulation complete, rig on wireline.																						
15:47		Wireline run in hole with guage ring.																						
16:23		Wireline on surface, unable to get to bottom.																						
16:45		Latch onto packer.																						
16:55		Rig on wirelinn and run in guage ring.																						
17:30		Wireline on surface, unable to get to bottem.																						
17:35		Come off packer and change out 2 foot pup for 1 foot pup.																						
18:05		Wireline run in hole with gauge ring.																						
18:45		Wireline at surface.																						
19:00		Pressure test tubing to 14MPa.																						
19:20		Pressure test casing to 14MPa.																						
19:35		Remove BOP's.																						
20:05		Attach wellhead and pressure test.																						
21:00		Rig up wireline.																						
22:00		Wireline run in hole to retreive prong.																						
22:55		Wireline at surface with prong.																						
23:00		Wireline run in hole to retreive plug.																						
24:00		Wireline at surface with plug.																						
05/03/17																								
00:05		Rig out wireline, rig up swab equiptment.																						
00:10		Preflow safety meeting.																						
00:45		Run in hole with swab #1.																						
00:50		Swab #1 at surface, tag fluid at surface, pull from 225m, fluid recovered = 0.25m3.																						
01:00		Swab #2, tag fluid at 44m, pull from 275m, fluid recovered = 0.25m3.																						
01:17		Swab #3, taged fluid at 132m, pull from 375m, fluid recovered = 0.5m3.																						
01:17		Well starting to flow, total fluid recovered while swabing = 1.0m3.																						
01:17		Change choke to 50.80 mm.																						
01:25	0.7	566	16	625																0.00				
01:25		Heavy fluid returns.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/17																								
01:26		Change choke to 30.1600 mm.																						
01:30	0.8	4040	17	1550																0.00				
01:30		Burnable gas to surface.																						
01:35	0.8	4879	18	2200																0.00				
01:36		Increase choke to 34.1300 mm.																						
01:45	1.0	3790	18	4000																0.00				
01:55		Increase choke to 50.8000 mm.																						
02:00	1.3	3500	20	5900											0.89	17.09	0.89		10.50	201.60	10.50		12000	7.0
02:15	1.5	3200	22	7400																0.00				
02:25		Meter in service on 63.5000 mm orifice plate.																						
02:30		6200ppm H2S, by Gastec tube.																						
02:30		API = 57 at 60°F.																						
02:30	1.8	3300	23	7900	1825	22.00	47	154.94	0.006200					0.54	2.54	121.92	3.43	57.0	13.00	624.00	23.50		12000	7.0
03:00	2.3	3000	26	9900	1350	38.00	46	176.39						4.21	1.79	85.92	5.22		7.50	360.00	31.00		12000	7.0
03:00		Cuts show 20% cond, 80% water.																						
03:30	2.8	2900	27	11000	1125	51.00	44	188.43						8.14	3.50	168.00	8.72		7.00	336.00	38.00			
03:35		Bleed off casing.																						
04:00	3.3	2950	30	250	1050	60.00	44	198.21						12.27	2.02	96.96	10.74		6.50	312.00	44.50		10000	8.0
04:30	3.8	2950	32	500	1050	65.00	43	206.63						16.58	2.68	128.64	13.42		6.00	288.00	50.50			
05:00	4.3	2975	34	1000	1075	66.00	44	210.37						20.96	1.72	82.56	15.14		5.00	240.00	55.50		16000	8.0
05:30	4.8	3000	35	1500	1075	65.00	44	208.73						25.31	2.67	128.16	17.81		5.50	264.00	61.00			
06:00	5.3	2975	35	1800	1075	65.00	45	208.37	0.006300					29.65	3.00	144.00	20.81	56.6	3.50	168.00	64.50		15000	8.0
06:00		H2S by Gastec = 6300ppm.																						
06:00		API = 56.6 at 60°F.																						
06:30	5.8	2542	37	2200	1075	67.00	45	211.62						34.06	5.39	258.72	26.20		6.50	312.00	71.00			
07:00	6.3	2788	36	2550	1100	68.00	46	215.14						38.54	6.97	334.56	33.17		5.00	240.00	76.00		16000	8.0
07:25		Decrease choke to 25.4000 mm.																						
07:30	6.8	4240	38	2900	1100	66.00	42	213.36						42.98	4.34	208.32	37.51		6.00	288.00	82.00			
08:00	7.3	3792	38	3000	1000	70.00	43	210.05						47.36	3.17	152.16	40.68		3.50	168.00	85.50		18000	7.0
08:30	7.8	4369	39	3300	1200	70.00	44	228.19						52.11	4.71	226.08	45.39		4.50	216.00	90.00			
09:00	8.3	4463	38	3500	1300	66.00	41	231.21						56.93	4.73	227.04	50.12		4.00	192.00	94.00		18000	8.0
09:30	8.8	4667	36	3800	1200	73.00	50	230.71						61.74	4.04	193.92	54.16		4.50	216.00	98.50			
10:00	9.3	4501	38	4000	1200	76.00	52	234.71						66.63	4.73	227.04	58.89		3.00	144.00	101.50		18000	8.0
10:30	9.8	4539	38	4200	1225	78.00	53	239.74						71.62	4.00	192.00	62.89		4.00	192.00	105.50			

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Northrock Resources Ltd.
B44-84-30-125-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production				Salinity	pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out		
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	molFr	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/17																								
11:00	10.3	4597	38	4400	1500	79.00	52	266.05						77.17	4.55	218.40	67.44		4.00	192.00	109.50		18000	9.0
11:00		Fluid gains changed to hourly.																						
11:30	10.8	4660	37	4500	1300	79.00	52	248.56	0.006500					82.34	4.43	212.64	71.87	56.6	3.50	168.00	113.00		16000	8.0
11:30		H2S by Gastec = 6500ppm.																						
11:30		API = 56.6 at 60°F.																						
11:30		Shut in well. Meter out of service.																						
11:30		Start buildups.																						
11:30		Total gas produced to date = 82.34 E3m3.																						
11:30		Total oil produced to date = 71.87m3.																						
11:30		Total water produced to date = 113.0m3.																						
11:35	0.1	10775		4200																0.00				
11:40	0.2	10877		4200																0.00				
11:45	0.3	11502		3600																0.00				
12:00	0.5	12600		2400																0.00				
12:15	0.8	13055		500																0.00				
12:30	1.0	13112		100																0.00				
13:00	1.5	13365		0																0.00				
13:30	2.0	13472		vac																0.00				
14:00	2.5	13534		vac																0.00				
14:30	3.0	13558		vac																0.00				
15:00	3.5	13572		vac																0.00				
15:30	4.0	13661		vac																0.00				
16:00	4.5	13706		vac																0.00				
16:00		RTM running in hole with temp/pressure gauge.																						
16:30	5.0	13758		vac																0.00				
17:00	5.5	13892		vac																0.00				
17:30	6.0	13992		vac																0.00				
18:00	6.5	14106		vac																0.00				
18:30	7.0	14306		vac																0.00				
19:00	7.5	14509		vac																0.00				
19:30	8.0	14543		vac																0.00				
20:00	8.5	14610		vac																0.00				
20:30	9.0	14588		vac																0.00				
21:00	9.5	14543		vac																0.00				

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Northrock Resources Ltd.
B44-64-30-125-45

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

Time	Elapsed Time	Well Head Data			Well Gas					Well Gas				Cum. Q Total	Cond/Oil Prod.				Water Production					pH
		Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2		Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol/r	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/17																								
21:30	10.0	14488		vac																0.00				
22:00	10.5	14464		vac																0.00				
22:30	11.0	14412		vac																0.00				
23:00	11.5	14423		vac																0.00				
23:30	12.0	14452		vac																0.00				
24:00	12.5	14306		vac																0.00				
05/03/18																								
00:30	13.0	14285		vac																0.00				
01:00	13.5	14268		vac																0.00				
01:30	14.0	14257		vac																0.00				
02:00	14.5	14271		vac																0.00				
02:30	15.0	14261		vac																0.00				
03:00	15.5	14206		vac																0.00				
03:30	16.0	14233		vac																0.00				
04:00	16.5	14268		vac																0.00				
04:30	17.0	14261		vac																0.00				
05:00	17.5	14254		vac																0.00				
05:30	18.0	14244		vac																0.00				
05:30		RTM start reverse gradient out of hole.																						
06:00	18.5	14248		vac																0.00				
06:30	19.0	14230		vac																0.00				
06:45		Attend safety meeting.																						
07:00	19.5	14230		vac																0.00				
07:55		Wireline at surface. Rig out wireline.																						
08:10		Rig in for acid job.																						
08:45		Attend safety meeting.																						
09:00		Pressure test surface lines. Proceed with acid job.																						
12:30		Finish acid job. Rig in to swab.																						
13:31		Swab #1, Tag 219m, Pulled from 525m, Fluid recovered = 0.75m3. Salinity = 20000ppm, ph = 1.																						
13:48		Swab #2, Tag 263m, Pulled from 570m, Fluid recovered = 1.75m3.																						
13:57		Swab #3, Tag 306m, Pulled from 668m, Fluid recovered = 1.25m3.																						
14:07		Swab #4, Tag 375m, Pulled from 668m, Fluid recovered = 1.5m3. Salinity = 16000ppm, ph = 1																						
14:22		Swab #5, Tag 425m, Pulled from 760m, Fluid recovered = 1.0m3.																						
14:34		Swab #6, Tag 475m, Pulled from 808m, Fluid recovered = 0.75m3.																						

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Northrock Resources Ltd.
B44-64-30-12S-4S

Operation:	Clean Up \ Test
Pool or Zone:	Tight Hole
Field or Area:	Summit Creek
Test Start:	15 Mar 2005
Test End:	26 Mar 2005
PES Job #:	4402134

		Well Head Data			Well Gas					Well Gas					Cond/Oil Prod.					Water Production					
Time	Elapsed Time	Tubing Pressure	Tubing Temp	Casing Pressure	Static Pressure	Diff.	Temp.	Q	H2S	Static Pressure2	Diff2	Temp2	Q2	Cum. Q Total	Incr Cond Volume 1	Cond Rate 1	Cum Cond All Total	Cond. Sp Gr @ 60 F	Incr Water Volume 1	Water Rate 1	Cum Water All Total	Grind Out	Salinity	pH
hh:mm	Hours	kPag	°C	kPag	kPag	kPa	°C	E³m³/d	mol%	kPag	kPa	°C	E³m³/d	E³m³	m³	m³/d	m³	°API	m³	m³/d	m³	%H₂O	ppm	
05/03/16																								
14:45		Swab #7, Tag 425m, Pulled from 668m, Fluid recovered = 1.5m3. Salinity = 28000ppm, ph = 1																						
14:54		Swab #8, Tag 263m, Pulled from 475m, Fluid recovered = 0.75m3.																						
15:14		Swab #9, Tag 375m, Pulled from 668m, Fluid recovered = 1.5m3.																						
16:55		Swab #10, Tag 85m, Pulled from 375m, Fluid recovered = 1.0m3. Salinity = 110000ppm, ph = 2																						
17:00		Total fluid recovered while swabbing = 11.0m3.																						
17:00		Well flowing.																						
17:00	4.5	1000		vac	0	0.00	0	0.00		0	0.00	0	0.00	82.34					11.00	58.67	124.00			
17:00		Change choke to 38.10 mm.																						
17:05	4.6	2750		vac	0	0.00	0	0.00						82.34						0.00				
17:10	4.7	2854		vac																0.00				
17:15	4.8	2910		vac																0.00				
17:30	5.0	3033		vac																0.00				
17:30		Trace of burnable gas to surface.																						
17:45	5.3	3218		vac																0.00				
18:00	5.5	4432		vac											0.00	0.00	71.87		20.57	493.68	144.57			3.0
18:00		Salinity is off scale.																						
18:30	6.0	2875	16	vac																0.00				
19:00	6.5	6195	22	vac	0	0.00	0	0.00		0	0.00	0	0.00	82.34	2.11	50.64	73.98		16.60	398.40	161.17			4.0
19:02		Meter in service on 88.9000 mm orifice plate.																						
19:30	7.0	6319	23	650	2275	6.00	28	195.65						86.15						0.00				
20:00	7.5	6683	28	2550	2500	6.50	29	213.42						90.59	10.12	242.88	84.10	57.6	14.15	339.60	175.32		250000	4.0
20:00		API = 57.6 at 15.6°C.																						
20:20		Meter out of service due to foam production.																						
20:30	8.0	8122	32																	0.00				
20:30		Decrease choke to 19.0500 mm.																						
20:35		Decrease choke to 12.7000 mm.																						
21:00		Meter in service on 88.9000 mm orifice plate.																						
21:00	8.5	11310	30	3300	3800	2.00	39	144.91							14.93	358.32	99.03		6.18	148.32	181.50		164000	5.0
21:30	9.0	11224	30	2650	3725	2.00	44	141.72						93.55						0.00				
21:45		Start incinerator at 80 liters/min.																						
22:00	9.5	11245	29	2550	3100	2.00	46	127.95	0.008000					96.21	8.37	200.88	107.40	56.1	2.18	52.32	183.68		128000	5.0
22:00		Incinerator total burned = 2.5m3.																						
22:00		API = 56.1at 15.6°C.																						
22:00		H2S by Core = 8000ppm.																						