AUTHORITY TO DRILL A WELL

National Energy Board | Office national de l'énergie

Exploratory XX | Delineation ☐
Development ☐ | Service ☐

APPROVAL TO DRILL A WELL

This application is submitted under Section 82 of the *Canada Oil and Gas Drilling Regulations* When approved under Section 83 of the Regulations, it is the requisite approval for the commencement of drilling operations.

Well Name: Northrock et al Fall Stone F-01

Operator: Northrock Resources Ltd. | Drilling Program No.:

Contractor: Akita Sahtu Drilling | Interest Identifier:

Drilling Rig or Unit: Akita #51 | Estimated Well Cost: $2,000,000

Location-Unit: F | Section: 01 | Grid Area: 64 50 125 45

Coordinates: Lat.: 64° 40' 29.045" BH 64° 40' 25.20 | Long.: 125° 46' 13.995" BH 125° 46' 07.18"

Area: TULITA | Field / Pool: Fall Stone

Elevation-KB/RT: 204.0m (ASL) | GL / Seafloor: 200.0m

Approx. Spud Date: January 10, 2000 | Est. Days on Location: 20

Anticipated Total Depth: 1400 m | Target Horizons: Basal Cretaceous Sandstone

EVALUATION PROGRAM

Ten-metre sample intervals:

Five-metre sample intervals: From surface casing to radioactive shale - 3 m in intervals thereafter

Canned sample intervals: 10 m intervals

Conventional cores at: None

Logs and Tests: E-Log, sonic, neutron - Density from TD to Surface casing

CASING AND CEMENTING PROGRAM

O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m KB)	Cementing
340 mm	71.43	J-55	30 m	2.9m^3 artic set cement
244.5 mm	53.6	J-55	350 m	23.3 m^3 artic set cement
177.8 mm	34.2	J-55	1400 m	29.4 m^3 RFC

B.O.P. Equipment: Shaffer Spherial 279 mm X 21 mPa Annular Preventor. 3 - Shaffer LWS 279 mm X 21 mPa Single Gateram Preventors. Valvcon 340 Litre x 21 mPa. 5 Station Accumulator, electric Remote. Cameron WKM 51 mm X 76 Mm X 21 mPa Choke Manifold.

Other Information:

Signed: Pat Okruc for | Title:
Responsible Officer

Name: Mr. Brian Merchant | Company: Northrock Resources Ltd.

Date: | Phone: (403) 213-7450

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Date: Dec. 23/99 | Signed: [signature]
Chief Conservation Officer

File: 9211-N046-1-2

WID: 1886

UWI: 300 F016450 125 450

444 Seventh Avenue SW
Calgary, Alberta T2P 0X8

444 Septième Avenue S.-O.
Calgary (Alberta) T2P 0X8

Telephone/Téléphone : (403) 292-4800
Facsimile/Télécopieur : (403) 292-5876
http://www.neb.gc.ca

Canada

WELL TERMINATION RECORD

National Energy Board | Office national de l'énergie

APR 11 11 03 AM '00

WELL TERMINATION RECORD

This record is submitted in compliance with Section 184 of the *Canada Oil and Gas Drilling Regulations*

Well Name: Northrock et al Fallstone F-01 Area: Tulita

Grid Area: N64° 50', W 125° 45' Field / Pool: 64° 40' 09.8" 125° 42' 13.99"

Interest Identifier: Final Coordinates: Lat: 64.673677 Long: 125.768661

Drilling Unit: 51 (Akita) Elevations-KB/RT: 203.8 (ASL) GL/Seafloor: 198.6

Spud Date: 00/01/27 R.R.: 00/02/12 Total Depth: 1400m

O.D (mm)	Weight (kg/m)	Grade	Depth Set (m KB)	Cement (m³)
339.7	81.1	K-55	42	9T
244.5	53.6	K-55	342	28T

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Chris Knoechel

from (person) Tom Logan / Kevin Kerwin of the

by means of Phone on Feb. 8 2000

Type of Plug	Interval (m KB)	Felt	Cement (m³)
Cement	1400-1310		10T
Cement	900-800		6T
Cement	360-325		2T

Lost Circulation/Overpressure Zones: N/A

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): N/A

Cores: Type: N/A Intervals:

Other Downhole Completion/Suspension Equipment:

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: T Logan Title: Consultant

Name: W. Tom Logan Date: 00-04-01

Company: N.L. Fisher

Well Status

Suspended ☐

Completed ☐

Abandoned ☒

Acknowledged by: T M Baker

Chief Conservation Officer

Date: Apr. 14/00

File: 9210-N046-1-2

UWI: 300F016450125450 WID: 1886

444 Seventh Avenue SW
Calgary, Alberta T2P 0X8

444 Septième Avenue S.-O.
Calgary (Alberta) T2P 0X8

Telephone/Téléphone : (403) 292-4800
Facsimile/Télécopieur : (403) 292-5876
http://www.neb-one.gc.ca

Canada

01 07 99
F:\BUOPS\QUENPIER\welltermirm.wpd

FINAL WELL REPORT

1886

N.E.B. COPY

FINAL WELL REPORT

NORTHROCK RESOUCES LTD

NORTHROCK ET AL FALLSTONE F-01

Grid# N 64° 50', W 125° 45'

DATE: March 29, 2000

COMPANY REPRESENTATIVE: MR. KEVIN KERWIN

Example

TABLE OF CONTENTS

Include page numbers.

A. INTRODUCTION — Page

Summary 1
Locality Map 1

B. GENERAL DATA

Well Name 2
Well Location 2
Unique Well Identifier 2
Operator 2
Contractor 2
Drilling Unit 2
Position Keeping 2
Support Craft 2
Drilling Unit Performance 2
Difficulties and Delays 2
Total Well Cost 3
Horizontal/Deviated Wells Require Bottom Hole Co-ordinates 3

C. SUMMARY OF DRILLING OPERATIONS

Elevations 3
Total Depth 3
Date and Hour Spudded 3
Date Drilling Completed 3
Date of Rig Release 3
Well Status 3
Hole Sizes and Depths 3
Casing and Cementing Record 3
Sidetracked Hole 4
Drilling Fluid 4
Fishing Operations 5
Well Kicks and Well Control Operations 5
Formation Leak Off Tests 5
Time Distribution 5
Deviation Survey 5
Abandonment Plugs 5
Composite Well Record 6
Completion Record 6

D. GEOLOGY

Page

Geological Summary .....
- Tops .....
- Sample Descriptions .....
- Coring Record .....

Gas Detection Report .....
Drill Stem Tests .....
Well Evaluation .....
Analyses .....
- Mud Salinity Record .....
- Gas, Oil & Water .....

Formation Stimulation .....
Formation and Test Results .....
Detailed Test Pressure Data Readings .....

See Attachment

A. INTRODUCTION

Northrock Resources Ltd drilled a 1400 meter exploratory well spudded on (27/01/00) and finishing on (12/02/00)

The drilling contractor was AKITA Drilling based out of Calgary, Alberta. The rig had a 47.7 m^3 mud system and was equipped with two boilers.

The well was drilled on Exploration License No 1886.

The well which was located approximately 100 km southwest Normanwell NWT:

Latitude: 64.673677
Longitude: -125.768661

The rig was moved onto the location (25/01/00) and the well spudded on (27/01/00) at 2200 hours to drill a 311mm pilot hole to a depth of 42 m. While drilling the conductor hole boulders were encountered which required drilling mud to clean the hole. The 339.7 mm 35kg/m J-55 LT&C conductor pipe was set with the shoe depth at 42 m. The conductor pipe was cemented with good mud returns throughout the cement job and 0.5 returns of cement. The diverter was nippled up and functioned tested with the HCR.

Drilled to 353 mKB w / 311mm bit & encountered no problems . Ran 244.5mm csg. to 342m & cemented w/arctic set cmt +12% BWOWD + .5%D65 + .5%D13 + .2%D46, density 1881 kg/m3, 100% excess cement return to surface , Displace w/water pump plug to 3.5mpa , held ok.

The BOP's were installed and pressure tested. The annular preventor was pressure tested to 1,400 kPa low and 10,500 kPa high. The pipe rams, kelly cock, stabbing valve and downhole BOP valve were tested to 1,400 kPa low and 21000 kPa high. The accumulator precharge bottles were checked and the accumulator function tested & bop drill were held prior to drilling out.

The float collar and shoe were drilled out on 02/02/00. A formation leak off test was done and the gradient was taken to 18.05 kPa/m without breaking down the formation. The 222 mm main hole was drilled ahead to 1400 m with minor problems.

After total depth had been reached the open hole was logged by Schlumberger.

After the logs were evaluated it was decided to abandon the well and cement plugs were run. Plug # 1 was run from 1400m to 1200m w/ 10.8 tonnes Class "G" cement. The plug was run, waited 6 hrs. The plug was felt at 1310m. Pumped another 10 tonne artic set cement for top fill. Attempt to pull stand out of the cement and the drill pipe was stuck. circulated the cement out of the hole. Placed a call to the NEB in Calgary and spoke with

Mr Andy Graw & Mr Chris Knoechel , explaining problems having topping up cmtg on plug #1. Permission was granted to Northrock Resources Ltd to go ahead & set plug #2 . Set all plug as program to surface.

Note: The summary is just a snapshot of the well and can be shorter or longer depending on the well.

B. GENERAL DATA

1. Well Name: NORTHROCK et al FALLSTONE F-01

   Authority to Drill a Well No: 1886

   Exploration Agreement Number:

   Location Unit: F

   Section: 01

   Grid Area: 64-50-125-45

   Classification: Exploratory

2. Well Location:F-01-64-50-125-45
   Coordinates: Latitude: 64° 40' 29.045"
   Longitude: 125° 46' 13.995"

3. Unique Well Identifier: 300F016450125450

4. Operator: Northrock Resources

5. Contractor: Akita Drilling

6. Drilling Unit: Land rig #51

7. Position Keeping: Not Applicable, Land Rig

8. Support Craft (Helicopter):

9. Drilling Unit Performance: Good

10. Difficulties and Delays: Waiting on cementers

11. Total Well Cost: $ 1,290,400

12. Horizontal Deviated Wells Require Bottom Hole Co-ordinates:
Latitude: N/A
Longitude: N/A

C. SUMMARY OF DRILLING OPERATIONS

1. Elevations:
   Ground: 198.6(m above sea level)
   KB: 203.8 (m above sea level)
   KB To Casing Flange: 5.2 (KB to CF)

2. Total Depth:
   FTD: 1400 mKB
   PBTD: 0 mKB
   TVD: 1400mKB

3. Date and Hour Spudded: 27/~~02~~ 01/00 (2200)

4. Date Drilling Completed: 08/02/00

5. Date of Rig Release: 12/02/00 (0800)

6. Well status: Abandoned

7. Hole Sizes and Depths:
   Conductor Hole: Size.444.5 mm to 42 mKB
   Surface Hole: Size.311 mm to353 mKB
   Main Hole: Size.222mm to1400 mKB

8. Casing and Cementing Record:
   Conductor Hole:

Casing Size:	339.7 mm
Casing Weight:	81.1 kg/m
Casing Grade:	K-55
Casing Make:	Ipsco
Number of Joints:	3
Thread:	LT&C
Depth Set:	42 m (KB)
Cut Height:	At Surface KB

Cut off Depth:	After abandonment
Date Set:	01/02/00
Cement Volume:	9 Tonnes
Cement Type:	Arctic Set Cement
Additives:	7.4% Freeze Suppressant
	0.5% D-65
	0.3% D-13

Surface Hole:

Casing Size:	244.5 mm
Casing Weight:	53.6 kg/m
Casing Grade:	K-55
Casing Make:	Ipsco
Number of Joints:	27
Thread:	LT&C
Depth Set:	242m (KB)
Cut Height:	At Surface (KB)
Date Set:	01/02/00
Cement Volume:	21m3
Float Shoe Depth:	342m
Float Collar Depth:	337m
Cut Off Depth:	After abandonment
Cement Type:	Arctic Set Cement
Additives:	7.4% Freeze Suppressant
	0.5% D-65
	0.3% D-13
	22.8 kg celloflake
Cement Top:	Surface (mKB)
Casing Bowl Size:	279 mm X 244.5 mm X 21 mpa
Casing Bowl Make:	StreamFlo

9. Sidetracked Hole: **Explanation if applicable.**

10. Drilling Fluid:

Conductor Hole	Spud mud	
Properties:	Viscosity:	50sec/L
	Weight:	1150 kg/m^3
	PH:	9

Surface Hole:	Gel - Chemical	
Properties:	Viscosity:	60sec/L
	Weight:	1130 kg/m^3
	PH:	8.0

11. Fishing Operations: **Explanation or n/a**

12. Well Kicks and Well Control Operations: **Explanation or n/a**

13. Formation Leak Off Tests:

Depth:	357m
Fluid Density:	1000 kg/m^3
Applied Pressure:	1850 kPa

The leak-off test was taken to a gradient of 18.05kPa /m without breaking down the formation.

14. Time Distribution:
15.

Time Break Down

Activity	Hours
Drilling:	132
Surveying:	13
Circulating:	15
Logging:	9
WOC:	20
Rig Service:	61
Tripping:	36
Running Casing:	17
Abandon:	48

15. Deviation Survey:

16. Abandonment Plugs:

	Plug 1	Plug 2	Plug 3
Date	09/02/00		
Interval (KB)	1400-1310	900-800	360-325
Formation Name	Imperal shale	Slater shale	Csg shoe
Formation Depth (KB)	1131	896	

Tonnes of Cement	10	6	2
Additives	5%B30 (FLAC) +	.3%D13 + .5%D65	+ .2%D46
Volume of H_2O Ahead	2m3	2m3	$0m^3$
Displacement			
Slurry Density	1474kg/m3	1835kg/m3	1848kg/m3
Calculated Plug Depth	m KB	m KB	m KB
Felt Plug Depth (KB)	1310m	810	320
Fluid Between Plugs	Gel-Chem mud	Gel-Chem mud	Gel-Chem mud

17. Composite Well Record: **See attached Well Logs and give an explanation.**

18. Completion Record: (if any)
    Start Date: N/A
    Finish Date:
    Contractor:

    Completion Summary: N/A
    Date: N/A

D: GEOLOGY

Geological Summary: see attachment

Continue until complete. Indicate any shows or HC cuts

Total Depth.....1400 mKB

DRILL STEM TESTS

TYPE: N/A

GEOLOGICAL REPORT

N.E.B. COPY

188

764508 ALBERTA LIMITED

(formerly KNOWLING GEOLOGICAL SERVICE)

Geological Report

NORTHROCK et al Fall Stone F-01

F - 01 - 64 - 50 - 125 - 45

N.W.T.

By:

David N.K.Roberts
P.Geol

11-Feb-00

512 - 32nd Street NW, Calgary, Alberta, T2N 2V7. Ph: 283-7190
Cellular: (403) 860-6400 (Calgary)

TABLE OF CONTENTS:

Well Data.....3

Formation Tops.....4

Drill Bits.....5

Surveys.....6

Sample Descriptions.....7

DST Results.....Appendix "A"

Striplog.....in pocket

WELL DATA:

Operator: Northrock Resources Ltd. **AFE:** 990436

Well Name: NORTHROCK et al Fall Stone F-01 **Wid #:** 1886

Field: Undefined **UWI:** 300F016450125450

Surface Co-ordinates: Lat: 64deg 40'29.045" Long: 125deg 46'13.995"

Well Status: Exploratory Plugged & Abandoned

Contractor: Akita/Sahtu Ptnshp. **Rig:** 51

Spud Date: 27-Jan-00 @ 2200hrs **TD Date:** 07-Feb-00 @ 2100hrs

Total Depth: 1400.00m Driller **Rig Release:** 10-FEB-00
1394.00m Logger

Elevations: **Kelly Bushing:** 203.80m **Ground Level:** 198.60m

Hole Size: 311mm to 353m, 222mm to FTD.

Casing Record:
Surface Casing: 244.5mm, 53.6m kg/m, ST&C, J-55, set at 342.0m.

Mud Type: Floc water to 1050m. Gel/chem to FTD.

Logs Run:

BHCS-GR-CAL	TD-SC	GR to Surface
CNL-LDT-PE-GR-DAC/DITE-SP	TD-SC	

Drill Stem Tests: None

Cores: None

Rotating Hours:

Surface Hole:	47.50 hrs
Main Hole:	86.75 hrs

Supervision:

Foreman:	Garry Campanuik
Geologist:	David N.K.Roberts

FORMATION TOPS:

Elevations: Ground Level: **198.60m** Kelly Bushing: **203.80m**

Formation	Prog MD	Prog SS	Smpl MD	Log MD	Log SS
Little Bear	445.8	- 243	434	426.0	- 222.2
Slater River	910.8	- 708	897	894.7	- 690.9
R/A Shale	1155.8	- 953	1148	1145.7	- 941.9
Basal K Sand	1300.8	-1098	N/D	N/D	N/D
Devonian Imperial	1333.8	-1131	1305	?	
Total Depth	1400.0	-1197	1400	1394.0	-1190.2

BIT RECORD:

Bit	Size	Type	Depth Out	Meters	Hours	WOB dan	RPM	Condition
1a	311	Reed HP13G	32	32	5.00	5	180	8:6:0
2a	311	Smith SSH	42	10	6.25	5	180	6:6:0
3a	444	Smith SCE	42	42	6.75	14	180	6:4:0
1b	311	Smith SSH	217	175	13.50	5	180	6:4:0
2b	311	Smith FDSSHC	353	136	16.00	5	180	5:3:0
1	222	Hughes A86G1	1087	734	42.75	12-16	100+40	3:2:0
2	222	Hughes G1XL	1400	313	44.00	12-16	100+40	2:2:0

SURVEYS

Depth	Inclination
49m	0.875
79m	0.750
107m	0.500
136m	0.250
160m	0.750
205m	1.000
223m	1.500
242m	1.000
261m	1.250
280m	1.750
299m	1.500
315m	1.750
348m	1.500
Set	244mm

MWD directional surveys run below surface casing.

See Appendix "A"

SAMPLE DESCRIPTIONS:

350-355m	Shale: 85%, grey, blocky, silty in part, occasional sandy streaks, trace carbonaceous flecks. Cement: 15%.
355-360m	Shale: 95%, as above. Cement: 5%.
360-400m	Shale: 100%, grey to dark grey, blocky, silty in part, local pyrite, trace sideritic in part, trace fossiliferous.
400-410m	Shale: 100%, grey, blocky, silty, sandy in part, local trace pyrite.

Little Bear log top at 426.0m.

410-430m	Shale: 100%, grey to dark grey, blocky to subfissile, silty in part, micromicaceous, trace pyrite, local trace glauconite.
430-435m	Shale: 40%, as above. Sandstone: 60%, salt and pepper textured, fine to coarse grained, moderate to well sorted, angular to subangular clasts, poor to moderate sorting, loose grains, common chert pebbles, yellow and red chert.
435-440m	Shale: 30%, as above. Sandstone: 70%, as above.
440-450m	Shale: 20%, as above. Sandstone: 80%, salt and pepper textured, fine to medium grained, commonly coarse grained, abundant chert pebbles and granules, angular to subrounded clasts, moderate to well cemented with silica, fair to good porosity. Grey/black, orange and yellow chert clasts.
450-460m	Shale: 10%, as above. Siltstone: 80%, off white to light grey, kaolinitic, tight. Sandstone: 10%, as above.

460-470m	Shale: 10%, as above. Sandstone: 90%, salt and pepper textured, fine to medium grained, common coarse to very coarse grained, common pebbles, well sorted, kaolinitic, angular to subangular clasts, moderately cemented with silica, quartz overgrowths, fair to good porosity (8-12%), trace dead oil staining, brownish cast, no fluorescence, no cut fluorescence.
470-480m	Shale: Trace. Sandstone: 100%, salt and pepper textured, fine grained, well sorted, moderate to well cemented with silica, quartz overgrowths, fair to good porosity in part, common very coarse grained and pebbly.
480-490m	Shale: Trace. Sandstone: 100%, as above, abundant kaolinite, fair porosity in part.
490-500m	Sandstone: 100%, as above, common carbonaceous fragments, common chert pebbles, kaolinitic.
500-510m	Shale: 30%, as above. Coal: 70%, black, subvitreous to earthy, commonly very shaley.
510-520m	Shale: 100%, grey to dark grey, blocky, silty in part, local carbonaceous plant remains, local very fine sandy streaks.
520-530m	Shale: 10%, as above. Sandstone: 90%, salt and pepper textured, fine to coarse grained, well sorted, angular to subangular clasts, poor to moderately cemented with silica and kaolinite, fair to good porosity in part, rare glauconite.
530-540m	Shale: 10%, as above. Sandstone: 90%, light grey, salt and pepper textured, very fine grained to fine grained and silty, moderate sorting, well cemented, kaolinitic, tight.
540-550m	Shale: 90%, generally dark grey, subfissile, micromicaceous, silty, common sandy laminations. Sandstone: 10%, as above.

550-560m	Shale: 40%, dark grey, blocky, sideritic in part, trace glauconite grains. Sandstone: 60%, salt and pepper textured, fine to coarse grained, well sorted, angular to subangular clasts, moderate to well cemented with silica, kaolinitic in part, fair to good porosity?
560-570m	Shale: 30%, as above, sideritic in part. Sandstone: 70%, light grey, salt and pepper textured, very fine to fine grained, silty, moderate sorting, well cemented, kaolinitic, tight.
570-580m	Shale: 20%, as above. Sandstone: 80%, as above. Also; fine to coarse grained, in part very coarse grained, well sorted, fair to good porosity.
580-590m	Shale: 5%, as above. Sandstone: 95%, light grey, salt and pepper textured, very fine to fine grained, silty, poor to moderate sorting, kaolinitic, trace porosity in part.
590-600m	Shale: 20%, dark grey to dark grey/brown, subfissile to fissile, sandy in part, micromicaceous. Sandstone: 80%, as above.
600-610m	Sandstone: 100%, salt and pepper textured, fine to coarse grained, well sorted, angular to subrounded clasts, moderate to well cemented with silica, quartz overgrowths, fair to good porosity.
610-620m	Sandstone: 100%, light grey, salt and pepper textured, very fine to fine grained, silty in part, moderate to well sorted, moderately cemented with silica and kaolinite, fair porosity in part.
620-625m	Shale: 10%, grey to dark grey, blocky, silty and sandy in part. Sandstone: 90%, as above, poor to moderate sorting, kaolinitic, tight.
625-630m	Shale: 50%, black, subfissile to fissile, micromicaceous, carbonaceous in part. Sandstone: 50%, white/clear, black, salt and pepper textured, fine to medium grained, well sorted, angular to subrounded clasts, moderately cemented with silica and kaolinite, fair to good porosity.

630-635m	Shale: 10%, as above. Sandstone: 90%, as above.
635-640m	Shale: 100%, grey, blocky.
640-645m	Shale: 50%, as above. Sandstone: 50%, as above, becoming light grey salt and pepper textured, very fine to fine grained, moderate to well sorted, well cemented and tight, kaolinitic.
645-650m	Shale: 30%, as above. Sandstone: 70%, as above.
650-655m	Sandstone: 100%, light grey, salt and pepper textured, very fine to fine grained, moderate to well sorted, well cemented with kaolinite and silica, tight.
655-660m	Sandstone: 100%, as above. Also: salt and pepper textured, medium to coarse grained, well sorted, angular to subrounded clasts, moderately cemented with silica, fair to good porosity.
660-665m	Sandstone: 100%, as above, medium to very coarse grained, fair to good porosity.
665-670m	Sandstone: 100%, as above, in part becoming fine to medium grained.
670-680m	Shale: 100%, dark grey, subfissile to blocky, flat luster.
680-685m	Shale: 70%, as above. Sandstone: 30%, light grey, salt and pepper textured, very fine grained and silty, well cemented and tight, kaolinitic.
685-690m	Shale: 30%, as above. Sandstone: 70%, as above.
690-695m	Shale: 40%, as above. Sandstone: 60%, as above.
695-700m	Shale: 70%, dark grey, blocky, very silty. Sandstone: 30%, grey, very fine grained and silty, argillaceous, tight.

700-705m Shale: 100%, dark grey, blocky, silty in part.

705-710m Shale: 80%, as above.
Sandstone: 20%, grey, very fine grained and silty, tight.

710-715m Shale: 5%, as above, common siderite.
Sandstone: 95% light grey, salt and pepper texturedvery fine to fine grained and silty, poor to moderate sorting, kaolinitic, well consolidated and tight, abundant siderite.

715-720m Sandstone: 100%, as above, trace siderite, tight.

725-730m Shale: 80%, dark grey, blocky, locally very silty.
Sandstone: 20%, as above, argillaceous, tight.

730-735m Shale: 70%, as above.
Sandstone: 30%, grey, very fine grained and silty, argillaceous, tight.

Trip for MWD failure at 737m. Rerun drill bit.

735-740m Shale: 30%, dark grey, blocky, flat luster.
Sandstone: 70%, light grey to grey, salt and pepper textured, very fine to fine grained, silty, moderate sorting, argillaceous in part, well cemented and tight.

740-745m Shale: 20%, as above, trace pyrite.
Sandstone: 80%, white/clear, black, salt and pepper textured, salt and pepper textured, fine to coarse grained, well sorted, angular to subangular clasts, well cemented with silica, trace porosity in part.

745-750m Shale: 70%, as above.
Sandstone: 30%, as above.

750-755m Shale: 30%, as above.
Sandstone: 70%, light grey to grey, salt and pepper textured, very fine to fine grained and silty, poor to moderate sorting, well cemented with silica and kaolinite, tight, carbonaceous flecks.

755-765m Shale: 20%, as above.
Sandstone: 80%, as above.

765-775m Shale: 100%, dark grey, blocky to subfissile, micro-micaceous in part.

775-780m
Shale: 5%, as above.
Sandstone: 95%, grey, salt and pepper textured, very fine grained and silty, fine grained in part, poor to moderate sorting, well cemented with silica, kaolinitic, carbonaceous flecks.

780-785m
Shale: 20%, dark grey, blocky to subfissile, commonly silty.
Sandstone: 80%, as above.

785-790m
Shale: 70%, as above.
Sandstone: 30%, as above.

790-795m
Shale: 80%, as above.
Sandstone: 20%, as above.

795-800m
Shale: 10%, dark grey to black, blocky, silty in part.
Sandstone: 90%, light grey, salt and pepper textured, very fine to fine grained, silty, moderate sorting, well cemented, kaolinitic, tight.

800-805m
Shale: 5%, as above.
Sandstone: 95%, light grey to grey, as above, becoming very fine grained and silty, poor to moderate sorting, well cemented and tight.

805-810m
Shale: 20%, dark grey, in part brown, blocky, locally sideritic.
Sandstone: 80%, light grey, salt and pepper textured, very fine to fine grained, silty in part, moderate to well sorted, angular clasts, well cemented, kaolinitic, tight.

810-815m
Shale: 15%, as above.
Sandstone: 85%, as above, becoming very fine grained and silty in part.

815-820m
Shale: 90%, dark grey, blocky, commonly silty/sandy, silty/sandy streaks.
Sandstone: 10%, as above.

820-825m
Shale: Trace.
Sandstone: 100%, white/clear, black, salt and pepper textured, very fine to fine grained, well sorted, angular clasts, well cemented with silica and kaolinite, abundant siderite in part, tight to trace porosity.

825-830m	Shale: 50%, grey to dark grey, blocky to subfissile, silty/sandy in part. Sandstone: 50%, light grey, salt and pepper textured, very fine to fine grained, silty, poor to moderate sorting, well cemented and tight.
830-835m	Shale: 100%, dark grey, blocky, silty, locally very sandy.
835-840m	Shale: 20%, as above. Sandstone: 80%, as above.
840-850m	Shale: 100%, as above, generally silty/sandy.
850-860m	Shale: 100%, dark grey, blocky, flat luster, silty in part.
860-865m	Shale: 100%, as above, local white specks.
865-870m	Sandstone: 100%, white/clear, black, salt and pepper textured, fine to coarse grained, well sorted, angular clasts, poorly consolidated with kaolinite, tight??
870-875m	Sandstone: 100%, as above, becoming moderate to well cemented with silica, common pyrite cement, fair to good porosity, quartz overgrowths.
875-880m	Sandstone: 100%, as above, well cemented with silica, tight to trace porosity, quartz overgrowths, rare pebbles.
880-885m	Sandstone: 100%, light grey to white/clear, black, salt and pepper textured, fine grained in part, medium grained, well sorted, well cemented with silica, kaolinitic, tight to trace porosity, carbonaceous fragments in part.
885-890m	Shale: Trace. Sandstone: 100%, as above, generally very fine to fine grained, well sorted, well cemented with silica, tight.

Slater River log top at 894.7m.

890-895m	Shale: Trace. Sandstone: 100%, light grey, salt and pepper textured, very fine to fine grained, moderate to well sorted, well cemented with silica and kaolinite, tight, carbonaceous fragments.
895-900m	Shale: 20%, dark grey, blocky, flat luster, micro-micaceous in part. Sandstone: 80%, as above, becoming very fine grained to fine grained and silty, poor to moderate sorting, well cemented and tight.
900-905m	Shale: 50%, as above. Sandstone: 50%, as above.
905-910m	Shale: 90%, dark grey, blocky to subfissile, local silty laminations, trace carbonaceous plant remains. Sandstone: 10%, as above, generally very fine grained and silty, tight.
910-920m	Shale: 100%, as above, occasional sandy streaks.
920-945m	Shale: 90%, as above. Sandstone: 10%, light grey, salt and pepper textured, very fine to fine grained, silty, poor to moderate sorting, well cemented and tight.
945-960m	Shale: 80%, as above. Sandstone: 20%, as above.
960-965m	Shale: 90%, as above, abundant sandy streaks. Sandstone: 10%, as above.
965-975m	Shale: 100%, as above, common sandy streaks.
975-1005m	Shale: 90%, dark grey, blocky to subfissile, commonly silty/sandy streaks. Sandstone: 10%, as above.
1005-1010m	Shale: 100%, as above, common silty/sandy streaks.
1010-1025m	Shale: 100%, dark grey, blocky to subfissile, common silty streaks.
1025-1035m	Shale: 100%, dark grey, subfissile to blocky, micro-micaceous, local silty/sandy streaks, flat luster.
1035-1045m	Shale: 100%, as above, trace silty laminations.

1045-1070m Shale: 100%, dark grey, subfissile to fissile, micro-micaceous in part, flat luster, common silty/sandy laminations in part, rare pyrite in part.

1070-1075m Shale: 95%, as above, fissile to blocky, micromicaceous in part, flat luster.
Sandstone: 5%, white/clear, salt and pepper textured, fine to medium grained, well sorted, loose grains, porosity??

1075-1085m Shale: 100%, dark grey, subfissile to fissile, micromicaceous in part, trace silty/sandy streaks.

Trip for bit at 1087m.

1085-1090m Shale: 90%, dark grey, blocky to subfissile, silty in part.
Sandstone: 10%, light grey to grey, salt and pepper textured, very fine to fine grained, silty, in part very fine grained and silty, moderate sorting, well cemented and tight.

1090-1115m Shale: 95%, as above.
Sandstone: 5%, as above.

1115-1120m Shale: 80%, as above.
Sandstone: 20%, light grey to grey, very fine to fine grained and silty, moderate sorting, well cemented and tight.

1120-1125m Shale: 90%, dark grey, blocky to subfissile, commonly silty, flat luster in part.
Sandstone: 10%, as above.

1125-1135m Shale: 90%, as above, common siderite in part.
Sandstone: 10%, as above.

1135-1140m Shale: 95%, dark grey, subfissile to fissile, flat luster, abundant siderite in part.
Sandstone: 5%, as above.

1140-1145m Shale: 100%, as above, abundant siderite.

Radioactive Shale log top at 1145.7m.

1145-1165m Shale: 100%, dark grey to black, fissile, flat luster, trace sideritic in part.

1165-1170m	Shale: 100%, as above, trace slickensided quartz fracture fill.
1170-1195m	Shale: 100%, black, subfissile, flat luster, trace fish scales in part, rare pyrite in part, rare micro veining in part.
1195-1225m	Shale: 100%, black, subfissile to fissile, flat luster, trace Inoceramus sp., trace fish scales.
1225-1230m	Shale: 90%, as above. Sandstone: 10%, dark grey, fine to medium grained, well sorted, subrounded to rounded clasts, polished and frosted quartz grains, "plated" the pyrite in part, well cemented with calcite and silica, silty matrix, tight, trace glauconite grains.
1230-1235m	Shale: 100%, as above, Inoceramus sp. Sandstone: Trace.
1235-1240m	Shale: 100%, blocky, subfissile to blocky, flat luster, abundant fossils in part.
1240-1245m	Shale: 100%, as above, no fossils.
1245-1250m	Shale: 100%, as above, generally blocky and silty.
1250-1260m	Shale: 100%, dark grey to black, blocky, silty.
1260-1265m	Shale: 95%, dark grey to black, subfissile to blocky, rare sandy streak, abundant carbonaceous plant remains, fish scales. Coal: 5%, black, vitreous, commonly shaley.
1265-1267.5m	Shale: 95%, dark grey, grey/brown, black, subfissile, carbonaceous plant remains, locally very sandy and silty, fossiliferous.
1267.5-1270m	Shale: 80%, as above, local silty streaks. Coal: 20%, as above.
1270-1272.5m	Shale: 100%, dark grey, dark grey/brown, subfissile, abundant carbonaceous plant remains, local silty/sandy streaks, locally coaly.

1272.5-1275m	Shale: 50%, as above. Siltstone: 50%, off white to light grey/brown, blocky, non sandy, abundant foraminifera.
1275-1277.5m	Shale: 30%, as above. Siltstone: 70%, as above.
1277.5-1280m	Shale: 40%, abundant dark cavings. Also; common light grey, waxy luster, abundant foraminifera. Siltstone: 60%, as above, locally becoming moderately sandy, abundant foraminifera.
1280-1282.5m	Shale: Trace, light grey/brown, waxy luster, abundant foraminifera. Siltstone: 80%, off white to light grey/brown, blocky, generally very fine sandy, scattered fine to medium well rounded quartz grains, well cemented and tight, abundant foraminafera in part, grading to sandstone in part. Sandstone: 20%, off white to light grey, quartzitic, very fine grained and silty, scattered fine to medium well rounded quartz grains, poor sorting, shaley/silty matrix.
1285-1287.5m	Shale: 40%, light grey/brown to grey/brown, abundantly sandy in part. Siltstone: 30%, as above. Sandstone: 30%, as above, loose subangular to rounded clasts, probable shaley/silty matrix.
1287.5-1290m	Shale: 50%, off white, soft, abundant fine to medium quartz grains, subround to rounded clasts, (washed out of shaley matrix, common foraminifera. Siltstone: 50%, as above, locally grading to poorly sorted sandstone, common foraminifera.
1290-1292.5m	Shale: 30%, as above. Siltstone: 705, as above.
1292.5-1295m	Shale: 10%, as above. Siltstone: 90%, as above.
1295-1297.5m	Shale: 10%, as above. Siltstone: 90%, as above. Conglomerate: Trace, tripolitic chert pebbles.

1297.5-1300m	Siltstone: 95%, off white to light brown, hard, local anhydritic patches, locally carbonaceous, local trace coarse sandy streaks. Conglomerate: 5%, off white to light brown, tripolitic chert clasts, fine to coarse sand grains in a tight (locally brown) siltstone matrix, (dead oil?), no fluorescence, no cut fluorescence.
1300-1302.5m	Siltstone: 10%, as above locally very hard and siliceous, tight. Conglomerate: 90%, as above, minor dark brown, grey, mottled, silty matrix, tight, common clear coarse to very coarse quartz clasts, shaley matrix in part.
1302.5-1305m	Shale: 10%, dark cavings. Conglomerate: 90%, as above.

Devonian Imperial Shale sample top at 1305m.

1305-1307.5m	Siltstone: 100%, light grey, firm, in part very fine sandy, moderately cemented and tight, fine disseminated carbonaceous flecks throughout.
1307.5-1310m	Siltstone: 100%, as above.
1310-1312.5m	Siltstone: 100%, as above.
1312.5-1315m	Shale: 20%, grey, blocky, very silty, micromicaceous in part. Siltstone: 80%, light grey to grey, blocky, argillaceous in part, fine disseminated carbonaceous flecks throughout, grading to silty shale in part.
1315-1317.5m	Shale: 60%, grey, blocky to subfissile, silty, micromicaceous. Siltstone: 40%, light grey to grey, slightly argillaceous in part, mica flakes, fine disseminated carbonaceous flecks.
1317.5-1320m	Shale: 70%, as above. Siltstone: 30%, as above.
1320-1335m	Shale: 80%, grey to dark grey, subfissile to fissile, silty, micromicaceous. Siltstone: 20%, grey, argillaceous, mica flakes, carbonaceous flecks disseminated throughout.

1335-1342.5m	Shale: 80%, grey to dark grey, blocky to subfissile, micromicaceous, commonly silty. Siltstone: 20%, grey, commonly very fine sandy, common carbonaceous flecks, mica flakes, grading to silty shale.
1342.5-1350m	Shale: 80%, grey, blocky to subfissile, silty, micromicaceous. Siltstone: 20%, grey, argillaceous, mica flakes, trace carbonaceous flecks.
1350-1355m	Shale: 80%, grey to dark grey, blocky to subfissile, silty in part, flat luster in part. Siltstone: 20%, grey, very fine sandy in part, argillaceous, disseminated carbonaceous flecks.
1355-1362.5m	Shale: 90%, as above. Sandstone: 10%, as above, locally becoming very sandy.
1362.5-1365m	Shale: 70%, as above. Siltstone: 30%, as above.
1365-1367.5m	Shale: 80%, as above. Siltstone: 20%, as above.
1367.5-1380m	Shale: 90%, dark grey, subfissile to fissile, silty in part, micromicaceous, local silty streaks. Siltstone: 10%, as above, grey, very fine sandy in part, tight.
1380-1382.5m	Shale: 80%, as above. Siltstone: 20%, as above.
1382.5-1385m	Shale: 100%, as above.
1385-1390m	Shale: 80%, as above. Siltstone: 20%, off white to light grey, commonly very fine sandy, well cemented and tight, common carbonaceous flecks.
1390-1392.5m	Shale: 90%, as above. Siltstone: 10%, as above.
1392.5-1395m	Shale: 70%, as above. Siltstone: 30%, as above.

1395-1400m	Shale: 90%, dark grey, blocky, micromicaceous, silty in part. Siltstone: 10%, grey, blocky, very fine sandy, argillaceous, common carbonaceous flecks.

FTD: 1400m

Appendix "A"

MWD Directional Surveys attached.....

Schlumberger

Survey

MD (m)	Incl (°)	Azim (°)	TVD (m)	VSec (m)	NS (m)	EW (m)	Closure (m)	DLS (°/30m)	Comment
0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	—	
363.00	2.20	81.2	362.91	1.07	1.07	6.89	6.97	0.18	
372.70	1.60	77.0	372.61	1.12	1.12	7.20	7.29	1.90	
382.20	2.10	74.9	382.10	1.20	1.20	7.50	7.59	1.59	
391.60	2.20	67.9	391.49	1.31	1.31	7.83	7.94	0.90	
401.10	2.30	77.7	400.99	1.42	1.42	8.19	8.31	1.25	
410.10	2.20	68.6	409.98	1.52	1.52	8.53	8.66	1.24	
419.60	2.50	72.8	419.47	1.65	1.65	8.89	9.05	1.09	
429.30	2.10	65.8	429.16	1.79	1.79	9.26	9.43	1.51	
438.90	1.90	66.5	438.76	1.92	1.92	9.56	9.75	0.63	
448.30	1.80	62.9	448.15	2.05	2.05	9.84	10.05	0.49	
457.70	1.70	51.7	457.55	2.21	2.21	10.08	10.32	1.14	
467.30	1.60	57.3	467.14	2.37	2.37	10.30	10.57	0.59	
477.00	1.50	58.0	476.84	2.51	2.51	10.52	10.82	0.31	
486.50	1.80	58.0	486.34	2.65	2.65	10.76	11.08	0.95	
495.90	1.90	60.1	495.73	2.81	2.81	11.02	11.37	0.39	
505.40	1.80	72.8	505.23	2.93	2.93	11.30	11.67	1.33	
515.10	1.30	60.1	514.92	3.03	3.03	11.54	11.93	1.87	
523.90	1.10	60.1	523.72	3.12	3.12	11.70	12.11	0.68	
533.60	1.10	70.7	533.42	3.20	3.20	11.87	12.29	0.63	
543.30	1.40	73.5	543.12	3.26	3.26	12.07	12.50	0.95	
553.00	1.20	71.4	552.82	3.33	3.33	12.28	12.72	0.64	
562.60	1.10	49.6	562.41	3.42	3.42	12.44	12.90	1.39	
572.10	1.20	48.9	571.91	3.55	3.55	12.59	13.08	0.32	
580.90	1.10	42.5	580.71	3.67	3.67	12.71	13.23	0.55	
666.50	1.20	83.0	666.29	4.38	4.38	14.16	14.82	0.28	
676.00	1.50	75.6	675.79	4.43	4.43	14.38	15.04	1.09	
685.00	1.70	75.3	684.79	4.49	4.49	14.62	15.29	0.67	
694.10	1.80	79.8	693.88	4.55	4.55	14.89	15.57	0.56	
703.90	1.80	84.7	703.68	4.59	4.59	15.20	15.87	0.47	
723.00	1.60	94.6	722.77	4.60	4.60	15.76	16.42	0.56	
732.60	1.40	89.7	732.37	4.59	4.59	16.01	16.66	0.74	
741.70	1.40	89.7	741.46	4.59	4.59	16.23	16.87	0.00	
751.20	1.70	80.2	750.96	4.61	4.61	16.49	17.12	1.25	
760.70	1.70	83.3	760.46	4.65	4.65	16.77	17.40	0.30	
770.20	1.80	79.8	769.95	4.70	4.70	17.05	17.69	0.46	
779.80	2.30	76.3	779.55	4.77	4.77	17.39	18.03	1.61	

789.40	1.40	100.9	789.14	4.79	4.79	17.69	18.33	3.69
798.80	1.50	113.6	798.54	4.72	4.72	17.92	18.53	1.07
808.40	1.90	99.5	808.13	4.64	4.64	18.19	18.77	1.80
818.00	2.10	100.9	817.73	4.59	4.59	18.52	19.08	0.64
827.60	2.40	96.0	827.32	4.53	4.53	18.89	19.43	1.11
837.20	2.30	112.9	836.91	4.43	4.43	19.27	19.77	2.18
846.80	2.00	128.3	846.51	4.26	4.26	19.58	20.04	2.03
856.50	1.70	140.3	856.20	4.04	4.04	19.80	20.21	1.51
866.20	1.90	131.1	865.90	3.82	3.82	20.02	20.38	1.08
875.80	1.90	125.5	875.49	3.63	3.63	20.27	20.59	0.58
885.40	1.50	124.1	885.09	3.46	3.46	20.50	20.79	1.26
894.90	1.80	126.5	894.58	3.31	3.31	20.72	20.98	0.97
904.50	1.40	112.9	904.18	3.17	3.17	20.95	21.19	1.72
914.10	1.80	110.1	913.78	3.07	3.07	21.20	21.42	1.27
923.80	1.80	95.3	923.47	3.01	3.01	21.50	21.71	1.43
933.00	1.60	101.6	932.67	2.97	2.97	21.77	21.97	0.89
942.20	1.50	92.5	941.86	2.94	2.94	22.01	22.21	0.87
951.70	1.80	98.8	951.36	2.91	2.91	22.28	22.47	1.11
961.40	1.60	98.1	961.05	2.87	2.87	22.57	22.75	0.62
971.00	2.00	101.6	970.65	2.81	2.81	22.86	23.04	1.30
980.50	2.40	104.4	980.14	2.73	2.73	23.22	23.38	1.31
989.50	2.80	100.9	989.13	2.64	2.64	23.62	23.77	1.43
998.90	3.30	100.2	998.52	2.55	2.55	24.11	24.24	1.60
1008.50	2.80	105.2	1008.11	2.44	2.44	24.61	24.73	1.77
1027.80	1.90	100.2	1027.39	2.26	2.26	25.38	25.48	1.43
1037.40	2.20	89.0	1036.98	2.23	2.23	25.72	25.82	1.56
1046.70	2.50	93.9	1046.28	2.22	2.22	26.10	26.19	1.16
1056.20	2.80	89.0	1055.77	2.21	2.21	26.54	26.63	1.19
1065.20	2.60	91.8	1064.76	2.21	2.21	26.96	27.05	0.80
1074.30	1.30	104.0	1073.85	2.18	2.18	27.27	27.36	4.47
1083.90	2.00	112.8	1083.45	2.09	2.09	27.53	27.61	2.32
1093.20	2.60	107.9	1092.74	1.96	1.96	27.88	27.95	2.04
1102.70	1.90	109.3	1102.23	1.84	1.84	28.23	28.29	2.22
1112.40	1.80	110.8	1111.93	1.74	1.74	28.53	28.58	0.34
1121.90	1.40	90.4	1121.42	1.68	1.68	28.78	28.83	2.18
1131.50	1.40	96.0	1131.02	1.67	1.67	29.02	29.06	0.43
1141.10	1.70	89.7	1140.62	1.66	1.66	29.28	29.32	1.08
1150.70	1.90	90.4	1150.21	1.66	1.66	29.58	29.62	0.63
1159.70	2.30	101.6	1159.21	1.62	1.62	29.90	29.95	1.90
1169.30	2.60	100.9	1168.80	1.54	1.54	30.31	30.34	0.94
1178.80	2.90	97.4	1178.29	1.47	1.47	30.76	30.79	1.09
1188.40	2.50	103.0	1187.88	1.39	1.39	31.20	31.23	1.50

1197.90	1.80	108.6	1197.37	1.30	1.30	31.54	31.57	2.31	
1207.50	1.80	108.6	1206.96	1.20	1.20	31.83	31.85	0.00	
1217.00	1.70	105.8	1216.46	1.11	1.11	32.11	32.13	0.42	
1226.00	2.30	107.2	1225.45	1.02	1.02	32.41	32.42	2.01	
1235.60	3.00	109.3	1235.04	0.88	0.88	32.83	32.84	2.21	
1244.80	2.50	113.6	1244.23	0.72	0.72	33.24	33.25	1.76	
1254.40	1.30	110.1	1253.83	0.60	0.60	33.53	33.54	3.77	
1264.00	1.10	100.2	1263.43	0.55	0.55	33.73	33.73	0.90	
1273.50	1.00	105.1	1272.92	0.51	0.51	33.90	33.90	0.42	
1282.70	0.80	61.9	1282.12	0.52	0.52	34.03	34.03	2.24	
1292.20	1.10	86.1	1291.62	0.56	0.56	34.18	34.18	1.56	
1301.60	1.50	80.5	1301.02	0.58	0.58	34.39	34.40	1.34	
1311.20	1.80	74.9	1310.62	0.64	0.64	34.66	34.67	1.06	
1320.70	1.90	68.6	1320.11	0.74	0.74	34.95	34.96	0.72	
1330.00	4.30	57.2	1329.40	0.99	0.99	35.39	35.40	7.96	
1339.60	5.50	55.2	1338.96	1.44	1.44	36.07	36.10	3.79	
1349.20	6.60	55.9	1348.51	2.01	2.01	36.90	36.96	3.45	
1358.80	7.10	58.0	1358.04	2.64	2.64	37.86	37.96	1.75	
1368.30	7.60	61.5	1367.46	3.25	3.25	38.91	39.05	2.12	
1377.90	7.40	67.9	1376.98	3.79	3.79	40.04	40.22	2.68	
1387.50	6.80	70.7	1386.51	4.21	4.21	41.15	41.37	2.16	
1400.00	6.00	75.2	1398.93	4.62	4.62	42.48	42.73	2.26	Extrapoluation

SURVEY PLAN

OVERSIZED

DOCUMENT

FILMED

ON

35mm

RESISTIVITY/ CONDUCTIVITY

1886 N.E.P. COPY

COMPANY: NORTHROCK RESOURCES LTD.

WELL: NORTHROCK ET AL FALL STONE F-01

FIELD: UNDEFINED

PROVINCE: NWT

Schlumberger **PHASOR INDUCTION SFL**

F-01-64-50-125-45	Elev.:	K.B.	203.8 m
LMI:300F0164501254S0		G.L.	198.6 m
		D.F.	

Permanent Datum:	GROUND LEVEL	Elev.:	198.6 m
Log Measured From:	KB	5.2 m	above Perm. Datum
Drilling Measured From:	KB		

API Serial No.	SECTION	TOWNSHIP	RANGE
300F0164501254S0			

	Run 1	Run 2	Run 3	Run 4
Logging Date	8-FEB-2000			
Run Number	1			
Depth Driller	1400 m			
Schlumberger Depth	1391 m			
Bottom Log Interval	1391 m			
Top Log Interval	342 m			
Casing Driller Size @ Depth	244.500 mm @ 342 m	@		@
Casing Schlumberger	342 m			
Bit Size	222.000 mm			
Type Fluid in Hole	GEL CHEM			
Density / Viscosity	1150 kg/m3 / 77 s			
Fluid Loss / PH	6.5 cm3 / 9.5			
Source Of Sample	RIG			
RM @ Measured Temperature	2.360 ohm.m @ 22 degC	@		@
RMF @ Measured Temperature	2.260 ohm.m @ 19 degC	@		@
RMC @ Measured Temperature	2.540 ohm.m @ 14 degC	@		@
Source: RMF / RMC	RIG / RIG			
RM @ MRT / RMF @ MRT	1.643 @ 41 / 1.465 @ 41	@ / @	@ / @	@ / @
Maximum Recorded Temperatures	41 degC			
Circulation Stopped	Time 8-FEB-2000	4:00		
Logger On Bottom	Time 8-FEB-2000	16:30		
Unit Number / Location	8416 / 6664			
Recorded By	SEAN MCCONKEY			
Witnessed By	DAVE ROBERTS			

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth	@			@
Casing Schlumberger				
Bit Size				
Type Fluid in Hole				
Density / Viscosity				
Fluid Loss / PH				
Source Of Sample				
RM @ Measured Temperature	@			@
RMF @ Measured Temperature	@			@
RMC @ Measured Temperature	@			@
Source: RMF / RMC				
RM @ MRT / RMF @ MRT	@ / @	@ / @	@ / @	@ / @
Maximum Recorded Temperatures				
Circulation Stopped	Time			
Logger On Bottom	Time			
Unit Number / Location				
Recorded By				
Witnessed By				

ALL 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, AND 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 ITS OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE SUBJECT TO OUR GENERAL TERMS AND CONDITIONS SET FORTH IN OUR PRICE SCHEDULE.

OTHER SERVICES1	
CS5	BHCS
CS6	DIL
CS7	LDT
CS8	CNL
CS9	
CS10	
REMARKS - RUN NUMBER 1	
PRESSURE - SURFACE EQUIPMENT	
NO ECENTRALIZER IN CONDUCTOR	
NO ECENTRALIZER IN PRODUCTION CASING	
STRETCH HAS BEEN ADDED TO CALIPER CORRECTION	
RE-LOGGED PROD TO	
RE-LOGGED PROD TO TOOL STOPPED TO TOOL AT 1200 PROD EXIT	
BOTTOM STICKY - TO SWITCH TO DIFFERENTIAL BAR TABLE	
TOOL TO STAY IN SUPERVISOR AND MULTIPLE DECENTS	
TOOL TO STAY IN SUPERVISOR AND MULTIPLE DECENTS	
TOOL TO STAY IN SUPERVISOR AND MULTIPLE DECENTS	

OTHER SERVICES2	
CS5	
CS6	
CS7	
CS8	
CS9	
CS10	
REMARKS - RUN NUMBER 2	

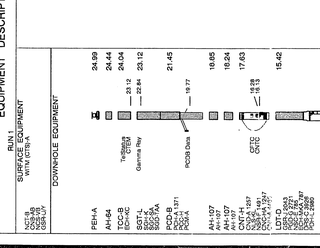
	RUN 1			RUN 2		
SERVICE & PROGRAM VERSION	6CCD-413			SERVICE & PROGRAM VERSION	6CCD-413	
LOGGING INTERVAL	START	STOP		LOGGING INTERVAL	START	STOP

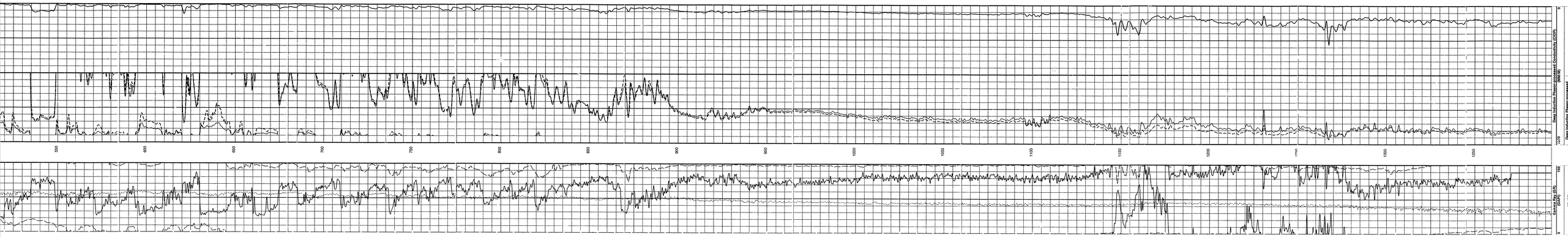
EQUIPMENT DESCRIPTION

RUN 1 — SURFACE EQUIPMENT WITH CPM/TA

NCS-B, NCS-A, NCS-C, SBUX

DOWNHOLE EQUIPMENT


FSH-A
AH-64
TCC-B
CCL-C
SGTL
SGCS
SGCS-A
SGDS-A
PCS-A
PCS-A
PCS-A
PCS-A
AH-107
AH-107
AH-107
AH-107
CNTC-A
CNTC-A
SGDS-A 1491
SGDS-A 1357
CNTC-A
SGDS-A 1357
SGDS-A 1491
SGDS-A 1357
SGDS-A 1357
SGDS-A 1357


Deep Induction Phasor-processed Conductivity (CIDP)
0
1000
Deep Induction Phasor-processed Resistivity (RIDP)
2
200
Gamma Ray (GR)
0
100
(API)
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350

MAIN PASS

Tension (TENS) 20000 (lb) 0 | SFL Averaged (SFLA) 0 (OHMM) 50

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BHT	Bottom Hole Temperature (used in calculations)	40	DEGC
DFD	Drilling Fluid Density	1150.00	K/M3
DGFF	Deep 60 MHz Gain Factor	1.00000	
DPR1	Deep 20 MHz Phase Shift	0	M
DPR2	Deep 30 MHz Phase Shift	-0.06619043	DEG
DRE2	Deep Read 20 MHz Smode Error Correction	13.8483	MM/M
DSR2	Deep Signal Reference (20 MHz)	7843	MM/M
DSRE	Deep Signal Reference Smode Correction	77.7969	MM/M
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GTSE	Generated Temperature Selection	LINEAR_SSTIMATE	
IFFR	DIT-E Induction Frequency Selector	32	
IPHA	DIT-E Phasor Processing Mode	PHASOR	
IPRO	DIT-E Induction Processing Selector	PHASOR	
ITEN	DIT-E Temperature Enable	ENABLE	
MFFR	Medium 60 MHz Frequency Selector	32	
MPR2	Medium 20 MHz Phase Shift	-0.0591118	DEG
MRE2	Medium Read 20 MHz Smode Error Correction	18.2331	MM/M
MSR2	Medium Signal Reference (20 MHz)	7843	MM/M
MSRE	Medium Quad 20 MHz Smode Error Correction	31.3591	MM/M
SFCR	SFL Channel Ratio	1000	
SHT	Surface Hole Temperature	0	DEGC
SPWV	SP Heat Value	0	MV
TDD	Total Depth Drilled	1505	M

Format: DITE_600_LINPHAS Vertical Scale: 1:600 Graphics File Created: 08-Feb-2000 16:42

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	SRPCWX-1214	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

Output DLIS Files

DEFAULT	DITE .016	FN:17 PRODUCER	08-Feb-2000 16:42	

Output DLIS Files

DEFAULT	DITE .016	FN:17 PRODUCER	08-Feb-2000 16:42	1393.2 M 312.1 M

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	SRPCWX-1214	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

MAIN PASS

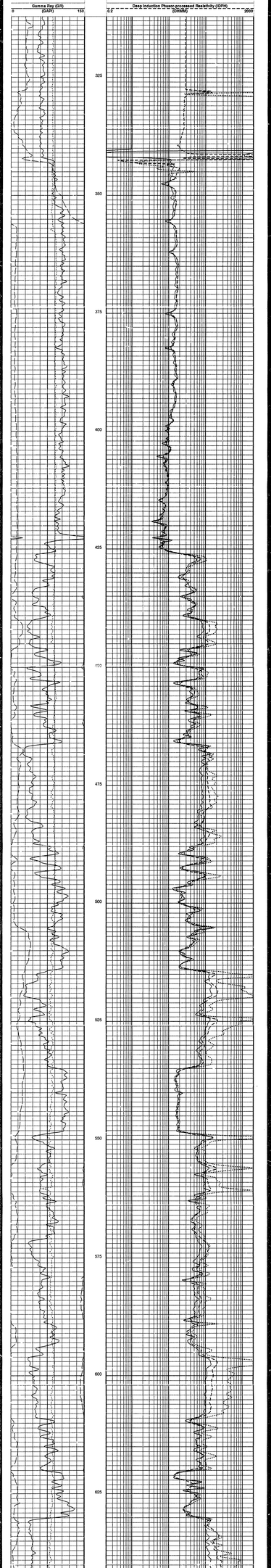
PIP SUMMARY

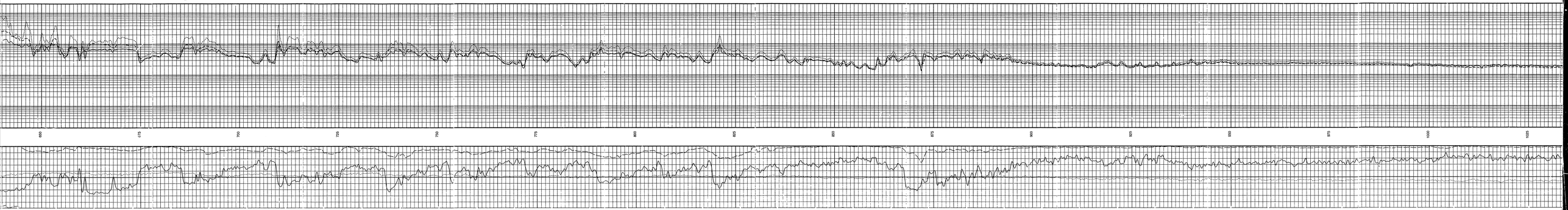
Time Mark Every 60 S

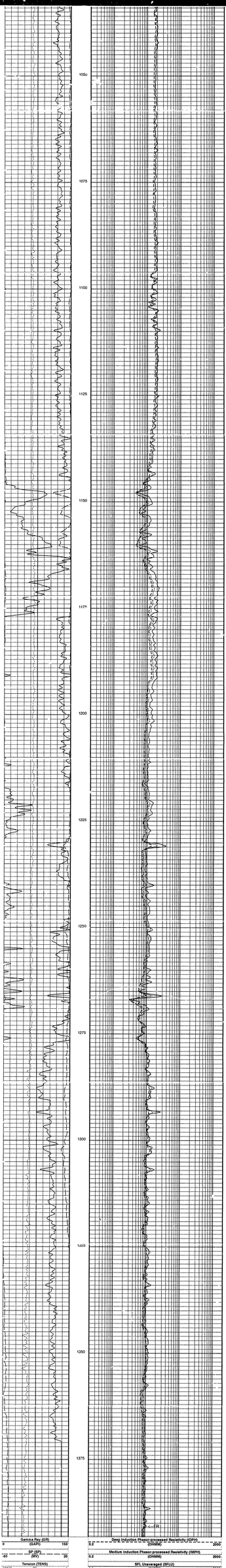
Tension (TENS) 20000 (lb) 0 | SFL Unaveraged (SFLU) 0.2 (OHMM) 2000

SP (SP) -80 (MV) 20 | Medium Induction Phasor-processed Resistivity (IMPH) 0.2 (OHMM) 2000

Gamma Ray (GR) 0 (GAPI) 150 | Deep Induction Phasor-processed Resistivity (IDPH) 0.2 (OHMM) 2000




650
675
700
725
750
775
800
825
850
875
900
925
950
975
1000
1025



Parameters

DLIS Name	Description	Value	
BHT	Bottom Hole Temperature (used in calculations)	95	DEGC
DFD	Drilling Fluid Density	1150.00	K/M3
DGAIN	Deep Gain Gain Factor	1.00000	
DGAIN2	Deep Gain Gain Factor	1.00000	M
DPH2	Deep 20 kHz Phase Shift	-0.0811000	DEG
DRE2	Deep Real 20 kHz Sonde Error Correction	13.6483	MM/M
DSIG2	Deep Sigma Reference (20 kHz)	1.2000	MM/M
DXE2	Deep Quad 20 kHz Sonde Error Correction	77.7062	MM/M
GDEV	Average Angular Deviation of Borehole from Normal	2	DEG
GTEMP	Gamma Temperature	0.018227	DCM
GTRG	Gamma Temperature Selection	LINEAR_ESTIMATE	
IFRE	DIT-E Inductive Frequency Selector	20	KZ
IPHA	DIT-E Phasor Processing Mode	ALL	
IPRO	DIT-E Inductive Processing Selector	PHASOR	
MGAIN	Medium Gain Gain Factor	1.00000	
MGAIN2	Medium 20 kHz Gain Factor	1.01491	
MPH2	Medium 20 kHz Phase Shift	-0.938118	DEG
MRE2	Medium Real 20 kHz Sonde Error Correction	16.2231	MM/M
MSIG2	Medium Sigma Reference (20 kHz)	1.2000	MM/M
MXE2	Medium Quad 20 kHz Sonde Error Correction	31.2081	MM/M
SFCR	SFL Channel Ratio	1000	
SHT	Surface Hole Temperature	5	DEGC
TCMV	Tool Cal Mv	1.00	MV
TD	Total Depth	1600	M

TD	Total Depth	1400	ft
Format: DITE_240_LOGPHASB	Vertical Scale: 1:240	Graphics File Created: 08-Feb-2000 18:42	

OP System Version: 9C0-413
MCM

DIT-E	9C0-413		LDT-D	9C0-413	
CNT-H	SRPCWX-1214		PCD-B	9C0-413	
SGT-L	9C0-413		TCC-B	9C0-413	

Output DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 18:42		

Input DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 18:42	1393.2 M	312.1 M
DEFAULT	DITE .015	FN:16 PRODUCER	08-Feb-2000 16:16	1397.4 M	1216.3 M

Output DLIS Files

DEFAULT	DITE .020	FN:19 PRODUCER	08-Feb-2000 20:13	1393.4 M	1118.2 M

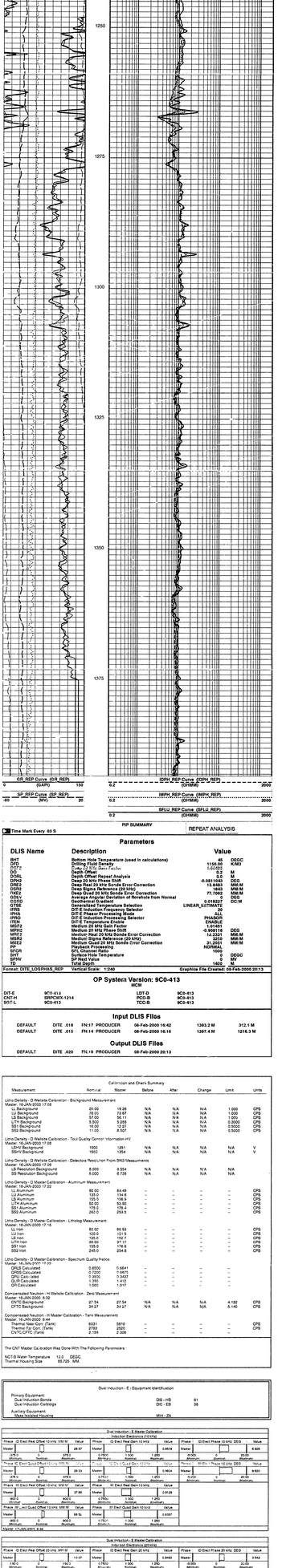
OP System Version: 9C0-413
MCM

DIT-E	9C0-413		LDT-D	9C0-413	
CNT-H	SRPCWX-1214		PCD-B	9C0-413	
SGT-L	9C0-413		TCC-B	9C0-413	

PIP SUMMARY

REPEAT ANALYSIS

Time Mark Every 60 S



PIP SUMMARY

REPEAT ANALYSIS

Parameters

DLIS Name	Description	Value
BIT	Bottom Hole Temperature (used in calculations)	46 DEGC
DFD	Drilling Fluid Density	1155.00 K/M3
DFV	Drilling Fluid Viscosity	1.00 S
DC	Depth Offset	0.0 M
DCRL	Depth Offset Repeat Analysis	0.0 M
DRHO	Deep 20 MHz Phase Shift	-0.081103 DEG
DRES	Deep Medium 20 MHz Sonde Error Correction	13.6844 MM/M
DRES2	Deep Medium Sigma Reference (20 MHz)	1.9843 MM/M
DRES2	Deep Quad 20 MHz Sonde Error Correction	77.7942 MM/M
GDEV	Average Angular Deviation of Borehole from Normal	DEG
GDEV2	Average Azimuth	0.018227 DEGM
GTBE	Generalized Temperature Selection	LINEAR_ESTIMATE
IFRS	DIT-E Induction Frequency Selector	20
IFRQ	DIT-E Induction Operating Mode	2
IPAD	DIT-E Induction Processing Selector	PHASOR
ITEN	DIT-E Temperature Enable	ENABLE
MEF2	Medium 20 MHz Gain Factor	1.01451
MPHO	Medium 20 MHz Phase Shift	-0.080118 DEG
MRES	Medium Medium 20 MHz Sonde Error Correction	14.2031 MM/M
MRES2	Medium Sigma Reference (20 MHz)	2.0220 MM/M
MXE2	Medium Quad 20 MHz Sonde Error Correction	31.2051 MM/M
NORM	Normalization	NORMALIZE
SFCR	SFL Channel Ratio	1000
SHT	Surface Hole Temperature	0 DEGC
SPNV	SP Next Value	0 MV
TD	Total Depth	1400 M

Format: DITE_LOGPHASB	Vertical Scale: 1:240	Graphics File Created: 08-Feb-2000 20:13	

OP System Version: 9C0-413
MCM

DIT-E	9C0-413		LDT-D	9C0-413	
CNT-H	SRPCWX-1214		PCD-B	9C0-413	
SGT-L	9C0-413		TCC-B	9C0-413	

Input DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 16:42	1393.2 M	312.1 M
DEFAULT	DITE .015	FN:16 PRODUCER	08-Feb-2000 16:16	1397.4 M	1216.3 M

Output DLIS Files

DEFAULT	DITE .020	FN:19 PRODUCER	08-Feb-2000 20:13		

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Litho Density - D Matrix Calibration - Background Measurement Master: 16-JAN-2000 17:08							
LL Background	20.00	19.28	N/A	N/A	N/A	1.000	CPS
LU Background	76.00	72.67	N/A	N/A	N/A	1.000	CPS
LS Background	57.00	56.11	N/A	N/A	N/A	1.000	CPS
LTH Background	5.800	3.269	N/A	N/A	N/A	0.3000	CPS
LTL Background	3.000	2.000	N/A	N/A	N/A	0.5000	CPS
SSS Background	11.00	8.527	N/A	N/A	N/A	0.5000	CPS
Litho Density - D Matrix Calibration - Tool Quality Control Information HV Master: 16-JAN-2000 17:08							
LSHV Background	1500	1351	N/A	N/A	N/A	N/A	V
SSHV Background	1500	1254	N/A	N/A	N/A	N/A	V
Litho Density - D Matrix Calibration - Detectors Resolution SKG Measurements Master: 16-JAN-2000 17:08							
LS Resolution Background	8.000	8.554	N/A	N/A	N/A	N/A	
SS Resolution Background	8.000	8.728	N/A	N/A	N/A	N/A	
Litho Density - D Master Calibration - Aluminum Measurement Master: 16-JAN-2000 17:22							
LL Aluminum	89.00	89.49	–	–	–	–	CPS
LU Aluminum	155.0	154.9	–	–	–	–	CPS
LS Aluminum	105.0	106.6	–	–	–	–	CPS
LTH Aluminum	50.00	53.30	–	–	–	–	CPS
SSI Aluminum	179.0	178.4	–	–	–	–	CPS
SSU Aluminum	260.0	259.5	–	–	–	–	CPS
Litho Density - D Matrix Calibration - Lithology Measurement Master: 16-JAN-2000 17:15							
LL Iron	80.00	86.93	–	–	–	–	CPS
LU Iron	120.0	121.5	–	–	–	–	CPS
LS Iron	100.0	97.17	–	–	–	–	CPS
LTH Iron	30.00	37.1	–	–	–	–	CPS
SSI Iron	155.0	178.6	–	–	–	–	CPS
SSU Iron	245.0	254.5	–	–	–	–	CPS
Litho Density - D Master Calibration - Spectrum Quality Factors Master: 16-JAN-2000 17:22							
GRLS Calculated	0.6500	0.6641	–	–	–	–	
GRLU Calculated	0.7000	0.7000	–	–	–	–	
GPU Calculated	0.3600	0.3487	–	–	–	–	
GLR Calculated	1.350	1.412	–	–	–	–	
GR Calculated	1.000	1.077	–	–	–	–	
Compensated Neutron - N Matrix Calibration - Zero Measurement Master: 16-JAN-2000 8:32							
CNTC Background	27.54	27.54	N/A	N/A	N/A	4.132	CPS
CFTC Background	34.27	34.27	N/A	N/A	N/A	5.140	CPS
Compensated Neutron - N Master Calibration - Tank Measurement Master: 16-JAN-2000 8:44							
Thermal Near Corr (Tank)	6031	5816	–	–	–	–	CPS
Thermal Near Corr (Tank)	2.000	2.000	–	–	–	–	CPS
CNTC/CFTC (Tank)	2.109	2.208	–	–	–	–	

The CNT Master Calibration Was Done With The Following Parameters :

NCT.B Water Temperature 12.0 DEGC
Thermal Housing Size 85/125 MM

Dual Induction - E : Equipment Identification

Primary Equipment:		
Dual Induction Sonde	DIS - HB	61
Dual Induction Cartridge	DIC - EB	36
Auxiliary Equipment:		
Mass Isolated Housing	MIH - ZA	

Dual Induction - E Master Calibration
Induction Electronics (20 kHz)

Phase	ID Direct Real Offset 10 kHz	Value	Phase	ID Direct Real Gain 10 kHz	Value	Phase	ID Direct Phase 10 kHz	DEG	Value
Master	28.67		Master	0.9576		Master	0.000		0.925
Minimum	25.0	32.0	Minimum	0.7500	1.250	Minimum	-2.000	2.000	
Nominal	29.0		Nominal	1.000		Nominal	0.000		
Maximum	33.0	26.0	Maximum	1.250	0.7500	Maximum	2.000	-2.000	
Phase ID Real Quad Offset 10 kHz	MM/M	Value	Phase	ID Real Quad Gain 10 kHz	Value	Phase	ID Real Phase 10 kHz	DEG	Value
Master	29.53		Master	0.9634		Master	0.000		9.931
Minimum	25.0	32.0	Minimum	0.7500	1.250	Minimum	-2.000	2.000	
Nominal	29.0		Nominal	1.000		Nominal	0.000		
Maximum	33.0	26.0	Maximum	1.250	0.7500	Maximum	2.000	-2.000	
Phase IH Direct Real Offset 10 kHz	MM/M	Value	Phase	IH Direct Real Gain 10 kHz	Value	Phase	IH Direct Phase 10 kHz	DEG	Value
Master	27.88		Master	0.9129					
Minimum	25.0	32.0	Minimum	0.7500	1.250				
Nominal	29.0		Nominal	1.000					
Maximum	33.0	26.0	Maximum	1.250	0.7500				
Phase IH Real Quad Offset 10 kHz	MM/M	Value	Phase	IH Real Quad Gain 10 kHz	Value				
Master	28.14		Master	0.9397					
Minimum	25.0	32.0	Minimum	0.7500	1.250				
Nominal	29.0		Nominal	1.000					
Maximum	33.0	26.0	Maximum	1.250	0.7500				

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration
Induction Electronics (40 kHz)

Phase	ID Direct Real Offset 20 kHz	MM/M	Value	Phase	ID Direct Real Gain 20 kHz	Value	Phase	ID Direct Phase 20 kHz	DEG	Value
Master	10.0		10.07	Master	0.9495		Master	0.000		3.542
Minimum	8.000	12.0		Minimum	0.7500	1.250	Minimum	-2.000	2.000	
Nominal	10.0			Nominal	1.000		Nominal	0.000		
Maximum	12.0	8.000		Maximum	1.250	0.7500	Maximum	2.000	-2.000	
Phase ID Direct Quad Offset 20 kHz	MM/M	Value	Phase	ID Direct Quad Gain 20 kHz	Value	Phase	ID Direct Phase 20 kHz	DEG	Value
Master	10.43		Master	0.9492		Master	0.000		6.797
Minimum	8.000	12.0	Minimum	0.7500	1.250	Minimum	-2.000	2.000	
Nominal	10.0		Nominal	1.000		Nominal	0.000		
Maximum	12.0	8.000	Maximum	1.250	0.7500	Maximum	2.000	-2.000	
Phase IH Direct Real Offset 20 kHz	MM/M	Value	Phase	IH Direct Real Gain 20 kHz	Value				
Master	9.383		Master	0.9118					
Minimum	8.000	12.0	Minimum	0.7500	1.250				
Nominal	10.0		Nominal	1.000					
Maximum	12.0	8.000	Maximum	1.250	0.7500				
Phase IH Direct Quad Offset 20 kHz	MM/M	Value	Phase	IH Direct Quad Gain 20 kHz	Value				
Master	9.883		Master	0.9397					
Minimum	8.000	12.0	Minimum	0.7500	1.250				
Nominal	10.0		Nominal	1.000					
Maximum	12.0	8.000	Maximum	1.250	0.7500				

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration
Induction Electronics (40 kHz)

Phase	ID Direct Real Offset 40 kHz	MM/M	Value	Phase	ID Direct Real Gain 40 kHz	Value	Phase	ID Direct Phase 40 kHz	DEG	Value
Master	6.383			Master	0.9118		Master	0.000		14.88
Minimum	5.000	8.000		Minimum	0.7500	1.250	Minimum	-2.000	2.000	
Nominal	6.000			Nominal	1.000		Nominal	0.000		
Maximum	8.000	5.000		Maximum	1.250	0.7500	Maximum	2.000	-2.000	

Phase	ID Elect Quad Offset 40 kHz MM/M	Value	Phase	ID Elect Quad Gain 40 kHz	Value	Phase	IM Elect Phase 40 kHz DEG	Value
Master	(Minimum) -100.0 / (Nominal) 0 / (Maximum) 100.0	7.402	Master	(Minimum) 0.7500 / (Nominal) 1.000 / (Maximum) 1.250	0.9172	Master	(Minimum) -10.00 / (Nominal) 0 / (Maximum) 35.00	17.82
Phase	IM Elect Real Offset 40 kHz MM/M	Value	Phase	IM Elect Real Gain 40 kHz	Value			
Master	(Minimum) -200.0 / (Nominal) 0 / (Maximum) 200.0	9.820	Master	(Minimum) 0.7500 / (Nominal) 1.000 / (Maximum) 1.250	0.9417			
Phase	IM Elect Quad Offset 40 kHz MM/M	Value	Phase	IM Elect Quad Gain 40 kHz	Value			
Master	(Minimum) -200.0 / (Nominal) 0 / (Maximum) 200.0	23.18	Master	(Minimum) 0.7500 / (Nominal) 1.000 / (Maximum) 1.250	0.9549			

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration

SFL Electronics

Phase	SFL Voltage Offset MV	Value	Phase	SFL Voltage Gain	Value
Master	(Minimum) -16.00 / (Nominal) 0 / (Maximum) 16.00	1.126	Master	(Minimum) 0.7500 / (Nominal) 1.000 / (Maximum) 1.250	0.9842
Phase	SFL Current Offset MA	Value	Phase	SFL Current Gain	Value
Master	(Minimum) -0.7000 / (Nominal) 0 / (Maximum) 0.7000	0.04030	Master	(Minimum) 0.7500 / (Nominal) 1.000 / (Maximum) 1.250	0.9809

Master: 17-JAN-2000 9:48

Litho Density - D / Equipment Identification

Primary Equipment:		
Nuclear Services Cartridge	NSC - E	785
Powered Gamma Detector	PGD - G	2721
Gamma Source Radioactive	GSR - J	2043
Auxiliary Equipment:		
Density Resistivity Sonde	DRS - C	3920
Electronics Cartridge Housing	ECH - MKA	787
Powered Detector Housing	PDH - L	2980

Litho Density - D Wellsite Calibration

Background Measurement

Phase	LL Background CPS	Value	Phase	LU Background CPS	Value	Phase	LS Background CPS	Value
Master	(Minimum) 13.00 / (Nominal) 20.00 / (Maximum) 25.00	19.28	Master	(Minimum) 58.00 / (Nominal) 76.00 / (Maximum) 94.00	73.57	Master	(Minimum) 43.00 / (Nominal) 57.00 / (Maximum) 72.00	56.11
Phase	LITH Background CPS	Value	Phase	SS1 Background CPS	Value	Phase	SS2 Background CPS	Value
Master	(Minimum) 4.000 / (Nominal) 5.500 / (Maximum) 7.000	5.288	Master	(Minimum) 12.00 / (Nominal) 16.00 / (Maximum) 19.50	12.27	Master	(Minimum) 8.000 / (Nominal) 11.00 / (Maximum) 13.50	8.507

Master: 16-JAN-2000 17:08

Litho Density - D Wellsite Calibration

Detectors Resolution From BKG Measurments

Phase	LS Resolution Background	Value	Phase	SS Resolution Background	Value
Master	(Minimum) 5.000 / (Nominal) 8.000 / (Maximum) 11.50	8.554	Master	(Minimum) 5.000 / (Nominal) 8.000 / (Maximum) 11.50	8.738

Master: 16-JAN-2000 17:08

Litho Density - D Master Calibration

Aluminum Measurement

Phase	LL Aluminum CPS	Value	Phase	LU Aluminum CPS	Value	Phase	LS Aluminum CPS	Value
Master	(Minimum) 70.00 / (Nominal) 90.00 / (Maximum) 125.0	89.49	Master	(Minimum) 100.0 / (Nominal) 135.0 / (Maximum) 194.0	134.8	Master	(Minimum) 120.0 / (Nominal) 155.0 / (Maximum) 217.0	156.9
Phase	LITH Aluminum CPS	Value	Phase	SS1 Aluminum CPS	Value	Phase	SS2 Aluminum CPS	Value
Master	(Minimum) 35.00 / (Nominal) 50.00 / (Maximum) 74.00	53.92	Master	(Minimum) 125.0 / (Nominal) 175.0 / (Maximum) 256.0	178.4	Master	(Minimum) 210.0 / (Nominal) 260.0 / (Maximum) 353.0	259.5

Master: 16-JAN-2000 17:22

Litho Density - D Master Calibration

Litholog Measurement

Phase	LL Iron CPS	Value	Phase	LU Iron CPS	Value	Phase	LS Iron CPS	Value
Master	(Minimum) 60.00 / (Nominal) 80.00 / (Maximum) 114.0	86.93	Master	(Minimum) 85.00 / (Nominal) 120.0 / (Maximum) 177.0	131.5	Master	(Minimum) 100.0 / (Nominal) 135.0 / (Maximum) 193.0	152.7
Phase	LITH Iron CPS	Value	Phase	SS1 Iron CPS	Value	Phase	SS2 Iron CPS	Value
Master	(Minimum) 15.00 / (Nominal) 30.00 / (Maximum) 51.00	37.17	Master	(Minimum) 105.0 / (Nominal) 155.0 / (Maximum) 234.0	176.6	Master	(Minimum) 190.0 / (Nominal) 245.0 / (Maximum) 325.0	254.8

Master: 16-JAN-2000 17:18

Litho Density - D Master Calibration

Spectrum Quality Ratios

Phase	QRLS Calculated	Value	Phase	QRSS Calculated	Value	Phase	QRLI Calculated	Value
Master	(Minimum) 0.6000 / (Nominal) 0.6500 / (Maximum) 0.7000	0.6641	Master	(Minimum) 0.6200 / (Nominal) 0.7200 / (Maximum) 0.8200	0.6875	Master	(Minimum) 0.2900 / (Nominal) 0.3900 / (Maximum) 0.4500	0.3437
Phase	QLIR Calculated	Value	Phase	QR Calculated	Value			
Master	(Minimum) 1.290 / (Nominal) 1.390 / (Maximum) 1.450	1.412	Master	(Minimum) 0.9800 / (Nominal) 1.000 / (Maximum) 1.020	1.017			

Master: 16-JAN-2000 17:22

Compensated Neutron - H / Equipment Identification

Primary Equipment:		
Compensated Neutron Cartridge	CNC - HA	1247
Neutron Logging Source	NLS - KL	
Neutron Source Radioactive	NSR - F	1491
Neutron Detector with Alpha Source	CND - A	1257
Compensated Neutron Box	CNB - AB	
Auxiliary Equipment:		
Compensated Neutron Housing	CNH - A	4465
Neutron Calibration Tank	NCT - B	

Compensated Neutron - H Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master	(Minimum) 5.000 / (Nominal) 27.54 / (Maximum) 40.00	27.54	Master	(Minimum) 5.000 / (Nominal) 34.27 / (Maximum) 40.00	34.27

Master: 16-JAN-2000 8:32

Compensated Neutron - H Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master	(Minimum) 5000 / (Nominal) 6031 / (Maximum) 7200	5816	Master	(Minimum) 2075 / (Nominal) 2793 / (Maximum) 3125	2520	Master	(Minimum) 2.120 / (Nominal) 2.159 / (Maximum) 2.540	2.308

Master: 16-JAN-2000 8:44

COMPANY:	NORTHROCK RESOURCES LTD.	BOTTOM LOG INTERVAL	1391 m
		SCHLUMBERGER DEPTH	1394 m
WELL:	NORTHROCK ET AL FALL STONE F-01	DEPTH DRILLER	1400 m
FIELD:	UNDEFINED	KELLY BUSHING	203.8 m
PROVINCE:	NWT	DRILL FLOOR	
		GROUND LEVEL	198.6 m

Schlumberger

PHASOR INDUCTION SFL

SONIC

1886 WEB COPY

COMPANY: NORTHROCK RESOURCES LTD.

WELL: NORTHROCK ET AL FALL STONE F-01

FIELD: UNDEFINED

PROVINCE: NWT

Schlumberger

BOREHOLE COMPENSATED SONIC LOG

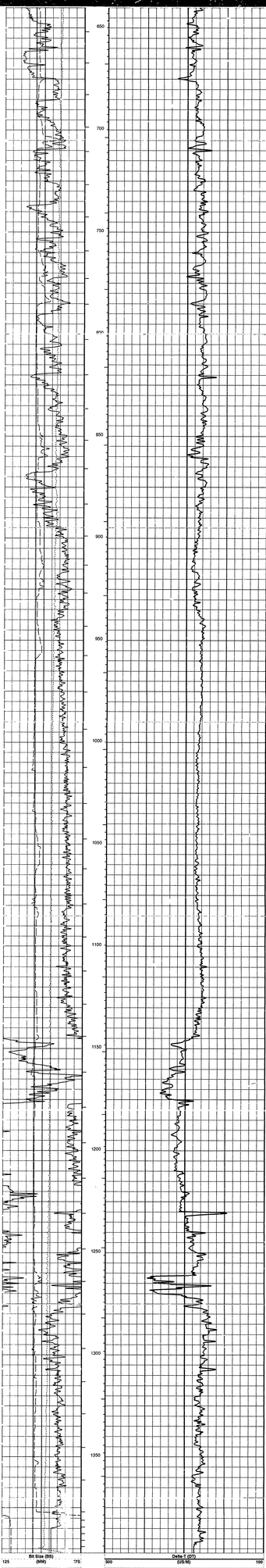
Permanent Datum:	GROUND ELEV.	Elev.: K.B.	853.8 m
Log Measured From:	KB	D.F.	188.6 m
Drilling Measured From:	KB	Elev.: G.L.	835.4 m

All Depths Are Measured From Above Perm. Datum

API Serial No. (50-133-20349-00-00)					
Logging Date	4-FEB-2000				
Run Number	1				
Depth Order	1800 m				
Bottom Logged Depth	1800 m				
Bottom Log Interval	1800 m				
Top Log Interval	342 m				
Casing Driller's Depth	342 m	12	342 m		12
Casing Schlumberger	342 m				
Bit Size	222.250 mm				
Type Fluid in Hole	CLEAR WATER				
Density	1.04 kg/m3	17.4 °C			
Fluid Loss	0.5 cm3	0.5			
Source of Sample	PIT				
RM at Measured Temperature	0.860 ohm m	22	22 degC		
RMF at Measured Temperature	0.290 ohm m	18	18 degC		
RMC at Measured Temperature	0.860 ohm m	22	22 degC		
Source: RMF / RMC	MEAS / MEAS				
RM at MRT	RMF at MRT	20	20		
Maximum Recorded Temperature	22 degC				
Equipment Shipped Time	4-FEB-2000	4:00			
Logger On Bottom	4-FEB-2000	11:30			
Unit Number	5705	Location			
Witnessed By	KEVIN MCCONACHY				
Witnessed By	DAVE ROBERTS				

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Order				
Bottom Logged Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller's Depth				
Casing Schlumberger				
Bit Size				
Type Fluid in Hole				
Density / Viscosity				
Fluid Loss / pH				
Source of Sample				
RM at Measured Temperature				
RMF at Measured Temperature				
RMC at Measured Temperature				
Source: RMF / RMC				
RM at MRT / RMF at MRT				
Maximum Recorded Temperature				
Equipment Shipped Time				
Logger On Bottom				
Unit Number / Location				
Witnessed By				
Witnessed By				

TOOL TYPE (TYPE)	SERIAL NO.	TOOL LOCATION (LOCATION)	HOURS	RUN NO.	TIME
SONIC SONDE A	2				
SONIC SONDE B	2				
SONIC SONDE C	2				
SONIC SONDE D	2				
SONIC SONDE E	2				
SONIC SONDE F	2				
SONIC SONDE G	2				
SONIC SONDE H	2				
SONIC SONDE I	2				
SONIC SONDE J	2				
SONIC SONDE K	2				
SONIC SONDE L	2				
SONIC SONDE M	2				
SONIC SONDE N	2				
SONIC SONDE O	2				
SONIC SONDE P	2				
SONIC SONDE Q	2				
SONIC SONDE R	2				
SONIC SONDE S	2				
SONIC SONDE T	2				
SONIC SONDE U	2				
SONIC SONDE V	2				
SONIC SONDE W	2				
SONIC SONDE X	2				
SONIC SONDE Y	2				
SONIC SONDE Z	2				
SONIC SONDE AA	2				
SONIC SONDE AB	2				
SONIC SONDE AC	2				
SONIC SONDE AD	2				
SONIC SONDE AE	2				
SONIC SONDE AF	2				
SONIC SONDE AG	2				
SONIC SONDE AH	2				
SONIC SONDE AI	2				
SONIC SONDE AJ	2				
SONIC SONDE AK	2				
SONIC SONDE AL	2				
SONIC SONDE AM	2				
SONIC SONDE AN	2				
SONIC SONDE AO	2				
SONIC SONDE AP	2				
SONIC SONDE AQ	2				
SONIC SONDE AR	2				
SONIC SONDE AS	2				
SONIC SONDE AT	2				
SONIC SONDE AU	2				
SONIC SONDE AV	2				
SONIC SONDE AW	2				
SONIC SONDE AX	2				
SONIC SONDE AY	2				
SONIC SONDE AZ	2				
SONIC SONDE BA	2				
SONIC SONDE BB	2				
SONIC SONDE BC	2				
SONIC SONDE BD	2				
SONIC SONDE BE	2				
SONIC SONDE BF	2				
SONIC SONDE BG	2				
SONIC SONDE BH	2				
SONIC SONDE BI	2				
SONIC SONDE BJ	2				
SONIC SONDE BK	2				
SONIC SONDE BL	2				
SONIC SONDE BM	2				
SONIC SONDE BN	2				
SONIC SONDE BO	2				
SONIC SONDE BP	2				
SONIC SONDE BQ	2				
SONIC SONDE BR	2				
SONIC SONDE BS	2				
SONIC SONDE BT	2				
SONIC SONDE BU	2				
SONIC SONDE BV	2				
SONIC SONDE BW	2				
SONIC SONDE BX	2				
SONIC SONDE BY	2				
SONIC SONDE BZ	2				
SONIC SONDE CA	2				
SONIC SONDE CB	2				
SONIC SONDE CC	2				
SONIC SONDE CD	2				
SONIC SONDE CE	2				
SONIC SONDE CF	2				
SONIC SONDE CG	2				
SONIC SONDE CH	2				
SONIC SONDE CI	2				
SONIC SONDE CJ	2				
SONIC SONDE CK	2				
SONIC SONDE CL	2				
SONIC SONDE CM	2				
SONIC SONDE CN	2				
SONIC SONDE CO	2				
SONIC SONDE CP	2				
SONIC SONDE CQ	2				
SONIC SONDE CR	2				
SONIC SONDE CS	2				
SONIC SONDE CT	2				
SONIC SONDE CU	2				
SONIC SONDE CV	2				
SONIC SONDE CW	2				
SONIC SONDE CX	2				
SONIC SONDE CY	2				
SONIC SONDE CZ	2				
SONIC SONDE DA	2				
SONIC SONDE DB	2				
SONIC SONDE DC	2				
SONIC SONDE DD	2				
SONIC SONDE DE	2				
SONIC SONDE DF	2				
SONIC SONDE DG	2				
SONIC SONDE DH	2				
SONIC SONDE DI	2				
SONIC SONDE DJ	2				
SONIC SONDE DK	2				
SONIC SONDE DL	2				
SONIC SONDE DM	2				
SONIC SONDE DN	2				
SONIC SONDE DO	2				
SONIC SONDE DP	2				
SONIC SONDE DQ	2				
SONIC SONDE DR	2				
SONIC SONDE DS	2				
SONIC SONDE DT	2				
SONIC SONDE DU	2				
SONIC SONDE DV	2				
SONIC SONDE DW	2				
SONIC SONDE DX	2				
SONIC SONDE DY	2				
SONIC SONDE DZ	2				
SONIC SONDE EA	2				
SONIC SONDE EB	2				
SONIC SONDE EC	2				
SONIC SONDE ED	2				
SONIC SONDE EE	2				
SONIC SONDE EF	2				
SONIC SONDE EG	2				
SONIC SONDE EH	2				
SONIC SONDE EI	2				
SONIC SONDE EJ	2				
SONIC SONDE EK	2				
SONIC SONDE EL	2				
SONIC SONDE EM	2				
SONIC SONDE EN	2				
SONIC SONDE EO	2				
SONIC SONDE EP	2				
SONIC SONDE EQ	2				
SONIC SONDE ER	2				
SONIC SONDE ES	2				
SONIC SONDE ET	2				
SONIC SONDE EU	2				
SONIC SONDE EV	2				
SONIC SONDE EW	2				
SONIC SONDE EX	2				
SONIC SONDE EY	2				
SONIC SONDE EZ	2				
SONIC SONDE FA	2				
SONIC SONDE FB	2				
SONIC SONDE FC	2				
SONIC SONDE FD	2				
SONIC SONDE FE	2				
SONIC SONDE FF	2				
SONIC SONDE FG	2				
SONIC SONDE FH	2				
SONIC SONDE FI	2				
SONIC SONDE FJ	2				
SONIC SONDE FK	2				
SONIC SONDE FL	2				
SONIC SONDE FM	2				
SONIC SONDE FN	2				
SONIC SONDE FO	2				
SONIC SONDE FP	2				
SONIC SONDE FQ	2				
SONIC SONDE FR	2				
SONIC SONDE FS	2				
SONIC SONDE FT	2				
SONIC SONDE FU	2				
SONIC SONDE FV	2				
SONIC SONDE FW	2				
SONIC SONDE FX	2				
SONIC SONDE FY	2				
SONIC SONDE FZ	2				
SONIC SONDE GA	2				
SONIC SONDE GB	2				
SONIC SONDE GC	2				
SONIC SONDE GD	2				
SONIC SONDE GE	2				
SONIC SONDE GF	2				
SONIC SONDE GG	2				
SONIC SONDE GH	2				
SONIC SONDE GI	2				
SONIC SONDE GJ	2				
SONIC SONDE GK	2				
SONIC SONDE GL	2				
SONIC SONDE GM	2				
SONIC SONDE GN	2				
SONIC SONDE GO	2				
SONIC SONDE GP	2				
SONIC SONDE GQ	2				
SONIC SONDE GR	2				
SONIC SONDE GS	2				
SONIC SONDE GT	2				
SONIC SONDE GU	2				
SONIC SONDE GV	2				
SONIC SONDE GW	2				
SONIC SONDE GX	2				
SONIC SONDE GY	2				
SONIC SONDE GZ	2				
SONIC SONDE HA	2				
SONIC SONDE HB	2				
SONIC SONDE HC	2				
SONIC SONDE HD	2				
SONIC SONDE HE	2				
SONIC SONDE HF	2				
SONIC SONDE HG	2				
SONIC SONDE HH	2				
SONIC SONDE HI	2				
SONIC SONDE HJ	2				
SONIC SONDE HK	2				
SONIC SONDE HL	2				
SONIC SONDE HM	2				
SONIC SONDE HN	2				
SONIC SONDE HO	2				
SONIC SONDE HP	2				
SONIC SONDE HQ	2				
SONIC SONDE HR	2				
SONIC SONDE HS	2				
SONIC SONDE HT	2				
SONIC SONDE HU	2				
SONIC SONDE HV	2				
SONIC SONDE HW	2				
SONIC SONDE HX	2				
SONIC SONDE HY	2				
SONIC SONDE HZ	2				
SONIC SONDE IA	2				
SONIC SONDE IB	2				
SONIC SONDE IC	2				
SONIC SONDE ID	2				
SONIC SONDE IE	2				
SONIC SONDE IF	2				
SONIC SONDE IG	2				
SONIC SONDE IH	2				
SONIC SONDE II	2				
SONIC SONDE IJ	2				
SONIC SONDE IK	2				
SONIC SONDE IL	2				
SONIC SONDE IM	2				
SONIC SONDE IN	2				
SONIC SONDE IO	2				
SONIC SONDE IP	2				
SONIC SONDE IQ	2				
SONIC SONDE IR	2				
SONIC SONDE IS	2				
SONIC SONDE IT	2				
SONIC SONDE IU	2				
SONIC SONDE IV	2				
SONIC SONDE IW	2				
SONIC SONDE IX	2				
SONIC SONDE IY	2				
SONIC SONDE IZ	2				
SONIC SONDE JA	2				
SONIC SONDE JB	2				
SONIC SONDE JC	2				
SONIC SONDE JD	2				
SONIC SONDE JE	2				
SONIC SONDE JF	2				
SONIC SONDE JG	2				
SONIC SONDE JH	2				
SONIC SONDE JI	2				
SONIC SONDE JJ	2				
SONIC SONDE JK	2				
SONIC SONDE JL	2				
SONIC SONDE JM	2				
SONIC SONDE JN	2				
SONIC SONDE JO	2				
SONIC SONDE JP	2				
SONIC SONDE JQ	2				
SONIC SONDE JR	2				
SONIC SONDE JS	2				
SONIC SONDE JT	2				
SONIC SONDE JU	2				
SONIC SONDE JV	2				
SONIC SONDE JW	2				
SONIC SONDE JX	2				
SONIC SONDE JY	2				
SONIC SONDE JZ	2				
SONIC SONDE KA	2				
SONIC SONDE KB	2				
SONIC SONDE KC	2				
SONIC SONDE KD	2				
SONIC SONDE KE	2				
SONIC SONDE KF	2				
SONIC SONDE KG	2				
SONIC SONDE KH	2				
SONIC SONDE KI	2				
SONIC SONDE KJ	2				
SONIC SONDE KK	2				
SONIC SONDE KL	2				
SONIC SONDE KM	2				
SONIC SONDE KN	2				
SONIC SONDE KO	2				
SONIC SONDE KP	2				
SONIC SONDE KQ	2				
SONIC SONDE KR	2				
SONIC SONDE KS	2				
SONIC SONDE KT	2				
SONIC SONDE KU	2				
SONIC SONDE KV	2				
SONIC SONDE KW	2				
SONIC SONDE KX	2				
SONIC SONDE KY	2				
SONIC SONDE KZ	2				
SONIC SONDE LA	2				
SONIC SONDE LB	2				
SONIC SONDE LC	2				
SONIC SONDE LD	2				
SONIC SONDE LE	2				
SONIC SONDE LF	2				
SONIC SONDE LG	2				
SONIC SONDE LH	2				
SONIC SONDE LI	2				
SONIC SONDE LJ	2				
SONIC SONDE LK	2				
SONIC SONDE LL	2				
SONIC SONDE LM	2				
SONIC SONDE LN	2				
SONIC SONDE LO	2				
SONIC SONDE LP	2				
SONIC SONDE LQ	2				
SONIC SONDE LR	2				
SONIC SONDE LS	2				
SONIC SONDE LT	2				
SONIC SONDE LU	2				
SONIC SONDE LV	2				
SONIC SONDE LW	2				
SONIC SONDE LX	2				
SONIC SONDE LY	2				
SONIC SONDE LZ	2				
SONIC SONDE MA	2				
SONIC SONDE MB	2				
SONIC SONDE MC	2				
SONIC SONDE MD	2				
SONIC SONDE ME	2				
SONIC SONDE MF	2				
SONIC SONDE MG	2				
SONIC SONDE MH	2				
SONIC SONDE MI	2				
SONIC SONDE MJ	2				
SONIC SONDE MK	2				
SONIC SONDE ML	2				
SONIC SONDE MM	2				
SONIC SONDE MN	2				
SONIC SONDE MO	2				
SONIC SONDE MP	2				
SONIC SONDE MQ	2				
SONIC SONDE MR	2				
SONIC SONDE MS	2				
SONIC SONDE MT	2				
SONIC SONDE MU	2				
SONIC SONDE MV	2				
SONIC SONDE MW	2				
SONIC SONDE MX	2				
SONIC SONDE MY	2				
SONIC SONDE MZ	2				
SONIC SONDE NA	2				
SONIC SONDE NB	2				
SONIC SONDE NC	2				
SONIC SONDE ND	2				
SONIC SONDE NE	2				
SONIC SONDE NF	2				
SONIC SONDE NG	2				
SONIC SONDE NH	2				
SONIC SONDE NI	2				
SONIC SONDE NJ	2				
SONIC SONDE NK	2				
SONIC SONDE NL	2				
SONIC SONDE NM	2				
SONIC SONDE NN	2				
SONIC SONDE NO	2				
SONIC SONDE NP	2				
SONIC SONDE NQ	2				
SONIC SONDE NR	2				
SONIC SONDE NS	2				
SONIC SONDE NT	2				
SONIC SONDE NU	2				
SONIC SONDE NV	2				
SONIC SONDE NW	2				
SONIC SONDE NX	2				
SONIC SONDE NY	2				
SONIC SONDE NZ	2				
SONIC SONDE OA	2				
SONIC SONDE OB	2				
SONIC SONDE OC	2				
SONIC SONDE OD	2				
SONIC SONDE OE	2				
SONIC SONDE OF	2				
SONIC SONDE OG	2				
SONIC SONDE OH	2				
SONIC SONDE OI	2				
SONIC SONDE OJ	2				
SONIC SONDE OK	2				
SONIC SONDE OL	2				
SONIC SONDE OM	2				
SONIC SONDE ON	2				
SONIC SONDE OO	2				
SONIC SONDE OP	2				
SONIC SONDE OQ	2				
SONIC SONDE OR	2				
SONIC SONDE OS	2				
SONIC SONDE OT	2				
SONIC SONDE OU	2				
SONIC SONDE OV	2				
SONIC SONDE OW	2				
SONIC SONDE OX	2				
SONIC SONDE OY	2				
SONIC SONDE OZ	2				
SONIC SONDE PA	2				
SONIC SONDE PB	2				
SONIC SONDE PC	2				
SONIC SONDE PD	2				
SONIC SONDE PE	2				
SONIC SONDE PF	2				
SONIC SONDE PG	2				
SONIC SONDE PH	2				
SONIC SONDE PI	2				
SONIC SONDE PJ	2				
SONIC SONDE PK	2				
SONIC SONDE PL	2				
SONIC SONDE PM	2				
SONIC SONDE PN	2				
SONIC SONDE PO	2				
SONIC SONDE PP	2				
SONIC SONDE PQ	2				
SONIC SONDE PR	2				
SONIC SONDE PS	2				
SONIC SONDE PT	2				
SONIC SONDE PU	2				
SONIC SONDE PV	2				
SONIC SONDE PW	2				
SONIC SONDE PX	2				
SONIC SONDE PY	2				
SONIC SONDE PZ	2				
SONIC SONDE QA	2				
SONIC SONDE QB	2				
SONIC SONDE QC	2				
SONIC SONDE QD	2				
SONIC SONDE QE	2				
SONIC SONDE QF	2				
SONIC SONDE QG	2				
SONIC SONDE QH	2				
SONIC SONDE QI	2				
SONIC SONDE QJ	2				
SONIC SONDE QK	2				
SONIC SONDE QL	2				
SONIC SONDE QM	2				
SONIC SONDE QN	2				
SONIC SONDE QO	2				
SONIC SONDE QP	2				
SONIC SONDE QQ	2				
SONIC SONDE QR	2				
SONIC SONDE QS	2				
SONIC SONDE QT	2				
SONIC SONDE QU	2				
SONIC SONDE QV	2				
SONIC SONDE QW	2				
SONIC SONDE QX	2				
SONIC SONDE QY	2				
SONIC SONDE QZ	2				
SONIC SONDE RA	2				
SONIC SONDE RB	2				
SONIC SONDE RC	2				
SONIC SONDE RD	2				
SONIC SONDE RE	2				
SONIC SONDE RF	2				
SONIC SONDE RG	2				
SONIC SONDE RH	2				
SONIC SONDE RI	2				
SONIC SONDE RJ	2				
SONIC SONDE RK	2				
SONIC SONDE RL	2				
SONIC SONDE RM	2				
SONIC SONDE RN	2				
SONIC SONDE RO	2				
SONIC SONDE RP	2				
SONIC SONDE RQ	2				
SONIC SONDE RR	2				
SONIC SONDE RS	2				
SONIC SONDE RT	2				
SONIC SONDE RU	2				
SONIC SONDE RV	2				
SONIC SONDE RW	2				
SONIC SONDE RX	2				
SONIC SONDE RY	2				
SONIC SONDE RZ	2				
SONIC SONDE SA	2				
SONIC SONDE SB	2				
SONIC SONDE SC	2				
SONIC SONDE SD	2				
SONIC SONDE SE	2				
SONIC SONDE SF	2				
SONIC SONDE SG	2				
SONIC SONDE SH	2				
SONIC SONDE SI	2				
SONIC SONDE SJ	2				
SONIC SONDE SK	2				
SONIC SONDE SL	2				
SONIC SONDE SM	2				
SONIC SONDE SN	2				
SONIC SONDE SO	2				
SONIC SONDE SP	2				
SONIC SONDE SQ	2				
SONIC SONDE SR	2				
SONIC SONDE SS	2				
SONIC SONDE ST	2				
SONIC SONDE SU	2				
SONIC SONDE SV	2				
SONIC SONDE SW	2				
SONIC SONDE SX	2				
SONIC SONDE SY	2				
SONIC SONDE SZ	2				
SONIC SONDE TA	2				
SONIC SONDE TB	2				
SONIC SONDE TC	2				
SONIC SONDE TD	2				
SONIC SONDE TE	2				
SONIC SONDE TF	2				
SONIC SONDE TG	2				
SONIC SONDE TH	2				
SONIC SONDE TI	2				
SONIC SONDE TJ	2				
SONIC SONDE TK	2				
SONIC SONDE TL	2				
SONIC SONDE TM	2				
SONIC SONDE TN	2				
SONIC SONDE TO	2				
SONIC SONDE TP	2				
SONIC SONDE TQ	2				
SONIC SONDE TR	2				
SONIC SONDE TS	2				
SONIC SONDE TT	2				
SONIC SONDE TU	2				
SONIC SONDE TV	2				
SONIC SONDE TW	2				
SONIC SONDE TX	2				
SONIC SONDE TY	2				
SONIC SONDE TZ	2				
SONIC SONDE UA	2				
SONIC SONDE UB	2				
SONIC SONDE UC	2				
SONIC SONDE UD	2				
SONIC SONDE UE	2				
SONIC SONDE UF	2				
SONIC SONDE UG	2				
SONIC SONDE UH	2				
SONIC SONDE UI	2				
SONIC SONDE UJ	2				
SONIC SONDE UK	2				
SONIC SONDE UL	2				
SONIC SONDE UM	2				
SONIC SONDE UN	2				
SONIC SONDE UO	2				
SONIC SONDE UP	2				
SONIC SONDE UQ	2				
SONIC SONDE UR	2				
SONIC SONDE US	2				
SONIC SONDE UT	2				
SONIC SONDE UU	2				
SONIC SONDE UV	2				
SONIC SONDE UW	2				
SONIC SONDE UX	2				
SONIC SONDE UY	2				
SONIC SONDE UZ	2				
SONIC SONDE VA	2				
SONIC SONDE VB	2				
SONIC SONDE VC	2				
SONIC SONDE VD	2				
SONIC SONDE VE	2				
SONIC SONDE VF	2				
SONIC SONDE VG	2				
SONIC SONDE VH	2				
SONIC SONDE VI	2				
SONIC SONDE VJ	2				
SONIC SONDE VK	2				
SONIC SONDE VL	2				
SONIC SONDE VM	2				
SONIC SONDE VN	2				
SONIC SONDE VO	2				
SONIC SONDE VP	2				
SONIC SONDE VQ	2				
SONIC SONDE VR	2				
SONIC SONDE VS	2				
SONIC SONDE VT	2				
SONIC SONDE VU	2				
SONIC SONDE VV	2				
SONIC SONDE VW	2				
SONIC SONDE VX	2				
SONIC SONDE VY	2				
SONIC SONDE VZ	2				
SONIC SONDE WA	2				
SONIC SONDE WB	2				
SONIC SONDE WC	2				
SONIC SONDE WD	2				
SONIC SONDE WE	2				
SONIC SONDE WF	2				
SONIC SONDE WG	2				
SONIC SONDE WH	2				
SONIC SONDE WI	2				
SONIC SONDE WJ	2				
SONIC SONDE WK	2				
SONIC SONDE WL	2				
SONIC SONDE WM	2				
SONIC SONDE WN	2				
SONIC SONDE WO	2				
SONIC SONDE WP	2				
SONIC SONDE WQ	2				
SONIC SONDE WR	2				
SONIC SONDE WS	2				
SONIC SONDE WT	2				
SONIC SONDE WU	2				
SONIC SONDE WV	2				
SONIC SONDE WW	2				
SONIC SONDE WX	2				
SONIC SONDE WY	2				
SONIC SONDE WZ	2				
SONIC SONDE XA	2				
SONIC SONDE XB	2				
SONIC SONDE XC	2				
SONIC SONDE XD	2				
SONIC SONDE XE	2				
SONIC SONDE XF	2				
SONIC SONDE XG	2				
SONIC SONDE XH	2				
SONIC SONDE XI	2				
SONIC SONDE XJ	2				
SONIC SONDE XK	2				
SONIC SONDE XL	2				
SONIC SONDE XM	2				
SONIC SONDE XN	2				
SONIC SONDE XO	2				
SONIC SONDE XP	2				
SONIC SONDE XQ	2				
SONIC SONDE XR	2				
SONIC SONDE XS	2				
SONIC SONDE XT	2				
SONIC SONDE XU	2				
SONIC SONDE XV	2				
SONIC SONDE XW	2				
SONIC SONDE XX	2				
SONIC SONDE XY	2				
SONIC SONDE XZ	2				
SONIC SONDE YA	2				
SONIC SONDE YB	2				
SONIC SONDE YC	2				
SONIC SONDE YD	2				
SONIC SONDE YE	2				
SONIC SONDE YF	2				
SONIC SONDE YG	2				
SONIC SONDE YH	2				
SONIC SONDE YI	2				
SONIC SONDE YJ	2				
SONIC SONDE YK	2				
SONIC SONDE YL	2				
SONIC SONDE YM	2				
SONIC SONDE YN	2				
SONIC SONDE YO	2				
SONIC SONDE YP	2				
SONIC SONDE YQ	2				
SONIC SONDE YR	2				
SONIC SONDE YS	2				
SONIC SONDE YT	2				
SONIC SONDE YU	2				
SONIC SONDE YV	2				
SONIC SONDE YW	2				
SONIC SONDE YX	2				
SONIC SONDE YY	2				
SONIC SONDE YZ	2				
SONIC SONDE ZA	2				
SONIC SONDE ZB	2				
SONIC SONDE ZC	2				
SONIC SONDE ZD	2				
SONIC SONDE ZE	2				
SONIC SONDE ZF	2				
SONIC SONDE ZG	2				
SONIC SONDE ZH	2				
SONIC SONDE ZI	2				
SONIC SONDE ZJ	2				
SONIC SONDE ZK	2				
SONIC SONDE ZL	2				
SONIC SONDE ZM	2				
SONIC SONDE ZN	2				
SONIC SONDE ZO	2				
SONIC SONDE ZP



PIP SUMMARY
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BS	Hole Size	222.000 MM
DFSH	Sensor Offset	0.1 M
DTCM	Delta-T Computation Mode	FULL
MODE	Firing Mode	BHC
PP	Playback Processing	NORMAL

Format: SON1_600 Vertical Scale: 1:600 Graphics File Created: 08-Feb-2000 14:58

OP System Version: 9C0-413

SOT-C	9C0-413	PCD-B	9C0-413
SOT-L	9C0-413	TCC-B	9C0-413

Input DLIS Files

DEFAULT	SDTC .008	FN:7	PRODUCER	08-Feb-2000 11:45	1396.1 M	13.0 M

Output DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58	1397.2 M	14.0 M

Integrated Hole/Cement Volume Summary

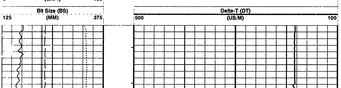
Hole Volume = 77.71 M3
Cement Volume = 51.51 M3 (assuming 177.80 MM casing O.D.)
Computed from 1397.2 M to 242.1 M using data channel(s) HDIA

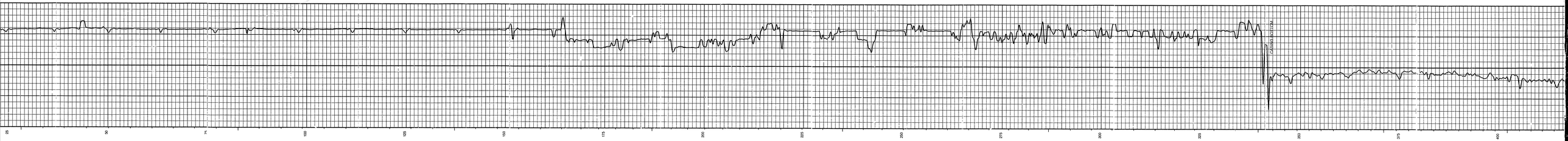
OP System Version: 9C0-413

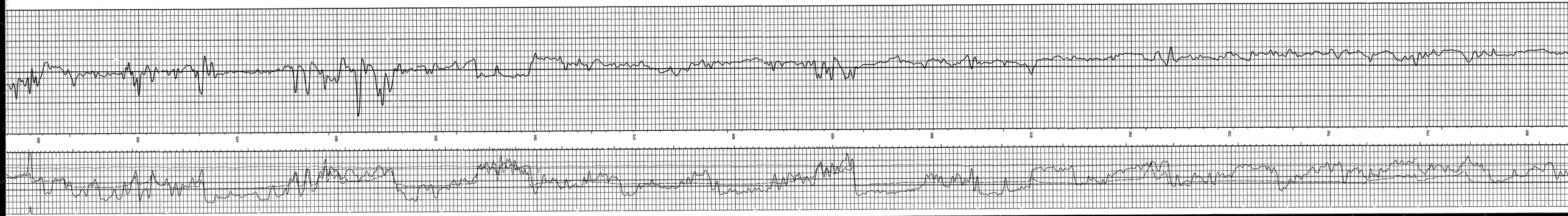
SOT-C	9C0-413	PCD-B	9C0-413
SOT-L	9C0-413	TCC-B	9C0-413

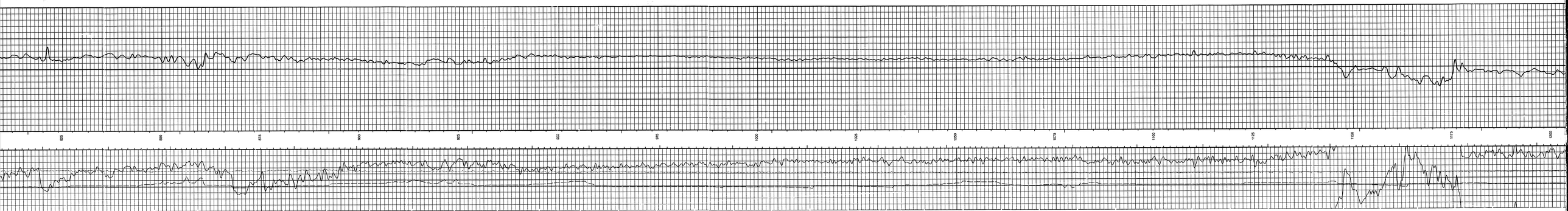
PIP SUMMARY
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

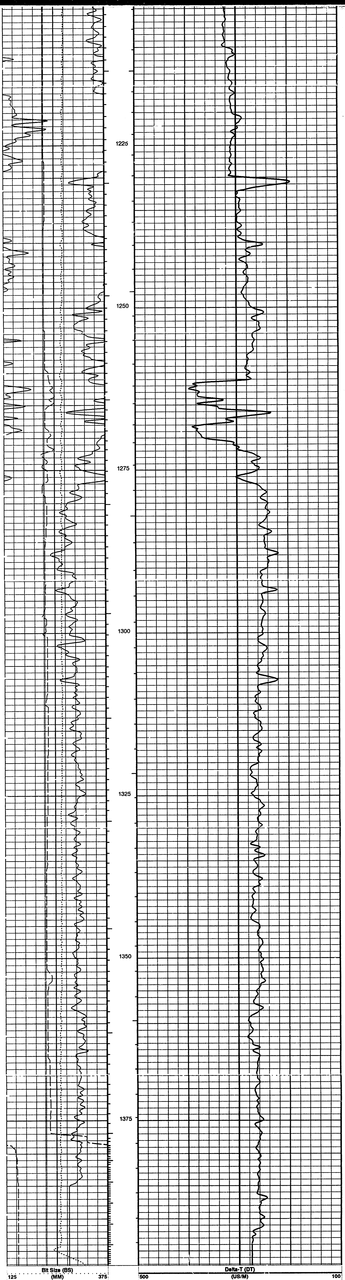
Time Mark Every 60 S




CAUSED EXT CTRL
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
400


425
450
475
500
525
550
575
600
625
650
675
700
725
750
775
800


825
850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200



PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BS	Bit Size	222.000 MM
DO	Depth Offset	M
MCOM	Mud Computation Mode	FULL
MODE	Fixing Mode	BHC
PP	Playback Processing	NORMAL

Format: SON-240 Vertical Scale: 1:240 Graphics File Created: 08-Feb-2000 14:58

OP System Version: 9C0-413

MCM

SDT-C	9C0-413	PCO-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

Input DLIS Files

DEFAULT	SDTC .008	FN:7	PRODUCER	08-Feb-2000 11:45	1396.1 M	13.0 M

Output DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58		

Input DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58	1397.2 M	14.0 M

Output DLIS Files

DEFAULT	SDTC .001	FN:4	PRODUCER	08-Feb-2000 16:51	1397.2 M	1117.9 M

Integrated Hole/Cement Volume Summary

Hole Volume = 21.66 M3
Cement Volume = 14.72 M3 (assuming 177.80 MM casing O.D.)
Computed from 1397.2 M to 1117.9 M using data channel(s) HDIA

OP System Version: 9C0-413

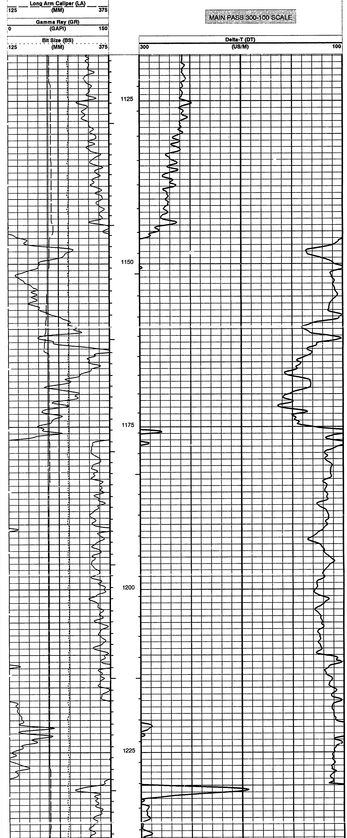
MCM

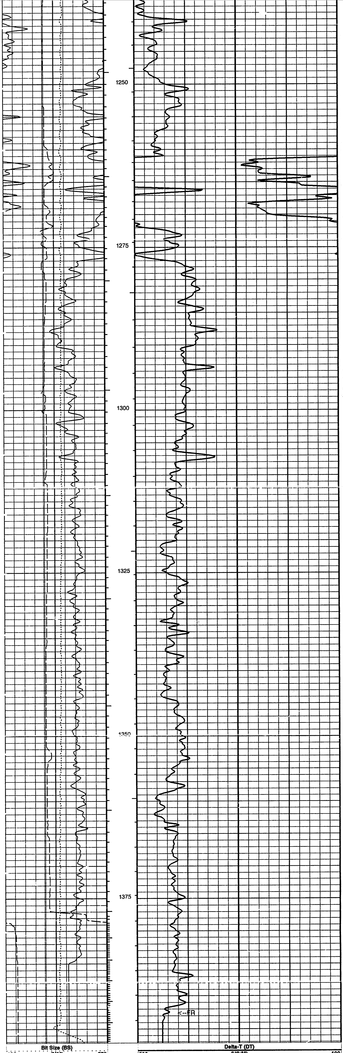
SDT-C	9C0-413	PCO-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S





MAIN PASS 300-100 SCALE

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Transit Time Minor Pip Every 1 MS
- Integrated Transit Time Major Pip Every 10 MS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	222.000	MM
DO	Depth Offset	0.0	M
DTCM	Delta-T Computation Mode	FULL	
MODE	Firing Mode	1	
PMP	Pattern Processing	NORMAL	

Format: SCIN1-240-300 Vertical Scale: 1:240 Graphics File Created: 08-Feb-2000 16:51

OP System Version: 9C0-413

MCM

SDT-C	9C0-413	PCD-B	9C0-413
SDT-L	9C0-413	TCC-B	9C0-413

Input DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58	1397.2 M	14.0 M

Output DLIS Files

DEFAULT	SDTC .004	FN:3	PRODUCER	08-Feb-2000 15:49	1397.2 M	1225.1 M

Input DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58	1397.2 M	14.0 M
DEFAULT	SDTC .004	FN:3	PRODUCER	08-Feb-2000 11:02	1396.7 M	1232.9 M

Output DLIS Files

DEFAULT	SDTC .004	FN:3	PRODUCER	08-Feb-2000 15:49	1397.2 M	1225.1 M

OP System Version: 9C0-413

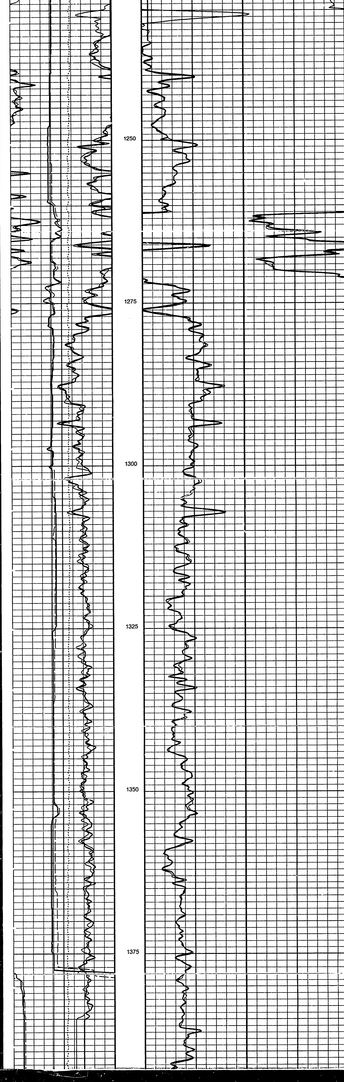
MCM

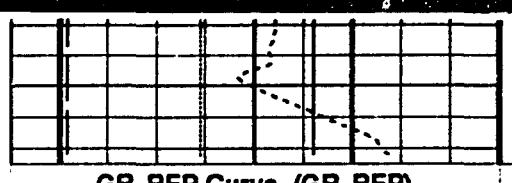
SDT-C	9C0-413	PCD-B	9C0-413
SDT-L	9C0-413	TCC-B	9C0-413

PIP SUMMARY

Time Mark Every 60 S

REPEAT ANALYSIS



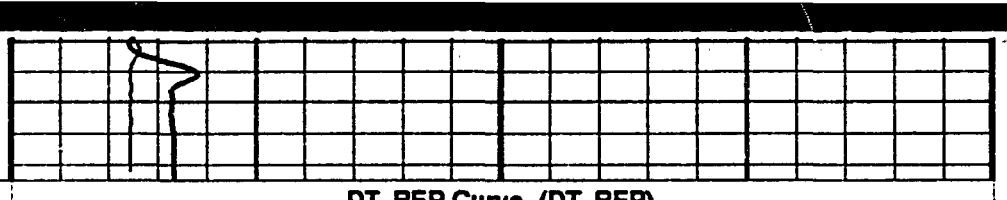


GR_REP Curve (GR_REP)

0 (GAPI) 150

LA_REP Curve (LA_REP)

125 (MM) 375



DT_REP Curve (DT_REP)

300 (US/M) 100

REPEAT ANALYSIS

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	222.000	MM
DO	Depth Offset	0.0	M
DORL	Depth Offset Repeat Analysis	0.8	M
DTCM	Delta-T Computation Mode	FULL	
MODE	Firing Mode	BHC	
PP	Playback Processing	NORMAL	

Format: SONI-240-300_REP Vertical Scale: 1:240 Graphics File Created: 08-Feb-2000 15:49

OP System Version: 9C0-413

MCM

SDT-C	9C0-413	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

Input DLIS Files

DEFAULT	SDTC .002	FN:1	PRODUCER	08-Feb-2000 14:58	1397.2 M	14.0 M
DEFAULT	SDTC .004	FN:3	PRODUCER	08-Feb-2000 11:02	1396.7 M	1232.9 M

Output DLIS Files

DEFAULT	SDTC .004	FN:3	PRODUCER	08-Feb-2000 15:49

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Powered Caliper Device - B Wellsite Calibration - Large Arm Calibration							
Before: 7-FEB-2000 9:21							
Large Arm Small Ring	203.2	N/A	196.6	N/A	N/A	N/A	MM
Large Arm Large Ring	304.8	N/A	313.8	N/A	N/A	N/A	MM
Powered Caliper Device - B Wellsite Calibration - Small Arm Calibration							
Before: 7-FEB-2000 9:33							
Small Arm Small Gauge	25.40	N/A	109.7	N/A	N/A	N/A	MM
Small Arm Large Gauge	127.0	N/A	176.8	N/A	N/A	N/A	MM
Powered Caliper Device - B Wellsite Calibration - Micro Inverse Calibration							
Before: 16-JAN-2000 19:59							
Micro Inverse Zero	0	N/A	4.420	N/A	N/A	0.1000	OHMM
Micro Inverse Plus	5.000	N/A	4.420	N/A	N/A	0.2000	OHMM
Powered Caliper Device - B Wellsite Calibration - Micro Normal Calibration							
Before: 16-JAN-2000 19:59							
Micro Normal Zero	0	N/A	4.420	N/A	N/A	0.1000	OHMM
Micro Normal Plus	5.000	N/A	4.420	N/A	N/A	0.2000	OHMM
Scintillation Gamma-Ray - L Wellsite Calibration - Detector Calibration							
Before: 7-FEB-2000 9:28							
Gamma Ray Background	30.00	N/A	64.01	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	154.1	N/A	154.1	N/A	N/A	14.01	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Powered Caliper Device - B / Equipment Identification

Primary Equipment:	
Powered Caliper Mechanical (sonde) - A	PCM - A
Powered Caliper Cartridge - H	PCC - H
Auxiliary Equipment:	
Powered Caliper Housing - A	PCH - A 1371

Powered Caliper Device - B Wellsite Calibration

Micro Inverse Calibration

Phase	Micro Inverse Zero OHMM	Value	Phase	Micro Inverse Plus OHMM	Value
Before	EXCEEDS LIMIT	4.420	Before		4.420
	-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			4.250 (Minimum) 5.000 (Nominal) 5.750 (Maximum)	

Before: 16-JAN-2000 19:59

Powered Caliper Device - B Wellsite Calibration

Micro Normal Calibration

Phase	Micro Normal Zero OHMM	Value	Phase	Micro Normal Plus OHMM	Value
Before	EXCEEDS LIMIT	4.420	Before		4.420
	-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			4.250 (Minimum) 5.000 (Nominal) 5.750 (Maximum)	

Before: 16-JAN-2000 19:59

Scintillation Gamma-Ray - L / Equipment Identification

Primary Equipment:	
Scintillation Gamma Cartridge	SGC - SA
Scintillation Gamma Detector	SGD - TAA
Auxiliary Equipment:	
Scintillation Gamma Housing	SGH - K
Gamma Source Radioactive	GSR - U/Y

Scintillation Gamma-Ray - L Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		64.01	Before		154.1	Before		165.0
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			140.1 (Minimum) 154.1 (Nominal) 168.1 (Maximum)			150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)	

Before: 7-FEB-2000 9:28

COMPANY:	NORTHROCK RESOURCES LTD.	BOTTOM LOG INTERVAL	1391 m
		SCHLUMBERGER DEPTH	1394 m
WELL:	NORTHROCK ET AL FALL STONE F-01	DEPTH DRILLER	1400 m
FIELD:	UNDEFINED	KELLY BUSHING	203.8 m
PROVINCE:	NWT	DRILL FLOOR	
		GROUND LEVEL	198.6 m

Schlumberger

BOREHOLE COMPENSATED SONIC LOG

DENSITY

1886 N.E.B. COPY

COMPANY: NORTHROCK RESOURCES LTD.

WELL: NORTHROCK ET AL FALL STONE F-01

FIELD: UNDEFINED

PROVINCE: NWT

Schlumberger

COMPENSATED NEUTRON
LITHO DENSITY

F-01-64-50-125-45
UWI:300F016450125450

Elev.: K.B. 203.8 m
G.L. 198.6 m
D.F.

Permanent Datum: GROUND LEVEL Elev.: 198.6 m
Log Measured From: KB 5.2 m above Perm. Datum
Drilling Measured From: KB

API Serial No.	SECTION	TOWNSHIP	RANGE
300F016450125450			

	Run 1	Run 2	Run 3	Run 4
Logging Date	8-FEB-2000			
Run Number	1			
Depth Driller	1400 m			
Schlumberger Depth	1394 m			
Bottom Log Interval	1382 m			
Top Log Interval	342 m			
Casing Driller Size @ Depth	244.500 mm @ 342 m	@	@	
Casing Schlumberger	342 m			
Bit Size	222.000 mm			
Type Fluid In Hole	GEL CHEM			
Density / Viscosity	1150 kg/m3 / 77 s			
Fluid Loss / PH	6.5 cm3 / 9.5			
Source Of Sample	RIG			
RM @ Measured Temperature	2.360 ohm.m @ 22 degC	@	@	
RMF @ Measured Temperature	2.260 ohm.m @ 18 degC	@	@	
RMC @ Measured Temperature	2.540 ohm.m @ 14 degC	@	@	
Source RMF / RMC	RG / RG			
RM @ MRT / RMF @ MRT	1.643 @ 41 / 1.465 @ 41	@ / @	@ / @	
Maximum Recorded Temperatures	41 degC			
Circulation Stopped / Time	6-FEB-2000 / 4:00			
Logger On Bottom / Time	8-FEB-2000 / 16:30			
Unit Number / Location	8416 / 6864			
Recorded By	SEAN MCCONKEY			
Witnessed By	DAVE ROBERTS			

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth	@	@		
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
Density / Viscosity				
Fluid Loss / PH				
Source Of Sample				
RM @ Measured Temperature	@	@		
RMF @ Measured Temperature	@	@		
RMC @ Measured Temperature	@	@		
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@ / @	@ / @	@ / @	@ / @
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE WILL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1: CBL
OS1: BHCS
OS2:
OS3:
OS4:
OS5:
OS6:

MAIN REMARKS: RUN NUMBER 1
WIRELINE NOT MARKED
NO SECONDARY DEPTH CORRELATION USED DW AND
ECCENTRIC PAD WAS USED ON THE DENSITY
STRETCH NOT ADDED DUE TO ABOVE CONDITIONS
RESISTIVITY CURVES ARE ACROSS SPUNE AT 1300M
RE-LOGGED FROM TD
RE-BEAT INTERVAL LOGGED TO 1250M AT GEOLOGIST'S REQUEST
SHORT AXIS KIT USED ON LDT CARTRIDGE - POWDER TOOL DID
TEND TO STAY IN SHORT AXIS ON MULTIPLE DECENTS
LOGGED DIR TO SURFACE ON BHCS DESENT

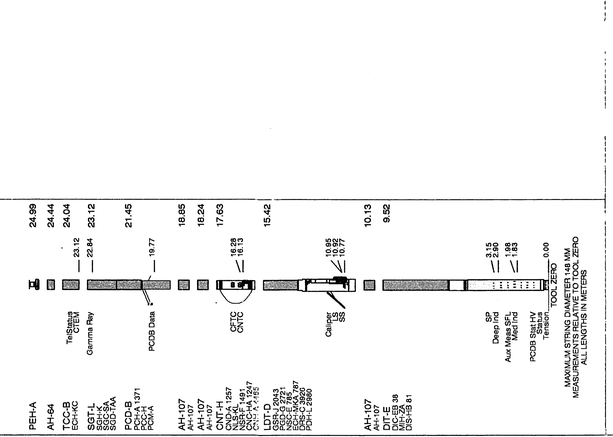
	Run 1	Run 2
SERVICE ORDER #:	8022035	
PROGRAM NAME:	BCAL	
FLUID LEVEL:	0 m	
LOGGED INTERVAL: START	STOP	START / STOP

RUN 1 EQUIPMENT DESCRIPTION

SURFACE EQUIPMENT WITH CTS/A

NCT-B
CNS-A
CNS-AB
GSA-UY

DOWNHOLE EQUIPMENT



RUN 2

Output DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 16:42	1393.2 M	312.1 M

Integrated Hole/Cement Volume Summary

Hole Volume = 44.38 M3
Cement Volume = 18.28 M3 (assuming 177.80 MM casing O.D.)
Computed from 1393.2 M to 342.1 M using data channel(s) CALI LA

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	SRPCWX-1214	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

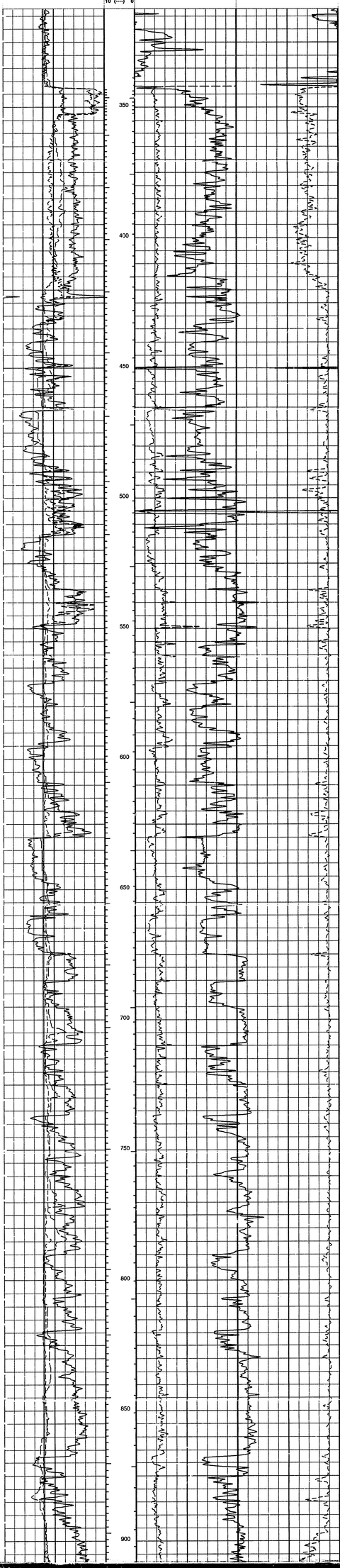
PIP SUMMARY

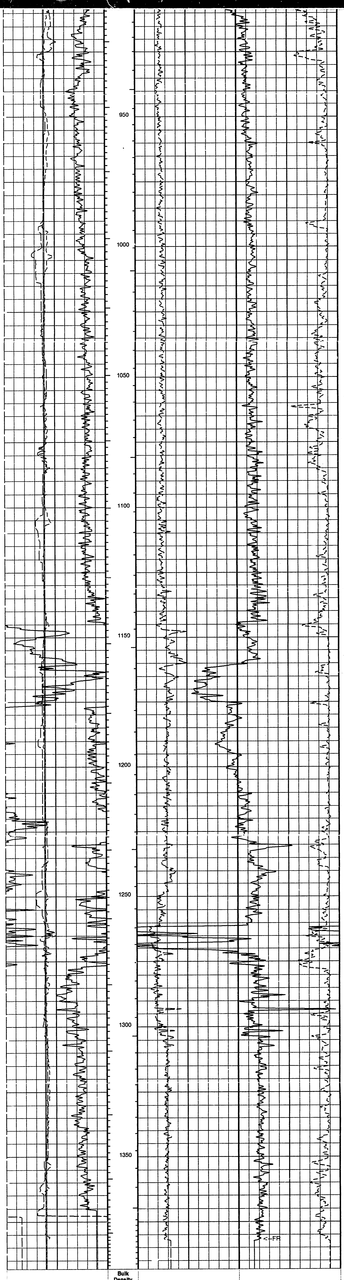
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

MAIN PASS, SANDSTONE MDEN=2650KG/M3

Long arm Caliper (LA) (MM)	Gamma Ray (GR) (GAPI)	Caliper (CALI) (MM)	Bit Size (BS) (MM)	Bulk Density Quality Curve (BDQC)	PhotoElectric Factor (PEF) (----)	Bulk Density (RHOB) (K/M3)	Bulk Density Correction (DRHO) (K/M3)
125 – 375	0 – 150	125 – 375	125 – 375	10 (----) 0	1 – 10	2000 – 3000	450 – -50





Bit Size (BIS) (MM) 125 375 | Bulk Density Quality Curve (BDQC) 10 (---) 0 | PhotoElectric Factor (PEF) 1 (---) 10 | Bulk Density Correction (DRHO) 450 (K/M3) -50

Caliper (CALI) (MM) 125 375 | Bulk Density (RHOB) 2000 (K/M3) 3000

Gamma Ray (GR) (GAPI) 0 150

Long Arm Caliper (LA) (MM) 125 375

MAIN PASS, SANDSTONE MDEN = 2650KG/M3

PIP SUMMARY

- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BFM	Borehole Fluid Medium	LIQUID	
BS	Bit Size	222.250	MM
DRC	Density Hole Correction	BS	
DORL	Depth Offset Repeat Analysis	0.0	M
DPRM	Density Porosity Processing Mode	STAN	
MDEN	Matrix Density	2650	KM3
MDEN	Matrix Density	2650	KM3
RMUD	Mud Weight	1150	KM3

Format: DENS-600 Vertical Scale: 1:600 Graphics File Created: 08-Feb-2000 16:42

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	SRPCWX-1214	PCD-B	9C0-413
SDT-L	9C0-413	TCC-B	9C0-413

Output DLIS Files

DEFAULT DITE .018 FN:17 PRODUCER 08-Feb-2000 16:42

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	SRPCWX-1214	PCD-B	9C0-413
SDT-L	9C0-413	TCC-B	9C0-413

Output DLIS Files

DEFAULT DITE .018 FN:17 PRODUCER 08-Feb-2000 16:42

1393.2 M 312.1 M

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
TDL	1304.00 M	1400.00 M	1304.8 16:52:07

PIP SUMMARY

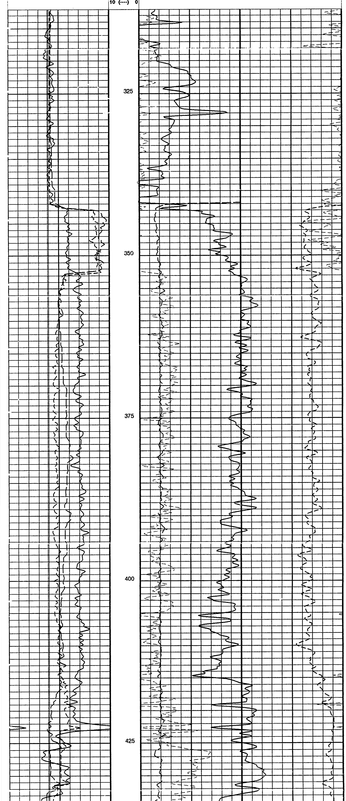
Time Mark Every 60 S

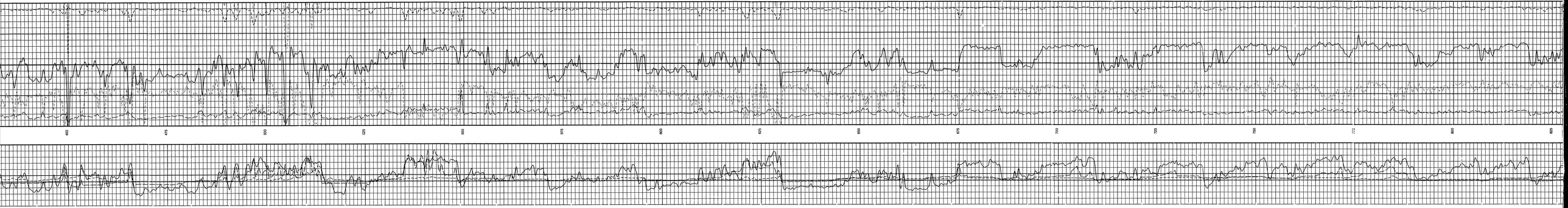
Long Arm Caliper (LA) (MM) 125 375 | MAIN PASS, MDEN = 2650KG/M3, SANDSTONE

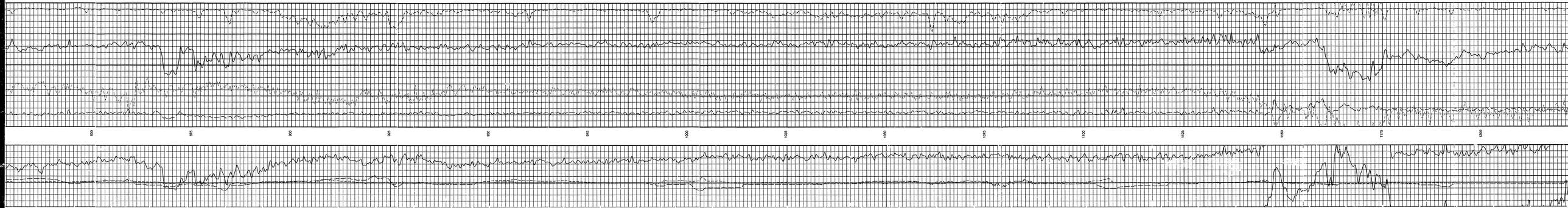
Gamma Ray (GR) (GAPI) 0 150 | PhotoElectric Factor (PEF) 1 (---) 11.600 | Bulk Density Correction (DRHO) 0.45 (K/M3) -0.15

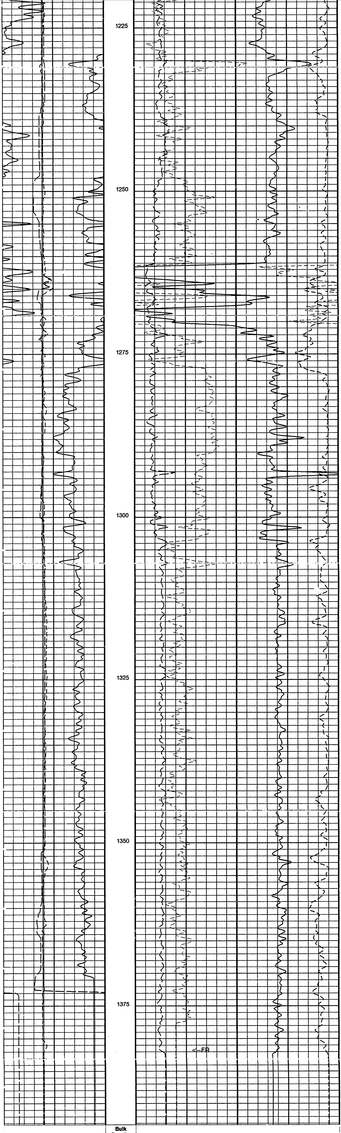
Caliper (CALI) (MM) 125 375 | Alpha Processed Neutron Porosity (NPOR) 0.45 (V/V) -0.15

Bit Size (BIS) (MM) 125 375 | Bulk Density Quality Curve (BDQC) 10 (---) 0 | Density Porosity (DPHI) 0.45 (V/V) -0.15




450
475
500
525
550
575
600
625
650
675
700
725
750
775
800
825


850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200



Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BFM	Borehole Fluid Medium	LIQUID
BHFL	Borehole Fluid Type	WATER
BHS	Hole Size Status	NORMAL
BS	Bit Size	222.250 MM
BSAL	Borehole Salinity	-50000.00 PPM
CCCO	Casing Collar Correction Option	NO
CCCO	Casing Cement Thickness Correction Option	NO
CBZ	Current Casing Size	244.500 MM
CWU	Casing Weight	53.60 KG/M
DFD	Drilling Fluid Density	1150.00 K/M3
DFL	Drilling Fluid Correction	NO
DORL	Depth Offset Repeat Analysis	0.0 M
DPPR	Density Porosity Processing Mode	STAN
FBD	Fluid Density	1000.00 K/M3
FSAL	Formation Salinity	-50000 PPM
FSCO	Formation Salinity Correction Option	NO
GCBS	Generalized Caliper Selection	BS
GDEC	Geometrical Correction of Borehole from Normal Geometrical Gradient	DEG
GGRD	Geometrical Gradient	0.014227 DC/M
HSCO	Hole Size Correction Option	YES
MATR	Rock Matrix Type	SANDSTONE
MCOR	Mud Density Correction Option	NO
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2650 K/M3
MFT	Mud Filtrate Temperature	25.00 DEGC
MWCO	Mud Weight Correction Option	NO
PTCO	Pressure/Temperature Correction Option	NO
RMFS	Resistivity of Mud Filtrate Sample	2.2000 OHMM
SDAT	Standoff Data Source	BOCM
SDOF	Standoff Offset Value	0.0 MM
SDCO	Standoff Correction Option	NO
TDL	Total Depth - Logger	1400.00 M
WMUD	Mud Weight	1150 K/M3

Format: DENS-240 Vertical Scale: 1:240 Graphics File Created: 08-Feb-2000 16:42

OP System Version: 9C0-413

MCM

DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	9PRCWX-1214	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

Output DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 16:42

Input DLIS Files

DEFAULT	DITE .018	FN:17 PRODUCER	08-Feb-2000 16:42	1393.2 M	312.1 M
DEFAULT	DITE .018	FN:18 PRODUCER	08-Feb-2000 16:42	1397.4 M	1216.3 M

Output DLIS Files

DEFAULT	DITE .020	FN:19 PRODUCER	08-Feb-2000 20:13	1393.4 M	1118.3 M

OP System Version: 9C0-413

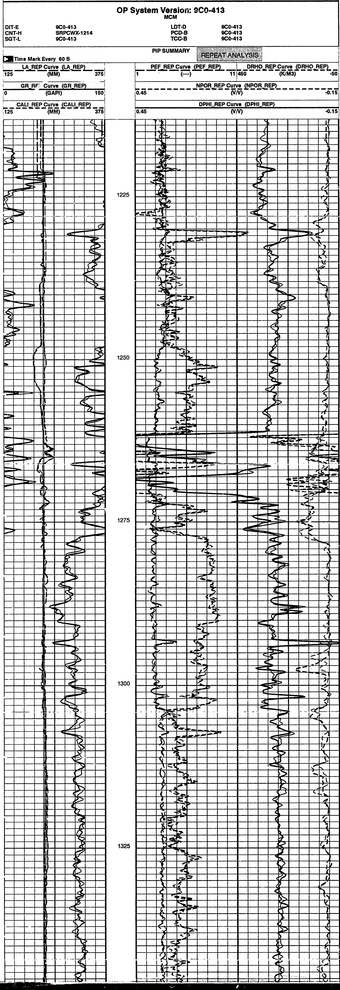
MCM

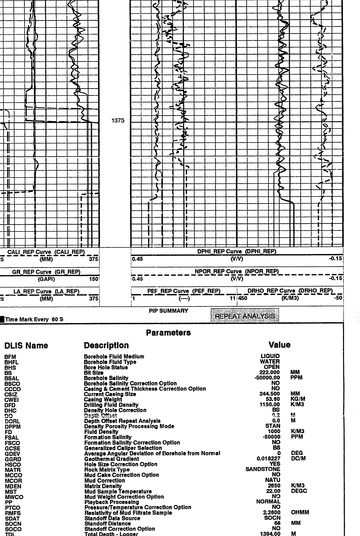
DIT-E	9C0-413	LDT-D	9C0-413
CNT-H	9PRCWX-1214	PCD-B	9C0-413
SGT-L	9C0-413	TCC-B	9C0-413

PIP SUMMARY

REPEAT ANALYSIS

Time Mark Every 60 S





PIP SUMMARY

REPEAT ANALYSIS

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BFM	Borehole Fluid Medium	LIQUID
BHFL	Borehole Fluid Type	WATER
BHS	Bore Hole Status	OPEN
BS	Bit Size	222.000 MM
BSAL	Borehole Salinity	-50000.00 PPM
CBCO	Casing Barite Correction Option	NO
CCCO	Casing & Cement Thickness Correction Option	NO
CSIZ	Current Casing Size	244.500 MM
CWEI	Casing Weight	53.570 KG/M
DFD	Drilling Fluid Density	1150.00 K/M3
DFPH	Drilling Fluid Ph Correction	8.00
DFV	Depth Offset	1.13 M
DORL	Depth Offset Repeat Analysis	0.00 M
DRPM	Depth Reversibility Processing Mode	STANDARD
FD	Fluid Density	1000.00 K/M3
FSAL	Formation Salinity	-50000 PPM
FSCO	Formation Salinity Correction Option	NO
GCSE	Generalized Caliper Selection	B3
GDAZ	Geothermal Gradient Azimuth of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
HSCO	Hole Size Correction Option	YES
MATR	Rock Matrix Type	SANDSTONE
MCCO	Mud Cake Correction Option	NO
MCOD	Mud Composition	NATU
MDEN	Matrix Density	2650 K/M3
MST	Mud Sample Temperature	22.00 DEGC
NWCO	Neutron Window Correction Option	NO
PB	Playback Processing	NORMAL
PTCO	Pressure/Temperature Correction Option	NO
RMFS	Resistivity of Mud Filtrate Sample	2.5000 OHMM
SDAT	Standoff Data Source	SOCN
SDCO	Standoff Correction	0.00 MM
SDCO	Standoff Correction Option	NO
TDL	Total Depth - Logger	1394.00 M
MWT	Mud Weight	1150 K/M3

Format: DENS-240_REP Vertical Scale: 1:240 Graphics File Created: 08-Feb-2000 20:13

OP System Version: 9C0-413

DIT-E	9C0-413		LDT-D	9C0-413	
CNT-H	SWRCWX-1214		PCD-B	9C0-413	
SGT-L	9C0-413		TCC-B	9C0-413	

Input DLIS Files

DEFAULT	DITE .018	FN:117 PRODUCER	08-Feb-2000 18:42	1393.3 M	312.1 M
DEFAULT	DITE .015	FN:114 PRODUCER	08-Feb-2000 16:18	1397.4 M	1216.3 M

Output DLIS Files

DEFAULT	DITE .020	FN:119 PRODUCER	08-Feb-2000 20:13	

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Litho Density - D Matrix Calibration - Background Measurement							
Master: 16-JAN-2000 17:08							
LL Background	20.00	19.28	N/A	N/A	N/A	1.000	CPS
LU Background	20.00	19.11	N/A	N/A	N/A	1.000	CPS
LS Background	27.00	26.11	N/A	N/A	N/A	1.000	CPS
LU Background	5.500	5.288	N/A	N/A	N/A	0.3300	CPS
SB1 Background	20.00	19.00	N/A	N/A	N/A	0.5000	CPS
SS2 Background	11.00	8.507	N/A	N/A	N/A	0.5000	CPS
Litho Density - D Matrix Calibration - Tool Quality Control Information HV							
Master: 16-JAN-2000 17:08							
LSHV Background	1500	1301	N/A	N/A	N/A	N/A	V
SSHV Background	1500	1354	N/A	N/A	N/A	N/A	V
Litho Density - D Matrix Calibration - Detectors Resolution From BKG Measurements							
Master: 16-JAN-2000 17:08							
LS Resolution Background	8.000	8.554	N/A	N/A	N/A	N/A	
SS Resolution Background	8.000	8.738	N/A	N/A	N/A	N/A	
Litho Density - D Master Calibration - Aluminum Measurement							
Master: 16-JAN-2000 17:08							
LL Aluminum	90.00	89.49	--	--	--	--	CPS
LU Aluminum	135.0	134.8	--	--	--	--	CPS
LS Aluminum	50.00	49.78	--	--	--	--	CPS
LU Aluminum	153.0	153.9	--	--	--	--	CPS
SS1 Aluminum	179.0	178.4	--	--	--	--	CPS
SS2 Aluminum	280.0	258.5	--	--	--	--	CPS
Litho Density - D Master Calibration - Lithotop Measurement							
Master: 16-JAN-2000 17:18							
LL Iron	60.00	56.80	--	--	--	--	CPS
LU Iron	120.0	131.5	--	--	--	--	CPS
LS Iron	135.0	132.7	--	--	--	--	CPS
LTH Iron	30.00	37.17	--	--	--	--	CPS
SS1 Iron	155.0	174.5	--	--	--	--	CPS
SS2 Iron	245.0	264.3	--	--	--	--	CPS
Litho Density - D Master Calibration - Spectrum Quality Ratios							
Master: 16-JAN-2000 17:02							
GRUS Calculated	0.6500	0.6641	--	--	--	--	
LSUS Calculated	0.7000	0.6875	--	--	--	--	
SPU Calculated	0.3000	0.3437	--	--	--	--	
GLR Calculated	1.390	1.472	--	--	--	--	
GR Calculated	1.030	1.057	--	--	--	--	
Compensated Neutron - H Wellsite Calibration - Zero Measurement							
Master: 16-JAN-2000 8:32							
CNTC Background	27.54	27.54	N/A	N/A	N/A	4.132	CPS
CFTC Background	34.27	34.27	N/A	N/A	N/A	5.140	CPS
Compensated Neutron - H Master Calibration - Tank Measurement							
Master: 16-JAN-2000 8:44							
Thermal Near Con.(Tank)	6031	5818	--	--	--	--	CPS
Thermal Far Con. (Tank)	2793	2820	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.306	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 10.0 DEGC.
Thermal Housing Size 65.725 MM.

Dual Induction - E / Equipment Identification

Primary Equipment:			
Dual Induction Sonde	DIS - HB	51	
Dual Induction Cartridge	DC - ES	36	
Auxiliary Equipment:			
Mass Isolated Housing	MIH - ZA		

Dual Induction - E Master Calibration

Induction Electrode (23.5KHz)

Phase	ID Elect Real Offset 10 kHz	MM.M	Value	Phase	ID Elect Real Gain 10 kHz	Value	Phase	ID Elect Phase 10 kHz	DEG	Value
Master	0	0	24.87	Master	1.000	0.9558	Master	0	0	8.685
-25.0	2.500	25.000	24.870	0.7500	1.000	1.000	0.000	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	ID Elect Quad Offset 10 kHz	MM.M	Value	Phase	ID Elect Quad Gain 10 kHz	Value	Phase	M Elect Phase 10 kHz	DEG	Value
Master	0	0	27.98	Master	1.000	0.9604	Master	0	0	8.693
-25.0	2.500	25.000	27.980	0.7500	1.000	1.000	0.000	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	M Elect Real Offset 10 kHz	MM.M	Value	Phase	M Elect Real Gain 10 kHz	Value
Master	0	0	27.98	Master	1.000	0.9139
-25.0	2.500	25.000	27.980	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Phase	M Elect Quad Offset 10 kHz	MM.M	Value	Phase	M Elect Quad Gain 10 kHz	Value
Master	0	0	26.52	Master	1.000	0.9597
-25.0	2.500	25.000	26.520	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration

Induction Electrode (20 kHz)

Phase	ID Elect Real Offset 20 kHz	MM.M	Value	Phase	ID Elect Real Gain 20 kHz	Value	Phase	ID Elect Phase 20 kHz	DEG	Value
Master	0	0	15.07	Master	1.000	0.9481	Master	0	0	5.9-1
-25.0	2.500	25.000	15.070	0.7500	1.000	1.000	0.000	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	ID Elect Quad Offset 20 kHz	MM.M	Value	Phase	ID Elect Quad Gain 20 kHz	Value	Phase	M Elect Phase 20 kHz	DEG	Value
Master	0	0	15.43	Master	1.000	0.9895	Master	0	0	6.767
-25.0	2.500	25.000	15.430	0.7500	1.000	1.000	0.000	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	M Elect Real Offset 20 kHz	MM.M	Value	Phase	M Elect Real Gain 20 kHz	Value
Master	0	0	15.35	Master	1.000	0.9488
-25.0	2.500	25.000	15.350	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Phase	M Elect Quad Offset 20 kHz	MM.M	Value	Phase	M Elect Quad Gain 20 kHz	Value
Master	0	0	16.13	Master	1.000	0.9704
-25.0	2.500	25.000	16.130	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration

Induction (40 kHz)

Phase	ID Elect Real Offset 40 kHz	MM.M	Value	Phase	ID Elect Real Gain 40 kHz	Value	Phase	ID Elect Phase 40 kHz	DEG	Value
Master	0	0	14.80	Master	1.000	0.9118	Master	0	0	14.98
-25.0	2.500	25.000	14.800	0.7500	1.000	1.000	-0.100	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	ID Elect Quad Offset 40 kHz	MM.M	Value	Phase	ID Elect Quad Gain 40 kHz	Value	Phase	M Elect Phase 40 kHz	DEG	Value
Master	0	0	17.42	Master	1.000	0.9172	Master	0	0	17.62
-25.0	2.500	25.000	17.420	0.7500	1.000	1.000	-0.100	0.000	20.00	20.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum

Phase	M Elect Real Offset 40 kHz	MM.M	Value	Phase	M Elect Real Gain 40 kHz	Value
Master	0	0	9.920	Master	1.000	0.9417
-25.0	2.500	25.000	9.920	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Phase	M Elect Quad Offset 40 kHz	MM.M	Value	Phase	M Elect Quad Gain 40 kHz	Value
Master	0	0	23.15	Master	1.000	0.9649
-25.0	2.500	25.000	23.150	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Master: 17-JAN-2000 9:46

Dual Induction - E Master Calibration

SFL Errors

Phase	SFL Voltage Offset	MV	Value	Phase	SFL Voltage Gain	Value
Master	0	0	1.126	Master	1.000	0.9942
-25.0	2.500	25.000	1.126	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Phase	SFL Current Offset	MA	Value	Phase	SFL Current Gain	Value
Master	0	0	0.04030	Master	1.000	0.9909
-0.7500	2.500	0.7500	0.04030	0.7500	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum

Master: 17-JAN-2000 9:46

Litho Density - D / Equipment Identification

Primary Equipment:		
Nuclear Services Cartridge	NSC - E	765
Powered Gamma Detector	PGD - D	2121
Gamma Source Radioactive	GSR - J	2043
Auxiliary Equipment:		
Density Flexibility Cartridge	DFC - C	3219
Electronics Cartridge Housing	ECH - L-WA	787
Powered Detector Housing	PDT - L	2202

Litho Density - D Wellsite Calibration

Background Measurement

Phase	LL Background	CPS	Value	Phase	LU Background	CPS	Value	Phase	LS Background	CPS	Value
Master	20.00	20.00	19.28	Master	20.00	19.11	19.87	Master	27.00	26.11	56.11
-15.00	20.00	25.00	20.000	20.00	20.00	25.00	20.000	-25.00	27.00	32.00	27.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Phase	LTH Background	CPS	Value	Phase	SB1 Background	CPS	Value	Phase	SS2 Background	CPS	Value
Master	7.000	7.000	9.288	Master	20.00	19.00	12.27	Master	11.00	8.507	8.507
-4.000	5.500	7.000	12.00	18.00	19.00	19.00	20.00	11.00	11.00	13.00	13.00
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Master: 16-JAN-2000 17:08

Litho Density - D Wellsite Calibration

Detectors Resolution From BKG Measurements

Phase	LS Resolution Background	Value	Phase	SS Resolution Background	Value
Master	8.000	8.554	Master	8.000	8.738
-5.000	8.000	11.00	8.000	8.000	11.00
Minimum	Normal	Maximum	Minimum	Normal	Maximum

Master: 16-JAN-2000 17:08

Litho Density - D Master Calibration

Aluminum Measurement

Phase	LL Aluminum	CPS	Value	Phase	LU Aluminum	CPS	Value	Phase	LS Aluminum	CPS	Value
Master	90.00	90.00	89.49	Master	135.0	135.0	134.8	Master	50.00	50.00	136.8
-75.00	90.00	105.0	90.00	105.0	135.0	135.0	135.0	50.00	50.00	50.00	50.00
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Phase	LTH Aluminum	CPS	Value	Phase	SS1 Aluminum	CPS	Value	Phase	SS2 Aluminum	CPS	Value
Master	50.00	50.00	53.92	Master	179.0	179.0	178.4	Master	280.0	280.0	258.5
-25.00	50.00	75.00	50.00	135.0	179.0	179.0	179.0	280.0	280.0	280.0	280.0
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Master: 16-JAN-2000 17:08

Litho Density - D Master Calibration

Lithotop Measurement

Phase	LL Iron	CPS	Value	Phase	LU Iron	CPS	Value	Phase	LS Iron	CPS	Value
Master	60.00	60.00	56.80	Master	120.0	120.0	131.5	Master	135.0	135.0	132.7
-40.00	60.00	80.00	60.00	100.0	120.0	140.0	120.0	120.0	135.0	150.0	135.0
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Phase	LTH Iron	CPS	Value	Phase	SS1 Iron	CPS	Value	Phase	SS2 Iron	CPS	Value
Master	30.00	30.00	37.17	Master	155.0	155.0	174.5	Master	245.0	245.0	264.3
-19.00	30.00	41.00	30.00	135.0	155.0	175.0	155.0	225.0	245.0	265.0	245.0
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Master: 16-JAN-2000 17:18

Litho Density - D Master Calibration

Spectrum Quality Ratios

Phase	GRUS Calculated		Value	Phase	LSUS Calculated		Value	Phase	SPU Calculated		Value
Master	0.6500	0.6500	0.6641	Master	0.6500	0.7000	0.6875	Master	0.2800	0.3000	0.3437
-0.6500	0.6500	0.7000	0.6500	0.6500	0.7000	0.8250	0.6500	-0.2800	0.3000	0.4000	0.3000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Normal	Maximum	Minimum	

Phase	GLR Calculated		Value	Phase	GR Calculated		Value
Master	1.390	1.390	1.472	Master	1.000	1.000	1.057
-1.200	1.390	1.400	1.390	0.9800	1.000	1.000	1.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum

Master: 16-JAN-2000 17:02

Compensated Neutron - H / Equipment Identification

Primary Equipment:		
Compensated Neutron Cartridge	CNC - HA	1247
Neutron Logging Source	NLS -	
Neutron Source Radioactive	NSR - F	1451
Neutron Detector with Alpha Source	CND - A	1257
Compensated Neutron Box	CNB - AB	
Auxiliary Equipment:		
Compensated Neutron Housing	CNH - A	4465
Neutron Calibration Tank	NCT - B	

Compensated Neutron - H Wellsite Calibration

Zero Measurement

Phase	CNTC Background	CPS	Value	Phase	CFTC Background	CPS	Value	Phase	CALIBRATION BOX		Value
Master	27.54	27.54	27.54	Master	34.27	34.27	34.27				
9.000	27.54	40.00	9.000	9.000	34.27	40.00	9.000				
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum				

Master: 16-JAN-2000 8:32

Compensated Neutron - H Master Calibration

Tank Measurement

Phase	Thermal Near Con. (Tank)	CPS	Value	Phase	Thermal Far Con. (Tank)	CPS	Value	Phase	CNTC/CFTC (Tank)		Value
Master	5818		5818	Master	2820		2820	Master	2.306		2.306
5000	6000	7000	2000	2750	2775	2825	2000	2.150	2.159	2.540	2.000
Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum	Minimum	Normal	Maximum	Minimum

Master: 16-JAN-2000 8:44

COMPANY:	NORTHROCK RESOURCES LTD.	BOTTOM LOG INTERVAL	1393 m
WELL:	NORTHROCK ET AL FALL STONE_F-01	CASING-DRILLER DEPTH	1394 m
FIELD:	UNDEFINED	DEPTH DRILLER	1400 m
PROVINCE:	NWT	KELLY BUSHING	203.8 m
		DRILL FLOOR	
		GROUND LEVEL	185.8 m

Schlumberger

COMPENSATED NEUTRON
LITHO DENSITY

MISCELLANEOUS

KNOWLING GEOLOGICAL
312-32nd Street N.W.
CALGARY, Alberta
T2P 1G5
(403) 860-6400

COMPOSITE WELL HISTORY
DRILLING TIME
LITHOLOGY LOG

COMPANY: NORTHROCK Resources Ltd.
WELL: Northrock et al Fall Stone F-01
FIELD: Undefined
PROVINCE: N.W.T.
LOCATION: F-01-64-50-125-45

COORDINATES: 64 40'29" 125 46'13"
ELEVATIONS: GD 198.80 m LOG MEASURED FROM KB
KB 203.80 m 5.2 m ABOVE GROUND
WELL TYPE: Exploratory
SPUD DATE: 27-JAN-00 @2200hr TOTAL DEPTH: 1400m
LICENCE No.: 1886 T.D. DATE: 07-Feb-00 @2100hr
AFE No.: 990436

CONTRACTOR: Akita/Sahtu Ltd #51
MUD TYPE: Gel/Chem
MUD UP @: 1030m
SAMPLES: 5m @ 350m to 1260m
2.5m 1260 to 1400m, 3 wet, 1 bulk.
10m @ 350 to 1400m. Jars.
DST's: None

CORES: None.

OPEN HOLE LOGS: BHCS-GR-CAL TD-SC (GR-surface)
DITE-CNI-LDT-GR-DAC-PE TD-SC

SUPERVISION
GEOLOGICAL: Dave Roberts

DRILLING: Garry Campanuk

HOLE SIZE		CASING SIZE		CASING DEPTH	
SURFACE: 311	mm	SURFACE: 244.5	mm	SURFACE: 342.0	m
INTERMEDIATE: 222	mm	INTERMEDIATE: n/a	mm	INTERMEDIATE:	m
MAIN:	mm	MAIN:	mm	MAIN:	m

REMARKS: Well deviated at bottom to 7.6 degrees.

ROCK TYPE

CONGLOMERATE, SANDSTONE, SILTSTONE, SHALE, grey, SHALE, black, SHALE, coloured, CHERT, LIMESTONE, DOLOMITE, ANHYDRITE, COAL, CLAYSTONE, grey, CLAYSTONE, col, MARLSTONE, calc, MARLSTONE, dol, SALT, SIDERITE, LIMONITE, BRECCIA, IGNEOUS, basic, IGNEOUS, acidic, CANNOT INTERPRET, NO SAMPLE, CEMENT, TUFF, ULTRABASIC

ACCESSORIES

SANDY, SILTY, FELDSPAR, SILICEOUS, CHERTY, light, CHERTY, dark, ARGILLACEOUS, CARBONACEOUS, BITUMINOUS, CALCAREOUS, LIMESTONE strg, DOLOMITIC, DOLOMITE strg, ANHYDRITIC, ANHYDRITE strg, PHOSPHATE pel, FERRUGINOUS, GLAUCONITIC, BENTONITIC, PYRITIC, KAOLINITIC, BIOCLASTIC, OOLITES, PELLETS, INTRACLASTS, FOSSILS, CRINOID, PELECYPOD, BRACHIOPOD, OSTRACOD, CORAL, STROMATOPOROID, AMPHISPORA, FISH REMAINS, PLANT REMAINS, BRECCIA frag, SANDSTONE strg, SILTSTONE strg, SHALE lam, TUFFACEOUS, Heavy, dark Minerals, FORAMINIFERA/Rad, ANTIGORITE, BRUCITE, BRONZITE, CHROMITE, CHRYSOTILE, DUNITE, TALC, SERPENTINE

OIL SHOWS

EVEN STAINING, FLUORESCES
SPOTTY STAIN, FLUORESCES
QUESTIONABLE, NO FLUORESCENCE,
DEAD, ASPHALTIC

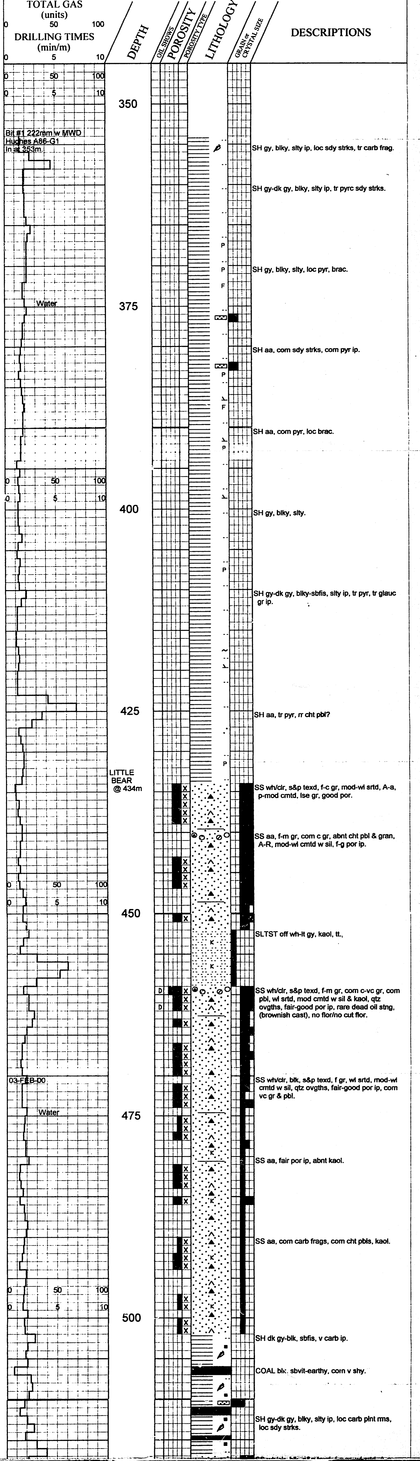
POROSITY TYPES

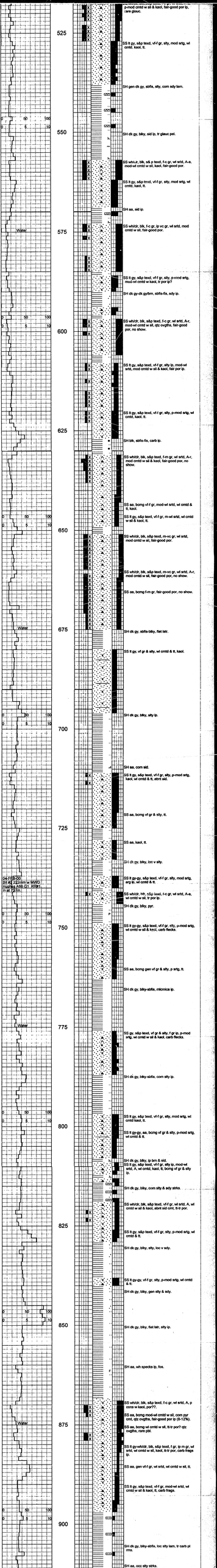
INTERCRYSTALLINE, INTERGRANULAR
INTEROOLITIC, INTEPELLETOID,
VUGGY,
PINPOINT,
MOLDIC
ORGANIC
FRACTURE
EARTHY
FENESTRAL

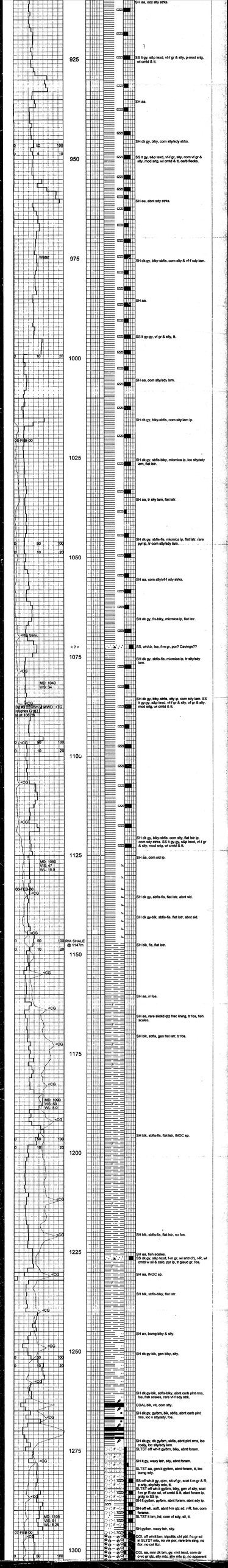
DUNHAM CLASSES

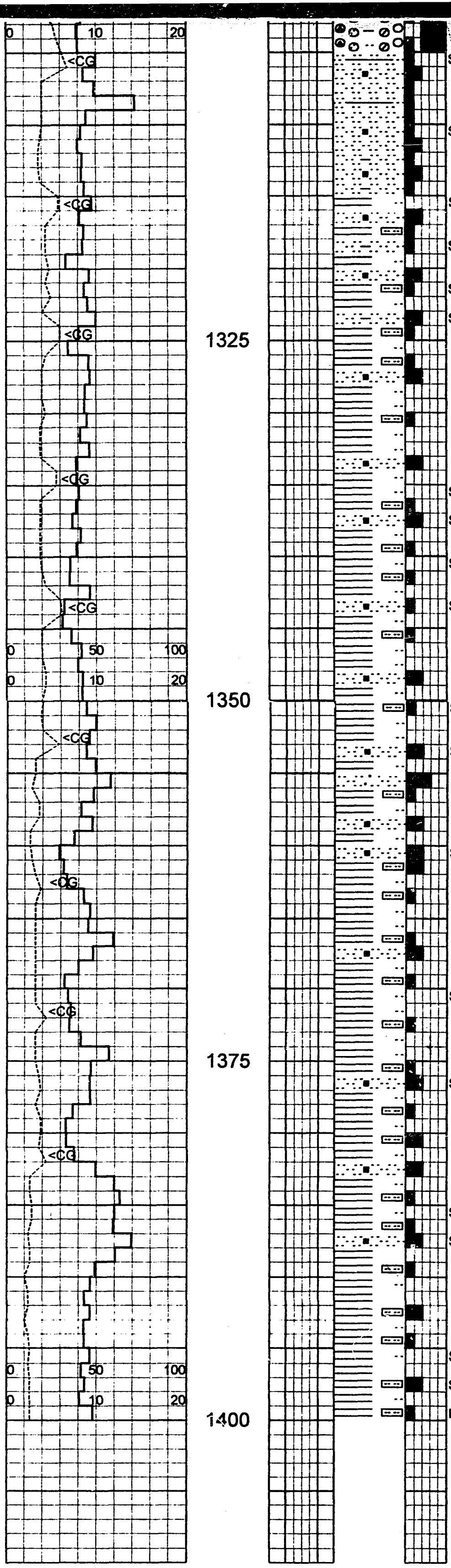
PK PACKSTONE
WK WACKESTONE
MD MUDSTONE
BD BOUNDSTONE
GR GRAINSTONE

SCALE 1:240




525
550
575
600
625
650
675
700
725
750
775
800
825
850
875
900
Water
Water
Water
Water
0 50 100
0 5 10
SS wh/vlr, blk, s& p tend, f-c gr, wl srtd, A-a, mod-wl cmtd w sil, kaol, fair-good por.
SS ll gy, s&p tmod, vf-f gr, sity, mod srtg, wl cmtd, kaol, tt.
SH gen dk gy, sbfis, slty, com sdy lam.
SH dk gy, blky, sid ip, tr glauc pel.
SS wh/vlr, blk, s& p tend, f-c gr, wl srtd, A-a, mod-wl cmtd w sil, kaol, fair-good por.
SS ll gy, s&p tmod, vf-f gr, sity, mod srtg, wl cmtd, kaol, tt.
SH aa, sid ip.
SS wh/dr, blk, s&p tend, f-c gr, wl srtd, mod cmtd w sil, fair-good por.
SS ll gy, s&p tend, vf-f gr, sity, p-mod srtg, mod-wl cmtd w kaol, tr por ip?
SH dk gy-dk gy/brn, sbfis-fis, sdy ip.
SS wh/dr, blk, s&p tend, f-c gr, wl srtd, A-r, mod-wl cmtd w sil, qtz ovgths, fair-good por, no show.
SS ll gy, s&p tend, vf-f gr, sity ip, mod-wl srtd, mod cmtd w sil & kaol, fair por ip.
SS ll gy, s&p tend, vf-f gr, sity, p-mod srtg, wl cmtd, kaol, tt.
SH blk, sbfis-fis, carb ip.
SS wh/dr, blk, s&p tend, f-m gr, wl srtd, A-r, mod cmtd w sil & kaol, fair-good por, no show.
SS aa, bcmg vf-f gr, mod-wl srtd, wl cmtd & tt, kaol.
SS ll gy, s&p tend, vf-f gr, m-wl srtd, wl cmtd w sil & kaol, tt.
SS wh/dr, blk, s&p tend, m-vc gr, wl srtd, mod cmtd w sil, fair-good por.
SS wh/dr, blk, s&p tend, m-vc gr, wl srtd, A-r, mod cmtd w sil, fair-good por, no show.
SS aa, bcmg f-m gr, fair-good por, no show.
SH dk gy, sbfis-blky, flat latr.
SS ll gy, vf gr & sity, wl cmtd & tt, kaol.
SH dk gy, blky, sity ip.
SH aa, com sid.
SS ll gy, s&p tend, vf-f gr, sity, p-mod srtg, kaol, wl cmtd & tt, mbnt sid.
SS aa, bcmg vf gr & sity, tt.
SS aa, kaol, tt.
SH dk gy, blky, loc v sity.
SS ll gy-gy, s&p tend, vf-f gr, sity, mod srtg, arg ip, wl cmtd & tt.
SS wh/dr, blk, s&p tend, f-c gr, wl srtd, A-a, wl cmtd w sil, tr por ip.
SH dk gy, blky, pyr.
SS ll gy-gy, s&p tend, vf-f gr, sity, p-mod srtg, wl cmtd w sil & kaol, carb flecks.
SS aa, bcmg gen vf gr & sity, p srtg, tt.
SH dk gy, blky-sbfis, mtcmica ip.
SS gy, s&p tend, vf gr & sity, f gr ip, p-mod srtg, wl cmtd w sil & kaol, carb flecks.
SH dk gy, blky-sbfis, com sity ip.
SS ll gy, s&p tend, vf-f gr, sity, mod srtg, wl cmtd kaol, tt.
SS ll gy-gy, aa, bcmg vf gr & sity, p-mod srtg, wl cmtd & tt.
SH dk gy, blky, ip brn & sid.
SS ll gy, s&p tend, vf-f gr, sity ip, mod-wl srtd, A, wl cmtd, kaol, tt, bcmg vf gr & sity ip.
SH dk gy, blky, com sity & sdy strks.
SS wh/dr, blk, s&p tend, vf-f gr, wl srtd, A, wl cmtd w sil & kaol, abnt sid cmt, tt-tr por.
SS ll gy, s&p tend, vf-f gr, sity, p-mod srtg, wl cmtd & tt.
SH dk gy, blky, sity, loc v sdy.
SS ll gy-gy, vf-f gr, sity, p-mod srtg, wl cmtd & tt.
SH dk gy, blky, gen sity & sdy.
SH dk gy, blky, flat latr, sity ip.
SH aa, wh specks ip, fos.
SS wh/dr, blk, s&p tend, f-c gr, wl srtd, A, p cons w kaol, por??.
SS aa, bcmg mod-wl cmtd w sil, com pyr cmt, qtz ovgths, fair-good por ip (8-12%).
SS aa, bcmg wl cmtd w sil, tt-tr por? qtz ovgths, rare pbl.
SS ll gy-wh/dr, blk, s&p tend, f gr, ip m gr, wl srtd, wl cmtd w sil, kaol, tt-tr por, carb frags ip.
SS aa, gen vf gr, wl srtd, wl cmtd w sil, tt.
SS ll gy, s&p tend, vf-f gr, mod-wl srtd, wl cmtd w sil & kaol, tt, carb frags.
SH dk gy, blky-sbfis, loc sity lam, tr carb pl rms.
SH aa, occ sity strks.
04-FEB-00
Sfc #2 222mm w MWD
Hole Size 8.5IN G1 RDB1
ft at 21m


925
950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300
Water
05-FEB-00
<RB Serv.
<CG
MD: 1040
VIS: 34
04-FEB-00 @ 2220hrs w MWD Hughes G387 Hole at 1067ft
MD: 1090
VIS: 47
WL: 15.0
RIA SHALE @ 1147m
MD: 1090
VIS: 33
WL: 6.0
MD: 1100
VIS: 31
WL: 6.2
07-FEB-00
SH aa, occ sity strks.
SS ltgy, sdp text, vf-f gr & slty, p-mod srtg, wl crntd & tt.
SH aa.
SH dk gy, blky, com sltyfsdy strks.
SS ltgy, sdp text, vf-f gr, slty, com vf gr & slty, mod srtg, wl crntd & tt, carb flecks.
SH aa, abnt sdy strks.
SH dk gy, blky-sbfis, com slty & vf-f sdy lam.
SH aa.
SS ltgy-gy, vf gr & slty, tt.
SH aa, com sltylsdy lam.
SH dk cy, blky-sbfis, com slty lam ip.
SH dk gy, sbfis-blky, micmica ip, loc sltylsdy lam, flat lstr.
SH aa, tr slty lam, flat lstr.
SH dk gy, sbfis-fis, micmica ip, flat lstr, rare pyr ip, tr-com sltylsdy lam.
SH aa, com sltylvf-f sdy strks.
SH dk gy, fis-blky, micmica ip, flat lstr.
SS, whslr, lse, f-m gr, por? Cavings??
SH dk gy, sbfis-fis, micmica ip, tr sltylsdy lam.
SH dk gy, blky-sbfis, slty ip, com sdy lam. SS ltgy-gy, sdp text, vf-f gr & slty, vf gr & slty, mod srtg, wl crntd & tt.
SH dk gy, blky-sbfis, com slty, flat lstr ip, com sdy strks. SS ltgy-gy, sdp text, vf-f gr & slty, mod srtg, wl crntd & tt.
SH aa, com sid ip.
SH dk gy, sbfis-fis, flat lstr, abnt sid.
SH dk gy-blk, sbfis-fis, flat lstr, abnt sid.
SH blk, fis, flat lstr.
SH aa, rr fos.
SH aa, rare slicked qtz frac lining, tr fos, fish scales.
SH blk, sbfis, gen flat lstr, tr fos.
SH blk, sbfis-fis, flat lstr, INOC sp.
SH blk, sbfis-fis, flat lstr, no fos.
SH aa, fish scales.
SS dk gy, sdp text, f-m gr, wl srtd (?), r-R, wl crntd w sil & calc, pyr ip, tr glauc gr, fos.
SH aa, INOC sp.
SH blk, sbfis-blky, flat lstr.
SH an, bcmg blky & slty.
SH dk gy-blk, gen blky, slty.
SH dk gy-blk, sbfis-blky, abnt carb plnt rms, fos, fish scales, rare vf-f sdy strk.
COAL blk, vit, com slty.
SH dk gy, gybrn, blk, sbfis, abnt carb plnt rms, loc v sltylsdy, fos.
SH dk gy, dk gybrn, sbfis, abnt plnt rms, loc coaly, loc sltylsdy lam.
SLTST off wh-ltgybrn, blky, abnt foram.
SH lt gy, wavy lstr, slty, abnt foram.
SLTST aa, gen lt gybrn, abnt foram, tt, loc bcmg sdy.
SS off wh-lt gy, qtzrc, sll-vf gr, scat f-m gr & R, p srtg, sltyslty mtx; tt.
SLTST off wh-ltgybrn, blky, gen vf slty, scat f-m gr R qtz sd, wl crntd & tt, abnt foram ip, grdg to SS ip.
SH lt gybrn, gybrn, abnt foram, abnt sdy ip.
SH off wh, soft, abnt f-m qtz sd, r-R, lse, com forams.
SLTST lt brn, hd, com vf sdy, sil, tt.
SH gybrn, wavy lstr, slty.
CCG, off wh lt brn, tripolitic cht pbl, f-c gr sd in SLTST mtx, no vis por, rare brn strg, no fluor, no cut fluor.
CGL aa, mnr ch brn, gy, vnrl text, comn cbr c-vc gr, slty mtx, slty mtx ip, no apparent



SLTST lt gy, frm, ip vf sdy, mod cmtd & tt, fine dism carb specs through out.

SLTST lt gy-gy, blky, arg ip, com carb specs, grdg to slty SH ip.

SH gy, blky-sbfis, slty, micmica.

SLTST lt gy-gy, sl arg, mica flks, com carb specs.

SH gy-dk gy, sbfis-fis, slty, micmica.

SLTST gy, arg, mica flks, carb specs.

SH gy-dk gy, blky-sbfis, micmica, com slty.

SLTST gy, com vf sdy, com carb specs, mica flks, grdg to slty SH ip.

SH gy, blky-sbfis, slty, micmica.

SLTST gy, arg, mica flk, tr carb specs.

SH gy-dk gy, blky-sbfis, slty ip, flat lstr ip, micmica.

SLTST gy, vf sdy ip, ag, grdg to SH, carb specs.

SLTST aa, lt gy-gy, vf sdy strks.

SH dk gy, sbfis-fis, slty ip, micmica, loc slty strks.

SLTST gy, vf sdy ip, tt, mica flks.

SH dk gy, sbfis-blky, loc sdy strks.

SLTST off wh-lt gy, com vf gr, wl cmtd & tt, com carb specs.

SH dk gy, sbfis-blky, micmica, slty ip.

SLTST gy, blky, vf sdy, com carb specs.

FTD 1400m @ 2100h 07-02-00.