APPROVAL TO DRILL A WELL

National Energy Board / Office national de l'énergie

Exploratory ☒ 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: PARA ET AL NOGHA M-17
Operator: PARAMOUNT RESOURCES LTD. Drilling Program No.:
Contractor: WILSON DRILLING Interest Identifier: Sahtu Settlement Lands Block M17
Drilling Rig or Unit: 3 Estimated Well Cost: $3,800,000.00
Location-Unit: M Section: 17 Grid Area: 66°40', 125°45'
Coordinates: Lat.: 66°36'45.247" Long.: 125°48'30.680"
Area: NOGHA Field / Pool: N/A
Elevation-KB~~RT~~: 350 (ASL) GL ~~Elevation~~: 344
Approx. Spud Date: JANUARY 30, 2003 Est. Days on Location: 35
Anticipated Total Depth: 1510 Target Horizons: MOUNT CLARKE

EVALUATION PROGRAM

Ten-metre sample intervals
Five-metre sample intervals: Surface to total depth
Canned sample intervals
Conventional cores at: 1426m and 1442m
Logs and Tests: GR-XY, Cal-DLL, Sonic-GR-XY, DL-CNL-GR-PE-XY-Cal. 3 DST's in Mt. Clarke

CASING AND CEMENTING PROGRAM

O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m KB)	Cementing
339.7	101	K-55	60	10 Tonnes Arctic Set
244.5	59.53	L-80	500	8 Tonnes Arctic Set
				20 Tonnes Class "G"
177.8	43.16	L-80	1510	29 Tonnes Class "G"

B.O.P. Equipment: 1-21mPa Annular, 1-21mPa double gate rams, double choke 21mPa manifold.

Other Information: The main hole will be drilled with salt saturated drilling fluid. The contaminated mud and solids will be encapsolated with Zeolite and concrete, then burried on lease.

Signed: *Responsible Officer* Title: Sr. Drilling & Completions Engineer

Name: Wayne Tomm Company: Paramount Resources Ltd.
Date: November 26, 2002 Phone: (403) 290-3626

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

Date: Feb 21/03 Signed: for / Chief Conservation Officer
File: 9211-P33-18-6
WID: 1970
UWI: 300M176640125450

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

CANADA

WELL TERMINATION RECORD

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

WELL DATA

Well Name: PARA ET AL NOGHA M-17 Area: NOGHA

Grid Area: 66°40', 125°45' Field/Pool: N/A

Permit or Lease No.: SAHTU M1 Final Coordinates: Lat.: 66°36'45.247" Long: 125°48'30.680"

Drilling Unit: M-17 Elevations RT/KB: 354.6 GL: 350.0

Spud Date: FEBRUARY 25, 2003 Rig Released: MARCH 20, 2003 Total Depth: 1471

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
339.7	101	J-55	60	8.8 Tonnes Arctic Set
244.5	59.53	L-80	499	12 Tonnes Arctic Set
				17.5 Tonnes 0:1:0 "G"
177.8	43.2	L-80	1471	32 Tonnes 0:1:0 "G"

PLUGGING PROGRAM

Approval of the following program was obtained by (person) N/A from

(person) ..... by means of

..... on ..... 19 .

Type of Plug:	Interval:	Felt:	Cement and Additives:
N/A			

Lost Circulation/Overpressure Zones: None

Equipment left on Seafloor (Describe): N/A

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

Cores: Type: None 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: ..... P. Eng. Title: Sr. DRILLING & COMPLETIONS ENGINEER

Name: WAYNE R. TOMM Date: APRIL 1, 2003

Acknowledged by: ..... Engineering Branch

Date: April 7/03

File: 9211-P33-18-6

WID 1970 UWI 300M176640125450

Well Status
Suspended ☒
Completed ☐
Abandoned ☐

Canada

FINAL WELL REPORT

N.E.B. COPY

FINAL WELL REPORT

Paramount Resources Ltd.

Para et al Nogha M-17
WID: 1970
UWI: 300M176650125450

Grid: 66^0 40', 125^0 45'

DATE: April 23, 2003

COMPANY REPRESENTATIVE: Wayne Tomm

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A. INTRODUCTION

Paramount Resources Ltd. drilled a 1471metre exploratory well spudded on February 25, 2003 and finishing on March 20, 2003 to evaluate gas potential in the Mount Clark formation at a depth of 1471mKB.

The drilling contractor was Nabors Drilling based out of Calgary, Alberta. The drilling rig used was a mechanical land rig rated for 2750 m. The rig had a $80m^3$ mud system and was equipped with two boilers.

The well was drilled on Sahtu Settlement Lands Block M-17 in which Paramount Resources Ltd. has a 50 % working interest. Operating License No1970 was issued to Paramount Resources Ltd. on February 21, 2003.

The well which offsets the PCI Canterra Nogha O-47 location. The exact co-ordinates of the well are as follows:

Latitude:	66^0 36' 45.247"
Longitude:	125^0 48' 30.680"

The rig was moved onto the location February 18, 2003 and the well spudded on February 25,2003 at 09:45 hours to drill the 444.5 mm conductor hole to a depth of 60 m. While drilling the conductor hole hard dolomite was encountered resulting in piloting ahead with 311mm and then opening up to 444mm hole. The 339.7 mm X 81.1 kg/m X K-55 LT&C conductor pipe was set with the shoe depth being at 27 m. The conductor pipe was cemented with good mud returns throughout the cement job and 3.0 m^3 returns of cement. The diverter was nippled up and functioned tested with the HCR.

The conductor shoe was then drilled out and the 311 mm surface hole was drilled ahead to 499 m with out any lost circulation.

When running the 244.5 mm X 55.53kg/m X L-780 LT&C casing, no problems were encountered. 35 joints casing was run with no problems and cemented with

LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3
TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

There was good mud returns reported throughout the cement job with 4.9 m^3 cement returns. The plug was bumped and the pressure held. The plug was down at 20:03 hours on March 06, 2003 The surface casing was set at 499m.

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 14,000 kPa high. The accumulator precharge bottles were checked and the accumulator function tested prior to drilling out.

The float collar and shoe were drilled out on March 09, 2003. A formation leak off test was done and the gradient was taken to 23 kPa/m without breaking down the formation. The 216mm main hole was drilled ahead to 580 m with some hole sloughing occurring. The hole was drilled to a total depth of 1471 m in the Proterozoic.

After total depth had been reached the open hole was logged by Schlumberger. Log run # 1 was a CNLDT, HRA Laterlog, Dipole Sonic and Gamma Ray from total depth to the surface casing.

After the logs were evaluated it was decided run production casing. When running the 177.8 mm x 43.2 kg/m x L-80 LT&C casing, no problems were encountered. 103 joints casing was run with no problems and cemented with:

32 TONNES OF "G" CEMENT+.5%DO65+.3%D167

There was good mud returns reported throughout the cement job with 2 m^3 cement returns. The plug was bumped and the pressure held. The plug was down at 18:32 hours on March 19, 2003 The production casing was set at 1471m.

The rig was then rigged out and released at 08:00 hours on March 20, 2003.

Note: The well was taken over by Apache Canada Ltd. when the drilling rig moved off location. Apache subsequently moved in a service rig and completed the well.

OVERSIZED

DOCUMENT

FILMED

ON

35mm

B. GENERAL DATA

1. Well Name: Para et al Nogha M-17

Authority to Drill a Well No: 1970

Exploration Agreement Number: Sahtu Settlement Lands Block M-17

Location Unit: M

Section: 17

Grid Area: 66^0 40', 125^0 45'

Classification: Exploration

2. Well Location Coordinates:
Latitude: 66^0 36' 45.247"
Longitude: 125^0 48' 30.680"

3. Unique Well Identifier: 300M176650125450

4. Operator: Paramount Resources Ltd.

5. Contractor: Nabors Drilling

6. Drilling Unit:
Rig # 62
Mechanical, Land Rig

7. Position Keeping: Not Applicable, Land Rig

8. Support Craft (Helicopter): N/A

9. Drilling Unit Performance: N/A

10. Difficulties and Delays: None

11. Total Well Cost: $4,131,394.00

C. SUMMARY OF DRILLING OPERATIONS

1. Elevations:
   Ground: 350.0m
   KB: 354.6m
   KB To Casing Flange: 4.6m (KB to CF)

2. Total Depth:
   FTD: 1471 mKB
   PBTD: 1451 mKB
   TVD: 1471 mKB

3. Date and Hour Spudded: February 25, 2003 @ 09:45 hrs.

4. Date Drilling Completed:March 18, 2003 @ 01:00 hrs.

5. Date of Rig Release:March 20, 2003 @ 08:00 hrs

6. Well status: Suspended Gas Well

7. Hole Sizes and Depths:

Conductor Hole:	444 mm to 60 mKB
Surface Hole:	311 mm to 499 mKB
Main Hole:	216 mm to 1471 mKB

8. Casing and Cementing Record:
   Conductor Hole:

Casing Size:	339.7 mm
Casing Weight:	101 kg/m
Casing Grade:	K-55
Casing Make:	Ipsco
Number of Joints:	5
Thread:	BT&C
Depth Set:	60 mKB
Cut Height:	At Surface KB
Cut off Depth:	N/A
Date Set:	February 27, 2003
Cement Volume:	10 Tonnes
Cement Type:	Arctic Set
Additives:	.5% DO65+.2% DO46+.3% DO13

Surface Hole:

Casing Size:	244.5 mm
Casing Weight:	59.53 kg/m
Casing Grade:	L-80
Casing Make:	Ipsco
Number of Joints:	35
Thread:	LT&C
Depth Set:	499 m (KB)
Cut Height:	At Surface (KB)
Date Set:	March 6, 2003
Cement Volume:	19 Tonnes
Float Shoe Depth:	499 mKB
Float Collar Depth:	484 mKB
Cut Off Depth:	N/A

Cement:

LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3
TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3
TOP JOB ON SURFACE CASING=4.8 TONNES OF ARTIC SET +.5%D-65+.2%D-46+.3%D-13

Cement Top:	Surface
Casing Bowl Size:	279 mm X 244.5 mm X 21 mpa
Casing Bowl Make:	ABB Vetco

9. Drilling Fluid:

Conductor Hole:	Gel - Chemical	
Properties:	Viscosity:	80 sec/L
	Weight:	1150 kg/m^3
	PH:	7.5
	Solids:	0.095
	Gels:	7 / 10
	PV / YP:	14 / 10
Surface Hole:	Gel - Chemical	
Properties:	Viscosity:	120 sec/L
	Weight:	1075 kg/m^3
	PH:	9.5
	Water loss:	N/A
	Solids:	0.108
	Filter Cake:	2

Main Hole:

Salt Saturated Gel - Chemical

Properties:		
	Viscosity:	66 sec/L
	Weight:	1300 kg/m^3
	PH:	9.5
	Water loss:	10 cc
	Chlorides:	190,000 mg/l
	Solids:	0.180
	Gels:	5 / 15
	Filter Cake:	1
	PV / YP:	15 / 7

10. Fishing Operations: N/A

11. Well Kicks and Well Control Operations: N/A

12. Formation Leak Off Tests:

Depth:	500 m
Casing Setting Depth:	499 mKB

The leak-off test was taken to a gradient of 23kPa /m without breaking down the formation.

13. Time Distribution:

	Activity											
Date	Drilling	Tripping & Directional	Surveying	Circulating & Reaming	Cementing	WOC or WOO	Rig Service& safety	Rig Repair	Run Casing	Rig-up, Tear-out	Rig Move	Logging & DST
02/18/03											12.0	
02/19/03											12.0	
02/20/03											12.0	
02/21/03											12.0	
02/22/03											12.0	
02/23/03											12.0	
02/24/03											12.0	
02/25/03											12.0	
02/26/03	5.00	6.50		2.50			.50			9.50		
02/27/03	10.50	6.50		5.50			.50	1.00				
02/28/03		6.50	.25	7.75	1.75	1.25	.75		5.75			
03/01/03	5.00	4.25				1.50	.50			12.75		
03/02/03	14.75	8.25					1.00					
03/03/03	11.75		.50	7.75			.50	3.50				
03/04/03	21.25		1.00				.50	1.25				
03/05/03	13.25	5.75	.50	1.00	1.75		.50	1.25				
03/06/03	19.75		.75	.75			.50	2.25				
03/07/03	3.75	5.25	.25	3.00	1.50	3.50	.50		6.25			
03/08/03				2.00	2.00	.75		6.00		13.25		
03/09/03		4.00					.25	8.50		11.25		
03/10/03	21.25	1.00	.50				1.00			.25		
03/11/03	17.25	4.50	.25	1.25			.75					
03/12/03	22.50		1.00				.50					
03/13/03	15.00	6.25	.50	1.75			.50					
03/14/03	23.25		.25				.50					
03/15/03	18.75	3.25	.50	1.00			.50					
03/16/03	16.75	6.00		.75			.50					
03/17/03	23.00		.50				.50					
03/18/03	23.50						.50					
03/19/03	1.00	10.00	.50	4.00			1.00					7.50
03/20/03				1.50	2.75		1.25		9.75	8.75		
03/21/03										8.00		
Totals	287.25	78.00	7.25	41.50	9.75	7.00	13.50	23.75	21.75	63.75	96.00	7.50

Time Break Down:

Activity	Hours	%
Drilling:	287.25	43.72
Tripping, Reaming:	78.00	11.87
Surveying:	7.25	01.10
Circulating:	41.50	06.32
Cementing:	9.75	01.48
WOC & WOO:	7.00	01.07
Rig Service & Safety:	13.50	02.05
Rig Repair:	23.75	03.61
Running casing:	21.75	03.31
Logging & DST:	7.50	01.14
Rig up & tear out:	63.75	09.70
Rig Move:	96.00	14.61
Total Hours:	657.00	100.00

14. Deviation Survey:



Paramount resources

WELL SUMMARY

Surface Casing: 499mMD, 598.97mTVD
TD: 1262.0mMD, 1261.62mTVD
Coordinates at TD: 7.26mS, 21.30mW
Start Date: February 25, 2003
End Date: March 18, 2003

Prepared By: Jason Sullivan, C.Tech
Sr. Drilling Technologist
April 1, 2003
email: jsullivan@radiusdirectional.com

Radius Directional Services

Actual Survey Report

Company:	Paramount Resources Ltd.	**Date:** 4/1/2003	**Time:** 10:45:50	**Page:**	1
Field:	Nogha	**Co-ordinate(NE) Reference:**	Site: Para et al Nogha Unit M Section 17		
Site:	Para et al Nogha Unit M Section 17	**Vertical (TVD) Reference:**	RKB 349.3		
Well:	M17 66° 40', 125° 45'	**Section (VS) Reference:**	Site (0.00N,0.00E,0.00Azi)		
Wellpath:	27-1126 OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Survey:	Actual Wellpath as Drilled	**Start Date:**	4/1/2003
Company:	Radius Directional Services	**Engineer:**	Jason Sullivan
Tool:	Geo-Link,	**Tied-to:**	From Surface

Field:	Nogha		
Map System:	Canadian UTM Zones (NAD27/Clarke66)	**Map Zone:**	UTM Zone 10, North 126W to 120W
Geo Datum:	Clarke 1866	**Coordinate System:**	Site Centre
Sys Datum:	Mean Sea Level	**Geomagnetic Model:**	igrf2000

Site:	Para et al Nogha Unit M Section 17				
Site Position:		**Northing:**	7390820.97 m	**Latitude:**	66 36 45.723 N
From:	Geographic	**Easting:**	375535.33 m	**Longitude:**	125 48 37.990 W
Position Uncertainty:	0.00 m			**North Reference:**	True
Ground Level:	344.00 m			**Grid Convergence:**	-2.58 deg

Well:	M17 66° 40', 125° 45'			**Slot Name:**		
Well Position:	+N/-S	0.00 m	**Northing:** 7390820.97 m	**Latitude:**	66 36 45.723 N	
	+E/-W	0.00 m	**Easting :** 375535.33 m	**Longitude:**	125 48 37.990 W	
Position Uncertainty:		0.00 m				

Wellpath:	27-1126 OH		**Drilled From:**	Surface	
			Tie-on Depth:	0.00 m	
Current Datum:	RKB	**Height** 349.33 m	**Above System Datum:**	Mean Sea Level	
Magnetic Data:	4/1/2003		**Declination:**	30.42 deg	
Field Strength:	58837 nT		**Mag Dip Angle:**	81.97 deg	

Vertical Section:	**Depth From (TVD)** m	**+N/-S** m	**+E/-W** m	**Direction** deg
	0.00	0.00	0.00	0.00

Survey

MD m	Incl deg	Azim deg	TVD m	Sys TVD m	N/S m	E/W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Comment
0.00	0.00	0.00	0.00	-349.33	0.00	0.00	0.00	0.000	0.000	0.000	
70.00	0.50	41.90	70.00	-279.33	0.23	0.20	0.23	0.214	0.214	0.000	
83.00	0.50	328.50	83.00	-266.33	0.32	0.21	0.32	1.379	0.000	-169.385	
101.00	0.50	310.30	101.00	-248.33	0.44	0.11	0.44	0.264	0.000	-30.333	
212.20	0.50	226.30	212.20	-137.13	0.41	-0.61	0.41	0.181	0.000	-22.662	
241.10	0.80	199.40	241.09	-108.24	0.14	-0.77	0.14	0.436	0.311	-27.924	
270.10	1.10	176.50	270.09	-79.24	-0.33	-0.82	-0.33	0.495	0.310	-23.690	
289.30	1.20	165.40	289.29	-60.04	-0.71	-0.76	-0.71	0.381	0.156	-17.344	
308.60	1.20	158.00	308.58	-40.75	-1.09	-0.63	-1.09	0.241	0.000	-11.503	
344.90	0.80	147.90	344.88	-4.45	-1.66	-0.35	-1.66	0.360	-0.331	-8.347	
376.00	0.20	276.90	375.97	26.64	-1.84	-0.29	-1.84	0.906	-0.579	124.437	
404.90	0.40	290.90	404.87	55.54	-1.80	-0.44	-1.80	0.220	0.208	14.533	
433.80	0.60	240.90	433.77	84.44	-1.83	-0.66	-1.83	0.477	0.208	-51.903	
462.80	0.60	226.40	462.77	113.44	-2.01	-0.90	-2.01	0.157	0.000	-15.000	
483.00	0.50	247.60	482.97	133.64	-2.12	-1.06	-2.12	0.334	-0.149	31.485	
499.00	0.64	241.86	498.97	149.64	-2.19	-1.21	-2.19	0.281	0.260	-10.755	Surface Casing 499mMD
505.90	0.70	240.10	505.87	156.54	-2.23	-1.28	-2.23	0.281	0.266	-7.670	
534.74	0.90	236.90	534.71	185.38	-2.44	-1.62	-2.44	0.213	0.208	-3.329	
582.90	0.60	288.20	582.86	233.53	-2.57	-2.17	-2.57	0.433	-0.187	31.956	
631.10	1.00	288.10	631.06	281.73	-2.36	-2.81	-2.36	0.249	0.249	-0.062	
679.20	1.20	269.80	679.15	329.82	-2.23	-3.72	-2.23	0.251	0.125	-11.414	
727.38	2.20	216.30	727.31	377.98	-2.97	-4.77	-2.97	1.103	0.623	-33.313	
746.80	2.30	220.10	746.72	397.39	-3.57	-5.24	-3.57	0.277	0.154	5.870	
774.70	1.90	226.80	774.60	425.27	-4.32	-5.94	-4.32	0.504	-0.430	7.204	

Radius Directional Services
Actual Survey Report

Company:	Paramount Resources Ltd.	**Date:** 4/1/2003	**Time:** 10:45:50	**Page:**	2
Field:	Nogha	**Co-ordinate(NE) Reference:**	Site: Para et al Nogha Unit M Section 17		
Site:	Para et al Nogha Unit M Section 17	**Vertical (TVD) Reference:**	RKB 349.3		
Well:	M17 66° 40', 125° 45'	**Section (VS) Reference:**	Site (0.00N,0.00E,0.00Azi)		
Wellpath:	27-1126 OH	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Survey

MD m	Incl deg	Azim deg	TVD m	Sys TVD m	N/S m	E/W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Comment
814.30	1.70	234.40	814.18	464.85	-5.11	-6.89	-5.11	0.236	-0.152	5.758	
862.50	2.00	237.50	862.35	513.02	-5.98	-8.19	-5.98	0.197	0.187	1.929	
891.40	2.10	246.10	891.23	541.90	-6.46	-9.09	-6.46	0.335	0.104	8.927	
930.00	2.30	259.20	929.81	580.48	-6.89	-10.50	-6.89	0.419	0.155	10.181	
968.60	2.20	264.90	968.38	619.05	-7.11	-12.00	-7.11	0.190	-0.078	4.430	
1006.00	2.10	267.60	1005.75	656.42	-7.20	-13.40	-7.20	0.114	-0.080	2.166	
1045.70	1.70	267.80	1045.43	696.10	-7.25	-14.72	-7.25	0.302	-0.302	0.151	
1122.90	1.40	262.90	1122.60	773.27	-7.41	-16.80	-7.41	0.127	-0.117	-1.904	
1229.00	2.30	276.00	1228.64	879.31	-7.35	-20.20	-7.35	0.280	0.254	3.704	
1246.00	1.90	274.70	1245.63	896.30	-7.29	-20.82	-7.29	0.711	-0.706	-2.294	
1262.00	1.52	273.48	1261.62	912.29	-7.26	-21.30	-7.26	0.716	-0.712	-2.287	Extrapolated to TD 1262mM

Annotation

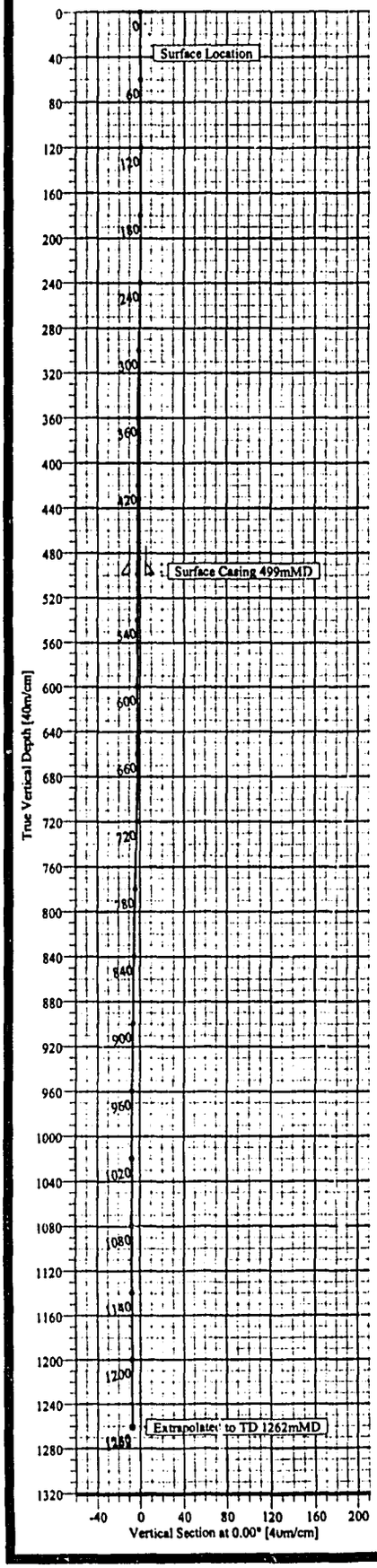
MD m	TVD m	
1262.00	1261.62	Extrapolated to TD 1262mMD

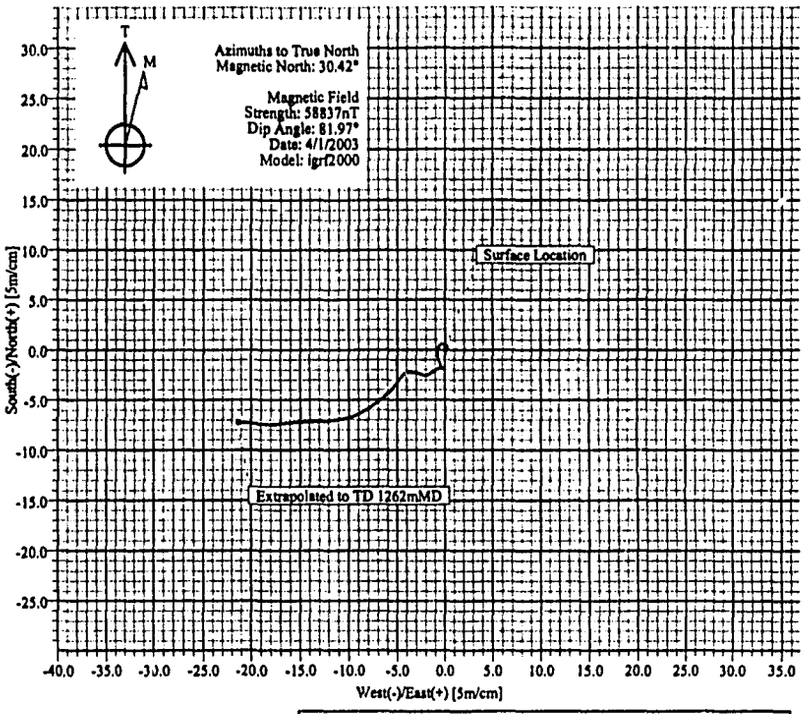
Operations Summary

Depth(m)
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
BHA 1
BHA 2
BHA 3
BHA 4
BHA 5
BHA 6
BHA 7
2/23/03 0:00
2/24/03 0:00
2/25/03 0:00
2/26/03 0:00
2/27/03 0:00
2/28/03 0:00
3/1/03 0:00
3/2/03 0:00
3/3/03 0:00
3/4/03 0:00
3/5/03 0:00
3/6/03 0:00
3/7/03 0:00
3/8/03 0:00
3/9/03 0:00
3/10/03 0:00
3/11/03 0:00
3/12/03 0:00
3/13/03 0:00
3/14/03 0:00
3/15/03 0:00
3/16/03 0:00
3/17/03 0:00
3/18/03 0:00
3/19/03 0:00
3/20/03 0:00
Depth vs Day

Paramount Resources Ltd.

Field: Nogha
Site: Para et al Nogha Unit M Section 17
Well: M17 66° 40', 125° 45'
Wellpath: 27-1126 OH
Survey: Actual Wellpath as Drilled





SITE DETAILS

Para et al Nogha Unit M Section 17

Site Centre Latitude: 66°36'45.723N
Longitude: 125°48'37.990W

Ground Level: 344.00

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site Centre Para et al Nogha Unit M Section 17, True North
Vertical (TVD) Reference: RKB 349.33
Section (VS) Reference: Site Centre (0.00N,0.00E)
Measured Depth Reference: RKB 349.33
Calculation Method: Minimum Curvature

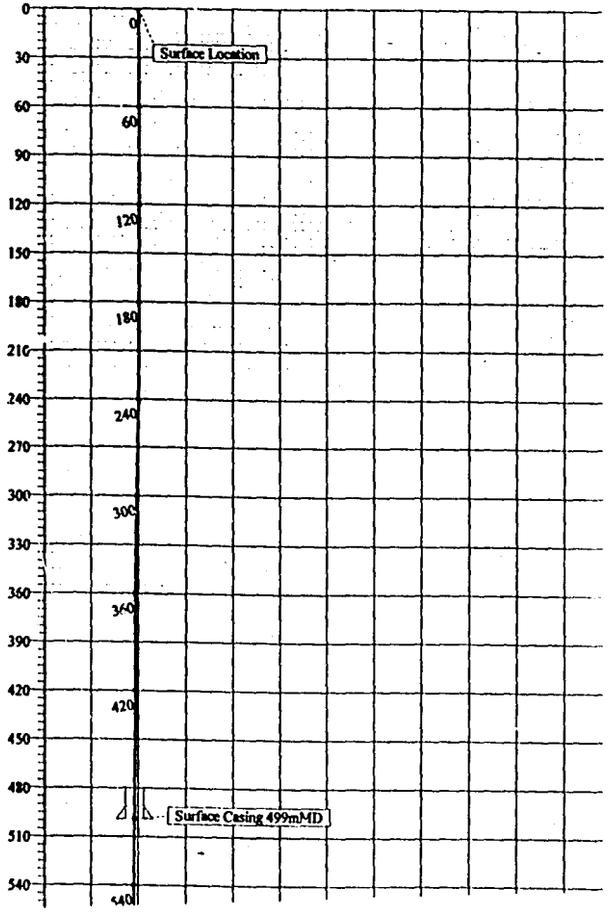
Survey: Actual Wellpath as Drilled (M17 66° 40', 125° 45'/27-1126 OH)

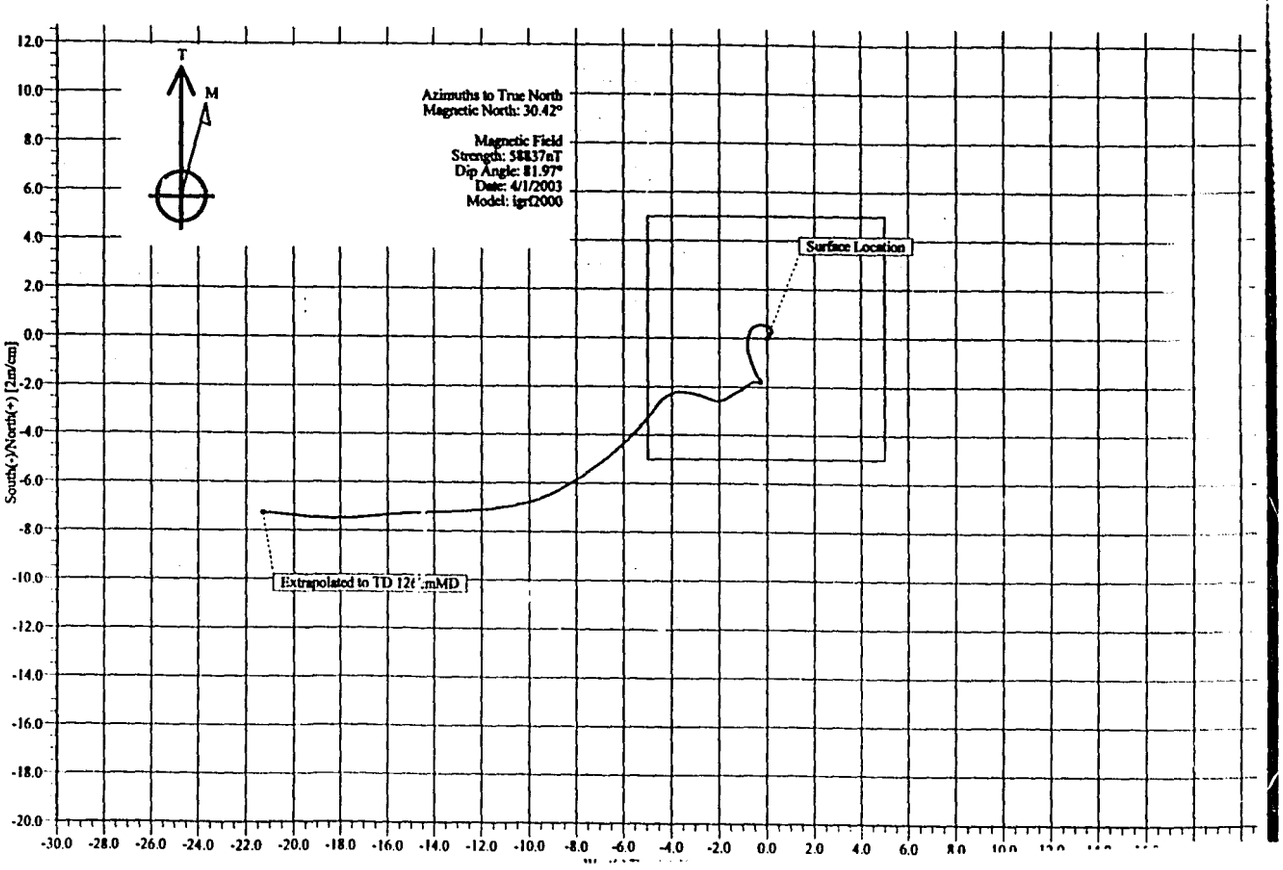
Created By: Jason Sullivan Date: 4/1/2003

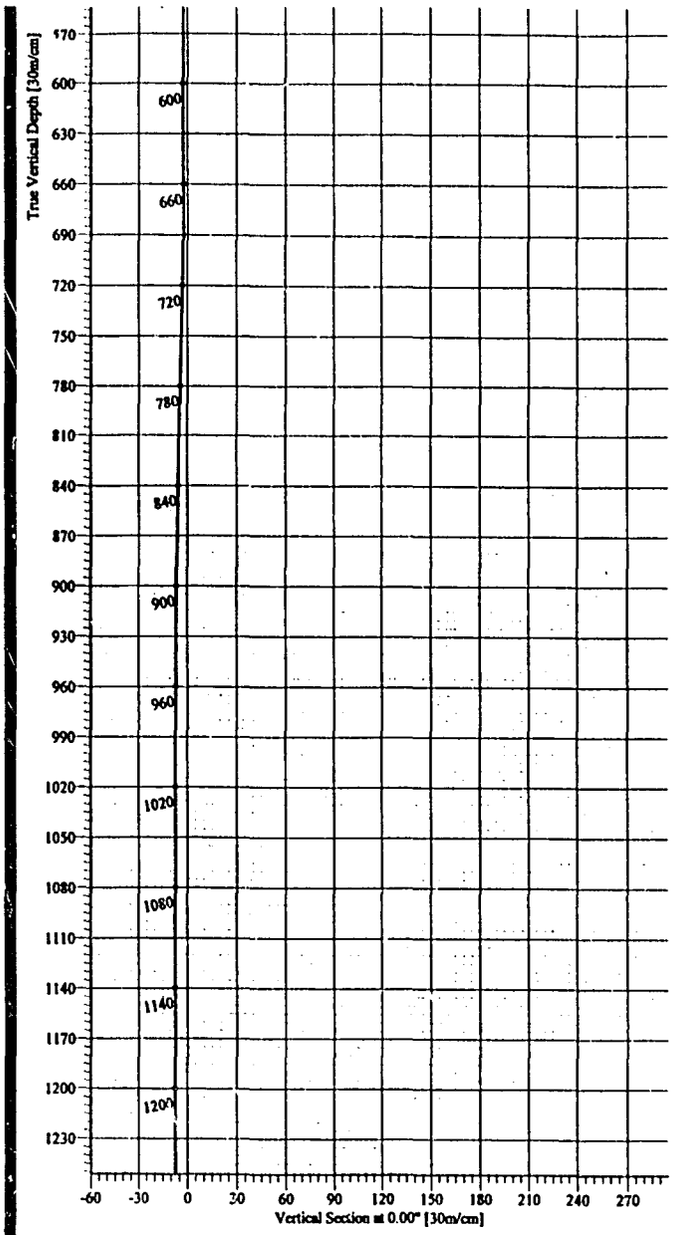
RADIUS
DIRECTIONAL SERVICES

Paramount Resources Ltd.

Field: Nogha
Site: Para et al Nogha Unit M Section 17
Well: M17 66° 40', 125° 45'
Wellpath: 27-1126 OH
Survey: Actual Wellpath as Drilled







SITE DETAILS

Pure et al Noghe Unit M Section 17

Site Centre Latitude 66°36'45.723N
Longitude 125°48'7.990W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Site Centre Pure et al Noghe Unit M Section 17, True North
Vertical (TVD) Reference: RKB 349.3)
Section (VS) Reference: Site Centre (0.00N,0.00E)
Measured Depth Reference: RKB 349.3);
Calculation Method: Minimum Curvature

Survey: Actual Wellpath as Drilled (M17 66° 40', 125° 45'27-1126 OH)

Created By: Jason Sullivan Date: 4/2/2003

RADIUS
DIRECTIONAL SERVICES

Well Information

Operator:	Paramount Resources Ltd.
Well Name:	Paramount Apache Nogha M-17
Location:	66° 36' 45.242" N / 125° 48' 30.680" W
UWI:	300M176640125450
Pool:	Mount Clarke
Field:	Nogha
Province / State:	Northwest Territories
Country:	Canada



Elevations

Reference:		Ground:	350 m
Cut(-) / Fill(+):		Kelly Bushing:	354.6 m
K.B. to Ground:	4.6 m	Casing Flange:	m

Total Depth

Measurement Type	Measured Depth	True Vertical Depth
Drillers TD (Tally)	1471 m	1470.56 m
Drillers TD (Strap or SLM)	1470.6 m	1470.16 m
Loggers TD	1471.5 m	1471.06 m

Surface Co - Ordinates

Well Type: Straight Longitude: 125.483068 Latitude: 66.3645242

N / S Co - Ordinates:

E / W Co - Ordinates:

Bottom Hole Co - Ordinates

Longitude: Latitude:

N / S Co - Ordinates:

E / W Co - Ordinates:

Drilling Fluid Summary

Fluid Type	From	To
Gel Chem / LCM	0 m	500 m
Salt saturated Gel Chem	500 m	1471 m

Casing Summary

Type	Hole Size	Casing Size	Landed At
Conductor	444 mm	339.7 mm	59 m
Surface	311 mm	244.5 mm	499 m

Well Summary

Spud Date: Feb 25, 2003 @ 09:45hrs Contractor: Nabors Drilling Rig 62

TD Date: Mar 18, 2003 @ 01:00hrs Rig Release Date:

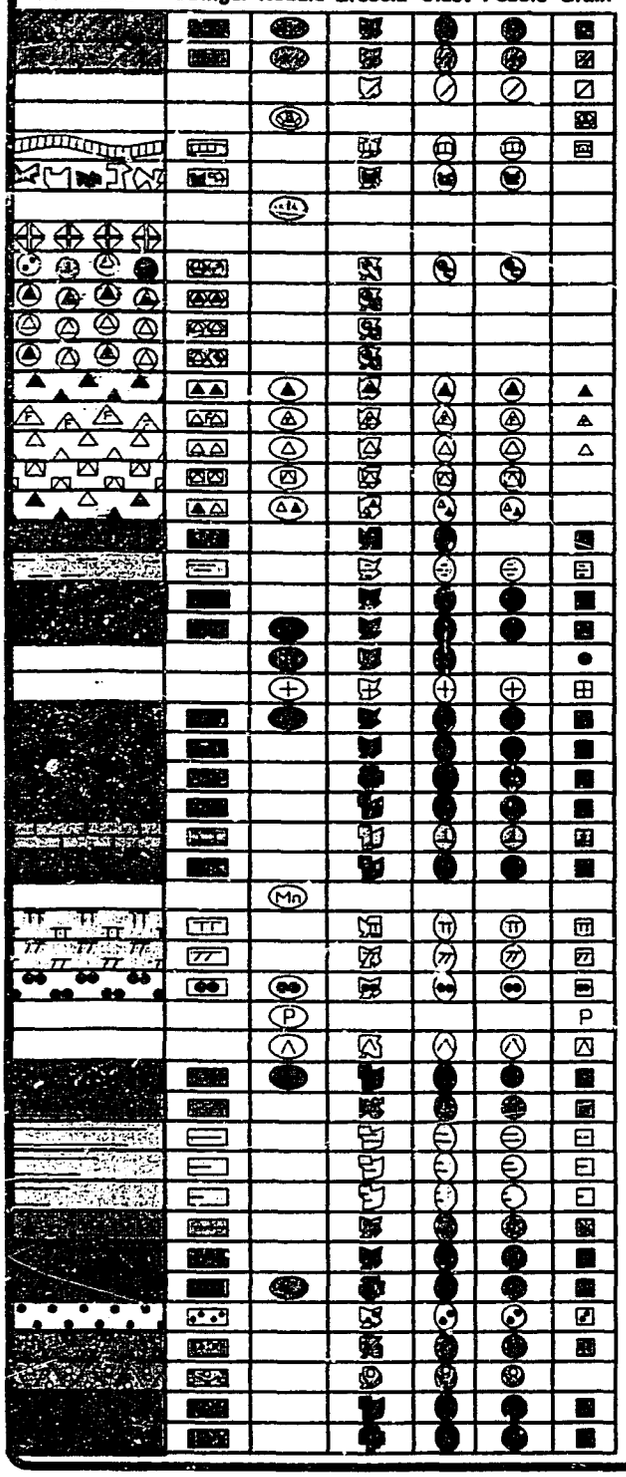
Work Schedule

Contractor	Geologist	Log Interval	Dates Logged
C. L. Bredin Holdings Ltd.	Colin Bredin P.Geol	500 m - 1471 m	Mar 7, 2003 - Mar 20, 3002

Remarks

Legend

Rock Types and Thin Beds



Whole Bed	Stringer	Nodule	Breccia	Clast	Pebble	Grain	Rock Type
							Anhydrite - primary
							Anhydrite - secondary
							Argillite
							Barite
							Bentonite
							Breccia
							Calcareous
							Cement
							Conglomerate - mixed
							Conglomerate - dark chert
							Conglomerate - light chert
							Conglomerate - varicolored chert
							Chert - dark
							Chert - fossiliferous
							Chert - light
							Chert - tripolitic
							Chert - varicolored
							Claystone - colored
							Claystone - gray
							Coal
							Dolomite
							Ferruginous
							Feldspar
							Gypsum
							Igneous - acidic
							Igneous - basic
							Igneous - metamorphic
							Limestone - grain supported
							Limestone - mud supported
							Manganese
							Marlstone - calcareous
							Marlstone - dolomitic
							Phosphate
							Pyrite
							Quartz
							Salt
							Shale - black
							Shale - dark gray
							Shale - medium gray
							Shale - light gray
							Shale - green
							Shale - red
							Siderite
							Sandstone
							Siltstone
							Till - glacial
							Volcanic (Tuff)
							Welded Volcanic (Tuff)

Accessories

	Anhydritic	G	Gibbsitic
	Argillaceous	I	Illitic
	Baritic	K	Kaolinitic
	Bentonitic		Lithic Fragment
	Bituminous		Marly - calcareous
	Calcareous		Marly - dolomitic
	Carbonaceous		Micromicaceous
	Cherty - dark	ML	Mixed layer clayey
	Cherty - fossiliferous	M	Montmorillonitic
	Cherty - light		Phosphate pellets
	Cherty - tripolitic	P	Pyritic
	Cherty - varicolored		Salt casts
C	Chloritic		Sandy
	Clayey		Sideritic
	Dolomitic		Siliceous
Fe	Ferruginous staining		Silty
	Fractures		Stylolitic
	Glauconitic		Tuffaceous
	Gypsiferous	Z	Zeolitic

Fossils (Rock Builders)

	Aggregate grains		Euryamphipora
	Algae - laminations		Foraminifera
	Algae - non descript	F	Fossil
	Algae - ootoid		Fragmental
	Algae - skeletal		Gastropod
	Amphipora		Graptolite
	Belemnite	H	Hydrozoa
	Bioclastic		Intraclast
	Brachiopod		Mollusc
	Bryozoa		Oncolite
	Calciphaera		Oolite
	Cephalopod		Ostracod
	Chaetetes		Pelecypod
	Coated grain		Pellet
	Conodont		Pisolite
	Coral		Plant Remains
	Coral - branching		Scaphopod
	Coral - head		Spicule
	Coral - colonial		Sponge
S	Coral - solitary		Stromatoporoid
	Crinoid	B	Stromatoporoid - bulbous
	Diatom	M	Stromatoporoid - massive
	Echnoid		Stromatoporoid - tabular
	Echnoid - spine		Tentaculites
	Fish Remains		Trilobite

Miscellaneous Grains

	Biotite		Mineral crystal		Orthoclase
	Glauconite		Mineral - dark		Plagioclase
	Mica flakes		Muscovite	o	Sand grain

Textures

C	Chalky	e	Earthy	mx	Microcrystalline
CX	Cryptocrystalline	L	Lithographic		Slickenside

Matrix

	Argillaceous		Marl - dolomitic
	Bentonite		Micrite
	Bituminous		Mixed Clay
	Clay		Montmorillonite
	Chlorite		Sand
	Gibbsite		Silt
	Illite		Sparry Calcite
	Kaolinite		Zeolite
	Marl - calcareous		

Porosity Type Track

e	Earthy - low permeability - crystals / grains less than 1 / 16 mm
⊡	Fenestral - voids from gas bubbles - shrinkage cracks - birdseye texture
F	Fracture
X	Intercrystalline - Interfragmental - Intergranular
◊	Interoolitic - Interpelletoidal
∫	Moldic
O	Organic - Bridged - Intrafossil
P	Pinpoint - voids less than 1/ 16 mm
V	Vuggy - voids greater than 1 / 16 mm

Oil Show Track

●	Even staining (75 - 100% of the rock is stained) - fluoresces in solvent
◕	Spotted staining (50 - 75% of the rock is stained) - fluoresces in solvent
◑	Spotted staining (25 - 50% of the rock is stained) - fluoresces in solvent
◔	Spotted staining (1 - 25% of the rock is stained) - fluoresces in solvent
O	Questionable oil staining - No fluorescents in solvent
D	Dead oil staining - asphaltic - bitumen - pyrobitumen etc.
F	Fluoresces - no visible oil staining

Diagenesis Track

	Calcification - Calichified
■	Dolomitization
	Diagenetically mottled
\	Fracturing
	Leaching
◇	Metasomatism - Replacement - Allotropic recrystallization - Inversion - Transformation
Pd	Pressure Deformation
Rx	Recrystallization - Strain recrystallization - Grain growth
^	Silicification
	Solution cavity filled - Geopetal structure
~	Stylolitic
W	Weathering

Degree of Diagenesis is in (%) percent. ? indicates questionable interpretation.

Cement

	Anhydritic		Gypsiferous
	Baritic		Hematitic
	Bituminous		Limonitic
	Calcareous		Pyritic
	Chert - dark		Salt
	Chert - light		Sideritic
	Dolomitic		Siliceous
	Ferruginous		

Sorting Track

vP	Very poorly sorted - > 10 phi size grade classes
P	Poorly sorted - 6-10 phi size grade classes
M	Moderately sorted - 3-6 phi size grade classes
mW	Moderately well sorted - 2-3 phi size grade classes
W	Well sorted - < 2 phi size grade classes

Rounding Track

vA	Very Angular	r	Subrounded
A	Angular	R	Rounded
a	Subangular	wR	Well Rounded

Framework Track

Framework is a ratio between clastic material greater than 1/16 mm and primary void filler less than 1/16 mm.
? indicates questionable interpretation

Core Track

Indicates Cored Interval

Indicates Lost Core

Test Track

Indicates Tested Interval

Wentworth Grain / Crystal Size Scale Chart

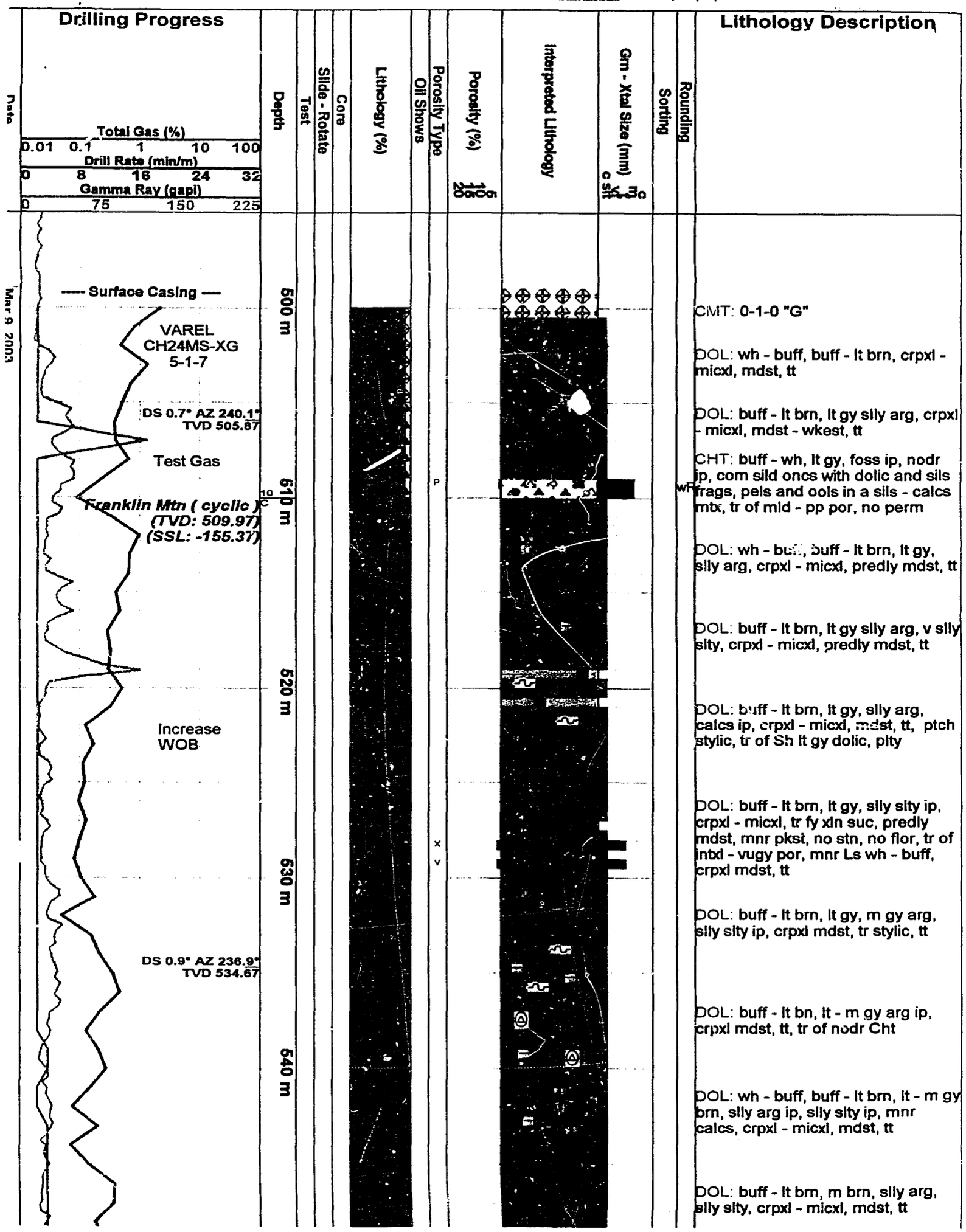
Clastic Rocks Common Name	Crystalline Rocks Common Name	Lower Size Limit (mm)	Upper Size Limit (mm)	Size Grades Phi (Ø)
Clay	Cryptocrystalline	0.00098	0.004	+10 to +9
Very Fine Silt	Very Finely Microcrystalline	0.004	0.008	+8
Fine Silt	Finely Microcrystalline	0.008	0.016	+7
Medium Silt	Medium Microcrystalline	0.016	0.031	+6
Coarse Silt	Coarsely Microcrystalline	0.031	0.0625	+5
Very Fine Sand	Very Finely Crystalline	0.0625	0.125	+4
Fine Sand	Finely Crystalline	0.125	0.25	+3
Medium Sand	Medium Crystalline	0.25	0.5	+2
Coarse Sand	Coarsely Crystalline	0.5	1.0	+1
Very Coarse Sand	Finely Megacrystalline	1.0	2.0	0
Granules	Coarsely Megacrystalline	2.0	4.0	-1
Fine Pebbles		4.0	8.0	-2
Medium pebbles		8.0	16.0	-3
Coarse Pebbles		16.0	32.0	-4
Very Coarse pebbles		32.0	64.0	-5
Cobbles		64.0	256.0	-6 to -7
Boulders		256.0	infinity	-8 to -9

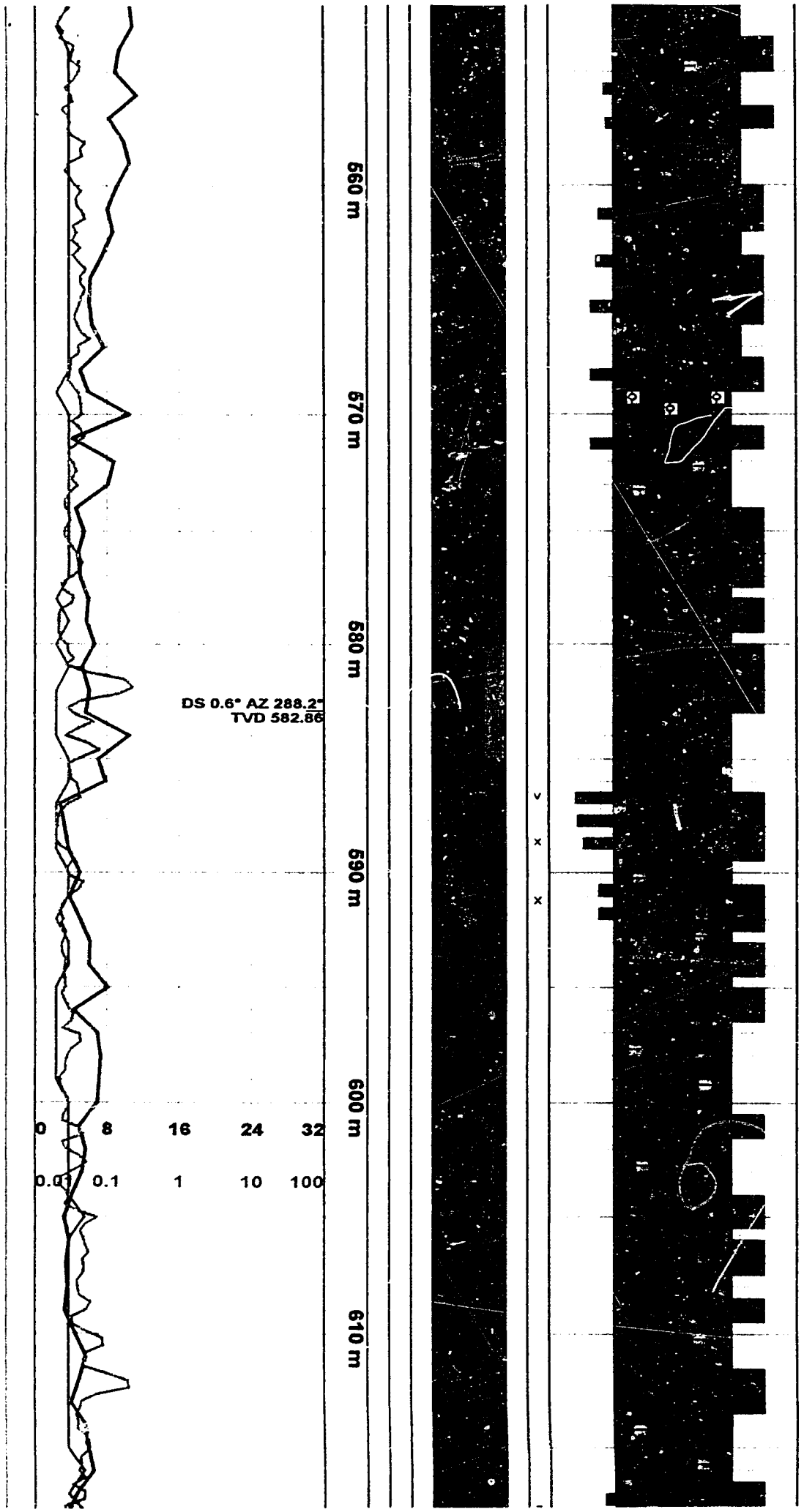
The size measure Phi is equal to the negative logarithm to the base 2 of the size in millimeters.
Thus 1 mm = 0 Phi and 1/2 mm = +1 Phi and 1/4 mm = +2 Phi etc.

Canstrat/Amstrat Grain Size Scale Chart

Clastic Rocks Common Name	Lower Size Limit (mm)	Upper Size Limit (mm)	Size Grades Phi (Ø)
Silt (Lower)	0.0039	0.0312	+8 to +7
Silt (Upper)	0.0312	0.0625	+6 to +5
Very Fine Sand (Lower)	0.0625	0.0937	+4.5
Very Fine Sand (Upper)	0.0937	0.125	+4
Fine Sand (Lower)	0.125	0.187	+3.5
Fine Sand (Upper)	0.187	0.25	+3
Medium Sand (Lower)	0.25	0.375	+2.5
Medium Sand (Upper)	0.375	0.5	+2
Coarse Sand (Lower)	0.5	0.75	+1.5
Coarse Sand (Upper)	.75	1.0	+1
Very Coarse Sand (Lower)	1.0	1.5	+0.5
Very Coarse Sand (Upper)	1.5	2.0	0

The size measure Phi is equal to the negative logarithm to the base 2 of the size in millimeters.
Thus 1 mm = 0 Phi and 1/2 mm = +1 Phi and 1/4 mm = +2 Phi etc.


Drilling Progress
Date
Total Gas (%)
0.01 0.1 1 10 100
Drill Rate (min/m)
0 8 16 24 32
Gamma Ray (gapi)
0 75 150 225
Depth
Test
Slide - Rotate
Core
Lithology (%)
Porosity Type
Oil Shows
Porosity (%)
Interpreted Lithology
Gm - Xtal Size (mm)
Sorting
Rounding
Lithology Description
Mar 9 2003
Surface Casing
VAREL
CH24MS-XG
5-1-7
DS 0.7° AZ 240.1°
TVD 505.87
Test Gas
Franklin Mtn (cyclic)
(TVD: 509.97)
(SSL: -155.37)
Increase
WOB
DS 0.9° AZ 236.9°
TVD 534.67
500 m
510 m
520 m
530 m
540 m
CMT: 0-1-0 "G"
DOL: wh - buff, buff - lt brn, crpxl - micxl, mdst, tt
DOL: buff - lt brn, lt gy slly arg, crpxl - micxl, mdst - wkest, tt
CHT: buff - wh, lt gy, foss ip, nodr ip, com sild oncs with dolic and sils frags, pels and ools in a sils - calcs mtx, tr of mld - pp por, no perm
DOL: wh - buff, buff - lt brn, lt gy, slly arg, crpxl - micxl, predly mdst, tt
DOL: buff - lt brn, lt gy slly arg, v slly slty, crpxl - micxl, predly mdst, tt
DOL: buff - lt brn, lt gy, slly arg, calcs ip, crpxl - micxl, mdst, tt, ptch stylic, tr of Sh lt gy dolic, plty
DOL: buff - lt brn, lt gy, slly slty ip, crpxl - micxl, tr fy xln suc, predly mdst, mnr pkst, no stn, no flor, tr of intxl - vugy por, mnr Ls wh - buff, crpxl mdst, tt
DOL: buff - lt brn, lt gy, m gy arg, slly slty ip, crpxl mdst, tr stylic, tt
DOL: buff - lt bn, lt - m gy arg ip, crpxl mdst, tt, tr of nodr Cht
DOL: wh - buff, buff - lt brn, lt - m gy brn, slly arg ip, slly slty ip, mnr calcs, crpxl - micxl, mdst, tt
DOL: buff - lt brn, m brn, slly arg, slly slty, crpxl - micxl, mdst, tt



crpxl - fy xln, mdst - wkest, no stn, no flor, scat pp - intxl por 2-3%

DOL: aa, mnr buff - lt brn, f - m xlr pkst, no stn, no flor, ptch intxl - vug por 3.4%

DOL: buff - lt brn, m brn, crpxl - fy xln, mdst - pkst, no stn, no flor, sca c clr dol xls, ptch vugy por 4-6%

DOL: buff - lt brn, lt - m brn, micxl fy xln, mdst - wkest, mnr pkst, slly slty, scat c dol and calc xls, ptch vugy por to 10%

LS: wh - lt gy, m gy, comly oomicr tt

DOL: buff - lt brn, crpxl - fy xln, slty prdly mdst, wkest ip, tt

LS: lt gy, m gy, arg ip, crpxl mdst,

DOL: buff - lt brn, crpxl - fy xln, mdst - wkest, slty, tt

LS: lt gy, lt brn, m gy brn, crpxl mdst, arg ip, dolic ip, occly oolic, tt

DOL: aa

SH: lt gy gn, calcs, plty, lamr ip

LS: lt gy, lt brn, m brn, crpxl mdst,

DOL: buff - lt brn, crpxl - fy xln, mdst - pkst, slty ip, no stn, no flor, ptch intxl - vugy por 12-16%

LS: buff - lt brn, crpxl mdst, arg ip, stylic ip, tt

DOL: buff - lt brn, crpxl - fy xln, mdst - wkest, mnr pkst, no stn, no flor, slty ip, scat pp - vugy por 6-8%

LS: buff - lt brn, crpxl mdst, slly arg tt

DOL: aa

LS: buff - lt brn, lt gy brn, slly arg, crpxl mdst, tt

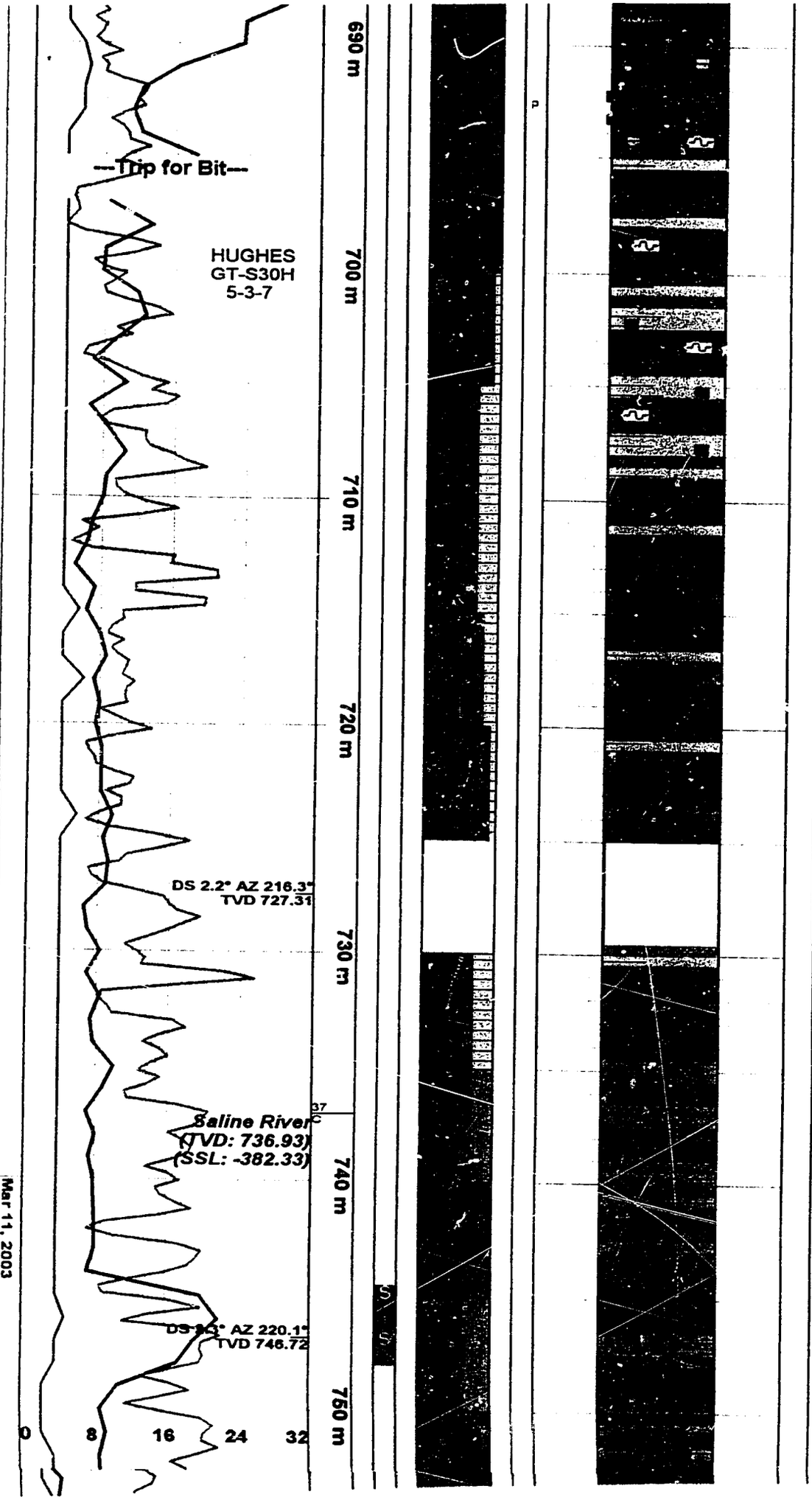
DOL: buff - lt brn, crpxl - fy xln, mdst - wkest, mnr pkst, slty ip, sca pp - vugy por 6-8%

LS: wh - lt gy, buff, slly arg, crpxl mdst, occly slty, tt

LS: wh - lt gy, buff, slly arg, crpxl mdst, tt

DOL: buff - lt brn, slty ip, crpxl - fy xln, mdst - wkest, tr of pp por

LS: wh - lt gy, buff, slly arg, crpxl mdst, tt, mnr Sh lt - m gy, calcs



DOL: buff - lt brn, lt gy brn, crp mdst, mnr pp - por 1-2%

LS: wh - buff, crpxl mdst, dolic occ Sh lam, stylic ip, tt

DOL: buff - lt brn, crpxl mdst, tt stylic ip, mnr Sh lt - m gy, calcs

DOL: buff - lt brn, crpxl mdst, tt stylic ip

SH: lt - m gy, calcs, plty

DOL: buff - lt brn, crpxl mdst, tt

SH: lt gy, m gy, fis, plty

DOL: buff - lt brn, lt - m brn, crp mdst, tr of vugy por

SH: lt - m gy, lt gy gn, fis, plty

DOL: buff - lt brn, lt - m brn, crp mdst, tt

SH: lt - m gy, lt - m gn, fis, plty

DOL: buff - lt brn, lt - m brn, crp mdst, tt

SH: lt - m gy, lt - m gy gn, fis, plt

No Sample

DOL: buff - lt brn, lt - m brn, lt - gy, tr redsh, crpxl mdst, tt

SH: lt - m gy, lt - m gn, tr red, fis plty - blky

DOL: buff - lt brn, lt - m brn, reds brn ip, crpxl mdst, tt, tr of Anhy

SH: lt - m gn, m gn, m red, m gy fis, predly plty

ANHY: wh - buff, crshd

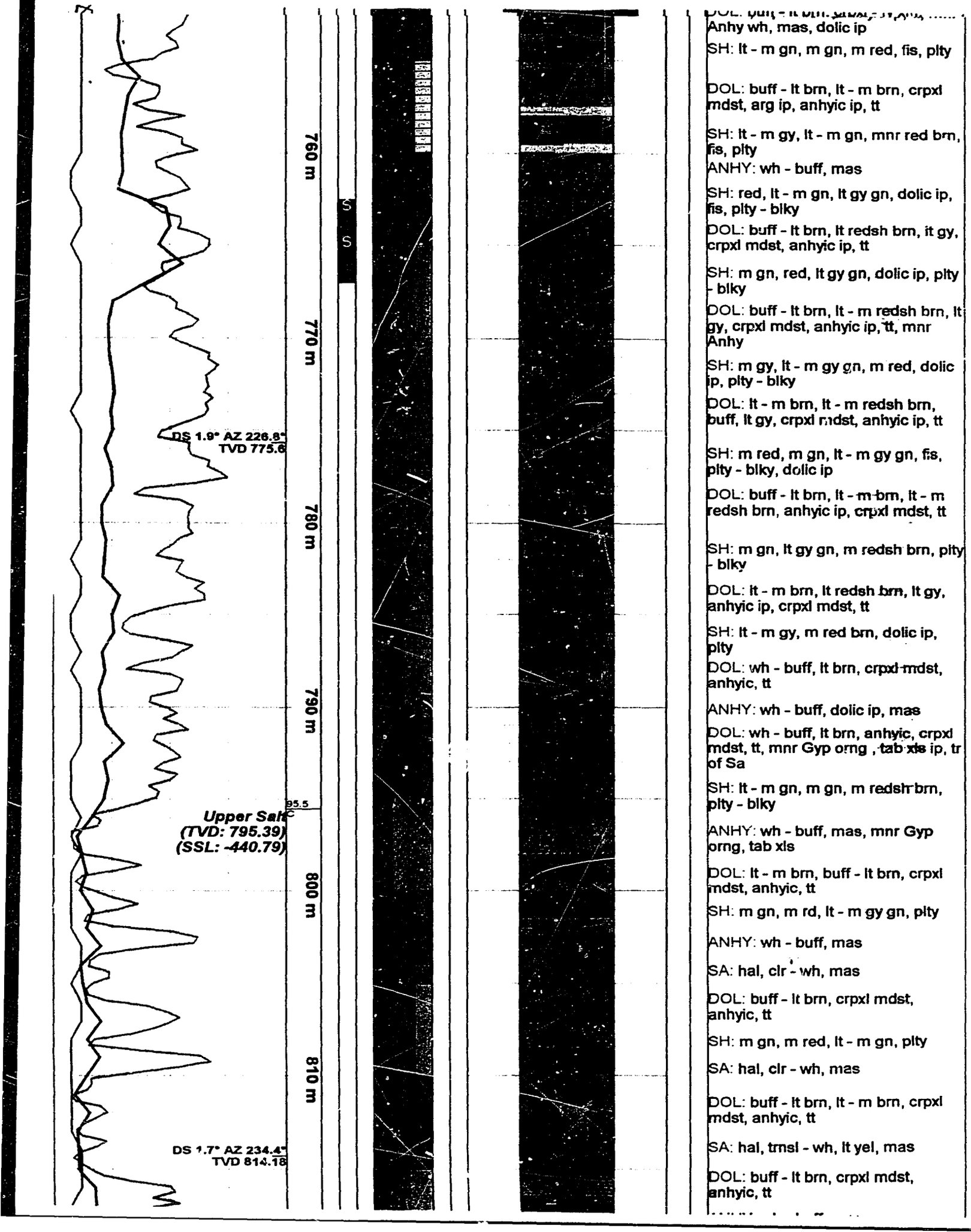
SH: lt - m gn, m gn, m red brn, fi predly plty

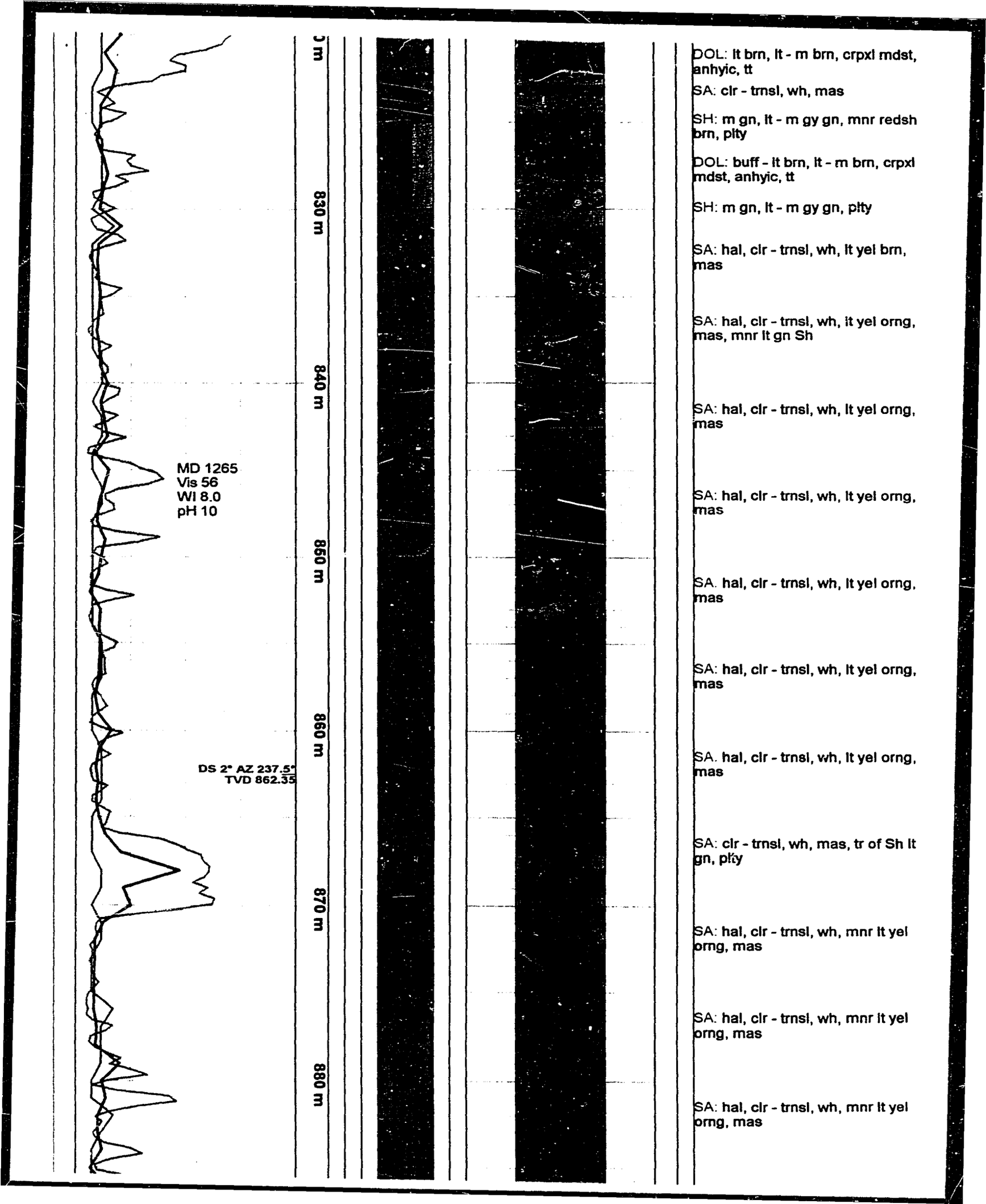
DOL: buff - lt brn, lt - m brn, reds brn ip, crpxl mdst, tt

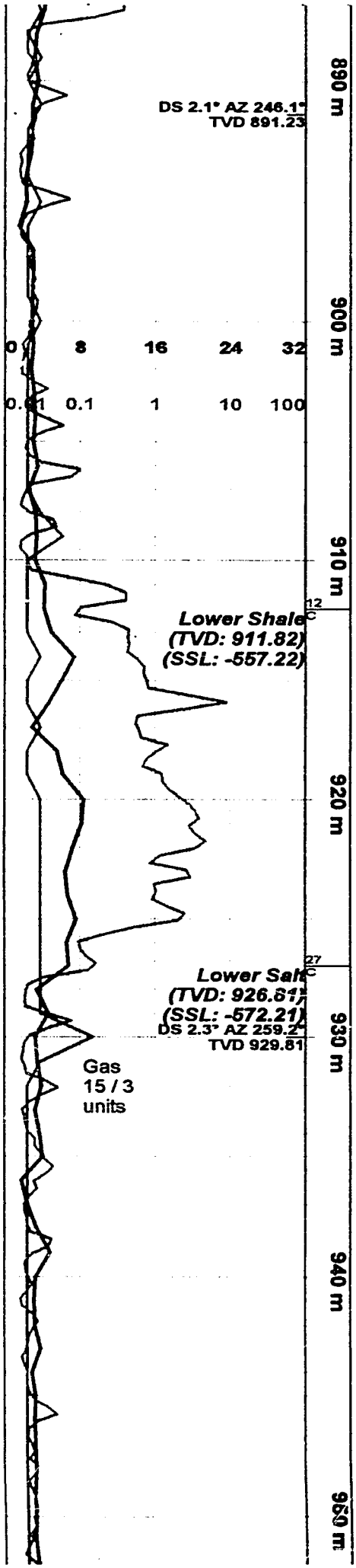
DOL: buff - lt brn, lt - m brn, m redsh brn, crpxl mdst, anhyic ip,

SH: m gn, lt - m red, dolic ip, fis, plty

DOL: buff - lt brn, lt - m redsh brn m brn, crpxl mdst, anhyic ip, tt, tr


760 m
770 m
780 m
790 m
800 m
810 m
DS 1.9° AZ 226.8°
TVD 775.6
Upper Salt
(TVD: 795.39)
(SSL: -440.79)
DS 1.7° AZ 234.4°
TVD 814.18
Anhy wh, mas, dolic ip
SH: lt - m gn, m gn, m red, fis, plty
DOL: buff - lt brn, lt - m brn, crpxl mdst, arg ip, anhyic ip, tt
SH: lt - m gy, lt - m gn, mnr red brn, fis, plty
ANHY: wh - buff, mas
SH: red, lt - m gn, lt gy gn, dolic ip, fis, plty - blky
DOL: buff - lt brn, lt redsh brn, lt gy, crpxl mdst, anhyic ip, tt
SH: m gn, red, lt gy gn, dolic ip, plty - blky
DOL: buff - lt brn, lt - m redsh brn, lt gy, crpxl mdst, anhyic ip, tt, mnr Anhy
SH: m gy, lt - m gy gn, m red, dolic ip, plty - blky
DOL: lt - m brn, lt - m redsh brn, buff, lt gy, crpxl mdst, anhyic ip, tt
SH: m red, m gn, lt - m gy gn, fis, plty - blky, dolic ip
DOL: buff - lt brn, lt - m brn, lt - m redsh brn, anhyic ip, crpxl mdst, tt
SH: m gn, lt gy gn, m redsh brn, plty - blky
DOL: lt - m brn, lt redsh brn, lt gy, anhyic ip, crpxl mdst, tt
SH: lt - m gy, m red brn, dolic ip, plty
DOL: wh - buff, lt brn, crpxl mdst, anhyic, tt
ANHY: wh - buff, dolic ip, mas
DOL: wh - buff, lt brn, anhyic, crpxl mdst, tt, mnr Gyp orng , tab xls ip, tr of Sa
SH: lt - m gn, m gn, m redsh brn, plty - blky
ANHY: wh - buff, mas, mnr Gyp orng, tab xls
DOL: lt - m brn, buff - lt brn, crpxl mdst, anhyic, tt
SH: m gn, m rd, lt - m gy gn, plty
ANHY: wh - buff, mas
SA: hal, clr - wh, mas
DOL: buff - lt brn, crpxl mdst, anhyic, tt
SH: m gn, m red, lt - m gn, plty
SA: hal, clr - wh, mas
DOL: buff - lt brn, lt - m brn, crpxl mdst, anhyic, tt
SA: hal, trnsl - wh, lt yel, mas
DOL: buff - lt brn, crpxl mdst, anhyic, tt


830 m
840 m
850 m
860 m
870 m
880 m
MD 1265
Vis 56
WI 8.0
pH 10
DS 2° AZ 237.5°
TVD 862.35
DOL: lt brn, lt - m brn, crpxl mdst, anhyic, tt
SA: clr - trnsl, wh, mas
SH: m gn, lt - m gy gn, mnr redsh brn, plty
DOL: buff - lt brn, lt - m brn, crpxl mdst, anhyic, tt
SH: m gn, lt - m gy gn, plty
SA: hal, clr - trnsl, wh, lt yel brn, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas, mnr lt gn Sh
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA. hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA. hal, clr - trnsl, wh, lt yel orng, mas
SA: clr - trnsl, wh, mas, tr of Sh lt gn, plty
SA: hal, clr - trnsl, wh, mnr lt yel orng, mas
SA: hal, clr - trnsl, wh, mnr lt yel orng, mas
SA: hal, clr - trnsl, wh, mnr lt yel orng, mas







mas

SA: hal, clr - trnsl, wh, lt yel orng, mas

SA: hal, clr - trnsl, wh, lt yel orng, mas

SA: hal, clr - trnsl, wh, lt yel orng, mas

SA: hal, clr - trnsl, wh, lt yel orng, mas

Very Poor Samples: 910 to 930m, mud clobbered

SH: lt gn, lt gy gn, sft, plty

DOL: buff -lt brn, crpxl mdst, anhyic tt

SH: lt gn, lt gy gn, sft, plty

ANHY: wh - buff, lt brn dolic

SH: lt gn, lt gy gn, sft, plty

DOL: buff - lt brn, crpxl mdst, anhyic, tt

ANHY: buff - lt brn dolic

DOL: buff - lt brn, crpxl mdst, anhyic, tt

SH: lt gn, lt gy gn, plty

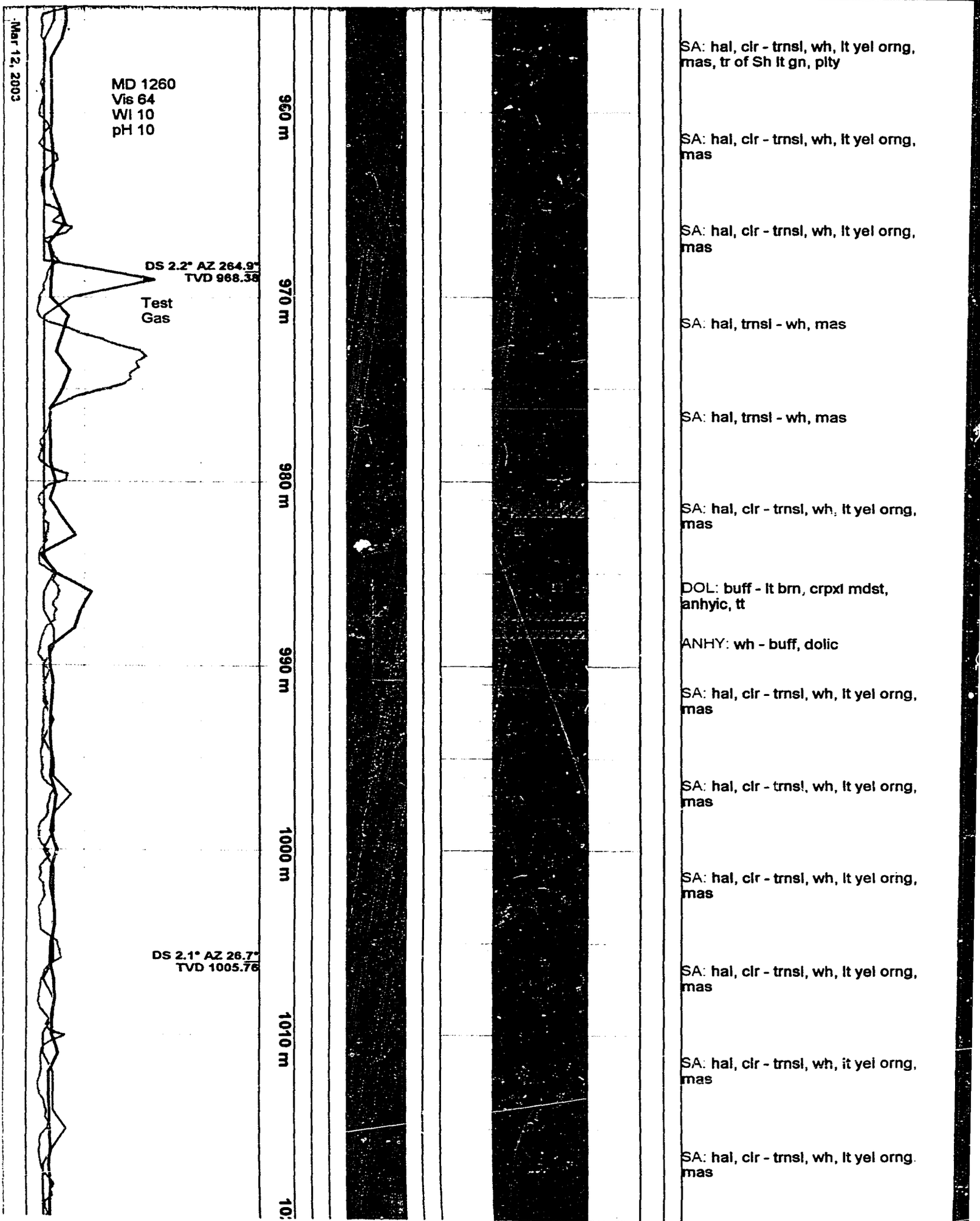
SA: hal, clr - trnsl, wh, lt yel orng, mas

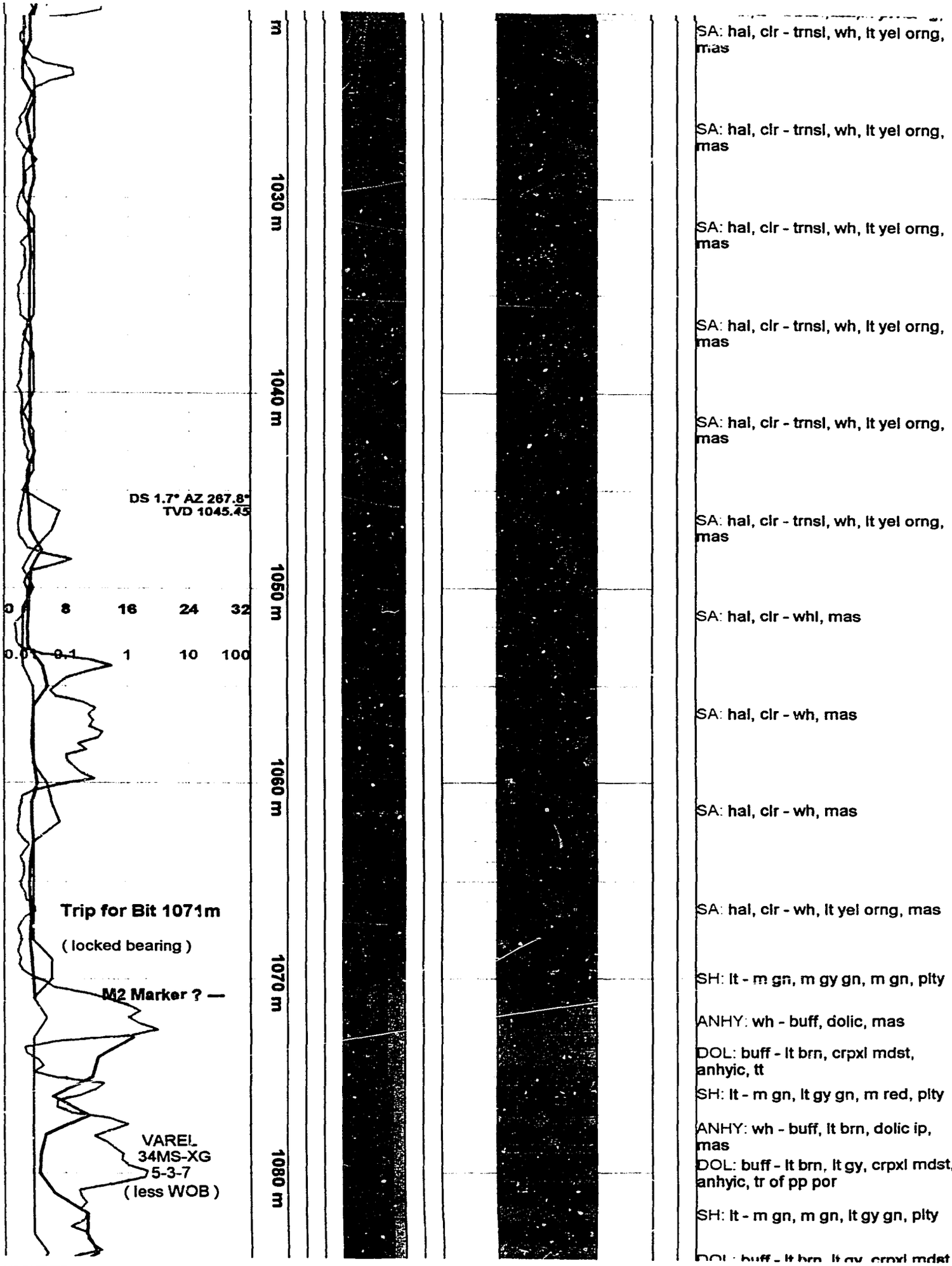
SA: hal, clr - trnsl, wh, lt yel orng, mas, mnr Sh lt gy gn, plty

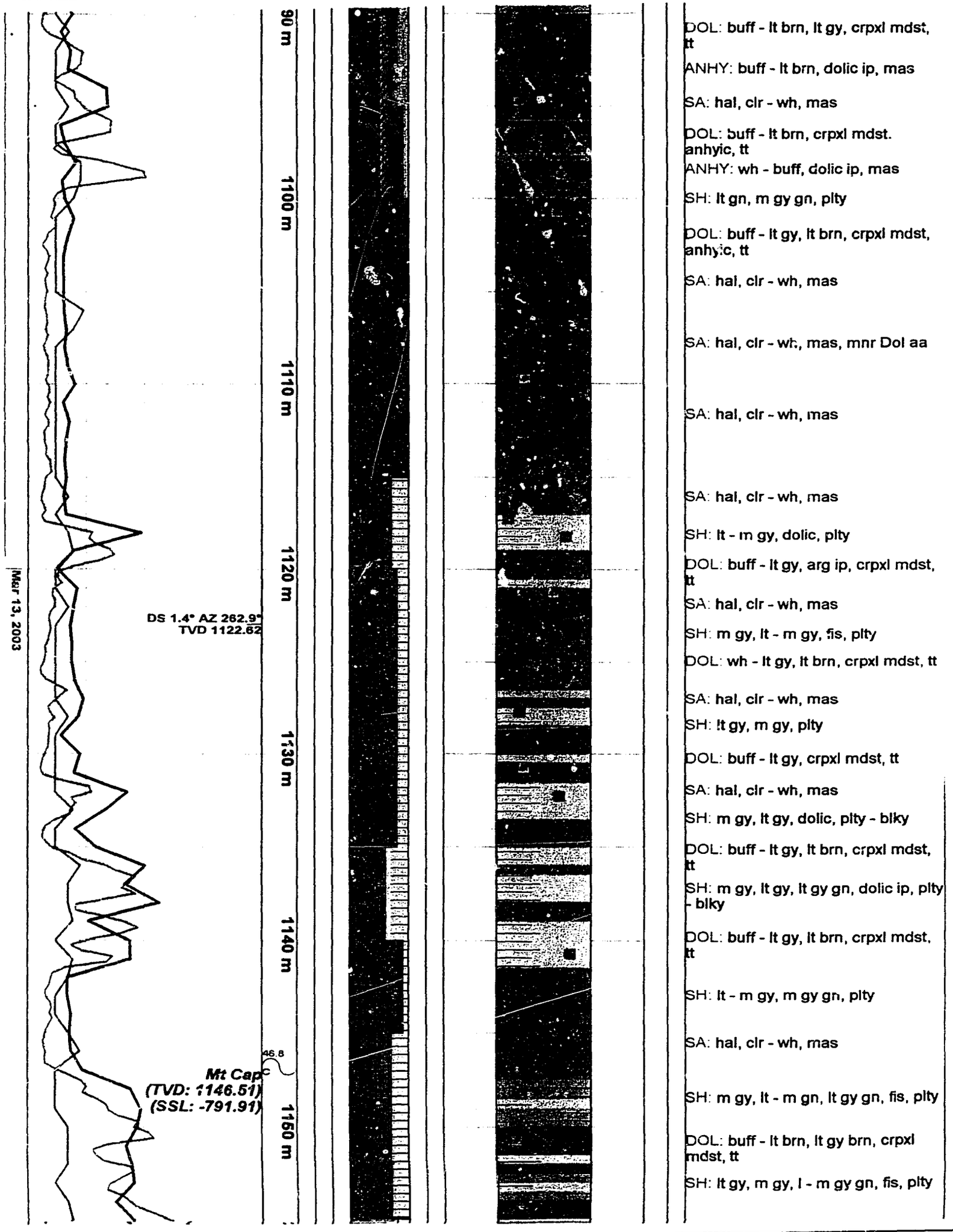
SA: hal, clr - trnsl, wh, lt yel orng, mas, tr of Sh lt gy gn

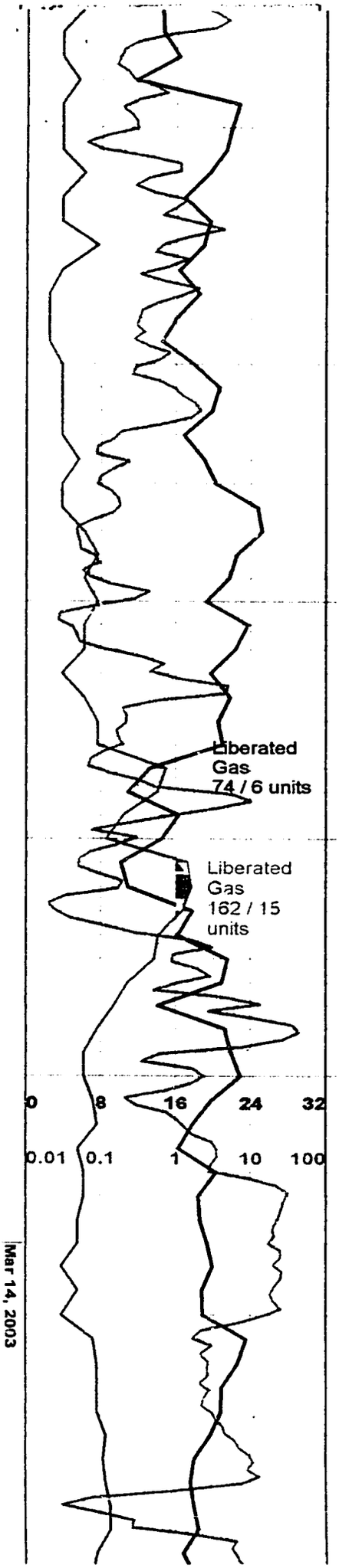
SA: hal, clr - trnsl, wh, lt yel orng, mas

SA: hal, clr - trnsl, wh, lt yel orng,


Mar 12, 2003
MD 1260
Vis 64
Wt 10
pH 10
DS 2.2° AZ 264.9°
TVD 968.38
Test
Gas
960 m
970 m
980 m
990 m
1000 m
DS 2.1° AZ 26.7°
TVD 1005.76
1010 m
SA: hal, clr - trnsl, wh, lt yel orng, mas, tr of Sh lt gn, plty
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, trnsl - wh, mas
SA: hal, trnsl - wh, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
DOL: buff - lt brn, crpxl mdst, anhyic, tt
ANHY: wh - buff, dolic
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas

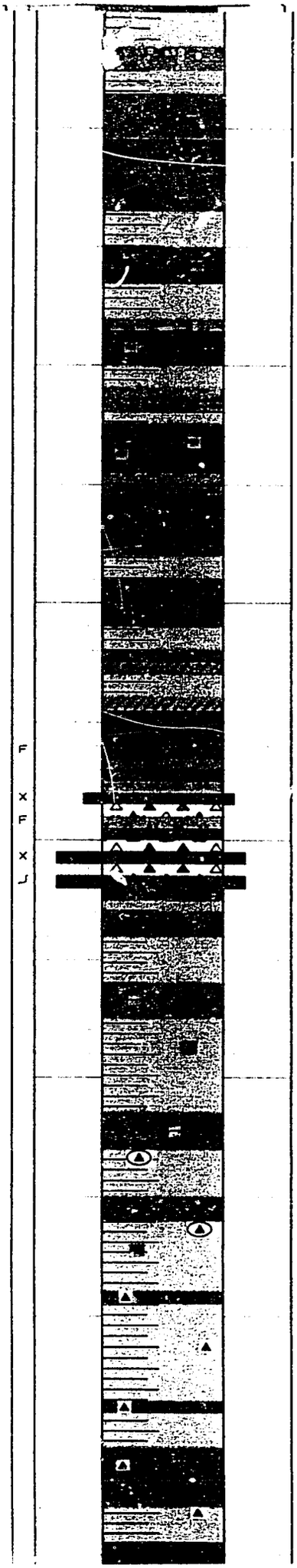

m
1030 m
1040 m
1050 m
1060 m
1070 m
1080 m
DS 1.7° AZ 267.8°
TVD 1045.45
0
8
16
24
32
0.01
0.1
1
10
100
Trip for Bit 1071m
(locked bearing)
M2 Marker ?
VAREL
34MS-XG
5-3-7
(less WOB)
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - trnsl, wh, lt yel orng, mas
SA: hal, clr - whl, mas
SA: hal, clr - wh, mas
SA: hal, clr - wh, mas
SA: hal, clr - wh, lt yel orng, mas
SH: lt - m gn, m gy gn, m gn, plty
ANHY: wh - buff, dolic, mas
DOL: buff - lt brn, crpxl mdst, anhyic, tt
SH: lt - m gn, lt gy gn, m red, plty
ANHY: wh - buff, lt brn, dolic ip, mas
DOL: buff - lt brn, lt gy, crpxl mdst, anhyic, tr of pp por
SH: lt - m gn, m gn, lt gy gn, plty
DOL: buff - lt brn, lt gy, crpxl mdst


90 m
1100 m
1110 m
1120 m
1130 m
1140 m
1150 m
Mar 13, 2003
DS 1.4° AZ 262.9°
TVD 1122.62
46.8
Mt Cap C
(TVD: 1146.51)
(SSL: -791.91)
DOL: buff - lt brn, lt gy, crpxl mdst, tt
ANHY: buff - lt brn, dolic ip, mas
SA: hal, clr - wh, mas
DOL: buff - lt brn, crpxl mdst. anhyic, tt
ANHY: wh - buff, dolic ip, mas
SH: lt gn, m gy gn, plty
DOL: buff - lt gy, lt brn, crpxl mdst, anhyic, tt
SA: hal, clr - wh, mas
SA: hal, clr - wh, mas, mnr Dol aa
SA: hal, clr - wh, mas
SA: hal, clr - wh, mas
SH: lt - m gy, dolic, plty
DOL: buff - lt gy, arg ip, crpxl mdst, tt
SA: hal, clr - wh, mas
SH: m gy, lt - m gy, fis, plty
DOL: wh - lt gy, lt brn, crpxl mdst, tt
SA: hal, clr - wh, mas
SH: lt gy, m gy, plty
DOL: buff - lt gy, crpxl mdst, tt
SA: hal, clr - wh, mas
SH: m gy, lt gy, dolic, plty - blky
DOL: buff - lt gy, lt brn, crpxl mdst, tt
SH: m gy, lt gy, lt gy gn, dolic ip, plty - blky
DOL: buff - lt gy, lt brn, crpxl mdst, tt
SH: lt - m gy, m gy gn, plty
SA: hal, clr - wh, mas
SH: m gy, lt - m gn, lt gy gn, fis, plty
DOL: buff - lt brn, lt gy brn, crpxl mdst, tt
SH: lt gy, m gy, l - m gy gn, fis, plty



1160 m
1170 m
1180 m
1190 m
1200 m
1210 m
1220





DOL: buff - lt brn, crpxl mdst, slly arg, slty ip, tt

SLTST: buff - lt brn, qtzs, dolic mtx, sdy ip, tt

SH: lt - m gy, m gy, lt brn, lt gy gn, fis,plty

SLTST: lt brn, qtzs, dol mtx, tt

DOL: buff - lt brn, crpxl mdst, slly arg, slty ip, tt

SH: m gy, lt - m gy, lt brn, predly plty

SLTST: lt brn, qtzs, dol mtx, tt

DOL: buff - lt brn, lt gy, crpxl mdst, slly arg, slty ip, tt

SH: lt - m gy, m gy, lt gy brn, predly plty

SLTST: lt brn, qtzs, dol mtx, tt

DOL: buff - lt brn, lt gy brn, crpxl mdst, slty ip, tt

LS: m - dk brn, arg, crpxl mdst, tt

SH: lt gy, lt - m gy, lt gy gn, plty

DOL: buff - lt brn, crpxl mdst, slty ip, tt

SH: lt - m gy gn, m gy, fis, plty

DOL: wh - buff, lt brn, crpxl mdst, anhyic ip, tt

LS: m brn, crpxl mdst, tt

SLTST: buff - lt brn, qtzs, dol mtx, tt

DOL: buff - lt brn, slly arg, crpxl mdst, tt, mnr lt brn, vfy xln suc pkst, no stn, no flor, strs of intxl - mld por to 18%, prob fracs

CHT: vari, trnsl - dk brn, c ang, conch frac

Very Poor Samples from 1195m to 1290m

NO SPL: mud, added salt

SH: m gy, lt - m gy, slty

DOL: buff - lt brn, crpxl mdst, tt

NO SPL: mud, added salt

SH: lt - m gy gn, lt gy, fis, plty

DOL: buff - lt brn, m brn, crpxl mdst, arg ip, tr of nodr Cht

NO SPL: added salt, mud

DOL: buff - lt brn, m brn arg, crpxl mdst, tt, tr of nodr Cht

SH: m gy, lt - m gy gn, dk gy, plty

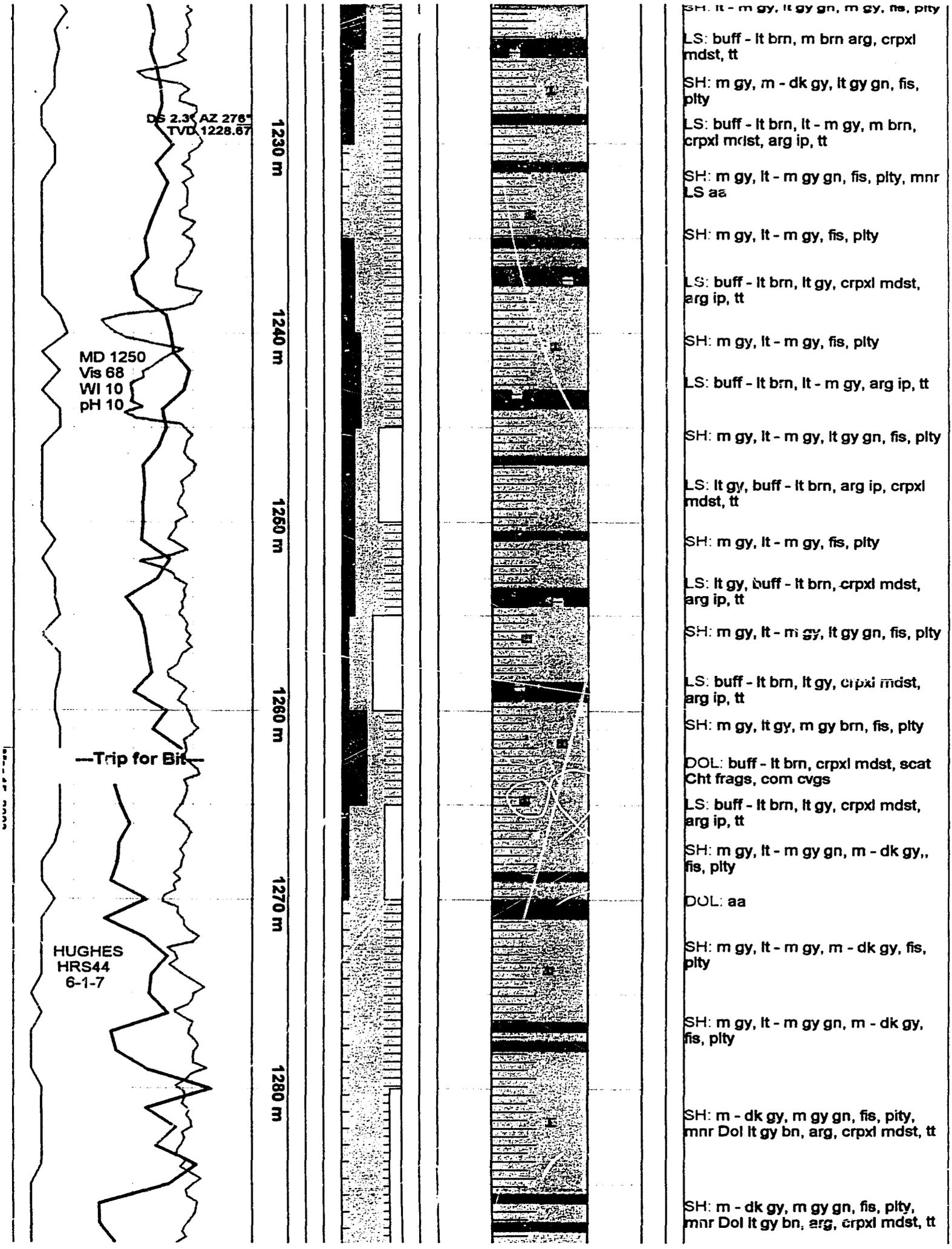
DOL: buff - lt brn, crpxl mdst, slly arg, tt, tr of Cht frags

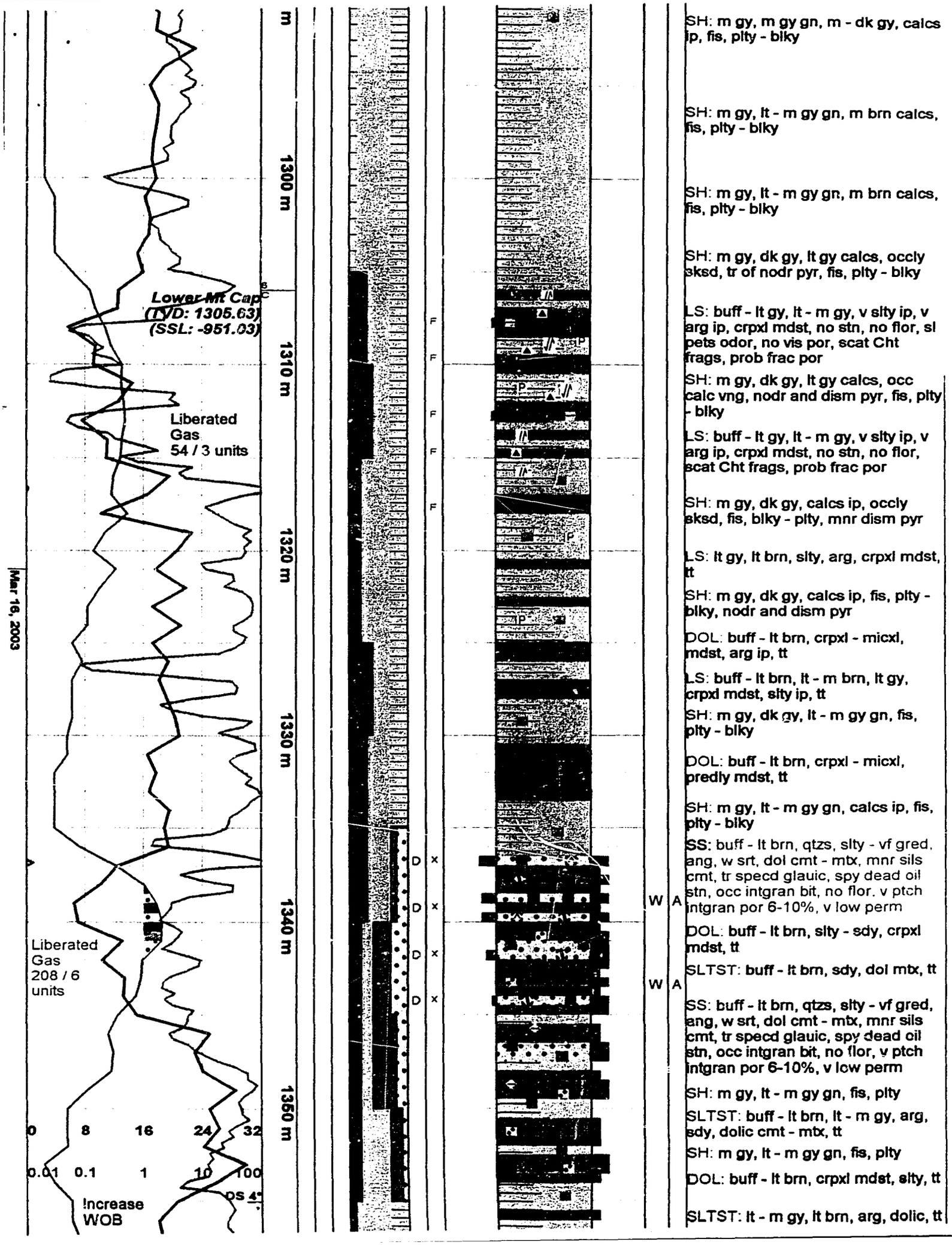
SH: lt - m gy, m gy, fis, plty

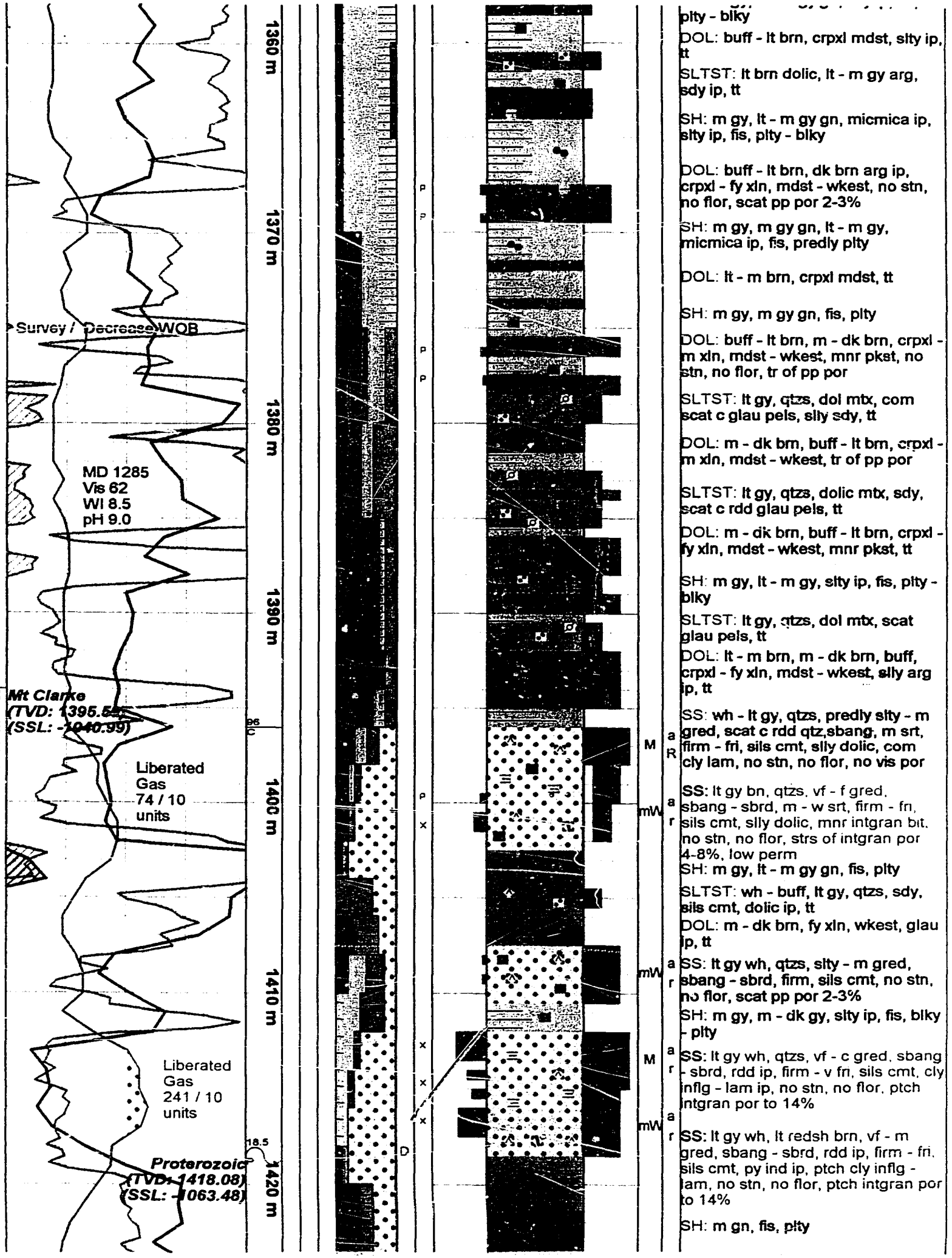
LS: buff - lt brn, m brn, mot m - dk brn ip, crpxl mdst, tt, tr of Cht frags

SH: lt - m gy gn, m gy, fis, plty

Mar 14, 2003


DS 2.3° AZ 276°
TVD 1228.67
MD 1250
Vis 68
Wl 10
pH 10
---Trip for Bit---
HUGHES
HRS44
6-1-7
1230 m
1240 m
1250 m
1260 m
1270 m
1280 m
SH: lt - m gy, lt gy gn, m gy, fis, plty
LS: buff - lt brn, m brn arg, crpxl mdst, tt
SH: m gy, m - dk gy, lt gy gn, fis, plty
LS: buff - lt brn, lt - m gy, m brn, crpxl mdst, arg ip, tt
SH: m gy, lt - m gy gn, fis, plty, mnr LS aa
SH: m gy, lt - m gy, fis, plty
LS: buff - lt brn, lt gy, crpxl mdst, arg ip, tt
SH: m gy, lt - m gy, fis, plty
LS: buff - lt brn, lt - m gy, arg ip, tt
SH: m gy, lt - m gy, lt gy gn, fis, plty
LS: lt gy, buff - lt brn, arg ip, crpxl mdst, tt
SH: m gy, lt - m gy, fis, plty
LS: lt gy, buff - lt brn, crpxl mdst, arg ip, tt
SH: m gy, lt - m gy, lt gy gn, fis, plty
LS: buff - lt brn, lt gy, crpxl mdst, arg ip, tt
SH: m gy, lt gy, m gy brn, fis, plty
DOL: buff - lt brn, crpxl mdst, scat Cht frags, com cvgs
LS: buff - lt brn, lt gy, crpxl mdst, arg ip, tt
SH: m gy, lt - m gy gn, m - dk gy,, fis, plty
DOL: aa
SH: m gy, lt - m gy, m - dk gy, fis, plty
SH: m gy, lt - m gy gn, m - dk gy, fis, plty
SH: m - dk gy, m gy gn, fis, plty, mnr Dol lt gy bn, arg, crpxl mdst, tt
SH: m - dk gy, m gy gn, fis, plty, mnr Dol lt gy bn, arg, crpxl mdst, tt


m
1300 m
1310 m
1320 m
1330 m
1340 m
1350 m
Lower Mt Cap
(TVD: 1305.63)
(SSL: -951.03)
Liberated
Gas
54 / 3 units
Liberated
Gas
208 / 6
units
Mar 16, 2003
0
8
16
24
32
0.01
0.1
1
10
100
Increase
WOB
SH: m gy, m gy gn, m - dk gy, calcs ip, fis, plty - blky
SH: m gy, lt - m gy gn, m brn calcs, fis, plty - blky
SH: m gy, lt - m gy gn, m brn calcs, fis, plty - blky
SH: m gy, dk gy, lt gy calcs, occly sksd, tr of nodr pyr, fis, plty - blky
LS: buff - lt gy, lt - m gy, v slty ip, v arg ip, crpxl mdst, no stn, no flor, sl pets odor, no vis por, scat Cht frags, prob frac por
SH: m gy, dk gy, lt gy calcs, occ calc vng, nodr and dism pyr, fis, plty - blky
LS: buff - lt gy, lt - m gy, v slty ip, v arg ip, crpxl mdst, no stn, no flor, scat Cht frags, prob frac por
SH: m gy, dk gy, calcs ip, occly sksd, fis, blky - plty, mnr dism pyr
LS: lt gy, lt brn, slty, arg, crpxl mdst, tt
SH: m gy, dk gy, calcs ip, fis, plty - blky, nodr and dism pyr
DOL: buff - lt brn, crpxl - micxl, mdst, arg ip, tt
LS: buff - lt brn, lt - m brn, lt gy, crpxl mdst, slty ip, tt
SH: m gy, dk gy, lt - m gy gn, fis, plty - blky
DOL: buff - lt brn, crpxl - micxl, predly mdst, tt
SH: m gy, lt - m gy gn, calcs ip, fis, plty - blky
SS: buff - lt brn, qtzs, slty - vf gred, ang, w srt, dol cmt - mtx, mnr sils cmt, tr specd glauic, spy dead oil stn, occ intgran bit, no flor, v ptch intgran por 6-10%, v low perm
DOL: buff - lt brn, slty - sdy, crpxl mdst, tt
SLTST: buff - lt brn, sdy, dol mtx, tt
SS: buff - lt brn, qtzs, slty - vf gred, ang, w srt, dol cmt - mtx, mnr sils cmt, tr specd glauic, spy dead oil stn, occ intgran bit, no flor, v ptch intgran por 6-10%, v low perm
SH: m gy, lt - m gy gn, fis, plty
SLTST: buff - lt brn, lt - m gy, arg, sdy, dolic cmt - mtx, tt
SH: m gy, lt - m gy gn, fis, plty
DOL: buff - lt brn, crpxl mdst, slty, tt
SLTST: lt - m gy, lt brn, arg, dolic, tt



plty - blky

DOL: buff - lt brn, crpxl mdst, slty ip, tt

SLTST: lt brn dolic, lt - m gy arg, sdy ip, tt

SH: m gy, lt - m gy gn, micmica ip, slty ip, fis, plty - blky

DOL: buff - lt brn, dk brn arg ip, crpxl - fy xln, mdst - wkest, no stn, no flor, scat pp por 2-3%

SH: m gy, m gy gn, lt - m gy, micmica ip, fis, predly plty

DOL: lt - m brn, crpxl mdst, tt

SH: m gy, m gy gn, fis, plty

DOL: buff - lt brn, m - dk brn, crpxl - m xln, mdst - wkest, mnr pkst, no stn, no flor, tr of pp por

SLTST: lt gy, qtzs, dol mtx, com scat c glau pels, slty sdy, tt

DOL: m - dk brn, buff - lt brn, crpxl - m xln, mdst - wkest, tr of pp por

SLTST: lt gy, qtzs, dolic mtx, sdy, scat c rdd glau pels, tt

DOL: m - dk brn, buff - lt brn, crpxl - fy xln, mdst - wkest, mnr pkst, tt

SH: m gy, lt - m gy, slty ip, fis, plty - blky

SLTST: lt gy, qtzs, dol mtx, scat glau pels, tt

DOL: lt - m brn, m - dk brn, buff, crpxl - fy xln, mdst - wkest, slty arg ip, tt

SS: wh - lt gy, qtzs, predly slty - m gred, scat c rdd qtz,sbang, m srt, firm - fri, sils cmt, slty dolic, com cly lam, no stn, no flor, no vis por

SS: lt gy bn, qtzs, vf - f gred, sbang - sbrd, m - w srt, firm - fri, sils cmt, slty dolic, mnr intgran bit, no stn, no flor, strs of intgran por 4-8%, low perm

SH: m gy, lt - m gy gn, fis, plty

SLTST: wh - buff, lt gy, qtzs, sdy, sils cmt, dolic ip, tt

DOL: m - dk brn, fy xln, wkest, glau ip, tt

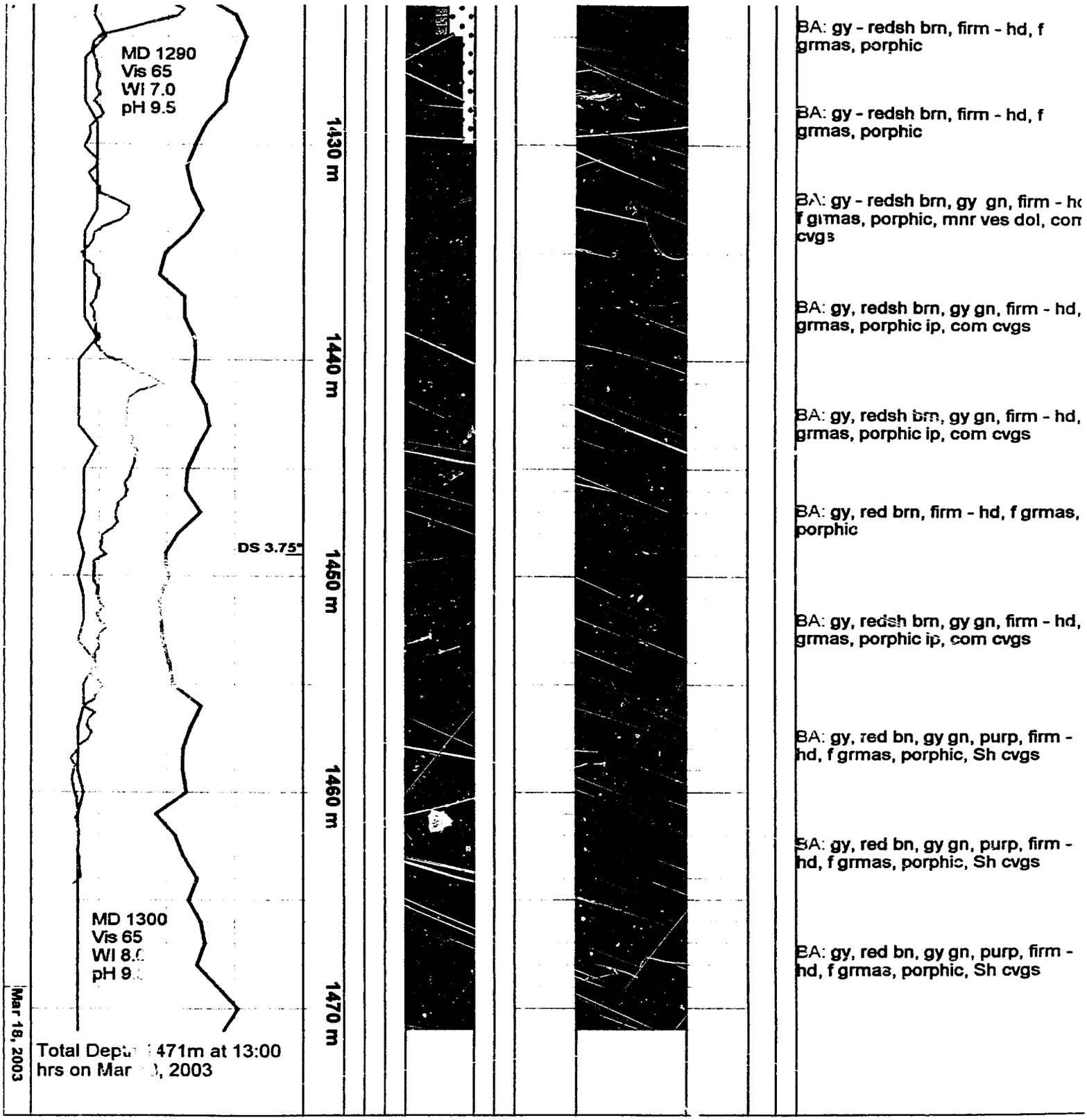
SS: lt gy wh, qtzs, slty - m gred, sbang - sbrd, firm, sils cmt, no stn, no flor, scat pp por 2-3%

SH: m gy, m - dk gy, slty ip, fis, blky - plty

SS: lt gy wh, qtzs, vf - c gred, sbang - sbrd, rdd ip, firm - v fri, sils cmt, cly inflg - lam ip, no stn, no flor, ptch intgran por to 14%

SS: lt gy wh, lt redsh brn, vf - m gred, sbang - sbrd, rdd ip, firm - fri, sils cmt, py ind ip, ptch cly inflg - lam, no stn, no flor, ptch intgran por to 14%

SH: m gn, fis, plty


MD 1290
Vis 65
Wt 7.0
pH 9.5
DS 3.75°
MD 1300
Vis 65
Wt 8.0
pH 9.0
1430 m
1440 m
1450 m
1460 m
1470 m
Mar 18, 2003
Total Depth 1471m at 13:00 hrs on Mar 18, 2003
BA: gy - redsh brn, firm - hd, f grmas, porphic
BA: gy - redsh brn, firm - hd, f grmas, porphic
BA: gy - redsh brn, gy gn, firm - hd f grmas, porphic, mnr ves dol, com cvgs
BA: gy, redsh brn, gy gn, firm - hd, grmas, porphic ip, com cvgs
BA: gy, redsh brn, gy gn, firm - hd, grmas, porphic ip, com cvgs
BA: gy, red brn, firm - hd, f grmas, porphic
BA: gy, redsh brn, gy gn, firm - hd, grmas, porphic ip, com cvgs
BA: gy, red bn, gy gn, purp, firm - hd, f grmas, porphic, Sh cvgs
BA: gy, red bn, gy gn, purp, firm - hd, f grmas, porphic, Sh cvgs
BA: gy, red bn, gy gn, purp, firm - hd, f grmas, porphic, Sh cvgs

Ground Elev. 350 m Casing Flange Elev. m Kelly Bushing Elev. 36.58 m Tot. Dep.

Formation Top Summary

Formation	Member	Sample Top (MD)	Sample Top (TVD)	Log Top (MD)	Log Top (TVD)	Subsea
Franklin Mtn (cyclic)		510 m	509.97 m	508 m	507.97 m	-153.37 m
Saline River		737 m	736.93 m	737 m	736.93 m	-382.33 m
Saline River	Upper Salt	795.5 m	795.39 m	795.5 m	795.39 m	-440.79 m
Saline River	Lower Shale	912 m	911.82 m	911 m	910.82 m	-556.22 m
Saline River	Lower Salt	927 m	926.81 m	927 m	926.81 m	-572.21 m
Mt Cap		1146.8 m	1146.51 m	1148 m	1147.71 m	-793.11 m
Mt Cap	Lower Mt Cap	1306 m	1305.63 m	1308 m	1307.63 m	-953.03 m
Mt Clarke		1396 m	1395.59 m	1395 m	1394.59 m	-1039.99 m
Proterozoic		1418.5 m	1418.08 m	1425 m	1424.58 m	-1069.98 m

15. Abandonment Plugs: **N/A**

16. Composite Well Record:

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA — LOCATION: PARA NOGHA M-17
UNIQUE I.D. — WELL LICENCE 1970

SUPERVISOR: MILES PYRDE 08:00\20\03\2003 — DAILY COST: $551,379
CELLULAR #: 1-403-997-9701 — CUM. COST: $551,379
SPUD DATE: 09:45\25\02\2003 — DAILY MUD:
R.R. DATE: — CUM MUD:
CONTRACTOR: NABORS #62
A.F.E. #: 02N310003 EST. T.D 1515 — DAYS FROM SPUD

DAY: 1 REP DATE: 22\02\03 STATUS 08:00 SPOTTING MATTING
DEPTH: PROG. KB: GL: MACP:
SURVEYS:

MUD TYPE: WT: VISC: WL: FC: PH:
ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

MOVE&SPOT:		RIG REP:	
RIG-UP:		LOGGING:	
RIG SERVICE:		CEMENT:	
SURVEY:		WOC:	
SAFTEY:		RUN CSG:	
DRILL:		DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
SAFETY		REAM:	
TOTAL HOURS:			

CASING SUMMARY

RAN ____ JTS OF ____ MM, ____ KG/M, ____ ____ CASING.
LANDED AT ____ MKB. TOTAL LENGTH ____ METERS.
CEMENTED WITH
PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

TRUCKING FOR REPORT #1 INCLUDES:HAVING SALT DELIVERED, HOLE OPENER DELIVERY,CASING FOR THE WHOLE WELL DELIVERED,MOTORS AND MUD DELIVERED FROM C-49 TO M-17.FEB\9-10 MOVING OF THE NABORS RIG AND CAMP IN FEB\18TH=15 LOADS,FEB 19TH=15 LOADS,FEB 20=4 LOADS FEB 21ST=3 LOADS, FEB 22ND=BALANCE OF THE RIG.

COSTS ALSO CONSIST OF FLYING NABORS CREWS INTO LOCATION.
CUMMALITIVE COSTS TO DATE CONSIST OF ROAD BUILDING , LEASE CONSTRUCTION, SURVEYING AND LICENSING.
FEB 18TH=MOVE IN RIG PARTS,UNLOAD AND PIN DERRICK BACK TOGETHER.
FEB 19TH=UNLOAD TRUCKS THAT ARRIVED AND FLY CREWS IN TO RIG UP CAMP IN THE MORNING.
APPACHIE REPS FLEW IN TO LOOK AT THE OPERATION AND HAVE A MEETING WITH COALVILLE LAKE REP ON HIRING LOCALS.SIGHT SEEING! SPOT WELLSITE SHACKS.
FEB 20TH=RIG UP CAMP.AIR DRILLING RATHOLER ROLLED IN THIS EVENING.
FEB 21ST=CONTONUE RIGGING UP DERRICK.RIG UP AIR DRILLING EQUIPMENT AND DRILL THE MOUSE HOLE AND RAT HOLE .
FEB 22ND=RATHOLE RIG HAD A HARD TIME DRILLING DUE TO ALL OF THE CLAY.CONDUCTOR WILL BE DRILLED WITH THE DRILLING RIG.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA — LOCATION: PARA NOGHA M-17
UNIQUE I.D. — WELL LICENCE 1970

SUPERVISOR: MILES PYRCH — DAILY COST: $51,200
CELLULAR #: 1-403-997-9701 — CUM. COST: $602,579
SPUD DATE: 09:45\25\02\2003 — DAILY MUD:
R.R. DATE: — CUM MUD:
CONTRACTOR: NABORS #62
A.F.E. #: 02N310003 EST. T.D 1515 — DAYS FROM SPUD

DAY: 2 REP DATE: 23\02\03 STATUS 08:00 RIGGING UP
DEPTH: PROG. KB: 354.60 GL: 350.00
SURVEYS:

MUD TYPE: WT: VISC: WL: FC: PH:
ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

RIG-UP	8.00	RIG REP:	
DRILL MH & RH:	8.00	LOGGING:	
RIG SERVICE:		CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:		DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
SAFETY			
TOTAL HOURS:	16.00		

CASING SUMMARY

RAN ____ JTS OF ____ MM, ____ KG/M, ____ ____ CASING.
LANDED AT ____ MKB. TOTAL LENGTH ____ METERS.
CEMENTED WITH
PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

00:00-08:00 WORK ON DRILLING RAT HOLE AND RIG OUT BERNIES RATHOLE RIG.
08:00-16:00 RIG UP RIG=SPOT MATTING,SUB BASE AND PIN DERRICK.FLY SECOND CREW IN.
SPOT PUMPS, MUD TANK, DOGHOUSE AND WATER TANK. RAISE WATER TANK.
19:00-20:30 SAFETY MEETING WITH NABORS CREWS, APPACHIE REP, AND MYSELF.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA — LOCATION: PARA NOGHA M-17
UNIQUE I.D. — WELL LICENCE 1970

SUPERVISOR: MILES PYRDB:00\20\03\2003 — DAILY COST: $187,800
CELLULAR #: 1-403-997-9701 — CUM. COST: $790,379
SPUD DATE: 09:45\25\02\2003 — DAILY MUD:
R.R. DATE: — CUM MUD:
CONTRACTOR: NABORS #62
A.F.E. #: 02N310003 EST. T.D 1515 — DAYS FROM SPUD

DAY: 3 REP DATE: 24\02\03 STATUS 08:00 RIGGING UP DERRICK STANDING
DEPTH: PROG. KB: 354.60 GL: 350.00 MACP: #REF!
SURVEYS:

MUD TYPE: WT: VISC: WL: FC: FI:
ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

RIG-UP	16.00	RIG REP:	
MAKE UP B.H.A.		LOGGING:	
RIG SERVICE:		CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:		DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
TOTAL HOURS:	16.00		

CASING SUMMARY

RAN ____ JTS OF ____ MM, ____ KG/M, ____ ____ CASING.
LANDED AT ____ MKB. TOTAL LENGTH ____ METERS.
CEMENTED WITH
PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

MOUSE HOLE AND RAT HOLE WERE DRILLED BY BERNIES ,ORDERED BY APPACHIE REP(WILF SWAN) AT A COST OF APPROXIMATELY $158,000 .

08:00-24:00

RIG UP RIG. FINISH SPOTTING RIG AND RIG UP.RAISE DERRICK AND GET THE SHACKS POWER WORKING. RIG IN THE BOILER AND GET THE STEAM GOING AROUND.BREAK TOWER AND CONTINUE TO RIG UP.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA — LOCATION: PARA NOGHA M-17
UNIQUE I.D. — WELL LICENCE 1970

SUPERVISOR: MILES PYRCH 08:00\20\03\2003 — DAILY COST: $74,700
CELLULAR #: 1-403-997-9701 — CUM. COST: $865,079
SPUD DATE: 09:45\25\02\2003 — DAILY MUD:
R.R. DATE: — CUM MUD:
CONTRACTOR: NABORS #62
A.F.E. #: 02N310003 EST. T.D 1515 — DAYS FROM SPUD

DAY: 4 REP DATE: 25\02\03 STATUS 08:00 SPUD CONDUCTOR
DEPTH: PROG. KB: 354.60 GL: 350.00 MACP: #REF!
SURVEYS:

MUD TYPE: WT: VISC: WL: FC: PH:
ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

MORU:	24.00	RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:		CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:		DST:	
TRIP		DRILL OUT	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		CTB:	
SAFETY			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN ____ JTS OF ____ MM, ____ KG/M, ____ ____ CASING.
LANDED AT ____ MKB. TOTAL LENGTH ____ METERS.
CEMENTED WITH
PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

00:00-24:00

RIG UP RIG.PESON SYSTEM HAND,GEOLOGIST X OIL TOOLS HAND FOR CENTIFUGES ARRIVED TODAY.

MINUS 15 DEGREES\OVERCAST\SNOWING

COLVILLE LAKE WINTER ROAD

KM 4.4
LAT. 60° 51' 19.9"
LONG. 129° 39' 15.0"

KM 7.9
LAT. 60° 50' 33.9"
LONG. 128° 43' 41.1"

KM 12.1
LAT. 60° 49' 04.9"
LONG. 128° 48' 02.1"

BELOT

RIDGE

LAC

BELOT

KM 35.2
LAT. 60° 47' 53.2"
LONG. 129° 29' 59.3"

CREEK
6.0m Wide
1.0m Deep

CREEK
1.0m Wide
1.0m Deep

PROPOSED WINTER SEISMIC ACCESS

SURVEYED WELLSITE

KM 26.2
LAT. 60° 42' 05.9"
LONG. 129° 42' 50.7"

KM 41.6
LAT. 60° 41' 02.8"
LONG. 129° 25' 41.2"

KM 46.6
LAT. 60° 39' 56.7"
LONG. 129° 32' 39.2"

CREEK
1.0m Wide
0.5m Deep

SEASONAL DRAINAGE
0.5m Wide
0.5m Deep

KM 54.5
LAT. 60° 39' 01.9"
LONG. 129° 24' 25.1"

KM 52.6
LAT. 60° 37' 18.5"
LONG. 129° 31' 21.2"

KM 66.9
LAT. 60° 34' 48.7"
LONG. 129° 20' 18.0"

KM 64.2
LAT. 60° 35' 00.0"
LONG. 129° 23' 32.9"

WET AREA

PROPOSED WINTER SEISMIC ACCESS

WATER SAMPLE

CAMP WATER SOURCE
KM 104.1
LAT. 60° 45' 14.6"
LONG. 125° 13' 10.9"

CREEK
1.0m Wide
0.5m Deep

CREEK
2.0m Wide
0.5m Deep

CREEK
1.0m Wide
0.5m Deep

TWEED LAKE

CAMP WATER SOURCE
KM 110.5
LAT. 60° 47' 22.0"
LONG. 125° 52' 54.4"

KM 100.0
LAT. 60° 42' 12.5"
LONG. 125° 45' 17.9"

PROPOSED WELL LOCATION C-49
PROPOSED CAMP SITE

KM 91.9 WATER SOURCE

KM 93.2
LAT. 60° 38' 02.9"
LONG. 125° 53' 54.2"

KM 92.4
LAT. 60° 37' 49.2"
LONG. 125° 52' 31.6"

PROPOSED WELL LOCATION P-27

WATER SOURCE

KM 92.6
LAT. 60° 36' 54.1"
LONG. 125° 48' 37.8"

KM 89.7
LAT. 60° 35' 49.8"
LONG. 125° 54' 24.9"

KM 92.5
LAT. 60° 36' 45.7"
LONG. 125° 48' 38.8"

PROPOSED RE-VOTE SUMP

KM 83.8
LAT. 60° 35' 34.4"
LONG. 125° 58' 37.5"

KM 92.0
LAT. 60° 36' 46.9"
LONG. 125° 48' 19.9"

PROPOSED WELL LOCATION M-17

PARAMOUNT RESOURCES LTD

NOGHA-COLVILLE LAKE COMPOSITE

SCALE 1 : 50 000

0.5 0 1.0 2.0 3.0 4.0 Kilomtres

0.5 0 1.0 2.0 3.0 Miles

- LEGEND -

EXISTING WINTER ACCESS ----------
PROPOSED WINTER/SEISMIC ACCESS ----------
PROPOSED NEW ROAD ——————

McElhanney Associates
PROFESSIONAL LAND SURVEYORS
10012 - 97 th. AVENUE
FORT ST. JOHN, B.C. V1J 5P3
TEL.: (250) 787-0356 FAX.: (250) 787-0310

DRAWN: SDB | DATE: OCT. 11/01 | JOB No: PARAMOUNT9553\COVILLE50.DGN

30X

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$61,142
CELLULAR #:	1-403-997-9701	CUM. COST:	$926,221
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$339
R.R. DATE:		CUM MUD:	$339
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	

DAY: 5 REP DATE: 26\02\03 STATUS 08:00 DRILLING CCONDUCTOR HOLE

DEPTH: 32 PROG. 32 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

PRE MIX

MUD TYPE: GEL CHEI WT: 1090 80 WL: FC: PH: 10

ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	BG	WEIGHT	RPM
1BRR	176923	311	HW	ETD44	OPEN	IN			IN	ALL	45\90
2B	B83280	444	MCB		3X19\14.3	IN	32	5	IN		

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	90	0.990				
OILWELL	PT-600	152	203	100	1.100	4000			

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			0.30
BIT SUB			0.78
MOTOR			9.57
FLEX MONEL			9.41
BELL SUB			0.73
X\O			0.99
KELLY			12.22
		TOTAL	34.00

TIME DISTRIBUTION

MIRU:	9.50	RIG REP:	
BOP, DRILLS		LOGGING:	
RIG SERVICE:	0.25	CEMENT:	
SURVEY:		WOC:	
REAMING	2.50	RUN CSG:	
DRILL:	5.00	DST:	
DRILL OUT:		TRIP:	5.00
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
SAFETY	0.25		
DIR WK	1.50		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.

LANDED AT 59.50 MKB. TOTAL LENGTH 60.74 METERS.

CEMENTED WITH

PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

00:00-05:00 CUT DRILL. LINE AND FINISH RIGGING UP	TRUCK HAULED IN 1-400BBL WATER TANK
05:00-09:30 PICK UP BHA	TALK WITH CATHY FROM FISHERIES AND OCEANS
09:30-09:45 SAFETY MEETING	THEY WILL BE IN TOMORROW AROUND 13:00 HRS.
09:45-11:00 DRILL 311MM PILOT HOLE F\0M-15M	TRUCK HAULED IN 1 LOAD OF ZEOLITE
11:00-12:45 DRILL 444MM HOLE F\0M-15M	PICK UP MOTOR TO DRILL PILOT HOLE.
12:45-14:15 PICK UP MOTOR	TRUCK IN TONG POWER GENERATOR
14:15-15:45 DRILL 311MM PILOT HOLE F\15M-24M	HIT HARD ROCK DRILLING AT 32M.
15:45-16:15 MAKE UP 444MM BIT	
16:45-17:00 DRILL 444MM HOLE F\15M-24M	
17:00-18:00 MAKE UP MONEL	
18:00-20:15 DRILL 444MM HOLE F\24M-32M	
20:15-21:15 WORK STUCK PIPE FREE	
21:15-22:15 PULL OUT AND CHANGE BHA	
22:15-23:45 CHANGE MOTOR ANGLE	
23:45-24:00 RIG SERVICE	
	MINUS 29 \ CLEAR

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$848,366
CELLULAR #:	1-403-997-9701	CUM. COST:	$1,774,587
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$2,622
R.R. DATE:		CUM MUD:	$2,961
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	1

DAY: 6 REP DATE: 27\02\03 US 08:00 TD CONDUCTOR

DEPTH: 32 PROG. KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

MUD TYPE: GEL CHEI WT: 1120 VISC: 80 WL: FC: PH: 9

ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1B	176923RR	311	HW	ETD44	OPEN	IN	60	15.5	2\2\IN	2\8	25\90
2B	B83280	444	MCB		3X19\14.3						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	80	0.880	2700			
OILWELL	PT-600	152	203	80	0.880				

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR TOOLS	223		28.40
1 DC	218		9.10
1 BELL SUB	218		0.73
1 DC	161		9.47
1 X\O	164		0.99
KELLY			11.01
		TOTAL	60.00

TIME DISTRIBUTION

MORU:		RIG REP:	1.00
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	10.50	DST:	
DRILL OUT:		TRIP:	5.75
CIRCULATE:	5.50	L.D.D.S.:	
SAFTEY		REAM:	
CUT DRILL LINE		DIR WK	0.75
BOP DRILL			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.

LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.

CEMENTED WITH

PLUG DOWN AT HRS. ON WITH M3 CEMENT RETURNS.

00:00-02:30 DRILL 311MM HOLE F\32M-32.5M
02:30-03:30 CHANGE FILTERS ON LIGHT PLANT
03:30-04:15 PICK UP MONEL
04:15-05:15 DRILL 311MM HOLE F\32.5M-33M
05:15-05:45 CONDITION MUD ENCOUNTERING SLOUGHIN
05:45-10:45 DRILL 311MM HOLE F\33M-42M
10:45-11:00 RIG SERVICE
11:00-12:00 TRY TO RUN 9" DC(BRIDGE OFF)
12:00-15:00 CONDITION MUD
15:00-15:30 PICK UP 9" DC
15:30-16:45 DRILL 311MM PILOT HOLE F\42M-52M
16:45-17:30 PICK UP 9"DC
17:30-18:30 CONDITION MUD SOME MORE
18:30-19:15 DRILL 311 PILOT HOLE F\52M-60M
19:15-20:15 CIRCULATE HOLE CLEAN
20:15-21:45 TRIP OUT TO LAY DOWN MTR AND RUN HOLE OPENE
21:45-22:30 CHANGE ANGLE ON BIT
22:30-23:45 RUN IN WITH HOLE OPENER
23:45-24:00 RIG SERVICE

SLOUGHING GRAVEL CAUSED US TO HAVE TROUBLE MAKING A CONNECTION AND CARYING ON AT 42M. WE HAD TO MUD UP THE SYSTEM TO A 80VIS.

MINUS 26HIGH \ MINUS 30 LOW\ CLEAR\CALM

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRDB:00\20\03\2003	DAILY COST:	$70,923
CELLULAR #:	1-403-997-9701	CUM. COST:	$1,845,510
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$1,111
R.R. DATE:		CUM MUD:	$4,072
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	2

DAY: 7 REP DATE: 28\02\03 STATUS 08:00 NIPPLING UP DIVERTOR

DEPTH: 60 PROG. 28 KB: 354.60 GL: 350.00 MACP:

SURVEYS: 34M=.5 DEGREES

MUD TYPE: GEL CHEI WT: 1160 VISC: 95 WL: FC: PH: 9.5

ADDITIVES: 2 SX=XANPLEX, 23 SX=GEL

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
COMBINATION 311MM\444MM\444HOLE OPENER						60	60	22		MAX	25\90
				22 TOTAL DRILLING HOURS FOR 444MM CONDUCTOR HOLE							

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	90	0.990				
OILWELL	PT-600	152	203	90	0.990	1000			

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR TOOLS	223		28.40
1 DC	218		9.10
1 BELL SUB	218		0.73
1 DC	161		9.47
1 X\O	164		0.99
KELLY			11.01
		TOTAL	60.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.25	CEMENT:	1.75
SURVEY:	0.25	WOC:	1.25
PRESSURE TEST:		RUN CSG:	5.75
DRILL:		DST:	
DRILL OUT:		TRIP:	6.50
CIRCULATE:	1.75	L.D.D.S.:	
SAFTEY	0.50	REAM:	6.00
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.

LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.

CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3

PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-03:00 MAKE UP AND RIH WITH 444MM HOLE OPENE
03:00-04:30 REAM 444MM HOLE F\31M-36.5M
04:30-05:15 PICK UP 9"DC
05:15-06:45 REAM 444MM HOLE F\36.5M-45.5M
06:45-07:00 SURVEY
07:00-10:30 REAM 444MM HOLE F\45.5M-59.5M
10:30-11:00 CIRCULATE AND CONDITION HOLE
11:00-11:15 RIG SERVICE
11:15-13:30 PULL OUT TO RUN CASING
13:30-15:15 RIG UP POWER TONGS
15:15-15:30 SAFETY MEETING
15:30-19:30 RUN CONDUCTOR PIPE
19:30-20:45 CIRCULATE CONDUCTOR
20:45-21:00 SAFETY MEETING
21:00-22:45 CEMENT CONDUCTOR
22:45-24:00 WAIT ON CEMENT

VARIOUS DEALS HAVE BEEN CONSTRUCTED BY APPACHIE AS FAR AS THE WATER TRUCK AND EXTRA LABOR WITH THE COALVILLE NATIVES THAT HAS NOT BEEN APPROVED BY PARAMOUNT !
RECEIVE 16,000L OF FUEL TODAY
TROUBLE GETTING CONDUCTOR PIPE TO BOTTOM
HAD TO CIRCULATE 3JT'S DOWN
GOOD CEMENT RETURNS ON JOB.

MINUS 30 DEGREES \PARTLY CLOUDY \ WINDY

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$93,319
CELLULAR #:	1-403-997-9701	CUM. COST:	$1,938,829
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$428
R.R. DATE:		CUM MUD:	$4,500
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	3

DAY: 8 REP DATE: 01\03\03 STATUS 08:00 RIH WITH DIRECTIONAL TOOLS

DEPTH: 74 PROG. 14 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

MUD TYPE: GEL CHEM WT: 1065 VISC: 45 WL: FC: PH: 11

ADDITIVES: 15 SX SAWDUST,

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	16\18\18	IN	14	4	IN		
					AVERAGE ROP ON BIT #1A=3.5 M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	105	1.155	1190	29.8\19.8		40.9
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
BIT SUB	223		0.87
3-DC'S	227		27.93
BELL SUB	162		0.73
X\O	171		0.99
4-DC'S	163		36.27
KELLY			6.91
		TOTAL	74.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.25	CEMENT:	
SURVEY:		WOC:	1.50
PRESSURE TEST:	0.75	RUN CSG:	
DRILL:	4.00	DST:	
DRILL OUT:	1.00	TRIP:	4.25
CIRCULATE:		L.D.D.S.:	
SAFTEY MTG	0.25	REAM:	
NIPPLE UP	8.00		
WELD FLANGE	4.00		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, IPSCO BT & C SMLS CASING.

LANDED AT 60.00 MKB. TOTAL LENGTH 101 METERS.

CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3

PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-01:30 WAIT ON CEMENT
01:30-05:30 CUT COND. AND WELD FLANGE
05:30-13:30 RIG UP DIVERTOR
13:30-14:15 PRES. TEST X FUNCTION CONTROL EQUIP.
14:15-14:30 DRILL OUT SAFETY MEETING
14:30-18:45 PREP FLOOR AND RUN IN THE HOLE
18:45-19:45 DRILL OUT
19:45-20:00 RIG SERVICE
20:00-24:00 DRILL 311MM HOLE F\60M-74M

FLY CENTIFUGE HAND OUT WITH ENCAPSULATED SAMPLES.
RECEIVE 180M3 OF SALT\GEL MUD FROM C-49 TO STORE FOR ENCAPSULATION AND USE FOR THE MAIN HOLE SECTION OF M-17.
DRILL OUT WITH CONVENTIONAL DRILLING ASSEMBLY
21 HRS FROM PLUG DOWN TO DRILL OUT.
TAG CEMENT AT 54M

MINUS 30 DEGREES \ WINDY

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$59,118
CELLULAR #:	1-403-997-9701	CUM. COST:	$1,997,947
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$1,053
R.R. DATE:		CUM MUD:	$5,552
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	4

DAY: 9 REP DATE: 02\03\03 STATUS 08:00 **DRILLING ON 215M**

DEPTH: **175** PROG. 101 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS: 71M=.5 DEGREES, 83M=.5 DEGREES, 118M=.25 DEGREES

MUD TYPE: GEL CHEM WT: 1065 VISC: 45 WL: FC: PH: 11

ADDITIVES: 6 SX-BICARB, 5 SX-SODA ASH, 1 SK-DESCO, 36 SX-GEL

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\16	IN	115	18.75	IN	10\12	35\90
					AVERAGE ROP FOR BIT #1B=6.13M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	90	0.990	9000	54.2\36	30.4	74.4
OILWELL	PT-600	152	203	90	0.990				

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		127.64
X\O	164		0.99
KELLY			6.96
		TOTAL	175.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	14.75	DST:	
DRILL OUT:		TRIP:	5.25
CIRCULATE:		L.D.D.S.:	
HANDLE TOOLS	3.00	REAM:	
SAFETY	0.50		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.

LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.

CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3

PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-03:45 DRILL 311MM HOLE F\74M-89M
03:45-06:45 TRIP OUT OF THE HOLE
06:45-07:00 SAFETY MEETING WITH DIR HANDS
07:00-09:30 PICK UP DIR TOOLS
09:30-11:45 RUN IN THE HOLE
11:45-12:00 RIG SERVICE
12:00-19:00 DRILL 311MM HOLE F\89M-144M
19:00-19:15 SAFETY MEETING (BOP DRILL)
19:15-20:45 DRILL 311MM HOLE F\144M-153M
20:45-21:15 TRY TO GET MWD WORKING
21:15-22:00 DRILL 311MM HOLE F\153M-162M
22:00-22:15 RIG SERVICE
22:15-24:00 DRILL 311MM HOLE F\162M-175M

REVIEW DRINKING POLICY AND CAMP EDICATE WITH ALL RIG HANDS.CAMP FIRE DRILL
HAD BUSHMASTERS (LORANE) FLY OUT AND BACK FOR A MEETING WITH ME AND THE TOOLPUSH ON THE QUALITY OF THE FOOD AND SERVICE EXSPECTED!

MINUS 20 \CLOUDY \ BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$54,382
CELLULAR #:	1-403-997-9701	CUM. COST:	$2,052,329
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$1,777
R.R. DATE:		CUM MUD:	$7,329
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	5

DAY: 10 REP DATE: 03\03\2003 STATUS 08:00 DRILLING ON AT 290M

DEPTH: 243 PROG. 68 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS: 144M=.5 DEGREES, 212M=.5 DEGREES

MUD TYPE: GEL CHEM WT: 1065 VISC: 65 WL: FC: PH: 9.5

ADDITIVES: PRIMASEAL C=8SX, PRIMASEAL M=8SX, SAWDUST=50SX, ENVIROSEAL=6SX,CELLO=10SX

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\16	IN	183	30.5	IN	10\12	35\110
					AVERAGE ROP ON BIT #1A=6 M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	90	0.990	8000	54.2\36	30.4	74.4
OILWELL	PT-600	152	203	90	0.990				

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		136.47
X\O	164		0.99
2 STD DP	114		57.74
KELLY			8.39
		TOTAL	243.00

TIME DISTRIBUTION

MORU:		RIG REP:	3.50
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:	0.50	WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	11.75	DST:	
DRILL OUT:		TRIP:	
CIRCULATE:	6.25	L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
CONDUCTOR		DIR WK:	
OTHER	1.50	SAFETY	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.

LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.

CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3

PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-02:15 DRILL 311MM HOLE F\175M-189M
02:15-02:45 SURVEY
02:45-03:00 BOP DRILL
03:00-03:15 RIG SERVICE
03:15-03:30 MIX AND PUMP LCM PILL
03:30-04:00 CHANGE HEAD IN MUD PUMP
04:00-08:30 DRILL 311MM HOLE F\189M-218M
08:30-08:45 REPAIR PUMP AIR LINE
08:45-09:45 DRILL 311MM HOLE F\218M-225M
9:45-12:00 MIX LOST CIRCULATION MATERIAL X PUMP
12:00-14:00 PUMP LCM PILL AND LET SET
14:00-14:15 RIG SERVICE
14:15-17:00 SHUT DOWN AND REPAIR RIG
17:00-18:45 PUMP LCM MUD
18:45-19:00 DRILL 311MM HOLE F\225-226M
19:00-19:45 SUCK FLUID OUT OF SHALE TANK
19:45-22:45 DRILL 311MM HOLE F\226M-239M
22:45-23:15 CLEAN FLOW LINE
23:15-24:00 DRILL 311MM HOLE F\239M-243M

NATIONAL ENERGY BOARD WAS OUT FOR A RIG INSPECTION .
311MM BIT USED FOR CONDUCTOR PILOT DRILLING WAS A RE-RUN FROM C-49
SHUT RIG DOWN TO STRAIGHTEN OUT SOME OF THE INFRACTIONS THAT WERE SPOTTED BY THE NEB
1 BULKER OF FUEL ARRIVED TODAY.

MINUS 24 / BREEZE AND CLEAR

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRCH:00\20\03\2003	**DAILY COST:**	$112,968
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,165,297
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$3,152
R.R. DATE:		**CUM MUD:**	$10,481
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	6

DAY: 11 **REP DATE** 04\03\2003 **STATUS 08:00** DRILLING ON @396M
DEPTH: 360 **PROG.** 117 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!
SURVEYS

MUD TYPE: GEL CHEM **WT:** 1100 **VISC:** 110 **WL:** **FC:** **PH:** 10
ADDITIVES: DEFOAMER=2 PAILS, GEL=113SX, CAUSTIC=2SK,XANPLEX D=4SX

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\16	IN	300	51 25	IN	10\12	35\110
						AVERAGE ROP ON BIT 1A=5.85M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	100	1.100				
OILWELL	PT-600	152	203	100	1.100	10000	54.2\36	30.4	74.4

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		136.47
X\O	164		0.99
6 STD DP	114		173.32
KELLY			9.81
		TOTAL	360.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	1.25
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	1.00	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	21.25	**DST:**	
DRILL OUT:		**TRIP:**	
CIRCULATE:		**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.
LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.
CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3
PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-10:15 DRILL 311MM HOLE F\243M-295M
10:15-10:30 RIG SERVICE
10:30-11:30 DRILL 311MM HOLE F\295M-304M
11:30-12:00 ACCUMILATED SURVEYS
12:00-22:00 DRILL 311MM HOLE F\308M-361M
22:00-22:15 RIG SERVICE
22:15-23:30 REPAIR CAP ON MUD PUMP
23:30-24:00 ACCUMILATED SURVEYS

CHANGE OUT GALIGAR ON PRECHARGE.
CEMENTERS ARRIVED TODAY, HAVING TROUBLE WITH THERE TRUCKS ON THE ROAD THEY HAD TO BE FLOWN OUT TO NORMAN WELLS TO GET PARTS AND BRING ANOTHER TRUCK IN FOR THE BULKER.
SERVICE RIG BROUGHT IN 30 MEN LAST NIGHT AND OVER FLOWED THE CAMP.

MINUS 22 HIGH\MINUS 32 LOW \BREEZE\CLEAR.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRDB:00\20\03\2003	**DAILY COST:**	$112,968
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,165,297
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$3,152
R.R. DATE:		**CUM MUD:**	$10,481
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	7

DAY: 11 **REP DATE** 05\03\2003 **STATUS** 08:00 DRILLING ON @445M

DEPTH: 420 **PROG.** 177 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS 345M=1 DEGREE, 376M=.2 DEGREES

MUD TYPE: GEL CHEM **WT:** 1070 **VISC:** 105 **WL:** **FC:** **PH:** 10

ADDITIVES: GEL=78SX, CAUSTIC=4SK,XANPLEX D=1SK, 10 SX SAWDUST

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\16	IN	360	64.5	IN	10\12	35\110
						AVERAGE ROP ON BIT 1A=5.58M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	100	1.100				
OILWELL	PT-600	152	203	100	1.100	9500	54.2\36	30.4	74.4

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		136.47
X\O	164		0.99
8 STD DP	114		231.15
KELLY			11.98
		TOTAL	420.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	1.25
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	1.75
SURVEY:	0.50	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	13.25	**DST:**	
DRILL OUT:		**TRIP:**	5.75
CIRCULATE:	1.00	**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	

TOTAL HOURS: 24.00

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.
LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.
CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3
PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-00:15 RIG SERVICE
00:15-01:30 REPAIR #1 PUMP
01:30-11:30 DRILL 311MM HOLE F\361M-409M
11:30-12:00 SURVEY
12:00-15:15 DRILL 311MM HOLE F\409M-420M
15:15-16:15 CIRCULATE AND CONDITION HOLE
16:15-18:00 CEMENT CONDUCTOR
18:00-21:15 TRIP OUT (BIT TRIP)
21:15-21:30 RIG SERVICE
21:30-24:00 RUN IN THE HOLE

DO A TOP JOB ON THE CONDUCTOR TO ENSURE A GOOD BOND AROUND IT.2.5 M3 OF 0:1:0"G"+2%CACL
SEND ZEOLITE OFF LOCATION TO C-49
ONE SMALL TRUCK OF FUEL ARRIVED YESTERDAY.
CAP ON DISCHARGE SCREEN WASHED ON PUMP #1.
CHANGE OUT 2 NABORS HANDS WITH NORTH RITE

MINUS 22 HIGH\MINUS 32 LOW \BREEZE\CLEAR.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRCH:00\20\03\2003	**DAILY COST:**	$56,020
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,298,696
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$1,255
R.R. DATE:		**CUM MUD:**	$13,562
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	8

DAY: 13 **REP DATE:** 06\03\2003 **STATUS 08:00** RUNNING CASING

DEPTH: 485 **PROG.** 65 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: GEL CHEM **WT:** 1070 **VISC:** 100 **WL:** N\A **FC:** **PH:** 10

ADDITIVES: 63 SX GEL, 1 SK CAUSTIC, 4 SX BICARBINATE

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\16	IN	65	19.75	IN	10\12	35\110
					AVERAGE ROP FOR BIT #2B=3.3 M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	100	1.100				
OILWELL	PT-600	152	203	100	1.100	11000	54.2\36	30.4	74.4

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		136.47
X\O	164		0.99
10X STD DP	114		298.65
KELLY			9.48
		TOTAL	485.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	2.25
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.75	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	19.75	**DST:**	
DRILL OUT:		**TRIP:**	
CIRCULATE:	0.75	**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
HANDLE DC'S		**SAFETY:**	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 5 JTS OF 339.7 MM, 101 KG/M, BUTT BT & C SMLS CASING.
LANDED AT 60.00 MKB. TOTAL LENGTH 60.74 METERS.
CEMENTED WITH 8.8TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13@1900KG\M3
PLUG DOWN AT 22:45 HRS. ON 27\2\3 WITH 3.0 M3 CEMENT RETURNS.

00:00-00:45 CIRCULATE AND CONDITION MUD.
00:45-01:00 SURVEY
01:00-09:45 DRILL 311MM HOLE F\420M-450M
09:45-10:00 RIG SERVICE
10:00-12:00 DRILL 311MM HOLE F\450M-457M
12:00-13:15 CHANGE HEAD IN PUMP
13:15-15:30 DRILL 311MM HOLE F\457M-463M
15:30-16:30 REPLACE FUEL PUMP IN FLOOR MTR
16:30-21:00 DRILL 311MM HOLE F\463M-478M
21:00-21:15 RIG SERVICE
21:15-21:30 SURVEY
21:30-24:00 DRILL 311MM HOLE F\478M-485M

1\2 A BULKER LOAD OF FUEL CAME IN(THE OTHER 1\2 WENT TO C-49)
AVERAGE ROP FOR THE DAY=3.3 M\HR

ROADS ARE DRIFTED AND ALL FLIGHTS ARE GROUNDED UNTIL FURTHER NOTICE.
MINUS 25 DEGREES \ OVERCAST \ WINDS GUSTING 110 KM\HR

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$137,588
CELLULAR #:	1-403-997-9701	CUM. COST:	$2,436,284
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$743
R.R. DATE:		CUM MUD:	$14,304
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	9

DAY: 14 REP DATE: 7\3\2003 STATUS 08:00 NIPPLING UP

DEPTH: 499 PROG. 14 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: GEL CHEM WT: 1075 VISC: 120 WL: N\A FC:2 PH: 9.5

ADDITIVES: 12 SX-GEL, 1 SK-CAUSTIC, 10 SX-CELLOFLAKE

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1A	M2230GA2	311	HW	MX30G	18\18\18	IN	79	23.5	IN	10\12	35\110
					AVERAGE ROP FOR BIT #2B=3.36M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	100	1.100				
OILWELL	PT-600	152	203	100	1.100	11000	54.2\36	30.4	74.4

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	311		0.30
DIR\BS\JAR	227		39.11
15 DC'S	163		136.47
X\O	164		0.99
11 STD DP	114		317.93
KELLY			4.20
		TOTAL	499.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.25	CEMENT:	1.50
SURVEY:	0.25	WOC:	3.50
PRESSURE TEST:		RUN CSG:	6.25
DRILL:	3.75	DST:	
DRILL OUT:		TRIP:	5.25
CIRCULATE:	3.00	L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
S X C DRILL LINE:		DIR WK:	
SAFETY MTNG	0.25	WELDING	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 JTS OF 244.5 MM, 59.53 KG/M, L-80 ERW CASING.

LANDED AT 499.00 MKB. TOTAL LENGTH 499.99 METERS.

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 HRS. ON 06\03\03 WITH 4.9 M3 CEMENT RETURNS.

00:00-00:45 DRILL 311MM HOLE F\485M-488M
00:45-01:00 RIG SERVICE
01:00-04:00 DRILL 311MM HOLE F\488M-499M SUR TD
04:00-04:30 CIRCULATE HOLE CLEAN
04:30-04:45 SURVEY
04:45-10:00 PULL OUT TO RUN CASING
10:00-16:15 RUN SURFACE CASING
16:15-18:45 CONDITION MUD
18:45-19:00 SAFETY MEETING
19:00-20:30 CEMENT CASING
20:30-24:00 WAIT ON CEMENT

CHANGE OUT DIRECTIONAL HAND,AND 2 NABORS HANDS,AND 2 CAMP STAFF.PLANE FLIGHT WITH NORTH RITE

MINUS 20 DEGREES \ CLEAR \ BREEZE

PARAMOUNT RESOURSES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH:00\20\03\2003	DAILY COST:	$76,723
CELLULAR #:	1-403-997-9701	CUM. COST:	$2,513,007
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$300
R.R. DATE:		CUM MUD:	$14,604
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	10

DAY: 15 REP DATE: 8\3\2003 STATUS 08:00 PRESSURE TESTING
DEPTH: 499 PROG. KB: 354.60 GL: 350.00 MACP: #REF!
SURVEYS:

MUD TYPE: SALT GEL WT: VISC: WL: FC: 2 PH:
ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1		216	varel	CH24MS							

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
KELLY			
		TOTAL	0.25

TIME DISTRIBUTION

MORU:		RIG REP:	6.00
DRILL MH & RH:		LOGGING:	
RIG SERVICE:		CEMENT:	2.00
SURVEY:		WOC:	0.75
PRESSURE TEST:		RUN CSG:	
DRILL:		DST:	
DRILL OUT:		TRIP:	
CIRCULATE:	2.00	L.D.D.S.:	
NIPPLE UP BOP:	9.00	REAM:	
P.TEST			
WELD BOWL	4.25		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 JTS OF 244.5 MM, 59.53 KG/M, L-80 ERW CASING.
LANDED AT 499.00 MKB. TOTAL LENGTH 499.99 METERS.
CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3
TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3
PLUG DOWN AT 20:03 HRS. ON 06\03\03 WITH 4.9 M3 CEMENT RETURNS.

00:00-00:45 WAIT ON CEMENT
00:45-05:00 CUT CASING AND WELD BOWL
05:00-14:00 NIPPLE UP
14:00-16:00 TOP JOB CEMENT
16:00-18:00 TRANSFER SALT MUD TO MUD TANKS
18:00-24:00 DEICE AND REPAIR RIG

TOP JOB ON SURFACE CASING=4.8 TONNES OF ARTIC SET +.5%D-65+.2%D-46+.3%D-13
ONE LOAD OF FUEL CAME IN TODAY AND WE GAVE A LOAD TO THE CONSTRUCTION DELTA OUT OF THE 400BBL TANK.

MINUS 20 \ CLEAR AND CALM.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRCH 08:00\20\03\2003	**DAILY COST:**	$64,638
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,577,644
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$413
R.R. DATE:		**CUM MUD:**	$15,017
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	11

DAY: 16 **REP DATE:** 9\3\2003 **STATUS 08:00** DRILLING ON

DEPTH: 499 **PROG.** **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS:

MUD TYPE: SALT\GEL **WT:** 1190 **VISC:** 40 **WL:** **FC:2** **PH:** 10.5

ADDITIVES: 5 SX BICARB

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1	184616	216	VAREL	CH24MS	15\15\16	IN			IN		

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
KELLY			
		TOTAL	173.53

TIME DISTRIBUTION

MORU:		**RIG REP:**	8.50
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.25	**CEMENT:**	
SURVEY:		**WOC:**	
PRESSURE TEST:	6.25	**RUN CSG:**	
DRILL:		**DST:**	
DRILL OUT:		**TRIP:**	2.00
CIRCULATE:		**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
D.I.R. TOOLS	2.00		
ANTIFREEZE MAN	5.00		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-07:15 REPAIR RIG,PREP LONGSTRING CASING ON RACKS, CLEAN RIG
07:15-11:30 PRESSURE TEST BOP AND ASSOCIATED EQUIPMENT
11:30-12:45 REPAIR PUMP #1
12:45-17:45 REPLACE HAMMER UNION ON DEGASSER LINE AND ANTIFREEZE MANIFOLD
17:45-18:00 RIG SERVICE
18:00-20:00 MAKE UP DIRECTIONAL BHA
20:00-22:00 RUN IN HOLE WITH BHA
22:00-24:00 TEST BOP'S

RECEIVE A LOAD OF FUEL.
RETURN 9" DIR TOOLS AND 444MM TOOLS AND BIT TO NISKU.

MINUS 20 \ BREEZE AND CLEAR

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRCH:00\20\03\2003	**DAILY COST:**	$64,798
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,642,442
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$8,673
R.R. DATE:		**CUM MUD:**	$23,689
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	12

DAY: 17 **REP DATE:** 10\3\2003 **STATUS 08:00 DRILLING ON 687M**
DEPTH: 646 **PROG.** 147 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!
SURVEYS: SEE ATTACHED

MUD TYPE: SALT\GEL **WT:** 1250 **VISC:** 42 **WL:** 10 **FC:**1 **PH:** 11
ADDITIVES: 322 SX SALT
5 SX-SODA ASH, 5 SX BICARB, 5 SX CITRIC ACID, BIOLOSE 1 SK,DEFOAMER 6 PAILS

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1	184616	216	VAREL	CH24MS	15\15\16	IN	147	19.75	IN	15\16	25\90
					AVERAGE ROP FOR BIT #1=7.44 M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	8500	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
17 STD DP	114		462.38
KELLY			10.09
		TOTAL	646.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:	0.50	WOC:	
PRESSURE TEST:	0.25	RUN CSG:	
DRILL:	19.75	DST:	
DRILL OUT:	1.50	TRIP:	1.00
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
SAFETY	0.50	S X C LINE	
		DIS HOLE	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**
LANDED AT 499.00 **MKB. TOTAL LENGTH** 499.99 **METERS.**
CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3
TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3
PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-01:00 RUN IN THE HOLE
01:00-01:45 DRILL OUT
01:45-02:00 SAFETY MEETING (BOP DRILL)
02:00-02:45 DRILL OUT
02:45-04:00 DRILL 216MM HOLE F\499M-504M
04:00-04:15 LEAK OFF TEST
04:15-08:00 DRILL 216MM HOLE F\504M-521M
08:00-08:15 RIG SERVICE
08:15-08:30 BOP DRILL
08:30-11:45 DRILL 216MM HOLE F\521M-541M
11:45-12:00 ACCUMILATED SURVEYS
12:00-20:00-DRILL 216MM HOLE F\541M-598M
20:00-20:15 RIG SERVICE
20:15-23:45 DRILL 216MM HOLE F\598M-646M
23:45-24:00 ACCUMILATED SURVEYS

A LOAD OF NABORS RIG SUPPLIES ALONG WITH SOME LONG STRING CASING TO MAKE UP THE TOTAL CASING NEEDED FOR PRODUCTION ARRIVED TODAY.
53.25 HRS FROM PLUG DOWN TO DRILL OUT.

MINUS 25 \ SNOWING AND BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRCH:00\20\03\2003	**DAILY COST:**	$76,578
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$2,719,020
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$4,608
R.R. DATE:		**CUM MUD:**	$28,297
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	13

DAY: 18 **REP DATE:** 11\3\2003 **STATUS 08:00** DRILLING ON @775M

DEPTH: 739 **PROG.** 93 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: SALT\GEL **WT:** 1260 **VISC:** 48 **WL:** 10 **FC:** **PH:** 10

ADDITIVES: 5 SX BICARB, 2 SK BIO-LOSE, 1 SK CAUSTIC, 5 SX CITRIC ACID, 92 SX SALT, 9 PAILS DEFOAMER

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
1	184616	216	VAREL	CH24MS	15\15\16	695	196	30.25	6\6\10	15\16	25\90
					AVERAGE ROP FOR BIT #1=6.47 M\HR						
2	6002938	216	BH	GTS30OH	15\15\16	IN	44	6.75	IN	14\16	25\90
							AVERAGE ROP FOR BIT #2=6.52M\HR				

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	8500	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
19X STD DP	114		558.81
KELLY			7.66
		TOTAL	740.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.25	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	17.25	**DST:**	
DRILL OUT:		**TRIP:**	4.50
CIRCULATE:	1.25	**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
SAFETY	0.25	**SAFETY:**	
S X C LINE			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-10:30 DRILL 216MM HOLE F\646M-695M
10:30-10:45 RIG SERVICE
10:45-11:00 ACCUMILATED SURVEYS
11:00-11:15 CIRCULATE BOTTOMS UP
11:15-13:45 PULL OUT TO CHANGE BIT
13:45-14:00 SAFETY MEETING (BOP DRILL)
14:00-16:00 RUN IN THE HOLE WITH BIT #2
16:00-17:00 REAM TO BOTTOM
17:00-20:00 DRILL 216MM HOLE F\695M-714M
20:00-20:15 RIG SERVICE
20:15-24:00 DRILL 216MM HOLE F\714M-739M

CHARTER A FLIGHT FOR NABORS FIELD SOUP AND TONG HAND RELEASED
BIT CAME OUT PINCHED WITH THE GAGE ROW GONE AND ONE BERINGS GONE IN SECOND CONE.
COALVILLE WATER TRUCK IS FINALY UP AND RUNNING FOR THE FIRST TIME SINCE THE START OF THIS WELL.
ENCAPSULATION HAS PASSED THE INSPECTION BY STEVE DECHENE.
TESTING TRUCK HAS LEFT FOR NORMAN WELLS TODAY
RELEASED DAN MCNELEY'S VAC TRUCK TODAY

MINUS 30 CLEAR AND BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH 00:00\20\03\2003	DAILY COST:	$57,778
CELLULAR #:	1-403-997-9701	CUM. COST:	$2,776,797
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$1,303
R.R. DATE:		CUM MUD:	$29,600
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	14

DAY: 19 REP DATE: 12\3\2003 STATUS 08:00 DRILLING ON @ 1053M

DEPTH: 955 PROG. 216 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

MUD TYPE: SALTGEL WT: 1260 VISC: 56 WL: 9 FC: PH: 10

ADDITIVES: 1 SK BIO-LOSE, 1 SK CAUSTIC, 3 PAILS DEFOAMER, 15 SX SALT

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
2	6002938	216	BH	GTS30OH	15\15\16	IN	260	29.25	IN	14\16	25\90
					AVERAGE ROP FOR BIT #2=8.88 M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	8500	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
26XX STD'S	114		770.96
KELLY			10.51
		TOTAL	955.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:	1.00	WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	22.50	DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
WORK PIPE			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 JTS OF 244.5 MM, 59.53 KG/M, L-80 ERW CASING.

LANDED AT 499.00 MKB. TOTAL LENGTH 499.99 METERS.

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 HRS. ON 06\03\03 WITH 4.9 M3 CEMENT RETURNS.

00:00-08:00 DRILL 216MM HOLE F\739M-782M
08:00-08:15 RIG SERVICE
08:15-11:30 DRILL 216MM HOLE F\782M-811M
11:30-12:00 ACCUMILATED SURVEYS
12:00-20:30 DRILL 216MM HOLE F\811M-917M
20:30-20:45 RIG SERVICE
20:45-23:30 DRILL 216MM HOLE F\917M-955M
23:30-24:00 ACCUMILATED SURVEYS

MCNELEY VAC TRUCK AND SPARE WATER TRUCK HAVE BEEN KEPT ON BY THE APPACHIE REP AFTER BEING RELEASED BY ME!
1\2 A LOAD OF FUEL DELIVERED TO RIG TODAY
ROP FOR THE DAY=9.6 M\HR

MINUS 23 \ OVERCAST AND VERY WINDY.

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRCH 8:00\20\03\2003	DAILY COST:	$71,417
CELLULAR #:	1-403-997-9701	CUM. COST:	$2,848,214
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$1,492
R.R. DATE:		CUM MUD:	$31,092
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	15

DAY: 20 REP DATE: 13\3\2003 STATUS 08:00 DRILLING ON @ 1158M

DEPTH: 1119 PROG. 164 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: SALT\GEL WT: 1260 VISC: 70 WL: 10 FC: PH: 10

ADDITIVES: 7 SX BICARB, 3 SX BIO-LOSE, 6 SX SALT, 2 SX SODA ASH, 3 PAILS DEFOAMER

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
2	6002938	216	BH	GTS30OH	15\15\16	1071	376	38	3\8\IN	14\16	25\90
					AVERAGE ROP FOR BIT #2=9.8M\HR						
3	149721	216	VAREL	34MS-XG	15\15\16	IN	48	6.25	IN	14\16	25\90

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	9000	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
32X STD'S DP	114		934.98
KELLY			10.49
		TOTAL	1119.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:	0.50	WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	15.00	DST:	
DRILL OUT:		TRIP:	6.00
CIRCULATE:	1.75	L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
DIR WK	0.25		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 JTS OF 244.5 MM, 59.53 KG/M, L-80 ERW CASING.

LANDED AT 499.00 MKB. TOTAL LENGTH 499.99 METERS.

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 HRS. ON 06\03\03 WITH 4.9 M3 CEMENT RETURNS.

00:00-08:45 DRILL 216MM HOLE F\959M-1071M
08:45-09:15 ACCUMILATED SURVEYS
09:15-09:30 RIG SERVICE
09:30-10:00 CIRCULATE BOTTOMS UP
10:00-11:15 PULL OUT OF THE HOLE
11:15-12:30 PUMP OUT 2 SINGLES AT 650M
12:30-14:15 PULL OUT OF THE HOLE
14:15-16:30 RUN IN THE HOLE
16:30-16:45 TEST MWD
16:45-17:30 RUN IN TO BOTTOM
17:30-19:15 DRILL 216MM HOLE F\1071M-1081M
19:15-19:30 RIG SERVICE
19:30-24:00 DRILL 216MM HOLE F\1081M-1119M

WHEN PULLED THE THIRD CONE ON THE BIT WAS LOCKED RIGHT UP AND COULDN'T BE TURNED.
AVERAGE ROP FOR THE DAY=10.93 M\HR
FLY ENCAPSULATOR HAND,CORE HAND AND SUMP TESTER IN TODAY.
TRAVERS CAMP IS RELEASED TO GO BY ME!
REMAINING HANDS IN THAT CAMP WILL BE ABLE TO STAY IN THE SLEIGH CAMP WHEN THAT CAMP IS GONE.WE HAVE A WATER HAULER,MUD MAN, WELDER STAYING IN THAT CAMP.
RECEIVE 3 NABORS HANDS ON NORTHRITE FLIGHT C-49 SERVICE RIG TOOK A DELTA FULL OF FUEL FOR FRACKING OPERATION TODAY.

MINUS 27\ CLEAR \ BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRE 08:00\20\03\2003	**DAILY COST:**	$158,680
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$3,006,894
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$2,210
R.R. DATE:		**CUM MUD:**	$33,301
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	16

DAY: 21 **REP DATE:** 14\3\2003 **STATUS 08:00** DRILLING ON @1231M

DEPTH: 1208 **PROG.** 89 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: SALT\GEL **WT:** **VISC:** **WL:** **FC:** **PH:**

ADDITIVES: 10 SX-SALT,4 PAILS-DEFOAMER, 7 SX-BIO-LOSE, 17 SX-SCDA ASH

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
3	149721	216	VAREL	34MS-XG	15\15\16	IN	137	29.5	IN	14\16	25\90
					AVERAGE ROP FOR BIT #3=4.64M\HR						

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	9000	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
40XX STD'S DP	114		1031.44
KELLY			3.03
		TOTAL	1208.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.25	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	23.25	**DST:**	
DRILL OUT:		**TRIP:**	
CIRCULATE:		**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
SMITH HEAD HANDLE TOOLS		**SLIP&CUT**	
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-00:15 RIG SERVICE
00:15-11:45 DRILL 216MM HOLE F\1119M-1170M
11:45-12:00 ACCUMILATED SURVEYS
12:00-16:00 DRILL 216MM HOLE F\1170M-1187M
16:00-16:15 RIG SERVICE
16:15-24:00 DRILL 216MM HOLE F\1187M-1208M

ADJUSTMENT TO MUD COSTS
HAULED 14T OF CEMENT FOR ENCAPSULATION
AVERAGE ROP FOR TODAY=3.8 M\HR

MINUS 24 \CLEAR AND SUNNY

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYREDO8:00\20\03\2003	**DAILY COST:**	$105,392
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$3,112,286
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$5,102
R.R. DATE:		**CUM MUD:**	$38,404
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	17

DAY: 22 **REP DATE:** 15\3\2003 **STATUS 08:00** DRILLING ON AT 1263M

DEPTH: 1262 **PROG.** 54 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: GEL\SWAL **WT:** 1260 **VISC:** 70 **WL:** 10 **FC:** **PH:** 10

ADDITIVES: 7SX-BIO LOSE,7PAILS-DEFOAMER,5SX-CITRIC ACID,105SX-SALT,5SX-SODA ASH,4-DESCO

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
3	6002938	216	BH	GTS30OH	15\15\16	1262	191	48.25	2\7\1	14\16	25\90
					AVERAGE ROP FOR BIT #3=3.95M\HR						
4											

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	10000	73.7	45.4	57.3
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		30.04
3-DC'S	164		25.77
JARS	162		4.04
12-DC'S	164		112.44
X\O	164		0.99
37X STD'S DP	114		1079.68
KELLY			8.79
		TOTAL	1262.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.50	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	18.75	**DST:**	
DRILL OUT:		**TRIP:**	2.75
CIRCULATE:	1.00	**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
DIR WK	0.50		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-09:30 DRILL 216MM HOLE F\1208M-1235M
09:30-09:45 RIG SERVICE
09:45-13:15 DRILL 216MM HOLE F\1235M-1245M
13:15-13:45 DEVIEATION SURVEY
13:45-19:30 DRILL 216MM HOLE F\1245M-1262M
19:30-20:30 CIRCULATE HOLE CLEAN
20:30-20:45 RIG SERVICE
20:45-23:30 PULL OUT OF THE HOLE
23:30-24:00 LAY OUT DIRECTIONAL TOOLS

SEND CORE HAND OUT ON NORTHRITE FLIGHT
1 TRUCK OF ZEOLITE CAME IN AND 1 TRUCK LOAD OF CNRL CEMENT CAME IN.
AVERAGE ROP FOR THE DAY=2.88 M\HR

MINUS 25 \SNOWING \ BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRE 08:00\20\03\2003	**DAILY COST:**	$142,655
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$3,254,941
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$2,071
R.R. DATE:		**CUM MUD:**	$40,475
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	18

DAY: 23 **REP DATE:** 16\3\2003 **STATUS 08:00** DRILLING ON @1349M

DEPTH: 1321 **PROG.** 59 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: SEE ATTACHED

MUD TYPE: SALT \ GEL **WT:** 1265 **VISC:** 78 **WL:** 10 **FC:** **PH:** 9.5

ADDITIVES: 4SX-BIO-LOSE,5SX-BICARB,5SX-CITRIC ACID,3PAILS-DEFOAMER,5SX-SALT

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
4	6004660	216	HW	HR44	3 X 14.3	IN	59	16.75	IN	16\17	40\90
						AVERAGE ROP FOR BIT #4=3.52M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	10000	80	49.2	45
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		9.17
6-DC'S	164		54.81
JARS	162		4.04
13-DC'S	164		117.55
X\O	164		0.60
39 STD'S DP	114		1127.88
KELLY			6.70
		TOTAL	1321.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	16.75	DST:	
DRILL OUT:		TRIP:	2.75
CIRCULATE:	0.75	L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
SLIP X CUT	1.00		
DIR WK	2.25		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-02:15 LAY DOWN DIRECTIONAL TOOLS
02:15-02:30 RIG SERVICE
02:30-04:15 RUN IN HOLE WITH BHA
04:15-05:15 SLIP AND CUT DRILL LINE
05:15-06:15 RUN IN THE HOLE
06:15-07:00 WASH TO BOTTOM
07:00-12:00 DRILL 216MM HOLE F\1262M-1279M
12:00-12:15 RIG SERVICE
12:15-24:00 DRILL 216MM HOLE F\1279M-1321M

BIT #3 HAD THE BEARINGS OUT OF CONE #1 THE REST OF THE BIT WAS IN GOOD SHAPE.
SEND OUT THE MWD HAND AND THE WELDER ON NORTHWRITE AIR.
RECEIVE A TOTAL OF 52200 KG OF CEMENT FROM CNRL.
ONE LOAD OF CEMENT CAME IN FROM CNRL TODAY

MINUS 34 \CLEAR \ CALM

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRE08:00\20\03\2003	**DAILY COST:**	$164,353
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$3,419,294
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$3,978
R.R. DATE:		**CUM MUD:**	$44,453
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	19

DAY: 24 **REP DATE:** 17\3\200: **STATUS 08:00 DRILLING ON @1420M**

DEPTH: 1394 **PROG.** 73 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: 1355M=4 DEGREES

MUD TYPE: SALT\GEL **WT:** 1285 **VISC:** 72 **WL:** 8 **FC:** **PH:** 9.5

ADDITIVES: 2 PAILS-DEFOAMER, 15 SX-BIO-LOSE,2 SX-CAUSTIC,105 SX-SALT

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
4	6004660	216	HW	HR44	3 X 14.3	IN	132	39.75	IN	16\17	40\90
						AVERAGE ROP FOR BIT #4=3.32M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	10900	80	49.2	45
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		9.17
6-DC'S	164		54.81
JARS	162		4.04
13-DC'S	164		117.55
X\O	164		0.60
41X STD'S DP	114		1195.35
KELLY			12.23
		TOTAL	1394.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.50	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	23.00	**DST:**	
DRILL OUT:		**TRIP:**	
CIRCULATE:		**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
WORK STUCK DP			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-08:45 DRILL 216MM HOLE F\1321M-1350M
08:45-09:00 RIG SERVICE
09:00-17:00 DRILL 216MM HOLE F\1359M-1375M
17:00-17:30 SURVEY
17:30-21:15 DRILL 216MM HOLE F\1375M-1385M
21:15-21:30 RIG SERVICE
21:30-24:00 DRILL 216MM HOLE F\1385M-1394M

APPROXIMATELY 25 TRUCKS HAVE LEFT THE SERVICE RIG ALL FUELING UP PRIOR TO LEAVING!

32TONNES OF CEMENT DELIVERED BY SCHLUMBERGE TODAY.
PICKER TRUCK DELIVERED ZEOLITE AND MOVED FINISHED PRODUCT TO SUMP TODAY
1 LOAD OF FUEL DELIVERED TODAY.1\2 WENT TO ENCAPSULATION X SERVICE RIG AND1\2 CAME TO NABORS DRILLING RIG.
AVERAGE ROP FOR THE DAY=3.17M\HR
WE ARE RUNNING SHORT ON FUEL HAVING A HARD TIME GETTING ANY FROM THE BULK PLANT!

MINUS 16\ CLOUDY AND BREEZE

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRE08:00\20\03\2003	DAILY COST:	$128,126
CELLULAR #:	1-403-997-9701	CUM. COST:	$3,547,420
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	$2,161
R.R. DATE:		CUM MUD:	$46,614
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	20

DAY: 25 REP DATE: 18\3\2003 STATUS 08:00 PULLING OUT TO LOG

DEPTH: 1468 PROG. 74 KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

MUD TYPE: SALT\GEL WT: 1295 VISC: 68 WL: 7 FC: PH: 9.5

ADDITIVES: 36 SX-SALT,5 PAILS-DEFOAMER, 1 SK-CAUSTIC, 2 SX-BIO-LOSE

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM
4	6004660	216	HW	HR44	3 X 14.3	IN	206	63.25	IN	16\17	40\90
						AVERAGE ROP FOR BIT #4=3.25M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203	115	1.265	10000	80	49.2	45
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		9.17
6-DC'S	164		54.81
JARS	162		4.04
13-DC'S	164		117.55
X\O	164		0.60
44 STD'S DP			1272.41
KELLY			9.17
		TOTAL	1468.00

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:	0.50	CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:	23.50	DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
HAN DIR TOOLS			
TESCO			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 JTS OF 244.5 MM, 59.53 KG/M, L-80 ERW CASING.

LANDED AT 499.00 MKB. TOTAL LENGTH 499.99 METERS.

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 HRS. ON 06\03\03 WITH 4.9 M3 CEMENT RETURNS.

00:00-11:45 DRILL 216MM HOLE F\1394M-1430M
11:45-12:00 RIG SERVICE
12:00-23:45 DRILL 216MM HOLE F\1430M-1468M
23:45-24:00 RIG SERVICE

SENT 2 TRUCKS TO NISKU WITH DIR TOOLS,CORE BBLS ON ONE TRUCK AND DRILL COLLARS THAT WERE SENT UP BY NABORS THAT WERE THE WRONG THREAD AND THE MECHANICS TRUCK ON THE SECOND LOAD!!
BODY JOB OF FUEL CAME IN TODAL WITH 1\2 GOING TO THE ENCAPSULATORS AND 1\2 THE LOAD COMING TO THE DRILLING RIG.

MINUS 13 \ CALM \ OVERCAST

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRE08:00\20\03\2003	**DAILY COST:**	$342,217
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$3,889,637
SPUD DATE:	09:45\25\02\2003	**DAILY MUD:**	$2,187
R.R. DATE:		**CUM MUD:**	$48,801
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	21

DAY: 26 **REP DATE:** 19\03\2003 **STATUS 08:00** RUNNING CASING

DEPTH: 1471 **PROG.** 3 **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS: 1449M=3.75 DEGREES

MUD TYPE: SALT\GEL **WT:** 1300 **VISC:** 65 **WL:** 8 **FC:** **PH:** 9.5

ADDITIVES: 2 PAILS-DEFOAMER, 5 SX SALT, 41 SX-BARITE, 4 SX-BIO LOSE, 30 SX-SAWDUST

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	CUT	RUN	HRS	TBG	WEIGHT	RPM
4	6004660	216	HW	HR44	3 X 14.3	1471	209	64.25	6\7\2	16\17	40\90
						AVERAGE ROP FOR BIT #4=3.25M\HR					

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT	216		0.25
DIR TOOLS	164		9.17
6-DC'S	164		54.81
JARS	162		4.04
13-DC'S	164		117.55
X\O	164		0.60
44 STD'S DP			1272.41
KELLY			12.17
		TOTAL	1471.00

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	7.50
RIG SERVICE:	0.50	**CEMENT:**	
SURVEY:	0.50	**WOC:**	
PRESSURE TEST:		**RUN CSG:**	
DRILL:	1.00	**DST:**	
DRILL OUT:		**TRIP:**	10.00
CIRCULATE:	4.00	**L.D.D.S.:**	
NIPPLE UP BOP:		**REAM:**	
SAFETY	0.50		
CUT TROUGH			
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 35 **JTS OF** 244.5 **MM,** 59.53 **KG/M,** L-80 ERW **CASING.**

LANDED AT 499.00 **MKB.** **TOTAL LENGTH** 499.99 **METERS.**

CEMENTED WITH LEAD=12 TONNES OF ARTIC SET+.5%D-65+.2%D-46+.3%D-13@1910KG\M3

TAIL=17.5 TONNES OF"G"+2%CACL@1880KG\M3

PLUG DOWN AT 20:03 **HRS. ON** 06\03\03 **WITH** 4.9 **M3 CEMENT RETURNS.**

00:00-01:00 DRILL 216MM HOLE F\1468M-1471M TD
01:00-02:00 CIRCULATE HOLE CLEAN
02:00-05:00 WIPER TRIP
05:00-05:15 BOP DRILL
05:15-06:15 CIRCULATE AND CONDITION HOLE
06:15-06:45 SURVEY
06:45-11:30 TRIP OUT TO LOG
11:30-11:45 RIG SERVICE
11:45-12:00 SAFETY MEETING WITH LOGGERS
12:00-19:30 WIRELINE LOGS
19:30-21:45 RUN IN THE HOLE
21:45-23:45 CIRCULATE AND CONDITION MUD
23:45-24:00 RIG SERVICE

2 MORE LOADS OF ZEOLITE WERE TRUCKED OUT FROM PENTASTARS YARD AND WE SENT TWO C-CANS OF CHEMICAL BACK TO NORMAN WELLS
2 TANKERS FULL OF FUEL WERE DELIVERED TODAY
1 LOAD WAS DELIVERED TO THE RIG AND THE OTHER LOAD WAS SPLIT BETWEEN ENCAPSULATORS AND CONSTRUCTION.
CHARTER A FLIGHT TO GET THE TONG HAND OUT AND SEND THE DIRECTIONAL DRILLER HOME.
1 MOTOR AND 1 SET OF JARS LEFT IN NORMAN WELLS TO BE SHIPPED OUT ON THE BARDGE!
STEVE DESCHENE SHOWED UP TODAY TO LOOK AT THE ENCAPSULATION AND GO OVER THE PROCESS ON HOW TO GO ABOUT MAKING THE SUMPS PASS BOARD APPROVALS.
MINUS 13 \OVERCAST\ CALM

PARAMOUNT RESOURCES LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		**LOCATION:**	**PARA NOGHA M-17**
UNIQUE I.D.		**WELL LICENCE**	**1970**
SUPERVISOR:	MILES PYRDB:00\20\03\2003	**DAILY COST:**	$185,243
CELLULAR #:	1-403-997-9701	**CUM. COST:**	$4,074,881
SPUD DATE:	09:45\25\03\2003	**DAILY MUD:**	$4,445
R.R. DATE:		**CUM MUD:**	$53,246
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 **EST. T.D** 1515	**DAYS FROM SPUD**	22

DAY: 27 **REP DATE:** 20\03\2003 **STATUS 08:00 RIG RELEASED**

DEPTH: 1471 **PROG.** _____ **KB:** 354.60 **GL:** 350.00 **MACP:** #REF!

SURVEYS:

MUD TYPE: SALT\GEL **WT:** 1300 **VISC:** 50 **WL:** 9 **FC:** **PH:** 10.5

ADDITIVES: 25 PAILS-KD-0700, 20 SX-BARITE, 5 SX-DESCO

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

MORU:		**RIG REP:**	
DRILL MH & RH:		**LOGGING:**	
RIG SERVICE:	0.25	**CEMENT:**	2.75
SURVEY:		**WOC:**	
PRESSURE TEST:		**RUN CSG:**	8.50
DRILL:		**DST:**	
DRILL OUT:		**TRIP:**	
CIRCULATE:	1.50	**L.D.D.S.:**	5.25
NIPPLE DWN BOP	3.50	**REAM:**	
SAFETY	1.00	**H/TOOLS**	
SET SLIPS	1.25		
TOTAL HOURS:	24.00		

CASING SUMMARY

RAN 103 **JTS OF** 177.8 **MM,** 43.2 **KG/M,** LT X C L-80 **CASING.**

LANDED AT 1471.00 **MKB.** **TOTAL LENGTH** 1472.60 **METERS.**

CEMENTED WITH 32 TONNES OF "G" CEMENT+.5%DO65+.3%D167

PLUG DOWN AT 18:32 **HRS. ON** 19\03\03 **WITH** 2.0 **M3 CEMENT RETURNS.**

00:00-00:15 SAFETY MEETING
00:15-04:00 LAY DOWN DRILL STRING
04:00-04:15 SAFETY MEETING
04:15-05:45 LAY DOWN DRILL COLLARS
05:45-06:00 SAFETY MEETING
06:00-14:45 RIG TO AND RUN CASING
14:45-16:15 CIRCULATE AND CONDITION MUD
16:15-16:30 SAFETY MEETING
16:30-19:15 CEMENT CASING
19:15-22:45 TEAR OUT BOP'S
22:45-23:15 SET CASING SLIPS WITH 55000DAN
23:15-24:00 CUT AND DRESS CASING

CHARTER A FLIGHT TO GET THE GEOLOGIST AND MUDMAN OUT AND SHIP THE ABB VETCO HAND IN TO INSTALL THE WELLHEAD!
1 TRUCK TO HAUL OPEN ENDED SHALE PIT TO NORMAN WELLS

MINUS 12 \ OVERCAST \ SNOWING

PARAMOUNT RESOURCESS LTD.

DAILY DRILLING REPORT

PARA ET AL NOGHA		LOCATION:	PARA NOGHA M-17
UNIQUE I.D.		WELL LICENCE	1970
SUPERVISOR:	MILES PYRE08:00\20\03\2003	DAILY COST:	$56,513
CELLULAR #:	1-403-997-9701	CUM. COST:	$4,131,394
SPUD DATE:	09:45\25\02\2003	DAILY MUD:	
R.R. DATE:	08:00\20\03\2003	CUM MUD:	$53,246
CONTRACTOR:	NABORS #62		
A.F.E. #:	02N310003 EST. T.D 1515	DAYS FROM SPUD	23

DAY: 28 REP DATE: 21\03\2003 STATUS 08:00

DEPTH: 1471 PROG. KB: 354.60 GL: 350.00 MACP: #REF!

SURVEYS:

MUD TYPE: WT: VISC: WL: FC: PH:

ADDITIVES:

BIT	SERIAL #	SIZE	MFG	TYPE	JETS	OUT	RUN	HRS	TBG	WEIGHT	RPM

PUMP	DESCR.	LINER	STK	SPM	RATE	PRESS	AV DC	AV DP	NOZZEL VEL.
OILWELL	PT-600	152	203						
OILWELL	PT-600	152	203						

DRILLING ASSEMBLY

TOOL	OD	ID	LENGTH
BIT			
KELLY			
		TOTAL	

TIME DISTRIBUTION

MORU:		RIG REP:	
DRILL MH & RH:		LOGGING:	
RIG SERVICE:		CEMENT:	
SURVEY:		WOC:	
PRESSURE TEST:		RUN CSG:	
DRILL:		DST:	
DRILL OUT:		TRIP:	
CIRCULATE:		L.D.D.S.:	
NIPPLE UP BOP:		REAM:	
BRIDGE PLUG		WIRE LINE	
HANDLE TOOLS			
TOTAL HOURS:			

CASING SUMMARY

RAN 103 JTS OF 177.8 MM, 43.2 KG/M, LT X C L-80 CASING.

LANDED AT 1471.00 MKB. TOTAL LENGTH 1472.60 METERS.

CEMENTED WITH 32 TONNES OF "G" CEMENT+.5%DO65+.3%D167

PLUG DOWN AT 18:32 HRS. ON 19\03\03 WITH 2.0 M3 CEMENT RETURNS.

00:00-08:00 TEAR OUT RIG AND CLEAN TANKS.
INSTALL WELLHEAD

RIG RELEASE @08:00\20\03\2003
VAC TRUCK DRIVER WAS BURNT BY STEAM WHILE EMPTYING THE BOILER.MEDIC HAD TO WRAP HIS LEG AROUND THE CALF.SENT OUT FOR FURTHER MEDICAL ATTENTION.

ENCAPSULATION WILL BE A ONGOING PROCESS UNTIL ALL OF THE FLUIDS ARE ENCAPSULATED.

MINUS 7 \CLEAR \ CALM

PARAMOUNT RESOURCES LTD.

RUNNING AND CEMENTING

CONDUCTOR CASING O.D.: 339.7 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA H/-17 DATE: 27\02\2003

K.B. ELEVATION 348.60 CSG. FLG. _____ TOTAL DEPTH (DRILLER) 59

HOLE SIZE	444			CSG IN HOLE	60.74		
DEPTH M	59			DEPTH SET	59		

MUD TYPE: GEL CHEM WT: 1160 KG/M3 VISC: 95 WL: 9.5

BOP'S 11"-3000LB

RUNNING

POWER TONGS RIG SERVICE TORQUE: MAX: _____ NM NOM _____ NM MIN _____
TIME PIPE START: 15:30 TIME ON BOTTOM 19:30 TIME CIRCULATED 1.25
FILL UP POINTS: ALL JTS BOTTOM BY CSG 60 UP FROM KB: 1M

REMARKS: FLOAT ON FLOAT SHOE NOT HOLDING, WHEN FILLING PIPE WE CIRCULATED. FIRST THREE CONNECTIONS WERE WELDED

CEMENTING

CEMENT CO: SCHLUMBERGE OPERATOR: DAN JOHNSON AR. TIME: 21:30\25\2\3
TYPES & QUANTITY OF CEMENT: 10 TONNES OF ARTIC SET +.5%DO65+.2%DO46+.3%DO13
HEIGHT TO BE CEMENTEI 59M
FLUSH: 1M3 MIX TIME: START: 21:42 FIN: 22:18 WT: 1900
CALCULATED DISP 4.7 MEASURED DISP. 4.2 START: 22:20 FIN: 22:30
DISPLACING FLUID WATER MAX. PRESS 1790 BUMP W/ _____
CEMENT RETURNS 3 M3 FLOAT HELD WORKED CSG WHILE CMT NO

REMARKS: .

LANDING

TIME LANDED: 22:30 DATE: 27\02\03 'WT. STRING (LESS BLOCKS)daN 2,000
WT. LANDED IN SLIPS: N\A daN BOWL: _____ SIZE: _____
SERIES _____ SLIP & SEAL ASS: _____

REMARK:

AGENT OF OPERATOR: MILES PYRET

PARAMOUNT RESOURCES LTD.

CONDUCTOR CASING REPORT

O.D.: 339.7 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA M-17 DATE: 30\01\2003

JTS ON LOC	M ON LOC	CASING WT.	GRADE	RANGE	THREAD	T & C	MAKE	JTS. RUN	DEPTH LANDED	M RUN IN WELL
5	60.16	101	K-55	3	BUTT	BT & C	IPSCO	5	59.00	60.16

SHOE: MAKE:	WEATHERFORD	TYPE:	FLOAT THREADED	LENGTH, M	0.58
COLLAR: MAKE:		TYPE:		LENGTH, M	
LANDING JOINT (WHEN USED) LENGTH, M				LENGTH, M	
OVERALL LENGTH OF CASING STRING, M				TOTAL, M	60.74
METERS UP FROM K.B. (SUBTRACT)		1.74 M			1.74
SETTING DEPTH: LOG:		DRILLER:	60.00		60.00
SHOE JOINT: OVERALL:	14.56 M (SUBTRACT)			SHOE JOINT	
FLOAT COLLAR: LOG:	N/A M	DRILLER:	60 M		60.00
K.B. TO CASING FLG:	N\A M	CUT OFF:	5.72 M		

CENTRALIZERS & TURBOLIZERS:

MAKE: NUMBER

POSITIONS:

SCRATCHERS:

MAKE: NUMBER

POSITIONS:

JOINTS WELDED:

REMARKS:

casing landed ON bottom.

OPERATORS REP: MILES PYRET

PARAMOUNT RESOURCES

PIPE TALLY

DATE: 1/13/2003

WELL NAME: PARA ET AL NOGHA — LOCATION: PARA NOGHA M-17

CONTRACTOR: NABORS #62

PIPE DESCRIPTION: 339.7 mm. 101 KG/M — GRADE: BUTT — RANGE: 3-Jan

CPLG: BT & C — THREAD: BT & C — MFG.: IPSCO — NEW OR USED: NEW

TYPE OF STRING: CONDUCTOR — TALLIED: MILES PYRET — THREADS OFF

	LENGTH		LENGTH		LENGTH		LENGTH		LENGTH		LENGTH
1	11.83	21		41		61		81		101	
2	12.03	22		42		62		82		102	
3	11.75	23		43		63		83		103	
4	12.34	24		44		64		84		104	
5	12.21	25		45		65		85		105	
6		26		46		66		86		106	
7		27		47		67		87		107	
8		28		48		68		88		108	
9		29		49		69		89		109	
10		30		50		70		90		110	
TTL 1-10	60.16	TTL 21-30		TTL 41-50		TTL 61-70		TTL 81-90		TTL 101-110	
11		31		51		71		91		111	
12		32		52		72		92		112	
13		33		53		73		93		113	
14		34		54		74		94		114	
15		35		55		75		95		115	
16		36		56		76		96		116	
17		37		57		77		97		117	
18		38		58		78		98		118	
19		39		59		79		99		119	
20		40		60		80		100		120	
TTL 11-20		TTL 31-40		TTL 51-60		TTL 71-80		TTL 91-100		TTL 111-120	
TTL 01-20	60.16	TTL 21-40		TTL 41-60		TTL 61-80		TTL 81-100		TTL 101-120	

TOTAL 1-20	60.16	PAGE 1 TOTAL		60.16	Shoe= 0.58
					Float=
TOTAL 21-40		LEFT OUT:			Shoe jt.= 12.41
TOTAL 41-60		FLOAT & SHOE		0.58	TOTAL JOINTS ON LOCATION
TOTAL 61-80		GRAND TOTAL:		60.74	REMARKS:
TOTAL 81-100					
TOTAL 100-120					
TOTAL 1 - 120	60.16				AGENT OF OPERATOR: MILES PYRET

PARAMOUNT RESOURCES LTD.

RUNNING AND CEMENTING

SURFACE CASING O.D.: 244.5 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA M-17 DATE: 06\03\2003

K.B. ELEVATION _____ CSG. FLG. 4.12 TOTAL DEPTH (DRILLER) 499

HOLE SIZE	311			CSG IN HOLE	244.5		
DEPTH M	499			DEPTH SET	499		

MUD TYPE: GEL CHEM WT: 1085 KG/M3 VISC: 110 WL: N\A

BOP'S 11"-3000 LB

RUNNING

POWER TONGSRIG SERVICE TORQUE: MAX: 12490 NM NOM 9990 NM MIN 7500
TIME PIPE START: 10:00 TIME ON BOTTOM 16:15 TIME CIRCULATED 2.5
FILL UP POINTS: EVERY ONE BOTTOM BY CSG 509 UP FROM KB: 1

REMARKS: Casing went to bottom good, Strap and drift all casing on racks.

CEMENTING

CEMENT CO: SCHLUMBERGER OPERATOR: DAN JOHNSON AR. TIME: 12:30
TYPES & QUANTITY OF CEMENT: 12TONNES OF ARTIC SET+.5%DO65+.2%DO46+.3%DO13
17.5 T TONNES OF 0:1:0"G"+2%CACL HEIGHT TO BE CEMENTEI 499M
FLUSH: 3 M3 MIX TIME: START: 18:49 FIN: 19:25 WT: 1910\1880
CALCULATED DISP 19.6 MEASURED DISP. 19.6 START: 19:32 FIN: 20:03
DISPLACING FLUID WATER MAX. PRESS 1680 BUMP W/ 8100
CEMENT RETURNS 5 M3 FLOAT HELD WORKED CSG WHILE CMT 3M

REMARKS:

LANDING

TIME LANDED: 20:08 DATE: 06\03\2003 'WT. STRING (LESS BLOCKS)daN 32,000
WT. LANDED IN SLIPS: N\A daN BOWL: 279MM X 244.5MM SIZE: 21000KPA
SERIES ODSO SLIP & SEAL ASS: 279 X 244.5 AUTOMATIC

REMARK: CASING WAS LANDED ON BOTTOM.

AGENT OF OPERATOR: MILES PYRET

PARAMOUNT RESOURCES LTD.

SURFACE CASING REPORT

O.D.: 244.5 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA M-17 DATE: 05\03\2003

JTS ON LOC	M ON LOC	CASING WT.	GRADE	RANGE	THREAD	T & C	MAKE	JTS. RUN	DEPTH LANDED	M RUN IN WELL
36	509.56	59.53	L-80	3	ERW	LT & C	IPSCO	35	499.00	499.16

SHOE: MAKE:	WEATHERFORD	TYPE:	FLOAT	LENGTH, M	0.46
COLLAR: MAKE:	WEATHERFORD	TYPE:	FLOAT	LENGTH, M	0.37
LANDING JOINT (WHEN USED) LENGTH, M				LENGTH, M	N\A
OVERALL LENGTH OF CASING STRING, M				TOTAL, M	499.99
METERS UP FROM K.B. (SUBTRACT)		1 M			1.00
SETTING DEPTH: LOG:		DRILLER:	499.00		498.99
SHOE JOINT: OVERALL:	14.56 M (SUBTRACT)			SHOE JOINT	14.56
FLOAT COLLAR: LOG:	M	DRILLER:	484.44 M		484.43
K.B. TO CASING FLG:	4.12 M	CUT OFF:	5.49 M		

CENTRALIZERS & TURBOLIZERS:

MAKE: WEATHERFORD NUMBER 11

POSITIONS:

JTS #1,2,4,8,12,16,20,24,28,32,34

SCRATCHERS:

MAKE: NUMBER

POSITIONS:

JOINTS WELDED: None

REMARKS:

FIRST 3 JTS THREADLOCKED.

OPERATORS REP: MILES PYRET

PARAMOUNT RESOURCES

PIPE TALLY

DATE: 02\03\2003

WELL NAME PARA ET AL NOGHA LOCATION PARA NOGHA M-17

CONTRACTOR NABORS #62

PIPE DESCRIPTION 244.5 mm. 59.53 KG/M GRADE L-80 RANGE 3

CPLG LT & C THREAD ERW MFG. IPSCO NEW OR USED NEW

TYPE OF STRING SURFACE TALLIED MILES PYRET / THREADS OFF

	LENGTH		LENGTH		LENGTH		LENGTH		LENGTH		LENGTH
*1	13.73	21	14.20	41		61		81		101	
*2	14.42	22	14.16	42		62		82		102	
3	14.07	23	14.45	43		63		83		103	
#4	14.43	*24	14.33	44		64		84		104	
5	14.18	25	14.44	45		65		85		105	
6	14.45	26	14.23	46		66		86		106	
7	14.45	27	14.46	47		67		87		107	
*8	14.36	*28	14.35	48		68		88		108	
9	14.23	29	13.92	49		69		89		109	
10	14.42	30	14.02	50		70		90		110	
TTL 1-10	142.74	TTL 21-30	142.56	TTL 41-50		TTL 61-70		TTL 81-90		TTL 101-110	
11	14.44	31	14.15	51		71		91		111	
*12	13.76	*32	14.02	52		72		92		112	
13	14.46	33	14.10	53		73		93		113	
14	14.36	*34	14.45	54		74		94		114	
15	14.46	35	14.32	55		75		95		115	
*16	14.44	OUT 36	10.40	56		76		96		116	
17	14.32	37		57		77		97		117	
18	14.40	38		58		78		98		118	
19	14.00	39		59		79		99		119	
*20	14.18	40		60		80		100		120	
TTL 11-20	142.82	TTL 31-40	81.44	TTL 51-60		TTL 71-80		TTL 91-100		TTL 111-120	
TTL 01-20	285.56	TTL 21-40	224.00	TTL 41-60		TTL 61-80		TTL 81-100		TTL 101-120	

TOTAL 1-20	285.56	PAGE 1 TOTAL		509.56	Shoe= 0.46
					Float= 0.37
TOTAL 21-40	224.00	LEFT OUT:		10.40	Shoe jt.= 14.56
TOTAL 41-60		FLOAT & SHOE		0.83	TOTAL JOINTS ON LOCATION 36
TOTAL 61-80		GRAND TOTAL:		499.99	REMARKS:
		* =CENTRALIZERS			
TOTAL 81-100					
TOTAL 100-120					
TOTAL 1 - 120	509.56				AGENT OF OPERATOR: MILES PYRET

PARAMOUNT RESOURCES LTD.

RUNNING AND CEMENTING

PRODUCTION CASING

O.D.: 177.8 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA M-17 DATE: 19\03\2003

K.B. ELEVATION 354.60 CSG. FLG 358.72 TOTAL DEPTH (DRILLER) 1471.5

HOLE SIZE	216	#REF!		CSG IN HOLE		#REF!	177.8
DEPTH M	1471	#REF!	1471.5	DEPTH SET		#REF!	1471.5

MUD TYPE: SALT \ GEL WT: 1285 KG/M3 VISC: 68 WL: 9.5

BOP'S 11"-3000LB

RUNNING

POWER TONGS RIG SERVICE TORQUE: MAX: 10110 NM NOM 8090 NM MIN 6070
TIME PIPE STARD: 6:00 TIME ON BOTTOM 14:45 TIME CIRCULATED 1.5
FILL UP POINTS: EVERY 3 JTS BOTTOM BY CSG 1471 UP FROM KB: 1

REMARKS:

CEMENTING

CEMENT CO: SCHLUMBERGER OPERATOR: DAN JOHNSON AR. TIME: 3:30
TYPES & QUANTITY OF CEMENT: 32 TONNES OF CLASS"G"CEMENT+.5%DO65 TIC+.3%D167 UNIFLAC
HEIGHT TO BE CEMENTED 1467M
FLUSH: 3 M3 MIX TIME: START: 16:52 FIN: 17:43 WT: 1935
CALCULATED DISP 28.2M3 MEASURED DISP. 28.5 START: 17:48 FIN: 18:32
DISPLACING FLUID WATER MAX. PRESS 13,400 BUMP W/ 3500KPA
CEMENT RETURNS 2 M3 FLOAT HELD WORKED CSG WHILE CM' 3M

REMARKS:

LANDING

TIME LANDED: 23:15 DATE: 19\03\2003 'WT. STRING (LESS BLOCKS)daN 58,000
WT. LANDED IN SLIPS: N\A daN BOWL: 279MM X 244.5MM SIZE: 21000KPA
SERIES ODSO SLIP & SEAL ASS: 279 X 244.5 AUTOMATIC

REMARK: SLIPS LANDED WITH 55000 DAN.

AGENT OF OPERATOR: MILES PYRET

PARAMOUNT RESOURCES LTD.

PRODUCTION CASING REPORT

O.D.: 177.8 MM

WELL NAME: PARA ET AL NOGHA LOC: PARA NOGHA M-17 DATE: 19\03\2003

JTS ON LOC	M ON LOC	CASING WT.	GRADE	RANGE	THREAD	T & C	MAKE	JTS. RUN	DEPTH LANDED	M RUN IN WELL
107	1524.76	43.16	ERW	3	8-RND	LT & C	IPSCO	104	1471.00	1471.84

SHOE: MAKE:	WEATHERFORD	TYPE:	FLOAT	LENGTH, M	0.34
COLLAR: MAKE:	WEATHERFORD	TYPE:	FLOAT	LENGTH, M	0.42
LANDING JOINT (WHEN USED) LENGTH, M				LENGTH, M	
OVERALL LENGTH OF CASING STRING, M				TOTAL, M	1472.60
METERS UP FROM K.B. (SUBTRACT)		1 M			1.00
SETTING DEPTH: LOG:	1471.50	DRILLER:	1471.00		1471.60
SHOE JOINT: OVERALL:	14.99 M (SUBTRACT)			SHOE JOINT	14.99
FLOAT COLLAR LOG:	1456.01 M	DRILLER:	M		1456.61
K.B. TO CASING FLG:	4.12 M	CUT OFF:	5 M		

CENTRALIZERS & TURBOLIZERS:

MAKE: WEATHERFORD NUMBER 22

POSITIONS:

JTS#
1,2,3,4,5,9,13,17,21,25,29,34,37,41,49,57,61,69,
77,81,89,97.

SCRATCHERS:

MAKE: NUMBER

POSITIONS:

JOINTS WELDED:

REMARKS:

OPERATORS REP: MILES PYRET

PARAMOUNT RESOURCES LTD.

PIPE TALLY

DATE: 18\03\2003 PAGE 1 OF 1

WELL NAME PARA ET AL NOGHA LOCATION PARA NOGHA M-17

CONTRACTOR NABORS #62

PIPE DESCRIPTION 177.8 mm. 43.16 KG/M GRADE ERW RANGE R3

CPLG LT & C THREAD 8R MFG. IPSCO NEW OR USED New

TYPE OF STRING PRODUCTION TALLIED MILES PYRET THREADS OFF

	LENGTH		LENGTH		LENGTH		LENGTH		LENGTH		LENGTH
C1	14.23	C21	14.24	C41	14.26	C61	14.50	C81	14.14	101	14.36
C2	14.48	22	14.70	42	14.43	62	13.52	82	14.33	102	14.28
C3	14.47	23	13.54	43	14.46	63	14.49	83	14.41	103	14.40
C4	14.23	24	14.45	44	14.42	64	14.45	84	14.44	OUT104	12.18
C5	13.71	C25	14.51	45	14.53	65	14.49	58	14.33	OUT105	13.51
6	14.46	26	14.31	46	13.99	66	14.28	86	14.21	OUT106	13.77
7	14.67	27	14.29	47	14.25	67	14.50	87	14.42	OUT107	13.46
8	13.88	28	14.44	48	14.41	68	14.39	88	14.49	108	
C9	14.45	C29	12.90	C49	14.35	C69	14.31	C89	14.42	109	
10	13.98	30	13.97	50	14.46	70	14.45	90	14.43	110	
TTL 1-10	142.56	TTL 21-30	141.35	TTL 41-50	143.56	TTL 61-70	143.38	TTL 81-90	143.62	TTL 101-110	95.96
11	14.48	31	14.38	51	14.47	71	14.43	91	14.39	111	
12	14.40	32	14.46	52	14.48	72	14.47	92	14.37	112	
C13	14.32	C34	14.43	53	14.49	73	13.89	39	14.30	113	
14	13.59	34	12.71	54	14.37	74	14.07	94	14.44	114	
15	14.46	35	14.45	55	14.53	75	14.37	95	14.12	115	
16	14.46	36	14.47	56	14.47	76	14.22	96	13.84	116	
C17	14.37	C37	14.14	C57	14.45	C77	14.30	C97	13.98	117	
18	14.46	38	13.83	58	14.31	78	14.46	98	14.45	118	
19	14.24	39	14.45	59	14.45	79	14.44	99	14.47	119	
20	14.16	40	14.43	60	14.49	80	14.43	100	13.69	120	
TTL 11-20	142.94	TTL 31-40	141.75	TTL 51-60	144.51	TTL 71-80	143.08	TTL 91-100	142.05	TTL 111-120	
TTL 01-20	285.50	TTL 21-40	283.10	TTL 41-60	288.07	TTL 61-80	286.46	TTL 81-100	285.67	TTL 101-120	95.96

TOTAL 1-20	285.50	PAGE 1 TOTAL	1524.76	Shoe=	0.34
				Float=	0.42
TOTAL 21-40	283.10	PAGE 2 TOTAL	#REF!	Shoe jt.=	14.99
TOTAL 41-60	288.07	FLOAT & SHOE	0.76	TOTAL JOINTS ON LOCATION	107
TOTAL 61-80	286.46	GRAND TOTAL:	#REF!	REMARKS:	
TOTAL 81-100	285.67	C=CENTRALIZERS.LAST 3 JTS STAY OUT.1472.6M WILL BE THE TOTAL OF THE LONG STRING CASING RAN.			
TOTAL 100-120	95.96				
TOTAL 1 - 120	1524.76			AGENT OF OPERATOR:	MILES PYRET

RENAISSANCE BIT RECORD

Province	Field	Well Name	Operator	Operator's Rep:	Location:	UID:
Alberta	NOGHA	PARA ET AL NOGHA	PARAMOUNT RES.	MILES PYRET	PARA NOGHA M-17	

Contractor	Rig #	Drawworks	Toolpusher						
NABORS	62	OILWELL-500	DOUG MATTICE	Pump #1	PT-600	LINER	152	STROKE	203
				Pump #2	PT-600		152		203

		No.	O.D.	I.D.	Conn.
Drill Collars	1	18	165	59	4.5XH
	2				
Tool Joints		Size	Grade	Weight	Conn.
	1	114	E	24.7	4.5XH
	2	114	E	62.5	4.5XH

	Date	Time
Spudded:	28-Feb	20:00
Set Surface:	6-Mar	20:30
Under surface	9-Mar	1:00
LINER		
Total Depth:	18-Mar	1:00
Released:		

Remarks:

Licensed Formation: MT CLARK

Licensed Depth: 1510

License #: 1970

DayWork	Meter
X	

BIT NO.	SIZE (mm)	MAKE	RETIP RERUN	TYPE	SERIAL NO.	NOZZLES (mm) 1	2	3	DEPTH OUT	METERS DRILLED	HOURS	ACCUM. HOURS	R.O.P. (m/hr)	WEIGHT (daN)	RPM	VERT. DEV.	PUMP PRESS.	RATE (m³/min)	MUD WT.	VIS.	W.L.	SHOCK TOOL	NO. DCs	DULL CONDITION Ti	To	MDC	Loc	B	G	RP
1B	311	HW	NEW	MX30G	M2230GA2	12.7	14.3	14.3	420	360	64.50	64.50	6	10\12	25\90	0.20	10000	2.20	1060	110	NA	YES	18	2	8	BT	O	6	3	PR
2BRR	311	VAREL	RR	ETD44	176923	12.7	14.3	14.3	499	79	23.50	88.00	3.36	10\12	25\90	0.50	9500	2.20	1090	105	NA	YES	18	3	4	BT	O	4	IN	TD
1	216	VAREL	NEW	CH24MS	184616	15	15	16	695	196	30.25	118.25	6.47	14\16	25\90	1.20	10000	1.20	1250	45	10.0	NO	18	3	8	PB	A	6	6	PR
2	216	HW	NEW	GT-S30H	6002938	15	15	16	1071	376	38.00	156.25	9.80	14\16	50\90	1.70	8500	1.20	1255	56	10.0	NO	18	2	1	CD	3	8	1	TQ
3	216	VAREL	NEW	34MS-XG	149721	15	15	16	1262	191	48.25	204.50	3.95	12\14	30\90	1.90	10000	1.20	1260	60	9.0	NO	18	2	2	B	1	6	2	TQ
4	216	HW	NEW	HRS44	6004660	18	18	18	1471	209	64.25	268.75	3.25	14\16	30\90	3.75	10000	1.20	1290	60	8.0	NO	21	6	8	BT	A	7	2	TD

SPUD NOTIFICATION

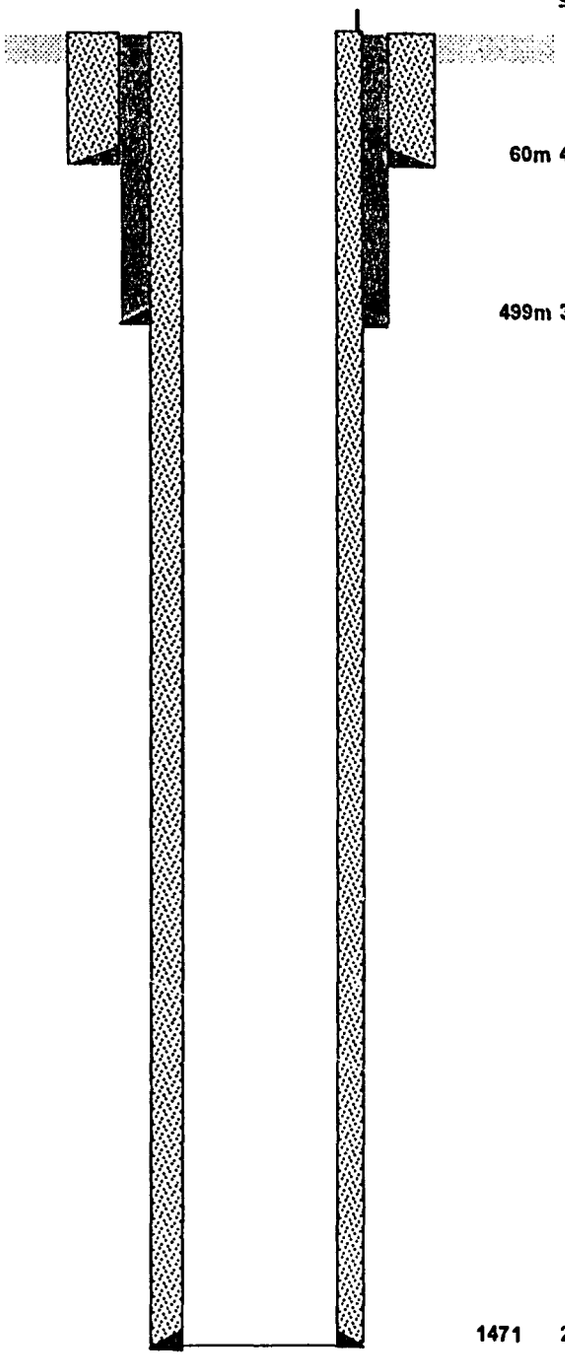
Well Name:	PARA NOGHA M-17
Location:	M-17
Licence No:	1970
Contractor Name:	NABORS DRILLING
Rig No:	62
Date of Spud:	28\02\2003
Time of Spud:	20:00
Projected Total Depth:	1440
Date Called In:	28\02\2003\20:00 TO TERRY BAKER 01\02\2003\16:42 TO RICK FISHER
Time Called(faxed) In:	
Name of Caller(fax):	MILES PYRET
Telephone Number:	1-403-997-9701
Number Faxed To:	

17. Final Well Configuration:

Para et al Nogha M-17

Date: As Drilled March 22, 2003

Grd Elev.: 350.0m
KB Elev.: 354.6m



Formation	Top	DEPTH	HOLE SIZES:	CASING SIZES:
				Conductor Barrel: 339mm Cement: Polarset
		60m	445mm	
				Surf. Csg.: 244.5 mm
		499m	311mm	Cement: Polarset
Franklin Mtn.(cyclic)	508			
Saline R.(upper sh)	737			
Saline R.(upper salt)	795.5			
Saline R.(lower sh)	911			
Saline R.(lower salt)	927			
Mt. Cap(upper sh)	1148			
Mt. Cap(lower sh)	1308			
Mt. Clark	1395			
Proterozoic(Basalt)	1425			Production Csg.: 177.8mm
Total Depth	1471	1471	216mm	Cement: Polarset

D: GEOLOGY

Geological Summary

Geological Report

on

Paramount Apache Nogha M-17

66° 36' 45.242" N / 125° 48' 30.680" W

Well Reached Total Depth on
Mar 18, 2003 @ 01:00

for

Paramount Resources Ltd.

Prepared For: Paul Price
Paramount Resources Ltd.

Prepared By: Colin Bredin P.Geol
C.L. Bredin Holdings Ltd.

Colin Bredin P.Geol

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Well Summary

Storage Units: Metric

Well Information

Operator:	**Paramount Resources Ltd.**
Well Name:	**Paramount Apache Nogha M-17**
Location:	**66° 36' 45.242" N / 125° 48' 30.680" W**
UWI:	300M176640125450
Pool:	Mount Clarke
Field:	Nogha
State / Province:	Northwest Territories
Country:	Canada
License Number:	WID 1970
Well Status:	**Mt. Clarke Gas**

Surface Co-ordinates

Hole Type: **Fault Indicator:**
Latitude: 66.3645242 **Longitude:** 125.4830680
N / S:
E / W:

Bottom Hole Co-ordinates

Latitude: **Longitude:**
N / S:
E / W:

Elevations

Reference:			
Ground Elevation:	350.00	**Kelly Bushing to Ground:**	4.60
Kelly Bushing Elevation:	354.60	**Cut (-):**	
Casing Flange Elevation:		**Fill (+):**	

Total Depth

	Measured Depth	True Vertical Depth
Total Depth Driller (Tally) :	1,471.00	1,470.56
Total Depth Driller (Strap or SLM):	1,470.60	1,470.16
Total Depth Logger:	1,471.50	1,471.06

Miscellaneous Depths

Plugback Depth: **Water Depth Reference:**
Sidetrack Depth: **Water Depth:**

Well Summary

Drilling Contractor: Nabors Drilling Rig 62 **Spud Date:** Feb 25, 2003 @ 09:45
Rig Release Date: **Total Depth Date:** Mar 18, 2003 @ 01:00

Cores **#** **Formation** **Interval** **Cut** **Recovered** **%**

Casing Summary

Casing Type	Casing Size	Landed Depth	Hole Size
Conductor	339.7	59.00	444.0
Surface	244.5	499.00	311.0

Well Summary

Storage Units: Metric

Logging Summary

Company	Engineer	Total Depth (MD)	Logging tools
Schlumberger	R. Delidais / P. Roc	1,471.00	HRA Laterolog from 1469.2 to 499.3m Dipole Sonic from 1448.4 to 50m Density Neutron from 1466.03 to 50m

Wireline Logging Summary

Storage Units: Metric

Logging Suite Number:	1		
Wireline Logging Company:	Schlumberger	**Engineer:**	R. Delidais / P. Roos
District:	Norman Wells	**Unit Number:**	8416
Witness:	C. Bredin		
Was Pressure Control Equipment Utilized:	No	**Maximum Deviation:**	4.500 °
Was the Logging Job Mechanically Assisted:	No	**Hole Size:**	216.0
Total Lost Time:	0.00		
Loggers' Total Down Time:	0.00		
Total Job Time (From Rig up to Rig down):	8.00		

	Measured Depth	True Vertical Depth
Casing Depth Driller	499.00	498.97
Casing Depth Logger	499.30	499.27
Total Depth Driller (Tally)	1,471.00	1,470.56
Total Depth Driller (Strap or SLM)	1,471.00	

General Remarks: Stacked tools. No problems. High res from 1430-1385, 1360-1325 and 1205-1175m.

Logging Run #: 1
Date: Mar 18, 2003

Drilling Fluid Data

Drilling Fluid Type: Salt Saturated Gel Chem
Fluid Density: 1300.0 **Viscosity:** 65 **pH:** 9.5 **Fluid Loss:** 8.0

Mud Resistivity (Rm):	0.77	@	12.0 °		
Mud Resistivity (Rm) @ BHT:	0.58	@	23.0 °	**Maximum Temperature:**	23.0 °
Mud Filtrate Resistivity (Rmf):	0.11	@	14.0 °	**Source (Rmf):**	Pressed
Mud Cake Resistivity (Rmc):	0.10	@	11.0 °	**Source (Rmc):**	Calculated

Logging Run Information

Date on Bottom: Mar 18, 2003
Total Depth Logger: 1,471.50 (MD) (TVD)

Logging Tools: HRA Laterolog from 1469.2 to 499.3m
Dipole Sonic from 1448.4 to 50m
Density Neutron from 1466.03 to 50m

Remarks: Logged GR, CNL and Sonic through casing to surface.

Hole Conditions: Good

Deviation / Directional Survey Report

Directional Drilling Company:	Radius Directional Services
Directional Drillers:	George Probylinski
Measured While Drilling (MWD) Hands:	Omar Marsa
Survey Type:	electronic
Survey Mode:	MWD
Survey Date:	Mar 7, 2003
Survey Calculation Method:	minimum curvature
Target Azimuth:	0.00 °
Dog Leg Severity Characteristic:	30.00

Survey Tie-In Information

Tie-In Co-Ordinantes

Latitude: 66.3645242
Longitude: 125.4830680
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinantes

Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Remarks: Deviation / MWD control probably unnecessary in this area. The mud motor was effective in increasing the ROP but a single shot control would have been sufficient. Deviation that developed in this well as in C-49 was the result of excessive weight on bit.

Survey Points

Storage Units: Metric

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
70.00	70.00	0.500	41.90	0.23	0.20	0.23	0.21
83.00	83.00	0.500	328.50	0.32	0.21	0.32	1.38
101.00	101.00	0.500	310.30	0.44	0.11	0.44	0.26
212.20	212.20	0.500	226.30	0.41	-0.61	0.41	0.18
241.10	241.09	0.800	199.40	0.14	-0.77	0.14	0.44
270.10	270.09	1.100	176.50	-0.33	-0.82	-0.33	0.49
289.30	289.29	1.200	165.40	-0.71	-0.76	-0.71	0.38
308.60	308.58	1.200	158.00	-1.09	-0.63	-1.09	0.24
344.90	344.88	0.800	147.90	-1.66	-0.35	-1.66	0.36
376.00	375.97	0.200	276.90	-1.84	-0.29	-1.84	0.91
404.90	404.87	0.400	290.90	-1.80	-0.44	-1.80	0.22
433.80	433.77	0.600	240.90	-1.83	-0.66	-1.83	0.48
462.80	462.77	0.600	226.40	-2.01	-0.90	-2.01	0.16
483.00	482.97	0.500	247.60	-2.12	-1.06	-2.12	0.33
505.90	505.87	0.700	240.10	-2.23	-1.28	-2.23	0.28
534.70	534.67	0.900	236.90	-2.44	-1.62	-2.44	0.21
582.90	582.86	0.600	288.20	-2.57	-2.17	-2.57	0.44
631.10	631.06	1.000	288.10	-2.36	-2.81	-2.36	0.25
679.20	679.15	1.200	269.80	-2.23	-3.72	-2.23	0.25
727.38	727.31	2.200	216.30	-2.97	-4.77	-2.97	1.10
746.80	746.72	2.300	220.10	-3.57	-5.24	-3.57	0.28
775.70	775.60	1.900	226.80	-4.34	-5.96	-4.34	0.49
814.30	314.18	1.700	234.40	-5.12	-6.90	-5.12	0.24
862.50	862.35	2.000	237.50	-5.98	-8.19	-5.98	0.20
891.40	891.23	2.100	246.10	-6.47	-9.10	-6.47	0.34
930.00	929.81	2.300	259.20	-6.90	-10.50	-6.90	0.42
968.60	968.38	2.200	264.90	-7.11	-12.00	-7.11	0.19
1,006.00	1,005.76	2.100	26.70	-6.56	-12.41	-6.56	3.01
1,045.70	1,045.45	1.700	267.80	-5.94	-12.67	-5.94	2.48
1,122.90	1,122.62	1.400	262.90	-6.10	-14.75	-6.10	0.13
1,229.00	1,228.67	2.300	276.00	-6.03	-18.15	-6.03	0.28

1,355.00		4.000					
1,449.00		3.750					

Formation Top Summary

Storage Units: Metric

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

***** All Depths measured from Kelly Bushing Elevation *****

Group *Formation* Member	Prognosis (TVD)	Sample Top (MD)	Sample Top (TVD)	Log Top (MD)	Log Top (TVD)	Subsea	Thickness
Franklin Mtn (cyclic)	542.00	510.00	509.97	508.00	507.97	-153.37	227.00
Saline River	763.00	737.00	736.93	737.00	736.93	-382.33	58.50
Saline River Upper Salt	826.00	795.50	795.39	795.50	795.39	-440.79	116.50
Saline River Lower Shale	932.00	912.00	911.82	911.00	910.82	-556.22	15.00
Saline River Lower Salt	948.00	927.00	926.81	927.00	926.81	-572.21	219.80
Mt Cap	1,190.00	1,146.80	1,146.51	1,148.00	1,147.71	-793.11	159.20
Mt Cap Lower Mt Cap	1,342.00	1,306.00	1,305.63	1,308.00	1,307.63	-953.03	90.00
Mt Clarke	1,426.00	1,396.00	1,395.59	1,395.00	1,394.59	-1,039.99	22.50
Proterozoic	1,452.00	1,418.50	1,418.08	1,425.00	1,424.58	-1,069.98	

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Franklin Mtn (cyclic)
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Late
Period: Cambrian
Stage:
Age (Approx): 495 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	510.00	509.97	-155.37	227.00
Log Top	508.00	507.97	-153.37	

Evaluation:

The basal Franklin Mountain cyclic unit consists of thick beds of Dolomite, cryptocrystalline to microcrystalline mudstone, Dolomite, microcrystalline to very finely crystalline wackestone to packstone and Limestone, white to buff to light brown mudstone. The base becomes argillaceous with thinbeds of Shale.

Conclusion:

No hydrocarbon reservoir potential.

Group:
Formation: Saline River
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Middle
Period: Cambrian
Stage:
Age (Approx): 500 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	737.00	736.93	-382.33	58.50
Log Top	737.00	736.93	-382.33	

Evaluation:

The upper Saline River consists primarily of red and green shales with thinbeds of dolomite mudstone and anhydrites.

Conclusion:

No reservoir potential

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Saline River
Member: Upper Salt
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 505 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	795.50	795.39	-440.79	116.50
Log Top	795.50	795.39	-440.79	

Evaluation:

The upper salt zone consists of interbedded dolomite and anhydrite becoming predominately halite with depth.

Conclusion:

No reservoir potential.

Group:
Formation: Saline River
Member: Lower Shale
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 510 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	912.00	911.82	-557.22	15.00
Log Top	911.00	910.82	-556.22	

Evaluation:

The lower shale zone consists primarily of soft green shale with thinbeds of dolomite and anhydrite.

Conclusion:

No reservoir potential.

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Saline River
Member: Lower Salt
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 515 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	927.00	926.81	-572.21	219.80
Log Top	927.00	926.81	-572.21	

Evaluation:

The lower salt zone is primarily halite with occasional beds of dolomite and anhydrite. Shale thinbeds occur near the base.

Conclusion:

No reservoir potential.

Group:
Formation: Mt Cap
Member:
Boundary Type: unconformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 525 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,146.80	1,146.51	-791.91	159.20
Log Top	1,148.00	1,147.71	-793.11	

Evaluation:

The upper Mt Cap is interbedded shale, tight siltstones and dolomite mudstones at the top becoming predominately shale with depth. From 1188 to 1193m is a Dolomite / Chert succession which produced a gas response of 162 / 15 units. The zone consisted of Chert variegated, translucent to dark brown, coarse angular, conchoidal fracture with laminae / thinbeds of Dolomite buff to light brown, slightly argillaceous, cryptocrystalline mudstone, tight, minor light brown, very finely crystalline sucrosic packstone, no stain, no fluorescence, streaks of intercrystalline to moldic porosity to 18%, probable fractures.

Conclusion:

Reservoir potential.

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Mt Cap
Member: Lower Mt Cap
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 530 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,306.00	1,305.63	-951.03	90.00
Log Top	1,308.00	1,307.63	-953.03	

Evaluation:

The top section of the Lower Mt Cap appears to be a fractured Limestone with Gas 54 / 3 units. Below it is interbedded Shale and mudstones. From 1336 to 1346m is a sequence of interbedded Siltstone, Dolomite and Sandstone, buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability. Liberated Gas 208 / 6 units.

Conclusion:

Reservoir potential 1336 - 1346m.

Group:
Formation: Mt Clarke
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 535 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,396.00	1,395.59	-1,040.99	22.50
Log Top	1,395.00	1,394.59	-1,039.99	

Evaluation:

The upper Mt Clarke "A" sand is light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability. liberated Gas 74 / 10 units. The middle Mt Clarke "B" sand is light gray white, quartzose, silty to medium grained, subangular to subround, firm, siliceous cement, no stain, no fluorescence, scattered pin point porosity 2-3%, no significant Gas effect. The lower most Mt Clarke "C" sand is light gray white, quartzose, very fine to coarse grained, subangular to subround, rounded in part, firm to very friable, siliceous cement, clay infilling to laminae in part, no stain, no fluorescence, patchy intergranular porosity to 14%. Liberated Gas 241 / 10 units. There was a probable 1-2 cubic meter loss of mud on penetration of the "C".

Conclusion:

Good reservoir potential in lower Sandstone.

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Proterozoic
Member:
Boundary Type: unconformable
Fault Type:

Era: PreCambrian
Series:
Period: Proterozic
Stage:
Age (Approx): 544 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,418.50	1,418.08	-1,063.48	
Log Top	1,425.00	1,424.58	-1,069.98	

Evaluation:

The basement is Basalt gray, red brown, gray green, purple, firm to hard, fine groundmass, porphyritic in part.

Conclusion:

No reservoir potential.

500.00 to 505.00 (5.00)
90% **DOLOMITE**
white to buff, buff to light brown, cryptocrystalline to microcrystalline, mudstone, tight

10% **CEMENT**
0-1-0 [redacted]

505.00 to 510.00 (5.00)
90% **DOLOMITE**
buff to light brown, light gray slightly argillaceous, cryptocrystalline to microcrystalline, mudstone to wackestone, tight

10% **CHERT**
buff to white, light gray, fossiliferous in part, nodular in part, common silicified oncolites with dolomitic and siliceous fragments, pellets and oolites in a siliceous to calcareous matrix, trace of moldic to pin point porosity, no permeability

510.00 to 515.00 (5.00)
100% **DOLOMITE**
white to buff, buff to light brown, light gray, slightly argillaceous, cryptocrystalline to microcrystalline, predominately mudstone, tight

515.00 to 520.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray slightly argillaceous, very slightly silty, cryptocrystalline to microcrystalline, predominately mudstone, tight

520.00 to 525.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, slightly argillaceous, calcareous in part, cryptocrystalline to microcrystalline, mudstone, tight, patchy stylolitic, trace of Shale light gray dolomitic, platy

525.00 to 530.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, slightly silty in part, cryptocrystalline to microcrystalline, trace finely crystalline sucrosic, predominately mudstone, minor packstone, no stain, no fluorescence, trace of intercrystalline to vuggy porosity, minor Limestone white to buff, cryptocrystalline mudstone, tight

530.00 to 535.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, medium gray argillaceous, slightly silty in part, cryptocrystalline mudstone, trace stylolitic, tight

535.00 to 540.00 (5.00)
100% **DOLOMITE**
buff to light bn, light to medium gray argillaceous in part, cryptocrystalline mudstone, tight, trace of nodular Chert

540.00 to 545.00 (5.00)
100% **DOLOMITE**
white to buff, buff to light brown, light to medium gray brown, slightly argillaceous in part, slightly silty in part, minor calcareous, cryptocrystalline to microcrystalline, mudstone, tight

545.00 to 550.00 (5.00)
100% **DOLOMITE**
buff to light brown, medium brown, slightly argillaceous, slightly silty, cryptocrystalline to microcrystalline, mudstone, tight

550.00 to 555.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, slightly argillaceous in part, cryptocrystalline to finely crystalline, mudstone to wackestone, no stain, no fluorescence, scattered pin point to intercrystalline porosity 2-3%
555.00 to 560.00 (5.00)	100%	**DOLOMITE** as above, minor buff to light brown, fine to medium crystalline packstone, no stain, no fluorescence, patchy intercrystalline to vuggy porosity 3.4%
560.00 to 565.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline to finely crystalline, mudstone to packstone, no stain, no fluorescence, scattered coarse clear dolomite crystals, patchy vuggy porosity 4-6%
565.00 to 570.00 (5.00)	90%	**DOLOMITE** buff to light brown, light to medium brown, microcrystalline to finely crystalline, mudstone to wackestone, minor packstone, slightly silty, scattered coarse dolomite and calcite crystals, patchy vuggy porosity to 10%
	10%	**LIMESTONE** white to light gray, medium gray, commonly oomicrite, tight
570.00 to 575.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, silty, predominately mudstone, wackestone in part, tight
	20%	**LIMESTONE** light gray, medium gray, argillaceous in part, cryptocrystalline mudstone, tight
575.00 to 580.00 (5.00)	70%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty, tight
	30%	**LIMESTONE** light gray, light brown, medium gray brown, cryptocrystalline mudstone, argillaceous in part, dolomitic in part, occasionally oolitic, tight
580.00 to 585.00 (5.00)	40%	**LIMESTONE** light gray, light brown, medium brown, cryptocrystalline mudstone, tight
	30%	**DOLOMITE** as above
	30%	**SHALE** light gray green, calcareous, platy, laminar in part
585.00 to 590.00 (5.00)	60%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, silty in part, no stain, no fluorescence, very patchy intercrystalline to vuggy porosity 12-16%

585.00 to 590.00 (5.00)	40%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, stylolitic in part, tight
590.00 to 595.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, rminor packstone, no stain, no fluorescence, silty in part, scattered pin point to vuggy porosity 6-8%
	20%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, tight
595.00 to 600.00 (5.00)	80%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight
	20%	**DOLOMITE** as above
600.00 to 605.00 (5.00)	80%	**LIMESTONE** buff to light brown, light gray brown, slightly argillaceous, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline tc finely crystalline, mudstone to wackestone, minor packstone, silty in part, scattered pin point to vuggy porosity 6-8%
605.00 to 610.00 (5.00)	100%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, occasionally silty, tight
610.00 to 615.00 (5.00)	70%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, tight
	30%	**DOLOMITE** buff to light brown, silty in part, cryptocrystalline to finely crystalline, mudstone to wackestone, trace of pin point porosity
615.00 to 620.00 (5.00)	60%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, tight, minor Shale light to medium gray, calcareous
	40%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, scattered pin point porosity 3-4%
620.00 to 625.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline to finely crystalline, mudstone to wackestone, calcareous in part, silty in part, no stain, no fluorescence, scattered moldic porosity 12-18%
	30%	**LIMESTONE** as above

625.00 to 630.00 (5.00)	80%	**DOLOMITE** white to buff, light brown, calcareous, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, scattered clear calcite and dolomite crystals, patchy intercrystalline to vuggy porosity 10 -14%
	20%	**LIMESTONE** as above
630.00 to 635.00 (5.00)	100%	**DOLOMITE** white to light gray, light brown, cryptocrystalline to finely crystalline, mudstone to sucrosic packstone, no stain, no fluorescence, pin point to intercrystalline porosity to 18%
635.00 to 640.00 (5.00)	60%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, tight
	40%	**DOLOMITE** white to light gray, cryptocrystalline to microcrystalline, predominately mudstone, tight
640.00 to 645.00 (5.00)	50%	**DOLOMITE** as above
	30%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, argillaceous in part, tight
	20%	**SHALE** medium gray, light gray, calcareous, fissile, platy
645.00 to 650.00 (5.00)	60%	**DOLOMITE** white to light gray, light brown, cryptocrystalline to microcrystalline, calcareous in part, predominately mudstone, tight
	30%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, tight
	10%	**SHALE** light gray, medium gray, fissile, platy
650.00 to 655.00 (5.00)	100%	**LIMESTONE** white to buff, light gray, slightly argillaceous, cryptocrystalline mudstone, tight, minor Dolomite as above
655.00 to 660.00 (5.00)	80%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline to microcrystalline, calcareous, mudstone to wackestone, tight

660.00 to 665.00 (5.00)	80%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** white to buff, light brown, cryptocrystalline to microcrystalline, mudstone to wackestone, tight
665.00 to 670.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, scattered coarse clear calcite crystals, scattered vuggy porosity 8-10%
	50%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
670.00 to 675.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, silty in part, no stain, no fluorescence, intercrystalline to vuggy porosity 8-10%
	20%	**LIMESTONE** as above
675.00 to 680.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline mudstone, slightly siliceous, hard, tight
680.00 to 685.00 (5.00)	100%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, slightly silty, slightly argillaceous, stylolitic in part, tight, trace of Shale medium gray, calcareous, platy
685.00 to 690.00 (5.00)	100%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, tight, occasional Shale laminae, stylolitic in part
690.00 to 695.00 (5.00)	70%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, minor pin point to porosity 1-2%
	30%	**LIMESTONE** white to buff, cryptocrystalline mudstone, dolomitic in part, occasional Shale laminae, stylolitic in part, tight
695.00 to 700.00 (5.00)	100%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight, stylolitic in part, minor Shale light to medium gray, calcareous, platy
700.00 to 705.00 (5.00)	90%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight, stylolitic in part
	10%	**SHALE** light to medium gray, calcareous, platy

705.00 to 710.00 (5.00)	70%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
	30%	**SHALE** light gray, medium gray, fissile, platy
710.00 to 715.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, trace of vuggy porosity
	30%	**SHALE** light to medium gray, light gray green, fissile, platy
715.00 to 720.00 (5.00)	80%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, tight
	20%	**SHALE** light to medium gray, light to medium green, fissile, platy
720.00 to 725.00 (5.00)	90%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, tight
	10%	**SHALE** light to medium gray, light to medium gray green, fissile, platy
725.00 to 730.00 (5.00)		**NO SAMPLE** Sample missed
730.00 to 735.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, light to medium gray, trace reddish, cryptocrystalline mudstone, tight
	30%	**SHALE** light to medium gray, light to medium green, trace red, fissile, platy to blocky
735.00 to 740.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, reddish brown in part, cryptocrystalline mudstone, tight, trace of Anhydrite
	30%	**SHALE** light to medium green, medium green, medium red, medium gray, fissile, predominately platy
740.00 to 745.00 (5.00)	50%	**SHALE** light to medium green, medium green, medium red brown, fissile, predominately platy
	40%	**DOLOMITE** buff to light brown, light to medium brown, reddish brown in part, cryptocrystalline mudstone, tight

740.00 to 745.00 (5.00)	10%	**ANHYDRITE** white to buff, crushed
745.00 to 750.00 (5.00)	60%	**DOLOMITE** buff to light brown, light to medium brown, medium reddish brown, cryptocrystalline mudstone, anhydritic in part, tight
	40%	**SHALE** medium green, light to medium red, dolomitic in part, fissile, platy
750.00 to 755.00 (5.00)	60%	**DOLOMITE** buff to light brown, light to medium reddish brown, medium brown, cryptocrystalline mudstone, anhydritic in part, tight, minor Anhydrite white, massive, dolomitic in part
	40%	**SHALE** light to medium green, medium green, medium red, fissile, platy
755.00 to 760.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, argillaceous in part, anhydritic in part, tight
	30%	**SHALE** light to medium gray, light to medium green, minor red brown, fissile, platy
760.00 to 765.00 (5.00)	60%	**SHALE** red, light to medium green, light gray green, dolomitic in part, fissile, platy to blocky
	30%	**DOLOMITE** buff to light brown, light reddish brown, light gray, cryptocrystalline mudstone, anhydritic in part, tight
	10%	**ANHYDRITE** white to buff, massive
765.00 to 770.00 (5.00)	70%	**SHALE** medium green, red, light gray green, dolomitic in part, platy to blocky
	30%	**DOLOMITE** buff to light brown, light to medium reddish brown, light gray, cryptocrystalline mudstone, anhydritic in part, tight, minor Anhydrite
770.00 to 775.00 (5.00)	80%	**SHALE** medium gray, light to medium gray green, medium red, dolomitic in part, platy to blocky
	20%	**DOLOMITE** light to medium brown, light to medium reddish brown, buff, light gray, cryptocrystalline mudstone, anhydritic in part, tight

775.00 to 780.00 (5.00)	70%	**SHALE** medium red, medium green, light to medium gray green, fissile, platy to blocky, dolomitic in part
	30%	**DOLOMITE** buff to light brown, light to medium brown, light to medium reddish brown, anhydritic in part, cryptocrystalline mudstone, tight
780.00 to 785.00 (5.00)	70%	**SHALE** medium green, light gray green, medium reddish brown, platy to blocky
	30%	**DOLOMITE** light to medium brown, light reddish brown, light gray, anhydritic in part, cryptocrystalline mudstone, tight
785.00 to 790.00 (5.00)	50%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SHALE** light to medium gray, medium red brown, dolomitic in part, platy
	20%	**ANHYDRITE** white to buff, dolomitic in part, massive
790.00 to 795.00 (5.00)	80%	**DOLOMITE** white to buff, light brown, anhydritic, cryptocrystalline mudstone, tight, minor Gypsum orange , tabular crystals in part, trace of Salt
	20%	**SHALE** light to medium green, light gray, platy
795.00 to 800.00 (5.00)	40%	**SHALE** light to medium green, medium green, medium reddish brown, platy to blocky
	30%	**ANHYDRITE** white to buff, massive, minor Gypsum orange, tabular crystals
	30%	**DOLOMITE** light to medium brown, buff to light brown, cryptocrystalline mudstone, anhydritic, tight
800.00 to 805.00 (5.00)	40%	**SHALE** medium green, medium round, light to medium gray green, platy
	30%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**SALT** halite, clear to white, massive

800.00 to 805.00 (5.00)	10%	**ANHYDRITE** white to buff, massive
805.00 to 810.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SHALE** medium green, medium red, light to medium green, platy
	20%	**ANHYDRITE** white to buff, massive
	20%	**SALT** halite, clear to white, massive
810.00 to 815.00 (5.00)	40%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, medium red, light gray green, platy
	20%	**SALT** halite, translucent to white, light yellow, massive
815.00 to 820.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, light to medium gray green, light to medium red, platy
	10%	**ANHYDRITE** white to buff, massive
820.00 to 825.00 (5.00)	40%	**DOLOMITE** light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** clear to translucent, white, massive
	30%	**SHALE** medium green, light to medium gray green, minor reddish brown, platy
825.00 to 830.00 (5.00)	40%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, light to medium gray green, platy
	20%	**SALT** halite, clear to white, massive

830.00 to 835.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow brown, massive
835.00 to 840.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive, minor light green Shale
840.00 to 845.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
845.00 to 850.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
850.00 to 855.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
855.00 to 860.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
860.00 to 865.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
865.00 to 870.00 (5.00)	100% **SALT** clear to translucent, white, massive, trace of Shale light gray green, platy
870.00 to 875.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
875.00 to 880.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
880.00 to 885.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
885.00 to 890.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
890.00 to 895.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
895.00 to 900.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
900.00 to 905.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
905.00 to 910.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
910.00 to 915.00 (5.00)	70% **SHALE** light green, light gray green, soft, platy

910.00 to 915.00 (5.00)	30%	**SALT** halite, clear to translucent, white, light yellow orange, massive
915.00 to 920.00 (5.00)	40%	**DOLOMITE** buff -lt brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** light green, light gray green, soft, platy
	20%	**SALT** halite, clear to translucent, white, light yellow orange, massive
920.00 to 925.00 (5.00)	40%	**SHALE** light green, light gray green, soft, platy
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**ANHYDRITE** white to buff, light brown dolomitic
	10%	**SALT** halite, clear to translucent, white, light yellow orange, massive
925.00 to 930.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** halite, clear to translucent, white, light yellow orange, massive
	30%	**SHALE** light green, light gray green, platy
	10%	**ANHYDRITE** buff to light brown dolomitic
930.00 to 935.00 (5.00)	80%	**SALT** halite, clear to translucent, white, light yellow orange, massive
	20%	**SHALE** light green, light gray green, medium gray green soft, platy
935.00 to 940.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive, minor Shale light gray green, platy
940.00 to 945.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive, trace of Shale light gray green
945.00 to 950.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive

950.00 to 955.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
955.00 to 960.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive, trace of Shale light green, platy
960.00 to 965.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
965.00 to 970.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
970.00 to 975.00 (5.00)	100% **SALT** halite, translucent to white, massive
975.00 to 980.00 (5.00)	100% **SALT** halite, translucent to white, massive
980.00 to 985.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
985.00 to 990.00 (5.00)	50% **SALT** halite, clear to translucent, white, light yellow orange, massive 40% **DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight 10% **ANHYDRITE** white to buff, dolomitic
990.00 to 995.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
995.00 to 1,000.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
1,000.00 to 1,005.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
1,005.00 to 1,010.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
1,010.00 to 1,015.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
1,015.00 to 1,020.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
1,020.00 to 1,025.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive

1,025.00 to 1,030.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,030.00 to 1,035.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,035.00 to 1,040.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,040.00 to 1,045.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,045.00 to 1,050.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,050.00 to 1,055.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,055.00 to 1,060.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,060.00 to 1,065.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,065.00 to 1,070.00 (5.00) 100% **SALT**
halite, clear to white, light yellow orange, massive

1,070.00 to 1,075.00 (5.00) 40% **DOLOMITE**
buff to light brown, cryptocrystalline mudstone, anhydritic, tight

30% **SHALE**
light to medium green, medium gray green, medium green, platy

20% **ANHYDRITE**
white to buff, dolomitic, massive

10% **SALT**
halite, clry to white, massive

1,075.00 to 1,080.00 (5.00) 50% **DOLOMITE**
buff to light brown, light gray, cryptocrystalline mudstone, anhydritic, trace of pin point porosity

20% **ANHYDRITE**
white to buff, light brown, dolomitic in part, massive

20% **SHALE**
light to medium green, light gray green, medium red, platy

10% **SALT**
halite, clear to white, massive

1,080.00 to 1,085.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** halite, clear to white, massive
	20%	**SHALE** light to medium green, medium green, light gray green, platy
1,085.00 to 1,090.00 (5.00)	60%	**SALT** halite, clear to white, massive
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**SHALE** light gray green, light to medium green, platy
1,090.00 to 1,095.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, tight
	20%	**ANHYDRITE** buff to light brown, dolomitic in part, massive
	20%	**SHALE** light gray green, medium green, platy
	10%	**SALT** halite, clear to white, massive
1,095.00 to 1,100.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone. anhydritic, tight
	20%	**ANHYDRITE** white to buff, dolomitic in part, massive
	20%	**SALT** halite, clear to white, massive
	10%	**SHALE** light green, medium gray green, platy
1,100.00 to 1,105.00 (5.00)	70%	**SALT** halite, clear to white, massive
	30%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, anhydritic, tight
1,105.00 to 1,110.00 (5.00)	100%	**SALT** halite, clear to white, massive, minor Dolomite as above

1,110.00 to 1,115.00 (5.00)	100%	**SALT** halite, clear to white, massive
1,115.00 to 1,120.00 (5.00)	50%	**SALT** halite, clear to white, massive
	30%	**SHALE** light to medium gray, dolomitic, platy
	20%	**DOLOMITE** buff to light gray, argillaceous in part, cryptocrystalline mudstone, tight
1,120.00 to 1,125.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** medium gray, light to medium gray, fissile, platy
	10%	**DOLOMITE** white to light gray, light brown, cryptocrystalline mudstone, tight
1,125.00 to 1,130.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** light gray, medium gray, platy
	10%	**DOLOMITE** buff to light gray, cryptocrystalline mudstone, tight
1,130.00 to 1,135.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** medium gray, light gray, dolomitic, platy to blocky
	10%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, tight
1,135.00 to 1,140.00 (5.00)	40%	**SHALE** medium gray, light gray, light gray green, dolomitic in part, platy to blocky
	30%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, tight
	30%	**SALT** halite, clear to white, massive
1,140.00 to 1,145.00 (5.00)	90%	**SALT** halite, clear to white, massive

1,140.00 to 1,145.00 (5.00)	10%	**SHALE** light to medium gray, medium gray green, platy
1,145.00 to 1,150.00 (5.00)	40%	**SALT** halite, clear to white, massive
	30%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, tight
	30%	**SHALE** medium gray, light to medium green, light gray green, fissile, platy
1,150.00 to 1,155.00 (5.00)	40%	**SALT** halite, clear, finely crystalline
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
	30%	**SHALE** medium gray, light gray green, fissile, platy
1,155.00 to 1,160.00 (5.00)	50%	**SHALE** light gray, medium gray, lower to medium gray green, fissile, platy
	30%	**SILTSTONE** buff to light brown, quartzose, dolomitic matrix, sandy in part, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
1,160.00 to 1,165.00 (5.00)	70%	**SHALE** light to medium gray, medium gray, light brown, light gray green, fissile,platy
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,165.00 to 1,170.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
	40%	**SHALE** medium gray, light to medium gray, light brown, predominately platy
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight

1,170.00 to 1,175.00 (5.00)	40%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, silty in part, tight
	40%	**SHALE** light to medium gray, medium gray, light gray brown, predominately platy
	20%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,175.00 to 1,180.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, silty in part, tight
	30%	**LIMESTONE** medium to dark brown, argillaceous, cryptocrystalline mudstone, tight
	30%	**SHALE** light gray, light to medium gray, light gray green, platy
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,180.00 to 1,182.00 (2.00)	80%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, anhydritic in part, tight
	20%	**SHALE** light gray, light to medium brown, platy
1,182.00 to 1,184.00 (2.00)	60%	**SHALE** light gray, light to medium brown, platy
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic in part, tight
	10%	**ANHYDRITE** white to buff, massive
1,184.00 to 1,186.00 (2.00)	60%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, medium brown argillaceous in part, anhydritic in part, tight
	30%	**SHALE** light to medium gray green, medium gray, fissile, platy
	10%	**ANHYDRITE** white to buff, massive
1,186.00 to 1,188.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, no visible porosity, minor Chert mottled light to dark brown, coarse angular fragments, probable fracture

1,186.00 to 1,188.00 (2.00)	30%	**LIMESTONE** medium brown, cryptocrystalline mudstone, tight
	20%	**SHALE** light to medium gray, dark brown laminar, fissile, platy
	10%	**SILTSTONE** buff to light brown, quartzose, dolomite matrix, tight
1,188.00 to 1,190.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, tight
	30%	**SHALE** light to medium gray, light gray green, fissile, platy
	30%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,190.00 to 1,192.00 (2.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous, tight
	30%	**SHALE** light to medium gray green, light gray, fissile, platy
	20%	**CHERT** variegated, white to dark brown, massive, conchoidal fracture
	20%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,192.00 to 1,194.00 (2.00)	40%	**CHERT** variegated, translucent to dark brown, coarse angular, conchoidal fracture
	40%	**DOLOMITE** buff to light brown, slightly argillaceous, cryptocrystalline mudstone, tight, minor light brown, very finely crystalline sucrosic packstone, no stain, no fluorescence, streaks of intercrystalline to moldic porosity to 18%, probable fractures
	20%	**SHALE** light to medium gray green, fissile, platy
1,194.00 to 1,196.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	20%	**CHERT** as above
1,196.00 to 1,200.00 (4.00)	70%	**NO SAMPLE** mud, added salt

1,196.00 to 1,200.00 (4.00)	20%	**SHALE** medium gray, light to medium gray, silty
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
1,200.00 to 1,205.00 (5.00)	60%	**NO SAMPLE** mud, added salt
	30%	**SHALE** light to medium gray green, light gray, fissile, platy
	10%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline mudstone, argillaceous in part, trace of nodular Chert
1,205.00 to 1,210.00 (5.00)	70%	**NO SAMPLE** added salt, mud
	20%	**DOLOMITE** buff to light brown, medium brown argillaceous, cryptocrystalline mudstone, tight, trace of nodular Chert
	20%	**SHALE** medium gray, light to medium gray green, dark gray, platy
1,210.00 to 1,215.00 (5.00)	60%	**NO SAMPLE** mud, added salt
	30%	**SHALE** light to medium gray, medium gray, fissile, platy
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight, trace of Chert fragments
1,215.00 to 1,220.00 (5.00)	50%	**SHALE** light to medium gray green, medium gray, fissile, platy
	30%	**LIMESTONE** buff to light brown, medium brown, mottled medium to dark brown in part, cryptocrystalline mudstone, tight, trace of Chert fragments
	20%	**NO SAMPLE** mud, added salt
1,220.00 to 1,225.00 (5.00)	60%	**SHALE** light to medium gray, light gray green, medium gray, fissile, platy
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, minor Chert, dark brown fragments

1,220.00 to 1,225.00 (5.00)	20%	**LIMESTONE** buff to light brown, medium brown argillaceous, cryptocrystalline mudstone, tight
1,225.00 to 1,230.00 (5.00)	80%	**SHALE** medium gray, medium to dark gray, light gray green, fissile, platy
	20%	**LIMESTONE** buff to light brown, light to medium gray, medium brown, cryptocrystalline mudstone, argillaceous in part, tight
1,230.00 to 1,235.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, fissile, platy, minor LIMESTONE as above
1,235.00 to 1,240.00 (5.00)	80%	**SHALE** medium gray, light to medium gray, fissile, platy
	20%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,240.00 to 1,245.00 (5.00)	70%	**SHALE** medium gray, light to medium gray, fissile, platy
	30%	**LIMESTONE** buff to light brown, light to medium gray, argillaceous in part, tight
1,245.00 to 1,250.00 (5.00)	40%	**NO SAMPLE** mud, salt additive
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	20%	**LIMESTONE** light gray, buff to light brown, argillaceous in part, cryptocrystalline mudstone, tight
1,250.00 to 1,255.00 (5.00)	80%	**SHALE** medium gray, light to medium gray, fissile, platy
	20%	**LIMESTONE** light gray, buff to light brown, cryptocrystalline mudstone, argillaceous in part, tight
1,255.00 to 1,260.00 (5.00)	50%	**NO SAMPLE** mud, salt additive
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	10%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,260.00 to 1,265.00 (5.00)	60%	**SHALE** medium gray, light gray, medium gray brown, fissile, platy

1,260.00 to 1,265.00 (5.00)	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, scattered Chert fragments, common cavings
	20%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,265.00 to 1,270.00 (5.00)	60%	**SHALE** medium gray, light to medium gray green, medium to dark gray,, fissile, platy
	30%	**NO SAMPLE** mud, added salt
	10%	**DOLOMITE** as above
1,270.00 to 1,275.00 (5.00)	100%	**SHALE** medium gray, light to medium gray, medium to dark gray, fissile, platy
1,275.00 to 1,280.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium to dark gray, fissile, platy
1,280.00 to 1,285.00 (5.00)	80%	**SHALE** medium to dark gray, medium gray green, fissile, platy, minor Dolomite light gray bn, argillaceous, cryptocrystalline mudstone, tight
	20%	**NO SAMPLE** clobbered mud
1,285.00 to 1,290.00 (5.00)	80%	**SHALE** medium to dark gray, medium gray green, fissile, platy, minor Dolomite light gray bn, argillaceous, cryptocrystalline mudstone, tight
	20%	**NO SAMPLE** clobbered mud
1,290.00 to 1,295.00 (5.00)	100%	**SHALE** medium gray, medium gray green, medium to dark gray, calcareous in part, fissile, platy to blocky
1,295.00 to 1,300.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium brown calcareous, fissile, platy to blocky
1,300.00 to 1,305.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium brown calcareous, fissile, platy to blocky
1,305.00 to 1,310.00 (5.00)	70%	**SHALE** medium gray, dark gray, light gray calcareous, occasionally slickensided, trace of nodular pyrite, fissile, platy to blocky

1,305.00 to 1,310.00 (5.00)
30% **LIMESTONE**
buff to light gray, light to medium gray, very silty in part, very argillaceous in part, cryptocrystalline mudstone, no stain, no fluorescence, slight petroliferous odor, no visible porosity, scattered Chert fragments, probable fracture porosity

1,310.00 to 1,315.00 (5.00)
60% **SHALE**
medium gray, dark gray, light gray calcareous, occasional calcite veining, nodular and disseminated pyrite, fissile, platy to blocky

40% **LIMESTONE**
buff to light gray, light to medium gray, very silty in part, very argillaceous in part, cryptocrystalline mudstone, no stain, no fluorescence, scattered Chert fragments, probable fracture porosity

1,315.00 to 1,320.00 (5.00)
80% **SHALE**
medium gray, dark gray, calcareous in part, occasionally slickensided, fissile, blocky to platy, minor disseminated pyrite

20% **LIMESTONE**
light gray, light brown, silty, argillaceous, cryptocrystalline mudstone, tight

1,320.00 to 1,325.00 (5.00)
80% **SHALE**
medium gray, dark gray, calcareous in part, fissile, platy to blocky, nodular and disseminated pyrite

10% **DOLOMITE**
buff to light brown, cryptocrystalline to microcrystalline, mudstone, argillaceous in part, tight

10% **LIMESTONE**
light gray, light brown, dark brown, argillaceous, cryptocrystalline mudstone, tight

1,325.00 to 1,330.00 (5.00)
60% **SHALE**
medium gray, dark gray, light to medium gray green, fissile, platy to blocky

40% **LIMESTONE**
buff to light brown, light to medium brown, light gray, cryptocrystalline mudstone, silty in part, tight

1,330.00 to 1,335.00 (5.00)
70% **SHALE**
medium gray, light to medium gray green, calcareous in part, fissile, platy to blocky

30% **DOLOMITE**
buff to light brown, cryptocrystalline to microcrystalline, predominately mudstone, tight

1,335.00 to 1,340.00 (5.00)
40% **SHALE**
light to medium gray green, medium gray, fissile, platy

30% **DOLOMITE**
buff to light brown, silty to sandy, cryptocrystalline mudstone, tight

1,335.00 to 1,340.00 (5.00)

20% **SANDSTONE**
buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability

10% **SILTSTONE**
buff to light brown, quartzose, sandy, dolomite matrix, tight

1,340.00 to 1,345.00 (5.00)

30% **SANDSTONE**
buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability

30% **SILTSTONE**
buff to light brown, sandy, dolomite matrix, tight

20% **DOLOMITE**
buff to light brown, cryptocrystalline to microcrystalline, tight

20% **SHALE**
medium gray, light to medium gray green, fissile, platy

1,345.00 to 1,350.00 (5.00)

40% **SILTSTONE**
buff to light brown, light to medium gray, argillaceous, sandy, dolomitic cement to matrix, tight

20% **DOLOMITE**
buff to light brown, cryptocrystalline mudstone, calcareous, argillaceous in part, tight

20% **SANDSTONE**
buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomitic cement to matrix, no stain, no fluorescence, no visible porosity

20% **SHALE**
medium gray, light to medium gray green, fissile, platy

1,350.00 to 1,355.00 (5.00)

50% **SHALE**
medium gray, medium gray silty, light to medium gray green, fissile, platy to blocky

20% **DOLOMITE**
buff to light brown, cryptocrystalline mudstone, silty, tight

20% **SILTSTONE**
light to medium gray, light brown, argillaceous, dolomitic, tight

10% **SANDSTONE**
as above

1,355.00 to 1,360.00 (5.00)	90%	**SHALE** medium gray, light to medium gray green, silty in part, fissile, platy to blocky
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, silty in part, tight
1,360.00 to 1,365.00 (5.00)	80%	**SHALE** medium gray, light to medium gray green, micromicaceous in part, silty in part, fissile, platy to blocky
	10%	**DOLOMITE** as above
	10%	**SILTSTONE** light brown dolomitic, light to medium gray argillaceous, sandy in part, tight
1,365.00 to 1,370.00 (5.00)	90%	**SHALE** medium gray, medium gray green, light to medium gray, micromicaceous in part, fissile, predominately platy
	10%	**DOLOMITE** light to medium brown, cryptocrystalline mudstone, tight
1,370.00 to 1,375.00 (5.00)	60%	**SHALE** medium gray, medium gray green, fissile, platy
	40%	**DOLOMITE** buff to light brown, dark brown argillaceous in part, cryptocrystalline to finely crystalline, mudstone to wackestone, no stain, no fluorescence, scattered pin point porosity 2-3%
1,375.00 to 1,380.00 (5.00)	50%	**DOLOMITE** buff to light brown, medium to dark brown, cryptocrystalline to medium crystalline, mudstone to wackestone, minor packstone, no stain, no fluorescence, trace of pin point porosity
	30%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, platy to blocky
	20%	**SILTSTONE** light gray, quartzose, dolomite matrix, common scattered coarse glauconite pellets, slightly sandy, tight
1,380.00 to 1,385.00 (5.00)	40%	**DOLOMITE** medium to dark brown, buff to light brown, cryptocrystalline to medium crystalline, mudstone to wackestone, trace of pin point porosity
	40%	**SILTSTONE** light gray, quartzose, dolomitic matrix, sandy, scattered coarse rounded glauconite pellets, tight

1,380.00 to 1,385.00 (5.00)	20%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
1,385.00 to 1,390.00 (5.00)	70%	**DOLOMITE** medium to dark brown, buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, minor packstone, tight
	20%	**SILTSTONE** light gray, quartzose, dolomite matrix, scattered glauconite pellets, tight
	10%	**SHALE** medium gray, light to medium gray, silty in part, fissile, platy to blocky
1,390.00 to 1,392.00 (2.00)	70%	**DOLOMITE** light to medium brown, medium to dark brown, buff, cryptocrystalline to finely crystalline, mudstone to wackestone, slightly argillaceous in part, tight
	20%	**SILTSTONE** light gray, quartzose, medium gray argillaceous, sandy in part, dolomitic cement to matrix, tight
	10%	**SHALE** medium gray, medium to dark gray, fissile, platy
1,392.00 to 1,394.00 (2.00)	80%	**DOLOMITE** light to medium brown, medium to dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, slightly argillaceous in part, tight
	20%	**SILTSTONE** quartzose, light gray, medium gray argillaceous, sandy in part, dolomite matrix, occasional glauconite pellets, tight
1,394.00 to 1,396.00 (2.00)	60%	**DOLOMITE** light to medium brown, dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	20%	**SHALE** medium gray, dark gray, fissile, platy
	20%	**SILTSTONE** light gray, quartzose, dolomitic cement to matrix, scattered glauconite pellets, tight
1,396.00 to 1,398.00 (2.00)	30%	**DOLOMITE** medium brown, dark brown, light to medium brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, , tight
	30%	**SANDSTONE** white to light gray, quartzose, predominately silty to medium grained, scattered coarse rounded quartz,subangular, medium sorted, firm to friable, siliceous cement, slightly dolomitic, common clay laminae, no stain, no fluorescence, no visible porosity

1,396.00 to 1,398.00 (2.00)	20%	**SHALE** medium gray, dark gray, fissile, platy
	20%	**SILTSTONE** light gray, quartzose, speckled glauconitic, dolomitic, argillaceous in part, tight
1,398.00 to 1,400.00 (2.00)	60%	**SANDSTONE** white to light gray, quartzose, predominately silty to medium grained, scattered coarse rounded quartz,subangular, medium sorted, firm to friable, siliceous cement, slightly dolomitic, common clay laminae, no stain, no fluorescence, no visible porosity
	20%	**DOLOMITE** medium brown, dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	10%	**SHALE** medium gray, dark gray, fissile, platy
	10%	**SILTSTONE** as above
1,400.00 to 1,402.00 (2.00)	70%	**SANDSTONE** light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability
	20%	**DOLOMITE** as above
	10%	**SILTSTONE** as above
1,402.00 to 1,404.00 (2.00)	80%	**SANDSTONE** light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability
	10%	**DOLOMITE** medium to dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	10%	**SILTSTONE** light gray, quartzose, siliceous cement, dolomitic in part, tight
1,404.00 to 1,406.00 (2.00)	40%	**SANDSTONE** as above
	30%	**SHALE** light gray green, medium gray, fissile, platy

1,404.00 to 1,406.00 (2.00)	30%	**SILTSTONE** white to buff, light gray, quartzose, sandy, siliceous cement, dolomitic in part, tight
1,406.00 to 1,408.00 (2.00)	40%	**SHALE** medium gray, light to medium gray green, fissile, platy
	30%	**DOLOMITE** medium to dark brown, finely crystalline, wackestone, glauconite in part, tight
	30%	**SANDSTONE** as above
1,408.00 to 1,410.00 (2.00)	30%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
	30%	**SILTSTONE** white to buff, quartzose, firm, siliceous cement, sandy in part, tight
	20%	**DOLOMITE** as above
	20%	**SANDSTONE** light gray white, quartzose, silty to medium grained, subangular to subround, firm, siliceous cement, no stain, no fluorescence, scattered pin point porosity 2-3%
1,410.00 to 1,412.00 (2.00)	40%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
	40%	**SILTSTONE** light gray, medium gray, quartzose, siliceous cement, argillaceous in part, tight
	20%	**SANDSTONE** as above
1,412.00 to 1,414.00 (2.00)	60%	**SANDSTONE** light gray white, quartzose, very fine to coarse grained, subangular to subround, rounded in part, firm to very friable, siliceous cement, clay infilling to laminae in part, no stain, no fluorescence, patchy intergranular porosity to 14%
	30%	**SHALE** medium gray, dark gray, silty in part, fissile, blocky to platy
	10%	**SILTSTONE** light gray white, quartzose, light gray argillaceous, siliceous cement, tight
1,414.00 to 1,416.00 (2.00)	70%	**SANDSTONE** light gray white, light reddish brown, very fine to medium grained, subangular to subround, rounded in part, firm to friable, siliceous cement, poorly indurated in part, patchy clay infilling to laminae, no stain, no fluorescence, patchy intergranular porosity to 14%

1,414.00 to 1,416.00 (2.00)	20%	**SHALE** medium gray, dark gray, silty in part, fissile, platy to blocky
	10%	**SILTSTONE** as above
1,416.00 to 1,418.00 (2.00)	80%	**SANDSTONE** light gray white, light reddish brown, very fine to medium grained, subangular to subround, rounded in part, firm to friable, siliceous cement, poorly indurated in part, patchy clay infilling to laminae, no stain, no fluorescence, patchy intergranular porosity to 14%
	20%	**SHALE** medium gray, dark gray, medium gray silty, fissile, platy to blocky
1,418.00 to 1,420.00 (2.00)	80%	**SANDSTONE** light gray white, light to medium reddish orange, very fine to medium grained, subangular to subround, medium to well sorted, firm, well indurated with siliceous cement, no stain, trace of intergranular bitumen, no fluorescence, no visible porosity
	10%	**BASALT** gray to red, firm to hard, fine groundmass, porphyritic
	10%	**SHALE** medium green, fissile, platy
1,420.00 to 1,425.00 (5.00)	40%	**BASALT** gray to reddish brown, firm to hard, fine groundmass, porphyritic
	40%	**SANDSTONE** as above
	20%	**SHALE** medium green, fissile, platy
1,425.00 to 1,430.00 (5.00)	80%	**BASALT** gray to reddish brown, firm to hard, fine groundmass, porphyritic
	20%	**SANDSTONE** as above, cavings
1,430.00 to 1,435.00 (5.00)	100%	**BASALT** gray to reddish brown, gray green, firm to hard, fine groundmass, porphyritic, minor vesicular dolomite, common cavings
1,435.00 to 1,440.00 (5.00)	100%	**BASALT** gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,440.00 to 1,445.00 (5.00) 100% **BASALT**
gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,445.00 to 1,450.00 (5.00) 100% **BASALT**
gray, red brown, firm to hard, fine groundmass, porphyritic

1,450.00 to 1,455.00 (5.00) 100% **BASALT**
gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,455.00 to 1,460.00 (5.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

1,460.00 to 1,465.00 (5.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

1,465.00 to 1,471.00 (6.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

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GEOLOGICAL REPORT

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Geological Report

on

Paramount Apache Nogha M-17

66° 36' 45.242" N / 125° 48' 30.680" W

Well Reached Total Depth on
Mar 18, 2003 @ 01:00

for

Paramount Resources Ltd.

Prepared For: Paul Price
Paramount Resources Ltd.

Prepared By: Colin Bredin P.Geol
C.L. Bredin Holdings Ltd.

Colin Bredin P.Geol

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Well Summary

Storage Units: Metric

Well Information

Operator:	**Paramount Resources Ltd.**
Well Name:	**Paramount Apache Nogha M-17**
Location:	**66° 36' 45.242" N / 125° 48' 30.680" W**
UWI:	300M176640125450
Pool:	Mount Clarke
Field:	Nogha
State / Province:	Northwest Territories
Country:	Canada
License Number:	WID 1970
Well Status:	**Mt. Clarke Gas**

Surface Co-ordinates

Hole Type: **Fault Indicator:**

Latitude: 66.3645242 **Longitude:** 125.4830680

N / S:
E / W:

Bottom Hole Co-ordinates

Latitude: **Longitude:**

N / S:
E / W:

Elevations

		Reference:	
Ground Elevation:	350.00	**Kelly Bushing to Ground:**	4.60
Kelly Bushing Elevation:	354.60	**Cut (-):**	
Casing Flange Elevation:		**Fill (+):**	

Total Depth

	Measured Depth	**True Vertical Depth**
Total Depth Driller (Tally) :	1,471.00	1,470.56
Total Depth Driller (Strap or SLM):	1,470.60	1,470.16
Total Depth Logger:	1,471.50	1,471.06

Miscellaneous Depths

Plugback Depth:	**Water Depth Reference:**
Sidetrack Depth:	**Water Depth:**

Well Summary

Drilling Contractor: Nabors Drilling Rig 62 **Spud Date:** Feb 25, 2003 @ 09:45

Rig Release Date: **Total Depth Date:** Mar 18, 2003 @ 01:00

Cores **#** **Formation** **Interval** **Cut** **Recovered** **%**

Casing Summary

Casing Type	Casing Size	Landed Depth	Hole Size
Conductor	339.7	59.00	444.0
Surface	244.5	499.00	311.0

Well Summary

Storage Units: Metric

Logging Summary

Company	Engineer	Total Depth (MD)	Logging tools
Schlumberger	R. Delidais / P. Roc	1,471.00	HRA Laterolog from 1469.2 to 499.3m Dipole Sonic from 1448.4 to 50m Density Neutron from 1466.03 to 50m

Wireline Logging Summary

Storage Units: Metric

Logging Suite Number:	1		
Wireline Logging Company:	Schlumberger	**Engineer:**	R. Delidais / P. Roos
District:	Norman Wells	**Unit Number:**	8416
Witness:	C. Bredin		
Was Pressure Control Equipment Utilized:	No	**Maximum Deviation:**	4.500 °
Was the Logging Job Mechanically Assisted:	No	**Hole Size:**	216.0
Total Lost Time:	0.00		
Loggers' Total Down Time:	0.00		
Total Job Time (From Rig up to Rig down):	8.00		

	Measured Depth	True Vertical Depth
Casing Depth Driller	499.00	498.97
Casing Depth Logger	499.30	499.27
Total Depth Driller (Tally)	1,471.00	1,470.56
Total Depth Driller (Strap or SLM)	1,471.00	

General Remarks: Stacked tools. No problems. High res from 1430-1385, 1360-1325 and 1205-1175m.

Logging Run #: 1
Date: Mar 18, 2003

Drilling Fluid Data

Drilling Fluid Type: Salt Saturated Gel Chem
Fluid Density: 1300.0 **Viscosity:** 65 **pH:** 9.5 **Fluid Loss:** 8.0

Mud Resistivity (Rm):	0.77	@	12.0 °		
Mud Resistivity (Rm) @ BHT:	0.58	@	23.0 °	**Maximum Temperature:**	23.0 °
Mud Filtrate Resistivity (Rmf):	0.11	@	14.0 °	**Source (Rmf):**	Pressed
Mud Cake Resistivity (Rmc):	0.10	@	11.0 °	**Source (Rmc):**	Calculated

Logging Run Information

Date on Bottom: Mar 18, 2003
Total Depth Logger: 1,471.50 (MD) (TVD)

Logging Tools: HRA Laterolog from 1469.2 to 499.3m
Dipole Sonic from 1448.4 to 50m
Density Neutron from 1466.03 to 50m

Remarks: Logged GR, CNL and Sonic through casing to surface.

Hole Conditions: Good

Deviation / Directional Survey Report

Directional Drilling Company: Radius Directional Services
Directional Drillers: George Probylinski
Measured While Drilling (MWD) Hands: Omar Marsa
Survey Type: electronic
Survey Mode: MWD
Survey Date: Mar 7, 2003
Survey Calculation Method: minimum curvature
Target Azimuth: 0.00 °
Dog Leg Severity Characteristic: 30.00

Survey Tie-In Information

Tie-In Co-Ordinantes
Latitude: 66.3645242
Longitude: 125.4830680
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00

Kick-Off (Whipstock) Information

Kick-Off Co-Ordinantes
Latitude:
Longitude:
N / S:
E / W:

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity

Remarks: Deviation / MWD control probably unnecessary in this area. The mud motor was effective in increasing the ROP but a single shot control would have been sufficient. Deviation that developed in this well as in C-49 was the result of excessive weight on bit.

Survey Points

Storage Units: Metric

Measured Depth	T.V.D.	Drift Angle (°)	Azimuth (°)	+N / -S Distance	+E / -W Distance	Vertical Section	DogLeg Severity
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
70.00	70.00	0.500	41.90	0.23	0.20	0.23	0.21
83.00	83.00	0.500	328.50	0.32	0.21	0.32	1.38
101.00	101.00	0.500	310.30	0.44	0.11	0.44	0.26
212.20	212.20	0.500	226.30	0.41	-0.61	0.41	0.18
241.10	241.09	0.800	199.40	0.14	-0.77	0.14	0.44
270.10	270.09	1.100	176.50	-0.33	-0.82	-0.33	0.49
289.30	289.29	1.200	165.40	-0.71	-0.76	-0.71	0.38
308.60	308.58	1.200	158.00	-1.09	-0.63	-1.09	0.24
344.90	344.88	0.800	147.90	-1.66	-0.35	-1.66	0.36
376.00	375.97	0.200	276.90	-1.84	-0.29	-1.84	0.91
404.90	404.87	0.400	290.90	-1.80	-0.44	-1.80	0.22
433.80	433.77	0.600	240.90	-1.83	-0.66	-1.83	0.48
462.80	462.77	0.600	226.40	-2.01	-0.90	-2.01	0.16
483.00	482.97	0.500	247.60	-2.12	-1.06	-2.12	0.33
505.90	505.87	0.700	240.10	-2.23	-1.28	-2.23	0.28
534.70	534.67	0.900	236.90	-2.44	-1.62	-2.44	0.21
582.90	582.86	0.600	288.20	-2.57	-2.17	-2.57	0.44
631.10	631.06	1.000	288.10	-2.36	-2.81	-2.36	0.25
679.20	679.15	1.200	269.80	-2.23	-3.72	-2.23	0.25
727.38	727.31	2.200	216.30	-2.97	-4.77	-2.97	1.10
746.80	746.72	2.300	220.10	-3.57	-5.24	-3.57	0.28
775.70	775.60	1.900	226.80	-4.34	-5.96	-4.34	0.49
814.30	814.18	1.700	234.40	-5.12	-6.90	-5.12	0.24
862.50	862.35	2.000	237.50	-5.98	-8.19	-5.98	0.20
891.40	891.23	2.100	246.10	-6.47	-9.10	-6.47	0.34
930.00	929.81	2.300	259.20	-6.90	-10.50	-6.90	0.42
968.60	968.38	2.200	264.90	-7.11	-12.00	-7.11	0.19
1,006.00	1,005.76	2.100	26.70	-6.56	-12.41	-6.56	3.01
1,045.70	1,045.45	1.700	267.80	-5.94	-12.67	-5.94	2.48
1,122.90	1,122.62	1.400	262.90	-6.10	-14.75	-6.10	0.13
1,229.00	1,228.67	2.300	276.00	-6.03	-18.15	-6.03	0.28

1,355.00		4.000					
1,449.00		3.750					

Formation Top Summary

Storage Units: Metric

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

***** All Depths measured from Kelly Bushing Elevation *****

Group *Formation* Member	Prognosis (TVD)	Sample Top (MD)	Sample Top (TVD)	Log Top (MD)	Log Top (TVD)	Subsea	Thickness
Franklin Mtn (cyclic)	542.00	510.00	509.97	508.00	507.97	-153.37	227.00
Saline River	763.00	737.00	736.93	737.00	736.93	-382.33	58.50
Saline River Upper Salt	826.00	795.50	795.39	795.50	795.39	-440.79	116.50
Saline River Lower Shale	932.00	912.00	911.82	911.00	910.82	-556.22	15.00
Saline River Lower Salt	948.00	927.00	926.81	927.00	926.81	-572.21	219.80
Mt Cap	1,190.00	1,146.80	1,146.51	1,148.00	1,147.71	-793.11	159.20
Mt Cap Lower Mt Cap	1,342.00	1,306.00	1,305.63	1,308.00	1,307.63	-953.03	90.00
Mt Clarke	1,426.00	1,396.00	1,395.59	1,395.00	1,394.59	-1,039.99	22.50
Proterozoic	1,452.00	1,418.50	1,418.08	1,425.00	1,424.58	-1,069.98	

Formation Evaluations

Storage Units: Metric

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Franklin Mtn (cyclic)
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Late
Period: Cambrian
Stage:
Age (Approx): 495 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	510.00	509.97	-155.37	227.00
Log Top	508.00	507.97	-153.37	

Evaluation:

The basal Franklin Mountain cyclic unit consists of thick beds of Dolomite, cryptocrystalline to microcrystalline mudstone, Dolomite, microcrystalline to very finely crystalline wackestone to packstone and Limestone, white to buff to light brown mudstone. The base becomes argillaceous with thinbeds of Shale.

Conclusion:

No hydrocarbon reservoir potential.

Group:
Formation: Saline River
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Middle
Period: Cambrian
Stage:
Age (Approx): 500 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	737.00	736.93	-382.33	58.50
Log Top	737.00	736.93	-382.33	

Evaluation:

The upper Saline River consists primarily of red and green shales with thinbeds of dolomite mudstone and anhydrites.

Conclusion:

No reservoir potential

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Saline River
Member: Upper Salt
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 505 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	795.50	795.39	-440.79	116.50
Log Top	795.50	795.39	-440.79	

Evaluation:

The upper salt zone consists of interbedded dolomite and anhydrite becoming predominately halite with depth.

Conclusion:

No reservoir potential.

Group:
Formation: Saline River
Member: Lower Shale
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 510 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	912.00	911.82	-557.22	15.00
Log Top	911.00	910.82	-556.22	

Evaluation:

The lower shale zone consists primarily of soft green shale with thinbeds of dolomite and anhydrite.

Conclusion:

No reservoir potential.

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Saline River
Member: Lower Salt
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 515 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	927.00	926.81	-572.21	219.80
Log Top	927.00	926.81	-572.21	

Evaluation:

The lower salt zone is primarily halite with occasional beds of dolomite and anhydrite. Shale thinbeds occur near the base.

Conclusion:

No reservoir potential.

Group:
Formation: Mt Cap
Member:
Boundary Type: unconformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 525 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,146.80	1,146.51	-791.91	159.20
Log Top	1,148.00	1,147.71	-793.11	

Evaluation:

The upper Mt Cap is interbedded shale, tight siltstones and dolomite mudstones at the top becoming predominately shale with depth. From 1188 to 1193m is a Dolomite / Chert succession which produced a gas response of 162 / 15 units. The zone consisted of Chert variegated, translucent to dark brown, coarse angular, conchoidal fracture with laminae / thinbeds of Dolomite buff to light brown, slightly argillaceous, cryptocrystalline mudstone, tight, minor light brown, very finely crystalline sucrosic packstone, no stain, no fluorescence, streaks of intercrystalline to moldic porosity to 18%, probable fractures.

Conclusion:

Reservoir potential.

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Mt Cap
Member: Lower Mt Cap
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 530 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,306.00	1,305.63	-951.03	90.00
Log Top	1,308.00	1,307.63	-953.03	

Evaluation:

The top section of the Lower Mt Cap appears to be a fractured Limestone with Gas 54 / 3 units. Below it is interbedded Shale and mudstones. From 1336 to 1346m is a sequence of interbedded Siltstone, Dolomite and Sandstone, buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability. Liberated Gas 208 / 6 units.

Conclusion:

Reservoir potential 1336 - 1346m.

Group:
Formation: Mt Clarke
Member:
Boundary Type: conformable
Fault Type:

Era: Paleozoic
Series: Early
Period: Cambrian
Stage:
Age (Approx): 535 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,396.00	1,395.59	-1,040.99	22.50
Log Top	1,395.00	1,394.59	-1,039.99	

Evaluation:

The upper Mt Clarke "A" sand is light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability. liberated Gas 74 / 10 units. The middle Mt Clarke "B" sand is light gray white, quartzose, silty to medium grained, subangular to subround, firm, siliceous cement, no stain, no fluorescence, scattered pin point porosity 2-3%, no significant Gas effect. The lower most Mt Clarke "C" sand is light gray white, quartzose, very fine to coarse grained, subangular to subround, rounded in part, firm to very friable, siliceous cement, clay infilling to laminae in part, no stain, no fluorescence, patchy intergranular porosity to 14%. Liberated Gas 241 / 10 units. There was a probable 1-2 cubic meter loss of mud on penetration of the "C".

Conclusion:

Good reservoir potential in lower Sandstone.

Formation Evaluations

Storage Units: Metric

Kelly Bushing Elevation: 354.60 **Casing Flange Elevation:**
Ground Elevation: 350.00

All Depths Measured from Kelly Bushing Elevation

Group:
Formation: Proterozoic
Member:
Boundary Type: unconformable
Fault Type:

Era: PreCambrian
Series:
Period: Proterozic
Stage:
Age (Approx): 544 Million years.

	Measured Depth	True Vertical Depth	Subsea	Thickness
Sample Top	1,418.50	1,418.08	-1,063.48	
Log Top	1,425.00	1,424.58	-1,069.98	

Evaluation:

The basement is Basalt gray, red brown, gray green, purple, firm to hard, fine groundmass, porphyritic in part.

Conclusion:

No reservoir potential.

500.00 to 505.00 (5.00)
90% **DOLOMITE**
white to buff, buff to light brown, cryptocrystalline to microcrystalline, mudstone, tight

10% **CEMENT**
0-1-0 [redacted]

505.00 to 510.00 (5.00)
90% **DOLOMITE**
buff to light brown, light gray slightly argillaceous, cryptocrystalline to microcrystalline, mudstone to wackestone, tight

10% **CHERT**
buff to white, light gray, fossiliferous in part, nodular in part, common silicified oncolites with dolomitic and siliceous fragments, pellets and oolites in a siliceous to calcareous matrix, trace of moldic to pin point porosity, no permeability

510.00 to 515.00 (5.00)
100% **DOLOMITE**
white to buff, buff to light brown, light gray, slightly argillaceous, cryptocrystalline to microcrystalline, predominately mudstone, tight

515.00 to 520.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray slightly argillaceous, very slightly silty, cryptocrystalline to microcrystalline, predominately mudstone, tight

520.00 to 525.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, slightly argillaceous, calcareous in part, cryptocrystalline to microcrystalline, mudstone, tight, patchy stylolitic, trace of Shale light gray dolomitic, platy

525.00 to 530.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, slightly silty in part, cryptocrystalline to microcrystalline, trace finely crystalline sucrosic, predominately mudstone, minor packstone, no stain, no fluorescence, trace of intercrystalline to vuggy porosity, minor Limestone white to buff, cryptocrystalline mudstone, tight

530.00 to 535.00 (5.00)
100% **DOLOMITE**
buff to light brown, light gray, medium gray argillaceous, slightly silty in part, cryptocrystalline mudstone, trace stylolitic, tight

535.00 to 540.00 (5.00)
100% **DOLOMITE**
buff to light bn, light to medium gray argillaceous in part, cryptocrystalline mudstone, tight, trace of nodular Chert

540.00 to 545.00 (5.00)
100% **DOLOMITE**
white to buff, buff to light brown, light to medium gray brown, slightly argillaceous in part, slightly silty in part, minor calcareous, cryptocrystalline to microcrystalline, mudstone, tight

545.00 to 550.00 (5.00)
100% **DOLOMITE**
buff to light brown, medium brown, slightly argillaceous, slightly silty, cryptocrystalline to microcrystalline, mudstone, tight

550.00 to 555.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, slightly argillaceous in part, cryptocrystalline to finely crystalline, mudstone to wackestone, no stain, no fluorescence, scattered pin point to intercrystalline porosity 2-3%
555.00 to 560.00 (5.00)	100%	**DOLOMITE** as above, minor buff to light brown, fine to medium crystalline packstone, no stain, no fluorescence, patchy intercrystalline to vuggy porosity 3.4%
560.00 to 565.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline to finely crystalline, mudstone to packstone, no stain, no fluorescence, scattered coarse clear dolomite crystals, patchy vuggy porosity 4-6%
565.00 to 570.00 (5.00)	90%	**DOLOMITE** buff to light brown, light to medium brown, microcrystalline to finely crystalline, mudstone to wackestone, minor packstone, slightly silty, scattered coarse dolomite and calcite crystals, patchy vuggy porosity to 10%
	10%	**LIMESTONE** white to light gray, medium gray, commonly oomicrite, tight
570.00 to 575.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, silty, predominately mudstone, wackestone in part, tight
	20%	**LIMESTONE** light gray, medium gray, argillaceous in part, cryptocrystalline mudstone, tight
575.00 to 580.00 (5.00)	70%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty, tight
	30%	**LIMESTONE** light gray, light brown, medium gray brown, cryptocrystalline mudstone, argillaceous in part, dolomitic in part, occasionally oolitic, tight
580.00 to 585.00 (5.00)	40%	**LIMESTONE** light gray, light brown, medium brown, cryptocrystalline mudstone, tight
	30%	**DOLOMITE** as above
	30%	**SHALE** light gray green, calcareous, platy, laminar in part
585.00 to 590.00 (5.00)	60%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, silty in part, no stain, no fluorescence, very patchy intercrystalline to vuggy porosity 12-16%

585.00 to 590.00 (5.00)	40%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, stylolitic in part, tight
590.00 to 595.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, minor packstone, no stain, no fluorescence, silty in part, scattered pin point to vuggy porosity 6-8%
	20%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, tight
595.00 to 600.00 (5.00)	80%	**LIMESTONE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight
	20%	**DOLOMITE** as above
600.00 to 605.00 (5.00)	80%	**LIMESTONE** buff to light brown, light gray brown, slightly argillaceous, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, minor packstone, silty in part, scattered pin point to vuggy porosity 6-8%
605.00 to 610.00 (5.00)	100%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, occasionally silty, tight
610.00 to 615.00 (5.00)	70%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, tight
	30%	**DOLOMITE** buff to light brown, silty in part, cryptocrystalline to finely crystalline, mudstone to wackestone, trace of pin point porosity
615.00 to 620.00 (5.00)	60%	**LIMESTONE** white to light gray, buff, slightly argillaceous, cryptocrystalline mudstone, tight, minor Shale light to medium gray, calcareous
	40%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, scattered pin point porosity 3-4%
620.00 to 625.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline to finely crystalline, mudstone to wackestone, calcareous in part, silty in part, no stain, no fluorescence, scattered moldic porosity 12-18%
	30%	**LIMESTONE** as above

625.00 to 630.00 (5.00)	80%	**DOLOMITE** white to buff, light brown, calcareous, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, scattered clear calcite and dolomite crystals, patchy intercrystalline to vuggy porosity 10 -14%
	20%	**LIMESTONE** as above
630.00 to 635.00 (5.00)	100%	**DOLOMITE** white to light gray, light brown, cryptocrystalline to finely crystalline, mudstone to sucrosic packstone, no stain, no fluorescence, pin point to intercrystalline porosity to 18%
635.00 to 640.00 (5.00)	60%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, tight
	40%	**DOLOMITE** white to light gray, cryptocrystalline to microcrystalline, predominately mudstone, tight
640.00 to 645.00 (5.00)	50%	**DOLOMITE** as above
	30%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, argillaceous in part, tight
	20%	**SHALE** medium gray, light gray, calcareous, fissile, platy
645.00 to 650.00 (5.00)	60%	**DOLOMITE** white to light gray, light brown, cryptocrystalline to microcrystalline, calcareous in part, predominately mudstone, tight
	30%	**LIMESTONE** white to light gray, light brown, cryptocrystalline mudstone, tight
	10%	**SHALE** light gray, medium gray, fissile, platy
650.00 to 655.00 (5.00)	100%	**LIMESTONE** white to buff, light gray, slightly argillaceous, cryptocrystalline mudstone, tight, minor Dolomite as above
655.00 to 660.00 (5.00)	80%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline to microcrystalline, calcareous, mudstone to wackestone, tight

660.00 to 665.00 (5.00)	80%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
	20%	**DOLOMITE** white to buff, light brown, cryptocrystalline to microcrystalline, mudstone to wackestone, tight
665.00 to 670.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, scattered coarse clear calcite crystals, scattered vuggy porosity 8-10%
	50%	**LIMESTONE** white to buff, light gray, light to medium brown, cryptocrystalline mudstone, tight
670.00 to 675.00 (5.00)	80%	**DOLOMITE** buff to light brown, cryptocrystalline to finely crystalline, mudstone to packstone, silty in part, no stain, no fluorescence, intercrystalline to vuggy porosity 8-10%
	20%	**LIMESTONE** as above
675.00 to 680.00 (5.00)	100%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline mudstone, slightly siliceous, hard, tight
680.00 to 685.00 (5.00)	100%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, slightly silty, slightly argillaceous, stylolitic in part, tight, trace of Shale medium gray, calcareous, platy
685.00 to 690.00 (5.00)	100%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, tight, occasional Shale laminae, stylolitic in part
690.00 to 695.00 (5.00)	70%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, minor pin point to porosity 1-2%
	30%	**LIMESTONE** white to buff, cryptocrystalline mudstone, dolomitic in part, occasional Shale laminae, stylolitic in part, tight
695.00 to 700.00 (5.00)	100%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight, stylolitic in part, minor Shale light to medium gray, calcareous, platy
700.00 to 705.00 (5.00)	90%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight, stylolitic in part
	10%	**SHALE** light to medium gray, calcareous, platy

705.00 to 710.00 (5.00)	70%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
	30%	**SHALE** light gray, medium gray, fissile, platy
710.00 to 715.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, trace of vuggy porosity
	30%	**SHALE** light to medium gray, light gray green, fissile, platy
715.00 to 720.00 (5.00)	80%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, tight
	20%	**SHALE** light to medium gray, light to medium green, fissile, platy
720.00 to 725.00 (5.00)	90%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, tight
	10%	**SHALE** light to medium gray, light to medium gray green, fissile, platy
725.00 to 730.00 (5.00)		**NO SAMPLE** Sample missed
730.00 to 735.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, light to medium gray, trace reddish, cryptocrystalline mudstone, tight
	30%	**SHALE** light to medium gray, light to medium green, trace red, fissile, platy to blocky
735.00 to 740.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, reddish brown in part, cryptocrystalline mudstone, tight, trace of Anhydrite
	30%	**SHALE** light to medium green, medium green, medium red, medium gray, fissile, predominately platy
740.00 to 745.00 (5.00)	50%	**SHALE** light to medium green, medium green, medium red brown, fissile, predominately platy
	40%	**DOLOMITE** buff to light to medium brown, reddish brown in part, cryptocrystalline mudstone, tight

740.00 to 745.00 (5.00)	10%	**ANHYDRITE** white to buff, crushed
745.00 to 750.00 (5.00)	60%	**DOLOMITE** buff to light brown, light to medium brown, medium reddish brown, cryptocrystalline mudstone, anhydritic in part, tight
	40%	**SHALE** medium green, light to medium red, dolomitic in part, fissile, platy
750.00 to 755.00 (5.00)	60%	**DOLOMITE** buff to light brown, light to medium reddish brown, medium brown, cryptocrystalline mudstone, anhydritic in part, tight, minor Anhydrite white, massive, dolomitic in part
	40%	**SHALE** light to medium green, medium green, medium red, fissile, platy
755.00 to 760.00 (5.00)	70%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, argillaceous in part, anhydritic in part, tight
	30%	**SHALE** light to medium gray, light to medium green, minor red brown, fissile, platy
760.00 to 765.00 (5.00)	60%	**SHALE** red, light to medium green, light gray green, dolomitic in part, fissile, platy to blocky
	30%	**DOLOMITE** buff to light brown, light reddish brown, light gray, cryptocrystalline mudstone, anhydritic in part, tight
	10%	**ANHYDRITE** white to buff, massive
765.00 to 770.00 (5.00)	70%	**SHALE** medium green, red, light gray green, dolomitic in part, platy to blocky
	30%	**DOLOMITE** buff to light brown, light to medium reddish brown, light gray, cryptocrystalline mudstone, anhydritic in part, tight, minor Anhydrite
770.00 to 775.00 (5.00)	80%	**SHALE** medium gray, light to medium gray green, medium red, dolomitic in part, platy to blocky
	20%	**DOLOMITE** light to medium brown, light to medium reddish brown, buff, light gray, cryptocrystalline mudstone, anhydritic in part, tight

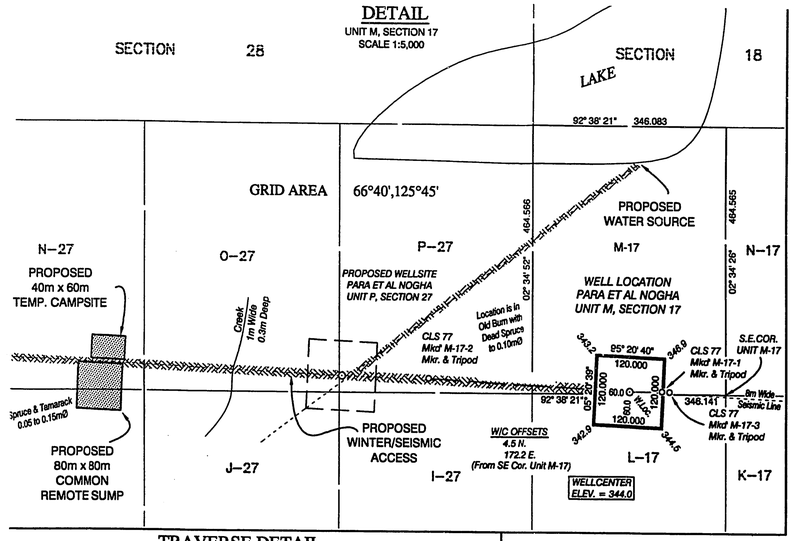
775.00 to 780.00 (5.00)	70%	**SHALE** medium red, medium green, light to medium gray green, fissile, platy to blocky, dolomitic in part
	30%	**DOLOMITE** buff to light brown, light to medium brown, light to medium reddish brown, anhydritic in part, cryptocrystalline mudstone, tight
780.00 to 785.00 (5.00)	70%	**SHALE** medium green, light gray green, medium reddish brown, platy to blocky
	30%	**DOLOMITE** light to medium brown, light reddish brown, light gray, anhydritic in part, cryptocrystalline mudstone, tight
785.00 to 790.00 (5.00)	50%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SHALE** light to medium gray, medium red brown, dolomitic in part, platy
	20%	**ANHYDRITE** white to buff, dolomitic in part, massive
790.00 to 795.00 (5.00)	80%	**DOLOMITE** white to buff, light brown, anhydritic, cryptocrystalline mudstone, tight, minor Gypsum orange , tabular crystals in part, trace of Salt
	20%	**SHALE** light to medium green, light gray, platy
795.00 to 800.00 (5.00)	40%	**SHALE** light to medium green, medium green, medium reddish brown, platy to blocky
	30%	**ANHYDRITE** white to buff, massive, minor Gypsum orange, tabular crystals
	30%	**DOLOMITE** light to medium brown, buff to light brown, cryptocrystalline mudstone, anhydritic, tight
800.00 to 805.00 (5.00)	40%	**SHALE** medium green, medium round, light to medium gray green, platy
	30%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**SALT** halite, clear to white, massive

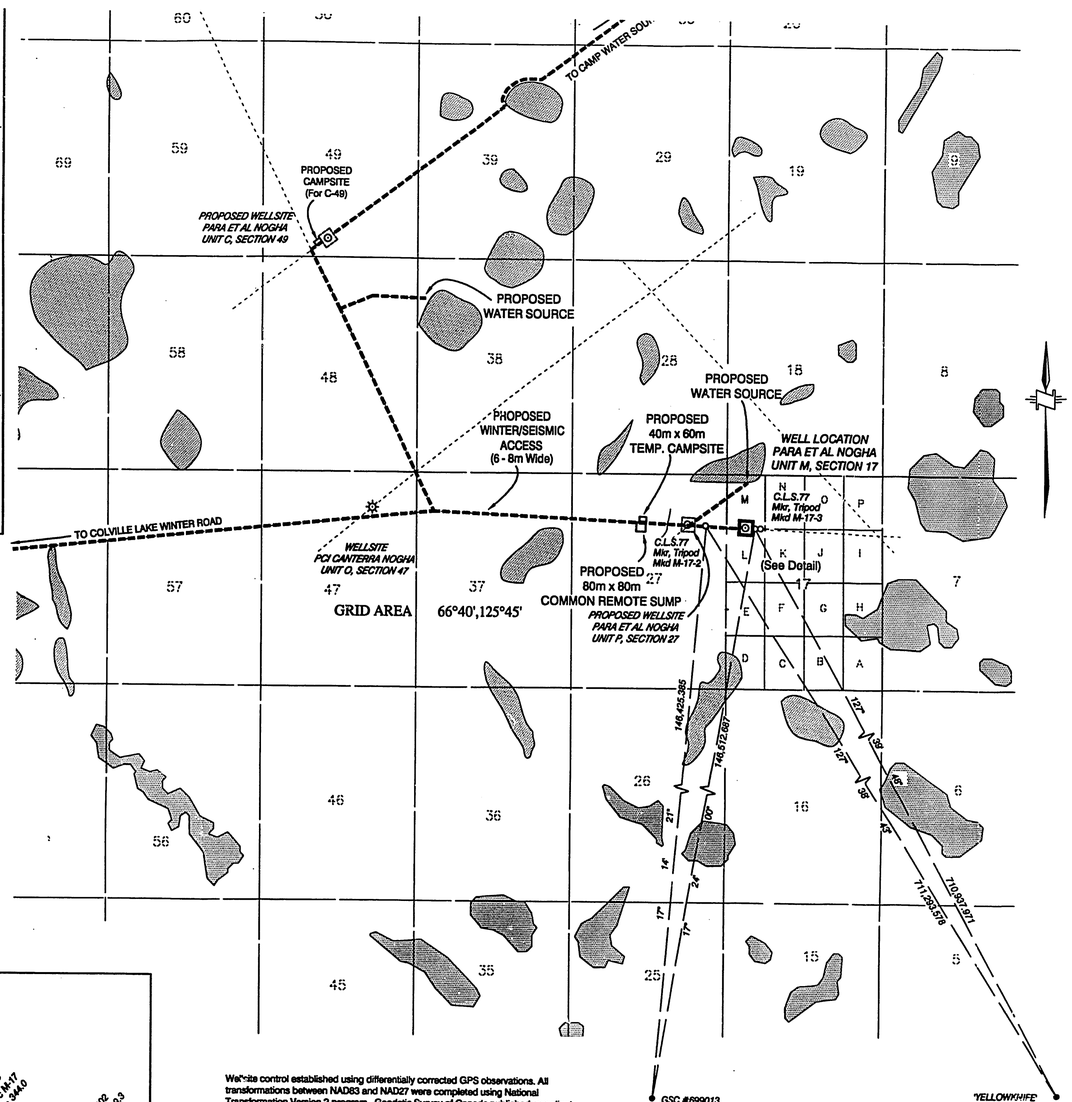
800.00 to 805.00 (5.00)	10%	**ANHYDRITE** white to buff, massive
805.00 to 810.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SHALE** medium green, medium red, light to medium green, platy
	20%	**ANHYDRITE** white to buff, massive
	20%	**SALT** halite, clear to white, massive
810.00 to 815.00 (5.00)	40%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, medium red, light gray green, platy
	20%	**SALT** halite, translucent to white, light yellow, massive
815.00 to 820.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, light to medium gray green, light to medium red, platy
	10%	**ANHYDRITE** white to buff, massive
820.00 to 825.00 (5.00)	40%	**DOLOMITE** light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** clear to translucent, white, massive
	30%	**SHALE** medium green, light to medium gray green, minor reddish brown, platy
825.00 to 830.00 (5.00)	40%	**DOLOMITE** buff to light brown, light to medium brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** medium green, light to medium gray green, platy
	20%	**SALT** halite, clear to white, massive

830.00 to 835.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow brown, massive
835.00 to 840.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive, minor light green Shale
840.00 to 845.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
845.00 to 850.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
850.00 to 855.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
855.00 to 860.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
860.00 to 865.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
865.00 to 870.00 (5.00)	100% **SALT** clear to translucent, white, massive, trace of Shale light gray green, platy
870.00 to 875.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
875.00 to 880.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
880.00 to 885.00 (5.00)	100% **SALT** halite, clear to translucent, white, minor light yellow orange, massive
885.00 to 890.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
890.00 to 895.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
895.00 to 900.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
900.00 to 905.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
905.00 to 910.00 (5.00)	100% **SALT** halite, clear to translucent, white, light yellow orange, massive
910.00 to 915.00 (5.00)	70% **SHALE** light green, light gray green, soft, platy

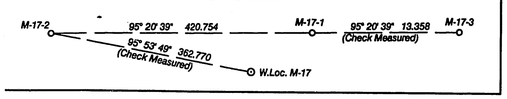
910.00 to 915.00 (5.00)	30%	**SALT** halite, clear to translucent, white, light yellow orange, massive
915.00 to 920.00 (5.00)	40%	**DOLOMITE** buff -lt brown, cryptocrystalline mudstone, anhydritic, tight
	40%	**SHALE** light green, light gray green, soft, platy
	20%	**SALT** halite, clear to translucent, white, light yellow orange, massive
920.00 to 925.00 (5.00)	40%	**SHALE** light green, light gray green, soft, platy
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**ANHYDRITE** white to buff, light brown dolomitic
	10%	**SALT** halite, clear to translucent, white, light yellow orange, massive
925.00 to 930.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** halite, clear to translucent, white, light yellow orange, massive
	30%	**SHALE** light green, light gray green, platy
	10%	**ANHYDRITE** buff to light brown dolomitic
930.00 to 935.00 (5.00)	80%	**SALT** halite, clear to translucent, white, light yellow orange, massive
	20%	**SHALE** light green, light gray green, medium gray green soft, platy
935.00 to 940.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive, minor Shale light gray green, platy
940.00 to 945.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive, trace of Shale light gray green
945.00 to 950.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive

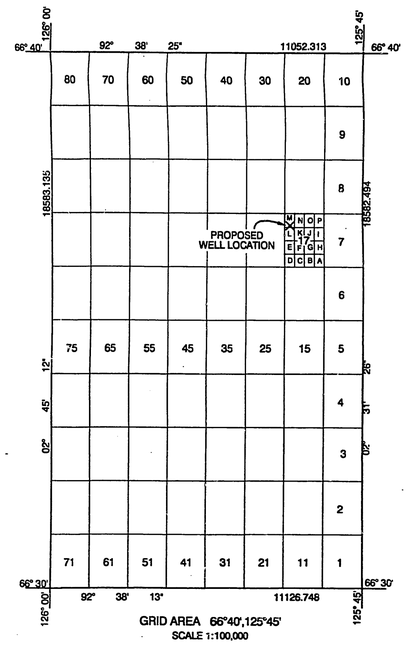
950.00 to 955.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
955.00 to 960.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive, trace of Shale light green, platy
960.00 to 965.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
965.00 to 970.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
970.00 to 975.00 (5.00)	100%	**SALT** halite, translucent to white, massive
975.00 to 980.00 (5.00)	100%	**SALT** halite, translucent to white, massive
980.00 to 985.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
985.00 to 990.00 (5.00)	50%	**SALT** halite, clear to translucent, white, light yellow orange, massive
	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	10%	**ANHYDRITE** white to buff, dolomitic
990.00 to 995.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
995.00 to 1,000.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
1,000.00 to 1,005.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
1,005.00 to 1,010.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
1,010.00 to 1,015.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
1,015.00 to 1,020.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive
1,020.00 to 1,025.00 (5.00)	100%	**SALT** halite, clear to translucent, white, light yellow orange, massive



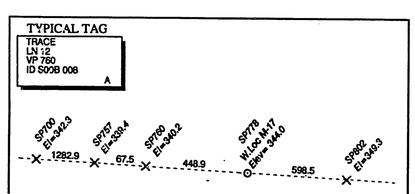


TRAVERSE DETAIL
NOT TO SCALE





TYPICAL TAG



SHOT POINT DETAIL
NOT TO SCALE

AREAS REQUIRED:

WELLSITE:	120m x 120m =	1.44 ha.
COMMON REMOTE SUMP:	80m x 80m =	0.64 ha.
CAMPSITE:	40m x 60m =	0.24 ha.
TOTAL:		2.32 ha.

Wellsite control established using differentially corrected GPS observations. All transformations between NAD83 and NAD27 were completed using National Transformation Version 2 program. Geodetic Survey of Canada published coordinate values for monument 'Yellowknife A.C.P. No.'889201' were held fixed. Adjusted values for monument 'Geodetic Survey of Canada Monument No.699013' and comparison to published coordinates are shown below.

GEOGRAPHIC AND UTM COORDINATES, (1983 NAD)

Station	Latitude(N)	Longitude(W)	Northings	Eastings	Elev.
CONTROL MONUMENTS					
"YELLOWKNIFE" GSC#889201(Pub/Fixed)	62° 28' 51.195"	114° 28' 50.446"	6956724.226	938239.160	207.922
M-17-1 (Adj.)	66° 36' 45.746"	125° 48' 33.270"	7391006.761	375696.652	345.89
M-17-2 (Adj.)	66° 36' 46.400"	125° 49' 07.411"	7391045.939	375179.838	341.58
GSC#699013 (Adj.)	65° 20' 26.050"	126° 36' 52.302"	7251235.428	331796.864	976.054
GSC#699013 (Pub)	65° 20' 26.050"	126° 36' 52.334"	7251235.295	331796.446	976.401
PROPOSED WELL					
M-17	66° 36' 45.723"	125° 48' 37.990"	7391006.678	375540.593	344.0
TRAVERSE STATIONS					
M-17-3	66° 36' 45.725"	125° 48' 32.187"	7391005.517	375611.948	345.95

GRID AREA 66°40' , 125° 45' - GEOGRAPHIC AND UTM COORDINATES, (1927 NAD)

NE	66° 40' 00"	125° 45' 00"	7396712.619	378480.533
NW	66° 40' 00"	126° 00' 00"	7397221.735	367439.952
SW	66° 30' 00"	126° 00' 00"	7378660.052	366547.294
SE	66° 30' 00"	125° 45' 00"	7378148.150	377662.260
M - 17, N.E.			7391254.830	375815.042
M - 17, N.W.			7391270.766	375469.327
M - 17, S.W.			7390806.572	375448.405
M - 17, S.E.			7390790.734	375794.179
PROPOSED WELL				
M-17	66° 36' 45.274"	125° 48' 30.860"	7390803.114	375622.366

LEGEND

UTM coordinates are computed for Zone 10, Central Meridian 123°W. Bearings were derived from differentially corrected GPS Observations, and are referred to meridian 123° W.

Distances are expressed in metres and decimals thereof.

Distances shown in traverse are measured distances reduced to the horizontal at general ground level.

For the computation of coordinates measured distances have been reduced to the UTM plane by multiplying them by an average combined scale factor of 0.9997357

Distances shown on grid area subdivisions are UTM plane, NAD27 Datum. All other dimensions are based on NAD83 datum.

Control monuments found ..... ●
Monuments placed ..... ○
Mkr. denotes metal marker post 2.0m long placed 0.30m away from Post.

Elevations were derived from Geodetic Survey of Canada Acitve Control Point 'Yellowknife' No. 889201 Elev. = 207.922m. (Geoid Separation: HT2000)

Survey was completed prior to drilling; therefore well as drilled may not necessarily agree with proposed location.

PLAN AND FIELD NOTES

OF SURVEY OF

PROPOSED EXPLORATORY WELL

PARA ET AL NOGHA

IN UNIT M, SECTION 17

GRID AREA 66° 40' , 125° 45'

NORTHWEST TERRITORIES

CANADA OIL AND GAS LAND REGULATIONS
EXPLORATORY WELL, SAHPU SETTLEMENT LANDS, BLOCK M17.

SCALE 1:25,000

500m 250 0m 500 1000 1500 2000m

SURVEYED FOR

PARAMOUNT RESOURCES LTD.

BY: W.V. JOHNSON, CLS
SEPT. & OCT. 2001.

THIS SURVEY WAS EXECUTED DURING THE PERIOD OF September 24th to October 2nd., 2001.

Certified Correct and completed on the 9th. day of October, 2001.

Canada Lands Surveyor

W.V. Johnson
Comm. No. 1393

PARAMOUNT RESOURCES LTD.

WITNESS

DATE

REV.No.	DESCRIPTION	DATE

McElhanney LAND SURVEYS LTD.
PROFESSIONAL LAND SURVEYORS
10012 - 97th Ave.
Fort St. John, British Columbia
Phone:(250)787-0356, Fax:(250)787-0310

DATE: 01/10/08 JOB No.: 3111-09554WS RH BAR

20X

1,025.00 to 1,030.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,030.00 to 1,035.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,035.00 to 1,040.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,040.00 to 1,045.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,045.00 to 1,050.00 (5.00) 100% **SALT**
halite, clear to translucent, white, light yellow orange, massive

1,050.00 to 1,055.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,055.00 to 1,060.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,060.00 to 1,065.00 (5.00) 100% **SALT**
halite, clear to white, massive

1,065.00 to 1,070.00 (5.00) 100% **SALT**
halite, clear to white, light yellow orange, massive

1,070.00 to 1,075.00 (5.00) 40% **DOLOMITE**
buff to light brown, cryptocrystalline mudstone, anhydritic, tight

30% **SHALE**
light to medium green, medium gray green, medium green, platy

20% **ANHYDRITE**
white to buff, dolomitic, massive

10% **SALT**
halite, clry to white, massive

1,075.00 to 1,080.00 (5.00) 50% **DOLOMITE**
buff to light brown, light gray, cryptocrystalline mudstone, anhydritic, trace of pin point porosity

20% **ANHYDRITE**
white to buff, light brown, dolomitic in part, massive

20% **SHALE**
light to medium green, light gray green, medium red, platy

10% **SALT**
halite, clear to white, massive

1,080.00 to 1,085.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, anhydritic, tight
	30%	**SALT** halite, clear to white, massive
	20%	**SHALE** light to medium green, medium green, light gray green, platy
1,085.00 to 1,090.00 (5.00)	60%	**SALT** halite, clear to white, massive
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic, tight
	20%	**SHALE** light gray green, light to medium green, platy
1,090.00 to 1,095.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, tight
	20%	**ANHYDRITE** buff to light brown, dolomitic in part, massive
	20%	**SHALE** light gray green, medium green, platy
	10%	**SALT** halite, clear to white, massive
1,095.00 to 1,100.00 (5.00)	50%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone. anhydritic, tight
	20%	**ANHYDRITE** white to buff, dolomitic in part, massive
	20%	**SALT** halite, clear to white, massive
	10%	**SHALE** light green, medium gray green, platy
1,100.00 to 1,105.00 (5.00)	70%	**SALT** halite, clear to white, massive
	30%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, anhydritic, tight
1,105.00 to 1,110.00 (5.00)	100%	**SALT** halite, clear to white, massive, minor Dolomite as above

1,110.00 to 1,115.00 (5.00)	100%	**SALT** halite, clear to white, massive
1,115.00 to 1,120.00 (5.00)	50%	**SALT** halite, clear to white, massive
	30%	**SHALE** light to medium gray, dolomitic, platy
	20%	**DOLOMITE** buff to light gray, argillaceous in part, cryptocrystalline mudstone, tight
1,120.00 to 1,125.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** medium gray, light to medium gray, fissile, platy
	10%	**DOLOMITE** white to light gray, light brown, cryptocrystalline mudstone, tight
1,125.00 to 1,130.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** light gray, medium gray, platy
	10%	**DOLOMITE** buff to light gray, cryptocrystalline mudstone, tight
1,130.00 to 1,135.00 (5.00)	70%	**SALT** halite, clear to white, massive
	20%	**SHALE** medium gray, light gray, dolomitic, platy to blocky
	10%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, tight
1,135.00 to 1,140.00 (5.00)	40%	**SHALE** medium gray, light gray, light gray green, dolomitic in part, platy to blocky
	30%	**DOLOMITE** buff to light gray, light brown, cryptocrystalline mudstone, tight
	30%	**SALT** halite, clear to white, massive
1,140.00 to 1,145.00 (5.00)	90%	**SALT** halite, clear to white, massive

1,140.00 to 1,145.00 (5.00)	10%	**SHALE** light to medium gray, medium gray green, platy
1,145.00 to 1,150.00 (5.00)	40%	**SALT** halite, clear to white, massive
	30%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, tight
	30%	**SHALE** medium gray, light to medium green, light gray green, fissile, platy
1,150.00 to 1,155.00 (5.00)	40%	**SALT** halite, clear, finely crystalline
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
	30%	**SHALE** medium gray, light gray green, fissile, platy
1,155.00 to 1,160.00 (5.00)	50%	**SHALE** light gray, medium gray, lower to medium gray green, fissile, platy
	30%	**SILTSTONE** buff to light brown, quartzose, dolomitic matrix, sandy in part, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
1,160.00 to 1,165.00 (5.00)	70%	**SHALE** light to medium gray, medium gray, light brown, light gray green, fissile,platy
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,165.00 to 1,170.00 (5.00)	50%	**DOLOMITE** buff to light brown, light gray, cryptocrystalline mudstone, slightly argillaceous, silty in part, tight
	40%	**SHALE** medium gray, light to medium gray, light brown, predominately platy
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight

1,170.00 to 1,175.00 (5.00)	40%	**DOLOMITE** buff to light brown, light gray brown, cryptocrystalline mudstone, silty in part, tight
	40%	**SHALE** light to medium gray, medium gray, light gray brown, predominately platy
	20%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,175.00 to 1,180.00 (5.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, silty in part, tight
	30%	**LIMESTONE** medium to dark brown, argillaceous, cryptocrystalline mudstone, tight
	30%	**SHALE** light gray, light to medium gray, light gray green, platy
	10%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,180.00 to 1,182.00 (2.00)	80%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, anhydritic in part, tight
	20%	**SHALE** light gray, light to medium brown, platy
1,182.00 to 1,184.00 (2.00)	60%	**SHALE** light gray, light to medium brown, platy
	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, anhydritic in part, tight
	10%	**ANHYDRITE** white to buff, massive
1,184.00 to 1,186.00 (2.00)	60%	**DOLOMITE** white to buff, light brown, cryptocrystalline mudstone, medium brown argillaceous in part, anhydritic in part, tight
	30%	**SHALE** light to medium gray green, medium gray, fissile, platy
	10%	**ANHYDRITE** white to buff, massive
1,186.00 to 1,188.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, no visible porosity, minor Chert mottled light to dark brown, coarse angular fragments, probable fracture

1,186.00 to 1,188.00 (2.00)	30%	**LIMESTONE** medium brown, cryptocrystalline mudstone, tight
	20%	**SHALE** light to medium gray, dark brown laminar, fissile, platy
	10%	**SILTSTONE** buff to light brown, quartzose, dolomite matrix, tight
1,188.00 to 1,190.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous in part, tight
	30%	**SHALE** light to medium gray, light gray green, fissile, platy
	30%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,190.00 to 1,192.00 (2.00)	30%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, argillaceous, tight
	30%	**SHALE** light to medium gray green, light gray, fissile, platy
	20%	**CHERT** variegated, white to dark brown, massive, conchoidal fracture
	20%	**SILTSTONE** light brown, quartzose, dolomite matrix, tight
1,192.00 to 1,194.00 (2.00)	40%	**CHERT** variegated, translucent to dark brown, coarse angular, conchoidal fracture
	40%	**DOLOMITE** buff to light brown, slightly argillaceous, cryptocrystalline mudstone, tight, minor light brown, very finely crystalline sucrosic packstone, no stain, no fluorescence, streaks of intercrystalline to moldic porosity to 18%, probable fractures
	20%	**SHALE** light to medium gray green, fissile, platy
1,194.00 to 1,196.00 (2.00)	40%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	20%	**CHERT** as above
1,196.00 to 1,200.00 (4.00)	70%	**NO SAMPLE** mud, added salt

1,196.00 to 1,200.00 (4.00)	20%	**SHALE** medium gray, light to medium gray, silty
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, tight
1,200.00 to 1,205.00 (5.00)	60%	**NO SAMPLE** mud, added salt
	30%	**SHALE** light to medium gray green, light gray, fissile, platy
	10%	**DOLOMITE** buff to light brown, medium brown, cryptocrystalline mudstone, argillaceous in part, trace of nodular Chert
1,205.00 to 1,210.00 (5.00)	70%	**NO SAMPLE** added salt, mud
	20%	**DOLOMITE** buff to light brown, medium brown argillaceous, cryptocrystalline mudstone, tight, trace of nodular Chert
	20%	**SHALE** medium gray, light to medium gray green, dark gray, platy
1,210.00 to 1,215.00 (5.00)	60%	**NO SAMPLE** mud, added salt
	30%	**SHALE** light to medium gray, medium gray, fissile, platy
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, slightly argillaceous, tight, trace of Chert fragments
1,215.00 to 1,220.00 (5.00)	50%	**SHALE** light to medium gray green, medium gray, fissile, platy
	30%	**LIMESTONE** buff to light brown, medium brown, mottled medium to dark brown in part, cryptocrystalline mudstone, tight, trace of Chert fragments
	20%	**NO SAMPLE** mud, added salt
1,220.00 to 1,225.00 (5.00)	60%	**SHALE** light to medium gray, light gray green, medium gray, fissile, platy
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, minor Chert, dark brown fragments

1,220.00 to 1,225.00 (5.00)	20%	**LIMESTONE** buff to light brown, medium brown argillaceous, cryptocrystalline mudstone, tight
1,225.00 to 1,230.00 (5.00)	80%	**SHALE** medium gray, medium to dark gray, light gray green, fissile, platy
	20%	**LIMESTONE** buff to light brown, light to medium gray, medium brown, cryptocrystalline mudstone, argillaceous in part, tight
1,230.00 to 1,235.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, fissile, platy, minor LIMESTONE as above
1,235.00 to 1,240.00 (5.00)	80%	**SHALE** medium gray, light to medium gray, fissile, platy
	20%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,240.00 to 1,245.00 (5.00)	70%	**SHALE** medium gray, light to medium gray, fissile, platy
	30%	**LIMESTONE** buff to light brown, light to medium gray, argillaceous in part, tight
1,245.00 to 1,250.00 (5.00)	40%	**NO SAMPLE** mud, salt additive
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	20%	**LIMESTONE** light gray, buff to light brown, argillaceous in part, cryptocrystalline mudstone, tight
1,250.00 to 1,255.00 (5.00)	80%	**SHALE** medium gray, light to medium gray, fissile, platy
	20%	**LIMESTONE** light gray, buff to light brown, cryptocrystalline mudstone, argillaceous in part, tight
1,255.00 to 1,260.00 (5.00)	50%	**NO SAMPLE** mud, salt additive
	40%	**SHALE** medium gray, light to medium gray, light gray green, fissile, platy
	10%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,260.00 to 1,265.00 (5.00)	60%	**SHALE** medium gray, light gray, medium gray brown, fissile, platy

1,260.00 to 1,265.00 (5.00)	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, scattered Chert fragments, common cavings
	20%	**LIMESTONE** buff to light brown, light gray, cryptocrystalline mudstone, argillaceous in part, tight
1,265.00 to 1,270.00 (5.00)	60%	**SHALE** medium gray, light to medium gray green, medium to dark gray,, fissile, platy
	30%	**NO SAMPLE** mud, added salt
	10%	**DOLOMITE** as above
1,270.00 to 1,275.00 (5.00)	100%	**SHALE** medium gray, light to medium gray, medium to dark gray, fissile, platy
1,275.00 to 1,280.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium to dark gray, fissile, platy
1,280.00 to 1,285.00 (5.00)	80%	**SHALE** medium to dark gray, medium gray green, fissile, platy, minor Dolomite light gray bn, argillaceous, cryptocrystalline mudstone, tight
	20%	**NO SAMPLE** clobbered mud
1,285.00 to 1,290.00 (5.00)	80%	**SHALE** medium to dark gray, medium gray green, fissile, platy, minor Dolomite light gray bn, argillaceous, cryptocrystalline mudstone, tight
	20%	**NO SAMPLE** clobbered mud
1,290.00 to 1,295.00 (5.00)	100%	**SHALE** medium gray, medium gray green, medium to dark gray, calcareous in part, fissile, platy to blocky
1,295.00 to 1,300.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium brown calcareous, fissile, platy to blocky
1,300.00 to 1,305.00 (5.00)	100%	**SHALE** medium gray, light to medium gray green, medium brown calcareous, fissile, platy to blocky
1,305.00 to 1,310.00 (5.00)	70%	**SHALE** medium gray, dark gray, light gray calcareous, occasionally slickensided, trace of nodular pyrite, fissile, platy to blocky

1,305.00 to 1,310.00 (5.00)	30%	**LIMESTONE** buff to light gray, light to medium gray, very silty in part, very argillaceous in part, cryptocrystalline mudstone, no stain, no fluorescence, slight petroliferous odor, no visible porosity, scattered Chert fragments, probable fracture porosity
1,310.00 to 1,315.00 (5.00)	60%	**SHALE** medium gray, dark gray, light gray calcareous, occasional calcite veining, nodular and disseminated pyrite, fissile, platy to blocky
	40%	**LIMESTONE** buff to light gray, light to medium gray, very silty in part, very argillaceous in part, cryptocrystalline mudstone, no stain, no fluorescence, scattered Chert fragments, probable fracture porosity
1,315.00 to 1,320.00 (5.00)	80%	**SHALE** medium gray, dark gray, calcareous in part, occasionally slickensided, fissile, blocky to platy, minor disseminated pyrite
	20%	**LIMESTONE** light gray, light brown, silty, argillaceous, cryptocrystalline mudstone, tight
1,320.00 to 1,325.00 (5.00)	80%	**SHALE** medium gray, dark gray, calcareous in part, fissile, platy to blocky, nodular and disseminated pyrite
	10%	**DOLOMITE** buff to light brown, cryptocrystalline to microcrystalline, mudstone, argillaceous in part, tight
	10%	**LIMESTONE** light gray, light brown, dark brown, argillaceous, cryptocrystalline mudstone, tight
1,325.00 to 1,330.00 (5.00)	60%	**SHALE** medium gray, dark gray, light to medium gray green, fissile, platy to blocky
	40%	**LIMESTONE** buff to light brown, light to medium brown, light gray, cryptocrystalline mudstone, silty in part, tight
1,330.00 to 1,335.00 (5.00)	70%	**SHALE** medium gray, light to medium gray green, calcareous in part, fissile, platy to blocky
	30%	**DOLOMITE** buff to light brown, cryptocrystalline to microcrystalline, predominately mudstone, tight
1,335.00 to 1,340.00 (5.00)	40%	**SHALE** light to medium gray green, medium gray, fissile, platy
	30%	**DOLOMITE** buff to light brown, silty to sandy, cryptocrystalline mudstone, tight

1,335.00 to 1,340.00 (5.00)	20%	**SANDSTONE** buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability
	10%	**SILTSTONE** buff to light brown, quartzose, sandy, dolomite matrix, tight
1,340.00 to 1,345.00 (5.00)	30%	**SANDSTONE** buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomite cement to matrix, minor siliceous cement, trace speckled glauconitic, spotty dead oil stain, occasional intergranular bitumen, no fluorescence, very patchy intergranular porosity 6-10%, very low permeability
	30%	**SILTSTONE** buff to light brown, sandy, dolomite matrix, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline to microcrystalline, tight
	20%	**SHALE** medium gray, light to medium gray green, fissile, platy
1,345.00 to 1,350.00 (5.00)	40%	**SILTSTONE** buff to light brown, light to medium gray, argillaceous, sandy, dolomitic cement to matrix, tight
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, calcareous, argillaceous in part, tight
	20%	**SANDSTONE** buff to light brown, quartzose, silty to very fine grained, angular, well sorted, dolomitic cement to matrix, no stain, no fluorescence, no visible porosity
	20%	**SHALE** medium gray, light to medium gray green, fissile, platy
1,350.00 to 1,355.00 (5.00)	50%	**SHALE** medium gray, medium gray silty, light to medium gray green, fissile, platy to blocky
	20%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, silty, tight
	20%	**SILTSTONE** light to medium gray, light brown, argillaceous, dolomitic, tight
	10%	**SANDSTONE** as above

1,355.00 to 1,360.00 (5.00)	90%	**SHALE** medium gray, light to medium gray green, silty in part, fissile, platy to blocky
	10%	**DOLOMITE** buff to light brown, cryptocrystalline mudstone, silty in part, tight
1,360.00 to 1,365.00 (5.00)	80%	**SHALE** medium gray, light to medium gray green, micromicaceous in part, silty in part, fissile, platy to blocky
	10%	**DOLOMITE** as above
	10%	**SILTSTONE** light brown dolomitic, light to medium gray argillaceous, sandy in part, tight
1,365.00 to 1,370.00 (5.00)	90%	**SHALE** medium gray, medium gray green, light to medium gray, micromicaceous in part, fissile, predominately platy
	10%	**DOLOMITE** light to medium brown, cryptocrystalline mudstone, tight
1,370.00 to 1,375.00 (5.00)	60%	**SHALE** medium gray, medium gray green, fissile, platy
	40%	**DOLOMITE** buff to light brown, dark brown argillaceous in part, cryptocrystalline to finely crystalline, mudstone to wackestone, no stain, no fluorescence, scattered pin point porosity 2-3%
1,375.00 to 1,380.00 (5.00)	50%	**DOLOMITE** buff to light brown, medium to dark brown, cryptocrystalline to medium crystalline, mudstone to wackestone, minor packstone, no stain, no fluorescence, trace of pin point porosity
	30%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, platy to blocky
	20%	**SILTSTONE** light gray, quartzose, dolomite matrix, common scattered coarse glauconite pellets, slightly sandy, tight
1,380.00 to 1,385.00 (5.00)	40%	**DOLOMITE** medium to dark brown, buff to light brown, cryptocrystalline to medium crystalline, mudstone to wackestone, trace of pin point porosity
	40%	**SILTSTONE** light gray, quartzose, dolomitic matrix, sandy, scattered coarse rounded glauconite pellets, tight

1,380.00 to 1,385.00 (5.00)	20%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
1,385.00 to 1,390.00 (5.00)	70%	**DOLOMITE** medium to dark brown, buff to light brown, cryptocrystalline to finely crystalline, mudstone to wackestone, minor packstone, tight
	20%	**SILTSTONE** light gray, quartzose, dolomite matrix, scattered glauconite pellets, tight
	10%	**SHALE** medium gray, light to medium gray, silty in part, fissile, platy to blocky
1,390.00 to 1,392.00 (2.00)	70%	**DOLOMITE** light to medium brown, medium to dark brown, buff, cryptocrystalline to finely crystalline, mudstone to wackestone, slightly argillaceous in part, tight
	20%	**SILTSTONE** light gray, quartzose, medium gray argillaceous, sandy in part, dolomitic cement to matrix, tight
	10%	**SHALE** medium gray, medium to dark gray, fissile, platy
1,392.00 to 1,394.00 (2.00)	80%	**DOLOMITE** light to medium brown, medium to dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, slightly argillaceous in part, tight
	20%	**SILTSTONE** quartzose, light gray, medium gray argillaceous, sandy in part, dolomite matrix, occasional glauconite pellets, tight
1,394.00 to 1,396.00 (2.00)	60%	**DOLOMITE** light to medium brown, dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	20%	**SHALE** medium gray, dark gray, fissile, platy
	20%	**SILTSTONE** light gray, quartzose, dolomitic cement to matrix, scattered glauconite pellets, tight
1,396.00 to 1,398.00 (2.00)	30%	**DOLOMITE** medium brown, dark brown, light to medium brown, cryptocrystalline to finely crystalline, mudstone to wackestone, silty in part, , tight
	30%	**SANDSTONE** white to light gray, quartzose, predominately silty to medium grained, scattered coarse rounded quartz,subangular, medium sorted, firm to friable, siliceous cement, slightly dolomitic, common clay laminae, no stain, no fluorescence, no visible porosity

1,396.00 to 1,398.00 (2.00)	20%	**SHALE** medium gray, dark gray, fissile, platy
	20%	**SILTSTONE** light gray, quartzose, speckled glauconitic, dolomitic, argillaceous in part, tight
1,398.00 to 1,400.00 (2.00)	60%	**SANDSTONE** white to light gray, quartzose, predominately silty to medium grained, scattered coarse rounded quartz,subangular, medium sorted, firm to friable, siliceous cement, slightly dolomitic, common clay laminae, no stain, no fluorescence, no visible porosity
	20%	**DOLOMITE** medium brown, dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	10%	**SHALE** medium gray, dark gray, fissile, platy
	10%	**SILTSTONE** as above
1,400.00 to 1,402.00 (2.00)	70%	**SANDSTONE** light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability
	20%	**DOLOMITE** as above
	10%	**SILTSTONE** as above
1,402.00 to 1,404.00 (2.00)	80%	**SANDSTONE** light gray bn, quartzose, very fine to fine grained, subangular to subround, medium to well sorted, firm to friable, siliceous cement, slightly dolomitic, minor intergranular bitumen, no stain, no fluorescence, streaks of intergranular porosity 4-8%, low permeability
	10%	**DOLOMITE** medium to dark brown, cryptocrystalline to finely crystalline, mudstone to wackestone, tight
	10%	**SILTSTONE** light gray, quartzose, siliceous cement, dolomitic in part, tight
1,404.00 to 1,406.00 (2.00)	40%	**SANDSTONE** as above
	30%	**SHALE** light gray green, medium gray, fissile, platy

1,404.00 to 1,406.00 (2.00)	30%	**SILTSTONE** white to buff, light gray, quartzose, sandy, siliceous cement, dolomitic in part, tight
1,406.00 to 1,408.00 (2.00)	40%	**SHALE** medium gray, light to medium gray green, fissile, platy
	30%	**DOLOMITE** medium to dark brown, finely crystalline, wackestone, glauconite in part, tight
	30%	**SANDSTONE** as above
1,408.00 to 1,410.00 (2.00)	30%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
	30%	**SILTSTONE** white to buff, quartzose, firm, siliceous cement, sandy in part, tight
	20%	**DOLOMITE** as above
	20%	**SANDSTONE** light gray white, quartzose, silty to medium grained, subangular to subround, firm, siliceous cement, no stain, no fluorescence, scattered pin point porosity 2-3%
1,410.00 to 1,412.00 (2.00)	40%	**SHALE** medium gray, medium to dark gray, silty in part, fissile, blocky to platy
	40%	**SILTSTONE** light gray, medium gray, quartzose, siliceous cement, argillaceous in part, tight
	20%	**SANDSTONE** as above
1,412.00 to 1,414.00 (2.00)	60%	**SANDSTONE** light gray white, quartzose, very fine to coarse grained, subangular to subround, rounded in part, firm to very friable, siliceous cement, clay infilling to laminae in part, no stain, no fluorescence, patchy intergranular porosity to 14%
	30%	**SHALE** medium gray, dark gray, silty in part, fissile, blocky to platy
	10%	**SILTSTONE** light gray white, quartzose, light gray argillaceous, siliceous cement, tight
1,414.00 to 1,416.00 (2.00)	70%	**SANDSTONE** light gray white, light reddish brown, very fine to medium grained, subangular to subround, rounded in part, firm to friable, siliceous cement, poorly indurated in part, patchy clay infilling to laminae, no stain, no fluorescence, patchy intergranular porosity to 14%

1,414.00 to 1,416.00 (2.00)	20%	**SHALE** medium gray, dark gray, silty in part, fissile, platy to blocky
	10%	**SILTSTONE** as above
1,416.00 to 1,418.00 (2.00)	80%	**SANDSTONE** light gray white, light reddish brown, very fine to medium grained, subangular to subround, rounded in part, firm to friable, siliceous cement, poorly indurated in part, patchy clay infilling to laminae, no stain, no fluorescence, patchy intergranular porosity to 14%
	20%	**SHALE** medium gray, dark gray, medium gray silty, fissile, platy to blocky
1,418.00 to 1,420.00 (2.00)	80%	**SANDSTONE** light gray white, light to medium reddish orange, very fine to medium grained, subangular to subround, medium to well sorted, firm, well indurated with siliceous cement, no stain, trace of intergranular bitumen, no fluorescence, no visible porosity
	10%	**BASALT** gray to red, firm to hard, fine groundmass, porphyritic
	10%	**SHALE** medium green, fissile, platy
1,420.00 to 1,425.00 (5.00)	40%	**BASALT** gray to reddish brown, firm to hard, fine groundmass, porphyritic
	40%	**SANDSTONE** as above
	20%	**SHALE** medium green, fissile, platy
1,425.00 to 1,430.00 (5.00)	80%	**BASALT** gray to reddish brown, firm to hard, fine groundmass, porphyritic
	20%	**SANDSTONE** as above, cavings
1,430.00 to 1,435.00 (5.00)	100%	**BASALT** gray to reddish brown, gray green, firm to hard, fine groundmass, porphyritic, minor vesicular dolomite, common cavings
1,435.00 to 1,440.00 (5.00)	100%	**BASALT** gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,440.00 to 1,445.00 (5.00) 100% **BASALT**
gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,445.00 to 1,450.00 (5.00) 100% **BASALT**
gray, red brown, firm to hard, fine groundmass, porphyritic

1,450.00 to 1,455.00 (5.00) 100% **BASALT**
gray, reddish brown, gray green, firm to hard, fine groundmass, porphyritic in part, common cavings

1,455.00 to 1,460.00 (5.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

1,460.00 to 1,465.00 (5.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

1,465.00 to 1,471.00 (6.00) 100% **BASALT**
gray, red bn, gray green, purple, firm to hard, fine groundmass, porphyritic, Shale cavings

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Well Information

Operator: Paramount Resources Ltd.
Well Name: Paramount Apache Nogha M-17
Location: 66° 36' 45.242" N / 125° 48' 36.680" W
UWI: 300M176640125450
Pool: Mount Clarke
Field: Nogha
Province / State: Northwest Territories
Country: Canada

1 789 423 5276
C.L. Devin Holdings Ltd.
No Logical Conclusion

Elevations

Reference: Ground: 350 m
Cut(+) / Fill(-): 4.6 m Kelly Bushing: 354.6 m
K.B. to Ground: 4.6 m Casing Flange: m

Total Depth

Measurement Type	Measured Depth	True Vertical Depth
Drillers TD (Tally)	1471 m	1470.56 m
Drillers TD (Strap or SLM)	1470.6 m	1470.16 m
Loggers TD	1471.0 m	1471.06 m

Surface Co - Ordinates

Well Type: Straight Longitude: 125.483068 Latitude: 66.3645242
N / S Co - Ordinates:
E / W Co - Ordinates:

Bottom Hole Co - Ordinates

Longitude: Latitude:
N / S Co - Ordinates:
E / W Co - Ordinates:

Drilling Fluid Summary

Fluid Type	From	To
Gel Chem / LCM	0 m	500 m
Salt saturated Gel Chem	500 m	1471 m

Casing Summary

Type	Hole Size	Casing Size	Landed At
Conductor	444 mm	339.7 mm	80 m
Surface	311 mm	244.5 mm	499 m

Well Summary

Spud Date: Feb 25, 2003 @ 09:45hrs Contractor: Nabors Drilling Rig 62
TD Date: Mar 18, 2003 @ 01:00hrs Rig Release Date:

Work Schedule

Contractor	Geologist	Log Interval	Dates Logged
C. L. Bredin Holdings Ltd.	Colin Bredin P.Geol	500 m - 1471 m	Mar 7, 2003 - Mar 20, 3002

Remarks

Legend

Rock Types and Thin Beds

Whole Bed | Stringer | Nodule | Breccia | Clast | Pebble | Grain | Rock Type

Anhydrite - primary
Anhydrite - secondary
Argillite
Barite
Bentonite
Breccia
Calcareous
Carnotite
Conglomerate - mixed
Conglomerate - dark chert
Conglomerate - light chert
Conglomerate - undifferentiated chert
Chalk
Chert - bedded/nodular
Chert - light
Chert - lithoclitic
Chert - undifferentiated
Claystone - colored
Claystone - grey
Coal
Dolomite
Ferruginous
Feldspar
Gypsum
Igneous - acidic
Igneous - basic
Igneous - metamorphic
Limestone - grain supported
Limestone - mud supported
Manganese
Marlstone - calcareous
Marlstone - dolomitic
Mudstone
Pyrite
Quartz
Salt
Shale - black
Shale - dark grey
Shale - medium grey
Shale - light grey
Shale - green
Shale - red
Siderite
Sandstone
Siltstone
Till - glacial
Volcanic (Tuff)
Welded Volcanics (Tuff)

Accessories

Anhydritic
Argillaceous
Barite
Bentonitic
Bituminous
Calcareous
Carbonaceous
Charty - dark
Charty - fossiliferous
Charty - light
Charty - trace - dark chert
Charty - undifferentiated
Chlorite
Clayey
Dolomitic
Ferruginous staining
Fissures
Glauconitic
Organiceous

Limestone
Mica
Pebbly
Pyritic
Quartzitic
Silty
Sucrosic
Tuffaceous
Zeolitic

Fossils (Rock Builders)

Algae - undifferentiated
Algae - laminations
Algae - oncoid
Algae - colonial
Algae - stromatolites
Amphipora
Bivalves
Brachiopod
Bryozoa
Calcisphere
Carbonized
Chaetetes
Coiled coiled
Conodont
Coral
Coral - branching
Coral - head
Crinoid
Coral - solitary
Coral - undifferentiated
Diatom
Echinoid
Echinoid - spine
Fish Remains

Foraminifera
Fusiform
Gastropod
Globigerina
Gypsy
Mollusc
Ostracod
Pelecypod
Plant
Planktic
Plant Tempsts
Radiolarian
Sponge
Stromatoporoid
Stromatoporoid - bulbous
Stromatoporoid - massive
Stromatoporoid - tubular
Trilobite

Miscellaneous Grains

Rotte
Pellet
Mica flakes

Mineral crystal
Mineral - dark
Muscovite

Orthoclase
Phosphatic
Sand grain

Textures

Chalky
Crystalline/saline

Earthy
Lithographic

Microcrystalline
Siliciclastic

Matrix

Argillaceous
Bentonitic
Bituminous
Chloritic
Dolomitic
Mica
Sandy
Mud - calcareous

Mud - dolomitic
Mud
Mixed Clay
Micaceous
Sand
Silt
Kaolinitic
Siliceous

Porosity Type Track

Earthy - low permeability - crystals / grains less than 1 / 16 mm
Fenestral - voids from gas bubbles - shrinkage cracks - birdseye texture
Fracture
Intercrystalline - interchrystalline - intergranular
Interparticle - intergranular
Mactic
Organic - Bridged - breakout
Pinpoint - voids less than 1/ 16 mm
Vuggy - voids greater than 1 / 16 mm

Cement

Anhydritic
Barite
Calcareous
Carbonous
Chert - clear
Chert - light
Chert - dark
Pyritic

Dolomitic
Hematitic
Limonitic
Pyritic
Siderite
Siliceous

Oil Show Track

Even staining (75 - 100% of the rock is stained) - fluoresces in solvent
Even staining (50 - 75% of the rock is stained) - fluoresces in solvent
Spotted staining (25 - 50% of the rock is stained) - fluoresces in solvent
Spotted staining (1 - 25% of the rock is stained) - fluoresces in solvent
Questionable oil staining - No fluorescents in solvent
Dead oil staining - asphaltic - bitumen - pyrobitumen etc.
Fluorescens - no visible oil staining

Sorting Track

Very poorly sorted - > 1/2 grain size variation classes
Poorly sorted - 0.75 phi size grade classes
Moderately sorted - 0.5 phi size grade classes
Moderately well sorted - 0.3 phi size grade classes
Well sorted - 0.2 phi size grade classes

Rounding Track

Very Angular
Angular
Subangular
Subrounded
Rounded
Well Rounded

Diagenesis Track

Calcification - Calcichert
Dolomitization
Chemorphically mottled
Fracturing
Leaching
Metasomatism - Replacement - Allotropic recrystallization - Inversion - Transformation
Pressure Deformation
Recrystallization - Grain recrystallization - Grain growth
Silicification
Solution pants filled - Geopetal structure
Dolomite
Weathering

Framework Track

Framework is a ratio between clastic material greater than 1/16 mm and primary void filler less than 1/16 mm.
Framework - clast supported
Framework - matrix supported

Core Track

Indicates Cored Interval
Indicates Lost Core

Test Track

Indicates Tested Interval
Indicates Test

Wentworth Grain / Crystal Size Scale Chart

Clastic Rocks Common Name	Crystalline Rocks Common Name	Lower Size Limit (mm)	Upper Size Limit (mm)	Size Grades (Phi)
		0.00098	0.004	+10 to +8
Clay	Cryptocrystalline	0.00098	0.004	+10 to +8
Very Fine Silt	Very Finely Microcrystalline	0.004	0.008	+8
Fine Silt	Finely Microcrystalline	0.008	0.016	+7
Medium Silt	Medium Microcrystalline	0.016	0.031	+6
Coarse Silt	Coarsely Microcrystalline	0.031	0.0625	+5
Very Fine Sand	Very Finely Crystalline	0.0625	0.125	+4
Fine Sand	Finely Crystalline	0.125	0.25	+3
Medium Sand	Medium Crystalline	0.25	0.5	+2
Coarse Sand	Coarsely Crystalline	0.5	1.0	+1
Very Coarse Sand	Finely Megacrystalline	1.0	2.0	0
Granules	Coarsely Megacrystalline	2.0	4.0	-1
Fine Pebbles		4.0	8.0	-2
Medium pebbles		8.0	16.0	-3
Coarse Pebbles		16.0	32.0	-4
Very Coarse pebbles		32.0	64.0	-5
Cobbles		64.0	256.0	-6 to -7
Boulders		256.0	infinity	-8 to -9

The size measure Phi is equal to the negative logarithm to the base 2 of the size in millimeters.
Thus 1 mm = 0 Phi and 1/2 mm = 1 Phi and 1/4 mm = 2 Phi etc.

Canstral/Amstrat Grain Size Scale Chart

Clastic Rocks Common Name	Lower Size Limit (mm)	Upper Size Limit (mm)	Size Grades Phi
	0.0039	0.0312	+8 to +5
Silt (Upper)	0.0312	0.0625	+5 to +5
Very Fine Sand (Lower)	0.0625	0.0937	+4
Very Fine Sand (Upper)	0.0937	0.125	+4
Fine Sand (Lower)	0.125	0.187	+3.5
Fine Sand (Upper)	0.187	0.25	+3
Medium Sand (Lower)	0.25	0.375	+2.5
Medium Sand (Upper)	0.375	0.5	+2
Coarse Sand (Lower)	0.5	0.75	+1.5
Coarse Sand (Upper)	.75	1.0	+1
Very Coarse Sand (Lower)	1.0	1.5	+0.5
Very Coarse Sand (Upper)	1.5	2.0	0

The size measure Phi is equal to the negative logarithm to the base 2 of the size in millimeters.
Thus 1 mm = 0 Phi and 1/2 mm = +1 Phi and 1/4 mm = +2 Phi etc.

Drilling Progress

Total Gas (%)
0.01 0.1 1 10 100
Well Rate (m/hr)
0 10 20
Gamma Ray (api)
0 150 225

Surface Casing — 499 m

MWD, CHD/MD-XG
5-1-7

DS 0.7° AZ 240.1°
TVD 500.87

Test Gas

Franklin Mtn (cyclic)
(TVD: 609.97)
(SSL: +55.37)

Increase WOB

DS 0.6° AZ 228.0°
TVD 934.87

DS 0.5° AZ 288.3°
TVD 982.66

DS 0.7° AZ 288.3°
TVD 1031.56

Drilling Rate (m/hr)
0 10 20

Lithology (%)
Sandstone
Shale
Limestone
Dolomite
Coal
Salt
Anhydrite
Chert

Porosity (%)
0 30

Hydrocarbon Shows
Oil
Gas

Gamma Ray (api)
0 150 225

Resistivity (ohm-m)
0.2 2000

Temperature (deg C)
0 50

Total Gas (%)
0.01 0.1 1 10 100

Chromatography (ppm)
C1 C2 C3 C4 C5

Sw %
0 100

Lithology Description

CMT: 0-1-0 "Q"

DOL: wh - buff, buff - lt brn, crpd - micd, mdst, tt

DOL: buff - lt brn, lt gy wh arg, crpd - micd, mdst - wkest, tt

CHT: buff - wh, lt gy, foss lp, nodr lp, com std cmcs with dolic and slic fragp, pels and ools in a wk - calcs mtx, tr of mid - pp por, no perm

DOL: wh - buff, buff - lt brn, lt gy, slty arg, crpd - micd, predly mdst, tt

DOL: buff - lt brn, lt gy slty arg, v slty slty, crpd - micd, predly mdst, tt

DOL: buff - lt brn, lt gy, slty arg, calcs lp, crpd - micd, mdst, tt, ptch slty, tr of Sh lt gy dolic, plty

DOL: buff - lt brn, lt gy, slty slty lp, crpd - micd, tr fy sln suc, predly mdst, mnr plast, no stn, no flor, tr of mid - vugy por, mnr Lw wh - buff, crpd mdst, tt

DOL: buff - lt brn, lt gy, m gy arg, slty slty lp, crpd mdst, tr vslsy, tt

DOL: buff - lt brn, lt - m gy arg lp, crpd mdst, tt, tr of nodr Chl

DOL: wh - buff, buff - lt brn, lt - m gy brn, slty arg lp, slty slty lp, mnr calcs, crpd - micd, mdst, tt

DOL: buff - lt brn, m brn, slty arg, slty slty, crpd - micd, mdst, tt

DOL: buff - lt brn, m brn, slty arg lp, crpd - fy stn, mdst - wkest, no stn, no flor, scatt pp - 2-3%

DOL: aa, mnr buff - lt brn, f - m stn plast, no stn, no flor, ptch mid - vugy por 3-4%

DOL: buff - lt brn, m brn, crpd - fy stn, mdst - plast, no stn, no flor, scatt ir clr dol xls, ptch vugy por 4-6%

DOL: buff - lt brn, lt - m brn, micd - fy stn, mdst - wkest, mnr plast, slty arg, scat r dol and calc xls, ptch vugy por to 10%

LS: wh - lt gy, m gy, oomly oomicr, tt

DOL: buff - lt brn, crpd - fy stn, slty, predly mdst, wkest lp, tt

LS: lt gy, m gy, arg lp, crpd mdst, tt

DOL: buff - lt brn, crpd - fy stn, mdst - wkest, slty, tt

LS: lt gy, lt brn, m gy brn, crpd mdst, arg lp, dolo lp, oocly oolic, tt

DOL: aa

SH: lt gy gn, calcs, plty, lamr lp

LS: lt gy, lt brn, m brn, crpd mdst, tt

DOL: buff - lt brn, crpd - fy stn, mdst - plast, slty lp, no stn, no flor, v ptch mid - vugy por 3-4%

LS: buff - lt brn, crpd mdst, arg lp, slty lp, tt

DOL: buff - lt brn, crpd - fy stn, mdst - wkest, mnr plast, no stn, no flor, slty lp, scat por 5-6%

LS: buff - lt brn, crpd mdst, slty arg, lp

DOL: aa

LS: buff - lt brn, lt gy brn, slty arg, crpd mdst, tt

DOL: buff - lt brn, crpd - fy stn, mdst - wkest, mnr plast, slty lp, scat pp - vugy por 6-8%

LS: wh - lt gy, buff, slty arg, crpd mdst, oocly slty, tt

LS: wh - lt gy, buff, slty arg, crpd mdst, tt

DOL: buff - lt brn, slty lp, crpd - fy stn, mdst - wkest, tr of ssp por

LS: wh - lt gy, buff, slty arg, crpd mdst, tt, mnr Sh lt - m gy, calcs

DOL: buff - lt brn, crpd - fy stn, mdst - wkest, calcs lp, slty lp, no stn, no flor, scat mid por 12-18%

LS: aa

DOL: wh - buff, lt brn, calcs, crpd - fy stn, mdst - wkest, slty lp, scat cl calc and dol xls, ptch mid - vugy por 10 -14%

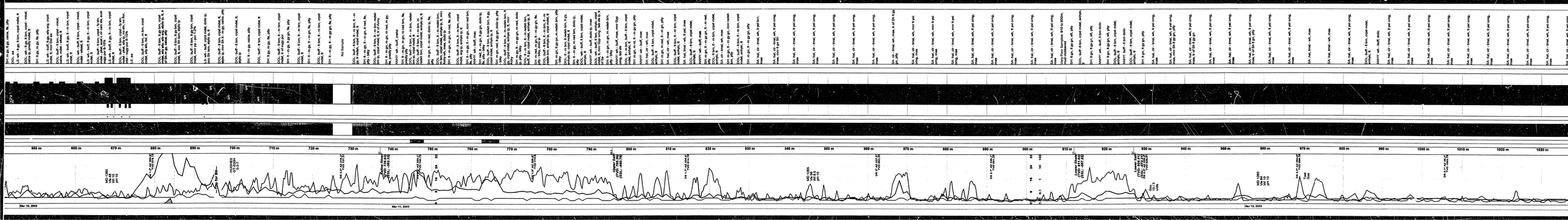
DOL: wh - lt gy, lt brn, crpd - fy stn, mdst - suc pwd, no stn, no flor, pp - intrpt por to 18%

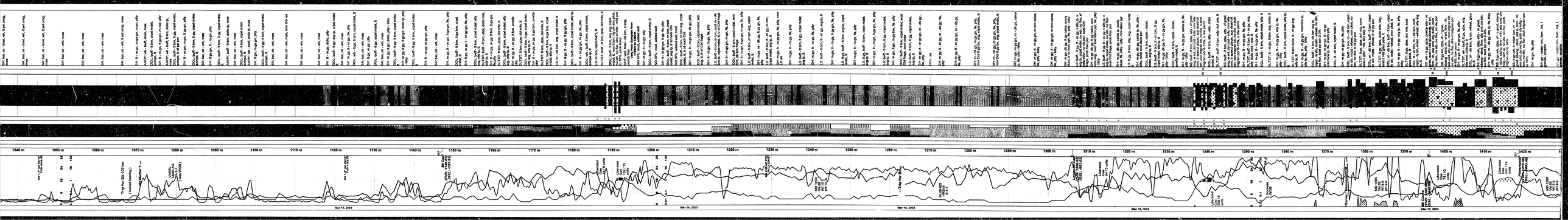
DOL: wh - lt gy, lt brn, crpd mdst, tt

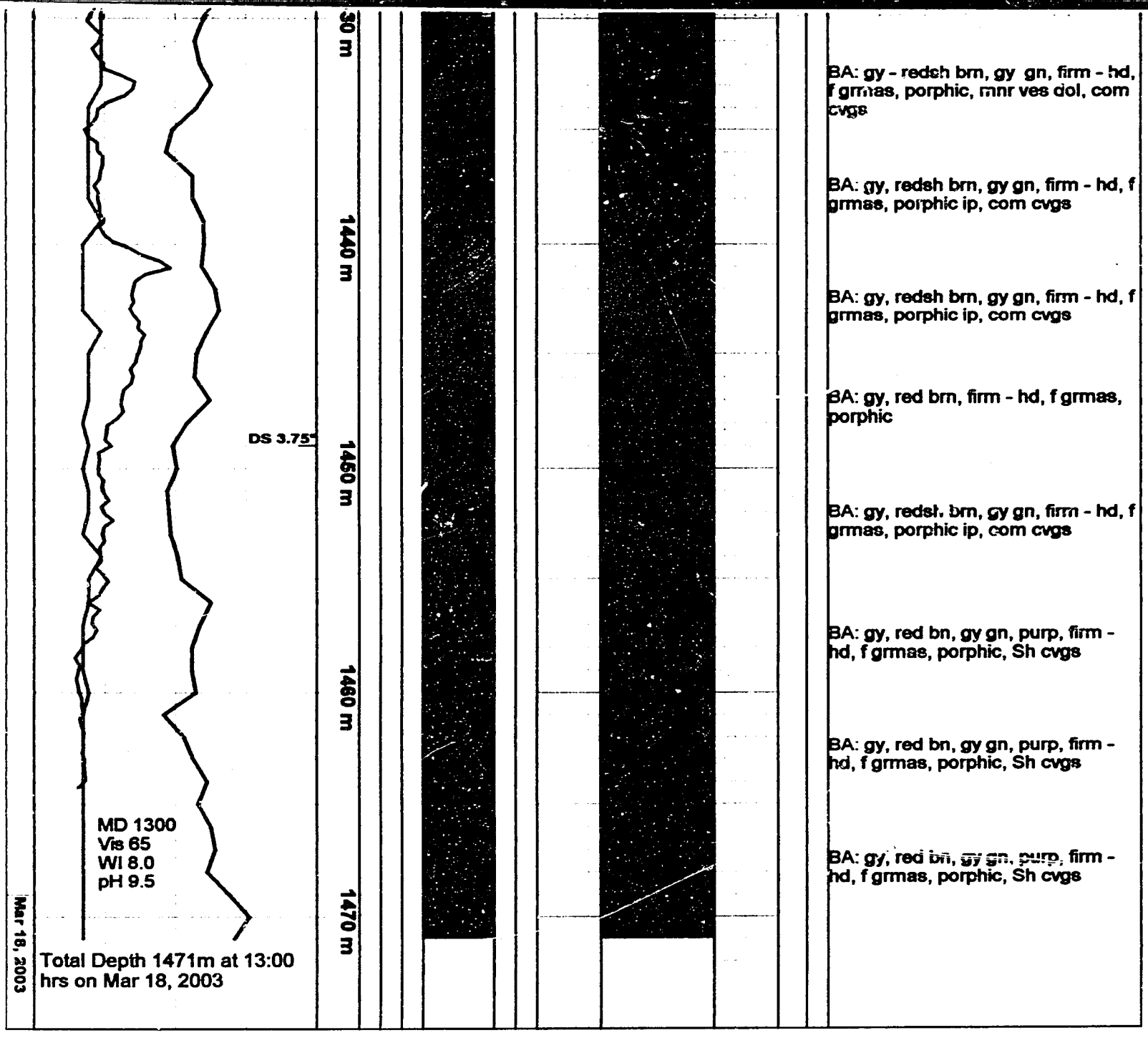
DOL: wh - lt gy, crpd - micd, predly mdst, tt

LS: wh - lt gy, lt brn, crpd mdst, arg lp, tt

DOL: wh - lt gy, lt brn, crpd - micd, mdst


660 m
670 m
680 m
690 m
700 m
710 m
720 m
730 m
740 m
750 m
760 m
770 m
780 m
790 m
800 m
810 m
820 m
830 m
840 m
850 m
860 m
870 m
880 m
890 m
900 m
910 m
920 m
930 m
940 m
950 m
960 m
970 m
980 m
990 m
1000 m
1010 m
1020 m
1030 m
Mar 10, 2003
Mar 11, 2003
Mar 12, 2003


1040 m
1050 m
1060 m
1070 m
1080 m
1090 m
1100 m
1110 m
1120 m
1130 m
1140 m
1150 m
1160 m
1170 m
1180 m
1190 m
1200 m
1210 m
1220 m
1230 m
1240 m
1250 m
1260 m
1270 m
1280 m
1290 m
1300 m
1310 m
1320 m
1330 m
1340 m
1350 m
1360 m
1370 m
1380 m
1390 m
1400 m
1410 m
1420 m
Mar 13, 2003
Mar 14, 2003
Mar 16, 2003
Mar 18, 2003
Mar 17, 2003
Trip for BHA
Trip for BHA
Trip for BHA



Ground Elev: 350 m **Casing Flange Elev: m** **Kelly Bushing Elev: 354.6 m** *All depths measured from K.B. Elev*

Formation Top Summary

Formation	Member	Sample Top (MD)	Sample Top (TVD)	Log Top (MD)	Log Top (TVD)	Subsea
Franklin Mtn (cyclic)		510 m	509.97 m	508 m	507.97 m	-153.37 m
Saline River		737 m	736.93 m	737 m	736.93 m	-382.33 m
Saline River	Upper Salt	795.5 m	795.39 m	795.5 m	795.39 m	-440.79 m
Saline River	Lower Shale	912 m	911.82 m	911 m	910.82 m	-556.22 m
Saline River	Lower Salt	927 m	926.81 m	927 m	926.81 m	-572.21 m
Mt Cap		1146.8 m	1146.51 m	1148 m	1147.71 m	-793.11 m
Mt Cap	Lower Mt Cap	1306 m	1305.63 m	1308 m	1307.63 m	-953.03 m
Mt Clarke		1396 m	1395.59 m	1395 m	1394.59 m	-1039.99 m
Proterozoic		1418.5 m	1418.08 m	1425 m	1424.58 m	-1069.98 m

GP was developed by CL Consultants Limited

C L Consultants Limited

WELL NAME:	Paramount Apache Nogha M-17
LOCATION:	66° 37' 45 N" - 125° 48' 30 E"
COMPANY:	Paramount Resources
UWI:	300-M-17-6640-12545-0
LICENSE:	
FIELD/POOL:	
WELLTYPE:	Wildcat
TERRITORY:	Northwest Territory
COUNTRY:	Canada
COMMENTS:	

N.E.B. COPY

FILE: 6180

G.L.:	344 m
K.B.:	350 m

Top of Data:	1 m MD
Top of Samples:	5 m MD
Total Depth:	499 m MD SAMPLES
Total Depth:	499 m MD LOG

Well Location Coordinates: 66deg 36' 45.247"N/ 125deg 48' 30.860"W

Mud Type Summary

Mud Company:	Baker Hughes
Mud type:	Gelchem 0 m to 499 m

Spud Date:	25/02/2003 08:00 hrs
TD Date:	00/00/0000 00:00 hrs
Consulting From:	24/ 2/2003 to 6/ 3/2003
Sample Data:	5 m to 499 m 5 m
Gas Data:	1 m to 499 m
Sample Quality:	5 m to 499 m Good, Some LCM

Wellsite Consulting Firm:	Continental Laboratories
Wellsite Geologist:	1) Todd Lecavalier From 1 m to 499 m MD

Hole Size:	444 mm mm	From 0 m to 60 m MD
	311 mm mm	From 60 m to 499 m MD
Casing:	339.7 mm	From 0 m to 60 m MD
	244.5 mm	From 0 m to 499 m MD

Well Status: Unknown

LITHOLOGY SYMBOLS

Breccia, Conglomerate, Sandstone
Siltstone, Shale Gray, Shale Black
Shale Light, Shale Dark, Shale Colored
Claystone Gray, Claystone Colored, Bentonite
Chert Light, Chert Dark, Marlstone Calcareous
Marlstone Dolomitic, Limestone mud supported, Limestone grain supported
Dolomite Primary, Dolomite Secondary, Siderite
Anhydrite Primary, Anhydrite Secondary, Gypsum
Salt, Coal, Coal interbedded
Igneous Basic, Igneous Acidic, Tuff
Welded Tuff, Metamorphic, Karst
No Sample, Not Interpretable, Questionable
Unconformity, Shale Brown, Claystone Brown

ACCESSORY SYMBOLS

Anhydritic, Argilite, Argillaceous, Bentonitic
Cemented Bituminous Subst., Brecciated, Calcareous, Carbonaceous
Chert Dark, Chert Light, Chert Tripolitic, Dolomitic
Feldspathic, Ferruginous, Glauconite
Gypsiferous, Heavy Minerals, Kaolin, Minerals
Nodules, Phosphatic, Pyritic, Salt
Sandy Grains, Sandy, Laminated Shale, Siliceous
Silty, Tuffaceous, Pebbles, Coal
Sideritic, Micaceous

STRINGERS

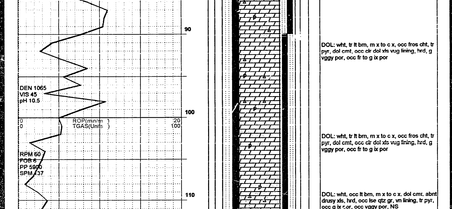
Anhydritic stringers, Dolomitic stringers, Gypsum stringers, Limestone stringers
Marlstone Calcareous stringers, Marlstone Dolomitic stringers, Sandstone stringers, Siltstone stringers
Siderite stringers

FOSSIL SYMBOLS

Amphipora, Belemnites, Bioclastic, Brachiopod
Bryozoa, Coral, Crinoidal, Echinoid
Fish Remain, Foraminifera, Fossil, Gastropod
Intraclast, Ooliths, Ostoids, Ostracod
Pelecypod, Pellet, Pisolite, Plant Remain
Scaphopod, Skeletal, Stromatoporoid, Cephalopod
Non Descript

1 symbol <=10%, 2 symbols 10%-20%, 3 symbols 20%-30%

POROSITY: ig - intergranular; ix - intercrystaline; v - vuggy; o - organic; p - pinpoint; f - fenestral; m - moldic; e - earthy
GRAINSIZE: slt - silt; vf - very fine; f - fine; m - medium; c - coarse; vc - very coarse
SORTING: p - poorly; m - moderately; w - well
OTHER SYMBOLS: DST, Core, Sidewall Core, RTF, Fault, Reverse Fault, Slide, Rotate, Silcs
OILSTAIN: - dead; - questionable (no fluorescence in solvent); - spotty (fluorescence in solvent); - live
TEXTURE: C - chalky; cr - cryptocrystalline; e - earthy; L - lithographic
CURVE LEGEND: ROP(min/m); TGAS(Units)



DOL wkl, lt gy, cs to v f s, occ f s, dol, cmt, lt gy, occ lt to dk gy pyr, NS to sl pyr, NS

DOL wkl, lt gy, cs to f s, occ v f s, dol, cmt, lt gy, occ lt to dk gy pyr, NS to sl pyr, NS

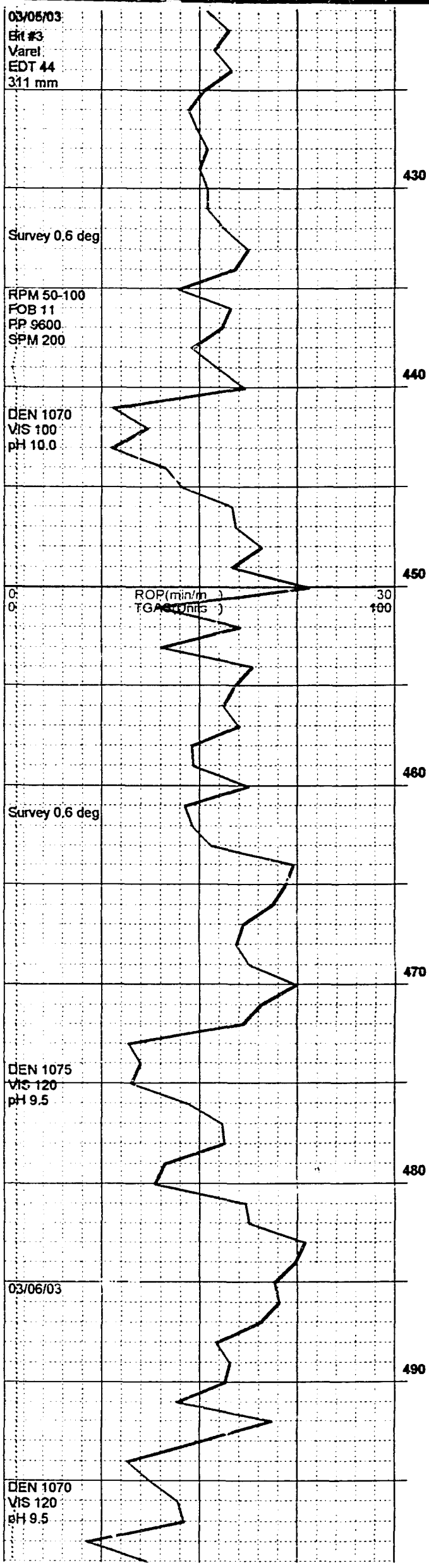
DOL wkl, lt gy, cs to f s, occ v f s, dol, cmt, lt gy, occ lt to dk gy pyr, NS to sl pyr, NS

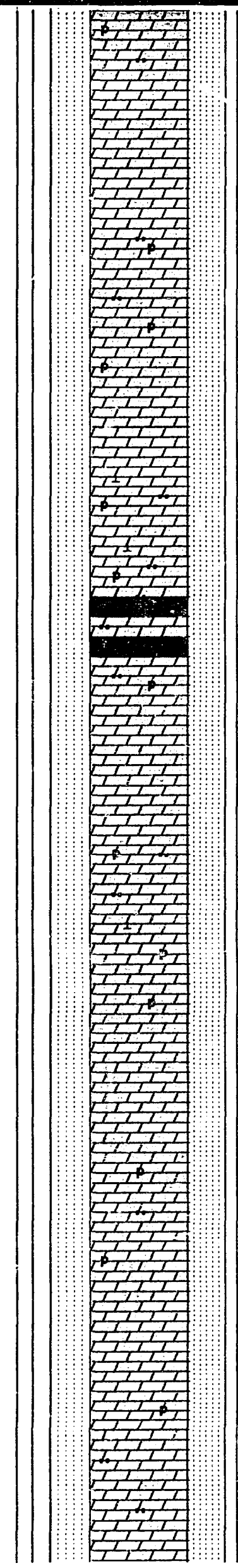
DOL wkl, lt gy, cs to v f s, dol, cmt, lt gy, occ lt to dk gy pyr, NS to sl pyr, NS

DOL lt brn, occ lt gy, cs to v f s, dol, cmt, occ dk gy pyr, occ lt to dk gy pyr, NS to sl pyr, NS

DOL wkl to lt gy, occ lt brn, cs to v f s, dol, cmt, occ dk gy pyr, occ lt to dk gy pyr, NS to sl pyr, NS

DOL wkl to lt gy, occ lt brn, cs to v f s, occ lt to m





DOL: lt to m brn, cx, hrd, occ pckst, occ banded pyr, tr slty, sl calc, dol cmt, tr bit, tt, NS

DOL: lt to m brn, cx, hrd, occ pckst, occ banded pyr, tr slty, sl calc, dol cmt, tr bit, tt, NS

DOL: wht, occ lt gy, cx, hrd, dol cmt, banded pyr, tt, NS

DOL: lt to m brn, cx, occ qtz xls, pos vng, dol cmt, hrd, sl slty, occ pyr, tt, NS

DOL: lt to m brn, cx, occ drusy xls, pos vng, dol cmt, occ slty, occ pyr, hrd, sl calc, tt, NS

MUDST: gn, lt gy, slbky to blky, dol, slty ip, frm, NS

DOL: lt to m brn, cx, dol cmt, hrd, tr slty, occ pyr, occ qtz lined vein, tt, NS

DOL: lt brn to bf, tr wht, cx, tr pckst, hrd, dol cmt, occ nod pyr, tt, NS

DOL: lt to m brn, cx, dol cmt, occ pyr, sl calc, tt, NS

DOL: wht, occ lt brn, cx, dol cmt, occ pyr, hrd suc, tt, NS

DOL: lt brn, cx, hrd, dol cmt, tt, NS (poor sample LCM sweep)

DOL: lt to m brn, cx, suc, dol cmt, hrd, sl slty, occ pyr, rr bit, tt, NS

DOL: lt to m brn, cx, suc ip, hrd, sl slty, occ pyr, tt, NS

DOL: wht, lt gy, cx, suc, hrd, occ pyr, tt, NS

DOL: lt to m brn, cx, suc ip, hrd, sl slty, occ pyr, tt, NS

Surface Casing 499 m MD

RESISTIVITY/

CONDUCTIVITY

Schlumberger

Paramount Resources Ltd

Pana et al Nogha M-17

Nogha

Northwest Territories

PLATFORM EXPRESS

HIGH RESOLUTION

AZIMUTHAL LATEROLOG -RXO

N.E.B. COPY

Province: Northwest Territories
Latitude: 66deg 29' 45.242"N
Longitude: 125deg 49' 30.680"W
Location: Pana et al Nogha M-17
Company: Paramount Resources Ltd
Well:
Field: Nogha
LOCATION

Latitude: 66deg 29' 45.242"N
Longitude: 125deg 49' 30.680"W
LMF: 300M/1766ft/2540
Elev.: K.B. 354.6 m
G.L. 350 m
D.F. 354.3 m

Permanent Datum: GROUND LEVEL Elev.: 350 m
Log Measured From: Kelly Bushing 4.6 m above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No. WID 1970 | Latitude 66deg 30' | Longitude 125deg 49'

	Run 1	Run 2	Run 3	Run 4
Logging Date	18-Mar-2003			
Run Number	1			
Depth Driller	1471 m			
Schlumberger Depth	1471.6 m			
Bottom Log Interval	1469.2 m			
Top Log Interval	499.3 m			
Casing Driller Size @ Depth	244.500 mm @ 499 m	@	@	
Casing Schlumberger	499.3 m			
Bit Size	216.000 mm			
Type Fluid In Hole	Salt Saturated Gel Chem			
Density / Viscosity	1300 kg/m3 / 69 s			
Fluid Loss / PH	8 cm3 / 9.5			
Source Of Sample	Circulation Tank			
RM @ Measured Temperature	0.770 ohm.m @ 12 degC	@	@	
RMF @ Measured Temperature	0.617 ohm.m @ 14 degC	@	@	
RMC @ Measured Temperature	0.100 ohm.m @ 11 degC	@	@	
Source RMF / RMC	Pressed / Calculated			
RM @ MRT / RMF @ MRT	0.564 @ 23 / 0.069 @ 23	@ / @	@ / @	@ / @
Maximum Recorded Temperatures	23 degC			
Circulation Stopped / Time	19-Mar-2003 / 8:00			
Logger On Bottom / Time	19-Mar-2003 / 13:30			
Unit Number / Location	5418 / Norman Wells			
Recorded By	R. Debbasch/P. Roos			
Witnessed By	C. Bredin			

	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 / 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				

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OTHER SERVICES: RUN 1
OBI1: PEX/HALS-DSI-BHS
OBI2:
OBI3:
OBI4:
OBI5:
OBI6:

HALS

CASING: RUN NUMBER 1
Tool OD 244.500mm Set@499.3m in HALS
Hole volume computed on a Bore casing diameter of 117.5mm
Surface Hole Location: Latitude 66deg 29' 45.242"N / 125deg 49' 30.680"W
Bottom Hole Location: Latitude 66deg 29' 45.242"N / 125deg 49' 30.680"W
Casing Diameter and Casing Weight are nominal values

Rig: Nabors #36
Crew: F. Roos, M. Lalo

RUN 1
2310783
1OO3-306
START
STOP

RUN 2
SERVICE ORDER #:
PRIMARY DEPTH CONTROL:
LOGGING INTERVAL:
START
STOP

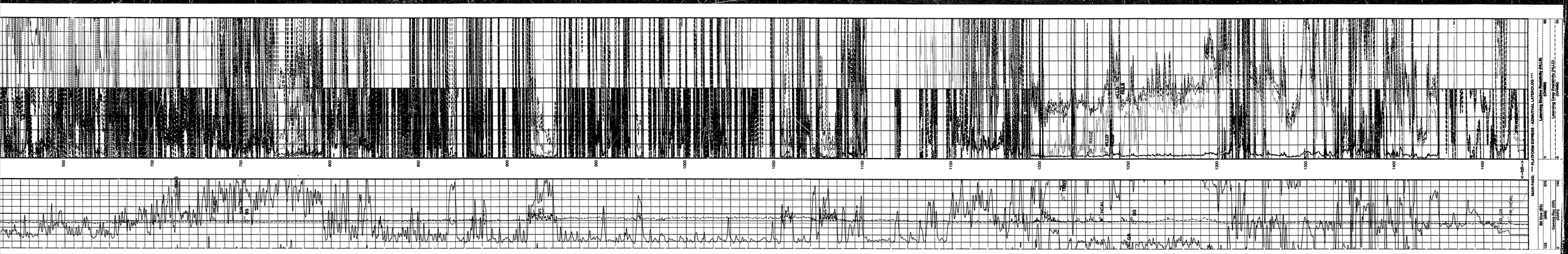
EQUIPMENT DESCRIPTION

RUN 1

SURFACE EQUIPMENT
GSFJ-V
GSFJ-B
CMTB-AB
CMTB-B

DOWNHOLE EQUIPMENT

LEH-QT	42.63	42.64	
AH-SBR			
AH-SBR			
DTCH	33.22	33.50	CTEM
DTCH	33.34	32.88	Toolface
DI-SST-B			
DI-SST-B			
ETCD-D			
ETCD-D			
SNDA-AA			
SNDA-AA			
EMS-B	12.04	17.04	Pwr
EMS-B	14.81		Mcd Temper
EMS-B			
EMS-B		13.72	Caliper
EMS-B			
EMS-B			
HDIL-B	12.70		
HDIL-B	12.09		
HDIL-B	11.48		
HDIL-B	11.85		
HDIL-B	9.92		
HDIL-B	9.75		
HDIL-B	9.59		
HDIL-B	6.47		
HDIL-B	2.29		
HDIL-B		25 MM	Standoff
HDIL-B			
HDIL-B			
HDIL-B		


650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
<--ISH-->
MAIN PASS --- PLATFORM EXPRESS - ARRAY RESISTIVITY COMPOSITE ---
Latero Phase Resistivity (HLLP) (ohmm)
Latero Deep Resistivity (HLLD) (ohmm)
Bit Size (BS) (inch)
Gamma Ray (GR) (API)
HLLP
HLLD
RXOZ
BS
GR
HCAL
TNPH
RHOB
DRHO
PEF

Caliper (HCAL)
(MM)
125 375

Tension (TENS)
28000 (N) 0

Laterolog Shallow Resistivity (HLLS)
(OHMM)
0 500

Laterolog Deep Resistivity (HLLD)
(OHMM)
0 500

Std. Res. Invaded Zone Resistivity (RXOZ)
(OHMM)
0 50

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	HILTB-FTB: High resolution Integrated Logging Tool-DTE:	
ARIP_LTE	HALS Long Tool Wiring Correction	OFF
ARIP_SHOULDER	HALS Shoulder Correction	OFF
BHCF	HALS Borehole Correction	ON
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
DHCF	Diameter & Eccentering used in HALS Borehole Corrections	Caliper_Eccentered
GBCC	HALS Groningen Correction	OFF
HBSP	HALS Bandpass Length	20.1 MM
MFCF	MCFL Processing Operation MFde	ON
TCCR	HALS TLC Correction	OFF
UNSPK	HALS Despiking Option	ON
UNSPK_THOLD	HALS Despiking Filter Threshold (in %)	20 %
UNSPK_WINDOW	HALS Despiking Filter Window (inches)	152.4 MM
	TSST-B: Environment Measurement Sonde	
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
	DSST-B: Dipole Shear Sonic Imager	
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
	STI: Stuck Tool Indicator	
LBFR	Trigger for MASS First Reading Label	TOL
TDD	Total Depth - Driller	1471.00 M
TDL	Total Depth - Logger	1471.00 M
	System and Miscellaneous	
BS	Bit Size	216.000 MM
DCBL	Depth Offset for Repeat Analysis	0.0 M
MST	Mud Sample Temperature	12.00 DEGC

Format: hilts_a2 Vertical Scale: 1:600 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306 MCM

HILTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_01BLUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

OP System Version: 10C0-306 MCM

HILTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BHT	22.7 DEGC	24 DEGC	1415.0 14:47:49

PIP SUMMARY

Time Mark Every 60 S

Std. Res. Invaded Zone Resistivity (RXOZ)
(OHMM)
0.2 2000

Tension (TENS)
28000 (N) 0

Laterolog Deep Resistivity (HLLD)
(OHMM)
2000 200000

Caliper (HCAL)
(MM)
125 375

Laterolog Shallow Resistivity (HLLS)
(OHMM)
2000 200000

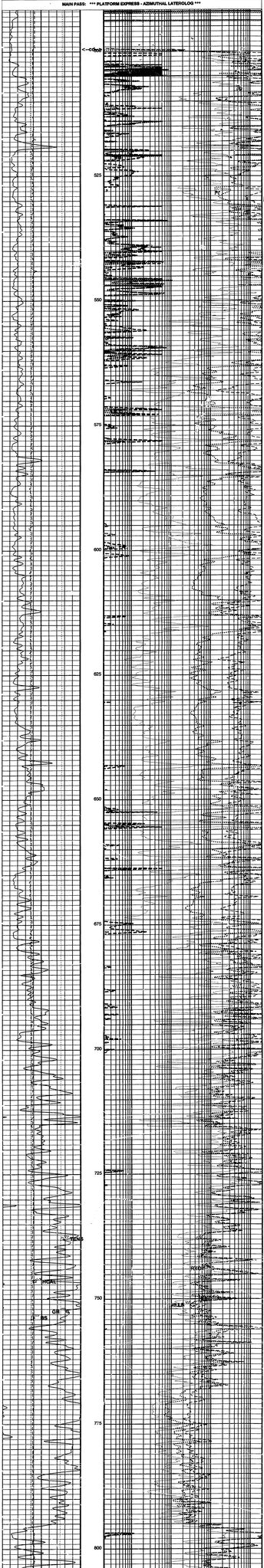
Gamma Ray (CIR)
(GAPI)
0 150

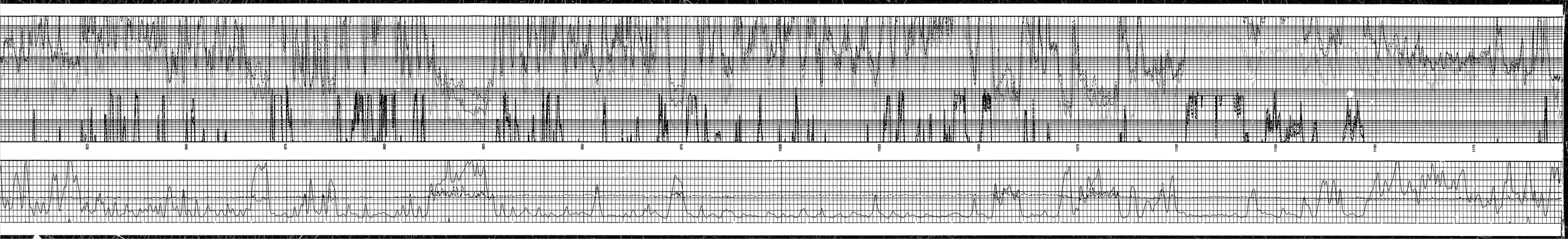
Laterolog Deep Resistivity (HLLD)
(OHMM)
0.2 2000

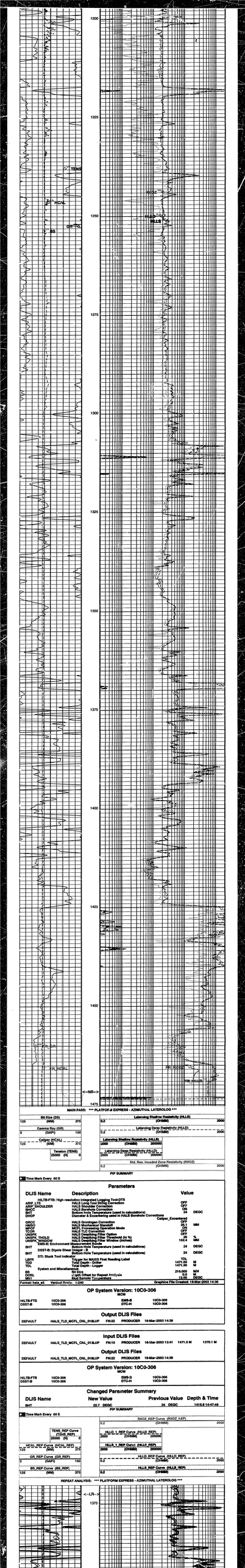
Bit Size (BS)
(MM)
123 373

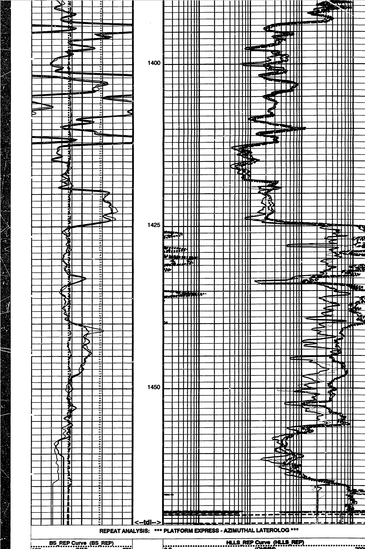
Laterolog Shallow Resistivity (HLLS)
(OHMM)
0.2 2000

MAIN PASS: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***




850
865
875
890
900
925
950
975
1000
1025
1050
1075
1100
1125
1150
1175


TENS
HCAL
GR
BS
RXOZ
HLLS
HLLD
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
1475
FR_HCAL
FR_RXOZ
TIR_HLLS
<--tdl-->
<--LR-->
MAIN PASS: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***
Bit Size (DR) (MM) 120 370
Gamma Ray (GR) (GAPI) 0 150
Caliper (HCAL) (MM) 120 370
Tension (TENS) 20000 (N) 0
Laterolog Shallow Resistivity (HLLS) (OHMM) 0.2 2000
Laterolog Deep Resistivity (HLLD) (OHMM) 0.2 2000
Laterolog Shallow Resistivity (HLLS) (OHMM) 2000 200000
Laterolog Deep Resistivity (HLLD) (OHMM) 2000 200000
Std. Res. Invaded Zone Resistivity (RXOZ) (OHMM) 0.2 2000
PIP SUMMARY
Time Mark Every 60 S
Parameters
DLIS Name Description Value
HLTB-FTB: High resolution Integrated Logging Tool-DTS
ARIP_LTS HALS Long Tool Skiing Correction OFF
ARIP_SHOULDER HALS Shoulder Correction ON
BHC HALS Borehole Correction OFF
BHT Bottom hole Temperature (used in calculations) 24 DEGC
DHOF Diameter & Eccentering used in HALS Borehole Corrections Caliper_Eccentered
GRCC HALS Groningen Correction OFF
HSRO HALS Mechanical Standoff 55.1 MM
MOP MCFL Processing Operation Mode ON
SDOP Sonde Operation Mode OFF
USSPK HALS Deskiking Filter Option OFF
UNSPK_THOLD HALS Deskiking Filter Threshold (in %) 25 %
UNSPK_WINDOW HALS Deskiking Filter Window (inches) 152.4 MM
HLTB-DTS: Environment Measurements
BHT Bottom Hole Temperature (used in calculations) 24 DEGC
DSST-B: Dipole Shear Imager - B
BHT Bottom Hole Temperature (used in calculations) 24 DEGC
STI: Stuck Tool Indicator
LBPR Trigger for MAXIS First Reading Label TDL
TDD Total Depth - Driller 1471.00 M
TDL Total Depth - Logger 1470.90 M
System and Miscellaneous
BS Bit Size 215.000 MM
DOFF Depth Offset for Repeat Analysis 0.00 M
MTEM Mud Temperature 152 DEGC
Format: hals_a5 Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:39
OP System Version: 10C0-306
MCM
HLTB-FTB 10C0-306 SMS-B 10C0-306
DSST-B 10C0-306 DTC-H 10C0-306
Output DLIS Files
DEFAULT HALS_TLD_MCFL_CNL_01#LUP FN:22 PRODUCER 18-Mar-2003 14:38
Input DLIS Files
DEFAULT HALS_TLD_MCFL_CNL_01.LUP FN:15 PRODUCER 18-Mar-2003 12:41 1471.0 M 1370.1 M
Output DLIS Files
DEFAULT HALS_TLD_MCFL_CNL_01#LUP FN:22 PRODUCER 18-Mar-2003 14:38
OP System Version: 10C0-306
MCM
HLTB-FTB 10C0-306 SMS-B 10C0-306
DSST-B 10C0-306 DTC-H 10C0-306
Changed Parameter Summary
DLIS Name New Value Previous Value Depth & Time
BHT 65.7 DEGC 24 DEGC 1415.9-14:47:49
PIP SUMMARY
Time Mark Every 60 S
RXOZ_REP Curve (RXOZ_REP) (OHMM) 0.2 2000
TENS_REP Curve (TENS_REP) 20000 (N) 0
HLLS_1_REP Curve (HLLD_REP) (OHMM) 2000 200000
HCAL_REP Curve (HCAL_REP) (MM) 120 370
HLLS_1_REP Curve (HLLD_REP) (OHMM) 2000 200000
GR_REP Curve (GR_REP) (GAPI) 0 150
HLLD_REP Curve (HLLD_REP) (OHMM) 0.2 2000
BS_REP Curve (BS_REP) (MM) 120 370
HLLS_REP Curve (HLLS_REP) (OHMM) 0.2 2000
REPEAT ANALYSIS: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***



REPEAT ANALYSIS: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***

BS_REP Curve (BS_REP) 125 (MM) 375
GR_REP Curve (GR_REP) 0 (GAPI) 150
HCAL_REP Curve (HCAL_REP) 125 (MM) 375
TENS_REP Curve (TENS_REP) 25000 (lb) 0
HLLS_REP Curve (HLLS_REP) 0.2 (OHMM) 2000
HLLD_REP Curve (HLLD_REP) 0.2 (OHMM) 2000
HLLD_L_REP Curve (HLLD_REP) 2000 (OHMM) 200000
RXOZ_REP Curve (RXOZ_REP) 0.2 (OHMM) 2000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HLTB-FTB: High resolution Integrated Logging Tool-DTS		
ARIP_LTS	HALS Long Tool Sticking Correction	OFF	
ARIP_SHOULDER	HALS Shoulder Correction	OFF	
BHC	HALS Borehole Correction	ON	
BSOF	MCFL Processing Operation Mode	OFF	
DHOP	Diameter & Eccentering used in HALS Borehole Corrections	24	DEGC
	Caliper_Eccentered		
GBCC	HALS Gronigen Correction	OFF	
HSSO	HALS Mechanical Standoff	26.1	MM
MPOF	MCFL Processing Operation Mode	ON	
TCOR	HALS TLC Correction	OFF	
UNSPK_THOLD	HALS Deadtime Filter Threshold (in %)	20	%
UNSPK_WINDOW	HALS Deadtime Filter Window (inches)	152.4	MM
	DSST-B: Environment Measurement Sonde		
BHT	Bottom Hole Temperature (used in calculations)	24	DEGC
	DSST-B: Dipole Shear Imager - B		
BHT	Bottom Hole Temperature (used in calculations)	24	DEGC
	System and Miscellaneous		
BS	Bit Size	216.00	MM
DCRL	Depth Offset for Repeat Analysis	0.0	M
MST	Mud Sample Temperature	15.00	DEGC

Format: hals_rep Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306
MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_013LUP	FN:15	PRODUCER	18-Mar-2003 13:41	1471.0 M

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38	

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

OP System Version: 10C0-306
MCM

HLTD	10C0-306	EMS	10C0-306
DSST-D	10C0-306	DTCH	10C0-306

PIP SUMMARY

Time Mark Every 60 S

Tension (TENS) 27000 (lb) 0
Gamma Ray (EHGR) 0 (GAPI) 150
Caliper (HCAL) 125 (MM) 375
Bit Size (BS) 125 (MM) 375
H. Res. Invaded Zone Resistivity (RXO8) 0.2 (OHMM) 2000
High Resolution Deep Resistivity (HRLD) 2000 (OHMM) 200000
High Resolution Shallow Resistivity (HRLS) 0.2 (OHMM) 2000
High Resolution Deep Resistivity (HRLD) 0.2 (OHMM) 2000

HIRES SECTION: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***

HIRES SECTION: *** PLATFORM EXPRESS - AZIMUTHAL LATEROLOG ***

Bit Size (BS) 125 (MM) 375
Caliper (HCAL) 125 (MM) 375
Gamma Ray (EHGR) 0 (GAPI) 150
Tension (TENS) 28000 (lb) 0
High Resolution Shallow Resistivity (HRLS) 0.2 (OHMM) 2000
High Resolution Deep Resistivity (HRLD) 0.2 (OHMM) 2000
High Resolution Shallow Resistivity (HRLS) 2000 (OHMM) 200000
High Resolution Deep Resistivity (HRLD) 2000 (OHMM) 200000
H. Res. Invaded Zone Resistivity (RXO8) 0.2 (OHMM) 2000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	HLTB-FTB: High resolution Integrated Logging Tool-DTS		
ARIP_LTS	HALS Long Tool Sticking Correction	OFF	
ARIP_SHOULDER	HALS Shoulder Correction	OFF	
BHC	HALS Borehole Correction	ON	
BHT	Bottom Hole Temperature (used in calculations)	24.000	degC
DHOP	Diameter & Eccentering used in HALS Borehole Corrections		
	CALIPER_ECCENTERED		
GBCC	HALS Gronigen Correction	OFF	
HSSO	HALS Mechanical Standoff	25.100	mm
MPOF	MCFL Processing Operation mode	ON	
TCOR	HALS TLC Correction	OFF	
UNSPK	HALS Deadtime Filter Option	OFF	
UNSPK_THOLD	HALS Deadtime Filter Threshold (in %)	20.000	%
UNSPK_WINDOW	HALS Deadtime Filter Window (inches)	152.4	mm
	DSST-B: Environment Measurement Sonde		
BHT	Bottom Hole Temperature (used in calculations)	24.000	degC
	DSST-B: Dipole Shear Imager - B		
BHT	Bottom Hole Temperature (used in calculations)	24.000	degC
	System and Miscellaneous		
BS	Bit Size	216.0	mm
MST	Mud Sample Temperature	15.000	degC

Format: hires_hals Vertical Scale: 1:120 Graphics File Created: 18-Mar-2003 15:27

OP System Version: 10C0-306
MCM

HLTD	10C0-306	EMS	10C0-306
DSST-B	10C0-306	DTCH	10C0-306

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_019LUP	FN:22	PRODUCER	18-Mar-2003 14:38	

OP System Version: 10C0-306
MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

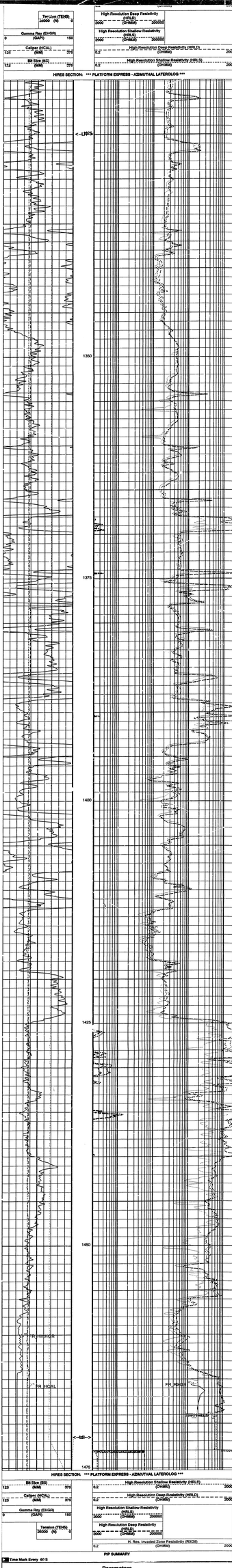
Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
BHT	23.7 DEGC	24 DEGC	1415.5 14:47:49

PIP SUMMARY

Time Mark Every 60 S

H. Res. Invaded Zone Resistivity (RXO8)



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	HILT8-FT8: high resolution Integrated Logging Tool-DT2	
ARIP_LSS	HALS Long Spac Sonic Correction	OFF
ARIP_SHOULDER	HALS Shoulder Correction	OFF
BHCO	HALS Borehole Correction	ON
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
DIHDP	Diameter & Eccentering used in HALS Borehole Corrections	
	Caliper_Eccentered	
GBCC	HALS Gronigen Correction	OFF
HBIT	HALS Recorded Bit Size	MM
HMCM	MCFL Processing Operation Mode	ON
HMT	HILT Nuclear Mud Type	NOBARITE
SOCN	Standoff Distance	3.175 MM
SOCO	Standoff Correction Option	YES
UMSPK	HALS Despiking	OFF
UMSPK_THOLD	HALS Despiking Filter Option	OFF
UNSPK_THOLD	HALS Despiking Filter Threshold (in %)	20 %
UNSPK_WINDOW	HALS Despiking Filter Window (inches)	152.4 MM
	TNSS-E: Environment Measurement Source	
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
	Header - C	
BHT	Bottom Hole Temperature (used in calculations)	24 DEGC
	STS: Stuck Tool Indicator	
LBRT	Trigger for MAXS First Reading Label	TDL
TDD	Total Depth - Driller	1471.00 M
TDL	Total Depth - Logger	1471.00 M
	System and Miscellaneous	
BS	Bit Size	216.000 MM
DFD	Drilling Fluid Density	1200.00 K/M3
DOBJ	Depth Offset for Repeat Analysis	0.00 M
MST	Mud Sample Temperature	12.00 DEGC

Format: hires_hals Vertical Scale: 1:120 Graphics File Created: 10-Mar-2003 14:35

OP System Version: 10C0-306

MCM

HILT8-FT3	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-N	10C0-306

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_01.RLUP	FN:22	PP:DUCER	10-Mar-2003 14:38	

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS1 Dual current mode 1							
Before: 18-Mar-2003 12:58							
Itst 1 Gain	1.000	N/A	0.999	N/A	N/A	0.026	MA
Itst 1 Phase	0.020	N/A	-0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS1 Aux current mode 1							
Before: 18-Mar-2003 12:58							
Iaux 1 Gain	1.000	N/A	0.996	N/A	N/A	0.013	MA
Iaux 1 Phase	0.020	N/A	-0.001	N/A	N/A	1.900	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS1 Aux current mode 2							
Before: 18-Mar-2003 12:58							
Iaux 2 Gain	1.000	N/A	0.981	N/A	N/A	0.048	MA
Iaux 2 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Aux current mode 3A							
Before: 18-Mar-2003 12:58							
I0 3A Gain	1.000	N/A	0.997	N/A	N/A	0.036	UA
I0 3A Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 I0 auxiliary mode 3B							
Before: 18-Mar-2003 12:58							
I0 3B Gain	1.000	N/A	0.970	N/A	N/A	0.036	UA
I0 3B Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Torpedo Voltage gains							
Before: 18-Mar-2003 12:58							
Zx1 Gain	1.000	N/A	0.998	N/A	N/A	0.026	MV
Zx2 Gain	1.000	N/A	0.994	N/A	N/A	0.045	MV
Zx3 Gain	1.000	N/A	0.991	N/A	N/A	0.045	MV
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Torpedo Voltage Phase							
Before: 18-Mar-2003 12:58							
Zx1 Phase	0.000	N/A	-0.188	N/A	N/A	2.300	DEG
Zx2 Phase	0.000	N/A	-0.291	N/A	N/A	0.800	DEG
Zx3 Phase	0.000	N/A	-0.250	N/A	N/A	0.500	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Upper Rxda Voltage mode 1							
Before: 18-Mar-2003 12:58							
Zu0 1 Gain	1.000	N/A	0.998	N/A	N/A	0.026	MV
Zu0 1 Phase	0.000	N/A	0.000	N/A	N/A	2.300	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 M1-M2 Voltage gains							
Before: 18-Mar-2003 12:58							
ZUM1 Gain	1.000	N/A	0.999	N/A	N/A	0.039	UV
ZUM2 Gain	1.000	N/A	0.995	N/A	N/A	0.019	UV
ZUM3 Gain	1.000	N/A	0.994	N/A	N/A	0.019	UV
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 M1-M2 Voltage Phases							
Before: 18-Mar-2003 12:58							
ZUM1 Phase	0.000	N/A	0.667	N/A	N/A	3.300	DEG
ZUM2 Phase	0.000	N/A	1.458	N/A	N/A	1.500	DEG
ZUM3 Phase	0.000	N/A	1.047	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 M1-A0* Voltage gains							
Before: 18-Mar-2003 12:58							
ZUA1 Gain	1.000	N/A	0.996	N/A	N/A	0.013	UV
ZUA2 Gain	1.000	N/A	0.994	N/A	N/A	0.046	UV
ZUA3 Gain	1.000	N/A	0.992	N/A	N/A	0.046	UV
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 M1-A0* Voltage Phases							
Before: 18-Mar-2003 12:58							
ZUA1 Phase	0.000	N/A	0.772	N/A	N/A	3.600	DEG
ZUA2 Phase	0.000	N/A	1.809	N/A	N/A	1.300	DEG
ZUA3 Phase	0.000	N/A	1.343	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Aux Voltage gains							
Before: 18-Mar-2003 12:58							
ZUA 1 Gain	1.000	N/A	1.000	*2A	N/A	0.032	MV
ZUA 2 Gain	1.000	N/A	1.000	*2A	N/A	0.045	MV
ZUA 3 Gain	1.000	N/A	1.017	*2A	N/A	0.045	MV
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Aux Voltage Phase							
Before: 18-Mar-2003 12:58							
ZUA 1 Phase	0.000	N/A	1.618	N/A	N/A	2.300	DEG
ZUA 2 Phase	0.000	N/A	0.248	N/A	N/A	0.800	DEG
ZUA 3 Phase	0.000	N/A	0.356	N/A	N/A	0.500	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 A0* Diff. Voltage mode 1							
Before: 18-Mar-2003 12:58							
ZUD 1 Gain	1.000	N/A	0.996	N/A	N/A	0.047	UV
ZUD 1 Phase	0.000	N/A	0.011	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 A0* Diff. Voltage mode 2							
Before: 18-Mar-2003 12:58							
ZUD 2 Gain	1.000	N/A	0.992	N/A	N/A	0.056	UV
ZUD 2 Phase	0.000	N/A	-0.092	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 A0* A2* Diff. Voltage mode 3A							
Before: 18-Mar-2003 12:58							
ZUD 3A Gain	1.530	N/A	0.995	N/A	N/A	0.056	UV
ZUD 3A Phase	0.000	N/A	0.646	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 A0* A2* Diff. Voltage mode 3B							
Before: 18-Mar-2003 12:58							
ZUD 3B Gain	1.000	N/A	1.021	N/A	N/A	0.054	UV
ZUD 3B Phase	0.000	N/A	0.223	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 vertical Voltage mode 1							
Before: 19-Mar-2003 12:58							
ZVV 1 Gain	1.000	N/A	1.000	N/A	N/A	0.022	UV
ZVV 1 Phase	0.000	N/A	0.229	N/A	N/A	2.900	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 vertical Voltage mode 2							
Before: 19-Mar-2003 12:58							
ZVV 2 Gain	1.000	N/A	0.998	N/A	N/A	0.036	UV
ZVV 2 Phase	0.000	N/A	0.343	N/A	N/A	1.900	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Azimuthal Voltage mode 1							
Before: 19-Mar-2003 12:58							
Az 1 Gain - 0	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain - 1	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain - 2	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 3	1.000	N/A	0.996	N/A	N/A	0.047	UV
Az 1 Gain - 4	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 5	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 6	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 7	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain - 8	1.000	N/A	0.999	N/A	N/A	0.047	UV
Az 1 Gain - 9	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 10	1.000	N/A	0.995	N/A	N/A	0.047	UV
Az 1 Gain - 11	1.000	N/A	0.995	N/A	N/A	0.047	UV
Az 1 Phase - 0	0.000	N/A	0.419	N/A	N/A	3.800	DEG
Az 1 Phase - 1	0.000	N/A	0.534	N/A	N/A	3.800	DEG
Az 1 Phase - 2	0.000	N/A	0.420	N/A	N/A	3.800	DEG
Az 1 Phase - 3	0.000	N/A	0.420	N/A	N/A	3.800	DEG
Az 1 Phase - 4	0.000	N/A	0.524	N/A	N/A	3.800	DEG
Az 1 Phase - 5	0.000	N/A	0.474	N/A	N/A	3.800	DEG
Az 1 Phase - 6	0.000	N/A	0.534	N/A	N/A	3.800	DEG
Az 1 Phase - 7	0.000	N/A	0.420	N/A	N/A	3.800	DEG
Az 1 Phase - 8	0.000	N/A	0.420	N/A	N/A	3.800	DEG
Az 1 Phase - 9	0.000	N/A	0.525	N/A	N/A	3.800	DEG
Az 1 Phase - 10	0.000	N/A	0.420	N/A	N/A	3.800	DEG
Az 1 Phase - 11	0.000	N/A	0.483	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Azimuthal Voltage mode 2							
Before: 19-Mar-2003 12:58							
Az 2 Gain - 0	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 1	1.000	N/A	0.985	N/A	N/A	0.056	UV
Az 2 Gain - 2	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain - 3	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain - 4	1.000	N/A	0.986	N/A	N/A	0.056	UV
Az 2 Gain - 5	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 6	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 7	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 8	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain - 9	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain - 10	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain - 11	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Phase - 0	0.000	N/A	1.106	N/A	N/A	1.300	DEG
Az 2 Phase - 1	0.000	N/A	1.068	N/A	N/A	1.300	DEG
Az 2 Phase - 2	0.000	N/A	1.088	N/A	N/A	1.300	DEG
Az 2 Phase - 3	0.000	N/A	1.057	N/A	N/A	1.300	DEG
Az 2 Phase - 4	0.000	N/A	1.185	N/A	N/A	1.300	DEG
Az 2 Phase - 5	0.000	N/A	1.016	N/A	N/A	1.300	DEG
Az 2 Phase - 6	0.000	N/A	1.118	N/A	N/A	1.300	DEG
Az 2 Phase - 7	0.000	N/A	1.080	N/A	N/A	1.300	DEG
Az 2 Phase - 8	0.000	N/A	1.174	N/A	N/A	1.300	DEG
Az 2 Phase - 9	0.000	N/A	1.144	N/A	N/A	1.300	DEG
Az 2 Phase - 10	0.000	N/A	1.144	N/A	N/A	1.300	DEG
Az 2 Phase - 11	0.000	N/A	1.141	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Azimuthal Voltage mode 3A							
Before: 19-Mar-2003 12:58							
Az 3A Gain - 0	1.000	N/A	0.992	N/A	N/A	0.056	UV
Az 3A Gain - 1	1.000	N/A	0.985	N/A	N/A	0.056	UV
Az 3A Gain - 2	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain - 3	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain - 4	1.000	N/A	0.990	N/A	N/A	0.056	UV
Az 3A Gain - 5	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain - 6	1.000	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain - 7	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 3A Gain - 8	1.030	N/A	0.988	N/A	N/A	0.056	UV
Az 3A Gain - 9	1.000	N/A	0.986	N/A	N/A	0.056	UV
Az 3A Gain - 10	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Gain - 11	1.000	N/A	0.989	N/A	N/A	0.056	UV
Az 3A Phase - 0	0.020	N/A	0.644	N/A	N/A	1.000	DEG
Az 3A Phase - 1	0.020	N/A	0.644	N/A	N/A	1.000	DEG
Az 3A Phase - 2	0.020	N/A	0.675	N/A	N/A	1.000	DEG
Az 3A Phase - 3	0.020	N/A	0.654	N/A	N/A	1.000	DEG
Az 3A Phase - 4	0.020	N/A	0.753	N/A	N/A	1.000	DEG
Az 3A Phase - 5	0.020	N/A	0.653	N/A	N/A	1.000	DEG
Az 3A Phase - 6	0.020	N/A	0.697	N/A	N/A	1.000	DEG
Az 3A Phase - 7	0.020	N/A	0.655	N/A	N/A	1.000	DEG
Az 3A Phase - 8	0.020	N/A	0.695	N/A	N/A	1.000	DEG
Az 3A Phase - 9	0.020	N/A	0.695	N/A	N/A	1.000	DEG
Az 3A Phase - 10	0.020	N/A	0.714	N/A	N/A	1.000	DEG
Az 3A Phase - 11	0.020	N/A	0.718	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - HALS5 Azimuthal Voltage mode 3B							
Before: 19-Mar-2003 12:58							
Az 3B Gain - 0	1.000	N/A	1.004	N/A	N/A	0.054	UV
Az 3B Gain - 1	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 2	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 3	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 4	1.000	N/A	0.995	N/A	N/A	0.054	UV
Az 3B Gain - 5	1.000	N/A	0.995	N/A	N/A	0.054	UV
Az 3B Gain - 6	1.000	N/A	1.004	N/A	N/A	0.054	UV
Az 3B Gain - 7	1.000	N/A	1.000	N/A	N/A	0.054	UV
Az 3B Gain - 8	1.000	N/A	0.998	N/A	N/A	0.054	UV
Az 3B Gain - 9	1.000	N/A	1.000	N/A	N/A	0.054	UV
Az 3B Gain - 10	1.000	N/A	1.000	N/A	N/A	0.054	UV
Az 3B Gain - 11	1.000	N/A	1.000	N/A	N/A	0.054	UV
Az 3B Phase - 0	0.000	N/A	0.107	N/A	N/A	1.000	DEG
Az 3B Phase - 1	0.000	N/A	0.164	N/A	N/A	1.000	DEG
Az 3B Phase - 2	0.000	N/A	0.164	N/A	N/A	1.000	DEG
Az 3B Phase - 3	0.000	N/A	0.000	N/A	N/A	1.000	DEG
Az 3B Phase - 4	0.000	N/A	0.217	N/A	N/A	1.000	DEG
Az 3B Phase - 5	0.000	N/A	0.186	N/A	N/A	1.000	DEG
Az 3B Phase - 6	0.000	N/A	0.094	N/A	N/A	1.000	DEG
Az 3B Phase - 7	0.000	N/A	0.071	N/A	N/A	1.000	DEG
Az 3B Phase - 8	0.000	N/A	0.071	N/A	N/A	1.000	DEG
Az 3B Phase - 9	0.000	N/A	-0.155	N/A	N/A	1.000	DEG
Az 3B Phase - 10	0.000	N/A	0.191	N/A	N/A	1.050	DEG
Az 3B Phase - 11	0.000	N/A	0.117	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool OTS Weldale Calibration - Bias Measurement Summary							
Before: 16-Mar-2003 13:15							
SS Window Bias	0.6795	N/A	0.6800	N/A	N/A	N/A	
SS Window Ratio	9568	N/A	9583	N/A	N/A	N/A	CPS
SS Window Ratio	0.4816	N/A	0.4809	N/A	N/A	N/A	
SS Window Sum	10083	N/A	9956	N/A	N/A	N/A	CPS
LS Window Ratio	0.2974	N/A	0.2993	N/A	N/A	N/A	
LS Window Sum	1158	N/A	1158	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool OTS Weldale Calibration - Photo-multiplier High Voltages Calibrations							
Before: 19-Mar-2003 14:15							
SS PM High Voltage (Command)	1672	N/A	1697	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1672	N/A	1792	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1672	N/A	1792	N/A	N/A	N/A	V
High resolution Integrated Logging Tool OTS Weldale Calibration - Crystal Quality Resolutions Calibration							
Before: 16-Mar-2003 13:15							
SS Crystal Resolution	11.04	N/A	11.70	N/A	N/A	N/A	%
SD Crystal Resolution	15.21	N/A	16.24	N/A	N/A	N/A	%
LD Crystal Resolution	9.789	N/A	9.660	N/A	N/A	N/A	%
High resolution Integrated Logging Tool OTS Weldale Calibration - MCFL Calibration							
Before: 16-Mar-2003 12:16							
Raw Bit Resolution	3873	N/A	3854	N/A	N/A	N/A	CHMM
Raw S1 Resolution	3850	N/A	3817	N/A	N/A	N/A	CHMM
Raw S2 Resolution	3830	N/A	3833	N/A	N/A	N/A	CHMM
High resolution Integrated Logging Tool OTS Weldale Calibration - HLTC Caliper Calibration							
Before: 19-Mar-2003 12:58							
HLTC Caliper Zero Measurement	2032	N/A	1951	N/A	N/A	N/A	MM
HLTC Caliper Plus Measurement	304.8	N/A	308.8	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool OTS Weldale Calibration - Detector Calibration							
Before: 19-Mar-2003 12:58							
Gamma Ray Background	30.00	N/A	54.94	N/A	N/A	N/A	GAPI
Gamma Ray (Ag - Bkg)	167.3	N/A	167.3	N/A	N/A	15.21	GAPI
Gamma Ray (Calibrator)	155.0	N/A	155.0	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool OTS Weldale Calibration - Zero Measurement							
Tubepot 1000.00 10.44 Pmtvac 10 Mar 2003 07:05:00							
CNTC Background	25.34	25.34	25.24	N/A	N/A	3.901	CPS
CFTC Background	27.65	27.65	28.92	N/A	N/A	4.144	CPS
High resolution Integrated Logging Tool OTS Weldale Calibration - Accelerometer Calibration							
Before: 16-Mar-2003 12:53							
Z-Axis Acceleration	0.910	N/A	0.829	N/A	N/A	N/A	11/32
High resolution Integrated Logging Tool OTS Weldale Calibration - Inversion results							
Master: 14-Jan-2003 17:01							
Rho Matrix	2596	2601	–	–	–	–	K/M3
Rho Nitrogen	1090	1095	–	–	–	–	K/M3
Pe Aluminum	2.570	2.581	–	–	–	–	
Pe Magnesium	2.500	2.502	–	–	–	–	
High resolution Integrated Logging Tool OTS Master Calibration - Deviation Summary							
Master: 14-Jan-2003 17:01							
SD Average Deviation	0	0.2722	–	–	–	–	%
SD Ratio Deviation	0	0.0000	–	–	–	–	%
SD Window Deviation	0	0.5580	–	–	–	–	%
SS Average Deviation	0	0.9580	–	–	–	–	%
LS Average Deviation	0	0.6907	–	–	–	–	%
LS Min Deviation	0	2.351	–	–	–	–	%
High resolution Integrated Logging Tool OTS Master Calibration - Tank Measurement							
Master: 19-Dec-2002 10:44							
Thermal Near Det. (Tank)	6031	5886	–	–	–	–	CPS
Thermal Far Corr. (Tank)	2793	2480	–	–	–	–	CPS
CNTC/CFTC (Tank)	2.159	2.364	–	–	–	–	
Environment Measurement Sonde Weldale Calibration - EMS Caliper Calibration							
Before: 19-Mar-2003 12:58							
Sonde 1 Short Radius	101.6	N/A	86.49	N/A	N/A	5.080	MM
Radius 1 Long Radius	152.4	N/A	136.4	N/A	N/A	5.080	MM
Radius 1 Short Radius	152.4	N/A	137.0	N/A	N/A	5.080	MM
Radius 2 Long Radius	101.6	N/A	78.21	N/A	N/A	5.080	MM
Radius 2 Short Radius	152.4	N/A	137.0	N/A	N/A	5.080	MM
Radius 3 Long Radius	152.4	N/A	137.7	N/A	N/A	5.080	MM
Radius 3 Short Radius	152.4	N/A	138.5	N/A	N/A	5.080	MM
Radius 4 Long Radius	101.6	N/A	78.97	N/A	N/A	5.080	MM
Radius 4 Short Radius	152.4	N/A	138.2	N/A	N/A	5.080	MM
Radius 5 Long Radius	101.6	N/A	78.74	N/A	N/A	5.080	MM
Radius 5 Short Radius	152.4	N/A	138.2	N/A	N/A	5.080	MM
Radius 6 Long Radius	101.6	N/A	106.1	N/A	N/A	5.080	MM

The GLS-VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

ACT-B Short Temperature 18.5 DEGC
Thermal Housing Size 65.700 MM

High resolution Integrated Logging Tool-OTS / Equipment Identification

Primary Equipment			
HALS High Resolution Sensing Sonde B		HALS - B	
HLT High-Resolution Mechanical Sonde		HGNS - S	1719
HLT Rio Gamma-ray Device		HRSD	918
HLT Nuclear Back-Scatter Detector		HLT	
HLT Nuclear Short-Spacing Detector		HLT	
HLT Nuclear Long-Spacing Detector		HLT	
Micro-Cylindrically Focused Log Device		MCFL	
GR Logging Source		GLS - VJ	1994
Auxiliary Equipment			
Lightning Control Module		LCM - AA	

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Total current mode 1

Itst 1 Gain MA	Value	Itst 1 Phase DEG	Value
	0.999		0.000

0.926	1.000	1.081	0.100	0.000	0.100
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux current mode 1

Iaux 1 Gain MA	Value	Iaux 1 Phase DEG	Value
	0.998		-0.001

0.912	1.000	1.088	1.900	0.000	1.900
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux current mode 2

Iaux 2 Gain MA	Value	Iaux 2 Phase DEG	Value
	0.981		0.000

0.912	1.000	1.088	0.100	0.000	0.100
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux current mode 3A

I0 3A Gain UA	Value	I0 3A Phase DEG	Value
	0.997		0.000

0.960	1.000	1.114	0.100	0.000	0.100
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux current mode 3B

I0 3B Gain UA	Value	I0 3B Phase DEG	Value
	0.970		0.000

0.960	1.000	1.114	0.100	0.000	0.100
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Torpedo Voltage gains

Zx1 Gain MV	Value	Zx2 Gain MV	Value	Zx3 Gain MV	Value
	0.998		0.994		0.991

0.905	1.000	1.078	0.905	1.000	1.103	0.905	1.000	1.103
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Torpedo Voltage Phase

Zx1 Phase DEG	Value	Zx2 Phase DEG	Value	Zx3 Phase DEG	Value
	-0.188		-0.291		-0.250

4.400	0.000	4.400	2.300	0.000	2.300	1.400	0.000	1.400
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Upper Rxda Voltage mode 1

Zu0 1 Gain MV	Value	Zu0 1 Phase DEG	Value
	0.998		0.000

0.905	1.000	1.078	2.300	0.000	2.300
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 M1-M2 Voltage gains

ZUM1 Gain UV	Value	ZUM2 Gain UV	Value	ZUM3 Gain UV	Value
	0.999		0.996		0.994

0.886	1.000	1.107	0.943	1.000	1.058	0.943	1.000	1.058
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 M1-M2 Voltage Phase

ZUM1 Phase DEG	Value	ZUM2 Phase DEG	Value	ZUM3 Phase DEG	Value
	0.667		1.458		1.047

0.500	0.000	6.000	0.300	0.000	3.300	0.000	0.000	2.000
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 M1-A0* Voltage gains

ZUA1 Gain UV	Value	ZUA2 Gain UV	Value	ZUA3 Gain UV	Value
	0.996		0.994		0.992

0.886	1.000	1.107	0.943	1.000	1.058	0.943	1.000	1.058
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 M1-A0* Voltage Phase

ZUA1 Phase DEG	Value	ZUA2 Phase DEG	Value	ZUA3 Phase DEG	Value
	0.772		1.809		1.343

4.800	0.000	4.800	3.300	0.000	3.300	2.000	0.000	2.000
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux Voltage gains

ZUA 1 Gain MV	Value	ZUA 2 Gain MV	Value	ZUA 3 Gain MV	Value
	1.000		1.000		1.017

0.905	1.000	1.103	0.864	1.000	1.151	0.864	1.000	1.151
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 Aux Voltage Phase

ZUA 1 Phase DEG	Value	ZUA 2 Phase DEG	Value	ZUA 3 Phase DEG	Value
	1.618		0.248		0.356

4.100	0.000	4.100	2.300	0.000	2.300	1.400	0.000	1.400
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 A0* A2* Diff. Voltage mode 1

ZUD 1 Gain UV	Value	ZUD 1 Phase DEG	Value
	0.996		0.011

0.874	1.000	1.107	3.800	0.000	3.800
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTS Weldale Calibration

HALS5 A0* A2* Diff. Voltage mode 2

ZUD 2 Gain UV	Value	ZUD 2 Phase DEG	Value
	0.992		-0.092

0.842	1.000	1.107	1.300	0.000	1.300
Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OT

1	[redacted]	0.994	1	[redacted]	0.534
2	[redacted]	0.997	2	[redacted]	0.566
3	[redacted]	0.996	3	[redacted]	0.521
4	[redacted]	1.000	4	[redacted]	0.534
5	[redacted]	0.997	5	[redacted]	0.274
6	[redacted]	0.997	6	[redacted]	0.554
7	[redacted]	1.001	7	[redacted]	0.455
8	[redacted]	0.996	8	[redacted]	0.493
9	[redacted]	0.997	9	[redacted]	0.525
10	[redacted]	0.995	10	[redacted]	0.502
11	[redacted]	0.998	11	[redacted]	0.483
0.974 (Minimum)	1.020 (Nominal)	1.147 (Maximum)	-6.300 (Minimum)	0.000 (Nominal)	6.300 (Maximum)

Before: 18-Mar-2003 12:56

1	[redacted]	0.980	1	[redacted]	1.042
2	[redacted]	0.983	2	[redacted]	1.068
3	[redacted]	0.983	3	[redacted]	1.057
4	[redacted]	0.986	4	[redacted]	1.186
5	[redacted]	0.983	5	[redacted]	1.016
6	[redacted]	0.983	6	[redacted]	1.101
7	[redacted]	0.987	7	[redacted]	1.080
8	[redacted]	0.982	8	[redacted]	1.104
9	[redacted]	0.984	9	[redacted]	1.083
10	[redacted]	0.982	10	[redacted]	1.144
11	[redacted]	0.985	11	[redacted]	1.141
0.842 (Minimum)	1.000 (Nominal)	1.187 (Maximum)	-3.300 (Minimum)	0.000 (Nominal)	3.300 (Maximum)

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HALSB Azimuthal Voltages mode 3A

Idx	Az 3A Gain UV	Value	Idx	Az 3A Phase DEG	Value
0	[redacted]	0.992	0	[redacted]	0.690
1	[redacted]	0.985	1	[redacted]	0.644
2	[redacted]	0.987	2	[redacted]	0.675
3	[redacted]	0.987	3	[redacted]	0.684
4	[redacted]	0.991	4	[redacted]	0.753
5	[redacted]	0.987	5	[redacted]	0.601
6	[redacted]	0.988	6	[redacted]	0.697
7	[redacted]	0.992	7	[redacted]	0.695
8	[redacted]	0.987	8	[redacted]	0.709
9	[redacted]	0.983	9	[redacted]	0.686
10	[redacted]	0.986	10	[redacted]	0.714
11	[redacted]	0.989	11	[redacted]	0.713
0.842 (Minimum)	1.000 (Nominal)	1.187 (Maximum)	-2.000 (Minimum)	0.000 (Nominal)	2.000 (Maximum)

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HALSB Azimuthal Voltages mode 3B

Idx	Az 3B Gain UV	Value	Idx	Az 3B Phase DEG	Value
0	[redacted]	1.004	0	[redacted]	0.107
1	[redacted]	0.993	1	[redacted]	0.164
2	[redacted]	1.001	2	[redacted]	0.285
3	[redacted]	1.002	3	[redacted]	-0.065
4	[redacted]	1.009	4	[redacted]	0.217
5	[redacted]	0.995	5	[redacted]	-0.196
6	[redacted]	0.999	6	[redacted]	0.094
7	[redacted]	1.004	7	[redacted]	-0.012
8	[redacted]	1.000	8	[redacted]	0.071
9	[redacted]	0.998	9	[redacted]	-0.155
10	[redacted]	1.000	10	[redacted]	0.191
11	[redacted]	1.003	11	[redacted]	0.117
0.845 (Minimum)	1.000 (Nominal)	1.183 (Maximum)	-2.000 (Minimum)	0.000 (Nominal)	2.000 (Maximum)

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before	[redacted]	0.6900	Before	[redacted]	0.4889	Before	[redacted]	0.2993
0.6455 (Minimum)	0.6763 (Nominal)	0.7135 (Maximum)	0.4670 (Minimum)	0.4916 (Nominal)	0.5162 (Maximum)	0.2825 (Minimum)	0.2974 (Nominal)	0.3122 (Maximum)
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before	[redacted]	9383	Before	[redacted]	9986	Before	[redacted]	1158
3918 (Minimum)	9388 (Nominal)	9557 (Maximum)	9515 (Minimum)	10020 (Nominal)	10520 (Maximum)	1101 (Minimum)	1158 (Nominal)	1216 (Maximum)

Before: 16-Mar-2003 13:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Proco-multiplier High voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before	[redacted]	1697	Before	[redacted]	1793	Before	[redacted]	1615
1570 (Minimum)	1670 (Nominal)	1770 (Maximum)	1713 (Minimum)	1813 (Nominal)	1913 (Maximum)	1578 (Minimum)	1678 (Nominal)	1778 (Maximum)

Before: 16-Mar-2003 13:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before	[redacted]	11.70	Before	[redacted]	10.24	Before	[redacted]	9.660
10.64 (Minimum)	11.64 (Nominal)	12.64 (Maximum)	9.233 (Minimum)	10.21 (Nominal)	11.21 (Maximum)	8.789 (Minimum)	9.789 (Nominal)	10.79 (Maximum)

Before: 16-Mar-2003 13:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	value	Phase	Raw B2 Resistivity OHMM	Value
Before	[redacted]	3854	Before	[redacted]	3817	Before	[redacted]	3833
3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3521 (Minimum)	3830 (Nominal)	4138 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: 16-Mar-2003 13:16

High resolution Integrated Logging Tool-DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value
Before	[redacted]	199.1	Before	[redacted]	308.8
152.4 (Minimum)	203.2 (Nominal)	254.0 (Maximum)	228.6 (Minimum)	304.8 (Nominal)	381.0 (Maximum)

Before: 16-Mar-2003 13:09

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before	[redacted]	54.84	Before	[redacted]	167.3	Before	[redacted]	165.0
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	152.1 (Minimum)	157.3 (Nominal)	182.5 (Maximum)	150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)

Before: 16-Mar-2003 13:09

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master	[redacted]	25.34	Master	[redacted]	27.65
Before	[redacted]	25.24	Before	[redacted]	28.62
5.000 (Minimum)	25.34 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	27.65 (Nominal)	40.00 (Maximum)

Master: 19-Dec-2002 10:44 Before: 16-Mar-2003 13:11

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before	[redacted]	9.829
9.810 (Minimum)	9.810 (Nominal)	10.01 (Maximum)

Before: 18-Mar-2003 12:53

High resolution Integrated Logging Tool-DTS Master Calibration

Inversion results

Phase	Rho Aluminum K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master	[redacted]	2601	Master	[redacted]	1685
2590 (Minimum)	2598 (Nominal)	2600 (Maximum)	1676 (Minimum)	1686 (Nominal)	1696 (Maximum)
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master	[redacted]	2.581	Master	[redacted]	2.630
2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master	[redacted]	0.2702	Master	[redacted]	0.2225	Master	[redacted]	0.6927
-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master	[redacted]	1.263	Master	[redacted]	0.9580	Master	[redacted]	2.331
-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master	[redacted]	5898	Master	[redacted]	2493	Master	[redacted]	2.365
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3128 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 19-Dec-2002 10:44

Environment Measurement Sonde / Equipment Identification

Primary Equipment:	
EMS Mechanical	EMM - B
EMS Cartridge	EMC - B
EMS Adaptor	EMA - B
Resistivity Meter	RES -
Auxiliary Equipment:	
Electronics Cartridge Housing	ECH - KH

Environment Measurement Sonde Wellsite Calibration

EMS Caliper Calibration

Phase	Radius 1 Short Radius MM	Value	Phase	Radius 1 Long Radius MM	Value
Before	[redacted]	86.49	Before	[redacted]	136.4
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)
Phase	Radius 2 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value
Before	[redacted]	137.8	Before	[redacted]	78.21
127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)	76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)
Phase	Radius 3 Short Radius MM	Value	Phase	Radius 3 Long Radius MM	Value
Before	[redacted]	86.56	Before	[redacted]	147.7
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)
Phase	Radius 4 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value
Before	[redacted]	156.9	Before	[redacted]	105.6
127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)	76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)
Phase	Radius 5 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value
Before	[redacted]	115.1	Before	[redacted]	156.2
76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)	127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)
Phase	Radius 6 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value
Before	[redacted]	148.9	Before	[redacted]	106.1
127.0 (Minimum)	152.4 (Nominal)	177.8 (Maximum)	76.20 (Minimum)	101.6 (Nominal)	127.0 (Maximum)

Before: 16-Mar-2003 15:12

Company: Paramount Resources Ltd.

Well: Para et al Nogha M-17

Field: Nogha

Province: Northwest Territories

Vertical Well

Schlumberger

PLATFORM EXPRESS
HIGH RESOLUTION
AZIMUTHAL LATEROLOG -RXO

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

SONIC

Schlumberger

GEOFRAME PROCESSED INTERPRETATION

DIPOLE SHEAR SONIC IMAGER

MEASURED DEPTH

*A Mark of Schlumberger

Using the following logs: PEX-HALS-DSI-EMS

COMPANY: Paramount Resources Ltd.
WELL: Para et al Nogha M-17
FIELD: Nogha
Province: Northwest Territories
Vertical Well

Date Logged: 18-Mar-2003 Date Processed: 11-Apr-2003
Well Location: Latitude: 66deg 36' 45.242"N
Longitude: 125deg 48' 30.680"W

Elevations: KB: 354.6m DF: 354.3m GL: 350m

API Number: WID 1970 Job Number: 9193793

FOOTAGE: This well data, location and borehole reference data were furnished by the customer.

All interpretations, we opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current price schedule.

Field Recording:	Location:	Norman Wells	Software Version: 10C2-506
Office Recording:	CIS Comm:	CALGARY	Baseline:

Engineer: B. Dellabalo/F. Rios
Log Analyst: D. Young

Mud and Borehole Measurements:

Rm @ Measured Temperature:	0.710ohm.m	@ 19degC	Rmf: 24degC
Rmf @ Measured Temperature:	0.710ohm.m	@ 19degC	Rmc: 24degC
Rmc @ Measured Temperature:	0.120ohm.m	@ 19degC	Mud Density: 1370kg/m3

Bitsize: 216mm
Fluid type: Water Based Mud
Salt Saturated Gel Chem.

Remarks:
Two 28.1mm standoffs on HALS
Two GMZ0s on DSI
Hole volume computed using a future casing diameter of 177.8mm
Hole volume computed using arms calipers
Fill from MTD calculated using DT P&S Compressional and DT1 Lower Dipole Shear

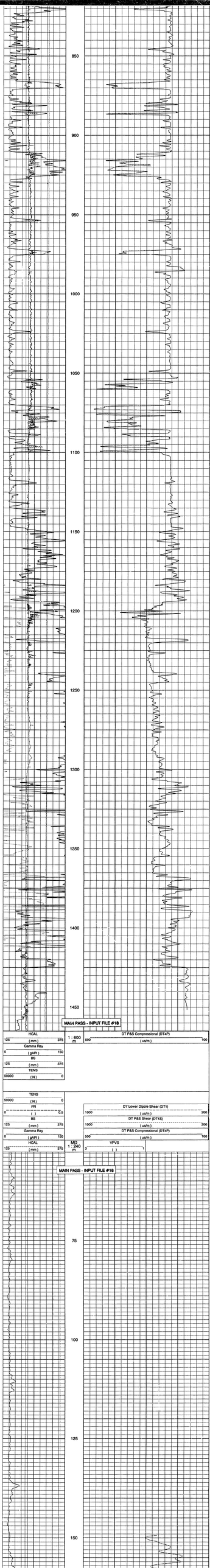
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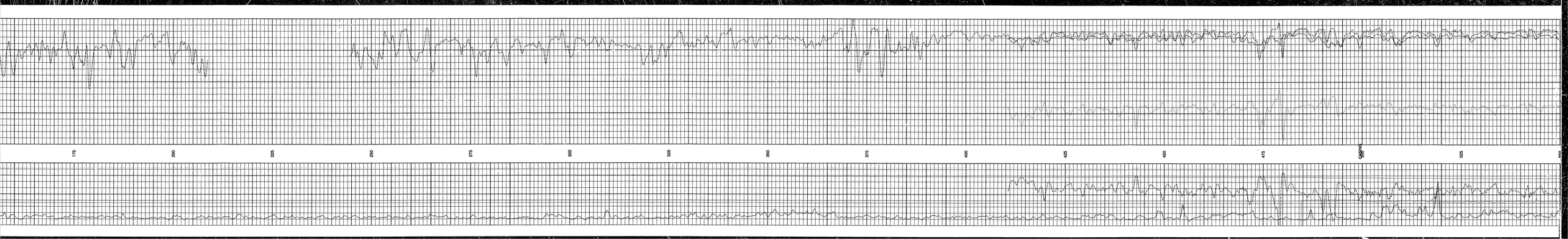
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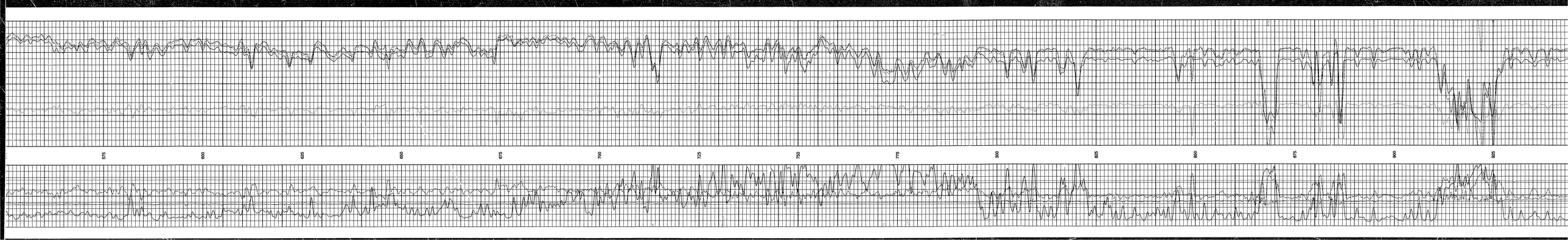
DT P&S Compressional (DTcP)
140 (usec/ft) 40

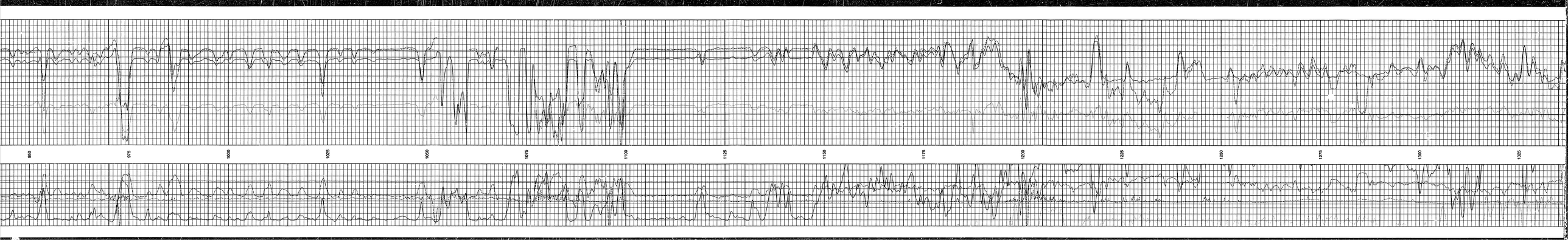
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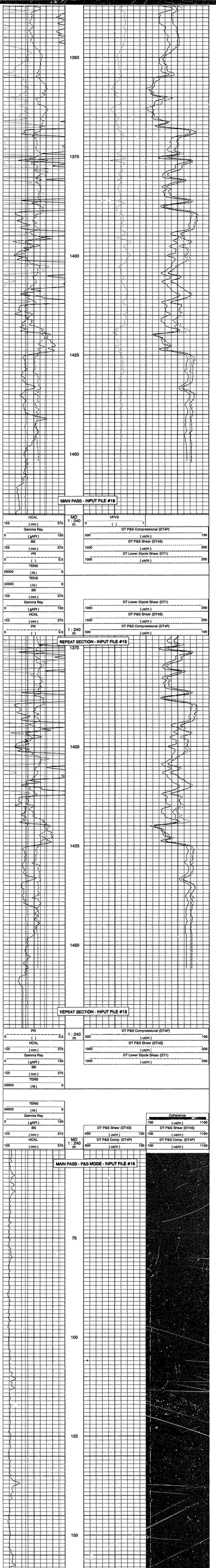
TENS 0 (lbf) 50000
GR (API) 0 150
Gamma Ray (API) 0 150
HCAL 135 (cm) 35

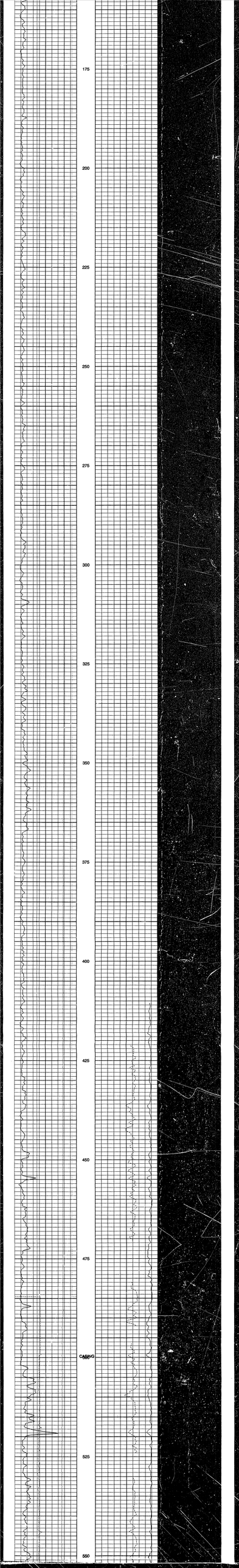

850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
MAIN PASS - INPUT FILE #18
HCAL
(mm)
125
375
Gamma Ray
(gAPI)
0
150
BS
(mm)
125
375
TENS
(N)
50000
0
1 : 600
m
DT P&S Compressional (DT4P)
500
(us/m)
100
TENS
(N)
50000
0
PR
( )
0
0.5
BS
(mm)
125
375
Gamma Ray
(gAPI)
0
150
HCAL
(mm)
125
375
DT Lower Dipole Shear (DT1)
1000
(us/m)
200
DT P&S Shear (DT4S)
1000
(us/m)
200
DT P&S Compressional (DT4P)
500
(us/m)
100
MD
1 : 240
m
VPVS
3
( )
1
MAIN PASS - INPUT FILE #18
75
100
125
150

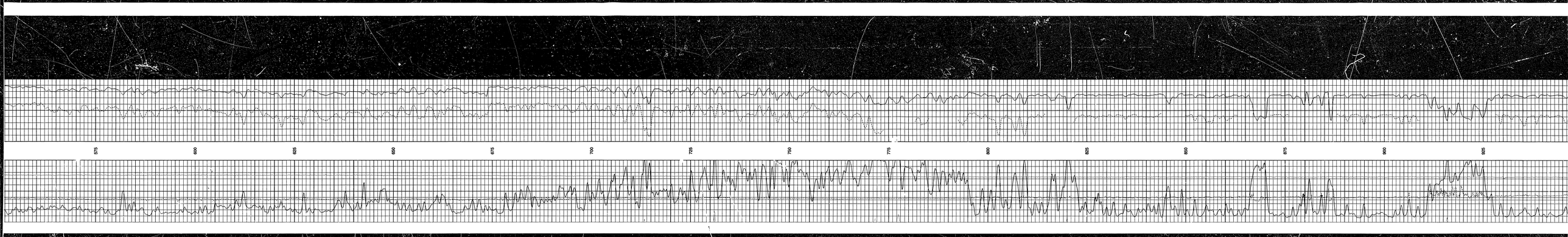

175
200
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275
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325
350
375
400
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475
500
525
550

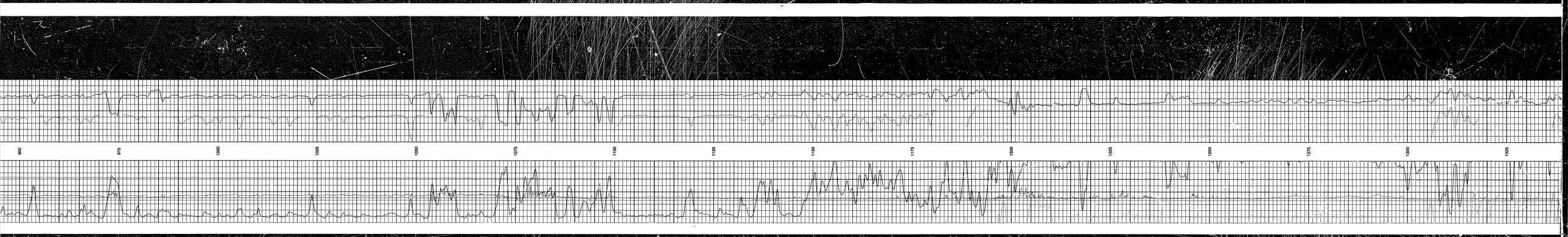

575
600
625
650
675
700
725
750
775
800
825
850
875
900
925

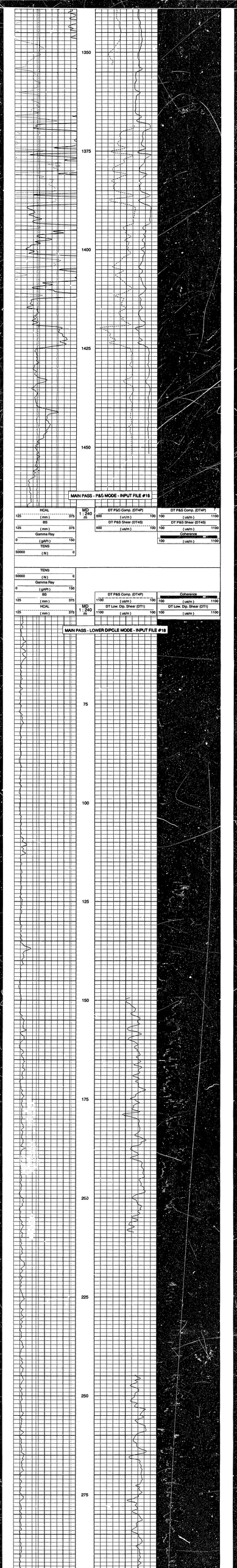

850
875
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300
1325

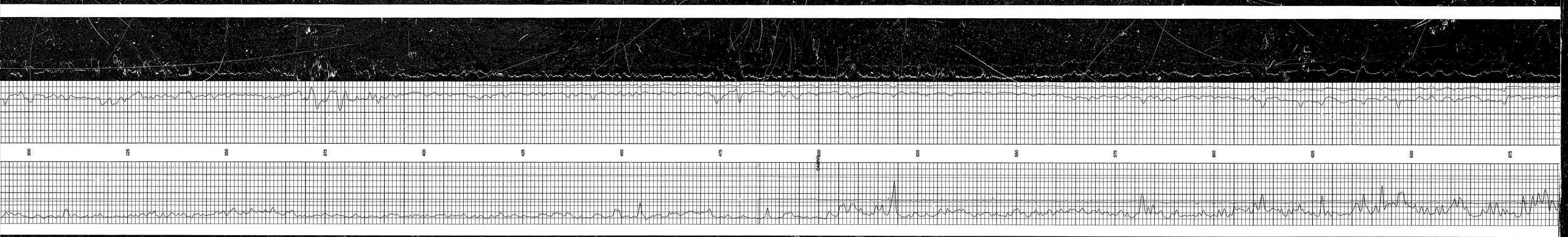

1350
1375
1400
1425
1450
MAIN PASS - INPUT FILE #18
HCAL
125 (mm) 375
Gamma Ray
0 (gAPI) 150
BS
125 (mm) 375
PIR
0 ( ) 0.5
TENS
50000 (N) 0
MD
1 : 240
m
VPVS
3 ( ) 1
DT P&S Compressional (DT4P)
500 (us/m) 100
DT P&S Shear (DT4S)
1000 (us/m) 200
DT Lower Dipole Shear (DT1)
1000 (us/m) 200
REPEAT SECTION - INPUT FILE #13
REPEAT SECTION - INPUT FILE #13
MAIN PASS - P&S MODE - INPUT FILE #18
Coherence
100 (us/m) 1100
75
100
125
150

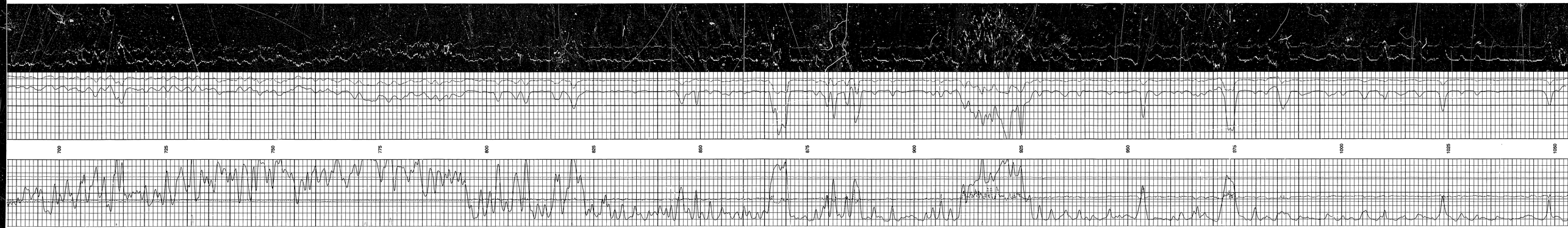

175
200
225
250
275
300
325
350
375
400
425
450
475
CASING
525
550

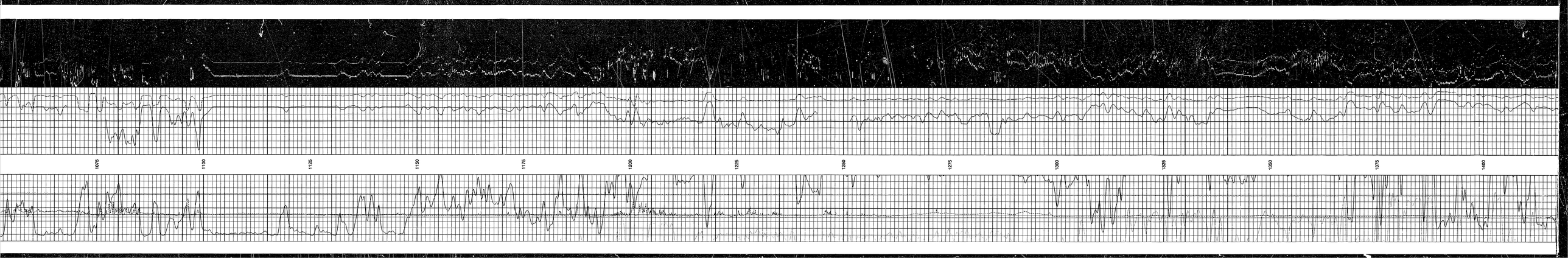

575
600
625
650
675
700
725
750
775
800
825
850
875
900
925

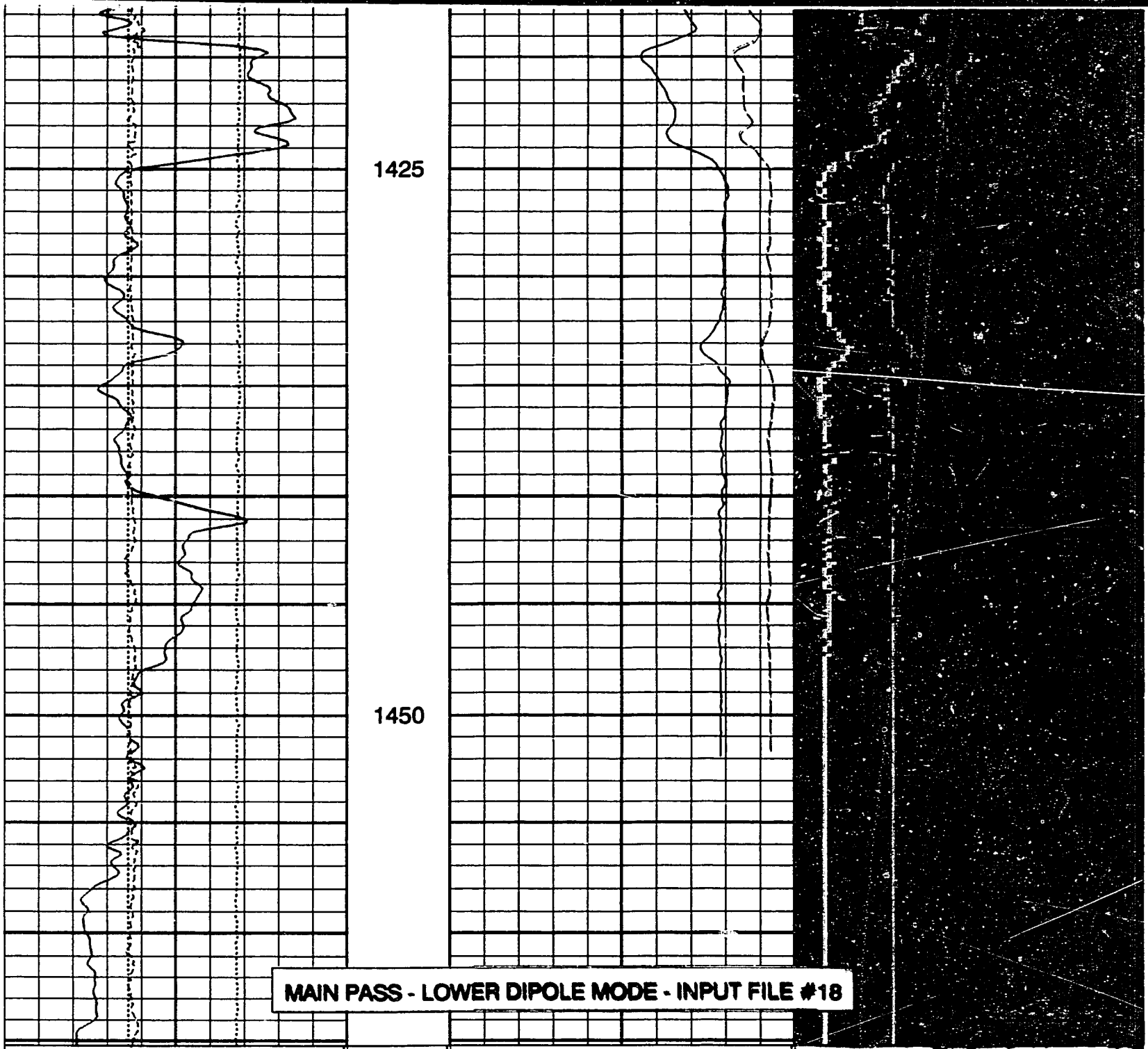

950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300
1325


1350
1375
1400
1425
1450
MAIN PASS - P&S MODE - INPUT FILE #18
HCAL
125 (mm) 375
BS
125 (mm) 375
Gamma Ray
0 (gAPI) 150
TENS
50000 (N) 0
MD 1 : 240 m
DT P&S Comp. (DT4P)
600 (us/m) 100
DT P&S Shear (DT4S)
600 (us/m) 100
DT P&S Comp. (DT4P)
100 (us/m) 1100
DT P&S Shear (DT4S)
100 (us/m) 1100
Coherence
100 (us/m) 1100
TENS
50000 (N) 0
Gamma Ray
0 (gAPI) 150
BS
125 (mm) 375
HCAL
125 (mm) 375
MD 1 : 240 m
DT P&S Comp. (DT4P)
1100 (us/m) 100
DT Low. Dip. Shear (DT1)
1100 (us/m) 100
Coherence
100 (us/m) 1100
DT Low. Dip. Shear (DT1)
100 (us/m) 1100
MAIN PASS - LOWER DIPOLE MODE - INPUT FILE #18
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
1225
1250
1275
1300
1325
1350
1375
1400



MAIN PASS - LOWER DIPOLE MODE - INPUT FILE #18

HCAL 125 (mm) 375	MD 1 : 240 m	DT Low. Dip. Shear (DT1) 1100 (us/m) 100	DT Low. Dip. Shear (DT1) 100 (us/m) 1100
BS 125 (mm) 375		DT P&S Comp. (DT4P) 1100 (us/m) 100	Coherence 100 (us/m) 1100
Gamma Ray 0 (gAPI) 150			
TENS 50000 (N) 0			

Company:	Paramount Resources Ltd.		
Well:	Para et al Nogha M-17		
FIELD:	Nogha		
Province:	Northwest Territories		
Vertical Well			
Date Logged:	18-Mar-2003	Date Processed:	11-Apr-2003
Well Location:	Lattitude: 66deg 36' 45.242"N Longitude: 125deg 48' 30.680"W		
Elevations:	KB: 354.6m	DF: 354.3m	GL: 350m
API Number:	WID 1970	Job Number:	9193793

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

DENSITY

Schlumberger

Paramount Resources Ltd.

Para et al Nogha M-17
Nogha
Northwest Territories

PLATFORM EXPRESS
COMPENSATED NEUTRON
LITHOLOGY DENSITY LOG

Province: Northwest Territories
Field: Nogha
Location: Latitude: 66deg 36' 45.242"N
Well: Para et al Nogha M-17
Company: Paramount Resources Ltd.

LOCATION

Latitude: 66deg 36' 45.242"N
Longitude: 125deg 48' 30.680"W
UWI: 300M176640125450

Elev.: K.B. 354.6 m
G.L. 350 m
D.F. 354.3 m

Permanent Datum: GROUND LEVEL — Elev.: 350 m
Log Measured From: Kelly Bushing — 4.6 m above Perm. Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Latitude	Longitude
WID 1970	66deg 36'	125deg 48'

	Run 1	Run 2	Run 3	Run 4
Logging Date	18-Mar-2003			
Run Number	1			
Depth Driller	1471 m			
Schlumberger Depth	1471.5 m			
Bottom Log Interval	1466.03 m			
Top Log Interval	50 m			
Casing Driller Size @ Depth	244.500 mm @ 499 m	@	@	
Casing Schlumberger	489.3 m			
Bit Size	216.000 mm			
Type Fluid In Hole	Salt Saturated Gel Chem			
MUD Density / Viscosity	1300 kg/m3 / 65 s			
MUD Fluid Loss / PH	8 cm3 / 9.5			
Source Of Sample	Circulation Tank			
RM @ Measured Temperature	0.770 ohm.m @ 12 degC	@	@	
RMF @ Measured Temperature	0.110 ohm.m @ 14 degC	@	@	
RMC @ Measured Temperature	0.100 ohm.m @ 11 degC	@	@	
Source RMF / RMC	Pressed / Calculated			
RM @ MRT / RMF @ MRT	0.584 @ 23 / 0.088 @ 23	@ / @	@ / @	@ / @
Maximum Recorded Temperatures	23 degC			
Circulation Stopped / Time	18-Mar-2003 / 8:00			
Logger On Bottom / Time	18-Mar-2003 / 13:30			
Unit Number / Location	8416 / Norman Wells			
Recorded By	R. Delisle/P. Roos			
Witnessed By	C. Bredin			

DISCLAIMER
THE USE OF AND RELIANCE UPON THIS RECORDED DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS PARTNERS, AFFILIATES, SUBSIDIARIES, AGENTS, EMPLOYEES, SUCCESSORS AND ASSIGNS) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING, (i) RESTRICTIONS ON THE USE OF THE RECORDED DATA, (ii) LIMITATIONS ON THE WARRANTIES MADE BY SCHLUMBERGER, (iii) LIMITATIONS ON COMPANY'S REMEDIES AND (iv) LIMITATIONS ON SCHLUMBERGER'S LIABILITY. COMPANY'S USE OF AND RELIANCE UPON THE RECORDED DATA, AND (v) CUSTOMER'S FULL AND SOLE RESPONSIBILITY REGARDING ANY DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED DATA.

OTHER SERVICES
OS1: PEX-HALS-DSI-EMS
OS2:
OS3:
OS4:
OS5:
REMARKS: RUN NUMBER 1
Tied to CBL/VDL run on 14JUL
Two CMEZs on DSI
Hole volume computed on a 16cm caving diameter of 177.8mm
Invert mud density and viscosity measured at 1300 kg/m3 and 65 s
Surface Hole Location: 66deg 36' 45.242"N / 125deg 48' 30.680"W
Density mastercal cut of data because of winter conditions

Rig: Nabors #62
Crew: P. Roos, M. Lukro

SERVICE ORDER #:		HUN 1		RUN 2	
PROGRAM VERSION:		8193703			
FLUID TYPE:		10CO-306			
LOGGED INTERVAL:	START	STOP		START	STOP

	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				
MUD Density / Viscosity				
MUD 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				

EQUIPMENT DESCRIPTION

RUN 1 — RUN 2

SURFACE EQUIPMENT
WITM (DTS)-A

GSR-UY
NCT-B
NCS-VB

DOWNHOLE EQUIPMENT

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_01SLUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

OP System Version: 10CO-306

		MCM	EMS-B
HILTB-FTB	10CO-306		10CO-306
DSST-B	10CO-306		10CO-306

DSST-B 10C0-306 DTC-H 10C0-306

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

Tension (TENS)
25000 (N) 0

Bit Size (BS)
125 (MM) 375

Caliper (HCAL)
125 (MM) 375

Std. Res. Formation Density (RHOZ)
2000 (K/M3) 3000

Gamma Ray (GR)
0 (GAPI) 150

Stuck Stretch (STIT)
0 (M) 20

Std. Res. Formation Pe (PEFZ)
0 (---) 10

Density Correction (HDRA)
450 (K/M3) -50

MAIN PASS: *** PLATFORM EXPRESS - LITHOLOGY DENSITY ***

<--cd500

550

600

650

700

TENS

PEFZ

RHOZ

HCAL

GR

HDRA

750

BS

800

850

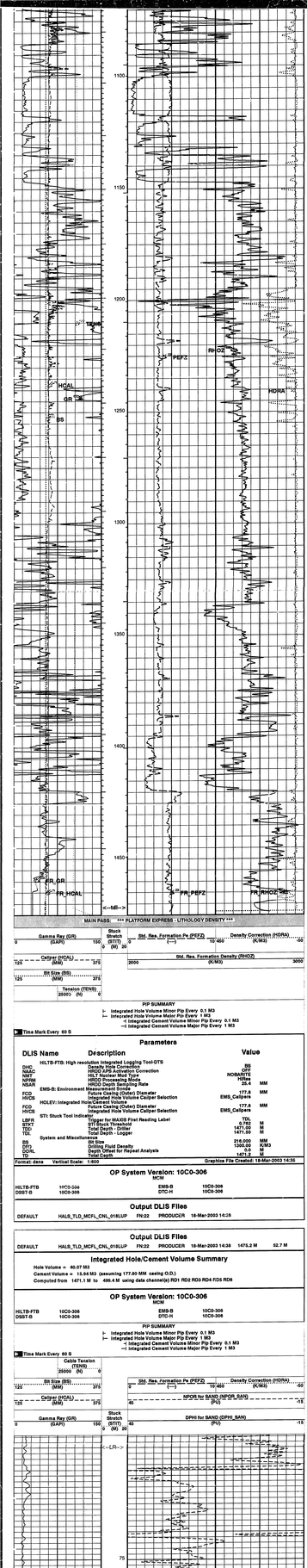
900

950

1000

1050

1100



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
HILTB-FTB: High resolution Integrated Logging Tool-DTS		BS
SHC	HRGD Activation	OFF
NAAC	HRGD AFS Activation Correction	OFF
NMT	HILT Nuclear Mud Type	NOBARITE
MFNM	HRGD Mud Filtrate Name	Filtrate
NSAR	HRGD Depth Sampling Rate	25.4 MM
EMS-B: Environment Measurement Sonde		
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
HOLEV: Integrated Hole Volume		
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers
STI: Stuck Tool Indicator		
LBFS	Trigger for MAXS First Reading Label	TDL
STXT	STT Stuck Threshold	0.785 M
TED	Total Depth - Driller	1471.50 M
TDL	Total Depth - Logger	1471.00 M
System and Miscellaneous		
BS	Bit Size	216.000 MM
DFD	Drilling Fluid Density	1200.00 K/M3
DFSL	Depth Sampled for Repeat Analysis	0.0 M
TD	Total Depth	1471.2 M

Format: dens Vertical Scale: 1:600 Graphics File Created: 18-Mar-2003 14:36

OP System Version: 10CO-306

MCM

HILTB-FTB	10CO-306	EMS-B	10CO-306
DSST-B	10CO-306	DTC-H	10CO-306
		TDL	

Output DLIS Files

DEFAULT HALS_TLD_MCFL_CNL_018LUP FN:22 PRODUCER 18-Mar-2003 14:26

Output DLIS Files

DEFAULT HALS_TLD_MCFL_CNL_018LUP FN:22 PRODUCER 18-Mar-2003 14:38 1475.2 M 52.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 40.07 M3
Cement Volume = 15.84 M3 (assuming 177.80 MM casing O.D.)
Computed from 1471.1 M to 409.4 M using data channel(s) RD1 RD2 RD3 RD4 RD5 RD6

OP System Version: 10CO-306

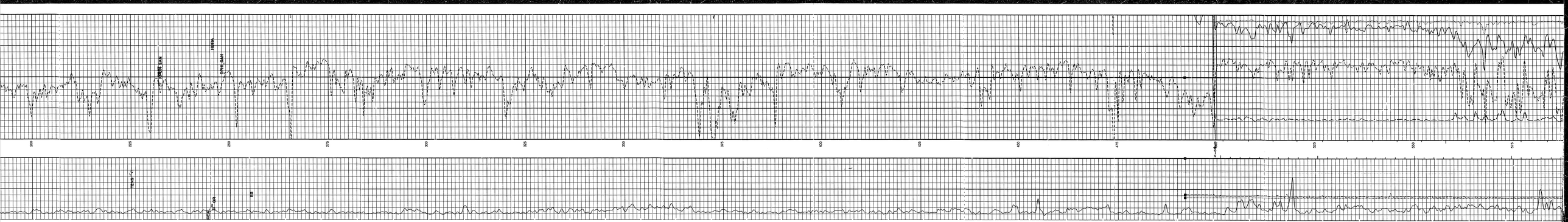
MCM

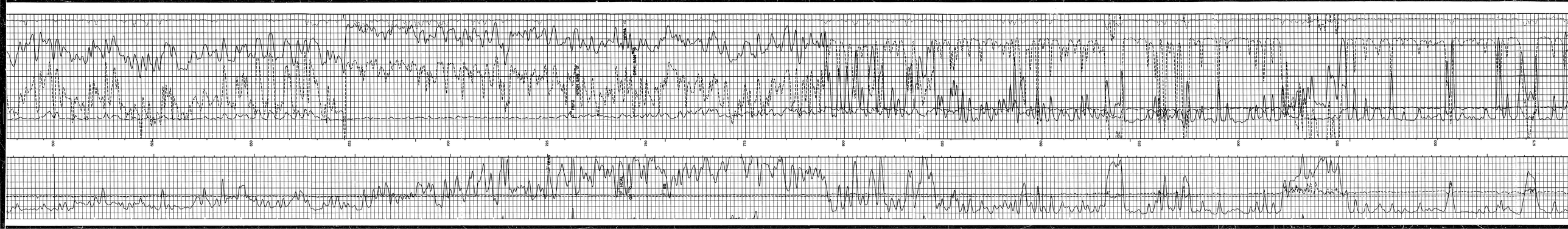
HILTB-FTB	10CO-306	EMS-B	10CO-306
DSST-B	10CO-306	DTC-H	10CO-306

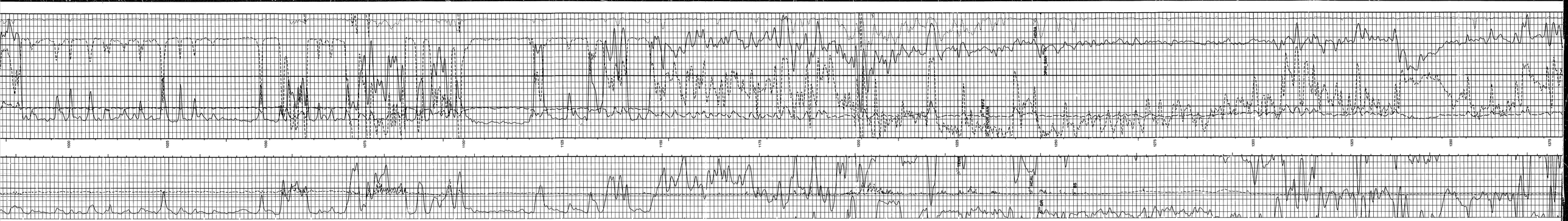
PIP SUMMARY

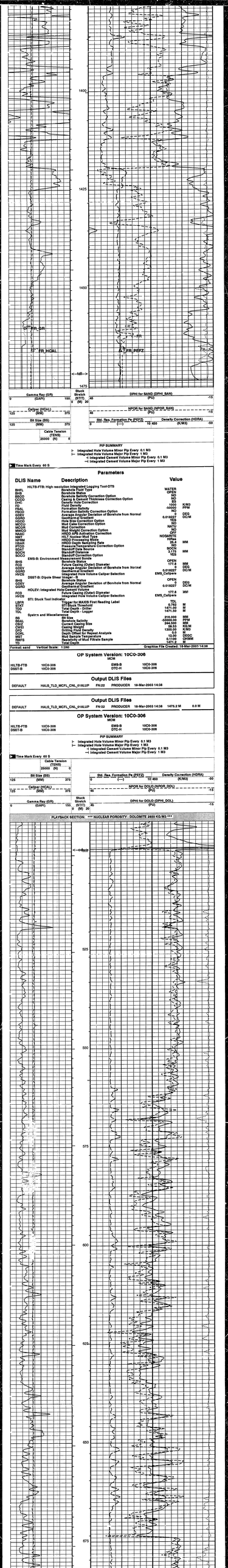
- Integrated Hole Volume Minor Pip Every 0.1 M3
- Integrated Hole Volume Major Pip Every 1 M3
- Integrated Cement Volume Minor Pip Every 0.1 M3
- Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S


HMRN
GRAM_GAM
HMRN
GRAM_GAM
200
225
250
275
300
325
350
375
400
425
450
475
500
525
550
575
ETCO2
HCO2C_GA
EIS


600
625
650
675
700
725
750
775
800
825
850
875
900
925
950
975
DPH (SAW)
DPH (SAW)
DPH (SAW)


1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
1475
1500
1525
1550
1575
1600
1625
1650
1675
1700
1725
1750
1775
1800
1825
1850
1875
1900
1925
1950
1975
2000
2025
2050



Parameters

DLIS Name	Description	Value
BHFL	HLTB-FTB: High resolution Integrated Logging Tool-DTS Borehole Fluid Type	WATER
BHS	Borehole Status	OPEN
BSCC	Borehole Salinity Correction Option	NO
CCCO	Casing Wall Thickness Correction Option	NO
CSCO	Casing Hole Correction	YES
FD	Fluid Density	1000 K/M3
FSAL	Formation Salinity	40000 PPM
FSCO	Formation Salinity Correction Option	NO
HDAD	Average Angular Deviation of Borehole from Normal	0 DEG
HDAZ	Geothermal Gradient	0.018227 DC/M
HSCO	Hole Size Correction Option	YES
MCOR	Mud Cake Correction Option	NO
MCUR	Mud Correction	NATU
MWCO	Mud Weight Correction Option	JEV
NASC	HRDD Porosity Matrix Correction	NO
NMAT	HRDD Matrix Material	NOMATRI
NPRM	HRDD Processing Mode	Hilee
OSAM	HRDD Depth Sampling Rate	50 MM
PTUD	Pressure/Temperature Correction Option	NO
SBSZ	Standoff Bit Size	SOCN
SDCH	Standoff Distance	3.175 MM
SOCO	Standoff Correction Option	YES
	EMS-B: Environmental Measurements Sonde	
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	177.8 MM
GSEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGND	Geothermal Gradient	0.018227 DC/M
HVCD	Hole Volume Caliper Selection	EMS_Calipers
	DSST-B: Dipole Sheer Imager - B	
BHS	Borehole Status	OPEN
GSEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGND	Geothermal Gradient	0.018227 DC/M
	HOLEV: Integrated Hole/Cement Volume	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCD	Integrated Hole Volume Caliper Selection	EMS_Calipers
	STI: Stuck Tool Indicator	
	Trigger for MAXIS First Reading Label	TDL
LBFB	STI Slope Threshold	0.703 M
STXT	STI Slope Caliber	1471.00 M
TDC	Total Depth - Logger	1471.00 M
	System and Miscellaneous	
BS	Bit Size	216.000 MM
SSAL	Borehole Salinity	-50000.00 PPM
CSIZ	Current Casing Size	340.00 MM
CWEI	Casing Weight	88.1 KG/M
DFD	Drilling Fluid Density	1300.00 K/M3
DOBL	Depth Offset for Repeat Analysis	0.0 M
MST	Mud Sample Temperature	110.00 DEGC
RMFS	Resistivity of Mud Filtrate Sample	0.1100 OHMM
TDD	Total Depth - Driller	1471.2 M

Format: sand Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306

MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Output DLIS Files

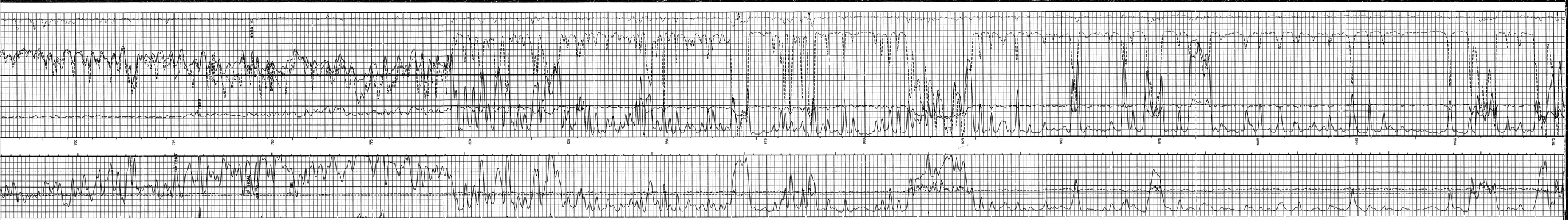
DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

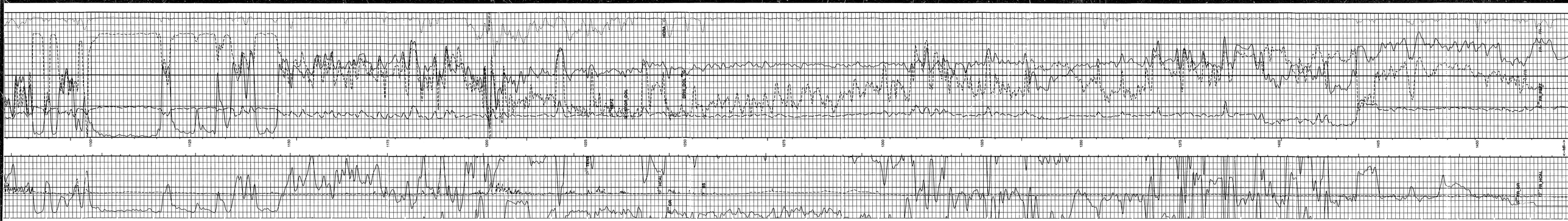
OP System Version: 10C0-306

MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

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


700
725
750
775
800
825
850
875
900
925
950
975
1000
1025
1050
1075


1100
1125
1150
1175
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
MEAN
DIAS
SYS
PULSE
RESP
TEMP
HEART
SPO2
PR

1475

PLAYBACK SECTION: *** NUCLEAR POROSITY - DOLOMITE 2650 KG/M3 ***

Gamma Ray (GR) (GAPI) 0 150
Stuck Stretch (STIT) (M) 0 20
DPHI for DOLO (DPHI_DOL) (PU) 45 -15
Caliper (HCAL) (MM) 125 375
NPOR for DOLO (NPOR_DOL) (PU) 45 -15
Bit Size (BS) (MM) 125 375
Std. Res. Formation Pe (PEF2) (---) 0 10.480
Density Correction (HDRA) (KMS) 0 -50

Cable Tension (TENS) 25000 (N) 0

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	
HILTB-FTB: High resolution Integrated Logging Tool-OTS			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CSCO	Casing & Cement Thickness Correction Option	NO	
DNC	Density Hole Correction	NO	
FSAL	Formation Salinity	40000.000	PPM
FSAL	Formation Salinity	NaCl	
FSCO	Formation Salinity Correction Option	NO	
GDEG	Average Angular Deviation of Borehole from Normal	0.018227	DEG
GSRD	Geothermal Gradient	0.018227	DC/M
HBCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCOO	Mud Compressibility	NATU	
MCOO	Mud Cake Correction Option	NO	
MXAC	HRDD APS Activation Correction	NO	
NMT	HILT Nuclear Mud Type	NOBARITE	
NSAM	HRDD Sampling Rate	25.4	MM
NSAM	HNGD Depth Sampling Rate	25.4	MM
PTCO	Pressure/Temperature Correction Option	NO	
SCCO	Standoff Correction	0.175	MM
SOCO	Standoff Distance	0.175	MM
SOCO	Standoff Correction Option	YES	
EMS-B: Environment Measurement Sonde			
BHS	Borehole Status	OPEN	
CSDV	Average Angular (Outer) Diameter	177.8	MM
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HVCS	HNGD Hole Volume Caliper Selection	EMS_Calipers	
HVCO	DSST-B: Dipole Shear Imager-B		
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
HOLEV: Integrated Hole Volume Caliper Selection			
FCD	Future Casing (Outer) Diameter	177.8	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
LBFR	STI: Stuck Tool Indicator	TDL	
STKT	Trigger for MAXIS Fired Reading Label	0.762	M
TDD	STT Stuck Threshold	1471.56	M
TDL	Total Depth - Driller	1471.56	M
TDL	Total Depth - Logger	0	M
System and Miscellaneous			
BS	Bit Size	215.900	MM
EMUL	Borehole Salinity	40000.00	PPM
MDEN	Mud Density Rate	2400.000	KG/M
OWS	Casing Weight	59.53	KG/M
OFD	Drilling Fluid Density	1200.00	K/M3
OMTL	Mud Sample Type Subset Analysis	MUD	
MST	Mud Sample Temperature	13.00	DEGC
RMFB	Resistivity of Mud Filtrate Sample	0.1100	OHMM
TD	Total Depth	1471.2	M

Format: dolo Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:39

OP System Version: 10C0-306

		MCH		
		EMB-B	10C0-306	
HILTB-FTB	10C0-306	DTC-H	10C0-306	
DSST-B	10C0-306			

Output DLIS Files

DEFAULT	HAIL_TLD_MCFL_CNL_01#LUP	FN:22	PRODUCER	18-Mar-2003 14:38	

Output DLIS Files

DEFAULT	HAIL_TLD_MCFL_CNL_01#LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M	0.0 M

OP System Version: 10C0-306

		MCM		
		EMB-B	10C0-306	
HILTB-FTB	10C0-306	DTC-H	10C0-306	
DSST-B	10C0-306			

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

Cable Tension (TENS) 25000 (N) 0

Bit Size (BS) (MM) 125 375

Std. Res. Formation Pe (PEF2) (---) 0 10.480

Density Correction (HDRA) (KMS) 0 -50

Caliper (HCAL) (MM) 125 375

NPOR for LIME (NPOR_LIM) (PU) 45 -15

Stuck Stretch (STIT) (M) 0 20

Gamma Ray (GR) (GAPI) 0 150

DPHI for LIME (DPHI_LIM) (PU) 45 -15

MAIN PASS: *** PEX NUCLEAR POROSITY - LIMESTONE 2710 KG.M3 ***

525
550
575
600
625
650
675
700
725
750

TENS
PEF2
NPOR_LIM
HCAL
GR
HDRA
DPHI_LIM
BS


775
800
825
850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
1150

MAIN PASS: *** XDX NUCLEAR POROSITY - LIMESTONE 2710 KG/M3 ***

Gamma Ray (GR) (GAR)		Stuck Stretch (STIT) (M)	DPHI for LIME (DPHI_LIM) (PU)
0	150	40	-15
0	30		
Caliper (HCAL) (MM)		NPOR for LIME (NPOR_LIM) (PU)	
125	375	45	-15
Bit Size (BS) (MM)		Std. Res. Formation Pe (PEFZ) (---)	Density Correction (HDRA) (K/M3)
125	375	0	10 450
			-50
Cable Tension (TENS) (N)			
25000	0		

RIP 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 Mar; Every 60 S

Parameters

DLIS Name	Description	Value
	HILTB-FTB: High resolution Integrated Logging Tool-DTS MCM	
BHFL	Borehole Fluid Type	WATER
BHS	Borehole Status	OPEN
BSCO	Borehole Salinity Correction Option	NO
CCCO	Casing & Cement Thickness Correction Option	NO
DFC	Fluid Density Correction	50
DFD	Fluid Density	1000 KJM3
FSAL	Formation Salinity	35000 PPM
FSCO	Formation Salinity Correction Option	NO
GDIP	Geothermal Gradient Inclination of Borehole from Normal	DEG
GDRO	Geothermal Gradient	0.014227 DC/M
HSCO	Hole Size Correction Option	YES
MCCO	Mud Cake Correction Option	NO
MCOR	Mud Correction	NATU
MWCO	Mud Weight Correction Option	NO
NAAC	HRDD APS activation Correction	YES
NMT	HILT Nuclear Mud Type	LIMESTONE
NSAM	HRDD Sampling Rate	15cm
NSAR	HRDD Depth Sampling Rate	30.4 MM
PTOC	Pressure/Temperature Correction Option	NO
SCFA	Standoff Caliper	SCAL
SOCH	Standoff Distance	0.178 MM
SOCO	Standoff Correction Option	YES
	EMS-B: Environmental Measurement Sonde	
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	177.8 MM
GDEV	Average Angular Deviation of Borehole from Normal	DEG
GDRD	Geothermal Gradient	0.014227 DC/M
HVCS	Hole Volume Volume Caliper Selection	EMS_Caliper4
	Imager - B	
BHS	Borehole Status	OPEN
GDIP	Inclination of Borehole from Normal	DEG
GDRD	Geothermal Gradient	0.014227 DC/M
	HOLEV: Integrated Hole/Cement Volume	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Hole Volume Volume Caliper Selection	EMS_Caliper4
	STI: Stuck Tool Indicator	
LBFS	Trigger for MAXIS First Reading Label	TDL
STHT	STI Stuck Threshold	0.125 M
TDL	Total Depth - Driller	1471.00 M
TDL	Total Depth - Logger	1471.59 M
	System and Miscellaneous	
BS	Bit Size	215.000 MM
BSAL	Borehole Salinity	-50000.00 PPM
CSIZ	Current Casing Size	244.500 MM
CWEI	Casing Weight	53.600 KGM
DFD	Drilling Fluid Density	1200.00 K/M3
DOFL	Depth Offset for Repeat Analysis	0.0 M
MST	Mud Sample Temperature	12.00 DEGC
RMFS	Resistivity of Mud Filtrate Sample	0.1100 OHMM
TD	Total Depth	1472.0 M

Format: line Vertical Scale: 1:240 — Graphics File Created: 18-Mar-2003 14:39

OP System Version: 10CO-306

MCM

HILTB-FTB	10CO-306	EMS-B	10CO-306
DSBT-B	10CO-306	LTU-H	10CO-306

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_01$LUP	FN:22	PRODUCER	18-Mar-2003 14:38	

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_01$LUP	FN:15	PRODUCER	18-Mar-2003 13:41	1471.0 M	1370.1 M

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_01$LUP	FN:22	PRODUCER	18-Mar-2003 14:38	

OP System Version: 10C0-306

MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

PIP SUMMARY

- Integrated Hole Volume Minor Plp Every 0.1 M3
- Integrated Hole Volume Major Plp Every 1 M3
- -t Integrated Cement Volume Minor Plp Every 0.1 M3
- -t Integrated Cement Volume Major Plp Every 1 M3

Time Mark Every 60 S

TENS_REP Curve (TENS_REP)
25000 (N) 0

HCAL_REP Curve (HCAL_REP)
125 (MM) 375

PEF2_REP Curve (PEF2_REP)
0 (---) 10.400

HDRA_REP Curve (HDRA_REP)
-.15 (K/M3) .45

GR_REP Curve (GR_REP)
0 (GAPI) 150

NPOR_SAN_REP Curve (NPOR_SAN_REP)
45 (PU) -15

BS_REP Curve (BS_REP)
125 (MM) 375

DPHI_SAN_REP Curve (DPHI_SAN_REP)
45 (PU) -15

<--LR-->

1375

1400

1425

1450

<--tdl-->

BS_REP Curve (BS_REP)
125 (MM) 375

DPHI_SAN_REP Curve (DPHI_SAN_REP)
45 (PU) -15

GR_REP Curve (GR_REP)
0 (GAPI) 150

HCAL_REP Curve (HCAL_REP)
125 (MM) 375

PEF2_REP Curve (PEF2_REP)
0 (---) 10.400

HDRA_REP Curve (HDRA_REP)
-.15 (K/M3) .45

TENS_REP Curve (TENS_REP)
25000 (N) 0

PIP SUMMARY

- Integrated Hole Volume Minor Plp Every 0.1 M3
- Integrated Hole Volume Major Plp Every 1 M3
- -t Integrated Cement Volume Minor Plp Every 0.1 M3
- -t Integrated Cement Volume Major Plp Every 1 M3

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	HLTB-FTB: High resolution Integrated Logging Tool-DTS	
BHFL	Borehole Fluid Type	WATER
BHS	Borehole Status	OPEN
CDCO	Casing & Cement Thickness Correction Option	NO
CECO	Casing & Cement Thickness Correction Option	NO
DHC	Density Hole Correction	BS
FD	Fluid Density	1000 K/M3
FSAL	Formation Salinity	45000 PPM
GCOR	Geothermal Gradient Correction Option	NO
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
MCOC	Mud Cake Correction Option	NO
MCOO	Mud Cake Correction Option	NO
MCOR	Mud Correction	NATU
MHCO	HNGD Hole Correction Option	OFF
MMCO	HNGD MRB Correction	OFF
NMT	HILT Nuclear Mud Type	NOBASITE
NPHM	HNGD Processing Mode	HiRes
HSAR	HNGD Depth Sampling Rate	30.4 MM
SCCO	Standoff Caliper Correction Option	NO
SDAT	Standoff Data Source	SCCH
SOCH	Standoff Distance	3.175 MM
SOCO	Standoff Correction Option	YES
	EMS-B: Environmental Measurement Sonde	
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	177.8 MM
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
HVCS	Integrated Hole Volume Caliper Selection	EMS_Caliperx MM
	DSST-B: Dipole Shear Imager -	
BHS	Borehole Status	OPEN
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
	HOLEV: Integrated Hole Cement Volume	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	STI: Stuck Tool Indicator - Integrated Hole Volume Caliper Selection	EMS_Caliperx MM
TDL	Total Depth - Logger	1471.50 M
	System and Mis ellaneous	
BI	Bit Size	216.000 MM
BSAL	Borehole Salinity	45000.00 PPM
CBS	Casing Bottom Size	244.50 MM
CMFI	Casing Weight	59.53 KG/M
DFD	Drilling Fluid Density	1300.00 K/M3
GURL	Depth Offset for Reject Analysis	0 M
MRTM	Mud Sample Temperature	13.00 DEGC
RMFS	Resistivity Mud Filtrate Sample	0.1100 OHMM
TD	Total Depth	1471.5 M

Format: sand RGP Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306

MCM

HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_013.LUP	FN:10	PRODUCER	18-Mar-2003 13:41	1471.0 M 1370.1 M

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018.LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1275.2 M 0.0 M

Integrated Hole/Cement Volume Summary

Hole Volume = 13.07 m3
Cement Volume = 5.05 m3 (assuming 177.80 mm casing O.D.)
Computed from 1224.6 m to 1148.5 m

OP System Version: 10C0-306

MCM

HILTD	10C0-306	EMS	10C0-306
DSST-B	10C0-306	DTCH	10C0-306

PIP SUMMARY

- Integrated Hole Volume Minor Plp Every 0.1 M3
- Integrated Hole Volume Major Plp Every 1 M3
- -t Integrated Cement Volume Minor Plp Every 0.1 M3
- -t Integrated Cement Volume Major Plp Every 1 M3

Time Mark Every 60 S

Cable Tension (TENS)
25000 (N) 0

BS Size (BS)
125 (MM) 375

HL Res. Fecmation Fe (FEFS)
0 (---) 10.400

Density Correction (HDRA)
-.15 (K/M3) .45

Caliper (HCAL)
125 (MM) 375

HDPH for SAND (HDPH_SAN)
45 (PU) -15

Stuck Stretch
0 (STIT) 30

Hilfes Gammaflay (HGR)
0 (GAPI) 150

HNPO for SAND (HNPO_SAN)
45 (PU) -15

1150

1175

1200

<--FR-->

Stuck Stretch
0 (STIT) 30

Hilfes Gammaflay (HGR)
0 (GAPI) 150

HNPO for SAND (HNPO_SAN)
45 (PU) -15

Caliper (HCAL) (MM) 125 375
Bit Size (BS) (MM) 125 375
Cable Tension (TENS) (N) 25000 0
HDPH for BAND (HDPH_SAN) (PU) 40 -15
H. Res. Formation Pe (REFB) (----) 0 10
Density Correction (HDRA) (K/M3) 480 -50

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	
	HLTB-FTB: High resolution Integrated Logging Tool-DTS		
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CBCO	Casing Bulk Density Thickness Correction Option	NO	
CHC	Classify Hole Correction	Bit	
DL	Fluid Density	1000.0	kg/m3
FSCO	Formation Salinity Correction Option	NO	
GDCO	Geothermal Gradient Correction of Borehole from Normal	0.000	deg
GDRO	Geothermal Gradient	0.018	degC/m
HSCO	Hole Size Correction Option	YES	
MCCO	Mud Cake Correction Option	NO	
MCO	Mud Cake Thickness	NaTU	
MWCO	Mud Weight Correction Option	NO	
NAMC	HRDD AFB Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NORMAL	
SHR	HRDD Sample Rate	HIRES	
SSAR	HRDD Depth Sampling Rate	25.400	mm
PTCO	Pressure/Temperature Correction Option	NO	
SCO	Standoff Choice	SCHLUM	
SDCH	Standoff Distance	0.178	mm
SOCO	Standoff Correction Option	YES	
	EMS-B: Environment Measurement Sonde		
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GDRO	Geothermal Gradient	0.018	degC/m
	DSST-B: Dipole Shear Imager -		
BHS	Borehole Status	OPEN	
GDEV	Average Angular Deviation of Borehole from Normal	0.000	deg
GDRO	Geothermal Gradient	0.018	degC/m
	STI: Stuck Tool Indicator		
STHT	STI Stuck Threshold	0.762	m
TDD	Total Depth - Driller	1471.0	m
TDL	Total Depth - Logger	1471.0	m
	System and Miscellaneous -		
BS	Bit Size	216.0	mm
BSAL	Borehole Salinity		
CBSZ	Current Casing Size		mm
CWEI	Casing Weight	94.6	kg/m
DFD	Drilling Fluid Density	1000.0	kg/m3
FSAL	Formation Salinity		
MST	Mud Sample Temperature	12.000	degC
RMFS	Resistivity of Mud Filtrate Sample	0.110	ohm.m
		YES	

Format: hires_sand Vertical Scale: 1/120 Graphics File Created: 18-Mar-2003 15:27

OP System Version: 10C0-306

MCM

HILTD	10C0-306	EMB	10C0-306
DSST-B	10C0-306	DTCH	10C0-306

Input DLIS Files

DEFAULT					
DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38	1475.2 M 0.0 M

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38

OP System Version: 10C0-306

MCM

HILTB-FTB	10C0-306	EMB-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

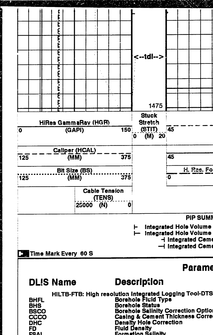
PIP SUMMARY
Integrated Hole Volume Minor Pip Every 0.1 M3
Integrated Hole Volume Major Pip Every 1 M3
Integrated Cement Volume Minor Pip Every 0.1 M3
Integrated Cement Volume Major Pip Every 1 M3

Time Mark Every 60 S

Cable Tension (TENS) (N) 25000 0
Bit Size (BS) (MM) 125 375
Caliper (HCAL) (MM) 125 375
HDPH for BAND (HDPH_SAN) (PU) 40 -15
H. Res. Formation Pe (REFB) (----) 0 10
Density Correction (HDRA) (K/M3) 480 -50
HiRes Gamma-Ray (HGR) (GAPI) 0 150
Stuck Stretch (STIT) (M) 0 20
HNPO for BAND (HNPO_SAN) (PU) 45 -15

1300
1350
1375
1400
1425
1450

CALI_HCAL
FR_HGR
FR_HCAL
FR_REFB



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
SS	HILTB-FTB: High resolution Integrated Logging Tool-DTS	
BHFL	Borehole Fluid Type	WATER
BHS	Borehole Status	OPEN
BSCO	Borehole Salinity Correction Option	NO
CSCO	Casing & Cement Thickness Correction Option	NO
DHC	Dead Hole Correction	YES
FBD	Formation Bulk Density	1000 K/M3
FBAL	Formation Salinity	-50000 PPM
FSCO	Formation Salinity Correction Option	NO
GDEV	Average Angular Deviation of Borehole from Normal	0.018227 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
MCOR	Mud Cake Correction Option	NO
MDCO	Mud Data Correction Option	NO
MCOR	Mud Correction	NATU
MWCO	Mud Weight Correction Option	NO
NAAC	HRDD APS Activation Correction	NO
NMTY	HILT Tool Model Name	NOBARITE
NWT	HRDD Mud Weight	HiRes
NSAM	HRDD Depth Sampling Rate	20.4 MM
PTCO	Pressure/Temperature Correction Option	NO
SDAT	Standoff Data Source	SOCN
SDCN	Standoff Distance	3.175 MM
SOCO	Standoff Correction Option	YES
	SMS-B: Environment	
BHS	Borehole Status	OPEN
FCD	Future Casing (Outer) Diameter	177.8 MM
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
HVCS	Future Hole Volume Caliper Selection	EMS_Caliper1
	DSST-B: Dipole Shear Imager	
BHS	Borehole Status	OPEN
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
	HOLEV: Integrated Hole/Cement Volume	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Future Hole Volume Caliper Selection	EMS_Caliper1
	STI: Stuck Tool Indicator	
LBFR	Trigger for MAXIS Flint Reading Label	TDL
STKT	STI Stuck Threshold	45.00 M
TDD	Total Depth - Driller	1475.00 M
TDL	Total Depth - Logger	1471.50 M
	System and Miscellaneous	
BS	Bit Size	216.000 MM
GSAL	Borehole Salinity	-50000.00 PPM
CBZ	Current Casing Size	244.500 PPM
CWEI	Casing Weight	53.570 KG/M
DFD	Drilling Fluid Density	1000.00 K/M3
DOFF	Depth Offset for Repeat Analysis	0.0 M
MST	Mud Sample Temperature	15.00 DEGC
RMFS	Resistivity of Mud Filtrate Sample	0.1100 OHMM
TD	Total Depth	1471.2 M

Format: hires_sand **Vertical Scale: 1:120** **Graphics File Created: 18-Mar-2003 14:38**

OP System Version: 10C0-306

MCM

HILTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_018LUP	FN:22	PRODUCER	18-Mar-2003 14:38

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Total current mode 1							
Before: 18-Mar-2003 12:56							
Itot 1 Gain	1.000	N/A	0.999	N/A	N/A	0.026	MA
Itot 1 Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Aux current mode 1							
Before: 18-Mar-2003 12:56							
Iaux 1 Gain	1.000	N/A	0.998	N/A	N/A	0.035	MA
Iaux 1 Phase	0.000	N/A	-0.001	N/A	N/A	1.800	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Aux current mode 2							
Before: 18-Mar-2003 12:56							
Iaux 2 Gain	1.000	N/A	0.981	N/A	N/A	0.048	MA
Iaux 2 Phase	0.000	N/A	-0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB A0 current mode 3A							
Before: 18-Mar-2003 12:58							
Ia 10 Gain	1.000	N/A	0.997	N/A	N/A	0.036	UA
Ia 10A Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB A0 current mode 3B							
Before: 18-Mar-2003 12:56							
Ia 3B Gain	1.000	N/A	0.975	N/A	N/A	0.036	UA
Ia 3B Phase	0.000	N/A	-0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Torpedo Voltage gains							
Before: 18-Mar-2003 12:56							
Zvt 1 Gain	1.000	N/A	0.998	N/A	N/A	0.025	MV
Zvt 2 Gain	1.000	N/A	0.984	N/A	N/A	0.045	MV
Zvt 3 Gain	1.000	N/A	0.991	N/A	N/A	0.045	MV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Torpedo Voltage Phases							
Before: 18-Mar-2003 12:56							
Zvt 1 Phase	0.000	N/A	-0.166	N/A	N/A	2.300	DEG
Zvt 2 Phase	0.000	N/A	-0.391	N/A	N/A	0.800	DEG
Zvt 3 Phase	0.000	N/A	-0.250	N/A	N/A	0.500	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Upper Bridle Voltage mode 1							
Before: 18-Mar-2003 12:56							
Zvb 1 Gain	1.000	N/A	0.998	N/A	N/A	0.025	MV
Zvb 1 Phase	0.000	N/A	-0.061	N/A	N/A	2.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB M1-M2 Voltage gains							
Before: 18-Mar-2003 12:56							
ZVM1 Gain	1.000	N/A	0.995	N/A	N/A	0.039	LV
ZVM2 Gain	1.000	N/A	0.993	N/A	N/A	0.019	LV
ZVM3 Gain	1.000	N/A	0.993	N/A	N/A	0.019	LV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB M1-M2 Voltage Phases							
Before: 18-Mar-2003 12:56							
ZVM1 Phase	0.000	N/A	0.667	N/A	N/A	3.800	DEG
ZVM2 Phase	0.000	N/A	1.476	N/A	N/A	1.300	DEG
ZVM3 Phase	0.000	N/A	1.047	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB M1-A0* Voltage gains							
Before: 18-Mar-2003 12:56							
ZVA 1 Gain	1.000	N/A	0.998	N/A	N/A	0.013	LV
ZVA 2 Gain	1.000	N/A	0.994	N/A	N/A	0.046	LV
ZVA 3 Gain	1.000	N/A	0.992	N/A	N/A	0.046	LV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB M1-A0* Voltage Phases							
Before: 18-Mar-2003 12:56							
ZVA 1 Phase	0.000	N/A	0.772	N/A	N/A	3.800	DEG
ZVA 2 Phase	0.000	N/A	1.528	N/A	N/A	1.300	DEG
ZVA 3 Phase	0.000	N/A	1.340	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Aux Voltage gains							
Before: 18-Mar-2003 12:56							
ZVA 1 Gain	1.000	N/A	1.099	N/A	N/A	0.032	MV
ZVA 2 Gain	1.000	N/A	1.090	N/A	N/A	0.045	MV
ZVA 3 Gain	1.000	N/A	1.017	N/A	N/A	0.045	MV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Aux Voltage Phases							
Before: 18-Mar-2003 12:56							
ZVA 1 Phase	0.000	N/A	-3.518	N/A	N/A	2.300	DEG
ZVA 2 Phase	0.000	N/A	0.046	N/A	N/A	0.800	DEG
ZVA 3 Phase	0.000	N/A	0.274	N/A	N/A	0.650	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB AO*-AO* Diff. Voltage mode 1							
Before: 18-Mar-2003 12:56							
ZVD 1 Gain	1.000	N/A	0.996	N/A	N/A	0.047	LV
ZVD 1 Phase	0.000	N/A	0.011	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB AO*-AO* Diff. Voltage mode 2							
Before: 18-Mar-2003 12:56							
ZVD 2 Gain	1.000	N/A	0.982	N/A	N/A	0.050	LV
ZVD 2 Phase	0.000	N/A	0.052	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB AO*-AO* Diff. Voltage mode 3A							
Before: 18-Mar-2003 12:56							
ZVD 3A Gain	1.000	N/A	0.985	N/A	N/A	0.058	LV
ZVD 3A Phase	0.000	N/A	0.048	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB AO*-AO* Diff. Voltage mode 3B							
Before: 18-Mar-2003 12:56							
ZVD 3B Gain	1.000	N/A	1.001	N/A	N/A	0.054	LV
ZVD 3B Phase	0.000	N/A	0.233	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB vertical Voltage mode 1							
Before: 18-Mar-2003 12:56							
ZV1 Gain	1.000	N/A	1.000	N/A	N/A	0.022	LV
ZV1 Phase	0.000	N/A	0.229	N/A	N/A	2.800	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB vertical Voltage mode 2							
Before: 18-Mar-2003 12:56							
ZV 2 Gain	1.000	N/A	0.988	N/A	N/A	0.036	LV
ZV 2 Phase	0.000	N/A	0.343	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Azimuthal Voltages mode 1							
Before: 18-Mar-2003 12:58							
Az 1 Gain - 0	1.000	N/A	1.001	N/A	N/A	0.047	LV
Az 1 Gain - 1	1.000	N/A	0.994	N/A	N/A	0.047	LV
Az 1 Gain - 2	1.000	N/A	0.997	N/A	N/A	0.047	LV
Az 1 Gain - 3	1.000	N/A	0.995	N/A	N/A	0.047	LV
Az 1 Gain - 4	1.000	N/A	1.000	N/A	N/A	0.047	LV
Az 1 Gain - 5	1.000	N/A	0.993	N/A	N/A	0.047	LV
Az 1 Gain - 6	1.000	N/A	0.997	N/A	N/A	0.047	LV
Az 1 Gain - 7	1.000	N/A	1.001	N/A	N/A	0.047	LV
Az 1 Gain - 8	1.000	N/A	0.996	N/A	N/A	0.047	LV
Az 1 Gain - 9	1.000	N/A	0.997	N/A	N/A	0.047	LV
Az 1 Gain - 10	1.000	N/A	0.995	N/A	N/A	0.047	LV
Az 1 Gain - 11	1.000	N/A	0.999	N/A	N/A	0.047	LV
AZ 1 Phase - 0	0.000	N/A	0.534	N/A	N/A	3.800	DEG
AZ 1 Phase - 1	0.000	N/A	0.534	N/A	N/A	3.800	DEG
AZ 1 Phase - 2	0.000	N/A	0.566	N/A	N/A	3.800	DEG
AZ 1 Phase - 3	0.000	N/A	0.521	N/A	N/A	3.800	DEG
AZ 1 Phase - 4	0.000	N/A	0.534	N/A	N/A	3.800	DEG
AZ 1 Phase - 5	0.000	N/A	0.274	N/A	N/A	3.800	DEG
AZ 1 Phase - 6	0.000	N/A	0.554	N/A	N/A	3.800	DEG
AZ 1 Phase - 7	0.000	N/A	0.483	N/A	N/A	3.800	DEG
AZ 1 Phase - 8	0.000	N/A	0.483	N/A	N/A	3.800	DEG
AZ 1 Phase - 9	0.000	N/A	0.502	N/A	N/A	3.800	DEG
AZ 1 Phase - 10	0.000	N/A	0.502	N/A	N/A	3.800	DEG
AZ 1 Phase - 11	0.000	N/A	0.483	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Azimuthal Voltages mode 2							
Before: 18-Mar-2003 12:58							
Az 2 Gain - 0	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 2 Gain - 1	1.000	N/A	0.980	N/A	N/A	0.056	LV
Az 2 Gain - 2	1.000	N/A	0.983	N/A	N/A	0.056	LV
Az 2 Gain - 3	1.000	N/A	0.983	N/A	N/A	0.056	LV
Az 2 Gain - 4	1.000	N/A	0.988	N/A	N/A	0.056	LV
Az 2 Gain - 5	1.000	N/A	0.983	N/A	N/A	0.056	LV
Az 2 Gain - 6	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 2 Gain - 7	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 2 Gain - 8	1.000	N/A	0.982	N/A	N/A	0.056	LV
Az 2 Gain - 9	1.000	N/A	0.984	N/A	N/A	0.056	LV
Az 2 Gain - 10	1.000	N/A	0.982	N/A	N/A	0.056	LV
Az 2 Gain - 11	1.000	N/A	0.985	N/A	N/A	0.056	LV
Az 2 Phase - 0	0.000	N/A	1.106	N/A	N/A	1.300	DEG
Az 2 Phase - 1	0.000	N/A	1.106	N/A	N/A	1.300	DEG
Az 2 Phase - 2	0.000	N/A	1.138	N/A	N/A	1.300	DEG
Az 2 Phase - 3	0.000	N/A	1.057	N/A	N/A	1.300	DEG
Az 2 Phase - 4	0.000	N/A	1.106	N/A	N/A	1.300	DEG
Az 2 Phase - 5	0.000	N/A	1.016	N/A	N/A	1.300	DEG
Az 2 Phase - 6	0.000	N/A	1.101	N/A	N/A	1.300	DEG
Az 2 Phase - 7	0.000	N/A	1.080	N/A	N/A	1.300	DEG
Az 2 Phase - 8	0.000	N/A	1.080	N/A	N/A	1.300	DEG
Az 2 Phase - 9	0.000	N/A	1.083	N/A	N/A	1.300	DEG
Az 2 Phase - 10	0.000	N/A	1.144	N/A	N/A	1.300	DEG
Az 2 Phase - 11	0.000	N/A	1.083	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Azimuthal Voltages mode 3A							
Before: 18-Mar-2003 12:56							
Az 3A Gain - 0	1.000	N/A	0.992	N/A	N/A	0.056	LV
Az 3A Gain - 1	1.000	N/A	0.985	N/A	N/A	0.056	LV
Az 3A Gain - 2	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 3A Gain - 3	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 3A Gain - 4	1.000	N/A	0.991	N/A	N/A	0.056	LV
Az 3A Gain - 5	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 3A Gain - 6	1.000	N/A	0.988	N/A	N/A	0.056	LV
Az 3A Gain - 7	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 3A Gain - 8	1.000	N/A	0.987	N/A	N/A	0.056	LV
Az 3A Gain - 9	1.000	N/A	0.990	N/A	N/A	0.056	LV
Az 3A Gain - 10	1.000	N/A	0.988	N/A	N/A	0.056	LV
Az 3A Gain - 11	1.000	N/A	0.999	N/A	N/A	0.056	LV
Az 3A Phase - 0	0.000	N/A	0.690	N/A	N/A	1.000	DEG
Az 3A Phase - 1	0.000	N/A	0.644	N/A	N/A	1.000	DEG
Az 3A Phase - 2	0.000	N/A	0.753	N/A	N/A	1.000	DEG
Az 3A Phase - 3	0.000	N/A	0.654	N/A	N/A	1.000	DEG
Az 3A Phase - 4	0.000	N/A	0.753	N/A	N/A	1.000	DEG
Az 3A Phase - 5	0.000	N/A	0.601	N/A	N/A	1.000	DEG
Az 3A Phase - 6	0.000	N/A	0.697	N/A	N/A	1.000	DEG
Az 3A Phase - 7	0.000	N/A	0.695	N/A	N/A	1.000	DEG
Az 3A Phase - 8	0.000	N/A	0.709	N/A	N/A	1.000	DEG
Az 3A Phase - 9	0.000	N/A	0.696	N/A	N/A	1.000	DEG
Az 3A Phase - 10	0.000	N/A	0.714	N/A	N/A	1.000	DEG
Az 3A Phase - 11	0.000	N/A	0.697	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HALSB Azimuthal Voltages mode 3B							
Before: 18-Mar-2003 12:56							
Az 3B Gain - 0	1.000	N/A	1.004	N/A	N/A	0.054	LV
Az 3B Gain - 1	1.000	N/A	0.993	N/A	N/A	0.054	LV
Az 3B Gain - 2	1.000	N/A	1.001	N/A	N/A	0.054	LV
Az 3B Gain - 3	1.000	N/A	0.997	N/A	N/A	0.054	LV
Az 3B Gain - 4	1.000	N/A	1.009	N/A	N/A	0.054	LV
Az 3B Gain - 5	1.000	N/A	0.995	N/A	N/A	0.054	LV
Az 3B Gain - 6	1.000	N/A	0.999	N/A	N/A	0.054	LV
Az 3B Gain - 7	1.000	N/A	1.004	N/A	N/A	0.054	LV
Az 3B Gain - 8	1.000	N/A	1.000	N/A	N/A	0.054	LV
Az 3B Gain - 9	1.000	N/A	0.995	N/A	N/A	0.054	LV
Az 3B Gain - 10	1.000	N/A	0.998	N/A	N/A	0.054	LV
Az 3B Gain - 11	1.000	N/A	1.013	N/A	N/A	0.054	LV
Az 3B Phase - 0	0.000	N/A	0.107	N/A	N/A	1.000	DEG
Az 3B Phase - 1	0.000	N/A	0.184	N/A	N/A	1.000	DEG
Az 3B Phase - 2	0.000	N/A	0.285	N/A	N/A	1.000	DEG
Az 3B Phase - 3	0.000	N/A	0.065	N/A	N/A	1.000	DEG
Az 3B Phase - 4	0.000	N/A	0.217	N/A	N/A	1.000	DEG
Az 3B Phase - 5	0.000	N/A	0.107	N/A	N/A	1.000	DEG
Az 3B Phase - 6	0.000	N/A	0.284	N/A	N/A	1.000	DEG
Az 3B Phase - 7	0.000	N/A	-0.012	N/A	N/A	1.000	DEG
Az 3B Phase - 8	0.000	N/A	0.071	N/A	N/A	1.000	DEG
Az 3B Phase - 9	0.000	N/A	-0.155	N/A	N/A	1.000	DEG
Az 3B Phase - 10	0.000	N/A	0.178	N/A	N/A	1.000	DEG
Az 3B Phase - 11	0.000	N/A	0.117	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Bob Measurement Summary							
Before: 18-Mar-2003 12:15							
SS Window Ratio	0.6795	N/A	0.6800	N/A	N/A	N/A	
SS Window Sum	9268	N/A	9263	N/A	N/A	N/A	CPS
SS Window Ratio	0.4816	N/A	0.4809	N/A	N/A	N/A	
SS Window Sum	10020	N/A	10003	N/A	N/A	N/A	CPS
LS Window Ratio	0.6794	N/A	0.6793	N/A	N/A	N/A	
LS Window Sum	1159	N/A	1159	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: 18-Mar-2003 13:15							
SS PM High Voltage (Command)	1670	N/A	1697	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1813	N/A	1793	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1678	N/A	1615	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Quality Resolutions Calibration							
Before: 18-Mar-2003 13:15							
SS Crystal Resolution	11.64	N/A	11.70	N/A	N/A	N/A	%
SS Crystal Resolution	10.21	N/A	10.24	N/A	N/A	N/A	%
LS Crystal Resolution	9.789	N/A	9.680	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration							
Before: 18-Mar-2003 13:16							
Rev R0 Resistivity	3870	N/A	3854	N/A	N/A	N/A	OHMM
Rev B1 Resistivity	3830	N/A	3817	N/A	N/A	N/A	OHMM
Rev B2 Resistivity	3830	N/A	3833	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT Caliper Calibration							
Before: 18-Mar-2003 13:02							
HILT Caliper Zero Measurement	203.2	N/A	199.1	N/A	N/A	N/A	MM
HILT Caliper Pos Measurement	304.8	N/A	308.9	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration							
Before: 18-Mar-2003 13:09							
Gamma Ray Background	30.00	N/A	54.64	N/A	N/A	N/A	GAPI
Gamma Ray Lab - Brg	167.2	N/A	167.3	N/A	N/A	15.21	GAPI
Gamma Ray Cal/Brg	165.0	N/A	165.0	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement							
Master: 19-Dec-2002 10:44 Before: 18-Mar-2003 12:11							
CNTC Background	25.34	25.24	25.24	N/A	N/A	2.601	CPS
CFTC Background	27.66	27.55	28.02	N/A	N/A	4.140	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Accelerometer Calibration							
Before: 18-Mar-2003 12:53							
Z-Axis Acceleration	9.810	N/A	9.829	N/A	N/A	N/A	M/S2
High resolution Integrated Logging Tool-DTS Master Calibration - Inversion results							
Master: 4-Jan-2003 17:20							
Mudcake Resistivity	2598	3601	--	--	--	--	K/M3
Rho Magnesium	1666	1655	--	--	--	--	K/M3
Pe Aluminum	2.570	2.581	--	--	--	--	
Pe Magnesium	2.650	2.630	--	--	--	--	
High resolution Integrated Logging Tool-DTS Master Calibration - Deviation Summary							
Master: 14-Jan-2003 17:21							
SS Average Deviation	0	0.2703	--	--	--	--	%
SS Max Deviation	0	1.263	--	--	--	--	%
SS Average Deviation	0	0.2228	--	--	--	--	%
SS Max Deviation	0	0.9580	--	--	--	--	%
LS Average Deviation	0	0.6927	--	--	--	--	%
LS Max Deviation	0	2.331	--	--	--	--	%
High resolution Integrated Logging Tool-DTS Master Calibration - Tank Measurement							
Master: 19-Dec-2002 10:44							
Thermal Neer Corr. (Tank)	6031	5698	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2483	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.365	--	--	--	--	
Environment Measurement Sonde Wellsite Calibration - EMS Caliper Calibration							
Before: 18-Mar-2003 15:12							
Radius 1 Short Radius	101.6	N/A	86.49	N/A	N/A	5.080	MM
Radius 1 Long Radius	152.4	N/A	136.4	N/A	N/A	5.080	MM
Radius 2 Short Radius	152.4	N/A	137.8	N/A	N/A	5.080	MM
Radius 2 Long Radius	101.6	N/A	79.21	N/A	N/A	5.080	MM
Radius 3 Short Radius	101.6	N/A	86.56	N/A	N/A	5.080	MM
Radius 3 Long Radius	152.4	N/A	136.2	N/A	N/A	5.080	MM
Radius 4 Short Radius	152.4	N/A	136.9	N/A	N/A	5.080	MM
Radius 4 Long Radius	101.6	N/A	105.6	N/A	N/A	5.080	MM
Radius 5 Short Radius	101.6	N/A	115.1	N/A	N/A	5.080	MM
Radius 5 Long Radius	152.4	N/A	156.2	N/A	N/A	5.080	MM
Radius 6 Short Radius	152.4	N/A	148.9	N/A	N/A	5.080	MM
Radius 6 Long Radius	101.6	N/A	108.1	N/A	N/A	5.080	MM

The GLS-VJ source activity is acceptable.

The HCNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	16.5	DEGC
Thermal Housing Temp	69.700	MM

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:
HILT Azimuthal Laterolog Sonde B — HALS - B
HILT High-Resolution Mechanical Sonde — HRMS - B — 1719
HILT Two Gamma-ray Device — HGD — 515
HILT Nuclear Back-Scatter Detector — HILT -
HILT Nuclear Long-Spacing Detector — HILT -
HILT Nuclear Long-Spacing Detector — HILT -
Micro Cylindrically Focused Log Device — MCFL -
GR Logging Source — SLG - VJ — 1964

Auxiliary Equipment:
Logging Control Module — LCM - AA

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Total current mode 1

Ito1 1 Gain MA	Value	Ito1 1 Phase DEG	Value
1.000	0.999	0.000	-0.000
0.909 1.000 1.091 (Minimum) (Nominal) (Maximum)		-0.100 0.000 0.100 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azo current mode 1

Iazo 1 Gain MA	Value	Iazo 1 Phase DEG	Value
1.000	0.998	0.000	-0.001
0.854 1.000 1.180 (Minimum) (Nominal) (Maximum)		4.800 0.000 4.800 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azo current mode 2

Iazo 2 Gain MA	Value	Iazo 2 Phase DEG	Value
1.000	0.981	0.000	-0.000
0.818 1.000 1.222 (Minimum) (Nominal) (Maximum)		-0.000 0.000 0.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azo current mode 3

Iazo 3 Gain MA	Value	Iazo 3 Phase DEG	Value
1.000	0.975	0.000	0.000
0.885 1.000 1.174 (Minimum) (Nominal) (Maximum)		-0.000 0.000 0.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Io1 current mode 1

Io1 Gain MA	Value	Io1 Phase DEG	Value
1.000	0.997	0.000	-0.000
0.693 1.000 1.714 (Minimum) (Nominal) (Maximum)		-0.000 0.000 0.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Io2 current mode 2

Io2 Gain MA	Value	Io2 Phase DEG	Value
1.000	0.994	0.000	-0.000
0.825 1.000 1.379 (Minimum) (Nominal) (Maximum)		-0.000 0.000 0.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Io3 current mode 3

Io3 Gain MA	Value	Io3 Phase DEG	Value
1.000	0.975	0.000	0.000
0.885 1.000 1.174 (Minimum) (Nominal) (Maximum)		-0.000 0.000 0.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Tornado Voltage gains

Zx1 Gain MV	Value	Zx2 Gain MV	Value	Zx3 Gain MV	Value
1.000	0.998	1.000	0.994	1.000	0.991
0.925 1.000 1.079 (Minimum) (Nominal) (Maximum)		0.848 1.000 1.182 (Minimum) (Nominal) (Maximum)		0.888 1.000 1.150 (Minimum) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Tornado Voltage Phase

Zx1 Phase DEG	Value	Zx2 Phase DEG	Value	Zx3 Phase DEG	Value
0.000	-0.195	0.000	-0.391	0.000	-0.250
4.400 0.000 4.400 (Minimum) (Nominal) (Maximum)		2.800 0.000 2.800 (Minimum) (Nominal) (Maximum)		1.400 0.000 1.400 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Upper Bridle Voltage mode 1

Zxb1 Gain MV	Value	Zxb1 Phase DEG	Value
1.000	0.998	0.000	-0.081
0.926 1.000 1.079 (Minimum) (Nominal) (Maximum)		4.400 0.000 4.400 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Bridle Voltage gains

Zv1 Gain MV	Value	Zv2 Gain MV	Value	Zv3 Gain MV	Value
1.000	0.998	1.000	0.995	1.000	0.994
0.895 1.000 1.117 (Minimum) (Nominal) (Maximum)		0.943 1.000 1.060 (Minimum) (Nominal) (Maximum)		0.943 1.000 1.060 (Minimum) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS 91 MV Voltage Phases

Zv1 Phase DEG	Value	Zv2 Phase DEG	Value	Zv3 Phase DEG	Value
0.000	0.667	0.000	1.458	0.000	1.047
4.500 0.000 6.500 (Minimum) (Nominal) (Maximum)		3.300 0.000 3.300 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS M1-AO Voltage gains

Zv1 Gain MV	Value	Zv2 Gain MV	Value	Zv3 Gain MV	Value
1.000	0.996	1.000	0.994	1.000	0.992
0.962 1.000 1.039 (Minimum) (Nominal) (Maximum)		0.864 1.000 1.784 (Minimum) (Nominal) (Maximum)		0.864 1.000 1.784 (Minimum) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS M1-AO Voltage Phases

Zv1 Phase DEG	Value	Zv2 Phase DEG	Value	Zv3 Phase DEG	Value
0.000	0.772	0.000	1.939	0.000	1.343
4.500 0.000 6.500 (Minimum) (Nominal) (Maximum)		3.300 0.000 3.300 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azo Voltage gains

ZvA 1 Gain MV	Value	ZvA 2 Gain MV	Value	ZvA 3 Gain MV	Value
1.000	1.000	1.000	1.000	1.000	1.000
0.905 1.000 1.105 (Minimum) (Nominal) (Maximum)		0.666 1.000 1.501 (Minimum) (Nominal) (Maximum)		0.666 1.000 1.501 (Minimum) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azo Voltage Phases

ZvA 1 Phase DEG	Value	ZvA 2 Phase DEG	Value	ZvA 3 Phase DEG	Value
0.000	1.018	0.000	0.548	0.000	0.000
4.100 0.000 4.100 (Minimum) (Nominal) (Maximum)		-2.300 0.000 2.300 (Minimum) (Nominal) (Maximum)		1.000 0.000 1.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS AIH- AH* Voltage mode 1

ZvI1 2 Gain UV	Value	ZvI1 2 Phase DEG	Value
1.000	0.999	0.000	0.011
0.874 1.000 1.147 (Minimum) (Nominal) (Maximum)		-8.300 0.000 8.300 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS AIH- AH* Voltage mode 2

ZvI2 2 Gain UV	Value	ZvI2 2 Phase DEG	Value
1.000	0.992	0.000	0.000
0.842 1.000 1.187 (Minimum) (Nominal) (Maximum)		-3.300 0.000 3.300 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS AIH- AH* Voltage mode 3A

ZvI3 3A Gain UV	Value	ZvI3 3A Phase DEG	Value
1.000	0.995	0.000	0.000
0.842 1.000 1.187 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS AIH- AH* Voltage mode 3B

ZvI3 3B Gain UV	Value	ZvI3 3B Phase DEG	Value
1.000	1.001	0.000	0.233
0.846 1.000 1.182 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS AIH- AH* Voltage mode 4

ZvI4 Gain UV	Value	ZvI4 Phase DEG	Value
1.000	0.998	0.000	0.029
0.938 1.000 1.065 (Minimum) (Nominal) (Maximum)		-4.600 0.000 4.600 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS vertical Voltage mode 1

ZvV 1 Gain UV	Value	ZvV 1 Phase DEG	Value
1.000	0.998	0.000	0.029
0.938 1.000 1.065 (Minimum) (Nominal) (Maximum)		-4.600 0.000 4.600 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS vertical Voltage mode 2

ZvV 2 Gain UV	Value	ZvV 2 Phase DEG	Value
1.000	0.998	0.000	0.343
0.895 1.000 1.117 (Minimum) (Nominal) (Maximum)		-2.900 0.000 2.900 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azimuthal Voltages mode 1

Idx	Az 1 Gain UV	Idx	Az 1 Phase DEG	Value
0	1.000	0		0.478
1	0.994	1		0.534
2	0.997	2		0.566
3	0.998	3		0.521
4	1.000	4		0.534
5	0.997	5		0.274
6	0.997	6		0.564
7	1.000	7		0.455
8	0.998	8		0.483
9	0.997	9		0.525
10	0.995	10		0.502
11	0.998	11		0.483
	0.974 1.000 1.147 (Minimum) (Nominal) (Maximum)		-6.300 0.000 6.300 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azimuthal Voltages mode 2A

Idx	Az 2A Gain UV	Idx	Az 2A Phase DEG	Value
0	1.000	0		0.690
1	0.998	1		0.644
2	0.997	2		0.675
3	0.997	3		0.664
4	0.991	4		0.763
5	0.997	5		0.601
6	0.998	6		0.697
7	0.998	7		0.658
8	0.997	8		0.709
9	0.998	9		0.696
10	0.998	10		0.714
11	0.999	11		0.718
	0.942 1.000 1.187 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azimuthal Voltages mode 2B

Idx	Az 2B Gain UV	Idx	Az 2B Phase DEG	Value
0	1.004	0		0.107
1	0.993	1		0.164
2	1.001	2		0.265
3	1.002	3		-0.065
4	1.009	4		0.217
5	0.995	5		-0.196
6	0.999	6		0.094
7	1.004	7		-0.012
8	1.000	8		0.071
9	0.998	9		-0.155
10	1.000	10		0.114
11	1.003	11		0.117
	0.945 1.000 1.183 (Minimum) (Nominal) (Maximum)		-3.000 0.000 3.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azimuthal Voltages mode 3A

Idx	Az 3A Gain UV	Idx	Az 3A Phase DEG	Value
0	1.000	0		0.890
1	0.998	1		0.844
2	0.997	2		0.875
3	0.997	3		0.864
4	0.991	4		0.763
5	0.997	5		0.601
6	0.998	6		0.697
7	0.998	7		0.658
8	0.997	8		0.709
9	0.998	9		0.696
10	0.998	10		0.714
11	0.999	11		0.718
	0.942 1.000 1.187 (Minimum) (Nominal) (Maximum)		-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
HALS Azimuthal Voltages mode 3B

Idx	Az 3B Gain UV	Idx	Az 3B Phase DEG	Value
0	1.004	0		0.107
1	0.993	1		0.164
2	1.001	2		0.265
3	1.002	3		-0.065
4	1.009	4		0.217
5	0.995	5		-0.196
6	0.999	6		0.094
7	1.004	7		-0.012
8	1.000	8		0.071
9	0.998	9		-0.155
10	1.000	10		0.114
11	1.003	11		0.117
	0.945 1.000 1.183 (Minimum) (Nominal) (Maximum)		-3.000 0.000 3.000 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Web Measurement Summary

Phase	SS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.8800	Before		0.4889	Before		0.2993
	0.6455 0.8795 0.7135 (Minimum) (Nominal) (Maximum)			0.4870 0.4916 0.5162 (Minimum) (Nominal) (Maximum)			0.2825 0.2974 0.3122 (Minimum) (Nominal) (Maximum)	

Phase	SS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		5080	Before		9990	Before		1156
	5015 5080 5697 (Minimum) (Nominal) (Maximum)			8815 10080 11250 (Minimum) (Nominal) (Maximum)			1116 1156 1215 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Photo-multiplier High Voltage Calibrations

Phase	SS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1675	Before		1773	Before		1775
	1675 1675 1775 (Minimum) (Nominal) (Maximum)			1673 1973 1973 (Minimum) (Nominal) (Maximum)			1675 1675 1775 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Crystal Quality Resolutions Calibration

Phase	SS Crystal Resolution %	Value	Phase	Sd Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		11.70	Before		10.24	Before		9.660
	10.68 11.70 12.64 (Minimum) (Nominal) (Maximum)			9.208 10.24 11.27 (Minimum) (Nominal) (Maximum)			8.758 9.660 10.79 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:15

High resolution Integrated Logging Tool-DTS Wellsite Calibration
MCFL Calibration

Phase	Raw SS Resistivity OHMM	Value	Phase	Raw S1 Resistivity OHMM	Value	Phase	Raw S2 Resistivity OHMM	Value
Before		3694	Before		3817	Before		3833
	3566 3675 4196 (Minimum) (Nominal) (Maximum)			3524 3830 4196 (Minimum) (Nominal) (Maximum)			3524 3830 4196 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:18

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Hi-T Caliper Calibration

Phase	HiT Caliper Zero Measurement MM	Value	Phase	HiT Caliper Plus Measurement MM	Value
Before		180.1	Before		309.9
	182.4 203.2 284.5 (Minimum) (Nominal) (Maximum)			226.5 304.8 381.0 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:09

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Deviation Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Up - Big) GAPI	Value	Phase	Gamma Ray (Flattened) GAPI	Value
Before		54.94	Before		187.3	Before		165.2
	0 30.00 120.0 (Minimum) (Nominal) (Maximum)			150.1 180.1 182.1 (Minimum) (Nominal) (Maximum)			150.0 165.0 180.0 (Minimum) (Nominal) (Maximum)	

Before: 16-Mar-2003 13:09

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.34	Master		27.65
Slave		25.24	Slave		28.62
	0.000 25.34 40.00 (Minimum) (Nominal) (Maximum)			0.000 27.65 40.00 (Minimum) (Nominal) (Maximum)	

Master: 10-Dec-2002 15:44

Before: 18-Mar-2003 13:11

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration M SI2	Value
Before		9.929
	9.810 9.850 10.00 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 13:53

High resolution Integrated Logging Tool-DTS Master Calibration
Inversion results

Phase	Rho Alum num K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master		2600	Master		1698
	2596 2600 2604 (Minimum) (Nominal) (Maximum)			1696 1698 1699 (Minimum) (Nominal) (Maximum)	

Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.581	Master		2.830
	2.470 2.570 2.670 (Minimum) (Nominal) (Maximum)			2.650 2.850 2.750 (Minimum) (Nominal) (Maximum)	

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-DTS Master Calibration
Deviation Results

Phase	SS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.0710	Master		0.0205	Master		0.0027
	-0.6000 0.0000 0.6000 (Minimum) (Nominal) (Maximum)			-1.000 0.0000 1.000 (Minimum) (Nominal) (Maximum)			-1.500 0.0000 1.500 (Minimum) (Nominal) (Maximum)	

Phase	SS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		1.452	Master		0.5000	Master		0.3331
	-1.500 0.0000 1.500 (Minimum) (Nominal) (Maximum)			-2.500 0.0000 2.500 (Minimum) (Nominal) (Maximum)			-3.500 0.0000 3.500 (Minimum) (Nominal) (Maximum)	

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-DTS Master Calibration
Temp Measurement

Phase	Thermal Near Conn (Tanc) CPS	Value	Phase	Thermal Far Conn (Tanc) CPS	Value	Phase	CNTC/CFTC (Tanc)	Value
Master		5698	Master		2495	Master		2.365
	5000 5700 7029 (Minimum) (Nominal) (Maximum)			2075 2700 3325 (Minimum) (Nominal) (Maximum)			2.100 2.500 2.900 (Minimum) (Nominal) (Maximum)	

Master: 14-Dec-2002 21:44

Environment Measurement Sonde / Equipment Identification

Primary Equipment:
EMS Mechanical — EMM - B
EMS Cartridge — EMC - B
EMS Adaptor — EMA - B
Resistivity Meter — RES -

Auxiliary Equipment:
Electronics Cartridge Housing — ECH - KH

Environment Measurement Sonde Calibration
EMS Caliper Calibration

Phase	Radius 1 Sh=t Radius MM	Value	Phase	Radius 1 Long Radius MM	Value
Before		96.43	Before		136.4
	76.20 101.6 127.0 (Minimum) (Nominal) (Maximum)			127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)	

Phase	Radius 2 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value
Before		127.8	Before		78.21
	127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)			76.20 101.2 127.0 (Minimum) (Nominal) (Maximum)	

Phase	Radius 3 Sh=t Radius MM	Value	Phase	Radius 3 Long Radius MM	Value
Before		88.58	Before		147.7
	76.20 101.6 127.0 (Minimum) (Nominal) (Maximum)			127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)	

Phase	Radius 4 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value
Before		150.5	Before		106.6
	127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)			76.20 101.6 127.0 (Minimum) (Nominal) (Maximum)	

Phase	Radius 5 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value
Before		118.1	Before		155.2
	76.20 101.6 127.0 (Minimum) (Nominal) (Maximum)			127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)	

Phase	Radius 6 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value
Before		114.9	Before		106.1
	127.0 182.4 177.8 (Minimum) (Nominal) (Maximum)			76.20 101.6 127.0 (Minimum) (Nominal) (Maximum)	

Before: 18-Mar-2003 15:12

Company: Paramount Resources Ltd.
Well: Nogha
Field: Parsnip
Province: Northwest Territories
Vertical Well

Schlumberger

PLATFORM EXPRESS
COMPENSATED NEUTRON
LITHOLOGY DENSITY LOG

COMPUTED

Schlumberger

Paramount Resources Ltd

Para et al Nogha M-17

Nogha

Northwest Territories

DIPOLE SHEAR

IMAGER LOG

N.E.B. COPY

Latitude: 66deg 39' 45.240"N
Longitude: 125deg 46' 30.669"W
UWI: 300M179046125400

Permanent Datum: GROUND LEVEL
Log Measured From: Kelly Bushing 4.6 m above Perm. Datum
Drilling Measured From: Kelly Bushing

Elev.: K.B. 304.6 m
G.L. 304 m
D.F. 304.3 m

Elev. 300 m

Province	Nahanni Escarpment Extending
Field	Nogha
Well Location	Para et al Nogha M-17 (B-42K) Para et al Nogha 5-17
Company	Paramount Resources Ltd.

	API Serial No.	Latitude	Longitude
	MID 1870	66deg 39'	125deg 46'

	Run 1	Run 2	Run 3	Run 4
Logging Date	16-Mar-2003			
Run Number	1			
Depth Driller	1471.5 m			
Deepest Logger Depth	1471.5 m			
Bottom Log Interval	1466.4 m			
Top Log Interval	50 m			
Casing Driller Size @ Depth	244.500 mm @ 499 m	@	@	@
Casing Schlumberger	499.3 m			
Bit Size	216.000 mm			
Type Fluid in Hole	Salt Saturated Gel Chem			
Density / Viscosity	1060 kg/m3 / 80 s			
Fluid Loss / PH	8 cm3 / 9.5			
Source Of Sample	Circulation Tank			
RM @ Measured Temperature	0.770 ohm.m @ 12 degC	@	@	@
RMF @ Measured Temperature	0.110 ohm.m @ 14 degC	@	@	@
RMC @ Measured Temperature	0.100 ohm.m @ 11 degC	@	@	@
Source RMF / RMC	Pressed / Calculated			
RM @ MRT / RMF @ MRT	0.564 @ 23 / 0.066 @ 23	@ @	@ @	@ @
Maximum Recorded Temperature	23 degC			
Circulation Stopped / Time	16-Mar-2003 / 8:00			
Logger On Bottom / Time	16-Mar-2003 / 13:30			
Unit Number / Location	5418 / Norman Wells			
Recorded By	71 Debbish/P. Ross			
Witnessed By	C. Breslin			

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Driller				
Deepest Logger 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 Temperature				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

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Drilling Measured From: Kelly Bushing
Elevation: 304.6 m
Permanent Datum: GROUND LEVEL
Log Measured From: Kelly Bushing 4.6 m above Perm. Datum

	Run 1	Run 2
Logging Date	16-Mar-2003	
Run Number	1	
Depth Driller	1471.5 m	
Deepest Logger Depth	1466.4 m	
Bottom Log Interval	1466.4 m	
Top Log Interval	50 m	
Casing Driller Size @ Depth	244.500 mm @ 499 m	
Casing Schlumberger	499.3 m	
Bit Size	216.000 mm	
Type Fluid in Hole	Salt Saturated Gel Chem	
Density / Viscosity	1060 kg/m3 / 80 s	
Fluid Loss / PH	8 cm3 / 9.5	
Source Of Sample	Circulation Tank	
RM @ Measured Temperature	0.770 ohm.m @ 12 degC	
RMF @ Measured Temperature	0.110 ohm.m @ 14 degC	
RMC @ Measured Temperature	0.100 ohm.m @ 11 degC	
Source RMF / RMC	Pressed / Calculated	
RM @ MRT / RMF @ MRT	0.564 @ 23 / 0.066 @ 23	
Maximum Recorded Temperature	23 degC	
Circulation Stopped / Time	16-Mar-2003 / 8:00	
Logger On Bottom / Time	16-Mar-2003 / 13:30	
Unit Number / Location	5418 / Norman Wells	
Recorded By	71 Debbish/P. Ross	
Witnessed By	C. Breslin	

RUN 1 — RUN 2

EQUIPMENT DESCRIPTION

SURFACE EQUIPMENT
GPSV-JA
GPSA-B
GPSA-A
WTS-B/TM-A

DOWNHOLE EQUIPMENT

	RUN 1		RUN 2	
SERVICE ORDER #	6353093			
LOGGING ENGINEER	P.ROSS			
LOGGING INTERVAL	BTOP	BBOT	BTOP	BBOT
CTB-A				
CTC-A				
CTE-A				
CTM-A				
CTU-A				
TELEMOD_SLN-10038B-A				
TTC-B/TTS-B/TTM-B				
Tool String Length = 27.77 m				
Tool String Weight = 1720kg (3790 lb)				
Tool is centralized using spring bows				
Tool is measured out of hole because of snow conditions				

	RUN 1		RUN 2	
SERVICE ORDER #	6353093			
LOGGING ENGINEER	P.ROSS			
LOGGING INTERVAL	BTOP	BBOT	BTOP	BBOT

No Nuclear #'s			
Other Sources			
LEH-QT	43.93		
AH-586R	42.64		
AI-597			
DTC-H	33.72		
ITEM	33.50		
TCC-B/TCD-B	32.59		
DAC-B			
DAS-B			
DAA-B			
EMS-B	17.04		
MAS-E	16.85		
MAA-E	16.72		
DAC-B			
AH-107	12.70		
AH-107	12.09		
HGNS-HRDA	11.49		
HGNS-TTRM	11.08		
HGNS-TTRA	10.98		
HGNS-TTRB	10.88		
HGNS-TTRC	10.78		
HGNS-TTRD	10.68		
HGNS-TTRE	10.58		
HGNS-TTRF	10.48		
HGNS-TTRG	10.38		
HGNS-TTRH	10.28		
HGNS-TTRI	10.18		
HGNS-TTRJ	10.08		
HGNS-TTRK	9.97		
HGNS-TTRL	9.87		
HGNS-TTRM	9.77		
HGNS-TTRN	9.67		
HGNS-TTRO	9.57		
HGNS-TTRP	9.47		
HGNS-TTRQ	9.37		
HGNS-TTRR	9.27		
HGNS-TTRS	9.17		
HGNS-TTRT	9.07		
HGNS-TTRU	8.97		
HGNS-TTRV	8.87		
HGNS-TTRW	8.77		
HGNS-TTRX	8.67		
HGNS-TTRY	8.57		
HGNS-TTRZ	8.47		
HGNS-TTRA	8.37		
HGNS-TTRB	8.27		
HGNS-TTRC	8.17		
HGNS-TTRD	8.07		
HGNS-TTRE	7.97		
HGNS-TTRF	7.87		
HGNS-TTRG	7.77		
HGNS-TTRH	7.67		
HGNS-TTRI	7.57		
HGNS-TTRJ	7.47		
HGNS-TTRK	7.37		
HGNS-TTRL	7.27		
HGNS-TTRM	7.17		
HGNS-TTRN	7.07		
HGNS-TTRO	6.97		
HGNS-TTRP	6.87		
HGNS-TTRQ	6.77		
HGNS-TTRR	6.67		
HGNS-TTRS	6.57		
HGNS-TTRT	6.47		
HGNS-TTRU	6.37		
HGNS-TTRV	6.27		
HGNS-TTRW	6.17		
HGNS-TTRX	6.07		
HGNS-TTRY	5.97		
HGNS-TTRZ	5.87		
HGNS-TTRA	5.77		
HGNS-TTRB	5.67		
HGNS-TTRC	5.57		
HGNS-TTRD	5.47		
HGNS-TTRE	5.37		
HGNS-TTRF	5.27		
HGNS-TTRG	5.17		
HGNS-TTRH	5.07		
HGNS-TTRI	4.97		
HGNS-TTRJ	4.87		
HGNS-TTRK	4.77		
HGNS-TTRL	4.67		
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HGNS-TT

MAIN PASS: *** DIPOLE SONIC - ALL MODES ***

Bit Size (BS) 125 (MM) 375

Gamma Ray (GR) 0 (GAPI) 150

Tension (TENS) 20000 (N) 0

Stuck Stretch (STIT) 0 (M) 30

Delta-T Comp - P & S (DTCP) 600 (US/M) 100

Delta-T Shear - Lower Dipole (DT1) 600 (US/M) 100

Delta-T Shear - P & S (DTSP) 600 (US/M) 100

Delta-T Shear - Upper Dipole (DT2) 600 (US/M) 100

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	
	EMS-B: Environment Measurement Sonde		
FCO	Future Caving (Outer) Diameter	177.8	MM
HVCB	Integrated Hole Volume Caliper Selection	EMS_Cal2+4	
	DSST-B: Dipole Shear Sonic Imager		
ITTS	Integrated Transit Time Source	DTCO	
RX1Q	Receiver 1 Geometry	7680	MM
RX2Q	Receiver 2 Geometry	7728	MM
RX3Q	Receiver 3 Geometry	7772	MM
RX4Q	Receiver 4 Geometry	7925	MM
RX5Q	Receiver 5 Geometry	8035	MM
RX6Q	Receiver 6 Geometry	8230	MM
RX7Q	Receiver 7 Geometry	8382	MM
RX8Q	Receiver 8 Geometry	8534	MM
BAB1	STC Boric Array Status - Lower Dipole	255	
BAB2	STC Boric Array Status - Upper Dipole	255	
BFB1	STC Filter - Lower Dipole	B1-3K	
BFB2	STC Filter - Upper Dipole	B1-3K	
	HDLEV: Integrated Hole Volume		
FCO	Future Caving (Outer) Diameter	177.8	MM
HVCB	Integrated Hole Volume Caliper Selection	EMS_Calipers	
	STC Stuck Tool Indicator		
LBFR	STC Stuck Threshold Flint Reading Label	TDL	
STHO	STC Stuck Threshold	0.762	M
TDD	Total Depth - Driller	1471.00	M
TDL	Total Depth - Logger	1471.00	M
	System and Miscellaneous		
BS	Bit Size	216.000	MM
DCRL	Depth Offset for Repeat Analysis	0.0	M
TD	Total Depth	1471.0	M

Format: del_sum_a2 Vertical Scale: 1:600 Graphics File Created: 10-Mar-2003 14:38

OP System Version: 10C0-306

MCM			
HLTB-FTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Output DLIS Files

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_D1EL.UP	FN:22	PRODUCER	18-Mar-2003 14:38	1478.2 M	82.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 40.07 M3
Cement Volume = 15.94 M3 (assuming 177.80 MM casing O.D.)
Computed from 1471.1 M to 499.4 M using data channel(s) RC*: RD3 RD3 RD4 RD5 RD6

OP System Version: 10C0-306

MCM

HLTB-PTB	10C0-306	EMI-B	10C0-306
DSBT-B	10C0-306	DTC-H	10C0-306

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

Tension (TENS)
25000 (N) 0

Gamma Ray (GR)
0 (GAPI) 150

Bit Size (BS)
125 (MM) 375

Stuck Stuck (STIT) (STIT)
0 (M) 0

Delta-T Rshear - Upper Dipole (DT2)
600 (US/M) 100

Delta-T Shear - P & S (DTSP)
600 (US/M) 100

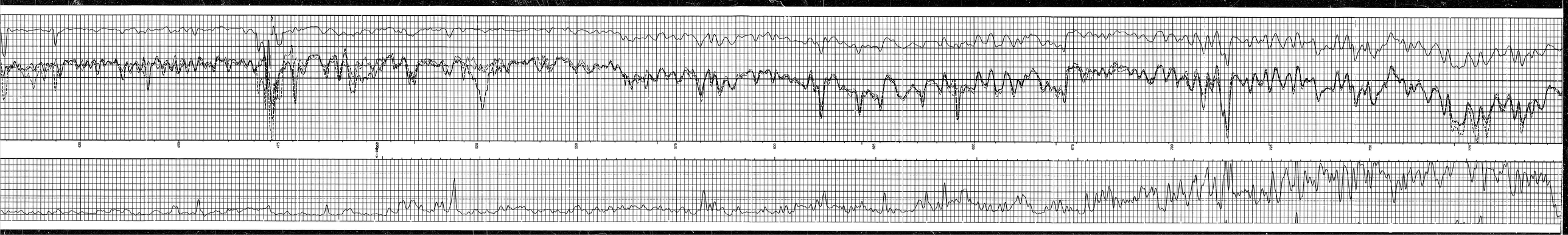
Delta-T Rshear - Lower Dipole (DT1)
600 (US/M) 100

Delta-T Comp - P & S (DTCP)
600 (US/M) 100

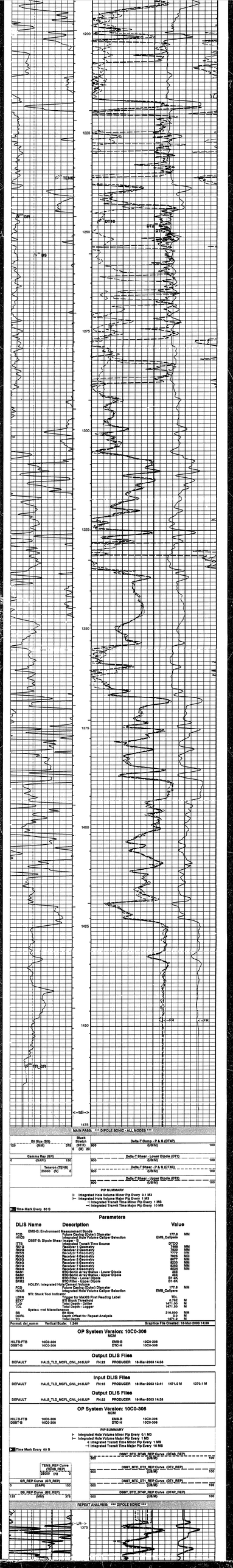
MAIN PASS *** DIPOLE SONIC - ALL MODES ***

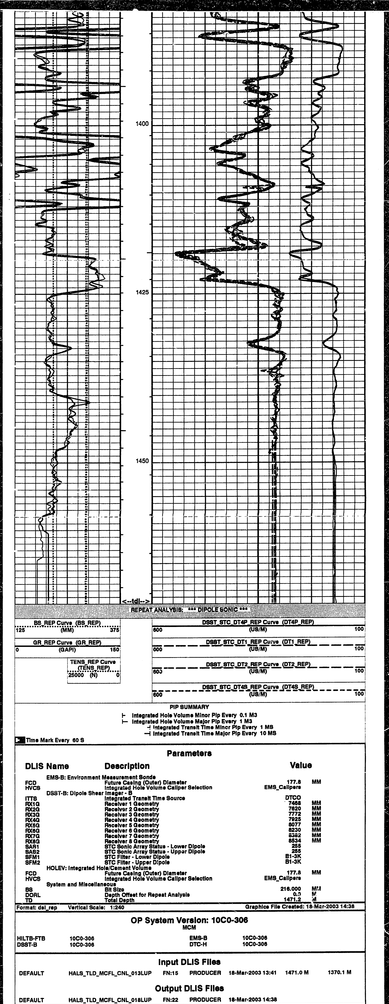
<-LR->

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


TENS
GR
DTSH
DTSH
DTSH
SS
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
1475
<--fdl-->
<--FPI
<--FPI
FPI -->
MAIN PASS: *** DIPOLE SONIC - ALL MODES ***
Bit Size (BS)
(MM)
125
375
Stuck Sticker
(STTT)
0
30
Delta-T Comp - P & S (DTdP)
600
(US/M)
100
Gamma Ray (GR)
(GAPI)
0
150
Delta-T Shear - Lower Dipole (DT1)
600
(US/M)
100
Tension (TENS)
25000
(N)
0
Delta-T Shear - P & S (DTSS)
600
(US/M)
100
Delta-T Shear - Upper Dipole (DT2)
600
(US/M)
100
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
EMS-B: Environment Measurement Bonde
FCD
Future Casing (Outer) Diameter
177.8
MM
HVCS
Integrated Hole Volume Caliper Selection
EMS_Calipers
DSST-B: Dipole Shear Sonic Tool
ITTS
Integrated Transit Time Source
DTCO
RX1G
Receiver 1 Geometry
7468
MM
RX2G
Receiver 2 Geometry
7510
MM
RX3G
Receiver 3 Geometry
7552
MM
RX4G
Receiver 4 Geometry
7595
MM
RX5G
Receiver 5 Geometry
8077
MM
RX6G
Receiver 6 Geometry
8200
MM
RX7G
Receiver 7 Geometry
8243
MM
RX8G
Receiver 8 Geometry
8334
MM
SAB1
STC Sonic Array Status - Lower Dipole
288
SAB2
STC Sonic Array Status - Upper Dipole
288
SFM1
STC Filter - Lower Dipole
B1-3K
SFM2
STC Filter - Upper Dipole
B1-3K
HCLEV: Integrated Hole Caliper Volume
FCD
Future Casing (Outer) Diameter
177.8
MM
HVCS
Integrated Hole Volume Caliper Selection
EMS_Calipers
STI: Stuck Tool Indicator
Trigger for MAXIS First Reading Label
TDL
STTT
STT Stuck Threshold
0.762
M
TDD
Total Depth - Driller
1471.50
M
TDL
Total Depth - Logger
Systeu nd Miscellaneous
DS
Bit Size
216.000
MM
DCRL
Depth Offset for Repeat Analysis
0.000
M
TD
Total Depth
1471.2
M
Format: dal_summ
Vertical Scale: 1:240
Graphics File Created: 18-Mar-2003 14:39
OP System Version: 10CO-306
MCM
HLTB-PTB
10CO-306
EMS-B
10CO-306
CSST-S
10CO-306
DTC-H
10CO-306
Output DLIS Files
DEFAULT
HALS_TLD_MCFL_CNL_01ELUP
FN:22
PRODUCER
18-Mar-2003 14:36
Input DLIS Files
DEFAULT
HALS_TLD_MCFL_CNL_01ELUP
FN:15
PRODUCER
18-Mar-2003 13:41
1471.0 M
1370.1 M
Output DLIS Files
DEFAULT
HALS_TLD_MCFL_CNL_01ELUP
FN:32
PRODUCER
18-Mar-2003 14:38
OP System Version: 10CO-306
MCM
HLTB-PTB
10CO-306
EMS-B
10CO-306
CSST-S
10CO-306
DTC-H
10CO-306
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
DSST_STC_DTSH_REP Curve (DTSS_REP)
600
(US/M)
100
TENS_REP Curve
(TENS_REP)
25000
(N)
0
DSST_STC_DT2_REP Curve (DT2_REP)
600
(US/M)
100
GR_REP Curve (GR_REP)
0
(GAPI)
150
DSST_STC_DT1_REP Curve (DT1_REP)
600
(US/M)
100
SS_REP Curve (SS_REP)
125
(MM)
375
DSST_STC_DTHP_REP Curve (DTHP_REP)
600
(US/M)
100
REPEAT ANALYSIS: *** DIPOLE SONIC ***
<--LR-->
1375



Parameters

DLIS Name	Description	Value
	EMS-B: Environment Measurement Sonde	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Caliper4
DSST-B: Dipole Shear Imager-B		
ITTS	Integrated Travel Time Source	DTCO
ITTD	Integrated Travel Time Delta	7366 MM
RD33	Receiver 3 Geometry	7930 MM
RD32	Receiver 2 Geometry	7772 MM
RD31	Receiver 1 Geometry	7614 MM
RD43	Receiver 3 Geometry	8077 MM
RD42	Receiver 2 Geometry	8230 MM
RD41	Receiver 1 Geometry	8382 MM
RD83	Receiver 8 Geometry	9834 MM
SAS1	STC Sonic Array Status - Lower Dipole	255
SAS2	STC Sonic Array Status - Upper Dipole	255
SFM1	STC Filter - Lower Dipole	B1-3K
SFM2	STC Filter - Upper Dipole	B1-3K
	DSST-H: HOLEV: Integrated Hole Volume	
FCD	Future Casing (Outer) Diameter	177.8 MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Caliper4
	System and Miscellaneous	
SS	Sonic Site	216.000 MM
DORL	Depth Offset for Repeat Analysis	0.3 M
TD	Total Depth	1471.2 M

Format: dst_rep Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306

	MCM	
HLTB-FTB	10C0-306	10C0-306
DSST-B	10C0-306	DTC-H 10C0-306

Input DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_010.UP	FN:15	PRODUCER	18-Mar-2003 13:41	1471.0 M 1370.1 M

Output DLIS Files

DEFAULT	HALS_TLD_MCFL_CNL_010.UP	FN:22	PRODUCER	18-Mar-2003 14:38	

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Total current mode 1							
Before: 16-Mar-2003 12:56							
Ibt1 1 Gain	1.000	N/A	0.999	N/A	N/A	0.026	MA
Ibt1 1 Phase	0.000	N/A	-0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Aux current mode 1							
Before: 16-Mar-2003 12:56							
Iaux 1 Gain	1.000	N/A	0.999	N/A	N/A	0.035	MA
Iaux 1 Phase	0.000	N/A	-0.001	N/A	N/A	1.900	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Aux current mode 2							
Before: 16-Mar-2003 12:56							
Iaux 2 Gain	1.000	N/A	0.951	N/A	N/A	0.048	MA
Iaux 2 Phase	0.000	N/A	0.951	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0 current mode 3A							
Before: 16-Mar-2003 12:56							
I0 3A Gain	1.000	N/A	0.957	N/A	N/A	0.036	LA
I0 3A Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0 current mode 3B							
Before: 16-Mar-2003 12:56							
I0 3B Gain	1.000	N/A	0.975	N/A	N/A	0.036	LA
I0 3B Phase	0.000	N/A	0.000	N/A	N/A	0.100	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Torpedo Voltage gains							
Before: 16-Mar-2003 12:56							
Zvt 1 Gain	1.000	N/A	0.999	N/A	N/A	0.025	MV
Zvt 2 Gain	1.000	N/A	0.994	N/A	N/A	0.048	MV
Zvt 3 Gain	1.000	N/A	0.991	N/A	N/A	0.048	MV
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Torpedo Voltage Phases							
Before: 16-Mar-2003 12:56							
Zvt 1 Phase	0.000	N/A	-0.189	N/A	N/A	2.300	DEG
Zvt 2 Phase	0.000	N/A	-0.391	N/A	N/A	0.800	DEG
Zvt 3 Phase	0.000	N/A	-0.586	N/A	N/A	0.500	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Upper Bridle Voltage mode 1							
Before: 16-Mar-2003 12:56							
Zub 1 Gain	1.000	N/A	0.999	N/A	N/A	0.025	MV
Zub 1 Phase	0.000	N/A	-0.001	N/A	N/A	0.900	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB M1-M2 Voltage gains							
Before: 16-Mar-2003 12:56							
ZVM 1 Gain	1.000	N/A	0.999	N/A	N/A	0.039	UV
ZVM 2 Gain	1.000	N/A	0.998	N/A	N/A	0.019	UV
ZVM 3 Gain	1.000	N/A	0.994	N/A	N/A	0.018	UV
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB M1-M2 Voltage Phases							
Before: 16-Mar-2003 12:56							
ZVM 1 Phase	0.000	N/A	0.667	N/A	N/A	3.800	DEG
ZVM 2 Phase	0.000	N/A	1.468	N/A	N/A	1.300	DEG
ZVM 3 Phase	0.000	N/A	1.547	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB M1-A0* Voltage gains							
Before: 16-Mar-2003 12:56							
ZVN 1 Gain	1.000	N/A	0.999	N/A	N/A	0.019	UV
ZVN 2 Gain	1.000	N/A	0.998	N/A	N/A	0.019	UV
ZVN 3 Gain	1.000	N/A	0.994	N/A	N/A	0.048	UV
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB M1-A0* Voltage Phases							
Before: 16-Mar-2003 12:56							
ZVN 1 Phase	0.000	N/A	0.772	N/A	N/A	3.800	DEG
ZVN 2 Phase	0.000	N/A	0.998	N/A	N/A	1.300	DEG
ZVN 3 Phase	0.000	N/A	1.343	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Aux Voltage gains							
Before: 16-Mar-2003 12:56							
ZVA 1 Gain	1.000	N/A	1.088	N/A	N/A	0.032	MV
ZVA 2 Gain	1.000	N/A	1.080	N/A	N/A	0.048	MV
ZVA 3 Gain	1.000	N/A	1.017	N/A	N/A	0.048	MV
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Aux Voltage Phases							
Before: 16-Mar-2003 12:56							
ZVA 1 Phase	0.000	N/A	1.518	N/A	N/A	2.300	DEG
ZVA 2 Phase	0.000	N/A	0.046	N/A	N/A	0.800	DEG
ZVA 3 Phase	0.000	N/A	0.356	N/A	N/A	0.500	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0*-A0* /2F, Voltage mode 1							
Before: 16-Mar-2003 12:56							
ZVO 1 Gain	1.000	N/A	0.999	N/A	N/A	0.047	UV
ZVO 1 Phase	0.000	N/A	0.211	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0*-A0* /2F, Voltage mode 2							
Before: 16-Mar-2003 12:56							
ZVO 2 Gain	1.000	N/A	0.992	N/A	N/A	0.096	UV
ZVO 2 Phase	0.000	N/A	1.082	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0*-A0* /2F, Voltage mode 3A							
Before: 16-Mar-2003 12:56							
ZVO 3A Gain	1.000	N/A	0.955	N/A	N/A	0.058	UV
ZVO 3A Phase	0.000	N/A	0.548	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB A0*-A0* /2F, Voltage mode 3B							
Before: 16-Mar-2003 12:56							
ZVO 3B Gain	1.000	N/A	1.001	N/A	N/A	0.054	UV
ZVO 3B Phase	0.000	N/A	0.539	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB vertical Voltage mode 1							
Before: 16-Mar-2003 12:56							
ZVV 1 Gain	1.000	N/A	1.000	N/A	N/A	0.022	UV
ZVV 1 Phase	0.000	N/A	0.000	N/A	N/A	2.800	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB vertical Voltage mode 2							
Before: 16-Mar-2003 12:56							
ZVV 2 Gain	1.000	N/A	0.998	N/A	N/A	0.038	UV
ZVV 2 Phase	0.000	N/A	0.348	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Azimuthal Voltages mode 1							
Before: 16-Mar-2003 12:56							
Az 1 Gain - 0	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain - 1	1.000	N/A	0.994	N/A	N/A	0.047	UV
Az 1 Gain - 2	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 3	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain - 4	1.000	N/A	1.000	N/A	N/A	0.047	UV
Az 1 Gain - 5	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 6	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 7	1.000	N/A	1.001	N/A	N/A	0.047	UV
Az 1 Gain - 8	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain - 9	1.000	N/A	0.997	N/A	N/A	0.047	UV
Az 1 Gain - 10	1.000	N/A	0.998	N/A	N/A	0.047	UV
Az 1 Gain - 11	1.000	N/A	0.995	N/A	N/A	0.047	UV
Az 1 Phase - 0	0.000	N/A	0.478	N/A	N/A	3.800	DEG
Az 1 Phase - 1	0.000	N/A	0.554	N/A	N/A	3.800	DEG
Az 1 Phase - 2	0.000	N/A	0.598	N/A	N/A	3.800	DEG
Az 1 Phase - 3	0.000	N/A	0.511	N/A	N/A	3.800	DEG
Az 1 Phase - 4	0.000	N/A	0.343	N/A	N/A	3.800	DEG
Az 1 Phase - 5	0.000	N/A	0.274	N/A	N/A	3.800	DEG
Az 1 Phase - 6	0.000	N/A	0.354	N/A	N/A	3.800	DEG
Az 1 Phase - 7	0.000	N/A	0.485	N/A	N/A	3.800	DEG
Az 1 Phase - 8	0.000	N/A	0.571	N/A	N/A	3.800	DEG
Az 1 Phase - 9	0.000	N/A	0.553	N/A	N/A	3.800	DEG
Az 1 Phase - 10	0.000	N/A	0.500	N/A	N/A	3.800	DEG
Az 1 Phase - 11	0.000	N/A	0.444	N/A	N/A	3.800	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Azimuthal Voltages mode 2							
Before: 16-Mar-2003 12:56							
Az 2 Gain - 0	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 1	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain - 2	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain - 3	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain - 4	1.000	N/A	0.981	N/A	N/A	0.056	UV
Az 2 Gain - 5	1.000	N/A	0.983	N/A	N/A	0.056	UV
Az 2 Gain - 6	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain - 7	1.000	N/A	0.987	N/A	N/A	0.056	UV
Az 2 Gain - 8	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain - 9	1.000	N/A	0.984	N/A	N/A	0.056	UV
Az 2 Gain - 10	1.000	N/A	0.982	N/A	N/A	0.056	UV
Az 2 Gain - 11	1.000	N/A	0.979	N/A	N/A	0.056	UV
Az 2 Phase - 0	0.000	N/A	1.500	N/A	N/A	1.300	DEG
Az 2 Phase - 1	0.000	N/A	1.206	N/A	N/A	1.300	DEG
Az 2 Phase - 2	0.000	N/A	1.089	N/A	N/A	1.300	DEG
Az 2 Phase - 3	0.000	N/A	1.067	N/A	N/A	1.300	DEG
Az 2 Phase - 4	0.000	N/A	1.116	N/A	N/A	1.300	DEG
Az 2 Phase - 5	0.000	N/A	1.216	N/A	N/A	1.300	DEG
Az 2 Phase - 6	0.000	N/A	1.121	N/A	N/A	1.300	DEG
Az 2 Phase - 7	0.000	N/A	1.060	N/A	N/A	1.300	DEG
Az 2 Phase - 8	0.000	N/A	1.104	N/A	N/A	1.300	DEG
Az 2 Phase - 9	0.000	N/A	1.140	N/A	N/A	1.300	DEG
Az 2 Phase - 10	0.000	N/A	1.141	N/A	N/A	1.300	DEG
Az 2 Phase - 11	0.000	N/A	1.141	N/A	N/A	1.300	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Azimuthal Voltages mode 3A							
Before: 16-Mar-2003 12:56							
Az 3A Gain - 0	1.000	N/A	0.992	N/A	N/A	0.058	UV
Az 3A Gain - 1	1.000	N/A	0.988	N/A	N/A	0.058	UV
Az 3A Gain - 2	1.000	N/A	0.987	N/A	N/A	0.058	UV
Az 3A Gain - 3	1.000	N/A	0.987	N/A	N/A	0.058	UV
Az 3A Gain - 4	1.000	N/A	0.987	N/A	N/A	0.058	UV
Az 3A Gain - 5	1.000	N/A	0.986	N/A	N/A	0.058	UV
Az 3A Gain - 6	1.000	N/A	0.982	N/A	N/A	0.058	UV
Az 3A Gain - 7	1.000	N/A	0.987	N/A	N/A	0.058	UV
Az 3A Gain - 8	1.000	N/A	0.987	N/A	N/A	0.058	UV
Az 3A Gain - 9	1.000	N/A	0.986	N/A	N/A	0.058	UV
Az 3A Gain - 10	1.000	N/A	0.986	N/A	N/A	0.058	UV
Az 3A Gain - 11	1.000	N/A	0.988	N/A	N/A	0.058	UV
Az 3A Phase - 0	0.000	N/A	0.656	N/A	N/A	1.000	DEG
Az 3A Phase - 1	0.000	N/A	0.844	N/A	N/A	1.000	DEG
Az 3A Phase - 2	0.000	N/A	0.751	N/A	N/A	1.000	DEG
Az 3A Phase - 3	0.000	N/A	0.753	N/A	N/A	1.000	DEG
Az 3A Phase - 4	0.000	N/A	0.753	N/A	N/A	1.000	DEG
Az 3A Phase - 5	0.000	N/A	0.801	N/A	N/A	1.000	DEG
Az 3A Phase - 6	0.000	N/A	0.697	N/A	N/A	1.000	DEG
Az 3A Phase - 7	0.000	N/A	0.716	N/A	N/A	1.000	DEG
Az 3A Phase - 8	0.000	N/A	0.759	N/A	N/A	1.000	DEG
Az 3A Phase - 9	0.000	N/A	0.666	N/A	N/A	1.000	DEG
Az 3A Phase - 10	0.000	N/A	0.714	N/A	N/A	1.000	DEG
Az 3A Phase - 11	0.000	N/A	0.716	N/A	N/A	1.000	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HALSB Azimuthal Voltages mode 3B							
Before: 16-Mar-2003 12:56							
Az 3B Gain - 0	1.000	N/A	1.004	N/A	N/A	0.054	UV
Az 3B Gain - 1	1.000	N/A	0.993	N/A	N/A	0.054	UV
Az 3B Gain - 2	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 3	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 4	1.000	N/A	1.009	N/A	N/A	0.054	UV
Az 3B Gain - 5	1.000	N/A	1.004	N/A	N/A	0.054	UV
Az 3B Gain - 6	1.000	N/A	1.004	N/A	N/A	0.054	UV
Az 3B Gain - 7	1.000	N/A	1.009	N/A	N/A	0.054	UV
Az 3B Gain - 8	1.000	N/A	0.995	N/A	N/A	0.054	UV
Az 3B Gain - 9	1.000	N/A	1.000	N/A	N/A	0.054	UV
Az 3B Gain - 10	1.000	N/A	1.002	N/A	N/A	0.054	UV
Az 3B Gain - 11	1.000	N/A	1.022	N/A	N/A	0.054	UV
Az 3B Phase - 0	0.000	N/A	0.285	N/A	N/A	1.200	DEG
Az 3B Phase - 1	0.000	N/A	0.255	N/A	N/A	1.200	DEG
Az 3B Phase - 2	0.000	N/A	0.317	N/A	N/A	1.200	DEG
Az 3B Phase - 3	0.000	N/A	0.318	N/A	N/A	1.200	DEG
Az 3B Phase - 4	0.000	N/A	0.296	N/A	N/A	1.200	DEG
Az 3B Phase - 5	0.000	N/A	0.212	N/A	N/A	1.200	DEG
Az 3B Phase - 6	0.000	N/A	0.183	N/A	N/A	1.200	DEG
Az 3B Phase - 7	0.000	N/A	0.183	N/A	N/A	1.200	DEG
Az 3B Phase - 8	0.000	N/A	0.183	N/A	N/A	1.200	DEG
Az 3B Phase - 9	0.000	N/A	0.183	N/A	N/A	1.200	DEG
Az 3B Phase - 10	0.000	N/A	0.117	N/A	N/A	1.200	DEG
Az 3B Phase - 11	0.000	N/A	0.117	N/A	N/A	1.200	DEG
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Stab Measurement Summary							
Before: 16-Mar-2003 10:16							
SB Window Ratio	0.6799	N/A	0.6800	N/A	N/A	N/A	CPS
SB Window Sum	9368	N/A	9393	N/A	N/A	N/A	
SS Window Ratio	0.4810	N/A	0.4809	N/A	N/A	N/A	CPS
SS Window Sum	10003	N/A	9998	N/A	N/A	N/A	
LB Window Ratio	0.3974	N/A	0.3993	N/A	N/A	N/A	CPS
LB Window Sum	1195	N/A	1195	N/A	N/A	N/A	
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Phono-multibit/air High Voltages Calibration							
Before: 16-Mar-2003 13:16							
SS PH High Voltage (Command)	1870	N/A	1867	N/A	N/A	N/A	V
SS PH High Voltage (Command)	1813	N/A	1793	N/A	N/A	N/A	V
LS PH High Voltage (Command)	1879	N/A	1818	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Crystal Quality Resolutions Calibration							
Before: 16-Mar-2003 13:16							
SS Cryst - Resolution	11.84	N/A	11.70	N/A	N/A	N/A	%
SS Cryst - Resolution	13.21	N/A	13.24	N/A	N/A	N/A	%
LS Crystal Resolution	9.759	N/A	9.690	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-OTS Wellsite Calibration - MCFL Calibration							
Before: 16-Mar-2003 13:16							
Raw Er Resistivity	3875	N/A	3854	N/A	N/A	N/A	OHMM
Raw Et Resistivity	3830	N/A	3817	N/A	N/A	N/A	OHMM
Raw Ed Resistivity	3800	N/A	3800	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-OTS Wellsite Calibration - HILT Caliper Calibration							
Before: 16-Mar-2003 13:08							
HILT Caliper Zero Measurement	203.2	N/A	199.1	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	304.8	N/A	308.8	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Detector Calibration							
Before: 16-Mar-2003 12:53							
Gamma Ray Background	30.00	N/A	54.64	N/A	N/A	N/A	GAPI
Gamma Ray Zero Check	15.00	N/A	16.21	N/A	N/A	16.21	GAPI
Gamma Ray Calibrator	165.0	N/A	165.2	N/A	N/A	18.00	GAPI
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Zero Measurement							
Master: 16-Dec-2002 10:44 Before: 16-Mar-2003 12:53							
QHTC Zero Count	53.31	25.24	25.24	N/A	N/A	2.901	CPS
QHTC Backgrounds	27.45	27.65	28.62	N/A	N/A	4.148	CPS
High resolution Integrated Logging Tool-OTS Wellsite Calibration - Accelerometer Calibration							
Before: 16-Mar-2003 12:53							
Z-Axis Acceleration	8.810	N/A	8.829	N/A	N/A	N/A	M/S2
High resolution Integrated Logging Tool-OTS Master Calibration - Inversion results							
Master: 16-Jan-2003 17:01							
Rho Aluminum	2698	2601	--	--	--	--	KM3
Rho Magnesium	1738	1740	--	--	--	--	KM3
Pe Aluminum	2.570	2.551	--	--	--	--	
Pe Magnesium	3.450	2.630	--	--	--	--	
High resolution Integrated Logging Tool-OTS Master Calibration - Deviation Summary							
Master: 16-Jan-2003 17:01							
Air average deviation	0.0	0.0700	--	--	--	--	

BB Average Deviation	0	0.2702	–	–	–	–	%
SB Max Deviation	0	0.3000	–	–	–	–	%
SB Average Deviation	0	0.2833	–	–	–	–	%
SB Max Deviation	0	0.3500	–	–	–	–	%
LB Average Deviation	0	0.6927	–	–	–	–	%
LB Max Deviation	0	2.331	–	–	–	–	%

High resolution Integrated Logging Tool-OTB Master Calibration - Tank Measurement
Master: 19-Dec-2002 10:44

Thermal Near Conv. (Tank)	6031	6000	–	–	CPS
Thermal Far Conv. (Tank)	2783	2400	–	–	CPS
CNTC/CTC (Tank)	2.159	2.000	–	–	

Environment Meas. - Hor.: 2mde Wellsite Calibration - EMS Caliper Calibration
Before: 19-Mar-2003 - 01:12

Radius 1 Short Radius	10.1	N/A	08.49	N/A	N/A	0.080	MM
Radius 2 Short Radius	10.2	N/A	08.49	N/A	N/A	0.080	MM
Radius 3 Short Radius	10.2	N/A	137.8	N/A	N/A	0.080	MM
Radius 4 Long Radius	10.1	N/A	79.21	N/A	N/A	0.080	MM
Radius 5 Long Radius	10.1	N/A	68.58	N/A	N/A	0.080	MM
Radius 6 Long Radius	10.2	N/A	147.7	N/A	N/A	0.080	MM
Radius 7 Long Radius	10.2	N/A	105.8	N/A	N/A	0.080	MM
Radius 8 Long Radius	10.2	N/A	105.8	N/A	N/A	0.080	MM
Radius 9 Short Radius	10.1	N/A	115.1	N/A	N/A	0.080	MM
Radius 10 Short Radius	10.2	N/A	105.2	N/A	N/A	0.080	MM
Radius 11 Short Radius	10.2	N/A	148.9	N/A	N/A	0.080	MM
Radius 12 Short Radius	10.1	N/A	106.1	N/A	N/A	0.080	MM

The GLS/ 42 source activity is acceptable.

The HDNS Neutron Master Calibration was done with the following parameters :

NCT-B Water Temperature	16.8	DEGC
Thermal Housing Size	83.725	MM

High resolution Integrated Logging Tool-OTB / Equipment Identification

Primary Equipment:	
HILT Azimuthal Laterolog Sonde B	HALB - B
HILT Dual Laterolog Azimuthal Sonde	HDAL - B 1719
HILT Rxo Gamma ray Device	HRGD - B 918
HILT Nuclear Rack Reamer Detector	HILT
HILT Nuclear Short-Spacing Detector	HILT
HILT Nuclear Long-Spacing Detector	HILT
HILT Cylindrically Focused Log Device	HILT
GR Logging Sensor	GLS - VU 1994
Auxiliary Equipment:	
Laterolog Control Module	LCM - M

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Tool current mode 1

Ibd 1 Dam MA	Value	Ibd 1 Phase DEG	Value
	0.999		-0.500
0.998 1.000 1.001		0.100 0.000 -0.600	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB Ibd current mode 1

Ibd 1 Dam MA	Value	Ibd 1 Phase DEG	Value
	0.998		-0.001
0.998 1.000 1.002		4.902 0.000 4.902	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Ibd current mode 58

Ibd 1 Dam MA	Value	Ibd 1 Phase DEG	Value
	0.999		-0.000
0.998 1.000 1.002		0.100 0.000 -0.100	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB Ibd current mode 58

Ibd 1 Dam MA	Value	Ibd 1 Phase DEG	Value
	0.999		-0.000
0.998 1.000 1.002		0.100 0.000 -0.100	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB I0 GB Gain UA

I0 GB Gain UA	Value	I0 GB Phase DEG	Value
	0.999		0.000
0.998 1.000 1.002		0.100 0.000 -0.100	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB I0 GB Gain UA

I0 GB Gain UA	Value	I0 GB Phase DEG	Value
	0.999		0.000
0.998 1.000 1.002		0.100 0.000 -0.100	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Tuning Voltage gains

Zvt 1 Dam MV	Value	Zvt 2 Dam MV	Value	Zvt 3 Dam MV	Value
	0.999		0.994		0.991
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB Tuning Voltage gains

Zvt 1 Dam MV	Value	Zvt 2 Dam MV	Value	Zvt 3 Dam MV	Value
	0.999		0.994		0.990
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Upper Bobo Voltage mode 1

Zb1 Dam MV	Value	Zb1 Phase DEG	Value
	0.999		-0.061
0.998 1.000 1.002		4.400 0.000 4.400	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB Upper Bobo Voltage mode 1

Zb1 Dam MV	Value	Zb1 Phase DEG	Value
	0.999		-0.061
0.998 1.000 1.002		4.400 0.000 4.400	
Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB A2 Voltage gains

ZVA1 Dam LV	Value	ZVA 2 Dam LV	Value	ZVA 3 Dam LV	Value
	0.999		0.993		0.994
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB A2 Voltage gains

ZVA1 Dam LV	Value	ZVA 2 Dam LV	Value	ZVA 3 Dam LV	Value
	0.999		0.993		0.994
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB A1 Voltage gains

ZVA1 Dam LV	Value	ZVA 2 Dam LV	Value	ZVA 3 Dam LV	Value
	0.999		0.994		0.994
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB A1 Voltage gains

ZVA1 Dam LV	Value	ZVA 2 Dam LV	Value	ZVA 3 Dam LV	Value
	0.999		0.994		0.994
0.998 1.000 1.002		1.164 1.000 0.836		1.164 1.000 0.836	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB M1-AP Voltage gains

ZVA1 Phase DEG	Value	ZVA 2 Phase DEG	Value	ZVA 3 Phase DEG	Value
	0.772		1.858		1.543
4.000 0.000 4.000		-3.300 0.000 3.300		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB M1-AP Voltage gains

ZVA1 Dam MV	Value	ZVA 2 Dam MV	Value	ZVA 3 Dam MV	Value
	1.000	1.000		1.000	1.000
0.9FUL 1.000 1.100		0.998 1.000 1.130		0.998 1.000 1.130	
Calibration	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Ibs Voltage Ratio

ZVA 1 Phase DEG	Value	ZVA 2 Phase DEG	Value	ZVA 3 Phase DEG	Value
	1.818		0.048		0.358
4.100 0.000 4.100		8.900 0.000 8.900		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB Ibs Voltage Ratio

ZVA 1 Phase DEG	Value	ZVA 2 Phase DEG	Value	ZVA 3 Phase DEG	Value
	1.818		0.048		0.358
4.100 0.000 4.100		8.900 0.000 8.900		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB2 AP-AH DIF Voltage mode 1

ZVD 1 Gain LV	Value	ZVD 2 Gain LV	Value	ZVD 3 Gain LV	Value
	0.996		0.999		0.011
0.974 1.000 1.147		8.300 0.000 8.300		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB2 AP-AH DIF Voltage mode 1

ZVD 3A Gain LV	Value	ZVD 3A Phase DEG	Value	ZVD 3A Phase DEG	Value
	0.916		0.646		0.000
0.842 1.000 1.187		0.000 0.000 0.000		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB2 vertical mode 1

ZVV 1 Gain LV	Value	ZVV 1 Phase DEG	Value	ZVV 2 Phase DEG	Value
	0.996		0.999		0.339
0.996 1.000 1.082		4.800 0.000 4.800		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB2 vertical mode 1

ZVV 1 Gain LV	Value	ZVV 1 Phase DEG	Value	ZVV 2 Phase DEG	Value
	0.996		0.999		0.339
0.996 1.000 1.082		4.800 0.000 4.800		0.000 0.000 0.000	
Minimum	Nominal Maximum	Minimum	Nominal Maximum	Minimum	Nominal Maximum

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB2 Azimuthal Voltage mode 1

Ub	Az 1 Gain LV	Value	Ub	Az 2 Phase DEG	Value
1		0.997	1		0.000
2		0.994	2		0.534
3		0.997	3		0.568
4		0.995	4		0.521
5		0.997	5		0.383
6		0.997	6		0.274
7		0.997	7		0.584
8		1.000	8		0.406
9		0.998	9		0.493
10		0.997	10		0.503
11		0.998	11		0.502
12		0.998	12		0.493
	0.974 1.000 1.147			-8.300 0.000 8.300	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HALB2 Azimuthal Voltage mode 1

Ub	Az 1 Gain LV	Value	Ub	Az 2 Phase DEG	Value
1		0.997	1		0.147
2		0.994	2		0.534
3		0.997	3		0.568
4		0.995	4		0.521
5		0.997	5		0.383
6		0.997	6		0.274
7		0.997	7		0.584
8		1.000	8		0.406
9		0.998	9		0.493
10		0.997	10		0.503
11		0.998	11		0.502
12		0.998	12		0.493
	0.974 1.000 1.147			-8.300 0.000 8.300	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB2 Azimuthal Voltage mode 2

Ub	Az 2 Gain LV	Value	Ub	Az 2 Phase DEG	Value
1		0.997	1		0.147
2		0.993	2		1.012
3		0.993	3		1.068
4		0.993	4		1.067
5		0.994	5		1.188
6		0.993	6		1.015
7		0.993	7		1.080
8		0.993	8		1.080
9		0.992	9		1.105
10		0.993	10		1.083
11		0.992	11		1.144
12		0.993	12		1.141
	0.974 1.000 1.147			-8.300 0.000 8.300	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB2 Azimuthal Voltage mode 3

Ub	Az 3B Gain LV	Value	Ub	Az 3B Phase DEG	Value
1		0.998	1		0.147
2		0.998	2		0.164
3		1.001	3		0.088
4		1.000	4		0.000
5		1.002	5		0.077
6		1.000	6		0.017
7		1.004	7		-0.196
8		1.000	8		0.094
9		1.000	9		-0.012
10		1.000	10		0.071
11		0.998	11		-0.185
12		1.000	12		0.191
13		1.000	13		0.117
	0.948 1.000 1.186			-8.300 0.000 8.300	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Azimuthal Voltage mode 4

Ub	Az 4B Gain LV	Value	Ub	Az 4B Phase DEG	Value
1		0.998	1		0.147
2		0.998	2		0.164
3		1.001	3		0.088
4		1.000	4		0.000
5		1.002	5		0.077
6		1.000	6		0.017
7		1.004	7		-0.196
8		1.000	8		0.094
9		1.000	9		-0.012
10		1.000	10		0.071
11		0.998	11		-0.185
12		1.000	12		0.191
13		1.000	13		0.117
	0.948 1.000 1.186			-8.300 0.000 8.300	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 12:58

High resolution Integrated Logging Tool-OTB Master Calibration
HALB Wellsite Accelerometer Calibration

Phase	SS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.4648	Before		0.4670	Before		0.4659
	0.4626 0.4748 0.4870			0.4670 0.4748 0.4826			0.4592 0.4748 0.4904	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	
Phase	SS Window Sum. CPS	Value	Phase	SS Window Sum. CPS	Value	Phase	LS Window Sum. CPS	Value
Before		6053	Before		6053	Before		1110
	6053 6086 6501			6053 10000 13950			1110 1198 1915	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 13:14

High resolution Integrated Logging Tool-OTB Master Calibration
Rate Measurement Summary

Phase	SB Pol High Voltage (Command) V	Value	Phase	SLPol High Voltage (Command) V	Value	Phase	LB Pol High Voltage (Command) V	Value
Before		1797	Before		1773	Before		1810
	1670 1750 1830			1670 1750 1830			1670 1750 1830	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 13:15

High resolution Integrated Logging Tool-OTB Master Calibration
Quick Quality Assurance Summary

Phase	SB Crystal Resolution %	Value	Phase	SB Crystal Resolution %	Value	Phase	LB Crystal Resolution %	Value
Before		11.70	Before		11.70	Before		8.980
	10.84 11.80 12.84			8.008 10.00 11.21			8.799 10.79 12.79	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 17-Mar-2003 13:15

High resolution Integrated Logging Tool-OTB Master Calibration
Quick Quality Assurance Summary

Phase	Rxo SI Resistivity OHMM	Value	Phase	Rxo SI Resistivity OHMM	Value	Phase	Rxo SI Resistivity OHMM	Value
Before		3654	Before		3654	Before		3633
	3085 3675 4180			3654 3685 4180			3634 3697 4180	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 18-Mar-2003 13:15

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HILT Caliper Zero Measurement

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value	Phase	
Before		2643	Before		3061	Before	
	1824 2052 2643			226.8 3061 3061			
	Minimum Nominal Maximum			Minimum Nominal Maximum			

Before: 19-Mar-2003 13:28

High resolution Integrated Logging Tool-OTB Wellsite Calibration
HILT Gamma Ray Background

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray Calibrated GAPI	Value
Before		84.54	Before		187.3	Before		1860
	0 0.00 1203			162.1 187.3 1883			1800 1860 1920	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Before: 19-Mar-2003 13:09

High resolution Integrated Logging Tool-OTB Wellsite Calibration
Mini-Inflow Test

Phase	DITC Background CPS	Value	Phase	DITC Background CPS	Value	Phase	
Before		25.34	Before		25.24	Before	
	8.000 25.34 40.00			8.000 25.24 40.00			
	Minimum Nominal Maximum			Minimum Nominal Maximum			

Before: 18-Mar-2003 13:11

High resolution Integrated Logging Tool-OTB Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before		9.809
	9.802 9.809 10.01	
	Minimum Nominal Maximum	

Before: 18-Mar-2003 12:53

High resolution Integrated Logging Tool-OTB Master Calibration
Inelastic Mode

Phase	Rho Aluminum KG/M3	Value	Phase	Rho Magnesium KG/M3	Value
Master		2697	Master		1686
	2590 2698 2805			1678 1686 1694	
	Minimum Nominal Maximum			Minimum Nominal Maximum	
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		3.991	Master		3.930
	3.870 3.970 4.070			3.850 3.950 4.050	
	Minimum Nominal Maximum			Minimum Nominal Maximum	

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-OTB Master Calibration
Neutron Summary

Phase	SS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Before		0.2702	Before		0.2833	Before		0.6927
	-0.8000 0.0000 0.8000			-1.000 0.0000 1.000			-1.900 0.0000 1.900	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	
Phase	SS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Before		0.3000	Before		0.3500	Before		2.331
	-1.800 0.0000 1.800			-2.500 0.0000 2.500			-3.800 0.0000 3.800	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Master: 14-Jan-2003 17:01

High resolution Integrated Logging Tool-OTB Master Calibration
Tank Measurement

Phase	Thermal Near Conv. (Tank) CPS	Value	Phase	Thermal Far Conv. (Tank) CPS	Value	Phase	CNTC/CTC (Tank)	Value
Before		6000	Before		2400	Before		2.000
	5000 6000 7200			2075 2400 2748			1.800 2.000 2.200	
	Minimum Nominal Maximum			Minimum Nominal Maximum			Minimum Nominal Maximum	

Master: 19-Dec-2002 10:44

Environment Measurement Sonde / Equipment Identification

Primary Equipment:	
EMS Mechanical	EMC - B
EMS Centraliser	EMC - B
EMS Adaptor	EMA - B
Resistivity Mod	RES -
Auxiliary Equipment:	
Electronics Cartridge Housing	ECH - XH

Environment Measurement Sonde Wellsite Calibration
EMS Caliper Calibration

Phase	Radius 1 Short Radius MM	Value	Phase	Radius 2 Long Radius MM	Value	Phase	
Before		10.1	Before		10.1	Before	
	78.01 120.8 127.0			68.40 68.40 68.40			136.4 137.0 137.6
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 2 Short Radius MM	Value	Phase	Radius 3 Long Radius MM	Value	Phase	
Before		10.2	Before		10.1	Before	
	77.41 120.4 127.0			137.8 137.8 137.8			78.01 78.01 78.01
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 3 Short Radius MM	Value	Phase	Radius 4 Long Radius MM	Value	Phase	
Before		10.2	Before		10.1	Before	
	78.01 121.4 127.0			68.85 68.85 68.85			147.7 147.7 147.7
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 4 Short Radius MM	Value	Phase	Radius 5 Long Radius MM	Value	Phase	
Before		10.1	Before		10.1	Before	
	77.41 120.4 127.0			156.9 156.9 156.9			105.8 105.8 105.8
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 5 Short Radius MM	Value	Phase	Radius 6 Long Radius MM	Value	Phase	
Before		10.2	Before		10.2	Before	
	78.01 121.4 127.0			116.1 116.1 116.1			115.1 115.1 115.1
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 6 Short Radius MM	Value	Phase	Radius 7 Long Radius MM	Value	Phase	
Before		10.2	Before		10.2	Before	
	78.01 120.8 127.0			148.9 148.9 148.9			106.2 106.2 106.2
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 7 Short Radius MM	Value	Phase	Radius 8 Long Radius MM	Value	Phase	
Before		10.2	Before		10.2	Before	
	78.01 120.8 127.0			106.1 106.1 106.1			105.2 105.2 105.2
	Minimum Nominal Maximum			Minimum Nominal Maximum			
Phase	Radius 8 Short Radius MM	Value	Phase	Radius 9 Short Radius MM	Value	Phase	
Before		10.2	Before		10.1	Before	
	78.01 120.8 127.0			115.1 115.1 115.1			106.1 106.1 106.1
	Minimum Nominal Maximum			Minimum Nominal Maximum			

Before: 18-Mar-2003 13:12

Company: Paramount Resources Ltd.
Well: Bara et.al Nogha M-17
Field: Nogha
Province: Northwest Territories
Vertical Well

Schlumberger

DIPOLE SHEAR
IMAGER LOG

MISCELLANEOUS

Schlumberger

Company: Paramount Resources Ltd.
Well: Para et al Nogha M-17
Field: Nogha
Location: Northwest Territories

COMPENSATED CEMENT
BOND LOG

N.E.B. COPY

Province: Northwest Territories
Field: Nogha
Location: Latitude 66deg 30' 45.242 Longitude 125deg 48' 30.680
Company: Paramount Resources Ltd.

Latitude: 66deg 30' 45.242		Elev.: K.B.	354.6 m
Longitude: 125deg 48' 30.680		G.L.	350 m
UWI: 300M176640125450		D.F.	354.3 m
Permanent Datum: GROUND LEVEL		Elev.:	350 m
Log Measured From: Kelly Bushing	4.6 m	above Perm. Datum	
Drilling Measured From: Kelly Bushing			

API Serial No.	Latitude	Longitude
WID 1970	66° 30' 45.242	125° 48' 30.680

	Run 1	Run 2	Run 3	Run 4
Logging Date	22-Mar-2003			
Run Number	2			
Depth Driller	1471 m			
Schlumberger Depth	1451 m			
Bottom Log Interval	1450 m			
Top Log Interval	975 m			
Casing Fluid Type	Salt Saturated Gel Chem			
Salinity				
Density	1000 kg/m3			
Fluid Level				
BIT/CASING/TUBING STRING				
Bit Size	216.000 mm			
From	4.6 m			
To	1471.2 m			
Casing/Tubing Size	177.800 mm			
Weight	43.2 kg/m			
Grade	P5-80			
From	4.6 m			
To	1470 m			
Maximum Recorded Temperatures	24 degC			
Logger On Bottom: Time	22-Mar-2003 13:15			
Unit Number: Location	8416 Norman Wells			
Recorded By	P. Rossi/ B.Jordan			
Witnessed By	Mike Penland			

	Run 1	Run 2	Run 3	Run 4
Oil Density				
Water Salinity				
Gas Gravity				
Rm				
Rw				
Mfg				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation	0 deg			
CEMENTING DATA				
Primary/Squeeze	Primary			
Casing String No				
Lead Cement Type				
Volume				
Density				
Water Loss				
Additives				
Tail Cement Type				
Volume				
Density				
Water Loss				
Additives				
Expected Cement Top				
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Fluid Type				
Salinity				
Density				
Fluid Level				
BIT/CASING/TUBING STRING				
Bit Size				
From				
To				
Casing/Tubing Size				
Weight				
Grade				
From				
To				
Maximum Recorded Temperatures				
Logger On Bottom: Time				
Unit Number: Location				
Recorded By				
Witnessed By				

REMARKS

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CREW
CB1 JUNK BASKET
CB2 VIP
CB3
CB4
CB5
CB6
CB7 BLIND BOX WEIGHT
LOG CORRELATED TO SCHLUMBERGER COMPENSATED NEUTRON
RAN 5 1/2 CASING AS PER TALLY
BUMPED CEMENT PLUG WITH 1500 PSI
PRODUCTION TEST #1 (DST #1) 1504.5 - 1506.0 M
PRESSURED UP WITH 20 TONNES CAMCO BOTTOM TRIP ANCHOR + 5 PK STRIP
PRESSURED UP WITH 20 TONNES CAMCO BOTTOM TRIP ANCHOR + 5 PK STRIP
PRESSURE PASS #1 ELECTED NOT TO BE PERFORMED BY CLIENT WHEN CEMENT
PRESSURE PASS #2 WAS RECORDED AT 1000 PSI

PERFORMED BY SCHLUMBERGER

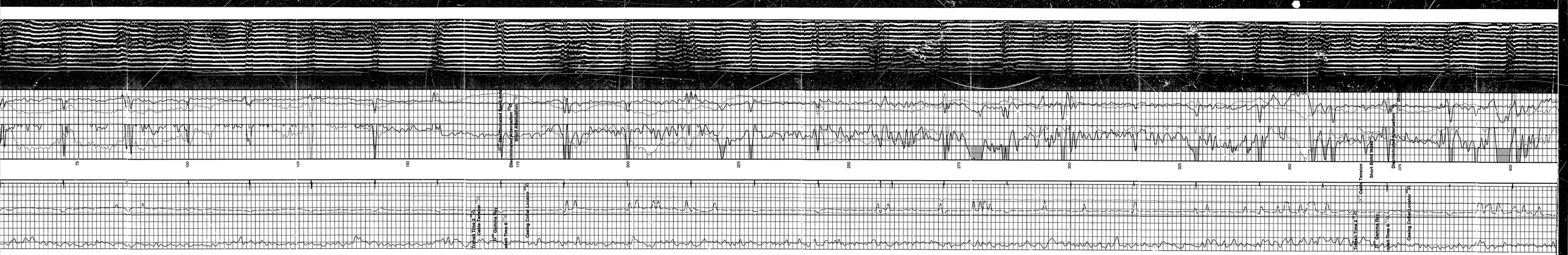
	RUN 1		RUN 2	
SERVICE ORDER #	8183774		SERVICE ORDER #	
PROGRAM VERSION	1D0D-506		PROGRAM VERSION	
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START
	1450 m	975 m		STOP

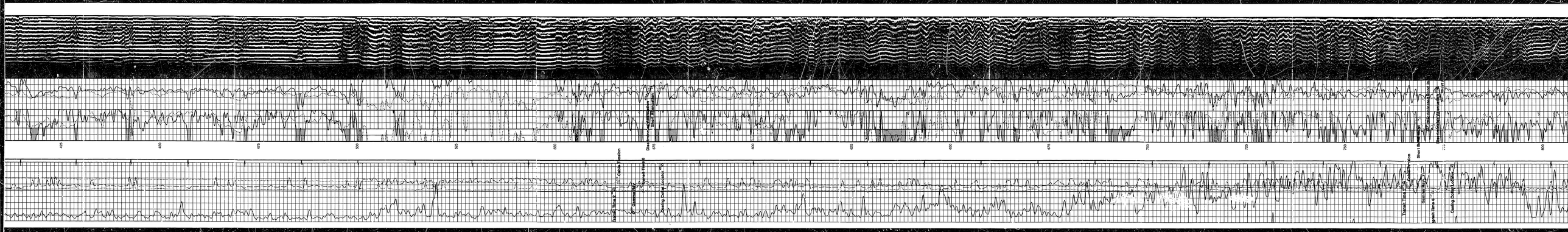
RUN 1
SURFACE EQUIPMENT

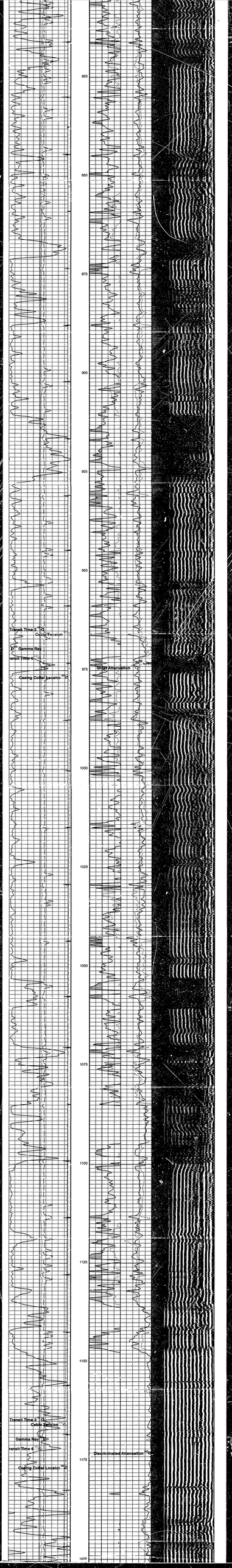
WDA-AB
GSR-C
WTC-3CTC-A

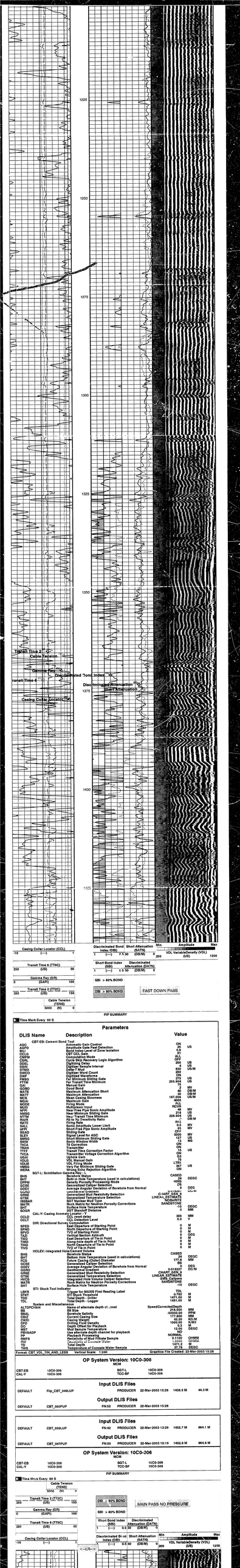
DOWNHOLE EQUIPMENT

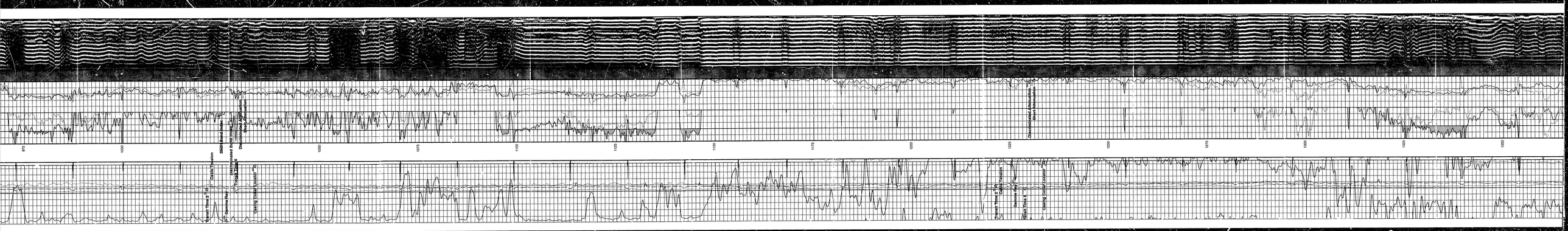
LEH-QT		13.32	
LEH-QT			
TCC-BF		12.43	
SCC-BF			
SCC-A			
CAL-Y	Tellibura	11.52	
CAL-Y	CCL	11.21	
SGT-L		10.17	
SGC-SA	Gamma Ray		
SGC-SA			
AH-127		8.78	
AH-127		6.4**	
CBF-EB			
SGC-SA			
SGC-SA			
SGC-SA

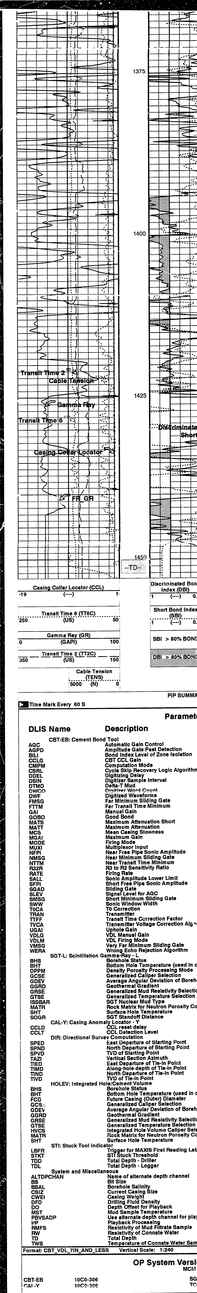

75
100
125
150
175
200
225
250
275
300
325
350
375
400
Discriminator Saturation
Short Attenuation
Short Time
Cable Tension
Gamma 1Hz
Casing Collar Locator
Discriminator Saturation
Short Attenuation
Short Time
Cable Tension
Gamma 1Hz
Casing Collar Locator


Pacing Time = 2
Cable Tension
Gamma Ray
Transit Time 6
Casing Collar Locator
Distance Between Receivers
Short Spacing
Caliper
Transit Time 4
Casing Collar Locator


825
850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200
Transit Time 2
Cable Tension
Gamma Ray
Transit Time 4
Casing Collar Locator
Short Attenuation
Discriminated Attenuation


1225
1250
1275
1300
1325
1350
1375
1400
Transmitter Time 2 (TT2C)
Cable Tension
Gamma Ray
Transmitter Time 1 (TT1C)
Discriminated Bond Index (DBI)
Discriminated Attenuation (DATN)
Short Attenuation (SATN)
Casing Collar Locator (CCL)
Min
Amplitude
Max
VDL VariableDensity (VDL)
(US)
200
1200
Casing Collar Locator (CCL)
(---)
-10
1
Transit Time 4 (TT4C)
(US)
200
50
Short Bond Index (SBI)
(---)
0.5
50
Discriminated Attenuation (DATN)
(DB/M)
0
Gamma Ray (GR)
(GAPI)
0
100
SBI > 80% BOND
Transit Time 2 (TT2C)
(US)
300
150
DBI > 80% BOND
FAST DOWN PASS
Cable Tension
(TENS)
(lb)
5000
0
PIP SUMMARY
Time Mark Every 60 S
Parameters
DLIS Name
Description
Value
CBT-EB: Cement Bond Tool
AGC Automatic Gain Control ON
AGFO Amplitude Gate Fast Detection 20 US
BEI Bond Index Level of Zone Isolation 0.5
CCLG CBT CCL Gain 1
CMPM Cement Measurement Mode ALL
CSRM Cycle Skip Recovery Logic Algorithm OFF
DDEL Digitizing Delay 300 US
DSI Digitizer Sample Interval 10 US
EMAX Energy Maximum 625 MV/M
GWCO Digitizer Word Count 250
GWF Digitized Waveforms ON
PWSG Primary Window Sliding Gate 20 US
PWT Far Transmit Time Minimum 265.984 US
SAG Manual Gain 75
SAL Sonic Amplitude Lower Limit 40 MV
SGAO Sliding Gate Sonic Amplitude 0 MV
SLEV Signal Level for AGC 5000 MV
SWSG Secondary Window Sliding Gate 20 US
SWW Sonic Windows Width 13 US
TBCA Tb Correction ON
TRAN Transmitter 1 US
TTFF Transit Time Correction Factor ON
TTVC Transit Time Voltage Correction Algorithm ON
UGJH Ughole Gain 0.3
VDLG VDL Manual Gain 75
VSG Very Far Sliding Gate LTT1 US
VWSG Very Far Minimum Sliding Gate 267 US
WERA Wrong Echo Rejection Algorithm ON
GR: SGT-L: Scintillation Gamma Ray
BHS Borehole Status CASED
BHT Bottom Hole Temperature (used in calculations) 84 DEGC
DPFM Density Porosity Processing Mode HIRES
GCBE Generalized Caliper Selection 8
GCBS Generalized Caliper Selection of Borehole from Normal 0 DEG
GcnVu Generalized Curvature (CHART GEN_8 LINEAR_SCALE)
GRSE Generalized Mud Resistivity Selection CHART_GEN_8
GRTE Generalized Temperature Selection LINEAR_SCALE
HMMA SGT Neutron Mud Type SIGMATEC
MATR Rock Matrix for Neutron Porosity Corrections SANDSTONE
SHT Surface Hole Temperature 0 DEGC
SOGR SGT Standoff Distance 0 MM
CALI: CAL-Y: Casing Anomaly Caliper
CCLD CCL reset delay 305 MM
CCLT CCL Detection Level 0.3 V
DIR: Directional Surveys
SPEO Exact Departure of Starting Point 0 M
SPND North Departure of Starting Point 0 M
SPVD Vertical Section Origin 0 M
TIEO Vertical Section Azimuth 0 DEG
TIED Exact Departure of Tie-In Point 0 M
TIND Along-hole depth of Tie-In Point 0 M
TIVD Exact Departure of Tie-In Point 0 M
TWS Tie-In Source 1
HOLEV: Integrated Hole/Caliper Volume
BHB Borehole Status CASED
BHT Bottom Hole Temperature (used in calculations) 84 DEGC
FCD Future Casing (Outer) Diameter 177.8 MM
GCBE Generalized Caliper Selection 8
GCBS Average Angular Deviation of Borehole from Normal 0 DEG
GDRO Generalized Dip Resolution 0.016937 DC/M
GRSE Generalized Mud Resistivity Selection CHART_GEN_8
GRTE Generalized Temperature Selection LINEAR_SCALE
HVCB Integrated Hole Volume Caliper Selection EMR_Caliper
MATR Rock Matrix for Neutron Porosity Corrections SANDSTONE
SHT Surface Hole Temperature 15 DEGC
STI: Stuck Tool Indicator
LBFR Trigger for MAX09 First Reading Label TDL
STKT Tool Stuck Threshold 0.762 M
TDD Total Depth - Driller 1671.00 M
TDL Total Depth - Logger 1651.00 M
System and Miscellaneous
ALTDPCHAN Name of alternate depth ch...nnel SpeedCorrectedDepth
BS Bit Size 216.000 MM
BSAL Borehole Salinity -50000.00 PPM
CSIZ Casing Outer Size 177.80 MM
CWEI Casing Weight 43.10 KG/M
DFD Drilling Fluid Density 1000.00 K/M3
DFT Depth Offset For Playback 0 M
MST Measured Temperature 15.00 DEGC
PBVSADP Use alternate depth channel for playback NO
PP Playback Processing NORMAL
RMFS Resistivity of Mud Filtrate Sample 0.1320 OHMM
RMS Resistivity of Mud Sample 0.1320 OHMM
TD Total Depth 1671.2 M
TWS Temperature of Console Water Sample 37.78 DEGC
Format: CBT_VDL_TIN_AND_LESS Vertical Scale: 1:240 Graphics File Created: 22-Mar-2003 15:28
OP System Version: 10C0-306
MCM
CBT-EB 10C0-306 SGT-L 10C0-306
CAL-Y 10C0-306 TCC-BF 10C0-306
Input DLIS Files
DEFAULT Flip_CBT_046UP PRODUCER 22-Mar-2003 15:26 1438.5 M 44.3 M
Output DLIS Files
DEFAULT CBT_060PUP FN:52 PRODUCER 22-Mar-2003 15:28
Input DLIS Files
DEFAULT CBT_030UP FN:42 PRODUCER 22-Mar-2003 13:29 1452.7 M 964.1 M
Output DLIS Files
DEFAULT CBT_047PUP FN:50 PRODUCER 22-Mar-2003 15:19 1452.6 M 964.8 M
OP System Version: 10C0-306
MCM
CBT-EB 10C0-306 SGT-L 10C0-306
CAL-Y 10C0-306 TCC-BF 10C0-306
PIP SUMMARY
Time Mark Every 60 S
Cable Tension (TENS) (lb) 5000 0
Transit Time 2 (TT2C) (US) 300 150
Gamma Ray (GR) (GAPI) 0 100
Transit Time 1 (TT1C) (US) 200 50
Casing Collar Locator (CCL) (---) -10 1
DBI > 80% BOND
MAIN PASS NO PRESSURE
SBI > 80% BOND
Short Bond Index (SBI) (---) 0.5 50
Discriminated Attenuation (DATN) (DB/M) 0.5 50
Discriminated Br.ict Index (DBI) (---) 0.5 50
Short Attenuation (SATN) (DB/M) 0
Min
Amplitude
Max
VDL VariableDensity (VDL) (US) 200 1250
<--LR-->


975
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300
1325
1350
Event Time 2
Gamma Ray
Caving Debris Caliper 2
Discriminated Attenuation
Short Attenuation
Event Time 4
Caving Debris Caliper 4



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	CBT-EB: Cement Bond Tool		
AGC	Automatic Gain Control	ON	
AGFD	Amplitude Gate Peak Detection	20	US
BEI	Bond Index Level of Zone Isolation	6.5	
CCLC	CBT CCL Gain	X1	
CMPM	Computation Mode	ZERO	
CSRL	Digital Step Recovery Logic Algorithm	OFF	
DBIN	Digitizer Sample Interval	200	US
DTMD	Delta-T Mod	600	US/M
DWCO	Digitizer Word Count	4	
DWF	Digitized Waveform	ON	
FMSG	Far Maximum Sliding Gate	275	US
FTIG	Far Time Minimum Threshold	285.938	US
GTI	Manual Gain	2	
GOBO	Good Bond	0	MV
MATE	Maximum Attenuation Short	80	DB/M
MATT	Maximum Attenuation	80	DB/M
MAXT	Maximum Waveform Windows	187.008	US/M
MGAI	Maximum Gain	8000	
MODE	Firing Mode	ALL	
NFIR	Near Fire Sonic Amplitude	46	MV
NFIR	Near Fire Sonic Amplitude	46	MV
NMSG	Near Minimum Sliding Gate	215	US
NTIG	Near Time Minimum Threshold	226.563	US
NTSR	Near to Far Sensitivity Ratio	2	DB/M
PATE	Firing Rate	R10	
SALL	Sonic Amplitude Lower Limit	0.5	MV
SFIR	Short Free Pipe Sonic Amplitude	46	MV
SGAD	Short Gain Adjust	OFF	
SLEV	Signal Level for ADC	5000	MV
SMSG	Short Minimum Sliding Gate	127	US
SMSW	Short Minimum Width	48	MS
TMCA	TS Correction	ON	
TRAN	Transmitter	2	US
TYFF	Transit Time Correction Factor	ON	
TVCA	Transit Time Variance Correction Alg rithm	G3	
VDLG	VDL Gain	10	
VDLM	VDL Manual Gain	LTM1	
VDLM	VDL Firing Mode	ALL	US
WSMG	Wide Minimum Sliding Gate	64	
WEBA	Wrong Echo Rejection Algorithm	ON	
	SGT-L: Scintillation Gamma Ray - L		
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	0	DEGC
DPPM	Density Porosity Processing Mode	HIRS	
GCSE	Generalized Caliper Selection	SS	
GSEC	Average Angular Deviation of Borehole from Normal	0	DEG
GSEC	Average Angular Deviation	0.918927	DC/M
GSEL	Generalized Mud Resistivity Selection	CHART GEN	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
GVSE	Generalized Volume Caliper Selection	ERR_CALIPER	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	15	DEGC
SOUR	SGT Source Distance	9	MM
	CAL-Y: Casing Analysis		
CCLD	CCL reset delay	305	MM
CCLT	CCL Detection Level	0.3	V
	Diff: Directional Survey Computation		
SPEC	Along-hole depth of Starting Point	0	M
SPND	North Departure of Starting Point	0	M
SPVD	TVD of Starting Point	0	M
TAZI	Azimuth of Tie-In Point	0	DEG
TIED	East Departure of Tie-In Point	0	M
TIMD	Along-hole depth of Tie-In Point	0	M
TIND	North Departure of Tie-In Point	0	M
TIVD	TVD of Tie-In Point	0	M
	HOLEV: Integrated Hole/Cement Volume		
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	0	DEGC
CSIZ	Casing Size (used in calculations)	177.8	MM
GCSL	Generalized Caliper Selection	SS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GSRD	Generalized Radius	0.918927	DC/M
GTSE	Generalized Mud Resistivity Selection	CHART GEN_1	
GVSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVOL	Generalized Volume Caliper Selection	ERR_CALIPER	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	15	DEGC
	STI: Stuck Tool Indicator		
LBFT	Trigger for MAXIS Fast Reading Label	TDC	
TDD	Total Depth - Driller	1471.37	M
TDI	Total Depth - Driller	1471.37	M
TDL	Total Depth - Logger	1451.00	M
	System and Miscellaneous		
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	216.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
CBGT	Current Casing Size	177.800	MM
CBUF	Current Fluid	1000.00	KG/M
DFD	Drilling Fluid Density	1000.00	K/M3
DO	Depth Offset for Playback	0.0	
DREF	Depth Reference Code	1.52	DEGC
PBSADP	Use alternate depth channel for playback	YES	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.1000	OHMM
RW	Resistivity of Connate Water	0.0200	OHMM
TIED	TIED	1471.2	M
TVD	Temperature	37.78	DEGC

Format: CBT_VDL_VIN_AND_LESS Vertical Scale: 1:240 Graphics File Created: 22-Mar-2003 15:19

OP System Version: 10C0-306

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	STI-CF	10C0-306

Input DLIS Files

DEFAULT	CBT_036L.UP	FN:42	PRODUCER	22-Mar-2003 13:29	1452.7 M	964.1 M

Output DLIS Files

DEFAULT	CBT_047P.UP	FN:50	PRODUCER	22-Mar-2003 15:19		

Input DLIs Files

DEFAULT	CBT_036L.UP	FN:41	PRODUCER	22-Mar-2003 13:13	1452.2 M	1339.4 M

Output DLIS Files

DEFAULT	CBT_046P.UP	FN:49	PRODUCER	22-Mar-2003 15:17	1454.8 M	1339.4 M

OP System Version: 10C0-306

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TOC-SF	10C0-306

PIP SUMMARY

Time Mark Every 60 S

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	CBT-CS: Cement Bond Tool		
AGC	Automatic Gain Control	ON	
AGFD	Amplitude Gate Peak Detection	20	US
BEI	Bond Index Level of Zone Isolation	6.5	
CCLG	CBT CCL Gain	X1	
CMPM	Computation Mode	ZERO	
CSRL	Digital Step Recovery Logic Algorithm	OFF	
DBIN	Digitizer Sample Interval	200	US
DBIN	Digitizer Sample Interval	4	US
DTMG	Delta-T Mod	600	US/M
DWCO	Digitizer Word Count	4	
DWF	Digitized Waveform	ON	
FMSG	Far Minimum Sliding Gate	275	US
FTIG	Far Transit Time Minimum	285.938	US
GTI	Manual Gain	2	
GOBO	Good Bond	0	MV
MATE	Maximum Attenuation Short	80	DB/M
MATT	Maximum Attenuation	80	DB/M
MAXT	Maximum Waveform Windows	187.008	US/M

MATT	Maximum Attenuation	0	DB/M
MAXD	Maximum Depth Wireless	187.000	MIN
MCSI	Maximum Gain	400	
MODE	Firing Mode	ALL	
MUXI	Multiplexer Input	RCVR	
NPR	Near Free Pipe Sonic Amplitude	0	MV
NPSG	Near Pipe Sliding Gate	218	US
NTTM	Near Transit Time Minimum	228.000	US
RDIR	R3 to R2 Sensitivity Ratio	0	DB/M
SAMP	Sample	Rt	
SALL	Sonic Amplitude Lower Limit	3.5	MV
SFPI	Short Free Pipe Sonic Amplitude	20	MV
SGAG	Sliding Gate	OFF	
SMSG	Short Minimum Sliding Gate	1000	MV
SMSG	Short Minimum Sliding Gate	127	US
SWW	Sonic Window Width	32	MS
TIOA	Tii Correction	ON	
TIOC	Tii Correction	ON	
TTTF	Transit Time Correction Factor	10	US
TVCA	Transmitter Voltage Correction Algorithm	ON	
VDLG	VDL Gate	ON	
VDLG	VDL Manual Gate	72	
VDLM	VDL Firing Mode	LTR1	
VWSG	Very Far Minimum Sliding Gate	1000	US
WERA	Wrong Echo Rejection Algorithm	ON	
	SGT-L: Scintillation Gamma Tool-Logging		
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	24	DEGC
CSPM	Current Sample Point Mode	HIRES	
GCSE	Generalized Caliper Selection	1	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GSRD	Generalized Standoff	0.01823	DCM
GSRS	Generalized Mud Resistivity Selection	CHART_GEN_4	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
GSSMAR	GST Hardset Mud Type	NOMARITE	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	10	DEGC
SOGS	GST Standoff Distance	0	MM
	CAL-Y: Casing Anomaly Locator - Y		
CCLD	CCL Depth Delay	305	MM
CCLT	CCL Detection Level	2	V
	DIR: Directional Survey Computation		
SPED	East Departure of Starting Point	0	M
SPND	North Departure of Starting Point	0	M
SPVD	TVD of Starting Point	0	M
TAZI	Vertical Section Azimuth	0	DEG
TIED	East Departure of Tie-In Point	0	M
TIND	North Departure of Tie-In Point	0	M
TIVD	TVD of Tie-In Point	0	M
	HOLEV: Integrated Hole Volume		
BHS	Borehole Status	CASED	
BHT	Bottom Hole Temperature (used in calculations)	24	DEGC
FCD	Future Casing (Outer) Diameter	178	MM
GCBE	Generalized Caliper Selection	1	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GSRD	Geoframe/Cranfield	0.01823	DCM
GRBE	Generalized Mud Resistivity Selection	CHART_GEN_4	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HVUS	Integrated Hole Volume Caliper Selection	EME_Calipers	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	10	DEGC
LSFR	Trigger for MAXD First Reading Label	TDL	
STKT	STT Stuck Threshold	0.782	M
TDD	Total Depth - Driller	1421.00	M
TDL	Total Depth - Logger	1421.00	M
	System and Miscellaneous		
ALTDPCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	178	MM
BSAL	Borehole Salinity	45000.00	PPM
CBIZ	Current Casing Size	177.800	MM
CWEI	Casing Weight	34.230	KG/M
DD	Drilling Mud Density	1000.00	KG/M3
DO	Depth Offset for Playback	2.0	M
MST	Mud Sample Temperature	12.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
RMFS	Resistivity of Mud Filtrate Sample	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	0.1100	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TLD	Total Depth	1421.00	M
WSAL	Salinity of Connate Water Sample	37.78	DEGC

Format: LogF_VDL_TIN_AND_LESS Vertical Scale: 1:240 Graphics File Created: 22-Mar-2003 15:17

OP System Version: 10C0-306

MCM

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TCC-BF	10C0-306

Input DLIS Files

DEFAULT	CBT_026LUP	FN:41 PRODUCER	22-Mar-2003 13:13	1652.2 M	1336.4 M

Output DLIS Files

DEFAULT	CBT_048PUP	FN:49 PRODUCER	22-Mar-2003 15:17		

Input DLIS Files

DEFAULT	CBT_029LUP	FN:42 PRODUCER	22-Mar-2003 13:29	1652.7 M	964.1 M

Output DLIS Files

DEFAULT	CBT_047PUP	FN:50 PRODUCER	22-Mar-2003 15:19	1652.8 M	964.8 M

OP System Version: 10C0-306

MCM

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TCC-BF	10C0-306

Cable Tension (TENS) 5000 (N) 0

Gamma Ray (GR) (GAPI) 0 100

Casing Collar Locator (CCL) -10 (----) 1

Transit Time 0 (TT0C) 250 (US) 50

Transit Time 1 (TT1C) 350 (US) 150

MAIN PASS NO PRESSURE

Short Attenuation (SATN) 100 (DB/M) 0

Near Attenuation (NATN) 100 (DB/M) 0

Borehole Compensated Attenuation (BATT) 100 (DB/M) 0

VDL Waveforms (VDL) 200 (US) 1200

<--LR-->

975

1000

1025

1050

1075

1100

1125

1150

1175

1200

1225

Cable Tension

Gamma Ray

Casing Collar Locator

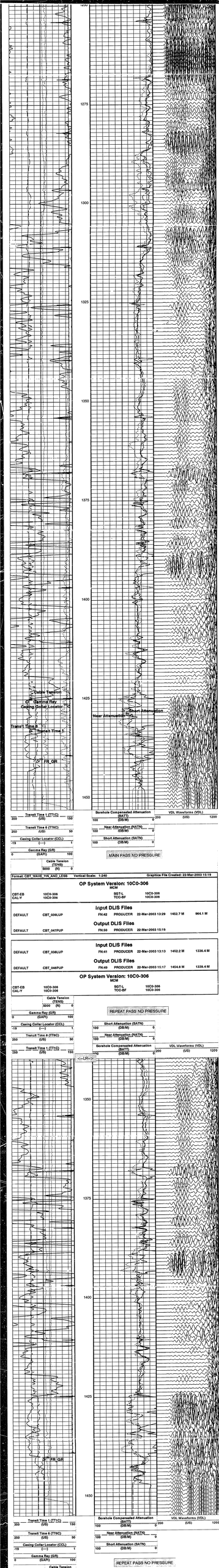
Short Attenuation

Near Attenuation

Borehole Compensated Attenuation

Transit Time 0

Transit Time 1


1250
1275
1300
1325
1350
1375
1400
1425
1450
Cable Tension (TEN)
Gamma Ray
Casing Collar Locator (CCL)
Transit Time 6
Transit Time 1
FR_GR
Near Attenuation (NATN)
Short Attenuation
Transit Time 1 (TT1C) (US)
350
150
Borehole Compensated Attenuation (BATT) (DB/M)
100
200
VDL Waveforms (VDL)
(US)
1200
Transit Time 6 (TT6C) (US)
250
50
Near Attenuation (NATN) (DB/M)
100
0
Casing Collar Locator (CCL)
-10
(---)
1
Short Attenuation (SATN) (DB/M)
100
0
Gamma Ray (GR) (GAPI)
0
100
MAIN PASS NO PRESSURE
Cable Tension (TENS) (N)
6000
0
Format: CBT_WAVE_FIN_AND_LESS
Vertical Scale: 1:240
Graphics File Created: 22-Mar-2003 15:19
OP System Version: 10C0-306
MCM
CBT-EB 10C0-306 SGT-L 10C0-306
CAL-Y 10C0-306 TCC-BF 10C0-306
Input DLIS Files
DEFAULT CBT_039LUP FN:42 PRODUCER 22-Mar-2003 13:29 1452.7 M 964.1 M
Output DLIS Files
DEFAULT CBT_047PUP FN:50 PRODUCER 22-Mar-2003 15:19
Input DLIS Files
DEFAULT CBT_038LUP FN:41 PRODUCER 22-Mar-2003 13:13 1452.2 M 1336.4 M
Output DLIS Files
DEFAULT CBT_046PUP FN:49 PRODUCER 22-Mar-2003 15:17 1454.8 M 1339.4 M
OP System Version: 10C0-306
REPEAT PASS NO PRESSURE
<LR>

(TENS)
5000 (N) 0

Format: CBT_WAVE_TIN_AND_LESS | Vertical Scale: 1:240 | Graphics File Created: 22-Mar-2003 15:17

OP System Version: 10C0-306

MCM

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TCC-BF	10C0-306

Input DLIS Files

DEFAULT	CBT_036LUP	FN:41	PRODUCER	22-Mar-2003 13:13	1452.2 M	1336.4 M

Output DLIS Files

DEFAULT	CBT_046PUP	FN:49	PRODUCER	22-Mar-2003 15:17

Input DLIS Files

DEFAULT	CBT_039LUP	FN:42	PRODUCER	22-Mar-2003 13:29	1452.7 M	964.1 M

Output DLIS Files

DEFAULT	CBT_047PUP	FN:50	PRODUCER	22-Mar-2003 15:19	1452.8 M	964.6 M

OP System Version: 10C0-306

MCM

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TCC-BF	10C0-306

Casing Collar Locator (CCL) -19 (---) 1

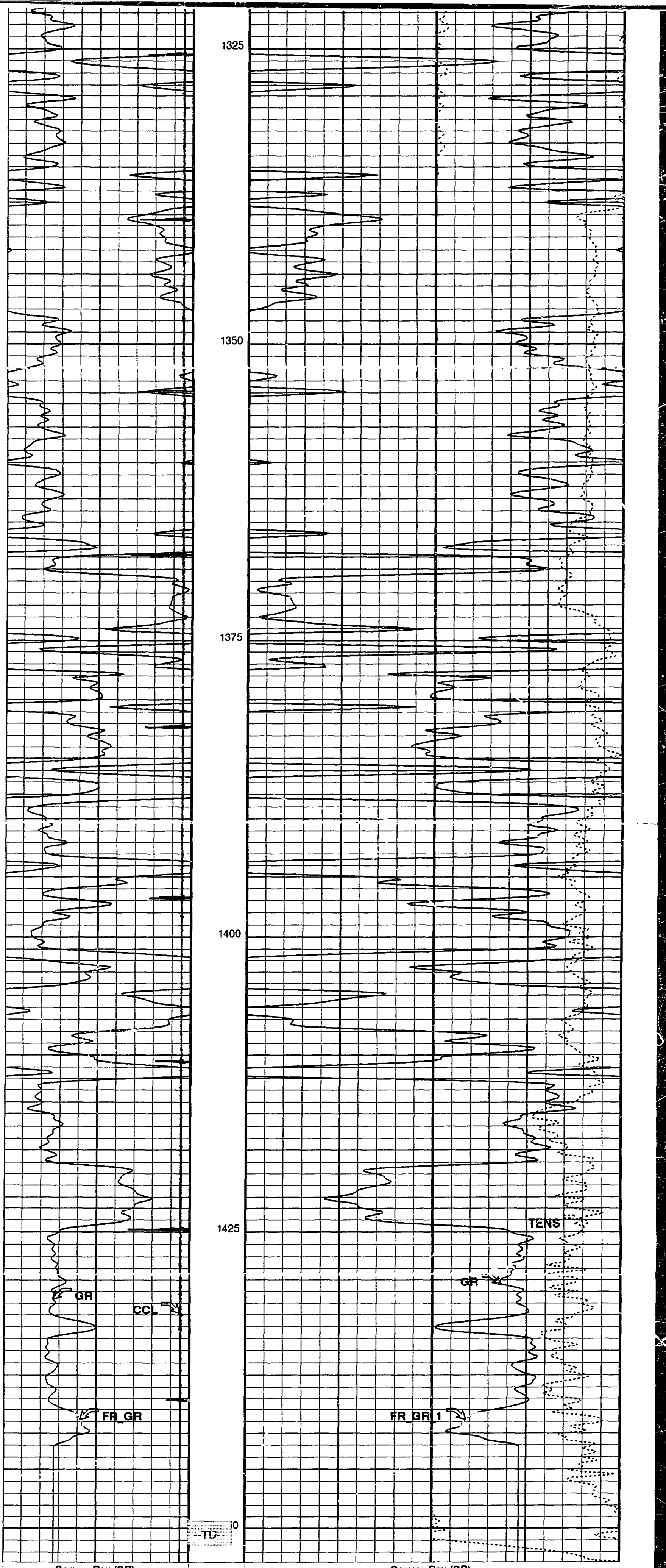
CORRELATION

Tension (TENS) 5000 (N) 0

Gamma Ray (GR) (GAPI) 0 100 <--R-> 100 Gamma Ray (GR) (GAPI) 0

975
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275
1300

TENS
GR
CCL



Parameters

DLIS Name	Description	Value	
	CAL-Y: Casing Anomaly Locator - Y		
CCLD	CCL reset delay	305	MM
CCLT	CCL Detection Level	0.3	V
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	M
TIMD	Along-hole depth of Tie-in Point	0	M
TIVD	TVD of Tie-in Point	0	M
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
TDD	Total Depth - Driller	1471.00	M
TDL	Total Depth - Logger	1451.00	M
	System and Miscellaneous		
DO	Depth Offset for Playback	0.2	M
PP	Playback Processing	NORMAL	

Format: CORRELATION Vertical Scale: 1:240 Graphics File Created: 22-Mar-2003 15:19

OP System Version: 10C0-306

MCM

CBT-EB	10C0-306	SGT-L	10C0-306
CAL-Y	10C0-306	TCC-BF	10C0-306

Input DLIS Files

DEFAULT	CBT_039LUP	FN:42	PRODUCER	22-Mar-2003 13:29	1452.7 M	964.1 M

Output DLIS Files

DEFAULT	CBT_047PUP	FN:50	PRODUCER	22-Mar-2003 15:19

Company Paramount Resources Ltd.

Schlumberger

Well Para et al Nogha M-17

Field Nogha

Province Northwest Territories

Vertical Well

COMPENSATED CEMENT
BOND LOG

Schlumberger

Company: Paramount Resources Ltd.

Well: Pera et al Nogha M-17

Field: Nogha

Province: Northwest Territories

CEMENT VOLUME LOG

Province	Northwest Territories
Field	Nogha
Location	Latitude 66deg 36' 45.242
Well	Pera et al Nogha M-17
Company	Paramount Resources Ltd.

LOCATION

Latitude: 66deg 36' 45.242 — Elev.: K.B. 354.6 m
Longitude: 125deg 48' 30.880 — G.L. 350 m
UWI: 300M176640125450 — D.F. 354.3 m

Permanent Datum: GROUND LEVEL — Elev.: 350 m
Log Measured From: Kelly Bushing — 4.6 m above Perm. Datum
Drilling Measured From: Kelly Bushing

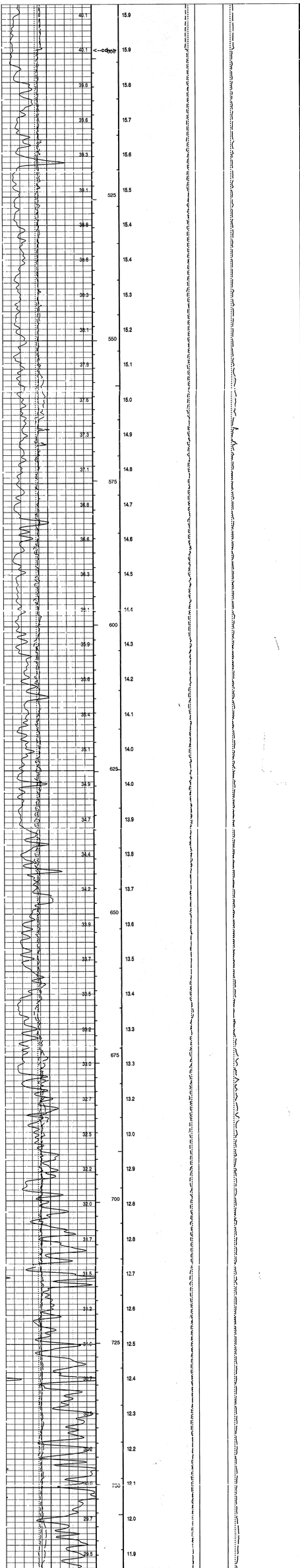
API Serial No.	Latitude	Longitude
WID 1970	66deg 36' 45.242	125deg 48' 30.690

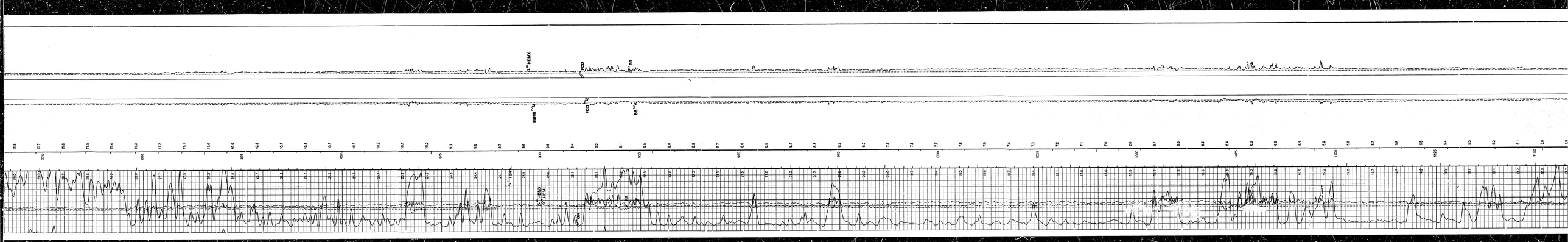
| | | |

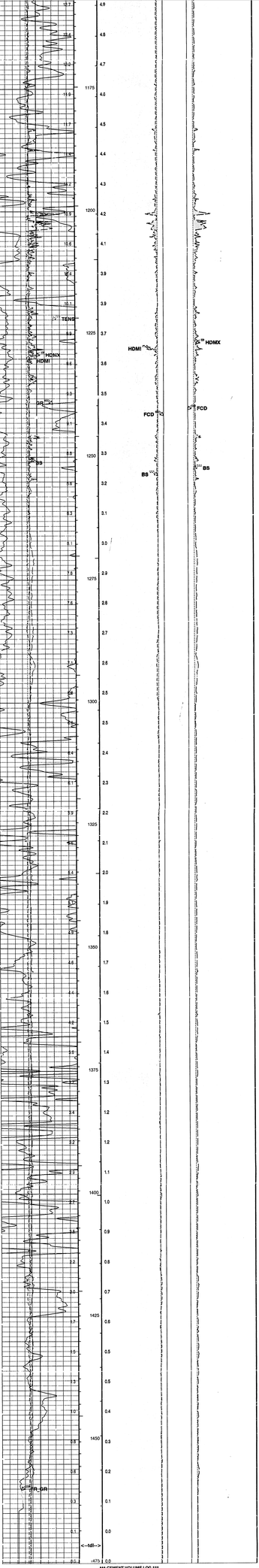
From HDMI_1 to BS2	From BS3 to HDMX_1
Tight Spot From BS2 to HDMI_1	Tight Spot From HDMX_1 to BS3
Annulus From BS2 to FCD2	Annulus From FCD3 to BS3
Future Casing	

Tension (TENS) 25000 (N) 0	
Hole Diameter Maximum (HDMX) 125 (MM) 375	
Hole Diameter Minimum (HDMI) 125 (MM) 375	Hole Diameter Maximum (HDMX) 100 (MM) 600
Gamma Ray (GR) 0 (GAPI) 150	
Bit Size (BS) 125 (MM) 375	FCD2 (FCD) 600 (MM) 100 Bit Size (BS) 600 (MM) 100
	FCD3 (FCD) 100 (MM) 600 Bit Size (BS) 100 (MM) 600

*** CEMENT VOLUME LOG ***




1ST HDMX
2ND FCD
BB
HDMX
FCD
BB
1ST TRMX
TRMX
FCD
BB



*** CEMENT VOLUME LOG ***

Bit Size (BS) 125 (MM) 375	Bit Size (BS) 100 100 (MM)	Bit Size (BS) 900 (MM) 900
Gamma Ray (GR) 0 (GAPI) 150	FCD3 (FCD) 600 (MM) 100 100	FCD3 (FCD) 600 (MM) 600
Hole Diameter Minimum (HDMI) 125 (MM) 375	Hole Diameter Minimum (HDMI) 900 (MM) 100 100	Hole Diameter Maximum (HDMX) 900 (MM) 900
Hole Diameter Maximum (HDMX) 125 (MM) 375	Future Casing	
Tension (TENS) 25000 (N) 0	Annulus From BS2 to FCD2	Annulus From FCD3 to BS3
	Tight Spot From BS2 to HDMI_1	Tight Spot From HDMX_1 to BS3
	Washout From HDMI_1 to BS2	Washout From BS3 to HDMX_1
	Formation Between LM12 and HDMI_1	Formation Between HDMX_1 and RHT3

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	
EMS-B: Environment Measurement Sonde			
ECC	Eccentralizer Used	60.0	MM
ECCF	EMS Eccentralizer Operation	OFF	
FCD	Future Casing (Outer) Diameter	177.8	MM
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
HOLEV: Integrated Hole Volume		177.8	MM
FCD	Future Casing (Outer) Diameter		
HVCS	Integrated Hole Volume Caliper Selection	EMS_Calipers	
STI: Stuck Tool Indicator			
LBTR	Logger for MAX30 First Reading Label	TDL	
TDD	Total Depth - Driller	1471.00	M
TDL	Total Depth - Logger	1471.00	M
System and Miscellaneous			
BS	Bit Size	216.000	MM
DCRL	Depth Offset for Repeat Analysis	0.0	M
TD	Total Depth	1471.0	M

Format: CVL Vertical Scale: 1:240 Graphics File Created: 18-Mar-2003 14:38

OP System Version: 10C0-306

MCM

HILTB-PTB	10C0-306	EMS-B	10C0-306
DSST-B	10C0-306	DTC-H	10C0-306

Output DLIS Files

DEFAULT	HAILS_TLD_MCFL_CNL_01#LUP	FN:22	PRODUCER	18-Mar-2003 14:38

Company: Paramount Resources Ltd.
Well: Para et al Nogha M-17
Field: Nogha
Province: Northwest Territories
Vertical Well

Schlumberger

CEMENT VOLUME LOG

ADDITIONAL INFORMATION

SEISMIC

N.E.B. COPY

Schlumberger

GEOFRAME
PROCESSED
INTERPRETATION

WELL SEISMIC REPORT

* A Mark of Schlumberger

Using the following logs: ASI-VSP
DT, RHOB, GR, CALI

COMPANY: Paramount Resources Ltd.
WELL: Para et al Nogha M-17
FIELD: Nogha
COUNTY: Northwest Territories
STATE:
COUNTRY: Canada
Date Logged: 18-Mar-2003 Date Processed:March 2003
Well Location: Lattitude: 66deg 36' 45.242"N
Longitude: 125deg 48' 30.680"W
Elevations: KB: 354.60 m DF: 354.30 m GL: 350.00 m
API Number: WID 1970 Job Number: 03027

N.E.B. COPY

FOLD HERE

The well name, location, borehole reference data were furnished by the customer.

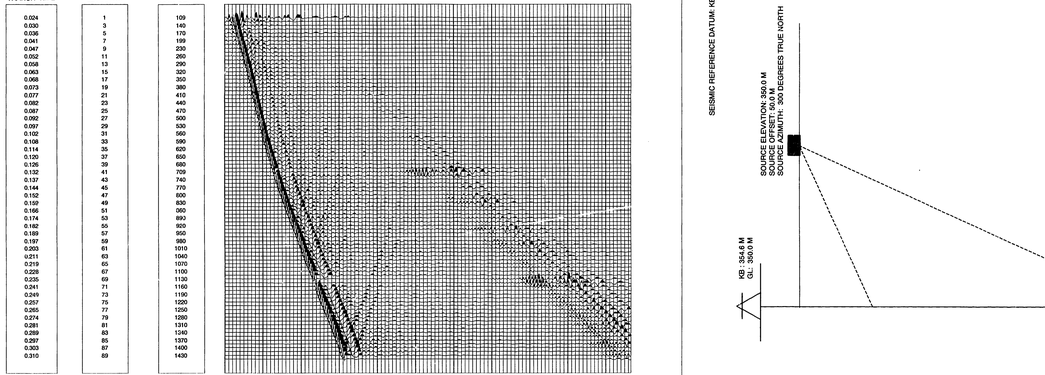
All interpretations, are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set forth in our current price schedule.

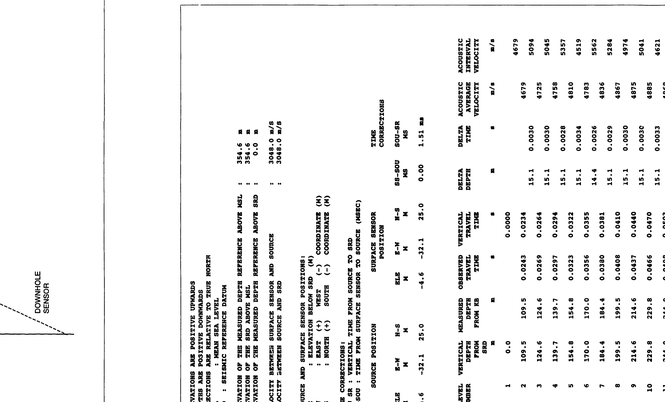
Field Recording: Location: Norman Wells Software Version: 10C0-306 Engineer: Brad Jordon
Baseline: GF3.8.1 Log Analyst: R Parker

Office Recording: IQS Center: DCS...Calgary
Mud and Borehole Measurements:
Rm @ Measured temperature: 0.770 ohmm @ 19.0 degC Bht: 24.0 degC Bitsize: 216.0 mm
Rmf @ Measured temperature: 0.110 ohmm @ 14.0 degC Type Fluid in Hole Salt Saturated Gel Chem.
Rmc @ Measured temperature: 0.100 ohmm @ 11.0 degC Mud Density: 1300.00 kg/m3

Remarks:
Source : Ohe Liston 315 Truck #be
Sweep: 6-139 Hz 24 sec linear
Source offset 50m at 300 degrees true
Source elevation -350 m

COMPUTING CENTRE STACKS
VERTICAL COMPONENT





ELEVATIONS ARE POSITIVE UPWARDS
DEPTHS ARE POSITIVE DOWNWARDS
DIRECTIONS ARE RELATIVE TO TRUE NORTH
SRD : SEISMIC REFERENCE DATUM
RKB : KELLY BUSHING

ELEVATION OF THE MEASURED DEPTH REFERENCE ABOVE MSL : 354.6 m
ELEVATION OF THE SRD ABOVE MSL : 354.6 m
ELEVATION OF THE RKB ABOVE SEISMIC REFERENCE ABOVE SRD : 0.0 m

VELOCITY BETWEEN SURFACE SENSOR AND SOURCE : 3048.0 m/s
VELOCITY BETWEEN SOURCE AND SRD : 3048.0 m/s

SOURCE AND SURFACE SENSOR DIRECTIONS
ELE : ELEVATION RELOR SRD (M)
E-W : EAST (+) WEST (-) COORDINATE (M)
N-S : NORTH (+) SOUTH (-) COORDINATE (M)

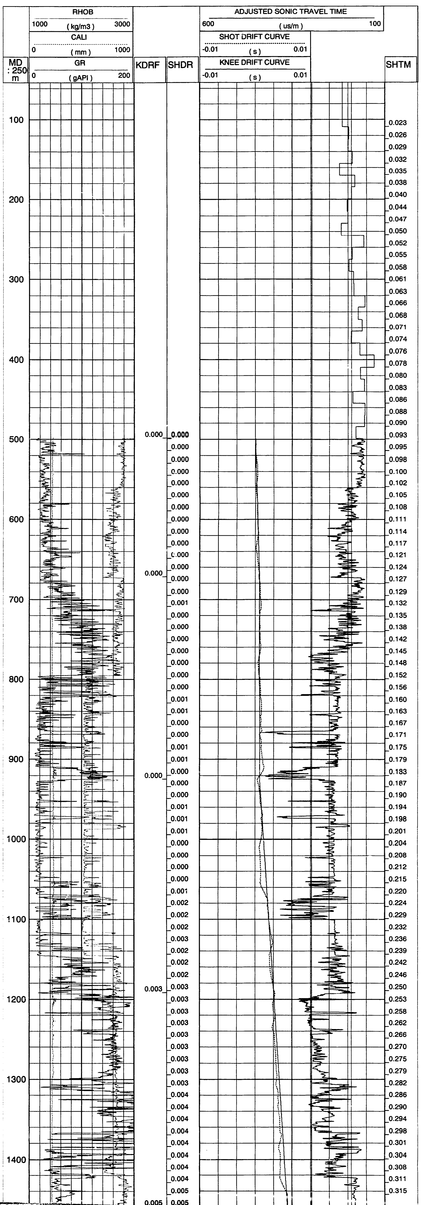
TIME CORRECTIONS:
SSD AR : VERTICAL TIME FROM SOURCE TO SRD
SS-SSD : TIME FROM SURFACE SENSOR TO SOURCE (NMEC)

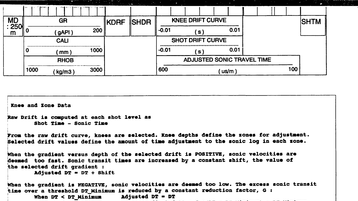
SOURCE POSITION			SURFACE SENSOR			TIME CORRECTIONS	
ELE M	E-W M	N-S M	ELE M	E-W M	N-S M	SS-SSD MS	SSD-SR MS
-4.6	-32.1	25.0	-4.6	-32.1	25.0	0.00	1.51 ms

LEVEL NUMBER	VERTICAL DEPTH FROM RKB m	MEASURED DEPTH m	OBSERVED VERTICAL TIME s	VERTICAL DEPTH m	DELTA DEPTH	DELTA TIME s	ACOUSTIC VELOCITY m/s	ACOUSTIC IMPEDANCE m/s
1	0.0	0.0	0.0000	0.0	m	s	m/s	m/s
2	109.5	109.5	0.0243	0.0234			6679	4679
3	126.6	126.6	0.0269	0.0244	15.1	0.0030	6725	5045
4	139.7	139.7	0.0297	0.0294	15.1	0.0030	4758	5357
5	154.8	154.8	0.0323	0.0322	15.1	0.0034	4810	4519
6	170.0	170.0	0.0356	0.0355	15.4	0.0036	4783	5562
7	185.4	185.4	0.0380	0.0381	15.1	0.0029	4836	5284
8	199.5	199.5	0.0409	0.0410	15.1	0.0029	4867	5294
9	214.6	214.6	0.0437	0.0440	15.1	0.0030	4875	4974
10	229.8	229.8	0.0466	0.0470	15.1	0.0030	4885	5041
11	244.9	244.9	0.0496	0.0500	15.1	0.0030	4885	4621

11	244.9	244.9	0.0498	0.0503
12	259.6	259.6	0.0521	0.0526
13	274.7	274.7	0.0548	0.0554
14	289.8	289.8	0.0578	0.0584
15	305.0	305.0	0.0605	0.0612
16	320.1	320.1	0.0632	0.0639
17	334.4	334.4	0.0654	0.0661
18	349.5	349.5	0.0679	0.0687
19	364.6	364.6	0.0703	0.0711
20	379.8	379.8	0.0731	0.0740
21	394.9	394.9	0.0756	0.0765
22	409.7	409.7	0.0775	0.0784
23	424.8	424.8	0.0800	0.0809
24	439.9	439.9	0.0823	0.0833
25	455.1	455.1	0.0851	0.0861
26	470.2	470.2	0.0874	0.0884
27	484.6	484.6	0.0896	0.0906
28	499.7	499.7	0.0922	0.0933
29	514.8	514.8	0.0947	0.0957
30	529.9	529.9	0.0973	0.0984
31	545.0	545.0	0.0998	0.1009
32	559.5	559.5	0.1018	0.1029
33	574.6	574.6	0.1048	0.1059
34	589.8	589.8	0.1077	0.1088
35	604.9	604.9	0.1106	0.1117
36	620.0	620.0	0.1138	0.1149
37	634.6	634.6	0.1165	0.1177
38	649.7	649.7	0.1199	0.1211
39	664.8	664.8	0.1231	0.1243
40	679.9	679.9	0.1261	0.1273
41	695.1	695.1	0.1288	0.1299
42	709.4	709.4	0.1316	0.1328
43	724.5	724.5	0.1344	0.1356
44	739.6	739.6	0.1375	0.1386
45	754.7	754.7	0.1409	0.1421
46	769.8	769.8	0.1440	0.1452
47	784.5	784.5	0.1477	0.1489
48	799.6	799.6	0.1516	0.1528
49	814.7	814.7	0.1553	0.1565
50	829.8	829.8	0.1591	0.1603
51	845.0	845.0	0.1625	0.1637
52	859.7	859.7	0.1659	0.1671
53	874.9	874.9	0.1700	0.1713
54	890.0	890.0	0.1740	0.1753
55	905.1	905.1	0.1778	0.1790
56	920.3	920.3	0.1819	0.1831
57	934.6	934.6	0.1858	0.1870
58	949.7	949.7	0.1895	0.1907
59	964.8	964.8	0.1934	0.1946
60	980.0	980.0	0.1972	0.1984
61	995.1	995.1	0.2006	0.2018
62	1009.5	1009.5	0.2035	0.2047
63	1024.6	1024.6	0.2073	0.2085
64	1039.8	1039.8	0.2108	0.2120
65	1054.9	1054.9	0.2142	0.2155
66	1070.0	1070.0	0.2189	0.2202
67	1084.6	1084.6	0.2235	0.2248
68	1099.7	1099.7	0.2279	0.2292
69	1114.8	1114.8	0.2316	0.2329
70	1130.0	1130.0	0.2354	0.2367
71	1145.1	1145.1	0.2381	0.2394
72	1159.6	1159.6	0.2415	0.2428
73	1174.7	1174.7	0.2451	0.2464
74	1189.8	1189.8	0.2489	0.2502
75	1204.9	1204.9	0.2525	0.2538
76	1220.1	1220.1	0.2573	0.2586
77	1234.7	1234.7	0.2609	0.2622
78	1249.8	1249.8	0.2653	0.2666
79	1264.9	1264.9	0.2696	0.2709
80	1280.0	1280.0	0.2738	0.2751
81	1295.1	1295.1	0.2780	0.2793
82	1309.6	1309.6	0.2814	0.2827
83	1324.7	1324.7	0.2853	0.2866
84	1339.8	1339.8	0.2894	0.2907
85	1354.9	1354.9	0.2933	0.2946
86	1370.0	1370.0	0.2975	0.2988
87	1384.5	1384.5	0.3001	0.3014
88	1399.6	1399.6	0.3034	0.3047
89	1414.7	1414.7	0.3068	0.3081
90	1429.8	1429.8	0.3102	0.3116
91	1445.0	1445.0	0.3139	0.3152

14.7	0.0023			4868	6610
15.1	0.0028			4935	5336
15.1	0.0030			4956	5102
15.1	0.0028			4963	5446
15.1	0.0028			4985	5478
15.1	0.0028			5006	6538
14.3	0.0022			5057	5830
15.1	0.0026			5086	6233
15.1	0.0024			5125	5268
15.1	0.0029			5131	6021
15.1	0.0025			5160	7821
14.8	0.0019			5225	6059
15.1	0.0025			5250	6472
15.1	0.0023			5285	5389
15.1	0.0028			5288	6529
15.1	0.0023			5321	6489
14.4	0.0022			5349	5672
15.1	0.0027			5358	6075
15.1	0.0025			5377	5665
15.1	0.0027			5385	6162
15.1	0.0025			5404	7178
14.5	0.0020			5438	5057
15.1	0.0030			5428	5180
15.1	0.0029			5421	5218
15.1	0.0029			5416	4664
15.1	0.0032			5395	5345
14.6	0.0027			5393	4440
15.1	0.0034			5367	4701
15.1	0.0032			5349	5019
15.1	0.0030			5342	5730
15.1	0.0026			5349	5036
14.3	0.0028			5343	5414
15.1	0.0028			5346	4909
15.1	0.0031			5335	4611
15.1	0.0034			5312	4781
15.1	0.0032			5301	3974
14.7	0.0037			5268	3893
15.1	0.0039			5233	4047
15.1	0.0037			5205	4008
15.1	0.0038			5176	4690
15.1	0.0034			5162	4286
14.8	0.0034			5144	3647
15.1	0.0041			5108	3788
15.1	0.0040			5078	4041
15.1	0.0037			5056	3680
15.1	0.0041			5025	3691
14.4	0.0039			4998	4079
15.1	0.0037			4980	3878
15.1	0.0039			4958	3991
15.1	0.0038			4939	4407
15.1	0.0034			4930	4963
14.4	0.0029			4931	4006
15.1	0.0038			4914	4303
15.1	0.0035			4904	4366
15.1	0.0035			4895	3238
15.1	0.0067			4860	3169
14.6	0.0046			4825	3403
15.1	0.0044			4798	4131
15.1	0.0037			4787	3939
15.1	0.0038			4774	5590
15.1	0.0027			4783	4343
14.5	0.0033			4777	4114
15.1	0.0037			4767	4055
15.1	0.0037			4756	4168
15.1	0.0036			4748	3165
15.1	0.0048			4719	4008
14.6	0.0036			4709	3450
15.1	0.0044			4698	3497
15.1	0.0043			4669	3619
15.1	0.0042			4653	3564
15.1	0.0042			4637	4287
14.4	0.0034			4632	3838
15.1	0.0039			4621	3738
15.1	0.0040			4609	3863
15.1	0.0039			4599	3629
15.1	0.0042			4586	5402
14.4	0.0027			4593	4617
15.1	0.0033			4593	4611
15.1	0.0034			4591	4416
15.1	0.0034			4589	4174
15.1	0.0036			4585	





Knee and Scan Data

Raw drift is computed at each shot level as
Shot Time - Sonic Time

From the raw drift curve, knees are selected. Knee depths define the zones for adjustment.
Selected drift values define the amount of time adjustment to the sonic log in each zone.

When the gradient across depth of the selected drift is POSITIVE, sonic velocities are deemed fast. Sonic transit times are increased by a constant shift, the value of the selected drift gradient :
Adjusted DT = DT + Shift

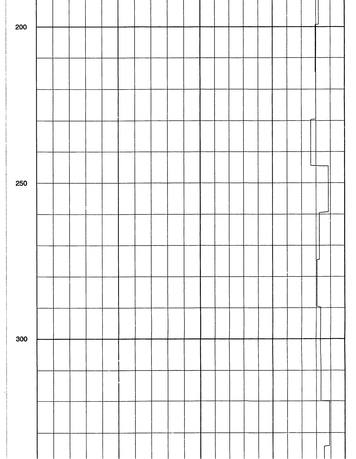
When the gradient is NEGATIVE, sonic velocities are deemed too low. The excess sonic transit time over a threshold DT_Minimum is reduced by a constant reduction factor, G :
When DT < DT_Minimum Adjusted DT = DT
When DT > DT_Minimum Adjusted DT = G *(DT - DT_Minimum) + DT_Minimum

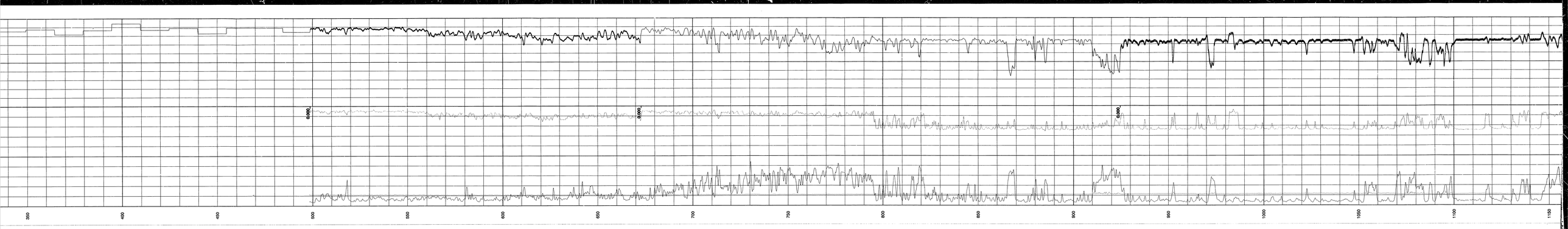
AFTER THE ADJUSTMENT OF THE SONIC LOG :
Residual is computed at each shot level as
Shot Time - Adjusted Sonic Time
It indicates how closely the adjustment has followed the shot times

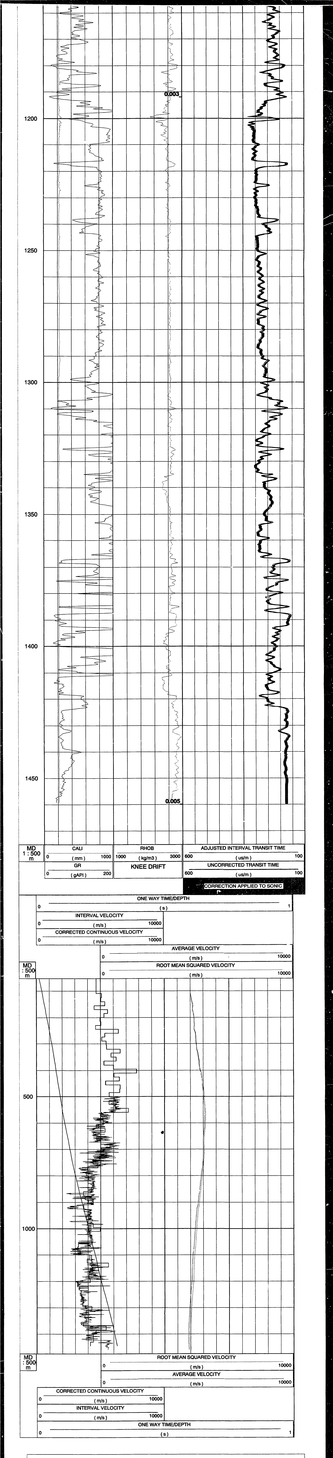
KNEE NUMBER	MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM KB m	SELECTED DRIFT AT KNEE ms	SHIFT ms/m	DELTA_T REDUCTION MINIMUM us/m	FACTOR G	SELECTED SHIFT GRADIENT us/m
1	499.0	499.0	-0.0000				
				4.3			4.3
2	673.0	673.0	0.0024				
				0.1			0.1
3	924.8	924.8	0.0025				
				9.5			9.5
4	1192.1	1192.1	0.0108				
				9.0			9.0
5		1460.0	0.0187				

---- POST CALIBRATION VELOCITY TABULATION ----

MEASURED DEPTH FROM KB m	VERTICAL DEPTH FROM KB m	VERTICAL SHOT TIME ms	ADJUSTED SONIC TIME ms	RAW DRIFT SHOT - SONIC ms	RESIDUAL SHOT - ADJUSTED SONIC ms	ADJUSTED INTERVAL VELOCITY m/s	ADJUSTED RMS VELOCITY m/s	ADJUSTED AVERAGE VELOCITY m/s
0.0	0.0	0.0	0.0					
109.5	109.5	23.6	23.6			4679	4679	4679
124.6	124.6	26.4	26.4			5094	4727	4725
139.7	139.7	29.4	29.4			5045	4761	4758
154.8	154.8	32.2	32.2			5357	4816	4810
170.0	170.0	35.5	35.5			4519	4789	4783
184.4	184.4	38.1	38.1			5562	4845	4836
199.5	199.5	41.0	41.0			4539	4877	4867
214.6	214.6	44.0	44.0			4574	4884	4875
229.8	229.8	47.0	47.0			5041	4894	4885
244.9	244.9	50.3	50.3			4621	4877	4868
259.6	259.6	52.6	52.6			6410	4953	4935
274.7	274.7	55.4	55.4			5336	4974	4956
289.8	289.8	58.4	58.4			5103	4980	4963
305.0	305.0	61.2	61.2			5444	5002	4985
320.1	320.1	63.9	63.9			5478	5024	5006
334.6	334.6	66.1	66.1			6539	5081	5057
349.5	349.5	68.7	68.7			5830	5112	5086
364.6	364.6	71.1	71.1			6233	5154	5125
379.8	379.8	74.0	74.0			5268	5158	5131
394.9	394.9	76.5	76.5			6021	5189	5160
409.7	409.7	78.6	78.6			7821	5260	5225
424.8	424.8	80.9	80.9			6059	5294	5250
439.9	439.9	83.3	83.3			5672	5331	5285
455.1	455.1	86.1	86.1			5389	5333	5288
470.2	470.2	88.4	88.4			6529	5368	5321
484.6	484.6	90.6	90.6			6489	5398	5349
499.7	499.7	93.3	93.3	0.0	-0.0	5647	5406	5358
514.8	514.8	95.7	95.8	0.1	-0.0	6042	5433	5376
529.9	529.9	98.4	98.2	0.3	0.2	6131	5442	5395
545.0	545.0	100.9	100.7	0.4	0.2	6217	5462	5415
559.5	559.5	102.9	103.1	0.1	-0.2	6044	5476	5429
574.6	574.6	105.9	105.9	0.3	-0.0	5290	5471	5426
589.8	589.8	108.8	108.9	0.3	-0.1	5065	5461	5416
604.9	604.9	111.7	111.7	0.4	-0.1	5307	5457	5413
620.0	620.0	114.9	114.9	0.5	0.0	4777	5439	5395
634.6	634.6	117.7	118.1	0.1	-0.5	4529	5416	5372
649.7	649.7	121.1	121.4	0.4	-0.3	4687	5398	5354
664.8	664.8	124.3	124.4	0.6	-0.1	5055	5390	5346
679.9	679.9	127.3	127.2	0.8	0.1	5256	5387	5344
695.1	695.1	129.9	129.9	1.8	0.1	5749	5395	5353
709.4	709.4	132.8	132.5	1.0	0.3	5286	5395	5353
724.5	724.5	135.6	135.6	0.7	-0.0	4165	5384	5343
739.6	739.6	138.6	138.7	0.7	-0.0	4253	5374	5334
754.7	754.7	142.1	142.0	0.9	0.1	4688	5357	5317
769.8	769.8	145.2	145.2	0.8	-0.0	4915	5342	5301
784.5	784.5	148.9	149.1	0.6	-0.2	4606	5306	5260
799.6	799.6	152.8	152.7	0.8	0.1	4207	5283	5236
814.7	814.7	156.5	156.4	1.0	0.2	4165	5260	5211
829.8	829.8	160.3	160.0	1.1	0.3	4188	5238	5188
845.0	845.0	163.7	163.5	1.0	0.2	4337	5220	5170
859.7	859.7	167.1	166.9	1.0	0.2	4253	5202	5150
874.9	874.9	171.3	171.1	1.0	0.2	3652	5170	5114
890.0	890.0	175.3	174.9	1.1	0.3	3902	5145	5087
905.1	905.1	179.0	178.6	1.4	0.6	4339	5131	5073
920.3	920.3	183.1	183.1	0.8	0.0	3269	5092	5026
934.6	934.6	187.0	187.2	0.7	-0.2	3472	5061	4992
949.7	949.7	190.7	190.9	0.8	-0.2	4130	5045	4975
964.8	964.8	194.6	194.6	1.2	0.0	4077	5029	4958
980.0	980.0	198.4	198.5	1.2	-0.1	3822	5007	4936
995.1	995.1	201.8	202.1	1.2	-0.3	3473	4995	4924
1009.5	1009.5	204.7	205.6	0.7	-0.9	4102	4981	4910
1024.6	1024.6	208.5	209.4	0.9	-0.8	4066	4966	4894
1039.8	1039.8	212.0	212.9	1.0	-0.9	4219	4954	4883
1054.9	1054.9	215.5	216.6	0.9	-1.1	4101	4941	4869
1070.0	1070.0	220.2	220.5	1.9	-0.3	3943	4925	4853
1084.6	1084.6	224.8	224.9	2.2	-0.1	3941	4899	4823
1099.7	1099.7	229.2	229.2	2.4	-0.0	3736	4876	4798
1114.8	1114.8	232.9	233.8	2.7	0.1	4251	4867	4789
1130.0	1130.0	236.7	236.3	3.1	0.4	4290	4859	4782
1145.1	1145.1	239.4	239.8	2.5	-0.4	4360	4852	4775
1159.6	1159.6	242.8	243.1	2.4	-0.4	4312	4845	4769
1174.7	1174.7	246.4	246.7	2.9	-0.2	4394	4837	4762
1189.8	1189.8	250.2	250.1	3.3	0.0	3755	4831	4757
1204.9	1204.9	253.8	254.1	3.1	-0.3	3466	4816	4741
1220.1	1220.1	258.6	258.5	3.6	0.0	3526	4796	4719
1234.7	1234.7	262.2	262.9	3.0	-0.7	3574	4776	4697
1249.8	1249.8	266.6	267.0	3.4	-0.4	3653	4761	4681
1264.9	1264.9	270.7	271.3	3.6	-0.6	3992	4744	4663
1280.0	1280.0	275.1	275.5	3.7	-0.4	3574	4728	4646
1295.1	1295.1	279.3	279.7	3.9	-0.4	3992	4713	4631
1309.6	1309.6	282.7	283.3	3.8	-0.6	4576	4705	4622
1324.7	1324.7	286.6	287.1	4.0	-0.5	3950	4695	4613
1339.8	1339.8	290.7	291.2	4.1	-0.5	4285	4683	4601
1354.9	1354.9	294.6	295.0	4.6	-0.4	3816	4675	4573
1370.0	1370.0	298.8	299.0	4.7	-0.2	4907	4664	4582
1384.5	1384.5	301.4	302.3	4.1	-0.9	4232	4660	4579
1399.6	1399.6	304.7	305.4	4.5	-0.7	4576	4663	4582
1414.7	1414.7	308.1	309.0	4.5	-0.9	4657	4658	4578
1429.8	1429.8	311.6	312.3	4.7	-0.7	5468	4657	4578
1445.0	1445.0	315.2	315.1	5.7	0.1	5555	4665	4586




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350
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500
550
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650
700
750
800
850
900
950
1000
1050
1100
1150




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----- TIME/DEPTH LISTING -----

   OWR      DEPTH     DEPTH     DEPTH     DEPTH     DEPTH     DEPTH
   MAT        AT        AT        AT        AT        AT        AT
  SONIC      TIME      TIME      TIME      TIME      TIME      TIME
   TIME
   AND
   SHD
    MS        m         m         m         m         m         m

     0       0.0       8.3      18.7      28.0      37.4      47.5
    10      46.8      56.1      65.5      74.8      84.3
    20      93.6     103.0     112.5     122.0     131.7
    30     141.3     151.0     160.8     170.6     180.4
    40     190.2     200.0     210.1     220.3     230.5
    50     240.8     251.1     261.4     271.7     282.1
    60     292.6     303.0     313.5     323.9     334.5
    70     345.1     355.7     366.4     377.1     387.8
    80     435.2     451.0     466.9     482.9     497.7
    90     680.7     692.6     704.6     716.7     728.5
   100     740.4     752.2     764.0     775.8     787.6
   110     799.4     811.2     823.0     834.8     846.7
   120     883.6     902.9     922.3     942.0     956.2
   130     970.4     984.6     998.8    1012.9    1026.9
   140     766.0     795.9     766.6     772.4     779.8
   150     787.2     794.6     802.0     809.4     816.8
   160     824.2     831.6     839.0     846.5     854.0
   170     870.2     878.6     886.1     894.4     903.2
   180     912.0     920.8     929.6     938.4     947.2
   190     956.1     964.9     973.8     982.6     971.9
   200     986.3     996.7    1002.9    1011.0    1019.3
   210    1027.1    1035.7    1044.2    1052.5    1059.9
   220    1068.2    1076.9    1085.5    1094.2    1097.4
   230    1102.7    1108.0    1113.3    1118.6    1123.9
   240    1146.0    1154.6    1163.1    1171.8    1180.8
   250    1189.5    1197.6    1206.6    1211.0    1216.3
   260    1221.6    1226.9    1232.2    1237.5    1242.8
   270    1248.2    1253.5    1274.7    1281.8    1288.9
   280    1296.1    1306.1    1316.0    1326.0    1328.2
   290    1330.2    1342.9    1355.6    1368.3    1381.0
   300    1374.2    1383.9    1393.5    1402.1    1410.6
   310    1418.2    1426.1    1434.1    1442.1
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SYNTHETIC SEISMOGRAM FROM CHECKSHOT CORRECTED SONIC

COMPANY:	PARAMOUNT RESOURCES LTD.
WELL:	PASA ETA L RODHA M-17
PROVINCE:	NWT
COUNTRY:	CANADA
DATE COMPUTED:	MARCH 2003
JOB NUMBER:	03027
REFERENCE DATUM:	KB
ACOUSTIC IMPEDANCE:	FROM SONIC AND DENSITY
SAMPLING RATE:	1 MSEC
WAVELET:	ORMSBY ZERO PHASE BPF
SCALE:	7.5 INCHES/SECOND
POLARITY CONVENTION:	AN INCREASE OF ACOUSTIC IMPEDANCE APPEARS AS A BLACK PEAK
NORMAL POLARITY:	

THE WAVELET IS DISPLYED FOR A PRESSURE COEFFICIENT OF 0.2 (INCREASE IN IMPEDENCE)

