AUTHORITY TO DRILL A WELL

CANADA

Exploratory ☒ Delineation ☐
Development ☐ Service ☐

AUTHORITY TO DRILL A WELL

APPLICATION

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

Well Name in Full: Paramount et al Bovie C-76 60° 20' 122° 45'

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

Contractor: Kenting Hi-Tower Drilling | Permit or Lease No.: EL 369

Drilling Rig or Unit: 22E | Estimated Well Cost: $3,500,000.00

Location-Unit: C Section: 76 Grid Area: 60° 20' 122° 45'

Coordinates: Lat.: Approx. 60° 15' 14.83" Long.: Approx. 122° 59' 22.34"

Area: Ft. Liard, N.W.T. | Field/Pool: N/A

Elevation-RT/KB: Approx. 426.5 m (ASL) | Seafloor: - (BRT)

Approx. Spud Date: January 2, 1997 | Estimated Days on Location: 55

Anticipated Total Depth: 3220.m | Target Horizon(s): Misaisaippian Flett, Devonian Tetcho, and Devonian Nahanni/Manetoe

U.W.I.: 300C766020122450

EVALUATION PROGRAM

Ten-metre sample intervals: N/A

Five-metre sample intervals: As specified from under surface casing to T.D.

Canned sample intervals: N/A

Conventional cores at: 1 or 2 - 18.m Devonian Nahanni/Manetoe

Logs and Tests: GR-DSI-CAL
LDT-CNL-NGT-MLT-EDAC-DLT-MSFL-EMS
DST's possible in target horizon after logging.

CASING AND CEMENTING PROGRAM

O.D	Weight:	Grade:	Setting Depth Below Seafloor: K.B.	Cementing Program (Volumes):
339.7 mm	71.42 kg/m	K-55	400.m	50 Tonne Class G + 2% $CaCl_2$ (100% Excess)
244.5 mm	69.94 kg/m	L-80	1600 m	2000 - 1200 m Thixotropic 'G' @ Caliper + 20% Excess + Class G to Surface
177.8 mm	43.16 kg/m	L-80	2840 m	Thermal Cement @ Caliper + 20% Excess

B O P. Equipment: 35 MPa Class IV Stack and Manifold with one (1) Annular Preventer and three (3) Gates - 1 double and 1 single + double choke and kill.

Other Information:

Signed: Greg Elliott Title: Assistant Drilling Manager

Date: November 18, 1996 Company: Paramount Resources Ltd.

APPROVAL

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

Signed: Jerry Butler
Engineering Branch

Date: Nov 7/97

File: 9214-P33-8-1, WID 1817

Canada

WELL TERMINATION RECORD (with attachment)

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: Paramount et al Bovie C-76 Area: Fort Liard, N.W.T.

Grid Area: 60° 20' 122° 45' Field/Pool: N/A

Permit or Lease No.: EL 369 Final Coordinates: Lat.: 60° 15' 14.83" Long: 122° 59' 22.94"

Drilling Unit: Kenting 22E Elevations-RT/KB: 433.32 m SF/GL: 426.80 m

Spud Date: 16 Jan 97 Rig Released: 30 Mar 97 Total Depth: 3220 m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
339.7	81.1	K-55	453 m	70 t 0:1:0 G + 1% $CaCl_2$
244.5	69.9	L-80	1713 m	5 t 0:1:0 G + 1% $CaCl_2$ + 0.5% T-10 + 0.5% D-24 60 t 1:1:2 G + 0.5% T-10
177.8	43.2	L-80	2897 m	36 t 0:1:0 G + 1.1% NFL-3
114.3	17.3	183 m K-55 296 m L-80	3220 m	19.5 t 1:1:2 + 0.5% T-10 + 0.2% R-6*
				9.0 t Thermal 40F + 0.4% D-24 + 0.5% T-1 + 0.3% R-6 + 0.5% Gel

*See Attached Diagram

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:

Lost Circulation/Overpressure Zones: Lost circulation at 140 m, 463 m, 680 m, Gas cutting at 1543 m - mud weight 1150.

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): .....

Cores: Type: None Intervals: .....

.....

Other Downhole Completion/Suspension Equipment: None

.....

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.

Name: David Baillargeon

Title: Drilling Consultant

Date: 21 April 1997

Acknowledged by: Jerry Baker
Engineering Branch

Date: May 5/97

File: 9211-P33-8-1 WID 1817

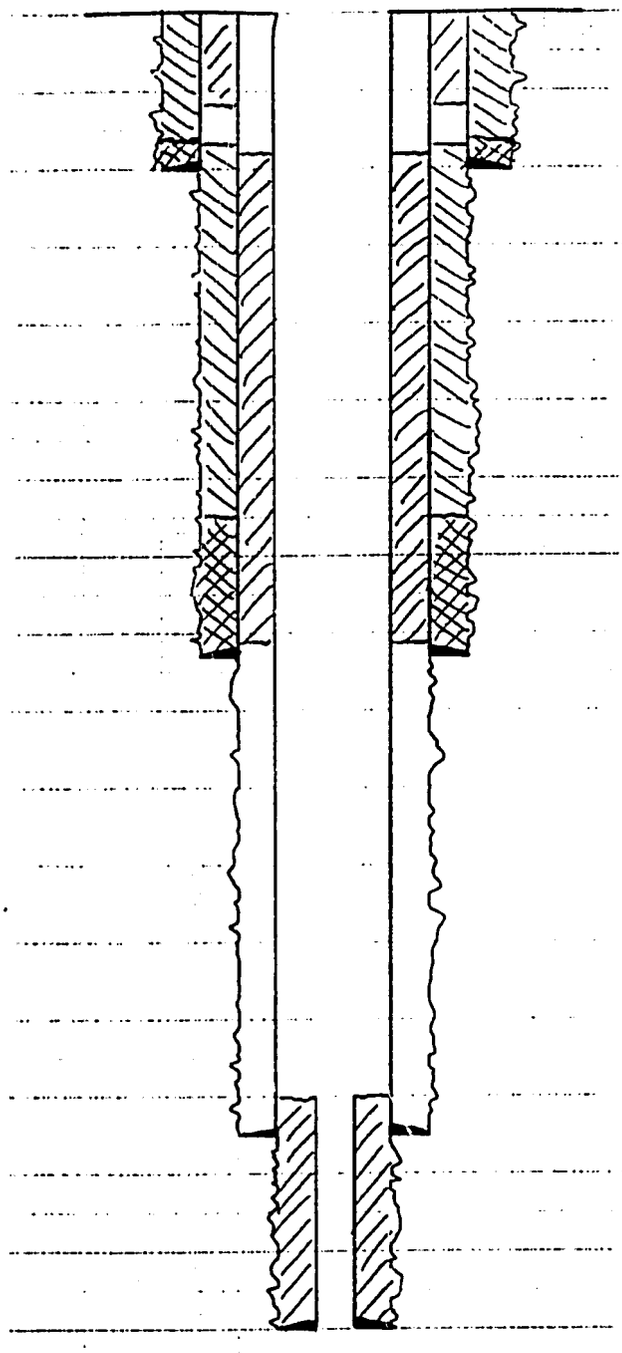
UWI 300C766020122450

Well Status
Suspended ☒
Completed ☐
Abandoned ☐

Canada

Paramount et al Bovie C-76

Well Profile at Rig Release



0 - 453m	444.5 mm hole
0 - 453m	339.7 mm, 81.1 kg/m, K-55, ST&C casing
432 - 440m	External casing packer
0 - 415m	53 m3 0:1:0 Class G + 1% $CaCl_2$
415 - 453m	4 m3 0:1:0 Class G + 1% $CaCl_2$ + 0.5% T-10 + 0.5% D-24
453 - 1713m	311.2 mm hole
0 - 1713m	244.5mm, 69.9 kg/m, L-80, LT&C casing
1307m	Stage cementing tool
1688 - 1699m	External casing packer
0 - 30m	Thermax
300 - 1307m	55 m3 1:1:2 Class G + 0.5% T-10
1307 - 1713m	25 m3 0:1:0 Class G + 1.1% NFL-3
1713 - 2897m	215.9 mm hole
0 - 2897m	177.8 mm, 43.2 kg/m, L-80, LT&C casing
1692m	Stage cementing tool
1695 - 1698m	External casing packer
350 - 1692m	18 m3 1:1:2 Class G + 0.5% T-10 + 0.2% R-6
1692 - 2897m	The annulus packs-off at flow rates above 0.2 m3/min. Unable to cement this stage.
2897 - 3222m	152.4 mm hole
2742 - 2925m	114.3 mm, 17.3 kg/m, K-55, ST-L casing
2925 - 3221m	114.3 mm, 17.3 kg/m, L-80, LT&C casing
2735 - 2742m	Liner hanger
2635 - 3221m	7 m3 Thermal 40F + 0.4% D-24 + 0.5% T-10 + 0.3% R-6 + 0.5% Gel

APPROVAL TO ALTER CONDITION OF A WELL

CANADA

APPLICATION TO ALTER CONDITION OF A WELL

This application form is to be submitted in triplicate to the District Conservation Engineer at least 45 days before commencement of operations.

Well Name: Paramount et al Bovie C-76 Area: Fort Liard, NWT

Coordinates: Lat: 60° 15' 14.83" Long: 122° 59' 22.34"

Operator: Paramount Resources Ltd. Contractor: ALBERTA GOLD

Drilling Rig or Unit: 30 Depth: 3221 mKB

Date ATDW Issued: Jan. 7/97 Date of Last Operation March 30, 1997

TYPE OF OPERATION

Initial well completion and production test

SUMMARY OF PROPOSED OPERATIONS

Perforate Manatoe Formation

Acidize Manatoe

Production Test Manatoe

Leave well suspended waiting on production facilities

Signed: D. Moorhead Title: Drilling and Completion Consultant

Date: Dec 10/97 Company: Paramount Resources Ltd.

APPROVAL

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

Signed: Jerry Baker
Conservation Engineer

Date: Dec 22/97

ATDW No: 1817 File: 9211-P33-8-1

300C766020122451

Well Status

Suspended	☒
Completed	☐
Abandoned	☐

Canada

WELL TERMINATION RECORD (with attachment)

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: Paramount et al Bovie C-76 (Re-entry) Area: Fort Liard, N.W.T.

Grid Area: 60° 20' 122° 45' Field/Pool: N/A

Permit or Lease No.: EL 369 Final Coordinates: Lat.: 60° 15' 14.83" Long: 122° 59' 22.34"

Drilling Unit: Alberta Gold #30 Elevations-RT/KB: 433.32 m SF/GL: 426.80 m

Spud Date: 18-Dec-97 Rig Released: 19-Feb-98 Total Depth: 3220 m
Re-entry

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
339.7	81.1	K-55	453 m	70 t 0:1:0 G + 1% CaCl2 .5 t 0:1:0 G + 1% CaCl2 + 0.5% T-10 + 0.5% D-24
244.5	69.9	L-80	1713 m	60 t 1:1:2 G + 0.5% T-10 36 t 0:1:0 G + 1.1% NFL-3
177.8	43.2	L-80	2897 m	19.5 t 1:1:2 + 0.5% T-10 + 0.2% R-6*
114.3	17.3	183 m K-55 296 m L-80	3220 m	9.0 t Thermal 40F + 0.4% D-24 + 0.5% T- + 0.3% R-6 + 0.5% Gel

PLUGGING PROGRAM

*See Attached Diagram

Approval of the following program was obtained by (person) ..... from

(person) ..... by means of

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

Type of Plug:	Interval:	Felt:	Cement and Additives:
BP	3113.5		
BP	2934.0		w/175m cmt on top
BP	2720.0		w/10m cmt on top
BP	2495.0		

Lost Circulation/Overpressure Zones: Lost circulation at 140 m, 463 m, 680 m, Gas cutting at 1543 m - mud weight 1150.

Equipment left on Seafloor (Describe): N/A

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

Cores: Type: None Intervals:

Other Downhole Completion/Suspension Equipment: Cut window from 2658.0-2675 mKB.

CERTIFICATION

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

Signed: S. Maaskant Title: Drilling Consultant

Name: Shirley Maaskant Date: March 31, 1998

Acknowledged by: Jerry Baker
Engineering Branch

Date: Oct. 27/98

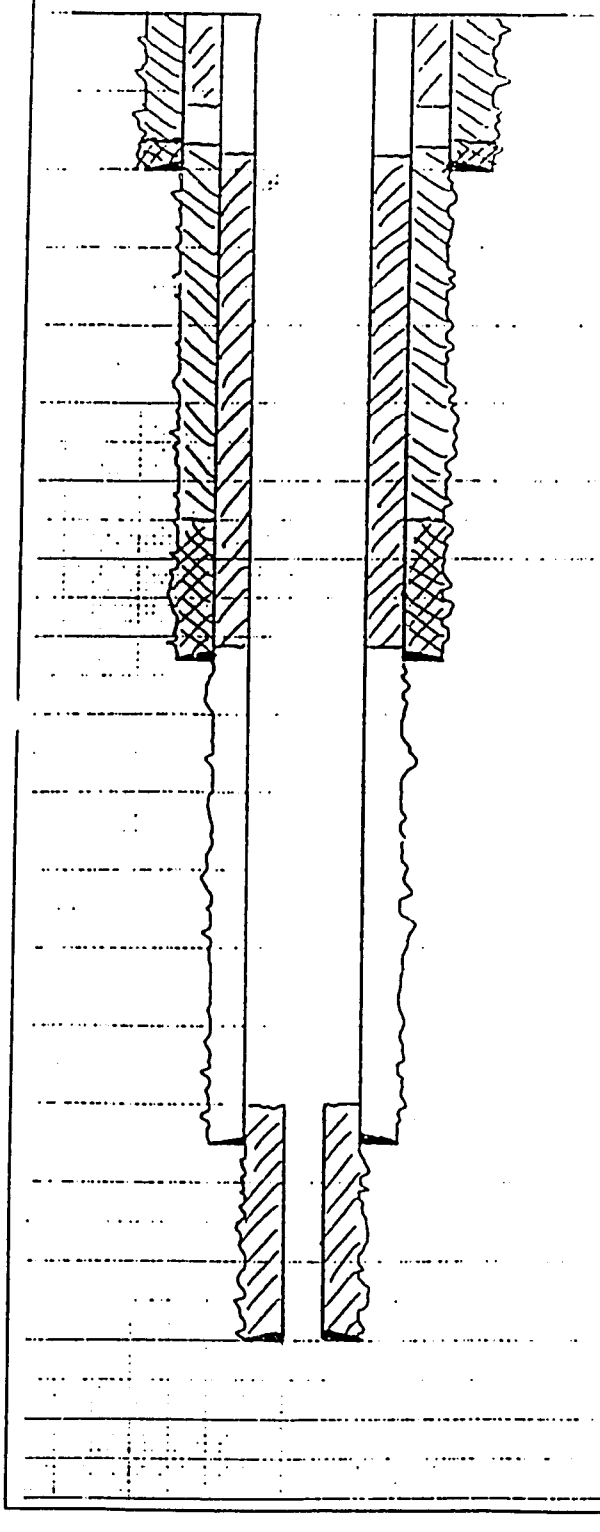
Well Status
Suspended ☐
Completed ☐
Abandoned ☒

File: WID 1817, 9211-P33-8-1RE

UWI 300C766020122451

Canada

Figure 1 - Wellbore and Casing Profile



0 - 453m	444.5 mm hole
0 - 453m	339.7 mm, 81.1 kg/m, K-55, ST&C casing
432 - 440m	External casing packer
0 - 415m	53 m3 0:1:0 Class G + 1% $CaCl_2$
415 - 453m	4 m3 0:1:0 Class G + 1% $CaCl_2$ + 0.5% T-10 + 0.5% D-24
453 - 1713m	311.2 mm hole
0 - 1713m	244.5mm, 69.9 kg/m, L-80, LT&C casing
1307m	Stage cementing tool
1688 - 1699m	External casing packer
0 - 30m	Thermax
300 - 1307m	55 m3 1:1:2 Class G + 0.5% T-10
1307 - 1713m	25 m3 0:1:0 Class G + 1.1% NFL-3
1713 - 2897m	215.9 mm hole
0 - 2897m	177.8 mm, 43.2 kg/m, L-80, LT&C casing
1692m	Stage cementing tool
1695 - 1698m	External casing packer
350 - 1692m	18 m3 1:1:2 Class G + 0.5% T-10 + 0.2% R-6
1692 - 2897m	The annulus packs-off at flow rates above 0.2 m3/min. Unable to cement this stage.
2897 - 3222m	152.4 mm hole
2742 - 2925m	114.3 mm, 17.3 kg/m, K-55, ST-L casing
2925 - 3221m	114.3 mm, 17.3 kg/m, L-80, LT&C casing
2735 - 2742m	Liner hanger
2635 - 3221m	7 m3 Thermal 40F + 0.4% D-24 + 0.5% T-10 + 0.3% R-6 + 0.5% Gel

FINAL WELL REPORT

N.E.B. COPY

FINAL WELL REPORT
PARAMOUNT ET AL BOVIE C-76
60^0 20' 122^0 45'

Revised on Aug. 25, 98.

Paramount Resources Ltd.

FINAL WELL REPORT

PARAMOUNT ET AL BOVIE C-76

60^0 20' 122^0 45'

Latitude 60^0 15' 14.83" Longitude 122^0 59' 22.34"

NOTE: **As requested by the N.E.B., this report replaces the Final Drilling Report prepared by Mr. David Baillargeon, Reservoir Drilling Services, which was submitted to the N.E.B. in 1997.**

Prepared By: S. Maaskant, C.E.T.
Date: August 25, 1998

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
SEP - 4 1998

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SECTION 1

INTRODUCTION

1. INTRODUCTION

Summary

Paramount Resources Ltd. drilled Bovie C76 to evaluate the gas potential of the Nahanni formation and a secondary objective the Flett . Kenting 22E spudded this well January 15, 1997 and rig released March 30, 1997.

Surface hole was drilled overbalanced with minor losses at 140 m controlled with LCM pills. Deviation remained a problem throughout surface hole.

First intermediate section encountered a fracture in the Flett (10 m under the surface shoe) which required a cement plug. An attempt to drill with air failed as the well was making too much water, so gel/chem was utilized with minor losses occurring. Small amounts of gas were detected after penetrating the Banff. Logs were run over this interval.

Second intermediate was drilled with an air hammer then displaced to gel/chem to run casing. Mechanical and pumping limitations plus a bottom hole temperature of 170 ° C prevented the cementing of stage #1. The second stage was cemented successfully.

Main hole was also drilled with gel/chem. We were unable to drill underbalanced as originally planned without the first stage of second intermediate casing cemented . Logs were run and liner cemented in place with no time to spare as break-up had arrived.

The well will be completed to evaluate the Nahanni gas potential.

Location Map (See Figure 1, Following Page)

OVERSIZED

DOCUMENT

FILMED

ON

35mm

SECTION 2

GENERAL DATA

2. GENERAL DATA

WELL NAME:	Paramount et al Bovie C-76
EXPLORATION AGREEMENT:	EL 368
DRILLING AUTHORITY:	1817 Issued January 7, 1997
GRID AREA:	60^0 20' 122^0 45'
CO-ORDINATES:	Latitude 60^0 15' 14.83" Longitude 122^0 59' 22.34"
UNIQUE WELL IDENTIFIER:	300C766020122450
LESSOR:	Shell Canada Ltd. entered into a formal agreement with Paramount covering parcel exploration licence 368.
OPERATOR:	Paramount Resources Ltd. 4000, 350 – 7 Ave. S.W. Calgary, Alberta T2P 3W5
DRILLING CONTRACTOR:	Kenting Drilling Limited Precision Drilling) 7th Floor, 112 - 4 Ave. S.W. Calgary, Alberta T2P 0H3
DRILLING RIG:	Kenting 22E
POSITION KEEPING:	N/A
SUPPORT CRAFT:	N/A
DRILLING UNIT PERFORMANCE	N/A
DIFFICULTIES & DELAYS:	N/A

SECTION 3

SUMMARY OF DRILLING OPERATIONS

3. SUMMARY OF DRILLING OPERATIONS

ELEVATIONS: G.L.: 426.8 m
K.B.: 433.31 m

TOTAL DEPTH: 3222 m Drilled:
3222 m Logged:
3205 m Plug Back

SPUD DATE: 1997 – 01 – 15 @ 0715 hours

COMPLETED DRILLING DATE: 1997 – 03 – 25 @ 0230 hours

RIG RELEASE: 1997 – 03 – 30 @ 2100 hours

WELL STATUS: STANDING CASED

HOLE SIZES, CASING See Bit Record in this Section

	Hole Size mm	Csg. Size mm	Wt. kg/m	Grade	Landed m
Surface	444	339.7	81.1	K55, ST&C	453
Intermediate 1	311	244.5	69.9	L80, LT&C	1713
Intermediate 2	216	177.8	43.2	L80, LT&C	2897
Liner	152	114.3	17.3	K55/L80, S&LT&C	3221

CASING CEMENTING: See Casing & Cementing Reports in this Section

SIDETRACKED HOLE: N/A

DRILLING FLUID: See Fluid Summary in this Section

FISHING: While drilling first intermediate at a depth of 927 m, the drill pipe twisted off the first joint above the HWDP. The fish was recovered in 25 hours

WELL KICKS: N/A

LEAK-OFF TESTS: (see attached)
Gradient at 504 m 18 kPa/m, no breakdown
Gradient at 1716 m 20 kKa/m, no breakdown

TIME DISTRIBUTION:	See Distribution in this Section
DEVIATION SURVEY:	See Surveys in this Section
ABANDONMENT PLUGS:	N/A
COMPOSITE WELL RECORD:	Was submitted in 1997 with initial report

Table 7 - Bit Record

Bit No.	Size mm	Brand	Type	Depth In m	Depth Out m	Rot Time hrs	ROP m/hr	Cum Time hrs	Dull Condition	Comment
1A	445	Sec	S33G	0	135	24.25	5.57	24.25	2-2-WT-A-1-1-0-DEV	Angle out to 2.5 deg, Garbutt @130m
2A	445	Hughes	X3A	135	144	4.25	2.12	28.50	2-2-WT-A-1-1-0-PR	Fantasque @ 144m
3A	445	Hughes	R3	144	149	13.25	0.38	41.75	7-8-WT-A-E-I-0-PR	Rough drlg, using 6000 daN and 50 rpm
4A	445	Sec	S21G	149	151	6.25	0.32	48.00	2-2-WT-A-1-1-0-PR	Rough drlg continues, trip to pilot
1B	311	Reed	HP53A	151	182	10.5	2.95	58.50	1-1-0-0-E-I-0-FM	Fleft @179m
RR4A	445	Sec	S21G	151	182	22.25	1.39	80.75	Didnt-Trip	Reamed pilot hole and drilled ahead.
RR4A	445	Sec	S21G	182	187	3.5	1.43	84.25	2-4-WT-A-E-I-0-PR	
RR2A	445	Hughes	X3A	187	210	21.5	1.07	105.75	2-3-WT-A-2-I-0-PR	Wont drill using 4000 daN, 140 rpm, trip to pilot
2B	311	Smith	SDGH	210	254	22.25	1.98	128.00	6-6-WT-A-5-3-0-PR	Packed BHA, stab runs into UG hole
3B	311	Reed	HP53A	254	282	31	0.90	159.00	2-5-BT-A-1-I-0-DEV	Angle out to 3 deg, pick-up motor
4B	311	Smith	F2P	282	453	39.75	4.30	198.75	4-6-WT-A-3-I-0-TD	Motor drilling
5A	445		H.O.	210	269	14.75	4.00	213.50	Damaged-PR	
6A	445	Hughes	X3A	269	291	12	1.83	225.50	1-4-WT-A-2-I-0-PR	Dont have another HO (using same WOB, RPM)
7A	445		H.O.	291	379	27	3.26	252.50	Undamaged-PR	No damage, reran
RR 7A	445		H.O.	379	453	24.25	3.05	276.75	Didnt-Say-TD	
1	311	Smith	FDGH	453	463	2.25	4.44	2.25	8-8-BT-A-E-I-8-LC	Rough drilling, trip for shock and jars
2	311	Reed	EHP53A	463	504	11.5	3.57	13.75	Undamaged-LC	Trip to run cmt plug
RR2	311	Reed	EHP53A	504	651	40.75	3.61	54.50	2-2-WT-A-E-I-0-DEV	Angle out to 2 deg, pick-up stabs
3	311	Sec	M44N	651	696	10.75	4.19	65.25	6-7-WT-A-8-4-0-PR	Stabs run into UG hole
4	311	Smith	F2P	696	837	29.25	4.82	94.50	2-4-WT-A-E-2-0-PP	Trip for wash-out
5	311	RBI	C2	837	927	20.25	4.44	114.75	1-3-BT-1-E-I-0-TW	Twisted-off
6	311	Hughes	GTM28	927	1279	62.25	5.65	177.00	1-2-WT-A-E-I-0-DEV	Shunda@975m, Pekisko@1119m, Banff@1163m
7PDC	311	DBS	FM2943	1279	1282	4.75	0.63	181.75	Undamaged-PR	Bit balled-up
RR7	311	DBS	FM2943	1282	1284	2.25	0.89	184.00	Undamaged-PR	Bit balled-up
8	311	Reed	HP43A	1284	1548	33	8.00	217.00	1-1-0-A-E-I-0-BHA	Dev down to 1 deg, drop 2 of 4 stabs
RR8	311	Reed	HP43A	1548	1710	28	5.79	245.00	2-4-BT-A-E-I-0-TD	Exshaw @1646m, Kotcho @1665m
9	216	Reed	HP43A	1710	1716	0.5	12.00	245.50	1-1-1-A-E-I-0-BHA	Run leak-off, change to air hammer
10AIR	216		H45R8	1716	2897	77.5	15.24	323.00	Damaged-TD	Tetcho@2030m, Ft Simp@2162m, Nahanni@2889
11	152	Smith	FV	2897	2907	5.75	1.74	328.75	8-8-WT-A-E-4-0-TQ	
12	152	Reed	HP51A	2907	2940	12	2.75	340.75	1-2-WT-A-E-I-0-BHA	Angle out to 3.25 deg, pick-up stabs
13	152	Smith	F3P	2940	3124	54.25	3.39	395.00	5-3-WT-3-1-I-0-PR	
14	152	Smith	F3P	3124	3222	22.5	4.36	417.50	2-2-WT-A-2-I-0-TD	Manatoe @3129m, Arnica @3184m

PARAMOUNT RESOURCES LTD.

CASING AND CEMENTING REPORT

Date Run: Feb 3, 1997

WELL NAME: Paramount et al Bovie C-76 60° 20' 122° 45' TOTAL DEPTH: 453.0 m

Surveyed Ground Elevation: 426.80 m ASL Cut / Fill: ..... m Actual Ground Elevation: 426.80 m

Dist. GRD. to KB: 6.51 m KB Elev.: 433.31 m KB to CF, Dist. "H": ..... m CF Elev.: 433.31 m

TYPE C, S, I, P	JTS RUN	SIZE mm OD	WEIGHT kg/m	GRADE	THREAD & COUPLING	SMLS ERW	MAKE	TALLY m thrd on	TALLY m thrd off	
S	36	339.7	81.10	K-55	8RD ST&C.	SMLS	Sumitomo		446.19	a
					ECP Packer				7.54	b
										c
										d
										e

LINER TOP @: ..... mKB
STAGE TOOL @: ..... mKB

CENTRALIZERS: Make Weatherford
Type: Latch On Qty.: 12
@: Middle #1, 2 over collars of No.5, 10, 15, 20, 25, 30 and 35.

TURBOLIZERS: Make .....
Type: ..... Qty.: .....
@: .....

SCRATCHERS: Make .....
Type: ..... Qty.: .....
@: .....

SHOE: Make Weatherford Type Float SQ / THRD	0.47	f
COLLAR: Make Weatherford Type Float	0.39	g
STAGE CMT. COLLAR: Make		h
LINER HANGER ASSY.: Make		i
DRILL PIPE OR LANDING JOINT IF USED		j
OVERALL TALLY OF STRING, (a+b+..+i+j)	454.59	k
STICK UP ABOVE KB	1.59	l
DEPTH LANDED @, mKB (k-l)	453.00	n
SHOE JOINT OVERALL TALLY, (g+f+csg jts)	13.18	o
EST. PBTD TO FLOAT COLLAR, (n-o)	439.82	p
LENGTH OF CASING CUTOFF	8.10	q
NET CASING TALLY LEFT, (a+b+c+d+e-q)	445.63	r

CASING HEAD: Make ..... S/N: .....
339.7 mm SQ / THRD x 376.1 mm 35000 MPa

Circulated mud 5.75 hrs after casing on bottom at 1600 litre/min. Mud density 1200 kg/m3
Reciprocated casing in 12 m strokes for 60 mins prior to cementing. Viscosity 1.5 s/l YP ..... Pa
Reciprocated casing in 6 m strokes for 70 mins while cementing. PV ..... mPa-sec Gels ..... / .....

LEAD /1st STAGE CEMENT from 453 m to 0 m

Preflush with 3 m3 of Scav./Water at 1. m3/min.
Amount & Blend:
10 tonnes 0:1:0 + 1% CaCl2 5 tonnes 0:1:0 + 1% CaCl2 + .5% T-10 + D24 at .5%

Slurry Volume: 56.8 m3. Density: 1901 kg/m3
Start mix at 03:04 hrs. Finish mix at 04:12 hrs.
Plug down at 05:05 hrs on Feb 3, 1997
Displ. with 34 m3 of Water at 9. m3/min.
Maximum pumping pressure 5000 kPa.
Bumped plug with 10000 kPa, floats held yes / no.
If not, held ..... kPa back pressure for ..... hrs.

TAIL / 2nd STAGE CEMENT from ..... m to ..... m

Preflush with ..... m3 of ..... at ..... m3/min.
Amount & Blend:

Slurry Volume: ..... m3. Density: kg/m3
Start mix at ..... hrs. Finish mix at ..... hrs.
Plug down at ..... hrs on .....
Displ. with ..... m3 of ..... at ..... m3/min.
Maximum pumping pressure ..... kPa.
Bumped plug with ..... kPa, floats held yes / no.
If not, held ..... kPa back pressure for ..... hrs.

Returns while cementing Good cement returns. Circulated out 10 m3 of slurry. Slips set in ..... daN.
Witnessed by ..... for Paramount, ... for contractor, ... for cementers.
REMARKS:

PARAMOUNT RESOURCES LTD.

CASING AND CEMENTING REPORT

Date Run: Mar 2, 1997

WELL NAME: Paramount et al Bovie C-76 60° 20' 122° 45' TOTAL DEPTH: 1713 m

Surveyed Ground Elevation: 426.80 m ASL Cut / Fill: ____ m Actual Ground Elevation: 426.80 m

Dist. GRD. to KB: 6.52 m KB Elev.: 433.32 m KB to CF, Dist. "H": 7.31 m CF Elev.: 426.01 m

TYPE C, S, I, P	JTS RUN	SIZE mm OD	WEIGHT kg/m	GRADE	THREAD & COUPLING	SMLS ERW	MAKE	TALLY m thrd on	TALLY m thrd off	
I (I)	130	244.5	69.94	L-80	8RD LT&C	ERW	ALGOMA		1701.94	a
ECP	1	Packer					Baker			b
									10.53	c
										d
										e

LINER TOP @: ____ mKB

STAGE TOOL @: 1306.67 mKB

CENTRALIZERS: Make W/Ford

Type: Bow Spring Qty.: 28

@: Shoe Joints, 2 Joint every 50 m to surface.

TURBOLIZERS: Make ____

Type: ____ Qty.: ____

@: ____

SCRATCHERS: Make ____

Type: ____ Qty.: ____

@: ____

SHOE: Make W/Ford Type Float 8RD / THRD	0.47	f
COLLAR: Make W/Ford Type Float	0.40	g
STAGE CMT. COLLAR: Make Baker	0.58	h
LINER HANGER ASSY.: Make		i
DRILL PIPE OR LANDING JOINT IF USED		j
OVERALL TALLY OF STRING, (a+b+..+i+j)	1713.92	k
STICK UP ABOVE KB	1.20	l
DEPTH LANDED @, mKB (k-l)	1712.72	n
SHOE JOINT OVERALL TALLY, (g+f+csg jts)	14.27	o
EST. PBTD TO FLOAT COLLAR, (n-o)	1698.45	p
LENGTH OF CASING CUTOFF	7.65	q
NET CASING TALLY LEFT, (a+b+c+d+e-q)	1704.02	r

CASING HEAD: Make McEvoy S/N: M5737-1

339.7 mm SOW / XOWO x 346.1 mm 35 MPa

Circulated mud 4.50 hrs after casing on bottom at 1400 litre/min. Mud density 1185 kg/m3

Reciprocated casing in 20 m strokes for 270 mins prior to cementing. Viscosity 55 s/l YP ____ Pa

Reciprocated casing in 3 m strokes for 31 mins while cementing. PV ____ mPa-sec Gels ____ / ____

LEAD /1st STAGE CEMENT from 1710 m to 1306 m

Preflush with 4 m3 of H20 at 1 m3/min.

Amount & Blend:

36 tonnes 0:1:0 + 1.1% NFL-3.

Slurry Volume: 25.3 m3. Density: 1901 kg/m3

Start mix at 16:47 hrs. Finish mix at 17:18 hrs.

Plug down at 18:30 hrs on Feb 2, 1997

Displ. with 19 m3 of H20 at 1 m3/min.

Maximum pumping pressure 3000 kPa.

Bumped plug with 6500 kPa, floats held yes / no.

If not, held ____ kPa back pressure for ____ hrs.

TAIL / 2nd STAGE CEMENT from 1306 m to 300 m

Preflush with 4 m3 of H20 at 1 m3/min.

Amount & Blend:

3 m3 of Scavenger 60 tonnes 1:1:2 "G" + .5% T-10

Slurry Volume: 54.8 m3. Density: 1683 kg/m3

Start mix at 01:08 hrs. Finish mix at 02:00 hrs.

Plug down at 02:45 hrs on Feb 3, 1997

Displ. with 49.3 m3 of H20 at 1.2 m3/min.

Maximum pumping pressure 10000 kPa.

Bumped plug with 21000 kPa, floats held yes / no.

If not, held ____ kPa back pressure for ____ hrs.

Returns while cementing Full. Circulated out 27 m3 of slurry. Slips set in 75000 daN.

Witnessed by C. Veenstra for Paramount, D. Ross for contractor, B. Pickett for cementers.

REMARKS: Returns of 27 m3 of slurry was cement and mud intermittent circulated mud for 6 hours between stages at a velocity 38.

PARAMOUNT RESOURCES LTD.

CASING AND CEMENTING REPORT

Date Run: Mar 14, 1997

WELL NAME: Paramount et al Bovie C-76 60° 20' 122° 45' TOTAL DEPTH: 2897 m

Surveyed Ground Elevation: 426.80 m ASL Cut / Fill: ..... m Actual Ground Elevation: 426.80 m

Dist. GRD. to KB: 6.52 m KB Elev.: 433.32 m KB to CF, Dist. "H": 7.31 m CF Elev.: 426.01 m

TYPE C, S, I, P	JTS RUN	SIZE mm OD	WEIGHT kg/m	GRADE	THREAD & COUPLING	SMLS ERW	MAKE	TALLY m thrd on	TALLY m thrd off	
I	221	177.8	43.16	1-80	8RD LT&C	ERW	ALGOMA		2894.17	a
	ECP			I-80	8RD LT&C	ERW				b
CUP XO	2	177.8	43.16	I-80	8RD LT&C		BAKER		2.70	c
									1.28	d
										e

LINER TOP @: ..... mKB
STAGE TOOL @: 1692.06 mKB

CENTRALIZERS: Make .....
Type: Bowspring Qty.: .....
@: Shoe Joint, Joint #2,

TURBOLIZERS: Make .....
Type: ..... Qty.: .....
@: .....

SCRATCHERS: Make .....
Type: ..... Qty.: .....
@: .....

SHOE: Make W/Ford Type Float SO / THRD	0.40	f
COLLAR: Make W/Ford Type Float	0.35	g
STAGE CMT. COLLAR: Make Baker at 1692 m	0.50	h
LINER HANGER ASSY.: Make		i
DRILL PIPE OR LANDING JOINT IF USED		j
OVERALL TALLY OF STRING, (a+b+...+i+j)	2899.40	k
STICK UP ABOVE KB	1.01	l
DEPTH LANDED @, mKB (k-l)	2898.39	n
SHOE JOINT OVERALL TALLY, (g+f+csgjts)	13.89	o
EST. PBTD TO FLOAT COLLAR, (n-o)	2884.50	p
LENGTH OF CASING CUTOFF	7.52	q
NET CASING TALLY LEFT, (a+b+c+d+e-q)	2890.63	r

CASING HEAD: Make McEvoy S/N: M5731-1
339.7 mm SO / THRD x 346.1 mm 35 MPa

Circulated mud ..... hrs after casing on bottom at ..... litre/min. Mud density 1135 kg/m3
Reciprocated casing in ..... m strokes for ..... mins prior to cementing. Viscosity 120 s/l YP ..... Pa
Reciprocated casing in ..... m strokes for ..... mins while cementing. PV ..... mPa-sec Gels ..... / .....

LEAD /1st STAGE CEMENT from 1692 m to 350 m	TAIL / 2nd STAGE CEMENT from 2897 m to 1695 m
Preflush with 4 m3 of H20 at 1 m3/min.	Preflush with ..... m3 of ..... at ..... m3/min.
Amount & Blend:	Amount & Blend:
19.5 tonnes 1:1:2 "G" + .5% T-10 +2% R-6	
Slurry Volume: 18.2 m3. Density: 1683 kg/m3	Slurry Volume: ..... m3. Density: kg/m3
Start mix at 03:33 hrs. Finish mix at 13:53 hrs.	Start mix at ..... hrs. Finish mix at ..... hrs.
Plug down at 04:23 hrs on Mar 16, 1997	Plug down at ..... hrs on .....
Displ. with 32.8 m3 of H20 at 1.1 m3/min.	Displ. with ..... m3 of ..... at ..... m3/min.
Maximum pumping pressure 13000 kPa.	Maximum pumping pressure ..... kPa.
Bumped plug with 21000 kPa, floats held yes / no .	Bumped plug with ..... kPa, floats held yes / no .
If not, held ..... kPa back pressure for ..... hrs.	If not, held ..... kPa back pressure for ..... hrs.

Returns while cementing 100%. Circulated out ..... m3 of slurry. Slips set in 70000 daN.
Witnessed by C. Veenstra for Paramount, D. Ross for contractor, B. Picket for cementers.
REMARKS: Unable to circulate enough to pump stage one cement. Opened stage tool and set packer to cement stage two.

PARAMOUNT RESOURCES LTD.

CASING AND CEMENTING REPORT

Date Run: Mar 28, 1997

WELL NAME: Paramount et al Bovie C-76 60° 20' 122° 45' TOTAL DEPTH: 3222 m

Surveyed Ground Elevation: 426.80 m ASL Cut / Fill: ..... m Actual Ground Elevation: 426.80 m

Dist. GRD. to KB: 6.52 m KB Elev.: 433.32 m KB to CF, Dist. "H": 7.31 m CF Elev.: 426.01 m

TYPE C, S, I, P	JTS RUN	SIZE mm OD	WEIGHT kg/m	GRADE	THREAD & COUPLING	SMLS ERW	MAKE	TALLY m thrd on	TALLY m thrd off	
P	21	114.1	17.26	N-80	LT&C	SMLS	ALGOMA		295.93	a
P	16	114.1	17.26	K-55	AB-STL	SMLS	ALGOMA		182.60	b
	2	114.1	17.26	K-55	ABX LT&C	SMLS	ALGOMA		0.70	c
					LJCX AB					d
										e

LINER TOP @: 2735.24 mKB
STAGE TOOL @: ..... mKB

CENTRALIZERS: Make .....
Type: Bowspring Qty.: .....
@: 3219, 3200, 3170, 3130, 3050, 2900

TURBOLIZERS: Make Cent
Type: Rigid Bar Qty.: 5
@: 2875, 2850, 2800, 2775, 2765, 2750

SCRATCHERS: Make .....
Type: ..... Qty.: .....
@: .....

SHOE: Make Float Type SQ / THRD	0.40	f
COLLAR: Make ..... Type	0.39	g
STAGE CMT. COLLAR: Make		h
LINER HANGER ASSY.: Make Cardium Hanger	6.74	i
DRILL PIPE OR LANDING JOINT IF USED	2734.24	j
OVERALL TALLY OF STRING, (a+b+...+i+j)	3221.00	k
STICK UP ABOVE KB		l
DEPTH LANDED @, mKB (k-l)	3221.00	n
SHOE JOINT OVERALL TALLY, (g+f+csg jts)	15.52	o
EST. PBTD TO FLOAT COLLAR, (n-o)	3205.48	p
LENGTH OF CASING CUTOFF		q
NET CASING TALLY LEFT, (a+b+c+d+e-q)	479.23	r

CASING HEAD: Make ..... S/N: .....
..... mm SQ / THRD x ..... mm ..... MPa

Circulated mud 3 hrs after casing on bottom at 570 litre/min. Mud density 1120 kg/m3
Reciprocated casing in 5 m strokes for 180 mins prior to cementing. Viscosity 49 s/l YP 5 Pa
Reciprocated casing in 5 m strokes for 60 mins while cementing. PV 14 mPa-sec Gels / .....

LEAD /1st STAGE CEMENT from 3222 m to 2635 m

Preflush with 3 m3 of H20 at 5 m3/min.
Amount & Blend: 9 tonnes Thermal 40 F, 4% D-24,
5% T-10, 3% R-6, 5% Gel
Slurry Volume: 6.9 m3. Density: 1876 kg/m3
Start mix at 17:53 hrs. Finish mix at 18:12 hrs.
Plug down at 13:35 hrs on Mar 28, 1997
Displ. with 4.8 m3 of H20 at 6.5 m3/min.
Maximum pumping pressure 11000 kPa.
Bumped plug with 21000 kPa, floats held yes / no.
If not, held ..... kPa back pressure for ..... hrs.

TAIL / 2nd STAGE CEMENT from ..... m to ..... m

Preflush with ..... m3 of ..... at ..... m3/min.
Amount & Blend: .....
Slurry Volume: ..... m3. Density: kg/m3
Start mix at ..... hrs. Finish mix at ..... hrs.
Plug down at ..... hrs on .....
Displ. with ..... m3 of ..... at ..... m3/min.
Maximum pumping pressure ..... kPa.
Bumped plug with ..... kPa, floats held yes / no.
If not, held ..... kPa back pressure for ..... hrs.

Returns while cementing Full. Circulated out ..... m3 of slurry. Slips set in ..... daN.
Witnessed by Wilson for Paramount, Ross for contractor, ... for cementers.
REMARKS: Cardium hanger sent top at 2735.24 m

Drilling Fluids

The well was drilled primarily with Gel Chemical mud, with one section drilled with air. Table 8 summarizes the mud systems used in this well. A breakdown of mud products versus hole section follows in Table 9.

Table 8 - Mud Systems

Hole Section	Mud System	Interval
		metres
Surface Hole	Gel Caustic * LCM Added	0 - 453 145
Intermediate Hole 1	Gel Chemical Air Gel Chemical * LCM Added * PHPA Added	453 - 555 555 - 555 555 - 1713 463 800
Intermediate Hole 2	Water Air Gel Chemical * Barite Added	1713 - 1716 1716 - 2897 2897 - 2897 2897
Main Hole	Gel Chemical * Barite Added	2897 - 3222 2897

Table 9 - Mud Product Consumption on Daily Reports

Product	Pkg	First Added	Surf Hole	Interm Hole 1	Interm Hole 2	Main Hole	Total	Billed
		metres						
Gel[1]	40 kg	0	367	962	366	63	1758	1721
Caustic	50 lb	0	21	31	13	11	76	80
Soda Ash	40 kg	0	3	6			9	10
Sawdust	40 lb	145	118	307			425	375
Kwikseal	40 lb	145	7	63			70	50
Desco	25 lb	453	2	10	11	6	29	30
Bicarb	100 lb	500		4			4	5
Lignite	50 lb	700		15		9	24	32
Encapsorfloc	20 L	800		13	6		19	20
VisPlus[2]	50 lb	800		0			0	3
Aquapac	50 lb	950		16	9	16	41	41
SAPP[3]	50 lb	1280		0			0	2
Detergent	20 L	1280		3			3	3
Barite	40 kg	2897			219	108	327	343

[1] Approx 20% was natural Gel in 100 lb bags .
[2] The report for DFS 32 has VisPlus written in, with no entry for amount
[3] Mud rings were reported on DFS 37, with only detergent added

Air Drilling / Underbalanced Drilling

Analysis

Table 12 - Drilling Time Summary

Operation	Start Date	Start Time	Days	Cum Days	Problems	Net Days	Cum Net Days
Prepare to drill	09-Jan-97	14:00	5.72	0.00	0.00	5.72	0.00
Drill 445 mm hole	15-Jan-97	07:15	15.97	15.97	3.67	12.30	12.30
Set 340 mm casing	31-Jan-97	06:30	7.19	23.16	2.21	4.98	17.28
Drill 311 mm hole	07-Feb-97	11:00	20.93	44.08	8.08	12.85	30.12
Run wireline logs	28-Feb-97	09:15	0.66	44.74	0.00	0.66	30.78
Set 245 mm casing	01-Mar-97	01:00	5.19	49.93	0.00	5.19	35.97
Drill 216 mm hole	06-Mar-97	05:30	6.88	56.80	2.13	4.75	40.71
Set 178 mm casing	13-Mar-97	02:30	5.93	62.73	1.00	4.93	45.64
Drill 152 mm hole	19-Mar-97	00:45	6.30	69.03	1.08	5.22	50.86
Run wireline logs	25-Mar-97	08:00	2.78	71.81	1.54	1.24	52.10
Set 114 mm casing	28-Mar-97	02:45	0.97	72.78	0.96	0.01	52.11
Wrap-up	29-Mar-97	02:00	1.79	74.57	0.63	1.16	53.27
Rig Released	30-Mar-97	21:00					

Deviation / Directional

The bottomhole target was directly below surface. The hole was drilled essentially straight down, with 1-3 degrees of deviation resulting from formation dips. Directional surveys were taken only in the short motor drilled section on surface hole. The azimuth was derived from the motor drilled section and was assumed to be 265 deg throughout. The well intersected the Nahanni approximately 89 metres west of the surface location and finished-up approximately 95 metres west of the surface location. (If the well reversed direction or spiralled, the displacements would of course be less.) The well path, based on assumed azimuths, is detailed by the directional survey calculations in Table 10.

Table 10 - Directional Survey Calculations

	Survey				Coordinates					Closure		
	Depth	Drift	Dir	TVD	N/S		E/W		DLS	Length	Dir	VSxn
	m	deg	deg	m	m		m		deg/30m	m	deg	m
1	0	0	0	0.00	0.00	N	0.00	E		0.00	0.0	0.00
2	112	0.75	265	112.00	-0.06	S	-0.73	W	0.20	0.73	265.0	-0.06
3	130	2.5	265	129.99	-0.11	S	-1.24	W	2.92	1.24	265.0	-0.11
4	148	1.5	265	147.98	-0.16	S	-1.86	W	1.67	1.87	265.0	-0.16
5	175	2	265	174.96	-0.23	S	-2.69	W	0.56	2.70	265.0	-0.23
6	253	2.75	265	252.90	-0.52	S	-5.91	W	0.29	5.93	265.0	-0.52
7	337	3	265	336.79	-0.88	S	-10.10	W	0.09	10.14	265.0	-0.88
8	413	1.75	265	412.72	-1.16	S	-13.24	W	0.49	13.29	265.0	-1.16
9	431	1.5	265	430.72	-1.20	S	-13.75	W	0.42	13.80	265.0	-1.20
10	460	1.125	265	459.71	-1.26	S	-14.41	W	0.39	14.47	265.0	-1.26
11	601	1	265	600.69	-1.49	S	-17.02	W	0.03	17.08	265.0	-1.49
12	680	2	265	679.66	-1.67	S	-19.08	W	0.38	19.15	265.0	-1.67
13	780	1.5	265	779.61	-1.94	S	-22.12	W	0.15	22.20	265.0	-1.94
14	952	1.5	265	951.55	-2.33	S	-26.60	W	0.00	26.70	265.0	-2.33
15	1078	2.5	265	1077.47	-2.71	S	-30.98	W	0.24	31.10	265.0	-2.71
16	1277	3	265	1276.24	-3.54	S	-40.49	W	0.08	40.65	265.0	-3.54
17	1431	1	265	1430.14	-4.01	S	-45.85	W	0.39	46.02	265.0	-4.01
18	1520	1.75	265	1519.12	-4.20	S	-47.98	W	0.25	48.16	265.0	-4.20
19	1703	2	265	1702.02	-4.72	S	-53.94	W	0.04	54.15	265.0	-4.72
20	1827	1.5	265	1825.96	-5.05	S	-57.71	W	0.12	57.93	265.0	-5.05
21	2028	0.75	265	2026.92	-5.39	S	-61.64	W	0.11	61.88	265.0	-5.39
22	2276	2	265	2274.84	-5.91	S	-67.57	W	0.15	67.83	265.0	-5.91
23	2658	1.5	265	2656.66	-6.93	S	-79.19	W	0.04	79.50	265.0	-6.93
24	2753	3	265	2751.59	-7.25	S	-82.91	W	0.47	83.23	265.0	-7.25
25	2867	3	265	2865.43	-7.77	S	-88.85	W	0.00	89.19	265.0	-7.77

Coring, Logging and Testing

No cores or drill stem tests were run on this well. Logs were run at two of the four casing points (Table 11). The first set of logs were run without problems. The sonic and density logs failed in

FORMATION PRESSURE TEST

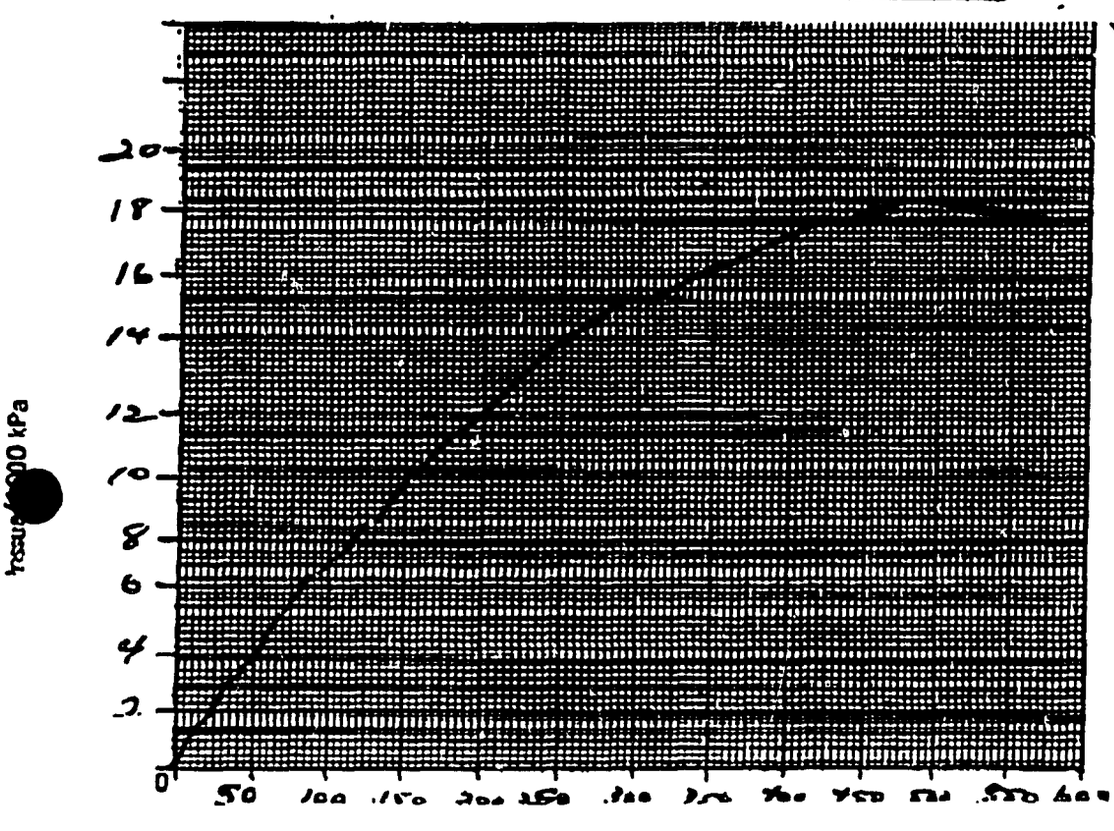
WELL: Paramount ET-Al Beaverlodge C-76 DATE: (y-m-d) 19 97-3-5

MAXIMUM TEST PRESSURE – LESSER OF

(1) B.O.P. Rating _____ kPa (1)

(2) Weakest Casing: _____ mm _____ kg/m _____ Grade

Burst Rating (kPa) _____ x 0.75 = _____ kPa (2)

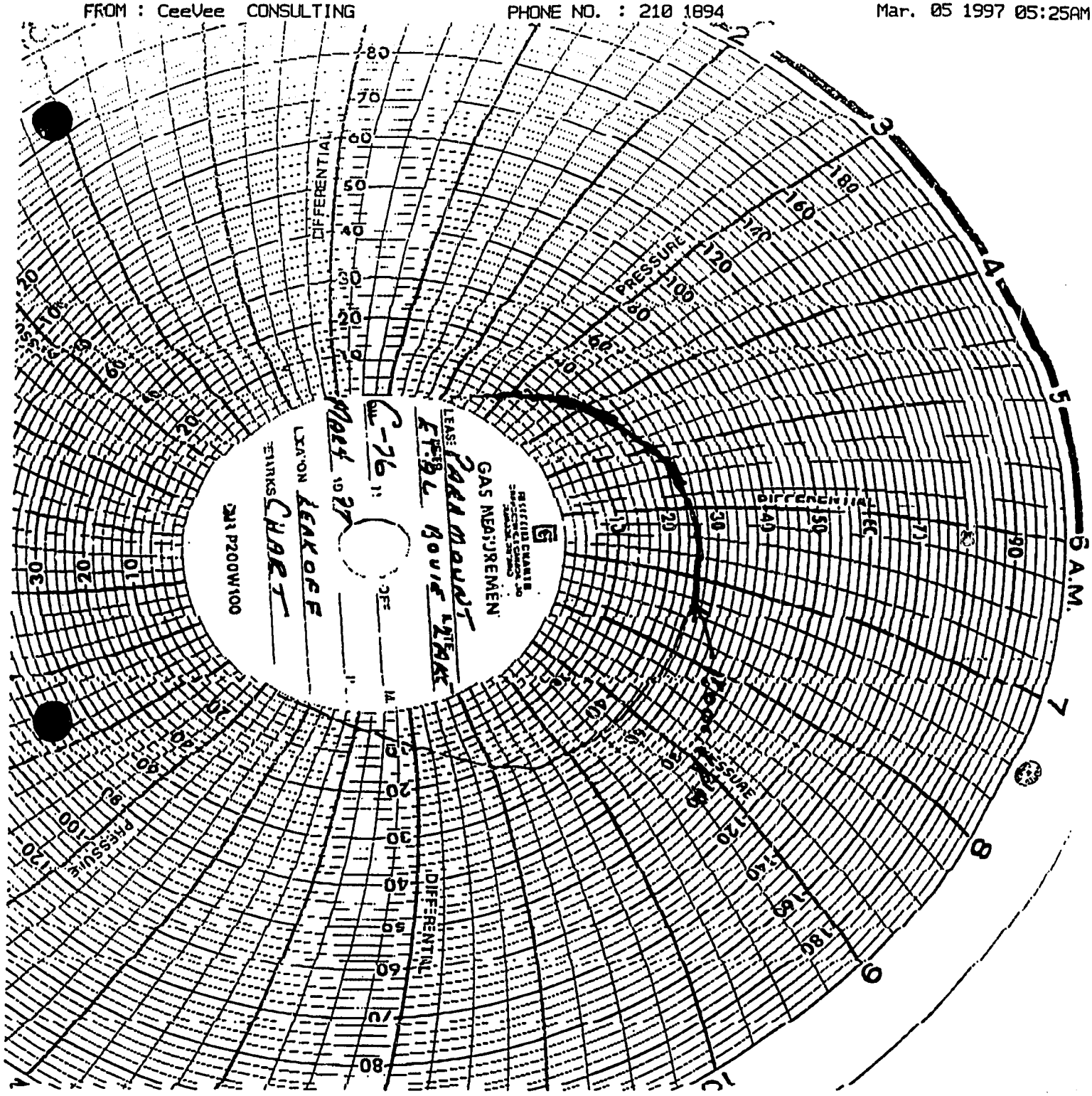


Volume Pumped/Litres

VOLUME PUMPED Litres	PRESSURE kPa
50	4000
100	7000
150	10000
200	12000
250	14000
300	15000
350	16000
400	17000
450	18000
500	18200
550	

Depth of casing	a)	1713	m	
Mud gradient	b)	(mud density x 0.00981) 9.81	kPa/m	
Hydrostatic pressure	c)	(a x b) 16804	kPa	
Leak-off pressure	d)	(see note below) 18000	kPa	
Total pressure (at shoe)	e)	(c + d) 34804	kPa	
Formation gradient	f)	(e÷a) 20	kPa/m	
Maximum allowable mud density with no annulus pressure	g)	(f÷ 0.00981) 2038	kg/m^3	

Note: The last point ON the straight line plotted above is the leak-off pressure that you enter in line (d)


GAS MEASUREMENT
LEASE: Pad Mount
WELL NO. 27
LOCATION: Leak Off
REMARKS: Chart
SWR P200W100
DIFFERENTIAL
PRESSURE
A.M.

SECTION 4

GEOLOGY

4. GEOLOGY

Drill Cuttings	See following pages for sample descriptions
Sample Distribution:	Washed Cuttings, 5 meter intervals Surface to Total Depth
	Two Sets I.S.P.G., Calgary One Set Paramount
Cores	N/A
Lithology:	See following pages for descriptions
Stratigraphic Column	Included in this Section
Biostratigraphic Column	N/A

OVERSIZED

DOCUMENT

FILMED

ON

35mm

GEOLOGICAL REPORT

on

Paramount et al Bovie Lake C-76
60 20' 122 45'

in the
NORTH WEST TERRITORIES

for
PARAMOUNT RESOURCES LTD.

Prepared For: J.H.T. RIDDELL P.GEOL
Prepared by: COLIN BREDIN P.GEOL
C.L. Bredin Holdings Ltd.

COLIN BREDIN P.GEOL

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WELL DATA SUMMARY

WELL NAME: PARAMOUNT ET AL BOVIE LAKE C-76
OPERATOR: PARAMOUNT RESOURCES LTD.
LOCATION: 60 20' 122 45'
NS CO-ORDINATES: Approx. 60 15' 14.83"
EW CO-ORDINATES: Approx. 122 59' 22.34"
PROVINCE: N.W.T
AREA: Ft. Liard N.W.T
DRILLING CONTRACTOR: KENTING HI-TOWER DRILLING **Rig #:** 22E
WELL LICENCE NUMBER: EL 369
ELEVATIONS - **GROUND LEVEL:** 426.80m
- **KELLY BUSHING:** 433.32m
SPUD DATE: JAN 15, 1997 at 0715 hours
T.D. DATE: MAR 25, 1997 at 0230 hours
SAMPLE INTERVAL: 250.00m - 3220.00m

ELECTRICAL LOGS RUN:

Rep#	Log#	Description	From(m)	To(m)
1	1	AITH ran as Phasor	1697.60	454.00
1	2	BHC Sonic	1689.10	20.00
1	3	Platform Express Density-Neutron-GR	1700.20	454.00
1	4	Platform Express Microlog	1700.20	454.00
3	1	AITH-TLD-CNL-ML-GR	3219.60	2894.00
3	2	DSI-GR	3214.00	2894.00
3	3	FMS-GR	3221.50	2894.00
3	4	ARI-LDT-CNL-ML-GR	3221.50	2894.00
3	5	DLT-LDT-CNL-ML-GR	3217.50	2894.00

DRILL STEM TESTS:

DST#	From(m)	To(m)

CORES CUT:

Cores#	From(m)	To(m)	Formation

WELL STATUS: Potential Nahanni, Manatoe Gas

CASING SUMMARY

String#	Name	Casing Size (mm)	Hole Size (mm)	Joints (#)	Weight (kg/m)	Landed At (m)	Cement (tonnes)	Cement Type
1	Sumitomo K-55	339.70	444.50	36	81.10	453.00	75.00	0-1-0 + 1% CaCl
2	ALGOMA L-80	244.50	311.20	130	69.94	1712.73	96.00	36 tonnes of 0-1-0 G as tail, 60 tonnes of 1-1-2 G as 2nd stage
3	ALGOMA L-80	177.80	216.00	221	43.16	2897.40	19.50	1-1-2 G, No cement below ECP / stage collar @ 1695m
4	K-55 AB, L-80 Liner	114.10	152.00	N/A	17.00	0.00	N/A	N/A

DAILY DRILLING SUMMARY

Date	0800 Depth (m)	Progress (m)	Hours Drlg.	Mud Weight (kg/m**3)	Vis (s/L)	Fluid Loss (cc/30min)	PH	Activity
JAN 23, 1997	258.00	29.00	18.25	N/A	N/A	N/A	N/A	Drilling pilot hole
JAN 24, 1997	278.00	20.00	23.00	1175.00	58.00	N/A	9.50	Drilling pilot hole
JAN 25, 1997	309.00	31.00	12.75	1175.00	58.00	N/A	9.50	Drilling pilot hole
JAN 26, 1997	405.00	96.00	19.50	1175.00	58.00	N/A	9.50	Drilling pilot hole
JAN 27, 1997	453.00	48.00	12.00	1190.00	50.00	N/A	9.00	Reaming with hole opener
JAN 28, 1997	453.00	0.00	17.75	1190.00	50.00	N/A	9.00	Reaming with hole opener
JAN 29, 1997	453.00	0.00	16.75	1190.00	50.00	N/A	9.00	Reaming with hole opener
JAN 30, 1997	453.00	0.00	19.00	1190.00	50.00	N/A	9.00	Reaming with hole opener
JAN 31, 1997	453.00	0.00	21.00	1190.00	50.00	N/A	9.00	Condition hole for casing
FEB 01, 1997	453.00	0.00	0.00	1190.00	50.00	N/A	9.00	Run and pull surface casing
FEB 02, 1997	453.00	0.00	13.00	1190.00	50.00	N/A	9.00	Ream and condition hole.
FEB 03, 1997	453.00	0.00	2.00	1190.00	50.00	N/A	9.00	Run and cement casing.
FEB 04, 1997	453.00	0.00	0.00	1190.00	50.00	N/A	9.00	Rig for air
FEB 05, 1997	453.00	0.00	0.00	1190.00	50.00	N/A	9.00	Nipple up for air.
FEB 06, 1997	453.00	0.00	0.00	1190.00	50.00	N/A	9.00	Repair
FEB 07, 1997	453.00	0.00	2.00	1190.00	50.00	N/A	9.00	Pressure test and drill out
FEB 08, 1997	466.00	13.00	3.00	1190.00	50.00	N/A	9.00	Drill, mix LCM, Drill
FEB 09, 1997	504.00	38.00	15.50	1020.00	48.00	N/A	9.50	Cement squeeze.
FEB 10, 1997	504.00	0.00	0.00	1020.00	48.00	N/A	9.50	Wait on cement

Date	0800 Depth (m)	Progress (m)	Hours Drlg.	Mud Weight (kg/m**3)	Vis (s/L)	Fluid Loss (cc/30min)	PH	Activity
FEB 11, 1997	538.00	34.00	8.50	1010.00	45.00	N/A	11.50	Drilling 311mm hole.
FEB 12, 1997	605.00	67.00	21.00	1055.00	42.00	N/A	11.00	Drilling 311mm hole
FEB 13, 1997	651.00	46.00	13.50	1055.00	42.00	N/A	11.00	Drill, trip for bit
FEB 14, 1997	696.00	45.00	10.75	1055.00	42.00	N/A	11.00	Drilling, Tripping
FEB 15, 1997	790.00	94.00	20.50	1055.00	42.00	N/A	11.00	Drilling 311mm hole
FEB 16, 1997	847.00	57.00	12.50	1100.00	43.00	11.20	9.00	Tripping, Drilling
FEB 17, 1997	927.00	80.00	18.00	1115.00	49.00	N/A	9.00	Drilling, Fishing
FEB 18, 1997	945.00	18.00	3.00	1115.00	49.00	N/A	9.00	Drilling 311mm hole
FEB 19, 1997	1081.00	136.00	21.00	1110.00	48.00	N/A	8.50	Drilling 311mm hole
FEB 20, 1997	1213.00	132.00	21.00	1130.00	57.00	6.40	8.50	Drilling 311mm hole
FEB 21, 1997	1279.00	66.00	14.00	1130.00	57.00	6.40	8.50	Drill, Trip for Bit
FEB 22, 1997	1282.00	3.00	4.75	1130.00	57.00	6.40	8.50	Tripping
FEB 23, 1997	1341.00	59.00	10.00	1130.00	57.00	6.40	8.50	Trip, Drilling 311mm hole
FEB 24, 1997	1520.00	179.00	21.00	1155.00	50.00	8.20	9.50	Drilling 311mm hole
FEB 25, 1997	1548.00	28.00	3.00	1155.00	50.00	8.20	9.50	Tripping
FEB 26, 1997	1606.00	58.00	11.50	1170.00	80.00	7.00	10.00	Drilling 311mm hole
FEB 27, 1997	1710.00	104.00	17.00	1170.00	95.00	6.00	9.50	Drilling, Wiper trip
FEB 28, 1997	1710.00	0.00	0.00	1170.00	95.00	6.00	9.50	Clean and condition hole
MAR 01, 1997	1710.00	0.00	0.00	1170.00	95.00	6.00	9.50	Logging, Wiper trip for casing

Date	0800 Depth (m)	Progress (m)	Hours Drlg.	Mud Weight (kg/m**3)	Vis (s/L)	Fluid Loss (cc/30min)	PH	Activity
MAR 02, 1997	1710.00	0.00	0.00	1170.00	95.00	6.00	9.50	Run intermediate (1) casing
MAR 03, 1997	1710.00	0.00	0.00	1170.00	95.00	6.00	9.50	Cement casing and nipple up.
MAR 04, 1997	1713.00	3.00	0.00	1170.00	95.00	6.00	9.50	Head up, RIH
MAR 05, 1997	1716.00	3.00	0.50	1170.00	95.00	6.00	9.50	Drill out, Leak off test, Trip for hammer.
MAR 06, 1997	1717.00	1.00	0.50	1170.00	95.00	6.00	9.50	Drill and dry hole
MAR 07, 1997	2100.00	383.00	19.00	1170.00	95.00	6.00	9.50	Drilling 216mm hole
MAR 08, 1997	2419.00	319.00	21.00	1170.00	95.00	6.00	9.50	Drilling 216mm hole
MAR 09, 1997	2700.00	281.00	20.00	1170.00	95.00	6.00	9.50	Drilling 216mm hole
MAR 10, 1997	2897.00	197.00	15.00	1170.00	95.00	6.00	9.50	Trip and mud up
MAR 11, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Clean and condition hole
MAR 12, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Clean and condition hole
MAR 13, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Clean and condition hole

Date	0800 Depth (m)	Progress (m)	Hours Drlg.	Mud Weight (kg/m**3)	Vis (s/L)	Fluid Loss (cc/30min)	PH	Activity
MAR 14, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Lay down pipe, Run Casing
MAR 15, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Run and circulate casing
MAR 16, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Case and cement
MAR 17, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Nipple up, run in hole
MAR 18, 1997	2897.00	0.00	0.00	1170.00	95.00	6.00	9.50	Pressure test, pick up drill string.
MAR 19, 1997	2908.00	11.00	5.00	1170.00	95.00	6.00	9.50	Drilling 152mm hole
MAR 20, 1997	2939.00	31.00	10.50	1170.00	95.00	6.00	9.50	Drilling 152mm hole
MAR 21, 1997	2940.80	1.80	1.00	1170.00	95.00	6.00	9.50	Reaming packed assembly.
MAR 22, 1997	3009.00	68.20	21.00	1170.00	95.00	6.00	9.50	Drilling 152mm hole
MAR 23, 1997	3095.00	86.00	21.00	1170.00	95.00	6.00	9.50	Drilling 152mm hole
MAR 24, 1997	3135.00	40.00	12.00	1170.00	95.00	6.00	9.50	Drilling, Trip for bit.
MAR 25, 1997	3220.00	85.00	18.00	1130.00	58.00	7.80	10.00	Drilling 152mm hole, Circulate

Date	0800 Depth (m)	Progress (m)	Hours Drlg.	Mud Weight (kg/m**3)	Vis (s/L)	Fluid Loss (cc/30min)	PH	Activity
MAR 26, 1997	3220.00	0.00	0.00	1130.00	58.00	7.80	10.00	Logging
MAR 28, 1997	3222.00	0.00	0.00	1130.00	58.00	7.80	10.00	Logging
MAR 29, 1997	3222.00	0.00	0.00	1130.00	58.00	7.80	10.00	Wiper trip, log, run liner.

DEVIATION SURVEYS

Measured Depth (m)	Angle of Inclination (Degree)	Azimuth (Degree)	T.V.D. (m)	Latitude (m)	Departure (m)	Vert. Section (m)	Dog Leg Severity (Deg/30m)
29.00	0.25	N/A	N/A	N/A	N/A	N/A	N/A
57.00	0.50	N/A	N/A	N/A	N/A	N/A	N/A
85.00	0.75	N/A	N/A	N/A	N/A	N/A	N/A
94.00	0.75	N/A	N/A	N/A	N/A	N/A	N/A
112.00	0.75	N/A	N/A	N/A	N/A	N/A	N/A
130.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
148.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
160.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
175.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
184.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
194.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
203.00	2.25	N/A	N/A	N/A	N/A	N/A	N/A
210.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
224.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
233.50	2.12	N/A	N/A	N/A	N/A	N/A	N/A
243.00	2.12	N/A	N/A	N/A	N/A	N/A	N/A
253.00	2.75	N/A	N/A	N/A	N/A	N/A	N/A
262.00	3.00	262.500	261.90	0.55	-6.21	0.55	0.93
279.00	2.88	267.000	278.87	0.63	-7.07	0.63	0.47
300.00	2.75	262.500	299.85	0.73	-8.10	0.73	0.36
318.00	2.88	267.500	317.83	0.80	-8.98	0.80	0.45
337.00	3.00	263.500	336.80	0.88	-9.95	0.88	0.38
356.50	3.00	263.500	356.28	1.00	-10.96	1.00	0.00
374.71	2.50	265.500	374.47	1.08	-11.83	1.08	0.84
392.00	2.25	260.500	391.74	1.17	-12.54	1.17	0.56
413.00	1.75	262.500	412.78	0.55	-8.67	0.55	0.72
431.00	1.50	254.500	430.77	0.45	-9.17	0.45	0.56
441.00	1.50	252.500	440.77	0.38	9.42	0.38	0.16
476.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
505.00	0.88	N/A	N/A	N/A	N/A	N/A	N/A
524.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
581.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A

Measured Depth (m)	Angle of Inclination (Degree)	Azimuth (Degree)	T.V.D. (m)	Latitude (m)	Departure (m)	Vert. Section (m)	Dog Leg Severity (Deg/30m)
601.00	1.00	N/A	N/A	N/A	N/A	N/A	N/A
639.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
661.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
680.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
704.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
714.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
723.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
741.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
761.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
770.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
780.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
798.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
808.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
817.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
828.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
859.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
878.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
934.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
952.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
982.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
1010.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
1039.00	1.88	N/A	N/A	N/A	N/A	N/A	N/A
1049.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
1068.00	2.25	N/A	N/A	N/A	N/A	N/A	N/A
1078.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
1096.00	2.25	N/A	N/A	N/A	N/A	N/A	N/A
1112.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
1125.00	2.25	N/A	N/A	N/A	N/A	N/A	N/A
1153.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
1183.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
1210.00	3.00	N/A	N/A	N/A	N/A	N/A	N/A
1220.00	3.00	N/A	N/A	N/A	N/A	N/A	N/A
1230.00	2.88	N/A	N/A	N/A	N/A	N/A	N/A

Measured Depth (m)	Angle of Inclination (Degree)	Azimuth (Degree)	T.V.D. (m)	Latitude (m)	Departure (m)	Vert. Section (m)	Dog Leg Severity (Deg/30m)
1260.00	2.50	N/A	N/A	N/A	N/A	N/A	N/A
1277.00	3.00	N/A	N/A	N/A	N/A	N/A	N/A
1291.00	3.12	N/A	N/A	N/A	N/A	N/A	N/A
1310.00	2.75	N/A	N/A	N/A	N/A	N/A	N/A
1339.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
1365.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
1393.00	1.00	N/A	N/A	N/A	N/A	N/A	N/A
1443.00	1.00	N/A	N/A	N/A	N/A	N/A	N/A
1491.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
1520.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
1562.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
1609.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
1703.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A
1751.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
1827.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
1932.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
2128.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
2219.00	2.25	N/A	N/A	N/A	N/A	N/A	N/A
2371.00	1.75	N/A	N/A	N/A	N/A	N/A	N/A
2467.00	1.25	N/A	N/A	N/A	N/A	N/A	N/A
2658.00	1.50	N/A	N/A	N/A	N/A	N/A	N/A
2753.00	3.00	N/A	N/A	N/A	N/A	N/A	N/A
2890.00	2.90	N/A	N/A	N/A	N/A	N/A	N/A
2928.00	3.25	N/A	N/A	N/A	N/A	N/A	N/A
2980.00	3.00	N/A	N/A	N/A	N/A	N/A	N/A
3057.00	2.75	N/A	N/A	N/A	N/A	N/A	N/A
3212.00	2.00	N/A	N/A	N/A	N/A	N/A	N/A

LOGGING REPORT

Date: FEB 28, 1997
Logging Company: SCHLUMBERGER
Logging Engineer: Dan Gimpelj
Truck Number: 2025
Hole Size: 311.00mm
Depth (Driller's): 1710.00m
Depth (Strap): 1712.30m
Depth (Logger's): 1701.00m
Last Casing: **Depth :** 454.00m **Size:** 339.70mm **Weight:** 81.10kg/m

MUD DETAILS

Mud Type: Gel / Chem
Mud Type: 1190.00kg/m**3
Viscosity: 119.00sec/l
pH: 9.00
Fluid Loss: 5.40cc/30min
Salinity: N/Appm

OPERATIONS SUMMARY

Hole conditions prior to logging: Good
Circulation time after T.D.: 1.5 hours
Number of Dummy Trips: 3
Description of Dummy Trips: 15 stand, 1 to casing
Number of Runs in Hole: **Total:** 2 **Suceeded:** 2 **Failed :** 0

LOGGING SEQUENCE

Logs	Time (Hrs)	Interval From (m)	Interval To (m)	Remarks
AITH ran as Phasor	1.80	1697.60	454.00	Ran in combination with Sonic
BHC Sonic	1.80	1689.10	20.00	Ran in Combination with AITH.
Platform Express Density-Neutron-GR	1.80	1700.20	454.00	Ran in combination with ML.
Platform Express Microlog	1.80	1700.20	454.00	Ran in combination with TLD.

Total Hours Logging: 7.20

FURTHER REMARKS

No problems running tools. About 10m of fill.

Date: MAR 10, 1997
Logging Company: N/A
Logging Engineer: N/A
Truck Number: N/A
Hole Size: 215.90mm
Depth (Driller's): 2397.00m
Depth (Strap): N/Am
Depth (Logger's): N/Am
Last Casing: Depth : 1712.70m **Size:** 244.50mm **Weight:** 69.94kg/m

MUD DETAILS

Mud Type: N/A
Mud Type: N/Akg/m**3
Viscosity: N/Asec/l
pH: N/A
Fluid Loss: N/Acc/30min
Salinity: N/Appm

OPERATIONS SUMMARY

Hole conditions prior to logging: N/A
Circulation time after T.D.: N/A
Number of Dummy Trips: N/A
Description of Dummy Trips: N/A
Number of Runs in Hole: Total: 0 **Suceeded:** N/A **Failed :** N/A

LOGGING SEQUENCE

Logs	Time (Hrs)	Interval From (m)	Interval To (m)	Remarks

Total Hours Logging: 7.20

FURTHER REMARKS

This section was air drilled. Logs waived by NEB.

Date: MAR 25, 1997
Logging Company: Schlumberger
Logging Engineer: Nick McInnes
Truck Number: 3049
Hole Size: 152.00mm
Depth (Driller's): 3220.00m
Depth (Strap): 3221.00m
Depth (Logger's): 3222.00m
Last Casing: Depth : 2893.00m **Size:** 177.80mm **Weight:** 43.16kg/m

MUD DETAILS

Mud Type: Gel Chem
Mud Type: 1130.00kg/m**3
Viscosity: 56.00sec/l
pH: 9.50
Fluid Loss: 7.20cc/30min
Salinity: N/Appm

OPERATIONS SUMMARY

Hole conditions prior to logging: Good
Circulation time after T.D.: 12 hours, WO loggers
Number of Dummy Trips: 1
Description of Dummy Trips: Between run 4 and 5
Number of Runs in Hole: Total: 5 **Succeeded:** 3 **Failed :** 2

LOGGING SEQUENCE

Logs	Time (Hrs)	Interval From (m)	Interval To (m)	Remarks
AITH-TLD-CNL-ML-GR	12.00	3219.60	2894.00	CNL-GR pulled to 1640m. TLD and ML failed.
DSI-GR	6.00	3214.00	2894.00	No problems
FMS-GR	6.00	3221.50	2894.00	No problems
ARI-LDT-CNL-ML-GR	8.00	3221.50	2894.00	CNL-GR pulled through casing, Lat and ML failed, LDT?
DLT-LDT-CNL-ML-GR	6.00	3217.50	2894.00	GR-CNL pulled through casing, LDT?

Total Hours Logging: 45.20

FURTHER REMARKS

Equipment couldn't handle BHT. Last run was with rewired rope socket. Hole was circulated between runs 4 and 5. Logging times estimated.

FORMATION TOPS

Kelly Bushing : 433.32m

Formation	Prognosis (m)	Sample Top (m)	Sample TVD (m)	Log Top (m)	Log TVD (m)	Subsea (m)
FANTASQUE	459.00	144.00	N/A	N/A	N/A	289.32
FLETT	494.00	179.00	N/A	N/A	N/A	254.32
SHUNDA	N/A	983.00	N/A	975.00	N/A	-541.68
PEKISKO	N/A	1116.00	N/A	1119.00	N/A	-685.68
BANFF	1113.00	1164.00	N/A	1163.00	N/A	-729.68
EXSHAW	1659.00	1647.00	N/A	1646.50	N/A	-1213.18
KOTCHO	1669.00	1662.00	N/A	1665.00	N/A	-1231.68
TETCHO	2024.00	2030.00	N/A	2030.00	N/A	-1596.68
KAKISA	N/A	2139.00	N/A	2138.00	N/A	-1704.68
FORT SIMPSON	2114.00	2161.50	N/A	2162.00	N/A	-1728.68
MUSKWA	2754.00	2812.50	N/A	2822.00	N/A	-2388.68
NAHANNI	2829.00	2886.50	N/A	2889.00	N/A	-2455.68
MANATOE	N/A	3129.00	N/A	N/A	N/A	-2695.68
ARNICA	N/A	3184.00	N/A	N/A	N/A	-2750.68
TOTAL DEPTH	3219.00	3220.00	N/A	3222.00	N/A	-2788.68

FORMATION EVALUATIONS

Formation: FANTASQUE
Age: PERMIAN
Member: N/A
Sample Top: 144.00m
Log Top: N/A
Thickness: N/A
Sample TVD: N/A
Log TVD: N/A
Subsea: 289.32m

Evaluation: Not sampled.

Conclusion: Estimated top from ROP surface.

Formation: FLETT
Age: MISSISSIPPIAN
Member: N/A
Sample Top: 179.00m
Log Top: N/A
Thickness: N/A
Sample TVD: N/A
Log TVD: N/A
Subsea: 254.32m

Evaluation: Upper Flett 179 to 695m is interbedded LIMESTONE, SHALE and DOLOMITE. Potential reservoirs in DOLOMITE at 292.5 to 297.5m, 320 to 360m, 421.5 to 423.5m, 459 to 463m, 471.5 to 476.5m, 483 to 488.5m, 520 to 531m and 547 to 551m (amber cut). Lower Flett 695 to 975m is interbedded LIMESTONE and SHALE with occasional CHERT.

Conclusion: Top estimated from ROP surface. Best potential in DOL 547 - 551m. No apparent reservoir in lower Flett.

Formation: SHUNDA
Age: MISSISSIPPIAN
Member: N/A
Sample Top: 983.00m
Log Top: 975.00m
Thickness: N/A
Sample TVD: N/A
Log TVD: N/A
Subsea: -541.68m

Evaluation: Upper Shunda is predominantly calcareous SHALE with occasional carbonate beds. Lower Shunda is predominantly tight LIMESTONE with interbedded SHALE. Slight gas response at 1085m, probable healed fractures.

Conclusion: No apparent reservoir potential.

Formation: PEKISKO
Age: MISSISSIPPIAN
Member: N/A
Sample Top: 1116.00m
Log Top: 1119.00m
Thickness: N/A
Sample TVD: N/A
Log TVD: N/A
Subsea: -685.68m

Evaluation: Top is DOLOMITE 1116 to 1119m with trace of pin point porosity. The remainder is calcareous SHALE with occasional tight LIMESTONE beds.

Conclusion: No apparent reservoir potential.

Formation: BANFF
Age: MISSISSIPPIAN
Member: N/A

Sample Top:	1164.00m	**Sample TVD:**	N/A
Log Top:	1163.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-729.68m

Evaluation: Predominantly calcareous SHALE with occasional thin argillaceous LIMESTONE beds. Sniff of gas from fractures 1410 to 1415m, 1510 to 1515m, 1543 to 1548m and 1573 to 1575m.

Conclusion: No apparent reservoir potential.

Formation:	EXSHAW		
Age:	MISSISSIPPIAN		
Member:	N/A		
Sample Top:	1647.00m	**Sample TVD:**	N/A
Log Top:	1646.50m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-1213.18m

Evaluation: SHALE dark brown, dark brown to black, earthy to slightly waxy, petroliferous odor, no fluorescence, fissile, predominantly blocky, common fractures, common slickensided, trace of nodular and disseminated pyrite, gassy mud.

Conclusion: No apparent reservoir potential.

Formation:	KOTCHO		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	1662.00m	**Sample TVD:**	N/A
Log Top:	1665.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-1231.68m

Evaluation: Upper Kotcho is light to medium gray slightly calcareous SHALE, Middle Kotcho is interbedded calcareous SHALE and tight LIMESTONE, Lower Kotcho is medium gray calcareous SHALE.

Conclusion: No reservoir potential.

Formation:	TETCHO		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	2030.00m	**Sample TVD:**	N/A
Log Top:	2030.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-1596.68m

Evaluation: Interbedded argillaceous LIMESTONE and calcareous SHALE.

Conclusion: Puff of gas while drilling at top of Tetcho and after surveys. No significant reservoir potential.

Formation:	KAKISA		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	2139.00m	**Sample TVD:**	N/A
Log Top:	2138.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-1704.68m

Evaluation: LIMESTONE light brown, dark gray brown, dark gray to black, very argillaceous in part, cryptocrystalline, mudstone, tight, trace of sparry calcite, probable healed fractures

Conclusion: No apparent reservoir potential.

Formation:	FORT SIMPSON		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	2161.50m	**Sample TVD:**	N/A
Log Top:	2162.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-1728.68m

Evaluation: Predominantly medium gray SHALE

Conclusion: No reservoir potential.

Formation:	MUSKWA		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	2812.50m	**Sample TVD:**	N/A
Log Top:	2822.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-2388.68m

Evaluation: Dark gray to black SHALE, calcareous in part, blocky to platy, slickensided in part, siliceous in part, probable fractures, common nodular and disseminated pyrite, trace af CHERT, trace of sparry calcite and petroliferous odor in lower Muskwa.

Conclusion: No reservoir potential.

Formation:	NAHANNI		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	2886.50m	**Sample TVD:**	N/A
Log Top:	2889.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-2455.68m

Evaluation: 2890.5 to 2926m DOLOMITE with veined sparry infilling, trace of pin point, vuggy and fracture porosity. 2926 to 3008m LIMESTONE predominantly cryptocrystalline, tight. Probable porous interbedded DOLOMITE at 2990 and 2995m. 3008 to 3084m argillaceous DOLOMITE with sparry veins, probable pin point, vuggy and fracture porosity. 3084 to 3112m predominantly tight LIMESTONE with thin interbedded SHALE. 3112 to 3130m predominantly DOLOMITE with interbedded SHALE

Conclusion: Good reservoir potential throughout dolomites.

Formation:	MANATOE		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	3129.00m	**Sample TVD:**	N/A
Log Top:	N/A	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-2695.68m

Evaluation: Predominantly sparry secondary hydrothermal DOLOMITE, probable vuggy and fracture porosity throughout.

Conclusion: Good reservoir potential.

Formation:	ARNICA		
Age:	DEVONIAN		
Member:	N/A		
Sample Top:	3184.00m	**Sample TVD:**	N/A
Log Top:	N/A	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-2750.68m

Evaluation: Predominantly DOLOMITE light to medium gray brown, slightly argillaceous in part, cryptocrystalline to microcrystalline, finely crystalline in part, predominantly mudstone to wackestone, sucrosic packstone in part, no stain, no fluorescence, no visible porosity.

Conclusion: No visible reservoir potential.

Formation:	TOTAL DEPTH		
Age:	N/A		
Member:	N/A		
Sample Top:	3220.00m	**Sample TVD:**	N/A
Log Top:	3222.00m	**Log TVD:**	N/A
Thickness:	N/A	**Subsea:**	-2788.68m

Evaluation: N/A

Conclusion: N/A

SAMPLE DESCRIPTIONS

Well Name: PARAMOUNT ET AL BOVIE LAKE C-76
Location: 60 20' 122 45'

250.00 to 255.00m **Interval: 5.00m**	**SHALE:** 20%, medium gray, dark gray, fissile, predominantly platy **LIMESTONE:** 80%, light brown white mottled medium gray, cryptocrystalline, mudstone, trace glauconitic, trace with nodular pyrite
255.00 to 260.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light gray white mottled medium gray, light brown, medium brown, cryptocrystalline mudstone, minor medium brown, dark gray brown, microcrystalline wackestone, slightly argillaceous, silty in part, trace dolomitic, no stain, no visible porosity
260.00 to 265.00m **Interval: 5.00m**	**SHALE:** 20%, medium gray, dark gray, fissile, platy, dark gray to bk glossy, fissile, platy **LIMESTONE:** 80%, as above
265.00 to 270.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light brown white mottled medium gray, predominantly cryptocrystalline mudstone, minor microcrystalline wackestone, no stain, no visible porosity
270.00 to 275.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light brown cryptocrystalline, light brown white mottled medium gray cryptocrystalline mudstone, trace medium brown cryptocrystalline to microcrystalline, mudstone to wackestone, tight
275.00 to 280.00m **Interval: 5.00m**	**LIMESTONE:** 100%, as above, medium to dark gray, cryptocrystalline mudstone, slightly argillaceous
280.00 to 285.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light brown, light gray brown, cryptocrystalline mudstone, mottled in part, LIMESTONE medium gray brown cryptocrystalline to microcrystalline, mudstone to wackestone, slightly dolomitic, no stain, no porosity
285.00 to 290.00m **Interval: 5.00m**	**LIMESTONE:** 100%, cream to light brown, cryptocrystalline, mudstone, mottled in part, no stain, no porosity
290.00 to 293.00m **Interval: 3.00m**	**DOLOMITE:** 100%, medium gray brown, cryptocrystalline to finely crystalline, mudstone to wackestone, no stain, very weak blooming wet cut fluorescence, weak dry cut fluorescence, scattered pin point and micro vuggy porosity 6-8%, low permeability
293.00 to 295.00m **Interval: 2.00m**	**DOLOMITE:** 20%, as above **LIMESTONE:** 80%, cream to light brown, mottled in part, cryptocrystalline mudstone, tight
295.00 to 300.00m **Interval: 5.00m**	**LIMESTONE:** 40%, as above **DOLOMITE:** 60%, medium gray brown, cryptocrystalline to microcrystalline, mudstone to wackestone, predominantly tight, no stain, very weak streaming wet cut fluorescence, trace of pin point porosity 4-5%, low permeability
300.00 to 305.00m **Interval: 5.00m**	**DOLOMITE:** 10%, as above

	LIMESTONE: 90%, light brown to cream, mottled medium brown, cryptocrystalline mudstone, LIMESTONE medium gray brown, cryptocrystalline to microcrystalline, predominantly mudstone, tight
305.00 to 310.00m Interval: 5.00m	DOLOMITE: 10%, as above
	LIMESTONE: 90%, as above
310.00 to 315.00m Interval: 5.00m	LIMESTONE: 100%, cream to light brown, mottled medium brown, medium gray, cryptocrystalline, mudstone, no stain, no visible porosity
315.00 to 320.00m Interval: 5.00m	SHALE: 20%, dark gray, bk, glossy, fissile, platy
	LIMESTONE: 80%, as above
320.00 to 322.50m Interval: 2.50m	DOLOMITE: 100%, medium brown, cryptocrystalline to microcrystalline, mudstone to wackestone, trace of sucrosic packstone, no stain, very weak blooming wet cut fluorescence, predominantly tight, trace of scattered pin point porosity, trace of intercrystalline porosity 4-6%
322.50 to 325.00m Interval: 2.50m	DOLOMITE: 100%, medium brown, light to medium gray, cryptocrystalline to microcrystalline, mudstone, calcareous in part, no stain, very weak dry cut fluorescence, no visible porosity
325.00 to 330.00m Interval: 5.00m	DOLOMITE: 100%, light brown, mottled in part, cryptocrystalline to microcrystalline, predominantly mudstone, minor wackestone, no stain, very weak blooming wet cut fluorescence, trace of pin point porosity 3-4%
330.00 to 335.00m Interval: 5.00m	DOLOMITE: 100%, as above, trace light to medium brown, finely crystalline sucrosic packstone, very weak blooming wet cut fluorescence, trace of intercrystalline porosity 4-6%
335.00 to 340.00m Interval: 5.00m	DOLOMITE: 100%, light to medium brown, mottled, predominantly cryptocrystalline mudstone, minor microcrystalline wackestone, no stain, very weak blooming wet cut fluorescence, trace of scattered pin point and micro vuggy porosity 6-8%
340.00 to 345.00m Interval: 5.00m	DOLOMITE: 100%, as above
345.00 to 350.00m Interval: 5.00m	DOLOMITE: 100%, as above
350.00 to 355.00m Interval: 5.00m	DOLOMITE: 100%, light to medium brown, mottled, predominantly cryptocrystalline, minor microcrystalline, mudstone, slightly calcareous in part, no stain, no fluorescence, no visible porosity
355.00 to 360.00m Interval: 5.00m	DOLOMITE: 100%, light to medium brown, mottled, predominantly cryptocrystalline, minor microcrystalline, mudstone, minor wackestone, slightly calcareous, no stain, no fluorescence, no visible porosity, DOLOMITE dark gray brown, cryptocrystalline, mudstone, slightly argillaceous, tight.
360.00 to 365.00m Interval: 5.00m	DOLOMITE: 40%, as above
	SHALE: 20%, dark gray, fissile, blocky, very calcareous

	LIMESTONE: 40%, medium gray, crpx to microcrystalline, mudstone, dolomitic, slightly argillaceous, LIMESTONE dark gray, cryptocrystalline, mudstone, very argillaceous, dolomitic
365.00 to 370.00m Interval: 5.00m	LIMESTONE: 100%, light gray white, medium gray, cryptocrystalline, mudstone, no stain, no fluorescence, no porosity, LIMESTONE medium gray, cryptocrystalline, argillaceous
370.00 to 375.00m Interval: 5.00m	LIMESTONE: 70%, as above
	SHALE: 30%, dark gray to black, fissile, blocky, calcareous
375.00 to 380.00m Interval: 5.00m	SHALE: 10%, as above
	LIMESTONE: 90%, light gray white, light brown, medium to dark brown, predominantly cryptocrystalline mudstone, mottled in part, chalky in part, no stain, no porosity
380.00 to 385.00m Interval: 5.00m	LIMESTONE: 100%, light gray white, light brown, medium to dark brown, medium gray, predominantly cryptocrystalline mudstone, mottled in part, chalky in part, very argillaceous in part, no stain, no fluorescence, no porosity
385.00 to 390.00m Interval: 5.00m	LIMESTONE: 20%, as above
	DOLOMITE: 80%, medium gray brown, dark gray brown, microcrystalline, wackestone, argillaceous, no stain, no fluorescence, no visible porosity
390.00 to 395.00m Interval: 5.00m	LIMESTONE: 100%, light brown mottled gray, cryptocrystalline mudstone, medium gray brown cryptocrystalline to microcrystalline, mudstone to wackestone, tight
395.00 to 400.00m Interval: 5.00m	LIMESTONE: 80%, as above
	SHALE: 10%, dark gray, fissile, platy, calcareous
	DOLOMITE: 10%, dark gray, microcrystalline, wackestone, argillaceous, tight
400.00 to 405.00m Interval: 5.00m	LIMESTONE: 40%, light brown mottled gray, medium gray argillaceous, cryptocrystalline mudstone
	DOLOMITE: 50%, medium gray brown, dark gray to brown, cryptocrystalline to microcrystalline, mudstone to wackestone, slightly to very argillaceous in part, no stain, no fluorescence, no visible porosity
	SHALE: 10%, dark gray, calcareous, dolomitic, fissile, platy to blocky
405.00 to 410.00m Interval: 5.00m	LIMESTONE: 100%, medium brown, medium gray, cryptocrystalline to microcrystalline, mudstone, dolomitic, slightly argillaceous in part, no stain, no porosity
410.00 to 415.00m Interval: 5.00m	SHALE: 20%, medium gray, fissile, blocky, calcareous
	LIMESTONE: 80%, as above, light gray white, chalky in part, mottled light brown

415.00 to 420.00m **Interval: 5.00m**	**LIMESTONE:** 100%, as above, light brown mottled, medium brown, dark brown, predominantly cryptocrystalline, mudstone, no stain, no porosity, trace of microcrystalline wackestone
420.00 to 422.50m **Interval: 2.50m**	**LIMESTONE:** 70%, as above **DOLOMITE:** 30%, light to medium brown mottled, predominantly cryptocrystalline mudstone, minor microcrystalline wackestone, trace finely crystalline wackestone, minor spotty oil stain, weak dry fluorescence, strong blooming wet cut fluorescence, trace of scattered pin point and micro vuggy porosity 8-10%, faint petroliferous odor, probable permeability
422.50 to 425.00m **Interval: 2.50m**	**LIMESTONE:** 100%, light to medium gray brown mottled, medium brown, cryptocrystalline mudstone, chalky in part, predominantly dolomitic, tight, trace of DOLOMITE as above, trace of SHALE dark gray, fissile, platy to blocky, calcareous
425.00 to 430.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light to medium mottled gray brown, light to medium brown, cryptocrystalline mudstone, tight, LIMESTONE medium to dark gray brown, argillaceous in part, no stain, no fluorescence, trace of pin point porosity, minor translucent to chalky secondary calcite, trace of LIMESTONE dark gray to black argillaceous, trace of SHALE dark gray, fissile, platy
430.00 to 435.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light to dark mottled gray brown, dark brown, cryptocrystalline mudstone, tight, no stain, no porosity, trace of translucent calcite, trace of SHALE as above
435.00 to 440.00m **Interval: 5.00m**	**LIMESTONE:** 100%, cream to light brown, mottled light to medium gray, cryptocrystalline mudstone, tight, trace of translucent calcite
440.00 to 445.00m **Interval: 5.00m**	**LIMESTONE:** 100%, as above
445.00 to 450.00m **Interval: 5.00m**	**SHALE:** 10%, dark gray, fissile, blocky to platy, calcareous **LIMESTONE:** 90%, as above
450.00 to 453.00m **Interval: 3.00m**	**SHALE:** 10%, as above **LIMESTONE:** 90%, as above
453.00 to 455.00m **Interval: 2.00m**	**LIMESTONE:** 100%, light gray translucent to light brown mottled gray, cryptocrystalline to microcrystalline, predominantly mudstone, trace of sparry calcite, trace of nodular and disseminated pyrite, minor 0-1-0 G cement
455.00 to 460.00m **Interval: 5.00m**	**LIMESTONE:** 80%, as above **DOLOMITE:** 20%, medium brown, cryptocrystalline to microcrystalline, mudstone to wackestone, calcareous, trace veined with sparry calcite and dolomite infilling, trace of spotty oil stain, very weak wet cut fluorescence, trace of pin point porosity
460.00 to 463.00m **Interval: 3.00m**	**DOLOMITE:** 100%, medium to dark gray, microcrystalline, mudstone to wackestone, argillaceous, trace of oil stain, fair blooming wet cut fluorescence, trace of pin point porosity, probable fractures at 456 and 458.5m with sparry dolomite infilling

463.00 to 465.00m **Interval: 2.00m**	**LIMESTONE:** 70%, light gray white, light brown mottled light to medium gray, predominantly cryptocrystalline mudstone, tight
	DOLOMITE: 30%, as above, light to medium brown, microcrystalline, mudstone to wackestone, slightly calcareous, no stain, no visible porosity
465.00 to 467.50m **Interval: 2.50m**	**LIMESTONE:** 100%, light gray white, light brown mottled gray, cryptocrystalline, mudstone, no stain, no porosity, trace of sparry calcite
467.50 to 470.00m **Interval: 2.50m**	**LIMESTONE:** 100%, light brown, light brown mottled gray, cryptocrystalline, mudstone, tight, trace of sparry calcite
470.00 to 475.00m **Interval: 5.00m**	**DOLOMITE:** 100%, medium gray, cryptocrystalline to microcrystalline, mudstone to wackestone, argillaceous, trace of dead oil stain. trace of pin point porosity, trace of sparry calcite, probable fracture at 474.8m
475.00 to 480.00m **Interval: 5.00m**	**DOLOMITE:** 30%, as above
	LIMESTONE: 70%, light brown, cryptocrystalline mudstone, medium gray microcrystalline to finely crystalline, predominantly wackestone, slightly argillaceous, no stain, no fluorescence, no porosity, trace of sparry calcite
480.00 to 485.00m **Interval: 5.00m**	**LIMESTONE:** 20%, as above
	DOLOMITE: 80%, light gray to dark gray, cryptocrystalline to microcrystalline, mudstone to wackestone, argillaceous in part, trace of dead oil stain, trace of pin point porosity, trace veined with sparry calcite, probable fracture at 484.4m
485.00 to 490.00m **Interval: 5.00m**	**DOLOMITE:** 10%, as above
	LIMESTONE: 90%, light gray white, light brown, medium brown, cryptocrystalline, mudstone, tight
490.00 to 495.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light gray white, light brown, light brown mottled gray, medium gray, cryptocrystalline mudstone, tight
495.00 to 500.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light brown white, light brown mottled gray, cryptocrystalline mudstone, tight
500.00 to 504.00m **Interval: 4.00m**	**DOLOMITE:** 50%, medium gray brown, cryptocrystalline to microcrystalline, mudstone, slightly argillaceous, calcareous, no stain, no porosity
	LIMESTONE: 50%, as above, medium to dark gray, cryptocrystalline mudstone, argillaceous, tight
504.00 to 510.00m **Interval: 6.00m**	**LIMESTONE:** 80%, medium brown mottled gray, dark gray brown argillaceous, cryptocrystalline mudstone, tight, trace of sparry calcite
	SHALE: 20%, dark gray, dark gray brown, calcareous, blocky
510.00 to 515.00m **Interval: 5.00m**	**LIMESTONE:** 30%, as above
	DOLOMITE: 70%, light to medium brown, cryptocrystalline, mudstone, calcareous, microcrystalline in part, argillaceous in part, tight

515.00 to 520.00m **Interval: 5.00m**	**LIMESTONE:** 90%, light gray, medium gray, cryptocrystalline to microcrystalline, predominantly mudstone, slightly argillaceous in part, dolomitic, tight
	DOLOMITE: 10%, light gray brown, cryptocrystalline to finely crystalline, predominantly mudstone, minor wackestone to packstone, patchy oil stain, fair dry, strong blooming wet cut fluorescence, trace intercrystalline and pin point porosity, probable fracture porosity 6-8%
520.00 to 525.00m **Interval: 5.00m**	**DOLOMITE:** 100%, light to medium brown, dark brown, cryptocrystalline to microcrystalline, predominantly mudstone, minor wackestone, trace of oil stain, faint blooming wet cut fluorescence, no visible porosity, probable fracture porosity 522-523, 524-526m, no apparent permeability
525.00 to 530.00m **Interval: 5.00m**	**DOLOMITE:** 100%, as above, probable fractures at 528.8 and 529.4m
530.00 to 535.00m **Interval: 5.00m**	**LIMESTONE:** 90%, light to medium gray, cryptocrystalline mudstone, argillaceous, slightly dolomitic, tight, trace of sparry calcite
	DOLOMITE: 10%, as above
535.00 to 540.00m **Interval: 5.00m**	**LIMESTONE:** 90%, medium gray cryptocrystalline mudstone, argillaceous, dolomitic in part, no stain, no fluorescence, no porosity
	SHALE: 10%, dark gray calcareous, platy
540.00 to 545.00m **Interval: 5.00m**	**LIMESTONE:** 100%, as above
545.00 to 550.00m **Interval: 5.00m**	**DOLOMITE:** 100%, light brown, cryptocrystalline to microcrystalline, finely crystalline in part, predominantly mudstone, trace wackestone to packstone, scattered oil stain, faint dry fluorescence, strong blooming wet cut fluorescence, amber cut, pin point, microvug and fracture porosity 12-14%, probable fractures at 547.8 and 548.2m
550.00 to 557.00m **Interval: 7.00m**	**LIMESTONE:** 70%, light to medium gray, cryptocrystalline, mudstone, argillaceous, dolomitic in part, tight, trace of sparry calcite
	DOLOMITE: 20%, as above
	SHALE: 10%, dark gray calcareous, platy
557.00 to 560.00m **Interval: 3.00m**	**DOLOMITE:** 10%, as above
	LIMESTONE: 90%, light to medium brown, light gray white, cryptocrystalline mudstone, dolomitic in part, no stain, tight
560.00 to 565.00m **Interval: 5.00m**	**LIMESTONE:** 100%, as above
565.00 to 570.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light gray white, light brown cryptocrystalline mudstone, dolomitic in part, no stain, tight
570.00 to 575.00m **Interval: 5.00m**	**LIMESTONE:** 100%, light brown, cryptocrystalline, mudstone, no stain, tight, trace of sparry calcite
575.00 to 580.00m **Interval: 5.00m**	**LIMESTONE:** 90%, as above, medium gray cryptocrystalline argillaceous mudstone
	SHALE: 10%, medium to dark gray, calcareous, fissile, platy

580.00 to 585.00m Interval: 5.00m	**LIMESTONE: 100%, light brown, cryptocrystalline, mudstone, no stain, tight, trace of sparry calcite**
585.00 to 590.00m Interval: 5.00m	**LIMESTONE: 100%, as above**
590.00 to 595.00m Interval: 5.00m	**LIMESTONE: 100%, as above, trace light gray, microcrystalline in part, dolomitic**
595.00 to 600.00m Interval: 5.00m	**LIMESTONE: 100%, as above**
600.00 to 605.00m Interval: 5.00m	**LIMESTONE: 60%, as above, light gray cryptocrystalline mudstone, argillaceous, trace of sparry calcite** **SHALE: 40%, medium to dark gray, platy, calcareous**
605.00 to 610.00m Interval: 5.00m	**LIMESTONE: 70%, light gray, light brown cryptocrystalline, mudstone, medium to dark gray argillaceous, cryptocrystalline, mudstone** **SHALE: 30%, medium gray, dark gray, calcareous, blocky to platy**
610.00 to 615.00m Interval: 5.00m	**LIMESTONE: 70%, as above** **SHALE: 30%, as above, trace dark gray to black slickensided**
615.00 to 620.00m Interval: 5.00m	**LIMESTONE: 50%, as above, medium to dark gray argillaceous, cryptocrystalline mudstone, tight** **SHALE: 50%, medium to dark gray, dark gray, calcareous, blocky to platy**
620.00 to 625.00m Interval: 5.00m	**LIMESTONE: 60%, light to medium gray, cryptocrystalline mudstone, tight, medium to dark gray argillaceous cryptocrystalline mudstone, tight** **SHALE: 40%, medium gray, dark gray, calcareous, blocky to platy**
625.00 to 630.00m Interval: 5.00m	**LIMESTONE: 70%, light brown, light brown mottled gray, light to medium gray, cryptocrystalline mudstone, tight** **SHALE: 30%, medium to dark gray, calcareous**
630.00 to 635.00m Interval: 5.00m	**SHALE: 50%, as above** **LIMESTONE: 50%, as above**
635.00 to 640.00m Interval: 5.00m	**LIMESTONE: 60%, light to medium gray, light to medium brown, cryptocrystalline, mudstone, argillaceous in part, tight** **SHALE: 40%, medium to dark gray, dark gray calcareous, trace slickensided**
640.00 to 645.00m Interval: 5.00m	**LIMESTONE: 70%, light brown, light gray, light to medium brown mottled gray, light to medium gray argillaceous, cryptocrystalline mudstone, tight** **SHALE: 30%, as above**
645.00 to 651.00m Interval: 6.00m	**LIMESTONE: 60%, as above** **SHALE: 40%, as above**

651.00 to 655.00m Interval: 4.00m	SHALE: 40%, dark gray to black, calcareous, blocky to platy
	LIMESTONE: 60%, light gray, medium gray, dark gray argillaceous, cryptocrystalline, mudstone, tight
655.00 to 660.00m Interval: 5.00m	SHALE: 90%, dark gray, medium gray, calcareous, platy to blocky, trace slickensided
	LIMESTONE: 10%, as above
660.00 to 665.00m Interval: 5.00m	SHALE: 70%, as above
	LIMESTONE: 30%, light gray white, light to gray mottled, medium gray argillaceous, cryptocrystalline, mudstone, tight
665.00 to 670.00m Interval: 5.00m	LIMESTONE: 40%, as above
	SHALE: 60%, as above, probable fracture @667, 668.2, 668.8 and 671.8m
670.00 to 675.00m Interval: 5.00m	LIMESTONE: 80%, light gray white, light brown, medium brown mottled gray, cryptocrystalline, mudstone, tight, trace of sparry calcite
	SHALE: 20%, medium to dark gray, calcareous
675.00 to 680.00m Interval: 5.00m	LIMESTONE: 70%, light brown, light gray white, medium brown mottled, light gray, medium gray argillaceous, cryptocrystalline, mudstone, tight
	SHALE: 30%, dark gray, medium gray calcareous, platy to blocky
680.00 to 685.00m Interval: 5.00m	LIMESTONE: 90%, light to medium gray, light to medium brown, cryptocrystalline, mudstone, argillaceous in part, tight
	SHALE: 10%, as above
685.00 to 690.00m Interval: 5.00m	LIMESTONE: 90%, as above, medium to dark gray argillaceous
	SHALE: 10%, as above
690.00 to 695.00m Interval: 5.00m	LIMESTONE: 20%, as above
	DOLOMITE: 50%, light to medium brown, medium brown, cryptocrystalline to microcrystalline, predominantly mudstone, no stain, no visible porosity
	CHERT: 30%, medium brown, white, dark brown, light blue gray, variegated
695.00 to 700.00m Interval: 5.00m	LIMESTONE: 60%, light gray, light to medium gray slightly argillaceous, medium gray brown argillaceous, cryptocrystalline, mudstone, trace of crinoid and bryozoa fragments
	SHALE: 10%, dark gray to black, calcareous, platy to blocky
	CHERT: 30%, as above
700.00 to 705.00m Interval: 5.00m	LIMESTONE: 60%, light gray, light gray brown, cryptocrystalline to microcrystalline, predominantly mudstone, argillaceous in part, tight, trace of crinoid and bryozoa fragments, trace of disseminated and nodular pyrite

	SHALE: 30%, medium gray, calcareous, blocky to platy
	CHERT: 10%, as above
705.00 to 710.00m Interval: 5.00m	**LIMESTONE:** 80%, light gray, light gray mottled brown, medium gray argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments, trace of CHERT as above
	SHALE: 20%, medium gray, dark gray calcareous, probable fractures at 704, 705 and 706m
710.00 to 715.00m Interval: 5.00m	**LIMESTONE:** 90%, light gray, light brown mottled gray, medium brown, medium gray argillaceous, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above, probable fractures at 710.6, 711.2 and 711.6m
715.00 to 720.00m Interval: 5.00m	**LIMESTONE:** 80%, light gray brown, medium gray argillaceous, medium brown slightly argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments
	SHALE: 20%, medium gray calcareous, platy to blocky
720.00 to 725.00m Interval: 5.00m	**LIMESTONE:** 70%, light gray brown, medium gray brown argillaceous, cryptocrystalline, mudstone, trace of crinoid fragments
	SHALE: 30%, medium gray, dark gray, calcareous, blocky to platy, probable fractures at 720.2 and 720.8m
725.00 to 730.00m Interval: 5.00m	**LIMESTONE:** 60%, light to medium brown, medium gray brown slightly argillaceous, medium gray argillaceous, cryptocrystalline, mudstone, trace of crinoid fragments
	SHALE: 30%, dark gray, medium gray calcareous
	CHERT: 10%, variegated, dark brown, light blue gray
730.00 to 735.00m Interval: 5.00m	**LIMESTONE:** 70%, as above
	SHALE: 30%, as above
735.00 to 740.00m Interval: 5.00m	**LIMESTONE:** 80%, light gray brown, medium gray argillaceous, medium to dark brown ally argillaceous, cryptocrystalline, mudstone, tight, trace of CHERT
	SHALE: 20%, medium to dark gray calcareous, probable fracture at 734.2, 739.4 and 739.8m
740.00 to 745.00m Interval: 5.00m	**LIMESTONE:** 90%, light gray, light gray brown, medium gray brown argillaceous, cryptocrystalline, mudstone, cherty in part, tight, trace of crinoid fragments
	SHALE: 10%, medium gray calcareous, minor CHERT variegated, dark brown, light blue gray
745.00 to 750.00m Interval: 5.00m	**LIMESTONE:** 90%, as above, probable fracture at 749.8m
	CHERT: 10%, as above
750.00 to 755.00m Interval: 5.00m	**LIMESTONE:** 70%, light gray, light gray brown, medium brown, argillaceous in part, cryptocrystalline, mudstone, tight
	SHALE: 30%, medium to dark gray calcareous

755.00 to 760.00m Interval: 5.00m	LIMESTONE: 90%, medium brown, light brown, medium gray brown, argillaceous in part, cryptocrystalline, mudstone, tight, trace of CHERT
	SHALE: 10%, dark gray, medium gray calcareous, blocky to platy
760.00 to 765.00m Interval: 5.00m	LIMESTONE: 80%, as above
	SHALE: 20%, as above
765.00 to 770.00m Interval: 5.00m	LIMESTONE: 90%, light gray brown, light brown, medium gray brown, argillaceous, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above
770.00 to 775.00m Interval: 5.00m	LIMESTONE: 90%, light gray brown, medium brown, medium gray brown, slightly argillaceous, predominantly cryptocrystalline mudstone, microcrystalline in part, tight, trace of CHERT
	SHALE: 10%, dark gray, medium gray calcareous, blocky to platy
775.00 to 780.00m Interval: 5.00m	LIMESTONE: 80%, as above
	SHALE: 20%, as above
780.00 to 785.00m Interval: 5.00m	LIMESTONE: 80%, light brown mottled gray, light gray brown slightly argillaceous, medium gray brown argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments, trace of sparry calcite
	SHALE: 20%, medium gray, fissile, predominantly platy
785.00 to 790.00m Interval: 5.00m	LIMESTONE: 80%, light gray, light brown, medium gray brown, argillaceous, cryptocrystalline mudstone, cherty in part, slightly dolomitic in part
	SHALE: 20%, medium gray, fissile, blocky to platy
790.00 to 795.00m Interval: 5.00m	LIMESTONE: 80%, medium gray, medium gray brown argillaceous, light gray brown, cryptocrystalline, mudstone, tight, trace of crinoid fragments
	SHALE: 20%, medium gray, dark gray slightly calcareous, fissile, predominantly platy
795.00 to 800.00m Interval: 5.00m	LIMESTONE: 90%, medium gray, light gray, argillaceous, light to medium brown mottled gray, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above
800.00 to 805.00m Interval: 5.00m	LIMESTONE: 70%, as above
	SHALE: 30%, medium gray, slightly calcareous, platy
805.00 to 810.00m Interval: 5.00m	LIMESTONE: 90%, medium gray, light gray, medium gray brown, argillaceous, cryptocrystalline, mudstone, tight, common sparry calcite
	SHALE: 10%, as above
810.00 to 815.00m Interval: 5.00m	LIMESTONE: 80%, medium gray, medium gray brown, light gray, argillaceous, cryptocrystalline, mudstone, tight
	SHALE: 20%, medium gray, slightly calcareous, fissile, predominantly platy

815.00 to 820.00m Interval: 5.00m	LIMESTONE: 80%, as above, minor CHERT variegated, dark brown, light blue gray
	SHALE: 20%, as above
820.00 to 825.00m Interval: 5.00m	LIMESTONE: 60%, medium gray, medium gray brown, dark gray, argillaceous, light gray, light brown, cryptocrystalline, mudstone, tight, trace of sparry calcite
	SHALE: 10%, dark gray, medium gray, slightly calcareous
	CHERT: 30%, variegated, dark brown, dark gray, light blue gray, white
825.00 to 830.00m Interval: 5.00m	LIMESTONE: 80%, as above
	SHALE: 10%, as above
	CHERT: 10%, as above
830.00 to 835.00m Interval: 5.00m	LIMESTONE: 90%, dark gray, dark gray brown very argillaceous, medium gray brown cryptocrystalline, mudstone, trace of sparry calcite, trace of CHERT
	SHALE: 10%, dark gray, slightly calcareous, black, slickensided in part
835.00 to 840.00m Interval: 5.00m	LIMESTONE: 60%, medium gray brown, medium brown, light gray brown, dark gray, argillaceous, cryptocrystalline to microcrystalline, mudstone, tight, trace of CHERT
	SHALE: 40%, dark gray calcareous, medium gray slightly calcareous, blocky to platy
840.00 to 845.00m Interval: 5.00m	SHALE: 60%, Tripoli Sample, medium gray, dark gray, slightly calcareous, predominantly platy, dark gray calcareous, blocky
	LIMESTONE: 40%, dark gray argillaceous, light to medium gray, medium brown, cryptocrystalline to microcrystalline, mudstone, tight
845.00 to 850.00m Interval: 5.00m	LIMESTONE: 80%, dark gray brown, medium gray brown argillaceous, light gray white, cryptocrystalline to microcrystalline, mudstone, tight, trace of crinoid fragments
	SHALE: 20%, dark gray calcareous blocky, medium gray fissile platy
850.00 to 855.00m Interval: 5.00m	LIMESTONE: 90%, medium gray argillaceous, light brown mottled gray, medium brown argillaceous, cryptocrystalline, mudstone, tight, minor sparry calcite, trace of sparry calcite
	SHALE: 10%, as above
855.00 to 860.00m Interval: 5.00m	LIMESTONE: 90%, medium gray, dark brown, dark gray argillaceous, light gray, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above
860.00 to 865.00m Interval: 5.00m	LIMESTONE: 90%, medium to dark gray brown mottled, light to medium brown mottled gray, light gray brown, argillaceous, cryptocrystalline, mudstone, tight, cherty in part, trace of crinoid fragments, trace of sparry calcite
	SHALE: 10%, dark gray calcareous, blocky, medium to dark gray platy

865.00 to 870.00m Interval: 5.00m	**LIMESTONE:** 70%, as above, probable fracture at 868m
	CHERT: 30%, variegated, dark brown, medium brown, light blue gray, white
870.00 to 875.00m Interval: 5.00m	**LIMESTONE:** 90%, medium gray, medium gray brown, light gray brown, argillaceous, cryptocrystalline, mudstone, tight, trace of sparry calcite
	CHERT: 10%, as above
875.00 to 880.00m Interval: 5.00m	**LIMESTONE:** 60%, as above
	CHERT: 10%, as above
	SHALE: 30%, dark gray to black, calcareous in part, fissile, predominantly platy, slickensided in part
880.00 to 885.00m Interval: 5.00m	**LIMESTONE:** 70%, medium gray brown, dark gray brown, light gray, light gray brown, argillaceous, cryptocrystalline, mudstone, tight, trace of sparry calcite
	CHERT: 20%, variegated, dark gray, dark brown, medium brown, light blue gray
	SHALE: 10%, as above
885.00 to 890.00m Interval: 5.00m	**LIMESTONE:** 80%, medium gray, dark gray brown, light gray white, argillaceous, cryptocrystalline, mudstone, tight, trace of CHERT
	SHALE: 20%, dark gray, black, slightly calcareous, blocky to platy
890.00 to 895.00m Interval: 5.00m	**LIMESTONE:** 90%, light gray white, light gray brown, cryptocrystalline, mudstone, medium gray, dark gray brown argillaceous, cryptocrystalline, mudstone, tight, trace of nodular pyrite, probable fracture at 892.4m
	SHALE: 10%, as above
895.00 to 900.00m Interval: 5.00m	**LIMESTONE:** 80%, as above, trace of crinoid fragments
	SHALE: 20%, as above
900.00 to 905.00m Interval: 5.00m	**LIMESTONE:** 80%, medium gray, medium gray brown mottled, argillaceous, light gray brown, cryptocrystalline to microcrystalline, mudstone, tight, trace of sparry calcite
	SHALE: 20%, medium gray, dark gray, slightly calcareous
905.00 to 910.00m Interval: 5.00m	**LIMESTONE:** 90%, dark gray, dark gray brown very argillaceous, light to medium gray brown argillaceous, light gray white, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above
910.00 to 915.00m Interval: 5.00m	**LIMESTONE:** 80%, as above
	SHALE: 20%, dark gray, medium gray, slightly calcareous, predominantly blocky

915.00 to 920.00m **Interval: 5.00m**	**LIMESTONE: 90%**, light to medium gray brown, light to medium gray, medium gray argillaceous, medium to dark gray very argillaceous, cryptocrystalline, mudstone, tight
	SHALE: 10%, as above
920.00 to 927.00m **Interval: 7.00m**	**LIMESTONE: 90%**, as above
	SHALE: 10%, as above
927.00 to 930.00m **Interval: 3.00m**	**SHALE: 20%**, dark gray, medium gray, fissile, predominantly platy
	LIMESTONE: 80%, medium gray, light gray, dark gray argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments, trace of sparry calcite
930.00 to 935.00m **Interval: 5.00m**	**LIMESTONE: 70%**, as above, trace of crinoid and bryozoa fragments, trace of sparry calcite
	SHALE: 30%, as above, probable fracture at 932.8 and 935.2m
935.00 to 940.00m **Interval: 5.00m**	**LIMESTONE: 80%**, medium gray, light gray, dark gray argillaceous, predominantly cryptocrystalline, trace microcrystalline, mudstone, tight, minor sparry calcite, trace of crinoid fragments
	SHALE: 20%, dark gray, medium gray, fissile, platy
940.00 to 945.00m **Interval: 5.00m**	**LIMESTONE: 60%**, as above
	SHALE: 40%, as above, probable fracture at 944m
945.00 to 950.00m **Interval: 5.00m**	**LIMESTONE: 90%**, light gray, medium gray argillaceous, predominantly cryptocrystalline, microcrystalline in part, mudstone, tight
	SHALE: 10%, as above
950.00 to 955.00m **Interval: 5.00m**	**LIMESTONE: 80%**, medium gray, dark gray brown, very argillaceous, light to medium gray, light gray white argillaceous, predominantly cryptocrystalline, microcrystalline in part, mudstone, tight, trace of sparry calcite, trace of nodular pyrite
	SHALE: 20%, medium gray, dark gray, fissile, platy, probable fracture at 959.6m
955.00 to 960.00m **Interval: 5.00m**	**LIMESTONE: 90%**, as above, minor LIMESTONE light gray white, light bn, cryptocrystalline to microcrystalline, mudstone, tight, trace of crinoid, bryozoa and brachiopod fragments
	SHALE: 10%, as above
960.00 to 965.00m **Interval: 5.00m**	**LIMESTONE: 90%**, light gray white, light brown, cryptocrystalline, mudstone, medium gray brown, dark gray brown argillaceous, cryptocrystalline to microcrystalline, mudstone, tight, common sparry calcite, probable fracture at 964.2m
	SHALE: 10%, medium gray, fissile, blocky to platy
965.00 to 970.00m **Interval: 5.00m**	**LIMESTONE: 50%**, as above
	SHALE: 50%, medium gray, dark gray , fissile, slightly calcareous, platy to blocky

970.00 to 975.00m Interval: 5.00m	LIMESTONE: 70%, light to medium gray argillaceous, medium gray, dark gray very argillaceous, cryptocrystalline to microcrystalline, mudstone, tight
	SHALE: 30%, as above
975.00 to 980.00m Interval: 5.00m	SHALE: 60%, medium gray, very calcareous, blocky
	LIMESTONE: 40%, light gray, medium gray, argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments, trace of sparry calcite
983.00m	SHUNDA
980.00 to 985.00m Interval: 5.00m	SHALE: 90%, medium gray, calcareous, fissile, platy to blocky, probable fracture at 985.2m
	LIMESTONE: 10%, as above
985.00 to 990.00m Interval: 5.00m	SHALE: 80%, as above, medium gray very calcareous
	LIMESTONE: 20%, medium gray very argillaceous, cryptocrystalline mudstone, tight
990.00 to 995.00m Interval: 5.00m	SHALE: 90%, medium gray, fissile, calcareous, blocky to platy
	LIMESTONE: 10%, as above
995.00 to 1000.00m Interval: 5.00m	SHALE: 70%, as above
	LIMESTONE: 30%, medium gray very argillaceous, cryptocrystalline, mudstone, tight
1000.00 to 1005.00m Interval: 5.00m	SHALE: 90%, as above
	LIMESTONE: 10%, as above
1005.00 to 1010.00m Interval: 5.00m	SHALE: 80%, medium gray, very calcareous
	LIMESTONE: 20%, medium gray, very argillaceous, cryptocrystalline, mudstone, tight
1010.00 to 1015.00m Interval: 5.00m	SHALE: 90%, medium gray, calcareous, fissile, platy to blocky
	LIMESTONE: 10%, as above
1015.00 to 1020.00m Interval: 5.00m	SHALE: 90%, as above
	LIMESTONE: 10%, as above
1020.00 to 1025.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky
1025.00 to 1030.00m Interval: 5.00m	SHALE: 100%, as above
1030.00 to 1035.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky

1035.00 to 1040.00m Interval: 5.00m	**SHALE: 100%, as above, trace of sparry calcite**
1040.00 to 1045.00m Interval: 5.00m	**SHALE: 100%, as above probable fracture at 1044.4m**
1045.00 to 1050.00m Interval: 5.00m	**SHALE: 100%, medium gray, fissile, calcareous, blocky to platy**
1050.00 to 1055.00m Interval: 5.00m	**SHALE: 80%, as above, probable fractures at 1051.2 and 1054.6m** **LIMESTONE: 20%, dark gray brown, medium gray, argillaceous, cryptocrystalline, mudstone, tight**
1055.00 to 1060.00m Interval: 5.00m	**SHALE: 90%, as above, probable fractures at 1055.4, 1056, 1056.8 and 1059m** **LIMESTONE: 10%, as above**
1060.00 to 1065.00m Interval: 5.00m	**SHALE: 60%, as above, probable fractures at 1060 and 1060.8m** **LIMESTONE: 40%, light brown white, light gray brown mottled, cryptocrystalline, mudstone, microcrystalline in part, tight, medium to dark gray argillaceous, cryptocrystalline, mudstone, tight**
1065.00 to 1070.00m Interval: 5.00m	**SHALE: 30%, as above, trace slickensided** **LIMESTONE: 70%, light brown white, light brown, mottled in part, cryptocrystalline to microcrystalline, trace finely crystalline, mudstone, tight, trace of crinoid fragments, minor sparry calcite**
1070.00 to 1075.00m Interval: 5.00m	**LIMESTONE: 70%, light brown white mottled, light gray white mottled, predominantly clean, argillaceous in part, cryptocrystalline to microcrystalline, mudstone, tight, common crinoid and minor brachiopod fragments** **SHALE: 30%, medium gray calcareous, fissile, platy to blocky**
1075.00 to 1080.00m Interval: 5.00m	**LIMESTONE: 90%, as above** **SHALE: 10%, as above**
1080.00 to 1085.00m Interval: 5.00m	**LIMESTONE: 80%, light brown white, light gray white, light to medium brown mottled, cryptocrystalline to finely crystalline, mudstone, tight, trace of crinoid and bryozoa fragments, trace of sparry calcite** **SHALE: 20%, as above**
1085.00 to 1090.00m Interval: 5.00m	**LIMESTONE: 80%, as above, light to medium gray ally argillaceous, common sparry calcite, trace veined, healed fractures** **SHALE: 20%, medium gray calcareous, fissile, blocky to platy**
1090.00 to 1095.00m Interval: 5.00m	**LIMESTONE: 90%, light brown, light brown mottled gray brown, cryptocrystalline to finely crystalline, mudstone, tight, minor sparry calcite, minor crinoid and brachiopod fragments, trace of disseminated and nodular pyrite** **SHALE: 10%, medium gray, dark gray calcareous, fissile, blocky to platy**

1095.00 to 1100.00m Interval: 5.00m	LIMESTONE: 50%, as above, medium gray argillaceous
	SHALE: 50%, medium gray, dark gray, calcareous, fissile, blocky to platy
1100.00 to 1105.00m Interval: 5.00m	LIMESTONE: 40%, as above
	SHALE: 60%, as above, probable fracture at 1102.6m
1105.00 to 1110.00m Interval: 5.00m	SHALE: 80%, medium gray calcareous, fissile, blocky to platy, probable fractures at 1107.6 and 1111.4m
	LIMESTONE: 20%, as above
1110.00 to 1115.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, fissile, platy, trace of LIMESTONE as above
1116.00m	PEKISKO
1115.00 to 1120.00m Interval: 5.00m	SHALE: 40%, as above
	LIMESTONE: 30%, light brown white, cryptocrystalline mudstone, tight, trace of crinoid fragments, trace of sparry calcite
	DOLOMITE: 30%, light to medium brown, calcareous, silty to sandy in part, cryptocrystalline to microcrystalline, predominantly wackestone, trace glauconitic, no stain, no fluorescence, trace of pin point porosity 1-2%, no permeability
1120.00 to 1125.00m Interval: 5.00m	SHALE: 60%, medium gray, slightly calcareous, fissile, platy to blocky
	LIMESTONE: 20%, as above
	DOLOMITE: 20%, as above
1125.00 to 1130.00m Interval: 5.00m	SHALE: 80%, as above, probable fracture at 1126m
	LIMESTONE: 10%, medium gray, medium gray silty, cryptocrystalline, mudstone, tight
	DOLOMITE: 10%, light brown, medium brown, silty to sandy, cryptocrystalline to microcrystalline, mudstone to wackestone, tight
1130.00 to 1135.00m Interval: 5.00m	SHALE: 60%, as above
	LIMESTONE: 20%, light gray white, medium gray, argillaceous, cryptocrystalline mudstone, tight, silty to sandy in part
	SILTSTONE: 20%, medium gray, very calcareous, sandy in part, tight
1135.00 to 1140.00m Interval: 5.00m	SHALE: 80%, medium gray, fissile, calcareous in part, platy to blocky
	LIMESTONE: 10%, as above
	DOLOMITE: 10%, as above
1140.00 to 1145.00m Interval: 5.00m	SHALE: 90%, medium gray, calcareous, fissile, platy to blocky
	LIMESTONE: 10%, as above

1145.00 to 1150.00m **Interval: 5.00m**	**SHALE:** 70%, as above
	LIMESTONE: 30%, light to medium brown white, cryptocrystalline to finely crystalline, mudstone, tight, trace of crinoid fragments, trace of sparry calcite, minor medium gray very argillaceous
1150.00 to 1155.00m **Interval: 5.00m**	**SHALE:** 90%, medium gray, calcareous, fissile, platy to blocky, light to medium gray, platy
	LIMESTONE: 0%, as above
1155.00 to 1160.00m **Interval: 5.00m**	**LIMESTONE:** 50%, light brown, light brown white, cryptocrystalline to microcrystalline, mudstone, tight, silty in part, common crinoid fragments
	SHALE: 50%, medium gray, dark gray, slightly calcareous, fissile, predominantly platy
1164.00m	**BANFF**
1160.00 to 1165.00m **Interval: 5.00m**	**LIMESTONE:** 30%, light brown white, medium brown, cryptocrystalline to microcrystalline, light gray, medium gray argillaceous, silty, mudstone, tight, trace of crinoid fragments
	SHALE: 70%, light to medium gray, slightly calcareous, fissile, predominantly platy
1165.00 to 1170.00m **Interval: 5.00m**	**SHALE:** 90%, light to medium gray, medium gray, slightly calcareous, fissile, predominantly platy
	LIMESTONE: 10%, as above
1170.00 to 1175.00m **Interval: 5.00m**	**SHALE:** 100%, as above, trace of LIMESTONE as above
1175.00 to 1180.00m **Interval: 5.00m**	**SHALE:** 100%, light to medium gray, slightly calcareous, fissile, platy
1180.00 to 1185.00m **Interval: 5.00m**	**SHALE:** 100%, light to medium gray, fissile, platy, trace of siderite, medium brown argillaceous
1185.00 to 1190.00m **Interval: 5.00m**	**SHALE:** 100%, as above, trace of siderite
1190.00 to 1195.00m **Interval: 5.00m**	**SHALE:** 100%, as above
1195.00 to 1200.00m **Interval: 5.00m**	**SHALE:** 100%, medium gray, dark gray, fissile, platy, trace sideritic
1200.00 to 1205.00m **Interval: 5.00m**	**SHALE:** 100%, medium gray, light to medium gray, fissile, platy to blocky, trace sideritic
1205.00 to 1210.00m **Interval: 5.00m**	**SHALE:** 100%, medium gray, medium to dark gray, fissile, platy to blocky, trace of SILTSTONE, medium gray brown, calcareous, tight
1210.00 to 1215.00m **Interval: 5.00m**	**SHALE:** 100%, medium gray, light to medium gray, fissile, platy to blocky, trace medium to dark gray brown, calcareous, silty
1215.00 to 1220.00m **Interval: 5.00m**	**SHALE:** 90%, as above
	LIMESTONE: 10%, medium gray, dark gray argillaceous, cryptocrystalline, mudstone, tight

1220.00 to 1225.00m Interval: 5.00m	SHALE: 100%, medium gray, light to medium gray slightly calcareous, fissile, platy to blocky, trace of LIMESTONE as above
1225.00 to 1230.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, fissile, platy to blocky, trace of LIMESTONE as above
1230.00 to 1235.00m Interval: 5.00m	SHALE: 90%, as above LIMESTONE: 10%, light gray white, light brown, medium brown, cryptocrystalline, mudstone, tight, trace of crinoid fragments
1235.00 to 1240.00m Interval: 5.00m	SHALE: 90%, light to medium gray, slightly calcareous, fissile, platy to blocky LIMESTONE: 10%, medium gray, very argillaceous, tight
1240.00 to 1245.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, fissile, platy to blocky, trace of LIMESTONE as above
1245.00 to 1250.00m Interval: 5.00m	SHALE: 100%, medium gray, medium gray calcareous, fissile, platy to blocky, trace of limestone as above
1250.00 to 1255.00m Interval: 5.00m	SHALE: 80%, as above LIMESTONE: 20%, medium gray, medium to dark gray, argillaceous, light gray slightly argillaceous, cryptocrystalline to microcrystalline, mudstone, tight
1255.00 to 1260.00m Interval: 5.00m	SHALE: 90%, as above LIMESTONE: 10%, medium gray, light gray, argillaceous, cryptocrystalline, mudstone, tight, common crinoid and brachiopod fragments
1260.00 to 1265.00m Interval: 5.00m	SHALE: 100%, as above, trace of LIMESTONE medium gray, argillaceous, medium gray brown silty, trace of crinoid fragments
1265.00 to 1270.00m Interval: 5.00m	SHALE: 100%, as above, dark brown calcareous, blocky
1270.00 to 1275.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1275.00 to 1280.00m Interval: 5.00m	SHALE: 90%, medium gray, calcareous, fissile, blocky to platy, abundant cavings LIMESTONE: 10%, light gray, light brown, cavings, trace of chert cavings
1280.00 to 1285.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy, abundant cavings
1285.00 to 1290.00m Interval: 5.00m	SHALE: 100%, as above
1290.00 to 1295.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, predominantly platy
1295.00 to 1300.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1300.00 to 1305.00m Interval: 5.00m	SHALE: 100%, as above

1305.00 to 1310.00m Interval: 5.00m	SHALE: 100%, as above, trace of LIMESTONE light to medium gray, argillaceous, cryptocrystalline, mudstone, tight
1310.00 to 1315.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1315.00 to 1320.00m Interval: 5.00m	SHALE: 100%, as above
1320.00 to 1325.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1325.00 to 1330.00m Interval: 5.00m	SHALE: 100%, as above
1330.00 to 1335.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1335.00 to 1340.00m Interval: 5.00m	SHALE: 100%, as above
1340.00 to 1345.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1345.00 to 1350.00m Interval: 5.00m	SHALE: 100%, as above
1350.00 to 1355.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, predominantly blocky
1355.00 to 1360.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1360.00 to 1365.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1365.00 to 1370.00m Interval: 5.00m	SHALE: 100%, as above, trace of LIMESTONE light to medium gray, argillaceous, cryptocrystalline, mudstone, tight
1370.00 to 1375.00m Interval: 5.00m	SHALE: 100%, medium gray, dark gray, fissile, calcareous, blocky to platy, trace of LIMESTONE as above
1375.00 to 1380.00m Interval: 5.00m	SHALE: 100%, medium gray, fissile, calcareous, blocky to platy
1380.00 to 1385.00m Interval: 5.00m	SHALE: 100%, medium gray, fissile, calcareous, platy to blocky
1385.00 to 1390.00m Interval: 5.00m	SHALE: 100%, as above
1390.00 to 1395.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1395.00 to 1400.00m Interval: 5.00m	SHALE: 100%, as above, trace of LIMESTONE light gray, medium gray argillaceous, cryptocrystalline, mudstone, tight
1400.00 to 1405.00m Interval: 5.00m	SHALE: 100%, as above
1405.00 to 1410.00m Interval: 5.00m	SHALE: 100%, medium gray, fissile, calcareous, blocky to platy

1410.00 to 1415.00m Interval: 5.00m	SHALE: 100%, as above, trace of LIMESTONE light gray white, light brown, dark brown argillaceous, cryptocrystalline to microcrystalline, mudstone, trace of pin point porosity, trace of sparry calcite, probable fracture at 1412.8m, mud gassy
1415.00 to 1420.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1420.00 to 1425.00m Interval: 5.00m	SHALE: 100%, as above
1425.00 to 1430.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1430.00 to 1435.00m Interval: 5.00m	SHALE: 100%, as above
1435.00 to 1440.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1440.00 to 1445.00m Interval: 5.00m	SHALE: 100%, as above, prob frac @ 1443m
1445.00 to 1450.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1450.00 to 1455.00m Interval: 5.00m	SHALE: 100%, as above
1455.00 to 1460.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1460.00 to 1465.00m Interval: 5.00m	SHALE: 100%, as above
1465.00 to 1470.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky, probable fracture at 1468.8m
1470.00 to 1475.00m Interval: 5.00m	SHALE: 100%, as above
1475.00 to 1480.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1480.00 to 1485.00m Interval: 5.00m	SHALE: 100%, as above
1485.00 to 1490.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky
1490.00 to 1495.00m Interval: 5.00m	SHALE: 100%, as above, probable fracture at 1498m
1495.00 to 1500.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1500.00 to 1505.00m Interval: 5.00m	SHALE: 100%, as above
1505.00 to 1510.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1510.00 to 1515.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, platy to blocky, trace veined, sparry calcite infilling, probable healed fractures at 1513m

1515.00 to 1520.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, fissile, blocky to platy
1520.00 to 1525.00m Interval: 5.00m	SHALE: 100%, as above, trace of sparry calcite
1525.00 to 1530.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, fissile, blocky to platy, trace slickensided
1530.00 to 1535.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, fissile, blocky to platy
1535.00 to 1540.00m Interval: 5.00m	SHALE: 100%, as above
1540.00 to 1545.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, fissile, platy to blocky, trace slickensided
1545.00 to 1548.00m Interval: 3.00m	SHALE: 100%, as above, probable fractures at 1546.4 and 1546.8m, mud very gassy
1548.00 to 1550.00m Interval: 2.00m	SHALE: 100%, cavings, medium gray, calcareous, fissile, platy to blocky
1550.00 to 1555.00m Interval: 5.00m	SHALE: 100%, as above, predominantly cavings
1555.00 to 1560.00m Interval: 5.00m	SHALE: 100%, medium gray, fissile, calcareous, platy to blocky, predominantly cavings
1560.00 to 1565.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, fissile, blocky, predominantly cavings
1565.00 to 1570.00m Interval: 5.00m	SHALE: 100%, as above
1570.00 to 1575.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, medium to dark gray, fissile, platy to blocky, abundant cavings
1575.00 to 1580.00m Interval: 5.00m	SHALE: 100%, as above
1580.00 to 1585.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, medium gray brown very calcareous, fissile, blocky to platy, trace of LIMESTONE medium gray br very argillaceous, cryptocrystalline, mudstone, tight
1585.00 to 1590.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, medium to dark gray, fissile, platy to blocky, trace slickensided, probable fracture at 1589.8m
1590.00 to 1595.00m Interval: 5.00m	SHALE: 100%, medium gray, medium to dark gray, slightly calcareous, fissile, platy to blocky
1595.00 to 1600.00m Interval: 5.00m	SHALE: 100%, medium gray, dark gray, fissile, platy to blocky
1600.00 to 1605.00m Interval: 5.00m	SHALE: 100%, as above
1605.00 to 1610.00m Interval: 5.00m	SHALE: 100%, medium gray, dark gray, slightly calcareous in part, fissile, platy to blocky
1610.00 to 1615.00m Interval: 5.00m	SHALE: 100%, as above

1615.00 to 1620.00m Interval: 5.00m	SHALE: 100%, dark gray, medium gray, fissile, blocky to platy, trace of sparry calcite
1620.00 to 1625.00m Interval: 5.00m	SHALE: 100%, dark gray, medium gray, fissile, predominantly blocky
1625.00 to 1630.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, fissile, predominantly blocky
1630.00 to 1635.00m Interval: 5.00m	SHALE: 100%, as above
1635.00 to 1640.00m Interval: 5.00m	SHALE: 100%, dark gray, medium to dark gray, fissile, predominantly blocky, trace slickensided
1640.00 to 1645.00m Interval: 5.00m	SHALE: 100%, dark gray brown, fissile, blocky
1647.00m	EXSHAW
1645.00 to 1650.00m Interval: 5.00m	SHALE: 100%, dark brown, earthy, fissile, blocky to platy, faint petroliferous odor, no fluorescence, trace slickensided
1650.00 to 1655.00m Interval: 5.00m	SHALE: 100%, dark brown to black, fissile, slightly waxy, predominantly blocky, petroliferous odor, common slickensided, no fluorescence, probable fractures at 1650.8, 1651.2, 1652.8, 1653 and 1654 to 1655m, mud very gassy
1655.00 to 1660.00m Interval: 5.00m	SHALE: 100%, as above, trace of nodular and disseminated pyrite, probable fractures at 1655.2, 1656.2, 1657 to 1658, 1658.4 and 1660.6m, mud very gassy
1662.00m	KOTCHO
1660.00 to 1665.00m Interval: 5.00m	SHALE: 100%, as above, mediurn brown white speckled calcareous, light gray, medium gray, calcareous, trace of nodular pyrite
1665.00 to 1670.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, light gray calcareous, medium gray brown as above, fissile, predominantly blocky, trace of LIMESTONE light gray argillaceous, cryptocrystalline, mudstone, tight, trace of crinoid fragments, trace of nodular pyrite
1670.00 to 1675.00m Interval: 5.00m	SHALE: 100%, light gray, medium gray calcareous, dark gray brown, fissile, blocky, trace of LIMESTONE light to medium gray, very argillaceous, cryptocrystalline, mudstone, tight
1675.00 to 1680.00m Interval: 5.00m	SHALE: 100%, light gray calcareous, medium to dark gray, fissile, predominantly blocky, trace of LIMESTONE light gray, very argillaceous, cryptocrystalline, mudstone, tight
1680.00 to 1685.00m Interval: 5.00m	SHALE: 100%, light gray, calcareous, medium to dark gray, fissile, predominantly blocky, trace of LIMESTONE as above
1685.00 to 1690.00m Interval: 5.00m	SHALE: 100%, light gray, medium gray, calcareous, dark gray, fissile, predominantly blocky, trace of LIMESTONE as above
1690.00 to 1695.00m Interval: 5.00m	SHALE: 100%, as above
1695.00 to 1700.00m Interval: 5.00m	SHALE: 100%, light gray, medium gray, calcareous, dark gray, fissile, predominantly blocky
1700.00 to 1705.00m Interval: 5.00m	SHALE: 100%, light gray, medium gray, calcareous, dark gray, fissile, predominantly blocky

1705.00 to 1710.00m Interval: 5.00m	SHALE: 100%, as above
1710.00 to 1715.00m Interval: 5.00m	SHALE: 100%, light to medium gray, slightly calcareous, predominantly blocky, AIR HAMMER CHIPS AND DUST
1715.00 to 1720.00m Interval: 5.00m	SHALE: 100%, as above
1720.00 to 1725.00m Interval: 5.00m	SHALE: 100%, light to medium gray, slightly calcareous, blocky to platy
1725.00 to 1730.00m Interval: 5.00m	SHALE: 100%, as above
1730.00 to 1735.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
1735.00 to 1740.00m Interval: 5.00m	SHALE: 100%, as above
1740.00 to 1745.00m Interval: 5.00m	SHALE: 100%, as above
1745.00 to 1750.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
1750.00 to 1755.00m Interval: 5.00m	SHALE: 50%, medium gray, very calcareous, predominantly blocky LIMESTONE: 50%, light to medium gray, slightly argillaceous, medium gray argillaceous, cryptocrystalline, mudstone, tight
1755.00 to 1760.00m Interval: 5.00m	SHALE: 60%, medium gray, very calcareous, blocky
1760.00 to 1765.00m Interval: 5.00m	LIMESTONE: 40%, light to medium gray slightly argillaceous, medium gray argillaceous, cryptocrystalline, mudstone, tight
1765.00 to 1770.00m Interval: 5.00m	SHALE: 40%, medium to dark gray, slightly calcareous, blocky LIMESTONE: 60%, as above
1770.00 to 1775.00m Interval: 5.00m	SHALE: 90%, medium gray, very calcareous, predominantly blocky LIMESTONE: 10%, as above, light gray argillaceous, cryptocrystalline, mudstone, tight
1775.00 to 1780.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, very calcareous, blocky
1780.00 to 1785.00m Interval: 5.00m	SHALE: 100%, medium gray, dark gray, very calcareous, blocky
1785.00 to 1790.00m Interval: 5.00m	SHALE: 90%, as above LIMESTONE: 10%, light gray brown, light to medium gray argillaceous, cryptocrystalline, mudstone, tight, trace of sparry calcite
1790.00 to 1795.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, blocky

1795.00 to 1800.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky
1800.00 to 1805.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky
1805.00 to 1810.00m Interval: 5.00m	SHALE: 100%, as above
1810.00 to 1815.00m Interval: 5.00m	SHALE: 100%, medium to dark gray calcareous, blocky
1815.00 to 1820.00m Interval: 5.00m	SHALE: 100%, as above
1820.00 to 1825.00m Interval: 5.00m	SHALE: 30%, medium gray, calcareous, blocky LIMESTONE: 70%, medium gray very argillaceous, cryptocrystalline, mudstone, tight
1825.00 to 1830.00m Interval: 5.00m	SHALE: 50%, as above LIMESTONE: 50%, as above
1830.00 to 1835.00m Interval: 5.00m	SHALE: 100%, as above LIMESTONE: 50%, as above
1835.00 to 1840.00m Interval: 5.00m	SHALE: 70%, medium to dark gray, very calcareous, blocky LIMESTONE: 30%, medium gray, very argillaceous, cryptocrystalline, mudstone, tight
1840.00 to 1845.00m Interval: 5.00m	SHALE: 50%, as above LIMESTONE: 50%, as above
1845.00 to 1850.00m Interval: 5.00m	SHALE: 60%, medium to dark gray, very calcareous, blocky LIMESTONE: 40%, medium to dark gray, very argillaceous, cryptocrystalline, mudstone, tight
1850.00 to 1855.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, blocky
1855.00 to 1860.00m Interval: 5.00m	SHALE: 100%, as above
1860.00 to 1865.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky
1865.00 to 1870.00m Interval: 5.00m	SHALE: 100%, as above
1870.00 to 1875.00m Interval: 5.00m	SHALE: 100%, as above
1875.00 to 1880.00m Interval: 5.00m	SHALE: 100%, medium to dark gray calcareous, blocky

1880.00 to 1885.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky
1885.00 to 1890.00m Interval: 5.00m	SHALE: 100%, as above
1890.00 to 1895.00m Interval: 5.00m	SHALE: 100%, as above
1895.00 to 1900.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky
1900.00 to 1905.00m Interval: 5.00m	SHALE: 100%, as above
1905.00 to 1910.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky
1910.00 to 1915.00m Interval: 5.00m	SHALE: 100%, as above
1915.00 to 1920.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky
1920.00 to 1925.00m Interval: 5.00m	SHALE: 100%, as above
1925.00 to 1930.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky
1930.00 to 1935.00m Interval: 5.00m	SHALE: 100%, as above
1935.00 to 1940.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky
1940.00 to 1945.00m Interval: 5.00m	SHALE: 100%, as above
1945.00 to 1950.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, blocky
1950.00 to 1955.00m Interval: 5.00m	SHALE: 100%, as above
1955.00 to 1960.00m Interval: 5.00m	SHALE: 100%, as above
1960.00 to 1965.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, blocky
1965.00 to 1970.00m Interval: 5.00m	SHALE: 100%, as above
1970.00 to 1975.00m Interval: 5.00m	SHALE: 100%, medium gray, calcareous, blocky
1975.00 to 1980.00m Interval: 5.00m	SHALE: 100%, as above
1980.00 to 1985.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky
1985.00 to 1990.00m Interval: 5.00m	SHALE: 100%, as above

1990.00 to 1995.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky
1995.00 to 2000.00m Interval: 5.00m	SHALE: 100%, as above
2000.00 to 2005.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, very calcareous, blocky
2005.00 to 2010.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky to platy
2010.00 to 2015.00m Interval: 5.00m	SHALE: 100%, dark gray, calcareous, blocky to platy, slight sulfur odor
2015.00 to 2020.00m Interval: 5.00m	SHALE: 100%, as above
2020.00 to 2025.00m Interval: 5.00m	SHALE: 100%, as above
2025.00 to 2030.00m Interval: 5.00m	SHALE: 100%, as above, dark gray brown, platy to blocky, slight petroliferous odor, puff of Gas while drilling at 2029m
2030.00m	TETCHO
2030.00 to 2035.00m Interval: 5.00m	SHALE: 50%, as above LIMESTONE: 50%, light to medium gray, medium gray, medium brown, argillaceous in part, cryptocrystalline to microcrystalline, predominantly mudstone, no visible porosity
2035.00 to 2040.00m Interval: 5.00m	SHALE: 50%, medium gray, dark gray, calcareous, blocky LIMESTONE: 50%, medium gray argillaceous, cryptocrystalline, mudstone, tight
2040.00 to 2045.00m Interval: 5.00m	SHALE: 80%, medium gray, calcareous, blocky LIMESTONE: 20%, as above
2045.00 to 2050.00m Interval: 5.00m	SHALE: 80%, as above LIMESTONE: 20%, medium gray, medium gray brown argillaceous, cryptocrystalline to microcrystalline, mudstone, tight
2050.00 to 2055.00m Interval: 5.00m	SHALE: 60%, as above LIMESTONE: 40%, as above, minor light gray, light brown, cryptocrystalline, mudstone
2055.00 to 2060.00m Interval: 5.00m	SHALE: 70%, medium gray, medium to dark gray, very calcareous, blocky LIMESTONE: 30%, medium gray very argillaceous, cryptocrystalline to microcrystalline, mudstone, tight
2060.00 to 2065.00m Interval: 5.00m	SHALE: 90%, as above LIMESTONE: 10%, as above

2065.00 to 2070.00m Interval: 5.00m	SHALE: 90%, as above
	LIMESTONE: 10%, as above
2070.00 to 2075.00m Interval: 5.00m	SHALE: 80%, medium gray, dark gray calcareous, blocky
	LIMESTONE: 20%, medium gray very argillaceous, cryptocrystalline to microcrystalline, mudstone, tight
2075.00 to 2080.00m Interval: 5.00m	SHALE: 70%, medium gray very calcareous, blocky
	LIMESTONE: 30%, medium gray, argillaceous, cryptocrystalline, mudstone, light brown, cryptocrystalline, mudstone, tight
2080.00 to 2085.00m Interval: 5.00m	SHALE: 90%, medium to dark gray, calcareous, blocky
	LIMESTONE: 10%, as above
2085.00 to 2090.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky
2090.00 to 2095.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, blocky
2095.00 to 2100.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, platy to blocky
2100.00 to 2105.00m Interval: 5.00m	SHALE: 70%, as above
	LIMESTONE: 30%, light to medium gray, argillaceous in part, cryptocrystalline, mudstone, tight
2105.00 to 2110.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, predominantly blocky
2110.00 to 2115.00m Interval: 5.00m	SHALE: 100%, as above
2115.00 to 2120.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, calcareous, blocky, trace of LIMESTONE light gray brown, cryptocrystalline, mudstone, tight
2120.00 to 2125.00m Interval: 5.00m	SHALE: 40%, as above
	LIMESTONE: 60%, light to medium gray, medium gray, very argillaceous in part, cryptocrystalline, mudstone, tight
2125.00 to 2130.00m Interval: 5.00m	SHALE: 30%, as above
	LIMESTONE: 70%, light gray, light to medium gray, medium gray, slightly to very argillaceous, cryptocrystalline, mudstone, tight
2130.00 to 2135.00m Interval: 5.00m	SHALE: 40%, dark gray, very calcareous, blocky
	LIMESTONE: 60%, as above
2139.00m	KAKISA
2135.00 to 2140.00m Interval: 5.00m	SHALE: 30%, as above

	LIMESTONE: 70%, dark gray, medium gray, dark gray brown, argillaceous, cryptocrystalline, mudstone, tight
2140.00 to 2145.00m Interval: 5.00m	SHALE: 10%, as above
	LIMESTONE: 90%, dark gray brown, medium gray brown, argillaceous, cryptocrystalline, mudstone, tight
2145.00 to 2150.00m Interval: 5.00m	LIMESTONE: 100%, light to medium brown clean, light gray, medium gray, dark gray, very argillaceous in part, cryptocrystalline, mudstone, tight, trace of sparry calcite, probable healed fractures
2150.00 to 2155.00m Interval: 5.00m	LIMESTONE: 100%, dark gray to black, dark gray brown, argillaceous in part, cryptocrystalline, mudstone, tight
2155.00 to 2160.00m Interval: 5.00m	LIMESTONE: 100%, as above, trace of SHALE dark gray, calcareous, blocky
2161.50m	FORT SIMPSON
2160.00 to 2165.00m Interval: 5.00m	LIMESTONE: 30%, as above
	SHALE: 70%, medium gray, dark gray, calcareous, blocky
2165.00 to 2170.00m Interval: 5.00m	SHALE: 100%, dark gray, dark gray brown, slightly calcareous, blocky
2170.00 to 2175.00m Interval: 5.00m	SHALE: 100%, as above
2175.00 to 2180.00m Interval: 5.00m	SHALE: 100%, as above
2180.00 to 2185.00m Interval: 5.00m	SHALE: 100%, dark gray, medium gray, slightly calcareous, blocky to platy
2185.00 to 2190.00m Interval: 5.00m	SHALE: 100%, as above
2190.00 to 2195.00m Interval: 5.00m	SHALE: 100%, medium gray, medium gray calcareous, platy to blocky
2195.00 to 2210.00m Interval: 15.00m	SHALE: 100%, medium gray, medium gray calcareous, blocky to platy
2210.00 to 2215.00m Interval: 5.00m	SHALE: 100%, medium gray, medium gray calcareous, blocky to platy
2215.00 to 2225.00m Interval: 10.00m	SHALE: 100%, medium gray, medium gray calcareous, platy to blocky
2225.00 to 2290.00m Interval: 65.00m	SHALE: 100%, medium gray, slightly calcareous, platy to blocky
2290.00 to 2295.00m Interval: 5.00m	SHALE: 100%, medium gray calcareous, blocky to platy
2295.00 to 2335.00m Interval: 40.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2335.00 to 2370.00m Interval: 35.00m	SHALE: 100%, medium gray, blocky to platy

2370.00 to 2410.00m Interval: 40.00m	SHALE: 100%, medium gray, slightly calcareous, platy to blocky
2410.00 to 2435.00m Interval: 25.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2435.00 to 2440.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky to platy
2440.00 to 2445.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2445.00 to 2455.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky to platy
2455.00 to 2475.00m Interval: 20.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2475.00 to 2490.00m Interval: 15.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky to platy
2490.00 to 2500.00m Interval: 10.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2500.00 to 2510.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky to platy
2510.00 to 2515.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, slightly calcareous, blocky to platy
2515.00 to 2580.00m Interval: 65.00m	SHALE: 100%, medium to dark gray, blocky to platy
2580.00 to 2595.00m Interval: 15.00m	SHALE: 100%, medium gray, medium to dark gray, slightly calcareous, platy to blocky
2595.00 to 2600.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, medium gray slightly calcareous, blocky to platy
2600.00 to 2605.00m Interval: 5.00m	SHALE: 100%, medium gray, medium to dark gray, slightly calcareous, platy to blocky
2605.00 to 2610.00m Interval: 5.00m	SHALE: 100%, medium gray, slightly calcareous, blocky to platy
2610.00 to 2620.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, blocky to platy
2620.00 to 2665.00m Interval: 45.00m	SHALE: 100%, medium gray, blocky to platy
2665.00 to 2675.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, platy to blocky
2675.00 to 2695.00m Interval: 20.00m	SHALE: 100%, medium gray, blocky to platy
2695.00 to 2700.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, blocky to platy
2700.00 to 2705.00m Interval: 5.00m	SHALE: 100%, medium gray, medium to dark gray, blocky to platy
2705.00 to 2720.00m Interval: 15.00m	SHALE: 100%, medium gray, blocky to platy

2720.00 to 2730.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, blocky to platy
2730.00 to 2735.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, medium gray slightly calcareous, blocky to platy
2735.00 to 2740.00m Interval: 5.00m	SHALE: 100%, medium to dark gray slightly calcareous, platy to blocky
2740.00 to 2745.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, dark gray, slightly calcareous, blocky to platy
2745.00 to 2765.00m Interval: 20.00m	SHALE: 100%, medium to dark gray, blocky to platy
2765.00 to 2770.00m Interval: 5.00m	SHALE: 100%, medium gray, blocky to platy
2770.00 to 2775.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, blocky to platy
2775.00 to 2780.00m Interval: 5.00m	SHALE: 100%, medium gray, blocky to platy
2780.00 to 2785.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, blocky to platy
2785.00 to 2805.00m Interval: 20.00m	SHALE: 100%, medium to dark gray, blocky to platy
2805.00 to 2810.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, dark gray, platy to blocky
2812.50m	MUSKWA
2810.00 to 2820.00m Interval: 10.00m	SHALE: 100%, medium to dark gray, platy to blocky
2820.00 to 2825.00m Interval: 5.00m	SHALE: 100%, dark gray, platy to blocky, trace of disseminated pyrite
2825.00 to 2830.00m Interval: 5.00m	SHALE: 100%, dark gray to black, calcareous, platy to blocky, trace of nodular and disseminated pyrite.
2830.00 to 2835.00m Interval: 5.00m	SHALE: 100%, dark gray, calcareous, blocky to platy, trace of disseminated pyrite
2835.00 to 2840.00m Interval: 5.00m	SHALE: 100%, as above
2840.00 to 2845.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, blocky to platy, trace of nodular pyrite, abundant cavings
2845.00 to 2850.00m Interval: 5.00m	SHALE: 100%, medium to dark gray, dark gray, platy to blocky, minor nodular and disseminated pyrite, common cavings
2850.00 to 2855.00m Interval: 5.00m	SHALE: 100%, dark gray, slightly calcareous, blocky to platy, common disseminated and nodular pyrite
2855.00 to 2870.00m Interval: 15.00m	SHALE: 100%, dark gray, blocky to platy, nodular and disseminated pyrite
2870.00 to 2875.00m Interval: 5.00m	SHALE: 100%, dark gray to black, brittle, siliceous in part, common disseminated pyrite, trace of black CHERT, trace of sparry calcite, trace slickensided, probable fractures at 2870.4, 2871.2, 2873, 2875.2 and 2875.8m

2875.00 to 2880.00m **Interval: 5.00m**	**SHALE: 100%**, dark gray, blocky, trace of sparry calcite, disseminated and nodular pyrite
2880.00 to 2885.00m **Interval: 5.00m**	**SHALE: 100%**, dark gray to black, dark gray calcareous, blocky, trace of disseminated pyrite, slight petroliferous odor
2886.50m	**NAHANNI**
2885.00 to 2890.00m **Interval: 5.00m**	**LIMESTONE: 30%**, medium gray white, medium brown, dolomitic, predominantly cryptocrystalline, mudstone, minor sparry calcite
	DOLOMITE: 70%, medium gray white, calcareous, slightly argillaceous, predominantly cryptocrystalline to finely crystalline, coarsely crystalline in part, mudstone to wackestone, no stain, no fluorescence, trace of pin point and vuggy porosity, no apparent permeability, DOLOMITE sparry, calcareous, white to translucent, probable fracture infilling
2890.00 to 2897.00m **Interval: 7.00m**	**DOLOMITE: 100%**, medium gray white, salt and pepper, calcareous, argillaceous, microcrystalline to finely crystalline, wackestone, no stain, no fluorescence, no visible porosity, DOLOMITE sparry, white to translucent, probably veined infilling
2897.00 to 2900.00m **Interval: 3.00m**	**DOLOMITE: 100%**, medium gray. dark gray speckled white, predominantly finely crystalline, packstone to wackestone, argillaceous matrix, no stain, no fluorescence, no visible porosity, DOLOMITE sparry, clean, white to translucent, pearly, lithographic to cryptocrystalline, tight, probable veined infilling, trace of SHALE dark gray to black, dolomitic, fissile, blocky, slightly siliceous in part
2900.00 to 2905.00m **Interval: 5.00m**	**DOLOMITE: 100%**, as above
2905.00 to 2907.00m **Interval: 2.00m**	**DOLOMITE: 80%**, medium gray, dark gray, predominantly microcrystalline, wackestone to mudstone, very argillaceous, DOLOMITE sparry, finely crystalline as above
	SHALE: 20%, dark gray, dolomitic, brittle, siliceous
2907.00 to 2910.00m **Interval: 3.00m**	**DOLOMITE: 80%**, dark gray, medium gray, microcrystalline, very argillaceous, wackestone, DOLOMITE light gray white, speckled, finely crystalline, wackestone to packstone, argillaceous matrix, tight, DOLOMITE sparry, white to translucent, lithographic to cryptocrystalline, tight
	SHALE: 20%, dark gray to black, slightly dolomitic, brittle, siliceous, trace of disseminated pyrite, trace slickensided
2910.00 to 2915.00m **Interval: 5.00m**	**DOLOMITE: 90%**, light gray white speckled, microcrystalline to finely crystalline, wackestone to packstone, argillaceous matrix, trace with intercrystalline bitumen, DOLOMITE medium gray, dark gray argillaceous, cryptocrystalline to microcrystalline, mudstone to wackestone, tight, DOLOMITE sparry, white to translucent, pearly, probable veined infilling
	SHALE: 10%, dark gray to black, brittle, disseminated pyrite
2915.00 to 2920.00m **Interval: 5.00m**	**DOLOMITE: 60%**, as above, probable vuggy porosity at 2916.5 to 2917 and 2919m
	LIMESTONE: 40%, light to brown, cryptocrystalline to microcrystalline, mudstone, argillaceous, tight

2920.00 to 2925.00m Interval: 5.00m	LIMESTONE: 60%, as above
	DOLOMITE: 40%, as above
2925.00 to 2930.00m Interval: 5.00m	LIMESTONE: 90%, buff to light brown, light gray brown, medium brown, cryptocrystalline to microcrystalline, predominantly mudstone, argillaceous in part, tight
	DOLOMITE: 10%, as above, trace of SHALE dark gray to black
2930.00 to 2935.00m Interval: 5.00m	LIMESTONE: 100%, as above
2935.00 to 2940.00m Interval: 5.00m	LIMESTONE: 100%, mottled light gray brown, light brown, medium brown, dark brown, cryptocrystalline, mudstone, argillaceous in part, tight
2940.00 to 2941.00m Interval: 1.00m	SHALE: 30%, dark gray to black, very calcareous
	LIMESTONE: 70%, as above, mottled dark gray to black, very argillaceous, cryptocrystalline, mudstone, tight
2941.00 to 2945.00m Interval: 4.00m	LIMESTONE: 90%, mottled dark gray, dark brown, medium gray brown, light gray, argillaceous, predominantly cryptocrystalline, mudstone, tight
	SHALE: 10%, dark gray to black, very calcareous
2945.00 to 2950.00m Interval: 5.00m	SHALE: 10%, as above
	LIMESTONE: 90%, as above
2950.00 to 2955.00m Interval: 5.00m	LIMESTONE: 90%, dark gray to black, medium gray brown, light gray brown, mottled in part, very argillaceous in part, cryptocrystalline to microcrystalline, mudstone, tight
	SHALE: 10%, dark gray to black, very calcareous
2955.00 to 2960.00m Interval: 5.00m	LIMESTONE: 70%, as above
	SHALE: 30%, dark gray to black, very calcareous
2960.00 to 2965.00m Interval: 5.00m	LIMESTONE: 80%, as above, mottled light to medium gray brown, cryptocrystalline, tight
	SHALE: 20%, as above
2965.00 to 2970.00m Interval: 5.00m	LIMESTONE: 90%, mottled light to medium gray brown, medium brown, dark brown, cryptocrystalline to microcrystalline, predominantly mudstone, argillaceous in part, tight
	SHALE: 10%, dark gray to black, very calcareous
2970.00 to 2975.00m Interval: 5.00m	LIMESTONE: 100%, mottled light to medium gray brown, dark brown, medium gray brown, argillaceous in part, cryptocrystalline, mudstone, tight
2975.00 to 2980.00m Interval: 5.00m	LIMESTONE: 100%, light gray, mottled light to medium gray brown, dark gray brown, dark brown argillaceous, cryptocrystalline, mudstone, tight

2980.00 to 2985.00m Interval: 5.00m	LIMESTONE: 100%, mottled light gray brown, medium gray brown, dark brown, argillaceous in part, cryptocrystalline, mudstone, tight
2985.00 to 2990.00m Interval: 5.00m	LIMESTONE: 70%, light to medium gray brown, mottled medium gray brown, dark brown, cryptocrystalline to microcrystalline, mudstone
	DOLOMITE: 30%, sparry, white to translucent, pearly, tight, veined infilling, minor finely crystalline, trace with intercrystalline bitumen, trace of scalenohedral transparent dolomite crystals, no stain, no fluorescence, trace slickensided, probable vuggy and intercrystalline porosity, probable fractures at 2988.2 to 2988.8m
2990.00 to 2995.00m Interval: 5.00m	LIMESTONE: 90%, mottled light gray brown, medium brown, dark brown, predominantly cryptocrystalline, mudstone, argillaceous in part, tight
	DOLOMITE: 10%, as above, probable healed fractures at 2992.8 to 2993.4m
2995.00 to 3000.00m Interval: 5.00m	LIMESTONE: 100%, mottled medium brown, dark brown, light gray brown, cryptocrystalline, mudstone, tight
3000.00 to 3005.00m Interval: 5.00m	LIMESTONE: 100%, mottled dark brown, medium brown, light brown, cryptocrystalline to microcrystalline, predominantly mudstone, slightly argillaceous, tight
3005.00 to 3010.00m Interval: 5.00m	DOLOMITE: 100%, mottled medium to dark gray brown, slightly argillaceous, microcrystalline to cryptocrystalline, mudstone to wackestone, tight, DOLOMITE sparry, white to translucent, pearly, tight, probable veined infilling
3010.00 to 3015.00m Interval: 5.00m	DOLOMITE: 100%, as above, trace of disseminated pyrite, no visible porosity
3015.00 to 3020.00m Interval: 5.00m	DOLOMITE: 100%, mottled dark gray brown, medium brown, argillaceous, microcrystalline to cryptocrystalline, mudstone, calcareous, in part, tight, minor sparry dolomite as above, no visible porosity
3020.00 to 3025.00m Interval: 5.00m	DOLOMITE: 100%, mottled light to medium to dark brown, cryptocrystalline to microcrystalline, argillaceous, trace finely crystalline, mudstone to wackestone, trace slickensided, DOLOMITE sparry, white to translucent, pearly, tight, minor clear, very fine to coarse scalenohedral and rhombohedral dolomite crystals, Fracture at 3027.8m
3025.00 to 3030.00m Interval: 5.00m	DOLOMITE: 100%, mottled medium to dark gray brown, microcrystalline to cryptocrystalline, mudstone to wackestone, slightly argillaceous, tight, DOLOMITE sparry, white to translucent, pearly, tight
3030.00 to 3035.00m Interval: 5.00m	LIMESTONE: 100%, dark gray brown, medium gray brown, light gray brown, cryptocrystalline, mudstone, tight
3035.00 to 3040.00m Interval: 5.00m	DOLOMITE: 90%, dark gray brown, argillaceous, microcrystalline to cryptocrystalline, predominantly mudstone, tight, DOLOMITE sparry, white to translucent, pearly, tight, veined infilling
	LIMESTONE: 10%, as above
3040.00 to 3045.00m Interval: 5.00m	DOLOMITE: 100%, medium to dark gray brown, argillaceous, cryptocrystalline to microcrystalline, mudstone, tight, DOLOMITE sparry, white to translucent, tight, veined infilling

3045.00 to 3050.00m Interval: 5.00m	DOLOMITE: 100%, as above, trace light gray white, finely crystalline, packstone, trace of intercrystalline bitumen, no fluorescence, no visible porosity
3050.00 to 3055.00m Interval: 5.00m	DOLOMITE: 100%, mottled medium to dark gray, dark gray black argillaceous, microcrystalline, mudstone to wackestone, DOLOMITE sparry, white to translucent, tight, veined infilling
3055.00 to 3060.00m Interval: 5.00m	DOLOMITE: 100%, mottled medium to dark gray brown, slightly argillaceous, microcrystalline to cryptocrystalline, predominantly mudstone, veined with DOLOMITE sparry, white to translucent, pearly, tight
3060.00 to 3065.00m Interval: 5.00m	DOLOMITE: 100%, as above, very argillaceous in part
3065.00 to 3070.00m Interval: 5.00m	DOLOMITE: 100%, mottled light to medium gray brown, microcrystalline to cryptocrystalline, mudstone to wackestone, slightly argillaceous in part, abundant DOLOMITE sparry, white to translucent, pearly, tight, minor finely crystalline with trace of intercrystalline bitumen, no visible porosity
3070.00 to 3075.00m Interval: 5.00m	LIMESTONE: 90%, light to medium brown, cryptocrystalline, mudstone, tight DOLOMITE: 10%, as above
3075.00 to 3080.00m Interval: 5.00m	LIMESTONE: 60%, as above, veined with sparry dolomite infilling DOLOMITE: 40%, as above, sparry, white to translucent, pearly, infilling, probable healed fractures 3077 to 3081m
3080.00 to 3085.00m Interval: 5.00m	LIMESTONE: 100%, light to medium brown, cryptocrystalline, mudstone, tight
3085.00 to 3090.00m Interval: 5.00m	LIMESTONE: 100%, as above
3090.00 to 3095.00m Interval: 5.00m	LIMESTONE: 90%, mottled light to medium to dark brown, cryptocrystalline, mudstone, tight DOLOMITE: 10%, dark gray brown, microcrystalline, mudstone, tight, trace of sparry dolomite
3095.00 to 3100.00m Interval: 5.00m	LIMESTONE: 100%, medium brown, light brown, cryptocrystalline, mudstone, tight, trace of SHALE light gray green, glauconitic, trace of disseminated pyrite
3100.00 to 3105.00m Interval: 5.00m	LIMESTONE: 100%, light gray brown, medium brown, cryptocrystalline, mudstone, tight, trace of SHALE as above
3105.00 to 3110.00m Interval: 5.00m	LIMESTONE: 80%, as above DOLOMITE: 10%, dark gray brown, microcrystalline, mudstone, trace of sparry dolomite SHALE: 10%, light gray, light gray calcareous, fissile, platy
3110.00 to 3115.00m Interval: 5.00m	LIMESTONE: 30%, as above

	DOLOMITE: 60%, mottled light to medium to dark gray brown, cryptocrystalline to microcrystalline, mudstone to wackestone, trace finely crystalline, sparry, tight, DOLOMITE sparry, white to translucent, pearly, tight
	SHALE: 10%, light gray, light gray calcareous
3115.00 to 3120.00m Interval: 5.00m	DOLOMITE: 80%, medium gray brown, light gray brown, mudstone, light gray brown sparry, pearly, finely crystalline, trace of intercrystalline bitumen, no visible porosity
	LIMESTONE: 10%, as above
	SHALE: 10%, light to medium gray green, dolomitic, trace of disseminated pyrite
3120.00 to 3125.00m Interval: 5.00m	DOLOMITE: 90%, as above, dark brown to black, microcrystalline, argillaceous, packstone to wackestone, tight, DOLOMITE sparry, white to translucent, pearly, probable healed fractures
	SHALE: 5%, light to medium gray green, dolomitic
	LIMESTONE: 5%, as above
3129.00m	MANATOE
3125.00 to 3130.00m Interval: 5.00m	DOLOMITE: 100%, sparry, white to translucent, pearly, tight, minor DOLOMITE mottled light to medium gray brown, cryptocrystalline to microcrystalline, wackestone, tight
3130.00 to 3135.00m Interval: 5.00m	DOLOMITE: 100%, sparry, white to translucent, pearly, tight, DOLOMITE medium gray brown mottled, cryptocrystalline to finely crystalline, predominantly mudstone to wackestone, trace sucrosic, trace of intercrystalline bitumen, trace of intercrystalline porosity, probable minor vuggy porosity
3135.00 to 3140.00m Interval: 5.00m	DOLOMITE: 100%, as above, trace black argillaceous, trace slickensided, probable healed fractures at 3137.8 and 3139.8m
3140.00 to 3145.00m Interval: 5.00m	DOLOMITE: 100%, as above, trace of coarse scalenohedral dolomite crystals, vuggy and pin point porosity, probable fractures at 3140.6 and 3143.6m
3145.00 to 3150.00m Interval: 5.00m	DOLOMITE: 100%, sparry, white to translucent, pearly, trace finely crystalline drusy, trace with intercrystalline bitumen, vuggy and pin point porosity, fractures at 3145.6 and 3149.5m, DOLOMITE light to medium brown, cryptocrystalline to microcrystalline, predominantly mudstone, tight
3150.00 to 3155.00m Interval: 5.00m	DOLOMITE: 100%, as above
3155.00 to 3160.00m Interval: 5.00m	DOLOMITE: 100%, sparry, white to translucent, pearly, predominantly tight, trace drusy, DOLOMITE light to medium brown, cryptocrystalline to microcrystalline, mudstone to wackestone, dark gray black argillaceous, microcrystalline, wackestone, trace of pin point porosity
3160.00 to 3165.00m Interval: 5.00m	DOLOMITE: 100%, as above
3165.00 to 3170.00m Interval: 5.00m	DOLOMITE: 100%, light gray brown, microcrystalline to finely crystalline, wackestone to packstone, minor mudstone, sucrosic in part, slightly calcareous in part, trace of pin point and intercrystalline porosity, DOLOMITE sparry as above

3170.00 to 3175.00m Interval: 5.00m	DOLOMITE: 100%, as above, dark gray to black, microcrystalline, argillaceous, wackestone, no visible porosity
3175.00 to 3180.00m Interval: 5.00m	DOLOMITE: 100%, as above
3184.00m	ARNICA
3180.00 to 3185.00m Interval: 5.00m	DOLOMITE: 90%, as above SHALE: 10%, light gray, calcareous, trace of LIMESTONE medium brown, cryptocrystalline, mudstone
3185.00 to 3190.00m Interval: 5.00m	DOLOMITE: 100%, light brown, medium gray, dark gray, slightly argillaceous, cryptocrystalline to finely crystalline, mudstone to wackestone, argillaceous in part, tight, minor DOLOMITE sparry, white to translucent, pearly, veined infilling, trace of SHALE light gray, medium gray calcareous, trace of LIMESTONE medium brown, cryptocrystalline, mudstone
3190.00 to 3195.00m Interval: 5.00m	DOLOMITE: 100%, light to medium gray brown, slightly argillaceous, cryptocrystalline to finely crystalline, mudstone to wackestone, tight, minor sparry dolomite as above, trace of SHALE light to medium gray, dolomitic
3195.00 to 3200.00m Interval: 5.00m	DOLOMITE: 100%, light gray to medium gray brown, slightly argillaceous in part, cryptocrystalline to microcrystalline, finely crystalline in part, predominantly mudstone to wackestone, sucrosic packstone in part, no stain, no fluorescence, no visible porosity, minor sparry dolomite as above
3200.00 to 3205.00m Interval: 5.00m	DOLOMITE: 100%, as above
3205.00 to 3210.00m Interval: 5.00m	DOLOMITE: 100%, as above, medium gray brown, dark gray brown argillaceous, slightly calcareous, predominantly cryptocrystalline mudstone, tight
3210.00 to 3215.00m Interval: 5.00m	DOLOMITE: 100%, medium gray, dark gray, light gray brown, cryptocrystalline to microcrystalline, mudstone to wackestone, argillaceous in part, slightly calcareous in part, tight
3215.00 to 3220.00m Interval: 5.00m	DOLOMITE: 100%, as above
3220.00m	TOTAL DEPTH

SECTION 5

WELL EVALUATION

5. WELL EVALUATION

Downhole Logs (Were submitted with initial report in 1997)

TABLE 3 DOWNHOLE LOG SUMMARY OPEN HOLE LOGS

Depth	Suite	Interval
		Mtrs
Surface Casing	None	
Interm Casing 1	AITH(Phasor) / BHCS-GR	1698 - 454
	* Sonic logged up to 20m	
	PX CNL-LDT-GR / Microlog	1700 - 454
Interm Casing 2	Waived	
Total Depth	AITH-TLD-CNL-ML-GR	3220 - 2894
	DSI-GR	3214 - 2894
	FMS-GR	3222 - 2894
	ARI-LDT-CNL-ML-GR	3222 - 2894
	DLT-LDT-CNL-ML-GR	3218 - 2894
	* CNL-GR logged up to 1700m	

Other Logs: N/A

Synthetic Seismograms: N/A

Formation Stimulation: N/A

Formation & Production Tests: N/A

Prognosis: Following in this Section

PARAMOUNT ET AL BOVIE C-76

FORMATION TOPS (m)

GL: 426.8 M
K.B.: 433.32 M

FORMATION	PROGNOSIS (m)	SAMPLE (m)	LOGS (m)	SUBSEA (m)
Fantasque	459	144	N/A	289.32
Flett	494	179	N/A	254.32
Shunda	N/A	983	975	-541.68
Pekisko	N/A	1116	1064	-630.68
Banff	1113	1164	1098	-664.68
Exshaw	1659	1647	1646.5	-1213.18
Kotcho	1669	1662	1665	-1231.68
Tetcho	2024	2030	2030	-1596.68
Kakisa	N/A	2139	2138	-1704.68
Ft. Simpson	2114	2161.5	2162	-1728.68
Muskwa	2754	2812.5	2822	-2388.68
Nahanni	2829	2886.5	2889	-2455.68
Manatoe	N/A	3129	N/A	-2695.68
Arnica	N/A	3184	N/A	-2750.68
TOTAL DEPTH	3219	3220	3222	-2788.68

SECTION 6

ENVIRONMENTAL WELL REPORT

6. ENVIRONMENTAL WELL REPORT

Was submitted with drilling application

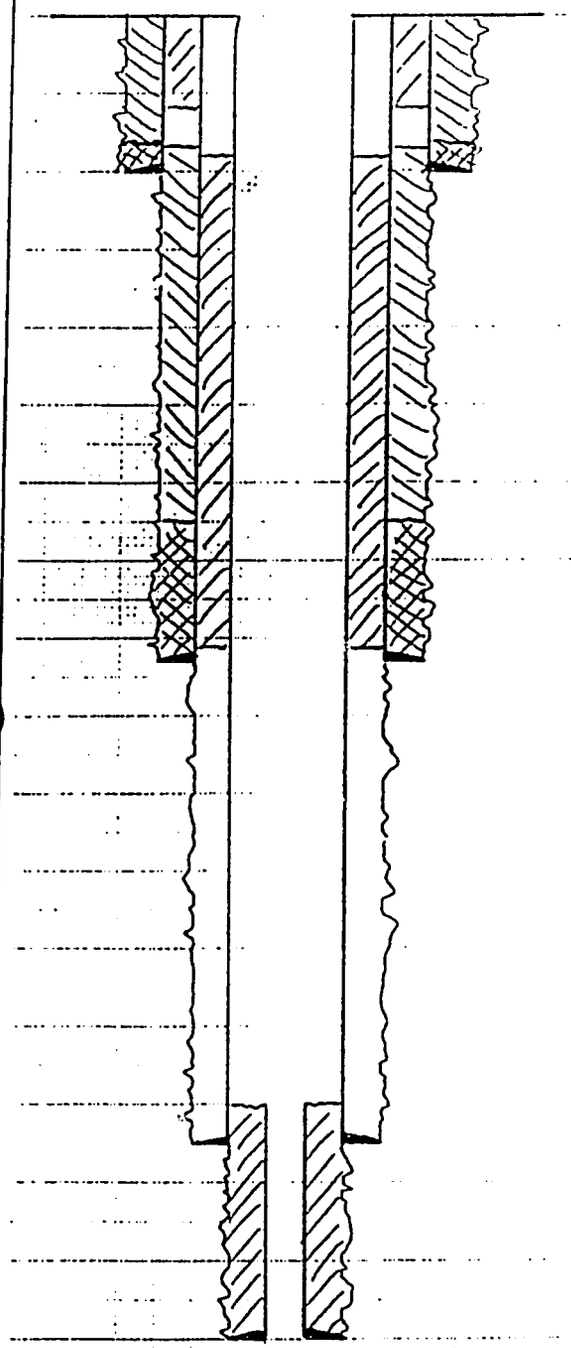
SECTION 7

APPENDICES TO WELL HISTORY REPORT

7. APPENDICES TO WELL HISTORY REPORT

Wellbore Diagram: (see attached)

Figure 1 - Wellbore and Casing Profile



0 - 453m	444.5 mm hole
0 - 453m	339.7 mm, 81.1 kg/m, K-55, ST&C casing
432 - 440m	External casing packer
0 - 415m	53 m3 0:1:0 Class G + 1% $CaCl_2$
415 - 453m	4 m3 0:1:0 Class G + 1% $CaCl_2$ + 0.5% T-10 + 0.5% D-24
453 - 1713m	311.2 mm hole
0 - 1713m	244.5mm, 69.9 kg/m, L-80, LT&C casing
1307m	Stage cementing tool
1688 - 1699m	External casing packer
0 - 30m	Thermax
300 - 1307m	55 m3 1:1:2 Class G + 0.5% T-10
1307 - 1713m	25 m3 0:1:0 Class G + 1.1% NFL-3
1713 - 2897m	215.9 mm hole
0 - 2897m	177.8 mm, 43.2 kg/m, L-80, LT&C casing
1692m	Stage cementing tool
1695 - 1698m	External casing packer
350 - 1692m	18 m3 1:1:2 Class G + 0.5% T-10 + 0.2% R-6
1692 - 2897m	The annulus packs-off at flow rates above 0.2 m3/min. Unable to cement this stage.
2897 - 3222m	152.4 mm hole
2742 - 2925m	114.3 mm, 17.3 kg/m, K-55, ST-L casing
2925 - 3221m	114.3 mm, 17.3 kg/m, L-80, LT&C casing
2735 - 2742m	Liner hanger
2635 - 3221m	7 m3 Thermal 40F + 0.4% D-24 + 0.5% T-10 + 0.3% R-6 + 0.5% Gel

FINAL DRILLING REPORT

N.E.B. COPY
W10 1817

29-May-97

Final Drilling Report

Paramount et al Bovie C-76 (Ft Liard, NWT)

Prepared by
David Baillargeon
Reservoir Drilling Services
for Greg Elliot
Paramount Resources

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
OCT 10 1997

Introduction

Synopsis

???

General Well Data

The general well data including the location, status, and approvals is summarized in Tables 1 and 2.

Table 1 - General Well Data

Description	Data
Well Name	Paramount et al Bovie C-76
Location / Grid Area	60° 20' 122° 45'
Designation	Exploration Wildcat
Security	Tight
Status	Waiting on completion
Zones	Nahanni, Manatoe
Latitude	60° 15' 15"
Longitude	122° 59' 22"
Total Depth	3222m
Spud to RR	74.6 days
Rig	Kenting #22E
Drawworks	National 80UE
Drill String	127 mm, 29/38 kg/m, E-75, 5 " XH 89 mm, 19/23 kg/m, E-75, 3 1/2 " IF
Pumps	National 9-P-100 National 8-P-80
Working Interests ???	Paramount 25%
	Berkley 25%
	Shell 50%

Table 2 - Approval Dates

Approval or Authority	Date Obtained
Authority for Expenditure (#12176)	10 January 1997
Water Licence (N3L1-1682)	7 January 1997
Drilling Licence (#1817)	7 January 1997
Licence Amendment (Depth Surf Csg)	21 January 1997
Licence Amendment (U/B Drilling)	13 March 1997
Licence Amendment (114mm Liner)	26 March 1997
Waive Intermediate Logs	11 March 1997
Termination Record	???

Personnel and Services

The personnel and services companies key to the drilling of this well are listed in Tables 3 and 4.

Table 3 - Paramount Personnel

Position	Individual	Interval
Drilling Superintendent	Greg Elliot	Jan 10 - Feb 23
	Lloyd Jeffries	Feb 24 - Mar 14
	David Baillargeon	Mar 15 - Mar 31
Drilling Supervisor	Clarence Veenstra	Jan 10 - Feb 2
	Bill Snydmiller	Feb 2 - Feb 10
	Clarence Veenstra	Feb 11 - Mar 22
	Kerry Graham	Mar 23 - Mar 31
Wellsite Geologist	Colin Bredin	All
Area Geologist	Jim Riddell	All
Construction Supervisor	Norris Fankhanel	All

Table 4 - Key Wellsite Services

Service	Company	Earnings[1]
Drilling Fluids	Concord[2]	68050
Drilling Bits	J & L	62730
	Reed	73800
	Security DBS	8700
	Smith	66620
	Western	18200
Cement	Nowsco[3]	171630
Directional	Computalog	47510
Rentals	Badger	11550
	Beaver	19630
	Big D	16190
	Buzzard	35790
	Ducharme	26030
	Enterra	25700
	Pason	12380
	Security DBS	29280
	Wadeco	58580
Coring (Not used)	Security DBS	
Logging	Schlumberger	124910
Testing (Not used)	Baker	
Casing	Fedmet / Thread Tech	19120
	Midfield	418950
Casing Accessories	Baker	116800
	Cardium	32590
Air / Nitrogen	Cdn Air Drilling	139020
Air Hammer	Smith	37490
Rotating Head	Williams	22780
Pressure Vessel (Not used)	Norward	
Underbalance (Not used)	RDS	

[1] Earnings are taken from invoices cleared to April 30 and do not include GST. (The Concord and Cardium earnings are revised based on an update report for May 27.)

[2] Concord earnings do not include trucking

[3] Nowsco earnings include the work they passed to Sanjel

Chronology

This section contains a chronological listing of the drilling events at this well (Table 5). The problems are highlighted in boldface lettering. The big picture is presented as drilling curves in the next section.

Table 5 - Drilling Events

Date	Time	Depth	Event
		metres	
... Rig-up and Prepare to Drill			
12 Nov 96			Surveyed wellsite. Freezing down access route. Started construction.
07 Jan 97			Started moving drilling rig from ???
12 Jan 97			Raise derrick. Install top drive. Fire-up boiler.
14 Jan 97			Nipple-up diverter. Mix drilling mud. Rig to spud.
... Surface Hole			
15 Jan 97	07:15		Spud with 445 mm bit.
16 Jan 97	10:15	139	**Survey indicates angle built to 2 1/2 degrees.** Trip for bit. Modify top drive for higher rotary speed.
	22:15	140	**Boulders and gravel, rough drilling, losing mud.**
17 Jan 97	06:30	145	**Spot LCM pills, build volume.**
	08:00	145	**Rough drilling, using 6 daN and 50 rpm, penetration rate only 0.3 m/hr.** Angle down to 1 1/2 degrees.
18 Jan 97	10:15	151	**Trip for low penetration rate.** Pick-up 311mm bit and pilot drill to 182 metres. **Angle builds back to 2 degrees.**
19 Jan 97	05:00		Ream 311mm pilot out to 445mm using bits.
21 Jan 97	11:00	210	**Trip for low penetration rate.** Pick-up 311mm bit and stabilization. Pilot drill to 282 metres.
24 Jan 97	11:15	282	**Trip for low penetration rate.** Pick-up 311mm bit and mud motor. (First survey indicates deviation is west.)
26 Jan 97	19:45	453	Reached surface casing depth. Ream 311mm pilot out to 445mm using hole opener.
27 Jan 97	17:15	269	Trip for cutters. Hole opener was damaged. Switch to bit until another arrives. Ream 311mm pilot out to 445mm using a bit.
28 Jan 97	11:30	291	**Penetration rate continues low. Trip to run hole opener.** Ream 311mm pilot out to 445mm using hole opener.
31 Jan 97	03:30	453	Finished reaming pilot hole, condition mud and hole. Wiper trip to collars.
... Surface Casing			
	06:30		Laydown 279/228 mm drill collars, run 340 mm casing, **hit ledge at 300 m, cannot work past ledge, laydown casing.** Wait on 445mm reamers.
1 Feb 97	20:30		**Ream tight spots between 180-280 m (1 hr), ream 280m to bottom (9 hrs).**
2 Feb 97	15:00		Run casing with ECP on bottom. Wait on cementers.
3 Feb 97	02:45		Cement casing, inflate ECP. Wait on cement. Clean cement from under substructure. Tear-out diverter. Dig down cellar 2 m. Cut and dress casing, weld on bowl.

Date	Time	Depth	Event
		metres	
4 Feb 97	14:45		Nipple-up BOP stack, install Williams head.
5 Feb 97	16:00		Pressure test to 1400 kPa and 14,000 kPa. Repair leaks.
7 Feb 97	04:00		Tag cement at 415m. Drill out cement and shoe.
... Intermediate Hole 1			
	11:00	453	Below surface casing. Drill 311mm hole.
	13:15	463	**Lost circulation (35 m3) to fractures** (300m into Flett). **Rig-up air, unload hole. Pump pill of heavy mud, Sawdust and Kwikseal.** Drill ahead with partial losses. Bypass shakers and recirculate LCM.
8 Feb 97	21:30	504	**Rate of mud loss while drilling was too high.** Run in open ended. **Run cement plug 490-448m**, pull up to 400 m, squeezed 3/4 m3 to start, another 1/2 m3 in 15 minutes.
9 Feb 97	10:45		Wait on cement 6 hrs, displace hole to water, polish plug to 454m, cement soft yet, wait on cement another 8 hrs, polish to 504m, cement hard now.
10 Feb 97	17:00		Ran leak-off test with water 3700 kPa => 18 kPa/m, displace to mud. Geologist reported minor fractures at 456m, 458m, 475m, and 484m, no gas, no porosity
11 Feb 97	10:45	550	Attempt to blow down hole, **water flow at 1 m3/min** (370 m into Flett), **revert to mud.** Geologist reported 2 m zone at 547m with 12-14% porosity. (Flow set off H2S alarms.)
	19:00	570	**Losing mud at 4 m3/hr, spot LCM pill of Sawdust and Kwikseal, drill ahead with losses at 1 m3/hr.**
12 Feb 97	20:45	651	**Angle builds to 2 degrees. Trip for bottomhole assembly, run in with stabilization.** Tear-off rotating head to reduce back pressure on the hole, to reduce mud loss rate.
13 Feb 97	18:30	680	Losses reported, spot LCM (Sawdust and Kwikseal) on bottom, drill ahead, losses continue, spot LCM at casing shoe.
13 Feb 97	22:00	693	**Drilled chert bed** (180m from base of Flett), scrubbed bit.
15 Feb 97	17:30	837	**Lost pump pressure, found wash-out in jars** (10 hrs).
17 Feb 97	01:30	927	**Twist-off drill pipe, fish and recover** (25 hrs). Pipe parted in the tube of the first joint above the HwtDP, 4-5 inches above pin. Fish was 208m in length, with the top at 720m.
20 Feb 97	23:45	1279	**Increase in pump pressure, trip for plugged jets** (100m into Banff). **Pulls tight, pump out to 600m, mud ring** (17 hrs). Began adding detergent.
21 Feb 97	22:30	1282	**Increase in pump pressure, dropped flow rate, bit would not drill, tripped for plugged jets** (11 hrs).
22 Feb 97	10:00	1284	Attempt to drill with PDC bit, would not drill, trip for an insert bit (9 hrs).
24 Feb 97	10:15	1543 m	**Drilled a fracture** (100m from base of Banff), **mud becomes gas cut** (mud density was 1150 kg/m3), **circulate to clear gas, no Barite added.**

Date	Time	Depth metres	Event
	14:30		**Connections have been tight. Trip to drop stabilizers from BHA. Pump out 9 stands. Circulate gas cut mud. Pump out and back ream to 1170m. Packed-off at 1170m. Work pipe free. Pump out and back ream to 800m.** Pulled smooth from 800m to surface. Run in with pendulum-like assembly. **Ream 1171m to bottom. Banff shale is sloughing, circulate and condition hole.**
27 Feb 97	01:00	1710 m	Reached casing point (50 m into Kotcho).
28 Feb 97	03:30		Trip for bit. Run in to condition hole, **ream bridges at 1473m and 1670m. Trip out to 1430m, tight between 1700m and 1500m (base of Banff sloughing). Trip back in was smooth. Circulate on bottom. Trip out to 1400m, tight between 1700m and 1600m.** Trip back in was smooth, encountered 10m of fill. Next wiper trip was good. Trip out to log.
... Intermediate Hole Logs 1			
	16:15		Begin logging.
1 Mar 97	01:00		Finished logging. Run in and condition hole for casing. Pull out and laydown 228mm drill collars.
... Intermediate Casing 1			
	20:15	1713	Depth correction. Run 245 mm casing, run ECP on bottom.
2 Mar 97	16:30		Cement stage #1, inflate ECP, drop dart, open stage tool, circulate 5 1/2 hrs, cement stage #2, lift BOP stack, set slips with 75,000 daN, install adapters.
3 Mar 97	08:00		Nipple-up BOP stack. **Surface casing vent has pressure on it. Will bleed-off pressure intermittently, to determine if it will dissipate.**
4 Mar 97	01:00		Pressure test to 1400 kPa and 21,000 kPa.
	16:00		Drill out stage collar, drill out shoe.
5 Mar 97	02:45	1713	Below intermediate casing.
	03:15	1716	Ran leak-off test => 20 kPa/m, trip for air hammer, make-up 10 stands and rack in derrick.
	20:30		Blow down hole with air in 300m increments, dry hole.
... Intermediate Hole 2			
6 Mar 97	05:30		Drill 216mm hole with air hammer. Drill and dry.
8 Mar 97	22:00	2600	Change rotating head element.
9 Mar 97	22:30	2880	**Work stuck pipe** (1 hr).
10 Mar 97	01:45	2897	Reached casing point (8 metres into Nahanni).
	05:30		Displace hole to mud in 300m increments. Pull out and laydown air hammer. Run in with bit to condition hole for casing. (Logs waived, will run neutron and gamma ray through casing at total depth.)
	20:15		**Hit bridge at 2650m** (lower Ft Simpson) **ream and clean** (3 hrs). **Hit bridge at 2770m** (lower Ft Simpson) **ream and clean** (1 hr). Clean 30m to bottom and circulate (4 1/2 hrs).
11 Mar 97	07:00		Trip to casing shoe and back. **Tight throughout, ream and clean** (7 hrs). **Ream 60m to bottom** and circulate (8 hrs)

Date	Time	Depth	Event
		metres	
	22:00		Trip to casing shoe and back. **Tight throughout, bridges at 1910m , 2150m, and 2357m** (7 hrs). Circulate and condition hole. **Raise mud density to 1235 kg/m3 with Barite, to combat sloughing** (12 hrs)
12 Mar 97	17:15		Trip slowly to casing shoe and back, hole stable, trip smoooth (7 hrs).
... Intermediate Casing 2			
13 Mar 97	02:30		Pull out for casing. Laydown 127mm drill string. Run 178 mm casing with ECP in middle (to land inside previous casing shoe). Break circulation at 2300 m, and every 200m to bottom.
14 Mar 97	21:30		Circulate casing on bottom. Circulating pressure limited to 9000 kPa to avoid setting ECP, **can attain only 0.2 m3/min before annulus packs-off. Mud returns are very viscous, dehydrated by bottomhole temperature of 170 degC.** (Rates greater than 0.2 m3/min must be sufficient to lift cuttings in the annulus, which pack-off around the ECP.) **Work casing and thin mud to attempt to attain higher circulation rates.**
16 Mar 97	00:30		**Cannot acheive higher circulation rates. Cannot cement stage #1 at these rates.** Pressure up to 17,000 kPa and inflate ECP. Drop dart and open stage tool. Circulate 1 1/2 hrs. Cement stage #2. **(Without the first stage cemented, cannot drill the main hole underbalanced.)** Set slips with 70,000 daN. Lift BOP, cut and dress casing.
	13:15		Nipple-up BOP stack. Pick-up 3 1/2" drill string.
17 Mar 97	12:00		Pressure test to 1400 kPa and 35,000 kPa. Isolate casing with an RTTS packer. Limit pressure test on annular preventer to 14,000 kPa. Pressure test casing to 17,000 kPa. Pick-up the rest of the 3 1/2" drill string. **(The 3 1/2" rubber elements for the Williams head split when installed. The rubber was too hard.) Pull out of hole and tear-out the Williams head.**
18 Mar 97	16:00		Drill out stage tool, drill out float and shoe.
... Main Hole			
19 Mar 97	00:45	2897	Below intermediate casing. Drill 152mm hole.
20 Mar 97	20:00	2940	**Hole angle out to 3 1/4 degrees. Trip for BHA. Pick-up stabilization.** (11 hrs) **Pipe became stuck at 2902m on trip in. Jar loose** (1/2 hr).
25 Mar 97	02:30	3220	Reached total depth (40 metres into Arnica). Circulate and wait on loggers.
... Main Hole Logs			
	20:15	3222	Begin logging. **Calipers failed on suite #1. Wait on LDT tool from Nisku. Suite #4 did not function. Rope socket was bubbled and swollen.** (Hole was static for 36 hrs, fluid temperature had reached 157 degC on bottom.) Depth correction.

Date	Time	Depth	Event

		metres	
27 Mar 97	07:00		**Run in with bit to circulate and reduce well temperature** (14 hrs).
	20:45		Run final suite of logs.
... Production Liner			
28 Mar 97	02:45		Finished logging. Run 114mm liner and circulate.
	18:30		Cement liner, set hanger, pull out of hole. **Surface casing / intermediate casing annulus continues to have pressure on it. Pump 1 m3 of Thermax into surface casing vent.**
... Wrap-up and Tear-out			
29 Mar 97	02:00		Run in with a bit to 2400m. Displace hole to water. Wait on cement. Polish cement to 2730m. Pressure test casing to 10,000 kPa. Tear-out BOP stack, clean tanks, dress 178mm casing, and install tubing bonnet. Tear-out top drive.
30 Mar 97	21:00		Rig released. Move rig to Paramount et al Maxhamish b-57-L / 94-O-15 in BC. Gauge on surface casing vent indicates there is no pressure in the annulus.

Operational Data

Wellsite and Access

???

Geology

Table 6 - Formation Tops and Sample Descriptions

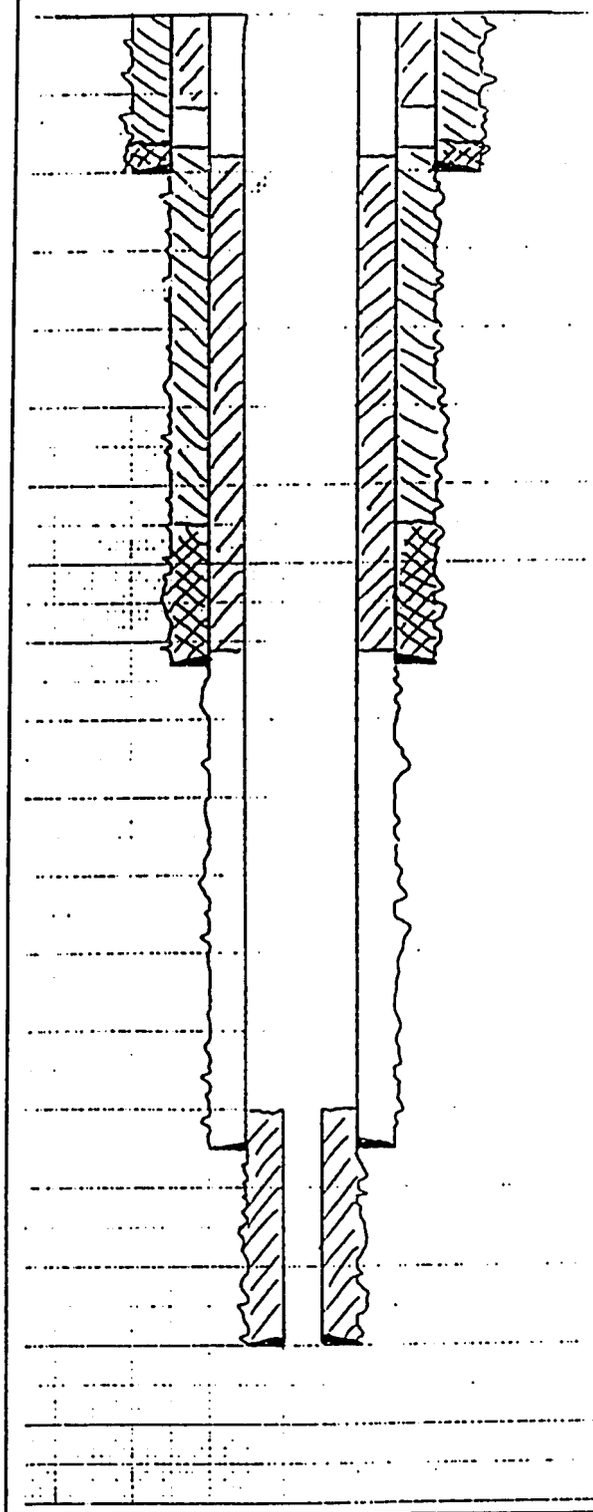
Formation Top or Marker	Measured Depth	Sample Descriptions
	metres	
Quarternary		
Glacial Drift	0	Unconsolidated sand and shale.
Permian		
Fantasque	144	Shale and chert.
Pennsylvanian		
Mattson	Not present	Sandstone interbedded with shale.
Mississippian		
Flett	179	Interbedded dolomite, limestone and shale.
Shunda	975	Shale, lime interbedded with shale at bottom.
Pekisko	1119	Dolomite at top, shale interbedded with lime.
Banff	1163	Shale interbedded with lime, some fractures.
Exshaw	1646	Shale, traces of pyrite.
Devonian		
Kotcho	1665	Shale, middle has limestone beds.
Tetcho	2030	Interbedded limestone and shale.
Kakisa	2138	Limestone.
Ft Simpson	2162	Shale.
Muskwa	2822	Shale, traces of pyrite and chert.
Nahanni	2889	Dolomite and limestone, shale beds at bottom.
Manatoe	3129	Dolomite, vuggy porosity.
Arnica	3184	Dolomite, tight.
Total Depth	3222	

Hole Sizes and Casing Program

The surface casing was planned to be set in the Fantasque to ensure a good casing seat, but the top came in very high and was too shallow to provide enough hole integrity. Drilling into the Flett to set the casing fulfilled the requirement. The first intermediate was set in the top of the Kotcho, as planned, and the second in the top of the Nahanni, as planned. The cement job on the second intermediate, unfortunately, didn't go as planned. The first staged was not pumped because the annulus would pack-off whenever the circulation rate reached 0.3 m3/min. (This would not have provided enough time to displace the cement before it set.) The second stage was cemented, but with the casing in this condition, the NEB insisted on a cemented liner overlapping the shoe of the previous string.

Even though external casing packers were installed in each casing string, to ensure there were no vent flows, the well ended up with pressure on the casing bowl outlets. After bleeding off the outlets for two weeks, the pressure in the annulus had not dissipated. To attempt to shut of the flow path, a Thermax plug was squeezed into the outlet. With 1 m3 away, the pressure spiked and the pumper was shutdown. The valve on the outlet was closed and a gauge installed. To date, no further pressure has been measured on the annulus.

Figure 1 - Wellbore and Casing Profile



0 - 453m	444.5 mm hole
0 - 453m	339.7 mm, 81.1 kg/m, K-55, ST&C casing
432 - 440m	External casing packer
0 - 415m	53 m3 0:1:0 Class G + 1% $CaCl_2$
415 - 453m	4 m3 0:1:0 Class G + 1% $CaCl_2$ + 0.5% T-10 + 0.5% D-24
453 - 1713m	311.2 mm hole
0 - 1713m	244.5mm, 69.9 kg/m, L-80, LT&C casing
1307m	Stage cementing tool
1688 - 1699m	External casing packer
0 - 30m	Thermax
300 - 1307m	55 m3 1:1:2 Class G + 0.5% T-10
1307 - 1713m	25 m3 0:1:0 Class G + 1.1% NFL-3
1713 - 2897m	215.9 mm hole
0 - 2897m	177.8 mm, 43.2 kg/m, L-80, LT&C casing
1692m	Stage cementing tool
1695 - 1698m	External casing packer
350 - 1692m	18 m3 1:1:2 Class G + 0.5% T-10 + 0.2% R-6
1692 - 2897m	The annulus packs-off at flow rates above 0.2 m3/min. Unable to cement this stage.
2897 - 3222m	152.4 mm hole
2742 - 2925m	114.3 mm, 17.3 kg/m, K-55, ST-L casing
2925 - 3221m	114.3 mm, 17.3 kg/m, L-80, LT&C casing
2735 - 2742m	Liner hanger
2635 - 3221m	7 m3 Thermal 40F + 0.4% D-24 + 0.5% T-10 + 0.3% R-6 + 0.5% Gel

Time Summary

Figure 2 - Drilling Progress Curve

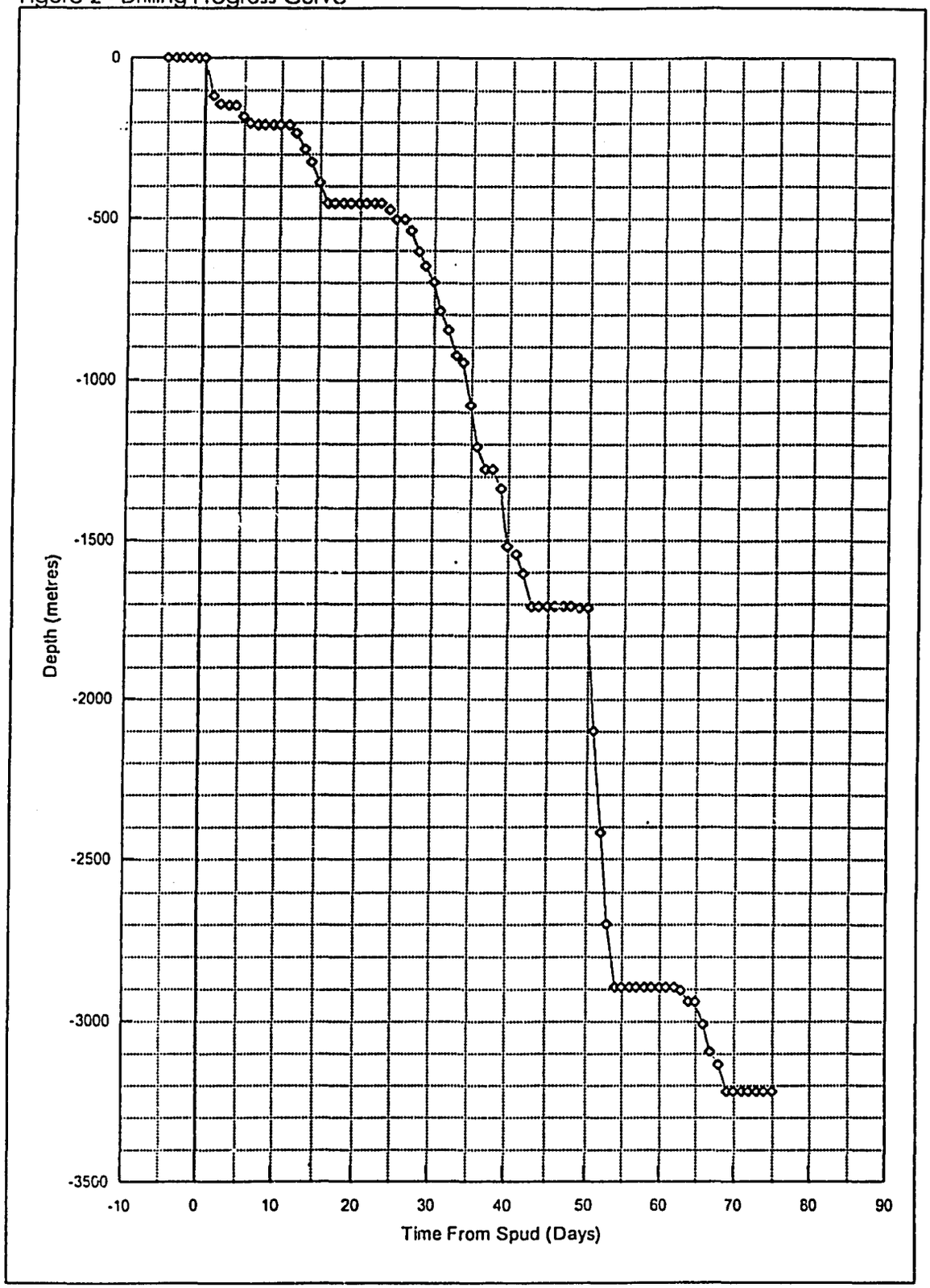
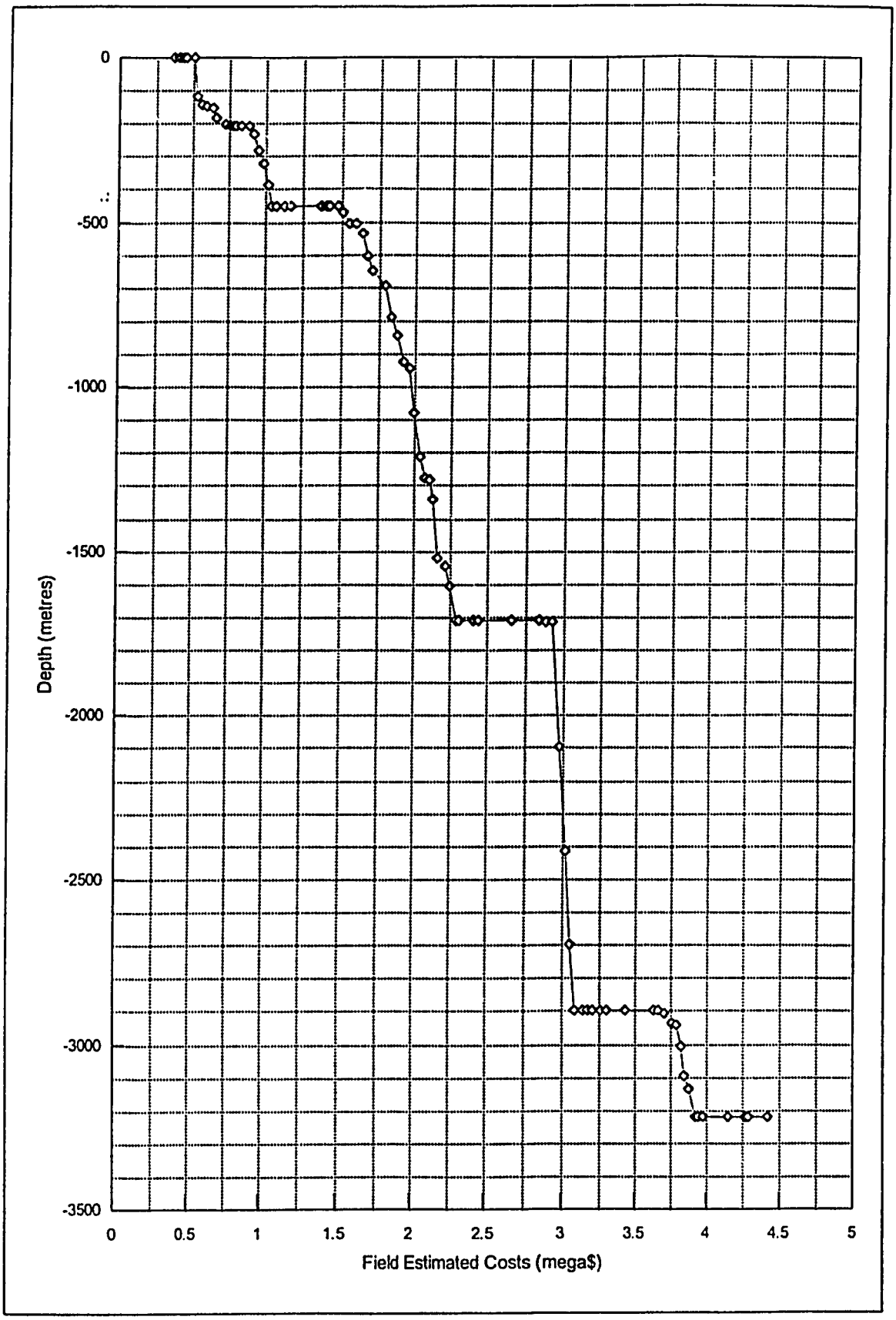
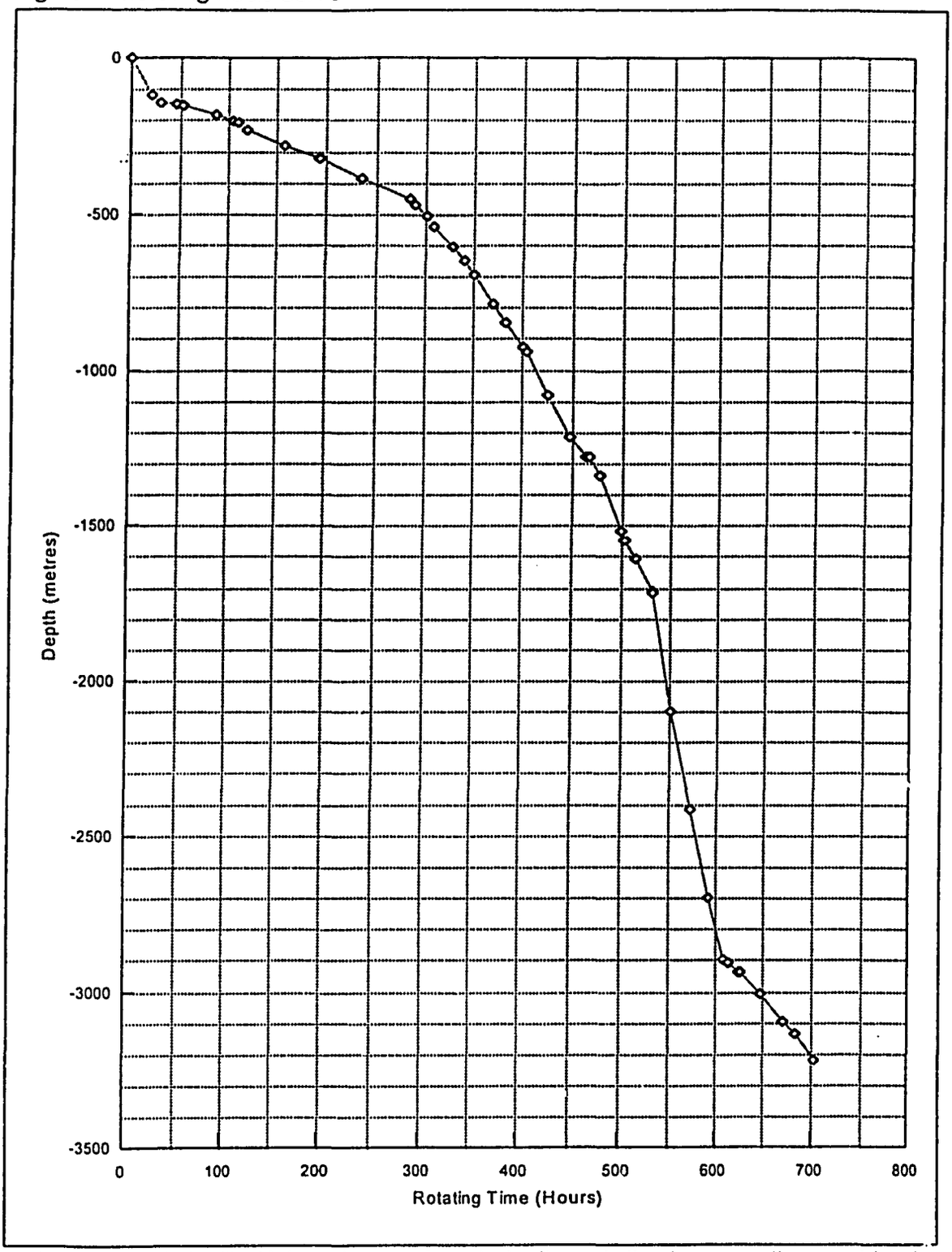


Figure 3 - Drilling Cost Curve



Bits / Bottomhole Assemblies

Figure 4 - Rotating Hours Curve



Note: For the pilot drilled intervals on surface hole, the rotating hours are the combined drill and ream hours.

Table 7 - Bit Record

Bit No.	Size	Brand	Type	Depth In	Depth Out	Rot Time	ROP	Cum Time	Dull Condition	Comment
	mm			m	m	hrs	m/hr	hrs		
1A	445	Sec	S33G	0	135	24.25	5.57	24.25	2-2-WT-A-1-1-0-DEV	Angle out to 2.5 deg, Garbutt @130m
2A	445	Hughes	X3A	135	144	4.25	2.12	28.50	2-2-WT-A-1-1-0-PR	Fantasque @ 144m
3A	445	Hughes	R3	144	149	13.25	0.38	41.75	7-8-WT-A-E-I-0-PR	Rough drlg, using 6000 daN and 50 rpm
4A	445	Sec	S21G	149	151	6.25	0.32	48.00	2-2-WT-A-1-1-0-PR	Rough drlg continues, trip to pilot
1B	311	Reed	HP53A	151	182	10.5	2.95	58.50	1-1-0-0-E-I-0-FM	Flett @179m
RR4A	445	Sec	S21G	151	182	22.25	1.39	80.75	Didnt-Trip	Reamed pilot hole and drilled ahead.
RR4A	445	Sec	S21G	182	187	3.5	1.43	84.25	2-4-WT-A-E-I-0-PR	
RR2A	445	Hughes	X3A	187	210	21.5	1.07	105.75	2-3-WT-A-2-I-0-PR	Wont drill using 4000 daN, 140 rpm, trip to pilot
2B	311	Smith	SDGH	210	254	22.25	1.98	128.00	6-6-WT-A-5-3-0-PR	Packed BHA, stab runs into UG hole
3B	311	Reed	HP53A	254	282	31	0.90	159.00	2-5-BT-A-1-I-0-DEV	Angle out to 3 deg, pick-up motor
4B	311	Smith	F2P	282	453	39.75	4.30	198.75	4-6-WT-A-3-I-0-TD	Motor drilling
5A	445		H.O.	210	269	14.75	4.00	213.50	Damaged-PR	
6A	445	Hughes	X3A	269	291	12	1.83	225.50	1-4-WT-A-2-I-0-PR	Dont have another HO (using same WOB, RPM)
7A	445		H.O.	291	379	27	3.26	252.50	Undamaged-PR	No damage, reran
RR 7A	445		H.O.	379	453	24.25	3.05	276.75	Didnt-Say-TD	
1	311	Smith	FDGH	453	463	2.25	4.44	2.25	8-8-BT-A-E-I-8-LC	Rough drilling, trip for shock and jars
2	311	Reed	EHP53A	463	504	11.5	3.57	13.75	Undamaged-LC	Trip to run cmt plug
RR2	311	Reed	EHP53A	504	651	40.75	3.61	54.50	2-2-WT-A-E-I-0-DEV	Angle out to 2 deg, pick-up stabs
3	311	Sec	M44N	651	696	10.75	4.19	65.25	6-7-WT-A-8-4-0-PR	Stabs run into UG hole
4	311	Smith	F2P	696	837	29.25	4.82	94.50	2-4-WT-A-E-2-0-PP	Trip for wash-out
5	311	RBI	C2	837	927	20.25	4.44	114.75	1-3-BT-1-E-I-0-TW	Twisted-off
6	311	Hughes	GTM28	927	1279	62.25	5.65	177.00	1-2-WT-A-E-I-0-DEV	Shunda@975m, Pekisko@1119m, Banff@1163m
7PDC	311	DBS	FM2943	1279	1282	4.75	0.63	181.75	Undamaged-PR	Bit balled-up
RR7	311	DBS	FM2943	1282	1284	2.25	0.89	184.00	Undamaged-PR	Bit balled-up
8	311	Reed	HP43A	1284	1548	33	8.00	217.00	1-1-0-A-E-I-0-BHA	Dev down to 1 deg, drop 2 of 4 stabs
RR8	311	Reed	HP43A	1548	1710	28	5.79	245.00	2-4-BT-A-E-I-0-TD	Exshaw @1646m, Kotcho @1665m
9	216	Reed	HP43A	1710	1716	0.5	12.00	245.50	1-1-1-A-E-I-0-BHA	Run leak-off, change to air hammer
10AIR	216		H45R8	1716	2897	77.5	15.24	323.00	Damaged-TD	Tetcho@2030m, Ft Simp@2162m, Nahanni@2889
11	152	Smith	FV	2897	2907	5.75	1.74	328.75	8-8-WT-A-E-4-0-TQ	
12	152	Reed	HP51A	2907	2940	12	2.75	340.75	1-2-WT-A-E-I-0-BHA	Angle out to 3.25 deg, pick-up stabs
13	152	Smith	F3P	2940	3124	54.25	3.39	395.00	5-3-WT-3-1-I-0-PR	
14	152	Smith	F3P	3124	3222	22.5	4.36	417.50	2-2-WT-A-2-I-0-TD	Manatoe @3129m, Arnica @3184m

Drilling Fluids

The well was drilled primarily with Gel Chemical mud, with one section drilled with air. Table 8 summarizes the mud systems used in this well. A breakdown of mud products versus hole section follows in Table 9.

Table 8 - Mud Systems

Hole Section	Mud System	Interval
		metres
Surface Hole	Gel Caustic * LCM Added	0 - 453 145
Intermediate Hole 1	Gel Chemical Air Gel Chemical * LCM Added * PHPA Added	453 - 555 555 - 555 555 - 1713 463 800
Intermediate Hole 2	Water Air Gel Chemical * Barite Added	1713 - 1716 1716 - 2897 2897 - 2897 2897
Main Hole	Gel Chemical * Barite Added	2897 - 3222 2897

Table 9 - Mud Product Consumption on Daily Reports

Product	Pkg	First Added	Surf Hole	Interm Hole 1	Interm Hole 2	Main Hole	Total	Billed
		metres						
Gel[1]	40 kg	0	367	962	366	63	1758	1721
Caustic	50 lb	0	21	31	13	11	76	80
Soda Ash	40 kg	0	3	6			9	10
Sawdust	40 lb	145	118	307			425	375
Kwikseal	40 lb	145	7	63			70	50
Desco	25 lb	453	2	10	11	6	29	30
Bicarb	100 lb	500		4			4	5
Lignite	50 lb	700		15		9	24	32
Encapsorfloc	20 L	800		13	6		19	20
VisPlus[2]	50 lb	800		0			0	3
Aquapac	50 lb	950		16	9	16	41	41
SAPP[3]	50 lb	1280		0			0	2
Detergent	20 L	1280		3			3	3
Barite	40 kg	2897			219	108	327	343

[1] Approx 20% was natural Gel in 100 lb bags .
[2] The report for DFS 32 has VisPlus written in, with no entry for amount
[3] Mud rings were reported on DFS 37, with only detergent added

Air Drilling / Underbalanced Drilling

Deviation / Directional

The bottomhole target was directly below surface. The hole was drilled essentially straight down, with 1-3 degrees of deviation resulting from formation dips. Directional surveys were taken only in the short motor drilled section on surface hole. The azimuth was derived from the motor drilled section and was assumed to be 265 deg throughout. The well intersected the Nahanni approximately 89 metres west of the surface location and finished-up approximately 95 metres west of the surface location. (If the well reversed direction or spiralled, the displacements would of course be less.) The well path, based on assumed azimuths, is detailed by the directional survey calculations in Table 10.

Table 10 - Directional Survey Calculations

	Survey				Coordinates					Closure		
	Depth	Drift	Dir	TVD	N/S		E/W		DLS	Length	Dir	VSxn
	m	deg	deg	m	m		m		deg/30m	m	deg	m
1	0	0	0	0.00	0.00	N	0.00	E		0.00	0.0	0.00
2	112	0.75	265	112.00	-0.06	S	-0.73	W	0.20	0.73	265.0	-0.06
3	130	2.5	265	129.99	-0.11	S	-1.24	W	2.92	1.24	265.0	-0.11
4	148	1.5	265	147.98	-0.16	S	-1.86	W	1.67	1.87	265.0	-0.16
5	175	2	265	174.96	-0.23	S	-2.69	W	0.56	2.70	265.0	-0.23
6	253	2.75	265	252.90	-0.52	S	-5.91	W	0.29	5.93	265.0	-0.52
7	337	3	265	336.79	-0.88	S	-10.10	W	0.09	10.14	265.0	-0.88
8	413	1.75	265	412.72	-1.16	S	-13.24	W	0.49	13.29	265.0	-1.16
9	431	1.5	265	430.72	-1.20	S	-13.75	W	0.42	13.80	265.0	-1.20
10	460	1.125	265	459.71	-1.26	S	-14.41	W	0.39	14.47	265.0	-1.26
11	601	1	265	600.69	-1.49	S	-17.02	W	0.03	17.08	265.0	-1.49
12	680	2	265	679.66	-1.67	S	-19.08	W	0.38	19.15	265.0	-1.67
13	780	1.5	265	779.61	-1.94	S	-22.12	W	0.15	22.20	265.0	-1.94
14	952	1.5	265	951.55	-2.33	S	-26.60	W	0.00	26.70	265.0	-2.33
15	1078	2.5	265	1077.47	-2.71	S	-30.98	W	0.24	31.10	265.0	-2.71
16	1277	3	265	1276.24	-3.54	S	-40.49	W	0.08	40.65	265.0	-3.54
17	1431	1	265	1430.14	-4.01	S	-45.85	W	0.39	46.02	265.0	-4.01
18	1520	1.75	265	1519.12	-4.20	S	-47.98	W	0.25	48.16	265.0	-4.20
19	1703	2	265	1702.02	-4.72	S	-53.94	W	0.04	54.15	265.0	-4.72
20	1827	1.5	265	1825.96	-5.05	S	-57.71	W	0.12	57.93	265.0	-5.05
21	2028	0.75	265	2026.92	-5.39	S	-61.64	W	0.11	61.88	265.0	-5.39
22	2276	2	265	2274.84	-5.91	S	-67.57	W	0.15	67.83	265.0	-5.91
23	2658	1.5	265	2656.66	-6.93	S	-79.19	W	0.04	79.50	265.0	-6.93
24	2753	3	265	2751.59	-7.25	S	-82.91	W	0.47	83.23	265.0	-7.25
25	2867	3	265	2865.43	-7.77	S	-88.85	W	0.00	89.19	265.0	-7.77

Coring, Logging and Testing

No cores or drill stem tests were run on this well. Logs were run at two of the four casing points (Table 11). The first set of logs were run without problems. The sonic and density

logs failed in the second set. The bottomhole temperature (170 degC) caused the rope socket to melt and prevent signal transmission.

Table 11 - Wireline Logs

Depth	Suite	Interval
		metres
Surface Casing	None	
Interm Casing 1	AITH(Phasor) / BHCS-GR	1698 - 454
	* Sonic logged up to 20m	
	PX CNL-LDT-GR / Microlog	1700 - 454
Interm Casing 2	Waived	
Total Depth	AITH-TLD-CNL-ML-GR	3220 - 2894
	DSI-GR	3214 - 2894
	FMS-GR	3222 - 2894
	ARI-LDT-CNL-ML-GR	3222 - 2894
	DLT-LDT-CNL-ML-GR	3218 - 2894
	* CNL-GR logged up to 1700m	

Analysis

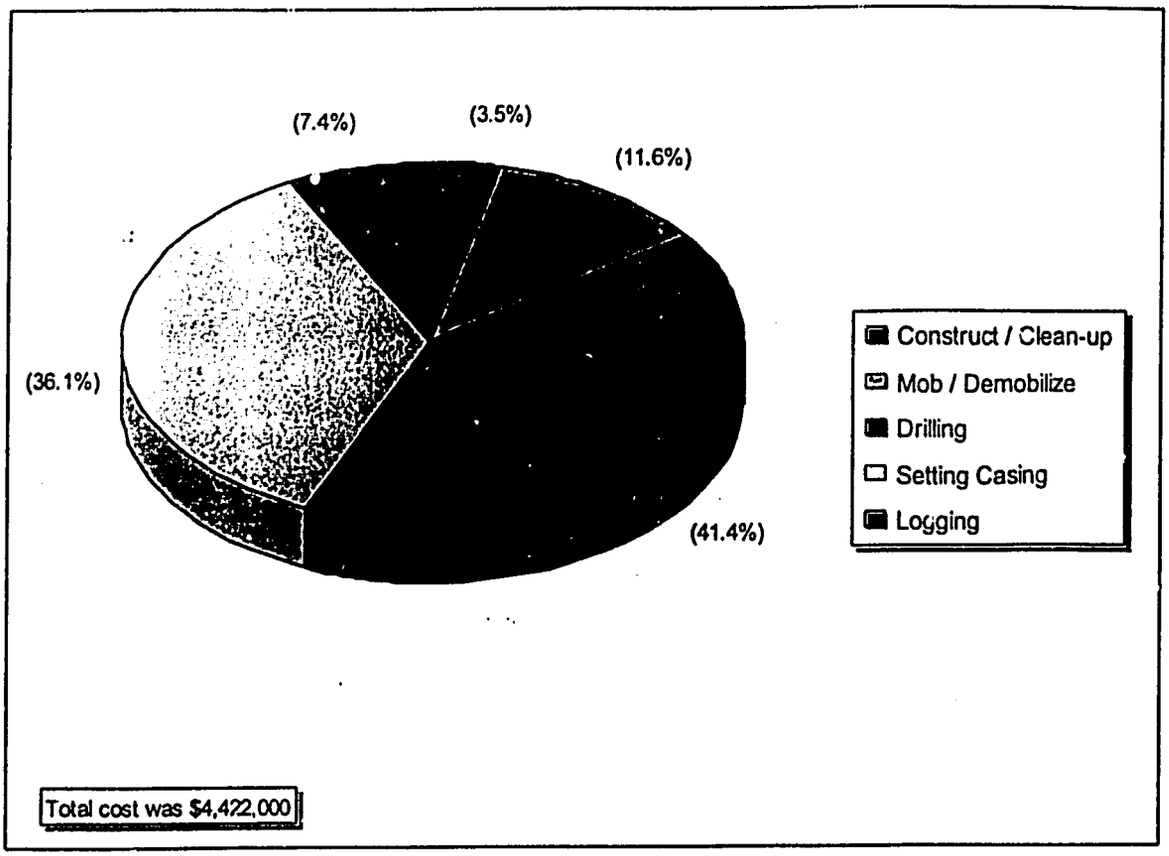
Table 12 - Drilling Time Summary

Operation	Start Date	Start Time	Days	Cum Days	Problems	Net Days	Cum Net Days
Prepare to drill	09-Jan-97	14:00	5.72	0.00	0.00	5.72	0.00
Drill 445 mm hole	15-Jan-97	07:15	15.97	15.97	3.67	12.30	12.30
Set 340 mm casing	31-Jan-97	06:30	7.19	23.16	2.21	4.98	17.28
Drill 311 mm hole	07-Feb-97	11:00	20.93	44.08	8.08	12.85	30.12
Run wireline logs	28-Feb-97	09:15	0.66	44.74	0.00	0.66	30.78
Set 245 mm casing	01-Mar-97	01:00	5.19	49.93	0.00	5.19	35.97
Drill 216 mm hole	06-Mar-97	05:30	6.88	56.80	2.13	4.75	40.71
Set 178 mm casing	13-Mar-97	02:30	5.93	62.73	1.00	4.93	45.64
Drill 152 mm hole	19-Mar-97	00:45	6.30	69.03	1.08	5.22	50.86
Run wireline logs	25-Mar-97	08:00	2.78	71.81	1.54	1.24	52.10
Set 114 mm casing	28-Mar-97	02:45	0.97	72.78	0.96	0.01	52.11
Wrap-up	29-Mar-97	02:00	1.79	74.57	0.63	1.16	53.27
Rig Released	30-Mar-97	21:00					

Table 13 - Drilling Cost Summary

Operation	End Day	End Cost	Adjust	Cost	Problems	Net Cost	Cum Net Cost
Construct, mobilize	0	$506,800	$5,500	$512,300		$512,300	$512,300
Drill 445 mm hole	16	$1,039,707	($21,600)	$511,307		$511,307	$1,023,607
Set 340 mm casing	23	$1,472,982	$24,700	$457,975		$457,975	$1,481,582
Drill 311 mm hole	44	$2,311,678	($23,100)	$815,596		$815,596	$2,297,178
Run wireline logs	45	$2,409,858	($4,000)	$94,180		$94,180	$2,391,358
Set 245 mm casing	50	$2,920,760	$18,500	$529,402		$529,402	$2,920,760
Drill 216 mm hole	57	$3,205,471		$284,711		$284,711	$3,205,471
Set 178 mm casing	63	$3,696,558		$491,087		$491,087	$3,696,558
Drill 152 mm hole	69	$3,915,507		$218,949		$218,949	$3,915,507
Run wireline logs	72	$4,150,096		$234,589		$234,589	$4,150,096
Set 114 mm casing	73	$4,266,855		$116,759		$116,759	$4,266,855
Demob, restore	75	$4,322,199	$100,000	$155,344		$155,344	$4,422,199

Figure 5 - Distribution of Costs



Problems

Gravel and Boulders

A zone of gravel and boulders was encountered at the base of the Glacial Till between 130-144m. The drilling became very rough and the hole angle kicked out to 2 1/2 degrees. Fluid returns were lost near the base.

The interval would normally have been drilled at 6 m/hr whereas the roughness reduced the rate to 2.25 m/hr. The lost time included ROP reduction (4 hrs), an extra trip (5 hrs), reaming (3.5 hrs) and LCM placement (1.5 hrs) for a total of 14 hrs. The cost of the problem is comprised of the lost time ($???), the extra bit ($???), the LCM ($???) and the mud built ($???) which totals $??? .

The zone is not widespread and should be factored into the next AFE as contingency only. On this well, the cost could not have been avoided.

Surface Casing Bridges

Lost Circulation in the Flett

Sour Water in the Flett

Wash-out in the Jars

Twist-off in the Drill Pipe

PDC Balled-up

Sloughing Shale from Banff

Sloughing Shale from Ft Simpson

Logging Troubles

Efficiency

Deviation and Chert in Fantasque

The Fantasque formation was encountered between 144-179 m and contained significant amounts of chert throughout. At reduced WOB and RPM (to control deviation), the drilling was very rough and the penetration rate was very low. The hole was pilot drilled from 151-182m in an effort to make hole without building angle. At the top of the Flett, the drilling smoothed out and the pilot bit was pulled. The hole was reamed-out to gauge using the previous bit.

The pilot hole reamed-out at 1.4 m/hr, less than half the rate at which it drilled. The rates of reaming-out with bits versus hole openers in the lower section of the surface hole indicate the reaming-out could have taken half as long with a hole-opener (see next section). The combined drill and ream penetration rate could have been 1.4 m/hr. The interval between 144-151 m, which was not pilot drilled, could have drilled in 1/4 of the time. The lost time included reduced ROP while not piloting (14.5 hrs) and the reduced ROP while without the hole opener (11 hrs) for a total of 25.5 hrs. The potential savings amounts to the value of the lost time ($???).

By pilot drilling the entire Fantasque and reaming it out using hole openers, the well cost can be reduced by the quoted amount.

Pilot Drilling Surface Without a Motor

Opening Pilot Hole with Bits

Air Drilling the Ft Simpson

Deviation in the Nahanni

Misc Observations

Hole Caliper

Caliper logs are available for Intermediate Hole 1 and Main Hole. The first intermediate hole (453-1710m) registered a volume of 113.7 m3, for an average hole diameter of 341 mm. The hole diameter was by no means constant. The calipers registered gauge hole between 942-962m (base of Flett) and 1632-1665m (Exshaw). The rest was washed-out, with the caliper wide open, between 488-518m (Flett), 578-608m (Flett), 1162-1285m (Banff), and 1323-1574m (Banff). Intermediate Hole 2 was not logged however hole fill volumes after air drilling indicated the hole was near gauge until the mud hit it. The main hole (2896-3222m) registered a volume of 6.76 m3, for an average hole diameter of 162 mm. There was one section, 3009-3083m (Nahanni), washed-out to 180mm and one section, 2896-2926m (Nahanni), washed-out to 170mm. The rest is pretty close to gauge. The caliper read 240mm between 2894-2898m, indicating the 178mm casing is probably not right on bottom.

The spiralling on the Intermediate Hole 1 caliper between 725-875m (Flett) may be an indication of elliptical hole and non-uniform rock stress in the X-Y plane. (Does this theory have any ramifications on the drilling program?)

Temperature Gradient

The bottomhole temperature at total depth was expected to be 170 degC. The logs (and logging problems) were the first indication this was true. The logs indicated the drilling fluid, after standing for 36 hours, had reached 158 degC. In fact, the dehydration of the drilling fluid, at the second intermediate casing point, was probably the first indication, however, it wasnt fully appreciated because the flowline temperature stayed under 50 degC. The two facts put together, suggest the zone of high temperature must not be too thick. The fluid must not have been next to the higher temperature long enough to become that hot. Looking back at the first set of logs, the maximum recorded temperature was 50 degC. Based on an average surface temperature of 0 degC, linear profiles (a gross simplification) have the shallow gradient at 2.9 degC/100m and the deep gradient at 7.1 degC/100m. The shallow gradient is much closer to normal (2.7 deg/100m) for Western Canada. The thermal conductivity of the shallower zones must be greater than that of the deeper zones. (Will this impact on the drilling program?)

FLOW & BUILD-UP REPORT (JAN 24-26/98)

PARAMOUNT RESOURCES LTD.

PARAMOUNT ET AL BOUIE
c-76-60-20-122-45

FLOW & BUILD-UP
JAN. 24 TO JAN. 26/98

SURVEY COMPANY: RAPID WIRELINE SERVICES LTD.

REPORT BY: P.D.Q. SERVICES LTD.

1. BASIC DATA

COMPANY : PARAMOUNT RESOURCES LTD.
ADDRESS : 4000 350-7th AVE. S.W. CALGARY
FIELD & POOL : BOUIE / NAHANNI
TYPE OF TEST : FLOW & BUILD-UP
PROD. INT. mCF: 2980.6 - 3075.28
ELEV.(CF),m : 426.8 (KB),m : 433.31
KB - CF,m : 6.51
POOL DATUM (SUBSEA),m :

WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45
STATUS : GAS
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
PROD. THROUGH : TUBING
MID-POINT OF PROD. INT.mCF : 3027.94
TUBING : mm @ mCF
DATUM DEPTH,mCF :

2. STATIC TEST

TUBING PRESSURE, kPag : 2162
CASING PRESSURE, kPag :
RUN DEPTH, mCF : 2938.2
B.H. TEMP. (C) : 150.0

SHUT-IN DATE : / @
DATE ON BOT : JAN. 24/98 @ 18:11
DATE OFF BOT : JAN. 26/98 @ 12:29
SURFACE TEMP. :

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
		RECORDERS ON BOTTOM AT 18:11 98/01/24				
JAN.24/98	0.00	18:11	9.380	7755	7	7763
	0.25	18:26	9.666	7993	6	7999
	0.50	18:41	9.981	8255	5	8260
	0.75	18:56	10.303	8522	4	8526
JAN.24/98	0.82	19:00	10.491	8678	3	8681
		OPENED WELL TO FLOW AT 19:00 98/01/24				
JAN.24/98	0.00	19:00	10.491	8678	3	8681
	0.25	19:15	4.663	3836	24	3860
	0.50	19:30	4.421	3635	24	3659
	0.75	19:45	4.433	3645	24	3669
	1.00	20:00	4.475	3680	24	3704
	1.25	20:15	4.638	3815	24	3839
	1.50	20:30	4.745	3904	23	3928
	1.75	20:45	4.865	4004	23	4027
	2.00	21:00	4.971	4092	23	4115
	2.25	21:15	5.026	4138	22	4160

REMARKS :
AMERADA MECHANICAL RECORDER.
NOTE: ALL DEPTHS QUOTED ARE MEASURED DEPTHS.

SURVEY COMPANY : RAPID WIRELINE SERVICES LTD.
INTERPRETATION BY : P.D.Q. SERVICES LTD. 250-7505

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2938.2

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	2.50	21:30	5.113	4210	22	4232
	2.75	21:45	5.204	4286	22	4307
	3.00	22:00	5.278	4347	22	4369
	3.25	22:15	5.439	4481	21	4502
	3.50	22:30	5.580	4598	21	4619
	3.75	22:45	5.704	4701	20	4721
	4.00	23:00	5.866	4836	20	4855
	4.25	23:15	6.038	4978	19	4998
	4.50	23:30	6.199	5112	19	5131
	4.75	23:45	6.356	5243	18	5261
JAN.24/98	5.00	24:00	6.511	5371	18	5389
JAN.25/98	5.25	00:15	6.685	5516	17	5533
	5.50	00:30	6.813	5622	17	5639
	5.75	00:45	6.998	5776	16	5792
JAN.25/98	6.00	01:00	7.139	5893	16	5909
		SHUT WELL IN AT 01:00 98/01/25				
JAN.25/98	0.00	01:00	7.139	5893	16	5909
	0.25	01:15	7.674	6338	14	6352
	0.50	01:30	8.066	6664	13	6676
	0.75	01:45	8.330	6883	12	6895
	1.00	02:00	8.458	6989	11	7001
	1.25	02:15	8.486	7013	11	7024
	1.50	02:30	8.486	7013	11	7024
	1.75	02:45	8.614	7119	11	7130
	2.00	03:00	8.869	7331	10	7340
	2.25	03:15	9.118	7538	9	7546
	2.50	03:30	9.385	7760	7	7768
	2.75	03:45	9.613	7949	6	7955
	3.00	04:00	9.805	8108	6	8114
	3.25	04:15	10.061	8321	5	8326
	3.50	04:30	10.260	8487	4	8490
	3.75	04:45	10.428	8626	3	8629
	4.00	05:00	10.615	8782	2	8784
	4.25	05:15	10.789	8926	1	8928
	4.50	05:30	11.081	9169	00	9169
	4.75	05:45	11.425	9455	-1	9453
	5.00	06:00	11.658	9648	-2	9646
	5.25	06:15	11.864	9819	-3	9816
	5.50	06:30	11.988	9922	-4	9919
	5.75	06:45	12.148	10055	-4	10051

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2938.2

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	6.00	07:00	12.275	10161	-5	10156
	6.25	07:15	12.369	10239	-5	10234
	6.50	07:30	12.466	10320	-6	10314
	6.75	07:45	12.576	10411	-6	10405
	7.00	08:00	12.625	10452	-6	10445
	7.25	08:15	12.774	10575	-7	10569
	7.50	08:30	12.840	10630	-7	10623
	7.75	08:45	12.984	10750	-8	10742
	8.00	09:00	13.156	10893	-8	10884
	8.25	09:15	13.335	11042	-9	11032
	8.50	09:30	13.483	11165	-10	11155
	8.75	09:45	13.644	11298	-11	11288
	9.00	10:00	13.774	11406	-11	11395
	9.25	10:15	13.926	11533	-12	11521
	9.50	10:30	14.081	11661	-12	11649
	9.75	10:45	14.206	11765	-13	11752
	10.00	11:00	14.330	11868	-13	11855
	10.25	11:15	14.490	12001	-14	11987
	10.50	11:30	14.604	12096	-15	12081
	10.75	11:45	14.733	12203	-15	12188
	11.00	12:00	14.835	12288	-16	12272
	11.25	12:15	14.974	12403	-16	12387
	11.50	12:30	15.165	12562	-17	12545
	11.75	12:45	15.379	12740	-18	12722
JAN.25/98	12.00	13:00	15.481	12825	-18	12806
		WELL OPENED TO FLOW AT 13:00 98/01/25				
JAN.25/98	0.00	13:00	15.481	12825	-18	12806
	0.25	13:15	5.031	4142	22	4164
	0.50	13:30	4.494	3696	24	3720
	0.75	13:45	4.150	3410	25	3435
	1.00	14:00	3.828	3142	26	3169
	1.25	14:15	3.618	2968	27	2995
	1.50	14:30	3.410	2795	28	2823
	1.75	14:45	3.296	2700	28	2728
	2.00	15:00	3.248	2660	28	2689
	2.25	15:15	3.233	2648	28	2676
	2.50	15:30	3.236	2650	28	2679
	2.75	15:45	3.241	2654	28	2683
	3.00	16:00	3.246	2659	28	2687
	3.25	16:15	3.253	2664	28	2693

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2938.2

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	3.50	16:30	3.268	2677	28	2705
	3.75	16:45	3.289	2694	28	2722
	4.00	17:00	3.315	2716	28	2744
	4.25	17:15	3.355	2749	28	2777
	4.50	17:30	3.368	2760	28	2788
	4.75	17:45	3.381	2771	28	2799
	5.00	18:00	3.409	2794	28	2822
	5.25	18:15	3.446	2825	28	2852
	5.50	18:30	3.471	2846	27	2873
	5.75	18:45	3.514	2881	27	2909
JAN.25/98	6.00	19:00	3.534	2898	27	2925
		SHUT WELL IN AT 19:00 98/01/25				
JAN.25/98	0.00	19:00	3.534	2898	27	2925
	0.25	19:15	4.435	3647	24	3671
	0.50	19:30	4.841	3984	23	4007
	0.75	19:45	5.111	4208	22	4230
	1.00	20:00	5.440	4482	21	4503
	1.25	20:15	5.669	4672	20	4692
	1.50	20:30	5.973	4924	19	4944
	1.75	20:45	6.153	5074	19	5093
	2.00	21:00	6.350	5238	18	5256
	2.25	21:15	6.524	5382	18	5400
	2.50	21:30	6.694	5524	17	5541
	2.75	21:45	6.955	5740	16	5757
	3.00	22:00	7.110	5869	16	5885
	3.25	22:15	7.310	6035	15	6051
	3.50	22:30	7.509	6201	14	6215
	3.75	22:45	7.667	6332	14	6346
	4.00	23:00	7.853	6487	13	6500
	4.25	23:15	8.000	6609	13	6622
	4.50	23:30	8.179	6757	12	6770
	4.75	23:45	8.318	6873	12	6885
JAN.25/98	5.00	24:00	8.429	6965	11	6977
JAN.26/98	5.25	00:15	8.583	7093	11	7104
	5.50	00:30	8.699	7189	10	7200
	5.75	00:45	8.821	7291	10	7301
	6.00	01:00	9.000	7440	9	7449
	6.25	01:15	9.142	7558	8	7567
	6.50	01:30	9.278	7671	8	7679
	6.75	01:45	9.380	7756	7	7764

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2938.2

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	7.00	02:00	9.486	7643	7	7850
	7.25	02:15	9.590	7931	7	7937
	7.50	02:30	9.734	8050	6	8056
	7.75	02:45	9.885	8176	5	8181
	8.00	03:00	10.039	8303	5	8308
	8.25	03:15	10.244	8473	4	8477
	8.50	03:30	10.349	8560	3	8564
	8.75	03:45	10.496	8683	3	8685
	9.00	04:00	10.638	8801	2	8803
	9.25	04:15	10.785	8923	2	8924
	9.50	04:30	10.908	9025	01	9026
	9.75	04:45	11.061	9152	00	9152
	10.00	05:00	11.315	9363	-01	9362
	10.25	05:15	11.569	9574	-2	9572
	10.50	05:30	11.764	9736	-2	9734
	10.75	05:45	11.869	9823	-3	9820
	11.00	06:00	11.983	9918	-4	9915
	11.25	06:15	12.113	10026	-4	10022
	11.50	06:30	12.161	10066	-4	10062
	11.75	06:45	12.228	10122	-5	10117
JAN.26/98	12.00	07:00	12.285	10169	-5	10164
		OPENED WELL TO FLOW AT 07:00 98/01/26				
JAN.26/98	0.00	07:00	12.285	10169	-5	10164
	0.25	07:15	4.124	3388	25	3414
	0.50	07:30	3.250	2662	28	2690
	0.75	07:45	2.998	2453	29	2482
	1.00	08:00	2.804	2291	30	2321
	1.25	08:15	2.646	2160	30	2190
	1.50	08:30	2.600	2122	30	2152
	1.75	08:45	2.561	2089	30	2120
	2.00	09:00	2.523	2058	31	2088
	2.25	09:15	2.504	2042	31	2073
	2.50	09:30	2.508	2045	31	2076
	2.75	09:45	2.543	2074	30	2105
	3.00	10:00	2.566	2094	30	2124
	3.25	10:15	2.600	2122	30	2152
	3.50	10:30	2.633	2149	30	2180
	3.75	10:45	2.675	2184	30	2214
	4.00	11:00	2.704	2208	30	2238
	4.25	11:15	2.743	2241	30	2271

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2938.2

TOP RECORDER
SERIAL NO: 20663 RANGE: 0 TO 42058 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 830.9 *D+(-38.5)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
JAN.26/98	4.50	11:30	2.783	2274	30	2304
		SHUT WELL IN AT 11:30 98/01/26				
JAN.26/98	0.00	11:30	2.783	2274	30	2304
	0.25	11:45	3.558	2918	27	2945
	0.50	12:00	3.991	3278	26	3303
	0.75	12:15	4.169	3426	25	3451
JAN.26/98	0.98	12:29	4.504	3704	24	3728
		RECORDERS OFF BOTTOM AT 12:29 98/01/26				

SUBSURFACE PRESSURE MEASUREMENTS

1. BASIC DATA

COMPANY : PARAMOUNT RESOURCES LTD.
ADDRESS : 4000 350-7th AVE. S.W. CALGARY
FIELD & POOL : BOUIE / NAHANNI
TYPE OF TEST : FLOW & BUILD-UP
PROD. INT. mCF: 2980.6 - 3075.28
ELEV.(CF),m : 426.8 (KB),m : 433.31
KB - CF,m : 6.51
POOL DATUM (SUBSEA),m :

WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45
STATUS : GAS
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
PROD. THROUGH : TUBING
MID-POINT OF PROD. INT.mCF : 3027.94
TUBING : mm @ mCF
DATUM DEPTH,mCF :

2. STATIC TEST

TUBING PRESSURE, kPag : 2162
CASING PRESSURE, kPag :
RUN DEPTH, mCF : 2940.0
B.H. TEMP. (C) : 150.0

SHUT-IN DATE : / @
DATE ON BOT : JAN. 24/98 @ 18:11
DATE OFF BOT : JAN. 26/98 @ 12:29
SURFACE TEMP. :

BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
		RECORDERS ON BOTTOM AT 18:11 98/01/24				
JAN.24/98	0.00	18:11	9.379	7828	29	7858
	0.25	18:26	9.656	8060	28	8088
	0.50	18:41	9.969	8321	27	8348
	0.75	18:56	10.184	8500	26	8527
JAN.24/98	0.82	19:00	10.269	8571	26	8597
		OPENED WELL TO FLOW AT 19:00 98/01/24				
JAN.24/98	0.00	19:00	10.269	8571	26	8597
	0.25	19:15	4.804	4010	20	4030
	0.50	19:30	4.324	3609	18	3627
	0.75	19:45	4.350	3631	18	3649
	1.00	20:00	4.388	3662	18	3681
	1.25	20:15	4.456	3719	18	3738
	1.50	20:30	4.569	3814	19	3832
	1.75	20:45	4.688	3913	19	3932
	2.00	21:00	4.844	4043	20	4063
	2.25	21:15	4.881	4074	20	4094

REMARKS :
AMERADA MECHANICAL RECORDER.
NOTE: ALL DEPTHS QUOTED ARE MEASURED DEPTHS.

SURVEY COMPANY : RAPID WIRELINE SERVICES LTD.
INTERPRETATION BY : P.D.Q. SERVICES LTD. 250-7505

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2940.0

BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION. 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	2.50	21:30	4.956	4137	20	4157
	2.75	21:45	5.025	4194	21	4215
	3.00	22:00	5.119	4273	21	4294
	3.25	22:15	5.238	4372	22	4394
	3.50	22:30	5.438	4539	22	4561
	3.75	22:45	5.581	4658	23	4681
	4.00	23:00	5.741	4792	24	4815
	4.25	23:15	5.889	4915	24	4940
	4.50	23:30	6.049	5049	25	5074
	4.75	23:45	6.236	5205	26	5231
JAN.24/98	5.00	24:00	6.391	5334	26	5361
JAN.25/98	5.25	00:15	6.551	5468	27	5495
	5.50	00:30	6.711	5601	28	5629
	5.75	00:45	6.873	5737	28	5765
JAN.25/98	6.00	01:00	6.993	5837	29	5866
	SHUT WELL IN AT 01:00 98/01/25					
JAN.25/98	0.00	01:00	6.993	5837	29	5866
	0.25	01:15	7.714	6439	32	6470
	0.50	01:30	8.015	6690	33	6723
	0.75	01:45	8.250	6886	34	6920
	1.00	02:00	8.341	6962	34	6996
	1.25	02:15	8.378	6993	33	7026
	1.50	02:30	8.378	6993	33	7026
	1.75	02:45	8.597	7177	33	7209
	2.00	03:00	8.849	7386	32	7418
	2.25	03:15	9.083	7582	31	7613
	2.50	03:30	9.333	7790	30	7820
	2.75	03:45	9.555	7975	29	8004
	3.00	04:00	9.774	8158	28	8186
	3.25	04:15	9.974	8325	27	8352
	3.50	04:30	10.196	8510	26	8537
	3.75	04:45	10.406	8686	25	8711
	4.00	05:00	10.613	8858	25	8883
	4.25	05:15	10.749	8972	24	8996
	4.50	05:30	11.136	9295	22	9317
	4.75	05:45	11.518	9614	21	9635
	5.00	06:00	11.573	9660	21	9681
	5.25	06:15	11.789	9840	20	9860
	5.50	06:30	11.936	9963	19	9982
	5.75	06:45	12.071	10075	19	10094

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2940.0

BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	6.00	07:00	12.186	10171	18	10190
	6.25	07:15	12.318	10282	18	10299
	6.50	07:30	12.401	10351	17	10368
	6.75	07:45	12.505	10438	17	10455
	7.00	08:00	12.555	10479	17	10496
	7.25	08:15	12.668	10574	16	10590
	7.50	08:30	12.786	10672	16	10688
	7.75	08:45	12.924	10787	15	10803
	8.00	09:00	13.124	10954	14	10969
	8.25	09:15	13.278	11083	14	11097
	8.50	09:30	13.441	11219	13	11232
	8.75	09:45	13.603	11354	13	11367
	9.00	10:00	13.731	11461	12	11473
	9.25	10:15	13.864	11572	12	11584
	9.50	10:30	13.999	11685	11	11696
	9.75	10:45	14.138	11801	10	11811
	10.00	11:00	14.278	11918	10	11927
	10.25	11:15	14.422	12038	9	12047
	10.50	11:30	14.509	12110	9	12119
	10.75	11:45	14.634	12215	8	12223
	11.00	12:00	14.775	12332	8	12340
	11.25	12:15	14.905	12441	7	12448
	11.50	12:30	15.128	12627	6	12634
	11.75	12:45	15.336	12801	6	12806
JAN.25/98	12.00	13:00	15.378	12836	5	12841
		WELL OPENED TO FLOW AT 13:00 98/01/25				
JAN.25/98	0.00	13:00	15.378	12836	5	12841
	0.25	13:15	5.158	4305	21	4327
	0.50	13:30	4.474	3734	18	3753
	0.75	13:45	4.116	3435	17	3452
	1.00	14:00	3.814	3183	16	3199
	1.25	14:15	3.556	2968	15	2983
	1.50	14:30	3.400	2838	14	2852
	1.75	14:45	3.269	2728	14	2742
	2.00	15:00	3.229	2695	13	2708
	2.25	15:15	3.203	2673	13	2687
	2.50	15:30	3.204	2674	13	2688
	2.75	15:45	3.208	2678	13	2691
	3.00	16:00	3.211	2680	13	2693
	3.25	16:15	3.218	2686	13	2699

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2940.0

BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	3.50	16:30	3.230	2696	13	2709
	3.75	16:45	3.243	2707	13	2720
	4.00	17:00	3.285	2742	14	2755
	4.25	17:15	3.295	2750	14	2764
	4.50	17:30	3.320	2771	14	2785
	4.75	17:45	3.344	2791	14	2805
	5.00	18:00	3.365	2809	14	2823
	5.25	18:15	3.391	2830	14	2844
	5.50	18:30	3.428	2861	14	2875
	5.75	18:45	3.464	2891	14	2906
JAN.25/98	6.00	19:00	3.489	2912	14	2927
		SHUT WELL IN AT 19:00 98/01/25				
JAN.25/98	0.00	19:00	3.489	2912	14	2927
	0.25	19:15	4.439	3705	18	3723
	0.50	19:30	4.767	3979	20	3999
	0.75	19:45	5.096	4253	21	4274
	1.00	20:00	5.390	4499	22	4521
	1.25	20:15	5.606	4679	23	4702
	1.50	20:30	5.894	4920	24	4944
	1.75	20:45	6.066	5063	25	5088
	2.00	21:00	6.235	5204	26	5230
	2.25	21:15	6.423	5361	26	5388
	2.50	21:30	6.610	5517	27	5544
	2.75	21:45	6.898	5758	28	5786
	3.00	22:00	7.004	5846	29	5875
	3.25	22:15	7.248	6050	30	6080
	3.50	22:30	7.491	6253	31	6283
	3.75	22:45	7.648	6384	31	6415
	4.00	23:00	7.804	6514	32	6546
	4.25	23:15	7.960	6644	33	6677
	4.50	23:30	8.091	6753	33	6787
	4.75	23:45	8.260	6894	34	6928
JAN.25/98	5.00	24:00	8.422	7030	33	7063
JAN.26/98	5.25	00:15	8.529	7119	33	7152
	5.50	00:30	8.654	7223	32	7256
	5.75	00:45	8.804	7348	32	7380
	6.00	01:00	8.935	7458	31	7489
	6.25	01:15	9.104	7599	31	7630
	6.50	01:30	9.215	7692	30	7723
	6.75	01:45	9.335	7792	30	7821

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2940.0

BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3

CLOCK RANGE: 180 HRS
EQUATION: 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
	7.00	02:00	9.416	7859	29	7889
	7.25	02:15	9.635	8042	28	8071
	7.50	02:30	9.748	8136	28	8165
	7.75	02:45	9.875	8242	27	8270
	8.00	03:00	9.988	8337	27	8364
	8.25	03:15	10.169	8488	26	8514
	8.50	03:30	10.350	8639	26	8665
	8.75	03:45	10.488	8754	25	8779
	9.00	04:00	10.613	8858	25	8883
	9.25	04:15	10.750	8973	24	8997
	9.50	04:30	10.894	9093	23	9116
	9.75	04:45	11.023	9201	23	9224
	10.00	05:00	11.354	9477	22	9499
	10.25	05:15	11.591	9675	21	9695
	10.50	05:30	11.706	9771	20	9791
	10.75	05:45	11.813	9860	20	9880
	11.00	06:00	11.944	9969	19	9989
	11.25	06:15	12.016	10030	19	10049
	11.50	06:30	12.123	10119	18	10137
	11.75	06:45	12.188	10173	18	10191
JAN.26/98	12.00	07:00	12.209	10191	18	10209
		OPENED WELL TO FLOW AT 07:00 98/01/26				
JAN.26/98	0.00	07:00	12.209	10191	18	10209
	0.25	07:15	4.743	3959	20	3978
	0.50	07:30	3.208	2678	13	2691
	0.75	07:45	2.964	2474	12	2486
	1.00	08:00	2.763	2306	11	2318
	1.25	08:15	2.660	2220	11	2231
	1.50	08:30	2.576	2150	11	2161
	1.75	08:45	2.549	2127	11	2138
	2.00	09:00	2.516	2100	10	2110
	2.25	09:15	2.496	2083	10	2094
	2.50	09:30	2.510	2095	10	2105
	2.75	09:45	2.516	2100	10	2110
	3.00	10:00	2.535	2116	11	2126
	3.25	10:15	2.588	2160	11	2171
	3.50	10:30	2.601	2171	11	2182
	3.75	10:45	2.644	2207	11	2218
	4.00	11:00	2.681	2238	11	2249
	4.25	11:15	2.711	2263	11	2274

SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : PARAMOUNT RESOURCES LTD.
WELL NAME : PARAMOUNT ET AL BOUIE
LOCATION : c-76-60-20-122-45

TYPE OF TEST : FLOW & BUILD-UP
DATE OF TEST : JAN. 24/98 TO JAN. 26/98
RUN DEPTH mCF : 2940.0

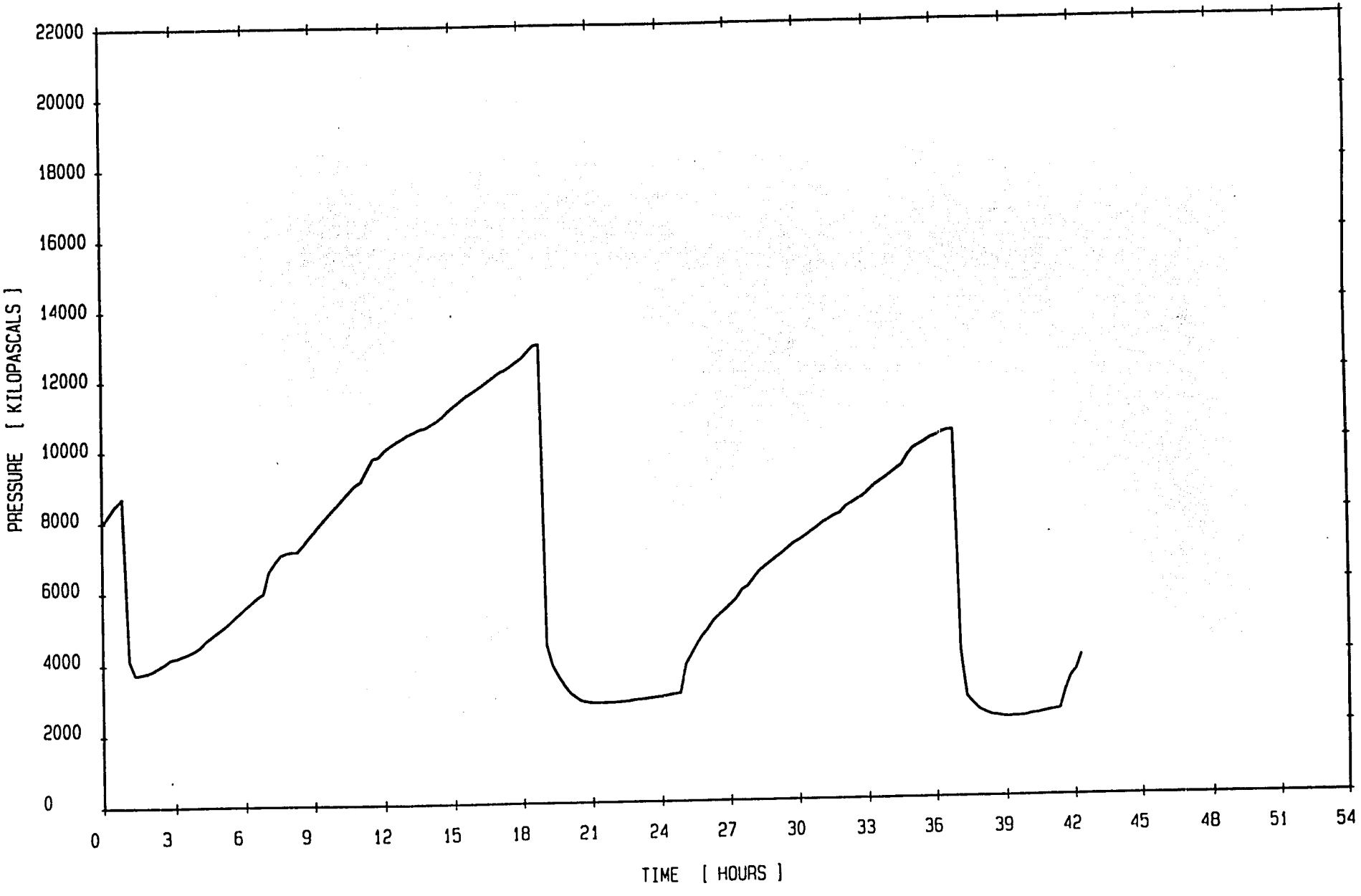
BOTTOM RECORDER
SERIAL NO: 20664 RANGE: 0 TO 42575 kPa CLOCK RANGE: 180 HRS
DATE OF LAST CALIBRATION (Y-M-D): 98 - 1 - 3 EQUATION: 834.7 *D+(-.2)

DATE	ACC.TIME hours	TIME hr-min	DEFLECTION mm	CALC PRESS kPag	P-PC kPag	PRESSURE kPag
JAN.26/98	4.50	11:30	2.746	2292	11	2303
		SHUT WELL IN AT 11:30 98/01/26				
JAN.26/98	0.00	11:30	2.746	2292	11	2303
	0.25	11:45	3.373	2815	14	2829
	0.50	12:00	3.831	3198	16	3213
	0.75	12:15	4.060	3389	17	3406
JAN.26/98	0.98	12:29	4.550	3798	19	3817
		RECORDERS OFF BOTTOM AT 12:29 98/01/26				

TIME VERSUS PRESSURE

PARAMOUNT ET AL BOUIE
c-76-60-20-122-45

FLOW & BUILD-UP
98-01-24 TO 98-01-26



GAS ANALYSIS

AGAT® Laboratories

GAS ANALYSIS

COMPANY IDENTIFICATION	AGAT 17131
LABORATORY NUMBER	GG21970A
OPERATOR NAME	PARAMOUNT RESOURCES LTD.
UNIQUE WELL IDENTIFIER	
WELL NAME	PARAMOUNT BOVIE LAKE
LSD	433.31
SURFACE LOCATION	426.8
FIELD OR AREA	BOVIE LAKE
POOL OR ZONE	MANNING
NAME OF SAMPLER	
COMPANY	ENTEST CORP.
TEST TYPE	
H2S	
TEST RECOVERY	
TEST INTERVAL OR PERFS	2986.5-3082.0 mKB
SAMPLING POINT	METER RUN
SEPARATOR / TREATER / RESERVOIR / SOURCE / SAMPLED / RECEIVED	GAUGE PRESSURE kPa: 70; TEMPERATURE °C: 23
DATE SAMPLED (YY-MM-DD)	98-01-25
DATE RECEIVED (YY-MM-DD)	98-01-28
DATE REPORTED (YY-MM-DD)	98-01-30
ANALYST	BD MCD
OTHER INFORMATION	300C7-86020-122-450

COMP.	MOLE FRACTION: AS SAMPLED	MOLE FRACTION: ACID GAS FREE	NATURAL GAS LIQUID CONTENT (m³/10³m³)
N_2	0.0001	0.0002	
H_2	0.0008	0.0010	
CO_2	0.1316	0.1678	
H_2S	0.1958	0.0000	
C_1	0.0200	0.0000	
C_2	0.6515	0.8307	
C_3	TRACE	TRACE	
iC_4	0.0002	0.0003	0.8
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7+	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	0.8

GROSS HEATING VALUE (MJ/m³) @ 15°C AND 101.325 kPa

MOISTURE AND ACID GAS FREE	AIR FREE AS RECEIVED	VISCOSITY @ RESERVOIR CONDITIONS
31.40	25.13	0.0 mPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED: MEASURED	MOISTURE FREE AS SAMPLED: CALCULATED	MOISTURE AND ACID GAS FREE: MEASURED	MOISTURE AND ACID GAS FREE: CALCULATED
	0.810		0.623

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED: pPc (kPa)	AS SAMPLED: pTc	ACID GAS FREE: pPc (kPa)	ACID GAS FREE: pTc
5074 kPa	207.8 K	4397 kPa	179.6 K

RELATIVE MOLECULAR MASS

TOTAL GAS	C_{7+}
23.4	0.0

H_2S ppm: 28.72

REMARKS:

EXCEED NORMAL LIMITS : N2 ,CO2
FIELD H2S = 2.00%/LAB = ND

AGAT Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 17131

LABORATORY NUMBER: GG219708

OPERATOR NAME: PARAMOUNT RESOURCES LTD.

UNIQUE WELL IDENTIFIER:

WELL NAME: PARAMOUNT BOVIE LAKE

ELEVATIONS: KB m 433.31 GR m 426.80

FIELD OR AREA: BOVIE LAKE

POOL OR ZONE: HANANNI

NAME OF SAMPLER:

COMPANY: ENTEST CORP.

TEST TYPE: NO

TEST INTERVAL OR PERFS: 2906.5-3082.0 mKB

SAMPLING POINT: METER RUN

	SEPARATOR	TREATER	RESERVOIR	HEATER	SAMPLED	RECEIVED
CASING PRESSURE kPa						10
TEMPERATURE °C						23

DATE SAMPLED (Y-M-D): 98-01-25

DATE RECEIVED (Y-M-D): 98-01-28

DATE REPORTED (Y-M-D): 98-01-30

ANALYST: GS MCO

OTHER INFORMATION: 30007-66020-122-450

COMP	MOLE FRACTION: AS RECEIVED	MOLE FRACTION: MOISTURE AND ACID GAS FREE	PETROLEUM LIQUID CONTENT BBL / 10^3 m^3
N_2	0.0006	0.0006	
H_2O	0.0009	0.0012	
CO_2	0.0494	0.0662	
H_2S	0.2216	0.0000	
He	0.0200	0.0270	
C_1	0.7073	0.9127	
C_2	TRACE	TRACE	
C_3	0.0003	0.0003	1.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	1.0

GROSS HEATING VALUE kJ/m³ @ 15° C AND 101.325 kPa

MOISTURE AND ACID GAS FREE: 38.27

AIR FREE AS RECEIVED: 27.25

VAPOUR PRESSURE @ 15.6°C kPa: 0.0

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED		MOISTURE AND ACID GAS FREE	
MEASURED	CALCULATED	MEASURED	CALCULATED
	0.800		0.580

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED		ACID GAS FREE	
p'_c kPa	T'_c K	p'_c kPa	T'_c K
5243	216.0	4516	186.1

RELATIVE MOLECULAR MASS

TOTAL GAS: 23.2

C_{7+}: 0.0

H_2S ppm: 28.72

REMARKS:

EXCEED NORMAL LIMITS : CO2
FIELD H2S = 2.00%/LAB = ND

AGAT Laboratories

GAS ANALYSIS

AGAT 20097	LABORATORY NUMBER: GG21970C
COMPANY NAME: PARAMOUNT RESOURCES LTD.	
UNIQUE WELL IDENTIFICATION:	WELL NAME: PARAMOUNT BOVIE LAKE
RIG # / ELEVATIONS: 433.31 / 426.80	
FIELD OR AREA: BOVIE LAKE	POOL OR ZONE: NAHANNI
NAME OF SAMPLER:	COMPANY: ENTEST CORP.
TEST TYPE:	NO:
TEST INTERVAL OR PERFS: 2986.5-3082.0 mKB	SAMPLING POINT: METER RUN
SEPARATOR / TREATER / RESERVOIR / CASING / SAMPLED / RECEIVED: PRESSURE kPa: 40	
TEMPERATURE °C: 23	
DATE SAMPLED (Y-M-D): 98-01-26	DATE RECEIVED (Y-M-D): 98-01-28
DATE REPORTED (Y-M-D): 98-01-30	ANALYST: GS MOD
OTHER INFORMATION: 300C7-86020-122-450	

Comp	MOLE FRACTION (As Sampled)	MOLE FRACTION (Moisture and Acid Gas Free)	PETROLEUM LIQUID CONTENT (mL/m³)
H_2	0.0004	0.0005	
He	0.0009	0.0011	
N_2	0.0692	0.0910	
CO_2	0.2197	0.0000	
H_2S	0.0200	0.0000	
C_1	0.6898	0.9074	
O_2	TRACE	TRACE	
C_2	0.0000	0.0000	0.0
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_{7+}	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE (kJ/m³ at 15°C and 101.325 kPa)

MOISTURE AND ACID GAS FREE	AIR FREE AS RECEIVED	VAPOUR PRESSURE PENTANES PLUS
34.28	26.56	0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED: MEASURED	MOISTURE FREE AS SAMPLED: CALCULATED	MOISTURE AND ACID GAS FREE: MEASURED	MOISTURE AND ACID GAS FREE: CALCULATED
	0.807		0.591

REAL/IDEAL CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED: pPc (abs)	AS SAMPLED: pTc	ACID GAS FREE: pPc (abs)	ACID GAS FREE: pTc
5215 kPa	214.5 K	4488 kPa	184.4 K

RELATIVE MOLECULAR MASS

TOTAL GAS	C_{7+}
23.4	0.0

C_{7+} gmol: 26.72

REMARKS:

EXCEED NORMAL LIMITS : N2 , CO2
FIELD H2S = 2.00%/LAB = ND

SURVEY PLAN

OVERSIZED

DOCUMENT

FILMED

ON

35mm

RESISTIVITY/ CONDUCTIVITY

N.E.B. COPY

N-9 1817

COMPANY: PARAMOUNT RESOURCES LTD

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

Schlumberger

ARRAY INDUCTION - LOG

LATITUDE: 60 15' 14.80"		Elev.: K.B.	433.32 M
LONGITUDE: 122 59' 23.34"			G.L. 426.8 M
LIN: 300C7960001224S0			D.F. 433.02 M
Permanent Datum:	GROUND LEVEL	Elev.:	426.8 M
Log Measured From:	KELLY BUSHING	6.5 M	above Perm. Datum
Drilling Measured From:	KELLY BUSHING		

API Serial No. 61 389 — LATITUDE: 60 15' 14.80" — LONGITUDE: 122 59' 23.34"

PROVINCE: NORTHWEST TERRITORIES
FIELD: UNDEFINED
LOCATION: LATITUDE: 60 15' 14.80"
Well: PARAMOUNT ET AL BOVIE LAKE C-76
Company: PARAMOUNT RESOURCES LTD

	Run 1	Run 2	Run 3	Run 4
Logging Date	28-FEB-1997			
Run Number	ONE			
Depth Driller	1710 M			
Schlumberger Depth	1700 M			
Bottom Log Interval	1697.8 M			
Top Log Interval	454 M			
Casing Driller Size @ Depth	339.700 MM @ 453 M	@	@	
Casing Schlumberger	454 M			
Bit Size	311.000 MM			
Type Fluid In Hole	GEL CHEM			
Density Viscosity	1190 KG/M3 119 S			
Fluid Loss PH	5.4 C3 9			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	4.370 OHMM @ 14 DEGC	@	@	
RMF @ Measured Temperature	4.750 OHMM @ 10 DEGC	@	@	
RMC @ Measured Temperature	2.490 OHMM @ 11 DEGC	@	@	
Source RMF RMC	MEASURED MEASURED			
RM @ MRT RMF @ MRT	2.168 @ 50 2.064 @ 50	@ @	@ @	@ @
Maximum Recorded Temperatures	50 DEGC 50			
Circulation Stopped Time	28-FEB-1997 9:15			
Logger On Bottom Time	28-FEB-1997 17:45			
Unit Number Location	2025 GRANDE PRAIRIE			
Recorded By	DAN GAMPEL			
Witnessed By	COLIN BISCON			

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

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT, GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. ANY INTERPRETATION MADE BY US IS ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS IN EFFECT AT THE TIME THE INTERPRETATION IS MADE.

OTHER SERVICES
CDS
DSL
DSL
CBIL
SDT

RUN 1 AT 1697.8 M: 339.7 MM CASING @ 453 M. KCL-CHEMICAL MUD SYSTEM. RUN 2 AT 1700 M: 311 MM HOLE TO TD. RUN 1 AT 1697.8 M: ARRAY INDUCTION, DSL, CBIL, SDT. RUN 2 AT 1700 M: CDS, DSL. RUN NUMBERS 2

ALL MECHANICAL CALIPER AND BOREHOLE VOLUME CORRELATIONS WITH DRAWN ON

ALL MECHANICAL CALIPER AND BOREHOLE VOLUME CORRELATIONS WITH DRAWN ON

BOREHOLE CONDITIONS: HOLE WAS IN GOOD CONDITION AT TIME OF LOGGING. HOLE WAS FILLED WITH 1190 KG/M3 KCL-CHEMICAL MUD SYSTEM. MUD WEIGHT WAS 1190 KG/M3 AND VISCOSITY WAS 119 S. PH WAS 9 AND FLUID LOSS WAS 5.4 C3. CALIPER READINGS INDICATE AN IN GAUGE HOLE.

RUN 1 AT 1697.8 M: 339.7 MM CASING @ 453 M. KCL-CHEMICAL MUD SYSTEM. RUN 2 AT 1700 M: 311 MM HOLE TO TD. RUN 1 AT 1697.8 M: ARRAY INDUCTION, DSL, CBIL, SDT. RUN 2 AT 1700 M: CDS, DSL. RUN NUMBERS 2

RUN 2

SERVICE ORDER #: 300C7960001224S0
FLUID LOCATION: FLOWLINE
INTERVAL: 454 M TO 1700 M
START: STOP:

RUN 1

SERVICE ORDER #: 300C7960001224S0
FLUID LOCATION: FLOWLINE
INTERVAL: 454 M TO 1697.8 M
START: STOP:

EQUIPMENT DESCRIPTION

RUN 1
SURFACE EQUIPMENT
SMA-3B 1337
GSH-31 3237
TDM-A 3B

DOWNHOLE EQUIPMENT

LEH-QT	LEH-QT	18.77
TCC-B	TCC-B/ECC	17.88
TCC-B	TCC-B/ECC	
		16.97
	Telltale	16.97
SGC-SA	Gamma Ray	16.97
SGC-SA		
SLS-TA		15.29
SLS-TA		
SLS-TA		10.57
SLS-TA		10.57
SLS-TA		9.73
SLS-TA		9.42
LUH		
LUH		
LUH		8.38
LUH		
MCD-G		
MCD-G		7.01
AH-107	HD	6.10
AH-107		
AH-107		5.49
AH-107		
AIT-H		4.88
AIT-H		
AH-107		38 MM Standoff
AH-107		
		2.41
	Induction Electrical Survey	0.03
	Mud Press RT	0.00
	Mud Temp RT	38 MM Standoff

TOOL ZERO
38 MM STANDOFF

MAXIMUM STRING DIAMETER: 89 MM
ALL LOGGED WITH WATER

Input DLIS Files
FIELD 28-FEB-1997 19:04 1702.5 M 153.9 M

Output DLIS Files
FIELD 28-FEB-1997 19:45
FIELD 28-FEB-1997 19:45

OP System Version: 7C0-712

ZIP SUMMARY

DEFAULT ATH -021
DEFAULT CUSTOMER ATH -035 FN 27 RGE 25W7 ATH -063

Time Mark Every 60 S
Tension (CSNB) 0 20000 (N)
CCL (V) -10 10
Gamma Ray (GAPI) 0 150

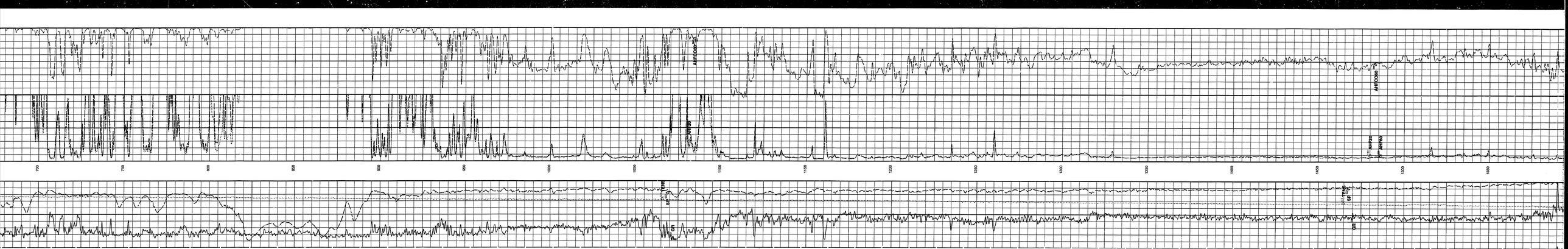
AIT-H 60 inch Investigation (AIH60) 0.2 2000 (OHMM)
AIT-H 90 inch Investigation (AIH90) 0.2 2000 (OHMM)
AIT-H 42 inch Investigation (AIH42) 0.2 2000 (OHMM)

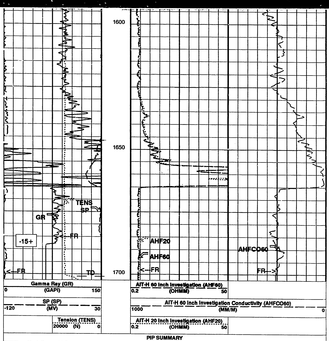
AIH60 AIH90 AIH42

CASING

450 500 550 600 650

-15+


AHFC0060
AHFC0060
AHF200
AHF60
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500
1550
TENE
SHT
GR
TENE
SHT
GR



Time Mark Every 60 S

PIP SUMMARY

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Shorte Correction Mode	2_ComputeStandoff
AHCDE	AIT-H Centre Detection Enable	0
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentered
AHDSED	AIT-H Casing Shoe Extracted Depth	-.00000 M
AHFCF	AIT-H 60 Inch Focusing Factor	1
AHMTA	AIT-H Tool Standoff	.38 MM
BHT	Bottom Hole Temperature (used in calculations)	50 DEGC
BS	Bit Size	311.000 MM
DFD	Drilling Fluid Density	1.03 G/C3
DO	Depth Offset	0.0 M
DORL	Depth Offset Repeat Analysis	0.0 M
FBEF	Fluid Borehole Effect	2
FRAM	Form Factor Subscript	2
GCEC	Generalized Caliper Selection	HO
GDEV	Generalized Deviation of Borehole from Normal	0 DEG
GGRAV	Geological Gravity	1.83270Gm/C3
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST
GTEM	Generalized Temperature Selection	LINEAR_GRADIENT
MST	Mud Sample Temperature	14.44 DEGC
PP	Playback Processing	RECOMP_2D
SHT	Surface Hole Temperature	20 DEGC
SPMV	SP Mod Value	0 MV
TDD	Total Depth - Driller	1700 M

Format: AITH_2LIN Vertical Scale: 1:240 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

OSM

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

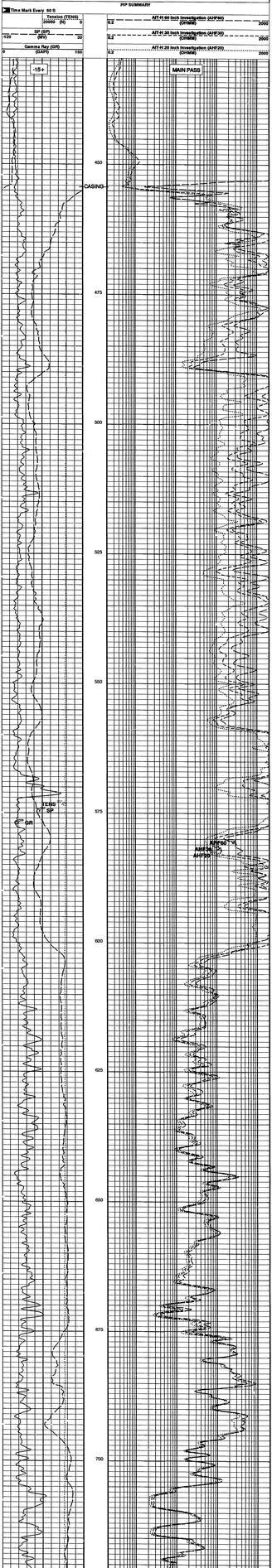
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CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

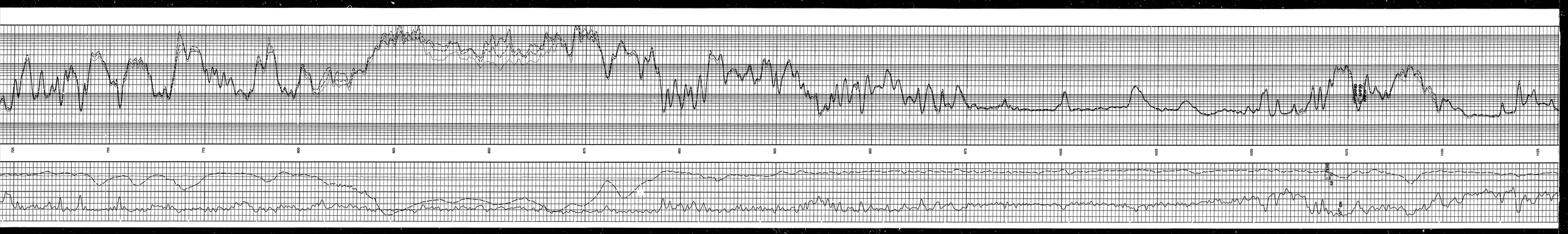
OP System Version: 7C0-712

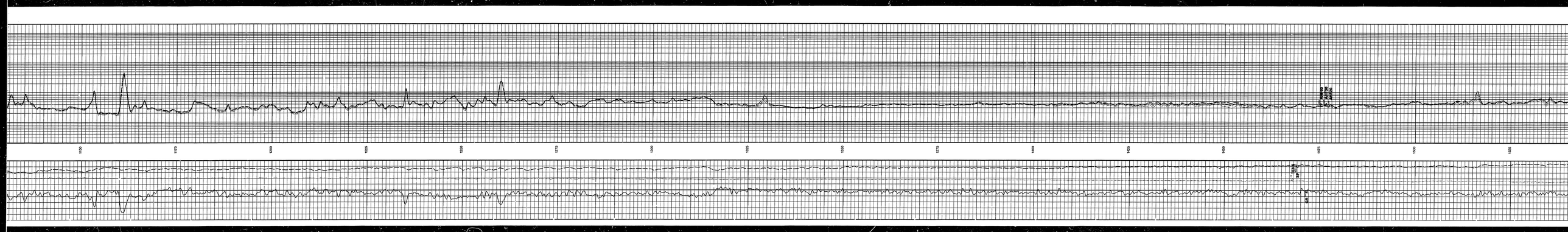
OSM

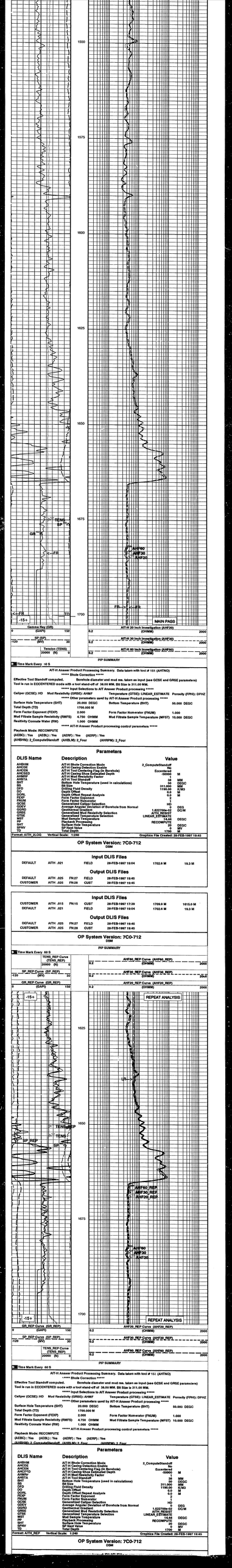
PIP SUMMARY

Time Mark Every 60 S




725
750
775
800
825
850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
SINUS
SINUS


1150
1175
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
1475
1500
1525
Marker
Artifact
Artifact
Artifact
EEG
EMG
EKG



Time Mark Every 10 S

AIT-H Answer Product Processing Summary. Data taken with tool # 151 (AHTNO)

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 36.00 MM. Bit Size is 311.00 MM.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HO Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	50.000 DEGC
Total Depth (TD)	1700.000 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	4.700 OHMM	Mud Filtrate Sample Temperature (MFST)	15.000 DEGC
Resitivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: RECOMPUTE
(AIEC) : Yes (AIEL) : Yes (AERF) : Yes (AEPF) : Yes
(AHBHM): 2_ComputedStandoff (AHBLM): 2_Four (AHHFM): 2_Four

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputedStandoff	
AHCEN	AIT-H Centering Flag (In Borehole)	Eccentered	
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentered	
AHCSO	AIT-H Casing Shoe Estimated Depth	-00000	M
AHMFA	AIT-H Mud Resistivity Factor	1	
BHT	Bottom Hole Temperature	50	DEGC
BHT	Bottom Hole Temperature (used in calculations)	50	DEGC
BS	Bit Size	311.000	MM
DFD	Drilling Fluid Density	1190.00	K/M3
DO	Depth Offset	0.0	M
DOAL	Depth Offset Repeat Analysis	0.0	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GMDI	Generalized Mud Inclination	1.5227e-08	DEG
GRSE	Generalized Mud Resistivity Selection	AHM_RDEP	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MST	Mud Sample Temperature	14.44	DEGC
PP	Pore Pressure	RECOMPUTE	
SHT	Surface Hole Temperature	20	DEGC
SPHV	SP Nevil Value	0	MV
TD	Total Depth	1700	M

Format: AITH_RLOG Vertical Scale: 1:240 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

Input DLIS Files

CUSTOMER	AITH .015	FN:15	CUST	28-FEB-1997 17:39	1709.9 M	1015.9 M
DEFAULT	AITH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

OP System Version: 7C0-712

DBM

PIP SUMMARY

Time Mark Every 60 S

TENS_REP Curve (TENS_REP)
(LBF)

AHF60_REP Curve (AHF60_REP)
(OHMM)

SP_REP Curve (SP_REP)
(MV)

AHF30_REP Curve (AHF30_REP)
(OHMM)

GR_REP Curve (GR_REP)
(GAPI)

AHF20_REP Curve (AHF20_REP)
(OHMM)

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 151 (AHTNO)

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 36.00 MM. Bit Size is 311.00 MM.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HO Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	50.000 DEGC
Total Depth (TD)	1700.000 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	4.700 OHMM	Mud Filtrate Sample Temperature (MFST)	15.000 DEGC
Resitivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: RECOMPUTE
(AIEC) : Yes (AIEL) : Yes (AERF) : Yes (AEPF) : Yes
(AHBHM): 2_ComputedStandoff (AHBLM): 2_Four (AHHFM): 2_Four

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputedStandoff	
AHCEN	AIT-H Centering Flag (In Borehole)	Eccentered	
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentered	
AHCSO	AIT-H Casing Shoe Estimated Depth	-00000	M
AHMFA	AIT-H Mud Resistivity Factor	1	
BHT	Bottom Hole Temperature	50	DEGC
BHT	Bottom Hole Temperature (used in calculations)	50	DEGC
BS	Bit Size	311.000	MM
DFD	Drilling Fluid Density	1190.00	K/M3
DO	Depth Offset	0.0	M
DOAL	Depth Offset Repeat Analysis	0.0	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HO	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GMDI	Generalized Mud Inclination	1.5227e-08	DEG
GRSE	Generalized Mud Resistivity Selection	AHM_RDEP	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MST	Mud Sample Temperature	14.44	DEGC
PP	Pore Pressure	RECOMPUTE	
SHT	Surface Hole Temperature	20	DEGC
SPHV	SP Nevil Value	0	MV
TD	Total Depth	1700	M

Format: AITH_REP Vertical Scale: 1:240 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

Input DLIS Files

CUSTOMER	AITH .015	FN:15	CUST	28-FEB-1997 17:39	1705.9 M	1015.6 M
DEFAULT	AITH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45

Input DLIS Files

DEFAULT	AITH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

AIT-H Borehole Corrected Average Conductivities

Average performed from depth 6465.50 ft/ 1971.00 m with 17079 samples

A1: 471.638 A2: -44.320 A3: 65.794 A4: 160.570

A5: 167.612 A6: 307.782 A7: 155.176 A8: 156.518

PIP SUMMARY

Time Mark Every 60 S

Tension (TENS) (N) 30000 5000

AIT-H QC Fully Calibrated A8 Signal (AHQABN[7]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A7 Signal (AHQABN[6]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A6 Signal (AHQABN[5]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A5 Signal (AHQABN[4]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A4 Signal (AHQABN[3]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A3 Signal (AHQABN[2]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A2 Signal (AHQABN[1]) (MM/M) 2 20000

AIT-H QC Fully Calibrated A1 Signal (AHQABN[0]) (MM/M) 2 20000

AIT-H Shale/Form Signal Ratio (AHSFR) 0 (---) 25

Tool Electronics Monitor (Raw ANDDS Channel): White=Normal, Blue=Warning, Red=Failure (AHQTI) (---)

AIT-H Array Ratio Monitor: Green=Normal (AHQRI) (---)

MAIN PASS

LOG QUALITY

ASING

TENS

AHQABN[5]

AHQABN[4]

AHQABN[3]

AHQABN[2]

AHQABN[1]

AHQABN[0]

AHSFR

450

500

550

600

650

700

750

800

850

900

950

1000

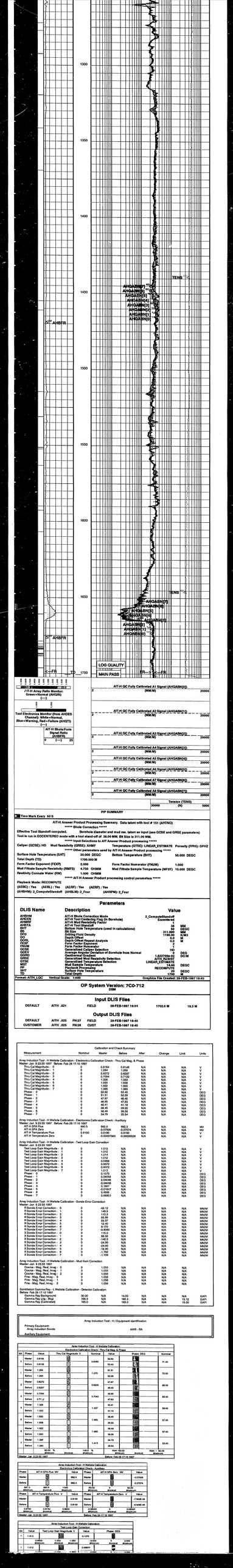
1050

1100

1150

1200

1250



AIT-H Answer Product Processing Summary. Data taken with tool # 151 (AHTNO)

***** Blade Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand-off of 38.00 MM. Bit Size is 311.00 MM.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HD	**Mud Resistivity (GRSE): AIM87**	**Temperature (GTSE): LINEAR_ESTIMATE**	**Porosity (FPHI): DPHZ**
Surface Hole Temperature (SHT)	**20.000 DEGC**	**Bottom Temperature (BHT)**	**50.000 DEGC**
Total Depth (TD)	**1700.000 M**	**Rm @ BHT**	**0.200 OHMM**
Form Factor Exponent (FEXP)	**2.000**	**Form Factor Numerator (FNUM)**	**1.000**
Mud Filtrate Sample Resistivity (RMFS)	**4.700 OHMM**	**Mud Filtrate Sample Temperature (MFST)**	**10.000 DEGC**
Resistivity Connate Water (RW)	**1.000 OHMM**		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: RECOMPUTE

(AEDC) : Yes (AESL) : Yes (AERP) : Yes (AEFP) : Yes

AHRHNI[ ]: Z_ComputedNeutoff (AHSLNO): Z_Four (AHPHNI): Z_Four

Parameters

DLIS Name	Description	Value
AHSHM	AIT-H Blade Correction Mode	Z_ComputedStandoff
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentered
AHMSF	AIT-H Mud Resistivity Factor	1
AHBTA	AIT-H Bit Size Increase	38 MM
SHT	Surface Hole Temperature (used in calculations)	20 DEGC
BS	Bit Size	311.000 MM
DFD	Drilling Fluid Density	1190.000 K/M3
DFV	Drilling Fluid Viscosity	6.0 M
DCNL	Depth Offset Repeat Analysis	0.0 M
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
CGSE	Caliper Selection Selection	HD
GGRD	Average Angular Deviation of Borehole from Normal	0 DEG
GGRO	Geothermal Gradient	1.822750e-02 DC/M
GRSE	Mud Resistivity Selection Selection	AIM87
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
MST	Mud Sample Temperature	14.44 DEGC
PASS	Processing Pass Number	RECOMPUTE
SHT	Surface Hole Temperature	20 DEGC
TD	Total Depth	1700 M

Format: AITH_LQC Vertical Scale: 1:600 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7CO-712

DIM

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	18.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master: Jan 3 23:55 1997 Before: Feb 28 17:15 1997							
Thru Cal Magnitude - 0	0	0.6164	0.6128	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	0.4273	0.4251	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.4273	1.000	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.7264	0.7122	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.335	1.333	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.930	1.935	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.930	1.935	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.350	1.350	N/A	N/A	N/A	V
Phase - 0	0	52.93	53.40	N/A	N/A	N/A	DEG
Phase - 1	0	47.67	47.93	N/A	N/A	N/A	DEG
Phase - 2	0	47.67	48.40	N/A	N/A	N/A	DEG
Phase - 3	0	46.85	47.63	N/A	N/A	N/A	DEG
Phase - 4	0	40.41	41.18	N/A	N/A	N/A	DEG
Phase - 5	0	34.45	35.22	N/A	N/A	N/A	DEG
Phase - 6	0	34.45	35.22	N/A	N/A	N/A	DEG
Phase - 7	0	34.79	35.54	N/A	N/A	N/A	DEG
Array Induction Tool - H Wellsite Calibration - Electronics Calibration Check - Auxiliary							
Master: Jan 3 23:55 1997 Before: Feb 28 17:15 1997							
AIT-H SPA Plus	990.5	992.0	992.3	N/A	N/A	N/A	MV
AIT-H Zero	0	-0.00007374	-0.00007374	N/A	N/A	N/A	V
AIT-H Temperature Plus	0.8100	0.8195	0.8192	N/A	N/A	N/A	V
AIT-H Temperature Zero	0	-0.00007583	-0.00008026	N/A	N/A	N/A	V
Array Induction Tool - H Wellsite Calibration - Test Loop Gain Correction							
Master: Jan 3 23:55 1997							
Test Loop Gain Magnitude - 0	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9998	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	0.9972	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	0.9972	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.012	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.1075	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.06858	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	0.06858	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	0.06858	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	0.1007	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	0.06858	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.4006	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	0.06903	N/A	N/A	N/A	N/A	DEG
Array Induction Tool - H Wellsite Calibration - Sonde Error Correction							
Master: Jan 3 23:55 1997							
R Sonde Error Correction - 0	0	-43.10	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	149.9	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	65.39	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	65.39	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	23.37	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	9.170	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.170	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-0.9000	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	115.3	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	69.30	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	24.58	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	-24.58	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	-24.60	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	-1.720	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	-1.720	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	-1.709	N/A	N/A	N/A	N/A	MM/M
Array Induction Tool - H Wellsite Calibration - Test Gain Correction							
Master: Jan 3 23:55 1997							
Cosine - Mag. Real, Imag. - 0	0	1.055	N/A	N/A	N/A	N/A	
Cosine - Mag. Real, Imag. - 1	0	1.055	N/A	N/A	N/A	N/A	
Cosine - Mag. Real, Imag. - 2	0	1.055	N/A	N/A	N/A	N/A	
Sine - Mag. Real, Imag. - 0	0	1.056	N/A	N/A	N/A	N/A	
Sine - Mag. Real, Imag. - 1	0	1.056	N/A	N/A	N/A	N/A	
Sine - Mag. Real, Imag. - 2	0	1.056	N/A	N/A	N/A	N/A	
Scintillation Gamma Ray - L Wellsite Calibration - Detector Calibration							
Before: Feb 28 17:12 1997							
Gamma Ray Background	30.00	N/A	14.50	N/A	N/A	N/A	GAPI
Gamma Ray (Thorium)	120.0	N/A	120.0	N/A	N/A	N/A	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Array Induction Tool - H / Equipment Identification

Primary Equipment:
Array Induction Sonde
AIHS - BA

Auxiliary Equipment:

Array Induction Tool - H Wellsite Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Mk	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
1	Master	0.6164	0	0.6200	52.93	0	71.00
	Before	0.6128	0		53.40	0	
2	Master	1.000	1	1.070	91.91	0	70.00
	Before	1.265	1		50.26	0	
3	Master	0.6270	2	0.6200	47.67	0	48.00
	Before	0.6207	2		48.40	0	
4	Master	0.7264	3	0.7340	46.85	0	45.00
	Before	0.7122	3		47.63	0	
5	Master	1.329	4	1.337	40.41	0	59.00
	Before	1.333	4		41.18	0	
6	Master	1.930	5	1.955	34.45	0	57.00
	Before	1.938	5		35.22	0	
7	Master	1.930	6	1.955	34.45	0	57.00
	Before	1.930	6		34.26	0	
	Master	1.365	7	1.415	34.79	0	53.00
	Before	1.340	7		35.54	0	

Master: Jan 3 23:55 1997 Before: Feb 28 17:15 1997

Array Induction Tool - H Wellsite Calibration

Electronics Calibration Check - Auxiliary

Phase		AIT-H SPA Plus MV	Value	Phase		AIT-H SPA Zero MV	Value
Master		990.5	Master			0	-0.07505
Before		992.3	Before			0	-0.07574
Mk 0	Nominal	Nominal	Mk 0	Nominal	Nominal	Mk 0	Nominal
Photo	AIT-H Temperature Plus V		Value	Photo	AIT-H Temperature Zero V		Value
Master		0.8190	Master				-7.583E-06
Before		0.8192	Before				-8.026E-06
0.8100 Nominal	0.8100 Nominal	0.8600 Nominal	-0.0000 Nominal	0.0000 Nominal	0.0000 Nominal	0.0000 Nominal	0.0000 Nominal

Master: Jan 3 23:55 1997 Before: Feb 28 17:15 1997

Array Induction Tool - H Wellsite Calibration

Test Loop Gain Correction

Mk	Value	Test Loop Gain Magnitude V	Value	Phase DEG	
1	1.013	0	0.1075	0	0
		Nominal	Nominal	Nominal	Nominal
2	1.012	1	0.0686	0	0
		Nominal	Nominal	Nominal	Nominal
3	1.012	2	0.0686	0	0
		Nominal	Nominal	Nominal	Nominal
4	1.012	3	0.0686	0	0
		Nominal	Nominal	Nominal	Nominal
5	0.9998	4	0.1007	0	0
		Nominal	Nominal	Nominal	Nominal
6	0.9972	5	0.0686	0	0
		Nominal	Nominal	Nominal	Nominal
7	0.9972	6	0.4006	0	0
		Nominal	Nominal	Nominal	Nominal
8	1.012	7	0.0690	0	0
		Nominal	Nominal	Nominal	Nominal

		(Minimum)	(Nominal)	(Maximum)		(Minimum)	(Nominal)	(Maximum)
2	1.014				0.04049			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.012				-0.09688			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9966				0.1607			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9672				-0.01007			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9972				0.4506			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.012				0.06303			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: Jan 9 23:55 1997

Array Induction Tool - H Wellsite Calibration
Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-43.12				115.0			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	149.9				88.33			
		114.0 (Minimum)	158.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.3				-142.5			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.99				-24.99			
		38.00 (Minimum)	64.00 (Nominal)	88.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.37				-24.80			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.40				-16.90			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.170				-1.782			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.9060				-1.709			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: Jan 9 23:55 1997

Array Induction Tool - H Wellsite Calibration
Mud Gain Correction

Idx	Value	Coarse - Mag. Real, Imag			Value	Fine - Mag. Real, Imag		
0	1.055				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
1	1.055				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
2	1.055				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

Master: Jan 9 23:55 1997

Array Induction Tool - H Master Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Value	Thru Cal Magnitude V			Nominal	Value	Phase DEG		Nominal
0		0.7964			0.8050	52.62			71.00
1	Master	1.271			1.270	51.51			70.00
2	Master	0.7922			0.8230	47.67			66.00
3	Master	0.7094			0.7040	46.65			65.00
4	Master	1.328			1.337	40.41			59.00
5	Master	1.930			1.956	38.45			57.00
6	Master	1.922			1.956	38.49			57.00
7	Master	1.385			1.415	34.79			53.00
		60.00 % (Minimum)		140.0 % (Maximum)		Nom -60.00 (Minimum)		Nom + 60.00 (Maximum)	

Master: Jan 9 23:55 1997

Array Induction Tool - H Master Calibration
Electronics Calibration Check - Auxiliary

Phase	AIT-H SPA Plus MV			Value	Phase	AIT-H SPA Zero MV			Value
Master				992.0	Master				-0.07926
	941.0 (Minimum)	990.5 (Nominal)	1040 (Maximum)			-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	
Phase	AIT-H Temperature Plus V			Value	Phase	AIT-H Temperature Zero V			Value
Master				0.9190	Master				-7.563E-05
	0.8700 (Minimum)	0.9150 (Nominal)	0.9600 (Maximum)			-0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)	

Master: Jan 9 23:55 1997

Array Induction Tool - H Master Calibration
Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V			Value	Phase DEG		
0	1.013				0.1375			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.012				0.06659			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.014				0.04049			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.012				-0.09688			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9966				0.1607			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9672				-0.01007			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9972				0.4506			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.012				0.06303			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		-3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: Jan 9 23:55 1997

Array Induction Tool - H Master Calibration
Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	-43.12				115.0			
		-231.0 (Minimum)	-56.00 (Nominal)	119.0 (Maximum)		-2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	149.9				88.33			
		114.0 (Minimum)	158.0 (Nominal)	204.0 (Maximum)		-625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.3				-142.5			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		-350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.99				-24.99			
		38.00 (Minimum)	64.00 (Nominal)	88.00 (Maximum)		-250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.37				-24.80			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		-63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	12.40				-16.90			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		-50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.170				-1.782			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	-0.9060				-1.709			
		-5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		-30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: Jan 9 23:55 1997

Array Induction Tool - H Master Calibration
Mud Gain Correction

Idx	Value	Coarse - Mag. Real, Imag			Value	Fine - Mag. Real, Imag		
0	1.056				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
1	1.056				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)
2	1.056				1.056			
		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)		0.6000 (Minimum)	1.000 (Nominal)	1.400 (Maximum)

Master: Jan 9 23:55 1997

Scintillation Gamma-Ray - L / Equipment Identification

Primary Equipment:
Scintillation Gamma Cartridge — SGC - SA
Scintillation Gamma Detector — SGD - TAA

Auxiliary Equipment:
Scintillation Gamma Housing — SGH - K
Gamma Source Radioactive — GSR - U/Y — 1237

Scintillation Gamma-Ray - L Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Sig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
Before				14.50	Before				166.3	Before				165.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			151.2 (Minimum)	166.3 (Nominal)	181.4 (Maximum)			150.0 (Minimum)	165.0 (Nominal)	180.0 (Maximum)	

Before: Feb 28 17:12 1997

COMPANY	PARAMOUNT RESOURCES LTD	BOTTOM LOG INTERVAL	1697.6 M
		SCHLUMBERGER DEPTH	1700 M
WELL	PARAMOUNT ET AL BOVIE LAKE C-76	DEPTH DRILLER	1710 M
FIELD	UNDEFINED	KELLY BUSHING	433.32 M
PROVINCE	NORTHWEST TERRITORIES	DRILL FLOOR	433.02 M
		GROUND LEVEL	426.8 M

Schlumberger

ARRAY INDUCTION - LOG

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAR - 6 1997

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

N.E.B. COPY

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

PROVINCE/TERRITORY: NORTHWEST TERRITORIES
Location: LATITUDE 65° 17' 14.82"
LONGITUDE 103° 58' 20.54"
Co. name: PARAMOUNT RESOURCES LTD.

Schlumberger

PLATFORM EXPRESS
ARRAY INDUCTION - RXO

LATITUDE: 65 19' 14.82"
LONGITUDE: 103 58' 20.54"
UWI: 300C788020120400

Permanent Datum: SINCLAIRO LEVEL — Elev.: 455.8 ft
Log Measured From: KELLY BUSHING — 6.0 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

	API Serial No.	LATITUDE	LONGITUDE
	EL 399	65 17' 14.82"	103 58' 20.54"

	Run 1	Run 2	Run 3	Run 4
Logging Date	25-MAR-1997			
Depth Driller	3500 M			
Depth Logger	3500 M			
Schlumberger Depth	3502 M			
Bottom Log Interval	3419.8 M			
Top Log Interval	2994 M			
Casing Driller Size @ Depth	244.5 MM @ 2994 M	@	@	@
Casing Schlumberger	2994 M			
Bit Size	152.000 MM			
Type Fluid in Hole	OBD, CHEM			
Density / Viscosity	1160 K/M3 / Nil S			
PH / Fluid Loss	9.5 / 4.5			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	0.208 OHMM @ 16 DEGC	@	@	@
RMF @ Measured Temperature	0.063 OHMM @ 16 DEGC	@	@	@
RMC @ Measured Temperature	1.500 OHMM @ 16 DEGC	@	@	@
Source RMF / RMC	MEASURED / CALCULATED			
RM @ MST / RMF @ MST	0.11 @ 105 / 0.047 @ 105	@ / @	@ / @	@ / @
Maximum Recorded Temperatures	105 DEGC			
Circulation Stopped / Time	25-MAR-1997 / 14:00			
Logger On Bottom / Time	25-MAR-1997 / 22:00			
Unit Number / Location	5070 / SWAN RIVER, MANITOBA			
Recorded By	NOEL MCINNIS			
Witnessed By	DOUN BROWN			

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

OTHER SERVICES: CBL GR, DSI, GR, HALS, GR
RUN: 1
DATE: 25-MAR-97
TYPE LOG: RUN NUMBER
TOP LOGGED INTERVAL: 3419.8 M
BOTTOM LOGGED INTERVAL: 2994 M
CASING-DRILLER: 244.5 MM @ 2994 M
CASING-LOGGER: 2994 M
BIT SIZE: 152.000 MM
TYPE FLUID IN HOLE: OBD, CHEM
DENSITY: 1160 K/M3
VISCOSITY: Nil S
PH: 9.5
FLUID LOSS: 4.5 C3
SOURCE OF SAMPLE: FLOWLINE
RM @ MEASURED TEMP: 0.208 OHMM @ 16 DEGC
RMF @ MEASURED TEMP: 0.063 OHMM @ 16 DEGC
RMC @ MEASURED TEMP: 1.500 OHMM @ 16 DEGC
SOURCE RMF: MEASURED
SOURCE RMC: CALCULATED
RM @ MST: 0.11 @ 105
RMF @ MST: 0.047 @ 105
MAXIMUM RECORDED TEMP: 105 DEGC
LOGGING DISTRICT: SWAN RIVER, MANITOBA
LOGGED BY: NOEL MCINNIS
WITNESSED BY: DOUN BROWN

RUN 2
DATE:
TYPE LOG:
TOP LOGGED INTERVAL:
BOTTOM LOGGED INTERVAL:
CASING-DRILLER:
CASING-LOGGER:
BIT SIZE:
TYPE FLUID IN HOLE:
DENSITY:
VISCOSITY:
PH:
FLUID LOSS:
SOURCE OF SAMPLE:
RM @ MEASURED TEMP:
RMF @ MEASURED TEMP:
RMC @ MEASURED TEMP:
SOURCE RMF:
SOURCE RMC:
RM @ MST:
RMF @ MST:
MAXIMUM RECORDED TEMP:
LOGGING DISTRICT:
LOGGED BY:
WITNESSED BY:

RUN 3
DATE:
TYPE LOG:
TOP LOGGED INTERVAL:
BOTTOM LOGGED INTERVAL:
CASING-DRILLER:
CASING-LOGGER:
BIT SIZE:
TYPE FLUID IN HOLE:
DENSITY:
VISCOSITY:
PH:
FLUID LOSS:
SOURCE OF SAMPLE:
RM @ MEASURED TEMP:
RMF @ MEASURED TEMP:
RMC @ MEASURED TEMP:
SOURCE RMF:
SOURCE RMC:
RM @ MST:
RMF @ MST:
MAXIMUM RECORDED TEMP:
LOGGING DISTRICT:
LOGGED BY:
WITNESSED BY:

RUN 4
DATE:
TYPE LOG:
TOP LOGGED INTERVAL:
BOTTOM LOGGED INTERVAL:
CASING-DRILLER:
CASING-LOGGER:
BIT SIZE:
TYPE FLUID IN HOLE:
DENSITY:
VISCOSITY:
PH:
FLUID LOSS:
SOURCE OF SAMPLE:
RM @ MEASURED TEMP:
RMF @ MEASURED TEMP:
RMC @ MEASURED TEMP:
SOURCE RMF:
SOURCE RMC:
RM @ MST:
RMF @ MST:
MAXIMUM RECORDED TEMP:
LOGGING DISTRICT:
LOGGED BY:
WITNESSED BY:

RUN 1 EQUIPMENT DESCRIPTION — RUN 2

SURFACE EQUIPMENT
GRULT CTB-A
GRULT CTB-B

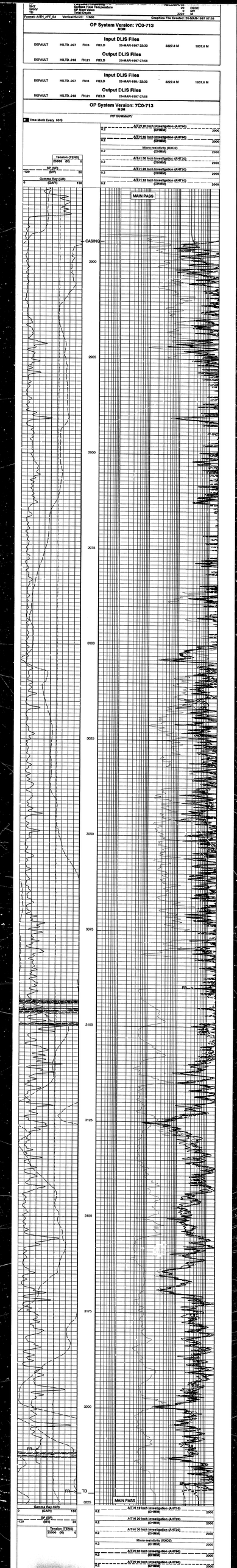
DOWNHOLE EQUIPMENT

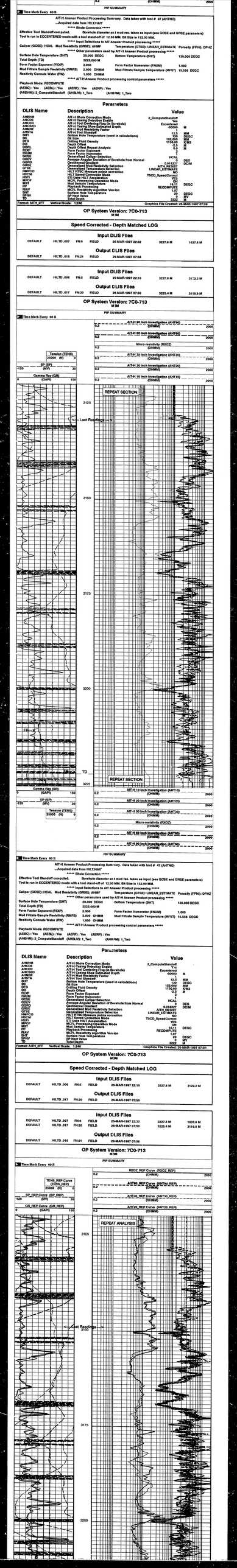
	RUN 1		RUN 2	
	SERIAL NUMBER	EQUIP. LOCATION	SERIAL NUMBER	EQUIP. LOCATION
PRIMARY CABLE	30915	ECP		ECP
TELEMETRY CARTRIDGE	3915	ECP		ECP

DITH DITA
DSI DSTA
CSUN CSUA
MCVD MCVS
HILT HTTB
AIT-H TEHC
AIT-M TEMC
AIT-A TEAC
HRGD HRGS
HNGS HNGS
HDIS HDIS
HLDS HLDS
HACC HACC
HCAL HCAL
HSGR HSGR
HTEN HTEN
MRIL-C MRIC
MRIL-P MRIP
ECS ECS
HNGS HNGS
HRDD HRDD
HMRS HMRS
HNPO HNPO
HPEF HPEF
HDSN HDSN
HGNS HGNS
HLDS HLDS
HRDD HRDD
HMRS HMRS
HNPO HNPO
HPEF HPEF
HDSN HDSN
HGNS HGNS
HLDS HLDS
HACC HACC
HCAL HCAL
HSGR HSGR
HTEN HTEN
MRIL-C MRIC
MRIL-P MRIP
ECS ECS

DITH 17.67
CSUN 16.78
HILT 16.78
HDIS 15.54
HRGD 14.17
HNGS 13.25
HLDS 11.28
HACC 8.42
HCAL 8.41
HSGR 7.39
HTEN 6.88
MRIL-C 6.48
MRIL-P 6.48
ECS 2.41
HMRS 0.63
HNPO 0.00
HPEF 0.00
HDSN 0.00
HGNS 0.00

MUDWEIGHT, VISCOSITY, FLUID LOSS, RM, RMF, RMC AND RM AT BHT ENTERED ON MAIN LOG HEADING
DATA SAMPLED EVERY .1524 M
TOOL STRING (TOP TO BOTTOM)
MAXIMUM TEMPERATURE RECORDED BY TOOLS ON THIS RUN WAS 105 DEGC
MAXIMUM TEMPERATURE RECORDED BY TOOLS ON PREVIOUS RUN WAS DEGC
TOOL STANDOFF (IN INCHES)
HILT: 1.5
HNGS: 0.5
HRGD: 0.5
HACC: 0.5
HCAL: 0.5
HSGR: 0.5
HTEN: 0.5
MRIL-C: 0.5
MRIL-P: 0.5
ECS: 0.5
HMRS: 0.5
HNPO: 0.5
HPEF: 0.5
HDSN: 0.5
HGNS: 0.5
HLDS: 0.5
HACC: 0.5
HCAL: 0.5
HSGR: 0.5
HTEN: 0.5
MRIL-C: 0.5
MRIL-P: 0.5
ECS: 0.5
TOOLS NOT USED
MRIL-C, MRIL-P, ECS, HMRS, HNPO, HPEF, HDSN, HGNS, HLDS, HACC, HCAL, HSGR, HTEN
MUDWEIGHT, VISCOSITY, FLUID LOSS, RM, RMF, RMC AND RM AT BHT ENTERED ON MAIN LOG HEADING
DATA SAMPLED EVERY .1524 M
TOOL STRING (TOP TO BOTTOM)
MAXIMUM TEMPERATURE RECORDED BY TOOLS ON THIS RUN WAS DEGC
MAXIMUM TEMPERATURE RECORDED BY TOOLS ON PREVIOUS RUN WAS DEGC
TOOL STANDOFF (IN INCHES)
TOOLS NOT USED


Surface Hole Temperature
SP Hard Value
TD
Total Depth
3227 M
Format: AITH_DFT_82
Vertical Scale: 1:600
Graphics File Created: 26-MAR-1997 07:58
OP System Version: 7C0-713
M 5M
Input DLIS Files
DEFAULT HILTD .007 FN:6 FIELD 25-MAR-1997 22:32 3227.6 M 1637.6 M
Output DLIS Files
DEFAULT HILTD .018 FN:21 FIELD 26-MAR-1997 07:58
Input DLIS Files
DEFAULT HILTD .007 FN:6 FIELD 25-MAR-1997 22:32 3227.6 M 1637.6 M
Output DLIS Files
DEFAULT HILTD .018 FN:21 FIELD 26-MAR-1997 07:58
OP System Version: 7C0-713
M 5M
PIP SUMMARY
Time Mark Every 60 S
AT-HI 60 Inch Investigation (AHT60) (OHMM)
AT-HI 90 Inch Investigation (AHT90) (OHMM)
Micro-resistivity (RXO2) (OHMM)
AT-HI 30 Inch Investigation (AHT30) (OHMM)
AT-HI 20 Inch Investigation (AHT20) (OHMM)
AT-HI 10 Inch Investigation (AHT10) (OHMM)
Tension (TENS) 35000 (N) 0
SP (SP) -120 (MV) 30
Gamma Ray (GR) 0 (GAPI) 150
MAIN PASS
CASING
FIN
TD
MAIN PASS
Gamma Ray (GR) 0 (GAPI) 150
SP (SP) -120 (MV) 30
Tension (TENS) 35000 (N) 0
AT-HI 10 Inch Investigation (AHT10) (OHMM)
AT-HI 20 Inch Investigation (AHT20) (OHMM)
AT-HI 30 Inch Investigation (AHT30) (OHMM)
Micro-resistivity (RXO2) (OHMM)
AT-HI 60 Inch Investigation (AHT60) (OHMM)
AT-HI 90 Inch Investigation (AHT90) (OHMM)
0.2
2000
2900
2925
2950
2975
3000
3025
3050
3075
3100
3125
3150
3175
3200
3225


0.2
(OHMM)
2000
PIP SUMMARY
Time Mark Every 60 S
AIT-H Answer Product Processing Summary: Data taken with tool # 47 (AITH0)
...Acquired data from HILT/HAIT
***** Bhole Correction *****
Effective Tool Standoff computed, Borehole diameter as 1 mod res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 12.50 MM. BS Size is 152.00 MM.
***** Input Selections to AIT Answer Product processing *****
Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHS): DPHZ
***** Other parameters used by AIT-H Answer Product processing *****
Surface Hole Temperature (SHT) 30.000 DEGC Bottom Temperature (BHT) 130.000 DEGC
Total Depth (TD) 3222.000 M
Form Factor Exponent (FEXP) 2.000 Form Factor Numerator (FNUM) 1.000
Mud Filtrate Sample Resistivity (RMFS) 2.900 OHMM Mud Filtrate Sample Temperature (MFST) 15.556 DEGC
Resistivity Correate Water (RW) 1.000 OHMM
***** AIT-H Answer Product processing control parameters *****
Playback Mode: RECOMPUTE
(AEBC) : Yes (AEBL) : Yes (AERP) : Yes (AESP) : Yes
(AHSHM): 2_ComputeStandoff (AHSLM): 1_Two (AHVRM): 1_Two
Parameters
DLIS Name
Description
Value
AHBHM
AIT-H Bhole Correction Mode
2_ComputeStandoff
AHCDC
AIT-H Centralizing Flag (In Borehole)
Yes
AHCEN
AIT-H Data Acquisition Centre
Eccentered
AHCSTO
AIT-H Casing Shoe Extended Depth
-99060
M
AHMSM
AIT-H Mud Resistivity Factor
1
AHRTA
AIT-H Tool Standoff
12.5
MM
BHT
Bottom Hole Temperature (used in calculations)
130
DEGC
BS
Drilling Fluid Density
152.000
MM
DFD
Depth Offset
1130.00
K/M3
DO
Depth Offset Repeat Analysis
0.5
M
DORL
Depth Offset for Playback
0
M
FEXP
Form Factor Exponent
2
FNUM
Form Factor Numerator
1
GCSE
Generalized Caliper Selection
HCAL
GDEV
Average Angular Deviation of Borehole from Normal
0
DEG
GGRD
Geothermal Gradient
0.018227
DC/M
GRSE
Generalized Resistivity Selection
AITH_ESTIMATE
GTSE
Generalized Temperature Selection
LINEAR_ESTIMATE
HHPCO
HILT/RTSC Measure points correction
NO
HSPD
HILT Tool Speed Correction
TSCO_SpeedCorrection
HSTI
ST1 Uses HILT Acceleration
YES
MPOF
MCFL Processing Operation Mode
ON
PF
Playback Processing
2
DEGC
PM
Playback Processing
RECOMPUTE
RAAV
MCFL Resistivity Algorithm Version
1.07
SHV
Surface Hole Temperature
30
DEGC
SPHV
SP Input Value
0
MV
TD
Total Depth
3222
M
Format: AITH_2FT Vertical Scale: 1:240 Graphics File Created: 29-MAR-1997 07:58
OP System Version: 7C0-713
M 5M
Speed Corrected - Depth Matched LOG
Input DLIS Files
DEFAULT HILTD .007 FN:6 FIELD 25-MAR-1997 22:32 3227.8 M 1637.8 M
Output DLIS Files
DEFAULT HILTD .018 FN:21 FIELD 29-MAR-1997 07:58
Input DLIS Files
DEFAULT HILTD .006 FN:5 FIELD 25-MAR-1997 22:10 3227.8 M 3132.2 M
Output DLIS Files
DEFAULT HILTD .017 FN:20 FIELD 29-MAR-1997 07:50
Input DLIS Files
DEFAULT HILTD .007 FN:6 FIELD 25-MAR-1997 22:32 3227.8 M 1637.8 M
DEFAULT HILTD .017 FN:20 FIELD 25-MAR-1997 07:50 3225.4 M 3119.9 M
Output DLIS Files
DEFAULT HILTD .018 FN:21 FIELD 29-MAR-1997 07:58
OP System Version: 7C0-713
M 5M
PIP SUMMARY
Time Mark Every 60 S
AIT-H 90 Inch Investigation (AHT90)
AIT-H 60 Inch Investigation (AHT60)
Micro-resistivity (RXOZ)
AIT-H 30 Inch Investigation (AHT30)
AIT-H 20 Inch Investigation (AHT20)
AIT-H 10 Inch Investigation (AHT10)
Tension (TENS)
SP (SP)
Gamma Ray (GR)
REPEAT SECTION
Last Reading
FINAL
TD
3125
3150
3175
3200
3205
Graphics File Created: 29-MAR-1997 07:58

PIP SUMMARY

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 47 (AHTNO)
...Acquired data from HILT/HAIT
***** Blade Correction *****
Effective Tool Standoff computed, Borehole diameter as I mod res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 12.50 MM. Bit Size is 152.00 MM.
***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL	Mud Resistivity (GRSE): AHMF	Temperature (GTSE): LINEAR_ESTIMATE	Porosity (FPHS): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	130.000 DEGC
Total Depth (TD)	3222.480 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	2.900 OHMM	Mud Filtrate Sample Temperature (MFST)	15.556 DEGC
Resistivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: RECOMPUTE			
(AERC) : Yes	(AESL) : Yes	(AERP) : Yes	(AETP) : Yes
(AHRHM): 2_ComputeRawAnd	(AHIB_M): 1_Two	(AHIRHM): 1_Two	

Parameters

DLIS Name	Description	Value
AHIBHM	AIT-H Shole Correction Mode	2_ComputeSimulAnd
AHCDE	AIT-H Caving Detection Enable	Yes
AHCDS	AIT-H Cave Detection Flag (In Borehole)	Eccentered
AHMPD	AIT-H Caving Shoe Extended Depth	-50000 M
AHMRP	AIT-H Ground Memory Factor	0
AHRTA	AIT-H Tool Standoff	12.5 MM
BHT	Bottom Hole Temperature (used in calculations)	130 DEGC
DFD	Drilling Fluid	1.100 K/M3
DFV	Drilling Fluid Density	1150.00 K/M3
DO	Depth Offset	-2.5 M
DRPL	Depth Repeat Repeat Analysis	0.2 M
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GDAT	Geodetic Datum Selection	HCAL
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.018227 DC/M
GTSE	Generalized Mud Resistivity Selection	AITH_RESIST
HMPCO	Mud Filtrate Temperature Selection	LINEAR_ESTIMATE
HSCH	HILT Borehole Salinity correction	0
HSCI	HILT Speed Correction Mode	TSCD_SpeedCorrected
HSTI	HILT Time HILT Acceleration	YES
HSTU	HILT Time Correction Mode	0.1 S
MRT	Mud Sample Temperature	15.57 DEGC
PB	Playback Processing	RECOMPUTE
PSAV	AIT-H Parameter Condition Version	0
SHT	Surface Hole Temperature	20 DEGC
SPMV	SP Hard Value	0 MV
TD	Total Depth	3222 M

Format: AITH_SPT_REP Vertical Scale: 1:240 Graphics File Created: 29-MAR-1997 07:58

OP System Version: 7C0-713
M 5M

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILT.007	FN:6	FIELD	25-MAR-1997 22:32	3227.4 M	1637.6 M
DEFAULT	HILT.017	FN:20	FIELD	26-MAR-1997 07:50	3235.4 M	3119.8 M

Output DLIS Files

DEFAULT	HILT.018	FN:21	FIELD	29-MAR-1997 07:58		

Input DLIS Files

DEFAULT	HILT.007	FN:6	FIELD	25-MAR-1997 22:32	3227.4 M	1637.6 M

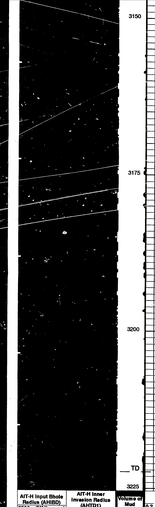
Output DLIS Files

DEFAULT	HILT.018	FN:21	FIELD	29-MAR-1997 07:58		

OP System Version: 7C0-713
M 5M

PIP SUMMARY

Time Mark Every 60 S



PIP SUMMARY

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 47 (AHTHO)
Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Tool Standoff computed.
Borehole diameter an I mud res. taken as input (see GCSE and GRSE parameters)
Tool is run in ECCENTERED mode with a tool stand-off of 13.50 MM. Bit Size is 193.00 MM.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL	Mud Resistivity (GRSE): AHMT	Tem-perature (GTSE): LINEAR_ESTIMATE	Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	138.000 DEGC
Total Depth (TD)	3222.000 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	2.900 OHMM	Mud Filtrate Sample Temperature (MFST)	15.556 DEGC
Resistivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: RECOMPUTE
(AEIC) : Yes (AEIL) : Yes (AEIF) : Yes (AEFP) : Yes
(AHSHIN0: 2_ComputeStandoff (AHMLM): 1_Two (AHI %0): 1_Two

Parameters

DLIS Name	Description	Value
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff
AHCOE	AIT-H Casing Detection Enable	Yes
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentered
AHSHO	AIT-H Centering Standoff Distance	-00000 M
AHMEF	AIT-H Environmental Factor	1
AHSTA	AIT-H Tool Standoff	12.5 MM
BHT	Bottom Hole Temperature (used in calculations)	138 DEGC
BS	Bit Size	193.000 MM
DFD	Drilling Fluid Density	1.200 G/C3
DO	Depth Offset	-0.5 M
DOBS	Depth Offset Repeat Analysis	0.0 M
FEXP	Form Factor Exponent	2
FNUM	Form Factor Numerator	1
GCSC	Generalized Caliper Selection	HCAL
GDEV	Generalized Deviation of Borehole from Normal	0 DEG
GGRO	Geothermal Gradient	0.018227 DC/M
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
MFST	Mud Filtrate Sample Temperature	15.556 DEGC
PP	Playback Processing	RECOMPUTE
RMFS	Resistivity of Mud Filtrate Sample	2.9000 OHMM
SHT	Surface Hole Temperature	20 DEGC
TD	Total Depth	3222 M

Format: AITH_DOI Vertical Scale: 1:240 Graphics File Created: 29-MAR-1997 07:58

OP System Version: 7C0-713
M 3M

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILTD .007	FN:6	FIELD	23-MAT-1997 22:32	3227.4 M	1637.6 M

Output DLIS Files

DEFAULT	HILTD .018	FN:21	FIELD	25-MAR-1997 07:58		

Input DLIS Files

DEFAULT	HILTD .007	FN:6	FIELD	25-MAR-1997 22:32	3227.4 M	1637.6 M

Output DLIS Files

DEFAULT	HILTD .018	FN:21	FIELD	29-MAR-1997 07:58		

Speed Corrected - Depth Matched LOG

OP System Version: 7C0-713
M 3M

PIP SUMMARY

Time Mark Every 60 S

Std. Res. Resistivity Standoff (RSOZ) 65 (MM) 0
Gamma Ray (EGGR) 0 (GAPI) 150
Std. Res. Density Standoff (DSOZ) 65 (MM) 0
Bit Size (BS) 125 (MM) 375
AIT-H Bhole/Form Signal Ratio (AHBFR) 20 (----) 120
Caliper (HCAL) (MM) 125 315
Tension (TENS) (N) 50000 0
AIT-H GC Fully Calibrated A8 Signal (AHGAHR8) (MM/M) 2 20000
AIT-H GC Fully Calibrated A7 Signal (AHGAHR7) (MM/M) 2 20000
AIT-H GC Fully Calibrated A6 Signal (AHGAHR6) (MM/M) 2 20000
AIT-H GC Fully Calibrated A5 Signal (AHGAHR5) (MM/M) 2 20000
AIT-H GC Fully Calibrated A4 Signal (AHGAHR4) (MM/M) 2 20000
AIT-H GC Fully Calibrated A3 Signal (AHGAHR3) (MM/M) 2 20000
AIT-H GC Fully Calibrated A2 Signal (AHGAHR2) (MM/M) 2 20000
AIT-H GC Fully Calibrated A1 Signal (AHGAHR1) (MM/M) 2 20000
Pe Correction (HPFA) (----) 0 2
Density Correction (HDRA) -500000 (G/C3) -50000
Hdrx (HDRX) 0.5 (----) 1.5
Delta Neutron Porosity (DNPO) -0.1 (MV) 0.1
GR Borehole Correction Factor (CTEM) 0.5 (----) 1.5

*** Flag Tracks ***
White = Absent Green = Good Yellow = Warn Red/Black = Bad

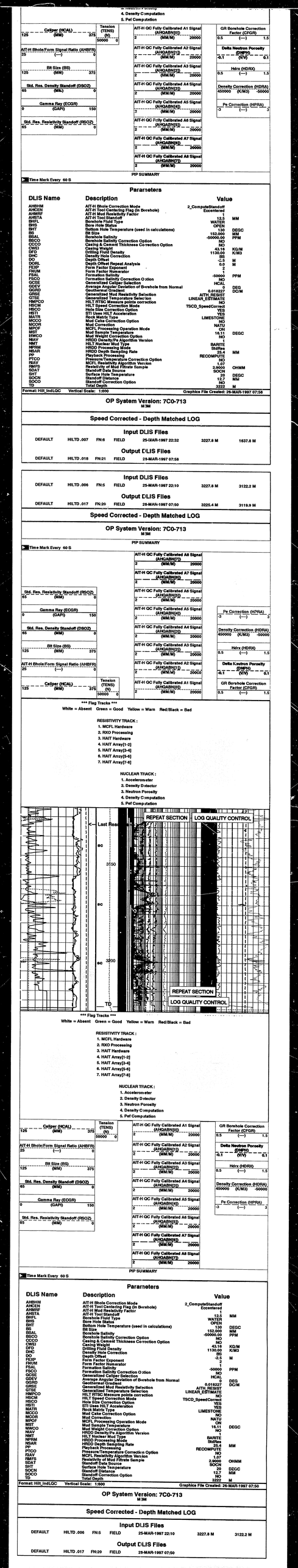
RESISTIVITY TRACK :
1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1-2]
5. HAIT Array[3-4]
6. HAIT Array[5-6]
7. HAIT Array[7-8]

NUCLEAR TRACK :
1. Accelerometer
2. Density D-dec/Gel
3. Neutron Porosity
4. Density C-ompdation
5. Pef Comp.dation

*** Flag Tracks ***
White = Absent Green = Good Yellow = Warn Red/Black = Bad

RESISTIVITY TRACK :
1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1-2]
5. HAIT Array[3-4]
6. HAIT Array[5-6]
7. HAIT Array[7-8]

NUCLEAR TRACK :
1. Accelerometer
2. Density D-dec/Gel



Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff	
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentred	
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	12.5	MM
BHFL	Borehole Fluid Type	WATER	
BHS	Bore Hole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	120	DEGC
BS	Bit Size	152.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CWGI	Casing Weight	43.15	KG/M
DFD	Drilling Fluid Density	1130.00	K/M3
DHC	Density Hole Correction	BS	
DO	Depth Offset	-2.5	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITH_RESBIT	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MPOF	Mud Processing Operation Mode	ON	
MST	Mud Sample Temperature	16.11	DEGC
MWCO	Mud Weight Correction Option	NO	
NMAT	HILT Nuclear Mud Type	BARITE	
NPHM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	25.4	MM
PP	Playback Processing	RECOMPUTE	
PTCO	Pressure/Temperature Correction Option	NO	
RAVF	MCFL Resistivity Algorithm Version	1.07	
RMFS	Resistivity of Mud Filtrate Sample	2.9000	OHMM
SOAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	127	MM
SOCO	Standoff Correction Option	NO	
TD	Total Depth	3222	M

Format: HIL_IndLQC Vertical Scale: 1:600 Graphics File Created: 28-MAR-1997 07:58

OP System Version: 7C0-713
M 3M

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILTD .007	FN:6	FIELD	25-MAR-1997 22:32	3227.8 M 1637.6 M

Output DLIS Files

DEFAULT	HILTD .018	FN:21	FIELD	28-MAR-1997 07:58	

Input DLIS Files

DEFAULT	HILTD .006	FN:5	FIELD	25-MAR-1997 22:10	3227.8 M 3122.2 M

Output DLIS Files

DEFAULT	HILTD .017	FN:20	FIELD	28-MAR-1997 07:50	3225.4 M 3119.9 M

Speed Corrected - Depth Matched LOG

OP System Version: 7C0-713
M 3M

PIP SUMMARY
Time Mark Every 60 S
AIT-H QC Fully Calibrated A8 Signal (AHQABN[7]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A7 Signal (AHQABN[6]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A6 Signal (AHQABN[5]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A5 Signal (AHQABN[4]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A4 Signal (AHQABN[3]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A3 Signal (AHQABN[2]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A2 Signal (AHQABN[1]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A1 Signal (AHQABN[0]) (MM/M) 2 20000
Pe Correction (HPRA) -3 (---) 3
Density Correction (HDRA) 450000 (K/M3) -50000
Hdrx (HDRX) 0.5 (---) 1.5
Delta Neutron Porosity (DNPH) -0.1 (V/V) 0.1
GR Borehole Correction Factor (CFGR) 0.5 (---) 1.5
Std. Res. Resistivity Standoff (RSOZ) (MM) 65 0
Gamma Ray (EGGR) (GAPI) 0 150
Std. Res. Density Standoff (DSOZ) (MM) 65 0
Bit Size (BS) (MM) 125 375
AIT-H Bhole/Form Signal Ratio (AHBFR) 25 (---) 0
Caliper (HCAL) (MM) 125 375
Tension (TENS) (N) 50000 0

*** Flag Tracks ***
White = Absent Green = Good Yellow = Warn Red/Black = Bad

RESISTIVITY TRACK :
1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1-2]
5. HAIT Array[3-4]
6. HAIT Array[5-6]
7. HAIT Array[7-8]

NUCLEAR TRACK :
1. Accelerometer
2. Density D etector
3. Neutron Porosity
4. Density C omputation
5. Pef Computation

*** Flag Tracks ***
White = Absent Green = Good Yellow = Warn Red/Black = Bad
RESISTIVITY TRACK :
1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1-2]
5. HAIT Array[3-4]
6. HAIT Array[5-6]
7. HAIT Array[7-8]
NUCLEAR TRACK :
1. Accelerometer
2. Density D etector
3. Neutron Porosity
4. Density C omputation
5. Pef Computation
Caliper (HCAL) (MM) 125 375
Tension (TENS) (N) 50000 0
AIT-H Bhole/Form Signal Ratio (AHBFR) 25 (---) 0
Bit Size (BS) (MM) 125 375
Std. Res. Density Standoff (DSOZ) (MM) 65 0
Gamma Ray (EGGR) (GAPI) 0 150
Std. Res. Resistivity Standoff (RSOZ) (MM) 65 0
AIT-H QC Fully Calibrated A1 Signal (AHQABN[0]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A2 Signal (AHQABN[1]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A3 Signal (AHQABN[2]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A4 Signal (AHQABN[3]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A5 Signal (AHQABN[4]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A6 Signal (AHQABN[5]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A7 Signal (AHQABN[6]) (MM/M) 2 20000
AIT-H QC Fully Calibrated A8 Signal (AHQABN[7]) (MM/M) 2 20000
GR Borehole Correction Factor (CFGR) 0.5 (---) 1.5
Delta Neutron Porosity (DNPH) -0.1 (V/V) 0.1
Hdrx (HDRX) 0.5 (---) 1.5
Density Correction (HDRA) 450000 (K/M3) -50000
Pe Correction (HPRA) -3 (---) 3
PIP SUMMARY
Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	2_ComputeStandoff	
AHCEN	AIT-H Tool Centering Flag (In Borehole)	Eccentred	
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	12.5	MM
BHFL	Borehole Fluid Type	WATER	
BHS	Bore Hole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	120	DEGC
BS	Bit Size	152.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CWGI	Casing Weight	43.15	KG/M
DFD	Drilling Fluid Density	1130.00	K/M3
DHC	Density Hole Correction	BS	
DO	Depth Offset	-2.5	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITH_RESBIT	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HMPCO	HILT RTSC Measure points correction	NO	
HSCM	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSCO	Hole Size Correction Option	YES	
HSTI	STI Uses HILT Acceleration	YES	
MATR	Rock Matrix Type	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MPOF	MCFL Processing Operation Mode	ON	
MST	Mud Sample Temperature	16.11	DEGC
MWCO	Mud Weight Correction Option	NO	
NMAT	HILT Nuclear Mud Type	BARITE	
NPHM	HRDD Density/Pe Algorithm Version	StdRes	
NSAR	HRDD Depth Sampling Rate	25.4	MM
PP	Playback Processing	RECOMPUTE	
PTCO	Pressure/Temperature Correction Option	NO	
RAVF	MCFL Resistivity Algorithm Version	1.07	
RMFS	Resistivity of Mud Filtrate Sample	2.9000	OHMM
SOAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standoff Distance	127	MM
SOCO	Standoff Correction Option	NO	
TD	Total Depth	3222	M

Format: HIL_IndLQC Vertical Scale: 1:600 Graphics File Created: 28-MAR-1997 07:50
OP System Version: 7C0-713
M 3M
Speed Corrected - Depth Matched LOG
Input DLIS Files
DEFAULT HILTD .006 FN:5 FIELD 25-MAR-1997 22:10 3227.8 M 3122.2 M
Output DLIS Files
DEFAULT HILTD .017 FN:20 FIELD 28-MAR-1997 07:50

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master Jan 28 15:21 1997 Before: Mar 25 17:20 1997							
Thru Cal Magnitude - 1	0	0.0232	0.0255	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.0533	0.0584	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.0533	0.0584	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	0.7181	0.7190	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	0.7181	0.7190	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.956	1.957	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.950	1.956	N/A	N/A	N/A	V
Phase - 1	0	89.81	89.84	N/A	N/A	N/A	DEG
Phase - 2	0	89.81	71.54	N/A	N/A	N/A	DEG
Phase - 3	0	69.53	70.17	N/A	N/A	N/A	DEG
Phase - 4	0	69.53	69.46	N/A	N/A	N/A	DEG
Phase - 5	0	57.24	58.70	N/A	N/A	N/A	DEG
Phase - 6	0	57.24	57.57	N/A	N/A	N/A	DEG
Phase - 7	0	55.66	57.63	N/A	N/A	N/A	DEG
Phase - 8	0	55.66	54.72	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Electronics Calibration Check - Auxiliary							
Master Jan 28 15:21 1997 Before: Mar 25 17:20 1997							
AT1 in SYA Pos		3902	3902	N/A	N/A	N/A	MV
AT1 in SYA Zero		0.4000	0.3297	N/A	N/A	N/A	MV
AT1 in Temperature Plus	3250	3250.0	3250.0	N/A	N/A	N/A	V
AT1 in Temperature Zero	0	0.0000	0.0000	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Test Loop Gain Correction							
Master Jan 28 15:21 1997							
Test Loop Gain Magnitude - 0	0	1.024	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.023	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.023	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	0.9937	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	0.9937	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	0.9937	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	1.002	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.002	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.5674	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.0000	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	0.0531	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	0.0843	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	0.0355	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.0927	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	-0.0927	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.1135	N/A	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Sonde Error Correction							
Master Jan 28 15:21 1997							
R Sonde Error Correction - 0	0	-61.80	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 1	0	0.000	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 2	0	189.1	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 3	0	64.81	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 4	0	24.12	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 5	0	9.00	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 6	0	13.92	N/A	N/A	N/A	N/A	MMM
R Sonde Error Correction - 7	0	-0.1756	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 0	0	-56.18	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 1	0	0.000	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 2	0	0.3208	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 3	0	-57.89	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 4	0	-21.84	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 5	0	-10.64	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 6	0	-0.8144	N/A	N/A	N/A	N/A	MMM
X Sonde Error Correction - 7	0	12.70	N/A	N/A	N/A	N/A	MMM
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Mud Gain Correction							
Master - Jan 28 15:21 1997							
Coarse - Mag. Red. Imag. - 0	0	1.067	N/A	N/A	N/A	N/A	
Coarse - Mag. Red. Imag. - 1	0	1.067	N/A	N/A	N/A	N/A	
Coarse - Mag. Red. Imag. - 2	0	1.067	N/A	N/A	N/A	N/A	
Fine - Mag. Red. Imag. - 0	0	1.067	N/A	N/A	N/A	N/A	
Fine - Mag. Red. Imag. - 1	0	1.067	N/A	N/A	N/A	N/A	
Fine - Mag. Red. Imag. - 2	0	1.067	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Stab Measurement Summary							
Before: Mar 25 20:40 1997							
SS Window Ratio	0.9078	N/A	1.001	N/A	N/A	N/A	
SS Window Sum	0.5000	N/A	0.5090	N/A	N/A	N/A	CPS
SS Window Sum	0.5000	N/A	0.4992	N/A	N/A	N/A	
LS Window Sum	12000	N/A	12000	N/A	N/A	N/A	CPS
LS Window Sum	0.2000	N/A	0.3228	N/A	N/A	N/A	
	1506	N/A	1494	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: Mar 25 20:40 1997							
SS PM High Voltage (Command)	1602	N/A	1596	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1573	N/A	1743	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1598	N/A	1657	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Crystal Zeolity Resolutions Calibration							
Before: Mar 25 20:40 1997							
SS Crystal Resolution	12.24	N/A	10.14	N/A	N/A	N/A	%
SS Crystal Resolution	9.120	N/A	9.828	N/A	N/A	N/A	%
LS Crystal Resolution	9.737	N/A	9.734	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-DTS Wellsite Calibration - MCFL Calibration							
Before: Mar 25 20:39 1997							
Raw 30 Resistivity	3875	N/A	3895	N/A	N/A	N/A	OHMM
Raw 61 Resistivity	3850	N/A	3850	N/A	N/A	N/A	OHMM
Raw 90 Resistivity	3850	N/A	3850	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-DTS Wellsite Calibration - HILT CJ per Calibration							
Before: Mar 25 17:26 1997							
HILT Caliper Zero Measurement	553.2		182.0	N/A	N/A	N/A	MV
HILT Caliper Plus Measurement	504.8		955.2	N/A	N/A	N/A	MV
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Detector Calibration							
Before: Mar 25 17:26 1997							
Gamma Ray Background	30.00	N/A	32.71	N/A	N/A	N/A	GAPI
Gamma Ray Lig - (Bkg)	173.3	N/A	173.3	N/A	N/A	15.75	GAPI
Gamma Ray (Calibrated)	183.3	N/A	183.3	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Zero Measurement							
Before: Mar 25 17:27 1997 Before: Mar 25 17:27 1997							
CNTC Background	35.57		28.74	N/A	N/A	3.911	CPS
CFTC Background	25.16		25.16	28.80	N/A	3.774	CPS
High resolution Integrated Logging Tool-DTS Wellsite Calibration - Accelerometer Calibration.a							
Before: Mar 25 20:39 1997							
Z-Axis Acceleration	8.810	N/A	9.825	N/A	N/A	N/A	MS2
Mechanical Caliper - G Wellsite Calibration - Electronics Calibration							
Before: Mar 25 17:26 1997							
MCGS Counts Plus	454.8	N/A	299.5	N/A	N/A	N/A	MM
MCGS Counts Zero	103.0	N/A	104.4	N/A	N/A	N/A	MM
Mechanical Caliper - G Wellsite Calibration - Caliper Calibration							
Before: Mar 25 17:26 1997							
Diameter Large Ring	454.8	N/A	299.5	N/A	N/A	N/A	MM
Diameter Small Ring	203.2	N/A	196.8	N/A	N/A	N/A	MM

The CNT Master Calibration Wkr Tone With The Following Parameters :

NCT-B Water Temperature 17.0 DEGC
Thermal Drift Size 65.199 MM

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:
Array Induction Tool - H
Array Induction Sonde
HILT High-Resolution Mechanical Sonde
HILT Gamma ray Sonde
HILT Nuclear Caliper Detector
HILT Nuclear Short-Spacing Detector
HILT Nuclear Long-Spacing Detector
Micro-Cylindrically Focused Log Device

AFI - U
AHRI - BA 47
HNAI - B 663
HRDI - 870
HILT -
HILT -
HILT -
MCFL -

Auxiliary Equipment

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Electronics Calibration Check - Thru Cal Mag. & Phase

Nb	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
1	Master	0.0232	0.0255	0.0000	89.84	71.54	71.55
	Before	0.0255			71.54		
2	Master	1.279	1.279	1.279	69.51	70.17	70.56
	Before	1.283			70.17		
3	Master	0.6533	0.6534	0.6534	69.41	58.70	58.00
	Before	0.6534			58.70		
4	Master	0.7140	0.7190	0.7190	69.51	57.57	55.00
	Before	0.7190			69.71		
5	Master	1.338	1.337	1.337	57.71	54.72	59.00
	Before	1.340			58.17		
6	Master	1.956	1.956	1.956	59.81	57.63	57.00
	Before	1.957			57.91		
7	Master	1.950	1.955	1.955	57.91	57.63	57.00
	Before	1.956			57.91		
8	Master	1.300	1.415	1.415	53.91	54.72	53.00
	Before	1.421			54.71		
		90.00 % Minimum	Nominal	Max. 110.00 % Maximum	Nom.-90.00 Minimum	Nominal	Nom.+ 90.00 Maximum

Master - Jan 28 15:21 1997 Before Mar 25 17:20 1997

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Electronics Calibration Check - Auxiliary

Phase	AT1 in SYA Pos MV	Value	Phase	AT1 in SYA Zero MV	Value
Master		3902	Master		0.4000
Before		994.2	Before		0.5097
	90.00 % Minimum	Nominal	Max. 110.00 % Maximum	Nom.-90.00 Minimum	Nominal
	3512	3902	4292	0.0400	0.4000

Phase	AT1 in Temperature Plus V	Value	Phase	AT1 in Temper ature Zero V	Value
Master	3.250	3.250	Master		0.0000
Before		0.9938	Before		0.0000
	90.00 % Minimum	Nominal	Max. 110.00 % Maximum	Nom.-90.00 Minimum	Nominal
	2.925	3.250	3.575	0.0000	0.0000

Master - Jan 28 15:21 1997 Before Mar 25 17:20 1997

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Test Loop Gain Correction

Nb	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.024	1.024	0.5674	0.5674
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
1	1.023	1.023	0.5680	0.0000
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
2	1.023	1.023	0.5680	0.0531
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
3	0.9937	0.9937	0.5680	0.0839
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
4	0.9937	0.9937	0.5680	0.0355
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
5	0.9937	0.9937	0.5680	-0.0927
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
6	1.002	1.002	0.5680	-0.0927
		0.9000 Minimum	1.024 Nominal	0.000 Maximum
7	1.002	1.002	0.5680	-0.1135
		0.9000 Minimum	1.024 Nominal	0.000 Maximum

Master - Jan 28 15:21 1997

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Sonde Error Correction

Nb	Value	R Sonde Error Correction	Value	X Sonde Error Correction	Value
0	61.80	-61.80	56.18	0.000	0.000
		0.000 Minimum	0.000 Nominal	0.000 Maximum	
1	183.7	183.7	60.17	0.3208	0.3208
		17.00 Minimum	189.1 Nominal	361.2 Maximum	
2	198.1	189.1	64.05	57.89	57.89
		42.00 Minimum	64.81 Nominal	87.62 Maximum	
3	64.81	64.81	24.12	21.84	21.84
		0.000 Minimum	24.12 Nominal	48.24 Maximum	
4	24.17	24.12	9.000	10.64	10.64
		15.12 Minimum	9.000 Nominal	33.12 Maximum	
5	9.259	9.000	-0.8144	0.8144	0.8144
		0.000 Minimum	13.92 Nominal	30.00 Maximum	
6	-0.1756	-0.1756	13.73	12.70	12.70
		0.000 Minimum	0.000 Nominal	30.00 Maximum	

Master - Jan 28 15:21 1997

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Mud Gain Correction

Phase	Coarse - Mag. Red. Imag.	Value	Fine - Mag. Red. Imag.	Value
Master	1.067	1.067	1.067	1.067
	0.9000 Minimum	1.067 Nominal	1.200 Maximum	0.9000 Minimum
Before	1.067	1.067	1.067	1.067
	0.9000 Minimum	1.067 Nominal	1.200 Maximum	0.9000 Minimum

Master - Jan 28 15:21 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Stab Measurement Summary

Phase	SS Window Ratio	Value	Phase	SS Window Sum	Value	Phase	LS Window Ratio	Value
Before	1.001	1.001	Before	0.5090	0.5090	Before	0.3228	0.3228
	0.9078 Minimum	1.000 Nominal		0.4992 Minimum	0.5000 Nominal		0.2000 Minimum	0.2000 Nominal
Phase	SS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before	12000	12000	Before	12000	12000	Before	1494	1494
	10800 Minimum	12000 Nominal		10800 Minimum	12000 Nominal		1344 Minimum	1506 Nominal

Before: Mar 25 20:40 1997

High resolution Integrated Logging Tool-DTS Wellsite Calibration
Photo-Multiplier High Voltages 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	1596	1596	Before	1743	1743	Before	1657	1657
	1602 Minimum	1743 Nominal		1570 Minimum	1671 Nominal		1490 Minimum	1598 Nominal

Before: Mar 25 20:40 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Crystal Quality Resolutions Calibration

Phase	SS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before	10.14	10.14	Before	9.828	9.828	Before	9.734	9.734
	12.24 Minimum	12.00 Nominal		9.120 Minimum	12.72 Nominal		9.737 Minimum	13.00 Nominal

Before: Mar 25 20:40 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Raw Resistivity Calibration

Phase	Raw 30 Resistivity OHMM	Value	Phase	Raw 61 Resistivity OHMM	Value	Phase	Raw 90 Resistivity OHMM	Value
Before	3895	3895	Before	3850	3850	Before	3850	3850
	3875 Minimum	3850 Nominal		3850 Minimum	3850 Nominal		3850 Minimum	3850 Nominal

Before: Mar 25 20:39 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Caliper Calibration

Phase	Raw BLT-Caliper (No Measurement) MV	Value	Phase	BLT-Caliper Plus Measurement MV	Value
Before	182.0	182.0	Before	954.8	955.2
	182.0 Minimum	182.0 Nominal		954.8 Minimum	955.2 Nominal

Before: Mar 25 17:27 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray Lig - (Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before	32.71	32.71	Before	173.3	173.3	Before	183.3	183.3
	30.00 Minimum	183.3 Nominal		173.3 Minimum	183.3 Nominal		183.3 Minimum	183.3 Nominal

Before: Mar 25 17:26 1997

High resolution Integrated Log-ging Tool-DTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Before	28.74	28.74	Before	28.80	28.16
	35.57 Minimum	28.74 Nominal		25.16 Minimum	28.80 Nominal

Master - Sep. 3 13:24 1997 Before: Mar 25 17:27 1997

High resolution Integrated Logging Tool-DTS
Wellsite Calibrations
Accelerometer Calibration

Phase	Z-Axis Acceleration MS2	Value
Before	9.825	9.825
	8.810 Minimum	9.825 Nominal

Before: Mar 25 20:39 1997

Mechanical Caliper - G / Equipment Identification

Primary Equipment:
Mechanical Caliper Device - G MCG - G 28

Auxiliary Equipment

Mechanical Caliper - G Wellsite Calibration
Electronics Calibration

Phase	MCGS Counts Plus	Value	Phase	MCGS Counts Zero	Value
Before	299.5	299.5	Before	104.4	104.4
	454.8 Minimum	454.8 Nominal	507.60 Maximum	103.0 Minimum	104.4 Nominal

Before: Mar 25 17:26 1997

Mechanical Caliper - G Wellsite Calibration
Caliper Calibration

Phase	Diameter Large Ring MM	Value	Phase	Diameter Small Ring MM	Value
Before	299.5	299.5	Before	196.8	196.8
	299.7 Minimum	454.8 Nominal	507.60 Maximum	196.8 Minimum	203.2 Nominal

Before: Mar 25 17:27 1997

COMPANY	PARAMOUNT RESOURCES LTD.
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

Schlumberger

PLATFORM EXPRESS
ARRAY INDUCTION - RXO

BOTTOM LOG INTERVAL	777.5 M
SCHLUMBERGER DEPTH	3822 M
DEPTH DRILLER	3820 M
KELLY BUSHING	450.32 M
DRILL FLOOR	432.32 M
GROUND LEVEL	428.6 M

RECEIVED
APR - 1997
ALASKA OIL & GAS CONSERVATION COMMISSION

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

N.E.B. COPY, 817

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

PROVINCE:NORTHWEST TERRITORIES
Field: UNDEFINED
Location: LATITUDE: 60 15' 14.83"
Well: PARAMOUNT ET AL BOVIE LA
Company: PARAMOUNT RESOURCES LTD.

9211-P33-8-1

Schlumberger

DUAL LATEROLOG

LOCATION

LATITUDE: 60 15' 14.83" | Elev.: K.B. 433.32 M
LONGITUDE: 122 59' 22.34" | G.L. 426.8 M
UWI: 300C786020122450 | D.F. 433.02 M

Permanent Datum: GROUND LEVEL | Elev.: 426.8 M
Log Measured From: KELLY BUSHING | 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	LATITUDE	LONGITUDE
EL 369	60 15' 14.83"	122 59' 22.34"

	Run 1	Run 2	Run 3	Run 4
Logging Date	25-MAR-1997			
Run Number	TWO			
Depth Driller	3222 M			
Schlumberger Depth	3222 M			
Bottom Log Interval	3217.5 M			
Top Log Interval	2694 M			
Casing Driller Size @ Depth	177.800 MM @ 2694 M	@	@	
Casing Schlumberger	2694 M			
Bit Size	152.000 MM			
Type Fluid In Hole	GEL CHEM			
MUD Density / Viscosity	1130 K/M3 / 56 S			
Fluid Loss / PH	7.2 C3 / 9.5			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	2.256 OHMM @ 16 DEGC	@	@	
RMF @ Measured Temperature	2.900 OHMM @ 16 DEGC	@	@	
RMC @ Measured Temperature	1.560 OHMM @ 14 DEGC	@	@	
Source RMF / RMC	MEASURED / MEASURED			
RM @ MRT / RMF @ MRT	0.473 @ 158 / 0.599 @ 158	@ / @	@ / @	
Maximum Recorded Temperatures	133 DEGC / 158			
Circulation Stopped / Time	25-MAR-1997 / 14:00			
Logger On Bottom / Time	27-MAR-1997 / 22:50			
Unit Number / Location	2045 / GRANDE PRAIRE			
Recorded By	NICK MCINNES			
Witnessed By	COLIN 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				
MUD Density / Viscosity				
Fluid Loss / PH				
Source Of Sample				
RM @ Measured Temperature	@	@		
RMF @ Measured Temperature	@	@		
RMC @ Measured Temperature	@	@		
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@ / @	@ / @	@ / @	
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES
CN-GR CNTH-MLT-ML-GR
CBL
DS-GR
AIT-GR
APS-LDT-CNTH-ML-GR
DSI
DLT-LDT-CNTH-ML-GR
SGR-SGRS-CNTH-MLT-AA

THREE 12 MM STANDOFFS RUN ON ATH

NO REPEAT SECTION DUE TO HOLE CONDITIONS

CALIPER EXPRESS 3 SECTIONS MADE

FILTERS DEPRESS 3 SECTIONS MADE

HRAC CALIPER FAILED AT 1500 DEGC - CALIBRATED AT 25 DEGC

CALIPER WOULD NOT CLOSE AFTER THIS

OTHER SERVICES
CBL
DS-GR
AIT-GR
APS-LDT-CNTH-ML-GR
DSI
DLT-LDT-CNTH-ML-GR
SGR-SGRS-CNTH-MLT-AA

REMARKS: RUN NUMBER 2

AIT REQUESTED - ANOTHER DENSITY TOOL, NEUTRON, AND MICROLOG REQUESTED

APS, MICROLOG, FAILED DUE TO TEMPERATURE

FOR THE DSI, 3 SECTIONS OF 3 METRES EACH REQUESTED. ALL WORKED WELL

*** NO REPEAT, MICROLOG, OR CASING CHECK DONE DUE TO BHT

RM @ 1.756 @ 81.5DEGF, RMC=2.256 @ 81.5DEGF, RMS=2.291 @ 60DEGF

PRINTS: 4 FIELD, 7 FINAL

RIG: KENTING 22E

OPERATORS: ROBIN BARNES, DON PURCELL

	RUN 1	RUN 2
SERVICE ORDER #	300357	
RIG NUMBER	705-719	
FLUID LEVEL		
LOGGED INTERVAL	START	STOP
	3222	2694

EQUIPMENT DESCRIPTION

RUN 1 / RUN 2

SURFACE EQUIPMENT
SGR-AA 8609
DTM-B 8000

LGM-AA
NGT-B
NCS-VB

DOWNHOLE EQUIPMENT

DTC-A
EDH-KN
DTCK-B209

CTEM — 24.10 — 24.41

DTA-A
EDH-KB
DTSM-B057

TelStatus — 21.97 — 21.97

SGT-N
SGH-K 2399
SGD-SA 2442
SGD-TA

Gamma Ray — 20.47 — 20.75

MLT-AA
MLT-AA 109

BMHO
RWN
MCBL — 18.03 — 19.08

MLTA Stat — 16.76 — 16.76

CNT-H
TNPA-A
CNTH-HA 409
CNH-A 2272

CFTC
CNTC — 15.42 — 14.55
15.27

LDT-D
DSD-D 2005
DSD-2 2362
DSH-B 2362
DSH-B 2700
PDH-1 2955

Caliper
LS
SS — 10.08 — 9.27
10.08 — 8.86
8.91

AH-169

DLT-E
DLH-CB
DLC-B 2297
DLE 775

LLD LLS — 4.48

Tension HY — DF — 0.00
TOOL ZERO

MAXIMUM STRING DIAMETER 149 MM
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Input DLIS Files

DEFAULT	DLTE .041	FN:42	FIELD	27-MAR-1997 22:53	3224.6 M	1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	28-MAR-1997 00:38

OP System Version: 7C0-713

MSN

PIP SUMMARY

Time Mark Every 60 S

Tension (TENS) 25000 (N) 0
Bit Size (BS) (MM) 125 375
Gamma Ray (GR) (GAPI) 0 150
Latersing Shallow Resistivity (LLS) (OHMM) 2000 200000
Latersing Deep Resistivity (LLD) (OHMM) 2000 200000
Latersing Shallow Resistivity (LLS) (OHMM) 0.2 2000
Latersing Deep Resistivity (LLD) (OHMM) 0.2 2000

CASING 2900 2950 3000 3050 3100 3150 3200 TD

MAIN PASS

Gamma Ray (GR) (GAPI) 0 150
Bit Size (BS) (MM) 125 375
Tension (TENS) 25000 (N) 0
Latersing Deep Resistivity (LLD) (OHMM) 0.2 2000
Latersing Deep Resistivity (LLD) (OHMM) 2000 200000
Latersing Shallow Resistivity (LLS) (OHMM) 0.2 2000
Latersing Shallow Resistivity (LLS) (OHMM) 2000 200000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BS	Bit Size	133.4mm MM
DO	Depth Offset	0.2 M
GDAC	GR Facility	GCHO
PROC	Pass Processing	RECOMPUTE

Format: DLT_2 Vertical Scale: 1:600 Graphics File Created: 28-MAR-1997 00:39

OP System Version: 7C0-713

MSN

Input DLIS Files

DEFAULT	DLTE .041	FN:42	FIELD	27-MAR-1997 22:53	3224.6 M	1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	28-MAR-1997 00:38

Input DLIS Files

DEFAULT	DLTE .041	FN:42	FIELD	27-MAR-1997 22:53	3224.6 M	1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	28-MAR-1997 00:38

OP System Version: 7C0-713

MSN

PIP SUMMARY

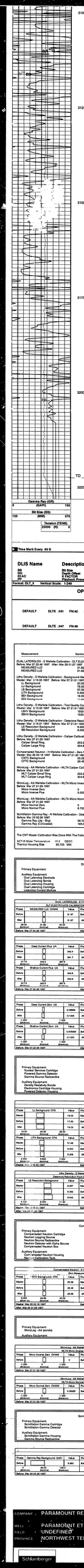
Time Mark Every 60 S

Tension (TENS) 25000 (N) 0
Bit Size (BS) (MM) 125 375
Gamma Ray (GR) (GAPI) 0 150
Latersing Shallow Resistivity (LLS) (OHMM) 2000 200000
Latersing Deep Resistivity (LLD) (OHMM) 2000 200000
Latersing Shallow Resistivity (LLS) (OHMM) 0.2 2000
Latersing Deep Resistivity (LLD) (OHMM) 0.2 2000

MAIN PASS

CASING 2900 2925 2950 2975 3000 3025 3050 3075

TD



Gamma Ray (GR) (GAPI) 0 150

SS Slow (SSS) (WAI) 120 370

Tension (TENS) 25000 (N) 0

Laterolog Deep Resistivity (LLD) (OHMM) 0.2 2000

Laterolog Shallow Resistivity (LLS) (OHMM) 0.2 2000

Laterolog Deep Resistivity (LLD) (OHMM) 2000 200000

Laterolog Shallow Resistivity (LLD) (OHMM) 2000 200000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BS	Bit Size	152.400 MM
DO	Depth Offset	0.0 M
RMC	R FACTOR	0.760
	RECORDED Processing	RECORDED

Format: DLT_e Vertical Scale: 1:200 Graphics File Created: 28-MAR-1997 00:38

OP System Version: 7C0-713

Input DLIS Files

DEFAULT	DLTE .041	FN:42	FIELD	27-MAR-1997 22:53	3224.6 M 1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	28-MAR-1997 00:38

Calibration and Check Summary

Measurement	Nominal	Master Before	Master After	Change	Limit	Units
DUAL LATEROLOG - E Wellsite Calibration - DLT ELECTRONICS CALIBRATION Latereolog Measurement						
Before Mar 27 22:46 1997 After: Mar 28 01:31 1997 Master Mar. 1 15:30 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997						
MEASURED LLD	31.62	N/A	31.67	31.67	0.1045	0.9000 OHMM
MEASURED LLS	31.62	N/A	31.54	31.32	-0.01824	0.9000 OHMM
Ultra Density - D Wellsite Calibration - Background Measurement						
Master Mar. 1 15:30 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997						
LL Background	22.00	18.04	17.93	16.00	0.1055	1.000 CPS
LU Background	57.00	52.53	52.47	50.50	0.02283	1.000 CPS
LS Background	57.00	52.53	52.47	50.50	0.02283	1.000 CPS
LITH Background	5.500	5.146	5.200	5.371	0.009165	0.5000 CPS
SS1 Background	16.00	14.82	14.77	15.10	-0.00841	0.5000 CPS
SS2 Background	11.00	10.41	10.41	10.77	0.00000	0.5000 CPS
Ultra Density - D Wellsite Calibration - Tool Quality Control Information HV						
Master Mar. 1 15:30 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997						
SSHV Background	1200	1202	1207	1207	0.470	N/A V
SSHV Background	1234	1230	1240	1233	-0.662	N/A N/A
Ultra Density - D Wellsite Calibration - Detective Resultion From BKG Measurements						
Master Mar. 1 15:31 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997						
LS Resolution Background	8.000	8.057	8.382	8.543	0.1810	N/A
SS Resolution Background	8.000	8.522	8.905	9.114	0.2092	N/A
Ultra Density - D Wellsite Calibration - Caliper Calibration						
Before: Mar 27 21:25 1997						
Caliper Small Ring	203.2	N/A	249.2	N/A	N/A	N/A MM
Caliper Large Ring	304.8	N/A	353.2	N/A	N/A	N/A MM
Compensated Neutron - N Wellsite Calibration - Zero Measurement						
Master Mar. 1 15:32:19 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:29 1997						
CFTC Background	29.35	29.35	29.46	25.99	-0.4958	3.784 CPS
CFTC Background	29.35	29.35	29.14	27.88	-1.456	4.418 CPS
MicroLog - AA Wellsite Calibration - MLTA Caliper Calibration						
Before: Mar 27 21:29 1997						
MLT Caliper Small Ring	203.2	N/A	208.9	N/A	N/A	N/A MM
MLT Caliper Large Ring	304.8	N/A	299.0	N/A	N/A	N/A MM
MicroLog - AA Wellsite Calibration - MLTA Micro Inverse Calibration						
Before: Mar 27 21:29 1997						
Micro Inverse Zero	0	N/A	0	N/A	N/A	0.1000 OHMM
Micro Inverse Plus	5.000	N/A	3.052	N/A	N/A	0.1000 OHMM
MicroLog - AA Wellsite Calibration - MLTA Micro Normal Calibration						
Before: Mar 27 21:29 1997						
Micro Normal Zero	0	N/A	0.05025	N/A	N/A	0.1000 OHMM
Micro Normal Plus	5.700	N/A	6.424	N/A	N/A	0.1000 OHMM
Scintillation Gamma Ray - N Wellsite Calibration - Detector Calibration						
Before: Mar 27 21:29 1997						
Gamma Ray Lilly - Bkgl	58.70	N/A	58.70	N/A	N/A	5.337 GAPI
Gamma Ray (Colimated)	185.0	N/A	185.0	N/A	N/A	10.00 GAPI

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 15.5 DEGC
Thermal Housing Size 85.725 MM.

DUAL LATEROLOG - E / Equipment Identification

Primary Equipment:
Dual Latero Electrode DLE - E 773
Dual Latero Sonde DLS - F 760
Dual Latero Housing DLH - CB
Dual Latero Cartridge DLC - C 3797
Wireless Control Module WCM - AA

DUAL LATEROLOG - E Wellsite Calibration
DLT ELECTRONICS CALIBRATION Latereolog Measurement

Pass	MEASURED LLD OHMM	Value	Pass	MEASURED LLS OHMM	Value
Before		31.67	Before		31.34
After		31.67	After		31.32
29.00 Minimum	31.66 Nominal	34.00 Maximum	29.00 Minimum	31.54 Nominal	34.00 Maximum

Before: Mar 27 22:46 1997 After: Mar 28 01:31 1997

DUAL LATEROLOG - E Wellsite Calibration
DLT Electrics Calibration Ultra Measurement

Pass	Deep Current Pick UA	Value	Pass	Deep Voltage Pick MV	Value	Pass	Groningen Voltage Pick MV	Value
Before		340.1	Before		10.84	Before		-1.175
After		341.7	After		10.88	After		-13.77
317.5 Minimum	343.5 Nominal	367.5 Maximum	9.500 Minimum	10.84 Nominal	11.50 Maximum	0.0000 Minimum	0.0000 Nominal	11.50 Maximum
Shallow Current Pick UA	Value	Pass	Shallow Voltage Pick MV	Value	Pass	Groningen Voltage Pick MV	Value
Before	343.6	Before		13.77			
After	343.6	After		13.76			
317.5 Minimum	343.5 Nominal	367.5 Maximum	9.500 Minimum	12.93 Nominal	11.50 Maximum		

Before: Mar 27 22:46 1997 After: Mar 28 01:31 1997

DUAL LATEROLOG - E Wellsite Calibration
DLT Electrics Calibration Ultra Measurement

Pass	Deep Current Zero UA	Value	Pass	Deep Voltage Zero MV	Value	Pass	Groningen Voltage Zero MV	Value
Before		-0.09659	Before		-0.003779	Before		-0.09834
After		-0.01308	After		-0.007897	After		-0.007687
-1.000 Minimum	0.0000 Nominal	1.000 Maximum	-0.1000 Minimum	0.0000 Nominal	0.1000 Maximum	-0.1000 Minimum	0.0000 Nominal	0.1000 Maximum
Shallow Current Zero UA	Value	Pass	Shallow Voltage Zero MV	Value	Pass	Groningen Voltage Zero MV	Value
Before	0.00584	Before		-0.01398			
After	-0.1000	After		-0.01398			
-1.000 Minimum	0.0000 Nominal	1.000 Maximum	-0.1000 Minimum	0.0000 Nominal	0.1000 Maximum		

Before: Mar 27 22:46 1997 After: Mar 28 01:31 1997

Ultra Density - D / Equipment Identification

Primary Equipment:
Nuclear Sources Cartridge NSC - E 2755
Gamma Source Detector PSD - D 3902
Density Electronics Cartridge SDH - C 2025

Auxiliary Equipment:
Density Resistivity Sonde DRS - E 5627
Electronics Cartridge Housing ECH - MKA 2700
Powered Detector Housing PDH - L 2995

Ultra Density - D Wellsite Calibration
Background Measurement

Pass	LL Background CPS	Value	Pass	LU Background CPS	Value	Pass	LS Background CPS	Value
Master		18.04	Master		52.53	Master		52.53
Before		17.93	Before		52.47	Before		52.47
After		18.03	After		52.50	After		52.50
16.00 Minimum	20.00 Nominal	28.00 Maximum	50.50 Minimum	57.00 Nominal	64.00 Maximum	50.50 Minimum	57.00 Nominal	64.00 Maximum

Pass	LITH Background CPS	Value	Pass	SS1 Background CPS	Value	Pass	SS2 Background CPS	Value
Master		5.146	Master		14.82	Master		9.774
Before		5.200	Before		14.77	Before		9.737
After		5.209	After		14.10	After		9.700
4.500 Minimum	5.500 Nominal	6.500 Maximum	13.00 Minimum	16.00 Nominal	19.00 Maximum	9.000 Minimum	11.00 Nominal	13.00 Maximum

Master: Mar. 1 15:30 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997

Ultra Density - D Wellsite Calibration
Detective Resolution From BKG Measurements

Pass	LS Resolution Background	Value	Pass	SS Resolution Background	Value
Master		8.057	Master		8.522
Before		8.382	Before		8.905
After		8.543	After		9.114
8.000 Minimum	8.000 Nominal	11.50 Maximum	8.000 Minimum	8.000 Nominal	11.50 Maximum

Master: Mar. 1 15:31 1997 Before: Mar 27 21:21 1997 After: Mar 28 01:30 1997

Compensated Neutron - N / Equipment Identification

Primary Equipment:
Compensated Neutron Cartridge CNC - HA 406
Neutron Logging Source NLS - XL
Neutron Detector Cartridge NDC - A
Neutron Detector with Alpha Source CNG - A
Compensated Neutron Box CNB - AB

Auxiliary Equipment:
Compensated Neutron Housing CNH - A 3272
NCT-B Calibration Tank NCT - B

Compensated Neutron - N Wellsite Calibration
Zero Measurement

Pass	NPG Background CPS	Value	Pass	GPG Background CPS	Value
Master		29.35	Master		29.45
Before		29.46	Before		29.14
After		29.56	After		27.88
5.500 Minimum	29.35 Nominal	50.00 Maximum	5.500 Minimum	29.45 Nominal	40.00 Maximum

Master: Mar 26 23:18 1997 Before: Mar 27 21:29 1997 After: Mar 28 01:29 1997

MicroLog - AA / Equipment Identification

Primary Equipment:
MicroLog - AA (sonde) MLT - AA 109

Auxiliary Equipment:

MicroLog - AA Wellsite Calibration
MLTA Micro Inverse Calibration

Pass	Micro Inverse Zero OHMM	Value	Pass	Micro Inverse Plus OHMM	Value
Before		0	Before		3.052
After		0.000	After		7.000
0.000 Minimum	0.000 Nominal	0.000 Maximum	0.000 Minimum	5.000 Nominal	7.000 Maximum

Before: Mar 27 21:29 1997

MicroLog - AA Wellsite Calibration
MLTA Micro Normal Calibration

Pass	Micro Normal Zero OHMM	Value	Pass	Micro Normal Plus OHMM	Value
Before		0.05025	Before		6.424
0.000 Minimum	0.000 Nominal	0.000 Maximum	4.700 Minimum	5.700 Nominal	6.700 Maximum

Before: Mar 27 21:29 1997

Scintillation Gamma Ray - N / Equipment Identification

Primary Equipment:
Scintillation Gamma Cartridge SGC - SA 9542
Scintillation Gamma Detector SGD - TAA

Auxiliary Equipment:
Gamma Sonde Housing SGH - K 2399
Gamma Source Radioactive SGR - UY 692

Scintillation Gamma Ray - N Wellsite Calibration
Detector Calibration

Pass	Gamma Ray Background GAPI	Value	Pass	Gamma Ray Lilly - Bkgl GAPI	Value	Pass	Gamma Ray (Calibrated) GAPI	Value
Before		8.565	Before		58.70	Before		185.0
After		8.565	After		58.70	After		185.0
0.000 Minimum	30.00 Nominal	185.0 Maximum	53.37 Minimum	58.70 Nominal	64.04 Maximum	185.0 Minimum	185.0 Nominal	185.0 Maximum

Before: Mar 28 02:28 1997

NATIONAL ENERGY BOARD
APPROVED
AR - 1-98

COMPANY :	PARAMOUNT RESOURCES LTD.
WELL :	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD :	UNDEFINED
PROVINCE :	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	3217.5 M
SCHLUMBERGER DEPTH	3222 M
DEPTH DRILLER	3222 M
KELLY BUSHING	423.32 M
DRILL FLOOR	422.52 M
GROUND LEVEL	408.4 M

Schlumberger

DUAL LATEROLOG

SONIC

NEUTRON

DENSITY

N.E.B. COPY

WID 1817

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

9211-P33-8-1

Schlumberger

BOREHOLE COMPENSATED SONIC LOG

LOCATION

LATITUDE: 60 15' 14.83"
LONGITUDE: 122 59' 22.34"
UWI: 300.C760D312.0450

Elev.: K.B. 433.32 M
G.L. 426.8 M
D.F. 433.02 M

Permanent Datum: GROUND LEVEL — Elev.: 426.8 M
Log Measured From: KELLY BUSHING — 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.: EL 969 — LATITUDE: 60 15' 14.83" — LONGITUDE: 122 59' 22.34"

PROVINCE: NORTHWEST TERRITORIES
Field: UNDEFINED
Location: LAT 60 15' 14.83" LONG 122 59' 22.34"
Well: PARAMOUNT ET AL BOVIE A
Company: PARAMOUNT RESOURCES LTD

	Run 1	Run 2	Run 3	Run 4
Logging Date	28-FEB-1997			
Run Number	ONE			
Depth Driller	1710 M			
Schlumberger Depth	1700 M			
Bottom Log Interval	1695.1 M			
Top Log Interval	454 M			
Casing Driller Size @ Depth	339.700 MM @ 453 M	@	@	@
Casing Schlumberger	454 M			
Bit Size	311.000 MM			
Type Fluid In Hole	GEL CHEM			
MUD Density / Viscosity	1190 K/M3 / 119 S			
Fluid Loss / PH	5.4 C3 / 9			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	4.370 OHMM @ 14 DEGC	@	@	@
RMF @ Measured Temperature	4.750 OHMM @ 10 DEGC	@	@	@
RMC @ Measured Temperature	2.490 OHMM @ 11 DEGC	@	@	@
Source RMF / RMC	MEASURED / MEASURED			
RM @ MRT / RMF @ MRT	2.188 @ 50 / 2.094 @ 50	@ @	@ @	@ @
Maximum Recorded Temperatures	50 DEGC / 50			
Circulation Stopped — Time	28-FEB-1997 — 9:15			
Logger On Bottom — Time	28-FEB-1997 — 17:45			
Unit Number — Location	20 - 5 — GRANDE PRAIRIE			
Recorded By	DAN GAMPELL			
Witnessed By	COLIN BREDIN			

OTHER SERVICES
OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 1
LOGGED WITH GAMMA RAY IN COMBINATION WITH GAMMA RAY
TWO 20MM STANDOFFS WERE RUN ON THE TOOL
SONIC CENTRALIZED BY THE MOD AND TWO CMHZ
SONIC LOGGED FROM BOTTOM UP
SHIPS IN SONIC CAUSED BY ROUGH AND LARGE HOLE CONDITIONS

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 WILLFUL 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 OR AGENTS. ANY INTERPRETATION MADE BY US IS SUBJECT TO OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE

RUN 1 = 4.370 OHMM @ 24 DEGF, RM2 = 4.750 OHMM @ 50 DEGF, RMC = 2.37 OHMM @ 61 DEGF
SCALES AND PRESENTATIONS AS PER CLIENT REQUEST
SCALE 1:240
OPERATIONS: BEL, REGLER AND WAYNE JENNINGS

	RUN 1	RUN 2
SERVICE ORDER #	700753	
PROGRAM VERSION	7.0	
LOGGED — TIME / DATE	STOP / START	STOP / START

RIG UP / RIG DOWN DETAILS
FLUID LEVEL(S) / INTERVAL(S)
TIME / DATE

EQUIPMENT DESCRIPTION — RUN 1 — RUN 2

SURFACE EQUIPMENT

SLM-DB
GSR-UY 1537
GSAA-BJ9

DOWNHOLE EQUIPMENT

LEH-QT LEH-QT		18.77	
TCC-BF ECC-BF 2905 TCC-BF 92		17.88	
SGT-L SGC-SA SGS-TAA	TelStatus Gamma Ray	16.97 16.69	16.97
SLT-T SLC-UA SLS-WA		15.29	
	UAN UAF	10.97 10.57	8.36
	LF LAN	8.73 8.42	
MCD-G MCD-G 88	HD		7.01 6.10
AH-107 AH-107 17			5.49
AH-107 AH-107			4.89
AIT-H AIHS-BA			38 MM Standoff
	Induction Tension Power Sup		2.41
	SP SENSOR DF Mud Resistivity Tension	0.03 TOOL ZERO 0.00	38 MM Standoff

MAXIMUM STRING DIAMETER 175 MM.
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Input DLIS Files

DEFAULT	AITH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	1702.5 M	19.7 M
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	1702.5 M	19.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 132.00 M3
Cement Volume = 73.46 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.9 M to 453.1 M using data channel(s): HD

OP System Version: 7C0-712

DRM

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DTCM	LT FULL	FULL LT	1922.0 19:55:14 1517.0 19:55:27

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

Bit Size (BS)
(MM) 175 — 425

Tension (TENS)
(N) 50000 — 0

Hole Diameter (HD)
(MM) 175 — 425

Gamma Ray (GR)
(GAPI) 0 — 150

Delta-T (DT)
(US/M) 300 — 100

BONIC SIGNAL CASING CHECK

<-CASING CALIPER CHECK

CASING

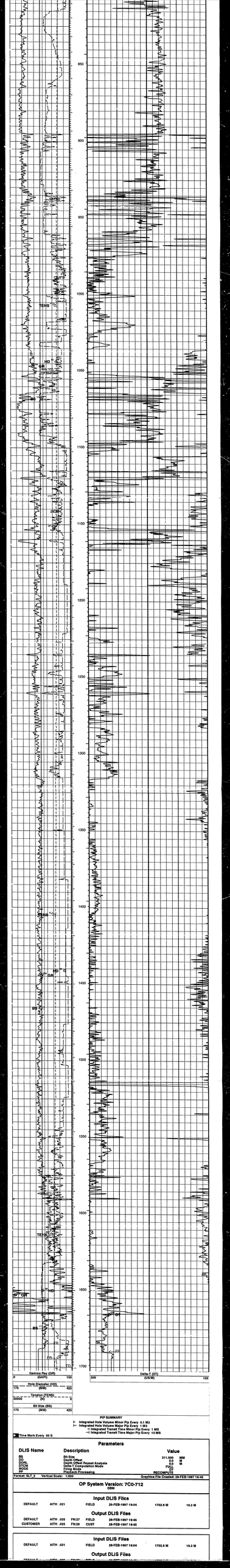
TENS

HD

GR

BS

DT



PIP SUMMARY

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

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	311.000	MM
DO	Depth Offset	0.0	M
DOFFL	Depth Offset Repeat Analysis	0.0	M
HCOMM	Delay Computation Mode	FULL	
MODE	Logging Mode	TDT	
PP	Playback Processing	RECOMPUTE	

Format: SLT_2 Vertical Scale: 1:600 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

DSM

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	AITH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	

Input DLIS Files

DEFAULT	AITH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

CUSTOMER	AITH .025	FN:28	CUST	28-FEB-1997 19:45	1702.5 M	19.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 132.00 M3
Cement Volume = 73.48 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.9 M to 453.1 M using data channel(s) HD

OP System Version: 7C0-712

DBM

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DTCM	LT FULL	FULL LT	1320.0 19:55:14 1317.0 19:55:27

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

BS Size (BSS) (MM)	
170	420

Tension (TENS) (N)	
50000	0

Hole Diameter (HD) (MM)	
175	425

Gamma Ray (GR) (GAPI)	
0	150

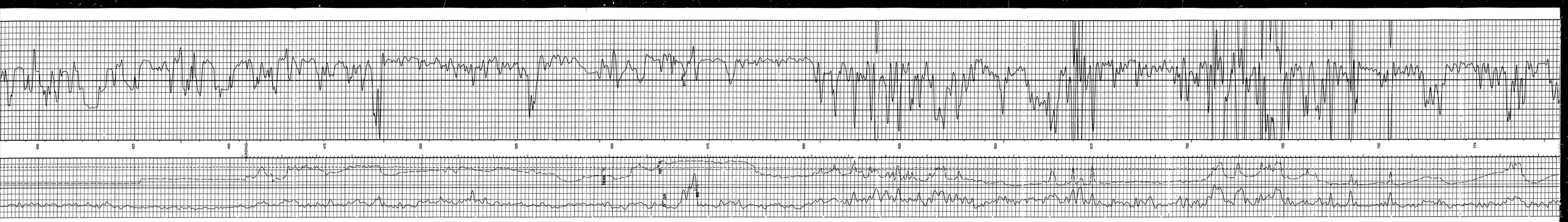
Delta-T (DT) (US/M)	
200	100

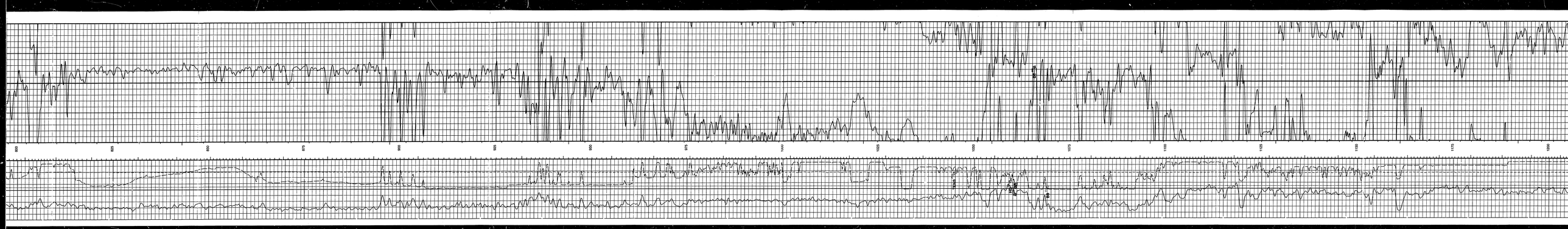
MAIN PASS

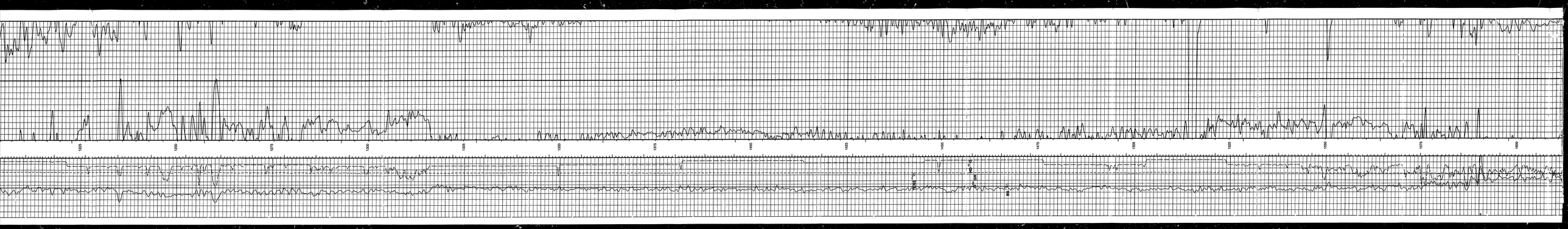
SONIC SIGNAL CASING CHECK ->

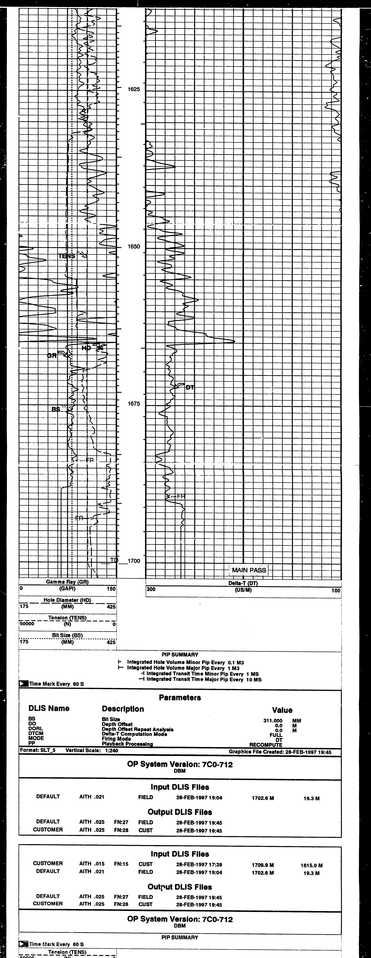
<- CASING CALIPER CHECK

SONIC SIGNAL CASING CHECK ->


400
425
450
475
500
525
550
575
600
625
650
675
700
725
750
775
ESOPH
TEMP
HEART
SPO2
RESP


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
1475
1500
1525
1550
1575
1600



PIP SUMMARY

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

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	311.000	MM
DO	Depth Offset	0.0	M
DTCM	Depth Offset Repeat Analysis	0.0	M
DTCM	Delta-T Computation Mode	FULL	
MODE	Firing Mode	DT	
PP	Playback Processing	RECOMPUTE	

Format: SLT_3 Vertical Scale: 1/240 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

Input DLIS Files

DEFAULT	ATH .021	FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	ATH .025	FN:27	FIELD	28-FEB-1997 19:45	
CUSTOMER	ATH .025	FN:28	CUST	28-FEB-1997 19:45	

Input DLIS Files

CUSTOMER	ATH .015	FN:15	CUST	28-FEB-1997 17:39	1709.9 M	1615.0 M
DEFAULT	ATH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	ATH .025	FN:27	FIELD	28-FEB-1997 19:45
CUSTOMER	ATH .025	FN:28	CUST	28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

PIP SUMMARY

Time Mark Every 60 S

Tension (TENS) (N)

Hole Diameter (HD) (MM)

Gamma Ray (GR) (GAPI)

Bit Size (BS) (MM)

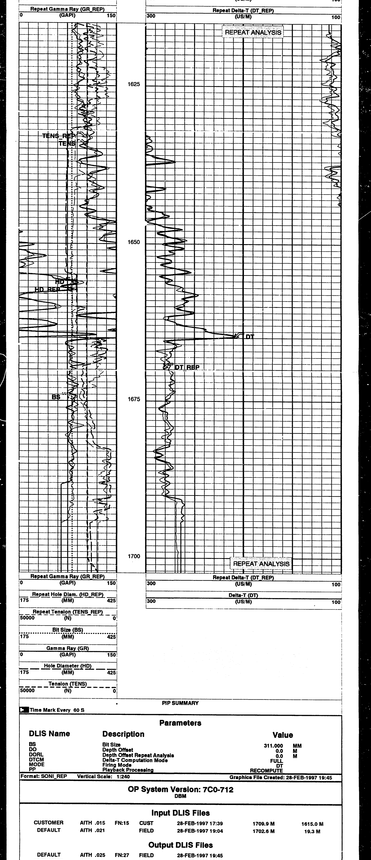
Repeat Hole Diam. (HD_REP) (MM)

Repeat Tension (TENS_REP) (N)

Repeat Gamma Ray (GR_REP) (GAPI)

Delta-T (DT) (US/M)

Repeat Delta-T (DT_REP) (US/M)



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BS	Bit Size	311.000	MM
DO	Depth Offset	0.0	M
DTCM	Depth Offset Repeat Analysis	0.0	M
DTCM	Delta-T Computation Mode	FULL	
MODE	Firing Mode	DT	
PP	Playback Processing	RECOMPUTE	

Format: SONI_REP Vertical Scale: 1/240 Graphics File Created: 28-FEB-1997 19:45

OP System Version: 7C0-712

DBM

Input DLIS Files

CUSTOMER	ATH .015	FN:15	CUST	28-FEB-1997 17:39	1709.9 M	1615.0 M
DEFAULT	ATH .021		FIELD	28-FEB-1997 19:04	1702.6 M	19.3 M

Output DLIS Files

DEFAULT	ATH .025	FN:27	FIELD	28-FEB-1997 19:45	1702.5 M	19.7 M
CUSTOMER	ATH .025	FN:28	CUST	28-FEB-1997 19:45	1702.5 M	19.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 122.00 M3
Cement Volume = 73.46 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.9 M to 453.1 M using data channel(s) HD

OP System Version: 7C0-712

DBM

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DTCM	LT	FULL	1522.0 19:05:14
	FULL	LT	1517.0 19:05:27

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

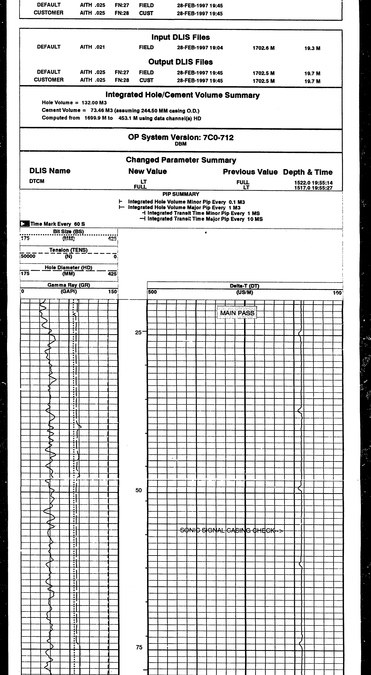
Bit Size (BS) (MM)

Tension (TENS) (N)

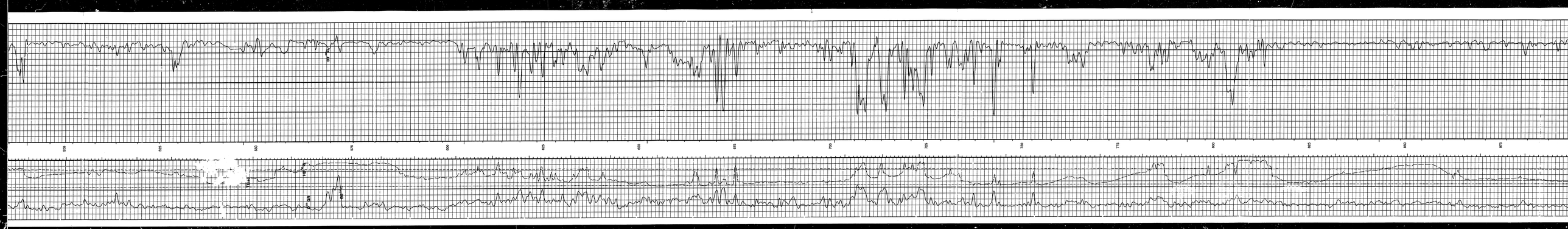
Hole Diameter (HD) (MM)

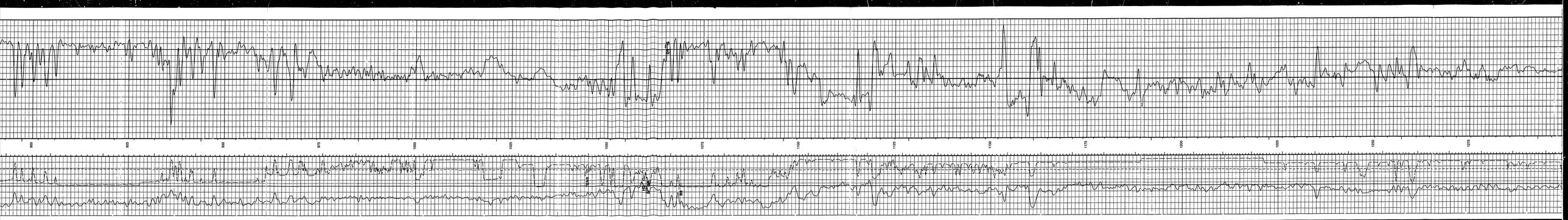
Gamma Ray (GR) (GAPI)

Delta-T (DT) (US/M)




100
125
150
175
200
225
250
275
300
325
350
375
400
425
450
475
CARDIO-RESPIRATORY CARDIO-CHECK
CARDIO-RESPIRATORY CARDIO-CHECK


DP
550
555
560
575
600
625
650
675
700
725
750
775
800
825
850
875
HR
BP


900
925
950
975
1000
1025
1050
1075
1100
1125
1150
1175
1200
1225
1250
1275

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
- =1 Integrated Transit Time Major Pip Every 10 MS

Parameters

DLIS Name	Description	Value
BS	Bit Size	311.000 MM
DDC	Depth Offset	0.0 M
LOGHS	Logging Head Repeat Analysis	OFF
LOGMD	Logging Direction Mode	PUMP
PP	Playback Processing	RECIPROCITY

Format: SLT_600 Verified Rules : 1.2(d) Graphics File Created: 28-FEB-1997 19:40

OP System Version: 7C0-712

DSM

Input DLIS Files

DEFAULT	AITH: .021	FIELD	28-FEB-1997 19:04	1760.4 M	19.3 M

Output DLIS Files

DEFAULT	AITH: .025	FIN:27	FIELD	28-FEB-1997 19:45
CUSTOMER	AITH: .025	FIN:28	CUST	28-FEB-1997 19:45

Calibration and Check Summary

Measurement	Number	Master Before	Master After	Change	Limit	Units
Scintillation Gamma Ray, 1 Wellsite Calibration - Detector Calibration						
Source Ray Ref (2.37 GE Value)						
Gamma Ray Background	30.00	N/A	14.50	N/A	N/A	N/A	GAPI
Gamma Ray (Low Limit)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI
Gamma Ray (Calibrate)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Scintillation Gamma Ray, 1 Equipment Verification

Primary Equipment		
Scintillation Gamma Cartridge	SGC - 59	
Scintillation Gamma Detector	SGD - 154	
Auxiliary Equipment		
Scintillation Gamma Housing	SGH - 4	
Gamma Source Reference	SSR - 47	185F

Scintillation Gamma Ray, 1 Wellsite Calibration

Pulses	Gamma Ray Background (GAPI)	Value	Pulses	Gamma Ray (Lo) (Rad. GAPI)	Value	Pulses	Gamma Ray (Calibrate) (GAPI)	Value
Before		14.50	Before		165.0	Before		165.0
After			After			After		
Pulses	Drift	Deviation	Pulses	Drift	Deviation	Pulses	Drift	Deviation
Before			Before			Before		
After			After			After		

Status: Feb 28 17:12 1997

RECEIVED
FEB 28 1997

COMPANY	PARAMOUNT RESOURCES LTD
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	1695.1 M
MEASUREMENT DEPTH	1701 M
DEPTH DRILLER	1710 M
KELLY BUSHING	493.50 M
DRILL FLOOR	493.50 M
GROUND LEVEL	468.4 M

Schlumberger

BOREHOLE COMPENSATED

FIELD COPY

WID 1817

COMPANY: PARAMOUNT RESOURCES LTD

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

9211-P33-8-1

Schlumberger

PLATFORM EXPRESS
DENSITY-NEUTRON-GR

LATITUDE: 60 15' 14.83"
LONGITUDE: 122 55' 22.34"
UWI: 300C766020122450

Elev.: K.B. 433.32 M
G.L. 426.8 M
D.F. 433.02 M

Permanent Datum: GROUND LEVEL Elev.: 426.8 M
Log Measured From: KELLY BUSHING 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No. EL 369 | LATITUDE: 60.15' 14.83" | LONGITUDE: 122 59' 22.34"

PROVINCE:NORTHWEST TERRITORIES
FIELD: UNDEFINED
Location: LATITUDE: 60 15' 14.83"
Well: PARAMOUNT ET AL BOVIE LA
Company: PARAMOUNT RESOURCES LT

| | | |

Output DLIS Files

DEFAULT	HLTB .036	FN:45	FIELD	28-FEB-1997 22:10		1703.9 M	424.9 M
CUSTOMER	HLTB .036	FN:46	CUST	28-FEB-1997 22:10		1703.9 M	424.9 M

Integrated Hole/Cement Volume Summary

Hole Volume = 11.370 M3
Cement Volume = 55.13 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.9 M to 453.1 M using data channel(s): HCAL

OP System Version: 7C0-712

DBM

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DCRL	5.2 M	0.0 M	1931.7 22:10:33

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)
20000 (N) 0

Hole Diameter (HD)
(MM) 175 425

Caliper (HCAL)
(MM) 175 425

Gamma Ray (GR)
0 (GAPI) 150

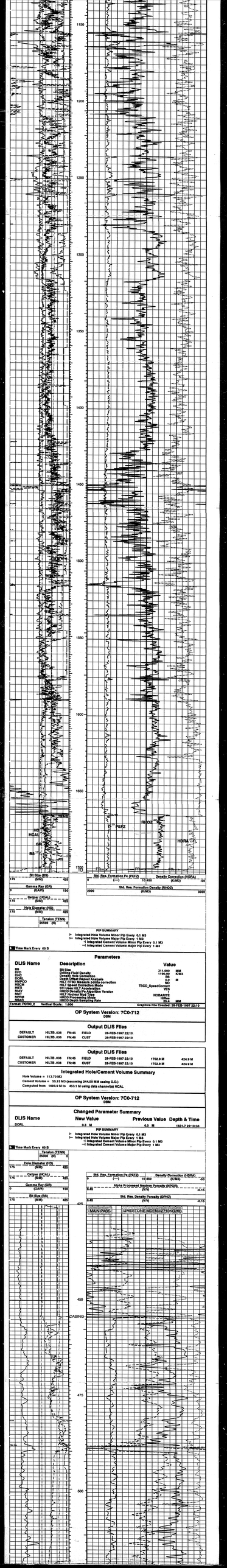
Bit Size (BS)
(MM) 175 425

Std. Res. Formation Density (RHOZ)
2000 (K/M3) 3000

Std. Res. Formation Pe (PEFZ) — Density Correction (HDRA)
0 (---) 10.450 (K/M3) -50

CASING

TENS
HCAL
GR
BS
PEFZ
RHOZ
HDRA



Time Mark Every 60 S

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

Parameters

DLIS Name	Description	Value	
BS	Bit Size	311.000	MM
DFD	Drilling Fluid Density	1199.00	K/M3
DFPH	Drilling Fluid PH Value	99	
DOBL	Depth Offset Repeat Analysis	0.0	M
HMPKO	HILT RTSC Measure points correction	NO	
HRTI	HILT Resolution Matrix	TSCD_SpeedCorrect	
HSTI	STI Uses HILT Acquisition	YES	
NAAV	HRDD Density/Pe Algorithm Version	1	
MMT	HILT Number Mud Type	NOBARITE	
MRES	HRDD Processing Mode	128ss	
MSAR	HRDD Max Sampling Rate	64.0	MM

Format: PORO_2 Vertical Scale: 1:600 Graphics File Created: 28-FEB-1997 22:10

OP System Version: 7C0-712
DBM

Output DLIS Files

DEFAULT	HILTD .036	FN:45	FIELD	28-FEB-1997 22:10	1702.9 M	424.9 M
CUSTOMER	HILTD .036	FN:46	CUST	28-FEB-1997 22:10	1702.9 M	424.9 M

Output DLIS Files

DEFAULT	HILTD .036	FN:45	FIELD	28-FEB-1997 22:10		
CUSTOMER	HILTD .036	FN:46	CUST	28-FEB-1997 22:10		

Integrated Hole/Cement Volume Summary

Hole Volume = 113.70 M3
Cement Volume = 55.15 M3 (assuming 244.50 MM casing O.D.)
Computed from 1695.9 M to 453.1 M using data channel(s) HCAL

OP System Version: 7C0-712
DBM

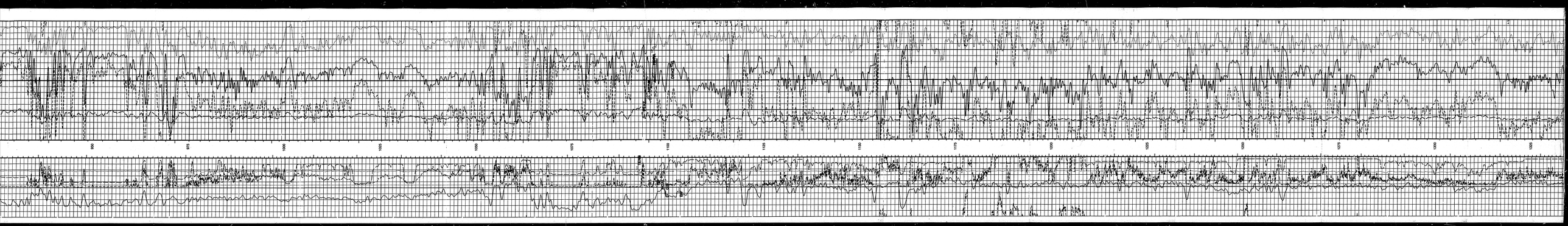
Changed Parameter Summary

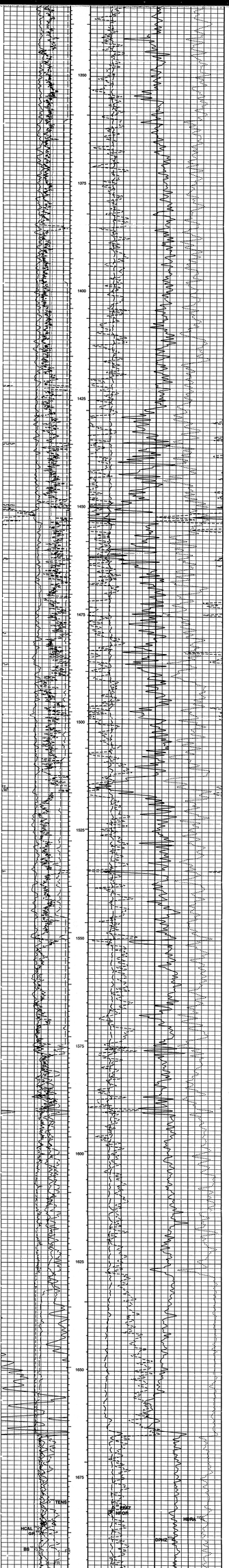
DLIS Name	New Value	Previous Value	Depth & Time
DORL	0.3 M	0.0 M	1631.7 22:10:33

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


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



Bit Size (BS) (MM)		445	0.45 Bhd. Rec. Density Porosity (DPHZ) 0V0	-0.15
Gamma Ray (GR) (GAPI)	0	150	0.45 Alpha Processed Neutron Porosity (HDRA) (V/V)	-0.15
Caliper (HCAL) (MM)	170	425	Bhd. Rec. Formation Pe (PEFZ) (---) 0 10.400	Density Correction (HDRA) (K/M3) -500 500
Hole Diameter (HD) (MM)	175	425		
Tension (TENS) 20000 (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	
BHFL	Borehole Fluid Type	WATER	
BHS	Hole Size Status	OPEN	
BHT	Bht	311.000	MM
BSAL	Borehole Salinity	-500000.00	PPM
CCCO	Borehole Salinity Correction Option	NO	
CDCO	Casing & Cement Thickness Correction Option	NO	
DFD	Drilling Fluid Density	0	KG/M
DFV	Drilling Fluid Viscosity	1150.00	K/M3
DQRL	Density Hole Correction	BS	
FD	Fluid Density Repeat Analysis	BS	M
FQ	Fluid Quality	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
GCCO	Geometrical Cutter Correction Option	NO	
GCSE	Geometrical Cutter Selection	HCAL	
HDEV	Average Angular Deviation of Borehole from Normal	0	DEG
MATR	Geometrical Quadrant	1.822700e-02	DC/M

HMPCO		1.822700e-02	DCIM
HSCO	HILT STSC Measure pointer correction	0	
HSCO	HILT Speed Correction Mode	TSCO_SpeedCorrect	
HSI	Hole Size Interpolation Option	YES	
HSTO	Hole Size Truncation Option	YES	
MATR	Rock Matrix Type	LIMESTONE	
MCOO	Mud Cake Correction Option	NO	
MDEN	Matrix Density	2710	KIM3
MDEN	Matrix Density	14.64	DEGC
MST	Mud Sample Temperature	14.44	DEGC
MTCO	Mud Temperature Correction Option	NO	
NAV	HRDD Depth Offset Hole Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NRUN	HRDD Processing Mode	HIRES	
PTCO	HRDD Depth Sampling Rate	30.4	MM
PTCO	Pressure Temperature Correction Option	NO	
RMTF	Resistivity of Mud Filtrate Sample	4.7500	OHMM
SDT	Standard Data Source	SOCN	
SDT	Surface Hole Temperature	20	DEGC
SOCN	Standard Distance	12.7	MM
SOCO	Standard Correction Option	NO	

Format: PORO_5 Vertical Scale: 1/240 Graphics File Created: 28-FEB-1997 22:19

OP System Version: 7C0-712

DBM

Output DLIS Files

DEFAULT	HILTB .036	FN:45	FIELD	28-FEB-1997 22:10		
CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10		

Input DLIS Files

CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10	1702.9 M	424.9 M
CUSTOMER	HILTB .035	FN:44	CUST	28-FEB-1997 22:00	1702.8 M	1622.9 M

Output DLIS Files

DEFAULT	HILTB .043	FN:54	FIELD	28-FEB-1997 23:39		
CUSTOMER	HILTB .043	FN:55	CUST	28-FEB-1997 23:39		

Integrated Hole/Cement Volume Summary

Hole Volume = 5.92 M3
Cement Volume = 2.27 M3 (assuming 244.50 MM casing O.D.)
Computed from 1700.9 M to 1623.2 M using data channel(s) HCAL HD

OP System Version: 7C0-712

DBM

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

TENS_REP Curve (TENS_REP)
25000 (N) 0

Tension (TENS)
25000 (N) 0

HD_REP Curve (HD_REP)
175 (MM) 425

HCAL_REP Curve (HCAL_REP)
175 (MM) 425

PEFZ_REP Curve (PEFZ_REP)
0 (---) 10

HDRA_REP Curve (HDRA_REP)
10 460 -50
(K/M3)

GR_REP Curve (GR_REP)
0 (GAPI) 150

Std. Res. Formation Pe (PEFZ)
0 (---) 10

Density Correction (HDRA)
10 460 -50
(K/M3)

RS_REP Curve (RS_REP)
0.2 (MM) 2000

NPOR_REP Curve (NPOR_REP)
0.45 (V/V) -0.15

Hole Diameter (HD)
175 (MM) 425

Alpha Processed Motion Porosity (NPOR)
0.45 (V/V) -0.15

Caliper (HCAL)
175 (MM) 425

DPHZ_REP Curve (DPHZ_REP)
0.45 (V/V) -0.15

Gamma Ray (GR)
0 (GAPI) 150

Std. Res. Density Porosity (DPHZ)
0.45 (V/V) -0.15

REPEAT ANALYSIS — LIMESTONE MDEN=2710KG/M3

1625
1600
1675
1700

REPEAT ANALYSIS — LIMESTONE MDEN=2710KG/M3

Gamma Ray (GR)
0 (GAPI) 150

Std. Res. Density Porosity (DPHZ)
0.45 (V/V) -0.15

Caliper (HCAL)
175 (MM) 425

DPHZ_REP Curve (DPHZ_REP)
0.45 (V/V) -0.15

Hole Diameter (HD)
175 (MM) 425

Alpha Processed Motion Porosity (NPOR)
0.45 (V/V) -0.15

RS_REP Curve (RS_REP)
0.2 (MM) 2000

NPOR_REP Curve (NPOR_REP)
0.45 (V/V) -0.15

GR_REP Curve (GR_REP)
0 (GAPI) 150

Std. Res. Formation Pe (PEFZ)
0 (---) 10

Density Correction (HDRA)
10 460 -50
(K/M3)

HCAL_REP Curve (HCAL_REP)
175 (MM) 425

PEFZ_REP Curve (PEFZ_REP)
0 (---) 10

HDRA_REP Curve (HDRA_REP)
10 460 -50
(K/M3)

HD_REP Curve (HD_REP)
175 (MM) 425

Tension (TENS)
25000 (N) 0

TENS_REP Curve (TENS_REP)
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	
BHFL	Borehole Fluid Type	WATER	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	311.200	MM
BSAL	Borehole Salinity	0.000000	PPM
BSCO	Borehole Salinity Correction Option	NO	
CBTH	Casing Bit Size Thickness Correction Option	NO	
CMFI	Casing Mud Fluid	61.72	KG/M
DFD	Drilling Fluid Density	1180.00	K/M3
DFSC	Depth Offset Shift Correction	0.0	M
DO	Depth Offset	0.0	M
DORL	Depth Offset Repeat Analysis	0.0	M
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSO	Generalized Caliper Selection	1	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
HMPCO	HILT STSC Measure pointer correction	1.822700e-02	DCIM
HSCO	HILT Speed Correction Mode	TSCO_SpeedCorrect	
HSI	Hole Size Interpolation	YES	
HSTI	375 Usec CLY Acceleration	1	
MATR	Rock Matrix Type	LIMESTONE	
MCOO	Mud Cake Correction Option	NO	
MDEN	Matrix Density	2710	KIM3
MST	Mud Sample Temperature	14.44	DEGC
MTCO	Mud Temperature Correction	NO	
NAV	HRDD Depth Offset Hole Version	1	
NMT	HILT Nuclear Mud Type	NOBARITE	
NRUN	HRDD Processing Mode	HIRES	
PP	Playback Processing Rate	30.4	MM
PTCO	Pressure Temperature Correction Option	NO	
RMTF	Resistivity of Mud Filtrate Sample	4.7500	OHMM
SDAT	Standard Data Source	SOCN	
SHT	Surface Hole Temperature	20	DEGC
SOCN	Standard Distance	12.7	MM
SOCO	Standard Correction Option	NO	

Format: PORO_REP Vertical Scale: 1/240 Graphics File Created: 28-FEB-1997 23:39

OP System Version: 7C0-712

DBM

Input DLIS Files

CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10	1702.9 M	424.9 M
CUSTOMER	HILTB .035	FN:44	CUST	28-FEB-1997 22:00	1702.8 M	1622.0 M

Output DLIS Files

CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10	1702.9 M	424.9 M

Input DLIS Files

DEFAULT	HILTB .047	FN:62	FIELD	1-MAR-1997 00:09	1255.0 M	424.9 M
CUSTOMER	HILTB .047	FN:63	CUST	1-MAR-1997 00:09	1255.0 M	424.9 M

Integrated Hole/Cement Volume Summary

Hole Volume = 73.09 M3
Cement Volume = 35.43 M3 (assuming 244.50 MM casing O.D.)
Computed from 1245.0 M to 453.1 M using data channel(s) HCAL HD

OP System Version: 7C0-712

DBM

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

Hole Diameter (HD)
175 (MM) 425

Caliper (HCAL)
175 (MM) 425

Std. Res. Formation Pe (PEFZ)
0 (---) 10

Density Correction (HDRA)
10 460 -50
(K/M3)

Gamma Ray (GR)
0 (GAPI) 150

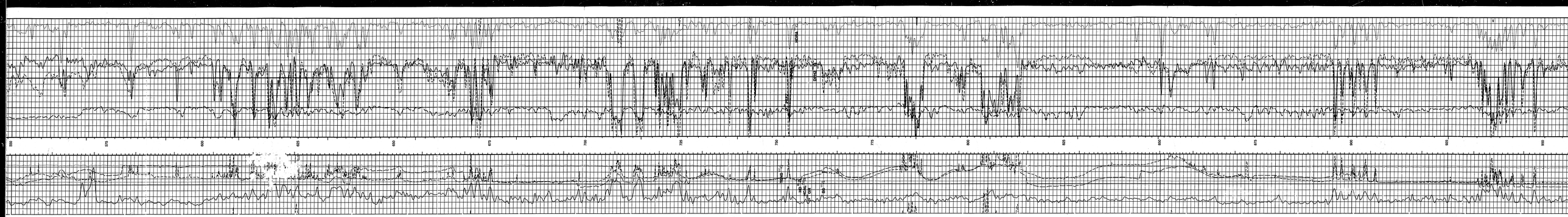
Alpha Processed Motion Porosity (NPOR)
0.45 (V/V) -0.15

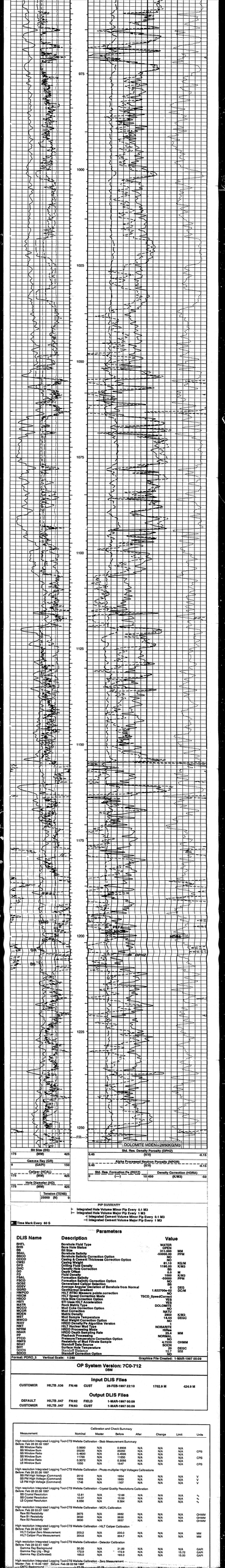
Std. Res. Density Porosity (DPHZ)
0.45 (V/V) -0.15

Std Slow (SS)
175 (MM) 425

DOLOMITE MDEN=2850KG/M3

425
450
CASING
475
500
525


500
525
600
625
650
675
700
725
750
775
800
825
850
875
900
925
950



DLIS Name	Description	Value
BHFL	Borehole Fluid Type	WATER
BHS	Borehole Status	MEASURED
BS	Bit Size	311.000 MM
BSCL	Borehole Salinity	-55000.00 PPM
CCOR	Casing & Cement Correction Option	NO
CCS3	Casing & Cement Thickness Correction Option	NO
CWEI	Casing Weight	81.10 KG/M
DFD	Drilling Fluid Density	1164.00 K/M3
DHC	Density Hole Correction	NO
DO	Depth Offset	0.0 M
FD	Fluid Density	1000 K/M3
FSAL	Formation Salinity	-55000 PPM
FSCO	Formation Salinity Correction Option	NO
GDEC	Geomagnetic Calibration Declination	0.0 DEG
GDRO	Average Angular Deviation of Borehole from Normal	0.0 DEG
HBHO	Hole Bottom Hole	1.8227E06+20 DCM
HBHOO	HILT BTHO Square points correction	NO
HSCO	HILT Speed Correction Mode	TSCD_SpeedCorrected
HSTI	HILT Sonde Identification	1
HSTI	STI Uses HILT Accelerometer	YES
MATR	Rock Matrix Type	DOLOMITE
MCOR	Mud Correction Option	NO
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2850 K/M3
MDTM	Mud Filtrate Temperature	14.50 DEGC
MWCO	Mud Weight Correction Option	NO
NAVV	HRDD Density/Pe Algorithm Version	1
NFIL	HILT Nuclear Mud Type	NORMAL
NPRE	Neutron Porosity Reference	Hilbe
NSAR	HRDD Depth Sampling Rate	152 MM
PP	Playback Processing	NORMAL
PTCO	Pressure/Temperature Correction Option	NO
RMFO	Mud Filtrate Resistivity Sample	0.250 OHMM
SDAT	Standoff Data Source	SONDE
SHT	Surface Hole Temperature	23 DEGC
SSTO	Standoff Status	152 MM
SSCO	Standoff Correction Option	NO

OP System Version: 7C0-712

DMM

Input DLIS Files

CUSTOMER	HILTD .036	FN:46	CUST	1702.9 M	424.9 M

Output DLIS Files

DEFAULT	HILTD .047	FN:62	FIELD	1-MAR-1997 00:09
CUSTOMER	HILTD .047	FN:63	CUST	1-MAR-1997 00:09

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Ratio	Limit	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary Before: Feb 26 20:00 1997							
SS Window Ratio	0.5800	N/A	0.5806	N/A	N/A	N/A	
SS Window Sum	20200	N/A	20200	N/A	N/A	N/A	CPS
LS Window Ratio	0.3000	N/A	0.3000	N/A	N/A	N/A	
SS Window Sum	11700	N/A	11650	N/A	N/A	N/A	CPS
LS Window Ratio	0.3072	N/A	0.3066	N/A	N/A	N/A	
LS Window Sum	1000	N/A	1047	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations Before: Feb 26 20:26 1997							
SS PM High Voltage (Command)	2010	N/A	1964	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1740	N/A	1740	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1740	N/A	1740	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calculation Before: Feb 26 20:28 1997							
SS Crystal Resolution	12.61	N/A	12.66	N/A	N/A	N/A	%
LS Crystal Resolution	10.07	N/A	10.53	N/A	N/A	N/A	%
LS Crystal Resolution	8.656	N/A	8.564	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration Before: Feb 26 03:07 1997							
Raw B1 Resistivity	3875	N/A	3852	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3630	N/A	3630	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3630	N/A	3857	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration Before: Feb 26 02:51 1997							
HILT Caliper Zero Measurement	203.2	N/A	203.0	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	304.8	N/A	304.7	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration Before: Feb 26 02:51 1997							
Gamma Ray Background	30.00	N/A	31.00	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Big)	172.0	N/A	172.8	N/A	N/A	15.72	GAPI
Gamma Ray (Calibrated)	185.0	N/A	185.0	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement Before: Feb 26 02:50 1997							
SS Zero Measurement	0.0	N/A	0.0	N/A	N/A	N/A	CPS
LS Zero Measurement	0.0	N/A	0.0	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration Before: Feb 26 02:51 1997							
Accelerometer Calibration	1.000	N/A	1.000	N/A	N/A	N/A	
Accelerometer Calibration	1.000	N/A	1.000	N/A	N/A	N/A	
Accelerometer Calibration	1.000	N/A	1.000	N/A	N/A	N/A	
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Temperature Calibration Before: Feb 26 02:51 1997							
Temperature Calibration	0.0	N/A	0.0	N/A	N/A	N/A	DEGC
Temperature Calibration	0.0	N/A	0.0	N/A	N/A	N/A	DEGC
Temperature Calibration	0.0	N/A	0.0	N/A	N/A	N/A	DEGC
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Pressure Calibration Before: Feb 26 02:51 1997							
Pressure Calibration	0.0	N/A	0.0	N/A	N/A	N/A	KPA
Pressure Calibration	0.0	N/A	0.0	N/A	N/A	N/A	KPA
Pressure Calibration	0.0	N/A	0.0	N/A	N/A	N/A	KPA
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Tension Calibration Before: Feb 26 02:51 1997							
Tension Calibration	0.0	N/A	0.0	N/A	N/A	N/A	N
Tension Calibration	0.0	N/A	0.0	N/A	N/A	N/A	N
Tension Calibration	0.0	N/A	0.0	N/A	N/A	N/A	N

CFTC Background	26.77	26.77	28.02	N/A	N/A	4.016	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration
Before: Feb 26 13:01 1997

Z-Axis Acceleration	9.810	N/A	9.814	N/A	N/A	N/A	M/S2

High resolution Integrated Logging Tool-CTS Master Calibration - Inversion results
Master: Feb 27 11:49 1997

Rho Aluminium	2596	2597	--	--	--	--	K/M3
Rho Magnesium	1686	1685	--	--	--	--	K/M3
Pe Aluminium	2.570	2.570	--	--	--	--	
Pe Magnesium	2.760	2.757	--	--	--	--	

High resolution Integrated Logging Tool-CTS Master Calibration - Deviation Summary
Master: Feb 27 11:49 1997

BS Average Deviation	0	0.2147	--	--	--	--	%
BS Max Deviation	0	0.6760	--	--	--	--	%
SS Average Deviation	0	0.3408	--	--	--	--	%
SS Max Deviation	0	1.255	--	--	--	--	%
LS Average Deviation	0	0.4157	--	--	--	--	%
LS Max Deviation	0	1.194	--	--	--	--	%

High resolution Integrated Logging Tool-CTS Master Calibration - Tank Measurement
Master: Feb 8 15:36 1997

Thermal Near Corr. (Tank)	6031	5567	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2357	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.362	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature -9.4 DEGC.
Thermal Housing Size 85.725 MM.

High resolution Integrated Logging Tool-CTS / Equipment Identification

Primary Equipment:		
HILT high-Resolution Mechanical Sonde	HRMS - B	834
HILT Rxo Gamma-ray Device	HRGD - B	869
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	
Micro Cylindrically Focused Log Device	MCFL -	
GR Logging Source	GLS - J	1911
HILT High Res. Control Cartridge	HRCC - B	884
Auxiliary Equipment:		

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.9908	Before		0.4596	Before		0.3086
	0.9395 (Minimum) 0.9890 (Nominal) 1.038 (Maximum)			0.4399 (Minimum) 0.4630 (Nominal) 0.4862 (Maximum)			0.2919 (Minimum) 0.3072 (Nominal) 0.3226 (Maximum)	
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		20250	Before		11650	Before		1547
	19220 (Minimum) 20230 (Nominal) 21250 (Maximum)			11110 (Minimum) 11700 (Nominal) 12280 (Maximum)			1472 (Minimum) 1550 (Nominal) 1627 (Maximum)	

Before: Feb 28 20:39 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Photo-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		1954	Before		1963	Before		1807
	1910 (Minimum) 2010 (Nominal) 2110 (Maximum)			1803 (Minimum) 1903 (Nominal) 2003 (Maximum)			1646 (Minimum) 1746 (Nominal) 1846 (Maximum)	

Before: Feb 28 20:38 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		12.66	Before		10.53	Before		8.584
	11.81 (Minimum) 12.81 (Nominal) 13.81 (Maximum)			9.073 (Minimum) 10.07 (Nominal) 11.07 (Maximum)			7.656 (Minimum) 8.656 (Nominal) 9.656 (Maximum)	

Before: Feb 28 20:38 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3882	Before		3838	Before		3857
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: Feb 28 03:07 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value
Before		200.0	Before		304.7
	152.4 (Minimum) 203.2 (Nominal) 254.0 (Maximum)			228.6 (Minimum) 304.8 (Nominal) 381.0 (Maximum)	

Before: Feb 28 02:52 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		31.89	Before		172.9	Before		165.0
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.2 (Minimum) 172.9 (Nominal) 188.6 (Maximum)			150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)	

Before: Feb 28 02:51 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.75	Master		26.77
Before		27.14	Before		28.02
	5.000 (Minimum) 27.75 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 26.77 (Nominal) 40.00 (Maximum)	
Master: Feb 8 15:36 1997			Before: Feb 28 02:59 1997		

High resolution Integrated Logging Tool-CTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before		9.814
	9.610 (Minimum) 9.810 (Nominal) 10.01 (Maximum)	

Before: Feb 26 13:01 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Inversion results

Phase	Rho Aluminium K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master		2597	Master		1685
	2586 (Minimum) 2596 (Nominal) 2606 (Maximum)			1676 (Minimum) 1686 (Nominal) 1696 (Maximum)	
Phase	Pe Aluminium	Value	Phase	Pe Magnesium	Value
Master		2.570	Master		2.757
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.660 (Minimum) 2.760 (Nominal) 2.860 (Maximum)	

Master: Feb 27 11:49 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.2147	Master		0.3408	Master		0.4157
	-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		0.6760	Master		1.255	Master		1.194
	-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: Feb 27 11:49 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5567	Master		2357	Master		2.362
	5000 (Minimum) 6031 (Nominal) 7200 (Maximum)			2075 (Minimum) 2793 (Nominal) 3125 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: Feb 8 15:36 1997

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAR - 8 1997

COMPANY PARAMOUNT RESOURCES LTD
WELL PARAMOUNT ET AL BOVIE LAKE C-76
FIELD UNDEFINED
PROVINCE NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	1700.2 M
SCHLUMBERGER DEPTH	1701 M
DEPTH DRILLER	1710 M
KELLY BUSHING	433.32 M
DRILL FLOOR	433.02 M
GROUND LEVEL	426.8 M

Schlumberger

PLATFORM EXPRESS

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

Schlumberger

DIPOLE SONIC IMAGER

PROVINCE: NORTHWEST TERRITORIES
Field: UNDEFINED
Location: LATITUDE: 60 15' 14.83*
Well: PARAMOUNT ET AL BOVIE LA
Company: PARAMOUNT RESOURCES LT

LOCATION
LATITUDE: 60 15' 14.83*
LONGITUDE: 122 39' 22.34*
UWI: 300C706B30122A50

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING 65 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

Elev.: K.B. 493.32 M
G.L. 428.8 M
D.F. 493.32 M

	Run 1	Run 2	Run 3	Run 4
Logging Date	25-MAR-1987			
Run Number	TWO			
Depth Driller	3822 M			
Depth Logger	3824 M			
Bottom Log Interval	3814 M			
Top Log Interval	2894 M			
Casing Driller Size @ Depth	177.800 MM @ 2894 M	@	@	@
Casing Schlumberger	2894 M			
Bit Size	152.000 MM			
Type Fluid In Hole	GEL CHEM			
Density	1.1500 K/M3			
Viscosity	56 S			
PH	9.5			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	0.2350 OHMM @ 16 DEGC	@	@	@
RMF @ Measured Temperature	0.2800 OHMM @ 16 DEGC	@	@	@
RMC @ Measured Temperature	MEASURED @ MEASURED DEGC	@	@	@
RM @ MRT	0.161 @ 130	@	@	@
RMF @ MRT	0.710 @ 130	@	@	@
RMC @ MRT	@	@	@	@
Maximum Recorded Temperatures	130 DEGC			
Circulation Stopped	25-MAR-1987			
Time	14:00			
Logger On Bottom	25-MAR-1987			
Time	19:00			
Unit Number	3048			
Location	GRANDE PRAIRIE			
Recorded By	NICK MCINNES			
Witnessed By	COLIN SPEDIN			

API Serial No.
Elevation: LATITUDE 60 15' 14.83* LONGITUDE 122 39' 22.34*

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 WILLFUL 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 CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1	OTHER SERVICES2
OS1: AITH-TLD-CNL-ML-GR	OS1:
OS2: DSI-GR	OS2:
OS3: FMS-GR	OS3:
OS4: DLT-LDT-CNL-ML-GR	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
THREE 12.5MM STANDOFFS RUN ON AITH	
NO 90 DEGREE OFFSET HARDWARE RUN ON NEUTRON DUE TO HOLE SIZE	
AITH RUN IN COMPUTE STANDOFF MODE	
PLATFORM EXPRESS EXCEEDED MAX OPERATING TEMPERATURE OF 125 DEGC	
HRMS CALIPER FAILED AT 135 DEGC - STARTED WORKING AND WAS OPENED AT 125 DEGC	
CALIPER WOULD NOT CLOSE AFTER THIS	
DUAL LATERALOG REQUESTED - ANOTHER DENSITY TOOL AND MICROLOG REQUESTED	
RM1=1.256 @ 61DEGF, RM2=2.256 @ 61DEGF, RM3=3.251 @ 60DEGF	
PRINTS: 4 FIELD, 7 FINAL	
RIG: KENTING 226	
OPERATORS: ROBIN BARKER, RON PURCELL	

RUN 1

SERVICE ORDER #: 500557
PROGRAM VERSION: 7C0-713
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

SURFACE EQUIPMENT

GSR-U/Y 692
DTM-B 8300

DOWNHOLE EQUIPMENT

CTEM — 22.86

DTC-H
ECH-KC 9109
DTC-A 8034
TelStatus
ToolStatu — 20.73
21.64

DTA-A
ECH-KE 8057
DTA-A 28
20.73

SGT-N
SGH-K 2399
SGC-SA 8542
SGD-TAA
Gamma Ray — 19.23
19.51

MCD-G
MCD-G 28
17.83

HD — 16.46

DSST-A
SPAC-AA 66
ECH-SC
SMDR-AA
SSLI-BA
SMDX-AA 33
15.54

HV DF
Tension PWF — 0.00
TOOL ZERO

MAXIMUM STRING DIAMETER 114 MM
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

RUN 2

Output DLIS Files

DEFAULT	DSSTA.013	FN:16	FIELD	26-MAR-1997 04:17	3225.1 M	2861.8 M
NO_WAVES	DSSTA.013	FN:17	CUST	26-MAR-1997 04:17	3225.1 M	2861.8 M

Integrated Hole/Cement Volume Summary

Hole Volume = 6.33 M3
Cement Volume = 3.46 M3 (assuming 114.00 MM casing O.D.)
Computed from 3219.9 M to 2894.1 M using data channel(s) HD

OP System Version: 7C0-713
MBM

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

Bit Size (BS) (MM): 125 375
Tension (TENS) (N): 50000 0
Hole Diameter (HD) (MM): 125 375
Peak Coherence / RA - P & S Comp (CHRP): 0 (---) 10
Gamma Ray (GR) (GAPI): 0 150
Delta-T Compressional (DTCO) (US/M): 500 100

Sonic Casing Signal Check -->

CASING

2900
2950
3000
3050
3100
3150
3200

RA
TD

Gamma Ray (GR) (GAPI): 0 150
Delta-T Compressional (DTCO) (US/M): 500 100
Peak Coherence / RA - P & S Comp (CHRP): 0 (---) 10
Hole Diameter (HD) (MM): 125 375
Tension (TENS) (N): 50000 0
Bit Size (BS) (MM): 125 375

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	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	152.400	MM
CCLL	Label Slowness Lower Limit - P & S Comp	100	US/M
CCUL	Label Slowness Upper Limit - P & S Comp	600	US/M
DTCO	Label Delta-T Speed Analysis	1.000	M
DTCS	Delta-T Source	PS_COMP	
DTF	Delta-T Fluid	620.079	US/M
DTSS	Shear Delta-T Source	PS_SHEAR	
LIC	Label Formation Character - P & S	COMP_FIRST	
RMIN	Label Shear/Comp Minimum Ratio - P & S	1.12	
RMAX	Label Shear/Comp Maximum Ratio - P & S	2.12	
SHLL	Label Slowness Lower Limit - P & S Shear	100	US/M
SHUL	Label Slowness Upper Limit - P & S Shear	600	US/M
SSLL	Label Slowness Lower Limit - Stoneley	500.00	US/M
SSUL	Label Slowness Upper Limit - Stoneley	2500.00	US/M
TWU	STC Integration TWw Window - P & S	500	US

Format: SONI_S2_500 Vertical Scale: 1:600 Graphics File Created: 26-MAR-1997 04:17

OP System Version: 7C0-713
MBM

Output DLIS Files

DEFAULT	DSSTA.013	FN:16	FIELD	26-MAR-1997 04:17		
NO_WAVES	DSSTA.013	FN:17	CUST	26-MAR-1997 04:17		

Output DLIS Files

DEFAULT	DSSTA.013	FN:16	FIELD	26-MAR-1997 04:17	3225.1 M	2861.8 M
NO_WAVES	DSSTA.013	FN:17	CUST	26-MAR-1997 04:17	3225.1 M	2861.8 M

Integrated Hole/Cement Volume Summary

Hole Volume = 6.33 M3
Cement Volume = 3.00 M3 (assuming 114.00 MM casing O.D.)
Computed from 3219.9 M to 2894.1 M using data channel(s) HD

OP System Version: 7C0-713
MBM

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

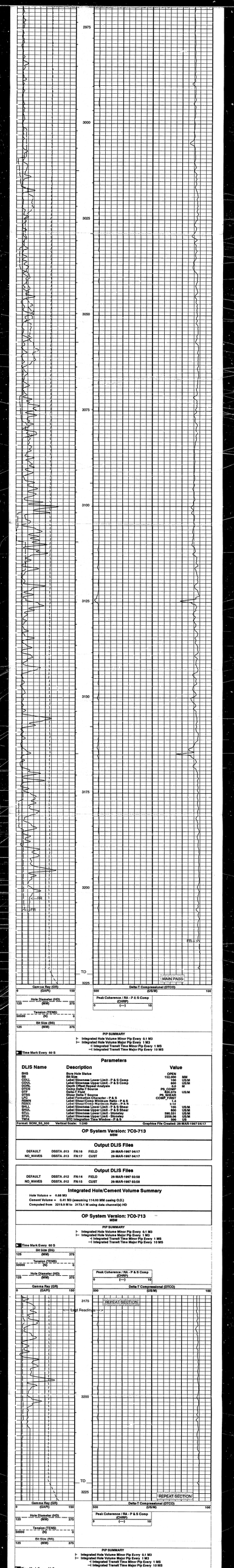
Time Mark Every 60 S

Bit Size (BS) (MM): 125 375
Tension (TENS) (N): 50000 0
Hole Diameter (HD) (MM): 125 375
Peak Coherence / RA - P & S Comp (CHRP): 0 (---) 10
Gamma Ray (GR) (GAPI): 0 150
Delta-T Compressional (DTCO) (US/M): 500 100

MAIN PASS

Sonic Casing Signal Check -->

2875
CASING
2900
2925
2950



Parameters

DLIS Name	Description	Value
BHS	Bore Hole Status	OPEN
BS	Bit Size	152.400 MM
CCLL	Label Slowness Lower Limit - P & S Comp	100 US/M
CCRL	Label Slowness Upper Limit - P & S Comp	600 US/M
DTCO	Comp Delta-T Analysis	1 M
DTCP	Comp Delta-T Source	PS_COMP
DTP	Delta-T Plot	500,100 US/M
DTPSS	Delta-T Shear Source	PS_COMP
LPC	Label Formation Character - P & S	COMP_FIRST
RMIN	Label Shear/Comp Minimum Ratio - P & S	1.4
SHLL	Label Slowness Lower Limit - P & S Shear	100
SHLL	Label Slowness Lower Limit - P & S Shear	100 US/M
SRUL	Label Slowness Upper Limit - P & S Shear	600 US/M
STLL	Label Slowness Lower Limit - Stoneley	590.551 US/M
STUL	Label Slowness Upper Limit - Stoneley	2559.055 US/M
TMT4	STC Integration Time Window - P & S	500 US

Format: BCMI_SS_500 Vertical Scale: 1:200 Graphics File Created: 26-MAR-1997 04:17

OP System Version: 7C0-713

MSM

Output DLIS Files

DEFAULT	DSSTA .013	FN:16	FIELD	26-MAR-1997 04:17
NO_WAVES	DSSTA .013	FN:17	CUST	26-MAR-1997 04:17

Output DLIS Files

DEFAULT	DSSTA .012	FN:14	FIELD	26-MAR-1997 03:58
NO_WAVES	DSSTA .012	FN:15	CUST	26-MAR-1997 03:58

Integrated Hole/Cement Volume Summary

Hole Volume = 0.68 M3

Cement Volume = 0.41 M3 (assuming 114.00 MM casing O.D.)

Computed from 3215.9 M to 3173.1 M using data channel(s) HD

OP System Version: 7C0-713

MSM

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

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 | Integrated Transit Time Major Tip Every 10 MS

Parameters

DLIS Name	Description	Value
BHS	Bore Hole Status	OPEN
CCSS	CCS Status	192.000 MM
CDLL	Label Stoneley Lower Limit - P & S Comp	100 US/M
CDUL	Label Stoneley Upper Limit - P & S Comp	600 US/M
CMPS	Delta-T Comp Source	PS_CORR
DTF	Delta-T Fluid	620.370 US/M
DTSS	Shear Delta-T Source	PS_SHEAR
FBHC	Label Fast Coherence Number - P & S	COMP_FIRST
HIGH	Label Sheet/Coinc Maximum Ratio - P & S	3
RMIX	Label Sheet/Comp Maximum Ratio - P & S	2.12
SHSL	Label Stoneslow Lower Limit - P & S Shear	100 US/M
SHSU	Label Stoneslow Upper Limit - P & S Shear	600 US/M
STLL	Label Stoneslow Lower Limit - Stoneley	590.551 US/M
STUL	Label Stoneslow Upper Limit - Stoneley	2038.06 US/M
TWIN	STC Integration Time Window - P & S	500 US

Format: SONI_65_500 | Vertical Scale: 1:240 | Graphics File Created: 26-MAR-1997 03:58

OP System Version: 7C0-713
MSM

Output DLIS Files

DEFAULT	DSSTA .012	FN:14	FIELD	26-MAR-1997 03:58	
NO_WAVES	DSSTA .012	FN:15	CUST	26-MAR-1997 03:58	

Output DLIS Files

DEFAULT	DSSTA .013	FN:16	FIELD	26-MAR-1997 04:17	3225.1 M	2861.8 M
NO_WAVES	DSSTA .013	FN:17	CUST	26-MAR-1997 04:17	3225.1 M	2861.8 M

OP System Version: 7C0-713
MSM

PIP SUMMARY

Time Mark Every 60 S

Tension (TENS) 25000 (lb) 0
Bit Size (BS) 120 (MM) 370
Hole Diameter (HD) 120 (MM) 370
Gamma Ray (GR) 0 (GAPI) 150
Poisson's Ratio (PR) 0 (---) 0.5

Delta-T Shear - P & S (DTSP) 600 (US/M) 100
Delta-T Comp - P & S (DTCP) 600 (US/M) 100
Peak Coherence / RA - P & S Shear (CHRS) -1 (---) 0
Peak Coherence / RA - P & S Comp (CHRP) 0 (---) 10

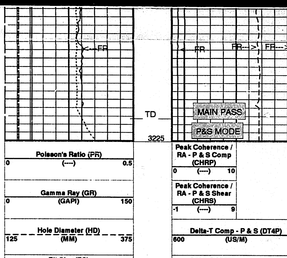
Min | Amplitude | Max
Rec.Array P&S Slow Prof. CVDL (SPRH) 100 (US/M) 600
Delta-T Shear / RA - P & S (DTSR) 100 (US/M) 600
Delta-T Comp / RA - P & S (DTRP) 100 (US/M) 600

MAIN PASS
P&S MODE

CASING

2875
2900
2925
2950
2975
3000
3025
3050
3075
3100
3125
3150
3175
3200

FBHC
COFR



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	152.000	MM
COLL	Label Slowness Lower Limit - P & S Comp	100	US/M
COUL	Label Slowness Upper Limit - P & S Comp	600	US/M
DORL	Depth Offset Repeat Analysis	0.0	M
DTCS	Comp Delta-T Source	PS_COMP	
DTF	Delta-T Fluid	620.079	US/M
DTSS	Shear Delta-T Source	PS_SHEAR	
LFC	Label Formation Character - P & S	COMP_FIRST	
RSMN	Label Shear/Comp Minimum Ratio - P & S	1.4	
RSMX	Label Shear/Comp Maximum Ratio - P & S	2.12	
SAM1	Sonic Acquisition Mode 1 (P & S)	EVEN	
SAM5	Sonic Acquisition Mode 5 (FMD)	OFF	
SAM6	Sonic Acquisition Mode 6 (DT FMD)	OFF	
SAMX	Sonic Acquisition Mode X (expert)	OFF	
SBO4	STC Search Band Offset - P & S	500	US
SBR4	STC Baseline Removal - P & S	ON	
SBW4	STC Search Band Width- P & S	2000	US
SFC4	Sonic formation Character - P & S	SELECTABLE	
SFM4	STC Filter - P & S	B3-20K	
SHUL	Label Slowness Lower Limit - P & S Shear	100	US/M
SLL4	Label Slowness Upper Limit - P & S Shear	600	US/M
STLL	Label Slowness Lower Limit - Stoneley	100	US/M
STUL	Label Slowness Upper Limit - Stoneley	590.551	US/M
SUL4	STC Slowness Upper Limit - P & S	2559.06	US/M
TLL4	STC Time Lower Limit - P & S	150	US
TUL4	STC Time Upper Limit - P & S	5110	US
TWI4	STC Integration Time Window - P & S	500	US

Format: DSI_PS Vertical Scale: 1:240 Graphics File Created: 26-MAR-1997 04:17

OP System Version: 7C0-713

MBM

Output DLIS Files

DEFAULT	DSSTA .013	FN:16	FIELD	26-MAR-1997 04:17
NO_WAVES	DSSTA .013	FN:17	CUST	26-MAR-1997 04:17

Output DLIS Files

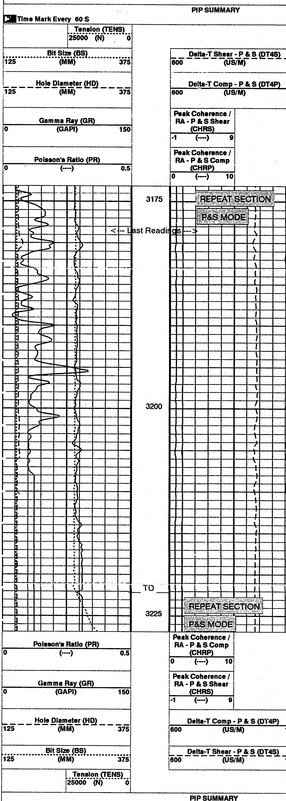
DEFAULT	DSSTA .012	FN:14	FIELD	26-MAR-1997 03:58
NO_WAVES	DSSTA .012	FN:15	CUST	26-MAR-1997 03:58

OP System Version: 7C0-713

MBM

PIP SUMMARY

Time Mark Every 60 S



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	152.000	MM
COLL	Label Slowness Lower Limit - P & S Comp	100	US/M
COUL	Label Slowness Upper Limit - P & S Comp	600	US/M
DTCS	Comp Delta-T Source	PS_COMP	
DTF	Delta-T Fluid	620.079	US/M
DTSS	Shear Delta-T Source	PS_SHEAR	
LFC	Label Formation Character - P & S	COMP_FIRST	
RSMN	Label Shear/Comp Minimum Ratio - P & S	1.4	
RSMX	Label Shear/Comp Maximum Ratio - P & S	2.12	
SAM1	Sonic Acquisition Mode 1 (P & S)	EVEN	
SAM5	Sonic Acquisition Mode 5 (FMD)	OFF	
SAM6	Sonic Acquisition Mode 6 (DT FMD)	OFF	
SAMX	Sonic Acquisition Mode X (expert)	OFF	
SBO4	STC Search Band Offset - P & S	500	US
SBR4	STC Baseline Removal - P & S	ON	
SBW4	STC Search Band Width- P & S	2000	US
SFC4	Sonic formation Character - P & S	SELECTABLE	
SFM4	STC Filter - P & S	B3-20K	
SHUL	Label Slowness Lower Limit - P & S Shear	100	US/M
SLL4	Label Slowness Upper Limit - P & S Shear	600	US/M
STLL	Label Slowness Lower Limit - Stoneley	100	US/M
STUL	Label Slowness Upper Limit - Stoneley	590.551	US/M
SUL4	STC Slowness Upper Limit - P & S	2559.06	US/M
TLL4	STC Time Lower Limit - P & S	150	US
TUL4	STC Time Upper Limit - P & S	5110	US
TWI4	STC Integration Time Window - P & S	500	US

Format: DSI_PS Vertical Scale: 1:240 Graphics File Created: 26-MAR-1997 03:58

OP System Version: 7C0-713

MBM

Output DLIS Files

DEFAULT	DSSTA .012	FN:14	FIELD	26-MAR-1997 03:58
NO_WAVES	DSSTA .012	FN:15	CUST	26-MAR-1997 03:58

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Mechanical Caliper - G Wellsite Calibration - Electronics Calibration							
Before: Mar 25 17:26 1997							
MCDG Counts Plus	377.0	N/A	379.5	N/A	N/A	N/A	
MCDG Counts Zero	103.0	N/A	104.4	N/A	N/A	N/A	
Mechanical Caliper - G Wellsite Calibration - Caliper Calibration							
Before: Mar 25 17:27 1997							
Diameter Large Ring	304.8	N/A	298.5	N/A	N/A	N/A	MM
Diameter Small Ring	203.2	N/A	196.6	N/A	N/A	N/A	MM
Scintillation Gamma-Ray - N Wellsite Calibration - Detector Calibration							
Before: Mar 26 02:36 1997							
Gamma Ray (Jig - Shop)	58.70	N/A	58.70	N/A	N/A	5.337	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00	GAPI

Mechanical Caliper - G / Equipment Identification

Primary Equipment:
Mechanical Caliper Device - G — MCD - G — 26

Auxiliary Equipment:

Mechanical Caliper - G Wellsite Calibration

Electronics Calibration

Phase	MCDG Counts Plus	Value	Phase	MCDG Counts Zero	Value
Before	377.0 (Nominal)	379.5	Before	103.0 (Nominal)	104.4
	320.5 (Minimum)	433.5 (Maximum)		87.55 (Minimum)	118.4 (Maximum)

Before: Mar 25 17:26 1997

Mechanical Caliper - G Wellsite Calibration

Caliper Calibration

Phase	Diameter Large Ring MM	Value	Phase	Diameter Small Ring MM	Value
Before	304.8 (Nominal)	298.5	Before	203.2 (Nominal)	196.6
	258.1 (Minimum)	350.5 (Maximum)		172.7 (Minimum)	233.7 (Maximum)

Before: Mar 25 17:27 1997

Scintillation Gamma-Ray - N / Equipment Identification

Primary Equipment:
Scintillation Gamma Cartridge — SGC - SA — 9542
Scintillation Gamma Detector — SGD - TAA

Auxiliary Equipment:
Scintillation Gamma Housing — SGH - K — 2399
Gamma Source Radioactive — GSR - U/Y — 692

Scintillation Gamma-Ray - N Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray Jig - Shop GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		8.960	Before		58.70	Before		165.0
	0 (Minimum)	30.00 (Nominal) 100.0 (Maximum)		53.37 (Minimum)	64.04 (Maximum)		130.0 (Minimum)	165.0 (Nominal) 180.0 (Maximum)

Before: Mar 26 02:36 1997

COMPANY	PARAMOUNT RESOURCES LTD.
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	3214 M
SCHLUMBERGER DEPTH	3222 M
DEPTH DRILLER	3222 M
KELLY BUSHING	453.32 M
DRILL FLOOR	453.02 M
GROUND LEVEL	426.8 M

Schlumberger

DIPOLE SONIC IMAGER

N.E.B. COPY

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

Schlumberger

COMPENSATED NEUTRON LITHODENSITY LOG

LATITUDE: 65 10' 14.63"
LONGITUDE: 120 58' 33.94"
API#: (NO API NUMBER GIVEN)

Permanent Datum: GROUND LEVEL — Elev.: K.B. 453.32 M
Log Measured From: KELLY BUSHING, 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING — D.L. 439.8 M — D.F. 453.32 M

	API Serial No.	LATITUDE	LONGITUDE
Location	50 TP 14 AM	65 10' 14.63"	120 58' 33.94"

	Run 1	Run 2	Run 3	Run 4
Logging Unit	7138 MAY 5867			
Run Number	TWO			
Depth Driller	4228 M			
Schlumberger Depth	4228 M			
Bottom Log Interval	3870.5 M			
Top Log Interval	2994 M			
Casing Driller Size @ Depth	177.8MM @ 2994 M	@	@	@
Casing Schlumberger	2994 M			
Bit Size	155.5MM			
Type Fluid in Hole	GEL CHEM			
Density / Viscosity	1.16 G/C3 56 S			
PH / Fluid Loss	11 7.5 C3			
Source Of Sample	FLOWLINE			
RM @ Measured Temperature	0.200 @ 21 DEGC	@	@	@
RMF @ Measured Temperature	0.900 @ 21 DEGC	@	@	@
RMC @ Measured Temperature	1.500 @ 21 DEGC	@	@	@
Source: RMF / RMC	MEASURED / MEASURED			
RM @ MST / RMF @ MST	0.472 @ 106 / 0.599 @ 106	@ / @	@ / @	@ / @
Time Circulation Stopped	23:30			
Time Logger On Bottom	04:30			
Logger On Bottom	23-MAY-1987			
Unit Number / Location	2048 / [illegible] EDMONTON			
Recorded By	RICK MCINNES			
Witnessed By	DOUG BYRON			

Logging Date	23-MAY-1987
Run Number	ONE
Depth Driller	3870 M
Schlumberger Depth	3870 M
Bottom Log Interval	3870 M
Top Log Interval	2994 M
Casing Driller Size @ Depth	@ @
Casing Schlumberger	2994 M
Bit Size	155.5MM
Type Fluid in Hole	GEL CHEM
Density / Viscosity	1.16 G/C3 56 S
PH / Fluid Loss	11 7.5 C3
Source Of Sample	FLOWLINE
RM @ Measured Temperature	0.200 @ 21 DEGC
RMF @ Measured Temperature	0.900 @ 21 DEGC
RMC @ Measured Temperature	1.500 @ 21 DEGC
Source: RMF / RMC	MEASURED / MEASURED
RM @ MST / RMF @ MST	0.472 @ 106 / 0.599 @ 106
Time Circulation Stopped	23:30
Time Logger On Bottom	04:30
Logger On Bottom	23-MAY-1987
Unit Number / Location	2048 / [illegible] EDMONTON
Recorded By	RICK MCINNES
Witnessed By	DOUG BYRON

RUN 1 RUN 2 RUN 3 RUN 4

CASING RECORD (DRILLER)

SIZE 244.5 MM @ 0 M
SIZE 177.8 MM @ 2994 M

BOREHOLE RECORD (DRILLER)

BIT SIZE 311.1 MM
BIT SIZE 155.5 MM @ 3870 M

BOREHOLE AND MUD CONDITIONS

MUD TYPE GEL CHEM
DENSITY 1.16 G/C3
VISCOSITY 56 S
PH 11
FLUID LOSS 7.5 C3
SOURCE OF SAMPLE FLOWLINE
RM @ MEAS. TEMP. 0.2 @ 21 DEGC
RMF @ MEAS. TEMP. 0.9 @ 21 DEGC
RMC @ MEAS. TEMP. 1.5 @ 21 DEGC
RM @ BHT 0.472 @ 106 DEGC
TIME CIRC. STOPPED 23:30
TIME LOGGER ON BOTTOM 04:30
MAXIMUM RECORDED TEMP. 106 DEGC
EQUIPMENT NUMBER AND LOCATION 2048 EDMONTON
RECORDED BY RICK MCINNES
WITNESSED BY DOUG BYRON

RUN 2

RUN 3

EQUIPMENT DESCRIPTION

RUN 1

SERVICE EQUIPMENT

DOWNHOLE EQUIPMENT

DTC-HJ 21.39
DTSM-A 20.47
DPHI-A
HRD-B 19.25
RHOB-A
BGDT-A 17.09
CNSC-A
CNSS-A 15.37
CNTC-A
CNTS-A
LITH-D
SSN-D
LSN-D
CGR-C
SGR-C
HSGR-C
POTA-C
THOR-C
URAN-C

Caliper 10.68
Gamma Ray
Tension

CONTROL 311
AUXILIARY 7.55
4.48
LLD-LLS

Tension 0.00

MUDCAKE STAND-OFF(IN) & MRT
MUDCAKE RESISTIVITY(OHMM) & MRT
ALL DEPTHS IN METRE

Input DLIS Files

DEFAULT	AUXTA .003	PASS	FIELD	3994 M	1349.4 M
			DLIS Filename	Top Depth	Bottom Depth
DEFAULT	AUXTA .007	PASS	FIELD	3551 M	1953.3 M
			DLIS Filename	Top Depth	Bottom Depth

Output DLIS Files

Integrated Hole/Cement Volume Summary

Hole Volume =	4.54 M3
Cement Volume =	1.63 M3
Computed from	3994.4 M to 3994.7 M using data measured by CALI

Oil System Version: 7CXA-713

PIP SUMMARY

- Integrated Hole Volume from 3994.4 to 3994.7 M
- Integrated Hole Volume from Pass 1 to Pass 2
- Integrated Cement Volume from Pass 1 to Pass 2

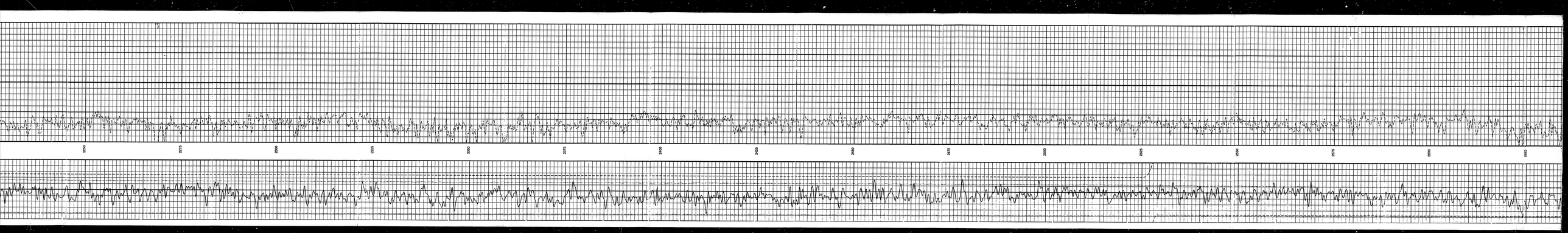
Bulk Density Correction (BDRH) -0.50 G/C3 0.50 | Bulk Density (RHOB) 1.95 G/C3 2.95 | Porosity (NPOR) 0.45 V/V -0.15 | Porosity (DPHI) 0.45 V/V -0.15

Caliper (CALI) 6.00 IN 16.00 | Gamma Ray (GR) 0 API 150 | Tension (TENS) 0 LB 2000

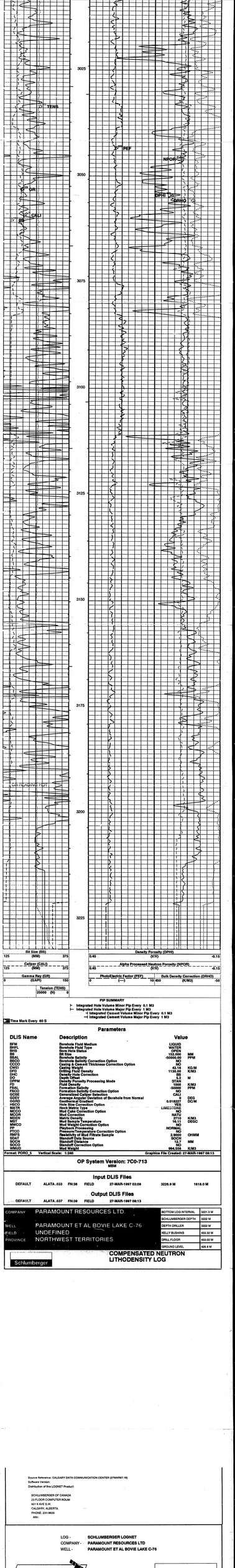
Mud Resistivity (RM) 0.20 OHMM 2.00 | Resistivity (RT) 0.20 OHMM 2000.00

1925 1900 1875 1850 1825 1800 1775 1750

1825 1850 1875 1900 1925 1950 1975 2000 2025 2050 2075 2100 2125 2150 2175 2200 2225


2250
2275
2300
2325
2350
2375
2400
2425
2450
2475
2500
2525
2550
2575
2600
2625

2650 2675 2700 2725 2750 2775 2800 2825 2850 2875 2900 2925 2950 2975 3000



Bit Size (BS) (MM) 125 375

Caliper (CALI) (MM) 125 375

Gamma Ray (GR) (GAPI) 0 150

Tension (TENS) (N) 25000 0

Density Porosity (DPHI) (V/V) 0.45 -0.15

Alpha Processed Neutron Porosity (NPOR) (V/V) 0.45 -0.15

Photoelectric Factor (PEF) (---) 0 10

Bulk Density Correction (DRHO) (K/M3) 0.450 -0.50

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	
BFM	Borehole Fluid Medium	LIQUID	
BHCL	Bore Hole Shape	WASHED	
BHS	Bore Hole Status	OPEN	
BS	Bit Size	152.000	MM
BSAL	Borehole Salinity	-50000.00	PPM
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
CWEI	Casing Weight	43.16	KG/M
DFD	Drilling Fluid Density	1130.00	K/M3
DFSC	Depth Offset Correction	0.0	
DO	Depth Offset	ES	M
DPPM	Density Porosity Processing Mode	STAN	
FD	Fluid Density	1000	K/M3
FSAL	Formation Salinity	-50000	PPM
GCAL	Generalized Caliper Selection Option	NO	
GCSE	Generalized Caliper Selection	CALI	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
HGRD	Hydrogen Gradient	0.016227	DC/M
HILI	Hole Lithology Correction Option	NO	
MATR	Hock Matrix Type	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MDEN	Mud Density	1111	K/M3
MST	Mud Sample Temperature	16.11	DEGC
MWCO	Mud Weight Correction Option	NO	
PP	Playback Processing	NORMAL	
PTCO	Pressure/Temperature Correction Option	NO	
RMFR	Resistivity of Mud Filtrate Sample	2.000	OHMM
SDAT	Standoff Data Source	SDCH	
SDCH	Standoff Distance	12.7	MM
SDCO	Standoff Correction Option	NO	
WMUD	Mud Weight	994.556	K/M3

Format: PORO_S Vertical Scale: 1:240 Graphics File Created: 27-MAR-1997 08:13

OP System Version: 7C0-713

MBM

Input DLIS Files

DEFAULT	ALATA..033	FN:36	FIELD	27-MAR-1997 03:09	3226.9 M	1618.0 M

Output DLIS Files

DEFAULT	ALATA..037	FN:39	FIELD	27-MAR-1997 08:13		

COMPANY	PARAMOUNT RESOURCES LTD.	BOTTOM LOG INTERVAL	3221.5 M
		SCHLUMBERGER DEPTH	3222 M
WELL	PARAMOUNT ET AL BOVIE LAKE C-76	DEPTH DRILLER	3222 M
FIELD	UNDEFINED	KELLY BUSHING	433.32 M
PROVINCE	NORTHWEST TERRITORIES	DRILL FLOOR	433.02 M
		GROUND LEVEL	408.4 M

Schlumberger

COMPENSATED NEUTRON LITHODENSITY LOG

Source Reference: CALGARY DATA COMMUNICATION CENTER (DTMARKIT.16)
Software Version:
Distribution of this LOGNET Product:

SCHLUMBERGER OF CANADA
23 FLOOR COMPUTER ROOM
801 6 AVE S.W.
CALGARY, ALBERTA
PHONE: 231-9628
Attn:

LOG - SCHLUMBERGER LOGNET
COMPANY - PARAMOUNT RESOURCES LTD
WELL - PARAMOUNT ET AL BOVIE LAKE C-76

LOGNET Communications Network

Schlumberger

NEB COPY

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

Schlumberger

COMPENSATED NEUTRON LITHODENSITY TOOL

LATITUDE: 60 15' 14.60"
LONGITUDE: 122 59' 22.34"
UWI: 300C76B2201204560

Elev.: K.B. 433.00 M
G.L. 426.8 M
D.F. 433.00 M

Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No. | LATITUDE | LONGITUDE
EL.Mat. | 60-15' 14.60" | 122 59' 22.34"

Logging Date	29-MAR-1997		
Run Number	ONE		
Depth Driller	2830 M		
Schlumberger Depth	2831 M		
Bottom Log Interval	2811.0 M		
Top Log Interval	2664 M		
Casing Driller Size @ Depth	177.800 MM @ 2664 M	@	@
Casing Schlumberger	2664 M		
Bit Size	152.000 MM		
Type Fluid in Hole	GEL-CHEM		
Density / Viscosity	1130 K/M3 / 56 S		
Fluid Loss / PH	7.4 C3 / 9.5		
Source Of Sample	FLOWLINE		
Rm @ Measured Temperature	0.830 OHM @ 62 M, 06 DEGC	@	@
Rmf @ Measured Temperature	0.600 OHM @ 62 M, 06 DEGC	@	@
Rmc @ Measured Temperature	1.560 OHM @ 62 M, 14 DEGC	@	@
Source: Rmf / Rmc	MEASURED / MEASURED		
Rm @ MST / Rmf @ MST	0.473 @ 156 / 0.599 @ 156	@ / @	@ / @
Maximum Recorded Temperatures	155 DEGC		
Circulation Stopped	Time 29-MAR-1997	14:00	
Logger On Bottom	Time 29-MAR-1997	22:00	
Unit Number / Location	3049 / GARAGE PRAIRIE		
Recorded By	NICK SICONOLFI		
Witnessed By	COLIN 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				
Density / Viscosity				
Fluid Loss / PH				
Source Of Sample				
Rm @ Measured Temperature	@	@	@	@
Rmf @ Measured Temperature	@	@	@	@
Rmc @ Measured Temperature	@	@	@	@
Source: Rmf / Rmc				
Rm @ MST / Rmf @ MST	@ / @	@ / @	@ / @	@ / @
Maximum Recorded Temperatures				
Circulation Stopped	Time			
Logger On Bottom	Time			
Unit Number / Location				
Recorded By				
Witnessed By				

931-P23-B-1

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY 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.

CREW ENGINEER: NICK SICONOLFI
OBS1: 6TH TECH-CHALAK,GH
OBS2: 6TH TECH-CHALAK,GH
OBS3: PRO-GH
OBS4: 6TH TECH-CHALAK,GH
REMARKS: NATURAL GAMMA
SURFACE EQUIPMENT PROBLEMS: NONE
DOWNHOLE EQUIPMENT PROBLEMS: NONE
PLATFORM EXPRESS RECORDED MAIN OPERATING TEMPERATURE OF 155 DEGC
LOGS CORRECTED FOR BOREHOLE AND CASING EFFECTS
TOOLS CENTRALIZED IN 8.5" HOLE
ALL DEPTHS REFERENCED TO DRILLER'S DEPTH
CASING COLLAR LOCATOR RECORDED ON SECTION BOX TO 2745.4 GRL
LOGGED WITH 2 ARMS AND 1 CALIPER
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY 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.

RUN 2

	RUN 2		
	BOTTOM	RIGHT	TOP
LOGGING INTERVAL	2830		2664
CASING DRILLER	2664		

PROVIDENCE 4
DOWNHOLE EQUIPMENT

RUN 2

SURFACE EQUIPMENT
CDB-A
CNTB-AA
HCNTB-AB

DOWNHOLE EQUIPMENT

DTC-A	CTEM	24.13	24.41
DTCA-3099		(CENTRALIZED)	
CTFA	Tattletale	21.97	21.97
CTFA-AB2857		(CENTRALIZED)	
SGT-N	Gamma Ray	20.47	20.75
SGTN-AB2852		(CENTRALIZED)	
MLT-AA	MWD	18.03	18.05
MLT-AA Isle	MODEL	(CENTRALIZED)	
	MWD Stat	16.78	16.79
CNTH-H		15.27	15.29
CNTH-AB	CNTC	14.51	14.51
LDT-D	CNTC		
HDIS-2992			
HDIS-2992			
HDIS-2992			
AH-169	Caliper	10.08	10.08
	MSS	9.27	9.27
DLT-E		8.60	8.60
DSLT-PPP		(2 ARMS AND 1 CALIPER)	
DSLT-PPP			
DSLT-E			
	LLD,LLS	4.48	

Tension RZ 2.00 0.00
MAXIMUM STRING SHARETEN 1148 LBS
MEASURED BETWEEN 2830 AND 0 M, ZERO
ALL DEPTHS IN METERS

Input DLIS Files

DEFAULT	DLTE 2441	FN:42	FIELD	27-MAR-1997 20:53	3256.0 M 1004.0 M

Output DLIS Files

DEFAULT	DLTE 2457	FN:44	PASS 1 MAIN PASS	29-MAR-1997 22:00	2831.0 M 1429.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 2.76 M3
Cement Volume = 0.83 M3 assuming 114.00 MM casing O.D.
Cement Sheath = 22.5 MM assuming 8.50 IN hole

OP System Version: 7C0-713

MAIN

PIP SUMMARY

Integrated Hole Volume Major Ply Every 0.1 M3
Integrated Hole Volume Minor Ply Every 1 M3
--> Integrated Cement Volume Major Ply Every 0.1 M3
--> Integrated Cement Volume Minor Ply Every 1 M3

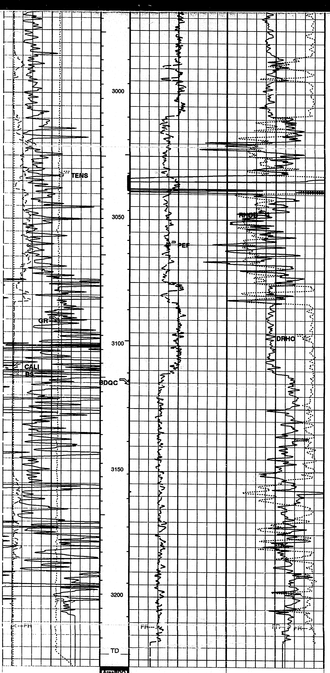
Time Mark Every 60 S

Gamma Ray (GR) 0 150
Caliper (CALI) 6 16
Mud Res. (RM) 0.2 2000
Bulk Density (RHOB) 1.95 2.95
Neutron Porosity (NPHI) 0.45 -0.15
Photo Electric Factor (PEF) 0 10
Bulk Density Correction (DRHO) -0.25 0.25
Rate of Penetration (ROP) 0 300

Bulk Density (RHOB) 1.95 2.95
Neutron Porosity (NPHI) 0.45 -0.15
Photo Electric Factor (PEF) 0 10
Bulk Density Correction (DRHO) -0.25 0.25
Rate of Penetration (ROP) 0 300

1650 1700 1750 1800 1850 1900 1950

1900
2000
2050
2100
2150
2200
2250
2300
2350
2400
2450
2500
2550
3000
3050
TSAG
BOAC
2700
2750
3000
3050
Last Reading
CASING
2000
2050



Bit Size (BS) (MM) 125 375

Area BDOC to DRHO

Photo-Electric Factor (PEF) (---) 0

Bulk Density Correction (DRHO) (K/M3) 10 1680 -50

Caliper (CALI) (MM) 125 375

Bulk Density (RHOB) Curve (BDOC) 10 (---) 0

Bulk Density (RHOB) (K/M3) 2000 3000

Gamma Ray (GR) (GAPI) 0 150

Tension (TENS) 25000 (lb) 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
BFM	Borehole Fluid Medium	LIQUID
BS	Bit Size	152.000 MM
CSC	Casing Hole Correction	NO
DEPTH	Depth Offset	0.0 M
DPPM	Density Porosity Processing Mode	STAN
MDEN	Matrix Density	2710 K/M3
MDEN	Matrix Density	K/M3
PP	Playback Processing	RECOMPUTE
WMUD	Mud Weight	994.000 K/M3

Format: PORO_2 Vertical Scale: 1:600 Graphics File Created: 28-MAR-1997 00:38

OP System Version: 7C0-713
MSM

Input DLIS Files

DEFAULT	DLTE .041	FR:42	FIELD	27-MAR-1997 22:53	3224.6 M	1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FR:48	FIELD	28-MAR-1997 00:38		

Input DLIS Files

DEFAULT	DLTE .041	FR:42	FIELD	27-MAR-1997 22:53	3224.6 M	1636.5 M

Output DLIS Files

DEFAULT	DLTE .047	FR:48	FIELD	28-MAR-1997 00:38	3227.5 M	1639.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 6.74 M3
Cement Volume = 3.42 M3 (assuming 114.00 MM casing O.D.)
Computed from 3221.9 M to 2894.1 M using data channel(s) CALI

OP System Version: 7C0-713
MSM

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 (lb) 0

Gamma Ray (GR) (GAPI) 0 150

Caliper (CALI) (MM) 125 375

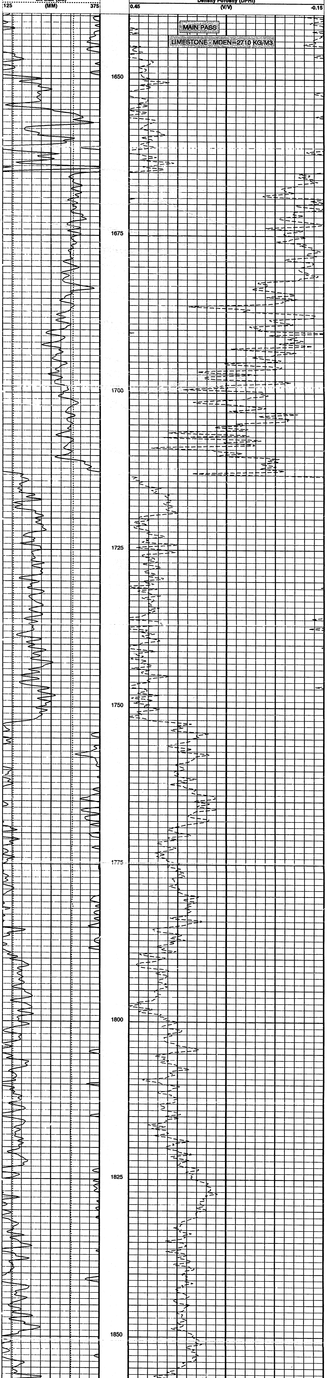
Bit Size (BS) (MM) 125 375

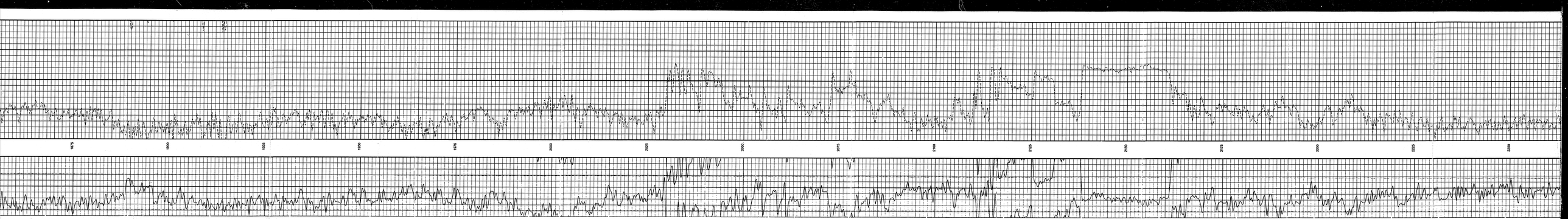
Photo-Electric Factor (PEF) (---) 0

Bulk Density Correction (DRHO) (K/M3) 10 1680 -50

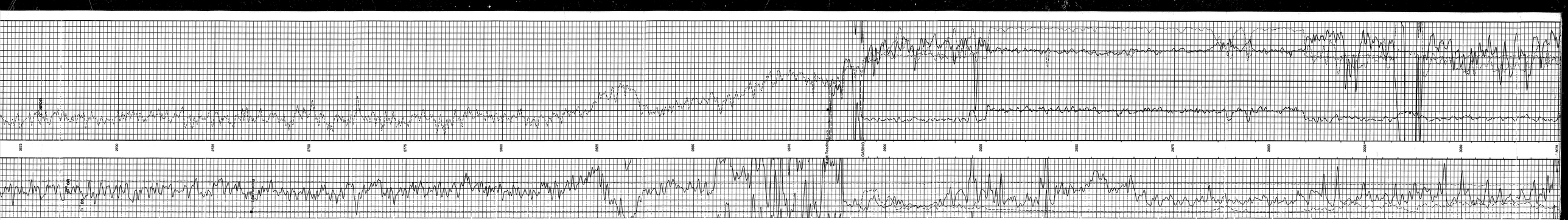
Alpha Processed Neutron Porosity (NPOR) (V/V) 0.45 -0.15

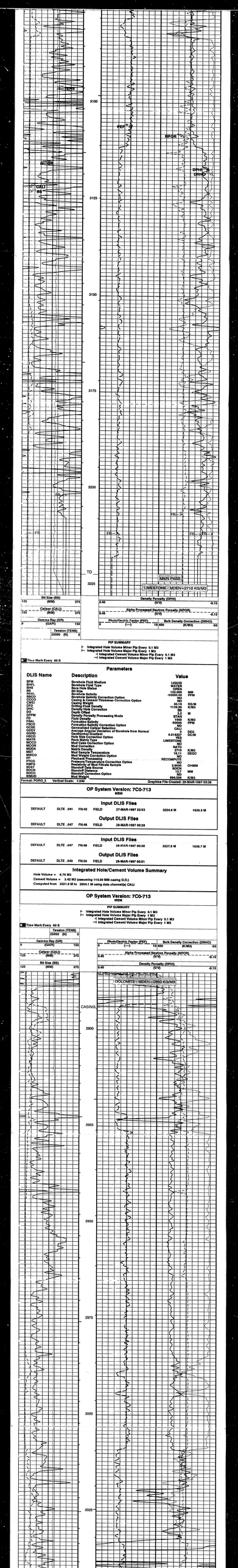
Density Porosity (DPHI) (V/V) 0.45 -0.15

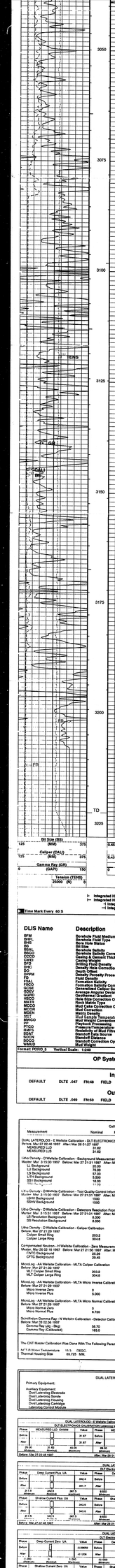



1875
1900
1925
1950
1975
2000
2025
2050
2075
2100
2125
2150
2175
2200
2225
2250

2275 2300 2325 2350 2375 2400 2425 2450 2475 2500 2525 2550 2575 2600 2625 2650


2675
2700
2725
2750
2775
2800
2825
2850
2875
2900
2925
2950
2975
3000
3025
3050
3075
CARBNAG
Pseudofusulina
Fusulina


3100
3125
3150
3175
3200
3225
TD
MAIN PASS
LIMESTONE - MDEN=2710 KG/M3
Bit Size (BS) (MM) 125 375
Caliper (CALI) (MM) 125 375
Gamma Ray (GR) (GAPI) 0 150
Tension (TENS) 23000 (N) 0
Density Porosity (DPHI) (V/V) 0.45 -0.15
Alpha Processed Neutron Porosity (NPOR) (V/V) 0.45 -0.15
PhotoElectric Factor (PEF) (---) 0 10
Bulk Density Correction (DRHO) (K/M3) -50 450
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
SFNI Borehole Fluid Sodium LIQUID
BHFL Borehole Fluid Type WATER
BHS Bore Hole Status OPEN
BS Bit Size 152.000 MM
SMUD Borehole Salinity -55000.000 PPM
COCO Casing & Cement Thickness Correction Option NO
CSG Casing Weight 4.700 KG/M
DFD Drilling Fluid Density 1120.000 K/M3
DNC Density Hole Correction BS
DPHI Density Porosity 0.3 M
DPPM Density Porosity Processing Mode STAN
FD Fluid Density 1120.000 K/M3
FSAL Formation Salinity -55000 PPM
GCSC Formation Salinity Correction Option NO
GCSV Gamma Ray Scale Value CALC
GDEV Average Angular Deviation of Borehole from Normal 0 DEG
GGRD Geothermal Gradient 0.018227 DC/M
GSCO Geothermal Gradient Option NO
MATR Rock Matrix Type LIMESTONE
MCCO Mud Cake Correction Option NO
MDEN Matrix Density 2710 K/M3
MDNS Matrix Density 2710 K/M3
MST Mud Sample Temperature 22.15 DEGC
MWCO Mud Weight Correction Option NO
PP Playback Processing RECOMPUTE
PTCO Pressure Correction Correction Option NO
RMFS Resistivity of Mud Filtrate Sample 0.0000 OHMM
SDCH Standoff Data Source SOCH
SOCH Standoff Correction 10 MM
SOCO Standoff Correction Option NO
WMUD Mud Weight 994.598 K/M3
Format: PORO_5 Vertical Scale: 1:240
Graphics File Created: 28-MAR-1997 00:38
OP System Version: 7C0-713
MSM
Input DLIS Files
DEFAULT DLTE .047 FN:48 FIELD 27-MAR-1997 22:53 3224.6 M 1636.5 M
Output DLIS Files
DEFAULT DLTE .047 FN:48 FIELD 28-MAR-1997 00:38
Input DLIS Files
DEFAULT DLTE .049 FN:48 FIELD 28-MAR-1997 00:38 3227.6 M 1639.7 M
Output DLIS Files
DEFAULT DLTE .049 FN:50 FIELD 28-MAR-1997 00:51
Integrated Hole/Cement Volume Summary
Hole Volume = 6.76 M3
Cement Volume = 3.42 M3 (assuming 114.00 MM casing O.D.)
Computed from 3221.0 M to 2894.1 M using data channel(s) CALI
OP System Version: 7C0-713
MSM
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) 23000 (N) 0
Gamma Ray (GR) (GAPI) 0 150
Caliper (CALI) (MM) 125 375
Bit Size (BS) (MM) 125 375
PhotoElectric Factor (PEF) (---) 0 10
Bulk Density Correction (DRHO) (K/M3) -50 450
Alpha Processed Neutron Porosity (NPOR) (V/V) 0.45 -0.15
Density Porosity (DPHI) (V/V) 0.45 -0.15
DOLOMITE - MDEN=2850 KG/M3
CASING
2900
2925
2950
2975
3000
3025



PIP SUMMARY

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

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
BFM	Borehole Fluid Medium	LIQUID
BHFL	Borehole Fluid Type	WATER
BHS	Borehole State	CASED
BI	Bit Size	152.000 MM
BSAL	Borehole Salinity	50000.00 PPM
CCCO	Casing & Cement Correction Option	NO
CCSO	Casing & Cement Thickness Correction Option	NO
CWGT	Casing Weight	43.16 KG/M
DFD	Drilling Fluid Density	1130.00 K/M3
DHC	Density Hole Correction	BS
DO	Depth Offset	0 M
DPPM	Density Porosity Processing Mode	STAN
FD	Fluid Density	1000 K/M3
FSAL	Formation Salinity	0000 PPM
GSCO	Gravitational Correction Option	NO
GSEV	Generalized Cal/Corr Selection	CALI
GSRV	Generalized Cal/Corr Selection of Borehole from Normal	DEG
GSRM	Geothermal Gradient	0.010227 DC/M
HBCO	Hole Size Correction Option	YES
HCAL	Hole Caliper	DOLOMITE
MCCO	Mud Cake Correction Option	YES
MCOR	Mud Correction	NATU
MDEN	Matrix Density	2850 K/M3
MSD	Mud Solids Description	11.1 DCCC
MWCO	Mud Weight Correction Option	NO
PD	Playback Processing	NORMAL
PTCO	Pressure/Temperature Correction Option	NO
RMFS	Resistivity of Mud Filtrate Sample	2.6000 OHMM
SOAT	Standoff Data Source	SCHE
SOCO	Standoff Distance	12.7 MM
SOSO	Standoff Correction Option	NO
WMUD	Mud Weight	994.000 K/M3

Format: PORO_5 Vertical Scale: 1:240 Graphics File Created: 30-MAR-1997 00:01

OP System Version: 7C0-713

MRM

Input DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	20-MAR-1997 00:38	3227.8 M

1839.7 M

Output DLIS Files

DEFAULT	DLTE .049	FN:50	FIELD	20-MAR-1997 00:51

Calibration and Check Summary

Measurement	Nominal	Master Before	Master After	Change	Limit	Units
DUAL LATEROLOG - E Wellsite Calibration - DLT ELECTRONICS CALIBRATION Laterolog Measurement						
Shallow Mud: 27 20 46 1997 After: Mar 28 01:21 1997						
MEASURED LLD	21.62	N/A	31.67	31.67	0.1845	0.8000 OHMM
MEASURED LLS	21.62	N/A	31.54	31.32	-0.01824	0.8000 OHMM
Litho Density - D Wellsite Calibration - Background Measurement						
Master: Mar 3 15:20 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:30 1997						
LL Background	20.00	18.04	17.93	18.68	-0.1055	1.000 CPS
LS Background	70.00	69.97	69.09	69.92	-0.1853	1.000 CPS
LD Background	70.00	52.48	52.40	52.50	0.03918	1.000 CPS
LITH Background	5.000	5.148	5.200	5.200	0.05000	1.000 CPS
SS1 Background	15.00	14.02	14.17	14.15	-0.0894	0.3000 CPS
SS2 Background	15.00	14.02	14.17	14.15	-0.0894	0.3000 CPS
Litho Density - D Wellsite Calibration - Tool Quality Control Information HV						
Master: Mar 3 15:50 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:30 1997						
LS Resolution Background	1000	1202	1207	1205	5.470	N/A V
SS1 Resolution Background	1000	1234	1242	1233	-9.662	N/A V
Litho Density - D Wellsite Calibration - Detectors Resolution From SIGI Measurments						
Master: Mar 3 15:51 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:30 1997						
LS Resolution Background	8.000	8.382	8.543	8.543	0.1810	N/A MM
SS1 Resolution Background	8.000	8.022	8.063	8.114	0.2092	N/A MM
Litho Density - D Wellsite Calibration - Caliper Calibration						
Before: Mar 27 21:29 1997						
Caliper Small Ring	203.2	N/A	249.2	N/A	N/A	N/A MM
Caliper Large Ring	304.8	N/A	304.8	N/A	N/A	N/A MM
Compensated Neutron - H Wellsite Calibration - Zero Measurement						
Master: Mar 26 02:18 1997 Before: Mar 27 21:00 1997 After: Mar 28 01:28 1997						
FNTC Background	25.29	25.29	25.46	25.96	0.4656	3.784 CPS
FFTC Background	25.29	25.45	26.14	27.65	-1.456	4.416 CPS
MicroLog - AA Wellsite Calibration - MLTA Caliper Calibration						
Before: Mar 27 21:29 1997						
MLT Caliper Small Ring	203.2	N/A	208.0	N/A	N/A	N/A MM
MLT Caliper Large Ring	304.8	N/A	305.0	N/A	N/A	N/A MM
MicroLog - AA Wellsite Calibration - MLTA Micro Inverse Calibration						
Before: Mar 27 21:29 1997						
Micro Inverse Zero	0	0	N/A	N/A	0.1000	OHMM
Micro Inverse Plus	5.000	N/A	5.052	N/A	0.1000	OHMM
MicroLog - AA Wellsite Calibration - MLTA Micro Normal Calibration						
Before: Mar 27 21:29 1997						
Micro Normal Zero	0	N/A	0.05225	N/A	N/A	0.1000 OHMM
Micro Normal Plus	6.720	N/A	6.434	N/A	N/A	0.1000 OHMM
Scintillation Gamma Ray - N Wellsite Calibration - Detector Calibration						
Before: Mar 26 02:34 1997						
Gamma Ray Low - Slug1	58.70	N/A	58.70	N/A	N/A	5.337 GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	15.00 GAPI

The CNT Master Calibration Was Done With The Following Parameters :

MTT Mineral Transmission YES / MSSC
Thermal Housing Size 85.725 MM

DUAL LATEROLOG - E / Equipment Identification

Primary Equipment:

Auxiliary Equipment:		
Dual Laterolog Electrode	DLE - E	775
Dual Laterolog Sonde	DLS - F	760
Dual Laterolog Housing	DLH - DB	
Dual Laterolog Cartridge	DLC - D	2797
Laterolog Control Module	LCM - AA	

DUAL LATEROLOG - E Wellsite Calibration
DLT ELECTRONICS CALIBRATION Laterolog Measurement

Phase	MEASURED LLD OHMM	Value	Phase	MEASURED LLS OHMM	Value
Before		21.67	Before		21.54
Bottom	21.62 Reference		Bottom	21.62 Reference	
After		31.67	After		31.32
Top	20.00 Minimum	40.00 Maximum	Top	20.00 Minimum	40.00 Maximum

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

DUAL LATEROLOG - D Wellsite Calibration
DLT Electronics Calibration Plus Measurement

Phase	Deep Current Plus UA	Value	Phase	Deep Voltage Plus MV	Value	Phase	Shallow Current Plus UA	Value	Phase	Shallow Voltage Plus MV	Value
Before		342.4	Before		13.84	Before		343.5	Before		13.78
Bottom	347.7 Reference		Bottom	13.93 Reference		Bottom	347.7 Reference		Bottom	13.93 Reference	
After		347.7	After		13.93	After		347.7	After		13.93
Top	327.7 Minimum	367.7 Maximum	Top	11.93 Minimum	15.93 Maximum	Top	327.7 Minimum	367.7 Maximum	Top	11.93 Minimum	15.93 Maximum

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

DUAL LATEROLOG - D Wellsite Calibration
DLT Electronics Calibration Zero Measurement

Phase	Deep Current Zero UA	Value	Phase	Deep Voltage Zero MV	Value	Phase	Shallow Current Zero UA	Value	Phase	Shallow Voltage Zero MV	Value
Before		-0.08878	Before		-0.007073	Before		-0.08878	Before		-0.006834
Bottom	0.000 Reference	-0.1296	Bottom	0.000 Reference	-0.007997	Bottom	0.000 Reference	-0.1296	Bottom	0.000 Reference	-0.007997
After		-0.1296	After		-0.007997	After		-0.1296	After		-0.007997
Top	0.000 Minimum	0.1000 Maximum	Top	0.000 Minimum	0.1000 Maximum	Top	0.000 Minimum	0.1000 Maximum	Top	0.000 Minimum	0.1000 Maximum

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

Litho Density - D / Equipment Identification

Primary Equipment:

Nuclear Services Cartridge	NSC - E	2755
Powered Gamma Detector	PGD - D	3902
Gamma Source Radioactive	GSR - J	2025
Auxiliary Equipment:		
Density Resistivity Sonde	DRS - E	5827
Density Resistivity Housing	DCH - MA	2750
Powered Detector Resistor	HCH - L	2855

Litho Density - D Wellsite Calibration
Background Measurement

Phase	LL Background CPS	Value	Phase	LU Background CPS	Value	Phase	LS Background CPS	Value	Phase	LD Background CPS	Value
Before		17.93	Before		69.97	Before		69.09	Before		52.51
Bottom	20.00 Reference	18.03	Bottom	70.00 Reference	69.97	Bottom	70.00 Reference	69.92	Bottom	70.00 Reference	52.47
After		18.03	After		69.97	After		69.92	After		52.50
Top	0.000 Minimum	40.00 Maximum	Top	0.000 Minimum	84.00 Maximum	Top	0.000 Minimum	84.00 Maximum	Top	0.000 Minimum	84.00 Maximum

Phase	LITH Background CPS	Value	Phase	SS1 Background CPS	Value	Phase	SS2 Background CPS	Value
Before		5.148	Before		14.02	Before		9.774
Master		5.200	Master		14.17	Master		9.797
After		5.200	After		14.17	After		9.797
Top	0.000 Minimum	7.000 Maximum	Top	0.000 Minimum	19.00 Maximum	Top	0.000 Minimum	13.00 Maximum

Master: Mar 3 15:50 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:30 1997

Litho Density - D Wellsite Calibration
Detectors Resolution From SIGI Measurments

Phase	LS Resolution Background	Value	Phase	SS1 Resolution Background	Value
Master		8.267	Master		8.022
Before		8.382	Before		8.063
After		8.543	After		8.114
Top	8.000 Minimum	11.50 Maximum	Top	8.000 Minimum	11.50 Maximum

Master: Mar 3 15:51 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:30 1997

Compensated Neutron - H / Equipment Identification

Primary Equipment:		
Compensated Neutron Cartridge	CNC - HA	406
Neutron Logging Source	NLS - KL	
Neutron Source Radioactive	NSR - F	
Neutron Detector with Alpha Source	CND - A	
Compensated Neutron Box	CNB - AB	
Auxiliary Equipment:		
Compensated Neutron Housing	CNH - A	3272
Neutron Calibration Tank	NCT - B	

Compensated Neutron - H Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.29	Master		29.45
Before		25.46	Before		29.14
After		25.96	After		27.68
	5.000 (Minimum) 25.29 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.45 (Nominal) 40.00 (Maximum)	

Master: Mar 26 02:18 1997 Before: Mar 27 21:30 1997

After: Mar 28 01:28 1997

MicroLog - AA / Equipment Identification

Primary Equipment:		
MicroLog - AA (sonde)	MLT - AA	109
Auxiliary Equipment:		

MicroLog - AA Wellsite Calibration

MLTA Micro Inverse Calibration

Phase	Micro Inverse Zero OHMM	Value	Phase	Micro Inverse Plus OHMM	Value
Before		0	Before		3.052
	-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			3.000 (Minimum) 5.000 (Nominal) 7.000 (Maximum)	

Before: Mar 27 21:29 1997

MicroLog - AA Wellsite Calibration

MLTA Micro Normal Calibration

Phase	Micro Normal Zero OHMM	Value	Phase	Micro Normal Plus OHMM	Value
Before		0.05225	Before		6.434
	-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			4.720 (Minimum) 6.720 (Nominal) 8.720 (Maximum)	

Before: Mar 27 21:29 1997

Scintillation Gamma-Ray - N / Equipment Identification

Primary Equipment:		
Scintillation Gamma Cartridge	SGC - SA	9542
Scintillation Gamma Detector	SGD - TAA	
Auxiliary Equipment:		
Scintillation Gamma Housing	SGH - K	2399
Gamma Source Radioactive	GSR - U/Y	692

Scintillation Gamma-Ray - N Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before			Before		58.70	Before		165.0
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			53.37 (Minimum) 58.70 (Nominal) 64.04 (Maximum)			150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)	

Before: Mar 26 02:36 1997

COMPANY	PARAMOUNT RESOURCES LTD.
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	3211.9 M
SCHLUMBERGER DEPTH	3222 M
DEPTH DRILLER	3222 M
KELLY BUSHING	433.32 M
DRILL FLOOR	433.02 M
GROUND LEVEL	426.8 M

Schlumberger

COMPENSATED NEUTRON LITHODENSITY TOOL

MICRO RESISTIVITY

N.E.B. COPY

D10 1817

COMPANY: PARAMOUNT RESOURCES LTD

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

9211-933-8-1

Schlumberger

PLATFORM EXPRESS
MICROLOG

PROVINCE:NORTHWEST TERRITORIES
Field: UNDEFINED
Location: LATITUDE: 60 15' 14.83"
Well: PARAMOUNT ET AL BOVIE LA
Company: PARAMOUNT RESOURCES LT

LATITUDE: 60 15' 14.83"
LONGITUDE: 122 59' 22.34"
UWI: 300C786020122460

Elev.: K.B. 433.32 M
G.L. 426.8 M
D.F. 433.02 M

Permanent Datum: GROUND LEVEL Elev.: 426.8 M
Log Measured From: KELLY BUSHING 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No. EL 369 | LATITUDE: 60 15' 14.83" | LONGITUDE: 122 59' 22.34"

	Run 1	Run 2	Run 3	Run 4
Logging Date	28-FEB-1997			
Run Number	ONE			
Depth Driller	1710 M			
Schlumberger Depth	1701 M			
Bottom Log Interval	1700.2 M			
Top Log Interval	454 M			
Casing Driller Size @ Depth	339.700 MM @ 453 M	@	@	
Casing Schlumberger	454 M			
Bit Size	311.000 MM			
Type Fluid In Hole	GEL CHEM			
MUD Density / Viscosity	1190 K/M3 / 119 S			
MUD Fluid Loss / PH	5.4 C3 / 9			
MUD Source Of Sample	FLOWLINE			
RM @ Measured Temperature	4.370 OHMM @ 14 DEGC	@	@	
RMF @ Measured Temperature	4.750 OHMM @ 10 DEGC	@	@	
RMC @ Measured Temperature	2.490 OHMM @ 11 DEGC	@	@	
Source RMF / RMC	MEASURED / MEASURED			
RM @ MRT / RMF @ MRT	2.198 @ 50 / 2.094 @ 50	@ / @	@ / @	@ / @
Maximum Recorded Temperatures	50 DEGC / 50			
Circulation Stopped / Time	26-FEB-1997 / 9:15			
Logger On Bottom / Time	28-FEB-1997 / 22:00			
Unit Number / Location	2025 / GRANDE PRAIRIE			
Recorded By	DAN GIMPELJ			
Witnessed By	COLIN BREDIN			

ALL INTERPRETATIONS ARE OPINION 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 BE LIABLE FOR ANY LOSS, COST, 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.

OTHER SERVICES1
OS1: HNGS-HMRT-CGR
OS2: TLD-CNL-GR-MCD
OS3:
OS4: LOGNET
OS5:
OS6:
COMMENTS: RUN NUMBER 1
TRIPLE DETECTOR DENSITY, NEUTRON AND GAMMA RAY RAN IN COMBINATION WITH MCD
ECCENTRALIZED HARDWARE RAN ON THE NEUTRON

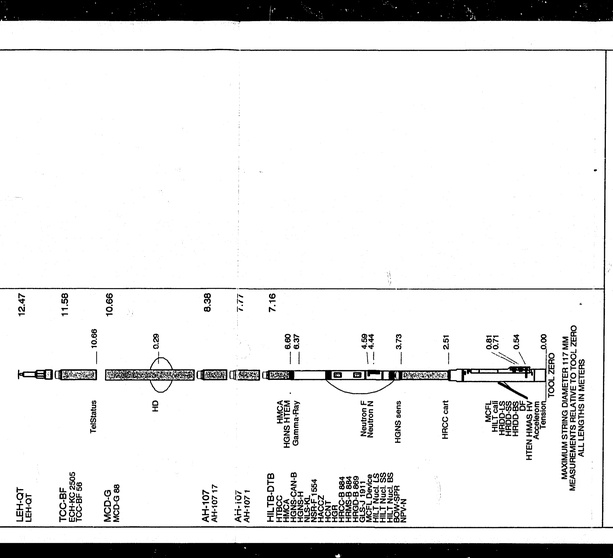
RM1 = 4.37 OHMM @ 98 DEGF, RM2 = 4.07 OHMM @ 90 DEGF, RM3 = 7.37 OHMM @ 81 DEGF
SERVICE ORDER #: 820743
PROGRAM VERSION: 700-712
LOGGED INTERVAL: START 454 M STOP 1700 M
OPERATORS: BILL REGLIN AND WAYNE JENNINGS

	RUN 1	RUN 2
SERVICE ORDER #:	820743	
PROGRAM VERSION:	700-712	
LOGGED INTERVAL	START 454 M	STOP 1700 M

EQUIPMENT DESCRIPTION

	RUN 1	RUN 2
SURFACE EQUIPMENT		
CSU	1237	
NGT-B		
CNB-AB		
HCC-AB	SS9	

DOWNHOLE EQUIPMENT



Output DLIS Files

DEFAULT	HILTB .036	FN:45	FIELD	28-FEB-1997 22:10	1702.9 M	424.9 M
CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10	1702.9 M	424.9 M

Integrated Hole/Cement Volume Summary

Hole Volume = 113.70 M3
Cement Volume = 55.15 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.9 M to 453.1 M using data channel(s) HCAL

OP System Version: 7C0-712

DBM

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
DORL	0.3 M	0.0 M	1631.7 22:10:33

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) 175 (MM) 425

Hole Diameter (HD) 175 (MM) 425

Caliper (HCAL) 175 (MM) 425

Gamma Ray (GR) 0 (GAPI) 150

Crossover From HMIN to HMNO

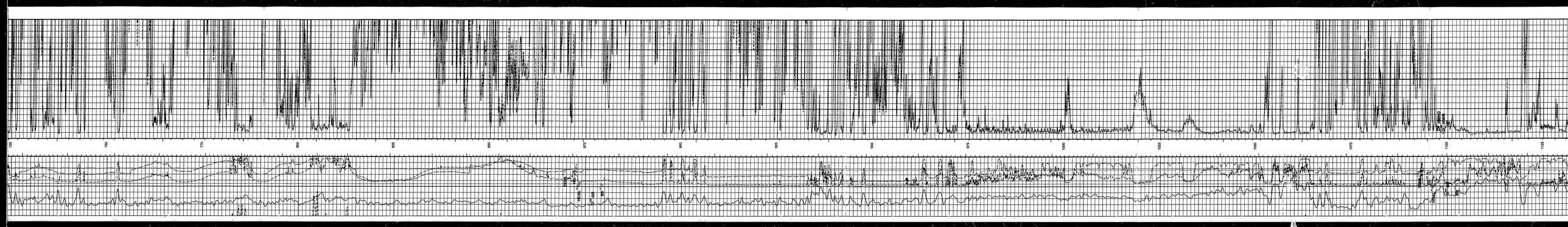
Computed Micro Normal (HMNO) 0 (OHMM) 40

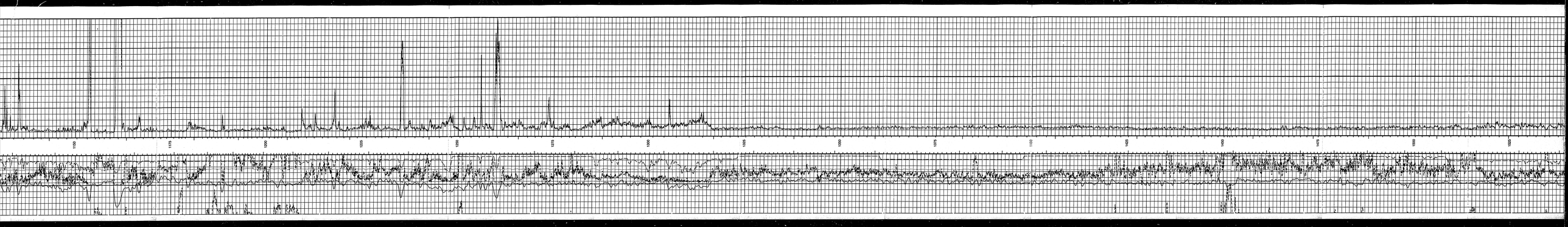
Computed Micro Inverse (HMIN) 0 (OHMM) 40

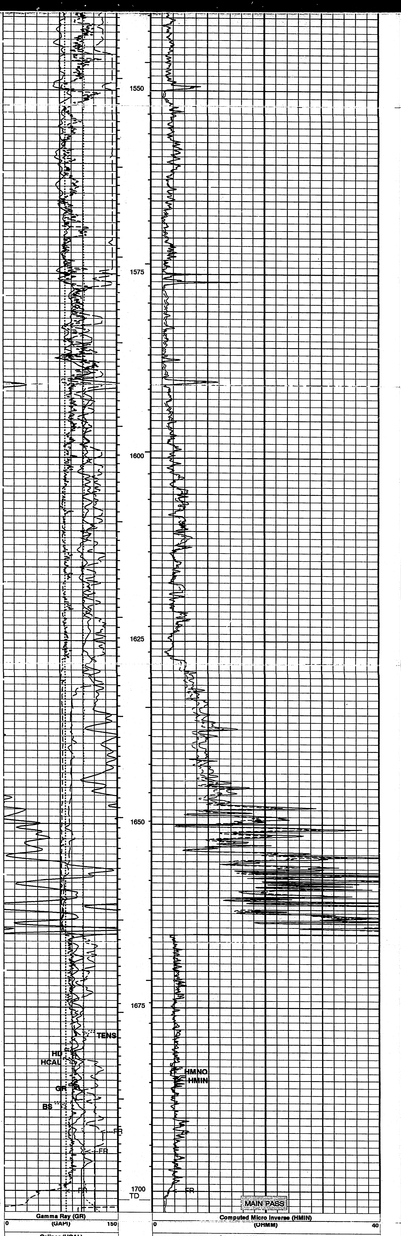
MAIN PASS

425
450
CASING
475
500
525
550
575
600
625
650
675
700

TENS
HD
HCAL
GR
BS
HMNO
HMIN


725
750
775
800
825
850
875
900
925
950
975
1000
1025
1050
1075
1100
1125
Heavy Rain
Light Rain
Heavy Rain
Light Rain
Heavy Rain
Light Rain


1150
1175
1200
1225
1250
1275
1300
1325
1350
1375
1400
1425
1450
1475
1500
1525



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

DBM

DLIS Name	Description	Value	
BS	Bit Size	311.000	MM
DORL	Depth Offset Repeat Analysis	0.0	M
HMPCO	HILT RTSC Measure points correction	NO	
HSTI	HILT Speed Correction Mode	TSCD_SpeedCorrect	
HSTN	HILT Tension Acceleration	100	
MPCP	MCFL Processing Mode	TSC	
RIAV	MCFL Resistivity Algorithm Version	1.07	

Format: MLT_40 Vertical Scale: 1:240 Graphics File Created: 28-FEB-1997 22:10

OP System Version: 7C0-712

DBM

Output DLIS Files

DEFAULT	HILTB .036	FN:45	FIELD	28-FEB-1997 22:10	
CUSTOMER	HILTB .036	FN:46	CUST	28-FEB-1997 22:10	

Output DLIS Files

DEFAULT	HILTB .035	FN:43	FIELD	28-FEB-1997 22:00	1702.8 M	1623.0 M
CUSTOMER	HILTB .035	FN:44	CUST	28-FEB-1997 22:00	1702.8 M	1622.9 M

Integrated Hole/Cement Volume Summary

Hole Volume = 5.60 M3
Cement Volume = 2.18 M3 (assuming 244.50 MM casing O.D.)
Computed from 1699.0 M to 1627.0 M using data channel(s) HCAL

OP System Version: 7C0-712

DBM

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

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	
BS	Bit Size	311.000	MM
DORL	Depth Offset Repeat Analysis	0.0	M
HMPCO	HILT RTSC Measure points correction	NO	
HSCH	HILT Speed Correction Mode	TSCD_SpeedCorrect	

HSCM		HLTT Sonde Correction Enable		NO	
HSTI		HLTT Linear Correction Points		TSCD_SpeedCorrect	
HSTI		STI Uses HSLT Accelerometer		YES	
MPOF		MCFL Processing Operation Mode		ON	
RIAV		MCFL Resistivity Algorithm Version		1.07	
Format: MLT_40	Vertical Scale: 1:240			Graphics File Created: 28-FEB-1997 22:00	

OP System Version: 7C0-712
DBM

Output DLIS Files

DEFAULT	HILTB .035	FN:63	FIELD	28-FEB-1997 22:00	
CUSTOMER	HILTB .035	FN:64	CUST	28-FEB-1997 22:00	

Input DLIS Files

DEFAULT	HILTB .040		FIELD	28-FEB-1997 23:12	1613.8 M	1434.5 M

Output DLIS Files

DEFAULT	HILTB .044	FN:56	FIELD	28-FEB-1997 23:56	
CUSTOMER	HILTB .044	FN:57	CUST	28-FEB-1997 23:56	

Integrated Hole/Cement Volume Summary

Hole Volume = 4.46 M3

Computed from 1613.8 M to 1434.7 M using data channel(s) HCAL HD

OP System Version: 7C0-712
DBM

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

BH Size (BHS) 175 (MM) 425

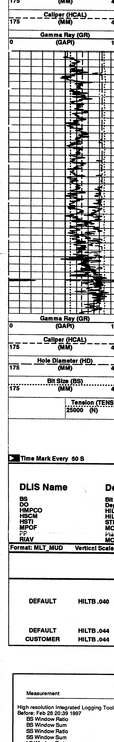
Hole Diameter (HD) 175 (MM) 425

Caliper (HCAL) 175 (MM) 425

Gamma Ray (GR) 0 (GAPI) 150

Computed Micro Normal (HMNO) 0 (OHMM) 4

Computed Micro Inverse (HMIN) 0 (OHMM) 4



Gamma Ray (GR) 0 (GAPI) 150

Caliper (HCAL) 175 (MM) 425

Hole Diameter (HD) 175 (MM) 425

BH Size (BHS) 175 (MM) 425

Tension (TENS) 25000 (N) 0

Computed Micro Inverse (HMIN) 0 (OHMM) 4

Computed Micro Normal (HMNO) 0 (OHMM) 4

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	
BS	Bit Size	311.000	MM
DO	Depth Offset	0.0	M
HMPCO	HILT RTBC Measure points correction	NO	
HSTI	HLTT Speed Correction Mode	TSCD_SpeedCorrect	
MPOF	MCFL Processing Operation Mode	YES	
PZ	Playback Processing Control	ON	
RIAV	MCFL Resistivity Algorithm Version	NORMAL	
		1.07	

Format: MLT_MUD Vertical Scale: 1:1200 Graphics File Created: 28-FEB-1997 22:56

OP System Version: 7C0-712
DBM

Input DLIS Files

DEFAULT	HILTB .040		FIELD	28-FEB-1997 23:12	1613.8 M 1434.5 M

Output DLIS Files

DEFAULT	HILTB .044	FN:56	FIELD	28-FEB-1997 23:56
CUSTOMER	HILTB .044	FN:57	CUST	28-FEB-1997 23:56

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limits	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary							
Before: Feb 28 20:39 1997							
SS Window Ratio	0.9900	N/A	0.9906	N/A	N/A	N/A	
SB Window Ratio	20250	N/A	20250	N/A	N/A	N/A	CPS
SS Window Ratio	0.4200	N/A	0.4199	N/A	N/A	N/A	
SB Window Ratio	11700	N/A	11699	N/A	N/A	N/A	CPS
LS Window Ratio	0.3072	N/A	0.3085	N/A	N/A	N/A	
LS Window Sum	1550	N/A	1547	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: Feb 28 20:42 1997							
FS PM High Voltage (Command)	2010	N/A	1954	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1903	N/A	1852	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1746	N/A	1697	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration							
Before: Feb 28 20:30 1997							
SS Crystal Resolution	12.51	N/A	17.58	N/A	N/A	N/A	%
SB Crystal Resolution	12.07	N/A	10.53	N/A	N/A	N/A	%
LS Crystal Resolution	8.656	N/A	8.564	N/A	N/A	N/A	%
High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration							
Before: Feb 28 03:07 1997							
Rev B0 Resistivity	3875	N/A	3882	N/A	N/A	N/A	OHMM
Rev B1 Resistivity	3830	N/A	3838	N/A	N/A	N/A	OHMM
Rev B2 Resistivity	3830	N/A	3837	N/A	N/A	N/A	OHMM
High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration							
Before: Feb 28 02:52 1997							
HILT Caliper Zero Measurement	203.2	N/A	200.0	N/A	N/A	N/A	MM
HILT Caliper Plus Measurement	304.8	N/A	304.7	N/A	N/A	N/A	MM
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration							
Before: Feb 28 02:21 1997							
Gamma Ray Background	30.00	N/A	31.89	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	172.9	N/A	172.9	N/A	N/A	10.72	GAPI
Gamma Ray (Calibrated)	165.0	N/A	165.0	N/A	N/A	10.00	GAPI
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement							
Master: Feb 8 13:36 1997 Before: Feb 28 02:59 1997							
CNTC Background	27.75	27.75	27.14	N/A	N/A	4.163	CPS
CFTC Background	28.77	28.77	28.02	N/A	N/A	4.016	CPS
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration							
Before: Feb 28 20:31 1997							
Z-Axis Acceleration	9.810	N/A	9.814	N/A	N/A	N/A	M/S2
High resolution Integrated Logging Tool-CTS Master Calibration - Inversion results							
Master: Feb 27 11:43 1997							
Rho Aluminium	2556	2557	--	--	--	--	K/M3
Rho Magnesium	1686	1685	--	--	--	--	K/M3
Pe Aluminium	2.570	2.570	--	--	--	--	
Pe Magnesium	0.760	0.757	--	--	--	--	
High resolution Integrated Logging Tool-CTS Master Calibration - Deviation Summary							
Master: Feb 27 11:46 1997							
SS Average Deviation	0	0.2147	--	--	--	--	%
SB Max Deviation	0	0.0760	--	--	--	--	%
SS Average Deviation	0	0.3409	--	--	--	--	%
SB Max Deviation	0	1.255	--	--	--	--	%
LS Average Deviation	0	0.4157	--	--	--	--	%
LS Max Deviation	0	1.194	--	--	--	--	%
High resolution Integrated Logging Tool-CTS Master Calibration - Tank Measurement							
Master: Feb 8 15:36 1997							
Thermal Near Corr. (Tank)	6031	5567	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2783	2357	--	--	--	--	CPS
CNTC/FTC (Tank)	2.159	2.362	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature -9.4 DEGC
Thermal Housing Size 85.725 MM

Logging Tool-CTS / Equipment Identification

Primary Equipment:

HILT high-Resolution Mechanical Sonde		HRMS - S	884
HILT Rev Gamma-ray Device		HRGD - S	889
HILT Nuclear Back-Scatter Detector		HILT -	
HILT Nuclear Short-Spacing Detector		HILT -	
HILT Nuclear Long-Spacing Detector		HILT -	
500mv Cylindrically Focused Log Device		MCFL -	
GR Logging Source		GLS - J	1911
HILT High Res. Control Cartridge		HRCC - S	884

Auxiliary Equipment:

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Stab Measurement Summary

Phase	SS Window Ratio	Value	Phase	SB Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.9906	Before		0.4199	Before		0.3085
	0.9900	1.038		0.4200	0.4662		0.2918	0.3072	0.3268
	Minimum	Nominal		Minimum	Nominal		Minimum	Nominal	Maximum

Phase	SS Window Sum CPS	Value	Phase	SB Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		20250	Before		11699	Before		1547
	19200	20250	21250	11110	11700	12290	1472	1550	1627
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 20:39 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Photo-multiplier High Voltages 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		1954	Before	[illegible]	1963	Before	[illegible]	1697
	1810	2010	1903	1800	2003	1946	1746	1940
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 20:42 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Crystal Quality Resolutions Calibration

Phase	SS Crystal Resolution %	Value	Phase	SB Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		12.66	Before		10.53	Before		8.564
	11.40	12.51	13.61	8.573	10.07	11.27	7.808	8.656	9.504
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 20:30 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
MCFL Calibration

Phase	Rev B0 Resistivity OHMM	Value	Phase	Rev B1 Resistivity OHMM	Value	Phase	Rev B2 Resistivity OHMM	Value
Before		3882	Before		3838	Before		3837
	3565	3875	4185	3524	3830	4136	3524	3830	4136
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 03:07 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement MM	Value	Phase	HILT Caliper Plus Measurement MM	Value
Before		200.0	Before		304.7
	192.4	203.2	214.0	288.8	304.8	321.0
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 02:52 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		31.89	Before		172.9	Before		165.0
	0	30.00	135.0	137.2	172.9	208.7	134.2	165.0	195.8
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Before: Feb 28 02:30 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.75	Master		26.77
	27.14		Before		28.02
	0.000	27.75	40.00	0.000	26.77	40.00
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Master: Feb 8 15:36 1997 Before: Feb 28 02:59 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration
Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before		9.814
	8.810	9.810	10.81
	Minimum	Nominal	Maximum

Before: Feb 28 13:51 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Inversion results

Phase	Rho Aluminium K/M3	Value	Phase	Rho Magnesium K/M3	Value
Master		2557	Master		1685
	2556	2556	1676	1685	1696
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Phase	Pe Aluminium	Value	Phase	Pe Magnesium	Value
Master		2.570	Master		0.757
	2.470	2.570	2.670	0.660	0.760	0.860
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Master: Feb 27 11:46 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Deviation Summary

Phase	SS Average Deviation %	Value	Phase	SB Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.2147	Master		0.0760	Master		C.4157
	0.0000	0	0.0000	0.000	0	1.000	0.000	0	1.000
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Phase	SS Max Deviation %	Value	Phase	SB Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		0.6760	Master	[illegible]	1.255	Master	[illegible]	1.194
	1.000	0	1.500	0.000	0	2.500	0.000	0	3.500
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Master: Feb 27 11:46 1997

High resolution Integrated Logging Tool-CTS Master Calibration
Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5567	Master	[illegible]	2357	Master	[illegible]	2.362
	5000	6031	7000	2075	2783	3125	2.120	2.159	2.540
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum

Master: Feb 8 15:36 1997

EXPORT EXPORTATION
RESTRICTED
RESTREINT

COMPANY	PARAMOUNT RESOURCES LTD
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	1700.2 M
SCHLUMBERGER DEPTH	1701 M
DEPTH DRILLER	1710 M
KELLY BUSHING	453.32 M
DRILL FLOOR	453.32 M
GROUND LEVEL	426.8 M

Schlumberger

PLATFORM EXPRESS

N.E.B. COPY

COMPANY PARAMOUNT RESOURCES LTD.

PARAMOUNT ET AL BOVIE LAKE C-76

WELL

PROVINCE NORTHWEST TERRITORIES

Well: Bell-133-E-1

Schlumberger **MICROLOG**

LATITUDE: 60 15' 14.83" — Elev.: K.B. 433.32 M
LONGITUDE: 102 59' 22.34" — G.L. 426.6 M
UWI: 300C79900201020450 — D.F. 433.02 M

Permanent Datum: GROUND LEVEL — Elev.: 426.6 M
Log Measured From: KELLY BUSHING — 6.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

	API Serial No. EL 399	LATITUDE 60 15' 14.83"	LONGITUDE 102 59' 22.34"
Logging Date	26-MAR-1987		
Run Number	TWO		
Depth Driller	3002 M		
Schlumberger Depth	3002 M		
Bottom Log Interval	3004 M		
Top Log Interval	2694 M		
Casing Driller Size @ Depth	177.800 MM @ 2694 M	@	@
Casing Schlumberger	178 MM		
Bit Size	152.400 MM		
Type Fluid In Hole	DEL CHEM		
Density / Viscosity	1135 KG/M3 56 S		
Fluid Loss / PH	7.2 C3 8.5		
Source Of Sample	FLOWLINE		
RM @ Measured Temperature	2.256 OHMM @ 16 DEGC	@	@
RMF @ Measured Temperature	0.900 OHMM @ 16 DEGC	@	@
RMC @ Measured Temperature	1.560 OHMM @ 14 DEGC	@	@
Source: RMF / RMC	MEASURED / MEASURED		
RM @ MRT / RMF @ MRT	0.473 @ 158 / 0.599 @ 158	@ / @	@ / @
Max. Recorded Temperature	158 DEGC		
Circulation Stopped / Time	20-MAR-1987 / 14:00		
Logger On Bottom / Time	27-MAR-1987 / 20:50		
Unit Number / Location	3068 / GRANDE PRAIRIE		
Recorded By	NICK MCINNES		
Witnessed By	COLIN BROWN		

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

MISCELLANEOUS TOOLS AT: DOWNHOLE EQUIPMENT — RUN 1 — DEPTH — RUN 2

DTC-A 24.41 — 24.41
DTCA-A 3507 — 21.87 — 21.87
DTA-A 3507 — 20.47 — 20.75
BGC-A 3507 — 18.03 — 19.09
BGCA-A 3507 — 16.78 — 16.76
MLT-AA 109 — 14.82 — 14.55
CNT-H 3507 — 13.08 — 13.08
NGC-A 3507 — 9.91 — 9.27
CAY-A 3507 — 8.66 — 8.66
LCD-A 3507 — 4.48 — 4.48
CNTD-A 3507
DSFD-A 3507
FDIL 3986
AH-169 — 0.00 — 0.00
DLIS — 0.00
DLIS Library — 0.00
DLIS Files — 0.00
TOOL ZERO — 0.00

Cartridge
Sonde
Tension Pad
MEASURES STRING WEIGHT AND MEASUREMENTS RELATIVE TO TOOL ZERO
TOOL ZERO AT BOTTOM OF SONDE

OTHER SERVICES
CBG
CBL
DIL
GR
SHDT

RUN 1 — RUN 2

DESCRIPTION

RIGGED UP ON 7" CASING.
CASING SCRAPED TO BOTTOM.
CASING SCRAPED TO BOTTOM.
RIGGED UP ON 5" CASING.

STOP — STOP

ALL MEASUREMENTS FROM KELLY BUSHING, BOARD OF CURRENCIES, PROVINCIAL ELECTRICAL CERTIFICATE
ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY 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.

RIGGED UP ON 7" CASING.
CASING SCRAPED TO BOTTOM.
CASING SCRAPED TO BOTTOM.
RIGGED UP ON 5" CASING.

RUN 1 — RUN 2

RIGGED UP ON 7" CASING.
CASING SCRAPED TO BOTTOM.
CASING SCRAPED TO BOTTOM.
RIGGED UP ON 5" CASING.

STOP — STOP

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY 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.

OTHER SERVICES
CBG
CBL
DIL
GR
SHDT

DESCRIPTION

RIGGED UP ON 7" CASING.
CASING SCRAPED TO BOTTOM.
CASING SCRAPED TO BOTTOM.
RIGGED UP ON 5" CASING.

DOWNHOLE EQUIPMENT

DTC-A 24.41 — 24.41
DTCA-A 3507 — Tattletale — 21.87 — 21.87
DTA-A 3507 — Gamma Ray — 20.47 — 20.75
BGC-A 3507 — 18.03 — 19.09
BGCA-A 3507 — BRIDGE MARK — 16.78 — 16.76
MLT-AA 109 — MLT-A Stat — 14.82 — 14.55
CNT-H 3507 — 13.08 — 13.08
NGC-A 3507 — CNTC — 9.91 — 9.27
CAY-A 3507 — 8.66 — 8.66
LCD-A 3507 — 4.48 — 4.48
CNTD-A 3507
DSFD-A 3507
FDIL 3986
AH-169 — Cartridge — 0.00 — 0.00
DLIS — Sonde — 0.00
DLIS Library — 0.00
DLIS Files — 0.00
TOOL ZERO — Tension Pad — 0.00

MISCELLANEOUS TOOLS AT: MEASURES STRING WEIGHT AND MEASUREMENTS RELATIVE TO TOOL ZERO
TOOL ZERO AT BOTTOM OF SONDE

RUN 1 — RUN 2

RIGGED UP ON 7" CASING.
CASING SCRAPED TO BOTTOM.
CASING SCRAPED TO BOTTOM.
RIGGED UP ON 5" CASING.

STOP — STOP

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY 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.

Input DLIS Files
DEFAULT DLIS AH PA.DLIS 2724.5+W 2324.5 M 1934.5 M
2724.5+W.pr2 2324.5 M

Output DLIS Files
DEFAULT DLIS AH PA.DLIS 2724.5+W.pr2 2324.5 M 1934.5 M

Integrated Hole/Cement Volume Summary
Hole Volume = 4.74 BBL
Cement Volume = 1.42 BBL
Computed from 2323.8 M to 2694.1 M using data obtained by Caliper

OP System Version: 7C0-713

PIP SUMMARY
Integrated Hole/Cement Volume: Pip Every 0.1 BBL
Integrated Hole/Cement Volume: Plot Every 0.1 BBL
--> Integrated Cement Volume: Pip Every 1 BBL

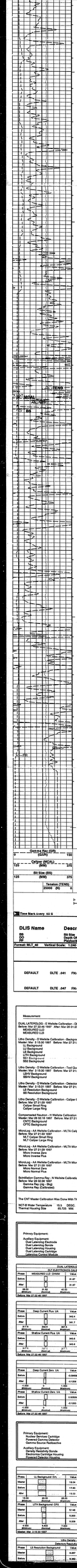
Time Mark Every 60 S
CASING (CCL) 0 — 100 — 200
Rel Bear (RB) 0 — 180 — 360
Deviation (DEVI) 0 — 10 — 20
Caliper (MCAL) 150 — 250 — 350
Gamma Ray (GR) 0 — 100 — 200

Area Filled Between Curves
Micro Inverse Resistivity (MINV) — Caliper (MCAL)
Micro Normal Resistivity (MNOR) — Caliper (MCAL)

MAIN PASS

CASING 2950 2955 2960 2975 3000

0 — 40
0 — 40
0 — 40



PDF SUMMARY

- Integrated Hole Volume Mirror Pip Every 0.1 M3
- Integrated Hole Volume Mirror Pip Every 0.5 M3
- Integrated Cement Volume Mirror Pip Every 0.1 M3
- Integrated Cement Volume Mirror Pip Every 1 M3

Time Mark every 60 S

Parameters

DLIS Name	Description	Value
BS	Bit Size	162.000 MM
DD	Drilling Fluid	Salt Gel
PP	Playback Processing	RECOMPUTE

Format: MLT_40 Vertical Scale: 1:240 Graphics File Created: 28-MAR-1997 00:38

OP System Version: 7C0-713

MSM

Input DLIS Files

DEFAULT	DLTE .041	FN:42	FIELD	27-MAR-1997 22:53	3224.9 M	1036.5 M

Output DLIS Files

DEFAULT	DLTE .047	FN:48	FIELD	28-MAR-1997 00:38	

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
DUAL LATEROLOG - E Wetsite Calibration - DLT ELECTRONICS CALIBRATION Laterolog Measurement							
Master, Mar 3 15:30 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:21 1997							
MEASURED LLD		31.67	N/A	31.67	0.1845	0.9000	OHMM
MEASURED LLS		31.02	N/A	31.34	-0.01824	0.8000	OHMM
Ultra Density - D Wetsite Calibration - Background Measurements							
Master, Mar 3 15:30 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:20 1997							
Lu Background		20.00	17.93	18.03	0.1055	1.000	CPS
LU Background		78.00	68.97	69.00	-0.1653	1.000	CPS
LSU Background		5.000	4.000	4.000	-0.0004231	0.5000	CPS
LSN Background		5.500	5.146	5.200	0.029105	0.5000	CPS
SSU Background		16.00	14.82	14.90	0.08611	0.8000	CPS
SSD Background		11.00	9.774	9.700	-0.05804	0.5000	CPS
Ultra Density - D Wetsite Calibration - Tool Quality Control Information HV							
Master, Mar 3 15:30 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:20 1997							
LSHV Background		1500	1198	1202	5.470	N/A	V
SSHV Background		1500	1224	1233	8.882	N/A	V
Ultra Density - D Wetsite Calibration - Detectors Resolution From BKG Measurements							
Master, Mar 3 15:30 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:20 1997							
LD Resolution Background		9.000	8.382	9.543	0.1810	N/A	
SS Resolution Background		8.000	6.922	8.905	6.114	0.2092	N/A
Ultra Density - D Wetsite Calibration - Caliper Calibration							
Before: Mar 27 21:20 1997							
Caliper Small Ring		203.2	N/A	249.2	N/A	N/A	MM
Caliper Large Ring		304.8	N/A	353.2	N/A	N/A	MM
Compensated Neutron - H Wetsite Calibration - Zero Measurement							
Master, Mar 26 05:18 1997 Before: Mar 27 21:00 1997 After: Mar 28 01:28 1997							
CFTC Background			25.20	25.46	25.86	0.4856	3.784	CPS
CNTC Background			29.40	29.40	29.14	27.66	-1.456	CPS
MicroLog - AA Wetsite Calibration - MLTA Caliper Calibration								
Before: Mar 27 21:39 1997								
MLT Caliper Small Ring			203.2	N/A	208.9	N/A	N/A	MM
MLT Caliper Large Ring			304.8	N/A	285.0	N/A	N/A	MM
MicroLog - AA Wetsite Calibration - MLTA Micro Inverse Calibration								
Before: Mar 27 21:39 1997								
Micro Inverse Zero			0	N/A	0	N/A	N/A	0.1000	OHMM
Micro Inverse Plus			5.000	N/A	5.050	N/A	N/A	0.1000	OHMM
MicroLog - AA Wetsite Calibration - MLTA Micro Normal Calibration								
Before: Mar 27 21:39 1997								
Micro Normal Zero			0	N/A	0.09225	N/A	N/A	0.1000	OHMM
Micro Normal Plus			6.700	N/A	6.454	N/A	N/A	0.1000	OHMM
Scintillation Gamma Ray - N Wetsite Calibration - Detector Calibration								
Before: Mar 27 21:39 1997								
Gamma Ray Low - Med			58.70	N/A	58.70	N/A	N/A	5.830	GAPI
Gamma Ray (Combined)			165.0	N/A	165.0	N/A	N/A	16.09	GAPI

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature 15.5 DEGC
Thermal Housing Size 85.725 MM

DUAL LATEROLOG - E / Equipment Identification

Primary Equipment:

Auxiliary Equipment:

Dual Latero Electrode	DLE - E	775
Dual Latero Sonde	DLS - T	760
Dual Latero Cartridge	DLC - D	2797
Latero-log Control Module	LCM - AA	

DUAL LATEROLOG - E Wetsite Calibration
DLT ELECTRONICS CALIBRATION Laterolog Measurement

Phase	MEASURED LLD OHMM	Value	Phase	MEASURED LLS OHMM	Value
Before		31.67	Before		31.34
After		31.67	After		31.30
	68.00 (Maximum)	20.00 (Minimum)		68.00 (Maximum)	20.00 (Minimum)

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

DUAL LATEROLOG - E Wetsite Calibration
Deep Current Pick UA Value

Phase	Deep Current Pick UA	Value	Phase	Deep Current Pick MV	Value	Phase	Groningen Voltage Pick MV	Value
Before		342.4	Before		10.84	Before		10.76
After		341.7	After		10.89	After		10.77
20.00 (Maximum)	342.4 (Value)	667.5 (Maximum)	0.000 (Minimum)	13.93 (Value)	11.23 (Maximum)	0.000 (Minimum)	4.800 (Value)	11.80 (Maximum)

DUAL LATEROLOG - E Wetsite Calibration
Shallow Current Pick UA Value

Phase	Shallow Current Pick UA	Value	Phase	Shallow Voltage Pick MV	Value
Before		343.5	Before		10.77
After		343.6	After		10.76
20.00 (Maximum)	343.5 (Value)	667.5 (Maximum)	0.000 (Minimum)	13.93 (Value)	11.23 (Maximum)

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

DUAL LATEROLOG - E Wetsite Calibration
DLT Electronics Calibration Zero Measurement

Phase	Deep Current Zero UA	Value	Phase	Deep Voltage Zero MV	Value	Phase	Groningen Voltage Zero MV	Value
Before		-0.09856	Before		-0.003773	Before		-0.009834
After		-0.1290	After		-0.007997	After		-0.007997
0.000 (Maximum)	0.000 (Value)	5.000 (Minimum)	0.000 (Maximum)	0.000 (Value)	5.000 (Minimum)	0.000 (Maximum)	0.000 (Value)	5.000 (Minimum)

Phase	Shallow Current Zero UA	Value	Phase	Shallow Voltage Zero MV	Value
Before		0.000543	Before		-0.01356
After		-0.1290	After		-0.01356
0.000 (Maximum)	0.000 (Value)	5.000 (Minimum)	0.000 (Maximum)	0.000 (Value)	5.000 (Minimum)

Before: Mar 27 22:46 1997 After: Mar 28 01:21 1997

Ultra Density - D / Equipment Identification

Primary Equipment:

Auxiliary Equipment:

Density Cartridge	NSC - E	2755
Powered Gamma Detector	PGD - D	3903
Gamma Source Radioactive	GSR - J	2029
Density Resistivity Sonde	DRS - E	5827
Electronics Cartridge Housing	ECH - MXA	2750
Powered Detector Housing	PDH - L	2995

Ultra Density - D Wetsite Calibration
Background Measurement

Phase	LL Background Cps	Value	Phase	LU Background CPS	Value	Phase	LS Background CPS	Value
Before		18.04	Before		69.97	Before		50.53
After		17.93	After		69.09	After		50.47
		13.03			55.00			53.50
18.00 (Maximum)	20.00 (Value)	20.01 (Minimum)	68.00 (Maximum)	78.00 (Value)	94.00 (Minimum)	45.00 (Maximum)	57.00 (Value)	79.00 (Minimum)

Phase	LITH Background CPS	Value	Phase	SSU Background CPS	Value	Phase	SSD Background CPS	Value
Master		5.148	Master		14.92	Master		8.774
After		5.200	After		14.17	Before		8.797
		5.228			14.13	After		8.790
4.000 (Maximum)	5.000 (Value)	7.000 (Minimum)	13.00 (Maximum)	14.00 (Value)	16.00 (Minimum)	7.000 (Maximum)	8.000 (Value)	11.00 (Minimum)

Master: Mar 3 15:30 1997 Before: Mar 27 21:31 1997 After: Mar 28 01:20 1997

Ultra Density - D Wetsite Calibration
Detectors Resolution From BKG Measurements

Phase	LS Resolution Background	Value	Phase	SS Resolution Background	Value
Master		9.207	Master		8.922
After		9.543	After		8.905

Before: Mar 27 21:31 1997

After			9.543	After			9.114	
5.000 (Minimum)	8.000 (Nominal)	11.50 (Maximum)		5.000 (Minimum)	8.000 (Nominal)	11.50 (Maximum)		

Master: Mar 3 15:31 1997 Before: Mar 27 21:31 1997

After: Mar 28 01:30 1997

Compensated Neutron - H / Equipment Identification

Primary Equipment:		
Compensated Neutron Cartridge	CNC - HA	406
Neutron Logging Source	NLS - KL	
Neutron Source Radioactive	NSR - F	
Neutron Detector with Alpha Source	CND - A	
Compensated Neutron Box	CNB - AB	
Auxiliary Equipment:		
Compensated Neutron Housing	CNH - A	3272
Neutron Calibration Tank	NCT - B	

Compensated Neutron - H Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.29	Master		29.45
Before		25.46	Before		29.14
After		25.98	After		27.68
5.000 (Minimum) 25.29 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 29.45 (Nominal) 40.00 (Maximum)		

Master: Mar 26 02:18 1997 Before: Mar 27 21:30 1997

After: Mar 28 01:28 1997

MicroLog - AA / Equipment Identification

Primary Equipment:		
MicroLog - AA (sonde)	MLT - AA	109
Auxiliary Equipment:		

MicroLog - AA Wellsite Calibration

MLTA Micro Inverse Calibration

Phase	Micro Inverse Zero OHMM	Value	Phase	Micro Inverse Plus OHMM	Value
Before		0	Before		3.052
-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			3.000 (Minimum) 5.000 (Nominal) 7.000 (Maximum)		

Before: Mar 27 21:29 1997

MicroLog - AA Wellsite Calibration

MLTA Micro Normal Calibration

Phase	Micro Normal Zero OHMM	Value	Phase	Micro Normal Plus OHMM	Value
Before		0.05225	Before		6.434
-1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			4.720 (Minimum) 6.720 (Nominal) 8.720 (Maximum)		

Before: Mar 27 21:29 1997

Scintillation Gamma-Ray - N / Equipment Identification

Primary Equipment:		
Scintillation Gamma Cartridge	SGC - SA	9542
Scintillation Gamma Detector	SGD - TAA	
Auxiliary Equipment:		
Scintillation Gamma Housing	SGH - K	2399
Gamma Source Radioactive	GSR - U/Y	692

Scintillation Gamma-Ray - N Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		8.980	Before		58.70	Before		165.0
0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			53.37 (Minimum) 58.70 (Nominal) 64.04 (Maximum)			150.0 (Minimum) 165.0 (Nominal) 180.0 (Maximum)		

Before: Mar 26 02:36 1997

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
APR - 8 1997

COMPANY	PARAMOUNT RESOURCES LTD.	BOTTOM LOG INTERVAL	3204 M
		SCHLUMBERGER DEPTH	3222 M
WELL	PARAMOUNT ET AL BOVIE LAKE C-76	DEPTH DRILLER	3222 M
FIELD	UNDEFINED	KELLY BUSHING	433.32 M
PROVINCE	NORTHWEST TERRITORIES	DRILL FLOOR	433.02 M
		GROUND LEVEL	426.8 M

Schlumberger

MICROLOG

DIPMETER/
CALIPER

N.E.B. COPY

9211-F23-F-1

SCHLUMBERGER

FMI Tadpole Plot

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

COUNTRY:

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
APR - 2 1997

Date Processed: 26-MAR-1997 Date Logged: 25-MAR-1997

Job Number: 4381 Processed at: Calgary

Well Location: LATITUDE: 60 10' 14.89"

Latitude: Longitude:

Elevations: KB: 433.32m DF: 433.02m GL: 426.8m

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LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT

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4211-P33-2-1

Schlumberger

DIPMETER
COMPUTED RESULT

MSD

* A Mark of Schlumberger

Intervals Processed: 3224 - 2880M

Company: PARAMOUNT RESOURCES LTD.

Well: PARAMOUNT ET AL BOVIE LAKE C-76

Field: UNDEFINED

Location: LAT:60 15'LON:122 59'59'

Run: TWO

Depth Units: METRES Processing No: DIPV2.4381

Date Logged: 25-MAR-1997 Date Processed: 26-MAR-1997

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
APR - 2 1997

REMARKS:

MAGNETIC DECLINATION = 27 DEGREES EAST
CORRELATION PARAMETERS: MSD - 1.2 M, X-03 M, X 45 DEGREES

DEVIATION FACTOR = +5
BIAS CORRECTION APPLIED

DB4A
DB4
DB3A
DB3
DB2A
DB2
DB1A
DB1

N E S W

Solid Dip Only
Solid Dip = Good Quality
(DEG)
90
0

RESISTIVITY → INCREASES

GR (GAPI) 150
0

CAL (MM) 375
125

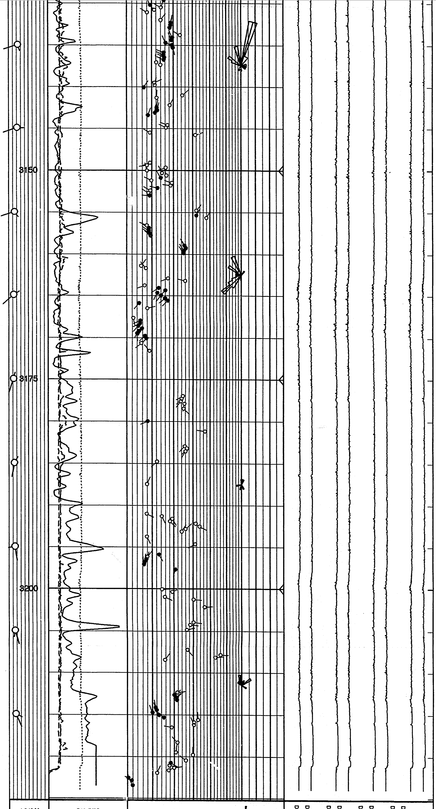
CAL (MM) 375
125

HAM #4
Pad 1
Pad 2

DEVI 10
0 (DEG)

LOG # 4

3220 3200 3175 3150 3125 3100 3075 3050 3025 3000 2975 2950 2925 2900 2875



1:240 M

Hole Az

Pad 1 Az

DEVI 0. 10. (DEG)

C13 (MM) 125. 375.

C24 (MM) 125. 375.

GR (GAPI) 0. 150.

RESISTIVITY ----> INCREASES

Solid Dip = Good Quality

Solid Dip Only

0. (DEG) 90.

N W E S

DELA DI1 DELA DI2 DELA DI3 DELA DI4 DELA DI5 DELA DI6

EMEX CORRECTION APPLIED

DECIMATION FACTOR = 16

RESISTIVITY ----> INCREASES

Hole Az

Pad 1 Az

DEVI 0. 10. (DEG)

GR (GAPI) 0. 150.

C24 (MM) 125. 375.

C13 (MM) 125. 375.

1:240 M

Solid Dip = Good Quality

Solid Dip Only

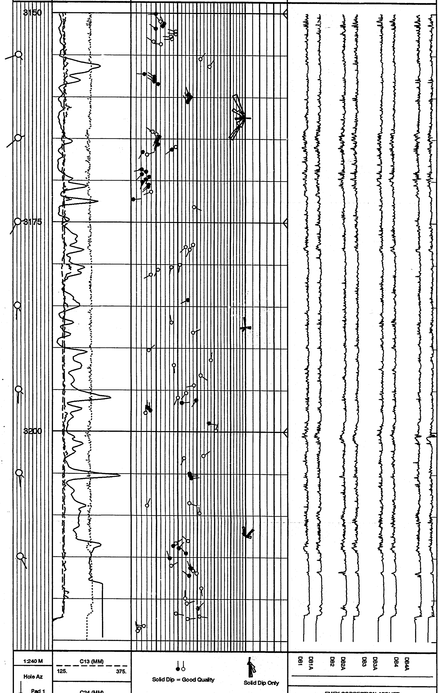
0. (DEG) 90.

N W E S

DECIMATION FACTOR = 16

EMEX CORRECTION APPLIED

DELA DI1 DELA DI2 DELA DI3 DELA DI4 DELA DI5 DELA DI6



1:240 M

C13 (MM) 125. 375.

Hole Az

Pad 1 Az

C24 (MM) 125. 375.

DEVI 0. 10. (DEG)

GR (GAPI) 0. 150.

RESISTIVITY ----> INCREASES

Solid Dip = Good Quality

Solid Dip Only

0. (DEG) 90.

N W E S

DELA DI1 DELA DI2 DELA DI3 DELA DI4 DELA DI5 DELA DI6

EMEX CORRECTION APPLIED

DECIMATION FACTOR = 16

MISCELLANEOUS

N.E.R. COPY

13/7

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

PROVINCE: NORTHWEST TERRITORIES

PROVINCE: NORTHWEST TERRITORIES
Location: LATITUDE: 60 15' 14.83"
Well: PARAMOUNT ET AL BOVIE LAKE C-76
Company: PARAMOUNT RESOURCES LTD.

94I-P33-8-1

Schlumberger

FORMATION MICROSCANNER

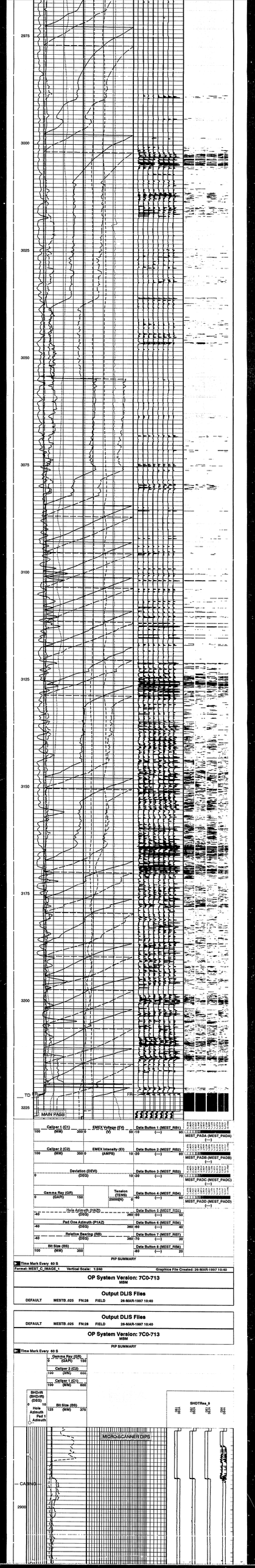
LOCATION

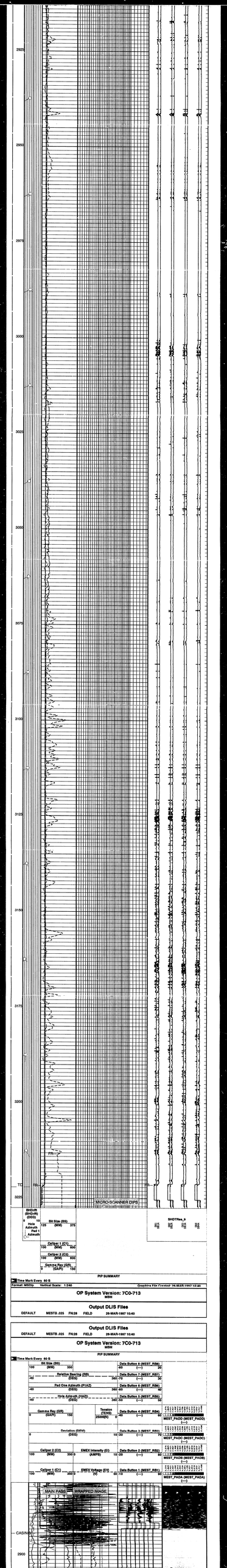
LATITUDE: 60 15' 14.83" | Elev.: K.B. 433.32 M
LONGITUDE: 102 59' 22.34" | G.L. 429.8 M
UWI: 300C780020122450 | D.F. 433.02 M

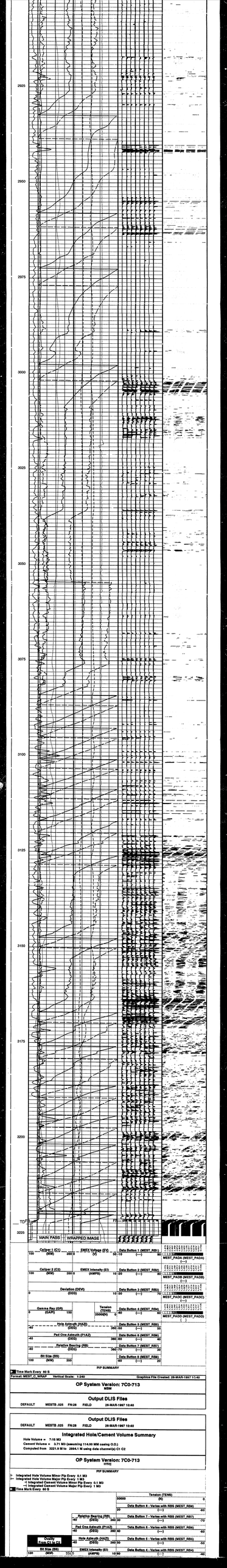
Permanent Datum: GROUND LEVEL | Elev.: 429.8 M
Log Measured From: KELLY BUSHING | 4.5 M above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	LATITUDE	LONGITUDE
EL 969	60 15' 14.83"	102 59' 22.34"

| | | |


2975
3000
3025
3050
3075
3100
3125
3150
3175
3200
TD
3225
MAIN PASS
Caliper 1 (C1) (MM) 100 350
EMEX Voltage (EV) (V) 0 65
Data Button 1 (MEST_RB1) 10 70 (---)
MEST_PADA (MEST_PADA) (---)
Caliper 2 (C2) (MM) 100 350
EMEX Intensity (EI) (AMPS) 0 10
Data Button 2 (MEST_RB2) -20 20 (---)
MEST_PADB (MEST_PADB) (---)
Deviation (DEVI) (DEG) 0 10
Data Button 3 (MEST_RB3) -30 70 (---)
MEST_PADC (MEST_PADC) (---)
Gamma Ray (GR) (GAPI) 0 150
Tension (TTENS) 25000(N) 0
Data Button 4 (MEST_RB4) -60 60 (---)
MEST_PADD (MEST_PADD) (---)
Hole Azimuth (P1AZ) (DEG) -40 360
Data Button 5 (MEST_RB5) -60 60 (---)
Pad One Azimuth (P1AZ) (DEG) -40 360
Data Button 6 (MEST_RB6) -60 60 (---)
Relative Bearing (RB) (DEG) -40 360
Data Button 7 (MEST_RB7) -70 70 (---)
Bit Size (BS) (MM) 100 350
Data Button 8 (MEST_RB8) -60 60 (---)
PIP SUMMARY
Time Mark Every 60 S
Format: MEST_C_IMAGE_1
Vertical Scale: 1:240
Graphics File Created: 26-MAR-1997 10:40
OP System Version: 7C0-713
MSM
Output DLIS Files
DEFAULT
MESTB .025
FN:28
FIELD
26-MAR-1997 10:40
Output DLIS Files
DEFAULT
MESTB .025
FN:28
FIELD
26-MAR-1997 10:40
OP System Version: 7C0-713
MSM
PIP SUMMARY
Time Mark Every 60 S
Gamma Ray (GR) (GAPI) 0 150
Caliper 2 (C2) (MM) 100 600
Caliper 1 (C1) (MM) 100 600
BHDrift (BHDrift) (DEG) 0 10
Hole Azimuth Pad 1 Azimuth
Bit Size (BS) (MM) 225 225
SHDTRes_9
MICRO-SCANNER DIPS
CASING
2900


2925
2950
2975
3000
3025
3050
3075
3100
3125
3150
3175
3200
3225
TD
MICRO-SCANNER DIPS
Hole Azimuth
Pad 1 Azimuth
Caliper 1 (C1)
Caliper 2 (C2)
Gamma Ray (GR)
SHOTRate_h
PIP SUMMARY
Time Mark Every 60 S
Vertical Scale: 1:240
Graphics File Printed: 26-MAR-1997 10:40
OP System Version: 7C0-713
MBM
Output DLIS Files
DEFAULT
MESTB.025
FN:28
FIELD
26-MAR-1997 10:40
Bit Size (BS)
Relative Bearing (RB)
Pad One Azimuth (P1AZ)
Hole Azimuth (HAZI)
Gamma Ray (GR)
Deviation (DEVI)
Caliper 2 (C2)
Caliper 1 (C1)
Tension (TENS)
EMEX Intensity (EI)
EMEX Voltage (EV)
Data Button 8 (MEST_RB8)
Data Button 7 (MEST_RB7)
Data Button 6 (MEST_RB6)
Data Button 5 (MEST_RB5)
Data Button 4 (MEST_RB4)
Data Button 3 (MEST_RB3)
Data Button 2 (MEST_RB2)
Data Button 1 (MEST_RB1)
MEST_PADD (MEST_PADD)
MEST_PADC (MEST_PADC)
MEST_PADB (MEST_PADB)
MEST_PADA (MEST_PADA)
MAIN PASS
WRAPPED IMAGE
CASING
2900



OP System Version: 7C0-713

MSM

Output DLIS Files

DEFAULT	MESTB.025	FN:28	FIELD	26-MAR-1997 10:40

Integrated Hole/Cement Volume Summary

Hole Volume = 7.05 M3
Cement Volume = 3.71 M3 (assuming 114.00 MM casing O.D.)
Computed from 3221.9 M to 2894.1 M using data channel(s) C1 C2

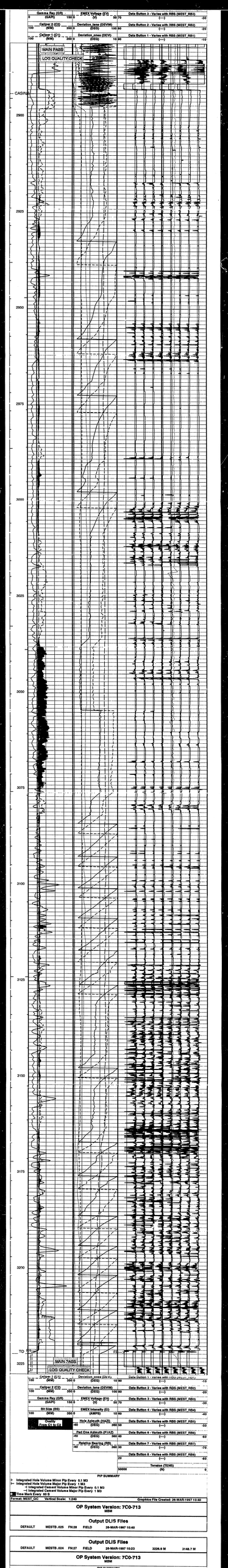
OP System Version: 7C0-713

MSM

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)
(LBF)
Data Button 8 - Varies with RBS (MEST_RB8)
Relative Bearing (RB)
(DEG)
Data Button 7 - Varies with RBS (MEST_RB7)
Pad One Azimuth (P1AZ)
(DEG)
Data Button 6 - Varies with RBS (MEST_RB6)
Hole Azimuth (HAZI)
(DEG)
Data Button 5 - Varies with RBS (MEST_RB5)
RI Size (SIZ)
(MM)
EMEX Intensity (EI)
(AMPS)
Data Button 4 - Varies with RBS (MEST_RB4)



OP System Version: 7C0-713
MSM

Output DLIS Files

DEFAULT	MESTB .025	FN:28	FIELD	26-MAR-1997 10:40

Output DLIS Files

DEFAULT	MESTB .024	FN:27	FIELD	26-MAR-1997 10:33	3226.6 M	3148.7 M

OP System Version: 7C0-713
MSM

PIP SUMMARY

Time Mark Every 60 S

Rel Brng (RB) (MM) 100 330
Data Button 8 (MEST_RB8) 0 (---) 20
Relative Bearing (RB) (DEG) 40 360
Data Button 7 (MEST_RB7) 360 70 (---) 30
Pad One Azimuth (P1AZ) (DEG) 40 360
Data Button 6 (MEST_RB6) 360 40 (---) 60
Hole Azimuth (HAZI) (DEG) 42 360
Data Button 5 (MEST_RB5) 360 50 (---) 50
Gamma Ray (GR) (GAPI) 0 150
Tension (TENS) (lb) 35000(N) 0
Data Button 4 (MEST_RB4) 40 (---) 60
MEST_PADD (MEST_PADD)
Deviation (DEVI) (DEG) 0 10
Data Button 3 (MEST_RB3) 30 (---) 70
MEST_PADC (MEST_PADC)
Caliper 2 (C2) (MM) 100 200
EMEX Intensity (EI) (AMPS) 10 20
Data Button 2 (MEST_RB2) 20 (---) 80
MEST_PADB (MEST_PADB)
Caliper 1 (C1) (MM) 100 330
EMEX Voltage (EV) (V) 60 70
Data Button 1 (MEST_RB1) 60 (---) 90
MEST_PADA (MEST_PADA)

3150
<-- Lateral Change
REPEAT SECTION
WRAPPED IMAGE
3175
3200
TD
3225
REPEAT SECTION
WRAPPED IMAGE

Caliper 1 (C1) (MM) 100 330
EMEX Voltage (EV) (V) 60 70
Data Button 1 (MEST_RB1) 60 (---) 90
MEST_PADA (MEST_PADA)
Caliper 2 (C2) (MM) 100 330
EMEX Intensity (EI) (AMPS) 10 20
Data Button 2 (MEST_RB2) 20 (---) 80
MEST_PADB (MEST_PADB)
Deviation (DEVI) (DEG) 0 10
Data Button 3 (MEST_RB3) 30 (---) 70
MEST_PADC (MEST_PADC)
Gamma Ray (GR) (GAPI) 0 150
Tension (TENS) (lb) 35000(N) 0
Data Button 4 (MEST_RB4) 40 (---) 60
MEST_PADD (MEST_PADD)
Hole Azimuth (HAZI) (DEG) 42 360
Data Button 5 (MEST_RB5) 360 50 (---) 50
Pad One Azimuth (P1AZ) (DEG) 40 360
Data Button 6 (MEST_RB6) 360 40 (---) 60
Relative Bearing (RB) (DEG) 40 360
Data Button 7 (MEST_RB7) 360 70 (---) 30
Rel Brng (RB) (MM) 100 330
Data Button 8 (MEST_RB8) 0 (---) 20

PIP SUMMARY

Time Mark Every 60 S
Format: MEST_C_WRAP Vertical Scale: 1:240
Graphics File Created: 26-MAR-1997 10:23

OP System Version: 7C0-713
MDM

Output DLIS Files

DEFAULT	MESTB .024	FN:27	FIELD	26-MAR-1997 10:23

Output DLIS Files

DEFAULT	MESTB .024	FN:27	FIELD	26-MAR-1997 10:23	3226.9 M	3148.7 M

Integrated Hole/Cement Volume Summary

Hole Volume = 1.49 M3
Cement Volume = 0.74 M3 (assuming 114.00 MM casing O.D.)
Computed from 3221.9 M to 3148.7 M using data channel(s) C1 C2

OP System Version: 7C0-713
MDM

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 0.1 M3
Integrated Hole Volume Major Pip Every 1 M3
-I Integrated Cement Volume Minor Pip Every 0.1 M3
-I Integrated Cement Volume Major Pip Every 1 M3
Time Mark Every 60 S

Tension (TENS) (lb) 50000 0
Data Button 8 - Varies with RBS (MEST_RB8) 0 20
Relative Bearing (RB) (DEG) 40 360
Data Button 7 - Varies with RBS (MEST_RB7) 360 70
Pad One Azimuth (P1AZ) (DEG) 40 360
Data Button 6 - Varies with RBS (MEST_RB6) 360 40
Quality Flags On/Off
Hole Azimuth (HAZI) (DEG) 42 360
Data Button 5 - Varies with RBS (MEST_RB5) 360 50
Rel Size (RS) (MM) 100 330
EMEX Intensity (EI) (AMPS) 10 90
Data Button 4 - Varies with RBS (MEST_RB4) 40
Gamma Ray (GR) (GAPI) 0 150
EMEX Voltage (EV) (V) 60 70
Data Button 3 - Varies with RBS (MEST_RB3) 30
Caliper 2 (C2) (MM) 100 330
Deviation_sine (DEVIM) (DEG) 10 90
Data Button 2 - Varies with RBS (MEST_RB2) 20
Caliper 1 (C1) (MM) 100 330
Deviation_cose (DEVI) (DEG) 10 90
Data Button 1 - Varies with RBS (MEST_RB1) 10

3150
<-- Lateral Change
REPEAT SECTION
LOG QUALITY CHECK
3175
3200
TD
3225
REPEAT SECTION
LOG QUALITY CHECK

Caliper 1 (C1) (MM) 100 330
Deviation_cose (DEVI) (DEG) 10 90
Data Button 1 - Varies with RBS (MEST_RB1) 10
Caliper 2 (C2) (MM) 100 330
Deviation_sine (DEVIM) (DEG) 10 90
Data Button 2 - Varies with RBS (MEST_RB2) 20
Gamma Ray (GR) (GAPI) 0 150
EMEX Voltage (EV) (V) 60 70
Data Button 3 - Varies with RBS (MEST_RB3) 30
Rel Size (RS) (MM) 100 330
EMEX Intensity (EI) (AMPS) 10 90
Data Button 4 - Varies with RBS (MEST_RB4) 40
Quality Flags On/Off
Hole Azimuth (HAZI) (DEG) 42 360
Data Button 5 - Varies with RBS (MEST_RB5) 360 50
Pad One Azimuth (P1AZ) (DEG) 40 360
Data Button 6 - Varies with RBS (MEST_RB6) 360 40
Relative Bearing (RB) (DEG) 40 360
Data Button 7 - Varies with RBS (MEST_RB7) 360 70
Rel Brng (RB) (MM) 100 330
Data Button 8 - Varies with RBS (MEST_RB8) 0 20
Tension (TENS) (lb) 50000 0

PIP SUMMARY

Integrated Hole Volume Minor Pip Every 0.1 M3
Integrated Hole Volume Major Pip Every 1 M3
-I Integrated Cement Volume Minor Pip Every 0.1 M3
-I Integrated Cement Volume Major Pip Every 1 M3
Time Mark Every 60 S
Format: MEST_OC Vertical Scale: 1:240
Graphics File Created: 26-MAR-1997 10:23

OP System Version: 7C0-713
MDM

Output DLIS Files

DEFAULT	MESTB .024	FN:27	FIELD	26-MAR-1997 10:23

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Micro Electrical Scanner - B (Slim) Wellsite Calibration - Caliper Calibration							
Before: Mar 26 08:28 1997							
Caliper 1 Zero Measurement	203.2	N/A	209.7	N/A	N/A	N/A	MM
Caliper 2 Zero Measurement	203.2	N/A	207.8	N/A	N/A	N/A	MM
Caliper 1 Plus Measurement	304.8	N/A	314.3	N/A	N/A	N/A	MM
Caliper 2 Plus Measurement	304.8	N/A	312.2	N/A	N/A	N/A	MM
Micro Electrical Scanner - B (Slim) Wellsite Calibration - CIRCUIT ACCELEROMETER PROM HAS BEEN READ CORRECTLY							
Before: Mar 26 08:28 1997							
TEMPERATURE REFERENCE :	N/A	N/A	20	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	91	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	11	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	395	N/A	N/A	N/A	
Micro Electrical Scanner - B (Slim) Wellsite Calibration - EPS MAGNETOMETER PROM HAS BEEN READ CORRECTLY							
Before: Mar 26 08:28 1997							
TEMPERATURE REFERENCE :	N/A	N/A	80	N/A	N/A	N/A	DEGC
YEAR OF CALIBRATION :	N/A	N/A	91	N/A	N/A	N/A	
MONTH OF CALIBRATION :	N/A	N/A	11	N/A	N/A	N/A	
SERIAL NUMBER :	N/A	N/A	24	N/A	N/A	N/A	
Scintillation Gamma Ray - II Wellsite Calibration - Detector Calibration							
Before: Mar 26 02:36 1997							
Gamma Ray Lig - Rig)	58.70	N/A	58.70	N/A	N/A	5.337	GAPI
Gamma Ray (Calibrated)		N/A	165.0	N/A	N/A	15.00	GAPI

Micro Electrical Scanner - B (Slim) / Equipment Identification

Primary Equipment:
MEST Sonde - A
MEST Preamplifier Cartridge - AB
GPIT Cartridge - AC
MEST Aquisition Cartridge - A

MEDS - B
MEPC - AB
GPIC - AC
MEAC - A

Auxiliary Equipment:
MEST Preamplifier Cartridge Housing
MEST Aquisition Cartridge Housing (SP)

MEPH - A
MEAH - B

Scintillation Gamma Ray - N / Equipment Identification

Primary Equipment:
Scintillation Gamma Cartridge
Scintillation Gamma Detector

SGC - SA
SGD - TAA

3542

Auxiliary Equipment:
Scintillation Gamma Housing
Gamma Source Reflasahe

SGH - K
GSR - UV

2260
Ci
GR

Scintillation Gamma Ray - II Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background (GAP)	Value	Phase	Gamma Ray Lig - (Rig) (GAP)	Value	Phase	Gamma Ray (Calibrated) (GAP)	Value
Before		8.992	Before		58.70	Before		165.0
	30.00 Minimum	7.263 Average	63.37 Maximum	58.70 Average	64.04 Standard Deviation	150.0 Minimum	165.0 Average	14.74 Standard Deviation

Before: Mar 26 02:36 1997

NATIONAL ENERGY BOARD
EXAMINED / EXAMINÉE
APR - 2 1997

COMPANY	PARAMOUNT RESOURCES LTD.
WELL	PARAMOUNT ET AL BOVIE LAKE C-76
FIELD	UNDEFINED
PROVINCE	NORTHWEST TERRITORIES

BOTTOM LOG INTERVAL	3221.5 M
SCHLUMBERGER DEPTH	3222 M
DEPTH DRILLER	3222 M
KELLY BUSHING	455.32 M
DRILL FLOOR	453.02 M
GROUND LEVEL	426.8 M

Schlumberger

FORMATION MICROSCANNER

N.E.B. COPY

(R17

DIR-P83-8-1

Schlumberger

FMI Images

COMPANY: PARAMOUNT RESOURCES LTD.

WELL: PARAMOUNT ET AL BOVIE LAKE C-76

FIELD: UNDEFINED

COUNTRY:

AUTOMATED BY: APR - 2 1997

Date Processed:	26-MAR-1997	Date Logged:	25-MAR-1997
Job Number:	4381	Processed at:	Calgary
Well Location:	LATITUDE: 60 15' 14.83"		
Latitude:		Longitude:	
Elevations:	KB: 433.32m	DF: 433.02m	GL: 426.8m

FOLD HERE

The well data, logged and supplied, remains the property of the customer.

All interpretations, or opinions based on inferences from electrical or other measurements and the original work on processing or conversion of any interpretation, shall not be held responsible for any errors, omissions, or liability for any loss, damage or expense incurred by reason of any person's use or reliance on any interpretation. These interpretations are also subject to our General Terms and Conditions as set out in our current price schedule.

Open Fracture Dip (Invaded) 0 Deg 90

Fractures Dip (Invaded) 0 Deg 90

Bedding Dip (Invaded) 0 Deg 90

Open Fracture Orientation-True nHole (Invaded)

FMAI-DSA (Orient=0) Fracture Orientation-True nHole (Invaded) Inactive 0 Fracture Orientation 360 Azimuthal

FMAI Image Fractured (Dyn) Orientation-True nHole (Invaded) 0 Azimuthal 360

Bedding Orientation-True nHole (Invaded) 0 Azimuthal 360

REF_AUTO 0 10

CAL 6 16

GR 0 100

TENS (LBF) 0 1000

True Dip 0 Deg 90

Dip 0 90

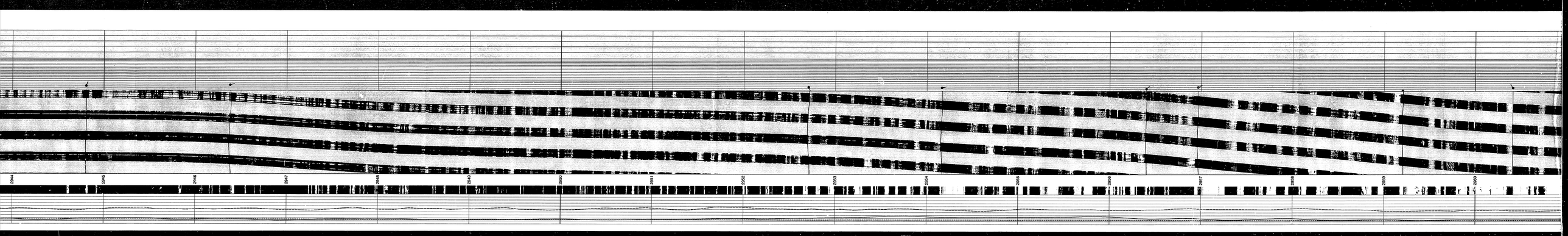
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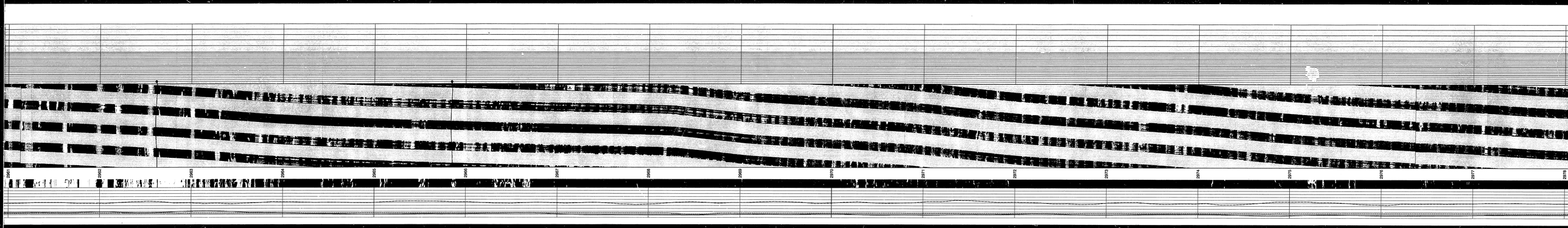
MD 1:10 m

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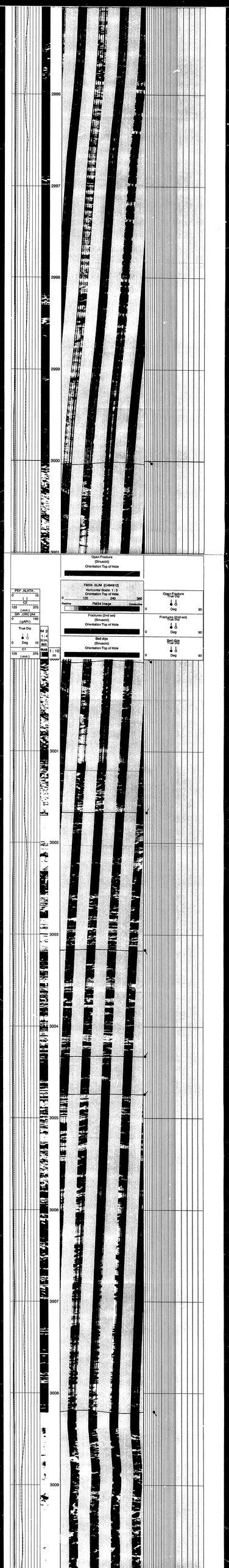
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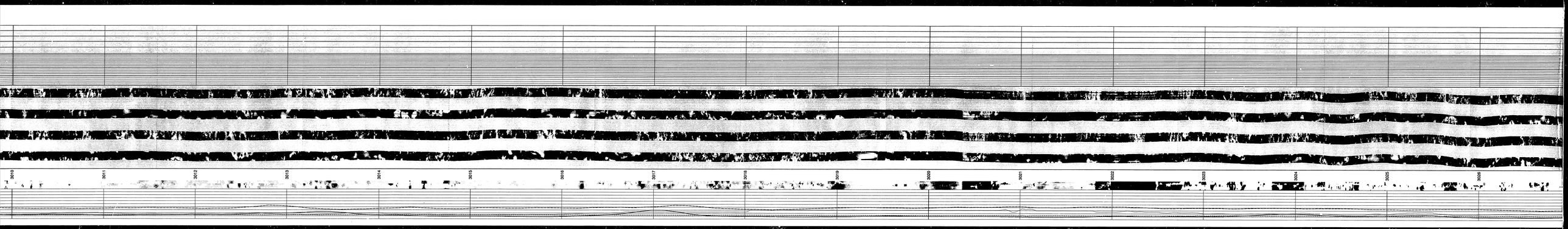

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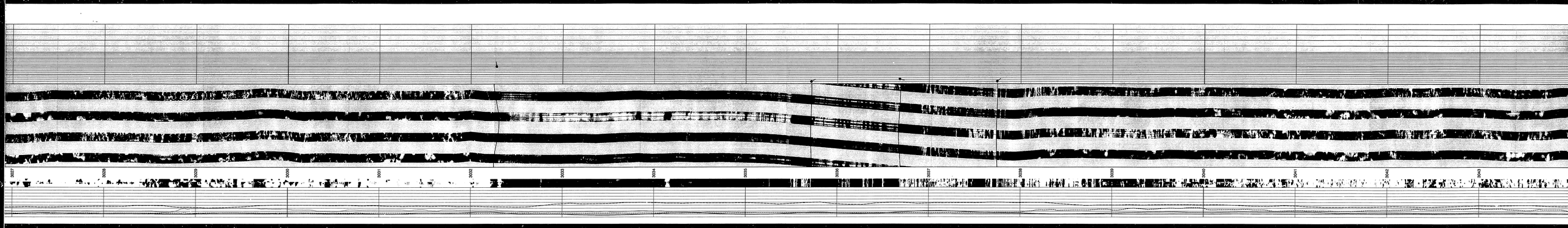

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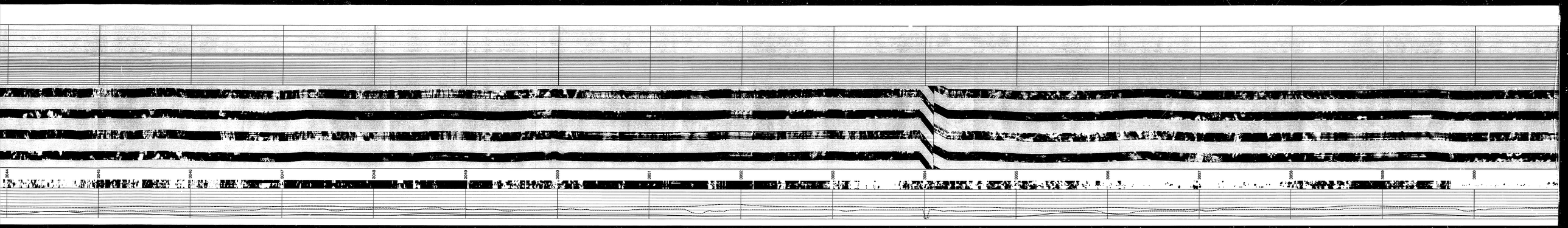

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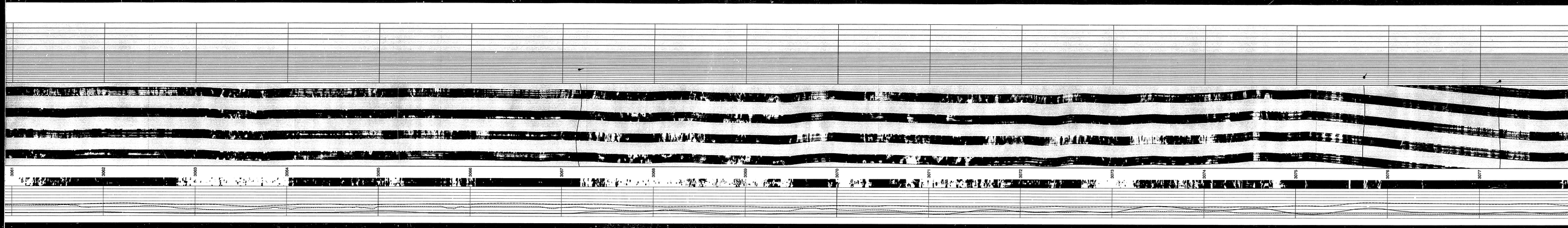
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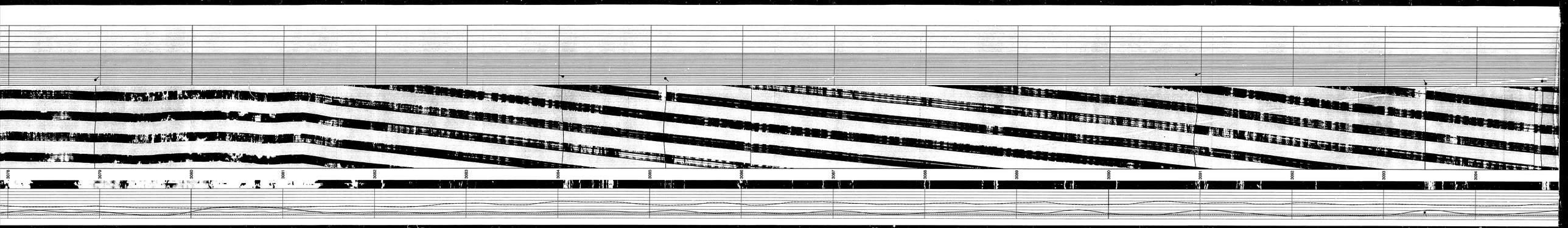

Open Fracture
(Sinusoid)
Orientation Top of Hole
FMS4 .SLIM [C494912]
Horizontal Scale 1 : 5
Orientation Top of Hole
0 120 240 360
Resistive
FMS4 Image
Conductive
Fractures (End set)
(Sinusoid)
Orientation Top of Hole
Bed dips
(Sinusoid)
Orientation Top of Hole
Open Fracture
(End set)
Fractures (End set)
Bed dips
(End set)
Deg
0
90
PEF ALATA
CALI
GR GRC [MA]
(gAPI)
True Dip
C1
(deg)
FMS 1 : 10
2996
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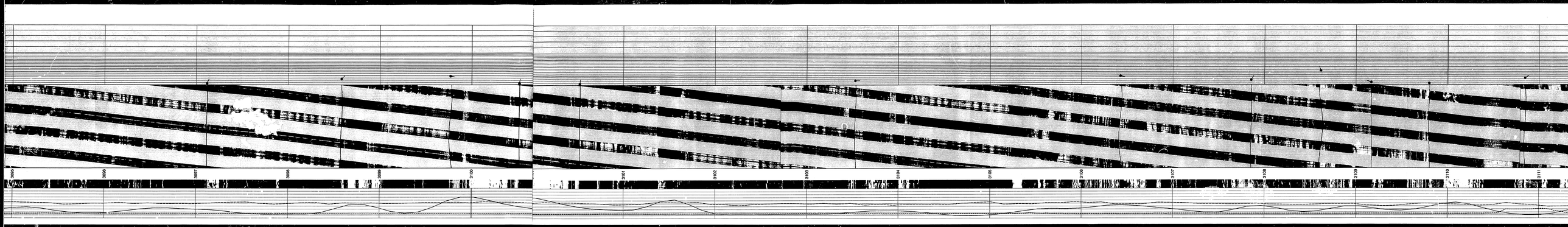

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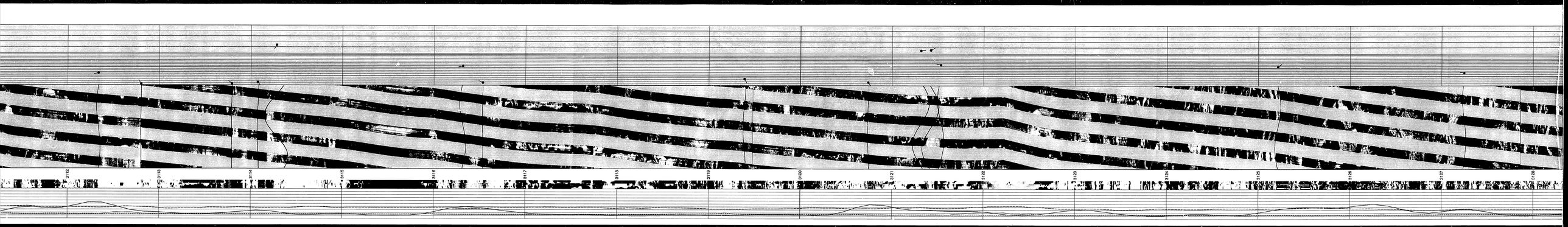

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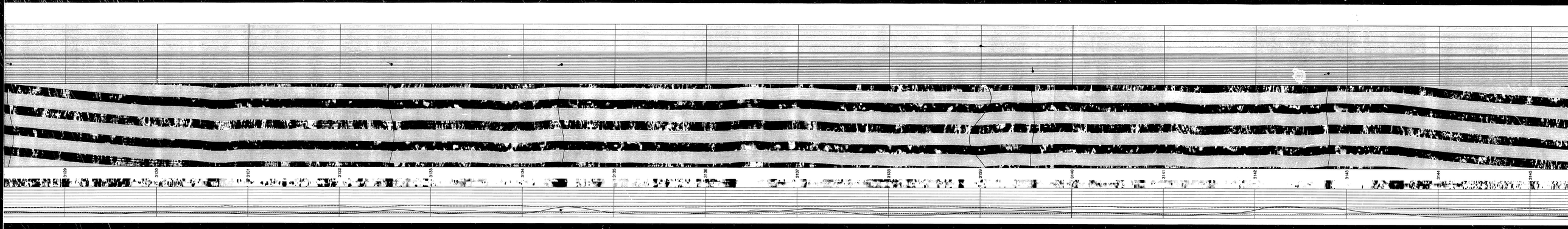

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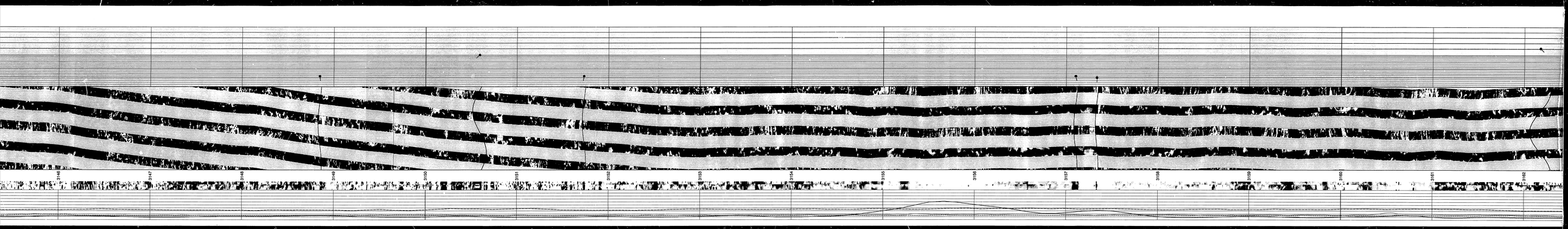

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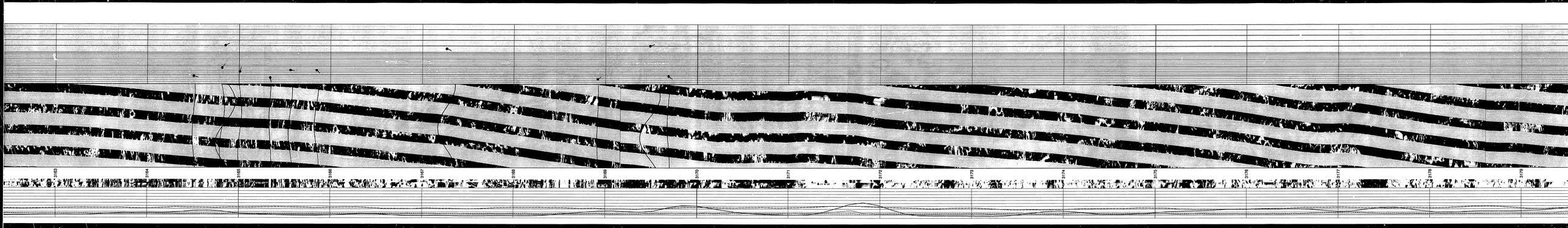

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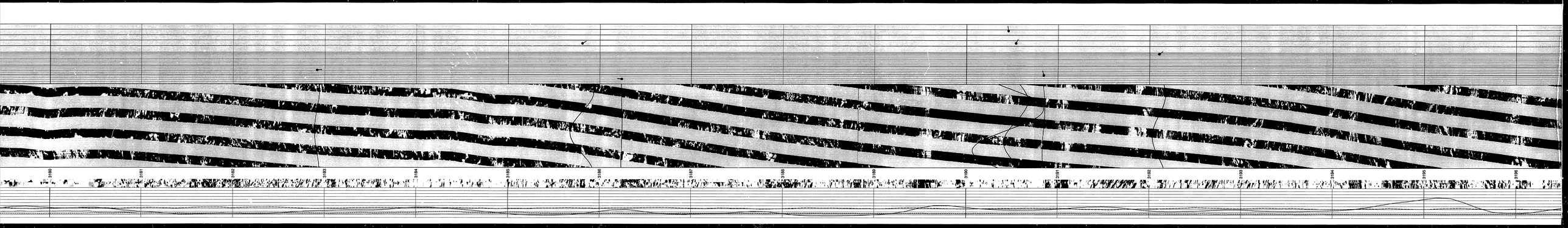

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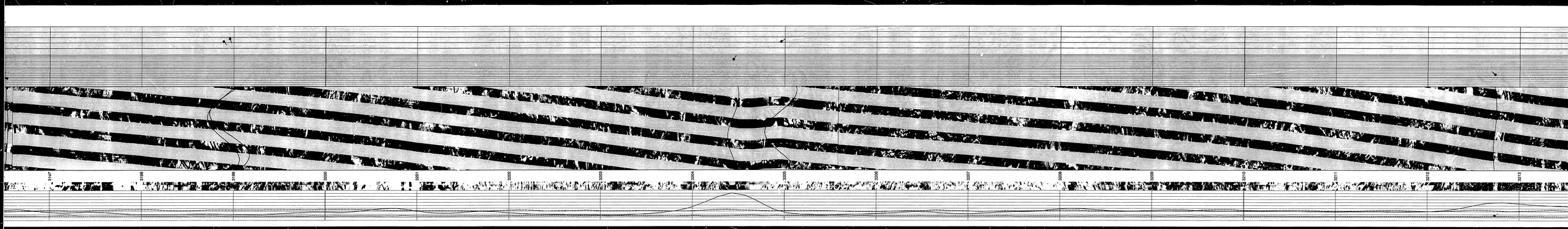

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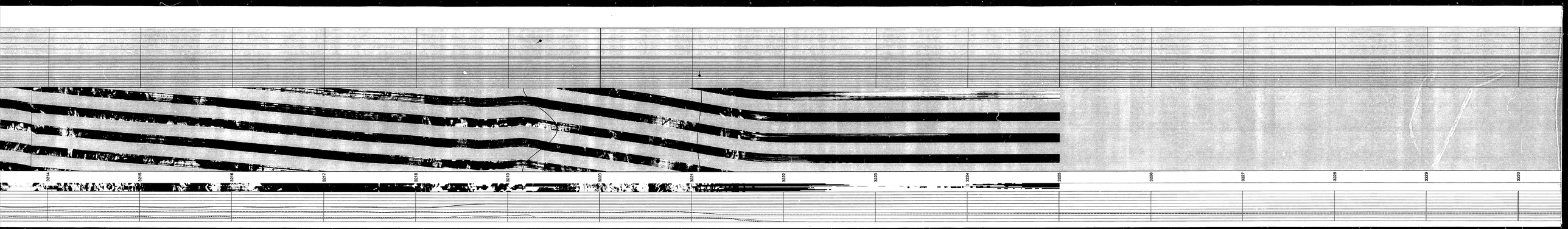

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3232

C1
125 375
(mm)

True Dip
0 Deg 10

GR .CRC [A4
0 150
(gAPI)

C2
125 375
(mm)

PEF .ALATA .
0 10
( )

IM [C
1 : 4
St.Im.
860

FMS

1 : 10
m

Bed dips
(Sinusoid)
Orientation Top of Hole

Fractures (2nd set)
(Sinusoid)
Orientation Top of Hole

FMS4 .SLIM [C494912]
Horizontal Scale: 1 : 5
Orientation Top of Hole
0 120 240 360
Resitive FMS4 Image Conductive

Open Fracture
(Sinusoid)
Orientation Top of Hole

Bed dips
True Dip
0 Deg 90

Fractures (2nd set)
True Dip
0 Deg 90

Open Fracture
True Dip
0 Deg 90

LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT