

**APPROVAL
TO DRILL A
WELL**

Exploratory ☒
Development ☐Culivation ☐
Service ☐

APPROVAL TO DRILL A WELL

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

Well Name: CNRES BELLEH DUKEH D-63
Operator: Cannat Resources Inc. Drilling Program No.:
Contractor: Akita Interest Identifier: 100%
Drilling Rig or Unit: 51 Estimated Well Cost: \$4,000,000.00
Location-Unit: D Section: 63 Grid Area: 66°50' 126°30'
Coordinates: Lat.: 66°42' 0.4888" Long.: 126°42' 43.487"
Area: Colville Hills Field / Pool:
Elevation-KB/RT: 331.2 m (ASL) GL / Seafloor: 326.3 m
Approx. Spud Date: Winter 2003 Est. Days on Location: 35
Anticipated Total Depth: 1400 m Target Horizons: Mount Clark

EVALUATION PROGRAM

Ten-metre sample intervals Nil
Five-metre sample intervals below surface casing shoe, see detailed drilling program
Canned sample intervals Nil
Conventional cores at See detailed drilling program
Logs and Tests Main hole, neutron, sonic, density, laterolog/ No DST's planned

CASING AND CEMENTING PROGRAM

	O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m KB)	Cementing
CP	406.4	6.4 mm wt	-	18	Arctic set
CC	339.7	101.2	K55	200	Arctic set
S	244.5	59.5	L80	800	Class "G" + Arctic Set
M	177.8	38.7	L80	500-sfc	
			T95	1353-500	Class "G" w/salt

D.O.P. Equipment: Conductor hole: Rotating head
Surface Hole: 346mm 21MPa drilling spool, 346 mm, 21MPa annular preventor, rotating head
Main hole: 279.4 mm 21 MPa drilling spool, 279.4 mm 21MPa double gate pipe & blind ram
279.4mm-21MPa drilling spool, 279.4 mm-21MPa single gate pipe ram, 279.4 mm-21MPa annul
preventor
Other information:

Signed: [Signature] P. Eng. Title: Drilling Engineer
Responsible Officer
Name: Kevin Ulliyott Company: Canadian Natural Resources Limited
Date: Sept 24, 02 Phone: (403) 716-6392

APPROVAL

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

Date: _____
File: _____
WID: _____
UWI: _____

Signed: [Signature]
Chief Conservation Officer

WELL
TERMINATION
RECORD

National Energy
Board



Office national
de l'énergie

WELL TERMINATION RECORD

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

Well Name: CNRES BELLEH DUKE H D-63 Area: COLVILLE HILLS
Grid Area: 66° 50', 126° 30' Field / Pool: _____
Interest 100% Final _____ Lat 66° 42' 04.888" Long: 126° 42' 43.487"
Drilling _____ Elevations- 332.4 (ASL) GL/Seafloor 326.30
Spud Date: 02/14/03 R.R.: 02/15/03 Total Depth: 1570
O.D. (mm) Weight (kg/m) Grade Depth Set (m KB) Cement (m³)
406 111.6 J-55 20 3
339.7 101.2 K-55 212 12.0 m³
244.5 59.5 L-80 680 40.0

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Craig Skubbeny
from (person) _____ of the _____
by means of _____ on _____

Type of Plug	Interval (m KB)	Felt	Cement (m³)
<u>CEMENT</u>	<u>1570 m - 1300 m</u>	<u>RETURNS</u>	<u>12.1 m³</u>
<u>CEMENT</u>	<u>1070 m - 640</u>	<u>YES</u>	<u>21.99</u>

Lost Circulation/Overpressure Zones: NONE

Equipment left on Seafloor (Describe): N/A

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

Cores: Type: _____ Interval: _____

Other Downhole Completion/Suspension _____

CERTIFICATION

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

Signed: [Signature] Title: GENERAL MANAGER OF
Name: TONY SABELLI Date: DRILLING AND COMPLETIONS

Company: CANADIAN NATURAL

Well Status

Suspended ☐

Completed ☐

Abandoned ☒

Acknowledged by: [Signature]

Chief Conservation Officer

Date: Sept 15/03

File: 9211-C144-2-1

UWI: 300D636650126300 WID: 1932

Canada

FINAL WELL REPORT

NEB

FINAL WELL REPORT

CANADIAN NATURAL RESOURCES LTD.

CNRES BELLEH DUKEH D-63

GRID: 66.42' 0.488" 126.42' 43.487"

DATE: MAY 28, 2003

COMPANY REPRESENTATIVE: SHAWN DOBLE

TABLE OF CONTENTS

	Page
A. Introduction	4
B. General Data	6
Well Name	
Well Coordinates	
Unique Well Identifier	
Operator	
Contractor	
Drilling Unit	
Position Keeping	
Support Craft	
Drilling Unit Performance	
Difficulties and Delays	
Total Well Cost	
Bottom Hole Coordinates	
C. Summary of Drilling Events	
Elevations	7
Total Depth	7
Date and Hour Spud	7
Date Drilling Completed	7
Date of Rig Release	7
Well Status	7
Hole Sizes and Depths	7
Casing and Cementing Record	8
Drilling Fluid	8
Fishing Operations	9
Well Kicks and Well Control Operations	9
Formation Integrity Tests	9
Time Distribution	9

D. Geology

Geological Summary	11
Formation Markers	11
Well Evaluation	13
Fluid Analysis	15
Formation Stimulation and Test Results	15

E. Appendices

Casing reports
Cement summary
Casing string summary
Directional survey
Mud properties summary
Synthetic Seismogram

A. INTRODUCTION

Canadian Natural Resources Limited (CNRL), as the operator and 100% working interest owner, of the well D-63-66.42' 0.488" 126.42' 43.487". The well was spud on February 14, 2003 and rig released on March 15, 2003. A total depth of 1570 m (measured depth) was drilled to evaluate gas potential in the Mount Clark formation.

The drilling contractor was Akita Drilling, based out of Calgary, Alberta. The drilling rig Akita 51, based out of Norman Wells, was a conventional land rig rated for 2700 in. The rig had a 54-m³ mud system and was equipped with two 80 hp boilers.

The well was drilled on EL 400 in which CNRL has 100% working interest. The location of the well was approximately 138 km NNE of the community of Fort Good Hope. CNRL barged all equipment to the staging area in Fort Good Hope in September 2002.

Conductor

A 445 mm conductor hole was drilled with air to a depth of 19m. No problems were encountered during this section of drilling. One joint of 406 mm conductor pipe was set in place at 19m. The conductor was cemented with 3 m³ of Arctic cement through top fill method, with the cement top at the surface. The Grant head and the blue line were installed to proceed with air drilling operations.

Surface casing

The cement was drilled out of the conductor barrel and air hammer drilled from 19 m to total depth of 212 m. The well was then switched over to gel chemical fluid to run 15 joints of Hydril 521 CTS K-55 101.19 kg/m casing, along with one shoe joint of the same type of casing, with a float shoe welded on bottom. The casing was set at 212 m and cemented with 2 m³ of pre flush followed by 16.2 t (75% excess) of arctic cement yielding 12m³ followed by 15.6m³ of water to displace casing. Pressure was held on string for 30 min (no plug used) and float shoe held. There was 6.5 m³ of cement slurry for returns.

Intermediate casing

The diverter was installed on a 13 3/8 bowl along with the Grant Head and pressure tested to 1500 kPa low and 7000 kPa high. The cement was drilled out from 199 m and the float shoe at 212 m and continue to drill to 214 m for running cement bond logs with conventional drilling methods. Air drilling was then followed from 214 m to 316 m. At 316 m, a water influx of .50 m³/min was encountered. The well was shut in and drilled ahead with rotary air to a depth of 687 mKb. All associated surveys were kept to less than one degree while drilling this section. 56 joints of new prudential 244.5 mm x 59.52 kg/m x LT&C, L-80 casing were set at 680 m and cemented with 2 m³ of pre flush followed by 48 t (200% excess) of class G + 2% CaCl₂ cement ,yielding 40 m³ followed by 26.8 m³ of water for displacement. Pressure was held on string for 120 min (no plug used or float equipment) with 7 m³ of cement for returns.

Production casing

Cement was drilled out from 656m to 687m, prior to air drilling from 687 m to 693 m. A leak off test was conducted. Results indicated a zero leak off with 11.5 Mpa surface and 9.1 Mpa hydrostatic. FSG was 23.5 kpa/m. High water influx of 0.52 m³/min was encountered and the drilling fluid was switched to water to drill the section 687 m to 1152 m. The section from 1152 m to 1550 m was drilled with salt saturated mud. Between the intervals 693m to 1550m, the directional drilling of the wellbore was kept within 1 degree. The average properties of the salt saturated mud were : Weight 1255g, Viscosity 38 sec/L, Chlorides 190000 mg/L, Calcium 1500 mg/L, Yield Point 1.5. The final depth of 1550 m KB was reached on March 5, 2003. A suite of Schlumberger logs were also run.

Abandonment plugs

Based on the logs, the Mount Clark zone was tight and wet. Three cement plugs were run into the hole for abandonment. Cement plugs were set at 612 m KB, 1070 m KB and 1250 m KB. The well was abandoned and rig was released on March 10, 2003.

B. GENERAL DATA

1. Wellname: CNRES BELLEH DUKEH D-63

Authority to Drill Well No: 1932

Exploration License: EL 400

Classification: Abandoned well

2. Well Coordinates: 00/D-63-66.42' 0.488" 126.42' 43.487"

3. Unique Well Identifier: 300D636650126300

4. Operator: Canadian Natural Resources Limited

5. Contractor: Akita Drilling

6. Drilling Unit: Akita Rig # 51
Diesel Electric, Land Rig

7. Position Keeping: Not Applicable

8. Support Craft (Helicopter): Canadian Helicopter and North Caribou Air

9. Drilling Unit Performance: Satisfactory

10. Difficulties and Delays: none

11. Total Well Cost: \$5.3 MM for the Drilling of this location. This includes lease and road construction.

2. Bottomhole Coordinates from Surface Location:

00/D-63-66.42' 0.488" 126.42' 43.487"

C. SUMMARY OF DRILLING OPERATIONS

1. Elevations:
 - Ground: 326.3 m above sea level
 - KB: 332.4 m above sea level
 - KB to Casing Flange: 5.72 m (KB to CF)
2. Total Depth
 - MD: 1570mKB
 - VD: 1570mKB
3. Date and Hour Spudded: February 14, 2003 – 7:00am
4. Date Drilling Completed: March 8, 2003
5. Date of Rig Release: March 10, 2003 – 12:00am
6. Well Status: Abandoned
7. Hole Sizes and Depths:
 - Conductor: 444.5mm to 19mKB
 - Surface : 387.3mm to 212mKB
 - Intermediate: 311.1mm to 687mKB
 - Production: 215.4mm to 1570mKB
8. Casing and Cementing Record:
 - Conductor Hole:
 - Casing Size: 415mm
 - Casing Weight: 101.1kg/m
 - Number of Joints: 1
 - Thread: none
 - Depth Set: 20mKB
 - Cut Height: Surface
 - Cut off Depth: Surface
 - Date Set: February 14, 2003
 - Cement Volume: 3.0 m3
 - Cement Type: Polarset
 - Additives: 0.5% D065 Turbulence Inducer + 0.2% D046 Antifoam Agent
+ 0.5% D013 Retarder
 - Surface Hole:
 - Casing Size: 339.7mm
 - Casing Weight: 101.195kg/m
 - Casing Grade: K-55
 - Casing Make: Hydril
 - Number of Joints: 16
 - Thread: Hydril CTS
 - Depth Set: 212mKB

Cut Height:	Surface
Cut off Depth:	Surface
Date Set:	February 16, 2003
Float Shoe Depth:	No plug or float shoe used
Float Collar Depth:	No plug or float collar used
Cement Volume:	24 Tonnes
Cement Type:	Arctic Set
Additives:	0.5% D065 Turbulence Inducer + 0.2% D046 Antifoam Agent + 0.5% D013 Retarder
Cement Top:	Surface
Casing Bowl Size:	13 3/8 x 13 5/8
Casing Bowl Make:	ABB Vetco

Intermediate Hole:

Casing Size:	244.5mm
Casing Weight:	59.527kg/m
Casing Grade:	L-80
Casing Make:	New Prudential
Number of Joints:	56
Thread:	LT&C
Depth Set:	680mKB
Cut Height:	Surface
Cut off Depth:	Surface
Date Set:	February 23, 2003
Float Collar Depth:	No plug or float shoe used
Float Shoe Depth:	No plug or float collar used
Cement Volume:	40.0 m3
Cement Type:	Class G
Additives:	2.0 % CaCl2
Cement Top:	Surface
Casing Bowl Size:	244.5mm x 279.4mm
Casing Bowl Make:	Walker EC ABB Vetco

Abandonment Plugs:

Plug #1:	1570m to 1300m
Cement Volume:	12.1m3
Cement Type:	Class G
Additives:	10% D44 BWOW +0.4% D167 + 0.4% D65 + 0.15% D13
Cement Top:	1250mkb
Method Felt:	Reverse Circulate. 0.5 m3 returns
Plug #2:	1070 to 640mkb
Cement Volume:	22.0m3
Cement Type:	Class G
Additives:	10% D44 BWOW +0.4% D167 + 0.4% D65 + 0.15% D13
Cement Top:	580mkb
Method Felt:	Reverse Circulate. 0.75 m3 returns

9. Drilling Fluid

Conductor: Gel-Chem

Properties: Viscosity: 55sec/L
Weight: 1040 kg/m³
pH: 10.0
Water Loss: not checked
Solids: not checked
Gels: not checked
Filter Cake: not checked
PV / YP: not checked

Surface: Water Based

Properties: Viscosity: 30
Weight: 1050 kg/m³
pH: 8.0
Water Loss: 0
Solids: 0
Gels: 1.0/2
Filter Cake:
PV / YP: 0.5 / 0.5

Intermediate: Salt Saturated

Properties: Viscosity: 53 sec/L
Weight: 1270 kg/m³
pH: 10
Water Loss: 8-13
Solids: 0.2%
Gels: 03/5.0
Filter Cake: 1mm
PV / YP: 19 / 11.5

10. Fishing Operations: n/a

11. Well Kicks and Well Controls Operations: n/a

12. Formation Integrity Tests: n/a

13. Time Distribution: *A daily time distribution can be found on the daily reports.

Time Breakdown:

<u>Activity</u>	<u>Days</u>
Moving In and Out	4.83
Rigging Up and Down	3.54
Drilling	10.6
Surveying	0.4
Circulating and Cond.	0.84
Cementing	0.42
WOC	0.34

Rig Service	0.52
Rig Repair	0.32
Tripping, Reaming	4.44
Running Casing	0.5
Logging	0.5
3 rd Party failure	0.17
NU / ND, Testing BOP	2.46
Fishing	0
Other	<u>1.73</u>
Total	31.61

D. GEOLOGY

1. Geological Summary D-63

CD with full Geological Report included.

2. FORMATION MARKERS

KB: 332.40 m

	<i>Prognosis</i>		Samples			Logs		
Formation	TVD (m)	Subsea (m)	MD (m)	TVD (m)	Subsea (m)	MD (m)	TVD (m)	Subsea (m)
Franklin Mtn.	417.4	-85	400	400	-67.6	401.0	401.0	-68.6
Saline River	969.4	-637	1009	1009	-676.6	1005.0	1005.0	-672.6
Saline River Salt	1065.4	-733	1062	1062	-729.6	1061.5	1061.5	-729.1
Seismic Marker	1134.4	-802	NP	NP	-	1135.5	1135.5	-803.1
Mt. Cap	1345.4	-1013	1345	1345	-1012.6	1345.5	1345.5	-1013.1
Shale Marker	1385.4	-1053	1433	1433	-1100.6	1430.0	1430.0	-1097.6
Dolomite Marker	-	-	NP	NP	NP	NP	NP	-
Mt. Clark	1504.4	-1172	1523	1523	-1190.6	1529.0	1529.0	-1196.6
Proterozoic	1514.4	-1182	1537	1537	-1204.6	1537.0	1537.0	-1204.6
TD	1544.4	-1212	1570.0	1570.0	-1237.6	1548.0	1548.0	-1215.6

Description Summary

Surface Casing to Franklin Mtn (215 – 400m)

The upper portion of the well encountered predominantly calcareous Dolostone. It was light to medium brown, calcareous, occasional trace clear selenite crystals. There was occasional streaky pinpoint and vuggy porosity with rare black bitumen in pores.

Franklin Mtn (400m – 1005m)

The Franklin Mtn. is predominantly a white to light grey, massive, microcrystalline to very finely crystalline Dolostone. It is hard to brittle, occasionally anhydritic with trace green shale partings and massive white chert. At approximately 680m the Franklin Mtn. becomes a Dolomitic Limestone. The limestone is white to medium brown, massive, microcrystalline, slightly silty, and tight. The Franklin Mtn. has no economic interest at this location.

Upper Saline River (1005m- 1062m)

The upper Saline River is interbedded Dolomitic Limestone and Shale. The Limestone is white to light gray, microcrystalline in part firm anhydritic and tight. The Shale is dark red brown, hard, slightly calcareous, fissile to sub-blocky.

Saline River Salt (1062m – 1346m)

The Saline River Salt is clear to cloudy white and occasionally orange and red. It has minor interbedded shale and Dolostone.

Mount Cap (1346m – 1523m)

The Mount Cap is an interbedded Limestone, Dolomite and Shale. Occasionally there are 1 to 2 meter porosity streaks within a tight limestone. The Limestone is cream to light grey, microcrystalline, dolomitic, occasionally bituminous, rare poor pinpoint porosity up to 5% with spotty yellow fluorescence. Dolostone is medium brown to cream, very fine to occasionally finely crystalline, calcareous in part, chert shards, tight to streaky pinpoint porosity(4-6%), occasional spotty yellow fluorescence with oil odor.

Mount Clark (1529m – 1537m)

The Mount Clark is a white sandstone, very fine, clear and angular quartz, trace unconsolidated, well sorted, trace very fine glauconite grains and trace very fine anhedral pyrite, poor to fair relief, silica and dolomitic cement, tight, rare pale yellow fluorescence, no cut.

Proterozoic (1537m – Total Depth)

The Proterozoic is a red to green shale, with minor Dolomite. Shale was firm to hard, non-calcareous, trace silty, occasional very fine glauconite. Dolomite dark brown, massive, microcrystalline, argillaceous, no shows.

3. WELL EVALUATION

OPEN HOLE LOG SUMMARY Intermediate

INTERMEDIATE RUN to 645m

Logging Company: Schlumberger Wireline Services

Field Engineer: Devin Bean

District: Norman Wells

Truck No.: 3025

On Location: February 23 @ 13:00

Off Location: February 24 @ 21:00

Circulation Ended: February 23 @ 10:15

Mud Properties:

Mud Type: water
Density: 1090 g/cc
Viscosity: 29 s/l
Fluid Loss: NA.
pH: NA

Rmf: NA
Rm: NA

Tool: Cased Hole Gamma Ray - Neutron
Interval logged: 645 m to surface

Rig Up: January 19 @ 23:00

Tool on Bottom: February 24 @13:45

Rig Down: February 24 @18:00

Time Losses: None

Logging Time: 5.0 hrs

Remarks. Logger stopped at 645m, set on bottom at this depth five attempts – cement in wellbore.

OPEN HOLE LOG SUMMARY Main

Logging Company: Schlumberger Wireline Services

Field Engineer: Devin Bean

District: Norman Wells

Truck No.: 3025

On Location: March 6 @ 09:30

Off Location: March 6 @ 23:00

Circulation Ended: March 6 @ 05:30

Mud Properties:

Mud Type: salt base

Density: 1265 g/cc

Viscosity: 55 s/l

Fluid Loss: 8 cm³

pH: 10.0

Rmf: 0.043 ohm.m @ 27°C

Rm: 0.054 ohm.m @ 28°C

Rmc: 0.062 ohm.m @ 27°C

Tool: Platform Express: Litho-Density Compensated Neutron, Borehole Compensated Sonic, Hals Laterolog,

Interval logged: 1548 to 680m

Rig Up: March 6 @ 10:30

Tool on Bottom: March 6 @ 13:50 (Run 1); 17:30 (Run 2)

Rig Down: March 6 @ 20:30

Time Losses: None.

Logging Time: 06:40 hrs.

Remarks: First rig up extended as decision was made by CNRL to change tool string after rig up was in progress.

GAS DETECTION ANOMALIES

Franklin Mtn – Saline River Interval:

804m – 808m: Gas increase from 40 units to 180 units. Dolomitic Limestone, fine crystalline, silty, trace clear angular quartz, trace bitumen, on irregular open fractures, bright pale yellow slow streaming cut.

Mount Cap Formation :

1425m – 1430m: Gas increase from background to 60-240 units, returns back to background of 20 units. Limestone: microcrystalline to finely crystalline, patchy pinpoint porosity, dark even oil show, pale yellow fluorescence.

1509 – 1511m: Gas increase from background of 40 units to 70 units.

Mount Clark Formation:

There was no significant Gas increase when drilling through the Mount Clark.

Proterozoic:

1550m – 1551m: Gas increase from background 40 units to 100 units.

Drillstem Tests

No Drillstem Tests were conducted during drilling operation.

4. FLUID ANALYSIS

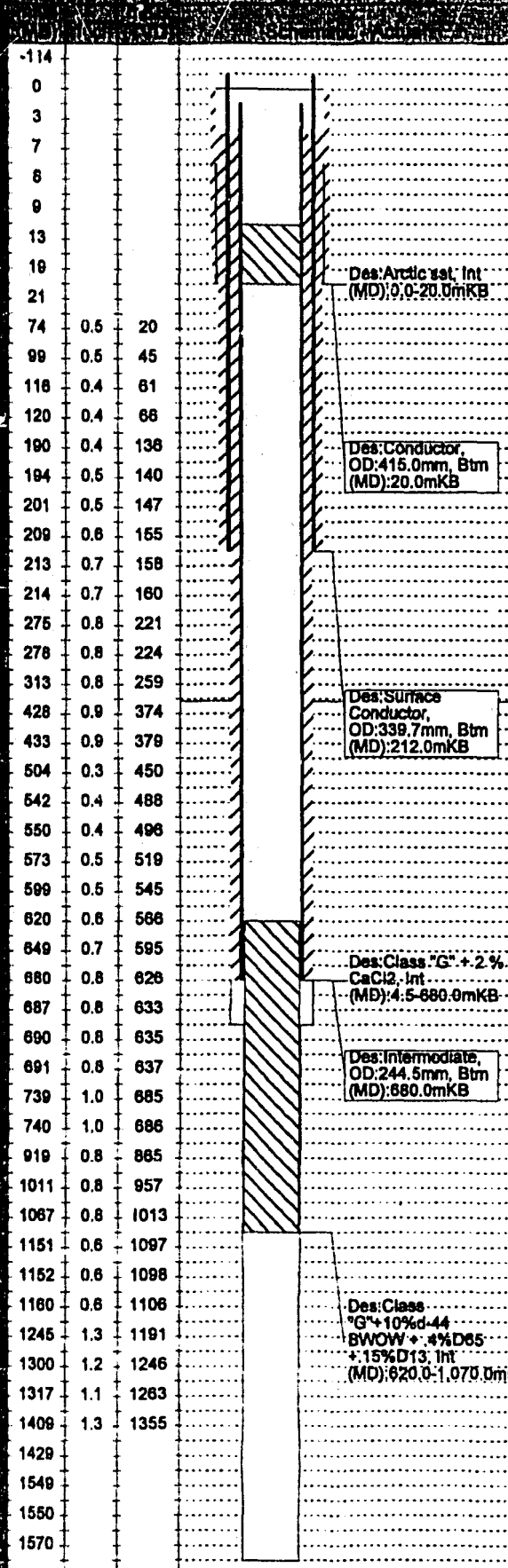
No fluid samples were taken.

5. FORMATION STIMULATION AND TEST RESULTS

The Mount Clark zone encountered in the well D-63 was tight and wet. The well was not completed and subsequently abandoned. No pressure recorders were run into the hole..

APPENDICES

Bottom Hole Location 00/D-83-86.42' 0.488" 126.42' 43.487"	Regulatory Field Name	CNRL Geographic Area	License No. 1832
KB Elevation (m) 332.40	Ground Elevation (m) 326.30	Casing Flange Elevation (m)	Spud Date 02/14/03 07:00:00
			Reg Release Date 03/15/03



Main Hole			
Conductor	444.5	0.00	19.00
Surface	387.3	19.00	212.00
Intermediate	311.0	212.00	687.00
Production	215.0	687.00	1,570.00

Casing Description	Run Date	Bottom or Set Depth (mKB)	Set Tension (daN)
Conductor	02/14/03 21:15	20.00	0.0
1 Conductor	415.0	406.0	101.100 J-55
			7.79
			20.00
			12.21

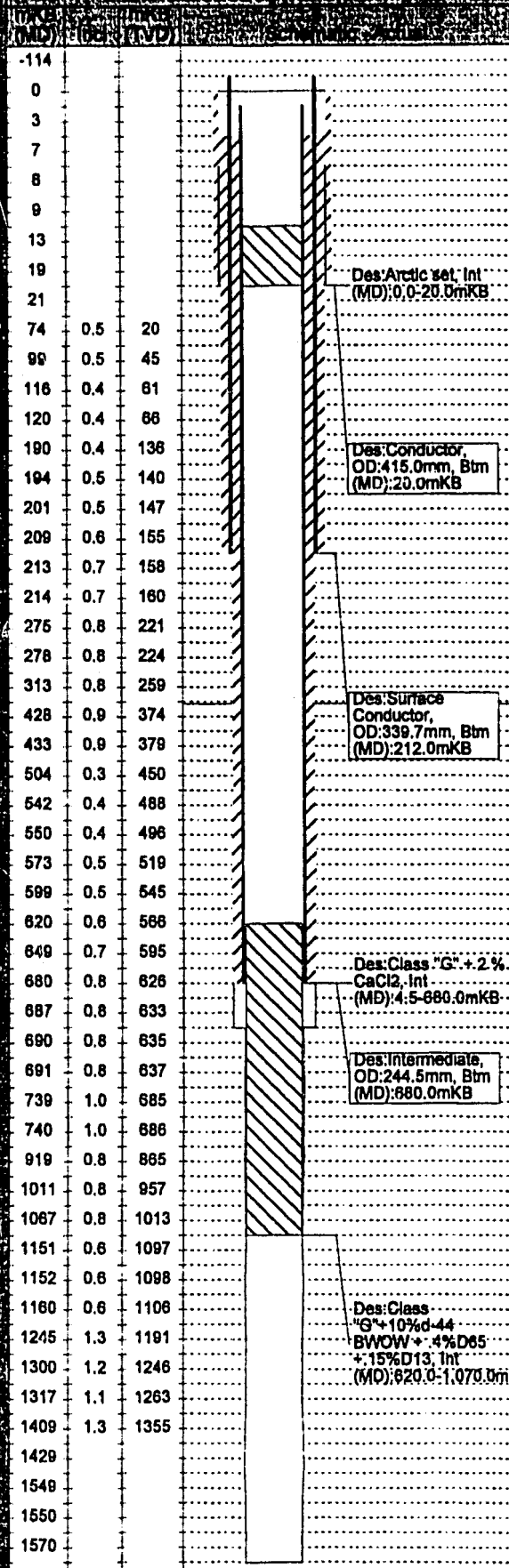
Cementing Start Date	Cementing End Date	Cementing Company
02/15/03 00:00	02/15/03 00:45	Dowell Schlumberger

Evaluation Method	Cement Evaluation Results
Comment	Ran 12.21m of conductor pipe to 20m & cemented w/ 3m3 of Arctic cement through top fill method hole took calculated volume filled to surface.

Cement Stages: 1, 0.00-20.00mKB							
Top (mKB)	Bottom (mKB)	Max Pump Pres (KPa)	Plug F/P Plug Bump, Hold-Test	Flow Fail Held (m)	Cmmt Rtn (m)		
0.00	20.00	700	0	No	0.00	0.00	
Avg Mixing Rate (m³/m P.P. Prior Bump (KPa)	Avg Disp Rate (m³/min)	Pipe Reciprocated?	Rtns Max (%)	Rtns Displ.			
0.600	0	0.000	100	100			

POLARSE		1881	0.39	0.74	3.00	20.0	0.00	20.00
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Wellbore Location 00/D-63-66.42' 0.488" 126.42' 43.487"		Regulatory Field Name		CNRL Geographic Area		License No. 1932	
KB Elevation (m) 332.40		Ground Elevation (m) 326.30		Casing Flange Elevation (m)		Spud Date 02/14/03 07:00:00	
						Rig Release Date 03/15/03	



Main Hole			
Conductor	444.5	0.00	19.00
Surface	387.3	19.00	212.00
Intermediate	311.0	212.00	687.00
Production	215.0	687.00	1,570.00

Casing Description	Run Date	Bottom or Set Depth (mKB)	Set Tension (daN)
Surface Conductor	02/17/03 20:00	212.00	
16 Casing Joints	339.7 315.3 101.195 K-55	-0.55	212.00 212.55

Bottom Hole Location	Regulatory Field Name	Civil Geographic Area	License No.
00/D-63-68.42' 0.488" 126.42' 43.487"			1932
KB Elevation (m)	Ground Elevation (m)	Casing Flange Elevation (m)	Spud Date
332.40	326.30		02/14/03 07:00:00
			Log Release Date
			03/15/03

MD (m)	TD (m)	KB (m)
-114		
0		
3		
7		
8		
9		
13		
19		
21		
74	0.5	20
99	0.5	45
116	0.4	61
120	0.4	66
190	0.4	138
194	0.5	140
201	0.5	147
209	0.6	155
213	0.7	158
214	0.7	160
275	0.8	221
278	0.8	224
313	0.8	259
428	0.9	374
433	0.9	379
504	0.3	450
542	0.4	488
550	0.4	496
573	0.5	519
599	0.5	545
620	0.6	566
649	0.7	595
680	0.8	626
687	0.8	633
690	0.8	635
691	0.8	637
739	1.0	685
740	1.0	686
919	0.8	965
1011	0.8	957
1087	0.6	1013
1151	0.6	1097
1152	0.6	1098
1190	0.6	1106
1245	1.3	1191
1300	1.2	1246
1317	1.1	1263
1409	1.3	1355
1429		
1549		
1550		
1570		

Des: Arctic cat. Int
(MD): 0.0-20.0mKB

Des: Conductor,
OD: 415.0mm, Btm
(MD): 20.0mKB

Des: Surface
Conductor,
OD: 339.7mm, Btm
(MD): 212.0mKB

Des: Class "G" + 2%
CaCl₂ Int
(MD): 4.5-680.0mKB

Des: Intermediate,
OD: 244.5mm, Btm
(MD): 680.0mKB

Des: Class
"G" + 10% d-44
BWOW + 4% D65
+ 15% D13 Int
(MD): 620.0-1,070.0m

Name	Main Hole		
Conductor	444.5	0.00	19.00
Surface	387.3	19.00	212.00
Intermediate	311.0	212.00	687.00
Production	215.0	687.00	1,570.00

Casing Description	Run Date	Bottom or Set Depth (mKB)	Set Tension (daN)
Intermediate	02/23/03 08:26	680.00	
58 Casing Joints	244.5	224.4	59.527 L-80
		0.58	680.00
			679.42

Cementing Start Date	Cementing End Date	Cementing Company
02/23/03 00:00	02/24/03 00:00	Dowell Schlumberger

Evaluation Method: Cement Evaluation Results

Comment: Ran 58 joints of New prudential 244.5mm x 59.52 kg/m x LT&C, L-80 csg. to a total depth of 680m. Cemented w/ 2m3 of preflush followed by 48t (200% excess) of class G + 2% CaCl₂ cement yielding 40m3 followed by 26.8m3 of water to displace csg. held pressure on string for 120 min (no plug used or float equipment). Had 7m3 of good cement for returns.

Cement Stages: 1, 4.50-680.00mKB						
Top (mKB)	Bottom (mKB)	Max Pump Pres (KPa)	Plug Bump	Hold	Float Fail	Hold (mCm) Rtn (m)
4.50	680.00	2,150	1,200	No		7.00
Avg Mixing Rate (m ³ /m)	P.P. Prior Bump (KPa)	Avg Disp Rate (m ³ /min)	Pipe Reciprocated?	Rins Mix (%)		Rins Displ
0.600	2,150	0.500	Yes	100		100

0:1:0 G	1890	48.0	1901	0.44	0.76	40.00	200.0	4.50	680.00
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KS Elevation (m)	Ground Elevation (m)	Casing Flange Elevation (m)	KS-Ground Distance (m)	KS-CF (m)	Spud Date	Log Release Date
332.40	326.30		6.10		02/14/03 07:00:00	03/15/03

Cementing Start Date	Cementing End Date	String	Name
02/15/03 00:00	02/15/03 00:45	Conductor, 20.00mKB	Main Hole

Comment
Ran 12.21m of conductor pipe to 20m & cemented w/ 3m3 of Arctic cement through top fill method hole took calculated volume filled to surface.

Description	Objective				Top (mKB)	Bottom (mKB)
Arctic set	Cement conductor in place				0.00	20.00
Top Plug?	Bottom Plug?	Avg Mixing Rate (m ³ /min)	P.P. Prior Bump (kPa)	Avg Disp Rate (m ³ /min)	Max Pump Press (kPa)	Plug Bump, Hold (kPa)
No	No	0.600	0	0.000	700	0
Pipe Reciprocated?	Returns when Mixing (%)	Pipe Rotated?		Cement Returns When		
	100					
Depth Tagged (mKB)	Tag Method	Depth Plug Drilled Out To (mKB)		Drill out diameter (mm)		
12.50	Drill Bit					

Cement Type	Fluid Description	Amount (tonnes)	Fluid Type	Volume Pumped (m ³)	Yield (m ³ /tonnes)
POLARSET			Lead	3.00	0.74
Mix H ₂ O Ratio (m ³ /tonnes)	Free Water (%)	Density (kg/m ³)	Plastic Viscosity (cp)	Thickening Time (hrs)	1st Compressive Strength (kPa)
0.39	0.00	1881			

Cementing Start Date	Cementing End Date	String	Name
02/23/03 00:00	02/24/03 00:00	Intermediate, 680.00mKB	Main Hole

Comment
Ran 56 joints of New prudential 244.5mm x 59.52 kg/m x LT&C, L-80 csg. to a total depth of 680m. Cemented w/ 2m3 of preflush followed by 48t (200% excess) of class G + 2% CaCl₂ cement yielding 40m3 followed by 26.8m3 of water to displace csg. held pressure on string for 120 min (no plug used or float equipment). Had 7m3 of good cement for returns.

Description	Objective				Top (mKB)	Bottom (mKB)
Class "G" + 2 % CaCl ₂	Cement 244.5mm csg in place.				4.50	680.00
Top Plug?	Bottom Plug?	Avg Mixing Rate (m ³ /min)	P.P. Prior Bump (kPa)	Avg Disp Rate (m ³ /min)	Max Pump Press (kPa)	Plug Bump, Hold (kPa)
No	No	0.600	2,150	0.500	2,150	1,200
Pipe Reciprocated?	Returns when Mixing (%)	Pipe Rotated?		Cement Returns When		
Yes	100					
Depth Tagged (mKB)	Tag Method	Depth Plug Drilled Out To (mKB)		Drill out diameter (mm)		
665.00	Wireline					

Cement Type	Fluid Description	Amount (tonnes)	Fluid Type	Volume Pumped (m ³)	Yield (m ³ /tonnes)
0:1:0 G	1890	48.0	Lead	40.00	0.76
Mix H ₂ O Ratio (m ³ /tonnes)	Free Water (%)	Density (kg/m ³)	Plastic Viscosity (cp)	Thickening Time (hrs)	1st Compressive Strength (kPa)
0.44	0.00	1901			

CaCl ₂		960.0 kg	77.0 %
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Cementing Start Date	Cementing End Date	String	Name
03/08/03 01:45	03/08/03 16:15		Main Hole

Comment
Plug # 1 from 1570m to 1300m Pumped 3.0m3 water ahead followed with 15.3 T (12.1m3) class "G" + 10% D44 BWOW + .4% D167 + .4% D65 + .15% D13. Displaced with .84m3 water and 7.8m3 mud. Plug balanced. POH to 1250m and reversed out drill pipe. .5m3 cement to surface.

Plug # 2 from 1070m to 640m Pumped 3.0m3 water ahead followed with 27.8 T (21.99m3) class "G" + 10% D44 BWOW + .4% D167 + .4% D65 + .15% D13. Displaced with .78m3 water and 1.84m3 mud. Plug balanced. POH to 580m and reversed out drill pipe. .75m3 cement to surface.

NOTE: Attempted plug #2 prior to above and pumped 3.0m3 cement and had to abort job and reverse out due to pumper problems and lack of control on pumper unit.

Description	Objective				Top (mKB)	Bottom (mKB)
Class "G"+10% d-44 BWOW + .4%D65 +.15%D13	Plug and abandon				620.00	1,070.00
Top Plug?	Bottom Plug?	Avg Mixing Rate (m ³ /min)	P.P. Prior Bump (kPa)	Avg Disp Rate (m ³ /min)	Max Pump Press (kPa)	Plug Bump, Hold (kPa)
No	No	0.600		0.600	50	
Pipe Reciprocated?	Returns when Mixing (%)	Pipe Rotated?		Cement Returns When		
Depth Tagged (mKB)	Tag Method	Depth Plug Drilled Out To (mKB)		Drill out diameter (mm)		
620.00	Drill Bit					

Well Hole Location 00/D-63-66.42' 0.488° 126.42' 43.487°	Regulatory Field Name	Chad. Geographic Area	Operator Canadian Natural Resources Limited	License No. 1932	Rt. Elev (m) 332.40	Gr. Elev (m) 326.30
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Conductor, 20.00mKB

Run (mKB) 20.00	Tension (dAN) 0.0	Max OD (mm) 415.0	Drift Min (mm)	Centralizers No	Scratchers No
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1 Conductor	415.0	406.0	12109.768	J-55	7.79	20.00	12.21	12.21
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Surface Conductor, 212.00mKB

Run (mKB) 212.00	Tension (dAN)	Max OD (mm) 339.7	Drift Min (mm) 311.4	Centralizers none	Scratchers none
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16 Casing Joints	339.7	315.3	11003.266	K-55	23,816	13,445	Hydriil CTS	-0.55	212.00	212.55	212.55
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Intermediate, 680.00mKB

Run (mKB) 680.00	Tension (dAN)	Max OD (mm) 244.5	Drift Min (mm) 220.4	Centralizers Yes jts 49,51,53,55	Scratchers No
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66 Casing Joints	244.5	224.4	96754.000	L-80	39,814	21,305	LT&C	0.58	680.00	679.42	679.42
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Wellbore Hole Location 00/D-63-66.42' 0.488" 126.42' 43.487"		Wellbore Legal Location 00/D-63-66.50-126.30		Regulatory Field Name		Cred. Geographic Area		License No. 1932	
GR Elev (m) 326.30	KB Elevation (m) 332.40	KB-GRd (m) 6.10	Current Well Status (m)		User ID (m)		Spud Date 02/14/03		RO Release Date 03/15/03
Name Main Hole							Vertical Section Direction (°)		
Description Single shot							Survey Company Akita		

Survey Data								
54.00	0.50	5.00	0.00	0.00	0.00	0.00	0.00	Yes
95.00	0.50	5.00	41.00	0.38	0.38	0.03	0.00	
151.00	0.25	5.00	97.00	0.72	0.72	0.06	0.13	
200.00	0.50	5.00	146.00	1.05	1.04	0.09	0.15	
248.00	1.25	5.00	193.99	1.78	1.77	0.15	0.47	
275.00	0.75	5.00	220.99	2.25	2.24	0.20	0.56	
355.00	0.75	5.00	300.98	3.30	3.28	0.29	0.00	
423.00	1.00	5.00	368.97	4.33	4.32	0.38	0.11	
498.00	0.25	5.00	443.97	5.16	5.13	0.45	0.30	
588.00	0.50	5.00	533.96	5.74	5.72	0.50	0.08	
741.00	1.00	5.00	686.95	7.74	7.72	0.67	0.10	
842.00	1.00	5.00	787.94	9.51	9.47	0.83	0.00	
942.00	0.75	5.00	887.92	11.03	10.99	0.96	0.08	
1,043.00	0.75	5.00	988.91	12.36	12.31	1.08	0.00	
1,110.00	0.75	5.00	1,055.91	13.23	13.18	1.15	0.00	
1,186.00	0.50	5.00	1,131.90	14.06	14.01	1.23	0.10	
1,257.00	1.50	5.00	1,202.89	15.30	15.24	1.33	0.42	
1,333.00	1.00	5.00	1,278.87	16.96	16.90	1.48	0.20	
1,367.00	2.50	5.00	1,312.86	18.00	17.93	1.57	1.32	
1,418.00	1.00	5.00	1,383.83	19.56	19.48	1.70	0.88	

Start Date	End Date	Spud Date	Log Release Date	Name
02/12/03	03/16/03	02/14/03	03/15/03	Main Hole

Rigs
Akita Drilling Ltd.
51

Wellbore Sections

Main Hole	444.5	0.00	19.00
Main Hole	387.3	19.00	212.00
Main Hole	311.0	212.00	687.00
Main Hole	215.0	687.00	1,570.00

Mud Checks

212.00	Gel Base	1040.00	55							149	10.0				0.0	0.0	0.0			02/17/03		0.00
487.00	Water Base	1040.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/20/03		
549.00	Water Base	1040.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/21/03	24.00	21.00
589.00	Water Base	1045.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/22/03	24.00	21.00
687.00	Water Base	1090.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/23/03	24.00	21.00
740.00	Water Base	1040.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/26/03	24.00	21.00
808.00	Water Base	1040.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/27/03	24.00	21.00
942.00	Water Base	1050.00	30	0.5	0.5	0.0	0.0			149	8.0			350.000	0.0	0.0	50.0			02/28/03	24.00	21.00
1,152.00	Salt Base	1245.00	34	8.0	2.5	1.0	2.0	13.0		149	11.0	0.000		85000.003	0.0	0.2	409.0	15	0.0	03/01/03	77.00	0.00
1,300.00	Salt Base	1260.00	47	19.0	8.0	3.0	4.0	9.0		149	9.5	0.000		85000.003	0.0	0.2	443.0	15	0.0	03/02/03	77.00	0.00
1,363.00	Salt Base	1265.00	48	15.0	5.0	2.0	4.0	10.0		149	10.0			85000.003	0.0	0.2	443.0	24		03/03/03		
1,475.00	Salt Base	1260.00	51	19.0	7.5	3.0	5.0	8.5		149	10.0			85000.003	0.0	0.2	434.0	32		03/04/03		
1,547.00	Salt Base	1270.00	53	19.0	11.5	4.0	7.0	8.0		149	10.0			85000.003	0.0	0.2	451.0	39		03/05/03		
1,550.00	Salt Base	1255.00	50	18.0	8.5	3.0	5.0	8.0		149	10.0			18500.000	0.0	0.2	426.0	39		03/06/03		

GEOLOGICAL REPORT

N.E.B. COPY

**CANADIAN NATURAL
RESOURCES LIMITED**

GEOLOGICAL REPORT

CNRES Belleh Dukeh 00/d-63-66.50-126.30/00

Colville Lake, NWT

Prepared by: Nancy Sinnott, P. Geol.

Reported to: Robert Befus

March 10, 2003

Cabra
CONSULTING

A DIVISION OF CABRA ENTERPRISES LTD.

**1623 - 48th Ave SW
Calgary, Alberta T2T 2S9
(403) 243-5022**

TABLE OF CONTENTS

WELL DATA SUMMARY.....	1
FORMATION MARKERS	3
DAILY SUMMARY	4
BIT RECORD	8
MUD RECORD	9
DEVIATION RECORD	10
OPEN HOLE LOG SUMMARY Intermediate	11
OPEN HOLE LOG SUMMARY Main.....	12
LITHOLOGY LOG POCKET.....	24

WELL DATA SUMMARY

Company: Canadian Natural Resources Limited

Well Name: CNRES Belleh Dukeh O-52-66.50-126.30

Surface Location: d-63-66.50-126.30

Surface Co-ordinates: 7399753.3N 600967E

Elevations:

<i>Ground:</i>	326.3 meters
<i>Kelly Bushing:</i>	332.4 meters
<i>KB to Ground:</i>	5.1 meters

Field: Undefined

Classification: New Pool Wildcat

Objectives:

<i>Primary</i>	– Mount Clarke Formation
<i>Secondary</i>	– Mount Cap Formation

Terminating Zone: Proterozoic

Security: Confidential

AFE Number: DO2A-0554-D312

Licence Number: 1932

Spud Date: February 14, 2003 @ 07:00

Total Depth: 1570 m, March 7 @ 08:20

Sampled Interval: 5 m intervals from 220 m to 1570m

Contractor: Akita Sahtu Drilling Rig # 51

Drilling Supervision: Craig Skubleny/Pat Carriere

Geological Supervision: Nancy Sinnott

Hole Size:

Conductor: 444.5 mm

Surface: 381 mm

Intermediate: 311 mm

Main: 216 mm

Conductor Casing:

Size: 406.4 mm

Type: conductor pipe

Landed @ 20 m

Cement: 10 tonnes of Arctic Set cement

Surface Casing:

Size: 339.7 mm

Type: 15 joints and 1 shoe joint 101.19 kg/m

Landed @ 212 m

Cement: 16 tonnes of Arctic Set cement

Intermediate Casing:

Size: 244.5 mm

Type: 56 joints 59.5 kg/m

Landed @ 680 m

Cement: 48 tonnes of Arctic Set cement of class "G" +2% CaCl.

Main Casing:

None - abandoned

Open Hole Logs:

Schlumberger Wireline Services

Final Status:

Abandoned

Rig Release:

March 9, 2003

Final Costs:

\$3,338,725 (as of March 7, before abandonment)

FORMATION MARKERS

KB: 332.40 m

Formation	Prognosis		Samples			Logs		
	TVD (m)	Subsea (m)	MD (m)	TVD (m)	Subsea (m)	MD (m)	TVD (m)	Subsea (m)
Franklin Mtn.	417.4	-85	400	400	-67.6	401.0	401.0	-68.6
Saline River	969.4	-637	1009	1009	-676.6	1005.0	1005.0	-672.6
Saline River Salt	1065.4	-733	1062	1062	-729.6	1061.5	1061.5	-729.1
Seismic Marker	1134.4	-802	NP	NP	-	1135.5	1135.5	-803.1
Mt. Cap	1345.4	-1013	1345	1345	-1012.6	1345.5	1345.5	-1013.1
Shale Marker	1385.4	-1053	1433	1433	-1100.6	1430.0	1430.0	-1097.6
Dolomite Marker	-	-	NP	NP	NP	NP	NP	-
Mt. Clark	1504.4	-1172	1523	1523	-1190.6	1523.0	1523.0	-1190.6
Proterozoic	1514.4	-1182	1537	1537	-1204.6	1537.0	1537.0	-1204.6
TD	1544.4	-1212	1570.0	1570.0	-1237.6	1548.0	1548.0	-1215.6

DAILY SUMMARY

Date	DFS	Cum. Costs	Depth @ 24:00 Hrs	Progress (m)	Drilling Hours	Avg. ROP	Formation	Operation	Operations Summary
03/02/17	3	\$1,836,091	212	0	0	0	Bear Rock	Casing	Repair power tongs, run casing to 212m, circ casing, cement casing, n/u diverter and Grant head, pressure test BOP equipment.
03/02/18	4	\$1,904,451	316	104	8.50	13.3	Bear Rock	Drilling	Finish n/u BOP, air drill with hammer 214-316m.
03/02/19	5	\$1958,874	397	81	8.75	9.3	Bear Rock	Drilling	Air drill to 382m, POOH for BHA change, switch to insert bit and rotary drill with fluid and air injection due to water influx.
03/02/20	6	\$2,179,059	494	97	17.50	6.2	Franklin Mountain	Drilling	Rotary drill and survey to 494m, close system and circulate flow through mud tanks.
03/02/21	7	\$2,223,757	555	61	14.00	4.5	Franklin Mountain	Drilling	Rotary drill and survey to 542m, trip for bit, drill to 555m.
03/02/22	8	\$2,306,847	648	93	21.25	4.4	Franklin Mountain	Drilling	Rotary drill and survey to 648m.
03/02/23	9	\$2,358,239	687	39	9.25	4.2	Franklin Mountain	Drilling, casing	Rotary drill to 687m, circulate, POOH to log, logging truck down, run casing, rig to cement.

Date	DFS	Cum. Costs	Depth @ 24:00 Hrs	Progress (m)	Drilling Hours	Avg. ROP	Formation	Operation	Operations Summary
03/02/24	10	\$2,517,761	687	0	0	0	Franklin Mountain	Cementing, logging	Rig to and cement, nipple down Grant head and diverter, cut casing, lay down Grant head and diverter, weld bowl, nipple up 11" BOP equipment, pressure test BOPs.
03/02/25	11	\$2,572,972	693	6	0.50	12.0	Franklin Mountain	Air drill	Nipple up, clean out cement in flow line, redrill mouse hole, make up hammer bit, slip and cut drill line, RIH with hammer, make 2.5m# water, shut down air drilling, POOH, switch to rotary drilling.
03/02/26	12	\$2,652,475	740	47	10.50	4.4	Franklin Mountain	Drilling, tripping	Rotary drill to 740m, POOH with bit #8, RIH with bit #9.
03/02/27	13	\$2,714,990	883	143	19.00	7.5	Franklin Mountain	Drilling	Finish trip, drill to 883m and survey.
03/02/28	14	\$2,771,810	1020	137	21.75	6.3	Franklin Mountain	Drilling	Drill and survey to 883m.
03/03/01	15	\$2, 826,757	1152	132	13.00	14.4	Saline River	Drilling, tripping	Drill to 1062m, POOH to change bit, RIH with PDC, drill to 1152m.
03/03/02	16	\$2,921,574	1300	148	15.75	9.4	Saline River	Drilling, tripping	Drill to 1300m, POOH to change bit.
03/03/03	17	\$3,011,292	1390	90	14.50	6.2	Saline River	Tripping, drilling	POOH, change bit, RIH, wash to bottom, drill and survey.

Date	DFS	Cum. Costs	Depth @ 24:00 Hrs	Progress (m)	Drilling Hours	Avg. ROP	Formation	Operation	Operations Summary
03/03/04	18	\$3,069,604	1492	102	21.25	4.8	Mt. Cap	Drilling	Drill to 1492m.
03/03/05	19	\$3,169,244	1550	58	18.75	3.1	Proterozoic	Drilling	Drill to 1550m.
03/03/06	20	\$3,277,636	1550	0	0	0	Proterozoic	Tripping, logging	Circulate, wiper trip, circulate, POOH for logs, rig up to and log, slip and cut, RIH.
03/03/07	21	\$3,338,725	1570	0	0	0	Proterozoic	Drilling	RIH, repair shaker, drill, circulate and condition mud, trip, lay down BHA, RIH and pick up pipe, circulate bottoms up.

DFS VS DEPTH & CUMULATIVE COST CHART

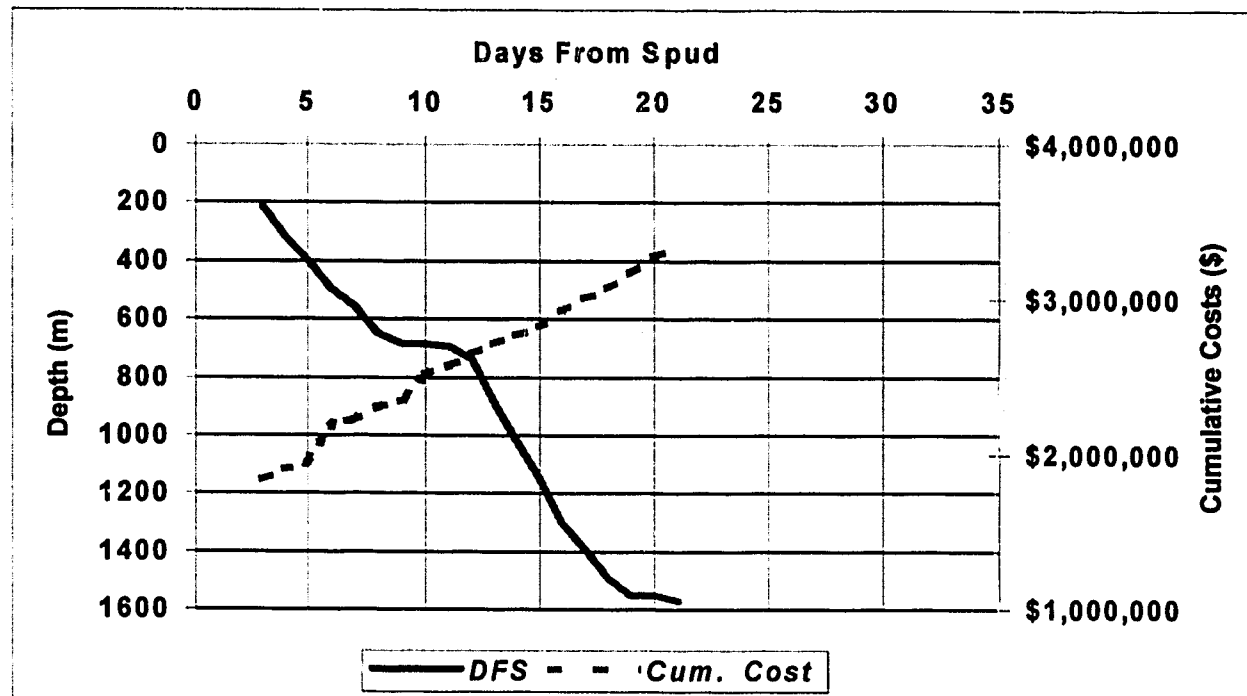


Figure 1

BIT RECORD

Bit #	Type	Serial	Size	Depth Out	Int. Cut	Hrs	FOB	RPM	Condition								Comments
Surface																	
1	Magma	51854	444.5	20	20	2.50	2-4	25	-	-	-	-	-	-	-	-	Hammer
Intermediate																	
2	Magma	2L001	387.0	212	192	9.25	4-10	25	-	-	-	-	-	-	-	-	Hammer
3RR	EHP51H	MT8757	311.1	214	2	1.00	11	100									Drill out
4	Magma	9J020	311.1	382	168	12.75	3	20	-	-	-	-	-	-	-	-	Hammer
5RR	EPH51H	MT8757	311.1	542	226	35.75	12-20	55-65	3	4	BT	G	2	1	FC	HR	
6	HP61ADG	NQ1469	311.1	687	145	40.25	22	70	2	3	BT	G	3	2	NO	TD	Int. TD
Main																	
7	Magma	?	215.9	693	6	0.50	1	24	-	-	-	-	-	-	-	-	Hammer
8	EHP53AK	EJ9286	215.9	740	46	10.50	18	70	8	8	BT	A	E	1	WT	PR	scrubbed
9	HRS38C	6008332	215.9	1062	412	46.75	18	65	3	1	BT	A	E	1	WT	FM	
10	DSX146GJ NW	47742	215.9	1300	238	22.00	6	70	1	1	BU	A	NO	NO	BU	PR	PDC
11	ATJ-S33C	TA8433CQ-S	215.9	1550	250	54.50	24	65	7	8	BT	A	F	1	BC	LOG	
12	EHP61AD G	NN3425	215.9	1570	20	5.50	24	65	2	2	CT	S	2	2	WT	TD	

MUD RECORD

Date	Depth (m)	Time	Density (kg/m ³)	Viscosity (s/l)	pH	W.L. (mL/30min)
Water-based mud						
03/02/17	212	09:00	1040	55	10.0	-
03/02/18	NA					
03/02/19	NA					
03/02/20	487	00:00	1040	30	8.0	-
03/02/21	549	20:15	1040	30	8.0	-
03/02/22	589	09:52	1045	30	8.0	-
03/02/23	687	09:52	1090	30	8.0	-
03/02/24	NA					
03/02/25	Air drill					
03/02/26	740	09:50	1040	30	8.0	-
03/02/27	808	12:00	1040	30	8.0	-
03/02/28	942	10:01	1050	30	8.0	-
Salt-based mud						
03/03/01	1152	00:00	1245	34	11.0	13.0
03/03/02	1300	19:30	1260	47	9.5	9.0
03/03/03	1363	00:00	1265	48	10.0	10.0
03/03/04	1475	19:00	1260	51	10.0	8.5
03/03/05	1547	00:00	1270	53	10.0	8.0
03/03/06	1550	13:15	1255	50	10.0	8.0
03/03/07	NA					

DEVIATION RECORD

Survey No.	Depth (m)	Deviation (degrees)	Interval (m)
1	51	0.50	51
2	95	0.50	44
3	151	0.25	56
4	200	0.59	49
5	248	1.25	48
6	275	0.75	27
7	355	0.75	80
8	423	1.00	68
9	588	0.50	165
10	741	1.00	153
11	842	1.00	101
12	942	0.75	100
13	1043	0.75	99
14	1110	0.75	67
15	1186	0.50	76
16	1257	1.50	71
17	1333	1.00	76
18	1418	1.00	85

OPEN HOLE LOG SUMMARY Intermediate

INTERMEDIATE RUN to 645m

Logging Company: Schlumberger Wireline Services

Field Engineer: Devin Bean

District: Norman Wells

Truck No.: 3025

On Location: February 23 @ 13:00

Off Location: February 24 @ 21:00

Circulation Ended: February 23 @ 10:15

<u>Mud Properties:</u>	Mud Type: water	Rmf: NA
	Density: 1090 g/cc	Rm: NA
	Viscosity: 29 s/l	
	Fluid Loss: NA.	
	pH: NA	

Tool: Platform Express

Interval logged: 645 m to surface

Rig Up: January 19 @ 23:00

Tool on Bottom: February 24 @13:45

Rig Down: February 24 @18:00

Time Losses: None

Logging Time: 5.0 hrs

Remarks: Cased hole log. Logger stopped at 645m, set on bottom at this depth five attempts - cement.

OPEN HOLE LOG SUMMARY Main

Logging Company: Schlumberger Wireline Services

Field Engineer: Devin Bean

District: Norman Wells

Truck No.: 3025

On Location: March 6 @ 09:30

Off Location: March 6 @ 23:00

Circulation Ended: March 6 @ 05:30

Mud Properties: Mud Type: salt base

Density: 1265 g/cc

Viscosity: 55 s/l

Fluid Loss: 8 cm³

pH: 10.0

Rmf: 0.043 ohm.m @ 27°C

Rm: 0.054 ohm.m @ 28°C

Rmc: 0.062 ohm.m @ 27°C

Tool: Platform Express

Interval logged: 1548 to 680m

Rig Up: March 6 @ 10:30

Tool on Bottom: March 6 @ 13:50 (Run 1); 17:30 (Run 2)

Rig Down: March 6 @ 20:30

Time Losses: None.

Logging Time: 06:40 hrs.

Remarks: First rig up extended as decision was made by CNRL to change tool string after rig up was in progress.

SAMPLE DESCRIPTIONS

215-220m: No sample - valve frozen.

220-225m: DOLOSTONE - light to medium brown, very hard, microcrystalline, Archie IIIA/C, calcareous, silty in part, 5% white, soft, finely disseminated and lenses of anhydrite, very tight, trace poor pinpoint to very fine vuggy porosity, no show.

225-235m: DOLOSTONE - medium to dark brown, very hard, microcrystalline to extremely fine crystalline, Archie IIIA/C, calcareous, silty in part, patchy pinpoint to fine vuggy porosity to 4%.

230-235m: DOLOSTONE - light to medium brown, very hard, microcrystalline, Archie IIIA/C, calcareous, silty in part, very tight, trace poor pinpoint to very fine vuggy porosity, abundant clear selenite vug fill and crystal fragments, common black, stylolitic, bituminous material, trace bright yellow fluorescence, pale yellow very slow streaming cut.

235-240m: ANHYDRITE and DOLOSTONE - interbedded white to light gray brown, massive, vitreous, trace clear selenite, very tight, no show and light brown anhydritic microcrystalline dolostone, Archie IIIA/C, tight, no show.

240-245m: DOLOSTONE - as 230-235m, common white, soft, finely disseminated anhydrite.

245-250m: DOLOSTONE - light to medium brown and gray brown, very hard, microcrystalline to extremely fine crystalline, Archie IIIA/C, calcareous in part, tight, trace black stylolitic bituminous material, no show.

250-255m: ANHYDRITE and DOLOSTONE - interbedded white to light gray brown, massive, vitreous, trace clear selenite, very tight, no show and light brown anhydritic microcrystalline dolostone, Archie IIIA/C.

255-260m: CALCAREOUS DOLOSTONE - medium brown, hard, microcrystalline to extremely fine crystalline, Archie IIIA/C, relict wackestone (intraclasts?) texture discernable in some grains, abundant white, soft, finely disseminated anhydrite, trace black stylolitic bituminous material, tight, no show.

260-265m: DOLOSTONE - dark gray brown, very hard, microcrystalline, Archie IIIA, very tight, no show, 10% soft, very fine crystalline anhydrite.

265-270m: CALCAREOUS DOLOSTONE - medium brown, hard, extremely fine crystalline, Archie IIIA/C, calcareous, abundant white, soft, finely disseminated and lenses of anhydrite, trace clear selenite as vug fill, trace pinpoint and vuggy porosity, trace bright white platy anhydrite, rare pyrite lenses, no show.

270-300m: CALCAREOUS DOLOSTONE - medium brown, hard, extremely fine crystalline, Archie IIIA/C, calcareous, trace clear selenite as vug fill, tight, no show.

300-340m: CALCAREOUS DOLOSTONE - medium brown, hard, extremely fine crystalline, Archie IIIA/C, calcareous, trace clear selenite crystals or bright white platy anhydrite, trace spotty pinpoint and vuggy porosity, vugs to several mm lined with fine brown dolomite, tight, no show.

340-350m: CALCAREOUS DOLOSTONE and DOLOMITIC LIMESTONE - light brown, minor cream, hard, extremely fine crystalline, Archie IIIA/C, calcareous, trace clear selenite crystals, trace spotty pinpoint and vuggy porosity, trace pyrite in part, tight, no show.

350-370m: CALCAREOUS DOLOSTONE - light to medium brown, hard, extremely fine crystalline, Archie IIIA/C, calcareous, trace clear selenite crystals (vug fill), trace spotty pinpoint and vuggy porosity, tight, rare black bitumen in pores, some with pale yellow very slow streaming cut.

370-380m: CALCAREOUS DOLOSTONE - light brown, hard, extremely fine crystalline, Archie IIIA/C and minor IIIA/B with 2-5% visible intergranular and pinpoint porosity in part, calcareous, trace spotty pinpoint and vuggy porosity, tight, trace very fine disseminated pyrite, rare black bitumen in pores, some with pale yellow very slow streaming cut.

380-385m: No sample - missed.

385-390m: CALCAREOUS DOLOSTONE - as previous.

390-395m: No sample - pumping through blowie line into pit, inspector determined no slurry shall flow anywhere other than within the pit.

395-400m: CALCAREOUS DOLOSTONE - light to medium brown, hard, extremely fine crystalline, Archie IIIA, calcareous, very tight, no show.

Franklin Mountain 401m

400-415m: DOLOSTONE - white to light gray and brown gray, brittle, microcrystalline to extremely fine crystalline, Archie IA and trace IB, very weakly calcareous, tight, trace brown black bituminous coatings (fluoresces pale yellow in solvent) in vugs and irregular fracture surfaces with slickensides, abundant white to very light gray CHERT, trace pyrite on fractures in chert, trace bright white platy anhydrite, trace pale green intergranular clay in upper 5m.

415-420m: DOLOSTONE - as previous, minor pale gray green shale.

420-445m: DOLOMITIC LIMESTONE and CALCAREOUS DOLOMITE - white to cream, hard, microcrystalline to fine crystalline, Archie IA, silty in part, cherty in part, trace medium to very coarse euhedral calcite (vuggy - fractures? - no vugs < cutting size, some calcite to 5mm) and bright white platy subhedral anhydrite (some observed associated with vuggy calcite), rare clear drusy quartz linings, trace very fine disseminated pyrite, tight, rare moderate, gold fluorescence, no cut.

445-455m: CHERT - white, massive; and DOLOMITIC LIMESTONE - as previous.

455-460m: DOLOMITIC LIMESTONE - as previous.

460-474m: CHERT - bright white to cream, massive, firm tripolitic in part, common euhedral fine to medium clear to smoky drusy quartz, common bright white, platy euhedral anhydrite; DOLOMITIC LIMESTONE, as previous.

474-505m: CALCAREOUS DOLOSTONE - cream with 3-5% patchy dark brick red hematite stain - pervasive and intergranular, massive, brittle, microcrystalline and very fine to medium crystalline, Archie IA, cherty in part, common bright white platy anhydrite, trace clear anhedral quartz and euhedral dolomite (commonly with partial coatings of clay - probably grew within claystone rather than vugs), tight with trace pinpoint porosity, no show; minor CHERT as previous; trace very light green to light green, soft, waxy CLAYSTONE (NOTE - not silty, but pattern without silty accessory not working).

505-520m: CALCAREOUS DOLOSTONE - cream with 3-5% patchy dark brick red hematite stain - pervasive and intergranular, brittle, very fine to medium crystalline, Archie IA, cherty in part, trace bright white platy anhydrite, trace clear anhedral quartz and euhedral dolomite (commonly with partial coatings of clay - probably grew within claystone rather than vugs), tight, no show; trace very light green to light green, soft, waxy CLAYSTONE.

520-545m: CALCAREOUS DOLOSTONE - cream to very light brown with trace to 15% locally patchy dark brick red hematite stain - pervasive and intergranular, pale green argillaceous in part associated with red stain, brittle, extremely fine to very fine crystalline, Archie IA, trace bright white platy anhydrite, trace fine disseminated pyrite, tight, no show.

545-569M: CALCAREOUS DOLOSTONE - cream to pink and very light brown to medium red brown due to even and patchy hematite stain, brittle to hard, extremely fine to very fine crystalline, Archie IA, weakly argillaceous in part, trace very fine dolomitic quartz sandstone stringers with hematitic cement, tight, no show; trace dark brick red CLAYSTONE.

569-590m: CALCAREOUS DOLOSTONE - white to buff, brittle to hard, microcrystalline to extremely fine crystalline, Archie IA, weakly argillaceous in part, tight, no show.

590-610m: CALCAREOUS DOLOSTONE and minor DOLOMITIC LIMESTONE - cream to pink and very light brown to medium red brown due to even and patchy hematite stain, brittle to hard, extremely fine to very fine crystalline, Archie IA, weakly argillaceous in part, tight, no show; trace dark brick red CLAYSTONE.

610-620m: CALCAREOUS DOLOSTONE - white to cream with 20% patchy dark brick red hematite stain - pervasive and intergranular, brittle, very fine to medium crystalline, Archie IA, tight, no show; trace soft, dark brick red CLAYSTONE.

620-627m: CALCAREOUS DOLOSTONE - light to medium brown with trace to 5% patchy dark brick red hematite stain - pervasive and intergranular, argillaceous, brittle, extremely fine to very fine crystalline, Archie IA, trace dark brown black bituminous? laminations, tight, no show.

627-642m: CALCAREOUS DOLOSTONE and DOLOMITIC LIMESTONE - white to buff and light pink, brittle to hard, microcrystalline to fine crystalline, Archie IA, silty, weakly argillaceous in part, tight, no show.

642-655m: CALCAREOUS DOLOSTONE - light to medium brown (very finely disseminated bitumen and light, even oil stain), silty, brittle, extremely fine to very fine crystalline, Archie IA, tight, trace brown black stylolitic bituminous streaks with pale yellow green very slow streaming cut; minor dark red brown firm CLAYSTONE.

655-680m: CALCAREOUS DOLOSTONE - light to dark gray brown (very finely disseminated bitumen, trace stylolitic, light even oil stain), silty, brittle, extremely fine to very fine crystalline, Archie IA, tight, no show; minor brown black soft to firm, very weakly calcareous SHALE, pale yellow green very slow streaming cut.

681-687m: DOLOMITIC LIMESTONE - white to light gray brown, silty, brittle, extremely fine to fine crystalline, Archie IA, trace fine disseminated pyrite, tight, no show.

687-690m: No sample. Valve frozen.

690-694m: Missed sample.

694-695m: DOLOMITIC LIMESTONE - medium gray brown, silty (silica), extremely fine to fine crystalline, Archie IA, argillaceous, trace fine disseminated pyrite, tight, no show, very fine cuttings.

695-700m: DOLOMITIC LIMESTONE - white, extremely fine to fine crystalline, Archie IA, trace fine disseminated pyrite, tight, no show, very fine cuttings.

700-710m: DOLOMITIC LIMESTONE - very light to medium brown, extremely fine to fine crystalline, Archie IA, siliceous/cherty in part, siltstone stringers, tight, no show, very fine cuttings.

710-715m: DOLOMITIC LIMESTONE - very light to medium brown, extremely fine to fine crystalline, Archie IA, weakly argillaceous, tight, no show, very fine cuttings.

715-745m: DOLOMITIC LIMESTONE - very light to medium brown, extremely fine to fine crystalline, Archie IA, silty (quartz), weakly to moderately argillaceous, tight, no show, very fine cuttings, 1-2% metal flakes increasing to 5% in 740m.

745-750m: DOLOMITIC LIMESTONE - white to cream, extremely fine to fine crystalline, Archie IA, silty (quartz), tight, no show, very fine cuttings.

750-760m: DOLOMITIC LIMESTONE - very light to medium brown, extremely fine to fine crystalline, Archie IA, silty (quartz), moderately argillaceous, tight, no show, very fine cuttings.

760-770m: DOLOMITIC LIMESTONE - white to light gray, microcrystalline to extremely fine crystalline, Archie IA, tight, no show, very fine cuttings.

770-785m: DOLOMITIC LIMESTONE - very light to medium brown, extremely fine to fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, moderately argillaceous in part (laminations), rare extremely fine to fine disseminated pyrite, rare pinpoint porosity, tight, no show, very fine cuttings.

785-790m: DOLOMITIC LIMESTONE - white, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, tight, no show, very fine cuttings.

790-795m: DOLOMITIC LIMESTONE - medium brown (light, even oil stain?), microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, tight, extremely faint yellow cut?, very fine cuttings.

795-799m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, tight, no show, very fine cuttings.

799-805m: DOLOMITIC LIMESTONE - medium brown (light, even oil stain?), extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, tight, trace black bitumen on irregular closed and open fractures, extremely faint yellow cut?

805-815m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, rare pale green soft, waxy clay, tight, no show, very fine cuttings.

815-820m: DOLOMITIC LIMESTONE - white to medium brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, tight, no show, very fine cuttings.

820-830m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show, very fine cuttings.

830-835m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, rare fine disseminated pyrite, rare pale green coloration due to clay, tight, trace very dark brown to black bituminous limestone and bitumen fracture fill, very fine cuttings.

835-845m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show, very fine cuttings.

845-855m: DOLOMITIC LIMESTONE - white, extremely fine crystalline, Archie IA, tight, no show, very fine cuttings.

855-860m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, very silty (quartz), trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show, very fine cuttings.

860-870m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), argillaceous, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show.

870-890m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, weakly silty, very argillaceous, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show.

890-925m: DOLOMITIC LIMESTONE - light to dark brown, microcrystalline to extremely fine crystalline, Archie IA, weakly silty, very argillaceous, trace very dark brown, shaly laminations with pale yellow slow streaming cut in part, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show.

860-870m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, silty (quartz), argillaceous, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, no show.

870-890m: DOLOMITIC LIMESTONE - white to light brown, microcrystalline to extremely fine crystalline, Archie IA, weakly silty, very argillaceous, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, very pale yellow, extremely slow streaming cut in part.

890-935m: DOLOMITIC LIMESTONE - light to dark brown, microcrystalline to extremely fine crystalline, Archie IA, weakly silty, moderately to very argillaceous, trace very dark brown, shaly laminations with pale yellow slow streaming cut in part, trace fine, clear angular quartz, rare fine disseminated pyrite, tight, very pale yellow, extremely slow streaming cut in part.

935-945m: DOLOMITIC LIMESTONE - white to light gray and brown gray, microcrystalline to extremely fine crystalline, Archie IA, brittle, flaky, very weakly silty, very weakly argillaceous and anhydritic in part, tight, no show.

945-975m: DOLOMITIC LIMESTONE - white to light gray and brown gray to medium brown, trace very dark brown, dominantly microcrystalline, to extremely fine crystalline, Archie IA, brittle, flaky, very weakly silty, weakly to moderately argillaceous, trace dark gray shaly laminations, tight, no show.

975-980m: DOLOMITIC LIMESTONE - white to very light brown, microcrystalline to extremely fine crystalline, Archie IA, brittle, flaky, very weakly silty, tight, no show.

980-998m: DOLOMITIC LIMESTONE - white to very light brown and dark gray very shaly transitional to calcareous SHALE, microcrystalline to extremely fine crystalline, Archie IA, brittle, flaky, very weakly silty, tight, no show.

998-1009m: SHALE - medium gray to green gray, firm to hard, subblocky to subfissile, weakly calcareous; DOLOMITIC LIMESTONE - as previous.

Saline River 1009m

1009-1025m: Interbedded DOLOMITIC LIMESTONE and SHALE: Dolomitic Limestone - white to light gray and buff, microcrystalline to extremely fine crystalline, Archie IA, brittle, flaky, no show; Shale - medium gray to green gray and dark brick red, firm to hard, subblocky to subfissile, gray shale is weakly calcareous.

1025-1062m: Interbedded SHALE and DOLOMITIC LIMESTONE: Dolomitic Limestone - white to light gray and buff, microcrystalline to extremely fine crystalline, Archie IA, brittle, flaky, trace anhydrite laminae, no show; Shale - medium green gray and green, subblocky to subfissile, firm waxy and dark brick red, subblocky to subfissile, firm, anhydritic in part with anhydrite on partings and as laminae.

Saline River Salt 1061.5m

1062-1110m: DOLOMITIC LIMESTONE and SHALE as previous. ROP indicates SALT. Trace very fine, vuggy orange anhydrite in green shale.

1110-1125m: No Sample. Poor returns, with scattered salt grains and clay balls in mud.

1125-1130m: SALT - white to light pink and trace red, massive, trace firm, subblocky to splintery green gray SHALE.

1130-1135m: No Sample. Poor returns, with scattered salt grains and clay balls in mud.

Seismic Marker 1135.5m

1135-1150m: No Sample. Poor returns, with scattered salt grains and clay balls in mud.

1150-1155m: ANHYDRITE/GYPSUM - white, chalky, soft, weakly calcareous, minor light green firm to hard, subblocky to subfissile SHALE. Poor returns.

1155-1160: No Sample. Poor returns, with scattered salt grains and clay balls in mud.

1160-1200m: SALT - white to light pink, massive, minor light green firm to hard, subblocky to fissile and splintery SHALE laminae and interbeds.

1200-1205m: SALT - white and trace light pink and orange, massive, white cloudy residue washed from samples - GYPSUM.

1205-1265m: SALT - white and trace light pink and dark orange (potash?), massive, light green clay washed from samples.

1265-1300m: No Sample. Poor returns, with scattered salt grains and light green clay balls in mud.

1300-1330m: SALT - white to light pink, massive, SHALE/CLAYSTONE - medium green and dark brown, very soft, subfissile, washes to clay balls, anhydritic in part.

1330-1335m: SALT - white to light pink, massive, DOLOMITE - light to medium brown, massive, very hard, microcrystalline, calcareous in part, some as large cuttings 5mm to 1cm, tight. Minor medium gray green, hard, subblocky to subfissile, moderately calcareous SHALE.

1335-1345m: SALT - white and clear to light pink, massive, minor green SHALE.

Mt Cap 1345.5m

1345-1350m: CALCAREOUS DOLOMITE and DOLOMITIC LIMESTONE - light to medium brown, blocky, hard, microcrystalline, weakly silty, tight, no show. Minor interlaminated green gray to gray brown and trace dark red brown, hard, blocky to splintery SHALE.

1350-1360m: DOLOMITIC LIMESTONE - light to medium brown, blocky, hard, microcrystalline to extremely fine crystalline, weakly silty, tight, no show. SHALE - 20% medium green and dark red brown (mottled green/red in part), hard, subblocky to

subfissile, weakly calcareous, trace very fine euhedral pyrite in part. Sample 1360m missed.

1360-1370m: DOLOMITIC LIMESTONE to CALCAREOUS DOLOMITE - medium to dark brown, firm to hard microcrystalline to extremely fine crystalline, Archie IA and minor IIIA/B, tight with patchy 3-6% visible intergranular porosity, minor dark brown CHERT shards and laminations, minor patchy very weak pale yellow and trace medium yellow fluorescence, trace pale yellow slow streaming cut (1370m).

1370-1375m: No sample (missed).

1375-1391m: SALT - white and clear, massive, trace bright white soft ANHYDRITE. Sample 1380m mostly very coarse shale and dolomite cavings.

1391-1421m: LIMESTONE -light brown, microcrystalline to extremely fine crystalline, Archie IA and minor IIIA/B, tight with trace patchy visible pinpoint and very fine vuggy porosity. Trace to 10% dark brown CHERT. Minor gray green SHALE.

1421-1430m: SHALE - medium to dark gray, firm to hard, subblocky to subfissile, bituminous in part. 20% LIMESTONE as previous.

Shale Marker 1430m

1430-1439m: SHALE - medium to dark gray and medium gray green, firm to hard, subblocky to subfissile, bituminous in part. 20% LIMESTONE as previous, 20% dark even oil stain, pale yellow patchy fluorescence and pale yellow slow streaming cut. (1435m poor sample).

1439-1460m: SHALE - dark gray to black and medium gray green, firm to hard, subblocky to fissile, micromicaceous in part, weakly to strongly calcareous, bituminous in part, trace anhedral pyrite blebs, very pale yellow, slow streaming cut. 30% medium green gray and trace mottled green-red moderately calcareous shale - cavings? (sample 1460m mostly very coarse green/red rounded shale - cavings brought to surface due to increased mud viscosity), 10% white LIMESTONE - white soft chalky to cream hard microcrystalline and buff extremely fine sugary with up to 5% visible intergranular and pinpoint porosity, trace fine disseminated pyrite.

1460-1470m: SHALE - 65% dark gray, firm to hard, subblocky to subfissile, weakly to strongly calcareous, bituminous in part, very pale yellow, slow streaming cut. LIMESTONE - 35% laminae in shale, white to cream, soft, chalky (Archie II) and sugary (Archie IIIA/B), microcrystalline to extremely fine crystalline, trace visible intergranular porosity to 3%, light even oil stain, pale yellow, slow streaming cut.

1470-1485m: DOLOMITIC LIMESTONE and CALCAREOUS DOLOMITE - 50-60% white, buff to dark brown, mottled in part (fossiliferous?), massive, hard, microcrystalline (Archie IIIA), very calcareous, trace extremely fine disseminated to medium clots of

pyrite, trace dark brown CHERT shards tight, no show. SHALE - 40-50% dark gray green to very dark gray and gray brown, firm (green) to hard (gray), blocky (gray) to subfissile and splintery (green), weakly to moderately calcareous.

1485-1490m: SHALE - as previous, 90%. CALCAREOUS DOLOMITE - as previous, 10%.

1490-1505m: SHALE - medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous. LIMESTONE - 20-30% cream translucent to medium brown, microcrystalline, hard, cherty in part, tight, no show.

1505-1523m: SHALE - medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous, silty in part, micromicaceous in part. LIMESTONE and CALCAREOUS DOLOMITE - 20-30% cream translucent to medium brown (medium oil stain or organic carbon?), microcrystalline, hard, cherty in part, tight, minor fU crystalline with trace glauconite, trace very fine dark green glauconite blebs, very weakly silty and argillaceous, trace pinpoint porosity, pale yellow, very slow streaming cut, rare bright white moderate streaming cut in hard, brown siltstone (one grain only - questionable).

Mount Clarke 1523m

1523-1525m: SANDSTONE - white, silt to vfl clear, angular quartz with trace unconsolidated, frosted, well rounded fU to mL quartz and hard brown black, rounded (phosphate?) grains, well sorted, trace vfl glauconite grains in part, trace very fine anhedral pyrite in part, 1% unconsolidated white, chalky platy (laminae?) grains - clay after feldspar?, poor to fair relief, moderately to well consolidated, silica and trace dolomite cement, no visible porosity, Sneider II/III, rare partial bitumen coatings on frosted quartz grains (no associated show), rare pale yellow patchy fluorescence, no cut.

1525-1527m: DOLOMITE - dark brown, massive, hard, microcrystalline, trace very fine dark green glauconite blebs, very weakly silty and argillaceous. SHALE - bright medium green, blocky, hard, weakly dolomitic, poorly sorted glauconitic sand stringers.

1527-1536m: SANDSTONE - white, silt to vfl with trace well rounded fU, minor fU-mL, well sorted, trace glauconite beads in part, poor to fair relief, moderately to well consolidated (20% unconsolidated silt to mL grains in 1535 sample), quartz overgrowths in part, no visible porosity, Sneider II/III, moderate to strong patchy white fluorescence, brightened in solvent but no cut.

Proterozoic 1537m

1536-1545m: SHALE/CLAYSTONE - dark brick red, subfissile, firm to hard, trace smooth, planar fracture surfaces. Mud saturated with suspended red clay.

CNRES Belleh Dukeh 00/d-63-66.50-126.30

1545-1555m: SHALE - 90% medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous, Mt. Cap cavings?, 10% dark brick red as previous. Mud washed off was green gray.

1555-1570m: SHALE - medium to dark gray and slightly greenish gray, hard, blocky to subblocky, non-calcareous, silty in part, trace light gray shaly tight SILTSTONE stringers, with rare very fine glauconite in part and rare dolomite veinlets <<1mm.

1570 m: **Driller's TD**

CNRES Belleh Dukeh 00/d-63-66.50-126.30

LITHOLOGY LOG POCKET

**Logs from this
section can be found
in the log section
of the fiche**

**RESISTIVITY/
CONDUCTIVITY**

[illegible][illegible][illegible]

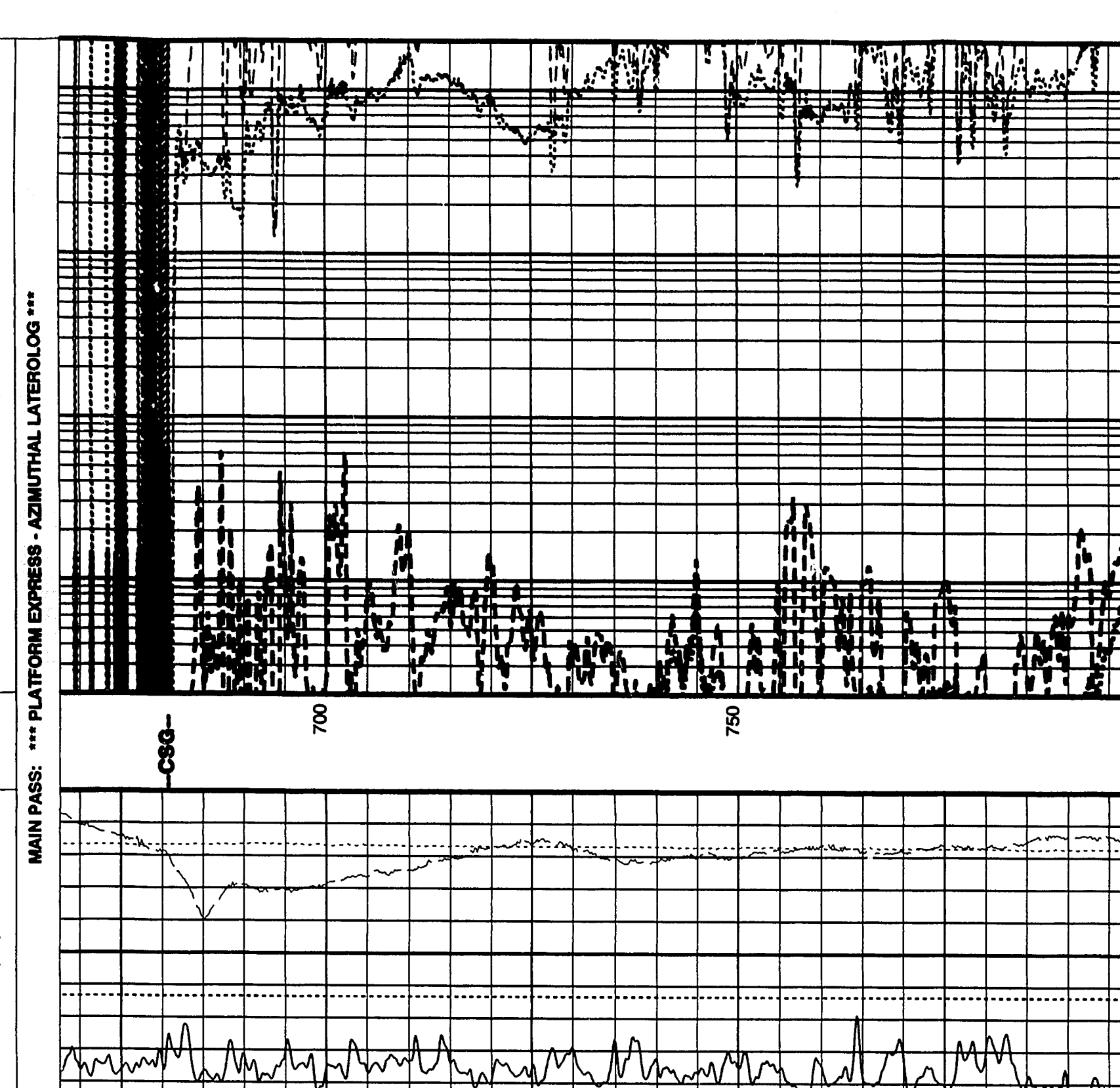
Input DLIS Files		
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		06-Mar-2003 13:58
		1552.3 M
		623.7 M

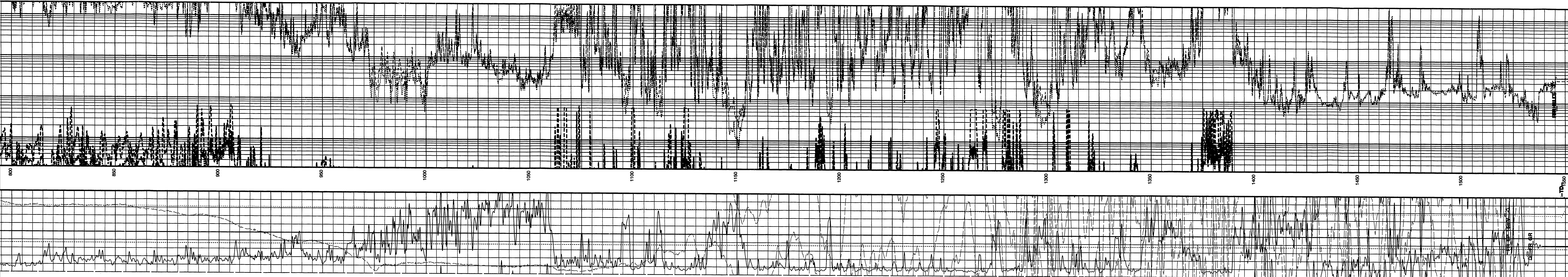
Output DLIS Files		
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		1552.3 M
		667.5 M

OP System Version: 10C0-306		
MCM		
10C0-306	DSL1-FTB	10C0-306
10C0-306	GP1T-C	10C0-306
10C0-306	BSP	10C0-306

Time Mark Every 60 S		
Tension (TENS)	25000 (N)	0
Gamma Ray (GR)	(GAP)	150
Bit Size (BS)	(MM)	375
SP [-15+ mV] (SP)	(mV)	30

PIP SUMMARY		
Laterolog Deep Resistivity (HLLD)	20000	20000
Laterolog Shadow Resistivity (MLLS)	20000	20000
Laterolog Deep Resistivity (HLLD)	(Ohmm)	2000
Laterolog Shadow Resistivity (MLLS)	(Ohmm)	2000





SP [-15...mV] (SP)	30
Bit Size (BS) (MM)	375
Gamma Ray (GR) (GAPI)	150
Tension (TENS) (N)	0

Laterolog Shadow Resistivity (LLS) (Ohm-M)	2000
Laterolog Depth Resistivity (HLLD) (Ohm-M)	2000

Laterolog Shadow Resistivity (LLS) (Ohm-M)	2000
Laterolog Depth Resistivity (HLLD) (Ohm-M)	2000

Time Mark Every 60 S	
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DLIS Name	Description	Parameters	Value
ARIP LYS	HALS-B: HILT Azimuthal Laterolog Sonde B		
ARIP SHOULDER	HALS Long Tool String Correction		
ARIP CC	HALS Shoulder Correction		
BHT	HALS Borehole Correction		
DHOP	Bottom Hole Temperature (used in calculations)	BitSize_Eccentered	25 DEGC
GRCC	HALS Grout Correction		
IMD	HALS Mechanical Standoff		
THOLD	HALS Despiking Filter Threshold (in %)		
UNSPK WINDOW	HALS Despiking Filter Window (inches)		
BHT	HALS Despiking Filter Window (inches)		
SPNV	SP Next Value		
SPVD	SP Directional Survey Computation		
TMD	Along-Hole depth of Ti-In Point		
BHT	Bottom Hole Temperature (used in calculations)		
LBFR	Trigger for MAXIS First Reading Label		
TDD	Total Depth - Driller		
TDL	Total Depth - Logger		
DO	Depth Offset for Playback		
MST	Mud Sample Temperature		
PP	Playback Processing		

10C0-306
HILTB-FTB
DTC-H

10C0-306
DSL-TFTB
GPT-C
BSP

10C0-306
10C0-306
10C0-306

Input DLIS Files

Output DLIS Files

DEFAULT

DEFAULT

HALS_SONIC_TLD_MCFL_010LUP

HALS_SONIC_TLD_MCFL_002PUP

FN:15

FN:1

PRODUCER

PRODUCER

06-Mar-2003 13:58

06-Mar-2003 18:28

629.7 M

667.5 M

10C0-306
HILTB-FTB
DTC-H

10C0-306
DSL-TFTB
GPT-C
BSP

10C0-306
10C0-306
10C0-306

Input DLIS Files

Output DLIS Files

DEFAULT

DEFAULT

HALS_SONIC_TLD_MCFL_010LUP

HALS_SONIC_TLD_MCFL_002PUP

FN:15

FN:1

PRODUCER

PRODUCER

06-Mar-2003 13:58

06-Mar-2003 18:28

629.7 M

667.5 M

OP System Version: 10C0-306

MCN

Time Mark Every 60 S

Tension (TENS)

Gamma Ray (GR)

Bit Size (BS)

SP (+15+ mV) (SP)

0

25000 (N)

150 (GAPI)

125 (MM)

-120 (MV)

Laterolog Deep Resistivity (HLD)

Laterolog Shadow Resistivity (HLS)

Laterolog Deep Resistivity (HLD)

Laterolog Shadow Resistivity (HLS)

2000

2000

0.2

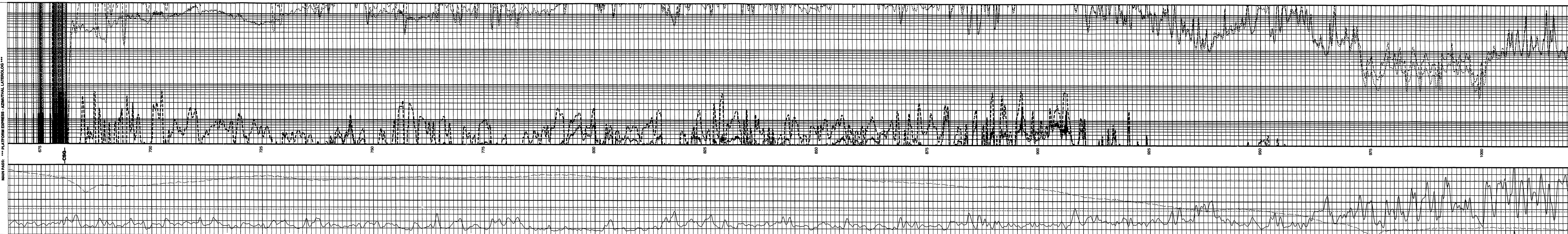
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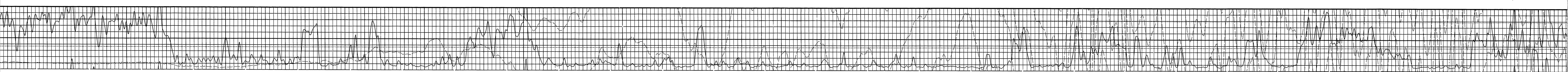
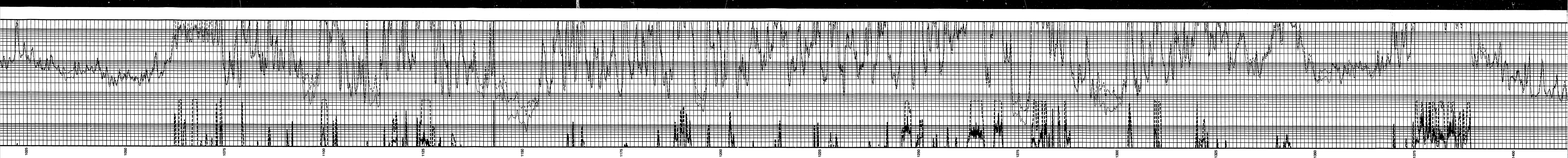
20000 (OHMM)

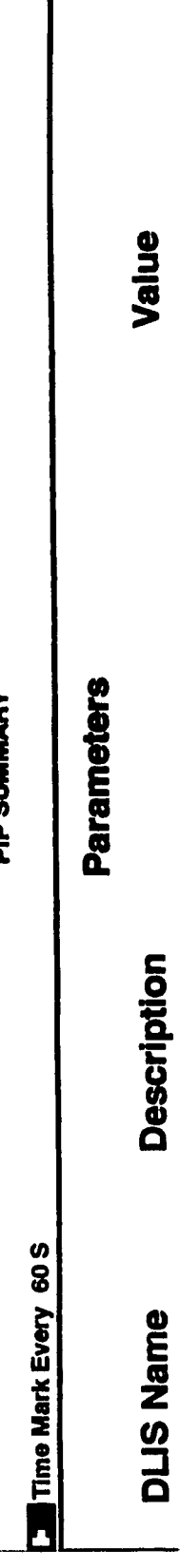
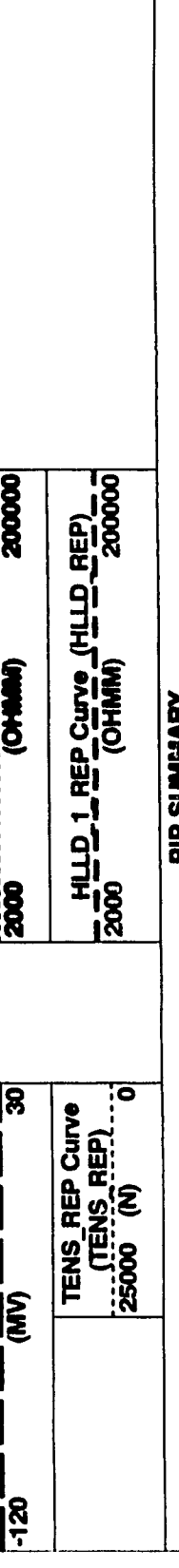
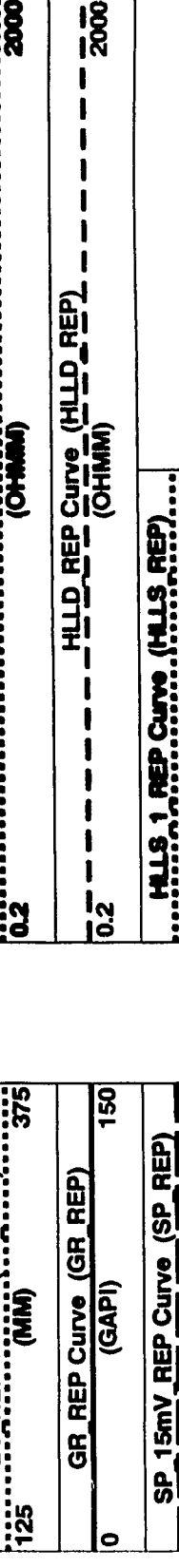
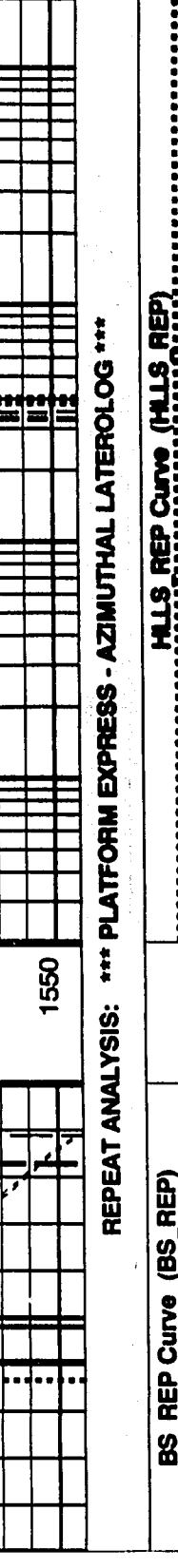
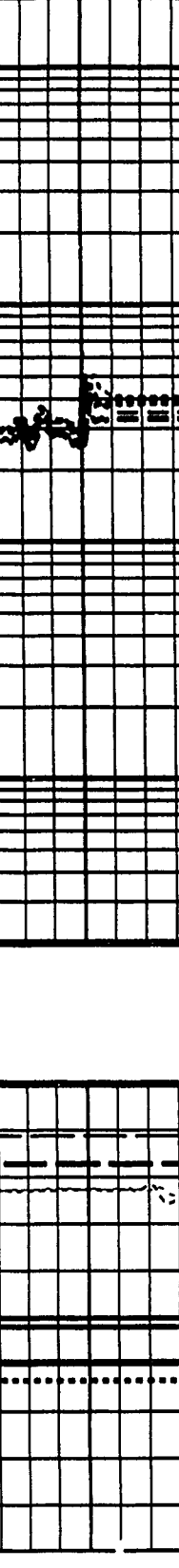
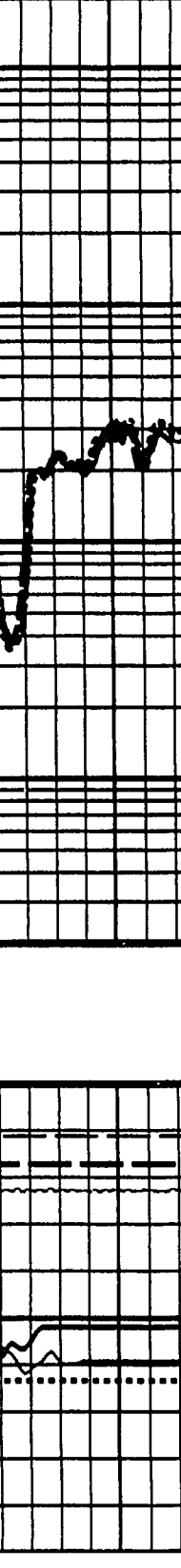
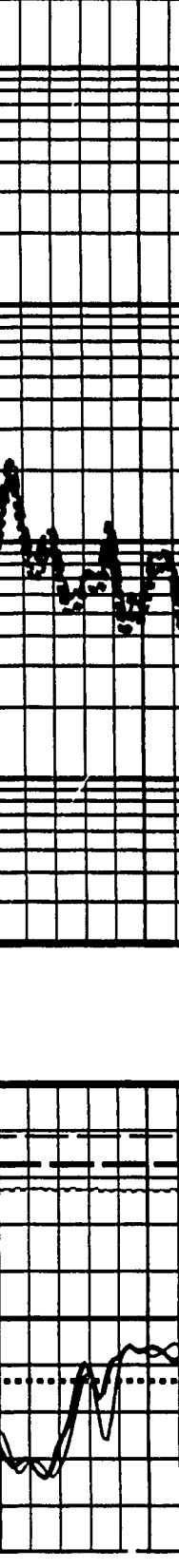
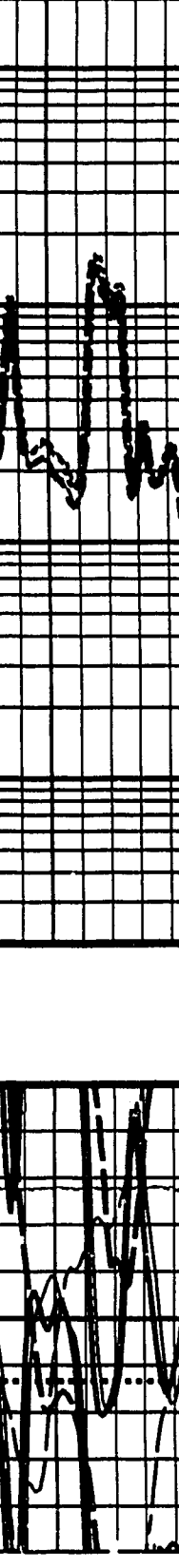
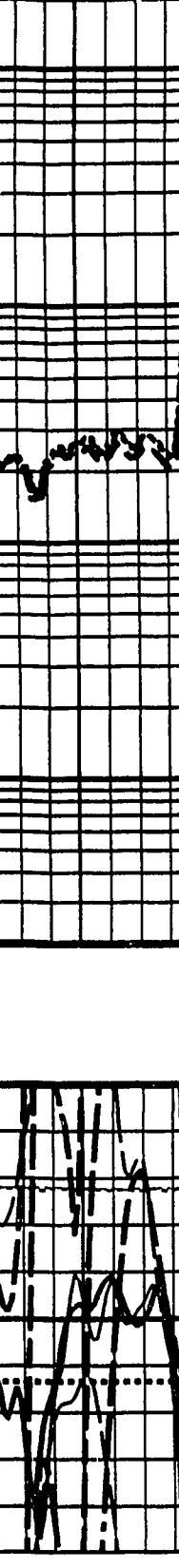
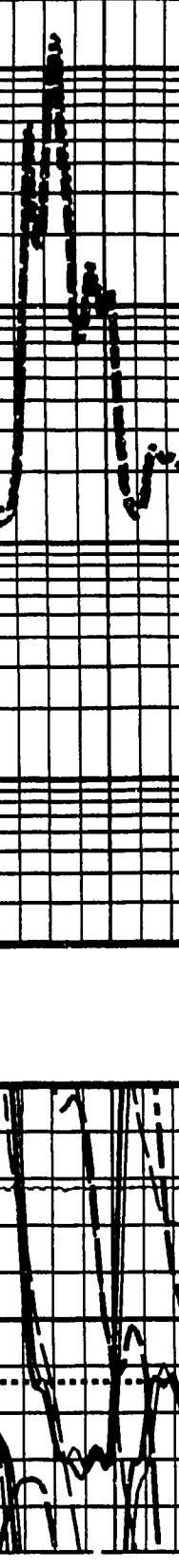
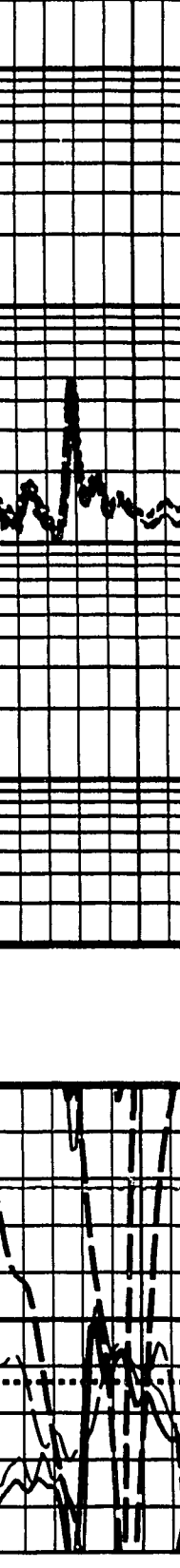
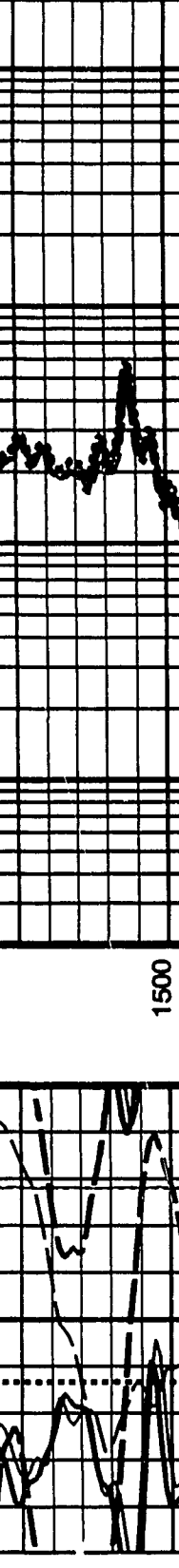
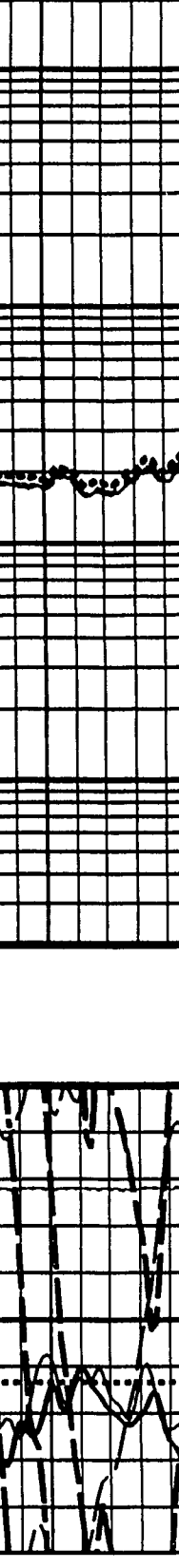
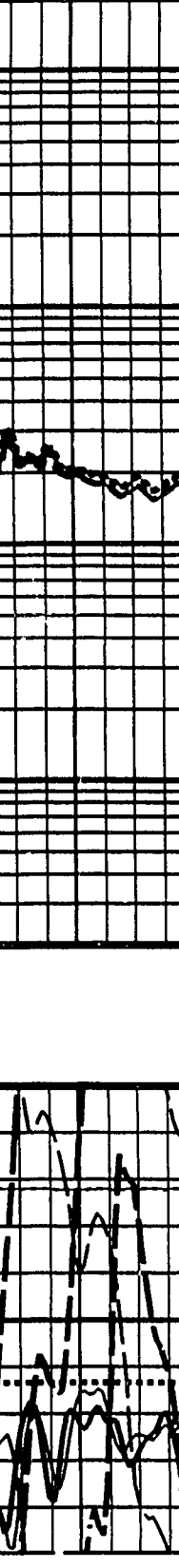
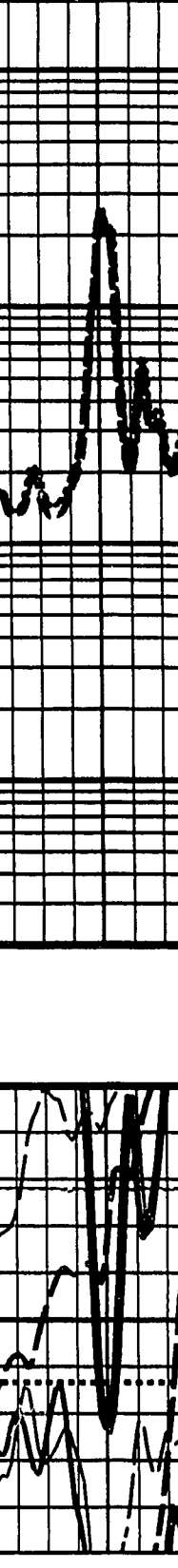
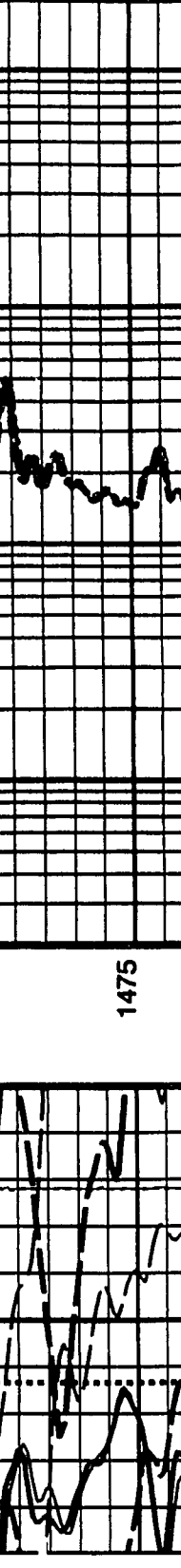
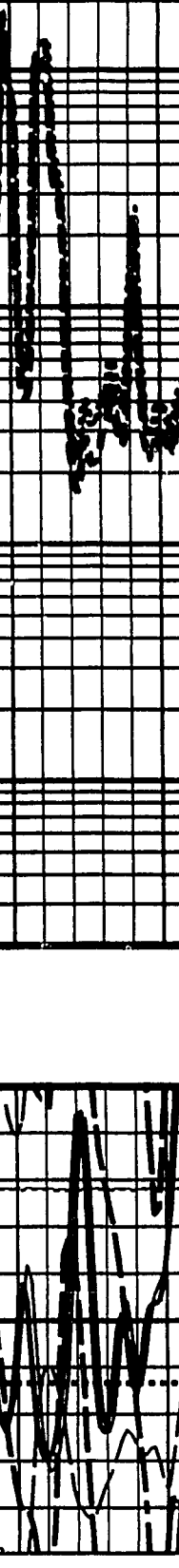
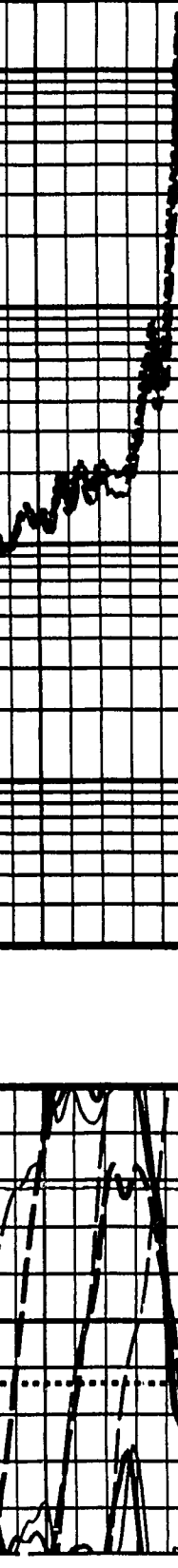
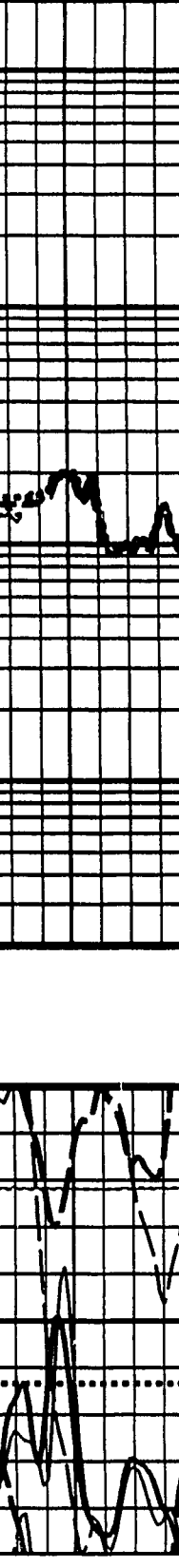
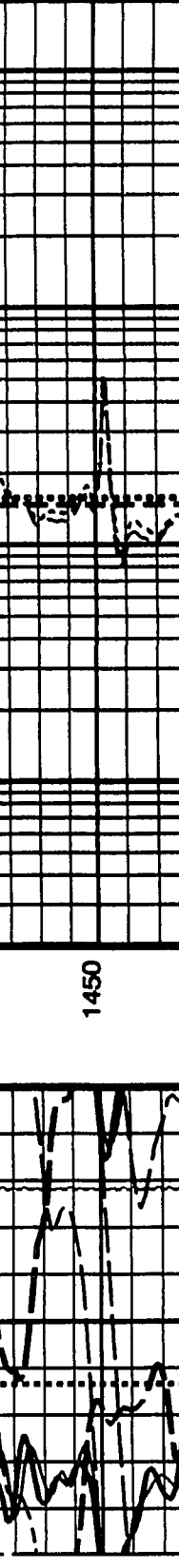
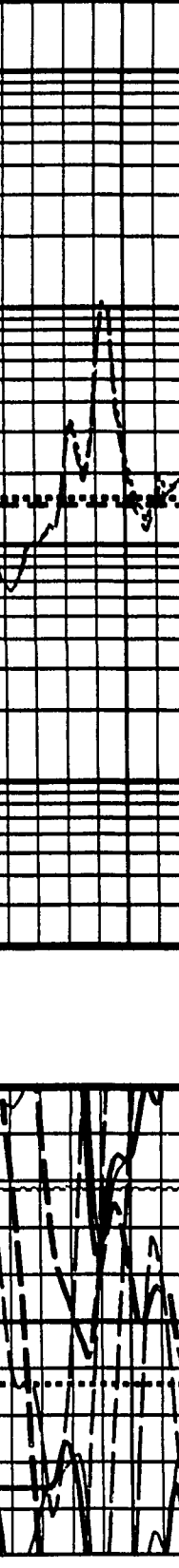
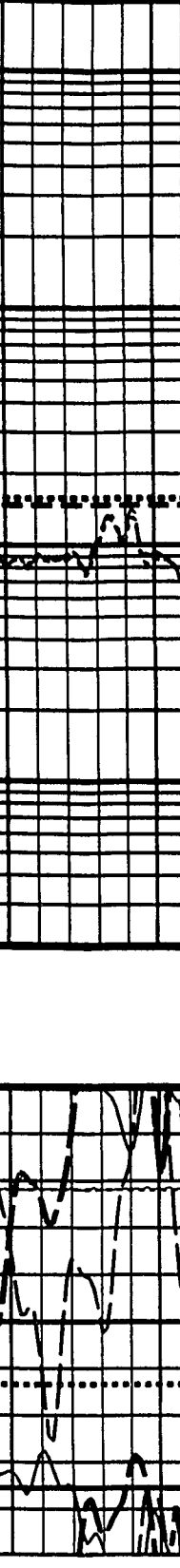
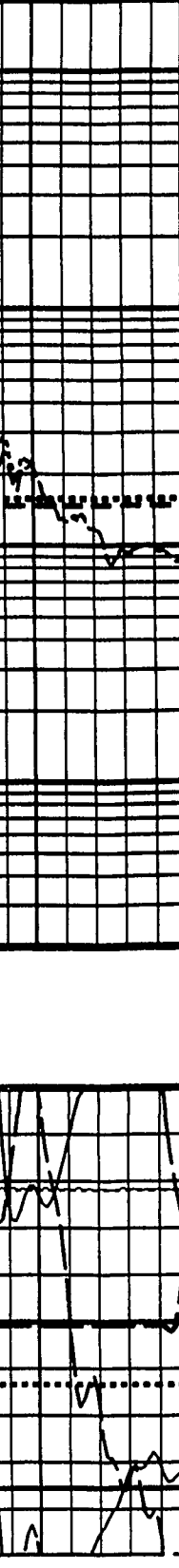
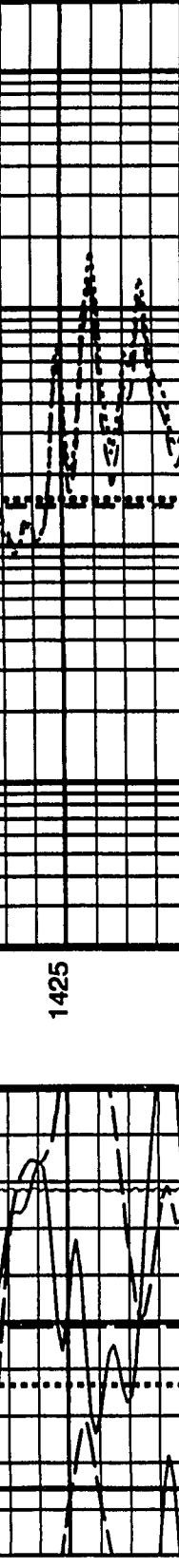
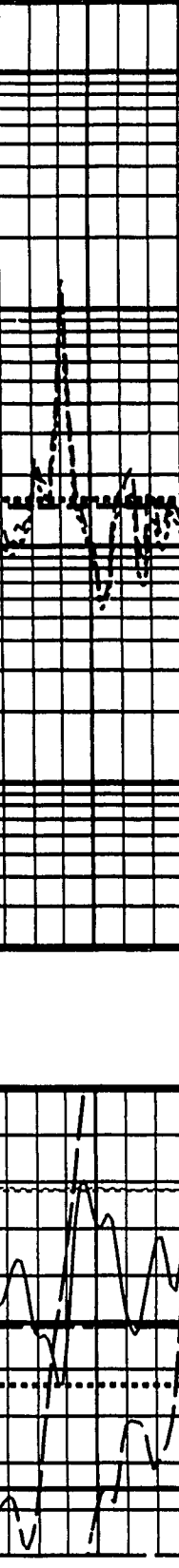
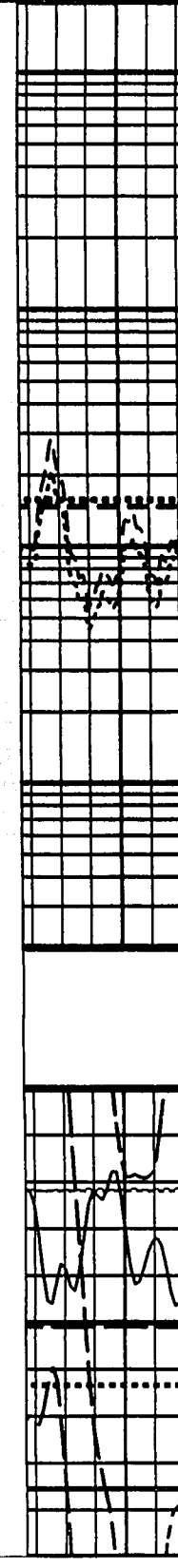
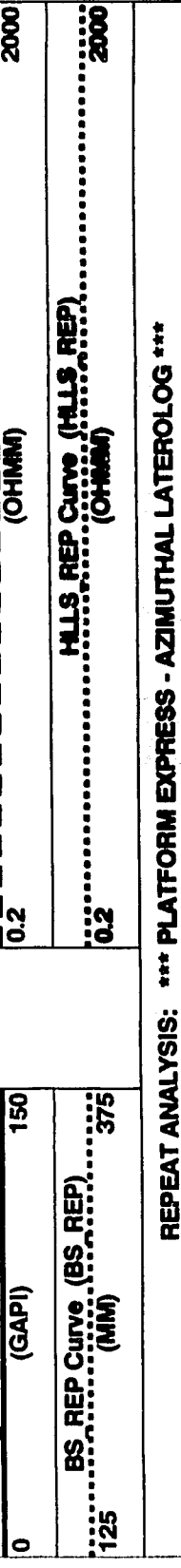
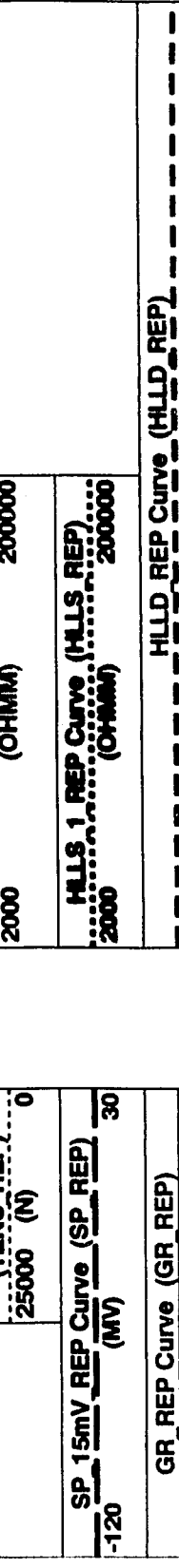
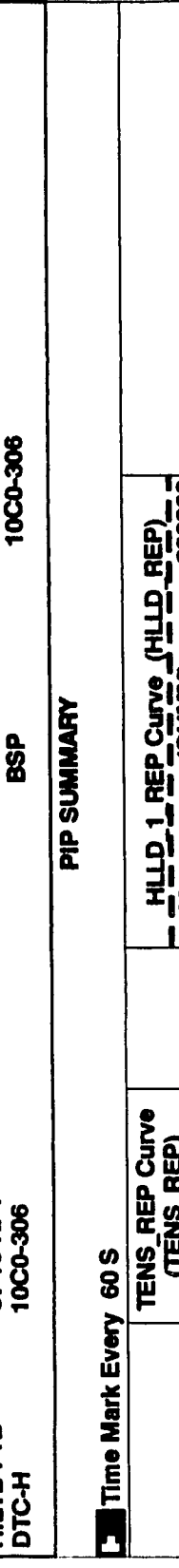
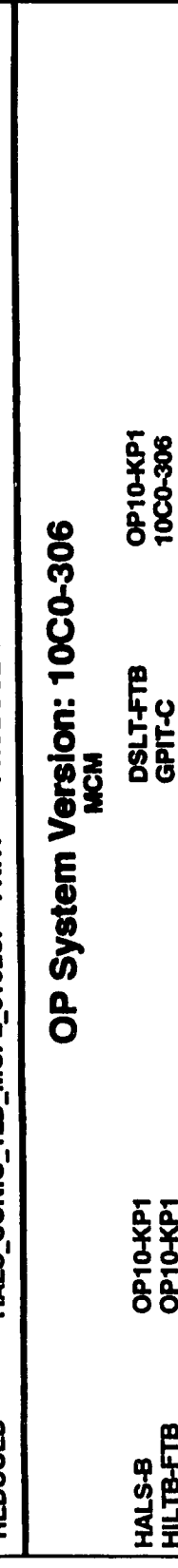
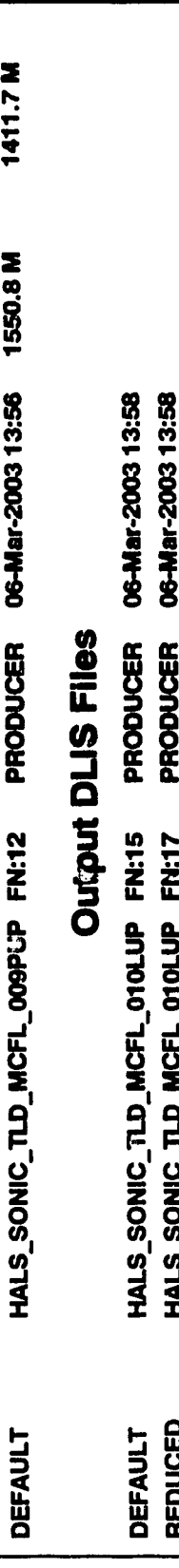
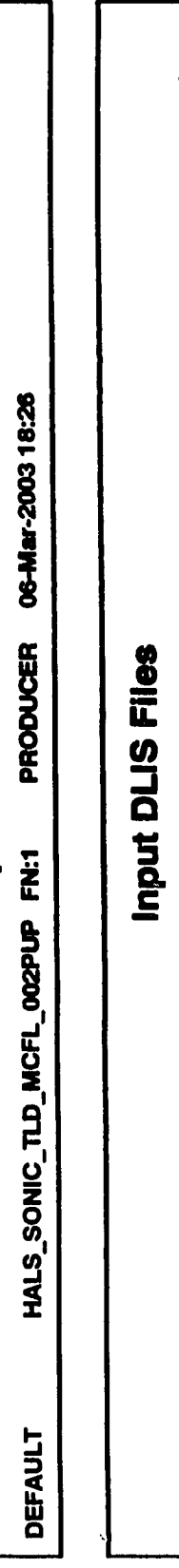
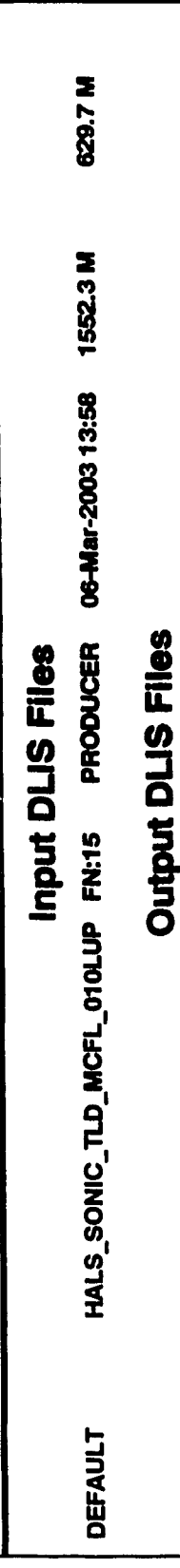
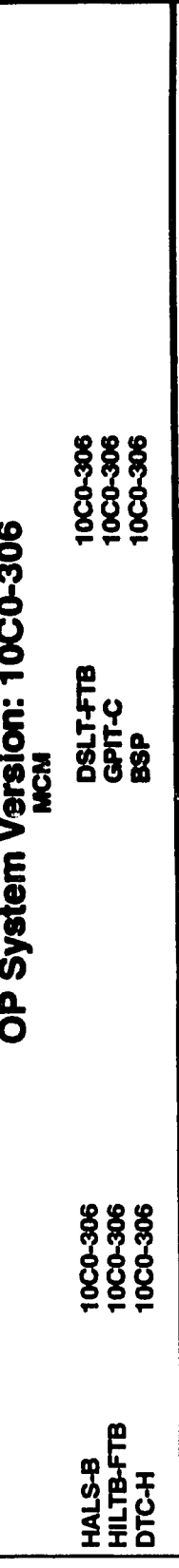
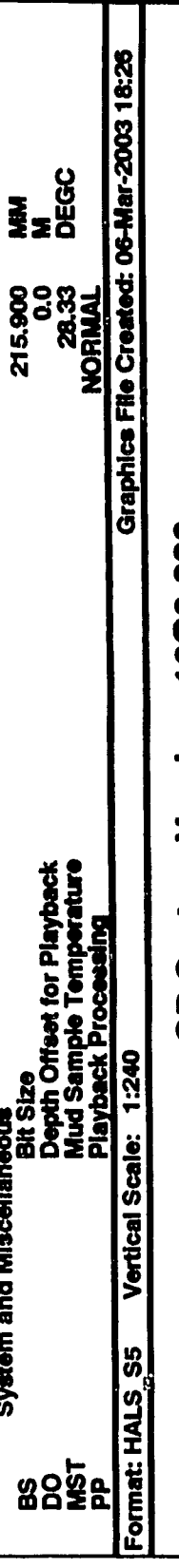
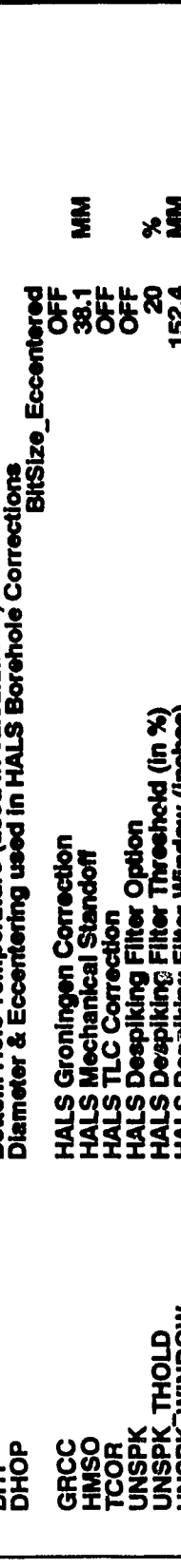
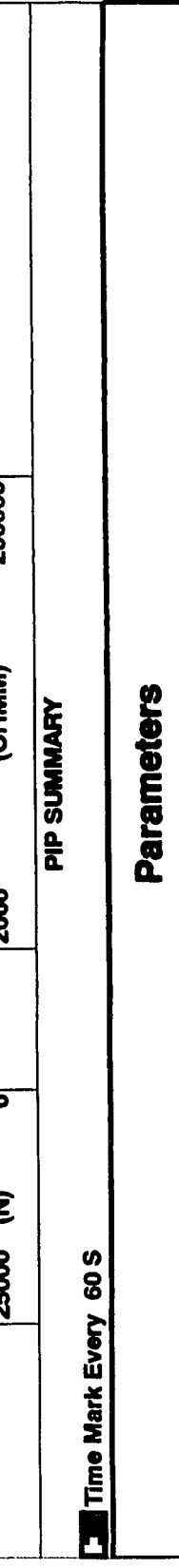
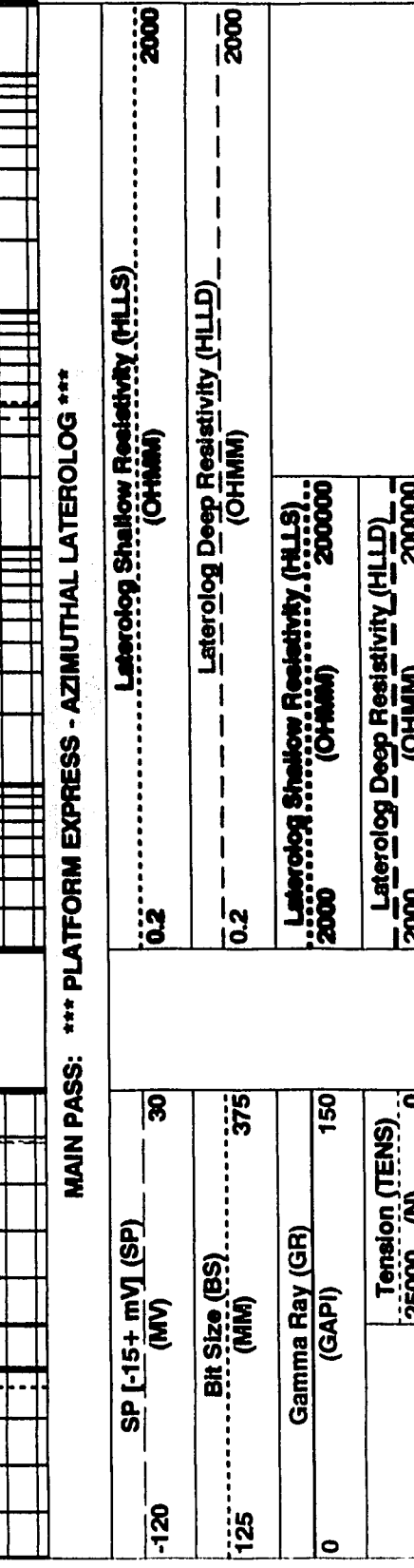
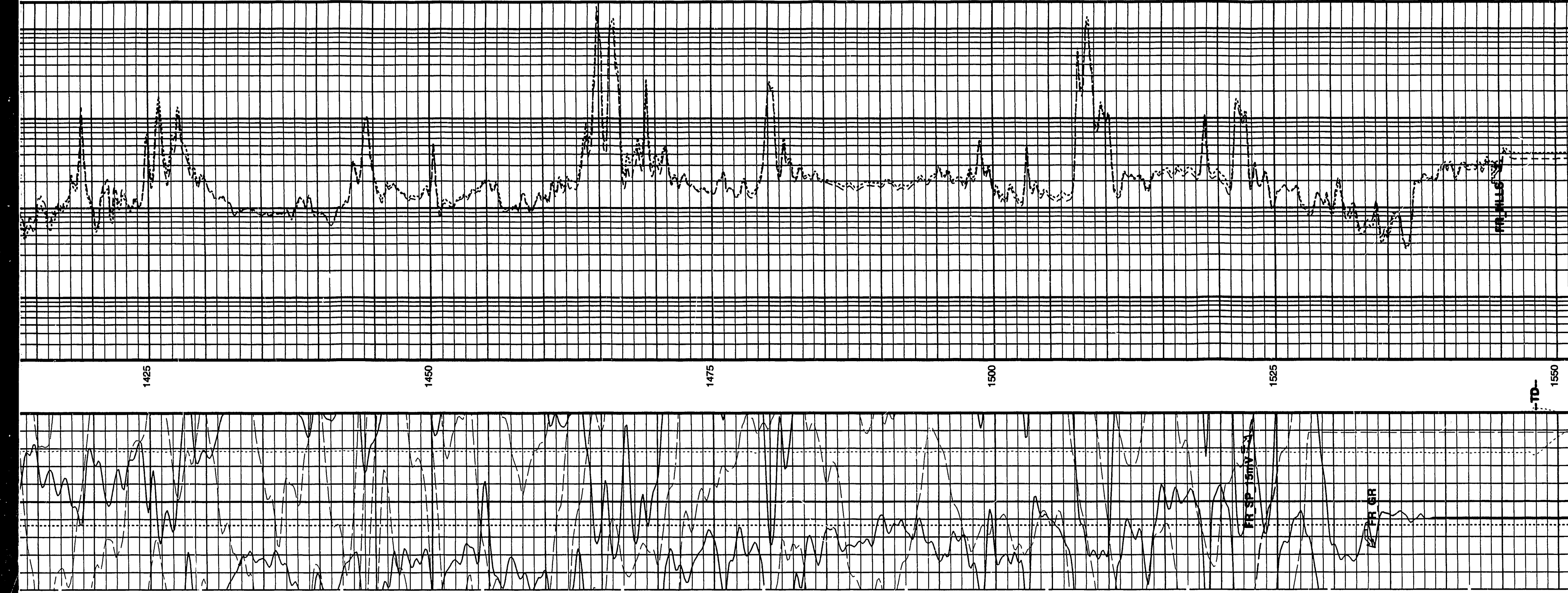
20000 (OHMM)

20000 (OHMM)

20000 (OHMM)







DLIS Name **Description** **Value**

HALS-B: HILT Azimuthal Laterolog Sonda B		
ARIP LITS	HALS Long Tool String Correction	OFF
ARIP SHOULDER	HALS Shoulder Correction	OFF
BHCC	HALS Borehole Correction	OFF
BHT	Bottom Hole Temperature (used in calculations)	ON
DROP	Diameter & Eccentricity used in ULS Borehole Corrections	25
GRCC	HALS Graveling Correction	DEGC
TCOR	HALS Mechanical Standoff	MM
UNSPK	HALS TLC Correction	OFF
UNSPK THOLD	HALS TLC Correction Option	1
UNSPK WINDOW	HALS Despiking Filter Window (Inches)	20
BHT	HALS Despiking Filter Window (Inches)	152.4
BHT	HALS Despiking Filter Window (Inches)	25
SPNV	SP Next Value	0
BHT	HOLEV: Integrated Hole/Cement Volume	25
BS	System and Miscellaneous	215.900
DORL	Depth Offset for Repeat Analysis	MM
MST	Depth Sample Temperature	0.0
	Depth Sample Temperature	28.33
	Vertical Scale: 1:240	DEGC

Format: HALS_S5 REP Vertical Scale: 1:240 Graphics File Created: 06-Mar-2003 13:58

OP System Version: 10C0-306

HALS-B	OP10-KP1	
HILT-B-TB	DSL-TFTB	OP10-KP1
DTC-H	GPT-C	10C0-306
	BSP	10C0-306

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCF_009UP	FN:12	PRODUCER	06-Mar-2003 13:56	1550.8 M	1411.7 M
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Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCF_010UP	FN:15	PRODUCER	06-Mar-2003 13:58	629.7 M
REDUCED	HALS_SONIC_TLD_MCF_010UP	FN:17	PRODUCER	06-Mar-2003 13:58	667.5 M

Input DLIS Files

DEFAULT	HALS_SONIC_TLD_MCF_010UP	FN:15	PRODUCER	06-Mar-2003 13:58	1552.3 M
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Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCF_002UP	FN:1	PRODUCER	06-Mar-2003 18:26	1552.3 M
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OP System Version: 10C0-306

HALS-B	10C0-306	
HILT-B-TB	DSL-TFTB	10C0-306
DTC-H	GPT-C	10C0-306
	BSP	10C0-306

PIP SUMMARY

High Resolution Deep Resistivity (HRLD) (OhmM)	200000
High Resolution Shallow Resistivity (HRLS) (OhmM)	200000
High Resolution Deep Resistivity (HRLD) (OhmM)	0.2
High Resolution Shallow Resistivity (HRLS) (OhmM)	0.2

HIRES SECTION: * PLATFORM EXPRESS - AZIMUTHAL LATEROLOG *****

Time Mark Every 60 S

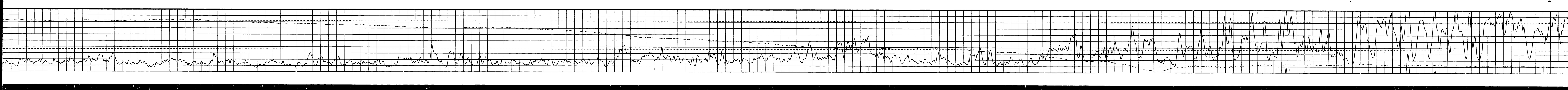
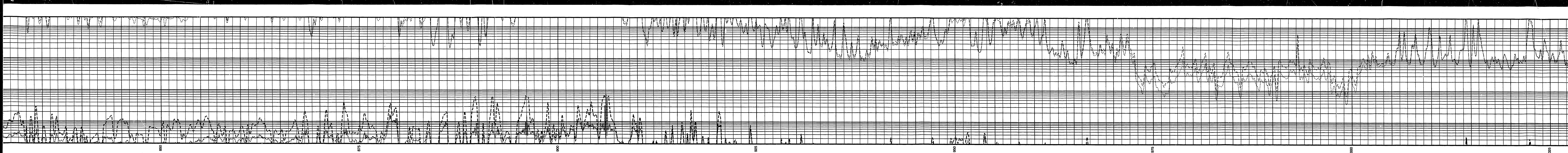
Tension (TENS) 0

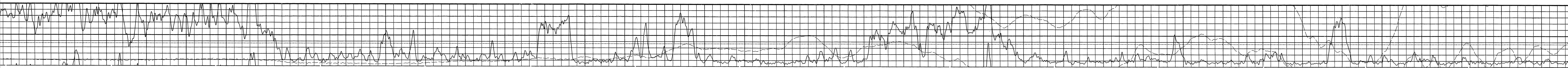
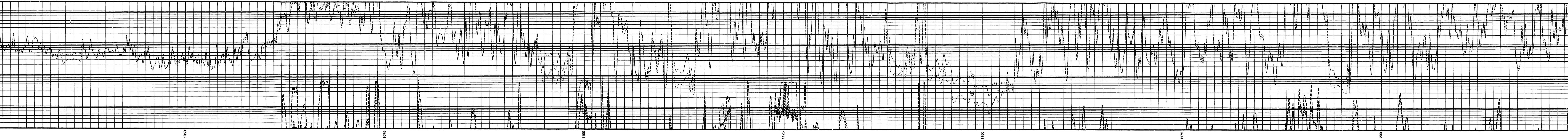
Gamma Ray (EHGR) 150

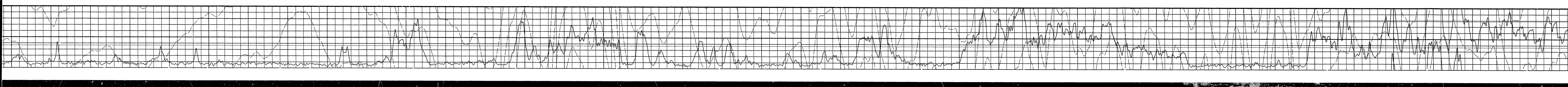
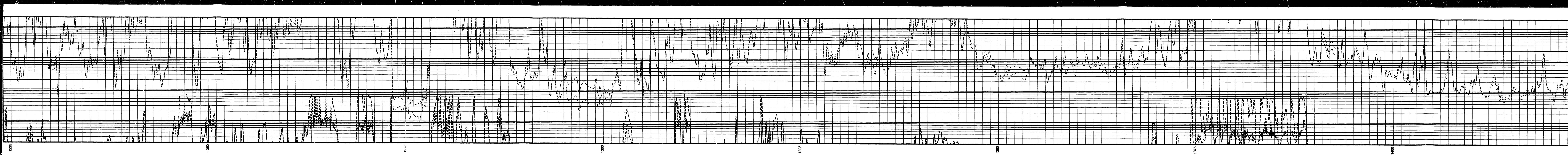
BH Size (BS) 375

SP 15+ mV (SP) 30

SP 15+ mV (SP) 30







**LEGIBILITY
OF LOG
COULD VARY
DUE TO
COLOR
CONTENT**

SONIC

Output DLIS Files

DEFAULT	HALS_SONIC_TLD_MCF_010LUP	FN:15	PRODUCER	06-Mar-2003 13:58	1552.3 M	629.7 M
REDUCED	HALS_SONIC_TLD_MCF_010LUP	FN:17	PRODUCER	06-Mar-2003 13:58	1552.3 M	629.7 M

OP System Version: 10C0-306

HALS-B	OPT10-KP1	DSL-T-FTB	OPT10-KP1
HILTB-FTB	OPT10-KP1	GPIT-C	10C0-306
DTC-H	10C0-306	BSP	10C0-306

Changed Parameter Summary

DLIS Name	New Value	Previous Value	Depth & Time
TDL	548.00 M	1547.50 M	1229.2 14:24:27

Time Mark Every 60 S

Integrated Transit Time Minor Pip Every 1 MS

Integrated Transit Time Major Pip Every 10 MS

Stuck Stretch (STT) (M)

Delta-T (DT) (US/M)

100

500

1000

1500

2000

2500

3000

3500

4000

4500

5000

5500

6000

6500

7000

7500

8000

8500

9000

9500

10000

10500

11000

11500

12000

12500

13000

13500

14000

14500

15000

15500

16000

16500

17000

17500

18000

18500

19000

19500

20000

20500

21000

21500

22000

22500

23000

23500

24000

24500

25000

25500

26000

26500

27000

27500

28000

28500

29000

29500

30000

30500

31000

31500

32000

32500

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33500

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89500

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90500

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121500

122000

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175000

175500

176000

176500

177000

177500

178000

178500

179000

179500

180000

180500

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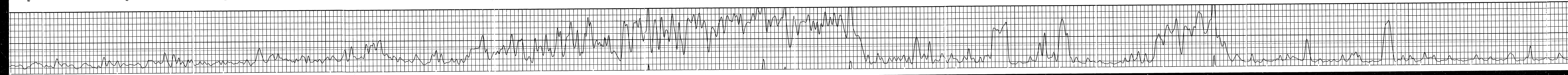
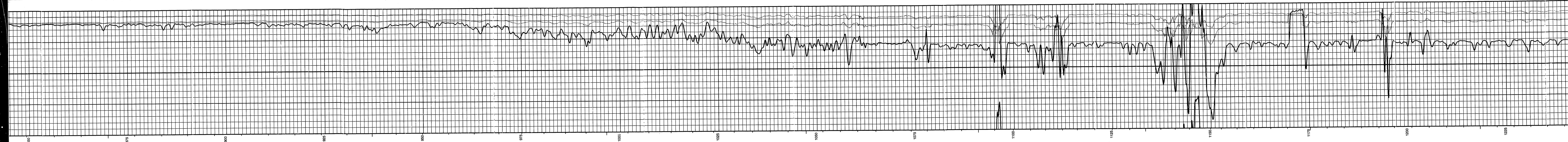
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8		0.996	8		0.483
9		0.997	9		0.516
10		0.997	10		0.479
11		0.998	11		0.480
0.874 (Minimum) 1.000 (Nominal) 1.147 (Maximum)			-6.300 (Minimum) 0.000 (Nominal) 6.300 (Maximum)		
Before: 6-Mar-2003 13:08					

					
5		0.983	5		1.006
6		0.984	6		1.094
7		0.988	7		1.077
8		0.983	8		1.108
9		0.984	9		1.068
10		0.982	10		1.146
11		0.985	11		1.133
0.842 1.000 1.187			-3.300 0.000 3.300		
(Minimum) (Nominal) (Maximum)			(Minimum) (Nominal) (Maximum)		
Before: 6-Mar-2003 13:08					

HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 3A					
Idx	Az 3A Gain UV	Value	Idx	Az 3A Phase DEG	Value
0		0.992	0		0.676
1		0.985	1		0.655
2		0.988	2		0.664
3		0.988	3		0.650
4		0.991	4		0.719
5		0.987	5		0.581
6		0.988	6		0.679
7		0.992	7		0.670
8		0.987	8		0.687
9		0.998	9		0.670
10		0.987	10		0.703
11		0.990	11		0.686
0.842		1.000	-2.000		2.000
(Minimum)		(Nominal)	(Minimum)		(Nominal)
1.187					
(Maximum)					
Before: 6-Mar-2003 13:08					

HILT Azimuthal Laterolog Sonde B Wellsite Calibration					
HALSB Azimuthal Voltages mode 3B					
Idx	Az 3B Gain UV	Value	Idx	Az 3B Phase DEG	Value
0		1.006	0		0.184
1		0.994	1		0.109
2		0.999	2		0.067
3		0.997	3		0.079
4		1.009	4		0.348
5		0.995	5		0.036
6		1.000	6		0.108
7		1.002	7		0.173
8		1.000	8		0.204
9		0.999	9		0.141
10		1.002	10		0.269
11		1.004	11		0.309
0.845 1.000 1.183 (Minimum) (Nominal) (Maximum)			-2.000 0.000 2.000 (Minimum) (Nominal) (Maximum)		
Before: 6-Mar-2003 13:08					

High resolution Integrated Logging Tool-DTS / Equipment Identification

Primary Equipment:

HILT Gamma-Ray Neutron Sonde-DTS
Gamma-Ray
Neutron with Alpha Source
Z-Axis Accelerometer
Neutron Logging Source
Neutron Source Radioactive
Compensated Neutron Box
HTBC Communication Assembly DTS Mode

HGNS - B

HGR -

HCNT -

HACC -

NLS - KL

NSR - F

CNB - AB

HMCA -

2516

Auxiliary Equipment:

Neutron Calibration Tank
Gamma Source Radioactive
HGNS Housing

NCT - B

GSR - U/Y

HGNS -

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig - Bkg) GAPI	Value	Phase	Gamma Ray (Calibrated) GAPI	Value
Before		32.56	Before		174.6	Before		165.0
0	30.00 (Minimum) 120.0 (Maximum)		158.7	174.6 (Minimum) 190.5 (Maximum)		150.0	165.0 (Minimum) 180.0 (Maximum)	
Before: 4-Mar-2003 14:03								

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.34	Master		27.65
Before		28.77	Before		31.73
5.000	25.34 (Minimum) 40.00 (Maximum)		5.000	27.65 (Minimum) 40.00 (Maximum)	
Master: 19-Dec-2002 10:44 Before: 4-Mar-2003 14:05					

High resolution Integrated Logging Tool-DTS Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2	Value
Before		9.831
9.610	9.810 (Minimum) 10.01 (Maximum)	
Before: 6-Mar-2003 12:29		

High resolution Integrated Logging Tool-DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5898	Master		2493	Master		2.366
5000	6031 (Minimum) 7200 (Maximum)		2075	2793 (Minimum) 3125 (Maximum)		2.120	2.159 (Minimum) 2.540 (Maximum)	
Master: 19-Dec-2002 10:44								

General Purpose Inclinator / Equipment Identification

Primary Equipment:

GPIT Cartridge - C

GPIC - C

Auxiliary Equipment:

GPIT Housing

GPIH - B

Company: CANNAT RESOURCES INC.

Well: CNRES BELLA DUKEH D-63

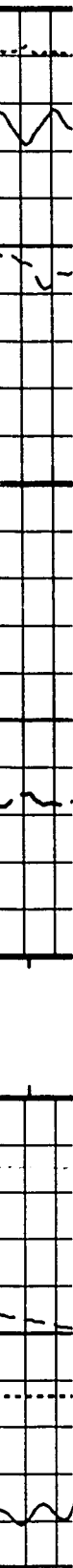
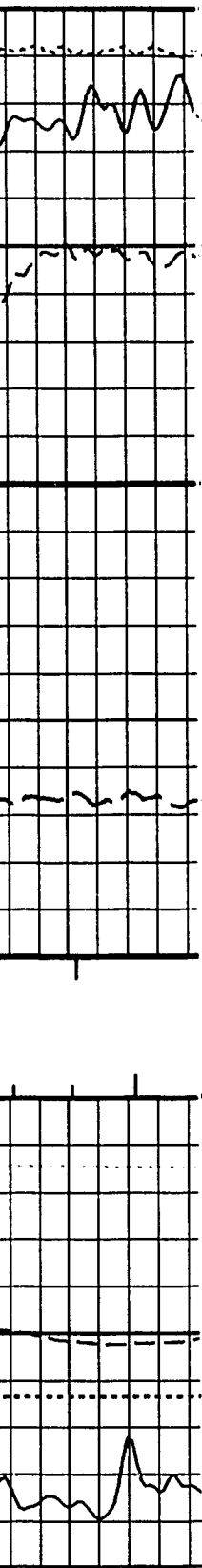
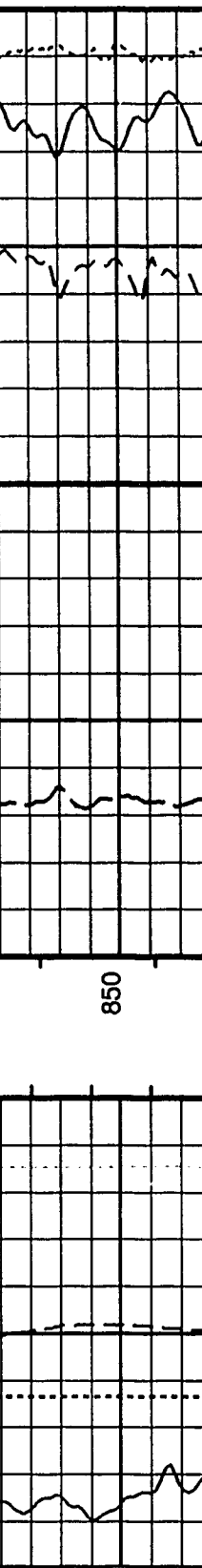
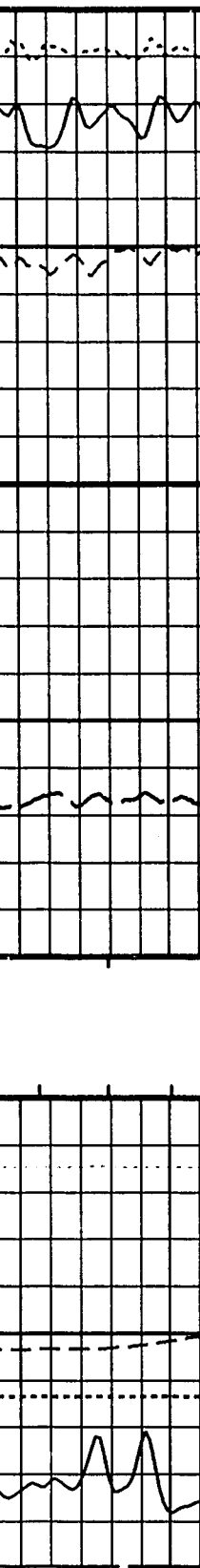
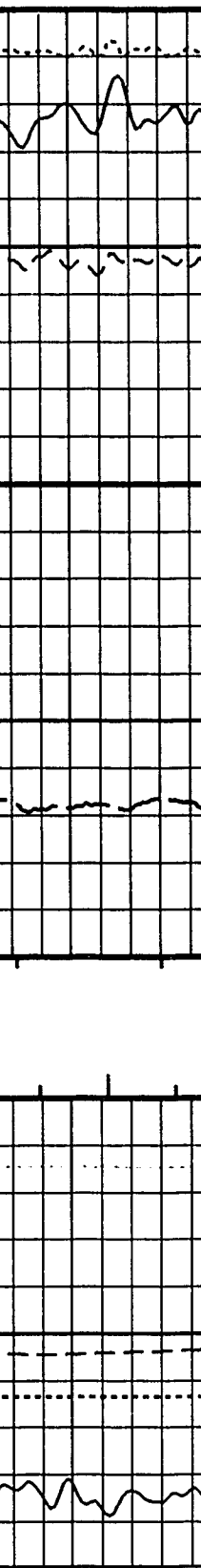
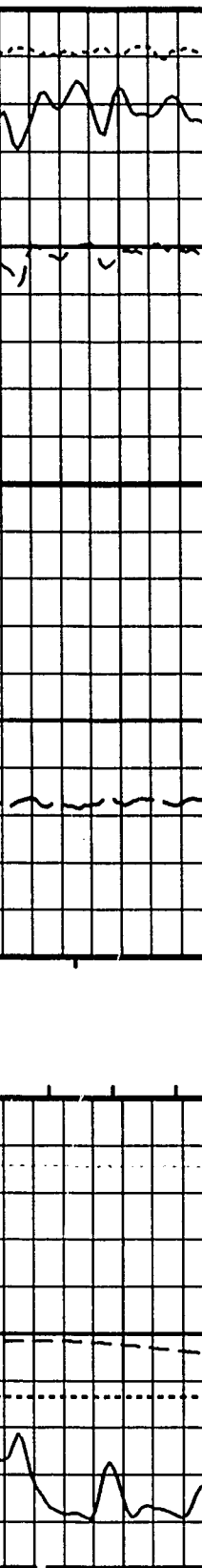
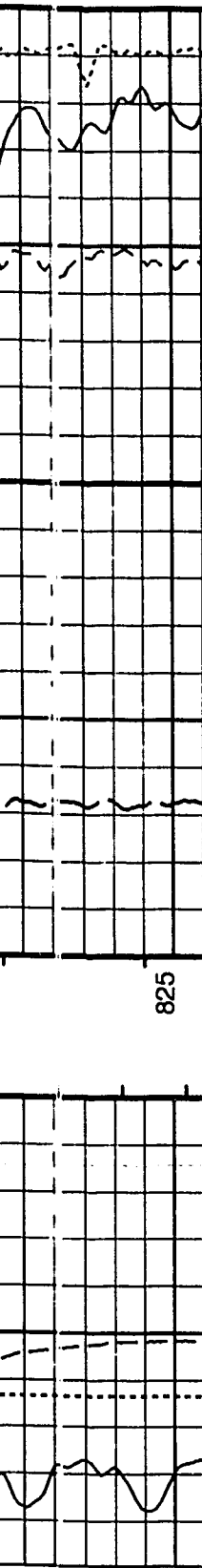
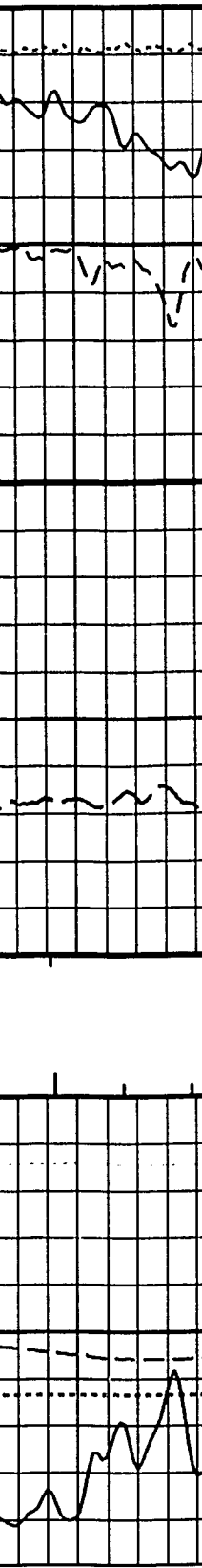
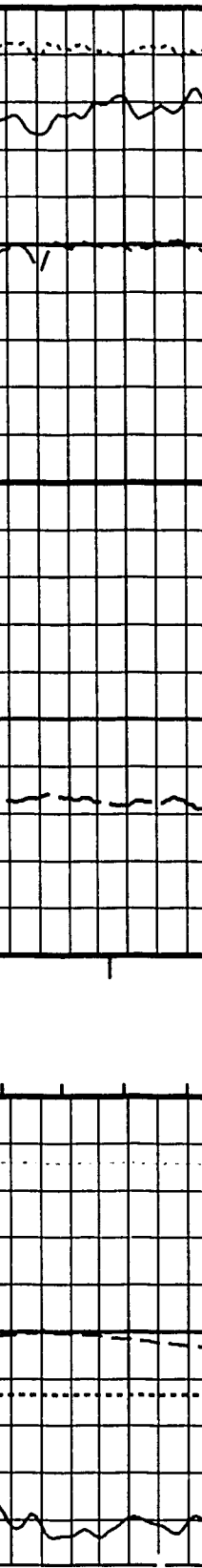
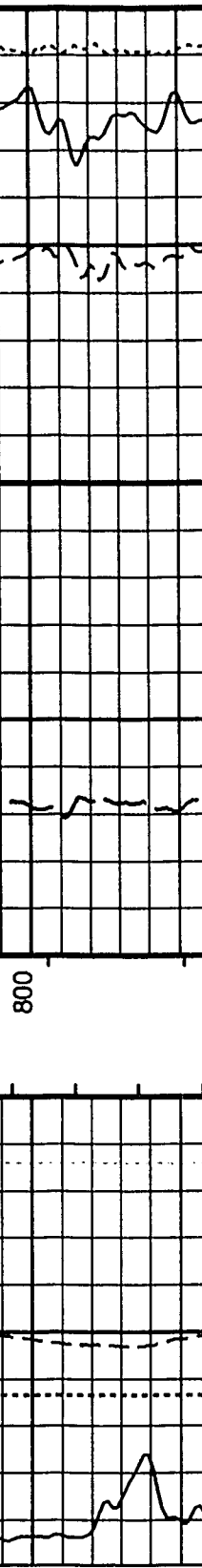
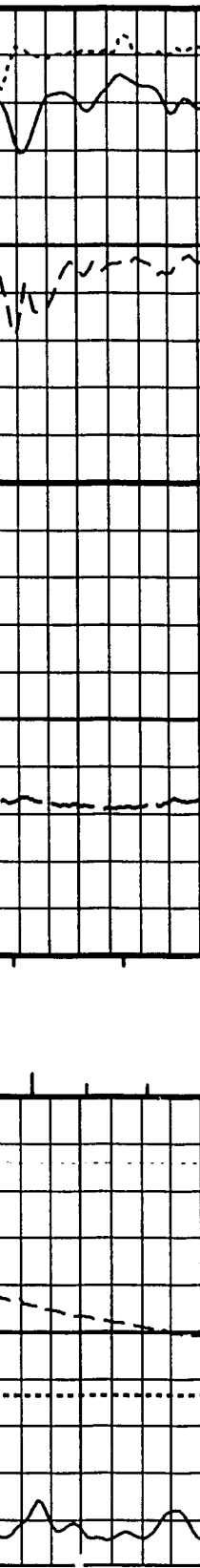
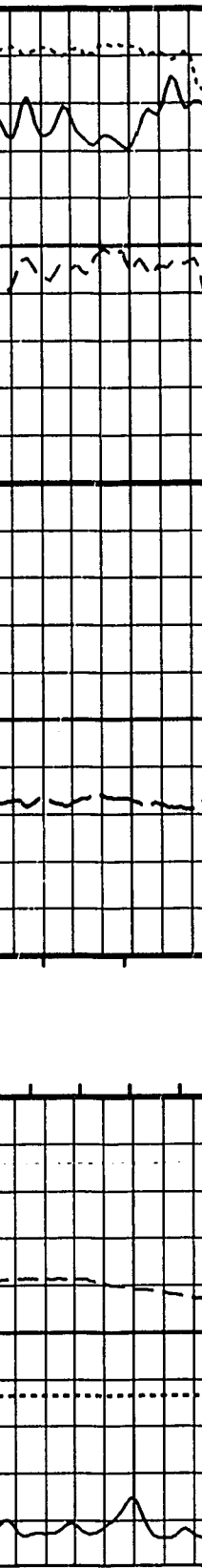
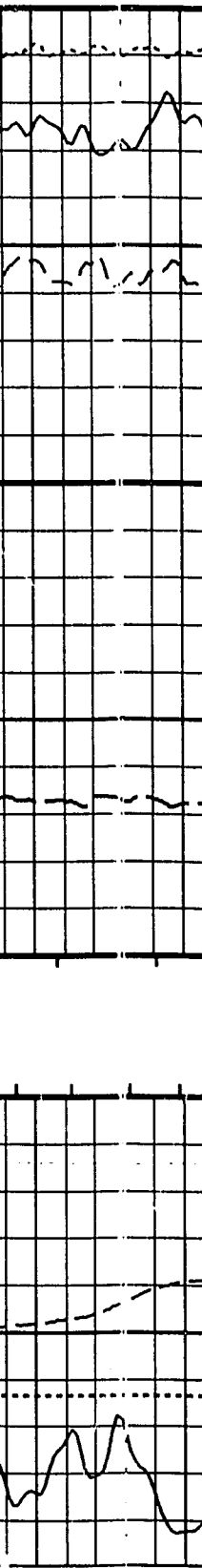
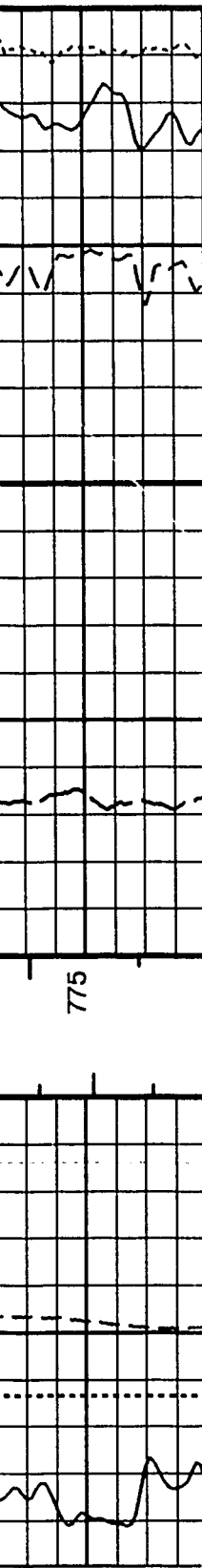
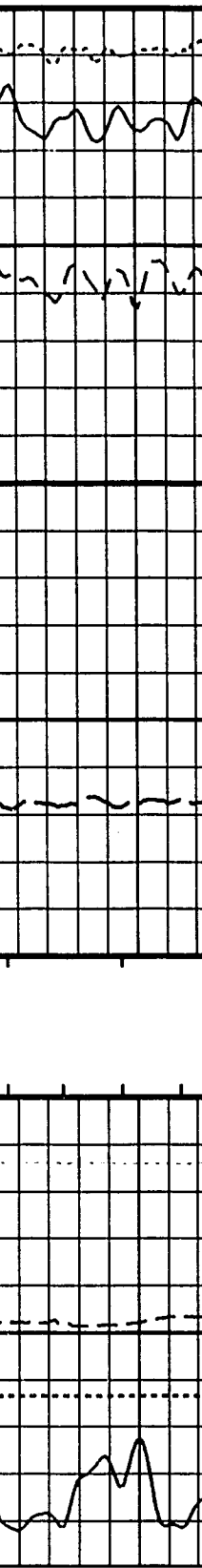
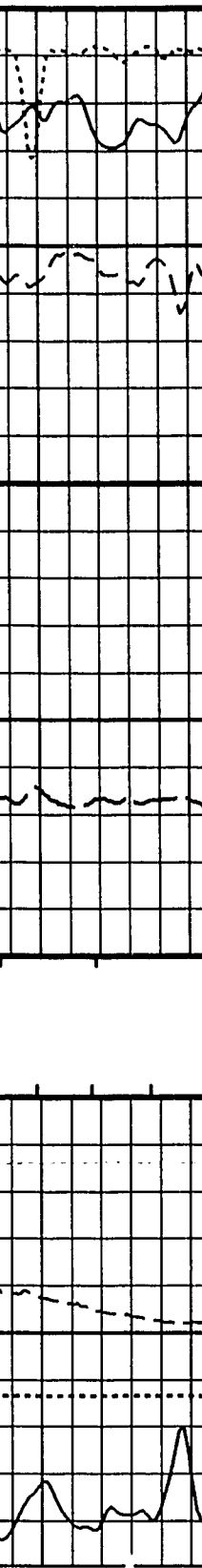
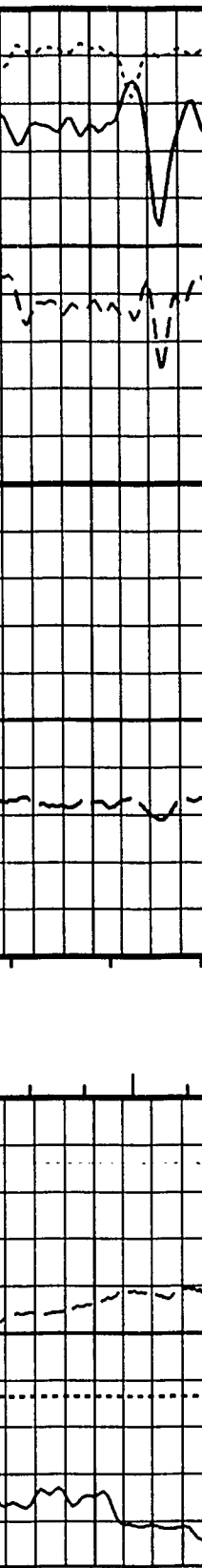
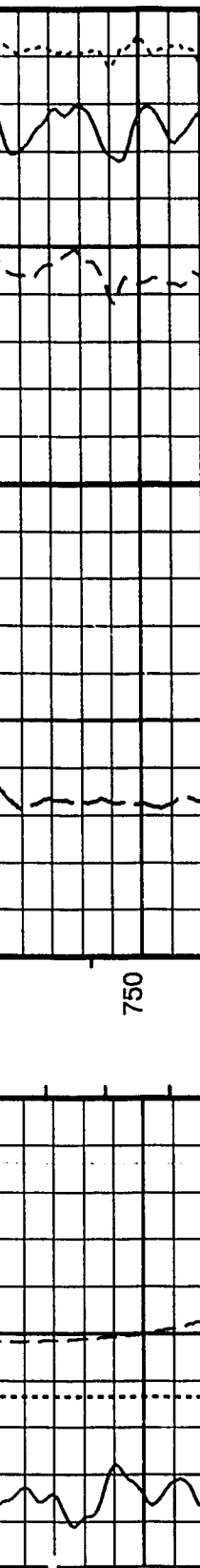
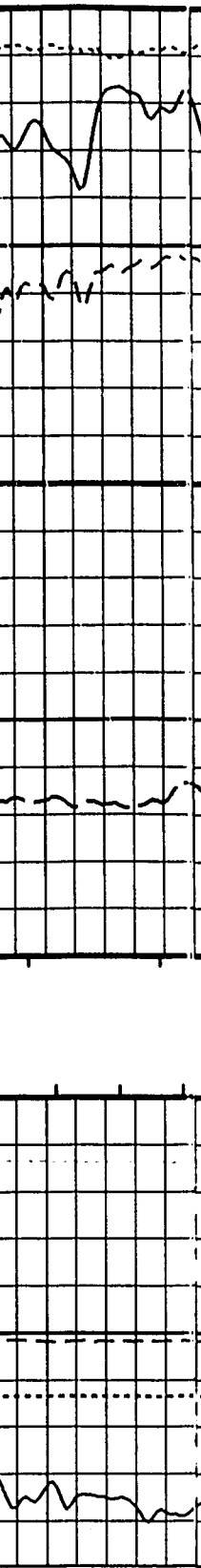
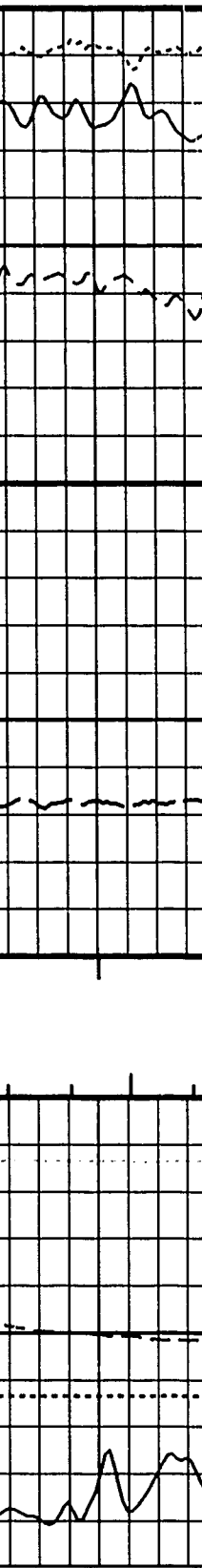
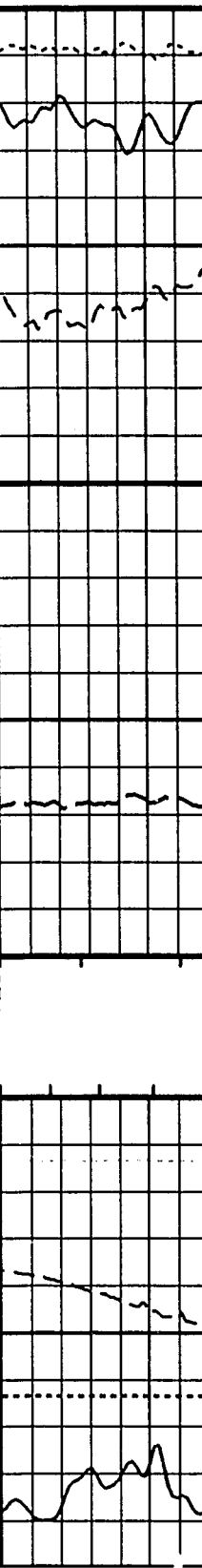
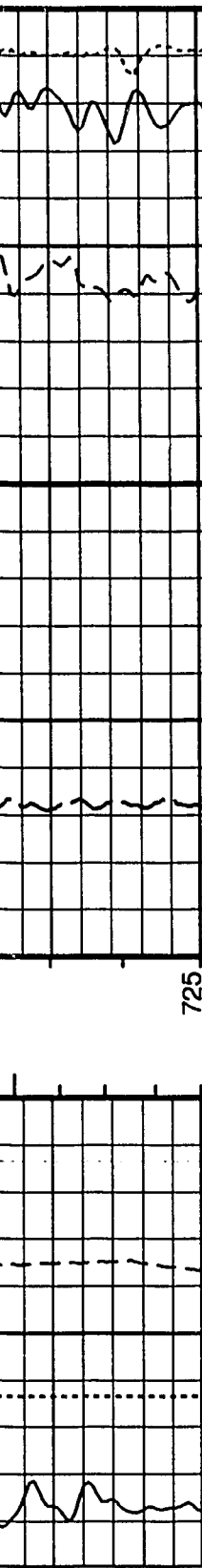
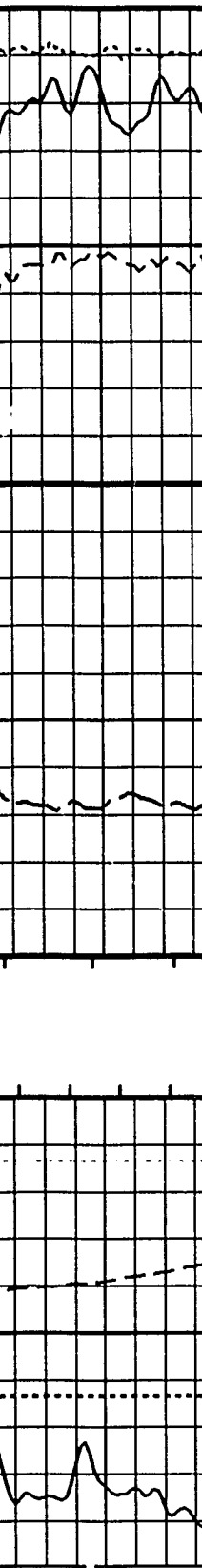
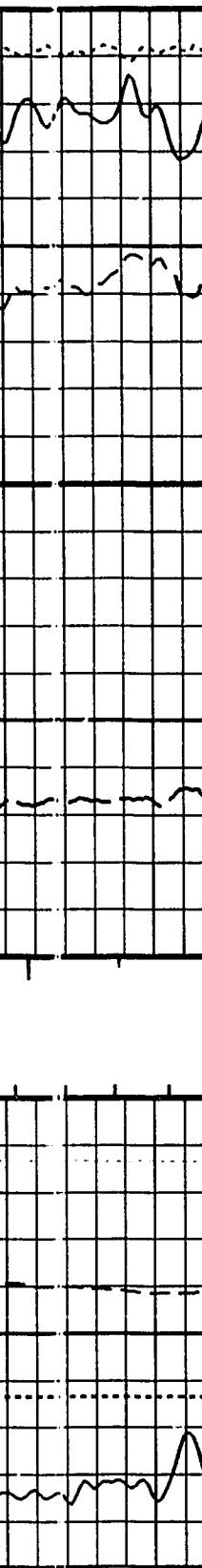
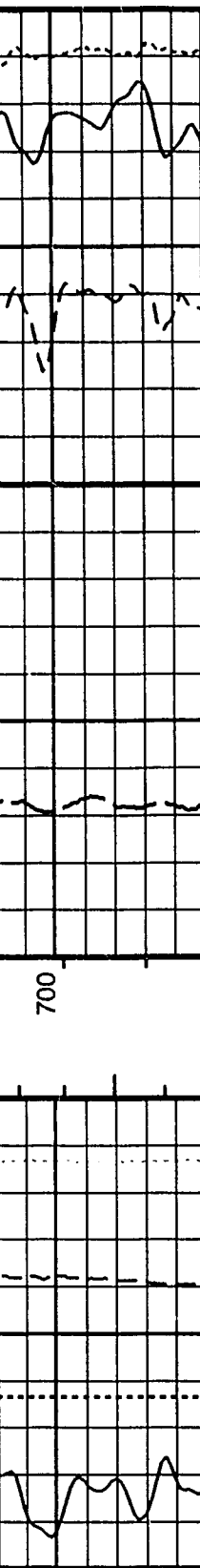
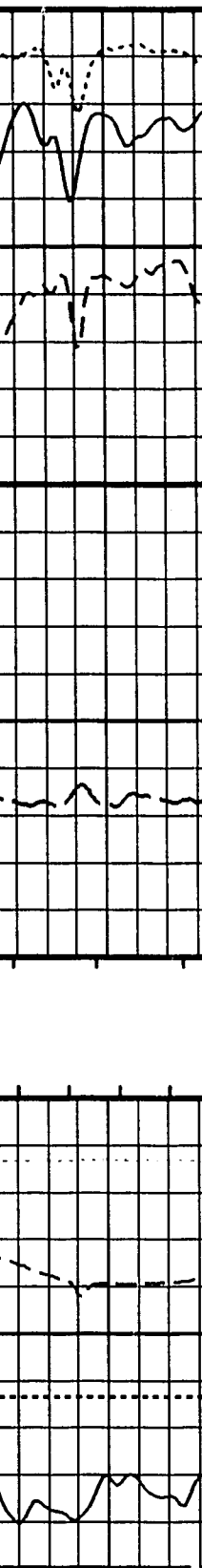
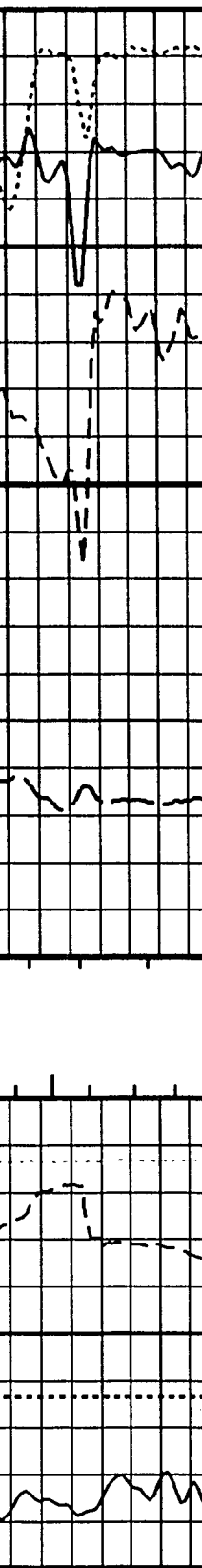
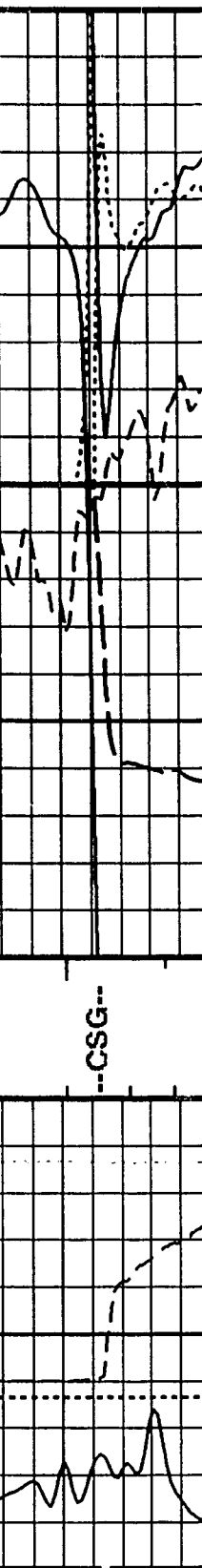
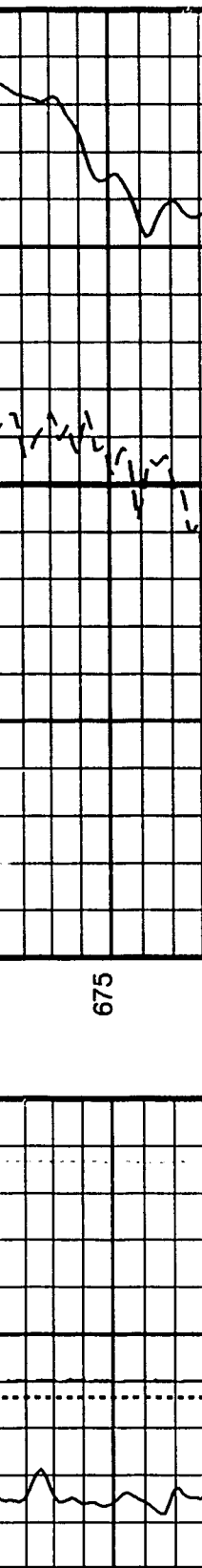
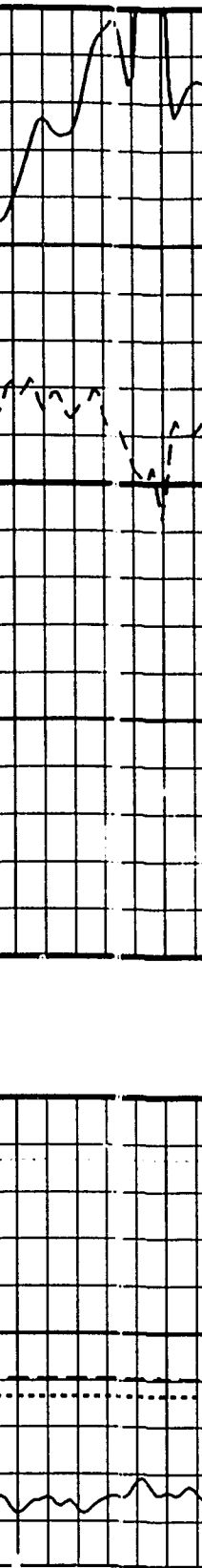
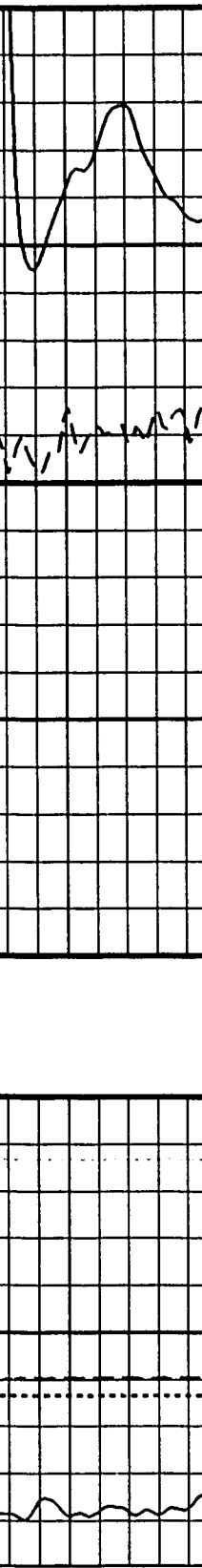
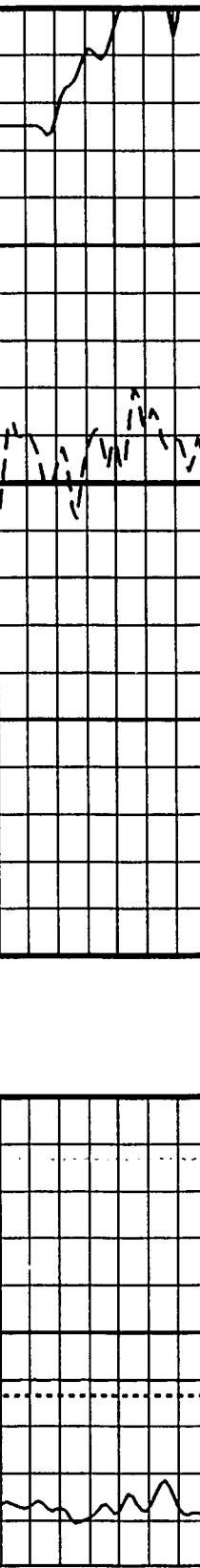
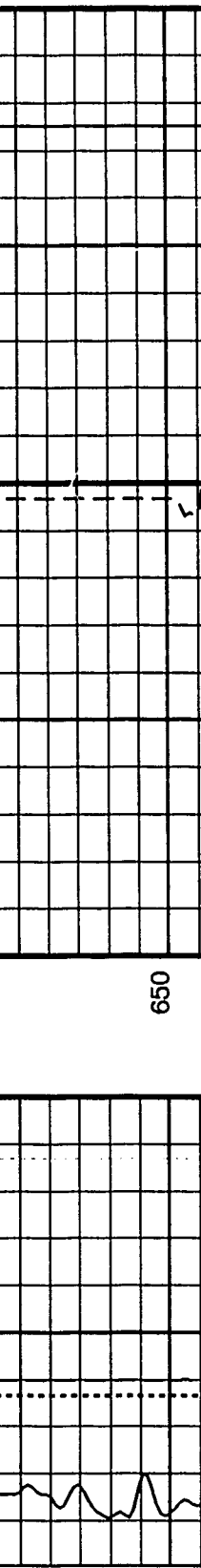
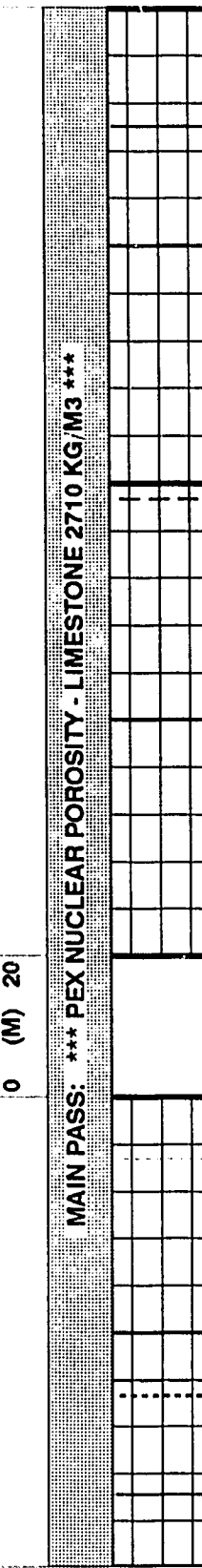
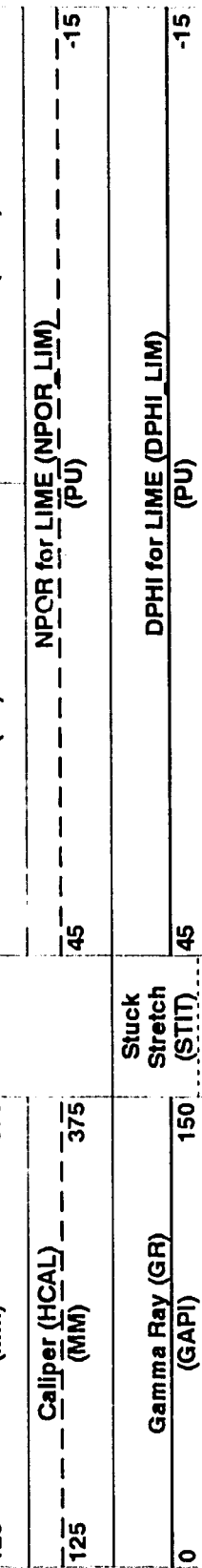
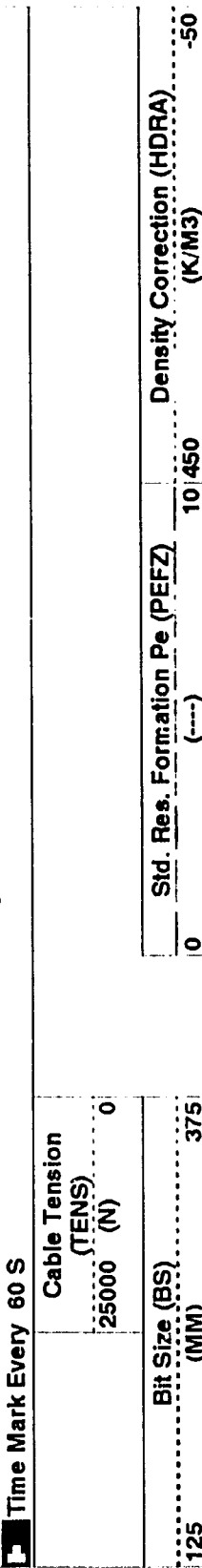
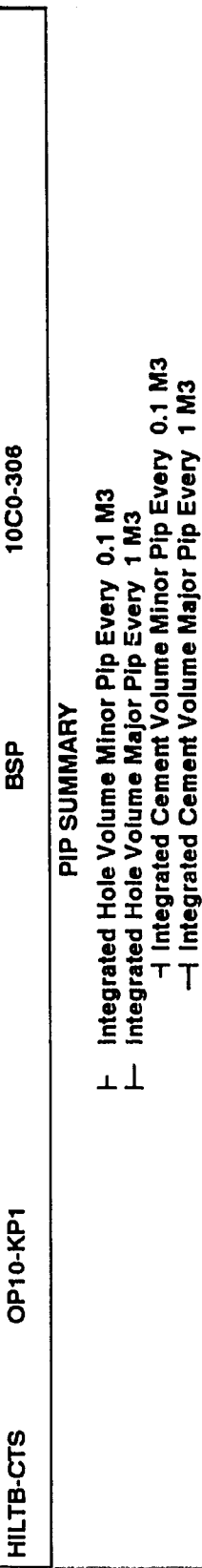
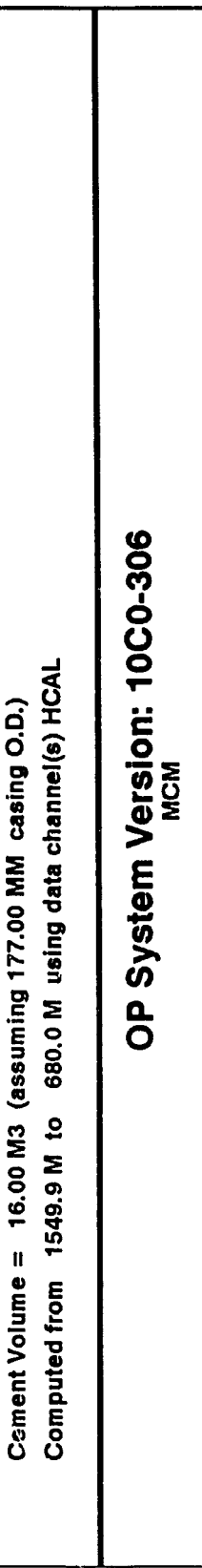
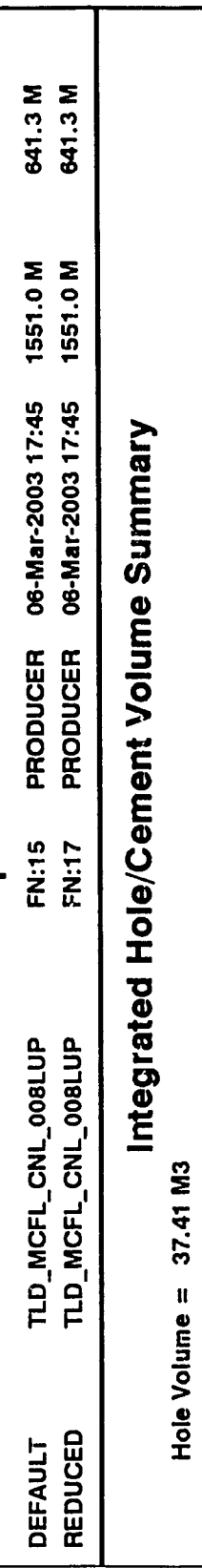
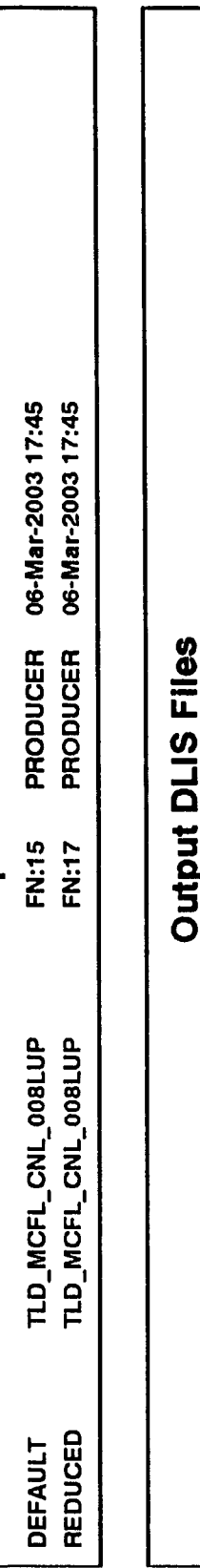
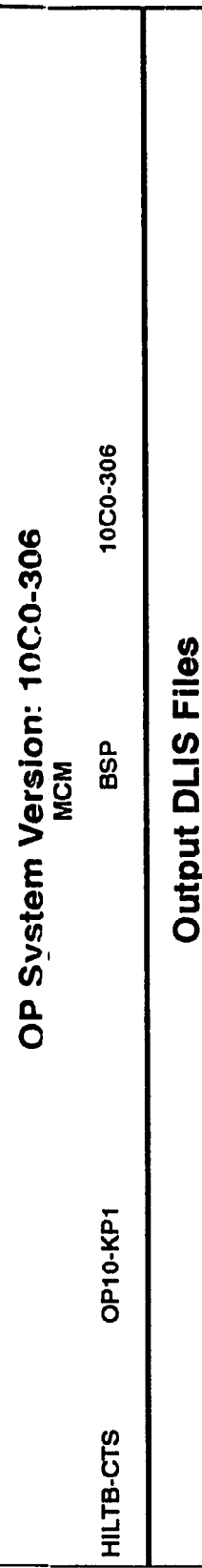
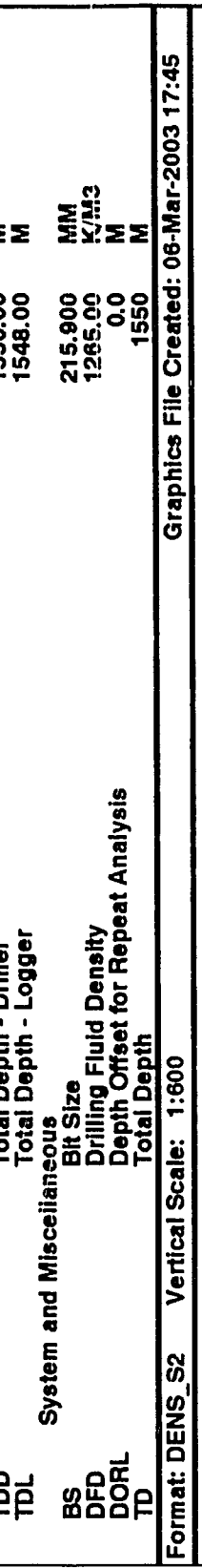
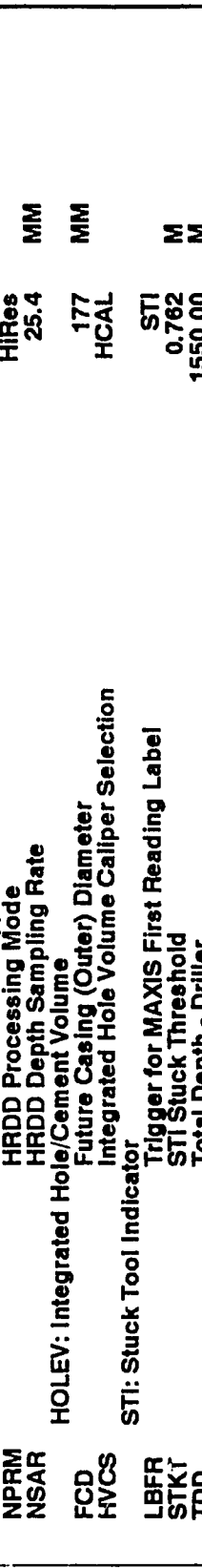
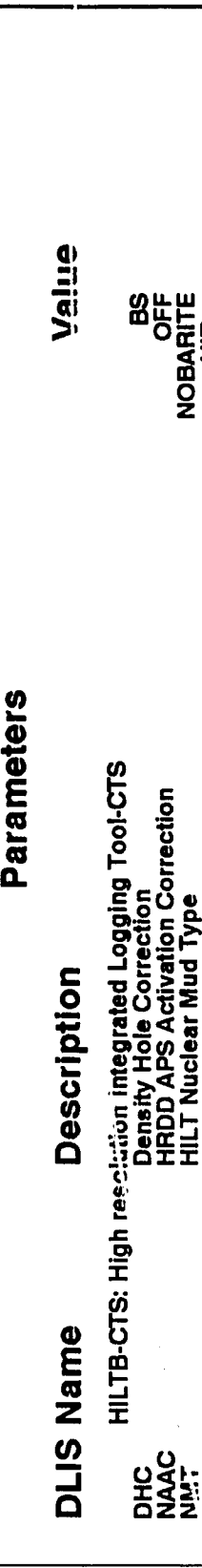
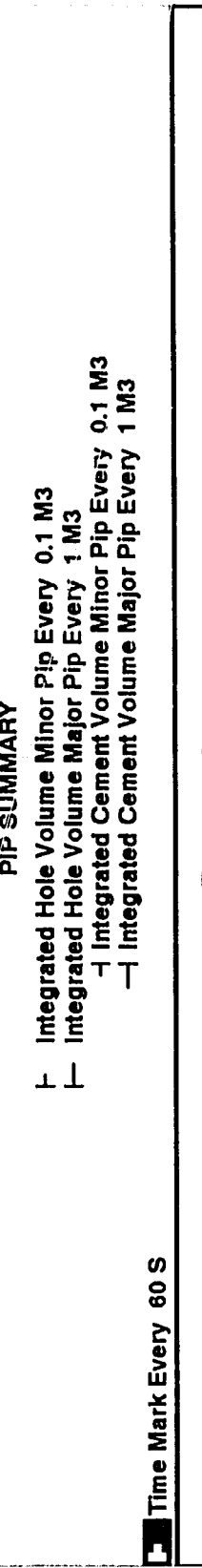
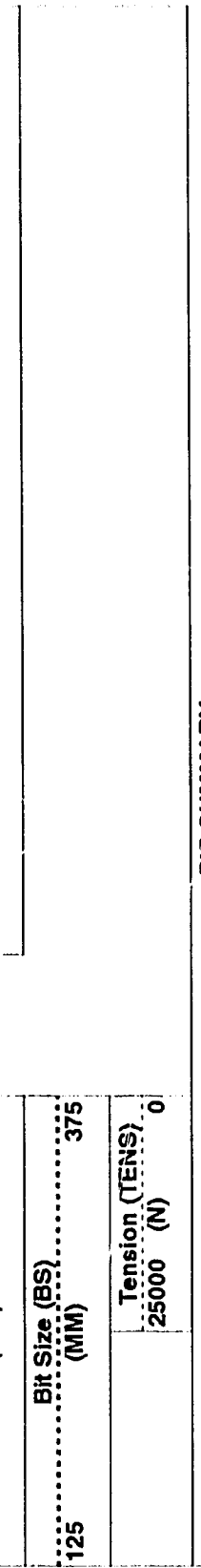
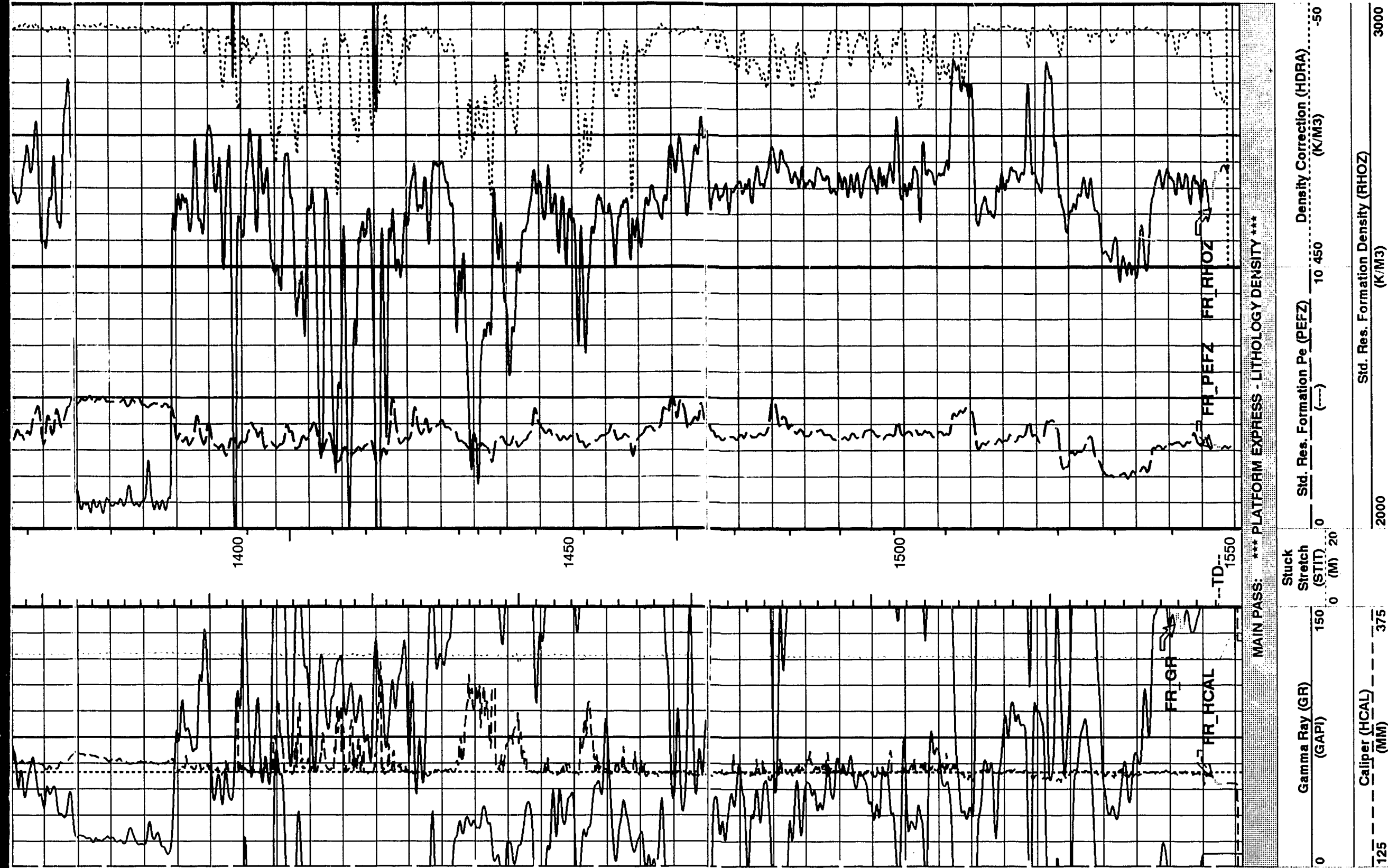
Field: UNDEFINED

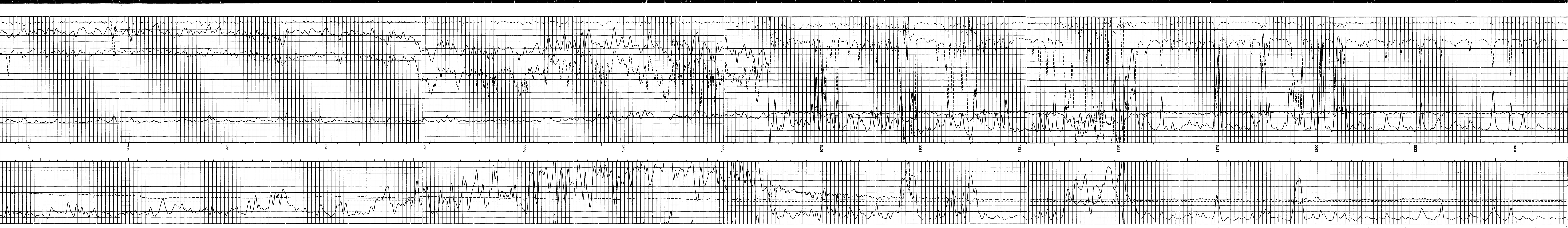
PROVINCE: NORTHWEST TERRITORIES

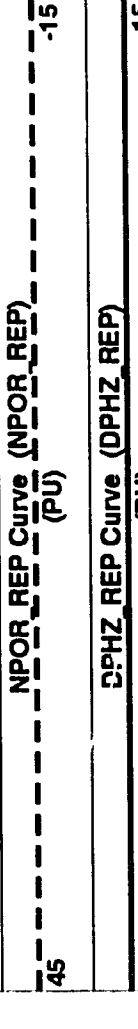
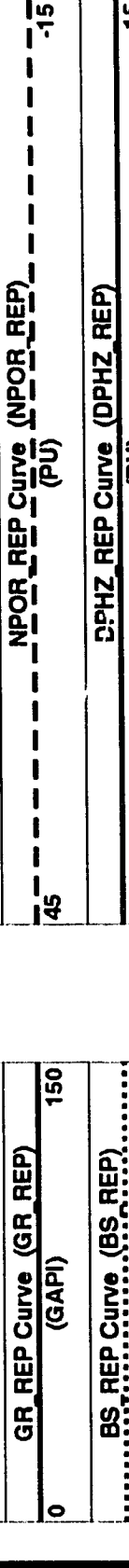
Schlumberger

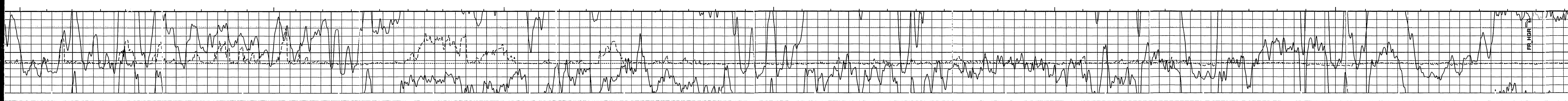
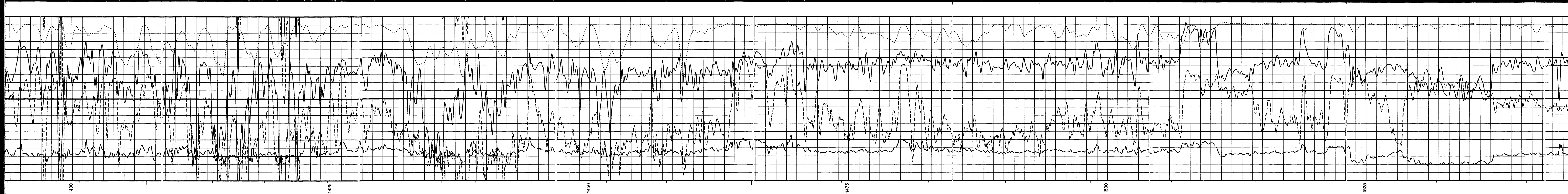
BOREHOLE COMPENSATED SONIC

DENSITY









FF HGR

DIRECTIONAL

PROVINCE NORTHWEST TERRITORIES
Field: UNDEFINED
Location: CNRES BELLA DUKEH D-63
Well: UNDEFINED
Company: CANNAT RESOURCES INC.
DIRECTIONAL LOG
LATITUDE 66 DEG 42'
LONGITUDE 126 DEG 42'
Elev.: K.B. 332.4 m
G.L. 326.3 m
D.F. 333 m
Permanent Datum: GROUND LEVEL
Log Measured From: KELLY BUSHING
Drilling Measured From: KELLY BUSHING
API Serial No.
Logging Date: 6-Mar-2003
Run Number: 916
Depth Driller: 1550 m
Schlumberger Depth: 1548 m
Bottom Log Interval: 1541 m
Top Log Interval: 1541 m
Casing Driller Size @ Depth: 244.500 mm
Casing Schlumberger: 880 m
Bit Size: 215.900 mm
Type Fluid In Hole: BRINE
Density: 1265 kg/m3
Viscosity: 55 s
Fluid Loss: 8 cm3
Source Of Sample: FLOWLINE
RM @ Measured Temperature: 0.054 ohm.m
RMF @ Measured Temperature: 0.043 ohm.m
RMC @ Measured Temperature: 0.062 ohm.m
Source RMF: PRESS
Source RMC: PRESS
RM @ MRT: 0.060 @ 23
RMF @ MRT: 0.047 @ 23
Maximum Recorded Temperature: 23 degC
Circulation Stopped Time: 5:30
Logger On Bottom Time: 13:50
Unit Number: 3025
Location: NORMAN WELLS
Recorded By: DEVIN BEAN
Witnessed By: PAT CARRIERE

Table with 4 columns: Run 1, Run 2, Run 3, Run 4. Contains directional log data for multiple runs.

Table with 2 columns: EQUIPMENT DESCRIPTION, EQUIPMENT. Lists various equipment used during the survey, including surface and downhole equipment.

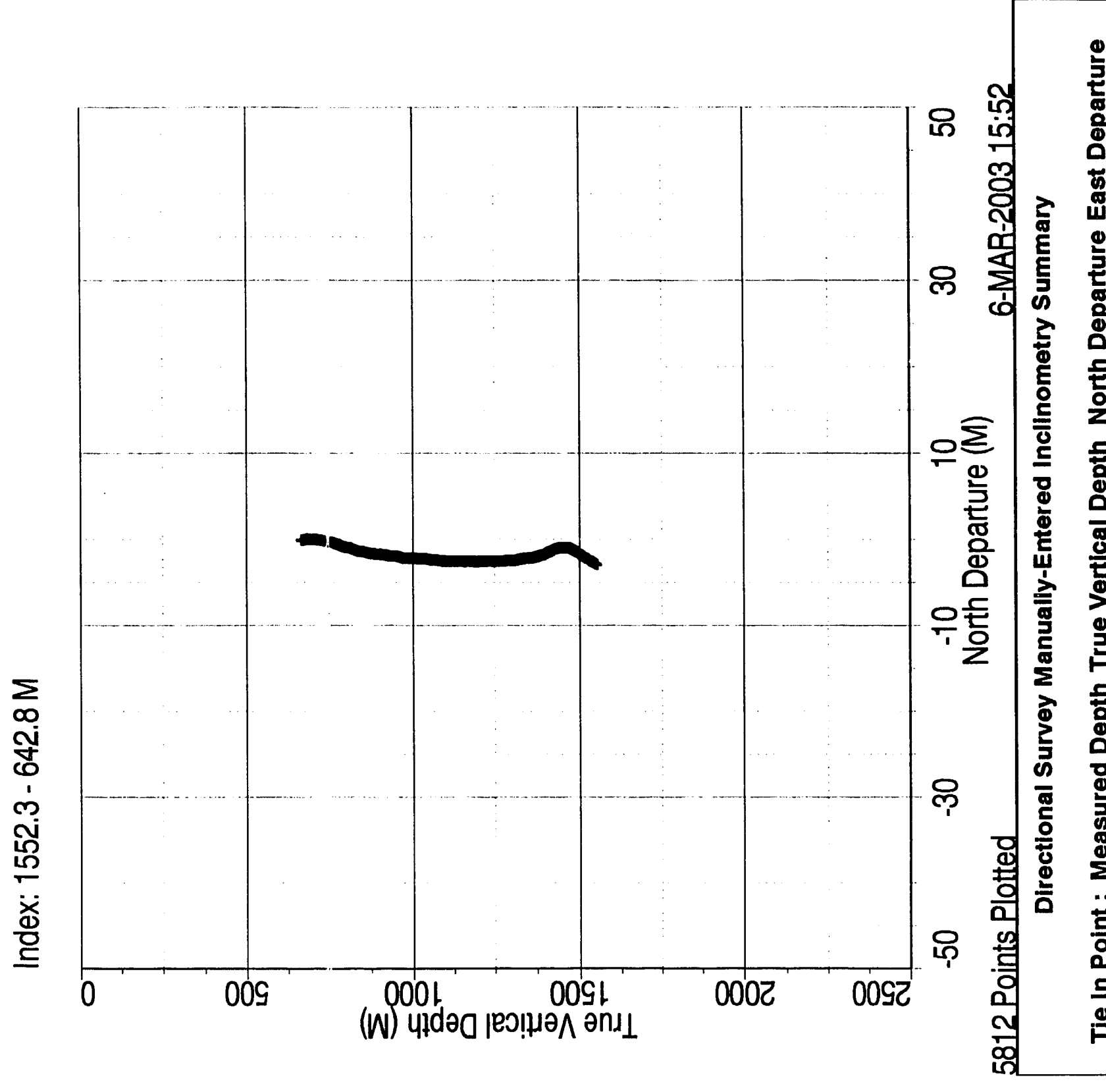
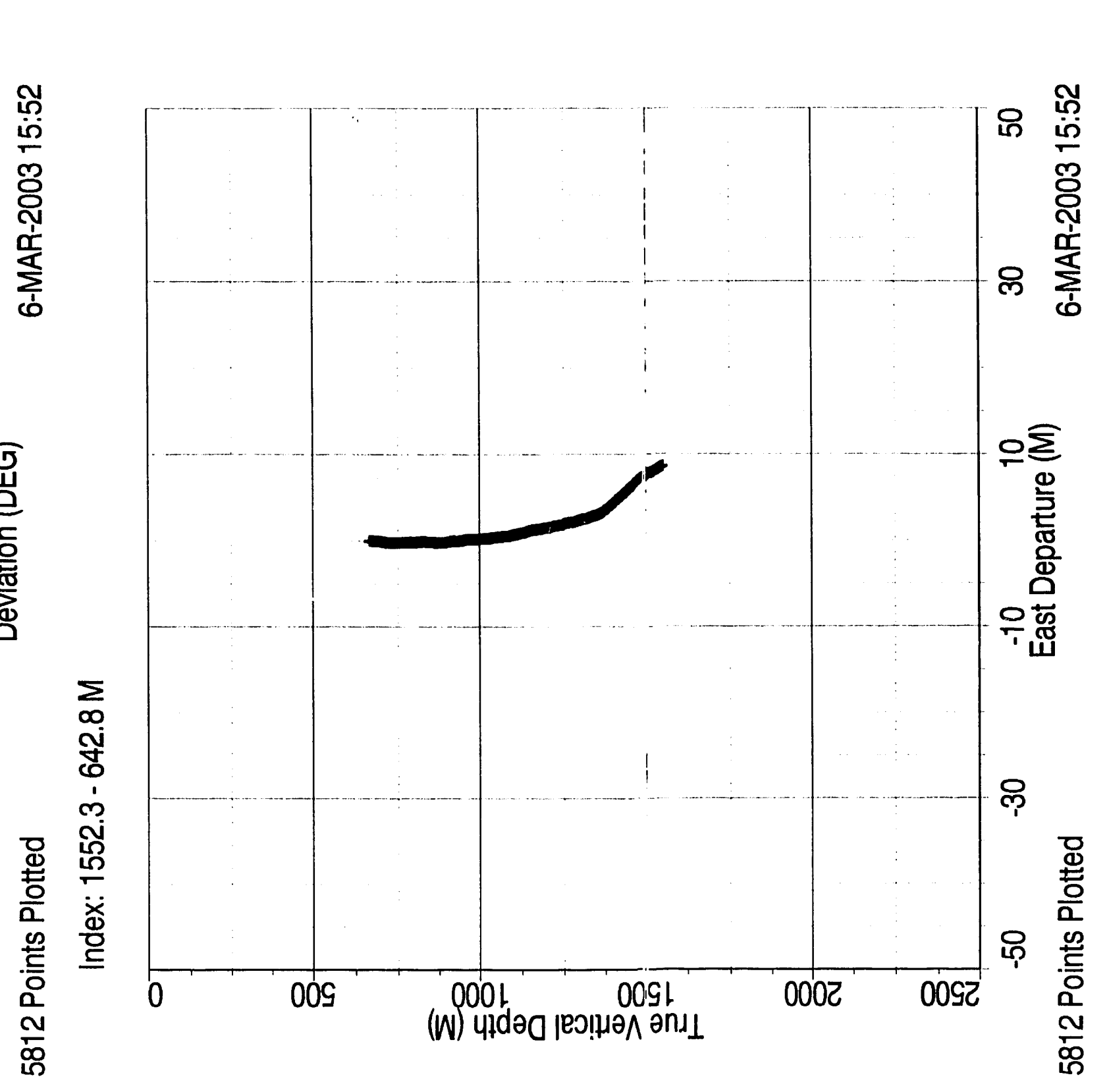
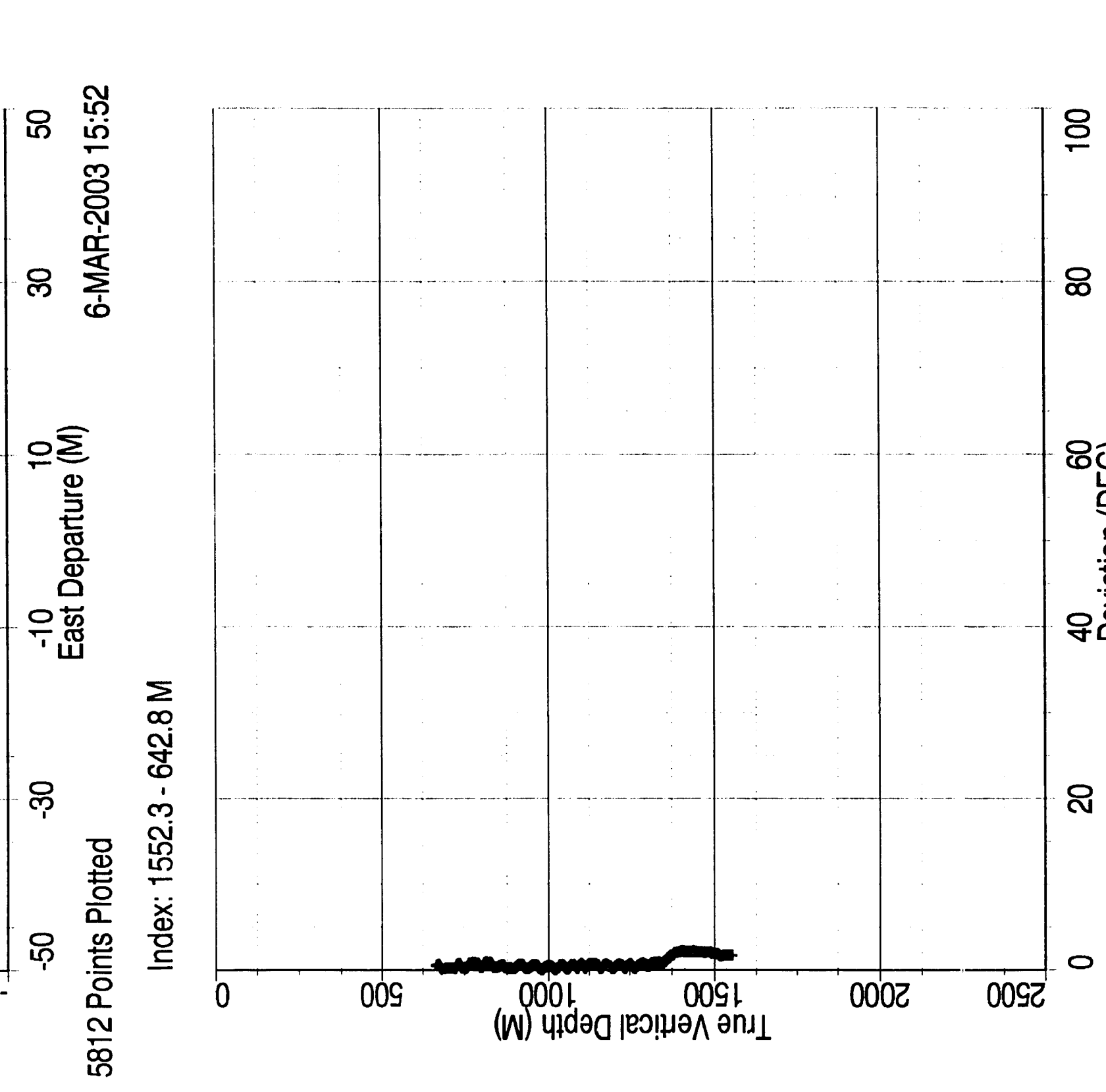
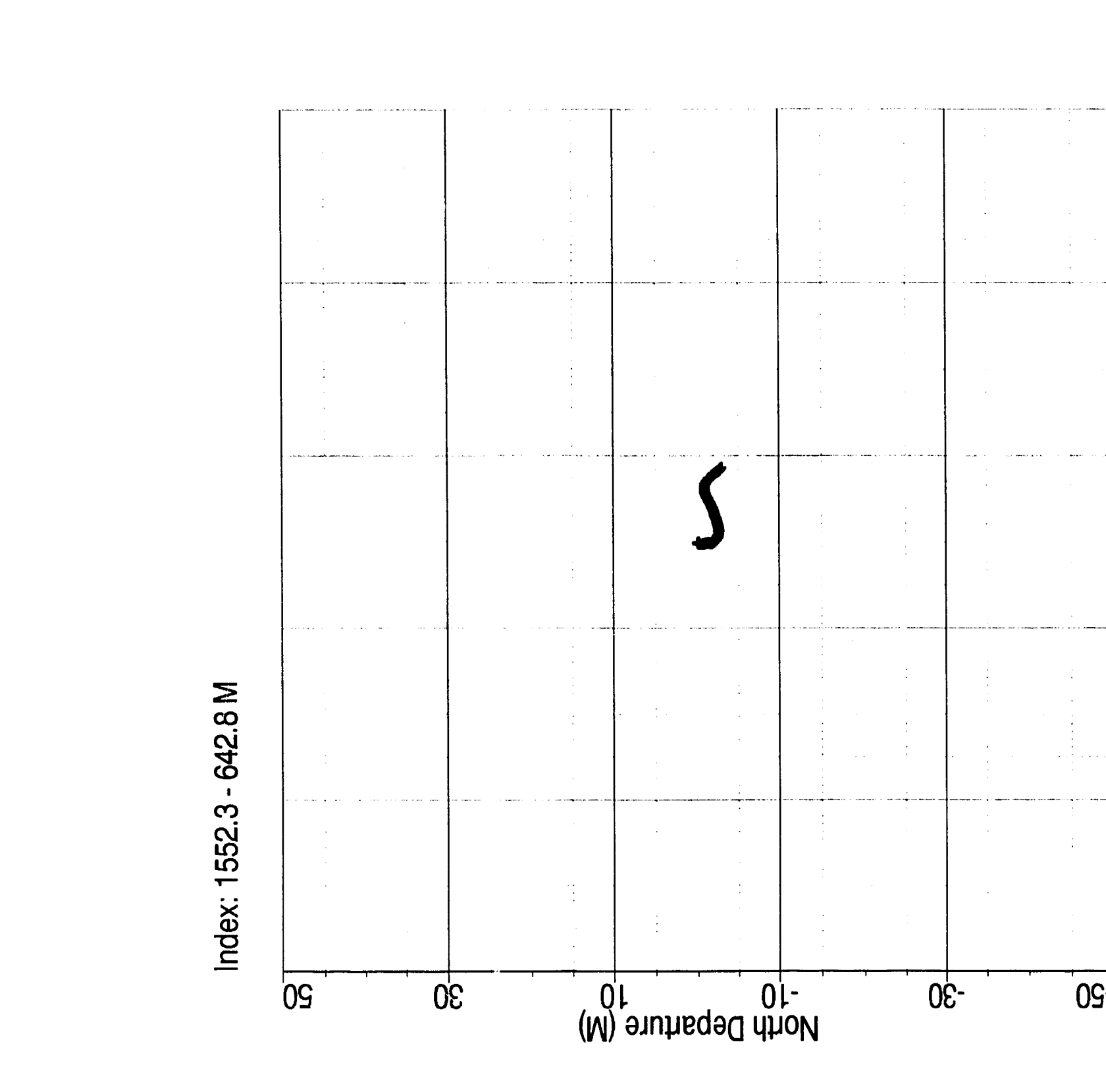
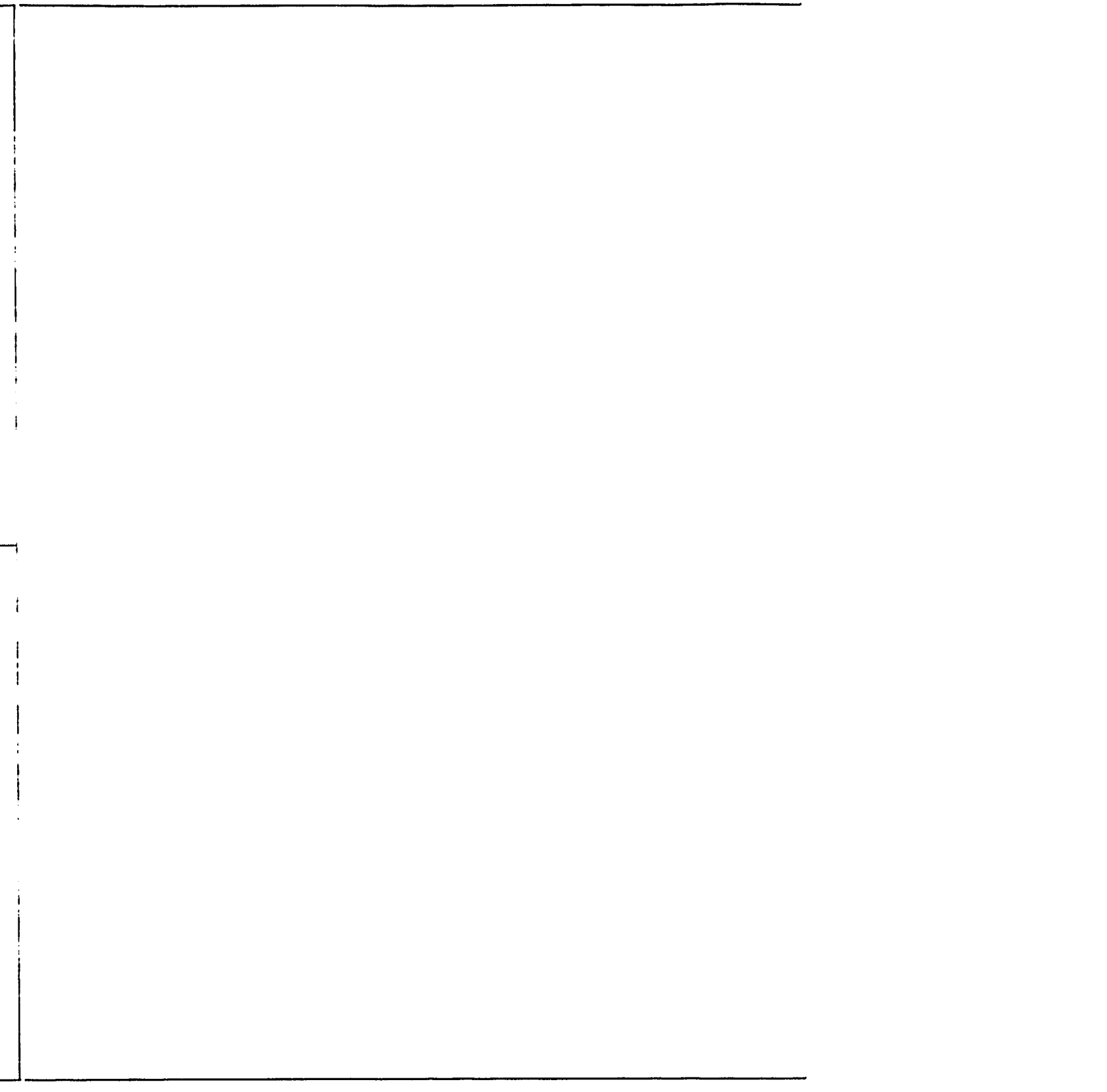


Table with 4 columns: Depth, Deviation, Azimuth, True Vertical Depth. Contains data for the entire survey, including tie-in points and summary data.

MISCELLANEOUS

Company

CANNAT RESOURCES INC.

We

CNRES BELLA DUKEH D-63

Field

UNDEFINED

Province

NORTHWEST TERRITORIES



PROVINCE: NORTHWEST TERRITORIES

Field: UNDEFINED

Location: LATITUDE 66 DEG 42'

Well: CNRES BELLA DUKEH D-63

Company: CANNAT RESOURCES INC.

LOCATION

GAMMA RAY

COMPENSATED NEUTRON

LATITUDE 66 DEG 42'

Elev.: K.B. 332.42 m

LONGITUDE 126 DEG 42'

G.L. 326.3 m

D.F.

Permanent Datum: GROUND LEVEL

Elev.: 326.3 m

Log Measured From: KELLY BUSHING

6.1 m above Perm. Datum

Drilling Measured From: KELLY BUSHING

API Serial No.

LATITUDE: 66 DEG 42'

LONGITUDE 126 DEG 42'

Logging Date	24-Feb-2003
Run Number	TWO
Depth Driller	680 m
Schlumberger Depth	647 m
Bottom Log Interval	646 m
Top Log Interval	0 m
Casing Fluid Type	FRESH WATER
Salinity	80000 ppm
Density	1090 kg/m3
Fluid Level	
BIT/CASING/TUBING STRING	
Bit Size	311.000 mm
From	212 m
To	680 m
Casing/Tubing Size	244.475 mm
Weight	59.52 kg/m
Grade	L 80
From	212 m
To	687 m
Maximum Recorded Temperatures	19 degC
Logger On Bottom	Time 24-Feb-2003 16:15
Unit Number	Location 3025 NORMAN WELLS
Recorded By	DEVIN BEAN
Witnessed By	CRAIG SKUBLENY

PVT DATA	Run 1	Run 2	Run 3	Run 4
Oil Density				
Water Salinity	80000 ppm			
Gas Gravity				
B _o				
B _w				
1/B _g				
Bubble Point Pressure				
Bubble Point Temperature				
Solution GOR				
Maximum Deviation	1 deg			
CEMENTING DATA				
Primary/Squeeze	Primary			
Casing String No	INTERMEDIATE			
Lead Cement Type	ARTIC SET			
Volume	10.4 m3			
Density	1880 kg/m3			
Water Loss				
Additives				
Tail Cement Type				
Volume				
Density				
Water Loss				
Additives				
Expected Cement Top				

Logging Date	
Run Number	
Depth Driller	
Schlumberger Depth	
Bottom Log Interval	
Top Log Interval	
Casing Fluid Type	
Salinity	
Density	
Fluid Level	
BIT/CASING/TUBING STRING	
Bit Size	
From	
To	
Casing/Tubing Size	
Weight	
Grade	
From	
To	
Maximum Recorded Temperatures	
Logger On Bottom	Time
Unit Number	Location
Recorded By	
Witnessed By	

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED DATA.

OTHER SERVICES1

OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 1

SECOND CASED HOLE LOG RUN, NO OPEN HOLE LOGS TO DATE.

NEUTRON DATA MAY BE INFLUENCED BY POROSITY OF CEMENT AND FLUID BEHIND CASING IN AREAS WHERE HOLE SIZE IS NOT EQUAL TO BIT SIZE OF 311.

BIT SIZE BEHIND SURFACE CASING IS 387 MM

NEUTRON MATRIX SET TO LIMESTONE.

CREW: JASON MCGINNIS

RUN 1

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL

START

STOP

RUN 2

SERVICE ORDER #:
PROGRAM VERSION:
FLUID LEVEL:

LOGGED INTERVAL

START

STOP

OTHER SERVICES2

OS1:
OS2:
OS3:
OS4:
OS5:

REMARKS: RUN NUMBER 2

EQUIPMENT DESCRIPTION	
RUN 1	RUN 2
SURFACE EQUIPMENT	
WITM (CTS)-A GSR-U/Y NCT-B CNB-AB	
DOWNHOLE EQUIPMENT	
3.90	
LEH-QT LEH-QT	
HGNS HTEM LMCA	

Field: UNDEFINED
PROVINCE: NORTHWEST TERRITORIES

GAMMA RAY
COMPENSATED NEUTRON

Input DLIS Files

PRODUCER 21-Feb-2003 12:38 203.3 M 30.0 M

Output DLIS Files

FN:29 PRODUCER 21-Feb-2003 12:38 203.3 M 30.5 M

OP System Version: 9C2-303

MCM

SGT-L OP92-KP2
TCC-BF OP92-KP2

PIP SUMMARY

Time Mark Every 60 S

Cable Tension (TENS) 2000 (N) 0

Casing Collar Locator (CCL) -19 (---) 1

Transit Time 2 (TT2C) (US) 400 200

Gamma Ray (GR) (GAPI) 0 100

FAST DOWN PASS

NBI > 80% BOND

Discriminated Bond Index (DBI) 1 (---) 0.5 50

Near Pseudo-Attenuation (NATN) (DB/M) 0

Discriminated Attenuation (DATN) (DB/M) 0 200

Min Amplitude VDL Variable Density (VDL) (US) 1200

First Reading

FLUID TOP

		MCM	
CBT-EB CAL-Y	9C2-303 OF92-KP2	OP92-L OP92-KP2	
Input DLIS Files			
DEFAULT	CBT_01SLUP	FN:14 PRODUCER 18-Feb-2003 06:30 215.6 M	14.8 M
Output DLIS Files			
DEFAULT	CBT_029PUP	FN:26 PRODUCER 21-Feb-2003 12:35	
Input DLIS Files			
DEFAULT	CBT_014LUP	FN:13 PRODUCER 18-Feb-2003 08:16 215.2 M	131.4 M

	Gamma Ray (GR) (GAPI)	0	100	Near Band Index (NBI)	1	0.5	Discriminated Attenuation (DATU)	0	50	Amplitude	Min	Max	VDL Variable Density (VDL) (US)	200	1200
Last Reading															

175

0	Gamma Ray (GR) (GAPI)	100		Min Max	Amplitude 	Max VOL Variable Density (VOL) (US) 1200
400	Transit Time 2 (TT2C) (US)	200				
Casing Collar Locator (CCL)			Discriminated Bond Index (DBI) 1 (-----) 0.5 50	Discriminated Attenuation (DATN) 0 (DBM)	Near Pseudo-Attenuation (NATY) 0 (DBM)	

CCLG	GBT CCL Gain	0.3	V
CCML	CCL Motion Level	ALL	
CCLM	Competition Mode	338,700	MM
CSIZ	Current Casing Size	10' 10"	OFF
CSRL	Cycle Skip Recovery Logic Algorithm	10' 10"	KG/M
CWEI	Casing Weight	20	US
DEEL	Dilling Depth	1026.00	K/M3
DELD	Dilling Fluid Density	0.0	M
DO	Depth Offset for Playback	STAN	
DPDM	Density Porosity Processing Mode		
DSIN	Digitizer Sample Interval	883	US/M
DWAO	Digitizer Word Count	250	
DWFS	Digitized Waveforms	ON	
FMFG	Far Minimum Sliding Gate	389	US
FTTM	Far Transit Time Minimum	396.75	
GSSE	Manual Gain	BS	
GSDE	Manual Gain	BS	
GSDV	Manual Gain	BS	
GGRD	Manual Gain	BS	
GGRS	Average Angular Deviation of Borehole from Normal	0	DEG
GROB	Geothermal Gradient	0.01827	DC/M
GROSE	Good Bond		INV
GROSD	Generalized Mud Resistivity Selection		
GROSE	Generalized Mud Resistivity Selection		
ISSBAR	SGT Nuclear Mud Type	NOBARTE	
ISSBAR	Rock Matrix for Neutron Porosity Corrections	LIESTONE	
MATR	Rock Matrix for Neutron Porosity Corrections		

DD	Total Depth	214.00	M
TD	Total Depth - Driller	214.00	M
TDR	Total Depth - Recorder	214.00	M
TRAN	Transducer	ON	N/A
TRF	Transmitter	ON	N/A
TTF	Transit Time Correction Factor	15	US
TVCA	Transmitter Voltage Correction Algorithm	75	DEGC
UWS	Temperature of Coriolis Water Sample	37.7N	G3
VBL	Velocity Gain	75	N/A
VDLG	VDL Manual Gain	LTRI	US
VOLM	VDL Firing Mode	ON	N/A
VMSG	Very Far Minimum Sliding Gate	ON	N/A
WEHA	Wrong Echo Rejection Algorithm	ON	N/A

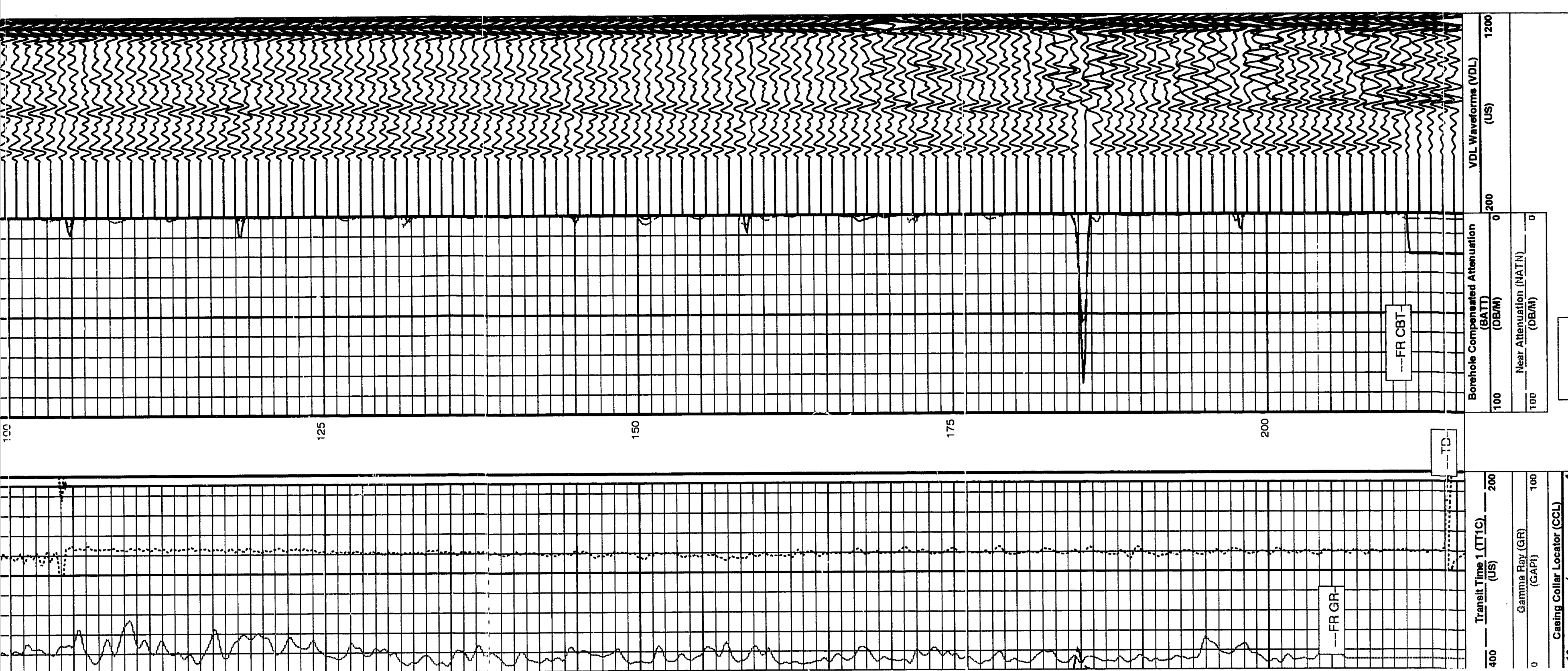
Format: CBT_VDL_LARGER_THAN_7IN Vertical Scale: 1:240 Graphics File Created: 21-Feb-2003 12:36

CBS-EB CAL-Y	9C2-303 OP82-KP2	MCM SGT-L OP82-KP2 TCC-BF OP82-KP2
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Input DLIS Files

DATE/TIME	DESCRIPTION	FILE NAME	SIZE
2003 FEB 21 12:36	INPUT DLIS FILES	9C2-303.OP82-KP2.TIF	131.4 M

MAIN PASS	Cable Tension (TENS)..... 0	Last Reading	Near Attenuation (NATT)..... 0 (DB/M)	Borehole Compensated Attenuation (BATT)..... 0 (DB/M)	VDL Waveforms (VDL) (US)	1200
	Casing Collar Locator (CCL) (-----) 1					
	Gamma Ray (GR) (GRPI)..... 100					
	Transit Time (TTTC) (US)..... 200					
-19	0	400		100		



Format: CBT_WAVE_LARGER_THAN_7IN Vertical Scale: 1240 Graphics File Created: 21-Feb-2003 12:35

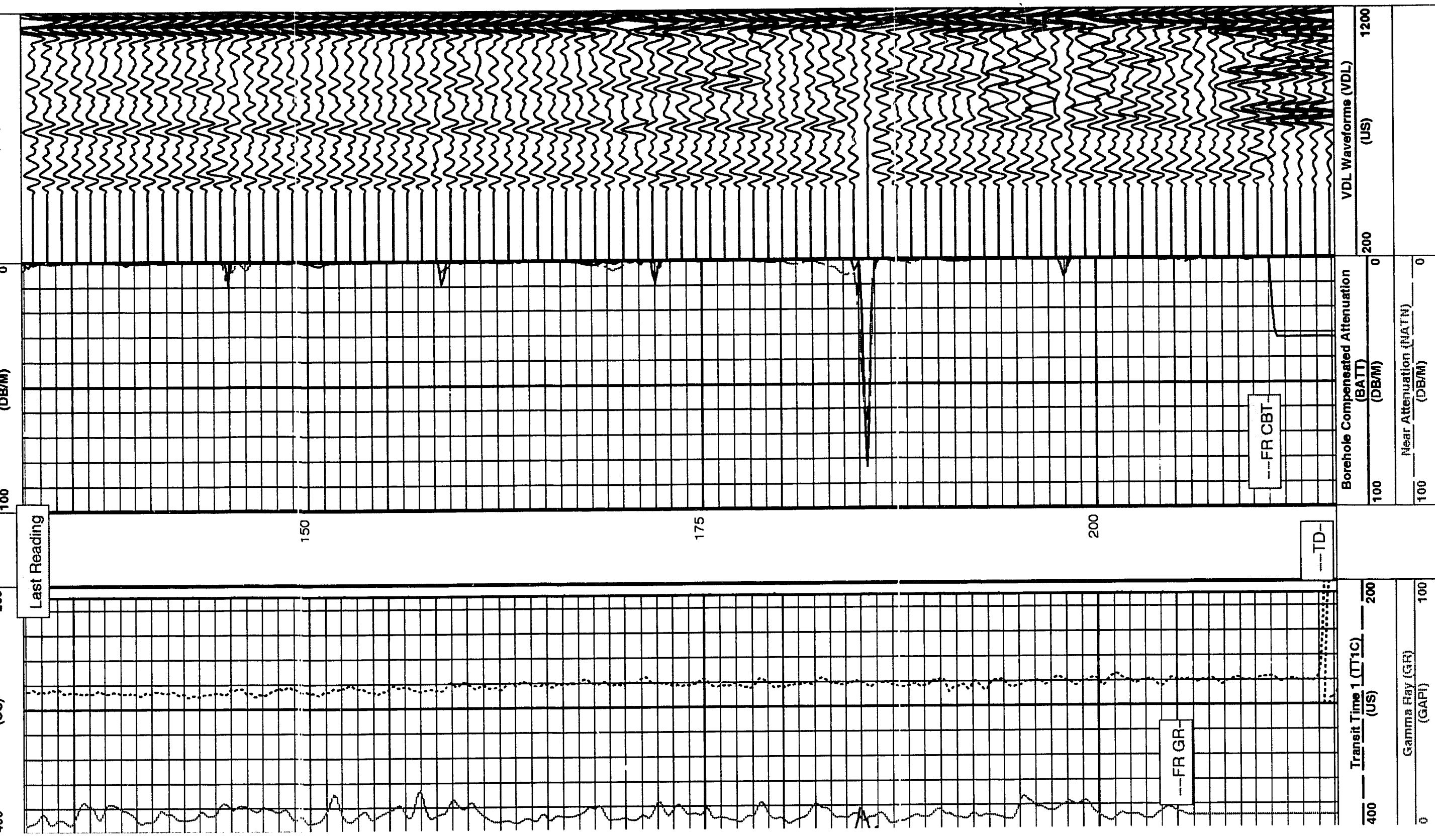
OP System Version: 9C2-303
MCM
CBT-EB 9C2-303 SGT-L OP82-KP2
CAL-Y OP82-KP2 TCC-BF

Input DLIS Files
FN:14 PRODUCER 18-Feb-2003 08:30 215.2 M 14.8 M
Output DLIS Files
FN:26 PRODUCER 21-Feb-2003 12:35

Input DLIS Files
FN:13 PRODUCER 18-Feb-2003 08:18 215.2 M 131.4 M
Output DLIS Files
FN:27 PRODUCER 21-Feb-2003 12:36 215.2 M 131.8 M

OP System Version: 9C2-303
MCM
CBT-EB 9C2-303 SGT-L OP82-KP2
CAL-Y OP82-KP2 TCC-BF

REPEAT SECTION
Near Attenuation (NATN) 0
Borehole Compensated Attenuation (BATT) 0
Near Attenuation (NATN) 0



Format: CBT_WAVE_LARGER_THAN_7IN Vertical Scale: 1240 Graphics File Created: 21-Feb-2003 12:36

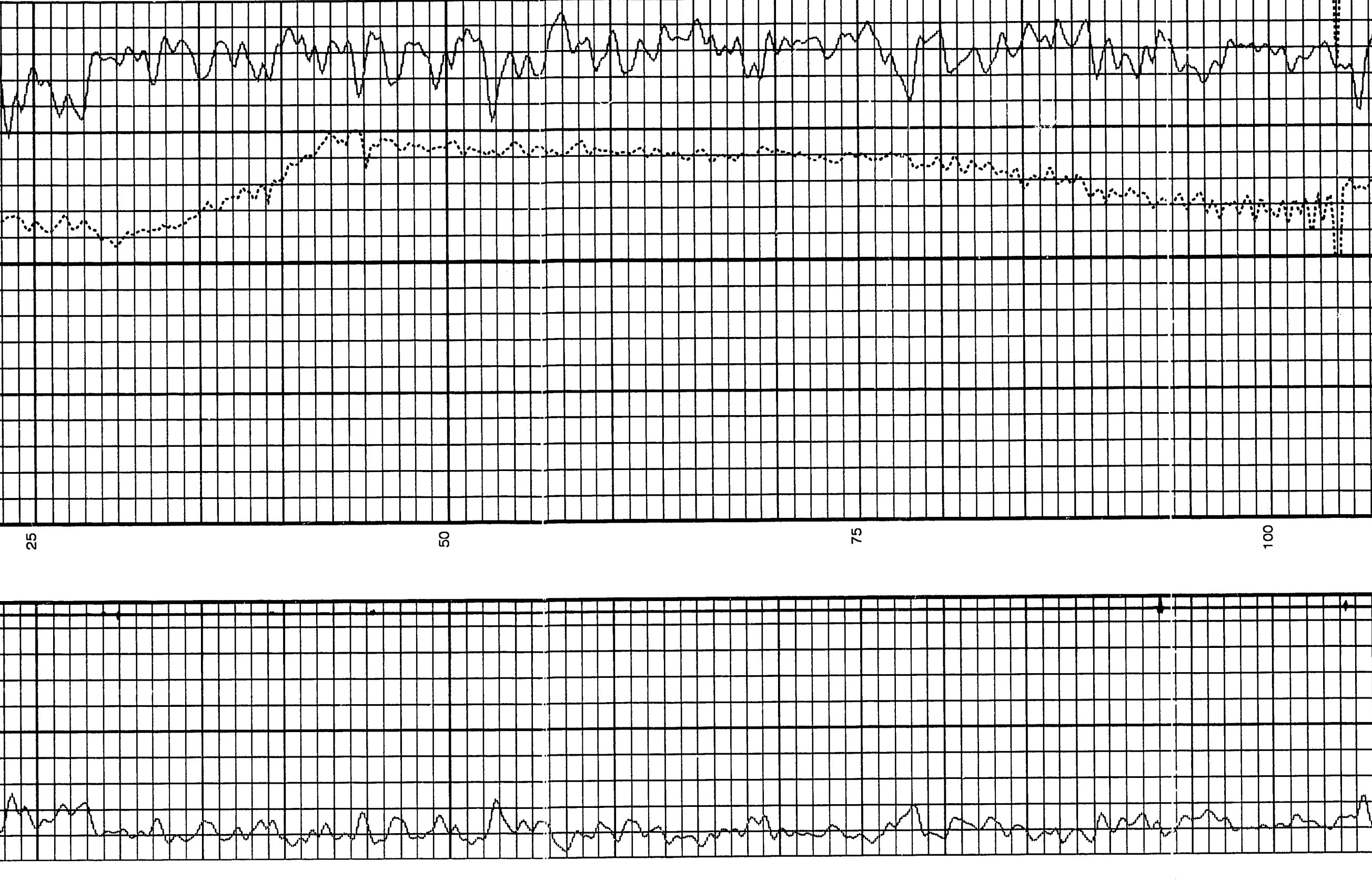
OP System Version: 9C2-303
MCM
CBT-EB 9C2-303 SGT-L OP82-KP2
CAL-Y OP82-KP2 TCC-BF

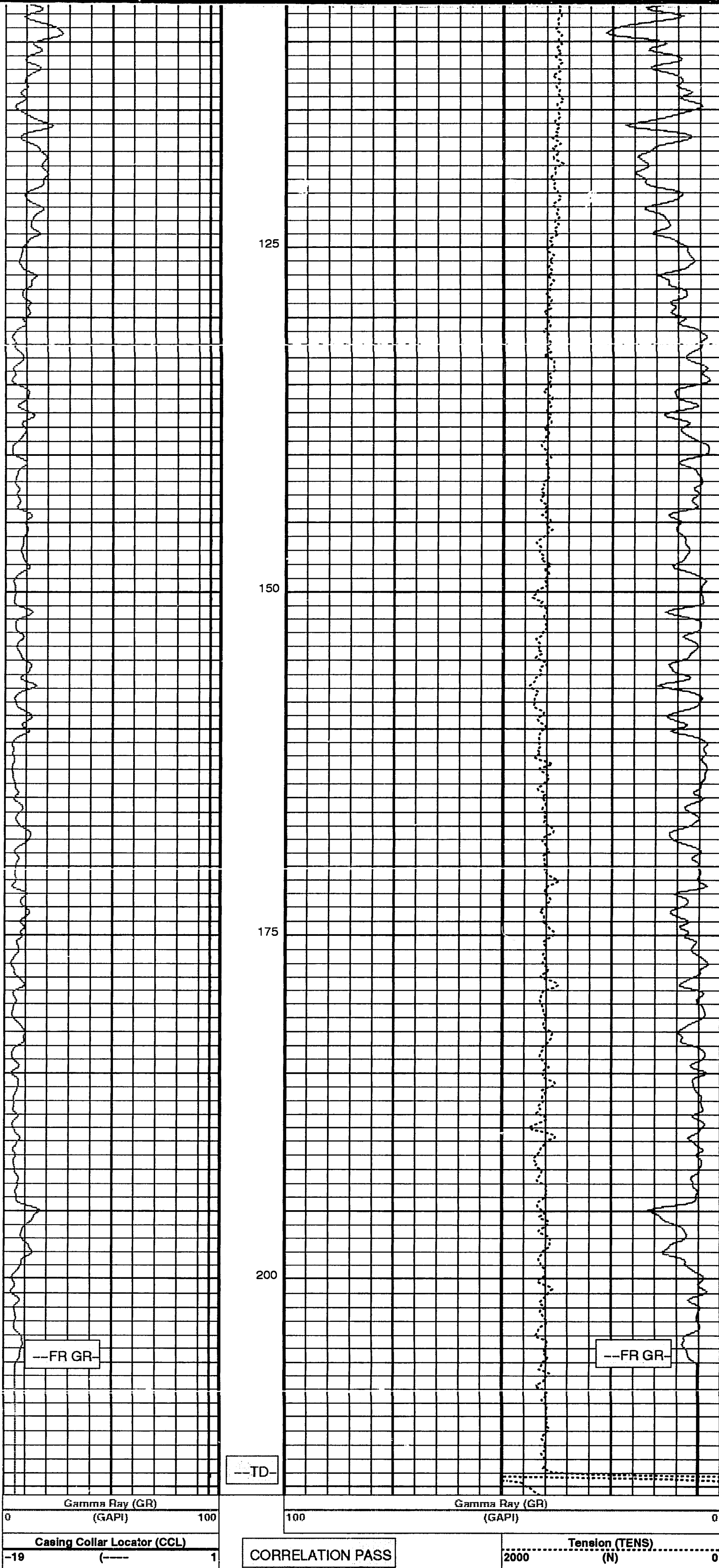
Input DLIS Files
FN:13 PRODUCER 18-Feb-2003 08:16 215.2 M 131.4 M
Output DLIS Files
FN:27 PRODUCER 21-Feb-2003 12:36

Output DLIS Files
FN:14 PRODUCER 18-Feb-2003 08:30 215.6 M 14.8 M

OP System Version: 9C2-303
MCM
CBT-EB 9C2-303 SGT-L OP82-KP2
CAL-Y OP82-KP2 TCC-BF

REPEAT SECTION
Near Attenuation (NATN) 0
Borehole Compensated Attenuation (BATT) 0
Near Attenuation (NATN) 0





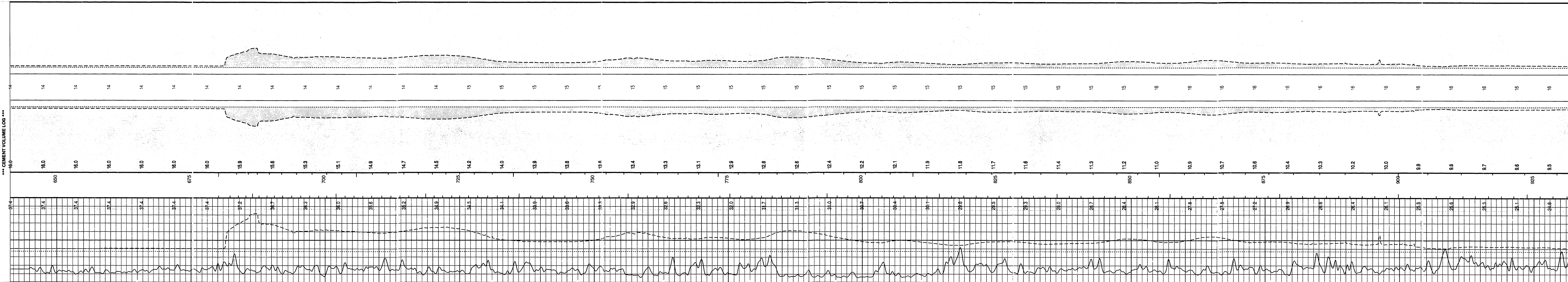
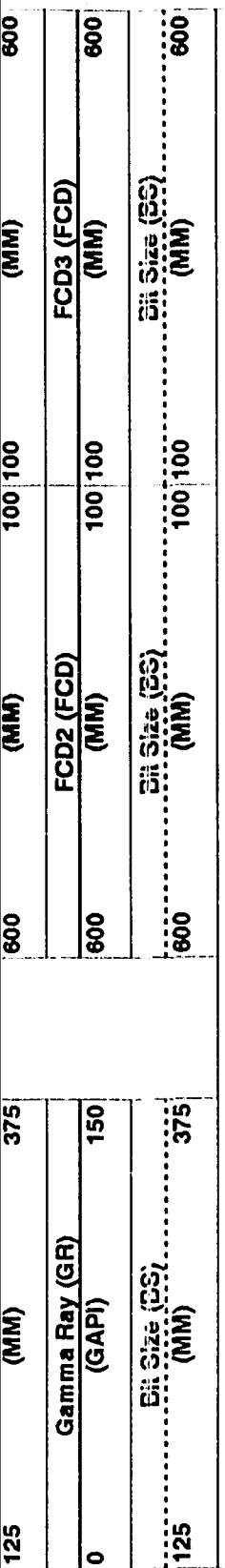
Parameters		
DLIS Name	Description	Value
CCLD	CCL reset delay	305 MM
CCLT	CCL Detection Level	0.3 V
Format: CORRELATION Vertical Scale: 1:240		Graphics File Created: 18-Feb-2003 08:30

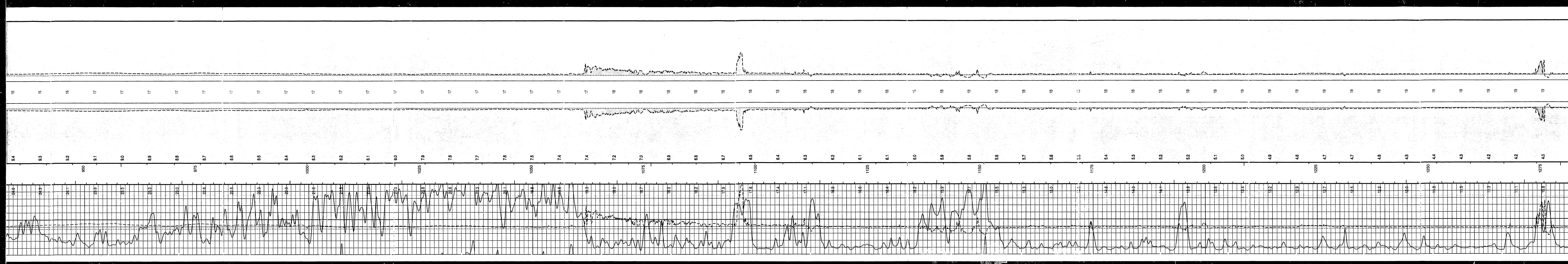
OP System Version: 9C2-303			
MCM			
CBT-EB	9C2-303	SGT-L	OP92-KP2
CAL-Y	OP92-KP2	TCC-BF	OP92-KP2

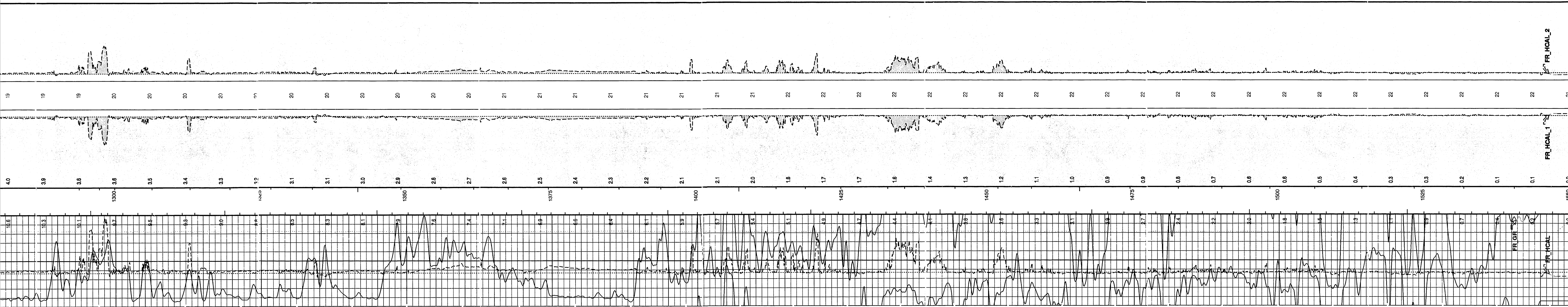
Output DLIS Files			
DEFAULT	CBT_015LUP	FN:14	PRODUCER 18-Feb-2003 08:30

COMPANY:		BOTTOM LOG INTERVAL	211 m
WELL:		SCHLUMBERGER DEPTH	214 m
FIELD:		DEPTH DRILLER	214 m
PROVINCE:		KELLY BUSHING	332.42 m
		DRILL FLOOR	
		GROUND LEVEL	326.3 m

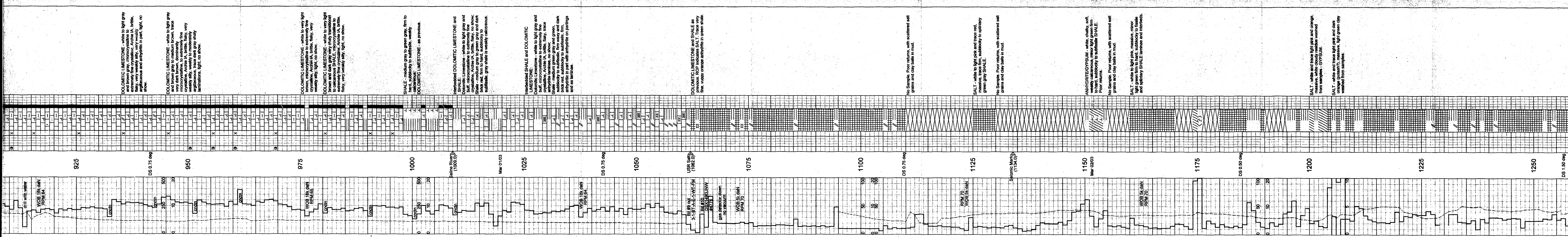
Schlumberger	COMPENSATED CEMENT BOND LOG
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Time Mark Every 60 S		OP System Version: 10C0-306	
Format: CVL		Vertical Scale: 1:240	
BHT		HILTB-CTS	
GGRD		OP10-KP1	
GTSE		BSP	
SHT		10C0-306	
Gamma Ray (GR)		Output DLIS Files	
PRIMARY CALIPER (HCAL)		FN:15 PRODUCER 06-Mar-2003 17:45	
Tension (TENS)		FN:17 PRODUCER 06-Mar-2003 17:45	
Tension (TENS)		Format: CVL	
Tension (TENS)		Vertical Scale: 1:240	
Tension (TENS)		Graphics File Created: 06-Mar-2003 17:45	
Tension (TENS)		Company: CANNAT RESOURCES INC.	
Tension (TENS)		Well: CNRES BELLA DUKEH D-63	
Tension (TENS)		Field: UNDEFINED	
Tension (TENS)		Province: NORTHWEST TERRITORIES	
Tension (TENS)		CEMENT VOLUME LOG	



DOLOMITIC LIMESTONE - white to light gray and brown gray, microcrystalline to extremely fine crystalline. Archie 1A, brittle, flaky, very weakly silty, very wet argillaceous and anhydritic in part, tight, no show.

DOLOMITIC LIMESTONE - white to light gray and brown gray to medium brown, trace very dark brown, dominantly microcrystalline, to extremely fine crystalline, Archie 1A, brittle, flaky, very weakly silty, weakly to moderately argillaceous, trace dark gray shaly

DOLOMITIC LIMESTONE - white to very light brown, microcrystalline to extremely fine crystalline. Archia 1A, brittle, flaky, very weathy silty, light, no show.

DOLOMITIC LIMESTONE - as previous.

brick red, firm to hard, subblocky to submassive, gray shale is weakly calcareous.

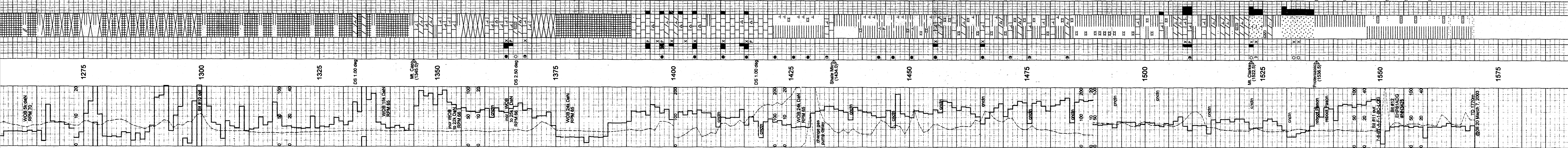
crystalline, Archie 1A, brittle, flaky, trace anhydrite laminae, no show;
Shale - medium green gray and green, subblocky to subfissile, firm waxy and brick red, subblocky to subfissile, firm, anhydritic in part with anhydrite on partings and as laminae.

DOLOMITIC LIMESTONE and SHALE as
previous ROP indicates SALT. Trace very

green gray SHALE.

SALT - white to light pink, massive, minor light green firm to hard, subblocky to fissile

WAL - white and trace light pink and orange, massive, white cloudy residue washed from samples - GYPSUM.



No Sample. Poor returns, with scattered salt grains and light green clay balls in mud.

SALT - white to light pink, massive. SHALE/CLAYSTONE - medium green and dark brown, very soft, subsiliceous, washes to clay balls, anhydritic in part.

SALT - white to light pink, massive. DOLOMITE - light to medium brown, massive, very hard, microcrystalline, calcareous in part, some as large cuttings 5mm to 1cm, light. Minor medium gray green, hard, subblocky to subsiliceous, moderately calcareous SHALE.

SALT - white and clear to light pink, massive, minor green SHALE.

CALCAREOUS DOLOMITE and DOLOMITIC LIMESTONE - light to medium brown, blocky, hard, microcrystalline, weakly silty, light, no show. Minor interlaminate green gray to gray brown and trace dark red brown, hard, blocky to splintery SHALE.

DOLOMITIC LIMESTONE - light to medium brown, blocky, hard, microcrystalline to extremely fine crystalline, weakly silty, light, no show. SHALE - 20% medium green and dark red brown (moderately greened in part), hard, subblocky to subsiliceous, weakly calcareous, trace very fine euhedral pyrite in part. Sample 1360m missed.

DOLOMITIC LIMESTONE to CALCAREOUS DOLOMITE - medium to dark brown, firm to hard microcrystalline to extremely fine crystalline, Arche IA and minor IIAB, tight with patchy 3-6% visible intergranular porosity, minor dark brown CHERT shards and laminations, minor patchy very weak pale yellow and trace medium yellow fluorescence, trace pale yellow slow streaming cut (1370m). No sample (missed).

SALT - white and clear, massive, trace bright white soft ANHYDRITE. Sample 1380m mostly very coarse shale and dolomite cavings.

LIMESTONE - light brown, microcrystalline to extremely fine crystalline, Arche IA and minor IIAB, tight with trace patchy visible pinpoint and very fine vuggy porosity. Trace to 10% dark brown CHERT. Minor gray green SHALE.

SHALE - medium to dark gray, firm to hard, subblocky to subsiliceous, bituminous in part, 20% LIMESTONE as previous.

SHALE - medium to dark gray and medium gray green, firm to hard, subblocky to subsiliceous, bituminous in part, 20% LIMESTONE as previous, 20% dark even oil stain, pale yellow patchy fluorescence and pale yellow slow streaming cut (1435m poor sample).

SHALE - dark gray to black and medium gray green, firm to hard, subblocky to fissile, micaceous in part, weakly to strongly calcareous, bituminous in part, trace anhydritic pyrite blebs, very pale yellow, slow streaming cut, 30% medium green gray and trace mottled green-red moderately calcareous shale - cavings? (sample 1480m mostly very coarse greened rounded shale - cavings brought to surface due to increased mud viscosity).

SHALE - 65% dark gray, firm to hard, subblocky to subsiliceous, weakly to strongly calcareous, bituminous in part, very pale yellow, slow streaming cut. LIMESTONE - 35% laminae in shale, white to cream, soft, chalky (Arche II) and sugary (Arche IIAB), microcrystalline to extremely fine crystalline, trace visible intergranular porosity to 3%, light even oil stain, pale yellow, slow streaming cut.

DOLOMITIC LIMESTONE and CALCAREOUS DOLOMITE - 50-60% white, buff to dark brown, mottled in part (fossiliferous?), massive, hard, microcrystalline (Arche IIIA), very calcareous, trace extremely fine disseminated to medium dots of pyrite, trace dark brown CHERT shards light, no show. SHALE - 40-50% dark gray green to very dark gray and gray brown, firm (green) to hard (gray), blocky (gray) to subsiliceous and splintery (green), weakly to moderately calcareous.

SHALE - medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous, silty in part, micaceous in part. LIMESTONE and CALCAREOUS DOLOMITE - 20-30% cream translucent to medium brown (medium oil stain or organic carbon?), microcrystalline, hard, cherty in part, light, minor IU crystalline with trace glauconite, trace very fine dark green glauconite blebs, very weakly silty and weakly silty and argillaceous, trace pinpoint porosity, pale yellow, very slow streaming cut, rare bright white moderate streaming cut in hard, brown silstone (one grain only - questionable).

SHALE - medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous. LIMESTONE - 20-30% cream translucent to medium brown, microcrystalline, hard, cherty in part, light, no show.

SHALE - medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous. LIMESTONE - 20-30% cream translucent to medium brown, microcrystalline, hard, cherty in part, light, no show.

SANDSTONE - white, silt to VL clear, angular quartz with trace unconsolidated, frosted, well rounded IU to mL quartz and hard brown black, rounded (phosphate?) grains, well sorted, trace VL glauconite grains in part, 1% unconsolidated white, chalky platy (laminar?) grains - clay after fieldwork? poor to fair relief, moderately to well consolidated, silica and trace dolomite cement, no visible porosity. Snider III/LI, rare partial bitumen coatings on frosted quartz grains (no associated show), rare pale yellow patchy fluorescence, no cut.

DOLOMITE - dark brown, massive, hard, microcrystalline, trace very fine dark green glauconite blebs, very weakly silty and argillaceous, SHALE - bright medium green, blocky, hard, weakly splintery, poorly sorted glauconite sand stringers.

SANDSTONE - white, silt to VL with trace well rounded IU, minor IU-mL, well sorted, trace glauconite beads in part, poor to fair relief, moderately to well consolidated (20% sample), quartz overgrowths in part, no visible porosity. Snider III/LI, moderate to strong patchy white fluorescence, brightened in solvent but no cut.

SHALE/CLAYSTONE - dark brick red, subsiliceous, firm to hard, trace smooth, planar fracture surfaces. Mud saturated with suspended red clay.

SHALE - 80% medium green to gray green and gray, firm, subblocky to fissile and splintery, non-calcareous, Mt. Cap cavings?, 10% dark brick red as previous. Mud washed off was green gray.

SHALE - medium to dark gray and slightly greenish gray, hard, blocky to subblocky, non-calcareous, silty in part, trace light gray shaly light SILTSTONE stringers, with rare very fine glauconite in part and rare dolomite venisils <1mm.

@08:20 March 7, 2003

**BEST
COPY
ON FILE**

TOUR SHEETS

PASON DATAMUSE
AGE 51
JOB 2
APE 3
COD 3422-2-011204



SMALL HOURS & SWS		CHIEF BELLEVILLE BUREAU D-45		CLASS		2091		S		13		
CANADIAN NATURAL RESOURCES LTD.		APOTA DRILLING LTD.		JOB NO.		51		2nd NO		480		
RICK PARKER		DRILLER		X		HND		YES		NO		
10 W.T.		0		800		1000		1000		1000		
MORNING TOUR		0		800		1000		1000		1000		
DRILLER	DOC DRILL NO.	NAME		HND	YES	NO	MOTOR HAND		YES	NO	MOD	
		MIKE GISH		0.00								
DERPICK HAND		TERRY RANESTAD		0.00								
MOTOR HAND		ALLEN KELLY		0.00								
FLOOR HAND		FLOYD CAMPBELL		0.00								
FLOOR HAND		CHRIS TOURANGEAU		0.00								
LEASE HAND		LAWRENCE CAMPBELL		0.00								
LEASE HAND		MARCEL GRANDJAMBE		0.00								
RATE SCHEDULE		X	LABOUR		REPAIR		INVERT					
CREW SAFETY DAYS		3106										
DAY TOUR		800		1000		1000		1000				
DRILLER	DOC DRILL NO.	NAME		HND	YES	NO	MOTOR HAND		YES	NO	MOD	
		BRUCE PRESTON		12.00								
DERPICK HAND		KELLY DOUD		12.00								
MOTOR HAND		JOHN GRANDJAMBE		12.00								
FLOOR HAND		CLARENCE GARDEBOS		12.00								
FLOOR HAND		CHARLES GULLY		12.00								
LEASE HAND		MATTHEW BETSIDEA		12.00								
LEASE HAND		ARON ELLTON		12.00								
W & C		PAUL REYNOLDS		12.00								
LOADER OPERATOR		MELVIN BLONDEN		12.00								
RATE SCHEDULE		X	REGULAR		REPAIR		INVERT					
CREW SAFETY DAYS		3106										
EVENING TOUR		1000		2400		2400		2400				
DRILLER	DOC DRILL NO.	NAME		HND	YES	NO	MOTOR HAND		YES	NO	MOD	
		MIKE GISH		0.00								
DERPICK HAND		TERRY RANESTAD		0.00								
MOTOR HAND		ALLEN KELLY		0.00								
FLOOR HAND		FLOYD CAMPBELL		0.00								
FLOOR HAND		CHRIS TOURANGEAU		0.00								
LEASE HAND		LAWRENCE CAMPBELL		0.00								
LEASE HAND		MARCEL GRANDJAMBE		0.00								
RATE SCHEDULE		X	REGULAR		REPAIR		INVERT					
CREW SAFETY DAYS		3106										

CANADIAN NATURAL RESOURCES LTD.

08:42: 128:42:

STATE OF OREGON, DEPARTMENT OF REVENUE

CRAIG SKUBLENY

AKITA DRILLING LTD.

3000630650126500

IMPORTANCE OF CONSTRUCTION FOR MANPOWER

RICK PARKER

- 1.1 Study With Required Preparation
- 1.2 Determine Importance - Writing (Using Short List)
- 1.3 Write Notes Prompt & Required
- 1.4 Write Outline & Short Paragraphs Prompt
- 1.5 Write Notes Prompt
- 1.6 Write Notes Prompt
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PAGE 1 **S** 1 **T**

NO. 81

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PASON DATAMUSE

Page 51

202

100

[illegible]

WELL NAME & NO.		DATE	MOUSE IN	DAY
CHERRY BULLEN DUKEH D-53		2003	3	12
COMPANY NAME		JOB NAME		
CANADIAN NATURAL RESOURCES LTD.		ARCTA DRILLING LTD		
JOB OPERATOR		WELL TAG		
RICK PARKER		01		
ADDRESS		WELL SHELVE TAG NUMBER		

[illegible][illegible][illegible][illegible][illegible][illegible]

RICK PARKER

PASON DATAHUE
 Addn 31
 Job 7
 AFE 2
 CDR 3422-2-811204

3104

[illegible]

19

CONTRACTOR
AKITA DRILLING LTD.
LONDON W1
3000E36650126500
MEMBERSHIP OF CONTRACTORS' ASSOCIATION
RICK PARKER

100

PASON DATAHUB
AIDS 51
Job 2
APE 2
CDN 3422 2-011204



WELL NUMBER & NO	REPORT	DATE	DAY
CHARLES BELLEN BUREN D-63	2003	3	8
OPERATOR CANADIAN NATURAL RESOURCES LTD.		LEASE NO. AKITA DRILLING LTD	
THE OPERATOR RICK PARKER		WELL NO. 81	
REGION CAMP		1000 SHELBY RD SW 1000 SHELBY RD SW	

[illegible][illegible]

EVENING TOUR		1989		2400		CASH	
CREDIT	DOC INCL NO.	NAME	WAGE	WAGE	WAGE	WAGE	WAGE
GRILLER		MIKE GISH	2.00				
DEURICK HAND		TERRY RANESTAD	2.00				
MOTOR HAND		ALLEN KELLY	2.00				
FLOOR HAND		FLOYD CAMPBELL	2.00				
FLOOR HAND		CHRIS TOURANGEAU	2.00				
LEASE HAND		LAWRENCE CAMPBELL	2.00				
LEASE HAND		MARCEL GRANDJAMBE	2.00				
W S C		PAUL REYNOLDS	2.00				
RATE SCHEDULE -		X	REGULAR	REPAIR			INVERT
		CROWN SAFETY DAYS					
		3101					

DAILY FORM		4.00	WELD TIME	15.75.00	HOURS RUN	BT ARE DENSITY (WELD)	ONLINE PLUM DENSITY	UNDER PLUM DENSITY	OPERATOR SIGNATURE		WELD IN	WELD IN	WELD IN	BARMAN EXPERIENCED MODELING	SAFETY FPC	MACP
WELD									MIKE OSH		8.00	10.5	365			
WELD OF B C																
WELD OF STEEL		40		WELD OF STEEL (B)												

	CREW SAFETY DATA	
	3100	



DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43
DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43

DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43
DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43

DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43
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DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43
DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43

DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43
DATE	1932	TIME	12:00	DRILLER	BOB ROLFE	DEPT	11	WELL NO.	1932	WELL NAME	CHRIS BELLEH DUKEH D-43

AKITA DRILLING LTD.

UNCLAS

300D636450126500

SIGNATURE OF CONTRACTOR AND ADDRESS

MIKE GISH

FILE NUMBER 2-102	CHIES BELLEN DUKEN D-43	Month	Year	Page
		2005	3	2
SPONSOR	EDUCATION	EDUCATION		
CANADIAN NATURAL RESOURCES LTD	AKTA DRILLING LTD			
BRIDGE CHIEF				
ALLEN				

[illegible][illegible][illegible]

CANADIAN NATURAL RESOURCES LTD.	ARCTA DRILLING LTD.
WILSON LOCATION	WELL #10
08:42: 126:42:	3000638650126500
SIGNATURE OF OPERATOR'S REPRESENTATIVE	SIGNATURE OF CONTRACTOR'S REP. MAN
CRAIG SKUBLEMY	MIKE GISH

[illegible][illegible][illegible][illegible]

WELL NAME & NO.	DATE	WELL NO.	DATE
CHARLES BELLEFON DUKEN 0-43	2003	2	26
DRILLING FIRM	LOGGING FIRM		
CANADIAN NATURAL RESOURCES LTD.	ARCTA DRILLING LTD.		
WELL NUMBER		WELL NO.	
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WELL TYPE			
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[illegible][illegible][illegible]

RATE SCHEDULE		X	WILLAR		REPAIR		PORT
			CREW SAFETY DAYS				
			480				

CANADIAN NATURAL RESOURCES LTD.

06:42: 126:42:

NAME OF OPERATOR'S REPRESENTATIVE

CRAIG SKURLENY

TRANSMISSION

AKITA DRILLING LTD

300D836650126500

MEASUREMENT OF CONTRACTORS' MISMANAGEMENT

RICK PARKER

- (1) Study With Intent Questions
- (2) Detailed Vegetation - Weekly (Using Ground L)
- (3) Field Signs Periods Required
- (4) Field Location & Data Integration Period
- (5) Photo Lines Started
- (6) 100% Daily Production
- (7) Weekly Report (GPR, Photo Lines & Integration L)
- (8) Key Site Health & Safety Meeting (environmental)
- (9) Critical Key Safety Inspection (environmental)
- (10) Most inspection before Raining or Leaving
- (11) Designation of Control
- (12) Water 10% Control

॥ श्रीगणेशाय नमः ॥

NAME	DATE OF BIRTH	TYPE	GRADE	PLANT TYPE	PLANT NAME	OTHER NAME
110 01	330 7	315 3	101 29	105 521	115 6	215 50
	244 5	224 4	50 53	105 521	115 6	215 50
	117 8	100 9	50 70	105 521	115 6	215 50
PLANT TYPE	PLANT NAME	PLANT NAME	PLANT NAME	PLANT NAME	PLANT NAME	PLANT NAME
110 01	330 7	315 3	101 29	105 521	115 6	215 50
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114 01	330 7	315 3	101 29	105 521	115 6	215 50

June 51

DATE ?

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PASON DATAHUB
Amps 51
Job 2
APE 2
CDN 3472 2-011204



SMALL WORKS & SIG.		CLASS		CLASS		CLASS	
CHRYSLER BELLEVUE D-43		2003		2		22	
CANADIAN NATURAL RESOURCES LTD.		LAWRENCE HALL		AKITA DISILLY & LTD.			
RICK PARKER		714		714		714	
RESERVE		714		714		714	
82 10 T.		714		714		714	
MORNING TOUR		0		800		2	
CHRYSLER		SUC BUS. NO.		SUC BUS. NO.		SUC BUS. NO.	
DALLER		BRUCE PRESTON		0.00		YES	
DERWICK HAND		KELLY DODD		0.00		NO	
MOTOR HAND		JOHN GRANDJAMBE		0.00		NO	
FLOOR HAND		CLARENCE GARDEBONS		0.00		NO	
FLOOR HAND		CHARLES GULLY		0.00		NO	
LEASE HAND		MATTHEW BETSIDEA		0.00		NO	
LEASE HAND		ARON ELLTON		0.00		NO	

DATE SCHEDULE		X	WEEKEND	REPORT	DATE
Crew Safety Data					
2003					
DAY TOUR		850	1000	1000	
CREW	SOC ENG. NO.	NAME	NO	YES	NO
DRILLER		RYAN LISOWAY	12.00		
DERRICK HAND		RODRICK KAKFW	12.00		
MOTOR HAND		STEVEN KELLY	12.00		
FLOOR HAND		DERRICK SHAE	12.00		
FLOOR HAND		CHESTER KAKFW	12.00		
LEASE HAND		SHAWN MOULE	12.00		
LEASE HAND		JACK WALKER	12.00		
W.S.C.		PAUL REYNOLDS	12.00		
Vendor supervisor		EDDY EROTSE	12.00		

BOB BOHMAN		X	REGULAR	SENIOR	WHEEL
CHIEF JURYMAN					
7					
EVENING TOUR		1000	2000	L-1000	
CREDIT	SEC ONE, TWO	NAME	WINS	YES	NO
DRILLER		BRUCE PRESTON	0.00		BP
DEPPICK HAND		KELLY DOUD	0.00		ND
MOTOR HAND		JOHN GRANDJAMBE	0.00		JS
FLOOR HAND		CLARENCE GARDEBOIS	0.00		CL
FLOOR HAND		CHARLES GULLY	0.00		CG
LEASE HAND		MATTHEW BETSIDEA	0.00		MB
LEASE HAND		ARON ELLTON	0.00		AE

RATE SCHEDULE	X	REGULAR		PENALTY		SURETY
		CERT.	SAFETY DAYS			

674

CANADIAN NATURAL RESOURCES LTD.

AKITA DRILLING LTD.

06:42: 126:43:

3000638450126500

SIGNATURE OF OPERATOR'S REPRESENTATIVE

SIGNATURE OF CONTRACTOR'S REPRESENTATIVE

CRAIG SKUBLENY

RICK PARKER

- 1.1 Daily Water Treatment
1.2 Chemical Injection - Heavy (Heavy Oil) Unit
1.3 1000 Gpm Pump - Heavy
1.4 1000 Gpm Pump - Light
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2.00 1000 Gpm Pump - Light

TIME	DRILLER	DRILLER NO.	DRILLER NAME	DRILLER ADDRESS	DRILLER PHONE	DRILLER FAX	DRILLER E-MAIL	DRILLER WEBSITE	DRILLER COMMENTS
06:42	126:43								
07:00	7.00								
07:15	7.15								
07:30	7.30								
07:45	7.45								
08:00	8.00								

TIME	DRILLER	DRILLER NO.	DRILLER NAME	DRILLER ADDRESS	DRILLER PHONE	DRILLER FAX	DRILLER E-MAIL	DRILLER WEBSITE	DRILLER COMMENTS
08:15	8.15								
08:30	8.30								
08:45	8.45								
09:00	9.00								
09:15	9.15								
09:30	9.30								
09:45	9.45								
10:00	10.00								
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16:45	16.45								
17:00	17.00								
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TIME	DRILLER	DRILLER NO.	DRILLER NAME	DRILLER ADDRESS	DRILLER PHONE	DRILLER FAX	DRILLER E-MAIL	DRILLER WEBSITE	DRILLER COMMENTS
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DAILY SCHEDULE	X	REGULAR		POWER			INVEST
GROSS ANNUITY RATE							

1032 CHNRS BELLEN DUKE D-83 CONTRACTOR
CANADIAN NATURAL RESOURCES LTD. AKITA DRILLING LTD.
06:42: 126:42: 3000830850126500
SIGNATURE OF OPERATOR REPRESENTATIVE SIGNATURE OF CONTRACTOR'S REGRADER
CRAIG SKUBLENY RUCK PARKER

FASON DATAHUB
ANN 511
JOB 2
APR 2
CDN 3422-2-11204



MORNING TOUR
DAY TOUR
EVENING TOUR
HOLE CONDITION
CUTTING STRUCTURE
DEPTH (M)
DEVIATION
DIRECTION
CHECKED DEAGLE ANCHORS, BRACKS AND LAMINAE
BLOWER RAN 200
BLOWDOWN = 100% OF FLUID TOTAL
BRUCE PRESTON
1700 30 80 54 80 D 30 8
1730 1740 0.25 30
1745 1815 0.50 30
1815 1940 1.50 30
1940 2100 1.25 30
2100 2200 1.00 30
2200 2315 1.25 30
2315 2330 0.25 30
2330 2345 0.25 30
2345 2400 0.25 30
CHECKED CHROMIUM DEAGLE ANCHORS, BRACKS AND LAMINAE
BLOWER RAN 200
BLOWDOWN = 100% OF FLUID
MIKE GISH 8 00 11 0 200

MORNING TOUR
DAY TOUR
EVENING TOUR
RATE SCHEDULE
CREW SAFETY DAYS
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FLOOR HAND		FLOYD CAMPBELL	0 00	PC
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LEASE HAND		LAWRENCE CAMPBELL	0 00	LC
LEASE HAND		MODEST EDDIBAR	0 00	ME

PAYE SCHEDULE	X	QUARTERLY		SEMI-ANNUAL		ANNUAL
		CREDIT SAFETY DAYS				
		DATE				

DAY TOUR		800	1000	TOTAL	
CRIB	BOC INL. BLS.	NAME	HRS	YRS	NO
DRILLER		BRUCE PRESTON	12.00		00
DERRICK HAND		KELLY DOUD	12.00		00
MOTOR HAND		JOHN GRANDJAMBE	12.00		20
FLOOR HAND		CLARENCE GARDEBOS	12.00		00
FLOOR HAND		CHARLES GULLY	12.00		00
LEASE HAND		MATTHEW BETSIDEA	12.00		00
LEASE HAND		ARON ELLTON	12.00		00
W B C		PAUL REYNOLDS	0.00		00
LOADER OPERATOR		MELVIN BLONDEN	12.00		00

DATE RECEIVED	X	AMOUNT		REMARKS		DATE

EVENING TOUR		1999	2000		
CITY	DOC REC. NO.	NAME	AGE	YES	NO
DRILLER		MIKE QISH	0 00		WON
DERPICK HAND		TERRY RANESTAD	4 00		TR
MOTOR HAND		ALLEN KELLY	4 00		AK
FLOOR HAND		FLOYD CAMPBELL	4 00		PC
FLOOR HAND		JAMES MCPHERSON	4 00		JA
LEASE HAND		LAWRENCE CAMPBELL	4 00		LC
LEASE HAND		MOORE EDDIBAR	0 00		ME
W S C		PAUL REYNOLDS	0 00		PAR

DATE SCHEDULE	X	REGULAR		SEMI		OVER
		CREW SAFETY DAYS				

[illegible]

MORNING TOUR		0	500	F. M. 1968	
CRIM	SOC. INS. NO.	NAME	DOB	YES	NO
DRILLER		MIKE GISH	0.00		
DERRICK HAND		TERRY RANESTAD	0.00		
MOTOR HAND		ALLEN KELLY	0.00		
FLOOR HAND		FLOYD CAMPBELL	0.00		
FLOOR HAND		JAMES MCPHERSON	0.00		
LEASE HAND		LAWRENCE CAMPBELL	0.00		
LEASE HAND		MODEST EDOBAR	0.00		
W & C		PAUL REYNOLDS	0.00		
PAID ROSSIGNOL	X	REPAIR		OTHER	SAVETY
DATE: 11-11-68					

[illegible]

EVENING TOUR		1000		2400		7:00-10:00	
ORDER	DOC. SER. NO.	NAME	AGE	DOB	SEX	HT	WEIGHT
DWILLER		MIKE GISH	1.00		BO		
DENRICK HAND		TERRY RANESTAD	1.00		MA		
MOTOR HAND		ALLEN KELLY	1.00		MA		
FLOOR HAND		FLOYD CAMPBELL	1.00		MC		
FLOOR HAND		JAMES MCPHERSON	1.00		MA		
LEASE HAND		LAWRENCE CAMPBELL	1.00		MC		
LEASE HAND		MODEST EDOBAR	1.00		MA		
W S C		PAUL REYNOLDS	1.00		MA		
DATE SCHEDULE X REGULAR REPAIR SHORT							
CHIEF SAFETY DAYS							

[illegible][illegible]

DAY TOUR									
SPY NO		TIME		000 015 025 31		SAFETY MTO			
DATE		PRIORITY (GRADE)		015 1000 1775 35		Maine Reg			
SPEC CODE		PLUNGER VELOCITY							
CONDUCTANCE		PLUNGER LOSS (GMS)							
TYPE		SP							
SERIAL NO									
STG									
DEPTH OUT		PROJECT		DEPTH		TIME		DATE	
DEPTH IN									
DEPTH 12 INCHES									
DEPTH 18 INCH									
DEPTH 24 INCH									
DEPTH 30 INCH									
DEPTH 36 INCH									
DEPTH 42 INCH									
DEPTH 48 INCH									
DEPTH 54 INCH									
DEPTH 60 INCH									
DEPTH 66 INCH									
DEPTH 72 INCH									
DEPTH 78 INCH									
DEPTH 84 INCH									
DEPTH 90 INCH									
DEPTH 96 INCH									
DEPTH 102 INCH									
DEPTH 108 INCH									
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CHINESE BELLEFLEUR 8-43		Page	3	Date	12
CANADIAN NATURAL RESOURCES LTD.		ANTA DRILLING LTD.		Page 40	
BICK FARMER		Page 41		Date 12/1/80	
N.M.I.		Page 42		Date 12/1/80	

MORNING TOUR		B	000	[REDACTED]	
CRIMP	DOC BUS NO.	NAME	TIME	YES	NO
DRILLER		RYAN LISOWAY	10:00		PL
DERRICK HAND		RODRICK KAKFW	10:00		NO
MOTOR HAND		STEVEN KELLY	10:00		SH
FLOOR HAND		DERRICK SHAE	10:00		CH
FLOOR HAND		CHESTER KAKFW	10:00		SH
LEASE HAND		SIMON HOLE	10:00		CH
LEASE HAND		JACK WALKER	10:00		JW

DATE SCHEDULE	X	REGULAR		REPAIR		SAVING
CREW SAFETY DAYS						
464						

DAY TOUR		090	1000	1100
DRIVER	DOC BUL. HIL.	NAME	TIME	TIME
DRILLER		MIKE GISH	10 00	11 00
DERRICK HAND		TERRY RANESTAD	10 00	11 00
MOTOR HAND		ALLEN KELLY	10 00	11 00
FLOOR HAND		FLOYD CAMPBELL	10 00	11 00
FLOOR HAND		JAMES MC PHERSON	10 00	11 00
LEASE HAND		LAWRENCE CAMPBELL	10 00	11 00
LEASE HAND		MODEST EDORBAR	10 00	11 00
LOADER OPERATOR		MELVIN BLONDEN	10 00	11 00

DATE SCHEDULE	X	COPIES		NUMBER		DATE	
		NEW SAFETY PAGE					

[illegible]

RATE SCHEDULE		X	REGULAR		PERIOD		INVERT
		CREW SAFETY DAYS					
		81					

[illegible][illegible][illegible][illegible][illegible]

DAY TOUR		000	1000	1000	
CRASH	DOC	DRS	NAME	TIME	YES
DRILLER			MIKE GISH	12.00	NO
DERRIK HAND			TERRY RANESTAD	12.00	TH
MOTOR HAND			ALLEN KELLY	12.00	HE
FLOOR HAND			FLOYD CAMPBELL	12.00	PC
FLOOR HAND			JAMES MCPHERSON	12.00	AN
LEASE HAND			LAWRENCE CAMPBELL	12.00	LE
LEASE HAND			MODEST EDONBAR	12.00	
WVC			KELLY DODD	12.00	AB
LOADER OPERATOR			MELVIN BLONDEN	12.00	LB

[illegible][illegible]

**ADDITIONAL
INFORMATION**

SYNTEHTIC SEISMOGRAM

300/ D63 66-42 126-42 /0

KB = 332.40 m

