

AUTHORITY TO
DRILL A WELL



Exploratory
Development ☒

Delineation
Service ☐

AUTHORITY TO DRILL A WELL

APPLICATION

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

Well Name in Full: CDN FOREST ET AL FORT LIARD K-32
Operator: CANADIAN FOREST OIL LTD. Drilling Program No.: N/A
Contractor: TO BE DETERMINED Permit or Lease No.: ---
Drilling Rig or Unit: TO BE DETERMINED Estimated Well Cost: \$1,888,000.00
Location-Unit: K Section: 32 Grid Area: 60°10'N, 123°15'W
Coordinates: Lat.: 60° 01' 39" N (EST.) Long.: 123° 21' 49" W (EST.)
Area: FORT LIARD Field/Pool: WILDCAT
Elevation-RT/KB: ELEVATION: 480.1m (ASL) Seafloor: NA (BRT)
Approx. Spud Date: 1999.02.01 Estimated Days on Location: 21 DAYS
Anticipated Total Depth: 1850m Target Horizon(s): CHINKEH FORMATION

EVALUATION PROGRAM

Ten-metre sample intervals ---
Five-metre sample intervals SURFACE BEDROCK TO T.D.
Canned sample intervals EVERY 10m, SURFACE BEDROCK TO T.D.
Conventional cores at ±.1336mKB TO .1351mKB OVER THE CHINKEH FORMATION
Logs and Tests SEE ATTACHED SHEET

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth Below Seafloor:	Cementing Program (Volumes):
406.4mm	CONDUCTOR PIPE		20mKB	GROUT TO SURFACE
244.5mm	53.57 kg/m	J-55	465mKB	55.4m³
177.8mm	34.23 kg/m	L-80	1850mKB	37.7m³

B.O.P. Equipment: AS PER CANADA OIL AND GAS DRILLING REGULATIONS, SECTION 60.
ACTUAL BOP INFORMATION TO FOLLOW UPON RIG SELECTION

Other Information:

Signed: M. J. Sullivan P.Eng. Title: MANAGER OF PROJECTS
Date: 1998.12.13 Company: PAJAK ENGINEERING LTD.
FOR: CANADIAN FOREST OIL LTD.

APPROVAL

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

Signed: David Baker
Chief Conservation Officer
Date: February 12, 1999
File: 9211-C131-1-2, WID 1860
UWI 300K326010123150

Canada

WELL
TERMINATION
RECORD (with
attachment)



WELL TERMINATION RECORD

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

Well Name: CDN FOREST et al FORT LIARD K-32 Area: Fort Liard
 Grid Area: 60° 10' N, 123° 15' W Field/Pool: Wildcat
 Interest Identifier: Final Coordinates: Lat: 60° 01' 39.211" Long: 123° 21' 49.639"
 Drilling Unit: K Elevations-KB/RT 484.5m (ASL) GL/Seafloor 480.1m
 Spud Date: 99/02/19 R.R. 99/03/21 Total Depth: 1695m

O.D. (mm)	Weight (kg/m)	Grade	Depth Set (m KB)	Cement (m³)
244.4	53.57	J-55	487.5	28.4
177.8	34.23	L-80	1695.0	36.0

PLUGGING PROGRAM

Approval of the following program was obtained by (person) N/A from
 (person) of the by means of
 on 19

Type of Plug	Interval (m KB)	Felt	Cement (m³)

Lost Circulation/Overpressure Zones: None
 Equipment left on Seafloor (Describe):
 Provision for Re-entry (Describe and attach sketch):
 Cores: Type: 89mm conventional Intervals: 1322-1339.4m

Other Downhole Completion/Suspension Equipment: 177.8mm casing run and cemented to surface. Tubing head with master valve installed.

CERTIFICATION

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

Signed: Keith Hynes Title: Operations Engineer
 Name: Keith Hynes Date: January 24, 2000
 Company: Canadian Forest Oil Ltd.

Acknowledged by: [Signature]

Well Status

Chief Conservation Officer

Suspended ☒

Date: Feb 7, 2000

Completed ☐

File: 9211-C131-1-2

Abandoned ☐

UWI: 300K326010123150 WID: 1860

Well	CDN Forest et al Fort Liard K-32			Date	20-Jan-00
Supervisor		KB	484.50	TD	1695m
Operator	Canadian Forest Oil Ltd.	GR	480.10	PBTD	1689m
		KB-GR	4.40	KB-CF	

Surf	Size	244.5mm	Weight	53.57 kg/m	Grade	J55	Depth	487.5m
Prod	Size	177.8mm	Weight	34.23 kg/m	Grade	L80	Depth	1695.0m
Liner	Size		Weight		Grade		Depth	

Zone	Interval (s)	Status
		Suspended

Type	Depth	Remarks

[illegible]

Pump Type					Serial No		Make	
Remarks								
Rod Size	Number	Grade	Scraper Description		Remarks			

Make	WP (kPa)	Flanged/Threaded
Component	Type	Size
Master Valve		
Tbg. Bonnet		
Tbg. Spool		
Tbg. Hanger		
Csg. Valves		
Rod BOP/Choke		

01/25/2000 9:01 AM

FINAL WELL REPORT

N.E.B. COPY

FINAL WELL REPORT

CDN FOREST et al FORT LIARD K-32
Final Well Report

N.E.B. COPY

FINAL WELL REPORT
CDN FOREST ET AL FORT LIARD K-32

MAY 10th, 2000

Prepared by: Keith Hynes
Operations Engineer
Canadian Forest Oil Ltd

A) SUMMARY

Canadian Forest Oil Ltd. spudded the Cdn Forest et al Fort Liard K-32 well on February 19, 1999 to test the Chinkeh sand for gas and to TD the well in the Mattson sand which was a secondary target. Nabors Drilling Rig #6 was utilized to drill 311mm hole to 487.5mKB where 244.5mm surface casing was set and cemented. After drilling 222mm hole to 1322mKB a core was cut from 1322mKB to 1339.4mKB. Drilling continued to 1465mKB where DST #1 was conducted over the Chinkeh interval from 1394mKB to 1408mKB. Test results suggested virtually no permeability in the Chinkeh. After reaching TD at 1695mKB and logging the well, DST #2 was conducted over the interval from 1635-1695mKB. A small quantity of gas along with 550m of salt water in the drillpipe was recovered. The hole was cased with 177.8mm pipe and cemented. A tubing head and master valve were installed and the well was suspended. At this point in time there are no plans to complete or re-enter and deepen the well. However, as completing or deepening are options pending the results of current and future offset wells, Canadian Forest Oil Ltd. would like to maintain K-32 as a suspended well.

B) GENERAL DATA:

WELL NAME:	Cdn Forest et al Fort Liard K-32
UNIT:	K
SECTION:	32
GRID AREA:	60° 10' 123° 15'
WELL LOCATION:	Latitude 60° 01' 39.211" Longitude 123° 21' 49.639"
UNIQUE WELL IDENTIFIER:	300K326010123150
OPERATOR:	Canadian Forest Oil Ltd 600, 800 – 6 th Avenue SW Calgary, Alberta, T2P 3G3
DRILLING CONTRACTOR:	Nabors Drilling Limited Suite 850 505 – 3 rd Street SW Calgary, Alberta, T2P 3E6
DRILLING UNIT:	Nabors Rig #6
TOTAL WELL COST:	\$1,567,573

C) SUMMARY OF DRILLING OPERATIONS

- i) Elevations: Ground: 480.1m 484.5m
- ii) Total Depth: 1695mKB
- iii) Spudded: February 19, 1999 @ 14:00hrs.
- iv) Drilling Completed: March 17, 1999 @ 17:00hrs.
- v) Rig Release: March 21, 1999 @ 11:00hrs
- vi) Well Status: Suspended
- vii) Hole Size and Depth: 311mm hole from 0 – 487.5m
222mm hole from 487.5 – 1695m
- viii) Surface Casing: 244.5mm, 53.57 kg/m, J-55, LT&C set at 487.5m.
Cemented with 38 tonnes 0:1:0 Class "G" and 1% CaCl₂. 8m³ of cement returns at surface.
- Production Casing: 177.8mm, 34.23 kg/m, L-80, LT&C set at 1695m.
Cemented with lead: 22m³ 1:1:6 + 0.75% CFR.
Tail: 11.5m³ 0:1:0 "G" + 0.4% CFL-3 + 0.2% LTR.
5m³ of cement returns at surface.
- ix) Sidetracked Hole: There were no sidetracks.
- x) Drilling Fluid: Potassium Sulphate Gel Chem.
- xi) Fishing Operations: There were no fishing operations.
- xii) Well Control: There were no well control operations.
- xiii) Formation Leak-Off Tests:

Depth	487m
Fluid Density	1000 kg/m ³
Applied Pressure	5200 kpa
Mud Wt. Equiv.	2087 kg/m ³
Formation Gradient	20.48 kpa/m
(see attached graph)	
- xiv) Time Distribution: The attached Drilling Summary Report and Daily Drilling Reports include a time breakdown.

- xv) **Deviation Survey:** The attached Drilling Summary Report and Daily Drilling Reports include an inclination survey, which show the maximum hole angle to be 4.0 degrees @ 1688m.
- xvi) **Abandonment Plugs:** The wellbore was left suspended by running and cementing 177.8mm casing and installing a master valve.
- xvii) **Composite Well Record:** See Attached Geological Report Strip Log.

D) GEOLOGY:

- i) **Drill Cuttings:** See Sample Description, Geological Well Report.
- ii) **Cores:** A core analysis including photos is attached.
- iii) **Lithology:** See attached Geological Well Report.
- iv) **Stratigraphic Column:** See attached Geological Well Report.
- v) **Biostratigraphic Data:** N/A.

E) WELL EVALUATION:

- i) **Openhole Logs:** A listing of open hole logs is included in the Geological Well Report. A set of open hole log disk files are attached.
- ii) **Other Logs:** A gas detection and mud log is included in the Geological Well Report.
- iii) **Synthetic Seismograms:** N/A
- iv) **Formation Stimulation:** No well completion or stimulation occurred.
- v) **Formation Test Results:** Two DST's were conducted and are attached.
- vi) **Detailed Test Pressure Readings:** See attached DST's.

F) ENVIRONMENTAL WELL REPORT:

An environmental assessment of the location was undertaken to meet the requirements of the Canadian Environmental Assessment Act (CEAA) as required by DIAND and the National Energy Board. This report was previously forwarded in multiple copies to all of the applicable authorities.

A Drilling Waste Disposal Summary on cleanup operations to date is attached.

G) APPENDICES:

- i) Please find attached gas and water analysis for products recovered during DST #1 and DST #2.
- ii) A final survey plan is attached. This plan has also been sent to Natural Resources Canada, Legal Survey Division for registration.

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:40 2000

DAY	DEPTH	PROGRESS	REMARKS
1	0	0	99/02/15 Drove to Fort Liard. 99/02/16 Drove out checked K-32 location and waited on camp trucks. Camp arrived @ 14:00 hours and the big bed arrived @ 15:00 hours. Spotted camp with Swanberg Trucking, camp operational at 17:00 hours. Crews arrived from Fort Liard airport at 21:30 hours. 99/02 17 08:00 hours. Waited on rig loads to arrive. Held a prejob safety meeting with Nabors and Swanberg personal at 11:00 hours. Rigged up Nabors #6, raised derrick at 21:30 hours. Continued to rig up and waited on additional rig loads, ie: boiler, divertor, catwalk and pipe. 99/02/17 23:59 hours.
2	0	0	99/02/18 00:01 hours. Continued to rig up Nabors Rig# 6. Spotted boiler at 04:00 hours and got boiler rigged up. Changed liners in Emsco 500 to 140 mm. Worked on mud system. Spotted catwalk and pipe tubs. Welded on divertor flange. Nipped up 508 mm divertor onto 406 mm conductor pipe 99/02/18 23:59 hours. Boiler start up 99/02/18 @ 06:00 hours.
3	80	80	99/02/19 00:01 hours. Nipped up 14,000 kPa divertor and mixed spud mud. Picked up BHA and made up same. Circulated hole and observed flow nipple leaking badly. Took flow apart siliconed, and reassembled. Circulated hole clean and pressure tested divertor to 225 kPa for 10 minutes. Pressure held ok. Held prespud safety meeting with Nabors crew followed by a prespud check list. Spudded in at 14:00 hours and drilled 311 mm hole surveying as required to 35 mKB. Mud would not stay on 110 mesh screens so 84 mesh screens were installed with no better results. While looking at the mud it seemed to be flocking and mud chemicals were checked and found that a sack of percol 727 was accidentally mixed for a sack of alcomer. Dynamic's office said it would be best to haul fluid from mud tank to remote sump and replaced with fresh water, which was done. Dynamic said the fluid could be reused in 3-4 days time. Drilled 311 mm hole from 35 mKB to 40 mKB. Held prespud meeting with Nabors night crew. Drilled 311 mm hole, surveying as required to 80 mKB. 99/02/19 23:59 hours. Note: Spudded CDN Forest et al Fort Liard K-32 with Nabors # 6 at 99/02/19 14:00 hours. File No: WID # 1860.
4	240	160	99/02/20 00:01 hours. Drilled 311 mm hole from 80 mKB to 240 mKB circulating and surveying as required. Tripped bit # 1A at 240 mKB due to decrease in penetration rate and deviation. 99/02/20 23:59 hours. Safety Topics : communication / handling tubulars Note :#1 Had problems with alcomer 110 plugging shaker screens directly after mixing, circulated a couple circulations so mud could shear through jets which resolved the problem.
5	355	115	99/02/21 00:01 hours. Drilled 311 mm hole from 240 mKB to 355 mKB surveying as required. 99/02/21 23:59 hours. Safety Topic: Working around rotary table. Note: Fanned hole with 3,000-5,000 daN from 280 mKB to 340 mKB to control deviation.
6	426	71	

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32	AFE: 984018	SPUD DATE: 99/02/19
LOCATION: 300-K32-6010-12315-0	CONTRACTOR: NABORS	RIG: 6

Wed Jun 21 14:41:41 2000

DAY	DEPTH	PROGRESS	REMARKS
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			99/02/22 00:01 hours. Drilled 311 mm hole from 355 mKB to 378 mKB surveying as required. Tripped bit #2A, hole good on trip. Break circulation and cleaned 2 m fill on bottom. Drilled 311 mm hole from 378 mKB to 426 mKB surveying as required, controlled deviation by varying WOB and RPM. 99/02/22 23:59 hours. Safety topics: Tripping / Working with steam. Note: Levelled rig with Rocky Davis Jacking Services prior to setting 244.5 mm casing.
7	488	62	99/02/23 00:01 hours. Drilled 311 mm hole from 426 mKB to 484 mKB surveying as required. Circulated and conditioned hole. Wiper tripped, pulled tight from 440 mKB to 380 mKB (small mud ring). Break circulation and cleaned 3 m of fill to bottom. Drilled 311 mm hole to 487.5 m TD. Circulated and conditioned hole and mud. Ran wireline survey and hoist to run 244.5 mm casing laying down 2 x 204 mm DC's. Rigged up to run 244.5 mm casing. Held prejob safety meeting with Nabors and Ray's Tong Service personal. 99/02/23 23:59 hours. Safety topics: Electrical safety / Running casing.
8	488	0	99/02/24 00:01 hours. Ran 37 joints 244.5 mm x 53.57 kg/m J-55, LT/C Prudential range # 3 casing. Total length of casing and accessories 488.38 m. Landed shoe at 487.5 mKB and float collar at 473.27 mKB. Circulated hole clean and wait on Sanjel's bulk cementer to arrive. Held prejob safety meeting with Sanjel and Nabors personal. Pressure tested surface equipment to 21,000 kPa. Pumped 3 m3 of water ahead, followed by 38 tonnes of 0:1:0 class "G" + 1% CaCl2. Released plug and displaced casing with 19 m3 of water. Bumped plug 3 MPa over circulating pressure at 11:29 hours. Bled off pressure and float held. Received 8 m3 of good cement returns, wait on cement for 6 hours. Nippled down and tore out diverter. Cut off casing and welded on a 279.4 mm x 244.5 mm 21 MPa weld on casing bowl equipped with 2/52.4 mm 21 MPa flanged valves. Pressure tested weld on bowl to 21 MPa. Bowl ser# 76334-17. Nippled up 228.6 mm x 21 MPa BOP stack. 99/02/24 23:59 hours. Safety meetings: Cementing / Handling BOP stack. Note: Nabors did not have a 114 mm reg x 127 mm H90 bit sub, so arrangements were made to get one hotshotted from Ft. St. John. The BHA was tripped in the hole and inspected by Bateman Inspection Services. Will trip BHA out of hole when that task is completed and wait on bit sub to arrive.
9	516	28	99/02/24 00:01 hours. Pressure tested blind rams and manifold to 1500 kPa and 13,000 kPa for 10 minutes each with Inland Pressure Testing. Nabors did not have a bit sub so BHA was picked up and run in the hole. The BHA that drilled surface hole was inspected on the trip in the hole. Pressure tested BOP valves to 1500 kPa, 13,000 kPa and hydril to 13,000 kPa for 10 minutes each. Tripped out and picked up bit sub and tripped in the hole. Break circulation tagged cement at 470 mKB. Drilled float collar at 472 mKB and 6 m cement. Pressure tested pipe rams, inside BOP and stabbing valve to 1500 kPa and 13,000 kPa for 10 minutes each. Held BOP drill and BOP discussion with Nabors day crew. Checked engine motor kills. (ok) Drilled cement, float shoe and new hole to 490 mKB. Performed formation integrity test which broke down with surface applied pressure 5200 kPa for a formation gradient of 20.48 kPa/m. Function tested accumulator and remotes. (ok) Held BOP drill and discussion with Nabors night crew. Drilled 222 mm hole to 516 mKB. 99/02/24 23:59 hours.

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:42 2000

DAY	DEPTH	PROGRESS	REMARKS
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			Safety topic: BOP drill and discussion x 2 Note: Drilled out shoe 99/02/24 @ 22:00 hours. : BHA inspection performed by Bateman Inspection Services (found cracked pin on lower kelly cock.)
10	709	193	99/02/26 00:01 hours. Drilled 222 mm hole from 516 mKB to 663 mKB surveying as required. When going back to bottom after surveying at 663 m, pump pressure increased to 10,500 kPa. (2 jets plugged, probably something caught in joint of last connection. Attempted to unplug jets and were able to free one jet, dropping pump pressure to 9,400 kPa @ 50 stks. Pump pressure slowly dropped from 9,400 kPa to 9,120 kPa. Drilled 222 mm hole to 709 mKB and surveying as required. Varied wob and rpm to control deviation. 99/02/26 23:59 hours. Safety topics: housekeeping / orientation of new crew member Surveys: 719 m-2, 738 m -2,
11	838	129	99/02/27 00:01 hours. Fanned 222 mm hole from 709 mKB to 838 mKB surveying as required. 99/02/ 23:59 hours. Safety Topics: MSDS / Handling survey & winch equipment.
12	952	114	99/02/28 00:01 hours. Control drilled 222 mm hole from 838 mKB to 952 mKB surveying as required. 99/02/28 23:59 hours. Safety topics: Fork lift operation / Rig service operation.
13	1057	105	99/03/01 00:01 hours. Control drilled 222 mm hole from 952 mKB to 1057 mKB surveying as required. 99/03/01 23:59 hours. Safety topics: Frost plugs / Pressure lines. Note: Changed head rubber in DA-500 pump.
14	1092	35	99/03/02 00:01 hours. Circulated bottom hole sample, dropped survey and hoisted bit # 1. (hole good on trip out.) Made up bit # 2 and tripped to 485 mKB. Slipped and cut drilling line. Tripped in with drill pipe to 1050 mKB and conducted a BOP drill in the tripping mode. Break circulation and cleaned 7 m to bottom with no fill. Control drilled 222 mm hole from 1057 mKB to 1092 mKB surveying as required. 99/03/02 23:59 hours. Safety topic: Confined entry spaces / Working on pumps Note :#1 Function tested blind rams when out of hole. #2 Hole fill: Act - 6.34 m3, Calc - 6.15 m3 = + .19 m3 #3 Changed D-375 pump to 140 mm heads & liners. #4 Survey @ 1084 m - 2 degrees. #5 Strap - 1057.01 m, Board - 1057 m = .01 m diff No Corr. #6 Freeboard in remote sump @ 10 m.
15	1156	64	99/03/03 00:01 hours. Control drilled 222 mm hole from 1092 mKB to 1156 mKB, surveying as required. 99/03/03 23:59 hours. Safety topics: Confined entry spaces / Blowing down boiler
16	1228	72	99/03/04 00:01 hours. Control drilled 222 mm hole from 1156 mKB to 1183 mKB. Repaired rig generator (thermal fan hub siezed up.) Control drilled 222 mm hole from 1183 mKB to 1228 mKB surveying as required. 99/03/04 23:59 hours.

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32	AFE: 984018	SPUD DATE: 99/02/19
LOCATION: 300-K32-6010-12315-0	CONTRACTOR: NABORS	RIG: 6

Wed Jun 21 14:41:43 2000

DAY	DEPTH	PROGRESS	REMARKS
...			
			Safety topics: Fall arrest / Orient new hands to rig. Held bop drill well secured 75 seconds.
17	1289	61	99/03/05 00:01 hours. Control drilled 222 mm hole from 1228 mKB to 1289 mKB surveying as required. 99/03/05 23:59 hours. Safety topics: Well control / Slip & cut procedures. * Held 2/ BOP drills with crews. (well secured in 75 & 82 seconds.) * cp +/- 1325 m.
18	1322	33	99/03/06 00:01 hours. Drilled 222 mm hole from 1289 mKB to 1290 mKB. Circulated bottom hole sample. Drilled 222 mm hole from 1290 mKB to 1322 mKB. Circulated bottom hole sample. Wiper tripped 15 stands to 1025 mKB flow checked as required. Dropped survey and hoisted bit # 2 to core, strapped pipe and flow checked as required. Checked blind rams when out of hole. Held prejob safety meeting with Nabors and Foothills personal. Picked up core barrels and made up same. 99/03/06 23:59 hours. Safety topics: Picking up core barrels / Boiler operation Hole fill: Calc - 7.04 m3, Meas - 7.27 m3. Diff = + .23 m3
19	1339	17	99/03/07 00:01 hours. Tripped in Core BBL # 1. Circulated on bottom and dropped ball. Cut 159 mm core # 1 from 1322 mKB to 1339.4 mKB. Hoisted core # 1 and flow checked as required. Recovered 16.7 m core, serviced core barrel and layed down same. Made up bit and bottom hole assembly and tripped in with bit # 3. 99/03 23:59 hours. Safety topics : Handling core / Loader operation Hole fill : act - 7.21 m3, calc - 7.04 m3, Diff = +.17 m3
20	1402	63	99/03/08 00:01 hours. Tripped in bit # 3, break circulation and cleaned to bottom. (no fill) Reamed rathole from 1322 mKB to 1339.4 mKB. Drilled 222 mm hole from 1339.4 mKB to 1402 mKB surveying as required. 99/03/08 23:59 hours. Safety topics: Tripping procedures / Camp fire drill.
21	1459	57	99/03/09 00:01 hours. Drilled 222 mm hole from 1402 mKB to 1459 mKB surveying as required. 99/03/09 23:59 hours. Safety topics: Mixing chemicals / Handling test tools.
22	1465	6	99/03/10 00:01 hours. Drilled 222 mm hole from 1459 mKB to 1465 mKB. Circulated up bottom hole sample. Wiper tripped to 1300 m. Break circulation and cleaned to bottom with no fill. Circulated and conditioned hole. Dropped survey and tripped bit # 3 to DST, flow checked as required. Function tested blind rams when out of the hole. Picked up and made up test tool with Alpine Testing. Tripped in with DST # 1. Inflated packers and preformed DST # 1 at the predetermined test interval. Pulled packers free and tripped out DST # 1 and flow checked as required. 99/03/10 23:59 hours. Safety topics: Picking up test tool / Inflating packers. * Had rig inspection from Rick Turner & Rick Finher of the NEB and found the rig to be satisfactory. * DST results will be delivered to Calgary office from Alpine's Calgary

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32	AFE: 984018	SPUD DATE: 99/02/19
LOCATION: 300-K32-6010-12315-0	CONTRACTOR: NABORS	RIG: 6

Wed Jun 21 14:41:44 2000

DAY	DEPTH	PROGRESS	REMARKS
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			office.
			* Hole fill: Act - 7.35 m ³ Calc 7.6 m ³ Diff = -.25 m ³ .
			* Hole fill: Act - 16.65 m ³ Calc 16.54 m ³ Diff = +.11 m ³ .
23	1494	29	99/03/11 00:01 hours. Tripped DST # 1, recovered recorders, broke down test tool and loaded out same. Made up bit #4RR3 and BHA and tripped to 487 mKB. Slipped and cut drilling line. Tripped in with drill pipe to 1460 mKB. Break circulation and washed 5 m to bottom with .5 m fill. Drilled 222 mm hole from 1465 mKB to 1494 mKB. Reached TD of 1494 mKB 20:00 hours 99/03/11. Circulated bottom hole sample. Wiper tripped to 1400 m. Break circulation and washed to bottom with no fill. Circulated and conditioned hole. 99/03/11 23:59 hours. Safety topics: Lockout procedures / Overhead lines.
24	1498	4	99/03/12 00:01 hours. Dropped survey and tripped out to log and flow checked as required. Rigged up and logged with Computalog. (Loggers TD @ 1494.7 mKB.) Made up BHA and tripped in with bit # 5RR3 to 1480 mKB. Break circulation and washed to bottom with no fill. Drilled 222 mm hole from 1494 mKB to 1498 mKB. 99/03/12 23:59 hours. Safety topics : Tag lines / Housekeeping Logs : #1 SpED - 1494.7 m to 487.9 m STI - 1492.6 m to 487.9 m #2 MDA - 1488.5 m to 487.9 m Hole fill : Act - 7.78 m ³ Calc - 7.58 m ³ Diff = + .2 m ³
25	1565	67	99/03/13 00:01 hours. Drilled 222 mm hole from 1498 mKB to 1550 mKB surveying as required. Circulated and levelled rig with Rocky Davis Jacking Services. (substructure was fairly unstable when it was up on the jacks as there is now about 12" of blocking under front end.) Drilled 222 mm hole from 1550 mKB to 1565 mKB. 99/03/13 23:59 hours. Safety topics : Emergency stations / Spring conditions.
26	1592	27	99/03/14 00:01 hours. Drilled 222 mm hole from 1565 mKB to 1582 mKB. Circulated bottoms up, dropped survey, tripped bit # 5RR3 and flow checked as required. Function tested blind rams when out of hole. Made up bit # 6 and tripped to 1567 mKB. Break circulation and cleaned to bottom with no fill. Drilled 222 mm hole from 1582 mKB to 1585 mKB. Some bad drilling line was noticed and it was decided to slip & cut drilling line for safety purposes. One stand was pulled and stood in derrick. Drill string was circulated through 2" circulating hose while 1.5 rows of drilling line was removed from drawworks drum. Drilled 222 mm hole from 1585 mKB to 1592 mKB. 99/03/14 23:59 hours. Safety topics : Tripping procedures / Jacking the rig. Hole fill : Act - 7.93 m ³ , Calc - 7.61 m ³ Diff = + .32 m ³ .
27	1626	34	99/03/15 00:01 hours. Drilled 222 mm hole from 1592 mKB to 1626 mKB. 99/03/15 23:59 hours. Safety topics : Job alertness / Safety lines & cables. * Ice bridge closed from noon to 22:00 hours for heavy loads light traffic ie: pickups (ok). * Survey @ 1621 m 3.88 degrees.

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:45 2000

DAY	DEPTH	PROGRESS	REMARKS
28	1659	33	99/03/16 00:01 hours. Drilled 222 mm hole from 1626 mKB to 1659 mKB surveying as required. 99/03/16 23:59 hours. Safety topics : Hand tools / Crew truck safety.
29	1695	36	99/03/17 00:01 hours. Drilled 222 mm hole from 1659 mKB to 1695 mKB. Circulated bottom hole sample. Wiper tripped to 1400 m. Break circulation and cleaned to bottom with no fill. Circulated and conditioned mud and hole. Dropped survey and tripped to log and flow checked as required. 99/03/17 23:59 hours. Safety topics : Mixing mud / Tripping procedures * TD 1695 mKB @ 17:00 hours 99/03/17.
30	1695	0	99/03/18 00:01 hours. Tripped out to log and flow checked as required. Rigged up and logged with Computalog. Made up bit # 7RR6 and tripped to 1688 mKB. Break circulation and cleaned to bottom with no fill. Circulated and conditioned hole to run DST # 2. 99/03/18 23:59 hours. Safety topics : Handling casing / Harness & landyard lines. Logs : Spd TD to 1450 mKB., CAL : TD to 487.5 mKB GR : TD to 487.5 mKB. STI : TD to 1450 mKB. MDA : TD to 1450 mKB. CVL : TD to 487.5 mKB. Hole fill : Act - 8.42 m³, Calc - 8.20 m³ Diff = + .22m³
31	1695	0	99/03/19 00:01 hours. Tripped bit # 7RR6 to log and flow checked as required. Waited on Alpine testers to arrive. Picked up and made up DST # 2. Tripped in with DST # 2 and set packers at the predetermined test interval and tested with Alpine Testers. Pulled packers free and tripped DST # 2 to 650 m. Reverse circulated fluid out of test tool. Continued to trip DST # 2. Recovered recorders and break down test tool. 99/03/19 23:59 hours. Safety topics : Testing / Handling test tools. Hole fill : Act - 8.44 m³, Calc - 8.20 m³ Diff = + .24 m³ : Act - 16.36 m³, Calc - 15.89 m³ Diff = + .47 m³
32	1695	0	99/03/20 00:01 hours. Break down test tool and load out same. Tripped in with bit # 7 RR6 to 1688 mKB. Break circulation and washed to bottom with no fill. Circulated and conditioned hole. Layed down pipe and collars. Checked blind rams when out of hole. Held prejob safety meeting with Ray's Tongs and Nabors personal. Rigged up and ran 126 joints 177.8 mm x 34.23 kg/m L-80 8rd Prudential casing, total lenght of casing and accessories 1696.73 m. Landed float shoe @ 1695 mKB and float collar @ 1689.68 mKB. Circulated and conditioned mud and hole. Held prejob safety meeting with Nabors and Sanjel personal. Pressure tested surface equipment to 21,000 kPa. Pumped 3 m³ water, 3 m³ scavenger @ 1300 kg/m³, 22.32 m³ 1:1:6 + .75% CFR lead cement, followed by 11.44 m³ 0:1:0 "G" + .4% CFL -3 + .2% LTR tail cement. Dropped plug and displaced casing with .5 m³ of tail cement followed by 34 m³ water. Bumped plug at 3 MPa over final circulating pressure. Held pressure for 1 minute. Bleed of pressure, float held ok. Recieved 5 m³ of good cement returns. Plug down @ 02:43 hours 99/03/21. 99/03/20 23:59 hours. Safety topic: Laying down pipe / Cementing Hole fill : Act - 8.30 m³, Calc - 8.20 m³ Diff = +.10 m³.
33	1695	0	

WELL COMMENTARY

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:46 2000

DAY	DEPTH	PROGRESS	REMARKS
---	-----	-----	-----

99/03/21 00:01 hours. Circulated and conditioned hole. Held prejob safety meeting with Nabors and Sanjel personal. Cemented with Sanjel, plug down @ 02:43 hours. Nippled down BOPS and set slips in 35,000 daN tension. Cut off 177.8 mm casing and a tubing head was installed by Stream Flo representatives. Continued to rig down rig. Held prejob safety meeting with Nabors and Land Transport representative. Racked rig off on the side of lease and prepared rig to be transported out on the frost.

99/03/21 23:59 hours.

Safety topic : rig move / cementing

- * Rig released 99/03/21 @ 11:00 hours.
- * Boiler down 99/03/21 @ 08:00 hours.
- * Hauled solids up and set in a pile beside remote sump.
- * Remote sump was left with 1 meter of freeboard.
- * Lease was left in clean and tidy condition.
- * Rental equipment was returned to vendor or needed equipment was transported to N -61 location.
- * Derrick down 99/03/21 @ 10:00 hours.
- * Transferred mud chemical stock to N-61 location.

34 1695

0

99/03/22 00:01 hours. Transported Nabors rig & camp to rack site Ft.St.John. Returned all company loads to vendor. All loads off location prior to 07:00 hours 99/03/22.
Final Report.

DAILY DRILLING RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:39 2000

DAY	MD (m)	VD (m)	FORMATION	METERS PROGRESS	HRS	ROP	BIT RUN / BIT#	WOB K daN	CSG SIZE (mm)	SHOE DEPTH (m)	PROBLEM	DAILY COST \$	CUM. COST \$	CUM. COST \$/m
0	0	0										0	0	0
0	0	0										164863	164863	0
1	80	0	Quaternary	80.0	5.50	14.5	1/1A	4 120				137540	302403	3780
2	240	0	Cretaceous									31163	333566	1390
3	355	0	Cretaceous	115.0	19.50	5.9	2/2A	4 130				37058	370624	1044
4	426	0	Cretaceous	71.0	16.50	4.3	3/3A	5 0				29183	399807	939
5	488	0	Shaftsbury	61.5	12.25	5.0	3/3A	5 155				26506	426313	874
6	488	0	Shaftsbury	0.0	0.00	0.0	1/1A	5 125	244.50	487.5		61330	487643	1000
7	516	0	Shaftsbury	28.5	2.75	10.4	4/1	7 70				45364	533007	1033
8	709	0	Shaftsbury	193.0	19.75	9.8	4/1	4 95				27712	560719	791
9	838	0	Shaftsbury	129.0	20.00	6.5	4/1	4 95				24699	585418	699
10	952	0	Shaftsbury	114.0	21.00	5.4	4/1	6 85				25916	611334	642
11	1057	0	L. Shaftsbury	105.0	21.50	4.9	2/2A	4 130				24343	635677	601
							4/1	6 85						
12	1092	0	Scatter	35.0	13.75	2.5	5/2	5 80				32500	668177	612
13	1156	0	Scatter	64.0	21.50	3.0	5/2	6 80				32086	700263	606
14	1228	0	Scatter	72.0	21.75	3.3	5/2	6 95				29746	730011	594
15	1289	0	Garbutt	61.0	21.75	2.8	3/3A	5 155				22943	752954	584
							5/2	4 95						
16	1322	0	Chinkeh	33.0	12.25	2.7	4/1	6 85				25412	778366	589
							6/1C	0 0						
17	1339	0	Chinkeh	17.0	11.00	1.5	7/3	0 0				37647	816013	609
18	1402	0	Triassic	63.0	15.75	4.0	7/3	8 65				34640	850653	607
19	1459	0	Triassic	57.0	22.50	2.5	7/3	12 65				23438	874091	599
	1465	0	Triassic	6.0	2.25	2.7	5/2	4 65				20939	895030	611
	1494	0	Triassic	29.0	9.00	3.2	6/1C	6 60				47941	942971	631
							8/4RR3	13 70						
22	1498	0	Triassic	4.0	1.75	2.3	9/5RR3	11 75				57201	1000172	668
23	1565	0	Fantasque	67.0	21.75	3.1	7/3	12 65				26618	1026790	656
							9/5RR3	13 75						
24	1592	0	Fantasque	27.0	12.75	2.1	10/6	13 48				31538	1058328	665
25	1626	0	Fantasque	34.0	23.00	1.5	10/6	13 48				24258	1082586	666
26	1659	0	Fantasque	33.0	22.50	1.5	10/6	13 48				22366	1104952	666
27	1695	0	Fantasque	36.0	16.25	2.2	8/4RR3	13 70				20331	1125283	664
28	1695	0	Fantasque									62270	1187553	701
29	1695	0	Fantasque									32040	1219593	720
30	1695	0	Fantasque	0.0	0.00	0.0	10/6	13 48				132980	1352573	798
							11/7RR6	0 0						
							9/5RR3	13 55						
31	1695	0	Fantasque									42191	1394764	823
32	1695	0	Fantasque									21014	1415778	835
33	0	0	Fantasque									0	1415778	0
-----												-----		
1695.0 406.50 4.2												1415778 835		

FORMATION TOPS RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

Wed Jun 21 14:41:37 2000

DAY	FORMATION	TOP (MD M)	TOP (TVD M)
===	=====	=====	=====
1	Quaternary	80.0	0.0
2	Cretaceous	240.0	0.0
5	Shaftsbury	487.5	0.0
7	Shaftesbury	516.0	0.0
11	L. Shaftsbury	1057.0	0.0
12	Scatter	1092.0	0.0
15	Garbutt	1289.0	0.0
16	Chinkeh	1322.0	0.0
18	Triassic	1402.0	0.0
23	Fantasque	1565.0	0.0

S U R V E Y R E C O R D (Minimum curvature method)

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

Wed Jun 21 14:41:37 2000

Target not specified.

#	DEPTH (m)	DRIFT(m)	TRUE BEARING V. SECT.		--DEFLECTION (m)--				TRUE DEPTH (m)	DLS (d/30m)
			(deg)	(m)	N+	S-	E+	W-		
23	422.00	0.88								
24	451.00	1.00								
25	480.00	1.00								
26	527.00	2.00								
27	547.00	1.75								
28	594.00	1.75								
29	642.00	2.00								
30	663.00	1.75								
31	690.00	1.75								
32	719.00	2.00								
33	738.00	2.00								
34	750.00	2.25								
35	767.00	1.88								
36	786.00	2.00								
37	804.00	2.00								
38	843.00	2.00								
39	872.00	2.25								
40	901.00	2.00								
41	930.00	2.00								
42	959.00	1.75								
43	988.00	2.00								
44	1017.00	2.13								
45	1049.00	2.13								
46	1064.00	2.00								
47	1084.00	2.00								
48	1113.00	1.50								
49	1142.00	1.00								
50	1189.00	1.50								
51	1212.00	2.00								
52	1241.00	2.25								
53	1269.00	2.75								
54	1317.00	3.00								
55	1362.00	2.00								
56	1411.00	1.75								
57	1459.00	1.75								
59	1490.00	2.25								
60	1525.00	2.75								
61	1576.00	3.25								
62	1621.00	3.88								
63	1688.00	4.00								

M U D A D D I T I V E S S U M M A R Y

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

Wed Jun 21 14:41:35 2000

MUD ADDITIVE	NO. OF SACKS	INVENT ADJUST	KG/ SACK	KG TOT. WEIGHT	\$COST/ SACK	% DISCOUNT	\$TOTAL COST
Alco 110	38	0	25.0	950	273.32	0.00	10386.16
Caustic	1	0	22.7	23	55.65	0.00	55.65
Chemcide	2	0	22.7	45	210.08	0.00	420.16
Corinox	39	0	20.0	780	170.96	0.00	6667.44
Desco	4	0	11.3	45	91.24	0.00	364.96
Drispac	36	0	22.7	817	304.80	0.00	10972.80
Gel	189	0	40.0	7560	20.00	0.00	3780.00
Lignite	3	0	22.7	68	18.44	0.00	55.32
Lime	49	0	20.0	980	13.80	0.00	676.20
Pallets	5	0	27.2	136	9.00	0.00	45.00
Pot Sulf	1798	0	25.0	44950	30.12	0.00	54155.76
Sawdust	100	0	0.0	0	7.60	0.00	760.00
Sod Sulf	40	0	22.7	908	68.52	0.00	2740.80
Soda Ash	1	0	25.0	25	25.20	0.00	25.20
Starpac	68	0	22.7	1544	156.28	0.00	10627.04
Sulph acid	2	0	25.0	50	74.28	0.00	148.56
Trucking	11285	0	0.0	0	1.00	0.00	11285.00
	13660	0					113166.05

MUD ADDITIVES BY HOLE SECTION

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABOFS

Wed Jun 21 14:41:34 2000

MUD ADDITIVE	NO. OF INVENT SACKS	ADJUST	KG/ SACK	KG TOT. WEIGHT	\$COST/ SACK	% DISCOUNT	\$TOTAL COST
Hole Section: MAIN							
Alco 110	29	0	25.0	725	273.32	0.00	7926.28
Chemcide	2	0	22.7	45	210.08	0.00	420.16
Corinox	33	0	20.0	660	170.96	0.00	5641.68
Desco	4	0	11.3	45	91.24	0.00	364.96
Drispac	32	0	22.7	726	304.80	0.00	9753.60
Gel	100	0	40.0	4000	20.00	0.00	2000.00
Lignite	3	0	22.7	68	18.44	0.00	55.32
Lime	41	0	20.0	820	13.80	0.00	565.80
Pot Sulf	1415	0	25.0	35375	30.12	0.00	42619.80
Sawdust	100	0	0.0	0	7.60	0.00	760.00
Sod Sulf	33	0	22.7	749	68.52	0.00	2261.16
Starpac	62	0	22.7	1407	156.28	0.00	9689.36
Sulph acid	2	0	25.0	50	74.28	0.00	148.56
Trucking	1840	0	0.0	0	1.00	0.00	1840.00
	3696	0					84046.68

Hole Section: SURFACE

Alco 110	9	0	25.0	225	273.32	0.00	2459.88
Caustic	1	0	22.7	23	55.65	0.00	55.65
Corinox	6	0	20.0	120	170.96	0.00	1025.76
Drispac	4	0	22.7	91	304.80	0.00	1219.20
Gel	89	0	40.0	3560	20.00	0.00	1780.00
Lime	8	0	20.0	160	13.80	0.00	110.40
Pallets	5	0	27.2	136	9.00	0.00	45.00
Pot Sulf	383	0	25.0	9575	30.12	0.00	11535.96
Sod Sulf	7	0	22.7	159	68.52	0.00	479.64
Soda Ash	1	0	25.0	25	25.20	0.00	25.20
Starpac	6	0	22.7	136	156.28	0.00	937.68
Trucking	9445	0	0.0	0	1.00	0.00	9445.00
	9964	0					29119.37

R I G A C T I V I T Y S U M M A R Y

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

Wed Jun 21 14:41:31 2000

HOLE SECTION	ACTIVITY	HOURS	PERCENTAGE	
=====	=====	=====	=====	
	TRIPPING	94.75	15.2	
	UNPLUG JET	0.50	0.1	
	W.O.C.	6.00	1.0	
	W/N.U. BOP	8.25	1.3	
		=====	=====	
		622.00	100.0	79.5%
TOTAL	BOP DRILL	1.50	0.2	
	CEMENTING	3.50	0.4	
	CIRCULATE	32.00	4.1	
	CLN TANKS	3.00	0.4	
	CLN TO BTM	0.75	0.1	
	CORING	11.00	1.4	
	CSG BOWL	5.50	0.7	
	DRILLING	395.50	50.6	
	DRLG OUT	3.50	0.4	
	HNDL TOOLS	15.00	1.9	
	INSP BHA	7.00	0.9	
	JACK RIG	0.75	0.1	
	LOGGING	23.75	3.0	
	PRESS TEST	7.00	0.9	
	REAMING	5.50	0.7	
	REPAIRS	0.50	0.1	
	RIG MOVE	19.75	2.5	
	RIG SERV	12.50	1.6	
	RIG UP/DN	26.00	3.3	
	RUN CSG	12.00	1.5	
	SAFETY MTG	15.25	2.0	
	SET SLIPS	1.00	0.1	
	SLIP & CUT	3.50	0.4	
	SURVEYING	24.00	3.1	
	TESTING	10.50	1.3	
	TRIPPING	109.75	14.0	
	UNPLUG JET	0.50	0.1	
	W.O.C.	6.00	0.8	
	W/N.U. BOP	25.50	0.8	
		=====	=====	
		782.00	100.0	100.0%

TOTAL ESTIMATED: 0.00 Hours

VARIANCE: -782.00 Hours

R I G A C T I V I T Y S U M M A R Y

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

RIG: 6

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

Wed Jun 21 14:41:30 2000

HOLE SECTION	ACTIVITY	HOURS	PERCENTAGE	
=====	=====	=====	=====	
(Missing)	CSG BOWL	3.50	8.8	
	RIG MOVE	10.75	26.9	
	RIG UP/DN	21.00	52.5	
	SAFETY MTG	0.25	0.6	
	W/N.U. BOP	4.50	11.2	
		=====	=====	
		40.00	100.0	5.1%
SURFACE	CIRCULATE	3.25	2.7	
	CLN TANKS	3.00	2.5	
	DRILLING	72.00	60.0	
	PRESS TEST	0.50	0.4	
	RIG SERV	2.00	1.7	
	RUN CSG	0.75	0.6	
	SAFETY MTG	3.00	2.5	
	SURVEYING	7.75	6.5	
	TRIPPING	15.00	12.5	
	W/N.U. BOP	12.75	10.6	
		=====	=====	
		120.00	100.0	15.3%
MAIN	BOP DRILL	1.50	0.2	
	CEMENTING	3.50	0.6	
	CIRCULATE	28.75	4.6	
	CLN TO BTM	0.75	0.1	
	CORING	11.00	1.8	
	CSG BOWL	2.00	0.3	
	DRILLING	323.50	52.0	
	DRLG OUT	3.50	0.6	
	HNDL TOOLS	15.00	2.4	
	INSP BHA	7.00	1.1	
	JACK RIG	0.75	0.1	
	LOGGING	23.75	3.8	
	PRESS TEST	6.50	1.0	
	REAMING	5.50	0.9	
	REPAIRS	0.50	0.1	
	RIG MOVE	9.00	1.4	
	RIG SERV	10.50	1.7	
	RIG UP/DN	5.00	0.8	
	RUN CSG	11.25	1.8	
	SAFETY MTG	12.00	1.9	
	SET SLIPS	1.00	0.2	
	SLIP & CUT	3.50	0.6	
	SURVEYING	16.25	2.6	
	TESTING	10.50	1.7	

BIT RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:29 2000

RUN	BIT#	SIZE		TYPE	MAKE	SERIAL NUMBER	NOZZLE SIZE(mm)			--DEPTH--		DRILL+CORE		REAMING		I-O-G-L	B-G-O-R	ROP			WOB			RPM			AVG MUD DEN
		(mm)					#1/4	#2/5	#3/6	IN	OUT	(m)	(hr)	(m)	(hr)			MIN (m/hr)	MAX (m/hr)	AVG (m/hr)	MIN daN	MAX daN	AVG daN	MIN	MAX	AVG	
1	1A	311.0	FDS	STC		LG6956	14.3	14.3	14.3	0	240	240	23.75	0	0.00	6-4-WT-A	4-1 -WT-PR	10.1	14.5	12.3	3000	7000	5000	120	130	125	1090
2	2A	311.0	G1	HW		J24CA	14.3	14.3	14.3	240	378	138	25.50	0	0.00	3-6-WT-G	4-1 -RG-PR	5.4	5.9	5.7	3000	6000	4500	120	140	130	1102
3	3A	311.0	GT-1	HW		RR 8111	15.9	15.9	15.9	378	487	109	22.75	0	0.00	3-3-WT-A	E-1 -WT-TD	4.6	4.8	4.7	3000	7000	5000	150	160	155	1105
4	1	222.0	EHP51X	Reed		NN3623	9.5	9.5	9.5	487	1057	570	85.00	0	0.00	3-3-WT-A	E-1 -NO-PR	6.7	10.5	8.6	3000	8000	5500	60	110	85	1087
5	2	222.0	F15H	SMITH		LR0748	9.5	9.5	9.5	1057	1322	265	91.00	0	0.00	4-4-WT-A	E-3 -NO-CP	2.5	3.0	2.8	3000	10000	6500	50	110	80	1091
6	1C	159.0	LI-8	FDC		CB-108	9.5	9.5	9.5	1322	1339	17	11.00	0	0.00	- - -	- - -	1.5	1.5	1.5	0	0	0	0	0	0	1098
7	3	222.0	GS86F	SEC		729263	9.5	9.5	9.5	1322	1465	126	40.50	17	5.50	3-3-WT-A	E-3 -NO-BHA	3.1	4.0	3.5	7000	14000	10500	50	80	65	1096
8	4RR3	222.0	GS86F	SEC		729283	9.5	9.5	9.5	1465	1494	29	9.00	0	0.00	4-4-WT-A	E-4 -NO-LOG	3.2	3.2	3.2	12000	14000	13000	60	80	70	
9	5RR3	222.0	GS86F	SEC		729283	9.5	9.5	9.5	1494	1582	88	31.25	0	0.00	6-6-WT-A	E-4 -NO-PR	2.3	3.0	2.6	10000	14000	12000	40	80	60	1088
10	6	222.0	F-35	SMITH		LT8107	9.5	9.5	9.5	1582	1695	113	66.75	0	0.00	5-7-BT-G	E-4 -WT-LOG	1.5	2.0	1.8	12000	14000	13000	35	60	47	1088
11	7RR6	222.0	F-35	SMITH		LT8107	14.3	14.3	14.3	1695		0	0.00	0	0.00	- - -	- - -	0.0	0.0	0.0	0	0	0	0	0	0	

BOTTOM HOLE ASSEMBLY RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:28 2000

HOLE #	BHA #	DEPTH IN(m)	QTY	CODE	DESCRIPTION	SERIAL #	O.D. (mm)	I.D. (mm)	LENGTH (m)	THREAD TYPE	BOX	PIN
2	9	1582	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	9	1582	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	9	1582	1		174 ShockSub	BSS0180	174.00	73.00	2.42	H90	127mm	127mm
2	9	1582	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	9	1582	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	9	1582	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	9	1582	2		171mm DC'S		172.00	73.00	18.02	H90	127mm	127mm
2	9	1582	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	9	1582	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	9	1582	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										230.86		
2	10	1695	1		222 mm Bit	729283	0.00	0.00	0.25	Reg		114mm
2	10	1695	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	10	1695	6		171mm DC		171.00	73.00	54.74	H90	127mm	127mm
2	10	1695	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	10	1695	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	10	1695	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										222.37		

BOTTOM HOLE ASSEMBLY RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:27 2000

HOLE #	BHA #	DEPTH IN(m)	QTY	CODE	DESCRIPTION	SERIAL #	O.D. (mm)	I.D. (mm)	LENGTH (m)	THREAD TYPE	BOX	PIN
2	4	1057	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	4	1057	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	4	1057	1		174 ShockSub	BSS0180	174.00	68.00	2.42	H90	127mm	127mm
2	4	1057	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	4	1057	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	4	1057	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	4	1057	2		171mm DC'S		172.00	73.00	18.02	H90	127mm	127mm
2	4	1057	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	4	1057	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	4	1057	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										230.86		
2	5	1322	1		159 mm Bit	CB-108	0.00	0.00	0.25	Reg		
2	5	1322	1		Core BBL		146.00	0.00	19.25			
2	5	1322	1		Jars		146.00	0.00	1.77			
2	5	1322	1		X/O Sub		168.00	0.00	0.23	Reg		114mm
2	5	1322	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	5	1322	6		171mm DC		171.00	73.00	54.74	H90	127mm	127mm
2	5	1322	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	5	1322	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	5	1322	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										243.62		
2	6	1322	1		222 mm Bit	729283	0.00	0.00	0.25	Reg		114mm
2	6	1322	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	6	1322	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	6	1322	1		174 ShockSub	BSS0180	174.00	73.00	2.42	H90	127mm	127mm
2	6	1322	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	6	1322	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	6	1322	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	6	1322	2		171mm DC'S		172.00	73.00	18.02	H90	127mm	127mm
2	6	1322	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	6	1322	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	6	1322	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										230.86		
2	7	1465	1		222 mm Bit	729283	0.00	0.00	0.25	Reg		114mm
2	7	1465	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	7	1465	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	7	1465	1		174 ShockSub	BSS0180	174.00	73.00	2.42	H90	127mm	127mm
2	7	1465	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	7	1465	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	7	1465	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	7	1465	2		171mm DC'S		172.00	73.00	18.02	H90	127mm	127mm
2	7	1465	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	7	1465	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	7	1465	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										230.86		
2	8	1494	1		222 mm Bit	729283	0.00	0.00	0.25	Reg		114mm
2	8	1494	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	8	1494	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	8	1494	1		174 ShockSub	BSS0180	174.00	73.00	2.42	H90	127mm	127mm
2	8	1494	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	8	1494	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	8	1494	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	8	1494	2		171mm DC'S		172.00	73.00	18.02	H90	127mm	127mm
2	8	1494	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	8	1494	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	8	1494	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

										230.86		

BOTTOM HOLE ASSEMBLY RECORD

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

AFE: 984018

SPUD DATE: 99/02/19

LOCATION: 300-K32-6010-12315-0

CONTRACTOR: NABORS

RIG: 6

Wed Jun 21 14:41:26 2000

HOLE #	BHA #	DEPTH IN(m)	QTY	CODE	DESCRIPTION	SERIAL #	O.D. (mm)	I.D. (mm)	LENGTH (m)	THREAD TYPE	BOX	PIN
1	1	0	1		311mm Bit	LG6956	0.00	0.00	0.30	reg		168
1	1	0	1		194mm BitSub		194.00	77.00	1.03	reg	168	168
1	1	0	2		208mm DC'S		208.00	74.00	17.59	reg	168	168
1	1	0	1		X/O		194.00	73.00	0.49	H90	127	168
1	1	0	6		173mm DC'S		172.00	73.00	54.74	H90	127	127
1	1	0	1		X/O		168.00	73.00	0.77	H90	114	127

74.92												
1	2	0	1		311mm Bit	LG6956	0.00	0.00	0.30	reg		168mm
1	2	0	1		194mm BitSub		194.00	77.00	1.03	reg	168mm	168mm
1	2	0	2		208mm DC'S		208.00	74.00	17.59	reg	168mm	168mm
1	2	0	1		X/O		194.00	73.00	0.49	H90	127mm	168mm
1	2	0	6		173mm DC'S		172.00	73.00	54.74	H90	127mm	127mm
1	2	0	1		X/O		168.00	73.00	0.77	H90	114mm	127mm
1	2	0	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
1	2	0	5		HW/DP		0.00	0.00	46.81	H90	114mm	114mm

231.84												
1	2	0	1		311mm Bit	LG6956	0.00	0.00	0.30	reg		168mm
1	2	0	1		194mm BitSub		194.00	77.00	1.03	reg	168mm	168mm
1	2	0	2		208mm DC'S		208.00	74.00	17.59	reg	168mm	168mm
1	2	0	1		X/O		194.00	73.00	0.49	H90	127mm	168mm
1	2	0	6		173mm DC'S		172.00	73.00	54.74	H90	127mm	127mm
1	2	0	1		X/O		168.00	73.00	0.77	H90	114mm	127mm
1	2	0	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
1	2	0	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

241.20												
1	2	0	1		X/O		194.00	73.00	0.49	H90	127mm	168mm
1	2	0	6		173mm DC'S		172.00	73.00	54.74	H90	127mm	127mm
1	2	0	1		X/O		168.00	73.00	0.77	H90	114mm	127mm
1	2	0	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
1	2	0	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

222.28												
2	3	488	1		222 mm Bit	NN3623	0.00	0.00	0.25	Reg		114mm
2	3	488	1		171mm BitSub		171.00	73.00	1.20	H90	114mm	127mm
2	3	488	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	3	488	1		174 ShockSub	BSS0180	174.00	68.00	2.42	H90	127mm	127mm
2	3	488	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	3	488	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	3	488	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	3	488	2		171mm DC's		172.00	73.00	18.02	H90	127mm	127mm
2	3	488	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	3	488	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	3	488	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

231.45												
2	4	1057	1		222 mm Bit	NN3623	0.00	0.00	0.25	Reg		114mm
2	4	1057	1		171mm BitSub		171.00	73.00	0.61	H90	114mm	127mm
2	4	1057	1		171mm DC		171.00	73.00	9.43	H90	127mm	127mm
2	4	1057	1		174 ShockSub	BSS0180	174.00	68.00	2.42	H90	127mm	127mm
2	4	1057	1		3pt Reamer	3380	163.00	56.00	1.34	H90	127mm	127mm
2	4	1057	3		171mm DC'S		172.00	73.00	27.29	H90	127mm	127mm
2	4	1057	1		171mm Jars	DJ6-675-11V	170.00	61.00	4.73	H90	127mm	127mm
2	4	1057	2		171mm DC's		172.00	73.00	18.02	H90	127mm	127mm
2	4	1057	1		X/O		168.00	73.00	0.49	H90	114mm	127mm
2	4	1057	12		160mm DC'S		160.00	60.00	110.11	H90	114mm	114mm
2	4	1057	6		HW/DP		0.00	0.00	56.17	H90	114mm	114mm

230.86

DAILY DRILLING REPORT

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/02/19	
U.W.I.: 300K326010123150		CPA NO.:		DAY:	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 480.1 m	KB-GL: m	SPUD DATE:	@ : hrs.
RIG #: 6		GL: 480.1 m	KB-CF: m	RIG RELEASE:	@ : hrs.
				WELL STATUS:	
WEATHER: Clear		TEMP: -11 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: m	PROGRESS: m	PBTD: m	FORMATION:		
8:00 a.m. DEPTH: m		8:00 a.m. OPERATION: Pick up BHA and make up same.			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 164863 CUMULATIVE COST: \$ 164863

B H A						TOTAL ROTATING HOURS:	
	LENGTH:	m	WT. BELOW JARS:	daN	JAR HRS:		JAR SERIAL #:
	WT. ON BIT:	daN	ROTARY RPM:		STRING WT.:		daN
	DRILL PIPE O.D.:	THREAD:	DRILL COLLARS O.D.:	THREAD:	NO. IN HOLE:		

[illegible]

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED
HR IN	kg/m3	OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3

P U M P	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
	TYPE:					TYPE:									
	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	kPa	DP m/min	DC m/min	VELOCITY m/sec.	HHP

SURVEYS			TIME BREAKDOWN		MUD ADDITIVES
	AZIMUTH		SAFETY MTG	CSG BOWL	3.50
° @ m			RIG UP/DN 16.00	W/N.U. BOP	4.50
° @ m					
° @ m					
° @ m					
° @ m					
° @ m					
° @ m					
° @ m					
° @ m			TOTAL HOURS:	24.00	

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/18 00:01 hours. Continued to rig up Nabors Rig# 6.

Boiler start up 99/02/18 @ 06:00 hours.

Spotted boiler at 04:00 hours and got boiler rigged up.

Changed liners in Emsco 500 to 140 mm. Worked on mud system.

Spotted catwalk and pipe tubs. Welded on divertor flange.

Nippled up 508 mm divertor onto 406 mm conductor pipe

99/02/18 23:59 hours.

SUPERVISOR: DOUG SOLBERG PHONE #: (600) 700 3610 CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/02/20

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 1

DEPTH: 80.00 m

PROGRESS: 80.00 m

CPA NO.:

WEATHER: Clear

TEMP: -12 °C

8:00 a.m. OPERATION: Drilling 311 mm Surface Hole

DRILLING & GEOLOGICAL REMARKS (Cont'd)

for a sack of alcomer. Dynamic's office said it would be best to haul fluid from mud tank to remote sump and replaced with fresh water, which was done. Dynamic said the fluid could be reused in 3-4 days time. Drilled 311 mm hole from 35 mKB to 40 mKB. Held prespud meeting with Nabors night crew. Drilled 311 mm hole, surveying as required to 80 mKB. 99/02/19 23:59 hours.

Note: Spudded CDN Forest et al Fort Liard K-32 with Nabors # 6 at 99/02/19 14:00 hours. File No: WID # 1860.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/02/21

U.W.I.: 300K326010123150

C/A NO.:

DAY: 2

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 480.1 m KB-GL: m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Clear

TEMP: -10 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 240.00 m

PROGRESS: 160.00 m

PBD: m

FORMATION:

8:00 a.m. DEPTH: 290.00 m

8:00 a.m. OPERATION: Drilling 311m surface hole

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 31163

CUMULATIVE COST: \$ 333566

1 311mm Bit 1 194mm BitSub 2 208mm DC'S 1 X/O 6 173mm DC'S
1 X/O 12 160mm DC'S 5 HW/DP

TOTAL ROTATING HOURS: 23.75

LENGTH: 231.84 m WT. BELOW JARS: daN JAR HRS: JAR SERIAL #:

WT. ON BIT: 5000 daN

ROTARY RPM: 120

STRING WT.: 24000 daN

DRILL PIPE O.D.:

THREAD:

DRILL COLLARS O.D.: 208

THREAD: 168mm Reg

NO. IN HOLE: 2

173 127mm H90

6

160 114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B	G	O	R
1A	311.0	STC	LG6956	FDS	14.3	14.3	14.3	0	240	240	10.1	23.75		3- 7	120	6	4	WT	A	4	1	WT	PR
														-									
														-									

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Dried. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		%
															MFI	MFO	IN/OUT
38	1085/1090	10.9	42.0	2.0	5/ 8.5	5.0/7.0	138.00	107.00	0.005	45		12000					/
	/				/	/											/
CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED					
24 HR IN	1110 kg/m3	OUT	1090 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3					

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
EMSCO	140	406	50	1.01	EMSCO	152	356	45	0.99	7000	26.3	26.3		0.00

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	1.50	Pot Sulf	145
0.25 ° @	87.00	m	DRILLING	18.25	W/N.U. BOP		Lime	2
0.50 ° @	110.00	m	SURVEYING	1.75	PRESS TEST		Alco 110	3
0.50 ° @	128.00	m	RIG SERV	0.50	TRIPPING	1.50	Corinox	2
0.50 ° @	160.00	m					Drispac	1
0.75 ° @	187.00	m						
0.50 ° @	207.00	m						
0.88 ° @	232.00	m						
° @		m						
° @		m						
° @		m						
			TOTAL HOURS: 24.00					

MUD COMMENTS: Problems with alcomer plugging shaker screens after chemical is mixed.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/20 00:01 hours. Drilled 311 mm hole from 80 mKB to 240 mKB circulating and surveying as required. Tripped bit # 1A at 240 mKB due to decrease in penetration rate and deviation.

99/02/20 23:59 hours.

Safety Topics : communication / handling tubulars

Note :#1 Had problems with alcomer 110 plugging shaker screens directly after mixing, circulated a couple circulations so mud could shear through jets which resolved the problem.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDM FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/02/23

U.W.I.: 300K326010123150

CPA NO.:

DAY: 4

OFFICE SUPERVISOR: KEITH HYNES

CONTRACTOR: NABORS

RIG #: 6

KB: 480.1 m KB-GL: m

GL: 480.1 m KB-CF: m

LICENCE NO.: WID#1860

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Light Flurries

TEMP: -10 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 426.00 m

PROGRESS: 71.00 m

PBD: m

FORMATION:

8:00 a.m. DEPTH: 460.00 m

8:00 a.m. OPERATION: Drill 311 mm surface hole

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 29183

CUMULATIVE COST: \$ 399807

1 311mm Bit

1 194mm BitSub

2 208mm DC'S

1 X/O

6 173mm DC'S

1 X/O

12 160mm DC'S

6 HW/DP

TOTAL
ROTATING
HOURS: 59.75

LENGTH: 241.20 m

WT. BELOW JARS:

daN

JAR HRS:

JAR SERIAL #:

WT. ON BIT: 6000 daN

ROTARY RPM: 160

STRING WT.: 28000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 208

THREAD: 168mm Reg

NO. IN HOLE: 2

173

127mm H90

6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS
					1	2	3	IN	OUT			DRL	RMD	WT&N	RPM	I	O	D	L	B	G	O	R	
1A	311.0	STC	LG6956	FDS	14.3	14.3	14.3	0	240	240	10.1	23.75		3- 7	120	6	4	WT	A	4	1	WT	PR	
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR	
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378		48	4.6	10.50		3- 7										

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI MFO	°C IN/OUT
40	1100/1105	11.0	24.0	2.0	6/ 9.0	5.0/8.0	162.00	118.00	0.005	44		22000	200	480	0.2 0.5	/ 15

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED	
24 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3		m3

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JBT	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	FBP
ENSCO	140	406	50	1.01	ENSCO	152	356	45	0.99	6000	30.4	38.1	55.7	63.79

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pot Sulf	58
1.00 ° @	365.00 m		DRILLING	16.50	W/N.U. BOP	Lime	1
0.75 ° @	375.00 m		SURVEYING	2.50	PRESS TEST	Alco 110	2
1.00 ° @	384.00 m		RIG SERV	0.50	TRIPPING 4.00	Corinox	2
0.75 ° @	393.00 m					Driscac	1
0.88 ° @	422.00 m					Starpac	2
° @	m					Sod Sulf	5
° @	m						
° @	m						
° @	m						
° @	m						
° @	m						
			TOTAL HOURS: 24.00				

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/22 00:01 hours. Drilled 311 mm hole from 355 mKB to 378 mKB surveying as required. Tripped bit #2A, hole good on trip. Break circulation and cleaned 2 m fill on bottom. Drilled 311 mm hole from 378 mKB to 426 mKB surveying as required, controlled deviation by varying WOB and RPM.

99/02/22 23:59 hours.

Safety topics: Tripping / Working with steam.

Note: Levelled rig with Rocky Davis Jacking Services prior to setting 244.5 mm casing.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/02/24	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 5	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860			
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @	14:00 hrs.
RIG #: 6		GL: 480.1 m	KB-CF: m	RIG RELEASE: @	: hrs.
		WELL STATUS:			
WEATHER: Clear		TEMP: -14 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: 487.50 m		PROGRESS: 61.50 m	PBTD: m	FORMATION:	
8:00 a.m. DEPTH: 487.50 m		8:00 a.m. OPERATION: Cementing with Sanjel.			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 26506 CUMULATIVE COST: \$ 426313

1	311mm Bit	1	194mm BitSub	2	208mm DC'S	1	X/O	6	173mm DC'S
1	X/O	12	160mm DC'S	6	HW/DP				

TOTAL ROTATING HOURS:	72.00
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LENGTH: 241.20 m WT. BELOW JARS: daN JAR HRS: JAR SERIAL #:

WT. ON BIT: 6000 daN

ROTARY RPM: 160

STRING WT.: 29500 daN

DRILL PIPE O.D.:	114	THREAD: 114mm H90	DRILL COLLARS O.D.:	208	THREAD: 168mm Reg	NO. IN HOLE:	2
				173	127mm H90		6
				160	114mm H90		12

BITS

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS		
					1	2	3	IN	OUT			DRL	RMD	WT&N	RPM	I	O	D	L	B	G	O	R
1A	311.0	STC	LG6956	FDS	14.3	14.3	14.3	0	240	240	10.1	23.75		3- 7	120	6	4	WT	A	4	1	WT	PR
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	G7-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	3	1	NO	PR

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES ☐ NO ☒[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED
20 HR IN	1110 kg/m3	OUT	1025 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MPa	DP m ³ /MIN	DC m ³ /MIN	VELOCITY m/sec.	HP
EMSCO	140	406	50	1.01	EMSCO	152	356	45	0.99	7000	30.4	38.1		0.00

SURVEYS		TIME BREAKDOWN	MUD ADDITIVES
	AZIMUTH		Pot Sulf
1.00 ° @ 451.00 m		SAFETY MTG 0.50 CIRCULATE 1.25	Lime 2
1.00 ° @ 480.00 m		DRILLING 12.25 W/N.U. BOP	Alco 110 2
" @ m		SURVEYING 0.75 PRESS TEST	Corinox 1
" @ m		RIG SERV 0.50 TRIPPING 8.00	Drispac 1
" @ m		RUN CSG 0.75	Starpac 2
" @ m			Sod Sulf 2
" @ m			
" @ m			
" @ m			
" @ m			
" @ m		TOTAL HOURS:	24.00

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/23 00:01 hours. Drilled 311 mm hole from 426 mKB to 484 mKB surveying as required. Circulated and conditioned hole. Wiper tripped, pulled tight from 440 mKB to 380 mKB (small mud ring). Break circulation and cleaned 3 m of fill to bottom. Drilled 311 mm hole to 487.5 m TD. Circulated and conditioned hole and mud. Ran wireline survey and hoist

to run 244.5 mm casing laying down 2 x 204 mm DC's. Rigged up to run 244.5 mm casing. Held prejob safety meeting with Nabors and Ray's Tong Service personal.

99/02/23 23:59 hours.

Safety topics: Electrical safety / Running casing.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/02/25	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 6	
OFFICE SUPERVISOR: KEITH HYNES					
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	LICENCE NO.: WID#1860	
RIG #: 6		GL: 480.1 m	KB-CF: m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
				RIG RELEASE: @ : hrs.	
WELL STATUS:					
WEATHER: Overcast		TEMP: -11 °C		FINAL TD: m	FORMATION:
Midnight DEPTH: 487.50 m		PROGRESS: 0.00 m		PBTD: m	FORMATION:
8:00 a.m. DEPTH: 487.50 m		8:00 a.m. OPERATION: Wait on bit sub			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 61330 CUMULATIVE COST: \$ 487643

1	X/O	6	173mm DC'S	1	X/O	12	160mm DC'S	6	HW/DP		
<table border="1"> <tr> <td>TOTAL ROTATING HOURS:</td> <td>72.00</td> </tr> </table>										TOTAL ROTATING HOURS:	72.00
TOTAL ROTATING HOURS:	72.00										
LENGTH: 222.28 m		WT. BELOW JARS:		daN		JAR HRS:		JAR SERIAL #:			
WT. ON BIT: 6000 daN		ROTARY RPM: 160		STRING WT.: 29500 daN							
DRILL PIPE O.D.: 114		THREAD: 114mm H90		DRILL COLLARS O.D.: 171		THREAD: 127mm H90		NO. IN HOLE: 6			
				160		114mm H90		12			

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WT&N	RPM	I	O	D	C	B	G	O	R
1A	311.0	STC	LG6956	FDS	14.3	14.3	14.3	0	240	240	10.1	23.75		3- 7	120	6	4	WT	A	4	1	WT	PR
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES () NO (X)

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		° C IN/OUT
															MFI	MFO	
	/				/	/											/
	/				/	/											/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED			
0 HR IN	kg/m3	OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3					m3

PUMP	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
	MODEL	LINER SIZE	STROKE INCH	SPM	CM ³ /MIN	MODEL	LINER SIZE	STROKE INCH	SPM	CM ³ /MIN		DP M/MIN	DC M/MIN	VELOCITY M/SEC.	HP
P	EMSCO	140	405			EMSCO	152	356				0.0	0.0		0.00

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
	AZIMUTH		SAFETY MTG	0.50	CIRCULATE	6.50	Pot Sulf	
° @ m			DRILLING		W/N.U. BOP	4.25	Lime	
° @ m			SURVEYING		PRESS TEST		Alco 110	
° @ m			RIG SERV		TRIPPING		Corinox	
° @ m			RUN CSG	3.25	W.O.C.	6.00	Drispac	
° @ m			CEMENTING	1.50	CSG BOWL	2.00	Starpac	
° @ m							Sod Sulf	
° @ m							Trucking	1540
° @ m								
° @ m								
° @ m								
° @ m								
° @ m								
					TOTAL HOURS:	24.00		

MUD COMMENTS: Dumped and cleaned all mud tanks.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/24 00:01 hours. Ran 37 joints 244.5 mm x 53.57 kg/m

-55, LT/C Prudential range # 3 casing. Total length of casing and accessories 488.38 m. Landed shoe at 487.5 mKB and float collar at 473.27 mKB. Circulated hole clean and wait on Sanjel's bulk cementer to arrive. Held prejob safety meeting with Sanjel and Nabors personal. Pressure

tested surface equipment to 21,000 kPa. Pumped 3 m3 of water ahead, followed by 38 tonnes of 0:1:0 class "G" + 1% CaCl2. Released plug and displaced casing with 19 m3 of water. Bumped plug 3 MPa over circulating pressure at 11:29 hours. Bled off pressure and float held. Recieved 8 m3 of good cement returns, wait on cement for 6 hours. Nipped

SUPERVISOR: DOUG SOLBERG PHONE #: (600) 700 2693 CALLING CARD#:



PAJAK ENGINEERING LTD.

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/02/25

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 6

DEPTH: 487.50 m

PROGRESS:

0.00 m

CPA NO.:

WEATHER: Overcast

TEMP: -11 °C

8:00 a.m. OPERATION: Wait on bit sub

DRILLING & GEOLOGICAL REMARKS (Cont'd)

down and tore out diverter. Cut off casing and welded on a 279.4 mm x 244.5 mm 21 MPa weld on casing bowl equipped with 2/52.4 mm 21 MPa flanged valves. Pressure tested weld on bowl to 21 MPa. Bowl ser# 76334-17. Nippled up 228.6 mm x 21 MPa BOP stack. 99/02/24 23:59 hours.

Safety meetings: Cementing / Handling BOP stack.

Note: Nabors did not have a 114 mm reg x 127 mm H90 bit sub, so arrangements were made to get one hotshotted from Ft. St. John. The BHA was tripped in the hole and inspected by Bateman Inspection Services. Will trip BHA out of hole when that task is completed and wait on bit sub to arrive.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/02/25	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 7	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860		SPUD DATE: 99/02/19 @ 14:00 hrs.	
CONTRACTOR: NABORS		KB: 484.5 m KB-GL: 4.4 m		RIG RELEASE: @ : hrs.	
RIG #: 6		GL: 480.1 m KB-CF: 4.2 m		WELL STATUS:	
WEATHER: Overcast		TEMP: -10 °C		FINAL TD: m FORMATION:	
Midnight DEPTH: 516.00 m		PROGRESS: 28.50 m		PBSD: m FORMATION:	
8:00 a.m. DEPTH: 580.00 m		8:00 a.m. OPERATION: Drilling 222 mm hole			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 45364 CUMULATIVE COST: \$ 533007

B
H
A

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC's	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL
ROTATING
HOURS: 74.75

LENGTH: 231.45 m WT. BELOW JARS: 7000 daN JAR HRS: 2.8 JAR SERIAL #: DJ6-675-

WT. ON BIT: 7000 daN

ROTARY RPM: 70

STRING WT.: 28000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171 THREAD: 127mm H90

NO. IN HOLE: 6

160 114mm H90

12

B
I
T
S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS		
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B		G	O
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	488		28	10.5	2.75		6- 8	60								

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI MFO	°C IN/OUT
44	1085/1090	12.5	13.0	1.0	10/ 7.5	2.0/5.0	146.00	122.00	0.006	24		22000	340	260	1.5 2.0	/ 14
	/				/	/										/
CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED				
3 HR IN	1090 kg/m3	OUT	1075 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3				

P
U
M
P

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	#A/MIN	MODEL	LINER mm	STROKE mm	SPM	#A/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
EMSCO	140	406	55	1.11	EMSCO	152	356			5600	39.0	59.7	86.7	84.41

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH			SAFETY MTG		CIRCULATE		Pot Sulf	168
° @	m		DRILLING	2.75	DRLG OUT	3.50	Lime	
° @	m		SURVEYING		PRESS TEST	6.50	Alco 110	2
° @	m		RIG SERV	0.25	TRIPPING	3.50	Corinox	
° @	m		BOP DRILL	0.50			Drispac	1
° @	m						Starpac	
° @	m						Sod Sulf	
° @	m						Gel	10
° @	m		INSP BHA	7.00				
° @	m		TOTAL HOURS: 24.00					

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/24 00:01 hours. Pressure tested blind rams and manifold to 1500 kPa and 13,000 kPa for 10 minutes each with Inland Pressure Testing. Nabors did not have a bit sub so BHA was picked up and run in the hole. The BHA that drilled surface hole was inspected on the trip in the hole. Pressure tested BOP valves to 1500 kPa, 13,000 kPa and

hydril to 13,000 kPa for 10 minutes each. Tripped out and picked up bit sub and tripped in the hole. Break circulation tagged cement at 470 mKB. Drilled float collar at 472 mKB and 6 m cement. Pressure tested pipe rams, inside BOP and stabbing valve to 1500 kPa and 13,000 kPa for 10 minutes each. Held BOP drill and BOP discussion with Nabors day

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:



PAJAK ENGINEERING LTD.

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/02/25

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 7

DEPTH: 516.00 m

PROGRESS: 28.50 m

CPA NO.:

WEATHER: Overcast

TEMP: -10 °C

8:00 a.m. OPERATION: Drilling 222 mm hole

DRILLING & GEOLOGICAL REMARKS (Cont'd)

crew. Checked engine motor kills. (ok) Drilled cement, float shoe and new hole to 490 mKB. Performed formation integrity test which broke down with surface applied pressure 5200 kPa for a formation gradient of 20.48 kPa/m. Function tested accumulator and remotes. (ok) Held BOP drill and discussion with Nabors night crew. Drilled 222 mm hole to 516 mKB.

99/02/24 23:59 hours.

Safety topic: BOP drill and discussion x 2

Note: Drilled out shoe 99/02/24 @ 22:00 hours.

: BHA inspection performed by Bateman Inspection Services (found cracked pin on lower kelly cock.)

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/02/27	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 8	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1830	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: @ : hrs.	
				WELL STATUS:	
WEATHER: Foggy		TEMP: -12 °C		FINAL TD: m	FORMATION:
Midnight DEPTH: 709.00 m		PROGRESS: 193.00 m		PBTD: m	FORMATION:
8:00 a.m. DEPTH: 763.00 m		8:00 a.m. OPERATION: Fanning 222 mm hole.			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 27712 CUMULATIVE COST: \$ 560719

1	222 mm Bit	1	171mm BitSub	1	171mm DC	1	174 ShockSub	1	3pt Reamer
3	171mm DC'S	1	171mm Jars	2	171mm DC's	1	X/O	12	160mm DC'S
6	HW/DP								

TOTAL ROTATING HOURS:	94.50
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LENGTH: 231.45 m WT. BELOW JARS: 7000 daN JAR HRS: 23.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 6000 daN

ROTARY RPM: 110

STRING WT.: 30000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL.	RMD.	WT DAN	RPM	I	O	D	L	B	G	O	R
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487		222	9.9	22.50		3- 6	80								

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES [] NO [X]

[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED		
24	HR IN	1085	kg/m ³	OUT	1070	kg/m ³	HR OUT	kg/m ³	HR OUT	kg/m ³	26	m ³

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MPa	DA m/MIN	DC m/MIN	VELOCITY m/sec.	HP
EMSCO	140	406	50	1.01	EMSCO	152	356			9120	35.5	54.3	78.8	63.59

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
	AZIMUTH	SAFETY MTG	0.50	CIRCULATE	Pot Sulf 112
2.00 ° @	527.00 m	DRILLING	19.75	DRLG OUT	Lime 3
1.75 ° @	547.00 m	SURVEYING	2.75	PRESS TEST	Alco 110 3
1.75 ° @	594.00 m	RIG SERV	0.50	TRIPPING	Corinox 3
2.00 ° @	642.00 m	BOP DRILL			Drispac 4
1.75 ° @	663.00 m				Starpac 8
1.75 ° @	690.00 m				Sod Sulf 3
° @	m				Gel 30
° @	m				
° @	m				
° @	m	UNPLUG JET	0.50		
				TOTAL HOURS:	24.00

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/26 00:01 hours. Drilled 222 mm hole from 516 mKB to 663 mKB surveying as required. When going back to bottom after surveying at 663 m, pump pressure increased to 10,500 kPa. (2 jets plugged, probably something caught in joint of last connection. Attempted to unplug jets and were able to free one jet, dropping pump pressure to 9,400 kPa @ 50 stks.

Pump pressure slowly dropped from 9,400 kPa to 9,120 kPa.

Drilled 222 mm hole to 709 mKB and surveying as required.

Varied wob and rpm to control deviation.

99/02/26 23:59 hours.

Safety topics: housekeeping / orientation of new crew member

Surveys: 719 m-2, 738 m -2,

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/02/28

U.W.I.: 300K326010123150

CPA NO.:

DAY: 9

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -26 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 838.00 m

PROGRESS: 129.00 m

PBDT: m FORMATION:

8:00 a.m. DEPTH: 880.00 m

8:00 a.m. OPERATION: Control drilling 222 mm hole.

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 24699

CUMULATIVE COST: \$ 585418

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL ROTATING HOURS: 114.50

LENGTH: 231.45 m WT. BELOW JARS: 7000 daN JAR HRS: 43.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 5000 daN

ROTARY RPM: 110

STRING WT.: 35000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL.	RMD	WTdaN	RPM	I	O	D	L	B	G		
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD
1	222.0	Reetl	NN3623	EHP51X	9.5	9.5	9.5	487		351	8.3	42.50		3- 6	80								

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C	
															MFI	MFO	IN/OUT	
51	1085 /1090	11.0	11.0	1.0	12 / 18.0	9.0 /15.	138.00	90.00	0.005	48		20000	350	440	0.3	0.7	/ 19	
	/				/	/											/	
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED				
24 HR IN	1100 kg/m3	OUT	1085 kg/m3	HR OUT			kg/m3	HR OUT			kg/m3	HR OUT			kg/m3	18 m3		

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
ENSCO	140	406	52	1.05	ENSCO	152	356			9120	36.9	56.5	82.0	71.45

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	Pot Sulf	112
2.00 ° @ 719.00 m		DRILLING	20.00	Lime	3
2.00 ° @ 738.00 m		SURVEYING	3.00	Alco 110	1
2.25 ° @ 750.00 m		RIG SERV	0.50	Corinox	2
1.88 ° @ 767.00 m		BOP DRILL		Driscac	1
2.00 ° @ 786.00 m				Starpac	2
2.00 ° @ 804.00 m				Sod Sulf	2
° @ m				Gel	
° @ m				Sulph acid	2
° @ m				Chemcide	1
° @ m				Sawdust	40
° @ m					
		TOTAL HOURS: 24.00			

MUD COMMENTS: Dumped and cleaned shaker & settling tanks.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/27 00:01 hours. Fanned 222 mm hole from 709 mKB to

38 mKB surveying as required.

99/02/ 23:59 hours.

Safety Topics: MSDS / Handling survey & winch equipment.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/01

U.W.I.: 300K326010123150

CPA NO.:

DAY: 10

OFFICE SUPERVISOR: KEITH HYNES

CONTRACTOR: NABORS

RIG #: 6

KB: 484.5 m

KB-GL: 4.4 m

GL: 480.1 m

KB-CF: 4.2 m

LICENCE NO.: WID#1860

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -14 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 952.00 m

PROGRESS: 114.00 m

PBTd: m

FORMATION:

8:00 a.m. DEPTH: 986.00 m

8:00 a.m. OPERATION: Control drilling 222 mm hole

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 25916

CUMULATIVE COST: \$ 611334

1 222 mm Bit

1 171mm BitSub

1 171mm DC

1 174 ShockSub

1 3pt Reamer

3 171mm DC's

1 171mm Jars

2 171mm DC's

1 X/O

12 160mm DC's

6 HW/DP

TOTAL
ROTATING 135.50
HOURS:

LENGTH: 231.45 m WT. BELOW JARS: 7000 daN JAR HRS: 63.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 7000 daN

ROTARY RPM: 90

STRING WT.: 38000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTDN	RPM	I	O	D	L	B	G	O	R		
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR		
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD		
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487		465	7.3	63.50		3- 8	80										

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C
															MFI	MFO	IN/OUT
48	1080/1085	10.6	8.0	1.0	10/ 14.0	5.0/8.0	130.00	92.00	0.002	38		22000	300	320	0.1	0.5	/ 16

CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED	
24 HR IN	1080 kg/m3	OUT	1055 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	25 m3	

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
EMSCO	140	406	55	1.11	EMSCO	152	356			6500	39.0	59.7	88.7	84.02

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pot Sulf	120
2.00 ° @	843.00 m		DRILLING	21.00	TRIPPING	Lime	3
2.25 ° @	872.00 m		SURVEYING	2.00		Alco 110	3
2.00 ° @	901.00 m		RIG SERV	0.50		Corinox	2
2.00 ° @	930.00 m		BOP DRILL			Drispec	2
° @	m					Starpac	4
° @	m					Sod Sulf	2
° @	m					Gel	
° @	m					Sulph acid	
° @	m					Chemcide	
° @	m					Sawdust	5
			TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped and cleaned suction tank.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/02/28 00:01 hours. Control drilled 222 mm hole from

38 mKB to 952 mKB surveying as required.

99/02/28 23:59 hours.

Safety topics: Fork lift operation / Rig service operation.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 2693

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON F/REST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/02

U.W.I.: 300K326010123150

CPA NO.:

DAY: 11

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -13 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1057.00 m

PROGRESS: 105.00 m

PBD: m FORMATION:

8:00 a.m. DEPTH: 1057.00 m

8:00 a.m. OPERATION: Tripping in with Bit # 2

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 24343 CUMULATIVE COST: \$ 635677

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC's	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL ROTATING HOURS: 157.00

LENGTH: 231.45 m WT. BELOW JARS: 7000 daN JAR HRS: 85.0 JAR SERIAL #: DJ6-675-

WT. ON BIT: 7000 daN

ROTARY RPM: 90

STRING WT.: 40000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B	G	D	R
2A	311.0	HW	J24CA	G1	14.3	14.3	14.3	240	378	138	5.4	25.50		3- 6	120	3	6	WT	G	4	1	RG	PR
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487		570	6.7	85.00		3- 8	80								

LAST PIPE TALLY: 483.95

BOARD: 483.91

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C IN/OUT
															MFI	MFO	
48	1080/1085	10.1	10.0	1.5	10/ 15.0	6.0/10.	162.00	118.00	0.002	44		20000	350	400	0.1	0.4	/ 24
CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED					
24 HR IN	1100 kg/m3	OUT	1080 kg/m3			HR OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3				17 m3

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
EMSCO	140	406	51	1.03	EMSCO	152	356			8810	36.2	55.4	80.4	67.13

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pot Sulf	96
1.75 ° @	959.00 m		DRILLING	21.50	TRIPPING	Lime	1
2.00 ° @	988.00 m		SURVEYING	1.50		Alco 110	2
2.13 ° @	1017.00 m		RIG SERV	0.50		Corinox	2
° @	m		BOP DRILL			Drispac	1
° @	m					Starpac	2
° @	m					Sod Sulf	2
° @	m					Gel	16
° @	m					Sulph acid	
° @	m					Chemcide	
° @	m					Sawdust	
			TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped and cleaned settling tank.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/01 00:01 hours. Control drilled 222 mm hole from

952 mKB to 1057 mKB surveying as required.

99/03/01 23:59 hours.

Safety topics: Frost plugs / Pressure lines.

Note: Changed head rubber in DA-500 pump.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32
LOCATION: 300-K32-6010-12315-0 U.W.I.: 300K326010123150

DATE: 99/03/03

DAY: 12 DEPTH: 1092.00 m PROGRESS: 35.00 m CPA NO.:

WEATHER: Light Flurries

TEMP: -13 °C

8:00 a.m. OPERATION: Control drilling 222 mm hole

DRILLING & GEOLOGICAL REMARKS (Cont'd)

- #4 Survey @ 1084 m - 2 degrees.
- #5 Strap - 1057.01 m, Board - 1057 m = .01 m diff No Corr.
- #6 Freeboard in remote sump @ 10 m.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 3906
CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/04

U.W.I.: 300K326010123150

CPA NO.:

DAY: 13

OFFICE SUPERVISOR: KEITH HYNES

CONTRACTOR: NABORS

RIG #: 6

KB: 484.5 m KB-GL: 4.4 m

GL: 480.1 m KB-CF: 4.2 m

LICENCE NO.: WID#1860

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Light Flurries

TEMP: -18 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1156.00 m

PROGRESS: 64.00 m

PBDT: m FORMATION:

8:00 a.m. DEPTH: 1185.00 m

8:00 a.m. OPERATION: Drilling 222 mm hole.

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 32086 CUMULATIVE COST: \$ 700263

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC's	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL ROTATING HOURS: 192.25

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 98.8 JAR SERIAL #: DJ6-675-

WT. ON BIT: 10000 daN

ROTARY RPM: 90

STRING WT.: 43000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BITS

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT	CUTTING STRUCT.										REMARKS
					1	2	3	IN	OUT			DRL	RMD		WT&N	RPM	I	O	D	L	B	G	O	R	
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD		
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487	1057	570	6.7	85.00		3- 8	80	3	3	WT	A	E	1	NO	PR		
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057		99	2.8	35.25		3- 10	70										

LAST PIPE TALLY: 1057.01

BOARD: 1057.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tox. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI	MFO	°C IN/OUT
45	1090/1095	10.1	8.0	1.0	10/ 14.0	5.0/9.0	154.00	108.00	0.002	46		20000	350	500	0.1	0.5	/ 22

CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED	
24 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	18 m3	

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	lPh	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
ENSCO	140	406	55	1.11	ENSCO	140	356			6900	39.0	59.7	85.7	84.79

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pet Sulf	66
2.00 ° @ 1084.00 m			DRILLING	21.50	TRIPPING	Lime	1
1.50 ° @ 1113.00 m			SURVEYING	1.50	SLIP & CUT	Alco 110	2
1.00 ° @ 1142.00 m			RIG SERV	0.50		Corinox	2
° @ m			BOP DRILL			Drispac	1
° @ m						Starpac	2
° @ m						Sod Sulf	2
° @ m						Gel	
° @ m						Sulph acid	
° @ m						Chemcide	
° @ m						Sawdust	
° @ m							
			TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped & cleaned shaker tank 18 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/03 00:01 hours. Control drilled 222 mm hole from

1092 mKB to 1156 mKB, surveying as required.

99/03/03 23:59 hours.

Safety topics: Confined entry spaces / Blowing down boiler

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/05

U.W.I.: 300K326010123150

CPA NO.:

DAY: 14

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Blowing Snow

TEMP: -18 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1228.00 m

PROGRESS: 72.00 m

PBDT: m FORMATION:

8:00 a.m. DEPTH: 1250.00 m

8:00 a.m. OPERATION: Control drilling 222 mm hole.

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 29748 CUMULATIVE COST: \$ 730011

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC's	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL ROTATING HOURS: 214.00

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 120.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 7000 daN

ROTARY RPM: 110

STRING WT.: 45000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171 THREAD: 127mm H90

NO. IN HOLE: 6

160 114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS PER HOUR	HOURS ON BIT		BIT	CUTTING STRUCT.										REMARKS
					1	2	3	IN	OUT		DRL	RMD		WTdaN	RPM	I	O	D	L	B	G	O	R	
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD	
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487	1057	570	6.7	85.00		3- 8	80	3	3	WT	A	E	1	NO	PR	
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057		171	3.0	57.00		3- 10	80									

LAST PIPE TALLY: 1057.01

BOARD: 1057.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Dried Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI	MFO	°C IN/OUT
46	1090/1095	10.7	10.0	1.0	9/ 12.5	6.0/9.0	146.00	105.00	0.002	41		20000	350	480	0.2	0.6	/ 22

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED
24 HR IN	1090 kg/m3	OUT	1070 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	15 m3

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
ENSCO	140	406	55	1.11	ENSCO	140	356			7200	39.0	59.7	86.7	84.79

SURVEYS		TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	Pot Sulf	71
1.50 ° @ 1189.00 m		DRILLING	21.75	TRIPPING	Lime	2
2.00 ° @ 1212.00 m		SURVEYING	0.75	SLIP & CUT	Alco 110	2
° @ m		RIG SERV	0.50	REPAIRS 0.50	Corinox	2
° @ m		BOP DRILL			Drispac	2
° @ m					Starpac	4
° @ m					Sod Sulf	2
° @ m					Gel	
° @ m					Sulph acid	
° @ m					Chemcide	
° @ m					Sawdust	
° @ m		TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped & cleaned settling tank 15 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/04 00:01 hours. Control drilled 222 mm hole from

Held bop drill well secured 75 seconds.

1156 mKB to 1183 mKB. Repaired rig generator (thermal fan sub siezed up.) Control drilled 222 mm hole from 1183 mKB to 1228 mKB surveying as required.

99/03/04 23:59 hours.

Safety topics: Fall arrest / Orient new hands to rig.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/06

U.W.I.: 300K326010123150

CPA NO.:

DAY: 15

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -23 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1289.00 m

PROGRESS: 61.00 m

PBDT: m FORMATION:

8:00 a.m. DEPTH: 1306.00 m

8:00 a.m. OPERATION: Control drilling 222 mm hole.

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 22943

CUMULATIVE COST: \$ 752954

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC's	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC's
6 HW/DP				

TOTAL ROTATING HOURS: 235.75

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 142.2 JAR SERIAL #: DJ6-675-

WT. ON BIT: 6000 daN

ROTARY RPM: 110

STRING WT.: 45000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT								REMARKS
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B	G	O	R	
3A	311.0	HW	RR 8111	GT-1	15.9	15.9	15.9	378	487	109	4.8	22.75		3- 7	150	3	3	WT	A	E	1	WT	TD	
1	222.0	Reed	NN3623	EHP51X	9.5	9.5	9.5	487	1057	570	6.7	85.00		3- 8	80	3	3	WT	A	E	1	NO	PR	
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057		232	2.9	78.75		3- 6	80									

LAST PIPE TALLY: 1057.01

BOARD: 1057.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C IN/OUT
															MFI	MFO	
46	1090/1095	10.7	10.0	1.0	9/ 13.0	7.0/10.	146.00	99.00	0.002	47		20000	350	440	0.1	0.4	/ 24
	/				/	/											/

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED	
24 HR IN	1085 kg/m3	OUT	1070 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	15 m3	

PUMP NO. 1					PUMP NO. 2					PRESSURE kPa	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
EMSCO	140	406	55	1.11	EMSCO	140	356			7400	39.0	59.7	86.7	84.79

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pot Sulf	67
2.25 °	@	1241.00 m	DRILLING	21.75	TRIPPING	Lime	2
2.75 °	@	1269.00 m	SURVEYING	0.75	SLIP & CUT	Alco 110	2
°	@	m	RIG SERV	0.50	REPAIRS	Corinox	2
°	@	m	BOP DRILL	0.50		Drispac	1
°	@	m				Starpac	2
°	@	m				Sod Sulf	?
°	@	m				Gel	12
°	@	m				Sulph acid	
°	@	m				Chemcide	
°	@	m				Sawdust	
°	@	m					
			TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped & cleaned shaker tank 15 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/05 00:01 hours. Control drilled 222 mm hole from

* cp +/- 1325 m.

1228 mKB to 1289 mKB surveying as required.

99/03/05 23:59 hours.

Safety topics: Well control / Slip & cut procedures.

* Held 2/ BOP drills with crews. (well secured in 75 & 82 seconds.)

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/07	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 16	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: @ : hrs.	
				WELL STATUS:	
WEATHER: Blowing snow		TEMP: -23 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: 1322.00 m		PROGRESS: 33.00 m	PBTD: m	FORMATION:	
8:00 a.m. DEPTH: 1330.00 m		8:00 a.m. OPERATION: Cut Core # 1			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 25412 CUMULATIVE COST: \$ 778366

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC's	1 X/O	12 160mm DC'S
6 HW/DP				

**TOTAL
ROTATING HOURS: 248.00**

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 154.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 6000 daN

ROTARY RPM: 80

STRING WT.: 45000 daN

DRILL PIPE O.D.: 114

4mm H90 DRILL

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

[illegible]

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED	
24	HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	10 m3

P U M P	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
	MODEL	LINER INCH	STROKE INCH	SPM	m3/MIN	MODEL	LINER INCH	STROKE INCH	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec.	HHP
	EMSCO	140	406	55	1.11	EMSCO	140	356			7400	39.0	59.7	43.3	21.00

SURVEYS		TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH		SAFETY MIG	0.50	CIRCULATE	2.75	Pot Sulf	75
3.00 ° @ 1317.00 m		DRILLING	12.25	TRIPPING	6.75	Line	1
° @ m		SURVEYING	0.25	SLIP & CUT		Alco 110	1
° @ m		RIG SERV	0.50	REPAIRS		Corinox	2
° @ m		BOP DRILL		HNDL TOOLS	1.00	Drispac	3
° @ m						Starpac	6
° @ m						Sod Sulf	2
° @ m						Gel	
° @ m						Sulph acid	
° @ m						Chemcide	
° @ m						Sawdust	
		TOTAL HOURS: 24.00					

MUD COMMENTS: Dumped & cleaned suction tank.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/06 00:01 hours. Drilled 222 mm hole from 1289 mKB to 1290 mKB. Circulated bottom hole sample. Drilled 222 mm hole from 1290 mKB to 1322 mKB. Circulated bottom hole sample. Wiper tripped 15 stands to 1025 mKB flow checked as required. Dropped survey and hoisted bit # 2 to core, strapped pipe and flow checked as required. Checked blind

rams when out of hole. Held prejob safety meeting with Nabors and Foothills personal. Picked up core barrels and made up same.

99/03/06 23:59 hours.

Safety topics: Picking up core barrels / Boiler operation
Hole fill; Calc - 7.04 m³, Meas - 7.27 m³. Diff = + .23 m³

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/08

U.W.I.: 300K326010123150

CPA NO.:

DAY: 17

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -21 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 1339.00 m

PROGRESS: 17.00 m

PBDT: m

FORMATION:

8:00 a.m. DEPTH: 1344.00 m

8:00 a.m. OPERATION: Drilling 222 mm hole.

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 37647

CUMULATIVE COST: \$ 816013

1 159 mm Bit

1 Core BBL

1 Jars

1 X/O Sub

1 171mm BitSub

6 171mm DC

1 X/O

12 160mm DC'S

6 HW/DP

TOTAL
ROTATING
HOURS: 259.00

LENGTH: 243.62 m WT. BELOW JARS: 7000 daN JAR HRS: 154.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 6000 daN

ROTARY RPM: 65

STRING WT.: 48000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WtdN	RPM	I	O	D	L	B	G	O	R
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057	1322	265	2.9	91.00		3- 6	50	4	4	WT	A	E	3	NO	CP
1C	159.0	FDC	CB-108	LI-S	9.5	9.5	9.5	1322	1339	17	1.5			6-	60								
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322		-132				-									

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C
															MFI	MFO	IN/OUT
51	1080/1085	10.5	7.8	1.0	10/ 15.0	7.0/11.	130.00	86.00	0.000	44		20000	350	440	0.2	0.6	/ 18

CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED
24 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	7 m3

PUMP NO. 1					PUMP NO. 2					PRESSURE		ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP	
EMSCO	140	406	40	0.81	EMSCO	140	356			3900	28.4	43.6	63.2	32.65	

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	0.75	Pot Sulf	40
° @	m		DRILLING		TRIPPING	9.50	Lime	3
° @	m		SURVEYING		SLIP & CUT		Alco 110	2
° @	m		RIG SERV	0.25	REPAIRS		Corinox	2
° @	m		BOP DRILL		HNDL TOOLS	2.00	Drispac	2
° @	m		CORING	11.00			Starpac	4
° @	m						Sod Sulf	2
° @	m						Gel	
° @	m						Sulph acid	
° @	m						Chemcide	
° @	m						Sawdust	
° @	m							
			TOTAL HOURS: 24.00					

MUD COMMENTS: Dumped and cleaned shaker tank 7 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/07 00:01 hours. Tripped in Core BBL # 1. Circulated on bottom and dropped ball. Cut 159 mm core # 1 from 1322 mKB to 1339.4 mKB. Hoisted core # 1 and flow checked as required. Recovered 16.7 m core, serviced core barrel and layed down same. Made up bit and bottom hole assembly and tripped in with bit # 3.

99/03 23:59 hours.

Safety topics : Handling core / Loader operation

Hole fill : act - 7.21 m3, calc - 7.04 m3, Diff = +.17 m3

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/09

U.W.I.: 300K326010123150

CPA NO.:

DAY: 18

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m

KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m

KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Overcast

TEMP: -27 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 1402.00 m

PROGRESS: 63.00 m

PBDT: m

FORMATION:

8:00 a.m. DEPTH: 1419.00 m

8:00 a.m. OPERATION: Drilling 222 mm hole

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 34640

CUMULATIVE COST: \$ 850653

1 222 mm Bit

1 171mm BitSub

1 171mm DC

1 174 ShockSub

1 3pt Reamer

3 171mm DC'S

1 171mm Jars

2 171mm DC'S

1 X/O

12 160mm DC'S

6 HW/DP

TOTAL
ROTATING
HOURS: 274.75

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 175.7 JAR SERIAL #: DJ6-675-

WT. ON BIT: 8000 daN

ROTARY RPM: 55-80

STRING WT.: 49000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS			
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B		G	O	R
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057	1322	265	2.9	91.00		3- 6	50	4	4	WT	A	E	3	NO	CP	
1c	159.0	FDC	CB-108	LI-S	9.5	9.5	9.5	1322	1339	17	1.5			6-	60									
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322		80	4.0	15.75	5.50	7- 8	50									

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C IN/OUT
															MFI	MFO	
47	1075 / 1080	10.5	10.0	1.0	10 / 14.0	6.0 / 10.	122.00	77.00	0.001	45		20000	350	420	0.2	0.5	/ 24
	/				/	/											/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED			
24 HR IN	1080 kg/m3	OUT	1070 kg/m3		IRR OUT		kg/m3	HR OUT		kg/m3	HR OUT		kg/m3	16 m3			

P
U
M
P

PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
ENSCO	140	406	55	1.11	ENSCO	140	356			7800	39.0	59.7	86.7	83.63

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	Pot Sulf 40
2.00 ° @ 1362.00 m		DRILLING	15.75	TRIPPING 1.25	Lime 2
° @ m		SURVEYING	0.50	SLIP & CUT	Alco 110 1
° @ m		RIG SERV	0.50	REPAIRS	Corinox 2
° @ m		BOP DRILL		HNDL TOOLS	Driscap 1
° @ m		REAMING	5.50		Starpac 2
° @ m					Sod Sulf 2
° @ m					Gel 10
° @ m					Sulph acid
° @ m					Chemcide
° @ m					Sawdust
° @ m					
		TOTAL HOURS: 24.00			

MUD COMMENTS: Dumped and cleaned settling tank 16 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/08 00:01 hours. Tripped in bit # 3, break circulation

and cleaned to bottom. (no fill) Reamed rathole from 1322

mKB to 1339.4 mKB. Drilled 222 mm hole from 1339.4 mKB to

1402 mKB surveying as required.

99/03/08 23:59 hours.

Safety topics: Tripping procedures / Camp fire drill.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/10

U.W.I.: 300K326010123150

CPA NO.:

DAY: 19

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 5

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Clear

TEMP: -17 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1459.00 m

PROGRESS: 57.00 m

PBD: m FORMATION:

8:00 a.m. DEPTH: 1465.00 m

8:00 a.m. OPERATION: Tripping bit # 3 to DST.

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 23438 CUMULATIVE COST: \$ 874091

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL ROTATING HOURS: 297.25

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 198.2 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 55-80

STRING WT.: 49000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.						REMARKS		
					1	2	3	IN	OUT			DRL.	RMD	WT&N	RPM	I	O	D	L	B	G		O	R
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057	1322	265	2.9	91.00		3- 6	50	4	4	WT	A	E	3	NO	CP	
1C	159.0	FDC	CB-108	LI-S	9.5	9.5	9.5	1322	1339	17	1.5			6-	60									
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322		137	3.1	38.25	5.50	10- 14	50									

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI	MFO	°C IN/OUT
50	1095/1100	10.3	8.0	1.0	11/ 16.0	8.0/12.	162.00	118.00	0.001	44		20000	350	400	0.2	0.8	/ 24

CENTRIFUGE				DESILTER				DESANDER				DEGASSER				TOTAL MUD DUMPED	
HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT			kg/m3	HR OUT			kg/m3	HR OUT			kg/m3	12 m3	

PUMP NO. 1					PUMP NO. 2					PRESSURE		ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	EPi	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP	
EMSCO	140	406	55	1.11	EMSCO	140	356			7500	39.0	59.7	86.7	85.18	

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	Pot Sulf 80
1.75 ° @ 1411.00 m		DRILLING	22.50	TRIPPING	Lime 2
° @ m		SURVEYING	0.50	SLIP & CUT	Alco 110 1
° @ m		RIG SERV	0.50	REPAIRS	Corinox 2
° @ m		BOP DRILL		HNDL TOOLS	Driscac 2
° @ m		REAMING			Starpac 4
° @ m					Sod Sulf 2
° @ m					Gel
° @ m					Sulph acid
° @ m					Chemcide
° @ m					Sawdust
° @ m					
		TOTAL HOURS: 24.00			

MUD COMMENTS: Dumped and cleaned shaker tank 12 m3.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/09 00:01 hours. Drilled 222 mm hole from 1402 mKB to

1459 mKB surveying as required.

99/03/09 23:59 hours.

Safety topics: Mixing chemicals / Handling test tools.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/11	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 20	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: @ : hrs.	
				WELL STATUS:	
WEATHER: Clear		TEMP: -21 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: 1465.00 m		PROGRESS: 6.00 m	PBTD: m	FORMATION:	
8:00 a.m. DEPTH: 1465.00 m		8:00 a.m. OPERATION: Trip in w/ bit # 4RR			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 20939 CUMULATIVE COST: \$ 895030

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL ROTATING HOURS:	299.50
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LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 200.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 55-80

STRING WT.: 50000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90 DRILL COLLARS O.D.: 171 THREAD: 127mm H90

NO. IN HOLE: 6

160 114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS			
					1	2	3	IN	OUT			DRL.	RMD	WTdN	RPM	I	O	D	L	B	G	O	R	
2	222.0	SMITH	LR0748	F15H	9.5	9.5	9.5	1057	1322	265	2.9	91.00		3- 6	50	4	4	WT	A	E	3	NO	CP	
1C	159.0	FDC	CB-108	LI-S	9.5	9.5	9.5	1322	1339	17	1.5			6-	60									
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322	1465	143	3.1	40.50	5.50	10- 14	50	3	3	WT	A	E	3	NO	BHA	

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED
24 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3

PUMP	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN	MODEL	LINER mm	STROKE mm	SPM	m ³ /MIN		DP m ³ /MIN	DC m ³ /MIN	VELOCITY m/sec	HHP
P	EMSCO	140	406	55	1.11	EMSCO	140	356			7500	39.0	59.7		0.00

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES			
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	1.50	Pot Sulf	
1.75 ° @	1459.00 m	DRILLING	2.25	TRIPPING	12.25	Lime	
° @	m	SURVEYING	0.25	SLIP & CUT		Alco 110	1
° @	m	RIG SERV	0.50	REPAIRS		Corinox	1
° @	m	BOP DRILL		HNDL TOOLS	2.25	Drispac	1
° @	m	REAMING		TESTING	4.50	Starpac	2
c @	m					Sod Sulf	1
° @	m					Gel	6
° @	m					Sulph acid	
° @	m					Chemcide	
° @	m					Sawdust	
				TOTAL HOURS: 24.00			

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/10 00:01 hours. Drilled 222 mm hole from 1459 mKB to 1465 mKB. Circulated up bottom hole sample. Wiper tripped to 1300 m. Break circulation and cleaned to bottom with no fill. Circulated and conditioned hole. Dropped survey and tripped bit # 3 to DST, flow checked as required. Function tested blind rams when out of the hole. Picked up and made

up test tool with Alpine Testing. Tripped in with DST # 1. Inflated packers and preformed DST # 1 at the predetermined test interval. Pulled packers free and tripped out DST # 1 and flow checked as required.

99/03/10 23:59 hours.

Safety topics: Picking up test tool / Inflating packers.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:



PAJAK ENGINEERING LTD.

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/03/11

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 20

DEPTH: 1465.00 m

PROGRESS:

6.00 m

CPA NO.:

WEATHER: Clear

TEMP: -21 °C

8:00 a.m. OPERATION: Trip in w/ bit # 4RR

DRILLING & GEOLOGICAL REMARKS (Cont'd)

- * Had rig inspection from Rick Turner & Rick Fisher of the NEB and found the rig to be satisfactory.
- * DST results will be delivered to Calgary office from Alpine's Calgary office.
- * Hole fill: Act - 7.35 m³ Calc 7.6 m³ Diff = -.25 m³.
- * Hole fill: Act - 16.65 m³ Calc 16.54 m³ Diff = +.11 m³.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CDW FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/12	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 21	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @	14:00 hrs.
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: @	: hrs.
				WELL STATUS:	
WEATHER: Clear		TEMP: -17 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: 1494.00 m		PROGRESS: 29.00 m	PBTD: m	FORMATION:	
8:00 a.m. DEPTH: 1494.00 m		8:00 a.m. OPERATION: Logging with Computalog			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 47941 CUMULATIVE COST: \$ 942971

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL ROTATING HOURS:	308.50
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LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 209.5 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 55-80

STRING WT.: 50000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.:

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

[illegible]

LAST PIPE TALLY: 1313.47

BOARD: 1313.38

CORRECTION: YES [] NO [X]

[illegible]

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED
24 HR IN	1090 kg/m ³	OUT	1080 kg/m ³	HR OUT	kg/m ³	HR OUT	kg/m ³	HR OUT	kg/m ³	0 m ³

P U M P	PUMP NO. 1					PUMP NO. 2					PRESSURE PSI	ANNULAR VELOCITY		JET	
	MODEL	LINER INCH	STROKE INCH	SPM	m3/MIN	MODEL	LINER INCH	STROKE INCH	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
	EMSCO	140	406	55	1.11	EMSCO	140	356			7500	39.0	59.7		0.00

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
		AZIMUTH	SAFETY MTG	0.50	CIRCULATE	3.00	Pot Sulf	40
°	@	m	DRILLING	9.00	TRIPPING	6.50	Lime	2
°	@	m	SURVEYING		SLIP & CUT	1.00	Alco 110	
°	@	m	RIG SERV	0.25	REPAIRS		Corinox	1
°	@	m	BOP DRILL	0.25	HNDL TOOLS	3.50	Drispac	2
°	@	m	REAMING		TESTING		Starpac	4
°	@	m					Sod Sulf	1
°	@	m					Gel	
°	@	m					Sulph acid	
°	@	m					Chemcide	1
°	@	m					Sawdust	
°	@	m						
						TOTAL HOURS:	24.00	

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/11 00:01 hours. Tripped DST # 1, recovered recorders, broke down test tool and loaded out same. Made up bit #4RR3 and BHA and tripped to 487 mKB. Slipped and cut drilling line. Tripped in with drill pipe to 1460 mKB. Break circulation and washed 5 m to bottom with .5 m fill. Drilled 222 mm hole from 1465 mKB to 1494 mKB. Reached TD

of 1494 mKB 20:00 hours 99/03/11. Circulated bottom hole sample. Wiper tripped to 1400 m. Break circulation and washed to bottom with no fill. Circulated and conditioned hole.

99/03/11 23:59 hours.

Safety topics: Lockout procedures / Overhead lines.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/13	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 22	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860		SPUD DATE: 99/02/19 @ 14:00 hrs.	
CONTRACTOR: NABORS		KB: 484.5 m KB-GL: 4.4 m		RIG RELEASE: @ : hrs.	
RIG #: 6		GL: 480.1 m KB-CF: 4.2 m		WELL STATUS:	
WEATHER: Overcast		TEMP: -18 °C		FINAL TD: m FORMATION:	
Midnight DEPTH: 1498.00 m		PROGRESS: 4.00 m		PBTd: m FORMATION:	
8:00 a.m. DEPTH: 1520.00 m		8:00 a.m. OPERATION: Drilling 222 mm hole.			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 57201 CUMULATIVE COST: \$ 1000172

BHA

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL
ROTATING
HOURS: 310.25

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 211.2 JAR SERIAL #: DJ6-675-
 WT. ON BIT: 10000 daN ROTARY RPM: 55-80 STRING WT.: 50000 daN
 DRILL PIPE O.D.: 114 THREAD: 114mm H90 DRILL COLLARS O.D.: 171 THREAD: 127mm H90 NO. IN HOLE: 6
 160 114mm H90 12

BITS

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.							REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B	G	U	R	
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322	1465	143	3.1	40.50	5.50	10-14	50	3	3	WT	A	E	3	NO	BHA	
4RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1465	1494	29	3.2	9.00		12-14	60	4	4	WT	A	E	4	NO	LOG	
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494		4	2.3	1.75		10-12	70									

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		° C IN/OUT
															MFI	MFO	
60	1085 / 1090	10.8	7.5	1.0	15 / 20.0	12. / 18.	138.00	78.00	0.001	50		20000	350	520	0.2	0.7	/ 20
	/				/	/											/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED			
12 HR IN	1090 kg/m3	OUT	1080 kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		0 m3			

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	lps	DP m/MIN	DC m/MIN	VELOCITY m/sec	HBP
EMSCO	140	406	55	1.11	EMSCO	140	356			7600	39.0	59.7	86.7	84.41

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	Pot Sulf
2.25 ° @ 1490.00 m		DRILLING	1.75	TRIPPING 8.50	Lime
° @ m		SURVEYING	0.25	SLIP & CUT	Alco 110
° @ m		RIG SERV	0.25	REPAIRS	Corinox
° @ m		BOP DRILL		HNDL TOOLS	Drispac
° @ m		REAMING		TESTING	Starpac
° @ m		CLN TO BTM	0.25	LOGGING 12.50	Sod Sulf
° @ m					Gel
° @ m					Sulph acid
° @ m					Chemcide
° @ m					Sawdust
				TOTAL HOURS: 24.00	

MUD COMMENTS: Lowered viscosity with lignite.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/12 00:01 hours. Dropped survey and tripped out to log and flow checked as required. Rigged up and logged with Computalog. (Loggers TD @ 1494.7 mKB.) Made up BHA and tripped in with bit # 5RR3 to 1480 mKB. Break circulation and washed to bottom with no fill. Drilled 222 mm hole from 1494 mKB to 1498 mKB.

99/03/12 23:59 hours.

Safety topics : Tag lines / Housekeeping

Logs : #1 Spd - 1494.7 m to 487.9 m

STI - 1492.6 m to 487.9 m

#2 MDA - 1488.5 m to 487.9 m

Hole fill : Act - 7.78 m^3 Calc - 7.58 m^3 Diff = + .2 m^3

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/14

U.W.I.: 300K326010123150

CPA NO.:

DAY: 23

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Clear

TEMP: -8 °C

FINAL TD: m FORMATION:

Midnight DEPTH: 1565.00 m

PROGRESS: 67.00 m

PBSD: m FORMATION:

8:00 a.m. DEPTH: 1582.00 m

8:00 a.m. OPERATION: Drilling 222 mm hole

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 26618

CUMULATIVE COST: \$ 1026790

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL ROTATING HOURS: 332.00

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 233.0 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 55-80

STRING WT.: 51000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171 THREAD: 127mm H90

NO. IN HOLE: 6

160 114mm H90

12

BIT S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	B	G	O	R		
3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1322	1465	143	3.1	40.50	5.50	10- 14	50	3	3	WT	A	E	3	NO	BHA		
4RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1465	1494	29	3.2	9.00		12- 14	60	4	4	WT	A	E	4	NO	LOG		
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494		71	3.0	23.50		12- 14	70										

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C
															MFI	MFO	IN/OUT
55	1085/1090	10.6	7.5	1.0	14/17.0	10.1/16	138.00	83.00	0.002	55		22000	800	480	0.2	0.7	24

CENTRIFUGE				DESILTER		DESANDER		DEGASSER		TOTAL MUD DUMPED	
24 HR IN	1085 kg/m3	OUT	1075 kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3		10 m3

PUMP NO. 1					PUMP NO. 2					PRESSURE		ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	LPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HP	
EMSCO	140	406	55	1.11	EMSCO	140	356			7600	39.0	59.7	86.7	84.41	

SURVEYS		TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH		SAFETY MTG		CIRCULATE		Pot Sulf	
2.75 ° @ 1525.00 m		DRILLING		TRIPPING		Lime	
° @ m		SURVEYING		SLIP & CUT		Alco 110	
° @ m		RIG SERV		REPAIRS		Corinox	
° @ m		BOP DRILL		HNDL TOOLS		Driscac	
° @ m		REAMING		TESTING		Starpac	
° @ m		CLN TO BTM		LOGGING		Sod Sulf	
° @ m		JACK RIG		0.75		Gel	
° @ m						Sulph acid	
° @ m						Chemcide	
° @ m						Sandust	
° @ m						Lignite	
				TOTAL HOURS: 24.00			

MUD COMMENTS: Dumped and cleaned shaker tank 10 m³.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/13 00:01 hours. Drilled 222 mm hole from 1498 mKB to 1550 mKB surveying as required. Circulated and levelled rig with Rocky Davis Jacking Services. (substructure was fairly unstable when it was up on the jacks as there is now about 12" of blocking under front end.) Drilled 222 mm hole from 1550 mKB to 1565 mKB.

99/03/13 23:59 hours.

Safety topics : Emergency stations / Spring conditions.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/15	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 24	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860		SPUD DATE: 99/02/19 @ 14:00 hrs.	
CONTRACTOR: NABORS		KB: 484.5 m KB-GL: 4.4 m		RIG RELEASE: @ : hrs.	
RIG #: 6		GL: 480.1 m KB-CF: 4.2 m		WELL STATUS:	
WEATHER: Clear		TEMP: -7 °C		FINAL TD: m FORMATION:	
Midnight DEPTH: 1592.00 m		PROGRESS: 27.00 m		PBTD: m FORMATION:	
8:00 a.m. DEPTH: 1603.00 m		8:00 a.m. OPERATION: Drilling 222 mm hole			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 31538 CUMULATIVE COST: \$ 1058328

B
H
A

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL
ROTATING 344.75
HOURS:

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 245.7 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 35-60

STRING WT.: 53000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

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BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS	
					1	2	3	IN	OUT			DRL.	RMD	WTdaN	RPM	1	O	D	L	B	G	O	R		
4RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1465	1494	29	3.2	9.00		12-14	60	4	4	WT	A	E	4	NO	LOG		
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12-14	40	6	6	WT	A	E	4	NO	PR		
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582		10	2.0	5.00		12-14	35										

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO [X]

M
D

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		° C IN/OUT
															MFI	MFO	
50	1085 /1090	10.7	7.5	1.0	10 / 15.0	8.0 /12.	146.00	99.00	0.001	47		20000	750	440	0.3	0.8	/ 24
	/				/	/											/
CENTRIFUGE					FILTERT			DESANDER			DEGASSER			TOTAL MUD DUMPED			
12 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT		kg/m3		HR OUT		kg/m3		HR OUT		kg/m3		0 m3	

P
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PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER	STROKE	SPM	m3/MIN	MODEL	LINER	STROKE	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
EMSCO	140	406	55	1.11	EMSCO	140	356			7500	39.0	59.7	86.7	84.41

SURVEYS		TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH		SAFETY MTG	0.50	CIRCULATE	0.75	Pot Sulf	30
3.25 ° @ 1576.00 m		DRILLING	12.75	TRIPPING	7.25	Lime	1
° @ m		SURVEYING	0.25	SLIP & CUT	1.50	Alco 110	
° @ m		RIG SERV	0.50	REPAIRS		Corinox	1
° @ m		BOP DRILL		HNDL TOOLS		Driscac	1
° @ m		REAMING		TESTING		Starpac	2
° @ m		CLN TO BTM	0.50	LOGGING		Sod Sulf	1
° @ m		TOTAL HOURS: 24.00				Gel	
° @ m						Sulph acid	
° @ m						Chemcide	
° @ m						Sawdust	
° @ m						Lignite	

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/14 00:01 hours. Drilled 222 mm hole from 1565 mKB to 1582 mKB. Circulated bottoms up, dropped survey, tripped bit # 5RR3 and flow checked as required. Function tested blind rams when out of hole. Made up bit # 6 and tripped to 1567 mKB. Break circulation and cleaned to bottom with no fill. Drilled 222 mm hole from 1582 mKB to 1585 mKB. Some

bad drilling line was noticed and it was decided to slip & cut drilling line for safety purposes. One stand was pulled and stood in derrick. Drill string was circulated through 2" circulating hose while 1.5 rows of drilling line was removed from drawworks drum. Drilled 222 mm hole from 1585 mKB to 1592 mKB.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:



PAJAK ENGINEERING LTD.

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/03/15

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 24

DEPTH: 1592.00 m

PROGRESS:

27.00 m

CPA NO.:

WEATHER: Clear

TEMP: -7 °C

8:00 a.m. OPERATION: Drilling 222 mm hole

DRILLING & GEOLOGICAL REMARKS (Cont'd)

99/03/14 23:59 hours.

Safety topics : Tripping procedures / Jacking the rig.

Hole fill : Act - 7.93 m³, Calc - 7.61 m³ Diff = + .32 m³.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/16	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 25	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: @ : hrs.	
				WELL STATUS:	
WEATHER: Clear		TEMP: -6 °C	FINAL TD: m	FORMATION:	
Midnight DEPTH: 1626.00 m		PROGRESS: 34.00 m	PBTD: m	FORMATION:	
8:00 a.m. DEPTH: 1636.00 m		8:00 a.m. OPERATION: Drilling 222 mm hole			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 24258 CUMULATIVE COST: \$ 1082586

B H A	1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer	TOTAL ROTATING 367.75 HOURS:
	3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S	
	6 HW/DP					
	LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 268.7 JAR SERIAL #: DJ6-675-					
	WT. ON BIT: 14000 daN		ROTARY RPM: 35-60		STRING WT.: 54000 daN	
	DRILL PIPE O.D.: 114	THREAD: 114mm H90	DRILL COLLARS O.D.: 171	THREAD: 127mm H90		NO. IN HOLE: 6
			160	114mm H90		12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS		
					1	2	3	IN	OUT			DRL	RMD	WT&N	RPM	I	O	D	L	B	G	O	R
4RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1465	1494	29	3.2	9.00		12- 14	60	4	4	WT	A	E	4	NO	LOG
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12- 14	40	6	6	WT	A	E	4	NO	PR
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582		44	1.6	28.00		12- 14	35								

LAST PIPE TALLY: 1494.52 BOARD: 1494.00 CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI MFO	° C IN/OUT
50	1085/1090	10.7	7.5	1.0	10/ 15.0	8.0/12.	146.00	99.00	0.001	47		20000	750	440	0.3 0.8	/ 24
	/				/	/										/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED		
24 HR IN	1090 kg/m3	OUT	1080 kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		9 m3		

PUMP	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
	MODEL	LINER (IN)	STROKE (IN)	SPM	m ³ /MIN	MODEL	LINER (IN)	STROKE (IN)	SPM	m ³ /MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
P	EMSCO	140	406	55	1.11	EMSCO	140	356			7500	39.0	59.7	86.7	84.41

SURVEYS			TIME BREAKDOWN		MUD ADDITIVES		
		AZIMUTH	SAFETY MTG	0.50	CIRCULATE	Pot Sulf	80
°	@	m	DRILLING	23.00	TRIPPING	Lime	1
°	@	m	SURVEYING		SLIP & CUT	Alco 110	2
°	@	m	RIG SERV	0.50	REPAIRS	Corinox	1
°	@	m	BOP DRILL		HNDL TOOLS	Driscac	2
°	@	m	REAMING		TESTING	Starpac	4
°	@	m	CLN TO BTM		LOGGING	Sod Sulf	1
°	@	m				Gel	
°	@	m				Sulph acid	
°	@	m				Chemcide	
°	@	m				Trucking	300
°	@	m					
					TOTAL HOURS:	24.00	

MUD COMMENTS: Dumped & cleaned settling tank 9 m³.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/15 00:01 hours. Drilled 222 mm hole from 1592 mKB to 1626 mKB.

* Survey @ 1621 m 3.88 degrees.

09/03/15 23:59 hours.

Safety topics : Job alertness / Safety lines & cables.

* Ice bridge closed from noon to 22:00 hours for heavy loads
light traffic ie: pickups (ok).

SUPERVISOR: DOUG SOLBERG PHONE #: (600) 700 3906 CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/17

U.W.I.: 300K326010123150

CFA NO.:

DAY: 26

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

KB: 484.5 m KB-GL: 4.4 m

RIG RELEASE: @ : hrs.

GL: 480.1 m KB-CF: 4.2 m

WELL STATUS:

WEATHER: Clear

TEMP: -8 °C

FINAL TD: m

FORMATION:

Midnight DEPTH: 1659.00 m

PROGRESS: 33.00 m

PBSD: m

FORMATION:

8:00 a.m. DEPTH: 1671.00 m

8:00 a.m. OPERATION: Drilling 222 mm hole.

AFE #: 98401d AFE AMT: \$ 1775000 DAILY COST: \$ 22366 CUMULATIVE COST: \$ 1104952

1 222 mm Bit	1 171mm BitSub	1 171mm DC	1 174 ShockSub	1 3pt Reamer
3 171mm DC'S	1 171mm Jars	2 171mm DC'S	1 X/O	12 160mm DC'S
6 HW/DP				

TOTAL ROTATING 390.25 HOURS:

LENGTH: 230.86 m WT. BELOW JARS: 7000 daN JAR HRS: 291.2 JAR SERIAL #: DJ6-675-

WT. ON BIT: 14000 daN

ROTARY RPM: 35-60

STRING WT.: 54000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.										REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WT&N	RPM	I	O	D	L	B	G	O	R				
4RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1465	1494	29	3.2	9.00		12-14	60	4	4	WT	A	E	4	NO	LOG				
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12-14	40	6	6	WT	A	E	4	NO	PR				
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582		77	1.5	50.50		12-14	35												

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI	MFO	°C IN/OUT
50	1085/1090	10.7	6.5	1.0	11/14.0	8.0/12.	146.00	100.00	0.002	46		20000	700	360	0.3	0.8	/ 24

CENTRIFUGE				DESILTER				DESANDER				DEGASSER				TOTAL MUD DUMPED	
24 HR IN	1090 kg/m3	OUT	1080 kg/m3	HR OUT		kg/m3		HR OUT		kg/m3		HR OUT		kg/m3		11 m3	

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
ENSCO	140	406	55	1.11	ENSCO	140	356			7500	39.0	59.7	86.7	84.41

SURVEYS			TIME BREAKDOWN			MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	Pot Sulf	80
3.88 ° @ 1621.00 m			DRILLING	22.50	TRIPPING	Lime	2
° @ m			SURVEYING	0.50	SLIP & CUT	Alco 110	2
° @ m			RIG SERV	0.50	REPAIRS	Corinox	
° @ m			BOP DRILL		HNDL TOOLS	Driscac	2
° @ m			REAMING		TESTING	Starpac	4
° @ m			CLN TO BTM		LOGGING	Sod Sulf	
° @ m						Gel	
° @ m						Sulph acid	
° @ m						Chemcide	
° @ m						Trucking	
			TOTAL HOURS: 24.00				

MUD COMMENTS: Dumped and cleaned shaker tank 11 m³.

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/16 00:01 hours. Drilled 222 mm hole from 1626 mKB to

1659 mKB surveying as required.

99/03/16 23:59 hours.

Safety topics : Hand tools / Crew truck safety.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/19

U.W.I.: 300K326010123150

CPA NO.:

DAY: 28

OFFICE SUPERVISOR: KEITH HYNES

CONTRACTOR: NABORS

RIG #: 6

KB: 484.5 m

KB-GL: 4.4 m

GL: 480.1 m

KB-CF: 4.2 m

LICENCE NO.: WID#1860

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Clear

TEMP: -10 °C

FINAL TD: 1695.00 m

FORMATION: Fantasque

Midnight DEPTH: 1695.00 m

PROGRESS: 0.00 m

PBDT: m

FORMATION: Fantasque

8:00 a.m. DEPTH: 1695.00 m

8:00 a.m. OPERATION: Pick up & make up DST # 2

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 62270

CUMULATIVE COST: \$ 1187553

1 222 mm Bit

1 171mm BitSub

6 171mm DC

1 X/O

12 160mm DC's

6 HW/DP

TOTAL
ROTATING 406.50
HOURS:

LENGTH: 222.37 m

WT. BELOW JARS: daN

JAR HRS:

JAR SERIAL #:

WT. ON BIT: daN

ROTARY RPM:

STRING WT.: 55000 daN

DRILL PIPE O.D.: 114

THREAD: 114mm H90

DRILL COLLARS O.D.: 171

THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS	
					1	2	3	IN	OUT			DRL	RMD	WTdaN	RPM	I	O	D	L	J	G	O	R		
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12- 14	40	6	6	WT	A	E	4	NO	PR		
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582	1695	113	1.7	66.75		12- 14	35	5	7	BT	G	E	4	WT	LOG		
7RR6	222.0	SMITH	LT8107	F-35	14.3	14.3	14.3	1695		-169				-											

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO []

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C
															MFI	MFO	IN/OUT
90	1085/1090	10.5	7.0	1.0	16/23.0	12./19.	154.00	97.00	0.001	57		20000	700	400	0.3	0.8	/ 23
	/				/	/											/

CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED	
HR IN	kg/m3	OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3	

PUMP NO. 1					PUMP NO. 2					PRESSURE kPa	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN		DP m/MIN	DC m/MIN	VELOCITY m/sec	ISP
EMSCO	140	406	55	1.11	EMSCO	140	356			4850	39.0	59.7	38.2	16.44

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	6.00	Pot Sulf	
° @ m			DRILLING		TRIPPING	6.00	Lime	4
° @ m			SURVEYING		SLIP & CUT		Alco 110	
° @ m			RIG SERV	0.25	REPAIRS		Corinox	1
° @ m			BOP DRILL		HNDL TCOLS		Drispac	1
° @ m			REAMING		TESTING		Starpac	2
° @ m			CLN TO BTM		LOGGING	11.25	Sod Sulf	1
° @ m							Gel	16
° @ m							Sulph acid	
° @ m							Chemcide	
° @ m							Trucking	
° @ m							Barite	
			TOTAL HOURS: 24.00					

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/18 00:01 hours. Tripped out to log and flow checked as required. Rigged up and logged with Computalog. Made up bit 7RR6 and tripped to 1688 mKB. Break circulation and cleaned to bottom with no fill. Circulated and conditioned hole to run DST # 2.

99/03/18 23:59 hours.

Safety topics : Handling casing / Harness & landyard lines.

Logs : Sped TD to 1450 mKB., CAL : TD to 487.5 mKB

GR : TD to 487.5 mKB. STI : TD to 1450 mKB. MDA : TD to 1450 mKB. CVL : TD to 487.5 mKB.

Hole fill : Act - 8.42 m³, Calc - 8.20 m³ Diff = + .22m³

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/20	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 29	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860		SPUD DATE: 99/02/19 @ 14:00 hrs.	
CONTRACTOR: NABORS		KB: 484.5 m KB-GL: 4.4 m		RIG RELEASE: @ : hrs.	
RIG #: 6		GL: 480.1 m KB-CF: 4.2 m		WELL STATUS:	
WEATHER: Clear		TEMP: -9 °C		FINAL TD: 1695.00 m FORMATION: Fantasque	
Midnight DEPTH: 1695.00 m		PROGRESS: 0.00 m		PBDT: m FORMATION: Fantasque	
8:00 a.m. DEPTH: 1695.00 m		8:00 a.m. OPERATION: Laying down pipe.			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 32040 CUMULATIVE COST: \$ 1219593

B
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1 222 mm Bit	1 171mm BitSub	6 171mm DC	1 X/O	12 160mm DC's
6 HW/DP				
LENGTH: 222.37 m	WT. BELOW JARS: daN	JAR HRS:	JAR SERIAL #:	

TOTAL
ROTATING
HOURS: 406.50

WT. ON BIT: daN ROTARY RPM: STRING WT: 55000 daN
 DRILL PIPE O.D.: 114 THREAD: 114mm H90 DRILL COLLARS O.D.: 171 THREAD: 127mm H90 NO. IN HOLE: 6
 160 114mm H90 12

B
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S

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.								REMARKS
					1	2	3	IN	OUT			DRL	RMD	WTDaN	RPM	I	O	D	L	B	G	O	R	
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12- 14	40	6	6	WT	A	E	4	NO	PR	
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582	1695	113	1.7	66.75		12- 14	35	5	7	BT	G	E	4	WT	LOG	
7RR6	222.0	SMITH	LT8107	F-35	14.3	14.3	14.3	1695		-169				-										

LAST PIPE TALLY: 1494.52 BOARD: 1494.00 CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol kg/m3	Dried Sol kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY MFI	MFO	°C IN/OUT
90	1085/1090	10.5	7.0	1.0	16/23.0	12./19.	154.00	97.00	0.001	57		20000	700	400	0.3	0.8	/ 23

D

CENTRIFUGE			DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED	
HR IN	kg/m3	OIL	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3	

P
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P

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
EMSCO	140	406			EMSCO	140	356			4850	0.0	0.0	0.0	0.00

SURVEYS		TIME BREAKDOWN		MUD ADDITIVES	
AZIMUTH		SAFETY MTG 0.50	CIRCULATE	Pot Sulf	
° @ m		DRILLING	TRIPPING 12.25	Lime	
° @ m		SURVEYING	SLIP & CUT	Alco 110	
° @ m		RIG SERV 0.25	REPAIRS	Corinox	
° @ m		BOP DRILL	HNDL TOOLS 5.00	Drispac	
° @ m		REAMING	TESTING 6.00	Starpac	
° @ m		CLN TO BTM	LOGGING	Sod Sulf	
° @ m				Gel	
° @ m				Sulph acid	
° @ m				Chemcide	
° @ m				Trucking	
° @ m				Barite	
		TOTAL HOURS: 24.00			

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/19 00:01 hours. Tripped bit # 7RR6 to log and flow checked as required. Waited on Alpine testers to arrive. Picked up and made up DST # 2. Tripped in with DST # 2 and set packers at the predetermined test interval and tested with Alpine Testers. Pulled packers free and tripped DST # 2 to 650 m. Reverse circulated fluid out of test tool.

Continued to trip DST # 2. Recovered recorders and brenk down test tool.

99/03/19 23:59 hours.

Safety topics : Testing / Handling test tools.

Hole fill : Act - 8.44 m³, Calc - 8.20 m³ Diff = + .24 m³

: Act - 16.36 m³, Calc - 15.89 m³ Diff = + .47 m³

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDW FOREST ET AL FORT LIARD K-32

LOCATION: 300-K32-6010-12315-0

DATE: 99/03/21

U.W.I.: 300K326010123150

CPA NO.:

DAY: 30

OFFICE SUPERVISOR: KEITH HYNES

LICENCE NO.: WID#1860

CONTRACTOR: NABORS

KB: 484.5 m KB-GL: 4.4 m

SPUD DATE: 99/02/19 @ 14:00 hrs.

RIG #: 6

GL: 480.1 m KB-CF: 4.2 m

RIG RELEASE: @ : hrs.

WELL STATUS:

WEATHER: Clear

TEMP: -12 °C

FINAL TD: 1695.00 m

FORMATION: Fantasque

Midnight DEPTH: 1695.00 m

PROGRESS: 0.00 m

PBDT: 1589.68 m

FORMATION: Fantasque

8:00 a.m. DEPTH: 1695.00 m

8:00 a.m. OPERATION: Tearing out Nabors # 6.

AFE #: 984018

AFE AMT: \$ 1775000

DAILY COST: \$ 132980

CUMULATIVE COST: \$ 1352573

1 222 mm Bit

1 171mm BitSub

6 171mm DC

1 X/O

12 160mm DC'S

6 HW/DP

TOTAL
ROTATING
HOURS: 406.50

LENGTH: 222.37 m WT. BELOW JARS: daN JAR HRS: JAR SERIAL #:

WT. ON BIT: daN

ROTARY RPM:

STRING WT.: 55000 daN

DRILL PIPE O.D.: 114 THREAD: 114mm H90

DRILL COLLARS O.D.: 171 THREAD: 127mm H90

NO. IN HOLE: 6

160

114mm H90

12

BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS PER HOUR	HOURS ON BIT		BIT	CUTTING STRUCT.										REMARKS
					1	2	3	IN	OUT		DRL	RMD		WTdaN	RPM	I	O	D	L	B	G	O	R	
5RR3	222.0	SEC	729283	GS86F	9.5	9.5	9.5	1494	1582	88	2.8	31.25		12-14	40	6	6	WT	A	E	4	NO	PR	
6	222.0	SMITH	LT8107	F-35	9.5	9.5	9.5	1582	1695	113	1.7	66.75		12-14	35	5	7	BT	G	E	4	WT	LOG	
7RR6	222.0	SMITH	LT8107	F-35	14.3	14.3	14.3	1695		-169				-										

LAST PIPE TALLY: 1494.52

BOARD: 1494.00

CORRECTION: YES [] NO [X]

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP		GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		°C IN/OUT
																MFI	MFO	
55	1085 / 1090	10.5	8.0	1.0	16'	8.0	5.0 / 6.0	154.00	97.00	0.001	57		20000	700	400	0.3	0.8	/ 23
	/				/		/											/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED				
HR IN		kg/m3	OUT		kg/m3	HR OUT		kg/m3	HR OUT		kg/m3	HR OUT		kg/m3	m3			

PUMP NO. 1 TYPE: DA-500					PUMP NO. 2 TYPE: D-375					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	DC m/MIN	VELOCITY m/sec	IHP
EMSCO	140	406	50	1.01	EMSCO	140	356			4850	35.5	54.3	34.8	12.39

SURVEYS			TIME BREAKDOWN				MUD ADDITIVES	
AZIMUTH			SAFETY MTG	0.50	CIRCULATE	3.00	Pot Sulf	28
° @ m			DRILLING		TRIPPING	10.75	Lime	4
° @ m			SURVEYING		SLIP & CUT		Alco 110	
° @ m			RIG SERV	0.50	REPAIRS		Corinox	
° @ m			BOP DRILL		HNDL TOOLS	1.25	Drispac	
° @ m			RUN CSG	8.00	TESTING		Starpac	
° @ m					LOGGING		Sod Sulf	
° @ m							Gel	
° @ m							Sulph acid	
° @ m							Desco	4
° @ m							Trucking	
° @ m							Sawdust	23
			TOTAL HOURS: 24.00					

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/20 00:01 hours. Break down test tool and load out same. Tripped in with bit # 7 RR6 to 1688 mKB. Break circulation and washed to bottom with no fill. Circulated and conditioned hole. Layed down pipe and collars. Checked blind rams when out of hole. Held prejob safety meeting with Ray's Tongs and Nabors personal. Rigged up and ran

126 joints 177.8 mm x 34.23 kg/m L-80 8rd Prudential casing, total length of casing and accessories 1696.73 m. Landed float shoe @ 1695 mKB and float collar @ 1689.68 mKB. Circulated and conditioned mud and hole. Held prejob safety meeting with Nabors and Sanjel personal. Pressure tested surface equipment to 21,000 kPa. Pumped 3 m³ water, 3 m³

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32

DATE: 99/03/21

LOCATION: 300-K32-6010-12315-0

U.W.I.: 300K326010123150

DAY: 30 DEPTH: 1695.00 m PROGRESS: 0.00 m CPA NO.:

WEATHER: Clear

TEMP: -12 °C

8:00 a.m. OPERATION: Tearing out Nabors # 6.

DRILLING & GEOLOGICAL REMARKS (Cont'd)

scavanger @ 1300 kg/m³, 22.32 m³ 1:1:6 + .75% CFR lead cement, followed by 11.44 m³ 0:1:0 "G" + .4% CFL -3 + .2% LTR tail cement. Dropped plug and displaced casing with .5 m³ of tail cement followed by 34 m³ water. Bumped plug at 3 MPa over final circulating pressure. Held pressure for 1 minute. Bleed of pressure, float held ok. Recieved 5 m³ of good cement returns. Plug down @ 02:43 hours 99/03/21.

99/03/20 23:59 hours.

Safety topic: Laying down pipe / Cementing

Hole fill : Act - 8.30 m³, Calc - 8.20 m³ Diff = 0.10 m³.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/22	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 31	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: 99/03/21 @ 11:00 hrs.	
				WELL STATUS: CAPPED GAS	
WEATHER: Clear		TEMP: -8 °C		FINAL TD: 1695.00 m	
Midnight DEPTH: 1695.00 m		PROGRESS: 0.00 m		FORMATION: Fantasque	
8:00 a.m. DEPTH: 1695.00 m		8:00 a.m. OPERATION: Racking Nabors Rig # 6 in Ft. St. John		PBTd: m	
				FORMATION: Fantasque	

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 42191 CUMULATIVE COST: \$ 1394764

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					TOTAL ROTATING 406.50 HOURS:	
LENGTH:	0.00 m	WT. BELOW JARS:	daN	JAR HRS:	JAR SERIAL #:	
WT. ON BIT:	daN	ROTARY RPM:		STRING WT.:	daN	
DRILL PIPE O.D.:	THREAD:	DRILL COLLAR O.D.:	THREAD:	NO. IN HOLE:		

BITS

[illegible]

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

[illegible]

D

CENTRIFUGE				DESSILTER		DE SANDER		DEGASSER		TOTAL MUD DUMPED
HR IN	kg/m3	OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	HR OUT	kg/m3	m3

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PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JET	
MODEL	LINEAR IN	STROKE IN	SPM	m3/MIN	MODEL	LINEAR IN	STROKE IN	SPM	m3/MIN	PSI	DP m/MIN	DC m/MIN	VELOCITY m/sec	HP
											0.0	0.0		0.00

SURVEYS		TIME BREAKDOWN	MUD ADDITIVES
AZIMUTH			Trucking
° @ m		SAFETY MTG CIRCULATE 1.00	
° @ m		CEMENTING 2.00 SET SLIPS 1.00	
° @ m		W/N.U. BOP 4.00 RIG UP/DN 5.00	
° @ m		RIG MOVE 9.00	
° @ m			
° @ m			
° @ m			
° @ m			
° @ m			
° @ m			
° @ m		TOTAL HOURS:	22.00

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/21 00:01 hours. Circulated and conditioned hole. Held prejob safety meeting with Nabors and Sanjel personal. Cemented with Sanjel, plug down @ 02:43 hours. Nippled down BOPS and set slips in 35,000 daN tension. Cut off 177.8 mm casing and a tubing head was installed by Stream Flo representatives. Continued to rig down rig. Held prejob

safety meeting with Nabors and Land Transport representative
Racked rig off on the side of lease and prepared rig to be
transported out on the frost.
99/03/21 23:59 hours.
Safety topic : rig move / cementing
* Rig released 99/03/21 @ 11:00 hours.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:



PAJAK ENGINEERING LTD.

DAILY DRILLING REPORT

WELL NAME: CDN FOREST ET AL FORT LIARD K-32
LOCATION: 300-K32-6010-12315-0 U.W.I.: 300K326010123150

DATE: 99/03/22

DAY: 31 DEPTH: 1695.00 m PROGRESS: 0.00 m CPA NO.:

WEATHER: Clear

TEMP: -8 °C

8:00 a.m. OPERATION: Racking Nabors Rig # 6 in Ft. St. John

DRILLING & GEOLOGICAL REMARKS (Cont'd)

- * Boiler down 99/03/21 @ 08:00 hours.
- * Hauled solids up and set in a pile beside remote sump.
- * Remote sump was left with 1 meter of freeboard.
- * Lease was left in clean and tidy condition.
- * Rental equipment was returned to vender or needed equipment was transported to N -61 location.
- * Derrick down 99/03/21 @ 10:00 hours.
- * Transferred mud chemical stock to N-61 location.

REPORTED BY: DOUG SOLBERG

PHONE #: (600) 700 3906
CALLING CARD #:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/23	
U.W.I.: 300K326010123150		CPA NO.:		DAY: 32	
OFFICE SUPERVISOR: KEITH HYNES		LICENCE NO.: WID#1860		SPUD DATE: 99/02/19 @ 14:00 hrs.	
CONTRACTOR: NABORS		KB: 484.5 m KB-GL: 4.4 m		RIG RELEASE: 99/03/21 @ 11:00 hrs.	
RIG #: 6		GL: 480.1 m KB-CF: 4.2 m		WELL STATUS: CAPPED GAS	
WEATHER: Clear		TEMP: -6 °C		FINAL TD: 1695.00 m	
Midnight DEPTH: 1695.00 m		PROGRESS: 0.00 m		PBTD: m	
8:00 a.m. DEPTH: 1695.00 m		8:00 a.m. OPERATION: Hauling Nabors # 6 to rack site Ft.St.John		FORMATION: Fantasque	

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ 21014 CUMULATIVE COST: \$ 1415778

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LENGTH: 0.00 m				WT. BELOW JARS: daN				JAR HRS:				JAR SERIAL #:			
WT. ON BIT: daN				ROTARY RPM:				STRING WT.: daN							
DRILL PIPE O.D.:				THREAD:				DRILL COLLARS O.D.:				THREAD:			
												NO. IN HOLE:			

TOTAL
ROTATING
HOURS: 406.50

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BIT NO.	SIZE mm	MAKE	SERIAL #	TYPE	NOZZLES mm			DEPTH		MTRS	MTRS PER HOUR	HOURS ON BIT		BIT		CUTTING STRUCT.					REMARKS
					1	2	3	IN	OUT			DRL.	RMD	WTdaN	RPM	I	O	D	L	B	
										0					-						
										0					-						
										0					-						

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Drid. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		° C IN/OUT	
	/				/	/										MFI	MFO	/
	/				/	/												/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED				
HR IN		kg/m3	OUT		kg/m3	HR OUT		kg/m3	HR OUT		kg/m3	HR OUT		kg/m3	m3			

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PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		JBT	
MODEL	LINER mm	STROKE mm	SPM	m3/MIN	MODEL	LINER mm	STROKE mm	SPM	m3/MIN	kPa	DP m/MIN	°C m/MIN	VELOCITY m/sec	HHP
											0.0	0.0		

SURVEYS	TIME BREAKDOWN	MUD ADDITIVES
AZIMUTH ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m	TOTAL HOURS: 0.00	

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

99/03/22 00:01 hours. Transported Nabors rig & camp to rack site Ft.St.John. Returned all company loads to vendor. All loads off location prior to 07:00 hours 99/03/22.

Final Report.

SUPERVISOR: DOUG SOLBERG

PHONE #: (600) 700 3906

CALLING CARD#:

DAILY DRILLING REPORT

WELL NAME: CON FOREST ET AL FORT LIARD K-32		LOCATION: 300-K32-6010-12315-0		DATE: 99/03/22	
U.W.I.: 00K326010123150		CPA NO.:		DAY: 33	
OFFICE SUPERVISOR: KEITH HYNES				LICENCE NO.: WID#1860	
CONTRACTOR: NABORS		KB: 484.5 m	KB-GL: 4.4 m	SPUD DATE: 99/02/19 @ 14:00 hrs.	
RIG #: 6		GL: 480.1 m	KB-CF: 4.2 m	RIG RELEASE: 99/03/21 @ 11:00 hrs.	
				WELL STATUS: CAPPED GAS	
WEATHER:		TEMP: °C	FINAL TD: 1695.00 m		FORMATION: Fantasque
Midnight DEPTH:	m	PROGRESS: -1695.0 m	PBSD:		m FORMATION: Fantasque
8:00 a.m. DEPTH:	m	8:00 a.m. OPERATION:			

AFE #: 984018 AFE AMT: \$ 1775000 DAILY COST: \$ CUMULATIVE COST: \$ 1415178

B H A					TOTAL ROTATING HOURS: 406.50	
	LENGTH: 0.00 m	WT. BELOW JARS: daN	JAR HRS:	JAR SERIAL #:		
	WT. ON BIT: daN	ROTARY RPM:	STRING WT.: daN			
	DRILL PIPE O.D.:	THREAD:	DRILL COLLARS O.D.:	THREAD:	NO. IN HOLE:	

[illegible]

LAST PIPE TALLY:

BOARD:

CORRECTION: YES [] NO []

Viscosity Sec/L	DENSITY IN/OUT	pH	WL cc/30min	FC mm	PV/YP	GELS O/10	Tot. Sol. kg/m3	Dried. Sol. kg/m3	SAND kg/m3	BENTONITE kg/m3	LCM kg/m3	OIL %	Cl ppm	Ca ppm	ALKALINITY		° C IN/OUT
															MF1	MFO	
	/				/	/											/
	/				/	/											/
CENTRIFUGE					DESILTER			DESANDER			DEGASSER			TOTAL MUD DUMPED			
HR IN	kg/m3	OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3		HR OUT	kg/m3				m3	

P U M P	PUMP NO. 1					PUMP NO. 2					PRESSURE	ANNULAR VELOCITY		HST	
	TYPE:					TYPE:						DP m/MIN	DC m/MIN	VELOCITY m/sec	HHP
	MODEL	LINER (CM)	STROKE (CM)	SPM	m3/MIN	MODEL	LINER (CM)	STROKE (CM)	SPM	m3/MIN					
												0.0	0.0		

SURVEYS	TIME BREAKDOWN	MUD ADDITIVES
AZIMUTH ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m ° @ m	SAFETY MTG CIRCULATE CEMENTING SET SLIPS W/N.U. BOP RIG UP/DN RIG MOVE TOTAL HOURS: []	Trucking

MUD COMMENTS:

DRILLING & GEOLOGICAL REMARKS: (Report all details of Casing, Cementing, Drill Stem Tests, Logging, Abandonment Plugs, etc. Sequence of Operations to be inserted below.)

SUPERVISOR: DOUG SOLBERG PHONE #: (600) 700 3906 CALLING CARD#:

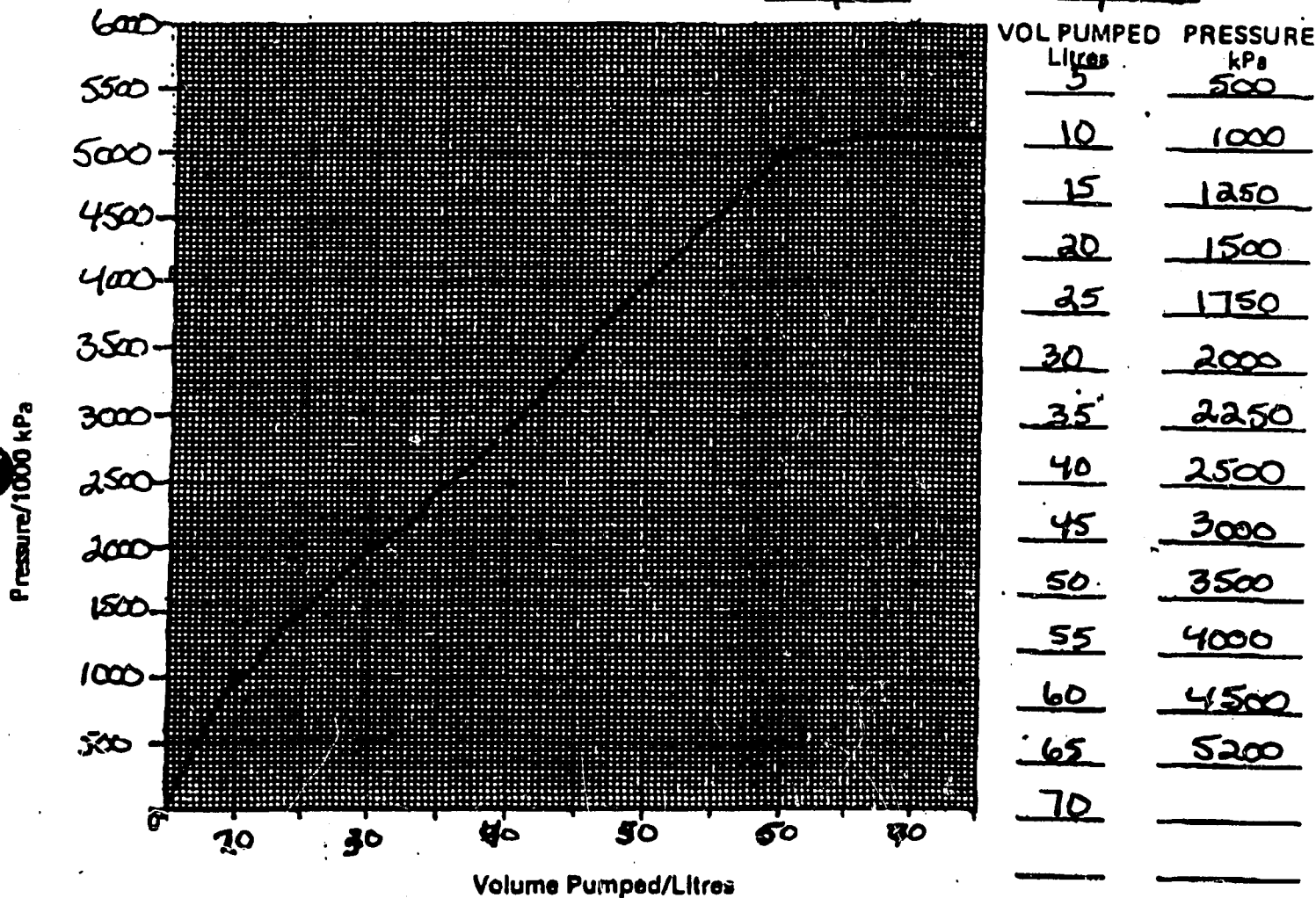
FORMATION LEAK - OFF TEST

FORMATION PRESSURE TEST

WELL: CANADIAN FOREST-K-32-60-10-123-50 DATE: (y-m-d) 1999-02-25

MAXIMUM TEST PRESSURE - LESSER OF

(1) B.O.P. Rating ----- 20,500 kPa (1)
 (2) Weakest Casing: 244.5 mm 53.37 kg/m 3-55 Grade
 Burst Rating (kPa) 28,825 x 0.75 = 21,618 kPa (2)



Depth of casing	a)	<u>487</u>	m
Mud gradient	b) (mud density x 0.00981)	<u>9.81</u>	kPa/m
Hydrostatic pressure	c) (a x b)	<u>4771</u>	kPa
Leak-off pressure	d) (see note below)	<u>5200</u>	kPa
Total pressure (at shoe)	e) (c + d)	<u>9971</u>	kPa
Formation gradient	f) (e ÷ a)	<u>20.48</u>	kPa/m
Maximum allowable mud density with no annulus pressure	g) ((f + 0.00981)	<u>2081</u>	kg/m ³

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



GEOLOGICAL WELL REPORT

PREPARED FOR

CANADIAN FOREST OIL LTD.

CDN FOREST et al FORT LIARD K 32 60 01 123 21

LATITUDE: 60 01' 39" NORTH

LONGITUDE: 123 21' 49" WEST

Report prepared by: William B. Godwin, P. Geol.

Report approved by: William B. Godwin, P. Geol.

4215 - Dalhart Road N.W. Calgary, Alberta, Canada T3A 1B6

Phone: (403) 288-9388 Fax: (403) 288-8499

Cellular: (403) 860-5398 (403) 861-2960

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WELL DATA SUMMARY

OPERATOR: CANADIAN FOREST OIL LTD.

WELL NAME: CDN FOREST et al FORT LIARD K 32

UNIQUE WELL IDENTIFIER: 300K326010123150

LOCATION: Latitude: 60 01' 39" North
Longitude: 123 21' 49" West

LICENCE No.: WID # 1860 A.F.E. No: 984018

ELEVATIONS: Ground: 480.1 metres K.B.: 484.5 metres

ZONES OF INTEREST: Primary: Cretaceous - Fort St. John Group
Chinkeh Formation
Secondary: Permian - Ishbel Group
Fantasque Formation
Mississippian - Mattson Formation

CONSULTING GEOLOGIST: Bill Godwin

COMPANY GEOLOGIST: Gary Winter

DRILLING CONTRACTOR: Nabors Drilling Ltd. Rig No. 6

SPUD DATE: February 19, 1999 at 14:00 hour

DRILLING COMPLETED: March 17, 1999 at 17:00 hour

TOTAL DEPTH: 1695.4 metres

TERMINATING FORMATION: Permian - Fantasque Formation

SURFACE HOLE: Hole Size: 311 mm Casing Size: 244.5 mm
Weight and Type: 53.57 kg/m, J-55, LT&C
Landing Depth: 487.9 metres

FINAL HOLE: Hole Size: 200 mm Casing Size: 177.8 mm
Weight and Type: 34.23 kg/m, L 80, ST&C
Landing Depth: 1695.4 metres

WELL DATA SUMMARY

MUD PARAMETERS:	Interval	Mud System
	0 m to 1695.4 m	K Minus Polymer

SAMPLES: Operator: CANADIAN FOREST OIL LTD.
Interval: 0 m to 1322 m at 5 m intervals
 1322 m to 1339.4 m at 1 m intervals
 1339.4 m to 1695.4 m at 5 m intervals
Four (4) sets of labelled sample trays with vials

Government: NATIONAL ENERGY BOARD

Interval: 0 m to 1322 m at 5 m intervals
 1322 m to 1339.4 m at 1 m intervals
 1339.4 m to 1695.4 m at 5 m intervals

Two (2) sets of labelled sample trays with vials

One (1) set of drill cuttings in sample bags

CORES: Core No. 1: Garbutt Formation

Date: March 07, 1999

Interval: 1322.0 m to 1339.4 m

Cut: 17.4 m Recovered: 16.7 m

Core Bit / Size: StrataPac LI S / 159 mm

Total Coring Time: 11.00 hours

Coring Company: Foothills Diamond Coring Ltd.

Core Analyses: AGAT Laboratories Calgary Ltd.

Comments: Core flown from Fort Liard airstrip to
Calgary via Morgan Air Services Ltd.

WELL DATA SUMMARY

DRILL STEM TESTS: D.S.T. No. 1: Cretaceous - Chinkeh Formation

Date: March 10, 1999

Interval: 1394.0 metres to 1408.0 metres

Type of Test: Closed Chamber
Inflate Straddle

Testing Company: Alpine Testing

Periods: Preflow: 05 minutes
Initial Shut In: 30 minutes
Valve Open: 30 minutes
Final Shut In: 30 minutes

Comments: Mechanically successful test

DRILL STEM TESTS: D.S.T. No. 2: Permian - Fantasque Formation

Date: March 10, 1999

Interval: 1635.0 metres to 1695.4 metres

Type of Test: Closed Chamber
Conventional Bottom Hole

Testing Company: Alpine Testing

Comments: Test information unavailable

WELL DATA SUMMARY

LOGGING PROGRAM: Company: Computalog
District: Grande Prairie / Edmonton
Logging Engineer: Chris Murray / Don Tiller
Date: March 12, 1999

Run No. 1:	Service	Interval	Time
	STI	1494.7 m to 487.9 m	5.0 hours
	SPeD	1492.6 m to 487.9 m	
	GR	1492.6 m to 25.0 m	

Run No. 2:	Service	Interval	Time
	MDA	1488.5 m to 487.9 m	6.0 hours

Comments: STI and SPeD run in combination on first descent. MDA run on second descent. MDA - Shear Wave (1488.5 m to 1000.0 m), and P Wave (1488.5 m to 487.9 m)

LOGGING PROGRAM: Company: Computalog
District: Grande Prairie / Edmonton
Logging Engineer: Jim Koch
Date: March 18, 1999

Run No. 3:	Service	Interval	Time
	SPeD	1694.6 m to 1450.0 m	3.5 hours

Run No. 4:	Service	Interval	Time
	STI	1693.2 m to 1450.0 m	3.5 hours

Run No. 5:	Service	Interval	Time
	MDA	1689.8 m to 1450.0 m	4.5 hours

Comments: All logs run seperately. MDA run on second descent. MDA - Shear Wave (1689.8 m to 1450.0 m), and P Wave (1689.8 m to 1450.0 m)

GEOLOGICAL MARKERS

K.B. ELEVATION: 484.5 metres

FORMATIONS	PROGNOSIS SUBSEA (metres)	LOG DEPTH (metres)	LOG SUBSEA (metres)
Quarternary	+ 480.1	4.4	+ 480.1
CRETACEOUS			
Cretaceous	+ 300.0	178.5	+ 306.0
Shaftesbury	+ 21.5	377.0	+ 107.5
Lower Shaftesbury	- 201.0	638.0	+ 153.5
Scatter	- 650.0	1051.3	- 566.8
Garbutt	- 760.0	1322.1	- 837.6
Chinkeh	- 918.0	1389.0	- 904.5
TRIASSIC			
Liard Group	- 930.0	1405.0	- 920.5
Belloy	-1070.0	1525.8	-1041.3
PERMIAN			
Fantasque	-1111.0	1568.8	-1084.3
MISSISSIPPIAN			
Mattson	-1213.0		
Total Depth	-1440.0	1695.4	-1210.9
Logger		1695.4	-1210.9

BIT RECORD

BIT NO.	TYPE	SIZE (mm)	DEPTH OUT	METRES DRILLED	TOTAL HOURS
1A	FDS	311	240.0	240.0	23.75
2A	G1	311	378.0	138.0	25.50
3A	GT-1	311	487.5	109.5	22.75
4B	EHP51X	222	1057.0	569.5	85.00
5B	F15H	222	1322.0	265.0	78.75
6C1	LI S	159	1339.4	17.4	11.00
7B	GS86F	222	1465.0	125.6	40.50
8BRR	GS86F	222	1494.0	29.0	9.00
9RR	GS86F	222	1582.0	88.0	31.25
10	F35	222	1695.4	113.4	66.75

CORE RECORD

CORE No. 1: CRETACEOUS - GARBUTT FORMATION

INTERVAL: 1322.0 m to 1339.4 m

CUT: 17.4 m

RECOVERED: 16.7 m

CORE BIT / SIZE: L I S (STRATAPAC) 159 mm

TOTAL CORING TIME: 11.00 hours

INTERVAL (metres)	LENGTH (metres)	DESCRIPTION
1322.00-1323.20	1.20	SHALE - black, carbonaceous, silty in small part, well indurated.
1323.20-1324.00	0.80	SHALE - black, carbonaceous, silty in small part, well indurated.
1324.00-1325.00	1.00	SHALE - black, carbonaceous, silty in small part, well indurated.
1325.00-1326.00	1.00	SHALE - black, carbonaceous, silty in small part, well indurated.
1326.00-1326.05	0.05	SILTSTONE - light greyish brown, quartzose, siderite cement, very argillaceous, well indurated.
1326.05-1326.60	0.55	SHALE - black, carbonaceous, silty in small part, well indurated.
1326.60-1326.70	0.10	NOT RECOVERED - MILLED DURING CORING
1326.70-1327.30	0.60	SHALE - black, carbonaceous, silty in small part, well indurated.
1327.30-1327.38	0.08	SILTSTONE - medium grey, quartzose, very arenaceous - common floating upper very fine size subangular frosted quartz grains dispersed throughout, well indurated.
1327.38-1328.40	1.02	SHALE - black, silty in small part, becoming increasing carbonaceous and phosphatic down section, well indurated.

CORE RECORD

INTERVAL (metres)	LENGTH (metres)	DESCRIPTION
1328.40-1328.50	0.10	NOT RECOVERED - MILLED DURING CORING
1328.50-1329.00	0.50	SHALE - black, carbonaceous, silty in small part, well indurated.
1329.00-1329.05	0.05	SILTSTONE - medium grey, quartzose, very bentonitic, grading to very silty bentonite, poorly indurated.
1329.05-1329.70	0.65	SHALE - black, carbonaceous, very bentonitic, silty in small part, well indurated.
1329.70-1329.80	0.10	NOT RECOVERED - MILLED DURING CORING
1329.80-1330.15	0.35	SHALE - black, carbonaceous, very bentonitic, phosphatic in part, silty in small part, well indurated.
1330.15-1330.20	0.05	BENTONITE - medium grey, very silty, poorly indurated.
1330.20-1330.30	0.10	SHALE - black, carbonaceous, very bentonitic, silty in small part, well indurated.
1330.30-1330.35	0.05	SILTSTONE - medium grey, quartzose, very argillaceous, moderately to well indurated.
1330.35-1331.00	0.65	SHALE - black, carbonaceous, silty in small part, phosphatic in part, well indurated.
1331.00-1331.10	0.10	NOT RECOVERED - MILLED DURING CORING
1331.10-1331.60	0.50	SHALE - black, carbonaceous, very bentonitic, silty in small part, poorly indurated.
1331.60-1331.70	0.10	NOT RECOVERED - MILLED DURING CORING
1331.70-1332.50	0.80	SHALE - black, carbonaceous, phosphatic in part, very bentonitic in part, silty in small part, moderately indurated.

CORE RECORD

INTERVAL (metres)	LENGTH (metres)	DESCRIPTION
1332.50-1332.60	0.10	BENTONITE - medium grey, very silty, poorly indurated.
1332.60-1333.00	0.40	SHALE - black, carbonaceous, very bentonitic in part, silty in small part, moderately indurated.
1333.00-1333.10	0.10	SILTSTONE - medium grey, quartzose, very argillaceous, well indurated.
1333.10-1334.40	1.30	SHALE - black, carbonaceous, very bentonitic in part, locally very phosphatic, silty in small part, well indurated.
1334.40-1334.50	0.10	SILTSTONE - medium grey, quartzose, very argillaceous, well indurated.
1334.50-1335.60	1.10	SHALE - black, carbonaceous, bentonitic, phosphatic in part, silty in small part, well indurated.
1335.60-1335.70	0.10	SILTSTONE - medium grey, quartzose, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, well indurated.
1335.70-1336.20	0.50	SHALE - black, carbonaceous, very bentonitic down section, silty in small part, well indurated.
1336.20-1336.30	0.10	NOT RECOVERED - MILLED DURING CORING
1336.30-1337.50	1.20	SHALE - black, carbonaceous, bentonitic, phosphatic, silty in small part, well indurated.
1337.50-1337.55	0.05	BENTONITE - medium grey, poorly indurated.
1337.55-1338.60	1.05	SHALE - black, carbonaceous, very bentonitic, phosphatic, silty in small part, moderately to poorly indurated.

CORE RECORD

INTERVAL (metres)	LENGTH (metres)	DESCRIPTION
1338.60-1338.65	0.05	BENTONITE - medium golden brown, silty in part, poorly indurated.
1338.65-1338.80	0.15	SHALE - black, carbonaceous, very bentonitic, silty in small part, poorly indurated.
1338.80-1338.85	0.05	BENTONITE - medium golden brown, silty in part, poorly indurated.
1338.85-1338.95	0.10	NOT RECOVERED - MILLED DURING CORING
1338.95-1339.40	0.45	SHALE - black, carbonaceous, bentonitic, phosphatic, silty in small part, well indurated.
1339.40		END OF CORE NO. 1

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
0 - 4.4		Kelly Bushing to Ground Elevation
4.4 - 15	85-90	TILL - light golden brown, occasional medium grey, very arenaceous throughout, abundant sand laminae and lenses, common ferruginous staining, sand lenses and laminae - lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, unlithified, poorly sorted, frosted quartz, light to medium brown and black chert, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
	10-15	CLAY - medium grey, grading to light and medium golden brown, very bentonitic, poorly indurated.
15 - 30	70-80	TILL - light golden brown, occasional medium grey, very arenaceous throughout, abundant sand laminae and lenses, common ferruginous staining, unlithified sand lenses and laminae - lower medium to upper coarse grained, abundant upper very coarse grained to granule size, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common Feldspar grains, increase in proportion from above interval, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
	20-30	CLAY - medium grey, occasional amounts of light golden brown, very bentonitic, poorly indurated.
30 - 35		NO SAMPLE

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
35 - 55	50-55	TILL - light golden brown, grading to light greyish brown, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, common ferruginous staining.
	45-50	SAND - unlithified, light reddish brown, grading to light golden orange, abundant ferruginous staining throughout, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
55 - 60	50	SAND - unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, staining increasing across this interval, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
	50	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, common ferruginous staining.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
60 - 65	40	SAND unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, lower fine to upper medium grained, common lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
	40	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, common ferruginous staining.
	20	CLAY - light to medium grey, grading to light and medium brownish grey, very bentonitic, poorly indurated.
65 - 70	35	TILL - light to medium golden orange, very arenaceous throughout, abundant sand laminae and lenses throughout, common ferruginous staining.
	35	CLAY - light to medium brownish grey, grading to medium grey in small part, very bentonitic, poorly indurated.
	30	SAND - unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
70 - 80	40	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, common ferruginous staining.
	35	CLAY - light to medium grey, grading to light and medium brownish grey, very bentonitic, poorly indurated.
	25	SAND - unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, upper fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
80 - 105	40-50	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
	35	CLAY - light to medium grey, grading to light and medium brownish grey, very bentonitic, rare Fe concretions, poorly indurated.
	15-25	SAND - unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
105 - 115	65	CLAY - medium grey, grading to dark grey, very bentonitic, rare Fe concretions, poorly indurated.
	25	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
	10	SAND - unlithified, very light orange, grading to light reddish brown, abundant ferruginous staining throughout, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, light to medium brown and black chert, common hematite grains, minor ilmenite grains, feldspar grains, dark greyish black volcanic lithic fragments, rare medium green glauconite grains, rare medium grey argillite and or claystone clast, poorly indurated.
115 - 125	50	SAND - unlithified, very light greyish white, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, abundant white clay residue on grain surfaces, poorly indurated.
	25	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
	25	CLAY - medium grey, grading to dark grey, very bentonitic, rare Fe concretions, poorly indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
125 - 140	50-55	CLAY - medium grey, grading to dark grey, very bentonitic, occasional Fe concretions, poorly indurated.
	40	SAND - unlithified, very light greyish white, lower fine to lower coarse grained, minor amounts of upper coarse to upper very coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, abundant white clay residue on grain surfaces, poorly indurated.
	05-10	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
140 - 155	80-85	SAND - unlithified, very light greyish white, lower fine to upper medium grained, minor amounts of lower and upper coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
	15	CLAY - medium grey, grading to dark grey, very bentonitic, occasional Fe concretions, poorly indurated.
	05-10	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
155 - 175	50	SAND - unlithified, very light greyish white, lower fine to upper coarse grained, minor amounts of lower and upper very coarse grained, rounded, minor subangular, poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, increase in proportion of dark chert in this interval, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
	50	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
175 - 180	50	SAND - unlithified, very light greyish white, lower fine to upper medium grained, minor amounts of lower and upper coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
	40	TILL - light golden orange, rare medium grey, very arenaceous throughout, abundant sand laminae and lenses throughout, abundant ferruginous staining.
	05	CLAY - medium grey, very bentonitic, rare Fe concretions, poorly indurated.
	05	SILTSTONE - light brownish grey, quartz, rare phlogopite and muscovite flakes, very argillaceous, arenaceous in large part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
180 - 185	55	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, rare phlogopite and muscovite flakes, very argillaceous, less arenaceous than above - minor amounts of floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	25	SHALE - medium brownish grey, subfissile, common blocky, bentonitic in part, rare Fe concretions, moderately indurated.
	20	SAND - unlithified, very light greyish white, lower fine to upper medium grained, minor amounts of lower and upper coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
185 - 190	40	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, bentonitic in part, rare Fe concretions, moderately indurated.
	35	SAND - unlithified, very light greyish white, lower fine to upper medium grained, minor amounts of lower and upper coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
	25	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, minor phlogopite and muscovite flakes, becoming more micaceous within this interval, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
190 - 195	40	SHALE - medium grey, grading to medium brownish grey, blocky, bentonitic in part, moderately indurated.
	35	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, minor phlogopite and muscovite flakes, becoming more micaceous within this interval, very argillaceous, moderately indurated.
	20	SAND - unlithified, very light greyish white, lower fine to upper medium grained, minor amounts of lower and upper coarse grained, rounded, minor subangular, moderately to poorly sorted, frosted quartz, minor sub vitreous quartz, minor light to medium brown and black chert, rare pyrite grains, rare Feldspar grains, abundant white clay residue on grain surfaces, poorly indurated.
	05	SANDSTONE - light greyish white, upper very fine grained, subangular, minor subrounded, moderately sorted, predominantly disaggregated throughout, locally very slightly consolidated, locally abundant white clay residue on grain surfaces, frosted quartz, rare medium to dark grey chert grains, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
195 - 200	60	SHALE - medium grey, subfissile, abundant blocky, silty, bentonitic in part, becoming very Mica, common muscovite flakes scattered throughout, moderately indurated.
	30	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, minor phlogopite and muscovite flakes, becoming more micaceous within this interval, very argillaceous, moderately indurated.
	10	SANDSTONE - light greyish white, upper very fine grained, subangular, minor subrounded, moderately sorted, predominantly disaggregated throughout, locally very slightly consolidated, locally abundant white clay residue on grain surfaces, frosted quartz, rare medium to dark grey chert grains, poor intergranular porosity, no visual shows.
200 - 210	90	SANDSTONE - light greyish white, salt and pepper, upper fine to lower medium grained in part, subangular, minor subrounded, moderately sorted, predominantly disaggregated throughout, locally very slightly consolidated, abundant white clay residue on grain surfaces throughout, frosted quartz, common medium to dark grey chert grains, occasional phlogopite and muscovite flakes, poor intergranular porosity, no visual shows.
	05	SHALE - medium grey, subfissile, abundant blocky, silty, bentonitic in part, Mica, minor muscovite flakes scattered throughout, moderately indurated.
	05	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, minor phlogopite and muscovite flakes, becoming more micaceous within this interval, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
210 - 215	65	SHALE - light grey, grading to light brownish grey, medium grey, subfissile, abundant blocky, silty, bentonitic in part, rare pyrite granules, moderately indurated.
	25	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, occasional phlogopite and muscovite flakes, very argillaceous, moderately indurated.
	10	SANDSTONE - light greyish white, salt and pepper, upper fine to lower medium grained in part, subangular, minor subrounded, moderately sorted, predominantly disaggregated throughout, locally very slightly consolidated, abundant white clay residue on grain surfaces throughout, frosted quartz, common medium to dark grey chert grains, occasional phlogopite and muscovite flakes, poor intergranular porosity, no visual shows.
215 - 240	95-100	SANDSTONE - off white, grading to light greyish white, salt and pepper, upper fine to upper medium grained, minor to common amounts of lower coarse grained, occasional amounts of upper coarse grained, subrounded to rounded in part, minor subangular, occasional angular, moderately to poorly sorted, predominantly disaggregated throughout, locally slightly consolidated, abundant white clay residue on grain surfaces throughout, locally plugging intergranular voids, rare amounts of silica and siderite cement, frosted quartz, minor medium to dark grey chert grains, rare rose quartz, rare occasional phlogopite and muscovite flakes, rare pyrite grains, poor intergranular porosity, rare amounts of dark brown to black organic specks on grain surfaces and occasionally encrusting intergranular voids, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	trace-05	SHALE - light grey, grading to light brownish grey, medium grey, subfissile, abundant blocky, silty, bentonitic in part, rare pyrite granules, moderately indurated.
	trace	SILTSTONE - light brownish grey, grading to medium brownish grey in part, quartz, occasional phlogopite and muscovite flakes, very argillaceous, moderately indurated.
240 - 250	50-55	SHALE - light brownish grey, minor medium grey, subfissile, occasional blocky, silty, bentonitic in part, rare pyrite granules, rare Fe concretions, moderately indurated.
	35-40	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	05-10	SANDSTONE - off white, grading to light greyish white, salt and pepper, upper fine to upper medium grained, minor to common amounts of lower coarse grained, occasional amounts of upper coarse grained, disaggregated throughout, as above, poor intergranular porosity, no visual shows.
250 - 265	45-50	SHALE - light brownish grey, minor medium grey, subfissile, occasional blocky, silty, bentonitic in part, rare pyrite granules, rare Fe concretions, rare fossil fragments - brachiopod, moderately indurated.
	40	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10-15	SANDSTONE - off white, grading to light greyish white, salt and pepper, upper very fine to lower fine grained, minor amounts of upper fine grained, subangular to subrounded, moderately sorted, consolidated, abundant white clay matrix dispersed throughout, frosted quartz, occasional medium to dark chert grains, occasional amounts of carbonaceous laminae scattered throughout, rare amounts of phlogopite flakes, poor intergranular porosity, no visual shows.
265 - 270	90	SHALE - medium grey, minor amounts of medium brownish grey, subfissile, common blocky, silty, bentonitic in part, occasional Fe concretions, rare fossil fragments - brachiopod, rare amounts of micro fracturing -small scale, sealed with crypto crystalline calcite, moderately to well indurated.
	10	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
270 - 275	75	SANDSTONE - off white, grading to light brownish grey in small part, salt and pepper, upper very fine to lower fine grained, minor amounts of upper fine grained, occasional amounts of lower medium to upper coarse grained, subangular to subrounded, moderately to poorly sorted, consolidated, disaggregated within the coarser grain size fraction, abundant white clay matrix dispersed throughout, occasional amounts of calcite and silica cement, rare amounts of siderite cement, frosted quartz, occasional medium to dark chert grains, occasional amounts of carbonaceous laminae and partings scattered throughout, rare amounts of phlogopite flakes, rare light green chlorite grains, poor intergranular porosity, no visual shows.
	20	SHALE - medium grey, occasional amounts of medium brownish grey, subfissile and blocky, silty, bentonitic in part, occasional Fe concretions, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
275 - 280	05	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
	50	SHALE - medium grey, occasional amounts of medium brownish grey, subfissile and blocky, silty, bentonitic in part, rare Fe concretions, moderately indurated.
	25	SILTSTONE - light brownish grey, quartz, minor phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
	25	SANDSTONE - off white, salt and pepper, predominantly upper very fine to lower fine grained, common amounts of lower medium to upper coarse grained, rare amounts of lower very coarse grained, subangular to subrounded, moderately to poorly sorted, consolidated, disaggregated within the coarser grain size fraction, abundant white clay matrix dispersed throughout, occasional amounts of calcite and silica cement, rare amounts of siderite cement, frosted quartz, occasional medium to dark chert grains, occasional amounts of carbonaceous laminae and partings scattered throughout, rare amounts of phlogopite flakes, rare light green chlorite grains, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
280 - 285	80	SANDSTONE - off white, salt and pepper, predominantly upper lower and upper fine grained, minor amounts of lower medium to upper coarse grained, occasional amounts of upper very fine grained, subangular to subrounded, moderately to poorly sorted, consolidated in part, generally becoming more disaggregated within this interval, abundant white clay matrix dispersed throughout, rare amounts of calcite and silica cement, rare amounts of siderite cement, frosted quartz, occasional medium to dark chert grains, rare Feldspar grains, rare rose quartz, rare amounts of carbonaceous argillite fragments, rare amounts of phlogopite flakes, poor intergranular porosity, no visual shows.
	15	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, becoming more Mica, rare amounts of siderite cement, very argillaceous, moderately indurated.
	05	SHALE - medium grey, occasional amounts of medium brownish grey, subfissile and blocky, silty, bentonitic in part, rare Fe concretions, moderately indurated.
285 - 290	80	SHALE - medium grey, common amounts of medium brownish grey, subfissile and blocky, silty, bentonitic in part, occasional Fe concretions, rare amounts of carbonaceous partings, moderately indurated.
	15	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, occasional amounts of lower medium grained, subangular to subrounded, moderately to poorly sorted, consolidated in part, disaggregated in part, frequent white clay matrix dispersed throughout, rare amounts of calcite and silica cement, frosted quartz, minor phlogopite flakes, occasional medium to dark chert grains, rare rose quartz, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
290 - 295	05	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
	85	SHALE - medium grey, grading frequently to medium brownish grey, subfissile and blocky, silty, bentonitic in part, occasional Fe concretions, rare amounts of carbonaceous partings, moderately indurated.
	15	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, occasional amounts of lower medium grained, subangular to subrounded, moderately to poorly sorted, consolidated in part, disaggregated in part, frequent white clay matrix dispersed throughout, rare amounts of calcite and silica cement, frosted quartz, minor phlogopite flakes, occasional medium to dark chert grains, rare rose quartz, poor intergranular porosity, no visual shows.
295 - 300	85	SANDSTONE - white to off white, salt and pepper, predominantly upper very fine grained to lower fine grained, occasional amounts of lower medium grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, disaggregated in part, frequent white clay matrix dispersed throughout, common amounts of calcite and silica cement, frosted quartz, minor phlogopite flakes, occasional medium to dark chert grains, occasional carbonaceous partings, rare rose quartz, poor intergranular porosity, rare amounts of dark brown to black organic specks scattered throughout, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	15	SHALE - dark grey, grading to medium brownish grey in large part, subfissile, occasional blocky, silty, bentonitic in part, occasional to minor amounts of Fe concretions, moderately indurated.
	trace	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
300 - 305	65	SHALE - medium grey, blocky, minor subfissile, silty, bentonitic in part, occasional amounts of carbonaceous partings scattered throughout, occasional amounts of Fe concretions, moderately indurated.
	20	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, consolidated, abundant white clay matrix dispersed throughout, common amounts of calcite and silica cement, frosted quartz, occasional phlogopite flakes, occasional medium to dark chert grains, occasional carbonaceous partings, rare rose quartz, poor intergranular porosity, no visual shows.
	15	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
305 - 310	65	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, consolidated, abundant white clay matrix dispersed throughout, common amounts of calcite cement, minor silica cement, frosted quartz, occasional carbonaceous partings, rare rose quartz, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25	SHALE - medium grey, blocky, minor subfissile, silty, bentonitic in part, occasional amounts of carbonaceous partings scattered throughout, occasional amounts of Fe concretions, moderately indurated.
	10	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
310 - 320	90-95	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, minor amounts of lower and upper medium grained, subangular to subrounded, moderately sorted, consolidated, abundant white clay matrix dispersed throughout, becoming increasingly disaggregated down section, common amounts of calcite cement, minor silica cement, frosted quartz, occasional to minor phlogopite flakes, rare medium to dark chert grains, rare rose quartz, poor intergranular porosity, no visual shows.
	05	SHALE - medium grey, blocky, minor subfissile, silty, bentonitic in part, occasional amounts of carbonaceous partings scattered throughout, occasional amounts of Fe concretions, moderately indurated.
	trace-05	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.
320 - 325	45	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, bentonitic in small part, rare Fe concretions, moderately indurated.
	40	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	15	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, minor amounts of lower and upper medium grained, subangular to subrounded, moderately sorted, consolidated, abundant white clay matrix dispersed throughout, becoming increasingly disaggregated down section, common amounts of calcite cement, minor silica cement, frosted quartz, occasional to minor phlogopite flakes, rare medium to dark chert grains, rare rose quartz, poor intergranular porosity, no visual shows.
325 - 330	55	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	45	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, bentonitic in small part, rare Fe concretions, moderately indurated.
330 - 335	65	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, bentonitic in small part, rare Fe concretions, moderately indurated.
	35	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
335 - 340	60	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	40	SHALE - medium grey, grading to dark grey, subfissile and blocky, very silty, bentonitic in small part, rare Fe concretions, moderately indurated.
340 - 350	55-60	SHALE - medium grey, grading to dark grey, blocky, minor subfissile, very silty, bentonitic in small part, occasional Fe concretions, moderately indurated.
	40-45	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, becoming increasing arenaceous within this interval, moderately indurated.
350 - 355	70	SHALE - medium grey, minor dark grey, subfissile, occasional blocky, silty, occasional Fe concretions, moderately indurated.
	30	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, locally arenaceous -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
355 - 365	90-95	SHALE - dark grey, occasional medium brownish grey, subfissile, occasional blocky, silty, minor Fe concretions, occasional amounts of carbonaceous partings, moderately indurated.
	05-10	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
365 - 375	100	SHALE - dark grey, subfissile, occasional blocky, silty, bentonitic in part, occasional Fe concretions, moderately indurated.
	trace	SILTSTONE - light brownish grey, quartz, occasional phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, moderately indurated.
375 - 380	60	SHALE - dark grey, grading to medium brownish grey, subfissile and blocky, very silty, becoming increasingly bentonitic - rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	25	SILTSTONE - light brownish grey, quartz, common phlogopite and muscovite flakes, rare amounts of siderite cement, very argillaceous, locally slightly pyritic, moderately indurated.
	15	SANDSTONE - off white, grading to light brownish grey, salt and pepper, predominantly upper very fine grained to lower fine grained, minor amounts of lower and upper medium grained, occasional amounts of lower and upper coarse grained, rare amounts of lower very coarse grained, subangular to subrounded, rounded and angular in part, moderately to poorly sorted, predominantly consolidated, disaggregated within the coarser grain size fraction, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional to minor phlogopite flakes, rare medium to dark chert grains, rare siderite grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
380 - 390	50	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, becoming increasingly bentonitic -rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	40-45	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, very arenaceous in large part - floating upper very fine size subangular frosted quartz grains, locally slightly pyritic, moderately indurated.
	05-10	SANDSTONE - off white, grading to light brownish grey, salt and pepper, predominantly upper very fine grained to lower fine grained, minor amounts of lower and upper medium grained, occasional amounts of lower and upper coarse grained, rare amounts of lower very coarse grained, subangular to subrounded, rounded and angular in part, moderately to poorly sorted, predominantly consolidated, disaggregated within the coarser grain size fraction, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional to minor phlogopite flakes, rare medium to dark chert grains, rare siderite grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
390 - 400	50-55	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, very arenaceous in large part - floating upper very fine size subangular frosted quartz grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	40	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, becoming increasingly bentonitic -rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	05-10	SANDSTONE - off white, grading to light brownish grey, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, minor phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
400 - 410	40	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, very arenaceous in large part - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	40	SHALE - medium grey, grading to medium brownish grey, subfissile and blocky, very silty, becoming increasingly bentonitic -rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	20	SANDSTONE - off white, grading to light brownish grey, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, rare phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
410 - 420	55-60	SHALE - medium grey, grading to dark grey, subfissile and blocky, very silty, becoming increasingly bentonitic - rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	30	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, very arenaceous in large part - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	10-15	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, rare phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
420 - 430	70-75	SHALE - dark grey, minor medium grey, subfissile and blocky, very silty, becoming increasingly bentonitic - rare amounts of light grey bentonite laminae, rare biotite flakes, rare Fe concretions, moderately indurated.
	15	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10-15	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
430 - 435	80-85	SHALE - dark grey, minor medium grey, subfissile and blocky, silty, bentonitic, rare Fe concretions, moderately indurated.
	10	SILTSTONE - light brownish grey, quartz, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, arenaceous in part -floating upper very fine size subangular frosted quartz grains, moderately indurated.
	05-10	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and silica cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
435 - 445	65-75	SHALE - dark grey, minor medium grey, blocky, minor subfissile, silty, bentonitic, rare Fe concretions, moderately indurated.
	25-35	SILTSTONE - light brownish grey, grading to off white, quartzose, frequent phlogopite and muscovite flakes, rare glauconite grains, rare amounts of siderite cement, very argillaceous, very arenaceous in part -floating upper very fine size subangular frosted quartz grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately to poorly sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, rare glauconite grains, rare rose quartz, poor intergranular porosity, no visual shows.
445 - 450	50-55	SILTSTONE - off white, grading to light brownish grey, quartzose, frequent phlogopite and muscovite flakes, rare glauconite grains, common calcite cement, very argillaceous, very arenaceous in part - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	45-50	SHALE - medium grey, minor dark grey, blocky, minor subfissile, silty, bentonitic, rare Fe concretions, moderately indurated.
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
450 - 460	65-70	SHALE - medium grey to dark grey, blocky, minor subfissile, silty, bentonitic, minor Fe concretions, moderately indurated.
	30-35	SILTSTONE - off white, grading to light brownish grey, quartzose, frequent phlogopite and muscovite flakes, rare glauconite grains, common calcite cement, very argillaceous, very arenaceous in part - floating upper very fine size subangular frosted quartz grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
460 - 465	60	SHALE - medium grey to dark grey, blocky, minor subfissile, silty, bentonitic, minor Fe concretions, moderately indurated.
	40	SILTSTONE - off white, grading to light brownish grey, quartzose, frequent phlogopite and muscovite flakes, rare glauconite grains, common calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, rare medium to dark chert grains, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
465 - 475	65-70	SILTSTONE - off white, grading to light brownish grey, quartzose, occasional carbonaceous laminae, occasional phlogopite and muscovite flakes, rare glauconite grains, occasional calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	30-35	SHALE - medium grey to dark grey, blocky, minor subfissile, silty, bentonitic, minor Fe concretions, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	trace	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, occasional phlogopite flakes, occasional carbonaceous argillite fragments, rare medium to dark chert grains, poor intergranular porosity, no visual shows.
475 - 487.9	40-45	SILTSTONE - off white, quartzose, occasional carbonaceous laminae, occasional phlogopite and muscovite flakes, rare glauconite grains, occasional calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	40	SHALE - medium grey, grading to dark grey downsection, blocky, minor subfissile, silty, bentonitic, minor Fe concretions, moderately indurated.
	15-20	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite and siderite cement, frosted quartz, common phlogopite flakes, occasional carbonaceous argillite fragments, rare medium to dark chert grains, poor intergranular porosity, no visual shows.
487.9		SURFACE CASING LANDING DEPTH

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
487.9 - 490	60	SHALE - dark grey downsection, blocky, minor subfissile, silty, bentonitic, moderately indurated.
	40	CEMENT
490 - 500	50	SHALE - dark grey, blocky, minor subfissile, silty, bentonitic, moderately indurated.
	25	SILTSTONE - light grey, grading to light brownish grey, quartzose, rare glauconite grains, rare calcite cement, very argillaceous, moderately indurated.
	25	CEMENT
500 - 505	55	SILTSTONE - light grey, grading to light brownish grey and off white, quartzose, rare glauconite grains, rare calcite cement, very argillaceous, moderately indurated.
	35	SHALE - dark grey, grading to dark greyish black in small part, subfissile, occasional blocky, silty, very bentonitic in part, occasional white bentonite laminae dispersed throughout, indistinct carbonized organic detritus, moderately indurated.
	10	CEMENT
505 - 510	55	SHALE - dark grey, blocky and subfissile, very silty, bentonitic in small part, moderately indurated.
	45	SILTSTONE - light grey and off white, as above, increase in calcite cement, very argillaceous, moderately indurated.
510 - 515	65	SHALE - dark grey, subfissile, minor blocky, silty, bentonitic in part, very small scale micro fractures - sealed with crypto crystalline calcite, moderately indurated.
	35	SILTSTONE - light grey and off white, quartzose, rare phlogopite flakes, calcite cement, very argillaceous, very arenaceous in part -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
515 - 520	80	SHALE - dark grey, minor amounts of medium grey, subfissile, minor blocky, silty, bentonitic, rare iron concretions, moderately indurated.
	20	SILTSTONE - light grey and off white, quartzose, occasional finely laminae with dark brown organic matter, rare phlogopite flakes, rare glauconite grains, calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
520 - 525	90	SHALE - dark grey, grading to dark greyish black in small part, subfissile, minor blocky, silty, very bentonitic in part, minor amounts of dark brown to black organic detritus, locally very slightly bituminous, rare iron concretions, moderately indurated.
	10	SILTSTONE - light grey and off white, quartzose, occasional finely laminae with dark brown organic matter, rare phlogopite flakes, rare glauconite grains, calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
525 - 530	90	SHALE - dark grey, minor medium grey, subfissile and blocky, silty, bentonitic in part, rare iron concretions, moderately indurated.
	10	SILTSTONE - light grey and off white, quartzose, occasional glauconite grains. slightly increase in proportion of glauconite grains, calcite cement, very argillaceous, arenaceous in part -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
530 - 540	85	SHALE - dark grey, minor dark greyish black, subfissile and blocky, silty, very bentonitic in part, occasional white bentonite laminae dispersed throughout, occasional glauconite grains, rare amounts of dark brown carbonized organic detritus, rare iron concretions, very slightly bituminous in small part, moderately indurated.
	15	SILTSTONE - light grey and off white, quartzose, occasional glauconite grains, calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
540 - 550	85	SHALE - dark grey, minor medium grey, rare dark greyish black, subfissile and blocky, silty, bentonitic in part, occasional muscovite and phlogopite flakes, rare white bentonite laminae dispersed throughout, rare glauconite grains, rare iron concretions, moderately indurated.
	15	SILTSTONE - light grey, grading to very light brownish grey in part, quartzose, rare glauconite grains, rare amounts of dark greyish black carbonized organic detritus, calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
550 - 565	85-90	SHALE - dark grey and dark greyish black, subfissile, fissile and splintery in part, silty, very bentonitic in part, occasional white and light grey bentonite laminae dispersed throughout, occasional amounts of medium to dark brown carbonized organic detritus (chitin), rare muscovite and phlogopite flakes, rare glauconite grains, rare iron concretions, very slightly bituminous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10-15	SILTSTONE - light grey, grading to light brownish grey, quartzose, occasional dark brown carbonized organic detritus (chitin), rare glauconite grains, calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
565 - 570	95	SHALE - dark grey, rare dark greyish black, subfissile, minor blocky, very silty, bentonitic in part, rare white and light grey bentonite laminae dispersed throughout, rare glauconite grains, rare iron concretions, moderately indurated.
	05	SILTSTONE - light grey, grading to light brownish grey, quartzose, rare glauconite grains, calcite cement, very argillaceous, moderately indurated.
570 - 580	100	SHALE - dark grey, common medium grey, rare dark greyish black, subfissile, minor blocky, very silty, bentonitic in part, occasional white and light grey, and light blue bentonite laminae dispersed throughout, rare glauconite grains, rare dark brown carbonized organic detritus, rare iron concretions, moderately indurated.
580 - 600	85-90	SHALE - medium grey, common dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare iron concretions, moderately indurated.
	10-15	SILTSTONE - light brownish grey, grading to medium brownish grey, quartzose, rare glauconite grains, minor siderite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
600 - 610	90	SHALE - medium grey, common dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare iron concretions, moderately indurated.
	10	SILTSTONE - light brownish grey, grading to medium brownish grey, quartzose, rare glauconite grains, minor siderite cement, very argillaceous, moderately indurated.
610 - 620	100	SHALE - dark grey, subfissile, minor blocky, silty, bentonitic in part, rare iron concretions, moderately indurated.
	trace	SILTSTONE - light brownish grey, grading to medium brownish grey, quartzose, rare glauconite grains, minor siderite cement, very argillaceous, moderately indurated.
620 - 640	95-100	SHALE - medium and dark grey, subfissile, minor blocky, silty, bentonitic in part, rare white bentonite laminae dispersed throughout, rare iron concretions, moderately indurated.
	trace-05	SILTSTONE - light brownish grey, grading to medium grey, quartzose, rare glauconite grains, minor siderite cement, very argillaceous, moderately indurated.
640 - 645	70	SHALE - medium and dark grey, subfissile, minor blocky, silty, very bentonitic in part, rare white bentonite laminae dispersed throughout, rare iron concretions, moderately indurated.
	30	SILTSTONE - off white, grading to light brownish grey, quartzose, minor to common glauconite grains, rare calcite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
645 - 650	50	SHALE - medium brownish grey, grading to medium grey, blocky, minor subfissile, silty, bentonitic in part, rare glauconite grains, rare iron concretions, moderately indurated.
	50	SILTSTONE - off white, grading to light brownish grey, quartzose, common glauconite grains, rare calcite cement, very argillaceous, moderately indurated.
650 - 680	65-70	SILTSTONE - medium grey, quartzose, minor to common amounts of glauconite grains, occasional to minor muscovite flakes, rare calcite cement, very argillaceous, moderately indurated.
	30-35	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey, blocky, common subfissile, very silty, bentonitic in part, rare to occasional iron concretions, rare glauconite grains, moderately indurated.
680 - 690	40	SILTSTONE - off white, quartzose, minor glauconite grains, occasional calcite cement, very argillaceous, locally very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	40	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey, blocky, common subfissile, very silty, bentonitic in part, occasional iron concretions, rare fossil fragments - brachiopod, moderately indurated.
	20	SANDSTONE - off white, salt and pepper, predominantly upper very fine grained, subangular, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite cement, frost quartz, occasional glauconite grains, rare phlogopite flakes, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
690 - 700	40	SILTSTONE - light and medium brownish grey, minor off white, quartzose, minor glauconite grains, occasional calcite and siderite cement, very argillaceous, locally very arenaceous -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	30	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey and dark greyish black, blocky, common subfissile, very silty, bentonitic in part, very slightly carbonaceous in part, occasional iron concretions, moderately indurated.
	30	SANDSTONE - off white, grading to white salt and pepper, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular, minor subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite cement, frost quartz, occasional glauconite grains, rare phlogopite flakes, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
700 - 710	60-65	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey, blocky, common subfissile, very silty, bentonitic in part, occasional iron concretions, moderately indurated.
	25	SILTSTONE - light and medium brownish grey, minor off white, quartzose, minor glauconite grains, occasional calcite and siderite cement, very argillaceous, locally very arenaceous -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10-15	SANDSTONE - off white, grading to white salt and pepper, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular, minor subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite cement, frost quartz, occasional glauconite grains, rare phlogopite flakes, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
710 - 720	40	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular, minor subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite cement, minor silica cement, frost quartz, occasional phlogopite and muscovite flakes, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
	30-35	SILTSTONE - light and medium brownish grey, minor off white, quartzose, minor glauconite grains, occasional calcite and siderite cement, very argillaceous, locally very arenaceous -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	25-30	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey, blocky, common subfissile, very silty, bentonitic in part, occasional iron concretions, moderately indurated.
720 - 730	40	SILTSTONE - light and medium brownish grey, minor off white, quartzose, minor glauconite grains, occasional calcite and siderite cement, very argillaceous, locally very arenaceous -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	35-40	SHALE - medium brownish grey, grading to medium grey and minor amounts of dark grey, blocky, common subfissile, very silty, bentonitic in part, occasional iron concretions, moderately indurated.
	20-25	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, subangular, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, locally common amounts of calcite cement, minor silica cement, frost quartz, occasional phlogopite and muscovite flakes, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
730 - 745	60-65	SHALE - dark grey, occasional dark brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional iron concretions, rare glauconite grains, moderately indurated. 25 SILTSTONE - light and medium brownish grey, minor medium grey, quartzose, rare glauconite grains, occasional calcite and siderite cement, very argillaceous, arenaceous in part to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	10-15	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, subangular, moderately to well sorted, predominantly consolidated, occasional amounts of clay matrix dispersed throughout, locally common amounts of calcite cement, minor silica cement, frost quartz, rare glauconite grains, rare phlogopite flakes, poor intergranular porosity, no visual shows.
745 - 760	50-55	SHALE - dark grey, grading to medium brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional iron concretions, rare glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25	SILTSTONE - light and medium brownish grey, minor medium grey, quartzose, rare glauconite grains, occasional calcite and siderite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	20-25	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, minor amounts of lower fine grained, subangular, moderately sorted, predominantly consolidated, abundant amounts of clay matrix dispersed throughout, minor silica cement, frost quartz, rare to occasional glauconite grains, glauconite proportion increasing down section over this interval, poor intergranular porosity, no visual shows.
760 - 770	70-75	SHALE - dark grey, grading to medium grey, subfissile and blocky, silty, bentonitic in part, occasional iron concretions, rare muscovite flakes, rare glauconite grains, moderately indurated.
	25-30	SILTSTONE - light and medium brownish grey, minor medium grey, quartzose, rare glauconite grains, minor calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
770 - 775	65	SHALE - dark grey, grading to medium brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional iron concretions, rare glauconite grains, moderately indurated.
	20	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, subangular, moderately sorted, predominantly consolidated, abundant amounts of clay matrix dispersed throughout, minor silica cement, frost quartz, rare glauconite grains, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
775 - 780	15	SILTSTONE - off white, grading to light brownish grey, quartzose, rare glauconite grains, occasional calcite cement, very argillaceous, arenaceous in part to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	65	SHALE - dark grey, grading to medium brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional iron concretions, rare glauconite grains, moderately indurated.
	30	SILTSTONE - off white, grading to light brownish grey, quartzose, rare glauconite grains, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
780 - 795	05	SANDSTONE - off white, grading to very light brownish grey in poor, salt and pepper, predominantly upper very fine grained, subangular, moderately sorted, predominantly consolidated, abundant amounts of clay matrix dispersed throughout, minor silica cement, frost quartz, rare glauconite grains, poor intergranular porosity, no visual shows.
	85-90	SHALE - dark grey, grading to medium grey, rare amounts of dark greyish black, subfissile and blocky, very silty, bentonitic in part, occasional iron concretions, locally very slightly carbonaceous, rare glauconite grains, moderately indurated.
	10-15	SILTSTONE - medium grey and medium brownish grey, quartzose, rare glauconite grains, rare calcite cement, very argillaceous, moderately indurated.
795 - 800	75	SHALE - medium grey, minor dark grey, subfissile and blocky, very silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25	SILTSTONE - off white, grading to light brownish grey, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, moderately indurated.
800 - 820	70-75	SHALE - medium to dark grey, subfissile and blocky, very silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.
	25-30	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine to lower fine subangular frosted quartz grains scattered throughout, moderately indurated.
820 - 825	55	SHALE - medium to dark grey, subfissile and blocky, very silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.
	45	SILTSTONE - off white, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine to lower fine subangular frosted quartz grains scattered throughout, moderately indurated.
825 - 830	70	SHALE - medium to dark grey, subfissile, minor blocky, silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.
	30	SILTSTONE - off white, grading to light brownish grey in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, very arenaceous throughout to floating upper very fine to lower fine subangular frosted quartz grains scattered throughout, moderately indurated.
830 - 835	50	SHALE - medium to dark grey, blocky, minor subfissile, very silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	50	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, very arenaceous throughout - floating upper very fine to lower fine subangular frosted quartz grains scattered throughout, moderately indurated.
835 - 845	55-60	SHALE - medium to dark grey, subfissile and blocky, very silty, bentonitic in part, occasional to minor amounts of iron concretions, moderately indurated.
	35-40	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, very arenaceous throughout to floating upper very fine to lower fine subangular frosted quartz grains scattered throughout, moderately indurated.
845 - 855	65-70	SHALE - medium to dark grey, subfissile and blocky, very silty, bentonitic in part, occasional to minor amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.
	30-35	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, moderately indurated.
855 - 870	70-75	SHALE - medium to dark grey, minor medium brownish grey, subfissile and blocky, very silty, bentonitic in part, rare amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.
	25-30	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
870 - 875	70	SHALE - medium to dark grey, minor medium brownish grey, subfissile and blocky, very silty, bentonitic in part, rare amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.
	30	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
875 - 885	85-90	SHALE - medium to dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.
	10-15	SILTSTONE - light brownish grey, occasional off white and light greyish white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
885 - 895	65-70	SHALE - medium to dark grey, minor medium brownish grey, subfissile and blocky, very silty, bentonitic in part, occasional amounts of iron concretions, moderately indurated.
	30-35	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
895 - 900	80	SHALE - medium to dark grey, minor medium brownish grey, subfissile and blocky, very silty, bentonitic in part, rare amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
930 - 935	70	SHALE - dark grey, minor medium grey, blocky and subfissile, very silty, bentonitic in part, rare amounts of iron concretions, moderately indurated.
	30	SILTSTONE - off white, grading to light brownish grey in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, moderately indurated.
935 - 945	85-90	SHALE - medium grey, minor dark grey, blocky, minor subfissile, silty, bentonitic in part, rare amounts of iron concretions, rare glauconite grains, moderately indurated.
	10-15	SILTSTONE - light greyish white, grading to light brownish grey in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, locally becoming very arenaceous - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
945 - 960	85-90	SHALE - medium grey, minor dark grey, blocky, minor subfissile, silty, bentonitic in part, rare amounts of iron concretions, rare glauconite grains, moderately indurated.
	10-15	SILTSTONE - light grey, grading to medium grey in part, quartzose, rare calcite cement, very argillaceous, moderately indurated.
	trace	MARLSTONE - medium grey and medium brown, very calcareous, well indurated.
960 - 975	80-85	SHALE - medium grey, minor dark grey, blocky, minor subfissile, silty, bentonitic in part, rare amounts of iron concretions, rare glauconite grains, moderately indurated.
	15-20	SILTSTONE - light grey, grading to medium grey in part, quartzose, rare calcite cement, very argillaceous, locally becoming arenaceous in part to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	20	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
900 - 910	70-75	SHALE - medium to dark grey, minor medium brownish grey, subfissile and blocky, very silty, bentonitic in part, rare amounts of iron concretions, rare amounts of carbonaceous organic detritus, moderately indurated.
	15-20	SANDSTONE - light brownish grey, salt and pepper, predominantly upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, locally common amounts of calcite and silica cement, frost quartz, minor glauconite grains, occasional phlogopite flakes, poor intergranular porosity, no visual shows.
	05-10	SILTSTONE - off white, grading to white in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
910 - 930	85-90	SHALE - dark grey, minor medium grey, blocky and subfissile, very silty, bentonitic in part, rare amounts of iron concretions, moderately indurated.
	10-15	SILTSTONE - off white, grading to light brownish grey in part, quartzose, rare phlogopite and muscovite flakes, occasional calcite cement, very argillaceous, moderately indurated.
	trace	MARLSTONE - medium brown, occasional medium grey, very calcareous, well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
975 - 980	75	SHALE - medium to dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare amounts of iron concretions, moderately indurated.
	25	SILTSTONE - medium to dark grey, quartzose, rare silica cement, very argillaceous, moderately indurated.
	trace	THOLEITE VOLCANIC - black, micro crystalline, fractured in small part, rare amounts of medium tan, coarse crystalline anhedral calcite and dolomite spar, well indurated.
980 - 1015	85-90	SHALE - medium to dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare to occasional amounts of iron concretions, moderately indurated.
	10-15	SILTSTONE - medium grey, minor light grey, quartzose, rare silica and calcite cement, very argillaceous, moderately indurated.
1015 - 1030	85-90	SHALE - medium to dark grey, occasional medium brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional amounts of iron concretions, rare glauconite grains, moderately indurated.
	10-15	SILTSTONE - medium grey, minor light grey, quartzose, rare silica and calcite cement, very argillaceous, moderately indurated.
1030 - 1045	85-90	SHALE - medium to dark grey, occasional medium brownish grey, blocky, minor subfissile, very silty, bentonitic in part, occasional amounts of iron concretions, rare glauconite grains, moderately indurated.
	10-15	SILTSTONE - medium grey, minor light grey, quartzose, rare silica and calcite cement, very argillaceous, moderately indurated.
1045 - 1050	90	SHALE - medium to dark grey, subfissile, minor blocky, very silty, bentonitic in part, occasional amounts of iron concretions, rare glauconite grains, rare pyrite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10	SILTSTONE - medium grey, minor light grey, quartzose, rare pyrite framboids, rare silica and calcite cement, very argillaceous, moderately indurated.
1050 - 1055	75	SHALE - medium grey, grading to medium brownish grey, subfissile, minor blocky, very silty, bentonitic in part, rare amounts of iron concretions, moderately indurated.
	15	SILTSTONE - light grey, light greyish white, minor off white and light brownish grey, quartzose, rare glauconite grains, rare silica and calcite cement, very argillaceous, moderately indurated.
	10	SANDSTONE - off white, grading to light brownish grey, predominantly upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silica and minor amounts of calcite cement, frost quartz, common glauconite grains, rare medium grey and medium brown chert, rare phlogopite flakes, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1055 - 1060	70	SHALE - medium grey, occasional dark grey, rare amounts of dark greyish black, subfissile, minor blocky, very silty, bentonitic in part, rare amounts of Iron concretions, moderately indurated.
	20	SANDSTONE - off white, grading to light brownish grey, predominantly upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silica and minor amounts of calcite cement, frost quartz, common glauconite grains, rare medium grey and medium brown chert, poor intergranular porosity, no visual shows.
	10	SILTSTONE - light grey, grading to medium grey, minor off white and light brownish grey, quartzose, occasional glauconite grains, rare silica and calcite cement, very argillaceous, moderately indurated.
1060 - 1070	45	SILTSTONE - medium grey, grading to medium brownish grey, minor off white and light brownish grey, quartzose, occasional glauconite grains, rare silica cement, very argillaceous, moderately indurated.
	40	SANDSTONE - off white, grading to light brownish grey, predominantly upper very fine grained, subangular, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, silica cement, frost quartz, common glauconite grains, rare medium grey and medium brown chert, poor intergranular porosity, no visual shows.
	15	SHALE - dark grey, occasional dark greyish black, subfissile and blocky, silty, bentonitic in part, rare amounts of Iron concretions, rare pyrite granules, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1070 - 1085	55-60	SILTSTONE - light and medium brownish grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	30	SANDSTONE - off white, grading to light brownish grey, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, becoming increasingly argillaceous within this interval, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare carbonaceous argillite fragments, poor intergranular porosity, no visual shows.
	10-15	SHALE - dark grey, occasional dark greyish black, subfissile, minor blocky, silty, bentonitic in part, rare amounts of Iron concretions, moderately indurated.
1085 - 1095	45-50	SILTSTONE - medium grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	45	SANDSTONE - light greyish white, grading to light and medium grey in part, predominantly upper very fine grained, rare amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare carbonaceous argillite fragments, poor intergranular porosity, questionable amounts of medium brown spotty organic staining, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	05-10	SHALE - medium grey, minor dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare amounts of Iron concretions, moderately indurated.
1095 - 1100	60	SANDSTONE - light greyish white, grading to off white in part, predominantly upper very fine grained, minor amounts of lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, less argillite than above interval, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare carbonaceous argillite fragments, rare muscovite flakes, poor intergranular porosity, questionable amounts of medium brown spotty organic staining, no visual shows.
	25	SILTSTONE - medium grey, occasional amounts of medium brownish grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15	SHALE - medium grey, minor dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare amounts of Iron concretions, moderately indurated.
	trace	MARLSTONE - dark brown, calcareous, well indurated.
1100 - 1105	50	SANDSTONE - light greyish white, grading to off white in part, predominantly upper very fine grained to lower fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, less argillite than above interval, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare carbonaceous argillite fragments, rare muscovite flakes, poor intergranular porosity, questionable amounts of medium brown spotty organic staining, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	35	SILTSTONE - medium grey, occasional amounts of medium brownish grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15	SHALE - dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare amounts of Iron concretions, rare pyrite grains, moderately indurated.
	trace	MARLSTONE - dark brown, calcareous, well indurated.
1105 - 1110	50	SHALE - dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare amounts of Iron concretions, rare pyrite grains, moderately indurated.
	35	SILTSTONE - medium grey, occasional amounts of medium brownish grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15	SANDSTONE - light greyish white, grading to off white in part, predominantly upper very fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare muscovite flakes, poor intergranular porosity, questionable amounts of medium brown spotty organic staining, no visual shows.
	trace	MARLSTONE - dark brown, calcareous, well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1110 - 1115	80	SHALE - dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare amounts of Iron concretions, rare pyrite grains, moderately indurated.
	20	SILTSTONE - medium grey, occasional amounts of medium dark grey, quartzose, rare glauconite grains, rare silica and siderite cement, very argillaceous, moderately indurated.
	trace	MARLSTONE - dark brown, calcareous, well indurated.
1115 - 1125	35	SILTSTONE - medium grey, occasional amounts of medium brownish grey, quartzose, occasional glauconite grains, occasional muscovite flakes, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	35	SANDSTONE - light greyish white, grading to off white in part, predominantly upper very fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, abundant white clay matrix dispersed throughout, silica cement, rare amounts of calcite cement, frost quartz, common glauconite grains, rare muscovite flakes, poor intergranular porosity, questionable amounts of medium brown spotty organic staining, no visual shows.
	30	SHALE - dark grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare amounts of Iron concretions, rare pyrite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1125 - 1145	50	SANDSTONE - medium brown, grading to medium tan in part, upper very fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, very silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogopite and muscovite flakes, poor intergranular porosity, common to frequent amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellow dry fluorescence, slow light yellowish white halo cut fluorescence, white ring on spot plate after evaporation of solvent.
	35-45	SILTSTONE - medium brownish grey, common dark brownish grey, quartzose, frequent to abundant glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout to floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	05-15	SHALE - dark grey, minor medium grey, blocky, minor subfissile, very silty, bentonitic in part, rare glauconite grains, rare amounts of iron concretions, rare pyrite grains, becoming increasingly pyritic down section rare amounts of pyritized worm burrows, rare pyritized fossil fragments - brachiopods, occasional glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1145 - 1150	70	SANDSTONE - medium brown, grading to medium tan in part, occasional amounts of off white, upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, very silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellow dry fluorescence, slow light yellowish white halo cut fluorescence, white ring on spot plate after evaporation of solvent.
	20	SILTSTONE - medium to dark brownish grey, quartzose, frequent to abundant glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	10	SHALE - dark grey, grading to dark greyish black in small part, subfissile, very silty, bentonitic in part, carbonaceous in part, minor to common amounts of glauconitic rich Iron concretions, occasional glauconite grains, rare pyrite grains, rare amounts of pyritized worm burrows, rare pyritized fossil fragments -brachiopods, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1150 - 1155	40	SANDSTONE - light grey, grading to off white, upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, disaggregated in small part, common white clay matrix dispersed throughout, very silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogopite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellow dry fluorescence, slow light yellowish white halo cut fluorescence, white ring on spot plate after evaporation of solvent.
	35	SHALE - dark grey, grading to dark greyish black in large part, subfissile, silty, bentonitic in part, carbonaceous in part, minor amounts of glauconitic rich Iron concretions, occasional glauconite grains, rare pyrite grains, rare amounts of pyritized worm burrows, rare pyritized fossil fragments -brachiopods, moderately indurated.
	25	SILTSTONE - dark brownish grey, quartzose, frequent to abundant glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1155 - 1165	45-50	SANDSTONE - medium tan, grading to off white, occasional medium brown, upper very fine grained, minor to common amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, very silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, staining generally increasing down section over this interval, strong petroliferous odor when drying sample, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate light yellowish white massive blooming cut fluorescence, white ring on spot plate after evaporation of solvent.
	35	SILTSTONE - medium to dark brownish grey, quartzose, frequent to abundant glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15-20	SHALE - dark grey, grading to dark greyish black in large part, subfissile, silty, bentonitic in part, carbonaceous in part, becoming increasing carbonaceous within this interval, occasional amounts of glauconitic rich Iron concretions, occasional glauconite grains, rare pyrite grains, rare amounts of pyritized worm burrows, rare pyritized fossil fragments - brachiopods, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1165 - 1170	40	SANDSTONE - medium tan, grading to off white, occasional medium brown, upper very fine grained, minor to common amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, very silty to becoming more silty in this interval, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, frequent to abundant amounts of medium to dark brown spotty organic staining, staining generally increasing down section over this interval, strong petroliferous odor when drying sample, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate light yellowish white massive blooming cut fluorescence, white ring on spot plate after evaporation of solvent.
	35	SILTSTONE - medium to dark brownish grey, quartzose, frequent to abundant glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	25	SHALE - dark grey, grading to dark greyish black in large part, subfissile, minor blocky, silty, bentonitic in part, carbonaceous in part, becoming increasing carbonaceous within this interval, occasional glauconite grains, rare pyrite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1170 - 1175	60	SANDSTONE - medium brown, grading to off white, upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogopite and muscovite flakes, poor intergranular porosity, abundant amounts of medium to dark brown spotty organic staining, strong petroliferous odor when drying sample, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate bright light yellowish white massive blooming cut fluorescence, white ring on spot plate after evaporation of solvent.
	25	SILTSTONE - medium to dark brownish grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15	SHALE - dark grey, grading to dark greyish black in large part, subfissile, minor blocky, silty, bentonitic in part, carbonaceous, loc' pyritic, occasional glauconite grains, rare pyrite grains, moderately indurated.
1175 - 1185	40-45	SILTSTONE - medium to dark brownish grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	40	SANDSTONE - medium brown, grading to off white, upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, abundant amounts of medium to dark brown spotty organic staining, strong petroliferous odor when drying sample, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate bright light yellowish white massive blooming cut fluorescence, white ring on spot plate after evaporation of solvent.
15-20		SHALE - dark grey, grading to dark greyish black in large part, subfissile, minor blocky, silty, bentonitic in part, carbonaceous, loc', pyritic, occasional amounts of Iron concretions, rare glauconite grains, rare pyrite grains, rare amounts of small scale micro fracturing - sealed with coarse crystalline calcite, moderately indurated.
1185 - 1200	40-45	SILTSTONE - medium to dark brownish grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25-30	SANDSTONE - medium brown, grading to off white, upper very fine grained, subangular, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate dull light yellowish white blooming and streaming cut fluorescence, white ring on spot plate after evaporation of solvent.
	25-30	SHALE - dark grey, grading to dark greyish black in large part, subfissile, minor blocky, silty, bentonitic in part, carbonaceous, loc' pyritic, occasional amounts of Iron concretions, rare glauconite grains, rare pyrite grains, moderately indurated.
1200 - 1205	60	SHALE - dark grey, grading to dark greyish black in large part, subfissile, minor blocky, silty, bentonitic in part, carbonaceous, occasional amounts of Iron concretions, rare pyrite grains, moderately indurated.
	25	SILTSTONE - medium to dark brownish grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	15	SANDSTONE - medium brown, grading to dark brown, upper very fine grained, subangular, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate dull light yellowish white blooming and streaming cut fluorescence, white ring on spot plate after evaporation of solvent.
1205 - 1210	70	SHALE - dark greyish black, subfissile, minor blocky, silty, bentonitic in part, carbonaceous becoming more carbonaceous than above interval, occasional amounts of iron concretions, rare glauconite grains. moderately indurated.
	25	SILTSTONE - medium to dark brownish grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	05	SANDSTONE - medium brown, upper very fine grained, subangular, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogpoite and muscovite flakes, poor intergranular porosity, common amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate dull light yellowish white blooming and streaming cut fluorescence, white ring on spot plate after evaporation of solvent.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1210 - 1215	50	SANDSTONE - medium brown, grading to medium brownish grey, upper very fine grained, subangular, moderately sorted, predominantly consolidated, common white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, common glauconite grains, rare phlogopite and muscovite flakes, poor intergranular porosity, abundant amounts of medium to dark brown spotty organic staining, no wet fluorescence trace amounts of dull spotty medium yellowish cream dry fluorescence, immediate dull light yellowish white blooming and streaming cut fluorescence, white ring on spot plate after evaporation of solvent.
	35	SILTSTONE - medium to dark brownish grey, grading to dark grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous throughout -floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
	15	SHALE - dark grey, grading to dark brownish grey, blocky, minor subfissile, silty, bentonitic in part, occasional amounts of Iron concretions, rare glauconite grains, moderately indurated.
1215 - 1220	60	SILTSTONE - medium to dark brownish grey, grading to dark grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, questionable amounts of dark brown dead oil staining, moderately indurated.
	40	SHALE - medium to dark grey, blocky, minor subfissile, silty, bentonitic in part, occasional amounts of Iron concretions, moderately indurated.
1220 - 1250	55-65	SHALE - dark grey, grading to dark greyish black in part, subfissile, minor fissile, silty, bentonitic in part, carbonaceous in part, rare to occasional amounts of Iron concretions, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	35-45	SILTSTONE - medium to dark brownish grey, grading to dark grey, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, questionable amounts of dark brown dead oil staining, moderately indurated.
1250 - 1275	75-80	SHALE - dark grey, grading to dark greyish black in part, subfissile, minor fissile, silty, bentonitic in part, carbonaceous in part, rare amounts of Iron concretions, occasional to rare amounts of pyrite granules, moderately indurated.
	20-25	SILTSTONE - medium to dark brownish grey, grading to medium grey in part, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, loc' arenaceous in part - floating upper very fine size subangular frosted quartz grains scattered throughout, moderately indurated.
1275 - 1290	85-90	SHALE - dark grey and dark greyish black in part, grading to dark brownish grey in part, subfissile, minor fissile, silty, micaceous in part, bentonitic in part, carbonaceous in part, locally common to abundant glauconite grains, rare amounts of Iron concretions, occasional to rare amounts of pyrite granules, moderately indurated.
	10-15	SILTSTONE - medium to dark brownish grey, grading to medium grey in part, quartzose, frequent glauconite grains, rare silica and siderite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1290 - 1305	90	SHALE - dark greyish black, blocky, minor subfissile, silty, micaceous in part, bentonitic in part, carbonaceous in part, becoming very finely laminated in part with dark grey bentonite, rare amounts of Iron concretions, moderately indurated.
	10	SILTSTONE - medium grey, grading to dark brownish grey in small part, quartzose, minor glauconite grains, rare silica and siderite cement, very argillaceous, moderately indurated.
1305 - 1320	85-95	SHALE - dark grey and dark greyish black in part, grading to dark brownish grey in part, subfissile, minor fissile, silty, micaceous in part, bentonitic in part, carbonaceous in part, locally common to abundant glauconite grains, rare amounts of Iron concretions, occasional to rare amounts of pyrite granules, moderately indurated.
	05-15	SILTSTONE - medium grey, quartzose, minor glauconite grains, rare silica and siderite cement, very argillaceous, moderately indurated.
1320 - 1322	90	SHALE - dark greyish black, blocky, minor subfissile, silty, micaceous in part, bentonitic in part, carbonaceous in part, occasional amounts of very thin coal laminae, rare amounts of Iron concretions, moderately indurated.
	05	SILTSTONE - medium grey, grading to dark brownish grey in small part, quartzose, common glauconite grains, rare silica and siderite cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	05	SANDSTONE - off white, grading to medium grey in part, predominantly upper very fine grained, minor amounts of lower fine grained, subangular, moderately sorted, consolidated, minor amounts of off white clay matrix dispersed throughout, silty, calcite cement, minor silica cement, frost quartz, frequent glauconite grains, rare fossil fragments - ostracod (?), argillaceous, poor intergranular porosity, no visual shows.

1322 - 1329.4

CORE NO. 1: GARBUTT FORMATION

See CORE RECORD

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1339 - 1345	100	SHALE - dark grey, grading to dark brownish grey, blocky, minor subfissile, silty, bentonitic, occasional amounts of dark brown carbonized organic detritus, rare fossil fragments - ostracod (?), rare white arenaceous - upper very fine grained, bentonite laminae, rare amounts of Fe concretions, moderately indurated.
	trace	SILTSTONE - medium grey, quartzose, rare silica cement, very argillaceous, moderately indurated.
1345 - 1365	95-100	SHALE - dark grey, grading to dark brownish grey, and dark greyish black, blocky, common subfissile to fissile, very silty, locally very fine laminated with light grey calcareous siltstone, bentonitic, becoming pyritic in part down section, occasional amounts of dark brown carbonized organic detritus, rare fossil fragments - ostracod (?) and brachiopod - locally replaced with pyrite, rare pyrite granules, rare amounts of Fe concretions, moderately indurated.
	trace-05	BENTONITE - white, grading to light green and light grey, very arenaceous - common amounts of floating upper fine to upper medium grained subrounded frosted quartz grains, common phlogopite flakes dispersed throughout, occasional amounts of carbonaceous laminae, poorly indurated.
	trace	SILTSTONE - medium grey, quartzose, rare silica cement, very argillaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1365 - 1385	95-100	SHALE - dark greyish black, blocky, common subfissile to fissile, very silty, very bentonitic, becoming very pyritic in part, common to minor amounts of dark brown carbonized organic detritus, localized small scale microfracturing (dendritic) throughout - sealed with pyrite and rare amounts of very coarse crystals calcite spar, occasional Phosphate peloids, rare fossil fragments - ostracod (?) and brachiopod - locally replaced with pyrite, rare pyrite granules and framboids, rare amounts of Fe concretions, moderately indurated.
		trace-05 BENTONITE - white, grading to light green and light grey, very arenaceous - common amounts of floating upper very fine size subangular frosted quartz grains, common phlogopite flakes dispersed throughout, occasional amounts of carbonaceous laminae, pyritic in part, poorly indurated.
		trace SILTSTONE - medium grey, grading to medium greenish grey, quartzose, rare silica cement, very argillaceous, moderately indurated.
1385 - 1390	85	SHALE - dark greyish black, blocky, minor sub fissile, carbonaceous locally -occasional amounts of very thin coal laminae, rare amounts of very thin pyrite veining, rare amounts of glauconite grains, well indurated.
	15	SILTSTONE - medium to dark greyish brown, grading to medium and dark grey, quartzose, abundant glauconite grains, rare amounts of silica cement, very argillaceous, pyritic in small part, locally minor amounts of medium to dark brown organic with bitumen staining, no visible shows, moderately to well indurated.
	trace	BENTONITE - white, grading to light and medium green, occasional amounts of light and medium brown, occasional glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1390 - 1395	40	SHALE - dark grey, grading to dark greyish black, blocky, minor sub fissile, carbonaceous in part, locally abundant glauconite grains, well indurated.
	35	SANDSTONE - off white, grading to very light brown in part, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, well consolidated throughout, dolomite and silica cement, locally abundant off white clay matrix, argillaceous, silty, frosted quartz, abundant glauconite grains, poor intergranular porosity, minor amounts of very light brown spotty organic with oil staining, exhibits subangular dull yellowish cream wet fluorescence, dull yellow dry fluorescence, immediate strong cream to white streaming cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.
	15	SILTSTONE - off white, grading to light greenish grey, quartzose, abundant glauconite grains, minor amounts of dolomite and silica cement, very argillaceous, pyritic in small part, moderately to well indurated.
	10	SILTSTONE - medium to dark greyish brown, grading to medium and dark grey, quartzose, abundant glauconite grains, rare amounts of dolomite and silica cement, very argillaceous, pyritic in small part, locally minor amounts of medium to dark brown organic with bitumen staining, no visible shows, moderately to well indurated.
	trace	BENTONITE - white, grading to light and medium green, rare amounts of light and medium brown, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1395 - 1400	40	SANDSTONE - off white, grading to very light greyish white, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, well consolidated throughout, sub friable in part, dolomite and silica cement, occasional amounts of quartz overgrowth developed, abundant off white clay matrix throughout, very argillaceous, silty, frosted and minor subvitreous quartz, common glauconite grains, occasional amounts of foraminifera and ostracod ? skeletal detritus, poor intergranular porosity, rare amounts of very light brown spotty organic with oil staining, exhibits subangular dull yellowish cream wet fluorescence, dull yellow dry fluorescence, immediate strong cream to white streaming cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.
	35	SHALE - medium grey, blocky, minor sub fissile, occasional light brown bentonite laminae, rare pyrite grains, well indurated.
	25	SILTSTONE - off white, grading to light greenish grey, and medium grey in part, quartzose, abundant glauconite grains, minor amounts of dolomite and silica cement, very argillaceous, pyritic in small part, moderately to well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1400 - 1402.5	50	SANDSTONE - light brown, grading to very light golden brown, predominantly lower and upper fine grained, rare amounts of lower and upper medium grained, subrounded, minor subangular, well sorted, predominantly disaggregated, locally consolidated in part, sub friable, silica cement, rare amounts of dolomite cement, minor amounts of quartz overgrowth developed, sub vitreous and vitreous quartz, minor glauconite grains, rare amounts of foraminifera skeletal detritus - pyritized in part, visible open pinpoint to very fine size intergranular voids, locally encrusted with medium brown organic with oil staining, fair to minor good intergranular porosity, common amounts of very light brown spotty organic with oil staining, exhibits subangular dull medium yellow to golden yellow wet fluorescence, bright medium golden yellow dry fluorescence, immediate strong cream to white massive cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.
	25	SANDSTONE - off white, grading to very light greyish white, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, well consolidated throughout, sub friable in part, dolomite and silica cement, occasional amounts of quartz overgrowth developed, abundant off white clay matrix throughout, very argillaceous, silty, frosted and minor subvitreous quartz, common glauconite grains, poor intergranular porosity, rare amounts of very light brown spotty organic with oil staining, exhibits subangular dull yellowish cream wet fluorescence, dull yellow dry fluorescence, immediate strong cream to white streaming cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	15	SILTSTONE - off white, grading to light greenish grey, and medium grey in part, quartzose, abundant glauconite grains, minor amounts of dolomite and silica cement, very argillaceous, pyritic in small part, moderately to well indurated.
	10	SHALE - medium grey, blocky, minor sub fissile, rare pyrite grains, well indurated.
1402.5 - 1405	35	SANDSTONE - light brown, grading to very light golden brown, and light greyish brown, predominantly lower and upper fine grained, common amounts of upper very fine grained, subrounded, minor subangular, moderately to well sorted, predominantly disaggregated, locally consolidated in part, sub friable, silica cement, minor amounts of quartz overgrowth developed, locally minor amounts of white clay matrix, sub vitreous and vitreous quartz, minor glauconite grains, visible open pinpoint to very fine size intergranular voids, locally encrusted with medium brown and black organic with oil staining, fair intergranular porosity, common amounts of very light brown spotty organic with oil staining, exhibits subangular dull medium yellow to golden yellow wet fluorescence, bright medium golden yellow dry fluorescence, immediate strong cream to white massive cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.
	25	SANDSTONE - off white, grading to very light greenish grey, predominantly upper very fine grained, minor amounts of lower and upper fine grained, subangular to subrounded, moderately sorted, well consolidated throughout, sub friable in part, silica cement, occasional amounts of quartz overgrowth developed, minor off white clay matrix throughout, proportion of clay matrix increasing within this interval, argillaceous, silty, frosted and minor subvitreous quartz, abundant glauconite grains, poor intergranular porosity, no shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25	SILTSTONE - off white, grading to light greenish grey, and medium grey in part, quartzose, abundant glauconite grains, minor amounts of dolomite and silica cement, very argillaceous, moderately to well indurated.
	15	SHALE - dark greyish black, sub fissile, carbonaceous, rare pyrite grains, well indurated.
1405 - 1410	30	SANDSTONE - white to off white, grading to light greyish white and light greenish grey, upper very fine grained, minor amounts of lower fine grained, subangular, moderately to well sorted, consolidated, silica cement, common amounts of off white clay matrix, frosted and sub vitreous quartz, common glauconite grains, argillaceous, silty, poor intergranular porosity, no visual shows.
	30	SILTSTONE - medium grey, grading to medium reddish grey and reddish brown in small part, occasional amounts of medium golden tan, quartzose, rare glauconite grains, silica cement, argillaceous, arenaceous in part - floating upper very fine size, subangular, frosted quartz grains, well indurated.
	20	SANDSTONE - light brown, grading to very light golden brown, and light greyish brown, predominantly lower and upper fine grained, common amounts of upper very fine grained, subrounded, minor subangular, moderately to well sorted, consolidated throughout, sub friable in part, silica cement, minor amounts of quartz overgrowth developed, locally rare amounts of white clay matrix, sub vitreous and vitreous quartz, minor glauconite grains, no visible open intergranular voids, poor intergranular porosity, common amounts of very light brown spotty organic with oil staining, exhibits subangular dull medium yellow to golden yellow wet fluorescence, bright medium golden yellow dry fluorescence, immediate strong cream to white massive cut fluorescence, yellowish white to cream colored residue on spot plate after evaporation of solvent.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1410 - 1415	15	SHALE - dark greyish black, minor light to medium grey and medium brown, blocky, minor sub fissile, very pyritic in part - common pyrite granules and framboids, well indurated.
	05	CHERT - medium tan, to light and medium grey, minor clear, upper coarse to granule size angular shards.
	50	SILTSTONE - medium grey, grading to medium greenish grey, quartzose, common glauconite grains, silica cement, rare dolomite cement, very argillaceous, well indurated.
	30	SANDSTONE - light grey to off white, grading to light greenish grey, upper very fine grained, subangular, moderately to well sorted, consolidated, silica cement, minor amounts of dolomite cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, common glauconite grains, very argillaceous, silty, poor intergranular porosity, no visual shows.
	20	SHALE - light grey, common medium grey, occasional light greenish grey and medium red brown, rare light brown, sub fissile and blocky, well indurated.
	trace	CHERT - light yellow, white, occasional light green and light tan, upper coarse to granule size angular shards.
1415 - 1420	50	SHALE - medium reddish brown, occasional light green, and medium to dark grey, rare black, sub fissile, minor blocky, ferruginous, well indurated.
	25	SILTSTONE - medium grey, grading to medium greenish grey, quartzose, minor glauconite grains, occasional medium grey argillite fragments, rare muscovite flakes, dolomite cement, minor silica cement, very argillaceous, well indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	25	SANDSTONE - off white to beige, upper very fine grained, rare amounts of lower fine grained, subangular, moderately to well sorted, consolidated, dolomite cement, minor amounts of off white clay matrix, frosted and sub vitreous quartz, common glauconite grains, argillaceous - less argillaceous within this interval, silty, poor intergranular porosity, no visual shows.
1420 - 1425	55	SANDSTONE - off white to beige, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite cement, minor amounts of off white clay matrix, frosted and sub vitreous quartz, rare dark grey to black chert, rare amounts of carbonaceous argillite fragments, argillaceous, silty, poor intergranular porosity, no visual shows.
	30	SILTSTONE - beige, grading to light brownish grey, rare amounts of medium grey, quartzose, occasional glauconite grains, rare silica and siderite cement, very argillaceous, very arenaceous - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	15	SHALE - medium reddish brown, occasional brownish grey, rare dark greyish black, blocky, minor subfissile, silty, bentonitic in part, carbonaceous in small part, occasional amounts of light green and light brown bentonite laminae, rare pyrite granules, moderately indurated.
1425 - 1435	35-40	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, minor amounts of off white clay matrix, frosted and sub vitreous quartz, rare dark grey to black chert, rare amounts of dark grey argillite fragments, argillaceous, silty, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	45	SILTSTONE - beige, grading to off white, quartzose, occasional glauconite grains, occasional amounts of dark grey argillite fragments, rare silica and siderite cement, very argillaceous, very arenaceous -floating upper very fine size subangular frosted quartz grains, moderately indurated.
	15-20	SHALE - light to medium grey, grading to medium reddish brown, rare dark greyish black, blocky, minor subfissile, silty, bentonitic in part, carbonaceous in small part, rare amounts of light green and light brown bentonite laminae, moderately indurated.
1435 - 1440	65	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, minor amounts of off white clay matrix, frosted and sub vitreous quartz, rare dark grey to black chert, rare amounts of dark grey argillite fragments, argillaceous, silty, poor intergranular porosity, no visual shows.
	25	SILTSTONE - beige, grading to off white, quartzose, occasional amounts of dark grey argillite fragments, rare silica and siderite cement, very argillaceous, very arenaceous - floating upper very fine size subangular frosted quartz grains, moderately indurated.
	10	SHALE - dark grey to dark greyish black, occasional medium reddish brown, blocky, minor subfissile, silty, carbonaceous, bentonitic in part, rare amounts of light green and light brown bentonite laminae, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1440 - 1455	40-45	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, frequent amounts of off white clay matrix, frosted and sub vitreous quartz, rare dark grey to black chert, rare amounts of dark grey argillite fragments, very argillaceous, silty, poor intergranular porosity, no visual shows.
	25-35	SHALE - dark grey to dark greyish black, grading down section to medium reddish brown, blocky, minor subfissile and splintery, silty, carbonaceous, bentonitic in part, rare amounts of light green and light brown bentonite laminae, moderately indurated.
	25-30	SILTSTONE - beige, grading to off white, quartzose, occasional amounts of dark grey argillite fragments, rare silica and siderite cement, very argillaceous, very arenaceous - floating upper very fine size subangular frosted quartz grains, moderately indurated.
1455 - 1460	50	SILTSTONE - medium grey, grading to medium greenish grey, occasional medium reddish brown, quartzose, occasional amounts of dark grey argillite fragments, rare dolomite cement, very argillaceous, moderately indurated.
	30	SHALE - medium greenish grey, minor medium brownish grey, subfissile and splintery, silty, rare Mica flakes - muscovite, moderately indurated.
	20	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, frequent amounts of off white clay matrix, frosted and sub vitreous quartz, occasional amounts of dark grey argillite fragments, very argillaceous, silty, poor intergranular porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1460 - 1475	65	SHALE - medium reddish brown, grading to medium greenish grey, occasional dark grey, subfissile, common blocky, silty, very bentonitic in part, moderately indurated.
	25-30	SILTSTONE - medium grey, grading to medium greenish grey, quartzose, occasional amounts of dark grey argillite fragments, rare dolomite cement, pyritic in small part, very argillaceous, moderately indurated.
	05-10	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, rare amounts of dark grey argillite fragments, very argillaceous, silty, poor intergranular porosity, no visual shows.
1475 - 1480	50	SILTSTONE - medium grey, grading to medium greenish grey, quartzose, occasional amounts of dark grey argillite fragments, rare dolomite cement, pyritic in small part, very argillaceous, moderately indurated.
	45	SHALE - medium reddish brown, grading to medium greenish grey, occasional dark grey, subfissile, common blocky, silty, very bentonitic in part, moderately indurated.
	05	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, rare amounts of dark grey argillite fragments, very argillaceous, silty, poor intergranular porosity, no visual shows.
1480 - 1485	60	SHALE - dark greyish black, grading to medium grey and medium reddish brown in part, subfissile, common blocky, silty, very bentonitic in part, carbonaceous, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	35	SILTSTONE - medium grey, grading to medium greenish grey, quartzose, occasional amounts of dark grey argillite fragments, rare dolomite cement, pyritic in small part, very argillaceous, moderately indurated.
	05	SANDSTONE - off white to beige, grading to cream, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, rare amounts of dark grey argillite fragments, very argillaceous, silty, poor intergranular porosity, no visual shows.
1485 - 1505	45-50	SHALE - medium grey, grading to medium reddish brown in part, subfissile, common blocky, silty, very bentonitic in part, rare amounts of off white bentonite laminae, rare amounts of Foraminifera skeletal detritus, moderately indurated.
	35	SILTSTONE - medium grey, quartzose, rare silica cement, very argillaceous, moderately indurated.
	15-20	SANDSTONE - light grey, grading to light brownish grey, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, dolomite and silica cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, common amounts of carbonaceous laminae - lineated in part, very argillaceous, silty, poor intergranular porosity, no visual shows.
1505 - 1525	80-85	SHALE - medium reddish brown, occasional medium grey, subfissile, common blocky, silty, bentonitic in part, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	15-20	SILTSTONE - medium grey, quartzose, rare muscovite flakes, rare carbonaceous organic detritus, rare dolomite and silica cement, very argillaceous, arenaceous in part - floating upper very fine size subangular frost quartz grains scattered throughout, moderately indurated.
	trace	SANDSTONE - light to medium grey, salt and pepper, upper very fine grained, subangular, moderately to well sorted, consolidated, silica cement, abundant amounts of off white clay matrix, frosted and sub vitreous quartz, common amounts of carbonaceous flakes, very argillaceous, silty, poor intergranular porosity, no visual shows.
1525 - 1530	80	SHALE - medium reddish brown, occasional medium grey, subfissile, common blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	10	SILTSTONE - medium grey, quartzose, rare muscovite flakes, rare carbonaceous organic detritus, dolomite cement, rare silica cement, very argillaceous, arenaceous in part to floating upper very fine size subangular frost quartz grains scattered throughout, moderately indurated.
	10	SANDSTONE - off white, grading to white, salt and pepper, upper very fine to upper fine grained, subangular to subrounded, moderately to well sorted, consolidated, silica cement, locally abundant to minor amounts of off white clay matrix, frosted and sub vitreous quartz, minor amounts of carbonaceous flakes, silty, locally becoming very pyritic, poor intergranular porosity, no visual shows.
1530 - 1540	80-85	SHALE - medium reddish brown, occasional medium grey, subfissile, common blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10	SILTSTONE - medium grey, quartzose, rare muscovite flakes, rare carbonaceous organic detritus, dolomite cement, rare silica cement, very argillaceous, arenaceous in part to floating upper very fine size subangular frost quartz grains scattered throughout, moderately indurated.
	05-10	SANDSTONE - light grey, grading light brownish grey and off white, salt and pepper, upper very fine to upper fine grained, subangular to subrounded, moderately to well sorted, consolidated, silica cement, locally abundant to minor amounts of off white clay matrix, frosted and sub vitreous quartz, minor amounts of carbonaceous flakes, silty, poor intergranular porosity, no visual shows.
1540 - 1555	85-90	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	10-15	SILTSTONE - medium grey, grading to light brownish grey in part, quartzose, occasional dolomite cement, rare silica cement, very argillaceous, moderately indurated.
1555 - 1560	95	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	05	SILTSTONE - medium grey, quartzose, occasional dolomite cement, rare silica cement, very argillaceous, moderately indurated.
	trace	DOLOMITE - medium brown, micro crystalline, silty, no effective porosity, no visual shows.
1560 - 1565	95	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1565 - 1570	05	SILTSTONE - medium grey and dark grey, quartzose, occasional dolomite cement, rare silica cement, locally slightly pyritic, very argillaceous, moderately indurated.
	trace	DOLOMITE - medium brown, micro crystalline, silty, no effective porosity, no visual shows.
	70	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	20	CHERT - medium to dark brown, grading to medium brownish grey, mottled, very coarse to granule size angular shards, common dark organic inclusions and sponge spicules, minor to common glauconite grains on surface, rare amounts of low amplitude stylolites - encrusted with dark brown bitumen, rare amounts localized small scale micro fracturing sealed with pyrite and crypto crystalline dolomite spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	05	SANDSTONE - very light brown, grading to dark brown, upper very fine grained, subangular, moderately sorted, minor amounts of clay matrix, consolidated, friable in part, silica and occasional amounts of dolomite cement, subvitreous quartz, common glauconite grains, minor carbonaceous material, rare amounts of pyritized sponge spicules, poor intergranular porosity, common medium to dark brown organic staining throughout, no shows.
	05	SHALE - dark brown, subfissile and blocky, very bituminous, occasional glauconite grains, moderately indurated.
	trace	DOLOMITE - medium brown, micro crystalline, no effective porosity, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1570 - 1575	50	CHERT - light brownish grey to medium brownish grey, occasional amounts of dark brown, mottled, very coarse to granule size angular shards, common dark organic inclusions and sponge spicules, occasional glauconite grains on surface, rare amounts of low amplitude styloids -encrusted with dark brown bitumen, rare localized small scale micro fracturing sealed with crypto crystalline silica spar, occasional pyrite and rare amounts of crypto crystalline dolomite spar, poor fracture porosity, locally common amounts of dark brown organic staining throughout, no shows.
	30	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	10	SANDSTONE - very light brown, grading to dark brown, upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, minor amounts of clay matrix, consolidated, friable in part, silica and occasional amounts of dolomite cement, subvitreous quartz, common glauconite grains, minor carbonaceous material, rare amounts of pyritized sponge spicules, poor intergranular porosity, common medium to dark brown organic staining throughout, no shows.
	10	SHALE - dark brown, occasional dark greyish black, subfissile and blocky, very bituminous, abundant glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1575 - 1580	65	CHERT - light brownish grey to medium brownish grey, occasional amounts of dark brown, mottled, very coarse to granule size angular shards, common dark organic inclusions and sponge spicules, occasional glauconite grains on surface, rare amounts of low amplitude stylolites - encrusted with dark brown bitumen, rare localized small scale micro fracturing sealed with crypto crystalline silica spar, rare pyrite and rare amounts of crypto crystalline dolomite spar, rare amounts of secondary micro fracturing evident with rare amounts of micro crystalline and very fine crystals euhedral and subhedral silica spar evident - possibly indicating open irregular shaped very fine to rare fine size voids, poor fracture porosity, locally common amounts of dark brown organic staining throughout, no shows.
	30	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	10	SANDSTONE - very light brown, grading to dark brown, minor amounts of white, upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, minor amounts of clay matrix, consolidated, friable in part, silica and occasional amounts of dolomite cement, subvitreous quartz, common glauconite grains, minor carbonaceous material, rare amounts of pyritized sponge spicules, poor intergranular porosity, common medium to dark brown organic staining throughout, no shows.
	10	SHALE - dark brown, occasional dark greyish black, subfissile and blocky, very bituminous, abundant glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1580 - 1585	40	CHERT - dark brown, grading to light brown, rare amounts of light tan and light brownish grey, mottled, very coarse to granule size angular shards, common dark organic inclusions and sponge spicules, rare Foraminifera inclusions, occasional glauconite grains on surface, rare amounts of low amplitude stylolids -encrusted with dark brown bitumen, rare localized small scale micro fracturing sealed with crypto crystalline silica spar, rare pyrite, rare amounts of secondary micro fracturing evident with rare amounts of micro crystalline silica spar evident - possibly indicating very thin open irregular shaped very fine size voids, poor fracture porosity, locally abundant amounts of dark brown organic staining throughout, no shows.
	35	SHALE - medium reddish brown, grading to medium grey, subfissile and blocky, silty, bentonitic in part, very slightly dolomitic, moderately indurated.
	15	SHALE - black, grading to very dark brown, subfissile and blocky, very bituminous, abundant glauconite grains, occasional amounts of pyritized sponge spicules, moderately indurated.
	10	SANDSTONE - dark brown, minor amounts of white, upper very fine grained, occasional amounts of lower fine grained, subangular to subrounded, moderately sorted, minor amounts of clay matrix, consolidated, silica and occasional amounts of dolomite cement, subvitreous quartz, abundant glauconite grains, minor carbonaceous material, rare amounts of Foraminifera skeletal detritus, poor intergranular porosity, abundant medium to dark brown organic staining throughout, no shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1585 - 1595	90-95	CHERT - light brown, grading to light greyish brown, occasional light tan, mottled, very coarse to granule size angular shards, minor dark organic inclusions, common to minor glauconite grains on surface, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, locally minor amounts of dark brown organic staining throughout, no shows.
	05-10	SHALE - medium to dark brown, subfissile and blocky, very bituminous, abundant glauconite grains, locally very pyritic moderately indurated.
1595 - 1600	70	CHERT - light brown, grading to light greyish brown, occasional off white, mottled, very coarse to granule size angular shards, occasional dark organic inclusions, rare glauconite grains on surface, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, locally minor amounts of dark brown organic staining throughout, no shows.
	20	LIMESTONE - off white, mudstone, earthy, arenaceous in part - floating upper very coarse size angular frost quartz and medium tan chert grains, very silicified, no effective porosity, no visual shows.
	10	SHALE - dark brown, blocky, bituminous, minor glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1600 - 1610	75-80	CHERT - medium greyish brown, grading to medium and dark brown in large part, mottled, very coarse to granule size angular shards, common dark organic inclusions, rare glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	10	LIMESTONE - off white, grading to light brown, mudstone, earthy, rare glauconite grains, arenaceous in part - floating upper very coarse size angular frost quartz and medium tan chert grains, very silicified, no effective porosity, no visual shows.
	10-15	SHALE - dark brown, blocky, bituminous, minor glauconite grains, moderately indurated.
1610 - 1630	50-55	CHERT - medium and dark brown, grading to medium greyish brown in part, mottled, very coarse to granule size angular shards, common dark organic inclusions, rare glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	30	MARLSTONE - dark brown, very calcareous, very siliceous, well indurated.
	10	LIMESTONE - off white, grading to light brown, mudstone, earthy, rare glauconite grains, arenaceous in part - floating upper very coarse size angular frost quartz and medium tan chert grains, very silicified, no effective porosity, no visual shows.
	05-10	SHALE - dark brown, blocky, bituminous, minor glauconite grains, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1630 - 1640	70	CHERT - dark brown, grading to medium greyish brown in part, mottled, very coarse to granule size angular shards, frequent dark organic inclusions, common glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude stylolds - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	25-30	SHALE - dark brown, blocky, bituminous, abundant glauconite grains, locally pyritic, moderately indurated.
	trace-05	DOLOMITE - medium brown, micro crystalline, locally abundant glauconite grains, pyritic in part, very siliceous, no effective porosity, abundant dark brown organic staining throughout, no visual shows.
1640 - 1655	55	CHERT - dark brown, grading to medium greyish brown and medium grey in part, mottled, very coarse to granule size angular shards, frequent dark organic inclusions, common glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude stylolds - encrusted with dark brown bitumen and rare amounts of pyrite, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	30-35	SHALE - dark brown, blocky, minor subfissile, bituminous, abundant glauconite grains, locally very pyritic, moderately indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10-15	DOLOMITE - medium greyish brown, minor medium and dark brown, predominantly micro crystalline, locally recrystallized to very fine and fine crystalline, frequent glauconite grains, pyritic in part, pyrite locally pluggin intercrystalline voids, very siliceous, no effective porosity, abundant dark brown organic staining throughout, no visual shows.
1655 - 1665	80-85	CHERT - dark brown, grading to medium greyish brown and medium grey in part, rare light grey, mottled, very coarse to granule size angular shards, frequent dark organic inclusions, common glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, very rare localized small scale micro fracturing sealed with crypto crystalline silica spar, poor fracture porosity, abundant amounts of dark brown organic staining throughout, no shows.
	10-15	DOLOMITE - dark brown, predominantly crypto crystalline to minor micro crystalline, frequent glauconite grains, pyritic in small part, very siliceous, no effective porosity, abundant dark brown organic staining throughout, no visual shows.
	05-10	SHALE - dark brown, blocky, minor subfissile, bituminous, abundant glauconite grains, locally very pyritic, moderately indurated.
1665 - 1670	90	CHERT - dark brown, grading to medium greyish brown and white in part, mottled, very coarse to granule size angular shards, frequent dark organic inclusions, occasional glauconite grains on surface, rare amounts of sponge spicules, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, becoming increasingly fractured - small scale micro fracturing throughout - sealed with microcrystalline to occasional amounts of very fine crystalline silica spar, poor fracture porosity, common to abundant amounts of dark brown organic staining throughout, no shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
	10	DOLOMITE - dark brown, predominantly micro crystalline, locally recrystallized to very fine crystalline, rare glauconite grains, pyritic in small part, very siliceous, no effective porosity, abundant dark brown organic staining throughout, no visual shows.
	trace	SHALE - dark brown, blocky, minor subfissile, bituminous, abundant glauconite grains, locally very pyritic, moderately indurated.
1670 - 1675	95	CHERT - light greyish brown, light brown grading to clear, minor dark brown, and white, speckled and mottled, very coarse to granule size angular shards, occasional dark organic inclusions, occasional glauconite grains on surface, rare amounts of Foraminifera skeletal detritus and sponge spicules, rare amounts of low amplitude styloids - encrusted with dark brown bitumen, becoming increasingly fractured - localized small scale micro fracturing sealed with white crypto crystalline silica spar, rare pyrite, rare amounts of secondary micro fracturing evident with rare amounts of micro crystalline to very fine crystalline silica and dolomite spar evident to possibly indicating very thin open irregular shaped very fine size voids, poor fracture porosity, minor amounts of medium to dark brown organic staining throughout, no shows.
	05	DOLOMITE - dark brown, predominantly micro crystalline, locally recrystallized to very fine crystalline, rare glauconite grains, very siliceous, no effective porosity, abundant dark brown organic staining throughout, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1675 - 1680	95	CHERT - white to light greyish brown, speckled and mottled, very coarse to granule size angular shards, occasional dark organic inclusions, rare glauconite grains on surface, rare amounts of Foraminifera skeletal detritus and sponge spicules, rare amounts of low amplitude stylolites - encrusted with dark brown bitumen, becoming more fractured - localized small scale micro fracturing sealed with white crypto crystalline silica spar, minor amounts of secondary micro fracturing evident, minor amounts of upper fine to lower medium and rare amounts of upper coarse crystals silica spar, euhedral and subhedral crystal clusters - possibly indicating open irregular shaped very fine size voids, poor to rare fair fracture porosity, minor amounts of medium to dark brown organic staining throughout, no shows.
	05	DOLOMITE - dark brown, predominantly micro crystalline, locally recrystallized to very fine crystalline, rare glauconite grains, very siliceous, locally pinpoint to very fine size subhedral shaped intercrystalline voids are evident, plugged with pyrobitumen, no effective porosity, abundant dark brown organic staining throughout, no visual shows.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1680 - 1690	95	CHERT - white to light greyish brown, speckled and mottled, very coarse to granule size angular shards, occasional dark organic inclusions, rare glauconite grains on surface, rare amounts of Foraminifera skeletal detritus and sponge spicules, rare amounts of low amplitude stylolites - encrusted with dark brown bitumen, fractured throughout - localized small scale micro fracturing sealed with white crypto crystalline silica spar, minor amounts of secondary micro fracturing evident, minor amounts of upper fine to lower medium and rare amounts of upper coarse to lower very coarse crystals silica spar, euhedral and subhedral crystals, and very fine size botryoidal silica spar developed - possibly indicating open irregular shaped very fine size voids, poor to rare fair fracture porosity, minor amounts of medium to dark brown organic staining throughout, no shows.
	05	DOLOMITE - dark brown, predominantly micro crystalline, locally recrystallized to very fine crystalline, rare glauconite grains, very siliceous, locally pinpoint to very fine size subhedral shaped intercrystalline voids are evident, plugged with pyrobitumen, no effective porosity, abundant dark brown organic staining throughout, no visual shows.
	trace	SHALE - black, subfissile, very bituminous, poorly indurated.

SAMPLE RECORD

INTERVAL (metres)	LITH (%)	DESCRIPTION
1690 - 1695.4	85	CHERT - dark brown, grading to dark greyish black, occasional amounts of medium grey, white, and light grey, speckled and mottled, very coarse to granule size angular shards, abundant dark organic inclusions, rare glauconite grains on surface, rare amounts of Foraminifera skeletal detritus and sponge spicules, rare amounts of low amplitude stylolids - encrusted with dark brown bitumen, fractured throughout - localized small scale micro fracturing predominantly sealed with white crypto crystalline silica spar, rare amounts of secondary micro fracturing evident, minor amounts of upper fine to lower medium and rare amounts of upper coarse crystals silica spar, euhedral and subhedral crystals -possibly indicating open irregular shaped very fine size voids, poor fracture porosity, abundant amounts of medium to dark brown organic staining throughout, no wet fluorescence, rare amounts of spotty dull golden yellow dry fluorescence, weak immediate light yellowish white streaming cut fluorescence.
	10	DOLOMITE - medium to dark brown, occasional dark greyish black, predominantly micro crystalline, locally recrystallized to very fine crystalline, rare glauconite grains, very siliceous, locally occasional amounts of pinpoint to very fine size subhedral shaped intercrystalline voids are evident, partly plugged with pyrobitumen, rare amounts of small scale micro fracturing is evident - sealed with pyrobitumen, no effective porosity, abundant dark brown organic staining throughout, becoming asphaltic in part, no visual shows.
	trace	SHALE - dark brown to black, subfissile, very bituminous, asphaltic, poorly indurated.

1695.4

TOTAL DEPTH

DAX Consulting Ltd.
CDN FOREST et al FORT LIARD K 32

REPORT DISTRIBUTION

The original and nine (9) copies of the Geological Report on CDN FOREST et al FORT LIARD K 32 60 01 123 21 have now been completed. The original and eight (8) copies have been forwarded to CANADIAN FOREST OIL LTD., and the remaining copy will be retained in DAX Consulting Ltd. files.

DAX Consulting Ltd.
CDN FOREST et al FORT LIARD K 32 60 01 123 21

ADDENDUM A - WELL HISTORY

DAX Consulting Ltd.
CDN FOREST et al FORT LIARD K 32 60 01 123 21

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)	
99-02-17	Move drill rig to location, unload equipment, rig up and raise derrick at 21:30 hour. Continue rig up of drill rig.	0	0
99-02-18	Continue to rig up drill rig.	0	0
99-02-19	Complete rig up of drill rig, make up BIT No. 1A: STC FDS, spud 311 mm surface hole on February 18, 1999 at 14:00 hour, drill 311 mm surface hole from 0.0 metres to 80.0 metres.	80	80
99-02-20	Drill 311 mm surface hole and survey from 80.0 metres to 240.0 metres. Average drilling rate 14.5 metres per hour.	160	240
99-02-21	Trip out Bit No. 1A, make up Bit No. 2A: HWG1, trip into hole, drill 311 mm surface hole and survey from 240.0 metres to 355.0 metres, average drilling rate 10.1 metres per hour.	115	355
99-02-22	Drill 311 mm surface hole and survey from 355.0 metres to 378.0 metres, trip out of hole to change surface bit, Make up Bit No. 3A: GT-1, trip into hole, drill 311 mm surface hole and survey from 355.0 metres to 426.0 metres. Average drilling rate 4.6 metres per hour.	71	426
99-02-23	Drill 311 mm surface hole and survey from 426.0 metres to 487.5 metres - Surface Casing Landing Depth. Average drilling rate 5.4 metres per hour. Trip out of hole in preparation to run 244.5 mm surface casing.	71	426

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)
99-02-24	Run 244.5 mm surface casing, casing. Thirty seven joints, 244.5 mm, 53.57 kg/m, J-55, LT/C Prudential Range No. 3 casing. Float collar at 473.3 metres KB, Float shoe at 487.5 metres KB. Rig up cementers, pressure tested surface equipment, pumped 3 m3 water ahead, followed by 38 tonnes of 0:1:0 class "G" and 1% CaCL2. Released plug, and displaced casing with 19 m3 water. Bumped plug at 11:29 hours. Received 8 m3 of good cement returns. Wait on cement, nipple down and tear out divertor. Cut off casing, weld on casing bowl. Pressure test weld on bowl. Nipple up BOP stack.	61.5 487.5
99-02-25	Nipple up BOP stack and pressure test Blind Rams and manifold. Make up Bit No. 4B: EHP 51X, inspect bottom hole assembly on way in. Pressure test BOP valves and Hydril. Tag cement at 470.0 metres KB. Drilled out float collar at 472.0 metres KB, and 6 metres of cement. Pressure test pipe rams and inside BOP stabbing valve. Drilled float shoe and new hole from 487.5 metres to 490.0 metres KB. Perform formation pressure integrity test. Drill ahead on 222 mm main hole from 490.0 metres KB to 516.0 metres KB. Average drilling rate 10.5 metres per hour.	28.5 516.0

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)	
99-02-26	Drill ahead and survey on 222 mm main hole from 516.0 metres KB to 709.0 metres KB. Average drilling rate 9.9 metres per hour.	193	709
99-02-27	Drill ahead and survey on 222 mm main hole from 709.0 metres KB to 838.0 metres KB. Average drilling rate 8.3 metres per hour.	129	838
99-02-28	Drill ahead and survey on 222 mm main hole from 838.0 metres KB to 952.0 metres KB. Average drilling rate 5.8 metres per hour.	114	952
99-03-01	Drill ahead and survey on 222 mm main hole from 952.0 metres KB to 1056.0 metres KB. Average drilling rate 6.7 metres per hour.	104	1056
99-03-02	Drill ahead and survey on 222 mm main hole from 1056.0 metres KB to 1057.0 metres KB. Trip out Bit No. 1B, make up BIT No. 5B: F15H, trip into hole, drill ahead and survey on 222 mm main hole from 1057.0 metres KB to 1092.0 metres KB. Average drilling rate 2.9 metres per hour	36	1092
99-03-03	Drill ahead and survey on 222 mm main hole from 1092.0 metres KB to 1156.0 metres KB. Average drilling rate 2.8 metres per hour.	64	1156
99-03-04	Drill ahead and survey on 222 mm main hole from 1156.0 metres KB to 1228.0 metres KB. Average drilling rate 3.0 metres per hour.	72	1228
99-03-05	Drill ahead and survey on 222 mm main hole from 1228.0 metres KB to 1290.0 metres KB. Average drilling rate 2.9 metres per hour.	62	1290

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)
99-03-06	Drill ahead and survey on 222 mm main hole from 1290.0 metres KB to 1322.0 metres KB. Average drilling rate 2.8 metres per hour. Circulate bottom hole sample, perform 15 stand wiper trip, circulate and condition hole. Trip out of hole, make up core barrel and core bit 6C: LI S, 159 mm, trip into hole. Average drilling rate 2.9 metres per hour.	32 1322
99-03-07	Trip into hole and cut core from 1322.0 metres to 1339.4 metres, total coring time - 11.0 hours, cut: 17.0 m, recovered: 16.7 m, trip out of hole, recover core, lay down core barrel. Make up Bit No. 7E: GT186F / 222 mm, trip into hole.	17.4 1334.9
99-03-08	Trip into hole, ream core rat hole, drill ahead on 222 mm main hole and survey from 1339.4 metres to 1402.0 metres. Average drilling rate 3.9 metres per hour.	62.6 1402.0
99-03-09	Drill ahead on 222 mm main hole and survey from 1402.0 metres to 1458.0 metres. Average drilling rate 2.7 metres per hour.	56.0 1458.0
99-03-10	Drill ahead on 222 mm main hole and survey from 1458.0 metres to 1465.0 metres. Circulate up bottom hole sample. Perform ten stand wiper trip, pull out of hole for closed chamber testing operations. Run closed chamber test, trip out of hole with test tools. Average drilling rate 2.4 metres per hour.	7.0 1465.0

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)
99-03-11	Trip out of hole with test tools, recover recorders. Make up Bit No. 8BRR: GS86F, trip into hole, drill ahead on main hole from 1465.0 metres to 1494.0 metres. Total Depth on March 11, 1999 at 20:00 hour. Circulate bottom hole sample, perform 5 stand wiper trip. Circulate and condition hole for logging. Average drilling rate 3.2 metres per hour.	29.0 1494.0
99-03-12	Circulate and condition hole for logging, trip out of hole. Rig up Computalog and log wellbore. Run No. 1: STI-SPed Run No. 2: MDA Rig out Computalog, make up Bit No. 9BRR: GS86F, trip into hole, drill ahead and survey on main hole from 1494.0 metres to 1498.0 metres. Average drilling rate 1.9 metres per hour.	4.0 1498.0
99-03-13	Drill ahead and survey on main hole from 1498.0 metres to 1565.0 metres. Average drilling rate 3.4 metres per hour.	67.0 1565.0
99-03-14	Drill ahead and survey on main hole from 1565.0 metres to 1582.0 metres, drop survey, trip out Bit No. 9BRR, make up Bit No. 10B: F35. trip into hole, drill ahead and survey on main hole from 1582.0 metres to 1591.0 metres. Average drilling rate 1.8 metres per hour.	26.0 1591.0
99-03-15	Drill ahead and survey on main hole from 1591.0 metres to 1626.0 metres. Average drilling rate 1.7 metres per hour.	35.0 1626.0
99-03-16	Drill ahead and survey on main hole from 1626.0 metres to 1659.0 metres. Average drilling rate 1.3 metres per hour.	33.0 1659.0

WELL HISTORY

DATE	ACTIVITY	PROGRESS/DEPTH (metres)
99-03-17	Drill ahead and survey on main hole from 1659.0 metres to 1695.4 metres, total depth - March 17, 1999 at 17:00 hour. Circulate bottom hole sample, perfrom 15 stand wiper trip. Circulate and condition hole for logging. Trip out of hole in preparation for logging.	36.4 1695.4
99-03-18	Complete trip out of hole, rig up Computalog, log well bore. Run No. 3: SPed, Run No.4: STI, and Run No. 5: MDA Rig out Computalog. Trip into hole, circulate and condition hole for drill stem testing.	0.0 1695.4
99-03-19	Circulate and condtion hole for drill stem test - closed chamber, 1635.0 metres to 1695.4 metres. Trip out of hole and run drill stem test. Trip out of hole, recover test recorders. Trip into hole, condition hole for running 177.8 mm production casing.	0.0 1695.4
99-03-20	Complete trip into hole. Circulate and condition hole for running casing. Trip out of hole. Rig to run 177.8 mm casing. Run and cement 177.8 mm production casing.	0.00 1695.4

DAX Consulting Ltd.
CDN FOREST et al FORT LIARD K 32 60 01 123 21

ADDENDUM B - DAILY GEOLOGICAL WELL REPORTS

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: February 25, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 1
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 6

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 487.5 metres
24 HOUR PROGRESS: 0.0 metres
AVERAGE DRILLING RATE: N/A metres per hour
00:00 HOUR STATUS: Nipping up BOP's

FORMATION: Cretaceous

06:00 HOUR DEPTH: 487.5 metres
CURRENT DRILLING RATE: N/A metres per hour
06:00 HOUR STATUS: Checking drill collars

FORMATION: Cretaceous

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Run 244.5 mm Surface Casing. Rig up cementing equipment and cement casing -- plug down at 23:30 hour, recovered 8m3 of cement returns. Wait on cement. Nipple down diverter. Cut off casing bowl and casing. Weld on new casing bowl. Pick up BOP's. Nipple up BOP's.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Nipple up BOP's, check drill collars. Make up Bkt No. 1B: HEHP51X / 222 mm, run in hole to conduct pressure testing operations. Drill out float collar and pressure test pipe rams. Drill out float shoe and approximately 2 metres, conduct formation leak off test. Drill ahead on main hole.

SURVEYS: 456 metres - 1,000 degrees

MUD PROPERTIES: Density: 1105 kg/m3
pH: 9.5

Viscosity: 99 s/L Water Loss: 27.0 cm3/30 min
F.C.: N/A run

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0				
Shaftesbury	+ 21.0				
Lower Shaftesbury	- 201.0				
Scatter	- 650.0				
Garbutt	- 760.0				
Chinle	- 918.0				
Triassic	- 930.0				
Bell	- 1070.0				
Fantique	- 1111.0				
Mattson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: February 25, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 1
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 6

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
0 - 211	No readings Unit Shut off		None
211 - 377	0.00		
377 - 445	0.62 - 0.82		
445 - 461	0.82 - 0.95		
461 - 480	1.03 - 1.04		
480 - 487.5	1.29 - 1.64		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: February 26, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 2
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 7

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 494.5 metres

00:00 HOUR DEPTH: 516.0 metres
24 HOUR PROGRESS: 28.5 metres
AVERAGE DRILLING RATE: 6.5 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Shaftesbury

06:00 HOUR DEPTH: 565.0 metres
CURRENT DRILLING RATE: 8.5 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Shaftesbury

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Nipple up BOP's, pressure test Blind Ram, Mandril Valve, manifold lines and choke valve. Make up Bt No. 1B: EHP51X / 222 mm, run in hole, break down stands to inspect drill collars, heavy weight drill pipe, Kelly, upper and lower Kelly cock, quill, and cross over sub. Run in hole encounter casing float collar at approximately 470.0 metres K.B. Drill out float collar, pressure test casing, Blind Rams and stabbing valve. Run in hole to drill out casing shoe, drill from 487.5 metres to approximately 499.0 metres, conduct formation leak off test. Drill ahead on main hole from 499.0 metres to 516.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 527 metres -- 2.000 degrees, 547 metres -- 1.750 degrees

MUD PROPERTIES: Density: 1090 kg/m3 Viscosity: 44 s/L Water Loss: 13.0 cm3/30 min
pH: 12.5 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0				
Scatter	- 650.0				
Garbutt	- 760.0				
Chinkeh	- 918.0				
Triassic	- 930.0				
Bellay	- 1070.0				
Fantagoe	- 1111.0				
Mattson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: February 26, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 2
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 7

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (Includes connection, survey and trip gas responses)
467.5 - 496	No Gas Readings, unable to operate gas detector due to drill rig electrical breaker malfunction		
498 - 504	0.24 to 0.37		
504 - 512	0.37 to 0.59		
512 - 520	0.49 to 0.64		
520 - 522	0.29 to 0.35		
522 - 529	0.52 to 0.62		
539 - 541	0.75 to 1.48		
541 - 546	0.32 to 0.39		
546 - 559	0.12 to 0.29		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: February 27, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 3
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 8

GROUND ELEVATION: 460.1 metres E.B. ELEVATION: 464.5 metres

00:00 HOUR DEPTH: 709.0 metres FORMATION: Lower Shaftesbury
24 HOUR PROGRESS: 193.0 metres
AVERAGE DRILLING RATE: 9.25 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

06:00 HOUR DEPTH: 751.0 metres FORMATION: Lower Shaftesbury
CURRENT DRILLING RATE: 7.5 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 516.0 metres to 709.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 594 metres - 1.750 degrees, 642 metres - 2.000 degrees, 663 metres - 1.750 degrees, 690 metres - 1.750 degrees,
719 metres - 2.000 degrees, 738 metres - 2.000 degrees

MUD PROPERTIES: Density: 1085 kg/m3 Viscosity: 51 s/L Water Loss: 12.0 cm3/30 min
pH: 11.5 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 390.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0				
Gurbait	- 760.0				
Chinkeh	- 916.0				
Triassic	- 930.0				
Bellay	-1070.0				
Fantazque	-1111.0				
Mattson	-1231.0				
Total Depth	-1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: February 27, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 3
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 8

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes correction, survey and trip gas responses)
548 - 559	0.12 to 0.29		
614 - 629	No reliable data*		
629 - 636	0.11 to 0.16		
636 - 640	No reliable data*		
640 - 642	0.23 to 0.25		
642 - 647	No reliable data*		
647 - 655	0.21 to 0.39		
655 - 664	No reliable data*		
664 - 667	0.25 to 0.43		
667 - 677	0.43 to 0.72		
677 - 697	0.76 to 1.20		
697 - 703	0.64 to 0.75		
703 - 714	0.10 to 0.27		
714 - 723	0.27 to 0.43		
723 - 725	0.10 to 0.14		
725 - 734	0.23 to 0.41		
734 - 749	0.48 to 0.68		

No reliable total gas data was recovered over the above intervals because the gas detector could not be "zeroed" or "calibrated". Attempts to deal with this problem yielded "negative" total gas percentage values for the background drilling gas value.

The reason, according to Global Link / Hearsaw Mud Logging is that the problem may stem from the potassium based mud system, which is causing some unknown incompatibility with the "sensor" designed to allow one to "zero" or "calibrate" the unit.

The operating solution - initialized at 663 metres, was to engage the Nitrogen sensor component, which increases the background drilling gas or total gas percentage levels by approximately 2.8%.

Enabling one to "zero" or calibrate the unit at a value of 2.8%.

All percentage gas values hereby reported for this well have had the 2.8% background gas calibration value subtracted from the final product. This seems to be working, as I have not experienced any "negative" percentage gas values from this point on.

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: February 28, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 4
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 9

GROUND ELEVATION: 480.1 metres E.B. ELEVATION: 494.5 metres

00:00 HOUR DEPTH: 838.0 metres FORMATION: Lower Shaftesbury
24 HOUR PROGRESS: 127.0 metres
AVERAGE DRILLING RATE: 6.0 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

06:00 HOUR DEPTH: 870.0 metres FORMATION: Lower Shaftesbury
CURRENT DRILLING RATE: 6.5 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 709.0 metres to 838.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 758 metres - 2.000 degrees, 767 metres - 1.875 degrees, 786 metres - 2.000 degrees, 804 metres 2.000 degrees
840 metres - 2.000 degrees

MUD PROPERTIES: Density: 1085 kg/m³ Viscosity: 55 s/L Water Loss: 11.0 cm³/30 min
pH: 11.0 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 380.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0				
Gurbutt	- 760.0				
Chinook	- 918.0				
Triassic	- 930.0				
Bellevue	-1070.0				
Fantique	-1111.0				
Mattson	-1231.0				
Total Depth	-1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: February 28, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 4
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 9

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
734 - 749	0.48 to 0.68		
749 - 761	0.48 to 0.91		
761 - 777	0.34 to 0.61		
777 - 779	0.74 to 0.85		
779 - 790	0.93 to 1.64		
790 - 800	0.79 to 0.96		
Re zero / recalibrate gas detector and change calcium / glycol			
800 - 802	0.27 to 0.46		
802 - 815	No reliable data - unit not properly maintaining calibration		
Re zero / recalibrate gas detector			
815 - 818	0.21 to 0.39		
818 - 821	No reliable data - unit not properly maintaining calibration		
821 - 822	0.34		
822 - 826	No reliable data - unit not properly maintaining calibration		
826 - 830	0.11 to 0.28		
830 - 831	1.05		830.6 to 830.8 fractured shale
831 - 832	0.57		
832 - 836	0.34 to 0.48		
836 - 839	0.21 to 0.27		
839 - 840	0.14		
840 - 842	No reliable data - unit not properly maintaining calibration		
842 - 843	0.16		
843 - 844	0.00		
844 - 858	0.07 to 0.14		
858 - 866	0.22 to 0.34		
866 - 870	0.16 to 0.26		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 01, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 5
REPORT FROM: Bill Gedwin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 10

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 952.0 metres
24 HOUR PROGRESS: 114.0 metres
AVERAGE DRILLING RATE: 5.75 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Lower Shaftesbury

06:00 HOUR DEPTH: 979.0 metres
CURRENT DRILLING RATE: 5.0 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Lower Shaftesbury

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 836.0 metres to 952.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole. Potential trip for drill bit within this time period. If required, circulate bottom hole sample, trip out of hole, make up Bit No. 2B, trip into hole, drill ahead and survey on main hole.

SURVEYS: 843 metres - 2.000 degrees, 872 metres - 2.250 degrees, 901 metres - 2.000 degrees, 930 metres - 2.000 degrees, 959 metres - 1.750 degrees

MUD PROPERTIES: Density: 1080 kg/m3
pH: 10.6

Viscosity: 46 s/L Water Loss: 8.0 cm3/30 min
F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (mbsca)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (mbsca)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0				
Garbutt	- 760.0				
Chinkeh	- 918.0				
Triassic	- 930.0				
Belley	- 1070.0				
Fantasque	- 1111.0				
Mattson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 01, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 5
REPORT FROM: Bill Goewin
SITE TELEPHONE NO.: 1-600-700-2963

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 10

GROUND ELEVATION: 480.1 metres E.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
866 - 870	0.16 to 0.26		
870 - 876	0.26 to 0.41		
876 - 879	0.41 to 0.48		
879 - 890	0.14 to 0.34		
898 - 941	0.24 to 0.46		
941 - 954	0.19 to 0.29		
954 - 960	0.21 to 0.29		
968 - 973	No reliable data - problems with re zeroing / no calibration of unit		
973 - 976	0.27 to 0.44		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 02, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 6
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 11

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1056.0 metres FORMATION: Scatter (?)
24 HOUR PROGRESS: 104.0 metres
AVERAGE DRILLING RATE: 5.0 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

06:00 HOUR DEPTH: 1057.0 metres FORMATION: Scatter (?)
CURRENT DRILLING RATE: 3.5 metres per hour
06:00 HOUR STATUS: Tripping into hole with Bit No. 2B

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 952.0 metres to 1056.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole from 1056.0 metres to 1057.0 metres. Circulate up bottom hole sample, drop survey, trip out of hole with Bit No. 1. Make up Bit No. 2: F15 517, trip into hole. Drill ahead and survey on main hole.

SURVEYS: 988 metres - 2.000 degrees, 1017 metres - 2.125 degrees, 1050 metres - 2.125 degrees

MUD PROPERTIES: Density: 1100 kg/m³ Viscosity: 47 s/L Water Loss: 10.0 cm³/30 min
pH: 10.1 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter ?	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0				
Chinle	- 918.0				
Triassic	- 930.0				
Belloy	- 1070.0				
Fantasque	- 1111.0				
Mattson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 02, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 6
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 11

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
973 - 976	0.27 to 0.44		
978 - 983	0.22 to 0.27		
987 - 990	0.40 to 0.48		
990 - 993	No reliable data - unit not properly maintaining calibration		
993 - 996	0.21 to 0.27		
996 - 998	0.15 to 0.16		
998 - 999	0.34		
999 - 1006	No data available - replacement gas detector being installed		
1006 - 1010	0.22 to 0.27		
1010 - 1014	No reliable data - unit no properly maintaining calibration		
1014 - 1025	0.22 to 0.28		
1025 - 1026	Re zero / recalibrate gas detector		
1026 - 1029	0.13 to 0.25		
1029 - 1034	0.25 to 0.47		
1034 - 1047	0.43 to 0.77		
1047 - 1046	0.36		
1046 - 1049	Re zero / recalibrate gas detector		
1049 - 1052	0.20 - 0.37		
1052 - 1054	0.10 to 0.35		
1054 - 1055	1.19		Shale / Siltstone (organic)
1055 - 1057	0.27 to 0.36		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 03, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 7
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-5906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 12

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1092.0 metres
24 HOUR PROGRESS: 36.0 metres
AVERAGE DRILLING RATE: 2.5 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Scatter

06:00 HOUR DEPTH: 1106.0 metres
CURRENT DRILLING RATE: 2.6 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Scatter

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead on main hole from 1056.0 metres to 1057.0 metres. Circulate up bottom hole sample, drop survey, trip out of hole with Bit No. 1. Make up Bit No. 2: F15 517, trip into hole. Drill ahead and survey on main hole from 1057.0 metres to 1092.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 1064 metres - 2.000 degrees, 1084 metres - 2.000 degrees

MUD PROPERTIES: Density: 1100 kg/m3 Viscosity: 47 s/L Water Loss: 10.0 cm3/30 min
pH: 10.1 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter ?	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0				
Chinleoh	- 918.0				
Triassic	- 930.0				
Bellay	- 1070.0				
Fantasque	- 1111.0				
Mertson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 03, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 7
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 12

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 494.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1057	0.36	1057	1.19
1057 - 1102	0.06*	Trip Gas - Pumps off 495 minutes	
1102 - 1105	0.12 to 0.17		

* Butane lighter test responses indicate unit is calibrated and operational

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 04, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 8
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 13

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1156.0 metres FORMATION: Scatter
24 HOUR PROGRESS: 64.0 metres
AVERAGE DRILLING RATE: 2.9 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

06:00 HOUR DEPTH: 1176.0 metres FORMATION: Scatter
CURRENT DRILLING RATE: 3.8 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1092.0 metres to 1156.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 1113 metres - 1.500 degrees, 1142 metres - 1.000 degrees

MUD PROPERTIES: Density: 1100 kg/m3 Viscosity: 47 s/L Water Loss: 10.0 cm3/30 min
pH: 10.1 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 488.2	4.4	4.4	+ 488.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gurbutt	- 760.0				
Chinleoh	- 918.0				
Triassic	- 930.0				
Belloy	-1070.0				
Fantique	-1111.0				
Mattson	-1231.0				
Total Depth	-1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 04, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 8
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 13

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1115 - 1127	0.06 to 0.12		
1127 - 1136	0.10 to 0.23		
1136 - 1146	0.09 to 0.17		
1146 - 1149	0.29 to 0.59		
1149 - 1150	0.64		
		1150 - 1151	1.60 Oil stained Sandstone
		1151 - 1152	Carbonaceous Shale
1152 - 1153	0.29	1153 - 1154	0.71 Survey Gas
1154 - 1164	0.41 to 0.71		
1164 - 1166	0.81 to 0.99		
1166 - 1167	0.35		
		1167 - 1168	1.48 Oil stained Sandstone
1168 - 1171	0.77 to 0.99		
1171 - 1174	0.99 to 1.41		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 04, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 8
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-800-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 13

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1156.0 metres
24 HOUR PROGRESS: 64.0 metres
AVERAGE DRILLING RATE: 2.9 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Scatter

06:00 HOUR DEPTH: 1178.0 metres
CURRENT DRILLING RATE: 3.8 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Scatter

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1092.0 metres to 1156.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 1113 metres - 1.500 degrees, 1142 metres - 1.000 degrees

MUD PROPERTIES: Density: 1100 kg/m³ Viscosity: 47 s/L Water Loss: 10.0 cm³/30 min
pH: 10.1 F.C.: 1.9 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 486.2	4.4	4.4	+ 486.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gambutt	- 760.0				
Chinikeh	- 918.0				
Triassic	- 930.0				
Belloy	- 1070.0				
Fantasque	- 1111.0				
Meltson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 04, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 8
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 13

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1115 - 1127	0.06 to 0.12		
1127 - 1136	0.10 to 0.23		
1136 - 1146	0.09 to 0.17		
1146 - 1149	0.29 to 0.59		
1149 - 1150	0.64		
		1150 - 1151	1.60
			Oil stained Sandstone
		1151 - 1152	Carbonaceous Shale
1152 - 1153	0.29		
		1153 - 1154	0.71 Survey Gas
1154 - 1164	0.41 to 0.71		
1164 - 1166	0.81 to 0.99		
1166 - 1167	0.35		
		1167 - 1168	1.45
			Oil stained Sandstone
1168 - 1171	0.77 to 0.99		
1171 - 1174	0.99 to 1.41		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 05, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 9
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 14

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1228.0 metres FORMATION: Scatter

24 HOUR PROGRESS: 72.0 metres

AVERAGE DRILLING RATE: 2.9 metres per hour

00:00 HOUR STATUS: Drill ahead on main hole

06:00 HOUR DEPTH: 1244.0 metres FORMATION: Scatter

CURRENT DRILLING RATE: 3.2 metres per hour

06:00 HOUR STATUS: Drill ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1156.0 metres to 1228.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole.

SURVEYS: 1189 metres - 1.500 degrees, 1212 metres - 2.000 degrees

MUD PROPERTIES: Density: 1090 kg/m3 Viscosity: 46 s/L Water Loss: 10.0 cm3/30 min
pH: 10.7 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 488.2	4.4	4.4	+ 488.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gorbett	- 760.0				
Chinook	- 918.0				
Triassic	- 930.0				
Belloy	- 1070.0				
Fantasque	- 1111.0				
Mattson	- 1231.0				
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 05, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 9
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 14

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1174 - 1176	0.83 to 1.16	1178 - 1180	1.73 to 1.79 Oil stained sandstone / siltstone
1180 - 1181	1.08		
1181 - 1189	0.86		
1189 - 1190	0.23		
1190 - 1193	0.79 to 0.87	1193 - 1198	1.10 to 1.88 Oil stained sandstone / siltstone / carbonaceous shale
		1198 - 1200	1.95 to 3.28 Oil stained sandstone / siltstone / carbonaceous shale
1200 - 1203	1.04 to 1.05		
1203 - 1209	0.58 to 0.81		
1209 - 1211	0.74 to 1.14		
1211 - 1230	0.58 to 1.00		
1230 - 1234	0.34 to 0.58		
1234 - 1240	0.55 to 0.64		
1240 - 1241	0.48 to 0.51		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 06, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 10
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 15

GROUND ELEVATION: 480.1 metres

E.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1290.0 metres
24 HOUR PROGRESS: 52.8 metres
AVERAGE DRILLING RATE: 2.9 metres per hour
00:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Garbutt

06:00 HOUR DEPTH: 1302.0 metres
CURRENT DRILLING RATE: 2.9 metres per hour
06:00 HOUR STATUS: Drill ahead on main hole

FORMATION: Garbutt

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1228.0 metres to 1290.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole from 1290.0 metres to Core Point, estimated to be approximately 1327 metres. Circulate bottom hole sample, perform wiper trip to approximately 1235 metres, circulate and condition hole for coring operations. Trip out of hole, make and pick up core barrel, trip into hole for coring operations.

SURVEYS: 1241 metres -- 2.250 degrees, 1269 metres -- 2.750 degrees

MUD PROPERTIES:

Density: 1090 kg/m³
pH: 10.7

Viscosity: 46 s/L
F.C.: 1.0 mm
Water Loss: 10.0 cm³/30 min

FORMATION SAMPLE TOPS:

	Prognosis (mbsen)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (mbsen)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.5	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1267.6	1267.6	- 783.1	23.1 metres low
High Gamma Zone		1289.2	1289.2	- 804.7	
Chinle	- 916.0				
Triassic	- 930.0				
Beiloy	- 1070.0	Not penetrated			
Fantaxque	- 1111.0	Not penetrated			
Mattson	- 1231.0	Not penetrated			
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 06, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 10
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: : 600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 15

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1241-- 1244	0.41 to 0.48		
1244 - 1249	0.30 to 0.35		
1249 -- 1279	0.29 to 0.58		
1279 - 1287	0.55 to 0.76		
1287 - 1289	0.24 to 0.43		
1289 - 1292	0.24 to 0.35		
1292 - 1296	0.47 to 0.51		
1296 - 1301	0.35 to 0.67		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 07, 1999
REPORT TO: Gary Wlaster

WELL REPORT NO.: 11
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 16
GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1322.0 metres FORMATION: Chlnkeh
24 HOUR PROGRESS: 32.0 metres
AVERAGE DRILLING RATE: 3.1 metres per hour
00:00 HOUR STATUS: Tripping in hole with Core Barrel

06:00 HOUR DEPTH: 1327.1 metres FORMATION: Chlnkeh
CURRENT CORING RATE: 1.9 metres per hour
06:00 HOUR STATUS: Coring - Core No. 1 at 1327.1 m KB

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1290.0 metres to 1322.0 metres. Core point - March 06, 1999 at 13:15 hour. Circulate bottom hole sample, perform 15 stand wiper trip, circulate and condition hole for coring operations, drop survey. Trip out of hole to pick up and make up core barrel and core bit - C!: LI S. Make up core barrel and core bit, trip into hole with same.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Complete trip into hole with core barrel and core bit, on bottom at 03:45 hour. Cut Core No. 1 from 1322.0 m KB to 1327.1 m KB. Cut Core No. 1 to 1340.0 m KB. Trip out of hole with core barrel, recover core, and lay down core barrel.

SURVEYS: 1317 metres - 3.000 degrees

MUD PROPERTIES: Density: 1090 kg/m3 Viscosity: 51 s/L Water Loss: 8.0 cm3/30 min
pH: 10.7 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gorbett	- 760.0	1267.6	1267.6	- 783.1	23.1 metres low
High Gamma Zone		1289.2	1289.2	- 804.7	
Chlnkeh	- 916.4	1321.4	1321.4	- 836.9	81.1 metres high
Core Interval		1322.0	1322.0	- 837.5	
		1340.0	1340.0	- 855.5	
Triassic	- 930.0				
Belloy	- 1070.0	Not penetrated			
Faulstique	- 1111.0	Not penetrated			
Mattson	- 1231.0	Not penetrated			
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 07, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 11
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-5906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 16

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1301 - 1318	0.47 to 0.87		
1318 - 1320	0.23 to 0.38		
1320 - 1322	0.12	1322	1.01 Wiper Trip Gas Pumps off 90 minutes
1322	0.06		Trip Gas Pumps off 540 minutes
1322 - 1326	0.06		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 08, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 12
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 17

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1339.4 metres
24 HOUR PROGRESS: 17.4 metres
AVERAGE CORING RATE: 1.6 metres per hour
00:00 HOUR STATUS: Tripping into hole

FORMATION: Garbutt

06:00 HOUR DEPTH: 1339.4 metres
CURRENT DRILLING RATE: N/A metres per hour
06:00 HOUR STATUS: Reaming core rat hole

FORMATION: Garbutt

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Complete trip into hole with core barrel and core bit, on bottom at 03:45 hour. Cut Core No. 1 from 1322.0 m KB to 1339.4 m KB. 17.4 metres of core cut, 16.7 metres of core recovered, coring ended March 07, 1999 at 14:45 hour, total coring time 11.0 hours. Trip out of hole with core barrel, recover core, lay down core barrel. Evaluate core for potential closed chamber bottom hole testing - not warranted, release Alpine Closed Chamber Testing Company. Coring operator travels to Fort Liard airport with core to deliver to Morgan Air Services for delivery to AGAT Laboratories (Calgary). Make up BH No. 3: GS865, trip into hole.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Complete trip into hole, ream core rat hole, drill ahead and survey on main hole.

SURVEYS: 1317 metres - 3,000 degrees

MUD PROPERTIES: Density: 1090 kg/m³ Viscosity: 51 s/l. Water Loss: 5.0 cm³/30 min
pH: 10.7 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	- 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1267.6	1267.6	- 783.1	23.1 metres low
High Gamma Zone		1289.2	1289.2	- 804.7	
Clidukeli	- 918.0	1321.4	1321.4	- 836.9	81.1 metres high
Core Interval		1322.0	1322.0	- 837.5	
		1339.4	1339.4	- 854.9	
Triassic	- 930.0				
Bellay	- 1070.0	Not penetrated			
Fantasque	- 1111.0	Not penetrated			
Mattson	- 1231.0	Not penetrated			
Total Depth	- 1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 08, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 12
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 17

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 494.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1322 - 1339.4	0.06		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 09, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 13
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 18

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1402.0 metres
24 HOUR PROGRESS: 62.6 metres
AVERAGE DRILLING RATE: 3.9 metres per hour
00:00 HOUR STATUS: Drilling ahead on main hole

FORMATION: Chinlekh

06:00 HOUR DEPTH: 1416.0 metres
CURRENT DRILLING RATE: 2.6 metres per hour
06:00 HOUR STATUS: Drilling ahead on main hole

FORMATION: Triassic

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Complete reaming of core rathole. Drill ahead and survey on main hole from 1339.4 metres to 1402.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole to Total Depth -- estimated to be 1450.0 metres KB (45 metres into the Triassic). Circulate up bottom hole sample, perform 10 stand wiper trip, circulate and condition hole for open hole logging. Drop survey, trip out of hole, rig up Computalog and log well.

SURVEYS: 1317 metres - 3.000 degrees

MUD PROPERTIES: Density: 1090 kg/m3 Viscosity: 51 s/L Water Loss: 8.0 cm3/30 min
pH: 10.7 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinlekh	- 916.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Bellay	- 1070.0	Not penetrated			
Fantasque	- 1111.0	Not penetrated			
Mattson	- 1231.0	Not penetrated			
Total Depth	- 1440.0	1450.0	1450.0	- 965.5	474.5 metres high

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 09, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 13
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 18

GROUND ELEVATION: 460.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1322 - 1347	0.06		
1347 - 1371	0.06		
1371 - 1377	1.35 - 1.40		
1377 - 1384	1.29 - 1.35		
1384 - 1392	1.20 - 1.24		
1392 - 1397	1.23 - 1.26		
1397 - 1403	1.27 - 1.29		
1403 - 1411	1.29 - 1.32		
1411 - 1414	1.05 - 1.16		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 10, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 14
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 19

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1458.0 metres
24 HOUR PROGRESS: 56.0 metres
AVERAGE DRILLING RATE: 2.7 metres per hour
00:00 HOUR STATUS: Drilling ahead on main hole

FORMATION: Triassic

06:00 HOUR DEPTH: 1465.0 metres
CURRENT DRILLING RATE: N/A metres per hour
06:00 HOUR STATUS: Tripping out of hole in preparation for closed chamber testing

FORMATION: Triassic

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1402.0 metres to 1458.0 metres.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drill ahead on main hole to from 1456.0 metres to 1465.0 metres, perform 10 stand wiper trip. Trip out of hole in preparation for closed chamber testing operations. Run closed chamber test.

SURVEYS: 1411 metres - 1.750 degrees

MUD PROPERTIES: Density: 1100 kg/m3 Viscosity: 49 s/L Water Loss: 10.0 cm3/30 min
pH: 10.3 F.C.: 10.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury 7	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scotter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinkeh	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Bellay	-1070.0	Not penetrated			
Fantasque	-1111.0	Not penetrated			
Maitson	-1231.0	Not penetrated			
Total Depth	-1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 16, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 14
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 19

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1414 - 1426	1.03 to 1.32		
1426 - 1433	1.49 to 1.90		
1433 - 1437	1.90 to 2.10		
1437 - 1447	2.04 to 2.74		
1447 - 1454	1.99 to 2.30		
1454 - 1465	1.52 to 1.71		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 11, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 15
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 20

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1465.0 metres FORMATION: Triassic
24 HOUR PROGRESS: 7.0 metres
AVERAGE DRILLING RATE: 2.4 metres per hour
00:00 HOUR STATUS: Tripping out of hole with testing equipment

06:00 HOUR DEPTH: 1465.0 metres FORMATION: Triassic
CURRENT DRILLING RATE: N/A metres per hour
06:00 HOUR STATUS: Tripping into hole with Bkt No. 3RR: GS865

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead on main hole from 1458.0 metres to 1465.0 metres. Circulate up bottom hole sample, perform 10 stand wiper trip, trip out of hole. Rig up Alpine Testing Ltd. run in hole and conduct closed chamber inflate straddle test. Complete test periods, trip out of hole with testing equipment.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Complete trip out of hole with testing equipment, recover recorders, lay down test tools, make up Bkt No. 3RR: GS865. Drill ahead and survey on main hole.

SURVEYS: 1459 metres - 1.750 degrees

MUD PROPERTIES: Density: 1100 kg/m³ Viscosity: 49 s/L Water Loss: 10.0 cm³/30 min
pH: 10.3 F.C.: 10.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 637.5	
Core Interval Base		1339.4	1339.4	- 654.9	
Chinikeh	- 916.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Belloy	-1070.0				
Fantasque	-1111.0				
Mattson	-1231.0				
Total Depth	-1440.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 11, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 15
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 20

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
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1465 --

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 12, 1999
REPORT TO: Gary Winder

WELL REPORT NO.: 16
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 21

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres
CURRENT TEMPERATURE: -18 C

00:00 HOUR DEPTH: 1494.0 metres FORMATION: Triassic
24 HOUR PROGRESS: 29.0 metres
AVERAGE DRILLING RATE: 3.2 metres per hour
00:00 HOUR STATUS: Tripping out of hole for logging

06:00 HOUR DEPTH: 1494.0 metres FORMATION: Triassic
CURRENT DRILLING RATE: N/A metres per hour
06:00 HOUR STATUS: Logging with Computalog - Run No. 1

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Complete trip out of hole with testing equipment, recover recorders, lay down test tools, make up Bit No. 4RR: GS245. Trip into hole, drill ahead and survey on main hole from 1465.0 metres to 1494.0 metres - Total Depth March 10, 1999 at 20:00 hour. Circulate up bottom hole sample, perform 5 stand wiper trip, circulate and condition hole for logging, drop survey, trip out of hole for logging.

FORECAST ACTIVITIES NEXT 24 HOUR PERIOD: Drop survey, trip out of hole in preparation for logging. Rig up Computalog and log well bore: Run No. 1: SPED and STI combination device, Run No. 2: MDA. Current status - tie in depth to base of surface casing, run in to bottom. Logging operations should be completed at approximately 20:00 hour today.

SURVEYS: 1490 metres - 2.250 degrees

MUD PROPERTIES: Density: 1085 kg/m3 Viscosity: 80 s/l. Water Loss: 7.2 cm3/30 min
pH: 9.9 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinle	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Bellevue	- 1070.0				
Fantasque	- 1111.0				
Maitson	- 1231.0				
Total Depth	- 1440.0	1494.0	1494.0	- 1009.5	430.5 metres high

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 12, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 16
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-800-700-3906

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 21

GROUND ELEVATION: 460.1 metres E.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1465 - 1492	2.68 to 2.90		
1492 - 1494	2.33 to 2.40		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 13, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 17
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906
CURRENT TEMPERATURE: - 16 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 22

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1498.0 metres FORMATION: Triassic
24 HOUR PROGRESS: 4.9 metres
AVERAGE DRILLING RATE: 1.9 metres per hour
00:00 HOUR STATUS: Drilling ahead on main hole

06:00 HOUR DEPTH: 1513.0 metres FORMATION: Triassic
CURRENT DRILLING RATE: 3.1 metres per hour
06:00 HOUR STATUS: Drilling ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drop survey, trip out of hole in preparation for logging. Rig up Computalog and log well bore.

Run No. 1: SPeD and STI combination device / Operating hours - 5.0
SpED - 1494.7 m to 487.9 m (GR to 25 m)
STI - 1492.6 m to 487.9 m

Run No. 2: MDA / Operating hours - 6.0
1488.5 m to 487.9 m

Rig out Computalog, make up Bit No. 4RR: GS86F, trip into hole. Drill ahead and survey on main hole from 1494.0 metres to 1498.0 metres.

FORECAST ACTIVITIES: Drill ahead and survey on main hole.

SURVEYS: 1490 metres - 2.250 degrees

MUD PROPERTIES: Density: 1085 kg/m3 Viscosity: 60 s/L Water Loss: 7.5 cm3/30 min
pH: 10.8 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinook	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Intermidiate Total Depth	-1440.0	1494.0	1494.0	- 1009.5	430.5 metres high
Belloy	-1070.0				
Fantasque	-1111.0				
Mattson	-1231.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 13, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 17
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-5906
CURRENT TEMPERATURE: - 16 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 22

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1494	2.77	1494	3.04 (Trip Gas) Pumps off 1305 minutes
1494 - 1498	2.51 to 2.86		
1498 - 1508	2.28 to 2.39		
1508 - 1511	2.44 to 2.48		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 14, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 18
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-800-700-3906
CURRENT TEMPERATURE: - 8 C

WELL NAME AND LOCATION: CDN FOREST at FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 23

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1565.0 metres

FORMATION: Belloy

24 HOUR PROGRESS: 67.0 metres

AVERAGE DRILLING RATE: 3.4 metres per hour

00:00 HOUR STATUS: Drilling ahead on main hole

06:00 HOUR DEPTH: 1579.0 metres

FORMATION: Fantasque

CURRENT DRILLING RATE: 2.1 metres per hour

06:00 HOUR STATUS: Drilling ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1498.0 metres to 1550.0 metres, jack up drill rig. Drill ahead and survey on main hole from 1550.0 metres to 1565.0 metres.

FORECAST ACTIVITIES: Drill ahead and survey on main hole. Potential bit trip within this period.

SURVEYS: 1525.0 metres - 2.250 degrees

MUD PROPERTIES: Density: 1085 kg/m3
pH: 10.6

Viscosity: 55 s/L Water Loss: 7.5 cm3/30 min
F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gambuz	- 760.0	1321.4	1321.4	- 639.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 654.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chidneh	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Belloy	- 1070.0	1525.2	1525.2	- 1040.7	29.3 metres high
Fantasque	- 1111.0	1567.2	1567.2	- 1082.7	28.3 metres high
Mattson	- 1231.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 14, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 18
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906
CURRENT TEMPERATURE: - 8 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 23

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1511 - 1521	2.48 to 2.89		
1521 - 1537	3.08 to 3.28		
1537 - 1548	2.84 to 3.04		
1548 - 1550	2.80 to 2.81		
1550 - 1551	2.31		
1551 - 1552	No readings - recalibrate gas detector		
1552 - 1553	2.91		
1553 - 1566	2.51 to 2.79	1566 - 1573	2.87 to 3.31 Bituminous shale, sandstone, and chert
1568 - 1577	2.54 to 2.73		
1573 - 1577	2.54 to 2.73		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 15, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 19
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906
CURRENT TEMPERATURE: - 6 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 24

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1591.0 metres

FORMATION: Fantasque

24 HOUR PROGRESS: 26.0 metres

AVERAGE DRILLING RATE: 1.9 metres per hour

00:00 HOUR STATUS: Drifting ahead on main hole

06:00 HOUR DEPTH: 1600.0 metres

FORMATION: Fantasque

CURRENT DRILLING RATE: 1.3 metres per hour

06:00 HOUR STATUS: Drilling ahead on main hole

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1565.0 metres to 1582.0 metres, circulate bottom hole sample, drop survey. Trip out of hole to replace drill bit. Make up Bt No. 5: F35, trip into hole. Drill ahead on main hole from 1582.0 metres to 1585.0 metres, slip and cut drilling line. Drill ahead and survey on main hole from 1585.0 metres to 1591.0 metres.

FORECAST ACTIVITIES: Drill ahead and survey on main hole.

SURVEYS: 1572.0 metres - 3.250 degrees

MUD PROPERTIES: Density: 1090 kg/m3 Viscosity: 50 s/L Water Loss: 7.5 cm3/30 min
pH: 10.7 F.C.: 1.0 mm

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scatter	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Garbutt	- 760.0	1321.4	1321.4	- 839.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinleoh	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Beley	- 1070.0	1525.2	1525.2	- 1040.7	29.3 metres high
Fantasque	- 1111.0	1567.2	1567.2	- 1082.7	28.3 metres high
Mattson	- 1231.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 15, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 19
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-800-700-3906
CURRENT TEMPERATURE: - 6 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 24

GROUND ELEVATION: 480.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1577 - 1582	2.57 to 2.63	1582	2.93 Trip Gas Pumps off 525 ndnutes
1582 - 1585	2.48 to 2.57		
1585 - 1593	2.63 to 2.74		
1593 - 1599	2.74 to 2.87		

DAX Consulting Ltd.

DAILY GEOLOGICAL WELL REPORT

DATE: March 16, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 20
REPORT FROM: Bill Godwin
SITE TELEPHONE NO.: 1-600-700-3906
CURRENT TEMPERATURE: - 7 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour

DAYS FROM SPUD: 25

GROUND ELEVATION: 480.1 metres

K.B. ELEVATION: 484.5 metres

00:00 HOUR DEPTH: 1626.0 metres
24 HOUR PROGRESS: 35.0 metres
AVERAGE DRILLING RATE: 1.7 metres per hour
00:00 HOUR STATUS: Drilling ahead on main hole

FORMATION: Fantasque

06:00 HOUR DEPTH: 1634.0 metres
CURRENT DRILLING RATE: 1.4 metres per hour
06:00 HOUR STATUS: Drilling ahead on main hole

FORMATION: Fantasque

OPERATIONS SUMMARY LAST 24 HOUR PERIOD: Drill ahead and survey on main hole from 1591.0 metres to 1626.0 metres.

FORECAST ACTIVITIES: Drill ahead and survey on main hole.

SURVEYS: 1624.0 metres - 3.875 degrees

MUD PROPERTIES: Density: 1090 kg/m³ Viscosity: 55 s/L Water Loss: 7.5 cm³/30 min
pH: 10.7 F.C.: 1.0 min

FORMATION SAMPLE TOPS:

	Prognosis (Subsea)	Measured Depth (metres)	T.V.D. Depth (metres)	T.V.D. (subsea)	Change from Prognosis
Quaternary	+ 480.2	4.4	4.4	+ 480.1	0.1 metres low
Cretaceous	+ 300.0	177.0	177.0	+ 307.5	7.5 metres high
Shaftesbury ?	+ 21.0	431.0	431.0	+ 53.5	32.5 metres high
Lower Shaftesbury	- 201.0	637.8	637.8	- 153.3	47.7 metres high
Scutler	- 650.0	1052.0	1052.0	- 567.5	82.5 metres high
Gardbutt	- 760.0	1321.4	1321.4	- 639.6	76.9 metres low
High Gamma Zone		1338.6	1338.6	- 854.1	
Core Interval Top		1322.0	1322.0	- 837.5	
Core Interval Base		1339.4	1339.4	- 854.9	
Chinkeh	- 918.0	1391.4	1391.4	- 906.9	11.1 metres high
Triassic	- 930.0	1405.2	1405.2	- 920.7	9.3 metres high
Bellroy	- 1070.0	1525.2	1525.2	- 1040.7	29.3 metres high
Fantasque	- 1111.0	1567.2	1567.2	- 1082.7	28.3 metres high
Mattson	- 1231.0				

DAX Consulting Ltd.

TOTAL GAS RESPONSE SUMMARY

DATE: March 16, 1999
REPORT TO: Gary Winter

WELL REPORT NO.: 20
REPORT FROM: Bill Gedwin
SITE TELEPHONE NO.: 1-606-780-3986
CURRENT TEMPERATURE: - 7 C

WELL NAME AND LOCATION: CDN FOREST et al FORT LIARD K-32
LATITUDE: 60 01' LONGITUDE: 123 21'

SPUD DATE: February 19, 1999 at 14:00 hour DAYS FROM SPUD: 25

GROUND ELEVATION: 460.1 metres K.B. ELEVATION: 484.5 metres

DEPTH INTERVAL (metres)	AVERAGE BACKGROUND TOTAL GAS (%)	DEPTH INTERVAL (metres)	SIGNIFICANT TOTAL GAS RESPONSE (%) (includes connection, survey and trip gas responses)
1599 - 1606	2.89 to 3.04		
1606 - 1617	2.86 to 2.93		
1617 - 1626	3.03 to 3.27		
1626 - 1633	3.21 to 3.26		

DAX Consulting Ltd.
CDN FOREST et al FORT LIARD K 32 60 01 123 21

ADDENDUM C - GEOLOGICAL STRIP LOGS



CONSULTING LTD.

Scale 1:240 Metric

Well Name: CON FOREST at FORT LIARD K 32
Location: K 32, 80 01 123 21
Licence Number: 990317@170HR
Region: FORT LIARD
Drilling Completed: 990317@170HR
Sput Date: 990317@170HR
Surface Coordinates: 49 01' 39" NORTH
Longitude: 123 21' 48" WEST
Bottom Hole Coordinates: 49 01' 39" NORTH
Longitude: 123 21' 48" WEST
Ground Elevation (m): 484.5
Logged Interval (m): 1895.4
Formation: QUATERNARY - PERMIAN - FANTASQUE
Type of Drilling Fluid: K MINUS POLYMER

Printed by Setup LOG from Weisight Systems Inc. 1-800-447-1834

Company: CANADIAN FOREST OIL LTD.
Address: 800, 300 - 6TH AVENUE S.W.
CALGARY, ALBERTA
T2P 3G3

Geologist: BILL GODWIN
Company: DAX CONSULTING LTD.
Address: 4216 DALLAS ROAD N.W.
CALGARY, ALBERTA
T3A 1B8

CORES
CORE NO. 1: CRETACEOUS - FORT ST. JOHN GROUP
GARBUIT FORMATION
INTERVAL: 1322.0 m to 1338.4 m
CUT: 17.4 m
RECOVERED: 18.7 m
TOTAL CORING TIME: 11.00 HOURS
CORE SHIPPED TO CALGARY VIA MORGAN AIR SERVICES LTD.

DRILL STEM TEST NO. 1: CRETACEOUS - FORT ST. JOHN GROUP
CHINKEN FORMATION
INTERVAL: 1394.0 m to 1408.0 m
TYPE OF TEST: INFLATE STRADDLE CLOSED CHAMBER

DRILL STEM TEST NO. 2: PERMIAN
FANTASQUE FORMATION
INTERVAL: 1830.0 m to 1895.4 m
TYPE OF TEST: INFLATE BOTTOM HOLE CLOSED CHAMBER

DRILL CUTTINGS
INTERVAL
0 m to 1322 m at 5 m intervals
1322 m to 1338.4 m at 1 m intervals
1338.4 m to 1404 m at 5 m intervals
1404 m to 1895.4 m at 5 m intervals

SAMPLE TRAYS AND VIALS
CANADIAN FOREST OIL LTD. - FOUR (4) SETS
GSC - TWO (2) SETS

SAMPLE BAGS
GSC - ONE (1) SET

PRIMARY ZONE OF INTEREST
CRETACEOUS - FORT ST. JOHN GROUP / CHINKEN FORMATION
PERMIAN - FANTASQUE FORMATION

VERTICAL WELL
MAXIMUM DEVIATION - 4.000 DEGREES @ 1885 m KB

OPEN HOLE LOGGING PROGRAM
COMPUTALOG
1999 03 12

SERVICES
STI 1484.7 m to 487.9 m // 6.0 HRS
SPeD 1482.8 m to 487.9 m
GR 1482.8 m to 25.0 m
MDA 1488.5 m to 487.9 m // 6.0 HRS
SHEAR WAVE - 1488.5 m to 1000.0 m
P WAVE - 1488.5 m to 487.9 m

COMPUTALOG
1999 03 18

SERVICES
SPeD 1894.0 m to 1480.0 m // 3.5 HRS
CAL 1480.0 m to 487.9 m
STI 1482.8 m to 1480.0 m // 3.5 HRS
MDA 1488.5 m to 1480.0 m // 4.5 HRS
SHEAR WAVE - 1488.5 m to 1450.0 m
P WAVE - 1889.9 m to 1480.0 m

ROCK TYPES
Anhydrite
Bentonite
Chert
Clay
Coal

ACCESSORIES
Coral
Crin
Echin
Fish
Fossil
Gastrop
Ostrac
Pelec
Plant
Pelec
Plant
Strom
Anhyd
Arg
Bent
Coal

OTHER SYMBOLS
Vuggy
Porosity
Well
Moderate
Poor
Bundling
Submid

INTERVALS
None
Core
Out
RR
Sidewall

POSSIBILITY TYPE
Entry
Fertile
Inert
Mollic
Organic
Pinpoint

MINERAL
Anhyd
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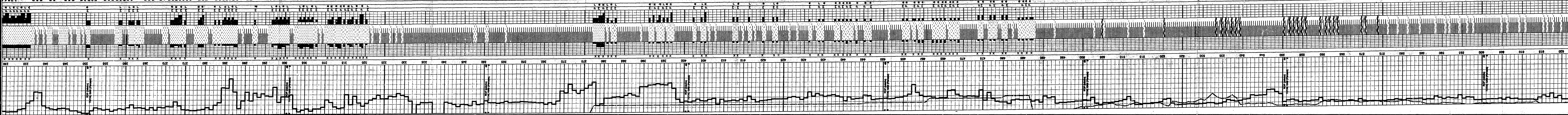
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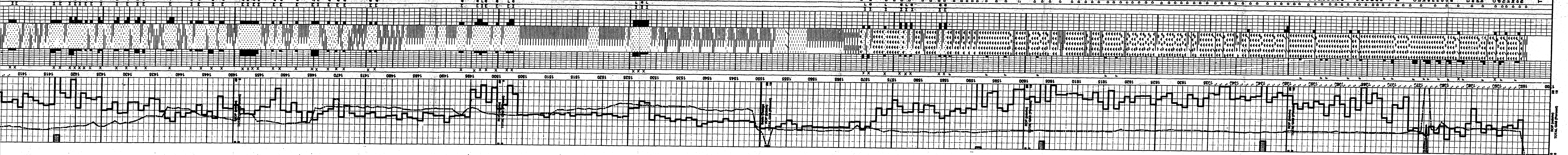
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Hyalin
Keol

POSSIBILITY TYPE
Entry
Fertile
Inert
Mollic
Organic
Pinpoint

[illegible]

[illegible]

**BEST
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ON FILE**



Scale 1:1200 Metric
CDN FOREST et al FORT LIARD K 32
WELL ID 123 21
Region: FORT LIARD
Drilling Completed: 990317@1700HR

Well Name: K 32 60 01 123 21
Licence Number: 990219@1400HR
Spud Date: 990219@1400HR
Surface Coordinates: LATITUDE: 60 01 29" NORTH
LONGITUDE: 123 21 49" WEST
Bottom Hole: LATITUDE: 60 01 29" NORTH
LONGITUDE: 123 21 49" WEST
Ground Elevation (m): 484.1 K.B. Elevation (m): 484.5
Logged Interval (m): 0.0 To: 1696.4 Total Depth (m): 1696.4
Formation: QUATERNARY - PERMAN FANTASQUE
Type of Drilling Fluid: K MINUS POLYMER

Printed by STRIP-LOG from WellSight Systems Inc. 1-800-447-1834

OPERATOR

Company: CANADIAN FOREST OIL LIMITED
Address: 800, 600 - 6th Avenue S.W.
Calgary, Alberta
T2P 3G3

GEOLOGIST

Name: BILL GOWIN
Company: DAX Consulting Ltd.
Address: 4215 Duhart Road N.W.
Calgary, Alberta
T3A 1B6

CORES

CORE NO. 1: CRETACEOUS - FORT ST. JOHN GROUP
GARBUTT FORMATION

INTERVAL: 1322.0 m to 1339.4 m
CUT: 17.4 m

RECOVERED: 16.7 m

TOTAL CORING TIME: 11.00 HOURS

DSTs

DRILL STEM TEST NO. 1: CRETACEOUS - FORT ST. JOHN GROUP
CHINKEH FORMATION

INTERVAL: 1394.0 m to 1466.0 m

TYPE OF TEST: INFLATE STRADDLE CLOSED CHAMBER

DRILL STEM TEST NO. 2: PERMANIAN
FANTASQUE FORMATION

INTERVAL: 1636.0 m to 1696.4 m

TYPE OF TEST: INFLATE BOTTOM HOLE CLOSED CHAMBER

COMMENTS

DRILL CUTTINGS

INTERVAL: 0 m to 1322 m at 5 m Intervals

1322 m to 1339.4 m at 5 m Intervals

1339.4 m to 1494 m at 5 m Intervals

1494 m to 1696.4 m at 5 m Intervals

SAMPLE TRAYS AND VIALS

CANADIAN FOREST OIL LIMITED - FOUR (4) SETS

GSC - TWO (2) SETS

SAMPLE BAGS

GSC - ONE (1) SET

PRIMARY ZONE OF INTEREST

CRETACEOUS - FORT ST. JOHN / CHINKEH FORMATION

TERMINATING FORMATION: PERMANIAN - FANTASQUE FORMATION

VERTICAL WELL - MAXIMUM DEVIATION - 4.000 DEGREES @ 1696 m KB

OPEN HOLE LOGGING PROGRAM

COMPUTALOG

1999 03 12

SERVICES

STI 1494.7 m to 487.9 m // 6.0 HRS

SPeD 1492.6 m to 487.9 m

GR 1492.6 m to 25.0 m

MDA 1488.6 m to 487.9 m // 6.0 HRS

SHEAR WAVE - 1488.6 m to 1450.0 m

P WAVE - 1488.6 m to 487.9 m

COMPUTALOG

1999 03 18

SERVICES

SPeD 1694.8 m to 1450.0 m

STI 1633.2 m to 1450.0 m // 3.5 HRS

MDA 1689.8 m to 1450.0 m // 4.5 HRS

SHEAR WAVE - 1689.8 m to 1450.0 m

P WAVE - 1689.8 m to 1450.0 m

ROCK TYPES

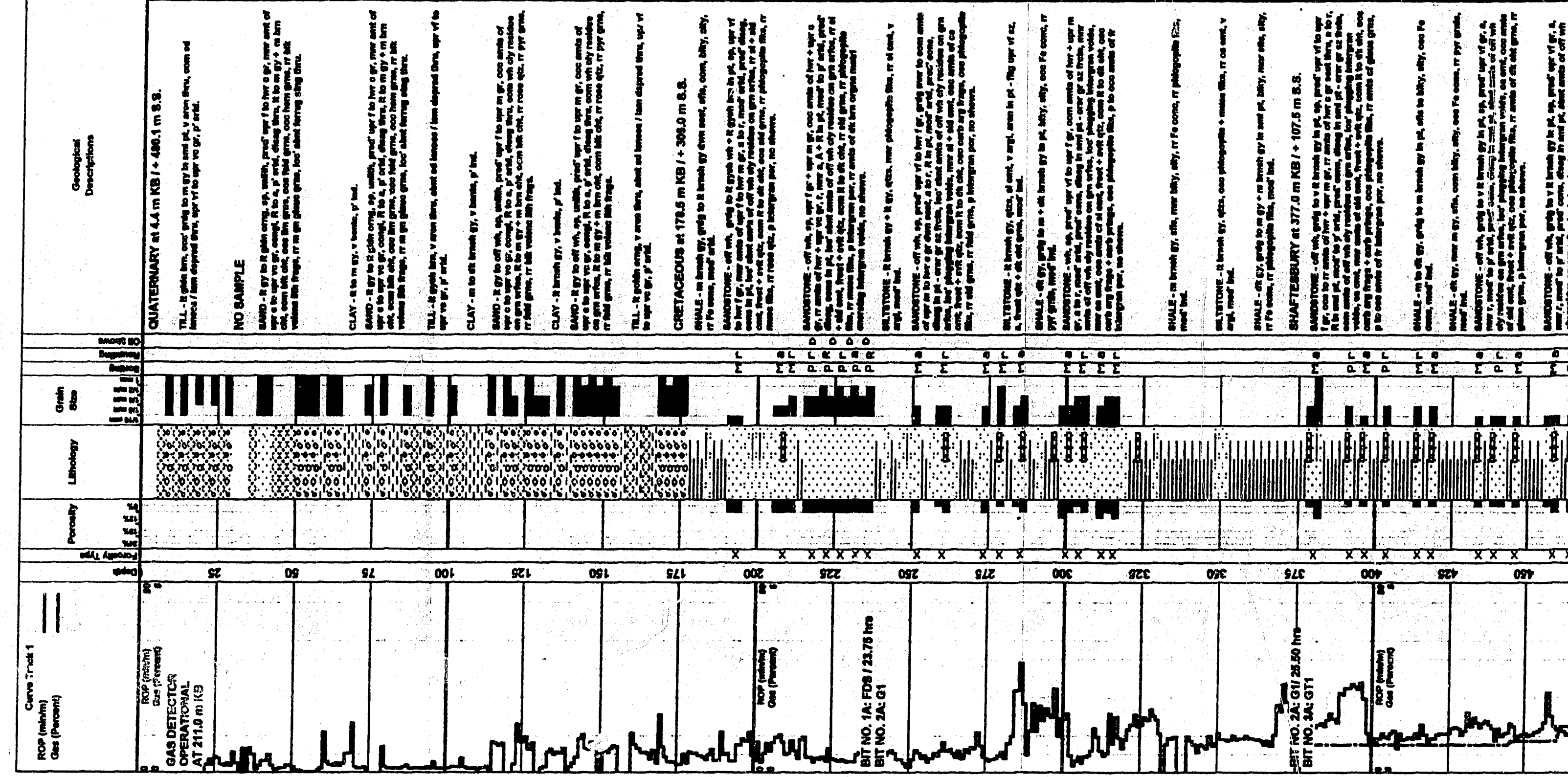
Anhy Marl Congl Dol Gyp Lignite Mnst Ss Tili Blank
Bent Nodule Phos Pyr Salt Sandy Silt Sil Sulphur Turf Fossil Algae Amph Belim Bloclast Brech Bryozoa Cephal
Brec Cht Cyst Coal

ACCESSORIES

Marl Minrd Nodule Phos Pyr Salt Sandy Silt Sil Sulphur Turf Fossil Algae Amph Belim Bloclast Brech Bryozoa Cephal

OTHER SYMBOLS

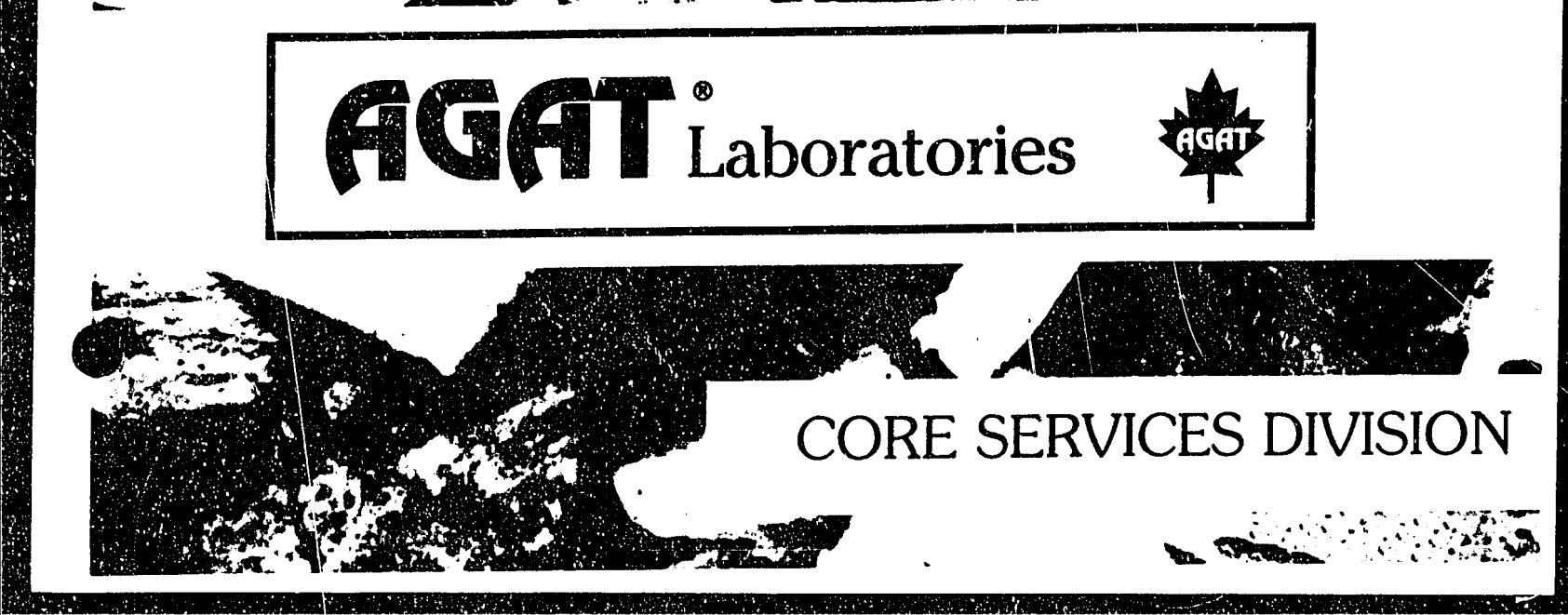
Porosity Type: Earthy, Fenest, Fracture, Inter, Moldic, Organic, Pinpoint
Sorting: Vuggy, Well, Moderate, Poor, Rounded, Submd
Oil Shows: Angular, Even, Spotted, Quee, Dead
Intervals: None, Core, Dst, RR, Sidewall



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CORE ANALYSIS

CORE ANALYSIS REPORT
CDN FOREST et al FORT LIARD K-32
CHINKEH FORMATION
K-32-060-10-123-15



AGAT[®] Laboratories



CORE SERVICES DIVISION

AGAT® Laboratories



CORE ANALYSIS REPORT

CDN FOREST et al FORT LIARD K-32

CHINKEH FORMATION

K-32-060-10-123-15

Prepared for:

CANADIAN FOREST OIL LTD.

RC8221

March, 1999

"In Pursuit of Excellence"

• **AIHA Accredited**

• **CAEAL Accredited**

• **Registered with APEGGA**

TABLE OF CONTENTS

Final Core Analysis Data..... 1

General Information

Sample Handling

Abbreviations

Core Logs

CORE ANALYSIS DATA

**CDN FOREST et al FORT LIARD K-32
K-32-060-10-123-15**

COMPANY : CANADIAN FOREST OIL LTD.
 WELL NAME : CDN FOREST et al FORT LIARD K-32
 LOCATION : K-32-060-10-123-15
 FORMATION : CHINKEH
 DRILLING FLUID : WATER BASE MUD

PAGE : 1
 DATE : 03-18-1999
 W/O No : RC8221

ROUTINE CORE ANALYSIS

Sample	interval (m)		Rep Thick (m)	Sample Length (m)	Gas Permeability			Capacity Kmax mD-m	Porosity	Capacity Ø-m	Density (Kg/m³)		Residual Saturation		Remarks
	Top	Base			Kmax (mD)	K90 (mD)	Kv (mD)				Bulk	Grain	Oil	Water	

CORE NO. 1 1322.00 - 1339.40 (CUT / RECEIVED = 17.40 / 16.55 m TOTAL BOXES = 12)

NA	1322.00	1338.55	16.55	-	-	-	-	-	-	-	-	-	-	-	sh
LC	1338.55	1339.40	0.85	-	-	-	-	-	-	-	-	-	-	-	Lost Core

SAMPLE HANDLING

AGAT LABORATORIES CORE SERVICES

SAMPLE HANDLING AND ANALYSIS INFORMATION

Company : CANADIAN FOREST OIL LTD.
Well : CDN FOREST et al FORT LIARD K-32
Location : K-32-060-10-123-15

Coring Equipment : Diamond
Coring Fluid : Water Base Mud
Core Diameter : 0.09 m
Total Cored : 17.40 m
Total Recovered : 16.55 m

W/O Number : RC8221
Date : 03-18-1999

HANDLING

Core Transported in : Boxes

REMARKS

Total Gamma Ray Log Only
No Further Analysis Required By Client
7 Sets of Color Photos of Slabbed Core



ABBREVIATIONS

COMMON ABBREVIATIONS

abnt Abundant
 abv Above
 Alg Algae (al)
 alt Altered (ing)
 amor Amorphous
 Amph Amphipora
 ang Angular
 anhy Anhydrite (ic)
 app Appear
 apr Apparent
 aprox Approximate (ly)
 arg Argillaceous
 ark Arkose (ic)
 asph Asphalt (ic)
 AST Assigned similar to
 (no actual sample taken)
 apha Aphanitic

bcm Become (ing)
 bd Bed
 bdd Bedded
 bdg Bedding
 Belm Belemnites
 bent Bentonite (ic)
 bf Buff
 biocl Bioclastic
 bioturb Bioturbated
 bit Bitumen (inous)
 bl Blue (ish)
 blk Black
 blkky Blocky
 bnd Band (ed)
 Brac Brachiopod
 brec Breccia (ted)
 bri Bright
 brit Brittle
 brn Brown
 Bry Bryozoa
 bulb Bulbous
 bur Burrowed

c Coarse (ly)
 calc Calcite (areous)
 carb Carbonaceous
 cbl Cobble (64-256 mm)
 Ceph Cephalopod
 cgl Conglomerate
 chk Chalk (y)
 chlor Chlorite
 cht Chert
 chty Cherty
 cl Clastic
 cln Clean
 clr Clear
 cly Clay (ey)
 com Common
 coq Coquina
 Cor Coral
 crbnt Carbonate
 Crin Crinoid (al)
 crm Cream
 crpxl Cryptocrystalline
 ctc Contact

deb Debris
 decr Decrease (ing)
 desi Desiccation
 dism Disseminated
 dk Dark (er)
 dns Dense (er)
 dol Dolomite (ic)
 drsy Drusy
 dtrl Detrital (us)

elg Elongate
 euhed Euhedral

f Fine (ly)
 fau Fauna
 Fe Iron-Ferruginous
 Fe-mag Ferromagnesian
 fenst Fenestral
 fis Fissile
 fl Fill (ed)
 fld Feldspar (thic)
 flk Flake
 flky Flaky
 flor Fluorescence
 flt Fault (ed)
 fltg Floating
 foram Foraminifera
 fos Fossil (iferous)
 fr Fair
 frac Fracture (ed)
 frag Fragment (al)
 fri Friable
 frmwk Framework
 fros Frosted

g Good
 Gast Gastropod
 gl Glass (y)
 glau Glauconite (ic)
 gn Green
 gr Grain (ed)
 gran Granular
 grd Grade (ed)
 grnl Granule (2-4 mm)
 gy Grey
 gyp Gypsum (iferous)

COMMON ABBREVIATIONS (CONTINUED)

hd	Hard	m	Medium	pk	Pink
hfrac	Horizontal Fracture	mar	Maroon	piag	Plagioclase
hi	High	mas	Massive	plcy	Pelecypod
hrtl	Horizontal	mat	Material, matter	pl	Plant
hvy	Heavy	mica	Mica (ceous)	plty	Platy
hydc	Hydrocarbon	mic	Micro	por	Porous (sity)
		mky	Milky	pos	Possible (ility)
ig	Igneous	mnr	Minor	p-p	Pin-Point
imbed	Imbedded	mnrl	Mineral (ized)	pred	Predominant (ly)
imp	Impression	mnut	Minute	prim	Primary
incl	Included (sion)	Mol	Mollusca	prob	Probable (ly)
incr	Increase	mot	Mottled	prom	Prominent (ly)
indst	Indistinct	mrly	Marly	pt	Part (ly)
intbd	Interbedded	mtx	Matrix	ptch	Patch (es)
intcl	Intraclast (s)			ptg	Parting
intfrag	Interfragmental	n	No, none, non	purp	Purple
intgran	Intergranular	nod	Nodule	pyr	Pyrite (ic) (ized)
intlarn	Interlaminated	num	Numerous	pyrbit	Pyrobitumen
intr	Intrusion (ive)				
intv	Interval	o	Oil	qtz	Quartz
intxl	Intercrystalline	occ	Occasional	qtzc	Quartzitic
ireg	Irregular	od	Odor	qtzs	Quartzose
ird	Iridescent	ool	Oolite (ic)		
intrsk	Intraskkeletal	op	Opaque	rd	Round (ed)
		org	Organic	repl	Replaced (ing) (ment)
kao	Kaolin	orng	Orange	rexl	Recrystallized
		orth	Orthoclase	rmn	Remains (nant)
lam	Laminated	Ost	Ostracod	rr	Rare
lchd	Leached	ovgth	Overgrowth	rsns	Resinous
len	Lentil (cular)	ox	Oxidized	rthy	Earthy
lith	Lithographic				
lmy	Limy	p	Preliminary (as suffix)	s	Small
lrg	Large (er)	pbl	Pebble (4-64 mm)	sa	Salt (y)
ls	Limestone	pel	Pellet	S	Sulphur
lse	Loose	perm	permeability	s&p	Salt & Pepper
lstr	Lustre	pet	Petroleum (iferous)	sat	Saturated
lt	Light (er)	phos	Phosphate (ic)	sb	Sub

COMMON ABBREVIATIONS (CONTINUED)

sc	Scales	tab	Tabular	xbd	Cross-bedded
scat	Scattered	tex	Texture	xbdg	Cross-bedding
sd	Sand (1/16 - 2mm)	Tham	Thamnopora	xl	Crystal (line)
sdv	Sandy	thk	Thick	xlam	Cross-laminated
sec	Secondary	thn	Thin		
sed	Sediment (ary)	thru	Throughout	yel	Yellow
sft	Soft	tr	Trace		
sh	Shale	trns	Translucent	zn	Zone
shad	Shadow	trnsp	Transparent		
shy	Shaly	tt	Tight	*	Broken core
sid	Siderite (ic)	tub	Tubular	/	With
sil	Silica			> 10000	Permeability over 10000 mD
sks	Slickensided	uncons	Unconsolidated	<0.01	Permeability less than 0.01 mD
sl	Slight (ly)	unident	Unidentifiable	CC	Cracked Core
sln	Solution	up	Upper	DR	Drilled
slt	Silt			LC	Lost Core
sltst	Siltstone	v	Very	RU	Rubble
slty	Silty	var	Variable	mD	milliDarcy
sm	Smooth	vcol	Varicolored		
SP	Small Plug (as prefix)	vfrac	Vertical Fracture		
sp	Spot (ted) (ty)	vgt	Varigated		
spec	Speck (led)	vn	Vein		
spl	Sample	vrtl	Vertical		
srt	Sort (ed) (ing)	vug	Vug (gy) (ular)		
strg	Stringer				
Strom	Stromatoporoid	w	Well		
stromlt	Stromatolite	wh	White		
struc	Structure	wk	Weak		
styl	Stylolite (ic)	wthrd	Weathered		
suc	Sucrosic	wtr	Water		
sug	Sugary	wvy	Wavy		
sup	Supported	wxy	Waxy		
surf	Surface	wsrt	Well sorted		
sz	Size				

CORE LOG

Company : CANADIAN FOREST OIL LTD.
Well Name : CDN FOREST et al FORT LIARD K-32
Field :
Location : K-32-060-10-123-15
Formation : CHINKEH
W / O : RC8221
Plot Scale 1:240

Recovery : 16.55m
Cored Interval : 1322.00 - 1339.40m
Drilg. Fld. : WATER BASE MUD
Elevation (KB) :

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CORE LOG

GAMMA RAY (API)
0 75 150

Sw
(frac P.V.)
1 .8 .6 .4 .2 0

GRAIN DENSITY
(Kg/m³)
2500 2750 3000

DEPTH
(m)

PERMEABILITY (Kmax)
(mD)

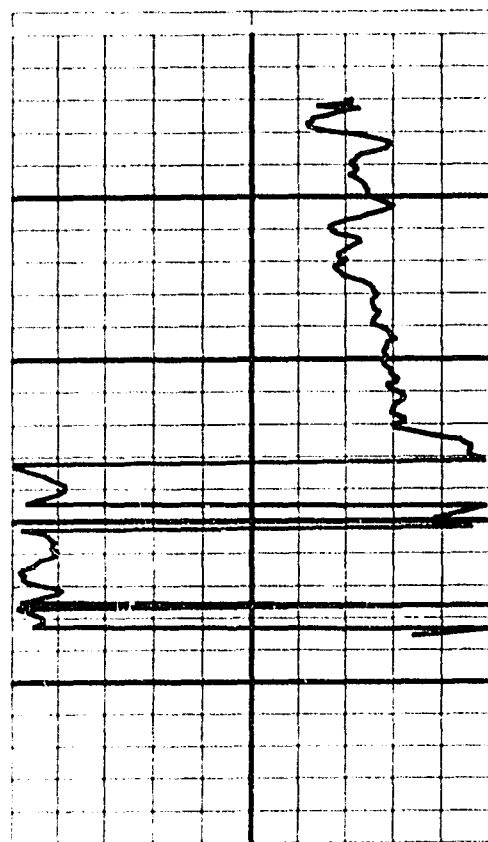
POROSITY
(fraction)

So
SAT'n
(frac. P.V.)

1 0.1 0.01 0.001 0.0001

.3 .2 1 0

0 .4 .8 1

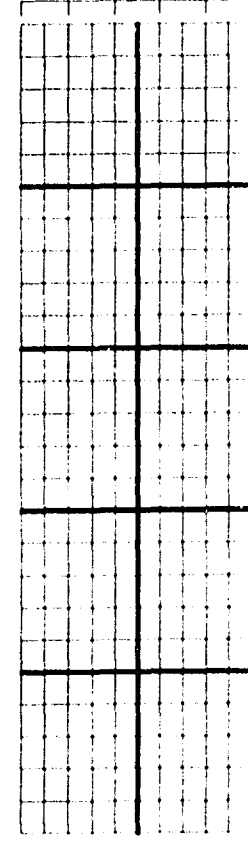
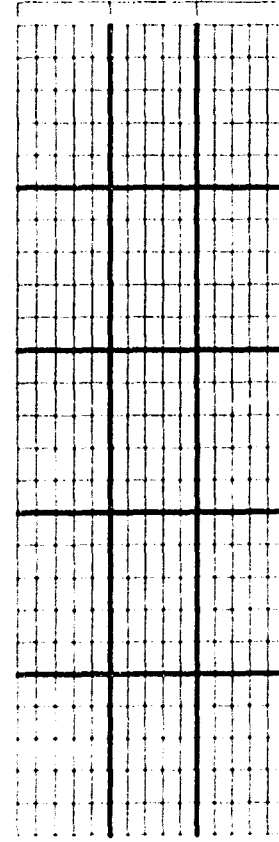
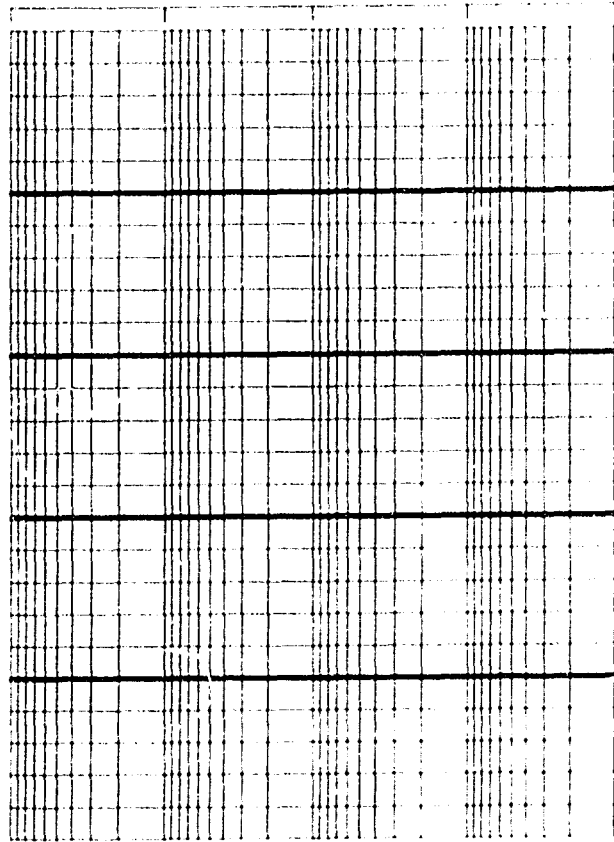


1325

1330

1335

1340



Company : CANADIAN FOREST OIL LTD.
Well Name : CDN FOREST et al FORT LIARD K-32
Field :
Location : K-32-060-10-123-15
Formation : CHINKEH
W / O : RC8221
Plot Scale 1:240

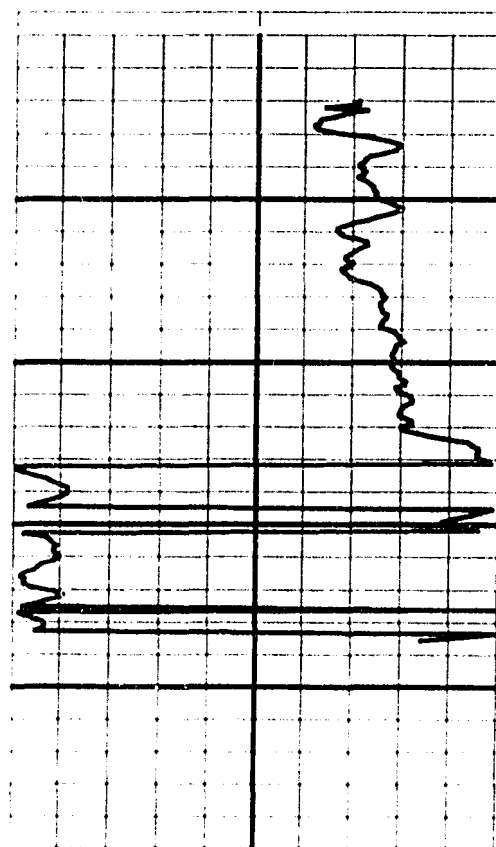
Recovery : 16.55m
Cored Interval : 1322.00 - 1339.40m
Drig. Fld. : WATER BASE MUD
Elevation (KB) :

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CORE LOG

GAMMA RAY (API)
0 75 150

GRAIN DENSITY
(Kg/m³)
2500 2750 3000



DEPTH
(m)

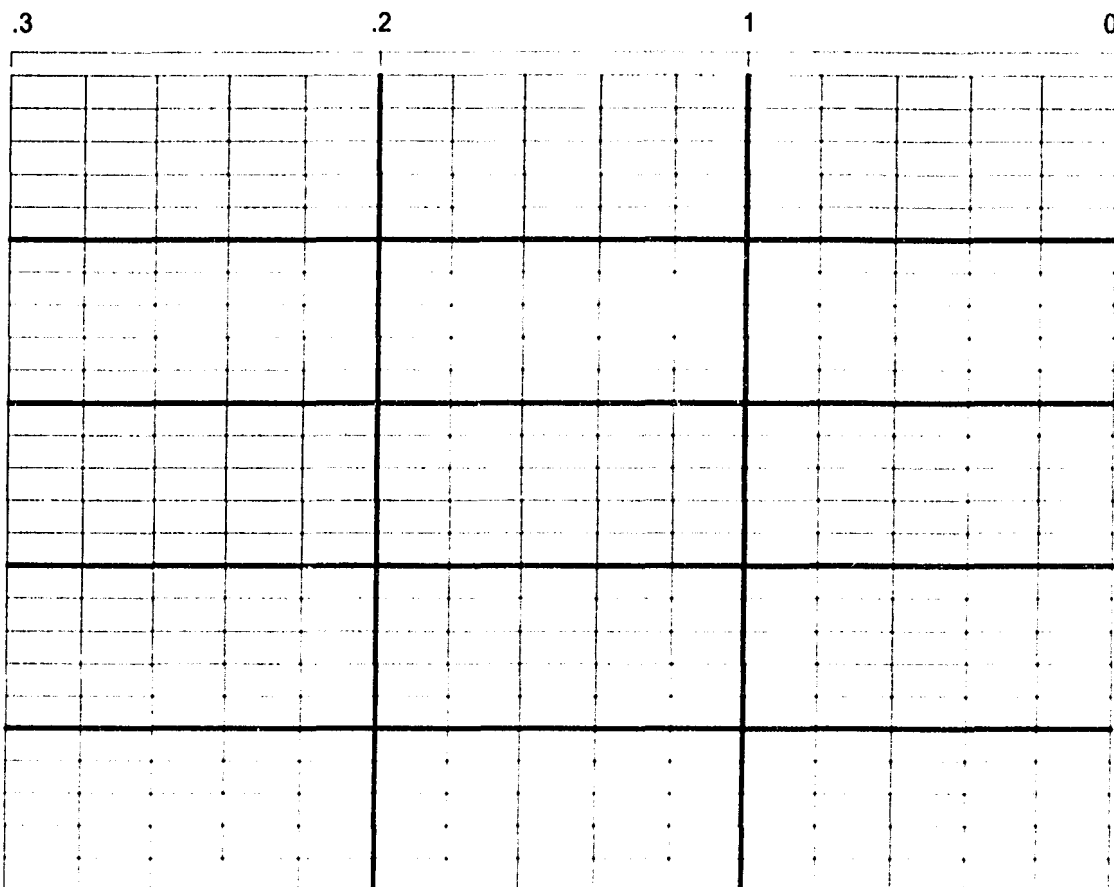
1325

1330

1335

1340

POROSITY
(fraction)





**DN FOREST et al FORT LIARD K-32
K-32-060-10-123-15**

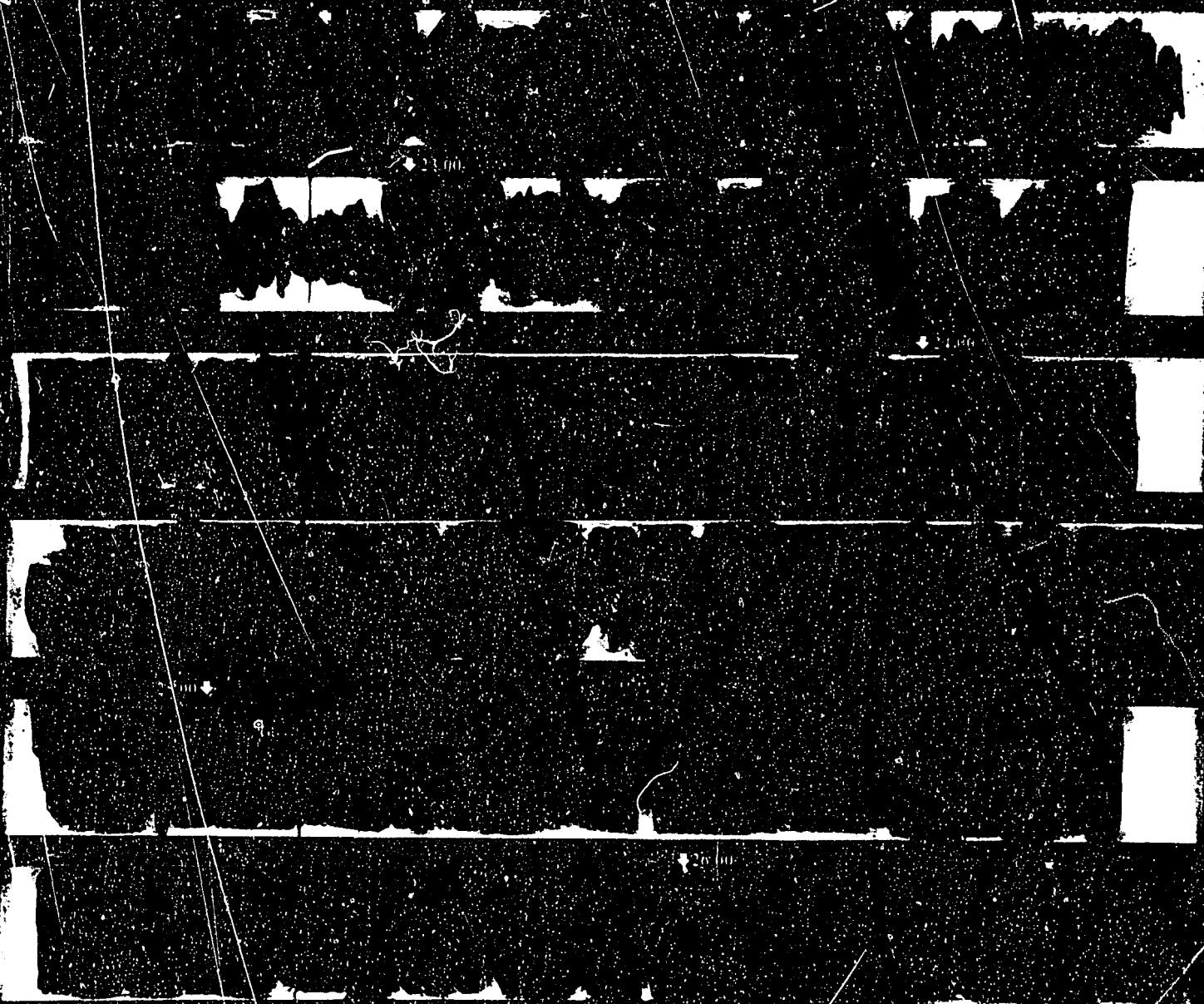
PHOTOGRAPHY

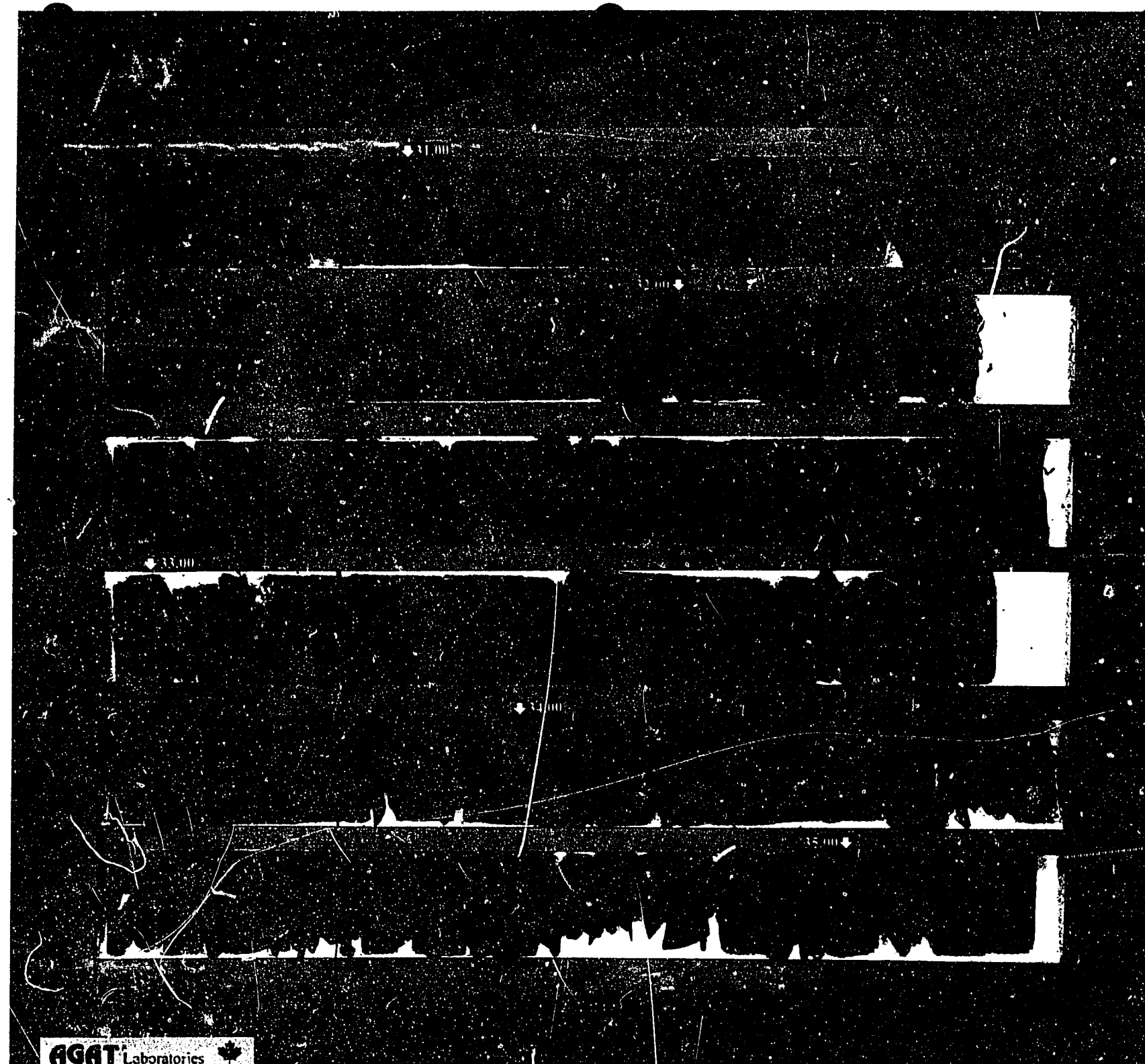
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Laboratories

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CDN FOREST et al FORT LIARD K-32
K-32-060-10-123-15







Drill Stem Test Report

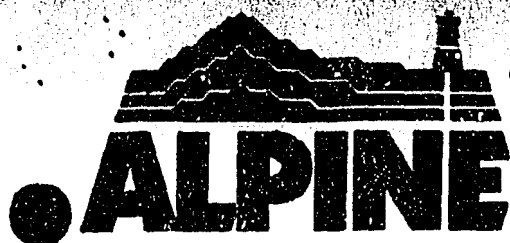
Prepared for: **CANADIAN FOREST OIL**
600, 800 - 6th Ave. S.W.
CALGARY, AB

Well Name: CDN FOREST ET AL LIARD K-32

Location: K-32-60-10-132-15

Test Date: 03/10/1999

Job Ticket #: D2-5148 DST#: 1



Drill Stem Testing Report

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-5148 DST#: 1
Test Date: 03/10/1999 1825hrs

Well Name: CDN FOREST ET AL LIARD K-32
Location: K-32-60-10-132-15

Contact: DOUG SOLBERG

General Information:

Test Type: INFLATE STRADDLE
Interval: 1394.00m - 1408.00m
Formation: CHINKEH
KB Elevation: 404.50m
Ground Elevation: 400.10m
Total Depth: 1465.00m
Test Mode: Fluid

Tester: R. BABYAK
Truck No.: Unit 677
Contractor: NABORS
Rig No.: 6
Hole Diameter: 222mm
Hole Condition: GOOD
Bottom Hole Temperature: 47.30 C

Electronic Recorder Information:

OUTSIDE	FLUID
Recorder #: 067	Recorder #: 003
Range: 7000 kPag	Range: 70000 kPag
Depth: 1396.92 m	Depth: 1371.39 m

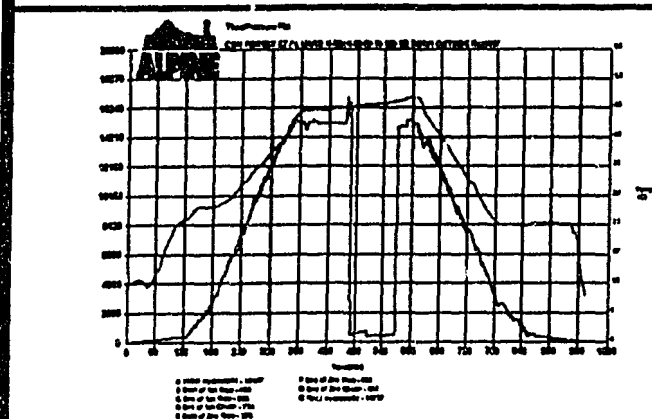
Flag Points:	Time:	Pressure:
A Initial Hydrostatic	0.00	15147.1
B Start of 1st Flow	0.00	479.7
C End of 1st Flow	6.00	557.8
D End of 1st Shutin	31.00	733.7
E Start of 2nd Flow	0.00	377.9
F End of 2nd Flow	23.00	405.1
G End of 2nd Shutin	36.00	483.2
Q Final Hydrostatic	0.00	14939.3

Test Run Information:

Start Time: 1825hrs
Reached Test Depth: 1745hrs
Pull Out Time: 2000hrs
Tool Out Of Hole: 200hrs

Weight set on Packers: 6000.00daN
Weight to free Packers: 41000.00daN
Initial String Weight: 40000.00daN
Unseated String Weight: 40000.00daN

Tool Chased Dist: 0.00m Water Loss: 8.00cm³
Mud Type: GEL CHEMICAL Mud Drop: NO
Mud Weight: 1100.00kg/m³ VIS: 60.00S/L
Amount of fill: 0.00m Filter Cake: 1.50mm
Amt of cushion: 0.00 Pump Time: 45min
Type of cushion: Reversed Out: NO



General Remarks:

Mechanically successful. *Test results suggest virtually no permeability within the zone tested.

Maximum gas rates as reported by Alpine Closed Chamber are as follows:

PREFLOW: 64.71 m³/day.

FINAL FLOW: 52.58 m³/day.

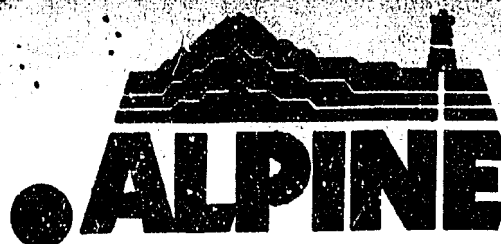
*** See enclosed Closed Chamber report for further evaluation.

NOTE - See Alpine Telemetry Report for real time data acquisition.

Recovery Description:

Total fluid recovery was 18 meters drilling fluid.

Gas Bomb: 0 Sampler: 1
Fluid Sample: 3 Sent to: NORWEST LABS



Drill Stem Testing - Tool Diagram / Description

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-5148 DST#: 1
Test Date: 03/10/1999 1825hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Inflate Straddle

Drill Collar Stands:	9
Drill Collar Singles:	0
Drill Pipe Stands:	63
Drill Pipe Singles:	0
Heavy Wt. Pipe Stands:	0
Heavy Wt. Pipe Singles:	0
Total Drill Collars/Pipe and Tools:	1399.29m
Total Drill Pipe Above K.B.:	5.29m
Total Depth:	1465m

Tool / Drill Stem Information:

Tool Weight:	2000.00	daN	25.24m
Drill Collar Inside Diameter:	72.00	mm	
Drill Collar Length:	166.27	m	44.41m
Drill Pipe Inside Diameter:	97.01	mm	
Drill Pipe Length:	1207.78	m	
Heavy Weight Pipe Diameter:	0.00	mm	
Heavy Weight Pipe Length:	0.00	m	
Bottom Choke Diameter:	12.70	mm	
Number of Packers: 2 Dia.:	196.00	mm	

Tool Remarks:

Depth:
1394m

13.94m

Depth:
1408m

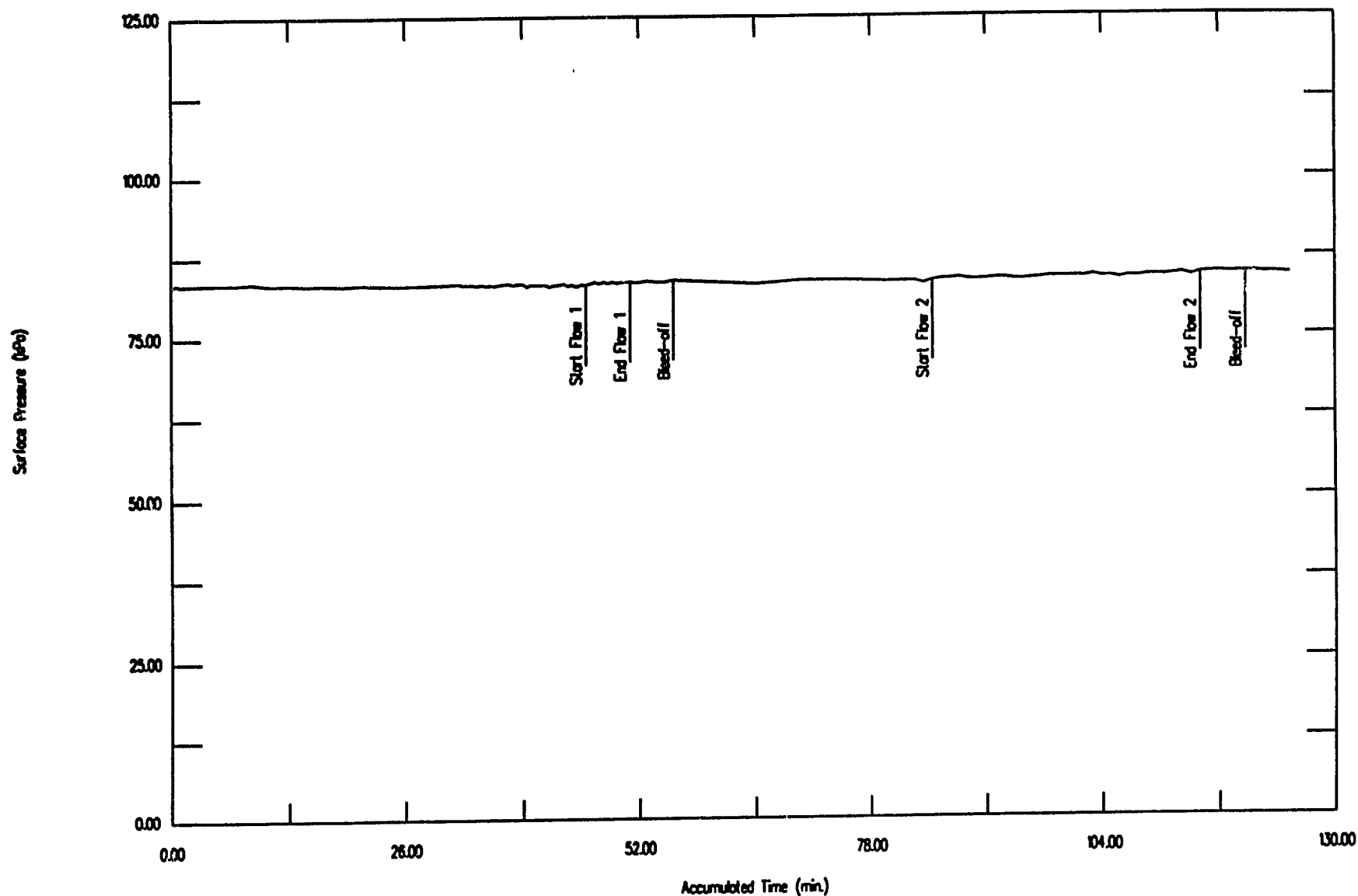
5.23m

Total Depth: 1465.00m

Item	Length
P.O. Sub	0.27
C.O. Sub	0.25
P.O. Sub	0.31
REC#003	1.80
HMV Stroke	2.42
Sampler	1.10
REC#033	1.80
Telemetry Tool	5.38
Jars	3.10
Safety Joint	0.72
Pump	2.05
Screen	1.18
Valve	2.23
Deflate	0.85
Packer	1.78
Stub	0.72
ASE Carrier	2.20
REC#065	
REC#067	
Bypass Hanger	0.42
C.O. Sub	0.30
Drill Collar	8.43
C.O. Sub	0.30
Bypass Receiver	0.85
Stub	0.72
Packer	1.78
Extension Sub	0.72
Drag Spring	2.08
REC#063	

SURFACE PRESSURE VS. TIME

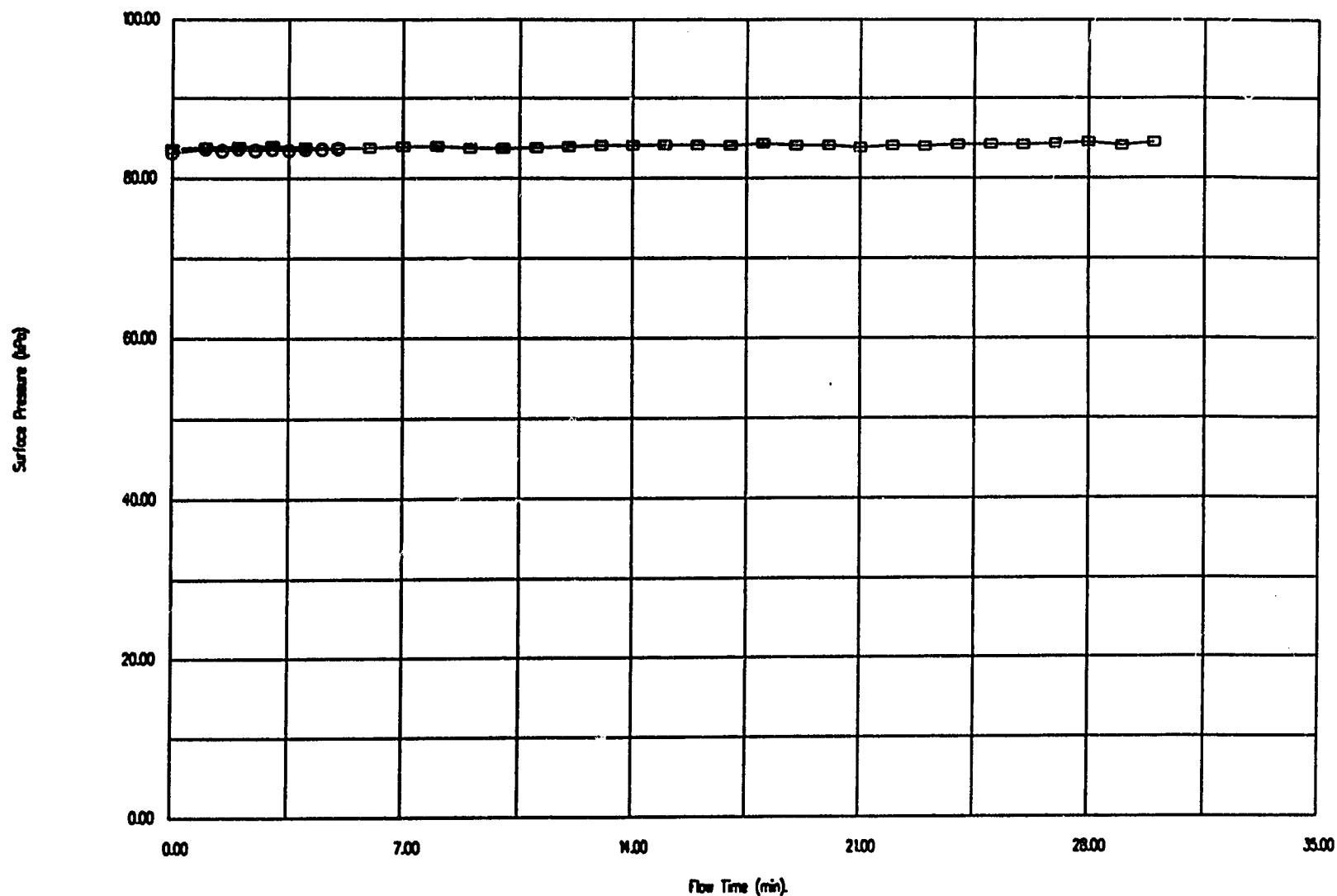
Well Name: CDN FOREST K-32
Location : K-32-60-10-132-15
D.S.T. # 1



SURFACE PRESSURE VS. FLOW TIME

Well Name: CDN FOREST K-32
Location : K-32-60-10-132-15
D.S.T. # 1

SYMBOL LEGEND
○ Flow 1
□ Flow 2



WELL NAME:CDN FOREST K-32

D.S.T. #1

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR: DRYGAS

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 9.63
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 293.15

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dp/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
00:00:00	0.00	83.28	0.00		
00:00:15	0.25	83.19	-0.36		
00:00:30	0.50	83.59	1.60		
00:00:45	0.75	83.45	-0.56		
00:01:00	1.00	83.32	-0.52		
00:03:00	3.00	83.41	0.05		
00:05:00	5.00	83.49	0.04		
00:07:00	7.00	83.48	-0.00		
00:09:00	9.00	83.64	0.08		
00:11:00	11.00	83.31	-0.17		
00:13:00	13.00	83.38	0.03		
00:15:00	15.00	83.23	-0.07		
00:17:00	17.00	83.29	0.03		
00:19:00	19.00	83.19	-0.05		
00:21:00	21.00	83.33	0.07		
00:23:00	23.00	83.18	-0.08		
00:25:00	25.00	83.11	-0.03		
00:27:00	27.00	83.17	0.03		
00:29:00	29.00	83.24	0.03		
00:31:00	31.00	83.35	0.06		
00:32:00	32.00	83.42	0.07		
00:32:30	32.50	83.24	-0.36		
00:33:00	33.00	83.23	-0.02		
00:33:30	33.50	83.23	0.00		
00:34:00	34.00	83.18	-0.10		
00:34:30	34.50	83.26	0.16		
00:35:00	35.00	83.17	-0.18		
00:35:30	35.50	83.20	0.06		
00:36:00	36.00	83.15	-0.1		
00:36:30	36.50	83.28	0.26		
00:37:00	37.00	83.40	0.24		
00:37:30	37.50	83.44	0.08		
00:38:00	38.00	83.26	-0.36		
00:38:30	38.50	83.43	0.34		
00:39:00	39.00	83.42	-0.02		

WELL NAME: CDN FOREST K-32

D.S.T. #1

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR: DRYGAS

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME (cu m) = 9.63
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP (Kel) = 293.15

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
00:39:30	39.50	83.02	-0.80		
00:40:00	40.00	83.24	0.44		
00:41:00	41.00	83.18	-0.06		
00:41:30	41.50	83.22	0.08		
00:42:00	42.00	82.95	-0.54		
00:42:30	42.50	83.17	0.44		
00:43:00	43.00	83.21	0.08		
00:43:30	43.50	83.37	0.32		
00:44:00	44.00	83.11	-0.52		
00:44:30	44.50	83.19	0.16		
00:45:00	45.00	82.92	-0.54		
00:45:30	45.50	83.22	0.60		

FIRST FLOW: 5 MINS

00:46:00	0.00	83.17	0.00	0.9978	0.00
00:47:00	1.00	83.65	0.48	0.9978	64.71
00:47:30	1.50	83.42	-0.46	0.9978	0.00
00:48:00	2.00	83.64	0.44	0.9978	59.32
00:48:30	2.50	83.46	-0.36	0.9978	0.00
00:49:00	3.00	83.63	0.34	0.9978	45.83
00:49:30	3.50	83.45	-0.36	0.9978	0.00
00:50:00	4.00	83.58	0.26	0.9978	35.05
00:50:30	4.50	83.58	0.00	0.9978	0.00
00:51:00	5.00	83.66	0.16	0.9978	21.57

FIRST SHUT-IN: 30 MINS

00:51:00	0.00	83.66	0.00		
00:51:30	0.50	83.53	-0.26		
00:52:00	1.00	83.56	0.06		
00:53:00	2.00	83.77	0.21		
00:54:00	3.00	83.59	-0.18		
00:55:00	4.00	83.62	0.03		
00:56:00	5.00	83.89	0.27		

NAME: CDN FOREST K-32

D.S.T. #1

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR: DRYGAS

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 9.63
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 293.15

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
----------------	---------------------	-------------------	--------------------	------------------------	-----------------

BLEED OFF

00:56:00	0.00	83.89	0.00		
01:05:00	9.00	83.21	-0.08		
01:10:00	14.00	83.76	0.11		
01:15:00	19.00	83.79	0.01		
01:20:00	24.00	83.51	-0.06		
01:23:00	27.00	83.57	0.02		
01:24:00	28.00	83.16	-0.41		

SECOND FLOW: 30 MINS

01:25:00	0.00	83.63	0.00	0.9978	0.00
01:26:00	1.00	83.84	0.21	0.9978	28.31
01:27:00	2.00	83.91	0.07	0.9978	9.44
01:28:00	3.00	84.03	0.12	0.9978	16.18
01:29:00	4.00	83.80	-0.23	0.9978	0.00
01:30:00	5.00	83.70	-0.10	0.9978	0.00
01:31:00	6.00	83.79	0.09	0.9978	12.13
01:32:00	7.00	83.95	0.16	0.9978	21.57
01:33:00	8.00	83.98	0.03	0.9978	4.05
01:34:00	9.00	83.76	-0.22	0.9978	0.00
01:35:00	10.00	83.70	-0.06	0.9978	0.00
01:36:00	11.00	83.82	0.12	0.9978	16.18
01:37:00	12.00	83.95	0.13	0.9978	17.53
01:38:00	13.00	84.11	0.16	0.9978	21.57
01:39:00	14.00	84.11	0.00	0.9978	0.00
01:40:00	15.00	84.14	0.03	0.9978	4.04
01:41:00	16.00	84.13	-0.01	0.9978	0.00
01:42:00	17.00	84.08	-0.05	0.9978	0.00
01:43:00	18.00	84.34	0.26	0.9978	35.05
01:44:00	19.00	84.06	-0.28	0.9978	0.00
01:45:00	20.00	84.10	0.04	0.9978	5.39
01:46:00	21.00	83.83	-0.27	0.9978	0.00

WELL NAME: CDN FOREST K-32

D.S.T. #1

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR: DRYGAS

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME (cu m) = 9.63
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP (Kel) = 293.15

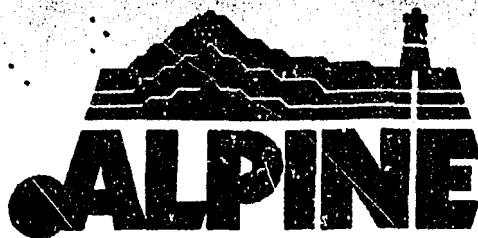
TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
01:47:00	22.00	84.09	0.26	0.9978	35.05
01:48:00	23.00	83.99	-0.1	0.9978	0.00
01:49:00	24.00	84.21	0.22	0.9978	29.66
01:50:00	25.00	84.24	0.03	0.9978	4.04
01:51:00	26.00	84.19	-0.05	0.9978	0.00
01:52:00	27.00	84.32	0.13	0.9978	17.53
01:53:00	28.00	84.49	0.17	0.9978	22.92
01:54:00	29.00	84.09	-0.40	0.9978	0.00
01:55:00	30.00	84.48	0.39	0.9978	52.58

SECOND SHUT-IN: 30 MINS

01:55:00	0.00	84.48	0.00
01:56:00	1.00	84.60	0.12
01:57:00	2.00	84.69	0.09
01:58:00	3.00	84.59	-0.10
01:59:00	4.00	84.63	0.04
02:00:00	5.00	84.67	0.04

BLEED OFF

02:00:00	0.00	84.67	0.00
02:01:00	1.00	84.70	0.03
02:02:00	2.00	84.57	-0.13
02:03:00	3.00	84.61	0.04
02:04:00	4.00	84.55	-0.06
02:05:00	5.00	84.46	-0.09



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-5148 DST#: 1
Test Date: 03/10/1979 1825hrs

Well Name: CDN FOREST ET AL LIARD K-32
Location: K-32-60-10-132-15

Contact: DOUG SOLBERG

Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)	Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
A	Initial Hydrostatic	0.00	0.00	15147.10		46.3			30.00	169.60	727.40	1.2000	46.9
B	Start of 1st Flow	0.00	0.00	479.70		46.6	D	End of 1st Shutin	31.00	175.90	733.70	1.1935	46.9
		1.00	50.90	530.60		46.6	E	Start of 2nd Flow	0.00	0.00	377.90		46.9
		2.00	71.80	551.50		46.6			1.00	12.70	390.60		46.9
		3.00	90.30	570.00		46.6			2.00	19.10	397.00		46.9
		4.00	68.90	548.60		46.7			3.00	24.30	402.20		47.0
		5.00	77.60	557.30		46.7			4.00	28.90	406.80		47.0
C	End of 1st Flow	6.00	78.10	557.80		46.7			5.00	33.50	411.40		47.0
		1.00	13.30	571.10	7.0000	46.7			6.00	37.60	415.50		47.0
		2.00	22.60	580.40	4.0000	46.7			7.00	41.60	419.50		47.0
		3.00	31.90	589.70	3.0000	46.7			8.00	44.50	422.40		47.0
		4.00	40.50	598.30	2.5000	46.7			9.00	48.60	426.50		47.0
		5.00	48.10	605.90	2.2000	46.7			10.00	51.50	429.40		47.0
		6.00	55.00	612.80	2.0000	46.8			11.00	53.80	431.70		47.0
		7.00	61.40	619.20	1.8571	46.8			12.00	56.70	434.60		47.0
		8.00	68.30	626.10	1.7500	46.8			13.00	58.40	436.30		47.0
		9.00	74.10	631.90	1.6667	46.8			14.00	58.40	436.30		47.0
		10.00	79.90	637.70	1.6000	46.8			15.00	59.00	436.90		47.0
		11.00	85.70	643.50	1.5455	46.8			16.00	61.30	439.20		47.1
		12.00	90.90	648.70	1.5000	46.8			17.00	60.10	438.00		47.1
		13.00	96.10	653.90	1.4615	46.8			18.00	63.00	440.90		47.1
		14.00	101.30	659.10	1.4286	46.8			19.00	65.80	443.80		47.1
		15.00	106.50	664.30	1.4000	46.8			20.00	67.70	445.60		47.1
		16.00	111.10	668.90	1.3750	46.8			21.00	67.70	445.60		47.1
		17.00	115.80	673.60	1.3529	46.8			22.00	24.80	402.70		47.1
		18.00	120.40	678.20	1.3333	46.8	F	End of 2nd Flow	23.00	27.20	405.10		47.1
		19.00	125.60	683.40	1.3158	46.8			1.00	4.60	409.70	10.0000	47.1
		20.00	130.20	688.00	1.3000	46.8			2.00	8.60	413.70	15.5000	47.1
		21.00	133.70	691.50	1.2857	46.9			3.00	12.10	417.20	10.6667	47.1
		22.00	138.30	696.10	1.2727	46.9			4.00	14.40	419.50	8.2500	47.2
		23.00	141.80	699.60	1.2609	46.9			5.00	17.30	422.40	6.8000	47.2
		24.00	146.40	704.20	1.2500	46.9			6.00	20.80	425.90	5.8333	47.2
		25.00	150.50	708.30	1.2400	46.9			7.00	23.70	428.80	5.1429	47.2
		26.00	154.50	712.30	1.2308	46.9			8.00	26.60	431.70	4.6250	47.2
		27.00	158.60	716.40	1.2222	46.9			9.00	29.50	434.60	4.2222	47.2
		28.00	162.10	719.90	1.2143	46.9			10.00	31.20	436.30	3.9000	47.2
		29.00	166.10	723.90	1.2069	46.9			11.00	33.50	438.60	3.6364	47.2



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-5148 DST#: 1
Test Date: 03/10/1999 1825hrs

Well Name: CDN FOREST ET AL LIARD K-32
Location: K-32-60-10-132-15

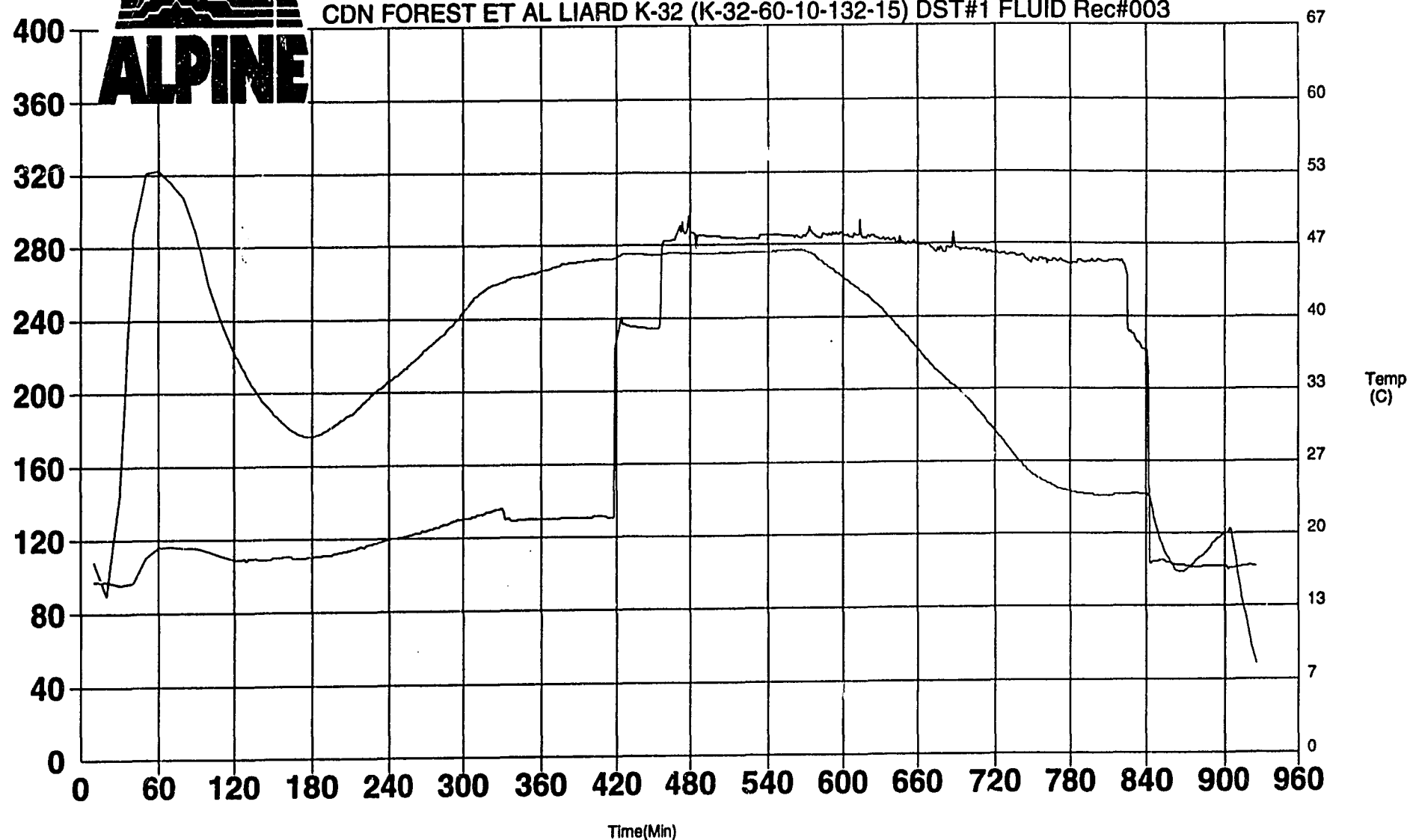
Contact: DOUG SOLBERG

Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
		12.00	35.30	440.40	3.4167	47.2
		13.00	37.00	442.10	3.2308	47.2
		14.00	37.60	442.70	3.0714	47.2
		15.00	38.20	443.30	2.9333	47.2
		16.00	41.00	446.10	2.8125	47.2
		17.00	43.90	449.00	2.7059	47.3
		18.00	45.10	450.20	2.6111	47.3
		19.00	45.70	450.80	2.5263	47.3
		20.00	48.00	453.10	2.4500	47.3
		21.00	50.30	455.40	2.3810	47.3
		22.00	53.20	458.30	2.3182	47.3
		23.00	54.90	460.00	2.2609	47.3
		24.00	56.10	461.20	2.2083	47.3
		25.00	56.70	461.80	2.1600	47.3
		26.00	56.70	461.80	2.1154	47.3
		27.00	59.00	464.10	2.0741	47.3
		28.00	61.30	466.40	2.0357	47.4
		29.00	63.60	468.70	2.0000	47.3
		30.00	65.90	471.00	1.9667	47.3
		31.00	68.80	473.90	1.9355	47.4
		32.00	71.10	476.20	1.9063	47.4
		33.00	73.50	478.60	1.8788	47.4
		34.00	75.80	480.90	1.8529	47.4
		35.00	77.50	482.60	1.8286	47.4
G	End of 2nd Shutin	36.00	78.10	483.20	1.8056	47.4
Q	Final Hydrostatic	0.00	0.00	14939.30		47.8



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 FLUID Rec#003



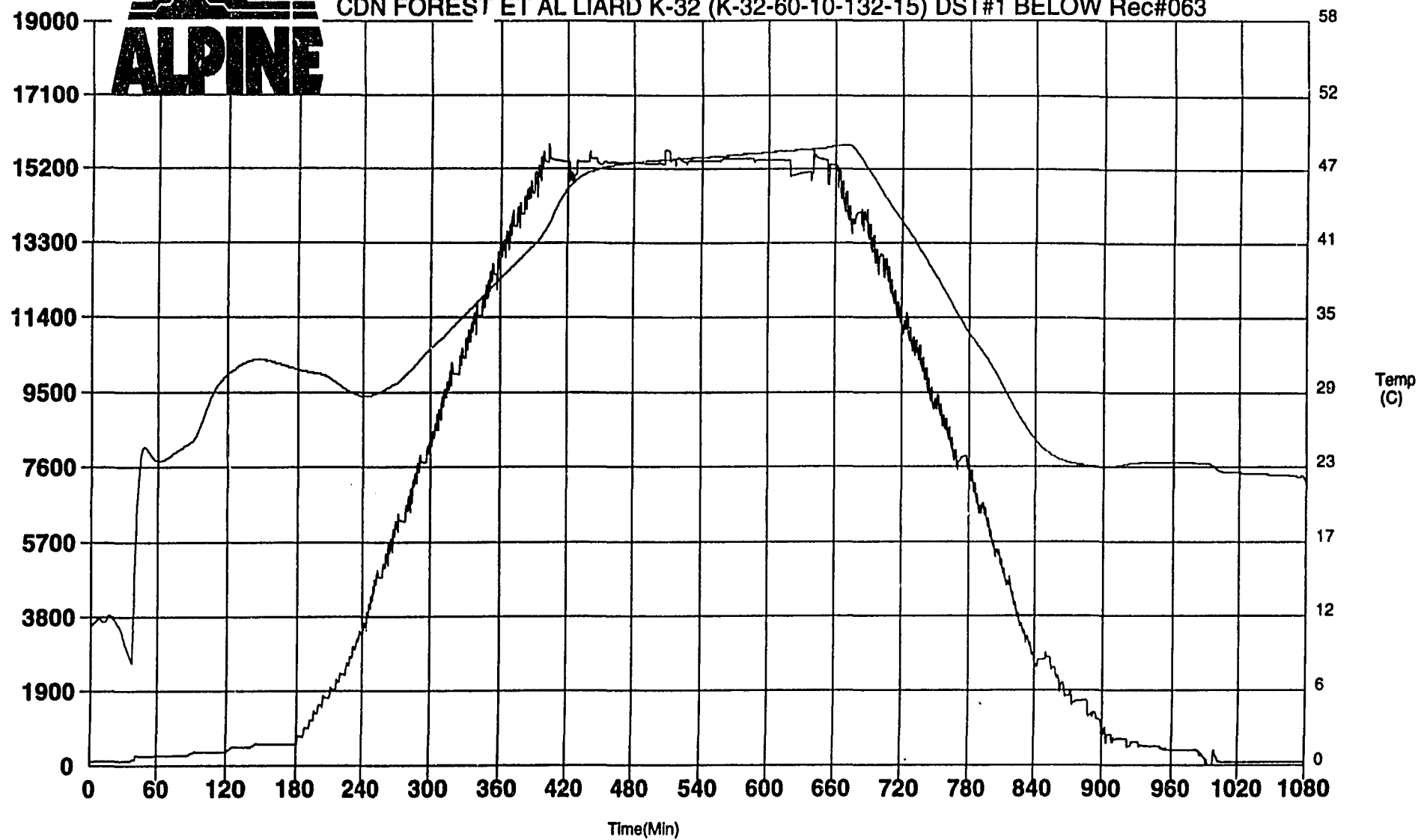
A Initial Hydrostatic - 131
B Start of 1st Flow - 131
C End of 1st Flow - 241
D End of 1st Shutin - 234
E Start of 2nd Flow - 235

F End of 2nd Flow - 278
G End of 2nd Shutin - 284
Q Final Hydrostatic - 284



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 BELOW Rec#063

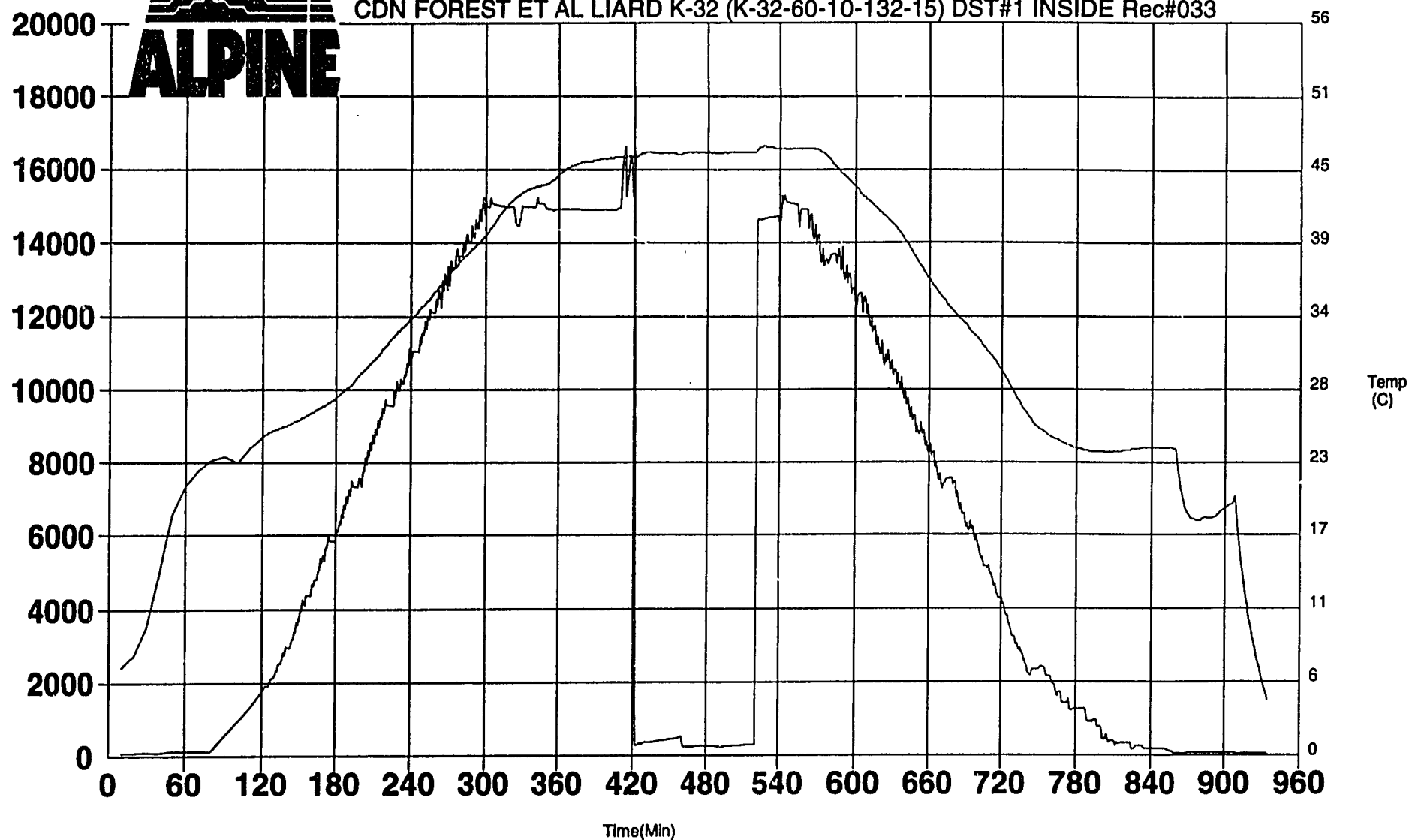


A Initial Hydrostatic - 15375
Q Final Hydrostatic - 15091



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 INSIDE Rec#033



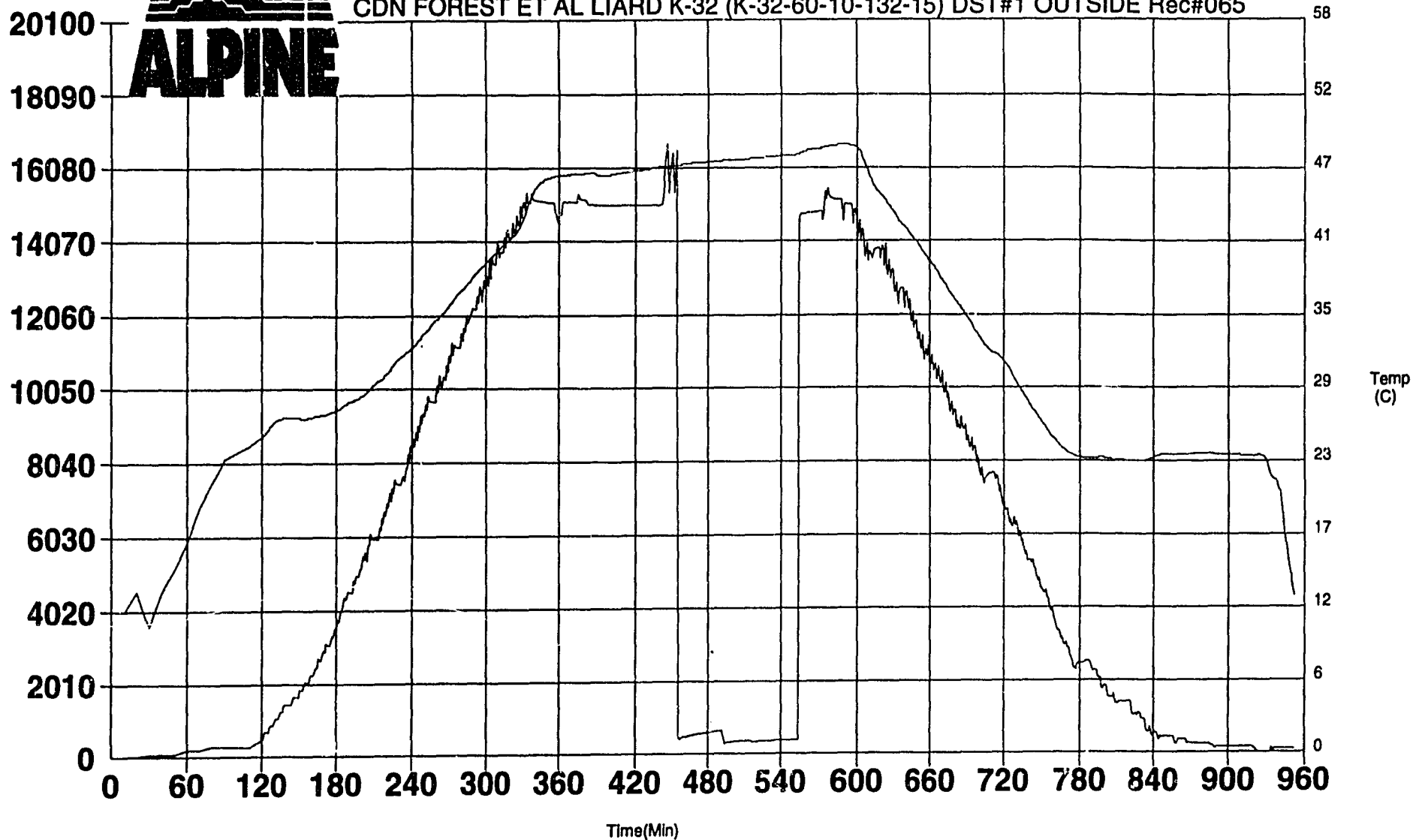
A Initial Hydrostatic - 14912
B Start of 1st Flow - 268
C End of 1st Flow - 329
D End of 1st Shutin - 528
E Start of 2nd Flow - 239

F End of 2nd Flow - 254
G End of 2nd Shutin - 295
Q Final Hydrostatic - 14686



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 OUTSIDE Rec#065



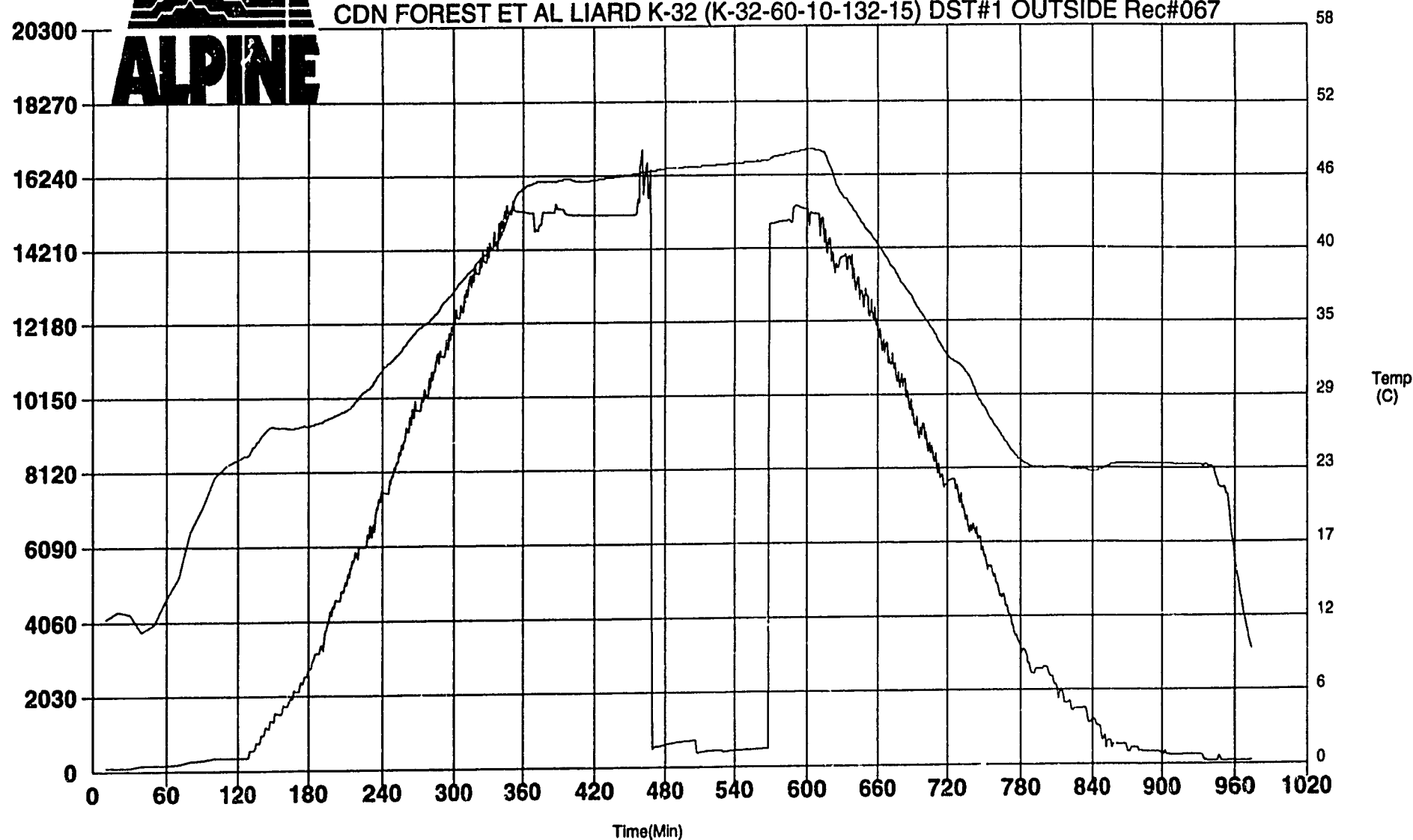
A Initial Hydrostatic - 15055
B Start of 1st Flow - 417
C End of 1st Flow - 456
D End of 1st Shutin - 640
E Start of 2nd Flow - 277

F End of 2nd Flow - 339
G End of 2nd Shutin - 394
Q Final Hydrostatic - 14832



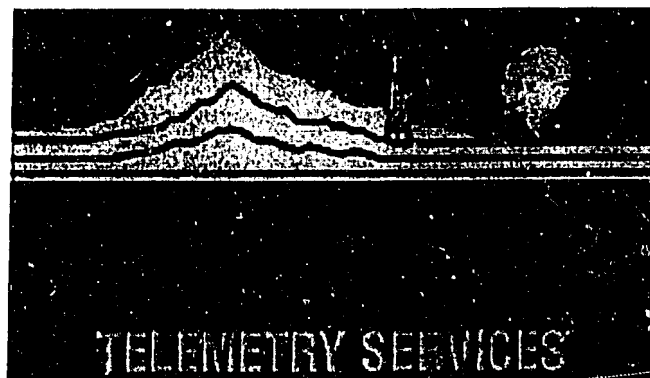
Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 OUTSIDE Rec#067



A Initial Hydrostatic - 15147
B Start of 1st Flow - 480
C End of 1st Flow - 558
D End of 1st Shutin - 734
E Start of 2nd Flow - 378

F End of 2nd Flow - 405
G End of 2nd Shutin - 483
Q Final Hydrostatic - 14939



Real Time Test Report

Prepared for: **CANADIAN FOREST OIL**
600, 800 - 6th Ave. S.W.
CALGARY, AB

Well Name: CDN FOREST ET AL LIARD K-32

Location: K-32-60-10-132-15

Test Date: 03/10/1999

Job Ticket #: T3055-1 DST#: 1

TELEMETRY SERVICES

Real Time Testing Report

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: T3055-1 DST#: 1

Test Date: 03/10/1999 1825hrs

Well Name: CDN FOREST ET AL LIARD K-32

Location: K-32-60-10-132-15

Contact: DOUG SOLBERG

General Information:

Test Type: INFLATE STRADDLE
Interval: 1394m -1408m
Formation: CHINKEH
KB Elevation: 404.50m
Ground Elevation: 400.10m
Total Depth: 1465.00m
Test Mode: Fluid

Tester: C. SCHAEFER
Truck No.: Unit 115
Contractor: NABORS
Rig No.: 6
Hole Diameter: 222mm
Hole Condition: GOOD
Bottom Hole Temperature: 47.30 C

Telemetry Recorder Information:

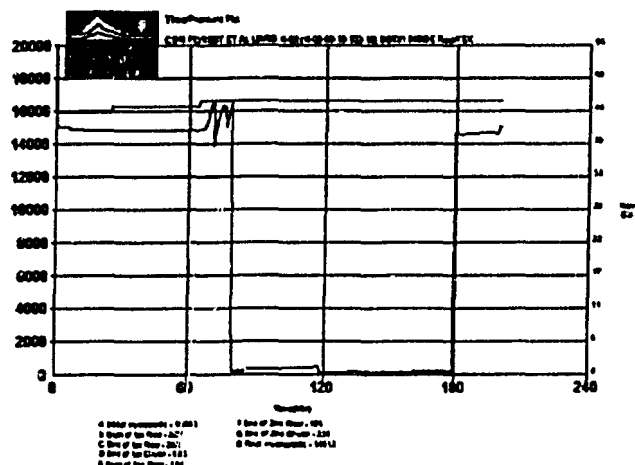
INSIDE

Recorder #: FEK Depth: 1382.09 m

Flag Points:	Time:	Pressure:
A Initial Hydrostatic	0.00	14883.2
B Start of 1st Flow	0.00	226.8
C End of 1st Flow	5.52	261.7
D End of 1st Shutin	31.26	502.5
E Start of 2nd Flow	0.00	194.2
F End of 2nd Flow	22.68	194.6
G End of 2nd Shutin	37.86	229.5
Q Final Hydrostatic	0.00	14611.9

Test Run Information:

Start Time: 1825hrs
Reached Test Depth: 1745hrs
Pull Out Time: 2000hrs
Tool Out Of Hole: 200hrs
Water Loss: 8.00cm³
Mud Drop: NO
VIS: 50.00S/L
Filter Cake: 1.50mm
Pump Time: 45min
Reversed Out: NO
Mud Type: GEL CHEMICAL
Mud Weight: 1100.00kg/m³
Amount of fill: 0.00m
Amount of cushion: 0.00
Type of cushion:



Recovery Description:

Total fluid recovery was 18 meters drilling fluid.

General Remarks:

Mechanically successful. *Test results suggest virtually no permeability within the zone tested.

Maximum gas rates as reported by Alpine Closed Chamber are as follows:

PREFLOW: 64.71 m³/day.

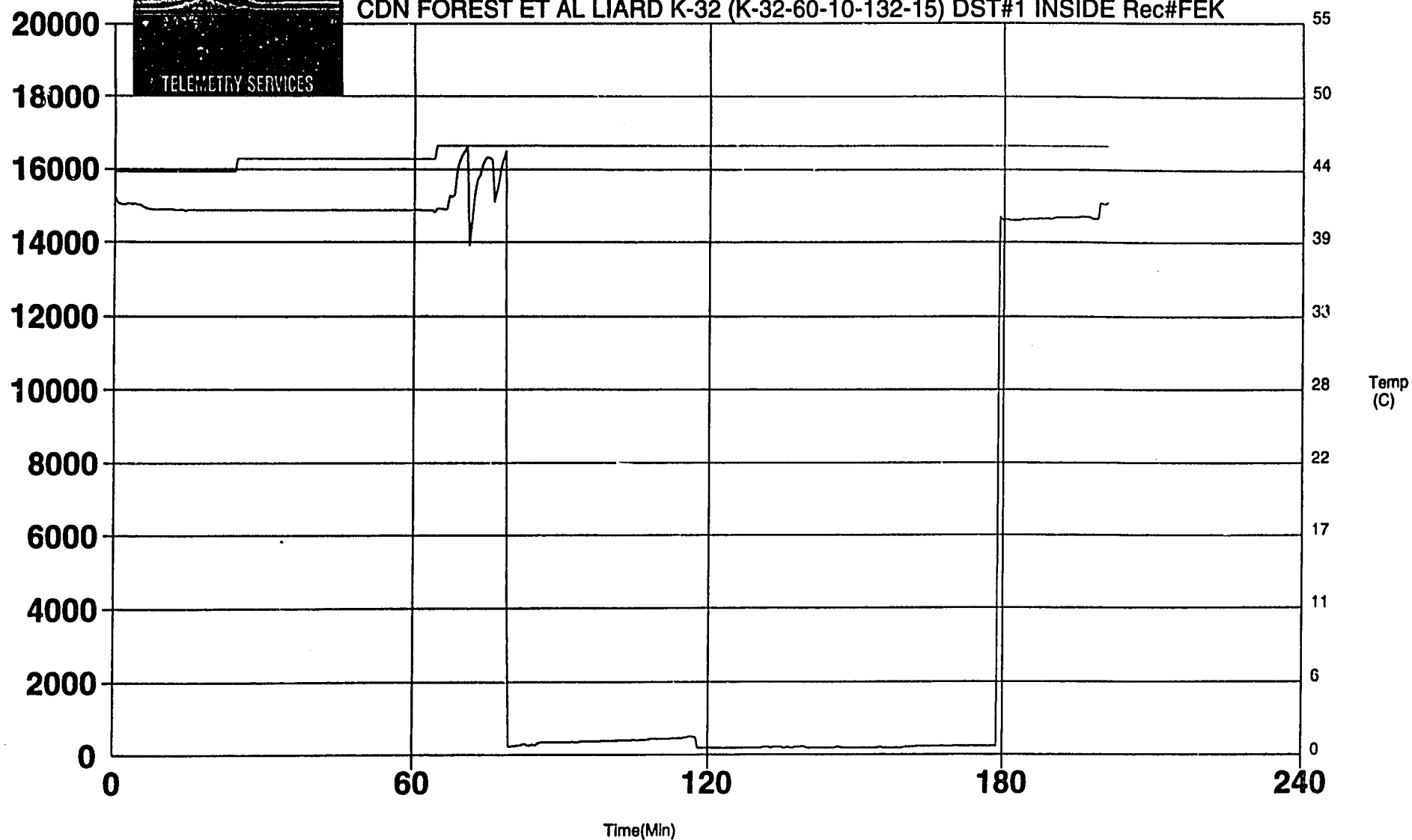
FINAL FLOW: 52.58 m³/day.

*** See enclosed Closed Chamber report for further evaluation.



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#1 INSIDE Rec#FEK



A Initial Hydrostatic - 14883
B Start of 1st Flow - 227
C End of 1st Flow - 262
D End of 1st Shutin - 503
E Start of 2nd Flow - 194

F End of 2nd Flow - 195
G End of 2nd Shutin - 230
Q Final Hydrostatic - 14612

DST REPORT #2



Drill Stem Test Report

Prepared for: **CANADIAN FOREST OIL**
600, 800 - 6th Ave. S.W.
CALGARY, AB

Well Name: **CDN FOREST ET AL LIARD K-32**
Location: **K-32-60-10-132-15**

Test Date: **03/19/1999**

Job Ticket #: **D2-6397** DST#: **2**



Drill Stem Testing Report

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397 DST#: 2
Test Date: 03/18/1993 830hrs

Well Name: CDN FOREST ET AL LIARD K-32
Location: K-32-60-10-132-15

Contact: DOUG SOLBERG

General Information:

Test Type: CONV. BOTTOM HOLE
Interval: 1635.00m - 1695.00m
Formation: PERMIAN FANTASQUE
KB Elevation: 404.50m
Ground Elevation: 400.10m
Total Depth: 1695.00m
Test Mode: Gas

Tester: R. EDWARDS
Truck No.: Unit 673
Contractor: NABORS
Rig No.: 6
Hole Diameter: 222mm
Hole Condition: GOOD
Bottom Hole Temperature: 56.60 C

Electronic Recorder Information:

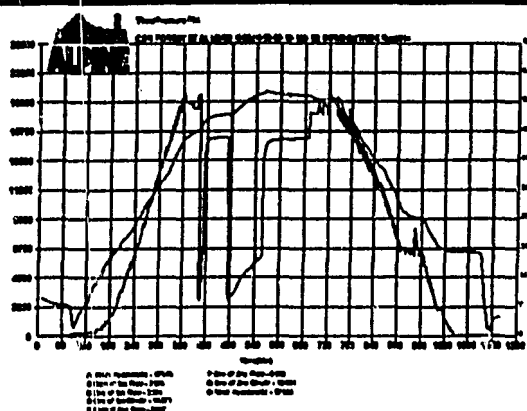
OUTSIDE Recorder #: 014	FLUID Recorder #: 044
Range: 70000 kPag	Range: 35000 kPag
Depth: 1637.59 m	Depth: 1616.76 m
Flag Points:	Time: Pressure:
A Initial Hydrostatic	0.00 17516.4
B Start of 1st Flow	0.00 3195.6
C End of 1st Flow	4.00 3404.0
D End of 1st Shutin	66.00 15271.0
E Start of 2nd Flow	0.00 2866.9
F End of 2nd Flow	79.00 6162.1
G End of 2nd Shutin	115.00 15193.5
H Final Hydrostatic	0.00 17122.9

Test Run Information:

Start Time: 830hrs
Reached Test Depth: 1200hrs
Pull Out Time: 1730hrs
Tool Out Of Hole: 2330hrs

Weight set on Packers: 10000.00daN
Weight to free Packers: 10000.00daN
Initial String Weight: 44000.00daN
Unseated String Weight: 48000.00daN

Tool Chased Dist: 0.00m Water Loss: 7.00cm³
Mud Type: GEL CHEMICAL Mud Drop: NO
Mud Weight: 1095.00kg/m³ VIS: 20.00S/L
Amount of fill: 0.00m Filter Cake: 1.00mm
Amt of cushion: 0.00 Pump Time: 30min
Type of cushion: Reversed Out: YES



General Remarks:

Mechanically successful. *Test results suggest moderate permeability within the zone tested.

Maximum gas rates as reported by Alpine Closed Chamber are as follows:

PREFLOW: 2314.49 m³/day.

FINAL FLOW: 3908.14 m³/day.

Went to conventional flow after 40 minutes of closed chamber.

*** See gas volume charts for gas rates.

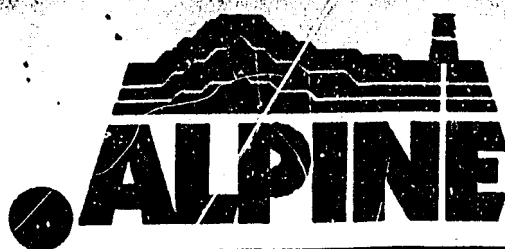
NOTE - See Alpine Telemetry Report for real time data acquisition.

Recovery Description:

Total fluid recovery reversed out was 552 meters, consisting of 20 meters gasified mud, 200 meters muddy gasified salt water, 332 meters salt water.
Salinity = 37,500 PPM

Gas to surface.

Gas Bomb: 1 Sampler: 1
Fluid Sample: 11 Sent to: AGAT LAB



Drill Stem Testing - Tool Diagram / Description

Company: CANADIAN FOREST OIL LTD.
800, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397 DST#: 2
Test Date: 03/19/1999 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Conventional Bottomhole

Drill Collar Stands: 6
Drill Collar Singles: 0
Drill Pipe Stands: 76
Drill Pipe Singles: 0
Heavy Wt. Pipe Stands: 3
Heavy Wt. Pipe Singles: 0
Total Drill Collars/Pipe and Tools: 1646.21m
Total Drill Pipe Above K.B.: 11.21m
Total Depth: 1695m

20.97m

Tool / Drill Stem Information:

Tool Weight: 6000.00 daN
Drill Collar Inside Diameter: 60.00 mm
Drill Collar Total Length: 111.48 m
Drill Pipe Inside Diameter: 97.00 mm
Drill Pipe Total Length: 1457.58 m
Heavy Weight Pipe Diameter: 73.00 mm
Heavy Weight Pipe Length: 56.18 m
Bottom Choke Diameter: 12.70 mm
Number of Packers: 2 Dia.: 196.00 mm

Depth:
1635.00m

Tool Remarks:

Well License #1860

60.26m

Total Depth: 1695.00m

Item	Length
P.O. Sub	0.62
C.O. Sub	0.31
REC#044	1.80
S.I.Tool	2.17
HMV Stroke	1.90
REC#039	1.80
Telemetry Tool	5.86
Jars	1.65
Safety Joint	0.72
Packer	2.24
Pecker	1.90
Stub	0.34
ASE Carrier	2.25
REC#014	
REC#145	
Perf	1.52
C.O. Sub	0.31
Drill Collar	54.93
C.O. Sub	0.31
Bullnose	0.60

81.23



Drill Stem Testing - Gas Recovery Measurements

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397 DST#: 2
Test Date: 03/19/1999 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Gas Measurements for Flow # 2

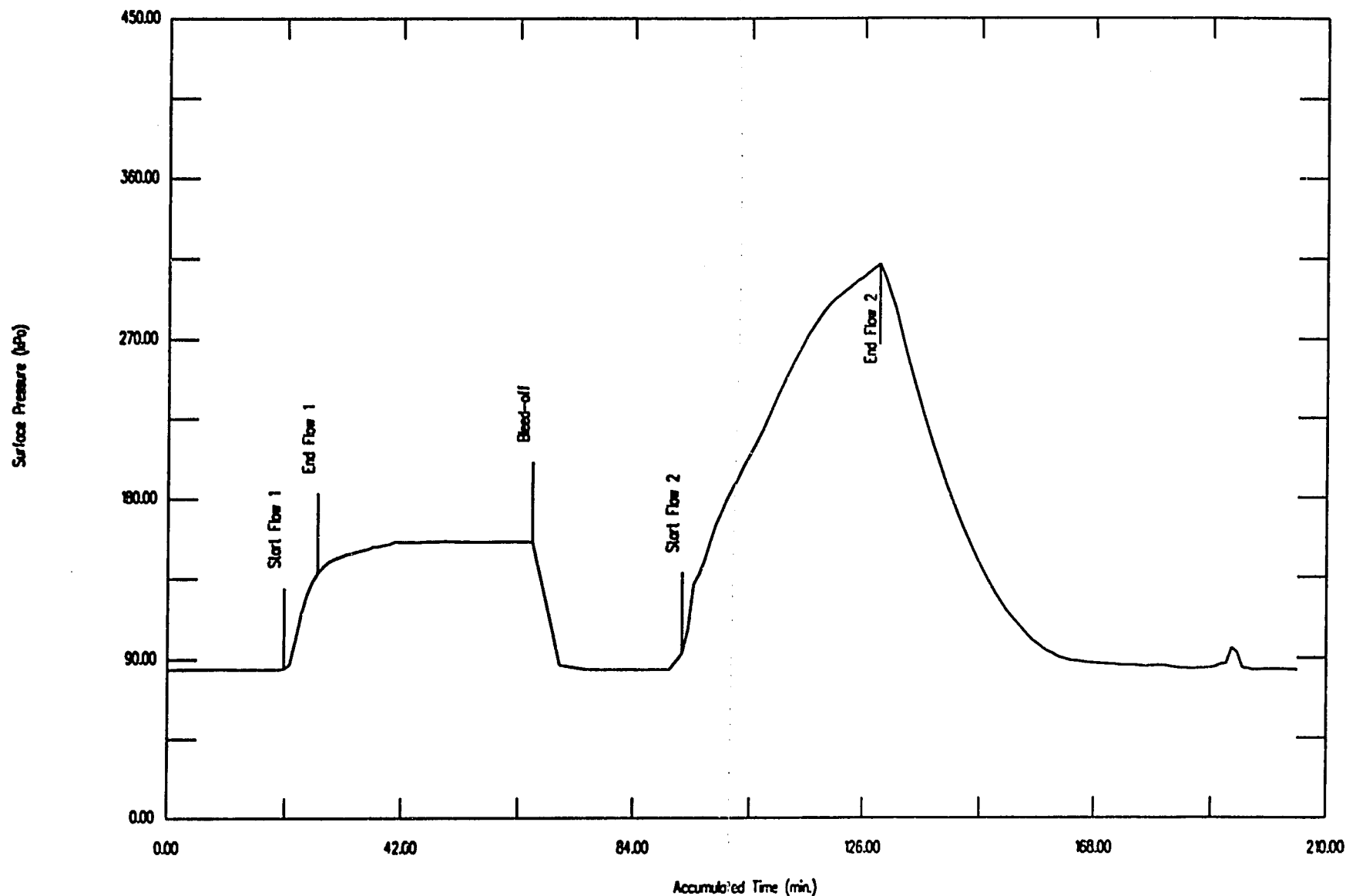
Gas Recovery Measured With:			Willis Choke
Time (min.)	Orifice (mm)	Pressure(kPa)	Rate (m ³ /d)
40	6.35	180	1711.00
45	6.35	140	1458.00
50	6.35	90	1164.00
55	6.35	0	0.00
60	6.35	0	0.00
65	6.35	0	0.00
70	6.35	0	0.00
75	6.35	0	0.00

SURFACE PRESSURE VS. TIME

Well Name: CDN FOREST LIARD

Location : K-32-60-10-132-15

D.S.T. # 2



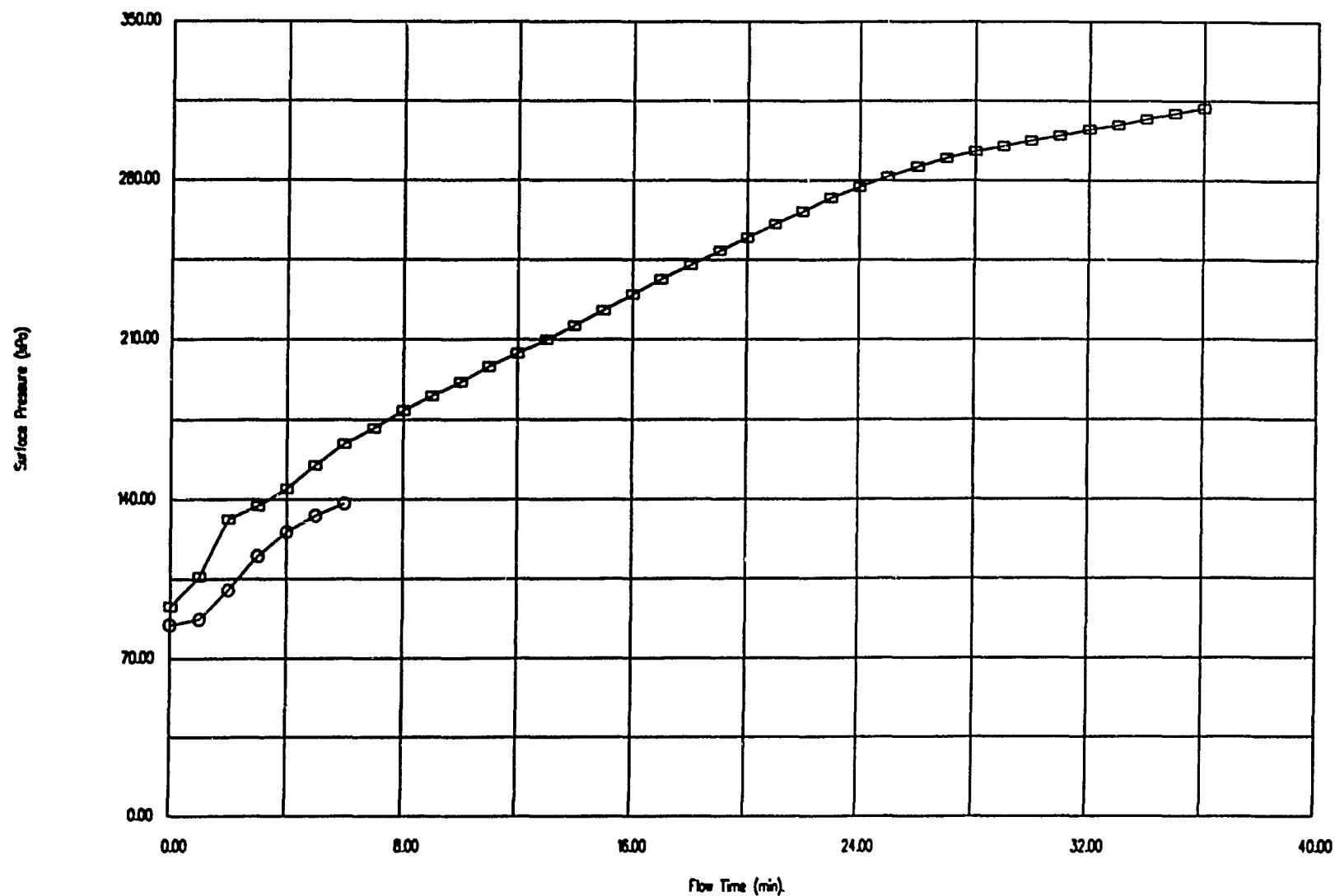
SURFACE PRESSURE VS. FLOW TIME

Well Name: CDN FOREST LIARD
Location : K-32-60-10-132-15
D.S.T. # 2

SYMBOL LEGEND

○ Flow 1

□ Flow 2



WELL NAME:CDN FOREST LIARD

D.S.T. #2

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
00:00:00	0.00	84.31	0.00		
00:00:15	0.25	84.17	-0.56		
00:00:30	0.50	84.39	0.88		
00:05:30	5.50	84.42	0.01		
00:10:30	10.50	84.43	0.00		
00:12:45	12.75	84.35	-0.04		
00:13:45	13.75	84.30	-0.05		
00:14:45	14.75	84.35	0.05		
00:15:45	15.75	84.30	-0.05		
00:16:45	16.75	84.26	-0.04		
00:17:45	17.75	84.43	0.17		
00:18:45	18.75	84.34	-0.09		
00:19:45	19.75	84.39	0.05		

FIRST FLOW: MINS

00:20:45	0.00	84.69	0.00	0.9979	0.00
00:21:45	1.00	87.24	2.55	0.9978	395.03
00:22:45	2.00	100.11	12.87	0.9975	1994.40
00:23:45	3.00	115.04	14.93	0.9972	2314.49
00:24:45	4.00	125.63	10.59	0.9969	1642.12
00:25:45	5.00	132.82	7.19	0.9967	1115.10
00:26:45	6.00	138.26	5.44	0.9966	843.81

FIRST SHUT-IN: MINS

00:26:45	0.00	138.26	0.00		
00:27:45	1.00	141.87	3.61		
00:28:45	2.00	144.59	2.72		
00:29:45	3.00	146.08	1.49		
00:30:45	4.00	147.23	1.15		
00:31:45	5.00	148.50	1.27		
00:32:45	6.00	149.21	0.71		
00:33:45	7.00	150.13	0.92		
00:34:45	8.00	150.88	0.75		

WELL NAME: CDN FOREST LIARD

D.S.T. #2

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
00:35:45	9.00	151.49	0.61		
00:36:45	10.00	152.94	1.45		
00:37:45	11.00	153.07	0.13		
00:38:45	12.00	153.78	0.71		
00:39:45	13.00	154.31	0.53		
00:40:45	14.00	155.67	1.36		
00:41:45	15.00	155.58	-0.09		
00:42:45	16.00	155.54	-0.04		
00:43:45	17.00	155.63	0.09		
00:44:45	18.00	155.32	-0.31		
00:45:45	19.00	155.58	0.26		
00:46:45	20.00	155.76	0.18		
00:47:45	21.00	155.58	-0.18		
00:48:45	22.00	155.72	0.14		
00:49:45	23.00	155.89	0.17		
00:50:30	23.75	155.80	-0.12		
00:55:30	28.75	155.53	-0.05		
01:00:30	33.75	155.70	0.03		
01:05:30	38.75	155.56	-0.03		

BLEED OFF

01:05:30	0.00	155.56	0.00		
01:10:30	5.00	86.49	-13.81		
01:15:30	10.00	84.02	-0.49		
01:20:30	15.00	83.86	-0.03		
01:25:30	20.00	83.86	-0.01		
01:30:30	25.00	83.86	0.01		

SECOND FLOW: MINS

01:32:45	0.00	92.81	0.00	0.9977	0.00
01:33:45	1.00	106.04	13.23	0.9974	2050.49
01:34:45	2.00	131.24	25.20	0.9968	3908.14
01:35:45	3.00	137.16	5.92	0.9966	918.24

WELL NAME: CDN FOREST LIARD

D.S.T. #2

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
01:36:45	4.00	144.76	7.60	0.9964	1179.04
01:37:45	5.00	155.01	10.25	0.9962	1590.56
01:38:45	6.00	164.53	9.52	0.9959	1477.63
01:39:45	7.00	171.38	6.85	0.9958	1063.39
01:40:45	8.00	178.94	7.56	0.9956	1173.83
01:41:45	9.00	185.27	6.33	0.9954	983.00
01:42:45	10.00	191.30	6.03	0.9953	936.55
01:43:45	11.00	198.09	6.79	0.9951	1054.77
01:44:45	12.00	203.83	5.74	0.9950	891.79
01:45:45	13.00	209.74	5.91	0.9948	918.34
01:46:45	14.00	215.87	6.13	0.9947	952.67
01:47:45	15.00	222.64	6.77	0.9945	1052.31
01:48:45	16.00	229.54	6.90	0.9943	1072.70
01:49:45	17.00	236.32	6.78	0.9942	1054.22
01:50:45	18.00	242.62	6.30	0.9940	979.74
01:51:45	19.00	248.97	6.35	0.9938	987.67
01:52:45	20.00	254.75	5.78	0.9937	899.14
01:53:45	21.00	260.76	6.01	0.9936	935.06
01:54:45	22.00	266.25	5.49	0.9934	854.27
01:55:45	23.00	272.27	6.02	0.9933	936.88
01:56:45	24.00	277.05	4.78	0.9932	743.99
01:57:45	25.00	281.70	4.65	0.9930	723.85
01:58:45	26.00	286.04	4.34	0.9929	675.66
01:59:45	27.00	289.76	3.72	0.9928	579.19
02:00:45	28.00	292.75	2.99	0.9928	465.57
02:01:45	29.00	295.02	2.27	0.9927	353.48
02:02:45	30.00	297.51	2.49	0.9926	387.76
02:03:45	31.00	299.73	2.22	0.9926	345.73
02:04:45	32.00	302.45	2.72	0.9925	423.63
02:05:45	33.00	304.36	1.91	0.9925	297.48
02:06:45	34.00	307.00	2.64	0.9924	411.22
02:07:45	35.00	309.49	2.49	0.9924	387.87
02:08:45	36.00	311.77	2.28	0.9923	355.18

WELL NAME: CDN FOREST LIARD

D.S.T. #2

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME (cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP (Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
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SECOND SHUT-IN: MINS

02:08:45	0.00	311.77	0.00
02:09:45	1.00	304.73	-7.04
02:10:45	2.00	295.21	-9.52
02:11:45	3.00	285.84	-9.37
02:12:45	4.00	273.14	-12.70
02:13:45	5.00	260.66	-12.48
02:14:45	6.00	249.09	-11.57
02:15:45	7.00	237.82	-11.27
02:16:45	8.00	226.96	-10.86
02:17:45	9.00	216.79	-10.17
02:18:45	10.00	207.09	-9.70
02:19:45	11.00	197.55	-9.54
02:20:45	12.00	188.55	-9.00
02:21:45	13.00	179.88	-8.67
02:22:45	14.00	171.70	-8.18
02:23:45	15.00	164.02	-7.68
02:24:45	16.00	157.06	-6.96
02:25:45	17.00	149.98	-7.08
02:26:45	18.00	143.48	-6.50
02:27:45	19.00	137.51	-5.97
02:28:45	20.00	131.73	-5.78
02:29:45	21.00	126.25	-5.48
02:30:45	22.00	121.58	-4.67
02:31:45	23.00	116.86	-4.72
02:32:45	24.00	113.02	-3.84
02:33:45	25.00	109.58	-3.44
02:34:45	26.00	106.23	-3.35
02:35:45	27.00	103.07	-3.16
02:36:45	28.00	99.95	-3.12
02:37:45	29.00	97.94	-2.01
02:38:45	30.00	95.52	-2.42
02:39:45	31.00	93.73	-1.79

WELL NAME:CDN FOREST LIARD

D.S.T. #2

LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
02:40:45	32.00	92.37	-1.36		
02:41:45	33.00	90.63	-1.74		
02:42:45	34.00	89.71	-0.92		
02:43:45	35.00	88.75	-0.96		
02:44:45	36.00	88.49	-0.26		
02:45:45	37.00	88.06	-0.43		
02:46:45	38.00	87.54	-0.52		
02:47:45	39.00	87.33	-0.21		
02:48:45	40.00	87.12	-0.21		
02:49:45	41.00	86.82	-0.30		
02:50:45	42.00	86.65	-0.17		
02:51:45	43.00	86.57	-0.08		
02:52:45	44.00	86.13	-0.44		
02:53:45	45.00	86.09	-0.04		
02:54:45	46.00	86.19	0.10		
02:55:45	47.00	85.93	-0.26		
02:56:45	48.00	85.59	-0.34		
02:57:45	49.00	85.55	-0.04		
02:58:45	50.00	85.73	0.18		
02:59:45	51.00	85.87	0.14		
03:00:45	52.00	85.83	-0.04		
03:01:45	53.00	85.22	-0.61		
03:02:45	54.00	84.69	-0.53		
03:03:45	55.00	84.26	-0.43		
03:04:45	56.00	84.26	0.00		
03:05:45	57.00	84.00	-0.26		
03:06:45	58.00	84.32	0.32		
03:07:45	59.00	84.32	0.00		
03:08:45	60.00	84.54	0.22		
03:09:45	61.00	85.16	0.62		
03:10:45	62.00	86.57	1.41		
03:11:45	63.00	86.97	0.40		
03:12:45	64.00	95.45	8.48		
03:13:45	65.00	93.17	-2.28		
03:14:45	66.00	84.58	-8.59		

WELL NAME: CDN FOREST LIARD

D.S.T. #2

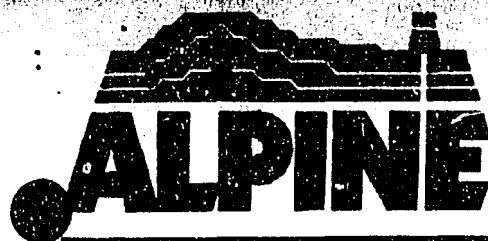
LOCATION: K-32-60-10-132-15

FLOW CALCULATIONS FOR:

FLOW CALCULATION PARAMETERS

NET CHAMBER VOLUME(cu m) = 11.32
GAS GRAVITY = 0.65
AVERAGE CHAMBER TEMP(Kel) = 299.65

TIME (real)	ACCUM.TIME (min)	PRESSURE (kPa)	dP/dT (kPa/min)	Z-FACTOR (Real Gas)	GAS (cu m/d)
-----	-----	-----	-----	-----	-----
03:15:45	67.00	84.23	-0.35		
03:16:45	68.00	83.41	-0.82		
03:17:45	69.00	83.46	0.05		
03:18:45	70.00	83.78	0.32		
03:19:45	71.00	83.74	-0.04		
03:20:45	72.00	83.88	0.14		
03:21:45	73.00	83.80	-0.08		
03:22:45	74.00	83.76	-0.04		
03:23:45	75.00	83.51	-0.25		
03:24:45	76.00	83.51	0.00		



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397
Test Date: 03/19/1999 830hrs

DST#: 2

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)	Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
A	Initial Hydrostatic	0.00	0.00	17516.40		47.8			32.00	11819.60	15223.60	1.1250	51.6
B	Start of 1st Flow	0.00	0.00	3195.60		48.2			33.00	11823.00	15227.00	1.1212	51.6
		1.00	-412.00	2783.60		48.3			34.00	11825.30	15229.30	1.1176	51.6
		2.00	-311.30	2884.30		48.9			35.00	11827.70	15231.70	1.1143	51.6
		3.00	-190.90	3004.70		49.1			36.00	11830.00	15234.00	1.1111	51.6
C	End of 1st Flow	4.00	208.40	3404.00		49.4			37.00	11832.30	15236.30	1.1081	51.6
		1.00	417.80	3821.80	5.0000	49.6			38.00	11834.60	15238.60	1.1053	51.6
		2.00	1033.60	4437.60	3.0000	49.8			39.00	11835.80	15239.80	1.1026	51.6
		3.00	2340.30	5744.30	2.3333	50.0			40.00	11838.10	15242.10	1.1000	51.6
		4.00	3732.70	7136.70	2.0000	50.1			41.00	11840.40	15244.40	1.0976	51.7
		5.00	5268.60	8672.60	1.8000	50.2			42.00	11842.70	15246.70	1.0952	51.7
		6.00	6904.00	10308.00	1.6667	50.3			43.00	11843.90	15247.90	1.0930	51.7
		7.00	8492.00	11896.00	1.5714	50.4			44.00	11845.00	15249.00	1.0909	51.7
		8.00	9790.60	13194.60	1.5000	50.5			45.00	11846.20	15250.20	1.0889	51.7
		9.00	10661.00	14065.00	1.4444	50.6			46.00	11848.50	15252.50	1.0870	51.7
		10.00	11141.30	14545.30	1.4000	50.7			47.00	11849.70	15253.70	1.0851	51.7
		11.00	11376.30	14780.30	1.3636	50.8			48.00	11852.00	15256.00	1.0833	51.7
		12.00	11505.90	14909.90	1.3333	50.9			49.00	11853.10	15257.10	1.0816	51.7
		13.00	11586.90	14990.90	1.3077	51.0			50.00	11854.30	15258.30	1.0800	51.7
		14.00	11637.80	15041.80	1.2857	51.0			51.00	11856.60	15260.60	1.0784	51.8
		15.00	11672.60	15076.60	1.2667	51.0			52.00	11856.80	15260.80	1.0769	51.8
		16.00	11701.50	15105.50	1.2500	51.1			53.00	11857.80	15261.80	1.0755	51.8
		17.00	11718.90	15122.90	1.2353	51.2			54.00	11860.10	15264.10	1.0741	51.8
		18.00	11736.20	15140.20	1.2222	51.2			55.00	11860.10	15264.10	1.0727	51.8
		19.00	11750.10	15154.10	1.2105	51.2			56.00	11861.20	15265.20	1.0714	51.8
		20.00	11760.50	15164.50	1.2000	51.3			57.00	11863.50	15267.50	1.0702	51.8
		21.00	11769.80	15173.80	1.1905	51.3			58.00	11863.50	15267.50	1.0690	51.8
		22.00	11777.90	15181.90	1.1818	51.4			59.00	11863.50	15267.50	1.0678	51.8
		23.00	11783.70	15187.70	1.1739	51.4			60.00	11863.50	15267.50	1.0667	51.8
		24.00	11790.60	15194.60	1.1667	51.4			61.00	11863.50	15267.50	1.0656	51.8
		25.00	11795.30	15199.30	1.1600	51.4			62.00	11864.70	15268.70	1.0645	51.9
		26.00	11799.90	15203.90	1.1538	51.5			63.00	11864.70	15268.70	1.0635	51.8
		27.00	11803.40	15207.40	1.1481	51.5			64.00	11865.90	15269.90	1.0625	51.9
		28.00	11806.80	15210.80	1.1429	51.5			65.00	11865.90	15269.90	1.0615	51.9
		29.00	11810.30	15214.30	1.1379	51.5	D	End of 1st Shutin	66.00	11867.00	15271.00	1.0606	51.9
		30.00	11813.80	15217.80	1.1333	51.5	E	Start of 2nd Flow	0.00	0.00	2866.90		51.6
		31.00	11817.20	15221.20	1.1290	51.5			1.00	42.90	2909.80		51.6



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397 DST#: 2
Test Date: 03/19/1989 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Chan Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)	Chan Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
		2.00	53.30	2920.20		51.7			39.00	1880.80	4747.70		54.9
		3.00	84.50	2951.40		51.7			40.00	1815.60	4782.50		55.0
		4.00	122.70	2989.60		51.8			41.00	1949.10	4816.00		55.0
		5.00	157.40	3024.30		51.9			42.00	1978.10	4845.00		55.1
		6.00	188.70	3055.60		52.0			43.00	2009.30	4876.20		55.2
		7.00	222.30	3089.20		52.2			44.00	2039.40	4906.30		55.3
		8.00	261.60	3128.50		52.3			45.00	2078.80	4945.70		55.3
		9.00	302.10	3169.00		52.4			46.00	2110.00	4976.90		55.4
		10.00	340.30	3207.20		52.5			47.00	2142.40	5009.30		55.4
		11.00	384.30	3251.20		52.6			48.00	2171.40	5038.30		55.5
		12.00	427.10	3294.00		52.7			49.00	2202.60	5069.50		55.6
		13.00	478.00	3344.90		52.8			50.00	2238.50	5105.40		55.6
		14.00	527.80	3394.70		52.9			51.00	2270.90	5137.80		55.6
		15.00	584.50	3451.40		53.0			52.00	2309.10	5176.00		55.7
		16.00	637.80	3504.70		53.1			53.00	2336.90	5203.80		55.8
		17.00	694.50	3561.40		53.1			54.00	2372.70	5239.60		55.9
		18.00	744.30	3611.20		53.3			55.00	2408.60	5275.50		55.9
		19.00	803.30	3670.20		53.4			56.00	2444.50	5311.40		56.0
		20.00	865.80	3732.70		53.4			57.00	2481.50	5348.40		56.0
		21.00	920.20	3787.10		53.5			58.00	2512.80	5379.70		56.1
		22.00	981.50	3848.40		53.6			59.00	2542.90	5409.80		56.1
		23.00	1051.00	3917.90		53.6			60.00	2584.60	5451.50		56.1
		24.00	1120.40	3987.30		53.7			61.00	2619.30	5486.20		56.2
		25.00	1188.70	4055.60		53.5			62.00	2654.00	5520.90		56.3
		26.00	1255.80	4122.70		54.0			63.00	2692.20	5559.10		56.3
		27.00	1319.50	4186.40		54.0			64.00	2724.60	5591.50		56.4
		28.00	1382.00	4248.90		54.1			65.00	2770.90	5637.80		56.4
		29.00	1442.20	4309.10		54.2			66.00	2806.80	5673.70		56.4
		30.00	1497.70	4364.60		54.3			67.00	2839.20	5706.10		56.5
		31.00	1547.50	4414.40		54.3			68.00	2882.00	5748.90		56.5
		32.00	1606.50	4473.40		54.4			69.00	2915.60	5782.50		56.5
		33.00	1660.90	4527.80		54.5			70.00	2954.90	5821.80		56.5
		34.00	1714.20	4581.10		54.6			71.00	2994.30	5861.20		56.6
		35.00	1753.50	4620.40		54.6			72.00	3033.60	5900.50		56.6
		36.00	1783.60	4650.50		54.7			73.00	3067.20	5934.10		56.6
		37.00	1819.50	4686.40		54.8			74.00	3106.60	5973.50		56.7
		38.00	1854.20	4721.10		54.9			75.00	3144.70	6011.60		56.7



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

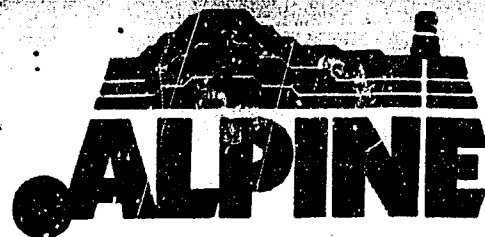
Job Ticket #: D2-6397 DGT#: 2
Test Date: 03/19/1999 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)	Chart Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
		76.00	3178.30	6045.20		56.8			34.00	8904.00	15066.10	3.4412	56.8
		77.00	3217.70	6084.60		56.8			35.00	8907.50	15069.60	3.3714	56.8
		78.00	3254.70	6121.60		56.8			36.00	8912.20	15074.30	3.3056	56.8
F	End of 2nd Flow	79.00	3295.20	6162.10		56.8			37.00	8915.60	15077.70	3.2432	56.8
		1.00	562.50	6724.60	84.0000	56.9			38.00	8919.10	15081.20	3.1842	56.8
		2.00	3240.80	9402.90	42.5000	56.9			39.00	8922.60	15084.70	3.1282	56.8
		3.00	5755.90	11918.00	28.6667	57.0			40.00	8926.00	15088.10	3.0750	56.8
		4.00	7254.70	13416.80	21.7500	57.1			41.00	8929.50	15091.60	3.0244	56.8
		5.00	7909.80	14071.90	17.6000	57.1			42.00	8933.00	15095.10	2.9762	56.8
		6.00	8194.60	14356.70	14.8333	57.2			43.00	8935.30	15097.40	2.9302	56.8
		7.00	8354.30	14516.40	12.8571	57.2			44.00	8938.80	15100.90	2.8864	56.8
		8.00	8457.30	14619.40	11.3750	57.2			45.00	8941.10	15103.20	2.8444	56.8
		9.00	8532.50	14694.60	10.2222	57.2			46.00	8943.40	15105.50	2.8043	56.7
		10.00	8588.10	14750.20	9.3000	57.2			47.00	8945.70	15107.80	2.7660	56.7
		11.00	8639.20	14795.30	8.5455	57.2			48.00	8948.00	15110.10	2.7292	56.7
		12.00	8669.10	14831.20	7.9167	57.2			49.00	8950.30	15112.40	2.6939	56.7
		13.00	8698.00	14860.10	7.3846	57.1			50.00	8953.80	15115.90	2.6600	56.6
		14.00	8721.20	14883.30	6.9286	57.1			51.00	8955.00	15117.10	2.6275	56.6
		15.00	8742.00	14904.10	6.5333	57.1			52.00	8957.30	15119.40	2.5962	56.6
		16.00	8759.40	14921.50	6.1875	57.1			53.00	8959.60	15121.70	2.5660	56.6
		17.00	8775.60	14937.70	5.8824	57.1			54.00	8961.90	15124.00	2.5370	56.6
		18.00	8788.30	14950.40	5.6111	57.1			55.00	8964.20	15126.30	2.5091	56.6
		19.00	8801.00	14963.10	5.3684	57.1			56.00	8965.40	15127.50	2.4821	56.6
		20.00	8811.50	14973.60	5.1500	57.1			57.00	8967.70	15129.80	2.4561	56.6
		21.00	8821.90	14984.00	4.9524	57.0			58.00	8970.00	15132.10	2.4310	56.6
		22.00	8831.10	14993.20	4.7727	57.0			59.00	8971.20	15133.30	2.4068	56.5
		23.00	8839.20	15001.30	4.6087	57.0			60.00	8973.50	15135.60	2.3839	56.5
		24.00	8847.30	15009.40	4.4583	57.0			61.00	8974.70	15136.80	2.3607	56.5
		25.00	8855.40	15017.50	4.3200	57.0			62.00	8977.00	15139.10	2.3387	56.5
		26.00	8862.40	15024.50	4.1923	56.9			63.00	8978.10	15140.20	2.3175	56.5
		27.00	8868.20	15030.30	4.0741	56.9			64.00	8979.30	15141.40	2.2969	56.6
		28.00	8874.00	15036.10	3.9643	56.9			65.00	8981.60	15143.70	2.2769	56.5
		29.00	8879.70	15041.80	3.8621	56.9			66.00	8982.80	15144.90	2.2576	56.2
		30.00	8885.50	15047.60	3.7667	56.9			67.00	8985.10	15147.20	2.2388	56.7
		31.00	8890.20	15052.30	3.6774	56.9			68.00	8986.20	15148.30	2.2206	56.6
		32.00	8894.80	15056.90	3.5938	56.9			69.00	8987.40	15149.50	2.2029	56.6
		33.00	8899.40	15061.50	3.5152	56.8			70.00	8988.50	15150.60	2.1857	56.6



Drill Stem Testing - Time / Pressure Listing

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: D2-6397 DST#: 2

Test Date: 03/19/1999 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Contact: DOUG SOLBERG

Location: K-32-60-10-132-15

Chan Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)	Chan Label	Comments	Time (Min.)	Delta P (KPa)	Pressure (KPa)	Abscissa (T+dt)/dt	Temp. (°C)
		71.00	8989.70	15151.80	2.1690	56.6			108.00	9026.70	15188.80	1.7685	56.3
		72.00	8992.00	15154.10	2.1528	56.5			109.00	9026.70	15188.80	1.7615	56.3
		73.00	8993.20	15155.30	2.1370	56.5			110.00	9027.90	15190.00	1.7545	56.3
		74.00	8994.30	15156.40	2.1216	56.5			111.00	9029.10	15191.20	1.7477	56.3
		75.00	8995.50	15157.60	2.1067	56.5			112.00	9029.10	15191.20	1.7411	56.3
		76.00	8996.60	15158.70	2.0921	56.5			113.00	9030.20	15192.30	1.7345	56.3
		77.00	8997.80	15159.90	2.0779	56.5			114.00	9031.40	15193.50	1.7281	56.3
		78.00	8999.00	15161.10	2.0641	56.5	G	End of 2nd Shutin	115.00	9031.40	15193.50	1.7217	56.3
		79.00	9000.10	15162.20	2.0506	56.5	Q	Final Hydrostatic	0.00	0.00	17122.90		55.5
		80.00	9001.30	15163.40	2.0375	56.5							
		81.00	9002.40	15164.50	2.0247	56.5							
		82.00	9003.60	15165.70	2.0122	56.5							
		83.00	9004.70	15166.80	2.0000	56.4							
		84.00	9005.90	15168.00	1.9881	56.5							
		85.00	9005.90	15168.00	1.9765	56.5							
		86.00	9008.20	15170.30	1.9651	56.5							
		87.00	9008.20	15170.30	1.9540	56.5							
		88.00	9009.40	15171.50	1.9432	56.4							
		89.00	9010.50	15172.60	1.9326	56.4							
		90.00	9011.70	15173.80	1.9222	56.4							
		91.00	9011.70	15173.80	1.9121	56.4							
		92.00	9014.00	15176.10	1.9022	56.4							
		93.00	9014.00	15176.10	1.8925	56.4							
		94.00	9015.20	15177.30	1.8830	56.4							
		95.00	9016.30	15178.40	1.8737	56.4							
		96.00	9017.50	15179.60	1.8646	56.4							
		97.00	9017.50	15179.60	1.8557	56.4							
		98.00	9018.60	15180.70	1.8469	56.4							
		99.00	9019.80	15181.90	1.8384	56.4							
		100.00	9020.90	15183.00	1.8302	56.4							
		101.00	9020.90	15183.00	1.8218	56.4							
		102.00	9020.90	15183.00	1.8137	56.4							
		103.00	9022.10	15184.20	1.8058	56.3							
		104.00	9023.30	15185.40	1.7981	56.3							
		105.00	9024.40	15186.50	1.7905	56.4							
		106.00	9025.60	15187.70	1.7830	56.4							
		107.00	9025.60	15187.70	1.7757	56.4							

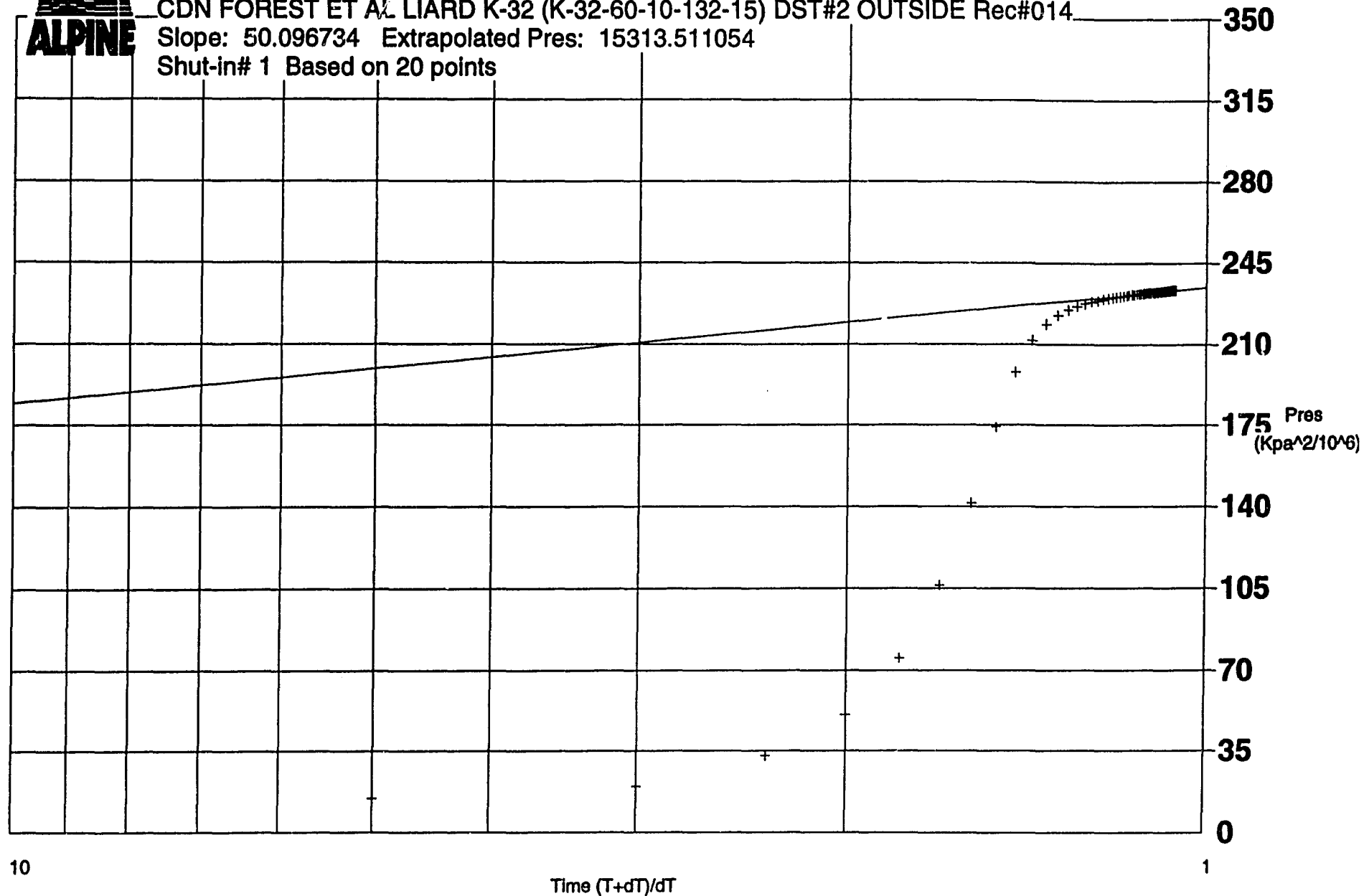


Horner Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 OUTSIDE Rec#014

Slope: 50.096734 Extrapolated Pres: 15313.511054

Shut-in# 1 Based on 20 points



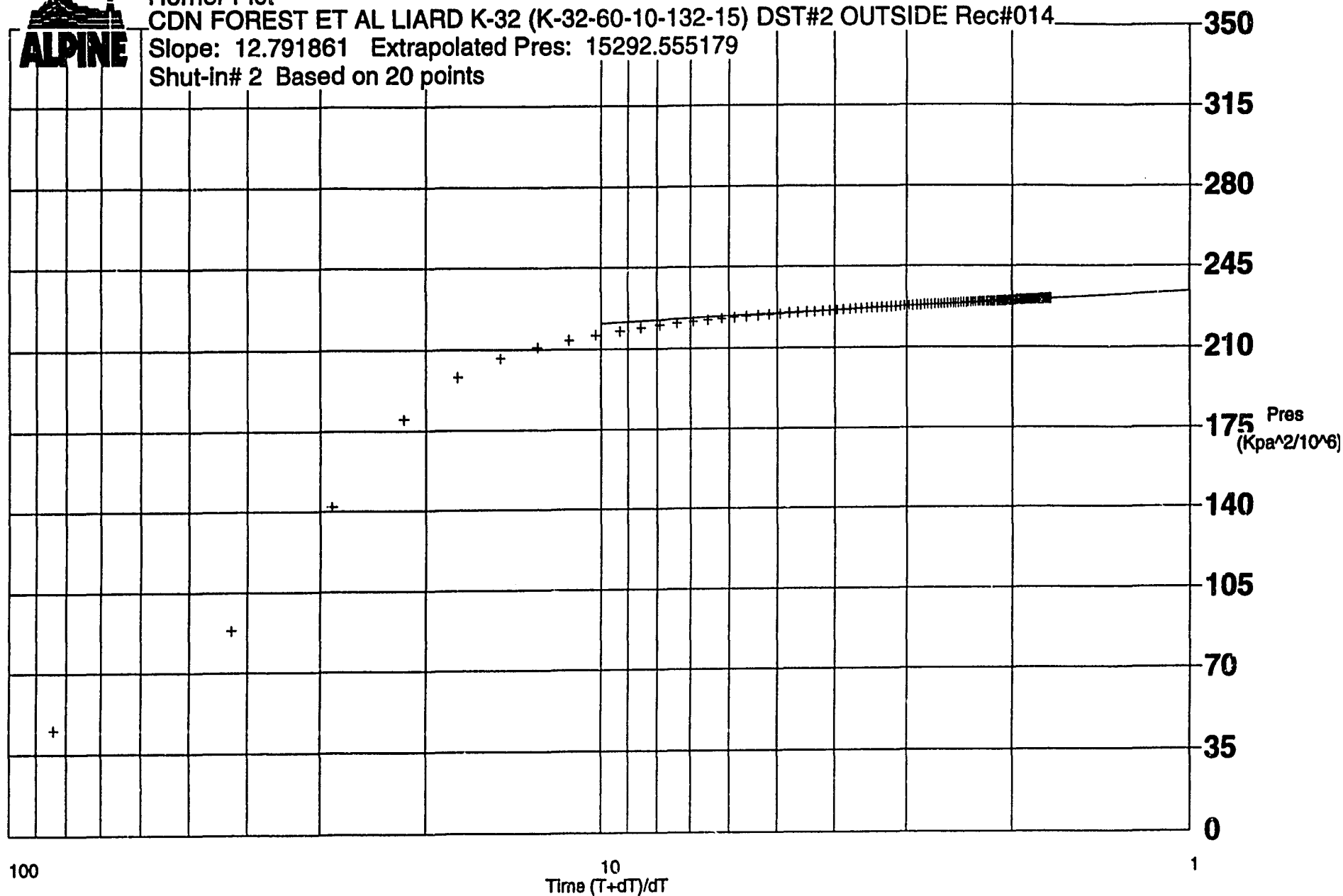


Horner Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 OUTSIDE Rec#014

Slope: 12.791861 Extrapolated Pres: 15292.555179

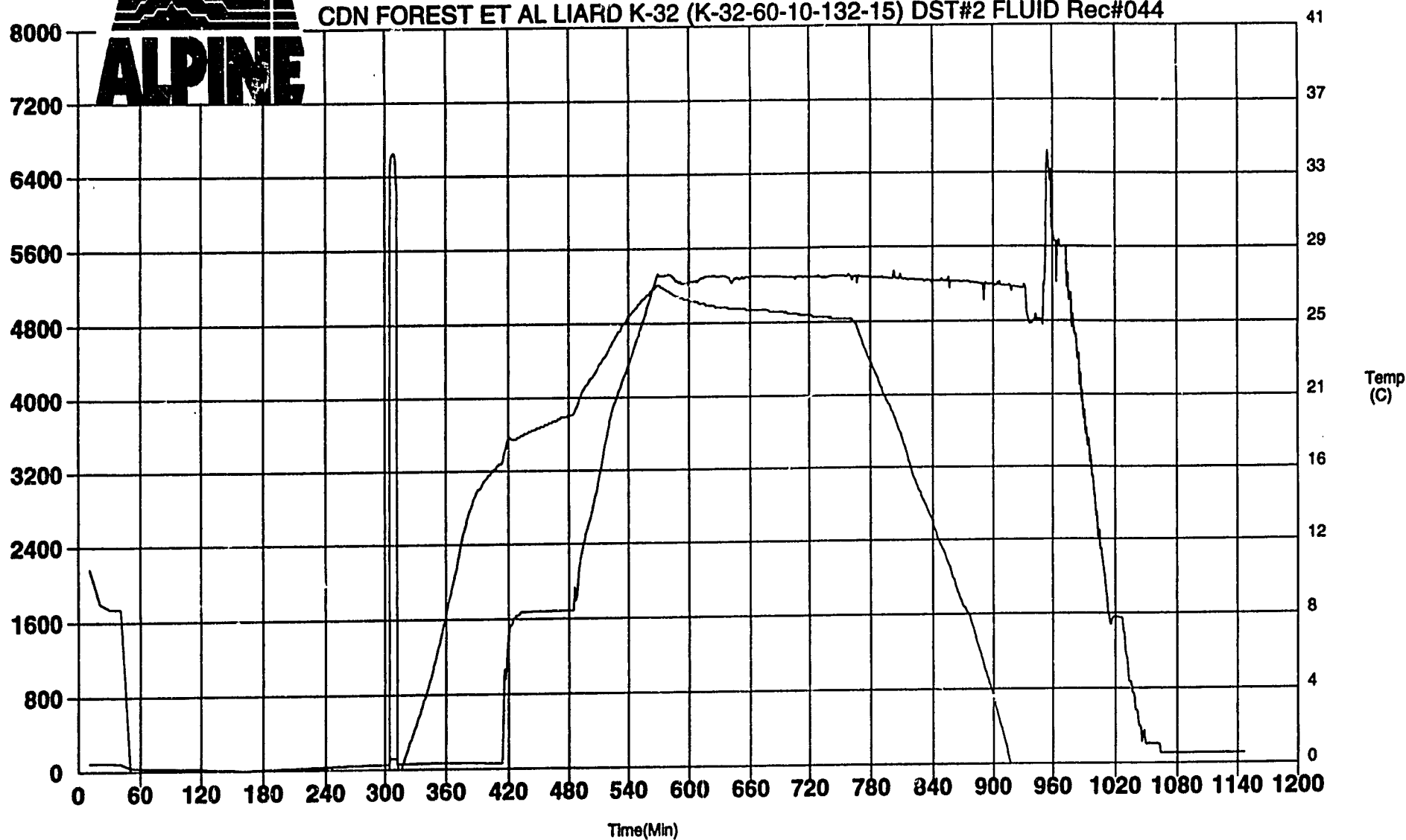
Shut-in# 2 Based on 20 points





Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 FLUID Rec#044



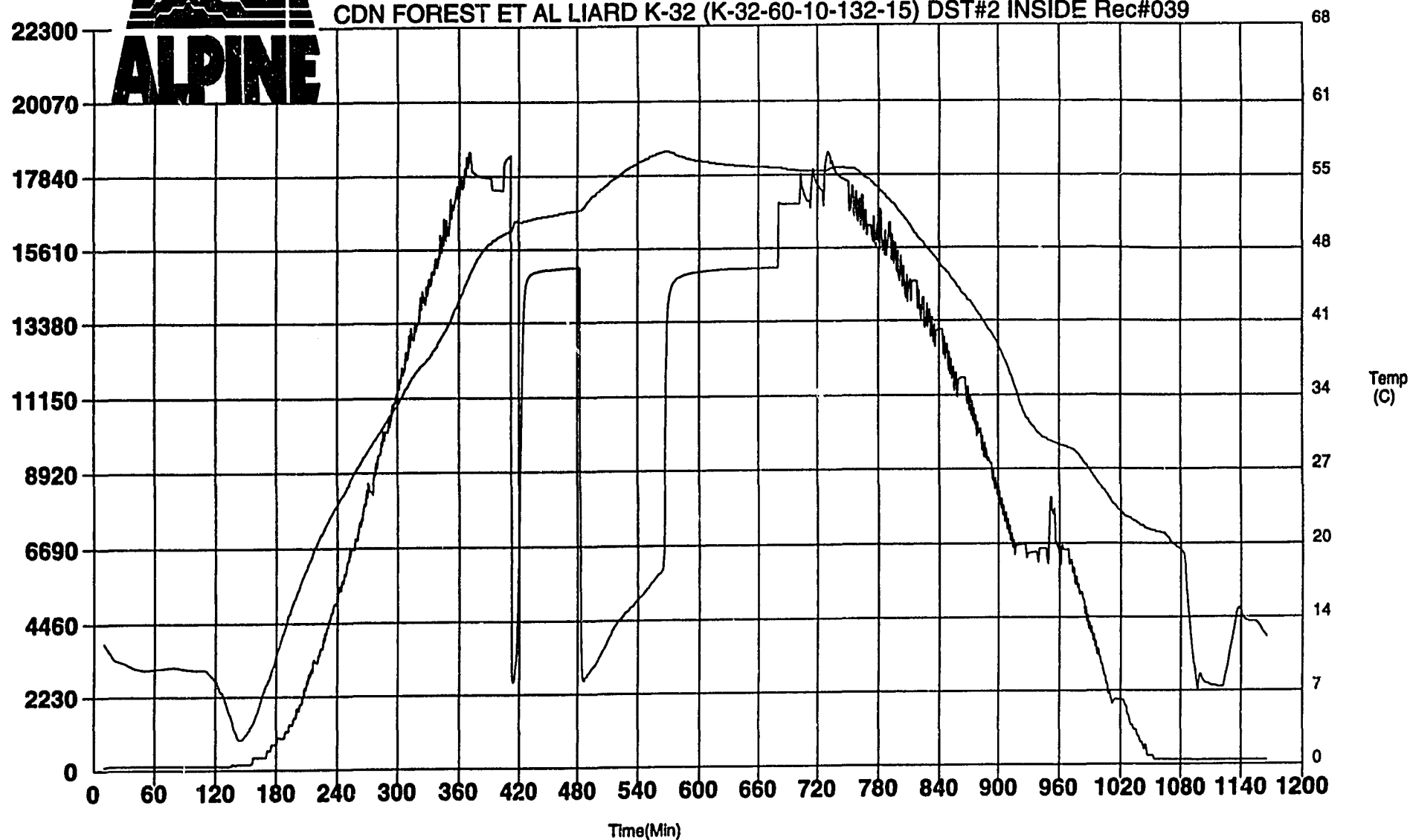
A Initial Hydrostatic - 57
B Start of 1st Flow - 954
C End of 1st Flow - 1527
D End of 1st Shutin - 1682
E Start of 2nd Flow - 1829

F End of 2nd Flow - 5331
G End of 2nd Shutin - 5291
Q Final Hydrostatic - 5275



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 INSIDE Rec#039



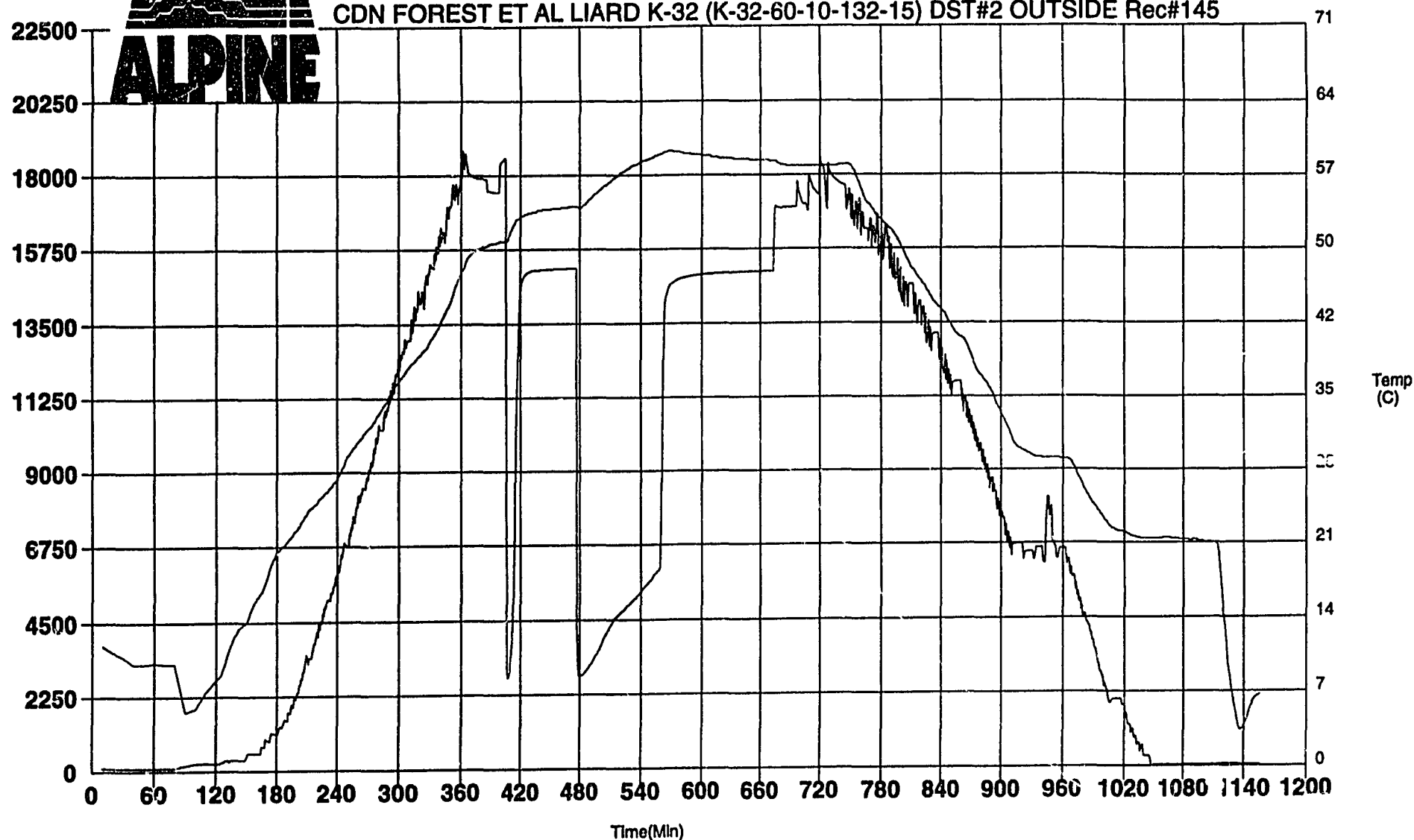
A Initial Hydrostatic - 17416
B Start of 1st Flow - 2815
C End of 1st Flow - 3026
D End of 1st Shutin - 15057
E Start of 2nd Flow - 2625

F End of 2nd Flow - 5983
G End of 2nd Shutin - 15025
Q Final Hydrostatic - 16966



Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 OUTSIDE Rec#145



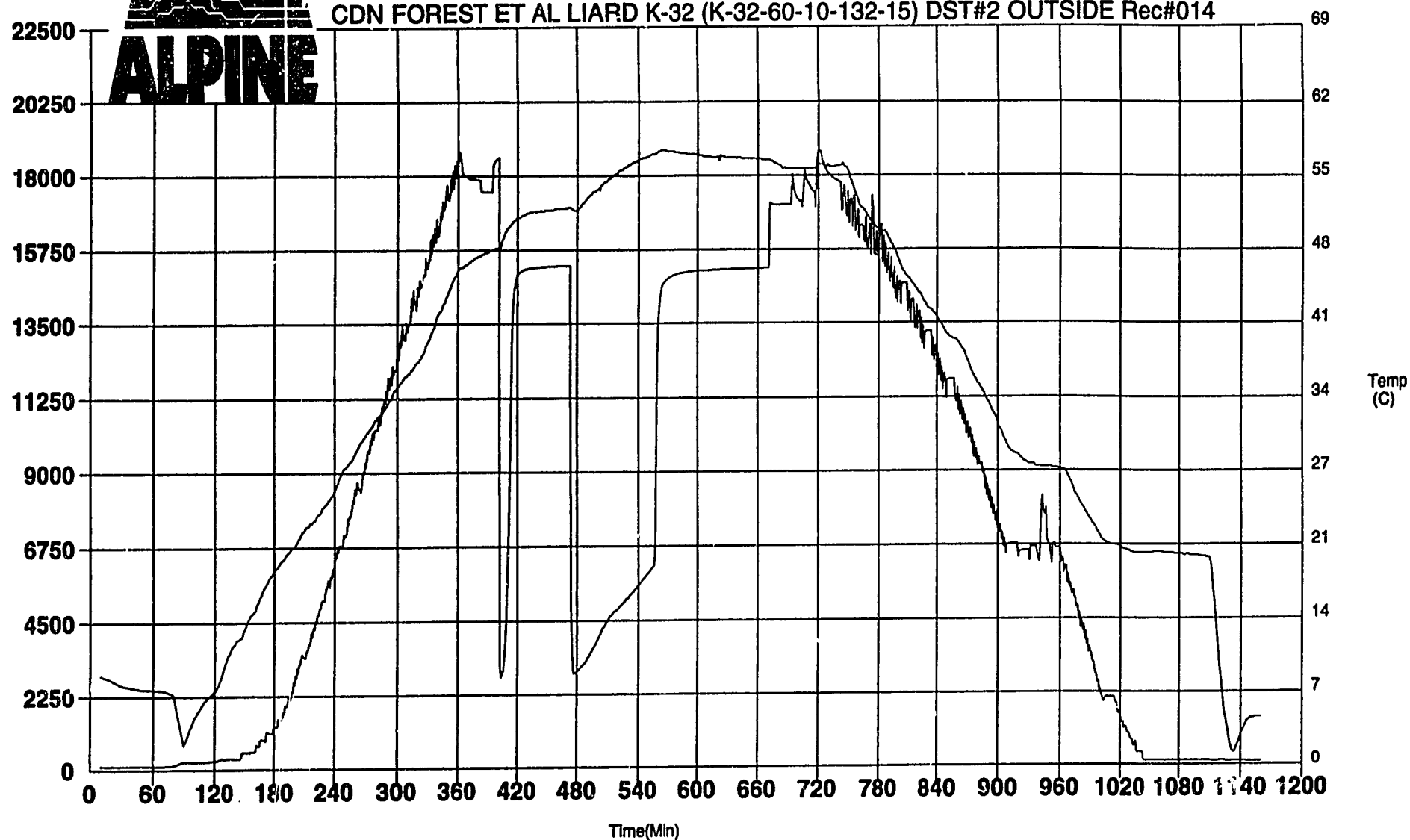
A Initial Hydrostatic - 17474
B Start of 1st Flow - 3024
C End of 1st Flow - 3882
D End of 1st Shut-in - 15177
E Start of 2nd Flow - 2781

F End of 2nd Flow - 6043
G End of 2nd Shut-in - 15066
Q Final Hydrostatic - 16991



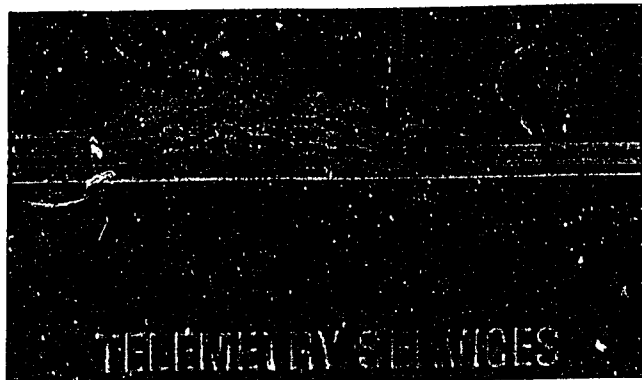
Time/Pressure Plot

CDN FOREST ET AL LIARD K-32 (K-32-60-10-132-15) DST#2 OUTSIDE Rec#014



A Initial Hydrostatic - 17516
B Start of 1st Flow - 3196
C End of 1st Flow - 3404
D End of 1st Shutin - 15271
E Start of 2nd Flow - 2867

F End of 2nd Flow - 6162
G End of 2nd Shutin - 15194
Q Final Hydrostatic - 17123



Real Time Test Report

Prepared for: **CANADIAN FOREST OIL**
600, 800 - 6th Ave. S.W.
CALGARY, AB

Well Name: CDN FOREST ET AL LIARD K-32
Location: K-32-60-10-132-15

Test Date: 03/19/1999

Job Ticket #: T3770-1 DST#: 2

TELEMETRY SERVICES

Real Time Testing Report

Company: CANADIAN FOREST OIL LTD.
600, 800 - 6th Ave. S.W.
CALGARY, AB

Job Ticket #: T3770-1 DST#: 2

Test Date: 03/18/1999 830hrs

Well Name: CDN FOREST ET AL LIARD K-32

Location: K-32-60-10-132-15

Contact: DOUG SOLBERG

General Information:

Test Type: CONV. BOTTOM HOLE
Interval: 1635m -1695m
Formation: PERMIAN FANTASQUE
KB Elevation: 404.50m
Ground Elevation: 400.10m
Total Depth: 1695.00m
Test Mode: Gas

Tester: B. HOLLINGSHEAD
Truck No.: Unit 115
Contractor: NABORS
Rig No.: 6
Hole Diameter: 222mm
Hole Condition: GOOD
Bottom Hole Temperature: 56.60 C

Telemetry Recorder Information:

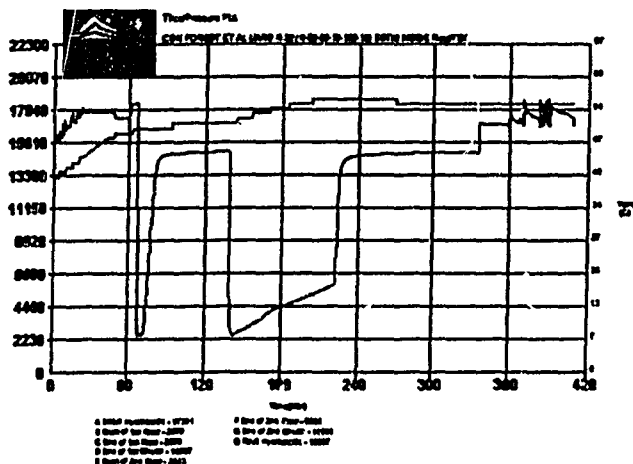
INSIDE

Recorder #: FEK Depth: 1628.49 m

Flag Points:	Time:	Pressure:
A Initial Hydrostatic	0.00	17301.3
B Start of 1st Flow	0.00	2578.9
C End of 1st Flow	4.08	2879.1
D End of 1st Shutin	65.10	14987.1
E Start of 2nd Flow	0.00	2543.2
F End of 2nd Flow	80.22	5906.0
G End of 2nd Shutin	114.54	14938.4
Q Final Hydrostatic	0.00	16857.2

Test Run Information:

Start Time: 830hrs
Reached Test Depth: 1200hrs
Pull Out Time: 1730hrs
Tool Out Of Hole: 2330hrs
Water Loss: 7.00cm³
Mud Drop: NO
VIS: 90.00S/L
Filter Cake: 1.00mm
Pump Time: 30min
Reversed Out: YES
Mud Type: GEL CHEMICAL
Mud Weight: 1095.00kg/m³
Amount of fill: 0.00m
Amount of cushion: 0.00
Type of cushion:

**General Remarks:**

Mechanically successful. *Test results suggest moderate permeability within the zone tested.

Maximum gas rates as reported by Alpine Closed Chamber are as follows:

PREFLOW: 2314.49 m³/day.

FINAL FLOW: 3908.14 m³/day.

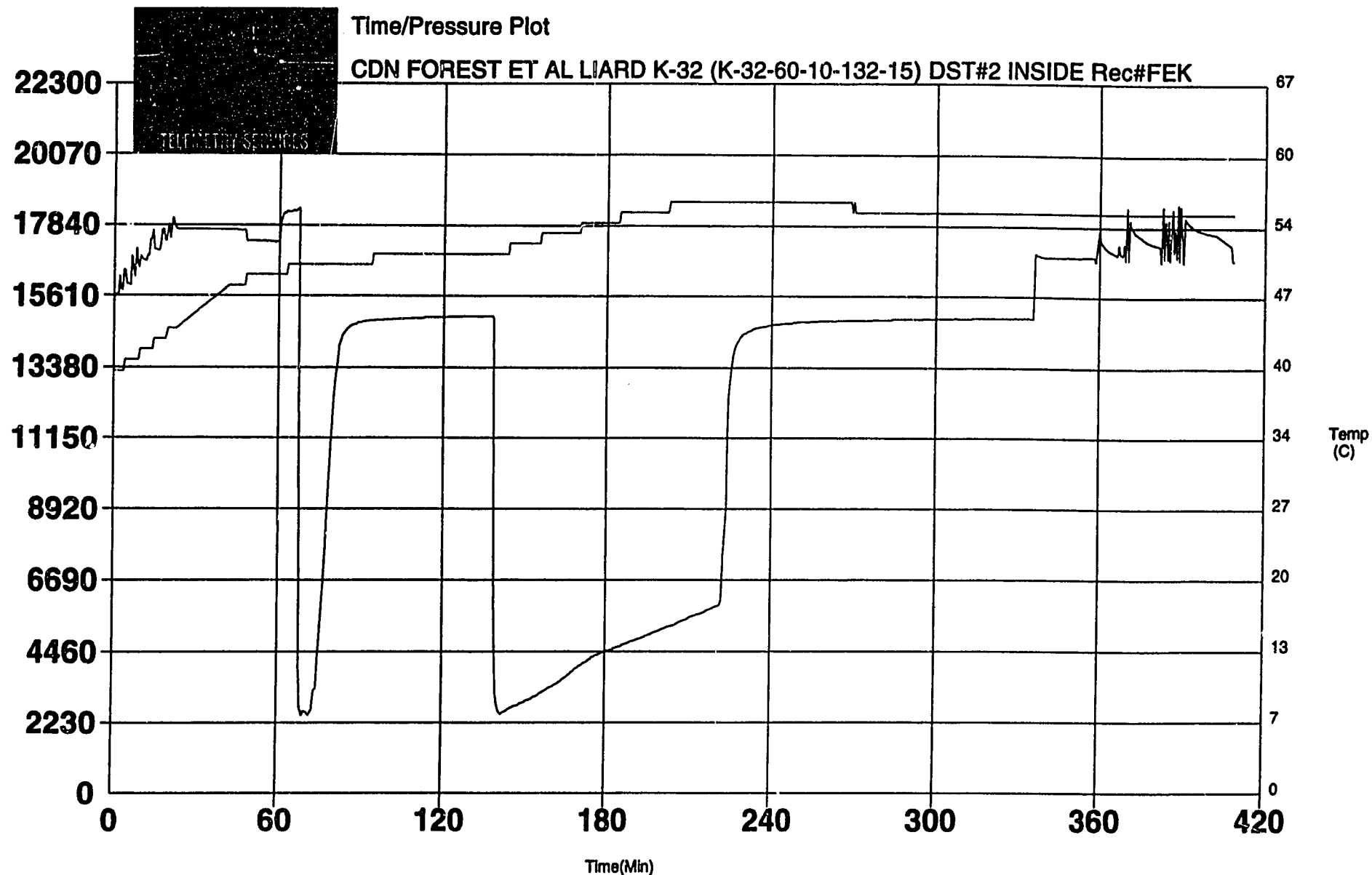
Went to conventional flow after 40 minutes of closed chamber.

*** See gas volume charts for gas rates.

Recovery Description:

Total fluid recovery reversed out was 552 meters, consisting of 20 meters gasified mud, 200 meters muddy gasified salt water, 332 meters salt water.
Salinity = 37,500 PPM

Gas to surface.

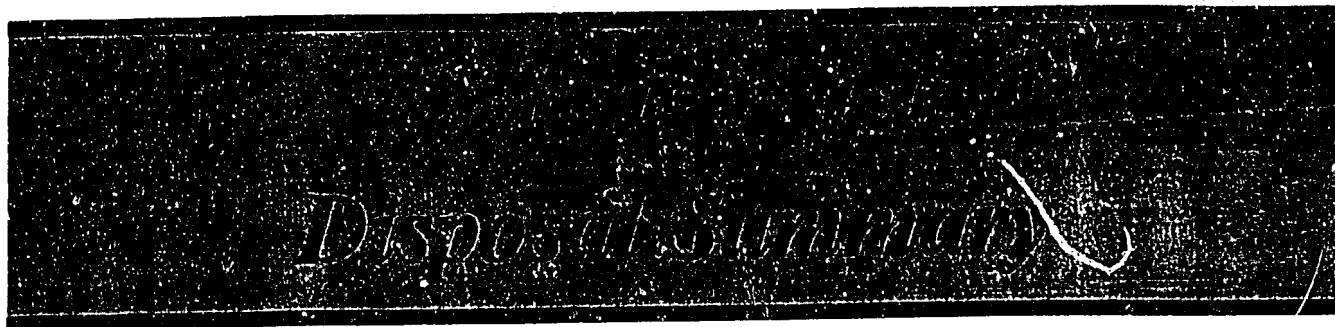


A Initial Hydrostatic - 17301
B Start of 1st Flow - 2579
C End of 1st Flow - 2879
D End of 1st Shutin - 14987
E Start of 2nd Flow - 2543

F End of 2nd Flow - 5906
G End of 2nd Shutin - 14938
Q Final Hydrostatic - 16857

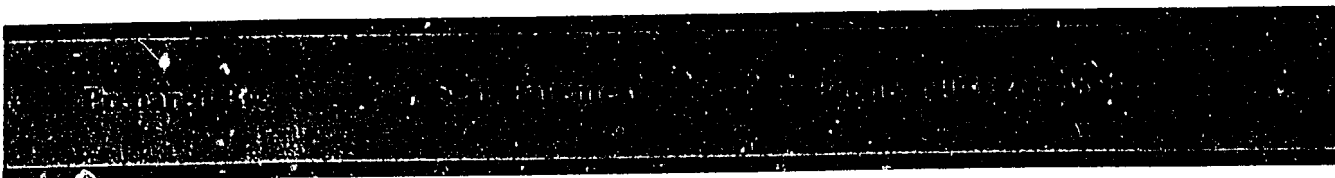
**DRILLING WASTE DISPOSAL
SUMMARY**

WF



Canadian Forest Fort Liard

K-32



Newpark Environmental Services Inc.
Suite 720, 101 - 6th Avenue S.W., Calgary, Alberta T2P 3P4
Phone: (403) 266-4850 Fax: (403) 266-4853

April 26, 1999

Mr. Keith Hynes
Canadian Forest Oil Ltd.
600, 800 - 6th Ave. S.W.
Calgary, AB. T2P 3G3

Dear Mr. Hynes:

RE: Canadian Forest Fort Liard K-32
Drilling Waste Analysis and Disposal

The drilling waste generated from the above indicated location was sampled and analysed for onsite disposal. The waste was analysed for routine salinities, toxicity, and hydrocarbon content. Due to the benign nature of the mud additives, no metals testing was performed (I.e. No source for metals contamination).

The attached disposal summary includes chemical loading parameters determined in the same manner as Alberta Energy Board's Guide 50. This provides a reference as to the suitability of the disposal of this waste.

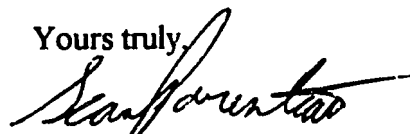
The drilling waste was generated from an inhibitive potassium sulphate system. This system created very high Total Dissolved Solids / Electrical Conductivity. The salts brought into the system are primarily potassium and sulphate, as seen in the lab report. The high levels of these salts (TDS) can create soil problems if not properly dispersed by the disposal procedure, in the case of this site a minimum 6:1 soil to waste ratio is recommended. In the case of this particular waste, the chlorides and sodium are relatively low at 604 mg/l and 3130 mg/l respectively. There will be no concerns with chlorides and sodium at this location.

The toxicity bioassay (Microtox) shows a minor toxic response, this is likely due to the presence of the Chemcide product, which is a biocide used for bacterial control. This toxicity is usually short term in nature and most likely will not create any problems with site reclamation.

The waste generated from potassium sulphate systems is commonly landprayed off location in agricultural areas. In the case of remote areas, a deep and thorough mix-bury-cover is the best option.

Please contact the undersigned with any questions regarding this report.

Yours truly,



Sean Parenteau

NOTIFICATION OF DRILLING WASTE DISPOSAL

The licensee certifies that the information on this form is correct and is submitted to the appropriate regulatory agency 48 hours prior to drilling waste disposal.

DAY MONTH YEAR
20 04 1999

YOUR FILE NUMBER
Canadian Forest Fmt Lland K-32

1. REGULATORY OFFICE

Appropriate regulatory office: National Energy Board

Second regulatory office (if applicable): _____

Fax: () - _____

Fax: () - _____

2. WELL INFORMATION

Well licensee: Canadian Forest Oil Ltd.

Surface location: _____

Unique well identifier: _____

Well authorization/licence number: 0000000

MSL number (if applicable): _____

Sump location or storage location

1. Same as surface location /or:

2. Same as surface location /or:

Mud type: Gel chem

Date of Sampling: DAY MONTH YEAR

Proposed Date of disposal: (48 hours notice is required)

DAY MONTH YEAR

22 04 1999

Lab Name: Norwest Labs

Lab Work Order: 221768

Operator/company

Name: Keith Hynes

Phone: (403) 292-8000

contact

Company Name: Canadian Forest Oil Ltd.

Mobile: () - _____ Fax: () - _____

Sampling company

Name: Sean Parenteau

Phone: (403) 266-4850

contact

Company Name: Newpark Environmental Services

Mobile: (403) 620-9624 Fax: (403) 266-4853

If drilling sump wastes are to be disposed by land treatment or alternate disposal methods, attach the required documentation and provide a summary in the comments section on page 2 of this form.

3. ON-SITE DISPOSAL

Fluids: _____ m³ Solids: _____ m³ Total Waste: 500 m³

Soil texture: Clay

LANDSPREADING ☐

Application thickness: _____ cm Incorporation depth: _____ cm

Receiving Soil EC: _____ dS/m Receiving Soil SAR: _____

Minimum area
ha

Max. application
rate m³/ha

Max. amount added
kg/ha

Chloride

Sodium

Nitrogen

TDS

Toxicity pass: _____ Predicted oil content after mix: _____ %

Proposed application rate: _____ m³/ha

Proposed area used for disposal: _____ ha

MIX-BURY-COVER ☒

Est. water table depth: 9 m Intended mix ratio: 6:1

Volume to be disposed: 500 m³

Has site been used before? No Toxicity pass: No

Post disposal values:

Chloride 54.76 mg/kg

Oil 0.01 %

Total mass chloride: 283.70 kg

Total mass nitrogen: _____ kg

4. OFF-SITE DISPOSAL

Fluids: _____ m³ Solids: _____ m³ Total Waste: _____ m³

Soil texture: _____ Horizon thickness: _____ cm

LANDSPRAYING ☐

PUMPOFF ☐

LWD ☐

Application thickness: _____ cm Incorporation depth: _____ cm

(if applicable)

Receiving soil EC: _____ dS/m Receiving soil SAR: _____

Minimum area
ha

Max. application
rate m³/ha

Max. amount added
kg/ha

Chloride

Sodium

Nitrogen

TDS

Solids Loading Rate: _____ t/ha

Toxicity pass: _____

Predicted oil content after mix: _____ %

Proposed application rate: _____ m³/ha

Proposed area used for disposal: _____ ha

Land owner: _____

Phone: _____

Date of consent: _____

Landowner consent is required if the disposal is off site.

Horizontal Oil Well? No

Hydrocarbons Added? No

Salt Zone Encountered? No

Nitrogen > 400 kg added? No

If you answered YES to any one of the above questions, please give details in the comments section on page 2.

5. DETAILED INFORMATION

Over-saturated solids fluids or total water	Under-saturated solids	Clear liquids	Residual soil
As received sample	As received sample	As received sample	As received sample
SG <u>1.10</u>	SG _____	pH _____	Soil density _____ kg/m ³
Mud density <u>1100</u> kg/m ³	Mud density _____ kg/m ³	EC _____ dS/m	Oil content _____ % dry wt
DBD <u>161</u> kg/m ³	DBD _____ kg/m ³	TDS _____ mg/L	
Oil content <u>0.60</u> % dry wt	Oil content _____ % dry wt	Chloride _____ mg/L	Saturated paste extract
Phi <u>0.94</u>		Sodium _____ mg/L	pH _____
	Saturated paste	Nitrogen _____ mg/L	EC _____ dS/m
	SG _____	Calcium _____ mg/L	Chloride _____ mg/L
	Phi _____	Magnesium _____ mg/L	Sodium _____ mg/L
		SAR _____	Nitrogen _____ mg/L
As received filtrate	Saturated paste extract		Calcium _____ mg/L
pH <u>11.60</u>	pH _____	Hydrocarbon, _____ mg/L	Magnesium _____ mg/L
EC <u>86.30</u> dS/m	EC _____ dS/m	diss _____	SAR _____
TDS <u>60410</u> mg/L	TDS _____ mg/L		
Chloride <u>604</u> mg/L	Chloride _____ mg/L		
Sodium <u>3130</u> mg/L	Sodium _____ mg/L		
Nitrogen _____ mg/L	Nitrogen _____ mg/L		
Calcium <u>408</u> mg/L	Calcium _____ mg/L		
Magnesium <u>1</u> mg/L	Magnesium _____ mg/L		
SAR <u>42.59</u>	SAR _____		

[illegible]

Microtox bioassay - Reading at 15 minutes		Notes
EC50 (15) original	30.00 %	
EC50 (15) charcoal	67.00 %	

Trace element analysis		Landspreading, landspraying/LWD			Mix-Bury-Cover		
Analysis threshold kg	Conc of analyte mg/kg	Minimum area ha	Application rate m ³ /ha	Loading rate kg/ha	Max. load rate kg/ha	Total mass kg	Max. appl. quantity kg
B 2.5					5		10
Cd 0.75					1.5		3
Cr 50					100		200
Cu 100					200		400
Pb 50					100		200
Ni 12.5					25		50
V 50					100		200
Zn 150					300		600

Saline/Sodic soil test results	Mix ratio:	Mix ratio:	Mix ratio:
Electrical Conductivity (dS/m)			
Sodium Adsorption Ratio			

Off-site disposal location (referenced from the north east corner of the section)				Section	Township	Range	Meridian
North-east corner	0 m South	0 m West					
South-west corner	0 m South	0 m West					

COMMENTS

Additional comments, disposal/treatment plan details, or site maps may be added on a separate page.

04/28/99

13:51

2780 438 0396

NORWEST LABS

NEWPARK

002/003



NORWEST LABS

EDMONTON
CALGARY
SURREY
LETHBRIDGE
WINNIPEG

H. (780) 438-5522 FAX (780) 438-0396
H. (403) 291-2022 FAX (403) 291-2021
H. (604) 514-3322 FAX (604) 514-3323
H. (403) 329-9269 FAX (403) 327-8527
H. (204) 952-8630 FAX (204) 276-6019

DATE 27 APR 99 08:33

P.O. NO.

W.O. NO. 2 221768

PAGE 1

NEWPARK ENVIRONMENTAL
SERVICES
300, 635 - 6 AVENUE S.W.
CALGARY, AB
T2P 0T5

KIM BENNER
K-2 CANADIAN FOR
FOREST OIL
09-04-99

SAMPLE

1

MICROTOX

SAMPLE TYPE		S. LIQUID
TURBIDITY		HIGH
COLOUR(M)		DK BROWN
COLOR CORRECTION		NO
INITIAL pH		11.6
ADJUST FINAL pH		8.8
CLARIFICATION		YES
CENTRIFUGATION		YES
FILTRATION		NO
FILTER TYPE		NONE
EC50 (15-MINUTES)	%ORG. SAM	29.7
EC20 (15-MINUTES)	%ORG. SAM	13.1
EC50 (5-MINUTES)	%ORG. SAM	30.8
EC20 (5-MINUTES)	%ORG. SAM	11.6
LAB TREATMENT		NONE
INTERPRETATION		FAIL

MICROTOX CHAR TR

LAB TREATMENT		CHARCOAL
EC50 (15-MIN-CH)	%	67.4
EC20 (15-MIN-CH)	%	39.4
EC50 (5-MIN-CH)	%	74.2
EC20 (5-MIN-CH)	%	48.7
INTER-CHAR		FAIL

SOIL ORGANICS

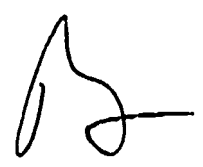
OIL, DEAN STARK	%	0.08
WATER	%	86.6
SOLIDS	%	13.3

D WASTE AS REC'D

SPECIFIC GRAV.	1.099
----------------	-------

FILTRATE

FILTRATE pH		11.6
FILTRATE EC	ds/m	86.3
T DIS SOLIDS	mg/L	60400
FILTRATE CHLORID	mg/L	604
SULPHATE-S	mg/L	13200
POTASSIUM	mg/L	28300

Lab Manager: 

04/28/99

13:51

8780 438 0383

NORWEST LABS

NEWPARK

003/003



NORWEST LABS

EDMONTON
CALGARY
SURREY
LETHBRIDGE
WINNIPEGF.H. (780) 438-5522
F.H. (403) 291-2022
F.H. (804) 514-3322
F.H. (403) 325-8260
F.H. (204) 882-8630FAX (780) 438-0396
FAX (403) 291-2021
FAX (804) 514-3323
FAX (403) 327-8527
FAX (204) 275-6019

DATE 27 APR 99 08:33

P.O. NO.

W.O. NO. 2 221768

PAGE 2

NEWPARK ENVIRONMENTAL
SERVICES
300, 635 - 6 AVENUE S.W.
CALGARY, AB
T2P 0T5KIM BENNER
K-2 CANADIAN FOR
FOREST OIL
09-04-99

SAMPLE

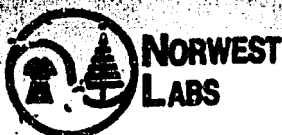
1

FILTRATE

FILTRATE SODIUM	mg/L	3130
FILTRATE CALCIUM	mg/L	408
FILTRATE Mg	mg/L	1.1
SOD. ADS. RATIO		42.6

Lab Manager: 

FLUID ANALYSIS



14203 - 129 Avenue, Edmonton, Alberta T5L 4N9
Phone (780) 438-5522

G99-13048
Laboratory Report Number

Page 1 of 2

Energy Resource Group

Canadian Forest Oil Ltd.

Operator

PLASTIC

Container Identity

K-32-60-10-132-15
Location

CDN Forest et al Liard K-32-60-10-132-15
Well Name

404.50 400.10
KB Elev, m GR Elev, m

Liard
Field/Area

Chinkeh
Pool / Zone

Sampler

Alpine
Company

DST 1
Test Type No
Multiple Recovery N

Test Recovery:
18 m Total

Test Interval, m
1394-1408

Perforations, m

See Below

@ 25°C

Sample Point

Amount & Type of Cushion

Mud Resistivity

Type of Production: Pumping _____ Flowing _____ Gas Lift _____ Swab _____
Production Rates: Water _____ m³/d Oil _____ m³/d Gas _____ 10³ m³/d

Gauge Pressure, kPa
Temperature, °C

Separator

Treater

Reservoir

Source

Sampled

Received

1999-03-10
Date Sampled (Y-M-D)

1999-03-15
Date Received (Y-M-D)

1999-03-24
Date Reported (Y-M-D)

K. Leong
Analyst

Other Information

Sample Summary

G99-13048-1 Top
No analysis of watery mud containing sediment as requested.

G99-13048-2 Top of Tool
No analysis of watery mud containing sediment as requested.

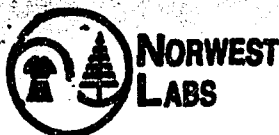
G99-13048-3 Mud Tank
No analysis of watery mud as requested.

G99-13048-4 Downhole Sampler #45
Downhole Sampler #45 was received with atmospheric pressure at ambient temperature. It contained 1.9 litres of watery mud.
Water analysis G99-13048-4.



Supervisor R. Pelegrin R. Peters

Approved [Signature] S. Montgomery



14203 - 129 Avenue, Edmonton, Alberta T5L 4J9
Phone (780) 438-5522

G99-13048-04
Laboratory Report Number

Page 2 of 2

WATER ANALYSIS

Energy Resource Group

Canadian Forest Oil Ltd.

Operator

PLASTIC

Container Identity

K-32-60-10-132-15
Location

CDN Forest et al Liard K-32-60-10-132-15
Well Name

404.50 400.10
KB Elev, m GR Elev, m

Liard
Field/Area

Chinkeh
Pool / Zone

Sampler

Alpine
Company

DST 1
Test Type No
Multiple Recovery N

Test Recovery:
18 m Total

Test Interval, m
1394-1408

Perforations, m

Downhole Sampler #45

Sample Point

Amount & Type of Cushion

Mud Resistivity @ 25°C

Type of Production: Pumping _____ Flowing _____ Gas Lift _____ Swab _____

Production Rates: Water _____ m³/d Oil _____ m³/d Gas _____ 10³ m³/d

Gauge Pressure, kPa
Temperature, °C

Separator

Treater

Reservoir

Source

Sampled

Received

03/10/99
Date Sampled (Y-M-D)

03/15/99
Date Received (Y-M-D)

03/24/99
Date Reported (Y-M-D)

K. Leong
Analyst

Other Information

Ion	mg/L	Mass Fraction	meq/L
Na	3 450	0.0486	150.08
K	26 588	0.3743	680.65
Ca	168	0.0024	8.39
Mg	5	0.0001	0.40
Ba			
Sr			
Fe	Nil		

Ion	mg/L	Mass Fraction	meq/L
Cl	848	0.0119	23.92
Br			
I			
HCO ₃	878	0.0124	14.41
SO ₄	39 090	0.5503	813.07
CO ₃	0	0.0000	0.00
OH	0	0.0000	0.00
H ₂ S	Nil		

Total Dissolved Solids, mg/L
Evaporated @ 110°C Evaporated @ 180°C

77 630

At Ignition Calculated

73 430

71 028

Organic Matter: Very Much

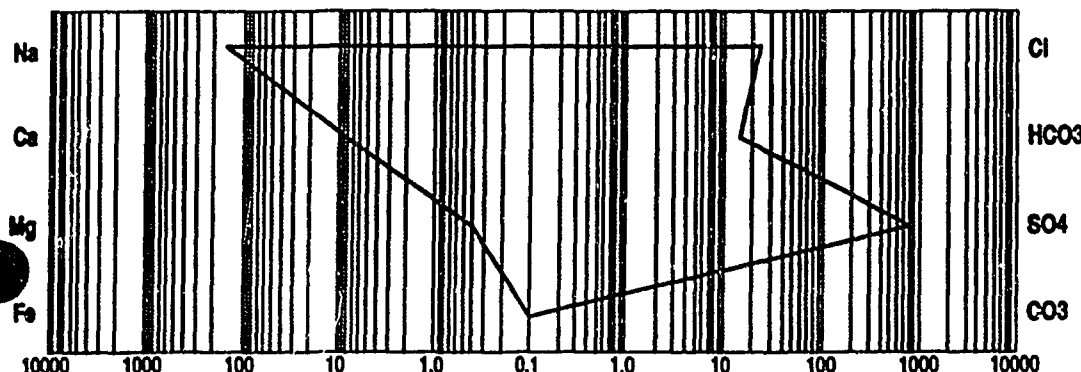
Relative Density Refractive Index
1.060 @ 25°C 1.3420 @ 25°C

Observed pH Resistivity ohm.m
8.3 @ 19 °C 0.158 @ 25°C

Remarks

Analysis performed on a yellow filtrate recovered from watery mud in sampler.

Logarithmic Pattern of Dissolved Ions, meq/L



Supervisor

R. Peters

Approved

S. Montgomery



GAS ANALYSIS

CONTAINER IDENTIFICATION

AGAT 11091

LABORATORY NUMBER

GG37125B

OPERATOR NAME

CANADIAN FOREST OIL

UNIQUE WELL IDENTIFIER

WELL NAME

ELEVATIONS KB m GRD m

CDN FOREST et al LAIRD K-32

484.50

480.10

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

LIARD

PERMIAN SYSTEM

ALPINE

TEST TYPE

NO

TEST RECOVERY

DST

2

LOCATION: 60-10-132-15

TEST INTERVAL OR PERFS

1635.0-1695.0
mKB

SAMPLING POINT

BOTTOM HOLE SAMPLER

GAUGE PRESSURE kPa

TEMPERATURE °C

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

1750

1750

1500

21

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

99-03-19

99-03-23

99-03-31

BN

NCO

PERMIAN FANTASQUE

COMP	MOLE FRACTION		PETROLEUM LIQUID CONTENT mL m ⁻³
	AIR FREE AS RECEIVED	AIR FREE ACID GAS FREE	
H ₂	0.0005	0.0005	
He	0.0003	0.0003	
N ₂	0.0162	0.0162	
CO ₂	0.0005	0.0000	
H ₂ S	0.0000	0.0000	
C ₁	0.9477	0.9482	
C ₂	0.0226	0.0226	
C ₃	0.0069	0.0069	25.4
IC ₄	0.0022	0.0022	9.5
NC ₄	0.0012	0.0012	5.2
IC ₅	0.0007	0.0007	3.5
NC ₅	0.0002	0.0002	0.8
C ₆	0.0005	0.0005	2.6
C ₇ +	0.0005	0.0005	3.2
C ₈			
C ₉			
C ₁₀ +			
TOTAL	1.0000	1.0000	50.2

GROSS HEATING VALUE MJ m⁻³
15 °C AND 101.325 kPa

MOISTURE AND ACID GAS FREE

38.73

AIR FREE AS RECEIVED

38.71

VAPOUR PRESSURE PENTANES PLUS

75.2 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED

MOISTURE AND ACID GAS FREE

MEASURED

CALCULATED

MEASURED

CALCULATED

0.588

0.587

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED

ACID GAS FREE

p_{pc} (aba)

p_{TC}

p_{pc} (aba)

p_{TC}

4581 kPa

194.6 K

4580 kPa

194.5 K

RELATIVE MOLECULAR MASS

TOTAL GAS

C₇ +

17.0

102.4

H₂S g m⁻³

0.00

REMARKS

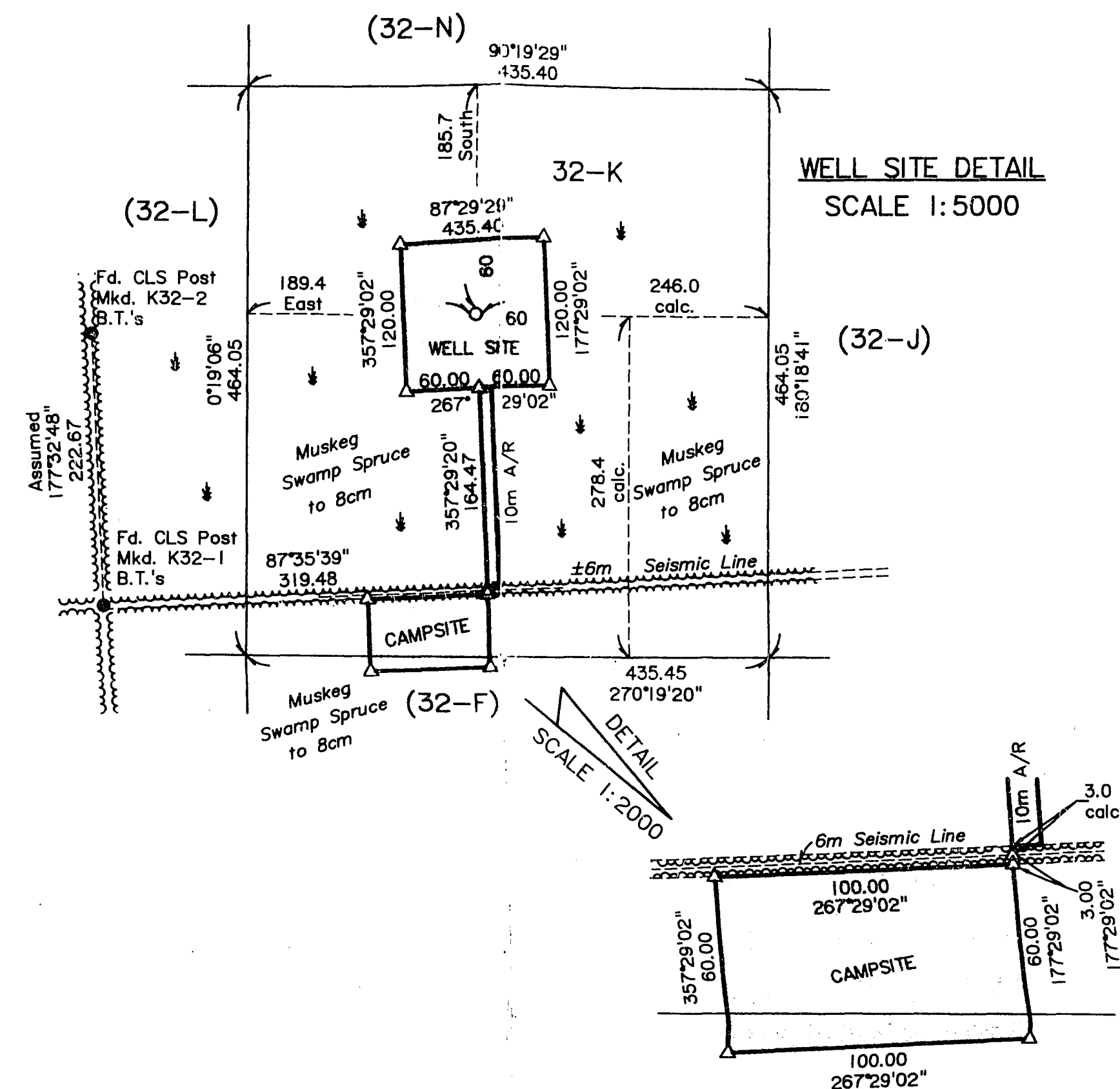
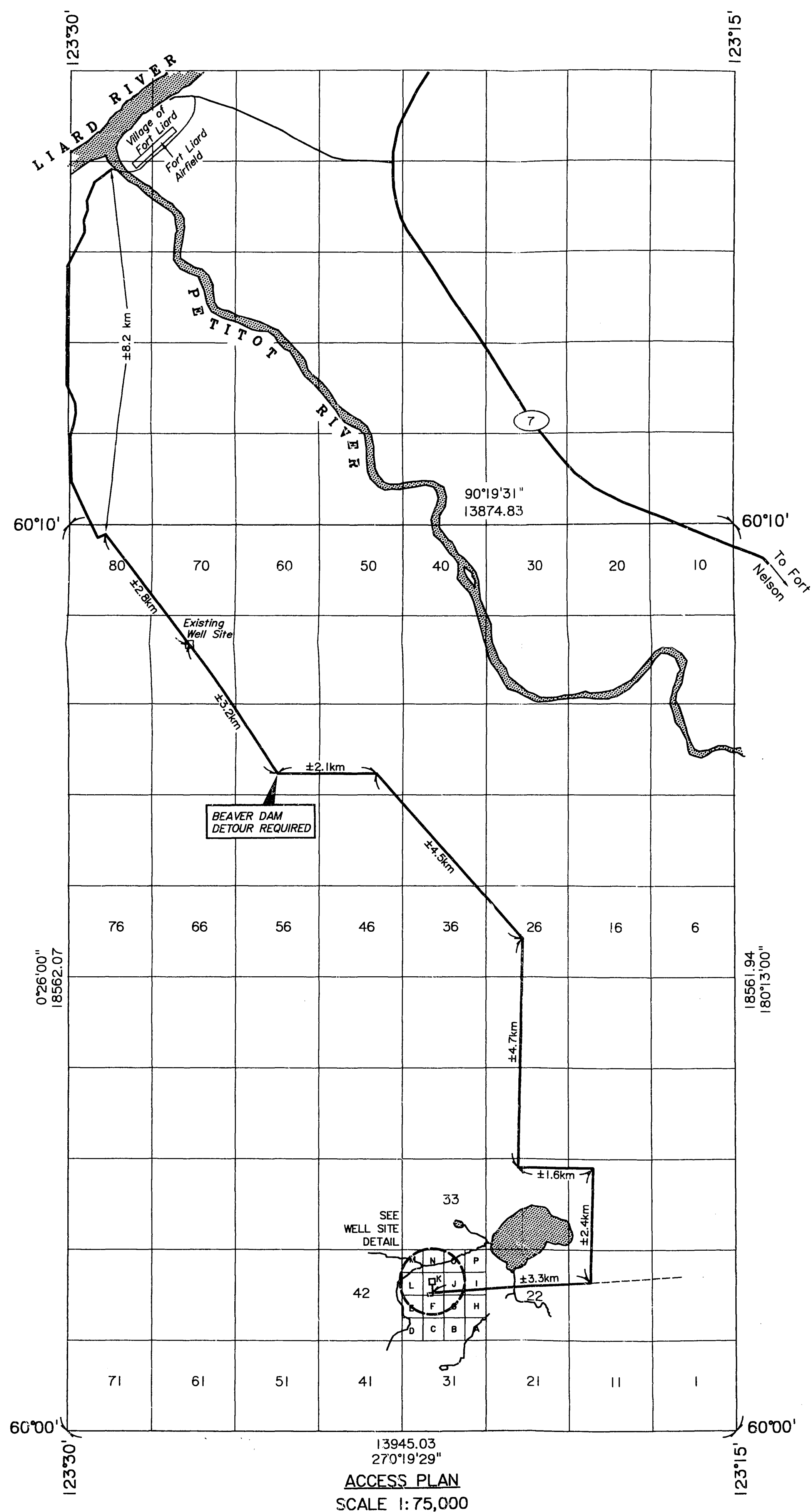
OVERSIZED

DOCUMENT

FILMED

ON

35mm



AREAS:

Within	ha	Ac
Well Site:	1.440	3.56
10m A/R:	0.165	0.41
Camp Site:	0.600	1.48
Total:	2.205	5.45

Elevations:

GROUND: 480.1
 Corners:
 N.W.: 480.2 N.E.: 479.7
 S.W.: 480.4 S.E.: 480.3
 Datum: GEOD. MONUMENT 829118
 Elev. = 218.241

NAD 27 CO-ORDINATES:

Station#	Northing	Easting	Latitude	Longitude
Well Centre 32-K	6654329.59	479724.87	60° 01'39.211"	123°21'49.639"
Campsite	6654070.28	479686.22	60° 01'30.822"	123°21'52.043"
CLS Post K31-1	6654092.04	479415.67	60° 01'31.477"	123°22'09.525"
CLS Post K31-2	6654314.23	479406.15	60° 01'38.657"	123°22'10.220"

LEGEND:

CLS 77 Post Found: _____
 25cm Iron Spike Placed: _____
 A/R Denotes Access Road.

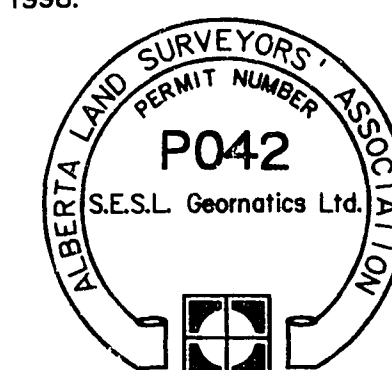
OPERATOR:

CANADIAN FOREST OIL LTD.

I, CURTIS E. HENRIE, CANADA LANDS SURVEYOR,
 OF CALGARY, ALBERTA, CERTIFY THAT THE SURVEY
 REPRESENTED BY THIS PLAN IS TRUE AND CORRECT,
 TO THE BEST OF MY KNOWLEDGE, AND WAS
 COMPLETED ON THE 9th DAY OF OCTOBER, 1998.

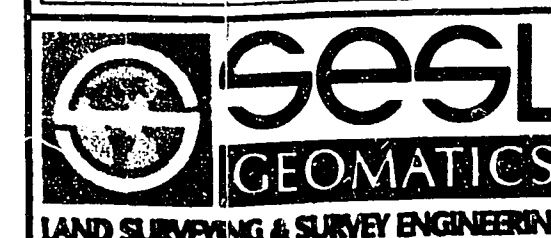
Curtis E. Henrie
 CANADA LANDS SURVEYOR

3 NOVEMBER, 1998
 DATE



SCALES AS SHOWN

CDN FOREST et al FORT LIARD 32-K
 IN SECTION 32, UNIT K
 GRID AREA 60°10', 123°15'

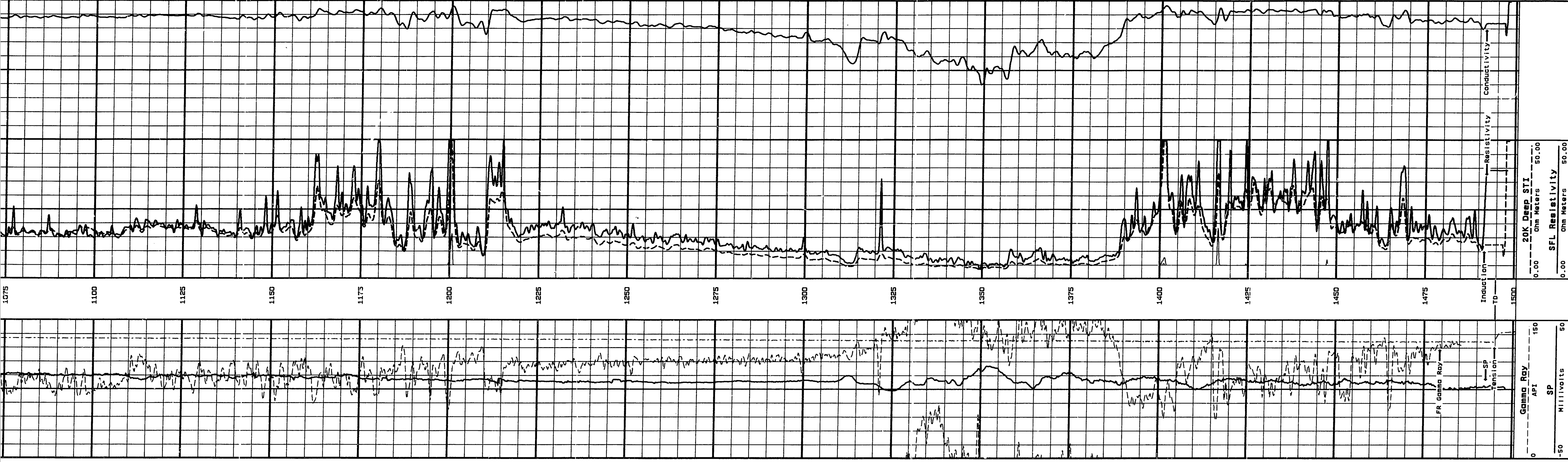


Surveyor: PL	Calculator: FS		
Draftsperson: BD	Chk'd: FS		
Job No.: 98N013			
TOLL FREE 1-800-565-2389 PH. (403) 234-9018 FAX. (403) 266-2919			

Access Route 29/10/98
 Original Issue 09/10/98
 Revision Date

SHEET 1 OF 1

**RESISTIVITY/
CONDUCTIVITY**



START DEPTH: 1500.4 Meters DIRECTION: UP DATE: 03/12/89 TIME: 12:04 MODE: TRACE PLAYBACK
22463 STI8

MAIN PASS

SYSTEM CONSTANTS	
NAME	VALUE
TD-LOGGER	1494.7
BIT SIZE	222.000
LOG WITH SP FROM	ON
STI SFL Chassis Return	ON
STI SFL Level Average	OFF
STI SFL Log Mode	ON

REPEAT PASS 1:240 SCALE

VERSION: 2.0b

REMARKS

MAIN PASS

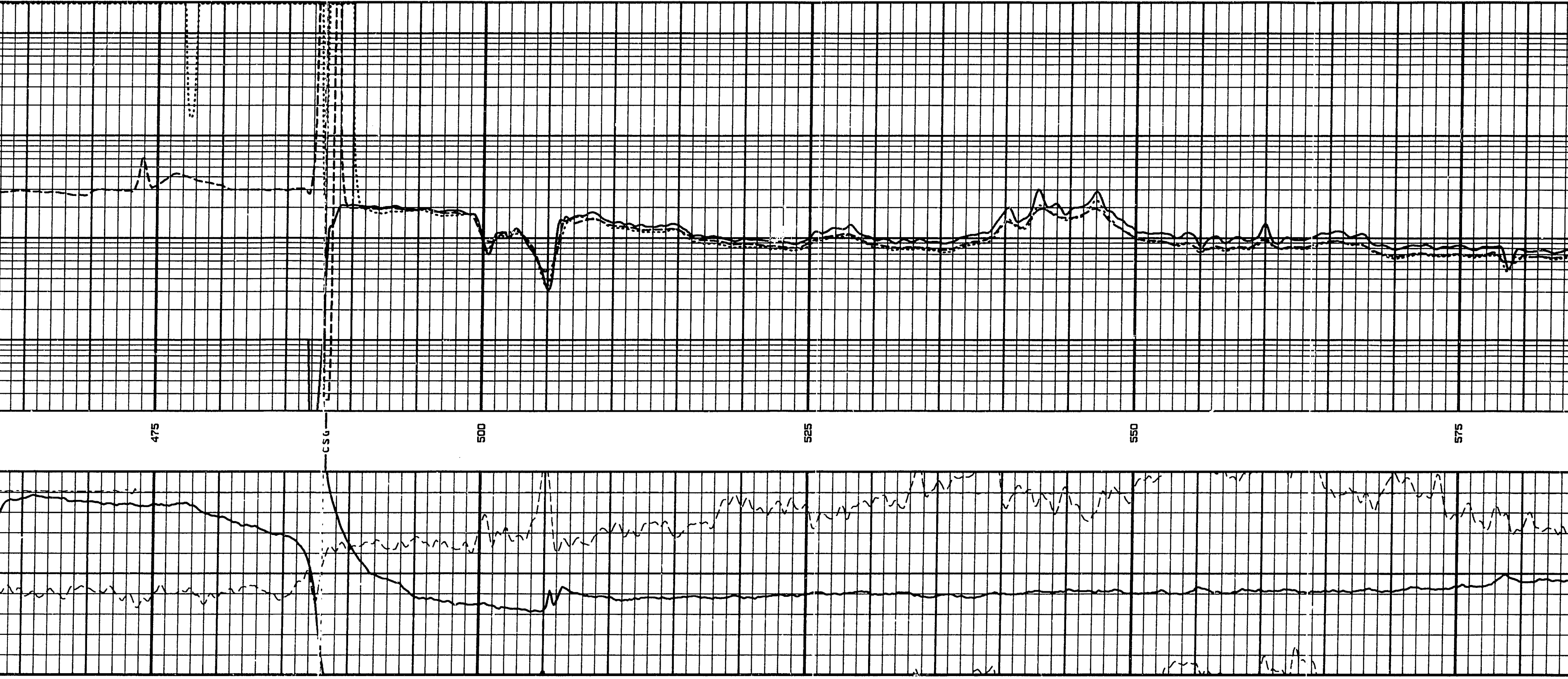
22463 STI8

FINISH DEPTH: 0.0 Meters DIRECTION: UP DATE: TIME: MODE: TRACE PLAYBACK

SFL Resistivity

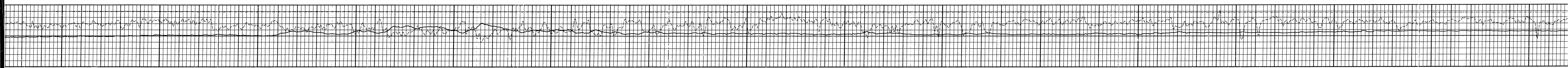
20K Medium STI

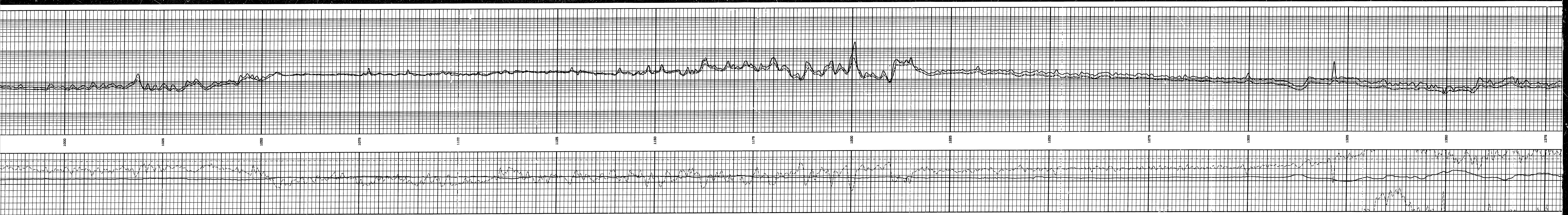
20K Deep STI





600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975





COMPUTALOG

PROVINCE NORTHWEST TERRITORIES
FIELD UNDEFINED
WELL CDN FOREST ET AL FORT LIARD
COMPANY CANADIAN FOREST OIL LTD.

DATE: 18/03/1999
Run No. 1695.4
Bot. Driller TMO
Bot. Logger 1695.3
First Reading 1693.2
Last Reading 1450.0
Meters Meas. 243.2
Csg. Driller 487.5
Csg. Logger 487.9
Bit Size 222 mm
Fluid Type K MINUS POLYMER
Dens. Visc. 1090.0 82.0
pH Fluid Loss 10.5 6.5
Sample Source FLOLINE
Rm 0.17 @ 15 °C
Rmf 0.15 @ 14 °C
Rmc 0.27 @ 16 °C
Rm @ BHT 0.09 @ 50 °C
Max Rec.Temp 50 °C
Spacing N/A
Operating Time 3.5 hrs.
Unit # 348
Location GRANDE PRAIRIE
Recorded By J. KOCH
Witnessed By B. GOODWIN

CS400

SIMULTANEOUS TRIPLE
INDUCTION SFL LOG

COMPANY CANADIAN FOREST OIL LTD.
WELL CDN FOREST ET AL FORT LIARD
FIELD UNDEFINED
PROVINCE NORTHWEST TERRITORIES

LSO Sec. Top Rge.
Perm. Datum Ground Level Elev. 480.1
Log measured from K.B. 4.40 above
Permanent Datum
UWI K 32 60 01 123 21
Licence 1960
Other Services:
SPED-CNT-UGR-DAC
MDA
Elev. K.B. 484.5
G.L. 480.1
CBF

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

REMARKS: R18: NABDS #6
Drilling Stopped 12:00/17 Circulation Stopped 21:30/17 Tool on Bottom 08:02/18 BHT 50 °C
STI-SP-UGR LOGGED IN COMBINATION
PRESENTATION AS PER CUSTOMERS REQUEST

TO RV SP SCALE USED
CHANGES IN MUD TYPE OR NEW SAMPLE
Date Sample No. Type Log SCALE CHANGES Interval Scale

Equipment Data
Run No. Tool Type Tool No. Other
STI-AC 122122 38mm STANDOFFS
UGR-JA 108 RA-20S-881

PH Water Loss
Rm @ Meas. Temp. °C
Rmf @ Meas. Temp. °C
Rmc @ Meas. Temp. °C
Rm @ BHT °C
Max Rec.Temp °C

Source of Sample
Rm @ Meas. Temp. °C
Rmf @ Meas. Temp. °C
Rmc @ Meas. Temp. °C
Rm @ BHT °C
Max Rec.Temp °C

Unit # 348
Location GRANDE PRAIRIE
Recorded By J. KOCH
Witnessed By B. GOODWIN

MAIN PASS
1:800 SCALE
CONDUCTIVITY PRESENTATION

VERSION: 1999.02.17

FINISH DEPTH: 1446.8 Meters DIRECTION: UP DATE: 03/18/1999 TIME: 10:05 MODE: TRACE PLAYBACK

20K Deep STI Cond. Milli-ohm/Meter

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

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20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

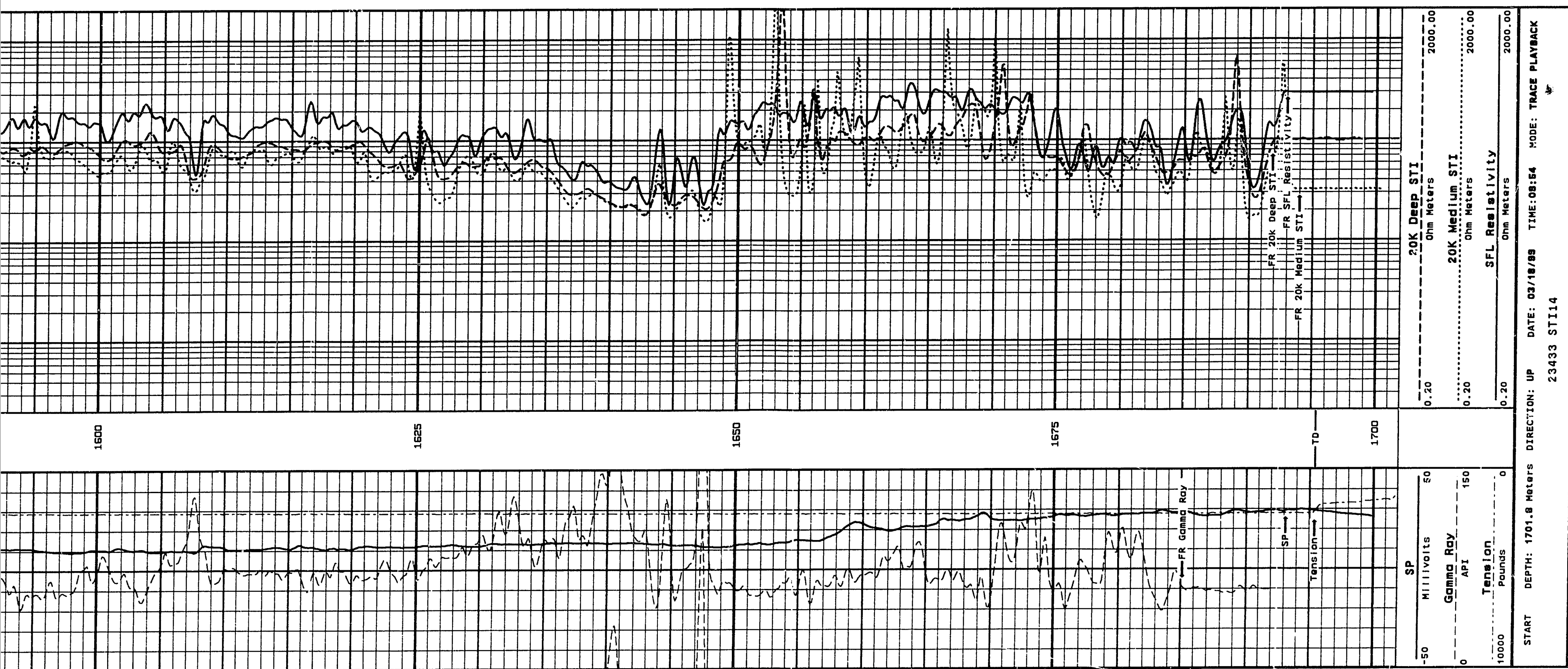
20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters

20K Deep STI SFL Resistivity Ohm Meters



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:54 MODE: TRACE PLAYBACK
23433 STI14

MAIN PASS

NAME	DESCRIPTION	VALUE	UNITS
SPDR	SP Drift	0.0	mV/100 Meters
SPL	Log with SP From	ON	
STI	SFL Chassis Return	ON	
STIS	STI SFL Log Mode On	ON	

20K Deep STI 2000.00
20K Medium STI 2000.00
SFL Resistivity 2000.00

REPEAT PASS 1:240 SCALE

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

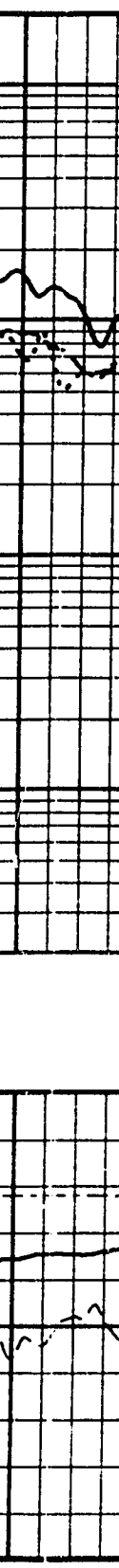


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

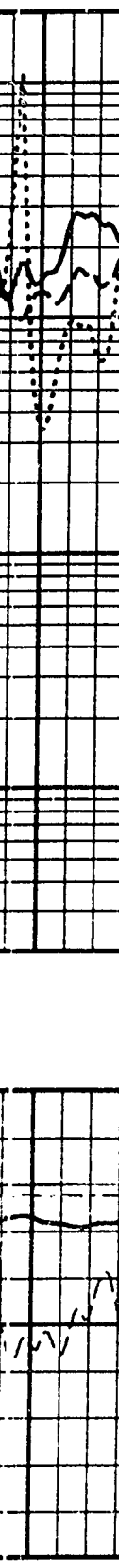


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

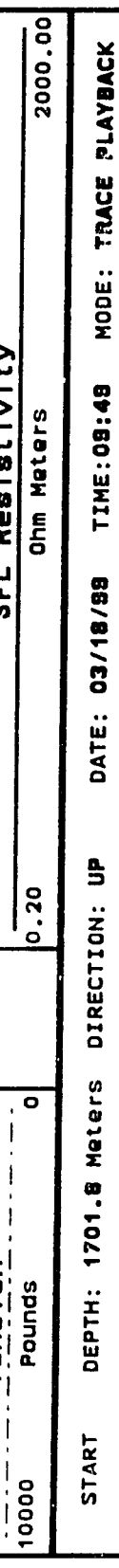


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

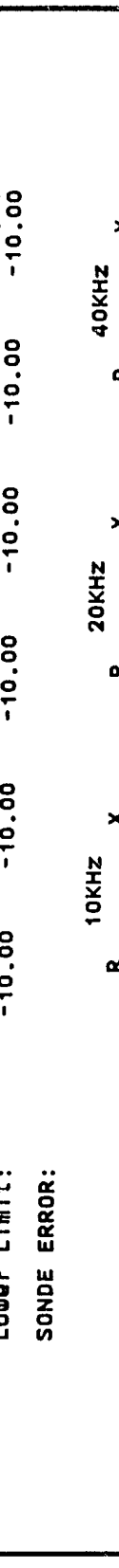


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

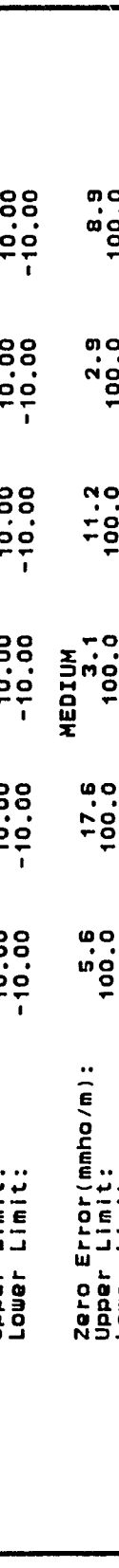


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

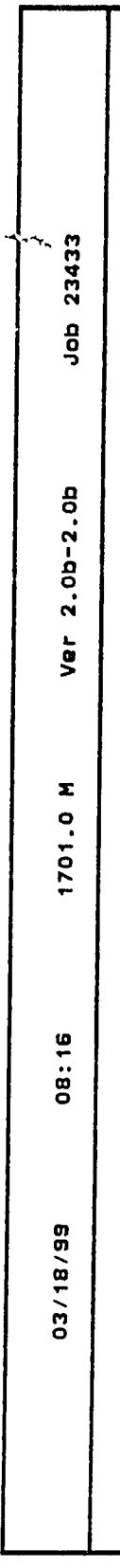


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12

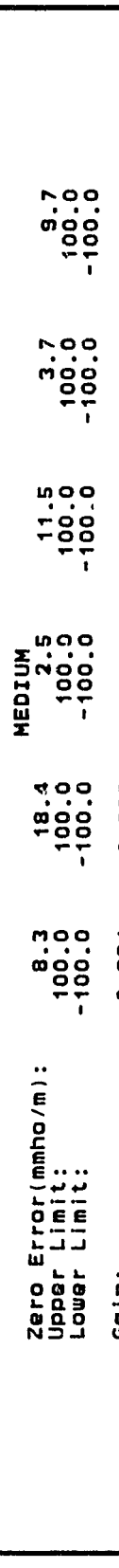


SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

REPEAT PASS

FINISH DEPTH: 1820.3 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:50 MODE: TRACE PLAYBACK
23433 STI12



SP Millivolts 50
Gamma Ray API 150
Tension Pounds 0
10000

START DEPTH: 1701.8 Meters DIRECTION: UP DATE: 03/18/99 TIME: 08:48 MODE: TRACE PLAYBACK
23433 STI12

SIMULTANEOUS TRIPLE INDUCTION AFTER SURVEY CALIBRATION

TOOL TYPE: STI-AC

SONDE SERIAL NO: 122
ELECTRONICS SERIAL NO: 122

	10KHz		20KHz		40KHz	
	R	X	R	X	R	X
Zero Error(mmho/m):	71.7	-3.5	DEEP 14.4	10.3	4.9	9.6
Upper Limit:	100.0	100.0	100.0	100.0	100.0	100.0
Lower Limit:	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0
Gain:	0.997	0.991	1.007	0.991	0.998	0.989
Upper Limit:	1.100	1.100	1.100	1.100	1.100	1.100
Lower Limit:	0.900	0.900	0.900	0.900	0.900	0.900
Phase Error(degrees):	-0.92	0.02	-0.43	-0.45	0.24	-0.37
Upper Limit:	10.00	10.00	10.00	10.00	10.00	10.00
Lower Limit:	-10.00	-10.00	-10.00	-10.00	-10.00	-10.00
Zero Error(mmho/m):	71.7	-3.6	MEDIUM 15.1	13.1	4.5	10.2
Upper Limit:	100.0	100.0	100.0	100.0	100.0	100.0
Lower Limit:	-100.0	-100.0	-100.0	-100.0	-100.0	-100.0
Gain:	0.997	0.991	1.005	0.991	0.998	0.989
Upper Limit:	1.100	1.100	1.100	1.100	1.100	1.100
Lower Limit:	0.900	0.900	0.900	0.900	0.900	0.900
Phase Error(degrees):	-0.92	0.03	-0.14	-0.46	0.54	-0.36
Upper Limit:	10.00	10.00	10.00	10.00	10.00	10.00
Lower Limit:	-10.00	-10.00	-10.00	-10.00	-10.00	-10.00

SFL CALIBRATIONS:

	OFFSET	MIN	MAX	UNITS	GAIN	MIN	MAX
Voltage:	0.0	-100.0	100.0	UV	1.044	0.800	1.200
Current:	-0.1	-25.0	25.0	UA	1.024	0.900	1.200

03/19/99

01:13

0.0 M

Ver 2.0b-2.0b

Job 23433

Gamma Ray Before Survey Calibration

Tool Type: UGR-JA Serial No: 108
Calibrator No: RA-20S-681

Background	Calibrator	Standard	Units
78.4	575.8	140.0	API
Delta Counts Per Sec: 497.4		CPS/API = 3.553	

O.H. Adaptor Head

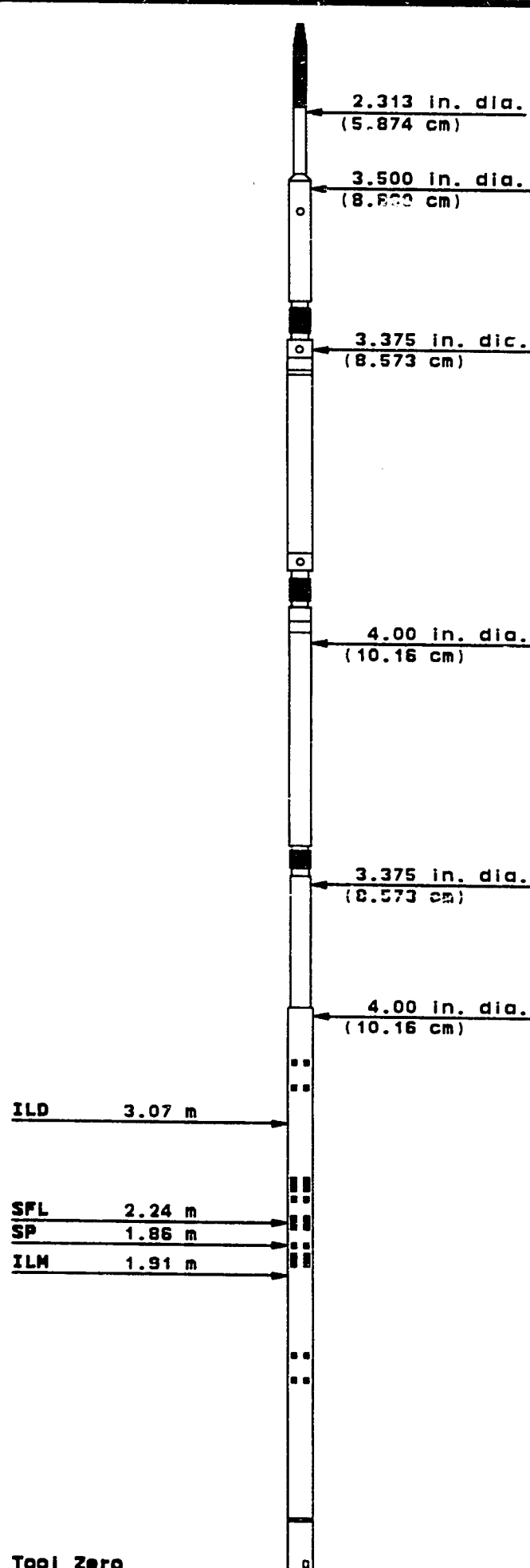
Weight	18.0 kg
Length	0.7 m
Max. Diameter	8.9 cm
Total Stack Weight	212.2 kg in air
Total Stack Length	10.15 m

Voltage Regulator

Weight	17.3 kg
Length	0.65 m
Max. Diameter	8.6 cm

Simultaneous Triple Induction

Weight	176.9 kg
Length	8.8 m
Max. Diameter	10.2 cm



COMPANY CANADIAN FOREST OIL LTD.

K 32 60 01 123 21

WELL CDN FOREST ET AL FORT LIARD

FIELD UNDEFINED PROVINCE N.W.T.

COMPUTALOG

SONIC

NEB COPY

CS400

COMPUTALOG

MONOPOLE DIPOLE ARRAY
ACOUSTIC LOG

FCLD

PROVINCE NORTHWEST TERRITORIES
FIELD UNDEFINED
WELL CDN FOREST ET AL FORT LIARD
COMPANY CANADIAN FOREST OIL LTD.

COMPANY CANADIAN FOREST OIL LTD.

WELL CDN FOREST ET AL FORT LIARD K-32

FIELD UNDEFINED

PROVINCE NORTHWEST TERRITORIES

LSD Sec. Top. Reg. Elev. 480.1
Perf. Datum Ground Level 4.4 m above
Log measured from K.B. Permanent Datum.
Elev. K.B. 480.5
G.L. 480.1
UHI K 32 60 01 123 21
Licence 1860
CBF

Date MARCH 12, 1999

Run No. ONE

Bot. Driller 1494.0

Bot. Logger 1494.5

First Reading 1488.5

Last Reading 1487.9

Meters Meas. 1000.6

CS9 Driller 487.5

CS9 Logger 487.9

Bit Size 223mm

Fluid Type K MINUS POLYMER

Dens. VISC. 1090.0 81.0

PH Fluid Loss 10.0 7.0

Sample Source Flowline

RM 0.30 @ 18 °C

RM 0.20 @ 17 °C

RM 0.18 @ 17 °C

RM 0.18 @ 45 °C

Max Rec Temp 45 °C

Spacing N/A

Operating Time 6.0 hrs.

Unit # 361

Location GRANDE PRAIRIE

Recorded By TILLER

Witnessed By B.GODWIN

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REMARKS Rig: NABORS #6 Service Order # 22463
Drilling Stopped 2000./11 Circulation Stopped 2400./11 Tool on Bottom 1218./12 BHT 45 °C
DIPOLE WAVEFORM LOGGED FROM TD-1000M AS REQUESTED BY CLIENT.

Prints: 2

CHANGES IN MUD TYPE OR NEW SAMPLE

Date	Sample No.
Depth - Driller	
Type Fluid In	
Hole	
Dens. Visc.	
PH Water Loss	
Source of Sample	
Rm @ Meas. Temp.	@ °C
Rmf @ Meas. Temp.	@ °C
Rmc @ Meas. Temp.	@ °C
Source Rmf	
Rm @ BHT	@ °C
Rmf @ BHT	@ °C
Rmc @ BHT	@ °C

SCALE CHANGES

Type Log	Interval	Scale
----------	----------	-------

EQUIPMENT DATA

Run No.	Tool Type	Tool No.	Other
ONE	MDA	2	3 STANDOFFS
	UGR-JA	118	TWO CENTRALIZERS
	CAL	9320	

REMARKS

MAIN PASS
1:600 SCALE

VERSION: 2.0b

MAIN PASS

22463 MDA12

FINISH DEPTH: 455.8 Meters DIRECTION: UP DATE: 03/12/99 TIME: 18:58 MODE: TRACE PLAYBACK

Tension

10000 Pounds 0

Gamma Ray

0 API 150

Y Caliper

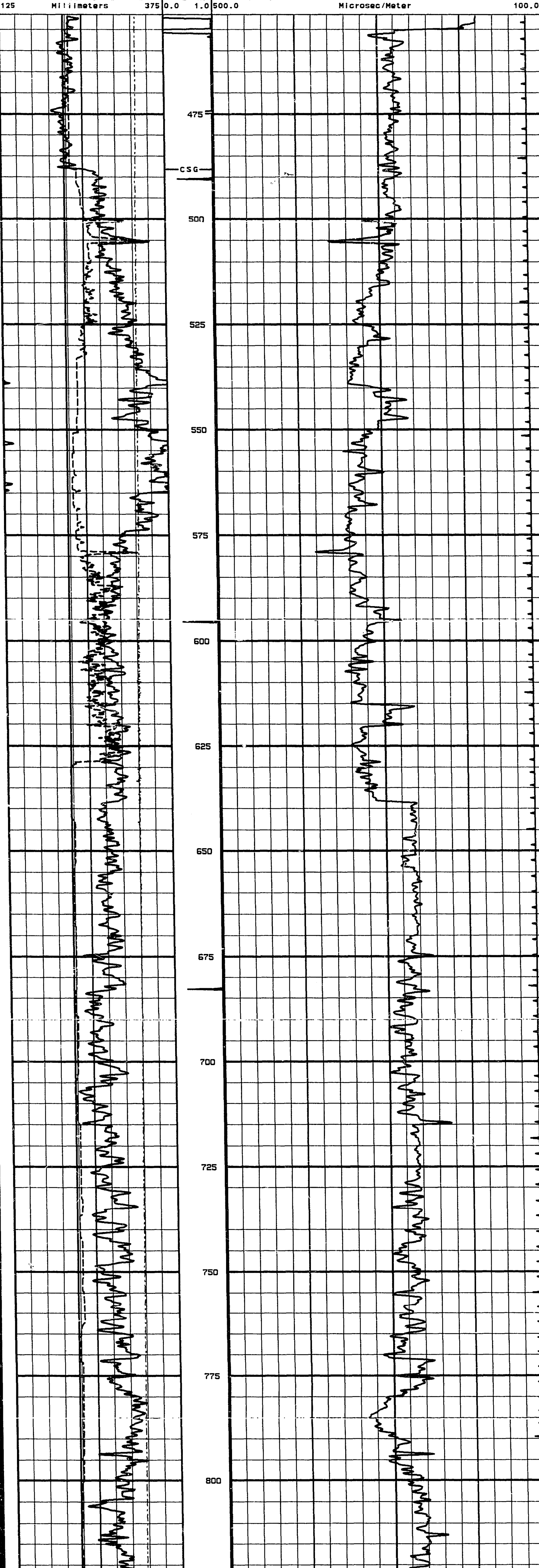
125 Millimeters 375

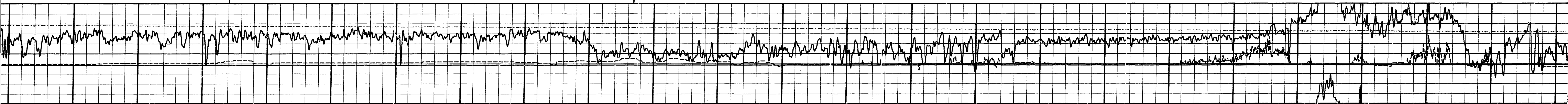
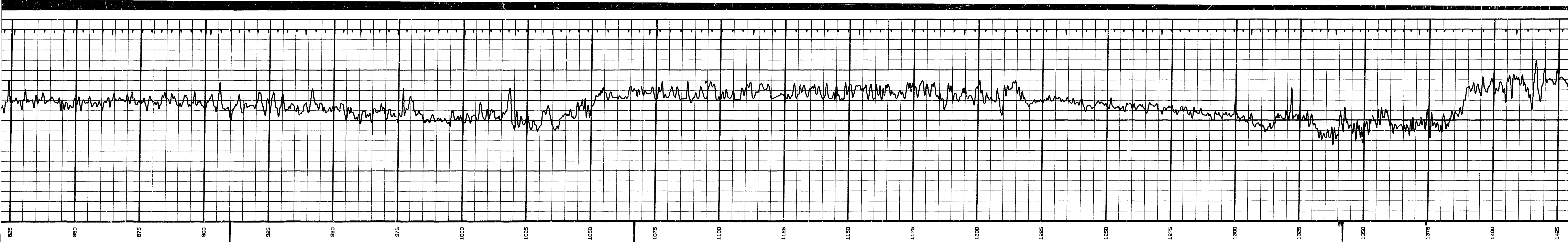
Compress

0.0 1.0 500.0

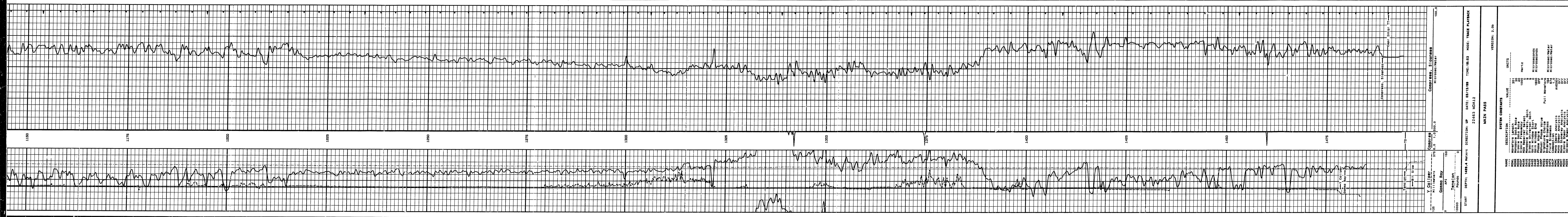
Compress. Slowness

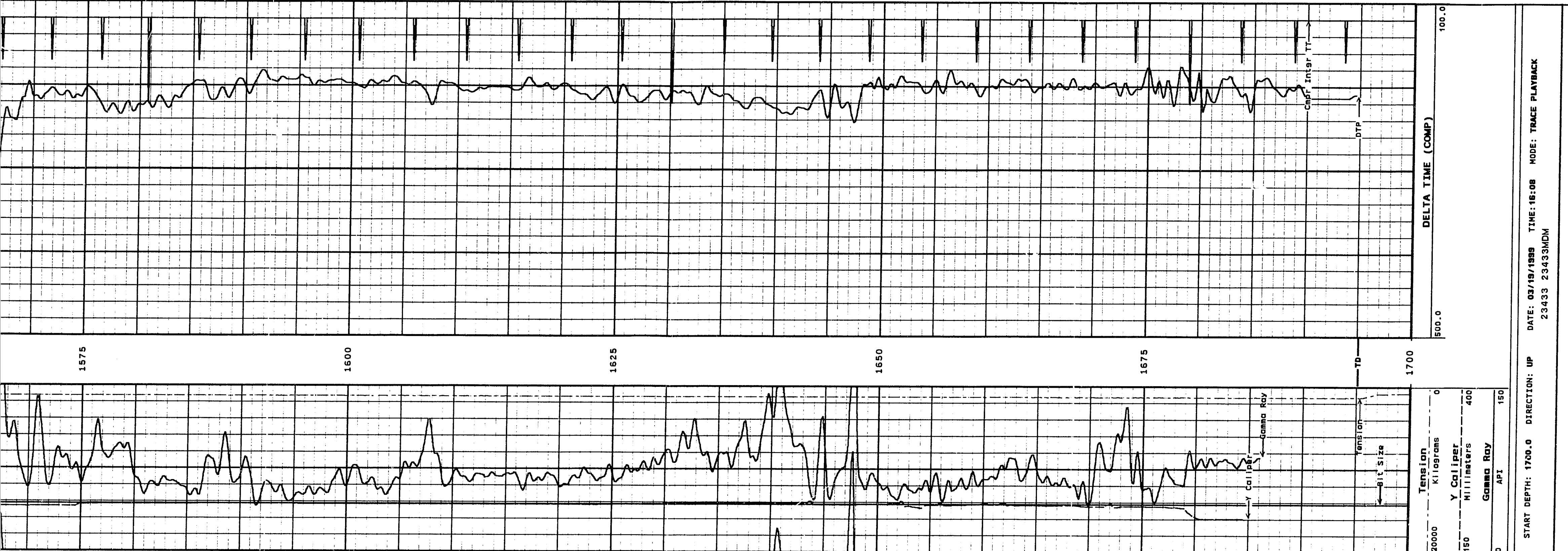
Microsec/Meter 100.0









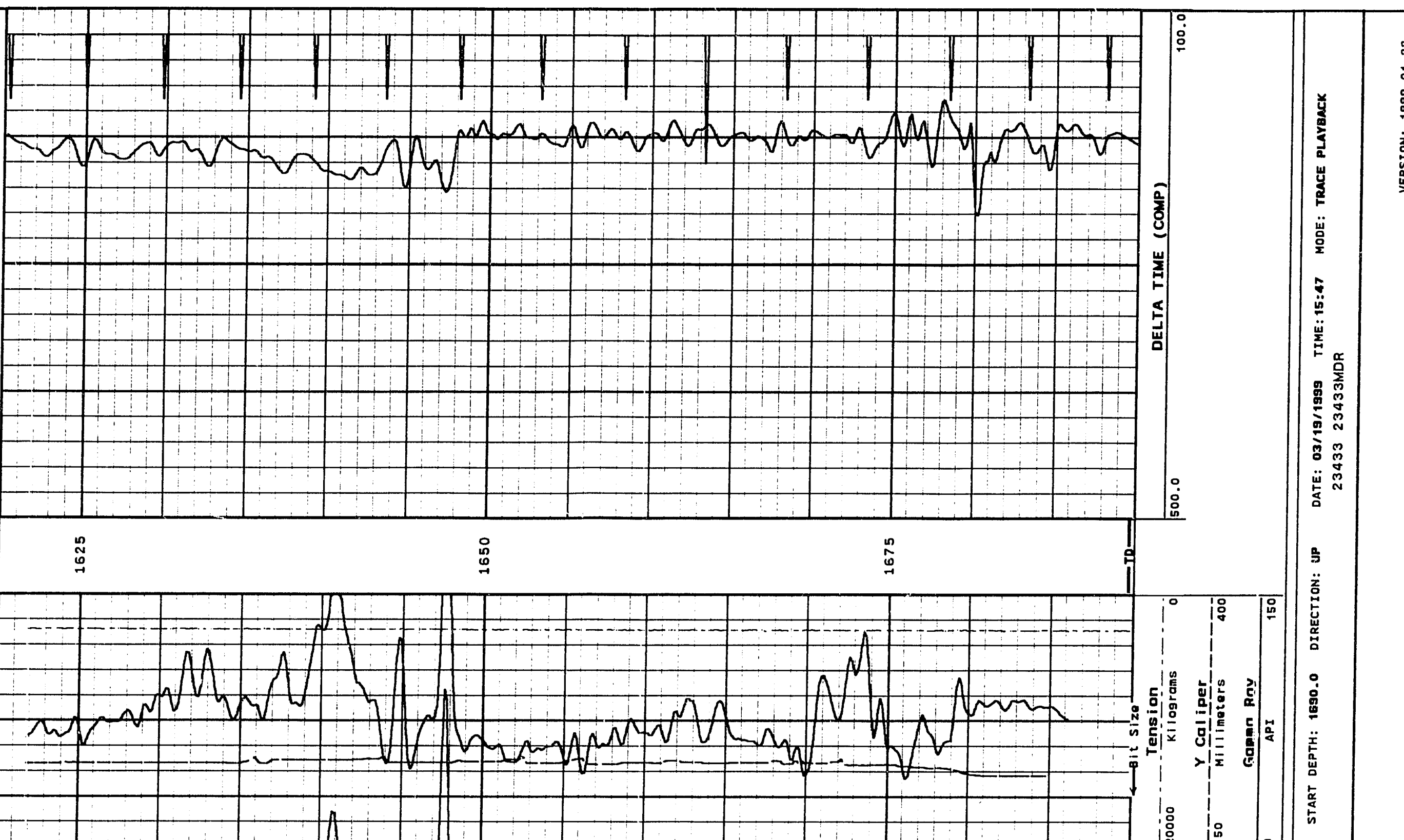


START DEPTH: 1700.0 DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK
23433 23433MDM

VERSION: 1999.01.22

REPEAT PASS
1:240 SCALE

23433 23433MDR
FINISH DEPTH: 1624.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 15:47 MODE: TRACE PLAYBACK

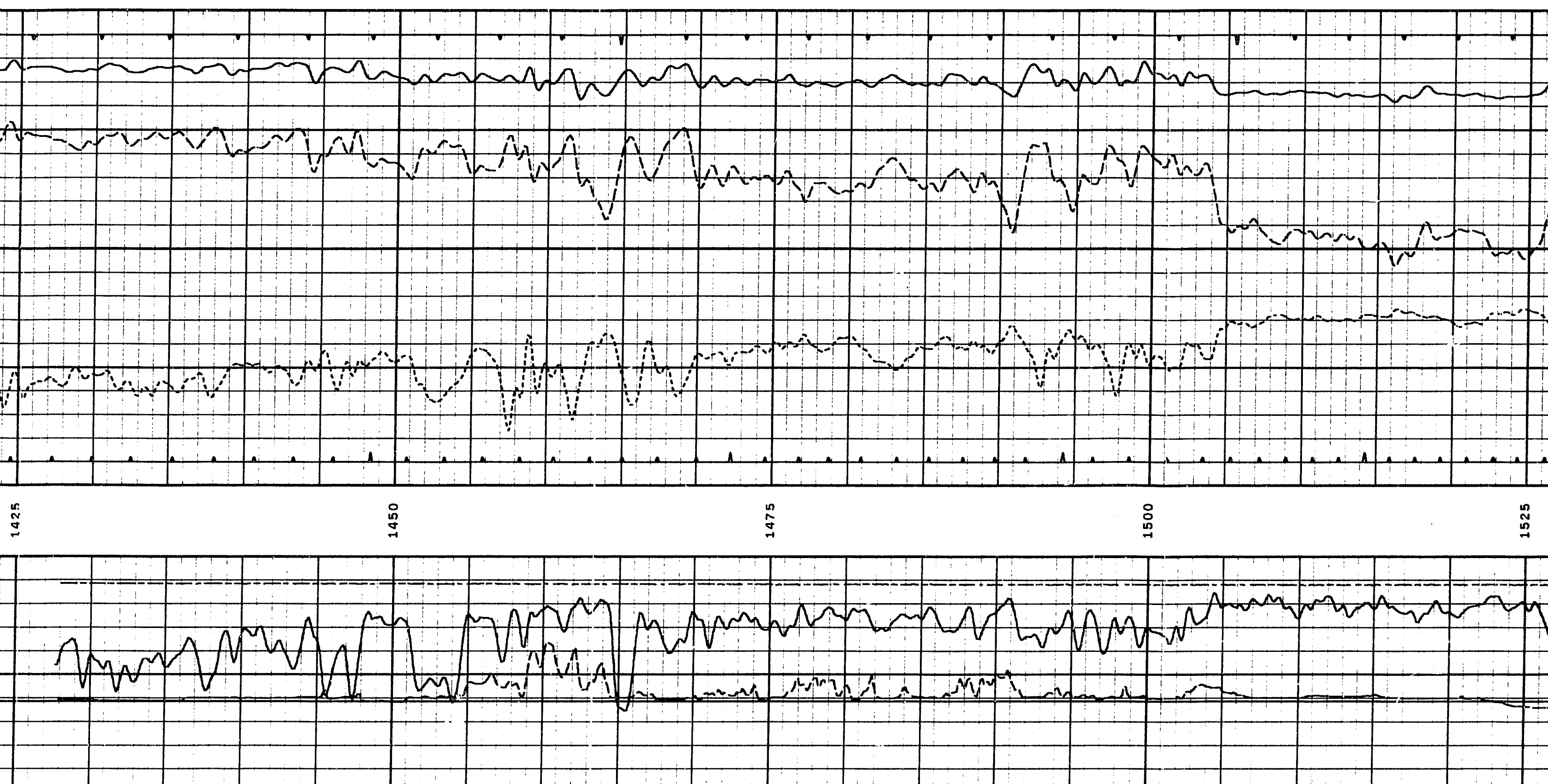


START DEPTH: 1680.0 DIRECTION: UP DATE: 03/19/1999 TIME: 15:47 MODE: TRACE PLAYBACK
23433 23433MDR

VERSION: 1999.01.22

REMARKS

23433 23433MDM
FINISH DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK

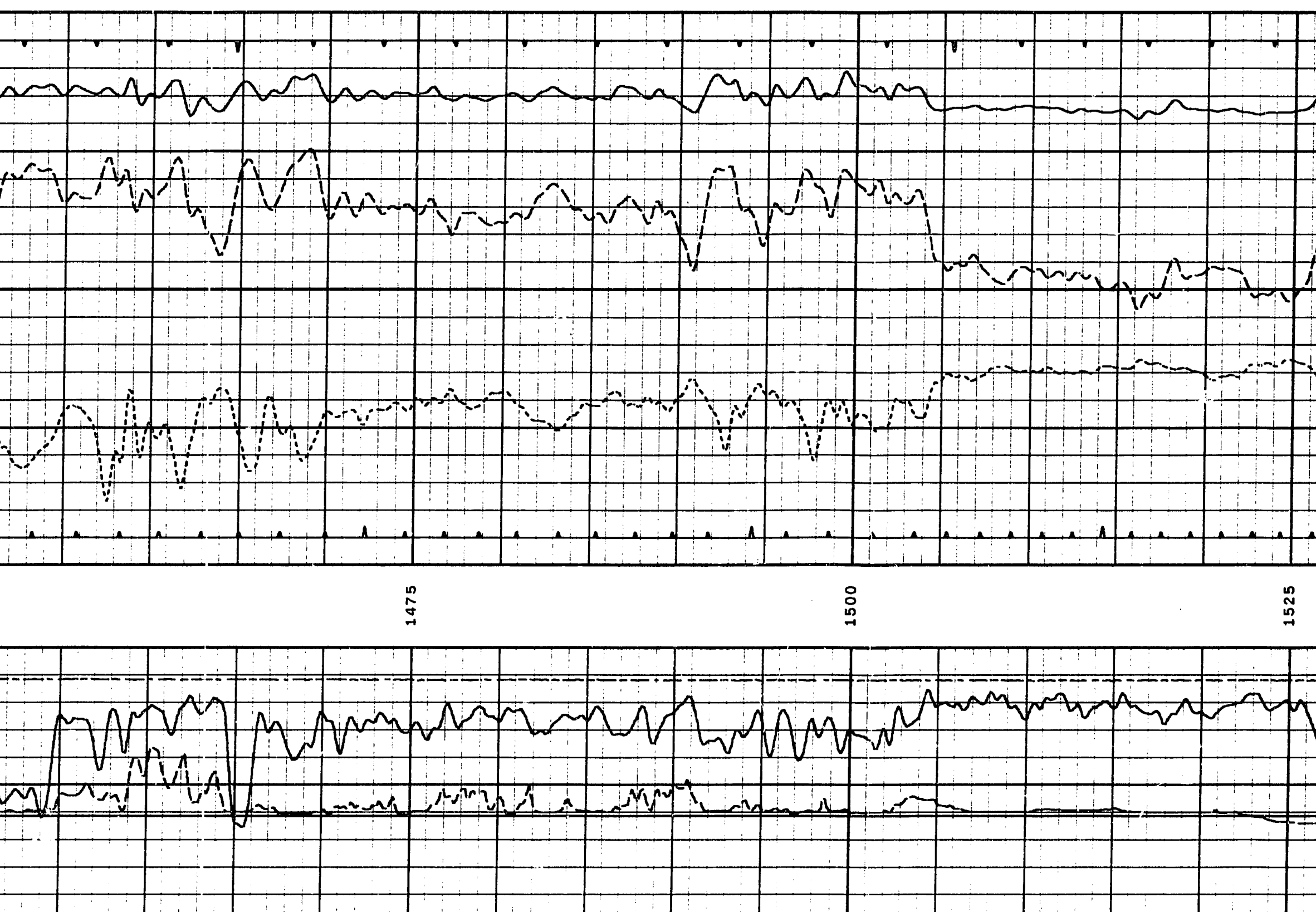


START DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK
23433 23433MDM

VERSION: 1999.01.22

REMARKS

23433 23433MDM
FINISH DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK

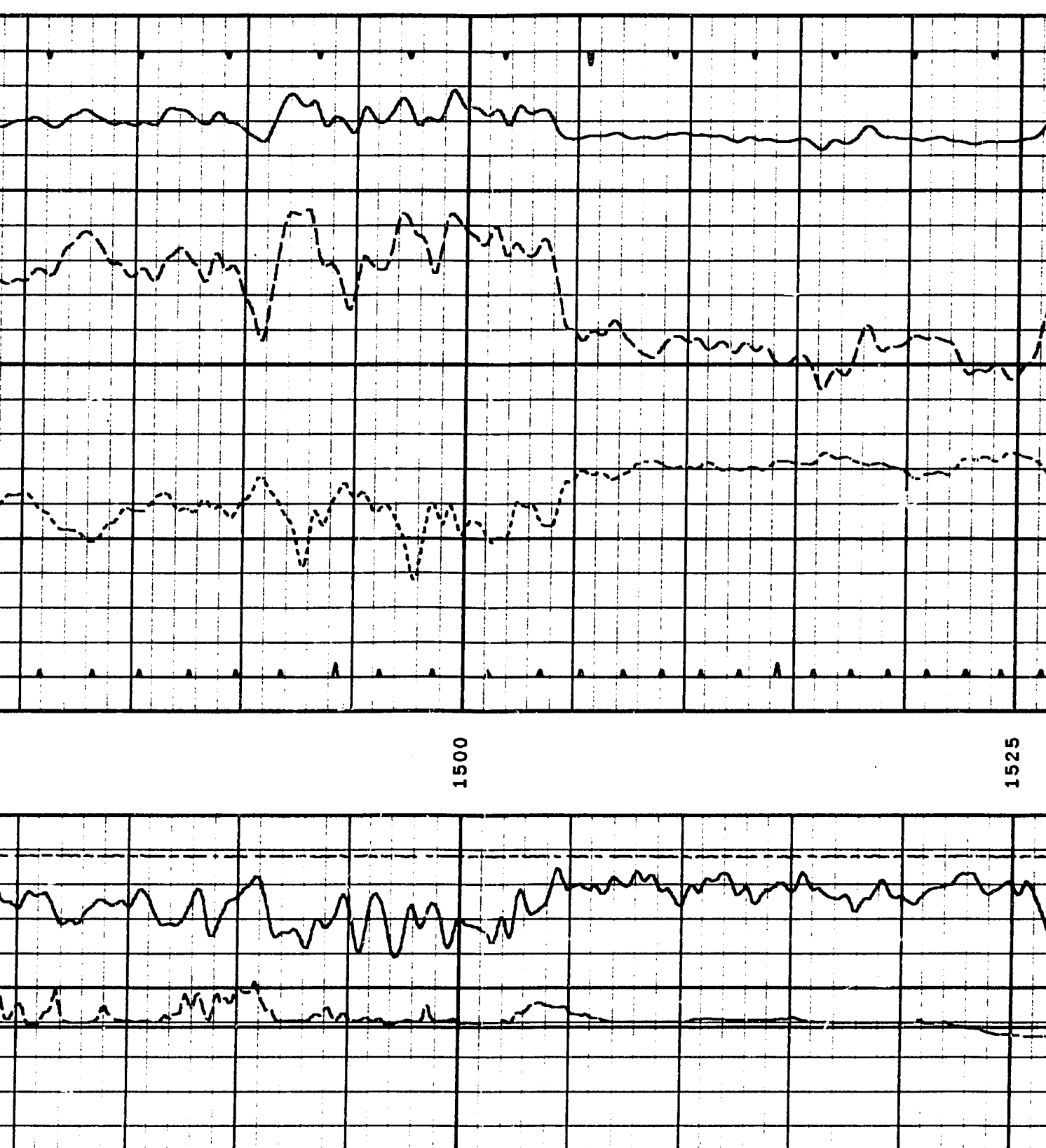


START DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK
23433 23433MDM

VERSION: 1999.01.22

REMARKS

23433 23433MDM
FINISH DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK

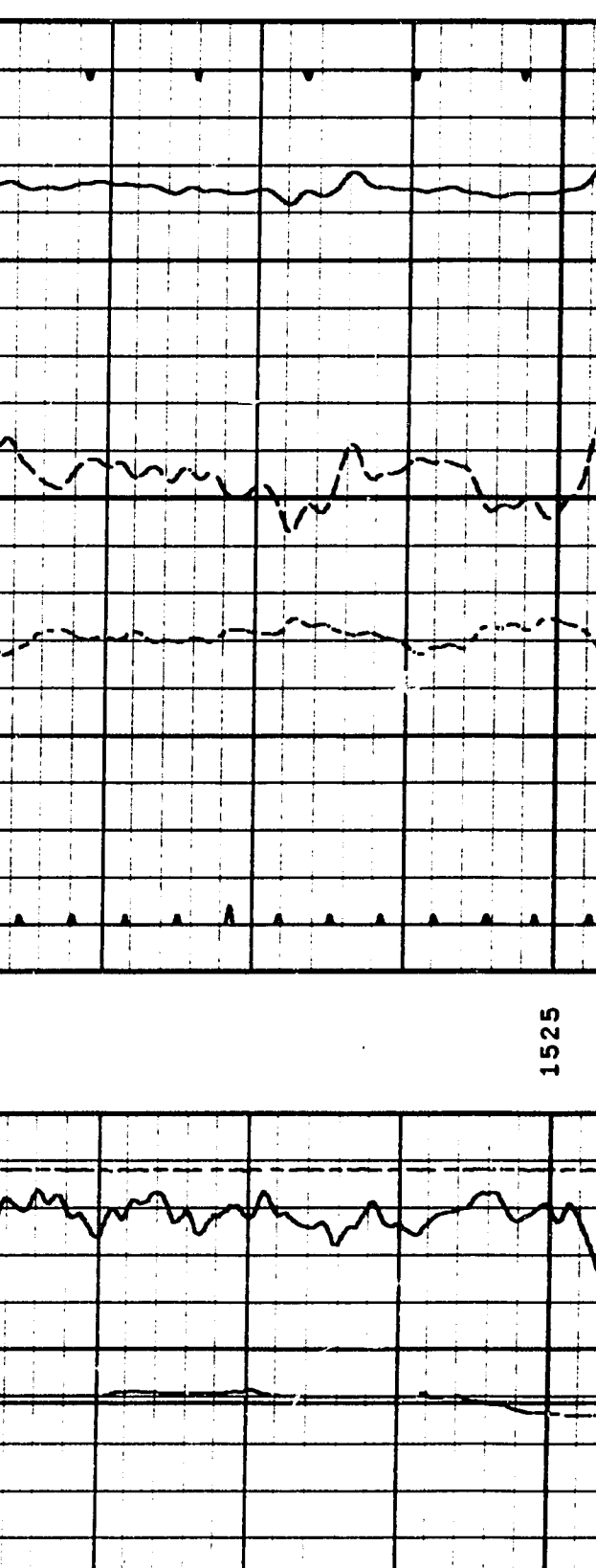


START DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK
23433 23433MDM

VERSION: 1999.01.22

REMARKS

23433 23433MDM
FINISH DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK



START DEPTH: 1426.5 Meters DIRECTION: UP DATE: 03/19/1999 TIME: 16:08 MODE: TRACE PLAYBACK
23433 23433MDM

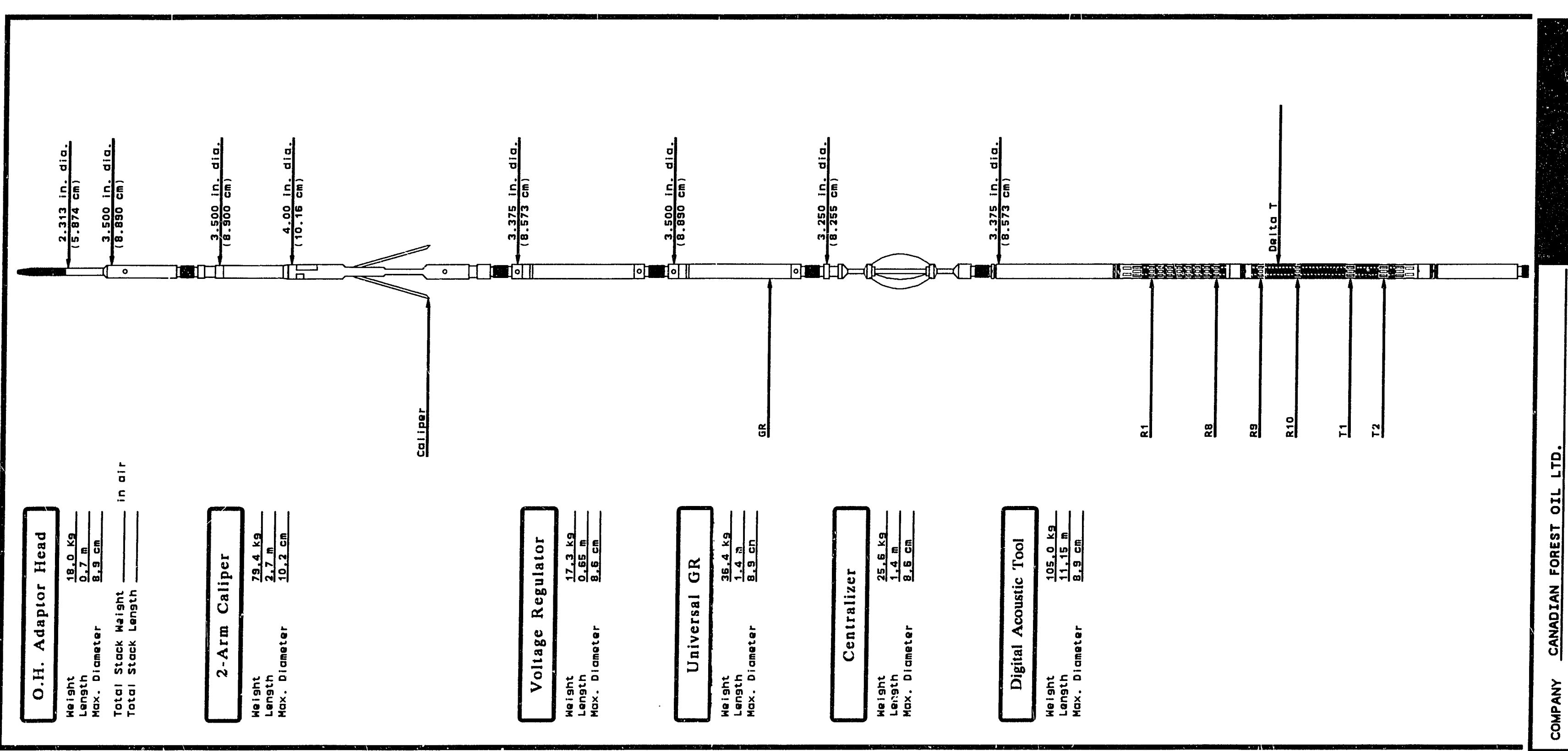
VERSION: 1999.01.22

REMARKS

10000	0	1100.0	DIPOLE DT (SHEAR)	100.0
125.0	CAL 2	375.0		100.0
0.0	GAMMA RAY	150.0		
0.0	POISSON	0.5		
START DEPTH: 1690.0 DIRECTION: UP DATE: 03/19/1999 TIME: 15:47 MODE: TRACE PLAYBACK				
23433 23433MDR				
VERSION: 1999.01.22				

03/18/99	00:59	0.0 M	Ver 2.0b-2.0b	Job 23433
Caliper Before Survey Calibration				
Tool Type: CAL-CC Serial No: 9090				
CAL2	3131.8	7529.1	mv	212.0 530.0 f/m

03/18/99	01:13	0.0 M	Ver 2.0b-2.0b	Job 23433
Gamma Ray Before Survey Calibration				
Tool Type: UGR-JA Serial No: 108				
Calibrator No: RA-20S-681				
Background 78.4 Calibrator 575.8 Standard 140.0 Units				
Delta Counts Per Sec: 497.4 CPS/API = 3.553				



COMPANY	CANADIAN FOREST OIL LTD.
	K 32 60 01 123 21
WELL	CDN FOREST ET AL FORT LIARD
FIELD	UNDEFINED
	PROVINCE N.W.T.

COMPUTALOG

DENSITY

NEED COPY

COMPUTALOG

CS400

SPECTRAL PE DENSITY
COMPENSATED NEUTRON
GAMMA RAY LOG

PROVINCE NORTHWEST TERRITORIES
UNDEVELOPED
CDN FOREST ET AL FORT
LIARD
CANADIAN FOREST OIL LTD.

COMPANY CANADIAN FOREST OIL LTD.

WELL CDN FOREST ET AL FORT LIARD

FIELD UNDEFINED

PROVINCE NORTHWEST TERRITORIES

LSD _____ Sec. _____ Twp. _____ Rge. _____
Perm. Datum Ground Level Elev. 480.1
Log measured from K.B. _____ 4.40 m above
Permanent Datum.

Other Services:
STI-SP
MDA
ELEV. K.B. 484.5
G.L. 480.1
CBF

UNIT K 32 60 01 123 21
Licence 1960

Date MARCH 12, 1999
Run No. ONE
Bot. Driller 1494.0
Bot. Logger 1494.7
First Reading 1485.1
Last Reading 487.5
Meters Meas. 997.2
Csg. Driller 487.5
Csg. Logger 487.9
Bit Size 222mm
Fluid Type K MINUS POLYMER
Dens. Visc. 1090.0 81.0
PH Fluid Loss 10.0 7.0
Sample Source Flowline
Rm 0.30 @ 18 °C
Rmf 0.20 @ 17 °C
Rac 0.20 @ 17 °C
Rm @ BHT 0.18 @ 45 °C
Max Rec. Temp 45°C
Spacing N/A
Operating Time 5.0 hrs.
Unit # 361
Location GRANDE PRAIRIE
Recorded By C. MURRAY
Witnessed By B. GODWIN

NATIONAL
ENCLOSURE
APR 2 2001

EQUIPMENT DATA

EQUIPMENT DATA

TOOL NO. 150151

TOOL NO. 150151

SPD-AB 122

SPD-AB 122

CMT-SA 118

CMT-SA 118

UGR-JA 9320

UGR-JA 9320

CAL-CC 90° OFFSET CALIPER

CAL-CC 90° OFFSET CALIPER

Other

Other

2233-GM

2233-GM

6388-NE

6388-NE

RA-205-737

RA-205-737

90° OFFSET CALIPER

90° OFFSET CALIPER

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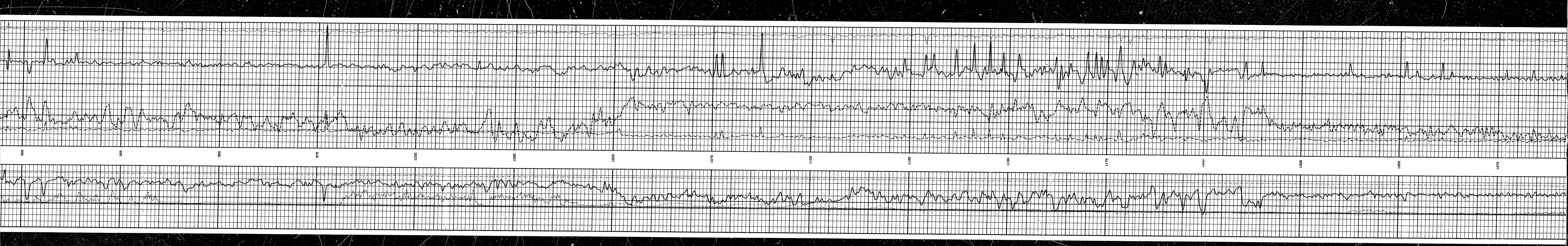
Scale

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Type Log</





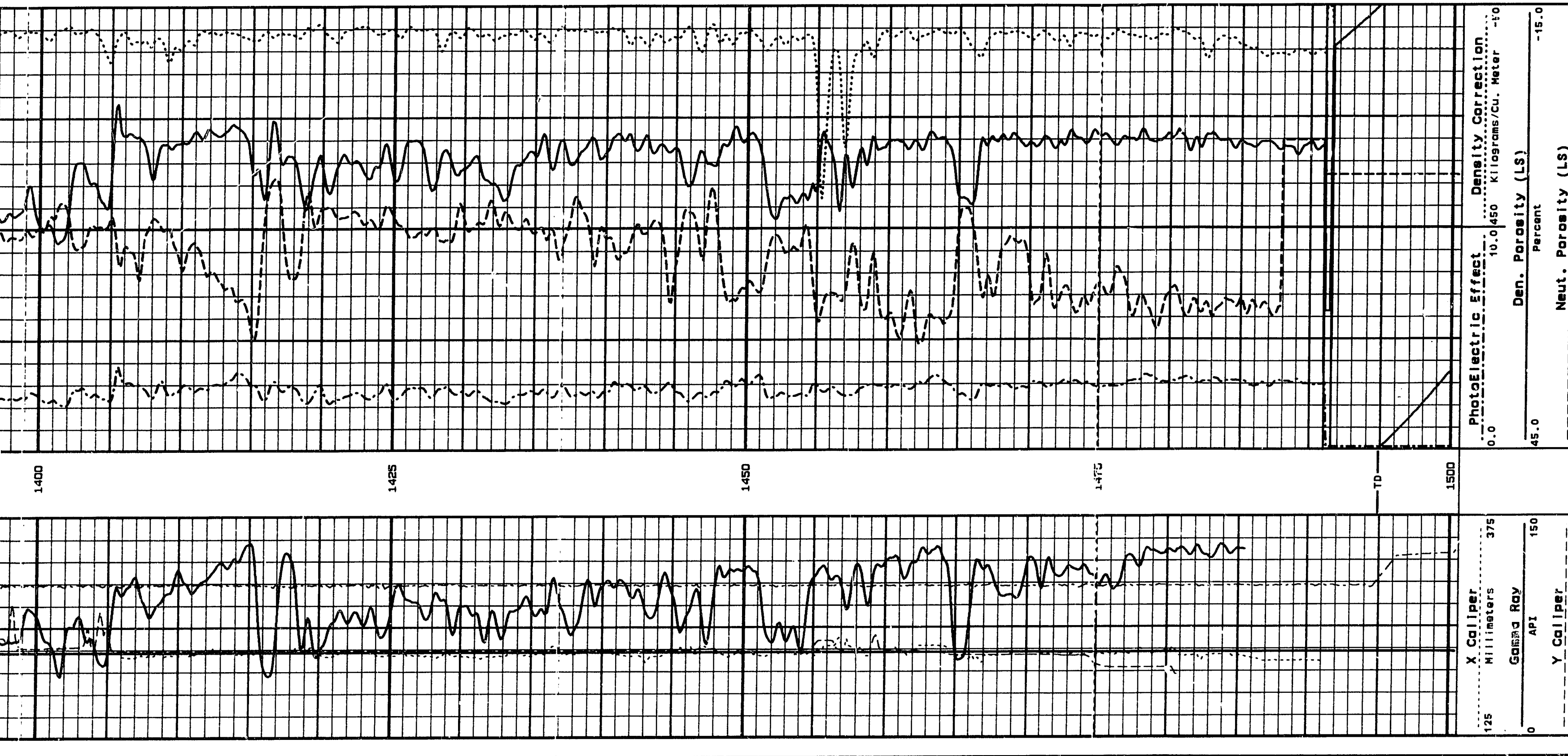
			PhotoElectric Effect		Density Correction	
			0.0		10.0 450 Kilograms/Cu. Meter -50	
X-Caliper						
125	Millimeters	375				
Gamma Ray			Den. Porosity (ss)			
0			45.0		Percent -15.0	
Y-Caliper			Neut. Porosity (ss)			
125	Millimeters	375	45.0		Percent -15.0	
Tension						
20000						
START	DEPTH: 1500.4 Meters		DIRECTION: UP	DATE: 03/12/88	TIME: 08:17	MODE: TRACE PLAYBACK

START	DEPTH: 1500.4 Meters	DIRECTION: UP	DATE: 03/12/99	TIME: 08:17	MODE: TRACE PLAYBACK
22463 ST13					
VERSION: 2.0b					

NAME	DESCRIPTION	VALUE	UNITS
TOL	TO-LOGGER	222.000	Millimeters
BS	BIT SIZE	222.000	Millimeters
BHT	BOTTOM HOLE TEMP	109.00	Degrees Centigrade
SPCC	SURFACE TEMPERATURE	109.00	Degrees Centigrade
SACC	Accumulation Time	109.00	Seconds
BARI	Barite Correction	0.997	Open
MM	Mud Weight	1090.00	Kilograms/Cu. Meter
PD	PLUG DENSITY	2710.0000	Kilograms/Cu. Meter
SPVS	SPED Valve Status	1000.0000	Kilograms/Cu. Meter
NGAI	K FACTOR-NEU	0.997	Open
RES	RES/CESED HOLE	0.997	Open
NTLS	TOOL TYPE-CNT	Caliper	Caliper
NTMS	TEMP SOURCE-CNT	Caliper	Caliper
NCOR	CONSTANT TEMP-CNT	21	Degrees Centigrade
NCAL	LS CALIPER NAME-CNT	OFF	OFF
SCAL	Density BH Diam Source	X Caliper	X Caliper

REPEAT PASS	1:240 SCALE	LIMESTONE MATRIX
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FINISH	DEPTH: 1388.8 Meters	DIRECTION: UP	DATE: 03/12/99	TIME: 18:37	MODE: TRACE PLAYBACK
22463					
VERSION: 2.0b					



START	DEPTH: 1500.4 Meters	DIRECTION: UP	DATE: 03/12/99	TIME: 18:38	MODE: TRACE PLAYBACK
22463					
VERSION: 2.0b					

NAME	DESCRIPTION	VALUE	UNITS
TOL	TO-LOGGER	222.000	Millimeters
BS	BIT SIZE	222.000	Millimeters
BHT	BOTTOM HOLE TEMP	109.00	Degrees Centigrade
SPCC	SURFACE TEMPERATURE	109.00	Degrees Centigrade
SACC	Accumulation Time	109.00	Seconds
BARI	Barite Correction	0.997	Open
MM	Mud Weight	1090.00	Kilograms/Cu. Meter
PD	PLUG DENSITY	2710.0000	Kilograms/Cu. Meter
SPVS	SPED Valve Status	1000.0000	Kilograms/Cu. Meter
NGAI	K FACTOR-NEU	0.997	Open
RES	RES/CESED HOLE	0.997	Open
NTLS	TOOL TYPE-CNT	Caliper	Caliper
NTMS	TEMP SOURCE-CNT	Caliper	Caliper
NCOR	CONSTANT TEMP-CNT	21	Degrees Centigrade
NCAL	LS CALIPER NAME-CNT	OFF	OFF
SCAL	Density BH Diam Source	X Caliper	X Caliper

03/12/99	01:08	0.0 M	Ver 2.0b-2.0b	Job 22463
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Caliper Before Survey Calibration	Tool Type: CAL-CC	Serial No: 9320
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Measured	Small	Large	Units	Small	Large	Units
CAL4	345C.3	6057.5	mm	177.5	325.0	mm

03/12/99	01:08	0.0 M	Ver 2.0b-2.0b	Job 22463
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Gamma Ray Before Survey Calibration	Tool Type: UGR-JA	Serial No: 118
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Background	Calibrator	Standard	Units
50.0	558.5	140.0	API
Delta Counts Per Sec: 508.5	CPS/API = 3.632		

02/10/99	14:41	0.0 M	Ver 2.0b-2.0b	Job SHOP
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Compensated Neutron Shop Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
------------------	--------------------	--

Tank Ratio:	Low Parosity	Med Parosity	High Parosity	Units
Tank Parosity:	1428.0	324.2	132.8	SS/LS
SS Detector:	305.3	473.6	305.4	CPS
Tool Ratio:	0.680	1.461	2.329	SS/LS
Tool Parosity:	-1.03	10.25	26.33	LM-PU

Tool Constant:	0.997	
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Surface Temperature:	5 DegC	
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SS Detector	LS Detector	Ratio	Parosity
288.8 CPS	180.7 CPS	1.653	13.60

03/12/99	01:05	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron After Survey Calibration	Tool Type: CNT-S	Serial No: 122
--	------------------	----------------

Verifior No: 005	Source No: 6888-NE	
------------------	--------------------	--

LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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03/12/99	11:13	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron Before Survey Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
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LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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03/12/99	01:05	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron After Survey Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
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LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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03/12/99	01:05	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron Before Survey Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
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LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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03/12/99	01:05	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron After Survey Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
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LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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03/12/99	01:05	0.0 M	Ver 2.0b-2.0b	Job 22463
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Compensated Neutron Before Survey Calibration	Tool Type: CNT-S	Serial No: 122
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Verifior No: 005	Source No: 6888-NE	
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LS Detector:	Verifior Check	Units
SS Detector:	302.1	CPS
Tool Ratio:	1.666	SS/LS
Tool Parosity:	13.83	LM-PU

Tool Constant:	0.997	
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CS400

COMPUTALOG

SPECTRAL PE DENSITY
COMPENSATED NEUTRON
GAMMA RAY LOG

PROVINCE NORTHWEST TERRITORIES
FIELD UNDEFINED
WELL CDN FOREST ET AL FORT LIARD
COMPANY CANADIAN FOREST OIL LTD.

COMPANY CANADIAN FOREST OIL LTD.
WELL CDN FOREST ET AL FORT LIARD
FIELD UNDEFINED
PROVINCE NORTHWEST TERRITORIES

LSD Sec. Twp. Rge. Other Services:
Perm. Datum Ground Level Elev. 480.1 STI-SP-UGR
Log measured from K.B. 4.40 m above MDA
Permanent Datum. ELEV. K.B. 484.5
G.L. 480.1
UNI K 32 60 01 123 21 CBF
Licence 1850

Date MARCH 18, 1999
Run No. TWO
Bat. Driller 1695.4
Bat. Logger 1695.3
First Reading 1694.6
Last Reading 1450.0
Meters Meas. 244.6
Csg. Driller 487.5
Csg. Logger 487.9
Bit Size 222 mm
Fluid Type K MINUS POLYMER
Dens. Visc. 1090.0 82.0
FH Fluid Loss 10.5 6.5
Sample Source FLOWLINE
Ra @ 15 °C 0.17 @ 15 °C 0.17 @ 16 °C
Raf @ 15 °C 0.15 @ 14 °C
Rac @ 27 °C 0.27 @ 16 °C
Ra @ BHT 0.09 @ 50 °C 0.09 @ 50 °C 0.09 @ 50 °C
Max Rec. Temp 50 °C
Spacing N/A
Operating Time 3.5 hrs.
Unit # 348
Location GRANDE PRAIRIE
Recorded By J. KOCH
Witnessed By B. GODWIN

ADDITIONAL GR & X
1450.0
487.9
862.1
172

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

REMARKS: RIG: HARBOR #6
Drilling Stopped 17.00 17. Circulation Stopped 21:30/17 Tool on Bottom 06:01/18 BHT 50 °C
SPD-CNT-UGR-DC LOGGED IN COMBINATION
PRESENTATION AS PER CUSTOMERS REQUEST

PRINTS: 2

CHANGES IN HUD TYPE OR NEW SAMPLE

Date	Sample No.	Type	Fluid In	Scale

Dens.	Visc.	Other

Run No.	Tool Type	Tool No.	Other
ONE <td>SPD-AB<td>110110<td>2068-GM</td></td></td>	SPD-AB <td>110110<td>2068-GM</td></td>	110110 <td>2068-GM</td>	2068-GM
	CNT-SA <td>107<td>8087-NE</td></td>	107 <td>8087-NE</td>	8087-NE
	UGR-JA <td>117<td>RA-205-681</td></td>	117 <td>RA-205-681</td>	RA-205-681
	CAL-CC <td>5050<td>Y-AXIS</td></td>	5050 <td>Y-AXIS</td>	Y-AXIS

FILE HISTORY

FILE NAME	DATE	START	TIME	STOP	DEPTH	START	STOP	DEPTH	TYPE	DIR	SOURCE	PASS IDENTIFIER
SP4	03/18/99	04:56			1552.1	0.0	0.0	0.0	TRACE	UP	CS400	

MAIN PASS

23433 SPE04

FINISH DEPTH: 0.0 Meters DIRECTION: UP DATE: TIME: MODE: TRACE PLAYBACK

Tension Pounds 10000

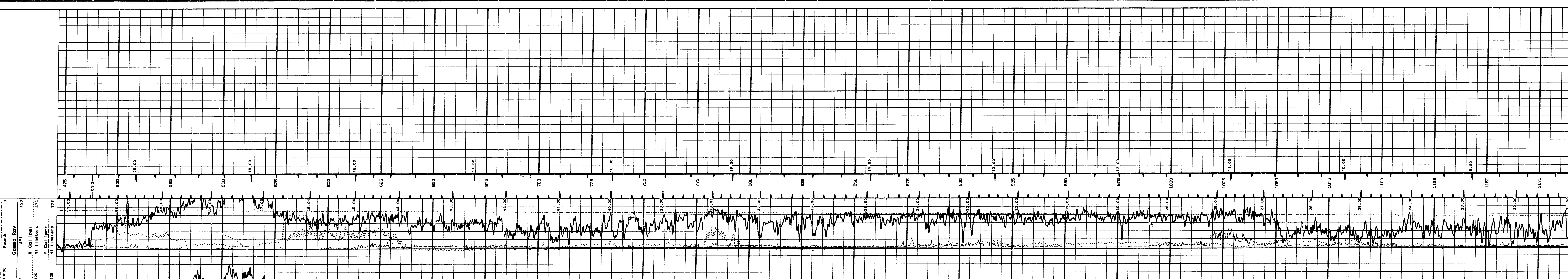
Gamma Ray API 150

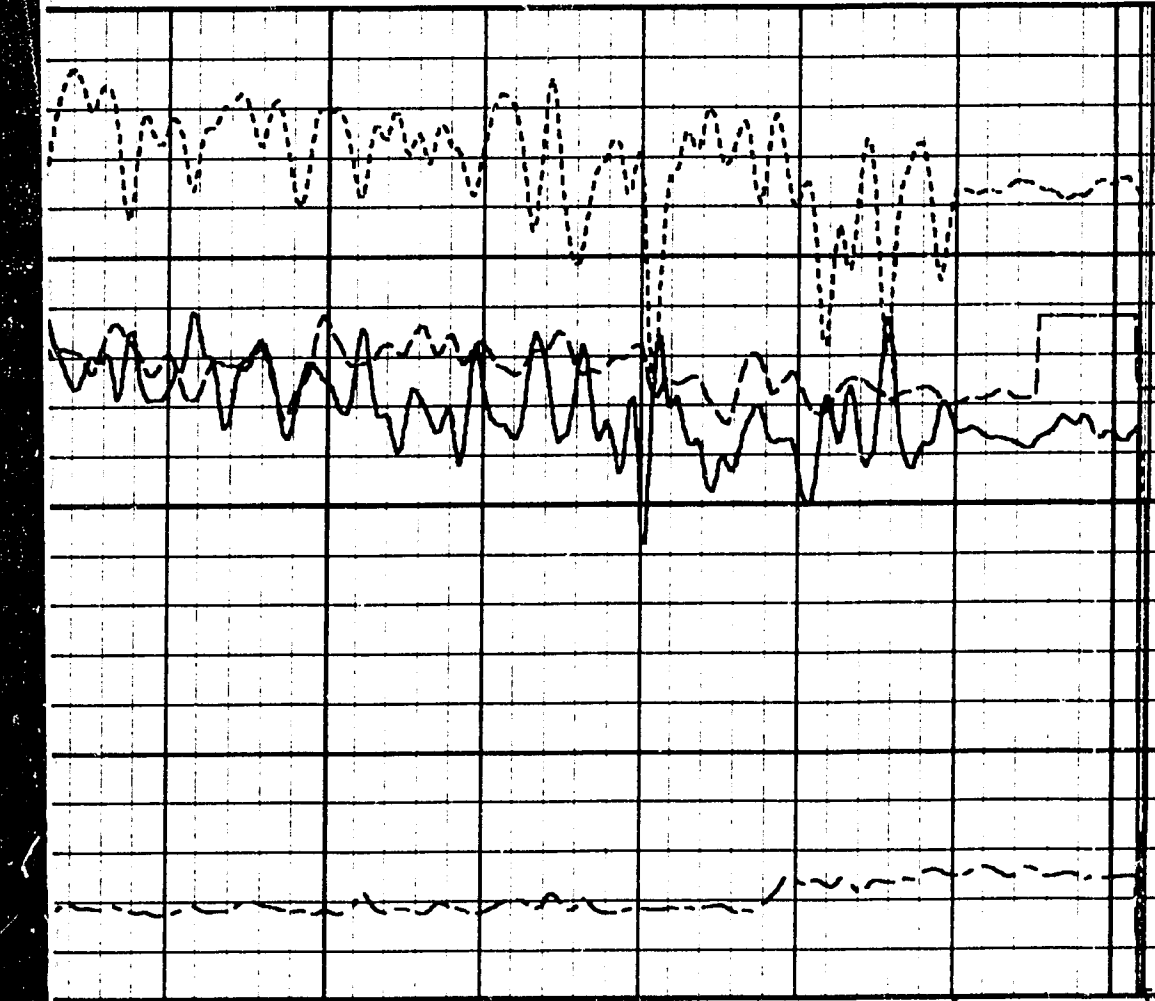
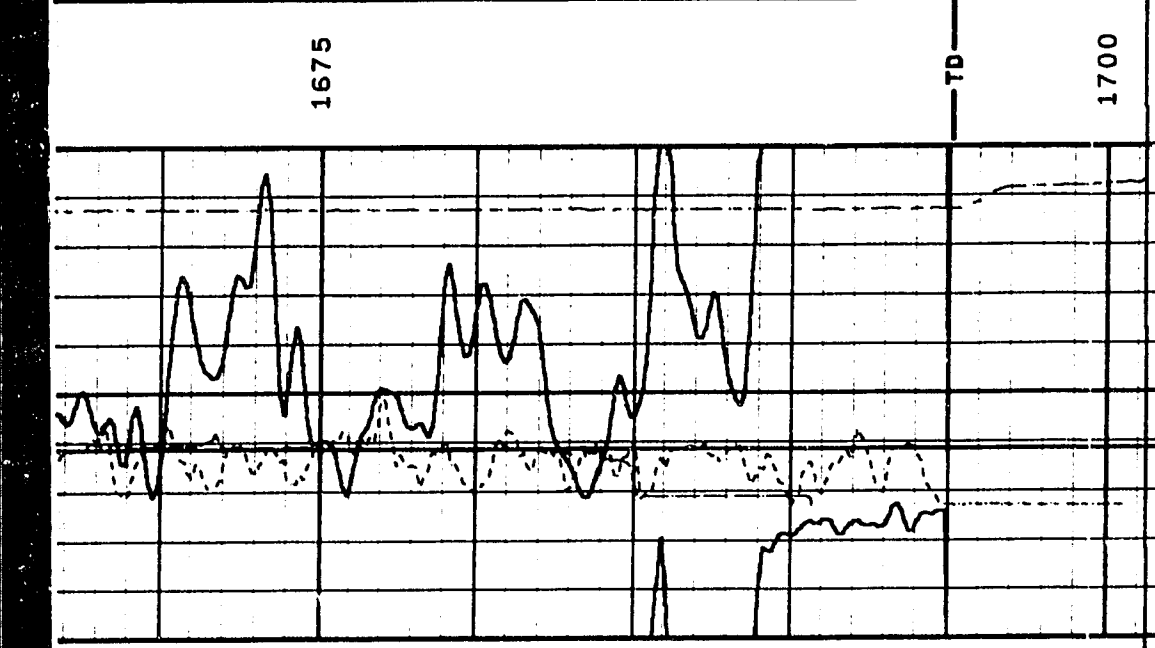
X Caliper Millimeters 125

Y Caliper Millimeters 125

REMARKS:
MAIN PASS
1500
BULK DENSITY
OPEN HOLE VOLUME Ticks ON LEFT SIDE OF DEPTH TRACK
ANNUAL CEMENT VOLUME Ticks ON RIGHT SIDE OF DEPTH TRACK (177 Bbm).

VERSION: 2.05





125	X Caliper Millimeters	375	PhotoElectric Effect	10.0	Density Correction	-50
0	Gamma Ray API	150	Den. Porosity (LS)	45.0	Percent	-15.0
125	Y Caliper Millimeters	375	Neut. Porosity (LS)	45.0	Percent	-15.0
10000	Tension Kilograms	0				

START DEPTH: 1701.2	DIRECTION: UP	DATE: 03/18/1999	TIME: 04:01	MODE: TRACE PLAYBACK
		23433	SPE 2	

VERSION: 1999.02.17

SYSTEM CONSTANTS			
NAME	DESCRIPTION	VALUE	UNITS
TDL	TD-LOGGER		
BS	BTL SIZE	1585	Meters
BHT	BOTTOM HOLE TEMP	222.000	MilliCelsius
SFT	SURFACE TEMPERATURE	50	Degrees Centigrade
SACC	Accumulation Time	5	Degrees Centigrade
WAT	Water Temp	100	Seconds
WAT	Water Temp Correction	100	
MDEN	MATRIX DENSITY	1090	Kilograms/Cu. Meter
FD	FLUID DENSITY	2710.0000	Kilograms/Cu. Meter
SPVS	Spad Valve Status	1000.0000	Kilograms/Cu. Meter
NGAI	K FACTOR-NEU	1.004	IN
NGAI	NEUTRON LOGGING HOLE	Open	
NHCS	NEUTRON LOGGING HOLE	Caliper	
NHCS	BITSIZE/CALIP	CNT-S	
NHCS	TOOL TYPE-CNT	Gradient	
NTMS	TEMP SOURCE-CNT	21	Degrees Centigrade
NCOT	CONSTANT TEMP-CNT		
NCOR	CNT CH CORR OFFSET	OFF	
NCOR	CNT CH CORR SLOPE		
NCAL	IS CALIPER NAME-CNT	X	Caliper
NCAL	IS CALIPER NAME-CNT		
NCAL	IS CALIPER NAME-CNT		

03/18/99	00:59	0.0 M	Ver 2.0b-2.0b	Job 23433
Caliper Before Survey Calibration				
Tool Types: CAL-CC			Serial No:9090	
CAL2	Measured		Calibrated	
	Small Large	Units mv	Small Large	Units mm
	3131.8	7529.1	212.0	630.0

03/16/99	00:40	0.0 M	Ver 2.0b-2.0b	Job 23433
Gamma Ray Before Survey Calibration				
Tool Type: UGR-JA		Serial No: 117		
Calibrator No: RA-20S-681				
Backsround				
84.4		Calibrator	Standard	Units
		580.7	140.0	API
Delta Counts Per Sec: 498.3		CPS/API = 3.545		

03/15/93	17.13	0.0 H	Ver 2.05-2.0b	Job SHOP
Compensated Neutron Shop Calibration				
Tool Type: CNT-S		Serial No: 107		
Verifier No: MSV-167		Source No: 6097-NE		
Tank Ratio:	Low Porosity	Med Porosity	High Porosity	Units
Tank Porosity:	0.713	1.451	2.594	SS/LS
	-0.76	10.25	25.73	LM-PU
LS Detector:	1458.7	346.1	144.2	CPS
SR Detector:	989.5	502.3	332.3	CPS
Tool Ratio:	0.685	1.451	2.304	SS/LS
Tool Porosity:	-1.03	10.25	26.14	LM-PU
Tool Constant: 1.004				
Surface Temperature: 24 DegC				
SS Detector LS Detector Ratio Porosity				
314.8 CPS 186.7 CPS 1.686 14.40				

03/18/99	00:34	0.0 M	Ver 2.0b-2.0b	Job 23433
Compensated Neutron Before Survey Calibration				
Tool Type: CNT-S		Serial No: 107		
Verifier No: MSV-167		Source No: 6097-NE		
LS Detector:	Verifier Check	Units		
	187.4	CPS		
SS Detector:	316.3	CPS		
Tool Ratio:	1.688	SS/LS		
Tool Porosity:	14.42	LW-PU		
Tool Constant:	1.004			

03/18/99	06:35	0.0 M	Ver 2.0b-2.0b	Job 23433
Compensated Neutron After Survey Calibration				
Tool Type: CNT-S		Serial No: 107		
Verifier No: MSV-167		Source No: 6097-NE		
		Verifier Check Before After	Units	
LS Detector:	187.4	188.1	CPS	
SS Detector:	316.3	316.7	CPS	
Tool Ratio:	1.688	1.684	SS/LS	
Tool Porosity:	14.42	14.35	LM-PU	
Tool Constant:	1.004			

03/12/99	17:48	0.0 M	Ver 2.0b-2.0b	Job SHOP	
Spectral Pe Density Shop Calibration					
Tool Type: SPS-AB		Serial No: 110110			
Firmware Ver: 4.00		Source No: 2058-GW			
	BK9	Al	Al+Fe	Mg	Units
CS PK	108.99	108.92	108.56	111.49	Ch
gain	0.164	0.164	0.164	0.168	Ch/Kev
Tn9 PK	11.47				
Off	0.126				
Res	9.85	9.43	9.29	9.80	%
LUPE	412	1562	1013	10371	CPS
LSUC	573	1026	501	5627	CPS
LCMP	1359	4105	3330	24052	CPS
CS PK	108.43	110.52	109.83	110.57	Ch
gain	0.164	0.167	0.166	0.167	Ch/Kev
Tn9 PK	11.27				
Off	-0.954				
Res	5.56	9.53	9.45	9.57	%
SLPE	2670	1783	1783	4036	CPS
SUPE	119	1562	1453	2861	CPS
SSUC	637	4575	4020	6453	CPS
SCMP	1332	11077	9545	16397	CPS
Acc	103	103	103	103	Secs

Density Calibration	
	Fresh
Spine Angle =	77.49
Spine Length =	199.77
	Barite
	78.94
	197.70

Pe Calibration	
	Fresh
LS Slope	= 1.6476
LS Intercept	= -0.2833
SS Slope	= 3.3644
SS Intercept	= -0.4473

03/18/99	00:27	0.0 M	Ver 2.0w-2.0b	Job 23433
Spectral Pe Density Before Survey Tool Check				
Tool Type: SPS-AB		Serial No: 110110		
Firmware Ver: 4.00		Source No: 2068-GW		
		Before	Units	
Cs Pk	108.99	109.98	Ch	
Gain	0.164	0.166	Ch/Kev	
Org Pk	11.47	11.56	Ch	
Org	0.165	0.337	Ch	
RES	9.65	5.92	%	
SLPE	212	213		
LUPE	115	115		
LSUC	673	670		
LCMP	1359	1351		
Cs Pk	108.43	109.43	Ch	
Gain	0.164	0.165	Ch/Kev	
Org Pk	11.37	11.36	Ch	
Org	-0.027	0.132	Ch	
RES	9.54	5.92	%	
SLPE	224	224		
LUPE	119	120		
SSUC	637	634		
SCMP	1332	1328		
Acc	103	103	Secs	

03/18/99	06:35	0.0 M	Ver 2.0b-2.0b	Job 23433
Spectral Pe Density After Survey Tool Check				
Tool Type: SPS-AB		Serial No: 110110		
Firmware Ver: 4.00		Source No: 2058-GH		
Shop	Before	After	Units	
CS PK	109.98	110.23	Ch	
Gain	11.64	11.67	Ch/Kev	
Tn9 Pk	11.56	11.57	Ch	
Off	0.126	0.297	Ch	
Res	9.85	9.39	%	
LLPE	212	212	cps	
LUPE	115	115	cps	
LSUC	673	672	cps	
LCMP	1355	1357	cps	
CS PK	109.43	110.02	Ch	
Gain	0.165	0.167	Ch/Kev	
Tn9 Pk	11.37	11.30	Ch	
Off	-0.037	0.070	Ch	
Res	9.54	9.56	%	
LLPE	222	223	cps	
LUPE	120	120	cps	
LSUC	520	516	cps	
SCMP	1328	1336	cps	
Acc	103	103	secs	

03/19/99	00:51	0.0 M	Ver 2.0b-2.0b	Job 23433															
Caliper Before Survey Calibration																			
Tool Type: SPD-AB		Serial No:110																	
<table><thead><tr><th></th><th>Measured</th><th>Units</th><th>Small</th><th>Calibrated</th></tr><tr><th></th><th>Large</th><th></th><th>Large</th><th>Units</th></tr></thead><tbody><tr><td>CALX</td><td>2118.0</td><td>3093.0 mv</td><td>152.0</td><td>310.0 mm</td></tr></tbody></table>						Measured	Units	Small	Calibrated		Large		Large	Units	CALX	2118.0	3093.0 mv	152.0	310.0 mm
	Measured	Units	Small	Calibrated															
	Large		Large	Units															
CALX	2118.0	3093.0 mv	152.0	310.0 mm															

O.H. Adaptor Head

Height 18.0 kg
Length 0.7 m
Max. Diameter 8.9 cm
Total Stack Height 423.3 kg in air
Total Stack Length 14.10 m

Voltage Regulator

Weight 17.3 kg
Length 0.66 m
Max. Diameter 9.6 cm

2-Arm Caliper

Weight 79.4 kg
Length 2.7 m
Max. Diameter 10.2 cm

SPeD400

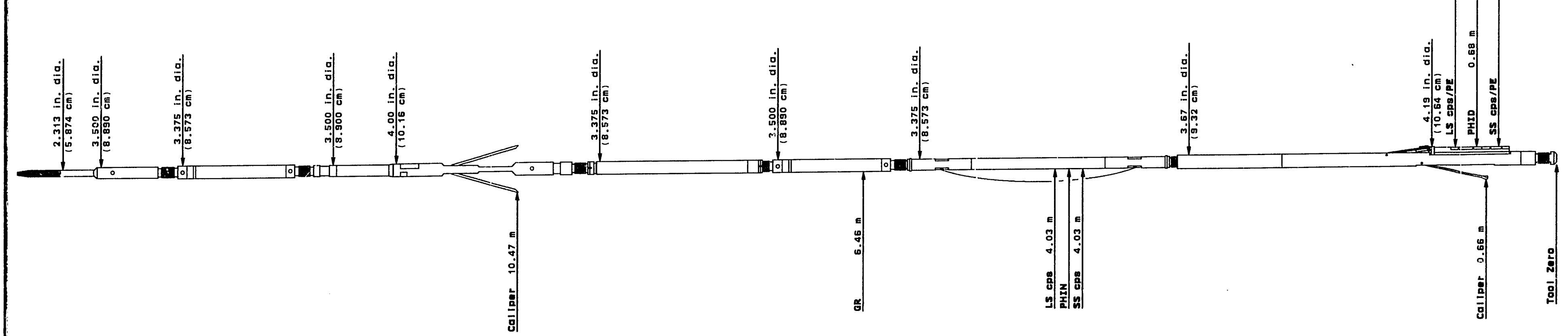
Weight 208.8 kg
Length 6.51 m
Max. Diameter 10.6 cm

Universal GR

Weight 36.4 kg
Length 1.4 m
Max. Diameter 8.9 cm

Mandrel Neutron

Weight 53.5 kg
Length 7.74 m
Max. Diameter 8.6 cm



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