PCI

K'ALO B-62

9211-P28-2-1

E.A. # 159
D.A. #1309

Canada Oil and Gas Lands Administration | Administration du pétrole et du gaz des terres du Canada

Nova Scotia	☐	West Coast	☐	Exploratory	☒
Newfoundland	☐	Northern	☒	Development	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	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: PCI K'ALO B-62

Operator: Petro-Canada Inc.
Drilling Program No.: -

Contractor: Peter Bawden
Permit or Lease No.: -

Drilling Rig or Unit: # 52
Estimated Well Cost: $4.65 MM

Location-Unit: B Section: 62 Grid Area: 65- 20 - 125- 15

Coordinates: Lat.: 65° 11' 02.6381"N
Long: 125° 27' 04.8638" W

Area: Brackett Lake (N.W.T.)
Field/Pool: Undefined

Elevation-~~RT~~/KB: 112.2 m (ASL)
Ground: ~~XXXXXX~~ 107.9 m (Surveyed) ~~XXXX~~

Approx. Spud Date: January 24, 1986
Estimated Days on Location: 34

Anticipated Total Depth: 1944 m K.B.
Target Horizon(s): Primary - Mt. Clarke
Secondary - Mt. Cap

UWI: 300B626520125150

EVALUATION PROGRAM

Ten-metre sample intervals

Five-metre sample intervals: Surface to T.D. (3 Bottled Sets, 2 Bagged Sets)

Canned sample intervals: Surface to T.D. (2 Sets, Every 10 m)

Conventional cores ~~XX~~: None

Logs and Tests: DLL-MSFL-GR, CNL-LDT-NGT, AMS, BHCS, MICROL, HDT, RFT, WST, Sidewall cores.
Possible Tests: Mt. Clarke (1884 m), Mt. Cap (1044 m)

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth (m K.B.) ~~XXXXXXXXXX~~	Cementing Program (Volumes):
340 mm	101 Kg/m	K-55, BT&C	60	13 Tonnes "G" neat + 3.0% $CaCl_2$ (9.85m^3)
245 mm	60 Kg/m	L-80, LT&C	500	39 Tonnes "G" neat + 3.0% $CaCl_2$ (29.6m^3)
178 mm	43 Kg/m	MN-80, LT&C	1944	Fill: (1000 to 450) 13 T "G" neat + 0.5% D65 (T.I.) (9.85 m^3)
				Tail: (TD to 1000) 22 T "G" neat + 2.0% $CaCl_2$ (16.7 m^3)

B.O.P. Equipment: See Attached

Other Information:

Signed: K. L. Brown
Title: Land Drilling Manager

Date: 1986-01-13
Company: Petro-Canada Inc.

APPROVAL

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

Signed:
Engineering Branch

Date: 24 Jan 86

File: 9211-P28-2-1

Department of Energy, Mines and Resources | Ministère de l'Énergie, des Mines et des Ressources
Department of Indian Affairs and Northern Development | Ministère des Affaires indiennes et du Nord Canadien

Canada

Canada Oil and Gas Lands Administration | Administration du pétrole et du gaz des terres du Canada

D.A. 1309
E.A. 159

				Well Status	
Nova Scotia	☐	West Coast	☐	Suspended	☐
Newfoundland	☐	Northern	☒	Completed	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Abandoned	☒

WELL TERMINATION RECORD

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

WELL DATA

Well Name: PCI K'alo B-62 Area: Brackett Lake (NWT)

Grid Area: 65° 20', 125° 15' Field/Pool: Undefined

Permit or Lease No.: N85A455 Final Coordinates: Lat. 65° 11' 02.6381" N Long: 125° 27' 04.8638 W

Drilling Unit: Bawden 52 Elevations RT/KB: 113.22 GL: 108-6

Spud Date: 86-01-24 @ 2000 Rig Released: 86-03-19 @ 12:00 Total Depth: 1985 m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
340mm	101 kg/m	K-55, BT&C	63.6	20t Class "G" + 2% CaCl2
244.5mm	60 kg/m	L-80, LT&C	752.0	Stage 1: 20t Class "G" + 2% CaCl2 + .5% T.I.
				Stage 2: 4t Class "G" + 2% CaCl2 + .5% T.I.

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Dave Scott from (person) Kem Singh of the Canada Oil and Gas Lands Administration by means of telephone on March 17 1986

Type of Plug:	Interval:	Felt:	Cement and Additives:
#1 Cement	1985 - 1885	No felt	6t "G" + .5% D-65 + .6% D-13
#2 Cement	782-722	724	5t "G" + 2% CaCl2
#3 Cement	18-Surface	-----	9t Class "G"

* The casing bowl was cut off, and cap was welded on the casing and a well identification sign was welded on.

Lost Circulation/Overpressure Zones: None

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): None

Cores: Type: No cores cut Intervals:

Other Downhole Completion/Suspension Equipment: None

CERTIFICATION

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

Signed: J.E. Kercher P. Eng. Title: Engineering Supervisor

Name: J.E. Kercher Date: April 25/86

Acknowledged by: Kem Singh Engineering Branch

Date: 86/06/06

File: 9211-P28-2-1

Department of Energy, Mines and Resources | Ministère de l'Énergie, des Mines et des Ressources

Department of Indian Affairs and Northern Development | Ministère des Affaires indiennes et du Nord canadien

Canada

CANADA OIL AND GAS LANDS
ADMINISTRATION
GAZ DES TERRES DU CANADA
JUIN 18 1986
ENGINEERING BRANCH
GÉNIE

OTTAWA COPY

PETRO-CANADA INCORPORATED

PCI K'ALO B-62

WELL HISTORY REPORT

Prepared by: B. Speirs
April 25, 1986

PCI K'alo B-62

WELL HISTORY REPORT

A) INTRODUCTION

1. Summary
2. Location Map

B) GENERAL DATA

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2. Well Location
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4. Operator and Drilling Contractor
5. Drilling Unit
6. Position Keeping
7. Support Craft
8. Drilling Unit Performance
9. Difficulties and Delays

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3. Date Spudded
4. Date Drilling Completed
5. Date of Rig Release
6. Well Status
7. Hole Sizes and Depth
8. Casing and Cementing Record
9. Sidetracked Hole
10. Drilling Fluids
11. Fishing Operation
12. Well Kicks
13. Formation Leak-Off Tests

C) SUMMARY OF DRILLING OPERATIONS (cont'd)

14. Time Breakdown
15. Deviation Survey
16. Abandonment Plugs
17. Composite Well Records

APPENDIX

Drilling Data

1. Deviation Records
2. Final Survey Plan
3. Wellbore Schematic

A. INTRODUCTION

1. Summary

PCI K'alo was the first well drilled by Petro-Canada in the Brackett Lake area. The primary objective was the lower Cambrian Mount Clarke formation, and the secondary objective was the Mount Cap formation.

The location coordinates for this well are 65° 11' 02.6381 North Latitude, 125° 27' 04.8638 West Longitude.

Petro-Canada Incorporated of Calgary operated the well. Peter Bawden Drilling Ltd. of Calgary, the Contractor, used Bawden Rig #52, a diesel mechanical rig to drill this hole.

This well was drilled to a total depth of 1985 m. Drilling was completed in 51 days.

PCI K'alo B-62 was spudded on 1986-01-24 at 2000 hours. A 609.6mm hole was augered to 15.62 m. 508mm conductor barrel was set and cemented with 4.5 t Class "G" + 2% $CaCl_2$.

A 311mm pilot hole was drilled to 63 m, then reamed to 445mm with a hole opener. 63 m of 340mm, 101 kg/m K-55 BT&C casing was set, and cemented with 20 t Class "G" + 2% $CaCl_2$.

A 311mm hole was drilled to 70 m, where a change was made from the gel/Kelzan XC polymer mud to an air/foam drilling fluid.

The hole started to produce water at 349 m. At 380 m, water production was about 48 m^3/hr.

Drilling continued to 644 m. Indian and Northern Affairs expressed concern about the environmental impact of the discharged water, so a switch was made back to the mud system.

Drilling continued to 752 m, where 244.5mm L-80 LT&C casing was set and cemented in two stages with Class "G" + 2% $CaCl_2$ + .5% T.I. Stage 1 was 20 t, Stage 2 was from 57 m to surface - cemented with 4 t.

A 216mm hole was drilled to 842 m with the mud system, when a change to a salt saturated mud system was made.

The hole was drilled to 1985 m. The well was open hole logged from 1981 m - 751 m. No DST's were performed. The well was plugged and abandoned, and rig released on 1986-03-19 at 1200 hours.

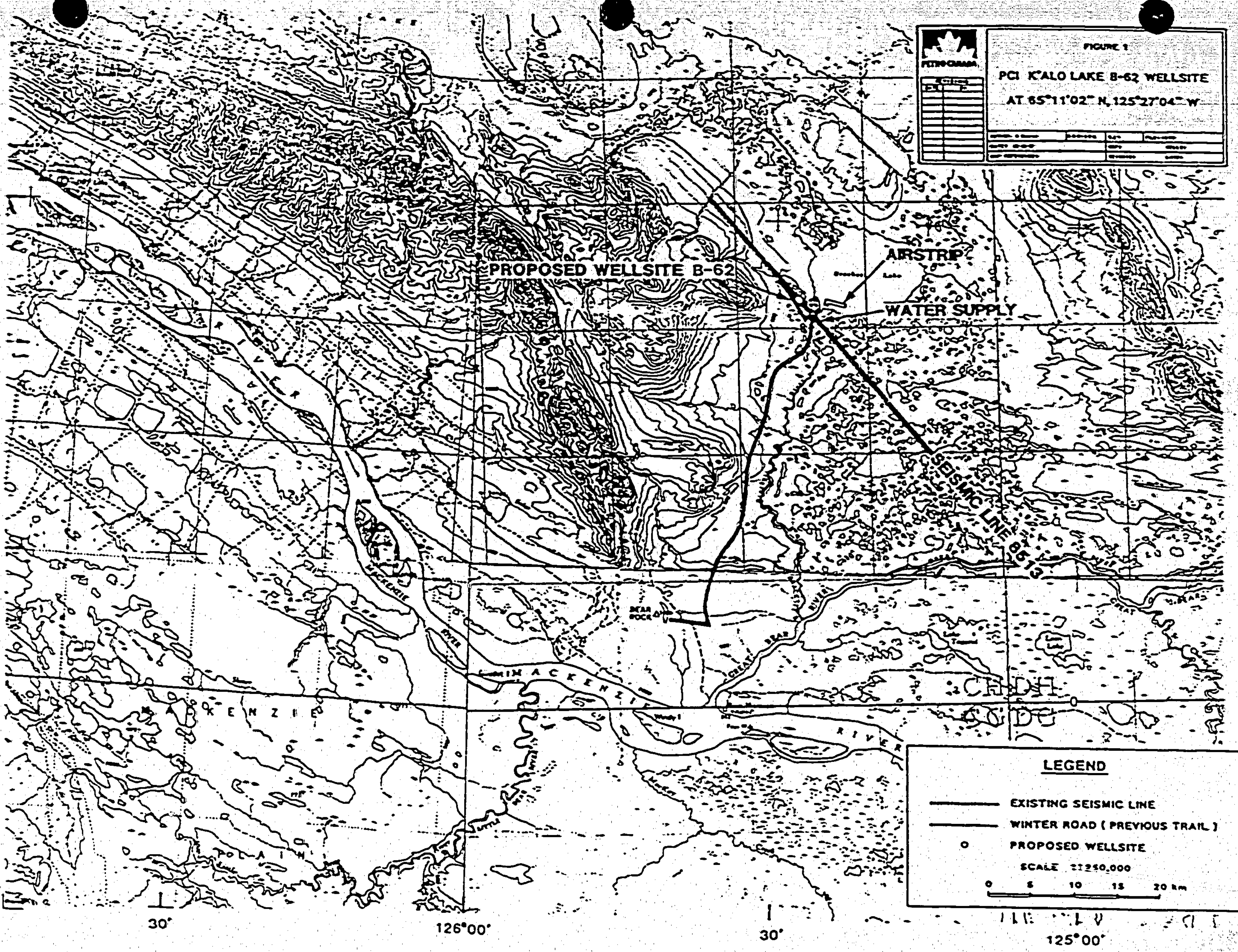


FIGURE 1
PCI K'ALO LAKE B-62 WELLSITE
AT 65°11'02" N, 125°27'04" W
PROPOSED WELLSITE B-62
AIRSTRIP
WATER SUPPLY
SEISMIC LINE 8513
MACKENZIE RIVER
MACKENZIE
GREAT BEAR RIVER
BEAR ROCK
15'
65°00'
45'
30'
126°00'
30'
125°00'
LEGEND
EXISTING SEISMIC LINE
WINTER ROAD (PREVIOUS TRAIL)
PROPOSED WELLSITE
SCALE 1:250,000
0 5 10 15 20 km

B. GENERAL DATA

1.	Well Name and Number:	PCI K'alo B-62 Grid Area: 65° 20', 125° 15'
2.	Well Location:	North Latitude: 65° 11' 02.6381" West Longitude: 125° 27' 04.8638"
3.	Unique Well Identifier:	300B626520125150
4.	Operator:	Petro-Canada Incorporated P.O. Box 2844 Calgary, Alberta T2P 3E3
	Contractor:	Peter Bawden Drilling Ltd. P.O. Box 5900, Station "L" Edmonton, Alberta T6C 4G5
5.	Drilling Unit:	Name: Bawden Rig #52 Type: Triple Diesel Mechanical Year Built: 1979 Location: Peace River
6.	Position Keeping:	Not applicable to this well.
7.	Support Craft:	Not applicable to this well.
8.	Drilling Unit Performance:	Not applicable to this well.
9.	Difficulties and Delays:	No difficulties or delays were encountered that were not directly associated with downhole operations.

C. SUMMARY OF DRILLING OPERATIONS

1. Elevations: Ground: 108.60 m
   Kelly Bushing: 113.22 m

2. Total Depth: Drilled: 1985
   Logged: 1981

3. Date and Hour Spudded: 86-01-24 2000 hours

4. Date Drilling Completed: 86-03-18

5. Date of Rig Release: 86-03-19 1200 hours

6. Well Status: Abandoned

7. Hole Sizes and Depths:

Class	Bit Numbers	Size (mm)	Depth (m) In	Depth (m) Out	Meters Drilled	Remarks
Conductor	1A	311	0	63	63	Drilled 15.6m with 610mm auger.
	2A	445	0	63	63	Ream hole to 445 m.
Surface	1B	311	63	350	287	Air drilled.
	2B	311	350	408	58	Air drilled.
	3B	311	408	644	236	Air drilled.
	4B	311	644	739	95	Mud up RR 2B
	5B	311	739	752	13	
Main	1C	216	752	775	23	
	2C	216	775	824	49	
	3C	216	824	846	22	
	4C	216	846	869	23	
	5C	216	869	1185	316	
	6C	216	1185	1472	287	
	7CRR	216	1472	1676	204	
	8C	216	1676	1935	259	
	9C	216	1935	1949	14	
	10C	216	1949	1955	6	Ream 4 m
	11C	216	1955	1957	2	
	12C	216	1957	1958	1	
	13C	216	1958	1963	5	Diamond Bit
	14C	216	1963	1985	22	

8. Casing and Cementing Details

Hole Classification	Conductor Barrel	Conductor Casing	Surface		Main
Hole Size: (mm)	609.6	445	311		216
Casing Size:(mm)	508	339.7	245		Abandon-ment
Weight kg/m:		101.2	60		-
Grade:		K-55	L-80		-
Coupling:		BT&C	LT&C		-
Number of Joints:		5	61		-
Number of Centralizers:	-	-	8		-
Date of Run:	86-01-25	86-01-28	86-02-11		-
Shoe Depth:	15.6	63.46	752.0		-
Tonnes of Cement:	4.5	20	20.0	4.0	-
Type of Cement:	Class G	Class G	Class G	Class G	-
Additives:	2% CaCl2	2% CaCl2	2% CaCl2 .5% T.I.	2% CaCl2 .5% T.I.	-
Height of Cement:	Surface	Surface	400 m	Surface	-
Based on:	Returns	Returns	Caliper Log	Returns	-

9. Sidetracked Hole - Not applicable to this well.

10. Drilling Fluid

The first 15.6 m was drilled dry with an auger. A Gel/Chemical mud was used to 70 m, when a switch was made to air/foam. At 644 m, the drilling fluid was changed to a Gel/Polymer mud. This fluid was used to 842 m, where it was saturated with salt. The salt mud was used to T.D.at 1985 m.

Summary of Mud Properties

Section	Interval (m)	Weight (kg/m^3)	Funnel Vis (s/l)	Water Loss (Aver. Cm^3)	pH (Aver)	Cl^- ($10^3 mg/l$)
Conductor	0-15.6	-	-	-	-	-
	15.6- 70	1080	48	-	11	-
Surface	70-644	air/foam				
	644-752	1040	52	12	9.3	4.0
Main	752-842	1047	45	10	10.1	2.2
	842-1475	1248	50	26	10.2	153
	1475-19895	1295	46	13	10	167

11. Fishing Operation

Date	Remarks
86-01-30	Fish rotating head bushing out of BOP's - 1/2 hour.
86-03-14	Retrieve junk with magnet - 1/2 hour.

12. Well Kicks - None

13. Formation Leak-off Tests

A pressure integrity test was run on 86-02-15 after drilling out the surface casing shoe at 752 m and drilling to 757 m. Mud (density 1025 kg/m^3) was used for this test and pressured to 7000 kPa at surface for 10 minutes. (equivalent mud weight 1974 kg/m^3). Formation Integrity was 19.36 kPa/m. The formation did not break down.

14. Time Breakdown

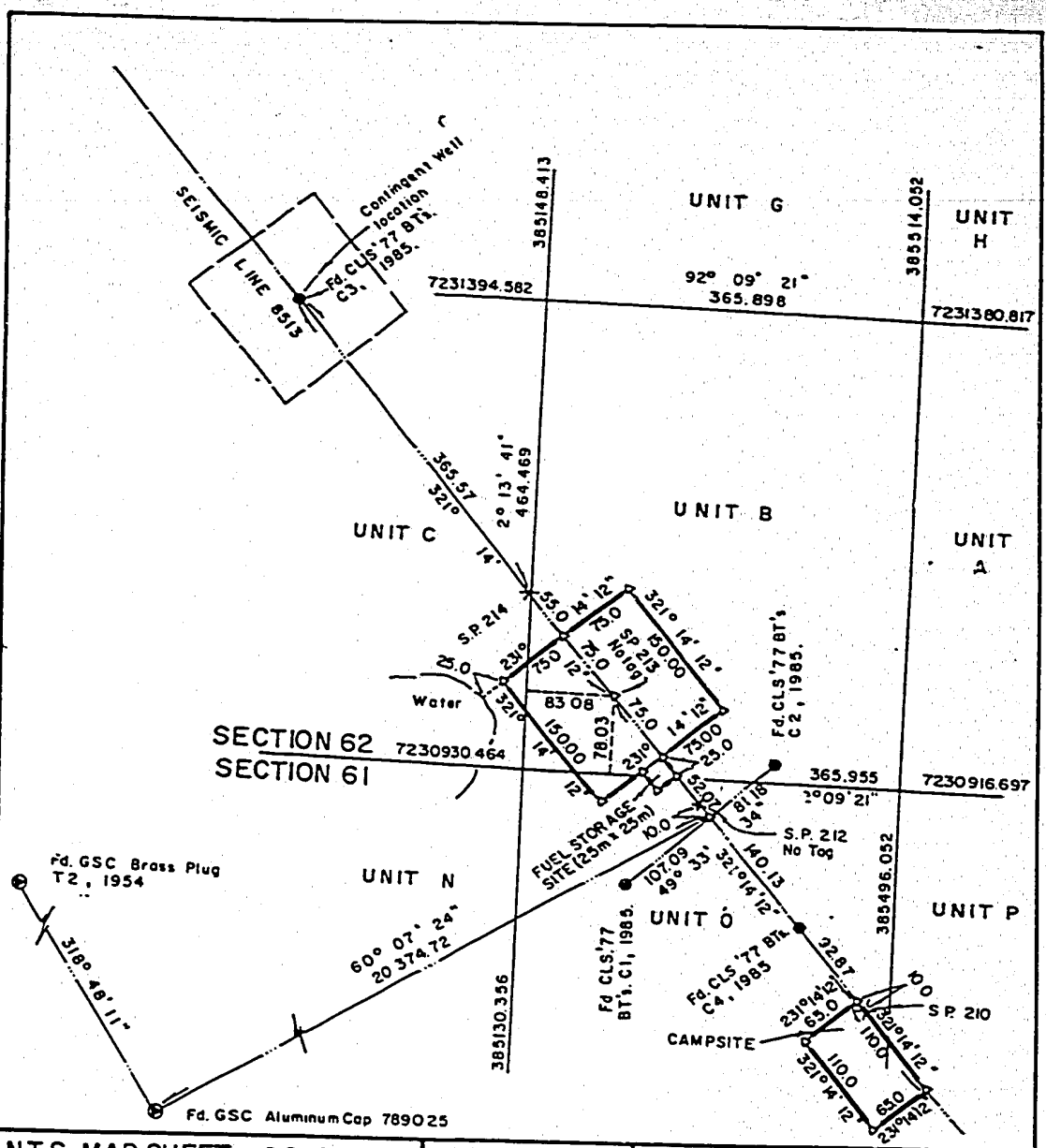
	Conductor				
	Barrel	Casing	Surface	Main	Total
Drill	7.00	17.00	199.00	475.50	698.50
Trip		4.75	28.00	123.75	156.50
Ream/Clean		7.75	19.50	15.50	42.75
Conditioning		1.25	23.50	29.00	53.75
Rig Service		0.75	6.00	14.25	21.00
Mechanical Downtime		1.75	3.00	0.75	5.50
Survey		3.00	11.00	21.25	32.25
CSG-CMT-WOC	30.25	16.50	22.50		69.25
Head up/PR Test			35.00	48.50	83.50
Coring					Ø
Logging			15.50	26.75	42.25
DST					
Drill Cement				9.00	9.00
Rig up Air			3.25		3.25
BOP Drill			0.50		0.50
Work Tight Hole			1.25		1.25
Fishing			0.50	0.50	1.00
Inspect BHA				17.75	17.75
Miscellaneous			1.50	23.50	25.00
Abadonment				36.00	36.00
TOTAL	37.25	52.75	370.00	830.00	1290.00

15. Deviation Survey

16. Abandonment Plugs

Type of Plug	Interval	Felt	Cement + Additives	Fluid between Plugs
1. Cement	1985 - 1885	Not felt	6 tonne "G" + .5% D-65 + .6% D-13	Salt saturated Gel/Plymer mud
2. Cement	782 - 722	724	5 tonne "G" + 2% CaCl2	Salt saturated Gel/Polymer mud
3. Cement	18 - 0	Surface	.9 tonne "G"	

17. Composite Well Record



N.T.S. MAP SHEET: 96-F-3	METRIC	NORTHWEST TERRITORIES

PETRO - CANADA INC.

PRELIMINARY SKETCH SHOWING WELL LOCATION

PCI K'ALO B-62

UNIT B, SECTION 62, GRID AREA 65° 20', 125° 15'

PETRO - CANADA INC.

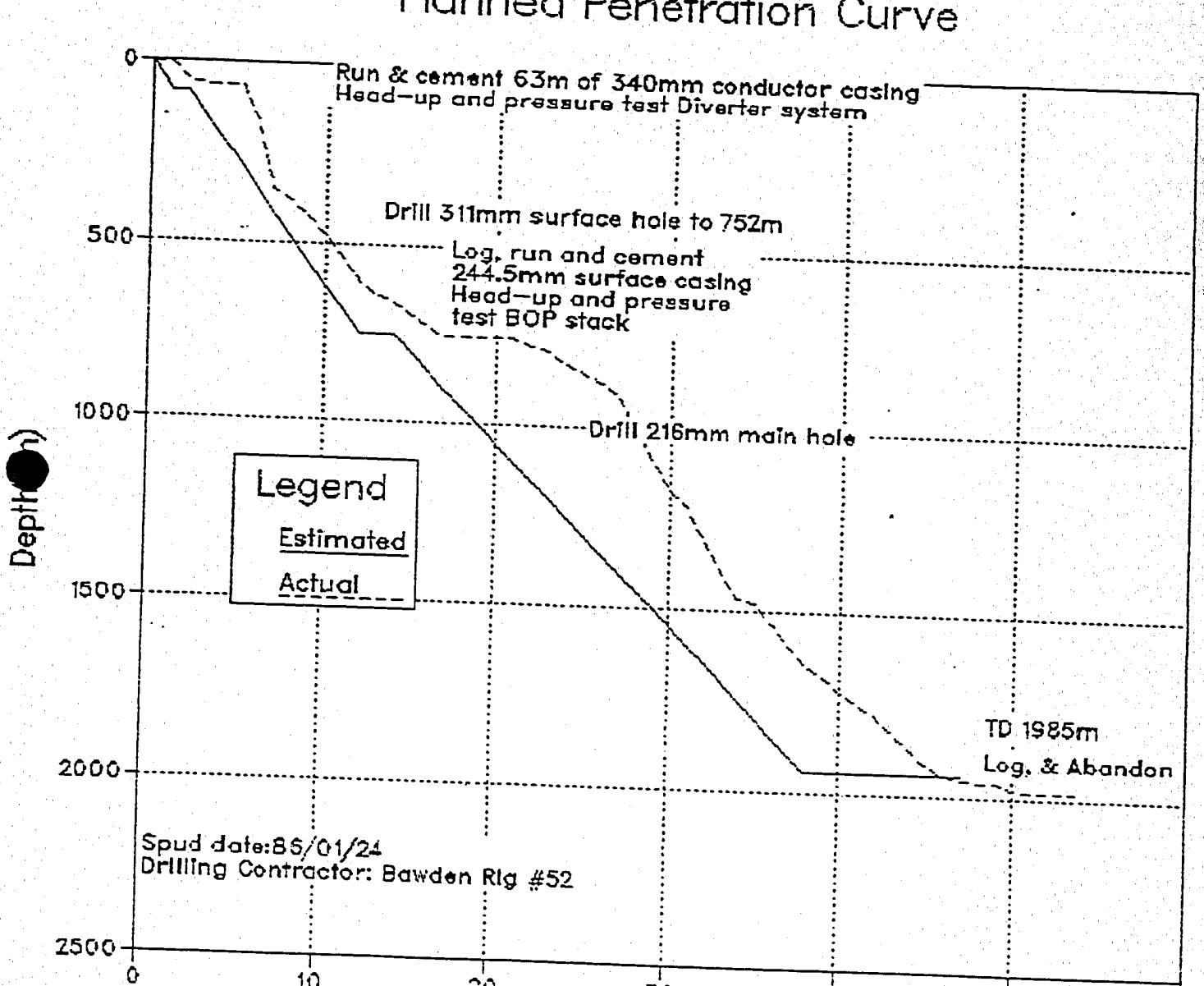
CERTIFIED CORRECT:
THIS 19th DAY OF NOVEMBER, A.D. 1985

CANADA LANDS SURVEYOR

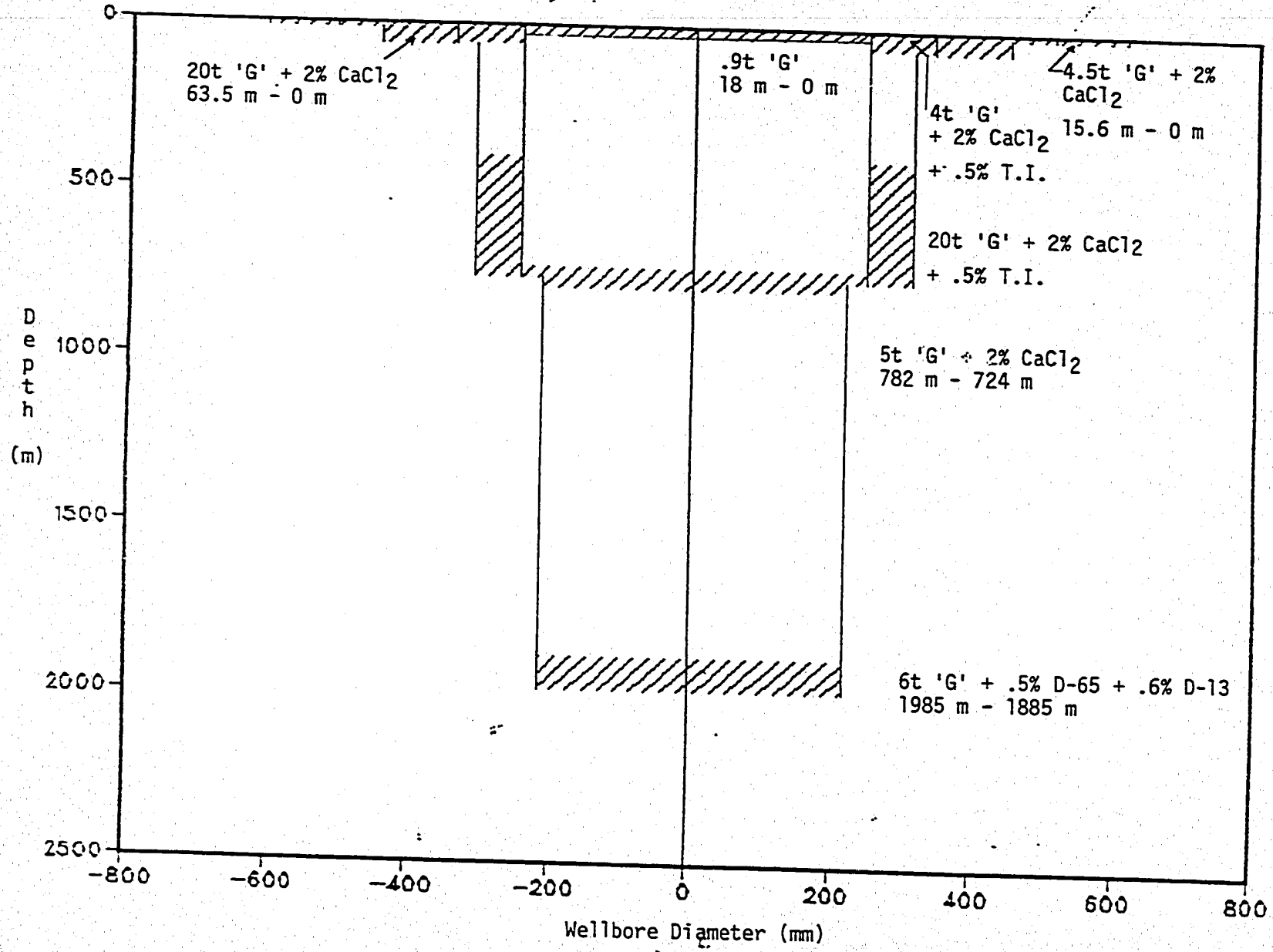
ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
ON GROUND AT WELLHEAD : 107.90	NORTH LATITUDE: 65° 11' 02.6381 (65.18406614) WEST LONGITUDE: 125° 27' 04.8638 (125.45135105)	NORTHING: 7231005.311 EASTING: 385216.411 CO-ORDINATES ARE COMPUTED FOR ZONE 10, CENTRAL MERIDIAN 123° W.

LEGEND	AREAS REQUIRED	
Survey Monument found ●	WELLSITE : 5.56 Acres 2.250 ha.	HOSFORD, IMPEY, WELTER AND ASSOCIATES LTD.
Survey Monument placed O	CAMPSITE : 1.77 Acres 0.715 ha.	P.O. BOX 1409, YELLOWKNIFE, X1A 2P1
Traverse Station Q	FUEL SITE : 0.15 Acres 0.063 ha.	NORTHWEST TERRITORIES
SCALE 1:5000	TOTAL : 7.48 Acres 3.028 ha	FILE NO. Y85035 R | DATE: NOV 19/85 | ckd

PCI K'ALO B-62
Planned Penetration Curve



Wellbore Profile
PCI K'ALO B–62



EXACT RADIUS OF CURVATURE METHOD

TIE-IN LOCATION

MEASURED DEPTH	743.0	M
TRUE VERTICAL DEPTH	742.4	M
DISTANCE NORTH	7.1	M
DISTANCE WEST	19.4	M

BOTTOM HOLE LOCATION

COURSE LENGTH	59.3	M
COURSE AZIMUTH	267.2	DEG
MEASURED DEPTH	1983.0	M
TRUE VERTICAL DEPTH	1980.6	M
DISTANCE SOUTH	2.9	M
DISTANCE WEST	59.3	M

REF 2350

MEAS. DEPTH M	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH M	COORDINATES + NORTH − SOUTH	COORDINATES + EAST − WEST	COURSE LENGTH M	DOG-L SEVERI DEG /
743.0	2.8	240	742.4	7.1	-19.4	20.7	0.0
752.0	2.8	240	751.4	6.9	-19.8	21.0	0.0
760.0	3.1	311	759.4	7.0	-20.1	21.3	2.0
780.0	3.0	313	779.3	7.7	-20.9	22.3	0.2
800.0	3.2	313	799.3	8.3	-21.7	23.3	0.2
820.0	3.9	308	819.3	9.3	-22.7	24.5	0.5
840.0	4.6	309	839.2	10.2	-23.8	25.9	0.2
860.0	4.1	308	859.2	11.1	-25.0	27.4	0.4
880.0	4.2	311	879.1	12.0	-26.2	28.8	0.4
900.0	4.6	310	899.0	13.0	-27.3	30.2	0.2
920.0	5.0	310	919.0	14.0	-28.6	31.9	0.2
940.0	5.0	309	938.9	15.2	-29.9	33.6	0.1
960.0	5.2	309	958.8	16.3	-31.3	35.3	0.1
980.0	4.9	310	978.7	17.4	-32.7	37.1	0.1
1000.0	4.9	311	998.7	18.5	-34.0	38.7	0.1
1020.0	4.6	313	1018.6	19.6	-35.2	40.3	0.4
1040.0	3.8	314	1038.5	20.7	-36.3	41.7	0.2
1060.0	3.7	311	1058.5	21.6	-37.2	43.0	0.2
1080.0	3.3	304	1078.5	22.3	-38.2	44.2	0.4
1100.0	2.9	285	1098.4	22.8	-39.2	45.3	0.4
1120.0	2.2	284	1118.4	23.0	-40.0	46.2	0.4
1140.0	1.6	278	1138.4	23.2	-40.7	46.8	0.3
1160.0	1.1	271	1158.4	23.2	-41.1	47.2	0.3
1180.0	1.1	232	1178.4	23.1	-41.5	47.5	0.2
1200.0	1.3	217	1198.4	22.8	-41.7	47.6	0.1
1220.0	1.2	215	1218.4	22.4	-42.0	47.6	0.0
1240.0	1.2	214	1238.4	22.1	-42.2	47.7	0.0
1260.0	1.4	215	1258.4	21.7	-42.5	47.7	0.1
1280.0	1.3	214	1278.4	21.4	-42.7	47.8	0.2
1300.0	1.3	215	1298.4	21.0	-43.0	47.8	0.1
1320.0	1.4	214	1318.4	20.6	-43.3	47.9	0.0
1340.0	1.5	215	1338.3	20.2	-43.6	48.0	0.2
1360.0	1.6	216	1358.3	19.7	-43.9	48.1	0.1
1380.0	1.4	215	1378.3	19.3	-44.2	48.2	0.1
1400.0	1.5	216	1398.3	18.9	-44.5	48.3	0.0
1420.0	1.5	218	1418.3	18.5	-44.8	48.4	0.8
1440.0	1.5	219	1438.3	18.0	-45.1	48.6	0.0
1460.0	1.4	218	1458.3	17.6	-45.4	48.7	0.2
1480.0	1.8	224	1478.3	17.2	-45.8	49.0	0.1
1500.0	1.7	222	1498.3	16.8	-46.2	49.2	0.1
1520.0	1.6	220	1518.3	16.3	-46.6	49.4	0.0
1540.0	1.7	217	1538.3	15.9	-47.0	49.6	0.1
1560.0	1.9	219	1558.3	15.4	-47.4	49.8	0.0
1580.0	1.8	218	1578.3	14.9	-47.8	50.0	0.0
1600.0	1.7	216	1598.2	14.4	-48.1	50.2	0.0
1620.0	1.9	217	1618.2	13.9	-48.5	50.5	0.1

REF 2350

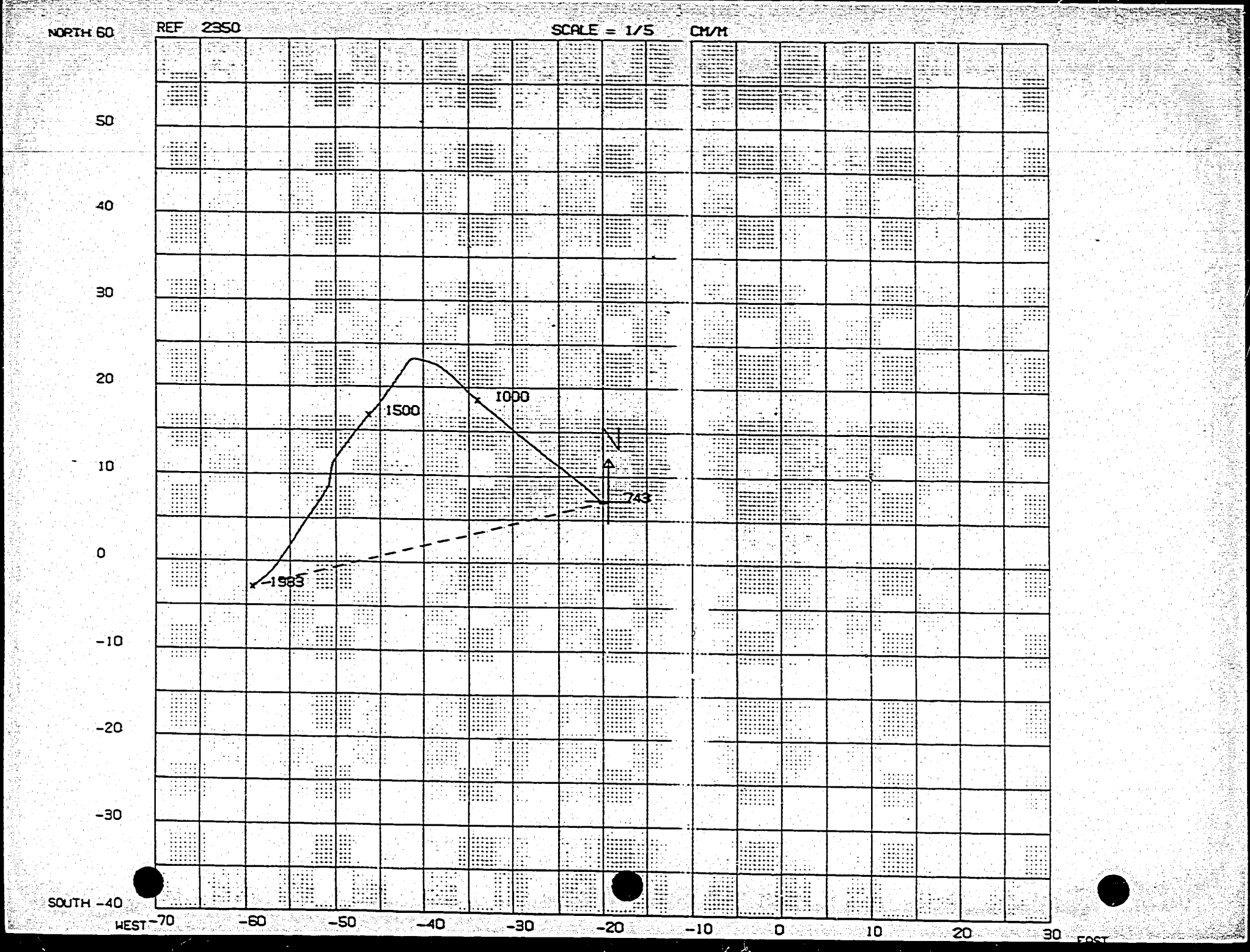
MEAS. DEPTH M	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH M	COORDINATES + NORTH - SOUTH	COORDINATES + EAST - WEST	COURSE LENGTH M	DOG-L SEVERI DEG /
1640.0	2.0	218	1638.2	13.3	-48.9	50.7	0.1
1660.0	2.0	217	1658.2	12.8	-49.4	51.0	0.1
1680.0	2.2	214	1678.2	12.2	-49.8	51.3	0.3
1700.0	2.9	209	1698.2	11.5	-50.2	51.5	1.0
1720.0	3.9	189	1718.1	10.3	-50.5	51.5	0.4
1740.0	4.5	193	1738.1	8.9	-50.7	51.5	1.3
1760.0	4.3	211	1758.0	7.5	-51.4	52.0	0.2
1780.0	4.1	212	1778.0	6.2	-52.2	52.6	0.1
1800.0	3.9	213	1797.9	5.1	-53.0	53.2	0.1
1820.0	3.9	213	1817.9	3.9	-53.7	53.8	0.0
1840.0	3.7	213	1837.8	2.8	-54.4	54.5	0.1
1860.0	3.3	214	1857.8	1.8	-55.1	55.1	0.3
1880.0	3.1	214	1877.8	0.9	-55.7	55.7	0.1
1900.0	3.1	216	1897.7	0.0	-56.3	56.3	0.1
1920.0	2.8	221	1917.7	-0.8	-57.0	57.0	0.2
1940.0	2.7	224	1937.7	-1.5	-57.6	57.6	0.2
1960.0	2.9	230	1957.7	-2.2	-58.3	58.4	0.1
1980.0	3.1	231	1977.6	-2.8	-59.1	59.2	0.0
1983.0	3.1	231	1980.6	-2.9	-59.3	59.3	0.0

REF 2350

BOTTOM HOLE LOCATION

COURSE LENGTH	59.3	M
COURSE AZIMUTH	267.2	DEGREES
MEASURED DEPTH	1983.0	M
TRUE VERTICAL DEPTH	1980.6	M
DISTANCE SOUTH	2.9	M
DISTANCE WEST	59.3	M

EXACT RADIUS OF CURVATURE METHOD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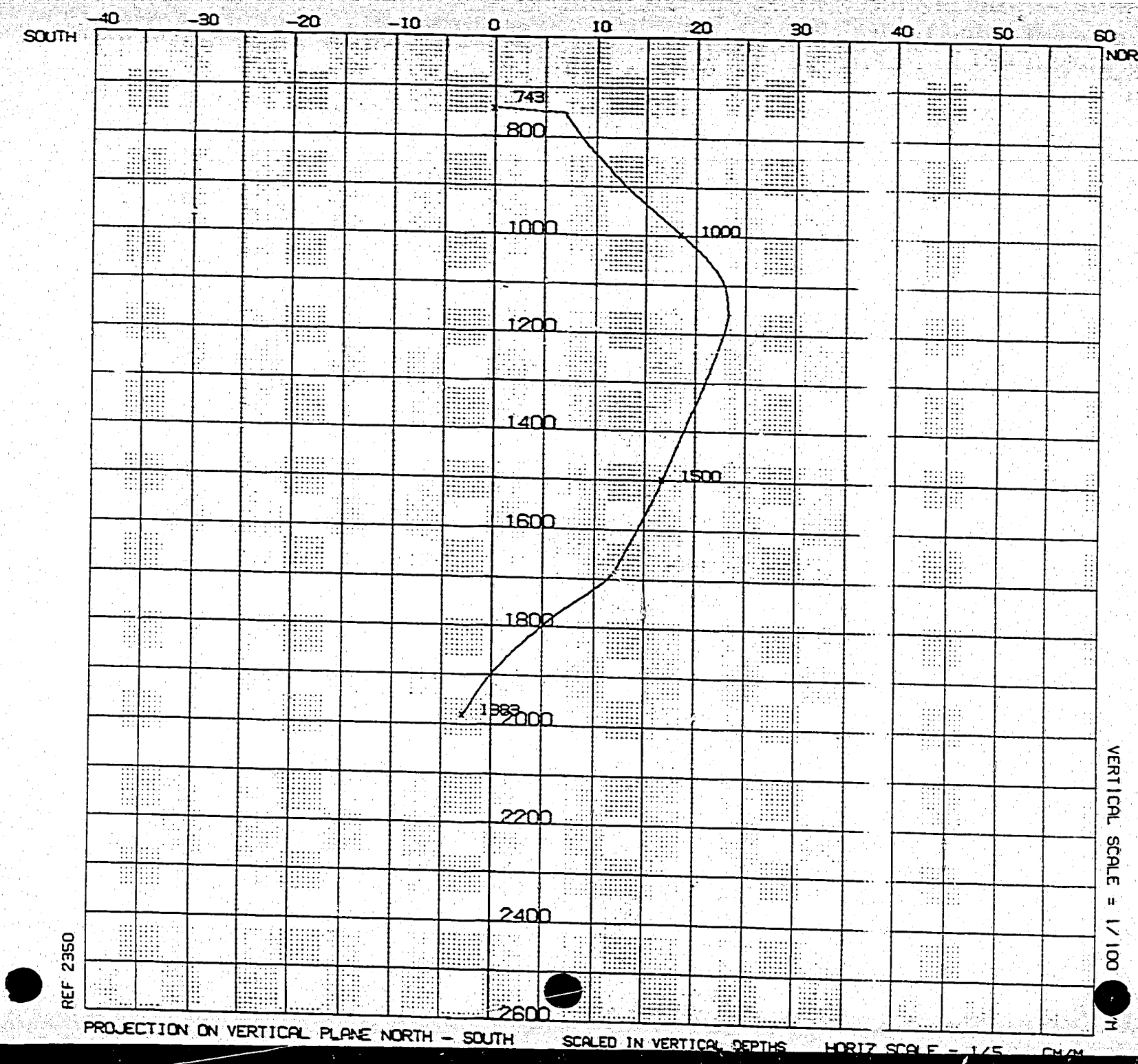
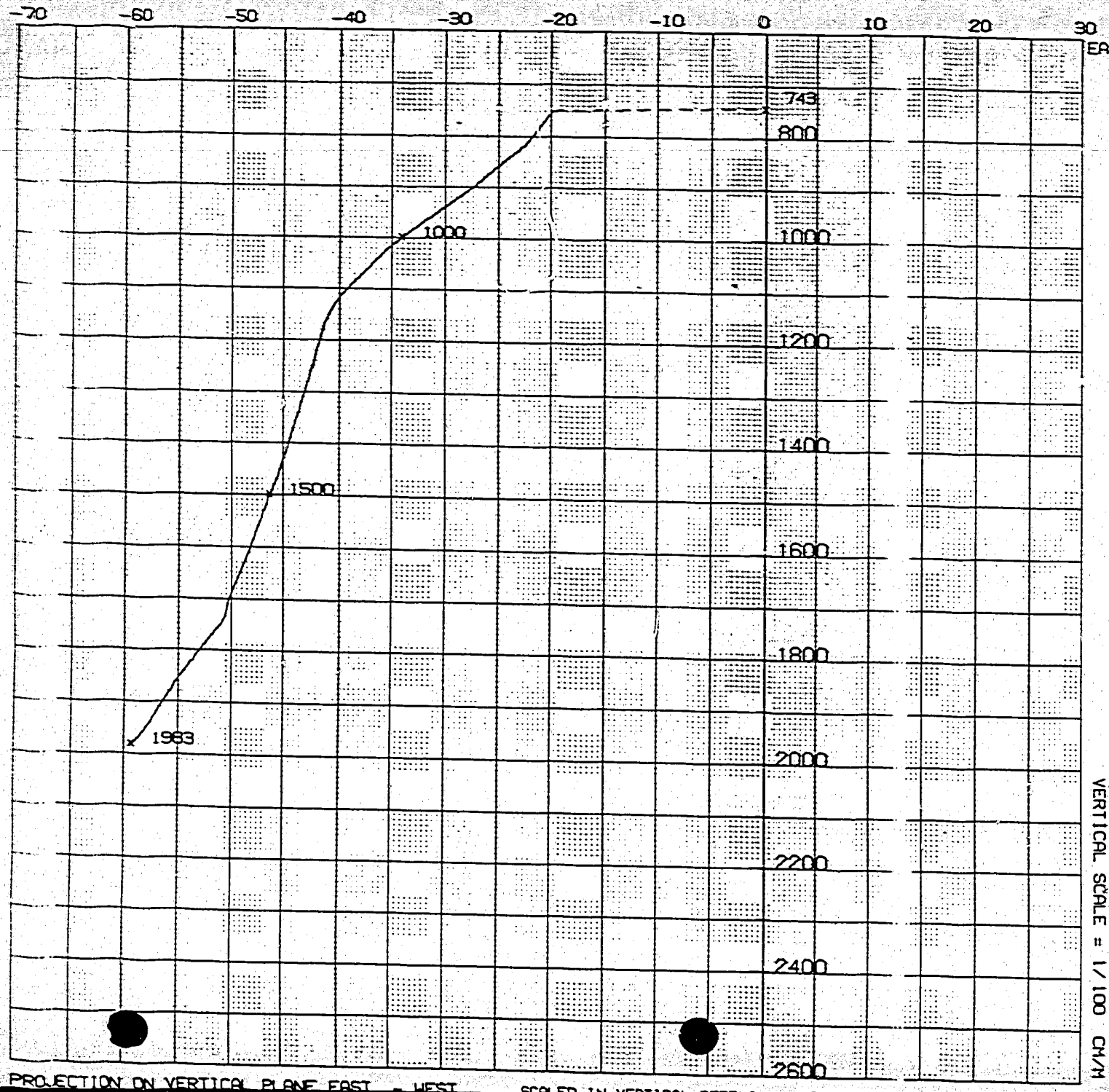
REF 2350
SCALE = 1/5 CM/M
50
40
30
20
10
0
-10
-20
-30
SOUTH -40
WEST -70
-60
-50
-40
-30
-20
-10
0
10
20
30
EAST
1500
1000
743
-1983


SOUTH
-40
-30
-20
-10
0
10
20
30
40
50
60
NORTH
743
800
1000
1000
1200
1400
1500
1600
1800
1383
2000
2200
2400
2600
REF 2350
VERTICAL SCALE = 1/100
PROJECTION ON VERTICAL PLANE NORTH - SOUTH
SCALED IN VERTICAL DEPTHS
HORIZ SCALE - 1/5


-70
-60
-50
-40
-30
-20
-10
0
10
20
30
EAST
743
800
1000
1000
1200
1400
1500
1600
1800
1963
2000
2200
2400
2600
VERTICAL SCALE = 1/100 CM/M
REF 2350
PROJECTION ON VERTICAL PLANE EAST - WEST

CANADA OIL AND GAS LANDS ADMINISTRATION
ADMINISTRATION DU PÉTROLE ET DU GAZ DES TERRES DU CANADA
MAY 6 1986
ENGINEERING BRANCH
GÉNIE

GEOLOGICAL WELLSITE REPORT

FOR

P.C.I. K'ALO

B-62

9211-P28-2-1

Prepared For

PETRO CANADA INCORPORATED

By

T. Vader

PRO GEO CONSULTANTS

March, 1986

TABLE OF CONTENTS

WELL SUMMARY

WELL NAME:	P.C.I. K'ALO B-62
COORDINATES:	65° 11' 02.6381"N, 125° 27' 04.8638 W
LOCATION:	Unit B, Section 62, Grid area 67° 00', 125° 45'
ELEVATIONS:	Ground: 108.6m KB: 113.22m
OPERATOR:	Petro Canada Incorporated
DRILLING CONTRACTOR:	Bawden Drilling Rig #52
WELLSITE SUPERVISION:	Toolpusher: J. Thorkman Engineer: G. Helinsky, B. Budd, R. Genest Geologist: T. Vader/D. Cridland
WELL SPUDDED:	2000 hours 1986/01/24
DRILLING COMPLETED:	1100 hours 1986/03/16
BIT SIZES:	Surface: 311mm Downhole: 216mm
CASING SIZES:	Surface: 244.5mm Production:
TOTAL DEPTH:	Driller: 1985m Logger:
BOTTOM HOLE FORMATION:	Mount Clarke? Katherine?
CORES CUT:	nil
LOGS RUN:	DLL-MSFL; CNL-LDT-GR-CAL; BHCS; NGT; WST, DIPMETER
DRILL STEM TESTS:	nil
RIG RELEASED:	1200 hours 1986/03/19
WELL STATUS:	Dry and abandoned

DAILY SUMMARY

1986/01/24

- Rig to spud
- Spud at 2000 hours with 609.6mm auger
- Auger to 8m K.B.

1986/01/25

- Auger to 15m K.B.
- Run 408mm conductor barrel
- Cement conductor with 450% excess
- Drill mouse hole and rat hole
- WOC (conductor barrel)

1986/01/26

- WOC
- Drill out cement and shoe with bit #1A HW J-3 (311mm)
- Drill 311mm pilot hole to 51m

1986/01/27

- Drill 311mm pilot hole to 63m
- Ream 311mm pilot hole to 445mm with hole opener
- POOH to run conductor casing
- Run 340mm conductor casing
- Circulate casing
- Cement casing

1986/01/28

- Cement casing
- WOC
- Head up diverter system

1986/01/29

- Head up diverter system
- RIH to pressure test

1986/01/30

- Pressure test diverter system
- Drill out cement and shoe
- Drill ahead to 70m with bit #1B STC FDT (311mm) with water
- Switch to air drilling
- Drill with air/foam to 164m

1986/01/31

- Drill ahead to 350m
- Prepare for bit trip
- Hole started making salty water at 348.5m
- POOH for bit

1986/02/01

- POOH for bit
- RIH with bit 2B HW J-33
- Drill 311mm hole with air/form to 380m

1986/02/02

- Drill 311mm hole with air/foam to 408m
- Trip for bit
- RIH with bit 3B HW J-22
- Drill 311mm hole with air/foam to 424m

1986/02/03

- Drill 311mm hole with air/foam to 478m

1986/02/04

- Drill 311mm hole with air/foam to 541m

1986/02/05

- Drill 311mm hole with air/foam to 610m

1986/02/06

- Drill 311mm hole with air/foam to 644m
- Trip for bit
- RIH to 220m
- Change to mud
- Clean hole to bottom with bit #4B? (RR #3B)

1986/02/07

- Clean to bottom
- Circulate and condition hole
- Drill 311mm hole with mud to 657m

1986/02/08

- Drill 311mm hole with mud to 695m

1986/02/09

- Drill 311mm hole with mud to 729m

1986/02/10

- Drill 311mm hole with mud to 739m
- Trip for bit
- RIH with bit #4B HW J-22
- Drill 311mm hole with mud to 752m

1986/02/11

- Circulate and condition hole
- POOH - rig up loggers
- Logging with Schlumberger

1986/02/12

- Run casing
- Cement casing
- WOC

1986/02/13

- WOC, head up BOP's

1986/02/14

- Nippling up BOP's
- Pressure test BOP's

1986/02/15

- RIH
- Starting to drill [illegible] of cement with water, with bit #1C J-3
- Drill ahead to 77[illegible]
- Run leak off [illegible]

1986/02/1[illegible]

- POOH
- Make up new [illegible] HW J-22
- Drill ahead [illegible]

1986/02/17

- Drill 216mm main hole to 825m
- POOH and change BHA

1986/02/18

- RIH with bit 3C HW J-33
- Drill 216mm hole to 840m
- Drill 216mm hole to 846m with decreased weight to correct deviation problems

1986/02/19

- POOH
- RIH with bit #4C and new BHA
- Drill 216mm hole to 869m with bit #4C HW JD7
- POOH to change BHA

1986/02/20

- RIH with bit 5C HW J-44
- Ream deviated hole
- Drill 216mm hole to 905m

1986/02/21

- Drill and survey to 1007m

1986/02/22

- Drill 216mm main hole to 1087m

1986/02/23

- Drill 216mm main hole to 1162m

1986/02/24

- Drill 216mm main hole to 1185m
- Trip for bit
- Change BHA
- RIH with bit #6C HW J-22
- Drill 216mm main hole to 1209m

1986/02/25

- Drill 216mm hole to 1308m

1986/02/26

- Drill 216mm hole to 1391m

1986/02/27

- Drill 216mm hole to 1462m

1986/02/28

- Drill 216mm hole to 1472m
- Trip for bit
- Inspect BHA
- Slip and cut drilling line
- RIH with bit #7C RR (HW J-33)
- Drill 216mm hole to 1474m

1986/03/01

- Drill 216mm hole to 1529m

1986/03/02

- Drill 216mm hole to 1591m

1986/03/03

- Drill 216mm hole to 1648m

1986/03/04

- Drill 216mm hole to 1676m
- Trip for bit
- Pressure test BOP's

1986/03/05

- RIH with #8C HW J-33
- Drill 216mm hole to 1718m

1986/03/06

- Drill 216mm hole to 1743m
- Reduce FOB to 8.000 DaN to correct deviation
- Drill ahead to 1750m

1986/03/07

- Drill 216mm hole with reduced FOB to 1786m

1986/03/08

- Drill 216mm hole to 1804m

1986/03/09

- Drill 216mm hole to 1872m

1986/03/10

- Drill 216mm hole to 1917m

1986/03/11

- Drill 216mm hole to 1935m
- Trip for bit
- RIH with bit #9C HW J-33
- Drill 216mm hole to 1941m

1986/03/12

- Drill 216mm hole to 1949m
- Trip for bit
- RIH with bit #10C HW J-55
- Drill 216mm hole to 1955m

1986/03/13

- Trip for bit
- RIH with bit #11C HW J-55
- Drill 216mm hole to 1957m
- Trip for bit
- RIH with bit #12C HW J-55R and junk sub
- Drill ahead to 1258m

1986/03/14

- Work junk sub
- POOH
- RIH with magnet
- Work magnet
- POOH
- RIH with bit #13C Norton-Christensen ME 375 diamond

1986/03/15

- Drill 216mm hole with Norton-Christensen Diamond Bit to 1963m
- Trip for bit
- RIH with bit #14C HW J-77
- Drill 216mm hole to 1977m

1986/03/16

- Drill 216mm hole to 1985m
- Circulate and condition hole
- POOH to log
- Logging with Schlumberger

1986/03/17 - 1986/03/19

- Logging with Schlumberger
- Run plugs
- Rig release 1200 hours 1986/03/19

CASING SUMMARY

Conductor Casing

Ran 5 jts, 340mm, 101 kg/m, BT&C conductor casing, cemented with 20 tonnes class "G" + 2% $CaCl_2$ cement. Landed at 63.0m K.B. Good returns to surface.

Surface Casing

Ran 61 joints 244.5mm, 60 kg/m, L-80, 8rd, Rge III LT&C surface casing. Cemented by Dowell; Stage I, 20 tonnes Class "G" with 2% $CaCl_2$ + 0.5% T.I., Stage II, 4 tonnes Class "G" with 2% $CaCl_2$ + 0.5% T.I. Landed at 752.0m. Plug down at 1986/02/11 at 1140 hours. Good cement returns to surface.

ABANDONMENT SUMMARY

Plug #1 1985 - 1885m

Cemented with 6 tonnes Class "G" + 0.5% $CaCl_2$. Plug down at 0500 hours 1986/03/18.

Plug #2 782 - 724m

Cemented with 5 tonnes Class "G" + 2% $CaCl_2$. Plug down at 0800 hours 1986/03/18.

Plug #3 surface - 18m

Cemented with 9 tonnes Class "G". Plug down at 2130 hours 1986/03/18.

GEOLOGICAL SUMMARY

P.C.I. K'ALO B-62 was drilled as an exploration well to evaluate hydrocarbon potential of the Mount Clarke Sandstone. A large Precambrian anticlinal structure was discerned through seismic evaluation, about 40 kilometers north west of the town of Fort Norman.

Shot point 213 of seismic line 8513 was picked as the well location due to its position near the apex of the structure.

The surface of the lease was composed mainly of frozen mud and organic material, typical of boreal swamp terrain.

Samples were caught from 12 meters to a total depth of 1985m.

From 12 meters to a depth of about 30 meters samples consisted of a light grey claystone with occasional silt grains of recent geological time.

Glacial till was prevalent from 30 to 55 meters and consisted of sub-angular to angular coarse sands and gravels consisting of pre-existing granite, dolomite, shale, sandstone and limestone with rare cherts.

At 55 meters a marginally competent shale was encountered. The shales with minor sandstone beds continued through to about 115 meters.

At 115 meters a varicolored chert pebble conglomerate was encountered. Shale was once again encountered at 140 meters. From 140 meters to 348 meters shale was the major rock type with abundant black medium grained chert trains. Occasional bands of sandstone occurred throughout this interval.

From 348 meters to 366 meters a detrital zone consisting of chert grains and pebbles was encountered. The chert was formed as a result of silicification (metasomatic replacement) of the underlying Franklin Mountain formation. This portion of the hole was drilled with air as a drilling fluid. Upon penetration of this zone the hole began producing salt water at a rate of about 100 barrels per hour. The salinity of the water was about 16,000 parts per million, about half that of normal sea water. Permission was granted by the forestry department to divert this produced water off the lease. Air drilling was continued until 643 meters when the forestry department disallowed any more water to be diverted off the lease.

The Franklin Mountain formation was penetrated at 366 meters. From samples it seems that more than the upper half of the Franklin Mountain formation was eroded. The upper half of the formation usually has varying amounts of chert included in the dolomite. The Franklin Mountain in this well contained no chert. The cryptocrystalline to fine crystalline dolomites of the formation in this well exhibited very little porosity; however salt water production while drilling with air increased to a maximum of about 400 barrels per hour.

Sample quality throughout this zone steadily deteriorated with depth due to caving of the soft Cretaceous shales uphole. By 643 meters samples were commonly contaminated by 90 - 95% cavings. Sample quality greatly improved at 643 meters when the rig switched to drilling with mud.

Dolomite was encountered through to casing point at 752 meters.

From 752 meters to 889 meters the Franklin Mountain Formation consisted of interbeds of tight cryptocrystalline dolomite, tight limestone and the base red and green shales.

The change from the Franklin Mountain to the Saline River formation is gradational and is vaguely marked by a general increase in the rate of penetration and an increase in the amount of shale.

The Saline River Salt Member occurred at 939 meters in this well. The Salt Member consisted mainly of halite with minor beds of anhydrite and shale interspersed at irregular intervals.

At 1019 meters the Mount Cap formation was encountered. From 1019 meters to a 270 meters the Mount Cap consisted of medium grey and medium grey/green shales.

From 1270 meters to about 1470 meters the Mount Cap consisted of grey green shales interspersed with minor bands of tight dolomite and limestone.

The remainder of the Mount Cap formation consisted of mainly grey and grey/green shales with minor thin bands of dolomite and siltstone with rare bands of sandstone. Porosity was tight to poor in the dolomites, sands and silts. No shows were observed.

At 1942 meters a white to light grey, quartzose, sand was encountered. The sand was silt to medium grained and was very well cemented with silica. Porosity was tight to poor throughout the sand. Drilling the sand was very difficult due to the abrasiveness of the sand caused by the abundant silica cement. Very hard tin tungsten carbide insert bits were used to drill the formation. At this point comparisons were made to the lithology of the Proterozoic Katherine formation encountered in the P.C.I. Sammons well drilled in 1984. The lithology of the Katherine formation and the sandstone encountered in K'ALO were quite similar

and had similar drilling properties. Also in the K'ALO well the lithology of the Proterozoic was unknown and could possibly be the Katherine formation. At 1985 meters, after penetrating the sand 43 meters and using seven bits in the process it was decided to cease drilling and and prepare to log. At the time of writing there is still some conjecture as to whether the formation at total depth was the Mount Clarke formation or the Katherine formation.

Based on log results the well was abandoned and the rig was released on March 19, 1985.

FORMATION TOPS

K.B. = 113.22m

FORMATION	SAMPLE		LOG	
	Depth (m)	Subsea (m)	Depth (m)	Subsea (m)
Detrital Zone	348	-234.78	347.5	-234.28
Franklin Mt.	366	-252.78	367.0	-253.78
Saline River Fm.	889	-775.78	889.0	-775.78
Salt Member	939	-825.78	939.0	-825.78
Mount Cap	1019	-905.78	1019.0	-905.78
Mt Clarke/Katherine?	1942 0	-1828.78	1939.0	-1825.78
F.T.D.	1985.0	-1871.78	1982.0	-1868.78

SAMPLE DESCRIPTIONS

Depth	Description
0 - 12m	Conductor casing (cemented 3 times with a total of approx. 300% excess)
12 - 20m	Samples masked by 100% cement from conductor pipe. (Lithology probably clay and organic material).
20 - 25m	Claystone? light grey, soft, occasional silt grains, chips break apart in wash water
25 - 30m	Missed sample
30 - 55m	Glacial till; subangular to angular coarse sands and gravels consisting of granite, dolomite, shale, rare quartz sandstone chips, rare limestone, rare cherts
55 - 63.5m	Shale: medium grey, medium grey/green, blocky, soft, slightly silty in part, slightly waxy in part, occasional calcareous white specks, occasionally micromicaceous
63.5 - 65m	No sample
65 - 70m	100% cavings of cement
70 - 80m	No sample
80 - 90m	Shale; light to medium grey, occasionally grey/green, blocky, soft, abundant black and grey coarse chert grains and pebbles (well rounded) trace of sandstone
90 - 100m	Interbeds of Shale as above and Sandstone; medium grey/brown, quartz and chert, fine to medium grained, subangular to subrounded, moderately sorted, minor silica cement, very argillaceous matrix, soft, friable, poor to fair effective intergranular porosity, common coarse chert grains and pebbles
100 - 115m	Missed samples
115 - 120m	Chert Pebble Conglomerate; varicolored, abundant chert pebbles and grains in a matrix of Sandstone; light to medium grey/brown, grey, quartz and chert, very fine to fine grained, subangular, moderately sorted, minor to abundant silica and siderite cement, argillaceous to very argillaceous matrix, soft to moderately hard, poor to fair effective intergranular porosity, trace of pyrite

120 - 125m Missed Sample

125 - 135m Shale: medium grey, blocky, soft, silty and sandy to very silty and sandy, abundant varicolored chert grains and pebbles included, grades to sandstone in part

135 - 140m Missed sample

140 - 145m Shale: medium to dark grey/brown, black, blocky, soft, micromicaceous, silty and sandy to very silty and sandy, abundant pyrite, abundant coarse chert grains and pebbles

145 - 155m Interbeds of Shale: as above, and Sandstone medium brown, quartz, very fine to fine grained, subangular, well sorted, moderately hard, silica and siderite cement, argillaceous to very argillaceous matrix, poor effective intergranular porosity, trace of coarse chert grains and pebbles trace of pyrite

155 - 165m Shale: medium brown, medium grey/brown, blocky, soft, micromicaceous, sandy and silty in part: with abundant bands of
Sandstone: medium brown, medium grey, quartz, very fine to fine grained, subangular, well sorted, silica and siderite cement, argillaceous to very argillaceous matrix, poor effective intergranular porosity: common coarse chert grains and pebbles, abundant pyritized plant fragments

165 - 170m Shale: medium grey, soft, bentonitic, silty and sandy in part, blocky, trace of sandstone, trace of chert grains and pebbles, common pyritized plant fragments

170 - 180m Shale: as above, and
Shale: dark grey/brown, blocky, micromicaceous, moderately hard, sideritic common aragonite, common pyritized plant fragments

180 - 197m Shale: medium to dark grey/brown, blocky, moderately hard, micromicaceous in part, slightly siliceous and sideritic in part, common aragonite (inoceramus) trace of pyritized plant fragments, minor coarse grained chert grains and pebbles, trace of siltstone

197 - 201m Shale: medium to dark grey/brown, medium grey, blocky, soft to moderately hard, siliceous and sideritic in part, silty to very silty in part, grades to very argillaceous sandstone in part, trace of pyritized plant fragments, trace of aragonite (Inoceramus) trace of coarse chert grains and pebbles (well rounded)

201 - 216m — Shale: medium grey/brown, blocky, moderately hard, slightly siliceous and sideritic in part, minor soft blocky silty light grey shale, trace of pyritized plant fragments, trace of aragonite (Inoceramus), trace of well rounded coarse chert grains and pebbles.

216 - 232m — Shale: medium grey/brown, medium grey, blocky, moderately hard, slightly siliceous and sideritic in part, silty and sandy in part common pyritized plant fragments, common coarse well rounded chert grains and pebbles, trace of aragonite (Inoceramus)

232 - 242m — Shale; medium grey, medium grey/brown, blocky, moderately hard, siliceous and sideritic in part, silty and sandy in part, abundant well rounded coarse chert grains and pebbles, common pyrite, trace of aragonite, trace of sandstone

242 - 258m — Shale: light to medium grey, blocky, soft, silty and sandy to very silty and sandy, trace of well rounded coarse chert grains and pebbles, trace of pyritized plant fragments.

258 - 268m — Shale: medium grey, medium grey/brown, blocky, soft, micromicaceous, silty and sandy in part, common well rounded coarse chert grains and pebbles, trace of pyrite, with rare thin bands of
Sandstone: light to medium grey/brown, quartz, minor chert, very fine grained, subangular, well sorted, minor silica cement, very argillaceous matrix, poor effective intergranular porosity

268 - 277m — Shale; medium grey, occasionally grey/brown, blocky, soft, micromicaceous, very silty and sandy in part, with occasional bands of
Sandstone; light to medium grey, quartz, minor chert, very fine grained, subangular, well sorted, minor to abundant silica cement, trace of pyrite cement, trace of calcite cement, slightly argillaceous to very argillaceous matrix, poor effective intergranular porosity; common well rounded coarse chert grains and pebbles, trace of pyrite

277 - 286m — Shale; light to medium grey/brown, blocky to subfissile, micromicaceous, silty to very silty in part, sideritic in part, soft to moderately hard with occasional bands of
Sandstone; light to medium grey, quartz and minor chert, very fine to fine grained, subangular, well sorted, minor silica and siderite cement, slightly argillaceous to argillaceous matrix, poor to effective intergranular porosity, abundant varicolored well rounded coarse chert grains and pebbles, trace of pyrite.

285 - 298m — Shale: light to medium grey, medium grey/brown, blocky, soft to moderately hard, micromicaceous in part, very silty and sandy in part, grades to sandstone in part, common very argillaceous sandstone, trace of pyritized plant fragments, trace of well rounded coarse chert grains and pebbles

298 - 312m — Shale; light to medium grey, light to medium grey/brown, medium brown, blocky, micromicaceous in part, soft to moderately hard, sideritic in part, very silty and sandy in part, grades to very argillaceous sandstone, common chert grains and pebbles, trace of pyrite, trace of aragonite

312 - 325m — Shale; light to medium grey, grey/brown, blocky, soft to moderately hard, very silty and sandy in part, grades to sandstone, abundant well rounded coarse chert grains and pebbles, trace of aragonite (Inoceramus)

325 - 330m — Missed Sample

330 - 348m — Shale: dark grey to black, blocky to subfissile, micromicaceous, occasional calcareous white specks, very silty and sandy in part, occasional carbonaceous flecks, trace of pyrite

348m DETRITAL ZONE (-234.78m SS)

348 - 366m — Sand and Gravel: consisting of well rounded chert grains and pebbles formed from weathering of pre-existing Franklin Mountain Formation:
Chert grains; white, light grey, clear, tan, fine to coarse grained, subrounded, poorly sorted, unconsolidated, to poorly cemented with silica, abundant quartz crystals

366m FRANKLIN MOUNTAIN (-252.78m SS)

366 - 371m — Dolomite: tan, light grey/brown, cryptocrystalline to very fine crystalline, subhedral, massive texture, clean to slightly argillaceous, hard, tight

371 - 378m — Dolomite: light to medium grey/brown, tan, cryptocrystalline to fine crystalline, subhedral, massive texture, slightly argillaceous to argillaceous, tight, rare shale laminae

378 - 390m — Dolomite; cream, tan to light brown, very fine to fine crystalline, occasionally medium crystalline, subhedral, massive texture, clean to slightly argillaceous, tight to poor vug porosity

390 - 400m — Dolomite: tan, light to medium brown, very fine to fine crystalline, occasionally medium crystalline, subhedral, massive texture, clean to slightly argillaceous, tight to poor vug porosity

400 - 407m — Dolomite; cream to tan, light grey/brown, cryptocrystalline to microcrystalline, subhedral, massive texture, clean to slightly argillaceous, tight

407 - 420m — Dolomite; tan, light grey/brown, cryptocrystalline to very fine crystalline, subhedral, massive texture, slightly argillaceous, tight to trace intercrystalline porosity

420 - 435m — Dolomite; cream to tan, light grey/brown, cryptocrystalline to microcrystalline, subhedral, massive texture, clean to slightly argillaceous, tight to trace intercrystalline porosity, trace of grey/green shale partings

435 - 442m — Dolomite; white, cream to tan, light grey/brown, cryptocrystalline to microcrystalline, occasionally very fine to fine crystalline, subhedral, massive texture, occasionally sucrosic, clean to slightly argillaceous, tight to poor intercrystalline and minor vug porosity

442 - 451m — Dolomite; cream to tan, cryptocrystalline to microcrystalline, occasionally very fine crystalline, subhedral, massive texture, occasionally sucrosic, clean, tight to occasionally poor intercrystalline and vug porosity; trace of shale partings

451 - 460m — Dolomite; cream, tan, cryptocrystalline to microcrystalline, rarely very fine to fine crystalline, subhedral, massive texture, rarely sucrosic, clean to very slightly argillaceous in part, tight to rarely poor intercrystalline and vug porosity, trace of green shale partings

460 - 470m — Dolomite; cream, tan, light brown, cryptocrystalline to microcrystalline, rarely very fine to fine crystalline, subhedral, massive texture, rarely sucrosic, clean to slightly argillaceous in part, tight to rarely poor vug and intercrystalline porosity, trace shale

470 - 486m — Dolomite; cream, tan, light brown, cryptocrystalline, occasionally microcrystalline, subhedral, massive texture, clean to slightly argillaceous in part, tight

486 - 495m	Dolomite; cream, tan, rarely light brown, cryptocrystalline, anhedral, massive texture, clean, tight
495 - 501m	Dolomite; cream, tan, occasionally light brown, cryptocrystalline to microcrystalline, subhedral, massive texture, clean to slightly argillaceous, tight to trace vug porosity, trace of green shale partings
501 - 525m	Dolomite; cream to light brown, cryptocrystalline to microcrystalline, anhedral, massive texture, clean to slightly argillaceous, tight; * Samples from 490 - 530m are contaminated with about 80 - 90% cavings from Cretaceous sediments uphole
525 - 540m	Dolomite; cream to light brown, cryptocrystalline to microcrystalline, anhedral, massive texture, clean to slightly argillaceous, tight
540 - 550m	Dolomite; cream, tan, occasionally light brown, cryptocrystalline to microcrystalline, anhedral, massive texture, clean to slightly argillaceous, tight
550 - 560m	Dolomite; cream, tan, light brown, cryptocrystalline to microcrystalline, limey in part, rarely very fine crystalline, anhedral to subhedral, massive texture, clean to slightly argillaceous, tight
560 - 569m	Dolomite; cream, tan, light to medium grey/brown, cryptocrystalline to microcrystalline, limey in part, anhedral massive texture, clean to argillaceous, tight; trace of pyrite inclusions, trace of grey/green shale partings
569 - 576m	Dolomite; tan to light brown, cryptocrystalline to microcrystalline, limey, subhedral, massive texture, slightly argillaceous to argillaceous, tight to poor intercrystalline porosity;
576 - 586m	Dolomite; cream to tan, light brown, cryptocrystalline to microcrystalline, limey, subhedral, massive texture, clean to slightly argillaceous, tight, trace of fossils, trace of light green, light grey/green shale partings
586 - 594m	Dolomite; tan to light brown, limey, cryptocrystalline, occasionally microcrystalline, anhedral, massive texture, clean to slightly argillaceous, tight; trace of light green, light grey/green shale partings

594 - 610m	Dolomite: cream, tan, light brown, light grey/brown, limey, cryptocrystalline to microcrystalline, subhedral, massive texture, slightly argillaceous to argillaceous, tight trace of grey/green shale, trace of limestone
610 - 618m	Dolomite; cream, tan, occasionally light brown, limey, cryptocrystalline, occasionally microcrystalline, anhedral, massive texture, slightly argillaceous to argillaceous, tight, trace of grey/green shale partings, trace of limestone
618 - 625m	Dolomite; cream, tan, light to medium brown, limey, cryptocrystalline, occasionally microcrystalline, anhedral massive texture, slightly argillaceous to argillaceous, tight; trace of shale partings, trace of limestone
625 - 643m	Dolomite; cream to light brown, limey, cryptocrystalline to microcrystalline, subhedral, massive texture, clean to slightly argillaceous, tight; rare shale partings, commonly grades to limestone
643 - 653m	Limestone; light to dark brown, dolomitic in part, micritic, slightly argillaceous to argillaceous, slightly silty in part, trace of pyrite inclusions, tight; grades to minor bands and pockets of limey dolomite
653 - 660m	Limestone; as above, with rare thin bands and pockets of Dolomite; cream to tan, limey to very limey, cryptocrystalline, anhedral, massive texture, slightly argillaceous, tight
660 - 669m	Limestone; cream to medium grey/brown, micritic to very fine crystalline, dolomitic to very dolomitic in part, clean to slightly argillaceous, tight; with rare thin bands and pockets of Limestone; as above
669 - 678m	Limestone; cream to medium brown, slightly dolomitic to dolomitic, micritic to very fine crystalline, clean to slightly argillaceous, tight; trace of dolomite

678 - 691m — Limestone; cream, tan, light to medium grey/brown, dolomitic, micritic, rarely very fine crystalline, slightly silty in part clean to slightly argillaceous, tight; rare dark grey shale partings, trace of pyrite, with occasional thin bands and pockets of
Dolomite; white to dark brown, cryptocrystalline to microcrystalline, slightly argillaceous to argillaceous, tight

691 - 704m — Interbeds of Limestone; cream to medium grey/brown, dolomitic to very dolomitic, micritic to very fine crystalline slightly argillaceous to argillaceous, tight; and
Dolomite; tan to light brown, very limey, cryptocrystalline to microcrystalline, subhedral, massive texture, slightly argillaceous, tight to trace of intercrystalline porosity

704 - 718m — Dolomite; cream to medium grey, limey to very limey, cryptocrystalline to occasionally microcrystalline, anhedral, massive texture, trace of disseminated pyrite, slightly argillaceous to very argillaceous, tight to trace of vug porosity grades to occasional bands and pockets of
Limestone; cream to medium grey, very dolomitic, micritic, occasionally very fine crystalline, slightly argillaceous to argillaceous, tight; occasionally grades to grey/green dolomitic shale

718 - 728m — Interbeds of Limestone; cream to medium grey, light brown, dolomitic to very dolomitic, micritic to very fine crystalline, slightly argillaceous to argillaceous, tight and
Dolomite; cream to medium grey, limey to very limey, cryptocrystalline to microcrystalline, clean to very argillaceous, tight to trace of intercrystalline porosity with rare thin bands of
Shale; medium grey, medium grey/green, blocky dolomitic, slightly micromicaceous, moderately hard

728 - 738m — Dolomite; cream, light to medium grey, limey to very limey, cryptocrystalline to microcrystalline, slightly argillaceous to very argillaceous, tight with occasional bands and pockets of
Limestone; medium to dark grey/green, blocky, dolomitic, slightly micromicaceous, trace of disseminated pyrite, moderately hard

738 - 752m — Dolomite; cream to tan, medium to dark grey/brown, limey, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly argillaceous to argillaceous, tight; with rare thin bands of
Shale; medium to dark grey, grey/green, blocky, dolomitic to very dolomitic, slightly micromicaceous in part, moderately hard

752 - 761m — Dolomite: cream to tan, light to dark grey/brown, limey to very limey in part, cryptocrystalline to microcrystalline, subhedral, massive to sucrosic texture, clean to very argillaceous, tight to poor intercrystalline porosity, trace of chert, with common bands of
Shale; medium grey, blocky, dolomitic to very dolomitic, moderately hard, micromicaceous, slightly bituminous in part

761 - 775m — Dolomite: medium to dark grey/brown, cryptocrystalline, occasionally microcrystalline, limey in part, anhedral, massive texture, slightly argillaceous to very argillaceous, tight to poor vug porosity, minor dolomite cement in vugs, and beds of
Dolomite; light brown, microcrystalline to very fine crystalline, subhedral to euhedral, sucrosic texture, clean to slightly argillaceous, poor intercrystalline porosity, trace of chert, with occasional thin bands and partings of
Shale; medium to dark grey, blocky to subfissile, micromicaceous, slightly dolomitic, moderately hard, bituminous in part

775 - 783m — Dolomite; light brown, microcrystalline to very fine crystalline, occasionally cryptocrystalline, limey in part, slightly silty in part, subhedral, sucrosic texture, trace of anhydrite cement, clean to slightly argillaceous, poor to fair intercrystalline porosity, trace of limestone, trace of shale

783 - 790m — Dolomite; as above, interbedded with
Dolomite: tan and light grey/brown, cryptocrystalline, anhedral, massive texture, limey in part slightly argillaceous to argillaceous tight, trace of limestone, trace of anhydrite, with rare thin bands of
Shale; medium grey, medium grey/green, dolomitic to very dolomitic, blocky to subfissile, micromicaceous in part, moderately hard, grades to argillaceous dolomite in part

790 - 800m — Dolomite; light to medium grey/brown, cryptocrystalline to microcrystalline, subhedral, massive texture, moderately hard, limey, slightly argillaceous to very argillaceous, tight, grades to dolomitic shale in part, with rare bands of
Shale; medium to dark grey, blocky, micromicaceous in part, dolomitic, moderately hard, grades to argillaceous dolomite

800 - 818m — Dolomite; cream to tan, light to medium grey/brown, cryptocrystalline to microcrystalline, limey in part, subhedral, massive texture, trace of anhydrite cement, clean to argillaceous, tight; grades to dolomitic shale in part, with occasional thin bands or laminae of
SHale; light to medium grey, medium grey/green, blocky to subfissile, micromicaceous in part, dolomitic moderately hard, grades to very argillaceous dolomite in part

818 - 830m — Dolomite; cream, light brown, medium grey, predominantly cryptocrystalline to microcrystalline, occasionally fine crystalline, massive texture, occasionally sucrosic, clean to argillaceous, limey, rare stylolites, tight to poor intercrystalline porosity, with rare thin bands of Shale; medium grey, blocky, dolomitic, moderately hard

830 - 840m — Interbeds of Shale; dark grey, dark brown, dolomitic, moderately hard, blocky to subfissile, micromicaceous, and
Dolomite; cream to light brown, medium to dark grey, cryptocrystalline to microcrystalline, occasionally very fine crystalline, massive texture, occasionally sucrosic, clean to very argillaceous, tight

840 - 845m — Interbeds of Shale; medium grey, medium grey/green, dolomite, moderately hard, blocky to subfissile, micromicaceous, and
Dolomite; cream to light brown, medium grey/green, cryptocrystalline to microcrystalline, rarely very fine crystalline, slightly limey to very limey, massive texture, clean to very argillaceous, tight

845 - 855m — Interbeds of Dolomite; cream to light brown, medium grey, cryptocrystalline to microcrystalline, rarely very fine crystalline, massive texture, rare sucrosic texture, slightly limey, clean to argillaceous, common stylolites, tight, and
Shale; dark grey, dark grey/green, very hard, platy to blocky, slightly dolomitic to dolomitic

855 - 865m — Interbeds of Dolomite; cream, light to medium brown, cryptocrystalline to microcrystalline, commonly very fine crystalline, slightly limey to very limey, slightly argillaceous, slightly silty, massive texture, occasional sucrosic texture tight and
Shale; dark grey/green, occasional medium brown, blocky to subfissile, slightly dolomitic to dolomitic, hard, micromicaceous

865 - 879m — Interbeds of Dolomite; cream, light grey, light brown, light red/brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, silty, subhedral, massive to sucrosic texture, limey in part, clean to argillaceous tight to poor intercrystalline porosity; and
Shale; medium to dark grey, medium grey/green, trace reddish/brown, blocky to subfissile, micromicaceous in part, dolomitic in part, moderately hard

879 - 889m — Interbeds of Mainly Dolomite; cream, tan, light brown, occasional reddish tinge, cryptocrystalline to microcrystalline occasionally very fine crystalline, silty in part limey in part, clean to argillaceous, massive texture, tight; and
Shale; medium to dark grey, occasionally medium grey/green, occasional reddish tinge, blocky to subfissile, micromicaceous in part, dolomitic in part, moderately hard

889m SALINE RIVER (-775.78m SS)

889 - 895m — Interbeds of Dolomite; cream, tan, light grey/brown, reddish brown, cryptocrystalline, occasionally microcrystalline, limey in part, common anhydrite cement, slightly argillaceous to very argillaceous, massive texture, chalky texture in part, tight, and
Shale; medium grey, light green, reddish grey, blocky to subfissile, dolomitic in part, micromicaceous in part, soft to moderately hard, trace of anhydrite

895 - 907m — Interbeds of Shale; red, green, grey/green, blocky, soft to moderately hard, dolomitic and anhydrite cements, slightly silty in part, trace of disseminated pyrite, and
Siltstone; red quartz, silt to very fine grained, subangular, well sorted, dolomite and anhydrite cement, hard, clean to slightly argillaceous, poor intergranular porosity, and

Dolomite; white to cream, cryptocrystalline to microcrystalline, occasionally very fine crystalline, massive texture, slightly silty, common anhydrite cement and pockets, slightly argillaceous in part, tight; with rare thin laminae and pockets of
Anhydrite; white to red, soft, massive texture, occasional vitreous lustre, dolomitic in part, commonly interlaminated with shales

907 - 925m Interbeds of Shale; red, light green, red/brown, blocky to subfissile, micromicaceous, soft to moderately hard, dolomitic in part slightly anhydritic in part, occasional salt casts, and
Dolomite; cream, tan, light brown, cryptocrystalline, anhedral, massive texture, occasional chalky texture, silty and sandy in part, limey in part, anhydritic in part, slightly argillaceous, to argillaceous, tight, trace of dolomitic siltstone

925 - 939m Interbeds of Shale; light green, red, brown, blocky to subfissile, micromicaceous in part, waxy in part, slightly dolomitic in part, slightly anhydritic in part, soft to moderately hard, and
Dolomite; cream, tan, light brown, cryptocrystalline, very silty in part, slightly anhydritic in part, very slightly argillaceous, anhedral, massive texture, tight; grading into common bands of
Siltstone; cream, tan, quartz, silt to very fine grained, subangular, well sorted, dolomite cement, trace of anhydrite cement, clean, tight

939m SALINE RIVER SALT MEMBER (-825.78m SS)

939 - 962m Halite; clear, white, occasionally orange (iron staining?), vitreous, soft, with rare thin bands of
Anhydrite; white, soft, fibrous in part, salty lustre in part, and rare thin bands of
Shale; light green, red, soft to moderately hard, blocky, slightly anhydritic

962 - 976m Halite; clear, white, rarely orange, vitreous lustre, soft, with rare thin bands or laminae of
Shale; light to medium green, reddish brown, blocky moderately hard, micromicaceous, anhydritic in part, trace of anhydrite,

976 - 996m Halite; clear, white, rarely orange, vitreous soft, trace of shale, trace of anhydrite

996 - 1019m Halite: clear, white, vitreous, soft, trace of shale, trace of anhydrite

1019m MOUNT CAP FORMATION (-905.78m SS)

1019 - 1025m Shale; light grey/green, medium to dark grey, blocky to subfissile, micromicaceous, moderately hard, dolomitic

1025 - 1036m Shale; medium to dark grey, medium grey/green, blocky, micromicaceous, dolomitic in part, sandy in part, bituminous in part, moderately hard, trace of dolomite

1036 - 1046m Shale; medium to dark grey, medium grey/brown, grey/green, blocky, micromicaceous, dolomitic to very dolomitic, slightly sandy in part, moderately hard, slightly bituminous in part

1046 - 1057m Shale: medium to dark grey, dark grey/brown, dark brown, blocky, micromicaceous, dolomitic to very dolomitic, sandy in part, bituminous in part, moderately hard, with occasional thin bands and laminae of
Dolomite; cream, light brown to dark grey/brown, cryptocrystalline to microcrystalline, anhedral, massive texture, limey in part, argillaceous to very argillaceous, commonly bitumen engrained, tight

1057 - 1067m Shale; medium to dark grey, grey/green, blocky to subfissile, micromicaceous, dolomitic in part, bituminous in part, moderately hard, minor dolomite veining

1067 - 1077m Shale; medium grey, medium grey/green, occasionally grey/brown, blocky to subfissile, micromicaceous, slightly dolomitic, moderately hard, trace of dolomite veining

1077 - 1083m Shale; medium grey, medium grey/brown, medium brown, blocky to subfissile, micromicaceous, slightly dolomitic in part, trace of dolomite

1083 - 1095m Shale: medium grey, medium grey/green, blocky to subfissile, micromicaceous, slightly dolomitic in part, trace of dolomite, trace of disseminated pyrite

1095 - 1110m Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous in part, waxy in part, very slightly dolomitic in part, moderately hard, trace of ostracoda?

1110 - 1125m Shale; medium grey/green, medium grey, blocky to subfissile, slightly micromicaceous in part, very slightly dolomitic in part, moderately hard, trace of ostracoda?

1125 - 1136m Shale; medium grey, medium grey/green, medium brown, blocky to subfissile, micromicaceous, dolomitic in part, sideritic in part, moderately hard, trace dolomite

1136 - 1150m Shale; medium grey, (slight green tinge), blocky to subfissile, micromicaceous, waxy in part, dolomite in part, moderately hard, trace of disseminated pyrite

1150 - 1155m Missed Sample

1155 - 1160m Shale; as above with rare thin laminae of
Dolomite; cream, tan, light grey, cryptocrystalline, anhedral, massive texture, slightly argillaceous, limey, tight

1160 - 1177m Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous, waxy in part, dolomitic in part, moderately hard, trace of pyrite,

1177 - 1180m Shale; dark grey, blocky, very dolomitic, very micromicaceous, slightly bituminous, moderately hard

1180 - 1195m Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous, waxy in part, dolomitic in part, moderately hard, slightly sandy in part

1195 - 1205m Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous, moderately hard, dolomitic to very dolomitic in part, waxy in part, trace of dolomite

1205 - 1215m Shale; medium grey/green, medium grey, blocky to subfissile, slightly micromicaceous to very micromicaceous, moderately hard, very slightly dolomitic, trace of fossil fragments, trace dolomite trace siltstone

1215 - 1226m Shale; medium grey/green, medium grey, maroon tinge, blocky to subfissile, slightly micromicaceous to very micromicaceous, moderately hard, trace of ostracoda?

1226 - 1236m Shale; medium grey/green, medium grey, rarely brown, blocky to subfissile, micromicaceous, moderately hard, slightly dolomitic,

1236 - 1247m Shale; medium grey, medium grey/green, blocky, occasionally subfissile, micromicaceous to very micromicaceous, occasionally silty, slightly dolomitic, moderately hard, trace of dolomite

1247 - 1263m Shale; medium grey, slight green tinge, blocky, moderately hard, micromicaceous to very micromicaceous, slightly dolomitic, trace of shell fragments

1263 - 1271m Shale; medium grey, blocky, moderately hard, micromicaceous to very micromicaceous, slightly dolomitic, trace of shell fragments, trace of glauconitic siltstone

1271 - 1278m Shale; medium grey, medium grey/green, blocky, micromicaceous to very micromicaceous, slightly silty, slightly dolomitic, with rare thin laminae of
Dolomite; light to medium brown, cryptocrystalline to microcrystalline, limey, slightly argillaceous, massive texture, tight, traces of shell fragments, trace of glauconitic siltstone

1278 - 1283m Shale; as above, with rare thin bands of
Dolomite; light to medium brown, cryptocrystalline to microcrystalline, silty to very silty and sandy, slightly argillaceous, slightly limey in part, tight, trace of glauconite, grades to siltstone in part

1283 - 1295m Shale; medium grey, medium grey/brown, blocky, micromicaceous, very dolomitic in part, moderately hard, silty and sandy in part, with rare thin laminae of
Dolomite; tan, light to medium brown, grey/brown, cryptocrystalline to microcrystalline, silty and sandy in part, slightly limey in part, slightly argillaceous, tight, trace fossil fragments

1295 - 1305m Shale; medium grey, occasionally grey/brown, blocky, micromicaceous, dolomitic, moderately hard, slightly silty and sandy in part with rare thin laminae of
Dolomite; cream to medium brown, cryptocrystalline to microcrystalline, slightly silty and sandy in part, slightly argillaceous to argillaceous tight, trace of dolomitic sandstone, trace of shell fragments

1305 - 1310m Shale; medium grey, slight green tinge, blocky to subfissile, slightly micromicaceous to very micromicaceous, slightly silty, slightly dolomitic, moderately hard, with rare thin laminae of
Dolomite; light to medium brown, cryptocrystalline to microcrystalline, slightly argillaceous to argillaceous, massive texture, tight

1310 - 1318m Shale; as above, with rare thin laminae of
Dolomite; as above, and
Siltstone; light to medium grey, quartz, silt - very fine grained, silica and calcite cement, slightly anhydritic, hard, tight; trace of glauconite

1318 - 1330m Shale; medium grey, medium grey/green, blocky to subfissile, slightly micromicaceous to very micromicaceous, slightly silty, slightly dolomitic, moderately hard, traces of dolomite

1330 - 1341m Shale; medium grey/green, blocky, micromicaceous, moderately hard, dolomitic in part, and:
Shale; medium to dark grey, blocky, slightly micromicaceous, dolomitic to very dolomitic, moderately hard, with rare thin laminae of
Limestone; dark grey micritic, argillaceous to very argillaceous, massive texture, dolomitic in part, slightly bituminous in part, silty in part, tight

1341 - 1347m Shale; medium grey/green, blocky, micromicaceous, very slightly dolomitic in part, slightly silty in part, moderately hard

1347 - 1357m Shale; medium grey, slight green tinge in part blocky, micromicaceous, to very micromicaceous, slightly silty in part, very slightly dolomitic in part, moderately hard, trace of disseminated pyrite, with rare thin laminae of
Dolomite; cream to dark grey, cryptocrystalline, massive texture, slightly silty, limey, slightly bituminous, very argillaceous, tight

1357 - 1365m Interbeds of Shale; medium to dark grey, black, medium brown, blocky, slightly micromicaceous, calcareous to very calcareous, silty in part, and
Limestone light to dark grey, tan, dolomite rhombs and limestone grains in an argillaceous lime matrix, silty to very silty, dolomitic, grades to limey shale in part, poor earthy porosity

1365 - 1370m Shale: medium grey/green, dark grey, blocky to subfissile, micromicaceous to very micromicaceous, very slightly dolomitic in part, moderately hard, with rare thin laminae of
Limestone: as above

1370 - 1382m Shale: light to medium grey, dark grey/brown, blocky, micromicaceous to very micromicaceous, dolomitic in part calcareous in part, moderately hard, trace of limestone, trace of dolomite

1382 - 1386m Dolomite: light grey/brown to medium grey/brown, cryptocrystalline, massive texture, slightly limey argillaceous to very argillaceous, slightly silty in part, tight; with minor thin bands of
Shale; medium grey, blocky to subfissile, micromicaceous to very micromicaceous dolomite to very dolomitic, medium hard

1386 - 1390m Dolomite: tan, light to dark grey/brown, cryptocrystalline, massive texture, slightly limey, argillaceous to very argillaceous, slightly silty in part, tight, with rare thin bands of
Shale: as above, and
Shale: dark grey to black, blocky, soft, bituminous

1390 - 1396m Interbeds of Dolomite; as above, and Shale; light to medium grey, blocky, micromicaceous, slightly limey, slightly silty, moderately hard, trace of limestone

1396 - 1405m Shale: light to medium grey, medium grey/green, blocky, micromicaceous, slightly silty, slightly dolomitic in part, trace glauconite, trace dolomite, trace limestone

1405 - 1417m Shale: light to medium grey, medium grey/green, blocky, moderately hard, micromicaceous, slightly limey, trace limestone

1417 - 1431m Shale: medium grey/green, medium brown, blocky, micromicaceous to very micromicaceous, slightly dolomitic, sideritic in part silty in part, moderately hard, trace of dolomite, trace of sandstone

1431 - 1442m SHale; medium grey, slight green tinge, blocky, micromicaceous to very micromicaceous, slightly dolomitic, slightly sandy in part moderately hard, trace of very argillaceous sandstone

1442 - 1444m Dolomite: light grey, tan, cryptocrystalline to very fine crystalline, subhedral, massive texture, sandy to very sandy in part, limey in part, slightly argillaceous, tight

1444 - 1449m Shale: medium grey, slight green tinge blocky, micromicaceous to very micromicaceous, slightly dolomitic, slightly sandy to very sandy in part, moderately hard

1449 - 1450m Shale: dark grey to black, blocky to subfissile, carbonaceous

1450 - 1461m Shale: medium grey, grey/brown, blocky to subfissile, micromicaceous to very micromicaceous, slightly silty and sandy, slightly dolomitic to dolomitic, moderately hard, with rare laminae of
Dolomite: tan, light grey, cryptocrystalline, anhedral, massive texture slightly limey, slightly sandy in part, slightly argillaceous to argillaceous, tight, trace of sandstone

1461 - 1470m Shale: medium grey, blocky, very micromicaceous, dolomitic to very dolomitic, slightly sandy in part, moderately hard, grading to rare thin laminae of
Dolomite: as above

1470 - 1483m Shale: light to medium grey, rarely medium grey/brown, blocky, micromicaceous to very micromicaceous, slightly dolomitic, moderately hard, silty in part, trace of siltstone, trace of dolomite

1483 - 1491m Shale: light to medium grey, slight green tinge, blocky to subfissile, slightly micromicaceous to very micromicaceous, slightly dolomitic, slightly silty in part, moderately hard, trace of siltstone, trace of dolomite

1491 - 1501m Shale: light to medium grey, medium brown, medium grey/green, blocky, slightly micromicaceous to very micromicaceous slightly dolomitic in part, silty in part, sideritic in part, moderately hard, with rare thin bands of
Siltstone: medium brown, medium grey, quartz, silt to very fine grained, subangular, well sorted, siderite cement, silica cement, argillaceous to very argillaceous matrix, micromicaceous, poor effective intergranular porosity, individual grains are hard to discern

1501 - 1511m Shale; light to medium grey, slight green tinge, slightly micromicaceous to very micromicaceous, slightly dolomitic in part, siliceous in part, slightly silty to very silty, moderately hard, with rare thin bands of
Siltstone; light grey, quartz, silt to very fine grained, grains fused together?, subangular, well sorted, silica cement, dolomite cement, argillaceous to very argillaceous matrix, micromicaceous, poor intergranular porosity, and
Dolomite; light grey, cryptocrystalline, anhedral, massive texture, silty, siliceous in part, slightly argillaceous, tight

1511 - 1521m Shale; light to medium grey, blocky, very micromicaceous, silty and sandy, slightly dolomitic, siliceous in part, silty in part, moderately hard, with occasional bands of
Siltstone light grey, quartz, silt to very fine grained, (grains are difficult to discern), subangular, well sorted, abundant dolomite and silica cement, slightly argillaceous to argillaceous matrix, slightly micromicaceous, very poor intergranular porosity and
Dolomite?? cryptocrystalline, silicified in part, tight; slightly silty, slightly micromicaceous

1521 - 1538m Shale; medium grey, medium brown, blocky, very micromicaceous, silty and sandy, sideritic in part, moderately hard, with rare thin bands of
Siltstone; light grey, quartz, silt to very fine grained, subangular, well sorted, (grains are difficult to discern), abundant silica cement, trace of dolomite cement, slightly argillaceous to argillaceous matrix, slightly micromicaceous in part, tight

1538 - 1547m Shale; light to medium grey, blocky, very micromicaceous, moderately hard, very slightly dolomitic in part, siliceous in part, with occasional bands of
Siltstone; light grey, quartz, silt to very fine grained (grains are difficult to discern), subangular?, well sorted?, abundant silica cement, minor dolomite cement, slightly argillaceous matrix, micromicaceous in part, tight, trace of siliceous dolomite?

1547 - 1552m Shale; light to medium grey, grey/brown, blocky, slightly micromicaceous to very micromicaceous, slightly dolomitic in part, siliceous in part, slightly silty and sandy, moderately hard, with rare thin bands of
Siltstone; as above (grains difficult to discern)

1552 - 1565m Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous to very micromicaceous siliceous in part, silty in part, moderately hard, with rare thin bands of
Siltstone; light grey, quartz, individual grains indiscernable, dolomite cement, abundant silica cement, slightly argillaceous matrix, slightly micromicaceous, tight

1565 - 1575m Shale; medium grey, medium grey/green, rarely grey/brown, blocky to subfissile, slightly micromicaceous to very micromicaceous, slightly dolomitic in part, siliceous in part, silty in part, moderately hard, with rare traces of
Siltstone; as above

1575 - 1590m Shale; light grey to medium grey, medium grey/green, blocky to subfissile, micromicaceous to very micromicaceous, silty in part siliceous in part, slightly dolomitic in part, moderately hard, with rare thin bands of
Siltstone; light grey, quartz, silt to very fine grained, subangular, well sorted, abundant silica cement, minor dolomite cement, slightly argillaceous matrix, micromicaceous in part, tight

1590 - 1602m Shale; light to medium grey, slight green tinge, blocky to subfissile, micromicaceous to very micromicaceous, silty and sandy in part, siliceous in part, slightly dolomitic in part, moderately hard, trace of siltstone

1602 - 1611m Shale; light to medium grey, grey/brown, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, sideritic in part, siliceous in part slightly silty and sandy in part, moderately hard, trace of siltstone

1611 - 1622m Shale; light to medium grey, slight green tinge, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, very slightly silty in part, moderately hard

1622 - 1636m Shale; light to medium grey/green, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, slightly silty in part, moderately hard

1636 - 1640m Shale; light to medium grey/green, medium brown, blocky to subfissile, micromicaceous, slightly dolomitic, sideritic in part, slightly silty in part, moderately hard, trace of sandstone

1640 - 1645m Shale; light to medium grey/green, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic, siliceous in part slightly sandy to very sandy in part moderately hard, with rare thin bands or laminae of Sandstone: light grey, light grey/green, quartz, very fine grained to fine grained, subangular, well sorted, abundant silica cement, minor dolomite cement, argillaceous to very argillaceous matrix, micromicaceous in part, tight

1645 - 1650m Shale; as above, with rare thin bands or laminae of Sandstone; as above

1650 - 1660m SHale; light to medium grey, slight green tinge, blocky to subfissile, micromicaceous to very micromicaceous, very slightly dolomitic in part, slightly silty and sandy in part, moderately hard, trace of sandstone, trace of dolomite

1660 - 1668m SHale; medium grey (slight green tinge), grey/brown, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, sideritic in part, slightly silty and sandy in part, moderately hard

1668 - 1675m Shale; light to medium grey/green, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, slightly silty in part, moderately hard, trace of fossil fragments, trace of siltstone

1675 - 1683m Shale; medium grey, grey/brown, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, siliceous in part sandy and silty in part, moderately hard, trace of sandstone

1683 - 1692m Shale; light to medium grey, grey/green, blocky to subfissile, micromicaceous to very micromicaceous, very slightly dolomitic, silty and sandy in part, moderately hard, trace of sandstone

1692 - 1707m Shale; medium grey, blocky to subfissile, micromicaceous, very slightly dolomitic in part, slightly silty in part, moderately hard

1707 - 1720m Shale; dark grey to black, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic to dolomitic, carbonaceous, silty to very silty, grades to siltstone, moderately hard, trace of dolomite, trace of siltstone

1720 - 1725m Shale; dark grey to black, blocky to subfissile, micromicaceous to very micromicaceous, slightly silty to silty, slightly dolomitic, carbonaceus, moderately hard, trace of dolomite

1725 - 1730m Shale; medium to dark grey, occasionally black, blocky to subfissile, micromicaceous, silty, dolomitic, slightly carbonaceous, moderately hard, with rare thin bands of
Siltstone; light grey, cream, quartz, silt to very fine grained, subangular, well sorted, silica and dolomite cement, argillaceous in part, micromicaceous in part, tight to trace of intergranular porosity, trace of dark grey dolomite

1730 - 1740m Shale; medium to dark grey, occasionally black, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic to dolomitic, silty to very silty, slightly carbonaceous, moderately hard, with rare thin bands of
Siltstone; light grey, light brown, quartz, silt to very fine grained, subangular, well sorted, silica and dolomite cement, argillaceous in part, slightly micromicaceous in part, poor effective intergranular porosity, trace of dark grey to black dolomite

1740 - 1750m Shale; light to medium grey, blocky to subfissile, micromicaceous, slightly dolomitic to dolomitic, silty in part, moderately hard, trace of siltstone, trace of pyrite

1750 - 1763m Shale; light to medium grey, medium brown, blocky to subfissile, micromicaceous to very micromicaceous, slightly dolomitic in part, slightly sideritic in part, slightly silty in part, moderately hard, trace of siltstone

1763 - 1777m Shale; light to medium grey, blocky to subfissile, micromicaceous to very micromicaceous, silty in part, slightly dolomitic in part, moderately hard, trace of siltstone

1777 - 1789m Shale; medium grey, blocky to subfissile, micromicaceous to very micromicaceous, sightly silty in part, moderately hard, trace of siltstone

1789 - 1800m Shale; light to medium grey, blocky to subfissile, micromicaceous to very micromicaceous, very slightly dolomitic in part, silty in part, moderately hard, trace of siltstone

1800 - 1811m Shale: light grey, medium to dark grey, blocky, dolomitic to very dolomitic, silty in part, slightly carbonaceous, moderately hard, with rare laminae of
Siltstone; light grey, light brown, quartz, silt to very fine grained, subangular, well sorted, abundant dolomite and silica cement, argillaceous to very argillaceous matrix, tight to poor effective intergranular porosity, trace of dolomite

1811 - 1823m Interbeds of Shale; medium to dark grey, blocky, micromicaceous to very micromicaceous, dolomitic to very dolomitic, slightly silty and sandy in part, slightly carbonaceous moderately hard, and
Siltstone; light grey, light brown, quartz, silt to very fine grained, subangular, well sorted, abundant dolomite and silica cement, slightly argillaceous to argillaceous matrix. tight to poor effective intergranular porosity and
Dolomite; light to dark grey, cryptocrystalline to microcrystalline, anhedral, massive texture, argillaceous to very argillaceous, slightly limey to limey, tight, grades to dolomitic shale in part, and
Limestone; light to medium grey/brown, micritic, occasionally very fine grained, dolomitic in part, argillaceous to very argillaceous, moderately hard, tight, grades to marlstone

1823 - 1826m Shale; as above, with minor bands of
Limestone; light to dark grey, light grey/brown, micritic to very fine granular, dolomitic, argillaceous to very argillaceous, moderately hard, tight, trace of dolomite

1826 - 1834m Shale; medium grey, blocky to subfissile, micromicaceous, slightly dolomitic in part, slightly silty in part, moderately hard

1834 - 1841m Shale; medium grey, slight green tinge, blocky to subfissile, micromicaceous, very slightly dolomitic in part, moderately hard

1841 - 1847m Shale: medium grey, blocky, micromicaceous to very micromicaceous, silty and sandy in part, moderately hard, trace of dolomite

1847 - 1851m Interbeds of Dolomite; dark grey to black, cryptocrystalline to microcrystalline, anhedral, massive texture, limey, very argillaceous, slightly bitumen engrained, silty in part, tight; and
Siltstone; light to medium grey, quartz, silt to very fine grained, subangular, well sorted, abundant silica and dolomite cement, slightly argillaceous matrix, quartz overgrowths, tight to poor intergranular porosity

1851 - 1860m Shale; light to medium grey, blocky, micromicaceous to very micromicaceous, siliceous in part, very silty and sandy in part, moderately hard, grades to argillaceous siltstone, common dolomite, common siltstone, common fossil fragments

1860 - 1870m Shale: medium grey, occasionally medium brown, blocky to subfissile, micromicaceous in part, slightly silty in part, slightly sideritic in part, moderately hard, trace of dolomite, trace of siltstone

1870 - 1876m Shale; medium grey, blocky, micromicaceous, very slightly dolomitic to very dolomitic in part, slightly silty in part moderately hard, with common beds of
Dolomite; light to dark grey, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly limey in part, silty in part, argillaceous to very argillaceous, tight

1876 - 1888m Shale; medium grey, slight green tinge, blocky to subfissile, micromicaceous, moderately hard, trace of dolomite, trace of floating quartz, trace of fossil fragments.

1888 - 1900m Shale; medium to dark grey, blocky, occasionally subfissile, micromicaceous, slightly dolomitic in part, moderately hard, with occasional bonds of
Dolomite; medium to dark grey, occasionally black, cryptocrytalline to microcrystalline, occasionally very fine crystalline subhedral, massive texture in part, limey to very limey, argillaceous, slightly bitumen engrained, minor pyrite inclusions, tight

1900 - 1915m [illegible]le; medium grey, slight green tinge, blocky, occa[illegible]ally subfissile, micromicaceous in part, slightly [illegible]mitic in part, moderately hard, trace of dolomite, [illegible]race of fossil fragments

1915 - 1935m Shale; medium grey, blocky to subfissile, micromicaceous, slightly silty in part, moderately hard, trace of siltstone trace of dolomite, trace of sandstone

1935 - 1942m Shale; light to medium grey, minor dark grey, slight green tinge, very slightly micromicaceous, slightly silty in part, moderately hard, trace of siltstone

1942m MOUNT CLARKE?/KATHERINE? (-1828.78m SS)

194c - 1947m Sandstone; white, becoming light to medium grey with depth, quartz, silt to medium grained, subangular to angular, poorly sorted, abundant silica cement, abundant quartz overgrowths, trace of dolomite cement, clean, tight to poor intergranular porosity, occasional bands of fair porosity, no shows

1947 - 1949m Interbeds of Sandstone; as above, and
Shale; medium grey, blocky to subfissile, micromicaceous, moderately hard, dolomitic in part

1949 - 1952m Sandstone; white, quartz, very fine grained, occasionally fine to medium grained, subangular, well sorted, abundant silica cement, well sorted, abundant silica cement, clean, poor intergranular porosity, no shows

1952 - 1955m Sandstone: white, clear, quartz, very fine grained to medium grained, rarely coarse grained, subangular to subrounded, poorly sorted, abundant silica cement, clean, tight to poor intergranular porosity, no shows

1955 - 1960m Sandstone; white, pink, quartz, silt to medium grained, subangular to subrounded, poorly sorted, abundant silica cement, quartz overgrowths, clean, tight to trace of intergranular porosity very abrasive with occasional thin bands or laminae of
Shale; medium to dark grey, slight green tinge, blocky to subfissile, micromicaceous in part, moderately hard, slightly dolomitic in part

1960 - 1968m Sandstone: white, pink, quartz, very fine to fine grained, occasionally medium to coarse grained, subangular to subrounded, moderately sorted, abundant silica cement, trace of dolomite cement, clean, tight to trace of intergranular porosity with rare laminae of
Shale; medium grey, medium grey/green, blocky to subfissile, micromicaceous in part, dolomitic in part, trace of black bituminous shale, trace of white to clear dolomite (veining?)

1968 - 1977m Sandstone; white, pink, quartz, very fine to coarse grained, poorly sorted, subangular to subrounded, abundant silica cement, trace of dolomite cement, clean, tight to trace intergranular porosity with rare laminae of
Shale; as above, trace of black bituminous shale, trace of dolomite (veining?)

1977 - 1985m Sandstone; white, pink, quartz, very fine grained to medium grained, rarely coarse grained, subangular to subrounded poorly sorted, abundant silica cement, trace of dolomite cement, clean, tight to trace of intergranular porosity trace of pyrite with rare laminae of
Shale; medium grey/green, blocky to subfissile, micromicaceous in part, moderately hard, trace of black slightly bituminous shale.