

**E.C. COPY**

PETRO-CANADA INCORPORATED

PCI CANTERRA BELE 0-35

WELL HISTORY REPORT

Prepared by: R. Hallsworth  
April 21, 1986

PCI CANTERRA BELE 0-35

WELL HISTORY REPORT

A) INTRODUCTION

1. Summary
2. Location Map

B) GENERAL DATA

1. Well Name and Number
2. Well Location
3. Unique Well Identifier
4. Operator and Drilling Contractor
5. Drilling Unit
6. Position Keeping
7. Support Craft
8. Drilling Unit Performance
9. Difficulties and Delays

C) SUMMARY OF DRILLING OPERATIONS

1. Elevations
2. Total Depth
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

PCI CANTERRA BELE 0-35

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

PCI CANTERRA BELE 0-35

A. INTRODUCTION

1. Summary

PCI Caterra Bele 0-35, located in the Lac Belot area of the Northwest Territories, was drilled to a total depth of 1384 m. Drilling was completed in 41 days.

Petro-Canada Incorporated of Calgary operated the well. Jade Drilling Ltd. of Edmonton, the Contractor, used Jade Rig #5, a diesel mechanical rig built in 1980.

The location coordinates for this well are 66° 34' 58.1357" North Latitude and 126° 21' 32.1083" West Longitude. Ground elevation is 393.26 m.

This oil test well bottomed in the Proterozoic Clastic Sequence at a depth of 1384 m. The primary objective was the lower Cambrian Mt. Clark formation. Secondary objective was the Mt. Cap.

PCI Caterra Bele 0-35 was spudded on 1986-02-14 at 0015 hours. A 311mm hole was drilled and reamed to 444mm at a depth of 63 m. 339mm conductor casing was set at a depth of 63.0 m.

A 311mm hole was drilled to 100 m with water as the drilling fluid. At 100 m, drilling resumed with air as the drilling fluid. At 401 m, the hole was displaced to foam and drilling was continued to 777 m. The hole was logged from 776 m - 9 m. 244mm surface casing was set at 777 m.

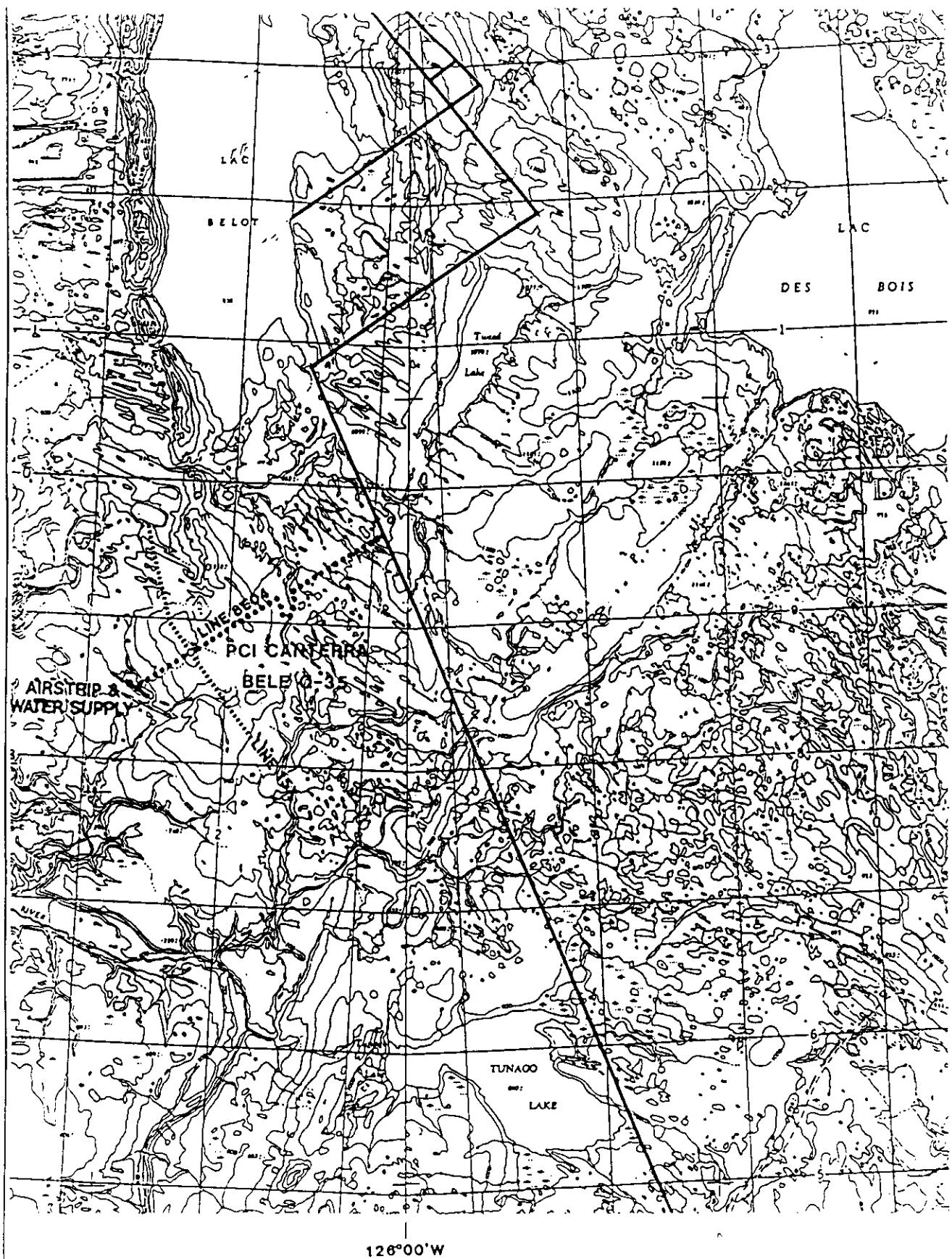
First flow of water occurred at 363 m. The estimated flow was 16 m<sup>3</sup>/hr, the salinity was 125 mg/l and the calcium content was 240 mg/l. The flowrate was constant until 666 m when flow increased to 48 m<sup>3</sup>/hour, salinity 150 mg/l and calcium content 240 mg/l.

The 216mm mainhole was drilled with water to 790 m, and with a salt saturated mud from 790 - 1384 m.

Two conventional cores were cut, from 1330 - 1341 m, and from 1341 - 1353 m. The hole was logged from 1380 - 777 m.

One DST was run, 1384 m of 178mm production casing was set, and Jade Rig #5 was released on 86-04-02 at 1200 hours.

2. Location Map - Figure 1



LEGEND

- WINTER ROAD
- ..... ACCESS ROUTE ON EXISTING SEISMIC LINE
- PROPOSED WELLSITE
- ..... SEISMIC LINE

Scale 1:240,000  
 Miles 0 10 20 Miles  
 Kilometers 0 10 20 Kilometers

PCI CANTERRA BELE O-35 WELLSITE  
 GRID AREA 66°40'N, 126°15'W

PCI CANTERRA BELE 0-35

B. GENERAL DATA

1. Well Name and Number: PCI Canterra Bele 0-35  
Grid Area: 66° 40', 126° 15'
2. Well Location: North Latitude: 66° 34' 58.1357"  
West Longitude: 126° 21' 32.1083"
3. Unique Well Identifier: 3000356640126150
4. Operator: Petro-Canada Incorporated  
P.O. Box 2844  
Calgary, Alberta  
T2P 3E3
- Contractor: Jade Drilling Ltd.  
5825 - 98th Street  
Edmonton, Alberta  
T6E 3L5
5. Drilling Unit: Name: Jade Rig #5  
Type: Triple Diesel Mechanical  
Year Built: 1980  
Location: Edmonton, Alberta
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.

PCI CANTERRA BELE 0-35

### C. SUMMARY OF DRILLING OPERATIONS

1. Elevations: Ground: 393.26 m  
Kelly Bushing: 397.76 m

2. Total Depth: Drilled: 1384  
Logged: 1381

3. Date and Hour Spudded: 86-02-14 0015 hours

4. Date Drilling Completed: 86-03-26 1730 hours

5. Date of Rig Release: 86-04-02 1200 hours

6. Well Status: Suspended

7. Hole Sizes and Depths:

Class	Bit Numbers	Size (mm)	Depth (m)		Meters Drilled	Remarks
			In	Out		
Conductor	1A	311	0	39	39	Reamed hole to 444mm.
	2A	311	39	63	24	
	3A	444	0	37	37	
	Hole Opener	444	37	63	26	
Surface	4B	311	63	85	22	.
	5B	311	85	270	185	
	6B	311	270	362	92	
	7B	311	362	573	211	
	8B	311	573	718	145	
	9B	311	718	777	59	
Main	10C	216	777	-	-	Pulled for plugged jets while drill- ing shoe. 4 broken teeth.
	11C	216	777	1149	372	Drilled out cement.
	12C	216	1149	1330	181	
	13C	215	1330	1341	11	Coring.
	14C	215	1341	1353	12	Coring.
	15C	216	1353	1384	31	

PCI CANTERRA BELE 0-35

8. Casing and Cementing Details

Hole Classification	Conductor	Surface		Main
Hole Size:	444	311		216
Casing Size:	339.7	245		177.8
Weight kg/m:	101.2	60		43.2
Grade:	K-55	K-55 & T-95		MN-80
Coupling:	BT&C	LT&C		LT&C
Number of Joints:	5	64		117
Number of Centralizers:	3	10		20
Date of Run:	86-02-19	86-03-10		86-04-01
Shoe Depth:	63.0	777.0		1384
Tonnes of Cement:	10.8	10	4.4	30
Type of Cement:	Class G	Class G	Class G	Class G
Additives:	3% CaCl <sub>2</sub>	2% CaCl <sub>2</sub>	2% CaCl <sub>2</sub>	0.5% D65
Height of Cement:	Surface	625 m	Surface	500 m
Based on:	Returns to Surface	Caliper Log	Returns to Surface	Caliper Log

9. Sidetracked Hole - Not applicable to this well.

10. Drilling Fluid

Gel chem was used from surface to 63 m; water was used from 63 to 100 m. Air was used to approximately 401 m; air foam was used to 777 m. Water was used to approximately 790 m. A saturated salt mud was used from 790 - 1384 m.

## PCI CANTERRA BELE 0-35

Summary of Mud Properties

Section	Interval (m)	Weight (kg/m <sup>3</sup> )	Funnel Vis (s/1)	Water Loss (Aver.Cm <sup>3</sup> )	pH (Aver)	C <sub>1</sub> (10 <sup>3</sup> mg/l)
Conductor	0-63	1070-1170	40-50	-	10.2	-
Surface	63-100	Water	-	-	-	-
Surface	100-401	Air	-	-	-	-
Surface	401-777	Air Foam	-	-	-	-
Main	777-790	Water	-	-	-	-
Main	790-1384	1215-1280	41-57	14.8	10.2	165-179

11. Fishing Operation

Saver sub twisted off when reaming at a depth of 37.5 m. Used a 6" basket grapple to recover fish, which was at 5.5 m.

When drilling at a depth of 362 m, dropped 12,000 daN of string weight. POOH, and ran in with overshot, latched onto fish and recovered same.

12. Well Kicks - None13. Formation Leak-off Tests

A pressure integrity test was run on day 29 after drilling out the surface casing shoe at 777 m. Water was used for the test and a surface pressure of 7,000 kPa was reached. The pressure at surface held for 5 minutes. The formation integrity was 18.8 kPa/m.

PCI CANTERRA BELE 0-35

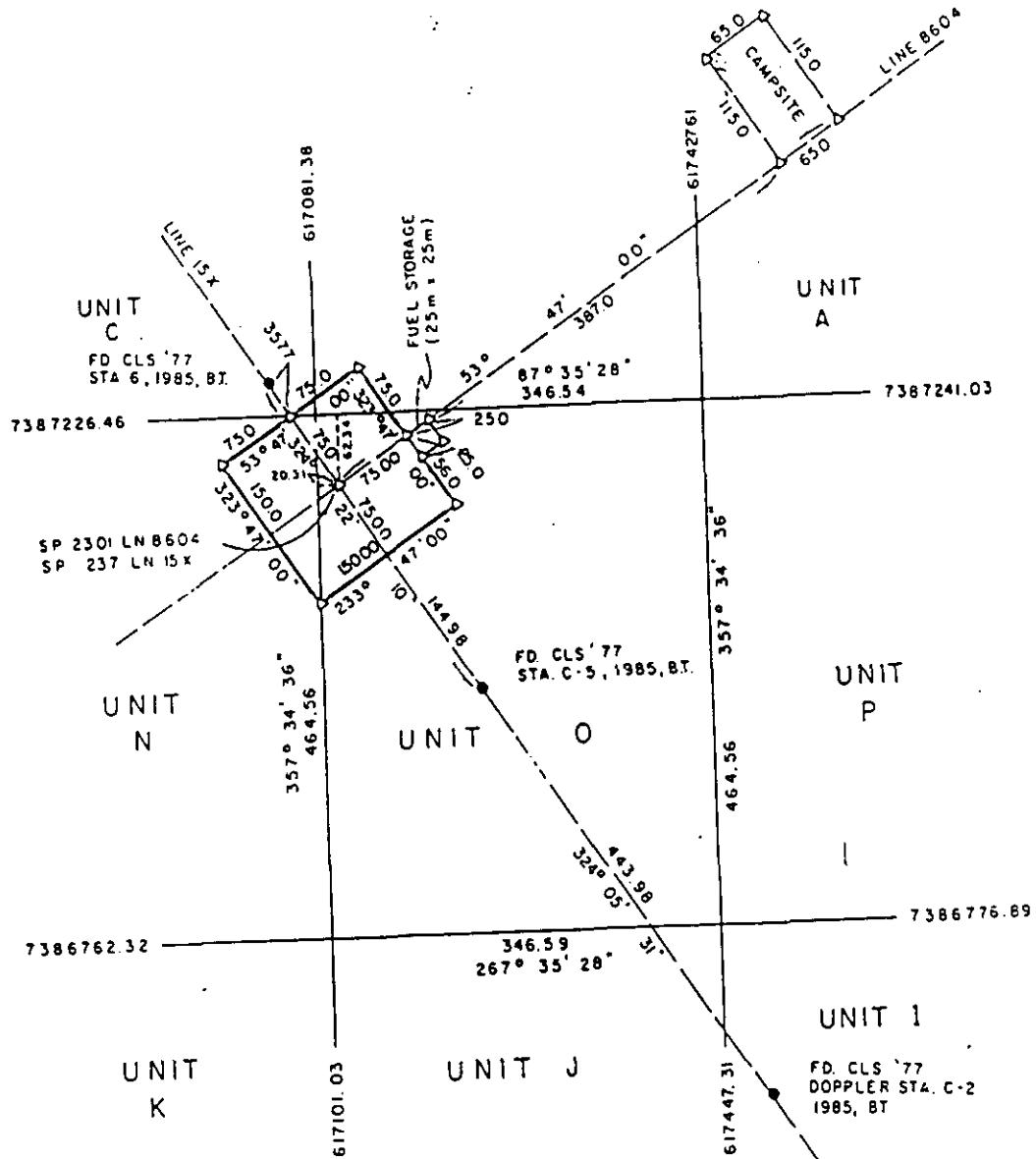
14. Time Breakdown

	Conductor	Surface	Main	Total
Drill	43.25	172.5	135.75	351.5
Trip	14.25	89.25	74.0	177.5
Ream/Clean	42.25	15	8.25	65.5
Conditioning	.5	28.25	21.75	50.5
Rig Service	4.0	13.5	9.75	27.25
Mechanical Downtime	.75	5.5	5	11.25
Survey	1.75	8.25	8.25	18.25
CSG-CMT-WOC	18.5	31.75	27.5	77.75
Head up/PR Test	54.25	50.50	8.75	113.50
Coring			72.5	72.5
Logging		14.5	32.25	46.75
DST			37.75	37.75
Drill Cement		2.5	6.5	9.0
Drill Out DV			3.5	3.5
WOO			2.5	2.5
Wait on Daylight			2.5	2.5
Tear Out			15	15
Rig up Air Drillers		2.5		2.5
Maintenance	5.75	12.5		18.25
Fishing	7	4.75		11.75
W.O. Tools		5.75		5.75
Wait on D.C. Inspection		8.25		8.25
Inspect D.C.		8.5		8.5
W.O. Cementers		2.25		2.25
<b>TOTAL</b>	<b>192.25</b>	<b>476.0</b>	<b>471.5</b>	<b>1139.75</b>

15. Deviation Survey

16. Abandonment Plugs - Not applicable to this well.

17. Composite Well Record



N.T.S. MAP SHEET: 96-L-9      METRIC      NORTHWEST TERRITORIES

**PETRO-CANADA INC.**

PRELIMINARY SKETCH SHOWING WELL LOCATION

**PCI CANTERRA BELE O-35**

UNIT O, SECTION 35, GRID AREA  $66^{\circ} 40'$ ,  $126^{\circ} 15'$

PETRO-CANADA INC.

*McDonald*

CERTIFIED CORRECT:

THIS 10TH DAY OF SEPTEMBER, A.D. 1985

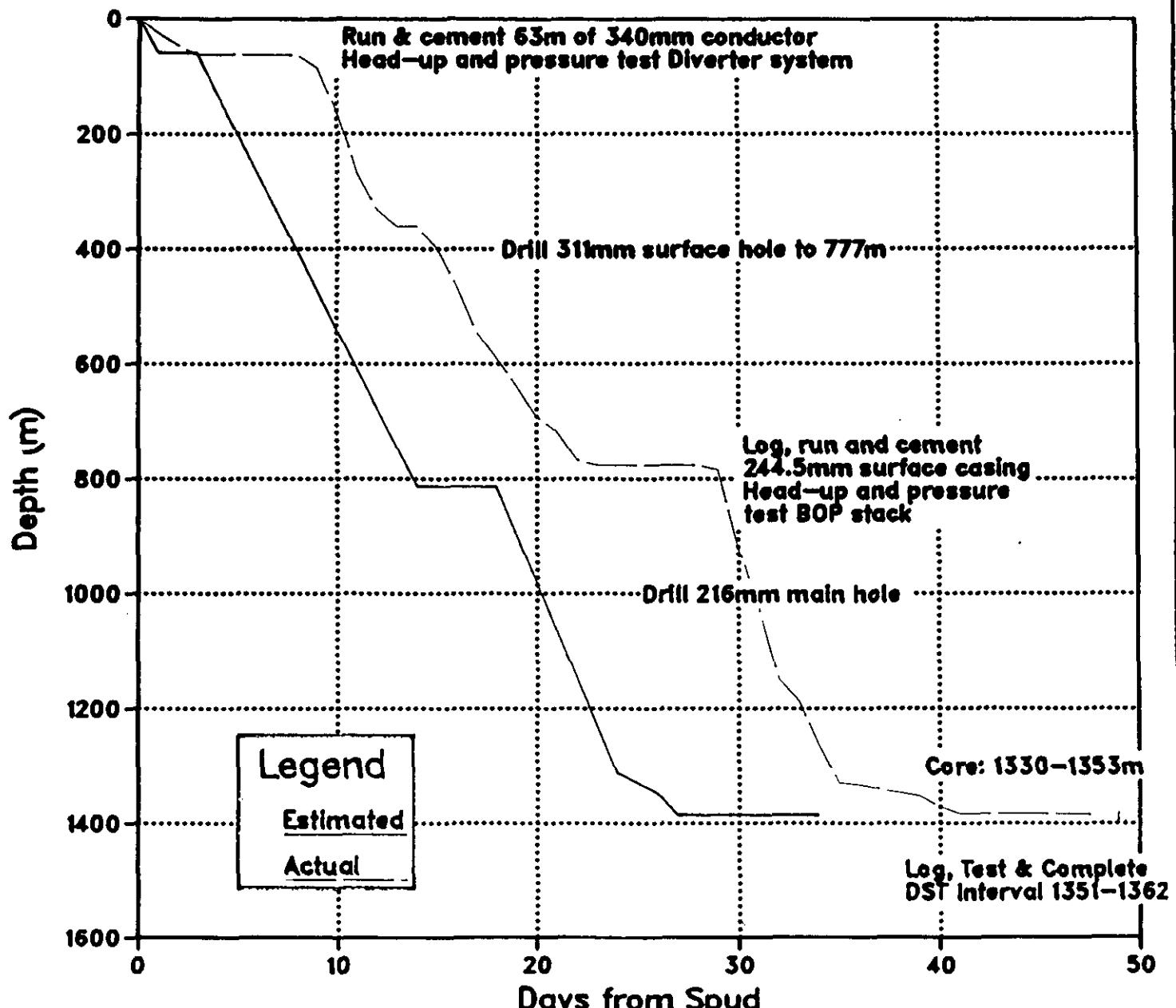
*MacLennan*

CANADA LANDS SURVEYOR

ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
ON GROUND : 392.62	NORTH LATITUDE: $66^{\circ} 34' 58.1357''$ 66.58281547 WEST LONGITUDE: $126^{\circ} 21' 32.1083''$ 126.35891897	NORTHING: 7387164.13 EASTING: 617104.34 CO-ORDINATES ARE COMPUTED FOR ZONE 9, CENTRAL MERIDIAN $129^{\circ} \text{W}$ .
AT WELLHEAD	HOSFORD, IMPEY, WELTER AND ASSOCIATES LTD. P.O. BOX 1409, YELLOWKNIFE, X1A 2P1 NORTHWEST TERRITORIES	
LEGEND	AREAS REQUIRED	
Survey Monument found... • Survey Monument placed... O Traverse Station... Q	WELLSITE : 5.560 Acres 2.250 ha. CAMP SITE : 1.847 Acres 0.748 ha. FUEL SITE : 0.154 Acres 0.062 ha. TOTAL : 7.56 Acres 3.06 ha.	
SCALE 1:5000	FILE NO. Y85023 DATE: SEPT. 10/85	

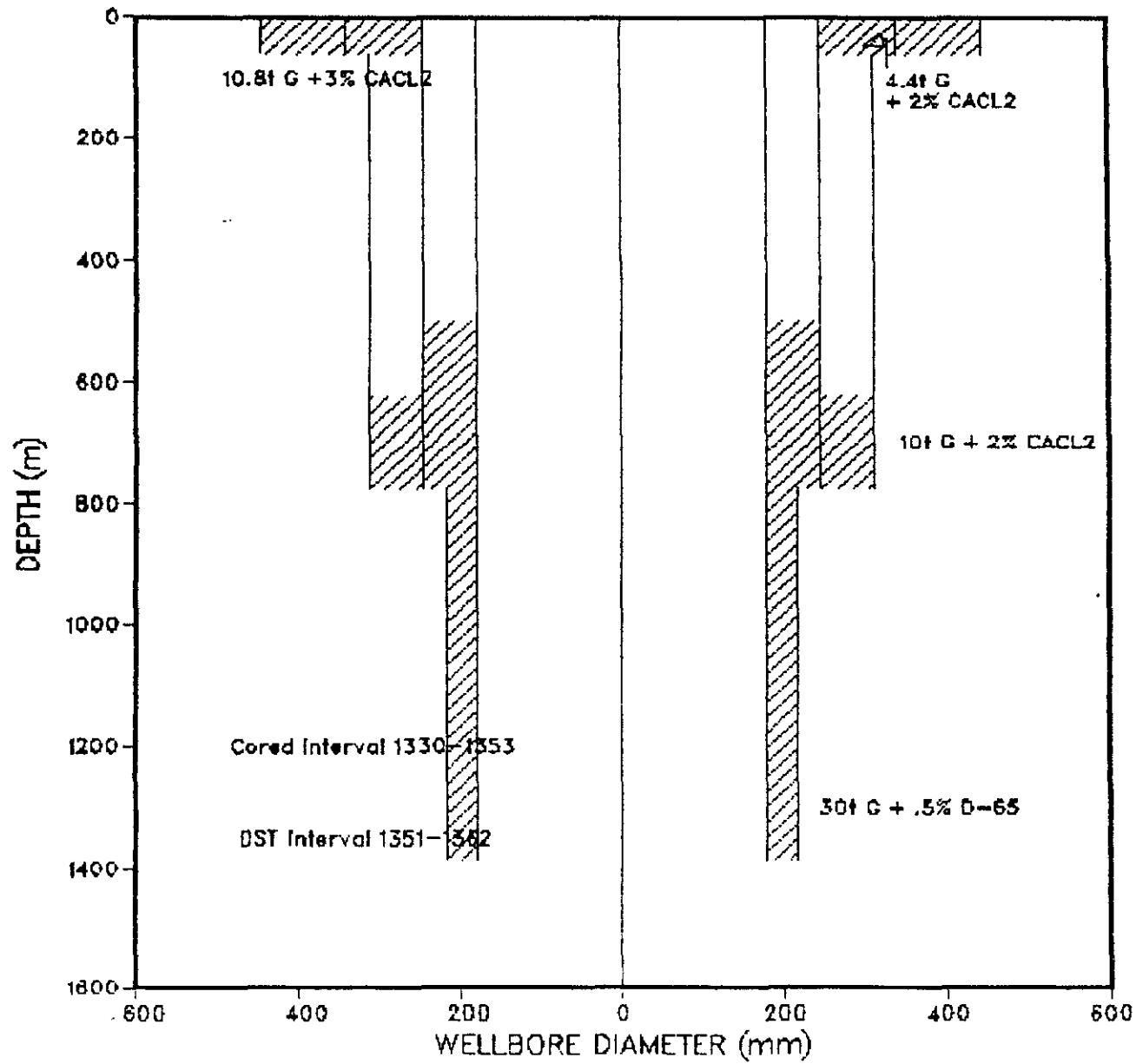
# PCI CANTERRA BELE 0-35

## Planned Penetration Curve



Spud date: 06/02/14

Wellbore Profile  
PCI CANTERRA BELE O-35



# EXACT RADIUS OF CURVATURE METHOD

## TIE-IN LOCATION

MEASURED DEPTH	0.0	M
TRUE VERTICAL DEPTH	0.0	M
DISTANCE NORTH	0.0	M
DISTANCE EAST	0.0	M

## BOTTOM HOLE LOCATION

COURSE LENGTH	59.2	M
COURSE AZIMUTH	50.1	DEG
MEASURED DEPTH	1380.0	M
TRUE VERTICAL DEPTH	1378.0	M
DISTANCE NORTH	38.0	M
DISTANCE EAST	45.4	M

VERTICAL SCALE = 1/100 CM/M

M/M

REF 2285

REF 2285

PAGE 1

MEAS.	DEPTH	DEVIATION	DEGREES	TRUE	CO-ORDINATES	COURSE	LENGTH	PAGE	
								M	DEGREES
0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	1
20.0	0.2	0.2	13	20.0	0.1	0.1	0.1	0.1	
40.0	0.4	0.4	25	40.0	0.1	0.1	0.1	0.2	
55.7	0.5	0.5	35	55.7	0.2	0.1	0.1	0.3	
60.0	0.4	0.4	49	60.0	0.2	0.1	0.1	0.4	
80.0	0.4	0.4	79	80.0	0.3	0.2	0.2	0.5	
100.0	0.3	0.3	96	100.0	0.3	0.3	0.3	0.5	
120.0	0.4	0.4	75	120.0	0.3	0.3	0.3	0.6	
140.0	0.5	0.5	60	140.0	0.3	0.3	0.3	0.8	
160.0	0.7	0.7	76	160.0	0.4	0.4	0.4	0.9	
180.0	0.8	0.8	73	180.0	0.5	0.5	0.5	1.2	
200.0	0.9	0.9	59	200.0	0.6	0.6	0.6	1.4	
220.0	0.8	0.8	33	220.0	0.7	0.7	0.7	1.7	
240.0	0.8	0.8	54	240.0	0.9	0.9	0.9	2.0	
260.0	1.0	1.0	61	260.0	1.1	1.1	1.1	2.3	
280.0	0.9	0.9	57	280.0	1.3	1.3	1.3	2.6	
300.0	1.1	1.1	59	300.0	1.5	1.5	1.5	3.0	
320.0	0.8	0.8	45	320.0	1.7	1.7	1.7	3.3	
340.0	0.9	0.9	32	340.0	1.8	1.8	1.8	3.6	
360.0	0.9	0.9	63	360.0	2.0	2.0	2.0	3.9	
380.0	0.9	0.9	55	380.0	2.2	2.2	2.2	4.2	
400.0	0.9	0.9	50	400.0	2.4	2.4	2.4	4.5	
420.0	0.9	0.9	57	420.0	2.5	2.5	2.5	4.8	
440.0	1.0	1.0	48	440.0	2.7	2.7	2.7	5.1	
460.0	1.0	1.0	38	460.0	3.0	3.0	3.0	5.4	
480.0	1.1	1.1	42	480.0	3.3	3.3	3.3	5.7	
500.0	1.3	1.3	37	500.0	3.6	3.6	3.6	6.0	
520.0	1.3	1.3	38	519.9	4.0	4.0	4.0	6.3	
540.0	1.3	1.3	44	539.9	4.3	4.3	4.3	6.7	
560.0	1.5	1.5	42	559.9	4.7	4.7	4.7	7.1	
580.0	1.7	1.7	55	579.9	5.1	5.1	5.1	7.5	
600.0	2.3	2.3	53	599.9	5.3	5.3	5.3	8.9	
620.0	2.1	2.1	61	619.9	5.9	5.9	5.9	9.7	
640.0	2.1	2.1	59	639.9	6.3	6.3	6.3	10.4	
660.0	2.2	2.1	62	659.9	6.7	6.7	6.7	11.2	
680.0	2.1	2.1	59	679.9	7.0	7.0	7.0	11.9	
700.0	2.2	2.2	66	699.9	7.4	7.4	7.4	12.7	
720.0	2.2	2.2	61	719.9	7.7	7.7	7.7	13.4	
740.0	2.0	2.0	61	739.9	8.1	8.1	8.1	14.1	
760.0	2.2	2.2	67	759.9	8.4	8.4	8.4	14.8	
780.0	3.1	3.1	68	779.9	8.7	8.7	8.7	15.6	
800.0	3.4	3.4	66	799.9	9.2	9.2	9.2	16.3	
820.0	3.7	3.7	54	819.7	9.8	9.8	9.8	18.0	
840.0	4.0	4.0	52	839.7	10.7	10.7	10.7	19.4	
860.0	4.3	4.3	49	859.6	11.6	11.6	11.6	20.8	
880.0	4.5	4.5	48	879.6	12.6	12.6	12.6	22.3	
900.0	4.8	4.8	48	899.5	13.7	13.7	13.7	24.0	
920.0	4.8	4.8	47	919.4	14.8	14.8	14.8	25.6	

REF 2205

PAGE 2

MEAS.	DEPTH	DEVIATION	AZIMUTH	VERTICAL	CO-ORDINATES			COURSE	LENGTH
					DEGREES	DEGREES	DEPTH		
940.0	4.8		47	939.3	16.0	22.1		27.3	
960.0	4.9		46	959.3	17.1	23.3		28.9	
980.0	4.7		44	979.2	18.3	24.5		30.6	
1000.0	4.8		40	999.1	19.5	25.6		32.2	
1020.0	5.0		37	1019.1	20.9	26.7		33.9	
1040.0	5.1		37	1039.0	22.3	27.7		35.6	
1060.0	5.1		37	1058.9	23.7	28.8		37.3	
1080.0	5.2		35	1078.8	25.2	29.9		39.0	
1100.0	5.3		31	1098.7	26.7	30.9		40.6	
1120.0	5.2		32	1118.7	28.2	31.0		42.5	
1140.0	5.3		30	1138.6	29.8	32.8		44.3	
1160.0	4.9		29	1158.5	31.3	33.6		46.0	
1180.0	4.5		31	1178.4	32.8	34.4		47.6	
1200.0	4.4		36	1198.4	34.1	35.3		49.1	
1220.0	4.2		40	1218.3	35.3	36.2		50.6	
1240.0	4.0		50	1238.3	36.3	37.2		52.0	
1260.0	2.8		62	1258.2	37.0	38.2		53.2	
1280.0	2.7		73	1278.2	37.3	39.1		54.0	
1300.0	2.6		84	1298.2	37.5	40.0		54.8	
1320.0	3.5		85	1318.2	37.6	41.1		55.7	
1340.0	4.1		86	1338.1	37.7	42.4		56.7	
1360.0	4.2		95	1358.1	37.8	43.9		57.9	
1380.0	4.1		73	1378.0	38.0	43.4		59.2	

REF 2205

PAGE 3

## BOTTOM HOLE LOCATION

COURSE LENGTH: 59.2 M

COURSE AZIMUTH: 50.1 DEGREES

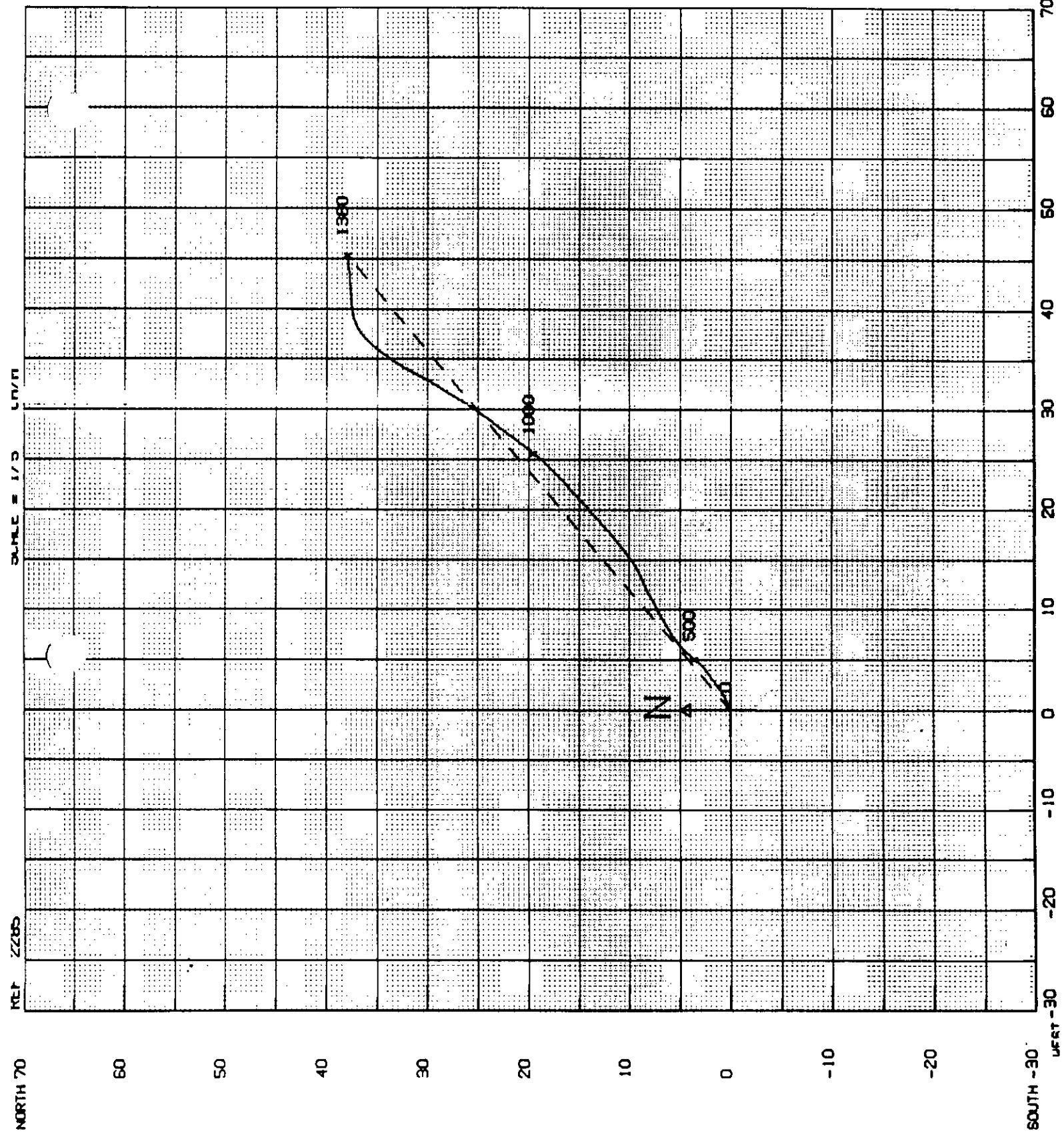
MEASURED DEPTH: 1380.0 M

TRUE VERTICAL DEPTH: 1378.0 M

DISTANCE NORTH: 38.0 M

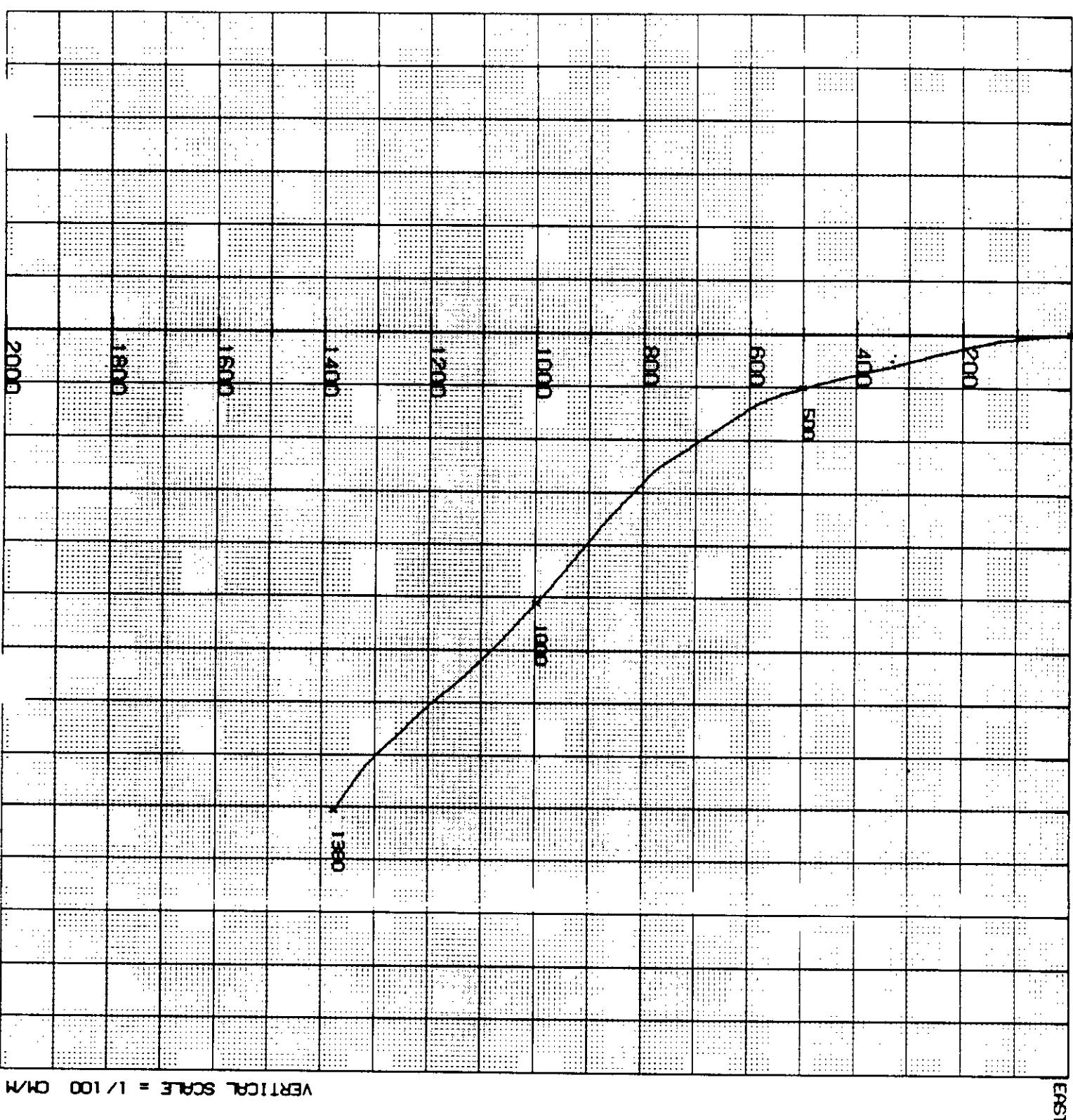
DISTANCE EAST: 43.4 M

EXACT RADIUS OF CURVATURE METHOD

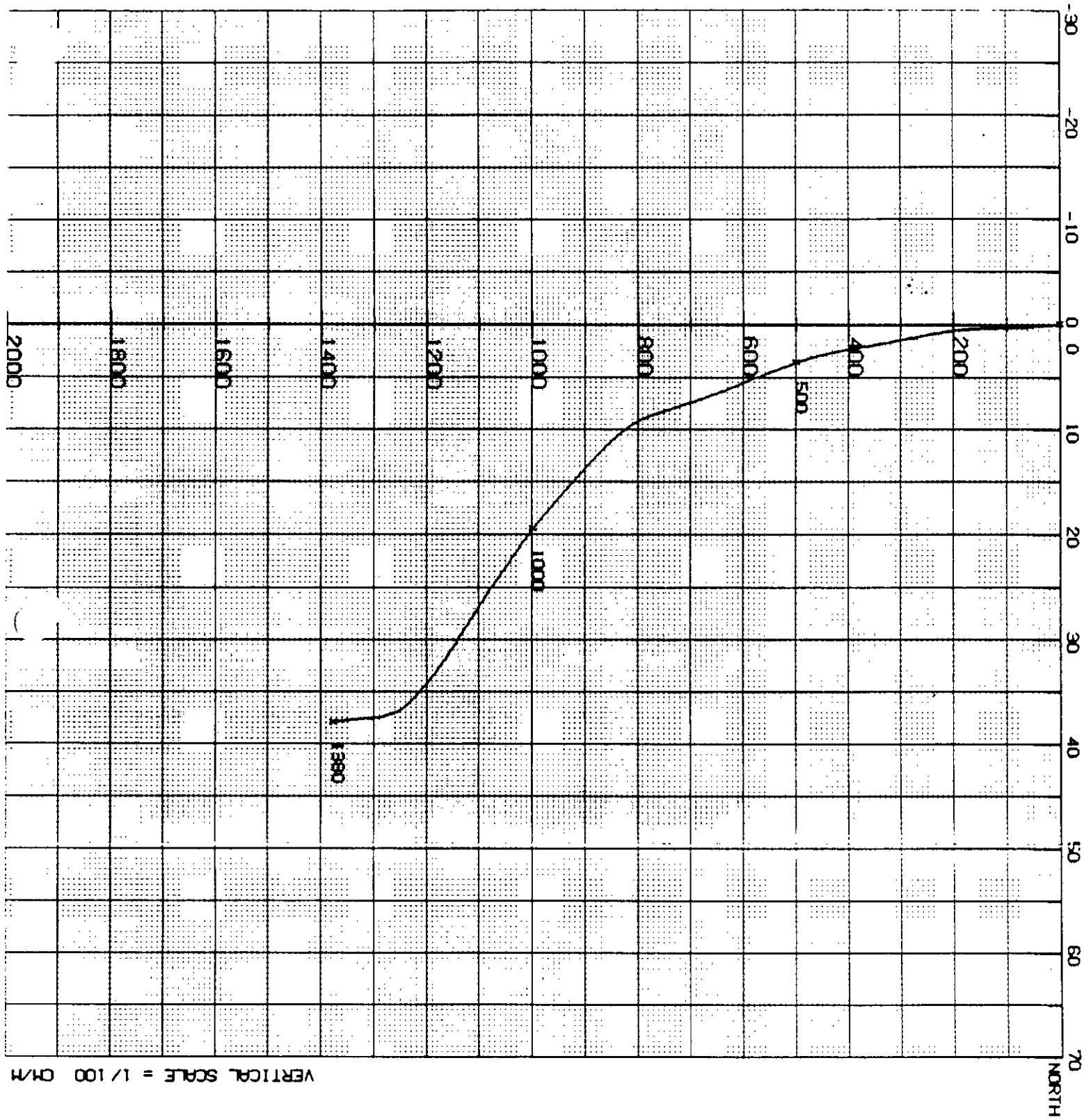


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RADA FÜR IN VERTRETUNG DER BUNDESREPUBLIK ÖSTERREICH



REF 2285



**CALGARY COPY**

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PETRO-CANADA INCORPORATED

PCI CANTERRA BELE 0-35

WELL HISTORY REPORT

Prepared by: R. Hallsworth  
April 21, 1986

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Drilling Data

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

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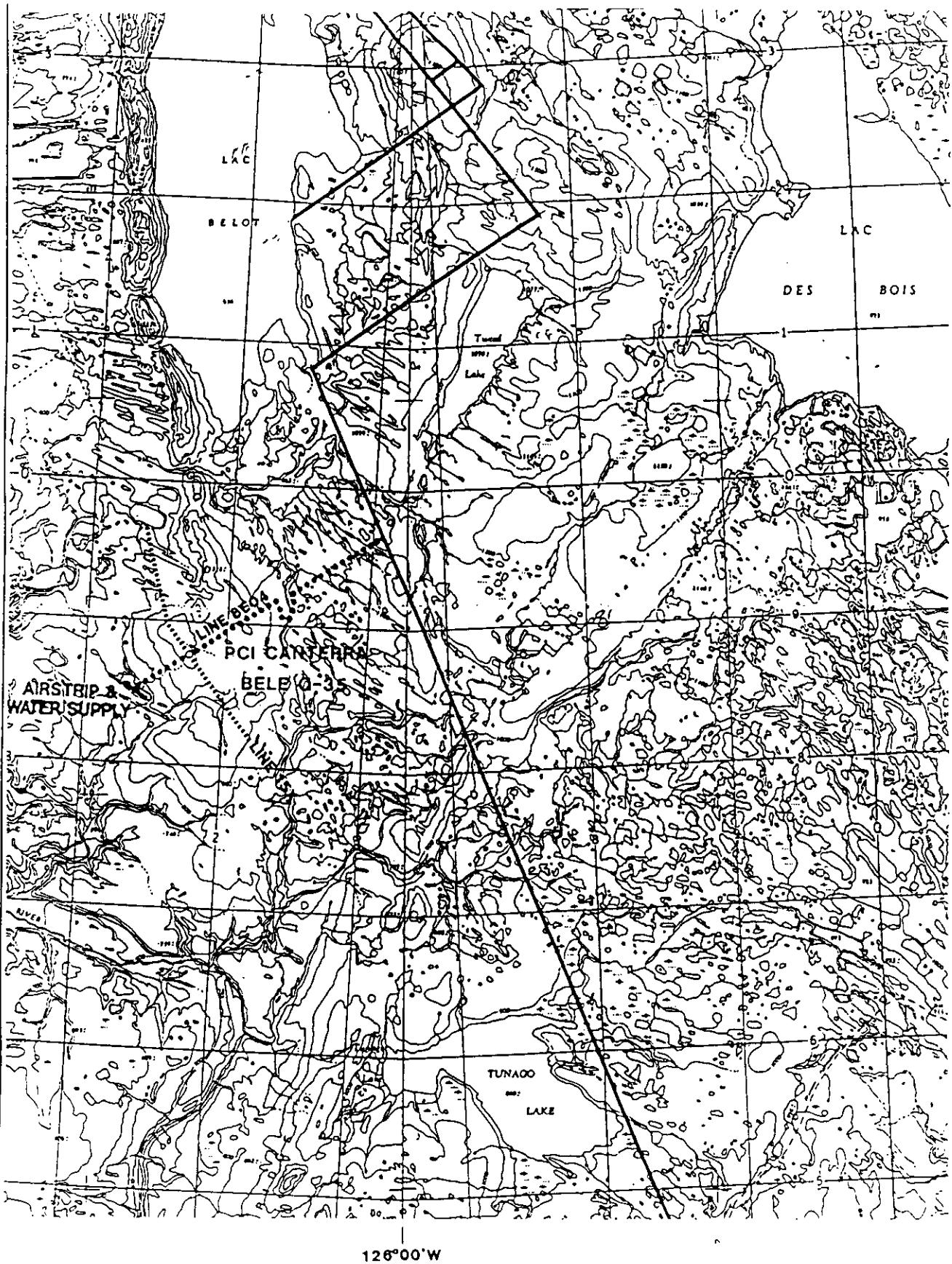
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Two conventional cores were cut, from 1330 - 1341 m, and from 1341 - 1353 m. The hole was logged from 1380 - 777 m.

One DST was run, 1384 m of 178mm production casing was set, and Jade Rig #5 was released on 86-04-02 at 1200 hours.

#### 2. Location Map - Figure 1



LEGEND

- WINTER ROAD
- ..... ACCESS ROUTE ON EXISTING SEISMIC LINE
- PROPOSED WELLSITE
- ..... SEISMIC LINE

Scale 1: 250,000  
 Miles 0 10 20 30  
 Kilometers 0 10 20 30

  
**PCI CANTERRA BELE O-35 WELLSITE**  
 GRID AREA 66°40'N, 126°15'W

PCI CANTERRA BELE 0-35

B. GENERAL DATA

1. Well Name and Number: PCI Canterra Bele 0-35  
Grid Area: 66° 40', 126° 15'
2. Well Location: North Latitude: 66° 34' 58.1357"  
West Longitude: 126° 21' 32.1083"
3. Unique Well Identifier: 3000356640126150
4. Operator: Petro-Canada Incorporated  
P.O. Box 2844  
Calgary, Alberta  
T2P 3E3
- Contractor: Jade Drilling Ltd.  
5825 - 98th Street  
Edmonton, Alberta  
T6E 3L5
5. Drilling Unit: Name: Jade Rig #5  
Type: Triple Diesel Mechanical  
Year Built: 1980  
Location: Edmonton, Alberta
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.

PCI CANTERRA BELE 0-35

### C. SUMMARY OF DRILLING OPERATIONS

1. Elevations:	Ground: 393.26 m
	Kelly Bushing: 397.76 m
2. Total Depth:	Drilled: 1384
	Logged: 1381
3. Date and Hour Spudded:	86-02-14 0015 hours
4. Date Drilling Completed:	86-03-26 1730 hours
5. Date of Rig Release:	86-04-02 1200 hours
6. Well Status:	Suspended
7. Hole Sizes and Depths:	

Class	Bit Numbers	Size (mm)	Depth (m)		Meters Drilled	Remarks
			In	Out		
Conductor	1A	311	0	39	39	Reamed hole to 444mm.
	2A	311	39	63	24	
	3A	444	0	37	37	
	Hole Opener	444	37	63	26	
Surface	4B	311	63	85	22	
	5B	311	85	270	185	
	6B	311	270	362	92	
	7B	311	362	573	211	
	8B	311	573	718	145	
	9B	311	718	777	59	
Main	10C	216	777	-	-	Pulled for plugged jets while drill- ing shoe. 4 broken teeth.
	11C	216	777	1149	372	Drilled out cement.
	12C	216	1149	1330	181	
	13C	215	1330	1341	11	Coring.
	14C	215	1341	1353	12	Coring.
	15C	216	1353	1384	31	

PCI CANTERRA BELE 0-35

8. Casing and Cementing Details

Hole Classification	Conductor	Surface		Main
Hole Size:	444	311		216
Casing Size:	339.7	245		177.8
Weight kg/m:	101.2	60		43.2
Grade:	K-55	K-55 & T-95		MN-80
Coupling:	BT&C	LT&C		LT&C
Number of Joints:	5	64		117
Number of Centralizers:	3	10		20
Date of Run:	86-02-19	86-03-10		86-04-01
Shoe Depth:	63.0	777.0		1384
Tonnes of Cement:	10.8	10	4.4	30
Type of Cement:	Class G	Class G	Class G	Class G
Additives:	3% CaCl <sub>2</sub>	2% CaCl <sub>2</sub>	2% CaCl <sub>2</sub>	0.5% D65
Height of Cement:	Surface	625 m	Surface	500 m
Based on:	Returns to Surface	Caliper Log	Returns to Surface	Caliper Log

9. Sidetracked Hole - Not applicable to this well.

10. Drilling Fluid

Gel chem was used from surface to 63 m; water was used from 63 to 100 m. Air was used to approximately 401 m; air foam was used to 777 m. Water was used to approximately 790 m. A saturated salt mud was used from 790 - 1384 m.

## PCI CANTERRA BELE 0-35

Summary of Mud Properties

Section	Interval (m)	Weight (kg/m <sup>3</sup> )	Funnel Vis (s/l)	Water Loss (Aver.Cm <sup>3</sup> )	pH (Aver)	CT (10 <sup>3</sup> mg/l)
Conductor	0-63	1070-1170	40-50	-	10.2	-
Surface	63-100	Water	-	-	-	-
Surface	100-401	Air	-	-	-	-
Surface	401-777	Air Foam	-	-	-	-
Main	777-790	Water	-	-	-	-
Main	790-1384	1215-1280	41-57	14.8	10.2	165-179

11. Fishing Operation

Saver sub twisted off when reaming at a depth of 37.5 m. Used a 6" basket grapple to recover fish, which was at 5.5 m.

When drilling at a depth of 362 m, dropped 12,000 daN of string weight. POOH, and ran in with overshot, latched onto fish and recovered same.

12. Well Kicks - None13. Formation Leak-off Tests

A pressure integrity test was run on day 29 after drilling out the surface casing shoe at 777 m. Water was used for the test and a surface pressure of 7,000 kPa was reached. The pressure at surface held for 5 minutes. The formation integrity was 18.8 kPa/m.

PCI CANTERRA BELE 0-35

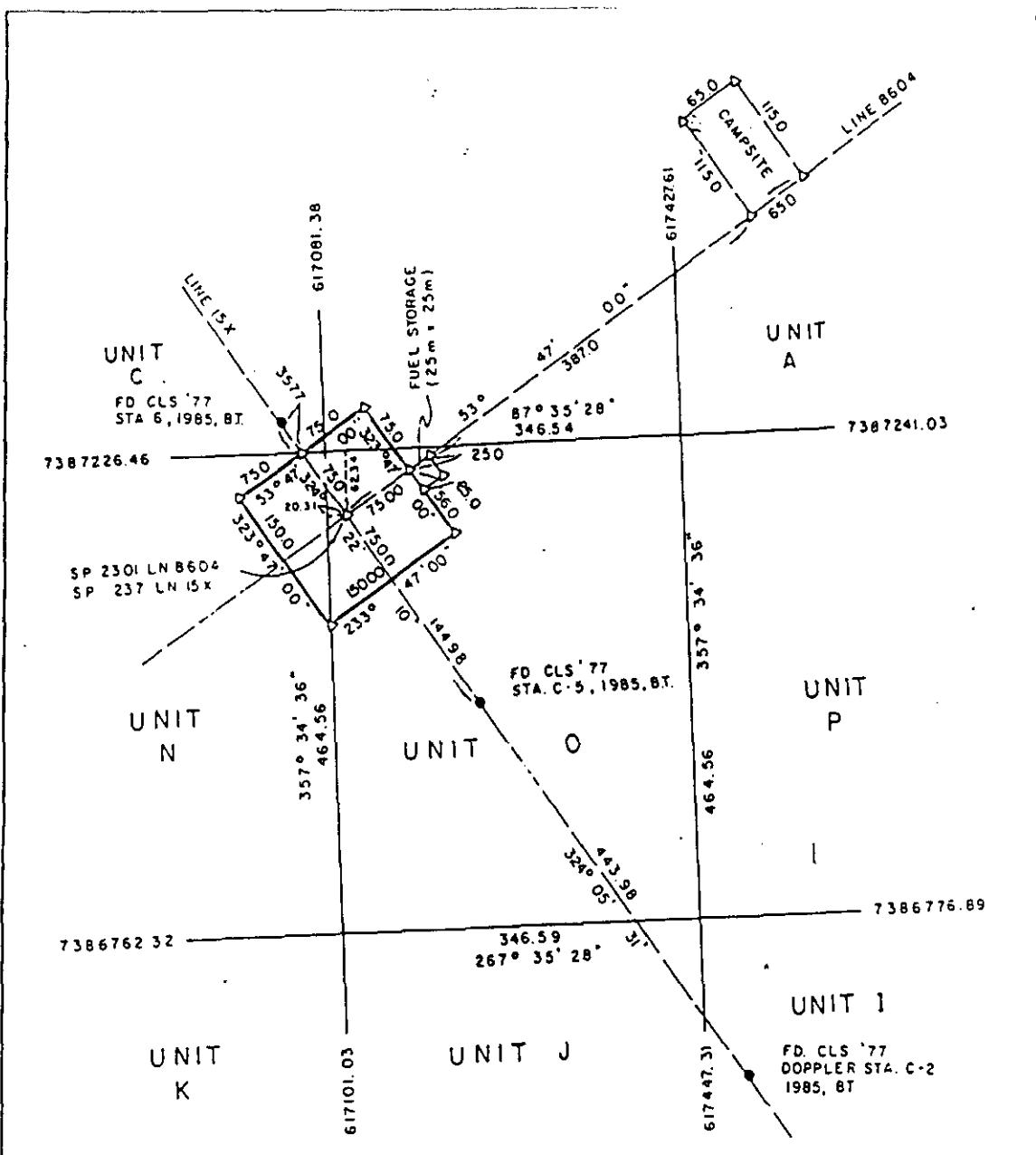
14. Time Breakdown

	Conductor	Surface	Main	Total
Drill	43.25	172.5	135.75	351.5
Trip	14.25	89.25	74.0	177.5
Ream/Clean	42.25	15	8.25	65.5
Conditioning	.5	28.25	21.75	50.5
Rig Service	4.0	13.5	9.75	27.25
Mechanical Downtime	.75	5.5	5	11.25
Survey	1.75	8.25	8.25	18.25
CSG-CMT-WOC	18.5	31.75	27.5	77.75
Head up/PR Test	54.25	50.50	8.75	113.50
Coring			72.5	72.5
Logging		14.5	32.25	46.75
DST			37.75	37.75
Drill Cement		2.5	6.5	9.0
Drill Out DV			3.5	3.5
WOO			2.5	2.5
Wait on Daylight			2.5	2.5
Tear Out			15	15
Rig up Air Drillers		2.5		2.5
Maintenance	5.75	12.5		18.25
Fishing	7	4.75		11.75
W.O. Tools		5.75		5.75
Wait on D.C. Inspection		8.25		8.25
Inspect D.C.		8.5		8.5
W.O. Cementers		2.25		2.25
<b>TOTAL</b>	<b>192.25</b>	<b>476.0</b>	<b>471.5</b>	<b>1139.75</b>

15. Deviation Survey

16. Abandonment Plugs - Not applicable to this well.

17. Composite Well Record



N.T.S. MAP SHEET: 96-L-9      METRIC      NORTHWEST TERRITORIES

**PETRO-CANADA INC.**

PRELIMINARY SKETCH SHOWING WELL LOCATION

**PCI CANTERRA BELE O-35**

UNIT O, SECTION 35, GRID AREA  $66^{\circ} 40'$ ,  $126^{\circ} 15'$

PETRO-CANADA INC.

*Macmillan*

CERTIFIED CORRECT:

THIS 10th DAY OF SEPTEMBER, A.D. 1985

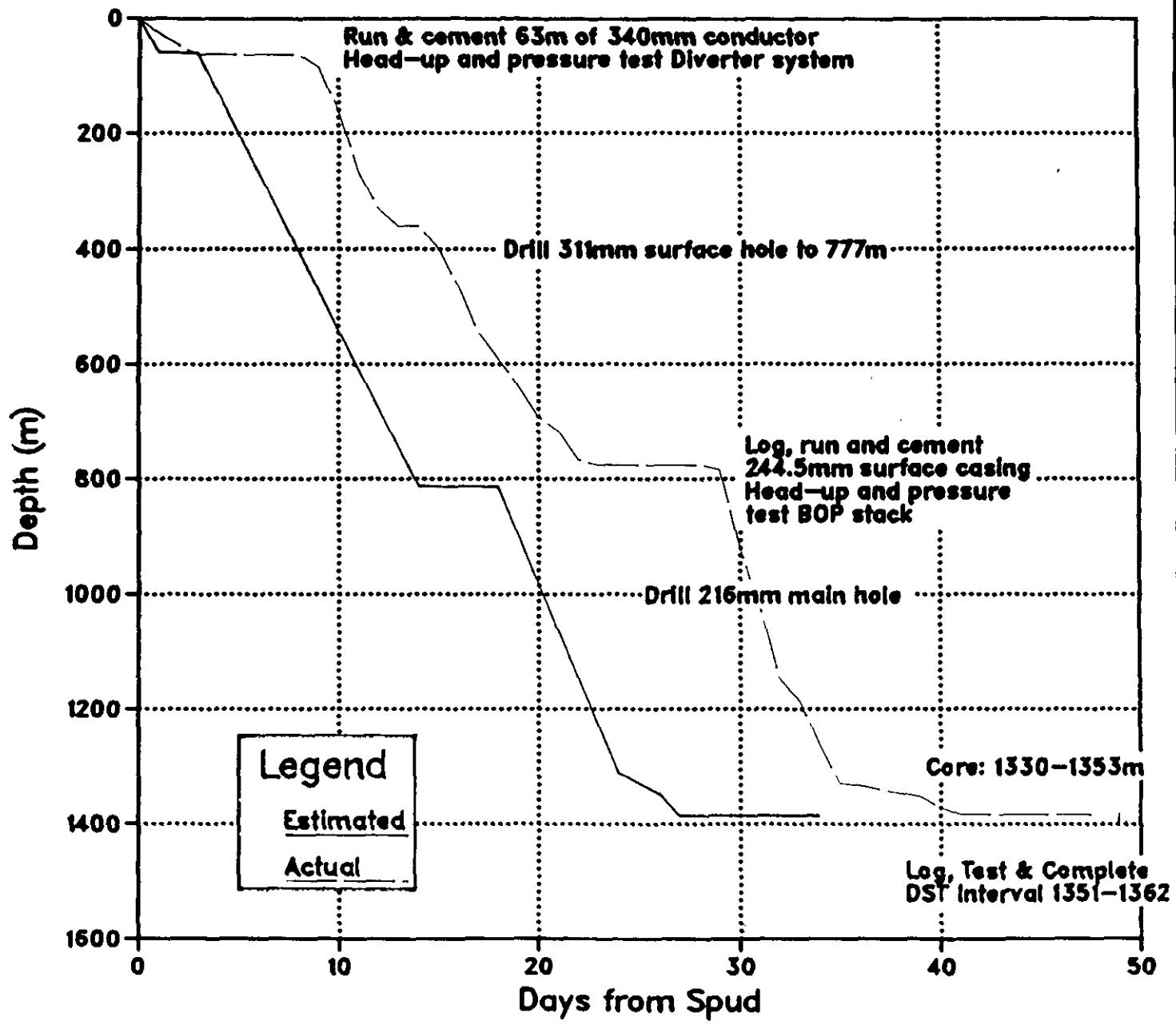
*Macmillan*

CANADA LANDS SURVEYOR

ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
ON GROUND : 392.62	NORTH LATITUDE: $66^{\circ} 34' 58.1357''$ 66.58281547 WEST LONGITUDE: $126^{\circ} 21' 32.1083''$ 126.35891897	NORTHING: 7387164.13 EASTING: 617104.34 CO-ORDINATES ARE COMPUTED FOR ZONE 9, CENTRAL MERIDIAN $129^{\circ}$ W.
AT WELLHEAD		
<b>LEGEND</b>		
Survey Monument found <input checked="" type="checkbox"/>		AREAS REQUIRED
Survey Monument placed <input type="checkbox"/>		WELLSITE: 5.560 Acres 2.250 ha.
Traverse Station <input type="checkbox"/>		CAMP SITE: 1.847 Acres 0.748 ha.
SCALE 1:5000		FUEL SITE: 0.154 Acres 0.062 ha.
		TOTAL: 7.56 Acres 3.06 ha.
		FILE NO. Y85023 DATE: SEPT. 10/85

# PCI CANTERRA BELE 0-35

## Planned Penetration Curve



Spud date: 86/02/14

Wellbore Profile  
PCI CANTERRA BELE 0-35

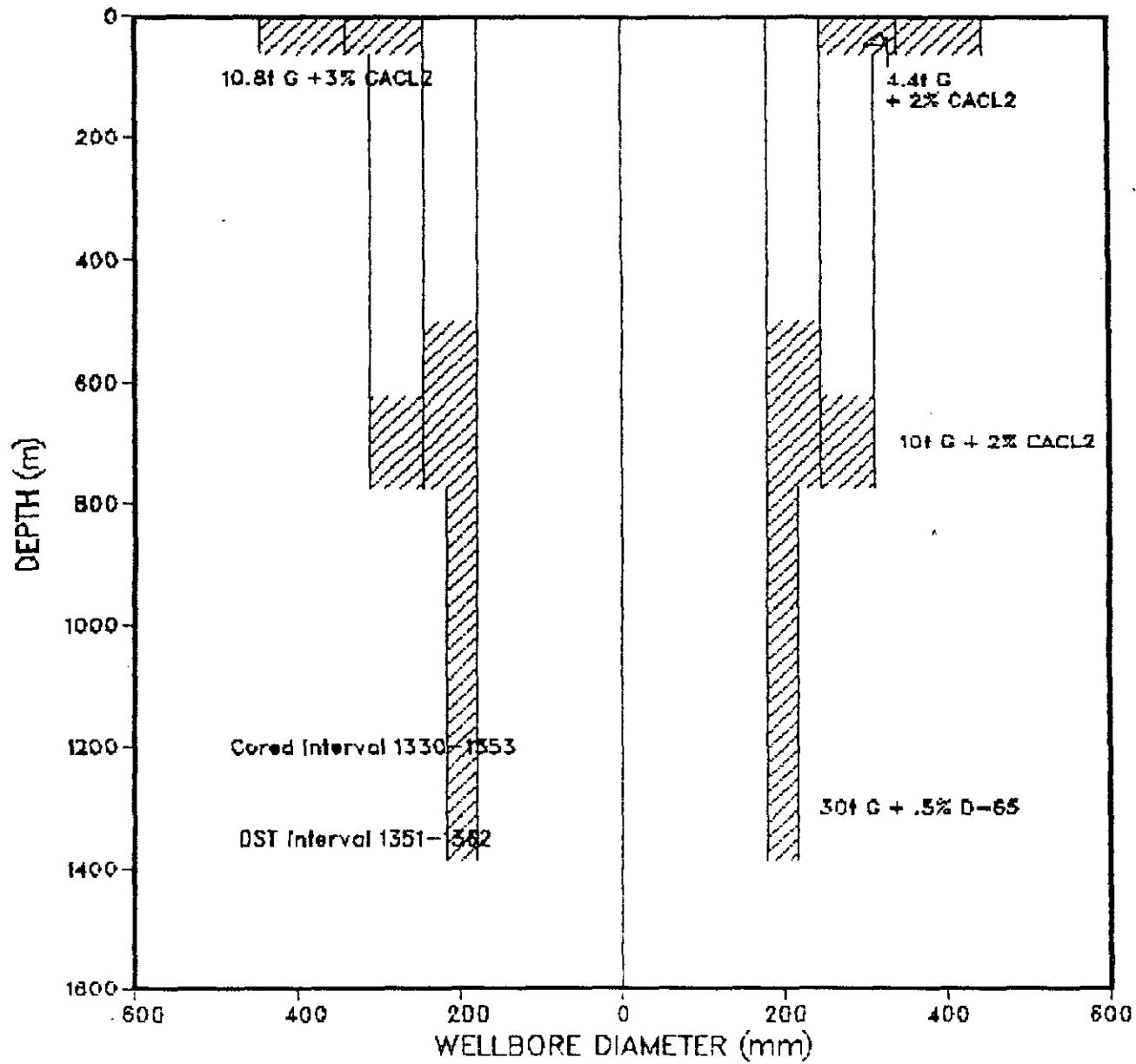


EXHIBIT RADIUS OF CURVATURE METHOD

TIE-IN LOCATION

MEASURED DEPTH	0.0	M
TRUE VERTICAL DEPTH	0.0	M
DISTANCE NORTH	0.0	M
DISTANCE EAST	0.0	M

BOTTOM HOLE LOCATION

COURSE LENGTH	59.2	M
COURSE AZIMUTH	50.1	DEG
MEASURED DEPTH	1380.0	M
TRUE VERTICAL DEPTH	1378.0	M
DISTANCE NORTH	38.0	M
DISTANCE EAST	45.4	M

VERTICAL SCALE = 1/100 Q/HM

W/K

REF 2285

REF 2285

PAGE 1

MEAS.	DEPTH	DEVIATION	H	DEGREES	TRUE AZIMUTH	VERTICAL DEPTH	CO-ORDINATES			COURSE	LENGTH
							+ NORTH	+ EAST	- SOUTH		
0.0	0.0		0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20.0	0.2		13	20.0	0.1	0.1	0.1	0.1	0.1	0.1	
40.0	0.4		25	40.0	0.1	0.1	0.1	0.1	0.2	0.2	
55.7	0.5		35	55.7	0.2	0.2	0.1	0.1	0.3	0.3	
60.0	0.4		49	60.0	0.2	0.3	0.2	0.2	0.4	0.4	
80.0	0.4		79	80.0	0.3	0.3	0.3	0.3	0.6	0.6	
100.0	0.3		96	100.0	0.3	0.4	0.4	0.4	0.9	0.9	
120.0	0.4		75	120.0	0.3	0.3	0.3	0.3	1.2	1.2	
140.0	0.5		68	140.0	0.3	0.4	0.3	0.3	1.4	1.4	
160.0	0.7		76	160.0	0.5	0.5	0.5	0.5	1.6	1.6	
180.0	0.8		73	180.0	0.6	0.6	0.6	0.6	1.8	1.8	
200.0	0.9		59	200.0	0.6	0.7	0.7	0.7	2.0	2.0	
220.0	0.8		53	220.0	0.7	0.9	0.9	0.9	2.2	2.2	
240.0	0.6		54	240.0	1.1	1.1	1.1	1.1	2.4	2.4	
260.0	1.0		61	260.0	1.3	1.3	1.3	1.3	2.6	2.6	
280.0	1.1		57	280.0	1.5	1.5	1.5	1.5	2.8	2.8	
300.0	1.1		59	300.0	1.7	1.8	1.8	1.8	3.0	3.0	
320.0	1.0		45	320.0	1.8	2.0	2.0	2.0	3.2	3.2	
340.0	0.9		32	340.0	2.2	2.2	2.2	2.2	3.4	3.4	
360.0	0.9		63	360.0	2.4	2.4	2.4	2.4	3.6	3.6	
380.0	0.9		55	380.0	2.6	2.6	2.6	2.6	3.8	3.8	
400.0	0.9		50	400.0	2.8	3.0	3.0	3.0	4.0	4.0	
420.0	0.9		57	420.0	2.5	2.7	2.7	2.7	4.2	4.2	
440.0	1.0		48	440.0	2.7	3.0	3.0	3.0	4.4	4.4	
460.0	1.0		38	460.0	3.0	3.3	3.3	3.3	4.6	4.6	
480.0	1.1		42	480.0	3.6	3.6	3.6	3.6	4.8	4.8	
500.0	1.3		37	500.0	4.0	4.3	4.3	4.3	5.0	5.0	
520.0	1.3		38	519.9	4.0	5.4	5.4	5.4	5.2	5.2	
540.0	1.3		44	539.9	4.3	5.7	5.7	5.7	5.4	5.4	
560.0	1.3		42	559.9	4.7	6.0	6.0	6.0	5.7	5.7	
580.0	1.7		55	579.9	5.1	6.4	6.4	6.4	6.2	6.2	
600.0	2.3		33	599.9	5.5	7.0	7.0	7.0	6.9	6.9	
620.0	2.3		61	619.9	5.9	7.7	7.7	7.7	7.7	7.7	
640.0	2.1		59	639.9	6.3	8.3	8.3	8.3	10.4	10.4	
660.0	2.2		62	659.9	6.7	9.0	9.0	9.0	11.2	11.2	
680.0	2.1		59	679.9	7.0	9.6	9.6	9.6	11.9	11.9	
700.0	2.0		66	699.8	7.4	10.3	10.3	10.3	12.7	12.7	
720.0	2.0		61	719.8	7.7	10.9	10.9	10.9	13.4	13.4	
740.0	2.0		61	739.8	8.1	11.6	11.6	11.6	14.1	14.1	
760.0	2.2		67	759.8	8.4	12.2	12.2	12.2	14.8	14.8	
780.0	2.1		68	779.8	8.7	13.0	13.0	13.0	15.6	15.6	
800.0	3.4		66	799.8	9.2	14.1	14.1	14.1	16.8	16.8	
820.0	3.7		54	819.7	9.6	15.1	15.1	15.1	18.0	18.0	
840.0	4.0		52	839.7	10.7	16.8	16.8	16.8	19.4	19.4	
860.0	4.3		49	859.6	11.6	17.3	17.3	17.3	20.8	20.8	
880.0	4.3		48	879.6	12.6	18.4	18.4	18.4	22.3	22.3	
900.0	4.6		48	899.5	13.7	19.7	19.7	19.7	24.0	24.0	
920.0	4.6		47	919.4	14.8	20.9	20.9	20.9	25.6	25.6	

REF 2205

PAGE 2

MEAS.	DEPTH	DEVIATION	DEGREES	TRUE AZIMUTH DEGREES	CO-ORDINATES	COURSE	LENGTH	M
940.0	4.8		47	939.3	16.0	22.1	27.3	
960.0	4.9		46	959.3	17.1	23.3	26.9	
980.0	4.7		44	979.2	18.3	24.5	30.6	
1000.0	4.8		40	999.1	19.3	25.6	32.2	
1020.0	5.0		37	1019.1	20.9	26.7	33.9	
1040.0	5.1		37	1039.0	22.3	27.7	35.6	
1060.0	5.1		37	1058.9	23.7	28.0	37.3	
1080.0	5.2		35	1078.8	25.2	29.9	39.0	
1100.0	5.3		31	1098.7	26.7	30.9	40.8	
1120.0	5.2		32	1118.7	28.2	31.8	42.5	
1140.0	5.3		30	1138.6	29.8	32.8	44.3	
1160.0	4.9		29	1158.5	31.3	33.6	46.0	
1180.0	4.5		31	1178.4	32.8	34.4	47.6	
1200.0	4.4		36	1198.4	34.1	35.3	49.1	
1220.0	4.2		40	1218.3	35.3	36.2	50.6	
1240.0	4.0		50	1238.3	36.3	37.2	52.0	
1260.0	2.8		62	1258.2	37.0	38.2	53.2	
1280.0	2.7		73	1278.2	37.3	39.1	54.0	
1300.0	2.6		84	1298.2	37.5	40.0	54.8	
1320.0	3.5		85	1318.2	37.6	41.1	55.7	
1340.0	4.1		86	1338.1	37.7	42.4	56.7	
1360.0	4.2		85	1358.1	37.8	43.9	57.9	
1380.0	4.1		73	1378.0	38.0	45.4	59.2	

REF 2205

PAGE 3

## BOTTOM HOLE LOCATION

COURSE LENGTH: 59.2 M

COURSE AZIMUTH: 50.1 DEGREES

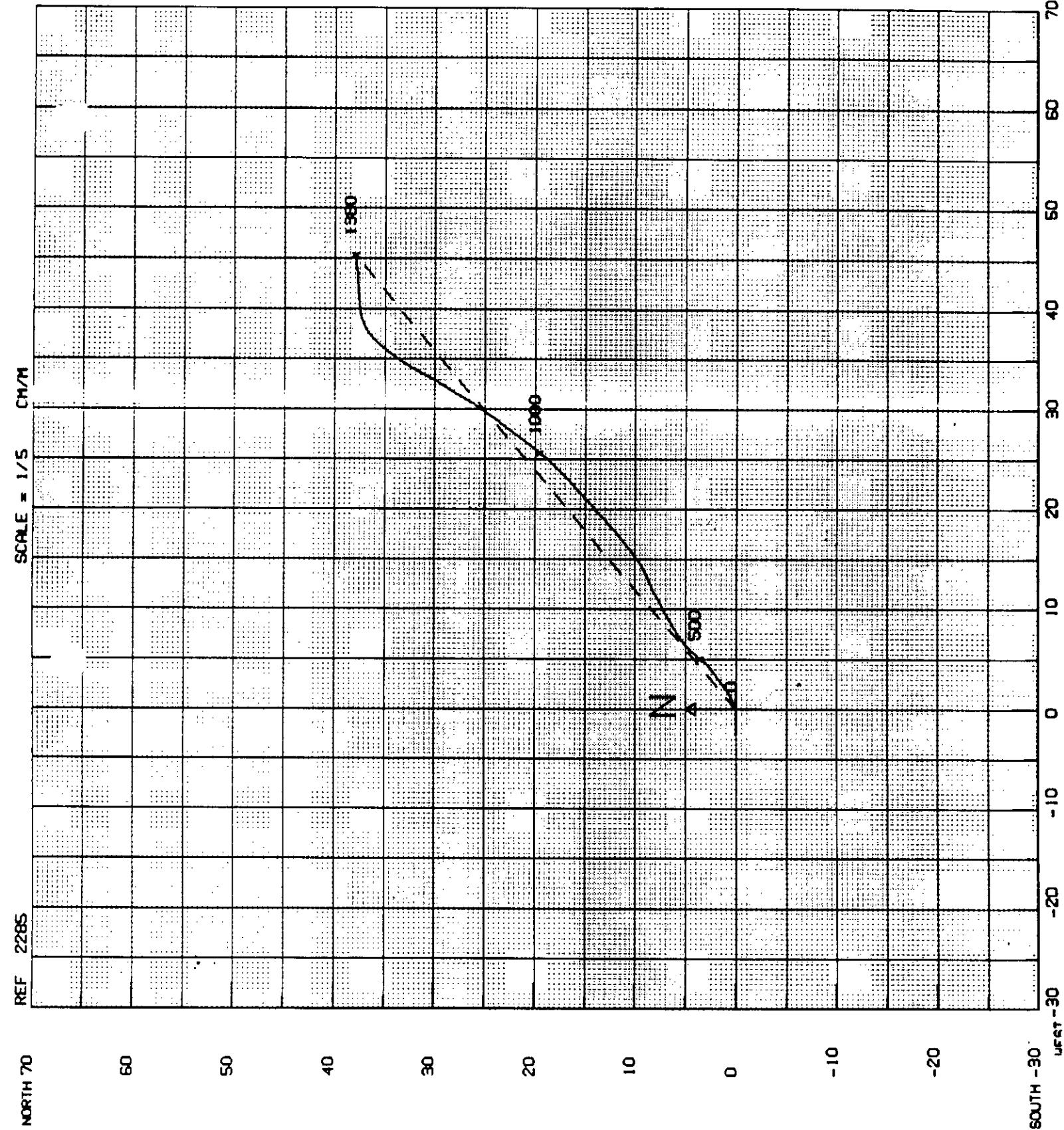
MEASURED DEPTH: 1380.0 M

TRUE VERTICAL DEPTH: 1378.0 M

DISTANCE NORTH: 38.0 M

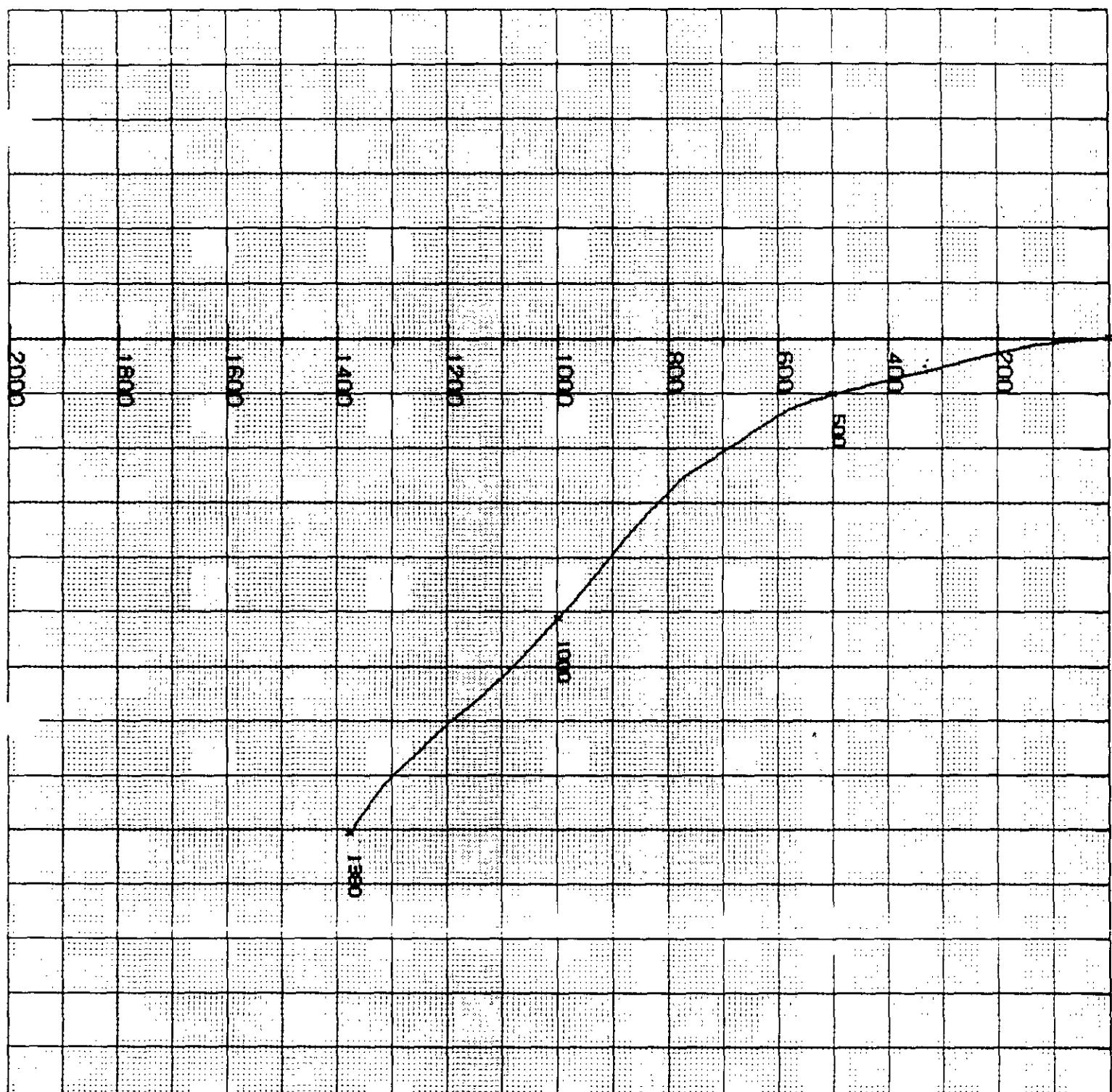
DISTANCE EAST: 45.4 M

## EXACT RADIUS OF CURVATURE METHOD



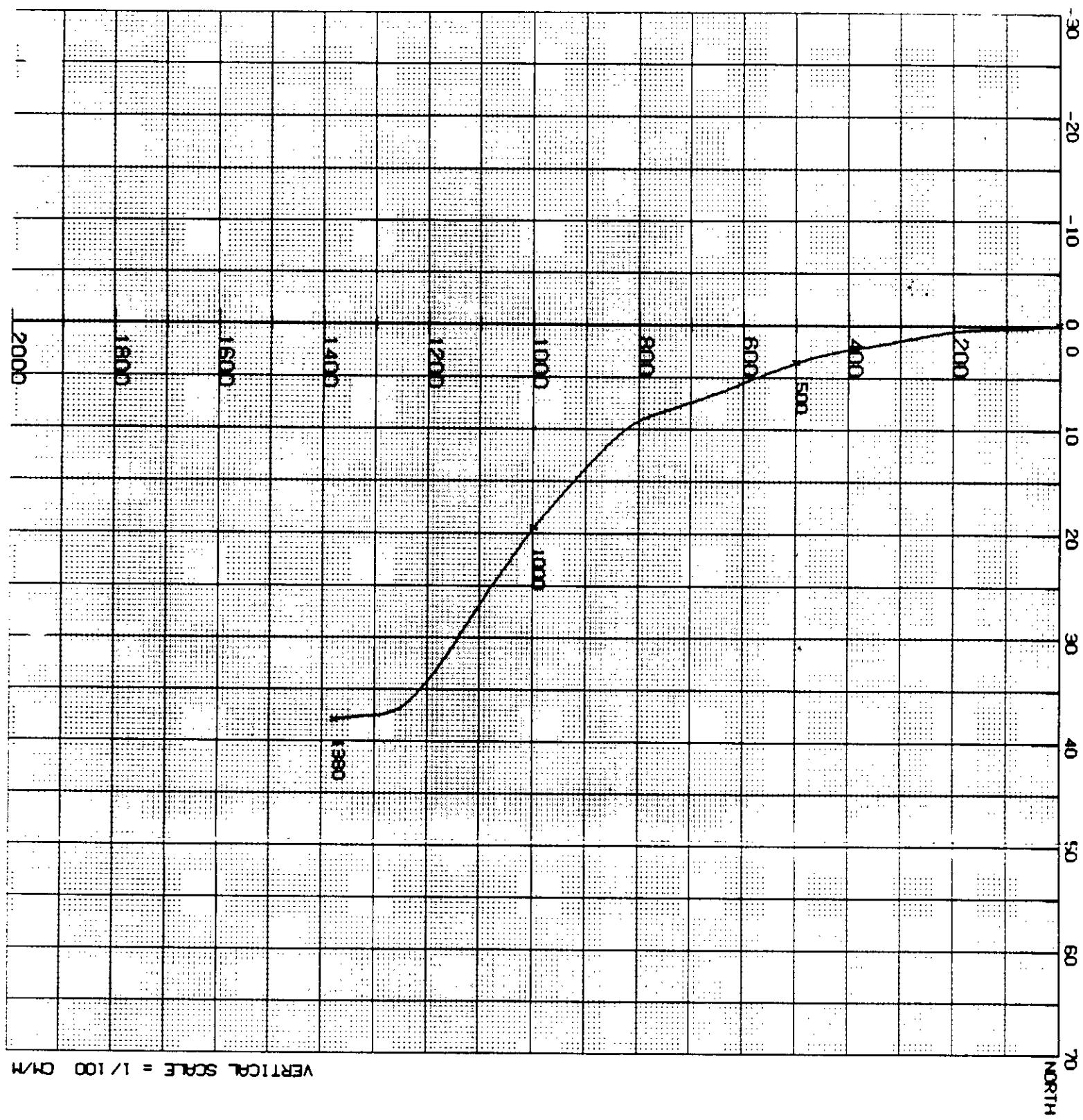
PEN. FRTION IN VERTICL IN ONE FRACT - LEFT

SCA FN IN VERTICL DEPTHS MTR17 SCAN = 1/5 GM/H



REF 2285

HANS



9211-P28-3-1 Clg

RI F#: C-70-999-74019-66

CANADA OIL AND G.S LANDS  
ADM. DE G.S. EN  
ADMINISTRATION DU GÉOLOGIE ET DU  
GAZ D.S TERRES DU CANADA

MAY 7 1986

ENGINEERING BRANCH  
GÉNIE

PCI CANTERRA BELE 0-35  
400/ 66.345 / 126.210 / 00  
DST#01  
1351.00m to 1362.00m  
MOUNT CLARK

TEST DATE: 86/03/30

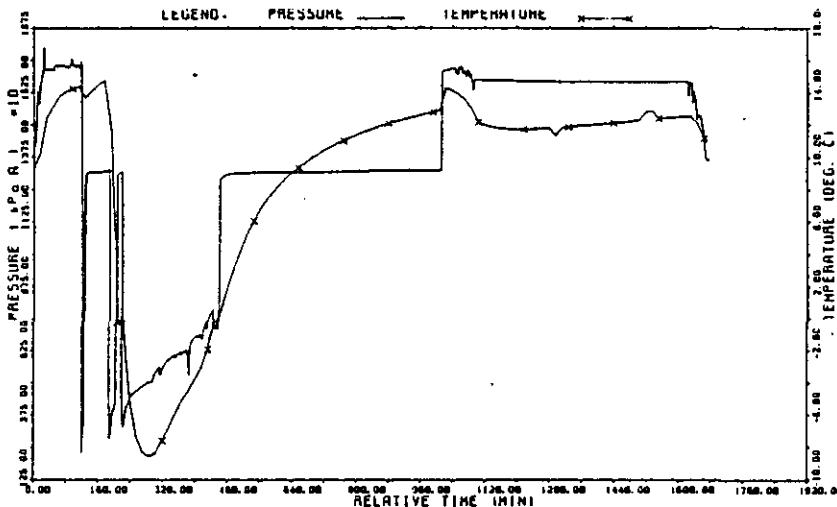
DEPTH: 1354.00m

PRESSURE  
kPa(a)

- 1) Initial Hydro : 17297.
- 2) 1st Flow Start: 2293.
- 3) 1st Flow End : 3284.
- 4) END 1st Shutin: 13238.
- 5) 2nd Flow Start: 2835.
- 6) 2nd Flow End : 4299.
- 7) END 2nd Shutin: 13238.
- 8) 3rd Flow Start: 3646.
- 9) 3rd Flow End : 7119.
- 10) END 3rd Shutin: 13264.
- 14) Final Hydro. : 17220.

TEST TIMES (MIN)

1stFLOW	:	4.0
SHUTIN	:	58.0
2ndFLOW	:	16.0
SHUTIN	:	14.0
3rdFLOW	:	238.0
SHUTIN	:	552.0



#### RECOVERY DATA

GAS TO SURFACE AT AN OPENING FINAL FLOW RATE OF 70 418.00 M3/D INCREASING TO 99 672.00 M3/D. TOTAL FLUID RECOVERY OF 46.00 M CONSISTED OF 30.00 M OF CONDENSATE AND 16.00 M OF CONDENSATE CUT DRILLING MUD.

#### REMARKS AND TEST SUMMARY

Test results indicate a mechanically successful test. Bottom hole pressures and the shape of the shut-in curves suggest HIGH PERMEABILITY within the interval tested. The final flow appears to be affected by fluid surging through the tools. Opened the tool for the final flow and the annulus started bubbling. Closed the tool, repumped the packers and continued with the test. The final shut-in stabilized in 458 minutes at 13 264.00 kPa, therefore was not extrapolated. Recorder #20426 - no pressures available due to excessive stylus drag.

#### TABLE OF CONTENTS

PAGE 1	PAGE 2	PAGE 3	PAGE 4
General Data	Tool Sequence	PRESSURE	Plot Summary
Blow Description	Recorder Summary	-TIME	Reservoir Calculations
Liquid Recovery	Mud and Hole Data	LISTING	-Parameters used
Gas Measurements			-Results

\*\*\*\*\* RECORDER PAGES & FIGURES \*\*\*\*\*

LYNES UNITED SERVICES LTD  
DST#01 REPORT

p.1

Well name : PCI CANTERRA BELE O-35  
Location : 400/ 66.345 / 126.210 /00  
Interval : 1351.00m to 1362.00m  
Test Date : 86/03/30  
Test Type : INFLATE STRADDLE  
Formation : MOUNT CLARK

K.B.Elevation : 397.80m  
Grd.Elevation : 393.30m  
TD @ test Date: 1384.00m  
Ticket Number : 74019  
Unit Number :

Started in hole at : 0030 hrs  
Tool opened at : 0530 hrs  
Reverse circulated?: NO  
Contractor & Rig No: JADE #5  
Lynes#1 : 1 of 1 on the same trip.

Operator: PETRO-CANADA INC.

ROOM 937 WEST  
150 - 6TH AVE. S.W.  
CALGARY ALBERTA  
T2P3E3

Company Rep : HOPE Y  
Testers : BARKER R

5 REPORTS(S) TO: CATHY BACKLAND  
Company:

BLOW DESCRIPTION

Preflow: Weak blow increasing a very strong air blow in 1 minute. Gas to surface in 3 minutes.

Second flow: Strong blow with gas to surface immediately.

Final flow: Gas to surface immediately with a light water spray.

TOTAL LIQUID RECOVERY : 46.00m

For DST# 1 through DST# 1  
3 Fluid Samples

Sent to: TAKEN BY THE  
CUSTOMER.

Btm. Hole Sampler #: 206

Sent to: TAKEN BY THE  
CUSTOMER.

30.00m CONDENSATE.

16.00m CONDENSATE CUT DRILLING MUD.

GAS MEASUREMENTS Device: ORIFICE WELL TESTER

Device:

Riser: 50.8mm

Gas Measurements Continued on Next Page

Dst#01  
PCI CANTERRA BELE O-35  
1351.00m To 1362.00m

p.la

FLOW #	TIME MIN	CHOKE mm	READING kPa	CUBIC METRES/D
3	10.	31.75	375.	70418.0
3	15.	31.75	400.	74113.0
3	20.	31.75	450.	81496.0
3	25.	31.75	470.	84439.0
3	30.	31.75	480.	85910.0
3	35.	31.75	480.	85910.0
3	40.	31.75	485.	86645.0
3	45.	31.75	485.	86645.0
3	50.	31.75	490.	87381.0
3	55.	31.75	490.	87381.0
3	60.	31.75	490.	87381.0
3	65.	31.75	495.	88116.0
3	70.	31.75	500.	88852.0
3	205.	38.10	300.	94796.0
3	210.	38.10	300.	94796.0
3	215.	38.10	310.	97248.0
3	220.	38.10	310.	97248.0
3	238.	38.10	320.	99672.0

\*TOOL SEQUENCE\*

SUB	LENGTH (m )
PUMP OUT SUB	.33
CROSS OVER SUB	.30
BAR STOP SUB	.30
INSIDE RECORDER	1.22
HYDRAULIC TOOL	1.50
BTM. HOLE SAMPLER	1.03
HYDRAULIC JARS	2.22
INSIDE RECORDER	1.38
SAFETY JOINT	.65
INFLATE PUMP	2.28
SCREEN	1.16
TOP INFALTE PACKER	1.78
PACKER STICK DOWN	.82
PORT SUB	.30
OUTSIDE RECORDER	2.02
SPACING	7.44
PACKER STICK UP	.42
BTM. INFALTE PACKER	1.90
SPACING	.61
RECORDER CARRIER	1.38
PERFORATED SPACING	.61
BELLY SPRING	2.00

\*\*\*\*\* TOOL TOTAL 31.65

DRILL COLLARS

ID= 60.0mm: 133.40  
 ID= :

DRILL PIPE

OD=114.3mm: 1204.83  
 OD= :

COLLAR-PIPE TOTAL 1338.23

STICK UP ABOVE TABLE : 1.38  
 TOOL ABOVE INTERVAL : 14.15  
 TOTAL INTERVAL : 11.00  
 BOTTOM CHOKES SIZE: 25.40 mm

\*\*\*RECORDER SUMMARY\*\*\*

1)	NUMBER : 001761	ELECTRONIC GAUGE.
	TYPE : DMRB	PRESURES AND
	LOCATION: OUTSIDE	TEMPERATURE.
	RANGE: 34500.00kPa(a)	
	DEPTH : 1354.00m	
2)	NUMBER : 012420	ABOVE INTERVAL.
	TYPE : K-3	
	LOCATION: INSIDE	
	RANGE: 20300.00kPa	
	DEPTH : 1344.00m	
3)	NUMBER : 019661	BELOW INTERVAL.
	TYPE : K-3	
	LOCATION: INSIDE	
	RANGE: 22800.00kPa	
	DEPTH : 1365.00m	
4)	NUMBER : 020426	ABOVE HYDRAULIC
	TYPE : K-3	TOOL. NO
	LOCATION: INSIDE	READINGS.
	RANGE: 19500.00kPa	
	DEPTH : 1337.00m	
5)	NUMBER : 020618	
	TYPE : K-3	
	LOCATION: OUTSIDE	
	RANGE: 21500.00kPa	
	DEPTH : 1354.00m	

MUD AND HOLE DATA

Caliper Hole Size @ Test Depth: 220.00mm	Water Loss : 8.5cc/s
Hole Condition at Test Time : GOOD	Filter Cake: 1.2 mm
Hole Conditioned Prior to Test? : YES	
Mud Weight : 1290.0 kg/m <sup>3</sup>	Main Hole Size: 215.00mm
Mud Type : GEL CHEMICAL	
Viscosity : 65.0s/1	Temperature @1354.00m = 14.3C

Location: 400/ 66.345 / 126.210 /00      Recorder Number: 001761  
 Test Type: INFLATE STRADDLE      Recorder Depth: 1354.00 m  
 Formation: MOUNT CLARK      Subsea Depth: -956.20 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE (T+dt)/dt kPa(a)	PRESSURE SQUARED kPa(a) <sup>2</sup> /10 <sup>6</sup>
1	INITIAL HYDROSTATIC			17297	
2	START OF 1st FLOW	0.0		2293	
3	END OF 1st FLOW	4.0		3284	
	1st SHUTIN PERIOD	0.0		3284	
		2.0	9041	12324	3.0000 151.8884
		6.0	9894	13178	1.6667 173.6491
		8.0	9903	13186	1.5000 173.8759
		10.0	9911	13195	1.4000 174.1028
		12.0	9911	13195	1.3333 174.1028
		14.0	9911	13195	1.2857 174.1028
		16.0	9920	13203	1.2500 174.3298
		18.0	9920	13203	1.2222* 174.3298
		22.0	9928	13212	1.1818* 174.5570
		24.0	9928	13212	1.1667* 174.5570
		26.0	9928	13212	1.1538* 174.5570
		28.0	9928	13212	1.1429* 174.5570
		30.0	9928	13212	1.1333* 174.5570
		32.0	9928	13212	1.1250* 174.5570
		34.0	9928	13212	1.1176* 174.5570
		38.0	9928	13212	1.1053* 174.5570
		40.0	9928	13212	1.1000* 174.5570
		42.0	9937	13221	1.0952* 174.7869
		44.0	9937	13221	1.0909* 174.7869
		46.0	9937	13221	1.0870* 174.7869
		48.0	9946	13229	1.0833* 175.0144
		50.0	9946	13229	1.0800* 175.0144
		54.0	9946	13229	1.0741* 175.0144
		56.0	9954	13238	1.0714* 175.2420
4	END OF 1st SHUTIN	58.0	9954	13238	1.0690* 175.2420
5	START OF 2nd FLOW	0.0		2835	

\* VALUES USED FOR EXTRAPOLATIONS

DST#01  
 PCI CANTERRA BELE 0-35  
 1351.00 m to 1362.00 m

p.3a

Location: 400/ 66.345 / 126.210 /00      Recorder Number: 001761  
 Test Type: INFLATE STRADDLE      Recorder Depth: 1354.00 m  
 Formation: MOUNT CLARK      Subsea Depth: -956.20 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE (T+dt)/dt kPa(a)	PRESSURE SQUARED kPa(a) <sup>2</sup> /10 <sup>6</sup>
6	END OF 2nd FLOW	2.0		3016	
		6.0		3577	
		8.0		3766	
		10.0		3964	
		12.0		3934	
		14.0		4111	
		16.0		4299	
2nd SHUTIN PERIOD		0.0		4299	
7	END OF 2nd SHUTIN	2.0	8775	13074	11.0000 170.9321
		6.0	8870	13169	4.3333 173.4200
		8.0	8887	13186	3.5000 173.8759
		10.0	8896	13195	3.0000 174.1028
		12.0	8930	13229	2.6667 175.0144
		14.0	8939	13238	2.4286 175.2420
		8	START OF 3rd FLOW	0.0	
		12.0		4077	
		24.0		4494	
		34.0		4663	
		46.0		4809	
		58.0		4938	
		70.0		5059	
		80.0		5274	
		92.0		5611	
		104.0		5645	
		114.0		5878	
		126.0		6059	
		138.0		6145	
		150.0		6171	
		160.0		6248	
		172.0		6576	
		184.0		6817	
		194.0		6938	

\* VALUES USED FOR EXTRAPOLATIONS

PCI CANTERRA BELE O-35  
1351.00 m to 1362.00 m

Location: 400/ 66.345 / 126.210 /00  
Test Type: INFLATE STRADDLE  
Formation: MOUNT CLARK

Recorder Number: 001761  
Recorder Depth: 1354.00 m  
Subsea Depth: -956.20 m

## TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE (T+dt)/dt kPa(a)	PRESSURE ABSCISSA	PRESSURE SQUARED kPa(a) <sup>2</sup> /10 <sup>6</sup>
9	END OF 3rd FLOW	206.0		7300		
		218.0		7731		
		230.0		7127		
		238.0		7119		
	3rd SHUTIN PERIOD	0.0		7119		
		18.0	5981	13100	15.3333	171.6100
		36.0	6024	13143	8.1667	172.7411
		56.0	6041	13160	5.6071	173.1935
		74.0	6050	13169	4.4865	173.4200
		92.0	6059	13178	3.8043	173.6491
		110.0	6059	13178	3.3455	173.6491
		128.0	6067	13186	3.0156	173.8759
		146.0	6067	13186	2.7671	173.8759
		164.0	6076	13195	2.5732	174.1028
		184.0	6076	13195	2.4022	174.1028
		202.0	6076	13195	2.2772	174.1028
		220.0	6076	13195	2.1727	174.1028
		238.0	6076	13195	2.0840	174.1028
		256.0	6076	13195	2.0078	174.1028
		274.0	6085	13203	1.9416	174.3298
		292.0	6085	13203	1.8836	174.3298
		312.0	6093	13212	1.8269	174.5570
		330.0	6102	13221	1.7818	174.7869
		348.0	6110	13229	1.7414	175.0144
		366.0	6110	13229	1.7049	175.0144
		384.0	6128	13247	1.6719	175.4698
		402.0	6128	13247	1.6418	175.4698
		420.0	6136	13255	1.6143	175.6977
		440.0	6136	13255	1.5864	175.6977
		458.0	6145	13264	1.5633	175.9258
		476.0	6145	13264	1.5420	175.9258
		494.0	6145	13264	1.5223	175.9258
		512.0	6145	13264	1.5039	175.9258
		530.0	6145	13264	1.4868	175.9258

\* VALUES USED FOR EXTRAPOLATIONS

PCI CANTERRA BELE O-35  
1351.00 m to 1362.00 m

Location: 400/ 66.345 / 126.210 /00  
Test Type: INFLATE STRADDLE  
Formation: MOUNT CLARK

Recorder Number: 001761  
Recorder Depth: 1354.00 m  
Subsea Depth: -956.20 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE(T+dt)/dt kPa(a)	ABSCISSA	PRESSURE SQUARED kPa(a)^2/10^6
10	END OF 3rd SHUTIN	548.0	6145	13264	1.4708	175.9258
10	END OF 3rd SHUTIN	552.0	6145	13264	1.4674	175.9258
14	FINAL HYDROSTATIC			17220		

\* VALUES USED FOR EXTRAPOLATIONS

1st SHUT-IN

HORNER EXTRAPOLATION 13242.50 kPa(a)  
HORNER SLOPE 13.20833 (kPa(a)\*\*2/10\*\*6)/CYCLE

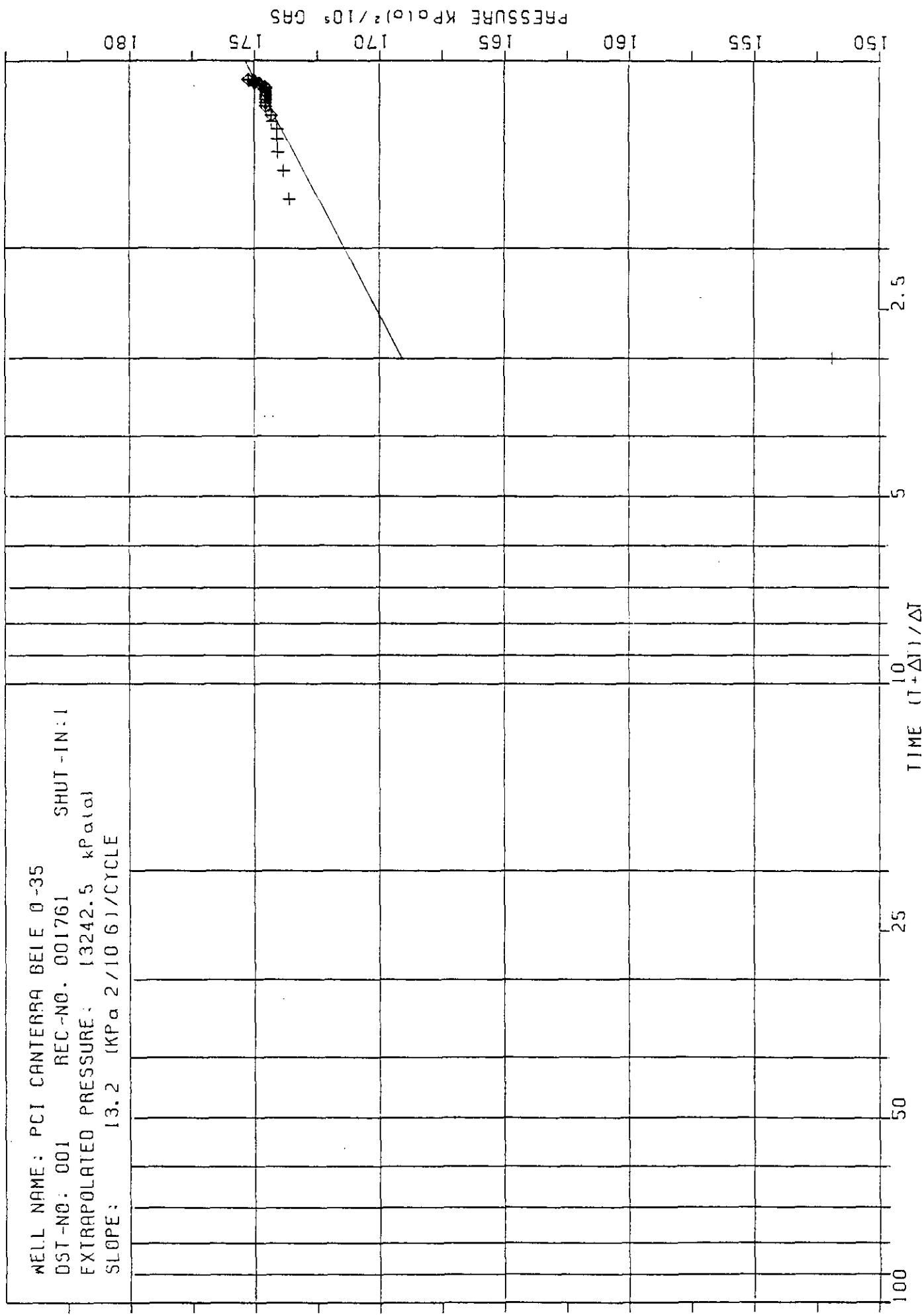
2nd SHUT-IN

HORNER EXTRAPOLATION .00 kPa(a)  
HORNER SLOPE .00000 (kPa(a)\*\*2/10\*\*6)/CYCLE

3rd SHUT-IN

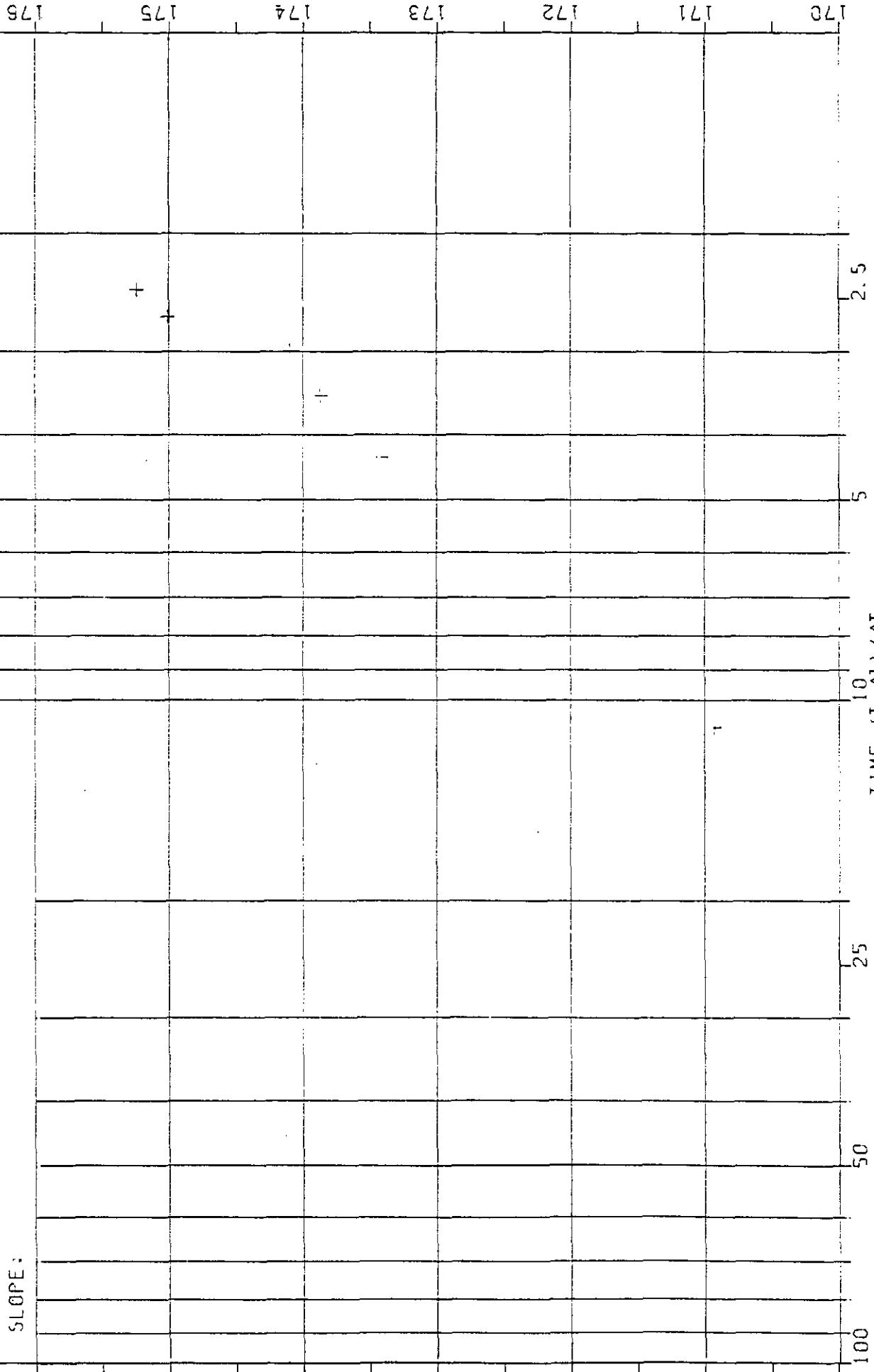
HORNER EXTRAPOLATION .00 kPa(a)  
HORNER SLOPE .00000 (kPa(a)\*\*2/10\*\*6)/CYCLE

WELL NAME : PCI CANTERRA BELE 0-35  
 DST-NO : 001 REC-NO. 001761 SHUT-IN : 1  
 EXTRAPOLATED PRESSURE : 13242.5 kPa(a)  
 SLOPE : 13.2 (kPa / 10 6 )/CYCLE



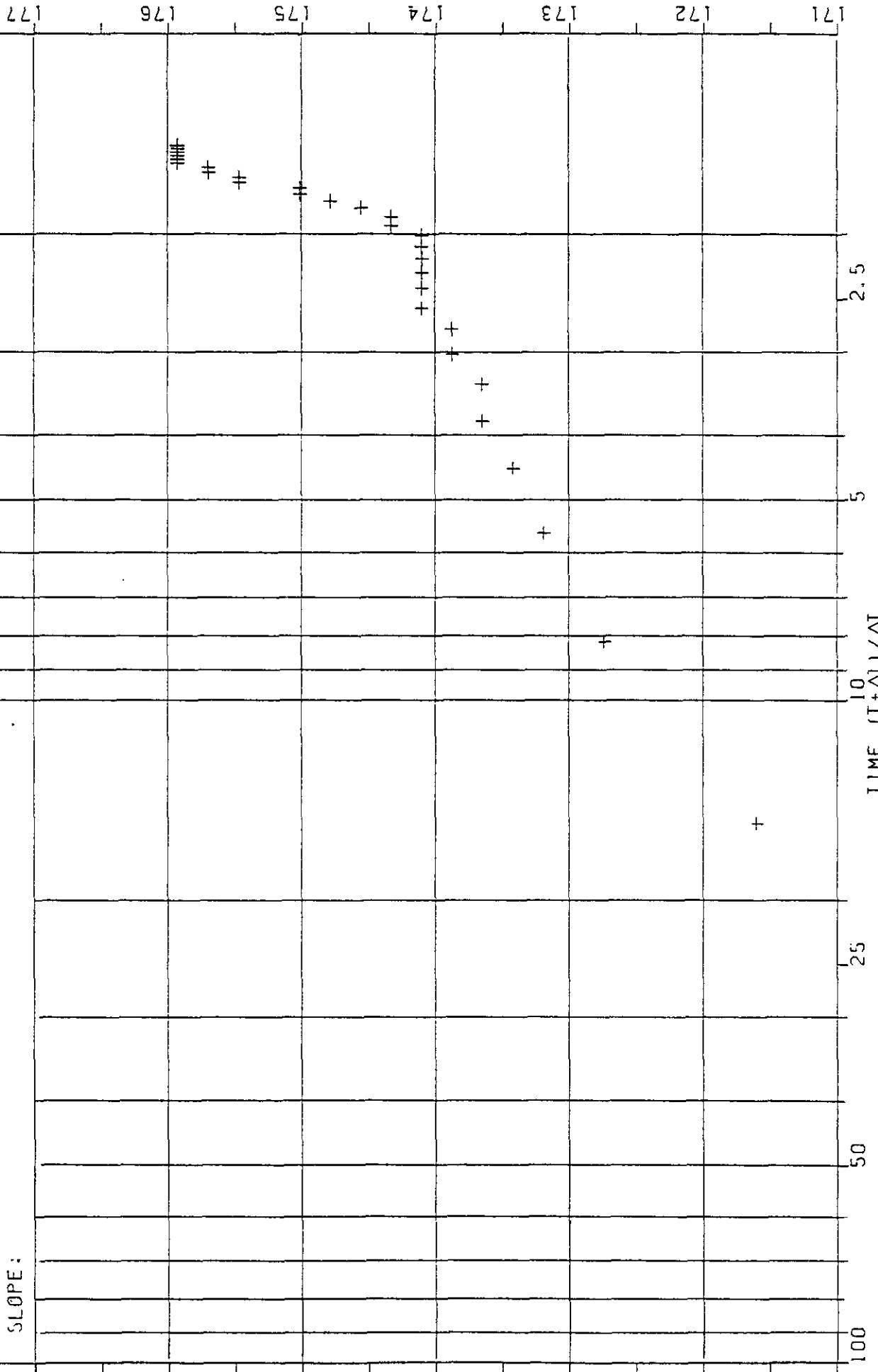
NAME: PCI CANTERRA BELE 0-35  
DST-NO: 001 REC-NO. 001761 SHUT-IN.2  
EXTRAPOLATED PRESSURE:  
SLOPE:

PRESSURE  $\text{KPa}(\text{g})^2 / 10^5 \text{ GRS}$



WELL NAME: PCI CANTERRA BELE 0-35  
DST-NO: 001 REC-NO. 001761 SHUT-IN.3  
EXTRAPOLATED PRESSURE:  
SLOPE:

PRESSURE  $\text{KP} \cdot \text{cm}^2 / 10^3$  GR5



PCI CANTERRA BELIE 0-35

66. 345 / 126. 210

REC#001761

100\*150

SHUTTIN ■ 1 + 3

2

REC#001761

DST#001

SHUTIN a 1 + 3

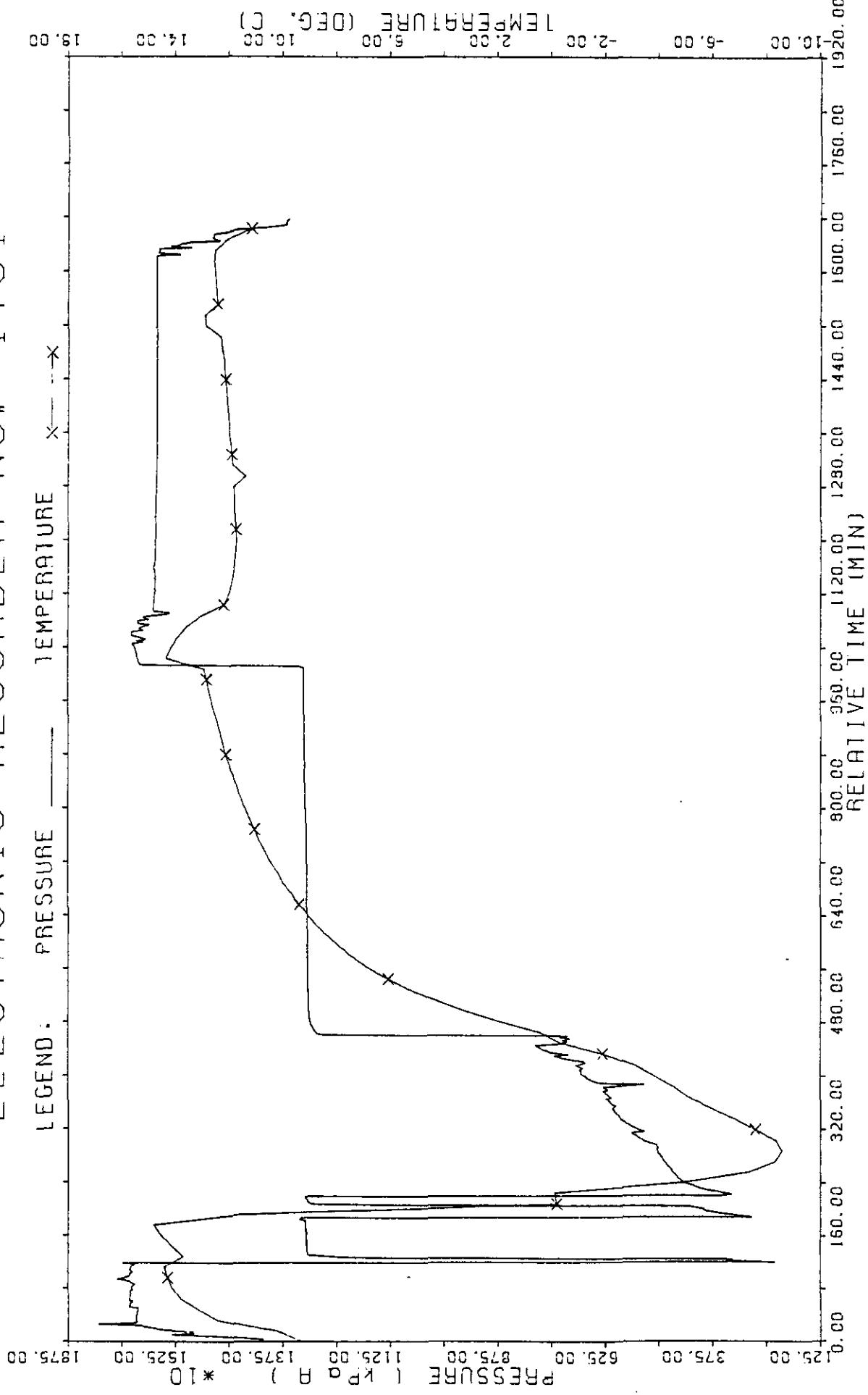
2 Δ

DELT A KP.s

100000  
10000  
1000  
100  
1000000

DELTAS MINUTES

PCI CANTERRA BELLE O-35  
66.345 126.210 DST NO 1  
ELECTRONIC RECORDER NO. 1761



DST#01  
PCI CANTERRA BELE O-35  
1351.00m to 1362.00m

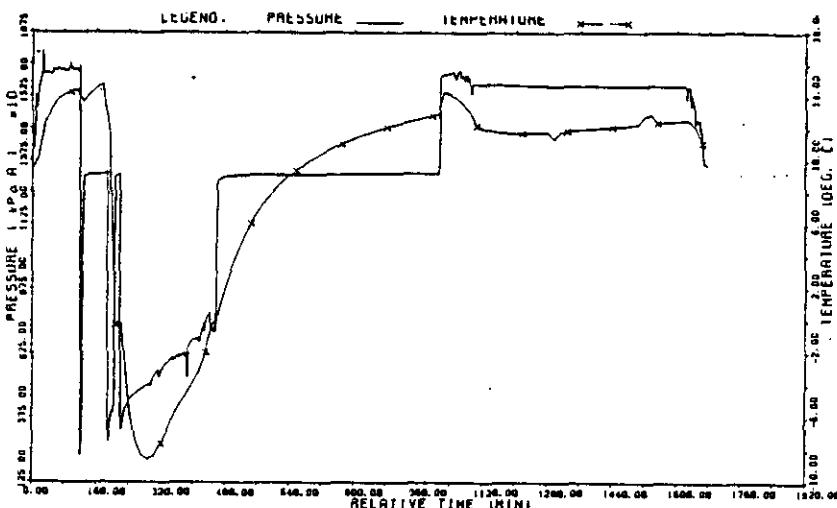
PRESSURE RECORDER NUMBER : 001761

DEPTH : 1354.00m  
TYPE : DMRB

LOCATION : OUTSIDE  
CAPACITY : 34500.00kPa(a)

PRESSURE  
kPa(a)

\*\*\*\*\* TEMPERATURE AT RECORDER DEPTH = 43.0 C



- 1) Initial Hydro : 17297.
- 2) 1st Flow Start: 2293.
- 3) 1st Flow End : 3284.
- 4) END 1st Shutin: 13238.
- 5) 2nd Flow Start: 2835.
- 6) 2nd Flow End : 4299.
- 7) END 2nd Shutin: 13238.
- 8) 3rd Flow Start: 3646.
- 9) 3rd Flow End : 7119.
- 10) END 3rd Shutin: 13264.
- 14) Final Hydro. : 17220.

ELECTRONIC GAUGE.  
PRESSURES AND  
TEMPERATURE.

TEST TIMES (MIN)

1st FLOW :	4.0
SHUTIN:	58.0
2nd FLOW :	16.0
SHUTIN:	14.0
3rd FLOW :	238.0
SHUTIN:	552.0

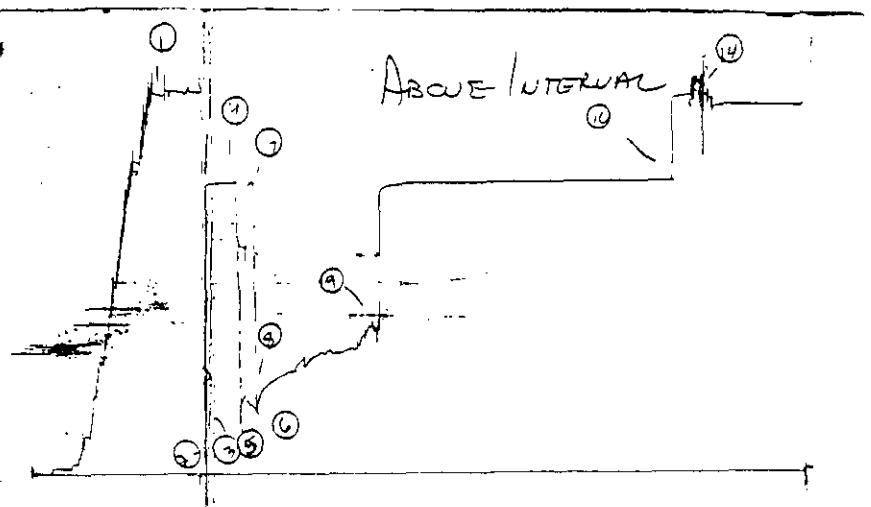
PRESSURE RECORDER NUMBER : 012420

DEPTH : 1344.00m  
TYPE : K-3

LOCATION : INSIDE  
CAPACITY : 20300.00 kPa

PRESSURE  
kPa

- 1) Initial Hydro : 17005.
- 2) 1st Flow Start: 1524.
- 3) 1st Flow End : 2724.
- 4) END 1st Shutin: 13088.
- 5) 2nd Flow Start: 2256.
- 6) 2nd Flow End : 3490.
- 7) END 2nd Shutin: 13088.
- 8) 3rd Flow Start: 2724.
- 9) 3rd Flow End : 6452.
- 10) END 3rd Shutin: 13088.
- 14) Final Hydro. : 16911.



ABOVE INTERVAL.

DST#01  
PCI CANTERRA BELE O-35  
1351.00m to 1362.00m

PRESSURE RECORDER NUMBER : 019661

DEPTH : 1365.00m  
TYPE : K-3

LOCATION : INSIDE  
CAPACITY : 22800.00 kPa

PRESSURE  
kPa

1) Initial Hydro : 17331.  
14) Final Hydro. : 17208.

① Below Interval ④

BELOW INTERVAL.

TEST TIMES(MIN)  
1st FLOW : 4.0  
SHUTIN: 58.0  
2nd FLOW : 16.0  
SHUTIN: 14.0  
3rd FLOW : 238.0  
SHUTIN: 552.0

PRESSURE RECORDER NUMBER : 020426

DEPTH : 1337.00m  
TYPE : K-3

LOCATION : INSIDE  
CAPACITY : 19500.00 kPa

PRESSURE  
kPa

1) Initial Hydro :  
14) Final Hydro. :

Above Hydraulic Tool

ABOVE HYDRAULIC  
TOOL. NO  
READINGS.

DST#01  
PCI CANTERRA BELE O-35  
1351.00m to 1362.00m

PRESSURE RECORDER NUMBER : 020618

DEPTH : 1354.00m  
TYPE : K-3

LOCATION : OUTSIDE  
CAPACITY : 21500.00 kPa

PRESSURE  
kPa

1) Initial Hydro :17201.  
2) 1st Flow Start: 1652.  
3) 1st Flow End : 3322.  
4) END 1st Shutin:13150.  
5) 2nd Flow Start: 2778.  
6) 2nd Flow End : 3564.  
7) END 2nd Shutin:13114.  
8) 3rd Flow Start: 3340.  
9) 3rd Flow End : 6958.  
10) END 3rd Shutin:13132.  
14) Final Hydro. :17120.

## STYLUS TOOL LIGHT

**TEST TIMES (MIN)**

1st	FLOW	:	4.0
	SHUTIN	:	58.0
2nd	FLOW	:	16.0
	SHUTIN	:	14.0
3rd	FLOW	:	238.0
	SHUTIN	:	552.0

**CORE LABORATORIES - CANADA, LTD.**

COMPANY PETRO-CANADA EXPLORATION INC.  
 WELL PCI CANTERRA BELE 0-35  
 FIELD WILDCAT, N.W.T.  
 LOCATION 66°34'38".13°N LAT 126°21'32".10°W LONG.

FORMATION MT. CAP  
 CORING EQUIPMENT DIAMOND  
 CORE DIAMETER, (mm) 100  
 CORING FLUID WATER BASE MUD

PAGE 1  
 FILE 70175-86-539C  
 DATE 86-04-07  
 ANALYSIS BC

**FULL DIAMETER ANALYSIS**

Sample Number	Depth Metres (m)	Sample Rep. Length	Permeability to Air Millidarcys	Porosity			Residual Saturation		
				X	%	Y	Oil	Water	Visual Examination
CORE NO. 1 1330.50 m - 1340.60 (core received 9.80 m) ( 9 Boxes)									
LC	1330.50-40.30	9.80	-	-	-	-	-	-	sh
	1340.30-40.60	0.30	-	-	-	-	-	-	Lost core
CORE NO. 2 1340.60 m - 1353.20 (core received 12.60 m) ( 11 Boxes)									
SF 1	1340.60-41.21	0.61	-	-	-	-	-	-	sh
SF 2	1341.21-41.65	0.44	-	<0.01	-	-	0.041	0.018	-
SF 3	1341.65-42.07	0.42	-	<0.01	-	-	0.012	0.005	-
AST 6	1342.07-44.25	2.18	-	-	-	-	-	-	sh
SF 4	1344.25-44.32	0.07	-	0.02	-	-	0.001	0.002	-
SF 5	1344.32-44.52	0.20	-	<0.01	-	-	0.006	0.001	-
SF 6	1344.52-44.58	0.06	-	0.04	0.03	0.02	0.002	0.054	0.003
SF 7	1344.58-44.66	0.08	-	0.02	-	-	0.002	0.014	0.001
SF 8	1344.66-44.94	0.28	1.4	0.04	0.03	0.02	0.011	0.054	0.015
SF 9	1344.94-45.05	0.11	-	0.02	-	-	0.002	0.065	0.007
SF 10	1345.05-45.45	0.40	1.5	0.02	0.02	<0.01	0.008	0.081	0.032
SF 11	1345.45-45.70	0.25	-	0.02	-	-	0.005	0.051	0.013
SF 12	1345.70-46.09	0.39	-	<0.01	-	-	0.041	0.016	-
SF 13	1346.09-46.46	0.37	-	0.03	-	-	0.011	0.057	0.021
SF 14	1346.46-46.72	0.26	-	0.09	-	-	0.023	0.104	0.027
SF 15	1346.72-47.00	0.28	-	0.05	-	-	0.014	0.076	0.021
SF 16	1347.00-47.48	0.48	1.2	<0.01	<0.01	-	0.050	0.024	2540

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM; AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGMENT OF CORE LABORATORIES - CANADA LTD. (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES - CANADA LTD. AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PROFICIENCY, PROPER OPERATIONS, OR PROFITABILITY OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAMP IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON.

## CORE LABORATORIES - CANADA LTD.

COMPANY PETRO-CANADA EXPLORATION INC.  
WELL PCI CANTERRA BELE 0-35FORMATION CORING EQUIPMENT  
MT. CAP DIAMONDPAGE 2  
FILE 70175-86-539C

## FULL DIAMETER ANALYSIS

Sample Number	Depth Metres (m)	■ Sample Rep. Length	■ (m) Max. 1 and 90 deg. 1 and V	Permeability to Air Millidarcys			Perm. X	Porosity X	Porosity X	Porosity X	!Residual Saturation! !Porosity! Density!s/■3! (Frac of Pore Vol.)			VISUAL EXAMINATION
				■ Bulk	■ Grain	■ Oil	■ Water	■	■	■	■	■	■	
SP 15	1347.77-48.14	0.37	-	<0.01	-	-	-	0.065	0.024	-	-	-	-	sh
SP 16	1348.14-48.43	0.29	-	0.07	0.020	0.093	0.027	-	2670	0.000	0.870	ss	vf	pyr
SP 17	1348.43-48.66	0.23	-	0.06	0.014	0.093	0.021	-	2670	0.000	0.762	ss	vf	pyr
SP 18	1348.66-49.25	0.59	1.4	<0.01	-	0.066	0.039	2480	2650	0.000	0.697	ss	vf	
-	1349.25-50.62	1.37	-	-	-	-	-	-	-	-	-	-	-	sh
SP 19	1350.62-50.76	0.14	0.07	0.06	0.008	0.072	0.010	2480	2670	0.000	0.674	ss	vf	
SP 20	1350.76-50.88	0.12	-	0.37	0.044	0.069	0.008	-	2680	0.000	0.716	ss	vf	f glauc
SP 21	1350.88-51.18	0.30	0.12	0.03	0.009	0.068	0.020	2490	2670	0.000	0.744	ss	vf	
-	1351.18-51.23	0.05	-	-	-	-	-	-	-	-	-	sh	sdy	
AST21	1351.23-51.32	0.09	-	0.03	0.003	0.068	0.006	2490	2670	0.000	0.744	ss	vf	
-	1351.32-52.10	0.78	-	-	-	-	-	-	-	-	-	sh		
SP 22	1352.10-52.25	0.15	-	<0.01	-	0.070	0.010	-	2750	0.000	0.842	ss	vf	glauc
-	1352.25-52.32	0.07	-	-	-	-	-	-	-	-	-	sh		
SP 23	1352.32-52.44	0.12	-	0.22	0.026	0.061	0.007	-	2740	0.000	0.853	ss	vf	f pyr
-	1352.44-52.69	0.25	-	-	-	-	-	-	-	-	-	sh	sdy	
SP 24	1352.69-53.01	0.32	1.3	<0.01	<0.01	0.026	0.008	2580	2650	0.000	0.819	ss	vf	
SP 25	1353.01-53.20	0.19	-	0.30	0.057	0.067	0.013	-	2660	0.000	0.430	ss	vf	f

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM; AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGMENT OF CORE LABORATORIES - CANADA LTD. (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES - CANADA LTD. AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PRODUCTIVITY, PROPER OPERATIONS, OR PROFITABILITY OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAND IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON.

CORE LABORATORIES - CANADA, LTD.  
Petroleum Reservoir Engineering

CORE ANALYSIS

PETRO-CANADA EXPLORATION INC.  
ECIL CANTERRA BENE 0-35  
WILDCAT, N.W.T.  
66 34' 58.13" N LAT 126 21' 32.10" W LONG.  
86-04-07

## CORE LABORATORIES - CANADA, LTD.

WELL FCI CANTERRA BELE 0-35

FORMATION MT. CAF

SUMMARY INTERVAL 1330.50-1353.20

TOTAL 22.70

METRES ANALYZED 7.00

METRES NOT ANALYZED: TOTAL 15.70 DENSE 15.40 LOST 0.30 \*NA 0.00 DRILLED 0.00 RURBLE 0.00

SUMMARY OF ANALYZED CORE		FRACTION OF ANALYZED CORE	WEIGHTED AVERAGE POROSITY	POROSITY	WEIGHTED AVERAGE METRES	HORIZONTAL PERMEABILITY	WEIGHTED AVERAGE METRES	PERMEABILITY	WEIGHTED AVERAGE RESID. OIL	WEIGHTED AVERAGE TOT. WATER	POROSITY HELIUM RANGE
ANALYZED CORE:											
TOTAL		7.000	1.000	0.058	0.403	0.040	0.279	0.000	0.742		
BY PERMEABILITY RANGES											
LESS THAN	0.01	0.01 MD	3.360	0.480	0.043	0.146	0.005	0.017	0.000	0.770	0.000 - 0.460
	-	0.09 MD	3.210	0.459	0.071	0.228	0.042	0.135	0.000	0.738	
	0.10	0.49 MD	0.430	0.061	0.066	0.028	0.297	0.128	0.000	0.623	
	0.50	0.99 MD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	1.00	9.98 MD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	GREATER THAN	9.99 MD	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

#NOT ANALYZED BY REQUEST

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM, AND FOR WHOM EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGMENT OF CORE LABORATORIES - CANADA LTD. (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES - CANADA LTD. AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PRODUCTIVITY, PROPER OPERATIONS, OR PROFITABILITY OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAND IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON.

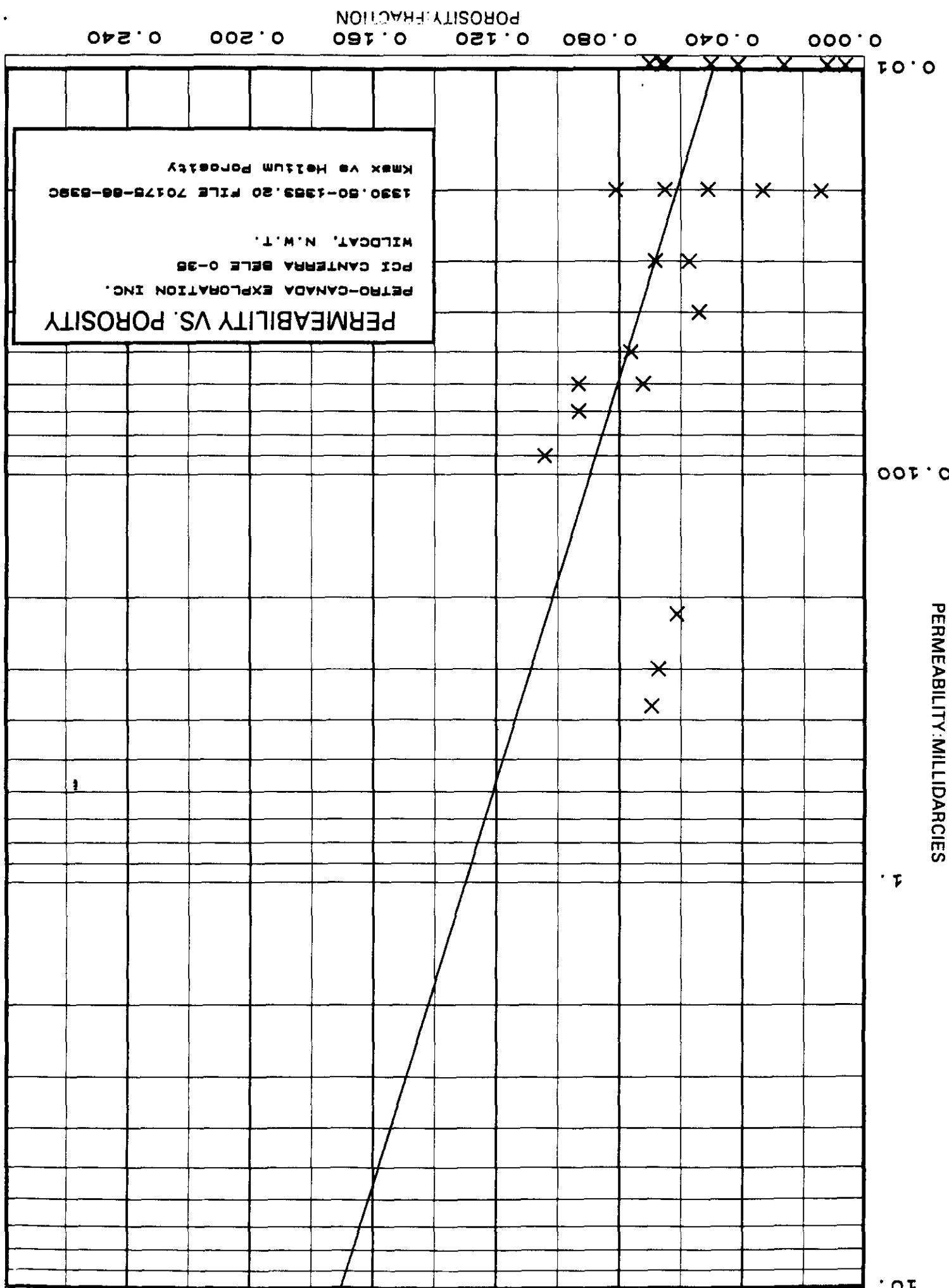
# CORE LABORATORIES - CANADA, LTD.

## CODE KEY - DESCRIPTIONS

anhy	= Anhydrite	= Halite (Salt)	hal	= Halite (Salt)	SCAL
AST	= Appears similar to	i	intgr	= Intergranular	sdy
bk	= Break	lam	lam	= Laminar (Laminated)	SEM
bldr	= Boulder	limy	limy	= Limy	sh
c	= Coarse	ls	ls	= Limestone	siltst
calc	= Calcite (arenous)	lv	lv	= Large vugs	sity
carbd	= Carbonaceous	m	m	= Medium	ss
chl	= Cobble	mi	mi	= Mud invaded	sshy
CEC	= Cation exchange capacity	mic	mic	= Micaceous	sty
cls	= Conglomerate	mshy	mshy	= Moderately shaly (<20%)	sulf
cht	= Chert	NA	NA	= Medium vugs	sv
coal	= Coal/Coal Inclusion	NP	NP	= Not analysed by request	tr
dol	= Dolomite	ool	ool	= No permeability measurement	TS
f	= Fine	OB	OB	= Oolitic	uncons
fest	= Ironstone	P	P	= Overburden	vfrac
foss	= Fossil (iferous)	pbl	pbl	= Preserved for future studies	vf
frac	= Fracture	POA	POA	= Portion removed for oil analysis	vOB
fric	= Friable	ppv	ppv	= PinPoint Vug	vshy
slauc	= Glauconite (ic)	PSA	PSA	= Particle size analysis	vug
grnl	= Granule	pyr	pyr	= Pyrite (ic)	*
gyp	= Gypsum	pyribit	pyribit	= Pyrobitumen	**
h frac	= Horizontal fracture				SA
					= Sieve Analysis
					ANALYSIS
					Fore volume measured by Boyle's Law in a Hassler holder using He
					X Grain vol m3rd by Boyle's Law in a modified U.S.P.M. Porosimeter using He
					X Grain volume measured by Boyle's Law in a matrix cup using He
					X Bulk volume measured by caliperings
					Bulk Volume by Archimedes Principle
					Porosity determined by summation of fluids (retort)
					Fluid saturations by retort on end pieces of full diameter samples
					X Water saturations by Dean-Stark
					X Oil saturations by weight difference in Dean-Stark
					Permeabilities measured on 20mm cubes
					X Permeabilities measured on 25.4 mm diameter drilled plugs
					X Core Gamma Composite
					X Core Gamma Spectral
					REMARKS:

PERM-ANTILOG ( 0.2483 ) (POROSITY) + -3.2237

SYMBOL	EQUATION OF THE LINE
$k$	$k = \text{ANTILOG}(\text{SLOPE}(\text{POROSITY}) + \text{LOG OF INTERCEPT})$
$\log(k)$	$\log(k) = (\text{SLOPE}(\text{POROSITY}) + \text{LOG OF INTERCEPT})$
$\text{EQUATION OF REDUCED LINE RELATING PERMEABILITY (k) TO POROSITY}$	



# PERMEABILITY VS POROSITY

PAGE 1  
FILE: 70175-86-539C

COMPANY: PETRO-CANADA EXPLORATION INC.

WELL : FCI CANTERRA BELE 0-35

FIELD : WILDCAT, N.W.T.

PROVINCE:

FORMATION: MT. CAF

AIR PERMEABILITY : MD - MAXIMUM  
POROSITY : FRACTION  
( UNCORRECTED FOR SLIPAGE )  
( HELIUM )

DEPTH INTERVAL	METERS ANALYZED	RANGE & SYMBOL	PERMEABILITY MINIMUM	PERMEABILITY MAXIMUM	FOROSITY MIN. MAX.	FOROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	PERMEABILITY AVERAGES HARMONIC	PERMEABILITY AVERAGES GEOMETRIC
1330.50 - 1353.20	7.00	1 (X)	0.000	10.0	0.000 0.480	0.058	0.04	0.01	0.02

EQUATION OF REDUCED LINE RELATING PERMEABILITY(K) TO POROSITY :

$$\begin{aligned} \text{LOG}(K) &= (\text{SLOPE})(\text{POROSITY}) + \text{LOG OF INTERCEPT} \\ K &= \text{ANTILOG}((\text{SLOPE})(\text{POROSITY}) + \text{LOG OF INTERCEPT}) \end{aligned}$$

RANGE  
-----  
EQUATION OF THE LINE  
-----

1    FERM = ANTILOG(( 0.2483)(POROSITY) + -3.2237)

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Kmax and Helium Porosity

1330.50-1353.20 FILE 70175-86-539C

PCI CENTERA BLE 0-35

INC.

## LEGEND

ARITHMETIC MEAN GRAIN DENSITY

GEOMETRIC MEAN PERMEABILITY

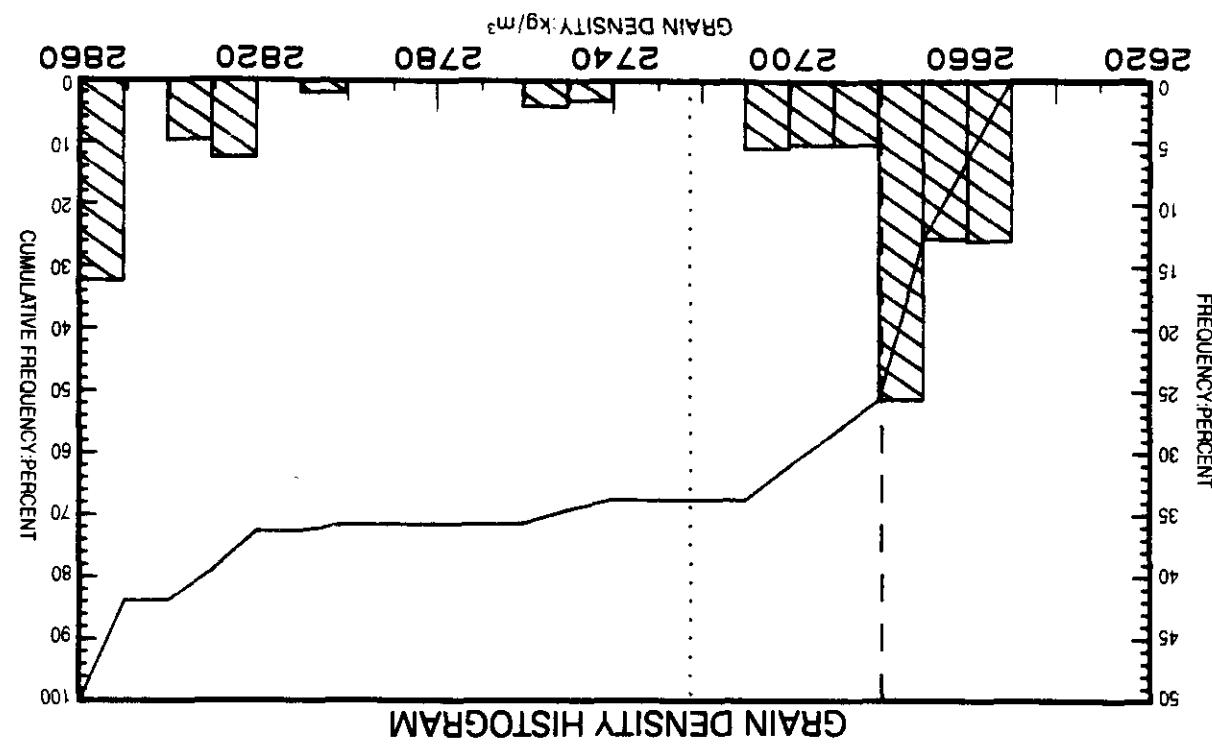
ARITHMETIC MEAN POROSITY

CUMULATIVE CAPACITY LOST

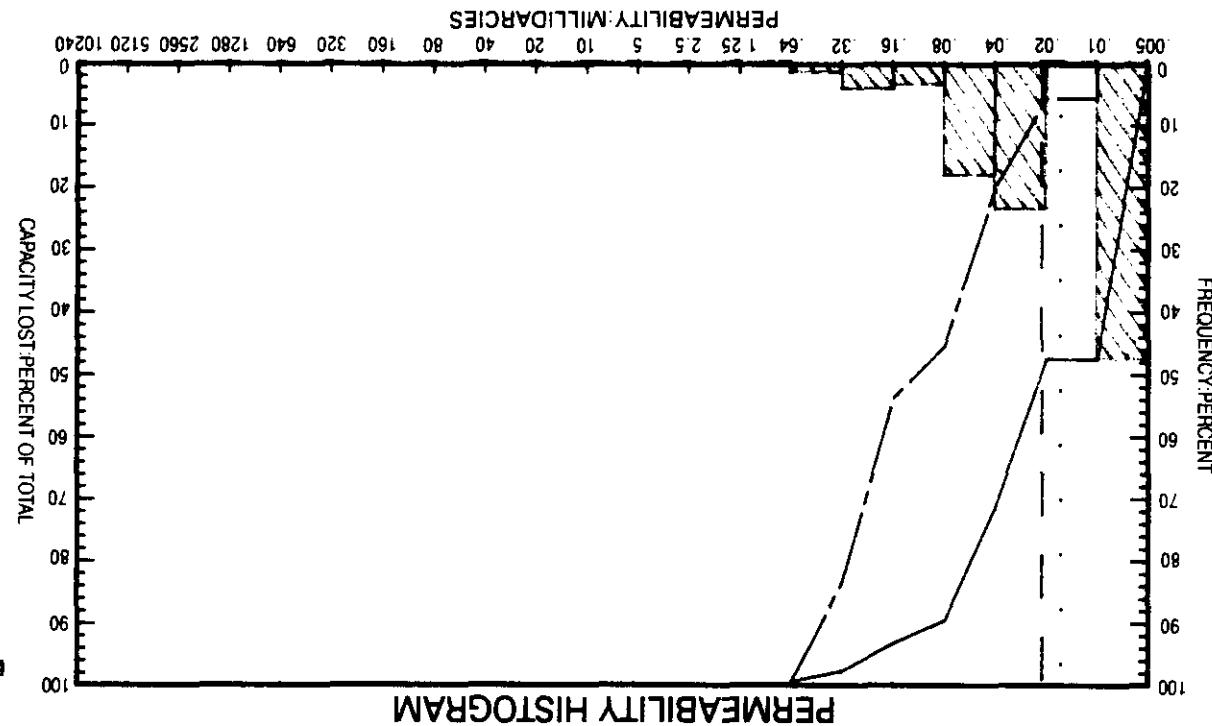
CUMULATIVE FREQUENCY

MEDIAN VALUE

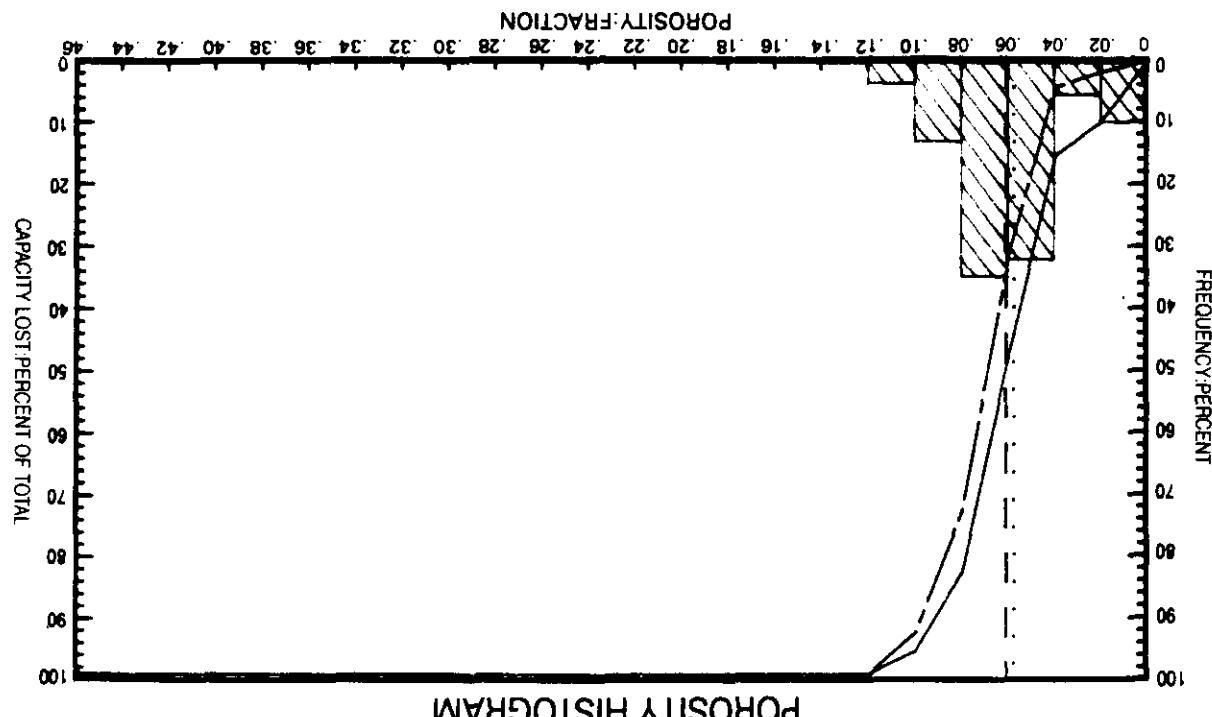
WILDCAT. N.W.T.



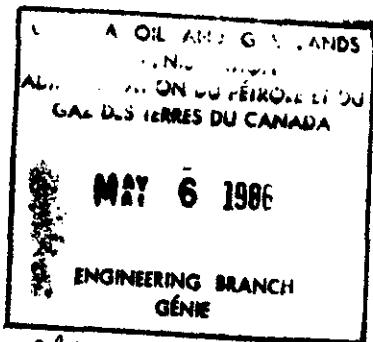
GRAIN DENSITY HISTOGRAM



PERMEABILITY HISTOGRAM



POROSITY HISTOGRAM



**CALGARY COPY**

*clg*

**GEOLOGICAL WELLSITE REPORT**

**FOR**

**PCI CANTERRA**

**BELE 0-35**

*9211-P28-3-1*

**Prepared For**

**PETRO CANADA RESOURCES**

**By**

**C.D. Frew**

**PRO GEO CONSULTANTS**

April, 1986

## TABLE OF CONTENTS

	page
WELL SUMMARY -----	1
DAILY SUMMARY -----	2
CASING SUMMARY -----	10
DRILL STEM TEST SUMMARY -----	11
GEOLOGICAL SUMMARY -----	13
FORMATION TOPS -----	14
SAMPLE DESCRIPTIONS -----	15
CORE DESCRIPTIONS -----	25

## WELL SUMMARY

WELL NAME: PCI CANTERRA BELE 0-35

COORDINATES: 66° 34' 58" N; 126° 21' 32" W

LOCATION: Unit 0, Sec. 35, Grid Area 66° 40', 125° 15'

ELEVATIONS: Ground: 393.26m  
KB: 397.76m

OPERATOR: Petro Canada Resources

DRILLING CONTRACTOR: Jade Drilling Rig #5

WELLSITE SUPERVISION: Toolpusher: D. Ostapovich/W. Zolkowski  
Engineer: K. Steil/Y. Hope/D. Fletcher  
Geologist: C.D. Frew

WELL SPUNDED: 0015 hours, 1986/02/14

DRILLING COMPLETED: 1740 hours, 1986/03/26

BIT SIZES: Surface: 311mm  
Downhole: 215.9mm

CASING SIZES: Surface: 245mm  
Production: 178mm

TOTAL DEPTH: Driller: 1384m K.B.  
Logger: 1380m K.B.

BOTTOM HOLE FORMATION: Proterozoic

CORES CUT: #1 1330.5 - 1340.6m  
#2 1340.6 - 1353.05m

LOGS RUN: DILL-MSFL; CNL-LDT-NGT-AMS; BHCS; HDT; MEL; WST

DRILL STEM TESTS: 1: 1351 - 1362m

RIG RELEASED: 2130 hours 1986/04/01

WELL STATUS: Cased and Abandoned

## DAILY SUMMARY

### 1986/02/14

- Spud 0015 hours
- Drill 11 meters of main hole with 250mm bit
- Lay down 228mm drill collar, pick up shock sub and make up BHA
- Drill 311mm hole
- Survey at 18m - .75° - blow kelly
- Remodel and install cellar jet - washed out

### 1986/02/15

- Drill 311mm hole
- Survey at 27m - 1°, blow kelly
- Pull out to bit, run in, pick up jars
- Drill 311mm hole
- Trip for bit #2
- Drill 311mm hole

### 1986/02/16

- Drill 311mm hole
- Survey at 43m - 1/4°
- Blow kelly, lay down collars, jars and shock sub
- Blow kelly, make up bit, ream conductor
- Ream conductor to 444mm

### 1986/02/17

- Ream conductor hole
- Trip out with bit #3A, pick up hole opener
- Run in, pick up jars, unplug jets in hole opener
- Ream - twist off at Sabre Sub
- Blow Kelly, wait on overshot
- Fish with overshot - successful
- Blow Kelly, break circulation, resume reaming
- Ream 444mm hole

### 1986/02/18

- Ream 444mm hole
- Trip for hole opener
- Ream 444mm hole
- Circulate prior to tripping out
- Trip out - strap out (strap OK)
- Rig up to run casing
- Run same

1986/02/19

- Run casing
- Rig up to cement - circulate prior to cementing
- Cement casing with Dowell-Schlumberger
- Ran 5 joints of 340mm, 101.18 kg/m, K-55 BT&C conductor pipe. Landed at 63m
- Cemented with 11 tonnes Class "G" cement + 3%  $\text{CaCl}_2$  displaced with  $4.1\text{m}^3 \text{H}_2\text{O}$
- Plug down at 0450 hours
- Wait on cement
- Cut casing - bail out cellar
- Weld on bowl

1986/02/20

- Weld on bowl and pressure test
- Nipple up BOP's

1986/02/21

- Nipple up BOP's
- Rig up to drill mousehole and drill mousehole
- Nipple up BOP's
- Check motor kills, function test Hydrils and pressure test to 700 kPa - OK

1986/02/22

- Pressure test diverter stack to 700 kPa, pressure test motor kills,
- Test hydrill - OK
- Rig service
- Make up BHA and run in hole. Tag cement at 52m
- Drill out cement and float shoe to 63m
- Drill 311mm hole to 82m - torque dropped off.
- Drill ahead to 85m, torque increased suddenly
- Blow kelly and pull out of hole for bit trip

1986/02/23

- Continue tripping out bit #5B
- Drill ahead with water to 99.4m (changed pumps twice)
- Rig up to drill with air and drill ahead to 163m

1986/02/24

- Drilled 311mm hole to 270m
- Tripped for bit

1986/02/25

- Run in with bit #6B
- Ream undergauge hole
- Drill 311mm hole
- Misrun survey at 277m
- Drill 311mm hole
- Replace gasket on Blooey line
- Drill 311mm hole
- Pull out of hole to 228m drill collars
- Change water pumps on floor motor
- Run in hole

1986/02/26

- Run in hole
- Drill 311mm hole
- Check Hydrill and HCR - OK
- Drill 311mm hole
- Twist off at collars
- Pull out of hole - one 171mm DC and three 228mm DC left in hole
- Wait on fishing tools, pick up fishing tools, run in with same
- Fish for collars
- Pull out of hole with fish
- Wait on collar inspectors - run collars in hole

1986/02/27

- Break down fishing tool - lay down one collar
- Pull collars out of hole
- Wait on inspectors
- Run in with collars
- Thaw rathole, pick up kelly and blow steam through collars
- Inspect collars
- Make up bit, run in hole

1986/02/28

- Run in with collars - pick up 6 drill collars
- Run in drill pipe
- Pick up kelly, break circulation
- Ream to bottom from 354 - 362m
- Bail out cellar and switch blooey line to dispose of water  
(hole making approximately 100bbl/hour of fresh water)
- Drill 311mm hole
- Clean cellar
- Drill 311mm hole

1986/03/01

- Drill 311mm hole
- Circulate to clean hole, pull 3 joints of drill pipe for float
- Run in hole
- Survey at 410m - try to break circulation unsuccessfully
- Pull out of hole, break circulation, run in hole
- Drill 311mm hole
- Pull 1 joint of drill pipe and recover float
- Circulate hole clean prior to survey
- Check hydril and HCR
- Drill 311mm hole
- Circulate prior to survey
- Survey

1986/03/02

- Pressured up when breaking circulation after survey at 458m
- Made 5 stand dummy trip and spotted 25 gallons of alcohol
- Break circulation, run in hole and clean to bottom
- Drill 311mm hole to 497m, circulate and survey
- Break circulation, clean to bottom
- Drill 311mm hole

1986/03/03

- Circulate and survey
- Break circulation, clean 1 metre of fill, drill ahead
- Repair air drilling equipment
- Circulate prior to pulling out of hole
- Trip out, lay down six 165mm drill collars
- Run in hole
- Strap in, tally out by 2 singles
- Install Granthead, blow kelly,
- Break circulation - ream to bottom
- Drill ahead

1986/03/04

- Drill ahead
- Survey at 592m - 1.75°
- Reduce weight on bit from 12000 to 8000 DaN
- Drill ahead
- Survey at 614m - 2.125°
- Reduce weight on bit to 6000 DaN, increase RPM to 120
- Drill ahead
- Survey at 623m - 2.06°
- Drill ahead

1986/03/05

- Drill ahead
- Survey at 632m - 2.06°
- Drill ahead
- Survey at 652m - 2°
- Drill ahead
- Survey at 680m - 1.94°
- Drill ahead

1986/03/06

- Build pressure and break circulation
- Drill and survey ahead
- Survey at 709m - 2 1/2°
- Trip for bit
- Jars unserviceable, shock sub cracked and leaking oil from crack
- Lay down jars, shock sub, and one 228mm drill collar
- Wait on shock sub - from Atco 76
- Pick up new shock sub and 171mm jar
- Start trip in hole

1986/03/07

- Run in hole with bit #9B
- Steam kelly and break circulation
- Unload hole and drill ahead
- Survey at 726m - 2 1/4°
- Break circulation, clean 2m fill to bottom and drill ahead
- Circulate to survey - kept having fill on bottom
- Drilled ahead while stiffening foam

1986/03/08

- Drill to TD
- Circulate and condition hole
- Wiper trip to 9 inch drill collars
- Run in hole
- Install Granthead, break circulation and condition hole
- Survey 773m - 2 1/4°
- Pull out of hole to log
- Log with Schlumberger

1986/03/09

- Logged with Schlumberger: DLL-GR 777 - 63m  
CNL-LDT-MGR-Dual Axis Caliper, 774 - Surface  
BHCS, 777 - 265m  
HDT-Cal, 777 - 63m
- Rig out loggers
- Run in hole
- Break circulation, circulate and condition hole - no fill
- Pull out of hole to run casing
- Lay down 228mm drill collars, shock sub and jars
- Rig up and run 245mm casing, T-lock and weld float shoe and collar

1986/03/10

- Ran 64 joints of 245mm casing
- Cemented casing
- Wait on cement, tear out hydril, Granthead, etc.
- Note: displaced casing with 30m<sup>3</sup> H<sub>2</sub>O prior to cementing Stage 1

1986/03/11

- Wait on cement
- Slack off casing, cut off casing
- Take off old stack - weld on bowl
- Commence heading up, put together 13 5/8" stack
- Install remote choke

1986/03/12

- Head up
- Try to install TOTCO remote choke; flanges not properly machined
- Replaced Willis Chokes
- Install test plug - could not stop it from leaking
- Pressure test all valves and chokes on Manifold at 1400 kPa - 10 minutes
- Tried high test - nothing would hold
- DOWELL cementing unit leaking back through valve - repaired cementing unit
- Pressure test manifold and chokes at 21000 kPa for 10 minutes
- Install new test plug
- Pressure test: both HCR valves, two kill line valves, check valves and blind rams - 1400 kPa and 21000 kPa, both for 10 minutes

1986/03/13

- Pressure kill lines valves and check valve
- Retrieve test plug
- Slip and cut 244mm drilling line
- Run in hole while inspecting drill collars
- Pressure hydral and stabbing valves at 1400 and 10500 kPa
- pipe rams at 1400 and 19000 kPa
- Drill out DV tool
- Blow kelly, pick up jars and run in hole while inspecting drill collars

1986/03/14

- run in hole
- Pressure test kelly cocks, inside BOP's and casing at 1400 and 15000 kPa
- Drill out float collar
- Drill 7m into shoe joint
- Pressure test casing and stabbing valves at 1400 and 15000 kPa
- Clean gravel from pump
- Drill out shoe
- Run PIT on formation to 7000 kPa
- Held 5 minutes, no leak off
- Total pressure at shoe: 14622 kPa, minimum 18.8 kPa/m
- Tripped out bit #10C for plugged jets at 772m
- Had 5 broken teeth

1986/03/15

- Drill ahead - held BOP drill
- Drill ahead - survey at 818m - 2 1/2°
- Change shaker screens and pumps
- Drill ahead - survey at 866m - 2 7/8°
- Drill ahead
- Work tight hole at 920m
- Drill 216mm hole - 2 plugged jets
- Tried to unplug - unsuccessfully

1986/03/16

- Drill 216mm hole
- Trip out for plugged jets
- Run in hole - no fill
- Drill ahead
- Trip out to pick up stabilizers

1986/03/17

- Run in hole with new BHA
- Drill 216mm hole
- Surveyed frequently, declination going out (max. 3 1/2°)
- Attempted to control deviation by varying WOB and RPM
- Drill ahead

1986/03/18

- Pull out of hole, change bit #11C, make up new BHA
- Run in hole
- Drill 216mm hole

1986/03/19

- Drill 216mm hole
- Held BOP drill - crews in place and well shut in within 3 minutes
- Drill 216mm hole

1986/03/20

- Drill 216mm hole
- Circulated and evaluated sample at 1330.5m (core point)
- Made 10 stand wiper trip - tight hole from 1330 to 1236m on trip out
- Held BOP drill - crews in place in 2 1/2 minutes

1986/03/21

- Completed 10 stand wiper trip
- Circulate and condition mud and hole (cleaned 4 meters of fill to bottom)
- Made 5 stand wiper trip, circulate and conditioned mud and hole
- Pull out of hole to cut core #1 (strapped out - OK)
- Lay down shock sub and stabilizers
- Make up core barrel and run in hole to cut core #1
- Dropped ball and cleaned 3 meters fill
- Cut core #1
- Held BOP drill - crews in place and well shut in in 2 minutes

1986/03/22

- Cut Core #1
- Mix 20 sack pill and pump same
- Core appears to have jammed off
- Pull out of hole with core #1

1986/03/23

- Finish pulling out of hole with core #1
- Recover core
- Service core barrel
- Run in hole with core barrel to cut core #2
- Break circulation and clean 5 meters fill to bottom, drop ball
- Cut Core #2
- Note: recovered 10.1m (100%) on core #1 (1330.5 = 1340.6m)

1986/03/24

- Cut Core #2 (1340.6 - 1353.0m) core jammed
- Mix and pump pill
- Pull out of hole with core #2
- Work tight hole
- Pull out of hole with core #2

1986/03/25

- Finish pulling out of hole with core #2 (1340.6 - 1353.05m) rec. 12.4m (100%)
- Service core barrel and wait on orders
- Lay down core barrel, bit sub and jars
- Run in hole with bit #15C - clean 10 meters, fill to bottom
- Drill 216mm hole
- Circulate sample at 1359m
- Survey at 1368m (2 7/8°)
- Drill ahead

1986/03/26

- Drill 216mm hole to 1384m KB (FTD)
- Circulate bottom hole sample
- Dummy trip 10 stands - first stand pulled tight, rest OK
- Cleaned 4 meters of fill to bottom
- Circulate and condition hole to log

1986/03/27

- Pull out of hole to log - recover wear bushing
- Attempt to log - tool held up at 1197m
- Run in hole for clean out trip
- ream 9m undergauge hole - 4m fill
- Circulate and condition hole
- Made 10 stand dummy trip
- Did not pull tight on trip out
- No fill on trip in
- Circulate and condition
- Pull out of hole to log - rig up Schlumberger

1986/03/28

- Log with Schlumberger  
DLL-MSFL  
CNL-LDT-NGT-AMS  
BHCS

1986/03/29

- Log with Schlumberger
- HDT
- MEL
- CNL-LDT repeat with different tool
- WST
- Rig out Schlumberger

1986/03/30

- Run in to condition hole
- Circulate and condition in preparation for testing
- Rig up Lynes-Baker
- Prepare for DST #2

1986/03/31

- Run DST No. 1 1351 - 1362m
- Complete DST #1
- Rig out Lynes-Baker
- Run in hole to condition prior to running casing

1986/04/01

- Lay down pipe
- Flow check, circulate out gas cut mud - approx.  $1\text{m}^3$
- Lay down drill pipe and drill collars
- Rig up and run casing, circulate casing, rig up cementer and cement
- set slips, tear out BOP's
- No problems while cementing
- full fluid returns at all times
- Rig release at 2130 hours

#### CASING SUMMARY

##### Surface Casing

Ran 64 jts 245mm 60 kg/m casing (H-55 for bottom 37.97m and for top 513.58 m, T-95 for middle 223.37 meters). Landed at 777.7m. Cemented with : Stage 1 777 - 625m with 10 tonnes 0:1:0 class "G" + 2%  $\text{CaCl}_2$ , mixed at 1895 kg/m, slurry volume  $7.57\text{m}^3$ . Displaced with theoretical displacement of 191 bbl. Plug did not bump. Displaced 6 more bbl and shut in casing for 6 hours. Filled casing with water and pressured to 13000 kPa. Inflated ECP at 60m, dropped dart and opened stage tool. Stage 2: 60m - surface with 4.4 tonnes 0:1:0 Class "G" + 2%  $\text{CaCl}_2$ , mixed at 1895 kg/m $^3$ . Slurry volume  $3.3\text{m}^3$ . Plug down at 1635 hours, 10/03/86. had  $2\text{m}^3$  cement returns.

Production Casing

Ran 117 joints 43.16 kg/m, 178mm, MN-80 with 20 centralizers. Cemented by Dowell-Schlumberger with 30 tonnes Class "G" + 0.5% D-65 (20% excess) Landed at 1384.33m. Plug down at 2100 hours 1986/04/01. Good cement returns to surface.

DRILLSTEM TEST SUMMARY

DST #1 1351 - 1362m Fm: Mt. Clarke Type: Straddle Inflate

TIMES: 6/60/240/540

PF: weak to very strong in 1 minute

VO: Information not available

RECOVERY: 30m condensate, 16m condensate cut mud

HP: 17151/17065 kPa

SIP: 13037/13037 kPa

FP: 3235/6810 kPa

OTHER:

GEOLOGICAL SUMMARY

PCI Cantera Belo 0-35 was drilled with the intent of further delineating the productive horizon of the Cambrian Mount Clarke formation obtaining hydrocarbon production and investigating the reservoir and the nature of its contents.

The well was spudded at 0015 hours 1986/02/14 by Jade Drilling Ltd. Rig #5. After conductor casing was set at 63m KB drilling continued with foamed air supervised by Air Drilling International - through the Bear Rock and Franklin Mountain formations into the Upper Saline River formation (refer to following formation descriptions).

Surface casing of 245mm diameter was set at 777m KB in the Upper Saline River formation; cemented by Dowell-Schlumberger. Drilling with Gel-Chem mud resumed after surface casing was set.

Sampling commenced at surface. Large bags of unwashed sample were collected every 5 meters, "jar" samples were collected every 10 meters and small bag samples were caught at 2.5m intervals for Thermal Electric Chromatography analysis - commenced at 1200m KB.

Two cores were cut - 1330.5 - 1340.6m KB and 1340.6 - 1353.05m KB. Coring was supervised by Norton-Christensen. There was 100% recovery of each core: refer to detailed core descriptions.

The primary zone of interest was the Cambrian Mount Clarke formation. It was encountered in Core 32 at 1344.46m KB (-946.70m SS). The core examined (and subsequent samples in this formation) consisted of fine - medium grained, tight barren Chloritic Sandstones and pale, hard, tight, very fine - medium grained quartzites. At the base of the core there was a section of medium - coarse grained quartzite, it was clear, well rounded, moderately sorted, very poorly consolidated and very friable in part.

The portions that were cemented showed siliceous overgrowth cement, it was clean to slightly argillaceous, tight where cemented - probably very porous where not well cemented but due to the extreme friability of the quartzite its porosity is difficult to quantify accurately.

Subsequent to coring sample quality worsened considerably with abundant cavings (shale mostly) from uphole. Despite this fact there was some quartzite as described above. There was a drilling break at 1357.5m KB and a sample was circulated to surface; however again the sample quality was very poor and aside from cavings the only evidence of sandstone/quartzite was scattered individual medium - coarse grains. Unfortunately coincident with this sample, a motor operating a crucial part of the hydrocarbon logging apparatus (the gas trap) seized and stopped functioning. The problem was discovered very quickly as an inspection of the hydrocarbon logging system was being conducted while the sample was being circulated. However, repairs required almost 45 minutes; consequently, any gas circulated to the surface was missed as the sample lag was 30 = 35 minutes.

The presence of hydrocarbons in the Mount Clarke was detected from the wireline logs (logging conducted by Schlumberger). Subsequent drillstem testing has supported this fact (refer to Drillstem Test Results).

A secondary zone of interest was in the lower Cambrian Mount Cap formation, specifically of interest were thin sandstone stringers in the lower "High Gamma Shale" portion. There were minor Sandstone stringers therein, they were medium brown, very fine grained - silty, calcareous, tight, with poor slow pale milky yellow cut fluorescence. The Mount Cap formation was encountered at 1121m KB - 723.24m KB Subsea. It consisted of dolomites and shales, the dolomite was white, buff, medium brown, microcrystalline - very fine crystalline, massive, sucrosic in part, dull - earthy, occasionally vitreous, soft - moderately hard, slightly anhydrous, tight, with rare poor intercrystalline porosity and no shows. The shale was light - medium grey green, soft, brittle, dull - occasionally micromicaceous subfissile, slightly calcareous, no shows.

With respect to the test of the formations encountered, drilling commenced in the Bear Rock formation. This consisted of Dolomite: light grey and grey-brown, white to pale brown in part, microcrystalline to very fine crystalline in part, massive - sucrosic hard, vitreous, clean, occasional medium-dark brown live oil stain predominantly tight with abundant vug and occasional good intercrystalline porosity, pale yellow direct fluorescence, excellent yellow cut fluorescence with rapid ribbony streaming. This Dolomite was manifested at surface and samples of such were forwarded to Petro-Canada in Calgary. The oil staining decreased at the base of this formation.

The Bear Rock was underlain by the Franklin Mountain formation of the Ronning Group. This formation came in at 120m KB (-277.76m ASL). This formation consisted of dolomite white, variable grey and variable brown, microcrystalline to very fine crystalline, massive - sucrosic hard, vitreous, clean, traces of massive pyrite, tight, no shows. There were occasional indications of vuggy porosity: euhedral quartz crystals, extreme torque while drilling and poor

sample returns in part. However, this vuggy porosity was sporadic and difficult to quantify. As well, throughout the Franklin Mountain there was abundant chert - white, translucent to opaque, hard, clean, sharp fragments, brittle in part.

The Franklin Mountain Formation terminated at 765m KB -367.24m SS at which point the Saline River formation was encountered. The upper portion was marked by Shales: green, reddish brown, mottled in part moderately hard, firm, brittle in part, blocky, dull, silty in part, no shows. There was also abundant Anhydrite herein: white-blue grey, very fine - fine crystalline, massive, vitreous - pearly, brittle, tight. From 821m KB -423.24m SS to 1039m KB the Saline River was made up of Salt: clear occasionally pale orange, massive - crystalline, soft, brittle, tight. From 1039 - 1121m KB there was abundant Dolomite and Shale interbedded with the Salt.

Subsequent to the Mount Cap and Mount Clarke formations mentioned previously the Proterozoic was encountered the first indication thereof was a Red Shale at 1359.6m KB -961.84m SS, this was pale-medium red, mottled red-green, soft moderately hard, blocky, dull, friable, very silty in part, hematitic, calcareous no shows. This Shale was almost certainly derived from the underlying Basalt, which was first encountered at 1363.8m KB -965.44m Subsea, this Basalt was red-brown, mottled, red-green, white in part, aphanitic, very hard, no visible phenocrysts, hematitic, calcareous in part.

Drilling was completed in the Proterozoic Basalt at 1740 hours, 1986/03/26. Following completion of drilling the forementioned wireline logging was conducted. Subsequent drillstem testing was performed by Lynes.

#### FORMATION TOPS

FORMATION	SAMPLE		LOG	
	Depth	Subsea	Depth	Subsea
Franklin Mt.	120.0	+277.76	120.0	+277.76
Saline River	765.0	-367.24	762.5	-364.74
Upper Salt	802.0	-404.24	800.75	-402.99
Shale Member	809.0	-411.24	812.0	-414.24
Lower Salt	821.0	-423.24	817.0	-419.24
Mount Cap	1121.0	-723.24	1120.25	-722.49
Mount Clarke	1344.46	-946.70	1343.7	-945.94
Red Shale	1359.60	-961.84	1361.0	-963.24
Basalt	1363.20	-965.44	1362.5	-964.74
FTD	1384.0	-986.24	1380.0	-982.24

5 - 52m Dolomite; light grey and grey brown, white to pale brown in part, microcrystalline to very fine crystalline in part, massive - sucrosic, hard, vitreous clean, occasional medium - dark brown live oil stain, predominantly tight with abundant vug and occasional good intercrystalline porosity, pale yellow direct fluorescence, excellent yellow cut fluorescence with rapid ribbony streaming

52 - 60m Dolomite; white - pale grey, microcrystalline, massive - sucrosic hard but friable, vitreous, clean, tight with poor intercrystalline porosity, no shows

60 - 120m Dolomite; white - occasional very light brown, microcrystalline to very fine crystalline, hard but friable, dull, clean, tight, no shows, abundant cement in part.

## FRANKLIN MOUNTAIN 120m KB (277.76m ASL)

120 - 130m Dolomite; light blue-grey, very fine to fine crystalline, hard, firm, dull, vitreous in part, clean calcareous, traces of disseminated pyrite, tight, no shows, traces of light brown dolomite as above, traces of chert.

130 - 140m No samples

145 - 160m Dolomite; white - light grey, occasional red-brown iron staining cryptocrystalline to microcrystalline, rarely very fine crystalline vitreous - dull, clean, abundant massive and disseminated pyrite, tight - no shows, there is also abundant chert, white, translucent to opaque, clean, hard, sharp fragments, brittle in part

160 - 210m Dolomite, white - buff, light grey, rare iron staining, cryptocrystalline to microcrystalline, rare subhedral crystals, vitreous, hard, traces of pyrite, tight, no shows, traces of Chert, as above, traces of Quartz, Note; insufficient samples at 180, 190 and 200m KB

210 - 290m Dolomite, white, light grey, light grey brown, microcrystalline - very fine crystalline, massive - sucrosic, hard, vitreous, clean, traces of massive pyrite, tight, no shows  
Abundant Chert, white, translucent - opaque, hard, clean, sharp fragments, brittle in part

290 - 300m Dolomite, medium grey - light grey in part, microcrystalline - very fine crystalline, massive, sucrosic in part, hard, clean, vitreous - dull in part, traces of massive and disseminated pyrite, traces of calcite crystals, tight, no shows

300 - 335m	<u>Dolomite</u> , white - light grey in part, microcrystalline, very fine to fine crystalline in part, massive - occasionally sucrosic in part, hard, clean, vitreous, dull in part, <u>tight</u> with <u>rare poor intercrystalline porosity</u> , <u>no shows</u> . Abundant Chert at top of interval: white, opaque, hard sharp fragments. Rare trace of red shale at base of interval.
335 - 340m	No sample
340 - 345m	<u>Dolomite</u> ; as above
345 - 355m	No sample
355 - 395m	<u>Dolomite</u> ; light to medium grey, occasionally white, very fine to fine crystalline, massive - occasionally sucrosic in part, hard, clean, rare disseminated pyrite, <u>tight</u> - <u>no shows</u>
395 - 420m	<u>Dolomite</u> , white, microcrystalline to very fine crystalline, massive - occasionally sucrosic, hard, clean, minor disseminated pyrite, <u>tight</u> - <u>no shows</u>
420 - 445m	<u>Dolomite</u> ; white-light grey, microcrystalline to very fine crystalline in part, massive - sucrosic in part, very hard, clean, <u>tight</u> , <u>no shows</u>
445 - 450m	<u>Dolomite</u> ; light brown, light grey-brown, pale grey, microcrystalline rare fine crystalline (consisting of euhedral dolomite rhombs in white limestone matrix), massive, vitreous, very hard, predominantly clean - slightly argillaceous in part, occasional euhedral quartz crystals, <u>tight</u> , <u>no shows</u>
450 - 485m	<u>Dolomite</u> ; medium - dark brown and grey-brown, traces of white, very fine crystalline - fine crystalline in part, massive, vitreous, hard-brittle in part, slightly argillaceous, traces of calcite crystals, rare buff coloured Chert, <u>tight</u> , <u>no shows</u>
485 - 500m	<u>Dolomite</u> ; medium-dark grey brown, light brown in part, microcrystalline massive, vitreous - dull in part, hard, slightly argillaceous, <u>tight</u> - <u>no shows</u>
500 - 525m	<u>Dolomite</u> ; medium - dark brown, occasional white - light brown, very fine crystalline, massive, vitreous, hard but friable, slightly calcareous, slightly argillaceous, <u>tight</u> , <u>no shows</u>
525 - 550m	<u>Dolomite</u> ; light grey, occasional medium - dark brown, microcrystalline - very fine crystalline in part, massive, vitreous, hard, rarely brittle in part, clean, slightly argillaceous, slightly calcareous in part, <u>tight</u> , <u>no shows</u>

550 - 570m No samples due to pipe tally being 21 metres out with respect to the geograph

570 - 580m Dolomite; white to light grey brown, very fine crystalline - microcrystalline in part, massive sucrosic, very hard, clean, rare iron staining, tight, no shows

580 - 600m Dolomite; white - light grey, dark grey in part, very fine crystalline - microcrystalline in part, massive - sucrosic in part, hard, clean, occasional iron staining, tight, no shows

600 - 615m Dolomite; medium - dark grey brown, cryptocrystalline, massive, dull - vitreous in part, moderately hard, slightly argillaceous, tight, no shows

615 - 630m Dolomite; medium - dark grey brown, light grey and light brown in part, cryptocrystalline - very fine crystalline, massive, dull - vitreous, moderately hard, brittle - friable in part, slightly argillaceous, occasional calcite crystals, tight, no shows

630 - 635m Dolomite; medium - dark grey, buff, cryptocrystalline - very fine crystalline in part, massive - sucrosic, dull - vitreous, friable, occasional calcite crystals, tight, no shows

635 - 650m Dolomite; white, grey, light brown, very fine crystalline - cryptocrystalline in part, rare medium dolomite crystals in very fine matrix, massive, sucrosic, hard, brittle and friable in part, rare iron staining, rare chert and quartz, rare poor intercrystalline porosity, no shows, poor returns

650 - 655m Dolomite; medium brown and grey brown, microcrystalline - very fine crystalline, massive, vitreous - dull, hard - brittle in part, slightly argillaceous, rare brown chert, tight, no shows

655 - 665m Dolomite; white - pale brown, medium brown in part, microcrystalline - very fine crystalline, massive - sucrosic in part, vitreous - dull in part, hard - brittle in part, clean - occasionally slightly argillaceous in part, rare coarse euhedral quartz crystals, tight, no shows

665 - 680m Dolomite; white, light - medium grey brown, microcrystalline - very fine crystalline, fine crystalline in part, massive, dull - vitreous, hard, brittle in part, slightly argillaceous, rare white chert, rare coarse euhedral quartz crystals, tight, no shows

680 - 690m Dolomite; white, light grey, light grey brown, microcrystalline - very fine crystalline, occasionally fine crystalline (euhedral crystals in Limestone matrix), massive, vitreous - dull in part, slightly calcreous, hard, brittle and friable in part, slightly argillaceous, rare quartz, trace iron stain, tight - rare poor intercrystalline porosity, no shows

790 - 802m Shale; as above, with abundant Anhydrite; white - blue grey, very fine - fine crystalline, massive, vitreous - pearly, brittle, tight, interbedded with Shale, minor Dolomite; as above, Traces of cement

## FIRST SALT MEMBER 802m KB (-904.24m SS)

802 - 809m Salt; clear, orange-red, massive-crystalline, soft, brittle, tight, no shows, with Shale; grey-green, moderately hard, firm, blocky, platy in part, dull - waxy, no shows Minor Dolomite; white, light grey, very fine crystalline, massive, moderately hard, clean, slightly anhydrous, tight, no shows, trace Anhydrite

## SHALE MEMBER 809m (-911.24m SS)

809 - 815m Shale as above, becoming reddish-brown in part Some Dolomite; as above, becoming very anhydrous

815 - 820m Anhydrite; white - light blue-grey, very fine crystalline, massive, pearly, dull, brittle, tight, some Shale; grey-green, reddish brown, moderately hard, firm, blocky - platy in part, dull - waxy, no shows minor Salt, clear, massive - crystalline, soft, brittle, tight, no shows

## LOWER SALT MEMBER 821m KB (-423.24m SS)

820 - 840m Salt, clear, orange-red in part, massive-crystalline, soft, brittle, tight - no shows

840 - 855m Salt; as above, minor Cement, trace Anhydrite, rare trace metal flakes

855 - 870m Salt, clear, rarely pale orange, massive, crystalline, soft, brittle, clean, tight, no shows

870 - 885m Salt, clear, rarely pale orange, massive, crystalline, soft, brittle, clean, tight, no shows

885 - 900m Salt, clear, massive - crystalline, soft, brittle, clean, tight, no shows  
Trace red-green Shale

900 - 920m Salt; clear, massive - crystalline, soft, brittle, clean, tight, no shows, trace red-green Shale

920 - 930m Poor sample quality - Abundant Cement and thick mud.  
Shale; light grey-green, soft, friable, subfissile, dull, calcareous, tight, no shows,  
Dolomite; light grey, microcrystalline, moderately hard, clean - slightly argillaceous, massive, dull - slightly vitreous, tight, no shows

930 - 945m Salt; clear, occasionally pale orange, massive-crystalline, soft, brittle, tight, no shows, rare metal flakes

945 - 960m Salt; clear, occasionally pale orange, massive - crystalline, soft, brittle, tight, no shows, occasional abundant cement, traces of metal flakes

960 - 965m Salt; clear, occasional pale orange, massive - crystalline, soft, brittle, tight, no shows

965 - 970m Poor sample quality, abundant cement and thick mud  
Salt as above  
Minor Shale; light grey, light grey-green, brittle, subfissile, dull-waxy, slightly calcareous, no shows

970 - 985m Salt; clear, white, massive - crystalline, soft, brittle, clean, tight, no shows

985 - 1000m Poor sample quality, abundant cement, and thick mud  
Salt; clear, white, massive - crystalline, soft, brittle, clean, tight, no shows  
Minor Shale; pale green, occasional red-brown, soft, friable, subfissile, waxy (cavings?), slightly calcareous, no shows  
Minor Anhydrite; white, light brown, microcrystalline, soft, massive, clean, tight,

1000 - 1020m Salt, clear, white, massive-crystalline, soft, brittle, clean, tight, traces Shale; cement, metal flakes

1020 - 1039m Salt; clear, white, rare pale orange, massive - crystalline, soft, brittle, clean, tight, trace shale

1039.5 - 1045m No sample, mud badly polymerized

1045 - 1050m Poor sample, mud polymerized  
Shale; light grey-green, soft, friable, subfissile, waxy, calcareous, no shows,  
Abundant Dolomite; light - medium grey, light brown, microcrystalline - very fine crystalline, massive - sucrosic in part, soft - moderately hard, dull - earthy in part, slightly argillaceous, slightly anhydrous, tight, no shows

1050 - 1060m Dolomite; light - medium, light brown, microcrystalline  
 - very fine crystalline, massive, sucrosic in part, soft  
 - moderately hard, dull - earthy in part, slightly  
 argillaceous, slightly anhydrous, tight, no shows  
 Minor Shale; light - medium green, soft, friable,  
 subfissile, waxy, calcareous, no shows  
 Trace Anhydrite, white, microcrystalline, massive, soft,  
 dull - earthy, tight

1060 - 1070m Dolomite; as above, trace cement, metal flakes, rare  
 trace Anhydrite

1070 - 1075m No sample, 100% cement, trace Dolomite

1075 - 1080m Dolomite; light grey, microcrystalline, massive, soft,  
 friable, dull - earthy in part, slightly argillaceous,  
 slightly anhydrous, tight, no shows  
 Abundant Salt, clear, white, massive, crystalline, soft,  
 brittle, clean, tight, no shows

1080 - 1085m Poor sample - poor returns  
Dolomite as above

1085 - 1100m Salt, clear, white, massive - crystalline, soft,  
 brittle, clean, tight, no shows, trace Dolomite

1100 - 1105m Salt; clear, white, massive - crystalline, soft,  
 brittle, clean, tight, no shows,  
 Abundant Shale; light - medium green, soft, friable,  
 subfissile, waxy, slightly calcareous, no shows  
 Minor Dolomite

1105 - 1113m Dolomite; light grey, microcrystalline, moderately hard,  
 massive - sucrosic in part, dull - earthy in part,  
 slightly argillaceous, slightly anhydrous, tight, no  
shows  
 Trace Shale; light - medium grey, soft - moderately  
 hard, friable, subfissile, dull, slightly calcareous, no  
shows

1113 - 1121m Salt; clear, white, rare pale yellow, massive -  
 crystalline, soft, clean, brittle, tight, no shows  
 Minor Dolomite; as above,

MT. CAP 1121m (-723.24m SS)

1121 - 1135m Dolomite; light grey, pale brown, white in part, micro-  
 crystalline - very fine crystalline, massive, moderately  
 hard, dull - earthy in part, slightly argillaceous,  
 slightly anhydrous, tight, no shows  
 Abundant Shale; grey-green, soft, friable, subfissile,  
 dull - waxy, slightly calcareous, no shows  
 Trace Anhydrite; white - blue grey, very fine  
 crystalline, soft, brittle, tight

1135 - 1145m Dolomite; as above, with rare poor intercrystalline porosity  
Trace Anhydrite; as above

1145 - 1155m Dolomite; pale brown, light grey, white in part, cryptocrystalline - very fine crystalline, massive - sucrosic in part, dull - earthy in part, moderately hard, slightly argillaceous, slightly anhydrous, tight - rare poor pinpoint and intercrystalline porosity, predominantly no shows - rare slow poor pale milky yellow cut fluorescence, no streaming  
Some Shale; medium grey-green, soft, friable, subfissile, dull, slightly calcareous, no shows  
Trace Anhydrite; white, soft, massive, earthy - pearly, tight  
Trace dark brown Chert; rare trace metal flakes

1155 - 1160m Dolomite; pale brown, light grey, white in part, cryptocrystalline, microcrystalline in part, massive - sucrosic in part, dull - earthy, moderately hard, slightly argillaceous, slightly anhydrous, tight - rare poor to fair, intercrystalline and pinpoint porosity, predominantly no shows - rare poor pale slow milky yellow cut fluorescence, no streaming  
Abundant Anhydrite; white, pale brown, cryptocrystalline - microcrystalline, massive, dull - earthy, soft, tight  
Minor Shale; light - medium grey-green, soft, friable in part, blocky - subfissile, dull - waxy in part, slightly calcareous, no shows

1160 - 1168m Anhydrite; pale - medium brown, white, microcrystalline - very fine in part, massive - sucrosic, very soft and friable, dull - earthy, tight  
Minor Shale; as before, minor Dolomite; as before

1168 - 1171m Salt; clear, white, massive - crystalline, soft, brittle, clean, tight

1171 - 1190m Dolomite; white, buff, medium brown, microcrystalline - very fine crystalline, massive, sucrosic in part, dull - earthy, occasionally vitreous, soft - moderately hard, slightly anhydrous, tight with rare poor intercrystalline porosity, no shows  
Some Anhydrite; white, massive - sucrosic, soft, earthy - pearly, very fine crystalline, tight  
Some Shale; grey-green, soft, friable, subfissile, dull - waxy, slightly calcareous, no shows traces brown Chert

1190 - 1200m Shale; light - medium grey-green, soft, brittle, dull - occasionally micromicaceous, subfissile, slightly calcareous, no shows

1200 - 1210m shale; light - medium grey and greenish grey, moderately hard, firm, subfissile, dull, very slightly calcareous, no shows  
Abundant Dolomite; medium - dark brown, light brown in part, micro - very fine crystalline, massive - sucrosic in part, moderately hard, slightly argillaceous, shaly in part, slightly calcareous, tight, no shows

1210 - 1225m Shale; medium-dark grey, black in part, soft-moderately hard, firm, friable in part, blocky-subfissile, dull - rarely micromicaceous, carbonaceous in part, no shows

1225 - 1230m Shale; medium grey - green, medium - dark grey in part, soft, friable, subfissile - fissile, dull - waxy, micromicaceous, slightly calcareous, no shows

1230 - 1240m Shale; medium - grey, soft, firm, friable in part, subfissile - fissile, splintery, dull, rarely micromicaceous, very calcareous, no shows

1240 - 1250m Shale; light - dark grey, soft, brittle, dull - micromicaceous, subfissile, no shows; trace white - brown pyritic Dolomite; rare dark brown Chert

1250 - 1260m Shale; light - dark grey, green in part, soft, brittle, micromicaceous - waxy, subfissile, slightly calcareous, no shows  
Traces Dolomite; pyrite, rare Chert

1260 - 1275m Shale; light - dark grey, medium grey, soft, brittle, subfissile, waxy-dull, slightly silty, no shows  
Traces Dolomite; pyrite, rare Chert

1275 - 1290m Shale; dark grey-black, medium brown, moderately hard, blocky, dull - micromicaceous, very calcareous, silty in part, carbonaceous in part, very slow pale milky yellow cut fluorescence  
Minor Dolomite; pale grey, micro - very fine crystalline, massive - sucrosic in part, soft - moderately hard, dull, calcareous, tight, no shows  
Traces white Limestone, dark brown Chert

1290 - 1295m Dolomite; light grey brown, white, mottled in part, cryptocrystalline, massive, moderately hard - hard, dull, slightly argillaceous, calcareous tight, no show  
Abundant Shale; medium grey-green, dark grey-black in part, soft, moderately hard, subfissile - splintery, dull - micromicaceous, slightly calcareous, occasionally silty in part, no shows rare trace massive pyrite

1295 - 1305m Shale; as above, trace Dolomite as above

1305 - 1320m Shale; medium grey, medium grey green, soft-moderately hard, subfissile - fissile, platy, dull-waxy, micromicaceous in part, silty - sandy in part, slightly calcareous, rare fossils (pelecypods), no shows  
Minor Dolomite; white, light grey brown, cryptocrystalline, massive, moderately hard, slightly argillaceous, tight, no shows, limey in part  
Minor Sandstone; medium-dark brown, very fine grained - silty in part, subrounded, well sorted, well consolidated, white calcareous cement, argillaceous, tight, poor slow milky pale yellow cut fluorescence, no streaming

1320 - 1327.5m Dolomite; light brown, medium grey brown, white in part, crypto-microcrystalline with massive, moderately hard, dull - vitreous in part, clean - slightly argillaceous, rare silty and sandy, calcareous - frequently grading to Limestone; rare trace fossils, rare trace glauconite, tight, no shows  
Abundant Shale; medium grey, medium grey-green, soft-moderately hard, subfissile-fissile, platy, dull-micromicaceous in part, silty in part, no shows

1327.5-1330.5m Sandstone; white, very fine crystalline - silty in part, subangular, well sorted, clear, siliceous cement, calcareous in part, clean trace glauconite, tight, no shows  
Some Shale; medium grey, medium grey-green, soft, moderately hard, subfissile-fissile platy, dull-micromicaceous in part, silty in part, no shows

COMMENCED CUTTING CORE #1 AT 1330.5m KB

COMMENCED CUTTING CORE #2 AT 1340.6m KB

SEE DETAILED CORE DESCRIPTION

1353.05-1359.6m Shale; (cavings most likely), light grey-green, medium grey, black in part, soft, firm, fissile, micromicaceous - waxy in part, occasional abundant muscovite, slightly silty, no shows  
Abundant Quartzite; white, pale grey, very fine - fine grained in part, subrounded - rounded, well sorted, well consolidated, siliceous overgrowth cement, very hard, tight, no shows, traces clear - white, coarse-medium grained Quartzite, poor siliceous overgrowth cement, friable, tight, no shows

RED SHALE 1359.5m KB (-961.84m SS)

1359.6-1363.2m Shale; pale - medium red, mottled red-green, soft, moderately hard, blocky, dull, friable, very silty in part, hematitic, calcareous, no shows

1363.2-1384.0m Basalt; dark red-brown, mottled red-green, occasionally white in part, aphanitic, very hard, no visible phenocrysts, hematitic, calcareous in part

#### DETAILED CORE DESCRIPTIONS

Core #1 1330.5 - 1340.6m Cut 10.1m Recovered 10.1m

Coring Times:

4,12,20,16,26,44,34,34,26,42,34,30,32,28,22,26,26,18,48,36,28,28,36, 32,30,30,28,34,28,34,44,46,73,80,34,36,36,30,34,30,26,26,38,28,26,36, 56,58,54,52

1330.5 - 1330.84m	0.34m	<u>Shale</u> ; medium grey-green, moderately hard, firm, non-fissile, micromicaceous, very slightly calcareous, <u>no shows</u> , slightly silty, sandy at top 5cm of interval
1330.84 - 1331.45m	0.61m	Light to medium grey green <u>Shale</u> showing horizontal bedding; minor horizontally oriented <u>Dolomite</u> ; stringers (bound by <u>Stylolites</u> ); horizontal <u>Stylolites</u> at top of interval; rare pyrite stringers <u>Shale</u> ; light - medium grey-green, soft, firm, non-fissile, micromicaceous, slightly silty, <u>no shows</u> <u>Dolomite</u> ; medium grey, cryptocrystalline, massive, hard, clean, vitreous, calcareous, rare disseminated pyrite, <u>tight</u> , <u>no shows</u>
1331.45 - 1331.63m	0.18	Light green <u>Shale</u> ; showing soft sediment deformation <u>Shale</u> ; light greenish grey, soft, firm, non-fissile, micromicaceous, slightly silty, <u>no shows</u>
1331.63 - 1332.44m	0.81m	<u>Shale</u> ; showing no bedding, no structures <u>Shale</u> ; medium grey-green, soft, firm-brittle, non-fissile, dull to micromicaceous in part, <u>no shows</u>

1332.44 - 1333.16m 0.72m Shale; showing soft sediment deformation and horizontal bedding; minor Dolomite stringers; top and base of interval marked by bitumen  
Shale; medium grey-green, soft, firm, non-fissile, micromicaceous, slightly silty in part, no shows  
Dolomite; medium grey-brown, cryptocrystalline, massive, hard, vitreous, slightly argillaceous, calcareous, rare damaged fossils, rare glauconite, tight, no shows

1333.16 - 1336.36m 4.20m Shale with rare soft sediment deformation  
Shale; dark grey-green, soft, firm, non-fissile, dull - micromicaceous in part, no shows

1336.36 - 1336.86m 0.50m Dolomite showing abundant soft sediment deformation (deformation as horizontal trend at base, random at top); base of interval marked by stylolites with abundant stylolites throughout, randomly oriented white calcite fracture filling throughout, massive pyrite blebs at base of interval

1336.86 - 1337.90 1.04m Shale with no bedding, no structures or inclusions.  
Shale; dark grey green, soft, firm, non-fissile, dull, rarely micromicaceous, no shows

1337.9- 1339.4m 1.50m Shale; showing horizontally oriented soft sediment deformation  
Shale; medium greenish grey, soft, firm, nonfissile, dull - micromicaceous, no shows

1339.4 - 1339.8m 0.40m Dark calcareous Shale with clasts of light calcareous Shale  
Shale; light - dark grey brown, moderately hard, firm, non-fissile, micromicaceous, calcareous, silty in part, no shows

1339.8 - 1340.6m 0.80m Large fossiliferous Dolomite clasts in matrix of bituminous Shale and stylolites; Dolomite is horizontally oriented  
Dolomite; medium brown, cryptocrystalline, massive, hard, argillaceous, dull - vitreous in part, minor calcite crystals, occasional crinoids and crinoidal debris, tight, no show

Core #2 1340.6 - 1353.05m Cut 12.45m Recovered 12.45m

## Coring Times:

34,50,44,60,42,44,30,40,34,42,28,24,20,20,32,20,44,40,20,24,18,32,50,32  
 52,38,58,16,20,24,20,28,28,38,20,20,18,22,16,30,32,30,38,30,46,34,38,60,  
 60,60,36,38,44,46,42,46,46,122,110

<u>Depth</u>	<u>Length (m)</u>	<u>Description</u>
1340.6 - 1343.09m	2.49	<u>Dolomite</u> showing abundant soft sediment deformation and occasional clasts in a <u>Shale</u> matrix, minor randomly oriented calcite fracture filling, dolomite is fossiliferous - occasional crinoid pieces, rare massive pyrite throughout, rare horizontally oriented stylolites <u>Dolomite</u> medium to dark grey brown, occasionally medium to dark grey green, micro-crystalline - massive, hard, vitreous, slightly argillaceous, <u>tight, no shows</u> , <u>Shale</u> ; medium to dark grey, soft, firm, non-fissile, micromicaceous, slightly silty, <u>no shows</u>
1343.09 - 1344.25m	1.16	<u>Shale</u> ; showing minor soft sediment deformation for first 5cm of interval with abundant small horizontally oriented siltstone stringers. Base of interval is marked by darker siltstone stringers and abundant soft sediment deformation. <u>Shale</u> ; medium - dark green, soft, firm, nonfissile, very silty becoming sandy and calcareous at base of interval
1344.25 - 1344.46m	0.21m	Fossiliferous <u>Dolomite</u> (crinoids), very minor and very thin shale <u>Dolomite</u> medium to dark grey brown, cryptocrystalline, very hard, massive slightly argillaceous, vitreous, <u>tight, no shows</u> <u>Shale</u> ; dark grey brown, soft, fissile, waxy, calcareous, <u>no shows</u>

MOUNT CLARKE 1344.46m (-946.70m SS)

1344.46 - 1345.47m 1.01m Chloritic Sandstone no visible bedding, quartzite stringer (8cm in thickness) from 1344.56 - 1344.64m, small quartzite stringer at 1344.50m  
Chloritic Sandstone; dark green-black, fine - medium grained, subrounded, poorly sorted, well consolidated, chloritic cement, slightly argillaceous, calcareous in part, tight, no shows

1345.47 - 1346.13m 0.66m Quartzite with Shale stringers, abundant soft sediment deformation which is horizontally oriented, rare massive pyrite  
Quartzite light grey-green, very fine to medium grained, subround to rounded, poorly sorted, well consolidated, clean to slightly argillaceous, very slightly calcareous, tight, no shows

1346.13 - 1346.8m 0.67 Quartzite and Shale stringers showing abundant soft sediment deformation  
Quartzite; pale grey, silty to very fine grained, subrounded, well sorted, very well consolidated, siliceous, clean, tight, no shows

1346.8 - 1348.03m 1.23m Silty Shale with Quartzite clasts, interval shows horizontally oriented bedding and soft sediment deformation.  
Shale; medium grey-green, soft, firm, non-fissile, micromicaceous, abundant muscovite in part, no shows  
Quartzite as in previous interval

1348.03 - 1349.15m 1.12m Quartzite clasts in a Shale matrix showing horizontally oriented bedding and soft sediment deformation; base of interval grades into Shale  
Quartzite; pale brown, very fine grained, subangular, well sorted well consolidated, clean, tight, no shows  
Shale; medium to dark grey-brown, soft, fissile, micromicaceous, abundant muscovite, no shows

1349.15 - 1350.13m 0.98m Shale with occasional Quartzite clasts at top of interval - rare at base; Shale shows some horizontal bedding and clasts are horizontally oriented  
Shale; dark grey-green, soft, non-fissile, micromicaceous with abundant muscovite no shows

1350.13 - 1350.65m	0.52m	<u>Shale</u> ; top of interval marked by rubble, shows some horizontal bedding and minor soft sediment deformation, minor black <u>Shale</u> bands throughout <u>Shale</u> ; dark grey-green to black, soft, fissile, dull, <u>no shows</u>
1350.65 - 1351.37m	0.72m	<u>Quartzite</u> ; clasts in a shale matrix, horizontally oriented <u>Quartzite</u> ; white - light grey, very fine grained, subangular, well sorted, well consolidated, well consolidated, siliceous, clean, <u>tight</u> , <u>no shows</u> <u>Shale</u> ; medium green, soft, fissile, waxy, <u>no shows</u>
1351.37 - 1352.20m	0.83m	<u>Shale</u> with rare horizontally oriented quartzite clasts <u>Shale</u> dark green, soft, fissile, waxy, <u>no shows</u>
1352.20 - 1352.50m	0.30	Chloritic <u>Sandstone</u> interbedded with <u>Shale</u> ; (Shale as above) Chloritic <u>Sandstone</u> ; dark green-black, medium-coarse grains in a very fine grained sandy and chloritic matrix, grains well rounded, poorly sorted, well consolidated, slightly argillaceous, <u>tight</u> , <u>no shows</u>
1352.50 - 1352.80m	0.30m	<u>Quartzite</u> with minor <u>Shale</u> showing some horizontal bedding and some horizontal soft sediment deformation, <u>Shale</u> at top of interval
1352.80 - 1353.05m	0.25m	Massive <u>Quartzite</u> <u>Quartzite</u> , clear - pale grey, medium-coarse grained, well rounded, moderately sorted, poorly consolidated, friable in part, clean - slightly argillaceous, occasional coarse grained spherical pyrite nodules, traces unidentified black mineralization, <u>no shows</u>



# CALGARY COPY

CORE LABORATORIES - CANADA LTD.  
Petroleum Reservoir Engineering  
CALGARY ALBERTA

9211-P28-31



Plastic

CONTAINER IDENTITY

## OIL ANALYSIS

70490-86-305

LABORATORY NUMBER

1 of 2

PAGE

66° 34' 58.13" NL  
126° 21' 32.10" WL

Petro Canada Inc.

OPERATOR

PCI Canterra Bele 0-35

WELL OR SAMPLE LOCATION NAME

397.8 393.3  
ABELEV m GRD ELEV m

LOCATION

FIELD OR AREA

Mount Clarke

POOL OR ZONE

Lynes United Services

SAMPLER

DST #1

TEST TYPE & NO.

TEST RECOVERY

CANADA OIL AND GAS LANDS

ADMINS. RAI. OIL & GAS LANDS

GAZ D.S. KRES DU CANADA  
SWAB

OC

Top of Recovery

POINT OF SAMPLE

AMT. & TYPE

1351 - 1362

PUMPING

FLOWING

GAS LIFT

OC

WATER

m<sup>3</sup>/d

OIL

m<sup>3</sup>/d

OC

TEST INTERVALS OR PERFS m

@ °C

@ °C

SEPARATOR RESERVOIR

CONTAINER WHEN SAMPLED

CONTAINER WHEN RECEIVED

SEPARATOR

ENGINEERING BRANCH

OC

PRESURES, kPa

TEMPERATURES, °C

86 03 31

86 04 10

86 04 15

DATE SAMPLED (Y/M/D)

DATE RECEIVED (Y/M/D)

DATE ANALYSED (Y/M/D)

ANALYST

REMARKS

## SAMPLE PROPERTIES

COLOR OF CLEAN OIL Trace 0.001 0.001  
WATER SS TOTAL SS&W

GRAVITY SPECIFIC 0.6950  
A.P.I. @ 15.6°C 72.1

AS RECEIVED AFTER CLEANING AS RECEIVED AFTER CLEANING

POUR POINT 0.0002 <0.010  
TOTAL SALT U.S.B.M. <-60°C

TOTAL SULPHUR MASS FRACTION kg/m<sup>3</sup> 0.0002 <0.010  
TOTAL SALT U.S.B.M. <-60°C

CARBON RESIDUE R.V.P. CONRADSON RAMSBOTTOM

VISCOSITY			
TEMP °C	MPa/s	mm <sup>2</sup> /s	
10	0.4371	0.6253	
20	0.4015	0.5793	
30	0.3702	0.5389	

## REMARKS

FRACTION DISTILLED	TEMP °C
0.05	51
0.10	60
0.15	65
0.20	70
0.25	73
0.30	77
0.35	81
0.40	85
0.45	89
0.50	93
0.55	96
0.60	101
0.65	106
0.70	110
0.75	115
0.80	121
0.85	128
0.90	136
0.95	151
0.99	204*

## DISTILLATION

ASTM

METHOD

88.3

BAROM. PRESS.  
KPa OR HG

20

34

ROOM TEMP. (°C)

INITIAL BOIL PT. (°C)

## DISTILLATION SUMMARY

204°C NAPHTHA

274°C KEROSENE

343°C LIGHT GRS./OIL

0.99

RECOVERED

0.00

0.01

RESIDUE

DISTILLATION LOSS

## SPECIFIC GRAVITY

DISTILLATE

RESIDUE

BASE TYPE

CHARACTERIZATION FACTOR



CORE LABORATORIES - CANADA LTD.  
Petroleum Reservoir Engineering  
CALGARY ALBERTA



Plastic	CONTAINER IDENTITY	70489-86-241	LABORATORY NUMBER				
Petro-Canada Inc.		2 of 2					
66° 34' 58.13" NL 126° 21' 32.10" WL	OPERATOR	397.8	393.3				
LOCATION	PCI Canterra Bele 0-35	K'BELEV	GRD ELEV.				
FIELD OR AREA	Mount Clarke	POOL OR ZONE	Lynes United Services				
DST #1	TEST TYPE & NO.	TEST RECOVERY	@ °C				
Top of Recovery	POINT OF SAMPLE	AMT. & TYPE CUSHION	MUD RESISTIVITY				
1351 - 1362	PUMPING FLOWING	GAS LIFT SWAB					
	WATER	m <sup>3</sup> /d	OIL	m <sup>3</sup> /d	GAS	m <sup>3</sup> /d	
TEST INTERVALS OR PERFS.							
SEPARATOR RESERVOIR	CONTAINER WHEN SAMPLED	@ °C	CONTAINER WHEN RECEIVED	@ °C	SEPARATOR	TEMPERATURES, °C	
PRESSES, kPa							
86 03 31	DATE SAMPLED (Y/M/D)	86 04 10	DATE RECEIVED (Y/M/D)	86 04 15	DATE ANALYSED (Y/M/D)	ANALYST	REMARKS

MUD FILTRATE ANALYSIS

Resistivity (Ohm-metres @ 25°C): 0.038

Chloride (mg/litre): 184000

9211- P28-3-1

PETRO-CANADA INC.

PCI BELE 0 - 35

FILE: 70179 - 86 - 439

**CALGARY COPY**

Canada Oil and Gas Administration des terres et gisements	132
May 26 1986	
To:	
File #:	

PCI BELE 0-35

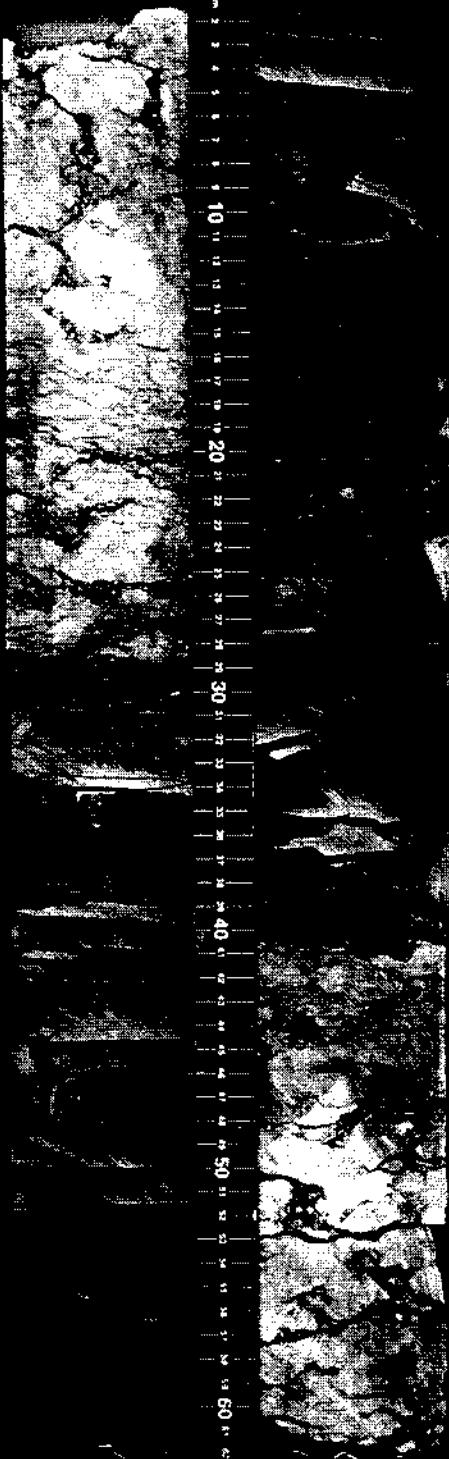
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PCI BELE 0-35

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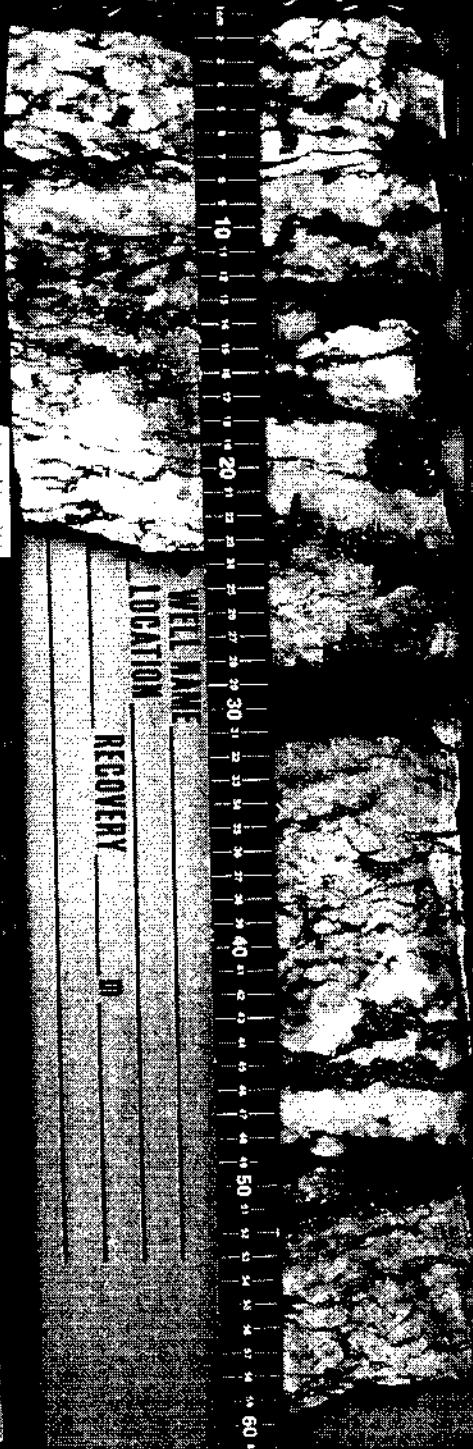
145

CORE 2 1340.60

WELL NAME  
LOCATION

RECOVERY

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PCI BELE 0-35

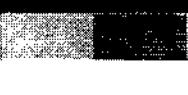
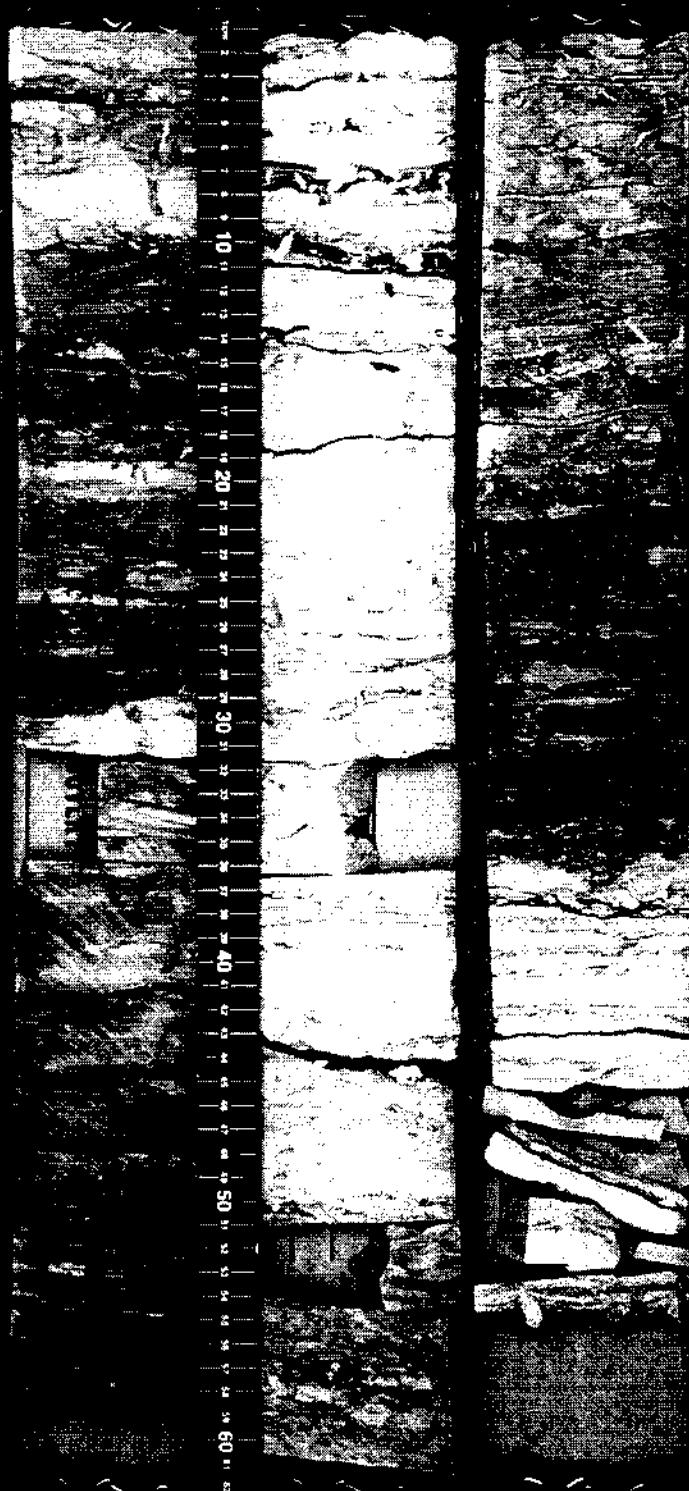
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PCI BELE 0-35



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PCI BELE 0-35

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PCI BELE 0-35

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# STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

PAGE 2  
FILE 70175-86-539C

COMPANY: FETRO-CANADA EXPLORATION INC.  
FIELD: WILDCAT, N.W.T.

WELL: FCI CANTERRA BELE 0-35  
PROVINCE:

## GROUFWING BY POROSITY RANGES

POROSITY RANGE	METRES IN RANGE	AVERAGE POROSITY	AVERAGE FERM. (GEOM.)	AVERAGE FERM. (ARITH.)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.000 - 0.020	0.7	0.011	0.006	0.007	10.0	10.0
0.020 - 0.040	0.4	0.027	0.006	0.008	5.6	15.6
0.040 - 0.060	2.3	0.049	0.011	0.016	32.4	48.0
0.060 - 0.080	2.5	0.068	0.022	0.069	35.1	83.1
0.080 - 0.100	0.9	0.088	0.039	0.046	13.1	96.3
0.100 - 0.120	0.3	0.104	0.090	0.090	3.7	100.0
TOTAL NUMBER OF METRES =		7.00				

THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM; AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGMENT OF CORE LABORATORIES - CANADA LTD. (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES - CANADA LTD. AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PRODUCTIVITY, PROPER OPERATIONS, OR PROFITABILITY OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAND IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON.

# STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

PAGE 3  
FILE 70175-86-539C

COMPANY: PETRO-CANADA EXPLORATION INC.  
FIELD: WILDCAT, N.W.T.

WELL: PCL CANTERRA RELE 0-35  
PROVINCE:

## GROUING BY PERMEABILITY RANGES

PERMEABILITY RANGE	METRES IN RANGE	AVERAGE (GEOM.)	PERM, (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.005 - 0.010	3.4	0.005	0.005	0.043	48.0	48.0
0.020 - 0.039	1.7	0.024	0.025	0.062	23.9	71.9
0.039 - 0.078	1.3	0.054	0.055	0.077	18.3	90.1
0.078 - 0.156	0.3	0.090	0.090	0.104	3.7	93.9
0.156 - 0.312	0.3	0.266	0.269	0.065	4.4	98.3
0.312 - 0.625	0.1	0.370	0.370	0.069	1.7	100.0

TOTAL NUMBER OF METRES = 7.00

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

PAGE 4  
FILE 70175-86-539C

COMPANY: FETRO-CANADA EXPLORATION INC.  
FIELD: WILDCAT, N.W.T.

WELL: PCI CANTERRA BELE 0-35  
PROVINCE:

POROSITY-METRES OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	METRES LOST	CAPACITY LOST (%)	METRES REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	ARITH MEDIAN
0.000	0.0	0.0	7.0	100.0	0.058	0.061
0.020	0.7	1.8	6.3	98.2	0.063	0.064
0.040	1.1	4.5	5.9	95.5	0.065	0.066
0.060	3.4	31.8	3.6	68.2	0.075	
0.080	5.8	73.2	1.2	26.8	0.091	
0.100	6.7	93.3	0.3	6.7	0.104	
0.120	7.0	100.0	0.0	-0.0	0.000	

TOTAL STORAGE CAPACITY IN POROSITY-METRES = 0.403

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# STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

PAGE 5  
FILE 70175-86-539C

COMPANY : FETRO-CANADA EXPLORATION INC.  
FIELD : WILLCAT, N.W.T.

WELL : FCI CANTERRA RELE 0-35  
PROVINCE :

## MILLIDARCY-METRES OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY	METRES	CAPACITY	METRES	CAPACITY	GEOM	MEAN	MEDIAN
CUT OFF	LOST	LOST (%)	REMAINING	REMAINING (%)			
0.005	0.0	0.0	7.0	100.0	0.02	0.02	0.02
0.010	3.4	6.0	3.6	94.0	0.05	0.04	0.04
0.020	3.4	6.0	3.6	94.0	0.05	0.05	0.04
0.039	5.0	20.7	2.0	79.3	0.08	0.08	0.08
0.078	6.3	45.8	0.7	54.2	0.19	0.19	0.19
0.156	6.6	54.2	0.4	45.8	0.29	0.29	0.29
0.312	6.9	84.1	0.1	15.9	0.37	0.37	0.37
0.625	7.0	100.0	0.0	1.00			

TOTAL FLOW CAPACITY IN MILLIDARCY-METRES (ARITHMETIC) = 0.28

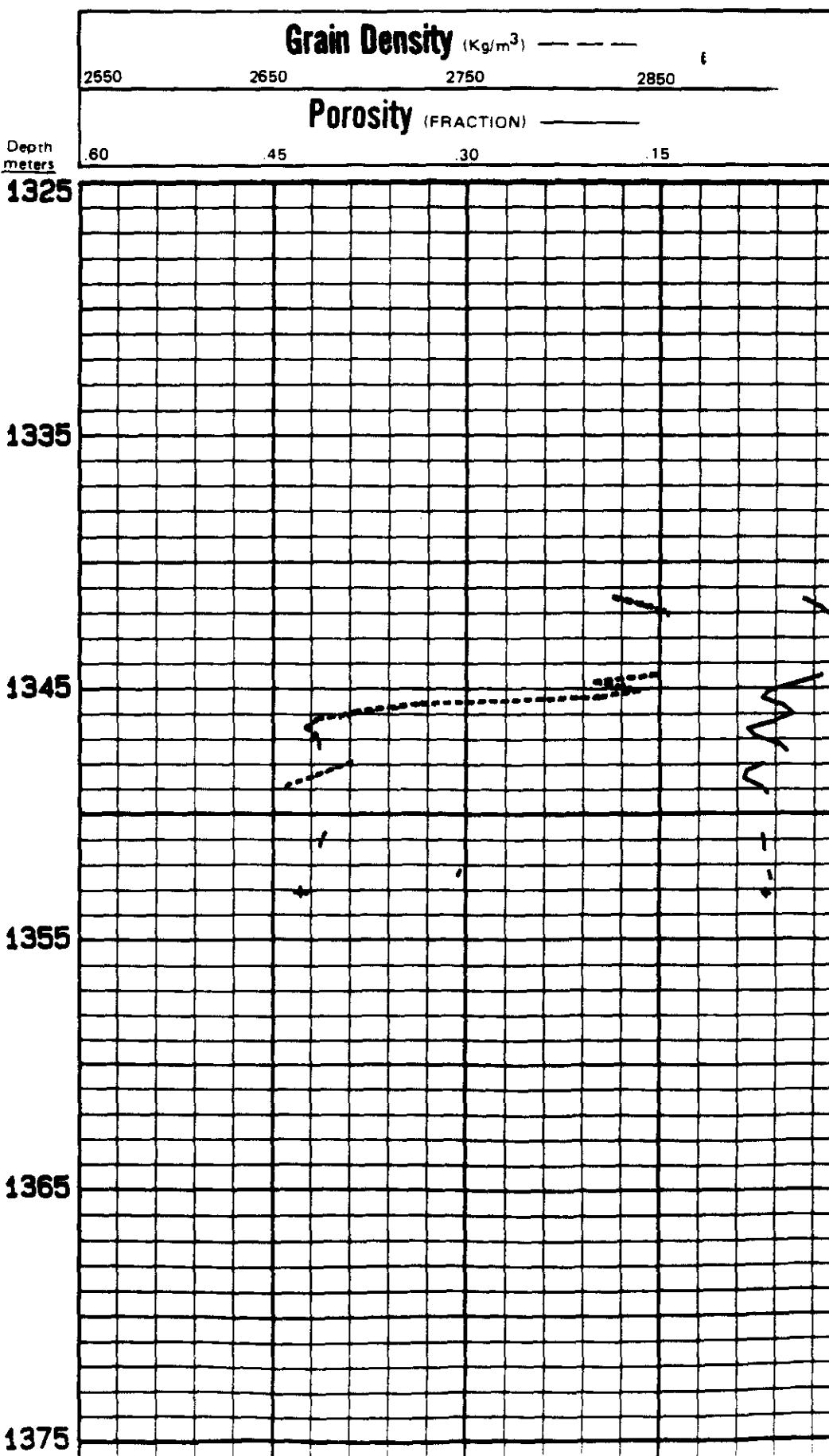
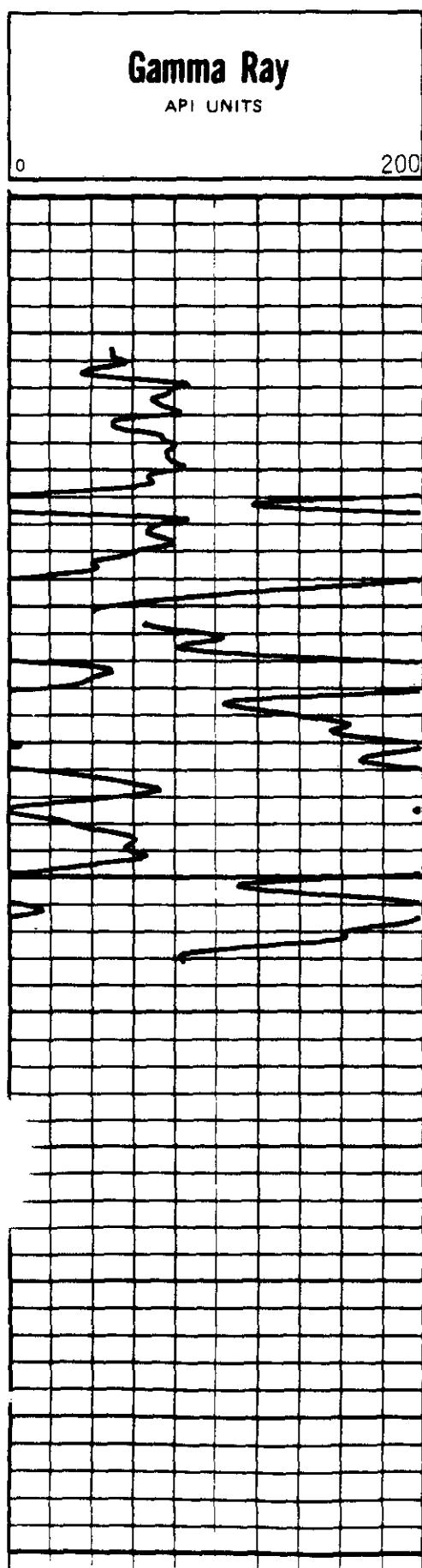
THESE ANALYSES, OPINIONS OR INTERPRETATIONS ARE BASED ON OBSERVATIONS AND MATERIALS SUPPLIED BY THE CLIENT TO WHOM; AND FOR WHOSE EXCLUSIVE AND CONFIDENTIAL USE; THIS REPORT IS MADE. THE INTERPRETATIONS OR OPINIONS EXPRESSED REPRESENT THE BEST JUDGEMENT OF CORE LABORATORIES - CANADA LTD. (ALL ERRORS AND OMISSIONS EXCEPTED); BUT CORE LABORATORIES - CANADA LTD. AND ITS OFFICERS AND EMPLOYEES, ASSUME NO RESPONSIBILITY AND MAKE NO WARRANTY OR REPRESENTATIONS, AS TO THE PRODUCTIVITY, PROPER OPERATIONS, OR PROFITABILITY OF ANY OIL, GAS OR OTHER MINERAL WELL OR SAND IN CONNECTION WITH WHICH SUCH REPORT IS USED OR RELIED UPON.

COMPANY PETRO-CANADA EXPLORATION INC. FILE NO. 70175-86-539C  
 WELL PCI CANTERRA BELE 0-35 DATE   
 FIELD WILDCAT, N.W.T FORMATION MT. CAP ELEV.   
 PROVINCE  DRLG. FLD. WATER BASE MUD CORES 1,2  
 LOCATION 66 34'58.13" N LAT. 126 21 '32.10" W LONG.

## CORRELATION COREGRAPH

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VERTICAL SCALE: 10 cm = 24m



CORE LABORATORIES - CANADA, LTD.

LAB

Petroleum Reservoir Engineering

COMPANY PETRO-CANADA EXPLORATION INC. FILE NO. 70175-86-539C  
 WELL PCI CANTERRA BELE 0-35 DATE \_\_\_\_\_  
 FIELD WILDCAT, N.W.T. FORMATION MT. CAP ELEV. \_\_\_\_\_  
 PROVINCE DRLG. FLD. WATER BASE MUD CORES 1,2  
 LOCATION 66 34 '58.13" N LAT. 126 21 '32.10" W LONG.

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VERTICAL SCALE: 10cm = 24m

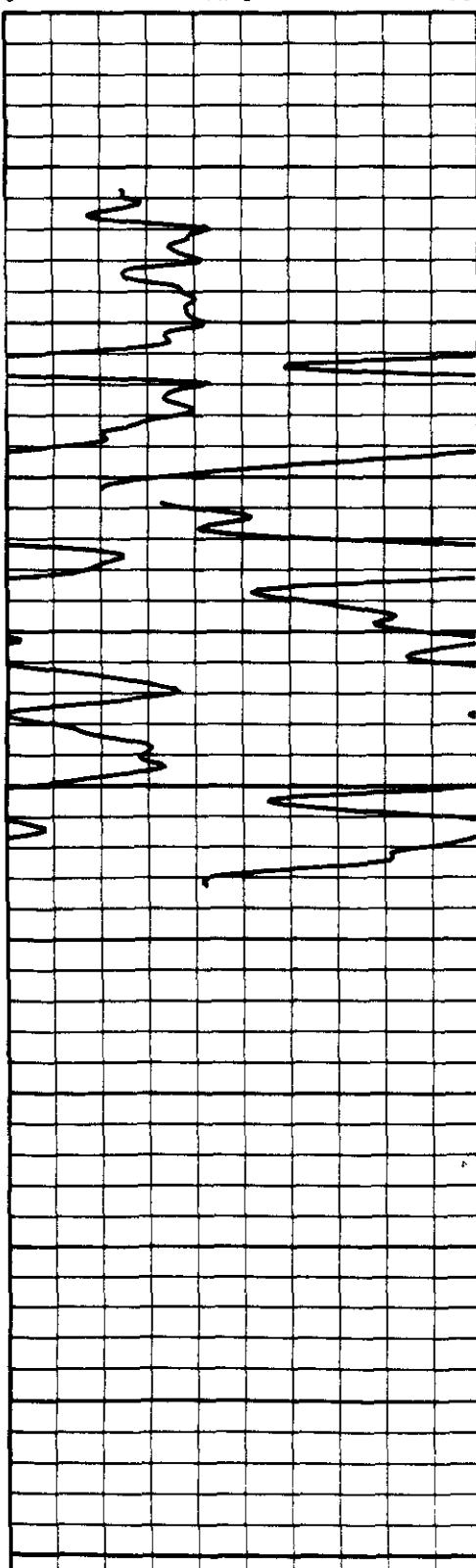
### Total Water

FRACTION PORE SPACE  
1.00 .80 .60 .40 .20 .00

### Gamma Ray

RADIATION INCREASE →

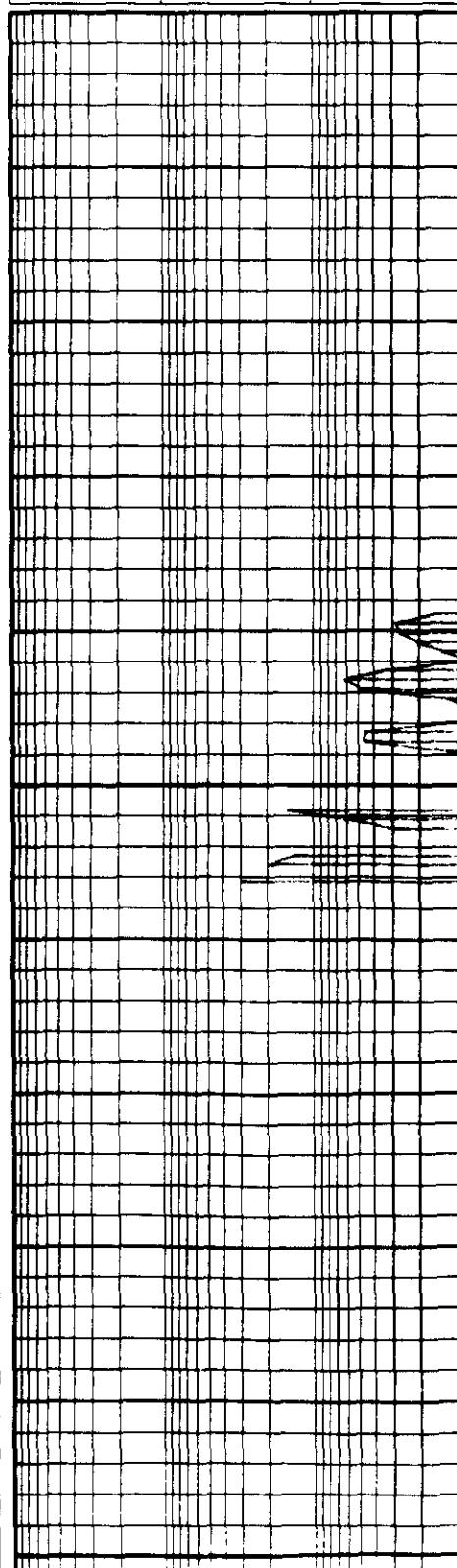
0 API



### Permeability $\times .01$

MILLIDARCIES

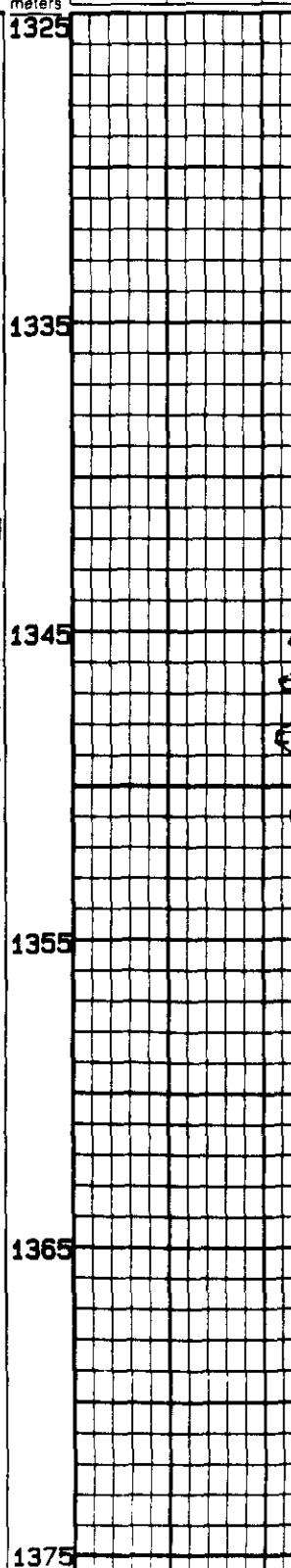
200 1000 100 10 1



### Porosity

FRACTION

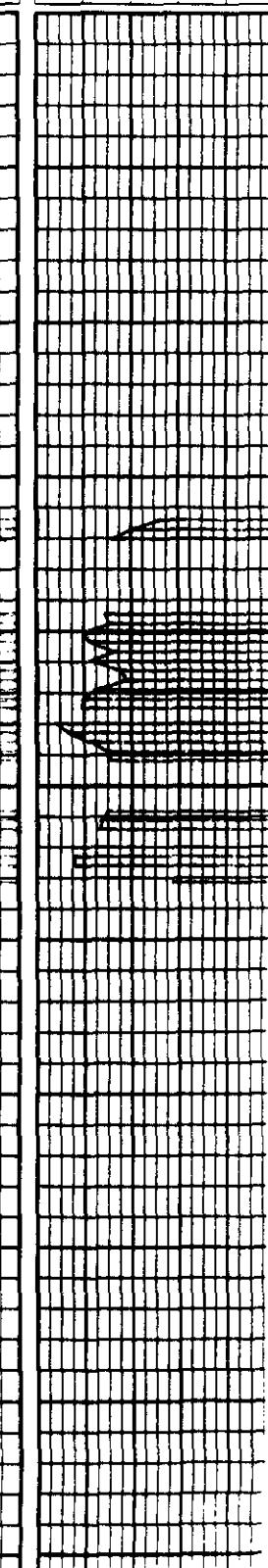
Depth .30 .20 .10 meters



### Oil Saturation

FRACTION PORE SPACE

0 0 .20 .40 .60 .80 1.00



# STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

PAGE 1  
FILE 70175-86-539C

COMPANY: FETRO-CANADA EXPLORATION INC.  
FIELD : WILDCAT, N.W.T.

WELL : FCI CANTERRA BELE 0-35  
PROVINCE:

AIR FERMEABILITY : MD. ( MAXIMUM ) RANGE USED 0.000 TO 10.  
POROSITY : FRACTION ( HELIUM ) RANGE USED 0.000 TO .46

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 1330.50 - 1353.20 INTERVAL LENGTH : 22.70  
METRES ANALYZED IN ZONE : 7.00 LITHOLOGY EXCLUDED : NONE

## DATA SUMMARY

POROSITY AVERAGE	PERMEABILITY AVERAGES
0.058	ARITHMETIC 0.04
	HARMONIC 0.01
	GEOMETRIC 0.02

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