PETRO CANADA INCORPORATED

PCI CANTERRA NOGHA O-47

Well History Report

Prepared by: D. D. Scott
1986-03-20

PCI CANTERRA NOGHA O-47

WELL HISTORY REPORT

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PCI CANTERRA NOGHA O-47

A. INTRODUCTION

i) Summary

PCI Canterra Nogha O-47 was the second commitment well drilled in the Tweed Lake area and validated E.A. No. 158. The well was drilled to evaluate the Mount Clark (primary interest) and Mount Cap formations for oil and/or gas potential.

Petro-Canada Incorporated of Calgary operated the well. The contractor, ATCO Drilling Limited of Calgary, drilled the well with Atco/Equtak Rig #76, a diesel mechanical rig built in 1983.

The well was spudded 1986-01-13 at 01:00. A 311 mm conductor hole was drilled and reamed to 444 mm to a depth of 64 m. 340 mm conductor casing was set at 64 m.

A 311 mm surface hole was started with water and converted to air drilling at 76 m. A bit trip at 112 m revealed that all three cones were missing. All cones and metal junk was recovered after 8 runs with a magnet and drilling was resumed.

Due to mechanical difficulties with the Grant Rotating Head the well was switched to a gel-polymer mud system at 128 m. The well was converted back to air drilling at 199 m. No lost circulation problems occurred during this time.

The hole started producing fresh water at 272 m at a rate of 1 m^3/hour and increased to a stable rate of 63 m^3 by 420 m.

Air drilling continued to 745 m where 245 mm surface casing was set.

The 216 mm main hole was drilled with gel-polymer mud to 801 m, and with a salt saturated mud from 801 - 1416 m (T.D.).

A minimum of 1 - 18 m core was to be cut in the Mount Clark formation (estimated top 1386 m). The formation was 42 m structurally higher than expected and the dolomite stringer, normally used to control drill to the top of the formation, did not appear. As a result the core point was missed and the core interval was drilled through.

The well was logged open-hole from 1416 - 745 m. Seven DST's were run in the Mount Clark, High Gamma Ray Shale and Mount Cap formations. The well was plugged and abandoned and the rig was released on 86-02-17 at 18:00.

ii) Location Map - Figure 1

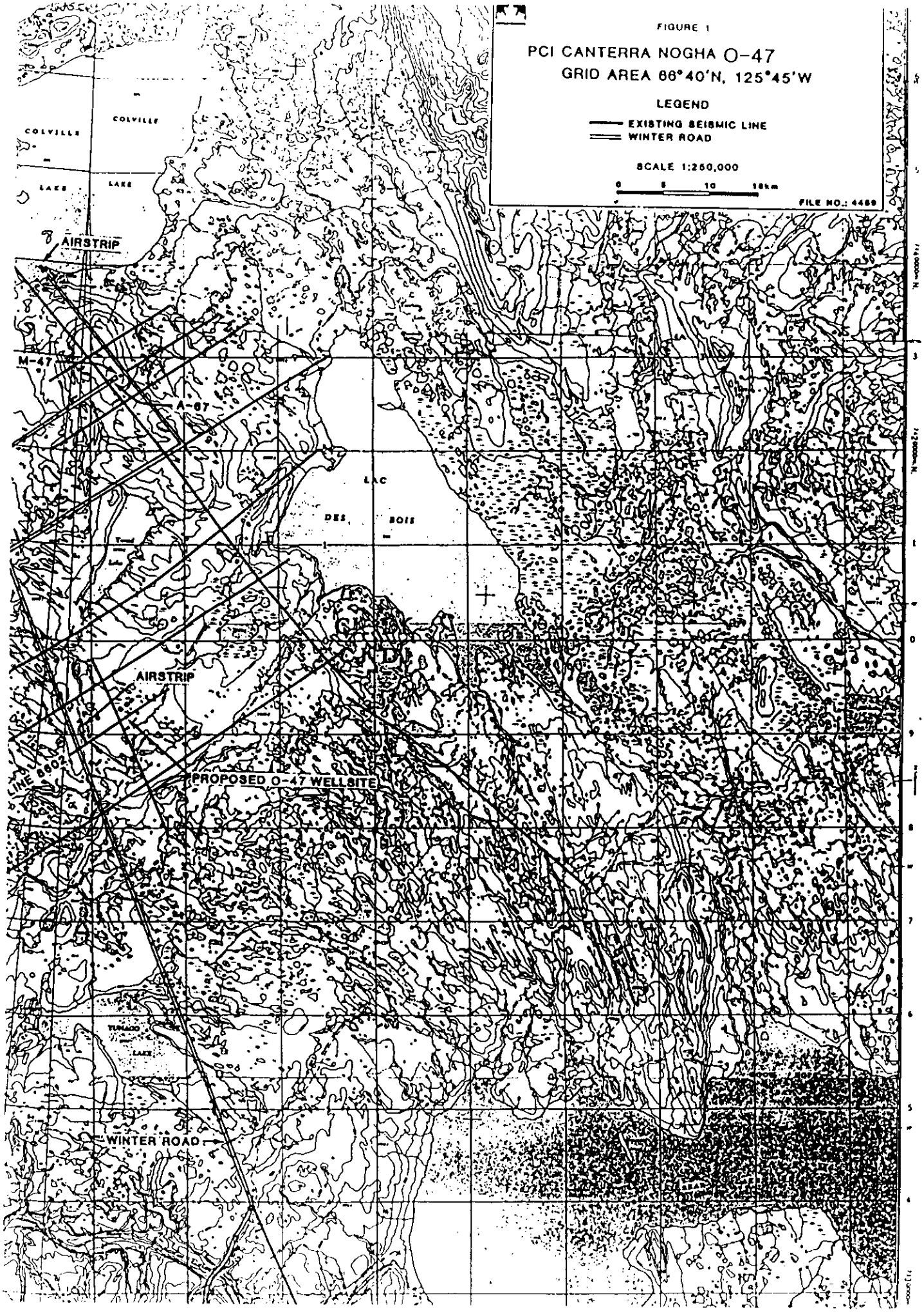


FIGURE 1
PCI CANTERRA NOGHA O-47
GRID AREA 66°40'N, 125°45'W
LEGEND
EXISTING SEISMIC LINE
WINTER ROAD
SCALE 1:250,000
0 5 10 15km
FILE NO.: 4469
COLVILLE
COLVILLE
LAKE
LAKE
AIRSTRIP
M-47
A-07
LAC
DES
BOIS
AIRSTRIP
LINE 8802
PROPOSED O-47 WELLSITE
TUNAGO
LAKE
WINTER ROAD

B. GENERAL DATA

i)	Well Name and Number:	PCI Canterra Nogha O-47 Grid Area: 66° 40' N, 125° 45'
ii)	Well Location:	North Latitude 66° 36' 52.1819" West Longitude 125° 53' 18.8698"
iii)	Unique Well Identifier:	3000476640125450
iv)	Operator:	Petro-Canada Incorporated P.O. Box 2844 Calgary, Alberta T2P 3E3
	Contractor:	Atco Drilling Limited 700, 800 - 6th Avenue S.W. Calgary, Alberta
v)	Drilling Unit:	Name: Atco/Equtak Rig #76 Type: Triple Diesel Mechanical Year built: 1983 Location: Nisku, Alberta
vi)	Position Keeping:	N/A to this well
vii)	Support Craft:	N/A to this well
viii)	Drilling Unit Performance:	N/A to this well
ix)	Difficulties & Delays:	No difficulties or delays were encountered that were not directly associated with downhole operations.

C. SUMMARY OF DRILLING OPERATIONS

i) Elevations: Ground: 348.29 m
Kelly Bushing: 354.39 m

ii) Total Depth: Drilled: 1416.5 m
Logged: 1415.0 m

iii) Date and Hour Spudded: 1986-01-13 at 01:00

iv) Date Drilling Completed: 1986-02-06 at 13:45

v) Date of Rig Release: 1986-02-17 at 18:00

vi) Well Status: Abandoned

vii) Hole Sizes and Depths:

Classification	Bit Number	Size (mm)	Depth (m) in	Depth (m) out	Metres Drilled	Remarks
Conductor	1A	311	0	65	65	Drill Pilot Hole
	Hole Opener	444	0	65	65	Reamed Pilot Hole
Surface	1B	311	65	112	47	Took 5 hours to drill out. Lost 3 cones.
	2B	311	112	138	26	Ream 100 - 112 m
	3B	311	138	199	61	
	4B	311	199	406	207	
	5B	311	406	600	194	
	6B	311	600	745	145	
Main	7C	216	745	863	118	2 hours to drill out. One seized bearing.
	8C	216	863	1128	265	Plugged jet.
	9C	216	1128	1325	197	
	10C	216	1325	1398	73	
	11C (Rerun)	216	1398	1416	18	Ream 1388 - 1398 m
	12C	216	1416	1416	0	Clean out trip.

viii) Casing and Cementing Details:

Hole Classification:	Conductor	Surface		Main
Hole Size: mm	444	311		216
Casing Size: mm	340	245		Abondoned
Weight: kg/m	101	60		-
Grade:	K-55	L-80		-
Coupling:	BT&C	LT&C		-
Number of Joints:	5	61		-
Number of Centralizers:	6	8		-
Date of Run:	86-01-14	86-01-27		-
Shoe Depth: m	64.0	745.0		-
Tonnes of Cement:	14.4	8	4	-
Type of Cement:	Class G	Class G	Class G	-
Additives:	2.2% $CaCl_2$ 40 kg Celloflake	2% $CaCl_2$ 0.5% FLA	2% $CaCl_2$ 0.5% FLA	-
Height of Cement: m	Surface	595		-
Based on:	Returns to Surface	Caliper Log		-

ix) Sidetracked Hole: N/A to this well

x) Drilling Fluid:

Hole Interval (m)	Mud System	Remarks
0 - 65	Gel-Polymer	Drill conductor hole
65 - 76	Water	Drill out conductor casing shoe
76 - 128	Air-Mist	Drill surface hole
128 - 199	Gel-Polymer	Switch to mud, mechnical problems with rotating head
199 - 275	Air-Mist	Change out rotating head and resume air drilling
275 - 745	Air-Foam	Encountered water, change to stable foam drilling
745 - 801	Water	Drill out surface casing shoe
801 - 1416	Salt Saturated Gel-Polymer	Drill main hole

Summary of Mud Properties:

Section	Interval (m)	Density (kg/m^3)	Funnel Viscosity (S/L)	Water Loss (average, cm^3)	PH (average)	Cl^- (10^3 mg/l)
Conductor	0- 65	1060-1090	42 - 53	-	10.7	-
Surface	65- 76	1000-1020	-	-	-	-
Surface	76- 128	Air	-	-	-	-
Surface	128- 199	1080-1090	38	18.1	9.5	-
Surface	199- 275	Air-Mist	-	-	-	-
Surface	275- 745	Air-Foam	-	-	-	-
Main	745- 801	1000-1020	-	-	-	-
Main	801-1416	1235-1285	42 - 55	11.5	10.5	106 - 170

xi) Fishing Operation:

Date Fish Lost	Fish Left in Hole	Duration of Fishing Operation	Remarks
86-01-16	3 bit cones #1B (311 mm, XDV)	9.5 hours	Recovered all cones and pieces of steel with magnet

xii) Well Kicks: None

xiii) Formation Leak-off Tests:

Last Casing Depth: 745 m
Depth of Test: 749 m
Fluid Density: 1010 kg/m^3
Surface Pressure: 7000 kPa
Mud Weight Equivalent: 1960 kg/m^3
Formation Integrity: 19.25 kPa/m

Pressure was held for 10 minutes without leak off or formation breakdown.

xiv) Time Breakdown:

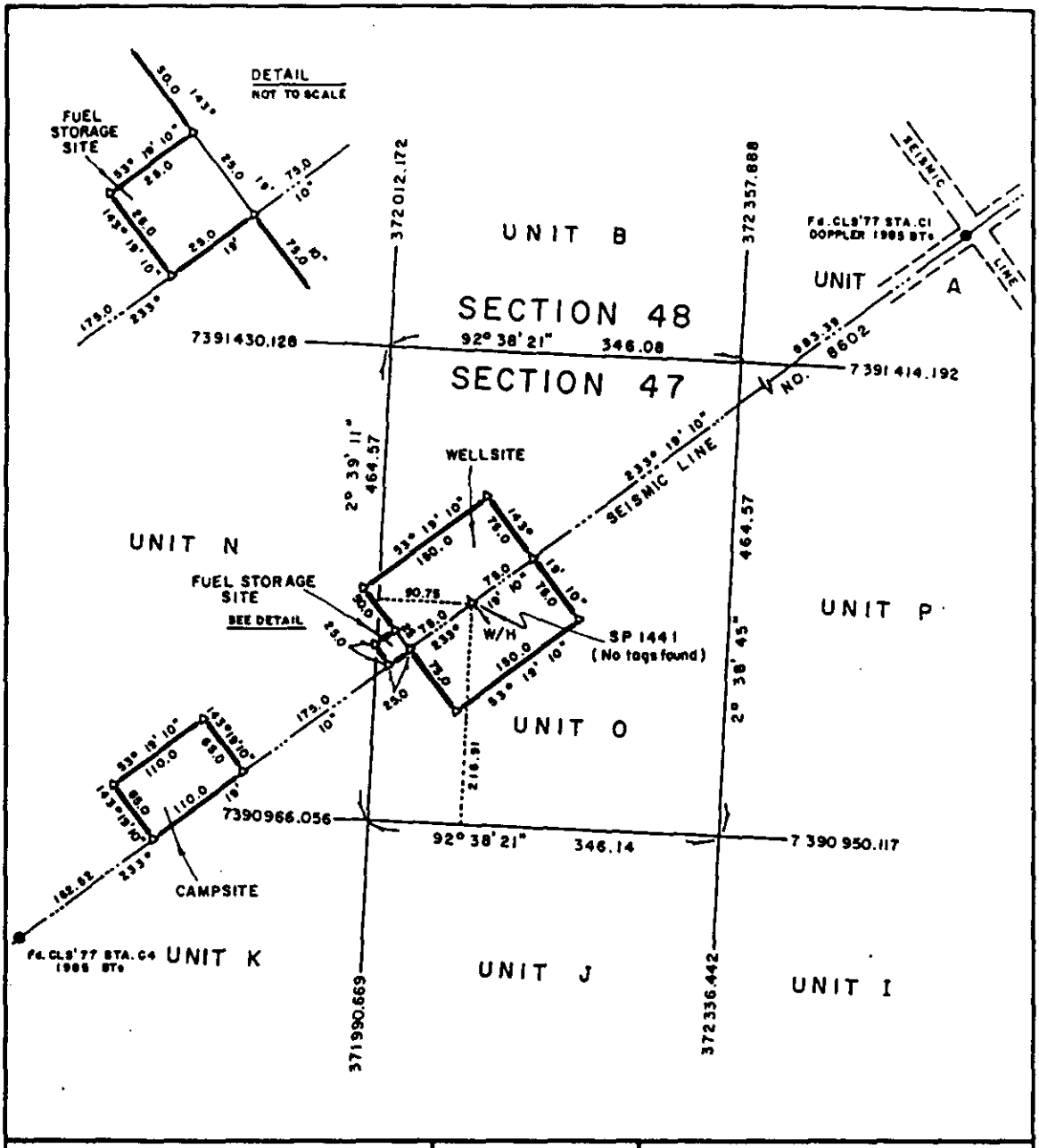
Time Breakdown	Conductor	Surface	Main	Total
Drill	19.50	156.25	148.25	324.00
Trip	2.50	19.75	25.75	48.00
Ream/Clean	12.25	4.75	0.75	17.75
Conditioning	1.00	5.75	6.25	13.00
Rig Service	0.50	6.75	9.25	16.50
Mechanical Downtime	-	6.00	-	6.00
Survey	1.50	7.50	7.25	16.25
Csg - Cmt. - WOC	15.00	19.00	-	34.00
Headup/Pressure Test	15.00	29.00	-	44.00
Coring	-	-	-	-
Logging	-	12.25	54.00	66.25
DST	-	-	165.75	165.75
Drill Out Cement	-	4.75	2.00	6.75
Rig Up Air	-	5.50	-	5.50
B.O.P. Drill	-	0.50	-	0.50
Unload Hole to Air	-	13.75	-	13.75
Teardown B.O.P.	-	-	10.00	10.00
Fishing	-	9.50	-	9.50
Stuck In Hole	-	-	-	-
Drill Mouse Hole	3.00	-	-	3.00
Work Pipe	2.50	6.00	-	8.50
Inspect Drill Collars	-	4.00	7.50	11.50
Lay Down Drill Collars	1.25	-	-	1.25
Abandonment	-	-	36.25	36.25
TOTAL	74.00	311.00	473.00	858.00

xv) Deviation Survey:

xvi) Abandonment Plugs:

Type of Plug	Interval (m)	Felt	Cement + Additives	Fluid Between Plugs
1. Cement	1416 - 1300	Not Felt	6 tonnes "G" + 2% $CaCl_2$	Sat. Salt - Gel-Poly
2. Cement	1200 - 1075	1080	9 tonnes "G" + 2% $CaCl_2$	Sat. Salt - Gel-Poly
3. Cement	775 - 715	717	4 tonnes "G" + 2% $CaCl_2$	Sat. Salt - Gel-Poly
4. Cement	10 - 0	Surface	0.6 tonnes "G" neat	

xvii) Composite Well Record:



N.T.S. MAP SHEET: 96 - K - 13	METRIC	NORTHWEST TERRITORIES

PETRO - CANADA INC.

PRELIMINARY SKETCH SHOWING WELL LOCATION

PCI CANTERRA NOGHA O-47

UNIT O, SECTION 47, GRID AREA 66° 40', 125° 45'

PETRO CANADA INC.

CERTIFIED CORRECT:
THIS 10th. DAY OF OCTOBER , A.D. 1985.

CANADA LANDS SURVEYOR

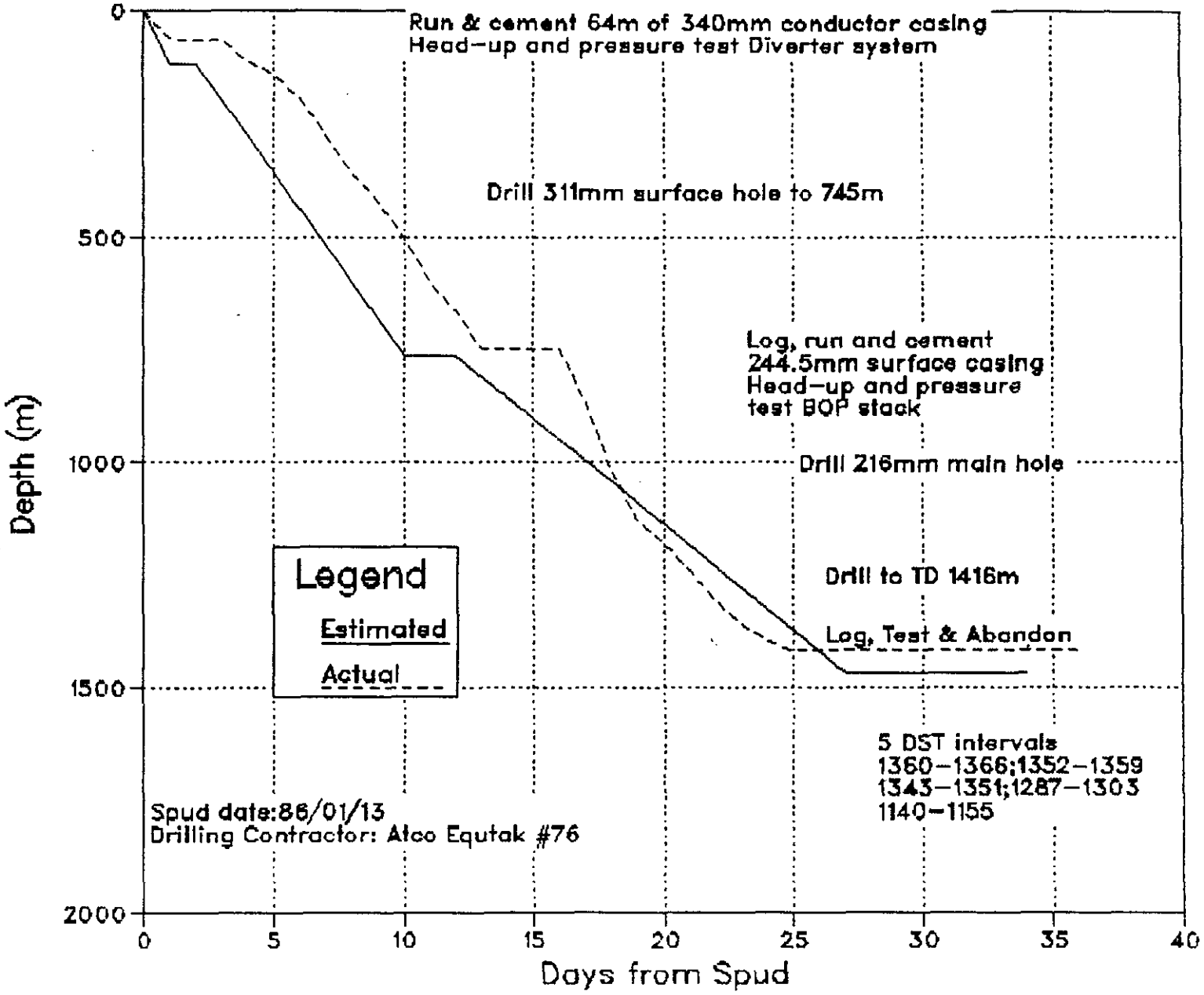
ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
ON GROUND AT WELLHEAD : 347.53	NORTH LATITUDE: 66° 36' 52.1819" (66.61449497°) WEST LONGITUDE: 125° 53' 18.8698" (125.88857494°)	NORTHING: 7,391,178.553 EASTING: 372,091.368 CO-ORDINATES ARE COMPUTED FOR ZONE 10, CENTRAL MERIDIAN 123° W.

LEGEND	AREAS REQUIRED		
Survey Monument found ●	WELLSITE	5.56 Acres	2.250 ha.
Survey Monument placed O	CAMPSITE	1.77 Acres	0.715 ha.
Traverse Station A	FUEL SITE	0.15 Acres	0.063 ha.
SCALE 1:5000	TOTAL	7.48 Acres	3.028 ha.

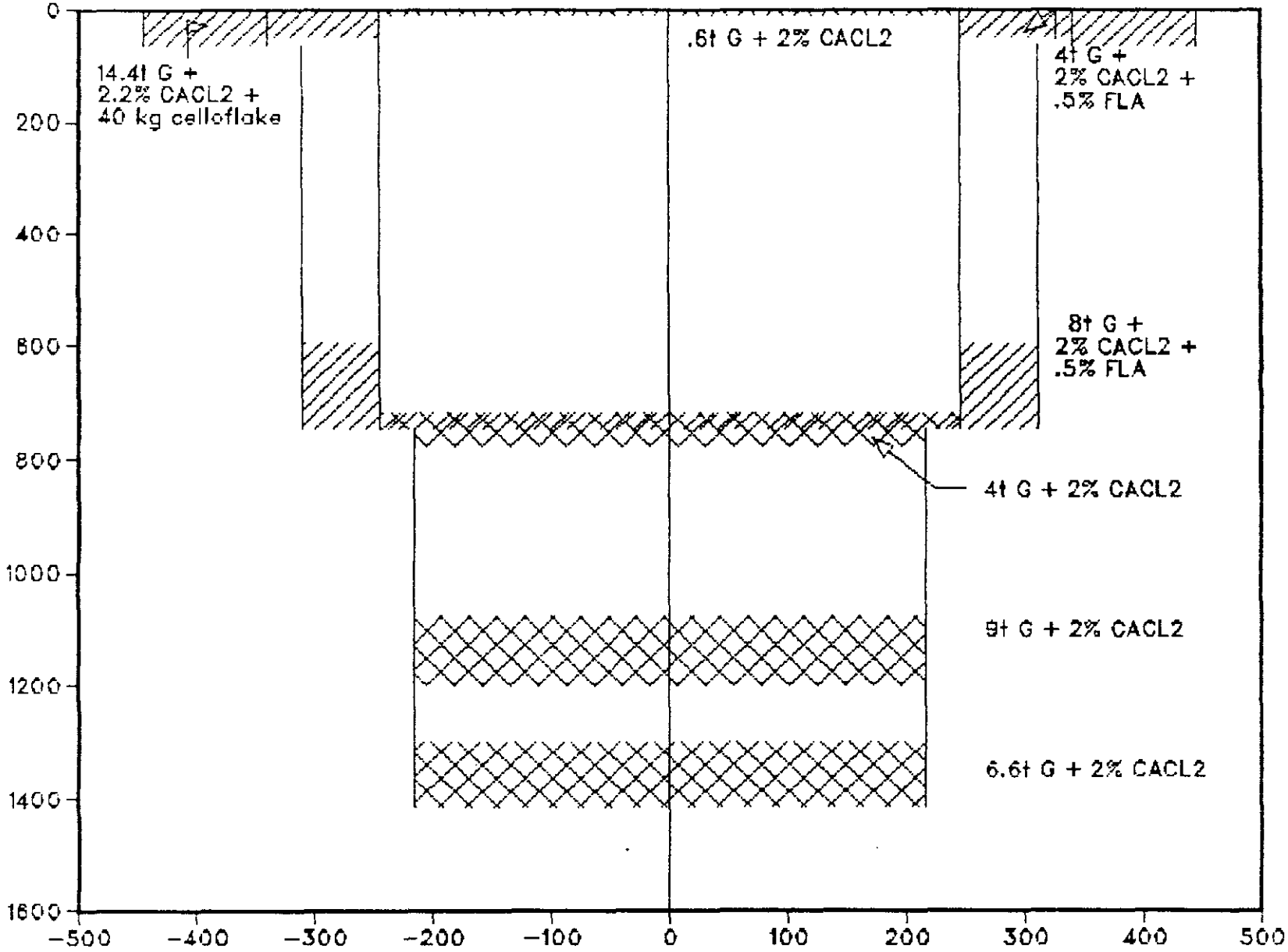
HOSFORD, IMPEY, WELTER AND ASSOCIATES LTD.
P.O. BOX 1409, YELLOWKNIFE, X1A 2P1
NORTHWEST TERRITORIES

FILE NO. Y85022-R1 | DATE: OCT 10/85 | CKD

PCI CANTERRA NOGHA O-47
Planned Penetration Curve



Wellbore Profile
PCI CANTERRA NOGHA O–47



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	32.9	M
COURSE AZIMUTH	347.2	DEG
MEASURED DEPTH	1419.0	M
TRUE VERTICAL DEPTH	1418.4	M
DISTANCE NORTH	32.1	M
DISTANCE WEST	7.3	M

REF 2349 PAGE 1

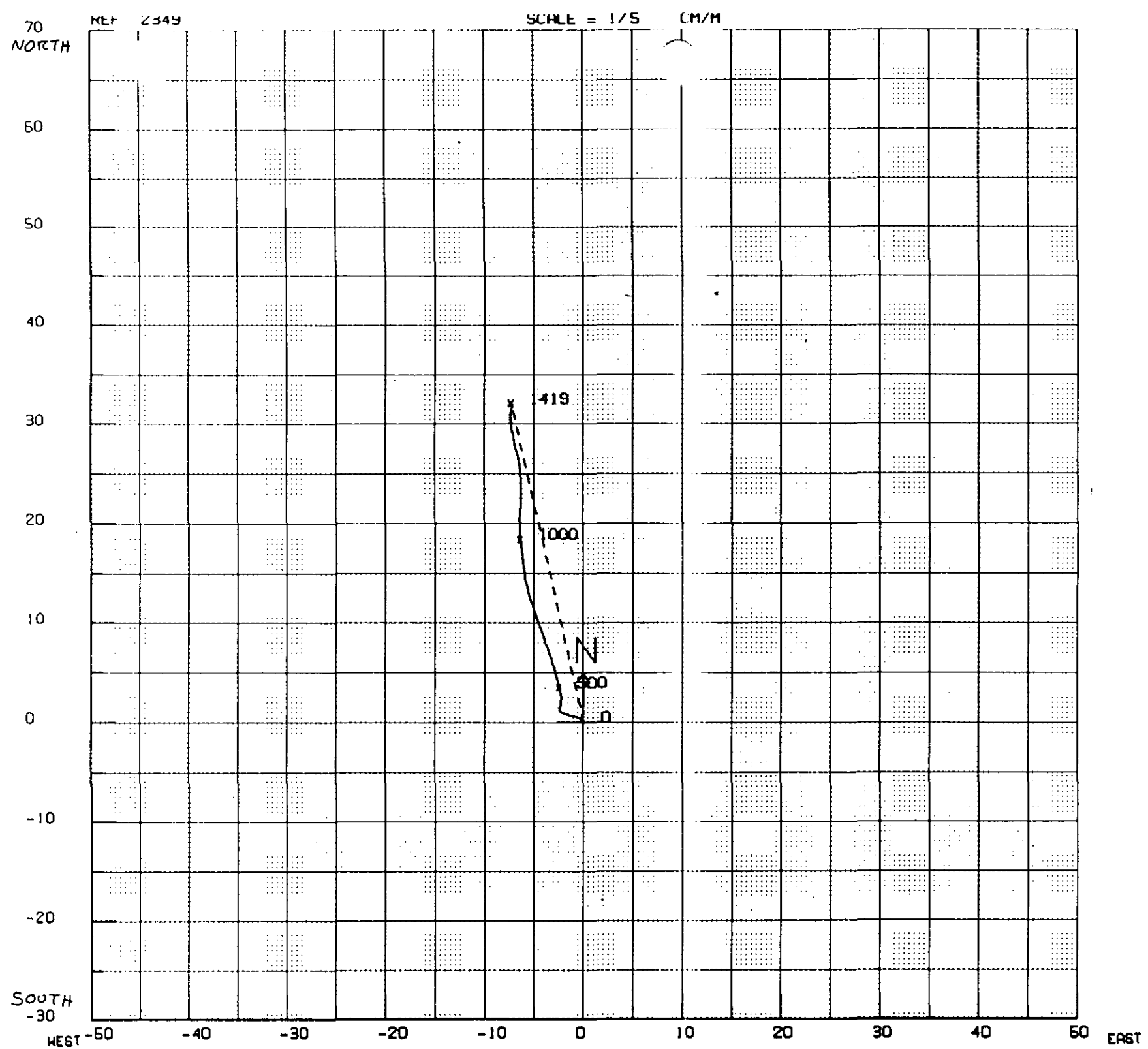
MEAS. DEPTH M	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH M	COORDINATES + NORTH - SOUTH	COORDINATES + EAST - WEST	COURSE LENGTH M	DOG-L SEVERI DEG /
0.0	0.0	0	0.0	0.0	0.0	0.0	0.0
20.0	0.1	316	20.0	0.0	0.0	0.0	0.0
40.0	0.1	272	40.0	0.0	0.0	0.1	0.0
60.0	0.2	228	60.0	-0.1	-0.1	0.1	0.0
62.0	0.2	224	62.0	-0.1	-0.1	0.1	0.0
80.0	0.2	201	80.0	-0.1	-0.1	0.1	0.1
100.0	0.4	320	100.0	0.0	-0.2	0.2	0.2
120.0	0.5	346	120.0	0.1	-0.2	0.3	0.2
140.0	0.3	344	140.0	0.2	-0.3	0.4	0.1
160.0	0.5	315	160.0	0.4	-0.3	0.5	0.2
180.0	0.8	287	180.0	0.5	-0.5	0.7	0.2
200.0	1.0	283	200.0	0.5	-0.9	1.0	0.1
220.0	1.0	294	220.0	0.6	-1.2	1.4	0.2
240.0	1.2	284	240.0	0.7	-1.6	1.8	0.3
260.0	1.0	298	260.0	0.9	-2.0	2.2	0.2
280.0	0.4	307	280.0	1.0	-2.2	2.4	0.3
300.0	0.3	323	300.0	1.1	-2.3	2.5	0.0
320.0	0.5	331	320.0	1.2	-2.4	2.6	0.1
340.0	0.6	359	340.0	1.3	-2.4	2.7	0.2
360.0	0.4	10	360.0	1.5	-2.4	2.8	0.0
380.0	0.7	6	380.0	1.7	-2.3	2.9	0.2
400.0	0.7	0	400.0	1.9	-2.3	3.0	0.0
420.0	0.7	12	420.0	2.1	-2.3	3.1	0.1
440.0	0.8	8	440.0	2.4	-2.3	3.3	0.1
460.0	0.9	352	460.0	2.7	-2.3	3.5	0.1
480.0	1.1	346	480.0	3.0	-2.3	3.8	0.1
500.0	1.4	349	500.0	3.5	-2.4	4.2	0.1
520.0	1.4	343	520.0	3.9	-2.5	4.7	0.1
540.0	1.3	340	540.0	4.4	-2.7	5.1	0.3
560.0	1.5	349	559.9	4.9	-2.8	5.6	0.1
580.0	1.4	344	579.9	5.4	-2.9	6.1	0.1
600.0	1.3	339	599.9	5.8	-3.1	6.6	0.1
620.0	1.2	343	619.9	6.2	-3.2	7.0	0.1
640.0	1.1	341	639.9	6.6	-3.3	7.4	0.1
660.0	1.1	338	659.9	7.0	-3.5	7.8	0.1
680.0	1.1	345	679.9	7.3	-3.6	8.2	0.1
700.0	1.3	336	699.9	7.7	-3.7	8.6	0.1
720.0	1.3	339	719.9	8.2	-3.9	9.1	0.2
740.0	1.2	349	739.9	8.6	-4.0	9.5	0.4
760.0	2.0	338	759.9	9.2	-4.2	10.1	0.0
780.0	2.1	339	779.9	9.8	-4.5	10.8	0.1
800.0	2.1	343	799.9	10.6	-4.7	11.6	0.1
820.0	2.2	340	819.8	11.3	-5.0	12.3	0.0
840.0	2.2	339	839.8	12.0	-5.2	13.1	0.1
860.0	2.1	343	859.8	12.7	-5.5	13.8	0.1
880.0	2.2	347	879.8	13.4	-5.7	14.6	0.1
900.0	2.3	347	899.8	14.2	-5.8	15.3	0.1
920.0	2.3	352	919.8	15.0	-6.0	16.1	0.1
940.0	2.3	355	939.8	15.8	-6.1	16.9	0.2

MEAS. DEPTH M	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH M	COORDINATES + NORTH - SOUTH	COORDINATES + EAST - WEST	COURSE LENGTH M	DOG-L SEVERI DEG /
960.0	2.4	354	959.7	16.6	-6.2	17.7	0.1
980.0	2.6	354	979.7	17.4	-6.3	18.5	0.2
1000.0	2.7	352	999.7	18.4	-6.4	19.5	0.1
1020.0	2.7	358	1019.7	19.3	-6.5	20.4	0.2
1040.0	2.6	2	1039.7	20.2	-6.4	21.2	0.2
1060.0	2.7	5	1059.6	21.1	-6.4	22.1	0.2
1080.0	2.9	1	1079.6	22.2	-6.3	23.0	0.1
1100.0	2.6	0	1099.6	23.2	-6.3	24.0	0.1
1120.0	2.3	359	1119.6	24.0	-6.3	24.8	0.3
1140.0	2.3	356	1139.6	24.8	-6.3	25.6	0.2
1160.0	2.1	353	1159.5	25.6	-6.4	26.4	0.5
1180.0	2.0	347	1179.5	26.2	-6.5	27.0	0.2
1200.0	2.0	343	1199.5	26.9	-6.7	27.7	0.1
1220.0	2.2	349	1219.5	27.5	-6.9	28.4	0.4
1240.0	2.0	349	1239.5	28.3	-7.0	29.1	0.1
1260.0	1.5	346	1259.5	28.9	-7.1	29.7	0.3
1280.0	1.3	342	1279.5	29.4	-7.3	30.3	0.2
1300.0	1.3	357	1299.5	29.8	-7.3	30.7	0.1
1320.0	1.2	359	1319.5	30.2	-7.4	31.1	0.1
1340.0	1.3	356	1339.5	30.6	-7.4	31.5	0.3
1360.0	1.2	6	1359.5	31.1	-7.4	31.9	0.1
1380.0	1.1	9	1379.5	31.4	-7.3	32.3	0.1
1400.0	0.9	12	1399.4	31.8	-7.3	32.6	0.2
1419.0	0.9	355	1418.4	32.1	-7.3	32.9	0.0

BOTTOM HOLE LOCATION

COURSE LENGTH	32.9	M
COURSE AZIMUTH	347.2	DEGREES
MEASURED DEPTH	1419.0	M
TRUE VERTICAL DEPTH	1418.4	M
DISTANCE NORTH	32.1	M
DISTANCE WEST	7.3	M

EXACT RADIUS OF CURVATURE METHOD


REF 2349
SCALE = 1/5 CM/M
70
NORTH
60
50
40
30
20
10
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-10
-20
SOUTH
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WEST
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-30
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10
20
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40
50
EAST
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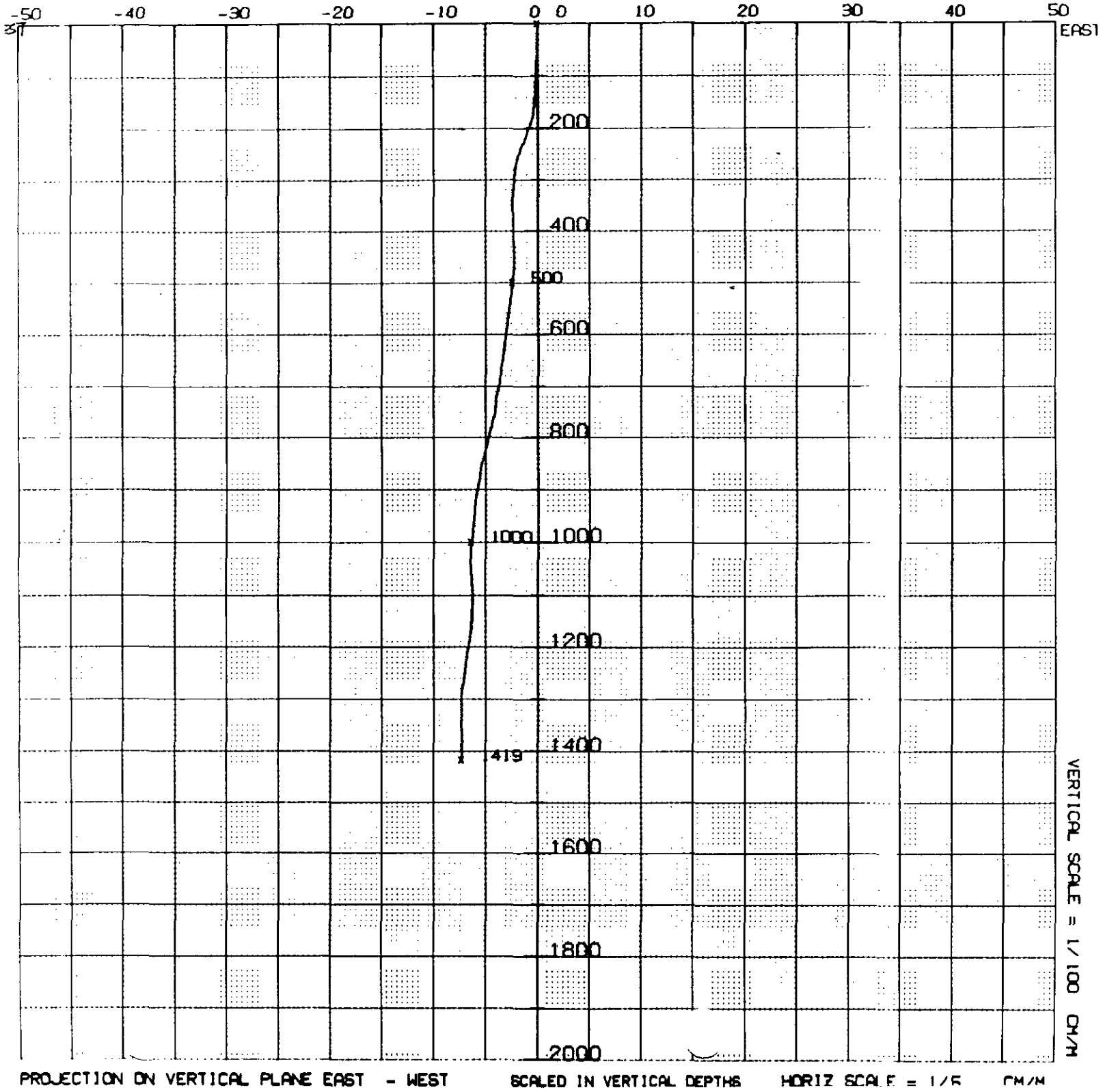
1000
N
400
0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-40
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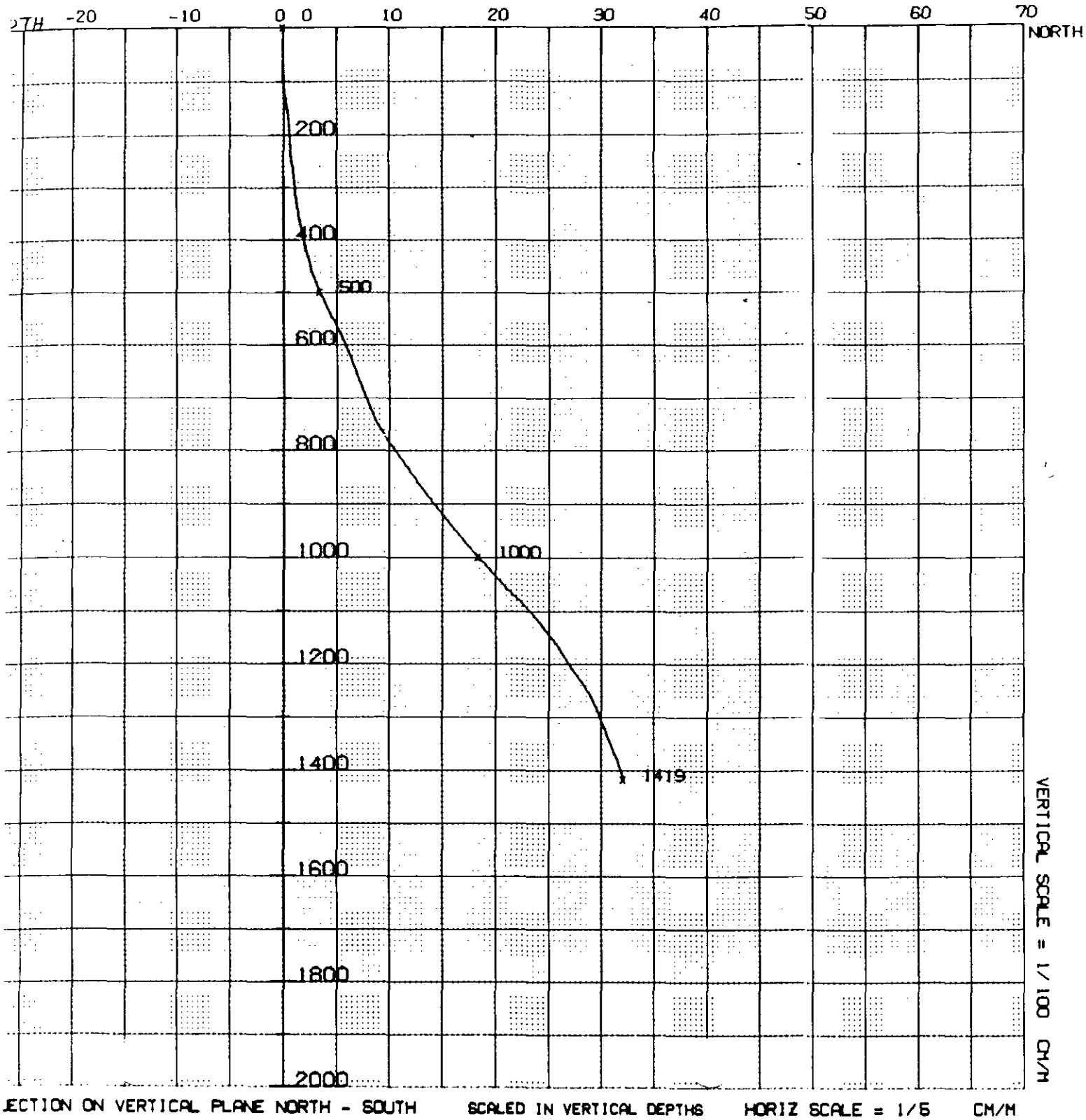
0
10
20
30
40
50
WEST
EAST
200
400
500
600
800
1000
1000
1200
1400
419
1600
1800
2000
VERTICAL SCALE = 1/100 CM/M
PROJECTION ON VERTICAL PLANE EAST - WEST
SCALED IN VERTICAL DEPTHS
HORIZ SCALE = 1/5 CM/M



JECTION ON VERTICAL PLANE NORTH - SOUTH SCALED IN VERTICAL DEPTHS HORIZ SCALE = 1/5 CM/M

9911 -P98-1-8 Calgary

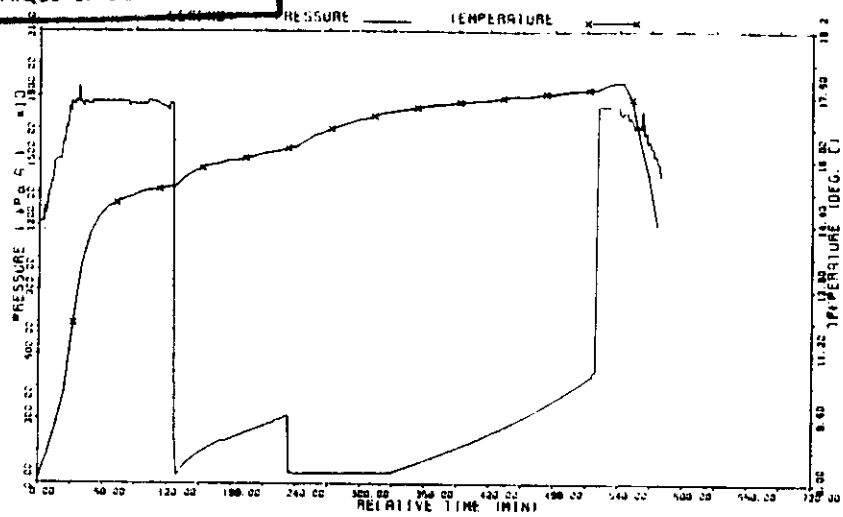
REF#:C-70-999-73105-66

TEST DATE: 86/02/09

PCI CANTERRA NOGHA 0-47
400/ 66.521 / 125.180 /00
DST#01
1360.00m to 1366.00m
MOUNT CLARK 'C'

DEPTH: 1362.00m

RECORDER # 001748



	PRESSURE kPa(a)
1) Initial Hydro :	17737.
2) 1st Flow Start:	2017.
3) 1st Flow End :	396.
4) END 1st Shutin:	3137.
5) 2nd Flow Start:	500.
6) 2nd Flow End :	500.
7) END 2nd Shutin:	5016.
14) Final Hydro. :	17599.

TEST TIMES (MIN)	
1stFLOW :	3.0
SHUTIN:	100.0
2ndFLOW :	93.0
SHUTIN:	189.0

RECOVERY DATA

TOTAL FLUID RECOVERY CONSISTED OF 18.00 M OF DRILLING MUD. NO GAS TO SURFACE.

REMARKS AND TEST SUMMARY

Test results indicate a mechanically successful test. Bottom hole pressures and the shape of the shut-in curves suggest VERY LOW PERMEABILITY within the interval tested. The initial and final shut-in were incremented but not extrapolated due to insufficient curve development.
A Closed Chamber report is included.

TABLE OF CONTENTS

LYNES UNITED SERVICES LTD
DST#01 REPORT

Well name : PCI CANTERRA NOGHA 0-47
Location : 400/ 66.521 / 125.180 /00
Interval : 1360.00m to 1366.00m
Test Date : 86/02/09
Test Type : INFLATE STRADDLE
Formation : MOUNT CLARK 'C'

K.B.Elevation : 354.39m
Grd.Elevation : 348.29m
TD @ test Date: 1416.00m
Ticket Number : 73105
Unit Number :

Started in hole at : 0530 hrs
Tool opened at : 0900 hrs
Reverse circulated?: NO
Contractor & Rig No: ATCO #76
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 : HOOK B
Testers : BRENNAN T

5 REPORTS(S) TO: DIANE THEISEN
Company:

BLOW DESCRIPTION

Preflow: Strong air blow. No gas to surface.
Final flow: Weak air blow throughout flow. Closed Chamber with Baker Production Technology for 2.25 minutes, then opened to the flare pit.

TOTAL LIQUID RECOVERY : 18.00m

For DST# 1 through DST# 1

6 Fluid Samples
Sent to: CORE LABS

Btm. Hole Sampler #: 197
Sent to: CORE LABS

18.00m DRILLING MUD.

GAS MEASUREMENTS

No Gas Measurements

DST#01
PCI CANTERRA NOGHA 0-47
1360.00m to 1366.00m

TOOL SEQUENCE

SUB	LENGTH (m)
CROSS OVER SUB	.30
SAFETY VALVE	1.05
CROSS OVER SUB	.30
CROSS OVER SUB	.30
CROSS OVER SUB	.30
PUMP OUT SUB	.33
INSIDE RECORDER	1.38
CHOKE SUB	.30
HYDRAULIC TOOL	1.50
BTM. HOLE SAMPLER	1.03
INSIDE RECORDER	1.38
HYDRAULIC JARS	2.22
SAFETY JOINT	.65
INFLATE PUMP	2.28
SCREEN	1.16
TOP INFLATE PACKER	1.78
PACKER STICK DOWN	.82
PORT SUB	.30
OUTSIDE RECORDER	2.06
SPACING	2.32
PACKER STICK UP	.50
BTM.INFLATE PACKER	1.90
PERFORATED SPACING	.90
BELLY SPRING	2.00
******** TOOL TOTAL	27.06

DRILL COLLARS
ID= 73.0mm: 169.04
ID= :
DRILL PIPE
OD=114.3mm: 1184.62
OD= :
COLLAR-PIPE TOTAL 1353.66

STICK UP ABOVE TABLE : 9.92
TOOL ABOVE INTERVAL : 16.26
TOTAL INTERVAL : 6.00
BOTTOM CHOKE SIZE: 12.70 mm

RECORDER SUMMARY

1) NUMBER : 001748 ELECTRONIC GAUGE
TYPE : DMRB PRESSURES AND
LOCATION: OUTSIDE TEMPERATURE.
RANGE: 68900.00kPa(a)
DEPTH : 1362.00m

2) NUMBER : 009015 ABOVE INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 40000.00kPa
DEPTH : 1352.00m

3) NUMBER : 009993
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 21000.00kPa
DEPTH : 1362.00m

4) NUMBER : 013834
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 21000.00kPa
DEPTH : 1362.00m

5) NUMBER : 019665 ABOVE HYDRAULIC
TYPE : K-3 TOOL RECORDER.
LOCATION: INSIDE
RANGE: 22100.00kPa
DEPTH : 1345.00m

MUD AND HOLE DATA

Calipered Hole Size @ Test Depth: 216.00mm Water Loss : 12.8cc/s
Hole Condition at Test Time : GOOD Filter Cake: 1.5 mm
Hole Conditioned Prior to Test? : YES
Mud Weight : 1285.0 kg/m3 Main Hole Size: 216.00mm
Mud Type : GLE CHEMICAL
Viscosity : 57.0s/l Temperature @1362.00m = 17.9C

DST#01
PCI CANTERRA NOGHA 0-47
1360.00 m to 1366.00 m

Location: 400/ 66.521 / 125.180 /00
Test Type: INFLATE STRADDLE
Formation: MOUNT CLARK 'C'

Recorder Number: 001748
Recorder Depth: 1362.00 m
Subsea Depth: -1007.61 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA	PRESSURE SQUARED kPa(a)^2/10^6
1	INITIAL HYDROSTATIC			17737		
2	START OF 1st FLOW	0.0		2017		
		2.0		379		
3	END OF 1st FLOW	3.0		396		
	1st SHUTIN PERIOD	0.0		396		
		2.0	190	586	2.5000	.3435
		4.0	328	724	1.7500	.5241
		7.0	500	896	1.4286	.8034
		9.0	603	1000	1.3333	.9995
		11.0	689	1086	1.2727	1.1792
		13.0	776	1172	1.2308	1.3738
		16.0	896	1293	1.1875	1.6712
		18.0	965	1362	1.1667	1.8543
		20.0	1034	1431	1.1500	2.0468
		23.0	1120	1517	1.1304	2.3008
		25.0	1189	1586	1.1200	2.5147
		27.0	1241	1638	1.1111	2.6814
		29.0	1310	1706	1.1034	2.9120
		32.0	1379	1775	1.0938	3.1520
		34.0	1431	1827	1.0882	3.3383
		36.0	1482	1879	1.0833	3.5300
		39.0	1569	1965	1.0769	3.8612
		41.0	1603	1999	1.0732	3.9979
		43.0	1551	1947	1.0698	3.7917
		45.0	1603	1999	1.0667	3.9979
		48.0	1655	2051	1.0625	4.2074
		50.0	1706	2103	1.0600	4.4222
		52.0	1758	2155	1.0577	4.6423
		55.0	1810	2206	1.0545	4.8678
		57.0	1862	2258	1.0526	5.0987
		59.0	1896	2293	1.0508	5.2556
		61.0	1931	2327	1.0492	5.4148

* VALUES USED FOR EXTRAPOLATIONS

DST#01
PCI CANTERRA NOGHA 0-47
1360.00 m to 1366.00 m

Location: 400/ 66.521 / 125.180 /00
Test Type: INFLATE STRADDLE
Formation: MOUNT CLARK 'C'

Recorder Number: 001748
Recorder Depth: 1362.00 m
Subsea Depth: -1007.61 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA	PRESSURE SQUARED kPa(a)^2/10^6
		64.0	1999	2396	1.0469	5.7404
		66.0	2034	2430	1.0455	5.9068
		68.0	2068	2465	1.0441	6.0756
		71.0	2137	2534	1.0423	6.4202
		73.0	2172	2568	1.0411	6.5961
		75.0	2206	2603	1.0400	6.7744
		77.0	2241	2637	1.0390	6.9550
		80.0	2310	2706	1.0375	7.3235
		82.0	2344	2741	1.0366	7.5112
		84.0	2379	2775	1.0357	7.7014
		87.0	2430	2827	1.0345	7.9911
		89.0	2465	2861	1.0337	8.1872
		91.0	2551	2948	1.0330	8.6878
		93.0	2586	2982	1.0323	8.8922
		96.0	2637	3034	1.0313	9.2033
		98.0	2672	3068	1.0306	9.4136
4	END OF 1st SHUTIN	100.0	2741	3137	1.0300	9.8415
5	START OF 2nd FLOW	0.0		500		
		2.0		500		
		4.0		465		
		7.0		465		
		9.0		465		
		11.0		465		
		13.0		465		
		16.0		483		
		18.0		465		
		20.0		465		
		23.0		483		
		25.0		483		
		27.0		483		
		29.0		483		
		32.0		483		
		34.0		483		
		36.0		483		

* VALUES USED FOR EXTRAPOLATIONS

DST#01
PCI CANTERRA NOGHA 0-47
1360.00 m to 1366.00 m

Location: 400/ 66.521 / 125.180 /00
Test Type: INFLATE STRADDLE
Formation: MOUNT CLARK 'C'

Recorder Number: 001748
Recorder Depth: 1362.00 m
Subsea Depth: -1007.61 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA	PRESSURE SQUARED kPa(a)^2/10^6
		39.0		483		
		41.0		483		
		43.0		483		
		45.0		483		
		48.0		483		
		50.0		483		
		52.0		483		
		55.0		500		
		57.0		500		
		59.0		500		
		61.0		500		
		64.0		500		
		66.0		500		
		68.0		500		
		71.0		500		
		73.0		500		
		75.0		500		
		77.0		500		
		80.0		500		
		82.0		500		
		84.0		500		
		87.0		500		
		89.0		500		
		91.0		500		
6	END OF 2nd FLOW	93.0		500		
	2nd SHUTIN PERIOD	0.0		500		
		5.0	69	569	20.2000	.3236
		10.0	172	672	10.6000	.4519
		14.0	241	741	7.8571	.5494
		19.0	328	827	6.0526	.6845
		23.0	396	896	5.1739	.8034
		28.0	483	983	4.4286	.9653
		32.0	569	1069	4.0000	1.1421
		37.0	655	1155	3.5946	1.3337

* VALUES USED FOR EXTRAPOLATIONS

DST#01
PCI CANTERRA NOGHA 0-47
1360.00 m to 1366.00 m

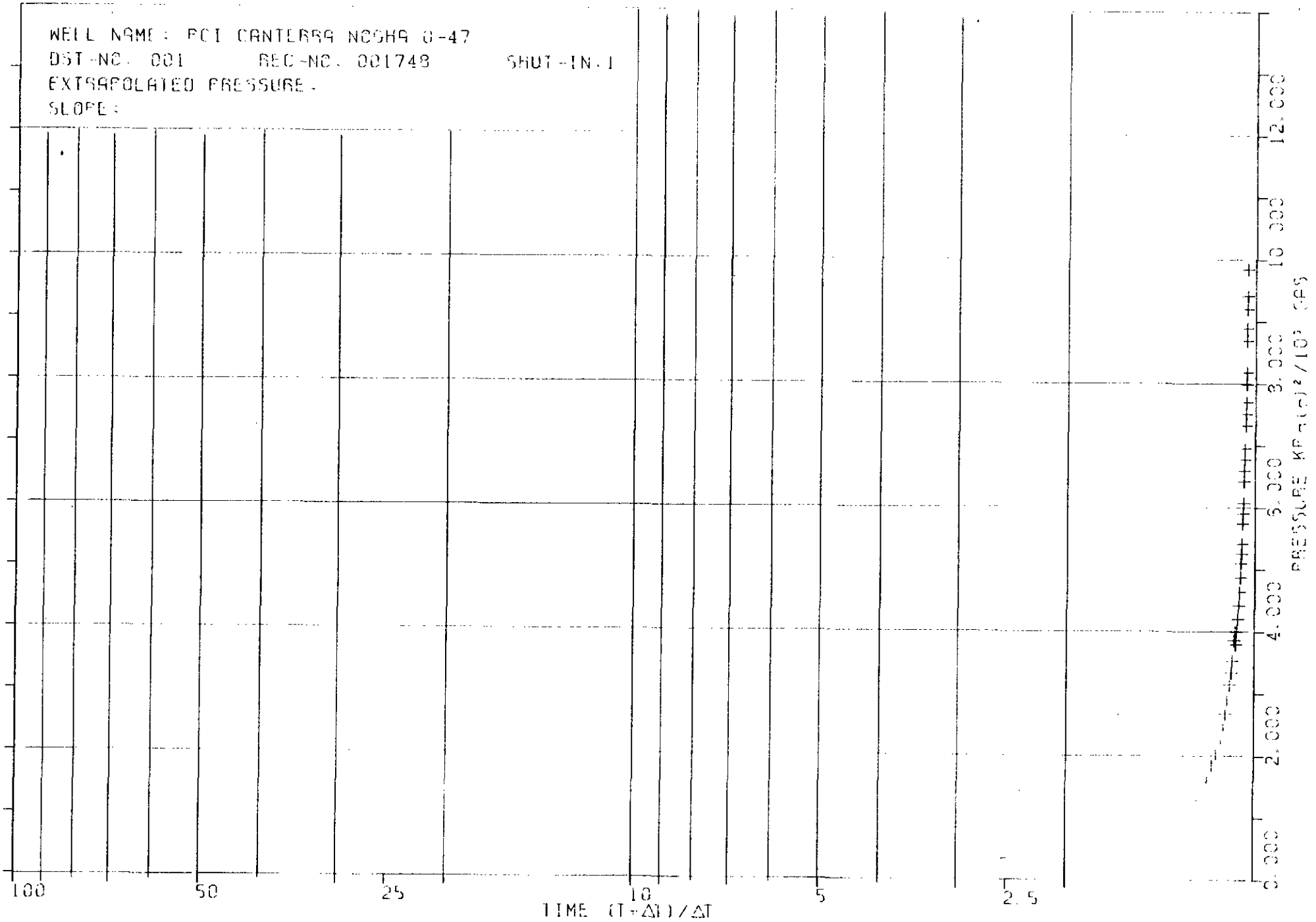
Location: 400/ 66.521 / 125.180 /00
Test Type: INFLATE STRADDLE
Formation: MOUNT CLARK 'C'

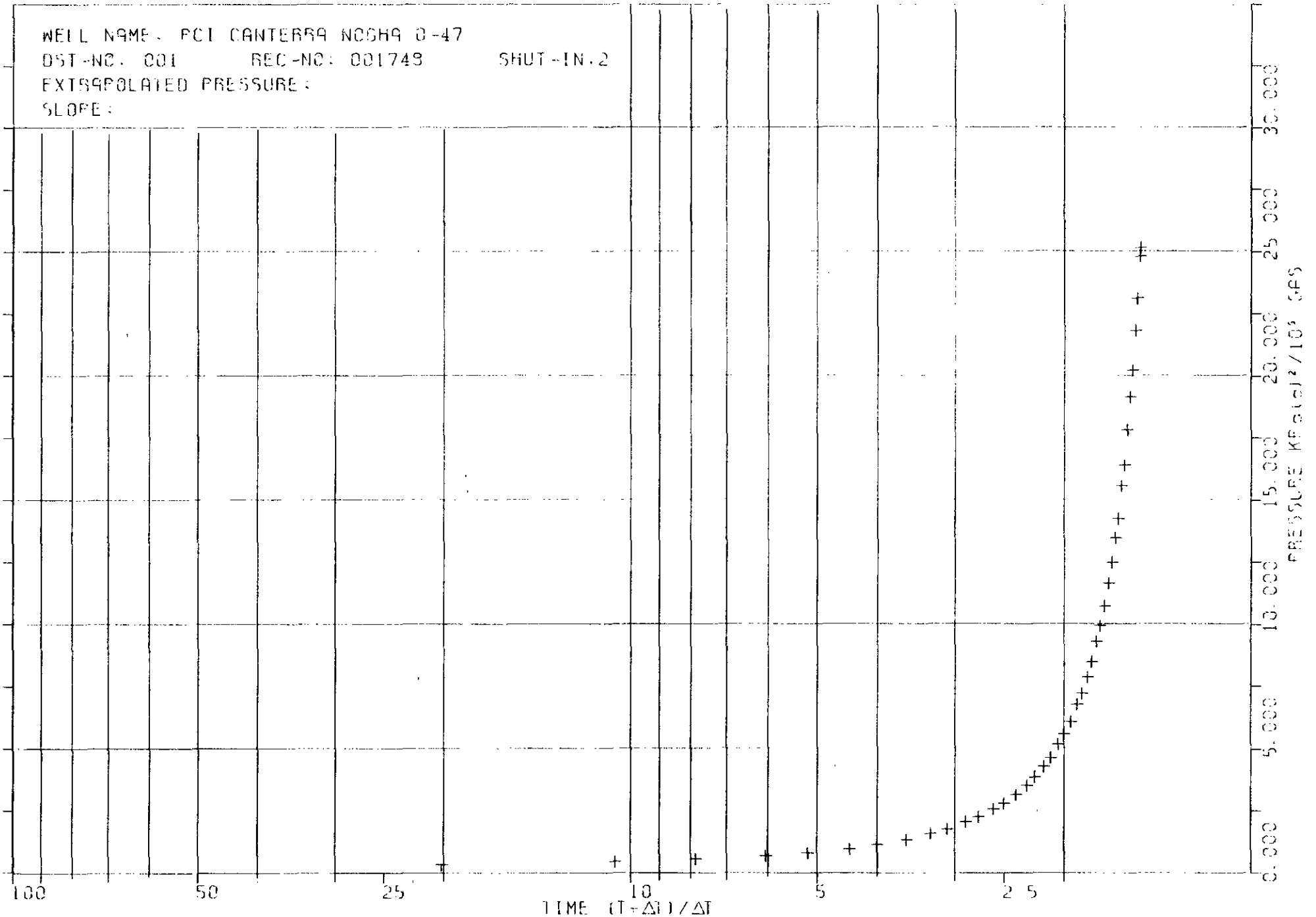
Recorder Number: 001748
Recorder Depth: 1362.00 m
Subsea Depth: -1007.61 m

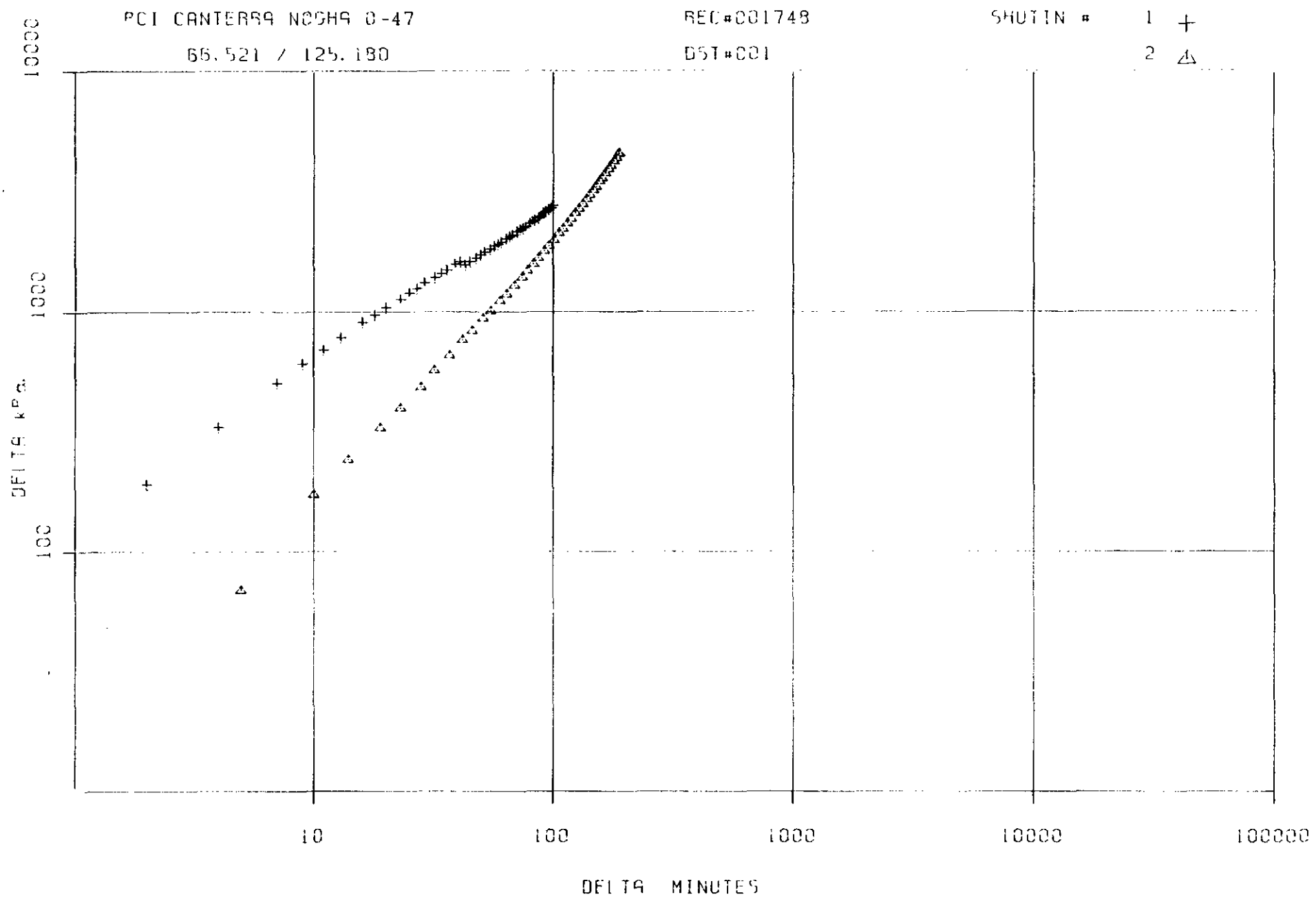
TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA	PRESSURE SQUARED kPa(a)^2/10^6
		42.0	758	1258	3.2857	1.5833
		46.0	827	1327	3.0870	1.7616
		51.0	931	1431	2.8824	2.0468
		55.0	1000	1500	2.7455	2.2488
		60.0	1103	1603	2.6000	2.5697
		64.0	1172	1672	2.5000	2.7955
		69.0	1276	1775	2.3913	3.1520
		74.0	1379	1879	2.2973	3.5300
		78.0	1465	1965	2.2308	3.8612
		83.0	1569	2068	2.1566	4.2784
		87.0	1655	2155	2.1034	4.6423
		92.0	1775	2275	2.0435	5.1769
		96.0	1862	2361	2.0000	5.5764
		101.0	1965	2465	1.9505	6.0756
		106.0	2103	2603	1.9057	6.7744
		110.0	2189	2689	1.8727	7.2305
		115.0	2308	2808	1.8348	7.8827
		119.0	2413	2913	1.8067	8.4857
		124.0	2551	3051	1.7742	9.3082
		128.0	2654	3154	1.7500	9.9499
		133.0	2775	3275	1.7218	10.7257
		138.0	2913	3413	1.6957	11.6479
		142.0	3034	3534	1.6761	12.4860
		147.0	3172	3671	1.6531	13.4795
		151.0	3275	3775	1.6358	14.2497
		156.0	3447	3947	1.6154	15.5808
		160.0	3551	4051	1.6000	16.4079
		165.0	3723	4223	1.5818	17.8341
		170.0	3878	4378	1.5647	19.1684
		174.0	3999	4499	1.5517	20.2395
		179.0	4171	4671	1.5363	21.8200
		183.0	4309	4809	1.5246	23.1273
		188.0	4482	4981	1.5106	24.8149
7	END OF 2nd SHUTIN	189.0	4516	5016	1.5079	25.1596
14	FINAL HYDROSTATIC			17599		

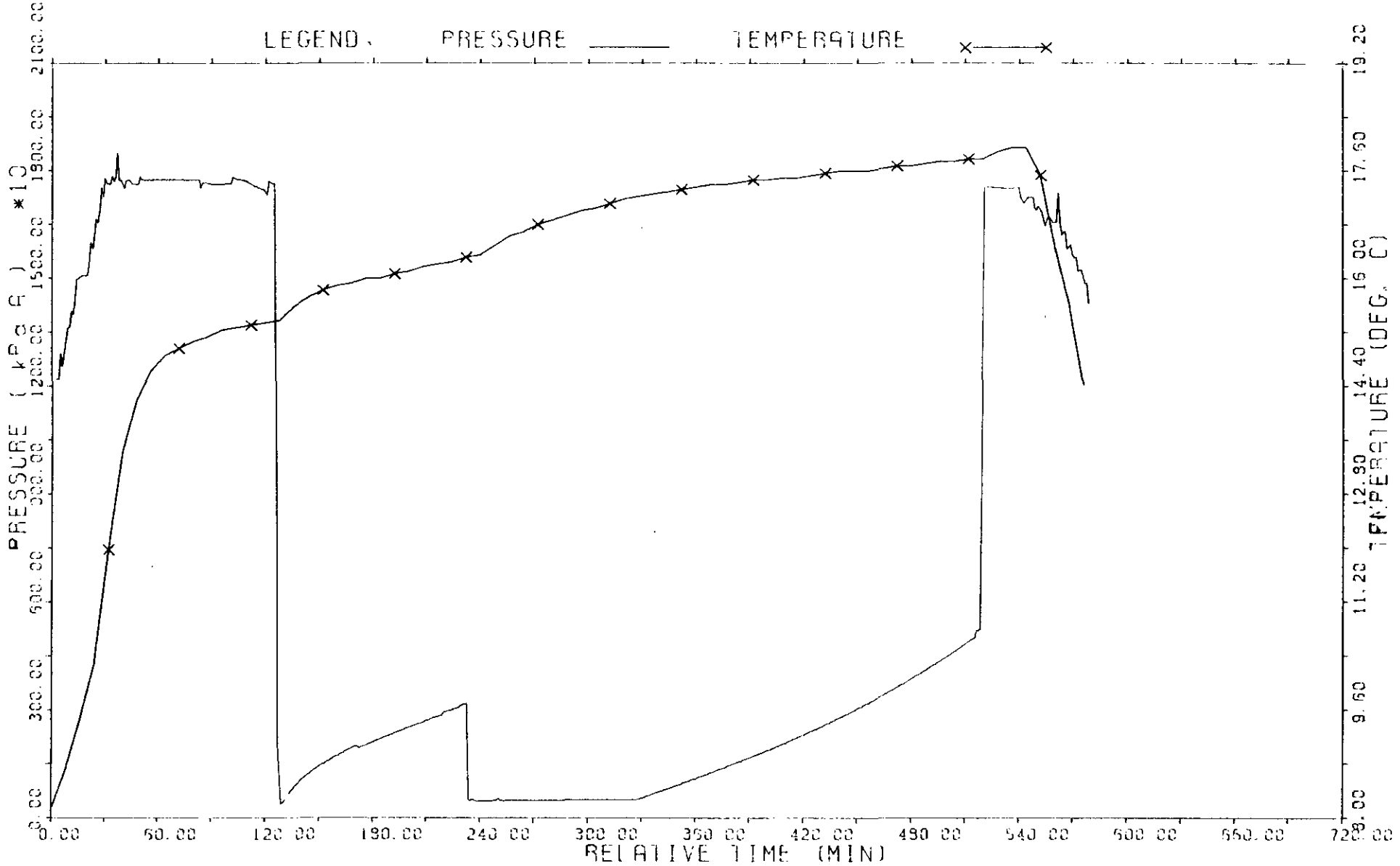
* VALUES USED FOR EXTRAPOLATIONS


WELL NAME : PCI CANTERRA NCGHA 0-47
DST-NO. 001 REC-NO. 001748 SHUT-IN.1
EXTRAPOLATED PRESSURE.
SLOPE :
100
50
25
10
5
2.5
TIME (T+ΔT)/ΔT
12,000
10,000
8,000
6,000
4,000
2,000
0
PRESSURE KPa(g)/10³ GES


WELL NAME: PCI CANTERRA NOSHA 8-47
DST-NO: 001 REC-NO: 001748 SHUT-IN.2
EXTRAPOLATED PRESSURE:
SLOPE:
100
50
25
10
5
2.5
TIME (T+ΔT)/ΔT
30,000
25,000
20,000
15,000
10,000
5,000
0,000


PCI CANTERRA NORTH 0-47
66.521 / 125.180
REC#001748
DST#001
SHUTIN # 1 +
2 △
10000
1000
100
DELTA kPa
10
100
1000
10000
100000
DELTA MINUTES

PCI CANTERRA NOGHA 0-47
66.521/125.180 DST #1
ELECTRONIC GAUGE #1748

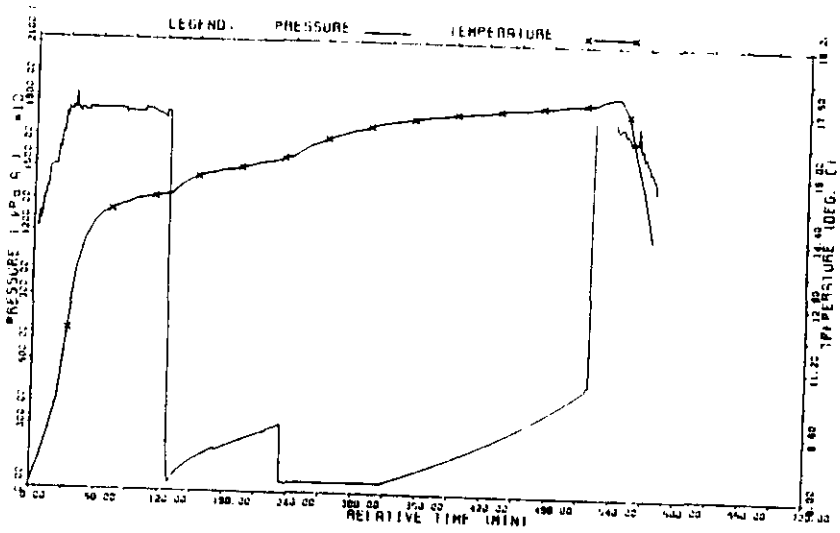


DST#01
PCI CANTERRA NOGHA 0-47
1360.00m to 1366.00m

PRESSURE RECORDER NUMBER : 001748

DEPTH : 1362.00m LOCATION : OUTSIDE
TYPE : DMRB CAPACITY : 68900.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 17.9 C



	PRESSURE kPa(a)
1) Initial Hydro :	17737.
2) 1st Flow Start:	2017.
3) 1st Flow End :	396.
4) END 1st Shutin:	3137.
5) 2nd Flow Start:	500.
6) 2nd Flow End :	500.
7) END 2nd Shutin:	5016.
14) Final Hydro. :	17599.

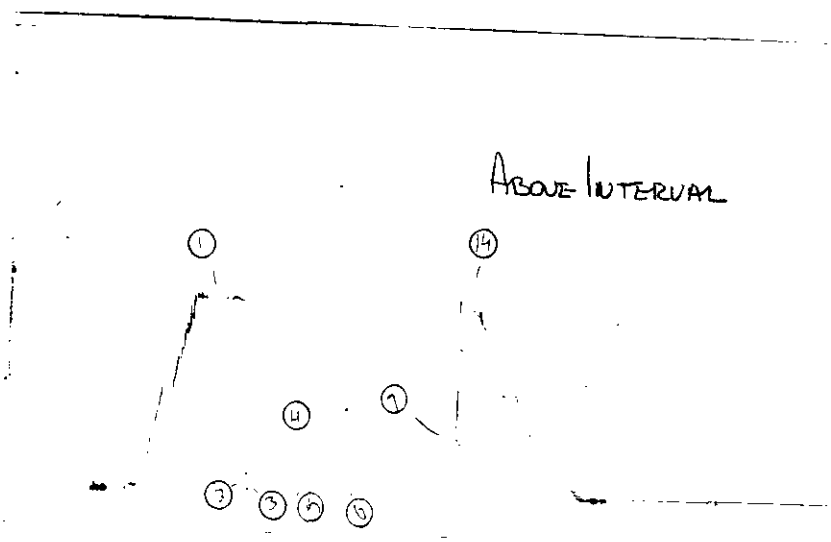
ELECTRONIC GAUGE
PRESSURES AND
TEMPERATURE.

TEST TIMES(MIN)

1st FLOW :	3.0
SHUTIN:	100.0
2nd FLOW :	93.0
SHUTIN:	189.0

PRESSURE RECORDER NUMBER : 009015

DEPTH : 1352.00m LOCATION : INSIDE
TYPE : K-3 CAPACITY : 40000.00 kPa



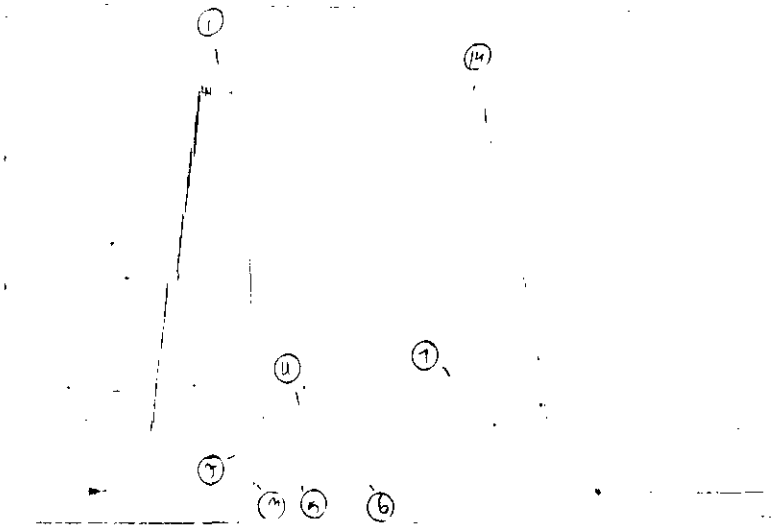
	PRESSURE kPa
1) Initial Hydro :	17655.
2) 1st Flow Start:	1707.
3) 1st Flow End :	422.
4) END 1st Shutin:	2991.
5) 2nd Flow Start:	541.
6) 2nd Flow End :	456.
7) END 2nd Shutin:	4891.
14) Final Hydro. :	17533.

ABOVE INTERVAL.

DST#01
PCI CANTERRA NOGHA 0-47
1360.00m to 1366.00m

PRESSURE RECORDER NUMBER : 009993

DEPTH : 1362.00m LOCATION : OUTSIDE
TYPE : K-3 CAPACITY : 21000.00 kPa

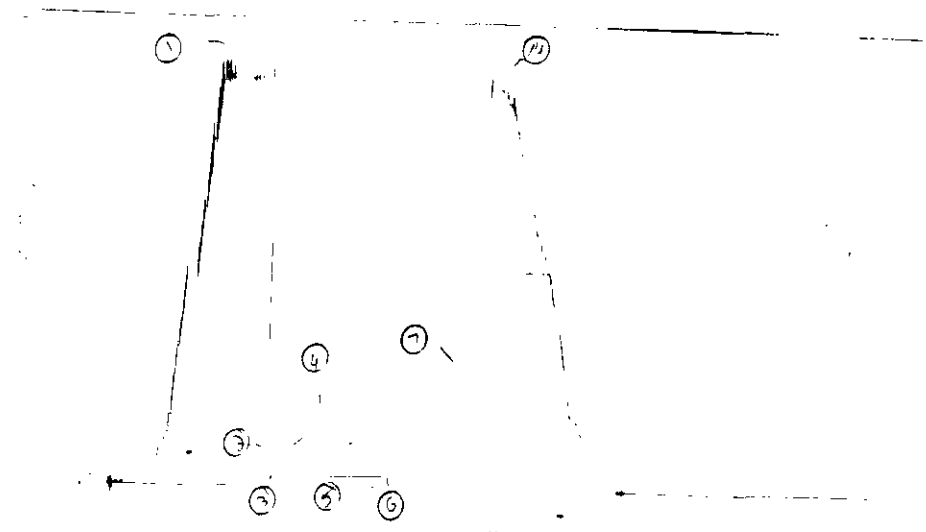


	PRESSURE kPa
1) Initial Hydro :	17715.
2) 1st Flow Start:	1909.
3) 1st Flow End :	395.
4) END 1st Shutin:	2927.
5) 2nd Flow Start:	446.
6) 2nd Flow End :	463.
7) END 2nd Shutin:	4840.
14) Final Hydro. :	17586.

TEST TIMES (MIN)	
1st FLOW :	3.0
SHUTIN:	100.0
2nd FLOW :	93.0
SHUTIN:	189.0

PRESSURE RECORDER NUMBER : 013834

DEPTH : 1362.00m LOCATION : OUTSIDE
TYPE : K-3 CAPACITY : 21000.00 kPa



	PRESSURE kPa
1) Initial Hydro :	17664.
2) 1st Flow Start:	1927.
3) 1st Flow End :	411.
4) END 1st Shutin:	2974.
5) 2nd Flow Start:	444.
6) 2nd Flow End :	486.
7) END 2nd Shutin:	4894.
14) Final Hydro. :	17581.

DST#01
PCI CANTERRA NOGHA 0-47
1360.00m to 1366.00m

PRESSURE RECORDER NUMBER : 019665

DEPTH : 1345.00m LOCATION : INSIDE
TYPE : K-3 CAPACITY : 22100.00 kPa

	PRESSURE kPa
1) Initial Hydro :	
14) Final Hydro. :	257.

Above Hydraulic Tool

(14)
1

ABOVE HYDRAULIC TOOL RECORDER.

TEST TIMES (MIN)

1st FLOW :	3.0
SHUTIN:	100.0
2nd FLOW :	93.0
SHUTIN:	189.0

LYNES UNITED SERVICES

Part of Baker Production Technology

1144 29th AVE. N.E., CALGARY

ALBERTA, T2E 7P1

CLOSED CHAMBER DST REPORT

Well name: PCI CANTERRA NOGHA 0-47

Location: 66.521-125.180

DST No.: 1

Interval: 1360- 1366 m

Date: 86/02/09

LYNES UNITED SERVICES, CALGARY, ALBERTA
Part of Baker Production Technology

Table of Contents

1. GENERAL INFORMATION

Company:	PETRO-CANADA	Date:	86/02/09
Well name:	PCI CANTERRA NOGHA O-47	Tester:	T. BRENNAN
Well no:	66.521-125.180	CC Tester:	F. ELDER
DST #:	1	Ticket #:	17704
Interval:	1360- 1366 m	Hole size:	216 mm

Formation: MOUNT CLARK C

Type of test: INFLATE STRADDLE

Primary objective of closed chamber: PRECISION

Cushion:	0.000 m	Volume:	0.000 m^3
Gas cushion:	0.000 kPa	Volume:	0.000 Sm^3
Chamber volume:	9.296 m^3	Sump volume:	0.068 m^3

RECORDER DATA

DSR #: 201	DMR #: 1748	Depth:	1362 m
Above shut-in recorder #:	19665	Depth:	1345 m
Surface probe #:	1608		

CONSTANTS AND FORMATION PARAMETERS

Bottom hole choke size(d):	12.7 mm	No. run: 1	Coeff(FP): 17.5
Est. form pressure:	5000 kPa	Est. form temp:	291.05 deg K
Gas spec. gravity:	0.60	(z):	0.880
Estimated gas-water ratio(R):	1.25	Surface pressure:	99.525 kPa

PRETEST CALCULATION RESULTS

	Max rate m^3/d	Max dp/dt kPa/min	Conversion m^3/d/kPa/min
Gas:	119968.17	889.04	134.94
Gas saturated water:	673.35 G/ 538.68 W	9.34	72.08
Gas free water:	538.68	4.35	123.77

2.1 Test Report Summary

A drill stem test was conducted on PCI CANTERRA NOGHA O-47 66.521-125.180 under closed chamber conditions according to LYNES STANDARD CLOSED CHAMBER TESTING PROCEDURE.

The surface pressure was monitored throughout the entire test. All measured data is presented both graphically and in tabular form in segments 3 and 4 of this report along with the calculated rates.

2.2 Results determined from the test data

1) PREFLOW PERIOD

Flow time 6 minutes
Surface pressure start 99.525 kPaa
Surface pressure end 96.597 kPaa

Indicated production: gas and fluid.

No pressure increase was noticed during the preflow. To check that the tool was open, the bubble valve was opened. Therefore, no rate calculations are available for the preflow. The lack of pressure increase during the preflow was a result of the Willis valve on the test head being closed due to moisture in the air line.

2) INITIAL SHUT-IN PERIOD

Shut-in time 98 minutes
Surface pressure behavior: relatively stable. The surface pressure increased 22 minutes into the shut-in as the surface probe was changed.

3) FINAL FLOW PERIOD

Flow time 2.25 minutes
Surface pressure start 106.380 kPaa
Surface pressure end 113.299 kPaa

Closed chamber flow rates:

Initial gas rate 824 m3/d @ .25 minutes
Maximum gas rate 1242 m3/d @ .75 minutes
Last gas rate 294 m3/d @ 1.25 minutes
Average gas rate 797 m3/d - for first 1.25 minutes

The bubble valve was opened 1.5 minutes into the flow. The well was opened to the flare pit 2.25 minutes into the flow. Therefore, no rate calculations are available for the flow after 1.25 minutes.

4) REPORTED RECOVERY

18 m of drilling mud.

5) PRESSURE READINGS FROM DOWNHOLE GAUGE

FSI End 257 kPa

2.3 Comments on the test

No rate calculations for the preflow are available as the surface valve was not open during this flow. No rate calculations after 1.25 minutes of the final flow are available as the bubble and remote valves were opened as requested.

The recorder run above the hydraulic tool indicates that virtually all of the fluid recovered was produced during the preflow.

The average gas rate for the first 1.25 minutes of the final flow was 797 m3/d.

2.4 Conclusion

The closed chamber and DST results indicate a zone of very low permeability. The closed chamber results indicate a zone that produced a small amount of gas during the final flow.

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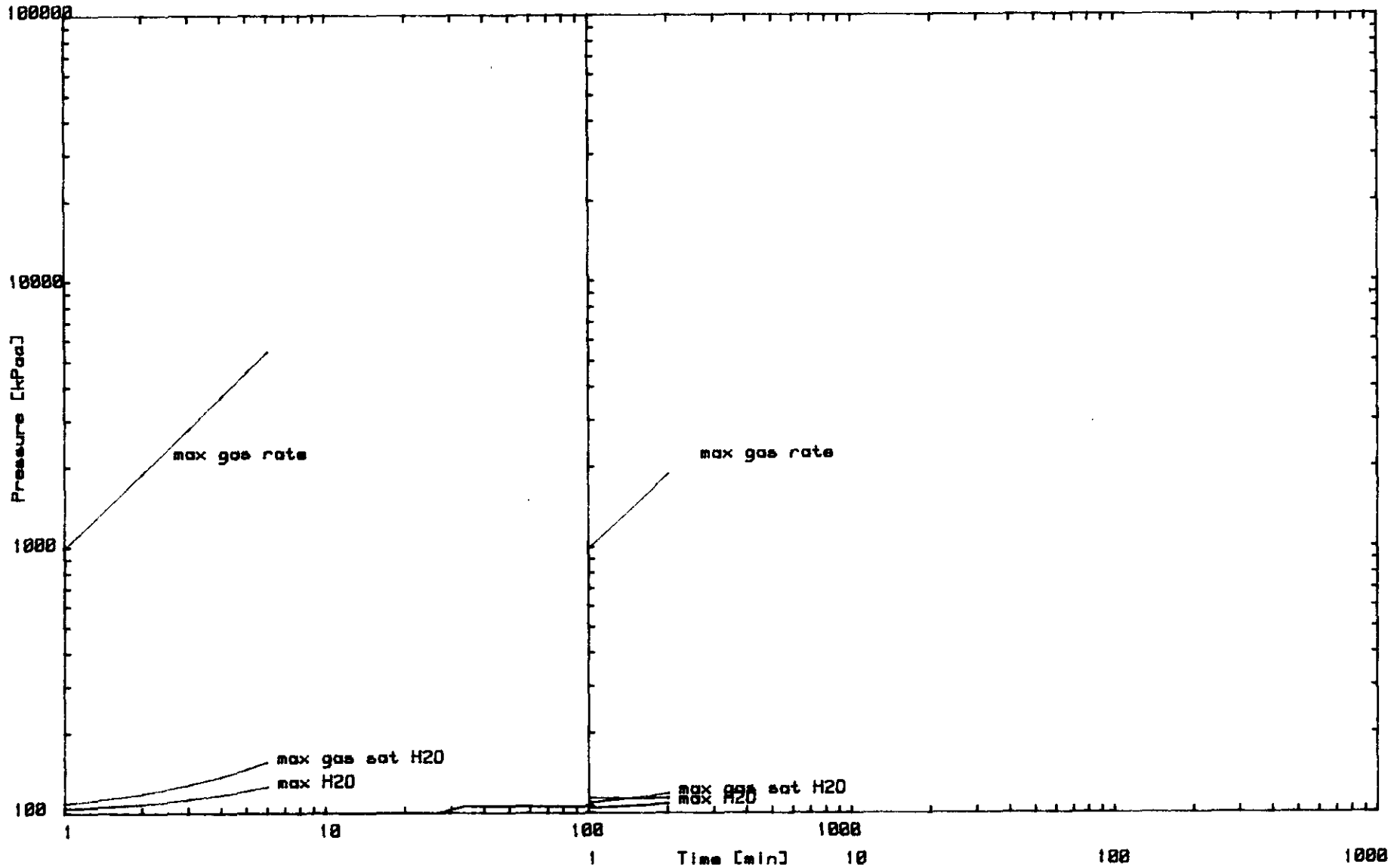
Part of Baker Production Technology

PCI CANTERRA NOGHA D-47
66.521-125.180
DST# 1

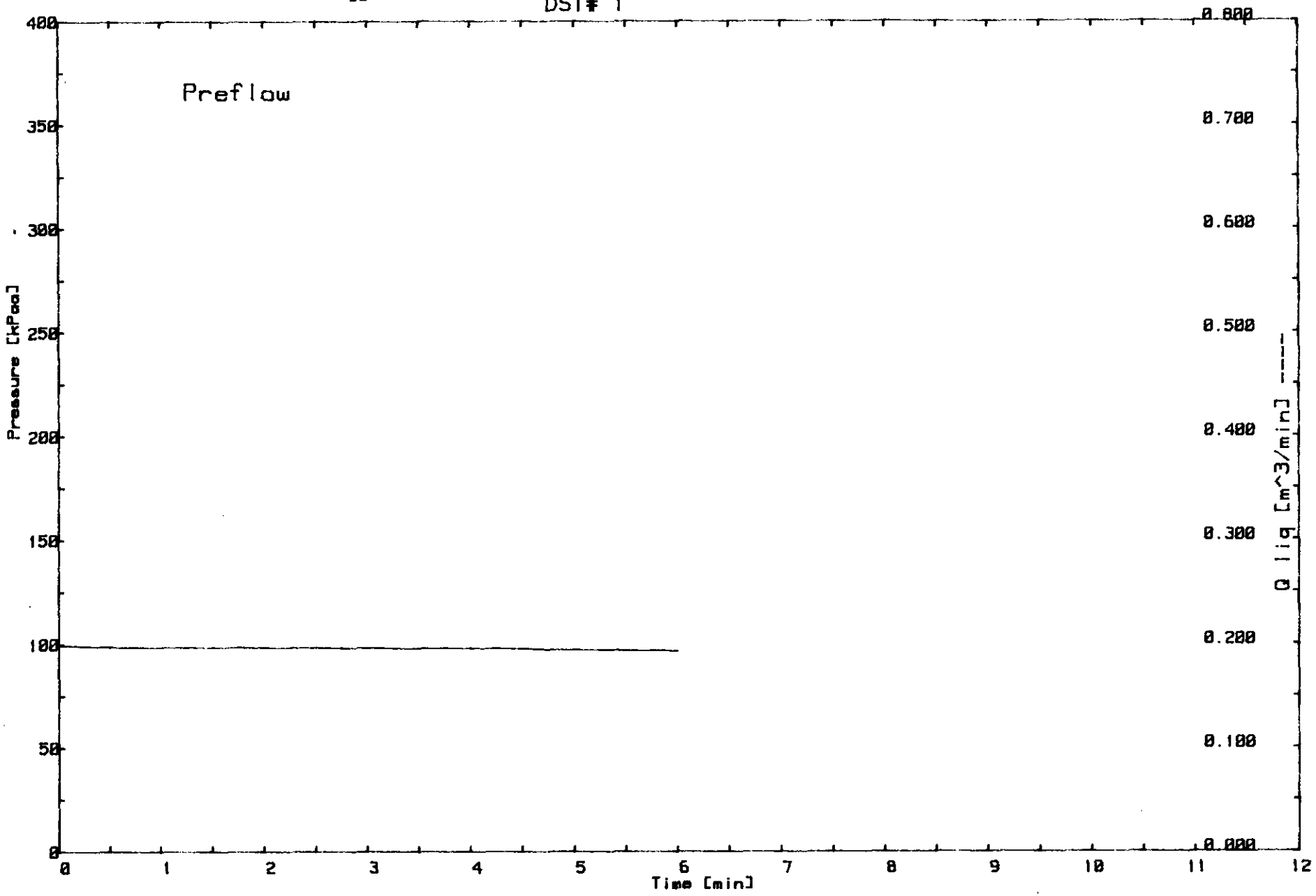
Fig. 3-1



LYNES UNITED SERVICES
Part of Baker Production Technology

PCI CANTERRA NOGHA 0-47
66.521-125.180
DST# 1

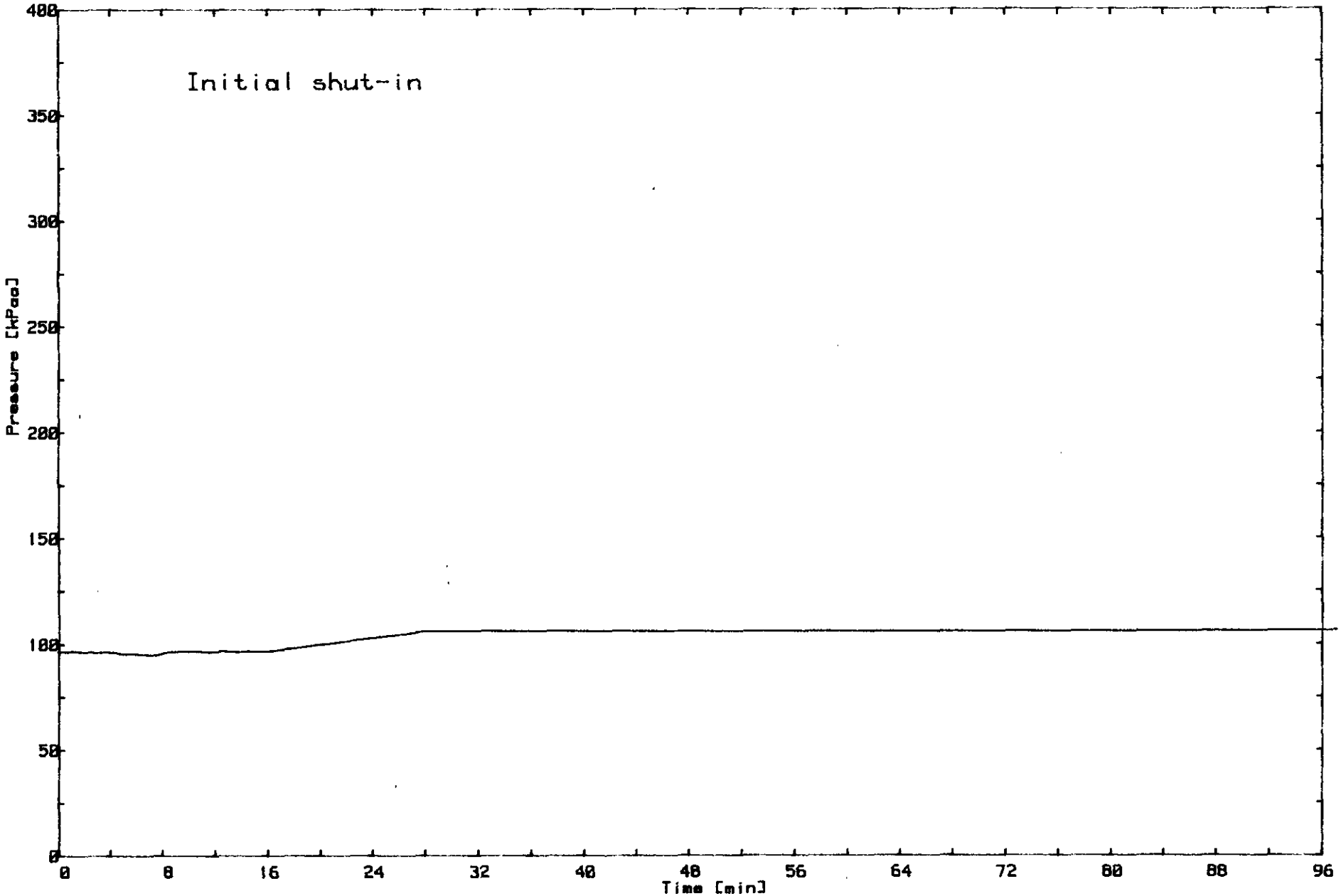
Fig. 3-2



LYNES UNITED SERVICES
Part of Baker Production Technology

PCI CANTERRA NOGHA 0-47
66.521-125.180
DST# 1

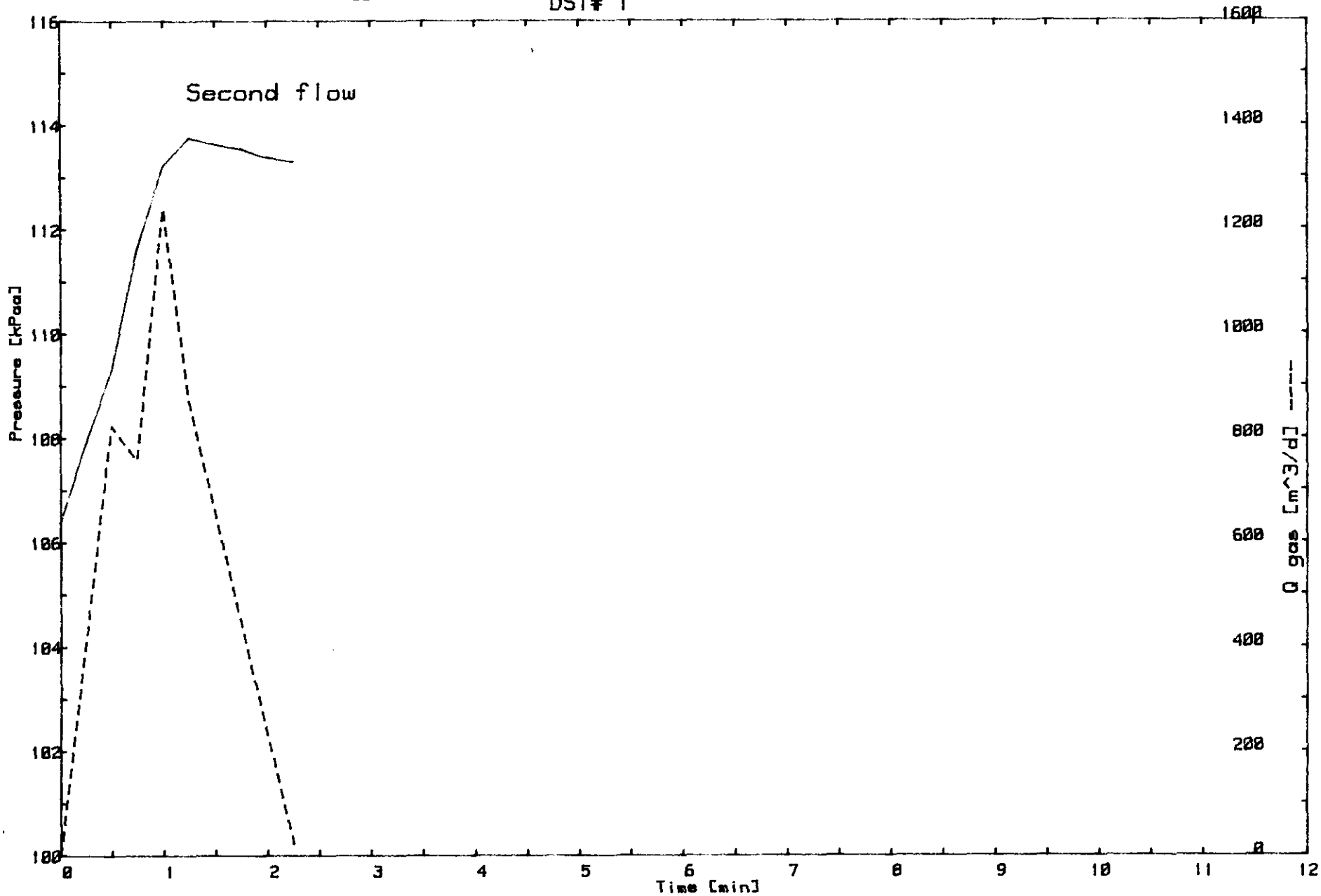
Fig. 3-3



LYNES UNITED SERVICES
Part of Baker Production Technology

PCI CANTERRA NOGHA 0-47
66.521-125.180
DST# 1

Fig. 3-4



4. DATA LISTINGS

First flow (surface valve closed, downhole valve open)

Elapsed time min	Press kPaa	dp/dt kPa/min	Ql m^3/min	Total Vol. produced m^3
0.00	99.525	0.000		
0.25	99.003	0.000		
0.50	98.642	0.000		
0.75	98.482	0.000		
1.00	98.482	0.000		
2.00	98.321	0.000		
3.00	98.321	0.000		
4.00	97.920	0.000		
5.00	97.198	0.000		
6.00	96.597	0.000		

First shut-in (surface valve closed, downhole valve closed)

Elapsed time min	Press kPaa	dp/dt kPa/min
0.00	96.597	0.000
0.25	96.437	-0.643
0.50	96.597	0.643
0.75	96.357	-0.962
1.00	96.878	2.086
2.00	96.277	-0.601
4.00	96.117	-0.080
6.00	95.355	-0.381
8.00	95.617	0.131
10.00	96.762	0.572
12.00	96.562	-0.100
14.00	96.602	0.020
16.00	96.883	0.141
18.00	98.345	0.731
20.00	99.920	0.788
22.00	101.495	0.787
24.00	103.070	0.788
26.00	104.645	0.788
28.00	106.221	0.788
30.00	106.336	0.058
32.00	106.274	-0.031
34.00	106.240	-0.017
36.00	106.240	0.000
38.00	106.185	-0.028
40.00	106.120	-0.032
42.00	106.100	-0.010
44.00	106.068	-0.016
46.00	106.019	-0.025
48.00	105.986	-0.017
50.00	105.940	-0.023
52.00	105.940	0.000
54.00	105.919	-0.011
56.00	105.894	-0.013
58.00	105.934	0.020
60.00	105.898	-0.018
62.00	105.874	-0.012
64.00	105.872	-0.000
66.00	105.896	0.012
68.00	105.900	0.002
70.00	105.923	0.011
72.00	105.927	0.002
74.00	105.927	0.000
76.00	105.897	-0.015
78.00	105.864	-0.017
80.00	105.901	0.019
82.00	105.948	0.023
84.00	105.954	0.003
86.00	106.103	0.075
88.00	106.192	0.044

Elapsed time min	Press kPaa	dp/dt kPa/min
90.00	106.248	0.028
92.00	106.304	0.028
94.00	106.363	0.030
96.00	106.430	0.033
98.00	106.380	-0.025

Second flow (surface valve closed, downhole valve open)

Elapsed time min	Press kPaa	dp/dt kPa/min	Qg m^3/d
0.00	106.380	0.000	0.000
0.25	107.906	6.104	823.685
0.50	109.309	5.612	757.294
0.75	111.610	9.204	1242.005
1.00	113.218	6.432	867.946
1.25	113.762	2.176	293.633
1.50	113.633	0.000	0.000
1.75	113.544	0.000	0.000
2.00	113.381	0.000	0.000
2.25	113.299	0.000	0.000

PCI CANTERRA NOGHA 0-47
66.521-123.180
DST# 1

APPENDIX A

A.1 PRETEST PLANNING PARAMETERS AND CALCULATIONS

1	Surface temperature	273.150 deg K	measured
2	Average chamber temperature	282.100 deg K	(est. form temp + surftemp)/2
3	Chamber deviation factor(z)	1.000	given
4	Sump volume	0.068 m^3	calculated
5	Top packer depth	1360.000 mKB	given
6	Bottom packer depth	1366.000 mKB	given
7	Test valve depth	1347.000 mKB	given
8	Stick up above KB	0.000 mKB	given
9	Total chamber length	1353.660 m	given
10	Lower drill collar length	169.040 m	given
11	Lower drill collar ID	73.000 mm	given
12	Lower drill collar capacity	0.00419 m^3/m	calculated
13	Lower drill collar volume	0.707 m^3	calculated
14	Upper drill collar length	0.000 m	given
15	Upper drill collar ID	0.000 mm	given
16	Upper drill collar capacity	0.00000 m^3/m	calculated
17	Upper drill collar volume	0.000 m^3	calculated
18	Lower drill pipe length	1184.620 m	given
19	Lower drill pipe size	114.000 mm	given
20	Lower drill pipe capacity	0.00725 m^3/m	given
21	Lower drill pipe volume	8.588 m^3	calculated
22	Upper drill pipe length	0.000 m	given
23	Upper drill pipe size	0.000 mm	given
24	Upper drill pipe capacity	0.00000 m^3/m	given
25	Upper drill pipe volume	0.000 m^3	calculated
26	Total chamber volume	9.296 m^3	total of tubular volumes
27	Water cushion length	0.000 m	measured
28	Water cushion volume	0.000 m^3	calculated
29	Rev. air/gas volume	9.296 m^3	calculated
30	Minimum time to produce sump volume	0.182 min	calculated
31	Corresponding surface pressure increase	0.797 kPa	calculated

A.2 MAXIMUM POSSIBLE RATES OF dp/dt AND FLOW:

32	Gas	889.04 kPa/min	119968.17 m^3/d	
33	Gas saturated water	9.34 kPa/min	673.35 G/	538.68 W m^3/d
34	Gas free water	4.35 kPa/min	538.68 m^3/d	

A.3 PRETEST PLANNING SUMMARY

From the above parameters it is clear that a surface pressure change greater than 889.036 kPa/min would not occur during this test. Surface pressure changes greater than 9.342 indicate hydrocarbon influx, and pressure changes less than 4.352 kPa/min may indicate liquid or low rate gas.

If gas is produced, a surface pressure increase of 1 kPa/min corresponds to 134.942 m^3/d of gas influx to the chamber.

CALGARY COPY

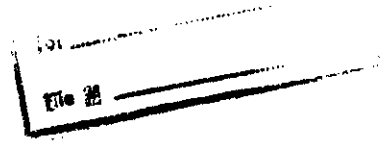
Q311-P28-1-8

DST SAMPLER DEPLETION, GAS AND WATER ANALYSES

FOR

PETRO-CANADA INC.

ALBERTA



File: 71280-86-291

Date: 1986 03 26

CORE LABORATORIES · CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

MFE #190 (CONTAINER IDENTITY) — 71280-86-291 (LABORATORY NUMBER)

Petro-Canada Inc. (OPERATOR) — 1 of 8 (PAGE)

(LOCATION) — PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME) — (KB ELEV.) — (GRD. ELEV.)

(FIELD OR AREA) — Mt. Clarke 'B' (POOL OR ZONE) — Lynes United Services (SAMPLER)

DST #2 (TEST TYPE & NO.) — (TEST RECOVERY)

Bottomhole (POINT OF SAMPLE) — (AMT. & TYPE CUSHION) — @ °C (MUD RESISTIVITY)

1352-1359 (TEST INTERVALS OR PERFS.)

PUMPING — FLOWING — GAS LIFT — SWAB

WATER m^3/d — OIL m^3/d — GAS m^3/d

(SEPARATOR) (RESERVOIR) — @ °C (CONTAINER WHEN SAMPLED) — @ °C (CONTAINER WHEN RECEIVED) — (SEPARATOR)

PRESSURES, kPa — TEMPERATURES, °C

DATE SAMPLED (Y/M/D)	DATE RECEIVED (Y/M/D)	DATE ANALYSED (Y/M/D)	ANALYST	REMARKS
1986 02 10	1986 03 10	1986 03 10	AM	

DST SAMPLER DEPLETION

The DST sampler contained:

- 0 kPa of gas
- 0 cc of water
- 1700 cc of mud
- 0 cc of oil

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Petroleum Reservoir Engineering
CALGARY ALBERTA

MFE #504 (CONTAINER IDENTITY)	71280-86-291 (LABORATORY NUMBER)
Petro-Canada Inc. (OPERATOR)	2 of 8 (PAGE)
(LOCATION) PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME)	(KB ELEV.) (GRD. ELEV.)
(FIELD OR AREA) MT. Clarke 'B' (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #2 (TEST TYPE & NO.)	(TEST RECOVERY)
Bottomhole (POINT OF SAMPLE)	(AMT. & TYPE CUSHION) (MUD RESISTIVITY @ °C)
1352-1359 (TEST INTERVALS OR PERFS.)	PUMPING FLOWING GAS LIFT SWAB
	WATER m^3/d OIL m^3/d GAS m^3/d
SEPARATOR RESERVOIR (CONTAINER WHEN SAMPLED @ °C) (CONTAINER WHEN RECEIVED @ °C)	SEPARATOR — TEMPERATURES, °C
PRESSURES, kPa	
1986 02 10 (DATE SAMPLED Y/M/D) 1986 03 10 (DATE RECEIVED Y/M/D) 1986 03 26 (DATE ANALYSED Y/M/D) AM (ANALYST)	(REMARKS)

DST SAMPLER DEPLETION

The DST sampler contained:

- 2075 kPa of gas
- 0 cc of water
- 0 cc of mud
- 0 cc of oil

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Petroleum Reservoir Engineering
CALGARY ALBERTA

GAS ANALYSIS

MFE #504 — CONTAINER IDENTITY
71280-86-291 — LABORATORY NUMBER

Petro-Canada Inc. — OPERATOR
3 of 8 — PAGE

LOCATION
PCP Canterra Nogh A 0-47 — WELL OR SAMPLE LOCATION NAME
KB ELEV., m
GRD ELEV. m

FIELD OR AREA
Mt. Clarke 'B' — POOL OR ZONE
Lynes United Services — SAMPLER

DST #2 — TEST TYPE & NUMBER
TEST RECOVERY

Bottomhole Sampler — POINT OF SAMPLE
AMOUNT & TYPE OF CUSHION
@ °C — MUD RESISTIVITY

1352-1359 — TEST INTERVALS OR PERFS., m

PUMPING FLOWING GAS LIFT SWAB

WATER m³/d OIL m³/d GAS m³/d

SEPARATOR RESERVOIR
@ °C CONTAINER WHEN SAMPLED
@ °C CONTAINER WHEN RECEIVED
SEPARATOR

PRESSURES, kPa (gauge) — TEMPERATURES, °C

1986 02 10 — DATE SAMPLED (Y/M/D)
1986 03 10 — DATE RECEIVED(Y/M/D)
1986 03 11 — DATE ANALYZED (Y/M/D)
TTV — ANALYST
REMARKS

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	.0004		
He	.0062		
N_2	.2026		
CO_2	.0006		
H_2S	.0000		
C_1	.7425		
C_2	.0304		
C_3	.0110		40.5
iC_4	.0023		10.0
C_4	.0023		9.7
iC_5	.0007		3.4
C_5	.0004		1.9
C_6	.0003		1.6
C_7+	.0003		2.1
TOTAL	1.0000		69.2
		C_5+	9.0

CALCULATED GROSS HEATING VALUE
MJ/m³ @ 15° C & 101.325 kPa (abs.)

31.92 — MOISTURE FREE
31.93 — MOISTURE & ACID GAS FREE

CALCULATED VAPOUR PRESSURE
kPa (abs.) @ 37.8° C

90.0 — PENTANES PLUS

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15° C & 101.325 kPa
MOISTURE FREE AS SAMPLED

.823 kg/m³ — DENSITY
.671 — RELATIVE DENSITY
19.4 — RELATIVE MOLECULAR MASS

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED		ACID GAS FREE	
4331.8 kPa (abs.)	183.4 K	kPa (abs.)	K
pPc	pTc	pPc	pTc

REMARKS

Note: The Gross Heating Value has been calculated in accordance to AGA Report #5.

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MFE #190 (CONTAINER IDENTITY) — 71280-86-291 (LABORATORY NUMBER)

Petro-Canada Inc. (OPERATOR) — 4 of 8 (PAGE)

PCP Canterra Nogh A 0-47 (LOCATION / WELL OR SAMPLE LOCATION NAME) — KB ELEV. — GRD. ELEV.

Mt. Clarke 'B' (FIELD OR AREA / POOL OR ZONE) — Lynes United Services (SAMPLER)

DST #2 (TEST TYPE & NO.) — TEST RECOVERY

Bottomhole Sampler (POINT OF SAMPLE) — AMT. & TYPE CUSHION — @ °C MUD RESISTIVITY

1352 -1359 (TEST INTERVALS OR PERFS.)

PUMPING FLOWING GAS LIFT SWAB

WATER m^3/d OIL m^3/d GAS m^3/d

SEPARATOR RESERVOIR — @ °C CONTAINER WHEN SAMPLED — @ °C CONTAINER WHEN RECEIVED — SEPARATOR

PRESSURES, kPa — TEMPERATURES, °C

DATE SAMPLED (Y/M/D)	DATE RECEIVED (Y/M/D)	DATE ANALYSED (Y/M/D)	ANALYST	REMARKS
1986 02 10	1986 03 10	1986 03 26	AM	

WATER ANALYSIS

Resistivity @ 25°C	0.043	ohm-metres
Chloride	155393	mg/litre

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MFE #93 (CONTAINER IDENTITY)	71280-86-291 (LABORATORY NUMBER)
Petro-Canada Inc. (OPERATOR)	5 of 8 (PAGE)
(LOCATION) PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME)	(KB ELEV.) (GRD. ELEV.)
(FIELD OR AREA) Mt. Clarke 'B' (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #3 (TEST TYPE & NO.)	(TEST RECOVERY)
Bottomhole (POINT OF SAMPLE)	(AMT. & TYPE CUSHION) @ °C (MUD RESISTIVITY)
1343-1351 (TEST INTERVALS OR PERFS.)	PUMPING FLOWING GAS LIFT SWAB
	WATER m^3/d OIL m^3/d GAS m^3/d
SEPARATOR RESERVOIR	@ °C (CONTAINER WHEN SAMPLED) @ °C (CONTAINER WHEN RECEIVED) SEPARATOR
PRESSURES, kPa	TEMPERATURES, °C
1986 02 11 (DATE SAMPLED Y/M/D)	1986 03 10 (DATE RECEIVED Y/M/D) 1986 03 10 (DATE ANALYSED Y/M/D) AM (ANALYST) (REMARKS)

DST SAMPLER DEPLETION

The DST sampler contained:

- 0 kPa of gas
- 0 cc of water
- 2000 cc of mud
- 0 cc of oil

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Petroleum Reservoir Engineering
CALGARY ALBERTA

MFE #88 (CONTAINER IDENTITY)	71280-86-291 (LABORATORY NUMBER)
Petro-Canada Inc. (OPERATOR)	6 of 8 (PAGE)
(LOCATION) PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME)	(KB ELEV.) (GRD. ELEV.)
(FIELD OR AREA) Mt. Cap (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #4 (TEST TYPE & NO.)	(TEST RECOVERY)
Bottomhole (POINT OF SAMPLE)	(AMT. & TYPE CUSHION) @ °C (MUD RESISTIVITY)
1287-1303 (TEST INTERVALS OR PERFS.)	PUMPING FLOWING GAS LIFT SWAB WATER m^3/d OIL m^3/d GAS m^3/d
(SEPARATOR) (RESERVOIR) @ °C (CONTAINER WHEN SAMPLED) @ °C (CONTAINER WHEN RECEIVED)	(SEPARATOR)
PRESSURES, kPa	TEMPERATURES, °C
1986 02 10 (DATE SAMPLED Y/M/D) 1986 03 10 (DATE RECEIVED Y/M/D) 1986 03 10 (DATE ANALYSED Y/M/D) AM (ANALYST)	(REMARKS)

DST SAMPLER DEPLETION

The DST sampler contained:

- 0 kPa of gas
- 0 cc of water
- 1900 cc of mud
- 0 cc of oil

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Petroleum Reservoir Engineering
CALGARY ALBERTA

MFE #88 (CONTAINER IDENTITY)	71280-86-291 (LABORATORY NUMBER)
Petro-Canada Inc. (OPERATOR)	7 of 8 (PAGE)
(LOCATION) PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME)	(KB ELEV.) (GRD. ELEV.)
(FIELD OR AREA) Mt. Cap (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #4 (TEST TYPE & NO.) (TEST RECOVERY)	
Bottomhole Sampler (POINT OF SAMPLE) (AMT. & TYPE CUSHION)	@ °C (MUD RESISTIVITY)
1287-1303 (TEST INTERVALS OR PERFS.)	PUMPING FLOWING GAS LIFT SWAB
	WATER m^3/d OIL m^3/d GAS m^3/d
SEPARATOR RESERVOIR	@ °C (CONTAINER WHEN SAMPLED) @ °C (CONTAINER WHEN RECEIVED) SEPARATOR
PRESSURES, kPa	TEMPERATURES, °C
1986 02 10 (DATE SAMPLED (Y/M/D)) 1986 03 10 (DATE RECEIVED (Y/M/D)) 1986 03 26 (DATE ANALYSED (Y/M/D)) CW (ANALYST)	(REMARKS)

WATER ANALYSIS

Resistivity @ 25°C	0.0435	ohm-metres
Chloride	159449	mg/litre

MFE #211 (CONTAINER IDENTITY)	71280-86-291 (LABORATORY NUMBER)
Petro-Canada Inc. (OPERATOR)	8 of 8 (PAGE)
(LOCATION) PCP Canterra Nogh A 0-47 (WELL OR SAMPLE LOCATION NAME)	(KB ELEV.) (GRD. ELEV.)
(FIELD OR AREA) Mt. Cap (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #5 (TEST TYPE & NO.)	(TEST RECOVERY)
Bottomhole (POINT OF SAMPLE)	(AMT. & TYPE CUSHION) @ °C (MUD RESISTIVITY)
1140-1155 (TEST INTERVALS OR PERFS.)	PUMPING FLOWING GAS LIFT SWAB WATER m^3/d OIL m^3/d GAS m^3/d
(SEPARATOR) (RESERVOIR)	@ °C (CONTAINER WHEN SAMPLED) @ °C (CONTAINER WHEN RECEIVED) (SEPARATOR)
PRESSURES, kPa	TEMPERATURES, °C
1986 02 14 (DATE SAMPLED Y/M/D)	1986 03 10 (DATE RECEIVED Y/M/D) 1986 03 10 (DATE ANALYSED Y/M/D) AM (ANALYST) (REMARKS)

DST SAMPLER DEPLETION

The DST sampler contained:

- 0 kPa of gas
- 0 cc of water
- 2000 cc of mud
- 0 cc of oil

9211-P28 - 1-8

Calgary

GEOLOGICAL WELLSITE REPORT

FOR

PCI CANTERRA

NOGHA 0-47

Prepared For

PETRO CANADA INCORPORATED

By

T.A. VADER/M. DIAMOND

PRO GEO CONSULTANTS

February, 1986

PRO GEO CONSULTANTS

TABLE OF CONTENTS

WELL SUMMARY

WELL NAME:	PCI CANTERRA NOGHA O-47
COORDINATES:	N66^{O} 36', 52.1819" W 125^{O} 53' 18.8698"
LOCATION:	Unit O Sec 47 Grid Area 66^{O} 40' 125^{O} 45'
ELEVATIONS:	Ground: 348.29m KB: 354.39m
OPERATOR:	Petro Canada Incorporated
DRILLING CONTRACTOR:	Atco Equtak Rig #76
WELLSITE SUPERVISION:	Toolpusher: D. Lauck Engineer: Y. Hope, M. Prichuk Geologist: T. Vader/M. Diamond
WELL SPUDDED:	0100 hours 1986/01/13
DRILLING COMPLETED:	1415 hours 1986/02/06
BIT SIZES:	Surface: 311 mm Downhole: 216 mm
CASING SIZES:	Surface: 245.5mm Production:
TOTAL DEPTH:	Driller: 1416.0m Logger: 1415.0m
BOTTOM HOLE FORMATION:	Proterozoic Volcanics
CORES CUT:	none
LOGS RUN:	Run #1 DISFL; CNL-LDT-NGT; BHCS Run #2 DIL-MSFL; CNL-LDT; BHCS; ML; WST; CST
DRILL STEM TESTS:	DST #1 1360 - 1366m DST #2 1352 - 1359m DST #3 1343 - 1351m DST #4 1287 - 1303m
RIG RELEASED:	1800 hours 1986/02/17
WELL STATUS:	dry and abandoned
ADDITIONAL:	

1986/01/13

- Prepare to spud
- Spud at 0100 hours
- Drill 311mm pilot hole to 59m with bit #1A HW JD7
- Work tight hole and stuck pipe for 2.5 hours
- Drill 311mm pilot hole to 63m

1986/01/14

- Drill 311mm pilot hole to 65m
- POOH
- RIH with bit #1A and 444.5mm hole opener
- Ream conductor hole to 64.0m
- Circulate and condition hole
- POOH to run casing
- Run 339.7mm conductor casing
- Circulate casing
- Cement casing
- WOC

1986/01/15

- WOC
- Weld on bowl
- Head up diverter system
- Rig up blouey line

1986/01/16

- Ream mouse hole
- RIH with bit #1B (HW XDV) and drill out cement with water
- Drill 311mm surface hole to 76m
- Rig up air drillers
- Blow hole dry
- Drill 311mm surface hole to 112m
- Trip for bit
- Inspect drill collars
- Make up fishing tool (magnet)
- Fish for cones

1986/01/17

- Fish for cones
- RIH with bit #2B (HWJD7)
- Ream from 100 -112m
- Drill 311mm surface hole with air to 128m
- Switch to mud (grant rotating head bearings seized)
- Drill 311mm surface hole with mud to 138m
- Prepare to trip for bit

1986/01/18

- Trip for bit
- RIH with bit #3b (HW JD7)
- Drill 311mm hole with mud to 196m

1986/01/19

- Drill ahead with mud to 199m
- Trip for bit
- Replace grant rotating head
- RIH with bit #4B (HW J33)
- Drill ahead with air/foam to 275m
- Hole started making water at approx 270m

1986/0120

-Drill 311mm hole with air/foam to 359m

1986/01/21

- Drill 311mm hole with air/foam to 406m
- Trip for bit
- RIH with bit #5B (HW J-33)
- Drill 311mm hole with air/foam to 420m

1986/01/22

- Drill 311mm hole with air/foam to 501m

1986/01/23

- Free stuck pipe (2 hours)
- Drill 311mm hole with air/foam to 600m

1986/01/24

- Trip for bit #6b at 600m
- RIH with new bit, circulate and unload hole
- Drilled 311mm hole with air/foam from 600m-660m

1986/01/25

- Drill ahead and survey 311mm hole from 660m - 738m
- Drill pipe stuck at 738m, work stuck pipe for 3 hours
- Drill ahead to TD of 745m
- Circulate hole and dummy trip to 600m
- Run to bottom, condition hole to log
- POOH 15 stands to 315m, release bottom hole pressure

1986/01/26

- Bleed off pressured formation and POOH to log
- Rig up and log
- a) DISFL-GR 2) CNL-LDT-NGT 3) BHC-GR
- Rig to run casing

1986/01/27

- Run casing program

1986/01/28

- Pressure test manifold and BOP's
- Drill out DV tool
- RIH

1986/01/29

- RIH, tag cement at 732m
- Drill out float collar, cement
- Displace hole to mud; drill ahead to 801m; salt saturate completed at 801m
- Drill ahead with bit 6C from 801 - 863m

1986/01/30

- POOH with bit 7C, one bearing seized
- RIH with bit 8C
- Drill ahead from 863 to 1011m
- Lose survey barrel at 1011m
- POOH to retrieve survey barrel
- RIH, drill from 1011 - 1020m

1986/01/31

- Drill ahead main 216mm hole from 1020m - 1128m
- Loose survey barrel at 1128m
- POOH for survey barrel
- Drill collars inspected

1986/02/01

- Finish drill collar inspection
- RIH drill ahead from 1128 - 1178m

1986/02/02

- Drill ahead form 1178 - 1240m

1986/02/03

- Drill ahead from 1240 - 1306m

1986/02/04

- Drill ahead form 1306 - 1325m
- 5 stand dummy trip, circulate bottoms up
- Drill ahead from 1325 - 1358m

1986/02/05

- Drill ahead from 1358 - 1398m
- Hoist for bit 10C

1986/02/06

- RIH with bit 9C (RR)
- Drill ahead from 1398 - 1416m
- TD at 1345 hours
- Condition hole for logging
- POOH for logging
- Rig up and log 1) DLL-MSFL

1986/02/07

- Log 2) CNL/LDT NGT-AMS 3) BHC-GR-CAL 4) ML-MLL 5) HDT

1986/02/08

- Log 6) WST (velocity survey) 7) RFT 8) CST
- RIH for clean out trip

1986/02/09

- Hoist for DST #1 1360 - 1366m "Mt. Clarke C"
- RIH with DST #1, run test
- POOH recovery charts
- RIH with bit ream 3 - 5m to bottom

1986/02/10

- Hoist for DST #2 1352 - 1359m
- RIH with CST #2, run test
- POOH, recover charts
- RIH with bit, clean to bottom

1986/02/11

- Hoist for DST #3, 1343 - 1351m
- RIH with DST #3, run test
- POOH, recover charts
- Clean to bottom

1986/02/12

- Hoist for DST #4, 1287 - 1303m
- RIH with DST #4, run test
- POOH, recover charts
- Clean to bottom

1986/02/13

- Hoist for DST #5, 1140 - 1155m
- RIH with DST #5, run test
- POOH, recover charts
- Clean to bottom

1986/02/14

- Run DST #6 1360 - 1366m
- Misrun

1986/02/15

- Run DST #7, 1360 - 1366m
- POOH, recover charts

1986/02/16

- Rig to run plugs

1986/02/17

- Rig release at 1800 hours, 1986/02/17

CASING SUMMARY

Conductor Casing

Ran 5 jts 339.7mm, 101 kg/m, K-55, BT&C conductor casing, cemented by Dowell with 14.4 tonnes Class "G" + 2.2% $CaCl_2$ + 50 kg Celloflake. Landed at 64.0m. Plug down 1986/01/14 at 2224 hours. 1.6m^3 returns to surface.

Intermediate Casing

Ran 61 joints 244.5mm, 59.3 kg/m, LT&C surface casing. Cemented by Dowell with 1) 8 tonnes Oilwell "G" + 2% $CaCl_2$; 2) 4 tonnes Oilwell "G" + 2% $CaCl_2$. Landed at 745 m. Plug down at 0905 hours, 1986/01/27. No cement returns to surface.

DRILLSTEM TEST SUMMARY

DST #1 1260 - 1366m Fm: Mt. Clarke "C" Type: Inflate Straddle

TIMES:	5/100/90/190
PF:	SAB throughout, NGTS
VO:	Strong decreasing to weak, NGTS
RECOVERY:	18m of drilling mud
HP:	17650/17581 KPa
SIP:	3188/5252 KPa
FP:	499/499/379 KPa
OTHER:	Top, middle and bottom samples caught

DST #2 1352 - 1359m Fm: Mt. Clarke "B" Type: Inflate Straddle

TIMES:	5/90/120/240
PF:	WAB, decreasing, NGTS
VO:	Strong air blow, GTS 51 mins
RECOVERY:	15m of gassified drilling mud
HP:	17702/17478 KPa
SIP:	14358/15151 KPa
FP:	723/1344/1085 KPa
OTHER:	

DST #3 1343 - 1351m Fm: Mt. Clarke "C" Type: Inflate Straddle

TIMES:	5/90/120/240
PF:	WAB, decreasing throughout, NGTS
VO:	Strong air blow, decreasing to weak, NGTS
RECOVERY:	18m of drilling mud
HP:	17677/17591 KPa
SIP:	1530/4290 KPa
FP:	336/336/836 KPa

DST #4 1287 - 1303m Fm: High G.R. Shale Type: Inflate Straddle

TIMES:	5/90/120/240
PF:	WAB, increasing, NGTS
VO:	Strong air blow throughout, NGTS
RECOVERY:	12m trace gas cut mud
HP:	1747/17034 KPa
SIP:	2597/6282 KPa
FP:	335/335/335 KPa

ABANDONMENT SUMMARY

Plug #1 Interval: 1416 - 1300m

Cemented with 6 tonnes Class G + 2% $CaCl_2$. Plug down at 0422 hours, 1986/02/16.

Plug #2 Interval: 1200 - 1075m

Cemented with 9 tonnes Class G + 2% $CaCl_2$. Plug down at 0630 hours, 1986/02/16.

Plug #3 Interval: 775 - 715m

Cemented with 4 tonnes Class G + 2% $CaCl_2$. Plug down at 108 hours, 1986/02/16.

7 DSTs were actually run

GEOLOGICAL SUMMARY

P.C.I. Canterra Nogha O-47 was spudded 1986/01/13 at 0100 hours, for the purpose of drilling down into the Proterozoic Volcanics and investigating the Mount Clarke formation for potential hydrocarbon production

No air drilling problems were encountered when penetrating the Franklin Mountain formation, and intermediate casing was run, once the Saline River Formation was established from samples.

A salt saturated mud system was employed while drilling out the shoe. However, full salt saturation was not completed, until a depth of 802m, and consequently the salt member was not picked in samples until a depth of 812m. Drilling continued smoothly through the salt member, with occasional traces of anhydrite partings and a 20m shale member at 863m.

The Mount Cap formation was encountered at a depth of 1096m, by a decrease in penetration rate. Subsequent circulated samples, showed the Mount Cap as consisting of interbedded dolomite, dolomite/siltstone, and shales. The dolomites occuring as a noncrystalline mudstone to trace microcrystalline, generally argillaceous. No visible oil staining was detected and porosities were poor, however a DST was run over the interval 1140m - 1155m, where an increase in total gas was noted from a background of 0.044% to 10.2%. The recovery consisted of fifteen meters of drilling mud, no gas to surface.

The Gamma Ray shale was observed from samples at a depth of 1289m, and consisted of argillaceous and arenaceous dolomite, argillaceous dolomitic sandstone and shale, However, the sands were poorly developed and tight. A drill stem test was run over the interval 1287 - 1303m where a total gas of 11.2% was noted. Twelve meters of slightly gas cut mud was recovered.

The Mount Clarke formation was encountered at a depth of 1342m, and consisted of three sand units. The Lower Mount Clarke "C" consisted of a white to light buff friable, fine to medium grained quartz sand, with poor to trace fair intergranular porosity. A weak cut was observed from a rare light brown stain. From subsequent log evaluation the sand was found to have an average porosity of twelve percent with a resistivity peaking at 20 ohms. A DST was run over the interval 1360 - 1366m, which recovered 15m of drilling mud with no gas to surface.

The Mount Clarke "B" and "C" sands were respectively found to consist of a white to cream, firm to friable, very fine to fine grained quartz. From log evaluation, porosities were found to be in the average of six percent, with resistivity values of 80 - 90 ohms. DST results from the Mount Clarke"B" over the interval 1352 - 1359, gave gas to surface in fifty-one minutes during valve open.

The Mount Clarke "C" proved on testing to be of no potential, with a recovery of eighteen meters of drilling mud.

The well was subsequently plugged and abandoned.

FORMATION TOPS

Formation	Sample Depth (m)	Subsea (m)	Log Sample (m)	Log (m)
Saline River	720.0	-365.61	709.0	-354.61
Salt Member	812.0	-457.61	742.0	-387.61
Shale Marker	863.0	-508.61	850.0	-495.61
Mount Cap	1096.0	-741.61	1109.0	-754.61
High G.R. Shale	1289.0	-934.61	1269.0	-914.61
Mount Clarke	1342.0	-987.61	1344.0	-989.61
Proterozoics	1366.0	-1011.61	1370.5	-1016.11
Total Depth	1416.0	-1061.61	1415.0	-1060.61

DETAILED SAMPLE DESCRIPTIONS

Depth	Descriptions
6 - 17m	Dolomite light grey, cream/orange, fine to coarse crystalline, subhedral, sucrosic texture, clean, poor to fair intercrystalline and vug porosity, common fracture porosity (weathered), Common dead oil staining, trace of very weak brown fluorescence
17 - 21m	Dolomite; as above, with abundant bands and pockets of Chert; white, clear, opaque to translucent, conchoidal fracture, hard

21 - 26m	Dolomite; white to light grey, tan/orange, microcrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean, poor intercrystalline and vug porosity, common fracture porosity, (weathered along fractures), common dead oil staining, fast yellow/white streaming cut, with abundant bands and pockets of Chert; as above
26 - 30m	Dolomite; light grey, rarely medium grey, microcrystalline, to medium crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous in part, poor to fair intercrystalline and vug porosity, common fracture porosity, trace of dead oil staining, fast yellow/white streaming cut, with minor bands and pockets of Chert; as above
30 - 35m	MISSED SAMPLE (BY PASSING SHAKER DUE TO L.C.M. IN MUD)
35 - 40m	Dolomite; white, light grey, tan, cryptocrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean, poor intercrystalline and vug porosity, minor fracture porosity (weathered), trace of dead oil staining, fast yellow/white streaming cut
40 - 50m	Dolomite; white, cream, cryptocrystalline to fine crystalline, subhedral, massive texture, clean, poor intercrystalline and vug porosity, trace of dead oil staining, fast yellow/white streaming cut, rare chert pockets
50 - 56m	Dolomite; white, cream, light grey, cryptocrystalline to medium crystalline, occasional coarse rhombohedrons, massive to sucrosic texture, minor chert inclusions, clean, poor to fair intercrystalline and vug porosity, trace of dead oil staining, fast yellow/white streaming cut
56 - 65m	Dolomite; white, cream, light grey, cryptocrystalline to very fine crystalline, subhedral, massive to sucrosic texture, clean,t race of chert inclusions, poor intercrystalline and vug porosity, slight trace of dead oil staining

* SAMPLES FROM 40 - 65M WERE CAUGHT WHILE OPENING CONDUCTOR HOLE TO 445mm

65 - 70m	Dolomite; white to light grey, cryptocrystalline to microcrystalline, occasionally fine crystalline, anhedral to subhedral, massive texture, clean, tight to very poor effective intercrystalline porosity, trace of vug porosity, with common pockets and bands of Chert; white, light grey, opaque to translucent, vitreous in part, conchoidal fracture hard
70 - 77m	Dolomite; white, light grey, microcrystalline to fine crystalline, subhedral, massive to occasional sucrosic texture, clean, very poor intercrystalline and vug porosity, with minor thin bands and pockets of Chert; as above
77 - 85m	Dolomite; light grey, cream, occasionally medium grey, very fine to medium crystalline, subhedral, massive texture, clean to very slightly argillaceous in part, very poor intercrystalline and vug porosity, minor chert inclusions, trace of pyrite inclusions
85 - 90m	MISSED SAMPLE (foam too thick for cuttings to drop out)
90 - 100m	Interbedded Dolomite; cream, light grey, cryptocrystalline to medium crystalline, subhedral, massive texture, clean to very slightly argillaceous, very poor intercrystalline and vug porosity, and Chert; white, light grey, tan, opaque to translucent, conchoidal fracture, hard
100 -105m	Missed Sample (foam too viscous)
105 - 110m	Dolomite; as above, with common pockets and bands of Chert; as above
110 - 115m	Missed Sample (foam too viscous)
115 - 126m	Dolomite; cream, tan, clear, very fine crystalline to coarse crystalline, subhedral, massive texture, clean, poor intercrystalline and vug porosity, with common pockets and bands of Chert; white, light grey, clear, vitreous to chalky texture, translucent to opaque, conchoidal fracture, hard, trace of quartz crystals, common pyrite

126 - 138m	Interbeds of: Dolomite; cream, tan, light grey, microcrystalline to fine crystalline, occasionally medium crystalline, subhedral, massive texture, clean to very slightly argillaceous, poor intercrystalline and vug porosity; and Chert; as above
138 - 151m	Dolomite; cream, tan, microcrystalline to very fine crystalline, subhedral, sucrosic texture, clean, poor intercrystalline and vug porosity, with minor pockets and bands of Chert; white, cream, clear, vitreous lustre in part, chalky texture in part, opaque to translucent, conchoidal fracture hard
151 - 162m	Dolomite; cream, tan, light grey, microcrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, poor intercrystalline and vug porosity with minor thin bands and pockets of Chert; as above
162 - 167m	Dolomite; cream, tan, microcrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean, poor intercrystalline and vug porosity with minor thin bands and pockets of Chert; white tan, clear, vitreous lustre, chalky texture in part, opaque to translucent, conchoidal fracture, hard
167 - 177m	Dolomite; cream, tan, microcrystalline to very fine crystalline, subhedral, massive texture, clean tight to trace of intercrystalline and vug porosity, rare chert inclusions
177 - 186m	Dolomite; cream to tan, light grey, microcrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, poor intercrystalline and vug porosity, with minor thin bands and pockets of Chert white, clear, light grey, vitreous lustre in part, chalky texture in part, conchoidal fracture, hard
186 - 190m	Dolomite; cream to tan, occasionally light brown, cryptocrystalline to very fine crystalline, anhedral to subhedral, massive to sucrosic texture, clean, tight to poor intercrystalline porosity with minor bands and pockets of Chert; as above

190 - 195m	Dolomite; tan to light brown, cryptocrystalline to microcrystalline, anhedral, massive texture, clean, tight to trace of intercrystalline and vug porosity, rare chert inclusions
195 - 200m	Missed Sample (foam to thick)
200 - 204m	Dolomite; cream, tan, light grey, microcrystalline to medium crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous poor intercrystalline and vug porosity, trace of chert
204 - 213m	Dolomite; cream, tan, microcrystalline to very fine crystalline, subhedral, massive to sucrosic texture, clean, tight to trace of intercrystalline and vug porosity, common white chert
213 - 228m	Dolomite; cream, tan, microcrystalline to medium crystalline, subhedral, massive to sucrosic texture, clean, tight to poor intercrystalline and vug porosity, trace of chert
228 - 235m	Dolomite; cream, tan, cryptocrystalline to microcrystalline, occasionally fine crystalline, anhedral to subhedral, massive to sucrosic texture, clean, trace of intercrystalline and vug porosity
235 - 240m	Missed Sample
240 - 252m	Dolomite; cream, tan, light grey, cryptocrystalline to microcrystalline, occasionally fine to medium crystalline, subhedral, massive, occasional sucrosic texture, clean to very slightly argillaceous, tight to trace of intercrystalline and vug porosity
252 - 268m	Dolomite, cream, tan, light grey, cryptocrystalline to medium crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, poor vug porosity, rare pyrite inclusions, trace of chert
268m	HOLE STARTED PRODUCING FRESH WATER WHILE DRILLING WITH AIR/FOAM MIXTURE
268 - 280m	Dolomite; cream to light brown, light grey/brown, cryptocrystalline to microcrystalline, commonly fine to medium crystalline, subhedral, rarely euhedral, occasional sucrosic texture, clean to very slightly argillaceous, tight to poor vug porosity, common chert, trace of pyrite.

280 - 285	Dolomite; tan to medium brown, cryptocrystalline to microcrystalline, anhedral, massive texture, rarely very fine to fine crystalline sucrosic euhedral chips, slightly argillaceous to argillaceous, tight to poor vug porosity
285 - 296m	Dolomite; cream to light brown, cryptocrystalline to microcrystalline, rarely very fine crystalline, subhedral, massive texture, slightly argillaceous, tight to poor vug porosity
296 - 305m	Dolomite; cream to tan, occasionally light brown, cryptocrystalline to very fine crystalline, subhedral, massive texture, slightly argillaceous in part, tight, trace of pyrite, trace of chert
305 - 310m	Missed sample
310 - 316m	Dolomite; tan to light grey/brown, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly argillaceous in part, occasional fine crystalline euhedral chips, tight to trace of vug porosity, trace of chert, trace of pyrite
316 - 321m	Dolomite; tan, light grey, light grey/brown, cryptocrystalline, anhedral, massive texture, slightly argillaceous in part, occasional fine to medium crystalline, subhedral chips, tight to trace vug porosity, trace pyrite
321 - 326m	Dolomite; cream to tan, light grey, fine to medium crystalline, subhedral, massive to sucrosic texture, very slightly argillaceous in part, poor to occasional fair vug porosity
326 - 330m	Dolomite; tan to light grey, occasionally light brown, cryptocrystalline to very fine crystalline, occasionally fine crystalline, anhedral, rarely subhedral, massive texture, slightly argillaceous in part, tight to trace vug porosity

330 - 341m Dolomite; cream to tan, microcrystalline to fine crystalline, occasionally medium crystalline, subhedral to euhedral, massive to sucrosic texture, clean, tight to poor vug porosity

341 - 345m Dolomite; cream to light brown, light grey, cryptocrystalline to very fine crystalline, occasionally fine crystalline, subhedral, massive texture, clean to slightly argillaceous in part, tight, poor intercrystalline and vug porosity

345 - 351m Dolomite; cream to tan, rarely light brown, cryptocrystalline to very fine crystalline, subhedral, massive texture, rarely sucrosic, clean to very slightly argillaceous, trace poor intercrystalline and vug porosity

351 - 355m Dolomite; cream to medium brown, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly argillaceous in part, tight

355 - 360m Dolomite; cream to medium brown, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly argillaceous in part, tight

360 - 367m Dolomite; white to cream, occasionally tan and light brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, subhedral, massive to sucrosic texture, clean, tight to trace of intercrystalline and vug porosity

367 - 377m Dolomite; cream to tan, occasionally light brown, cryptocrystalline to very fine crystalline, occasionally fine crystalline, subhedral, massive to occasionally sucrosic texture, clean to very slightly argillaceous, tight to poor intercrystalline and vug porosity, trace of pyrite, rare green shale partings

377 - 383m Dolomite; cream, tan, light brown, cryptocrystalline to microcrystalline, occasionally very fine to fine crystalline, subhedral, massive texture, occasional sucrosic texture, clean to very slightly argillaceous, tight to occasional poor intercrystalline porosity, trace of pyrite, rare shale partings

383 - 388m Dolomite; cream to tan, rarely light brown, crypto to microcrystalline, rarely very fine crystalline, anhedral to subhedral, massive texture clean, tight

388 - 395m Dolomite; light to medium brown, cryptocrystalline to fine crystalline, subhedral, massive to sucrosic texture, slightly argillaceous, poor intercrystalline and vug porosity, trace of pyrite

395 - 400m Missed Sample

400 - 405m Dolomite; cream, tan, light grey/brown, cryptocrystalline, anhedral, massive texture, slightly argillaceous, tight

405 - 417m Dolomite; cream to light brown, light grey cryptocrystalline to very fine crystalline, subhedral, massive texture, clean to argillaceous, tight to trace of pinpoint porosity

417 - 423m Dolomite; cream to light brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, anhedral to subhedral, massive texture, slightly argillaceous in part, tight to trace pinpoint porosity

423 - 432m Dolomite; cream to tan, light grey, cryptocrystalline to fine crystalline, subhedral to euhedral, massive to sucrosic texture, trace of calcite cement, clean to very slightly argillaceous, poor intercrystalline and vug porosity

432 - 445m Dolomite; tan to medium brown, cryptocrystalline to microcrystalline, rarely very fine crystalline, anhedral to subhedral, massive texture, slightly argillaceous, tight to trace of pinpoint porosity

445 - 456m Dolomite; white to cream, occasionally light to medium brown, cryptocrystaline to microcrystalline, occasionally very fine crystalline, clean to slightly argillaceous, tight

456 - 461m Dolomite; light to medium brown, cryptocrystalline to microcrystalline, occasionally very fine to fine crystalline, slightly argillaceous to argillaceous, tight to rare vug porosity

461 - 465m Dolomite; cream to tan, cryptocrystalline to occasionally micro-crystalline, rarely fine crystalline, anhedral, massive texture, clean, tight, with occasional bands of
Chert; white to light grey, vitreous to opaque, hard, conchoidal fracture, composed mainly of radiolarian remains in siliceous matrix

465 - 470m Dolomite; cream to light brown, cryptocrystalline to microcrystalline, occasionally fine crystalline, anhedral, rarely subhedral, massive texture, very slightly argillaceous, tight

470 - 480m Missed samples (Blooey line was changed around, sample catching device had to be redesigned)

480 - 485m Dolomite; cream to light brown, cryptocrystalline to microcrystalline, anhedral, massive texture, clean to very slightly argillaceous, tight trace of shale partings

485 - 490m Missed Sample

490 - 500m Dolomite; cream to light brown cryptocrystalline to fine crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, poor intercrystalline and vug porosity, trace of grey dolomite, rare shale partings

500 - 507m Dolomite; tan to light brown, cryptocrystalline to very fine crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, poor to occasional fair pinpoint, intercrystalline and vug porosity

507 - 516m Dolomite; tan to medium brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, anhedral, massive texture, clean to slightly argillaceous, tight to trace of vug porosity

516 - 526m Dolomite; tan to medium brown, rarely light grey, cryptocrystalline to very fine crystalline, anhedral to subhedral, massive to sucrosic texture, clean to slightly argillaceous, poor intercrystalline and pinpoint porosity

526 - 537m Dolomite; cream to light brown, cryptocrystalline to very fine crystalline, subhedral, massive to sucrosic texture, clean to very slightly argillaceous, tight to poor intercrystalline vug and pinpoint porosity

537 - 545m Dolomite; cream to medium brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, subhedral, massive to sucrosic texture, clean to slightly argillaceous, poor to fair intercrystalline, pinpoint and vug porosity

545 - 552m Dolomite; cream to tan, occasionally light to medium brown, cryptocrystalline to microcrystalline, occasionally very fine crystalline, subhedral, massive to occasionally sucrosic texture, clean to very slightly argillaceous, tight to poor intercrystalline, pinpoint and vug porosity

552 - 559m Dolomite; cream to tan, occasionally light brown, rarely light grey, cryptocrystalline to very fine crystalline, subhedral, massive to sucrosic texture, slightly limey in part, clean to very slightly argillaceous, poor to fair intercrystalline, pinpoint and vug porosity

559 - 562m Dolomite; cream to tan, cryptocrystalline to microcrystalline, anhedral, massive texture, slightly limey in part, clean to slightly argillaceous, tight to trace vug porosity

562 - 570m Dolomite; cream to medium brown, rarely light grey, cryptocrystalline to very fine crystalline, subhedral, massive texture, limey in part, clean to argillaceous, tight to poor intercrystalline, pinpoint and vug porosity, grades to limestone

570 - 575m Dolomite, cream to tan, commonly light to medium brown, cryptocrystalline to microcrystalline, rarely very fine crystalline, limey to very limey in part, anhedral, massive texture, clean to slightly argillaceous, tight to trace of intercrystalline porosity, grades to Limestone; cream to tan, commonly light to medium brown, micritic to very fine granular, dolomitic to very dolomitic, clean to slightly argillaceous, tight to poor intergranular porosity

575 - 585m Dolomite; cream to tan, commonly light brown, cryptocrystalline to microcrystalline, rarely very fine crystalline, slightly limey to limey, subhedral, massive to sucrosic texture, clean to slightly argillaceous, poor to fair intercrystalline, pinpoint and vug porosity, with minor thin bands of Limestone; as above, trace of chert, trace of radiolarians

585 - 597m Dolomite; cream, occasionally tan to light brown, cryptocrystalline to microcrystalline, limey to very limey, euhedral, sucrosic texture, clean to rarely argillaceous, poor to occasional fair intercrystalline, pinpoint and vug porosity grades to minor bands of Limestone; cream, occasionally tan, micritic to very fine granular, dolomitic to very dolomitic, massive texture, clean to very slightly argillaceous, poor to intergranular and pinpoint porosity

597 - 617m Dolomite with interbedded limestone
Dolomite; cream to tan, light grey, cryptocrystalline to microcrystalline, anhedral, massive texture, limey to very limey, slightly argillaceous to very argillaceous, tight, poor pinpoint and vuggy
Limestone; cream to tan, light grey, micritic, chalky texture in places, dolomitic to very dolomitic, argillaceous, tight, poor pinpoint and vuggy porosity, trace chert

617 - 629m Predominantly Dolomite with thinly interbedded Limestone
Dolomite; cream to medium brown, crystalline to very finely crystalline, subhedral massive texture, vitreous in places, limey to very limey in places, slightly argillaceous to very argillaceous, tight, poor pinpoint and vuggy porosity
Limestone; cream to medium brown, micritic, chalky texture in places, dolomitic to very dolomitic, slightly argillaceous to very argillaceous, tight to poor pinpoint and vuggy porosity

629 - 640m Dolomite; cream to light brown, cryptocrystalline to microcrystalline, anhedral to euhedral, sucrosic texture in places, slightly argillaceous, poor to good intercrystalline, pinpoint and vuggy porosity

640 - 659m Dolomite with interbedded Limestone
Dolomite; cream to light brown, crypto to microcrystalline, anhedral to massive texture, slightly argillaceous to argillaceous, poor pinpoint and vuggy porosity
Limestone; tan, light grey, micritic, chalky texture in places, dolomitic to very dolomitic, slightly argillaceous to argillaceous, tight, poor pinpoint and vuggy porosity

659 - 674m Dolomite; with thin interbedded Dolomite/Limestone
Dolomite; light buff/brown, grey, locally cream, firm to hard, locally soft and argillaceous, generally noncrystalline to microcrystalline, predominantly mudstone/wackestone, locally finely crystalline horizons with sucrosic texture developing, in places grading o dolomitic limestone, trace argillaceous, poor intercrystalline porosity, trace pinpoint, no visible live stain, no shows
Dolomite/Limestone; light grey to buff/brown, firm to locally hard, generally noncrystalline to microcrystalline, trace finely crystalline horizons, predominantly mudstone grained to mudstone/wackestone, trace argillaceous, poor intercrystalline porosity, no shows
- trace Limestone; white to cream, soft chalky argillaceous mudstone, poor porosity, no shows

674 - 683m Dolomite with interbedded dolomite/mudstone, and shale horizons
Dolomite; grey to predominantly buff/brown, firm to hard, generally microcrystalline to finely crystalline, locally developing sucrosic texture, generally wackestone locally mudstone/wackestone and packstone horizons, grading to dolomite/limestone, trace argillaceous to very argillaceous, poor intercrystalline to trace fair intercrystalline and pinpoint porosity, no visible live stain, no shows

674 - 683m (cont'd) - trace argillaceous Limestone; white to cream, soft, chalky argillaceous mudstone, poor porosity no shows
Shale; medium to dark grey, gray/green, slightly micromicaceous, subfissile/blocky, slightly fissile and brittle, slightly calcareous matrix, local silty nature

683 - 700m Interbedded Dolomite and Shale
Dolomite; cream to predominantly light buff/brown, medium brown, grading from a generally noncrystalline mudstone, trace finely crystalline and cryptocrystalline wackestone/packstone with sucrosic texture on occasion, grading in places to dolomitic/limestone, trace argillaceous matrix, poor to trace fair intercrystalline porosity, no visible live stain, no shows
Shale; grey to grey/green, slightly micromicaceous in places subfissile to fissile, soft to firm, slightly brittle in fissile component, slight to noncalcareous matrix, grading form silty to very silty shale

700 - 725m Interbedded Dolomite and Shale
Dolomite; cream to light buff/brown, red/brown, firm, generally noncrystalline mudstone grading to microcrystalline and trace finely crystalline wackestone, local sucrosic texture developing grading in places to dolomitic/limestone, trace argillaceous to very argillaceous horizons, poor intercrystalline porosity, trace fair in places, no visible live stain
Shale; medium to dark green, red/brown, slightly micromicaceous, subfissile/blocky, soft to firm, slightly fissile and brittle, slight to noncalcareous matrix, generally grading to silty to very silty shale to dolomitic siltstone

725 - 745m Shale with thinly interbedded dolomite
Shale; light to medium green, subfissile/blocky in places, locally fissile, slight to noncalcareous matrix, silty nature
Dolomite; buff to light grey, microcrystalline to cryptocrystalline, massive, locally argillaceous to very argillaceous, generally poor porosity, no shows

745 - 776m Shale; predominantly light to medium green, locally red/brown, slightly micromicaceous, subfissile, blocky, soft to firm, slightly waxy in green, generally silty to very silty nature, slight to noncalcareous, calcareous matrix

776 - 802m Shale; grey to green, red/brown, soft to firm, waxy in green, generally silty to very silty nature, slightly to noncalcareous matrix, grading to interbedded dolomitic siltstone
Dolomitic Siltstone; grey to buff, firm, moderately compacted, locally grain supported and moderately well indurated, dolomitic matrix, grading to interbedded light grey/buff noncrystalline dolomite, generally mudstone, locally replaced with anhydrite, poor porosity, no shows
Anhydrite; cream to light grey generally noncrystalline to massive, partially dolomitized

802 - 812m Interbedded Shale, Anhydrite, Dolomitic/Siltstone, trace horizons of salt
Shale; predominantly light to medium green, red/brown, generally subfissile/blocky, slightly micromicaceous on occasion, slight to noncalcareous nature, generally silty to very silty shale, grading to interbedded Siltstone
Anhydrite, cream to light grey, soft to firm, generally massive, chalky texture
Dolomitic/Siltstone; light grey to buff, soft to firm, moderately compacted, generally anhydritic in nature
Salt; occuring as halite, white to frosty to clear, locally yellow, generally massive (minor amounts)

812 - 828m Salt with minor horizons of Shale and Anhydrite
Salt; occuring as halite, clear to frosty/white, becoming predominantly orange-yellow
Anhydrite; white to frosty, generally massive, noncrystalline, local soft chalky texture
Shale; light green, soft waxy, subfissile, silty

828 - 839m Salt with Interbedded Shale and Anhydrite
Salt; clear to frosty, generally occuring as halite, locally yellow, generally massive and bedded
Shale; grey to green, red/brown, soft to firm, generally subfissile/blocky, slight to noncalcareous matrix, silty nature
Anhydrite; white to cream, soft to firm, chalky and crystalline textures

839 - 850m Predominantly massive Salt with horizons of Shale and Anhydrite
Salt: halite, frosty/white, orange/yellow, generally massive and bedded
Anhydrite; white, soft, chalky, noncrystalline
- trace Shale, green, soft, subfissile

850 - 857m — Salt with interbedded Shale
Salt white to frosty, generally occuring as massive halite, interbedded with thin horizons of anhydrite, chalky and soft
Shale; green, waxy, soft, subfissile

857 - 892m — Interbedded Shale Clay, occasional salt and anhydrite horizons
Shale; green, waxy, soft, subfissile

892 - 913m — Interbedded soft green shale, dolomitic siltstone, anhydrite and salt
Shale; light green, soft, waxy
Dolomitic/Siltstone; cream, soft, poor to moderately compacted anhydritic
Anhydrite, white to cream, generally finely crystalline to massive, crystalline and chalky textures, interbedded with soft green shale and clay
Salt; clear to white, yellow/orange, massive, occuring as halite

913 - 933m — Interbedded Salt; Anhydrite; Dolomitic/Siltstone
Salt; white to clear, orange/yellow, massive, trace crystalline
Anhydrite; white to cream, soft to firm, generally noncrystalline, massive, trace crystalline, local soft chalky texture,
Dolomitic/Siltstone; white to cream to buff, firm, moderately compacted, anhydritic

933 - 966m — Salt with Interbedded horizons of Anhydrite and Dolomite
Salt white to frosty, opaque, locally interbedded with orange/yellow, massive, occuring as halite
Anhydrite, white to cream, firm to hard, locally soft, chalky, partially dolomitized
Dolomite; cream to light buff, firm to hard, generally noncrystalline mudstone, anhydritic, trace argillaceous to very argillaceous, grading to interbedded dolomitic siltstone, poor porosity, no shows

966 - 979m — Massive Salt, traces of Anhydrite
Salt; predominantly vitreous to clear, white, locally orange yellow, generally massive halite, trace horizons of anhydrite and minor shale lenses

979 - 1010m — Salt predominantly frosty, white, clear, locally orange yellow, massive, bedded, occuring as halite
- trace anhydrite and dolomitic/siltstone stringers

1010 - 1027m Salt; predominantly frosty/white, locally clear and orange to yellow, generally occuring as massive halite
Interbedded with thin stringers of anhydrite: white to cream, soft to firm, crystalline and chalky textures, thinly interbedded soft green shale

1027 - 1049m Interbedded Salt with Dolomitic/Sandstone; Dolomite and Anhydrite
Salt; white to frosty, locally orange/yellow, firm, generally occuring as massive halite with thin stringers of anhydrite
Dolomite; medium brown, mottled brown, firm to hard, generally finely crystalline and medium crystalline, sucrosic texture, generally wackestone/packstone, locally argillaceous and grain supported (quartz and dolomite grains) in places grading to fine grained dolomitic sandstone, interbedded with dolomitic/siltstone, poor to fair intergranular porosity, local apparent dark stain, no cut fluorescence, bitumen?

1049 - 1077m Salt with interbedded Anhydrite and Dolomite
Salt; white to cream, yellow/orange, massive, bedded halite
Anhydrite; white to cream, light grey, soft to firm, generally massive and noncrystalline, soft and chalky.
Dolomite; light buff to brown, generally noncrystalline mudstone, interbedded with dolomitic/siltstone, poor porosity, no shows

1077 - 1096m Salt with Anhydrite and Dolomitic/Siltstone stringers
Salt; white to frosty, generally firm, occuring as massive halite
Dolomitic/Siltstone; light buff, grey/brown, generally noncrystalline mudstone, locally microcrystalline, generally occuring with interbedded dolomitic/siltstone, poor porosity, no shows
Anhydrite; light grey to cream, firm, generally crystalline to chalky, occuring with light grey/green, soft, waxy shale

1096 - 1106m Interbedded Shale; Dolomite; Anhydrite
Shale; medium to dark grey, slightly micromicaceous in places, generally subfissile/blocky, soft to firm, generally silty to very silty nature. Slight to noncalcareous matrix, grading to interbedded siltstone
Dolomite; light buff/brown, firm to hard, generally noncrystalline to microcrystalline, predominantly mudstone/wackestone, becoming argillaceous to very argillaceous, grading to dolomitic/siltstone, locally anhydritic, poor ineffective porosity, no shows
Anhydrite; white to light grey, firm to hard, generally massive to noncrystalline - thinly interbedded dolomite/limestone and argillaceous limestone

1106 - 1129m Interbedded Shale, Dolomite/Siltstone, Dolomite
Shale; grey to predominantly medium green, subfissile blocky, generally firm, soft and waxy in green, slight to noncalcareous matrix, silty to very silty nature -
Dolomite/Siltstone; light buff/brown, firm, moderately well compacted and indurated, quartz and dolomite grain supported, dolomitic matrix, sandy nature in places, anhydritic on occasion
Dolomite; light buff - brown, firm, noncrystalline mudstone, poor porosity, no shows
- trace anhydrite stringers, light grey/brown, noncrystalline

1129 - 1143m Dolomite; light to medium brown, firm to hard, noncrystalline to microcrystalline, predominantly mudstone/wackestone, generally occuring with interbedded dolomite/siltstone, firm, medium brown, moderately well compacted and indurated, locally quartz and dolomitic grain supported, poor ineffective porosity, no shows; locally anhydritic
Shale; dark grey/brown, locally dark green, subfissile/blocky soft to firm, slightly micromicaceous, slight to noncalcareous matrix, silty nature
Anhydrite; white to cream, light brown, firm, crystalline to massive, partially dolomitized

1143 - 1151m Shale; medium to dark grey, locally dark green, generally as above
Dolomite; light to medium grey/brown, firm, noncrystalline mudstone, argillaceous as above, poor porosity, no shows, anhydritic

1151 - 1154m Dolomite; light buff to grey/brown, firm to hard, generally noncrystalline to microcrystalline, predominantly mudstone, grading to mudstone/wackestone, locally anhydritic, argillaceous grading to dolomitic/siltstone, poor ineffective intercrystalline, no shows

1154 - 1162m Shale; dark grey, grey green, locally light green, subfissile/blocky, firm locally soft and waxy in green, slight to noncalcareous matrix, silty to very silty nature
Dolomite; medium to dark brown, locally light brown, firm to hard, grading from noncrystalline to microcrystalline, trace horizons of finely crystalline dolomite, generally mudstone/wackestone, trace argillaceous to very argillaceous, grading to interbedded grain supported dolomite/siltstone, generally quartz and dolomite grains in dolomitic matrix, local sandy nature, poor ineffective porosity, no shows
- local interbedded dolomite/limestone and anhydrite

1162 - 1173m Shale; dark grey, grey/green, subfissile/blocky as above
Dolomite; medium to light brown, firm, generally noncrystalline to microcrystalline, argillaceous grading to interbedded dolomite/siltstone, poor porosity, no shows; trace interbedded anhydrite

1173 - 1189m Shale; medium to predominantly dark grey, slightly micromicaceous, generally subfissile/blocky, firm, slight to noncalcareous matrix, generally silty to very silty nature, grading to interbedded siltstone
Limestone; light buff to cream, soft to firm, generally noncrystalline mudstone, grading to microcrystalline and trace finely crystalline horizons, locally grading to dolomite/limestone, trace argillaceous to locally very argillaceous, poor ineffective porosity, no shows
- thinly interbedded Dolomite stringers, light buff to brown, firm, noncrystalline to microcrystalline, generally mudstone/wackestone, argillaceous and grain supported on occasion, poor porosity, no show
- trace anhydrite, white to cream, soft and chalky and crystalline

1189 - 1200m Predominantly Shale with Interbedded Limestone and traces of Dolomite/Siltstone and Anhydrite
Shale; dark grey, dark grey/brown, grey/green, slightly micromicaceous, subfissile to slightly fissile, soft to firm, slightly fissile and brittle, slight to noncalcareous matrix, silty to very silty shale, grading to interbedded siltstone
Limestone; cream to light grey, grey/brown, generally noncrystalline to microcrystalline, predominantly mudstone, grading to mudstone/wackestone, generally argillaceous locally grading to dolomite/limestone, poor ineffective porosity, no shows
Dolomite; dark grey to brown, firm to hard, generally noncrystalline to microcrystalline, predominantly mudstone/wackestone, locally anhydritic, grading to interbedded grain supported dolomite/siltstone, poor ineffective porosity, no shows
- trace anhydrite, cream, chalky texture, soft

1200 - 1219m Shale with stringers of Limestone Dolomite/Siltstone
Shale; predominantly dark grey, slightly micromicaceous, subfissile to fissile, firm to slightly brittle in fissile component, slight to noncalcareous matrix, generally silty to very silty shale, grading to interbedded siltstone

1200 - 1219m (cont'd)
Limestone; light grey to cream, buff/brown, firm, generally soft chalky argillaceous, predominantly mudstone, grading in places to mudstone/wackestone, locally dolomite/limestone, poor porosity, no shows
Dolomite/Siltstone; grey/brown, firm to hard, moderately well compacted and indurated, generally quartz grain supported, dolomitic matrix, locally interbedded with massive dolomite, poor porosity, no shows
- trace anhydritic

1219 - 1235m
Predominantly Shale with thinly interbedded Limestone and traces of Dolomite and Anhydrite
Shale; dark grey, dark grey/green, slightly micromicaceous on occasion, subfissile to fissile, firm to slightly brittle in fissile component, locally soft and waxy in green, slight to noncalcareous matrix, generally grading silty to shale.
Limestone; cream to light grey, firm, locally soft chalky argillaceous, generally noncrystalline to microcrystalline, predominantly mudstone, locally dolomitic, poor porosity, no shows

1235 - 1257m
Predominantly Shale with Interbedded Horizons of Limestone and traces of Dolomite
Shale; dark grey to locally black, interbedded with occasional grey/green, and green, slightly micromicaceous to micromicaceous, subfissile to fissile, firm to slightly brittle in fissile component, locally soft and waxy in green, slight to noncalcareous matrix, grading to silty to very silty shale, grading to interbedded siltstone.
Limestone; light grey/cream, predominantly noncrystalline mudstone to microcrystalline, locally soft, chalky, poor intercrystalline porosity, no shows
Dolomite; light grey to cream, soft to firm, generally noncrystalline mudstone to microcrystalline horizons, grading to dolomitic/limestone, argillaceous, poor porosity, no shows
- trace anhydrite

1257 - 1264m
Shale; predominantly dark grey, interbedded with dark green shale, subfissile to slightly fissile, soft to firm, slight to noncalcareous matrix
Limestone; light brown, soft to firm, generally microcrystalline to finely crystalline, predominantly mudstone/wackestone, quartz grain supported in argillaceous horizons, grading to sandy in nature, poor ineffective porosity, no shows

1264 - 1273m Shale; dark grey, dark green, generally as above
Siltstone; grey, grey/green, firm to soft, locally moderately well compacted and indurated, calcareous matrix, quartz grain supported, local sandy nature grading to thin horizons of argillaceous sandstone
Limestone; light brown, generally microcrystalline to massive, locally grading to quartz grain supported calcareous siltstone, poor porosity, no shows

1273 - 1289m Shale; predominantly grey/green, dark green, slightly micromicaceous to micaceous, subfissile/blocky, soft to firm, locally waxy, slight to noncalcareous matrix, generally silty to very silty shale
Dolomite; light brown to mottled brown, firm to hard, generally massive to microcrystalline, predominantly mudstone/wackestone, trace grading to dolomite/limestone poor ineffective porosity, no shows
Predominantly Dolomite Sandstone, Siltstone

1289 - 1295m Dolomite/Sandstone (argillaceous) medium to dark brown to becoming predominantly cream to light grey/green, firm to hard, slightly friable in places, very fine grained to trace fine grained, predominantly clear to frosty quartz, trace green shale blebs, trace very finely disseminated pyrite, dolomitic cement, moderately well sorted, trace argillaceous to very argillaceous grading to interbedded sandy siltstone, poor porosity, no visible live stain, no shows
Siltstone; light grey/brown, firm, moderately well compacted and indurated, quartz grain supported up to 40% (60% on occasion) dolomitic matrix, locally grading to argillaceous sandstone
- trace dolomite and dolomite/limestone stringers, rare chalky anhydrite

1295 - 1303m Sandstone; cream to light grey, grey/green, grey/brown, firm to hard, slightly friable, very fine grained to trace fine grained, predominantly clear to frosty quartz, trace green shale blebs, trace very finely disseminated pyrite, dolomitic cement, moderately well sorted, trace argillaceous to very argillaceous grading to interbedded sandy siltstone, poor porosity, no shows
Dolomite; medium brown/grey, locally white to cream, generally grading to quartz grain supported siltstone and locally sandy, poor ineffective porosity, no shows
- trace dolomitic/limestone

1303 - 1318m Shale; dark grey, dark green, locally black, slightly micromicaceous to micaceous, subfissile to fissile, firm to slightly brittle in fissile component, slight to noncalcareous matrix, grading to silty to very silty shale
Dolomite; dark grey/brown, to grey, firm, generally noncrystalline mudstone and grain supported, quartz and dolomitic grains in dolomitic matrix, generally grading to sandy horizons
Sandstone (argillaceous) cream to light grey, firm to locally hard, generally very fine to fine grained, frosty to white quartz, trace shaley, trace very finely disseminated pyrite, dolomitic cement, generally moderately sorted, argillaceous to very argillaceous grading to sandy siltstone, poor porosity, no shows

1318 - 1331m Shale; dark grey grey/grey, slightly micromicaceous to micaceous, subfissile to fissile, firm to slightly brittle, trace very finely disseminated pyrite
Dolomite/Siltstone; grey/brown, firm to hard, moderately well compacted and indurated, grading from massive dolomite with scattered quartz gains to quartz grain supported siltstone with dolomitic matrix, local sand nature grading to argillaceous sandstone, poor porosity, no shows
- trace Sandstone (argillaceous) light grey/green, firm to slightly friable, predominantly very fine grained, clear to frosty quartz, green shale blebs, trace glauconite, mica flakes, dolomitic cement, generally argillaceous to very argillaceous, grading to interbedded sandy siltstone, poor porosity, no shows

1331 - 1342m Dolomite; dark brown, firm to hard, generally microcrystalline and crystalline horizons, generally mudstone/wackestone, grading to interbedded quartz grain supported dolomitic siltstone, locally sandy to argillaceous sandstone stringers, predominantly poor porosity, no visible live stain, no shows
Sandstone (argillaceous); light grey/green, firm to slightly friable, predominantly very fine grained, clear to frosty quartz, green shale blebs, traces of glauconite, mica flakes, dolomitic cement, generally argillaceous nature, grading to interbedded sandy siltstone, poor porosity, no shows

1342 - 1346m Sandstone; white to light cream to buff, friable to firm, locally hard, predominantly fine grained, medium to coarse grained on occasion, predominantly clear to frosty quartz, trace green shale blebs, silica cement, moderately to moderately well sorted, subangular to angular, generally argillaceous matrix, grading on occasion to sandy siltstone, poor intergranular porosity, no visible live stain, no shows, traces of pyrobitumen in local pore spaces

1346 - 1351m Sandstone; (argillaceous) white to cream, firm to hard, very fine grained to trace fine grained, predominantly clear to frosty quartz, trace shaly, trace mica flakes, silica cemented, moderately well sorted, subangular to angular, generally argillaceous matrix, grading on occasion to sandy siltstone, poor intergranular porosity, no visible live stain, no shows; trace of pyrobitumen in pore spaces
- traces of dark brown dolomite, firm to hard, generally argillaceous, poor porosity, no shows

1351 - 1353m Dolomite/Siltstone; light grey/green, firm to hard, moderately well compacted and indurated, grading to interbedded silty sandstone

1353 - 1360m Sandstone; white to cream to light buff, firm to hard, very fine to fine grained, locally medium grained, predominantly clear to frosty quartz, trace very finely disseminated pyrite, trace green shale fragments, silica cemented, moderately well developed, subangular to angular, trace argillaceous to very argillaceous grading to sandy siltstone at base, poor ineffective porosity, trace bitumen in local pore space, no visible live oil stain, trace dull yellow fluorescence fading quickly in solvent

1360 - 1361m Shale; grey/green, slightly micromicaceous, subfissile, blocky, soft to firm, slightly fissile and brittle, slight to noncalcareous matrix
Dolomitic/Siltstone; dark grey/brown, firm to hard, moderately well compacted and indurated, generally quartz grain supported in dolomitic matrix, generally grading to sandy siltstone

1361 - 1363m Sandstone; white to cream to light buff, firm to hard, very fine to fine grained, locally medium grained, generally as described above in 1353 - 1360m.

1363 - 1366m Sandstone; white to light buff/brown, locally grey/green, firm to hard, locally friable, predominantly fine grained, locally medium grained, predominantly frosty/white to clear quartz, trace very finely disseminated pyrite, trace green shale blebs, silica cemented, moderately to moderately well sorted, subangular to subrounded, poor to trace fair intergranular porosity, trace bitumen, local light brown stain, moderately slow streaming yellow fluorescence turning cloudy

1366 - 1370m Interbedded Shales and Sandstone "Altered" by heat and pressure (meta sediments)
Shale; red/brown, red, subfissile and blocky, firm to hard, generally argillaceous and grading to quartzose siltstone,
Sandstone; brown, to red/brown, locally frosty to clear, firm to hard, very fine to fine grained, predominantly frosty to clear quartz, local "welted" appearance, abundant silica cement, poor porosity, no show

1370 - 1374m Basalt; grey/red to maroon, locally approaching black, generally andisitic, fine grained and aphanitic, locally chemically altered appearance, local vessicular and minor fractures infilled with calcite and dolomite, traces of chlorite

1374 - 1387m Basalt; grey to maroon, red, firm to hard, generally fine grained andisite, aphanitic, mafic minerals in a matrix of hematite, non glassy, traces of chlorite and feldspar, local vessicular texture infilled with calcite and dolomite.

1387 - 1396m Basalt; maroon, grey/red, hard, hematite, generally andisite, fine grained, trace microvessicular infilled with dolomite and calcite.

1396 - 1405m Basalt; grey to dark red, firm to hard, generally fine grained nature (aphanitic) occuring as andisite, trace hematite, chlorite and mafics, apparent fractures infilled with dolomite
- Dolomite generally cream to light grey, firm to hard, generally noncrystalline mudstone, massive, occuring with basalt and appearing altered by heat on occasion, poor porosity, no shows

1405 - 1416m Basalt; predominantly maroon/red, locally grey, grey/green, hard, generally fine grained andesite, trace chlorite, evidence of fractures and trace vessicular, infilled with dolomite and trace calcite.

TOTAL DEPTH 1416m

SIDEWALL CORE DESCRIPTIONS

Depth Req'd	Actual Depth	Description
1400m	1400.2m	Fractured basalt occuring with traces of argillaceous dolomite and arenaceous dolomite Basalt; grey/red to green, firm to hard, generally fine grained, aphanitic, occuring as andesite, visible chlorite, trace hematite and mafic minerals, trace K-feldspar, generally appearing as broken and fractured with argillaceous dolomite Dolomite; white to cream, soft and clay like texture, mudstone, and trace quartz grains supported, locally becoming sand in nature, generally poor ineffective porosity, no shows
1378.0m	1378.0m	Red/brown, clay, (chemically altered basalt) soft earthy texture, trace gain supported horizons and cream to white dolomite mudstone, scattered horizons of green chlorite and trace mafics
1374m	1374.0m	Soft earthy red/brown clay with scattered horizons of grain supported siltstone, quartz grains and mafics in a clay matrix, trace chlorite blebs, trace dolomitic mudstone
1367.5m	1367.0m	Predominantly red/maroon, soft, earthy, clay, with fragments of basalt, grey/red, to green, generally aphanitic. Local fragments of dolomitic siltstone and rare dolomite, occuring as light brown microcrystalline fragments with poor porosity, no shows, trace quartz and chert fragments associated with mafic grains and dolomitic mudstone
1364.0	1364.0	Sandstone; cream to light buff/brown, firm to friable, predominantly fine to medium grained local horizons of very fine grained, predominantly clear to frosty/white quartz, with minor lenses of dolomitic mudstone, cement generally weak, silica and/or dolomitic clay cement, moderately sorted, subangular to angular grains, poor to fair intergranular porosity, trace light brown stain, slow to moderately streaming, pale yellow fluorescence where stained

1362.0m	1362.0m	Sandstone; white to light buff/brown, predominantly friable, generally fine to medium grained, locally scattered coarse grains, predominantly clear to frosty/white quartz, trace horizons of dolomitic mudstone, trace very finely disseminated pyrite, silica and/or clay cement, generally weak, moderately to moderately well sorted in places, subangular to angular grains, poor to fair intergranular porosity, trace light brown stain, slow to moderately streaming, pale yellow fluorescence in solvent where stained
1357.5m	1357m	Soft green/grey shale with horizons of siltstone and sandstone Siltstone; white to cream, poorly compacted and indurated, slightly dolomitic clay matrix, quartz grain supported, sandy nature Sandstone; white to cream, light brown, friable, very fine to trace fine grained, frosty/white quartz, weak silica and/or dolomitic clay cement, generally moderately well sorted, trace argillaceous to very argillaceous grading to quartz grains in a clay matrix, trace very rare light brown stain, very weak fluorescence in solvent fading quickly
1355.6m	1355.0m	Sandstone; light grey, friable to unconsolidated, generally fine to medium grained, local scattered coarse grains, predominantly white to frosty quart, trace very finely disseminated pyrite, cement weak to absent, moderately sorted, subangular to angular grains, generally argillaceous to clay matrix asssociated (filter cake?), porosity generally plugged with mud, no shows
1344.7m	1344.0m	Soft green Shale; Siltstone and Sandstone Shale; light green, soft, waxy Siltstone; light grey, soft, quartz grain supported sandy nature Sandstone; white to light grey, friable to unconsolidated generally fine grained, locally medium grained frosty/white quartz predominantly, trace green shale blebs and/or glauconite, weak cement, generally clay slightly dolomitic, moderately sorted, generally associated with argillaceous matrix, porosity plugged, no shows

1295.0m	1295.0m	Dolomitic Siltstone; light grey, soft to firm, poor to moderately compacted and indurated, generally quartz grain supported with dolomitic matrix, generally grading to very fine grained argillaceous quartz sandstone, poor ineffective porosity, no shows
1294m	1294m	Dolomitic Siltstone as above, with lenses of argillaceous sandstone Sandstone; light grey, friable to unconsolidated, generally very fine grained, predominantly frosty/white quartz, dolomitic clay cement/matrix, moderately well sorted, generally very argillaceous, poor ineffective porosity, no shows
1290.7m	1290.7m	Quartz grain supported dolomitic siltstone; light grey, soft to firm generally poorly compacted and indurated, frosty white quartz grains in slightly dolomitic clay matrix, trace very finely disseminated pyrite, locally grading to argillaceous sandstone, poor ineffective porosity, no shows CORE GUN #2, 21 SHOTS, 1 LOST, 2 EMPTY
1363.8m	1363.8m	Sandstone; white to medium brown, friable to unconsolidated, predominantly fine to medium grained, frosty/white to clear quartz, trace shale fragments, trace very finely disseminated pyrite on occasion, silica and/or clay cement, generally weak when present, moderately well sorted, subangular to angular grains, poor to fair intergranular porosity, rare spotty brown stain, trace slow streaming yellow fluorescence in solvent, fading quickly
1346.7m	1346.7m	(Poor recovery) Sandstone; white to light grey, unconsolidated, predominantly coarse grained to medium grained, generally clear to frosty/white quartz in a soft clay, dolomite cement matrix, poor to moderately sorted, subrounded grains, poor indeterminate porosity, no visible live stain, no shows, appearing argillaceous in nature
1288.5m	1288.5m	Predominantly soft green shale with lenses of grain supported dolomitic clay and mudstone, quartz grains and dolomitic fragments, trace calcite crystals, trace very finely disseminated pyrite
1270.5m	1270.5m	As above

1270m	1270m	Generally grey/green shale associated with siltstone and trace limestone Limestone; light brown, soft to firm, generally microcrystalline mudstone/wackestone, becoming argillaceous and grain supported, grading to sandy nature, poor ineffective porosity, no shows
1266.5m	1266.5m	(Very poor recovery) Limestone; cream to brown, soft to firm, chalky and argillaceous grading to trace microcrystalline, generally argillaceous to very argillaceous grading to calcareous siltstone, poor ineffective porosity, no shows
1261m	1261m	Shale; black, grey, soft to firm, subfissile, calcareous matrix, grading to interbedded siltstone and sandy siltstone Limestone; light brown, soft, generally noncrystalline mudstone, poor porosity, no shows
1229m	1229m	Shale; dark grey/green, slightly micromicaceous, subfissile/blocky, soft, waxy, trace very finely disseminated pyrite, slightly calcareous matrix, generally silty nature
1202m	1202m	Shale; dark grey/green, slightly micromicaceous, subfissile/blocky, soft and waxy Limestone; cream to light grey, brown, soft to firm, grading from noncrystalline mudstone, trace microcrystalline, becoming argillaceous and grain supported, grading to calcareous sandy siltstone, tace pyrite, poor ineffective porosity, no visible live stain no shows
1184m	1184m	Shale; medium green, soft/waxy, subfissile, slight calcareous matrix, trace of brown argillaceous dolomitic mudstone
1180.5m	1180.5m	Sandstone; (argillaceous) light grey/brown, friable and unconsolidated, predominantly very fine grained, clear to frosty quartz, trace shaley, calcareous cement, moderately well sorted, subangular to angular, generally argillaceous and grading to sandy siltstone, poor ineffective porosity, no shows - trace Limestone; light buff to cream, soft, generally noncrystalline mudstone, poor porosity, no shows
1175.5m	1175.5m	Shale; medium to dark grey/green, soft and subfissile, waxy nature, slight calcareous matrix

1171.0m	1171.0m	Shale; as above
1153.2m	1153.2m	Limestone; grey to brown, firm, microcrystalline to trace finely crystalline, locally grading to dolomitic/limestone, generally mudstone/wackestone poor ineffective porosity, no shows - trace Shaley; medium grey/green, soft, waxy Sandy Siltstone; light buff/brown, firm, moderately compacted quartz and dolomitic grains, calcareous matrix, sandy nature
1152.0m	1152.0m	Shale; grey/green, soft to firm, subfissile/blocky locally waxy Limestone; light buff/brown, firm to hard, generally microcrystalline, becoming argillaceous and grain supported to locally interbedded siltstone, poor ineffective porosity, no shows, - trace dolomitic/limestone
1151.5m	1151.5m	Limestone; as above - trace Dolomite; grey/brown, firm to hard, noncrystalline to trace microcrystalline, predominantly mudstone, grading to dolomitic/limestone, trace argillaceous and grain supported, poor porosity no shows
1144.5m	1144.5m	Lenses of Shale and Dolomite Shale; light grey/green, medium grey, soft, subfissile, locally waxy, slight calcareous matrix Dolomite; light to medium brown, soft to firm, generally noncrystalline mudstone, predominantly and grain supported, grading to dolomitic siltstone and argillaceous very fine grained dolomitic sandstone, poor ineffective porosity no shows

CORE LABORATORIES · CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

Plastic (CONTAINER IDENTITY)		70489-86-118 (LABORATORY NUMBER)
	Petro-Canada Inc. (OPERATOR)	3 of 3 (PAGE)
66° 36' 52.18" NE 125° 53' 18.86" WL (LOCATION)	PCI Canterra Nogha O-47 (WELL OR SAMPLE LOCATION NAME)	KB ELEV / GRD ELEV
(FIELD OR AREA)	MT Cap (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #4 (TEST TYPE & NO.)	(TEST RECOVERY)	
Top of Tool (POINT OF SAMPLE)	(AMT. & TYPE CUSHION)	@ °C (MUD RESISTIVITY)
1287 - 1303 (TEST INTERVALS OR PERFS)	PUMPING / FLOWING / GAS LIFT / SWAB	
	WATER m³/d OIL m³/d GAS m³/d	
SEPARATOR / RESERVOIR	@ °C CONTAINER WHEN SAMPLED / @ °C CONTAINER WHEN RECEIVED	SEPARATOR
PRESSURES, kPa		TEMPERATURES, °C
86 02 12 (DATE SAMPLED (Y/M/D))	86 02 14 (DATE RECEIVED (Y/M/D)) / 86 02 17 (DATE ANALYSED (Y/M/D)) / LS (ANALYST)	(REMARKS)

MUD FILTRATE ANALYSIS

Resistivity (Ohm-metres @ 25°C): 0.039

Chloride (mg/litre): 164147

9211-128-1-5

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GAS ANALYSIS

CALGARY COPY

DST Chamber #197 — CONTAINER IDENTITY

70380-86-307 — LABORATORY NUMBER

Petro-Canada Inc. — OPERATOR

1 of 2 — PAGE

66° 36' 52.18" NL
125° 53' 18.86" WL — LOCATION

PCI Canterra Nogha O-47 — WELL OR SAMPLE LOCATION NAME

KB ELEV., m — GRD. ELEV., m

Northwest Territories — FIELD OR AREA

MT Clarke C — POOL OR ZONE

Lynes United Services — SAMPLER

DST #1 — TEST TYPE & NUMBER

TOOL: 2200 mL Mud — TEST RECOVERY

DST Chamber #197 — POINT OF SAMPLE

AMOUNT & TYPE OF CUSHION

@ °C — MUD RESISTIVITY

1360 - 1366 — TEST INTERVALS OR PERFS., m

PUMPING FLOWING GAS LIFT SWAB

WATER m³/d OIL m³/d GAS m³/d

SEPARATOR RESERVOIR

@ °C — CONTAINER WHEN SAMPLED

250 @21 °C — CONTAINER WHEN RECEIVED

SEPARATOR

PRESSURES, kPa (gauge)

TEMPERATURES, °C

86 02 09 — DATE SAMPLED (Y/M/D)

86 02 11 — DATE RECEIVED(Y/M/D)

86 02 11 — DATE ANALYZED (Y/M/D)

RH — ANALYST

REMARKS

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	0.0027		
He	0.0046		
N_2	0.1709		
CO_2	0.0002		
H_2S	0.0000		
C_1	0.7592		
C_2	0.0374		
C_3	0.0151		55.5
iC_4	0.0034		14.9
C_4	0.0039		16.4
iC_5	0.0014		6.8
C_5	0.0008		3.9
C_6	0.0004		2.2
C_7+	TRACE		0.0
TOTAL	1.0000		99.7
		C_5+	12.9

CALCULATED GROSS HEATING VALUE
MJ/m³ @ 15° C & 101.325 kPa (abs.)

33.88	33.91
MOISTURE FREE	MOISTURE & ACID GAS FREE

CALCULATED VAPOUR PRESSURE
kPa (abs.) @ 37.8° C

114.2
PENTANES PLUS

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15° C & 101.325 kPa

MOISTURE FREE AS SAMPLED

0.821 kg/m³	0.670	19.4
DENSITY	RELATIVE DENSITY	RELATIVE MOLECULAR MASS

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED		ACID GAS FREE	
4365.0 kPa (abs.)	187.7 K	kPa (abs.)	K
pPc	pTc	pPc	pTc

REMARKS

CANADA OIL AND GAS ADMINISTRATION
ADMINISTRATION PÉTROLIÈRE ET GAZIÈRE
JUNE 7 1986
ENGINEERING BRANCH
GÉNIE

Note: The Gross Heating Value has been calculated in accordance to AGA Report #5.

FORM NO. 7012-1

CORE LABORATORIES · CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

DST Chamber #197 (CONTAINER IDENTITY)		70380-86-104 (LABORATORY NUMBER)
	Petro-Canada Inc. (OPERATOR)	2 of 2 (PAGE)
66° 36' 52.18" NL 125° 53' 18.86" WL (LOCATION)	PCI Canterra Nogha O-47 (WELL OR SAMPLE LOCATION NAME)	KB ELEV / GRD. ELEV.
Northwest Territories (FIELD OR AREA)	MT Clarke C (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #1 (TEST TYPE & NO.)	TOOL: 2200 mL Mud (TEST RECOVERY)	
DST Chamber #197 (POINT OF SAMPLE)	(AMT. & TYPE CUSHION)	@ °C (MUD RESISTIVITY)
1360 - 1366 (TEST INTERVALS OR PERFS.)	PUMPING / FLOWING / GAS LIFT / SWAB	
	WATER m³/d / OIL m³/d / GAS m³/d	
SEPARATOR / RESERVOIR	@ °C CONTAINER WHEN SAMPLED / @ °C CONTAINER WHEN RECEIVED	SEPARATOR
PRESSURES, kPa		TEMPERATURES, °C
86 02 09 (DATE SAMPLED Y/M/D)	86 02 11 (DATE RECEIVED Y/M/D)	86 02 11 (DATE ANALYSED Y/M/D) / LS (ANALYST) / (REMARKS)

MUD FILTRATE ANALYSIS

Resistivity (Ohm-metres @ 25°C): 0.040

Chloride (mg/litre): 159200

9211-P28-1-8 Calgary

CORE LABORATORIES - CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

Plastic (CONTAINER IDENTITY)		70489-86-118 (LABORATORY NUMBER)
	Petro-Canada Inc. (OPERATOR)	1 of 3 (PAGE)
66° 36' 52.18" NL 125° 53' 18.86" WL (LOCATION)	PCI Canterra Nogha O-47 (WELL OR SAMPLE LOCATION NAME)	KB ELEV / GRD ELEV
(FIELD OR AREA)	MT Clarke B (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #2 (TEST TYPE & NO.)	15 m Gas Cut Drilling Mud (TEST RECOVERY)	
Bottom (POINT OF SAMPLE)	(AMT. & TYPE CUSHION)	@ °C (MUD RESISTIVITY)
1352 - 1359 (TEST INTERVALS OR PERFS)	PUMPING / FLOWING / GAS LIFT / SWAB WATER m^3/d OIL m^3/d GAS m^3/d	
SEPARATOR / RESERVOIR	@ °C CONTAINER WHEN SAMPLED / @ °C CONTAINER WHEN RECEIVED	SEPARATOR
PRESSURES, kPa		TEMPERATURES, °C
86 02 10 (DATE SAMPLED Y/M/D)	86 02 14 (DATE RECEIVED Y/M/D) / 86 02 17 (DATE ANALYSED Y/M/D) / LS (ANALYST)	REMARKS

MUD FILTRATE ANALYSIS

Resistivity (Ohm-metres @ 25°C): 0.040

Chloride (mg/litre): 159893

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Petroleum Reservoir Engineering
CALGARY ALBERTA

Plastic (CONTAINER IDENTITY)		70489-86-118 (LABORATORY NUMBER)
	Petro-Canada Inc. (OPERATOR)	2 of 3 (PAGE)
66° 36' 52.18" NL 125° 53' 18.86" WL (LOCATION)	PCI Canterra Nogha O-47 (WELL OR SAMPLE LOCATION NAME)	KB ELEV / GRD. ELEV
(FIELD OR AREA)	MT Clarke A (POOL OR ZONE)	Lynes United Services (SAMPLER)
DST #3 (TEST TYPE & NO.)	18 m Drilling Mud (TEST RECOVERY)	
Top of Tool (POINT OF SAMPLE)	(AMT. & TYPE CUSHION)	@ °C (MUD RESISTIVITY)
1343 - 1351 (TEST INTERVALS OR PERFS)	PUMPING / FLOWING / GAS LIFT / SWAB WATER m³/d / OIL m³/d / GAS m³/d	
SEPARATOR / RESERVOIR	@ °C CONTAINER WHEN SAMPLED / @ °C CONTAINER WHEN RECEIVED	SEPARATOR
PRESSURES, kPa		TEMPERATURES, °C
86 02 11 (DATE SAMPLED Y/M/D)	86 02 14 (DATE RECEIVED Y/M/D) / 86 02 17 (DATE ANALYSED Y/M/D) / LS (ANALYST)	REMARKS

MUD FILTRATE ANALYSIS

Resistivity (Ohm-metres @ 25°C): 0.039

Chloride (mg/litre): 168402

9911 - P98 - 1 - 8 Calgary

CORE LABORATORIES · CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

GAS ANALYSIS

6341 CONTAINER IDENTITY		70380-86-340 LABORATORY NUMBER
	Petro-Canada Inc. OPERATOR	1 of 1 PAGE
66° 36' 52.18" NL 125° 53' 18.86" WL LOCATION	PCI Canterra Nogha O-47 WELL OR SAMPLE LOCATION NAME	KB ELEV., m / GRD. ELEV., m
Northwest Territories FIELD OR AREA	MT Clarke B POOL OR ZONE	SAMPLER
DST #2 TEST TYPE & NUMBER	TEST RECOVERY	
Bubble Hose POINT OF SAMPLE	AMOUNT & TYPE OF CUSHION	@ °C MUD RESISTIVITY
1352 - 1359 TEST INTERVALS OR PERFS., m	PUMPING / FLOWING / GAS LIFT / SWAB WATER m³/d OIL m³/d GAS m³/d	
SEPARATOR / RESERVOIR	@ °C CONTAINER WHEN SAMPLED: 21 @ 22 °C CONTAINER WHEN RECEIVED	SEPARATOR
PRESSURES, kPa (gauge)		TEMPERATURES, °C
86 02 10 DATE SAMPLED (Y/M/D)	86 02 14 DATE RECEIVED(Y/M/D) / 86 02 17 DATE ANALYZED (Y/M/D) / ANALYST	REMARKS

COMPONENT	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	mL/m³ AIR FREE AS RECEIVED
H_2	TRACE		
He	0.0047		
N_2	0.1909		
CO_2	0.0048		
H_2S	0.0000		
C_1	0.7421		
C_2	0.0330		
C_3	0.0133		48.9
iC_4	0.0032		14.0
C_4	0.0038		16.0
iC_5	0.0018		8.8
C_5	0.0012		5.8
C_6	0.0009		4.9
C_7+	0.0003		2.1
TOTAL	1.0000		100.5
		C_5+	21.6

CALCULATED GROSS HEATING VALUE
MJ/m³ @ 15° C & 101.325 kPa (abs.)

MOISTURE FREE	MOISTURE & ACID GAS FREE
32.98	33.14

CALCULATED VAPOUR PRESSURE
kPa (abs.) @ 37.8° C

PENTANES PLUS
98.7

CALCULATED TOTAL SAMPLE PROPERTIES (AIR=1) @ 15° C & 101.325 kPa
MOISTURE FREE AS SAMPLED

DENSITY	RELATIVE DENSITY	RELATIVE MOLECULAR MASS
0.838 kg/m³	0.683	19.8

CALCULATED PSEUDOCRITICAL PROPERTIES

AS SAMPLED		ACID GAS FREE	
4359.5 kPa (abs.) pPc	187.0 K pTc	kPa (abs.) pPc	K pTc

REMARKS

Note: The Gross Heating Value has been calculated in accordance to AGA Report #5

Geological Province _____

LOGS	
TYPE	INTERVAL
DISFL-GR	744-64 mK.B.
CNL-LDT	744-11.5mK.B.
NGT	744-10mK.B.
BHC-GR	744-250mK.B.
DISFL-GR	1415-685mK.B.
CNL-LDT	1415-685mK.B.
NGT-AMS	1415-745mK.B.
BHC-GR	1415-725mK.B.
HDT	1415-725m K.B.
CST	1415-725m K.B.
RFT	1415-725 m KB
ML-MLL	1415-725 m KB
WST	1415-725 m KB

FORMATION INTERVAL TESTS*	
TOTAL NO	INTERVAL
No RFT information available.	

* IF NO OTHER TESTS, EXPAND RESULTS UNDER "FLOW TESTS"

FLOW TESTS

(Test type & no., interval, flow times, produced fluids and rates, stimulation)

DST No. 1
1360-1366mKB Mt. Clark "C" sand.
No flow to surface - Rec. 18m of mud.

DST No. 2
1352-1359mKB Mt. Clark "B" sand.
G.T.S. at 200m³/day - Rec. 15m of mud.

DST No. 3
1343-1351mKB Mt Clark "A" sand.
No flow to surface - Rec. 18m of mud.

DST No. 4
1287-1303mKB Mt. Cap (High Gamma Ray Shale).
No flow to surface - Rec. 12m gas cut mud.

DST No. 5
1140-1155mKB Mt. Cap
No flow to surface - Rec. 7m of mud.

DST No. 6
1360-1366mKB
Misrun.

DST No. 7
1360-1366mKB Mt. Clark "C" sand.
No flow to surface - Rec. 18m of mud.

CORES

NO	INTERVAL	REC	LITHOLOGY
			No cores were cut.
			Sidewall Cores - 45 shots with 8 misfires and 1 bullet lost.
			- 32 samples were recovered and 4 bullets came up empty.

MUD DATA

DEPTH	200	400	600	800	1000	1200	1400	1416TD
WEIGHT (PPG)	1090	Air Drilled	Air Drilled	1200	1200	1255	1290	1290

STIMULATION		
TYPE	INTERVAL	AMOUNT USED PROPPING AGENT
HCL	None	
HF		
FRACTURE		

FRACTURE TESTS	
DEPTH	EQUIPMENT MUD WEIGHT
745 m	1960 kg/m³

INITIALS W.F.N.

DATE 1986-06-13

E.A. 158
D.A. 1301

WELL CARD

CANADA OIL AND GAS LANDS ADMINISTRATION
ENGINEERING BRANCH

WELL NAME	PCI Canterra Nogha 0-47		
PROJECT NUMBER		U.W.I	3000476640125450
OPERATOR	Petro Canada Inc.		
AREA	Tweed Lake	FIELD/POOL	Undefined
SPUD DATE	1986-01-13	DRLG COMPLETE	1986-02-06
RIG RELEASED	1986-02-17		
LOCATION LATITUDE	66° 36' 52.1819" N	LONGITUDE	125° 53' 18.8698" W

CONTRACTOR	Atco Drilling Ltd.	RIG	Atco/Equtak Rig #76
RIG TYPE	Triple Diesel Mechanical	REGISTRY	
STATION KEEPING			

DAYS TOTAL	36	ROB	13.5
WOW			
WELL COST	$3,304,218 (e)	RIG COST	
WELL COST/DAY		RIG COST/DAY	

STATUS	Abandonned	AAPG CLASS	Exploratory
COGLA CLASS			
TD	1416 m K.B.	ELEVATIONS /KB	354.39m
SF/GL	348.29m		
PERMIT OR LEASE NO (STATE IF INTERIM)	E.A. 158		
REPORT REC'D	86-06-02	COMPLETE	
RELEASED			

SIDE TRACK	N/A
WELL KICK	Water Flow 272 - 420 m K.B.
LOST CIRCULATION	N/A
FISHING JOBS	112m KB Bit cones lost, recovered with magnet.
DEVIATED HOLE	N/A
MUD TYPE	Gel Polymer/Salt Saturated Mud
TD/WT	1310kg/m³
AVG PROPERTIES VIS	60
WL	14
pH	9.5

REMARKS (e.g. Casing, Cementing, Deviation, Hole Problems, Equipment left in hole, Accidents)

- The well was drilled in the Tweed Lake Area of the N.W.T. to investigate the oil and gas potential of the Mount Clark and the Mount Cap formations.
- 311mm surface hole was started with water and converted to air at 76m. A bit trip at 112m revealed that all three bit cones were missing. The bit cones were recovered with a magnet. Air drilling continued to 128m where, due to mechanical trouble with the rotating head the circulating system was changed to a Gel-Polymer mud and drilling continued to a depth of 199m. Air drilling re-commenced at 199m, the hole started to produce fresh water at 272m. The water flow increased to a stable rate of 63m³/day, air drilling continued to 745m where 245mm surface casing was set.
- The main hole was drilled from 745m to 801m with a Gel/Polymer mud and from 801m to T.D. of 1416m with a salt saturated mud, without incident.
- Due to the Mount Clark Formation being 42m structurally higher than prognosed the core point was missed and no cores were cut in the formation.

CASING	SIZE mm	DEPTH mKB	CASING AND CEMENTING DETAILS	ABANDONMENT PLUGS TYPE	INTERVAL
Cond.	340	64.0	5jts. 101 kg/m, K-55 c/w 14.4t Class G cement.	cement	1416-1300m
Surf.	245	745.0	61jts. 59.3 kg/m, L-80 c/w 12.0t Class G cement in 2 stages	cement	1200-1075m
				cement	775-715m
				cment	10-0m

EQUIPMENT LEFT ON SEA FLOOR N/A

Cut off casing bowl, weld on plate c/w well identifier