



Canadian Natural

Downhole Schematic (Program)

ANADARKO LIARD P-16

Bottom Hole Location	Surface Legal Location	License No.	Field Name	Province	
300/P-16-06.03-001.23/00	300/P-16-06.03-001.23	NT001976	FT LIARD	N.W.T	
Well Profile	Fluid Type	Original KB Elevation (m)	KB-Ground Distance (m)	KB-Casing Flange Distance (m)	KB-Tubing Head Distance (m)
Directional	Deep Gas	334.10	6.70		
Latitude (DMS)	Longitude (DMS)	Spud Date	Rig Release Date	GW Protected?	BGWP (mKB)
60° 25' 50.1" N	123° 31' 58.3" E	1/28/2003	7/24/2003		
Directions To Well					H2S Classification
					Sour

Well Profile: Directional - Original Hole, 3/24/2011 7:56:36 AM		
mKB (MD)	mKB (TVD)	Schematic - Actual
0		
7	6	
7	7	
7	7	
17	17	
23	23	
37	36	
37	37	Conductor, 6.7-37.0
45	45	
184	184	
184	184	
198	198	
199	199	Surface, 6.7-199.0
200	200	
226	226	
650	650	
711	710	
788	787	
789	788	
803	802	
803	802	Intermediate, 6.7-803.0
1,706	1,694	
2,104	2,086	
2,419	2,397	
2,737	2,711	
2,762	2,735	
2,966	2,933	
2,966	2,933	
2,967	2,935	
2,967	2,935	
2,970	2,938	
2,971	2,938	
2,977	2,944	
2,978	2,945	
2,980	2,947	
2,980	2,947	
2,986	2,953	
2,992	2,958	
2,992	2,959	
3,033	2,997	
3,125	3,063	Production, 6.7-2,992.0 2,992.0-3,125.0, Zone: Nahanni, Original Hole Perf Status: Open - Not Flowing, 3/31/2003 00:00

Jobs

Abandonment, <Start Date?>

Job Category Abandon	AFE Number	Total Cost	Total AFE+Sup	WI (%) 100.00
SCVF Test Required? Yes	GM Test Required? No	Non-Routine? No	Waiver Required? No	
Objective				

Notes (See Attached for More Info and Detailed Procedures)

3/23/2011 00:00

Comment

21 Feb, 2004, SITP 23,726 kPa, SICP 84 kPa, bled off tubing pressure to zero, plug holding.
Filled tubing with 13.5m3 inhibited fluid, set slip stop and hookwall plug at 70.7mKB (64mCF). set BPV in tubing hanger and filled wellhead with methanol.
Plug was originally set in on-off at 2965mKB on 12 August 2003, bled off 1140 kPa from tubing, plug held, set BPV in tubing hanger.

31 July 2003, pulled recorders, BHP 28,515 kPa, BHT 161.7 deg C. Tubing pressure 22,837 kPa.

H2S gas analysis = 9000 ppm, Norwest test dated 11 April 2003 shows only 0.61% H2S.

12 July 2003, pumped 1.5m3 G, bailed back some soft cement, tagged cement at 2817mKB, drilled cement to 2940mKB, appears through cement. Ran jetting tool, tagged at 2967mKB, worked through to bottom of tail pipe, tagged at 3033mKB, circulated out 3% KCL water using N2.

Wellbore Sections

Section	Size (mm)	Top (mKB)	Bottom (mKB)
Conductor	660.4	6.70	37.00
Surface	444.5	37.00	199.00
Intermediate 1	311.0	199.00	803.00
Intermediate 2	222.2	803.00	2,737.00
Intermediate 2	222.0	2,737.00	2,992.00
Main 1	155.6	2,992.00	3,125.00

Casing Strings

Casing Description	OD (mm)	Wt (kg/m)	Grade	Top (mKB)	Set Depth (MD) (mKB)
Conductor	508.0	139.887	K-55	6.70	37.00
Surface	339.7	81.105	K-55	6.70	199.00
Intermediate	244.5	59.527	L-80	6.70	803.00
Production	177.8	38.692	L-80	6.70	2,992.00

Cement Stages

Description	Top (mKB)	Bottom (mKB)	Cmnt Rtn (m³)
Surface Cement	6.70	199.00	1.50
Comment			
23.0 tonnes G + 3.0% CaCl2 + 57 kg celloflake, 1.5m3 cement returns			
Conductor Cement	6.70	37.00	0.10
Comment			
5.3 tonnes G, pumper failed, topped up with 2.6 tonnes G from 14m KB to surface. Cement returns noted. Jan 31, 2003, drilled out conductor, test failed, spotted 2.5m3 cement at 36mKB, squeezed 0.8m3 cement. MacKenzie Valley and Land Board witnessed operations.			



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Well Profile Directional	Fluid Type Deep Gas	Original KB Elevation (m) 334.10	KB-Ground Distance (m) 6.70	KB-Casing Flange Distance (m) KB-Tubing Head Distance (m)
Latitude (DMS) 60° 25' 50.1" N	Longitude (DMS) 123° 31' 58.3" E	Spud Date 1/28/2003	Rig Release Date 7/24/2003	GW Protected? BGWP (mKB) Oil Sand Area No
Directions To Well	H2S Classification Sour			

Well Profile: Directional - Original Hole, 3/24/2011 7:56:36 AM

mKB (MD)	mKB (TVD)	Schematic - Actual
0		
7	6	
7	7	
7	7	
17	17	
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37	37	
45	45	
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2,992	2,959	
3,033	2,997	
3,125	3,063	

Conductor,
6.7-37.0Surface,
6.7-199.0Intermediate,
6.7-803.0Production,
6.7-2,992.0
2,992.0-3,125.0,
Zone: Nahanni,
Original Hole
Perf Status:
Open - Not
Flowing,
3/31/2003 00:00

Cement Stages

Description	Top (mKB)	Bottom (mKB)	Cmnt Rtn (m³)
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Intermediate Cement

6.70

803.00

10.00

Comment

15.0 tonnes G + 2.0% EXC + 3.0% A-9 + 0.55% CD-31 tailed with 10.0 tonnes G + 1.0% CaCl₂ + 0.5% CD-32. 10.0m³ cement returns.

Description	Top (mKB)	Bottom (mKB)	Cmnt Rtn (m³)
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Production Cement

650.00

2,992.00

3.00

Comment

25.0 tonnes G + 1.25% R3 + 2.0% ECX + 3.0% A9 tailed with 20.0 tonnes Thermal 40F + 0.3% R3 + 0.5% CD32 + 0.5% FL77.3.0m³ cement returns.

Perforations

Zone	Top (mKB)	Btm (mKB)	Current Status
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Nahanni, Original Hole

2,992.00

3,125.00

Open - Not Flowing

Tubing Strings

Tubing - Production set at 2,980.44mKB on 4/3/2003 00:00

Tubing Description	OD (mm)	Wt (kg/m)	String Grade
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Tubing - Production

88.9

13.840

L-80

Comment

Tubing Components

Item No.	Jts	Item Description	OD (mm)	ID (mm)	Len (m)	Top (mKB)	Btm (mKB)
2-1	1	Tubing Hanger	177.8	76.0	0.19	6.51	6.70
2-2	1	Hydri Pup Joint L-80	88.9	76.0	0.42	6.70	7.12
2-3	1	HYD 533 CB Tubing L-80	88.9	76.0	9.54	7.12	16.66
2-4	3	Hydri Tubing Pup Joints L-80	88.9	76.0	6.46	16.66	23.12
2-5	310	HYD 533 CB Tubing L-80	88.9	76.0	2,942...	23.12	2,965...
2-6	1	Howco On-Off Tool 58.75mm "F"	139.7	58.8	0.16	2,965...	2,966...
2-7	1	Howco BWC Perm Packer - Coated	150.0	62.0	1.13	2,966...	2,967...
2-8	1	Packer to HYD 533 X-Over Incoloy 925	73.0	62.0	0.14	2,967...	2,967...
2-9	1	Hydri 533 CB Pup Joint L-80 - Coated	73.0	62.0	2.98	2,967...	2,970...
2-10	1	Baker "F" Nipple 57.15mm Incoloy 925	73.0	57.1	0.38	2,970...	2,970...
2-11	1	HYD L-80 Perforated Joint L-80 - Coated	73.0	62.0	9.48	2,970...	2,980...
2-12	1	Wireline Guide Coated 55.37mm No-GO	73.0	55.4	0.20	2,980...	2,980...

Other In Hole

Description	Run Date	Pull Date	Top (mKB)	Btm (mKB)
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Cement Plug

7/12/2003

3,033.00

3,125.00

Logs

AIT-BHC-SONIC-GR-EDAC-PEX, 6.80-803.00mKB

Date	Type	Logging Company	Cased?
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2/15/2003

AIT-BHC-SONIC-GR-ED...

Schlumberger

BHCS-CNL-LDT-IND-GR-CAL, 6.80-2,962.00mKB

Date	Type	Logging Company	Cased?
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3/16/2003

BHCS-CNL-LDT-IND-GR...

Schlumberger

OBMI-GR, 2,750.00-2,992.00mKB

Date	Type	Logging Company	Cased?
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3/16/2003

OBMI-GR

Schlumberger

BHCS-CNL-LDT-ID-SONIC, 2,992.00-3,125.00mKB

Date	Type	Logging Company	Cased?
------	------	-----------------	--------

3/31/2003

BHCS-CNL-LDT-ID-SONIC

Schlumberger



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6.7-2,992.0
2,992.0-3,125.0,
Zone: Nahanni,
Original Hole
Perf Status:
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Flowing.
3/31/2003 00:00

Wellheads

Foothills, Cooper Cameron on <Install Date?>

Type Foothills	Make Cooper Cameron	Service	WP (kPa) 35,000
Size (mm)	Install Date		

Comment
SINGLE