Final Well Report
Port au Port #1 – Sidetrack #3

PDIP Ref. GHS-0010-OPS-1-REP-0046
Rev. 1

Submitted by

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Report Approval Cover Sheet

Report Title:	**Final Well Report: PAP#1 – ST#3**
Project Name:	**Garden Hill South – Horizontal Sidetrack Well**
Client:	**N/A**
Client Ref:	**N/A**
PDIP Ref:	**GHS-0010-OPS-1-REP-0046**

Approval Record

Rev. No.	Date	Prepared	Reviewed	Approved
Rev 0	August 14, 2009	Vanessa Pennell Mercer	Brian Hickey	Barath Rajgopaul
Rev 1	July 05, 2010	Meg Long Brian Hickey	Laura Hartley	Barath Rajgopaul

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Report Record of Revision

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Rev. No.	Date	Revision Details
0	Aug. 14, 2009	Original Draft
1	July 05, 2010	Updated as per DNR's comments

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List of Appendices

1. Introduction

PDI Production Inc. (PDIP) drilled the Port au Port #1 - Sidetrack #3 (PAP#1-ST#3) wellbore at the Garden Hill South (GHS) oil and gas site, commencing in the fall of 2008. PAP#1-ST#3 is a horizontal sidetrack well bore that was drilled with the intent to maximise surface contact and production in the Aguathuna formation. The Aguathuna formation previously produced with the drilling of the PAP#1 well bore, in addition to production from the Port au Port #1-Sidetrack #2 (PAP#1-ST#2) well bore.

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PAP#1-ST#3 was drilled on behalf of PDIP the operator of the property, by Nabors Drilling, with drilling management services provided by Dragon Lance Management Corporation (DLMC).

Details of the drilling rig and contractors are as follows:-

Drilling Manager:	Dragon Lance Management Corporation
Rig Contractor:	Nabors Drilling
Drilling Rig:	Nabors Rig 45ETD
Rig Type:	Triple Cantilever

Prior to drilling PAP #1-ST #3 the PAP #1-ST #2 well was tested and subsequently abandoned. PAP#1-ST#3 included drilling a new side track, casing and cementing, and completing the well. ST#3 kicked off into the Precamian Gneiss formation and passed through Winterhouse, Lourdes, Goose Tickle and Table Point formations. The track went horizontal for approximately 725m through the Aguathuna formation.

These sidetracks were completed and the rig was subsequently released on December 24 2008. The well was put on a production test on January 03 2009 for 26 days and produced some 6000 bbls of oil. The well was shut in on January 29 due to production difficulties.

1.1 Map

Figure 1-1 displays the location of the Garden Hill South oil and gas site on the Port au Port Peninsula.

Figure 1-1: Location of GHS Oil and Gas Site

1.2 General Information

The PAP#1-ST#3 well was drilled at the Garden Hill South Discovery site on Production Lease 2002-01. The Drilling Program Approval number was **DPA 2008-124-01** and the Authority to Drill a Well number was **ADW 2008-124-01-01 (Appendix 1 and 2)**.

The well was drilled by sidetracking a well from the PAP#1 well, the surface location of which is N 5372856.003. E 335490.317.

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1.3 Difficulties & Delays

PDIP commenced killing the well PAP#1-ST#2 on August 14 2008, however difficulties were encountered with installing a backpressure valve and as a results killing the well took longer than anticipated.

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PDIP attempted to clean PAP#1-ST#2 to determine whether or not the sidetrack would produce. However heavy weight drill pipe was damaged (bent) during the process making cleaning not possible. In addition one mud motor was bent and the lower portion of a second motor and a drill bit were lost in the hole. PDIP subsequently abandoned the operation in the sidetrack and plugged and abandoned the well.

During the abandonment procedure of ST#2. Schlumberger poured a cement plug on September 17. 2008 however, the cement job was not sufficient for the operation and therefore a second cement plug was poured on September 20 2008.

Drilling of PAP#1-ST#3 was much slower than originally anticipated creating many delays as explained in the following text.

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Delays were experienced due to failures associated with LWD/MWD tools and failed mud motors. This resulted in having to trip out of hole much more often than needed.

PDIP also experienced rig downtime associated with failures from the top drive on the rig and a hose failure due to an error by rig personnel.

PDIP spent several days attempting to set the casing at the planned casing set point but were unable to do so. In the end PDIP set the casing higher than originally anticipated. Once PDIP were ready to cement the casing the cement batch plant failed and PDIP had to wait for the plant to be repaired causing additional delays. A higher than planned casing set point also meant that PDIP had to obtain and install a scab liner.

Once drilling commenced in the production zone the intent was to drill under balanced. However, the company providing underbalanced drilling services noted several equipment deficiencies and shortages including failed equipment and missing equipment resulting in significant delays to the drilling of this section.

During underbalanced drilling a bit was lost in the ST#3 hole. Many attempts were made to fish the bit but were unsuccessful. Therefore the bit was pushed to the end of the hole which resulted in the end of drilling. This meant that the horizontal section was shorter than originally planned. Therefore fishing activities and the pushing of the bit resulted in additional rig time.

PDIP also failed to log PAP#1-ST#3 as many attempts to run logging tools in the hole on drill string were unsuccessful. This resulted in no logging data and additional project delays.

2. Drilling Operations

2.1 Elevation

The Kelly Bushing elevation was 219.7m above mean sea level. The casing flange elevation is 212.92m above mean sea level.

2.2 Total Depth

The top of the window for ST#3 was milled at 2278.75m and the bottom of the window is at 2283.00m. The Measured Depth of the well is 4256m MD.

2.3 Spud Date

The drilling operation for this program commenced at 12:00 PM on August 12 2008.

2.4 Date Drilling Completed

Total Measured Depth of 4256m MD was reached on December 1 2008.

2.5 Rig Release Date

The rig was released on December 24 2008.

2.6 Well Status

2.6.1 PAP#1-ST#2

PAP#1-ST#2 was abandoned after the drill stem testing.

2.6.2 PAP#1-ST#3

A dual string completions package was installed in PAP#1-ST#3 following the drilling campaign.

2.7 Hole Sizes and Depths

See section 2.8: Bit Records.

2.8 Bit Records

Details of bits used during the ST#2 hole cleaning campaign are summarized in Table 2-1. Note that Table 2-1 shows the bits used in ST#2 however no actually drilling was undertaken in ST#2. A complete bit record for ST#3 can be found in **Appendix 3.**

Table 2-1: Bits Used in ST#2

Date	Aug 21/08	Aug 30/08	Sept 2/08	Sept 5/08	Sept 13/08
Bit No.	1RR	2	3	4	5
Size (mm)	222.0	216.0	159.0	156.0	156.0
Mfg.	Smith	Smith	Smith	Smith	Smith
Type	FH45	XR+	XR20W	XR15W	XR15
Serial#	PJ3446	PJ6333	PL1386	MX9841	MX0993
Nozzles	3 x 17.5	3 x 15.9	3 x 15.9	3 x 14.3	3 x 9.5
Area Nozzles (mm^2)		593.8	593.8	481.8	212.65
WOB (daN)		2.0	2.0	1.0	0.5-5
RPM		40	50	45	20
From (mKB)		2325.5	2382.0	3340.0	3482.0
To (mKB)		2360.0	3363.0	3482.0	3482.0
Meters		35			

2.9 Casing and Cementing Record

A 177.8mm OD liner was set during in the PAP#1-ST#3 well bore. in addition to a 114.3mm OD SCAB liner. Conductor Casing and Intermediate Casing were set as part of previous operations in the main well bore. A summary of casing and cementing associated with ST#3 is outlined below in Table 2-2. A copy of the casing and cementing details can be found in **Appendix 4.**

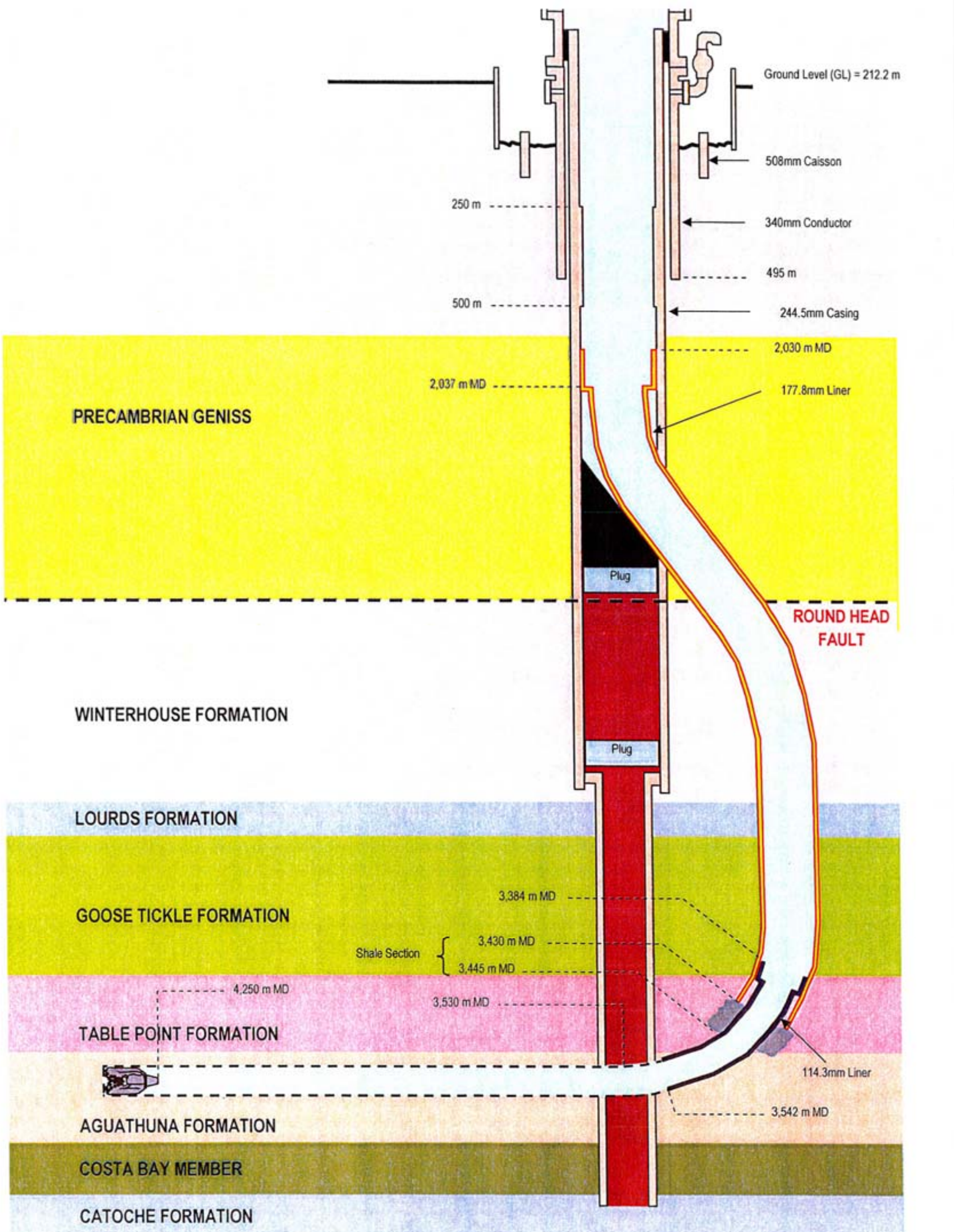


Table 2-2: Casing and Cementing Details for PAP#1-ST#3

Casing Size (mm OD)	177.8 mm	114.3 mm – SCAB Liner
Weight (kg/m)	38.69	22.51
Grade	L80	P110
Hanger Set Point (m. MD)	2030 m	3385 m
Set Point (m. MD)	3430 m	3542 m
Number of Joints	102	12
	Cement Details	
Slurry Volume Injected	20.4 m^3	n/a

2.10 Sidetracked Hole

PAP#1 - ST#3 is a sidetrack. No further sidetracks were drilled. ST#2 was plugged and abandoned as part of this drilling campaign. ST#1 was abandoned in previous operations.

2.11 Drilling Fluid

Table 2.2 provides an overview of the fluid density and pH for the drilling fluids used during the campaign. Full details of the drilling fluids can be found in the detailed Water-Based Mud Reports that are in **Appendix 5.**

Date	Drilling Fluid Density	pH
Aug 20-21. 2008	1150	8.5
Aug 22. 2008	1155	8.5
Aug 23-31. 2008	1165	8.5
Sept 1-4. 2008	1145	8.3
Sept 5. 2008	1160	8.3
Sept 8. 2008	1170	8.5
Sept 9-12. 2008	1170	8.3
Sept 13-14.2008	1160	8
Sept 15. 2008	1165	8
Sept 16-17. 2008	1160	8
Sept 18-19. 2008	1160	10
Sept 20. 2008	1165	10
Sept 21-22. 2008	1160	10
Sept 23-24. 2008	1160	10.7
Sept 25. 2008	1160	10.2
Sept 27. 2008	1165	10.5
Sept 28. 2009	1110	10
Sept 29. 2008	1090	10
Sept 30. 2008	1090	9.5
Oct 1-2. 2008	1090	9.0
Oct 3. 2008	1095	8.8
Oct 4. 2008	1095	8.5
Oct 5. 2008	1100	8.5
Oct 6. 2008	1095	8
Oct 7. 2008	1090	8.5
Oct 8. 2008	1095	8
Oct 9. 2008	1090	8
Oct 10-13. 2008	1090	8.5

Oct 14. 2008	1090	8
Oct 15-19. 2008	1095	8
Oct 20. 2008	1095	9.5
Oct 21. 2008	1090	9.5
Oct 22. 2008	1095	10.5
Oct 23. 2008	1105	10
Oct 24. 2008	1095	10
Oct 25. 2008	1095	10.5
Oct 26. 2008	1090	10.5
Oct 27. 2008	1095	10
Oct 28. 2008	1095	10.5
Oct 29. 2008	1100	10.5
Oct 30-31. 2008	1095	10.5
Nov 1-2. 2008	1095	11
Nov 3. 2008	1100	10
Nov 10. 2008	1065	11.9
Nov 11. 2008	1065	11.6
Nov 12. 2008	1050	12.0
Nov 13. 2008	1040	11.8
Nov 14. 2008	1035	11.8
Nov 15-16. 2008	1040	11
Nov 17. 2008	1040	11
Nov 18. 2008	1050	11
Nov 19. 2008	1040	11
Nov 20-22. 2008	1040	10.5
Nov 23-24. 2008	1045	10.5
Nov 25-26. 2008	1040	10.4
Nov 27. 2008	1045	10.5
Nov 28. 2008	1040	10.7
Nov 29-Dec 1. 1008	1045	10.8
Dec 2-4. 2008	1045	11
Dec 5. 2008	1045	10
Dec 6. 2008	1040	10
Dec 7-8. 2008	1045	10.3
Dec 9-10. 2008	1050	9
Dec 11. 2008	1060	9.5
Dec 12-13. 2008	1060	9
Dec 14-17.2008	1055	9.0
Dec 18. 2008	1020	8.5
Dec 19-21. 2008	1060	9

2.12 Fluid Disposal

Disposal of fluids during the drilling campaign was handled by local waste management contractors. The following volume of drilling fluid was removed from site:

Date	Volume Removed
Dec 30/08	40.000
Dec 30/08	40.000
Jan/02/09	40.000
Dec 08/08	30.000
Dec 09/08	30.000
Dec 10/08	30.000
Dec 11/08	30.000
Dec13/08	30.000
Dec 15/08	30.000
Dec 16/08	30.000
Dec 16/08	30.000
Dec 17/08	30.000
Dec 18/08	30.000
Dec18/08	25.000
Dec 18/08	30.000
Dec 20 /08	30.000
Dec20/08	25.000
Dec 23/08	30.000
Dec 23/08	30.000
Dec24/08	30.000
Dec 24/08	25.000
Jan 02/09	25.000
Jan 03/09	25.000
Jan 05/09	25.000
Jan 07/09	25.000
Jan 07/09	25.000
Jan 09/09	25.000
Jan 10/09	30.000
Jan 13/09	30.000
Total	**855.000**

2.13 Fishing Operations

FISH (mud motor with attached bit) tagged in ST#2 at 3363m. FISH was washed down to 3365m. No fishing operations were conducted as the sidetrack was plugged and abandoned.

Fishing operations were undertaken on a lost bit in ST#3. The fish a 156mm drill bit was lost in the hole. It was tagged at 2037m. The fish was resting on the 7” liner hanger. After several attempts the fish was knocked into the 7” liner. The recovery operation was abandoned and the fish was pushed to the bottom of the hole. There is no fishing report associated with this work but it is documented in the drilling reports.

2.14 Well Kicks

No well kicks were experienced as reported.

2.15 Formation Leak-Off Tests

A formation integrity (leak-off) test was conducted on September 26 2008 at a depth of 2284.13m MD. The test was conducted at a pressure of 14.000 kPa. The report can be found in **Appendix 16.**

A second leak-off test was conducted on October 18 2008 at a depth of 3116.71m MD. The test was conducted at a pressure of 8000 kPa. The report can be found in **Appendix 16.**

2.16 Time Distribution

The daily reports **(Appendix 6)** produced (including hourly breakdown of activities) have been submitted separately. A copy of the time distribution summary can be found in **Appendix 13.**

2.17 Deviation Plot

A copy of the as drilled survey can be found in **Appendix 7.**

2.18 Abandonment / Suspension Plugs

PAP#1-ST#2 was plugged and abandoned during the operation. Abandonment operations commenced on September 17 2008. A copy of the well termination record is found in **Appendix 12.**

As noted in Section 2.13 above a FISH was tagged in ST#2 at 3363m in the sidetrack. The total depth of ST#2 was 3482m. As the FISH was tagged above this and because the well was unable to be penetrated below the depth of the FISH it was determined that it was not practical to set a bottom hole plug

Therefore the following operations were undertaken:

- A cement plug was set on top of the FISH to 30m above the casing window of ST#2 (3346.69m).
- The cement plug was then squeezed around the FISH to fill in the area below the FISH to the bottom of the well.
- The top of the resulting cement plug was tagged at 2916.14m at 07:45 hours on September 21 2008. The bottom of the plug is at 3482m (the bottom of the well) and the cement plug top.
- A bridge plug was then run in on drill pipe and set at 2359.84m at 02:30 hours on September 22 2008.
- A second bridge plug was run in on drill pipe and set at 2287m at 17:50 hours on September 22 2008.
- An abandonment schematic of ST#2 is shown below in Figure 2-1.

Figure 2-1: Abandonment Schematic of PAP#1-ST#2 September 2008

2.19 Well Schematic

A schematic of PAP#1-ST#3 is shown in Figure 2-2.

2.20 Completions Equipment

PDIP installed a dual string completion into the PAP#1-ST#3 well bore. The completions included 73mm production tubing installed to 3280 MD. A 73mm heater string to 2150m was also installed. The completions strings were installed to a dual completion tubing hanger. In addition a production packer was installed. A detailed drawing of the dual completions can be found in **Appendix 11.**

Figure 2-1: Abandonment Schematic of PAP#1-ST#2 September 2008

2.21 Well Schematic

A schematic of PAP#1-ST#3 is shown in Figure 2-2.

2.22 Completions Equipment

PDIP installed a dual string completion into the PAP#1-ST#3 well bore. The completions included 73mm production tubing installed to 3280 MD. A 73mm heater string to 2150m was also installed. The completions strings were installed to a dual completion tubing hanger. In addition a production packer was installed. A detailed drawing of the dual completions can be found in **Appendix 11.**

ST#3 Horizontal Well Permanent Packer Details

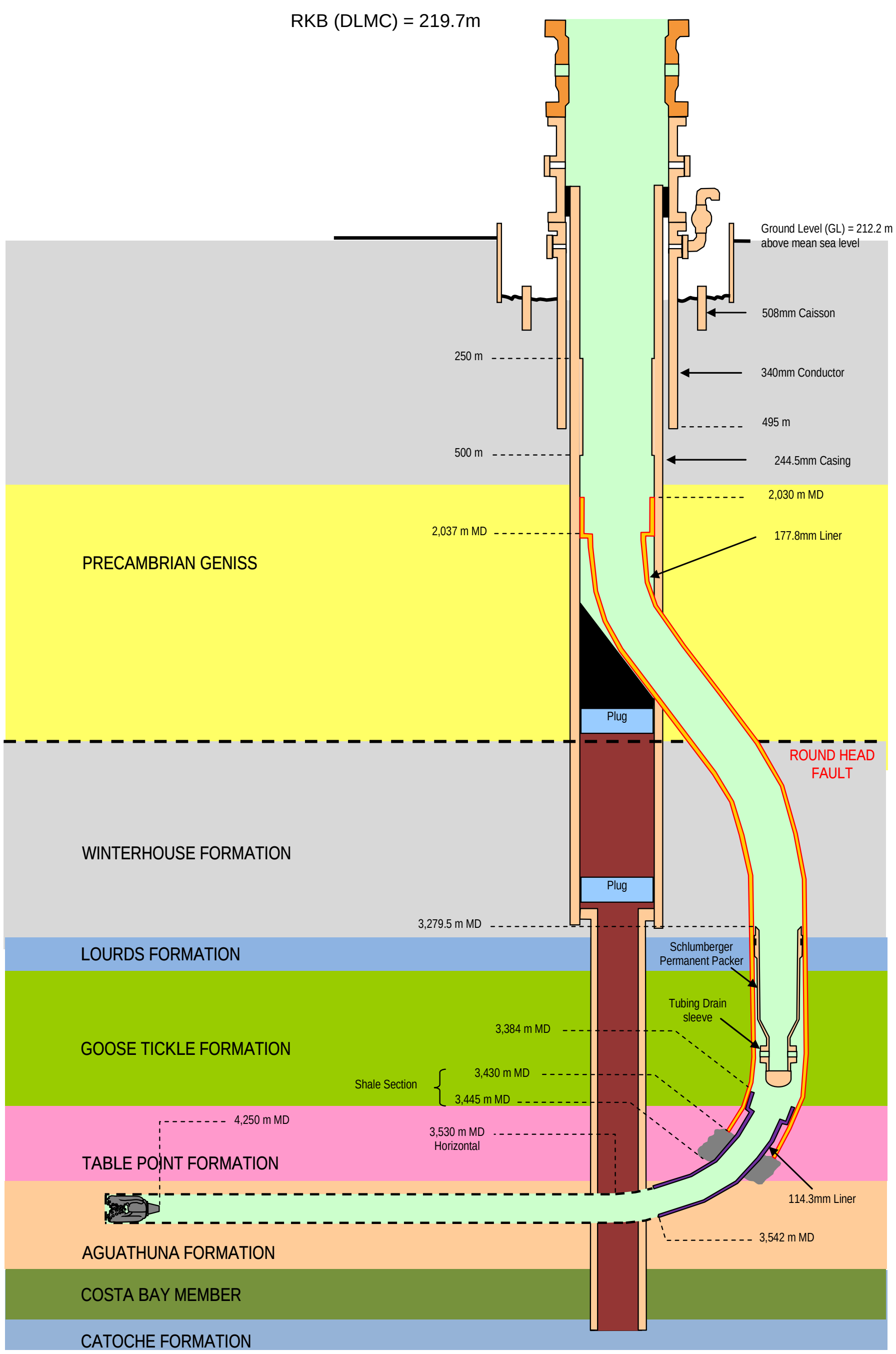


Figure 2-2: PAP#1-ST#3 Well Schematic

2.23 Fluid Samples

A drill stem test was performed on ST#2 on September 13 2008. A total of 13 Fluid Samples were taken as noted below:

- Sample #1 & #2 are oily mud gas cut
- Sample #3 @ 1% Oil & 99% oily mud gas cut
- Sample #4 @ 2% Oil & 2% Oil & Mud Emulsion & 5% Solids & 91% Oily Mud Gas cut
- Sample #5 @ 30% Oil & 12% Oil & Mud Emulsion & 3% Solids & 55% Oily Mud Gas cut
- Sample #6 @ 23% Oil & 12% Oil & Mud Emulsion & 5% Solids & 60% Oily Mud Gas cut
- Sample #7 @ 12% Oil & 8% Oil & Mud Emulsion & 4% Solids & 76% Oily Mud Gas cut
- Sample #8 @ 35% Oil & 10% Oil & Mud Emulsion & 4% Solids & 51% Oily Mud Gas cut
- Sample #9 @ 40% Oil & 10% Oil & Mud Emulsion & 4% Solids & 46% Oily Mud Gas cut
- Sample #10 @ 22% Oil & 9% Oil & Mud Emulsion & 6% Solids & 63% Oily Mud Gas cut
- Sample #11 @ 25% Oil & 8% Oil & Mud Emulsion & 4% Solids & 63% Oily Mud Gas cut
- Sample #12 @ 20% Oil & 4% Oil & Mud Emulsion & 1% Solids & 75% Oily Mud Gas cut
- Sample #13 @ 3% Oil & 4% Oil & Mud Emulsion & 5% Solids & 88% Oily Mud Gas cut

2.24 Composite Well Record

Table 2.3 displays the composite well record.

Table 2.3: Composite Well Record for PAP#1 – ST#2

Depth	Comment	Date / Time
3325m - 3482m	Undertake DST in ST#2	September 12. 2008
2916.14m – 3346.69m	Set cement plug in ST#2	September 17. 2008
2359.84m	Set bridge plug in ST#2	September 22. 2008
2287m	Set bridge plug in ST#2	September 22. 2008
2279m	Set whip-stock	September 25. 2008
2278.75m - 2283.00m	Window created for ST#3	September 26. 2008
2283.0m – 2959.28m	Drilling vertical portion of ST3. mud motor sheared drive shaft and was replaced (ROP 5-6m/hr)	October1st2009-11th October 2009
2959.28m – 2987.37m	Slide Drilling ahead with ROP 4-6.5 m/hr	October12th– October 14th
2987.37m – 2999.27m	Rotary Drill ROP 3.51 m/hr	October 14th. 2008
2999.7m – 3004.65m	Rotary drill ROP 0.61-3.51 m/hr	October 15th. 2008
3004.65m – 3020.5m	ROP 1.8-2.26m/hr	October 16th. 2008
3030.5m – 3079.25m	ROP 4.15-9.64m/hr	October 17th. 2008
3079.25m – 3116.71m	Commenced dropping angle predicted drop 2-2.5 degrees per 30 meters	October 18th. 2008
3116.72 – 3156.8	ROP 10m/hr	October 19th. 2008
3156.8m – 3227.66 m	1400 units gas peak ROP 6.4-10.8 m/hr	October 20th. 2008
3227.66.5m- 3267.0m	ROP 0.9-2.5m/hr	October21st - 23rd. 2008
	Change out MWD tools	October 24th. 2008
3267.0m – 3318.6m	Rotary Drilling through the Goose Tickle ROP 4.43 m/hr	October 25th. 2008
3318.6m – 3346.79m	Building angle Slide Drilling 23 KDa/N	October 26th. 2008

3346.79m – 3385.27m	Slide Drilling 17-25 KDa/N	October 27th. 2008
3385.27m – 3414.08m	Slide Drilling 28 KDa/N	October 28th. 2008
3442.76m – 3534m	Slide Drilling 10-30 FDa/N	October 29th-31st. 2008
3534.17m – 3551.0m	Rotary Drilling ROP 5.69-10.69m/hr installing casing liner	November 1st. 2008
	Casing Liner installation continued	November 2nd. 2008
	Casing Liner Continued	November 3rd. 2008
	Casing Liner hung up @3443 meters	November 4th. 2008
	Casing Liner cemented at 1930	November 6th. 2008
	WOC to set. lay down tool. pickup tools	November 7th. 2008
	Drill out cement. clean and Ream	November 8th – 11th. 2008
	Cementing stinger to cement isolation plug from 3530m back	November 12th. 2008
	Cement Open Hole Theoretical cement top 3236m	November 13th. 2008
3338m – 3468m	Drill out cement from 3338-3507m mud motor was stuck and had to be pulled	November 14th. 2008
	Change out Mud Motor	November 15th. 2008
	Drilled out Cement Plug at 3528 meters	November 16th. 2008
3528m – 3586.20m	Drill horizontal section ROP 7.13-16.18 m/hr	November 17th. 2008
3586.2m – 3610m	Drilling ahead but awaiting arrival of UBD equipment	November 18th. 2008
3610m – 3648m	Drilling ahead at ROP 4.93-10.12m/hr	November 19th. 2008
3648m – 3734m	Drilling through ROP 9.68-14.28m/hr	November 20th. 2008
3734m – 3842m	Drilling dropping angle ROP 10.64-34.9m/hr	November 21th. 2008
3842m – 3926m	Drilling ahead ROP 8.73-17.93 m/hr	November 22nd. 2008
	Circulate and POOH install UBD equipment flare was lit!!	November 23rd. 2008
3926m – 3952m	Drill ahead and pressure test R-BOP ROP 9.67-12.14m/hr	November 24th. 2008
3952m – 3975m	Drilling with Under-balance ROP 6.16-15.15m/hr	November 25th. 2008
	Wiper trip 3975m – 3550m	November 26th. 2008
	Running in hole with resistivity. GRT and other tools	November 27th. 2008
3975m – 3991m	Rotary Drill 8.52m. Slide 6.5m	November 27th. 2008
3991m – 4255.90m	Rotary Drill and Slide	Nov. 28 – Dec. 01. 2008

3. Geology

3.1 Drill Cuttings

A full suite of cuttings were collected from 3555m to 4210m.

Sample intervals were recorded throughout the daily drilling reports. Samples were taken at 3555m and 4210m in the Aguathuna Formation during November and December 2008. These samples showed the following information;

The results of the drill cutting acid solubility indicate that a 15% hydrochloric acid would dissolve between 48.4% and 93.6% of the rock present depending on the depth. A copy of the report is found in **Appendix 10**. Based on the acid solubility determination and SEM analysis of the submitted drill cuttings the dominant lithology consists of a tight limestone with heterogeneous degrees of dolomitization minor clays and other associated minerals are also present within the cuttings. The acid insoluble residue was mainly comprised of mudstone and clay-type silicate material. Illite clay was present in all the cuttings tested with Sample C (3555m) containing the greatest abundance in the overall composition.

The overall porosity of the carbonate cuttings can be described as low typically <3% (based on visual analysis from drill cuttings). The primary porosity seen is intercrystalline with some secondary dissolution porosity. In some samples porosity can be seen as "pin point" porosity. Intercrystalline dolomite is the main visible feature in the carbonate cuttings. Other noted features are the presence of micritic calcite, clay coating and dissolution textures. The high salinity of the formation water and the prevalence of clays in all of the samples tested indicate that clay stabilizers should be added to any water based fluids injected into the formation. Using fresh water may "shock" the clays in the formation which could increase the tendency of illite to migrate.

3.2 Cores

No cores were taken during the operation.

3.3 Lithological Descriptions

The following lithological descriptions correspond to the stratigraphic column displayed in Figure 3.1. A detailed breakdown of the differing lithofacies is illustrated in the associated strip log in **Appendix 9.**

Table 3.1: Lithology Log Sample Descriptions. PAP#1 – ST#3

2850m – 2865 m	Shale. 70-80%. dark grey to light. platy to lumpy. micaeous in part. slightly calcareous. firm to brittle. trace of coal. black to green greasy phyllite grains. with 20-30% dark to light grey to mottled sandstone. quartzose sand. lumpy to platy. fine to very fine grain. sub-angular. moderately sorted. consolidated. tight. hard. friable in part. calcareous cement. some of the shale grains are sandy in part. gradational bedding.
2865m – 2895	Sandstone. 70-80% as before. dull grey. fine to very fine grain. consolidated. tight. hard. calcareous cement. with 20-30% dark grey to black shale. platy to lumpy. firm to brittle to soft. trace of banding. slightly calcareous. micaeous. becoming silty with depth.
2895m – 2905 m	Sandstone.60% dull to light grey. fine to very fine grain. consolidated. tight. hard. calcareous. with 40% dark grey shale. blocky to platy to splintery. hard to brittle with minor coal black to green phyllite grains. greasy lustre. rich in cave-ins. large fragments.
2905m – 2920m	Shale. 80-90% dark grey to light to weathered brown. blocky to lumpy to platy. firm to brittle. micaceous. calcarceous. with 10-20% dull grey to speckled sandstone. as before. silty in part.

2920m -2955m	Sandstone. 80-90% . light to dull grey. quartzose sand. fine to medium grain. moderately sorted. sub-angular. consolidated. friable to hard. calcareous cement. silty in part. with 10-20% dark grey shale. blocky to lumpy. sandy in part. firm to brittle. slightly calcareous. trace of banding. loose vitreous quartz grains. sub-angular. coal black phyllite grains. greasy lustre.
2960m – 2985m	Sandstone. 80-90%dull to light grey. quartzose sand. fine to coarse grain. sub-angular. moderately sorted. consolidated to loose. hard. calcareous. with dark grey to black shale. 10-20%. as above. sandy in part. calcarceous. with minor coal black to green greasy phyllite. splintery to platy. trace of weathered brown grains. rich in cave-ins.
2985m – 2995m	Predominantly large cave-ins. Sandstone. 60%. dull to light grey. large blocky grains with dark to medium grey. 40% minor brown weathered grains.
3010m – 3025m	Sandstone.90%. as before. consolidated to loose vitreous quartz grains. coarse grain. sub-angular. calcareous cement. silty in part. with 10% medium to dark grey shale. Trace of greasy phyllite grains with 5% iron filings. rusty red to bluish. platy. Increase in cave-ins. about 80% at 3025m.
3025m – 3055m	Sandstone.90%light to dull grey. quartzose sand. fine to coarse grain. silty in part. sub-angular. moderately sorted. consolidated. tight. loose grain. calcarceous cement. with medium to dark grey shale. lumpy to platy. micaceous. trace of black to green greasy phyllite. becoming limey with depth. white platy silty limestone. decrease in shale. trace of bio-clastic.
3055m – 3080m	Sandstone. 100%. light to dull grey. quartzose sand. fine to very fine grain. silty in part. sub-angular. lumpy to platy. poorly sorted. consolidated. hard to soft. very limey. minor grey lumpy to platy shale calcarceous. trace of bio-clastic. brachipods. greasy black phyllite grains. GRADATIONAL ZONE.
3080m – 3090m	Sandstone. 90%. dull grey to light to rusty weathered brown grey. fine to coarse. sub-angular. platy to lumpy. poorly consolidated to loose. vitreous quartz grains. coarse grain. firm to friable. limey to silty. with 5-10% dark to weathered brown shale. blocky to lumpy. calcarceous. firm to soft.
3090m – 3105m	Predominantly light to dull grey limestone. 90% as before. sandy in part. 5-10% dark shale. blocky to lumpy. hard. calcarceous with minor green to black greasy phyllite 3-5%. splintery to platy.
3105m – 3116.m	Limestone. 100%.light grey to dark to tan. chalky to crystalline. detrital. very fine grain to crypto-crystalline. platy. With loose vitreous quartz grains. coarse grain. sub-angular. minor dark grey limey shale.
3116m – 3130m	Limestone. 100%. dull grey to brownish grey. chalky to crystalline. soft to hard. very fine grain to crypto-crystalline. platy to lumpy. tight. with minor dark to black shale. lumpy. phyllitic in part. greasy lustre. trace of bio-clastic. shale increasing with depth.
3130m – 3165m	Limestone. 70-80%.as above. with 20-30% dark grey shale. blocky to lumpy. calcareous. firm to brittle. shale becoming platy with depth. limestone becoming re-crystallized to rhomb crystals in a limey cement. Shale decreasing with depth.
3165m – 3185m	Limestone. 90%. light to dull grey to tan. chalky to crystalline. soft to hard. platy. very fine grain to cryptocrystalline. tight. slickensides along cleavage planes. with 5-10% dark grey shale. blocky to lumpy. hard. calcareous. trace of bio-clastic. Shale increasing with depth.
3185m – 3195m	Shale. 80-90%. dark grey to minor chocolate brown. lumpy to platy. firm to brittle. calcareous. with 10-20% dull grey limestone. as before. brown shale increasing with depth.
3195m – 3205m	Limestone. 70-80%. dull grey. as before. chalky. soft. with 20-30% dark grey blocky shale. phyllitic in part. greasy lustre. calcareous to slight. trace of pyrite veinlets.
3205m – 3210m	Shale. 70-80%. dark grey to brown. possibly weathered. hard to soft. blocky to lumpy. calcareous. slickensides along cleavage planes. 20-30% dull grey chalky limestone.
3210m – 3220m	Limestone. 70-80%. dull grey to dark to mottled. chalky to crystalline. sandy in part. very fine grain to cryptocrystalline. trace of slickensides. pyrite. black greasy phyllite grains. bio-clastic. with dark grey shale. lumpy. hard. calcareous.
3220m – 3245m	Limestone. 100%. dull to light grey. chalky to crystalline to spotty texture. sandy throughout. very fine grain to cryptocrystalline. friable to hard. tight. rich in vitreous calcite crystals. siliceous in part. with minor dark grey blocky shale and black greasy phyllite.
3245m – 3250m	Limestone. 100%. as above. with about 5% dark grey shale with black phyllite. Trace of vitreous quartz grains. coarse grain. angular to sub-rounded.

3250m – 3260m	Sandstone. 100%. dull grey. quartzose sand. fine to coarse grain. angular to sub-rounded. moderately sorted. consolidated. tight. hard to friable. calcite to silica cement. minor brown limestone and black shale stringers.
3260m – 3265m	Limestone. 100%. dull grey to light to brown. sandy in part. with a shaly texture. crystalline to chalky. tight. hard. cryptocrystalline to very fine grain. with loose vitreous quartz grains. coarse grain. angular to sub-rounded. minor dark grey to calcareous shale with black greasy phyllite
3265m – 3270m	Phyllite. 100% green to greenish grey. smooth greasy texture. platy to splintery. about 1% iron fillings. Possibly a fault zone.
3270m – 3275m	Limestone. 70%. as before. sandy in part. with increase in dark grey to black shale 30%. blocky to lumpy. firm to brittle. calcareous. phyllitic in part. black to green. smooth greasy lustre.
3275 m – 3280m	Shale. 80%. dark to medium grey. platy to lumpy. slight calcareous to non-calcareous. soft to firm. with dull grey sandstone 20%. fine to very fine grain. silty in part. with loose vitreous quartz grains. coarse grain. sub-angular to sub-rounded. consolidated. soft. friable. silica to calcite cement
3280m – 3305m	Shale. 100%. dark grey to weathered brown. blocky. lumpy to platy. firm to brittle. non-calcareous to slight. micaeous. sandy in part. minor white calcite veinlets with dull grey siltstone stringers.
3305m – 3330m	Shale. 100%.dark to grey. platy to lumpy. micaeous firm to soft. non-calcareous to slight. sandy in part. trace of loose vitreous quartz grains. dull grey mudstone grains. dolomitic
3340m – 3347m	Shale. 100%. dark grey to brown. possibly weathered. platy to lumpy. firm to soft. sandy in part. non-calcareous. Trace of dull grey mudstone. dolomitic. brown decreasing with depth.
3347m – 3365m	Shale. 100%. dark grey to black. lumpy to splintery to platy. firm to brittle. blocky to micaeous in part non-calcareous. Trace of brownish grey sand stringers. black greasy phyllite grains. loose vitreous quartz grains and dull grey mudstone. dolomitic.
3365m – 3380m	Shale. 100%. as above. increase in brown grains. with minor black bituminous shale. no fluorescence with about 5% dull grey mudstone. dolomitic. soft and 1-2% rusty red iron fillings. platy.
3380m – 3385m	Shale. 70%. dark to medium grey. soft to firm. sandy. with inter-bedded dull grey sandstone 30%. quartzite fine to coarse grain. sub-rounded to sub-angular. poorly sorted. friable. calcite to silica cement. with minor dull grey mudstone.
3385m – 3400m	Shale. 70-90%. dark grey to black. blocky to lumpy to platy. firm to brittle. dolomitic. phyllitic in part. greasy lustre. with 10-30% dull grey sandstone. Medium to coarse fine grain. sub-angular to sub-rounded. poorly sorted. calcite cement. friable. minor dull grey mudstone. Sand decreasing with depth.
3400m – 3430m	Shale. 70-90% as above. with minor dull grey sandstone 10-30% loose vitreous quartz grains. fine to coarse grain. sub-angular to sub-rounded. poorly sorted. calcareous cement. consolidated. tight. and dull grey mudstone. calcareous with slickensides along cleavage planes. Dull grey sandstone and mudstone content varies with depth.
3430m– 3450m	Shale. 80-95%. dark grey to black. lumpy to platy. firm to brittle. non-calcareous. sandy in part. with 5-20% dull grey sandstone. as before. fine grain. silty in part. calcareous. soft. grading to dull grey mudstone. sand and mudstone increasing with depth. trace of banding. slickensides. white calcite.
3450m – 3465m	Shale. 70-80%. as above. with 20-30%. dull grey mudstone. sandy in part. soft. calcareous. with minor grey sandstone. mudstone decreasing with depth
3465m – 3475m	Sandstone.70%. dull grey. fine to medium grain. sub-rounded to sub angular. moderately sorted. consolidated. tight. calcite to silica cement. minor dull grey mudstone with 30% shale. as above. shale becoming sandy with depth.
3475m – 3485m	Shale. 100% dark grey to light greenish grey. lumpy to platy to splintery. firm to brittle. phyllitic. in part. greasy lustre. possibly fault zone. non-calcareous. trace of sand.
3490m – 3495m	Shale. 100% dark grey to black to light greenish grey. lumpy to splintery to platy. firm to brittle. phyllitic in part. greasy lustre. rich in cave-ins.
3495m – 3500m	Shale. 95%. dark grey to black. as before. phyllitic in part. greenish grey. greasy lustre. minor dull to light grey limestone 5%. very fine grain to cryptocrystalline.
3500m – 3515m	Limestone. 100-80%. Light grey to light brown. very fine crystalline to cryptocrystalline. tight.

TABLE POINT FM 3501.5M	soft to hard. chalky to crystalline. sucrosic texture in part. platy to lumpy. slickensides along cleavage planes. with 20% dark grey to black shale. lumpy to platy. phyllitic. dolomitic to non-calcaraeous.
3515m – 3520m	Sample unreliable. just big shale cave-ins. possibly catch on shift change.
3520m – 3530m	Limestone. 100%. as before. with shale cave-ins.
3530m – 3535m AGUATHUNA FM 3533M	Dolomite. 80%. tan to light grey. crystalline. fine to coarse crystalline. good inter-crystalline to pinpoint porosity. no live oil staining. residual. weak fluorescence to none. with 20% light grey limestone. minor fossils
3535m – 3550m	Dolomite. 100%.Tan to mottled to light grey. fine to coarse-crystalline. excellent to good inter-crystalline porosity. residual oil staining. no fluorescence. formation appears flushed. Rich in vitreous dolomotised calcite crystals. rhombs.
3550m – 3560m	Cement. 100%. light speckled grey. lumpy. friable. trace of light grey crystalline dolomite grains. Dolomite. 90%. light grey to mottled to tan. crystalline. cryptocrystalline. fair to good inter-crystalline porosity. sporadic oil staining. residual. no fluorescence with 10% cement
3560m – 3570m	Dolomite. 60%. as above. rich in dark grey shale 20% and light grey cement cave-ins 20%. Trace of vitreous dolomite rhombs.
3570m – 3575m	Dolomite. 100%. Light grey to mottled to tan. crystalline. cryptocrystalline to very fine crystalline. good inter-crystalline porosity. with sporadic residual oil staining. no fluorescence. Minor vitreous dolomitic rhombs with 2-3% grey cement cave-ins.
3575m – 3580m	Dolomite.100%. light grey to mottled to tan. crystalline. cryptocrystalline to very fine crystalline. Good inter-crystalline porosity. scattered oil staining. residual. no fluorescence. Limestone. 80%. Slickensides on limestone grains. possibly shearing.
3580m – 3585m	Dolomite.100%. light grey to mottled to tan. crystalline. cryptocrystalline to very fine crystalline. Good inter-crystalline porosity. scattered oil staining. residual. no fluorescence. Limestone. 80%. Slickensides on limestone grains. possibly shearing.
3585m – 3590m	Limestone. 80%. light grey. platy. soft. very fine crystalline. tight. with inter-bedded dolomite 20%. tan to mottled. crystalline. cryptocrystalline. lumpy. fair to good inter-crystalline porosity. sporadic oil-staining. residual. fluorescence. very slow ribbon-cut. whitish yellow.
3590m – 3600m	Limestone. 90-95%. as above. with 5-10% dolomite. vitreous to mottled to tan. cryptocrystalline to very fine crystalline. good inter-crystalline porosity. sporadic oil staining. trace of fluorescence. slow ribbon-cut. whitish yellow. rich in vitreous dolomite rhombs.
3600m – 3610m	Limestone. 100%. light grey to buff. soft to brittle. tight. very fine crystalline. decrease in slickensides with 2-3% vitreous to tan dolomite. as before. and 2-3% dark grey to black shale. blocky to platy. dolomitic in part. possibly cave-ins.
3610m – 3615m	Limestone. 100%. as before. with 1-2% tan to vitreous dolomite grains. crystalline and 1-2% dark grey. lumpy shale. becoming pure limestone.
3615m – 3630m	Limestone. 100%.light grey to buff. platy to lumpy. soft to brittle. chalky. very fine crystalline. tight. minor slickensides. bio-clastic. Trace of black lumpy shale. slight increase in slickensides with depth.
3630m – 3640m	Limestone. 100%. as above. trace of grey cement grains. lumpy and black to dark grey shale.
3640m – 3670m	Limestone. 100% light grey to buff. platy to lumpy. soft to brittle. tight. chalky. very fine crystalline. Trace of dark grey shale. slickensides. Trace of grey cement grains and dark grey shale.
3670m – 3725m	Limestone. 100%. light grey to buff. platy to lumpy. chalky. soft to brittle. tight. very fine crystalline. minor slickensides. bio-clastic. trace of dark grey shale.
3725m – 3735m	Limestone. 95%. as above with 2-5%. tan crystalline dolomite. fair to good inter-crystalline porosity. sporadic oil staining. residual. weak fluorescence. massive-cut. whitish yellow. with minor dark grey shale.
3735m – 3740m	Limestone. 90%. light grey to buff. as before. with 5% tan crystalline dolomite. cryptocrystalline. fair to good inter-crystalline porosity. residual oil staining. no fluorescence. and 5% dark grey to black shale. blocky to lumpy.
3740m – 3745m	Limestone. 100%. as before. more platy. with 2-3% crystalline dolomite. vitreous to tan. as before. and 2-3% dark shale. decrease in dolomite and shale.

3745m – 3750m	Limestone. 90%. light grey to buff. lumpy to platy. soft to brittle. tight. chalky. very fine crystalline. with 5% crystalline dolomite. Tan to vitreous. cryptocrystalline. fair to good inter-crystalline porosity. residual oil staining. no fluorescence and 5% dark grey to black shale. blocky to lumpy.
3750m – 3760m	Limestone.100%. light grey to buff. lumpy to platy. tight. chalky. very fine crystalline. trace of crystalline dolomite and shale grains. becoming platy with depth. brittle. increase in slickensides.
3760m – 3765m	Limestone. 100%. as above. very platy. becoming whiter in colour. about 1% or less of dolomite grains.
3765m – 3790m	Limestone.100%. white to buff. platy to lumpy. tight. very fine crystalline to cryptocrystalline. chalky in part. vitreous calcite rhombs. minor slickensides. less then 1% dolomite.
3790m – 3800m	Limestone. 100%. as above. not as platy. predominantly pure white throughout sample.
3800m – 3828m	Limestone. 100%. predominantly white to vitreous grey. from re-crystallized white limestone but still calcareous. lumpy to platy. chalky. very fine crystalline to minor cryptocrystalline. soft to brittle. trace of slickensides. vitreous grey limestone increasing with depth.
3828m – 3835m	Limestone. 90%. as above. increase in tan colour dolomite. 5-10%. trace of inter-crystalline porosity.
3835-3845m	Dolomite. 70-80%. tan to brown. crystalline. very fine crystalline to cryptocrystalline. fair inter-crystalline porosity. sporadic residual oil staining. fluorescence. slow-ribbon cut. whitish-yellow. with 20-30% limestone. as before. trace of shale
3845m – 3855m	Dolomite.90%. tan to light grey. crystalline. very fine crystalline to cryptocrystalline. fair inter-crystalline porosity. sporadic residual oil staining. fluorescence. slow-ribbon cut to massive. with 5-10% white limestone.
3855m – 3875m	Dolomite. 80%. tan to light grey. crystalline. very fine crystalline to crypto-crystalline. sucrosic texture in part. poor porosity. trace of residual oil staining. fluorescence. slow-ribbon cut. whitish yellow. with 5-10% limestone and 5-10% dark grey to greenish grey shale. dolomitic in part. phyllitic in part.
3875m – 3900m	Dolomite. 100%. predominantly light grey to minor tan. lumpy. very fine crystalline to cryptocrystalline. sucrose texture. tight. no visible porosity or residual oil staining. Minor vitreous dolomite crystals. dark shale. and white lumpy limestone grains. soft.
3900m – 3920m	Dolomite. 100%. light grey to light tan. very crystalline. very fine crystalline to cryptocrystalline. tight. sucrose texture in part. no visible porosity or residual oil staining. There are cemented clusters of vitreous dolomite crystals. which show no porosity. maybe they are filling in vugs that have been broken apart by the drill bit. trace of dark grey shale. maybe cave-ins
3920m – 3930m	Dolomite. 90%. predominantly light grey to minor light tan. crystalline to cryptocrystalline. sucrose texture. tight. no visible porosity or staining. becoming whiter in colour with 10% white platy limestone. soft. it appears like some of the dolomite is becoming limey.
3930m – 3935m	Shale. 60-70%. dark grey. platy to lumpy. firm to hard. dolomitic in part. 20% light grey to tan. very fine crystalline. lumpy. and 10% white limestone. Soft. platy. with 2-3% rusty red iron fillings.
3935m – 3945m	No samples due to UBD
3945m – 3955m	Limestone. 60-70% white to light grey. platy. soft. very fine crystalline. chalky. tight. slickensides. with 30-40% tan to light grey dolomite. crystalline. lumpy. tight. very fine crystalline to cryptocrystalline. limey in part. with minor dark grey shale. Trace of iron fillings.
3955m – 3960m	Limestone.70-80%. as before. with 20-30% tan to light grey dolomite. as before. minor vitreous dolomite crystals with dark grey shale. Trace of rusty red iron fillings.
3960m – 3975m	Limestone. 80-90%. white to mottled. soft . platy to lumpy. tight. with 10-20% tan to light grey dolomite. crystalline. very fine crystalline to crypto-crystalline. tight. no staining. minor dark grey shale. Trace of rusty red iron fillings. Limestone increasing with depth. Sample quality poor due to UBD
3975m – 3985m	Dolomite. 95%. vitreous to tan. crystalline platy. very fine crystalline to cryptocrystalline. no visible porosity or oil staining. with 5-10% limestone. very fine crystalline. soft. lumpy. Minor dark grey shale. 2-3% rusty red iron fillings. limestone decreasing with depth.
3985m – 3995m	Dolomite. 90%. vitreous to tan. crystalline. lumpy to platy. very fine crystalline to cryptocrystalline. no visible porosity or staining. Multiple grains tested for fluorescence. none. 5% limestone. minor shale and iron fillings.

3995m – 4020m	Dolomite. 95%. as before. tested multiple grains for fluorescence. none. 5% white limestone. tan colour increasing and becoming darker with depth.
4020m – 4035m	Dolomite. 100%. as before. lumpy to platy. with 3-5% minor white limestone. Multiple grains tested for fluorescence. none.
4035m– 4060m	Dolomite. 80-90%. tan to vitreous. lumpy to platy. crystalline. very fine crystalline to cryptocrystalline. no visible porosity or staining. multiple grains tested for fluorescence. none. Increase in white platy limestone 10-20%. translucent. slickensides. indicate shearing.
4060m – 4070m	Dolomite. 70% vitreous to tan. very fine crystalline to cryptocrystalline. tight. no staining. no fluorescence. with 20-30% white limestone. platy to lumpy. translucent. slickensides. fine crystalline. chalky in part. limestone increasing with depth
4070m – 4085m	Limestone. 90%. white to vitreous. translucent in part. predominantly platy. soft. very fine crystalline. rich in slickensides. tight. no staining with 5-10% crystalline dolomite. vitreous to tan. as before. trace of bio-clastic.
4085m – 4095m	Limestone. 70-80%. as above. with increase in tan crystalline 20-30%.
4095m – 4130m	Dolomite. 80-90%. tan to vitreous. crystalline. very fine crystalline to cryptocrystalline. no visible porosity or staining. rich in crystal rhombs which are cemented together. multiple grains tested for fluorescence. none to a very weak trace. with 10-20% white platy limestone. as before.
4130m – 4150m	Limestone. 90% white to grey to vitreous. lumpy to platy. soft. slickensides. translucent. chalky. very fine crystalline. tight. 5-10% tan to light grey crystalline dolomite. tight. no staining.
4150m – 4175m	Dolomite. 90% light grey to tan. crystalline. firm to soft. blocky. limey in part. cryptocrystalline. No visible porosity or staining. Multiple grains tested for fluorescence. none to a weak fluorescence. with 10-20% white platy limestone.
4175m – 4185m	Limestone. 70-80%. white. lumpy to platy. soft. chalky. very fine crystalline. tight. no staining with 20-30% dolomite. as before. limey in part.
4185m – 4190m	Dolomite. 90%. light grey to tan to mottled. very platy and splintery translucent. cryptocrystalline to very fine crystalline. fair to poor inter-crystalline porosity .Fluorescence. good. no ribbon cut. with 10% white limestone.
4190m – 4200m	Dolomite.90%. predominantly light grey to minor tan. translucent. splintery to platy. crypto-crystalline. tight. no staining. fluorescence. good. orange yellow. no ribbon-cut. the grains fluorescence without solvent. There are lead grey flakes in the dolomite matrix which might be a variety of carbon that is causing the fluorescence. with 5-10% white platy limestone.
4200m – 4210m	Dolomite. 100%. as above. no visible porosity or staining. fluorescence. good. as before. the dolomite grains are almost silicified because they have none to very little reaction to acid. With 3-5% white limestone. increasing with depth.
4210m – 4230m	Dolomite. 90%. light grey to tan. minor translucent. lumpy to platy. cryptocrystalline to minor very fine crystalline. tight. no staining. weak to good fluorescence. as before. with 5-10% white limestone. minor rounded bio-clastic. silicified dolomite grains.
4230m – 4235m	Dolomite.90%. as above. with a trace of inter-crystalline porosity. no staining. no fluorescence. with 5-10% white limestone. minor rounded bio-clastic.
4230m – 4240m	Dolomite.90%. as above. with a trace of inter-crystalline porosity. no staining. no fluorescence. with 5-10% white limestone. minor rounded bio-clastic.
4240m – 4255m	Dolomite. 90% light grey to tan. predominantly lumpy to minor splintery. crystalline. cryptocrystalline to very fine crystalline. poor inter-crystalline porosity. no staining. weak -good fluorescence with 5-10% white limestone. rounded bi-clastic.

3.4 Stratigraphic Column

The Stratigraphic Column for PAP#1-ST#3 is shown below in Figure 3-1. A copy of the strip log and sample description can be found in **Appendix 9.**

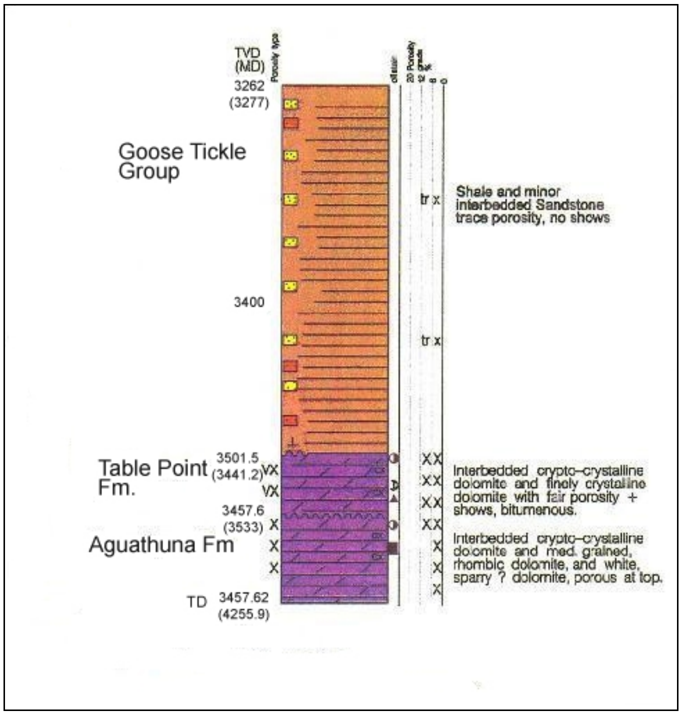


Figure 3-1: Stratigraphic Column. PAP#1-ST#3

3.5 Biostratigraphic Data

No biostratigraphic study was undertaken.

4. Well Evaluation

4.1 Downhole Logs

The real-time gamma ray tool failed and as such no logging details are available.

4.2 Other Logs

None taken..

4.3 Synthetic Seismograms

None taken.

4.4 Vertical Seismic Profiles

None taken.

4.5 Velocity Surveys

None taken.

4.6 Formation Stimulation

PDIP had an acid job performed on PAP#1-ST#3. A copy of the report is found in **Appendix 10.**

4.7 Formation Flow Tests

A drill stem test (DST) was performed in ST#2 over the interval 3325m to 3482m on September 12 2009. A copy of the report is found in **Appendix 15.**

- **Pre-flow (PF):** The tool was opened for pre-flow from 17:14 to 18:03 for 49 min. Pressures were monitored and the DST manifold pressure built from 2300 kPa to 2700 kPa in the first five minutes, then remained steady until the end of the PF period with very weak air blow and no gas to surface.
- **Initial shut-in period (ISI)**: The well was shut-in to allow for 86 minutes from 18:03 to 19:29 to allow for re-charging of the zone.
- **Main flow period (MF)**: The DST tool was opened to flow the well to the production testers for the MF for 970 minutes from 19:59 to 12:09 (September 13 2009). There was slight gas blow on tubing. Gas to surface was too small to measure.
- **Final shut-in period (FSI)**: The DST tool was shut-in for 214 minutes from 12:09 to 15:43.

Samples taken during the DST are described in Section 2.21.

In addition to the DST performed in Sidetrack #2 a flow test was performed on the horizontal well, PAP#1-ST#3. The well was opened from January 3 to January 29 2009. During this period the choke was varied to test the flow of the well. The production profile is summarized in Table 4-1.

Table 4-1: Production in ST#3 During January 2009 Flow Test

Date	Oil Produced (m^3)	Gas Produced (10^3 m^3)
03/01/2008	36.407	25.900
04/01/2008	73.002	40.200
05/01/2008	70.193	29.430
06/01/2008	65.570	28.670
07/01/2008	55.620	29.950
08/01/2008	49.905	26.110
09/01/2008	49.058	24.150
10/01/2008	45.232	23.320
11/01/2008	43.414	20.682
12/01/2008	44.769	21.970
13/01/2008	42.148	21.840
14/01/2008	49.020	21.137
15/01/2008	40.260	18.640
16/01/2008	37.390	16.830
17/01/2008	36.480	17.350
18/01/2008	35.710	17.430
19/01/2008	32.100	15.430
20/01/2008	31.320	12.456
21/01/2008	11.310	4.418
22/01/2008	20.263	8.802
23/01/2008	28.309	11.789
24/01/2008	13.620	5.397
25/01/2008	7.930	4.730
26/01/2008	27.850	14.522
27/01/2008	10.588	5660
28/01/2008	0	980
29/01/2008	8.355	5.550
Total	**965.823**	**473.343**

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources

FAX TRANSMISSION

50 Elizabeth Ave., 4th Floor
St. John's, NL
Fax: (709) 729-2508

To:	Mick Hibbert	**Date: August 7, 2008**
Fax #:	754-8170	**Pages: 7, including this cover sheet**
From:	Keith Hynes	
Subject:		

COMMENTS:

IF YOU DID NOT RECEIVE THE TOTAL NUMBER OF PAGES INDICATED ABOVE, OR HAVE ANY OTHER PROBLEMS, PLEASE CONTACT (709) 729-2005.

P.O. Box 8700, St. John's, NL, Canada, A1B 4J6

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Office of the Associate Deputy Minister, Energy

August 7, 2008

Mr. Mick Hibbert
Operations Manager
PDI Production Inc.
10 Fort William Place
Suite 201, The Baine Johnston Centre
St. John's, NL A1C 1K4
Canada

Dear Mr. Hibbert:

Re: Drilling Program Approval and Authority to Drill a Well
<u>for Port Au Port #1 – Sidetrack #3 (PAP#1 – ST#3)</u>

Please find attached the following executed documents pertaining to the subject well operations:

(1) Drilling Program Approval (DPA 2008-124-01)
(2) Authority to Drill a Well (ADW 2008-124-01-01)

These documents contain attached conditions. Please ensure that they are prominently displayed at the wellsite at all times.

If you have any questions please contact Keith Hynes at 729-7188. Thank you for your interest in western Newfoundland, and good luck with your exploration efforts.

Yours sincerely,

Pierre Tobin
Associate Deputy Minister (Energy)

Attachment

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Energy Branch

DRILLING PROGRAM APPROVAL - APPLICATION

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act(1)*, PDI Production Inc. (PDIP) as operator on behalf of PDIP, CIVC Creditor Corporation, Gestion Resources Inc., holding a subsisting licence, permit or lease issued pursuant to the *Petroleum Regulations(2)*, namely; 2002-01
(licence, permit, or lease #)

hereby applies for approval to conduct a drilling program using the drilling rig Nabors Drilling Rig 45ETD and equipment and procedures described in the detailed program dated. August 6, 2008

The undersigned operator's Representative hereby declares that, to the best of the operator's knowledge, the information contained herein and in the attached detailed program is true, accurate and complete.

Signed: [signature]
Operator's Representative

Date: AUGUST 6, 2008

APPROVAL

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act*, the operator named in the Application is hereby authorized to conduct the proposed drilling program subject to the following conditions:

1. This Drilling Program Approval shall, unless otherwise extended or terminated, expire upon the 7 day of August, 20 11

2. This Authorization shall be prominently displayed at the well site at all times during which operations are being conducted;

3. Evidence of financial responsibility, as required pursuant to Section 14 of the *Petroleum Drilling Regulations (3)*, shall be provided by the operator to the Minister of Natural Resources;

4. The operator shall use the equipment and procedures described in the detailed program dated August 7, 2008 unless a change in the equipment or procedures is approved in writing by the Director; and

5. The operator shall comply with such other conditions as are appended to this Approval.

Signed: [signature]

Effective Date: Aug. 7/08

Drilling Program Approved No. 2008-124-01

(1) - (R.S.N.L. 1990, c. P-10)

(2) - CNR 1151/96

(3) - CNR 1150/96

SCHEDULE "B"
TO
DRILLING PROGRAM APPROVAL #2008-124-01
OTHER CONDITIONS

1. Notwithstanding condition #4 of the Approval (see previous page), the Operator shall comply with the requirements of the *Petroleum Drilling Regulations (CNR 1150/96)* (the Regulations) unless the Operator has received written approval from the Director to deviate from the Regulations.

2. Pursuant to Section 154 of the Regulations, the director shall release to the public, general information including the name, classification, location, identity of the drilling contractor and rig used by the Operator, depth and operational status of the drilling program.

3. It is a condition of approval of this DPA that the Operator, pursuant to Section 52(2)(a) of the *Petroleum Regulations, (CNR 1151/96)* provide to the director on a daily basis a cost summary and that at the same time as the Final Well Report is submitted a Benefits Report for all major cost categories also be submitted.

4. It is a condition of this DPA that the Operator, pursuant to Section 88 of the Regulations, submit tour sheets on a weekly basis.

August 7, 2008

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Energy Branch

AUTHORITY TO DRILL A WELL - APPLICATION

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act (R.S.N.L. 1990, c. P-10)* and in compliance with section 29 of the *Petroleum Drilling Regulations,(CNR 1150/96)* PDI Production Inc. (PDIP), as operator, hereby applies for Authority to Drill a Well to be known as Port au Port #1 - Sidetrack #3 (PAP#1 - ST#3) using the equipment and procedures described in the well program dated August ,20 08

Permit, Licence or Lease to which this Program applies: 2002-01

Area: Port au Port, Newfoundland	COORDINATES	
Field/Pool: Garden Hill South	Long: 48-29-21.381 N	UTM (NAD27) Northing: 5,372,856.003
Drilling Rig: Nabors 45ETD	Lat: 59-13-32.705 W	Easting: 335,490.317
Rig Type: Triple Mobile Drilling Unit	ELEVATIONS	DEPTH
Drilling Contractor: Nabors Drilling Inc. (A Division of Nabors Canada)	☐ RT ☒ KB ☐ RF 219.7 m	T.D.: 4448 m MD
	G.L.: 212.4 m	TVD: 3450 m
ESTIMATES	TARGET HORIZONS	
Spud Date: August 12, 2008 — Well Cost: $12.3 M	Aguathuna Formation	
Days on Location: Estimated 85 days		

EVALUATION PROGRAM

Ten-metre sample intervals: none	Conventional cores at: Sidewall cores in Aguathuna Formation
Five-metre sample intervals: from drillout to TD	Logs and Tests: While Drilling: Gamma Ray, Resistivity. Post Drilling: Rig-source VSP, DSI Sonic, Gamma Ray, Resistivity with Microlog, Caliper, Neutron Density, PEF & Image Log
Canned sample intervals: none	

CASING AND CEMENTING PROGRAM

O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m)	Cementing Program
177.8	38.68	L-80	3548 m	3548 m to 2150 m 0:1:0 Class G Cement 18.5 tonne

Other Equipment:

The undersigned operator's Representative hereby declares that, to the best of the Representative's knowledge, the information contrained herein and in the attached detailed program is true, accurate and complete.

Signed: M [signature] Date: August 6, 2008

Operator's Representative

AUTHORIZATION

Whereas the Minister of Natural Resources has jurisdiction under the *Petroleum Drilling Regulations*, ("the Regulations").

In accordance with section 32 of the Regulations, the operator named in the Application is authorized to undertake the proposed well program described above subject to the following conditions:

1. This Authorization shall be prominently displayed at the well sita at all times during which operations are being conducted;
2. Copies of all logs and well test data shall be submitted to the director by the operator promptly after their aquistition;
3. The operator shall comply with all conditions of the Drilling Program Approval No. DPA-2008-0124-01 under which the above well is to be drilled;
4. No change in the well program hereby approved may be made unless it is first approved by the director in writing;
5. This Authorization is conditional on the operator commencing drilling within 120 days of the effective Authorization date; and
6. The operator shall comply with such other conditions as are appended to this Authorization.

Signed: [signature] Effective Date: Aug. 7/08

Authority to Drill a Well No. 2008-124-01-01

SCHEDULE "A" TO AUTHORITY TO DRILL A WELL #2008-124-01-01 OTHER CONDITIONS

1. The Operator shall, prior to commencement of major site operations, ensure that an approved Operator's representative is on site to supervise all site operations.

2. Notwithstanding condition #3 of the Authorization (see previous page), the Operator shall comply with the requirements of the *Petroleum Drilling Regulations, (CNR 1150/96)* (the Regulations) unless the Operator has received written approval from the Director to deviate from the Regulations.

3. The Operator shall ensure that the well is drilled in a prudent and reasonable manner, consistent with good oilfield practices and with due consideration for the safety of personnel, property and the environment.

4. The Operator shall be liable for its actions and the actions of its agents, contractors, employees and any others acting under the Operator's authority in drilling and testing the well.

5. The Operator's liability for the actions of its agents, contractors, employees and any others acting under the Operator's authority in drilling the well does not limit any liability that those agents, contractors, employees or others acting under the Operator's authority may have to the Operator.

6. The Operator shall ensure that all necessary approvals have been acquired from other government agencies and other rights holders, in respect of access to and use of land for the purpose of the drilling and testing operations, and disposal of all materials.

7. The Operator shall attorn to the jurisdiction of the courts of the Province of Newfoundland and Labrador.

8. A summary report of all operations performed, normally referred to as the daily completion/workover report, daily drilling report and daily geological report, shall be submitted on a daily basis.

9. Prior to commencing drilling operations, the Operator shall ensure that contingency plans have been verified and that equipment is available to cope with a foreseeable emergency situation.

10. Prior to commencing drilling operations, the Operator shall supply an updated CAODC rig and site inspection report completed by the well supervisor and the rig manager.

11. If deficiencies are noted in the inspection report provided in item 10 above, follow-up report(s) must be submitted by the site supervisor attesting that work to correct the deficiencies has been completed.

12. Where the well or any part of the existing well such as Sidetrack #2, is to be abandoned or suspended, a program must be submitted for approval prior to carrying out those operations. As per section 122 of the Regulations, a termination record signed by the operator's representative must be submitted within 21 days.

13. The Operator shall provide the Director with a videotape, or photographs showing the final condition of the drillsite.

August 7, 2008

APPENDIX 1:

(Attachment) Drilling Program Approval (DPA)

Garden Hill South PAP#1 - ST#3
Drilling Program Approval (DPA) Application

PDIP Ref. GHS-0001-OPW-2-REP-0006
Rev. 2

Submitted by

PDI Production Inc.

2nd Floor Baine Johnston Centre
Suite 201
10 Fort William Place
St John's, NL
A1C 1K4

August 2008

pdiproduction

Report Approval Cover Sheet

Report Title:	**Garden Hill South PAP#1 - ST#3 Drilling Program Approval (DPA) Application**
Project Name:	Garden Hill South Horizontal Well
Client:	N/A
Client Ref:	N/A
PDIP Ref:	GHS-0001-OPW-2-REP-0006

Approval Record

Rev. No.	Date	Prepared	Reviewed	Approved
0	Nov. 27th, 2007	K Boone	V P Mercer	A Pegram
1	July 21st, 2008	K Boone	V P Mercer	M Hibbert
2	August 6th, 2008	V P Mercer	K Boone	M Hibbert

Report Record of Revision

Report Title:	**Garden Hill South PAP#1 - ST#3** **Drilling Program Approval (DPA) Application**
Project Name:	Garden Hill South Horizontal Well
Client:	N/A
Client Ref:	N/A
PDIP Ref:	GHS-0001-OPW-2-REP-0006

Record of Revision

Rev. No.	Date	Revision Details
0	Nov 27th, 2007	Original Revision
1	July 15th, 2008	Comments received from DNR addressed. Rig changed to Nabors Rig 45 (from Rig 57). Drilling consultant changed to Dragon Lance Management Corporation (from CODECO Consulting Inc.).
2	August 6th, 2008	Comments received from DNR (July 30th, 2008) addressed.

Summary

Garden Hill South (GHS) is an onshore discovery on the Port au Port Peninsula in Western Newfoundland, which is covered by Petroleum Lease #2002-01.

PDIP as operators of the Petroleum Lease submit this drilling program for approval by the Department of Natural Resources, on behalf of the interest holders in Lease #2002-01.

This drilling program states that PDIP intend to drill a new sidetrack (ST#3) in the PAP#1 wellbore with the goal to achieve sustained production and continual flow from the reservoir. Drilling of the new sidetrack in the PAP#1 wellbore is scheduled to commence in August 2008 and will be undertaken by Nabors Drilling Inc. (A Division of Nabors Canada) using Nabors Rig 45ETD.

PDIP have considered the environment at the site and have determined that there are no anticipated conflicts with resources, including wildlife, water supply, and water bodies. A number of pollution prevention mechanisms have however been developed and incorporated to minimize the potential for spills of oil or other pollutants to reach the surrounding soil on site.

In addition, PDIP have ensured that appropriate financing and insurance are in place to allow the commencement of operations. PDIP will also continue to make sure that all personnel working on site are appropriately qualified.

Recognizing that accidents do happen, PDIP have developed a detailed set of contingency plans for serious injury or death, major fire, loss or disablement of the rig, loss of well control, spills of oil or other pollutants to the environment, and releases of hydrocarbons with the potential to threaten personnel. These plans are submitted as an appendix to this drilling program.

Contents

List of Appendices

1. Introduction

1.1 Background and Location

Petroleum Lease #2002-01 allows for production of hydrocarbons from an onshore area of the Port au Port Peninsula, indicated as 'Lease Area' in Figure 1-1.

Based on previous geological interpretation and a 2D seismic survey of the area (combined with the experience of previous interest holders of the Petroleum lease), the current interest holders consider that significant oil production opportunities exist within the lease area, but in particular at two structural accumulations within the lease area: Garden Hill South (GHS) and Garden Hill North (GHN), also shown in Figure 1-1. Wells have been drilled at GHS, but all of these have since been shut-in or abandoned. To date, no wells have been drilled at GHN.

The current interest holders in Petroleum Lease #2002-01 are:

- PDI Production Inc. (PDIP)
- CIVC Creditor Corp (CC)
- Gestion Resources Inc. (GR)

PDIP have undertaken to develop and operate GHS on behalf of the interest holders and submit this drilling program for approval by the Department of Natural Resources (DNR).

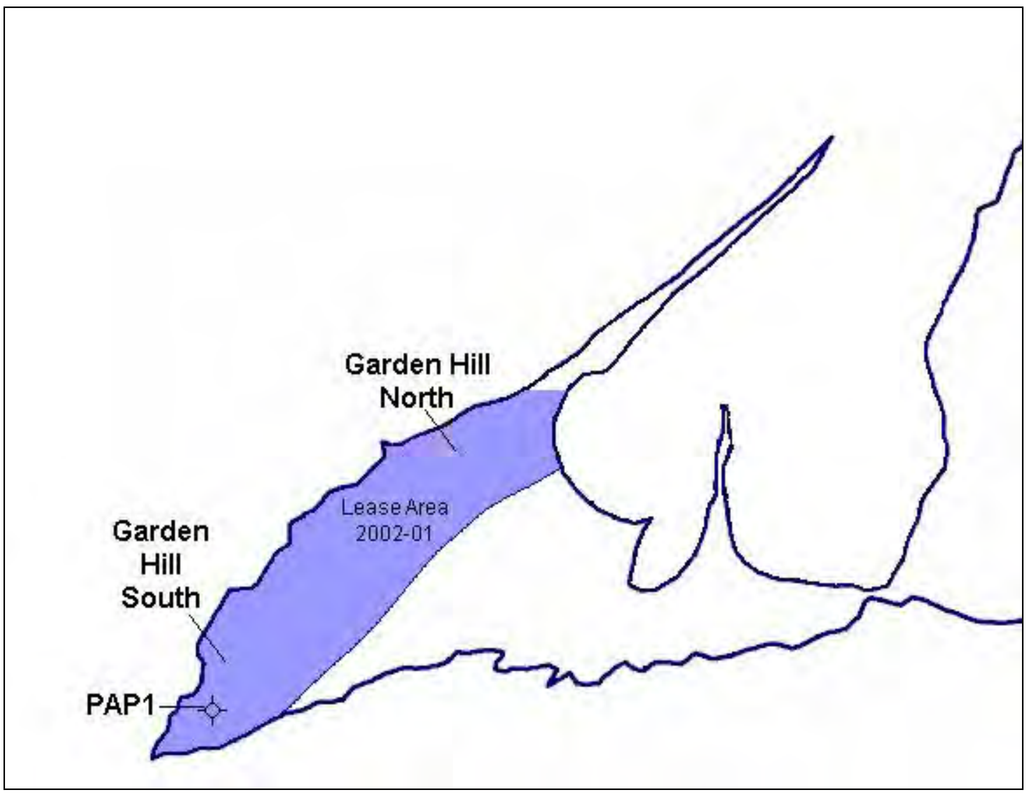


Figure 1-1: Port au Port Petroleum Lease #2002-01

1.2 Document Structure

This drilling program provides information to support proposed drilling operations at the GHS oil and gas development.

Section 2 provides an overview of the purpose, nature and logistics of the planned drilling operations at the site. Section 3 describes, in general, the drilling rig that will be utilized to commence the program to drill the Port au Port #1, Sidetrack #3 (PAP#1 - ST#3) wellbore.

Section 4 describes any special conditions that may affect the safety of the drilling operations, and Sections 5 through 7 provide supporting environmental information. Specifically, Section 5 describes the environmental conditions at site, whilst Section 6 describes PDIPs philosophy towards the protection of the natural environment and provides an overview of the environmental protection measures that will be utilized during the drilling entry program. Section 7 then summarizes communications with the Department of Environment and Conservation concerning the requirements for environmental registration and assessment for the project.

Section 8 introduces a site survey, which is presented in Appendix B, while Section 9 refers to a site layout with equipment, presented in Appendix C. The drilling rig crew qualifications are summarized in Section 10. Sections 11 and 12 then describe insurance and financial requirements respectively, and finally Section 13 describes the contingency plans that PDIP have in place to deal with potentially hazardous incidents at site.

2. Program Purpose, Timing, Nature and Logistics

PDIP have undertaken to develop and operate GHS on behalf of the interest holders. Having re-entered the Port au Port #1, Sidetrack #2 (PAP#1 - ST#2) well in early 2007, PDIP are now planning to drill a new horizontal sidetrack well (ST#3) in the Port au Port No #1 wellbore (PAP#1 - ST#3).

The purpose of drilling the horizontal well is to:

- achieve sustained production from the reservoir;
- provide an additional structural control point for mapping the extent and closure of the GHS field;
- test the theory of dolomitisation of the Upper Aguathuna Dolomite extending NNE from PAP#1 in the footwall of the Round Head Thrust;
- investigate the contribution of faults/ fractures to oil production;
- investigate the orientation of faults/fractures;
- investigate the size of the GHS accumulation from test data.

Drilling of the new horizontal sidetrack in the PAP#1 well is scheduled to commence in August 2008. Drilling will be undertaken by Nabors Drilling Inc. (A Division of Nabors Canada) using Nabors Rig 45ETD. Engineering and operations supervision will be provided by Dragon Lance Management Corporation (DLMC) and PDIP.

3. Rig Specifications

PDIP intend to utilize Nabors Drilling Rig 45ETD, a triple mobile drilling unit (MDU), for its onshore drilling program at GHS. In part, this type of drill rig has been chosen to withstand the harsh weather conditions anticipated at this location. Given the high winds anticipated at GHS, the rig derrick will be stabilized using high strength guy wires secured by drilled and grouted anchors.

3.1 Nabors Rig 45ETD

Nabors Drilling Rig 45ETD is a conventional drilling rig that typically works in the province of Alberta. It has also been used previously in Newfoundland. Rig 45ETD and its associated equipment is in compliance with the Alberta Energy and Utilities Board (EUB) regulations covered in EUB Guide 36. Included with this rig is an electric top drive (ETD), which uses an electric motor to rotate the drill string. A summary of the specifications of Rig 45ETD is shown in Table 3-1.

General		
Rig No:	45ETD	
Rig Depth:	6100m with 127mm drill pipe	
Number of Loads:	54 (with boiler)	
Drawworks		
Make:	Emsco Electohoist II	
Max Hoisting Capacity (daN):	375,000 / 357,000	
Number of Hoisting Speeds	Multiple	
Auxiliary Brake Type:	Baylor	
Rig Power		
Make:	2 x EMD 79B DC to DWKS	
Total Rig Power:	2 x 746 kW	2 x 1,000 HP
Continuous Power:	2 x 597 kW	2 x 800 HP
Derrick		
Make:	DRECO M14225-1330	
Type:	Triple Cantilever	
Height (m):	43.28	
Normal No Lines Strung:	10	
Maximum Allowable Working Load – API Rating (daN) :	445,000	12 lines
Contractor's Allowable Working Load (daN):	445,000	12 lines
Top Drive		
Make and Model:	Canrig 1050E / 500	
Static Hoist Rating (daN):	444,800	
Electric Motor:	GE 752 High Torque Shunt	
Max Continuous Armature Current:	1250 Amps	
Max Intermittent Armature Current:	1435 Amps	
Max. Armature Voltage:	750 Volts DC	
Field Supply:	60, 40, 30, Amps	
Continuous Output Power (kW):	840	
Intermittent Output Power (kW):	967	
Gear Ratio:	5.000:1	7.120:1
Continuous Torque Rating:	40,700 Nm (30,000 ft-lb) @ 180 RPM	57,900 Nm (42,700 ft-lb) @ 125 RPM

Table 3-1: Nabors Rig 45ETD Specifications

Top Drive (continued)		
Intermittent Torque Rating:	45,100 Nm (33,300 ft-lb) @ 180 RPM	64,300 Nm (47,400 ft-lb) @ 125 RPM
Maximum Speed Rating:	27,500 Nm (20,300 ft-lb) @ 265 RPM	39,200 Nm (28,900 ft-lb) @ 185 RPM
Brake Capacity:	40,700 Nm (30,000 ft-lb)	57,900 Nm (42,700 ft-lb)
Maximum Electric Motor Torque:	45,100 Nm (33,300 ft-lb)	64,300 Nm (47,400 ft-lb)
Torque Boost Torque Make-Up:	32,500 Nm (24,000 ft-lb)	32,500 Nm (24,000 ft-lb)
Torque Boost Torque Break Out:	50,800 Nm (37,500 ft-lb)	50,800 Nm (37,500 ft-lb)
Maximum Connection B/O Torque:	96,000 Nm (70,800 ft-lb)	115,100 Nm (84,900 ft-lb)
Pipe Handler Orientation:	Unlimited, remote controlled	
Pipe Handler Lock:	32 positions, remote controlled	
Back-up Wrench Gripper:	5.75 to 9.0 inches	
Diameter Range:	3.75 to 7.0 inches with alternate die blocks	
Back-up Wrench Maximum Travel:	43.25 inches	
Quill Connection:	6 - 5/8 Reg	
Water Course Diameter:	3.0 inches	
Circulating Pressure Rating:	5000 psi	Standard
Circulating Pressure Rating:	7500 psi	Optional
Floating Quill Travel:	8.0 inches	
Link Counterbalance Travel:	8.0 inches	
Cooling System:	Standard: Local Blower	11 kW, 80 m^3/min flow (15 HP, 2800 scfm flow)
Lubrication System:	1.5 kW, 15 L/min flow	
Hydraulic Requirement – Pressure Compensated Control:	45 L/min flow	16,200 kPa
Weight (Without Blocks):	12,700 kg	
Substructure		
Make:	DRECO Standard 4E	
Type:	Box-on-Box	
Maximum Load Capacity Set Back (daN):	222,000	
Maximum Load Capacity Rotary (daN):	356,000	
KB- Ground (m):	7.27	
Vertical Clearance for BOPs (m):	5.65	
Rotary Table		
Make:	Emsco (Dreco driven)	
Type:	T3750	
Opening (mm):	952.5	
Contractor's Operating RPM:	Max - 160	Min - 0

Table 3-1 (cont.): Nabors Rig 45ETD Specifications

Traveling Equipment		
Bails - Make / Max Allowable Load:	BJ	311,360 daN
Elevator - Make / Max Allowable Load:	Web Wilson	311,360 daN
Block/Hook - Make / Max Allowable Load:	Emsco	444,800 daN
Drilling Line		
Line Type:	EIP	
Line Size (mm):	35.00	
Single Line Breaking Strength (daN):	83,500	
Drill Pipe		
Size: 127mm OD, Grade: E	Density: 29.05 kg/m	Connection: As required, 2,237 m
Size: 127mm OD, Grade: G	Density: 29.05 kg/m	
Size: 127mm OD, Grade: X95	Density: 38 kg/m	
Drill Collars		
Diameter: 229 mm OD, 76 mm ID	Connection: 7" H90	Joints Available: 10
Diameter: 165/171 mm OD, 66 mm ID	Connection: 5" H90	Joints Available: 23
Mud Pumps		
Make and Model:	2 x Emsco FB-1600	
Stroke (mm):	305	
Pump Powered by:	2 x EMD 79B (596 kW each)	
Liner Size (mm)	*Max Pump Pressure (kPa)/ Contractor Max Pump Pressure (kPa)*	*Max Strokes per min / Min Strokes per min*
140	38,320 / 27,600	120 / 30
165	27,450 / 21,900	120 / 30
Mud Tanks		
Covered 1 Tank System		
Total Volume (m³):	115.8	No. of Tanks: 2
Active (Useable) Volume (m³):	105.8	No. of Compartments: 3
Pill Tank Volume (m³):	5.0	
Trip Tank Volume (m³):	5.0	
Independent Mud Mixing System Pumps 1 to 6:	Type: Mission	Size: 127 mm x 152 mm
Agitator:	Type: Eurodrive	Total No. of Agitators: 5
Hole Fill Pump:	Type: Mission	51 mm x 76 mm
Shale Shakers		
Make:	Derreck Flo-Line Cleaner	
Quantity:	2	
Vibrating Speed (cycles/min):	1,850	
Mud Gas Separators		
Quantity:	2	
Location:	Remote Tank	
Height Above Mud Level (m):	1.84	(mud level to top of vessel)
Vessel Diameter (mm):	914	
Liquid Inlet Line Size (mm):	101	

Table 3-1 (cont): Nabors Rig 45ETD Specifications

Mud Gas Separator (continued)		
Gas Outlet Size (mm):	203	
Open Bottom:	Yes	
Internal Baffles:	Yes	
NACE Certified:	Yes	
Blowout Prevention		
BOP Stack:		
346 mm x 35,000 kPa Shaffer SPH Annular with NACE trim		
346 mm x 35,000 kPa Shaffer SL Ram with NACE trim		
346 mm x 35,000 kPa Shaffer SL Ram with NACE trim		
HCR Valve Make / Size:	Shaffer	76 mm NACE
Kill Line Valves Size / Quantity:	76 mm	2
Accumulator Make / Type:	Ross-Hill	2 Station Electric
Accumulator Size / Rating:	624 L	21,000 kPa
Manifold		
Note: The master BOP controls are located at the accumulator and remote controls at the dog house		
Pressure Rating (kPa):	35,000	
Choke Line Size (mm):	76	
Valve Type:	Demco	
Size (mm):	76 x 76	
Nace Trim:	Yes	
Generators		
	Powered By:	KVA / Output (kW):
Number 1 – Kato AA27478000:	Caterpillar 3512 B	1785 / 1100
Number 2 – Kato 6P6-3150:	Caterpillar 3512 B	1785 / 1100
Number 3 – Cat SR4:	Caterpillar 3512 B	1750 / 1100
Instrumentation		
Electronic Drilling Recorder		
Boiler		
Make:	Volcano	
Type:	Diesel	
Output (kW):	93	
Drill Pipe Spinner		
Make:	Iron Roughneck	
Fuel Storage		
Volume (L):	24,000	1 transfer pump
Water Storage		
Volume (L):	64,000	2 transfer pumps

Table 3-1 (cont.): Nabors Rig 45ETD Specifications

3.2 Expected Rig Discharges

The amount of diesel fuel to be used by the drill rig is estimated to average between 4,000 and 4,500 litres per day. This will not generate significant air emissions at the site. This rate of fuel consumption is below the Newfoundland Department of Environment and Conservation's (NLDOEC's) Type I emission source threshold of 15,000,000 litres/year. Above this level, industry is required to undertake air dispersion modelling, stack testing, and ambient air monitoring to demonstrate compliance with the province's Air Pollution Control Regulations, 2004.

The noise levels associated with drilling a well using a drill rig of this size would range from approximately 70 dBA in the dog house area to approximately 110 dBA in the generator, motor house and vacuum pump areas. However, since noise levels diminish with distance, it is anticipated that the site noise will not reach annoyance or disturbance levels outside of the drilling area boundary.

The discharge amounts for Nabors Rig 45ETD indicated in Table 3-2 (taken from Ref. 1) are based on an **average load of 50% capacity**.

Emission	Rate	Unit
Total NO_X (as NO_2)	8.8700	lb/hr
Total CO	0.9900	lb/hr
Total HC	0.2100	lb/hr
Total CO2	810.2	lb/hr
Part Matter	0.0500	lb/hr
Oxygen in Exhaust	12.4000	%
Dry Smoke Opacity	0.8000	%
Bosch Smoke Number	1.2800	

Table 3-2: Nabors Rig 45ETD Discharge

The drives and brakes on the rig will be water cooled. It is anticipated that the cooling water system will be a closed system and that the water may be treated with chlorine as a biocide. Treated cooling water will be disposed of at the end of the campaign (and, if necessary, during the drilling process) using a qualified waste management contractor.

4. Safety Comments

PDIP are environmentally responsible corporate citizens and hold personal safety, resource conservation, and protection of the environment in high regard. PDIP's facilities, equipment, and operating practices meet or exceed all applicable regulations and codes, and conform to good oilfield practice, and all contractors are required to adhere to the same principles. As such, PDIP take every effort to carry out operations in a safe and efficient manner.

No special conditions or circumstances that may affect the safety of the drilling operations are anticipated. All operations will be typical drilling operations with drilling carried out using a conventional drilling rig. Acceptable environmental conditions for working at site will be decided by the Well Site Supervisor in consultation with the Tool Pusher and operations will be suspended if it is believed that safety could be compromised.

In addition, all relevant safety policies and procedures will be implemented and adhered to during operations at site.

5. Environmental Description

The Port au Port peninsula lies at the northernmost landfall of the Appalachian Mountain system. Several important petroleum provinces, such as West Texas and the Anadarko and Michigan basins, have developed along this mountain system, all producing from Lower to Middle Ordovician dolomitized reservoirs.

The Garden Hill field is contained within a fault-bounded inversion fairway that trends to the northeast across the Port au Port peninsula and Port au Port Bay. The Garden Hill field comprises two structural culminations – Garden Hill South and Garden Hill North. These structures share a common petroleum system, including reservoir, source, migration route, trapping mechanism and geological history.

The GHS site is approximately 4.4 ha in size. The site is composed mainly of Class A aggregate, which has been flattened into a hard, road-like surface. There are no water bodies on site.

The site lies within the Port au Port Subregion of the Western Newfoundland Ecoregion. Generally, this ecoregion is characterized by a humid climate with a relatively longer frost-free period than other ecoregions of Newfoundland and Labrador. The landscape is dominated by rock barrens. The rock type is dominated by limestone. The limestone heaths of the area support numerous species of rare and endangered plants. Forests are generally unproductive or totally lacking (Ref. 2).

Although the Port au Port Peninsula can support rare and endangered plants, a query of the Environment Canada's Species at Risk mapping software (Ref. 3) does not indicate any plant species near the project site. Ref. 3 indicates that a bird, the Red Crossbill percna subspecies (*Loxia curvirostra percna*), is the only endangered species found on land near the project site. The distribution of the bird covers the entire province of Newfoundland. No conflicts are anticipated with this species or any other wildlife because the site has already been cleared and developed into an industrial site. Wildlife access is prevented by a 2 metre high chain link fence which has been erected around the entire site at GHS. There are no sensitive wildlife areas designated in the vicinity of the project.

Conflicts with resources such as municipal water supplies are not expected to occur because during normal operations there will be no discharge to the environment.

No conflicts with fish and fish habitat are anticipated as there are no water bodies or streams on the site.

The nearest climate data available for the GHS project site is taken at Stephenville, approximately 60 km east of the site. Climate data for this location between 1971 and 2000 is shown in Table 5-1 (Ref. 4).

Temperature	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year	Code
Daily Average (°C)	-6.2	-7.5	-3.6	2.3	7.4	12	16.1	16.2	12.2	6.9	2.3	-3	4.6	A
Standard Deviation	1.7	2.8	2.6	1.9	1.6	1	1.2	0.8	1.1	1	1.3	1.9	0.9	A
Daily Maximum (°C)	-2.5	-3.2	0.7	6	11.6	16.3	19.9	20.1	16.1	10.3	5.1	0.2	8.4	A
Daily Minimum (°C)	-9.9	-11.8	-7.9	-1.5	3	7.6	12.2	12.3	8.3	3.5	-0.6	-6.2	0.8	A
Extreme Maximum (°C)	12.4	12.7	19.7	23.8	27.2	30	**30.6**	29.9	29.1	22.2	20.6	16.1		
Date (yyyy/dd)	1986/28	1996/17	1999/29	1986/26	1950/26	1954/27	**1949/31+**	2001/01	1989/10	1946/01+	1967/05	1966/01		
Extreme Minimum (°C)	-26.1	**-29.5**	-29.2	-15.6	-7.1	-1.1	3.9	2.2	-0.7	-5.6	-14.9	-20.2		
Date (yyyy/dd)	1957/29	**1990/05**	1990/08	1994/02	1993/11	1943/01+	1974/07	1975/25+	1986/21	1969/31	1992/24	1984/26		
Precipitation														
Rainfall (mm)	34.8	28.8	37.5	55.4	93.7	102.3	117.4	122.8	127.9	126.6	90.3	47.4	984.9	A
Snowfall (cm)	114.6	82.2	60.5	20.9	4.2	0	0	0	0.1	3.7	31.7	89.1	406.9	A
Precipitation (mm)	134.5	102.1	93.7	75.6	98.1	102.3	117.4	122.8	128	130.2	120.7	126.7	1352.1	A
Average Snow Depth (cm)	43	58	43	9	0	0	0	0	0	0	2	16	14	A
Median Snow Depth (cm)	43	58	42	7	0	0	0	0	0	0	0	14	14	A
Snow Depth at Month-end (cm)	51	61	22	1	0	0	0	0	0	0	5	30	14	A
Extreme Daily Rainfall (mm)	52.8	83.8	50.8	68.8	53.6	**130.7**	84.1	96	72.1	50.2	63	48.2		
Date (yyyy/dd)	1979/08	1946/22	1968/20	1994/07	1993/14	**1995/08**	1979/17	1989/05	1943/25	2000/10	1951/08	1990/08		
Extreme Daily Snowfall (cm)	**56.1**	41.7	34	21.1	14	2.5	0	0	2.4	12.7	20.8	35.3		
Date (yyyy/dd)	**1973/31**	1964/17	1993/14	1964/02	1963/10	1946/01	1942/01+	1942/01+	1989/27	1969/23	1997/29	1952/31		
Extreme Daily Precipitation (mm)	58.8	94	50.8	68.8	58.9	**130.7**	84.1	96	81	50.2	70.1	48.2		
Date (yyyy/dd)	1979/08	1946/22	1968/20	1994/07	1954/22	**1995/08**	1979/17	1989/05	1955/21	2000/10	1958/07	1990/08		

Table 5-1: Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

Extreme Snow Depth (cm)	151	169	**183**	97	9	0	0	0	0	10	35	120		
Date (yyyy/dd)	1982/19	2001/25	**1967/19+**	1997/03+	1997/01	1954/01+	1954/01+	1954/01+	1954/01+	1969/23	1997/30	1989/31		
Days with Maximum Temperature: Days with Maximum Temperature:														
<= 0 °C	21.5	20.4	13.5	2.1	0.07	0	0	0	0	0	3.1	15.1	75.8	A
> 0 °C	9.5	7.9	17.5	27.9	30.9	30	31	31	30	31	26.9	15.9	289.5	A
> 10 °C	0.2	0.33	0.9	5.3	19.5	28.3	31	31	29	15.5	4.3	1.1	166.6	A
> 20 °C	0	0	0	0.1	0.97	5.2	14.3	14.8	2.9	0.21	0	0	38.5	A
> 30 °C	0	0	0	0	0	0	0.03	0	0	0	0	0	0.03	A
> 35 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Days with Minimum Temperature: Days with Minimum Temperature:														
> 0 °C	0.83	0.73	2.9	10.1	25.3	29.9	31	31	29.9	26.5	12.4	3	203.5	A
<= 2 °C	30.6	27.9	29.8	25.9	12.6	1.3	0	0	1	11.1	23.3	30	193.6	A
<= 0 °C	30.2	27.5	28.1	19.9	5.7	0.1	0	0	0.1	4.5	17.6	28	161.7	A
< -2 °C	28.7	26.2	24.2	12.4	1.6	0	0	0	0	0.93	10.4	23.9	128.4	A
< -10 °C	15.2	17.2	11.1	0.67	0	0	0	0	0	0	0.24	7.3	51.7	A
< -20 °C	0.4	2.5	1.4	0	0	0	0	0	0	0	0	0.03	4.3	A
< - 30 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Days with Rainfall: Days with Rainfall:														
>= 0.2 mm	5.5	4.5	6.9	9.7	13.9	14.2	15.3	14.9	16.1	18.4	13	7.4	139.8	A
>= 5 mm	2.2	1.8	2.7	3.7	5.6	6.2	6.9	6.9	7.4	7.8	5.4	3	59.6	A
>= 10 mm	1.1	0.93	1.1	1.7	3.3	3.3	4.2	4.1	4.7	4.4	3.2	1.6	33.6	A
>= 25 mm	0.2	0.17	0.13	0.27	0.63	0.63	0.77	1.1	0.93	0.89	0.64	0.27	6.6	A

Table 5-1 (cont.): Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

Days With Snowfall: Days With Snowfall:														
>= 0.2 cm	25	19.9	15	7.9	1.6	0	0	0	0.13	1.8	10.9	20.9	103.2	A
>= 5 cm	7.9	5.2	3.9	1.1	0.2	0	0	0	0	0.18	1.8	6.3	26.6	A
>= 10 cm	2.6	1.9	1.4	0.33	0.07	0	0	0	0	0.04	0.68	2.1	9.2	A
>= 25 cm	0.27	0.1	0.2	0	0	0	0	0	0	0	0	0.07	0.64	A
Days with Precipitation: Days with Precipitation:														
>= 0.2 mm	26.4	21.4	18.3	15.2	14.7	14.2	15.3	14.9	16.1	19	20.8	24.2	220.6	A
>= 5 mm	8.8	6.1	6.5	5	6	6.2	6.9	6.9	7.4	8.1	7.1	8.3	83.3	A
>= 10 mm	3.3	2.9	2.6	2.2	3.5	3.3	4.2	4.1	4.7	4.5	4	3.6	42.8	A
>= 25 mm	0.5	0.3	0.43	0.27	0.63	0.63	0.77	1.1	0.93	0.89	0.68	0.5	7.6	A
Days with Snow Depth: Days with Snow Depth:														
>= 1 cm	30.8	27.5	27.7	14.4	0.57	0	0	0	0	0.11	8.5	24.5	134.1	A
>= 5 cm	30	26.6	26.1	11.4	0.03	0	0	0	0	0.04	4.2	20.1	118.4	A
>= 10	28.9	25.7	24.4	8.1	0	0	0	0	0	0	2.2	15.1	104.5	A
>= 20	24.5	22.3	20.9	4.9	0	0	0	0	0	0	0.19	9.4	82.3	A
Wind: Wind:														
Speed (km/h)	24.9	22	20.9	19.6	17.2	15.3	14.4	15.5	17.4	19	21.2	23.5	19.2	A
Most Frequent Direction	W	W	NE	NE	NE	SW	SW	SW	SW	W	W	W	SW	A
Maximum Hourly Speed	93	89	89	83	83	65	54	83	72	89	83	**93**		
Date (yyyy/dd)	1982/15+	1970/11+	1996/04	1978/06	1978/22	1981/26	2000/09	1990/02	1954/12+	2000/29	1977/27	**1979/17**		

Table 5-1 (cont.): Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

Maximum Gust Speed	**141**	137	140	111	111	93	80	102	113	137	116	137		
Date (yyyy/dd)	**1986/14**	1967/23	1976/17	1980/05	1988/03	1981/26	1979/05	1990/02	1954/12	2000/29	1955/20	1972/02		
Direction of Maximum Gust	SW	E	E	E	NE	SE	SE	E	S	E	NE	SW	SW	
Days with Winds >= 52 km/hr	6.2	2.9	3.3	1.8	0.7	0.1	0.1	0.5	0.5	1.4	2.4	5.7	25.6	A
Days with Winds >= 63 km/hr	2.3	1.3	1.4	0.5	0.2	0	0	0.1	0.1	0.5	0.7	2.2	9.3	A
Degree Days: Degree Days:														
Above 24 °C	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Above 18 °C	0	0	0	0	0	1.2	11.3	10.4	1.2	0	0	0	24.2	A
Above 15 °C	0	0	0	0.2	0.5	9.7	52.8	53.5	9.5	0.6	0	0	126.7	A
Above 10 °C	0	0	0	2.8	14.8	76	188.9	192.6	79.4	11.5	1.4	0.1	567.4	A
Above 5 °C	0.6	0.7	2.1	17.6	87.3	209.7	343.6	347.4	217.3	76.6	18.2	2.3	1323.5	A
Above 0 °C	7.5	7.9	25	86.7	228.3	359.5	498.6	502.4	367.2	216.2	87.1	21.4	2407.9	A
Below 0 °C	200.2	219.6	137.1	19.2	0.4	0	0	0	0	0.1	17.9	113.8	708.3	A
Below 5 °C	348.3	353.7	269.3	100.1	14.4	0.2	0	0	0.1	15.5	99	249.7	1450.2	A
Below 10 °C	502.7	494.3	422.2	235.2	96.9	16.5	0.2	0.2	12.2	105.5	232.3	402.4	2520.5	A
Below 15 °C	657.7	635.7	577.2	382.7	237.6	100.2	19.2	16	92.2	249.6	380.9	557.4	3906.2	A
Below 18 °C	750.7	720.5	670.2	472.5	330.1	181.7	70.7	66	174	342	470.8	650.4	4899.4	A
Bright Sunshine: Bright Sunshine:														
Total Hours	42.5	72.5	111.4	130.3	199.1	199	199.7	194.8	138.9	100.9	51.6	30.1		A
Days with measureable	18.9	19.6	23.4	23	26	25	26.4	27.2	25.6	24.1	19	16		A
% of possible daylight hours	15.6	25.4	30.3	31.8	42.2	41.3	41.1	43.8	36.7	30	18.6	11.6		A
Extreme Daily	8.6	10.4	11.1	13.5	15	15.5	15.4	14.5	12.6	10.2	9.2	9		A
Date (yyyy/dd)	1973/26	1971/24+	1982/31	1984/27+	1971/30+	1979/21	1973/10+	1989/02	1972/02	1998/10	1974/10	1971/06		

Table 5-1 (cont.): Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

Humidex: Humidex:														
Extreme Humidex	12.9	13	19.5	26	28.8	35.3	35.7	34	**36.1**	28	24.7	18.6		
Date (yyyy/dd)	1986/28	1996/17	1999/29	1986/26	1960/30	1959/15	1982/22	1960/22+	**1989/10**	1997/01	1967/05	1966/01		
Days with Humidex >= 30	0	0	0	0	0	0.2	1.3	1.3	0.2	0	0	0	3	A
Days with Humidex >= 35	0	0	0	0	0	0	0	0	0	0	0	0	0.1	A
Days with Humidex >= 40	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Wind Chill: Wind Chill:														
Extreme Wind Chill	-38.2	**-41.4**	-38.1	-26	-13.2	-4.5	1.9	-0.7	-5	-9.9	-21.6	-35.6		
Date (yyyy/dd)	1991/26	**1990/03**	1992/01	1994/02	1966/08	1974/06	1974/07	1975/25	1989/27	1986/26	1993/24+	1984/27		
Days with Wind Chill < -20	12.2	13.3	7.9	0.2	0	0	0	0	0	0	0.1	4.8	38.5	A
Days with Wind Chill < -30	0.9	2.4	0.8	0	0	0	0	0	0	0	0	0.1	4.3	A
Days with Wind Chill < -40	0	0	0	0	0	0	0	0	0	0	0	0	0	A
Humidity: Humidity:														
Average Vapour Pressure (kPa)	0.3	0.3	0.4	0.6	0.8	1.1	1.5	1.5	1.2	0.8	0.6	0.4	0.8	A
Average Relative Humidity - 0600LST (%)	80.3	79.4	79.8	78.9	78.8	80.6	83.3	85.1	83.9	81.9	79.1	80	80.9	A
Average Relative Humidity - 1500LST (%)	78	75.6	72.8	67.5	65.7	69.4	71.8	70.9	69.7	71.3	74.7	77.7	72.1	A
Pressure: Pressure:														
Average Station Pressure (kPa)	100.7	100.8	100.9	101	101.2	101	101	101.1	101.2	101.2	100.9	100.8	101	A
Average Sea Level Pressure (kPa)	101	101.1	101.1	101.2	101.4	101.3	101.3	101.4	101.4	101.4	101.2	101	101.2	A
Visibility (hours with): Visibility (hours with):														

Table 5-1 (cont.): Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

< 1 km	31.8	18	14.7	7.6	7.3	13.4	11.6	7.1	2.9	3	4.3	18.1		A
1 to 9 km	225.6	166.4	113.9	68.9	63.7	77.6	95.4	73.3	51.7	47.2	81.4	176.5		A
> 9 km	486.6	494	615.4	643.5	673	629	637	663.6	665.4	693.9	634.4	549.4		A
Cloud Amount (hours with): Cloud Amount (hours with):														
0 to 2 tenths	28.2	75.9	130	127.9	150.1	134.6	116.8	132.8	123.8	88.6	43.8	31.3		A
3 to 7 tenths	112.3	127.1	139	129.8	158.1	166.5	196.8	204.7	188.3	163.2	106.8	93.2		A
8 to 10 tenths	603.5	475.5	475	462.4	435.8	418.9	430.5	406.6	408	492.2	569.4	619.6		

Table 5-1 (cont.): Climate Normals for Stephenville, 1971-2000 (from Ref. 4)

6. Protection of the Natural Environment

6.1 Philosophy

PDIP are environmentally responsible corporate citizens and endeavour to undertake operations in a manner that minimizes interaction with the surrounding natural environment.

PDIP therefore aim to achieve zero spills. In order to meet this objective, PDIP will ensure that only qualified personnel operate equipment at site, by employing suitably qualified personnel and providing additional training whenever required. However, PDIP also recognize that in some cases, despite using the best available preventative measures, a spill may occur. For this reason, PDIP have developed a detailed contingency plan describing the response measures to undertake in the event of a release of oil or other pollutant to the environment. PDIP's contingency plans are described in Section 13.

In addition, PDIP have contracted appropriate waste management contractors to ensure that waste produced on site is dealt with in an appropriate and environmentally friendly manner.

PDIP believe that natural resources should be utilized to their maximum potential. Although PDIP initially intend to flare associated natural gas, the company has also considered a number of options for utilizing this gas and will continue to evaluate these options once well data is available from the testing program proposed for PAP#1 - ST#3. As examples, PDIP intend, if and when feasible, to use natural gas produced at site to power site activities and to transmit power into the local electrical grid.

6.2 Pollution Prevention Measures at Site

A number of pollution prevention measures have been developed and incorporated into the site layout and plant design in order to minimize the potential for environmental impact in the event of spills of oil or other pollutants.

6.2.1 Prevention of Releases from Production Equipment

The pressure vessels that will be utilized on site during drilling, testing, and early production operations are fully certified and over specified units, which will minimize the potential for a release of hydrocarbons. In addition, the contractor providing production equipment and personnel on site will utilize drip trays under the production pipeline connections and provide pails under sample points to collect any oil and prevent spillage.

6.2.2 Loading Pan

Government of Newfoundland Regulations require oil loading facilities to be designed to mitigate oil spills during loading operations.

Therefore, a loading pan is provided at site for tanker loading that incorporates a sump positioned in a catchment area located between the loading hose and tanker parking position in order to be directly under the most likely cause of a spill. The catchment area of the loading pan (the area that will drain under gravity to a sump) encloses both the loading hose and the road tanker.

The sump has been designed with sufficient capacity to contain oil from a worst-case spill (taken to be three times the volume transferred to the tanker in one minute).

Additional information about the loading pan can be found in Ref. 5.

6.2.3 Storage Tank Berm

The GHS tank farm consists of eight storage tanks (with capacities of between 336 and 538 barrels, and a total capacity of approximately 3220bbl) located inside a berm. The berm is designed to provide containment of liquids that leak from the storage tanks.

Regulations require the berm to provide containment for the greater of (Ref. 6):

- 110% of the capacity of the largest tank or
- 100% of the capacity of the largest tank, plus 10% of the aggregate capacity of all the other tanks.

In addition, the base and walls of the berm are required to be liquid tight to a permeability of 25 litres/metre^2/day (Ref. 6).

Based on the requirements defined in the regulations, the capacity of the berm at GHS is required to be 807bbl.

The GHS berm is 32m in length, 16.2m wide and 0.8m deep. It therefore has a volume of 414.7m^3. Because of the volume of the berm occupied by the base (the lower 0.8m) of the eight tanks, however, its effective capacity will be less than this.

The circumferences of the tanks at GHS vary slightly, but the tanks are all 11.5m or less in circumference. Based on this, the effective capacity, V_{BE}, of the berm is conservatively calculated as follows:

$$V_{BE} = 414.7 - \pi\left(\frac{11.5}{2\pi}\right)^2 * 0.8 * 8$$

$$V_{BE} = 414.7m^3 - 67.3m^3$$

$$V_{BE} = 347m^3$$

The capacity of the berm at GHS is approximately 347m^3, or 2186bbl. Therefore, the capacity of the berm is significantly higher than the required capacity (807 bbl).

6.2.4 Diesel Fuel Tanks

A rig diesel fuel tank will be mobilized to site to be used during drilling operations. The tank will be supplied by the diesel fuel vendor and will be bermed as a measure of secondary containment for spill prevention as per the provincial Petroleum Drilling Regulations under the Petroleum and Natural Gas Act.

In addition, quantities of diesel required for site generators will continue to be stored on site in a double contained fuel tank.

7. Environmental Impact Assessment Requirements

PDIP and CIVC met with representatives from the Department of Environment and Conservation on August 28, 2006, to discuss the requirements for environmental registration and release under the Environmental Protection Act for the well re-entry and extended well test planned at GHS for Winter 2006/2007. It was noted during the meeting that CIVC had been notified by the Department, in 2001, that an environmental impact statement was not required for the activities undertaken at that time and that the project was released from assessment.

Following the meeting, PDIP sent a letter to the Minister of Environment and Conservation to notify the Department of a change in proponent and to request that the release previously granted to CIVC be extended to cover the new work planned for GHS. The request was made based on the fact that the site conditions have not changed since the activities undertaken by CIVC and that the work proposed is not significantly different from that previously undertaken. PDIP subsequently received notification from the Minister, in a letter dated October 16, 2006, that re-registration is not required under the Environmental Protection Act. The project has been released and an environmental impact assessment is not required.

A copy of the letter noting that re-registration is not required can be found in Appendix A.

8. Site Survey

A copy of the site survey drawing is included in Appendix B.

9. Site Equipment and Layout

The detailed site equipment and layout plan is shown in Appendix C for illustrative purposes. A large printout (size ANSI D) is appended to this report.

10. Crew Qualifications

During the project, onsite management and supervision will be provided by DLMC. The DLMC Project Manager will have overall charge of the well site. A summary of the qualifications and experience of DLMC's Project Manager (Mr. Steve McIntosh) is provided in Section 10.1

Experienced rig personnel from Nabors with relevant qualifications will be utilized on site for drilling PAP#1 - ST#3. The crew experience and qualifications are summarized in Section 10.2.

10.1 DLMC Project Manager: Steve McIntosh

Mr. Steve McIntosh has thirty seven (37) years of continuous employment as a Project Manager, Drilling Manager, Drilling & Completions Consultant, Consultant Drilling Supervisor working on both exploration and development projects in Canada, USA, South America, Middle East, Africa, Asia and South East Asia. Twelve (12) of these years were spent on high angle long reach directional wells, ERD extended reach directional wells and horizontal wells.

SPECIAL PROJECTS

- Successfully drilled a long reach UBD under balanced horizontal well to 3450m MD 1550m TVD from a kickoff point of 1200m.
- Successfully drilled a 2500m horizontal lateral section under balanced with nitrogen, completed open hole with multiple acid-fracturing to a total of 150 m^3 of HCL acid.

- Successfully drilled a 1000m lateral section from a kickoff point of 4750m and a final TVD of 5100m.
- Two (2) years as Project Manager supervising 12 rigs all drilling horizontal wells which successively drilled and completed 300 plus wells with a loss rate of 0.0065 (2 wells out of 305).
- Successfully drilled and completed three deep sour gas wells to over 18,000 ft, with the three (3) well project coming in $2.7 million under budget.
- Supervised drilling of a relief well to kill a deep, high-pressure gas blowout in Iran.
- Developed and presented a 14 day Technical Presentation on horizontal and multilateral drilling and completions operations to the Lang Fang Institute (Beijing University).

Operations Manager / Drilling & Completions Consultant **2002 to Current**
Dragon Lance Management Corporation

Dragon Lance Management Corporation was formed in 2002 with various consultants to support and supplement each other as a group and provide oilfield supervisory support to clients worldwide.

- Regulatory application planning support
- Well planning
- Casing design with specialized software
- Lease & road construction
- Drilling, completions and abandonment supervisory worldwide
- AFE & budget planning development
- Oversee and direct operations and activities pertaining to the wellsite operations
- Consult & confer with prime contractor representative ensuring the achievement of the goals
- Liaising with 3rd party service providers, both before & during after drilling operations to order & ensure availability & timely delivery of equipment & services.
- Maintain wellsite reporting system and end of well reports to regulatory agencies and clients
- Ensure compliance of HSE policies and procedures
- Ensure compliance with regulatory agencies pertaining to wellsite operations
- Approve & code AFE expenditures for equipment & services provides during operations

Project Manager **2001 to 2002**
CEC Ltd.

- Direct supervision of morning reports and drilling consultants on location
- Regulatory applications & licensing support with OGC, AEUB and SEM
- Oversee and direct all operations and activities pertaining to the wellsite operations for Crest Clients as required by clients.
- Develop project timelines and budgets
- Develop drilling & completions programs for various clients
- Maintaining wellsite reporting system and end of well reports
- Develop sour gas drilling programs
- Provide support on well control operations
- Ensure compliance of HSE policies and procedures
- Ensure compliance with regulatory agencies pertaining to drilling operations
- Approve & code AFE expenditures
- Casing design

General Manager **1999 – 2001**
Gold Lion Technology Corp.

- Responsible for all the direction and focus of the company's projects including research, development and marketing of all associated products and services in China.
- Co-ordinate a research program with China National Petroleum Corporation (CNPC) of a specialized drilling fluid for the petroleum industry.
- Responsible for development of special training schools for CNPC associated Chinese companies.
- Responsible for the equipment design and selection of imported equipment for various drilling and completions projects throughout China, including the provinces of Heilongjiang, Jilin, Hebei, Liaoning, Shandong, Jiangsu, Henan, Shanxi, Sichuan, Gansu, Nei Mongol and Xinjiang.
- Directly involved with the evaluation phase of all new company projects.
- Assisted Joint Venture negotiations with various foreign operators.
- Establishment of various Joint Ventures and Foreign Company Representative Offices in China.
- Negotiated contracts with MOFTEC and SPCA for foreign operators.
- Assisted both CNPC and SINOPEC with Technical Presentation for drilling, completions, and environmental impact studies with foreign operators.

China Project General Manager **1997 – 1999**
Sunwing Energy Ltd.

- Managed Sunwing Energy's first petroleum project in China. Responsible for project management and Chinese protocol at meetings and negotiations with Chinese Government Officials and Joint Management Committees.
- Conducted onsite evaluations of drilling procedures, drilling equipment, drilling services and overall capabilities of the major oilfields throughout China.
- Responsible for import of equipment and technical services.
- Responsible for all company operations on the Daqing project during the start-up and implementation stages into the production stage.
- Responsible for all company daily operations for drilling and completions throughout China.
- Responsible for development of all the training and special training schools for the Chinese associated company personnel.
- Directly involved with the evaluation phase of all new projects in China for the company.

Drilling Manager **1996 – 1997**
Sunwing Energy Ltd.

- Responsible for all company daily operations for drilling and completions including operations in China.
- Developed bid documents for all associated drilling services in China.
- Prepared and supervised preparation of all drilling and drilling related programs including a specialized drilling fluid for the Daqing projects.
- Responsible to help develop the company chart of accounts for China and all paper work forms for tracking costs and equipment for all China Projects.
- Responsible for all drilling rig selection and drilling tools selection in China.
- Responsible for all materials and equipment imported into China.
- Worked closely with the engineering and geology groups to ensure all their requirements were properly executed in the drilling and completions programs. Directly involved with the evaluation phase of all new projects as related to the drilling and completions operations.
- Project evaluation for the Chinese Government and developed a horizontal presentation in Daqing, China related to this project on horizontal drilling operations.

- Developed and presented a two (2) week seminar on Horizontal / Multi-Lateral Drilling and Horizontal Completions Operations for the Research Institute of Petroleum Evaluation for China

Drilling Consultant **1993 – 1995**
Union Pacific Resources Inc. (UPRC)

- Worked exclusively for Union Pacific Resources Inc. (UPRC) managing drilling and completions projects in Canada and reporting to Union Pacific Resources Corporation in Ft. Worth, Texas.
- In charge of all horizontal drilling operations for UPRC in Canada and ultra deep sour gas wells in the Rocky Mountain Areas of Canada / USA.
- Responsible for directional and horizontal design changes in the company.
- Responsible for multi lateral development well planning and execution of all the drilling programs in Canada as well as all under-balanced drilling and completions operations.
- Consulted as a drilling consultant and was reassigned to the Calgary Office to support the V.P. of Union Pacific Canada and Ft. Worth Drilling Department representatives.

Drilling and Completions Consultant **1991-1993**
Fletcher Development Ltd.

- Worked exclusively for FDL managing drilling and completions projects in Canada and reporting to Ft. Worth, Texas.
- Responsible for directional and horizontal design changes in the company.
- Responsible for multi lateral development well planning and execution of all the drilling programs in Canada as well as all under-balanced drilling and completions operations.

Drilling Consultant **1988 – 1990**
Crest Energy Consultants Ltd.

- Supervised drilling projects, with wells ranging from 1,500m (5000ft) to 3,900m (12,400ft), including air drilling, under-balanced drilling, high angle long reach wells, critical sour and horizontal wells throughout North America.

Drilling Consultant **1985 – 1988**
Noyes Supervision Ltd.

- Supervised field drilling and completions projects in all areas of western Canada, with well depths ranging from 700m (2,300ft) to 4,000m (13,250ft), including mostly high hazard H_2S sour gas wells and critical sour gas wells in highly populated areas.

Rig Manager **1981 – 1985**
Badger Drilling Ltd.

- Rig Manager for 3,600m (12,000ft) drilling rig on drilling operations of sour gas wells in Northern Alberta areas, including a 20-well /2 year sour gas-drilling program in Rainbow – Zama.

Rig Manager **1980-1981**
Helmerich & Payne

- 1 year contract in Venezuela, South America based out of Caracas El Tigre; coordinated Venezuelan crews and equipment to operate a 4500m land drilling rig in the foothills of South Western Venezuela, South America.

Rig Manager **1979-1980**
Westburne Drilling International

- Two (2) year contract in Algeria as Rig Manager on a National 1320 UE drilling rig in Northern Algeria performing all duties related to operating a drilling rig in a harsh desert environment.

Relief Toolpusher **1977 – 1978**
Westburne Drilling International

- Drilling oil and gas wells from 3500m to 6500m (11,500ft to 21,300ft). Working in a high-pressure gas and multi problem area of Western Iran. Supervised many high-pressure well control problems, including two relief wells to control a high-pressure blowout in Ahwaz-Asmari oilfield. Left Iran after the Iranian Revolution forced the expulsion of all expats from Iran.

AD/Driller **1976-1977**
Commonwealth Hi-Tower Arctic Joint Venture

- Performed all duties related to operating a drilling rig in an extremely harsh Arctic environment. Drilled on the first Panarctic platform well, Drake F-76 off Melville Island in the Canadian High Arctic at 76°25'22" N / 108°28'48" W

Tour Tool Push **1975**
Helmerich & Payne

- 1 year contract in Venezuela, South America based out of El Tigre; coordinated Venezuelan crews and equipment to operate a 4500m land drilling rig in the foothills of south-western Venezuela, South America.

AD / Tour Push **1974**
Anson Drilling Ltd

- 1 year contract in Colombia, South America, based out of Bucaramanga; performed all duties related to the operation of a 3400m land drilling rig and assisted in the training of Colombia crews in Drilling Practices.

Lease to Driller **1968 - 1973**
Thompson Drilling, Parker Drilling, Precision Drilling, Hi-Tower Drilling

- Worked from lease hand to driller with the above drilling contractors as listed.

10.2 Nabors Rig Personnel

Experienced rig personnel from Nabors with relevant qualifications will be utilized on site for drilling PAP#1 - ST#3. The crew experience and qualifications are summarized in Table 10-1 and copies of relevant certificates are included in Appendix D. It should be noted that documentation of qualifications highlighted below has not yet been provided to PDIP. This outstanding documentation will be updated and forwarded to the provincial Department of Natural Resources as soon as it is received by PDIP.

		Completed Courses											
Position		H_2S	Confined Space	Loader	Rig Rescue	Fall Protection	1st Line	2nd Line	Boiler	Defensive Driving	First Aid	WHMIS	**Industry Exp/Position Exp**
Rig Manager 1	Rick Zenner	2008.10.08	x	2010.09.25	x	x		2010.04.01	x	x	2008.10.23	x	31 yrs / 13 yrs
Rig Manager 2	Brent Kramps	2011.03.14	x	2010.09.29	x	x		2009.05.12			2011.07.08		22 yrs / 2 yrs
Driller	Pat Houlgrave	2011.04.18	x	2009.09.25	x	x	2011.04.03				2008.11.18	x	11.5 yrs / 2.5 yrs
Derrickhand	Paul Weigel	2008.10.08	x			x					2011.06.04		44 yrs / 37 yrs
Motorhand	Richard Newcomen	2010.01.11	x									x	5 yrs / 4 yrs
Floorhand	George Chaulk	2009.03.23				x					2009.06.15		3 months
Floorhand	Pat Tourout	2010.11.20					2009.11.19						8 yrs / 8 yrs
Leasehand	Ernie Tourout	2009.10.08											
Driller	Jeff Monyard	2008.10.07	x	2011.04.16	x	x	2009.11.21			x		x	7 yrs / 1 yr
Derrickhand	Derrick Eslinger	2010.08.09	x		x	x				x	2010.08.17		20 yrs / 11 yrs
Motorhand	Rex Dingman	2010.01.29	x	2009.08.21	x	x						x	3 yrs / 1 yr
Floorhand	Dan Squires		x	2010.01.16		x					2009.03.17	x	1 yr / 1 yr
Floorhand	Randy Coles	x	x			x					2010.04.17		2 yrs / 2 yrs
Leasehand	Scott Evans	2010.06.09				x						x	2 months
Driller	Carl Bailey	2011.05.30	x	2010.12.04			2011.07.18			x		x	
Derrickhand	James Jensen	2009.03.02	x		x	x					2010.03.14		6 yrs / 2 yrs
Motorhand	Darren Farrell	2009.01.26	x		x	x				x	2008.10.25	x	7 yrs / 2 yrs
Floorhand	Ronald Gould	2010.10.04	x				2009.01.25						10 yrs
Floorhand	Darren Miller	2010.04.25	x	2010.04.30							2010.05.08	x	4 yrs / 3 yrs
Leasehand	Justin Reid	2010.06.08	x	2010.04.30							2010.05.08		

Table 10-1: Crew Qualifications

11. Insurance

PDIP have insurance to cover our Port au Port project operations (and all other PDIP commercial developments). The package was chosen based on discussions with insurance brokers and a review of similar insurance packages. The policy was approved by the Department of Natural Resources in October 2006, prior to the PAP#1 - ST#2 well re-entry. PDIP believe that our insurance package meets or exceeds the requirements of a project of this type and scale.

PDIP's insurance package consists of two policies: Commercial General and Pollution Liability and an Energy Package. Both policies commenced on October 16, 2006, initially with a term of one year, and have since been renewed on October 16, 2007. An overview of the policies is given below and copies of the insurance certificates can be found in Appendix E.

Commercial General and Pollution Liability:

- Limit: C$10,000,000
- Deductible: C$5,000 with respect to property damage/bodily injury and C$10,000 with respect to pollution liability and clean up costs

Energy Package:

Materials Damage

- Limit: value of equipment on site
- Deductible: variable (a percentage of the insured value, which is dependent upon cause of damage)

Operator's Extra Expense

- Limit: C$10,000,000
- Deductible: between C$25,000 and C$150,000 depending on drilling costs

12. Financial Requirements

Section 14 of the Petroleum Drilling Regulations indicates that a performance bond must be provided as security against failure of the operator to comply with the regulations. This section notes this requirement and provides an overview of the deposit currently on hold with the Department.

The Department of Natural Resources currently holds a C$300,000 Security Deposit in the name of ENEGI Inc. The Deposit was transferred from CIVC Creditor Corp to ENEGI Inc. on June 9, 2006. Copies of correspondence with respect to this transfer may be found in Appendix F.

13. Contingency Plans

Whilst PDIP is committed to preventing incidents, the company recognizes that a major incident could occur at any time. PDIP has therefore developed an Emergency Management Plan that outlines the general responsibilities of PDIP personnel based at site and at PDIP headquarters in St John's in the event of an emergency.

The specific actions required of personnel during an emergency, however, depend on the nature of that emergency and these are therefore detailed in a number of specific Contingency Plans and Emergency

Response Procedures that support PDIP's Emergency Management Plan. PDIP have developed contingency plans/emergency response procedures for use in the following credible emergency situations:

- Serious Injury or Death
- Major Fire or Explosion
- Loss or Disablement of a Rig
- Loss of Well Control
- Release of Oil or Other Pollutant to the environment
- Hydrocarbon Release with the potential to threaten personnel

PDIP's Emergency Management Plan and supporting contingency plans/emergency response procedures ensure that lines of communication in the event of an emergency are clear and therefore that all required support and resources (both internal and external to the organisation) can be quickly and effectively mobilized.

A copy of the Emergency Management Plan and supporting contingency plans/emergency response procedures can be found in Appendix G.

14. References

1. Nabors Rig 45 Performance Data, February 5th 2008 (PDIP Ref. GHS-0010-ICO-0027-OTH).

2. Government of Newfoundland and Labrador Forest Resources Website: Western Newfoundland Ecoregions. Found online at http://www.nr.gov.nl.ca/forestry/maps/west_eco.stm. (PDIP Ref. GHS/0001 - TI-007).

3. All Endangered, Threatened, and Special Concern Species with a Map. Environment Canada's Species at Risk mapping software. Found online at: http://www.sis.ec.gc.ca/ec_species/ec_species_e.phtml

4. Environment Canada Climate Normals for Stephenville, Newfoundland. Found online at: http://www.climate.weatheroffice.ec.gc.ca/climate_normals/results_e.html?Province=NFLD&StationName=&SearchType=&LocateBy=Province&Proximity=25&ProximityFrom=City&StationNumber=&IDType=MSC&CityName=&ParkName=&LatitudeDegrees=&LatitudeMinutes=&LongitudeDegrees=&LongitudeMinutes=&NormalsClass=A&SelNormals=&StnId=6740&

5. Concept Design for a Road Tanker Loading Pan, September 28th 2006, Rev. 0 (PDIP Ref. GHS-0001-OPS-2-TND-0003).

6. Storage and Handling of Gasoline and Associated Products Regulations, 2003, under the Environmental Protection Act (O.C. 2003-225). Newfoundland and Labrador Regulation 58/03.

Appendix A:

Letter from Former Minister Jackman Regarding Environmental Registration and Release

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Environment and Conservation
Office of the Minister

OCT 16 2006

Ms. Vanessa Pennell, M.Eng.
PDI Production Inc.
Suite 201, Baine Johnston Centre
10 Fort William Place
St. John's, NL
A1C 1K4

Dear Ms. Pennell

Subject: The Proposed Garden Hill South Oil and Gas Development

Thank you for your letter received on September 1, 2006 outlining the proposed work program to re-establish operations at the site known as Garden Hill South. Please be advised that since the scope of work is not a significant change from the original undertaking and the site environment has not changed significantly since the project was released on October 18, 2001, re-registration is not required. Please be aware that neither the temporary work stoppage since August 2002 nor the change in proponent triggers a requirement to re-register under the *Environmental Protection Act*. You are still bound by the terms and conditions of the original release.

You may proceed with the undertaking as described, subject to any other Act or regulations. Please be aware that this evaluation is in reference to the project as described to this department in the registration document # 971 . You are obliged to inform this Department of any possible significant change to that project as soon as it is known in order that we can determine if another registration review is consequently required.

If you have any questions concerning these matters, please contact Mr. Michael Cahill, Director, Environmental Assessment Division, at 729-0673.

Sincerely,

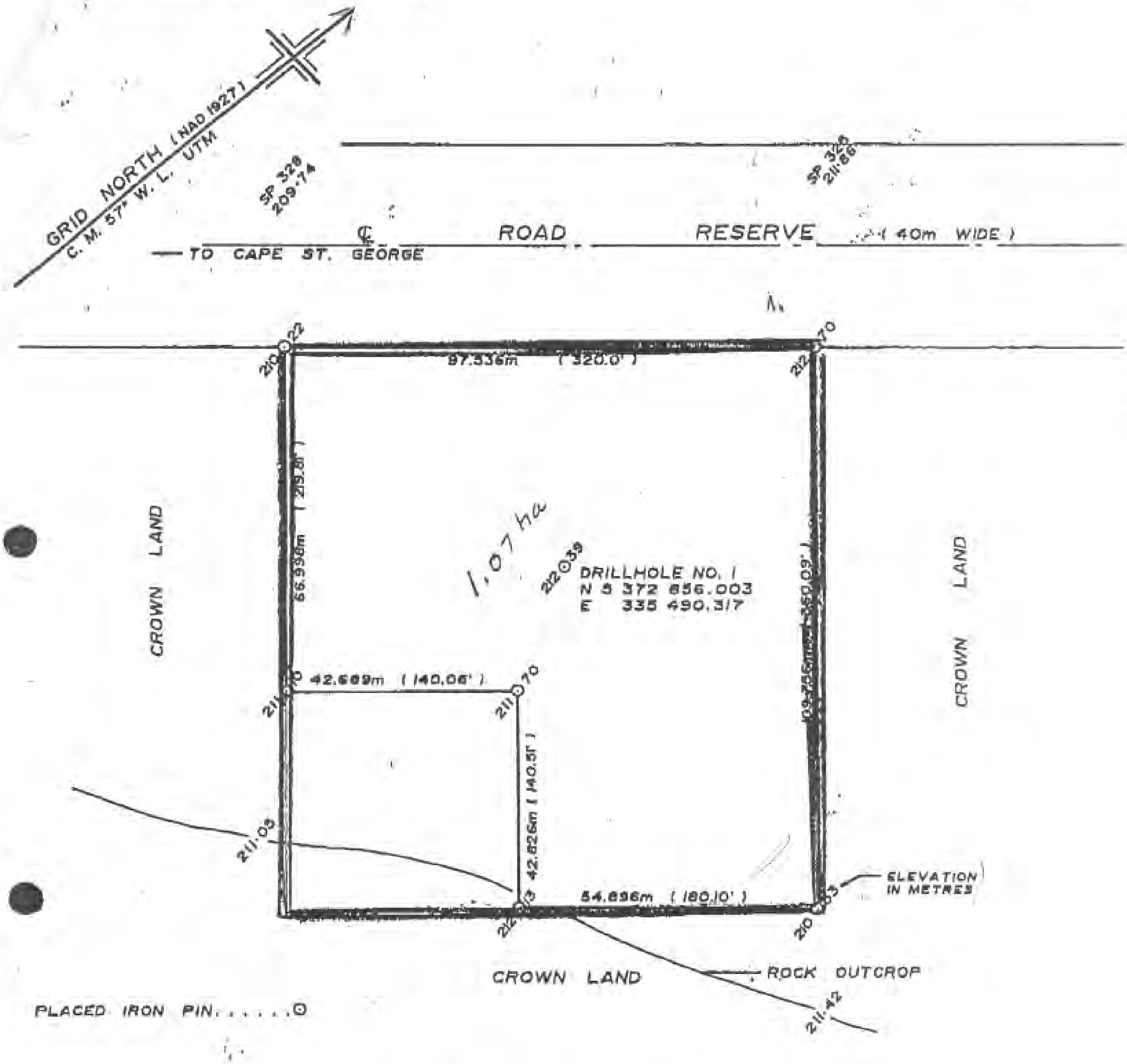
Clyde Jackman

CLYDE JACKMAN
Minister

cc. Mr. Kelvin Parsons, MHA Burgeo & La Poile

Appendix B:

Site Survey Drawing



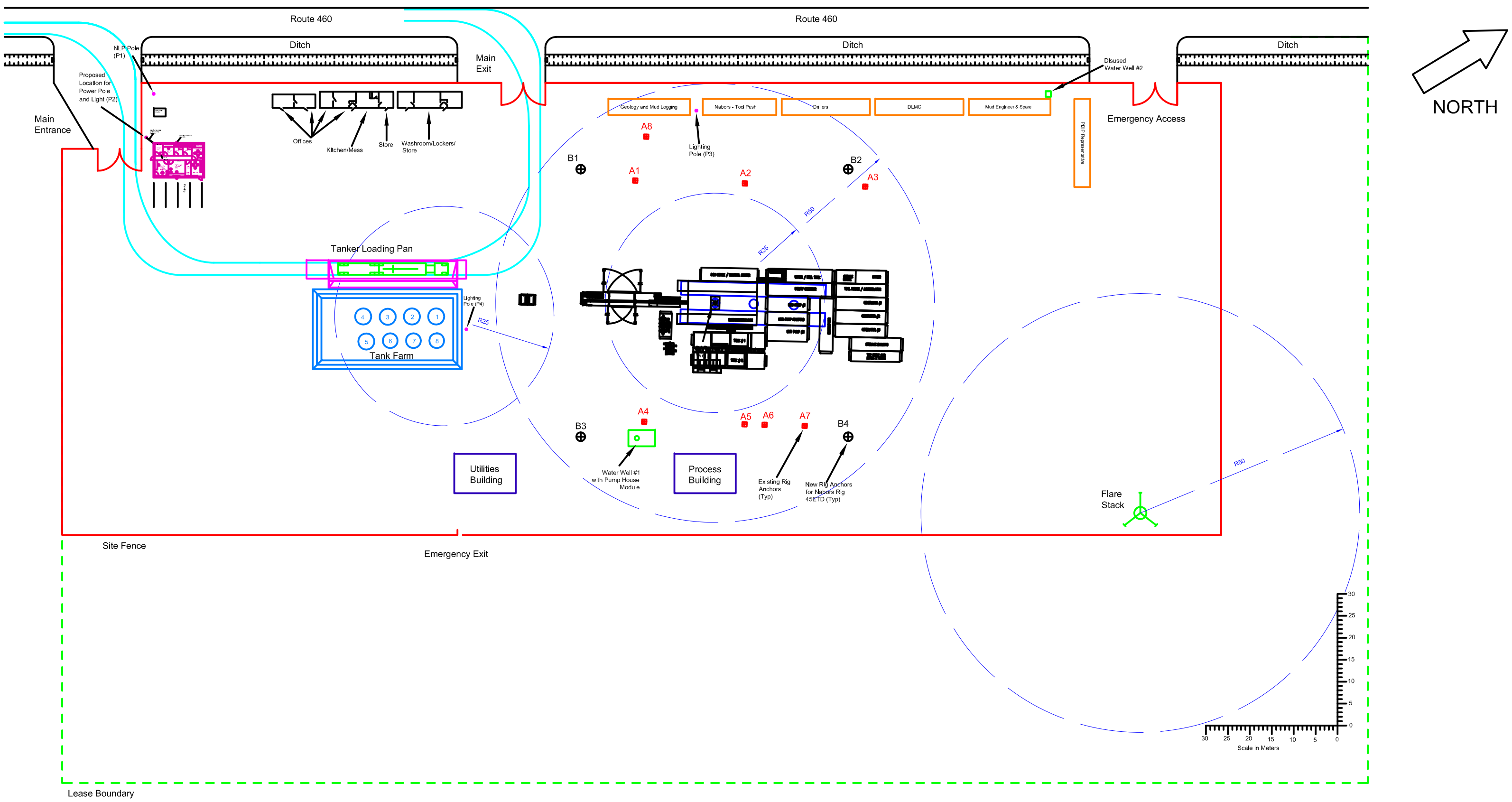
PLOT PLAN PREPARED
FOR
HUNT OIL

PLAN PREPARED BY
YATES & WOODS LTD.
NEWFOUNDLAND LAND SURVEYOR'S
JUNE 9, 1994 DWG. NO. 94070-1

SCALE 1 : 1000

Appendix C:

Site Equipment and Layout



Notes:

1. Distance from flare to storage tanks = 163.5m (minimum required distance = 50m)
2. Distance from flare to wellhead = 108.1m (minimum required distance = 50m)
3. Distance from flare to separator = 92.4m (minimum required distance = 50m)
4. Distance from wellhead to storage tanks = 61.8m (minimum required distance = 50m)
5. Distance from separator to storage tanks = 57.5m (minimum required distance = 25m)

pdiproduction

Baine Johnston Centre
2nd Floor, Suite 201
10 Fort William Place
St. John's, NL
A1C 1K4

Title:
Garden Hill South Site Layout with Nabors Rig 45ETD

Project:
Garden Hill South Horizontal Well - PAP#1 - ST#3

Drawing No.:	Revision:
GHS-OPW-SLP-0002	Rev. 1
Author:	Reviewer:
K Boone	M Hibbert

Date:
18 June 2008

Appendix D:

Crew Qualifications

St. John Ambulance

St. John Ambulance certifies that

Rick M. Zenner

has completed a course in

Standard First Aid - Level C CPR

Class #: 1-31463341

Expiry Date: Oct 23, 2008

Annual CPR retraining is recommended

Reference #: 1-J6PH5

St. John Ambulance

St. John Ambulance certifies that

Rick M. Zenner

has completed a course in

Standard First Aid - Level C CPR

Expiry Date: Oct 23, 2008

Reference#: 1-J6PH5

St. John Ambulance

St. John Ambulance certifies that

Rick M. Zenner

has completed a course in

Level C CPR

Date of issue: Oct 23, 2005

Reference#: 1-J6PH5

Lessons taught

1. Emergency Scene Mgmt
2. Shock, Unconsciousness and Fainting
3. Artificial Respiration - Adult
4. Choking - Adult
5. Severe Bleeding
6. Child Resuscitation
7. Infant Resuscitation
8. Cardiovascular Emergencies and One-rescuer CPR - Adult
9. Two-Rescuer CPR - Adult
10. Secondary Survey
11. Bone and Joint Injuries - Upper limbs; muscle strains
12. Bone and Joint Injuries - Lower limbs
13. Head/Spinal and Pelvic Injuries
14. Eye Injuries
19. Burns
21. Medical Conditions (diabetes, convulsions, asthma, allergies)
22. Environmental Illnesses and Injuries

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A - Heart Saver:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B - Heart Saver Plus:	Level A material plus one or two of infant resuscitation, child resuscitation and two-rescuer CPR
Level C - Basic Rescuer:	One and two-rescuer CPR and choking manoeuvers for infant, child and adult casualties
Level D - Child/Infant:	CPR and choking manoeuvers for child and infant casualties
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

STOCK # 5604

FROM :NABORS52 FAX NO. : Oct. 25 2005 08:22AM P1

ENFORM Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

Course Date: Oct 8-05 Course Number: 130347

H_2S Alive Instructor: Todd Conrad

H_2S Alive Instructor No.:

H_2S Alive Instructor Signature:

MICRO PRINT – MAGNIFY TO READ

ENFORM Temporary Certificate No. 347792

H_2S Alive®

(valid for 90 days from course date as indicated on back of ticket)

Rick Zenner

has successfully completed the Enform H_2S Alive® course

DO NOT PHOTOCOPY

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING ... THROUGH NUMBERS

St. John Ambulance
Alberta Council
INTERIM AWARD

Congratulations to

RICK ZENNER

on the successful completion of

Standard FA & Level C CPR

Aggie Mitchell Oct 23/05 1-31463341

Instructor 562-8537 Date Course No.

* Interim Award valid for two months – Certificate will follow.

Alberta
MUNICIPAL AFFAIRS

ABSA

This is to certify that
Richard Zenner
is a Registered holder of a
SPECIAL OILWELL
Certificate which expires Jun, 03, 2008

File #: A-47249 Card #: 127212
Cert #: 007859

Certificate of Achievement

Rick Zenner

Has completed

NSST

July 9 2007

Joe Bruce Todd Merriott

PETROLEUM INDUSTRY TRAINING SERVICE
2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

RE: Certification for Class Number [illegible].

Attached is a certificate for Rick Zenner for the Fall Rescue for Rig Work taken on April 12, 2000.

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY

FRR-10167

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

Rick Zenner

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work - April 12, 2000

EXPIRY DATE

n/a

STUDENT SIGNATURE

PETROLEUM INDUSTRY TRAINING SERVICE
2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

RE: Certification for Class Number 39795.

Attached is a certificate for Rick Zenner for the Fall Protection for Rig Work taken on April 22, 1998.

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY

FPR-10985

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

Rick Zenner

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Workers - April 22, 1998

EXPIRY DATE

n/a

STUDENT SIGNATURE

PETROLEUM INDUSTRY TRAINING SERVICE
Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 103432

Attached is a certificate for Rick Zenner for the Off-Highway Defensive Driving taken

March 30, 2004

The Certificate number is OHD-103432-460325

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

OHD-103432-460325

THIS IS TO CERTIFY THAT

PETROLEUM INDUSTRY TRAINING SERVICE

Rick Zenner

HAS SATISFACTORILY COMPLETED

Off-Highway Defensive Driving

EXPIRY DATE

March 30, 2004

n/a

STUDENT SIGNATURE

PETROLEUM INDUSTRY TRAINING SERVICE
2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

Gerry Waters
Nabors Drilling Ltd.
Box 55
Nisku, AB T0C 2G0

Attached is a certificate for Rick Zenner for the Environmental Issues in the Drilling Industry taken on April 15, 1994.
The Certificate number is EID-10113.

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY
EID-10113
PETROLEUM INDUSTRY TRAINING SERVICE
THIS IS TO CERTIFY THAT
Rick Zenner
HAS SATISFACTORILY COMPLETED
Environmental Issues in the Drilling Industry
EXPIRY DATE n/a
PRESIDENT

ENFORM
Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Margaret Hagel
Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8

The Certificate number is WC-132346-460325

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
WC-132346-460325
ENFORM
THIS IS TO CERTIFY THAT
Rick Zenner
HAS SATISFACTORILY COMPLETED
Second Line Supervisor's Well Control (Test Well)
EXPIRY DATE
Apr-01-2008
STUDENT SIGNATURE

ENTERED

TDG TRAINING CERTIFICATE
TDG - WHMIS COMPLIANCE CENTRE INC.
9320 - 49 Street, Edmonton, AB; Ph: 780-461-2525
THIS CERTIFIES THAT: RICK ZENNER.
EMPLOYEE SIGNATURE:
EMPLOYED BY: NABORS DRILLING
ADDRESS:
EXPIRES ON: JAN 27 2009 DATE ISSUED: JAN 27 2006
EMPLOYER (Signature)

Arresting You Ltd.
Safety Training Specialists

This is to certify that
RICK ZENNER
has successfully completed a course in

RIG SPECIFIC CONFINED SPACE
Date of issue: APRIL 12, 2000

Instructor: FRANK MURRAY

Alberta LABOUR

Boilers and Pressure Vessels Act
Certificate of Competency
Confirmation Card

RICHARD ZENNER File No. A-47249
is the holder of a
SPECIAL OIL-WELL OPERATOR'S Certificate of Competency.

Signature of Certificate Holder

FORM NO. CB-04 (92/02)

Arresting You Ltd. 8633 CERTIFICATION #
Safety Training Specialists
Bay #6, 7459 Edgar Industrial Bend
Red Deer, AB T4P 3R3

RICK ZENNER
has successfully completed:

Nabors Loader Evaluato-

EXPIRY DATE 09/25/20[illegible]

Non Transferable - Valid at Nabors Drilling Only

Disclaimer: This training program is interpretive information. It is important to note that it remains the responsibility of every worker and employer to know and understand their responsibilities under the appropriate regulatory body.

ENFORM

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Carloyn Jones
Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8
The Certificate number is WC-180677-460325

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

ENFORM

CERTIFICATE NUMBER
WC-180677-460325

THIS IS TO CERTIFY THAT
Rick Zenner
HAS SATISFACTORILY COMPLETED

Second Line Supervisor's Well Control (Test Well)

EXPIRY DATE
Apr-01-2010

STUDENT SIGNATURE

Supt.

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Standard First Aid CPR-C (ESO)

Class #: 1-18420506

Expiry Date: Mar 22, 2008

Annual CPR retraining is recommended

Reference #: 1-CMLYO

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Standard First Aid CPR-C (ESO)

Expiry Date: **Mar 22, 2008**

Reference#: **1-CMLYO**

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Level C CPR

Date of Issue: **Mar 22, 2005**

Reference#: **1-CMLYO**

Lessons taught

1. Emergency Scene Mgmt
2. Shock, Unconsciousness and Fainting
3. Artificial Respiration - Adult
4. Choking - Adult
5. Severe Bleeding
6. Child Resuscitation
7. Infant Resuscitation
8. Cardiovascular Emergencies and One-rescuer CPR - Adult
9. Two-Rescuer CPR - Adult
10. Secondary Survey
11. Bone and Joint Injuries - Upper limbs; muscle strains
12. Bone and Joint Injuries - Lower limbs
13. Head/Spinal and Pelvic Injuries
18. Eye Injuries
19. Burns
21. Medical Conditions (diabetes, convulsions, asthma, allergies)
22. Environmental Illnesses and Injuries

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A - Heart Saver:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B - Heart Saver Plus:	Level A material plus one or two of infant resuscitation, child resuscitation and two-rescuer CPR
Level C - Basic Rescuer:	One and two-rescuer CPR and choking manoeuvers for infant, child and adult casualties
Level D - Child/Infant:	CPR and choking manoeuvers for child and infant casualties
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

MICRO PRINT – MAGNIFY TO READ

FORM

Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

Course Date: March 14 2008 Course Number: 183878

H_2S Alive Instructor: Dave LeBlanc

H_2S Alive Instructor No.: 135 785 518 528

H_2S Alive Instructor Signature:

ENFORM

Temporary Certificate No. 709658

H_2S Alive®

(valid for 90 days from course date as indicated on back of ticket)

Brent Kramps

has successfully completed the Enform H_2S Alive® course

DO NOT PHOTOCOPY

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING MICROLINES, THERMOCHROMIC INK AND BLEED THROUGH NUMBERS

Learn-Rite Courses Inc.
Grande Prairie, Alberta
(780) 532-0423

Permanent Ticket

Certifies that

Brent Kramps

Has successfully completed training in:

Confined Space Entry: ____ Instructor Initial

Basic Tank Rescue: ____ Instructor Initial

Course No: **LR07-081 CSE/R** Issue Date: **May 15, 2007**

Instructor: ____ Expiry Date: **May 15, 2010**

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Standard First Aid - Level C CPR

Class #: 1-75743716

Expiry Date: Jul 08, 2011

Annual CPR retraining is recommended

Reference #: 1-1H7IAC

Issued By: Alberta Council

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Standard First Aid - Level C CPR

Expiry Date: Jul 08, 2011

Reference #: **1-1H7IAC**
Issued By:
Alberta Council

St. John Ambulance

St. John Ambulance certifies that

Brent A. Kramps

has completed a course in

Level C CPR

Issued Date: **Jul 08, 2008**

Reference #: **1-1H7IAC**
Issued By:
Alberta Council

Lessons taught

1. Emergency Scene Management.
2. Shock, Unconsciousness & Fainting
3. Choking - Adult
4. Cardiovascular Emergencies & One-rescuer CPR - Adult
5. Severe Bleeding.
6. Medical Conditions (diabetes, convulsions, asthma, allergies).
7. Child Resuscitation.
8. Infant Resuscitation.
9. Two-Rescuer CPR.
11. Secondary Survey.
12. Bone and Joint Injuries
13. Head/Spinal and Pelvic Injuries
15. Wound Care.
16. Eye Injuries.
19. Burns.
21. Heat and Cold Emergencies.

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B:	One-rescuer CPR and choking manoeuvers for adult, child and infant casualties
Level C:	One and two-rescuer CPR and choking manoeuvers for adult, child and infant casualties
HCP:	One and two-rescuer CPR and choking manoeuvers for adult, child and infant casualties. AR, BVM, AED included
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

STOCK # 5604

APR 0 5 2002

PETROLEUM INDUSTRY TRAINING SERVICE
Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 77311

Attached is a certificate for Brent Kramps for the Fall Rescue for Rig Work taken on March 12, 2002.

The Certificate number is FRR-77311-457444

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE NUMBER

FRR-77311-457444

THIS IS TO CERTIFY THAT

[redacted]

PETROLEUM INDUSTRY TRAINING SERVICE

EXPIRY DATE

n/a

PETROLEUM INDUSTRY TRAINING SERVICE
2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

[illegible]

[illegible]

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY

FPR-12570

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

Brent Kramps

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Workers - April 7, 1999

EXPIRY DATE

n/a

STUDENT SIGNATURE

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

CERTIFICATE NUMBER

WC-152734-457444

ENFORM

THIS IS TO CERTIFY THAT

Brent Kramps

HAS SATISFACTORILY COMPLETED

Second Line Supervisor's Well Control (Test Well)

EXPIRY DATE

May-12-2009

STUDENT SIGNATURE

Sheena
Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8
The Certificate number is WC-152734-457444

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

05/11/07

Rig 48

Arresting You Ltd.
Safety Training Specialists
Bay #5, 7459 Edgar Industrial Bend
Red Deer, AB T4P 3R3

8666 CERTIFICATION #

BRENT KRAMPS
has successfully completed:

Nabors Loader Evaluator

EXPIRY DATE 09/28/2010

Non Transferable - Valid at Nabors Drilling Only

Disclaimer: This training program is interpretive information. It is important to note that it remains the responsibility of every worker and employer to know and understand their responsibilities under the appropriate regulatory body.

91 ENTERED UMS-Oct04/07

052-3/866902

Alberta Government

8803NQ

QUALIFICATION CERTIFICATE

THIS IS TO CERTIFY THAT

BRENT ANTHONY KRAMPS

HAS ACHIEVED THE STANDARDS ESTABLISHED
UNDER THE ALBERTA APPRENTICESHIP AND INDUSTRY TRAINING ACT
AND IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A JOURNEYMAN
AND TO USE THE TITLE CERTIFIED JOURNEYMAN.

RIG TECHNICIAN 3

EFFECTIVE DATE
December 19th, 2006

ISSUE DATE
January 10th, 2007

HONOURABLE DOUG HORNER
MINISTER OF ADVANCED EDUCATION
AND TECHNOLOGY

SHIRLEY DUL, EXECUTIVE
DIRECTOR OF APPRENTICESHIP
& INDUSTRY TRAINING

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Carolyn
Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8

The Certificate number is FLE-185574-502475

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

FLE-185574-502475

ENFORM

THIS IS TO CERTIFY THAT

Patrick Houlgrave

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention
Examination

EXPIRY DATE
Apr-03-2011

STUDENT SIGNATURE

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 183269

Attached is a certificate for Patrick Houlgrave for the H2S Alive taken

March 31, 2008

The Certificate number is HAL-183269-502475

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
HAL-183269-502475

ENFORM

THIS IS TO CERTIFY THAT

Patrick Houlgrave

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Apr-18-2011

STUDENT SIGNATURE

Pa.tan1 250108 Jr

Rig 46.
403-398-0308

Certificate # CSR012232060124

HSE INTEGRATED | Industrial Health Safety Environment

Certifies that Patrick Houlgrave
an employee of Nabors Drilling Ltd
has successfully completed a course in
Confined Space Entry & Rig Tank Rescue
Date Jan 24, 2006 Instructor

safety insights

Industrial Safety Training Specialists

Patrick Houlgrave

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: John [illegible]

Date: 9/25/06 Expires: 9/25/09

Paid Oct. 13/06.

ATT: MARGARET

I HAVE STILL NOT RECEIVED ANYTHING FOR TAKING THESE COURSES COULD YOU PLEASE AUTHORIZE PAYMENT FOR ME. ALSO I ONLY RECEIVED LIVING ALLOWANCE FOR THE PRE SPUD MEETING ON NOV 15, WE WERE SUPPOSED TO GET PAID FOR THAT DAY. COULD YOU CHECK INTO IT FOR ME

THANKYOU!

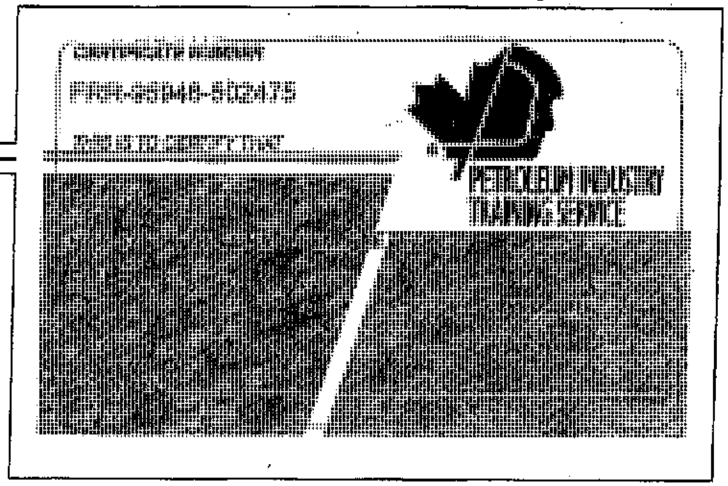
P. Houlgrave

ENTERED 02/16/07

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Posted
c Maleod
Dec 22/03
DC



Re: Certification for Class Number 95946

Attached is a certificate for Patrick Houlgrave for the Fall Rescue for Rig Work taken

November 18, 2003

The Certificate number is FRR-95946-502475

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

46

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 95932

Attached is a certificate for Patrick Houlgrave for the Fall Protection for Rig Work taken

November 17, 2003

The Certificate number is FPR-95932-502475

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FPR-95932-502475

THIS IS TO CERTIFY THAT

PETROLEUM INDUSTRY TRAINING SERVICE

Patrick Houlgrave

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work

November 17, 2003

EXPIRY DATE
[illegible]

STUDENT SIGNATURE

St. John Ambulance

St. John Ambulance certifies that

Patrick O. Houlgrave

has completed a course in

Standard First Aid - Level A CPR

Class #: 1-32422309

Expiry Date: Nov 18, 2008

Annual CPR retraining is recommended

Reference #: 1-JUNGX

St. John Ambulance

St. John Ambulance certifies that

Patrick O. Houlgrave

has completed a course in

Standard First Aid - Level A CPR

Expiry Date: Nov 18, 2008

Reference#: **1-JUNGX**

St. John Ambulance

St. John Ambulance certifies that

Patrick O. Houlgrave

has completed a course in

Level A CPR

Date of Issue: **Nov 18, 2005**

Reference#: **1-JUNGX**

Lessons taught

1. Emergency Scene Mgmt
2. Shock, Unconsciousness and Fainting
3. Artificial Respiration - Adult
4. Choking - Adult
5. Severe Bleeding
6. Cardiovascular Emergencies and One-rescuer CPR - Adult
10. Secondary Survey
11. Bone and Joint Injuries - Upper limbs: muscle strains
12. Bone and Joint Injuries - Lower limbs
13. Head/Spinal and Pelvic Injuries
14. Chest Injuries
15. Wound Care
16. Eye Injuries
19. Burns
20. Poison, Bites & Stings
21. Medical Conditions (diabetes, convulsions, asthma, allergies)
22. Environmental Illnesses and Injuries

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A - Heart Saver:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B - Heart Saver Plus:	Level A material plus one or two of infant resuscitation, child resuscitation and two-rescuer CPR
Level C - Basic Rescuer:	One and two-rescuer CPR and choking manoeuvers for infant, child and adult casualties
Level D - Child/Infant:	CPR and choking manoeuvers for child and infant casualties
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

STOCK # 5604

TDG TRAINING CERTIFICATE

TDG - WHMIS
COMPLIANCE CENTRE INC.
9320 - 49 Street, Edmonton, AB; Ph: 780-461-2325

THIS CERTIFIES THAT: PATRICK HOLGRAVE

EMPLOYEE SIGNATURE:

EMPLOYED BY: NABORS DRILLING

ADDRESS: 902-20th Avenue

EXPIRES ON: AUG. 7, 2010 DATE ISSUED: AUG. 7, 2007.

EMPLOYER (Signature)

ENTERED
Ms. Sept 19/07

Clear Language -- TDG Test

Received Nisku

AUG 0 1 2007

COMPANY: Nabors Drilling

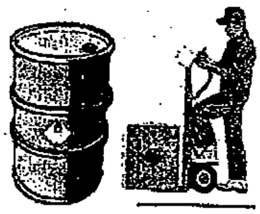
STUDENT NAME (Please Print)	TEST DATE
Patrick Houlgrave	

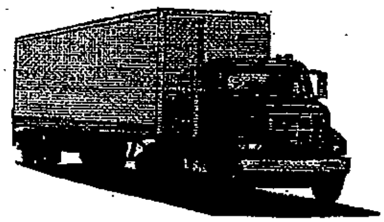
TEST SCORE: 23 out of 25 = 92 %

Aug. 7/07

TRANSPORTING DANGEROUS GOODS SAFELY

HANDLING, OFFERING for TRANSPORT or TRANSPORTING





IS YOUR REPONSIBILITY

INSTRUCTIONS: For the following questions choose the most accurate response per question; and highlight/circle that response. Some questions require a written response.

Read each question carefully.

If you wish to change an answer - place an "X" through your old answer and circle your new answer

If you get stuck on a question, move to the next question and come back to the other question later on, if you are taking this as self-study. Ask your instructor for help if you do not understand a question

There is NO time limit.

Once you have finished, review your test answers.

You require a grade of 80% to pass - GOOD LUCK

Nabors

SEP 3 0 2005

Certificate of Training
Fall Protection

This is to certify that

PAT HOLLGRAVE

has successfully completed a video and instructional course in the use, limitations and maintenance of Fall Protection equipment. Has read and understands NABORS Fall Protection Program as well as the Rescue Procedures Plan and has shown a proficiency and knowledge of Fall Protection systems as required by Good Oilfield Practices.

Date 22-09-05 Authorization [signature]
dd/mm/yy

Nabors

Fall Protection
Certificated of Training

902-20th Ave
Nisku, Alberta
T9E 7Z6

PAT HOLLGRAVE
NAME

Has successfully completed an instructional course in the use, limitations And maintenance of and has been fitted with Fall Protection Equipment. In accordance with instructions as required by good oilfield practices.

DATE: 22-09-05 [signature]
dd/mm/yy AUTHORIZATION

I acknowledge having received this Fall Protection training while an employee of NABORS DRILLING

P. Hollgrave
Employee Signature

Copy 1 – SDM Copy 2 – office Card to Employee Form# ND-044

Nabors Drilling
A NABORS INDUSTRIES Company

Certificate Of Training

This is to certify that

PAT HOULGRAVE

has successfully completed an instructional course in the use, limitations and maintenance of, and has been fit tested with, the following North Respirators:

NORTH 7700

in accordance with North's instructions as required by government regulations.

Date: 28 01 97 **Employer's Signature** Tom Quinn
dd / mm / yy

Nabors Drilling
A NABORS INDUSTRIES Company

RESPIRATOR
Certificate of Training
This is to certify that:

Box 1006
Nisku, Alberta
T9E 8A8

PAT HOULGRAVE
NAME

Has successfully completed an instructional course in the use, limitations and maintenance of, and has been fit tested with, the following respirators:

NORTH 7700

In accordance with instructions as required by government regulations.

Tom Quinn — EMPLOYERS SIGNATURE
JAN 28/97 — DATE

I acknowledge having received this Respirator training while an employee of NABORS DRILLING LIMITED

P. Houlgrave
Employee Signature

052-3/869190

8631NQ

Alberta
Government

QUALIFICATION CERTIFICATE

THIS IS TO CERTIFY THAT

PATRICK HOULGRAVE

HAS ACHIEVED THE STANDARDS ESTABLISHED UNDER THE ALBERTA APPRENTICESHIP AND INDUSTRY TRAINING ACT AND IS HEREBY AUTHORIZED TO WORK IN THE TRADE AS A JOURNEYMAN AND TO USE THE TITLE CERTIFIED JOURNEYMAN

RIG TECHNICIAN 3

EFFECTIVE DATE
December 4th, 2006

ISSUE DATE
December 14th, 2006

Honourable Denis Herard
Minister of Advanced Education

Shirley Dul, Executive Director of
Apprenticeship & Industry Training

PETROLEUM INDUSTRY TRAINING SERVICE 2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

RE: Certification for Class Number 58636.

Attached is a certificate for Paul Weigel for the Fall Protection for Rig Workers taken on October 26, 2000.

- IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY

FPR-15215

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

Paul Weigel

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Workers - October 26, 2000

EXPIRY DATE
n/a

STUDENT SIGNATURE

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING MICROLINES, THERMOCHROMIC INK AND BLEED THROUGH NUMBERS

FORM Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

MICRO PRINT - MAGNIFY TO READ

Course Date: OCT 8-05 Course Number: 130347

H_2S Alive Instructor: Todd Conrad

H_2S Alive Instructor No.:

H_2S Alive Instructor Signature:

ENFORM Temporary Certificate No. 347791

H_2S Alive®

(valid for 90 days from course date as indicated on back of ticket)

Paul WeiGEL

has successfully completed the Enform H_2S Alive® course

DO NOT PHOTOCOPY

MICRO PRINT - MAGNIFY TO READ

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING MICROLINES, THERMOCHROMIC INK AND BLEED THROUGH NUMBERS

si safety insights

Industrial Safety Training Specialists

Paul Weigel

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor:
Glenn Yingst

Date: 12/10/04 **Expires: 12/10/07**

ENTERED
[illegible]

St. John Ambulance

St. John Ambulance certifies that
Paul Weigel

has completed a course in
Standard First Aid - Level A
CPR

Expiry Date: Jun 16, 2008
Reference#: 1-FJC3L

Arresting You Ltd.
Safety Training Specialists
This is to certify that
PAUL WEIGEL
has successfully completed a course in
Confined Space
Course Date MAY 24 2006
Expiry Date: 90 days from course date
Temporary Number 0455-06

Temporary Certificate

Certificate of Achievement
Paul Weigel
Has completed
NSST
January 16, 2007
Joe Bruce
Todd Merriott

ENTERED
04/02/07

St. John Ambulance

St. John Ambulance certifies that

Paul Weigel

has completed a course in

Standard First Aid - Level A CPR

Expiry Date: Jun 04, 2011

Reference #: **1-1HM9EZ**

Issued By:

Alberta Council

Nabors

Certification of W.H.M.I.S. Training

902-20 Ave
Nisku, Alberta
T9E 7Z6

Richard Newcomen
NAME OF EMPLOYEE

Has successfully completed training in accordance within the Requirements of the workplace hazardous materials information System (W.H.M.I.S.) legislation.

DATE: 5-4-04
dd/mm/yy
AUTHORIZATION

GLOBAL TRAINING

INTERIM AWARD

CONGRATULATIONS TO

Richard C. Newcomen

ON THE SUCCESSFUL COMPLETION OF

Confined Space Entry

Instructor — Date 03/15/07

*Interim Award valid for two months—Certificate will follow

CERTIFICATE NUMBER
HAL-158040-915461

FORM

THIS IS TO CERTIFY THAT

Richard Newcomer

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Jan-11-2010

STUDENT SIGNATURE

Employee CERTIFICATE OF TRAINING for T.D.G. (By Road)

THIS CARD CERTIFIES THAT: Richard Newcomen
(PRINT EMPLOYEE'S NAME)

EMPLOYEE (Signature)

Has completed adequate training (in accordance with the requirements of the Clear Language T. D. G. [Parts 6.2 & 6.3]) as per assigned duties related to the handling/offering for transport/transporting of dangerous goods by road as indicated on reverse.

DATE ISSUED: June 20/2005 **EXPIRES ON:** June 20/2008

EMPLOYED BY: Great Plains TRAILBLAZER ULTRALINE

An Operating division of Savanna Energy Services Corp.

EMPLOYER (Signature)

ADDRESS: *1000, 321 - 6th Ave. S.W. Calgary Alberta T2P 3H3*

GLOBAL TRAINING

RICHARD NEWCOMEN

CONFINED SPACE

Date of Certification
3/15/2007

Ken Russell

Certificate of Achievement

Richard Newcomen

Has completed

NSST

January 16, 2007

Joe Bruce

Todd Merriott

CERTIFICATE NUMBER
HAL-140275-818502

ENFORM

THIS IS TO CERTIFY THAT

George J. Chaulk

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Mar-23-2009

STUDENT SIGNATURE George Chaulk

Certificate of Achievement

George Chaulk

has completed

Nabors Orientation

on Dec 3 2001

Joe Bruce

Facilitator

Canadian Red Cross
Croix-Rouge canadienne

George Chaulk
Is Certified In
First Responder

Issue Date: March 15, 2007
Expiry Date: March 15, 2010
Instructor: Briana McCarthy

St. John Ambulance

St. John Ambulance certifies that

George J Chaulk
has completed a course in
SAFETY ORIENTED FIRST AID

Emergency First Aid HeartStart

Electives 1 - 5 8 13 15 19
Expiry Date June 15, 2009
Course # 06-73487

Annual retraining in CPR is recommended.

New Hire

CERTIFICATE ISSUED BY
FPR-10759

THIS IS TO CERTIFY THAT

George Chaulk

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work - May 22, 1998

EXPIRY DATE
n/a

STUDENT SIGNATURE George Chaulk

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

College of the North Atlantic
P.O. Box 19003
Stn Seal Cove
Conception Bay, NS A1X 5C7

The Certificate number is FLE-154054-632024

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
HAL-174854-632024

ENFORM

THIS IS TO CERTIFY THAT

Patrick Tourout

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Nov-20-2010

STUDENT SIGNATURE

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

College of the North Atlantic
P.O. Box 19003
Stn Seal Cove
Conception Bay, NS A1X 5C7

The Certificate number is FLE-154054-632024

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FLE-154054-632024

ENFORM

THIS IS TO CERTIFY THAT

Patrick A. Tourout

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention Examination

EXPIRY DATE
Nov-19-2009

STUDENT SIGNATURE

H2S?

Certificate of Achievement

PATRICK TOURCUT

Has Completed

Nabors Orientation

NOV. 19/2007

Joe Bruce

Ed Lavelle

ENFORM

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 161994

Attached is a certificate for Jeff Monyard for the Off-Highway Defensive Driving taken

March 08, 2007

The Certificate number is OHD-161994-508568

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

OHD-161994-508568

ENFORM

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

Off-Highway Defensive Driving

March 08, 2007

EXPIRY DATE

n/a

STUDENT SIGNATURE

TDG TRAINING CERTIFICATE

TDG - WHMIS COMPLIANCE CENTRE INC.

9020 - 49 Street Edmonton, AB; Ph: 780-461-2525

THIS CERTIFIES THAT: JEFF MONYARD

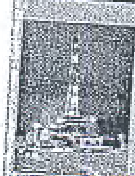
EMPLOYEE SIGNATURE:

EMPLOYED BY: NABORS DRILLING

ADDRESS: 902-20 Avenue NISKU, AB.

EXPIRES ON: Mar.12, 2010 DATE ISSUED: Mar. 12, 2007.

EMPLOYER (Signature)



Certificate of Achievement

Jeff Monyard

Has completed

NSST

January 16, 2007

Joe Bruce

Todd Merriott

IAC-130347-508568

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

H2S Alive Challenge

PETROLEUM INDUSTRY TRAINING SERVICE

EXPIRY DATE

Oct-07-2008

STUDENT SIGNATURE

FRR-119394-508568

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work

PETROLEUM INDUSTRY TRAINING SERVICE

EXPIRY DATE

April 14, 2005 n/a

STUDENT SIGNATURE

CERTIFICATE NUMBER

FPR-119375-508568

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work

PETROLEUM INDUSTRY TRAINING SERVICE

EXPIRY DATE

April 13, 2005 n/a

STUDENT SIGNATURE

safety insights

Industrial Safety Training Specialists

Jeff Monyard

Has Successfully Completed The

Heavy Loader Safety Training Course

Expired

Instructor: Glenn Yingst

Date: 26/10/04

Expires: 26/10/07

CERTIFICATE NUMBER

FLE-154054-508568

ENFORM

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention Examination

EXPIRY DATE

Nov-21-2009

STUDENT SIGNATURE

Safety Training Centre

This is to certify that

JEFF P. MONYARD

Has attended and successfully completed

CONFINED SPACE ENTRY

Expiry Date NOV. 22. 2009 Course No. 061122

Instructor SCOTT BROWN Level ENTRY

Cameron Ventures Ltd. #204 - 7819 - 50 Ave., Red Deer, AB • (403) 341-4544

St. John Ambulance

St. John Ambulance certifies that

Jeff Monyard

has completed a course in

Level A CPR

Date of Issue: Jun 11, 2000

Reference#: 1-QCLK6

Expired

St. John Ambulance

St. John Ambulance certifies that

Jeff Monyard

has completed a course in

Emergency First Aid-Industry BC & Alberta

Expiry Date: Jun 11, 2003

Reference#: 1-QCLK6

Nabors Drilling

A NABORS INDUSTRIES Company

Box 1006
Nisku, Alberta
T9E 8A8

RESPIRATOR
Certificate of Training
This is to certify that:

JEFF MONYARD

NAME

Has successfully completed an instructional course in the use, limitations and maintenance of, and has been fit tested with, the following respirators:

NORTH #7700

SCOTT SCBA

In accordance with instructions as required by government regulations

EMPLOYERS SIGNATURE

JAN 24/02

DATE

Nabors Drilling

A NABORS INDUSTRIES Company

Certificate of W.H.M.I.S. Training

Box 1006
Nisku, Alberta
T9E 8A8

JEFF MONYARD

NAME OF EMPLOYEE

has completed training in accordance within the requirements of the workplace hazardous materials information system (W.H.M.I.S.) legislation.

DATE 24 01 02

dd / mm / yy

AUTHORIZATION

03/01/07

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8

The Certificate number is FLE-154054-508568

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

FLE-154054-508568

ENFORM

THIS IS TO CERTIFY THAT

Jeff Monyard

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention Examination

EXPIRY DATE

Nov-21-2009

STUDENT SIGNATURE

ENTERED 02/20/07

Arresting You Ltd.
1-877-909-9099

76
CERTIFICATION #

JEFF MONYARD

has successfully completed:

Nabors Loader Operator

Date Completed 04/16/2008

Nabors Drilling
(780)955-2381

Non Transferable - Valid at Nabors Drilling Only

Disclaimer: This training program is interpretive information. It is important to note that it remains the responsibility of every worker and employer to know and understand their responsibilities under the appropriate regulatory body.

Certificate of Achievement

Ernie Tourout

Has Completed

Nabors Orientation

July 28, 08

Joe Bruce

Terry Rousselle

CERTIFICATE NUMBER

HAL-154599-886770

ENFORM

THIS IS TO CERTIFY THAT

Ernie Tourout

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE

Nov-08-2009

STUDENT SIGNATURE Ernie Tourout

safety insights

Industrial Safety Training Specialists

Derrick Eslinger

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: Glenn Yingst
Glenn Yingst

Date: 12/10/04 Expires: 12/10/07

FLATLINE RESPONSE INC.

Division of Flatline-ASI Vocational College

Derrick Eslinger
has successfully completed the performance requirements for
Standard First Aid with
Health Care Provider C.P.R & AED
As outlined in the Alberta Workplace Health and Safety Guidelines & ILCOR Guidelines

Expires On: August 17, 2010 Course Number: 8-1507

Certificate No 407-1754 Instructor Signature

FLATLINE RESPONSE INC.

Division of Flatline-ASI Vocational College

Derrick Eslinger
has successfully completed the performance requirements for

Confined Space - Pre-entry Entry

Expires On: August 18, 2010 Date Issued: 8/17/07

Instructor Signature:

Certificate No **CSE07** 2007

CERTIFICATE NUMBER
HAL-170687-657030

ENFORM

THIS IS TO CERTIFY THAT

Derrick Eslinger

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Aug-09-2010

STUDENT SIGNATURE Derrick Eslinger

CERTIFICATE NUMBER
OHD-154985-657030

ENFORM

THIS IS TO CERTIFY THAT

Derrick Eslinger

HAS SATISFACTORILY COMPLETED

Off-Highway Defensive Driving

October 30, 2006

EXPIRY DATE
n/a

STUDENT SIGNATURE

Arresting You Ltd.
Safety Training Specialists
Bay #6, 7459 Edgar Industrial Bend
Red Deer, AB T4P 3R3

7546
CERTIFICATION #

DERRICK ESLINGER

has successfully completed:

Service Worker Fall Protection

EXPIRY DATE **04/25/2012**

Disclaimer: This training program is interpretive information. It is important to note that it remains the responsibility of every worker and employer to know and understand their responsibilities under the appropriate regulatory body.

FEB.15.2008 1:28PM VILLAGE SQUARE PO NO.582 P.1

CERTIFICATE NUMBER
FRR-174493-657030

ENFORM

THIS IS TO CERTIFY THAT

Derrick Eslinger

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work

November 16, 2007

EXPIRY DATE
n/a

STUDENT SIGNATURE

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 154985

Attached is a certificate for Derrick Eslinger for the Off-Highway Defensive Driving taken

October 30, 2006

The Certificate number is OHD-154985-657030

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
OHD-154985-657030

ENFORM

THIS IS TO CERTIFY THAT

Derrick Eslinger

HAS SATISFACTORILY COMPLETED

Off-Highway Defensive Driving

October 30, 2006

EXPIRY DATE
n/a

STUDENT SIGNATURE

ENTERED
02/15/07

PETROLEUM INDUSTRY TRAINING SERVICE

2115 - 27th Avenue N.E., Calgary, Alberta T2E 7E4
(403) 250-9606 Fax: (403) 291-9408

RE: Certification for Class Number 58916.

Attached is a certificate for Derrick Eslinger for the Fall Protection for Rig Workers taken on November 2, 2001.

— IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE ON REVERSE

CERTIFICATE ISSUED BY

FPR-15226

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

Derrick Eslinger

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Workers - November 2, 2001

EXPIRY DATE
n/a

STUDENT SIGNATURE

Arresting You Ltd.
Safety Training Specialists
Bay #5, 7459 Edgar Industrial Bend
Red Deer, AB T4P 3R3

7546
CERTIFICATION #

DERRICK ESLINGER

has successfully completed:

Service Worker Fall Protection

EXPIRY DATE 04/25/2012

Disclaimer: This training program is interpretive information. It is important to note that it remains the responsibility of every worker and employer to know and understand their responsibilities under the appropriate regulatory body.

---

safety insights

Industrial Safety Training Specialists

Derrick Eslinger

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: Glenn Yingst

Glenn Yingst

Date: 12/10/04

Expires: 12/10/07

ENTERED 09/19/06

H2S & CS - Rd. Nov 7/07

ENFORM

Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

Course Date: OCT 29,2007 Course Number: 173185

H_2S Alive Instructor: TOM CLINTON

H_2S Alive Instructor No.: 3692

H_2S Alive Instructor Signature:

MICRO PRINT - MAGNIFY TO READ

ENFORM

Temporary Certificate No. 683628

H_2S Alive®

(valid for 90 days from course date as indicated on back of ticket)

REX L. DINGMAN

has successfully completed the Enform H_2S Alive® course

DO NOT PHOTOCOPY

MICRO PRINT - MAGNIFY TO READ

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING MICROLINES, THERMOCHROMIC INK AND BLEED THROUGH NUMBERS

---

si safety insights

Industrial Safety Training Specialists

Rex Digman

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: Brian Bell

Date: 8/21/06 Expires: 8/21/09

Nabors

Certification of W.H.M.I.S. Training

902-20 Ave
Nisku, Alberta
T9E 7Z6

Rex Dingman
NAME OF EMPLOYEE

Has successfully completed training in accordance within the Requirements of the workplace hazardous materials information System (W.H.M.I.S.) legislation.

DATE: 06/04/05 Bob H
dd/mm/yy AUTHORIZATION

Arresting You Ltd.
Safety Training Specialists

This is to certify that
Rex Dingman
has successfully completed a course in
Confined Space
Course Date: 31 OCT 07
Expiry Date: 90 days from course date
Temporary Number 1670-07

Temporary Certificate

94

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 166594

Attached is a certificate for Rex Dingman for the Fall Protection for Rig Work taken

May 31, 2007

The Certificate number is FPRN-166594-665388

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FPRN-166594-665388

ENFORM

THIS IS TO CERTIFY THAT

Rex Dingman

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work

May 31, 2007

STUDENT SIGNATURE

EXPIRY DATE
n/a

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 166595

Attached is a certificate for Rex Dingman for the Fall Rescue for Rig Work taken

June 01, 2007

The Certificate number is FRR-166595-665388

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FRR-166595-665388

ENFORM

THIS IS TO CERTIFY THAT

Rex Dingman

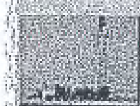
HAS SATISFACTORILY COMPLETED

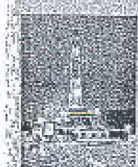
Fall Rescue for Rig Work

June 01, 2007

STUDENT SIGNATURE

EXPIRY DATE
n/a





Certificate of Achievement

Rex Dingman

Has completed

NSST

January 16, 2007

Joe Bruce Todd Merriott

02/07

NABORS.85 Floorhand

CERTIFICATE NUMBER
HAL-124170-747744

THIS IS TO CERTIFY THAT

Dan Squires

PETROLEUM INDUS TRAINING SERVICE

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Jul-11-2008

STUDENT SIGNATURE Dan Squires

St. John Ambulance

St. John Ambulance certifies that

Daniel Squires

TM

has completed a course in
SAFETY ORIENTED FIRST AID
Marine Advanced **HeartStart**

Electives 1 - 5 8 - 13 15 17 19 - 22
Expiry Date March 17, 2009
Course # 06-72533

Annual retraining in CPR is recommended.

Nabors

Certification of
W.H.M.I.S. Training

902-20 Ave
Nisku, Alberta
T9E 7Z6

Daniel Squires
NAME OF EMPLOYEE

Has successfully completed training in accordance within the Requirements of the workplace hazardous materials information System (W.H.M.I.S.) legislation.

DATE: June 26/06 dd/mm/yy

Terry Rousselle
AUTHORIZATION

ENTERED 02/06/07

Nabors

Fall Protection
Certificate of Training

902-20th Ave
Nisku, Alberta
T9E 7Z6

DAN SQUIRES
NAME

Has successfully completed an instructional course in the use, limitations
And maintenance of and has been fitted with Fall Protection Equipment
In accordance with instructions as required by good oilfield practices.

DATE: 12/07/07
dd/mm/yy

AUTHORIZATION

LSS

LSC6337

THIS IS TO CERTIFY THAT
DAN G SQUIRES
[illegible]
CONFINED SPACE ENTRY RESCUE
[illegible]

DATE Feb 26, 2007 COURSE NO. NC714/07

Leduc Safety Service Ltd.

---

si safety insights

Industrial Safety
Training Specialists

Dan Squires

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor:

Date: 16/01/07

Expires: 16/01/10

FROM :DAN SQUIRES FAX NO. :8638521 NOV. 16 2007 06:11PM P1

MOUNTAIN
INDUSTRIALSAFETY

Randy Coles
Has taken
Confined Space Entry

Issued/Expires
04/19/07-04/19/10
Cert #: 704193-4

www.misafety.ca

MARINE INSTITUTE
FISHERIES AND MARINE INSTITUTE
OF MEMORIAL UNIVERSITY
ST. JOHN'S, NEWFOUNDLAND, CANADA
Full Member of the International Assoc. for Sea Survival Training (IASST)

This is to certify that
Randy Coles
has successfully completed a course in
Basic Survival Training (including H.U.E.T)

School of Maritime Studies | Student ID Number 890683
Duration Hours 40 | Date 25-Apr-06 | Expiry Date 25-Apr-09

Registrar | School of Maritime Studies | Executive Director

CERTIFICATE NUMBER
FPRN-166116-770922

ENFORM

THIS IS TO CERTIFY THAT
Randy Coles
HAS SATISFACTORILY COMPLETED
Fall Protection for Rig Work
May 15, 2007
EXPIRY DATE
n/a
STUDENT SIGNATURE R. Coles

Canadian Red Cross
Croix-Rouge canadienne

Red Cross First Aid:
Prepare for Life

Randy Coles
Name
is Certified in
STANDARD FIRST AID CPR Level ■ A ☐ B ☐ C
This card is invalid if more than one level of CPR is checked.
CPR includes AED training unless otherwise indicated.
☐ Does not include AED certification.

04/17/2007
Date of Issue

60028729
Instructor I.D. #

04/17/2010
Expiry Date

Corinna Strauss
Instructor

YOU MAY RECERTIFY SOONER IF REQUIRED FOR EMPLOYMENT

CERTIFICATE NUMBER

HAL-167479-929626

ENFORM

THIS IS TO CERTIFY THAT

Scott Evans

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE

Jun-09-2010

STUDENT SIGNATURE Scott Evans

COLLEGE OF THE NORTH ATLANTIC — CAODC — PETROLEUM INDUSTRY TRAINING SERVICE

This is to certify that

SCOTT EVANS

Has Successfully Completed the

Floorhand (Roughneck) Training Course

Given under the seal of College of the North Atlantic in the province of Newfoundland, Canada

June 13, 2007

Date

College of the North Atlantic

Nabors

Certification of W.H.M.I.S. Training

902-20 Ave
Nisku, Alberta
T9E 7Z6

Scott Evans

NAME OF EMPLOYEE

Has successfully completed training in accordance within the Requirements of the workplace hazardous materials information System (W.H.M.I.S.) legislation.

DATE: 03/12/2007
dd/mm/yy

AUTHORIZATION

Nabors

Respirator Certificate of Training

This is to certify that:

902-20th Ave
Nisku, Alberta
T9E 7Z8

Scott Evans

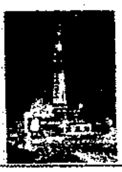
NAME OF EMPLOYEE

Has successfully completed an instructional course in the use, limitations and maintenance of and has been fit tested with the following respirators:.

North 7700 / Dec 3/07

SIZE: SMALL

Authorizing Signature



Certificate of Achievement

Scott Evans

Has completed

Nabors Orientation

On Dec 3, 2007

Joe Bruce

Facilitator

Nabors Drilling

A Division of NABORS CANADA

Fall Protection Certificate of Instruction

Scott Evans

NAME

Has successfully completed an instructional course in the use, limitations and maintenance of and has been fitted with Fall Protection Equipment in accordance with Good Oilfield Practices.

DATE 04/12/07
dd/mm/yy

AUTHORIZATION

COLLEGE OF THE NORTH ATLANTIC

This is to certify that

SCOTT EVANS

Has Successfully Completed the

Workplace Hazardous Materials Information System

Safety Training Program

June 9, 2007

Date Issued

Instructor

Renewed on July 7/2008

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

CERTIFICATE NUMBER

FLE-125562-602872

THIS IS TO CERTIFY THAT

Carl Bailey

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention Examination

EXPIRY DATE

Jul-18-2008

STUDENT SIGNATURE

PETROLEUM INDUSTRY TRAINING SERVICE

The Facilitator
5817- 62 Street
Taber, AB T1G 1Y6

The Certificate number is FLE-125562-602872

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

TDG - WHMIS
COMPLIANCE CENTRE INC.
9320 - 49 Street, Edmonton, AB; Ph: 780-451-2525

TDG TRAINING CERTIFICATE

THIS CERTIFIES THAT: Carl Bailey

EMPLOYEE SIGNATURE:

EMPLOYED BY: Nabors Drilling

ADDRESS: 902-20th Avenue. Nisku, AB.

EXPIRES ON: Oct.5,2010 DATE ISSUED: Oct.5,2007

EMPLOYER (Signature)

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8

The Certificate number is FLE-189596-602872

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

ENFORM

CERTIFICATE NUMBER

FLE-189596-602872

THIS IS TO CERTIFY THAT

Carl Bailey

HAS SATISFACTORILY COMPLETED

First Line Supervisor's Blowout Prevention Examination

EXPIRY DATE

Jul-18-2011

STUDENT SIGNATURE

Pd. Jly 29 (1)

ENFORM
Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 154985

Attached is a certificate for Carl Bailey for the Off-Highway Defensive Driving taken

October 30, 2006

The Certificate number is OHD-154985-869850

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
OHD-154985-869850

ENFORM

THIS IS TO CERTIFY THAT

Carl Bailey

HAS SATISFACTORILY COMPLETED

Off-Highway Defensive Driving

October 30, 2006

EXPIRY DATE
n/a

STUDENT SIGNATURE

02/1367

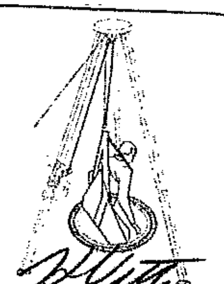
Carl Bailey

has successfully completed an 8 hour

Confined Space Entry and Rescue

Course

Expiry Date: January 8, 2010



GATEWAY
Safety Services

Instructor: Howard Versteeg
Ph: 403-328-8496
Issue # 14376

04/02/07

PD June 3 [illegible]

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 184823

Attached is a certificate for Carl Bailey for the H2S Alive taken

March 29, 2008

The Certificate number is HAL-184823-602872

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
HAL-184823-602872

ENFORM

THIS IS TO CERTIFY THAT

Carl Bailey

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
May-30-2011

STUDENT SIGNATURE

safety insights

Industrial Safety
Training Specialists

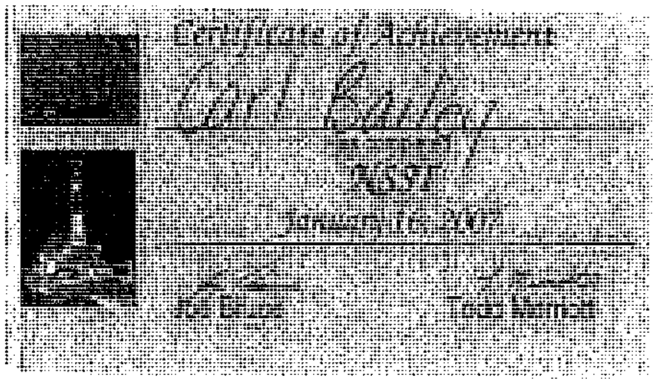
Carl Bailey

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: John Belanger

Date: 04/12/07

Expires: 04/12/10



04/02/07

St. John Ambulance

St. John Ambulance certifies that

James R. Jensen

has completed a course in

Standard First Aid - Level A CPR (New)

Class #: 1-61275581

Expiry Date: Mar 14, 2010

Annual CPR retraining is recommended

Reference #: 1-11KDFT

Issued By: Alberta Council

05/11/07

St. John Ambulance

St. John Ambulance certifies that

James R. Jensen

has completed a course in

Standard First Aid - Level A CPR (New)

Expiry Date: Mar 14, 2010

Reference #: **1-11KDFT**
Issued By:
Alberta Council

St. John Ambulance

St. John Ambulance certifies that

James R. Jensen

has completed a course in

Level A CPR

Issued Date: **Mar 14, 2007**

Reference #: **1-11KDFT**
Issued By:
Alberta Council

Lessons taught

1. Emergency Scene Management.
2. Shock, Unconsciousness & Fainting.
3. Choking - Adult.
4. Cardiovascular Emergencies & One-rescuer CPR - Adult.
5. Severe Bleeding.
6. Medical Conditions (diabetes, convulsions, asthma, allergies).
9. Two-Rescuer CPR.
11. Secondary Survey.
12. Bone and Joint Injuries.
13. Head/Spinal and Pelvic Injuries.
15. Wound Care.
18. Eye Injuries.
19. Burns.
21. Heat and Cold Emergencies.

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B:	One-rescuer CPR and choking manoeuvers for adult, child and infant casualties
Level C:	One and two-rescuer CPR and choking manoeuvers for adult, child and infant casualties
HCP:	One and two-rescuer CPR and choking manoeuvers for adult, child and infant casualties. AR, BVM, AED included
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

STOCK # 5604

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 90242

Attached is a certificate for James Jensen for the Fall Protection for Rig Work taken

May 22, 2003

The Certificate number is FPR-90242-528500

► IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FPR-90242-528500

PETROLEUM INDUSTRY TRAINING SERVICE

THIS IS TO CERTIFY THAT

James Jensen

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work

May 22, 2003

EXPIRY DATE
n/a

STUDENT SIGNATURE

ENFORM Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

MICRO PRINT – MAGNIFY TO READ

Course Date: June 17/06 Course Number: 144671

Enform Instructor: FRANK MURRAY

Enform Instructor No.: 1614

Enform Instructor Signature: Frank Murray

ENFORM Temporary Certificate No. 340418

Fall Rescue For Rig Work

(valid for 90 days from course date as indicated on back of ticket)

96% James Jensen

has successfully completed the Enform Fall Rescue For Rig Work course

DO NOT PHOTOCOPY

ENTERED 09/14/06

CERTIFICATE NUMBER
HAL-138971-528500

ENFORM

THIS IS TO CERTIFY THAT

[illegible]

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Mar-02-2009

STUDENT SIGNATURE

ATTN

GLOBAL

TRAINING Inc.

JAMES JENSEN

CONFINED SPACE

Date of Certification
01/19/2007

Ken Russell

safety insights

Industrial Safety Training Specialists

James Jensen

ENTERED

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: John Belanger

Date: 5/10/05 Expires: 5/10/08

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 144671

Attached is a certificate for James Jensen for the Fall Rescue for Rig Work taken

June 17, 2006

The Certificate number is FRR-144671-528500

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
FRR-144671-528500

ENFORM

THIS IS TO CERTIFY THAT

James Jensen

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work

June 17, 2006

EXPIRY DATE
n/a

STUDENT SIGNATURE

ENTERED
09 20

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 133666

Attached is a certificate for Darren R. Farrell for the H2S Alive taken

January 16, 2006

The Certificate number is HAL-133666-527130

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

HAL-133666-527130

ENFORM

THIS IS TO CERTIFY THAT

Darren R. Farrell

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE

Jan-26-2009

STUDENT SIGNATURE

ENTERED

STANDARD SAFETY

AND CONSULTING SERVICES (1978) LTD.

Certifies that *Darren Farrell*
an employee of *Nabors Drilling*
has successfully completed a course in

Confined Space Entry & Rig Tank Rescue

Date *December 2, 2003* Instructor

Industrial Health Safety Environment
INTEGRATED

This is to Certify that **Darren Farrell**
Has successfully completed training in:

Confined Space Entry Level II

Instructor:* *Jason Pelletier
Expires On:* *Sept 27 2010
Course Number:* *NI16960-07

1-877-872-4641

Industrial Health Safety Environment
INTEGRATED

This is to Certify that: ***Darren Farrell***
has completed the:

OSSA Confined Space Entry

Issue Date:* *Sept 27 2007
Expires On:* *Non Expiry Re-Certification Not Required
Authorization (Print):* *Jason Pelletier
Authorization (Signature):

Pdgv

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 114477

Attached is a certificate for Darren R. Farrell for the Fall Protection for Rig Work taken

February 03, 2005

The Certificate number is FPR-114477-527130

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

FPR-114477-527130

ENTERED

PETROLEUM INDUSTRY TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 116621

Attached is a certificate for Darren R. Farrell for the Fall Rescue for Rig Work taken

February 18, 2005

The Certificate number is FRR-116621-527130

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER

FRR-116621-527130

THIS IS TO CERTIFY THAT

PETROLEUM INDUSTRY TRAINING SERVICE

Darren R. Farrell

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work

February 18, 2005

EXPIRY DATE

n/a

STUDENT SIGNATURE

St. John Ambulance

St. John Ambulance certifies that

Darren R. Farrell

has completed a course in

Standard First Aid - Level B CPR

Class #: 1-31270593

Expiry Date: Oct 25, 2008

Annual CPR retraining is recommended

Reference #: 1-J6AQR

St. John Ambulance

St. John Ambulance certifies that

Darren R. Farrell

has completed a course in

Standard First Aid - Level B CPR

Expiry Date: Oct 25, 2008

Reference#: 1-J6AQR

St. John Ambulance

St. John Ambulance certifies that

Darren R. Farrell

has completed a course in

Level B CPR

Date of Issue: **Oct 25, 2005**

Reference#: **1-J6AQR**

Lessons taught

1. Emergency Scene Mgmt
2. Shock, Unconsciousness and Fainting
3. Artificial Respiration - Adult
4. Choking - Adult
5. Severe Bleeding
6. Cardiovascular Emergencies and One-rescuer CPR - Adult
9. Two-Rescuer CPR - Adult
10. Secondary Survey
11. Bone and Joint Injuries - Upper limbs; muscle strains
12. Bone and Joint Injuries - Lower limbs
13. Head/Spinal and Pelvic Injuries
18. Eye Injuries
19. Burns
21. Medical Conditions (diabetes, convulsions, asthma, allergies)
22. Environmental Illnesses and Injuries

Annual retraining in CPR is recommended

Cardiopulmonary Resuscitation Levels:

Level A - Heart Saver:	One-rescuer CPR and choking manoeuvers for an adult casualty
Level B - Heart Saver Plus:	Level A material plus one or two of infant resuscitation, child resuscitation and two-rescuer CPR
Level C - Basic Rescuer:	One and two-rescuer CPR and choking manoeuvers for infant, child and adult casualties
Level D - Child/Infant:	CPR and choking manoeuvers for child and infant casualties
Level E:	Customized courses that provide training for special needs group
AED:	Understanding the knowledge and skill to safely use an AED(Automated External Defibrillator)

Annual retraining in CPR is recommended

STOCK # 5604

CERTIFICATE NUMBER
FPR-114477-527130

THIS IS TO CERTIFY THAT

Darren R. Farrell

PETROLEUM INDUSTRY TRAINING SERVICE

HAS SATISFACTORILY COMPLETED

Fall Protection for Rig Work

EXPIRY DATE

February 03, 2005 n/a

STUDENT SIGNATURE Darren Farrell

CERTIFICATE NUMBER
FRR-116621-527130

THIS IS TO CERTIFY THAT

PETROLEUM INDUSTRY TRAINING SERVICE

Darren R. Farrell

HAS SATISFACTORILY COMPLETED

Fall Rescue for Rig Work

EXPIRY DATE

February 18, 2005 n/a

STUDENT SIGNATURE Darren Farrell

STANDARD SAFETY

AND CONSULTING SERVICES (1978) LTD.

Certifies that *Darren Farrell*
an employee of *Nabors Drilling*
has successfully completed a course in
Confined Space Entry & Rig Tank Rescue
Date *December 2, 2003* Instructor [signature]

CERTIFICATE NUMBER
HAL-86673-527130

THIS IS TO CERTIFY THAT

PETROLEUM INDUSTRY TRAINING SERVICE

Darren R. Farrell

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE

Jan-27-2006

STUDENT SIGNATURE Darren Farrell

Expired

Nabors

Respirator
Certificate of Training
This is to certify that:

902-20th Ave
Nisku, Alberta
T9E 7Z8

DARREN FARRELL
NAME OF EMPLOYEE

Has successfully completed an instructional course in the use, limitations and maintenance of and has been fit tested with the following respirators:

NORTH 7700

HEARING TEST [illegible]

W.H.I.M.I.S EXAM

EMPLOYEE NAME: DARREN FARRELL SIGNATURE: Darren Farrell POSITION: RoFF Neck
RIG MANAGER NAME: D MATTILE SIGNATURE: W Mitt RIG # 384 DATE: FEB 18/01
COMPLETED BY: SIGNATURE: POSITION:

W. H. M. I. S.

If you have taken a WHMIS course through another Drilling Contractor, then complete the short test below. Return it to the Personnel Department, along with a copy of your previous tickets. If you have never taken a WHMIS course then do not complete the test below and we will arrange for training.

1. What does WHMIS stand for?

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

2. In your words, what is WHMIS?

Its a guide to let you know whats dangerous and whats not dangerous.

3. What are the three elements of WHMIS?

MATERIAL SAFety DATA SHEET, WorKers KNowledge, LABELs From Supplier to workplace.

4. List seven categories required on supplier label in a container larger than 100 ml.

Product Identification
Supplier InFo
HAZARD Symbols
Risk phrases
Precautionary Measures
First-AID Measures
Reference To MSDS
Contained with cross hatch border

5. What are the three categories required on a worksite label?

MSDS
Product IdenTification
InFo on ~~[illegible]~~
safeway to handle product

6. What does MSDS stand for and where will they be found on the rig?

MATERIAL ~~[illegible]~~ SAFety DATA SHEET DOGHOUSE

7. List the nine categories required on an MSDS sheet?

Product InFo
HAZARDOUS Ingredients
PHYSICAL DATA
Fire & Explosion DATA
Reactivity "
Toxicological Properties
Preventive Measures
First-Aid "
Preparation DATA

HAVE YOU RECEIVED A WHMIS BOOKLET IN YOUR ORIENTATION PACKAGE?

YES ✓ NO ____

TDG TRAINING CERTIFICATE

TDG - WHMIS

9320 - 49 Street, Edmonton, AB; Ph: 780-461-2525

THIS CERTIFIES THAT: Darren Farrell

EMPLOYEE SIGNATURE:

EMPLOYED BY: Nabors Drilling

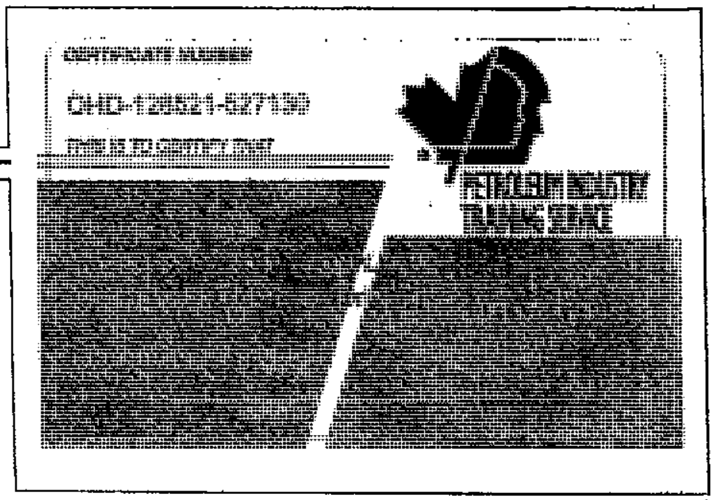
ADDRESS: 902-20 Avenue, NISKU, AB

EXPIRES ON: Aug 29 2008 DATE ISSUED: Aug 29 2005

PShali

EMPLOYER (Signature)

PETROLEUM INDUSTRY TRAINING SERVICE
Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3



Re: Certification for Class Number 128521

Attached is a certificate for Darren R. Farrell for the Off-Highway Defensive Driving taken

September 01, 2005

The Certificate number is OHD-128521-527130

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
HAL-173428-632766

ENFORM

THIS IS TO CERTIFY THAT

Roland Gould

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Oct-04-2010

STUDENT SIGNATURE

STANDARD SAFETY

AND CONSULTING SERVICES (1978) LTD.

THIS IS TO CERTIFY THAT

Roland Gould

HAS SUCCESSFULLY COMPLETED

Confined Space Entry & Rig Tank Rescue

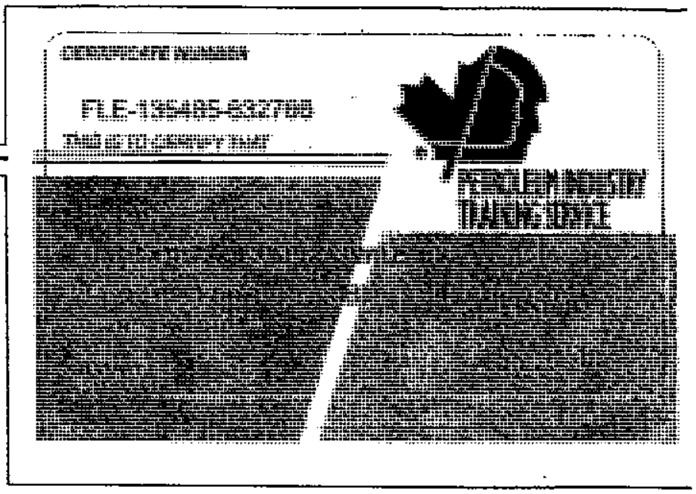
Dated at Nisku, this Eleventh day of April [redacted] 2001

S.W. LeSreud
Authorization

Instructor

PETROLEUM INDUSTRY
TRAINING SERVICE

Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3



Nabors Drilling
Box 1006, 902 - 20 Avenue
Nisku, AB T9E 8A8

The Certificate number is FLE-135485-632766

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE - PLEASE SIGN CERTIFICATE

LSS LSH26937

This is to certify that

ROLAND R. GOULD

has completed a course in

HYDROGEN SULPHIDE

Expires: Oct 17, 2004 Course No. N1831/01

Leduc Safety Service Ltd.

ENTERED

Gt ENTERED July 26/07

Pd 83 July 06/07

ENFORM Calgary Training Centre
1538 - 25th Avenue N.E., Calgary, Alberta T2E 8Y3

Re: Certification for Class Number 163086

Attached is a certificate for Darrell Miller for the H2S Alive taken

April 26, 2007

The Certificate number is HAL-163086-607967

IMPORTANT: TERMS OF CERTIFICATE ON REVERSE • PLEASE SIGN CERTIFICATE

CERTIFICATE NUMBER
HAL-163086-607967

ENFORM

THIS IS TO CERTIFY THAT

Darrell Miller

HAS SATISFACTORILY COMPLETED

H2S Alive

EXPIRY DATE
Apr-25-2010

STUDENT SIGNATURE

Rig 85. 10008030.
Motor

S0030.

STANDARD SAFETY

AND CONSULTING SERVICES (1978) LTD.

Certifies that ***Darrell Miller***
an employee of *Nabors Drilling*
has successfully completed a course in
Confined Space Entry & Rig Tank Rescue
Date *July 5, 2005* Instructor

ENTERED

St. John Ambulance

St. John Ambulance certifies that

Darrell Miller

has completed a course in

Standard First Aid - Level A CPR (New)

Class #: 1-64568158

Expiry Date: May 08, 2010

Annual CPR retraining is recommended

Reference #: 1-142CBW

Issued By: Alberta Council

St. John Ambulance

St. John Ambulance certifies that

Darrell Miller

has completed a course in

AED (Automated External Defibrillation)

Class #: 1-67248117

Date of Issue: May 08, 2007

Annual CPR retraining is recommended

Reference #: 1-142BBP

Issued By: Alberta Council

safety insights

Industrial Safety
Training Specialists

Darrel Miller

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: John Belanger

Date: 30/04/07 Expires: 30/04/10

05/11/07

Nabors

02/20/07

FEB 06 2007

W.H.M.I.S. Exam

EMPLOYEE NAME: DARRELL MILLER SIGNATURE: Darrell Miller POSITION: MOTORMAN

RIG MANAGER NAME: MIKE Combden SIGNATURE: M. Comb RIG # C-0085 DATE: JAN 27/07

COMPLETED BY: DARRELL MILLER SIGNATURE: Darrell Miller POSITION: MOTORMAN

Did you receive a WHMIS Booklet with your orientation package? ☑ YES ☐ NO

W.H.M.I.S.

If you have taken a WHMIS course through another Drilling Contractor, then complete the short test below. Return it to the Personnel Department, along with a copy of your previous tickets. IF you have never taken a WHMIS course, then do not complete the test below and we will arrange for training.

1. What does WHMIS stand for?
   WORKPLACE HAZARDOUS MATERIALS INFORMATION SHEET

2. In your words, what is WHMIS?
   BASIC INFORMATION SYSTEM ON CONTROLLED SUBSTANCES TO BE USED BY EMPLOYERS & EMPLOYEES

3. What are the three elements of WHMIS?
   LABELS, MSDS (MATERIAL SAFETY DATA SHEETS), WORKER INFORMATION

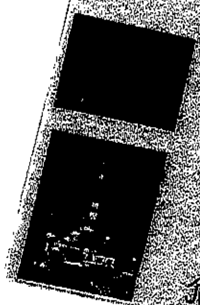
4. List seven categories required on supplier label in a container larger than 100ml.
   1. PRODUCT NAME
   2. NATURE OF HAZARD
   3. PRECAUTIONARY MEASURES
   4. FIRST AID MEASURES
   5. REFERENCE TO MSDS
   6. NAME & BUISNESS LOCATION
   7. 1 OR MORE HAZARD ~~[illegible]~~ SYMBOL

5. What are the three categories required on a worksite label?
   1. IDENTIFICATION OF PRODUCT
   2. REFERENCE TO MSDS FOR MORE INFORMATION
   3. INFORMATION FOR SAFE HANDLING

6. What does MSDS stand for and where will they be found on the rig?
   MATERIAL SAFETY DATA SHEET, DOGHOUSE

7. List the nine categories required on an MSDS Sheet?
   1. PRODUCT INFORMATION
   2. HAZARDOUS INGREDIENTS
   3. FIRE & EXPLOSIONS DATA
   4. PHYSICAL DATA
   5. REACTIVITY DATA
   6. TOXICOLOGICAL PROPERTIES
   7. PREVENTIVE MEASURES
   8. FIRST AID MEASURES
   9. PREPARATION DATA

Copy 1 – Office Card to Employee Form# ND-045



Certificate of Achievement

Darrell Miller

Has completed

NGST

on July 11, 2005

Joe Bruce

Todd Merriott

St. John Ambulance

St. John Ambulance certifies that

Justin V Reid

has completed a course in

SAFETY ORIENTED FIRST AID

Emergency First Aid HeartStart

Electives 8-13-20

Expiry Date June 08, 2007

Course # 04-73149

Annual retraining in CPR is recommended.

ENFORM Temporary Certificate No. 486884

FORM Warm the letters "EN" with breath. It will temporarily fade if certificate is authentic.

MICRO PRINT – MAGNIFY TO READ

Course Date: Oct. 27/06 Course Number: 152821

H_2S Alive Instructor: ED MAHONEY

H_2S Alive Instructor No.: 450288

H_2S Alive Instructor Signature: Ed Mahoney

H_2S Alive®

(valid for 90 days from course date as indicated on back of ticket)

JUSTIN REID

has successfully completed the Enform H_2S Alive® course

DO NOT PHOTOCOPY

MICRO PRINT – MAGNIFY TO READ

THIS DOCUMENT CONTAINS SECURITY FEATURES INCLUDING MICROLINES, THERMOCHROMIC INK AND BLEED THROUGH NUMBERS

02/21/07

05/11/07

LSC6310

THIS IS TO CERTIFY THAT

JUSTIN V. REID

has completed a course in

CONFINED SPACE ENTRY/RESCUE

DATE Feb 20, 2007 COURSE NO. NC711/07

Leduc Safety Service Ltd.

safety insights

Industrial Safety
Training Specialists

Justin Reid

Has Successfully Completed The
Heavy Loader Safety Training Course

Instructor: [signature]
John Belanger

Date: 30/04/07

Expires: 30/04/10

05/11/07

ENTERED
ms. Aug 8/07

Pd. July 18, 2007

St. John Ambulance

St. John Ambulance certifies that

Justin V. Reid

has completed a course in

Standard First Aid - Level A CPR (New)

Class #: 1-64568158

Expiry Date: May 08, 2010

Annual CPR retraining is recommended

Reference #: 1-142CC6

Issued By: Alberta Council

Appendix E:

Insurance Certificate

Jardine Lloyd Thompson Canada — Certificate of Insurance

Suite 300, 112 – 4th Avenue S.W., Calgary, Alberta T2P 0H3 Telephone: (403) 264-8600 Facsimile: (403) 264-8608

Certificate Holder: **To Whom It May Concern**
(For Evidence of Insurance Only)

Name of Insured: **PDI Production Inc.**
Suite 201, Baine Johnston Center
10 Fort William Place
St. Johns, NL A1C 1K4

This certificate is issued as a matter of information only and confers no rights upon the certificate holder other than those provided in the policy. This certificate does not amend, extend or alter the coverage afforded by the policies listed herein.

This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated, notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain. The insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies. Limits shown may have been reduced by paid claims/expenses.

Schedule of Insurance(s)

Type of Insurance	Insuring Company and Policy Number	Policy Dates	Limit of Liability/Amount of Coverage
Commercial General Liability	Underwriters at Lloyd's (By authority of Windsor Insurance Brokers Limited) Cover Note # ICF4405	October 16, 2007 – October 16, 2008	CAD10,000,000 any one occurrence and in the aggregate during the Policy Period separately in respect of Products Liability/Completed Operations Liability combined and in respect of Employee Benefits Errors and Omissions Liability. Deductible: CAD5,000 each and every claim including costs and expenses except CAD10,000 each and every claim including costs and expenses, in respect of Pollution Liability and also Clean Up Costs Extension.
All Risk Property / Boiler & Machinery	Certain Underwriters at Lloyds of London (By authority of JLT risk Solutions) Policy # JLTOG01607	October 16, 2007 – October 16, 2008	CAD550,000 – Production Property CAD 50,000 – Office Contents Deductible: Minimum CAD35,000 (100%) or 1% of highest insured value, whichever the greatest, but not less than CAD5,000 (For Assured's interest) any one occurrence except: Earthquake: 2% or minimum CAD50,000 Flood: 2% or minimum CAD100,000 Wildfire: CAD50,000 Electronic Data Equipment: CAD5,000 Office Contents: CAD5,000
Operator's Extra Expense	Certain Underwriters at Lloyds of London (By authority of JLT risk Solutions) Policy # JLTOG01607	October 16, 2007 – October 16, 2008	CAD10,000,000 combined single limit any one occurrence CAD 1,000,000 any one occurrence – Care, Custody or Control Deductible: CAD75,000 (100%) any one occurrence in respect all Drilling Wells with Dryhole Authorization for Expenditure less than CAD2,000,000 (100%) CAD150,000 (100%) any one occurrence in respect all Drilling Wells with Dryhole Authorization for Expenditure in excess of CAD2,000,000 (100%) but, CAD25,000 (100%) any one occurrence in respect of Care, Custody or Control CAD50,000 (100%) any one occurrence in respect of producing wells CAD25,000 (100%) any one occurrence in respect shun-in/plugged and abandoned wells.

Terms and Conditions

These statements have been made in good faith and are a summary of the insurance cover in force (which is subject to the full terms and conditions of the policy). We accept no responsibility whatsoever for any inadvertent or negligent act, error or omission on our part in preparing these statements or for any loss, damage or expense thereby occasioned to any recipient of this certificate.

Jardine Lloyd Thompson Canada

Date: October 24, 2007

Per: L Landers

S:\DEPT\ENERGY\P\PDI Production\CERTS\K13432.doc

Appendix F:

Correspondence between CIVC Creditor Corp. and Department of Natural Resources Regarding Financial Deposit

CANADIAN IMPERIAL VENTURE CORP.

P.O. Box 6232, St. John's, NL A1C 6J9
Tel: 709-739-6700 / Fax: 709-739-6605

E-mail: info@canadianimperial.com
Website: www.canadianimperial.com
Trading Symbol: CQV:TSX Venture Exchange

Facsimile

To:	**Vanessa Pennell-Mercer**	From:	**Tina Ricketts**
Fax:	**754-8170**	Pages:	5 (including cover)
Phone:	**754-8162**	Date:	**November 7, 2006**
Re:	**Requested info re. $300,000 Security Deposit**	CC:	

☐ Urgent ☐ For Review ☐ Please Comment ☐ Please Reply ☐ Please Recycle

● Comments:

Hi Vanessa:

Please find attached a copy of a letter from CIVC Creditor Corp. to the Department of Natural Resources regarding the $300,000 Security Deposit and acknowledgement of receipt from Government of this correspondence. Please note that the initial security deposit was in the form of Irrevocable Standby Letters of Credit ($150,000 each) by CIVC and these LoC's were later replaced with bank drafts issued to Government totalling $300,000.

Regards,

Tina

CIVC CREDITOR CORP.

America Tower, Ste. 4100
2929 Allen Parkway
Houston, Texas 77019
Tel. (713) 335-4800
Fax (713) 335-4848

June 9, 2006

Government of Newfoundland and Labrador
Petroleum Resources Development Division,
Department of Natural Resources
Natural Resources Building
50 Elizabeth Avenue, St. John's, NL A1A 1W5

Attention: **Mr. Wes Foote**
Director (Acting)

Ladies/Gentlemen:

Re: CIVC Creditor Corporation ("Assignor")
ENEGI Inc. ("Assignee")
Lease 2002-01 made effective April 2, 2002 and issued by the Government of Newfoundland and Labrador, Department of Mines and Energy ("Lease")

The Assignor and the Assignee are parties to an Agreement of Purchase and Sale dated the 24th day of May, 2006, with Canadian Imperial Venture Corp., PDI Production Inc, Gestion Resources Limited and Alan Minty (the "Purchase Agreement"), wherein the Assignor has agreed, *inter alia*, to assign, and the Assignee has agreed, *inter alia*, to assume all of the rights, benefits, interest and obligations of the Assignor in, to and under the Lease, as, at and effective from the Closing (as defined in the Purchase Agreement), together with all present and future security deposits, including any deposits in favour of the Government of Newfoundland and Labrador pursuant to section 14 of the *Petroleum Drilling Regulations*.

The Assignee has been advised by the Assignor and the Petroleum Resources Development Division, Department of Natural Resources ("Department") that the Department presently holds the sum of Three hundred thousand dollars ($300,000.00) on deposit in the name of the Assignor ("Security Deposit").

We therefore wish to jointly advise the Department that the Assignor has assigned all of its interest in the Security Deposit to the Assignee such that entitlement to such funds is now vested solely with the Assignee.

Yours truly,

CIVC CREDITOR CORPORATION

By: ______________________
[Duly Authorised Officer]

ENEGI Inc.

By: ______________________
[Duly Authorised Officer]

I:\Client\CIVC Creditor Corp\Enegi PSA Agmt\Security Deposit Joint Notice 08jun06.doc

Yours truly,

CIVC CREDITOR CORPORATION	ENEGI Inc.
By: ______________________	By: ______________________
[Duly Authorised Officer]	*[Duly Authorised Officer]*

GOVERNMENT OF
NEWFOUNDLAND AND LABRADOR

Department of
Natural Resources
Energy Branch
Policy and Strategic Planning

Ms. Suzanne M. Orsborn
Benson Myles
Suite 900, Atlantic Place
Water Street, P.O. Box 1538
St. John's, NL A1C 5N8

September 5, 2006

By Fax: 579-2647

Dear Ms. Orsborn:

Re: Assignment of Security Deposit

With respect to your discussion this morning with Angie Philpott, please be advised that we confirm receipt of the notice dated June 9, 2006 and addressed to Mr. Wes Foote, of the assignment of the Security Deposit in the amount of $300,000.00 from CIVC Creditor Corp. (Assignor) to Enegi Inc. (Assignee). This notice was received at our Department on June 16, 2006.

Yours truly

Fred Allen
Director

Appendix G:

PDIP's Contingency Plans

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0001
Title:	Garden Hill South Emergency Management Plan
Project Name:	Port au Port Project
PDIP Ref:	GHS/0001
Pages (including cover):	11

Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	19th Oct 2006	1st Issue	D North	A Pegram	Damian Minty
1	23rd Oct 2006	Update following Independent Review	D North	A Pegram	Damian Minty
2	28th Nov 2006	Changes to Cape St George Emergency Telephone Numbers	D North	L Fairbairn	Alison Pegram
3	20th Nov 2007	General update for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert
4	12th Dec 2007	Update of ambulance emergency contact number.	B Saunders	L Fairbairn	M Hibbert

Contents

1. Introduction

PDI Production Inc. (PDIP) is committed to operating in a safe and environmentally responsible manner. However, the company recognizes that there is a residual possibility of an incident or emergency occurring that imposes a risk to personnel or to the environment.

This document details PDIP's Emergency Management Plan (EMP) for drilling operations (and any subsequent well test operations) at the Garden Hill South (GHS) site. It outlines the general responsibilities of PDIP personnel based at the GHS site and at PDIP headquarters in St. John's.

Specific actions required by personnel during an incident or emergency depend on the nature of the incident/emergency and are identified in contingency plans (Refs. 1 to 7) that supplement this EMP.

This EMP provides the following information:

- PDIP's Emergency Management Policy.
- Definition of incident and emergency categories.
- Emergency management roles and procedure.
- Identification of the supplementary contingency plans.
- A description of the role of a PDIP Emergency Management Support Team (EMST), its organization and how it would be mobilized in the event of certain emergencies.
- Contact details of relevant PDIP personnel and emergency services.

2. Emergency Management Policy

It is PDIP's policy to ensure that its drilling activities (and any subsequent well test operations) are conducted in a safe and environmentally responsible manner and in compliance with applicable federal and provincial regulations. However, PDIP recognises that there is a residual possibility of an incident or emergency occurring and that effective management of an incident or emergency is essential to minimise risk to personnel and the environment. PDIP has therefore developed emergency management plans and contingency plans that are appropriate for its operations.

It is the responsibility of the PDIP Chief Executive Officer (CEO) to ensure that appropriate emergency management plans and supplementary contingency plans are implemented, periodically reviewed and exercised to ensure that they are effective during any foreseeable incident or emergency.

3. Categorisation of Incidents and Emergencies

An incident or emergency is an unplanned accidental event or situation that imposes a threat to personnel, the environment or facilities.

Incidents and emergencies at the GHS site are categorised as a 'Category 1 Incident' or a 'Category 2 Emergency' according to the following definitions.

3.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by all of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

3.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP EMST (see Section 5) and/or from external emergency services. A Category 2 Emergency can be characterised by any of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

Note: Although a well control incident is less onerous than loss of well control it is, nevertheless, classified as a Category 2 Emergency. This is because it requires the immediate notification of the PDIP Operations Manager and because it provides forewarning of a situation that has potential eventually to lead to a loss of well control.

4. Emergency Management Procedure

This section identifies the primary emergency management roles during operations at the GHS site and outlines the GHS Emergency Management Procedure. It also identifies contingency plans that provide supplementary guidance on the management of specific incidents and emergencies.

During operations at GHS, there will always be representatives of PDIP's drilling support services contractor (PDIP's prime contractor) at site. During drilling operations, there will also always be representatives of PDIP's drilling contractor at site. Therefore, PDIP's emergency management plans and procedures must be co-ordinated with those of its contractors. This co-ordination is considered in a separate document (Ref. 1).

4.1 Emergency Management Roles

4.1.1 Site HSE Designate

During operations at the GHS site, there will always be someone on site nominated to be responsible for HSE issues (termed the HSE Designate). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

4.1.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St John's and provides support to the site HSE Designate, in particular in the event of a Category 2 Emergency. This support may require mobilisation of the EMST (described in Section 5).

4.2 Emergency Management Procedure Outline

If there is an incident or emergency, the priority is to ensure the safety of personnel. Therefore, any response strategy must only be undertaken if it is considered safe to do so and provided the appropriate precautions are taken.

Management of incidents and emergencies at the GHS site is the responsibility of the site HSE Designate. This is because the site HSE Designate is in the best position (i.e. on-site) to assess the situation and act accordingly.

The flow chart in Figure 4.1 outlines the Emergency Management Procedure.

The HSE Designate, having taken any necessary measures to mitigate the immediate consequences of the incident (such as administering of first aid), invokes any relevant contingency plans and categorises the event as a Category 1 Incident or a Category 2 Emergency (as defined in Section 3).

In the event that the HSE Designate is a PDIP representative and is incapacitated as a result of the incident, responsibility for the initial management of the emergency will be assumed by PDIP's prime contractor's site HSE representative. If the HSE Designate is PDIP's prime contractor's site HSE representative (because both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibility for the initial management of the emergency will be assumed by the PDIP GHS Site Superintendent (who lives locally and is on 24-hour call).

A Category 1 Incident is managed using the resources available at site and responsibility for this management lies with the site HSE Designate. (However, the HSE Designate must inform the PDIP Operations Manager of the Category 1 Incident.)

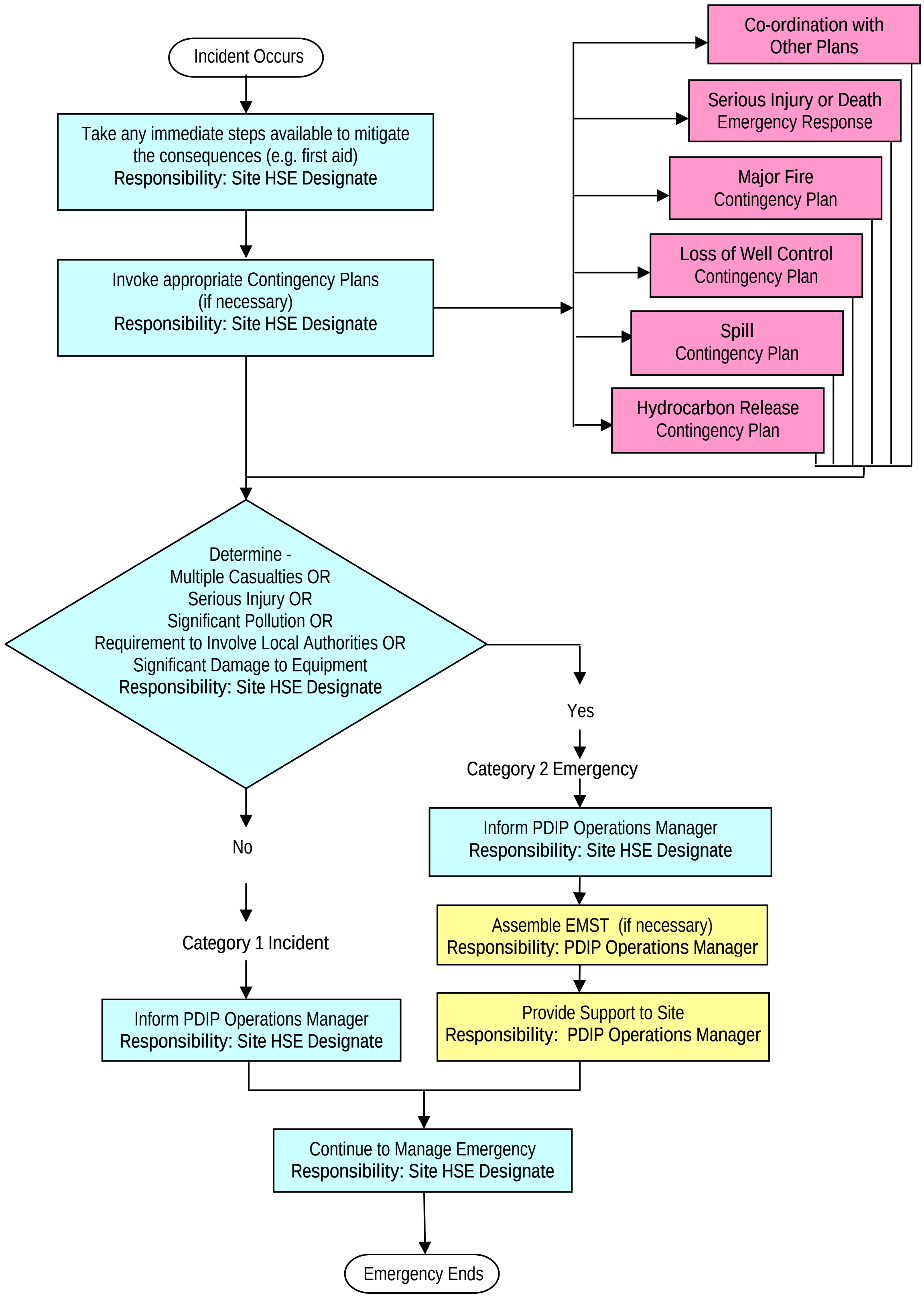


Figure 4.1: Emergency Management Procedure Flowchart

For a Category 2 Emergency, the HSE Designate may require assistance from the EMST based in St. John's. This assistance is mobilized and managed by the PDIP Operations Manager who communicates directly with the site HSE Designate. However, responsibility for managing the emergency (including eliciting support from emergency services) remains with the HSE Designate.

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

4.3 Contingency Plans

GHS contingency plans provide specific supplementary guidance on the management of the following:

- Serious Injury or Death (Ref. 2)
- Fire or Explosion (Ref. 3)
- Oil or Other Pollutant Spills (Ref. 4)
- Hydrocarbon Release (Ref. 5)
- Well Control Incident or Loss of Well Control (Ref. 6)
- Loss or Disablement of Drilling Rig (Ref. 7)

The co-ordination of this GHS EMP with plans used by contractors is addressed in Ref. 1.

4.4 Location of the Emergency Management Plan

Two copies of this EMP together with all the contingency plans are available at the GHS site. Two copies are also available in the Emergency Response Room (see Section 5.3) at PDIP Headquarters in St. John's.

4.5 Training, Exercises and Drills

All personnel that work at the GHS site will receive formal training in PDIP's site-specific response procedures. Personnel tasked with emergency response duties and responsibilities identified in this EMP and its supplementary contingency plans will receive formal training in the plan contents.

It is the responsibility of PDIP's CEO to ensure that the EMP and supplementary contingency plans are implemented, periodically reviewed and exercised to ensure that they are effective during any foreseeable incident or emergency.

PDIP appoint only suitably qualified and experienced drilling contractor(s) for drilling operation at GHS. Drilling contractors are required to have suitably approved and tested well control procedures. PDIP require:

- Rig managers and drillers to have appropriate current certification in well control.

- Drill crew to be trained in the causes and warning signs of a well kick.

- Drill crew to be trained in well control methods, and flow check and shut-in procedures.

- BOP drills to be conducted on at least a weekly basis and BOP components to be actuated regularly as per government regulations.

5. Emergency Management Support Team (EMST)

5.1 EMST Role

The role of the EMST is to provide support in the event of a Category 2 Emergency at the GHS site. The EMST will provide support to site personnel by providing the following assistance, as necessary:

- Seeking additional specialist expertise.
- Communication with government and regulatory bodies.
- Media liaison, including preparation of statements and press releases.
- Liaison with contractors.
- Protecting the legal liability of the company.
- Dealing with financial and insurance issues.
- Ensuring that all other important company business continues, as far as possible.
- Liaison with the emergency response organizations, including the emergency response organization of any major contractor on the site.

5.2 EMST Organisation

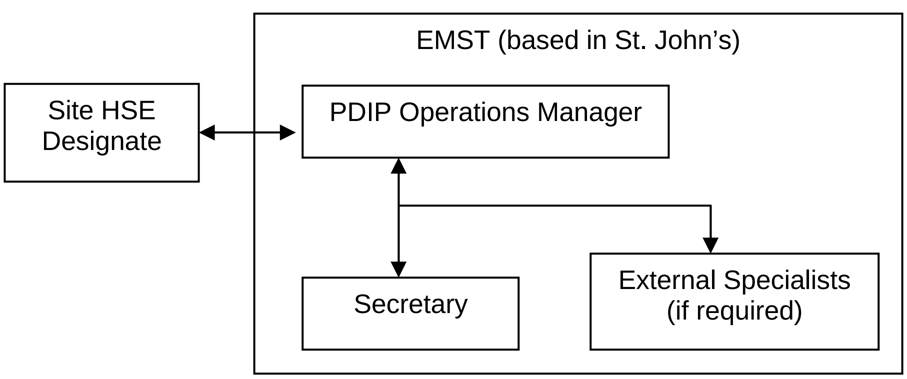


Figure 5.1: **EMST Organization**

The EMST consists of the following individuals, with the lines of communication as indicated in Figure 5.1:

PDIP Operations Manager: Has overall responsibility of the EMST and communicates directly with the site HSE Designate. The Operations Manager has designated deputies, who assume the emergency management responsibilities of the Operations Manager if the Operations Manager is absent. (Deputies are identified in Section 6).

Secretary: Is responsible for ensuring that the necessary communication facilities and documentation are available to those who require them and for keeping a written record of the emergency. The Secretary has a designated deputy who assumes the emergency management responsibilities of the Secretary if the Secretary is absent (see Section 6).

External Specialists: Non-PDIP personnel who can contribute to the management of the emergency by providing specialist knowledge. These are contacted, as necessary, by the PDIP Operations Manager.

5.3 EMST Location

For a Category 2 Emergency, the EMST operates from PDIP offices Conference Room in St. John's, which, for the duration on the emergency, will be designated the Emergency Response Room (ERR). The following facilities are available in the ERR or in close proximity to the ERR:

- Individual telephone lines for each team member.
- Secure communications to the GHS site.
- Office facilities such as computers, fax facilities, photocopiers, stationery etc.
- Appropriate emergency response documentation.
- Information display equipment **-** white boards, flip charts, overhead projectors etc.
- Relevant maps, charts, drawings etc. of the operations.
- Clock

6. Emergency Contact Numbers

6.1 PDIP Emergency Management Contact Numbers

PDIP emergency management contact numbers, for use in the event of an emergency, are given in Table 6.1. Where appropriate, alternative personnel are identified who should be contacted when the designated contact is not available.

Emergency Management Contact Numbers					
Position	**Contact Name**	**Home**	**Office**	**Fax**	**Cell**
Operations Manager (St John's)	Mick Hibbert	(709) 722 5398	(709) 754 8149	(709) 754 8170	(709) 691 0539
	Brian Hickey (1st Alternative)	(709) 739 7260	(709) 754 8154	(709) 754 8170	(709) 689 0297
	Ali Chaisson (2nd Alternative)	(709) 722 6337	(709) 754 8168	(709) 754 8170	(709) 737 6337
Secretary (St John's)	Kelly Boone	(709) 738 6467	(709) 754 8163	(709) 754 8170	(709) 728 5700
	Lesley Bulger (Alternative)	(709) 368 1837	(709) 754 8162	(709) 754 8170	(709) 685 7458
Site HSE Designate (Garden Hill South)	Travis Young (Superintendent)	(709) 644 2620	(709) 649 6058	(709) 644 2176	(709) 638 0112
	Tony Young (Supervisor)	(709) 644 2331	(709) 649 6059	(709) 644 2176	
	Alternative	See Contingency Plan Co-ordination Document (Ref. 1)			

Table 6.1: PDIP Emergency Contact Numbers

6.2 Emergency Service Telephone Numbers

Local emergency service telephone numbers are given in Table 6.2.

Local Emergency Service Telephone Numbers	
RCMP (Stephenville)	(709) 643-2118
Fire Service (Cape St. George – 16km) - Voluntary	(709) 644-2222
Fire Service (Lourdes- 35km) - Voluntary	(709) 642-2222
Fire Service (Stephenville – 50km)	(709) 643-2176
Ambulance (Stephenville)	(709) 643-5111
Accident Report Line	(709) 729-4444
Hospital (Stephenville)	(709) 643-5111
Environmental Emergency Response (24 Hr)	(800) 563-9089
Environmental Emergency Response (alternative).	(709) 772-2083
Cape St. George Medical Clinic	(709) 644-2660

Table 6.2: Emergency Service Contact Numbers

7. References

1. Co-ordination of Emergency Management Plans, Doc. No. GHS-0001-ECS-2-PRO-0009.

2. Emergency Response Procedure in the event of Serious Injury or Death, Doc. No. GHS-0001-ECS-2-PRO-0002.

3. Contingency Plan in the Event of Fire or Explosion, Doc. No. GHS-0001-ECS-2-PRO-0004.

4. Contingency Plan in the Event of a Release of Oil or Other Pollutants, Doc. No. GHS-0001-ECS-2-PRO-0005.

5. Contingency Plan in the Event of a Hydrocarbon Release, Doc. No. GHS-0001-ECS-2-PRO-0006.

6. Contingency Plan for Well Control Incident or Loss of Well Control, Doc. No. GHS-0001-ECS-2-PRO-0007.

7. Contingency Plan for Loss or Disablement of Drilling Rig, Doc. No. GHS-0001-ECS-2-PRO-0008.

	PDI PRODUCTION INC.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0002
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Project Name:	Port au Port Project
PDIP Ref:	GHS/0001
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0	20th Oct 2006	Comprehensive Revision	David North	Alison Pegram	
1	25th Oct 2006	Revision following independent review.	David North	Alison Pegram	
2	26th Oct 2006	Following comments by the DNR (Energy Branch)	David North	Alison Pegram	
3	14th Nov. 2006	Incorporating comments on the regulatory definition of ‘serious injury’	Alison Pegram	David North	Damian Minty
4	28th Nov 2006	Changes to Cape St George Emergency Telephone Numbers	David North	Lucy Fairbairn	Alison Pegram
5	20th Nov 2007	General update for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert
6	12th Dec 2007	Update of ambulance emergency contact number.	B Saunders	L Fairbairn	M Hibbert

Contents

1. Introduction

This document describes actions to be taken in the event of a death or serious injury at the Garden Hill South (GHS) site. This procedure is supplementary to PDI Production Inc.'s (PDIP's) GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by all of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team (EMST) and/or from external emergency services. A Category 2 Emergency can be characterised by any of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

2.3 Serious Injury

A serious injury is an injury that requires treatment by a medical practitioner in hospital.

If there is doubt as to whether an injury is serious, it shall be assumed to be so, until assessed by a medical practitioner (doctor or paramedic). If, on medical assessment, the injury proves not to be serious, then adherence to this procedure may be discontinued.

If a person appears to be fatally injured, the injury should continue to be treated as a serious injury until the fatality is confirmed by a medical practitioner.

(Note: For regulatory purposes (under the Occupational Health and Safety Act), 'Serious Injury' is defined as:

(a) A fracture of the skull, spine, pelvis, femur, humerus, fibula or tibia, or radius or ulna.

(b) An amputation of a major part of a hand or foot.

(c) The loss of sight of an eye.

(d) A serious internal haemorrhage.

(e) A burn that requires medical attention.

(f) An injury caused directly or indirectly by explosives.

(g) An asphyxiation or poisoning by gas resulting in partial or total loss of physical control.

(h) Another injury likely to endanger life or cause permanent injury.

The Act states that 'Serious Injury' "does not include injuries to a worker of a nature that may be treated through first aid or medical treatment and the worker is able to return to his or her work either immediately after the treatment or at his or her next scheduled shift".)

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an EMST.

4. Response Procedures

A death or serious injury at the GHS site is a Category 2 Emergency that may require the support of an EMST (as mobilized and co-ordinated by the PDIP Operations Manager). However, the immediate response will be conducted at site and the responsibility for managing the emergency lies with the Site HSE Designate.

Sections 4.1 and 4.2 discuss the immediate response for a death or serious injury. Section 4.3 describes the responsibilities of the PDIP Operations Manager.

4.1 Actions by Personnel Discovering an Injured Person

Any person on-site discovering a seriously injured person that is not already receiving attention should immediately take the following actions:

- Raise the alarm using the most appropriate means (communication with the control room, manual call points etc).
- Assess the situation to determine whether the incident that may have led to the injury presents a risk to others. If this is the case, determine if there are any actions that can be taken to reduce this risk and act accordingly.
- If it is safe to approach the casualty, provide first aid and/or seek the help of others to provide first aid.

If the casualty is incapacitated, no attempt should be made to move the casualty unless:

- Instructed to do so by a doctor or paramedic.
- The casualty is at risk from further injury and moving the casualty will reduce the risk.

The person discovering the injured person should confirm that the HSE Designate is aware of the incident as soon as possible.

4.2 Actions by the HSE Designate

Once aware that a serious injury has occurred, the HSE Designate should consider taking the following actions:

- Providing additional First Aid.
- Contacting the ambulance/medical services using one or more of the following telephone numbers:

Ambulance (Stephenville)	(709) 643-5111
Cape St. George Medical Clinic	(709) 644-2660
Hospital (Stephenville)	(709) 643-5111

Note that there is no specific telephone number for a helicopter evacuation service. However, the ambulance service will decide on the most appropriate means of transporting the casualty.

- If the injured person is trapped, or is inaccessible, calling the fire service using one or more of the following telephone numbers:

Fire Service (Cape St. George – 16km)	(709) 644-2222
Fire Service (Lourdes – 35km)	(709) 642-2222
Fire Service (Stephenville – 50km)	(709) 643-2176

- Making the casualty more comfortable (by providing additional clothing or blankets etc).

- If necessary, safely suspending activities at site.

The HSE Designate shall inform the PDIP Operations Manager of the situation including:

- The nature and extent of the emergency.
- An initial assessment of injuries.
- Name(s) of casualties.

Contact details as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170
	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

If the casualty is incapacitated, the HSE Designate should not attempt to move the casualty unless:

- Instructed to do so by a doctor or paramedic.

- The casualty is at risk from further injury and moving the casualty would reduce the risk.

If a casualty is confirmed to be a fatality by a medical practitioner, the body should not be moved until instructed to do so by the police. In such a case, the site around the incident should not be disturbed.

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

4.3 Actions by the Operations Manager

Once the PDIP Operations Manager is aware that a serious injury or death has occurred, they should consider taking the following actions:

- Mobilizing the Emergency Management Support Team.
- Invoking any additional supplementary contingency plans associated with the EMP (Ref. 1). (For example, possibly associated with mitigating the incident that caused the death or serious injury).
- Notifying the relevant authorities (such as local police) and regulators (such as the Department of Natural Resources).
- Providing a press release via appropriate channels (only after next-of-kin have been informed).

Note: next-of-kin will normally be informed by the police service.

5. References

1. Garden Hill South Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0002.

PDI PRODUCTION INC.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0004
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Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	27th Oct 2006	1st Issue	David North	Alison Pegram	
1	28th Nov 2006	Changes to Cape St George Emergency Telephone Numbers	David North	Lucy Fairbairn	Alison Pegram
2	20th Nov 2007	General update for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert

Contents

1. Introduction

This document describes actions to be taken in the event of a fire or explosion at the Garden Hill South (GHS) site. This procedure is supplementary to PDIP's GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

This contingency plan is applicable in the event of an ignited hydrocarbon release (i.e. fire or explosion). If a hydrocarbon release does not ignite, PDIP's contingency plan for hydrocarbon release (Ref. 2) is to be applied.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by all of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team (EMST) and/or from external emergency services. A Category 2 Emergency can be characterised by any of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an EMST.

4. Response Procedures

4.1 General

A small non-hydrocarbon fire that can comfortably be managed using on-site facilities is a Category 1 Incident. An ignited hydrocarbon release, i.e. a fire or an explosion, is a Category 2 Emergency. In addition, a large non-hydrocarbon fire for which there is uncertainty over whether it can be comfortably managed using on-site facilities is classed as a Category 2 Emergency.

If there is an incident or emergency, the priority is to ensure the safety of personnel. Therefore, any response strategy must only be undertaken if it is safe to do so and provided the appropriate precautions are taken.

The immediate response to a fire or explosion at the GHS site will be by site personnel and the site HSE Designate will be responsible for managing the incident or emergency. For Category 2 Emergencies, however, additional support may be required from the emergency services or from an EMST (or both). Sections 4.2, 4.3 and 4.4 discuss the immediate response to the fire or explosion at GHS site. Section 4.5 describes the responsibilities of the PDIP Operations Manager.

4.2 Actions by Personnel Discovering a Fire or Being Aware of an Explosion

Any person on-site discovering a fire or being aware of an explosion should immediately consider the following actions:

- Raising the alarm using the most appropriate means (communication with the control room, manual call points etc).

- If the fire is a non-hydrocarbon fire, and is small and can be approached safely (taking account of the potential for escalation and/or explosion), consider controlling the fire with suitable hand-held equipment.

- For hydrocarbon fire or explosion, or for a fire with the potential to escalate to affect hydrocarbon-containing equipment, initiating an emergency shutdown of surface equipment.

The person discovering the fire or being aware of the explosion should also confirm that the HSE Designate is aware of the situation as soon as possible.

4.3 Actions by the HSE Designate

Once aware that a fire is in progress or an explosion has occurred, the HSE Designate should consider taking the following actions:

- If necessary, safely suspending activities at site. This may include:

  - Terminating drilling activity and shutting down the well and well testing activities (if this has not already been done).
  - Terminating tanker loading operations.

- If there is any doubt that a fire can be extinguished using on-site resources, calling the fire service using one or more of the following telephone numbers:

Fire Service (Cape St. George – 16km) – Voluntary	(709) 644-2222
Fire Service (Lourdes – 35km) - Voluntary	(709) 642-2222
Fire Service (Stephenville – 50km)	(709) 643-2176

  The service should be briefed as to the nature of the fire and the possibility of further escalation or explosions.

- Invoking any other applicable contingency plans. (For example, contingency plans for the event of an oil spill or for the event of a death or serious injury.) Note: actions to ensure the safety of personnel take priority.

- Directing site personnel to the most suitable Muster Point. This will normally be the off-site Rendezvous Point (see Figure 4.1) but consideration should be given to mustering up wind of any toxic fumes or smoke.

- In the event of a large fire, high levels of thermal radiation, smoke etc. may warrant moving the muster point further from the site.

- Identifying any missing personnel and establishing their last known location.

- If safe to do so, taking action to locate and recover any missing personnel.

The HSE Designate should inform the PDIP Operations Manager of the nature and extent of the fire. Contact details as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170
	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

4.4 Actions by Other Site Personnel

On hearing a site alarm, or if directed to do so by the HSE Designate, personnel should muster at the designated off-site Rendezvous Point (see Figure 4.1), or alternative muster point, as directed by the HSE Designate.

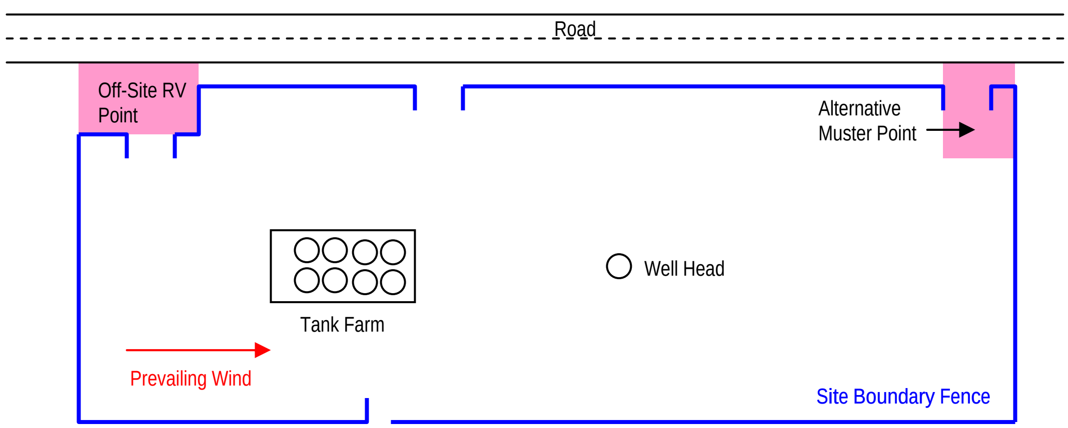

Figure 4.1: **Muster Points (not to scale)**

4.5 Actions by the Operations Manager

Once aware that a fire or explosion has occurred, the PDIP Operations Manager should consider taking the following actions in the event of a Category 2 Emergency:

- Mobilizing the EMST.

- In the case of a surface release of well fluids due to loss of well control, any actions required of the PDIP Operations Manager by the GHS Contingency Plan for Well Control Incident and Loss of Well Control (Ref. 3).

- Any actions required of the PDIP Operations Manager by any other relevant GHS contingency plans.

- Providing a press release via appropriate channels.

- Notifying the relevant authorities such as the Department of Natural Resources.

5. References

1. Garden Hill South Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0001

2. GHS Contingency Plan for Event of Hydrocarbon Release, Doc. No. GHS-0001-ECS-2-PRO-0006.

3. Contingency Plan for Well Control Incident or Loss of Well Control, Doc. No. GHS-0001-ECS-2-PRO-0007.

Procedure Cover Sheet

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0	2nd Nov 2006		Vanessa Pennell Mercer	Alison Pegram	Damian Minty
1	13th Nov 2006	Incorporating comments received from DNR and DOEC.	Alison Pegram	Vanessa Pennell Mercer	Damian Minty
2	22nd Nov 2006	Incorporating additional information required under GAP regulations.	Alison Pegram	Vanessa Pennell Mercer	Damian Minty
3	7th Dec 2006	Added Appendix A	Vanessa Pennell Mercer	Kelly Boone	Alison Pegram
4	20th Nov 2007	General update for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert
5	18th Dec 2007	Sections 6 and 7 updated to account for DNR comments	B Saunders	A Pegram	M Hibbert

Contents

List of Appendices

1. Introduction

PDI Production Inc. (PDIP) is committed to operating in an environmentally responsible manner and endeavours to undertake operations that minimise interaction with the surrounding natural environment. PDIP, therefore, aims to achieve zero spills. However, PDIP also recognises that in some cases, despite using the best available preventative measures, a spill could occur.

This contingency plan describes actions to be taken in the event of a spill of oil or other pollutant at the Garden Hill South (GHS) site. This plan is supplementary to PDIP's GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

This plan considers PDIP's response to oil spills primarily in terms of mitigating risks to the environment. Mitigation of the risk to personnel from a hydrocarbon release is addressed in a separate GHS contingency plan (Ref. 2).

This plan takes account of:

- PDIP's oil spill response arrangements and planning.
- Requirements with regard to reporting of oil spills to the Department of Natural Resources.
- Requirements of the Department of Environment and Conservation with regard to the reporting and remediation of oil spills.

The purpose of this plan is to:

- Detail measures provided to prevent and remediate releases of oil or other pollutants at the GHS site.
- Provide an unambiguous list of actions to be taken by PDIP and its contractors in the event of a release.
- Clarify communication lines and reporting requirements regarding a release of oil or other pollutant resulting from operations associated with the GHS site.
- Detail responsibilities of individuals in relation to the response to and reporting, if required, of releases.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by <u>all</u> of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team (EMST) and/or from external emergency services. A Category 2 Emergency can be characterised by <u>any</u> of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

2.3 Leak/Leakage

Newfoundland and Labrador Regulations 58/03 (Storage and Handling of Gasoline and Associated Products Regulations, 2003) (Ref. 3) define a leak as „a discharge of gasoline or associated products from a storage tank system, pipeline, tank vessel, tank car or tank vehicle, other than through the usual function for which the storage tank system or pipeline was designed'.

2.4 Spill

Newfoundland and Labrador Regulations 58/03 (Storage and Handling of Gasoline and Associated Products Regulations, 2003) (Ref. 3) define a spill as „a loss of gasoline or associated products in excess of 70 litres from a storage tank system, pipeline, tank vessel or vehicle onto or into the soil or water'.

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the „HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an EMST.

4. Oil Spill and Pollution Causes and Prevention Measures

4.1 Causes

Oil or other pollutants could be spilled or released at the GHS site as a result of accidents, equipment failures or procedural irregularities associated with surface or subsurface equipment containing oil or other hazardous materials. Potential incidents that could give rise to a release include, but are not limited to, the following:

- Process equipment failures.
- Loss of well control.
- Operator errors.
- Maintenance errors.
- Blocked drains from containment sumps.
- Failure of on-site oil containment facilities (e.g. break in a berm)
- Accidents associated with loading of road tankers at site.
- Other accidents associated with road tankers on site.
- Storage tank failures (e.g. rupture).

4.2 Prevention Measures

PDIP take all reasonable measures to prevent spills of oil or other pollutants. A number of pollution prevention measures have been developed and incorporated into the site layout and plant design, in order to minimize the potential for environmental impact in the event of spills of oil or other pollutants.

4.2.1 Production Equipment

Pressure vessels to be utilised on site during well test and early production operations are contained units, which will minimise the potential for a release of hydrocarbons. In addition, the contractor providing production equipment and personnel on site will utilise drip trays under the production pipes and provide pails under sample points to collect any oil and prevent spillage.

4.2.2 Loading Pan

Government of Newfoundland Regulations require oil loading facilities to be designed to mitigate oil spills during loading operations.

Therefore, the GHS tanker loading facility includes a "loading pan" that incorporates a sump positioned in a catchment area located between the loading arms and tanker parking position in order to be directly under the most likely cause of a spill. To be effective at mitigating spills from loading operations, the catchment area (the area that will drain under gravity to a sump) encloses both the loading arms and the road tanker.

The sump has been designed with sufficient capacity to contain oil from a worst-case spill (taken to be three times the volume transferred to the tanker in one minute).

4.2.3 Storage Tank Berm

The GHS tank farm consists of eight storage tanks (with capacities of between 336 and 538bbl, and a total capacity of approximately 3220bbl), located inside a berm. The berm is designed to provide containment of liquids that leak from the storage tanks.

Regulations require the berm to provide containment for the greater of (Ref. 3):

- 110% of the capacity of the largest tank, or
- 100% of the capacity of the largest tank, plus 10% of the aggregate capacity of all the other tanks.

In addition, the base and walls of the berm are required to be liquid tight to a permeability of 25 litres/metre^2/day (Ref. 3).

Based on the requirements defined in the regulations, the capacity of the berm at GHS is required to be 807bbl.

The GHS berm is 32m in length, 16.2m wide and 0.8m deep. It therefore has a volume of 414.7m^3. Because some of the volume of the berm is occupied by the base (the lower 0.8m) of the eight tanks, however, its effective capacity is less than this.

The circumferences of the tanks at GHS vary slightly, but the tanks are all 11.5m or less in circumference. Based on this, the effective capacity (V_{BE}) of the berm is conservatively calculated as follows:

$$V_{BE} = 414.7 - \pi\left(\frac{11.5}{2\pi}\right)^2 * 0.8 * 8$$

$$V_{BE} = 414.7m^3 - 67.3m^3$$

$$V_{BE} = 347m^3$$

The capacity of the berm at GHS is approximately $347m^3$, or 2180 bbl. Therefore, the capacity of the berm is significantly higher than the required capacity (807bbl).

4.3 Remediation Equipment

Two spill kits are provided at the GHS site, one adjacent to the main surface equipment and one on the tanker loading pan. Each kit consists of a 45 imperial gallon, 16-gauge steel drum, complete with full removal cover and two closing rings, containing:

- One 44 litre bag of Oclansorb
- 50 Hi-Point pads 2/8”x17”x19”
- One spark resistant poly-shovel
- Five 4-mil yellow heavy duty disposal bags 30” x 48” printed “Caution Waste Material”
- Five 4” x 4’ Sorb Sox
- Five 4” x 8’ Sorb Sox
- One pair of chemical resistant gloves

5. Spill Response Procedures

5.1 General

If there is a spill, the priority is to ensure the safety of personnel. Therefore, any response strategy must only be undertaken if it is safe to do so and provided the appropriate precautions are taken. This plan describes PDIP’s response to oil spills primarily in terms of mitigating the environmental consequences of a hydrocarbon release. Mitigation of the risk to personnel from a hydrocarbon release is addressed in Ref. 2.

A spill that has not resulted in significant pollution is classed as a Category 1 Incident. A spill that has resulted in significant pollution (such as an oil spill that occurs outside containment areas) is classed as a Category 2 Emergency.

The objective of responding to a Category 1 spill is to prevent it developing into a Category 2 Emergency. Also, in case it does, nevertheless, develop into a Category 2 Emergency, to reduce the resultant risk to the environment.

The immediate response to a spill of pollutant at the GHS site will be by site personnel and the site HSE Designate will be responsible for managing the incident or emergency. If the spill becomes a Category 2 Emergency, however, additional support may be required from a professional emergency response organization, the emergency services or an EMST (or all). Sections 5.2 and 5.3 discuss the immediate response to a spill at the GHS site. Section 5.4 describes the responsibilities of the PDIP Operations Manager. Spill clean-up measures are considered in Section 6.

5.2 Actions by Personnel Noticing a Spill

Any person on-site discovering a spill should immediately consider the following actions:

- Taking appropriate actions to ensure the safety of personnel.
- If safe to do so, taking initial actions to stop, or limit the size of, the spill, giving due consideration to the fact the spill may be toxic, flammable and/or corrosive.
- Confirming, as soon as possible, that the HSE Designate is aware of the situation and providing, if possible, information on the source of the spill, fluid released and approximate spill size.

5.3 Actions by the HSE Designate

Once aware that a spill of pollutant has occurred, the HSE designate should consider taking the following actions:

- Assessing the situation and determining the source, size and nature of the spill.
- Ensuring safety of all personnel at the GHS site, including those who will be exposed to the immediate effects of the incident, as well as personnel exposed to the spill during any mitigation and clean-up actions. Consideration should be given to the fact that the spill may be toxic, flammable and/or corrosive and therefore:
    - Appropriate personal protective equipment (PPE) should be provided and worn.
    - Additional precautions may be required, e.g. standing upwind of a gaseous release.
- Taking immediate action, if it is safe to do so and has not already been achieved, to isolate the release. If necessary, this may involve safely suspending activities at site, which may include:
    - Suspension of drilling activities.
    - Shut down of the well and well testing activities.
    - Termination of tanker loading operations.
- Assessing whether the spill is a Category 1 Incident or a Category 2 Emergency and informing the Operations Manager. Contact details are as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170

	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

- Contacting the emergency services, if required, using one or more of the following telephone numbers :

    - Fire Service (Lourdes) (709) 642 2222
    - Fire Service (Stephenville) (709) 643 2176
    - Fire Service (Stephenville Airport) (709) 643 8437 or 8438
    - RCMP (Stephenville) (709) 643 2118

  Note that there is a requirement to notify the authorities in the event of a leak or a spill (see Section 7).

- Ensuring that appropriate remediation measures (described in Section 6) are undertaken.

Once appropriate remediation measures have been taken, the HSE Designate should update the Emergency Response Log (noting the time, date, approximate volume of substance spilled, etc).

5.4 Actions by the Operations Manager

Once the PDIP Operations Manager is aware that a spill has occurred, they should consider taking the following actions in the event of a Category 2 Emergency:

- Mobilizing the EMST.

- In the case of a surface release of well fluids due to loss of well control, any actions required of the PDIP Operations Manager by the GHS Contingency Plan for Well Control Incident and Loss of Well Control (Ref. 5).

- Any actions required of the PDIP Operations Manager by any other relevant GHS contingency plans.

- Providing a press release via appropriate channels.

- Notifying the relevant authorities such as the Department of Natural Resources. (There may be an obligation to notify the Government in the event of a leak or a spill, see Section 7).

- Ensuring that a detailed spill report is prepared (see Section 7) and filed at PDIP headquarters along with other relevant information.

- Ensuring that any reporting requirements relating to insurance are fulfilled in a timely manner.

6. Remediation Measures

All losses of petroleum products to the environment require remediation. Specific remediation measures required in the event of a release are largely dependent upon whether the release is contained (by oil spill prevention measures provided, and therefore does not contact soil or water) or uncontained. Appropriate measures for each type of release are described here.

6.1 Contained Spills

Spill containment measures are provided on site, where practicable, in areas where there is potential for a significant release (e.g. tanker loading pan and the berm surrounding the tank farm).

The first response for small spills in these areas should be the use of spill kits provided on-site. Contaminated liquid will be stored on-site in a sealed container until there is sufficient waste to warrant disposal by an appropriate waste management contractor. Contaminated liquid stored on-site will be stored in accordance with Newfoundland and Labrador Used Oil Control Regulations, NLR 82/02, which stipulate that the maximum quantity of waste/used oil to be stored on site is 205 litres. Waste/used oil is to be stored in a sealed 205 litre 18 gauge drum that is provided with secondary containment (for example, by placing the drum within the on-site storage tank berm).

For larger spills, waste management contractors should be mobilized immediately to pump out the spilled fluids and clean the affected area.

Contact details for PDIP's waste management contractors are as follows:

Pardy's Waste Management and Industrial Services
P.O. Box 285
Pasadena, NL
A0L 1K0
Contact: Derek Pardy
Office Tel: (709) 686 2013
Cell: (709) 632 4672
Fax: (709) 686 2512

Crosbie Industrial Services Ltd.
P.O. 8338
St. John's, NL
A1B 3N7
Contact: Steve Power
Office Tel: (709) 722 8212
Cell: (709) 685 1315
Fax: (709) 739 0602

Pardy's Waste Management are the Eastern Canada Response Corporation's (ECRC's) representative in the region and are listed in Appendix A.

6.2 Uncontained Spills

For spills occurring in locations for which spill containment measures are not provided, or in the unlikely event that the containment measures are not adequate to contain the spill, the HSE Designate is responsible for the cleanup operation, but will also receive support, as required, from the PDIP Operations Manager.

Actions that should be considered, and taken where appropriate, include:

- Determining extent of contamination.
- Determining whether or not a spill kit is appropriate for cleanup.
- If a spill kit is not appropriate, arranging for removal of contaminated soil using appropriate measures based on the size of the spill and type of soil (i.e. manual or mechanical measures). A list of heavy equipment operators who may be utilised in clean up operations if mechanical measures are required can be found in Appendix A.
- Initiating a soil sampling program, where appropriate, to ensure that, following clean-up, the hydrocarbon concentration in soil in the affected area is in compliance with relevant regulations, guidelines or standards. If hydrocarbon levels are still too high, additional soil should be removed and the sampling program repeated.
- In the case of severe spills, a ground water monitoring program may be required.

Clean-up, as detailed above, is required for any hydrocarbon contamination of soil or water, including incidental surface staining.

Contaminated soil generated by removal of surface stain can be temporarily stored in sealed steel drums within the storage tank berm, provided the berm capacity requirements of Ref. 3 (see Section 4.2.3) are maintained, until the material can be transported to an approved soil treatment facility. Documentation on the quantities stored and disposed of, and of soil sample analyses, are to be maintained on-site for Government Service Centre (GSC) review.

Remediation of any release into the environment must also comply with the requirements of the Department of Environment and Conservation's (DOEC's) Guidance Document "Management of Impacted Sites". This includes a requirement, for any significant release or any release with the potential to impact drinking water, ecological habitat or indoor air or to migrate off-site, to employ an Environmental Consultant to oversee remediation activities. As per DOEC direction, all soil/water samples are to be collected by the Environmental Consultant. The overall role of the Environmental Consultant in overseeing remediation activities will be defined in consultation with the GSC Environmental Protection Officer. Contact information for various consultants can be found in Appendix A.

7. Reporting of Releases

Government of Newfoundland Regulations (Ref. 3) define:

- A **leak/leakage** as „a discharge of gasoline or associated products from a storage tank system, pipeline, tank vessel, tank car or tank vehicle, other than through the usual function for which the storage tank system or pipeline was designed'.

- A **spill** as „a loss of gasoline or associated products in excess of 70 litres from a storage tank system, pipeline, tank vessel or vehicle onto or into the soil or water'.

The Ref. 3 regulations require that the government be notified of all leaks and of any releases (spills) greater than 70 litres. (All leaks are reportable because it is generally unknown how long the leak has been in progress before it is detected.) In such cases, the PDIP Operations Manager shall be responsible for notifying the following:

- Environmental Emergency Notification
  Telephone: (800) 563 9089 (24hr)/(709) 772 2083 (alternative)

- Environmental Protection Officer, Government Service Centre, Corner Brook
  Telephone: (709) 637 2448/2449
  Fax: (709) 637 2681

- Pollution Prevention, Department of Environment and Conservation
  Telephone: (709) 729 2556/2555
  Fax: (709) 729 6969

In addition, for releases greater than 70 litres, a report should be prepared under the direction of the PDIP Operations Manager that contains the following information:

a. Procedures taken to notify the Government and copies of all information that was forwarded.

b. The type, size, location and cause of the spill.

c. Details of the method(s) used to contain the spill (if appropriate).

d. Details of remediation undertaken.

e. Details of the involvement of the Emergency Management Support Team (Ref. 1), if applicable.

f. Any measure taken to prevent a similar problem in the future (e.g., additional maintenance of faulty equipment or a change in procedure).

g. Lessons learned.

The Operations Manger should also ensure that a copy of the report is filed at PDIP headquarters, along with other relevant information pertaining to the spill.

In addition, it is the Operations Manager's responsibility to ensure that any reporting requirements relating to insurance are fulfilled in a timely manner.

8. Summary of Responsibilities

This section summarises the responsibilities of key personnel relating to the response to and reporting of spills outlined in this plan.

8.1 HSE Designate

The HSE Designate is the person on site who has responsibility for implementing the initial response to the release. Once informed of the situation, he is responsible for:

- Assessing the situation and determining the source, size and nature of the release.
- Assessing the potential for the incident to threaten the health and safety of personnel, ensuring that personnel involved in the response wear suitable clothing and take appropriate precautions and, if necessary, organising an evacuation of non-essential personnel.
- Taking immediate actions, if it is safe to do so and has not already been done, to isolate the release.
- If necessary, safely suspending activities at site, including, as appropriate, suspension of well intervention activities, shutting in the well and abandoning tanker loading operations.
- Assessing whether the spill is a Category 1 Incident or Category 2 Emergency and informing the Operations Manager.
- Contacting the emergency services and/or external contractors and consultants if required to assist in the immediate response or remediation.
- Overseeing remediation activities, including clean-up, disposal and restoration.
- Maintaining documentation on the quantities of waste/used oil and contaminated soil stored on-site and disposed of, and of soil sample analyses, for Government Service Centre (GSC) review.
- Updating the Emergency Response Log.

8.2 Operations Manager

The PDIP Operations Manager provides support to the HSE Designate, particularly in the event of a Category 2 Emergency, and is responsible for:

- Mobilizing, if necessary, and directing the Emergency Management Support Team.
- Notifying the Government in the event of a leak or „spill' (release greater than 70 litres).
- In the case of a surface release of well fluids due to loss of well control, considering any actions required of the PDIP Operations Manager by the GHS Contingency Plan for Well Control Incident and Loss of Well Control (Ref. 5).

- Considering any actions required of the PDIP Operations Manager by any other relevant GHS contingency plans.
- Liaising with the media, including preparation of statements and press releases.
- Ensuring, in the event of a spill, that a detailed spill report is prepared (see Section 7) and filed at PDIP headquarters along with other relevant information.
- Ensuring that any reporting requirements relating to insurance are fulfilled in a timely manner.

9. References

1. Garden Hill South Emergency Management Plan, GHS-0001-ECS-2-PRO-0001.
2. GHS Contingency Plan for Event of Hydrocarbon Release, GHS-0001-ECS-2-PRO-0006.
3. NEWFOUNDLAND AND LABRADOR REGULATION 58/03 (Storage and Handling of Gasoline and Associated Products Regulations, 2003) under the Environmental Protection Act. http://www.hoa.gov.nl.ca/hoa/regulations/rc030058.htm
4. Garden Hill South – Concept Design for a Road Tanker Loading Pan, PDIP Technical Document, Rev 0, 28th September 2006 (PDIP Ref. TD-0006, Rev.0)
5. GHS Contingency Plan for Well Control Incident or Loss of Well Control, GHS-0001-ECS-2-PRO-0007.

Appendix A:

Contact Details for Heavy Equipment Operators, Environmental Consultants and Other Oil Spill Response Support

Heavy Equipment Contractors

Harvey & Company Ltd. 18 Maple Valley Rd. Corner Brook, NL A2H 6E6 Ph: 709.639.2960 Or: 1-888-427-8393	Humber Arm Contracting Mount Moriah Corner Brook, NL Ph: 709.785.1540
K & F Excavating and Equipment Ltd. Watson's Pond Corner Brook, NL A2H 5W7 Ph: 709.634.9337	Murley G & F Excavations Ltd. 165 Main Street, Mount Moriah Corner Brook, NL Ph: 709.785.2958 Frenchman's Cove Benoit's Cove, NL Ph: 709.789.3492
West Coast Excavating & Equipment Co. Ltd 19 Maple Valley Rd. Corner Brook, NL A2H 3C4 Ph: 709.639.9423	West Coast Sand and Gravel 50 Main Street Corner Brook, NL A2H 1C4 Ph: 709.639.7727
Convoy Services Ltd 316 O'Connell Drive Corner Brook, NL A2H 6V9 Ph: 709.639.1431	Whalen Enterprises Ltd 241 Carolina Avenue Stephenville, NL A2N 2A6 Ph: 709.643.3388

Environmental Consultants

Anderson Engineering Consultants Ltd Millbrook Mall Corner Brook, NL A1C 4B5 Ph: 709.634.9944	ALL-TECH Environmental Services Ltd Corner Brook, NL Ph:709.640.2581
Jacques Whitford Limited 607 Torbay Road St. John's, NL A1A 4Y6 Ph: 709.576.1458	CBCL Limited 38 Main Street Corner Brook, NL A2H 6Z7 Ph:709.639.4225

Waste Management Contractors

Pardy's Waste Management and Industrial Services P.O. Box 285 Pasadena, NL A0L 1K0 Contact: Derek Pardy Office Tel: 709.686.2013 Cell: 709.632.4672 Fax: 709.686.2512	Crosbie Industrial Services Ltd. P.O. 8338 St. John's, NL A1B 3N7 Contact: Steve Power Office Tel: 709.722.8212 Cell: 709.685.1315 Fax: 709.739.0602

Additional Oil Spill Response Support and Equipment

L & C Construction Ltd. Stentaford Avenue Pasadena, NL Ph: 709.686-2828	SERT Centre Fisheries and Marine Institute of Memorial University of Newfoundland 7 Tennessee Drive Stephenville, Newfoundland A2N 2Y3 Ph: 709.643.5550

PDI PRODUCTION INC.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0006
Title:	Contingency Plan for Event of Hydrocarbon Release
Project Name:	Port au Port Project
PDIP Ref:	GHS/0001
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Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
Rev 0	3rd Nov. 2006		David North	Alison Pegram	
Rev 1	14th Nov. 2006	Incorporating comments received from DNR and DOEC.	Alison Pegram	David North	Damian Minty
Rev 2	28th Nov. 2006	Changes to Cape St George Emergency Telephone Numbers	David North	Lucy Fairbairn	Alison Pegram
3	20th Nov 2007	General update for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert
4	12th Dec 2007	Update of ambulance emergency contact number.	B Saunders	L Fairbairn	M Hibbert

Contents

1. Introduction

This contingency plan describes actions to be taken in the event of a hydrocarbon release at the Garden Hill South (GHS) site. This plan is supplementary to PDI Production Inc.'s (PDIP's) GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

This plan considers PDIP's response primarily in terms of mitigating risks to personnel. Mitigation of the environmental consequences of a hydrocarbon release in the form of an oil spill is addressed in a separate contingency plan (Ref. 2).

Also, this contingency plan is applicable in the event of a non-ignited hydrocarbon release. If a hydrocarbon release ignites and results in a fire or explosion, PDIP's contingency plan for the event of fire or explosion (Ref. 3) applies.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by all of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team and/or from external emergency services. A Category 2 Emergency can be characterised by any of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).

- There is a requirement to involve local authorities.
- There is significant damage to equipment.

2.3 Hydrocarbon Release

An on-site release of hydrocarbon to the environment may be due to:

Well Fluid Release: A release of well fluids from the well bore due to loss of well control.

Surface Equipment Release: A release of hydrocarbon from surface well test equipment.

Oil Storage/Transportation System Release: A release of oil from oil storage tanks or road tanker. (Oil produced from well testing will be temporarily stored on-site, for subsequent export by road tanker.)

Utility System Release: Certain hydrocarbon inventories are stored on-site for use in utility systems. For example, diesel fuel for diesel generators.

There are several possible outcomes of a hydrocarbon release, depending on the type of fluid released and whether it ignites:

Oil Spill: An un-ignited release of oil.
Gas Release: An un-ignited release of gas.
Pool Fire: Following ignition of a liquid release.
Jet Fire: Following ignition of gas or liquid released at pressure.
Explosion: Following ignition of a cloud of flammable gas.

This contingency plan is applicable in the event of a non-ignited hydrocarbon release. If a hydrocarbon release ignites, PDIP's contingency plan for the event of fire or explosion (Ref. 3) applies. Mitigation of the environmental consequences of an oil spill is addressed in Ref. 2.

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an Emergency Management Support Team (EMST).

4. Hydrocarbon Release Response Procedures

4.1 General

If there is a hydrocarbon release, the priority is to ensure the safety of personnel. Therefore, any response strategy must only be undertaken if it is safe to do so and provided the appropriate precautions are taken.

A non-ignited hydrocarbon release that has not resulted in significant pollution is a Category 1 Incident.

The objective of responding to a Category 1 hydrocarbon release is to prevent it developing into a Category 2 Emergency. Also, in case it does, nevertheless, develop into a Category 2 Emergency, to reduce the resultant risk to personnel and the environment.

Response to a hydrocarbon release depends, to some extent, on the severity and nature of the release. For example, all the response actions indicated in this Section 4 are appropriate for pressurized well fluid releases and process releases, but some may be less appropriate for smaller releases from non-pressurized inventories such as utility system releases. However, in considering response actions for less significant releases, personnel must take into account the potential consequences of escalation to other hydrocarbon inventories, if the release were subsequently to ignite.

The immediate response to a hydrocarbon release at the GHS site will be by site personnel and the site HSE Designate will be responsible for managing the incident or emergency. If the hydrocarbon release becomes a Category 2 Emergency, however, additional support may be required from the emergency services or an EMST (or both). Sections 4.2, 4.3 and 4.4 discuss the immediate response to a hydrocarbon release at GHS site. Section 4.5 describes the responsibilities of the PDIP Operations Manager.

4.2 Actions by Personnel Noticing a Hydrocarbon Release

Any person on-site becoming aware of a hydrocarbon release should immediately consider the following actions:

- In the case of a hydrocarbon release during well testing, initiating a shutdown of surface equipment (this will isolate hydrocarbon inventories and blow down those that are pressurised).

- Isolating electrical plant in the vicinity of the release.

- Where possible, removing ignition source(s) near the release. (For example, shutdown diesel generators, stop any welding activities, etc.)

- Raising the alarm using the most appropriate means (communication with the control room, manual call points etc).

Any person becoming aware of a hydrocarbon release should also confirm that the HSE Designate is aware of the situation as soon as possible.

4.3 Actions by the HSE Designate

Once aware that a hydrocarbon release has occurred, the HSE Designate should consider taking the following actions:

- In the case of a hydrocarbon release during well testing, initiating shutdown of surface equipment (if this has not already been done).

- Removing ignition sources (if this has not already been done).

- Safely suspending activities at site, which may include:

  - Suspension of drilling activities
  - Termination of tanker loading operations

- Considering the possible consequences of an unignited release igniting and the ignited release escalating to other inventories and taking any other appropriate actions.

- If there is any doubt that a subsequent fire could be safely and rapidly extinguished using on-site resources, calling the fire service. Contact numbers for the fire service are as follows:

Fire Service (Cape St. George – 16km away)	(709) 644-2222
Fire Service (Lourdes – 35km away)	(709) 642-2222
Fire Service (Stephenville – 50km away)	(709) 643-2176

  The fire service should be briefed as to the nature of the hydrocarbon release and the possibility of a fire and any escalation or explosions.

  (Note: A satellite phone is available in the event that land line facilities are unavailable.)

- Invoking any other applicable contingency plans. (For example, contingency plans for the event of an oil spill or, if the release subsequently ignites, for the event of a fire or explosion, or for death or serious injury.) Note: actions to ensure the safety of personnel take priority.

- Directing site personnel to the most suitable muster point. This will normally be the off-site Rendezvous (RV) Point (see Figure 4.1), but consideration should be given to mustering upwind of any toxic fumes or smoke that could result from a subsequent fire.

In the case of a large well blowout, the potential for smoke or thermal radiation (if the blowout subsequently ignites) may warrant moving the muster point further from the site. In such a case, the car park of the Crosswinds Resort would provide a suitable location (approximately 500m away from the site).

- Identifying any missing personnel and establishing their last known location.
- If safe to do so, taking action to locate and recover any missing personnel.
- Calling the emergency services. Contact numbers are as follows:

Ambulance (Stephenville – 50km)	(709) 643-5111
Cape St. George Medical Clinic	(709) 644-2660
Hospital (Stephenville)	(709) 643-5111

The HSE Designate should inform the PDIP Operations Manager of the nature and extent of the release. Contact details as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170
	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

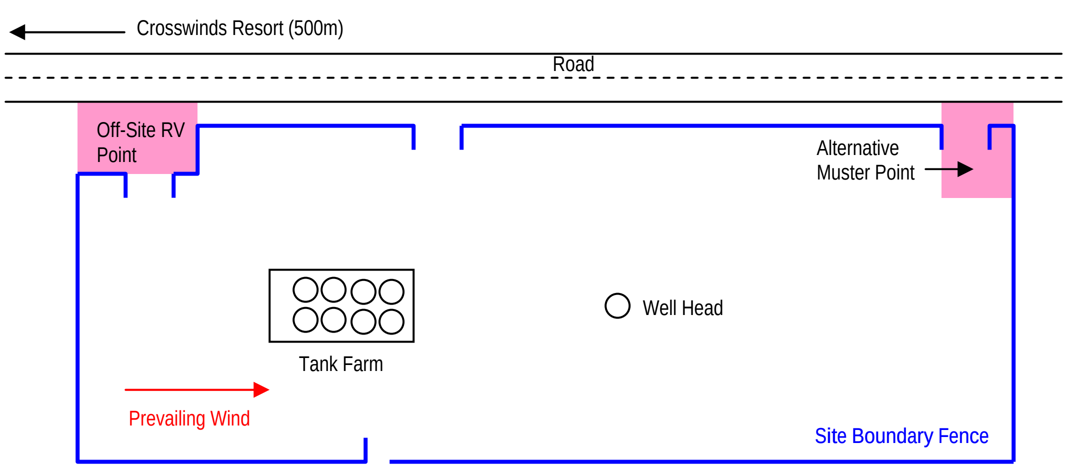

Figure 4.1: **Muster Points (not to scale)**

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

4.4 Actions by Site Personnel

On hearing a site alarm, or if directed to do so by the HSE Designate, personnel should muster at the designated off-site RV Point (see Figure 4.1), or alternative muster point, as directed by the HSE Designate.

4.5 Actions by the Operations Manager

Once aware that a hydrocarbon release has occurred, the PDIP Operations Manger should consider taking the following actions in the event of a Category 2 Emergency:

- Mobilizing the EMST.
- In the case of a surface release of well fluids due to loss of well control, any actions required of the PDIP Operations Manger by the GHS Contingency Plan for Well Control Incident and Loss of Well Control (Ref. 4).
- Any actions required of the PDIP Operations Manger by any other relevant GHS contingency plans.
- Notifying the relevant authorities such as Department of Natural Resources (via the Director of the Petroleum Development Division).
- Providing a press release via appropriate channels.

5. References

1 Garden Hill South Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0001.

2 GHS Contingency Plan in the Event of a Release of Oil or Other Pollutant, Doc. No. GHS-0001-ECS-2-PRO-0005.

3 GHS Contingency Plan for Event of Fire or Explosion, Doc. No. GHS-0001-ECS-2-PRO-0004.

4 GHS Contingency Plan for Well Control Incident or Loss of Well Control, Doc. No. GHS-0001-ECS-2-PRO-0007.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0007
Title:	Contingency Plan for Well Control Incident or Loss of Well Control
Project Name:	Port au Port Project
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Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	20th Nov 2007	Original, for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert
1	4th Aug 2008	Inclusion of environmental emergency numbers in Section 5.4.	L Fairbairn	A Pegram	M Hibbert

Contents

1. Introduction

This contingency plan describes actions required in the event there is a well control incident or loss of well control at the Garden Hill South (GHS) Site. (Loss of well control refers to a situation in which there is an uncontrolled surface release of hydrocarbon fluids from the well.)

This contingency plan is supplementary to PDI Production Inc.'s (PDIP's) GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by <u>all</u> of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team (EMST) and/or from external emergency services. A Category 2 Emergency can be characterised by <u>any</u> of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

Note: Although a well control incident is less onerous than a loss of well control it is, nevertheless, classified as a Category 2 Emergency. This is because it requires the immediate notification of the PDIP Operations Manager and because it provides forewarning of a situation that has potential to lead to a loss of well control.

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an Emergency Management Support Team (EMST).

4. General Provisions

4.1 Drilling Contractor Competence

PDIP appoint only suitably qualified and experienced drilling contractor(s) for drilling operations at GHS. Drilling contractors are required to have suitably approved and tested well control procedures. Also:

- Rig managers and drillers must have appropriate current certification in well control.
- Drill crew must be trained in the causes and warning signs of a well kick.
- Drill crew must be trained in well control methods, and flow check and shut-in procedures.
- BOP drills must be conducted on a weekly basis and BOP components actuated regularly as per government regulations.

4.2 Insurance

Drilling contractor(s) appointed by PDIP are required to carry insurance in accordance with the terms of CAODC/CAPP Master Daywork Contract and carry risks and liabilities in accordance with the terms of that contract.

PDIP, as operators, will carry insurance that covers General Commercial Liability, Pollution Liability and 'Operator's Extra Expense' (blowout cover) as per Provincial Requirements and including material damage cover.

4.3 Drilling of a Relief Well

Prior to the commencement of drilling operations at GHS, PDIP will identify an alternative drilling installation for the drilling of a relief well in case such a requirement arises. PDIP will also identify a source of supply for a backup wellhead system and all consumables required to set conductor and surface casing for such a relief well.

5. Response Procedure

5.1 General

Initial response to a well control incident will be by the drilling crew. However, the drilling contractor's on-site supervisor should also ensure that the HSE Designate is aware of the situation as soon as possible.

A well control incident or a loss of well control is a Category 2 Emergency that requires the notification of the PDIP Operations Manager. Sections 5.2 and 5.3 describe the immediate on-site response to a well control incident and a loss of well control. Section 5.4 describes the responsibilities of the PDIP Operations Manager.

5.2 Actions by Drilling Contractor's On-Site Supervisor

The drilling contractor's on-site supervisor should ensure that the HSE Designate is aware of a well control incident as soon as possible.

5.3 Actions by the HSE Designate

Once aware of a well control incident, the HSE Designate should monitor the situation (in consultation with the drilling contractor's on-site supervisor). The HSE Designate should also:

- Consider taking precautionary actions appropriate for a hydrocarbon release, as identified in the GHS Contingency Plan for Hydrocarbon Release (Ref. 2). (For example, suspending site activities, removing ignition sources and instructing site personnel to muster.)

- Inform the PDIP Operations Manager of the well control incident. Contact details as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170
	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

If well control is lost, resulting in the surface release of well fluids, the HSE Designate should:

- Invoke the GHS Contingency Plan for Hydrocarbon Release (Ref. 2).
- Inform the PDIP Operations Manager of the loss of well control.

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

5.4 Actions by the PDIP Operations Manager

Once aware of a well control incident at site, the PDIP Operations Manager should:

- Monitor the situation in consultation with the drilling contactor's designated liaison officer.
- Consider taking precautionary actions appropriate for a hydrocarbon release, as identified in the GHS Contingency Plan for Hydrocarbon Release (Ref. 2). (For example, mobilising the EMST and notifying the relevant authorities such as the Department of Natural Resources.)

Once aware of loss of well control, resulting in the surface release of well fluids, the PDIP Operations Manager should:

- Consider actions required of the PDIP Operations Manager by the GHS Contingency Plan for Hydrocarbon Release (Ref. 2).
- Contact and request assistance from a well control specialist. Contact details are as follows:

  SafetyBOSS
  921, 9th Avenue S E, Calgary, Alberta, T2G 0S5
  Phone: (403) 261-5075
  Fax: (403) 261-4859
  info@safetyboss.net

- In the event of a spill greater than 70 litres, notify the following:

  - Environmental Emergency Notification
    Telephone: (800) 563 9089 (24hr)/(709) 772 2083 (alternative)

  - Environmental Protection Officer, Government Service Centre, Corner Brook
    Telephone: (709) 637 2448/2449
    Fax: (709) 637 2681

  - Pollution Prevention, Department of Environment and Conservation
    Telephone: (709) 729 2556/2555
    Fax: (709) 729 6969

- Make provisions and co-ordinate actions required for the drilling of a relief well if, in consultation with a well control specialist, the drilling of such a well is considered necessary.

Once aware of loss of well control, resulting in the surface release of well fluids, the PDIP Operations Manager should also consider taking the following actions:

- Contacting and liaising with PDIP's insurers.

- Contacting and liaising with the drilling contractor and the drilling contractor's insurers.

6. References

1. GHS Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0001.

2. GHS Contingency Plan for Event of Hydrocarbon Release, Doc. No. GHS-0001-ECS-2-PRO-0006.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0008
Title:	Contingency Plan for Loss or Disablement of a Drilling Rig
Project Name:	Port au Port Project
PDIP Ref:	GHS/0001
Pages (including cover):	7

Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	20th Nov 2007	Original, for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert

Contents

1. Introduction

This contingency plan describes actions required in the event of loss or disablement of a drilling rig at the Garden Hill South (GHS) Site. That is, the total loss or destruction of a rig, or a major rig breakdown with indefinite repair time.

This contingency plan is supplementary to PDI Production Inc.'s (PDIP's) GHS Emergency Management Plan (EMP) (Ref. 1) and is to be read in conjunction with the EMP.

2. Definitions

2.1 Category 1 Incident

A Category 1 Incident is any incident (or combination of incidents) that imposes a threat to personnel, the environment or facilities, but that can be comfortably managed with the resources available on-site. A Category 1 Incident can be characterised by all of the following conditions:

- Either there are no casualties, or there is a single casualty that is not serious. (For example, an injury that can be treated on-site or by a doctor at a convenient time.)
- There is no significant pollution. (For example, an oil spill that remains within a spill containment area.)
- There is no fire (or explosion) involving hydrocarbons, and no potential to escalate to a hydrocarbon fire (or explosion).
- There is no requirement to involve local authorities.
- There is no significant damage to equipment.

2.2 Category 2 Emergency

A Category 2 Emergency is any incident, or combination of incidents, that imposes a threat to personnel, the environment or facilities, and that requires off-site support, typically from a PDIP Emergency Management Support Team (EMST) and/or from external emergency services. A Category 2 Emergency can be characterised by any of the following conditions:

- There are multiple casualties.
- There is a single casualty that involves serious injury. (For example, an injury that requires treatment in hospital.)
- There is a well control incident or loss of well control.
- There is significant pollution. (For example, an oil spill that occurs outside containment areas.)
- There is a fire (or explosion) involving hydrocarbons, or with potential to escalate to a hydrocarbon fire (or explosion).
- There is a requirement to involve local authorities.
- There is significant damage to equipment.

3. Emergency Management Roles

3.1 Site HSE Designate

During operations at the GHS site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate'). This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an Emergency Management Support Team (EMST).

4. General Provisions

4.1 Drilling Contractor Competence

PDIP appoint only suitably qualified and experienced drilling contractor(s) for drilling operations at GHS. Drilling contractors are required to have suitably approved and tested procedures for loss or disablement of a drilling rig.

4.2 Insurance

Drilling contractor(s) appointed by PDIP are required to carry insurance in accordance with the terms of CAODC/CAPP Master Daywork Contract and carry risks and liabilities in accordance with the terms of that contract.

PDIP, as operators, will carry insurance that covers General Commercial Liability, Pollution Liability and 'Operator's Extra Expense' (blowout cover) as per Provincial Requirements and including material damage cover.

5. Response Procedure

5.1 General

Loss or disablement of a rig at GHS could occur due to, for example:

- Fire or explosion.
- Mechanical damage (for example, vehicle impact).
- Extreme weather.
- Equipment failure.

Irrespective of the cause of a loss or disablement of a drilling rig, the immediate on-site response will be managed by the Site HSE Designate.

The priority is to ensure the safety of personnel. Other GHS contingency plans provide guidance for the following types of event:

- Hydrocarbon release (Ref. 2)
- Spill of oil or other pollutant (Ref. 3).
- Fire or explosion (Ref. 4).
- Serious injury or death (Ref. 5).
- Loss of well control (Ref. 6).

Also, irrespective of the cause of loss or disablement of a drilling rig, the incident will be a Category 2 Emergency that involves significant damage to equipment and which cannot be managed with resources available at site. It, therefore, requires the notification of the PDIP Operations Manager. Sections 5.2 and 5.3 describe the immediate on-site response to a loss or disablement of a drilling rig. Section 5.4 describes the responsibilities of the PDIP Operations Manager.

5.2 Actions by Drilling Contractor's On-Site Supervisor

The drilling contractor's on-site supervisor should ensure that the HSE Designate is aware of loss or disablement of the drilling rig as soon as possible.

5.3 Actions by the HSE Designate

In the event of loss or disablement of a drilling rig, the HSE Designate should consider taking the following actions:

- Safely suspending site activities and ensuring or confirming that the well is safely shut down.

- Invoking any other applicable contingency plans. (For example, contingency plans for the event of a fire or explosion (Ref. 4), for the event of a death or serious injury (Ref. 5), or loss of well control (Ref. 6)). Note: actions to ensure the safety of personnel take priority.

The HSE Designate should inform the PDIP Operations Manager of the loss or disablement of the drilling rig. Contact details as follows:

Mick Hibbert (Primary Contact):	Office	(709) 754 8149
	Fax	(709) 754 8170
	Cell	(709) 691 0539
	Home	(709) 722 5398
Brian Hickey (1st Alternative):	Office	(709) 754 8154
	Fax	(709) 754 8170
	Cell	(709) 689 0297
	Home	(709) 739 7260
Ali Chaisson (2nd Alternative)	Office	(709) 754 8168
	Fax	(709) 754 8170
	Cell	(709) 737 6337
	Home	(709) 722 6337

For each Category 1 Incident or Category 2 Emergency, the HSE Designate completes/updates an Emergency Response Log, which is maintained at the GHS site, noting the date, time, nature of the incident, actions taken, etc.

5.4 Actions by the PDIP Operations Manager

Once aware that the drilling rig is lost or disabled, the PDIP Operations Manager should consider taking the following actions:

- Mobilizing the EMST.
- Any actions required of the PDIP Operations Manager by any other relevant GHS contingency plans dependant on the cause and type of incident, see Section 5.1.
- Notifying the relevant authorities such as the Department of Natural Resources.
- Contacting and liaising with PDIP's insurers.
- Contacting and liaising with the drilling contractor and the drilling contractor's insurers.
- Planning and co-ordinating recovery of the situation at the GHS site.
- Planning and co-ordinating efforts to ensure that operations re-continue at site as soon as is reasonably practicable.
- Providing a press release via appropriate channels.

6. References

1. GHS Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0001.
2. GHS Contingency Plan for Hydrocarbon Release, Doc. No. GHS-0001-ECS-2-PRO-0006.

3. GHS Contingency Plan for Spill of Oil or Other Pollutant, Doc. No. GHS-0001-ECS-2-PRO-0005.

4. GHS Contingency Plan for Fire or Explosion, Doc. No. GHS-0001-ECS-2-PRO-0004.

5. GHS Contingency Plan for Serious Injury or Death, Doc. No. GHS-0001-ECS-2-PRO-0002.

6. GHS Contingency Plan for Loss of Well Control, Doc. No. GHS-0001-ECS-2-PRO-0007.

PDI PRODUCTION INC.

Procedure Cover Sheet

Document No:	GHS-0001-ECS-2-PRO-0009
Title:	Co-ordination of Emergency Plans for Garden Hill South
Project Name:	Port au Port Project
PDIP Ref:	GHS/0001
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Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	14th November 2006	Original.	David North	Alison Pegram	Damian Minty
1	20th Nov 2007	Revision, for drilling of PAP#1 ST#3.	B Saunders	A Pegram	M Hibbert

Contents

1. Introduction

This document describes how emergency procedures should be implemented at the Garden Hill South site during drilling operations scheduled to commence in Q4 2007, taking into account procedures developed by PDIP and the existing procedures of Nabors Canada (the drilling contractor). This document forms part of PDIP's Emergency Management Plan and should be read in conjunction with Ref. 1.

The objective of the document is to ensure that, in the event of an emergency occurring at the Garden Hill South site, the most appropriate procedures are followed and that the responsibilities of those involved are clear.

2. PDIP Emergency Management Policy

It is PDIP's policy to ensure that its drilling activities (and any subsequent well test operations) are conducted in a safe and environmentally responsible manner and in compliance with applicable federal and provincial regulations. However, PDIP recognise that there is a residual possibility of an incident or emergency occurring and that effective management of an incident or emergency is essential to minimise risk to personnel and the environment. PDIP have therefore developed emergency management plans and contingency plans that are appropriate for its operations.

3. Key Responsibilities

It is the responsibility of the PDIP Chief Executive Officer (CEO) to ensure that appropriate emergency management plans and supplementary contingency plans are implemented, periodically reviewed and exercised to ensure that they are effective during any foreseeable incident or emergency.

As Operator of Garden Hill South, the primary responsibility for responding to an unplanned hazardous event at the site remains with PDIP. However, where appropriate, representatives of PDIP's prime contractor (Codeco Consulting (2000) Inc.) fulfil key roles within the on-site team responding to the incident. For certain incidents relating to drilling operations, Nabors personnel will also fulfil key roles in responding to the incident.

Specific roles and responsibilities designated within PDIP's Emergency Management Plan are outlined in Sections 3.1.1 and 3.1.2. In addition, Section 4 outlines roles and responsibilities of Nabors personnel.

3.1.1 Site HSE Designate

During operations at the Garden Hill South site, there will always be someone on-site nominated to be responsible for HSE issues (termed the 'HSE Designate').

This will usually be the PDIP GHS Site Superintendent, if on site, or the PDIP GHS Site Supervisor. However, when both the PDIP GHS Site Superintendent and the PDIP GHS Site Supervisor are absent, a suitably qualified person from PDIP's prime contractor's team will be assigned the position of HSE Designate.

In the event that the HSE Designate is a PDIP HSE Designate and is incapacitated as a result of an incident, responsibilities of HSE Designate will be assumed by the HSE representative of PDIP's prime contractor. If the HSE Designate is the site HSE representative of PDIP's prime contractor (because the PDIP GHS Site Superintendent and GHS Site Supervisor are off-site) and is incapacitated because of the incident, responsibilities of HSE Designate will be assumed by the GHS Site Superintendent (who lives locally and is on 24-hour call).

3.1.2 PDIP Operations Manager

The PDIP Operations Manager is based at PDIP's offices in St. John's and provides support to the site HSE Designate. In particular, in the event of a Category 2 Emergency, the PDIP Operations Manager will, if necessary, mobilize an EMST.

4. Co-ordination of Plans

PDIP have an Emergency Management Plan (Ref. 1) that defines the following procedures for use following an incident during drilling operations:

- Emergency Response Procedure in the Event of a Serious Injury or Death (Ref. 2)
- Contingency Plan in the Event of a Hydrocarbon Release (Ref. 3)
- Contingency Plan in the Event of a Fire or Explosion (Ref. 4)
- Contingency Plan in the Event of a Release of Oil or Other Pollutant (Ref. 5)
- Contingency Plan for Well Control Incident and Loss of Well Control (Ref. 6)
- Contingency Plan for Loss or Disablement of Drilling Rig (Ref. 7)

Safety Element 04 of Nabors Safety Manual (Ref. 8) relates to Emergency Preparedness, and provides procedures for use in the event of the following occurrences:

- Personnel injury/illness
- Fire/explosion
- H_2S release
- Well blowout
- Derrick rescue
- Natural disasters
- Winter Driving

Ref. 8 recognises, however, that the 'Prime Contractor' (in this case, PDIP) 'is responsible for reacting to all emergencies arising from its [PDIP's] operations and for providing the necessary logistic support to meet those emergencies'. Therefore it states that 'Nabors Canada operating divisions will work within the Prime Contractor's Emergency Action Plan and Nabors will follow that plan'. This is in line with PDIP's own philosophy and it is therefore expected that, in most cases, PDIP's procedures will be implemented. Nabors personnel will therefore receive training to ensure that they are familiar with the requirements of these procedures.

Ref. 8 also states, however, that 'should an emergency arise and Nabors Management determines that the Prime Contractor's Emergency Action Plan is inadequate … this plan [Ref. 8] will be used in its complete form'.

PDIP recognise that, with regard to issues such as well control incidents, loss of well control and loss or disablement of a drilling rig, Nabors have the technical expertise and experience required to respond to such events and have detailed procedures governing the initial technical response to the situation. In such cases, these procedures will be adopted. For such events, Nabors would also make senior management personnel off site available to assist in management of the response, preferably through liaison between appropriate individuals and the PDIP Emergency Management Support Team.

In particular, in such events, Nabors have undertaken to:

- Make senior management staff available to assist in the response.
- Mobilize whatever equipment is required, for blowout control etc.
- Identify the nearest available replacement rig, where required, suspend operations involving that rig (where it is safe and possible to do so) and mobilize the rig to Garden Hill South. [Nearest Nabors rigs during the drilling operations are expected to be one rig at Shoal Point for SPE's operations and another in New Brunswick.]

Where there is any conflict in terms of which procedures should be implemented, a decision will be made by the HSE Designate to adopt:

1. Procedures that are in compliance with local (Newfoundland) regulations.
2. The procedures that are more advanced and offer the highest level of protection for personnel, the environment and the assets.

In all cases, the HSE Designate retains responsibility for the immediate on-site response to, and ongoing management of, the incident. Requirements for co-ordination between the HSE Designate and Nabors personnel on site are detailed in individual PDIP contingency plans.

For all incidents on site, it is expected that each company will follow their own procedures with regard to the requirement for internal reporting of incidents. Responsibility for reporting to regulators and other external bodies lies with PDIP, as Operator.

5. Emergency Contact Numbers

Emergency management contact numbers for PDIP personnel and PDIP's prime contractor personnel with key roles in the event of an emergency are given in Table 5.1. Where appropriate, alternative personnel are identified who should be contacted when the designated contact is not available.

Emergency Management Contact Numbers					
Position	**Contact Name**	**Home**	**Office**	**Fax**	**Cell**
Operations Manager (St John's)	Mick Hibbert	(709) 722 5398	(709) 754 8149	(709) 754 8170	(709) 691 0539
	Brian Hickey (1st Alternative)	(709) 739 7260	(709) 754 8154	(709) 754 8170	(709) 689 0297
	Ali Chaisson (2nd Alternative)	(709) 722 6337	(709) 754 8168	(709) 754 8170	(709) 737 6337
Secretary (St John's)	Kelly Boone	(709) 738 6467	(709) 754 8163	(709) 754 8170	(709) 728 5700
	Lesley Bulger (Alternative)	(709) 368 1837	(709) 754 8162	(709) 754 8170	(709) 685 7458
Site HSE Designate (Garden Hill South)	Travis Young (Superintendent)	(709) 644 2620	(709) 649 6058	(709) 644 2176	(709) 638 0112
	Tony Young (Supervisor)	(709) 644 2331	(709) 649 6059	(709) 644 2176	N/A
	Marcel Yurak (Codeco Well Site Supervisor - day shift)	N/A	(403) 450 0160	N/A	(403) 852 8040
	Everett Couhlin (Codeco Well Site Supervisor - night shift)	N/A	(403) 450 1382	N/A	(403) 363 0155

Table 5.1: Emergency Contact Numbers

6. References

1. Emergency Management Plan, Doc. No. GHS-0001-ECS-2-PRO-0001, November 2007, PDIP.

2. Emergency Response Procedure in the Event of Serious Injury or Death, Doc. No. GHS-0001-ECS-2-PRO-0002, November 2007, PDIP.

3. Contingency Plan for Event of Hydrocarbon Release, Doc. No. GHS-0001-ECS-2-PRO-0006, November 2007, PDIP.

4. Contingency Plan for Event of Fire or Explosion, Doc. No. GHS-0001-ECS-2-PRO-0004, November 2007, PDIP.

5. Contingency Plan for Event of a Spill of Oil or Other Pollutant, Doc. No. GHS-0001-ECS-2-PRO-0005, November 2007, PDIP.

6. Contingency Plan for Well Control Incident or Loss of Well Control, Doc. No. GHS-0001-ECS-2-PRO-0007, November 2007, PDIP.

7. Contingency Plan for Loss or Disablement of a Drilling Rig, Doc. No. GHS-0001-ECS-2-PRO-0008, November 2007, PDIP.

8. Safety Element 04: Emergency Preparedness, Safety Manual, June 2006, Nabors Canada.

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Office of the Associate Deputy Minister, Energy

August 7, 2008

Mr. Mick Hibbert
Operations Manager
PDI Production Inc.
10 Fort William Place
Suite 201, The Baine Johnston Centre
St. John's, NL A1C 1K4
Canada

Dear Mr. Hibbert:

Re: Drilling Program Approval and Authority to Drill a Well
for Port Au Port #1 – Sidetrack #3 (PAP#1 – ST#3)

Please find attached the following executed documents pertaining to the subject well operations:

(1) Drilling Program Approval (DPA 2008-124-01)
(2) Authority to Drill a Well (ADW 2008-124-01-01)

These documents contain attached conditions. Please ensure that they are prominently displayed at the wellsite at all times.

If you have any questions please contact Keith Hynes at 729-7188. Thank you for your interest in western Newfoundland, and good luck with your exploration efforts.

Yours sincerely,

Pierre Tobin
Associate Deputy Minister (Energy)

Attachment

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Energy Branch

DRILLING PROGRAM APPROVAL - APPLICATION

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act(1.)*, PDI Production Inc. (PDIP)
as operator on behalf of PDIP, CIVC Creditor Corporation, Gestion Resources Inc., holding a
subsisting licence, permit or lease issued pursuant to the *Petroleum Regulations(2)*, namely, 2002-01
(licence, permit, or lease #)

hereby applies for approval to conduct a drilling program using the drilling rig Nabors Drilling Rig 45ETD
and equipment and procedures described in the detailed program dated August 6, 2008
The undersigned operator's Representative hereby declares that, to the best of the operator's knowledge, the information contained herein and in the attached detailed program is true, accurate and complete

Signed: [signature] Date: AUGUST 6, 2008
Operator's Representative

APPROVAL

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act*, the operator named in the Application is hereby authorized to conduct the proposed drilling program subject to the following conditions

1. This Drilling Program Approval shall, unless otherwise extended or terminated, expire upon the 7 day of August, 20 11

2. This Authorization shall be prominently displayed at the well site at all times during which operations are being conducted.

3. Evidence of financial responsibility, as required pursuant to Section 14 of the *Petroleum Drilling Regulations (3)*, shall be provided by the operator to the Minister of Natural Resources.

4. The operator shall use the equipment and procedures described in the detailed program dated August 7, 2008 unless a change in the equipment or procedures is approved in writing by the Director; and

5. The operator shall comply with such other conditions as are appended to this Approval.

Signed: [signature] Effective Date: Aug. 7/08

Drilling Program Approved No. 2008-124-01

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(1) - (R.S.N.L. 1990, c. P-10)

(2) - CNR 1151/96

(3) - CNR 1150/96

SCHEDULE "B"
TO
DRILLING PROGRAM APPROVAL #2008-124-01
OTHER CONDITIONS

1. Notwithstanding condition #4 of the Approval (see previous page), the Operator shall comply with the requirements of the *Petroleum Drilling Regulations (CNR 1150/96)* (the Regulations) unless the Operator has received written approval from the Director to deviate from the Regulations.

2. Pursuant to Section 154 of the Regulations, the director shall release to the public, general information including the name, classification, location, identity of the drilling contractor and rig used by the Operator, depth and operational status of the drilling program.

3. It is a condition of approval of this DPA that the Operator, pursuant to Section 52(2)(a) of the *Petroleum Regulations, (CNR 1151/96)* provide to the director on a daily basis a cost summary and that at the same time as the Final Well Report is submitted a Benefits Report for all major cost categories also be submitted.

4. It is a condition of this DPA that the Operator, pursuant to Section 88 of the Regulations, submit tour sheets on a weekly basis.

August 7, 2008

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources
Energy Branch

AUTHORITY TO DRILL A WELL - APPLICATION

Pursuant to sections 8 and 9 of the *Petroleum and Natural Gas Act (R.S.N.L. 1990, c. P-10)* and in compliance with section 29 of the *Petroleum Drilling Regulations,(CNR 1150/96)* PDI Production Inc (PDIP) as operator, hereby applies for Authority to Drill a Well to be known as Port au Port #1 - Sidetrack #3 (PAP#1 - ST#3) using the equipment and procedures described in the well program dated August ,20 08

Permit, Licence or Lease to which this Program applies: 2002-01

Area: Port au Port, Newfoundland		CO-ORDINATES	
Field/Pool: Garden Hill South		Long: 48-29-21.381 N	UTM (NAD27) Northing: 5,372,856.003
Drilling Rig: Nabors 45ETD		Lat. 59-13-32.705 W	Easting: 335,490.317
Rig Type: Triple Mobile Drilling Unit		ELEVATION	DEPTH
Drilling Contractor: Nabors Drilling Inc. (A Division of Nabors Canada)		☐ RT ☒ KB ☐ RF 219.7 m	T.D.: 4448 m MD
		G.L.: 212.4 m	TVD: 3450 m
ESTIMATES		TARGET HORIZONS	
Spud Date: August 12, 2008	Well Cost: $12.3 M	Aguathuna Formation	
Days on Location: Estimated 85 days			

EVALUATION PROGRAM

Ten-metre sample intervals: none	Conventional cores at: Sidewall cores in Aguathuna Formation
Five-metre sample intervals: from drillout to TD	Logs and Tests: While Drilling: Gamma Ray, Resistivity. Post Drilling: Rig-source VSP, DSI Sonic, Gamma Ray, Resistivity with Microlog, Caliper, Neutron Density, PEF & Image Log
Canned sample intervals: none	

CASING AND CEMENTING PROGRAM

O.D. (mm)	Weight (kg/m)	Grade	Setting Depth (m)	Cementing Program
177.8	38.68	L-80	3548 m	3548 m to 2150 m 0:1:0 Class G Cement 18.5 tonne

Other Equipment:

The undersigned operator's Representative hereby declares that, to the best of the Representative's knowledge, the information contrained herein and in the attached detailed program is true, accurate and complete.

Signed: M Albrecht
Operator's Representative

Date: August 6, 2008

AUTHORIZATION

Whereas the Minister of Natural Resources has jurisdiction under the *Petroleum Drilling Regulations*, ("the Regulations").
In accordance with section 32 of the Regulations, the operator named in the Application is authorized to undertake the proposed well program described above subject to the following conditions:

1. This Authorization shall be prominently displayed at the well sita at all times during which operations are being conducted;
2. Copies of all logs and well test data shall be submitted to the director by the operator promptly after their aquistition;
3. The operator shall comply with all conditions of the Drilling Program Approval No. DPA-2008-0124-01 under which the above well is to be drilled;
4. No change in the well program hereby approved may be made unless it is first approved by the director in writing;
5. This Authorization is conditional on the operator commencing drilling within 120 days of the effective Authorization date; and
6. The operator shall comply with such other conditions as are appended to this Authorization.

Signed:

Effective Date: Aug. 7/08

Authority to Drill a Well No. 2008-124-01-01

SCHEDULE "A" TO AUTHORITY TO DRILL A WELL #2008-124-01-01 OTHER CONDITIONS

1. The Operator shall, prior to commencement of major site operations, ensure that an approved Operator's representative is on site to supervise all site operations.

2. Notwithstanding condition #3 of the Authorization (see previous page), the Operator shall comply with the requirements of the *Petroleum Drilling Regulations, (CNR 1150/96)* (the Regulations) unless the Operator has received written approval from the Director to deviate from the Regulations.

3. The Operator shall ensure that the well is drilled in a prudent and reasonable manner, consistent with good oilfield practices and with due consideration for the safety of personnel, property and the environment.

4. The Operator shall be liable for its actions and the actions of its agents, contractors, employees and any others acting under the Operator's authority in drilling and testing the well.

5. The Operator's liability for the actions of its agents, contractors, employees and any others acting under the Operator's authority in drilling the well does not limit any liability that those agents, contractors, employees or others acting under the Operator's authority may have to the Operator.

6. The Operator shall ensure that all necessary approvals have been acquired from other government agencies and other rights holders, in respect of access to and use of land for the purpose of the drilling and testing operations, and disposal of all materials.

7. The Operator shall attorn to the jurisdiction of the courts of the Province of Newfoundland and Labrador.

8. A summary report of all operations performed, normally referred to as the daily completion/workover report, daily drilling report and daily geological report, shall be submitted on a daily basis.

9. Prior to commencing drilling operations, the Operator shall ensure that contingency plans have been verified and that equipment is available to cope with a foreseeable emergency situation.

10. Prior to commencing drilling operations, the Operator shall supply an updated CAODC rig and site inspection report completed by the well supervisor and the rig manager.

11. If deficiencies are noted in the inspection report provided in item 10 above, follow-up report(s) must be submitted by the site supervisor attesting that work to correct the deficiencies has been completed.

12. Where the well or any part of the existing well such as Sidetrack #2, is to be abandoned or suspended, a program must be submitted for approval prior to carrying out those operations. As per section 122 of the Regulations, a termination record signed by the operator's representative must be submitted within 21 days.

13. The Operator shall provide the Director with a videotape, or photographs showing the final condition of the drillsite.

August 7, 2008

GHS0010-ICO- -GOV

Newfoundland Labrador

Government of Newfoundland and Labrador
Department of Natural Resources

FAX TRANSMISSION

50 Elizabeth Ave., 4th Floor
St. John's, NL
Fax: (709) 729-2508

To:	Mick Hibbert	**Date: August 7, 2008**
Fax #:	754-8170	**Pages: 7, including this cover sheet**
From:	Keith Hynes	
Subject:		

COMMENTS:

IF YOU DID NOT RECEIVE THE TOTAL NUMBER OF PAGES INDICATED ABOVE, OR HAVE ANY OTHER PROBLEMS, PLEASE CONTACT (709) 729-2005.

APPENDIX 2:

(Attachment) Authority to Drill a Well (ADW)

Garden Hill South PAP#1 - ST#3
Authority to Drill a Well (ADW) Application

PDIP Ref. GHS-0001-OPW-2-REP-0007
Rev. 3

Submitted by

PDI Production Inc.
2nd Floor Baine Johnston Centre
Suite 201
10 Fort William Place
St John's, NL
A1C 1K4

August 2008

pdiproduction

Report Approval Cover Sheet

Report Title:	**Garden Hill South PAP#1 - ST#3** **Authority to Drill a Well (ADW) Application**
Project Name:	Garden Hill South Horizontal Well
Client:	N/A
Client Ref:	N/A
PDIP Ref:	GHS-0001-OPW-2-REP-0007

Approval Record

Rev. No.	Date	Prepared	Reviewed	Approved
0	November 27th, 2007	K Boone	V Pennell Mercer	A Pegram
1	November 30th, 2007	K Boone	V Pennell Mercer	A Pegram
2	July 18th, 2008	K Boone	V Pennell Mercer	M Hibbert

pdiproduction

Report Record of Revision

Report Title:	**Garden Hill South PAP#1 - ST#3** **Authority to Drill a Well (ADW) Application**
Project Name:	Garden Hill South Horizontal Well
Client:	N/A
Client Ref:	N/A
PDIP Ref:	GHS-0001-OPW-2-REP-0007

Record of Revision

Rev. No.	Date	Revision Details
0	Nov 27th, 2007	Original Issue.
1	Nov 30th, 2007	Document updated to include Rev. 6 of Appendix A
2	July 18th, 2008	Comments received from DNR addressed. Rig changed to Nabors Rig 45 (from Rig 57). Drilling consultant changed to Dragon Lance Management Corporation (from CODECO Consulting Inc.).
3	August 6th, 2008	Updated Appendix A (Operations Program)

Contents

List of Appendices

1. Introduction

1.1 Background

PDIP have undertaken to develop and operate Garden Hill South (GHS) and are planning to enter the Port au Port No.1 (PAP#1) wellbore and drill a new sidetrack (ST#3) to that well.

Based on previous geological interpretation and a 2D seismic survey of the area (combined with the experience of previous interest holders of the Petroleum lease), the current interest holders consider that significant oil production opportunities exist within the lease area, but in particular at two structural accumulations within the lease area: Garden Hill South (GHS) and Garden Hill North (GHN), also shown in Figure 1-1. Wells have been drilled at GHS, but all of these have since been shut-in or abandoned. To date, no wells have been drilled at GHN.

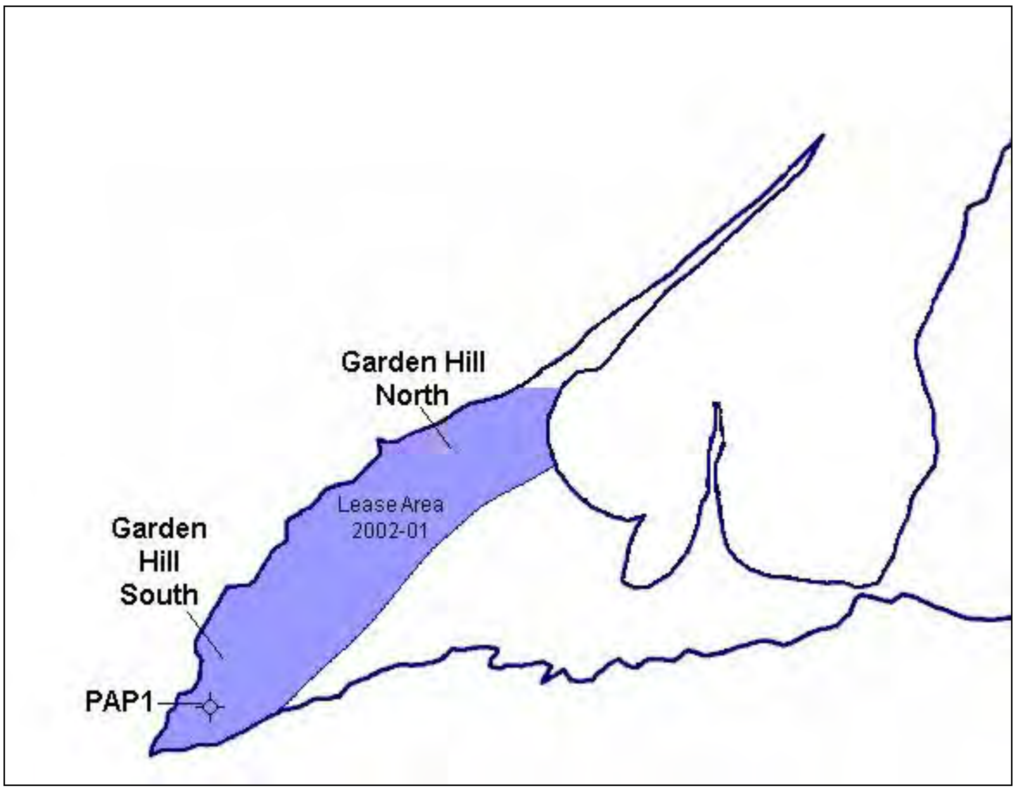


Figure 1-1: Port au Port Petroleum Lease #2002-01 and Opportunities

On January 18 2007, PAP#1 - ST#2 was re-entered and successfully swabbed into production. After stable initial production and a successful initial pressure build up test, the well flow started to become erratic. The well was therefore temporarily suspended in order to fully evaluate the options available to resolve the situation.

Following this evaluation, PDIP determined that drilling a new horizontal sidetrack (ST#3) to the existing PAP#1 well would be the best way forward in order to achieve sustained production.

The purpose of drilling the new horizontal sidetrack is to:

- achieve sustained production from the reservoir.
- provide an additional structural control point for mapping the extent and closure of the GHS field.
- test the theory of dolomitisation of the Upper Aguathuna Dolomite extending in a NNE direction from PAP#1 in the footwall of the Round Head Thrust.
- investigate the contribution of faults/ fractures to oil production.
- investigate the orientation of faults/fractures.
- investigate the size of the GHS accumulation from test data.

PDIP are submitting this document to the Department of Natural Resources to support their application for an Authority to Drill the ST#3 Well. PDIP have also submitted a Drilling Program Application that provides details of the overall intentions for the drilling operations at the site.

1.2 Document Structure

This document first provides an overview of the geological prognosis of the well in Section 2, followed by details of the well evaluation program in Section 3. Any subsurface conditions anticipated at the proposed drill site that may affect the safety and efficiency of the drilling operations are discussed in Section 4.

Details of the wellhead and xmas tree for the PAP#1 well are provided in Section 5. Details of the blowout prevention system to be used are provided in Section 6.

Section 7 gives an overview of the drilling sequence while the Operations and Procedure Program provided by Dragon Lance Management Corporation (DLMC), including the casing program, cementing program and fluids program, is attached in Appendix A.

Section 8 gives an overview of the offset well data used in the planning and engineering of the well, and a detailed offset well review is attached in Appendix B.

2. Geological Prognosis

2.1 Stratigraphic Section

The GHS discovery occurs in Lower Ordovician carbonates within the Anticosti Basin. The stratigraphy of the Anticosti Basin comprises six tectono-stratigraphic megasequences which were deposited before, during, and after the Palaeozoic collisional events that formed the Appalachian Mountains.

The only reservoir so far proven to contain hydrocarbons on Newfoundland’s west coast is the Aguathuna Formation within the St. George Group, consisting of partially dolomitized peritidal limestones deposited on a broad carbonate platform.

The Ordovician oil prospect and the Aguathuna Formation are shown in the chronostratigraphic chart in Figure 2-1 (from Cooper et al, 2001), highlighted by a yellow arrow, and in the generalized stratigraphic sections in the Anticosti Basin in Figure 2-2 below. The recognized source rock for the Anticosti Basin in onshore western Newfoundland is the Cambro-Ordovician Green Point Formation shale.

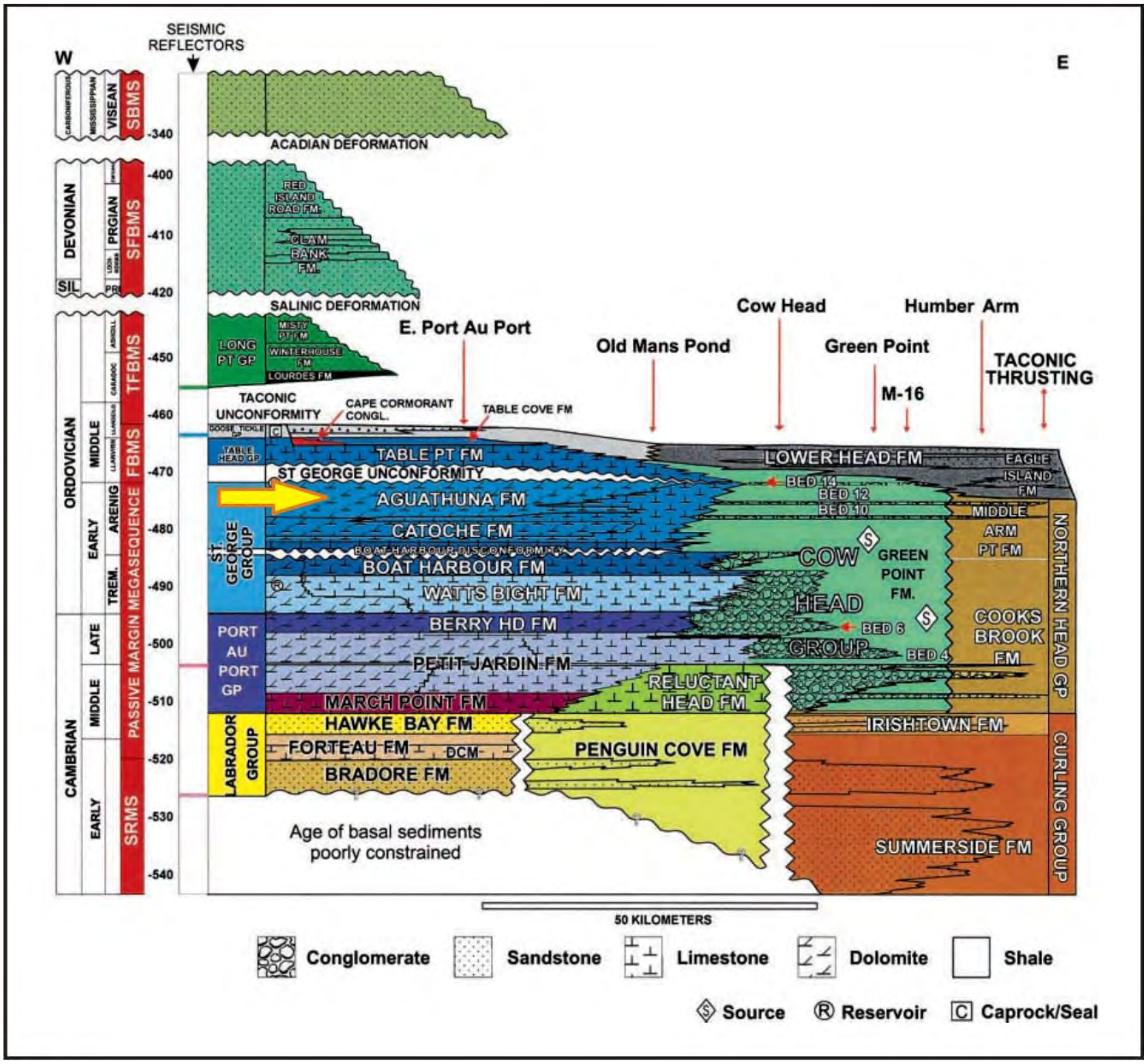


Figure 2-1: Chronostratigraphic Chart for Western Newfoundland

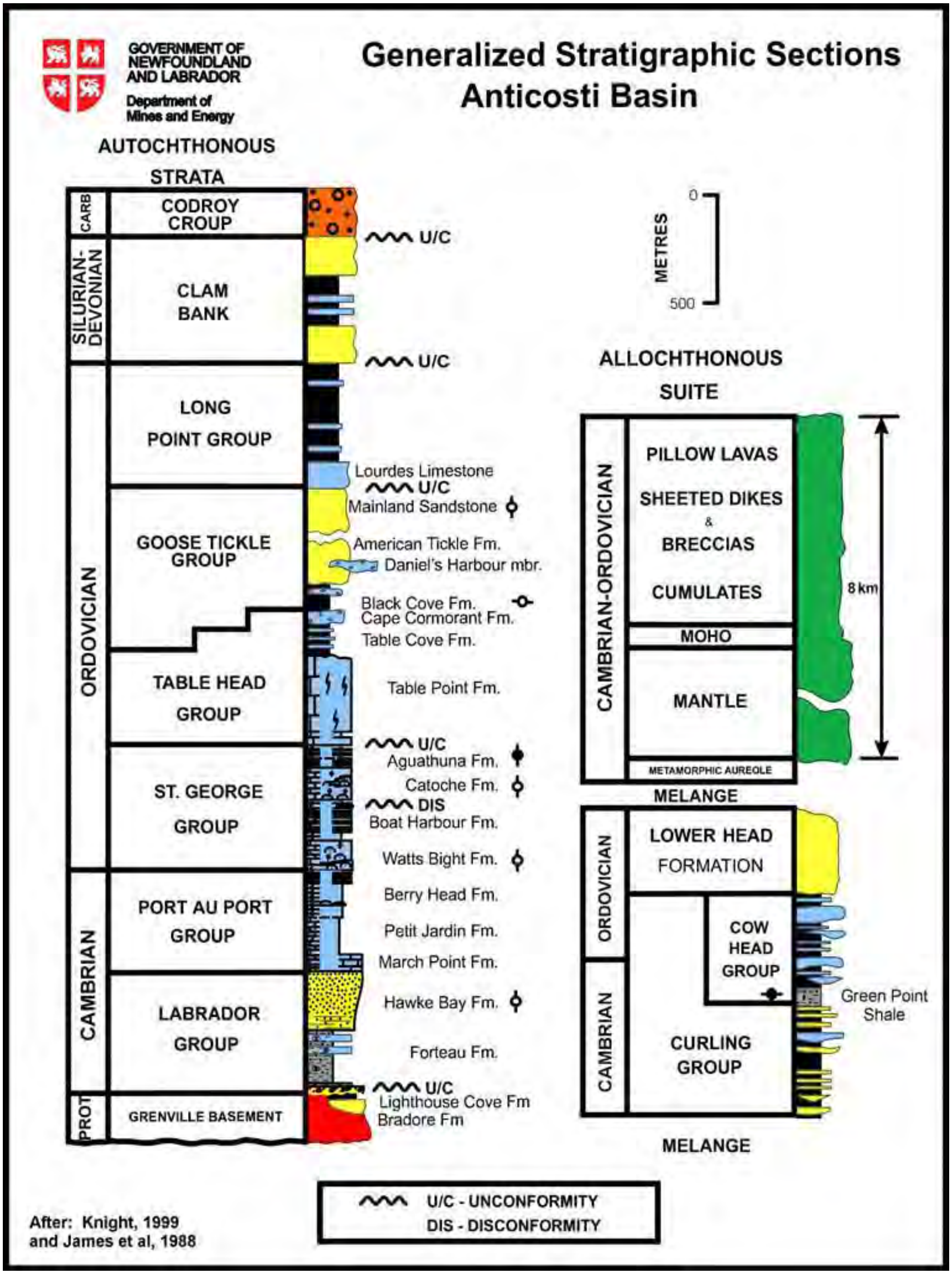


Figure 2-2: Generalized Stratigraphic Section of the Anticosti Basin in Western Newfoundland

2.2 Formation Lithology

2.2.1 Depth and Thickness of Formations

The actual depths and thicknesses of each formation in the main PAP#1 well and the two sidetracks PAP#1 – ST#1 and PAP#1 – ST#2 are shown in Table 2-1 below.

	PAP#1 (KB=220.8)				PAP#1 - ST#1 (KB=220.4)				PAP#1 - ST#2 (KB=220.0)			
Formation	**MD**	**TVD**	**TVDSS**	**Thickness**	**MD**	**TVD**	**TVDSS**	**Thickness**	**MD**	**TVD**	**TVDSS**	**Thickness**
RHT / WINTERH.	2325.0	2323.2	2102.4	756	2324.6	2322.8	2102.4	756				
LOURDES	3082	3079.1	2858	170	3118	3079	2859	167				
GOOSE TICKLE	3252	3248.6	3028	193	3295	3246	3026	185				
TABLE POINT	3446	3441.7	3221	13	3490	3431	3211	55	3443	3435.0	3215	13
AGUATHUNA	3459	3454.6	3234	120	3506	3446	3266	76	3458	3448.3	3228	
COSTA BAY MBR	3580	3575.0	3354	20	3629	3562	3342	20				
CATOCHE FM	3600	3594.9	3374		3651	3583	3362					

Table 2-1: Formation Tops and Thicknesses in PAP#1, PAP#1 - ST#1 and PAP#1 - ST#2 (m)

Prognosed depths and thicknesses for each formation in PAP#1 – ST#3 are based upon the stratigraphy in these adjacent wells; the similarity of vertical thicknesses between PAP#1 and PAP#1 – ST#1 gives confidence that there is only minor lateral variability in formation thickness. The prognosed depths and unit thicknesses for PAP#1 - ST#3 are included in Table 2-2 below.

Formation	**TVDSS**	**TVD**	**MD**	**Approx. Thickness***
Kick-off into Precambrian Gneiss	2098.2	2309.2	2311	
RHT / WINTERHOUSE	2102	2322	2324	
LOURDES	2871	3091	3107	170
GOOSE TICKLE	3041	3261	3277	193
TABLE POINT	3222	3442	3500	13
AGUATHUNA	3230	3450	3544	
** Thickness estimates taken from PAP#1 well values*				

Table 2-2: Prognosed Formation Tops and Thickness for PAP#1 – ST#3 (m), KB = 220 m

2.2.2 Lithology of Formations

Lithology of the various units is highlighted below and summarized in Table 2-3.

The well is expected to kick off in Precambrian metamorphic rocks in the hanging wall of the Round Head Thrust. These metamorphic rocks consist of dense, coarse, granitic gneiss with interlayers of mafic igneous dykes.

The Winterhouse Formation consists of low-grade metamorphosed phyllite and quartzite at the top, grading to dark shales and quartzose sandstone and siltstone, with minor interbeds of limestone.

The Lourdes Formation contains highly fossiliferous limestone, with varying amounts of disseminated quartzose sand, and interbeds of sandstone (possibly with hydrocarbon shows), siltstone, and shale. The base of the formation may be sandstone dominated.

The Goose Tickle Group consists predominantly of brown-grey shale with minor interbedded siltstone and sandstone with trace porosity. No hydrocarbon shows were encountered in the Goose Tickle Group in the PAP#1 well.

The Table Point Formation is characteristically a tight grey limestone with minor interbedded dolostone and no expected reservoir potential. It contains a diverse assemblage of shelly fossils and is predominantly fine grained, consisting of mudstone and wackestone.

The Aguathuna Formation section consists of interbedded crypto-crystalline dolomite, medium grained rhombic dolomite and white sparry dolomite. The upper part of the Aguathuna (targeted in this well) comprises a dark dolostone with intercrystalline matrix porosity, and averages 5.2 - 7.4% porosity and 43 mD permeability (based on values from the reservoir interval in PAP#1). Non-reservoir zones in PAP#1 (including the tight lithologies below the PAP#1 oil zone) comprise dense, crypto- to microcrystalline dolomudstone, with 0% porosity and no permeability.

Formation / Interval	Lithology
Precambrian Metamorphics	Dark mafic igneous dykes interlayered with coarse granitic gneiss. Dense rock with crystalline texture.
Round Head Thrust Zone	The region of the Round Head Thrust zones comprises highly deformed cataclastic mafic dykes, interlayered with gneiss, chlorite mica schist, and quartzite. In places within the fault zone inter-layering of Winterhouse Formation shales occurs.
Winterhouse Formation	The upper part of the formation comprises lower grade metamorphosed phyllite and metaquartzite (metamorphism likely caused by movement on the Round Head Thrust). The lower part of the formation (>2500m MD in PAP#1) comprises interlayered dark shales and quartz-rich sandstones. The base of the Winterhouse Formation comprises siltstone & shale interlayered with SST, with increasing limestone content as the boundary with the underlying Lourdes Group is approached.
Lourdes Formation	The Lourdes Formation comprises limestone interbedded with siltstone, shale and sandstone. More sandy intervals are evident as the base of the formation is approached. Some HC shows occur in SST layers.

Table 2-3: Expected Lithologies of the Formations to be Penetrated in PAP#1 – ST#3

Goose Tickle Group	Shale and minor interbedded sandstone. Trace porosity in some sandstones. Minor hydrocarbon-stained dolomite occurs in shales at base of sequence. Shales are brown-grey, and dominantly non-calcareous, traces of dolomitic mudstone occur. Sandstones are immature, and poorly sorted with high percentage of quartz (approximately 80%). Areas of chalky matrix occur. Sandstones generally display rounded to sub-angular grains and have poor porosity. Some light brown hydrocarbon staining and yellow fluorescence is evident.
Table Point Formation	Interbedded crypto-crystalline dolomite, and finely crystalline dolomite with fair porosity and shows (from PAP#1 – ST#2). Some sandy interlayers. Rare good quality carbonate layers with vuggy porosity, rhombic dolomite crystals, and residual bitumen staining are present. Occasional white sparry dolomite occurs. Occasional dull yellow fluorescence can be seen.
Aguathuna Formation	Variably dolomitized limestone. Commonly interbedding of crypto-crystalline dolomite, medium grained rhombic dolomite, and white sparry dolomite occurs. Off-white - tan - brown colour with some bitumen staining. Low permeability areas of Aguathuna Limestone Matrix are characterised by well cemented, tightly interlocking crystals with conchoidal appearance, and vitreous lustre occur. The low quality rock is dense, with rare isolated pores (drilling rate likely to dramatically slow down in non-dolomitized layers). Moderate quality layers of Aguathuna Limestone are finely crystallised with earthy appearance. Minor porosity and pin-point pores may be identified. The good quality, highly dolomitized Aguathuna Limestone has sandy, granular, or sugary appearance, and is fine - medium grained. Visible porosity is abundant, and oolitic/other granular textures may be seen in the highly dolomitized samples. Sparry dolomite infills some cavernous and vuggy porosity.
Costa Bay Member (uppermost Catoche Formation)	(Not planned to be intersected by PAP#1 – ST#3) Vuggy dolomitic limestone with dark shale interbeds. Microcrystalline to crystalline.

Table 2-3 (cont.): Expected Lithologies of the Formations to be Penetrated in PAP#1 – ST#3

2.3 Depth of Geological and Seismic Markers

The prognosed formation tops are presented in Table 2-2.

2.4 Prospective Horizons

The target reservoir unit is the uppermost portion of the Aguathuna Formation. No secondary targets have been identified.

A zone of moderate porosity has been identified in the Aguathuna Formation in the PAP#1 discovery well. This zone is 18.5 m thick and averages 5.2 to 7.4% porosity and approximately 43 mD permeability. Electric logs show the zone to be dolomitized, and FMI image logs in this interval have been interpreted as displaying zones of 'cavity/cavern porosity'.

This porous zone at the top of the Aguathuna Formation is the target for PAP#1 – ST#3. The 900 m horizontal section is planned to travel laterally within this porous, permeable interval.

2.5 Structure Maps

The Garden Hill trend, which runs along the northwest margin of the Port au Port Peninsula, consists of the sub-thrust block that underlies the Round Head thrust. Within this area oil has been discovered at the southern end of the peninsula at Garden Hill South.

A series of structure maps has been created based on well data and a small, closely spaced 2D seismic grid (Figures 2-3 to 2-6). The mapped extent of the field based on seismic data covers an area of 12 km^2 onshore.

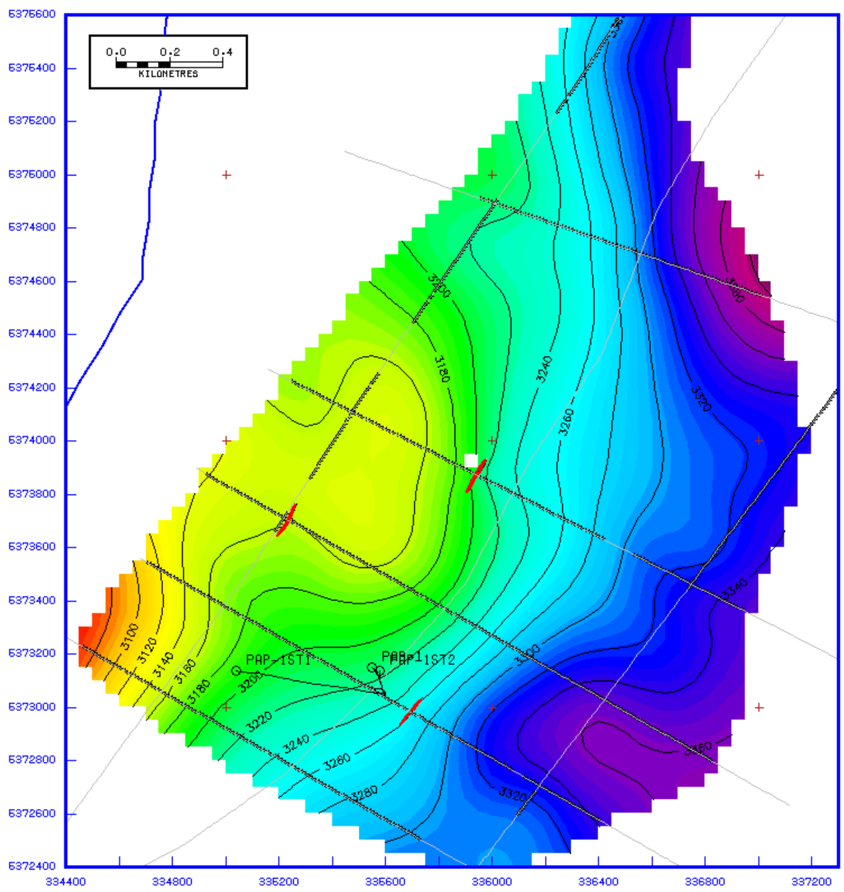


Figure 2-3 : Top Table Point Formation Depth Structure Map

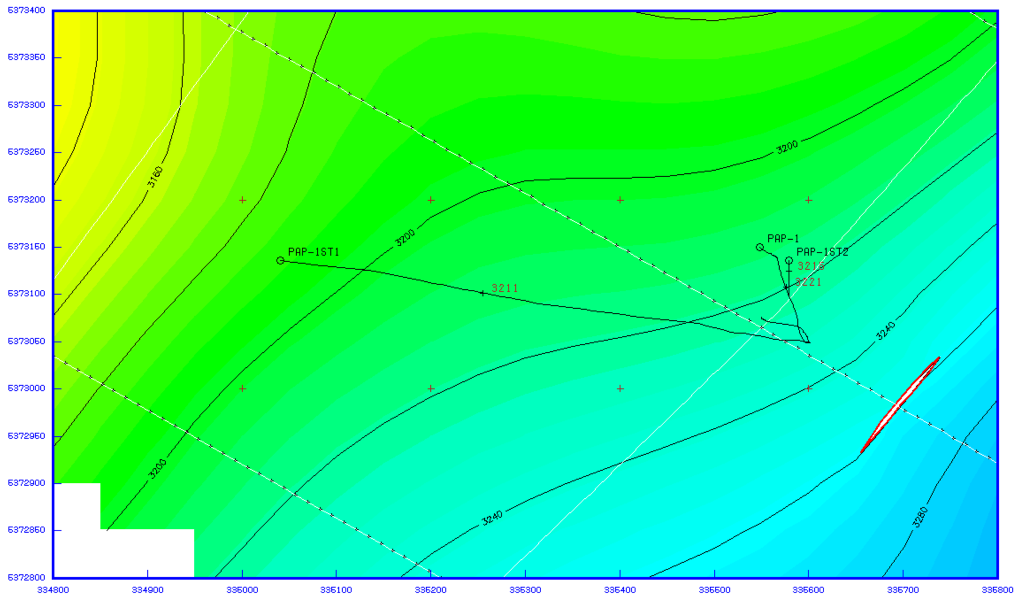


Figure 2-4: Top Table Point Formation Depth Structure Map (detail)

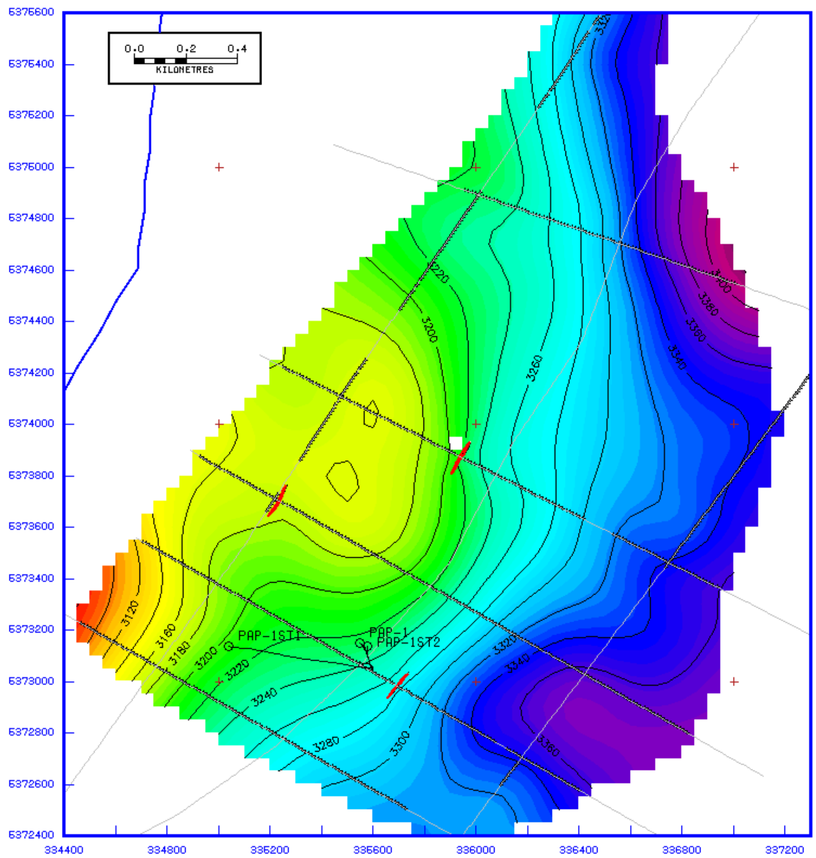


Figure 2-5: Top Aguathuna Formation Depth Structure Map

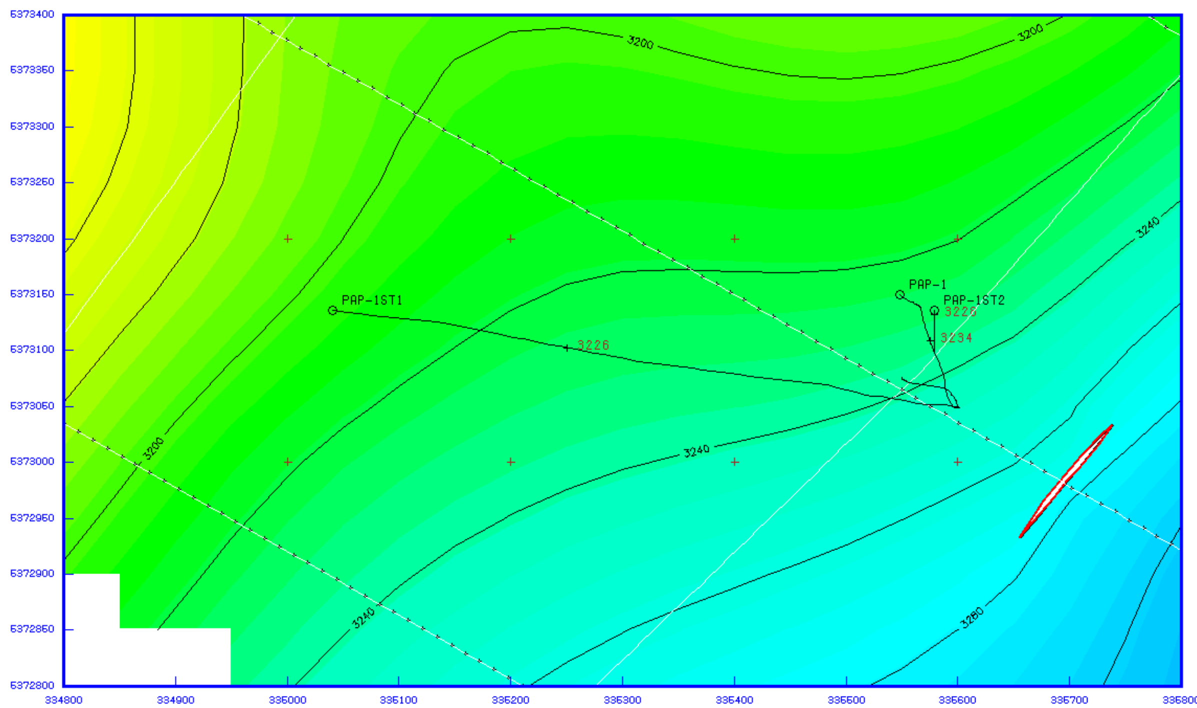


Figure 2-6: Top Aguathuna Formation Depth Structure Map (detail)

From the seismic data, the GHS structure is interpreted to lie beneath the Round Head Thrust (i.e. in the foot wall) and the PAP#1 well and sidetracks have tested the southeastern flank of the structure. The structure maps (Figures 2-3 to 2-6) show that the surfaces generally rise away from the Round Head Thrust towards the west and northwest, so that the structural culmination is likely to be to the west of the area of seismic coverage. Faults interpreted to cut the target horizons are shown, although correlation of faults between adjacent lines has proved impossible. Fault orientation has been assumed to be roughly parallel to the Round Head Thrust.

In the absence of further velocity information, depth conversion to Top Table Point Formation has been based on the pseudo-average velocities calculated at each of the three well penetrations (i.e. picked seismic two-way time versus well depth). These pseudo-average velocities were computer contoured and applied to two-way time surface to generate the Top Table Point depth structure map presented in Figure 2-3. However, it should be added that the pseudo-average velocities calculated at the wells (and hence the hand-contoured velocity map) increase from southeast to northwest.

The Top Aguathuna depth structure maps (Figures 2-5 and 2-6) have been generated by the addition of an isopach map which has been constructed by hand-contouring on the basis of well data. Top Table Point to Top Aguathuna thicknesses were derived at the locations of the Top Aguathuna well penetrations using the back interpolated depths from the Top Table Point depth structure map and the actual Top Aguathuna depths measured from the wells.

2.6 Seismic Data

The seismic data coverage around the GHS structure consists of seven 2D lines, namely GH-1, GH-2, GH-3 and GH-4 (dip lines acquired by CIVC in 2000), plus GH-6, GH-7 (strike lines acquired in 2000 by CIVC) and CAH-93-4A (strike line acquired in 1993 by Hunt). These lines measure 32 km in total. Dip line spacing is approximately 400 to 500 m, while strike line spacing is 600 to 700 m as shown in Figure 2-7.

Most of these lines are very short, limiting the extent of possible seismic migration and interpretation. Nevertheless, several of the sections are adequate for interpretation of the position of the Round Head fault and for use in placement of the drilling target.

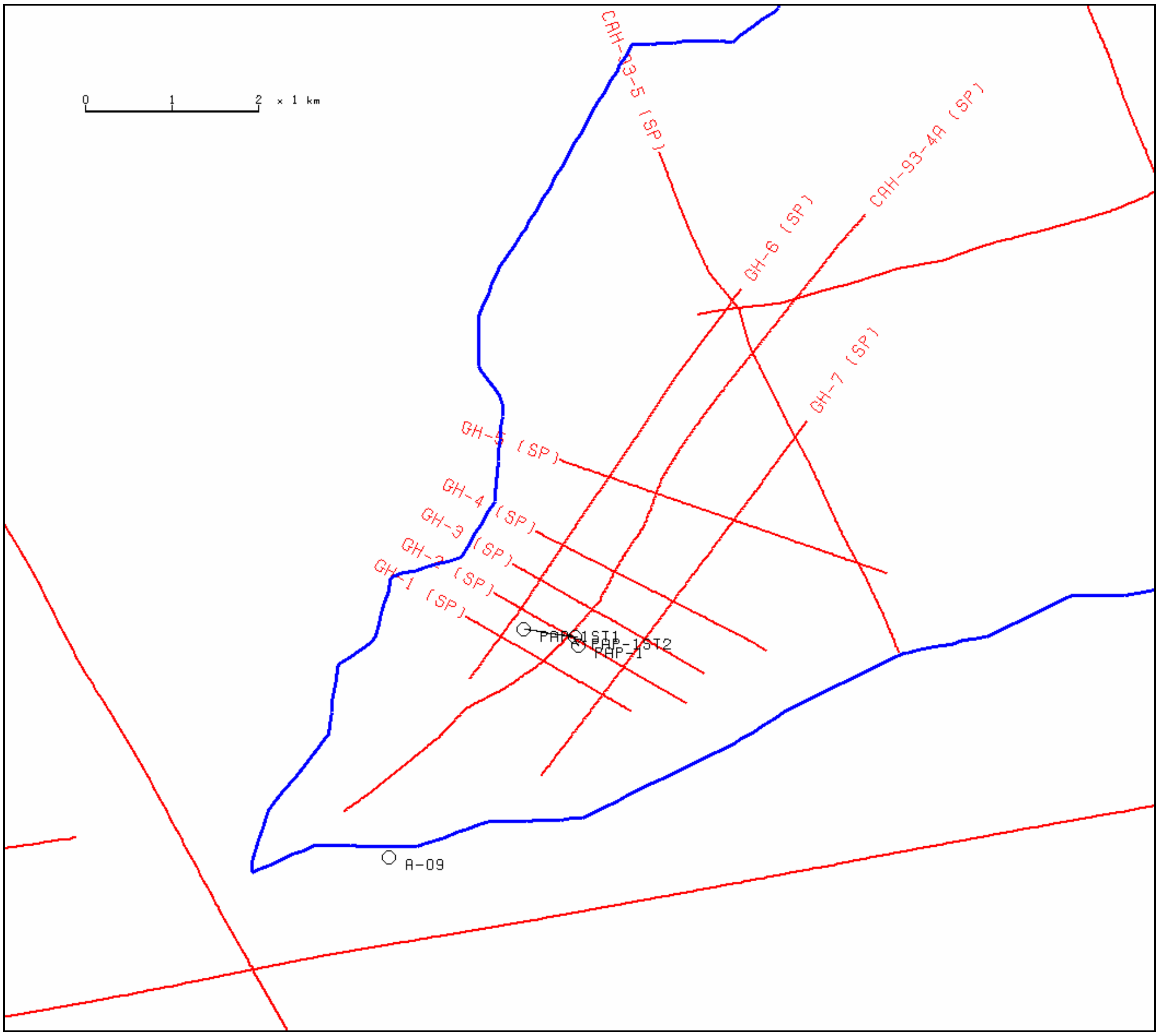


Figure 2-7: Seismic Data Coverage around the GHS Structure

Figure 2-8 shows seismic line GH-2, which is the closest to the existing well, with well locations of the various wellbores projected onto the seismic line. A fault has been interpreted close to the PAP#1 and PAP#1 – ST#2 wells, which potentially cuts the Aguathuna Formation down dip (southeast) of PAP#1. There is however some uncertainty as to whether this is a true fault, rather than an imaging artefact, as well uncertainty over the true position of the 'fault'. It has not been possible to correlate this feature onto either of the two adjacent dip lines, which lie approximately 400 metres away.

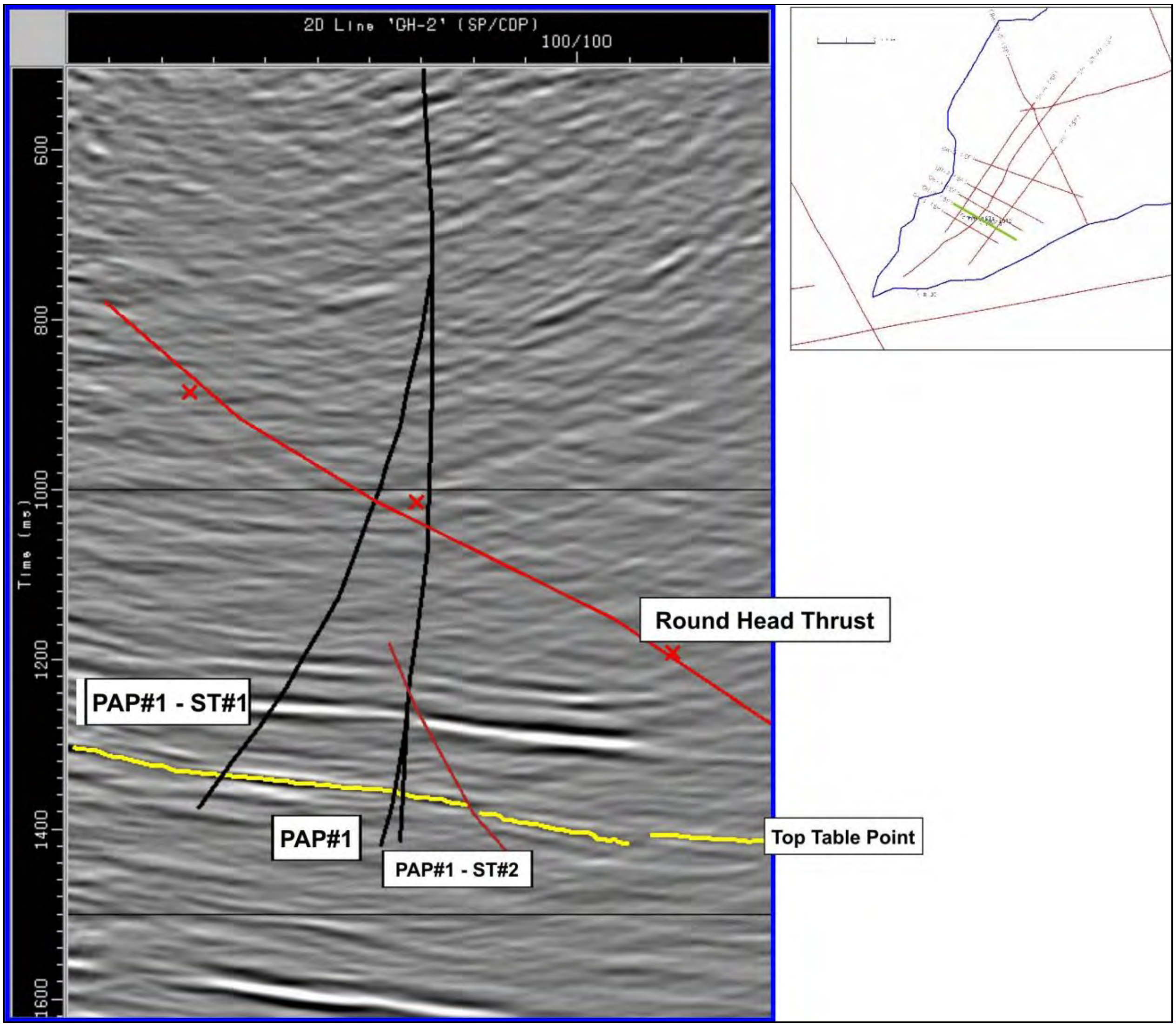


Figure 2-8: Seismic Line GH-2

Figure 2-9 shows seismic line CAH-93-5, located some 3.5 km from the PAP#1 wells. The line is longer (approximately 6.4 km in length), and seismic imaging of the target structure is quite good. The Round Head Thrust is well imaged and faulting affecting the Table Point and Aguathuna formations is clearly visible.

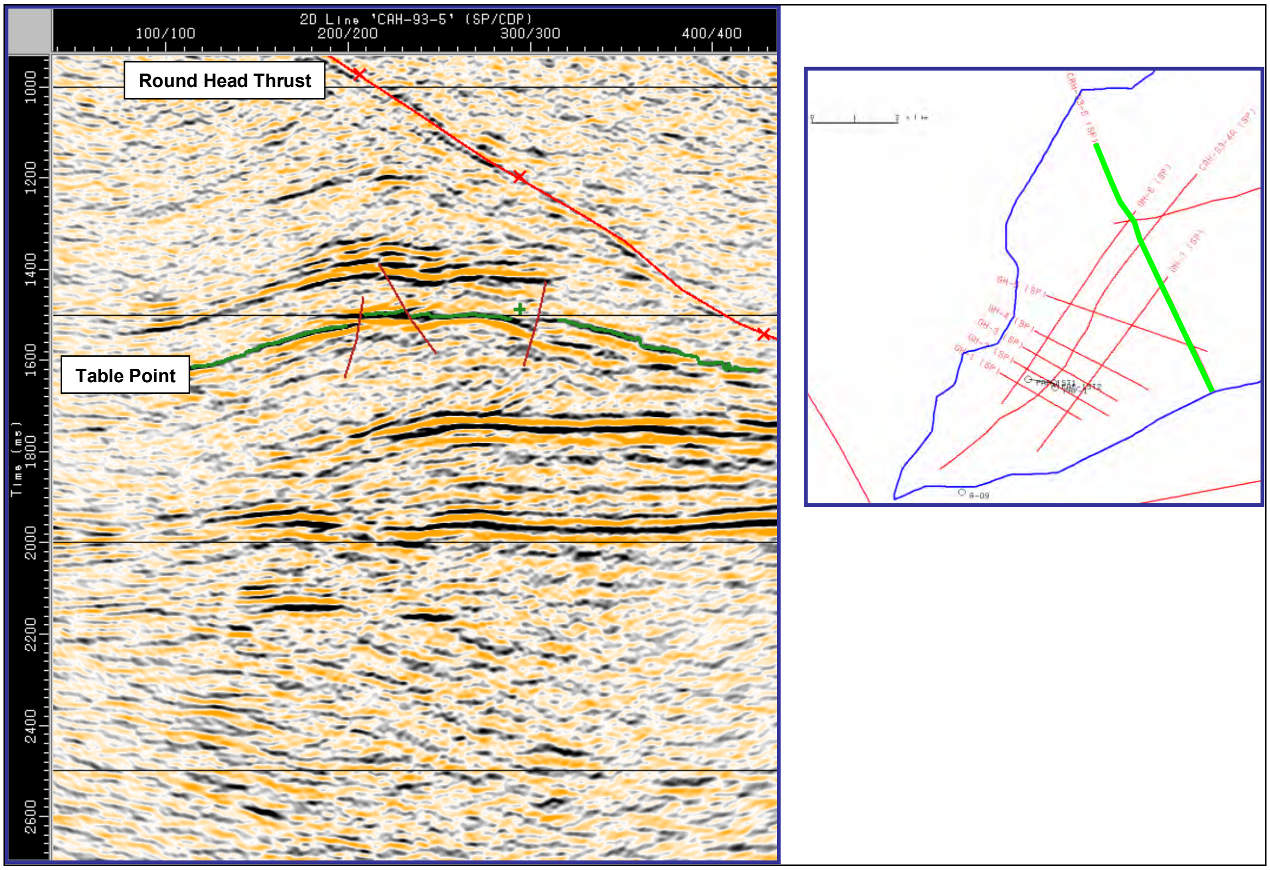


Figure 2-9: Seismic Line CAH-93-5

3. Well Evaluation Program Details

The planned well evaluation program consists of drill cuttings sample collection and analysis, a suite of petrophysical logs, a vertical-seismic profile (VSP), sidewall coring, and formation flow testing. Details of each of these elements are given in the following subsections.

3.1 Drill Cuttings Sample Collection

Cuttings samples will be collected every 5 m from kick-off depth to TD. Two sets of washed/dry samples and two sets of unwashed/wet samples will be collected.

Cuttings samples will be described for lithology and hydrocarbon shows and presented on a standard mudlog. Calcimetry will be undertaken on samples from top Table Point Formation to TD, and the wellsite geologist will produce an independent lithological log.

3.2 Gas Monitoring

Gas chromatograph analysis of mud gases will be undertaken and recorded continuously from kick-off depth to TD.

3.3 Conventional Cores

Not applicable. No conventional cores will be taken in this well.

3.4 Sidewall Cores

Mechanical sidewall coring will be undertaken in the Aguathuna Formation reservoir interval. 25 samples will be collected for analysis.

3.5 Logs

Measuring-while-drilling/logging-while-drilling (MWD/LWD) data will be acquired for directional monitoring and to provide stratigraphic control and directional monitoring, which will be critical in geosteering the well.

The following MWD/LWD tools will be run during drilling:

- ABI Directional Tool
- Gamma Ray
- Resistivity

In addition, the following well logs will be run on drillpipe after reaching TD:

Entire wellbore:
- Dipole Shear Imager (DSI) Sonic

6" hole (1500 m horizontal section):
- Gamma Ray
- Resistivity
- Caliper
- Density Porosity/PEF
- Neutron Porosity
- Micro Log
- Fullbore Formation Micro Imager (FMI)

The inclusion of an FMI log will allow for accurate recording of formation dips, precluding the need for an additional dipmeter log.

3.6 VSP Survey

PDIP intend to carry out a rig-source VSP survey for this well. It had been recommended to PDIP that the optimum position for the seismic source for this VSP survey would be between 50 m and 80 m due south of the well location so that it is vertically above the initial southerly heading of the sidetrack.

A rig-source VSP is expected to provide an accurate time-depth-velocity profile at the well and a clear tie of the formations encountered during drilling with their seismic reflection response. A rig-source VSP also has the potential to deliver additional information that may be useful in future studies. For example, it should provide a robust guide to the maximum frequencies that can be recovered at varying depths in the sub-surface at this location.

3.7 Formation Flow Testing

Subject to successful recovery of hydrocarbons, a 30-day production test will be undertaken.

4. Problem Zones

Expected reservoir formation pressure is 33,889 kPa and it is not anticipated that any overpressured or underpressured zones will be encountered during the drilling of PAP#1 – ST#3.

Details of other potential problems and concerns that may be encountered during drilling, as well as appropriate contingencies are detailed in the attached Operations and Procedure Program (Appendix A).

5. Wellhead and Xmas Tree Description

The following subsections describe the wellhead and xmas tree on the PAP#1 well, which are illustrated in Figure 5-1.

5.1 Wellhead

The configuration of the wellhead is as follows:

- 13-3/8” x 35,000kPa surface casing head.
- 9-5/8” x 35,000kPa intermediate casing head.
- 11” x 69,000kPa tubing head.
- 11” x 69,000kPa xmas tree adapter.
- 3-1/2” dual bore x 69,000kPa tubing hanger.
- 3 X 2-1/16” X 69,000kPa manual annulus access and annulus hot water heating valves.

Each of these elements is described in the subsections below.

5.1.1 Surface Casing Head

The 13-3/8” x 35,000kPa surface casing head was re-furbished in-situ in 2006 by removing the existing annulus cementing valves and terminating the bowl outlets with a metal sealing BX blind flange on one side and a 2” vent valve on the other. The head was sand blasted back to parent material, and coated with a primer and paint.

5.1.2 Intermediate Casing Head

The 9-5/8” x 35,000kPa intermediate casing head was also re-furbished in-situ by removing the existing annulus access valves and terminating the bowl outlets with metal sealing BX blind flanges. The head was sand blasted back to parent material, and coated with a primer and paint. The upper casing head interface is terminated in an 11” x 69,000 kPa – BX158 API flange.

5.1.3 Tubing Head

The upper and lower flange terminations of the tubing head are 11” x 69,000kPa – BX158 API flanges (to suit the 9-5/8” x 35,000kPa intermediate casing head flange and to provide a standard API flange profile for an 11” (or higher) BOP system). One 2-1/16” x 69,000kPa annulus access valve is provided to enable well circulation and annulus access pressure monitoring. In addition, two 2-1/16” x 69,000kPa annuus hot water circulation values are provided to allow hot water to circulate through the annulus to subsequently warm well fluids to prevent the formation of hydrates, salts and wax precipitates. This component has been specified to API, PSL-3.

5.1.4 Xmas Tree Adapter

The xmas tree adapter consists of an 11” x 10,000psi – BX158 modified API blind flange to mate with the tubing head and an upper 3-1/16” x 39,000kPa – BX154 studded flange for the installation of the xmas tree. It is fitted with four hydraulic line access ports. These will be utilized to facilitate the installation of a chemical injection supply valve, a future hydraulic sliding sleeve (twin lines) and a down hole pressure and temperature monitoring cable penetrater. As with the tubing head, this component has been specified to API, PSL-3.

5.1.5 Tubing Hanger

The tubing hanger is designed to fit in the enlarged through bore tubing head and seal-off the well annulus using dual resilient seals. The hanger also seals within two specially machined pockets within the xmas tree adapter to provide dual sealing for the dual string completion. In the production tubing string this provides dimensional and pressure continuity through the well completion for the unobstructed passage of wire line tools. In the hot water circulation string this provides pressure continuity to the xmas tree adapter. It is fitted with four hydraulic line access ports. These will be utilized to facilitate the installation of a chemical injection supply valve, a future hydraulic sliding sleeve (twin lines) and a down hole pressure and temperature monitoring cable penetrater.

Plugs are provided in the tubing hanger to facilitate the safe installation/removal of the xmas tree adapter. In the production string, a standard back pressure valve profile is provided for the occasional installation of a pump through back pressure valve. In the hot water circulation string, a permanent one-way check valve is installed which seals in the reverse flow mode. As with the tubing head, this component has been specified to API, PSL-3.

5.1.6 Manual Valves

The wellhead is fitted with three 2-1/16” X 69,000 kPa manual valves as shown in Figure 5-1. One is an annulus access valve, while the other two are used for an inlet and outlet for a hot water circulation system which will be utilized to circulate hot water through the annulus to subsequently warm well fluids to prevent the formation of hydrates, salts and wax precipitates. A well annulus pressure and temperature sensor is mounted on the annulus access valve.

5.2 Xmas Tree

The xmas tree, which is specified for 39,000kPa, is configured as follows:

- An unimpeded vertical through bore of 3-1/16” diameter for the unobstructed passage of wire line tools.
- Production wing off-take and production service access of 2-1/16” diameter.
- A manually operated lower master valve (PSL-3).
- A hydraulically operated fail safe close upper master valve (PSL-2).
- A manually operated swab valve (PSL-2).
- A hydraulically operated fail safe close production wing valve (PSL-2).
- A manually operated production choke valve (PSL-1).
- A manually operated service wing valve (PSL-2).
- A threaded tree cap.

The xmas tree has the following features:

- Bolted valve construction.
- Metal to metal sealing throughout.
- WECO Fig 1502 access adapter on the service wing valve.

The xmas tree has been fitted with a pressure and temperature sensor to monitor the well tubing temperature and pressure.

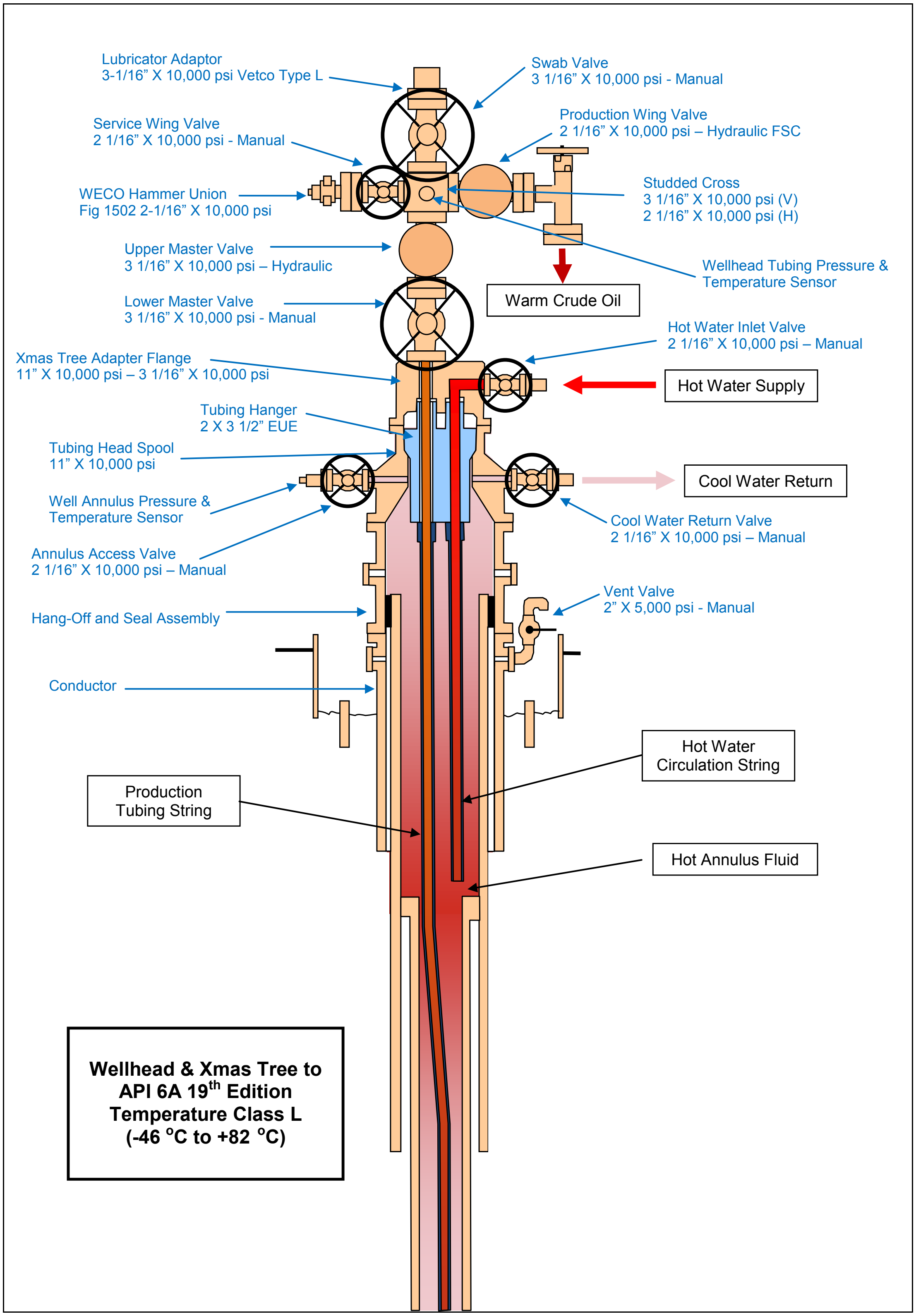


Figure 5-1: PAP#1 Wellhead and Xmas Tree

6. Blowout Prevention System

The Nabors Rig 45ETD has a 13-5/8” x 5000 psi (35,000 kPa) Blowout Preventer (BOP) stack as outlined below and as shown in Figure 6-1. The system is constructed to MR-01-75 Rev 84 specifications.

The BOP system is controlled by a direct hydraulic control system from an accumulator unit located outside of the 25m safety radius and features an electrically operated drillers’ remote control panel. The accumulator is a 624 L, 2 station electric Ross Hill accumulator with a pressure rating of 21,000 kPa (or approximately 3045 psi). In addition, there are two 76 mm kill lines.

The BOP configuration is shown in Figure 6-1 and includes the following equipment:

- Item 1 13-5/8” Shaffer Spherical Preventor
- Item 2 13-5/8” Shaffer SL Single Gate Ram – Stud x Stud
- Item 3 13-5/8” Shaffer SL Single Gate Ram – Stud x Flange
- Item 4 13-5/8” Shaffer SL Single Gate Ram – Stud x Stud
- Item 5 13-5/8” Drilling Spool
- Item 6 13-5/8” Rotating Spool
- Item 7 13-5/8” Tubing Hangar (Supplied by the Oil Company)
- Item 8 3-1/8” Hydraulic Control (HCR) Gate Valve
- Item 9 3-1/8” Gate Valve
- Item 10 3-1/8” Gate Valve
- Item 11 3-1/8” Gate Valve
- Item 12 3-1/8” Gate Valve
- Item 13 3-1/8” Gate Valve
- Item 14 3-1/8” Check Valve
- Item 15 3-1/8” Block Tee
- Item 16 3-1/8” Gate Valve
- Item 17 3-1/8” Gate Valve
- Item 18 3-1/8” Check Valve
- Item 19 3-1/8” Block Tee

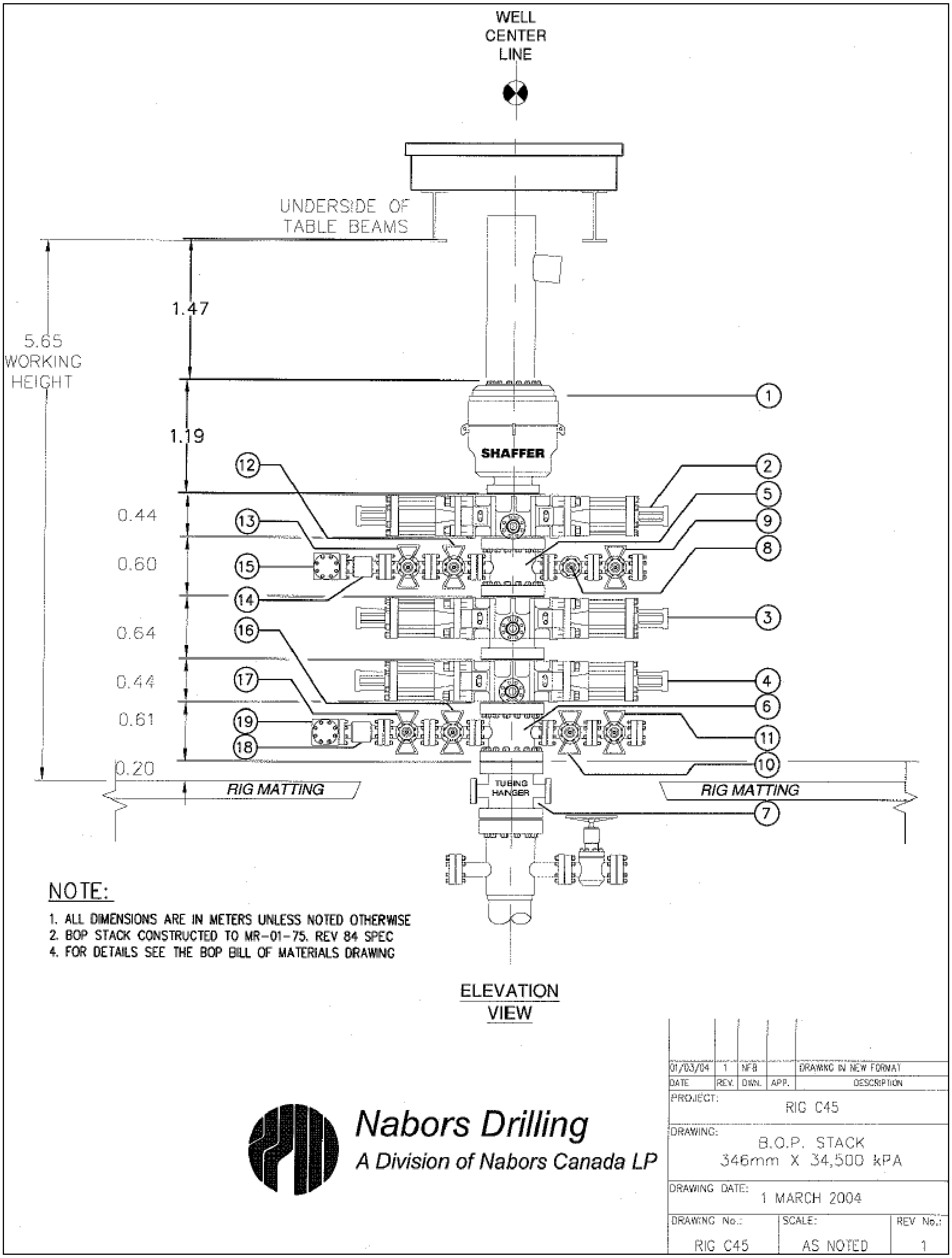


Figure 6-1: BOP Stack for Nabors Rig 45ETD

7. Drilling Sequence and Procedures

On January 18 2007, PAP#1 - ST#2 was re-entered and successfully swabbed into production. The well flowed at 312 bpd of API 50° - 56° oil and approximately 1 MMscf/d of gas. The re-entry operation included the removal of two plugs and the installation of down-hole completion equipment. Following re-entry, the well was put through the following tests:

- well flow test.
- pressure build-up test.
- production testing.

After stable initial production and a successful initial pressure build up test, the PAP#1 - ST#2 well flow started to become erratic. PDIP considered that continuing production under these conditions could potentially cause damage to the ST#2 operation and therefore decided to temporarily suspend the well to fully evaluate the options available to resolve the situation.

Following this evaluation, PDIP determined that drilling a new horizontal sidetrack (ST#3) to the existing PAP#1 well would be the best option to meet their objective of sustained production. A diagram of the planned horizontal ST#3 well and configuration of the PAP#1 well and sidetracks is shown in Figure 7-1.

Drilling of this well is scheduled to commence during August 2008 and will be undertaken by Nabors Drilling Inc. (A Division of Nabors Canada) using Nabors Rig 45ETD. It is estimated that the entire drilling and completion campaign will take 98 days to complete. Following drilling and completion, a 30 day extended well flow test will be carried out to acquire reservoir data and to determine the production performance of the well.

The drilling program is divided into five phases as follows:

Phase I	Well preparation operations (killing the well and removing existing completions)
Phase II	Side-track operations (clean out, flow testing and abandoning ST#2 and cement squeeze and whipstocking for ST#3)
Phase III	Drilling (drilling the ST#3 wellbore)
Phase IV	Completions (setting the dual string completions for the operation)
Phase V	Well testing (flow testing)

The details of the drilling program have been finalized by DLMC and are provided in Appendix A.

Details of the casing program are also provided in Appendix A including design safety factors, fracture gradient and pore pressure information , intermediate casing details and main hole casing details.

Details of the cementing program for each casing string are also given in Appendix A. The main hole section of the well is uncemented, but details of the cementing program for the intermediate section (between 2400m and 3563m) are given.

As detailed in Appendix A, three drilling fluid systems have been selected for the drilling of this well based on the following three defined intervals of the well:

- Window milling interval from 0 mMD to 2325 mMD.
- Middle interval from 2325 mMD to 3563 mMD.
- Main hole interval from 3563 mMD to 4900 mMD.

The expected fluid properties to be maintained for each interval are provided in the drilling fluid program in Appendix A.

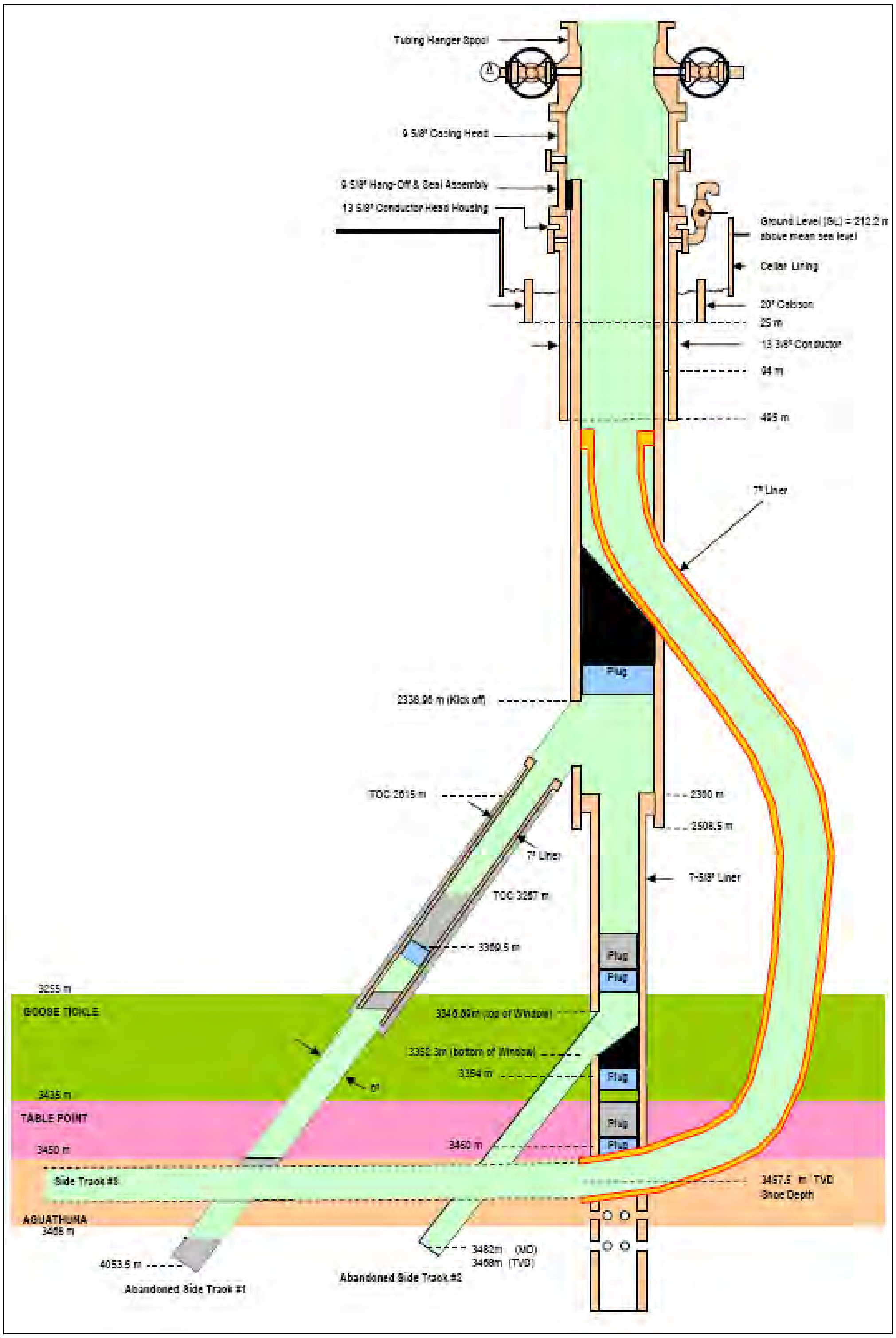


Figure 7-1: Planned ST#3 Details and Configuration of PAP#1 Well and Sidetracks

8. Offset Well Data

Information obtained during the drilling of previous wells at GHS has been used in planning the drilling of the horizontal sidetrack (ST#3) to PAP#1 at GHS. Drilling problems that were encountered on the previous wells and sidetracks have been identified and lessons learnt have been incorporated into the detailed drilling program for ST#3. The following wells have been reviewed as part of this process:

- PAP #1 – drilled by Hunt Oil in 1994
- PAP #1 - ST#1 – drilled in 2001
- PAP #1 - ST#2 – drilled in 2002 and re-entered in 2007

Offset well data used in planning and engineering of the PAP#1 - ST#3 well can be found in Appendix B.

Appendix A:

Directional Operations Program

Operations & Procedures Program

PDIP PAP#1 - ST#3
Nabors Rig #45 – ETD

DRAGON LANCE MANAGEMENT CORPORATION

Technical Document Cover Sheet

Title:	Directional Operations Program PAP#1-ST#3
Project Name:	PAP#1 Side Track #3
Client:	PDI Production Inc.
Client Ref:	GHS-0010-TIP-0004-OTH
DLMC Ref:	CA-2008-68-NFL-2
Pages (including cover):	90

PAP#1 - ST#3 Operations Program

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
1	July 11,2008	Draft	S. McIntosh K Almeida J Mauricio Liu Dong Bo Ming Zhou	S. McIntosh	S. McIntosh Passed to PDIP for review
2	July 15,2008	Draft	"As above"	M. Hibbert	M. Hibbert Passed back to DLMC for review
3	July 21,2008	Draft	"As above"	S. McIntosh	Passed back to PDIP for review
4	July 23, 2008	Original Submission to DNR	"As above"	S. McIntosh	M. Hibbert
5	August 6th, 2008	Updated to include comments received from DNR	"As above"	S. McIntosh	M. Hibbert

Executive Summary

The PDIP PAP#1-ST#3 program is designed to encompass the installation of the Nabors #45 – ETD drilling rig to function as a drilling rig and completion rig to enable completion of the entirety of the operations program required with the same rig. In summary, the operations program is as follows:-

1. The rig will be assembled and inspected to NLDNR regulations / specifications.
2. After installing a suitable flowline to the rig's choke manifold, the well will be bled down and the hydrocarbons flowed to a production flow tank as required to separate the well fluids, flare off the gas and recover the hydrocarbon liquids.
3. Once a stable column of liquid hydrocarbons has been established, the well will be killed by pumping a kill fluid down the existing tubing string.
4. Once balanced pressure conditions have been established a BPV will be installed in the tubing hanger production string, the xmas tree will be removed and a BOP system will be installed as required and tested.
5. With a fully tested BOP system in place, the existing well completion will be removed to allow full casing bore access to the ST#2 well leg.
6. After completion removal, the wellbore including ST#2 will be cleaned out to the ST#2 original T.D.
7. Once cleaned out a DST will be conducted to test the potential production limits of the Aguathuna formation from ST#2.
8. After testing the Aguathuna formation from ST#2 this section of the well will be abandoned as per NL-DNR regulations.
9. After completion of ST#2 abandonment operations, the original well bore casing will be evaluated with a casing evaluation & bond log.
10. Once logged, the sidetrack depth for ST#3 will be confirmed or reselected as per casing evaluation.
11. Original well bore remedial perforating & cementing operations will be conducted as required from evaluating the evaluation & bond log.

12. After perforating and cementing, a whipstock will be installed and a window will be cut in the 244.5mm casing and reamed smooth.

13. After reaming the window, directional drilling will take place to land the wellbore horizontal in the start of the Aguathuna formation as per the directional program.

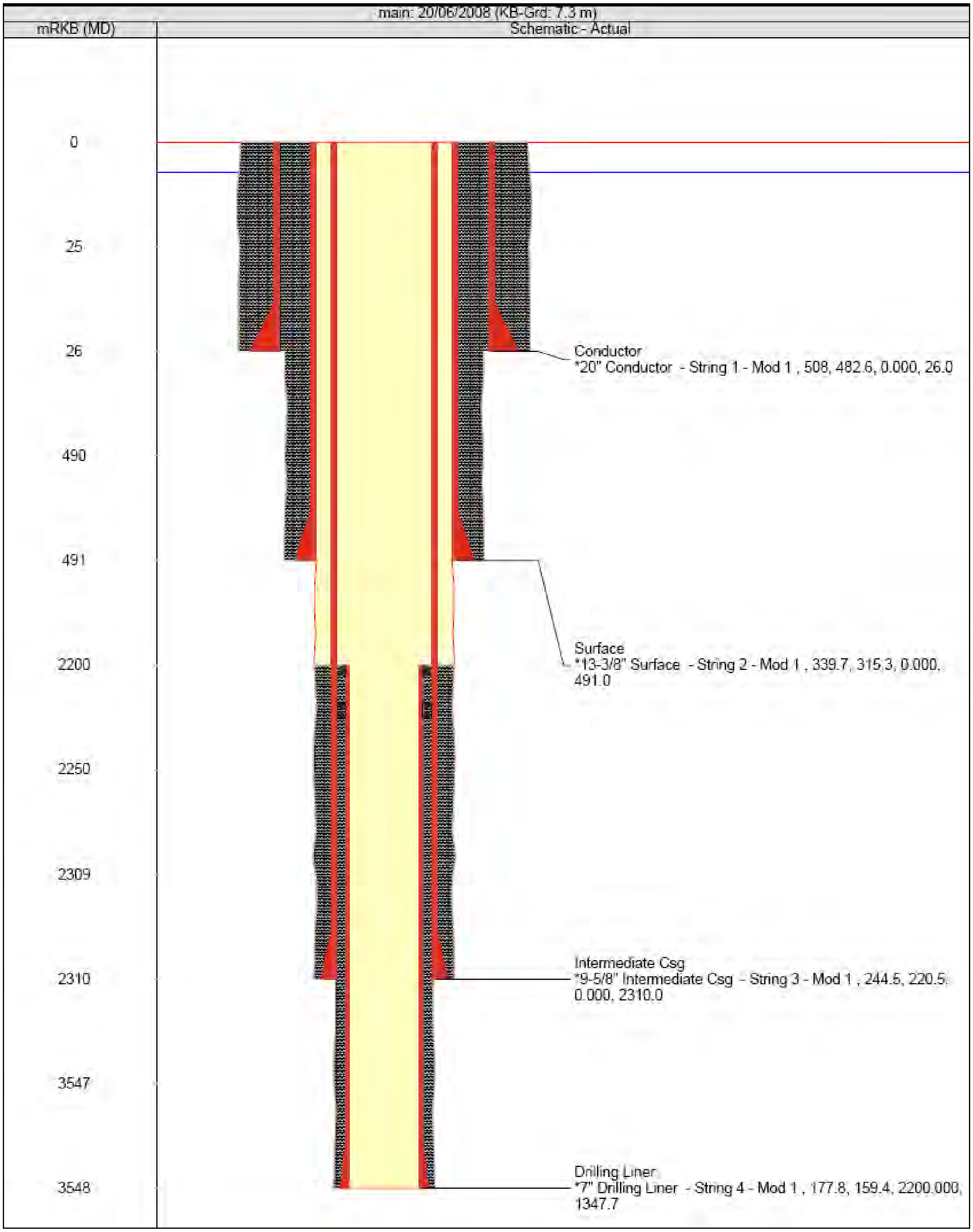
14. At this point, a drilling liner will be run into the Aguathuna and cemented in place. A leak off test will confirm the integrity of the cemented liner.

15. After undertaking a successful LOT, a 900m to 1500m horizontal section will be drilled in the Aguathuna formation at a near balanced state. (slightly over balanced losing minor fluids to slightly under balanced flowing fluids and/or gas).

16. Upon completion of the horizontal section, drilled with suitable MWD & LWD tooling, the drilling tools will be laid down and a production completion string will be installed.

17. With a fully tested completion string in place, the BOP system will be removed and the wellhead capped with a production xmas tree after which the well will be turned over to production and production tested.

A schematic of the well casing is shown below.



main: 20/06/2008 (KB-Grd: 7.3 m)
mRKB (MD)
Schematic - Actual
0
25
26
490
491
2200
2250
2309
2310
3547
3548
Conductor
*20" Conductor - String 1 - Mod 1 , 508, 482.6, 0.000, 26.0
Surface
*13-3/8" Surface - String 2 - Mod 1 , 339.7, 315.3, 0.000, 491.0
Intermediate Csg
*9-5/8" Intermediate Csg - String 3 - Mod 1 , 244.5, 220.5, 0.000, 2310.0
Drilling Liner
*7" Drilling Liner - String 4 - Mod 1 , 177.8, 159.4, 2200.000, 1347.7

Contents

pdiproduction

1. Directions to Location

The drilling site is located at Garden Hill South, at Cape St. George on the Port au Port Peninsula. From the Trans Canada Highway, take the exit for R490 and follow the highway through Stephenville Crossing to the junction of R490 and R460. Follow R460 through Stephenville and towards the Port au Port Peninsula., at the town of Aguathuna (approximately 17 km), turn left to stay on R460 towards Cape St. George, at Piccadilly (approximately 16 km), turn left to stay on R460 towards Cape St. George, continue to follow R460 through Cape St. George along the coast until the highway turns into R463, follow this route for approximately 5 km to the Garden Hill South oil and gas site.

DRAGON LANCE
MANAGEMENT CORPORATION

2. Well Data Summary

Operator:	PDI Production Inc.	**Well Name:**	Port au Port #1 ST#3
Operator Code:	N/A	**Location:**	Port au Port Peninsula
Country:	Canada	**Classification:**	Directional Production Well
Province/State:	Newfoundland	**Well Type:**	Tight Hole
Concession/Block:	N/A	**Area/Field:**	Garden Hill south
Exploration License #	N/A	**Spud Date:**	Aug. 12th 2008
Production Lease #	PL2002-01	**Well Licence #**	TBD
Rig:	Nabors #45-ETD	**Est. Drilling Days:**	78

Primary Objective: Aguathuna (Horizontal Section across Aguathuna formation)

Planned T.D. (M.D.)	4448 m	**Planned T.D. (TVD)**	3450 m
Start of Horizontal: (M.D.)	3548 m	**Planned T.D. (TVD)**	3450 m
End of Horizontal: (M.D.)	4448 m	**Planned T.D. (TVD)**	3450 m

Survey GL Elevation:	212.20 m	**H_2S Content:**	0%
Cut/Fill:	0.53 m	**CO_2 Content:**	0.00%
GL Elevation:	212.20 m	**EPZ Content:**	0%
KB to Ground:	7.27 m	**KB Elevation:**	220.00 m

AFE #:	N/A	**Budget Status:**	Approved
AFE Amount (D & A):	$ 14,957,367	**AFE Status:**	Approved
Operator (W.I):	100%	**Cost Centre:**	Development

3. Rig Layout Plan:

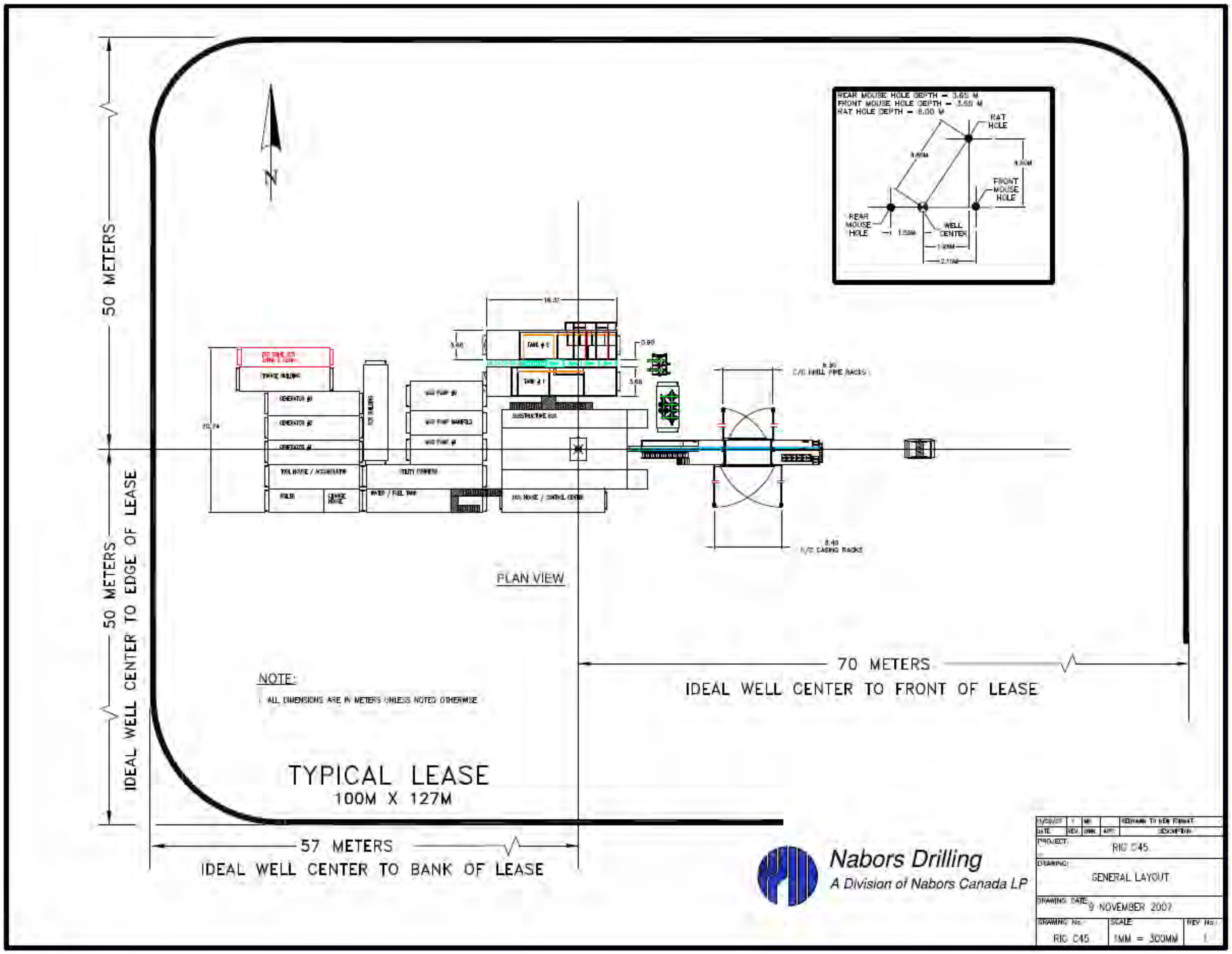


Figure 3-1: General Rig Layout – Nabors Rig #45

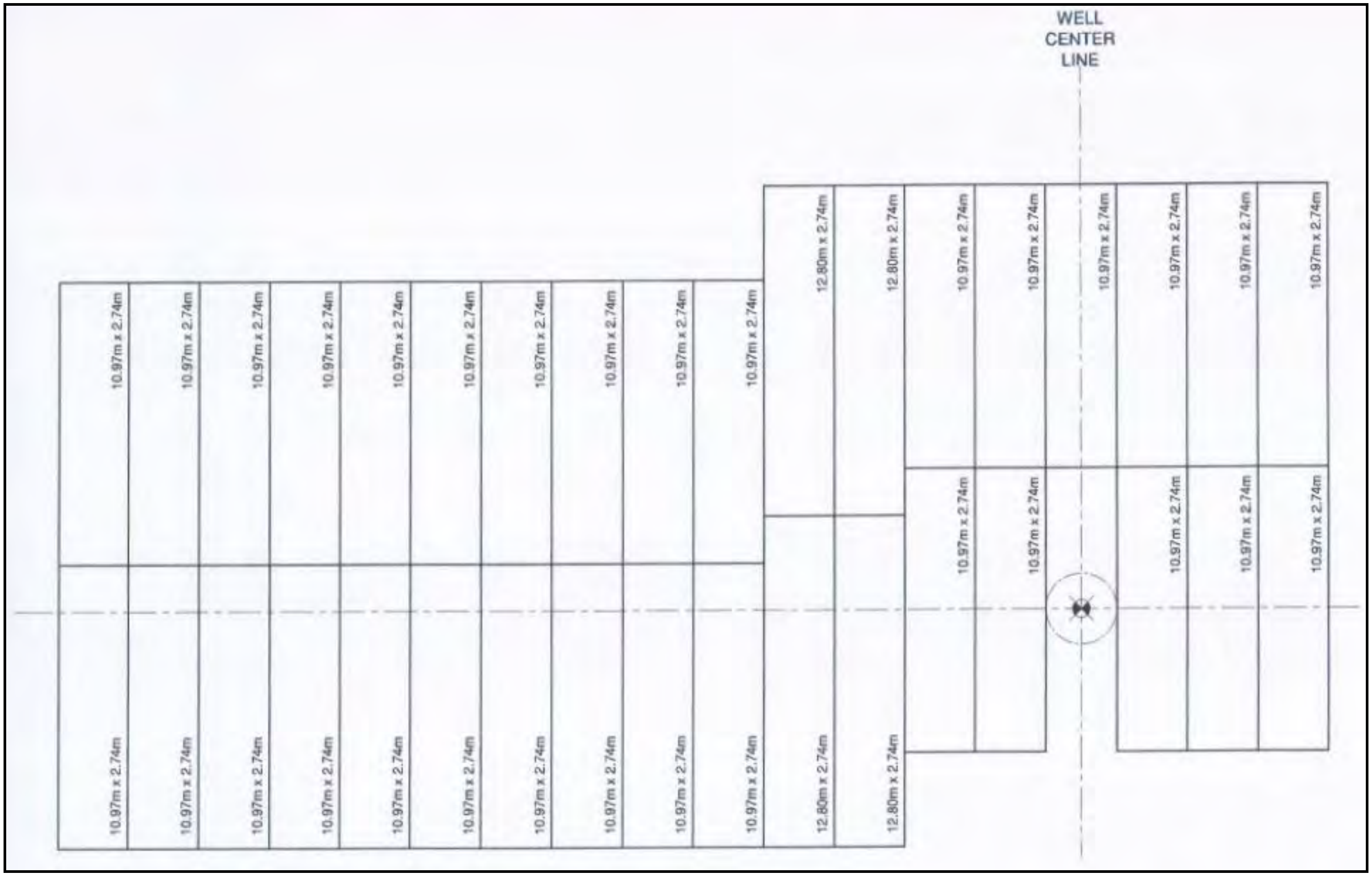


Figure 3-2: Plan View Matting Lay Out Plan Nabors Rig #45

4. Drilling Location Survey & Site Diagram

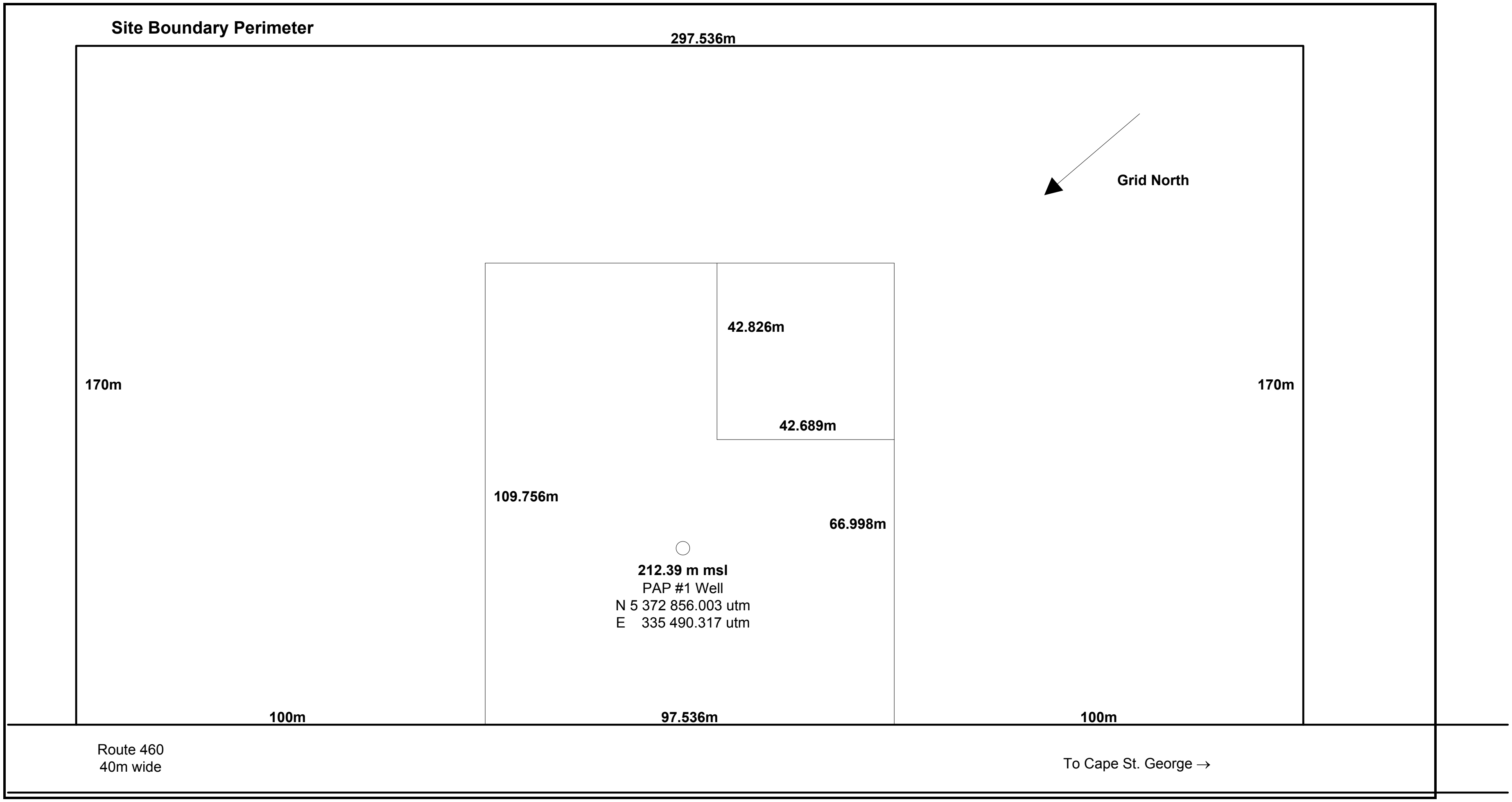
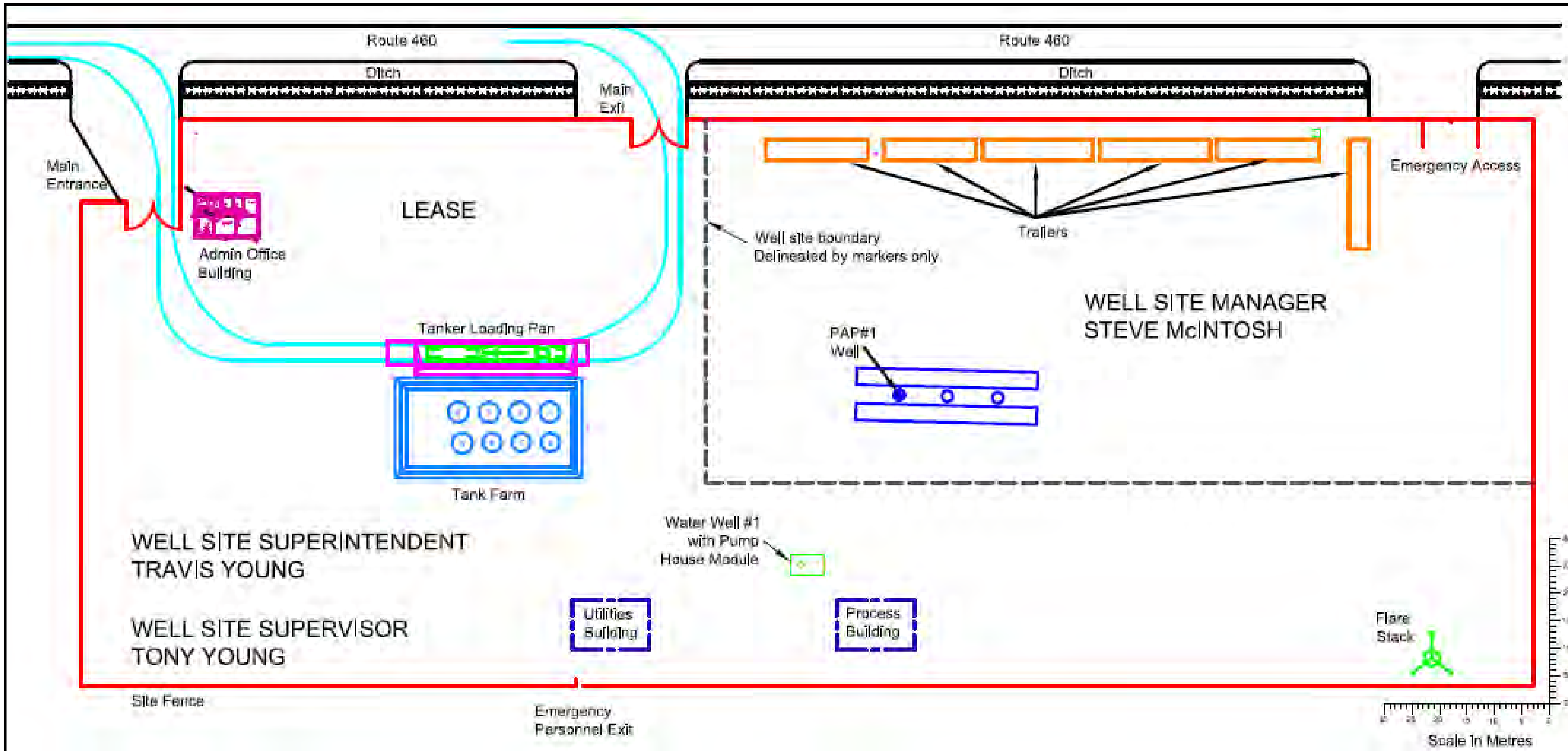


Figure 4-1: Garden Hill South Site Survey



Lease entrance, exit, and emergency personnel exit gate keys with Travis Young.

Emergency access gate keys with Steve McIntosh and Travis Young.

Figure 4-2: Garden Hill South Site Diagram

5. Co-ordinate Data Summary

WELLHEAD FLANGE POINT	NAD 27	NAD 83	SUBSEA (metres)
UTM “Y” NORTH	5372856.003	537365.97	+212.20
UTM “X” EAST	335490.317	335567.56	
Latitude NORTH	48-29-21.38107	48-29-21.16	
Longitude WEST	59-13-32.705513	59-13-29.187	

K.O.P.	NAD 27	NAD 83	SUBSEA (metres)
UTM “Y” NORTH	5372615.93	5372825.9	-2088.00
UTM “X” EAST	335462.84	335540.08	
Latitude NORTH	48-29-13.511	48-29-13.29	
Longitude WEST	59-13-36.349	59-13-32.83	

INTERMEDIATE CASING POINT	NAD 27	NAD 83	SUBSEA (metres)
UTM “Y” NORTH	5372907.53	5373117.5	-3230.00
UTM “X” EAST	335462.00	335539.25	
Latitude NORTH	59-13-36.803	48-29-22.726	
Longitude WEST	48-29-22.947	59-13-33.284	

HORIZONTAL START POINT	NAD 27	NAD 83	SUBSEA (metres)
UTM “Y” NORTH	5372907.53	5373117.5	-3230.00
UTM “X” EAST	335462.00	335539.25	
Latitude NORTH	59-13-36.803	48-29-22.726	
Longitude WEST	48-29-22.947	59-13-33.284	

HORIZONTAL END POINT	NAD 27	NAD 83	SUBSEA (metres)
UTM “Y” NORTH	5373449.7	5373659.67	-3230.00
UTM “X” EAST	335884.561	335961.75	
Latitude NORTH	48-29-40.891	48-29-40.67	
Longitude WEST	59-13-17.00	59-13-13.48	

6. Formation & Geological Data Summary

6.1 Geological Description:

The actual depths and thicknesses of each formation in the main PAP#1 well and the two sidetracks PAP#1 – ST#1 and PAP#1 – ST#2 are shown in Table 6-1 below.

Table 6-1: Formation tops and thicknesses in PAP#1, PAP#1-ST#1 and PAP#1-ST#2 wells in metres

	PAP#1		(KB=220.8)		PAP#1 - ST#1		(KB=220.4)		PAP#1 - ST#2		(KB=220.0)	
Formation	MD	TVD	TVDSS	Thickness	MD	TVD	TVDSS	Thickness	MD	TVD	TVDSS	Thickness
RHT / WINTERH.	2325.0	2323.2	2102.4	756	2324.6	2322.8	2102.4	756				
LOURDES	3082	3079.1	2858	170	3118	3079	2859	167				
GOOSE TICKLE	3252	3248.6	3028	193	3295	3246	3026	185				
TABLE POINT	3446	3441.7	3221	13	3490	3431	3211	55	3443	3435.0	3215	13
AGUATHUNA	3459	3454.6	3234	120	3506	3446	3266	76	3458	3448.3	3228	
COSTA BAY MBR	3580	3575.0	3354	20	3629	3562	3342	20				
CATOCHE FM	3600	3594.9	3374		3651	3583	3362					

Prognosed depths and thicknesses for each formation in PAP#1 – ST#3 are based upon the stratigraphy in these adjacent wells; the similarity of TVT thicknesses between PAP#1 and PAP#1 – ST#1 gives confidence that there is only minor lateral variability in formation thickness. The prognosed depths and unit thicknesses for PAP#1 - ST#3 (based on current understanding) are included in Table 6-2 below.

Table 6-2: Prognosed Formation Tops and Thickness for PAP#1 - ST#3 (m), KB=220 m

Formation	TVDSS	TVD	MD	Approx. Thickness*
Kick-off into Precambrian Gneiss	2098.2	2309.2	2311.0	
RHT / Winterhouse	2102	2322	2324	756
Lourdes	2871	3091	3107	170
Goose Tickle	3041	3261	3277	193
Table Point	3222	3442	3500	13
Aguathuna	3230	3450	3544	
** Thickness estimates taken from PAP#1 well values*				

6.2 Stratigraphic Section

The Garden Hill South discovery occurs in Lower Ordovician carbonates within the Anticosti Basin. The stratigraphy of the Anticosti Basin comprises six tectono-stratigraphic megasequences which were deposited before, during, and after the Palaeozoic collisional events which formed the Appalachian Mountains.

The only reservoir so far proven to contain hydrocarbons on Newfoundland's west coast is the Aguathuna Formation within the St. George Group, consisting of partially dolomitized peritidal limestone deposited on a broad carbonate platform.

The Ordovician oil prospect and the Aguathuna Formation are shown in the chronostratigraphic chart and in the generalized stratigraphic sections in the Anticosti Basin below. The recognized source rock for the Anticosti Basin in onshore western Newfoundland is the Cambro-Ordovician Green Point Formation shale.

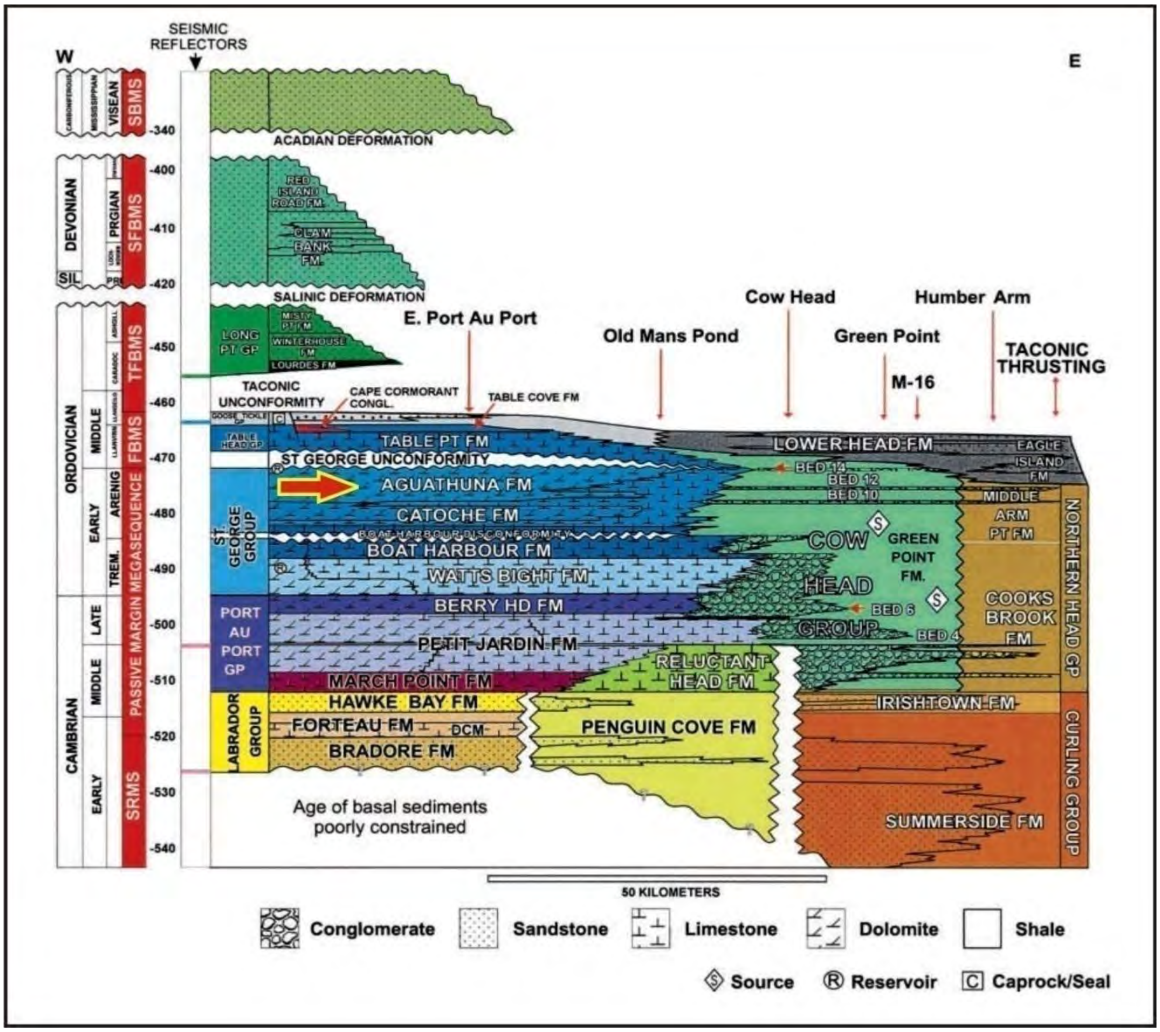


Figure 6-1: Chronostratigraphic chart for western Newfoundland. The position of the target Aguathuna Formation is highlighted by a yellow arrow. After Cooper et al., 2001

6.3 Lithology Description

Lithology of the various units is highlighted above and summarized in Table 6-3.

The well is expected to kick off in Precambrian metamorphic rocks in the hanging wall of the Round Head Thrust. These consist of dense, coarse, granitic gneiss with interlayers of mafic igneous dykes.

The Winterhouse Formation consists of low-grade metamorphosed phyllite and quartzite at the top, grading to dark shales and quartzose sandstone and siltstone, with minor interbeds of limestone.

The Lourdes Formation contains of highly fossiliferous limestone, with varying amounts of disseminated quartzose sand, and interbeds of sandstone (possibly with hydrocarbon shows), siltstone, and shale. The base of the formation may be sandstone dominated.

The Goose Tickle Group consists predominantly of brown-grey shale with minor interbedded siltstone and sandstone with trace porosity. No hydrocarbon shows were encountered in the Goose Tickle Group in the PAP#1 well.

The Table Point Formation is characteristically a tight grey limestone with minor interbedded dolostone and no expected reservoir potential. It contains a diverse assemblage of shelly fossils and is predominantly fine grained, consisting of mudstone and wackestone.

The Aguathuna Formation section consists of interbedded crypto-crystalline dolomite, medium grained rhombic dolomite and white sparry dolomite. The upper part of the Aguathuna (targeted in this well) comprises a dark dolostone with intercrystalline matrix porosity, and averages 5.2-7.4% porosity and 34 mD permeability based on values from the reservoir interval in PAP#1. Non-reservoir zones in PAP#1 (including the tight lithologies below the oil zone) comprise dense, crypto- to microcrystalline dolomudstone, with 0% porosity and no permeability.

Table 6-3: Expected Lithologies, PAP#1 - ST#3

Formation / Interval	Lithology
Precambrian Metamorphics	Dark mafic igneous dykes interlayered with coarse granitic gneiss. Dense rock with crystalline texture.
Round Head Thrust Zone	The region of the Round Head Thrust zones comprises highly deformed cataclastic mafic dykes, interlayered with gneiss, chlorite mica schist, and quartzite. In places within the fault zone inter-layering of Winterhouse Formation shales occurs.
Winterhouse Formation	The upper part of the formation comprises lower grade metamorphosed phyllite and metaquartzite (metamorphism likely caused by movement on the Round Head Thrust). The lower part of the formation (>2500m mD in PAP#1) comprises interlayered dark shales and quartz-rich sandstones. The base of the Winterhouse Formation comprises siltstone & shale interlayered with SST, with increasing limestone content as the boundary with the underlying Lourdes Group is approached.
Lourdes Formation	The Lourdes Formation comprises limestone interbedded with siltstone, shale and sandstone. More sandy intervals are evident as the base of the formation is approached. Some HC shows occur in SST layers.
Goose Tickle Group	Shale and minor interbedded sandstone. Trace porosity in some sandstones. Minor hydrocarbon-stained dolomite occurs in shales at base of sequence. Shales are brown-grey, and dominantly non-calcareous, traces of dolomitic mudstone occur. Sandstones are immature, and poorly sorted with high percentage of quartz (c. 80%). Areas of chalky matrix occur. Sandstones generally display rounded to sub-angular grains and have poor porosity. Some light brown hydrocarbon staining and yellow fluorescence is evident.
Table Point Formation	Interbedded crypto-crystalline dolomite, and finely crystalline dolomite with fair porosity and shows (from PAP#1 – ST#2). Some sandy interlayers. Rare good quality carbonate layers with vuggy porosity, rhombic dolomite crystals, and residual bitumen staining are present. Occasional white sparry dolomite occurs. Occasional dull yellow fluorescence can be seen.
Aguathuna Formation	Variably dolomitized limestone. Commonly interbedding of crypto-crystalline dolomite, medium grained rhombic dolomite, and white sparry dolomite occurs. Off-white - tan - brown colour with some bitumen staining. Low permeability areas of Aguathuna Limestone Matrix are characterised by well cemented, tightly interlocking crystals with

	conchoidal appearance, and vitreous lustre occur. The low quality rock is dense, with rare isolated pores (drilling rate likely to dramatically slow down in non-dolomitized layers). Moderate quality layers of Aguathuna Limestone are finely crystallised with earthy appearance. Minor porosity and pin-point pores may be identified. The good quality, highly dolomitized Aguathuna Limestone has sandy, granular, or sugary appearance, and is fine - medium grained. Visible porosity is abundant, and oolitic/other granular textures may be seen in the highly dolomitized samples. Sparry dolomite infills some cavernous and vuggy porosity.
Costa Bay Member (uppermost Catoche Formation)	(Not planned to be intersected by PAP#1 – ST#3) Vuggy dolomitic limestone with dark shale interbeds. Microcrystalline to crystalline.

7. E.R.P. Considerations

PDIP have developed an Emergency Management Plan and a detailed set of contingency plans/emergency response procedures to ensure that the lines of communication in the event of an emergency are clear and therefore that all required support and resources (both internal and external to the organization) can be quickly and effectively mobilized. Copies of these plans and procedures are kept on site and are included in the Drilling Program Approval (DPA) application for PAP#1 – ST#3.

No H_2S is expected, but precautions have been taken in the event that sour fluids are brought to surface. These precautions include SCBA for rig personnel and placement of a four head H_2S, CO_2, O_2, LEL monitor and H_2S personal monitors on the Drilling Rig.

H_2S is not expected. No over pressured formations are anticipated.

8. Area Problems and Concerns

8.1 Intermediate Hole (2308m MD to3548m MD)

Deviation Control: strike and dip may be highly erratic, unpredictable and will try to cause bit deflection. The upper section will be drilled with steerable motors and measurement while drilling instrumentation for monitoring deviation. In addition, the Goose Tickle Group is comprised of weak shale. These will mechanically fail and erode quickly, and may impact ability to build angle and control direction. Additional inclination will be built into the wellbore to account for this potential.

No Overpressure Formations Expected.
Formation pressures are known from the original wellbore penetrations and subsequent sidetrack operations. A Formation Integrity Test will be taken after drilling out into new hole to determine integrity of the cement outside the perforations (see Section 20).

Hard Drilling: The entire package from the Winterhouse to the Aguathuna is considered PDC drillable. The Humber Arm Allochthon is not expected to be encountered but if it is pyrite nodules will be present in the Humber Arm and could wipe out bits quickly. Rotating speeds must be controlled to prevent bit destruction.

Weak Shale: The Goose Tickle Group and the Table Cove Formation are comprised of weak shale and will fail or erode quickly. The Winterhouse is also prone to caving over extended periods of exposure to fluids. Ensure good hole cleaning.

Differential Sticking: Other than the Aguathuna, porosity development across this interval is unexpected. If differential sticking does occur, spot diesel and Pipe-Lax across the BHA. Ensure volume of spotting fluid is sufficient to cover entire BHA on placement. Have sufficient volume in place in the drill pipe to displace 100 litres every hour for 18-24 hours. Any spotting fluids and contaminated mud should be isolated for proper off-location disposal.

Borehole Stability: Due to the thrust-deformed nature of the area and the profile of the well, some instability is possible**.** If instability in an interval becomes a problem, plugs will be set.

Pre-flush	150 m +/- of surfactant based pre-flush weighted to match mud weight
Cement	- 4.5 m^3 for 215.9 mm section
	- 20 % over hole volume

Massive Loss Circulation: Massive losses are possible in the Aguathuna. Although the plan is to set casing in the Table Point Formation (above the Aguathuna), it is possible that the Aguathuna may inadvertently be penetrated. Previous success noted in healing losses using LCM pills.

Fracture Gradient: The gradient is expected to be in the 17.3 kPa/m range.

8.2 Main Hole (3548m MD to 4448m MD)

Loss Circulation: Massive losses are highly probable in the Aguathuna. LCM pills have been formulated and are included in the Drilling Fluids Program but will only be used as a last resort as the formation plugging in the production zone would be extensive in nature. PDIP will be consulted prior to pumping any lost circulation pills.

No overpressure formations expected.

Differential Sticking: All loss circulation zones also have the potential for differential sticking. A product called PIPE-LAX will be on site for this purpose. This is a glycol based product and a pill spotting schedule is included in the Drilling Fluids Section. An HCl acid may be available on site for spotting across the BHA in the event the sticking is mechanical and not differential. If required, the HCl will be stored on pallets in protective totes inside a lined berm area on the site.

With the casing set to the top of the limestone package, consideration will be given to backing off the string and running a burst disk to underbalance the zone and free the pipe.

Fracture Gradient: The fracture gradient for the carbonates is expected to be in the 19 – 22 kPa/m range.

Deviation: Bed dip is variable in the Aguathuna. This formation will be geo-steered with a focused gamma ray to stay below the Table Point and resistivity to stay in the oil leg.

Faults: Two to three faults will be crossed by the wellbore. Ratty formation and minor sloughing may be expected from these intervals. Survey frequency will need to be increased to monitor for bit deflection and doglegs. These intervals will be drilled with a rotary steerable system to enable control and correction of any deviation problems. Location of faults may not appear as prognosed, and a contingency plan is in place for these results.

Borehole Stability: Due to the heavily faulted nature of the area and potential for faults to be crossed within the Aguathuna be prepared to *stop and squeeze* the faulted area with cement if zone will not clean up. Circulate

Pre-flush	150 m +/- of surfactant based pre-flush weighted to match mud weight
Cement	- 2.5 m^3 for 152.4 mm section - 20 % over hole volume

Formation Discontinuity: in the event that a fault is crossed and the zone is stable, drilling will continue ahead to a point where we can determine structurally where we are, i.e. try to determine the throw of the fault from formation information. From this information a decision will be made by geology support team to climb/drop or plug back the wellbore and redirect the well path.

Wet Reservoir: while drilling the horizontal interval if water is clearly encountered from resistivity values, a decision will be made after consultation with geology and reservoir to plug back the well via cement squeeze. At this time well path direction will be re-determined.

9. Contingency Planning

#	Problem	Problem Identifiers	Consequences	Remedial Action	Likelihood
1	Delays in abandonment at SPE 2K-39	n/a	Rig Delay	Talk to NLDNR & Wait for rig.	Not known, but not likely
2	Problems at Loading Yard	Late arrival of cranes and weight scales	Delay in mobilization of the drilling rig. Rig stand-by time extended.	Early commitment to contract with transporter company	Unlikely
3	High Winds Rig up & Down	Evident	Will only affect rig up & rig down due to cranes. +65	None available	Very likely Days?
4	High Winds Drilling	Evident	Will only affect drilling operations if extreme wind +120	None available	Very likely Days?
5	Cold weather	Evident	Decreases site productivity	Additional boiler fuel	Unlikely
7	Unable to bullhead kill the well	Cannot pump kill fluid down tubing string	Rig Delay by 1 day	Pull the packer assembly free and kill the well.	Unlikely
8	Cannot unset completion packer	Stuck packer	Slight delay in commencing remainder of operations	Leave it in or strip it out.	Highly unlikely
9	ST #2 Section - Mud losses while cleaning out this section	Self-evident by mud losses	1) Extra rig costs. 2) Delay in drilling. 3) Increased cost of mud.	1) Balance mud density to control losses 2) Trip slower	High degree of probability
10	ST #2 Section - Unable to get a good DST packer seat	Fluid bypass on the annulus	Rig Delay by 1 day	Pull the DST assembly and RIH with tandem packers.	Unlikely
11	ST#2 Plug will not seal	Leaking plug	Slight delay in commencing remainder of operations	Dump extra cement to seal plug	Highly Unlikely
12	Setting the Whip-Stock (slight	Gyro confirms casing	Will need to correct well trajectory	Commence drilling and correct	Unlikely

#	Problem	Problem Identifiers	Consequences	Remedial Action	Likelihood
	deviation)	window cut in wrong direction	to compensate	error by extending the well trajectory drill path	
13	Setting the Whip-Stock (major deviation)	Gyro confirms casing window cut in wrong direction	Delay in commencing remainder of operations	Re-whipstock the well	Highly Unlikely
14	216mm Hole ST #3 Section High mud losses in the Aguathuna formation	Self-evident by massive losses	1) Extra rig costs. 2) Delay in drilling. 3) Increased cost of mud.	1) Spot a B.H. LCM carbonate pill to allow running and cementing of liner.	High degree of probability
15	Drilling bits wearing out prematurely	Rate of progress slow	Delay in Drilling	Have spares available and look at drill bit specifications. PDC drill bits to be used and rotating speeds will be controlled.	Routine
16	Directional drilling	High mud motor wear rate	Delays in drilling due to extra drill string tripping	Modify drill fluid to reduce solids and increase lubricity additives	Routine
17	Directional drilling	MWD/LWD Instrument failure	Delays in drilling due to extra drill string tripping	Change instrument BHA for carried spare	Low
18	Horizontal section borehole instability	Drill pipe friction and drilling difficulties	Stuck drill pipe	Work drill pipe until free and well stable. Set slotted casing over unstable section.	Medium
19	Collision with PAP#1 or PAP#1-ST#2 boreholes	Detect casing cuttings in well (PAP#1) PAP#1-ST#2 will not be detected aside from kick in production	Delay in drilling Will mean that there is uncertainty in structural mapping because tie-ins with seismic are incorrect	Pull back and plug well, realign well target Attempt to re-evaluate mapping	Extremely low
20	156mm Hole Section GOR to low in the Aguathuna	Self-evident by massive losses of	1) Extra rig up costs. 2) Mobilize N2 units to drill ahead	1) Use nitrogen to decrease mud weight.	1)Programmed

#	Problem	Problem Identifiers	Consequences	Remedial Action	Likelihood
	formation to support "Balanced Drilling"	fluid and no gas to surface production testing unit	at balanced BHP. 3)Delay in drilling 4) Increased cost of mud.	2) If N2 fails then use LCM pills that can be dissolved by acid. (Major Change) 3) Use ULTRASEAL	2) Not known 3) Not known
21	Logging tools stuck in hole	Unable to remove logging tools	Delay in drilling	Fishing Operations	Extremely low
22	Differential Sticking	Possible in Aguathuna	Delay in Drilling	Spot diesel in BHA (to displace 100 litres every hour for 24 hours) Pipelax will be available on site.	Routine
23	Failure of pressure test for production well operations	Failure to hold pressure	1. Possible junking of well 2. Delay in putting the well on production	Run 7" casing to surface or (or 7 -5/8")	Not known until completion of CBL and CIL

10. Location Preparation & Rig Move

Make sure that all the underground and above ground oil & gas pressure lines, electrical lines, water supply lines and sewer systems are properly marked and all boundaries clearly identified. Consult with the local ground disturbance regulations and if any questions contact your Project Manager.

Make sure that all trucks, cranes and workers are properly orientated to the location dangers, it is very important to ensure everyone is aware that they will be working around a live wellhead and safety is of the utmost importance at all times while spotting equipment around and above the wellhead area.

The minimum distance to be allowed between any water well and the main well to be drilled will be 45 metres centre to centre.

Level location the rig foot print area to ensure that the rig matting will sit in a level environment.

Report ground water conditions to the drilling operations department as soon as it is confirmed.

Inform PDIP St. John's Office, DLMC General Manager and Project Manager that the rig will be moving 72 hours in advance.

Inform local residents 48 hours prior to rigs arrival and cover all safety issues and concerns regarding rig move and rig up operations.

Follow PDIP rig move safety procedures, contractor's procedure and ensure no operations violate the DLMC operations and safety policy.

Move in wellsite accommodations and locate as per Drilling Supervisors instructions. Arrange trailers to avoid possible derrick interference with phone signals.

The Drilling Supervisors wellsite accommodation should be arranged so that it is in direct sight of drilling floor.

11. Pre-Operational Considerations

Due to the high winds in the area anchors have been set in all 4 corners of the location and the guy wires and load cells need to be properly attached to the derrick immediately after raising. This must be done as soon as possible because the possible wind loads in the area can be in excess of the free standing capacity. The wind ratings have been calculated in accordance with API specification 4F wind pressure. The maximum wind loads of 100 MPH or 160 km/hour apply with zero hook load applied to the mast, with or without pipe racked in the derrick.

Ensure 2, 1-litre samples of mix water and dry blend cement are obtained prior to mixing cement slurry. Also ensure sample of mix water is forwarded to cementing company prior to cementing to ensure compatibility for long string. These samples should be kept until after initial completions of the well. Please advise the DLMC General Manager prior to disposal. **Sample bottles will be supplied.**

"THIS IS URGENT AND REQUIRED FOR CEMENT TESTING REQUIREMENTS"

A pre-spud meeting with all major suppliers should be held at a convenient time, and at a location to be determined, to discuss and issue final approved drilling program to service companies. This pre-spud meeting should include as many of the relevant service companies and field personnel (domestic and foreign) assigned to this drilling project as possible and will be held prior to drilling operations commencement.

Consult with Dragon Lance Project Manager to ensure that all are aware of local sensitivities and of any obligations PDIP may have in regards to this drilling program.

Make sure that all special arrangements, promises and commitments by PDIP and DLMC are properly addressed and if any concerns or issues arise then discuss with the DLMC Project Manager or General Manager.

Ensure that the contractor and subcontractors have satisfied all pre-spud contractual obligations and that all equipment is as required by the various contracts that will be in force. A list and copy of all contracts will be made available from the DLMC operations group.

Prior to commencement of work at the well location, inspect and evaluate contractor's equipment using DLMC "Rig Inspection Checklist" and the drilling contract (from Nisku Office) to determine what conditions, additions, modifications, or other requirements, if any, must be met to satisfy the drilling contract and PDIP, DLMC and NLDNR criteria. All disputes in this regard should be addressed to the DLMC General Manager so that he may have the issue properly dealt with in a timely manner.

Operator shall note whether the contractor's equipment is acceptable, with or without condition. If the acceptance is conditional, fully describe in writing on Operator's Rig Inspection Checklist what the conditions are and what resolutions are required. All disputes in this regard should be addressed to the DLMC General Manager so that he may have the issue properly dealt with in a timely manner.

Contractor will maintain a complete and up to date set of drilling records open and available for Operators representative and NLDNR to examine or inspect when ever required.

PDIP and DLMC are committed to maintaining a high standard of safety and environmental awareness during field operations. As part of an ongoing process the well site supervisors shall be expected as a minimum to familiarize themselves with company operating procedures and standards, and to comply with all government and company regulations.
Ensure a pre-spud safety meeting is held with all personnel on location to ensure personnel have adequate training and certification. The drilling contractor and drilling consultant must carry out a detailed rig inspection upon final rig up and that this inspection is completed and posted prior to undertaking re-entry operations.

Dragon Lance Management Corporation on-site representative shall be aware of government regulations pertaining to their job site, and ensure compliance with those regulations. Also J.S.A. & J.H.A. documents must be completed prior to any work started by any service company or any single service as well as safety orientation work sheets to be filled out. Once completed, a sticker is to be given to service company for display on hard hats. One copy is to be held by well site supervisor and sent in to Dragon Lance Management Corporation office with final reports.

Any deviations from safe working conditions should be documented in the morning reports and reported immediately to the Nisku Office **((780)929-6768)** by the well site supervisor.

Make sure there is enough equipment provided on lease at all times to ensure all of the drilling fluids and solids waste created from this project are disposed of correctly with a government approved waste disposal company. Samples of all disposed fluids and solids waste must be taken, dated and marked with truck unit number and final destination for proper disposal.

12. General Rig Up Considerations

Hold a safety meeting with all personnel working on location to confirm the extreme danger of working around the wellhead and oil tanks. Make sure that all trucks, cranes and workers are properly oriented to the location dangers, it is very important to ensure everyone is aware that they will be working around a live wellhead and safety is of the utmost importance at all times while spotting equipment around and above the wellhead area.

While rigging up the drilling rig make sure that we order out a 177.8mm liner X/O from 177.8mm BTC box by 177.8mm TC-IIA pin between 1.25m to 1.50m length with welded BTC box.

Change mud pump liners to 165mm (6-½”) while rigging up.

Once rig is rigged up conduct a C.A.O.D.C. & D.L.M.C pre-drill rig inspection and correct all deficient items. Another inspection must be undertaken once rig BOP’s are installed and pressure tested. Send the inspection sheets to the St. John’s office ASAP so that approval can be cleared by NLDNR to proceed ahead with operations.

Mix and build 35 m3 of kill fluid as required.

Mix a general 45 to 50 sec/litre viscosity water base mud for future milling operations.

13. Existing Equipment

13.1 Existing Wellhead Equipment Installed

The existing wellhead equipment is shown in Figure 13-1 and described in Table 13-1.

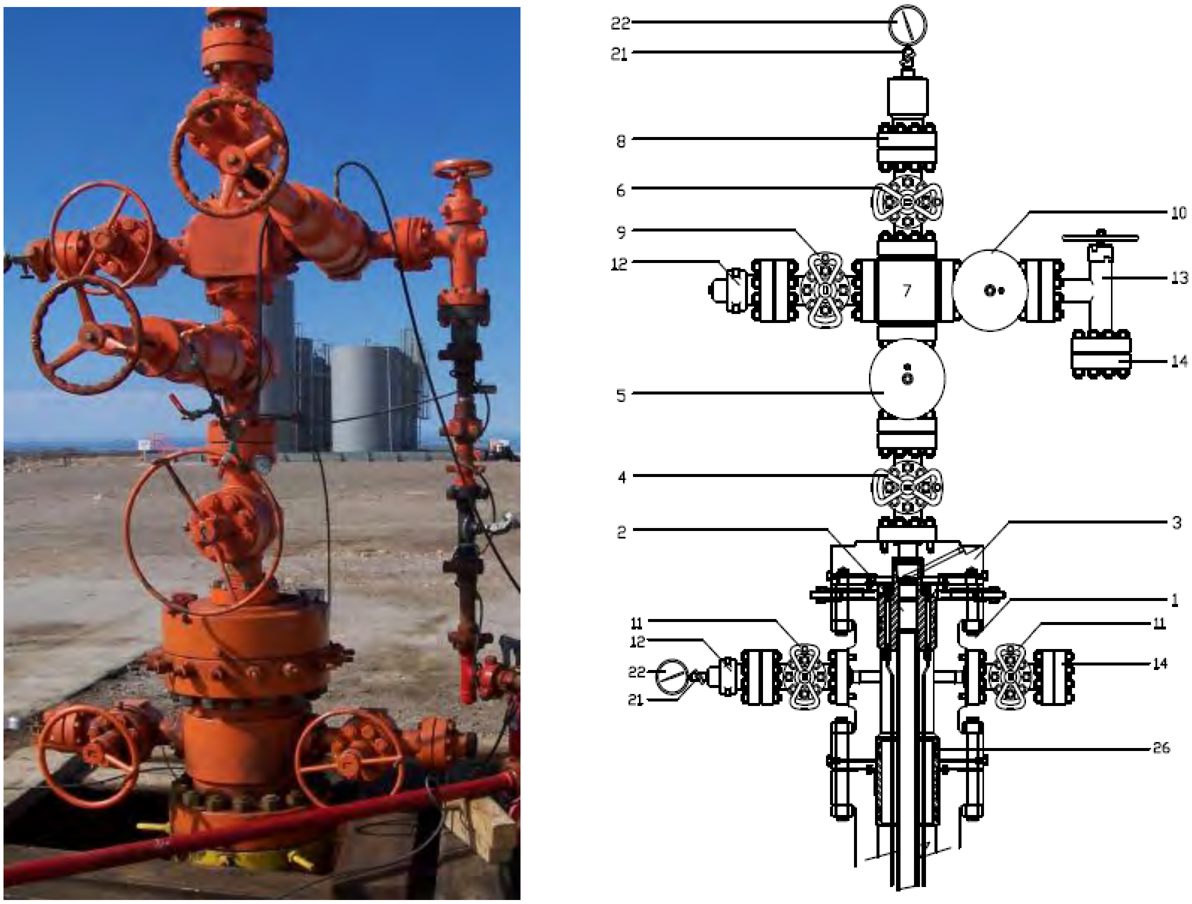


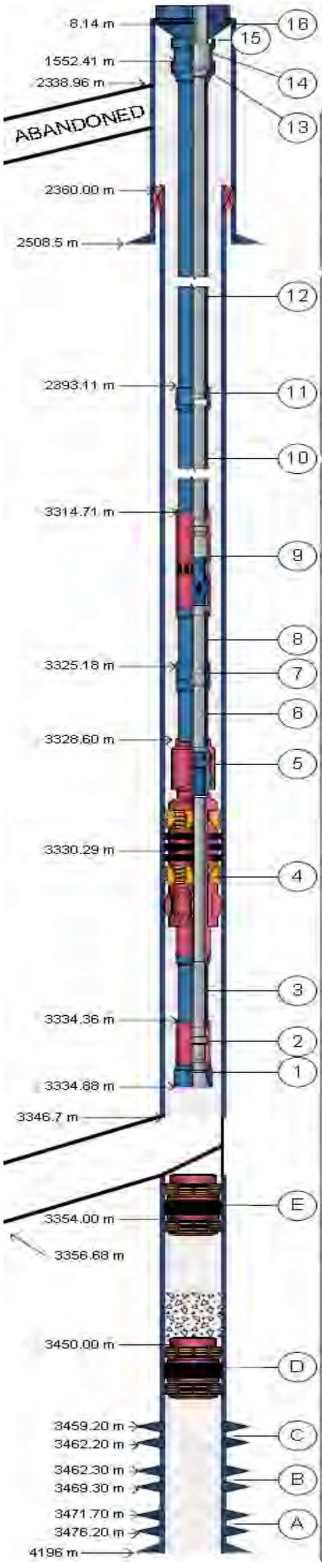
Figure 13-1: Existing Wellhead at PAP#1

Table 13-1: Description of Existing Wellhead Equipment at PAP#1

Item	Description	
1	Tubing Head Spool	11" x 10,000psi
2	Tubing Hanger	3-1/2" EUE
3	Xmas Tree Adapter Flange	11" x 10,000psi – 3-1/16" x 10,000psi
4	Lower Master Valve	3-1/16" x 10,000psi – Manual
5	Upper Master Valve	3-1/16" x 10,000psi – Hydraulic FSC
6	Swab Valve	3-1/16" x 10,000psi – Manual
7	Studded Cross	3-1/16" x 10,000psi (V) – 2-1/16" 10,000psi (H)
8	Lubricator Adapter	3-1/16" x 10,000psi – Vetco Type L
9	Service Wing Valve	2-1/16" x 10,000psi – Manual
10	Production Wing Valve	2-1/16" x 10,000psi – Hydraulic FSC
11	Annulus Access Valve	2-1/16" x 10,000psi – Manual

12	WECO Hammer Union	Fig 1502 - 2-1/16" x 10,000psi
13	Production Choke Valve	2-1/16" x 10,000psi – 1" max Orifice
14	Blind Flange	2-1/16" x 10,000psi
21	Needle Valve	½" x 10,000psi
22	Pressure Gauge	0 – 10,000psi

13.2 Existing Completion String



INNICOR COMPLETION SYSTEMS

Final Installation Report

Company	PDI PRODUCTION			Reference	GRA 524386
Prepared for	MICK HIBBERT	Client #	709-754-8149	Location	ST-2 WELL CAPE ST.GEORGE PORT AU PORT
Sales Rep	CAREY MOUNTAIN	Vendor #	780-538-4811		
Service Centre	GRANDE PRAIRIE ALBERTA	Drawn by	LEIF ANDERSON	Date	JAN.15 2007 Page 1

TUBULAR	Size	Weight	Grade	Thread	Depth
Casing	244.5mm	70.01	L-80	LT&C	2508.50
Liner	193.7mm	58.09	T-95	LT&C	4196
Tubing 1	88.9mm	13.84	L-80	EUE	1552.41
Tubing 2	73mm	11.74	L-80	PH-6 HYDRILL	2393.11
Tubing 3	73mm	9.67	L-80	CS HYDRILL	3325.18

ITEM	DESCRIPTION	I.D.	O.D.	Length
1.	73mm WIRELINE RE-ENTRY GUIDE	62.00	93.17	.13
2.	73mm L-80 Eue 1.87 "XN" NIPPLE 47.63mm X 45.49mm NO-GO	45.49	93.17	.39
3.	73mm L-80 Eue 3m PUP JOINT	62.00	93.17	3.07
4.	193.7mm 10k Eskimo Mechanical Double Grip Retrievable Packer	62.00	159.00	2.11
5.	193.7mm ON-OFF UNIT c/w 1.87 "X" PROFILE 47.63mm	47.63	159.00	.58
6.	73mm L-80 Eue 3m PUP JOINT	62.00	93.17	3.06
7.	L-80 CROSSOVER 73mm Eue PIN BY 73mm CS-HYDRILL BOX	62.00	88.90	.36
8.	73mm L-80 CS-HYDRILL TUBING JOINT	62.00	88.90	9.61
9.	73mm L-80 CS-HYDRILL SLIDING SLEEVE 1.87 "XA" 47.63mm UP OPEN – OTIS "B" SHIFT KEYS	47.63	88.90	.86
10.	73mm L-80 CS-HYDRILL TUBING (96 JOINTS)	60.22	81.29	921.25
11.	L-80 CROSSOVER 73mm CS-HYDRILL PIN BY 73mm PH-6 BOX	60.22	81.79	.35
12.	73mm L80 PH-6 HYDRILL TUBING (88 JOINTS)	57.53	87.32	840.36
13.	L-80 CROSSOVER 73mm PH-8 PIN BY 88.9mm Eue BOX	57.53	114.30	.34
14.	88.9mm L-80 Eue TUBING (161 JOINTS)	76.00	114.30	1543.47
15.	88.9mm L-80 Eue 1.2m PUP JOINT (PIN BY PIN)	76.00	88.90	1.13
16.	TUBING HANGER FLANGE 88.9mm BY 193.7mm	76.00	193.70	.22
	KB – THF 8.14m			
	4000 daN COMPRESSION -0.55m			
A.	PERFORATIONS 3471.70 – 3476.20 mkb			
B.	PERFORATIONS 3462.30 – 3469.30 mkB			
C.	PERFORATIONS 3459.20 – 3462.20 mkB			
D.	PERMANENT BRIDGE PLUG 3450.00 mkb c/w CEMENT TOP			
E.	WHIPSTOCK BRIDGE PLUG 3354.00 mkb			

NOTES

193.7mm ESKIMO 10k PACKER SET IN 4000 daN COMPRESSION.
RIGHT HAND TO RELEASE.
PRESSURE TEST CASING TO 7mpa FOR 15 min. SOLID TEST.
90-80-90 HSN ELEMENTS AND SEALS.
4 STEEL RELEASE SHEAR PINS.
800 DRAG BLOCKS,6 SPRINGS.

193.7mm ON-OFF UNIT 1.87 "X" 47.63mm "X" PROFILE
HSN BONDED SEALS
LEFT TO COME OFF.

SLIDING SLEEVE 1.87 "XA" 47.63mm "X" PROFILE
UP TO SHIFT OPEN
USE OTIS "B" SHIFT KEYS

13.3 Existing Wellbore

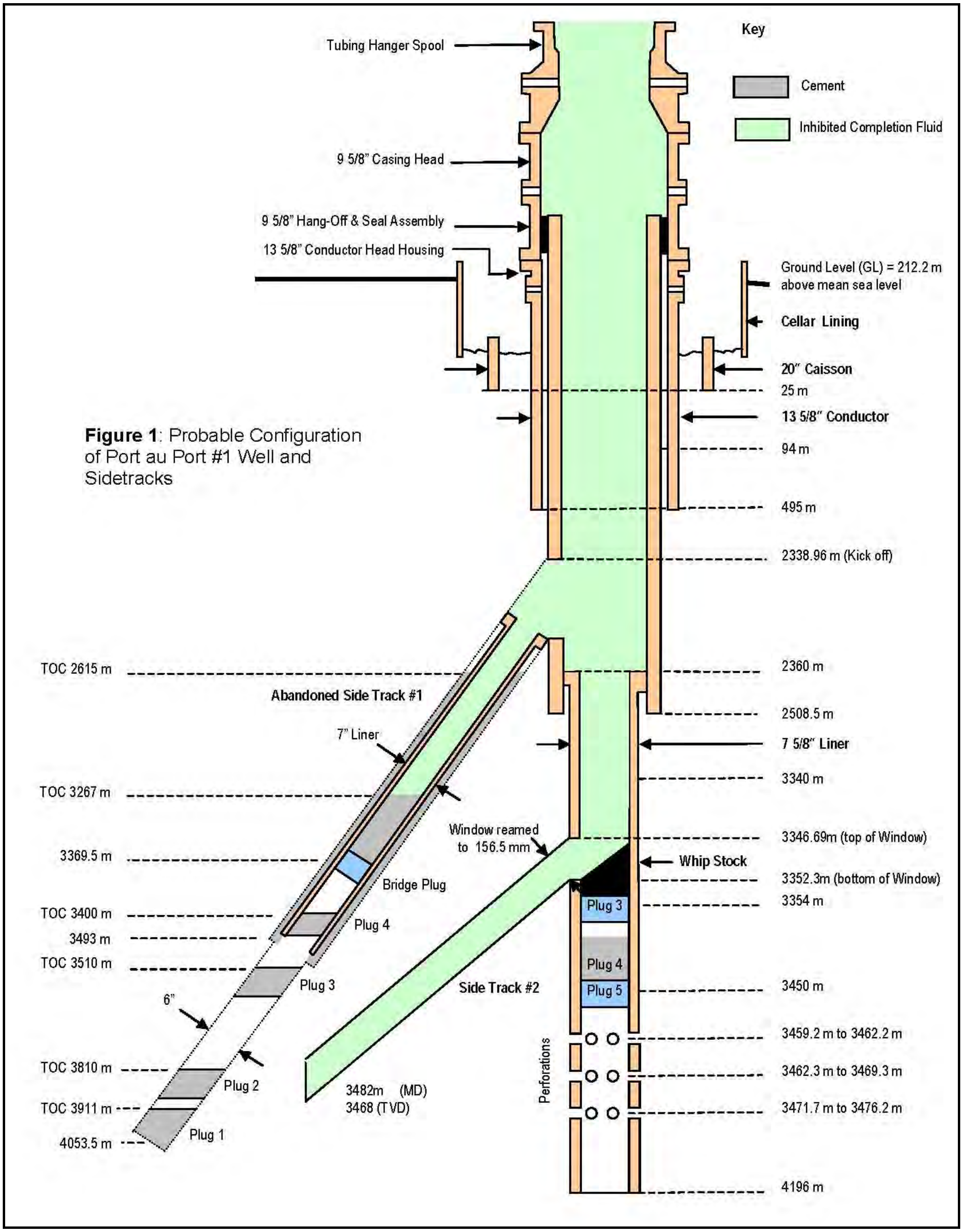
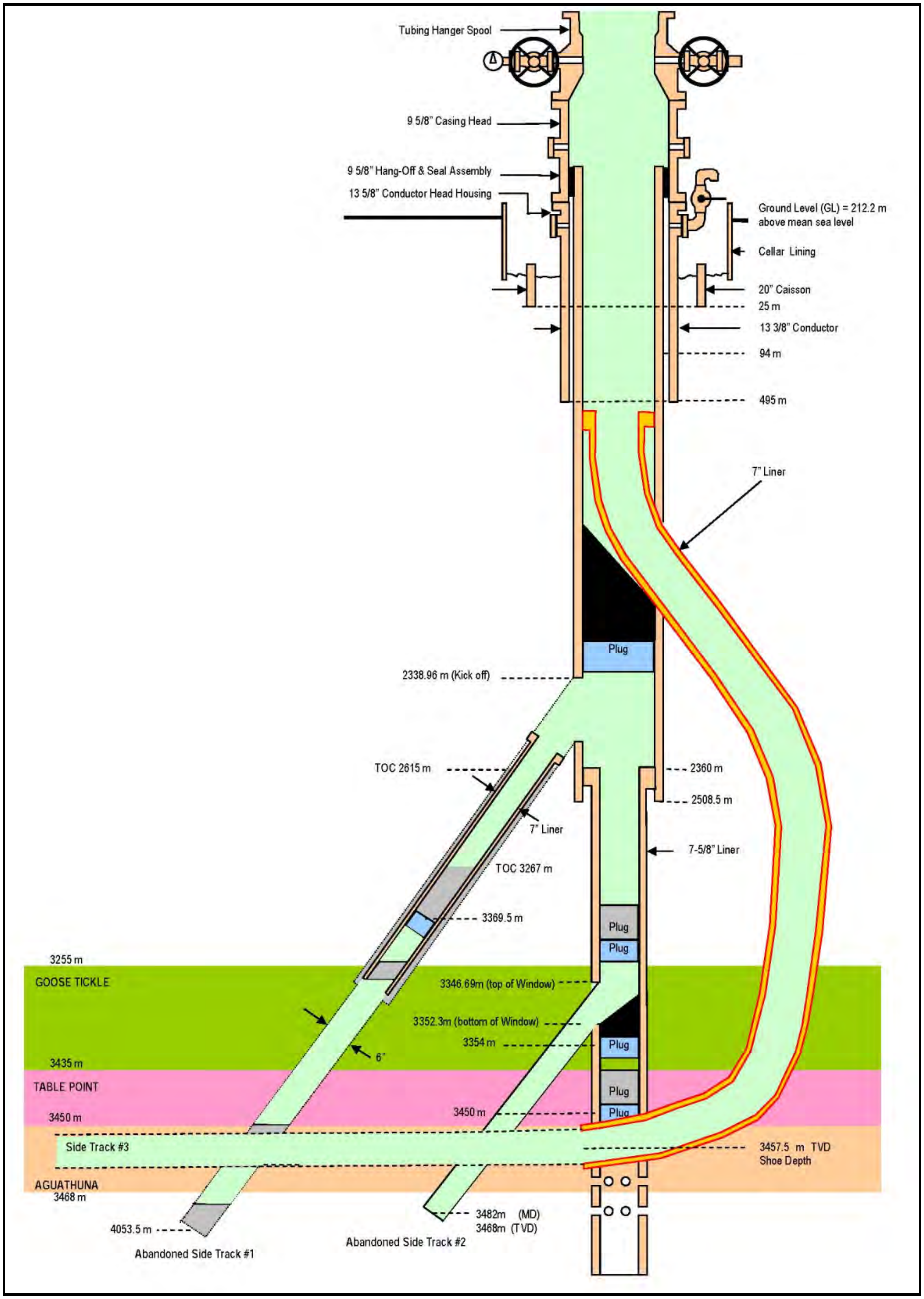


Figure 1: Probable Configuration of Port au Port #1 Well and Sidetracks

14. Planned Wellbore



15. BOP Pressure Testing Procedure

Hold safety procedures meeting and develop a JSA for the following pressure testing work.

Bleed down pressure from 16,000 kPa to 2,500 kPa, if fluid arrives at surface flow back to the production tank farm.

Rig in Vetco wellhead services. Using lubricator, install a one-way backpressure valve into existing tubing hanger.

Bleed off wellhead to ensure backpressure valve is installed properly. Wait 30 minutes after bleed down to ensure the BPV does not leak. Note that bleed-off fluid may be gas or crude oil; suitable precautions to be taken for venting and possible minor spill.

Disconnect lubricator and lay out same.

Refer to Vetco professionals and manual for complete detailed procedure on backpressure valve installation and removal.

Remove the xmas tree and carefully set aside on a transportation palette for shipping to the Vetco facility in St. John's.

Remove the wellhead xmas tree adapter flange (279.4mm x 70 MPa) and carefully set aside in the PDIP storage container. This flange will not be required for re-completing the well.

Install 279.4mm by 70 MPa (10,000 psi) x 340mm by 35 MPa (5,000 psi) DSA flange.

Install the stump tested 340mm by 35 MPa BOP system.

Function test the lower rams 73mm (2-7/8").

Function test the upper rams 88.9mm (3-1/2").

Function test the blind rams.

Pick up one joint of 73mm (2-7/8") L-80 EUE tubing with "Short" 73mm (2-7/8") L-80 EUE X 88.9mm (3-1/2") L-80 EUE crossover on the bottom and screw into the "Dognut" (leave BPV in-place "DO NOT REMOVE").

Function test the annular preventer onto the 73mm (2-7/8") tubing.

Pressure test annular preventer to a low / high of 1400 kPa and 21,000 kPa. Pressure test the flange and ring groove connection to 1400 kPa and 21,000 kPa.

Bleed of pressure and open annular preventer.

Pressure test lower rams 73mm (2-7/8”) to a low / high of 1400 kPa and 21,000 kPa. Pressure test the flange and ring groove connection to 1400 kPa and 21,000 kPa.

Bleed of pressure and open lower pipe rams, record proper space out.

Lay down joint of 73mm (2-7/8”) L-80 EUE tubing with “Short” 73mm (2-7/8”) L-80 EUE X 88.9mm (3-1/2”) L-80 EUE crossover

Pick up one joint of 88.9mm (3-1/2”) L-80 EUE tubing and screw into the “Dognut” (leave BPV in-place “DO NOT REMOVE”).

Function test the annular preventer onto the 3-½ tubing.

Pressure test and function test same to a low / high of 1400 kPa and 35000 kPa. Pressure test the flange and ring groove connection to 1400 kPa and 35000 kPa.

Bleed of pressure and open annular preventer.

Pressure test upper rams 88.9mm (3-1/2”) L-80 EUE to a low / high of 1400 kPa and 21,000 kPa. Pressure test the flange and ring groove connection to 1400 kPa and 21,000 kPa.

Bleed of pressure and open upper 3-½” pipe rams, record proper space out.

“DO NOT REMOVE” the backpressure valve from tubing hanger.

16. Well Kill Procedure

Hold safety procedures meeting and develop a JSA for the following well kill procedure.

This procedure is undertaken using the drilling rig equipment.

Prepare 25 m^3 of kill fluid in the rig tanks.

Install 88.9mm (3-1/2”) L-80 EUE pup joint c/w inline safety valve and thread into top of tubing hanger above the BPV.

Apply 5,000 kPa of back pressure to the "Casing & Tubing" annulus with water as required.

Install rig top drive onto the 88.9mm (3-1/2") L-80 EUE pup joint.

Commence killing well by pumping 15 m^3 of kill mud down the tubing "Bullhead Kill".

Bleed off gas pressure slowly to rig flare tank if required. Pump and bleed as necessary.

After 15 m^3 of kill mud has been "Bullhead Kill" down the tubing, bleed off pressure and flow check tubing.

Ensure well is dead.

Bleed off the 5,000 kPa of back pressure to the "Casing & Tubing" annulus. Bleed off annulus, ensure annulus is dead.

Release tubing hanger lock-down bolts and hoist tubing upwards and come off the packer with the on/off tool.

Reverse circulate down casing "Bullhead Kill" the annulus volume as required to kill the well and stabilize the annulus and tubing.

Once well is completely dead then continue to Section 17: Completion String Removal Procedure.

17. Completion String Removal Procedure

Hold safety procedures meeting and develop a JSA for the following procedure.

Rig up 88.9 mm tubing handling equipment.

Lower tubing slowly and latch back onto packer with on/off tool.

Unset 193.7 mm 10K Eskimo DG packer set at 3329.18 mKB.

Once packer is unset, pause for one hour to allow packer elements to relax.

Reverse circulate well with kill mud and condition same.

If packer pulls free then trip tubing out of the hole and lay out tubing string and packer.

Note that the well has three tubing types: -

1. Tubing 1 88.9mm (3-1/2”) L-80 EUE
2. Tubing 2 73mm (2-7/8”) L-80 PH-6 Hydril
3. Tubing 3 73mm (2-7/8”) L-80 CS Hydril.

Pull out of hole and lay out 161 - 88.9 mm 13.84 kg/m L-80 tubing joints onto pipe racks.

NOTE: Use caution while breaking apart thread connections and install thread protectors before laying out all existing tubing.

Rig up 73.0 mm tubing handling equipment.

Pull out of hole and lay out 88 – 73.0 mm 11.76 kg/m L-80 Hydril PH-6 tubing joints and 96 – 73.0 mm 9.67 kg/m L-80 mm Hydril CS onto pipe racks.

Remove 193.7 mm 10K Eskimo DG packer c/w bottomhole assembly and lay out same.

If unable to latch on, then leave packer in hole and pull out of hole.

Lay out tubing string as per above.

18. Sidetrack Operations

There are two existing sidetracks in PAP#1 well:

1. ST#1 – Plugged and abandoned
2. ST#2 – Current producer but will be cleaned out, logged, then tested and then plugged and abandoned during this campaign

This portion of the program is initiated when the tubing is pulled from the wellbore and the well is dead under a hydrostatic column of fluid.

18.1 Clean out of Sidetrack #2

After the completion string is laid down and wellbore is stable, pick up and make up flex BHA string for clean out of the sidetrack #2 wellbore. RIH and clean out from 2 joints above the packer seat are down to the window of ST#2, make sure that we maintain mud density to maintain well control with the drilling fluids.

Clean down from the window to TD of ST#2 one joint at a time making sure that the wellbore is cleaned up as we go and make sure that we maintain mud density to maintain well control with the drilling fluids. If wellbore becomes unstable stop and condition wellbore and fluids prior to proceeding to bottom.

Once the well bore is cleaned up wiper trip to above the window back to TD circulating 2 bottoms up, and then repeat this operation a second time. If we have problems getting into or out of the window section then a mill & TBR mill run will be conducted to clean up the window as required. When hole is clean and stable POOH to run logs for ST#2 as described below.

18.2 Logging Operations for ST#2

The following logs will be run on wireline along the entire 136 m length of Sidetrack #2:

- Gamma Ray
- Caliper
- Resistivity
- Borehole Compensated Sonic
- Neutron Porosity
- Density Porosity/Photoelectric
- Fullbore Formation MicroImager (FMI)

This wireline logging will be conducted by Schlumberger Oilfield Services. Prior to logging the sidetrack, in order to obtain additional reservoir and geological data, ST#2 will be extended. The length of the extension is unknown, but the intent is to determine the base of the Aguathuna Formation by penetrating into the Costa Bay Member.

18.3 Testing Procedure in ST#2

After logging ST#2 pick up BH-DST tools. Confirm the actual tool design and testing procedures with the office prior to picking up any tools. The actual positioning of recorders will be critical to the test. Make sure that we have a minimum of 1 recorder above the tools, 2 inside recorders below the packer, inside the interval, 2 outside recorders below the packer and inside the interval, and 1 BH recorder. The packer will be set in the intermediate casing with a DP stringer running into the ST#2 section. Do not run the DST tools or packer past the window section.

18.3.1 Recommendation for testing the well PAP#1 – ST#2

The well PAP#1 – ST#2 (sidetrack from the main borehole PAP#1) is planned for re-entering and testing to evaluate production perspectives of the Aguathuna Formation of the Garden Hill South field (Newfoundland, Canada).

Previously a number of tests were carried out in the main borehole (well PAP#1) and ST#2, showing oil rates of up to 1700 and 145 bopd, respectively. Earlier, the main borehole (PAP#1) was under pilot production for a total of 13 days and produced almost 8000 barrels of oil with some water.

However, the main borehole was abandoned and the available information on DST for ST#2 did not allow for a full description of the production potential at this location. Recent test analysis suggests that the same boundary was seen in both PAP#1 and in ST#2, contrary to the earlier interpretation which proposed a fault between the two penetrations. If the recent interpretation is correct then this might suggest that ST#2 is close to a gas leg (above the condensate leg).

18.3.2 Well Test Program for ST#2

The main objectives of testing the well PAP#1-ST#2 are:

1. to confirm the reservoir parameters obtained previously (DST2 in 2002);
2. to quantify the connected reservoir volume.
3. to establish whether the free gas seen in the earlier ST#2 test is rate dependent

The previous interpretation of DST 2 suggested that the oil flowed mainly from the lower part (10-20 metres) of the open hole section (3,335 to 3,482 metres AHD). Previously it has been assumed that most of the gas came from the upper part of the hole; hence the requirement for a new test aiming to conclusively resolve where the gas and oil is coming from and establish whether the ST#2 is proximal to a gas leg or not.

The previous estimation of reservoir permeability (around 6.5mD) was used to derive the relationship between duration of the flow period and radius of investigation:

Time, hrs	6	12	24	48	72
Radius, ft	200	290	410	580	710
STOIIP, Mstb	39	78	160	310	470

Based upon the above considerations, the recommended well test plan is as following:

1. Run in tubing string and set the packer
2. Run-in and locate autonomous pressure / temperature gauges to the tubing shoe and record the static survey, hang off the gauges
3. Flow the well at maximum rate until cleaned up (expect less than 1 hour)
4. Shut in for preliminary build up for 2 hours
5. Produce the well at 1/3 maximum clean up rate for 12 hours with frequent FBHP/FTHP readings and ½-hourly cumulative production reports
6. Increase well rate to 2/3 maximum clean up rate for 12 hours and then open up to maximum rate for further 12 hours
7. Produce for at least 24 hrs at the maximum oil rate with frequent FBHP/FTHP readings and ½-hourly cumulative production reports
8. Shut-in the well for 96-120 hours and continue frequent SIBHP/SITHP readings
9. Pull out the pressure / temperature gauges and record the static survey.

The recommended frequency of wellhead and down hole pressure readings is 15 seconds initially and this can be reviewed as the test progresses. Cumulative production of oil, water (if present) and gas should be reported on ½ hourly basis and additionally before the flow mode (rates or choke sizes) is changed.

18.4 Abandonment of Side Track #2

After all DST tools are back out and laid down continue on with the abandonment of ST#2, but confirm with the office after the DST data has been recovered.

Hold safety procedures meeting and develop a JSA for the following procedure.

Run in the well with DP and a 152 m bit with casing scraper, into the top of the 194 mm casing liner lap (@ 2360 m).

Run in two stands to be sure the area is clean for a Composite Bridge Plug.

Work the casing scraper through the area to provide a suitable surface to set the composite plug by wire line .

Circulate to ensure area is cleaned of any potential sloughing of formations.

POOH with the bit and casing scraper.

RIH and set 194 mm (7-5/8") Weatherford type bridge plug on either wireline or drill pipe a minimum of two joints inside the liner lap. The tools are to be sent out with either option for setting.

Set the Composite plug just above ST#2 located at +/- 3320 m. (Confirm setting depth with Nisku and St. John's).

Maximum speed on wireline is 35 m/min and 15 m/min on drill pipe.

After setting the plug dump bail or place 8 linear metres of cement on top of plug.

Due to open hole on ST#1, do not attempt a pressure test over 7 MPa on lower plug without consultation of the drilling Project Manager.

RIH and set 244.5 mm (9-5/8") Weatherford type bridge plug on either wireline or drill pipe. The tools are to be sent out with either option for setting.

Set the Composite plug just above ST#1 located at 2329 m.

Preferred location is 2329 m since it is free of connections and any wellbore interference.

After pressure testing the plug dump bail or place 8 linear metres of cement on top of plug.

19. Casing & Bond Log Evaluation

Hold safety procedures meeting and develop a JSA for the following procedure.

Rig up electric wireline (E-line) truck.

Run in hole with casing evaluation logging tools c/w CBL logging tools to 2329m or top of cement abandonment plug.

Log from T.D. to surface with the casing evaluation logging tools, but the CBL needs only to be logged from T.D. up to 1400m.

Ensure that logging tools are set on depth.

Once logs are completed send data immediately to Nisku Office for evaluation before proceeding with the perforating program below.

20. Perforating Interval

Hold safety procedures meeting and develop a JSA for the following procedure.

After evaluation of the cement bond log has confirmed that no cement exists behind the 244.5 mm casing string.

CONFIRM PERFORATING INTERVAL BEFORE MOVING AHEAD

Hold safety procedures meeting and develop a JSA for the following procedure.

INITIATE COMPLETE LEASE RADIO SILENCE INCLUDING ALL CELL PHONE UNITS. ALL CELL PHONES TO BE HANDED TO THE SITE SAFETY REPRESENTATIVE FOR LOGGING BEFORE CONTINUING FURTHER.

Rig up electric wireline (E-line) truck.

Make up perforating guns as required at the sidetrack interval that will be cement squeezed.

There are casing collars at 2191, 2205, 2319 and 2332 metres.

The interval to be perforated is 2306– 2318 m. Schlumberger wireline guns to be loaded at 12 SPF and phased at 135/45 degree phasing.

Pending tool weights and lengths the run may have to be broken into two separate runs for wireline operations.

Confirm gun weights and availability via Halifax and St. John's facilities.

21. Remedial Cement Squeeze Operations

Hold safety procedures meeting and develop a JSA for the following procedure.

After perforating has been complete run into well with bit and casing scraper to 0.5 metres above the top of the composite bridge plug and circulate the wellbore to clean up any perforating debris.

Note: Open the vent valve on the 304mm casing bowl so that there is no pressure build up behind the 304mm casing in the event that there is no cement and communications is established.

Shut in the wellbore via the annular and take an injection test rate at 0.25m^3/min for 5 minutes, 0.5m^3/min for 5 minutes, 0.75m^3/min for 5 minutes, and 1.00m^3/min for 5 minutes.

Observe 304mm casing bowl vent valve for fluid egress and/or pressure build-up in the 244.5mm (9-5/8”) casing. Record pressure and monitor annulus of 244.5 mm (9-5/8”) casing for any pressure build up. Note pressure on Morning Reports.

With open ended DP above composite plug at 2332 m, circulate and spot as a balanced plug of 8.0 m^3 of cement.

Pull out of plug to approximately 2130m and reverse circulate one and one-half DP volume to ensure no excess cement remaining inside.

Cement Blend is 0:1:0 + 0.5% CD-31 + 0.3% FL-63 + 0.2% R-3. Details attached in BJ Program.

Annular Volume – 0.029 m^3/m

Casing Capacity – 0.041 m^3/m

Execute a running hesitation squeeze with 8.0 m^3 of 0:1:0 cement:

a) Inject 2.5 m^3 of cement into perforations at 0.5 m^3/min
b) Hesitate for 15 minutes and hold pressure constant
c) Inject 1.5 m^3 of cement into perforations
d) Hesitate for 15 minutes and hold pressure constant
e) Inject 1.5 m^3/min of cement into perforation
f) Hesitate for 15 minutes and hold pressure constant
g) Inject 0.5 m^3/min and record injection pressure
h) Shut-in and monitor pressure for 8 hours

With each injection the pressure should slowly start to build. Record pressures and shut-in on surface while hesitating. Refer to slurry properties enclosed.

22. Whipstock Procedures and Diagrams

Hold safety procedures meeting and develop a JSA for the following procedure.

Pick up and make up a bit and scraper assembly.

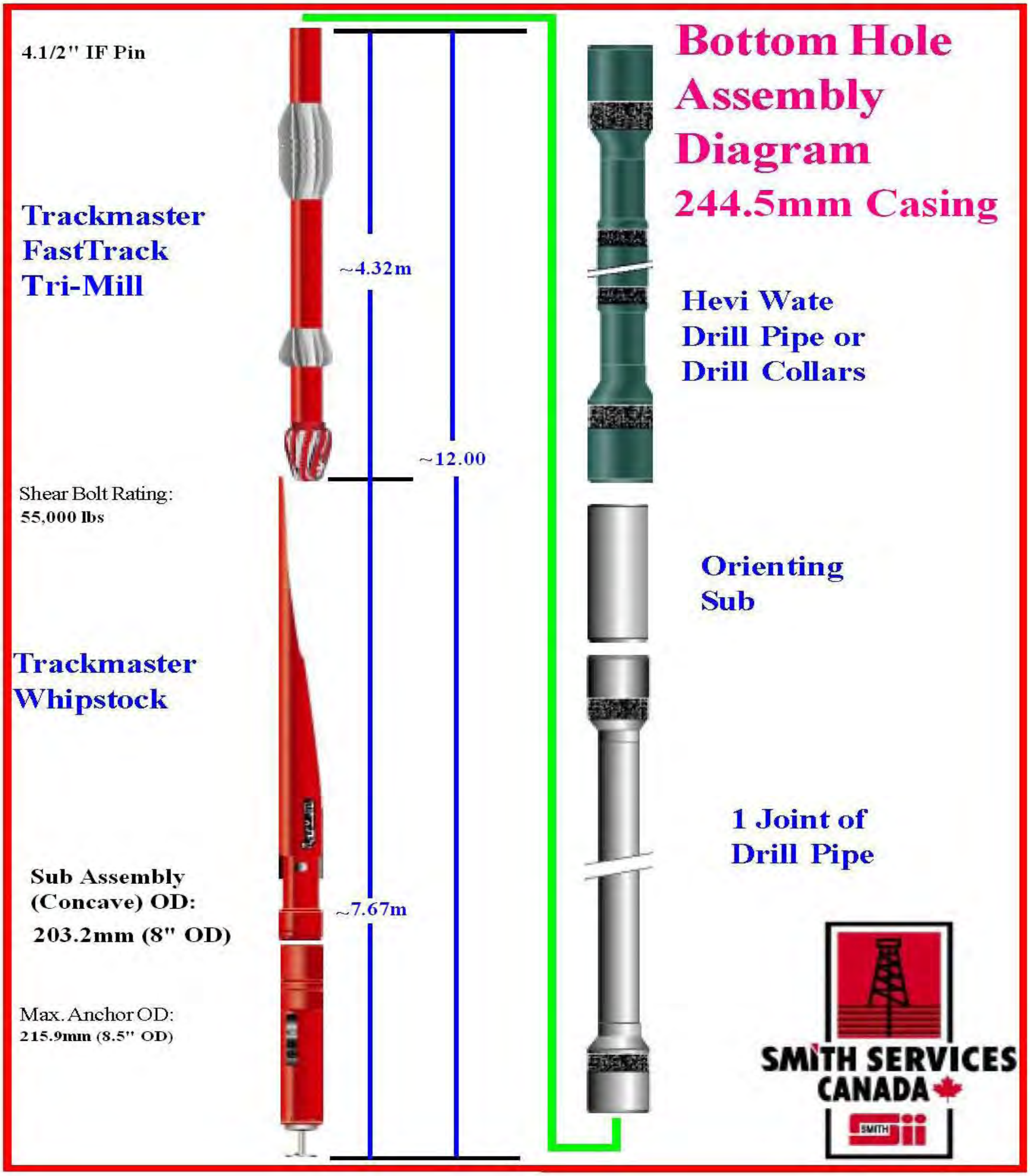
The cement will be polished down to 2315 m with a bit and scraper assembly.

After polishing the plug circulate the wellbore clean prior to picking up the whipstock assembly.

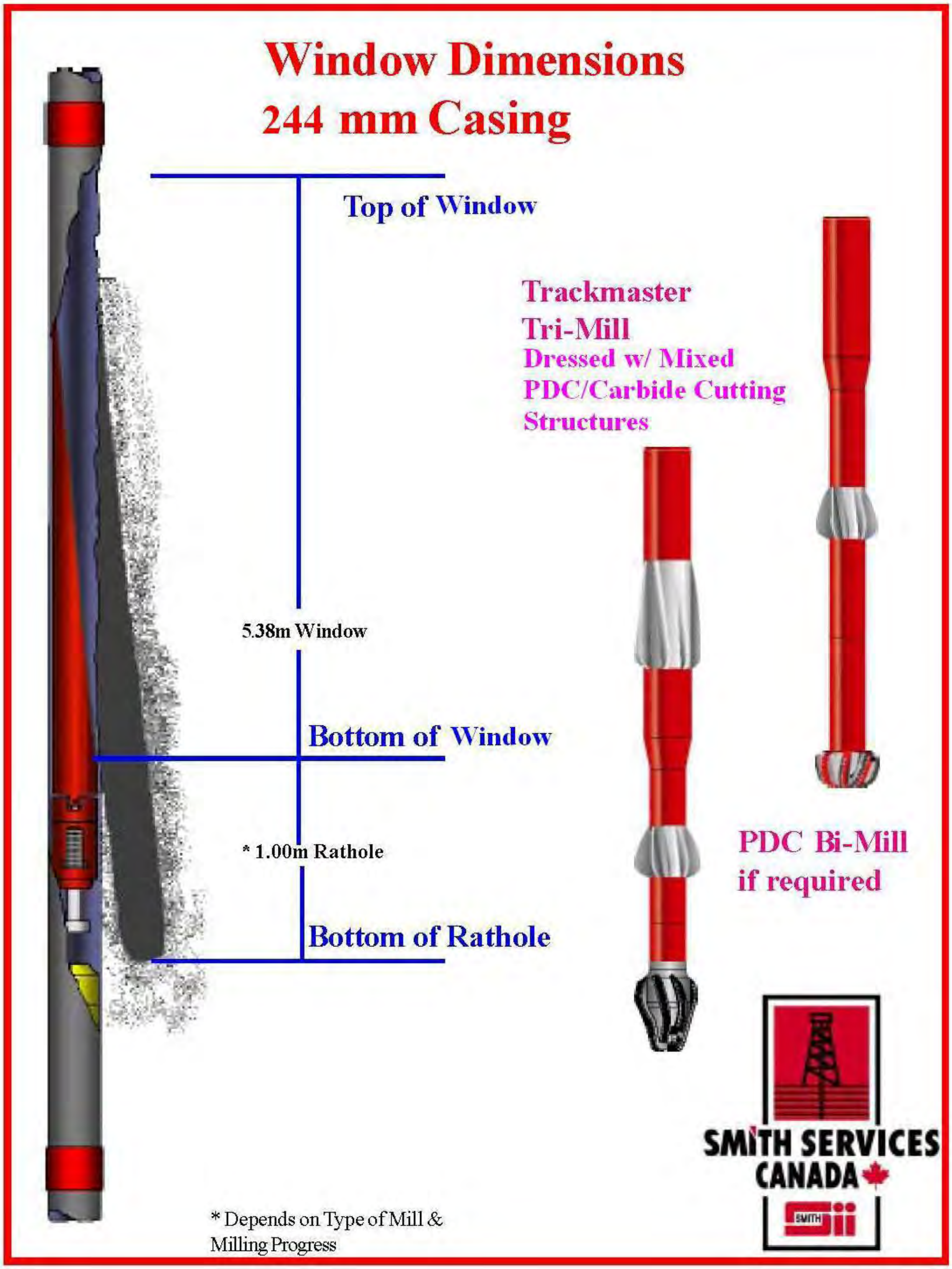
The whipstock assembly will be run in and bottom set on top of the cement plug.

The sidetrack will be initiated following the procedure bellow.

If set according to plan mill will exit casing from 2307 m to 2313.7 m and leave 4 metres as a minimum of cement squeezed perforations below.



4.1/2" IF Pin
Trackmaster FastTrack Tri-Mill
~4.32m
~12.00
Shear Bolt Rating:
55,000 lbs
Trackmaster Whipstock
Sub Assembly (Concave) OD:
203.2mm (8" OD)
~7.67m
Max. Anchor OD:
215.9mm (8.5" OD)
Bottom Hole Assembly Diagram
244.5mm Casing
Hevi Wate Drill Pipe or Drill Collars
Orienting Sub
1 Joint of Drill Pipe
SMITH SERVICES CANADA
SMITH


Window Dimensions
244 mm Casing
Top of Window
Trackmaster
Tri-Mill
Dressed w/ Mixed
PDC/Carbide Cutting
Structures
5.38m Window
Bottom of Window
* 1.00m Rathole
PDC Bi-Mill
if required
Bottom of Rathole
SMITH SERVICES
CANADA
SMITH
* Depends on Type of Mill &
Milling Progress

1. General Job Description:

Make up the suggested BHA and run the retrievable Mechanical Trackmaster to the desired depth. Orient the whip face using a gyro or MWD*, then set weight down to set slips and shear mill off whip, and start milling. A complete back-up Whipstock system will be on location.

2. Pre-Job:

a) Have meeting with Wellsite Supervisor, Toolpush, Driller, direct. Driller and gyro rep. and discuss the job procedure.

b) Casing Scraper & Gauge Ring Runs - Verifies casing ID and removes any corrosion scale or wax buildup and reduces the chance of getting stuck. The Smith operator will run a window mill and watermelon mill combination to verify the ID and clean up the existing casing.

c) Casing Collar Log (CCL) - Locates collars to ensure bottom of whipstock is 0.6 - 1.8 m above the nearest collar at the proposed setting depth. Ensures window is not milled through a collar.

d) Pipe Tally - Establish and ensure pipe tally remains constant through out job, Smith operator must be made aware of any changes to it.

e) Set cement or bridge plug at desired depth.

f) Prepare mud for good milling practices: 35-50 viscosity and a yield point of 10 or greater.

g) On last trip out with drill string or when picking up the drill string, a special bored and fluted drill pipe drift should be used to check the drill pipe drift. The passage of the drift ensures that the wire line equipment will pass through.

3. BHA:

a) Pick up the Trackmaster from catwalk, lifting eye is at back of whipstock, and set in mouse hole or rotary table (rams shut).

b) Pick up Trackmaster Mill and bolt lead mill to whipstock. Remove setting plunger cover.

c) Make up the BHA shown in program. **(Mill, 1 joint of Drill Pipe, Orienting Sub, HWDP and Drill Collars (if required).)** **Minimize** cross over subs to keep the BHA more flexible above the mill and minimize the risk of twist offs.

d) The Trackmaster will be oriented with a gyro or MWD*. Scribe a line from whipface to orientation sub to line up key.

e) Make up drill string weight to at least 1250-6250 daN (2750-14000 lbs) of milling weight. 22,200daN or 50,000lbs. is the required set down weight. Indicate drill string components:

f.) Trip into the hole slowly to within 15 meters (50 ft) of bridge plug. **DO NOT RUN INTO BRIDGE PLUG AND SET THE ANCHOR.** Work the drill string to determine hole drag. Monitor and record hole drag.

4. Orientation of Trackmaster:

a) The bottom of the Trackmaster must be **0.6 to 1.8 m above a casing collar**. Run in to within 3 m of plug and orient whipstock, ie. note toolface and work pipe as required to achieve desired orientation, repeat as required.

5. Setting Trackmaster:

a) Slowly lower whipstock and tag plug, recheck orientation.

b) Start setting weight down, approx. 1600 daN (3600 lbs) is required to shear plunger rod shear screw on the bottom of anchor. This releases the setting spring and moves the slips to the casing I.D. Pick up the whipstock 0.3 to 1.0m to ensure the slips have released. Verify orientation. Set down weight, approx. 25,000 daN (55,000 lbs) is required to break shear bolt.The whipstock is now set.

6. Window Milling:

a) After shearing bolt, pick up mill 0.6-0.9 m (2-3 feet) above whip, set rotary speed at 60-80 RPM and pump minimum 700 liters/minute (optimum 1135lpm). Record rotary speed, torque, circulation rate and pressure. Slowly lower mill until it contacts the whip.

b) A light amount of weight (0.5 – 1.0kdaN) should be used during the initial milling.

c) Mill the window under the following parameters:
    1000 – 5500daN (2 – 12klb) for weight on mill
    60 – 120 RPM for rotary speed

Any parameters over the above figures requires a sign off on the operator representative on location.

NOTE: When the center point is reached, a decrease in torque and/or penetration may be experienced. Should this occur, increase the weight on the mill and decrease the RPM. This will cause the mill to flex away from the face of the whipstock and off the center point. When the center is passed, an increase in penetration and torque will be recognized. After 0.3m of penetration at the increased weight, bring the milling weight and RPM back to the previously used values and continue milling the window.

NOTE: Annular cement and formation can affect the required RPM and weight needed to mill the window.

d) If the penetration rate falls below what is expected for the amount of time milling, pull out of the hole. Replace the mill and continue milling.

NOTE: Change out to a different fully inspected drill pipe joint after each mill run.

NOTE: **Weights and torques are for general reference only and may be adjusted as required. fisherman**

7. Mill the Rat Hole:

a) To dress window properly, the rathole must have a minimum depth of 1.00 m (3.3 ft). It must be at least the length from the bottom of the mill to the mid point of the top mill.

b) Make several passes through the window to clean up any burrs and check against any possible fill. After reaming, stop rotary and let the mill slide down through the window. If unusual drag is encountered, ream until smooth.

c) Circulate hole clean and pull out.

d) Inspect the condition, wear patterns and gauge on the mills to verify that the window's condition is acceptable.

8. Reamer Run (If Required):

If the dress mill is 3mm (1/8") or greater under gauge or if the window could not be finished on the first run, run in the Back-up mill and redress the window

If the dress mill is less than 3mm (1/8") under gauge and the window is smooth, the job is complete.

* **Note:** If there is sufficient hole angle, the orientation can be done with the MWD tool. This would save the cost of the gyro tools and the subsequent gyro runs to ensure proper orientation. There should be 5 – 8 degrees of angle in the hole for MWD orientation.

pdiproduction

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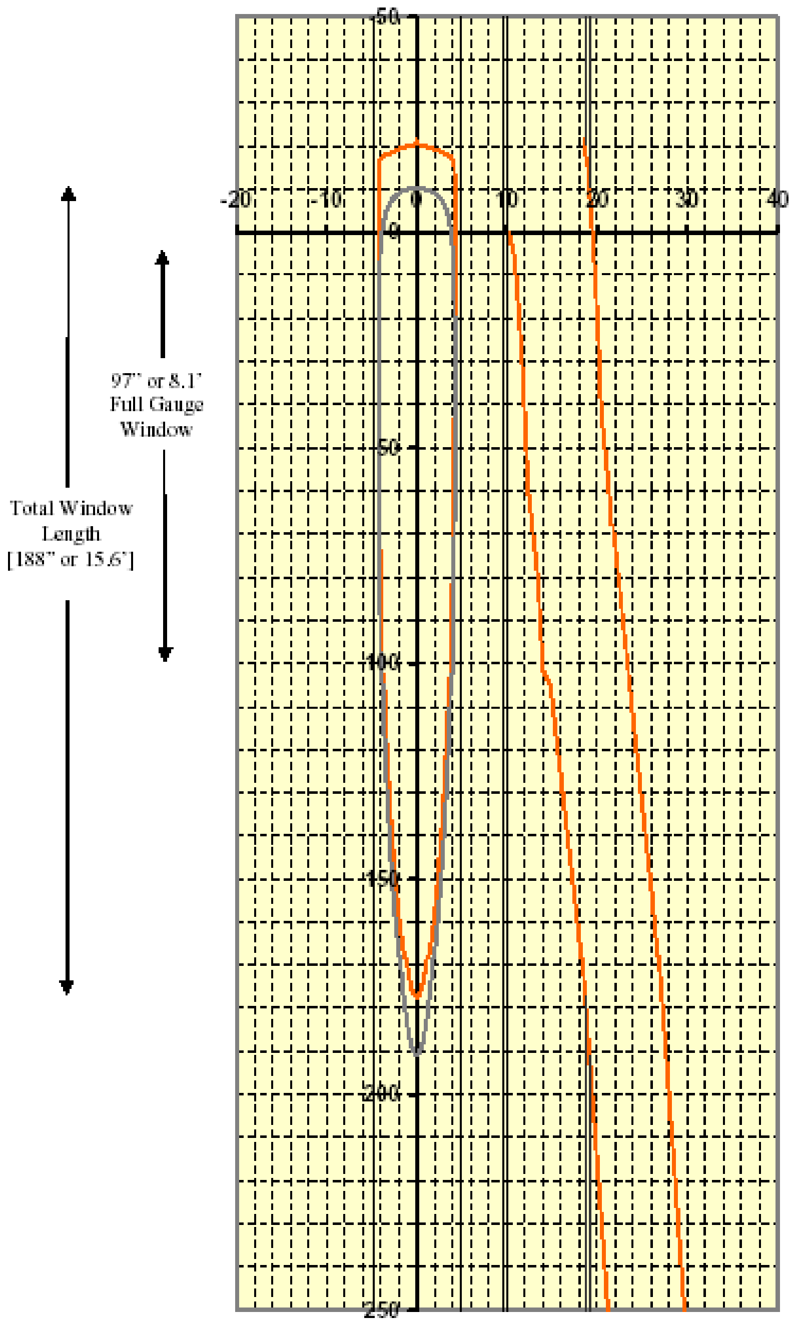


Casing Data:

9 5/8” - 47 lbs/ft
OD - 9.625”
ID - 8.681”
Drift ID - 8.525”

Whipstock Sub-Assembly
Number: *30016108*

Bimill Assembly
Number:
Mill Dia: 8.50”

DLS Calculation:

Liner size: 7 5/8”
Radius Of Curvature: 435 ft
Dogleg Severity: 13.18 Deg / 100ft

Weight of Casing Removed: 212 Lbs

** The orange line represents the Mill assembly contacting the inside wall of the casing in the front view*

SCALE: INCHES

9 5/8” Trackmaster Plus Bimill Window Profile Prediction

23. Directional Drilling Program

MERIDIAN DIRECTIONAL SERVICES INC.

Job Number: Preliminary Sdtrk #3
Company: PDI Production Inc.
Lease/Well: Garden Hill South
Location: Port au Port #1 (ST #3)
Rig Name: TBA
RKB: 220.0m Est
G.L. or M.S.L.: 212.5m Est

State/Country: Newfoundland / Canada
Declination: -20.57
Grid: Planned to NAD 83
File name: W:\COMPAN~H\PDI_PR~U\GARDEN~I\PRELIM.SVY
Date/Time: 03-Jun-08 / 08:48
Curve Name: Final Version 5: ST #3. KOP @ 2308m TVD

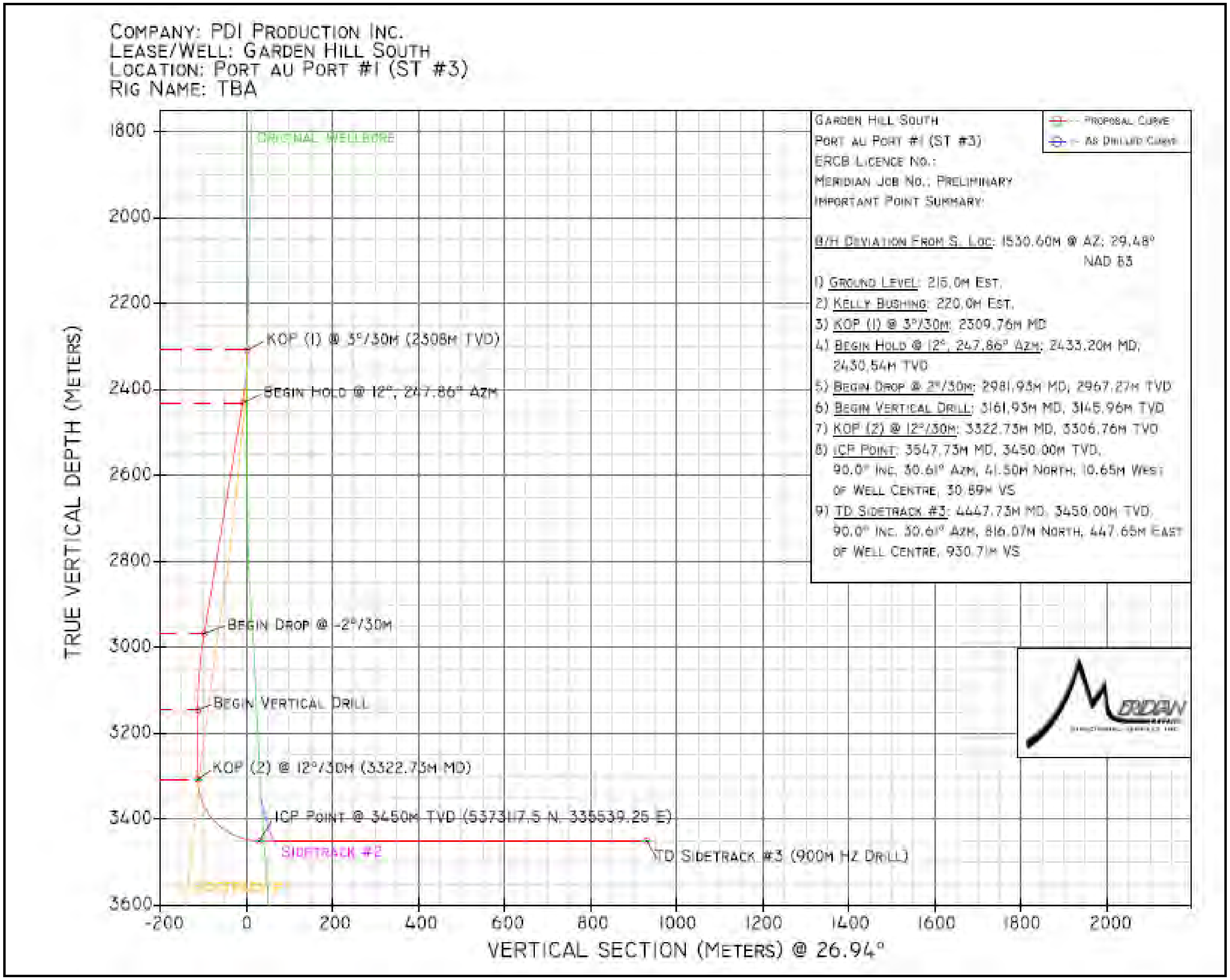
Meridian Directional Services Inc. Main: (403)269-8828 Fax: (403)264-8829

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 29.48
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

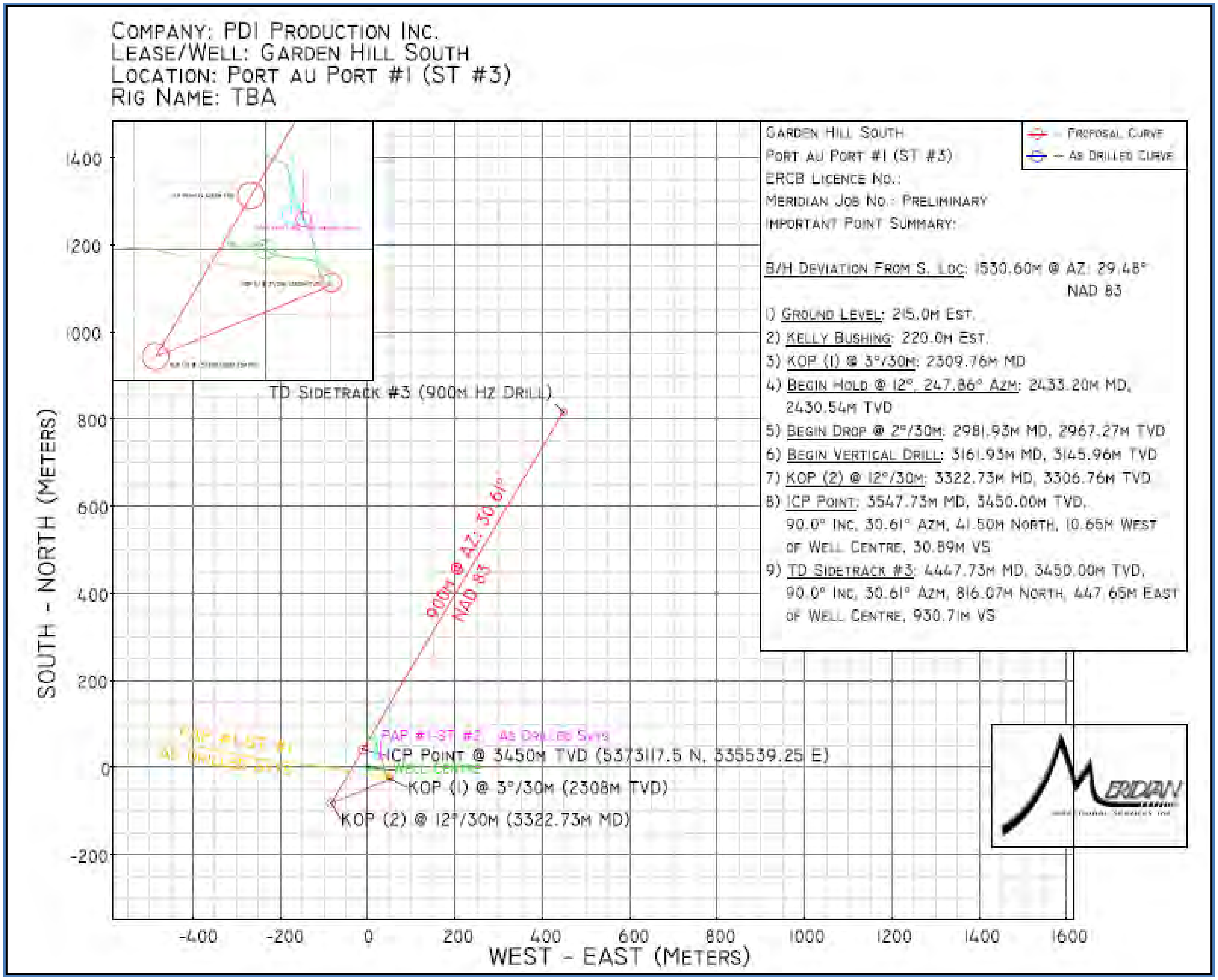
Measured Depth Meters	*Incl Angle Deg*	*Drift Direction Deg*	*True Vertical Depth*	*Subsea TVD Meters*	*N-S Meters*	*E-W Meters*	*Vertical Section Meters*	*Dogleg Severity Deg/30*
KOP (1) @ 3?30m (2308m TVD)								
2309.76	1.79	150.88	2308.00	-2088.00	-25.16	50.47	2.93	.00
2339.76	3.07	221.74	2337.98	-2117.98	-26.17	50.16	1.91	3.00
2369.76	5.80	238.73	2367.89	-2147.89	-27.55	48.33	-.20	3.00
2399.76	8.70	244.66	2397.64	-2177.64	-29.31	44.99	-3.38	3.00
2429.76	11.66	247.61	2427.17	-2207.17	-31.44	40.13	-7.62	3.00
Begin Hold @ 12°; 247.86° Azm								
2433.20	12.00	247.86	2430.54	-2210.54	-31.71	39.48	-8.17	3.00
2463.20	12.00	247.86	2459.88	-2239.88	-34.06	33.70	-13.06	.00
2493.20	12.00	247.86	2489.23	-2269.23	-36.41	27.92	-17.95	.00
2523.20	12.00	247.86	2518.57	-2298.57	-38.76	22.15	-22.84	.00
2553.20	12.00	247.86	2547.91	-2327.91	-41.11	16.37	-27.73	.00
2583.20	12.00	247.86	2577.26	-2357.26	-43.46	10.59	-32.62	.00
2613.20	12.00	247.86	2606.60	-2386.60	-45.81	4.82	-37.51	.00
2643.20	12.00	247.86	2635.95	-2415.95	-48.16	-.96	-42.40	.00
2673.20	12.00	247.86	2665.29	-2445.29	-50.51	-6.74	-47.29	.00
2703.20	12.00	247.86	2694.64	-2474.64	-52.86	-12.52	-52.18	.00
2733.20	12.00	247.86	2723.98	-2503.98	-55.21	-18.29	-57.07	.00
2763.20	12.00	247.86	2753.33	-2533.33	-57.56	-24.07	-61.96	.00
2793.20	12.00	247.86	2782.67	-2562.67	-59.91	-29.85	-66.65	.00
2823.20	12.00	247.86	2812.01	-2592.01	-62.26	-35.63	-71.74	.00
2853.20	12.00	247.86	2841.36	-2621.36	-64.62	-41.40	-76.63	.00

Measured Depth Meters	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD Meters	N-S Meters	E-W Meters	Vertical Section Meters	Dogleg Severity Deg/30
2883.20	12.00	247.86	2870.70	-2650.70	-66.97	-47.18	-81.51	.00
2913.20	12.00	247.86	2900.05	-2680.05	-69.32	-52.96	-86.40	.00
2943.20	12.00	247.86	2929.39	-2709.39	-71.67	-58.74	-91.29	.00
2973.20	12.00	247.86	2958.74	-2738.74	-74.02	-64.51	-96.18	.00
Begin Drop @ -2°/30m								
2981.93	12.00	247.86	2967.27	-2747.27	-74.70	-66.19	-97.61	.00
3011.93	10.00	247.86	2996.72	-2776.72	-76.86	-71.50	-102.09	2.00
3041.93	8.00	247.86	3026.35	-2806.35	-78.63	-75.84	-105.77	2.00
3071.93	6.00	247.86	3056.13	-2836.13	-80.01	-79.23	-108.64	2.00
3101.93	4.00	247.86	3086.01	-2866.01	-80.99	-81.65	-110.69	2.00
3131.93	2.00	247.86	3115.97	-2895.97	-81.58	-83.11	-111.92	2.00
Begin Vertical Drill								
3161.93	.00	247.86	3145.96	-2925.96	-81.78	-83.59	-112.33	2.00
3191.93	.00	247.86	3175.96	-2955.96	-81.78	-83.59	-112.33	.00
3221.93	.00	247.86	3205.96	-2985.96	-81.78	-83.59	-112.33	.00
3251.93	.00	247.86	3235.96	-3015.96	-81.78	-83.59	-112.33	.00
3281.93	.00	247.86	3265.96	-3045.96	-81.78	-83.59	-112.33	.00
3311.93	.00	247.86	3295.96	-3075.96	-81.78	-83.59	-112.33	.00
KOP (2) @ 12°/30m (3322.73m MD)								
3322.73	.00	30.58	3306.76	-3086.76	-81.78	-83.59	-112.33	.00
3352.73	12.00	30.61	3336.54	-3116.54	-79.09	-82.00	-109.20	12.00
3382.73	24.00	30.61	3365.02	-3145.02	-71.12	-77.28	-99.95	12.00
3412.73	36.00	30.61	3390.95	-3170.95	-58.24	-69.66	-84.98	12.00
3442.73	48.00	30.61	3413.21	-3193.21	-40.99	-59.46	-64.94	12.00
3472.73	60.00	30.61	3430.81	-3210.81	-20.14	-47.12	-40.72	12.00
3502.73	72.00	30.61	3442.99	-3222.99	3.40	-33.19	-13.37	12.00
3532.73	84.00	30.61	3449.22	-3229.22	28.61	-18.28	15.91	12.00
ICP Point @ 3450m TVD (5373117.5 N, 335539.25 E)								
3547.73	90.00	30.61	3450.00	-3230.00	41.50	-10.65	30.89	12.00
3577.73	90.00	30.61	3450.00	-3230.00	67.32	4.63	60.88	.00
3607.73	90.00	30.61	3450.00	-3230.00	93.14	19.90	90.87	.00
3637.73	90.00	30.61	3450.00	-3230.00	118.96	35.18	120.87	.00
3667.73	90.00	30.61	3450.00	-3230.00	144.78	50.46	150.86	.00
3697.73	90.00	30.61	3450.00	-3230.00	170.60	65.73	180.86	.00
3727.73	90.00	30.61	3450.00	-3230.00	196.42	81.01	210.85	.00
3757.73	90.00	30.61	3450.00	-3230.00	222.23	96.28	240.84	.00
3787.73	90.00	30.61	3450.00	-3230.00	248.05	111.56	270.84	.00
3817.73	90.00	30.61	3450.00	-3230.00	273.87	126.84	300.83	.00
3847.73	90.00	30.61	3450.00	-3230.00	299.69	142.11	330.83	.00
3877.73	90.00	30.61	3450.00	-3230.00	325.51	157.39	360.82	.00
3907.73	90.00	30.61	3450.00	-3230.00	351.33	172.67	390.82	.00
3937.73	90.00	30.61	3450.00	-3230.00	377.15	187.94	420.81	.00
3967.73	90.00	30.61	3450.00	-3230.00	402.97	203.22	450.80	.00

Measured Depth Meters	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD Meters	N-S Meters	E-W Meters	Vertical Section Meters	Dogleg Severity Deg/30
3997.73	90.00	30.61	3450.00	-3230.00	428.79	218.50	480.80	.00
4027.73	90.00	30.61	3450.00	-3230.00	454.61	233.77	510.79	.00
4057.73	90.00	30.61	3450.00	-3230.00	480.43	249.05	540.79	.00
4087.73	90.00	30.61	3450.00	-3230.00	506.25	264.33	570.78	.00
4117.73	90.00	30.61	3450.00	-3230.00	532.06	279.60	600.77	.00
4147.73	90.00	30.61	3450.00	-3230.00	557.88	294.88	630.77	.00
4177.73	90.00	30.61	3450.00	-3230.00	583.70	310.16	660.76	.00
4207.73	90.00	30.61	3450.00	-3230.00	609.52	325.43	690.76	.00
4237.73	90.00	30.61	3450.00	-3230.00	635.34	340.71	720.75	.00
4267.73	90.00	30.61	3450.00	-3230.00	661.16	355.99	750.75	.00
4297.73	90.00	30.61	3450.00	-3230.00	686.98	371.26	780.74	.00
4327.73	90.00	30.61	3450.00	-3230.00	712.80	386.54	810.73	.00
4357.73	90.00	30.61	3450.00	-3230.00	738.62	401.82	840.73	.00
4386.64	90.00	30.61	3450.00	-3230.00	763.50	416.54	869.64	.00
4416.64	90.00	30.61	3450.00	-3230.00	789.32	431.82	899.63	.00
TD Sidetrack #3 (900m Hz Drill)								
4447.73	90.00	30.61	3450.00	-3230.00	816.07	447.65	930.71	.00


COMPANY: PDI PRODUCTION INC.
LEASE/WELL: GARDEN HILL SOUTH
LOCATION: PORT AU PORT #1 (ST #3)
RIG NAME: TBA
ORIGINAL WELLBORE
KOP (1) @ 3°/30M (2308M TVD)
BEGIN HOLD @ 12°, 247.86° AZM
BEGIN DROP @ -2°/30M
BEGIN VERTICAL DRILL
KOP (2) @ 12°/30M (3322.73M MD)
ICP POINT @ 3450M TVD (5373117.5 N, 335539.25 E)
SIDETRACK #2
TD SIDETRACK #3 (900M HZ DRILL)
PROPOSAL CURVE
AS DRILLED CURVE
GARDEN HILL SOUTH
PORT AU PORT #1 (ST #3)
ERCB LICENCE NO.:
MERIDIAN JOB NO.: PRELIMINARY
IMPORTANT POINT SUMMARY:
B/H DEVIATION FROM S. LOC: 1530.60M @ AZ: 29.48° NAD 83
1) GROUND LEVEL: 215.0M EST.
2) KELLY BUSHING: 220.0M EST.
3) KOP (1) @ 3°/30M: 2309.76M MD
4) BEGIN HOLD @ 12°, 247.86° AZM: 2433.20M MD, 2430.54M TVD
5) BEGIN DROP @ 2°/30M: 2981.93M MD, 2967.27M TVD
6) BEGIN VERTICAL DRILL: 3161.93M MD, 3145.96M TVD
7) KOP (2) @ 12°/30M: 3322.73M MD, 3306.76M TVD
8) ICP POINT: 3547.73M MD, 3450.00M TVD, 90.0° INC, 30.61° AZM, 41.50M NORTH, 10.65M WEST OF WELL CENTRE, 30.69M VS
9) TD SIDETRACK #3: 4447.73M MD, 3450.00M TVD, 90.0° INC, 30.61° AZM, 816.07M NORTH, 447.65M EAST OF WELL CENTRE, 930.71M VS
TRUE VERTICAL DEPTH (METERS)
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
VERTICAL SECTION (METERS) @ 26.94°

pdiproduction



Dragon Lance
Management Corporation

24. Least Distance Side Track #3 to PAP #1

LEAST DISTANCE REPORT

3-D Least Distance between Reference well and Comparison Well

Direction Reference : North

Distance and direction is measured FROM Reference Well TO Compare Well

Calculated by WinSERVE SURVEY © PDT, 1995-2008

REFERENCE CURVE
Name : Prelim 4: ST #3, KOP @ 2308m TVD
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

COMPARSION CURVE
Name : PAP #1: Logged Svys
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

MD m	INC Deg	AZM Deg	TVD m	TVD-Comp m	E-W-Comp m	N-S-Comp m	Distance m	Direction Deg	Inc Deg
2309.76	1.79	150.88	2308.00	2308.24	50.47	-25.16	.24	151.35	1.34
2339.76	3.07	221.74	2337.98	2338.23	50.88	-25.71	.89	57.13	73.71
2369.76	5.80	238.73	2367.89	2368.22	51.21	-26.24	3.18	65.41	83.98
2399.76	8.70	244.66	2397.64	2397.22	51.38	-26.56	6.97	66.73	93.50
2429.76	11.66	247.61	2427.17	2427.22	51.08	-26.51	12.01	65.75	89.78
2433.20	12.00	247.86	2430.54	2431.21	50.99	-26.49	12.65	65.64	86.93
2463.20	12.00	247.86	2459.88	2460.20	50.05	-26.46	18.03	65.08	88.99
2493.20	12.00	247.86	2489.23	2490.17	48.79	-26.25	23.22	64.03	87.66
2523.20	12.00	247.86	2518.57	2519.15	48.25	-26.44	28.87	64.73	88.84
2553.20	12.00	247.86	2547.91	2549.13	47.21	-26.02	34.35	63.92	87.97
2583.20	12.00	247.86	2577.26	2578.10	46.20	-25.13	40.06	62.77	88.79
2613.20	12.00	247.86	2606.60	2607.07	45.37	-23.99	46.05	61.72	89.42
2643.20	12.00	247.86	2635.95	2636.03	44.66	-22.79	52.20	60.92	89.91
2673.20	12.00	247.86	2665.29	2666.00	43.89	-21.72	58.25	60.38	89.30
2703.20	12.00	247.86	2694.64	2694.98	43.13	-20.81	64.22	60.06	89.69
2733.20	12.00	247.86	2723.98	2723.96	42.46	-19.86	70.29	59.81	90.02
2763.20	12.00	247.86	2753.33	2752.93	41.84	-18.84	76.45	59.57	90.29
2793.20	12.00	247.86	2782.67	2781.91	41.29	-17.74	82.71	59.34	90.53
2823.20	12.00	247.86	2812.01	2810.87	40.77	-16.42	89.10	59.03	90.73
2853.20	12.00	247.86	2841.36	2838.81	40.26	-14.68	95.75	58.56	91.52
2883.20	12.00	247.86	2870.70	2867.73	39.81	-12.53	102.67	57.96	91.66
2913.20	12.00	247.86	2900.05	2896.63	39.40	-10.17	109.73	57.37	91.78
2943.20	12.00	247.86	2929.39	2925.52	39.04	-7.73	116.88	56.82	91.90
2973.20	12.00	247.86	2958.74	2954.42	38.69	-5.26	124.08	56.33	91.99
2981.93	12.00	247.86	2967.27	2962.39	38.60	-4.57	126.19	56.21	92.22
3011.93	10.00	247.86	2996.72	2992.29	38.27	-2.15	132.85	55.76	91.91
3041.93	8.00	247.86	3026.35	3022.21	37.95	-.01	138.37	55.36	91.72
3071.93	6.00	247.86	3056.13	3052.14	37.54	1.97	142.73	54.93	91.60
3101.93	4.00	247.86	3086.01	3083.07	36.98	3.93	145.92	54.40	91.15
3131.93	2.00	247.86	3115.97	3113.01	36.35	5.81	148.04	53.81	91.15
3161.93	.00	247.86	3145.96	3142.94	35.69	7.75	149.17	53.11	91.16
3191.93	.00	247.86	3175.96	3172.86	34.96	9.75	149.80	52.33	91.19
3221.93	.00	247.86	3205.96	3202.78	34.17	11.83	150.47	51.52	91.21

MD m	INC Deg	AZM Deg	TVD m	TVD-Comp m	E-W-Comp m	N-S-Comp m	Distance m	Direction Deg	Inc Deg
3251.93	.00	247.86	3235.96	3232.70	33.36	13.90	151.14	50.71	91.24
3281.93	.00	247.86	3265.96	3262.61	32.44	16.03	151.79	49.87	91.27
3311.93	.00	247.86	3295.96	3291.50	31.44	18.30	152.54	48.98	91.68
3322.73	.00	30.58	3306.76	3302.46	31.04	19.20	152.83	48.62	91.61
3352.73	12.00	30.61	3336.54	3331.32	29.94	21.72	150.73	47.99	91.98
3382.73	24.00	30.61	3365.02	3359.18	28.86	24.39	142.91	48.02	92.34
3412.73	36.00	30.61	3390.95	3386.04	28.01	26.98	129.71	48.89	92.17
3442.73	48.00	30.61	3413.21	3408.92	27.27	29.24	111.68	51.00	92.20
3472.73	60.00	30.61	3430.81	3428.80	26.59	31.26	89.89	55.11	91.28
3502.73	72.00	30.61	3442.99	3442.72	26.03	32.69	66.07	63.68	90.24
3532.73	84.00	30.61	3449.22	3450.67	25.67	33.52	44.25	83.62	88.12
3547.73	90.00	30.61	3450.00	3452.65	25.58	33.73	37.15	102.10	85.91
3577.73	90.00	30.61	3450.00	3454.64	25.49	33.94	39.64	147.99	83.28
3607.73	90.00	30.61	3450.00	3456.63	25.40	34.14	59.62	174.67	83.62
3637.73	90.00	30.61	3450.00	3457.62	25.36	34.24	85.62	186.61	84.89
3667.73	90.00	30.61	3450.00	3459.61	25.27	34.44	113.58	192.86	85.15
3697.73	90.00	30.61	3450.00	3461.60	25.18	34.64	142.34	196.61	85.33
3727.73	90.00	30.61	3450.00	3463.58	25.09	34.85	171.51	199.09	85.46
3757.73	90.00	30.61	3450.00	3466.57	24.96	35.15	200.91	200.87	85.27
3787.73	90.00	30.61	3450.00	3468.55	24.87	35.35	230.44	202.17	85.38
3817.73	90.00	30.61	3450.00	3470.54	24.78	35.56	260.06	203.18	85.47
3847.73	90.00	30.61	3450.00	3472.53	24.70	35.76	289.75	203.98	85.54
3877.73	90.00	30.61	3450.00	3474.52	24.61	35.97	319.48	204.64	85.60
3907.73	90.00	30.61	3450.00	3477.50	24.48	36.28	349.24	205.19	85.48
3937.73	90.00	30.61	3450.00	3479.48	24.40	36.49	379.03	205.65	85.54
3967.73	90.00	30.61	3450.00	3481.47	24.32	36.70	408.84	206.03	85.58
3997.73	90.00	30.61	3450.00	3483.46	24.23	36.91	438.66	206.37	85.63
4027.73	90.00	30.61	3450.00	3486.44	24.11	37.23	468.50	206.67	85.54
4057.73	90.00	30.61	3450.00	3488.43	24.03	37.44	498.34	206.93	85.58
4087.73	90.00	30.61	3450.00	3490.41	23.95	37.66	528.20	207.16	85.61
4117.73	90.00	30.61	3450.00	3492.40	23.86	37.87	558.06	207.36	85.64
4147.73	90.00	30.61	3450.00	3494.39	23.78	38.08	587.93	207.54	85.67
4177.73	90.00	30.61	3450.00	3496.37	23.70	38.30	617.80	207.71	85.69
4207.73	90.00	30.61	3450.00	3498.36	23.62	38.51	647.68	207.86	85.72
4237.73	90.00	30.61	3450.00	3501.34	23.50	38.83	677.56	208.00	85.65
4267.73	90.00	30.61	3450.00	3503.33	23.41	39.04	707.44	208.13	85.68
4297.73	90.00	30.61	3450.00	3505.32	23.33	39.26	737.33	208.24	85.70
4327.73	90.00	30.61	3450.00	3506.31	23.29	39.36	767.23	208.34	85.79
4357.73	90.00	30.61	3450.00	3508.30	23.21	39.57	797.12	208.44	85.81
4386.64	90.00	30.61	3450.00	3510.28	23.13	39.78	825.94	208.53	85.81
4416.64	90.00	30.61	3450.00	3512.27	23.05	39.99	855.84	208.61	85.83
4446.64	90.00	30.61	3450.00	3514.26	22.97	40.20	885.74	208.69	85.84
4476.64	90.00	30.61	3450.00	3515.25	22.93	40.30	915.65	208.76	85.91
4506.64	90.00	30.61	3450.00	3517.24	22.85	40.51	945.56	208.83	85.92
4536.64	90.00	30.61	3450.00	3520.22	22.73	40.82	975.46	208.90	85.87
4566.64	90.00	30.61	3450.00	3522.21	22.65	41.03	1005.38	208.96	85.88
4596.64	90.00	30.61	3450.00	3524.20	22.57	41.23	1035.29	209.02	85.89
4626.64	90.00	30.61	3450.00	3525.19	22.53	41.34	1065.20	209.07	85.95
4656.64	90.00	30.61	3450.00	3525.19	22.53	41.34	1095.12	209.11	86.06
4686.64	90.00	30.61	3450.00	3527.18	22.46	41.53	1125.04	209.16	86.07
4716.64	90.00	30.61	3450.00	3529.17	22.39	41.73	1154.96	209.20	86.07
4746.64	90.00	30.61	3450.00	3531.16	22.31	41.93	1184.88	209.25	86.07
4776.64	90.00	30.61	3450.01	3533.15	22.24	42.13	1214.80	209.29	86.08
4806.64	90.00	30.61	3450.01	3535.14	22.16	42.32	1244.72	209.33	86.08
4836.64	90.00	30.61	3450.01	3535.14	22.16	42.32	1274.65	209.36	86.17
4866.64	90.00	30.61	3450.01	3535.14	22.16	42.32	1304.57	209.39	86.26
4896.64	90.00	30.61	3450.01	3536.13	22.13	42.42	1334.50	209.42	86.30
4926.64	90.00	30.61	3450.01	3538.12	22.07	42.60	1364.43	209.45	86.30

25. Least Distance Side Track #3 to PAP #1 Side Track #1

LEAST DISTANCE REPORT

3-D Least Distance between Reference well and Comparison Well
Direction Reference : North
Distance and direction is measured FROM Reference Well TO Compare Well
Calculated by WinSERVE SURVEY © PDT, 1995-2008

REFERENCE CURVE
Name : Prelim 4: ST #3, KOP @ 2308m TVD
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

COMPARSION CURVE
Name : PAP #1-ST #1: As Drilled Svys
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

MD m	INC Deg	AZM Deg	TVD m	TVD-Comp m	E-W-Comp m	N-S-Comp m	Distance m	Direction Deg	Inc Deg
2309.76	1.79	150.88	2308.00	2308.67	43.30	-21.08	8.28	299.63	85.33
2339.76	3.07	221.74	2337.98	2337.86	43.54	-21.67	8.01	304.22	90.82
2369.76	5.80	238.73	2367.89	2366.32	40.87	-21.27	9.88	310.09	99.13
2399.76	8.70	244.66	2397.64	2395.68	36.49	-20.39	12.48	316.40	99.06
2429.76	11.66	247.61	2427.17	2425.01	31.97	-19.28	14.80	326.12	98.38
2433.20	12.00	247.86	2430.54	2428.95	31.29	-19.16	15.06	326.87	96.04
2463.20	12.00	247.86	2459.88	2458.15	24.92	-18.95	17.56	329.83	95.64
2493.20	12.00	247.86	2489.23	2486.58	17.44	-19.13	20.38	328.73	97.45
2523.20	12.00	247.86	2518.57	2514.59	9.91	-18.67	23.85	328.66	99.61
2553.20	12.00	247.86	2547.91	2542.83	2.57	-17.62	27.72	329.56	100.58
2583.20	12.00	247.86	2577.26	2572.52	-5.08	-16.02	31.95	330.27	98.53
2613.20	12.00	247.86	2606.60	2599.80	-12.08	-14.71	36.04	331.49	100.88
2643.20	12.00	247.86	2635.95	2628.04	-20.42	-13.02	40.94	331.03	101.13
2673.20	12.00	247.86	2665.29	2656.93	-29.48	-11.78	45.69	329.59	100.55
2703.20	12.00	247.86	2694.64	2683.48	-37.99	-10.78	50.44	328.81	102.78
2733.20	12.00	247.86	2723.98	2708.82	-46.77	-8.77	56.55	328.49	105.55
2763.20	12.00	247.86	2753.33	2736.03	-57.34	-6.29	63.52	327.03	105.80
2793.20	12.00	247.86	2782.67	2764.79	-67.49	-3.75	69.93	326.17	104.82
2823.20	12.00	247.86	2812.01	2789.79	-76.91	-1.67	76.61	325.73	106.86
2853.20	12.00	247.86	2841.36	2821.91	-89.03	.35	82.86	323.75	103.57
2883.20	12.00	247.86	2870.70	2848.81	-98.99	1.25	88.41	322.79	104.34
2913.20	12.00	247.86	2900.05	2875.10	-109.17	1.98	94.16	321.75	105.37
2943.20	12.00	247.86	2929.39	2903.82	-120.50	3.29	100.44	320.51	104.75
2973.20	12.00	247.86	2958.74	2933.35	-130.81	4.25	105.67	319.73	103.90
2981.93	12.00	247.86	2967.27	2939.47	-132.98	4.50	107.27	319.86	105.02
3011.93	10.00	247.86	2996.72	2965.05	-142.43	5.77	113.41	319.36	106.21
3041.93	8.00	247.86	3026.35	2993.72	-153.31	7.17	120.12	317.92	105.76
3071.93	6.00	247.86	3056.13	3023.57	-163.57	8.73	126.68	316.46	104.89
3101.93	4.00	247.86	3086.01	3048.96	-172.37	9.98	133.71	315.08	106.09
3131.93	2.00	247.86	3115.97	3076.91	-182.29	11.44	141.48	313.16	106.02
3161.93	.00	247.86	3145.96	3103.99	-191.76	12.44	149.47	311.06	106.31
3191.93	.00	247.86	3175.96	3131.12	-201.33	13.65	158.05	309.03	106.48
3221.93	.00	247.86	3205.96	3159.70	-210.67	15.05	166.33	307.31	106.15

26. Least Distance Side Track #3 to PAP #1 Side Track #2

LEAST DISTANCE REPORT

3-D Least Distance between Reference well and Comparison Well
Direction Reference : North
Distance and direction is measured FROM Reference Well TO Compare Well
Calculated by WinSERVE SURVEY © PDT, 1995-2008

REFERENCE CURVE
Name : Prelim 4: ST #3, KOP @ 2308m TVD
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

COMPARSION CURVE
Name : PAP #1-ST #2: As Drilled Surveys
E-W offset: 0
N-S Offset: 0
SubSea Offset: 220

MD m	INC Deg	AZM Deg	TVD m	TVD-Comp m	E-W-Comp m	N-S-Comp m	Distance m	Direction Deg	Inc Deg
2309.76	1.79	150.88	2308.00	3348.23	20.19	27.01	1041.98	329.87	3.32
2339.76	3.07	221.74	2337.98	3348.23	20.19	27.01	1012.10	330.59	3.46
2369.76	5.80	238.73	2367.89	3348.23	20.19	27.01	982.27	332.71	3.58
2399.76	8.70	244.66	2397.64	3348.23	20.19	27.01	952.58	336.24	3.70
2429.76	11.66	247.61	2427.17	3348.23	20.19	27.01	923.13	341.16	3.84
2433.20	12.00	247.86	2430.54	3348.23	20.19	27.01	919.77	341.81	3.85
2463.20	12.00	247.86	2459.88	3348.23	20.19	27.01	890.55	347.52	4.03
2493.20	12.00	247.86	2489.23	3348.23	20.19	27.01	861.38	353.05	4.25
2523.20	12.00	247.86	2518.57	3348.23	20.19	27.01	832.27	358.30	4.53
2553.20	12.00	247.86	2547.91	3348.23	20.19	27.01	803.22	3.21	4.87
2583.20	12.00	247.86	2577.26	3348.23	20.19	27.01	774.25	7.76	5.27
2613.20	12.00	247.86	2606.60	3348.23	20.19	27.01	745.35	11.92	5.73
2643.20	12.00	247.86	2635.95	3348.23	20.19	27.01	716.55	15.72	6.26
2673.20	12.00	247.86	2665.29	3348.23	20.19	27.01	687.85	19.16	6.85
2703.20	12.00	247.86	2694.64	3348.23	20.19	27.01	659.27	22.27	7.52
2733.20	12.00	247.86	2723.98	3348.23	20.19	27.01	630.82	25.08	8.27
2763.20	12.00	247.86	2753.33	3348.23	20.19	27.01	602.52	27.63	9.12
2793.20	12.00	247.86	2782.67	3348.23	20.19	27.01	574.39	29.93	10.06
2823.20	12.00	247.86	2812.01	3348.23	20.19	27.01	546.46	32.01	11.11
2853.20	12.00	247.86	2841.36	3348.23	20.19	27.01	518.76	33.91	12.29
2883.20	12.00	247.86	2870.70	3348.23	20.19	27.01	491.33	35.64	13.61
2913.20	12.00	247.86	2900.05	3348.23	20.19	27.01	464.22	37.21	15.10
2943.20	12.00	247.86	2929.39	3348.23	20.19	27.01	437.49	38.65	16.79
2973.20	12.00	247.86	2958.74	3348.23	20.19	27.01	411.20	39.98	18.70
2981.93	12.00	247.86	2967.27	3348.23	20.19	27.01	403.65	40.34	19.30
3011.93	10.00	247.86	2996.72	3348.23	20.19	27.01	377.83	41.44	21.51
3041.93	8.00	247.86	3026.35	3348.23	20.19	27.01	352.12	42.27	23.92
3071.93	6.00	247.86	3056.13	3348.23	20.19	27.01	326.59	42.89	26.57
3101.93	4.00	247.86	3086.01	3348.23	20.19	27.01	301.32	43.32	29.51
3131.93	2.00	247.86	3115.97	3348.23	20.19	27.01	276.42	43.57	32.83
3161.93	.00	247.86	3145.96	3348.23	20.19	27.01	252.03	43.65	36.62
3191.93	.00	247.86	3175.96	3348.23	20.19	27.01	228.66	43.65	41.11
3221.93	.00	247.86	3205.96	3348.23	20.19	27.01	207.00	43.65	46.58

MD m	INC Deg	AZM Deg	TVD m	TVD-Comp m	E-W-Comp m	N-S-Comp m	Distance m	Direction Deg	Inc Deg
3251.93	.00	247.86	3235.96	3348.23	20.19	27.01	187.65	43.65	53.25
3281.93	.00	247.86	3265.96	3348.23	20.19	27.01	171.39	43.65	61.31
3311.93	.00	247.86	3295.96	3348.23	20.19	27.01	159.18	43.65	70.83
3322.73	.00	30.58	3306.76	3348.23	20.19	27.01	155.97	43.65	74.58
3352.73	12.00	30.61	3336.54	3348.23	20.19	27.01	147.77	43.92	85.46
3382.73	24.00	30.61	3365.02	3354.17	20.00	27.85	139.21	44.51	94.47
3412.73	36.00	30.61	3390.95	3366.08	19.71	30.41	128.31	45.23	101.18
3442.73	48.00	30.61	3413.21	3386.12	20.01	36.66	114.36	45.66	103.70
3472.73	60.00	30.61	3430.81	3409.28	20.45	44.01	95.63	46.49	103.01
3502.73	72.00	30.61	3442.99	3425.59	20.36	49.76	72.94	49.12	103.80
3532.73	84.00	30.61	3449.22	3437.78	20.20	54.81	47.93	55.74	103.80
3547.73	90.00	30.61	3450.00	3441.29	20.25	56.72	35.53	63.78	104.19
3577.73	90.00	30.61	3450.00	3452.70	20.44	62.92	16.63	105.54	80.65
3607.73	90.00	30.61	3450.00	3464.73	20.86	70.25	27.23	177.60	57.26
3637.73	90.00	30.61	3450.00	3468.85	21.04	72.89	51.75	197.06	68.63
3667.73	90.00	30.61	3450.00	3468.85	21.04	72.89	79.93	202.25	76.36
3697.73	90.00	30.61	3450.00	3468.85	21.04	72.89	109.09	204.58	80.05
3727.73	90.00	30.61	3450.00	3468.85	21.04	72.89	138.60	205.89	82.18
3757.73	90.00	30.61	3450.00	3468.85	21.04	72.89	168.29	206.74	83.57
3787.73	90.00	30.61	3450.00	3468.85	21.04	72.89	198.07	207.33	84.54
3817.73	90.00	30.61	3450.00	3468.85	21.04	72.89	227.91	207.76	85.25
3847.73	90.00	30.61	3450.00	3468.85	21.04	72.89	257.79	208.09	85.81
3877.73	90.00	30.61	3450.00	3468.85	21.04	72.89	287.69	208.36	86.24
3907.73	90.00	30.61	3450.00	3468.85	21.04	72.89	317.61	208.57	86.60
3937.73	90.00	30.61	3450.00	3468.85	21.04	72.89	347.55	208.75	86.89
3967.73	90.00	30.61	3450.00	3468.85	21.04	72.89	377.49	208.90	87.14
3997.73	90.00	30.61	3450.00	3468.85	21.04	72.89	407.44	209.02	87.35
4027.73	90.00	30.61	3450.00	3468.85	21.04	72.89	437.40	209.13	87.53
4057.73	90.00	30.61	3450.00	3468.85	21.04	72.89	467.37	209.23	87.69
4087.73	90.00	30.61	3450.00	3468.85	21.04	72.89	497.34	209.31	87.83
4117.73	90.00	30.61	3450.00	3468.85	21.04	72.89	527.31	209.38	87.95
4147.73	90.00	30.61	3450.00	3468.85	21.04	72.89	557.28	209.45	88.06
4177.73	90.00	30.61	3450.00	3468.85	21.04	72.89	587.26	209.51	88.16
4207.73	90.00	30.61	3450.00	3468.85	21.04	72.89	617.24	209.56	88.25
4237.73	90.00	30.61	3450.00	3468.85	21.04	72.89	647.22	209.61	88.33
4267.73	90.00	30.61	3450.00	3468.85	21.04	72.89	677.21	209.66	88.40
4297.73	90.00	30.61	3450.00	3468.85	21.04	72.89	707.19	209.70	88.47
4327.73	90.00	30.61	3450.00	3468.85	21.04	72.89	737.18	209.73	88.53
4357.73	90.00	30.61	3450.00	3468.85	21.04	72.89	767.17	209.77	88.59
4386.64	90.00	30.61	3450.00	3468.85	21.04	72.89	796.07	209.80	88.64
4416.64	90.00	30.61	3450.00	3468.85	21.04	72.89	826.06	209.83	88.69
4446.64	90.00	30.61	3450.00	3468.85	21.04	72.89	856.05	209.86	88.74
4476.64	90.00	30.61	3450.00	3468.85	21.04	72.89	886.04	209.88	88.78
4506.64	90.00	30.61	3450.00	3468.85	21.04	72.89	916.03	209.91	88.82
4536.64	90.00	30.61	3450.00	3468.85	21.04	72.89	946.02	209.93	88.86
4566.64	90.00	30.61	3450.00	3468.85	21.04	72.89	976.01	209.95	88.89
4596.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1006.00	209.97	88.93
4626.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1036.00	209.99	88.96
4656.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1065.99	210.00	88.99
4686.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1095.98	210.02	89.01
4716.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1125.98	210.04	89.04
4746.64	90.00	30.61	3450.00	3468.85	21.04	72.89	1155.97	210.05	89.07
4776.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1185.97	210.07	89.09
4806.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1215.96	210.08	89.11
4836.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1245.96	210.09	89.13
4866.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1275.95	210.10	89.15
4896.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1305.95	210.12	89.17
4926.64	90.00	30.61	3450.01	3468.85	21.04	72.89	1335.94	210.13	89.19

27. Intermediate Section

27.1 Intermediate Drilling Section

Drill 215.9 mm directional hole to approximately 3548 m MD (3450 m TVD) as per directional profile using motor and tri-cone / PDC combinations. After confirming mill has cut window, round trip system for directional assembly to move away from old wellbore.

27.2 Intermediate Formation Integrity Test

Drill a minimum of 10 m of new 215.9 mm hole and conduct formation integrity test. Shut down at the first sign of leak off in the Winterhouse formation.

27.3 Intermediate Deviation

The intermediate section will be drilled entirely with a MWD assembly in the string – maximum reported surveys every 30m. This section will be drilled with performance 165.1mm motors to ensure proper torque is being delivered to the bit and directional corrections can be made.

The Directional Plan in place calls for building at a maximum of 3° per 30m first moving to the south away from the well bore and then curving back underneath the well at a maximum of 2° per 30m first, then building the final curve at a maximum of 12° per 30m to intersect the Table Point at 85°. The isopach is estimated be 13 m so a full 13m of true vertical depth will be drilled off to ensure the 177.8 mm casing isolates the Table Point from the Aguathuna.

See Directional Profile / Survey Plots Section.

27.4 Intermediate Drill Bits

Drill intermediate hole with 215.9 mm PDC's on steerable motors and tri-cone bits. See Drill Bit Section.

27.5 Intermediate Mud Logging

Gas chromatograph from drill out to TD, recorded continuously.

27.6 Intermediate Logging

MWD shielded gamma ray tool will be run from drill - out to section TD (3563 m MD) to aid with prediction of the top of the Table Point formation, based on correlation with offset well logs.

No open wellbore logs will be run due to the close proximity to PAP#1.

27.7 Intermediate Coring

No cores planned.

27.8 Intermediate Drilling Fluid

See the detail in Section 31. This interval will be drilled with a PHPA (Partially Hydrolyzed Poly-Acrylomide) fresh water based fluid. The system will run normal properties for this fluid.

Density – 1080-1120 kg/m3
Viscosity – 35-45 cp
Yields – 6-10 Pa
Plastic Viscosity – 15 -40

The main risk with this system in this interval is the accidental drilling through the fault and encountering loss circulation or the fault thinning of the structure resulting in drilling directly into a loss zone. To minimize the impact of this, loss circulation material will be stocked on location.

All fluids produced, generated or circulated from the wellbore will be sampled and stored on site in the wellsite storage tanks. These fluids will be disposed of as per NL regulations in a timely procedure during the active operating program. Any active drilling fluids will be stored within the rig tanks and all reserve fluids will be stored within the wellsite storage tanks.

27.9 Intermediate Liner

Run from 3548 to 2150 m the 177.80mm, 38.68 kg/m L-80 Casing with TC-II/A connection.

27.9.1 Intermediate Liner Design Information

Hole Size:	215.9 mm		Burst Rating:	49.9 MPa
Set Depth:	3548 m		Burst SF:	1.40
Top:	2150 m		Collapse Rating:	37.3 MPa
OD:	177.8 mm		Collapse SF:	1.02
Weight:	36.68 kg/m		Tension Rating:	268 kN
Grade:	L-80		Tension SF:	2.56
Connection:	TC-II/A			
Drift ID:	156.2 mm			

Design Assumptions

1. Collapse design based on 1100 kg/m^3 mud weight and fully evacuated casing string.
2. Tension based on string weight in air.
3. Burst design: Shut-in tubing head pressure.
4. Designed as a production string.
5. Reservoir pressure is 33 MPa from production results
6. Fracture gradients from design and area results average from 18.1 KPa/m to 22 KPa/m

27.9.2 Intermediate Liner String Assembly

Interval	Description	Length
3548 – 3546 m	Weatherford Reaming Shoe	2 m
3546 – 3521 m	2 joint 177.8 mm casing	25 m
3521 – 3520 m	Float Collar	1 m
3520 – 2176 m	177.8 mm casing with centralization	1344 m
2176 – 2150 m	Weatherford Liner Hanger w/ liner top packer and tie back	26 m
	TOTAL STRING LENGTH:	1398m

27.9.3 Intermediate Liner Centralizers

Centralizers will be installed on all casing joints covered by cement. At the centre of each joint install one semi-rigid with a stop collar on either side with 2 m of free travel and 1 stand-off band above and below by 4 m.

27.10 Cement Details

Interval:	3548– 2150 m
Cement Type:	0:1:0 Class G
Additives:	0.2% R-3 0.4% FL-5 0.5% CD-32 2% Microsil 12P
Cement Required (w/additives):	~ 18.5 tonne
Slurry Density:	1901 kg/m^3
Slurry Yield:	0.757 m^3/t
Water Required:	0.44 m^3/t
Thickening Time:	4:45 hours @ 40 Bc 5:00 hours @ 100 Bc
Fluid Loss:	<30 cc/30 min

Compressive Strength:	3.5 MPa - 7 hrs, 40 C 21.0 MPa – 24.0 hrs.
Free Water:	BP settling test – 0%

27.11 Cementing Procedure

Circulate casing until minimal solids returning at maximum circulating rates.

Circulate and work liner while still attached and DO NOT SET LINER UNTILL PREPARED TO CEMENT.

Pump the preflush followed by cement.

Release wiper plug, displace drill pipe with water.

Check floats; if floats OK bleed remaining pressure off and W.O.C. for 24 hours.

If floats by-pass increase the pressure to hold fluid static and hold for 12 – 18 hours.

WOC time a minimum of 24 hours or until 6000 kPa compressive strength.

27.11.1 Preflush

Pump 5.0 m^3 of water with surfactant based preflush at 1000 kg/m^3. Preflush volumes must be corrected for hydrostatic effect. Purpose of preflush is to water wet formations.
Annular volumes:

Annular OD	Annular ID	Volume per Metre
215.9 mm	177.8 mm	0.01178 m3/m
259.00 mm (20%)	177.8 mm	0.0142 m^3/m

27.11.2 Displacement Rates

In order to improve cement bond quality, an annular velocity of 80 m/min should be maintained during cement displacement.

Increase the circulation rate in 0.25 m^3/min increments to achieve the desired rate.

Flow rates to achieve desired displacement rates are (approximate ranges):

Gauge hole = 0.95 m^3/min
20% over = 1.15 m^3/min

27.11.3 Reciprocation

Casing should be stroked 3 – 5 m to assist cleaning up the wellbore but once released from the liner to cement then there should be no rotation or reciprocation of the liner. Maximum loads should be closely monitored when the casing is full of cement.

27.11.4 Wellhead and Pressure Test

1. Pressure Test 34.5 MPa (5000 psi) BOP stack, pressure test BOP's and surface system.
2. See BOP's, wellhead and seals section for pressure test schedule.
3. Conduct BOP drill with all crews prior to drill-out.
4. Conduct pre-drill out strategy meeting for lost circulation.
5. Rig up underbalanced drilling equipment with rotary head.

28. Main Hole Section

Drill 156 mm directional hole to approximately 4900 m MD, 3448m TVD. Section TD will be determined by structural results.

28.1 Main Hole Formation Integrity Test

Drill up to 5 m of new 156 mm hole and conduct formation integrity test. Drilling more open hole may result in massive losses.

28.2 Main Hole Fracture Gradient/Formation Pressure

The fracture gradient for the entire open hole section above the Aguathuna is expected to be in the 18.1-22kPa/m range. Pore pressure for this open hole section on the first well was also normally pressured at 9.81kPa/m and the main reservoir will be slightly under pressured at 9.54 kPa/m. In Figure 28-1 pore pressure is the blue line and fracture gradient is the green line.

Pore Pressure Fracture Gradient Profile

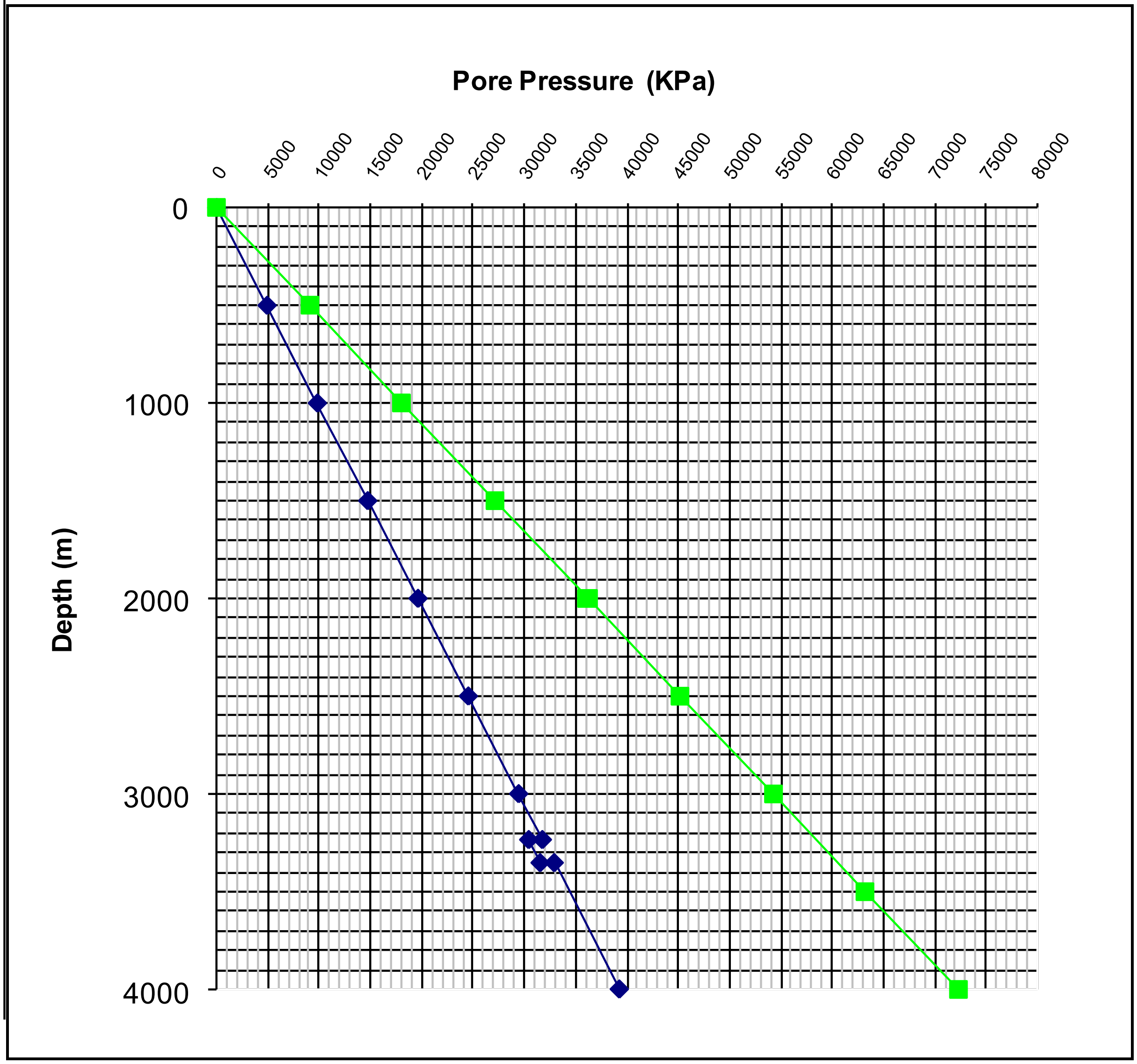
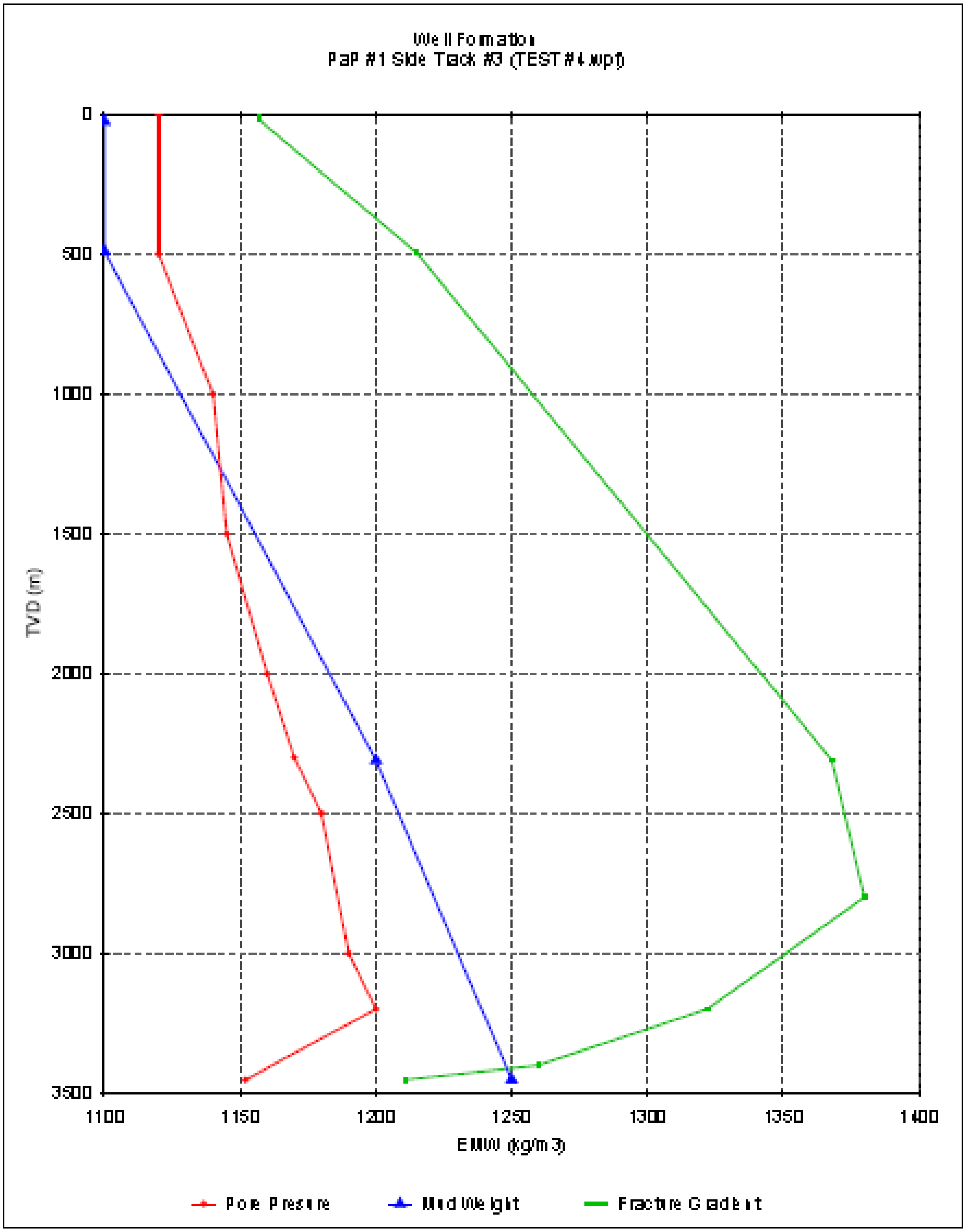


Figure 28-1:Pore Pressure Fracture Gradient Profile



28.3 Main Hole Deviation

The 177.8 mm casing setting depth and placement in previous section will be reflected on drill out assembly. If section occurs as planned, drill out with a directional assembly with MWD and motor. Plan is to drill ahead to find the porosity utilizing the resistivity and gamma ray tools. This plan does not allow evaluation of losses without motor/MWD in string but does allow steerability to find the objective zones.

28.4 Main Hole Drilling Fluid

3548 – 4900 m: Polymer/Cal Carb– this system was selected to allow for lower density and cleaner drilling fluids. The system will also be more economical if losses are excessive, flipping straight to water.

All trip pills will be $CaCO_3$ based. Use Barite as a last resort to avoid plug up the formation.

28.5 Main Hole Drilling Fluid One Page Summary

Mud Type: Drill Water Polymer Returns Rig Floor Lithology: Limestone, Dolomite		Depth: 3457 m TVD Inclination: 90°	
SECTION SUMMARY			
Drill cement shoe with water based fluid and high viscosity pills. Drill ahead with Polymer to TD of 4900 m MD.			
Recommended Mud Properties		**Recommended Mud Formulation**	
Properties	**Specifications**	**Product**	**Concentration**
Funnel Viscosity	40-45 s/L	Caustic Soda	0.70 kg/m^3
Fluid Loss	6 - 8 cc/30 min. API	Soda Ash	0.70 kg/m^3
Density	1100 - 1140 kg/m^3	IDVIS	4.5 kg/m^3
YP	6-10 Pa	FLOPLEX	8..0 kg/m^3
Gels -- 10s/10m	2 - 6 Pa	Calcium Carbonate	60 kg/m^3
LGS	< 6% v/v		
pH	9 – 10		

Potential Problems	Drilling Fluid Solutions
1. Formation pressures. 2. Wellbore cleaning.	1. Premix Calcium Carbonate in the drilling fluid prior to known loss zone. Have a standby pill of premixed LCM. Cement severe losses. 2. Unknown pressures near the gradient of water may require a density increase to trip safely. 3. Wellbore cleaning will be enhanced with viscous sweeps if partial losses are encountered.

Mud Volume Estimates	Chemical Requirements			
	Primary		Contingency	
	Product	**Quantity**	**Product**	**Quantity**
Surface Working Volume = 100 m^3 Total Hole Volume = 125 m^3 Dilution Volume = 150 m^3 Total Volume Requirement = 375 m^3	Caustic Soda Soda Ash IDVIS FLOPLEX Calcium Carb.	28 sacks 13 sacks 58 sacks 120 sacks 750 sacks	$CaCO_3$ (F 325μ) $CaCO_3$ (M) $CaCO_3$ (C) Diaseal	400 sacks 400 sacks 400 sacks 500 sacks

28.6 Main Hole Drill Bits

Drill main hole with 152.6 mm with PDC and tri-cone bits. See Section 33.

28.7 Main Hole Mud Logging

Gas chromatograph from drill out to TD recorded continuously.

28.8 Main Hole Logging

Timing	Item	Location	Provider	Method
While Drilling				
	Sample Collection	Full length of wellbore	Well site geologist	
	Gamma Ray LWD	Full length of wellbore	Meridian	LWD/MWD
	Resistivity LWD	Full length of wellbore	Meridian	LWD/MWD
Post Drilling				

	Rig source VSP Survey	Vertical portion of wellbore	Schlumberger	
	DSI Sonic	Full length of wellbore	Schlumberger	All logs are to be drill-pipe conveyed
	Gamma Ray	6” section	Schlumberger	
	Resistivity, including microlog	6” section	Schlumberger	
	Caliper	6” section	Schlumberger	
	Neutron	6” section	Schlumberger	
	Density	6” section	Schlumberger	
	PEF	6” section	Schlumberger	
	FMI	6” section	Schlumberger	

Transmit Logs to St. John's

9 log copies and digital disks required by PDIP in St. John's for distribution.

Final Log Copies

Metric log copies and 4 digital disks required for PDIP Office.

VSP

A rig-source VSP Survey will be conducted after reaching TD. This will provide information on interval velocities in the Port au Port area.

28.9 Main Hole Coring:

25 sidewall cores samples will be collected by a mechanical sidewall coring tool in the Aguathuna Formation reservoir interval.

28.10 Main Hole Casing:

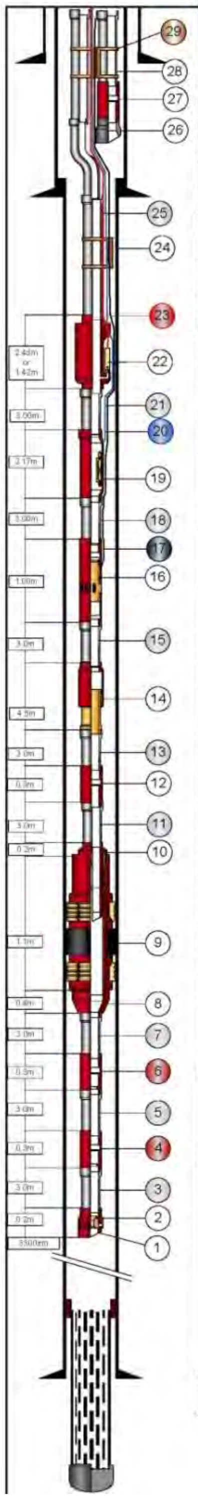
This section is planned to be left open hole and will be completed as a open hole section.

28.11 Main Hole Casing Design Information:

This section is planned to be left open hole and will be completed as a open hole section.

29. Final Completion Assembly Installation

Weatherford



PAP #1 - ST #3 ~ Proposal A, Revision 1 – July 7, 2008

Proposed Installation Report

Company	PDIP			Reference	CP08316A.CL
Prepared for	Brian Hickey	Phone	709.782.8683	Location	NFLD
Prepared by	Cal Lawton	Sales Rep	Cal Lawton 403.693.7529		
Service Centre	Newfld & Labrador	Drawn by	Cal Lawton	Date	18 Jun 2008 · Page 1

TUBULAR	Size	Weight	Grade	Thread	Depth
Casing 1	339.7	101.2kg/m	J-55	ST&C	495
Casing 2	244.5	70.01kg/m	L-80	LT&C	2508
Liner 1	177.8	38.69kg/m	L-80	TC-11/A	2275-3563
Liner 2	114.3	17.26kg/m	J-55	LT&C	3563-4900
Tubing 1	73.0	12.95 kg/m	L-80	EUE	3700
Tubing 2	73.0	11.74 kg/m	L-80	Hydrill	2000

ITEM	DESCRIPTION	
1.	Half Mule Shoe	
2.	Pump Out Plug. 1689 kPa/screws. Max 14 Shear Screws. (Length incl'd in Item 1)	
3.	73.0mm pup joint – 3.1m	
4.	73.0mm Landing Nipple w/ 53.98mm Otis "RN" Profile, 49.20mm No-Go	
5.	73.0mm pup joint – 3.1m	
6.	73.0mm Landing Nipple w/ 53.98mm Otis "R" Profile	
7.	73.0mm pup joint – 3.1m	
8.	Weatherford "BlackCat" Tail Pipe Adapter c/w 73.0mm 9.67kg/m Eue pin down	
9.	Weatherford "BlackCat" Retrievable Seal Bore Packer – 69MPa Rated 177.8mm (34.2-47.6kg/m), Max O.D.: 150.83mm, Seal Bore I.D.: 101.6mm	
10.	"BlackCat" Latch Double Seal Assembly, Max O.D.: 132.1mm, Min I.D.: 75.95mm	
11.	73.0mm Pup Joint	
12.	73.0mm Landing Nipple w/ 53.98mm Otis "R" Profile	
13.	73.0mm Pup Joint	
14.	Expansion Joint. Stroke 3m. Estimated Length 4.5m	
15.	73.0mm Tubing	
16.	Weatherford "ROSS" Remotely Operated Sliding Sleeve, Hydraulically Actuated, Two control lines, one to open & one to close	
17.	6.35mm Sliding Sleeve Capillary Line – 316SS	3277m
18.	73.0mm Tubing	
19.	Chemcial Injection Mandrel	
20.	9.52mm Chemical Injection Capillary Line	3272m
21.	73.0mm Tubing as required	
22.	**Permanent Gauge Carrier Mandrel – Dual Side Mount c/w (2) internal sensing gauges.**	
	Permanent Gauge Carrier Mandrel - Solid Mount Style (Shown here illustrate 2 different styles/lengths)	
23.	6.35mm TEC Gauge Line	3266m
24.	Line Protector – 3 Capillary Lines	
25.	73.0mm Pup Joint and Tubing to Surface	
26.	73.0mm Wire Line Re-Entry Guide - Mule Shoe	
27.	73.0mm Landing Nipple w/ 53.98mm Otis "RN" Profile	
28.	73.0mm Pup Joint and Tubing to Surface	
29.	**DUAL TUBING CLAMPS - BEING SOURCED JOE REDINGER (WEATHERFORD)**	

NOTES

This is approximate drawing based on the information at hand. Lengths provided are a rough estimate only (with the exception of tubings and gauge mandrel) and based upon Weatherford equipment and may/will be different than final equipment chosen.

- A gas sample is required to determine all elastomer selections
- Annulus will be filled with inhibited fluid
- Packer will be set with water in the wellbore
- BHT: 55°C
- BHP: 38MPa, sweet gas
- Produced fluid will have 90,000ppm Cl

30. Completion Running Procedure

All equipment will be transported to site.

Require at least 48 hours for preparation time, to ensure all equipment has arrived, and no damage has occurred during transport.

All electronic equipment will be function tested.

Prior to running completion string, read and review the final completion string configuration and ensure all landing depths for every tool are confirmed.

Install the bottom-hole packer assembly as per configuration provided. Packer hand will be available on location and will be responsible for threading and torquing the packer assembly together.

Install the two Pressure and Temperature (P&T) side carrier mandrels c/w with P&T recorders as per configuration provided. The service company providing the P&T gauges will be available onsite for installation.

The P&T sensors will be installed and function tested again. The sensors pressure ports will be configured to internal tubing pressure.

As the tubing string is being run into the hole, the crew will run the spooling unit, and install the heavy-duty cannon clamps across each joint.

Install the sliding sleeve as per configuration provided. Packer hand will be available to install the sliding sleeve. Run the sliding sleeve in hole in the "CLOSED" position.

The Capillary crew and Injection valve supplier will install the injection sub c/w dummy valve as per configuration provided. Chemical injection valve personnel will be available on location to install the injection valve. The crew will strap both data cable and chemical capillary line at each joint, mid-way between the collars. Note: Chemical capillary line will be run in hole with applied pressure to detect any leaks while running in hole.

The data crew and spooling crew will be responsible for installing the cannon clamps and midjoint banding.

Once the production string has been run to pre-determined depth, the surface termination process will take place.

Once completion string is spaced out to appropriate landing depths, the wellhead service company will install the tubing hanger onto completion string, where necessary. Note: Ensure tubing hanger is prepared beforehand for immediate installation.

Install the data cable and capillary line to the tubing hanger as per service hands on location. Position the tubing hanger and hydraulically set the packer as per packer hand recommendations. Once set, land the tubing hanger into the tubing head flange. Install Vetco backpressure valve into tubing hanger. Tighten the lock down screws for the tubing hanger. Pressure test packer to a minimum of 7 MPa for 15 minutes. Once test is confirmed, bleed off pressure and remove rig BOP's. Install wellhead and configure the data cable and capillary tubing through the assigned feed-through ports of the tubing bonnet.

One feed-through port will encompass the data cable, one for the capillary injection line and two for the sliding sleeve capillary hydraulic lines. Both data line and capillary tubes will be double sealed through the tubing hanger and will terminate through the xmas tree adapter flange. The P&T data line is terminated through the xmas tree adapter flange using a double ferrule seal lock fitting and hard wired into an xmas tree junction box (Class1/Div1). The capillary line penetrations through the tubing hanger will connect with the xmas tree adapter flange via individual seal subs and terminate using shut-off needle valves.

With the xmas tree adapter in place, pressure test to a minimum of 7 MPa for 15 minutes to verify cavity seal integrity. Once test is confirmed, install the xmas tree, with all valves closed. The wellhead installation is complete. Ensure all penetrator seals are in place at the tubing bonnet and tested at the exit points of the tubing bonnet before removing backpressure valve.

Rig up backpressure valve lubricator on xmas tree lubricator adapter. Open the xmas tree swab, upper master and lower master valves.

Run in through xmas tree with BPV retrieving tool and equalize and retrieve backpressure valve from the tubing hanger.

Rig out lubricator.

Rig up slickline unit.

Run in hole and retrieve dummy valve using kickover tool.

Run back in hole and install 25.4 mm BKCL-2 Chemical Injection valve using kickover tool.

Once installed, test chemical injection valve to ensure is functional and installed properly.

Once all is terminated, the P&T cable surface module (SRO Gauge computer) will be installed. The surface module will be able to record dual surface pressures, therefore tubing and casing pressure can also be measured, or dual tbg pressures.

Install the P & T surface equipment as necessary. The surface module will have display and memory.

The memory is accessible through "Flash Card" data download.

The surface module will have expansion capabilities for interface for future SCADA applications.

31. Drilling Fluids Program

a) Kill Fluids: a PHPA / Polymer weighted system

Cased Hole Section	
Drilling Fluid System:	**Weighted / Polymer / PHPA – Kill Fluid**
Key Products :	BARITE,CALCARB, POLYPLUS RD, KELZAN XCD POLYMER, POLYPAC UL, CAUSTIC SODA

Interval Drilling Fluid Properties									
Density kg/m³	**Funnel Visc.** Sec/l	**Yield Point** Pa	**6 RPM**	**GEL's 10"/10'** Pa	**Filtrate API** ml.	**pH**	**PHPA** kg/m³	**MBT** kg/m³	**LGS** %
1250 1300	50 - 65	10 - 15	8 - 12	2 -5 / 4-8	6 - 8	8 - 9	1 - 2	<35	< 6

- The proposed mud for this interval is a Polymer / PHPA this will aid in retention of barite.

b) Milling Interval: For milling of window in the 244.5 mm casing fresh water Bentonite slurry has been chosen. This is economical and easily adjusted to meet the conditions required to clean the swarf from the well bore. The effects of any contamination resulting from contact with the cement will enhance the cleaning properties and are easily treated should they become too extreme.

Milling Interval: 2308 m – 2315 m	
Drilling Fluid System :	**Bentonite**
Angle & Deviation :	0 to 3 degrees
Key Products :	M-I GEL, CAUSTIC SODA, SODA ASH
Solids Control :	Shakers
Potential Problems :	Cement contamination, Hole cleaning (SWARF)

Interval Drilling Fluid Properties									
Density kg/m^3	**Funnel Visc.** Sec/l	**Yield Point** Pa	**6 RPM**	**GEL's 10"/10'/30"** Pa	**Filtrate API** ml.	**pH**	**Cl^-** mg/l.	**MBT** kg/m^3	**Drill Solids** %
1050 1070	>100	>30		N/C	N/C	9.5 - 10		70	N/A

- Prior to displacing mud into hole, try to ensure that there has been 6 – 8 hours to ensure full hydration.
- Contamination of the system with KCl brine needs to be avoided.
- Place magnets in possum belly to avoid damage to pumps.
- Flocculation from contact with cement can be treated with Sodium Bicarbonate and / or S.A.P.P. Only treat if the flocculation is causing problems. The extra viscosity can help with cleaning the metal from the hole.
- Continue drilling with this mud until it is certain that you are clear of all cement before displacing to the Polymer / PHPA system.

c) 216 mm Interval: For the drilling of this interval, a PHPA / Polymer system has been selected.

216 mm Interval: 2325 m – 3547 m — 177.8 mm. Casing	
Drilling Fluid System :	**Polymer / PHPA**
Angle & Deviation :	KOP 2308m, Build to 12° @ 247.86 azimuth, Hold 12° to 2981m, Drop 0° to 3322m, Build 12° DLS to Hold 90° to 3547m
Key Products :	POLYPLUS RD, KELZAN XCD POLYMER, POLYPAC UL, CAUSTIC SODA
Solids Control :	Shale Shakers
Potential Problems :	Pressured, sloughing shales, Torque-Drag-Tight Hole, Minor lost circulation above Aguathuna. Possible major loss at end of interval.

Interval Drilling Fluid Properties									
Density kg/m³	**Funnel Visc.** Sec/l	**Yield Point** Pa	**6 RPM**	**GEL's 10"/10'** Pa	**Filtrate API** ml.	**pH**	**PHPA** kg/m³	**MBT** kg/m³	**LGS** %
1070	50 - 65	10 - 15	8 - 12	2 -5 / 4-8	6 - 8	8 - 9	1 - 2	<35	< 6

- The proposed mud for this interval is a Polymer / PHPA this will aid in a low mud weight and minimizing ECDs.
- Sloughing shale is a possible problem in this section.
- Treat the system with Polyplus RD to extend the stability of water sensitive shales and prevent sloughing shales and hole instability.
- Use POLYPAC UL for filtration control, as it will also help inhibit the water sensitivity of shale.
- Torque, Drag and Tight Hole may occur after the well has been deviated, and a lubricant such as IDLUBE XL, if the problem is extreme.
- Because of the large volumes anticipated, use of a de-watering system is recommended.

d) 152 mm Interval: For the drilling of this interval, a Polymer / Calcium Carbonate system has been selected. The initial volume will be carried forward from the previous interval and will be treated with 45 kg/m3 of sized Calcium Carbonate to reduce the risk of expected loss of circulation.

156 mm Interval: 3547 m – 4447 m — Open Hole	
Drilling Fluid System :	**Polymer – Calcium Carbonate – Produced Fluids**
Angle & Deviation :	Horizontal Section
Key Products :	KELZAN XCD POLYMER, POLYPAC UL, CAUSTIC SODA,
Solids Control :	Shale Shakers
Potential Problems :	Hole cleaning, Lost Circulation, T&D/CoF, Formation Damage

Interval Drilling Fluid Properties

Density kg/m^3	**Funnel Visc.** Sec/l	**Yield Point** Pa	**6 RPM**	**GEL's 10"/10'** Pa	**Filtrate API** ml.	**pH**	**Cal Carb** kg/m^3	**MBT** kg/m^3	**LGS** %
1070 - 1130	45 - 55	8 - 12	5 - 8	2 -5 / 4-8	6 - 8	8 - 9	45	<20	< 9

- Pre-treat the mud with Sodium Bicarbonate before drilling the cement.
- Maintain the mud weight the lowest practical values, and less than 1090 kg/m3
- Torque, drag and tight hole conditions may occur as the well is horizontal through this interval. A lubricant such as IDLUBE XL or Drill beads may be required.
- The risk of severe and massive lost circulation in this interval is high and will be controlled with the flow rates and back pressure as required.

32. Hydraulics Schedule:

RUN NO.	SIZE	BIT	DEPTH		METRES DRILLED	HRS	EXPECTED AVERAGE ROP	WOB	RPM	NOZZLES	FLOW RATE	LINER SIZE	MUD WEIGHT
	mm		IN m	OUT m	m		m/hr	10^3daN	bit speed range	mm	m^3/min	mm	kg/m^3
1	215.9	5-3-7 PDC's	2310	3563	1255		10 - 15	5-15	75 - 110	3 x 15.9	1.7 – 2.0	152	1100

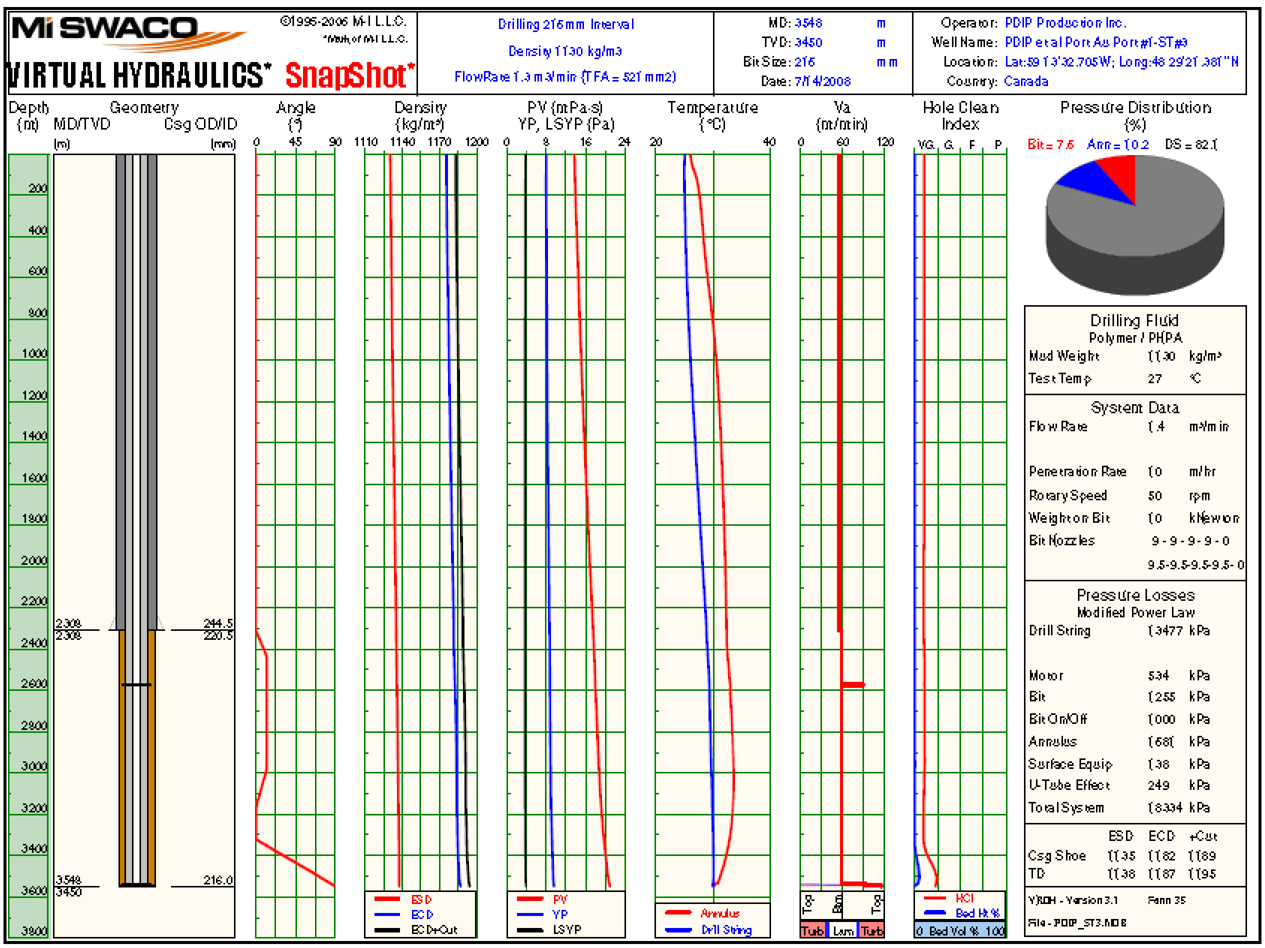


Figure 32-1: Hydraulics for 216mm O.H. & 5" (127mm) DP & HWDP

RUN NO.	SIZE	BIT	DEPTH		METRES DRILLED	HRS	EXPECTED AVERAGE ROP	WOB	RPM	NOZZLES	FLOW RATE	LINER SIZE	MUD WEIGHT
	mm		IN m	OUT m	m		m/hr	10^3daN	bit speed range	mm	m^3/min	mm	kg/m^3
2	152.6	6-1-7 PDC's	3563	5000	1435		5 - 10	5-15	75 - 110	3 X 11.9	1.0 – 1.5	152	1050

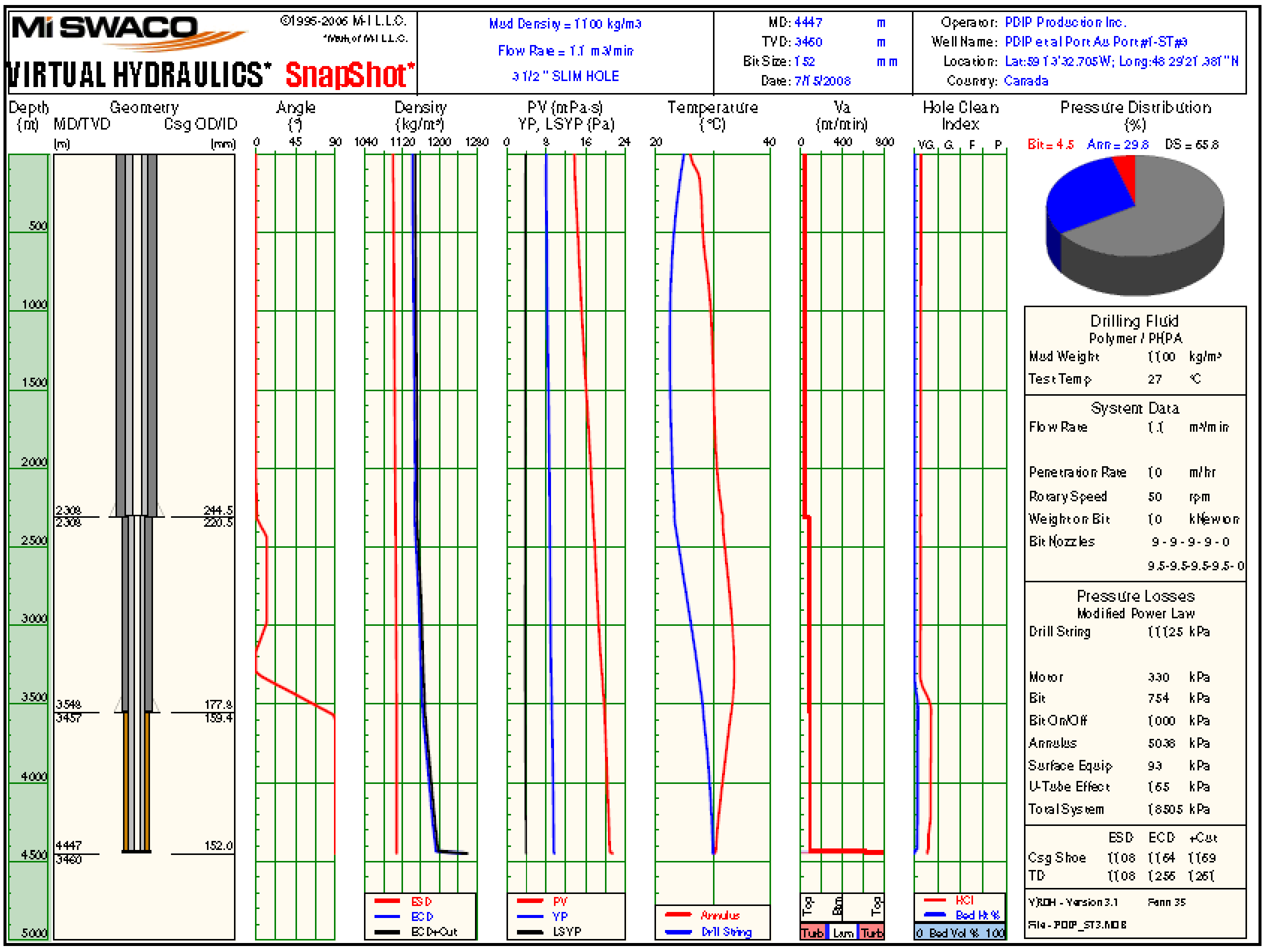


Figure 32-2 Hydraulics for 156mm 3 ½ (89mm) HWDP

33. Bit Program & Offset Performance

Bit #	size (mm)	model	purchase price	gage length	IADC	INC in	INC out	depth in	depth out	metres drilled	drilling hours	total hours	ROP (m/hr)
1	216	MSi816WPX	$139,660	2"	323	20	120	2280	2580	300	43	43	7
2	216	MSi816UQEPX	$160,529	3"	323	120	00	2580	2930	350	44	87	8
3	216	MSi816WUEPX	$160,529	3"	323	00	80	2930	3280	350	44	130	8
4	216	MSi816WPX	$139,660	2"	323	80	900	3280	3582	302	50	181	6
4 A	216	XR+PS	$16,620	-	117	-	-	-	-	-	-	-	-
4 B	216	FH35ODVPS	$25,410	-	547	-	-	-	-	-	-	-	-
Formations: - Precambrian Gneiss (MM), RHT/Winterhouse (SS), Lourdes (LS), Goose Tickle (SH), Table Cove (SH), Table Point (LS), Springs Inlet (LS) and Aguathuna (LS-DOL)													
5	156	MSi613WPX	$69,440	2"	233	900	900	3582	3900	318	64	244	5
6	156	MSi613WPX	$69,440	2"	233	900	900	3900	4300	400	67	311	6
7	156	MSi613WPX	$69,440	2"	233	900	900	4300	4700	400	67	378	6
8	156	MSi613WPX	$69,440	2"	233	900	900	4700	5082	382	76	454	5
9 A	156	XR+PS	$10,735	-	117	-	-	-	-	-	-	-	-
9 B	156	XR30YODPS	$18,060	-	547	-	-	-	-	-	-	-	-

33.1 Offset Bit Performance

Port au Port #1: typical bits run from Precambrian metamorphics through to Aguathuna were TCI roller cones 517 type. A total of 17 bit runs ranged from 447 to 547 hardness in the 311mm and 216mm intervals that covered the formations/lithology that will be drilled in ST#3. The improvements in drill bit technology since the drilling of Port au Port #1 in 1995 and ST#1 & ST#2 will deliver better performance in this sidetrack application.

Proposed PDC Bit Designs

The PDC drill bits proposed for this application are from the SHARC product line (Smith High Abrasion Resistant Configuration). The SHARC technology has the ability to deliver a very stable cutting structure that has a hugely increased diamond volume allowing much longer runs. These bits have been successful on Canada's East Coast and the recent new designs have delivered significant results for operators such as Petro-Canada and Husky. Other bits will continue to be evaluated for potential use (i.e.

Hughes,Reed) depending on bit performance and formation changes. A selection of contingency bits will be on location.

34. Formation Evaluation Requirements:

Sampling Program /Distribution

A well site geologist will be on location from drill-out of the whipstock to TD.

Samples to be caught every 5m from drill-out to TD

- 2 unwashed 500g plastic-lined cloth bag samples.
- 2 washed 25ml vial samples.

35. Contact List

35.1 Emergency Services Contact List

Name	Telephone	Fax
Fire Service (Lourdes)	(709) 642-2222	
Fire Service (Stephenville)	(709) 643-2176	
Fire Service (Stephenville Airport)	(709) 643-8437 or 8438	
RCMP (Stephenville)	(709) 643-2118	
Ambulance (Stephenville – 50km)	(709) 643-5111	
Cape St. George Medical Clinic	(709) 644-2660	
Hospital (Stephenville)	(709) 643-5111	
Environmental Emergency Response	(800) 563 9089 (24hr) (709) 772 2083 (alternative)	
Environmental Protection Officer, Government Service Centre, Corner Brook	(709) 637-2448 (709) 637-2449	(709) 637-2681
Pollution Prevention, Department of Environment and Conservation	(709) 729-2556 (709) 729-2555	(709) 729-6969

35.2 DLMC & PDIP Contacts

NAME	DEPARTMENT	OFFICE TEL.	CELL	HOME & OTHER TEL.
Dragon Lance Management Corp.				
Steve c McIntosh	General Manager	(780)929-6768	(403)875-8848 (403)875-6132	011-86-137-010-98042
Lyle McIntosh	Drilling Supervisor			
Tibor Papp	Drilling Supervisor			
Noelan Chapman	Drilling Supervisor			
Glen Mayor	Completion Supervisor			
PDI Production Inc.				
Mick Hibbert	Operations Manager	(709)754-8149	(709)691-0539	(709)722-5389
Barath Rajgopaul	Sub-surface Manager	+44(161)817-7184	+44(781)703-0426	+44(207)486-8780
Shehu Abdurrahman	RE,G&G Manager	+44 161 8177453	+44 785 009 7087	
Brian Hickey	Co-ordinator	(709)754-8154	(709)689-0297	(709)739-7260
Kelly Batten Hender	Project Geologist	(709)754-8148	(709)687-5495	(709)726-5957
Travis Young	Well Site Superintendent	(709)649-6058	(709)638-0112	(709)644-2331
Tony Young	Well Site Supervisor	(709)649-6059		(709)644-2331
Roland Strickland	Well Site Geologist			(709)643-4402

35.3 Project Contract Services

SERVICE CONTRACT	SUPPLIER COMPANY	CONTACT	PHONE	CELL
Casing	East Coast Tubulars	Andrew Power	902-463-6284	902-225-4591
Cementing	BJ Services	Randy Wilson	403-531-5172	
Shoe/Float/Tong/ect.	Weatherford	Joe Redinger	709-782-6136	709-687-7775
Casing Running Services	Weatherford	Joe Redinger	709-782-6136	709-687-7775
Communication Equipment	Down East			
Cutting Disposal	Pardy	Derek Pardy	709-686-2012	709-632-4672
Directional Drilling	Meridian	Travis Echman	403-269-8828	403-874-2555
Drill Bits	Smith	Wayne Rideout	709-738-4760	709-728-9899
Drilling Rig	Nabors	Ian Cooke	403-861-2692	
Drilling Fluids	Mi Swaco	Todd Reid	709-754-9001	709-685-8440
Engineering	Dragon Lance	Steve McIntosh	780-929-6768	
Pumps	Battlefield Rentals	Jamie Curnew	709-634-2610	709-632-0888
Fuel	North Atlantic			
Geology Wellsite	Roland Strickland	Roland Strickland		709-643-4402
Trucking	Clarke	Lloyd Jones	709-747-6404	709-689-3975
Logging	Schlumberger	Ahmed El-Toukhy	709-748-7902	709-743-5802
PCT/Choke/EDR	Rigwatch			
Rig Move	Hunts	Greer Hunt	709-747-4868	
Shocks/Subs/Jars	Meridian Directional	Travis Echman	403-269-8828	403-874-2555
Solids Control	MI Swaco	Todd Reid	709-754-9001	709-685-8440
Tubular Inspection	Atlantic Inspection	Gary Piccott	709-576-3999	709-685-7570
Vacuum Truck	Pardy's	Derek Pardy	709-686-2012	709-632-4672
Well Site Accomm.	Atlantra	Marcus Dewinter	800-456-1800	
Completions	Weatherford	Cal Lawton	403-804-6203	403-804-6203
Waste Disposal	Pardy's	Derek Pardy	709-686-2012	709-632-4672

35.4 Project General Services:

CONTRACTOR SERVICE PROVIDER	LOCATION	CONTACT	PHONE	FAX
Abbott and Halliburton Co. Ltd	Port au Port	Bill Abbott	709-648-2235 or 709-648-2225	709-648-9518
Air Labrador	Stephenville	Tracey Smith	709-643-1274	709-643-1279
Aqua Drilling Ltd.	Pasadena	Bruce Sullivan	709-727-9335	n/a
Atlantic Drilling & Blasting Ltd.	Doyles	Francis Gale	709-955-2561	709-955-3402
Atlantic Hydraulics and Machine Ltd.	Corner Brook	Glen Sullivan	709-639-8208	709-639-8211
Atlantic Minerals Ltd.	Lower Cove	Dave McIsaac	709-644-2447	709-644-2449
Battlefield Equipment Rentals	Corner Brook	Jamie Curnew	709-643-2610	n/a
Brookside Convenience	Degrau	Perry Reddigan	709-644-2525	n/a
Budget Rentals	Stephenville	Lyn Strickland	709-643-5913	709-643-5738
Corner Brook Fabrication and Steel (2005) Ltd.	Corner Brook	Wayne Hann	709-643-6878	709-643-6997
Crosbies Industrial Services Ltd.	Pasadena	Sean Burton	709-640-0372	709-686-3454
Dennis GMC	Stephenville	Dave Lomand	709 643-5141	709-643-5463
Dreamcatcher Lodge	Stephenville	Barbie Roberts	709-643-6655	709-643-2504
Eddy Towing Services	Stephenville	Craig Eddy	709-643-5040	709-643-2338
EFCO Enterprises Ltd	Stephenville	Martina March	709-643-5001	709-643-3444
Felix Bed and Breakfast	Cape St. George	Joyce Felix	709-644-2936	n/a
Frank's Netting and Rigging	Stephenville	n/a	709-643-2066	n/a
Gabriel's Construction	Port au Port	Robert Gabriel	709-648-2760	n/a

CONTRACTOR SERVICE PROVIDER	LOCATION	CONTACT	PHONE	FAX
Holiday Inn	Stephenville	Roseann White	709-643-6666	709-643-3900
Hotel Stephenville	Stephenville	John Priddle	709-643-5176	709-643-5381
Indian Head Co-op	Stephenville	Tony White	709-643-5675	709-643-3983
Inn at the Cape	Cape St. George	Jenny Fenwick	709-644-2273	
K & J Metals	Stephenville	Robert James	709-643-5546	709-643-6377
Kay's Country Restaurant	Cape St. George	Mrs. Robia	709 644-2300	n/a
Locke's Electrical	Corner Brook	Bill Thistle	709-632-6104	709-643-5451
Lourdes Coop Society Ltd	Lourdes	John Smith	709-642-5342	709-642-5027
Lourdes Superette	Lourdes	Doris O'Gorman	709-642-5761	n/a
Medical West Supplies	Corner Brook	Jack Kenney	709-632-7852	709-632-7852
Newfoundland and Labrador Power	Stephenville	Roddie Duffy	709-643-7018	709-643-7032
North Atlantic	Corner Brook	Peter Gosse	709-639-2284	n/a
Ozzie's General Store and Heritage Room	Cape St. George	Alvin Felix	709-644-2030	n/a
Paddy's Plumbing	Stephenville	Paddy Mulrooney	706-643-3042	n/a
Pardys Waste Management and Industrial Services	Pasadena	Derek Pardy	709-686-2012	709-686-2512
Parkview Variety Ltd.	Lourdes	Regina Drake	709-642-5356	n/a
Pinsents' Concrete Ltd	Stephenville	Joan Pinsent	709-643-4375	709-643-3113
Pottle Enterprises Ltd.	Stephenville	Fred Pottle	709-643-4863	709-643-5371
Provincial Airlines	Stephenville	Scott Hurley	709-643-3400	n/a

CONTRACTOR SERVICE PROVIDER	LOCATION	CONTACT	PHONE	FAX
Quality Pharmacy Ltd.	Lourdes	Francis Joy	709-642-5003	709-642-5008
Red Brook Variety	Degrau	Mrs. Benoit	709-644-2733	n/a
R. Davis Surveys ltd	Stephenville Crossing	Robin Davis	709-646-2776	709-646-2214
Rideout Tools	Corner Brook	Terry Flynn	709-634-3294	709-634-5346
Roland Strickland	Kippens	Roland Strickland	709-643-4402	709-643-2358
Sea Breeze Restaurant	Mainland	Gary Hall	709-642-5481	n/a
Sparkes Trucking	Corner Brook	Shawn Sparkes	709-634-1741	709-785-7604
Spruce Pine Acres	Port au Port	Melissa Martin	709-648-9600	709- 648-9600
Stephenville Truck Centre (1991) Ltd.	Stephenville	Don Cook	709-643-9140	709-643-4143
Superior Automotive	Stephenville	n/a	709-643-2301	709-643-4421
Thistle's Excavating Ltd	Stephenville	Geoff Thistle	709-643-5930	709-643-6018
Town of Cape St. George	Cape St. George	Ina Renouf	709-644-2290	709-644-2291
Whalen Enterprises Ltd.	Stephenville	Mike Whalen	709-643-3388	709-643-3456
Western Steel Works Inc.	Deer Lake	n/a	709-635-5429	709-635-5459
Young's Welding	Marches Point	Tony Young	709-644-2331	n/a

36. Program Distribution List

COPY #	RECIPIENT
1, 2, 3, 4	Department of Natural Resources
5	Mick Hibbert
6	Steve McIntosh
7, 8, 9, 10	PDIP
11, 12, 13	DLMC
14	Travis Young (Field Copy for PDIP Field Office)
15	Drilling Consultants (Field Copy for Drilling & Completions)
16	Roland Strickland (Field Copy for Geology)

Appendix B:

Offset Well Data

PDI PRODUCTION INC.

PAP1 Offset Well Review

Technical Doc No:	TD-082
Title:	PAP Offset Well Review
Project Name:	Garden Hill South
Client:	n/a
Client Ref:	n/a
PDIP Ref:	GHS/0001
Pages (including cover):	20

Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	17 Jul 2007		R. Lowe	M. Hibbert	B. RAJAGOPAUL

Contents

1. Introduction

PDI Production intends to drill the PAP1 ST#3 sidetrack in Q3 of 2007. The well will be drilled with a 1500hp rig sourced from Alberta. The proposed sidetrack will exit the 244.5mm (9 5/8") casing (at approximately 2309mMD) and will land at the original location of the PAP#1 well. This will offer the lowest risk strategy and will target known oil in the reservoir. From the landing point (3235-3240m TVDSS) the well will extend horizontally through the Upper Aguathuna formation in a NNE direction. The NNW-SSE oriented horizontal section will run parallel to the strike of the mapped Aguathuna formations beds. It is predicted that the horizontal well will intersect WNW-ESE oriented faults.

The casing program proposed for this side track is as follows: -

- Exit from Surface Casing 244.5mmm (9-5/8") – existing
- Liner 194mm (7-5/8") – new
- Production Liner - Slotted 114mm (4-1/2") – new

The appraisal well would have the following primary aims

- Test the theory of dolomitisation of the Upper Aguathuna Dolomite extending NNE from PAP1 in the footwall of the Round Head Thrust
- Investigate the contribution of faults/ fractures to oil production
- Investigate the orientation of faults/fractures
- Investigate the size of the Garden Hill South accumulation from test data.

Exiting from the 244.5mm (9 5/8") it is felt will give the following advantages

- A contingency hole size
- An ability to isolate ST#1 which proved troublesome when drilling ST#2
- Improved hydraulics and increase available weight to the bit (due to drill pipe size)
- Reduced surface handling risk
- Greater available overpull and torque capacity while drilling
- Increased number of drilling tool options
- A 152.4mm (6") reservoir section allowing the use of 114mm (4-1/2") slotted liner / screens to prevent wellbore collapse and still allow reservoir access with 73mm (2 7/8") tubing at a later date if required.

The purpose of this document is to identify and document the drilling problems that were encountered on the previous wells / sidetracks to allow the learning's to be incorporated into the detailed drilling program for the sidetrack. This is being performed retrospectively due to the absence of an After Action Review after each of the wells.

It is recommended that an After Action Review is conducted after the sidetrack to negate the requirement for an offset review for any future wells.

The wells will be presented section by section with an individual observation, possible cause of problem and recommended action to prevent reoccurrence of the issue. The following wells have been reviewed

- PAP 1 – drilled by Hunt Oil in 1994
- PAP 1 ST#1 – 2001
- PAP 1 ST#2 - 2002

2. Proposed Well Events

2.1 Rig Up

2.2 Kill Well

2.3 Pull Completion

2.4 Isolate Side Track 2

2.5 Isolate Side Track 1

2.6 Run whipstock

2.7 Mill window

2.8 Drill and land 216mm open hole at target

2.9 Run and cement 178mm liner

2.10 Drill 152mm horizontal (length TBC)

2.11 Run 114mm slotted liner

2.12 Clean well and test

2.13 Recomplete

3. Rig Selection

The proposed rig will be mobilized from Alberta it is expected to have the following minimum equipment (or equivalent) to overcome identified issues in the drilling of the offset wells.

Item	Specification	
Rig Depth	5300m with 127mm drill pipe	
Number of loads	56	
Drawork Capacity	388,750 / 340,270 daN	12 lines / 10 lines
Auxillary Brake	Baylor Elmago	
Rig Power	2 – 746kW	2 – 1,000 HP
	2 – 597kW	2 – 800 HP
Derrick		
Normal Arrangement	10 lines strung	
Maximum Allowable Working Load	333,000daN	12 lines
	317,000daN	10 lines
Substructure		
Type	Dreco Box on Box	
Maximum Load Capacity Set Back	177,600daN	
Maximum Load Capacity Rotary	310,800daN	
KB- Ground	7.05m	
Vertical Clearnace – BOP	5.65m	
Rotary Table		
Oilwell B27 1/2	700mm	
Max RPM	150	
Top Drive		
Canrig 1050E/500	444,800daN	
Traveling Equipment		
Bails	311,360daN	
Elevator	311,360daN	
Block/Hook	355,840daN	
Drilling Line		
Line Size	34.90mm	
Single Line Breaking Strain	74,281daN	
Drill Pipe	127mm OD – E – 29.05 kg/m	4.5"IF Cxn – 133 jnts
	127mm OD – X95 – 29.05 kg/m	4.5"IF Cxn – 123 jnts
	127mm OD – X95 – 38.0 kg/m	4.5"IF Cxn – 148 jnts
Drill Collars	174mm OD – 65mm ID	5"H90 – 21 jnts
	228mm OD – 76mm ID	7"H90 – 9 jnts
	127mm OD – 74mm ID	4.5"IF – 9 jnts
Mud Pumps	2 x Oilwell A 1100PT	254mm stroke
	2 x GE 752 (596KW)	
Liner Size	Max Pump Pressure kpa	Contractor Max kpa
114	34,473	27,579
140	25,510	20,408
152	21,373	17,099
165	17,926	14,341
127	32,000	25,000
Mud Tanks		
	Total Volume 166m³	Active Volume 146m³
	Pill Tank Volume 4m³	Trip Tank Volume 7m³
Shale Shaker	Derrick x 2	VS 1,850Hz

Mud Gas Separator	2	
BOP	Annular	5000psi
	Ram	5000psi
	Ram	5000psi
	Ram	5000psi
	HCR	
	Kill Line	
	Accumulator	742litres – 21,000kpa
Choke	Pressure Rating	34,500kPa
	Choke Line Size	76mm
	Size	76 x 76mm
	Nace Trim	Yes
Generators	X 3	3850kw
	Cold Start	150kW
Instrumentation	Electronic Drilling Recorder	
Boiler	Diesel	90kW
Fuel Storage	49,000l	
Water Storage	51,000l	

Notes:

- The required capacity is a 5000m / 1500hp rig
- The BOP and HP circulation System must be rated to 5,000 psi
- The unit must be equipped for cold weather work
- The unit must be certified prior to acceptance for a minimum duration of 12 months to allow an uninterrupted work schedule.

4. 244.5mm / 9 5/8" Casing

4.1 PAP1 Original Well

The 244.5mm casing will be exited at approximately 2309m. The casing string consists of 189 jts of 47ppf L80 casing which was cemented with 1645sx of Class G.

- Weatherford Homco Float Shoe 1.43'
- Jt 244.5mm casing 47ppf L80
- Jt 244.5mm casing 47ppf L80
- Weatherford Homco Float Collar 8142' (2481m)
- 187jts 244.5mm casing.

There is no mention of casing centralizers on the casing tally. Therefore it should be assumed that centralizers are found on every joint and will be present when sidetracking.

Action: Assume that spring centralizers are present and this should be taken into account when choosing the position of the sidetrack. Good milling practices should be adapted to ensure that the window is clear prior to completing the milling run.

The casing is relatively old (13 years) and will have been subject to a number of well interventions since it was originally run; in addition it could also have been subject to corrosion. Therefore it is recommended the casing is checked for integrity prior to proceeding. This will have a number of benefits

- Confirm pressure integrity
- Confirm interior casing condition for packer setting
- Confirm presence of cement to assist with exiting.
- Confirm position of casing collars (to allow them to be avoided during milling)

Action: Conduct USIT (Ultra Sonic Imaging Tool) and CCL (Casing Collar Locator) wireline run to optimize position of whipstock exit.

4.2 PAP1 ST#1

The 244.5mm casing was exited at 2338.96m. Prior to this a 244.5mm casing scraper was run to the 193.6mm liner top at 2358m with no difficulties. The casing should also be scraped for ST#3 but it is imperative that the casing scraper does not enter the window exit as potentially it may become stuck in the window of ST#1.

Action: Scrape 244.5mm casing prior to running the whipstock to ensure an effective seal between the packer and the casing wall.
Action: Strap the drill pipe on the way into the well to ensure the scraper does not come into contact with the window for ST#1.

4.3 PAP1 ST#2

ST#2 casing was exited in the 196.3mm liner below the exit point for ST#1. Therefore is of no relevance to ST#3 as it will be below the exit point.

5. Drilling 311mm / 216mm Open Hole Section (2330m-3470m TVD)

5.1 PAP1 original well (311mm / 216mm)

NB. It has been decide to treat both hole sections as one due to the fact the ST#3 sidetrack will be drilled as one hole size(216mm) from the window exit to the target horizontal formation (the Aguathuna)

The section took 45 days to drill from 7644ft (2330m) – 11,384ft (3470m). Average ROPs of 2 - 3fph were seen throughout the section. ROP's increased up to 6fph in the predominantly shale and limestone sections.

5.1.1 311mm section

The 311mm section was drilled using a rotary assembly and the following drilling parameters

WOB (klb)	20 – 22	RPM	60 - 70
SPP (psi)	1750 – 2200	GPM	600

The formation consisted primarily of granite, shale and cataclasite in the upper section. As the well became progressively deeper and the Round Head Thrust hanging wall was exited (2325m), the formations became increasingly dominated by shale, sandstone and shale.

The following bit types were utilized in the 311mm section.

Depth In	No.	Type	IADC Code	Average ROP	Total Footage	Hours	Bit Grading
2293m	25	Smith F27XP	527	4.78fph	287	60	4-E-1/4
2400m	26	Smith F27XP	527	4.6fph	256	55.5	3-E-IH
2477m	27	Smith F2 XXP	???	5.57fph	106	19	2-E-16

The well was drilled in 1994 and it can be seen that the hours for each drilling bit are relatively low compared to the bit performance that would be expected today. The last bit run can be discounted as the BHA was pulled at section TD. The average tripping time at the TD of this section was 3.5 hours POOH, 1 hour for BHA handling, 3.5 hours RIH and 1 hour washing and reaming to bottom (Total 9 hour round trip). A reduction in the number of bit trips would have a very positive effect upon the time taken to drill the well and the chosen BHA should be designed to maximize the number of on bottom drilling hours.

Action: Investigate the use of PDC / Impregnated diamond bits to drill the hole section.
Action: Investigate the use of high torque even wall motors and turbine drilling to increase the rate of penetration and to increase the on bottom drilling time.

The section was drilled with a water based fluid, no specific details are given but average drilling fluid parameters are as follows.

MW	9.1	Gels	3 - 14
FV	44	Ph	9.4
FC	2/32	FL	9.0
PV / YP	15 / 12	Solids	6%
Cl	16000mg/l	Sand	1-2%

The principle observation is the high percentage of low gravity solids (6%) in the drilling fluid. This would indicate that the drilling fluid was not being cleaned adequately (>2% target). The high percentage of low gravity solids will lead to excessive washing of metal components, increased frictional heating, increased ECD and increased formation damage.

Action: Fluid Handling surface equipment should provide 100% redundancy for expected pumping volumes for the well.
Action: Shaker screens should be adequately sized to remove as much solids as possible.
Action: A centrifuge should be considered to assist with the removal of Low Gravity Solids.

Surveys were conducted throughout the section and the final section TD survey at 2501m – 3degrees.

Wireline logs were run over the section and no difficulties are reported in getting to bottom with the logs. This would imply that the well was in gauge and the formations were stable when drilled with water based mud at these hole angles.

5.1.2 216mm section

The 216mm section was initially drilled using air drilling; this was abandoned after drilling 97’ in 3 days. Excessive hole problems with sloughing shales were seen and the decision was made to revert back to a drilling fluid system.

The rest of the section was drilled using a rotary assembly and the following drilling parameters.

WOB (klb)	20 - 40	RPM	75
SPP (psi)	2800 - 3300	GPM	320 - 360

The upper part of the formation was composed of inter bedded sandstone, shale and siltstone. Limestone became increasingly prevalent with depth from 3010m onwards through the Lourdes formation up to 3460m where the formation became dolomitic and hydrocarbons were identified in the Aguathuna at 3472m. Beyond this depth the formations consisted of interbedded shales, limestone and dolomites. The proposed horizontal sidetrack will target the upper Aguathuna so formations below this depth (Costa Bay at 3560m and Catoche at 3598m) were not reviewed.

The following bit types were utilized in the 216mm section.

Depth In	No.	Type	IADC Code	Average ROP	Total Footage	Hours	Bit Grading
2510m	28	Smith SVH	Air Bit	3.3	10	3	4-3-IG
2520m	29	Smith HWR8	Air Bit	14.4	65	4.5	95%new
2533m	28RR	Smith SVH	Air Bit	3.56	41	11.5	3-E-I
2545m	30	Smith F2XXP	517	6.1	603	98.5	4-E-I
2729m	31	Smith F15XXP	517	5.81	352	60.5	7-E-I
2836m	32	Smith F27XXP	527	4.70	409	87	3-E-I
2961m	33	Security SS84F	517	4.80	404	84	3-E-I
3084m	34	Smith F2	517	5.78	573	99	6-E-1/8
3259m	35	Smith F2	517	7.9	774	97.5	5-E-1/8
3495m	36	Security SS82F	437	5.8	116	20	8

The same comments referring to bit hours and tripping time (see 311mm section) apply but are magnified by the increase in depth. Tripping time at 3495m would take approximately 5 hours out, 1 hour for BHA handling and 5 hours to trip back in, 1 hour can be assumed for washing and reaming to bottom, therefore the total tripping time is 12 hours for a round trip.

The section was drilled initially with a mist in an attempt to increase the ROP. This was found to create an unstable wellbore and a water based fluid system was then utilized. Hole stability issues were seen for some time (days) after the initial mist drilling which eventually stabilized. The water based fluid parameters utilized are listed below.

MW	9.1	Gels	2 - 9
FV	44	Ph	9.4
FC	2/32	FL	10
PV / YP	15 / 10	Solids	6%
Cl	16000mg/l	Sand	0.5%

The drilling fluid through the section became progressively worse with Mud Weights creeping up to 10.8ppg. In addition the funnel viscosity was allowed to increase to 63 along with a PV / YP of 34/20. This was purely due to the fact the percentage of low gravity solids in the system was allowed to build up 11.3%.

The knock on effect of this is the circulating ECD's would be very high which would increase the chance of losses and in addition the filter cake development would be thick and spongy (as opposed to thin and slick); again increasing overall torque and drag and the propensity of becoming stuck.

Action: The drilling fluid specification for the section should be maintained within the following parameters

MW	**9.1**	**Gels**	**2 - 10**
FV	**46**	**Ph**	**9.4**
FC	**1/32**	**FL**	**2**
PV / YP	**15 / 10**	**Solids**	**5%**
Cl	**16000mg/l**	**Sand**	**0.5%**

Action: The contracted rig's solids control system should be of an adequate standard to maintain the drilling fluid within these specifications throughout the duration of the well.

Losses (up to 35bph) and gas cut mud were noted after entering the top of the Aguathuna at 3470m. The losses were treated with LCM. A cycle of losses and gains were then experienced through the hole section and control of the well was at times compromised. It is generally accepted that the Aguathuna limestone / dolomite at this point was either karsted or part of a fault.

The proposed horizontal sidetrack will target the Upper Aguathuna so again the potential for losses should be recognized.

Action: Loss mitigation action plan needs to be included in detailed drilling program.

5.2 PAP#1 ST1

The PAP#1 ST1 was drilled to test an up-dip extension to the Garden Hill South Discovery. The target for the PAP#1 ST1 was the Aguathuna Formation approximately 350m to the west of PAP#1.

Operations commenced on the 17th August 2001 when Simmons 31 was rigged up on the PAP#1 well site. A window was cut in the existing PAP#1 311mm from 2334 to 2342m and the well kicked off in a westerly direction from 2339m. The well was drilled to a depth of 3488m within the Table Point Formation limestone that was just above the predicted depth of the top of the Aguathuna reservoir. The open-hole section was logged by Baker Atlas in three runs. The well was then cased to 3488m (178mm) and cemented with 12.2m³ of cement slurry. Top of cement is estimated at 2615m.

The casing was drilled out and the Aguathuna reservoir penetrated to a depth of 3595m. Logs were run and an open-hole drill stem test of the Aguathuna reservoir conducted. No flow was obtained or hydrocarbons recovered on test.

Drilling was continued to a final depth of 4601m where the well was logged. No other indications of hydrocarbons were seen and the well was plugged and abandoned.

The following geological horizons we encountered during the drilling of PAP#1.

Formation	PAP#1 ST1			PAP#1			ST1 relative PAP#1
	MD m	TVDSS m	Isopach m	MD m	TVDSS m	Isopcach m	m
Winterhouse	2326.2	-2092.4	716.9	2324.9	-2093.7	760.0	-1.3
Lourdes	3071.8	-2809.3	164.6	3085.0	-2853.6	167.7	-44.3
Goose Tickle	3245.8	-2973.9	175.1	3252.8	-3021.3	192.2	-47.5
Table Point	3431.0	-3149.0	13.8	3445.0	-3213.5	14.0	-64.6
Aguathuna	3445.5	-3162.8	104.1	3459.0	-3227.5	138.0	-64.8
Catoche	3555.7	-3266.9	177.6	3597.0	-3365.5	154.0	-98.6
Boat Harbour	3745.0	-3444.5	208.1	3751.0	-3519.5	207.0	-75.0
Berry Head	3970.5	-3652.5		3958.0	-3726.5	160.0	-73.9

5.2.1 216mm section (2342 – 3493m)

Drilling of the section utilized the following BHA and parameters

BHA	Description	Depth in and Out
1	Bit – Mach 1XL @1.5deg UBHO sub 9 x HWDP 6 x DC Jars 9 x DC DP	2347m / 2361m

WOB (daN)	2-5	RPM	motor
SPP (kPa)	7600	LPM	1294

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC MX-LR 20ddt	517	3x20	1.3	24.5	3-3-WT-G-E-I-WT-BHA

Winterhouse Grey Dolomite 2347-2361m

BHA 1 was utilized as a kick off assembly. The kick off was performed using a single shot to orient the tool face and drill away from the casing until the BHA was outside of the zone of magnetic interference. During the kick off it is noted there is no auto driller on the drilling brake. This has a negative effect upon the ability to transfer weight smoothly and leads to an overall drop in ROP (20%) over the course of the whole well.

Action: Ensure rig selected has tested and functioning auto driller

BHA	Description	Depth in and Out
2	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	2361m / 2543m

WOB (daN)	14	RPM	Motor (20)
SPP (kPa)	7600	LPM	1300

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC XS-30GD	537	3x20	3	50.75	3-3-WT-G-E-I-WT-BHA

Winterhouse Grey Dolomite 2361- 2543 with coal stringers

BHA#2 was utilized as the first MWD assembly to build hole angle to 15 deg. The assembly responded to the sliding and built and turned as predicted. The bit ROP and bit hours are on the low side of what would be expected today.

Action: Investigate the use of PDC / Impregnated diamond bits to drill the hole section.
Action: Investigate the use of high torque even wall motors and turbine drilling to increase the rate of penetration and to increase the on bottom drilling time.
Action: Investigate the use of sonic data to ascertain the compressive strength of the rock.

BHA	Description	Depth in and Out
3	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	2543m / 2739m

WOB (daN)	15-20	RPM	Motor (20)
SPP (kPa)	8600	LPM	1390

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC XS-35CG	547	3x20	3.9	53	3-5-BT-G-E-I-WT-HR

Winterhouse Sand Shale and Dolomite

BHA#3 built to 20.8 deg with a combination of sliding and rotating. The bit was pulled on hours. No drilling issues were seen while drilling. The action's highlighted above to increase the amount of time spent on bottom drilling will be looked at.

BHA	Description	Depth in and Out
4	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	2739m / 2889m

WOB (daN)	15-20	RPM	Motor (20)
SPP (kPa)	9500	LPM	1390

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC XS40C GDX	627	3x20	3.3	49.25	2-3-BT-G-E-I-WT NO-DMF

Winterhouse Sand Shale Siltsone

Hole was drilled with no problems, no tight spots. Round trip is taking 17.5 hours. Again the emphasis must be placed on extending the bit / motor life.

BHA	Description	Depth in and Out
5	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	2889m / 3108m

WOB (daN)	15-20	RPM	Motor (20)
SPP (kPa)	10,200	LPM	1390

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC XS40C GDX	627	3x20	4.0	67.5	1-3-BT-0-E-I-WT NO-HR

Winterhouse Sand Shale Siltsone

BHA	Description	Depth in and Out
6	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	3108m / 3270m

WOB (daN)	15-20 (27 sliding)	RPM	Motor (20)
SPP (kPa)	10,200	LPM	1390

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC MX35 C	547	3x20	2.4	55.5	3-2-BT-M-E-I-WT NO-DMF

Winterhouse Sand Shale Siltsone to 3115m / Lourdes limestone at 3115m

Torque was becoming an issue while drilling the section, values up to 50% of rotary stall torque were seen. Hole drag 25 – 30 daN

BHA	Description	Depth in and Out
7	Bit – 216mm Dog Sub – 216mm Mach 1XL 1.3deg Nortrak Stab NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	3270m / 3467m

WOB (daN)	15-20 (27 sliding)	RPM	Motor (25)
SPP (kPa)	11,200	LPM	1390

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC MX30 G	537	3x20	2.4	91.0	6-4-CD3-M-F-2mm-CI ER-HR BHA

Winterhouse Sand Shale Siltsone to 3115m / Lourdes limestone at 3115m / Goose Tickle at 3294m / Table Cove at 3445m

The condition of the bit when pulled was close to loosing a cone; this implies that the bit hours were not monitored effectively during the bit run. The hours were twice the number seen on the other bit runs with essentially the same bit type.

Action: Track bit revolutions on a daily basis and use this as a guide for pulling bits.

BHA	Description	Depth in and Out
8 RR (24.5 hrs)	Bit – 216mm Bit Sub NMDC Hang off sub NMDC 6 x DC Jars 9 x DC 9 x HWDP	3467m / 3493m

WOB (daN)	17000	RPM	70
SPP (kPa)	11,200	LPM	1300

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
216mm	HTC XLR20 D	517	3x16	1.5	48.5	4-4-WT-G-E-I-CT-TD

Winterhouse Sand Shale Siltsone to 3115m / Lourdes limestone at 3115m / Goose Tickle at 3294m / Table Cove at 3445m / Table Point 3478

Rotary Torque – 60 -70%, metal cuttings identified after rotating at 70 RPM, this would indicate that the excessive casing wear / whipstock wear was being generated by the rotation of the drill pipe.

The well was then logged from 3740m, no difficulties were reported.

The well was cleaned out with Bit 9RR and then the seven inch liner was then run and cemented, the seven inch liner was dropped outside of the window. It is unsure at what depth the liner top is but it is known that it does not protrude into the original well bore so it can be presumed that it is sitting outside of the window. The top of the cement is calculated as being at 2615m (approximately 270m below the window, therefore it can be assumed that the top part of the liner would be unsupported. The liner top is reported as being at 2363.3m as a note is present on the DDR (1/110/05) stating that the liner top could not be entered without rotation. This statement again supports the theory there is a lack of cement around the liner top and it was essentially unsupported.

Rotation through the liner would have induced reactive torque (left hand turn). This would have in effect potentially led to the backing of the casing joints and damage to the liner top. This theory is supported by the note that CIVC were unable to obtain a pressure seal with a tie back liner.

Action: The liner top must be supported either by cement or a liner hanger packer.

5.2.2 152mm section (3493m – 4035.3m)

Drilling of the section utilized the following BHA and parameters

BHA	Description	Depth in and Out
9	Bit – Near Bit Stab (152mm) 2 x NMDC 1 x String Stab (152mm) 7 x Spiral DC Jars 8 x DC 9 x HWDP DP	3454m (cement top) / 3536m

WOB (daN)	4000	RPM	60
SPP (kPa)	13800	LPM	1100

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
152mm	HTC MX-LR 20ddt	537	3x20	10 (cement drilling)	32.25	2-2-NO-NO-E-0-N0-HR/PR

The BHA was used to drill the cement and the shoe track. Leak off test were conducted and they both leaked. It was also noted that difficulty was experienced in engaging the liner top. It can be assumed that the leak was at the liner top in the open hole section.

BHA	Description	Depth in and Out
10	Bit – Near Bit Stab (152mm) 2 x NMDC 1 x String Stab (152mm) 7 x Spiral DC Jars 8 x DC 9 x HWDP DP	3536m / 3597m

WOB (daN)	8000	RPM	85/95
SPP (kPa)	10200	LPM	1100

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
152mm	HTC STX40	617	3x16	1.9	59	4-4-BT-M/G-E-0-FC-PP

A washout was detected and was found at the 3.5” x 4.5”IF cross over at this stage the bit was pulled and intermediate logs run over the Aguathuna. A DST was conducted and was found to be unproductive.

Following the DST, integrity problems were noted with the liner and the 9 5/8” casing these were repaired after long fishing jobs and cement squeezes. The effectiveness of the cement squeeze has been proved with tests to the casing during both Sidetrack 1 and Sidetrack 2.

Action: 9 5/8" casing should be pressure tested after the completion is pulled.

The review did not continue further due to the fact the proposed ST3 sidetrack will target the Aguathuna section only.

5.3 PAP#1 ST2

The PAP#1 ST2 was drilled in the summer of 2002 to penetrate the Table Point and Aguathuna formations that were productive in original Port-au-Port #1 well. A plug was drilled through in the PAP#1 well before the drilling of the sidetrack commenced on July 29th, 2002. Two DST's were conducted; DST#1 produced 0.22mmscf/day and DST#2 produced 195bopd for 36 hours plus 1.2mmscf/day of gas.

5.3.1 156mm section (3353.7m – 3482m)

BHA 2 did not actually drill as it sidetracked down the side of the casing after the kick off, the window was subsequently cemented and then drilled again to ensure that hole angle could be built.

Drilling of the section utilized the following BHA and parameters

BHA	Description	Depth in and Out
3	Bit Motor 1.83 deg 2 x NMDC 3 x HW Jars 47 x HW 88.9mm DP 127mm DP	3352m / 3374m

WOB (daN)	4/5 daN	RPM	120
SPP (kPa)	14,500	LPM	990l/m

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
156mm	HTC GT1	???	Open	3.5	18	2-5-I

The BHA was used to drill the cement and the rat hole. The principle aim of the bit run was to build angle away from the original well bore.

Action: ST#3 will potentially sidetrack in the Winterhouse or Gneissic formation above the Winterhouse. This potentially could be difficult to sidetrack in as in all likely hood the formation will be harder than the cement so it is essential the following philosophy is adopted to ensure the well is sidetracked successfully.

- **Stiff milling assembly**
- **Short Rat Hole (to prevent mills from tracking down the casing)**
- **Time drill the rat hole**
- **Ensure the bit selected has a side cutting action which will facilitate building hole angle away from the casing.**
- **Consider having cementing on standby during the kick off**

- **Geological samples to be caught at one metre interval to gauge if formation is being cut.**

BHA	Description	Depth in and Out
4	Bit Motor 1.83 deg 2 x NMDC 3 x HW Jars 47 x HW 88.9mm DP 127mm DP	3374m / 3465m

WOB (daN)	7/8 daN	RPM	120
SPP (kPa)	16,600	LPM	990l/m

Diameter	Make	IADC	Jets	ROP	Hrs	Bit Grading
156mm	HTC STX-30	536	Open	3.5	24.5	1-1-I

TD was reached with some gamma ray issues, but overall the drilling appeared to progress reasonably smoothly.

Hearsay states that considerable issues were seen with tripping in and out of the well due to ST1 being open. This caused considerable difficulty with running BHA's and with the DST assembly. The recommendation from the Concept Well Design is to isolate ST#1 as it can be seen to be problematic and there is a doubt over the pressure integrity of the window (which is currently open)).

APPENDIX 3:

(Attachment) Bit Records

PAP #1 - ST #3 Bit Record

size	model	serial #	type	IADC	Bit run #	well	depth in	depth out	metres drilled	ROP m/hr	# cutters	Dull Grade
222	used RC	-	TCI	-	-	-	-	-	**-**	**-**	-	-
216	XR+PS	PJ6333	MT	117	-	Run on ST #2	-	-	-		59 Teeth	-
159	XR20WPS	PL1386	TCI	517	-		-	-	-		97 Inserts	-
156	XR15WPS	MX9841	TCI	447	-		-	-	-		86 Inserts	-
216	FH40ODVPS	PJ0538	TCI	617	6	Run on ST #3	2385	2486	**101**	1.8	157 Inserts	3-4-FC-A-1-1-LT-HR
216	MSi616WBPX	JX0874	PDC	-	7		2486	2788	**302**	5.5	59 + 6	0-1-CT-S-X-I-BT-BHA
216	MSi816WUEPX	JY0420	PDC	-	8		2788	2998	**210**	3.0	59	3-3-CT-A-X-I-BT-PR
216	FH23VPS	PJ8492	TCI	517	9		2998	3060	**62**	3.8	134 Inserts	8-3-BT-M-E-1-CT-DTF
216	FH30ODVPS	PJ0483	TCI	537	10		3060	3100	**40**	4.7	148 Inserts	4-0-LT-C-X-1-BT-PP
216	used RC	LG4633	MT	137	11		3100	3105	**5**	0.5		-
216	FH45OD1PS	PH0976	TCI	617	12		3105	3218	**113**	2.1	163 Inserts	-
216	MDSi813NBPX	JY5284	PDC	-	13		3218	3282	**151**	3.3	64	4-1-CT-A-X-3-LT-PR
216	MSi816WPX	JX1066	PDC	-	14		3282	3565	**283**	4.1	59	3-5-CT-S-X-1-BT-PR
156	XR+PS	PG7950	MT	117	16		3507	3550	**43**	-	56 Teeth	-
156	used RC	FJ1744	MT	-			3550	3550	**-**	-		-
156	MSi613WQBPX	JY6026	PDC	-	17		3550	3975	**425**	7.3	42 + 6	1-6-CT-S-X-1-CT-BHA
156	MSi613WQBPX	JX3095	PDC	-	18		3975	4256	**281**	5.1	42 + 6	LIH

APPENDIX 4:

(Attachment) Casing and Cementing Records

Schlumberger	Cementing Service Report

Job Administration Data   PDI Production

Client	**PDI Production**
Well Name	**PDIP Well # 1**
Field Name	**Port aux Port**
Rig Name	**Nabors 45**
Contractor	**Dragon Lance Management**
Serv. Location	**Mount Pearl, Newfoundland**
Dowell Engineer	**Samson/Binions/Mallard/Penney**
Date	**September 17, 2008**
Description	**Cement Job – Plug (3253-3482 m)**

Cementing Details

Open Hole Summary:		**Prev-Casing Summary:**		**Pressure Summary:**	
Plug Top (MD)	3253	String Size (mm):	193	Start Pressure: (KPA)	7000
Plug Bottom (MD)	3482	Shoe Depth:	3346.7	Finish Pressure (KPA)	1326
Avg. OH size (mm):	168	CMT Inside CSG:	Yes	Under Displace (m3)	1.5
Plug Length (m)	229	Inside Length (m)	93	Pull (Wet/Dry)	Dry
% OH Excess	100	Outside Length (m)	105		
Bit Size (mm):	156	Mixing Rate	0.5	BHST (°C)	51
Water temp:	9	Disp Rate	.8	BHCT (°C)	42
		Cement temp:	10		

Estimated TOC	**3253 m**

Cement Systems:

		Mix Fluid Type
Plug Slurry	'G'+ 5 L/T D175 +8 L/T D145A + 20 L/T D168+ 2 L/T D801	Fresh Water

Fluid Sequence:

	Cement/MudPump:	Density (kg/m3)	Cement Yield (m3/t)	Mix Fluid Yield (l/t)	Program Vol (m3)	Actual Vol (m3)	Tonne
Fresh Water	Cementer	1000			2	2	
Pressure Test	Cementer	1000			21,000 KPA		
Fresh Water	Cementer	1000			3	3	
Slurry	Cementer	1900	0.77	0.454	4.5	5.0	6.5
Water Behind	Cementer	1000			1.3	1.3	
Mud	Rig Pumps	1155			21.3	20	

Comments:

The cementer pumped 1 m^3 of water to confirm circulation, shut down and pressure tested surface lines at 35,000 KPa. There was a leak in the 2x1 valve on the truck and it was changed out. The cementer pumped 1 m water and pressure tested lines at 35,000 Kpa (GOOD TEST) 3 m^3 water was pumped to finish water ahead. Total water 5 m^3. The cementer mixed 5.0 m^3 slurry and pumped on the fly followed by 1.3 m^3 water. The rig pumped 20.3 m^3 mud place plug. The plug pulled dry.

Schlumberger	Customer:	PDI Production
	District:	Mount Pearl
	Representative:	Brian Hickey
	DS Supervisor:	R.Samson
Job Date: 09-17-2008	Well:	Port aux port # 1

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:17:2008:15:02:49	-511	0.00	1008.18	0.008
09:17:2008:15:03:09	-511	0.00	1008.18	0.008
09:17:2008:15:03:29	-511	0.00	1008.18	0.008
09:17:2008:15:03:49	-511	0.00	1008.18	0.008
09:17:2008:15:04:09	-511	0.00	1008.18	0.008
09:17:2008:15:04:29	-511	0.00	1008.18	0.008
09:17:2008:15:04:49	-511	0.00	1008.18	0.008
09:17:2008:15:05:09	-511	0.00	1008.18	0.008
09:17:2008:15:05:29	-511	0.00	1008.18	0.008
09:17:2008:15:05:49	-511	0.00	1008.18	0.008
09:17:2008:15:06:09	-511	0.00	1008.18	0.008
09:17:2008:15:06:29	-511	0.00	1008.18	0.008
09:17:2008:15:06:49	-511	0.00	1008.18	0.008
09:17:2008:15:07:09	-511	0.00	1008.18	0.008
09:17:2008:15:07:29	-511	0.00	1008.18	0.008
09:17:2008:15:07:49	-511	0.00	1008.18	0.008
09:17:2008:15:08:09	-511	0.00	1008.18	0.008
09:17:2008:15:08:29	-511	0.00	1008.18	0.008
09:17:2008:15:08:49	-511	0.00	1008.18	0.008
09:17:2008:15:09:09	-511	0.00	1008.18	0.008
09:17:2008:15:09:29	-511	0.00	1008.18	0.008
09:17:2008:15:09:49	-511	0.00	1008.18	0.008
09:17:2008:15:10:09	-511	0.00	1008.18	0.008
09:17:2008:15:10:29	-511	0.00	1008.18	0.008
09:17:2008:15:10:49	-511	0.00	1008.18	0.008
09:17:2008:15:11:09	-511	0.00	1008.18	0.008
09:17:2008:15:11:29	-511	0.00	1008.18	0.008
09:17:2008:15:11:49	-511	0.00	1008.18	0.008
09:17:2008:15:12:09	-511	0.00	1008.18	0.008
09:17:2008:15:12:29	-511	0.00	1008.18	0.008
09:17:2008:15:12:49	-511	0.00	1008.18	0.008
09:17:2008:15:13:09	-511	0.00	1008.18	0.008
09:17:2008:15:13:29	-511	0.00	1008.18	0.008
09:17:2008:15:13:49	-511	0.00	1008.18	0.008
09:17:2008:15:14:09	-511	0.00	1008.18	0.008
09:17:2008:15:14:29	-511	0.00	1008.18	0.008
09:17:2008:15:14:49	-511	0.00	1008.18	0.008
09:17:2008:15:15:09	-511	0.00	1008.18	0.008
09:17:2008:15:15:29	-511	0.00	1008.18	0.008
09:17:2008:15:15:49	-511	0.00	1008.18	0.008
09:17:2008:15:16:09	-511	0.00	1008.18	0.008
09:17:2008:15:16:29	-511	0.00	1008.18	0.008
09:17:2008:15:16:49	-511	0.00	1008.18	0.008
09:17:2008:15:17:09	-511	0.00	1008.18	0.008
09:17:2008:15:17:29	-511	0.00	1008.18	0.008
09:17:2008:15:17:49	-511	0.00	1008.18	0.008
09:17:2008:15:18:09	-511	0.00	1008.18	0.008
09:17:2008:15:18:29	-511	0.00	1008.18	0.008
09:17:2008:15:18:49	0	0.00	1008.18	0.008
09:17:2008:15:19:09	0	0.00	1008.18	0.008
09:17:2008:15:19:29	0	0.00	1008.18	0.008
09:17:2008:15:19:49	189	0.48	1007.27	0.032
09:17:2008:15:20:00	Start Water Ahead			
09:17:2008:15:20:00	1389	0.32	999.96	0.111
09:17:2008:15:20:09	2967	0.18	1001.78	0.146
09:17:2008:15:20:29	7164	0.24	1002.70	0.201
09:17:2008:15:20:49	1799	0.39	1001.78	0.303
09:17:2008:15:21:09	3756	0.58	1000.87	0.465
09:17:2008:15:21:29	4955	0.64	1000.87	0.676
09:17:2008:15:21:49	5650	0.70	999.96	0.898
09:17:2008:15:22:09	284	0.00	1001.78	1.008
09:17:2008:15:22:29	442	0.00	1000.87	1.008
09:17:2008:15:22:49	379	0.00	1000.87	1.008
09:17:2008:15:23:09	347	0.00	1000.87	1.008
09:17:2008:15:23:29	347	0.00	1000.87	1.008
09:17:2008:15:23:49	316	0.00	1000.87	1.008
09:17:2008:15:23:52	Pressure Test Lines			

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:17:2008:15:24:09	20073	0.02	1000.87	1.010
09:17:2008:15:24:29	33361	0.00	1000.87	1.011
09:17:2008:15:24:49	32919	0.00	1001.78	1.011
09:17:2008:15:25:09	32572	0.00	1001.78	1.011
09:17:2008:15:25:29	32193	0.00	1000.87	1.011
09:17:2008:15:25:49	41756	0.00	1001.78	1.012
09:17:2008:15:26:09	41283	0.00	1000.87	1.012
09:17:2008:15:26:29	40809	0.00	1000.87	1.012
09:17:2008:15:26:49	40462	0.00	1000.87	1.012
09:17:2008:15:27:09	40083	0.00	1000.87	1.012
09:17:2008:15:27:29	39736	0.00	1001.78	1.012
09:17:2008:15:27:49	39420	0.00	1000.87	1.012
09:17:2008:15:28:09	39105	0.00	1001.78	1.012
09:17:2008:15:28:29	38821	0.00	1001.78	1.012
09:17:2008:15:28:49	38505	0.00	1001.78	1.012
09:17:2008:15:29:09	38221	0.00	1001.78	1.012
09:17:2008:15:29:29	37937	0.00	1001.78	1.012
09:17:2008:15:29:49	37653	0.00	1000.87	1.012
09:17:2008:15:30:09	37369	0.00	1000.87	1.012
09:17:2008:15:30:29	37085	0.00	1000.87	1.012
09:17:2008:15:30:49	158	0.00	1000.87	1.012
09:17:2008:15:31:09	95	0.00	1000.87	1.012
09:17:2008:15:31:21	Leak on Connection			
09:17:2008:15:31:21	95	0.00	1000.87	1.012
09:17:2008:15:31:29	95	0.00	1000.87	1.012
09:17:2008:15:31:49	17580	0.00	1000.87	1.015
09:17:2008:15:32:09	34244	0.00	1000.87	1.017
09:17:2008:15:32:29	34023	0.00	1001.78	1.017
09:17:2008:15:32:49	33802	0.00	1000.87	1.017
09:17:2008:15:33:09	33550	0.00	1002.70	1.017
09:17:2008:15:33:29	33329	0.00	1001.78	1.017
09:17:2008:15:33:49	33108	0.00	1001.78	1.017
09:17:2008:15:34:09	32887	0.00	1001.78	1.017
09:17:2008:15:34:29	32698	0.00	1001.78	1.017
09:17:2008:15:34:49	32540	0.00	1001.78	1.017
09:17:2008:15:35:09	32382	0.00	1001.78	1.017
09:17:2008:15:35:29	32193	0.00	1001.78	1.017
09:17:2008:15:35:49	32003	0.00	1001.78	1.017
09:17:2008:15:36:09	31814	0.00	1001.78	1.017
09:17:2008:15:36:29	31530	0.00	1001.78	1.017
09:17:2008:15:36:49	95	0.00	1001.78	1.017
09:17:2008:15:37:09	95	0.00	1001.78	1.017
09:17:2008:15:37:29	126	0.00	1001.78	1.017
09:17:2008:15:37:49	126	0.00	1001.78	1.017
09:17:2008:15:38:09	126	0.00	1001.78	1.017
09:17:2008:15:38:29	95	0.00	1001.78	1.017
09:17:2008:15:38:49	95	0.00	1001.78	1.017
09:17:2008:15:39:09	95	0.00	1000.87	1.017
09:17:2008:15:39:29	95	0.00	1001.78	1.017
09:17:2008:15:39:49	95	0.00	1001.78	1.017
09:17:2008:15:40:09	95	0.00	1001.78	1.017
09:17:2008:15:40:29	95	0.00	1001.78	1.017
09:17:2008:15:40:49	63	0.00	1001.78	1.017
09:17:2008:15:41:09	63	0.00	1001.78	1.017
09:17:2008:15:41:29	63	0.00	1001.78	1.017
09:17:2008:15:41:49	63	0.00	1001.78	1.017
09:17:2008:15:42:09	63	0.00	1001.78	1.017
09:17:2008:15:42:29	63	0.00	1001.78	1.017
09:17:2008:15:42:49	63	0.00	1001.78	1.017
09:17:2008:15:43:09	63	0.00	1001.78	1.017
09:17:2008:15:43:29	63	0.00	1001.78	1.017
09:17:2008:15:43:49	63	0.00	1001.78	1.017
09:17:2008:15:44:09	63	0.00	1001.78	1.017
09:17:2008:15:44:29	63	0.00	1001.78	1.017
09:17:2008:15:44:49	63	0.00	1000.87	1.017
09:17:2008:15:45:09	63	0.00	1000.87	1.017
09:17:2008:15:45:29	63	0.00	1000.87	1.017
09:17:2008:15:45:49	63	0.00	1000.87	1.017
09:17:2008:15:46:04	Change out 2x1 Valve on truck			
09:17:2008:15:46:04	379	0.39	1000.87	1.024
09:17:2008:15:46:09	1641	0.27	1001.78	1.055
09:17:2008:15:46:29	3693	0.66	1000.87	1.184
09:17:2008:15:46:49	6344	0.78	1000.87	1.438

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:17:2008:15:47:04	Pressure Test Lines 35 MPa			
09:17:2008:15:47:04	7417	0.78	999.96	1.634
09:17:2008:15:47:09	6439	0.78	999.96	1.699
09:17:2008:15:47:29	6565	0.78	999.96	1.960
09:17:2008:15:47:49	252	0.00	999.96	2.034
09:17:2008:15:48:09	189	0.00	1000.87	2.034
09:17:2008:15:48:29	36485	0.02	999.96	2.037
09:17:2008:15:48:49	37211	0.00	999.96	2.038
09:17:2008:15:49:09	37022	0.00	1000.87	2.038
09:17:2008:15:49:29	36864	0.00	1000.87	2.038
09:17:2008:15:49:49	36738	0.00	1000.87	2.038
09:17:2008:15:50:09	36611	0.00	1000.87	2.038
09:17:2008:15:50:29	36485	0.00	1000.87	2.038
09:17:2008:15:50:49	36391	0.00	1001.78	2.038
09:17:2008:15:51:09	36296	0.00	1000.87	2.038
09:17:2008:15:51:29	36201	0.00	1000.87	2.038
09:17:2008:15:51:49	158	0.00	1000.87	2.038
09:17:2008:15:52:09	505	0.00	1000.87	2.038
09:17:2008:15:52:29	473	0.00	1000.87	2.038
09:17:2008:15:52:49	3977	0.35	1000.87	2.096
09:17:2008:15:53:09	19347	0.78	1000.87	2.315
09:17:2008:15:53:29	4797	0.43	999.96	2.492
09:17:2008:15:53:49	3156	0.51	999.96	2.637
09:17:2008:15:54:09	6849	0.78	999.96	2.857
09:17:2008:15:54:29	7007	0.78	999.96	3.118
09:17:2008:15:54:49	7733	0.79	999.04	3.379
09:17:2008:15:55:10	6659	0.79	999.96	3.654
09:17:2008:15:55:30	7101	0.78	999.04	3.915
09:17:2008:15:55:50	8017	0.78	999.96	4.177
09:17:2008:15:56:10	7922	0.78	999.96	4.438
09:17:2008:15:56:30	8427	0.78	999.96	4.700
09:17:2008:15:56:50	8017	0.78	999.04	4.961
09:17:2008:15:57:02	Total Water ahead Vol = 5.03 m3			
09:17:2008:15:57:02	252	0.00	999.96	5.030
09:17:2008:15:57:10	1042	0.00	999.96	0.000
09:17:2008:15:57:30	1105	0.00	992.64	0.000
09:17:2008:15:57:50	1105	0.00	964.30	0.000
09:17:2008:15:58:10	1105	0.00	964.30	0.000
09:17:2008:15:58:30	1105	0.00	905.79	0.000
09:17:2008:15:58:50	1105	0.00	953.33	0.000
09:17:2008:15:59:10	1105	0.00	984.41	0.000
09:17:2008:15:59:30	1105	0.00	987.16	0.000
09:17:2008:15:59:50	1105	0.00	987.16	0.000
09:17:2008:16:00:10	1105	0.00	987.16	0.000
09:17:2008:16:00:30	1105	0.00	985.33	0.000
09:17:2008:16:00:50	1073	0.00	986.24	0.000
09:17:2008:16:01:10	1073	0.00	986.24	0.000
09:17:2008:16:01:30	1073	0.00	987.16	0.000
09:17:2008:16:01:50	1073	0.00	988.98	0.000
09:17:2008:16:02:10	1073	0.00	988.98	0.000
09:17:2008:16:02:30	1073	0.00	988.98	0.000
09:17:2008:16:02:50	1073	0.00	988.98	0.000
09:17:2008:16:03:10	1073	0.00	988.98	0.000
09:17:2008:16:03:30	1073	0.00	988.98	0.000
09:17:2008:16:03:50	1042	0.00	989.90	0.000
09:17:2008:16:04:10	1042	0.00	989.90	0.000
09:17:2008:16:04:30	1042	0.00	990.81	0.000
09:17:2008:16:04:50	1042	0.00	990.81	0.000
09:17:2008:16:05:10	1042	0.00	990.81	0.000
09:17:2008:16:05:30	1042	0.00	991.73	0.000
09:17:2008:16:05:50	1042	0.00	991.73	0.000
09:17:2008:16:06:10	1042	0.00	991.73	0.000
09:17:2008:16:06:30	1042	0.00	991.73	0.000
09:17:2008:16:06:50	1042	0.00	992.64	0.000
09:17:2008:16:07:10	1042	0.00	992.64	0.000
09:17:2008:16:07:30	1042	0.00	992.64	0.000
09:17:2008:16:07:50	1042	0.00	991.73	0.000
09:17:2008:16:08:10	1042	0.00	993.56	0.000
09:17:2008:16:08:30	1042	0.00	992.64	0.000
09:17:2008:16:08:50	1010	0.00	993.56	0.000
09:17:2008:16:09:10	1010	0.00	993.56	0.000
09:17:2008:16:09:30	1010	0.00	993.56	0.000
09:17:2008:16:09:50	1010	0.00	992.64	0.000

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:17:2008:16:10:10	1010	0.00	905.79	0.000
09:17:2008:16:10:30	1010	0.00	986.24	0.000
09:17:2008:16:10:50	1010	0.00	985.33	0.000
09:17:2008:16:11:10	1010	0.00	984.41	0.000
09:17:2008:16:11:30	1010	0.00	984.41	0.000
09:17:2008:16:11:50	1010	0.00	996.30	0.000
09:17:2008:16:12:10	1010	0.00	1189.20	0.000
09:17:2008:16:12:30	1010	0.00	1308.04	0.000
09:17:2008:16:12:50	1010	0.00	1405.86	0.000
09:17:2008:16:13:10	1010	0.00	1558.53	0.000
09:17:2008:16:13:22	Start Mixing Slurry			
09:17:2008:16:13:22	1010	0.00	1635.33	0.000
09:17:2008:16:13:30	1010	0.00	1684.69	0.000
09:17:2008:16:13:50	1010	0.00	1791.65	0.000
09:17:2008:16:14:10	3409	0.39	1921.47	0.049
09:17:2008:16:14:30	6155	0.78	1883.99	0.289
09:17:2008:16:14:50	4450	0.51	1898.62	0.518
09:17:2008:16:15:10	3472	0.52	1804.45	0.690
09:17:2008:16:15:30	1641	0.26	1915.07	0.793
09:17:2008:16:15:50	3851	0.55	1895.87	0.952
09:17:2008:16:16:10	10100	0.79	1924.21	1.191
09:17:2008:16:16:30	9437	0.79	1883.99	1.453
09:17:2008:16:16:50	9184	0.78	1812.68	1.714
09:17:2008:16:17:10	5302	0.69	1784.34	1.960
09:17:2008:16:17:30	5839	0.69	1751.43	2.189
09:17:2008:16:17:50	126	0.00	-241.53	2.339
09:17:2008:16:18:10	95	0.00	2003.75	2.339
09:17:2008:16:18:30	63	0.00	1978.15	2.339
09:17:2008:16:18:50	1357	0.55	1851.08	2.457
09:17:2008:16:19:10	1515	0.55	1863.88	2.640
09:17:2008:16:19:30	3156	0.55	1860.22	2.823
09:17:2008:16:19:50	2083	0.48	-241.53	3.005
09:17:2008:16:20:10	410	0.24	1806.28	3.097
09:17:2008:16:20:30	410	0.25	1903.19	3.179
09:17:2008:16:20:50	379	0.24	1857.48	3.261
09:17:2008:16:21:10	379	0.25	1899.53	3.343
09:17:2008:16:21:30	821	0.38	1931.53	3.453
09:17:2008:16:21:50	1262	0.48	1907.76	3.601
09:17:2008:16:22:10	1262	0.49	1897.70	3.773
09:17:2008:16:22:30	1294	0.49	1895.87	3.938
09:17:2008:16:22:50	1294	0.49	1895.87	4.102
09:17:2008:16:23:10	1326	0.49	1895.87	4.266
09:17:2008:16:23:30	1326	0.49	1880.33	4.431
09:17:2008:16:23:50	757	0.37	1858.39	4.576
09:17:2008:16:24:10	757	0.38	1898.62	4.701
09:17:2008:16:24:30	757	0.38	1849.25	4.826
09:17:2008:16:24:50	757	0.38	1802.63	4.951
09:17:2008:16:25:10	537	0.38	1302.56	5.076
09:17:2008:16:25:11	Total Slurry Vol = 5.08 m3			
09:17:2008:16:25:11	473	0.37	-240.62	5.082
09:17:2008:16:25:30	600	0.38	1042.01	0.119
09:17:2008:16:25:50	252	0.37	1003.61	0.244
09:17:2008:16:26:10	221	0.38	992.64	0.370
09:17:2008:16:26:30	252	0.42	988.98	0.496
09:17:2008:16:26:50	631	0.55	984.41	0.673
09:17:2008:16:27:10	726	0.55	988.07	0.856
09:17:2008:16:27:30	726	0.55	986.24	1.038
09:17:2008:16:27:50	757	0.55	995.38	1.221
09:17:2008:16:28:10	221	0.00	942.36	1.358
09:17:2008:16:28:30	95	0.00	988.07	1.358
09:17:2008:16:28:50	32	0.00	978.01	1.358
09:17:2008:16:29:10	0	0.00	985.33	1.358
09:17:2008:16:29:30	32	0.00	989.90	1.358
09:17:2008:16:29:50	0	0.00	976.19	1.358
09:17:2008:16:30:10	0	0.00	995.38	1.358
09:17:2008:16:30:30	0	0.00	996.30	1.358
09:17:2008:16:30:50	0	0.00	996.30	1.358
09:17:2008:16:31:10	32	0.00	995.38	1.358
09:17:2008:16:31:30	0	0.00	995.38	1.358
09:17:2008:16:31:49	Water Behind, Vol = 1.36 m3			
09:17:2008:16:31:49	0	0.00	996.30	1.358
09:17:2008:16:31:50	0	0.00	996.30	0.000

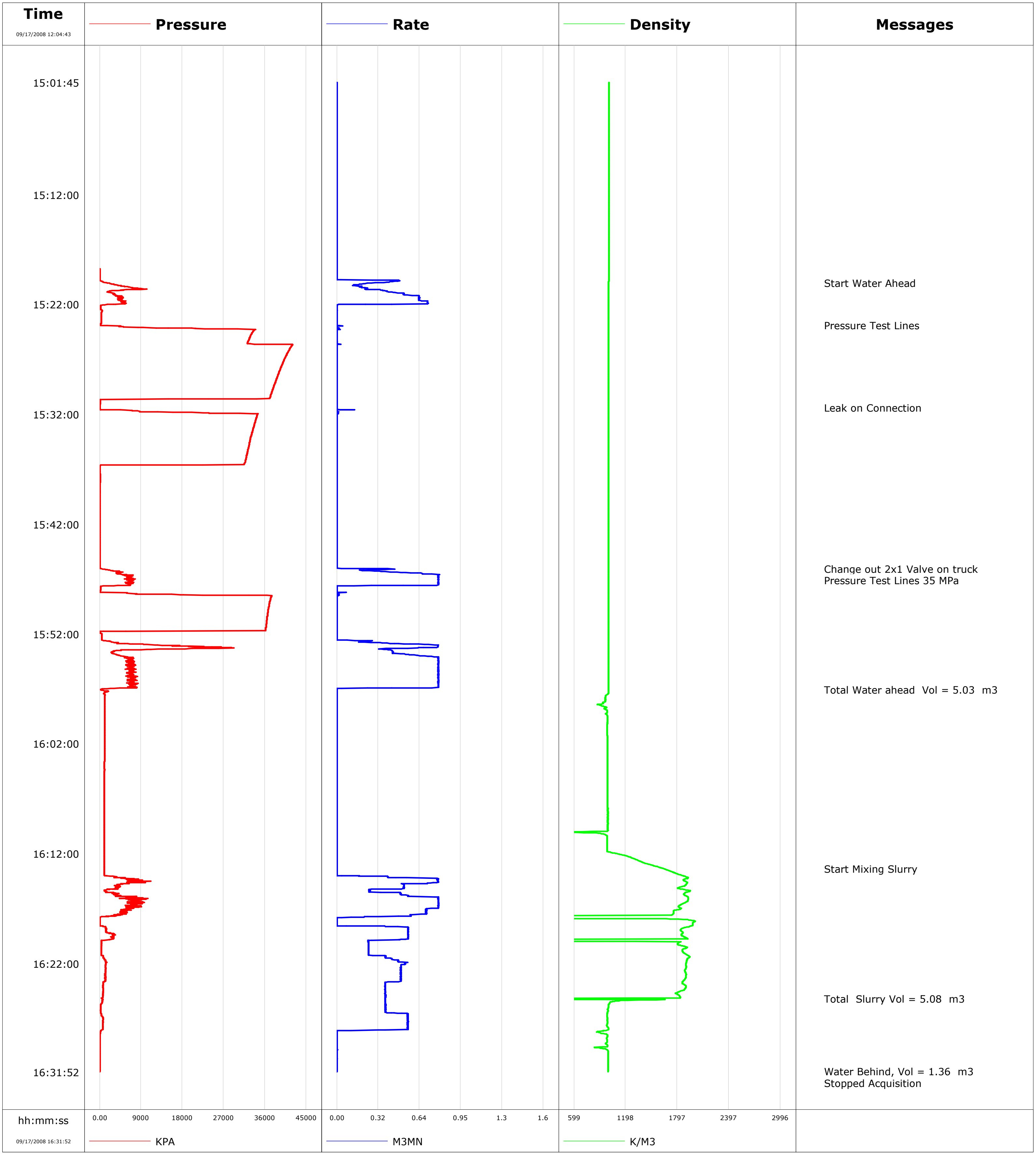
Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3

Schlumberger

Cementing Job Report

CemCAT v1.3

Well	Port aux port # 1	**Client**	PDI Production
Field	Port aux port	**SIR No.**	2202967305
Engineer	R.Samson	**Job Type**	Cement Plug 3253 -3482 M
Country	Canada	**Job Date**	09-17-2008



09/17/2008 17:00:47

Schlumberger

Cementing Service Report

Job Administration Data

PDI Production

Client	**PDI Production**
Well Name	**PDIP Well # 1**
Field Name	**Port aux Port**
Rig Name	**Nabors 45**
Contractor	**Dragon Lance Management**
Serv. Location	**Mount Pearl, Newfoundland**
Dowell Engineer	**Samson/Binions/Mallard/Penney**
Date	**September 20, 2008**
Description	**Cement Job – Plug (3357-2905 m)**

Cementing Details

Open Hole Summary:		**Prev-Casing Summary:**		**Pressure Summary:**	
Plug Top (MD)	2905	String Size (mm):	193	Start Pressure: (KPA)	7000
Plug Bottom (MD)	3357	Shoe Depth:	3346.7	Finish Pressure (KPA)	1326
Avg. OH size (mm):	168.3	CMT Inside CSG:	Yes	Under Displace (m3)	2.0
Plug Length (m)	226/226	Inside Length (m)	441.7	Pull (Wet/Dry)	Dry
% OH Excess	20	Outside Length (m)	10.3		
Bit Size (mm):	156	Mixing Rate	0.5	BHST (°C)	51
Water temp:	9	Disp Rate	.8	BHCT (°C)	42
		Cement temp:	10		

Estimated TOC	**2905 m**

Cement Systems:

		Mix Fluid Type
Plug Slurry	'G'+ 5 L/T D175 +8 L/T D145A + 20 L/T D168+ 2 L/T D801	Fresh Water

Fluid Sequence:

	Cement/MudPump:	**Density** (kg/m3)	**Cement Yield** (m3/t)	**Mix Fluid Yield** (l/t)	**Program Vol** (m3)	**Actual Vol** (m3)	**Tonne**
Fresh Water	Cementer	1000			1	1	
Pressure Test	Cementer	1000			25,000 KPA		
Fresh Water	Cementer	1000			4	4	
Slurry	Cementer	1900	0.77	0.454	5/5	5.5/5.3	14
Water Behind	Cementer	1000			1.2	1.2	
Mud	Rig Pumps	1155			21/19	21/19	

Comments:

The job procedure to place cement slurry from 3357-2905 m. Plug # 1 was placed in two parts A and B and cement slurry was circulated out from part A ensuring that the top of the cement slurry was at 3154.5 m before placing B part of the plug in the hole. With each operation the cementer pumped 1 m^3 of water to confirm circulation, shut down and pressure tested surface lines at 25,000 KPa. Followed by 4 m^3 water. Total water 5 m^3 ahead The cementer mixed 5.5 m^3 slurry followed by 1.2 m^3 water. The rig pumped 21.0 m^3 mud place plug. The plug pulled dry. The rig POOH to 3154.5 m and reversed circulated 0.5 m3 slurry ensuring the cement height. Then placed part B of plug # 1 to a estimated top of cement at 2905 m in the same manner.

Schlumberger	
	Customer: PDI Production
	District: Mount Pearl
	Representative: Brian Hickey
	DS Supervisor: R. Samson
Job Date: 09-20-2008	Well: PDI Production Well # 1

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:20:2008:09:33:05	32	0.00	1002.70	0.000
09:20:2008:09:33:25	32	0.00	1002.70	0.000
09:20:2008:09:33:45	32	0.00	1002.70	0.000
09:20:2008:09:34:00	Water Ahead			
09:20:2008:09:34:00	32	0.00	1001.78	0.000
09:20:2008:09:34:05	32	0.00	1002.70	0.000
09:20:2008:09:34:25	1483	0.24	1001.78	0.041
09:20:2008:09:34:45	1010	0.20	1002.70	0.134
09:20:2008:09:35:05	2872	0.56	1002.70	0.271
09:20:2008:09:35:25	3409	0.62	1002.70	0.475
09:20:2008:09:35:45	3440	0.62	1002.70	0.682
09:20:2008:09:36:05	3440	0.62	1001.78	0.889
09:20:2008:09:36:25	316	0.00	1002.70	1.011
09:20:2008:09:36:45	600	0.00	1002.70	1.011
09:20:2008:09:37:05	789	0.00	1002.70	1.011
09:20:2008:09:37:25	757	0.00	1002.70	1.011
09:20:2008:09:37:45	726	0.00	1002.70	1.011
09:20:2008:09:38:00	Pressure Test Lines			
09:20:2008:09:38:00	726	0.00	1002.70	1.011
09:20:2008:09:38:05	726	0.00	1002.70	1.011
09:20:2008:09:38:25	6249	0.02	1001.78	1.012
09:20:2008:09:38:45	24744	0.00	1001.78	1.013
09:20:2008:09:39:05	24302	0.00	1001.78	1.013
09:20:2008:09:39:25	23987	0.00	1002.70	1.013
09:20:2008:09:39:45	23734	0.00	1002.70	1.013
09:20:2008:09:40:05	23513	0.00	1002.70	1.013
09:20:2008:09:40:25	23292	0.00	1002.70	1.013
09:20:2008:09:40:45	23166	0.00	1002.70	1.013
09:20:2008:09:41:05	23008	0.00	1002.70	1.013
09:20:2008:09:41:25	22914	0.00	1002.70	1.013
09:20:2008:09:41:45	95	0.00	1002.70	1.013
09:20:2008:09:42:05	158	0.00	1002.70	1.013
09:20:2008:09:42:25	537	0.00	1002.70	1.013
09:20:2008:09:42:45	2146	0.48	1000.87	1.097
09:20:2008:09:43:05	3472	0.62	1001.78	1.300
09:20:2008:09:43:25	3566	0.62	1001.78	1.507
09:20:2008:09:43:45	3598	0.62	1002.70	1.714
09:20:2008:09:44:05	3598	0.62	1002.70	1.921
09:20:2008:09:44:25	3440	0.62	1002.70	2.128
09:20:2008:09:44:45	3535	0.62	1002.70	2.336
09:20:2008:09:45:05	3724	0.62	1002.70	2.543
09:20:2008:09:45:25	3756	0.62	1002.70	2.750
09:20:2008:09:45:45	3661	0.62	1002.70	2.957
09:20:2008:09:46:05	3787	0.62	1001.78	3.164
09:20:2008:09:46:25	3756	0.62	1002.70	3.371
09:20:2008:09:46:45	3630	0.62	1002.70	3.579
09:20:2008:09:47:05	3851	0.62	1001.78	3.786
09:20:2008:09:47:25	3977	0.62	1002.70	3.993
09:20:2008:09:47:45	3882	0.62	1001.78	4.200
09:20:2008:09:48:05	3914	0.62	1002.70	4.407
09:20:2008:09:48:25	4040	0.62	1002.70	4.614
09:20:2008:09:48:45	3914	0.62	1002.70	4.821
09:20:2008:09:49:00	Finish Water Ahead 5 m3			
09:20:2008:09:49:00	4135	0.62	1002.70	4.977
09:20:2008:09:49:05	2115	0.20	1001.78	5.016
09:20:2008:09:49:12	Reset Total, Vol = 5.02 m3			
09:20:2008:09:49:12	158	0.00	1002.70	5.024
09:20:2008:09:49:25	1073	0.00	1002.70	0.000
09:20:2008:09:49:45	915	0.00	1002.70	0.000
09:20:2008:09:50:05	1073	0.00	976.19	0.000
09:20:2008:09:50:25	1105	0.00	978.01	0.000
09:20:2008:09:50:45	1105	0.00	973.44	0.000
09:20:2008:09:51:00	Start Mixing Slurry			
09:20:2008:09:51:00	1105	0.00	971.61	0.000
09:20:2008:09:51:05	1105	0.00	970.70	0.000
09:20:2008:09:51:25	1105	0.00	970.70	0.000
09:20:2008:09:51:45	1105	0.00	969.79	0.000

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:20:2008:09:52:25	1105	0.00	1436.94	0.000
09:20:2008:09:52:45	1105	0.00	1657.27	0.000
09:20:2008:09:53:05	1105	0.00	1817.25	0.000
09:20:2008:09:53:25	3882	0.54	1821.82	0.164
09:20:2008:09:53:45	4640	0.55	1845.59	0.346
09:20:2008:09:54:05	3693	0.55	1873.02	0.529
09:20:2008:09:54:25	3377	0.50	1857.48	0.707
09:20:2008:09:54:45	2746	0.48	1894.05	0.867
09:20:2008:09:55:05	2462	0.40	1895.87	1.024
09:20:2008:09:55:25	2146	0.40	1882.16	1.158
09:20:2008:09:55:45	2146	0.41	1891.30	1.293
09:20:2008:09:56:05	1957	0.40	1886.73	1.428
09:20:2008:09:56:25	1925	0.41	1873.93	1.562
09:20:2008:09:56:45	1673	0.40	1890.39	1.697
09:20:2008:09:57:05	1420	0.40	1893.13	1.833
09:20:2008:09:57:25	1389	0.41	1875.76	1.968
09:20:2008:09:57:45	1294	0.40	1868.45	2.103
09:20:2008:09:58:05	1073	0.41	1871.19	2.238
09:20:2008:09:58:25	947	0.40	1883.99	2.372
09:20:2008:09:58:45	947	0.39	1888.56	2.503
09:20:2008:09:59:05	947	0.40	1869.36	2.634
09:20:2008:09:59:25	947	0.40	1862.05	2.765
09:20:2008:09:59:45	947	0.40	1859.31	2.897
09:20:2008:10:00:05	884	0.40	1892.22	3.028
09:20:2008:10:00:25	947	0.39	1817.25	3.159
09:20:2008:10:00:45	821	0.36	1905.02	3.280
09:20:2008:10:01:05	884	0.36	1830.05	3.399
09:20:2008:10:01:25	757	0.36	1874.85	3.519
09:20:2008:10:01:45	789	0.36	1889.47	3.638
09:20:2008:10:02:05	852	0.36	1877.59	3.758
09:20:2008:10:02:25	821	0.36	1871.19	3.878
09:20:2008:10:02:45	821	0.36	1925.13	3.997
09:20:2008:10:03:05	884	0.36	1883.08	4.117
09:20:2008:10:03:25	852	0.36	1926.96	4.236
09:20:2008:10:03:45	884	0.36	1884.90	4.356
09:20:2008:10:04:05	821	0.36	1871.19	4.476
09:20:2008:10:04:25	821	0.36	1915.07	4.595
09:20:2008:10:04:45	852	0.36	1922.39	4.715
09:20:2008:10:05:05	852	0.36	1928.79	4.834
09:20:2008:10:05:25	884	0.36	1908.67	4.954
09:20:2008:10:05:45	884	0.36	1882.16	5.073
09:20:2008:10:06:00	Finish 5.5 m3 slurry			
09:20:2008:10:06:00	821	0.36	1885.82	5.163
09:20:2008:10:06:03	Water Behind			
09:20:2008:10:06:03	821	0.36	1888.56	5.181
09:20:2008:10:06:05	789	0.36	1891.30	5.193
09:20:2008:10:06:25	821	0.36	1895.87	5.313
09:20:2008:10:06:45	821	0.36	1894.05	5.432
09:20:2008:10:06:59	Reset Total, Vol = 5.52 m3			
09:20:2008:10:06:59	757	0.36	1894.05	5.516
09:20:2008:10:07:05	789	0.36	1893.13	0.036
09:20:2008:10:07:25	663	0.36	1073.09	0.156
09:20:2008:10:07:45	284	0.36	1046.58	0.276
09:20:2008:10:08:05	252	0.36	1033.78	0.396
09:20:2008:10:08:25	252	0.36	1023.72	0.516
09:20:2008:10:08:45	252	0.36	1016.41	0.636
09:20:2008:10:09:05	252	0.36	1010.93	0.756
09:20:2008:10:09:25	252	0.36	1006.35	0.876
09:20:2008:10:09:45	252	0.36	997.21	0.996
09:20:2008:10:10:03	Finish 1.2 m3 Water behind			
09:20:2008:10:10:03	252	0.36	984.41	1.105
09:20:2008:10:10:05	252	0.36	978.93	1.117
09:20:2008:10:10:24	Reset Total, Vol = 1.22 m3			
09:20:2008:10:10:24	158	0.08	997.21	1.222
09:20:2008:10:10:25	126	0.00	987.16	0.001
09:20:2008:10:10:45	63	0.00	978.01	0.001
09:20:2008:10:11:03	Rig to displace plug 21 m3 --- Pulled dry			
09:20:2008:10:11:03	32	0.00	999.04	0.001
09:20:2008:10:11:05	32	0.00	999.04	0.001
09:20:2008:10:11:25	32	0.00	999.96	0.001
09:20:2008:10:11:45	63	0.00	984.41	0.001
09:20:2008:10:12:05	32	0.00	999.04	0.001
09:20:2008:10:12:25	32	0.00	959.73	0.001

Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:20:2008:12:36:45	-25312	0.00	-748.91	0.000
09:20:2008:12:37:57	32	0.00	96.72	0.000
09:20:2008:12:38:17	32	0.00	96.72	0.000
09:20:2008:12:38:37	32	0.00	96.72	0.000
09:20:2008:12:38:57	32	0.00	96.72	0.000
09:20:2008:12:39:17	32	0.00	96.72	0.000
09:20:2008:12:39:37	32	0.00	96.72	0.000
09:20:2008:12:39:57	32	0.00	96.72	0.000
09:20:2008:12:40:17	32	0.00	96.72	0.000
09:20:2008:12:40:37	32	0.00	96.72	0.000
09:20:2008:12:40:57	32	0.00	96.72	0.000
09:20:2008:12:41:03	Plug # 1-B			
09:20:2008:12:41:03	32	0.00	96.72	0.000
09:20:2008:12:41:05	Water Ahead			
09:20:2008:12:41:05	32	0.00	96.72	0.000
09:20:2008:12:41:17	95	0.00	96.72	0.000
09:20:2008:12:41:37	915	0.34	96.72	0.045
09:20:2008:12:41:58	3219	0.53	96.72	0.217
09:20:2008:12:42:18	663	0.18	96.72	0.332
09:20:2008:12:42:38	726	0.25	96.72	0.398
09:20:2008:12:42:58	884	0.29	96.72	0.493
09:20:2008:12:43:18	3503	0.62	96.72	0.654
09:20:2008:12:43:38	3440	0.62	96.72	0.861
09:20:2008:12:43:58	600	0.00	96.72	1.016
09:20:2008:12:44:00	Pressure Test Lines at 25 MPa			
09:20:2008:12:44:00	442	0.00	96.72	1.016
09:20:2008:12:44:18	947	0.00	96.72	1.016
09:20:2008:12:44:38	23450	0.01	96.72	1.018
09:20:2008:12:44:58	25407	0.00	96.72	1.018
09:20:2008:12:45:18	25281	0.00	96.72	1.018
09:20:2008:12:45:38	25186	0.00	96.72	1.018
09:20:2008:12:45:58	25091	0.00	96.72	1.018
09:20:2008:12:46:18	24997	0.00	96.72	1.018
09:20:2008:12:46:38	24934	0.00	96.72	1.018
09:20:2008:12:46:58	24839	0.00	96.72	1.018
09:20:2008:12:47:18	24776	0.00	96.72	1.018
09:20:2008:12:47:38	284	0.00	96.72	1.018
09:20:2008:12:47:58	473	0.00	96.72	1.018
09:20:2008:12:48:18	2178	0.48	96.72	1.079
09:20:2008:12:48:38	3282	0.62	96.72	1.280
09:20:2008:12:48:58	3472	0.62	96.72	1.487
09:20:2008:12:49:18	3503	0.62	96.72	1.694
09:20:2008:12:49:38	3535	0.62	96.72	1.901
09:20:2008:12:49:58	3598	0.62	96.72	2.108
09:20:2008:12:50:18	3377	0.62	96.72	2.315
09:20:2008:12:50:38	3503	0.62	96.72	2.523
09:20:2008:12:50:58	3503	0.62	96.72	2.730
09:20:2008:12:51:18	3598	0.62	96.72	2.937
09:20:2008:12:51:38	3566	0.62	96.72	3.144
09:20:2008:12:51:58	3693	0.62	96.72	3.351
09:20:2008:12:52:18	3756	0.62	96.72	3.558
09:20:2008:12:52:38	3756	0.62	96.72	3.766
09:20:2008:12:52:58	3756	0.62	96.72	3.973
09:20:2008:12:53:18	3787	0.62	96.72	4.180
09:20:2008:12:53:38	3630	0.62	96.72	4.387
09:20:2008:12:53:58	3756	0.62	96.72	4.594
09:20:2008:12:54:00	Finish 5 m3 water ahead			
09:20:2008:12:54:00	Start Cement Slurry			
09:20:2008:12:54:00	3882	0.62	96.72	4.615
09:20:2008:12:54:18	3851	0.62	96.72	4.801
09:20:2008:12:54:38	1515	0.19	96.72	4.998
09:20:2008:12:54:43	Reset Total, Vol = 5.00 m3			
09:20:2008:12:54:43	189	0.00	96.72	5.004
09:20:2008:12:54:58	821	0.00	96.72	0.000
09:20:2008:12:55:00	Start Cement Slurry			
09:20:2008:12:55:00	473	0.00	96.72	0.000
09:20:2008:12:55:18	789	0.00	96.72	0.000
09:20:2008:12:55:38	1073	0.00	818.03	0.000
09:20:2008:12:55:58	1073	0.00	978.93	0.000
09:20:2008:12:56:18	1042	0.00	978.01	0.000
09:20:2008:12:56:38	1042	0.00	980.76	0.000
09:20:2008:12:56:58	1042	0.00	1101.43	0.000
09:20:2008:12:57:18	1042	0.00	1215.71	0.000

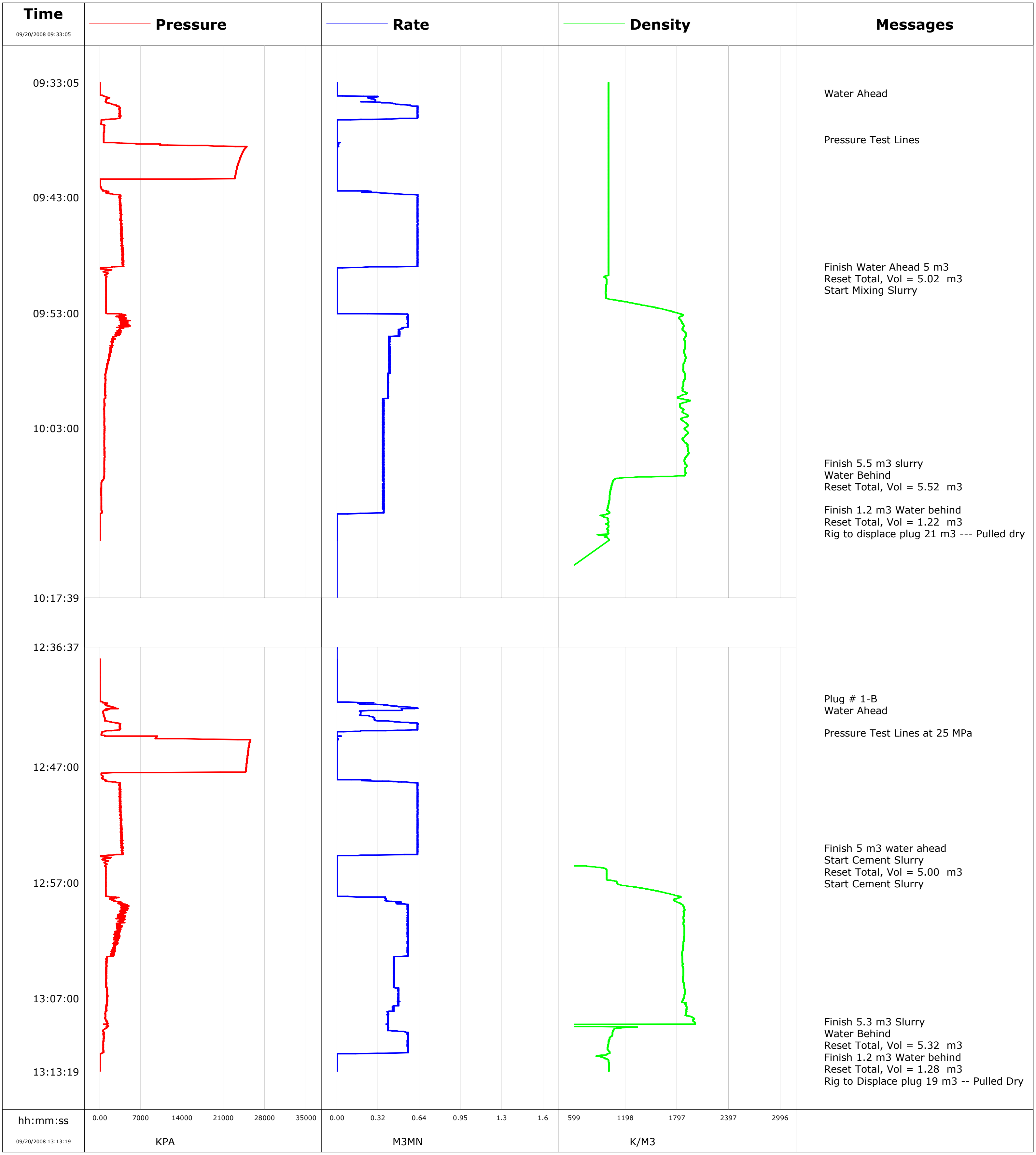
Time mm:dd:yyyy:hh:mm:ss	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3
09:20:2008:12:57:38	1042	0.00	1495.45	0.000
09:20:2008:12:57:58	1042	0.00	1702.98	0.000
09:20:2008:12:58:18	3314	0.38	1823.65	0.025
09:20:2008:12:58:38	2683	0.42	1777.03	0.152
09:20:2008:12:58:58	3819	0.54	1862.05	0.315
09:20:2008:12:59:18	4103	0.55	1881.25	0.498
09:20:2008:12:59:38	3535	0.55	1873.93	0.680
09:20:2008:12:59:58	4008	0.55	1870.28	0.863
09:20:2008:13:00:18	3503	0.55	1873.93	1.046
09:20:2008:13:00:38	3503	0.54	1870.28	1.228
09:20:2008:13:00:58	3188	0.55	1880.33	1.411
09:20:2008:13:01:18	3472	0.55	1880.33	1.593
09:20:2008:13:01:38	2588	0.55	1878.50	1.776
09:20:2008:13:01:58	2336	0.55	1873.93	1.958
09:20:2008:13:02:18	2935	0.55	1869.36	2.141
09:20:2008:13:02:38	2430	0.55	1865.71	2.324
09:20:2008:13:02:58	2651	0.55	1856.56	2.506
09:20:2008:13:03:18	2336	0.55	1851.99	2.689
09:20:2008:13:03:38	1168	0.44	1856.56	2.846
09:20:2008:13:03:58	1199	0.44	1861.13	2.993
09:20:2008:13:04:18	1136	0.44	1861.13	3.140
09:20:2008:13:04:38	1168	0.44	1868.45	3.287
09:20:2008:13:04:58	1136	0.44	1868.45	3.433
09:20:2008:13:05:18	1168	0.44	1864.79	3.580
09:20:2008:13:05:38	1105	0.44	1868.45	3.727
09:20:2008:13:05:58	1168	0.44	1880.33	3.874
09:20:2008:13:06:18	1326	0.48	1883.08	4.027
09:20:2008:13:06:38	1294	0.48	1883.08	4.186
09:20:2008:13:06:58	1262	0.47	1874.85	4.344
09:20:2008:13:07:18	1389	0.48	1851.99	4.503
09:20:2008:13:07:38	1231	0.48	1902.27	4.661
09:20:2008:13:07:58	1231	0.43	1905.93	4.807
09:20:2008:13:08:18	978	0.40	1901.36	4.946
09:20:2008:13:08:38	947	0.39	1969.92	5.077
09:20:2008:13:08:58	1168	0.39	1980.89	5.209
09:20:2008:13:09:00	Finish 5.3 m3 Slurry			
09:20:2008:13:09:00	1357	0.39	1987.29	5.222
09:20:2008:13:09:03	Water Behind			
09:20:2008:13:09:03	1326	0.40	1993.69	5.241
09:20:2008:13:09:15	Reset Total, Vol = 5.32 m3			
09:20:2008:13:09:15	1073	0.38	2005.58	5.320
09:20:2008:13:09:18	1294	0.39	-240.62	0.020
09:20:2008:13:09:38	1073	0.40	1084.06	0.151
09:20:2008:13:09:58	694	0.55	1046.58	0.298
09:20:2008:13:10:18	757	0.55	1034.69	0.480
09:20:2008:13:10:38	694	0.55	1008.18	0.663
09:20:2008:13:10:58	663	0.55	999.04	0.845
09:20:2008:13:11:03	Finish 1.2 m3 Water behind			
09:20:2008:13:11:03	663	0.55	998.13	0.891
09:20:2008:13:11:18	631	0.55	989.90	1.028
09:20:2008:13:11:38	694	0.55	1011.84	1.210
09:20:2008:13:11:47	Reset Total, Vol = 1.28 m3			
09:20:2008:13:11:47	316	0.15	1008.18	1.282
09:20:2008:13:11:50	Rig to Displace plug 19 m3 -- Pulled Dry			
09:20:2008:13:11:50	158	0.00	984.41	0.002
09:20:2008:13:11:58	126	0.00	880.19	0.002
09:20:2008:13:12:18	63	0.00	991.73	0.002
09:20:2008:13:12:38	63	0.00	1004.53	0.002
09:20:2008:13:12:58	32	0.00	1005.44	0.002
09:20:2008:13:13:18	32	0.00	1004.53	0.002

Schlumberger

Cementing Job Report

CemCAT v1.3

Well	PDI Production Well # 1	**Client**	PDI Production
Field	Port Aux Port	**SIR No.**	2202967307
Engineer	R. Samson	**Job Type**	Plug (3357-2905 m)
Country	Canada	**Job Date**	09-20-2008



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Schlumberger

Cementing Service Report

Job Administration Data

PDIP

Client	**PDIProduction inc.**
Well Name	**P a P #1**
Field Name	**Garden Hill South Oil and Gas**
Rig Name	**Nabors 45**
Contractor	**Garden Hill South Oil and Gas**
Serv. Location	**Mount Pearl, Newfoundland**
Dowell Engineer	**Barnes/Bushey/Murphy**
Date	**August 28, 2008**
Description	**Cement Job – Squeeze**

Cementing Details

Open Hole Summary:		**Prev-Casing Summary:**		**Pressure Summary:**	
Plug Top (MD)	N/A	String Size (mm):	127mm	Start Pressure: (KPA)	2000kpa
Plug Bottom (MD)	N/A	Shoe Depth:	N/A	Finish Pressure (KPA)	1000kpa
Avg. OH size (mm):	N/A	CMT Inside CSG:	N/A	Under Displace (m3)	N/A
Plug Length (m)	N/A	Inside Length (m)	N/A	Pull (Wet/Dry)	Dry
% OH Excess	0	Outside Length (m)	N/A		
Bit Size (mm):	N/A	Mixing Rate	0.3m3	BHST (°C)	30
Water temp:	15 Deg C	Disp Rate	0.6m3	BHCT (°C)	25
		Cement temp:	19		

Estimated TOC	**N/A**

Cement Systems:

Plug Slurry	'G'+ 5 L/T D175 +10 L/T D145A + 4L/T D801	**Mix Fluid Type** Fresh Water

Fluid Sequence:

	Cement/MudPump:	Density (kg/m3)	Cement Yield (m3/t)	Mix Fluid Yield (l/t)	Program Vol (m3)	Actual Vol (m3)	Tonne
Fresh Water	Cementer	1000			1	1	
Pressure Test	Cementer	1000			45,000 KPA		
Slurry	Cementer	1900	0.77	0.45462	16	16.8	21.8
Displace/squeeze	Rig	1000			21.3	21.5	

Comments:

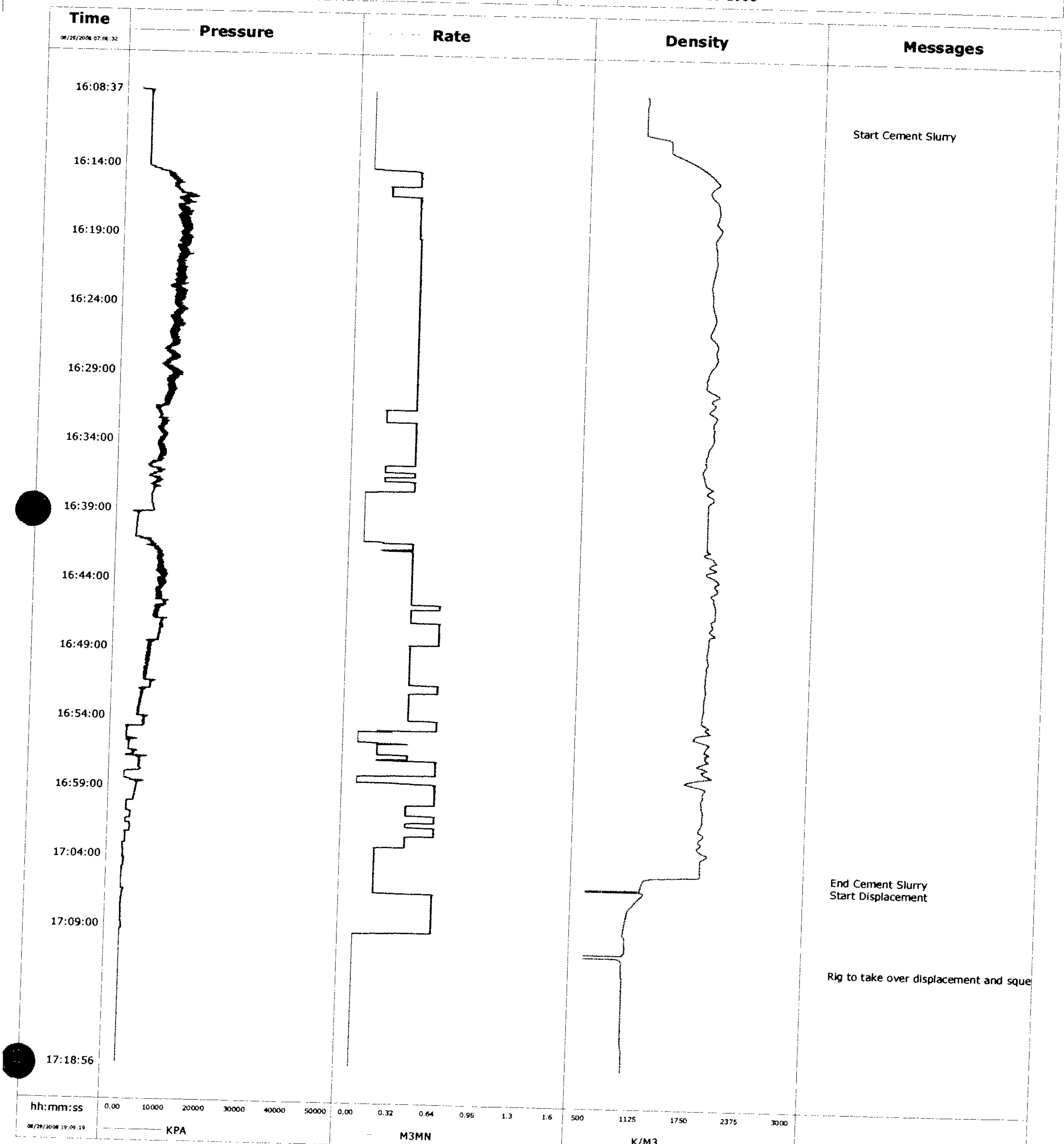
The cementer pumped 1 m^3 of water to confirm circulation and fill lines, shut down and pressure tested surface lines at 45,000 KPa. Lines were tested and the pressure was released at the cement unit. The cementer mixed 16.8 m^3 slurry and pumped on the fly followed by 2.0 m^3 water to clean lines. The rig continued to displace and squeeze 21.5m3. The pipe pulled dry.

Schlumberger

Cementing Job Report

CemCAT v1.3

Well	Port au Port #1	**Client**	Garden Hill South Oil and Gas
Field	Port au Port	**SIR No.**	22022967150
Engineer	Travis Barnes	**Job Type**	Squeeze
Country	Canada	**Job Date**	08-28-2008



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Schlumberger

Cementing Service Report

Customer	Job Number
	2202967152

Well	Location (legal)	Schlumberger Location	Job Start
Port au Port #1		St. Johns, NF	2008-Nov-06

Field	Formation Name/Type	Deviation	Bit Size	Well MD	Well TVD
Garden Hills South Oil and Gas		°	mm	3,550 m	3,468 m

County	State/Province	BHP	BHST	BHCT	Pore Press. Gradient
	Newfoundland	kPa	51 °C	40 °C	kPa/m

Well Master: 0101010101 API / UWI:

Rig Name	Drilled For	Service Via
NABORS 45	Oil	Land

Offshore Zone	Well Class	Well Type
	Old	Exploration

Drilling Fluid Type	Max. Density	Plastic Vis
	lb/gal	cp

Service Line	Job Type
Cementing	BlkSqz Rpr Liner Casing

Max. Allowed Tubing Pressure	Max. Allowed Ann. Pressure	WellHead Connection
kPa	kPa	127mm

Service Instructions

Schlumberger to provide operators and equipment to preform a 178mm Liner using 1950kg/m3 cement.

Casing/Liner

Depth, m	Size, mm	Weight, kg/m	Grade	Thread
3550	178			

Tubing/Drill Pipe

Depth,	Size, mm	Weight, kg/m	Grade	Thread
2128	127			

Perforations/Open Hole

Top, m	Bottom, m	spm	No. of Shots	Total Interval
				m
				Diameter
				mm

Treat Down	Displacement	Packer Type	Packer Depth
Drill Pipe	47.5 m³	None	m

Tubing Vol.	Casing Vol.	Annular Vol.	OpenHole Vol
19.7 m³	27.8 m³	19.5 m³	0.6 m³

Casing/Tubing Secured ☑ 1 Hole Volume Circulated prior to Cementing ☑

Lift Pressure: kPa

Pipe Rotated ☐ Pipe Reciprocated ☐

No. Centralizers: Top Plugs: 1 Bottom Plugs: 1

Cement Head Type: Double

Job Scheduled For:	Arrived on Location:	Leave Location:
11/2/2008 11:00	2008-Nov-03 7:45	2008-Nov-06 22:00

Casing Tools		Squeeze Job	
Shoe Type:	Guide	Squeeze Type	
Shoe Depth:	3550 m	Tool Type:	
Stage Tool Type:		Tool Depth:	m
Stage Tool Depth:	m	Tail Pipe Size:	m
Collar Type:	Float	Tail Pipe Depth:	m
Collar Depth:	3520 m	Sqz Total Vol:	m³

Date	Time 24 hr clock	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3	0 0	0 0	0 0	Message
2008-Nov-06	15:46	32	0.00	1004.53	0.0	0	0	0	
2008-Nov-06	15:46								Start Job
2008-Nov-06	15:46	0	0.00	1004.53	0.0	0	0	0	
2008-Nov-06	15:46								Fill Lines
2008-Nov-06	15:46	0	0.00	1004.53	0.0	0	0	0	
2008-Nov-06	15:48	2083	0.18	1008.18	0.1	0	0	0	
2008-Nov-06	15:50	7796	0.19	999.96	0.6	0	0	0	
2008-Nov-06	15:52	3156	0.00	1000.87	0.7	0	0	0	
2008-Nov-06	15:54	29321	0.00	1001.78	0.7	0	0	0	
2008-Nov-06	15:55								Pressure Test Lines
2008-Nov-06	15:55	35002	0.00	995.38	0.7	0	0	0	
2008-Nov-06	15:56	189	0.00	996.30	0.7	0	0	0	
2008-Nov-06	15:58	63	0.00	987.16	0.7	0	0	0	
2008-Nov-06	15:59								Start Mixing to Batchmixer
2008-Nov-06	15:59	63	0.00	994.47	0.0	0	0	0	
2008-Nov-06	16:00	32	0.00	1166.28	0.0	0	0	0	
2008-Nov-06	16:02	0	0.00	1357.35	0.0	0	0	0	
2008-Nov-06	16:04	0	0.00	1719.38	0.0	0	0	0	
2008-Nov-06	16:06	410	0.07	1977.18	0.1	0	0	0	
2008-Nov-06	16:08	284	0.07	1970.78	0.1	0	0	0	
2008-Nov-06	16:10	473	0.11	1957.98	0.3	0	0	0	
2008-Nov-06	16:12	473	0.11	1956.16	0.6	0	0	0	

Well		Field	Service Date	Customer	Job Number
Port au Port #1 #		Garden Hills South Oil and Gas	08311-Nov-06		2202967152

Date	Time 24 hr clock	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3	0 0	0 0	0 0	Message
2008-Nov-06	16:14	568	0.13	1944.27	0.9	0	0	0	
2008-Nov-06	16:16	505	0.13	1917.76	1.2	0	0	0	
2008-Nov-06	16:18	505	0.11	1903.13	1.4	0	0	0	
2008-Nov-06	16:20	347	0.06	1965.30	1.6	0	0	0	
2008-Nov-06	16:22	316	0.00	1917.76	1.6	0	0	0	
2008-Nov-06	16:24	473	0.11	1940.61	1.8	0	0	0	
2008-Nov-06	16:26	537	0.12	1952.01	2.0	0	0	0	
2008-Nov-06	16:28	600	0.12	1963.90	2.3	0	0	0	
2008-Nov-06	16:30	537	0.12	1931.47	2.5	0	0	0	
2008-Nov-06	16:32	442	0.11	1948.84	2.7	0	0	0	
2008-Nov-06	16:34	473	0.11	1948.84	2.9	0	0	0	
2008-Nov-06	16:36	537	0.11	1962.07	3.1	0	0	0	
2008-Nov-06	16:38	505	0.11	1947.44	3.3	0	0	0	
2008-Nov-06	16:40	316	0.03	1928.24	3.5	0	0	0	
2008-Nov-06	16:42	473	0.11	1966.21	3.6	0	0	0	
2008-Nov-06	16:44	537	0.11	1935.13	3.8	0	0	0	
2008-Nov-06	16:46	505	0.11	1935.13	4.1	0	0	0	
2008-Nov-06	16:48	505	0.11	1961.64	4.3	0	0	0	
2008-Nov-06	16:50	473	0.11	1957.07	4.5	0	0	0	
2008-Nov-06	16:52	505	0.11	1934.21	4.7	0	0	0	
2008-Nov-06	16:54	568	0.11	1965.30	4.9	0	0	0	
2008-Nov-06	16:56	442	0.07	1969.87	5.1	0	0	0	
2008-Nov-06	16:58	1136	0.27	1970.78	5.3	0	0	0	
2008-Nov-06	17:00	63	0.00	1145.26	5.3	0	0	0	
2008-Nov-06	17:01	3125	0.23	1139.77	0.1	0	0	0	
2008-Nov-06	17:01								Start Cement Slurry from batch mixer
2008-Nov-06	17:02	2777	0.43	1133.37	0.3	0	0	0	
2008-Nov-06	17:04	2462	0.34	1111.43	1.3	0	0	0	
2008-Nov-06	17:06	2178	0.36	1095.89	1.9	0	0	0	
2008-Nov-06	17:08	1862	0.57	1086.75	2.8	0	0	0	
2008-Nov-06	17:10	1515	0.57	1080.35	4.0	0	0	0	
2008-Nov-06	17:12	1136	0.55	1072.12	4.8	0	0	0	
2008-Nov-06	17:14	600	0.37	1064.81	5.7	0	0	0	
2008-Nov-06	17:16	347	0.00	1062.06	6.2	0	0	0	
2008-Nov-06	17:18	189	0.16	1202.85	6.3	0	0	0	
2008-Nov-06	17:20	158	0.43	991.67	6.9	0	0	0	
2008-Nov-06	17:22	63	0.50	105.81	7.7	0	0	0	
2008-Nov-06	17:24	32	0.00	105.81	8.1	0	0	0	
2008-Nov-06	17:26	63	0.00	105.81	8.5	0	0	0	
2008-Nov-06	17:28	7322	0.52	1499.05	9.4	0	0	0	
2008-Nov-06	17:30	8206	0.52	1574.93	10.4	0	0	0	
2008-Nov-06	17:32	8080	0.52	1625.21	11.4	0	0	0	
2008-Nov-06	17:34	8395	0.52	1630.70	12.5	0	0	0	
2008-Nov-06	17:36	6786	0.52	1584.07	13.5	0	0	0	
2008-Nov-06	17:38	6628	0.52	1583.16	14.6	0	0	0	
2008-Nov-06	17:40	7101	0.55	1580.42	15.5	0	0	0	
2008-Nov-06	17:40								True balance weight 1950kg/m3
2008-Nov-06	17:40	7164	0.55	1580.42	15.6	0	0	0	
2008-Nov-06	17:42	6439	0.55	1580.42	16.7	0	0	0	
2008-Nov-06	17:44	6060	0.55	1580.42	17.8	0	0	0	
2008-Nov-06	17:46	5271	0.55	1579.50	18.9	0	0	0	
2008-Nov-06	17:48	284	0.00	1732.18	19.6	0	0	0	

Well	Field	Service Date	Customer	Job Number
Port au Port #1 #	Garden Hills South Oil and Gas	08311-Nov-06		2202967152

Date	Time 24 hr clock	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3	0 0	0 0	0 0	Message
2008-Nov-06	17:49	284	0.00	1311.64	19.6	0	0	0	
2008-Nov-06	17:49								End Batchmixed Cement 16m3 tank gage
2008-Nov-06	17:49								Start cement on fly
2008-Nov-06	17:49	252	0.00	1336.33	0.0	0	0	0	
2008-Nov-06	17:50	252	0.00	1754.12	0.0	0	0	0	
2008-Nov-06	17:52	2052	0.20	1951.58	0.2	0	0	0	
2008-Nov-06	17:54	1389	0.10	1953.41	0.4	0	0	0	
2008-Nov-06	17:56	1326	0.11	1936.04	0.7	0	0	0	
2008-Nov-06	17:58	663	0.00	1983.58	0.8	0	0	0	
2008-Nov-06	18:00	2872	0.27	1947.93	1.1	0	0	0	
2008-Nov-06	18:02	1168	0.07	1966.21	1.4	0	0	0	
2008-Nov-06	18:04	2304	0.16	1941.53	1.7	0	0	0	
2008-Nov-06	18:06	3314	0.27	1946.10	2.1	0	0	0	
2008-Nov-06	18:08								NRD pluging off
2008-Nov-06	18:08	2115	0.27	1893.93	2.5	0	0	0	
2008-Nov-06	18:08	1704	0.24	-221.53	2.6	0	0	0	
2008-Nov-06	18:10	1357	0.15	1935.07	3.0	0	0	0	
2008-Nov-06	18:12	1894	0.27	1918.62	3.4	0	0	0	
2008-Nov-06	18:14	2241	0.27	1893.02	3.9	0	0	0	
2008-Nov-06	18:16	32	0.00	1491.68	4.3	0	0	0	
2008-Nov-06	18:18	63	0.00	1487.11	4.3	0	0	0	
2008-Nov-06	18:19								End cement 20.3m3 total
2008-Nov-06	18:19	63	0.00	1484.37	4.3	0	0	0	
2008-Nov-06	18:20	63	0.00	1495.34	0.0	0	0	0	
2008-Nov-06	18:20								Rig droped plug
2008-Nov-06	18:20	126	0.00	1558.42	0.0	0	0	0	
2008-Nov-06	18:20								Start Displacement
2008-Nov-06	18:20	694	0.10	1339.01	0.0	0	0	0	
2008-Nov-06	18:22	1894	0.43	1044.64	0.7	0	0	0	
2008-Nov-06	18:24	-32	0.00	983.39	1.5	0	0	0	
2008-Nov-06	18:26	316	0.11	1032.75	1.6	0	0	0	
2008-Nov-06	18:28	0	0.00	1001.67	1.6	0	0	0	
2008-Nov-06	18:28								4m3 tank gage displaced, rig take over
2008-Nov-06	18:28	0	0.00	1001.67	1.6	0	0	0	
2008-Nov-06	18:30								Clean up pump
2008-Nov-06	19:56								End Job
2008-Nov-06	19:57								Rig bumped plug at 29545kpa
2008-Nov-06	19:57								Total displacement 2815 strokes
2008-Nov-06	19:57	-32	0.00	97.72	0.0	0	0	0	

Well	Field	Service Date	Customer	Job Number
Port au Port #1 #	Garden Hills South Oil and Gas	08311-Nov-06		2202967152

Date	Time	Treating Pressure	Flow Rate	Density	Volume	0	0	0	Message
	24 hr clock	kPa	m3/min	kg/m3	m3	0	0	0	

Post Job Summary

Average Pump Rates, bpm				Volume of Fluid Injected, m^3			
Slurry	N2	Mud	Maximum Rate	Total Slurry	Mud	Spacer	N2
0.2			0.7	20.4	16	3	

Treating Pressure Summary, kPa					Breakdown Fluid	
Maximum	Final	Average	Bump Plug to	Breakdown	Volume	Density
35400		16000	35000		m^3	lb/gal

Avg. N2 Percent	Designed Slurry Volume	Displacement	Mix Water Temp		
%	21.6 m^3	47.5 m^3	8 °C	☐ Cement Circulated to Surface? Volume m^3	☐ Washed Thru Perfs To m

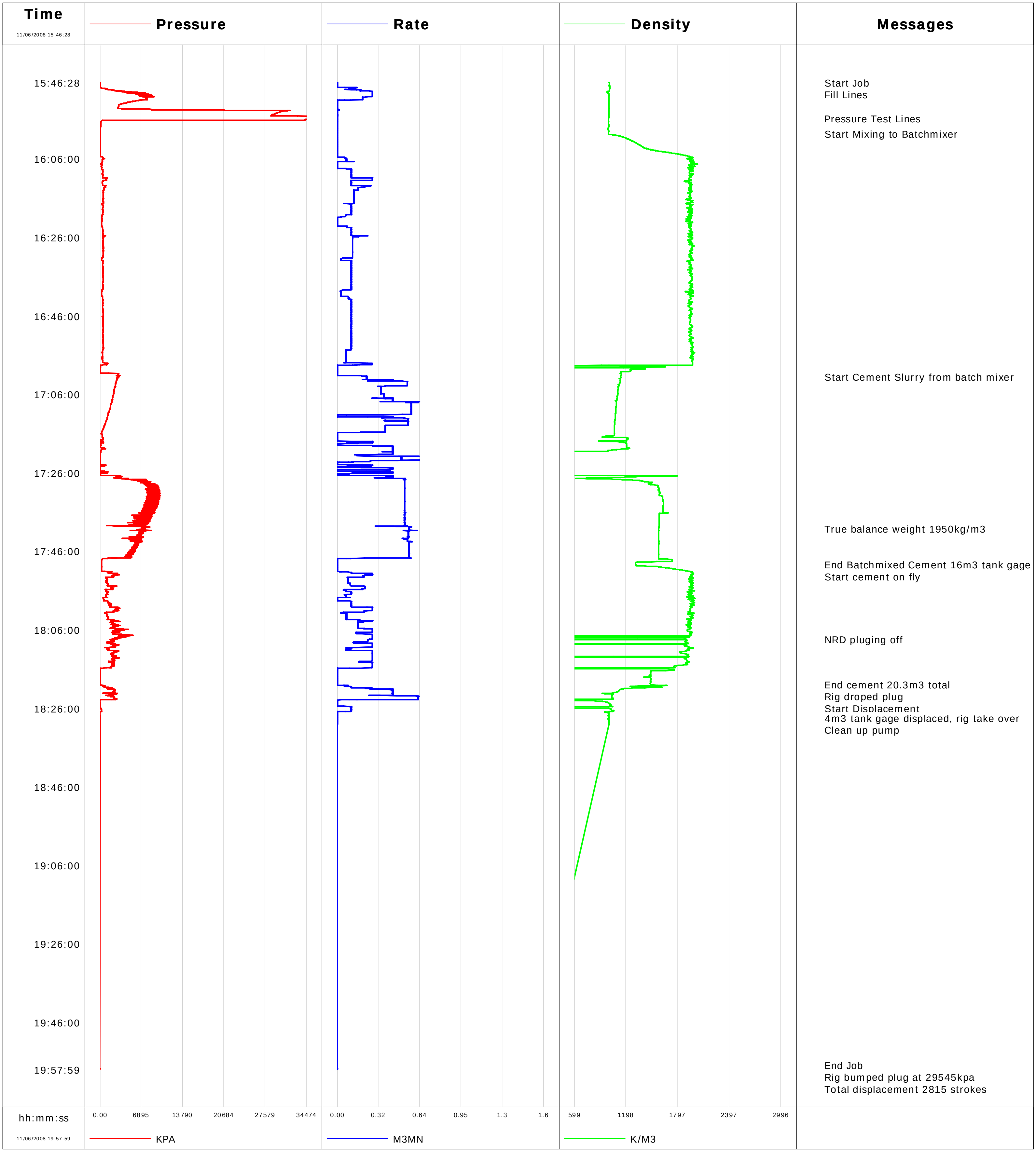
Customer or Authorized Representative	Schlumberger Supervisor		
Brian, Hickey,	Barnes, Travis	☐ CirculationLost	☑ Job Completed

Schlumberger

Cementing Job Report

CemCAT v1.3

Well	Port au Port #1	**Client**	PDIP
Field	Port au Port	**SIR No.**	2202967152
Engineer	Travis Barnes	**Job Type**	Liner
Country	Canada	**Job Date**	11-06-2008



01/18/2009 20:25:06

Schlumberger

Cementing Service Report

Customer	Job Number
PDI Production	2202967404

Well	Location (legal)	Schlumberger Location	Job Start
Port au Port #1	Stephenville	St. Johns, NF	2008-Nov-11

Field	Formation Name/Type	Deviation	Bit Size	Well MD	Well TVD
Port au Port		°	mm	3,550 m	3,468 m

County	State/Province	BHP	BHST	BHCT	Pore Press. Gradient
	Newfoundland	kPa	51 °C	40 °C	kPa/m

Well Master: 0101010101 | API / UWI:

Rig Name	Drilled For	Service Via
NABORS 45	Oil	Land

Offshore Zone	Well Class	Well Type
	Old	Exploration

Drilling Fluid Type	Max. Density	Plastic Vis
	kg/m³	cp

Service Line	Job Type
Cementing	Set Cement Plug P/W

Max. Allowed Tubing Pressure	Max. Allowed Ann. Pressure	WellHead Connection
kPa	kPa	89mm

Service Instructions

Schlumberger to preform a cement plug using Class G cement 1950kg/m3

Casing/Liner

Depth, m	Size, mm	Weight, kg/m	Grade	Thread
3550	178			

Tubing/Drill Pipe

Depth,	Size, mm	Weight, kg/m	Grade	Thread
3539	89			

Perforations/Open Hole

Top, m	Bottom, m	spm	No. of Shots	Total Interval
				m
				Diameter
				mm

Treat Down	Displacement	Packer Type	Packer Depth
Drill Pipe	16.5 m³	None	m

Tubing Vol.	Casing Vol.	Annular Vol.	OpenHole Vol
16.5 m³	0 m³	0 m³	0 m³

Casing/Tubing Secured ☑ | 1 Hole Volume Circulated prior to Cementing ☑

Lift Pressure: kPa

Pipe Rotated ☐ | Pipe Reciprocated ☐

No. Centralizers: | Top Plugs: | Bottom Plugs:

Cement Head Type:

Job Scheduled For:	Arrived on Location:	Leave Location:
11/11/2008 8:00	2008-Nov-11 11:30	2008-Nov-12 0:00

Casing Tools

Shoe Type:	
Shoe Depth:	m
Stage Tool Type:	
Stage Tool Depth:	m
Collar Type:	
Collar Depth:	m

Squeeze Job

Squeeze Type	
Tool Type:	
Tool Depth:	m
Tail Pipe Size:	m
Tail Pipe Depth:	m
Sqz Total Vol:	m³

Date	Time (24 hr clock)	Treating Pressure (kPa)	Flow Rate (m3/min)	Density (kg/m3)	Volume (m3)	0 (0)	0 (0)	0 (0)	Message
2008-Nov-11	20:39	-95	0.00	1003.61	0.0	0	0	0	
2008-Nov-11	20:39	-95	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:39								Start Job
2008-Nov-11	20:39	-95	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:39								Fill Lines 1m3
2008-Nov-11	20:40	-95	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	20:41	-126	0.00	-240.62	0.0	0	0	0	
2008-Nov-11	20:43	2304	0.51	1003.61	0.2	0	0	0	
2008-Nov-11	20:44	3977	0.50	1002.70	0.9	0	0	0	
2008-Nov-11	20:45								Pressure Test Lines
2008-Nov-11	20:45	347	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:45	63	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:47	36485	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:48	35507	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:49	35538	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:51	-32	0.00	1002.70	1.1	0	0	0	
2008-Nov-11	20:52	-32	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:53	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:55	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:56	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:57	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	20:59	-63	0.00	1002.70	0.0	0	0	0	

Well	Field	Service Date	Customer	Job Number
Port au Port #1 #	Port au Port	08316-Nov-11	PDI Production	2202967404

Date	Time 24 hr clock	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3	0 0	0 0	0 0	Message
2008-Nov-11	21:00	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	21:01	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:03	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:04	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:05	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:07	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:08								Mixing mix fluid
2008-Nov-11	21:08	-63	0.00	978.93	0.0	0	0	0	
2008-Nov-11	21:08	-63	0.00	983.50	0.0	0	0	0	
2008-Nov-11	21:09	-63	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	21:11	-63	0.00	1003.61	0.0	0	0	0	
2008-Nov-11	21:12	-63	0.00	1000.87	0.0	0	0	0	
2008-Nov-11	21:13	-63	0.00	988.07	0.0	0	0	0	
2008-Nov-11	21:15	-63	0.00	987.16	0.0	0	0	0	
2008-Nov-11	21:16	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:17	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:19	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:20	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:21	-63	0.00	983.50	0.0	0	0	0	
2008-Nov-11	21:23	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:24	-63	0.00	983.50	0.0	0	0	0	
2008-Nov-11	21:25	-63	0.00	984.41	0.0	0	0	0	
2008-Nov-11	21:25								Start batchmixing
2008-Nov-11	21:25	-63	0.00	983.50	0.0	0	0	0	
2008-Nov-11	21:27	-63	0.00	1002.70	0.0	0	0	0	
2008-Nov-11	21:28	-63	0.00	1000.28	0.0	0	0	0	
2008-Nov-11	21:29	-63	0.00	1218.96	0.0	0	0	0	
2008-Nov-11	21:31	-63	0.00	1683.38	0.0	0	0	0	
2008-Nov-11	21:32	600	0.00	1947.58	0.0	0	0	0	
2008-Nov-11	21:33	505	0.00	1945.18	0.0	0	0	0	
2008-Nov-11	21:35	379	0.27	1955.24	0.5	0	0	0	
2008-Nov-11	21:36	1073	0.50	1934.21	1.0	0	0	0	
2008-Nov-11	21:37	316	0.22	1936.96	1.5	0	0	0	
2008-Nov-11	21:39	284	0.21	1987.24	1.8	0	0	0	
2008-Nov-11	21:40	600	0.45	1915.02	2.4	0	0	0	
2008-Nov-11	21:41	316	0.21	1932.39	2.8	0	0	0	
2008-Nov-11	21:43	726	0.45	1903.13	3.3	0	0	0	
2008-Nov-11	21:44	915	0.45	1982.67	3.9	0	0	0	
2008-Nov-11	21:45	978	0.45	1925.07	4.5	0	0	0	
2008-Nov-11	21:47	410	0.17	1839.14	5.1	0	0	0	
2008-Nov-11	21:48	284	0.00	1939.70	5.1	0	0	0	
2008-Nov-11	21:49	884	0.50	1932.39	5.6	0	0	0	
2008-Nov-11	21:51	884	0.51	1947.01	6.0	0	0	0	
2008-Nov-11	21:52	978	0.50	1944.27	6.7	0	0	0	
2008-Nov-11	21:53	0	0.00	474.23	6.8	0	0	0	
2008-Nov-11	21:54	0	0.00	1067.55	6.8	0	0	0	
2008-Nov-11	21:54								Done batchmixing, true weight 1955kg/m3
2008-Nov-11	21:54	0	0.00	1102.29	6.8	0	0	0	
2008-Nov-11	21:54								Reset Total, Vol = 6.79 m3
2008-Nov-11	21:55	0	0.00	1099.60	0.0	0	0	0	
2008-Nov-11	21:56	0	0.00	1102.35	0.0	0	0	0	
2008-Nov-11	21:57	-32	0.00	356.36	0.0	0	0	0	
2008-Nov-11	21:58	-32	0.00	364.58	0.0	0	0	0	

Well		Field	Service Date	Customer	Job Number
Port au Port #1 #		Port au Port	08316-Nov-11	PDI Production	2202967404

Date	Time 24 hr clock	Treating Pressure kPa	Flow Rate m3/min	Density kg/m3	Volume m3	0 0	0 0	0 0	Message
2008-Nov-11	21:58								Start Cement Slurry
2008-Nov-11	21:59	-32	0.00	361.84	0.0	0	0	0	
2008-Nov-11	22:00	284	0.00	359.10	0.0	0	0	0	
2008-Nov-11	22:01	1673	0.38	353.61	0.3	0	0	0	
2008-Nov-11	22:03	2209	0.30	349.04	0.8	0	0	0	
2008-Nov-11	22:04	4166	0.45	357.27	1.4	0	0	0	
2008-Nov-11	22:05	2904	0.45	361.84	2.0	0	0	0	
2008-Nov-11	22:07	2967	0.49	362.76	2.6	0	0	0	
2008-Nov-11	22:08	2651	0.49	364.58	3.3	0	0	0	
2008-Nov-11	22:09	2304	0.49	366.41	3.9	0	0	0	
2008-Nov-11	22:11	2493	0.49	364.58	4.6	0	0	0	
2008-Nov-11	22:12	2556	0.49	364.58	5.2	0	0	0	
2008-Nov-11	22:13	2651	0.49	365.50	5.9	0	0	0	
2008-Nov-11	22:14								Reset Total, Vol = 6.39 m3
2008-Nov-11	22:14	347	0.07	365.50	6.4	0	0	0	
2008-Nov-11	22:15								Remark
2008-Nov-11	22:15	189	0.00	365.50	0.0	0	0	0	
2008-Nov-11	22:15	126	0.00	364.58	0.0	0	0	0	
2008-Nov-11	22:15								Water behind
2008-Nov-11	22:15	1641	0.45	968.87	0.1	0	0	0	
2008-Nov-11	22:16	1799	0.89	1003.61	0.8	0	0	0	
2008-Nov-11	22:17	663	0.41	995.38	2.0	0	0	0	
2008-Nov-11	22:18	252	0.00	993.56	2.0	0	0	0	
2008-Nov-11	22:18								Reset Total, Vol = 2.03 m3
2008-Nov-11	22:19	0	0.00	998.13	0.0	0	0	0	
2008-Nov-11	22:19								Rig to displace
2008-Nov-11	22:19	0	0.00	997.21	0.0	0	0	0	
2008-Nov-11	22:19								Clean up pump
2008-Nov-11	22:19	0	0.00	996.30	0.0	0	0	0	
2008-Nov-11	22:20	-32	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	22:21	726	0.00	1038.35	0.0	0	0	0	
2008-Nov-11	22:23	158	0.00	916.76	0.0	0	0	0	
2008-Nov-11	22:24	757	0.00	993.56	0.0	0	0	0	
2008-Nov-11	22:25	757	0.00	994.47	0.0	0	0	0	
2008-Nov-11	22:27	95	0.00	1001.78	0.0	0	0	0	
2008-Nov-11	22:28	789	0.00	994.47	0.0	0	0	0	
2008-Nov-11	22:29	694	0.00	994.47	0.0	0	0	0	
2008-Nov-11	22:31	821	0.00	1000.87	0.0	0	0	0	
2008-Nov-11	22:32	95	0.00	969.79	0.0	0	0	0	
2008-Nov-11	22:33	316	0.00	996.30	0.0	0	0	0	
2008-Nov-11	22:35	0	0.00	976.19	0.0	0	0	0	
2008-Nov-11	22:36	-32	0.00	954.24	0.0	0	0	0	
2008-Nov-11	22:37	-32	0.00	935.05	0.0	0	0	0	
2008-Nov-11	22:39	1136	0.00	883.85	0.0	0	0	0	
2008-Nov-11	22:40	316	0.00	857.34	0.0	0	0	0	
2008-Nov-11	22:41	537	0.00	978.01	0.3	0	0	0	
2008-Nov-11	22:43	284	0.00	980.76	0.3	0	0	0	
2008-Nov-11	22:44	284	0.00	979.84	0.3	0	0	0	
2008-Nov-11	22:45								Plug balanced 1001strokes/14m3
2008-Nov-11	22:45	284	0.00	981.67	0.3	0	0	0	
2008-Nov-11	22:45	252	0.00	982.59	0.3	0	0	0	
2008-Nov-11	22:45								End Job
2008-Nov-11	22:45	284	0.00	981.67	0.3	0	0	0	

Well	Field	Service Date	Customer	Job Number
Port au Port #1 #	Port au Port	08316-Nov-11	PDI Production	2202967404

Date	Time (24 hr clock)	Treating Pressure (kPa)	Flow Rate (m3/min)	Density (kg/m3)	Volume (m3)	0 (0)	0 (0)	0 (0)	Message
2008-Nov-11	22:47	63	0.00	982.59	0.3	0	0	0	
2008-Nov-11	22:48	-32	0.00	982.59	0.3	0	0	0	
2008-Nov-11	22:49	-63	0.00	983.50	0.3	0	0	0	
2008-Nov-11	22:51	-63	0.00	984.41	0.3	0	0	0	
2008-Nov-11	22:52	-63	0.00	984.41	0.3	0	0	0	
2008-Nov-11	22:53	-63	0.00	986.24	0.3	0	0	0	
2008-Nov-11	22:55	-63	0.00	987.16	0.3	0	0	0	
2008-Nov-11	22:56	-95	0.00	987.16	0.3	0	0	0	
2008-Nov-11	22:57	-95	0.00	987.16	0.3	0	0	0	
2008-Nov-11	22:59	-95	0.00	987.16	0.3	0	0	0	
2008-Nov-11	23:00	-95	0.00	987.16	0.3	0	0	0	
2008-Nov-11	23:01	-95	0.00	988.07	0.3	0	0	0	
2008-Nov-11	23:03	-95	0.00	987.16	0.3	0	0	0	
2008-Nov-11	23:04	-95	0.00	989.90	0.3	0	0	0	
2008-Nov-11	23:05	-95	0.00	990.81	0.3	0	0	0	
2008-Nov-11	23:07	-95	0.00	991.73	0.3	0	0	0	
2008-Nov-11	23:08	-95	0.00	991.73	0.3	0	0	0	
2008-Nov-11	23:09	-95	0.00	991.73	0.3	0	0	0	
2008-Nov-11	23:11	-95	0.00	991.73	0.3	0	0	0	
2008-Nov-11	23:12	-95	0.00	992.64	0.3	0	0	0	
2008-Nov-11	23:13	-95	0.00	992.64	0.3	0	0	0	
2008-Nov-11	23:15	-95	0.00	992.64	0.3	0	0	0	
2008-Nov-11	23:16	-95	0.00	992.64	0.3	0	0	0	
2008-Nov-11	23:17	-95	0.00	991.73	0.3	0	0	0	
2008-Nov-11	23:19	-25470	0.00	-748.91	0.3	0	0	0	
2008-Nov-11	23:20	-25470	0.00	-748.91	0.3	0	0	0	
2008-Nov-11	23:21	-25470	0.00	-748.91	0.3	0	0	0	
2008-Nov-11	23:23	-25470	0.00	-748.91	0.3	0	0	0	

Post Job Summary

Average Pump Rates, m³/m				Volume of Fluid Injected, m³			
Slurry	N2	Mud	Maximum Rate	Total Slurry	Mud	Spacer	N2
0.4			0.8	6.4	0	7	

Treating Pressure Summary, kPa					Breakdown Fluid	
Maximum	Final	Average	Bump Plug to	Breakdown	Volume	Density
7000		2000			m³	kg/m³

Avg. N2 Percent	Designed Slurry Volume	Displacement	Mix Water Temp	☐ Cement Circulated to Surface? Volume	☐ Washed Thru Perfs To
%	6.4 m³	16.5 m³	10 °C	m³	m

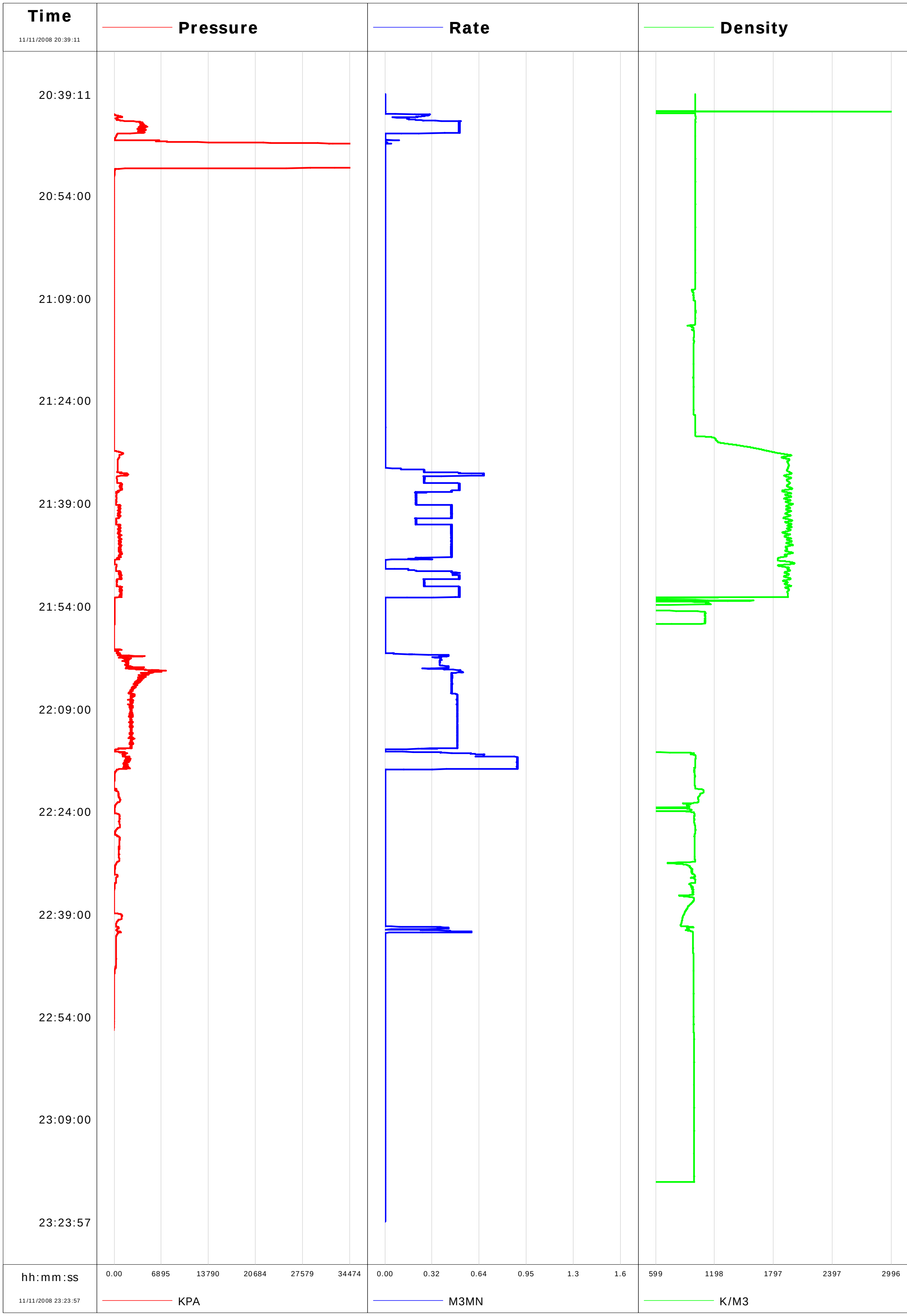
Customer or Authorized Representative	Schlumberger Supervisor	☐ CirculationLost	☑ Job Completed
Brian, Hickey,	Barnes, Travis		

Schlumberger

Cementing Job Report

CemCAT v1.3

Well	Port au Port #1	**Client**	PDI Production
Field	Port au Port	**SIR No.**	2202967404
Engineer	Travis Barnes	**Job Type**	Plug
Country	Canada	**Job Date**	11-11-2008



Messages

Start Job
Fill Lines 1m3

Pressure Test Lines

Mixing mix fluid

Start batchmixing

Done batchmixing, true weight 1955kg/m
Reset Total, Vol = 6.79 m3
Start Cement Slurry

Reset Total, Vol = 6.39 m3
Remark
Water behind
Reset Total, Vol = 2.03 m3
Rig to displace
Clean up pump

Plug balanced 1001strokes/14m3
End Job
Stopped Acquisition

01/19/2009 14:33:58

CASING DESIGN ANALYSIS

Garden Hill South – Port au Port #1

Sidetrack #3

Submitted to:

Mick Hibbert – Operations Manager

June 20, 2008

Prepared by:

Kleber Almeida & Steve McIntosh

Dragon Lance Management Corporation

DRAGON LANCE
MANAGEMENT CORPORATION

Technical Document Cover Sheet

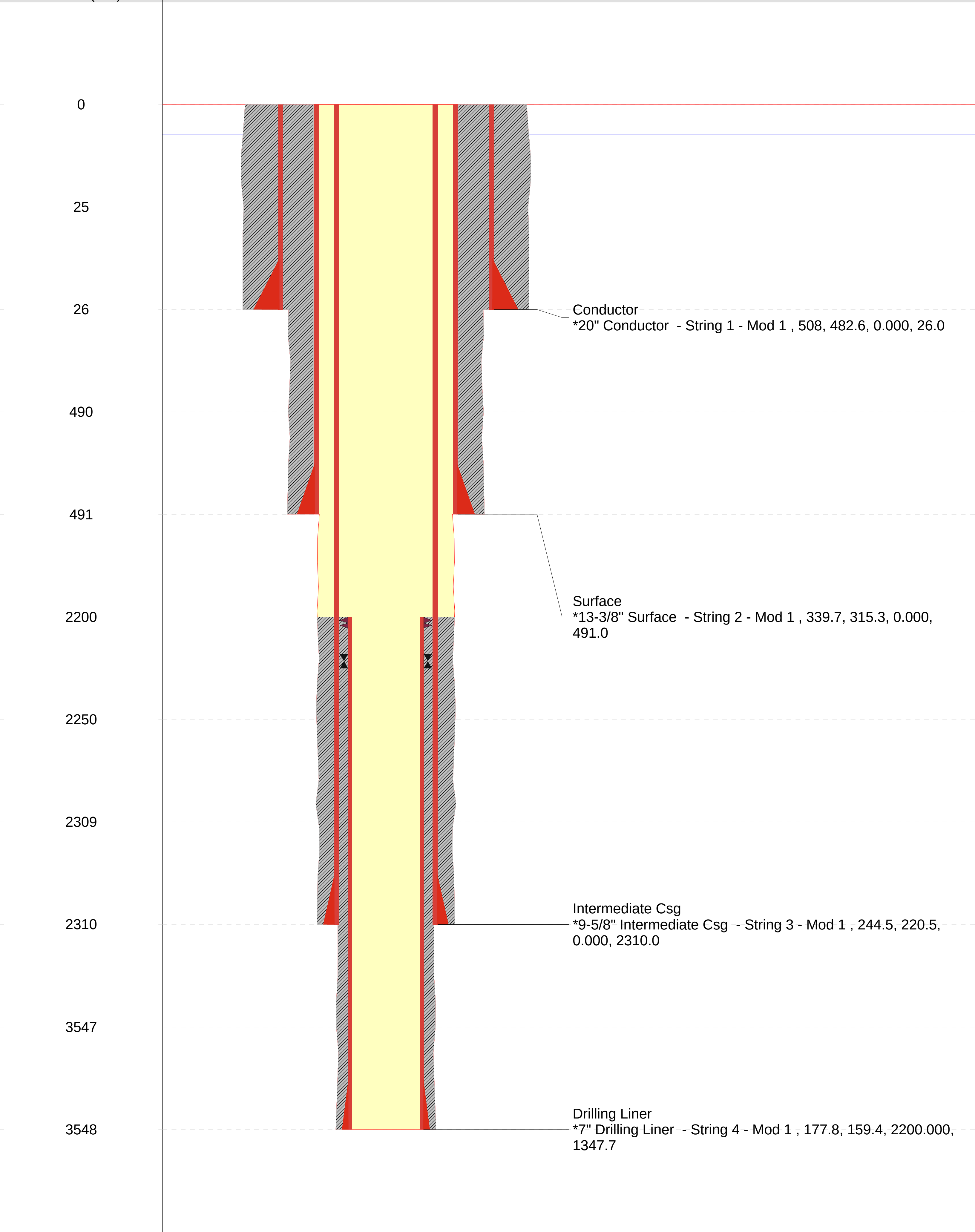
Title:	Casing Design Analysis
Project Name:	Garden Hills South PaP #1 Side Track #3
Client:	PDI Production (PDIP) Inc.
Client Ref:	
"DLMC" Ref:	2008-0018-NFL
Pages (including cover):	70

Record of Revision

Rev. No.	Date	Revision	Prepared	Reviewed	Approved
0	June 5th 2008	Original / Original Draft	Kleber Almeida	Steve McIntosh	n/a
1	June 10th 2008	Draft updated	Ming Zhou	Steve McIntosh	Ming Zhou
1	June 16th 2008	Final for D & C	n/a	Steve McIntosh	Kleber Almeida
1	June 20th 2008	Final for D & C	n/a	n/a	Steve McIntosh
1	June 20th 2008	Sent to PDIP for Review	n/a	Mick Hibbert	

main: 20/06/2008 (KB-Grd: 7.3 m)

mRKB (MD)	Schematic - Actual



Wellbore

Des	OD	Int (MD)
main	660.4	0.000-26.000
main	444 1/2	26.000-491.000
main	311.2	491.000-2310.000
main	215.9	2310.000-3547.730

*20" Conductor - String 1 - Mod 1

No.	Des	OD	ID	Top (MD)	Len
	Conductor *20" Conductor - String 1 - Mod 1	508	482.6	0.000	26.0

*13-3/8" Surface - String 2 - Mod 1

No.	Des	OD	ID	Top (MD)	Len
	Surface *13-3/8" Surface - String 2 - Mod 1	339.7	315.3	0.000	491.0

*9-5/8" Intermediate Csg - String 3 - Mod 1

No.	Des	OD	ID	Top (MD)	Len
	Intermediate Csg *9-5/8" Intermediate Csg - String 3 - Mod 1	244.5	220.5	0.000	2310.0

*7" Drilling Liner - String 4 - Mod 1

No.	Des	OD	ID	Top (MD)	Len
	Drilling Liner *7" Drilling Liner - String 4 - Mod 1	177.8	159.4	2200.000	1347.7

*20" Conductor - String 1 - Mod 1 Shoe

No.	Des	OD	Top (MD)	Len
	*20" Conductor - String 1 - Mod 1 Shoe	508	25.086	0.9

*13-3/8" Surface - String 2 - Mod 1 Shoe

No.	Des	OD	Top (MD)	Len
	*13-3/8" Surface - String 2 - Mod 1 Shoe	339.7	490.086	0.9

*9-5/8" Intermediate Csg - String 3 - Mod 1 Shoe

No.	Des	OD	Top (MD)	Len
	*9-5/8" Intermediate Csg - String 3 - Mod 1 Shoe	244.5	2309.086	0.9

*7" Drilling Liner - String 4 - Mod 1 Shoe

No.	Des	OD	Top (MD)	Len
	*7" Drilling Liner - String 4 - Mod 1 Shoe	177.8	3546.816	0.9

Cement

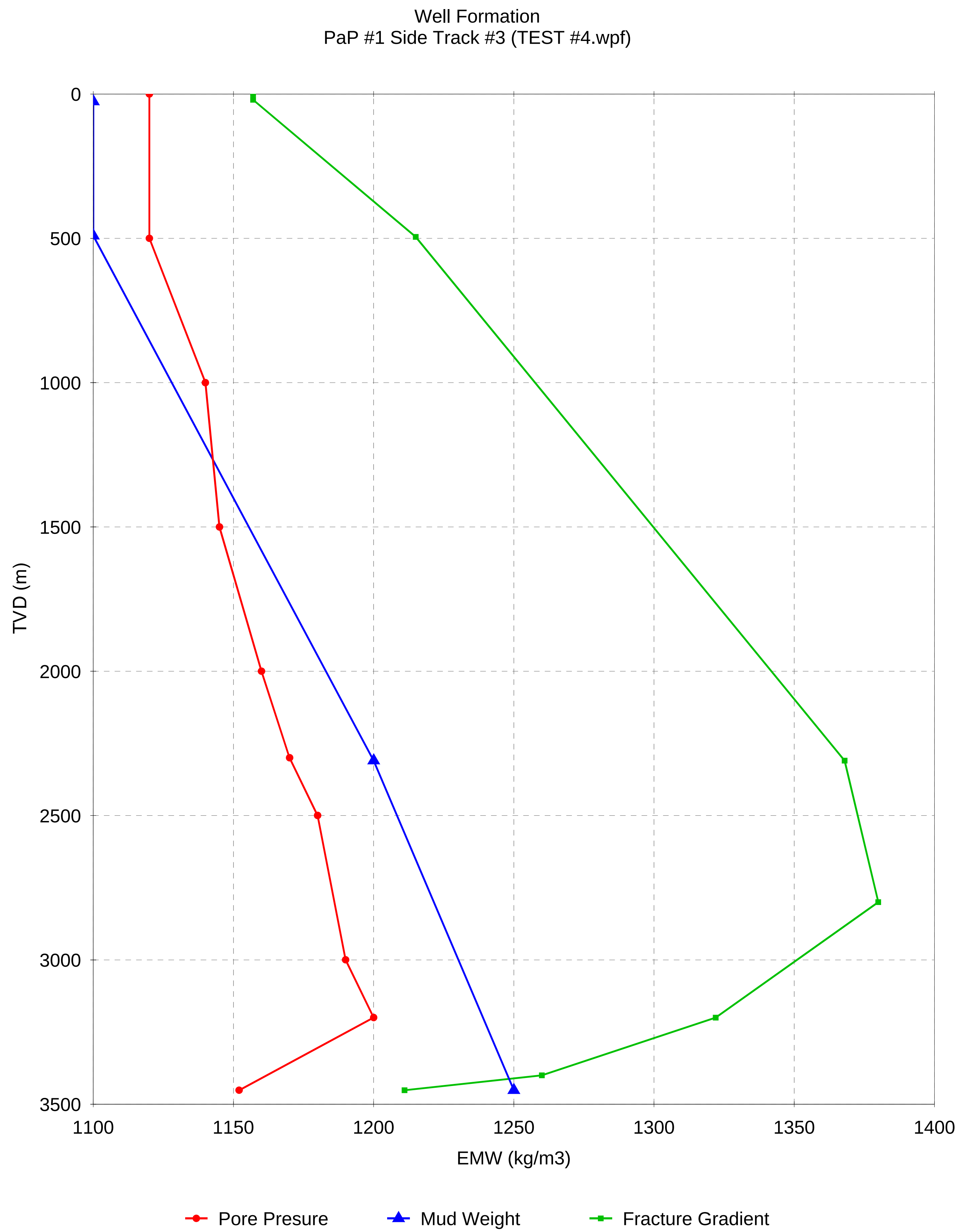
Des	Int (MD)	Date
Conductor *20" Conductor - String 1 - Mod 1 -Cement1	0.000-26.000	
Surface *13-3/8" Surface - String 2 - Mod 1 -Cement1	0.000-491.000	
Drilling Liner *7" Drilling Liner - String 4 - Mod 1 -Cement1	2200.000-2200.000	
Intermediate Csg *9-5/8" Intermediate Csg - String 3 - Mod 1 -Cement2	2250.000-2310.000	
Drilling Liner *7" Drilling Liner - String 4 - Mod 1 -Cement2	2200.000-3547.730	

Formations

Des	Top (MD)
Reference 0	0.000

Well Survey
PaP #1 Side Track #3 (TEST #4.wpf)

Survey				
MD (m)	**Inclination (deg)**	**Azimuth (deg)**	**TVD (m)**	**Dogleg severity (deg/30 m)**
0			0	
495	1	0	494.975	0
2300	1.5	150.88	2299.797	0
2309.76	1.79	150.88	2309.553	0.9
2339.76	3.07	221.74	2339.531	3
2433.2	12	247.86	2432.088	3
2981.93	12	247.86	2968.827	0
3011.93	10	247.86	2998.274	2
3161.93	0	247.86	3147.514	2
3322.73	0	30.58	3308.314	0
3352.73	12	30.61	3338.095	12
3442.73	48	30.61	3414.762	12
3547.73	89.99	30.61	3451.562	12
4450	89.99	30.61	3451.72	0

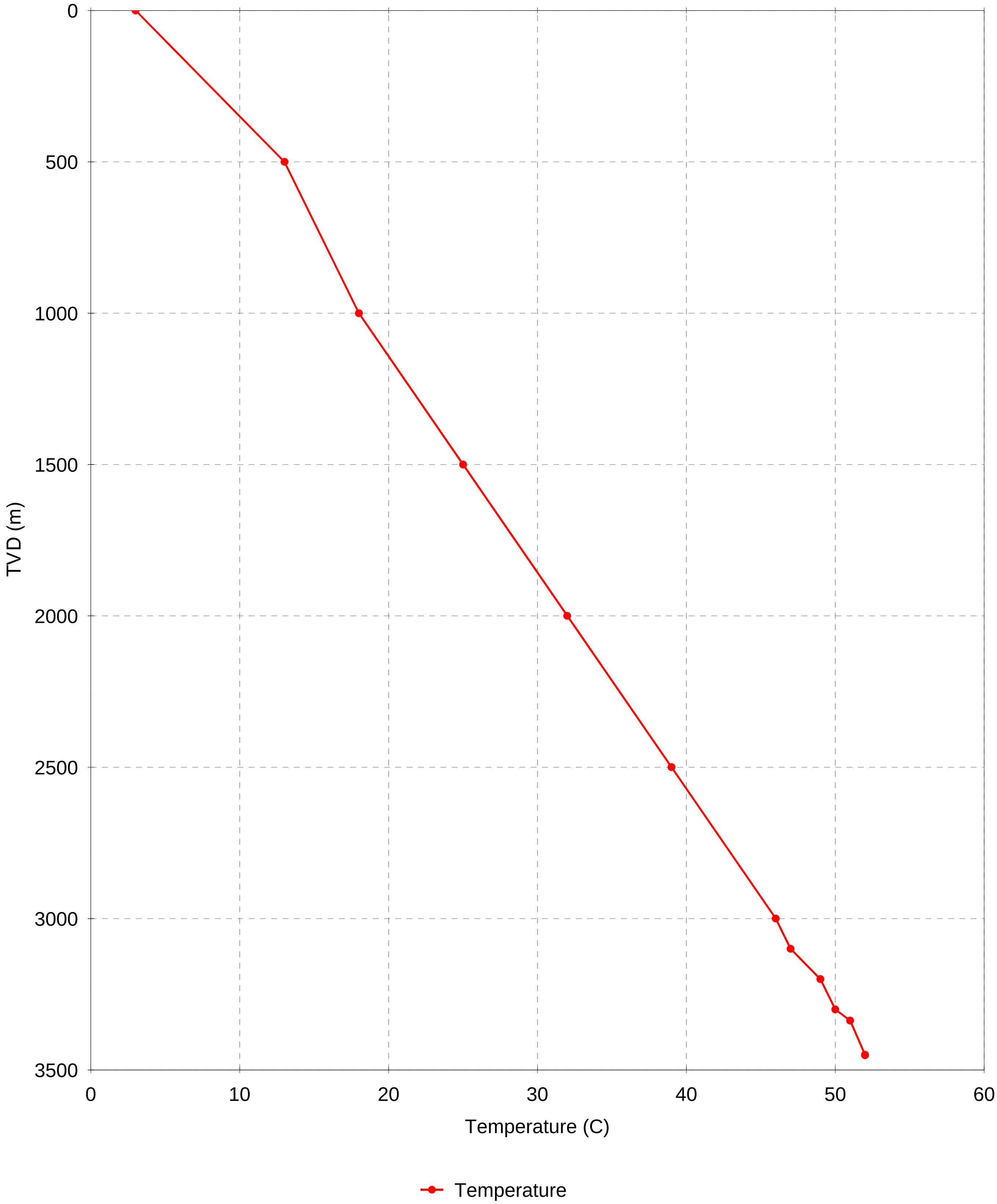


June 20 2008, 22:38 PM

Well Formation
PaP #1 Side Track #3 (TEST #4.wpf)

Pore Pressure				Mud Weight			Fracture Gradient		
TVD (m)	**Pressure (kPa)**	**EMW (kg/m3)**		**TVD (m)**	**MW (kg/m3)**		**TVD (m)**	**Pressure (kPa)**	**EMW (kg/m3)**
0	0			25.999	1100		0	0	
500	5492	1120		490.975	1100		20	227	1157
1000	11180	1140		2309.793	1200		495	5900	1215
1500	16843	1145		3451.562	1250		2310	31000	1368
2000	22751	1160					2800	37882	1380
2300	26390	1170					3200	41500	1322
2500	28930	1180					3400	42000	1260
3000	35010	1190					3451.7	41000	1211
3200	37658	1200							
3451.7	39000	1152							

Well Static Temperature
PaP #1 Side Track #3 (TEST #4.wpf)



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Well Static Temperature
PaP #1 Side Track #3 (TEST #4.wpf)

Static Temperature		
TVD (m)	**Temperature (C)**	**Gradient (C/100m)**
0	3	
500	13	2
1000	18	1
1500	25	1.4
2000	32	1.4
2500	39	1.4
3000	46	1.4
3100	47	1.4
3200	49	1.4
3300	50	1.4
3337	51	1.4
3450	52	1.4
3451.7	52	1.4

String/Model Name: *20" Conductor - String 1 - Mod 1

Summary of Minimum Design Factors

MD Top (m)	MD Bottom (m)	Pipe Description	Cost ($/m)
0.000	26.000	508.0 mm 158.4933 kg/m K-55 STC	

Total String Cost ($):

Minimum Design Factors

Load	Design Factor	Cause	MD (m)	Position	Load Name
Burst	>100	B	0	Below	press test-str #1
Collapse	18.93	E	26	Above	1/3 evac-1611' str1
Tension					Tension loading does not occur
Compression	>100	M	26	Above	1/3 evac-1611' str1
Von Mises	66.09		26	Above	1/3 evac-1611' str1

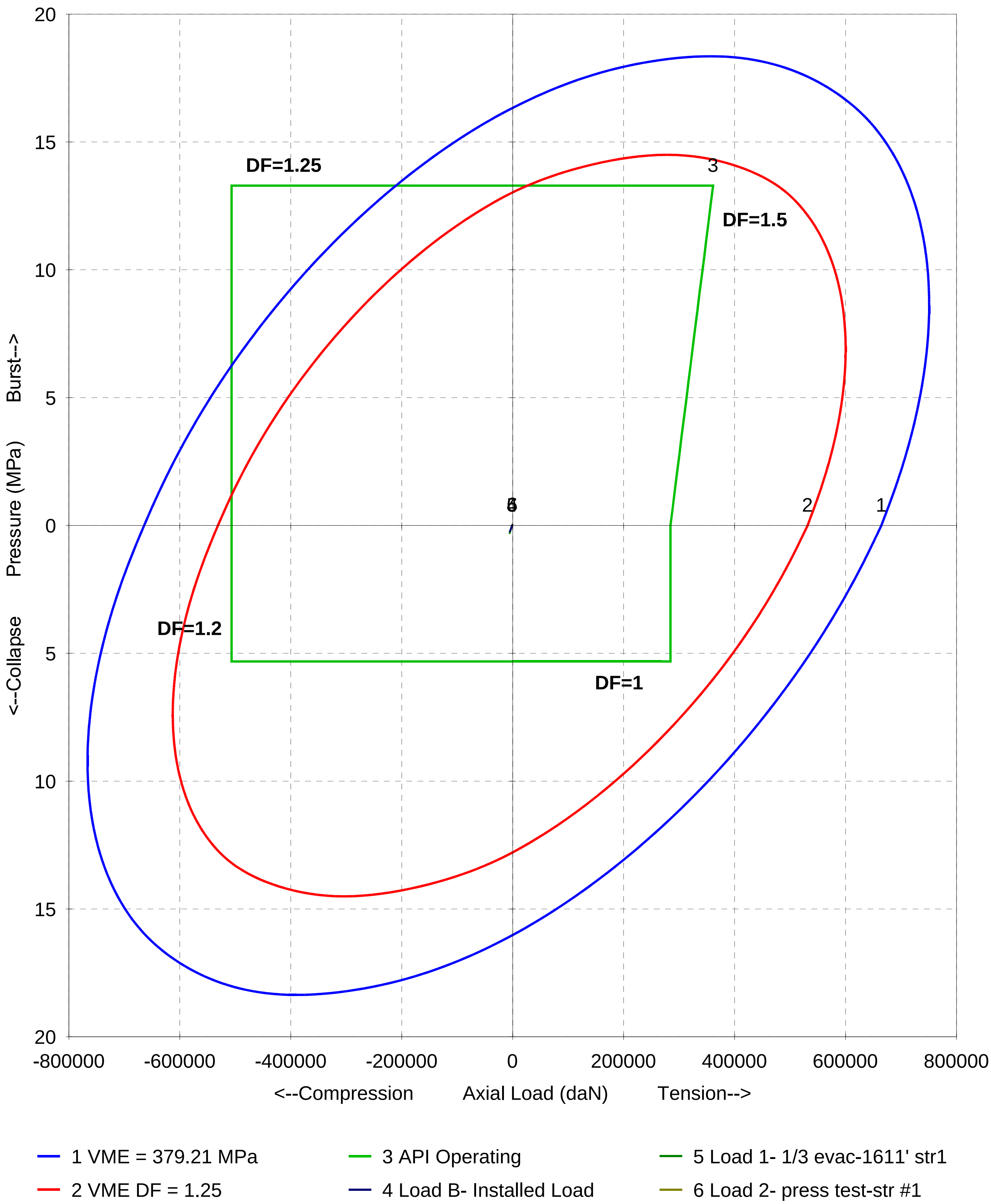
Buckling Does Not Occur

Thermal Yield Derating is used

Design Factor Causes

Burst		**Collapse**		**Axial**	
Pipe Body	B	Yield	Y	Pin	M
Coupling	F	Plastic	P	Box	F
Ring Seal	R	Transition	T	Pipe Body	B
User Defined	U	Elastic	E	Jump Out	J
		User Defined	U	User Defined	U
				Bending	S

String Triaxial: 20.000 106.500 K-55 STC Steel 0-26 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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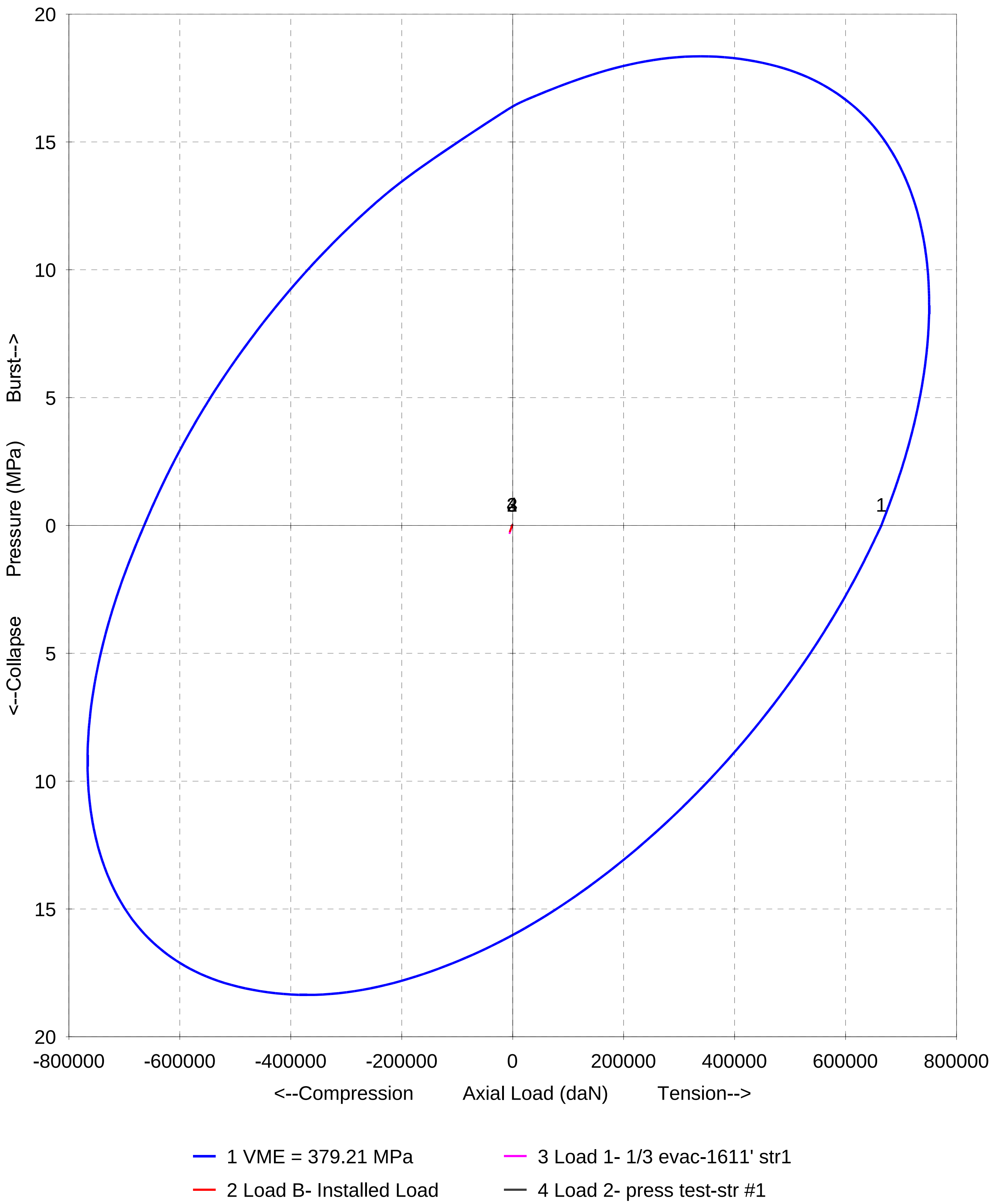
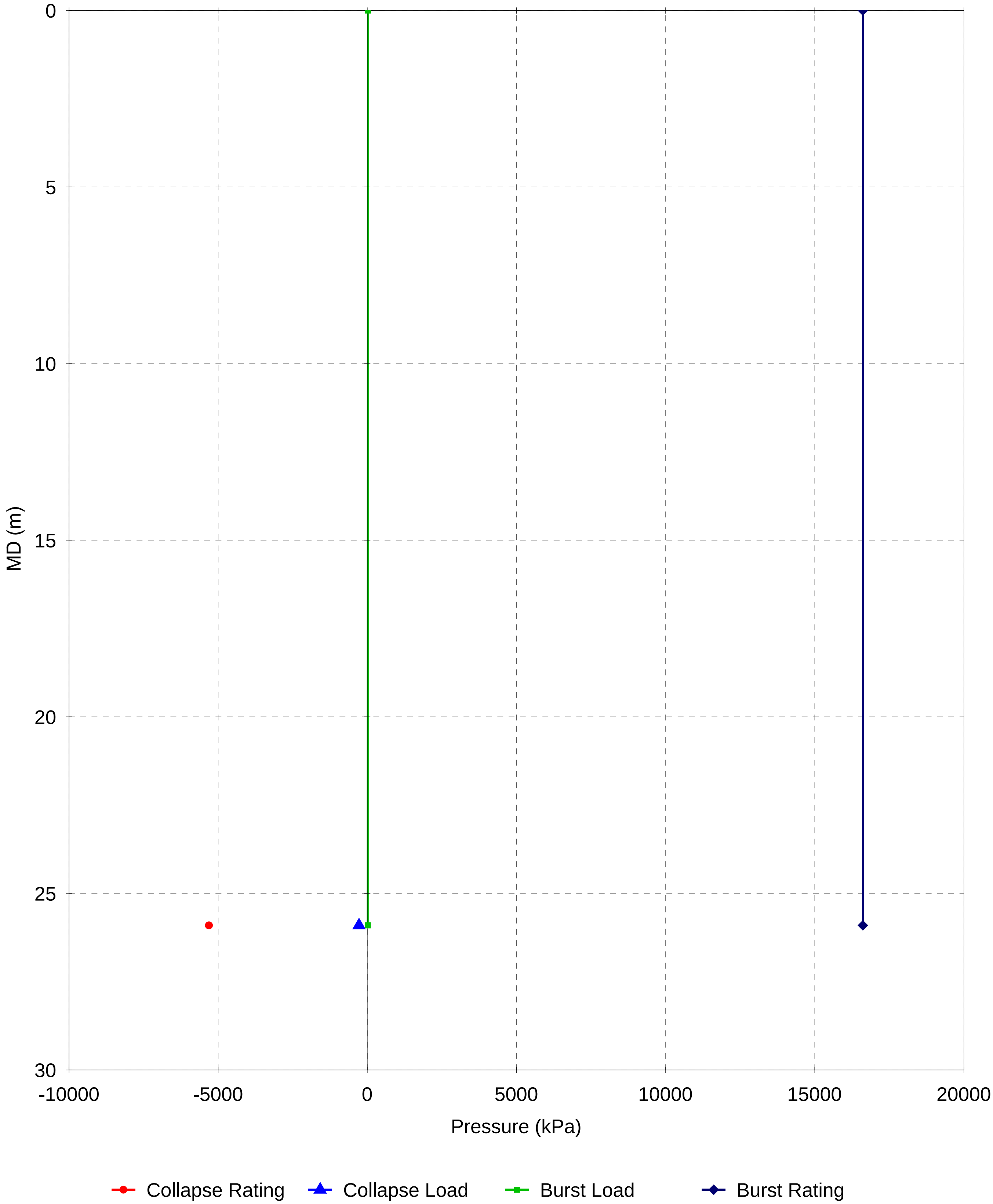
String CISO: 20.000 106.500 K-55 STC Steel 0-26 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 20 2008, 23:02 PM

String Burst/Collapse Design: *20" Conductor - String 1 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



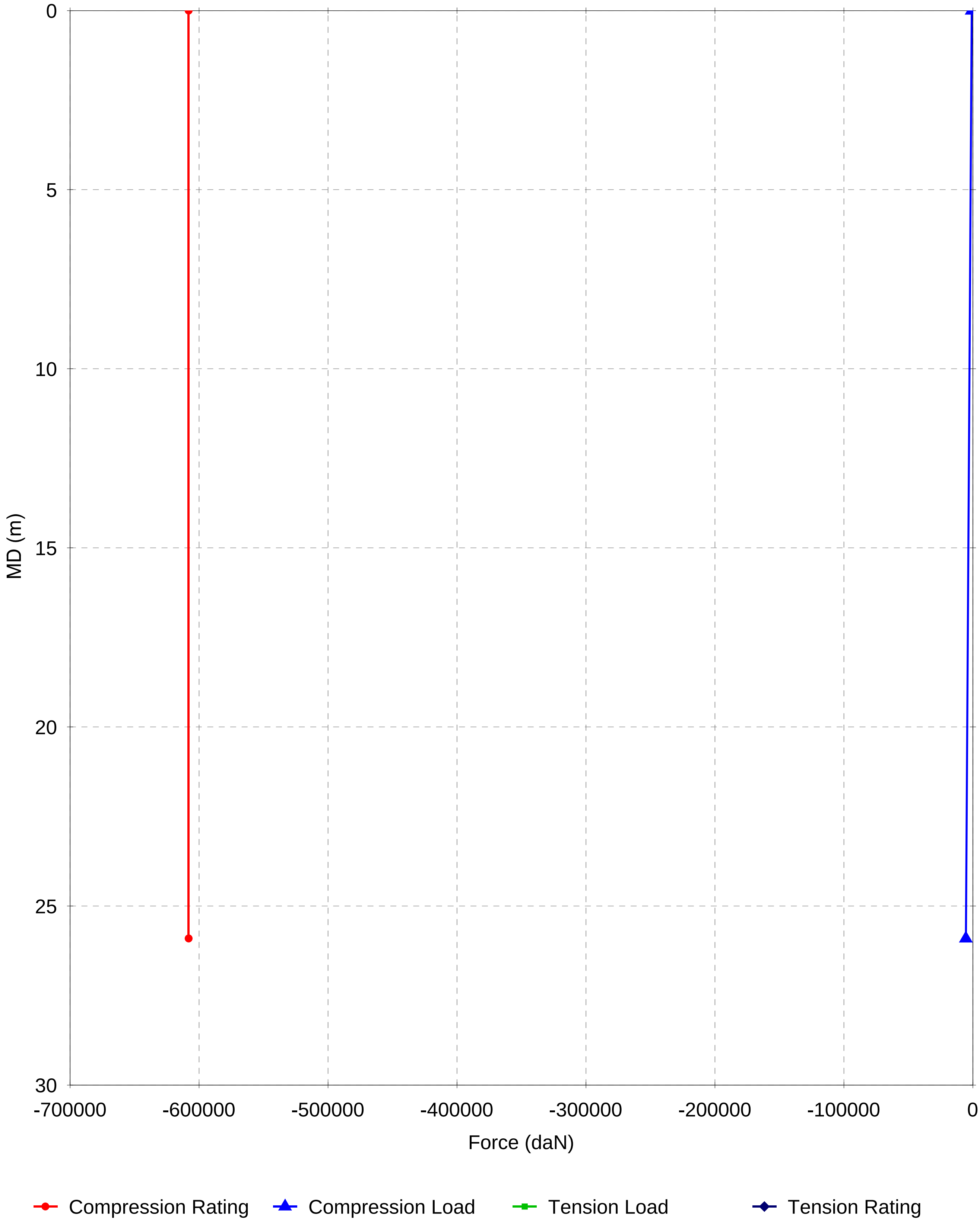
June 20 2008, 23:02 PM

String/Model Name: *20" Conductor - String 1 - Mod 1

Burst/Collapse Design

Depth		Burst				Collapse			
MD (m)	TVD (m)	Rating (kPa)	Load (kPa)	DF	Load Name	Rating (kPa)	Load (kPa)	DF	Load Name
0	0	16616	21	794.06	press test-str #1				
26	25.999	16616	16	1049.9	press test-str #1	5309	280	18.93	1/3 evac-1611' str1

String Tension/Compression Design: *20" Conductor - String 1 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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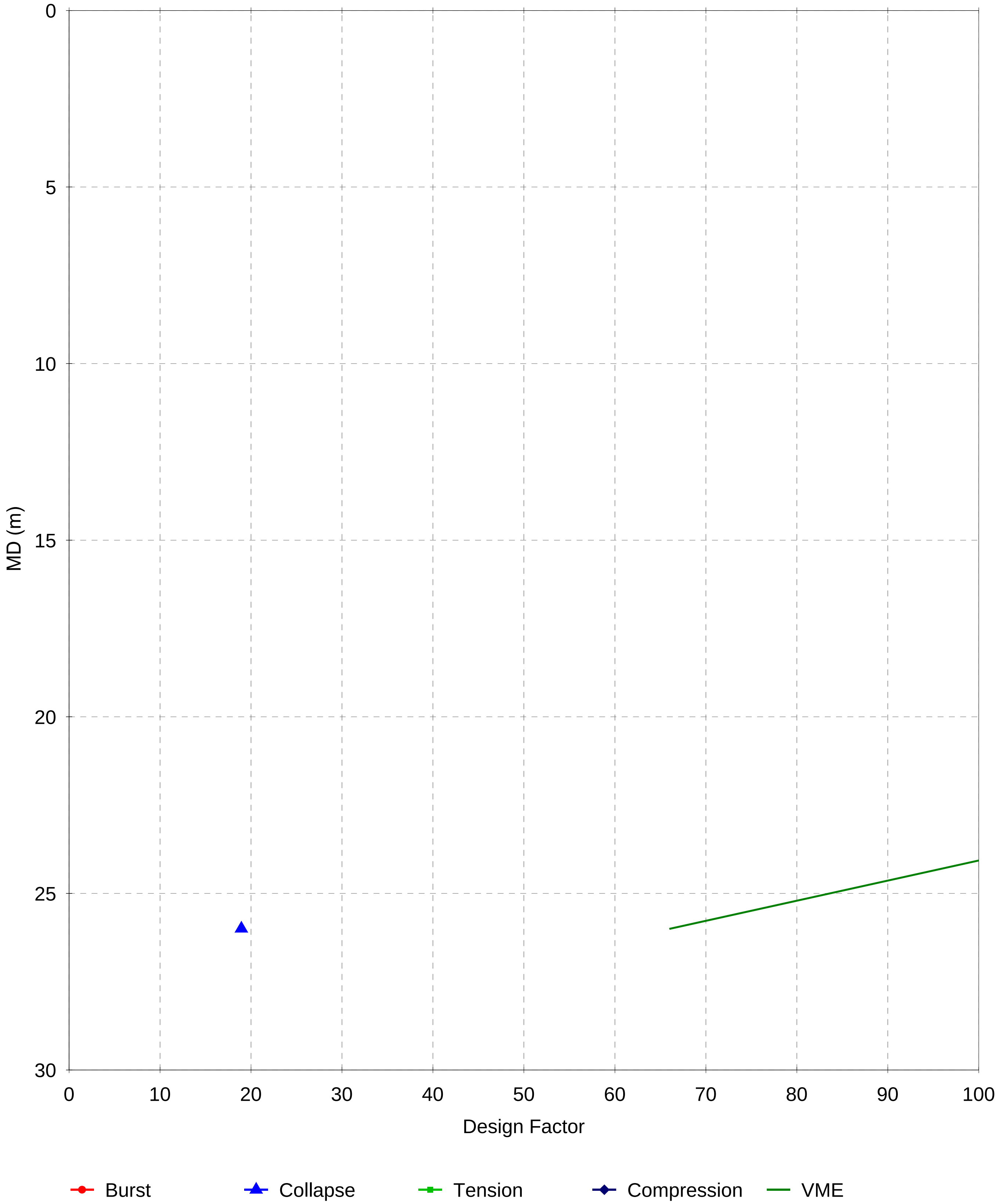
String/Model Name: *20" Conductor - String 1 - Mod 1

Tension Compression Design

Depth		Tension				Compression			
MD (m)	TVD (m)	Rating (daN)	Load (daN)	DF	Load Name	Rating (daN)	Load (daN)	DF	Load Name
0	0					608072	861	706.82	1/3 evac-1611' str1
26	25.999					608072	5372	113.21	1/3 evac-1611' str1

String Minimum Design Factors: *20" Conductor - String 1 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 20 2008, 23:05 PM

String/Model Name: *20" Conductor - String 1 - Mod 1

Minimum Design Factors

MD (m)	TVD (m)	Burst	Collapse	Tension	Compression	VME
0	0	794.06			706.82	522.73
25.908	25.603	1049.9	18.93		113.21	66.09

INPUT SUMMARY TABLE

Wellplan: PaP #1 Side Track #3
Model: *20" Conductor - String 1 - Mod 1 String Type: Conductor

WELL PARAMETERS

Rule: TdasRule	Lithology: Hard Rock	Well Type: Exploratory
Location: Onshore	KB Depth (m): 7.270	Water Depth (m): 0.000

MODEL COMPONENTS

Number of Sections: 1

Section 1: 0.000 - 26.000 m

OD (mm): 508.0	Weight (kg/m): 158.4933	Wall Thickness (mm): 12.7
Grade: K-55	Joint: STC	Pipe ID (mm): 482.6
Material: Steel	Pipe Drift Dia (mm): 477.8	

Pipe Performance Properties

Pipe Description:	508.0 mm 158.4933 kg/m K-55 STC		
Yield (MPa):	379.21	Coupling OD (mm):	533.4
Tensile (MPa):	655.00	OD Tolerance:	1.010
Burst (kPa):	16616	Wall Tolerance:	0.875
Collapse (kPa):	5309	Wall Loss (%):	0
Tension (MPa):	6612.07		
Compression (MPa):	9425.13	Consider Axial Compression on Collapse	
Leak (kPa):	16616	Resistance (ACCR):	No
Hydro (kPa):	15168	Temp Derate:	Steel
Cost ($/m):		Anisotropy:	No

HOLE DESCRIPTION

Deviated Trajectory: DEVIATION

MD (m)	Icnlination (deg)	Azimuth (deg)	TVD (m)	Dogleg Severity (deg/30 m)
0			0	
495	1	0	494.98	0
2300	1.5	150.88	2299.8	0

2309.76	1.79	150.88	2309.6	0.9
2339.76	3.07	221.74	2339.5	3
2433.2	12	247.86	2432.1	3
2981.93	12	247.86	2968.8	0
3011.93	10	247.86	2998.3	2
3161.93	0	247.86	3147.5	2
3322.73	0	30.58	3308.3	0
3352.73	12	30.61	3338.1	12
3442.73	48	30.61	3414.8	12
3547.73	89.99	30.61	3451.6	12
4450	89.99	30.61	3451.7	0

Hole Size: Hole 1 - 1

MD		Hole Size
Top	Bottom	
(m)	(m)	(mm)
0.000	26.000	660.4

BASE CASE COMPONENTS

Installed Load
Internal Pressure Profile: 9.2 ppg mud
External Pressure Profile: mud/cement-string #1
Temperature Profile: STATIC TEMPERATURE
Floats: Closed Movement (cm) Up: 0.0 Down: 0.0
Packer: No

Interval Description

MD		Cement?	Axial Adjustment
Top	Bottom		
(m)	(m)		(daN)
0.000	26.000	Yes	0

LOAD CASE COMPONENTS

Load Case # 1: 1/3 evac-1611' str1

Internal Pressure Profile: 1/3 evac from 1611'
External Pressure Profile: 9.2 ppg mud
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 2: press test-str #1

Internal Pressure Profile: press test-str #1
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

PRESSURE PROFILE

Pressure Profile: 1/3 evac from 1611'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
163.658	0	0	0
490.975	3531	1100	733

Pressure Profile: 9.2 ppg mud

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
490.975	5296	1100	1100

Pressure Profile: press test-str #1

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	21		
25.999	301	1100	1182

Pressure Profile: NATURAL PORE PRESS

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
500.000	5492	1120	1120
1000.000	11180	1160	1140
1500.000	16843	1155	1145
2000.000	22751	1205	1160
2300.000	26390	1237	1170
2500.000	28930	1295	1180
3000.000	35010	1240	1190
3200.000	37658	1350	1200
3451.700	39000	544	1152

Pressure Profile: mud/cement-string #1

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
25.999	495	1941	1941

TEMPERATURE PROFILE

Temperature Profile: STATIC TEMPERATURE

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	3	
500.000	13	2.000
1000.000	18	1.000
1500.000	25	1.400
2000.000	32	1.400
2500.000	39	1.400
3000.000	46	1.400
3100.000	47	1.400
3200.000	49	1.400
3300.000	50	1.400
3337.000	51	1.400
3450.000	52	1.400
3451.700	52	1.400

FRICTION PROFILES

NONE DEFINED

INPUT SUMMARY TABLE

Wellplan: PaP #1 Side Track #3
Model: *13-3/8" Surface - String 2 - Mod 1 | String Type: Surface

WELL PARAMETERS

Rule: TdasRule	Lithology: Hard Rock	Well Type: Exploratory
Location: Onshore	KB Depth (m): 7.270	Water Depth (m): 0.000

MODEL COMPONENTS

Number of Sections: 1

Section 1: 0.000 - 491.000 m

OD (mm): 339.7	Weight (kg/m): 101.1976	Wall Thickness (mm): 12.2
Grade: J-55	Joint: STC	Pipe ID (mm): 315.3
Material: Steel	Pipe Drift Dia (mm): 311.4	

Pipe Performance Properties

Pipe Description:	339.7 mm 101.1976 kg/m J-55 STC		
Yield (MPa):	379.21	Coupling OD (mm):	365.1
Tensile (MPa):	517.11	OD Tolerance:	1.010
Burst (kPa):	23787	Wall Tolerance:	0.875
Collapse (kPa):	13445	Wall Loss (%):	0
Tension (MPa):	4653.96		
Compression (MPa):	5929.49	Consider Axial Compression on Collapse	
Leak (kPa):	23787	Resistance (ACCR):	No
Hydro (kPa):	22063	Temp Derate:	Steel
Cost ($/m):		Anisotropy:	No

HOLE DESCRIPTION

Deviated Trajectory: DEVIATION

MD (m)	Icnlination (deg)	Azimuth (deg)	TVD (m)	Dogleg Severity (deg/30 m)
0			0	
495	1	0	494.98	0
2300	1.5	150.88	2299.8	0

2309.76	1.79	150.88	2309.6	0.9
2339.76	3.07	221.74	2339.5	3
2433.2	12	247.86	2432.1	3
2981.93	12	247.86	2968.8	0
3011.93	10	247.86	2998.3	2
3161.93	0	247.86	3147.5	2
3322.73	0	30.58	3308.3	0
3352.73	12	30.61	3338.1	12
3442.73	48	30.61	3414.8	12
3547.73	89.99	30.61	3451.6	12
4450	89.99	30.61	3451.7	0

Hole Size: Hole 2 - 1

MD		Hole Size
Top	Bottom	
(m)	(m)	(mm)
0.000	491.000	444.5

BASE CASE COMPONENTS

Installed Load
Internal Pressure Profile: 9.2 ppg mud
External Pressure Profile: cement-string #2
Temperature Profile: STATIC TEMPERATURE
Floats: Closed Movement (cm) Up: 0.0 Down: 0.0
Packer: No

Interval Description

MD		Cement?	Axial Adjustment
Top	Bottom		
(m)	(m)		(daN)
0.000	491.000	Yes	0

LOAD CASE COMPONENTS

Load Case # 1: 1/3 evac-7578' str2

Internal Pressure Profile: 1/3 evac from 7578'
External Pressure Profile: 9.2 ppg mud
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 2: 1/3 replc-7578' C,W

Internal Pressure Profile: 1/3 replace-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: circulating-7578'
Internal Plug: No
Fluid Friction: None

Load Case # 3: 1/3 replc-7578' S,W

Internal Pressure Profile: 1/3 replace-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 4: press test-str #2

Internal Pressure Profile: press test-str #2
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 5: 100 bbl kick-7578'

Internal Pressure Profile: 100 bbl kick-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: 100 bbl kick-7578'
Internal Plug: No
Fluid Friction: None

PRESSURE PROFILE

Pressure Profile: 1/3 evac from 7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
769.931	0	0	0
2309.793	18121	1200	800

Pressure Profile: 9.2 ppg mud

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
490.975	5296	1100	1100

Pressure Profile: 1/3 replace-7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	9061		

769.931	9061	0	1200
2309.793	27182	1200	1200

Pressure Profile: NATURAL PORE PRESS

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
500.000	5492	1120	1120
1000.000	11180	1160	1140
1500.000	16843	1155	1145
2000.000	22751	1205	1160
2300.000	26390	1237	1170
2500.000	28930	1295	1180
3000.000	35010	1240	1190
3200.000	37658	1350	1200
3451.700	39000	544	1152

Pressure Profile: press test-str #2

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	669		
490.975	5965	1100	1239

Pressure Profile: 100 bbl kick-7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	187		
490.975	5965	1200	1239

Pressure Profile: cement-string #2

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
338.583	4973	1498	1498
490.975	7874	1941	1635

TEMPERATURE PROFILE

Temperature Profile: STATIC TEMPERATURE

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	3	
500.000	13	2.000
1000.000	18	1.000
1500.000	25	1.400
2000.000	32	1.400
2500.000	39	1.400
3000.000	46	1.400
3100.000	47	1.400

3200.000	49	1.400
3300.000	50	1.400
3337.000	51	1.400
3450.000	52	1.400
3451.700	52	1.400

Temperature Profile: circulating-7578'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	13	
1539.862	31	1.155
2309.793	34	0.351

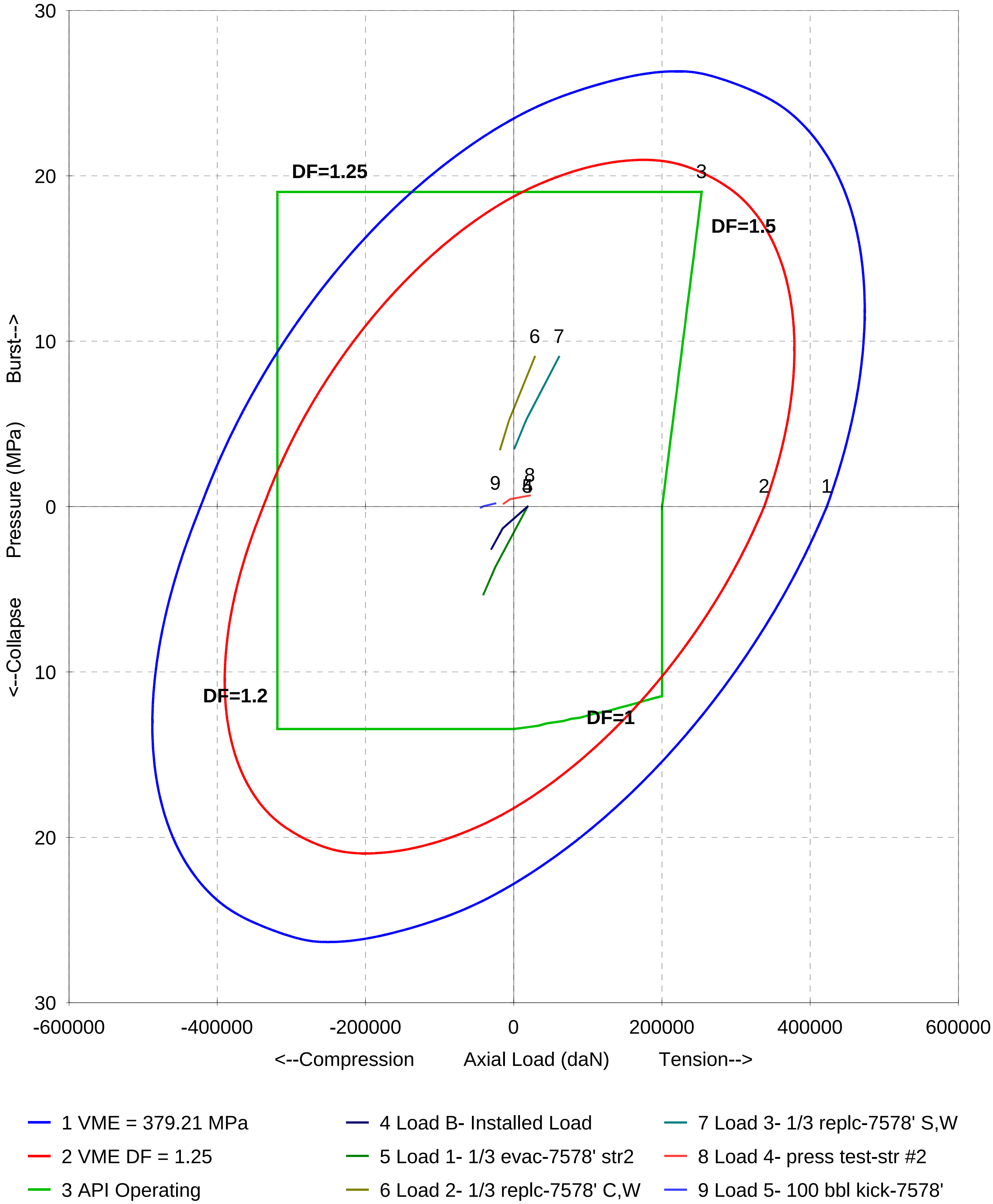
Temperature Profile: 100 bbl kick-7578'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	17	
1226.875	31	1.155
1996.800	34	0.351
2309.793	36	0.864

FRICTION PROFILES

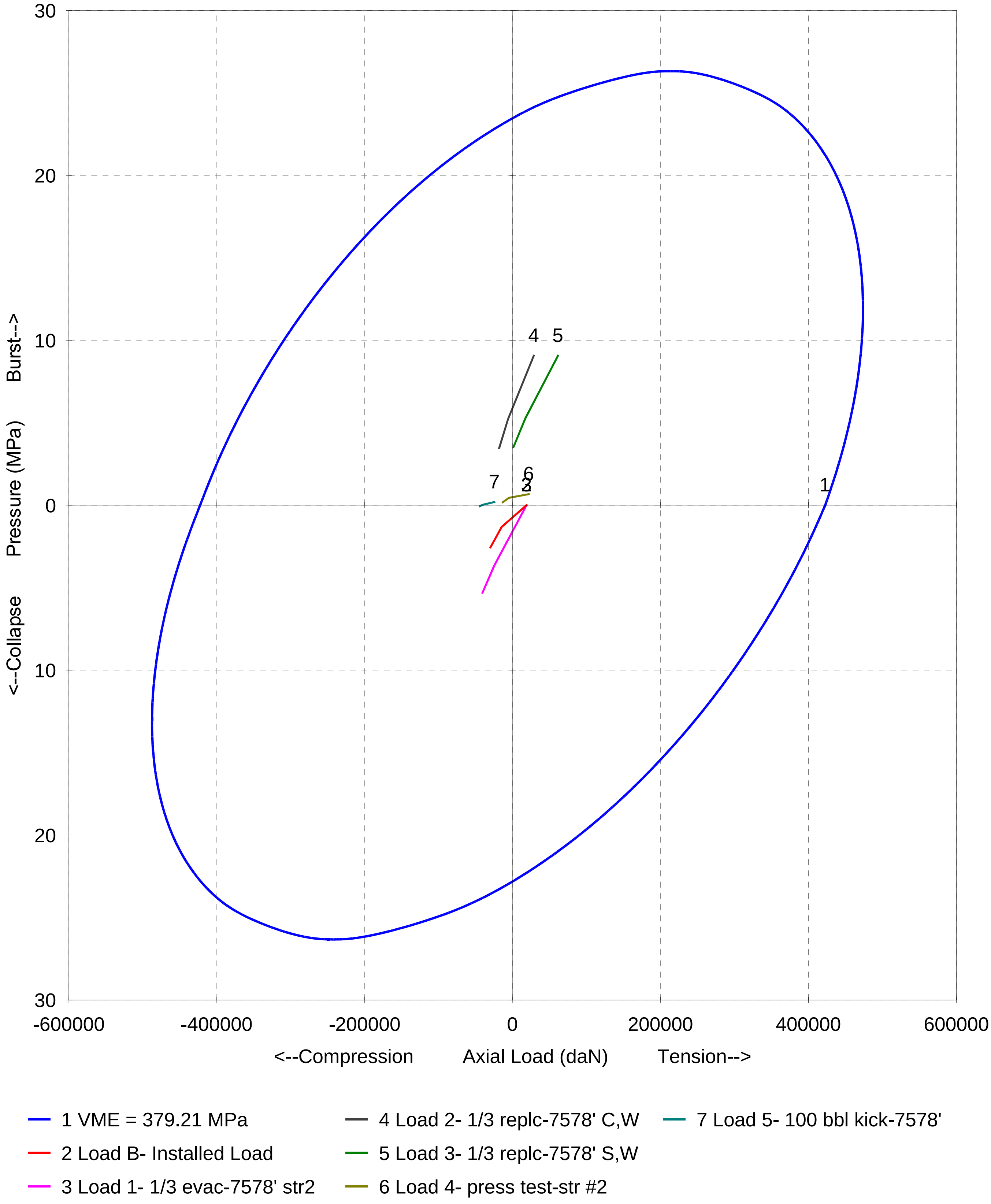
NONE DEFINED

String Triaxial: 13.375 68.000 J-55 STC Steel 0-491 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



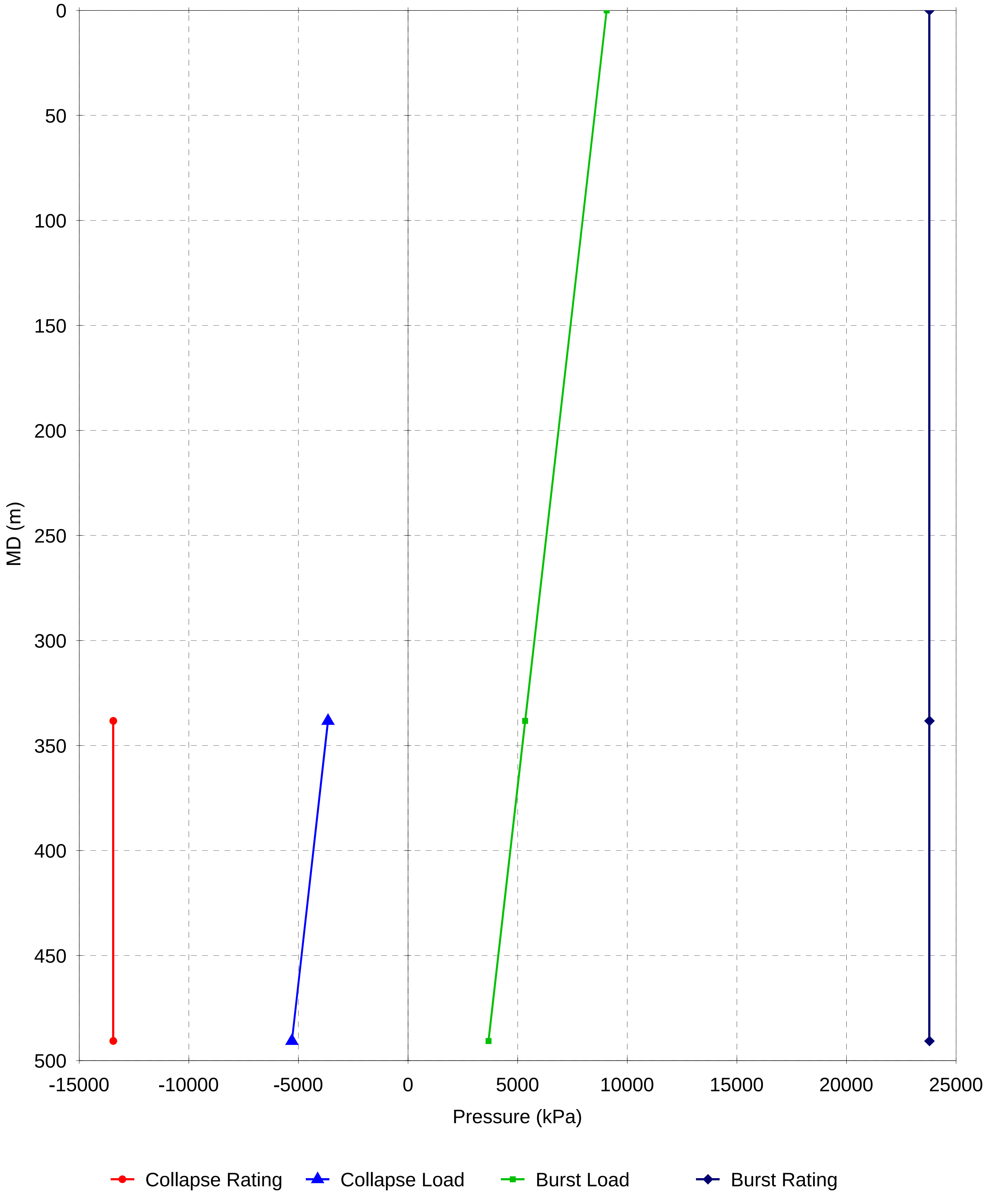
June 20 2008, 23:24 PM

String CISO: 13.375 68.000 J-55 STC Steel 0-491 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 20 2008, 23:29 PM

String Burst/Collapse Design: *13-3/8" Surface - String 2 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



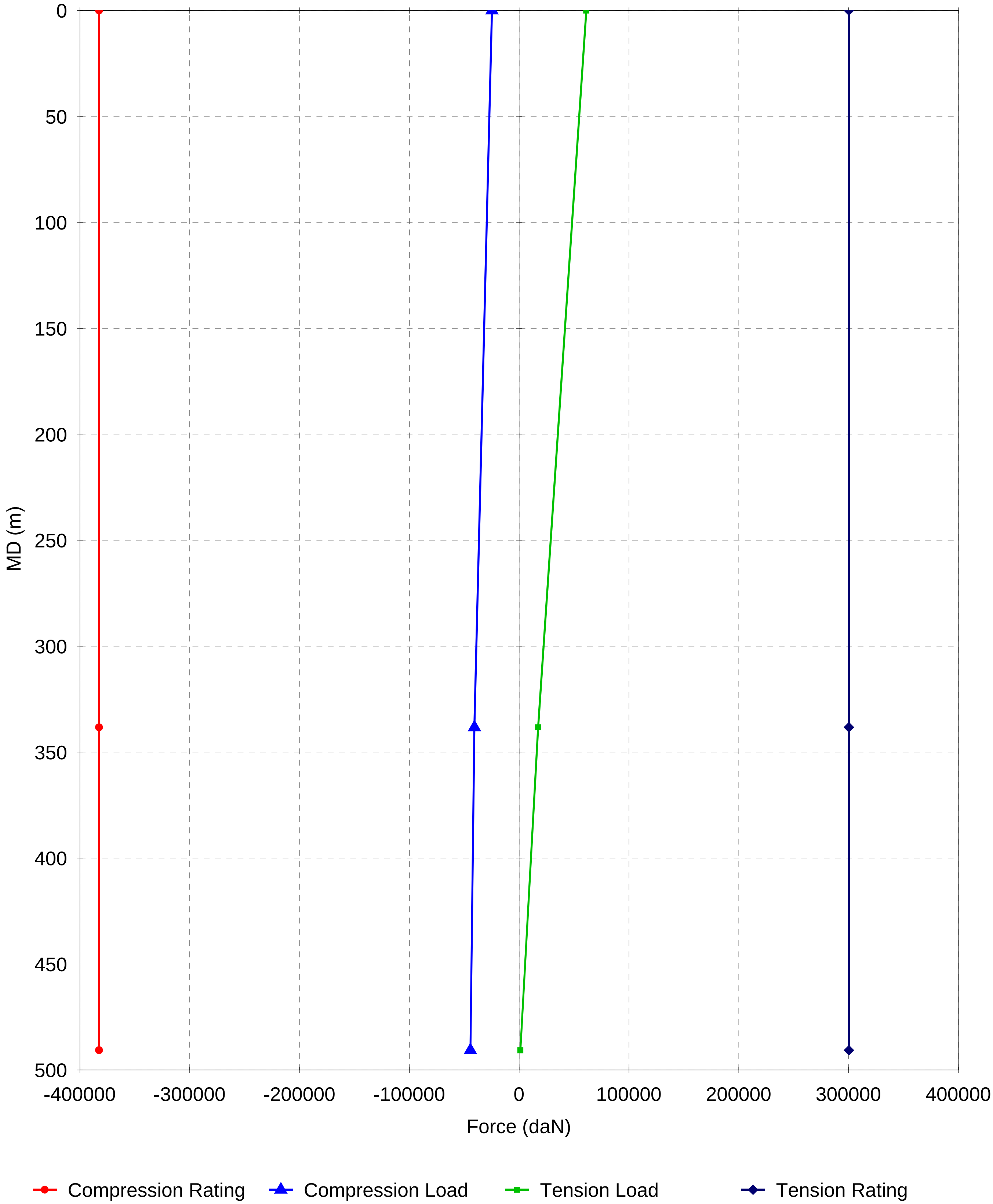
June 20 2008, 23:32 PM

String/Model Name: *13-3/8" Surface - String 2 - Mod 1

Burst/Collapse Design

Depth		Burst				Collapse			
MD (m)	TVD (m)	Rating (kPa)	Load (kPa)	DF	Load Name	Rating (kPa)	Load (kPa)	DF	Load Name
0	0	23787	9061	2.63	1/3 replc-7578' C,W				
338.6	338.583	23787	5342	4.45	1/3 replc-7578' C,W	13445	3652	3.68	1/3 evac-7578' str2
491	490.975	23787	3668	6.49	1/3 replc-7578' C,W	13445	5296	2.54	1/3 evac-7578' str2

String Tension/Compression Design: *13-3/8" Surface - String 2 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



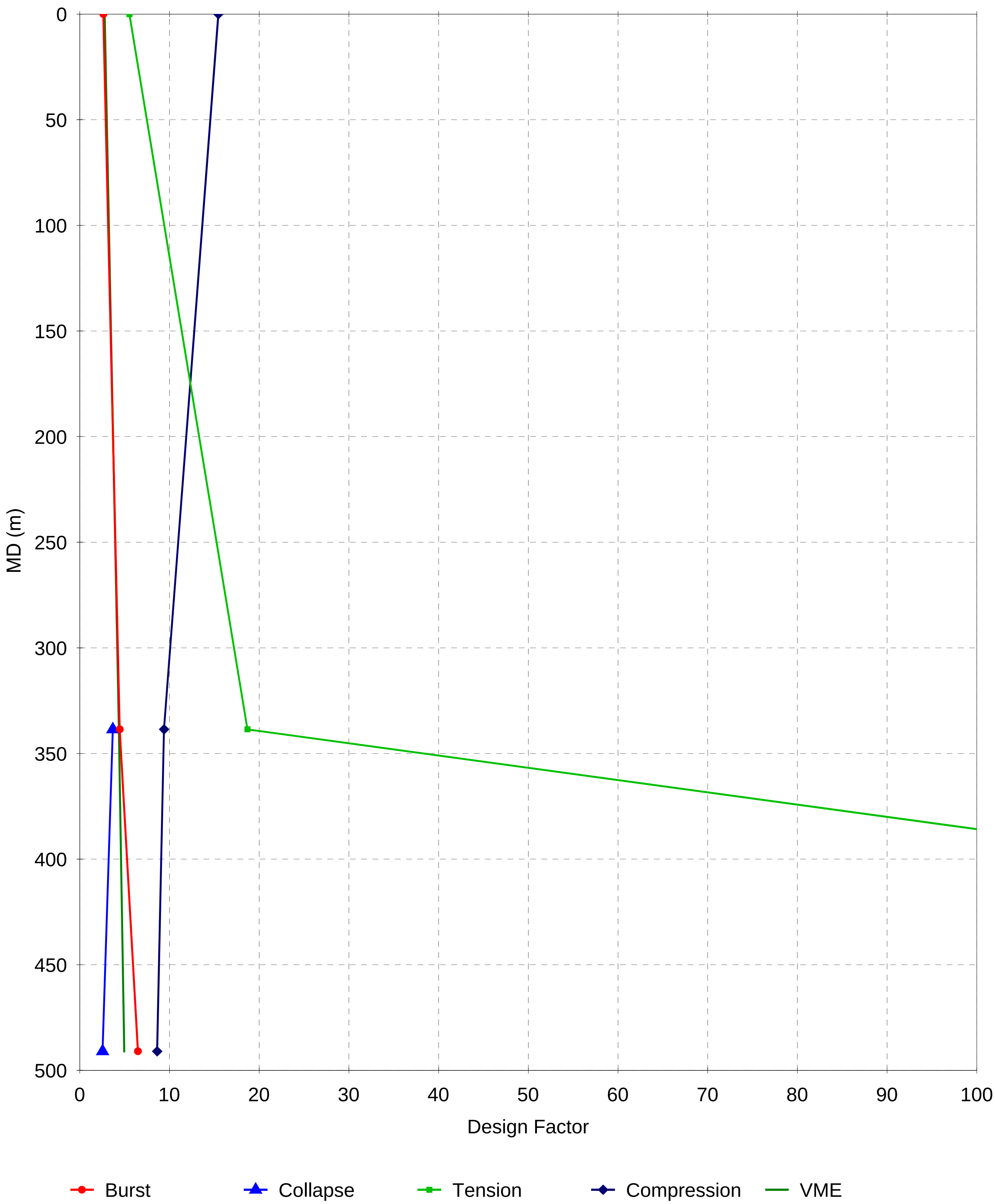
June 21 2008, 07:38 AM

String/Model Name: *13-3/8" Surface - String 2 - Mod 1

Tension Compression Design

Depth		Tension				Compression			
MD (m)	TVD (m)	Rating (daN)	Load (daN)	DF	Load Name	Rating (daN)	Load (daN)	DF	Load Name
0	0	300255	61168	5.53	1/3 replc-7578' S,W	382547	24759	15.45	100 bbl kick-7578'
338.6	338.583	300255	17276	18.69	1/3 replc-7578' S,W	382547	40755	9.39	100 bbl kick-7578'
491	490.975	300255	1124	281.07	1/3 replc-7578' S,W	382547	44352	8.63	100 bbl kick-7578'

String Minimum Design Factors: *13-3/8" Surface - String 2 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 21 2008, 07:40 AM

String/Model Name: *13-3/8" Surface - String 2 - Mod 1

Minimum Design Factors

MD (m)	TVD (m)	Burst	Collapse	Tension	Compression	VME
0	0	2.63		5.53	15.45	2.78
338.328	338.023	4.45	3.68	18.69	9.39	4.36
490.728	490.423	6.49	2.54	281.07	8.63	4.96

INPUT SUMMARY TABLE

Wellplan: PaP #1 Side Track #3
Model: *13-3/8" Surface - String 2 - Mod 1 String Type: Surface

WELL PARAMETERS

Rule: TdasRule	Lithology: Hard Rock	Well Type: Exploratory
Location: Onshore	KB Depth (m): 7.270	Water Depth (m): 0.000

MODEL COMPONENTS

Number of Sections: 1

Section 1: 0.000 - 491.000 m

OD (mm): 339.7	Weight (kg/m): 101.1976	Wall Thickness (mm): 12.2
Grade: J-55	Joint: STC	Pipe ID (mm): 315.3
Material: Steel	Pipe Drift Dia (mm): 311.4	

Pipe Performance Properties

Pipe Description:	339.7 mm 101.1976 kg/m J-55 STC		
Yield (MPa):	379.21	Coupling OD (mm):	365.1
Tensile (MPa):	517.11	OD Tolerance:	1.010
Burst (kPa):	23787	Wall Tolerance:	0.875
Collapse (kPa):	13445	Wall Loss (%):	0
Tension (MPa):	4653.96		
Compression (MPa):	5929.49	Consider Axial Compression on Collapse	
Leak (kPa):	23787	Resistance (ACCR):	No
Hydro (kPa):	22063	Temp Derate:	Steel
Cost ($/m):		Anisotropy:	No

HOLE DESCRIPTION

Deviated Trajectory: DEVIATION

MD (m)	Icnlination (deg)	Azimuth (deg)	TVD (m)	Dogleg Severity (deg/30 m)
0			0	
495	1	0	494.98	0
2300	1.5	150.88	2299.8	0

2309.76	1.79	150.88	2309.6	0.9
2339.76	3.07	221.74	2339.5	3
2433.2	12	247.86	2432.1	3
2981.93	12	247.86	2968.8	0
3011.93	10	247.86	2998.3	2
3161.93	0	247.86	3147.5	2
3322.73	0	30.58	3308.3	0
3352.73	12	30.61	3338.1	12
3442.73	48	30.61	3414.8	12
3547.73	89.99	30.61	3451.6	12
4450	89.99	30.61	3451.7	0

Hole Size: Hole 2 - 1

MD		Hole Size
Top	Bottom	
(m)	(m)	(mm)
0.000	491.000	444.5

BASE CASE COMPONENTS

Installed Load
Internal Pressure Profile: 9.2 ppg mud
External Pressure Profile: cement-string #2
Temperature Profile: STATIC TEMPERATURE
Floats: Closed Movement (cm) Up: 0.0 Down: 0.0
Packer: No

Interval Description

MD		Cement?	Axial Adjustment
Top	Bottom		
(m)	(m)		(daN)
0.000	491.000	Yes	0

LOAD CASE COMPONENTS

Load Case # 1: 1/3 evac-7578' str2

Internal Pressure Profile: 1/3 evac from 7578'
External Pressure Profile: 9.2 ppg mud
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 2: 1/3 replc-7578' C,W

Internal Pressure Profile: 1/3 replace-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: circulating-7578'
Internal Plug: No
Fluid Friction: None

Load Case # 3: 1/3 replc-7578' S,W

Internal Pressure Profile: 1/3 replace-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 4: press test-str #2

Internal Pressure Profile: press test-str #2
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 5: 100 bbl kick-7578'

Internal Pressure Profile: 100 bbl kick-7578'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: 100 bbl kick-7578'
Internal Plug: No
Fluid Friction: None

PRESSURE PROFILE

Pressure Profile: 1/3 evac from 7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
769.931	0	0	0
2309.793	18121	1200	800

Pressure Profile: 9.2 ppg mud

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
490.975	5296	1100	1100

Pressure Profile: 1/3 replace-7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	9061		

769.931	9061	0	1200
2309.793	27182	1200	1200

Pressure Profile: NATURAL PORE PRESS

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
500.000	5492	1120	1120
1000.000	11180	1160	1140
1500.000	16843	1155	1145
2000.000	22751	1205	1160
2300.000	26390	1237	1170
2500.000	28930	1295	1180
3000.000	35010	1240	1190
3200.000	37658	1350	1200
3451.700	39000	544	1152

Pressure Profile: press test-str #2

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	669		
490.975	5965	1100	1239

Pressure Profile: 100 bbl kick-7578'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	187		
490.975	5965	1200	1239

Pressure Profile: cement-string #2

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
338.583	4973	1498	1498
490.975	7874	1941	1635

TEMPERATURE PROFILE

Temperature Profile: STATIC TEMPERATURE

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	3	
500.000	13	2.000
1000.000	18	1.000
1500.000	25	1.400
2000.000	32	1.400
2500.000	39	1.400
3000.000	46	1.400
3100.000	47	1.400

3200.000	49	1.400
3300.000	50	1.400
3337.000	51	1.400
3450.000	52	1.400
3451.700	52	1.400

Temperature Profile: circulating-7578'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	13	
1539.862	31	1.155
2309.793	34	0.351

Temperature Profile: 100 bbl kick-7578'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	17	
1226.875	31	1.155
1996.800	34	0.351
2309.793	36	0.864

FRICTION PROFILES

NONE DEFINED

String/Model Name: *9-5/8" Intermediate Csg - String 3 - Mod 1

Summary of Minimum Design Factors

MD Top (m)	MD Bottom (m)	Pipe Description	Cost ($/m)
0.000	2310.000	244.5 mm 69.9454 kg/m L-80 LTC	

Total String Cost ($):

Minimum Design Factors

Load	Design Factor	Cause	MD (m)	Position	Load Name
Burst	3.36	B	0	Below	1/3 replc-11324' S,W
Collapse	2.28	P	2309.76	Above	1/3 evac-11324' str3
Tension	2.84	J	0	Below	press test-str #3
Compression	7.11	M	2310	Above	1/3 evac-11324' str3
Von Mises	2.91		1150.61	Above	1/3 evac-11324' str3

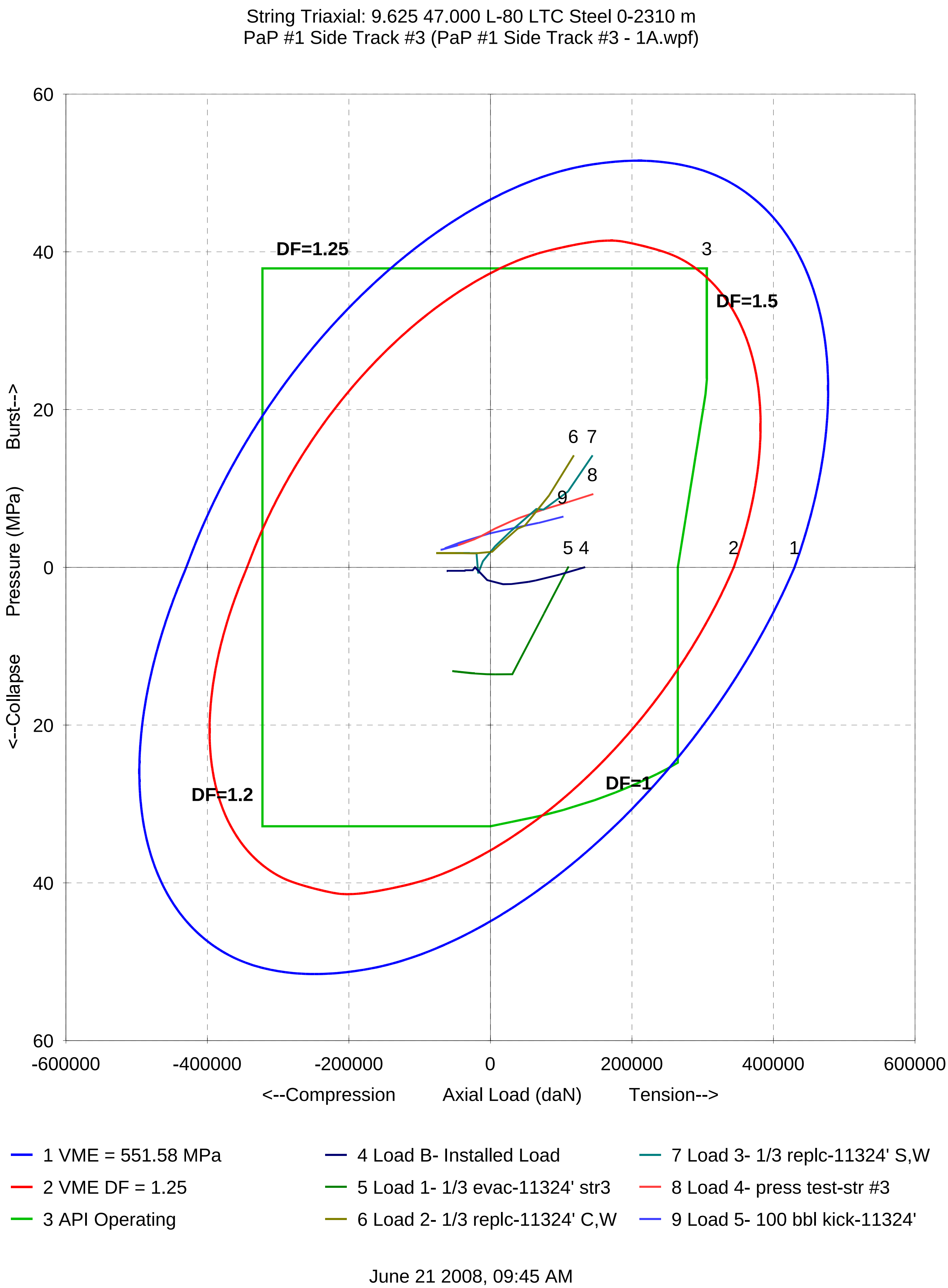
Buckling Occurs in the Following Load Case(s):

1/3 replc-11324' C,W, press test-str #3, 100 bbl kick-11324'

Thermal Yield Derating is used

Design Factor Causes

Burst		**Collapse**		**Axial**	
Pipe Body	B	Yield	Y	Pin	M
Coupling	F	Plastic	P	Box	F
Ring Seal	R	Transition	T	Pipe Body	B
User Defined	U	Elastic	E	Jump Out	J
		User Defined	U	User Defined	U
				Bending	S



String Triaxial: 9.625 47.000 L-80 LTC Steel 0-2310 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)
DF=1.25
DF=1.5
DF=1.2
DF=1
3
6 7
8
9
5 4
2
1
60
40
20
0
20
40
60
-600000
-400000
-200000
0
200000
400000
600000
<--Collapse Pressure (MPa) Burst-->
<--Compression Axial Load (daN) Tension-->
1 VME = 551.58 MPa
2 VME DF = 1.25
3 API Operating
4 Load B- Installed Load
5 Load 1- 1/3 evac-11324' str3
6 Load 2- 1/3 replc-11324' C,W
7 Load 3- 1/3 replc-11324' S,W
8 Load 4- press test-str #3
9 Load 5- 100 bbl kick-11324'
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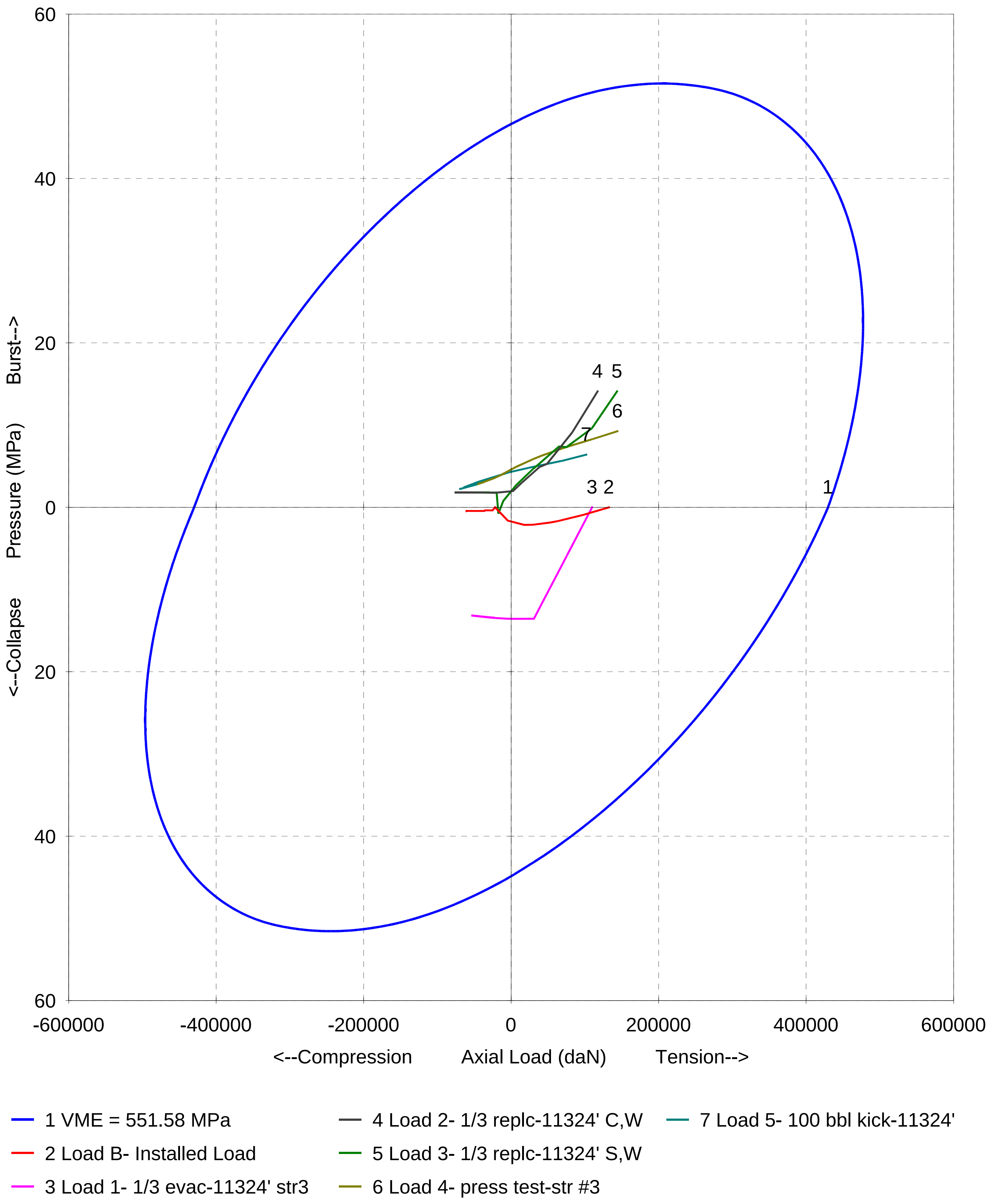
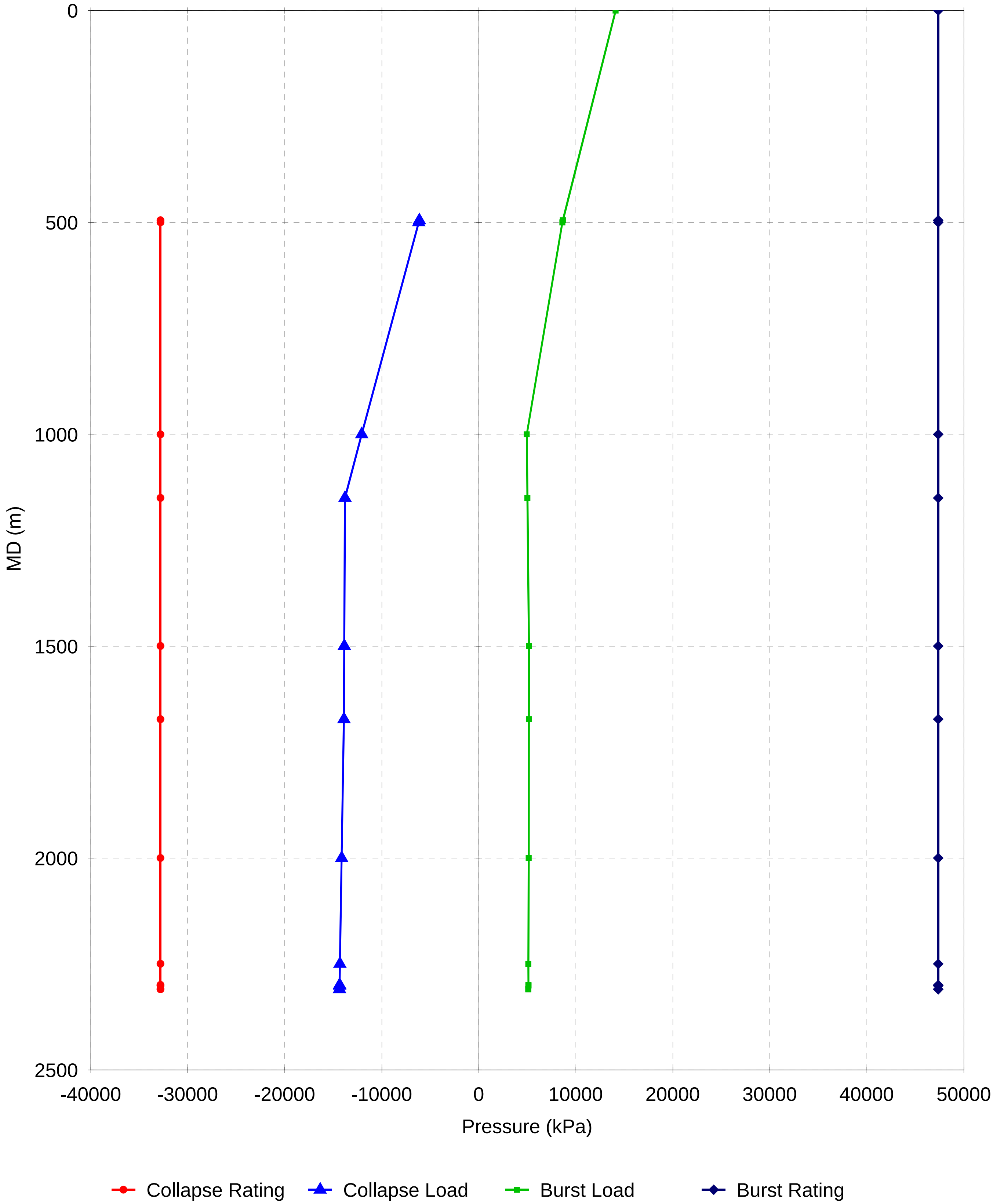
String CISO: 9.625 47.000 L-80 LTC Steel 0-2310 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 21 2008, 09:46 AM

String Burst/Collapse Design: *9-5/8" Intermediate Csg - String 3 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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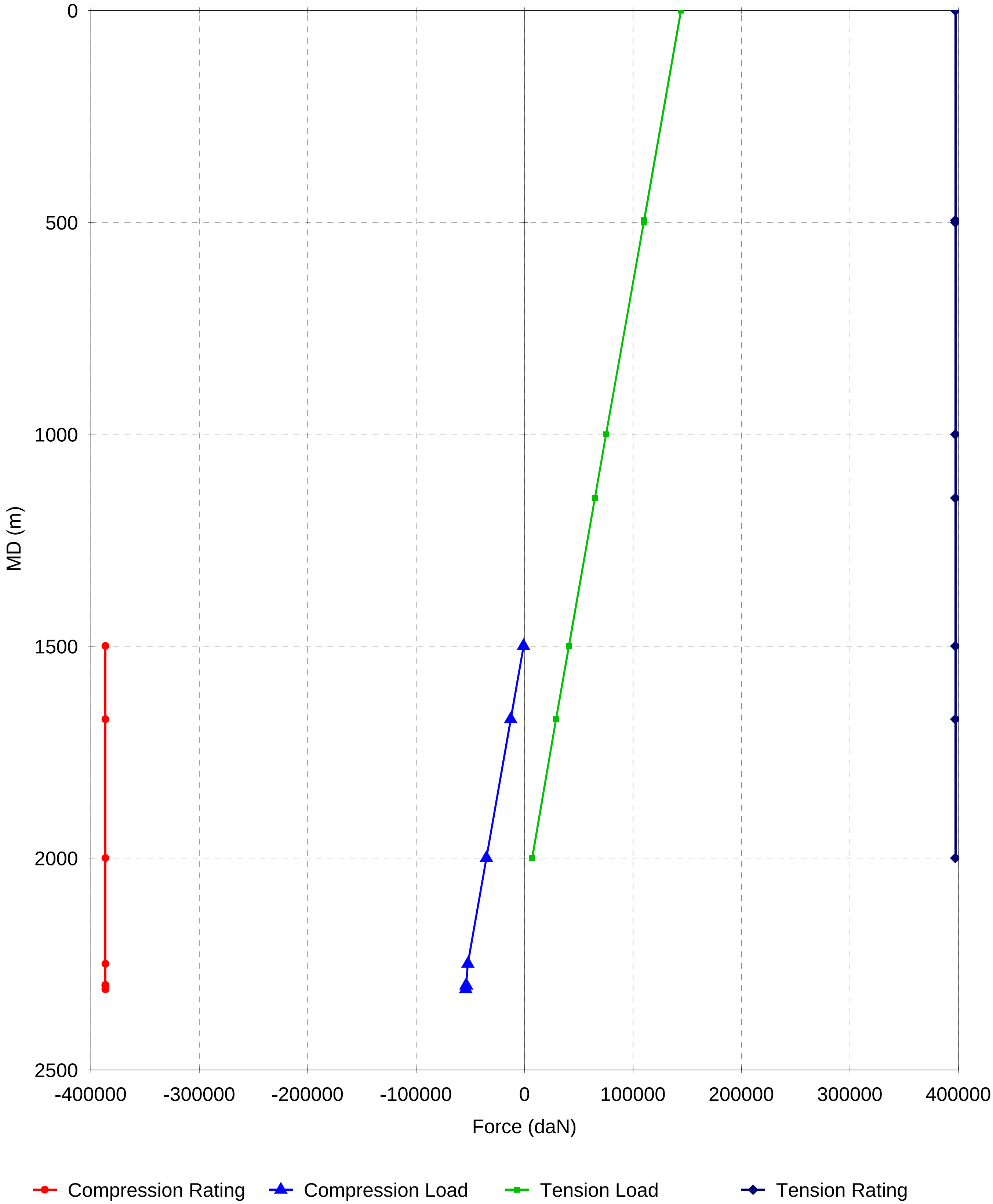
String/Model Name: *9-5/8" Intermediate Csg - String 3 - Mod 1

Burst/Collapse Design

Depth		Burst				Collapse			
MD (m)	TVD (m)	Rating (kPa)	Load (kPa)	DF	Load Name	Rating (kPa)	Load (kPa)	DF	Load Name
0	0	47367	14103	3.36	1/3 replc-11324' S,W				
495	494.975	47367	8667	5.47	1/3 replc-11324' S,W	32819	6134	5.35	1/3 evac-11324' str3
500.026	500	47367	8612	5.5	1/3 replc-11324' S,W	32819	6196	5.3	1/3 evac-11324' str3
1000.075	1000	47367	4946	9.58	press test-str #3	32819	12072	2.72	1/3 evac-11324' str3
1150.61	1150.521	47367	5013	9.45	press test-str #3	32819	13800	2.38	1/3 evac-11324' str3
1500.124	1500	47367	5167	9.17	press test-str #3	32819	13876	2.37	1/3 evac-11324' str3
1672.736	1672.595	47367	5159	9.18	press test-str #3	32819	13911	2.36	1/3 evac-11324' str3
2000.173	2000	47367	5143	9.21	press test-str #3	32819	14144	2.32	1/3 evac-11324' str3
2250	2249.802	47367	5105	9.28	100 bbl kick-11324'	32819	14322	2.29	1/3 evac-11324' str3
2300	2299.797	47367	5112	9.27	100 bbl kick-11324'	32819	14358	2.29	1/3 evac-11324' str3
2300.203	2300	47367	5112	9.27	100 bbl kick-11324'	32819	14358	2.29	1/3 evac-11324' str3
2301.245	2301.041	47367	5111	9.27	100 bbl kick-11324'	32819	14358	2.29	1/3 evac-11324' str3
2309.76	2309.553	47367	5107	9.27	100 bbl kick-11324'	32819	14364	2.28	1/3 evac-11324' str3
2310	2309.793	47367	5107	9.27	100 bbl kick-11324'	32819	14365	2.28	1/3 evac-11324' str3

String Tension/Compression Design: *9-5/8" Intermediate Csg - String 3 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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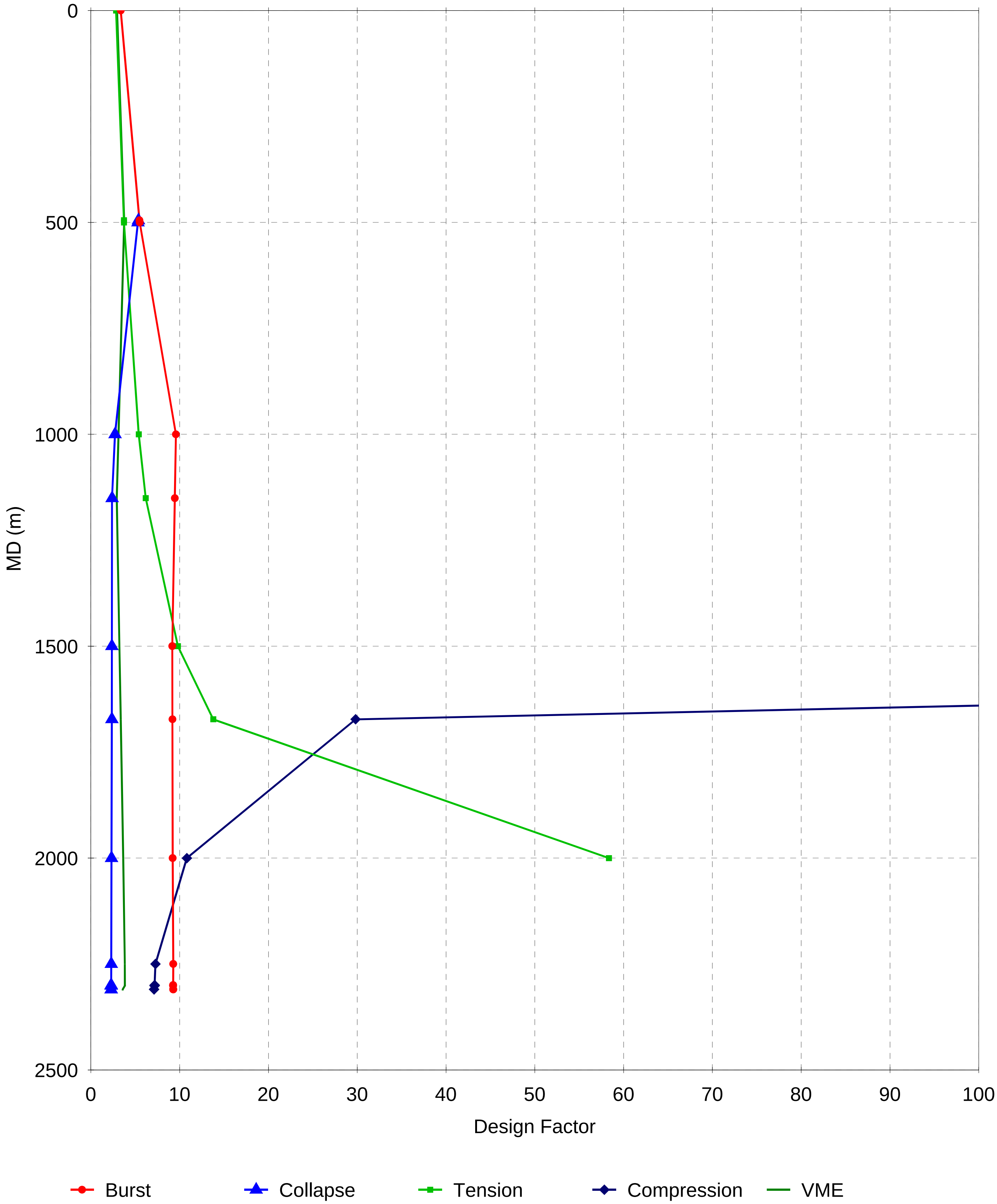
String/Model Name: *9-5/8" Intermediate Csg - String 3 - Mod 1

Tension Compression Design

Depth		Tension				Compression			
MD (m)	TVD (m)	Rating (daN)	Load (daN)	DF	Load Name	Rating (daN)	Load (daN)	DF	Load Name
0	0	397226	144173	2.84	press test-str #3				
495	494.975	397226	110222	3.72	press test-str #3				
500.026	500	397226	109878	3.73	press test-str #3				
1000.075	1000	397226	75115	5.39	1/3 replc-11324' S,W				
1150.61	1150.521	397226	64791	6.18	1/3 replc-11324' S,W				
1500.124	1500	397226	40820	9.8	1/3 replc-11324' S,W	386551	948	402.93	100 bbl kick-11324'
1672.736	1672.595	397226	28981	13.78	1/3 replc-11324' S,W	386551	12787	29.82	100 bbl kick-11324'
2000.173	2000	397226	6991	58.35	press test-str #3	386551	35244	10.8	100 bbl kick-11324'
2250	2249.802					386551	52378	7.27	100 bbl kick-11324'
2300	2299.797					386551	53869	7.18	1/3 evac-11324' str3
2300.203	2300					386551	53879	7.17	1/3 evac-11324' str3
2301.245	2301.041					386551	53928	7.17	1/3 evac-11324' str3
2309.76	2309.553					386551	54328	7.12	1/3 evac-11324' str3
2310	2309.793					386551	54339	7.11	1/3 evac-11324' str3

String Minimum Design Factors: *9-5/8" Intermediate Csg - String 3 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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String/Model Name: *9-5/8" Intermediate Csg - String 3 - Mod 1

Minimum Design Factors

MD (m)	TVD (m)	Burst	Collapse	Tension	Compression	VME
0	0	3.36		2.84		2.95
494.995	494.69	5.47	5.35	3.72		3.75
499.872	499.567	5.5	5.3	3.73		3.75
1000.049	999.744	9.58	2.72	5.39		3.11
1150.315	1150.01	9.45	2.38	6.18		2.91
1499.921	1499.616	9.17	2.37	9.8	402.93	3.21
1672.438	1672.133	9.18	2.36	13.78	29.82	3.36
2000.098	1999.793	9.21	2.32	58.35	10.8	3.64
2249.729	2249.424	9.28	2.29		7.27	3.82
2299.716	2299.411	9.27	2.29		7.18	3.82
2300.021	2299.716	9.27	2.29		7.17	3.82
2301.24	2300.935	9.27	2.29		7.17	3.82
2309.47	2309.165	9.27	2.28		7.12	3.58
2309.774	2309.47	9.27	2.28		7.11	3.58

INPUT SUMMARY TABLE

Wellplan: PaP #1 Side Track #3
Model: *9-5/8" Intermediate Csg - String 3 - Mod 1 String Type: Intermediate Csg

WELL PARAMETERS

Rule: TdasRule	Lithology: Hard Rock	Well Type: Exploratory
Location: Onshore	KB Depth (m): 7.270	Water Depth (m): 0.000

MODEL COMPONENTS

Number of Sections: 1

Section 1: 0.000 - 2310.000 m

OD (mm): 244.5	Weight (kg/m): 69.9454	Wall Thickness (mm): 12.0
Grade: L-80	Joint: LTC	Pipe ID (mm): 220.5
Material: Steel	Pipe Drift Dia (mm): 216.5	

Pipe Performance Properties

Pipe Description:	244.5 mm 69.9454 kg/m L-80 LTC		
Yield (MPa):	551.58	Coupling OD (mm):	269.9
Tensile (MPa):	655.00	OD Tolerance:	1.010
Burst (kPa):	47367	Wall Tolerance:	0.875
Collapse (kPa):	32819	Wall Loss (%):	0
Tension (MPa):	6157.02		
Compression (MPa):	5991.54	Consider Axial Compression on Collapse	
Leak (kPa):	47367	Resistance (ACCR):	No
Hydro (kPa):	43437	Temp Derate:	Steel
Cost ($/m):		Anisotropy:	No

HOLE DESCRIPTION

Deviated Trajectory: DEVIATION

MD (m)	Icnlination (deg)	Azimuth (deg)	TVD (m)	Dogleg Severity (deg/30 m)
0			0	
495	1	0	494.98	0
2300	1.5	150.88	2299.8	0

2309.76	1.79	150.88	2309.6	0.9
2339.76	3.07	221.74	2339.5	3
2433.2	12	247.86	2432.1	3
2981.93	12	247.86	2968.8	0
3011.93	10	247.86	2998.3	2
3161.93	0	247.86	3147.5	2
3322.73	0	30.58	3308.3	0
3352.73	12	30.61	3338.1	12
3442.73	48	30.61	3414.8	12
3547.73	89.99	30.61	3451.6	12
4450	89.99	30.61	3451.7	0

Hole Size: Hole 3 - 1

MD		Hole Size
Top	Bottom	
(m)	(m)	(mm)
0.000	2310.000	311.1

BASE CASE COMPONENTS

Installed Load
Internal Pressure Profile: 10 ppg mud
External Pressure Profile: mud/cement-string #3
Temperature Profile: STATIC TEMPERATURE
Floats: Closed Movement (cm) Up: 0.0 Down: 0.0
Packer: No

Interval Description

MD		Cement?	Axial Adjustment
Top	Bottom		
(m)	(m)		(daN)
0.000	2250.000	No	0
2250.000	2310.000	Yes	0

LOAD CASE COMPONENTS

Load Case # 1: 1/3 evac-11324' str3

Internal Pressure Profile: 1/3 evac from 11324'
External Pressure Profile: 10 ppg mud
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 2: 1/3 replc-11324' C,W

Internal Pressure Profile: 1/3 replace-11324'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: circulating-11324'
Internal Plug: No
Fluid Friction: None

Load Case # 3: 1/3 replc-11324' S,W

Internal Pressure Profile: 1/3 replace-11324'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 4: press test-str #3

Internal Pressure Profile: press test-str #3
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 5: 100 bbl kick-11324'

Internal Pressure Profile: 100 bbl kick-11324'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: 100 bbl kick-11324'
Internal Plug: No
Fluid Friction: None

PRESSURE PROFILE

Pressure Profile: 1/3 evac from 11324'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
1150.521	0	0	0
3451.562	28207	1250	833

Pressure Profile: 10 ppg mud

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
2309.793	27182	1200	1200

Pressure Profile: 1/3 replace-11324'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)

0.000	14103		
1150.521	14103	0	1250
3451.562	42310	1250	1250

Pressure Profile: NATURAL PORE PRESS

TVD	Pressure	Gradient	Eq. Mud Wt.
(m)	(kPa)	(kg/m3)	(kg/m3)
0.000	0		
500.000	5492	1120	1120
1000.000	11180	1160	1140
1500.000	16843	1155	1145
2000.000	22751	1205	1160
2300.000	26390	1237	1170
2500.000	28930	1295	1180
3000.000	35010	1240	1190
3200.000	37658	1350	1200
3451.700	39000	544	1152

Pressure Profile: press test-str #3

TVD	Pressure	Gradient	Eq. Mud Wt.
(m)	(kPa)	(kg/m3)	(kg/m3)
0.000	4358		
2309.793	31540	1200	1392

Pressure Profile: 100 bbl kick-11324'

TVD	Pressure	Gradient	Eq. Mud Wt.
(m)	(kPa)	(kg/m3)	(kg/m3)
0.000	3225		
2309.793	31540	1250	1392

Pressure Profile: mud/cement-string #3

TVD	Pressure	Gradient	Eq. Mud Wt.
(m)	(kPa)	(kg/m3)	(kg/m3)
0.000	0		
2249.802	26476	1200	1200
2309.793	27618	1941	1219

TEMPERATURE PROFILE

Temperature Profile: STATIC TEMPERATURE

TVD	Temperature	Gradient
(m)	(C)	(C/100 m)
0.000	3	
500.000	13	2.000
1000.000	18	1.000
1500.000	25	1.400
2000.000	32	1.400
2500.000	39	1.400
3000.000	46	1.400

3100.000	47	1.400
3200.000	49	1.400
3300.000	50	1.400
3337.000	51	1.400
3450.000	52	1.400
3451.700	52	1.400

Temperature Profile: circulating-11324'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	19	
2301.041	45	1.143
3451.562	49	0.305

Temperature Profile: 100 bbl kick-11324'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	26	
1672.595	45	1.143
2844.976	49	0.299
3451.562	52	0.578

FRICTION PROFILES

NONE DEFINED

String/Model Name: *7" Drilling Liner - String 4 - Mod 1

Summary of Minimum Design Factors

MD Top (m)	MD Bottom (m)	Pipe Description	Cost ($/m)
2200.000	3547.730	177.8 mm 38.6932 kg/m L-80 BTC	

Total String Cost ($):

Minimum Design Factors

Load	Design Factor	Cause	MD (m)	Position	Load Name
Burst	12.86	B	3547.73	Above	press test-str #4
Collapse	1.9	P	3352.73	Above	1/3 evac-11324' str4
Tension	3.46	M	2200	Below	press test-str #4
Compression					Compression loading does not occur
Von Mises	1.71		3322.73	Below	1/3 evac-11324' str4

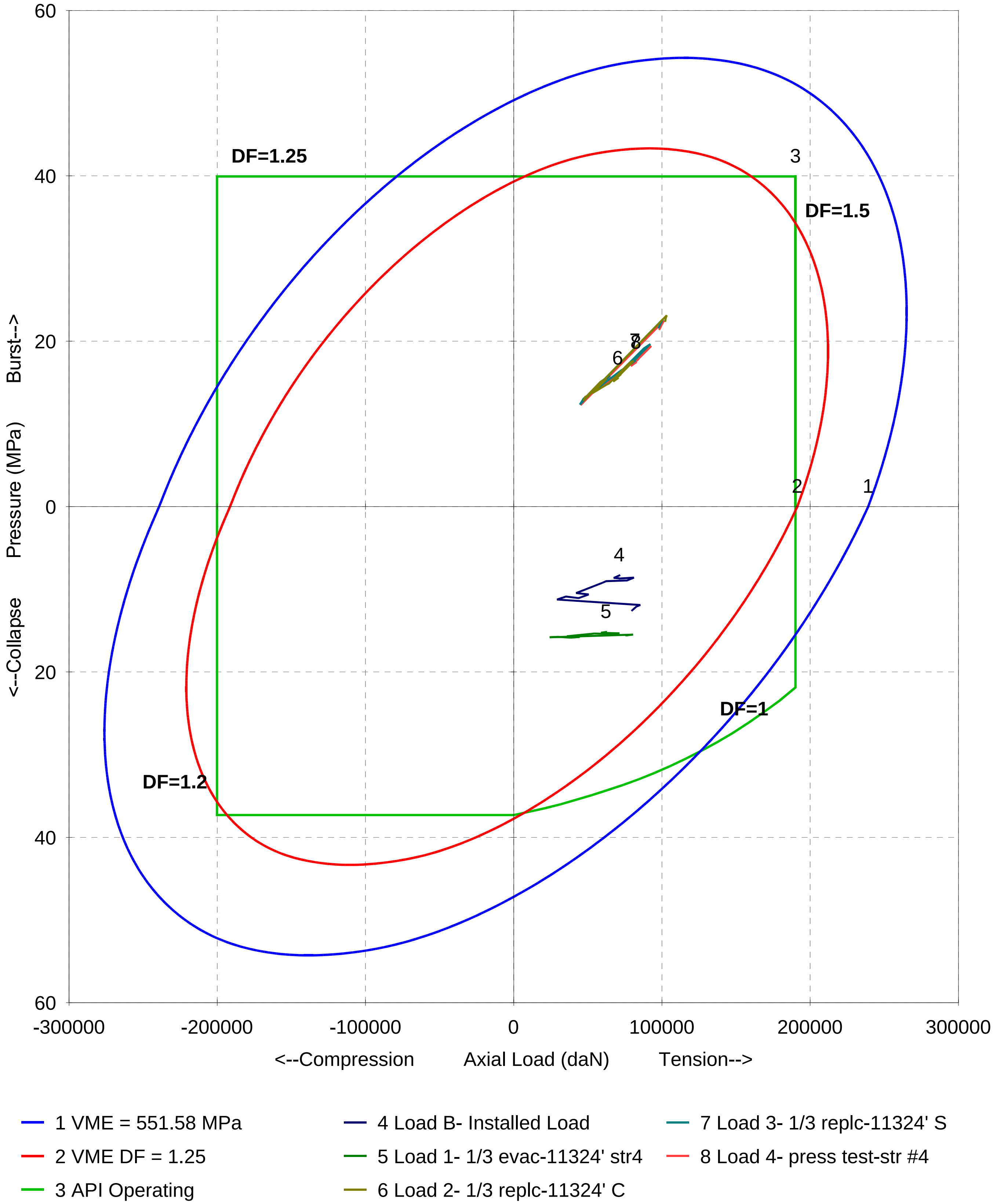
Buckling Does Not Occur

Thermal Yield Derating is used

Design Factor Causes

Burst		**Collapse**		**Axial**	
Pipe Body	B	Yield	Y	Pin	M
Coupling	F	Plastic	P	Box	F
Ring Seal	R	Transition	T	Pipe Body	B
User Defined	U	Elastic	E	Jump Out	J
		User Defined	U	User Defined	U
				Bending	S

String Triaxial: 7.000 26.000 L-80 BTC Steel 2200-3547.73 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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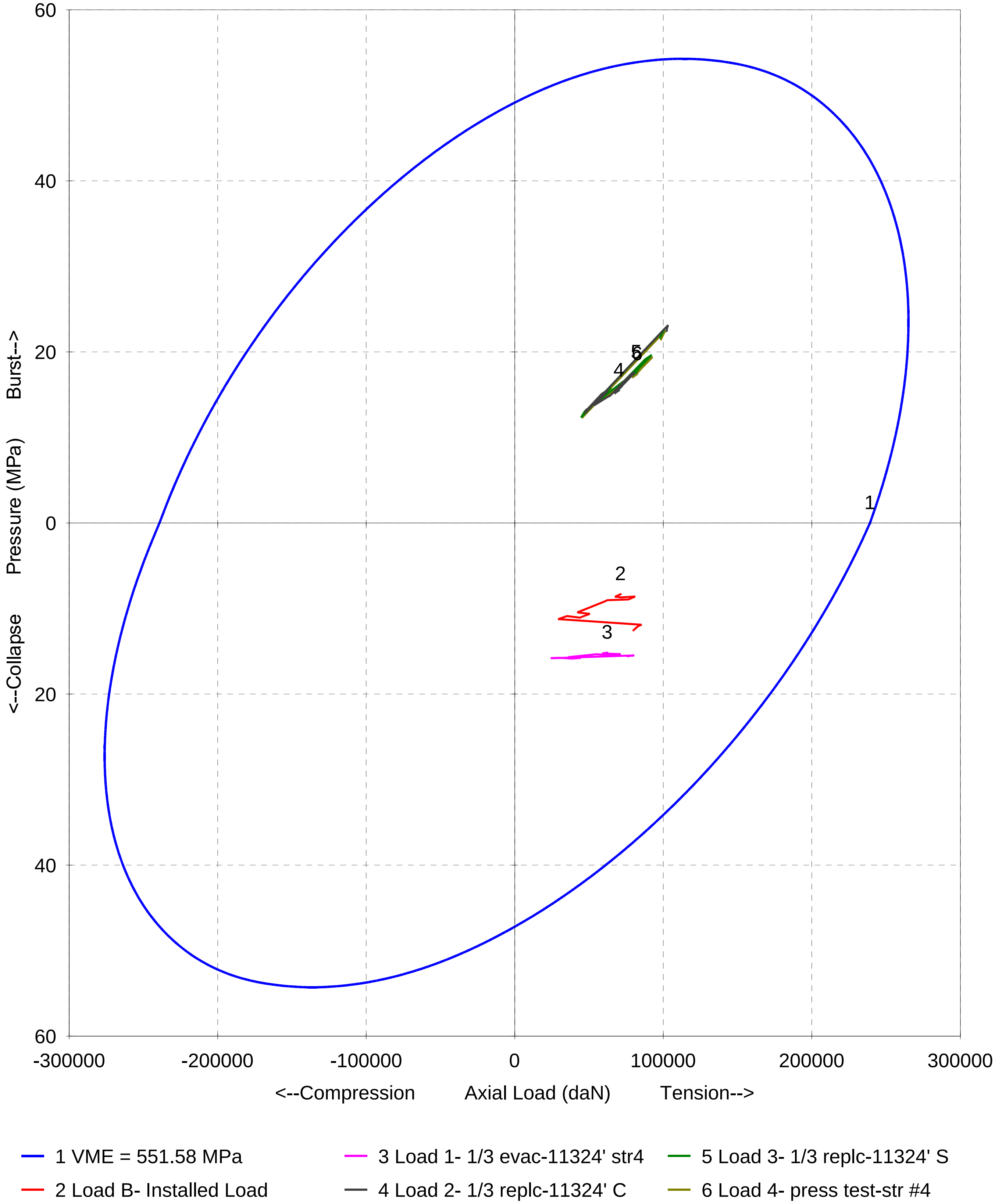
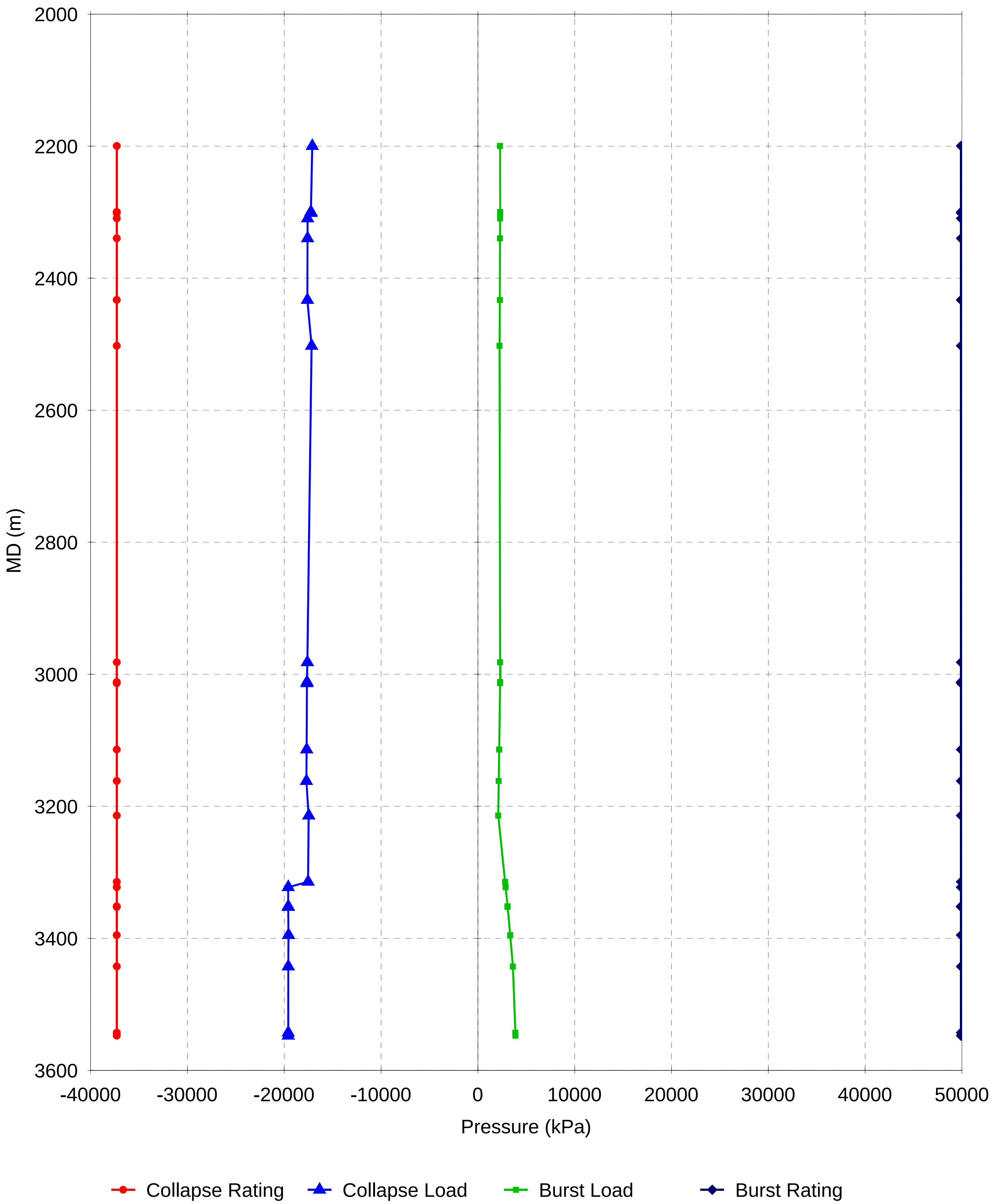
String CISO: 7.000 26.000 L-80 BTC Steel 2200-3547.73 m
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



June 21 2008, 09:53 AM

String Burst/Collapse Design: *7" Drilling Liner - String 4 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)

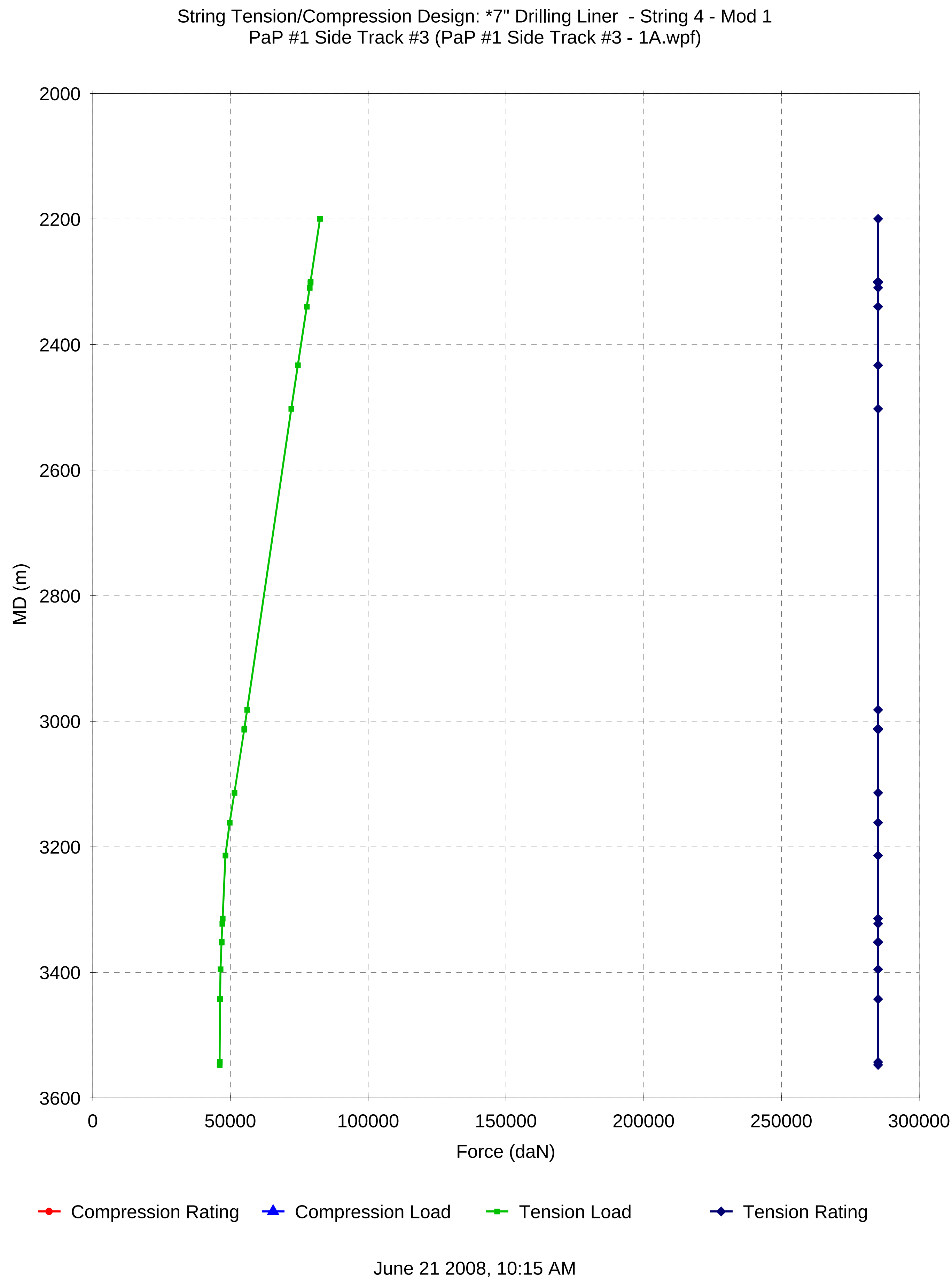


June 21 2008, 09:53 AM

String/Model Name: *7" Drilling Liner - String 4 - Mod 1

Burst/Collapse Design

Depth		Burst				Collapse			
MD (m)	TVD (m)	Rating (kPa)	Load (kPa)	DF	Load Name	Rating (kPa)	Load (kPa)	DF	Load Name
2200	2199.807	49918	2292	21.78	press test-str #4	37301	17110	2.18	1/3 evac-11324' str4
2300	2299.797	49918	2305	21.65	press test-str #4	37301	17251	2.16	1/3 evac-11324' str4
2300.203	2300	49918	2305	21.65	press test-str #4	37301	17251	2.16	1/3 evac-11324' str4
2301.245	2301.041	49918	2305	21.66	press test-str #4	37301	17252	2.16	1/3 evac-11324' str4
2309.76	2309.553	49918	2301	21.69	press test-str #4	37301	17589	2.12	1/3 evac-11324' str4
2339.76	2339.531	49918	2288	21.82	press test-str #4	37301	17595	2.12	1/3 evac-11324' str4
2433.2	2432.088	49918	2269	22	press test-str #4	37301	17617	2.12	1/3 evac-11324' str4
2502.629	2500	49918	2242	22.27	press test-str #4	37301	17180	2.17	1/3 evac-11324' str4
2981.93	2968.827	49918	2295	21.75	press test-str #4	37301	17613	2.12	1/3 evac-11324' str4
3011.93	2998.274	49918	2298	21.73	press test-str #4	37301	17654	2.11	1/3 evac-11324' str4
3013.664	3000	49918	2298	21.72	press test-str #4	37301	17656	2.11	1/3 evac-11324' str4
3114.174	3100	49918	2201	22.68	press test-str #4	37301	17687	2.11	1/3 evac-11324' str4
3161.93	3147.514	49918	2154	23.17	press test-str #4	37301	17716	2.11	1/3 evac-11324' str4
3214.416	3200	49918	2105	23.72	press test-str #4	37301	17477	2.13	1/3 evac-11324' str4
3314.416	3300	49918	2809	17.77	press test-str #4	37301	17542	2.13	1/3 evac-11324' str4
3322.73	3308.314	49918	2867	17.41	press test-str #4	37301	19591	1.9	1/3 evac-11324' str4
3351.627	3337	49918	3069	16.26	press test-str #4	37301	19592	1.9	1/3 evac-11324' str4
3352.73	3338.095	49918	3077	16.22	press test-str #4	37301	19593	1.9	1/3 evac-11324' str4
3395.33	3374.384	49918	3337	14.96	press test-str #4	37301	19563	1.91	1/3 evac-11324' str4
3442.73	3414.762	49918	3622	13.78	press test-str #4	37301	19580	1.91	1/3 evac-11324' str4
3543.273	3450	49918	3871	12.9	press test-str #4	37301	19590	1.9	1/3 evac-11324' str4
3547.73	3451.562	49918	3882	12.86	press test-str #4	37301	19592	1.9	1/3 evac-11324' str4



String Tension/Compression Design: *7" Drilling Liner - String 4 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)
MD (m)
2000
2200
2400
2600
2800
3000
3200
3400
3600
0
50000
100000
150000
200000
250000
300000
Force (daN)
Compression Rating
Compression Load
Tension Load
Tension Rating
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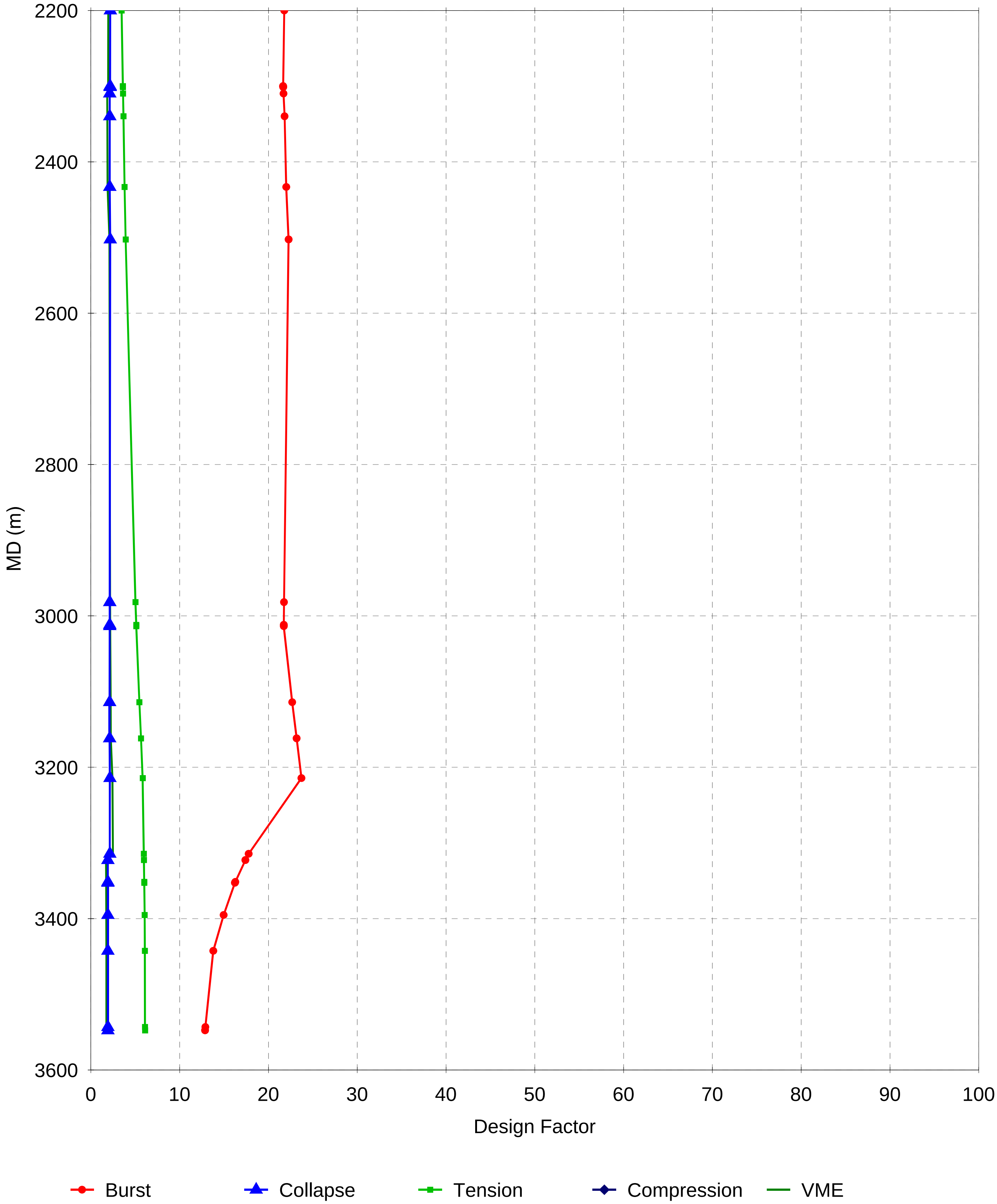
String/Model Name: *7" Drilling Liner - String 4 - Mod 1

Tension Compression Design

Depth		Tension				Compression			
MD (m)	TVD (m)	Rating (daN)	Load (daN)	DF	Load Name	Rating (daN)	Load (daN)	DF	Load Name
2200	2199.807	285131	82474	3.46	press test-str #4				
2300	2299.797	285131	79061	3.61	press test-str #4				
2300.203	2300	285131	79054	3.61	press test-str #4				
2301.245	2301.041	285131	79018	3.61	press test-str #4				
2309.76	2309.553	285131	78720	3.62	press test-str #4				
2339.76	2339.531	285131	77672	3.67	press test-str #4				
2433.2	2432.088	285131	74434	3.79	press test-str #4				
2502.629	2500	285131	72058	3.91	press test-str #4				
2981.93	2968.827	285131	56035	5.02	press test-str #4				
3011.93	2998.274	285131	55028	5.11	press test-str #4				
3013.664	3000	285131	54969	5.11	press test-str #4				
3114.174	3100	285131	51391	5.46	press test-str #4				
3161.93	3147.514	285131	49691	5.65	press test-str #4				
3214.416	3200	285131	48151	5.83	1/3 replc-11324' C				
3314.416	3300	285131	47120	5.96	1/3 replc-11324' C				
3322.73	3308.314	285131	47035	5.97	1/3 replc-11324' C				
3351.627	3337	285131	46739	6.01	1/3 replc-11324' C				
3352.73	3338.095	285131	46728	6.01	1/3 replc-11324' C				
3395.33	3374.384	285131	46354	6.06	1/3 replc-11324' C				
3442.73	3414.762	285131	46199	6.08	1/3 replc-11324' C				
3543.273	3450	285131	46065	6.09	1/3 replc-11324' C				
3547.73	3451.562	285131	46059	6.09	1/3 replc-11324' C				

String Minimum Design Factors: *7" Drilling Liner - String 4 - Mod 1
PaP #1 Side Track #3 (PaP #1 Side Track #3 - 1A.wpf)



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String/Model Name: *7" Drilling Liner - String 4 - Mod 1

Minimum Design Factors

MD (m)	TVD (m)	Burst	Collapse	Tension	Compression	VME
2199.742	2199.437	21.78	2.18	3.46		1.97
2299.716	2299.411	21.65	2.16	3.61		1.95
2300.021	2299.716	21.65	2.16	3.61		1.95
2301.24	2300.935	21.66	2.16	3.61		1.95
2309.47	2309.165	21.69	2.12	3.62		1.84
2339.645	2339.34	21.82	2.12	3.67		1.85
2432.914	2431.694	22	2.12	3.79		1.88
2502.408	2499.665	22.27	2.17	3.91		2.09
2981.858	2968.752	21.75	2.12	5.02		2.16
3011.729	2998.013	21.73	2.11	5.11		2.17
3013.558	2999.842	21.72	2.11	5.11		2.18
3114.142	3099.816	22.68	2.11	5.46		2.22
3161.69	3147.06	23.17	2.11	5.65		2.25
3214.116	3199.486	23.72	2.13	5.83		2.43
3314.395	3299.765	17.77	2.13	5.96		2.48
3322.625	3307.994	17.41	1.9	5.97		1.71
3351.581	3336.95	16.26	1.9	6.01		1.72
3352.495	3337.56	16.22	1.9	6.01		1.72
3395.167	3374.136	14.96	1.91	6.06		1.73
3442.716	3414.674	13.78	1.91	6.08		1.74
3542.995	3449.726	12.9	1.9	6.09		1.75
3547.567	3451.25	12.86	1.9	6.09		1.75

INPUT SUMMARY TABLE

Wellplan: PaP #1 Side Track #3
Model: *7" Drilling Liner - String 4 - Mod 1 String Type: Drilling Liner

WELL PARAMETERS

Rule: TdasRule	Lithology: Hard Rock	Well Type: Exploratory
Location: Onshore	KB Depth (m): 7.270	Water Depth (m): 0.000

MODEL COMPONENTS

Number of Sections: 1

Section 1: 2200.000 - 3547.730 m

OD (mm): 177.8	Weight (kg/m): 38.6932	Wall Thickness (mm): 9.2
Grade: L-80	Joint: BTC	Pipe ID (mm): 159.4
Material: Steel	Pipe Drift Dia (mm): 156.2	

Pipe Performance Properties

Pipe Description:	177.8 mm 38.6932 kg/m L-80 BTC		
Yield (MPa):	551.58	Coupling OD (mm):	194.5
Tensile (MPa):	655.00	OD Tolerance:	1.010
Burst (kPa):	49918	Wall Tolerance:	0.875
Collapse (kPa):	37301	Wall Loss (%):	0
Tension (MPa):	4419.54		
Compression (MPa):	3723.17	Consider Axial Compression on Collapse	
Leak (kPa):	49918	Resistance (ACCR):	No
Hydro (kPa):	45505	Temp Derate:	Steel
Cost ($/m):		Anisotropy:	No

HOLE DESCRIPTION

Deviated Trajectory: DEVIATION

MD (m)	Icnlination (deg)	Azimuth (deg)	TVD (m)	Dogleg Severity (deg/30 m)
0			0	
495	1	0	494.98	0
2300	1.5	150.88	2299.8	0

2309.76	1.79	150.88	2309.6	0.9
2339.76	3.07	221.74	2339.5	3
2433.2	12	247.86	2432.1	3
2981.93	12	247.86	2968.8	0
3011.93	10	247.86	2998.3	2
3161.93	0	247.86	3147.5	2
3322.73	0	30.58	3308.3	0
3352.73	12	30.61	3338.1	12
3442.73	48	30.61	3414.8	12
3547.73	89.99	30.61	3451.6	12
4450	89.99	30.61	3451.7	0

Hole Size: Hole 4 - 1

MD		Hole Size
Top	Bottom	
(m)	(m)	(mm)
0.000	3547.730	215.9

BASE CASE COMPONENTS

Installed Load
Internal Pressure Profile: 10.4 ppg mud
External Pressure Profile: cement-string #4
Temperature Profile: STATIC TEMPERATURE
Floats: Closed Movement (cm) Up: 0.0 Down: 0.0
Packer: Yes Bore (mm): 156.0 Pressure Below Packer (kPa): 16500

Interval Description

MD		Cement?	Axial Adjustment
Top	Bottom		
(m)	(m)		(daN)
2200.000	2200.000	Yes	0
2200.000	3547.730	Yes	0

LOAD CASE COMPONENTS

Load Case # 1: 1/3 evac-11324' str4

Internal Pressure Profile: 1/3 evac from 11324'
External Pressure Profile: 10.4 ppg mud
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 2: 1/3 replc-11324' C

Internal Pressure Profile: 1/3 replace-11324'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: circulating-11324'
Internal Plug: No
Fluid Friction: None

Load Case # 3: 1/3 replc-11324' S

Internal Pressure Profile: 1/3 replace-11324'
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

Load Case # 4: press test-str #4

Internal Pressure Profile: press test-str #4
External Pressure Profile: NATURAL PORE PRESS
Temperature Profile: STATIC TEMPERATURE
Internal Plug: No
Fluid Friction: None

PRESSURE PROFILE

Pressure Profile: 1/3 evac from 11324'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
1150.521	0	0	0
3451.562	28207	1250	833

Pressure Profile: 10.4 ppg mud

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
3451.562	42310	1250	1250

Pressure Profile: 1/3 replace-11324'

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	14103		
1150.521	14103	0	1250
3451.562	42310	1250	1250

Pressure Profile: NATURAL PORE PRESS

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		

500.000	5492	1120	1120
1000.000	11180	1160	1140
1500.000	16843	1155	1145
2000.000	22751	1205	1160
2300.000	26390	1237	1170
2500.000	28930	1295	1180
3000.000	35010	1240	1190
3200.000	37658	1350	1200
3451.700	39000	544	1152

Pressure Profile: press test-str #4

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	501		
3451.562	42811	1250	1265

Pressure Profile: cement-string #4

TVD (m)	Pressure (kPa)	Gradient (kg/m3)	Eq. Mud Wt. (kg/m3)
0.000	0		
3374.384	49565	1498	1498
3451.562	51034	1941	1508

TEMPERATURE PROFILE

Temperature Profile: STATIC TEMPERATURE

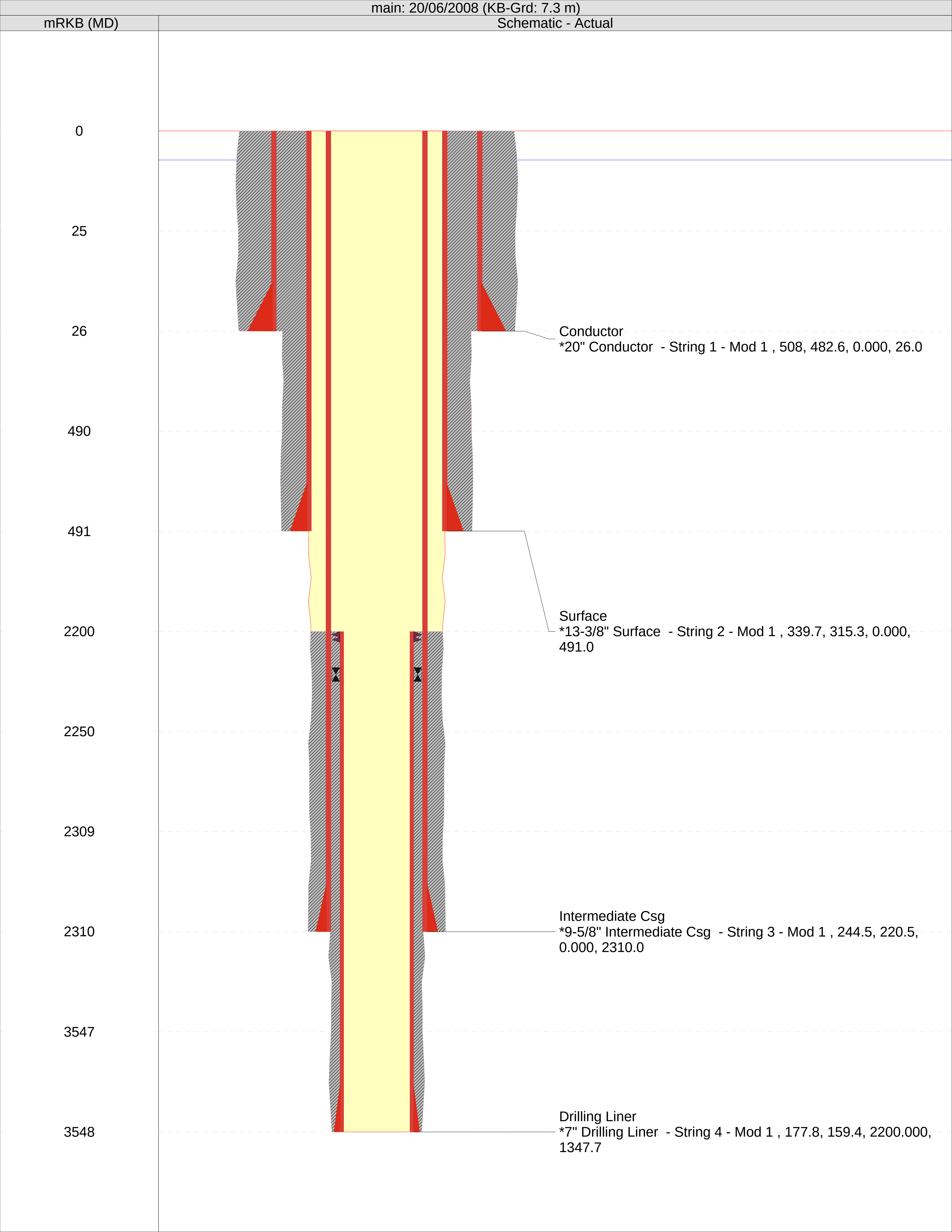
TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	3	
500.000	13	2.000
1000.000	18	1.000
1500.000	25	1.400
2000.000	32	1.400
2500.000	39	1.400
3000.000	46	1.400
3100.000	47	1.400
3200.000	49	1.400
3300.000	50	1.400
3337.000	51	1.400
3450.000	52	1.400
3451.700	52	1.400

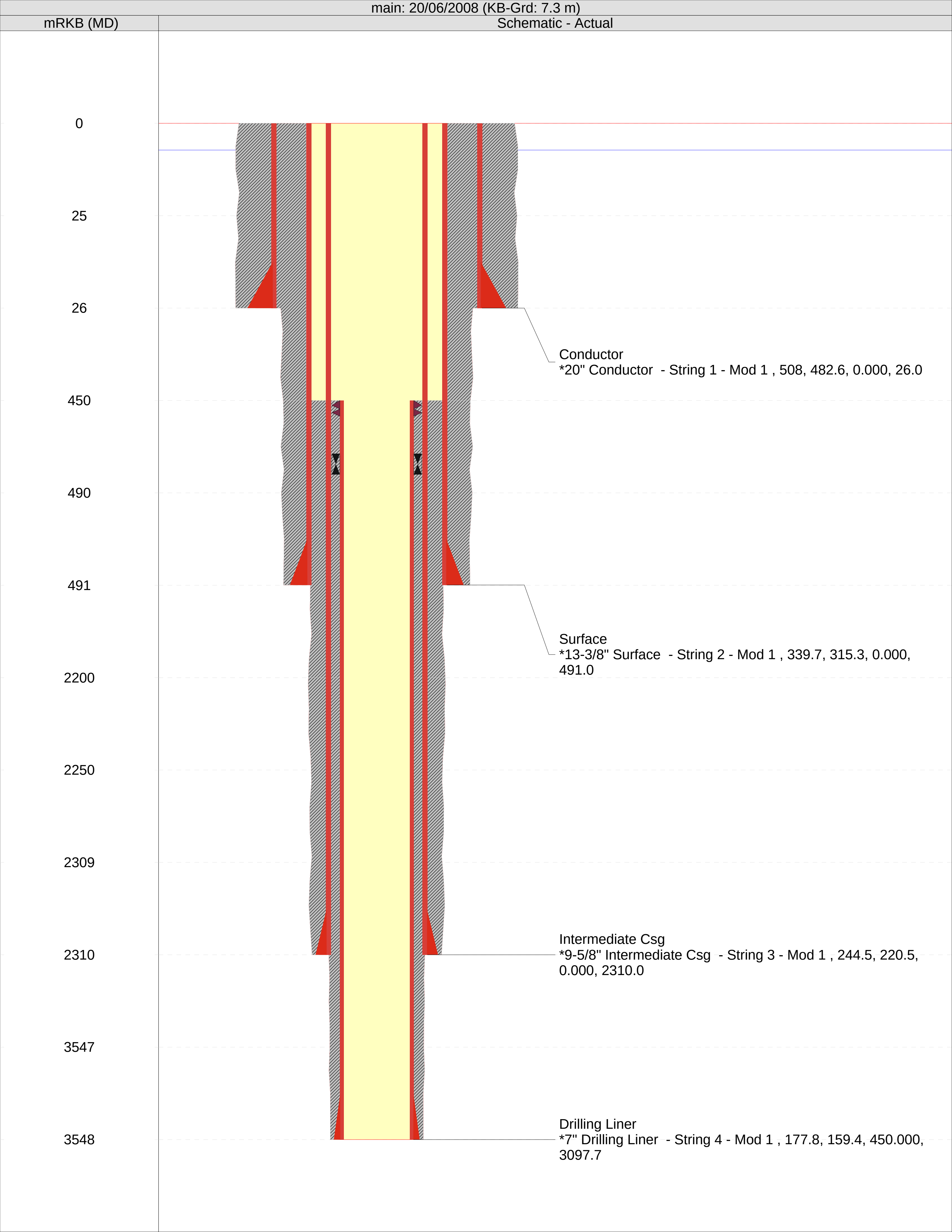
Temperature Profile: circulating-11324'

TVD (m)	Temperature (C)	Gradient (C/100 m)
0.000	19	
2301.041	45	1.143
3451.562	49	0.305

FRICTION PROFILES

NONE DEFINED


main: 20/06/2008 (KB-Grd: 7.3 m)
mRKB (MD)
Schematic - Actual
0
25
26
490
491
2200
2250
2309
2310
3547
3548
Conductor
*20" Conductor - String 1 - Mod 1 , 508, 482.6, 0.000, 26.0
Surface
*13-3/8" Surface - String 2 - Mod 1 , 339.7, 315.3, 0.000, 491.0
Intermediate Csg
*9-5/8" Intermediate Csg - String 3 - Mod 1 , 244.5, 220.5, 0.000, 2310.0
Drilling Liner
*7" Drilling Liner - String 4 - Mod 1 , 177.8, 159.4, 2200.000, 1347.7


main: 20/06/2008 (KB-Grd: 7.3 m)
mRKB (MD)
Schematic - Actual
0
25
26
450
490
491
2200
2250
2309
2310
3547
3548
Conductor
*20" Conductor - String 1 - Mod 1 , 508, 482.6, 0.000, 26.0
Surface
*13-3/8" Surface - String 2 - Mod 1 , 339.7, 315.3, 0.000, 491.0
Intermediate Csg
*9-5/8" Intermediate Csg - String 3 - Mod 1 , 244.5, 220.5, 0.000, 2310.0
Drilling Liner
*7" Drilling Liner - String 4 - Mod 1 , 177.8, 159.4, 450.000, 3097.7

main: 20/06/2008 (KB-Grd: 7.3 m)

mRKB (MD)	Schematic - Actual