END OF WELL REPORT

OMV Australia

Baleen - 4

24th September 2004 – 28th October 2004

by

BAKER HUGHES INTEQ

Baleen - 4

Final Well Report

SECTION 1

WELL SUMMARY

1.1 Well Data Summary

Well Name	Baleen - 4
Rig Name:	MODU Ocean Bounty
Rig Type:	Semi-submersible
Drilling Contractor:	Diamond Offshore General Company
Drilling Datum:	Rotary Table
Drill Floor Elevation:	25.0m
Water Depth:	53.1m
Surface Coordinates:	038º 00’ 20.99” S Lat 5,792,541.3mN 148º 26’ 34.42” E Long 626,675.9 mE
Block:	VIC / L21
Well Type:	Horizontal Gas Producer / Re-entry and abandonment of Baleen - 3
Kick off Date:	15:00hrs 27th September 2004
Total Depth:	2290.00m
TVD Total Depth:	716.95m
TD Date:	22nd October 2004
Well Status:	Put on line with gas pipeline
Baker Hughes INTEQ Crew:	
Data Engineers:	Duane Hatton Andrew MacQueen Tomasz Zelski David Walsh
Logging Geologists:	Ajitoro Andrew Hurley

1.2 Well Summary

All depths in this report unless otherwise stated refer to depths in metres below the rotary table – mRT.

After running the BOP's and Riser to the sub sea tree Baleen - 3 was re-entered and the well was killed using Brine and sea water. The completion tubing was then pulled and laid out. An EZSV cement retainer was run to 796m and set and cemented in place. The 9 5/8" casing was then cut at 399.11m and pulled out of hole before the kick-off cement was pumped to 254.5m(TOC).

Baleen – 4 was officially spudded at 15:00hrs on the 27th of September 2004. A 12 ¼" mill-tooth bit was then run in hole to dress the cement plug for kick-off (drilled to 320m). At this stage, the well was in the process of being displaced to synthetic oil based mud (SOBM) when there was a sudden increase in stand pipe pressure. The drill-string had packed off with no rotation, upwards and downwards movement and circulation possible.

Wire-line was then run in hole with a back off charge and 44.12m of fish was left in the hole. A jarring assembly was then made up and RIH. The well was then fully displaced to 9.3ppg SOBM. The jarring assembly then engaged the fish and jarring operations proceeded. This jarring was unsuccessful and a gyro survey was dropped but hung up at 199.7m. Wire-line ran a blind back-off tool with the run still leaving 125.44m of fish down hole. Open ended drill pipe was run in, with each joint being given extra torque. The fish was engaged and 5 left hand string turns applied, with no weight gain indicated. On pulling out with the string no fish was recovered. Another overshot assembly was run and once engaged to the fish was turned 8 times to the left hand side. A down hole shudder was experienced and 10klb increase in the string weight. On pulling out 7 joints of heavy weight drill-pipe and 6.07m of accelerator were recovered. The next stage of fishing operations required the overshot assembly to be run in to engage the fish at 196.83m with 10klb over-pull noted. A wireline back-off charge was then run in and set off with a torque drop in the string occurring. The down hole assembly was the rotated 5 times to the left and the string was free with a 25klb weight gain noted. On pulling out, the rest of the accelerator, 6 drill collars and jars were retrieved. A wash-over assembly was then required to be run to mill over the first of the 3 stabilizers still in hole. The milling proceeded to 295m and the assembly was then Pulled out. An overshot string was run in and engaged the top of the fish at 279.82m. Wire-line back-off charge was fired at 290m with a 9klb torque drop experienced. Problems on attempting to back out with the fish occurred and on pulling out, no additional fish was recovered. A back-off assembly was then run and tagged top of fish at 279.82m. Wireline again ran a back-off charge to 290m. On backing out of the fish no extra weight gain was noted but, once the assembly was pulled to surface a cross over joint, 8 ¼" drill collar and a stabilizer were brought to surface. Another wash-over string was run in and tagged the top of fish at 290.25m and milling commenced to 300.36m. On pulling out with the wash-over string, the wear bush was also retrieved due it being jammed on the 12" burn shoe on the trip out of hole. Another back-off assembly was run in, and the well was circulated out 3 times prior to tagging the top of the fish at 290.25m. The fish was engaged with 27klbs/ft torque applied to the string and the pipe worked (jarring up and down, 160klb over-pull) without success in freeing the fish. Wireline prepared and ran another back-off charge. 50klbs of torque was subjected onto the back-off assembly and 5 full turns of the string applied. On picking up the assembly 5klbs of extra weight was noted. When the assembly came to surface, fish recovered was one 8 ¼" drill collar and the second of the three stabilizers. The top of the fish was now 301.35m. The wearbushing was then run in hole and re-set. Another wash-over assembly was tripped in hole and washed down to 311m and the hole circulated out three times before POOH. An overshot and an 8 ¼" mill control grapple assembly was then run in and the fish engaged, 10klb over-pull was experienced. Circulation was then broken at 580gpm and the string worked and pulled out with the remaining fish.

The next stage of the operation was to pressure test the casing to 500psi for 10 minutes against the bottom shear rams, as there was some concern whether the 12 ¼" drilling assembly wore a hole in it. The pressure test was successful. A reverse circulating basket was then RIH and washed down from 100m to 320m at 1070gpm. The BOP's were then function tested to clear any possible metallic fragments/junk that may of become lodged in the cavities. The ball was then dropped to reverse circulate in the sub at 1030gpm and the assembly then POOH. A post jarring inspection was then conducted on the derrick and the top drive.

The first 12 ¼" bit was then made up and RIH to 160m where another casing pressure test was conducted this time against the MPR's at 500psi for 30 minutes. On running to bottom, drilling (dressing cement kick-off plug) proceeded to 336.7m at 900gpm (1320psi). The hole was then circulated out for 1 hour until the shakers were clean. A gyro survey was dropped and the drilling assembly POOH. A USIT wireline log was then run to check the 13 3/8" casing structural integrity.

A new 12 ¼" bit was made up to a kick-off drilling assembly (mud motor set to 1.5 degrees). Slide drilling commenced from 336.7m to 390m, it was then decided to pull the bit back to the shoe to conduct a FIT, results: 1.87sg (15.5ppg) EMW. The assembly was then tripped back in and slide drilling resumed to a depth of 733m. Gyro surveys on a slick line were run on almost every stand. The hole was then circulated out as per extended reach drilling (ERD) engineers instructions. Some over-pull was noticed on the trip out and was remedied by tripping back in and rotating and circulating at high rates or as per ERD engineers instructions. More gyro surveys were then dropped on the trip back to surface.

A new 12 ¼" bit was then made up to a rotary steerable assembly and RIH with some drag (10-20klb) noted at 580m. The hole was then washed down to bottom. Slide drilling continued to 1298m, it was then decided to circulate the hole at 950gpm (3200psi) for over an hour. Further drilling proceeded to 1582m and then bottoms up was circulated out four times at 950gpm (4100psi). Directional drilling recommenced to a section TD of 1890m (89degrees angle of hole). The hole was then circulated out for 3 hours and the drilling assembly pulled out of hole reaming and washing down tight spots.

Bit 2 was then rerun for a wash down to bottom trip. Certain tighter areas were reamed, washed down and the circulated out as per ERD engineers recommendations. The assembly was then tripped out to the casing shoe also washing and reaming and then back to bottom where a spacer and channel seal were pumped. The string was POOH and rigging up to run casing began

The 9 5/8" casing was to be "floated" in with the bottom half of the casing (972.5m, 40lb/ft) to be left empty and the top half (912.89m, 47lb/ft), separated by a float joint to be filled with KCL brine. A custom made push plate connected to the top drive was used to push the casing into the hole during tighter spots. The 9 5/8" casing was landed out at a total depth of 1885.39m.

New Bit number 4 was made up, run in hole and tagged top of cement at 1859m. Drilling cement and shoe track commenced with seawater and 30bbl guar gum sweeps. The hole was then displaced to KCL brine (9.1ppg) and the hole circulated and mud conditioned. The shoe was drilled out with rat hole to 1890m. Three meters of new formation were then drilled and a formation integrity test preformed, results being 265psi = 1.34sg (11.1ppg). Drilling proceeded to 2010.5m, where sliding was found to be impossible with the current BHA configuration.

New Bit number 5 was made up as a rotary assembly and run in, but encountered difficulty proceeding beyond the casing shoe, with the string stalling out several times. The BHA was rotated and reamed down to tag bottom to drill ahead from 2010.5m at a steady 30-40m/hr down to 2290m where numerous circulations were performed, and a lengthy hole cleaning procedure commenced, including a wiper trip to the shoe and back to TD. After circulating again, 135bbls were spotted back to 2140m. The string was then pulled out of hole, with circulations carried out at 850m & 278m.

Bit 5 was then re-run on a clean-out assembly, which hung up at 915m, where the hole was circulated. The string was unable to proceed beyond 1400m without rotation and so the string was rotated to tag TD at 2290m. The string was then pumped out of hole using unfiltered brine & 'Baralift' sweeps at intervals, before running back in on elevators to 100m above the casing shoe. The hole was circulated before pumping and displacing a spacer-train & displacing the hole to weighted brine. The string was then pulled out of hole.

6.625" Liner with 'Excluder 2000' Sand Screens was then made up and run in on drillpipe to 2284m where the hanger was landed and a clean up enzyme was pumped. The Landing string was then pulled out of the hole & a set of casing scrapers were run to clean the casing prior to running production tubing & carrying out the completion program to bring the well online.

SECTION 2

DRILLING & ENGINEERING

2.1 Bit Run Summaries

Baleen - 4

12.25" Hole Section
30th September 2004

Bit Run No. 1 Summary

Bit Number	NB 1
Bit Size	12.25”
Bit Type	Hughes MX – 1
S/N	6007091
Jets	3 x 24
Depth In (m)	254.5 m (cement)
Depth Out (m)	320.0 m (cement)
Metres Drilled	65.5 m
Drilling Hours	5.7
TBR (krevs)	65.1
Circulating Hours	6.3
Average ROP (m/hr)	11.5
API Condition	1-1-NO-A-E-In-NO-LIH

Drilling Parameters

WOB (klbs)	4	-	12.9
RPM	25	-	81
Torque (kft-lbs)	0.5	-	4.02
Flow In (gpm)	384	-	841
Pump Pressure (psi)	424	-	846

Mud System

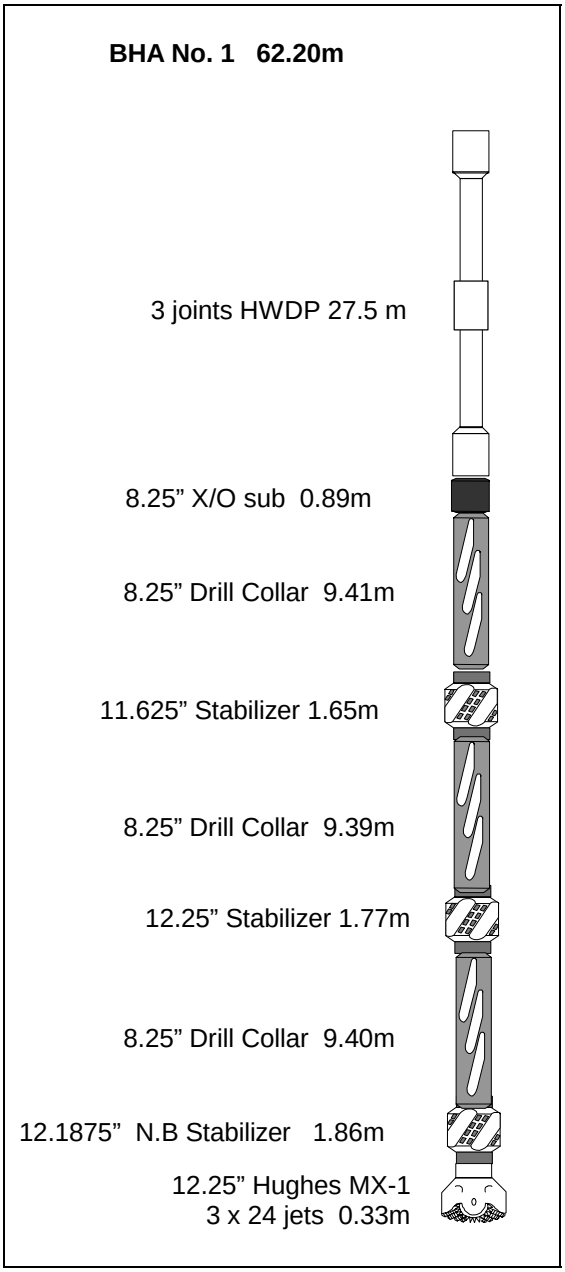
Seawater 1.03 sg

Lithology

Cement

Drilling Summary

NB1, a 12 1/4” Hughes tricone bit, was made up to a BHA consisting of 3 stabilizers to dress the cement kickoff plug from 254.5m. Cement was drilled from 254.5m to 320m with seawater. At 320m, then the well was circulated with 225bbls at 800gpm, followed by an additional 160bbls circulated while boosting the riser. The drillstring was then pulled back to 315.64m and preparations for the well to be displaced to Synthetic Oil-Based Mud were made. SOBM was displaced while rotating the string, but after only 165 strokes the drill string packed off with 1100psi. The pressure was then bled off and the string was worked for a free point. 17bbls were then pumped at 4 SPM to register a standpipe pressure increase to 950psi. No rotation, movement up or down of the drillstring and no circulation was possible. Further attempts work pipe were unsuccessful. Wire-line was then run in hole with a back off charge and 44.12m of fish was left in the hole. A jarring assembly was then made up and RIH. The well was then fully displaced to 9.3ppg SOBM. The jarring assembly then engaged the fish and jarring operations proceeded. This jarring was unsuccessful and a gyro survey was dropped but hung up at 199.7m. Wire-line ran a blind back-off tool with the run still leaving 125.44m of fish down hole. Open ended drill pipe was run in, with each joint being given extra torque. The fish was engaged and 5 left hand string turns applied, with no weight gain indicated. On pulling out with the string no fish was recovered. Another overshot assembly was run and once engaged to the fish was turned 8 times to the left hand side. A down hole shudder was experienced and 10klb increase in the string weight. On pulling out 7 joints of heavy weight drill-pipe and 6.07m of accelerator were recovered. The next stage of fishing operations required the overshot



assembly to be run in to engage the fish at 196.83m with 10klb over-pull noted. A wireline back-off charge was then run in and set off with a torque drop in the string occurring. The down hole assembly was the rotated 5 times to the left and the string was free with a 25klb weight gain noted. On pulling out, the rest of the accelerator, 6 drill collars and jars were retrieved. A wash-over assembly was then required to be run to mill over the first of the 3 stabilizers still in hole. The milling proceeded to 295m and the assembly was then Pulled out. An overshot string was run in and engaged the top of the fish at 279.82m. Wire-line back-off charge was fired at 290m with a 9klb torque drop experienced. Problems on attempting to back out with the fish occurred and on pulling out, no additional fish was recovered. A back-off assembly was then run and tagged top of fish at 279.82m. Wireline again ran a back-off charge to 290m. On backing out of the fish no extra weight gain was noted but, once the assembly was pulled to surface a cross over joint, 8 ¼" drill collar and a stabilizer were brought to surface. Another wash-over string was run in and tagged the top of fish at 290.25m and milling commenced to 300.36m. On pulling out with the wash-over string, the wear bush was also retrieved due it being jammed on the 12" burn shoe on the trip out of hole. Another back-off assembly was run in, and the well was circulated out 3 times prior to tagging the top of the fish at 290.25m. The fish was engaged with 27klbs/ft torque applied to the string and the pipe worked (jarring up and down, 160klb over-pull) without success in freeing the fish. Wireline prepared and ran another back-off charge. 50klbs of torque was subjected onto the back-off assembly and 5 full turns of the string applied. On picking up the assembly 5klbs of extra weight was noted. When the assembly came to surface, fish recovered was one 8 ¼" drill collar and the second of the three stabilizers. The top of the fish was now 301.35m. The wear-bushing was then run in hole and re-set. Another wash-over assembly was tripped in hole and washed down to 311m and the hole circulated out three times before POOH. An overshot and an 8 ¼" mill control grapple assembly was then run in and the fish engaged, 10klb over-pull was experienced. Circulation was then broken at 580gpm and the string worked and pulled out with the remaining fish.

12.25" Hole Section
9th October 2004

Bit Run No. 2 Summary

Bit Number	RR 1.1
Bit Size	12.25”
Bit Type	Hughes MX – 1
S/N	6007091
Jets	3 x 24
Depth In (m)	320
Depth Out (m)	336.7
Metres Drilled	16.7
Drilling Hours	2.3
TBR (krevs)	11.3
Circulating Hours	4.2
Average ROP (m/hr)	6.9
API Condition	1-1-NO-A-E-In-NO-TD

Drilling Parameters

WOB (klbs)	1.2	-	15.2
RPM	14	-	85
Torque (kft-lbs)	0.7	-	2.9
Flow In (gpm)	582	-	895
Pump Pressure (psi)	733	-	1255

Mud System

Synthetic oil based mud	1.12	1.13 sg

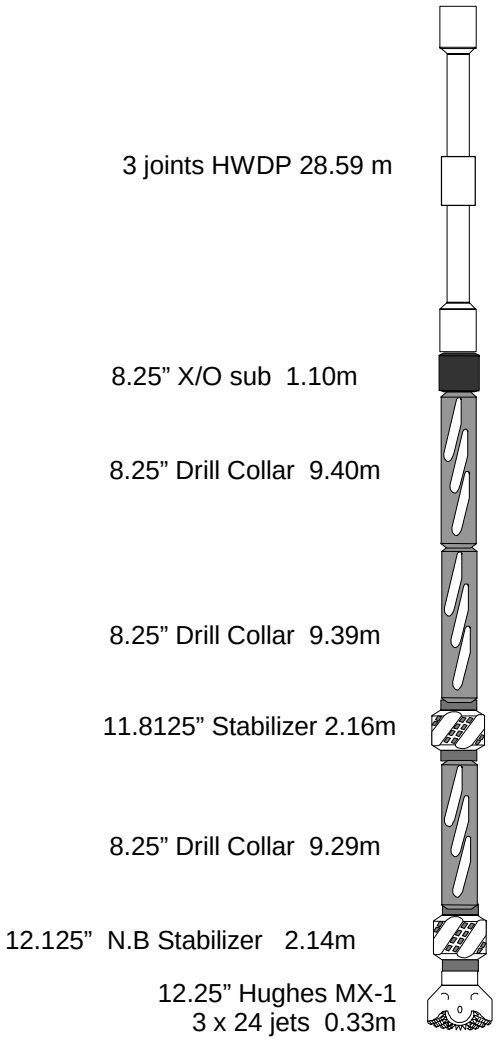
Lithology

Cement

Drilling Summary

Bit RR1.1 was made up to a BHA consisting of 2 stabilizers to continue dressing the cement kickoff plug. Running in hole to 160m and a casing pressure test was conducted against the MPR’s at 500psi for 30 minutes with test judged successful. Ran in hole to 320m and drilling proceeded to 336.7m using synthetic oil based mud system without incidents. At TD the hole was circulated for a period of 1 hour and then further circulated for 30 minutes while boosting the riser at 1364gpm. A gyro survey was taken, and then a wireline USIT log was run to check the integrity of the casing.

BHA No. 2 62.40m



12.25" Hole Section
10th – 11th October 2004

Bit Run No. 3 Summary

Bit Number	NB 2
Bit Size	12.25”
Bit Type	Smith GFXIVCPS
S/N	MP7324
Jets	3 x 22, 1 x 19
Depth In (m)	336.7
Depth Out (m)	733
Metres Drilled	396.3
Drilling Hours	11.3
TBR (krevs)	113.2
Circulating Hours	27.4
Average ROP (m/hr)	35.1
API Condition	1-1-NO-A-E-In-NO-BHA

Drilling Parameters

WOB (klbs)	1.2	-	43.3
RPM	120	-	237
Torque (kft-lbs)	0	-	7.3
Flow In (gpm)	458	-	928
Pump Pressure (psi)	1035	-	3519

Mud System

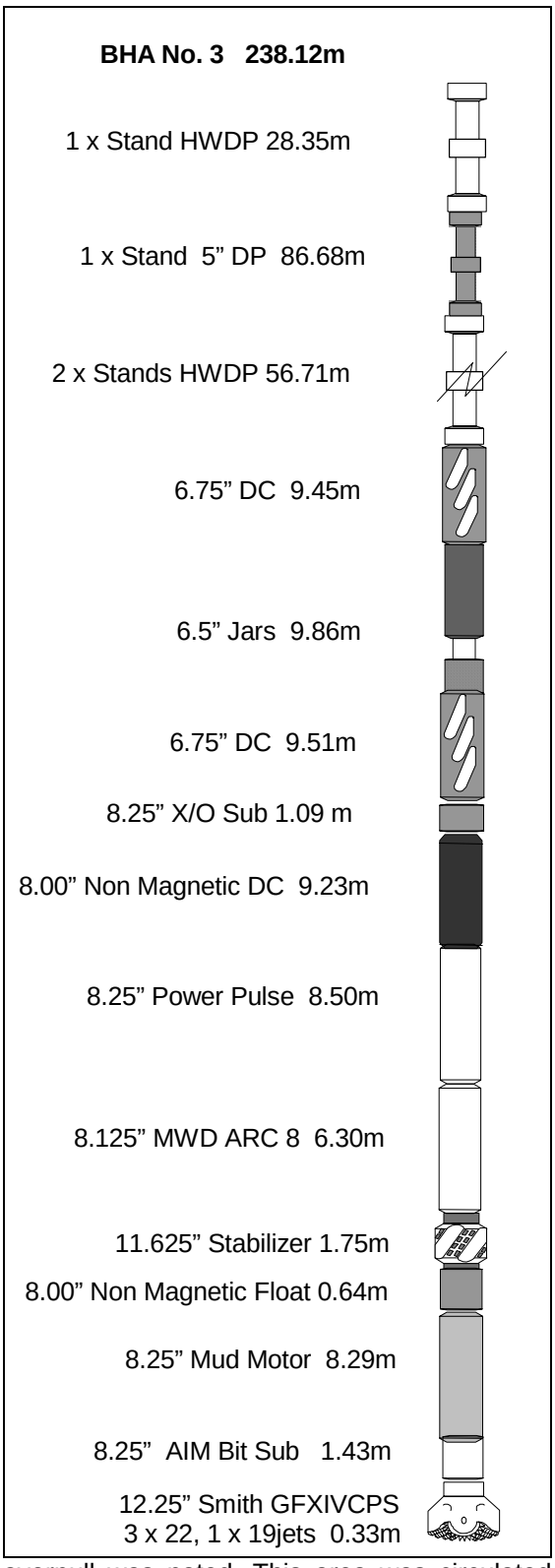
Synthetic oil based mud	1.12	-	1.13sg

Lithology

Cement, Argillaceous Calcilutite,Calcarenite, Calcareous Claystone

Drilling Summary

A new 12.25” bit was made up with an MWD/ rotary steerable assembly, the motor set to a 1.5 degree bend. This directional assembly was shallow tested and the tool face aligned before drilling proceeded. On reaching bottom sliding commenced from 336.7m to 361m with pumping parameters being maintained at around 550gpm (1300psi standpipe pressure). At 361m a gyro survey was run on a slick line with circulation rates of around 900gpm (2200psi) being maintained. Sliding continued to 390m and another gyro survey was run. The drill string was then pulled back to the 13 3/8” shoe (254.4m) and the hole circulated for 30 minutes in preparation for a formation integrity test. The FIT was successful with a result of 1.62sg (13.49ppg) EMW being noted. On running back to bottom sliding continued to 417m when another gyro survey was run. Sliding proceeded to 448m with 600gpm (1600psi) pumping parameters and another gyro survey was run. Sliding continued to a section TD of 733m. The well was then circulated out for 2 ¼ hours at 900gpm (3650psi) while rotating at 90rpm as per extended reach drilling (ERD) engineers instructions. After flow checking the drill-string was pulled out of the hole. At 655m to 626m 30klbs overpull was noted. This area was circulated out for 1 ½ hours at 880gpm (3300psi) while rotating the drill string at around 130rpm (ERD engineers instructions). A 30bbl hi-vis pill was then pumped and circulated out. POOH continued to 550m when another tight spot was encountered (50klbs overpull). This area was circulated out for 30 minutes at 900gpm. The assembly was then run back to bottom



and circulation for 1 hour commenced at 910gpm, shakers were noted as clean. A gyro survey was dropped at TD and the drillstring pulled out of hole with gyro surveys being taken at each joint. At 545m, 50klb drag was experienced and bottoms-up was circulated out. Continued coming out with no further problems.

12.25" Hole Section
12th - 14th October 2004

Bit Run No. 4 Summary

Bit Number	NB 3
Bit Size	12.25”
Bit Type	Smith MRS91GHPX
S/N	JT6155
Jets	4 x 18, 3 x 16
Depth In (m)	733
Depth Out (m)	1890
Metres Drilled	1247
Drilling Hours	24.4
TBR (krevs)	211.6
Circulating Hours	49.2
Average ROP (m/hr)	47.4
API Condition	1-O-WT-G-X-2-WT-TD

Drilling Parameters

WOB (klbs)	0.1	-	16.3
RPM	50	-	234
Torque (kft-lbs)	1.6	-	12.4
Flow In (gpm)	479	-	974
Pump Pressure (psi)	1471	-	4275

Mud System

Synthetic oil based mud	1.13	-	1.18sg

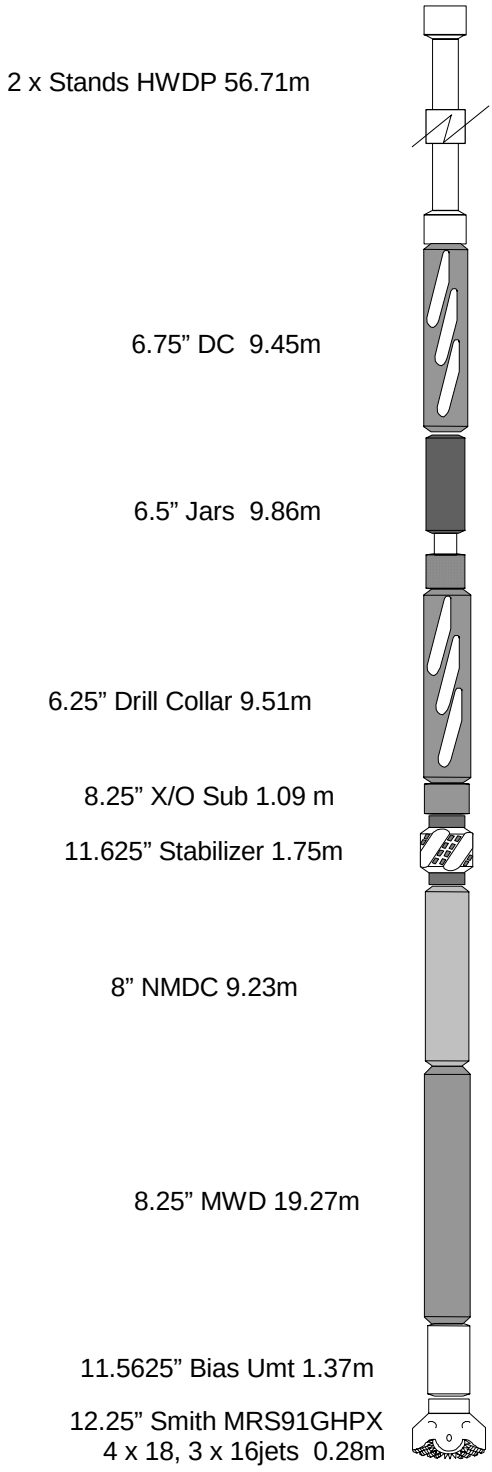
Lithology

Calcareous Claystone, minor Calcarenite, Claystone, Sandstone

Drilling Summary

A new 12.25” PDC fixed cutter bit was made up to a MWD rotary steerable unit and RIH to 580m with a 10-20klb drag noted. The drilling assembly was then washed down to 733m with a flow 900gpm and a 40rpm rotating speed. New formation was drilled to 1289m at 900gpm (2300psi) and at 140rpm. At this point the hole was circulated out for 1 ¼ hours. Drilling then proceeded to 1582m and the hole was cleaned by circulating bottoms up 4 times at a flow of 950gpm (4100psi). At 1726m a pressure relief valve on a mud pump needed to be repaired and with the MWD tool unable to transmit its signal properly, drilling ceased for 45 minutes and the hole circulated during this period. Drilling continued to 1811m when a large gas peak of 33% was noted. Drilling ceased and the well was circulated and a flow check preformed (static). Drill ahead to 1861m, when another circulation of the hole was conducted for 30 minutes to improve the ROP. Reached TD for this run at 1890m and the well was circulated out for 3 hours. On the trip out 25klb overpull was noted at 1072m. Circulating bottoms up 3 times remedied the tight spot and tripping resumed with 0-10klb overpull noted up until the 13 3/8” shoe, where the well was flow checked (static) and the drilling assembly pulled completely.

BHA No. 4 118.52m



12.25" Hole Section
14th – 17th October 2004

Bit Run No. 5 Summary

Bit Number	RR2.1
Bit Size	12.25”
Bit Type	Smith GFXIVCPS
S/N	MP7324
Jets	3 x 22, 1 x 19
Depth In (m)	1980
Depth Out (m)	1980
Metres Drilled	0
Drilling Hours	0
TBR (krevs)	113.2
Circulating Hours	25.8
Average ROP (m/hr)	0
API Condition	1-1-NO-A-E-In-NO-BHA

Mud System

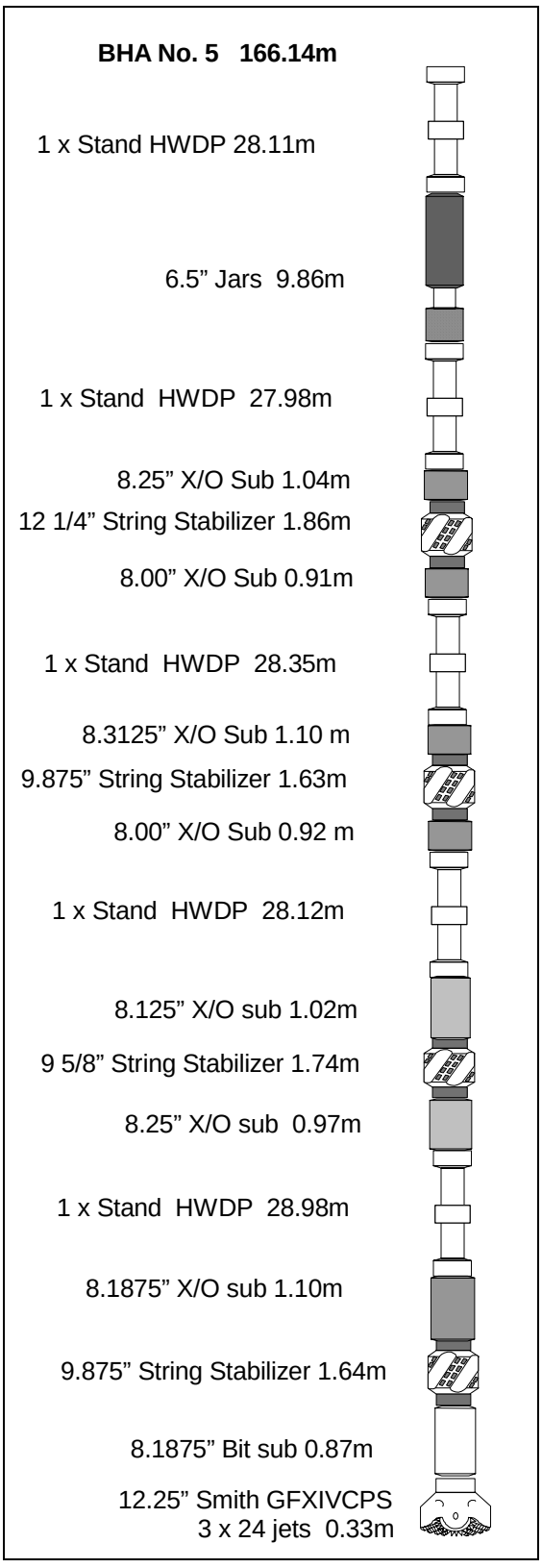
Synthetic oil based mud 1.18sg

Lithology

Hole conditioning trip

Drilling Summary

An altered BHA was made up and Run in for a wash down trip. The assembly was run in to 810m and washing down proceeded to 915m. Continued to run in to 990m and washed down to 1020m. Running in continued to 1220m and the string was washed down to 1640m. Running in continued from 1640m to 1890m, with the last stand being washed down to section TD with no fill noted. Circulation of bottoms up was then undertaken for a period of 1 ½ hours. The string was pulled out with washing and reaming (as per hole cleaning guidelines) to 800m with notable overpull occurring at 1379m(25klbs) and at 936m(20klbs). At 744m 20klbs overpull was experienced and all returns were lost (128bbls). A stand was picked up and the pipe worked to 772m with full returns being gradually reestablished over a period of 1 ¼ hours circulation. The hole was then swept with a 40bbl hi-vis pill and bottoms up circulated out 8 times the hole volume. Pulling out of hole (washing and back reaming) resumed to 538m where 20klbs overpull occurred. This area was circulated out 4 ½ times bottoms up. The assembly was then pulled out to the 13 3/8” shoe and circulation for 1 hour in which time 2 x 40bbls hi-vis sweeps were pumped. The assembly was then tripped back in hole with the only notable drag being at evident at 522m-535m (25klbs). Once the string reached bottom an extended circulation run was undertaken for 4 hours. A side entry stand was rigged up and 45bbls of tuned spacer pumped.



Then 80bbls of channel seal was displaced into the hole from 1863m to 1725m. POOH to 1629m where 7bbls of spacer was spotted and the assembly then completely pulled to the surface.

8.5" Hole Section
19th – 21st October 2004

Bit Run No. 5 Summary

Bit Number	NB4
Bit Size	8.5”
Bit Type	Reed Hycalog TC11
S/N	B73551
Jets	3 x 22
Depth In (m)	1890
Depth Out (m)	2010.5
Metres Drilled	121.5
Drilling Hours	3.2
TBR (krevs)	39.6
Circulating Hours	26.6
Average ROP (m/hr)	38.1
API Condition	6-2-CT-G-E-1-BT-BHA

Drilling Parameters

WOB (klbs)	2.2	-	68.4
RPM	180	-	272
Torque (kft-lbs)	0	-	16.1
Flow In (gpm)	571	-	612
Pump Pressure (psi)	2112	-	2426

Mud System

Water based KCL brine 1.08 - 1.09sg

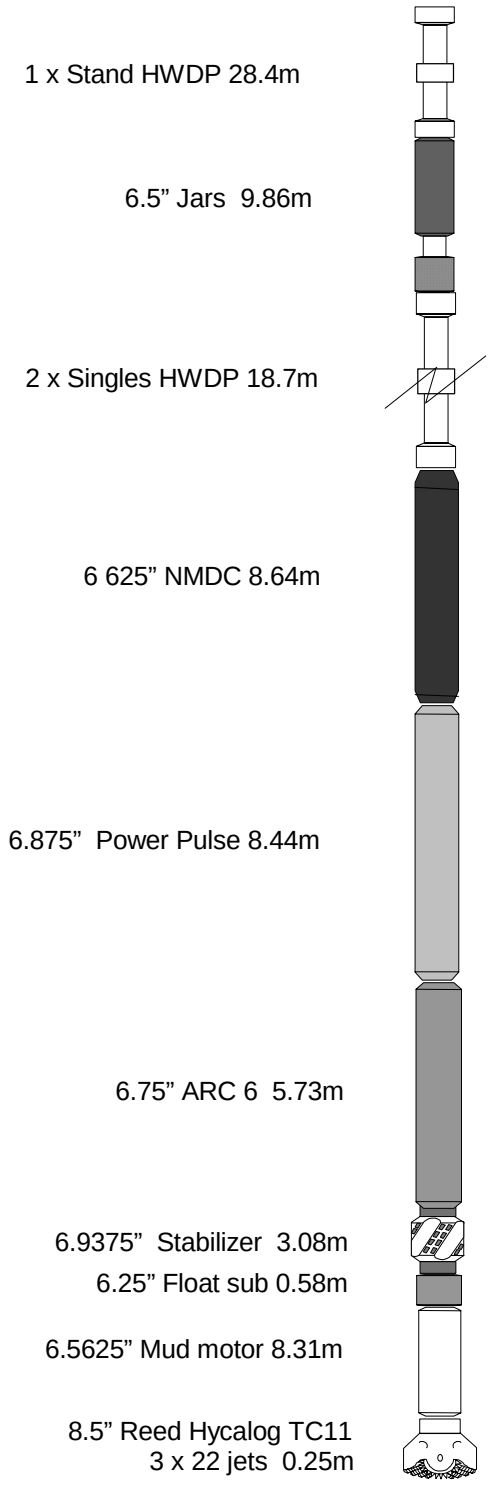
Lithology

Sandstone

Drilling Summary

After the completion of the 9.625” casing run, NB4 was made up to a directional assembly with a motor bend of 0.78 degrees. This was then run in to tag the top of cement at 1859m, and the cement, plugs & float collar was drilled out with seawater and Guar Gum sweeps. The hole was then displaced to 1.09sg water-based KCl mud before drilling out the shoe and rat-hole. With 3m of new formation drilled, the hole was circulated and the mud system conditioned before conducting a FIT with 265psi (1.34sg EMW). Drilling of new hole commenced with rotary and slide drilling (with slide drilling becoming increasingly more difficult) down to 2010.5m where attempts at sliding were met with no success. The hole was circulated clean & the string washed out of the hole to alter the BHA configuration.

BHA No. 6 91.99m



8.5" Hole Section
21st – 22nd October 2004

Bit Run No. 6 Summary

Bit Number	NB5
Bit Size	8.5”
Bit Type	Hughes, MXS20D
S/N	L8420DB6S
Jets	2 x 24
Depth In (m)	2010.5
Depth Out (m)	2290
Metres Drilled	279.5
Drilling Hours	9.3
TBR (krevs)	42.4
Circulating Hours	20.1
Average ROP (m/hr)	30.1
API Condition	1-1-ER-A-E-In-WT-TD

Drilling Parameters

WOB (klbs)	15.3	-	65.0
RPM	56	-	253
Torque (kft-lbs)	11.9	-	20.3
Flow In (gpm)	125	-	913
Pump Pressure (psi)	529	-	3115

Mud System

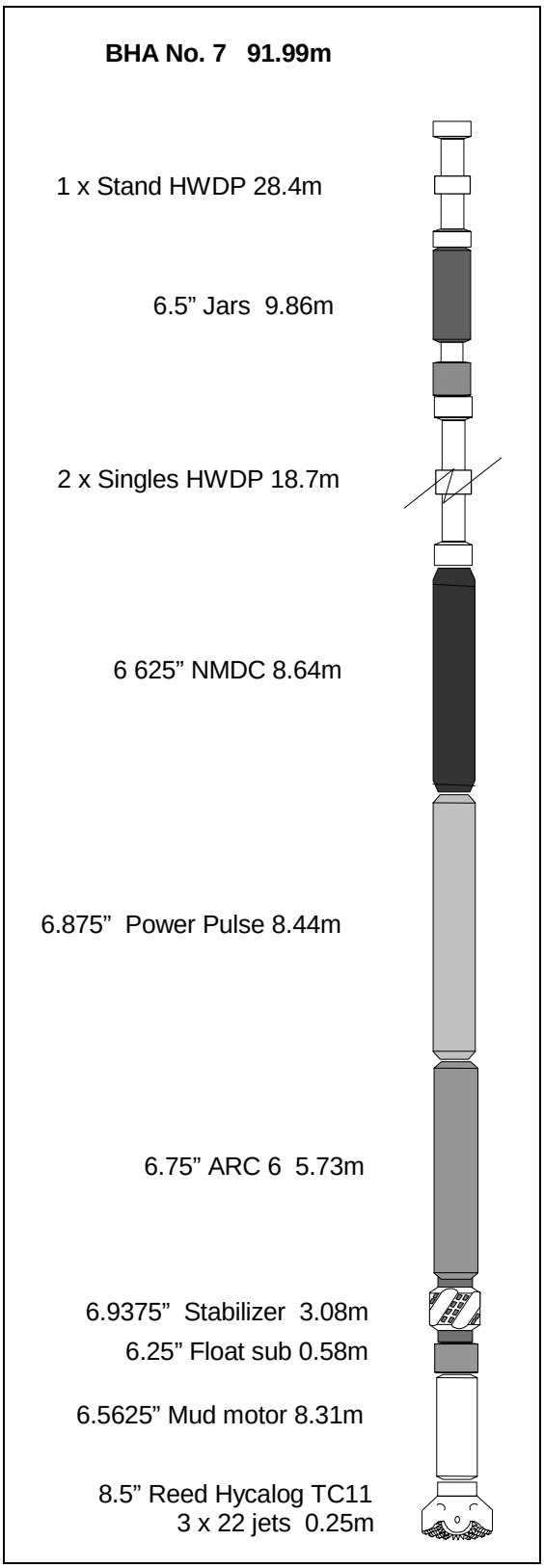
Water based KCL brine	1.09	-	1.12sg

Lithology

Sandstone

Drilling Summary

The final drilling bit run consisted of a roller cone bit on a rotary assembly with an Andergauge to control angle. This was run in to the casing shoe where an obstruction was encountered. Initially this was unable to be worked past. After numerous attempts, the string was worked past the obstruction & reamed down to 1905m. The string was then pulled back into the casing where the string stalled out and became stuck inside the casing at 1880m. Using rotation, the string was worked free & washed and reamed down to 2010.5m. Drilling commenced with the string being worked twice on connections, but with rotation required to move the string. The third mud pump was lined up as a booster at 250gpm to attempt to assist with hole cleaning. TD for the well was reached at 2290m, where the hole was circulated 5 times to clean the hole. After a flow-check (static) the string was pulled back (tight hole at 1891m, where 2 30bbl sweeps were circulated) to the casing shoe. The string was then run back to bottom – which required rotation. The hole was circulated clean at TD before pulling out of the hole. The hole was circulated clean (including the use of the booster) at 850m. Overpull of 40klb was encountered at 278m which was worked. The hole was circulated again and pulling out continued with 5 to 15 klb drag encountered inside casing. The 8.5” BHA was layed out and Bit 5 was then made up to a clean-out assembly consisting of the bit attached to a near-bit stabilizer, a single stand of HWDP, then three stabilizers spaced by single stands of drillpipe. This 91m BHA was run in, with the string



hanging up from 915m, and unable to proceed without rotation from 1400m to 2290m. After circulating the hole clean, the string was pulled back to the shoe, where the hole was circulated at 850gpm until the weighted brine system was ready. The string was then rotated down to 2290m, and 135bbls of Baradrill-N-SF was pumped and chased with 92bbls of mud. The string was then pumped back to 100m above the casing shoe, displacing Baradrill-N-SF as it was pulled. The hole was then displaced to a 9.0ppg KCl Brine. The string was then rotary-back-washed to 700m, where a Baralift pill was circulated, and again at 500m. The string was then run back to 100m above the casing shoe and a spacer train pumped before displacing the hole to 9.0ppg KCl Brine, flow-checking, and pulling out of hole on the elevators.

The 6.625" 'Excluder 2000' Sand Screens were then run , with a 2.875" tubing stinger run within, and the hanger run in on drillpipe. With 2290m tagged, bottoms-up was circulated. The cementing unit was then used to circulate the enzyme pill to clean out the sands of filtrate. The Hanger was then set and the running tool pulled out of the hole & the tubing laid out. A number of casing scraper runs were then conducted, first to clean out the riser, then the 9.625" casing. Production tubing was then run and the completion program proceeded.

2.2 Casing / Cementing Summary

Plug and Abandon Baleen - 3

27th – 29th September 2004

Hole Size	13 3/8”
Depth	254.5 m

Casing Cut and pull casing

ID	9 5/8”
Weight	47 lb/ft
Grade	L – 80 collapse
Shoe Depth	866m
ID	13 5/8”
Weight	68 lb/ft
Grade	K – 55 burst
Shoe Depth	320m

Cement Details:

Job 1: Run and set EZSV packer

Sacks	200
Type	Class “G”
Additives	Halad 413L @0.123gal/sx CFR-3L @ 0.061gal/sx
Weight	15.8 ppg
Yield	1.16 cuft/sx
Volume	43 bbls

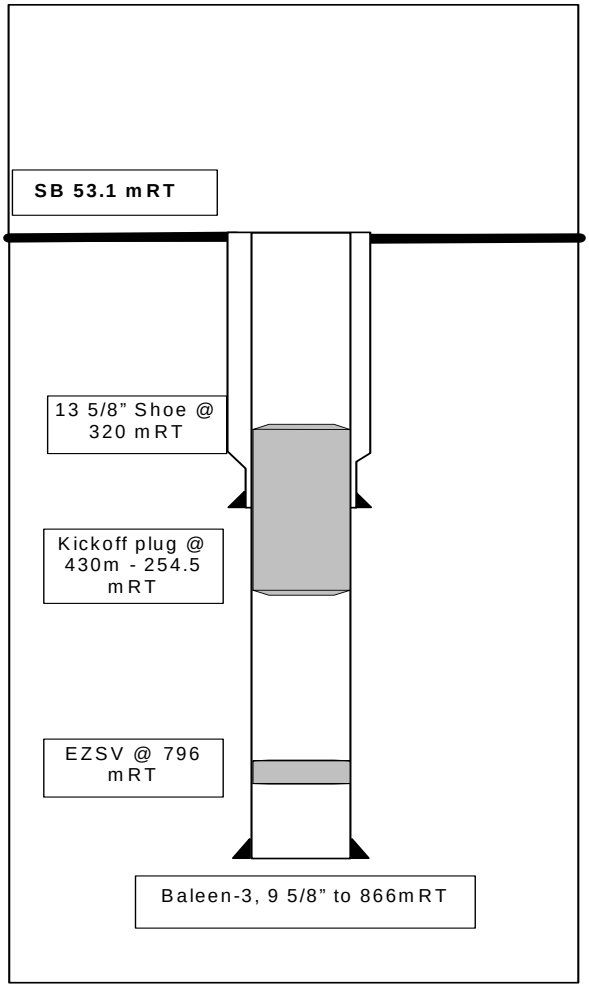
Job 2: Set Kickoff Plug

Sacks	395
Type	Class “G”
Additives	CFR-3L @ 0.096gal/sx
Weight	16.8 ppg
Yield	1.02 cuft/sx
Volume	72 bbls

Summary

After the 9 5/8” casing was cut and retrieved from 796m an EZSV packer was run and set at 796m and 43bbls of cement were pumped. This exposed the hole to new formation to 320m (13 5/8” casing. The next cement job was to set a kickoff plug for Baleen-4. A CST and dart were run to 435m and the stinger assembly was pulled back to 430m. 72bbls of cement was pumped to set a densified kickoff plug. Waiting on cement for over 24hrs. The first drilling assembly tagged top of cement at 254.4m.

13.625”/ 9 5/8” Casing
Cut and pull 9 5/8” casing
P & A Baleen-3.
Set cement kickoff plug.



9 5/8" Casing

17th – 18th October 2004

Hole Size	12 1/4"
Depth	1890 m

Casing

OD	9 5/8"
Weight	40 / 47 lb/ft
Grade	L – 80 / L -80
Shoe Depth	1885.39m
ID	9.1063" / 8.8875"

Cement Details:

Lead slurry:

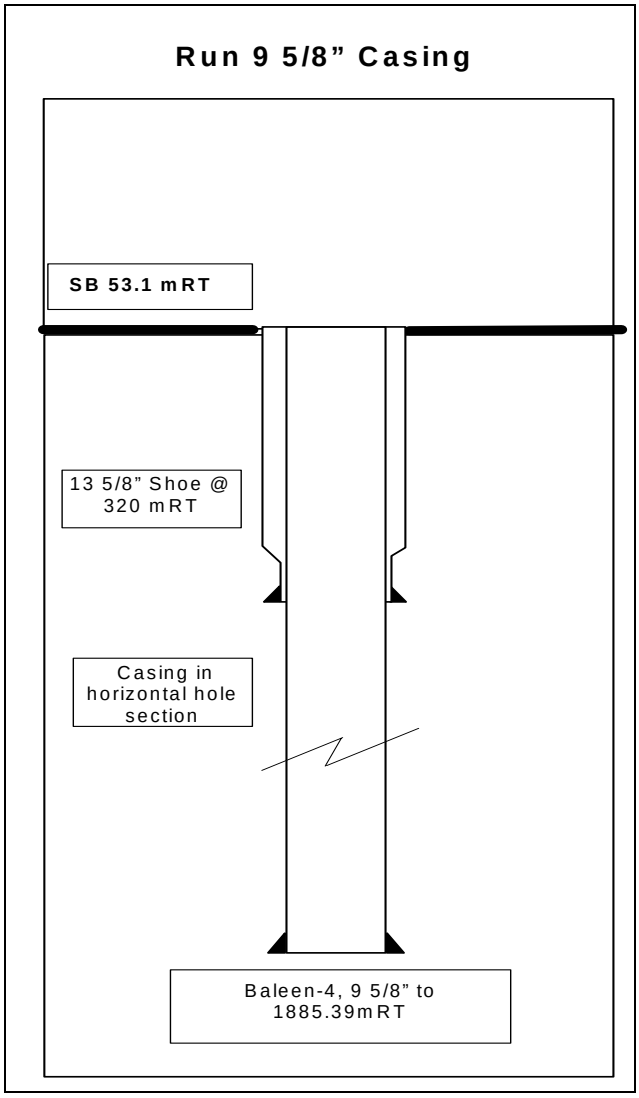
Sacks	315
Type	Class "G"
Additives	Gascon – 387gal
	Halad-344EXP - 95gal
	SCR-100L – 35gal
	NF-6 – 5gal
Mix Fluid	84bbls
Weight	12.8 ppg
Yield	1.96 cuft/sx
Volume	110bbls

Lead slurry:

Sacks	546
Type	Class "G"
Additives	Halad-413L - 160gal
	Halad-344EXP – 90gal
	SCR-100L – 16gal
	NF-6 – 5gal
Mix Fluid	90bbls
Weight	15.8 ppg
Yield	1.16 cuft/sx
Volume	115bbls

Summary

The 9 5/8" casing for this well was considered to be "floated" casing. The shoe and inter A joint were filled with spacer and then sealed off with a float joint. The next joints, inter B with the rest of the casing (40lb/ft type) up to 966m (73 joints) were left empty. Another float collar joint was then inserted into the casing string. The next casing joints to be run (64 joints) were the 47lb/ft variety which were filled with KCL brine spacer. At 1806m 10-30klb drag was noted, but with a custom made top drive push plate these tighter areas were overcome. The casing was landed out at 1885.39m (shoe depth). A side entry stand was made up and connected to the cementing unit and the casing floatation collar was sheared with 2400 psi.



This allowed the KCL brine to drop to the bottom and the excess air vented from the casing. The casing was then filled with 9.4ppg brine. The riser was then displaced from SOBM to seawater. A plug was then pumped down to the shoe track float collar with a 200psi spike noted. The cement lines were then rigged up and 34bbls of spacer pumped. The cement was then mixed and pumped as per program with 110bbls lead slurry at 12.8ppg and 115bbls of tail-slurry at 15.8ppg. The cement was then displaced with help of the rig's pumps and plug was bumped at 4490stks=750psi and then pressured up to 1700psi with pressure unable to be maintained (cement head leaking).

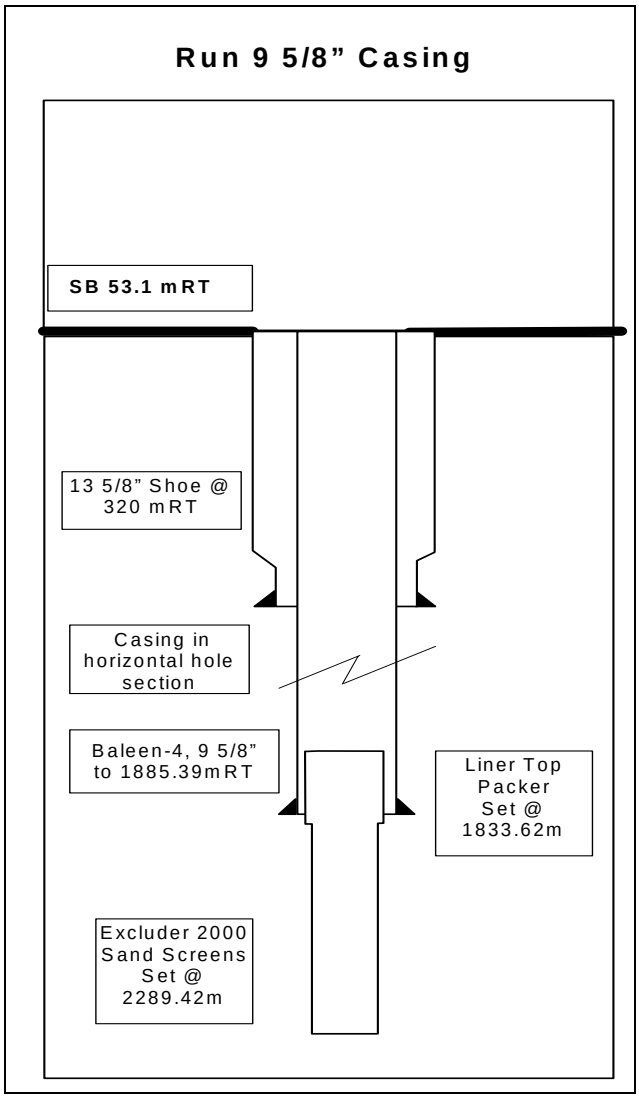
6 5/8" Production Liner

24th – 25th October 2004

Hole Size 8 ½"
Depth 2290 m

Liner

OD 6 5/8" (nom), 7.46"
Weight 24 lb/ft
Grade 13Cr-80
ID 5.921"



Summary

A GPV set shoe was picked up & tested, before picking up and running 34 joints of 'Excluder 2000' Sand Screens on 5 joints of 7" tubing, which were made up to a ZXP Liner Top Packer & a Running Tool. Some joints of screen were damaged due to over-torquing. A False rotary table was then made up, and 48 joints of 2.875" tubing run inside the screens as a stinger. The assembly was the run in on 5" drillpipe to the shoe, using 3 right-hand turns of rotation per stand. At the shoe, bottoms up was circulated, before continuing to run in hole to bottom, where bottoms up was again circulated. The cementing unit was then used to circulate the enzyme pill to clean out the sands of filtrate. The Hanger was then set and the running tool pulled out of the hole & the tubing laid out. A number of casing scraper runs were then conducted, first to clean out the riser, then the 9.625" casing. Production tubing was then run and the completion program proceeded.

SECTION 3

GEOLOGY & SHOWS

3.1 GEOLOGY AND SHOWS

BALEEN – 4

Due to the ERD nature of the well all depths in this section will be presented in measured depth from rotary table (MDRT) and true vertical depth from rotary table (TVDRT) unless stated otherwise.

Samples for Baleen - 4 were taken at the following intervals:

Depth (mMDRT)	Sampling Interval
260 – 465m	5m
470 - **2290m**	10m

Missed samples for Baleen – 4:

Depth (mMDRT)	Reason
1840 - 1850	Sample board cleaned
1380 – 1390	No returns

The lithological sequence intersected at Baleen - 4 is described below. For more detailed descriptions of the cuttings, refer to Appendix I: The Formation Evaluation Log.

DRILLED HOLE SECTIONS

12 ¼" (311mm) HOLE SECTION

340 to 1890 mMDRT

8 ½" (216 mm) HOLE SECTION

1890 to 2290 mMDRT

GIPPSLAND LIMESTONE

MDRT: 340m – 1190m/ TVDRT: 340– 625.0m

The Gippsland Limestone was predominantly composed of Calcilutite and Calcareous Claystone with Calcarenite decreasing in percent with depth. The basal section of this formation was purely Calcareous Claystone.

CALCILUTITE: The designation Calcilutite was assigned to this lithology due to it's high clay and calcareous nature The colour of the Calcilutite ranged from very light grey, light grey to medium grey, rarely off white or light olive grey. Hardness and break ranged from being soft and plastic to firm and sub–blocky and often locally moderately hard. The Calcilutite at random depths became silty in part. Accessories included common fossils and Foraminifera as well as rare carbonaceous material.

CALCAREOUS CLAYSTONE: The designation Calcareous Claystone was assigned to this lithology as the clay content was greater then the Calcilutite but the calcareous percent was considerably lower. Colour ranged from medium dark grey, medium dark grey to commonly dark grey. Hardness and break ranged from firm and sub-blocky to moderately hard and sub-blocky to blocky. Accessories included common fossils, Foraminifera, trace pyrite and rare carbonaceous matter.

CALCARENITE: The designation Calcarenite was assigned to this lithology as the grain size was within the sand size range and was calcareous in nature. Hardness ranged from moderately hard to hard, with a minor unconsolidated component. Grain size ranged from very fine to medium, predominantly ranging from very fine to fine. The grains angularity ranged from angular to sub-rounded, predominantly ranging from sub-angular to sub-rounded. Sphericity was generally sub-elongated. Sorting was fair to well with a calcareous cement and commonly a argillaceous matrix. Accessories included fossil fragments, Foraminifera, tr crystalline calcite. Porosity was considered poor and there were no shows.

The section from 340 to 1190mMDRT was drilled with an average ROP of 50.9mMDRT/hr, ranging from 0.0mMDRT/hr to 185.29mMDRT/hr.

For the Gippsland Limestone the minimum gas is 0.00%, average 0.58% and 2.53%. Significant gas peaks observed in the interval:

Depth mMDRT	Total Gas %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
790	1.49	14900	0	0	0	0	0	0
861	2.53	25300	0	0	0	0	0	0
952	1.49	14900	0	0	0	0	0	0
1108	1.38	13800	0	0	0	0	0	0
1143	2.13	21300	0	0	0	0	0	0

LAKE ENTRANCE FORMATION

MDRT: 1190.0 – 1730.0m/ TVDRT: 625.0 – 700.5m

This formation was predominantly Calcareous Claystone and Claystone, both Calcilutite and Calcarenite were excluded from the geological log within the first one hundred meters of the formation.

CALCILUTITE: The colour of the Calcilutite ranged from very light grey, light grey to medium grey, rarely off whit, light olive grey. Hardness and break ranged from being soft and amorphous to moderately hard and sub-blocky. Accessories included common fossils and Foraminifera as well as rare carbonaceous material.

CALCAREOUS CLAYSTONE: The designation Calcareous Claystone was assigned to this lithology as the clay content was greater then the Calcilutite but the calcareous percent was considerably lower. Colour ranged from light grey, medium dark grey, medium dark grey and olive grey. Hardness and break ranged from being firm and sub-blocky to moderately hard to hard and blocky. With depth this lithology decreased in its calcareous content and became silty in part. Accessories included common fossils, Foraminifera, trace to rare glauconite.

CLAYSTONE: Colour ranged from light grey to medium grey and light olive grey to olive grey. Hardness and break ranged from being soft and sub-blocky to moderately hard and blocky. Accessories included rare fossils, foraminifera, trace to common glauconite. With depth this Claystone increased in silt an glauconite.

CALCARENITE: The designation Calcarenite was assigned to this lithology as the grain size was within the sand size range and was calcareous in nature. Hardness ranged from moderately hard to hard, with a minor unconsolidated component. Grain size ranged from very fine to medium, predominantely ranging from very fine to fine. The grains angularity ranged from angular to sub-rounded, predominantly ranging from sub-angular to sub-round. Sphericity was generally sub-elongated. Sorting was fair to well with calcareous cement and commonly an argillaceous matrix. Accessories included fossil fragments, Foraminifera, trace crystalline calcite. Porosity was considered poor and there were no shows.

The section from 1190 - 1730mMDRT was drilled with an average ROP of 57.87mMDRT/hr, ranging from 12.46mMDRT/hr to 122.91mMDRT/hr.

For the Lake Entrance Formation the minimum gas is 0.00%, average 1.48% and 3.22%. Significant gas peaks observed in the interval:

Depth mMDRT	Total Gas %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
1212	2.01	20100	0	0	0	0	0	0
1239	2.36	23600	0	0	0	0	0	0
1285	2.51	25100	0	0	0	0	0	0
1345	2.02	20200	0	0	0	0	0	0
1409	2.19	21900	0	0	0	0	0	0
1498	3.22	32200	0	0	0	0	0	0
1662	2.18	21800	0	0	0	0	0	0

GURNARD FORMATION

MDRT: 1730.0 – 1790.0m/ TVDRT: 700.5 – 708.0m

This formation consists of Siltstone and Silty Sandstone.

SILTSTONE: Colour ranged from medium light grey to medium grey and greyish brown. Hardness and break ranged from being soft and sub-blocky to moderately hard and blocky. Sandy in part. Common to abundant glauconite.

SILTY SANDSTONE: Colour was medium grayish brown, soft. Grain size was very fine quartz, sub-rounded – rounded, spherical, well sorted, silty matrix. Abundant glauconite.No to poor visual porosity and no shows.

The section from 1730 - 1790mMDRT was drilled with an average ROP of 48.9mMDRT/hr, ranging from 9.6mMDRT/hr to 91.8mMDRT/hr.

For the Gurnard Formation the minimum gas is 1.03%, average 3.25% and 9.21%. Significant gas peaks observed in the interval:

Depth mMDRT	Total Gas %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
1747	5.97	59700	0	0	0	0	0	0
1781	9.19	91800	100	0	0	0	0	0

TOP POROSITY – GURNARD FORMATION

SANDSTONE: Colour ranged from medium to dark brownish grey and olive black. Occasionally there was a mottled greyish yellow or greyish orange. Hardness was firm to moderately hard. The grain size was very fine quartz grains. Roundness ranged from sub-angular to sub-round with equant sphericity. Sorting was good to excellent. There was a common silt matrix, occasionally minor to abundant argillaceous matrix, with minor to common glauconite and trace pyrite. Porosity was visually rated as poor to none. However, the high gas levels indicate a good or greater inferred porosity. There were no fluorescence shows.

The section from 1790 – 2290mMDRT was drilled with an average ROP of 48.65mMDRT/hr, ranging from 4.94mMDRT/hr to 48.65MDRT/hr.

For the Top Porosity – Gurnard Formation the minimum gas is 0.00%, average 6.67% and 33.05% maximum. Significant gas peaks observed in the interval:

Depth mMDRT	Total Gas %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
1805	35.6	477400	800	0	0	0	0	0
1855	17.86	176600	200	0	0	0	0	0
1878	18.82	184200	400	0	0	0	0	0
1919	39.26	392600	500	0	0	0	0	0
1941	27.60	276000	400	0	0	0	0	0
1967	27.82	278200	400	0	0	0	0	0
1985	26.61	260000	400	0	0	0	0	0
2006	31.00	310000	600	0	0	0	0	0
2047	4.27	4270	0	0	0	0	0	0
2077	25.38	5380	100	0	0	0	0	0
2132	6.50	6500	100	0	0	0	0	0
2332	11.74	117400	0	0	0	0	0	0
2263	7.12	71200	0	0	0	0	0	0

Shipping Manifest

Well: Baleen - 4

Includes:
Sets A
Samplex Tray
Sets B,C,D,E,F
Washed & Dried Samples
Sets G
Mud Samples
Sets H
Drill Water
Sets H
Mud Additives
Sets I
Miscellaneous (Charts,worksheets**)**

Date: 24 October 2004

From: BHI Unit 86012

Location: ***Ocean Bounty***

Geological Samples from Baleen - 4

Shipped in Container No: 41327

Total Number of Boxes/Packages: 10 Big boxes, 3 Small boxes, 1 Wooden box

For shipment to:

OMV Australia Pty/Ltd Sample Store
c/o Kestrel Information Management Pty Ltd
39 McDowell Street
Welshpool WA 6106
Tel:08 9350 3170
Fax 08 9350 3179
ATTN: BARRY LOYD

SAMPLES FOR Baleen-4

SAMPLE TYPE	No. Of Sets	COMPOSITION			PACKING DETAILS And notes
		Sample Box No.	Depth Interval (m) From	To	
Sets A Samplex Tray	1	1	335	2290	Wooden samplex tray box
Sets B,C,D,E,F Washed and Dried Small sample boxes 1-6 packed Big box # 1 Small sample boxes 7-11 packed Big box # 2	5	1	340	440	Each intervals 5 sets are boxed individually in 3.5”x5.5”x14.5” boxes. PLUS SEA FLOOR SAMPLES
		2	445	600	
		3	610	800	
		4	810	960	
		5	970	1130	
		6	1140	1320	
		7	1330	1490	Due to the ERD nature of this well shaker returns were very fine and limited. In an attempt to catch the required sample amount past 1890mMDRT (box 11 to TD) raw sample was lightly washed.
		8	1500	1690	
		9	1700	1890	
		10	1900	2110	
		11	2120	2290(TD)	
Sets G **Mud Samples**	1	1			1. SBM 14/10/04 1890mMDRT 2. WBM 20/10/04 1908mMDRT 3. WBM 22/10/04 2210mMDRT 4. WBM 22/10/04 2290mMDRT

Sets H **Drill Water**	3	n/a	n/a	n/a	3 x 1 ltr of drill water
Sets H **Mud Additives**	1	n/a	n/a	n/a	All SBM and WBM additives available at the time were collected. These samples were placed in samplex trays. These Trays have been split up into SBM and WBM samplex trays. The mud additive samplex trays were then packed in the wooden box with the lithology samplex trays.
Sets I **Miscellaneous (Charts, worksheets)**	1	1	335		Worksheet, Calcimeter Chart, Siemens Charts

SECTION 4

PRESSURE EVALUATION

4.1 Pore Pressure Evaluation

Baker Hughes INTEQ formation pressure evaluation services commenced at 337m. An average seawater density of 1.04sg was assumed as the normal saline pressure gradient for all calculations for Baleen - 4. Using real time data, such as the hydrocarbon gas trend, lithology, flowline temperature, corrected Drilling Exponent (Dxc) data for conventional roller bits, constant drilling fluid parameters, pore pressure estimates were made during the drilling of Baleen - 4. For more details, please refer to Appendix 3, "Pressure Evaluation Plot".

The following brief description of the Dxc is an extraction from Baker Hughes INTEQ manual; **Formation Pressure Evaluation Pore Pressure Evaluation Techniques**. Please refer to it for further clarification.

Bingham (1965) proposed a relationship between penetration rate, weight on bit, rotary speed, and bit diameter, Jorden and Shirley (1966) solved the equation and allowed a constant, “a”, to be unity, but made the d-exponent lithology specific. In a constant lithology, the d-exponent should increase as the depth, compaction and differential pressure across the bottom increase. Upon penetration of a geopressured zone, compaction and differential pressure will decrease and will be reflected by a decrease in the d-exponent

Since differential pressure is dependent upon the mud density as well as formation pore pressure, Rehm and McClendon (1971) proposed a correction for this, hence the Dxc (**Equation 4-12)**

$$\mathbf{Dxc = [\log (R/60N) / \log (12W/10^3B)] \times [N.FBG/ECD]}$$

Where Dxc = corrected d-exponent (dimensionless)

R = rate of penetration (ft/hr)

N = rotary speed (rpm)

B = hole diameter (inches)

N.FBG = normal formation balance gradient (ppg)

ECD = effective circulating density (ppg)

W = weight on bit (1000 lbs)

Factors not considered by the Dxc in its basic form are drilling hydraulics, tooth efficiency (tooth wear and change in bit type) and lithology variation (matrix strength). If differential pressure becomes too large, the simple ratio correction will not completely compensate for its effect on the drill rate. In addition, the relationships among force applied (W/B), rotary speed (N), differential pressure (N.FBG/ECD), and rate of penetration (R) are more complex than the Dxc formulation would imply. While working within “normal” working ranges, radical changes in any of these parameters (for example, change in hole size after setting casing) may result in a change in the Dxc. 80824 Rev B /January 1996 Confidential

Whilst sliding with a downhole motor, bit RPM values are calculated from the flowrates used, as specified by the manufacturer. And in high angle deviated holes, the translation of the weight onto the bit may not be very exact, thus affecting the Dxc.

12.25" Hole Section

A synthetic oil based mud system was used to drill this section. The mud density ranged from 9.3ppg to 9.85ppg with the effective circulation density calculated to be in the area of 9.58ppg to 9.89ppg.

This interval consisted of Calcareous Claystones, Calcilutites, Calcarenites, Argillaceous Calcilutite, Claystones, Siltstone, Silty Sandstone, Sandstones and minor Glauconitic Claystone.

The Dxc showed no major deflections that could be associated with abnormal pressure. Negative deflections in the Dxc trend line were thought to be related to lithology changes. Weight on bit relationships associated with mud motor and high angle deviated hole was another factor affecting Dxc values and therefore Dxc trends could not be relied upon with any certainty to ascertain pore pressure gradients.

The temperature gradient showed a gradual increase with depth ranging from 34.4degrees to 68.5degrees, with a gradient of approximately 2.27degrees /100m (thought to be due to rigs drilling parameters being pushed to the limit) and no notable deflections in the trend line.

No significant cavings were noted on the shakers and no connection gasses (gas peaks did not seem to coincide with connections) were observed while drilling Baleen - 4.

In the absence of any abnormal pressure indicators while drilling Baleen - 4 the whole 12.25” section was estimated to have a relatively normal pore pressure in the range of 1.04sg to 1.07sg EMW. Indications from the previous wells drilled in the extreme near vicinity likewise showed no signs of abnormal pressure.

8.5" Hole Section

A KCL brine based mud system was used throughout this section. The mud density varied from 1.09sg (9.1ppg) to 1.18sg with the effective circulating density calculated to be in the range of 1.26sg to 1.31sg.

The 8.5” hole (drilling for production liner) section consisted mainly of a Sandstone interval and was largely extreme angle to horizontal, with little increase in TVD.

The Dxc showed no major deflections that could be associated with abnormal pressure. Negative deflections in the Dxc trend line were thought to be related to changes of the mud system from SBOM to KCL brine. Weight on bit relationships associated with mud motor and high angle deviated hole was another factor affecting Dxc values and therefore Dxc trends could not be relied upon with any certainty to ascertain pore pressure gradients.

The temperature gradient showed a gradual increase with depth, and no notable deflections in the trend line.

No significant cavings were noted on the shakers and no connection gasses were observed while drilling Baleen-4. Although significant gas peaks were recorded from drilled volume.

In the absence of any abnormal pressure indicators while drilling Baleen-4 the whole 8.5” section was estimated to have a relatively normal pore pressure in the range of 1.02g to 1.06g EMW. This estimate is supported by the known reservoir pressure of 950psi, indicating that this section was in act under-pressured.

4.2 Fracture Pressure Evaluation

This data was used to provide the basis of a fracture pressure prediction using Daines' minimum tensile strength method. The model has the capacity to resolve and extrapolate the local principle stress regime, subsequent to the first fracture in a compact formation. For further information, please refer to the:

Formation Pressure Evaluation Pore Pressure Evaluation Techniques.

Daines' technique calculates the fracture pressures employing the following equation:

$$Pf = (\{S-Pp\} * \{u/1-u\}) + (\{S-Pp\} * B) + Pp$$

Where Pf = Fracture pressure (psi)

Pp = Pore pressure (psi)

S = Overburden pressure (psi)

u = Poisson's ratio (unitless)

B = Effective stress ratio

During drilling, bulk densities were calculated from cuttings lithology together with data from offset wells. These estimates were adjusted when density data became available from wireline logs.

The Poisson's ratio was derived by comparing the formation type drilled with a list of established values. The effective stress ratio "Beta" was calculated from the results of leak off tests where the fracture gradient is actually measured. Once the ratio had been derived the result was used over the following hole section to calculate the fracture pressure using overburden pressure, estimated pore pressure and Poisson's ratio for each lithology.

It must however be stressed that this method of fracture pressure calculation relies heavily upon the formation being pressured up to the point of fracture. The use in the equation of data from formation integrity tests (in which the formation is pressured to a predetermined point and no further) rather than a full leak off test will underestimate subsequent fracture pressures.

12.25" Hole Section

A leak off test result of 14.49ppg EMW was performed at the Baleen - 3 13.375" casing shoe (320m MD, 319m TVD). On Baleen – 4 after drilling to 390m it was decided to pull the drilling assembly back to the 13 3/8" shoe and conduct a formation integrity test (FIT). The result of the test was noted as 1.86sg EMW (230psi). The results of this test are presented in tabular form at the end of this section.

The ECDs encountered during this section never reached this point, and no significant losses were encountered – with the exception of a temporary complete loss of returns after a pack-off at section TD

8.5" Hole Section

After drilling out the Baleen - 4 9 5/8" casing shoe at 1885.39m, rathole to 1890m and three metres of 8.5" hole to 1893m, a formation integrity test (FIT) was performed. A good test was obtained and the result, using mud weighted at 1.09sg (9.1ppg) recorded an equivalent mud weight (EMW) of 1.34sg (11.1ppg) formation strength at the casing shoe. This FIT result was used for fracture pressure calculations of Baleen-4.

No significant downhole mud losses were recorded whilst drilling Baleen-4. The 8.5" section was drilled with a KCL brine mud system weighted from 1.09sg to 1.18 sg. While drilling, an ECD range of 1.26sg to 1.31sg was recorded. The ECD in this section at no time came close to the 1.34sg fracture pressure recorded at the shoe.

The following is a summary of the leak off test conducted in this well:

Hole Section	Hole MD	Casing	Shoe MD	Pressure	Mud Weight	EMW
12.25”	390m	13.375”	320m	230psi	1.11ppg	1.86sg
8.5”	1893m	9.625”	1885.39m	265psi	1.09sg	1.34sg

TABLES

BAKER HUGHES INTEQ

Bit Run Summary

Operator	Well Name	Location	Drilling Contractor
OMV	Baleen - 4	VIC/L21	Diamond Offshore

Bit No.	Bit Make, Type	Bit Size *in*	Jets *x 1/32"*	Serial No.	Depth In *m*	Depth Out *m*	Metres Drilled *Metres*	On Btm Hours Drilled *Hours*	ROP Avg *m/hr*	TBR *x1000*	Drilling Parameters					Circ Hours	Bit Grading	Comments
											WOB *Tonnes*	RPM	SPP *psi*	Flow *gpm*	MD *sg*			
NB1	Hughes, MX-1	12.25	3 x 24	6007091	254.50	320.00	65.50	5.7	11.50	65.1	4.0 - 12.9	25-81	200-550	384 - 841	1.03	6.3	1-1-NO-A-E-In-NO-LIH	Drill to 320m . Drill string stuck in hole. Start with fishing operation
RR1.1	Hughes, MX-1	12.25	3 x 24	6007091	320.00	336.70	16.70	2.3	6.90	11.3	1.2 - 15.2	24-85	733-1255	582 - 895	1.12	4.2	1-1-NO-A-E-In-NO-TD	Drill to 336.7m. Dressing kickoff plug
NB2	Smith, GFXIVCPS	12.25	3 x 22, 1 x 19	MP7324	336.70	733.00	396.50	11.3	32.70	113.2	1.2 - 43.3	0-55	1035-3519	458 - 928	1.12-1.13	27.4	1-1-WT-A-E-In-NO-BHA	Drill directional hole to 733m. Bit / BHA tripout change.
NB3	Smith, MRS91GHPX	12.25	4 x 18, 3 x 16	JT6155	733.00	1890.00	1157.00	24.4	47.40	211.6	0.1 - 16.3	115-173	1471-4275	479 - 974	1.13-1.18	49.2	1-O-WT-G-X-2-WT-TD	Drill directional hole to 1890m. Angle of hole at 89 degrees
RR2.1	Smith, GFXIVCPS	12.25	3 x 24	MP7324	1890.00	1890.00	0.00	0.0	0.00	113.2					1.18	25.8	1-1-NO-A-E-In-NO-BHA	Wash down wiper trip to 1890m
NB4	Reed Hycalog, TC11	8.5	3 x 22	B73551	1890.00	2013.00	123.00	3.2	38.40	39.6	2.2-68.4	0-97	2203-2435	571 - 612	1.08-1.09	26.6	6-2-CT-G-E-I-BT-BHA	Drill 8.5" directional production hole 2013m
NB5	Hughes, MXS2OD	8.5	2 x 24	1842ODB6S	2013.00	2290.00	279.50	9.3	37.50	42.3	17.6-57.88	56-91	1401-3115	490-913	1.08-1.10	19.7	1-1-ER-A-E-In-WT-TD	Drill 8.5" directional production hole 2290m, TD.

BAKER HUGHES INTEQ

Bit Hydraulics Summary

OMV Australia

Operator	Well Name	Location	Drilling Contractor	Rig
OMV Australia	**Baleen - 4**	**VIC/L21**	**Diamond Offshore**	**Ocean Bounty**

Drillstring Abbreviations

N Normal — **P** Positive Displacement Motor — **R** Rotary Steerable

M MWD — **A** Adjustable Gauge Stabilizer — **C** Core

Hydraulics Models

Power Law Model used for drilling with Mud

Bingham Model used for coring and drilling with sea water

Bit No.	Depth (m)	Hole Size in	Jets x 1/32"	Drill String Type	Mud Type	Mud Density ppg	PV cP	YP lbs/100 ft sq	Flow Rate gpm	Jet Vel m/sec	Impact Force lbf	Hydraulic Power hhp	H S I HP/in2	Bit Loss Psi	SPP Loss %	Pipe Loss Psi	ECD ppg	Annular Velocities DP OH m/min	Annular Velocities DC OH m/min	Annular Velocities DC Critical m/min
12.25" Hole Section																				
NB1	254.5	12.25"	3 x 24	N	seawater	8.60	2	2	801	59.1	10.7	198.1	1.0	251	59.1	57	8.62	46.3	72.1	73.0
RR1.1	254.5	12.25"	3 x 24	N	Synthetic oil based	9.30	28	28	900	66.4	8.0	399.9	1.6	343	44.9	162	9.59	52.1	53.8	82.0
NB2	733.0	12.25"	3 x 24, 1 x19	PM	Synthetic oil based	9.55	35	33	928	65.3	8.3	1187.3	1.6	340	15.5	412	10.09	55.4	62.5	80.6
NB3	1890	12.25"	4 x 18, 3 x 16	RM	Synthetic oil based	9.80	37	31	900	55.6	7.1	1278.7	1.1	253	10.4	1180	10.45	53.8	60.6	78.1
8.5" Hole Section																				
NB4	2011	8.5"	3 x 22	PMA	Water based KCL/Brine	9.10	7	26	600	52.7	8.6	879.0	1.3	210	8.4	301	10.40	83.0	94.9	158.1
NB5	2290	8.5"	2 x 24	RMA	Water based KCL/Brine	9.80	11	26	650	58.3	11.0	1002.4	2.1	340	11.9	422	10.90	94.9	167.9	119.0

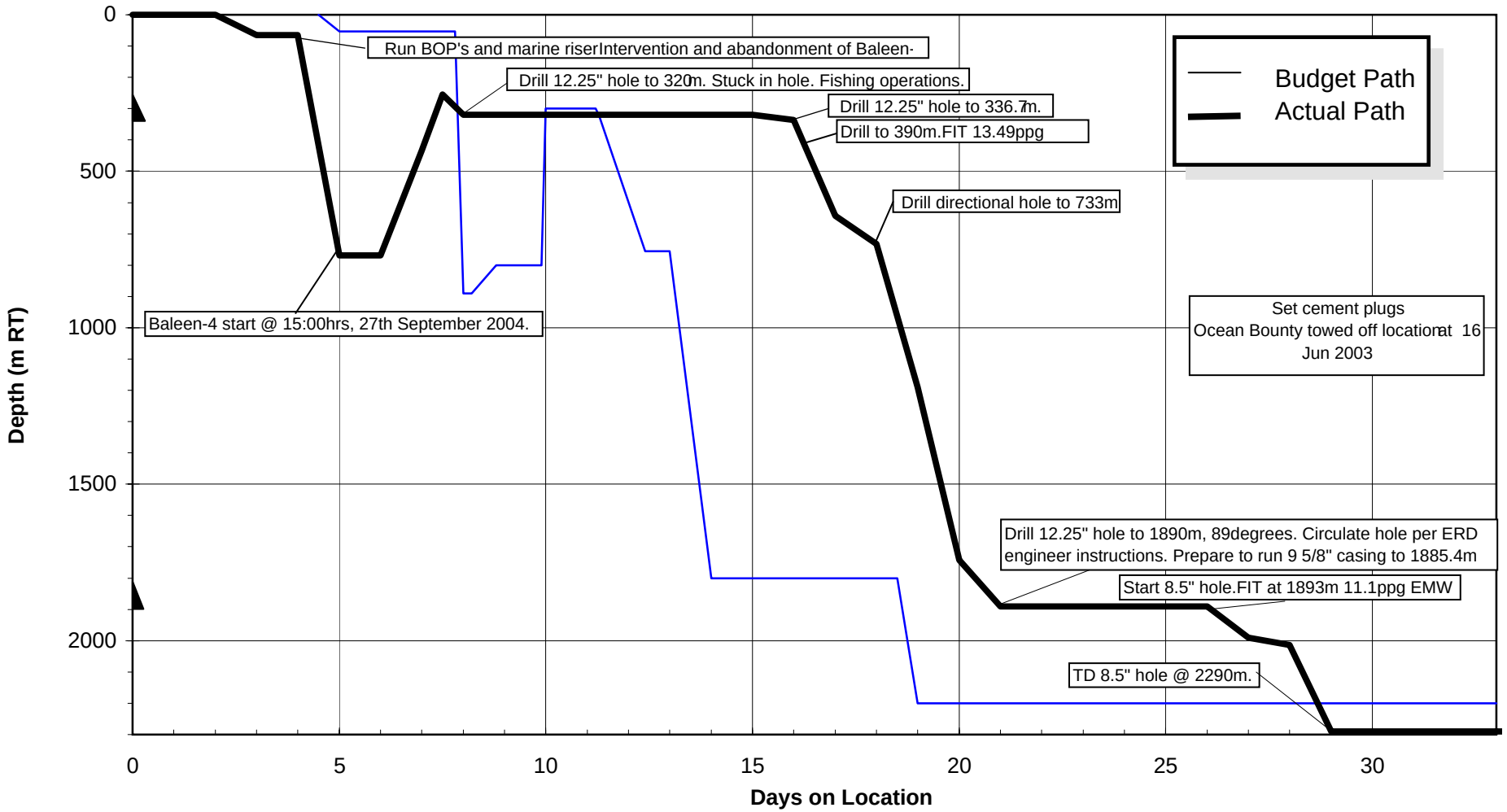
BAKER HUGHES INTEQ

OMV Australia

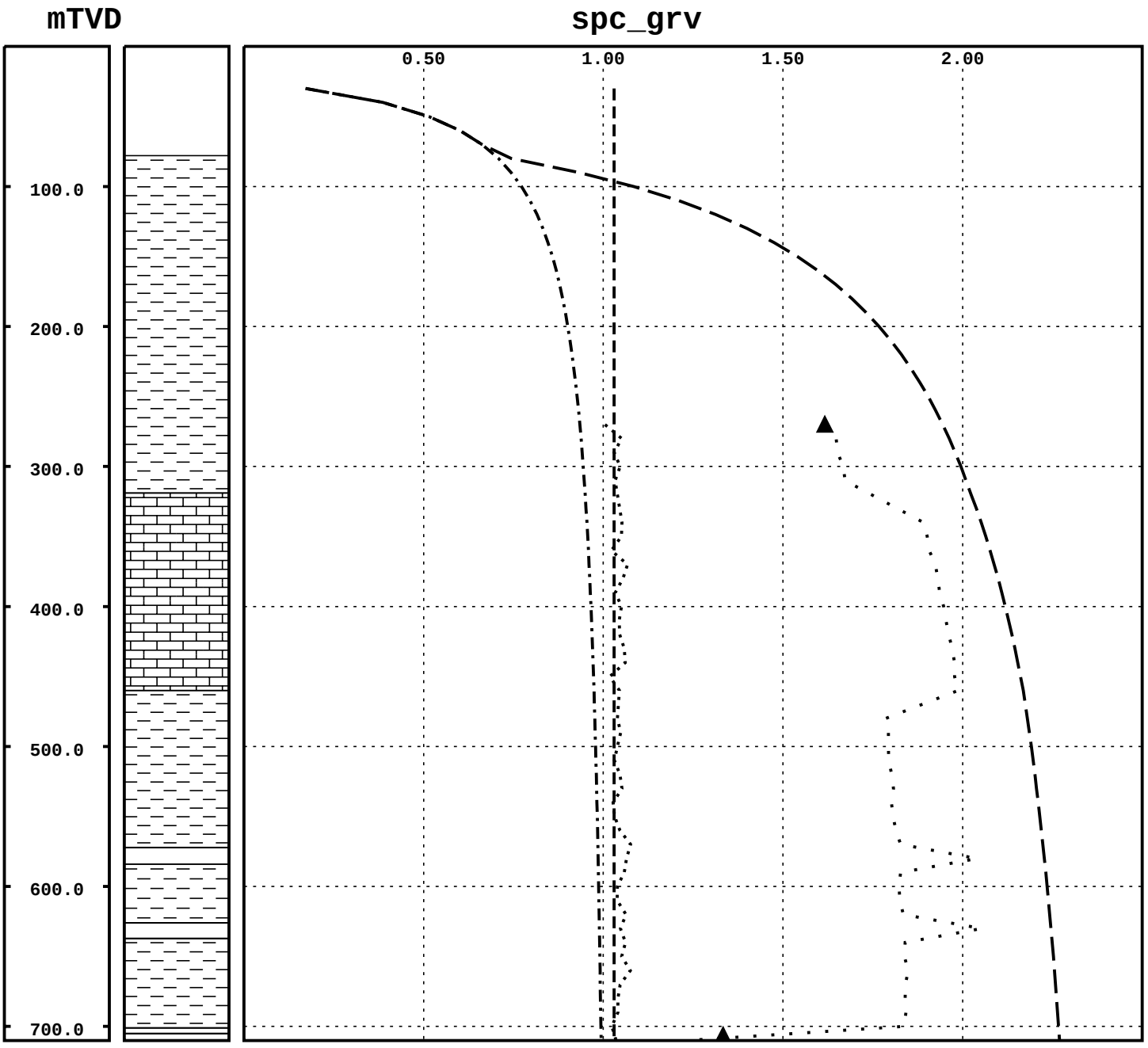
Baleen - 4

Time vs. Depth Curve

OMV Australia



Advantage Pressure Evaluation



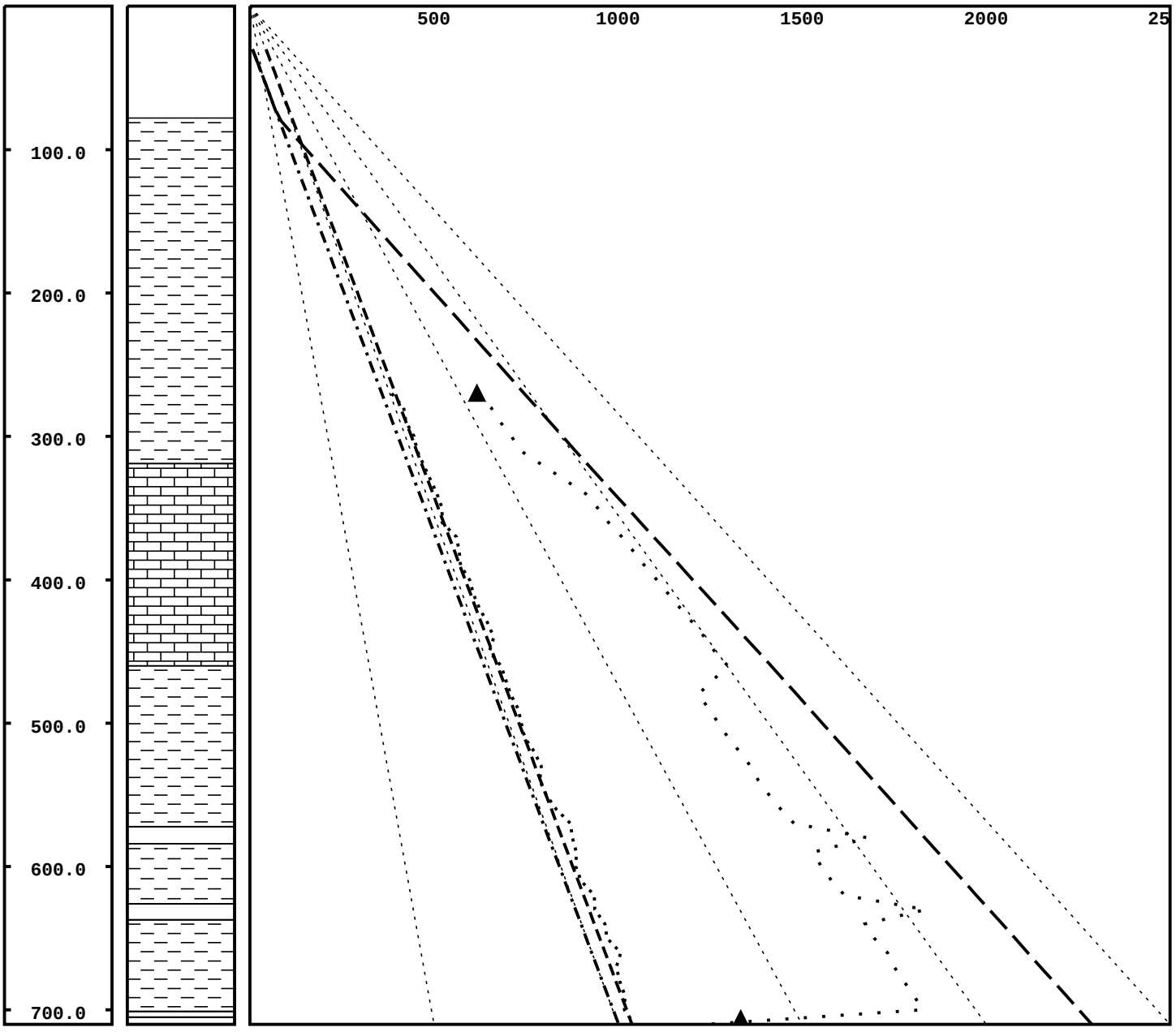
Evaluation Key

Evaluation 1	: Baleen-4
Well	: Baleen-4
Path	: Original Path
Pore Pressure	: Dxc: Ratio
Fracture Pressure	: Daines
Kick Tolerance	: 5.0, 10.0 & 15.0 bbl

Line Type Key

- Normal Pore Pressure Gradient
- Normal Formation Balance Gradient
- Overburden Gradient
- Estimated Pore Pressure
- Estimated Fracture Pressure
- Estimated Kick Tolerance
- Trend
- Known Kick Pressure
- Repeat Formation Test
- Drill Stem Test
- Known Observed Pressure
- Leak-off Test

Advantage Pressure Evaluation



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APPENDICES

FORMATION EVALUATION LOG

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DRILLING DATA PLOT

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PRESSURE EVALUATION PLOT

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PRESSURE SUMMARY PLOT

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GAS RATO PLOT

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