



## **FINAL WELL REPORT**

Anzon Australia Pty Ltd

Basker-7

VIC-L-26

22 July – 24 August 2009

by

**BAKER HUGHES INTEQ**

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## **Basker-7**

### **Final Well Report**

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## **SECTION 1**

### **WELL SUMMARY**

## 1.1 Well Data Summary

Well Name	Basker-7
Rig Name:	Ocean Patriot
Rig Type:	Semi-submersible
Drilling Contractor:	Diamond Offshore
Drilling Datum:	Rotary Table
RT to AHD:	21.5m
Water Depth:	154.2m
Surface Co-ordinates:	Lat 38° 17' 58.791" S Long 148° 42' 22.312" E
Block:	VIC/L26
Well Type:	Development
Spud Date:	22 July 2009
Spud Depth:	175.7 mMDRT
Total Depth:	3921.0 mMDRT
TD Date:	05 August 2009
Well Status:	Completed for oil production
Baker Hughes INTEQ Crew:	
Data Engineers:	Sathiamorthy Subramanian, Yeong-Chen Wong, Ramanathan Gokula Krishnan, Shaharizad Shahadan
Logging Geologists:	Kenneth Lee Paraan, Raman Dhanda
Sample Technicians:	James Bladen, Samuel Drechsler

## 1.2 Well Summary

Baker Hughes INTEQ SLS provided formation evaluation and drill monitoring services for Basker-7 from spud at 175.7 to 3921.0 mMDRT (TD). Data was processed and stored using Advantage version 2.10U3 software. All depths are measured depth below Rotary Table (mMDRT) referenced to Australian Height Datum (AHD) unless otherwise stated.

The well was spudded on 22 July 2009 at 0300hrs with a 660mm (26") Reed bit with a 914mm (36") hole opener. The 914mm (36") hole section was drilled from seabed at 175.7 to 210.7 mMDRT with a sea water followed by Hi-Vis sweeps and returns to sea bed. After reaching section TD the hole was swept with 150bbl PHG. The hole was circulated clean and over-displaced to 300bbl of Hi-Vis PHG.

The 762mm (30") x 508mm (20") casing shoe was run in the hole and cemented with the shoe set at 209.0 mMDRT. The cement job was carried out without problems.

A 406mm (16") Smith XR+VCPS bit was made up to a drilling assembly with a mud motor and MWD tools, RIH and tagged cement at 207.0 mMDRT, drilled out cement, shoe track and new formation from 210.7 to 1061.7 mMDRT with seawater and hi-vis sweeps. After reaching section TD the hole was swept with 150bbl PHG. The hole was circulated clean and displaced to 9.5ppg mud.

The 340mm (13-3/8") casing was run in hole and cemented with the shoe set at 1056.6 mMDRT. The cement job was carried out without any problem.

The 311mm (12-1/4") BHA was made up with a Smith MSI 519 bit and MWD tools and shallow tested with a flow and pressure of 900gpm and 800psi. The BHA was run in hole and tagged TOC at 1028.7 mMDRT, drilled out plug, float, shoe at 1056.6 and cement to 1061.7 mMDRT. Drilled 3.0m of new formation to 1064.7 mMDRT, then circulated and conditioned mud to 1.08sg (9.0ppg). Pulling back into the shoe, a Formation Integrity Test (FIT) was performed with 1.08sg (9.0ppg) mud yielding an Equivalent Mud Weight (EMW) of 1.56sg (13.0ppg). The bit continued drilling 311mm (12-1/4") hole from 1064.7 to 2918.0 mMDRT. The bit was pulled out of the hole due to a decrease in ROP.

The 244mm (9-5/8") casing was run in hole and cemented with the shoe set at 2910.9 mMDRT.

The 216mm (8-1/2") BHA was made up with a Smith MSi616WEBPX bit and MWD tools. The BHA was run in hole and tagged TOC at 2884.0 mMDRT, drilled out the plug, float, shoe at 2910.8m and cement to 2918.0m. Drilled 3.0m of new formation to 2921.0 mMDRT, circulated and conditioned mud to 1.12sg (9.3ppg). Pulling back into the shoe, a Formation Integrity Test (FIT) was performed with 1.12sg (9.3ppg) mud yielding an Equivalent Mud Weight (EMW) of 1.56sg (13.0ppg). The bit continued drilling 311mm (12-1/4") hole from 2921.0 to 3448.8 mMDRT. The bit was pulled out of the hole due to a leak in the derrick gooseneck on the standpipe. A new 216mm (8-1/2") Smith MSi616WEBPX bit (BHA 5) was made up with a mud motor and MWD tools, RIH and drilled from 3448.8 to 3537.0 mMDRT. The bit was pulled out due to down hole mud motor failure. A rerun Smith MSi616WEBPX bit (BHA6) was made up with a new mud motor and MWD tools, RIH and drilled from 3537.0 to well TD at 3921.0 mMDRT on 5 August 2009 at 0930hrs. The hole was then circulated bottoms up. The bit was pulled out of the hole without any problem. The bit was then laid down for grading at surface.

The wireline logs were then rigged up and RIH.

The 178mm (7") liner was run in hole and cemented with the shoe depth at 3920.0 mMDRT.

Well completion was subsequently undertaken as per program.

## **SECTION 2**

### **DRILLING & ENGINEERING**

## 2.1 Bit Run Summaries

### Basker-7

**660mm (26") x 914mm (36") Hole Section**  
**22 July 2009**

#### Bit Run No. 1 Summary

Bit No.	NB1
Bit Size	660mm (26")
Bit Type	Reed Y11C
Jets	3 x 22, 1 x 16
Depth In, mMDRT	175.7
Depth Out, mMDRT	210.7
Bit Grading	1-1-NO-N-0-1-WT-TD

#### Drilling Parameters

WOB	1.0 – 15.6klbf
Torque	0 – 4.7kft.lb
RPM S	0 – 124
Pump Pressure	0 – 2075psi
Flow In	800 – 1365gpm

#### Mud

Seawater and pre-hydrated gel sweeps

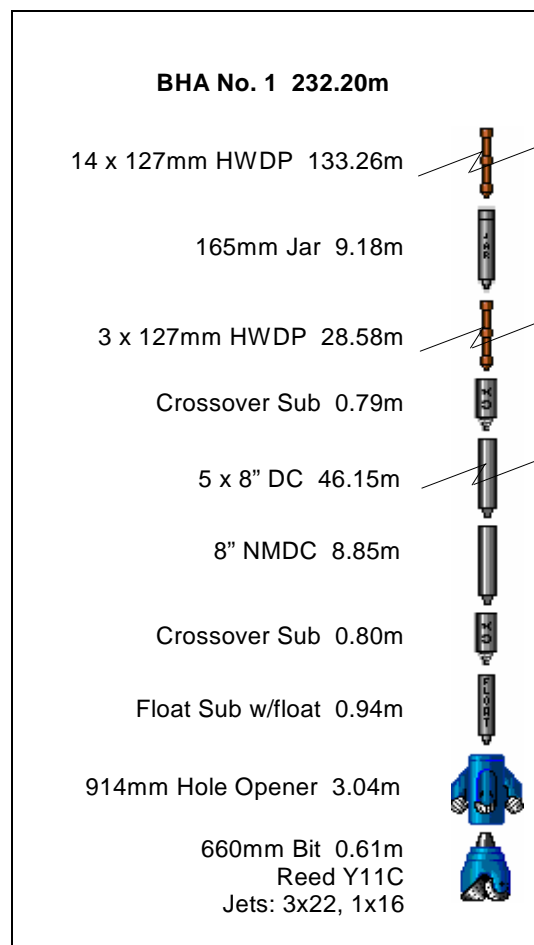
#### Lithology

Returns to seabed

#### Drilling Summary

The BHA was picked up on the 22 July 2009 with a 660mm (26") Reed bit with a 914mm (36") hole opener. Tagged seabed at 175.7 mMDRT pulled off bottom and established drilling parameters. Spud the well at 0300hrs and drilled hole from 175.7 to 210.7 mMDRT with seawater and hi-vis sweeps. Returns were dumped to seabed.

After reaching section TD the hole was swept with 150bbl PHG. The hole was circulated clean and over displaced to 300bbl of Hi-Vis PHG. The bit and BHA were pulled out of the hole and racked back the BHA for running and setting the 762mm (30") conductor.



**Basker-7**  
**406mm (16") Hole Section**  
**23 – 24 July 2009**

**Bit Run No. 2 Summary**

Bit No.	NB2
Bit Size	406mm (16")
Bit Type	Smith XR+VCPS
Jets	3x22, 1x15
Depth In, mMDRT	210.7
Depth Out, mMDRT	1061.7
Bit Grading	1-1-NO-S-I-1-WT-TD

**Drilling Parameters**

WOB	0.1 – 45.2klbf
Torque	0 – 7.1kft.lb
RPM S	0 – 123
Pump Pressure	424 – 3889psi
Flow In	453 – 1506gpm

**Mud**

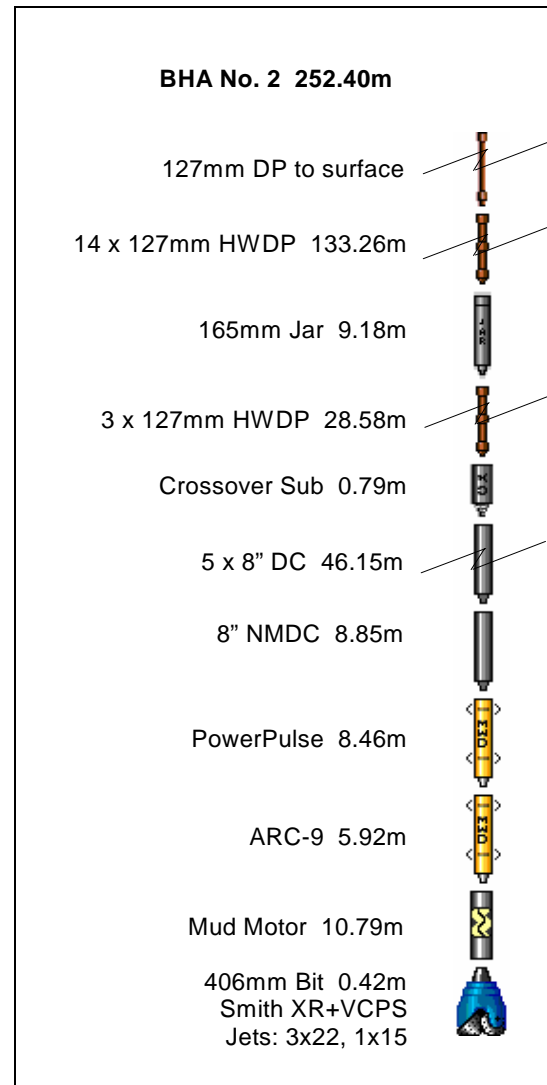
Seawater and pre-hydrated gel sweeps

**Lithology**

Returns to seabed

**Drilling Summary**

The 406mm (16-1/2") Smith bit was picked up and made up to a BHA composed of motor and MWD/LWD tools on 23 July 2009. RIH, made up top drive and washed down the last stand to the top of the cement at 207.0 mMDRT. Drilled out cement plugs, float collar and shoe track. Drilled 406mm (16") hole from 210.7 to 1061.7 mMDRT. The drilling was completed with an average ROP of 61.2m/hr. At TD, the hole was circulated with 150bbl of hi-vis PHG. Later, the hole was displaced with 9.5ppg mud and the string POOH for running the 340mm (13-3/8") casing.





**Basker-7**  
**311mm (12-1/4") Hole Section**  
**26 – 29 July 2009**

**Bit Run No. 3 Summary**

Bit No.	NB3
Bit Size	311mm (12-1/4")
Bit Type	Smith MSI 519
Jets	2x14, 5x15
Depth In, mMDRT	1061.7
Depth Out, mMDRT	2918.0
Bit Grading	1-2-CT-S-X-1/8-FC-PR

**Drilling Parameters**

WOB	2.1 – 51.8klbf
Torque	2.6 – 20.5kft.lb
RPM S	68 - 240
Pump Pressure	1339 – 4727psi
Flow In	741 – 1280gpm

**Mud**

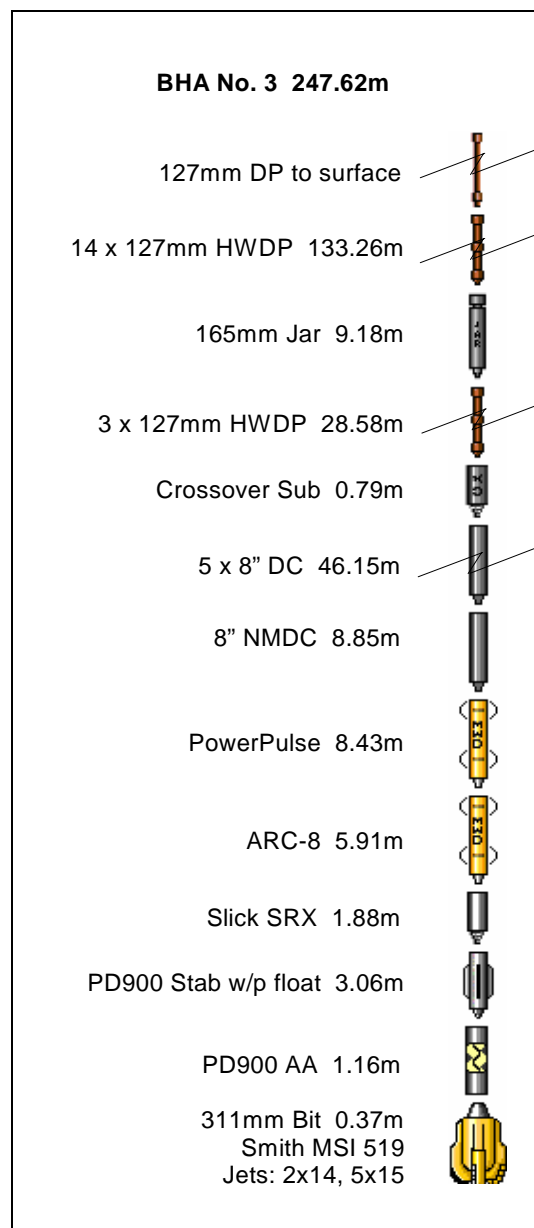
Drilled with 1.08 – 1.16sg KCL mud

**Lithology**

Marl, Calcareous Claystone, Claystone, Siltstone, Sandstone.

**Drilling Summary**

The 311mm (12-1/4) Smith bit was made up with MWD/LWD tools and run in hole. The BHA was run in hole and tagged the top of the cement at 1028.7mMDRT, drilled out the plug, float, shoe at 1056.6 mMDRT and cement to 1061.7 mMDRT. Drilled 3.0m new formation to 1064.7 mMDRT, circulated and conditioned mud to 9.0ppg. Pulling back into the shoe, a Formation Integrity Test (FIT) was performed with 9.0ppg mud yielding an Equivalent Mud Weight (EMW) of 1.56sg (13.0ppg). The bit continued drilling 311mm (12-1/4") hole from 1064.7 to 2918.0 mMDRT. The bit was pulled out of the hole due to a decrease in ROP.



**Basker-7**  
**216mm (8-1/2") Hole Section**  
**31 July – 2 August 2009**

**Bit Run No. 4 Summary**

Bit No.	NB4
Bit Size	216mm (8-1/2")
Bit Type	Smith MSi519WEBPX
Jets	3x13, 3x14
Depth In, mMDRT	2918.0
Depth Out, mMDRT	3448.8
Bit Grading	1-0-CT-S-X-2-RO-T

**Drilling Parameters**

WOB	5.7 – 45.3klbf
Torque	29.2 – 34.1kft.lb
RPM S	115 - 201
Pump Pressure	3031 – 3920psi
Flow In	632 – 866gpm

**Mud**

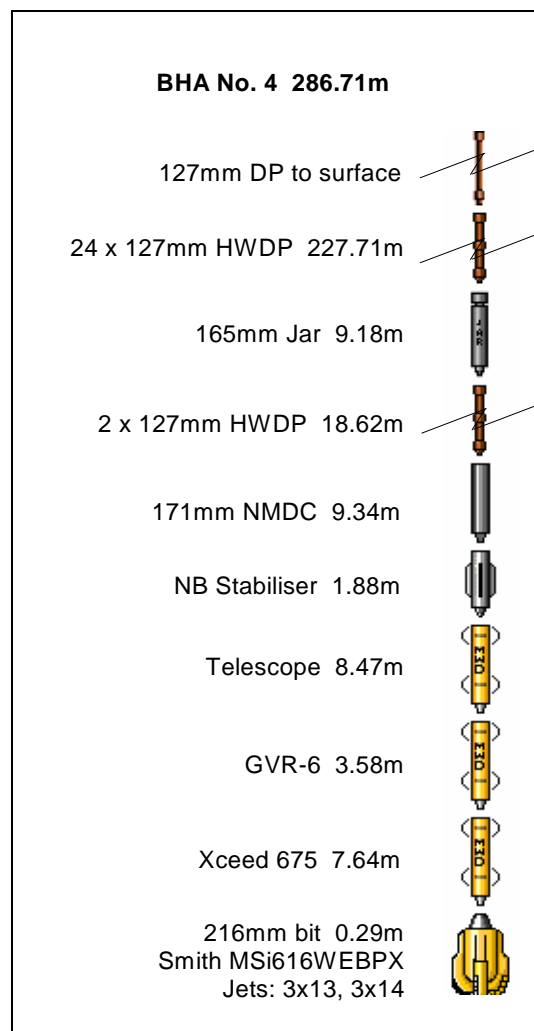
Drilled with 1.12 – 1.13sg KCL mud

**Lithology**

Claystone, Argillaceous Siltstone, Siltstone, Coal.

**Drilling Summary**

The 216mm (8-1/2") Smith bit was made up with MWD/LWD tools and run in the hole. The BHA was run in the hole and tagged TOC at 2884.0 mMDRT, drilled out the plug, float and shoe at 2910.8 mMDRT and cement to 2918.0 mMDRT. Drilled 3.0m of new formation to 2921.0 mMDRT, circulated and conditioned the mud to 1.12sg (9.3ppg). Pulling back into the shoe, a Formation Integrity Test (FIT) was performed with 1.12sg (9.3ppg) mud yielding an Equivalent Mud Weight (EMW) of 1.56sg (13.0ppg). The bit was pulled out of hole due to a leak in the derrick gooseneck on the standpipe.



**Basker-7**  
**216mm (8-1/2") Hole Section**  
**2– 3 August 2009**

**Bit Run No. 5 Summary**

Bit No.	NB5
Bit Size	216mm (8-1/2")
Bit Type	Smith MSi616WEBPX
Jets	3x13, 3x12
Depth In, mMDRT	3448.0
Depth Out, mMDRT	3537.0
Bit Grading	1-0-CT-C-X-I-NO-DMF

**Drilling Parameters**

WOB	1.0 – 37.5klbf
Torque	19.2 – 31.7kft.lb
RPM S	25 - 96
Pump Pressure	2922 – 4260psi
Flow In	499 – 631gpm

**Mud**

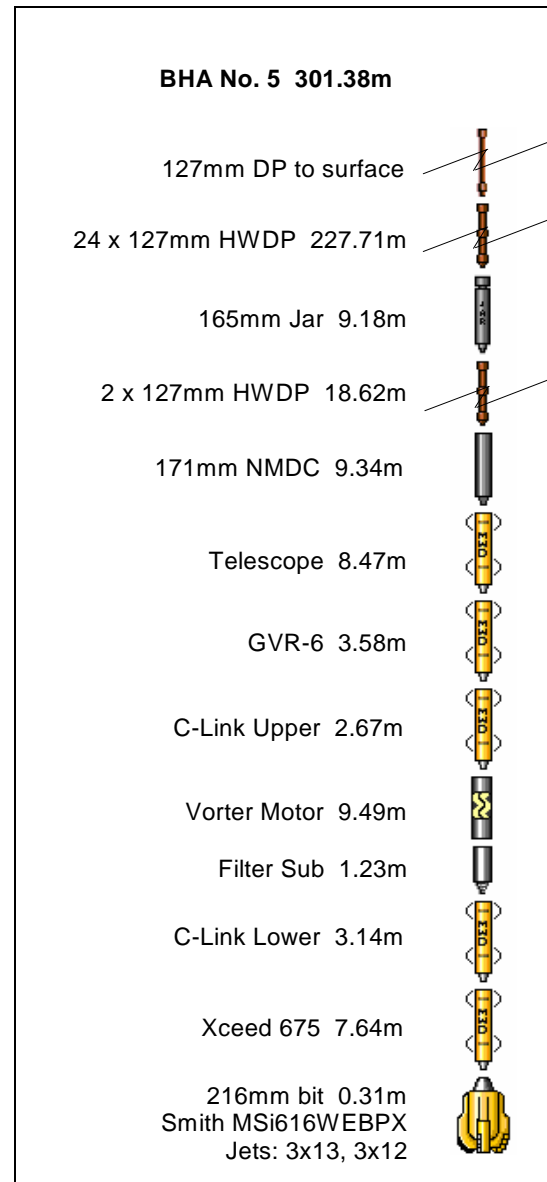
Drilled with 1.14sg KCL mud

**Lithology**

Argillaceous Siltstone, Sandstone, Coal Stringers.

**Drilling Summary**

The 216mm (8-1/2") Smith bit was made up with a mud motor and MWD/LWD tools and run in hole. The drill line was slipped and cut at the 244mm (9-5/8") shoe. Continued running into open hole. No problem was encountered while running in. Washed last stand down and continued drilling from 3448.8 to 3537.0 mMDRT. The bit was pulled out of the hole due to a mud motor failure.



**Basker-7**  
**216mm (8-1/2") Hole Section**  
**3 – 5 August 2009**

**Bit Run No. 6 Summary**

Bit No.	5RR
Bit Size	216mm (8-1/2")
Bit Type	Smith MSi616WEBPX
Jets	3x13, 3x12
Depth In, mMDRT	3537.0
Depth Out, mMDRT	3921.0
Bit Grading	1-1-CT-S-X-I-WT-TF

**Drilling Parameters**

WOB	0.8 – 46.3klbf
Torque	12.5 – 30.6kft.lb
RPM S	20 - 126
Pump Pressure	2394 – 3331psi
Flow In	428 – 604gpm

**Mud**

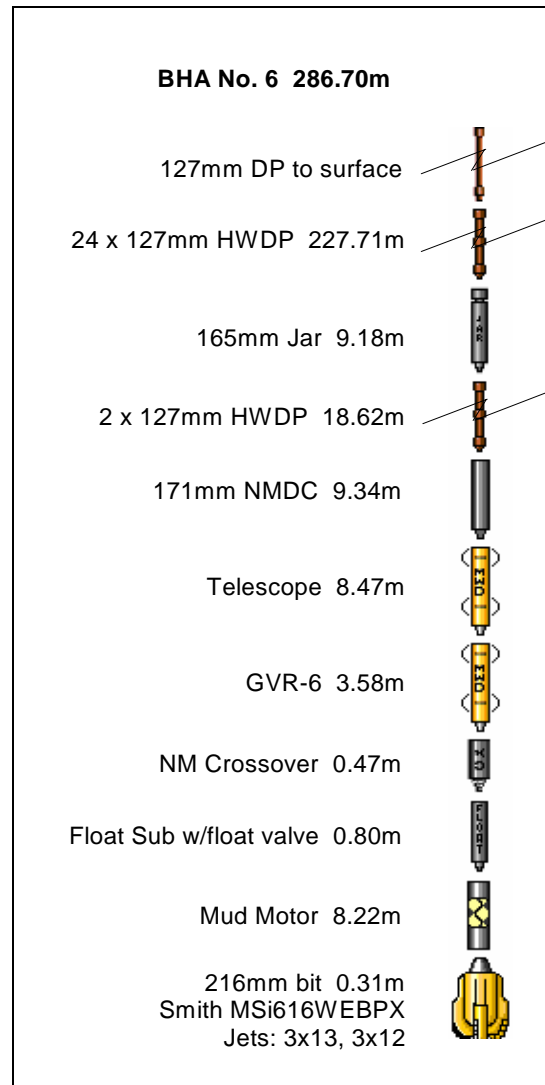
Drilled with 1.14sg KCL mud

**Lithology**

Argillaceous Siltstone, Sandstone, Coal, Volcanics.

**Drilling Summary**

The 216mm (8-1/2") Smith bit was made up with a mud motor and MWD/LWD tools and run in hole. Slip and cut the drill line at the 244mm (9-5/8") shoe. Continued running in the open hole. No problem was encountered while running in the hole. Washed last stand down and continued drilling from 3537.0 to well TD at 3921.0 mMDRT.



## 2.2 Casing / Cementing Summary

### Basker-7

**762mm (30") x 508mm (20") Casing**  
**22 July 2009**

#### 762mm (30") x 508mm (20") Casing

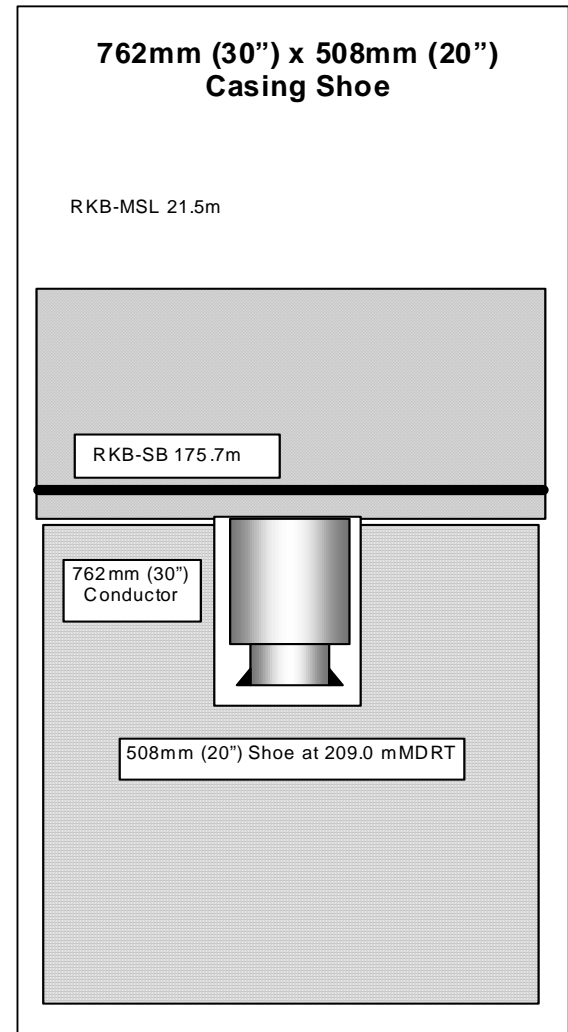
Casing 762mm (30") x 1" x 56 Housing  
 w/Lynx HT Box  
 762mm (30") Intermediate Joint  
 762mm (30") x 508mm (20")  
 Crossover  
 508mm (20") Float Shoe

ID 711mm (28")  
 Weight 310kg/m (19.35lb/ft)  
 Grade X-52  
 Shoe Depth 209.0 mMDRT

#### Cement Details:

Sacks 864sx  
 Type Class "G"  
 Mixwater 109.51gal/sx

Weight 1.90sg  
 Yield 1.16ft<sup>3</sup>/sx  
 Volume 183bbl



**Basker-7**  
**340mm (13-3/8") Casing**  
**24 – 25 July 2009**

Hole Size 406mm (16")  
 Depth 1061.7 mMDRT

**340mm (13-3/8") Casing**

Casing 1 x Shoe joint A  
 1 x Intermediate Joint A  
 1 x Float Collar Joint A  
 70 x 340mm (13-3/8") Casing

ID 315.5mm (12.42")  
 Weight 101.2kg/m (68lb/ft)  
 Grade L-80  
 Shoe Depth 1056.6 mMDRT

**Cement Details:**

**Lead slurry**

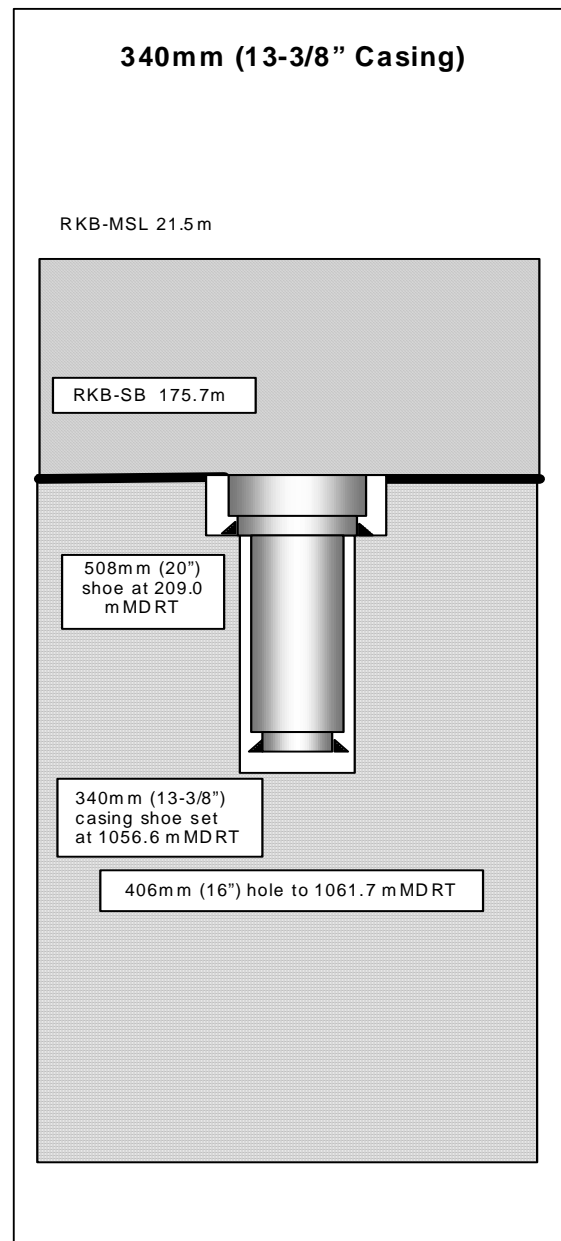
Sacks 497sx  
 Type Class "G"  
 Mixwater 13.22gal/sx

Weight 1.50sg  
 Yield 2.24ft<sup>3</sup>/sx  
 Volume 198.4bbl

**Tail slurry**

Sacks 537sx  
 Type Class "G"  
 Mixwater 5.35gal/sx

Weight 1.50sg  
 Yield 2.24ft<sup>3</sup>/sx  
 Volume 113.8bbl



**Basker-7**  
**244mm (9-5/8") Casing**  
**29 July – 30 July 2009**

Hole Size 311mm (12-1/4")  
 Depth 2918.0 mMDRT

**244mm (9-5/8") Casing**

Casing 1 x Float Shoe  
 1 x Intermediate Joint  
 1 x Float Collar Joint  
 223 x 244mm (9-5/8") Casing

ID 223mm (8.781")  
 Weight 69.94kg/m (47lb/ft)  
 Grade L-80  
 Shoe Depth 2910.9 mMDRT

**Cement Details:**

**Lead slurry**

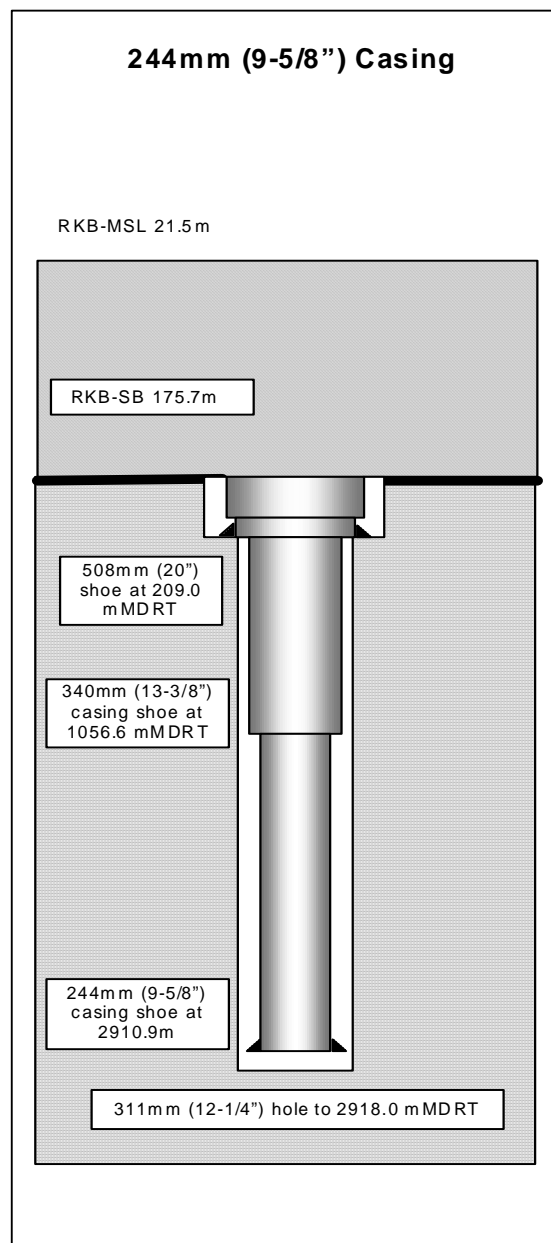
Sacks 248sx  
 Type Class "G"  
 Mixwater 13.271gal/sx  
 Additives 0.010gps D047  
 0.500gps D075  
 0.255gps D110

Weight 1.50sg  
 Yield 2.24ft<sup>3</sup>/sx  
 Volume 99bbl

**Tail slurry**

Sacks 206sx  
 Type Class "G"  
 Mixwater 5.206gal/sx  
 Additives 0.010gps D047  
 0.080gps D145A  
 0.500gps D168  
 0.020gps D081

Weight 1.91sg  
 Yield 1.17ft<sup>3</sup>/sx  
 Volume 43bbl



**Basker-7**  
**178mm (7") Liner**  
**12 – 14 August 2009**

Hole Size 216mm (8-1/2")  
 Depth 3921.0 mMDRT

**178mm (7") Liner**

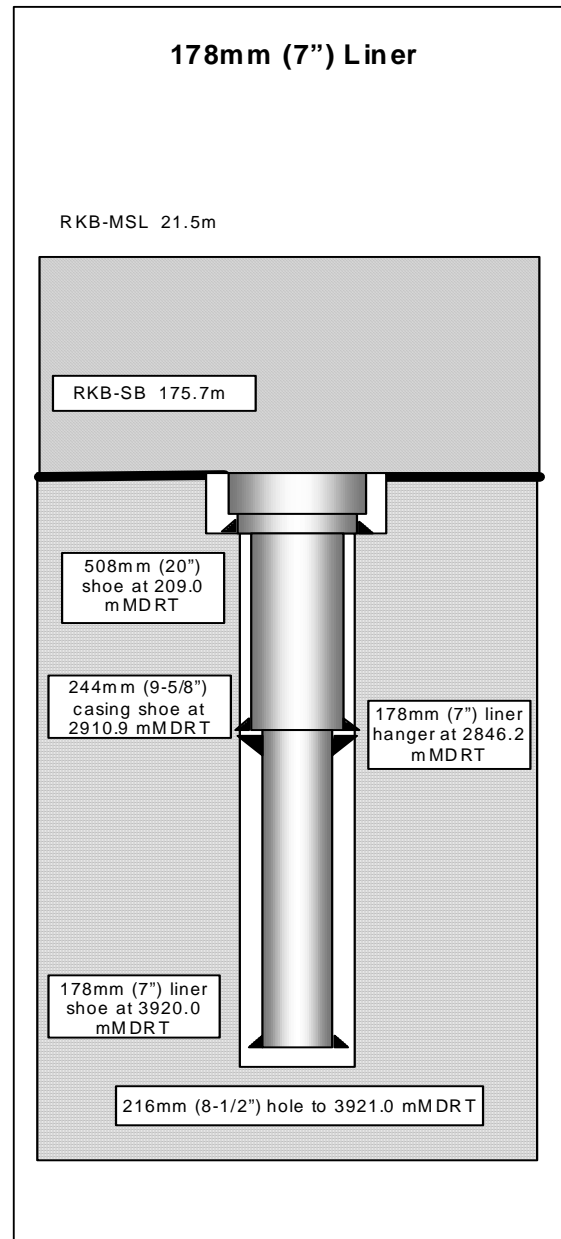
Casing 1 x Float Shoe  
 1 x Float Collar Joint  
 1 x Intermediate Joint  
 1 x Landing Collar  
 76 x 178mm (7") Liner

ID 178mm (7")  
 Weight 43.2kg/m (95lb/ft)  
 Grade L-80  
 Shoe Depth 3920.0 mMDRT

**Cement Details:**

Sacks 354sx  
 Type ABC Class "G"  
 Mixwater 6.156gal/sx  
 Additives 0.005gps D175  
 1.200gps D600G  
 0.300gps D168  
 0.020gps D080  
 0.020gps D110  
 35% BWOC D066

Weight 1.92sg  
 Yield 1.49ft<sup>3</sup>/sx  
 Volume 218bbl





## **SECTION 3**

### **GEOLOGY & SHOWS**

### 3.1 Geology and Shows

Geological logging for Basker-7 commenced at 3.0 metres below the 340mm (13-3/8") casing shoe (set at 1056.6 mMDRT) to a total depth of 3921.0 mMDRT (All depths given in this section are measured along hole from the rotary Table, unless otherwise specified).

During the course of the well, all gas equipment was checked and calibrated regularly.

The lithology intervals described below are based on changes in cuttings lithology, drilling parameters, ROP, Total Gas, Chromatograph readings and available MWD data at the wellsite.

Total gas values are quoted as % C1 (Methane) equivalent in air and hydrocarbons (component alkanes) (C1-NC5) in parts per million (ppm).

#### **Summary of Lithology**

##### **175.7 – 1061.7 mMDRT:**

**660mm (26") x 914mm (36") Section:** Returns to Sea Bed

##### **1061.7 – 2100.0 mMDRT:**

###### **MARL**

**MARL (100%):** dominantly olive grey, common medium light grey to medium grey, soft to firm, occasional moderately hard, subblocky to blocky, abundant calcareous clay, trace carbonaceous materials, trace very fine sand

##### **2100.0 – 2495.0 mMDRT:**

###### **MARL and CALCAREOUS CLAYSTONE**

**MARL (50 to 100%):** dominantly pale yellowish brown, olive grey, firm to moderately hard, dominantly moderately hard, subblocky to blocky, 30 to 35% calcareous clay, trace calcareous silt, trace pyrite, trace carbonaceous specks, trace black lithics

**CALCAREOUS CLAYSTONE (20 to 100%):** medium light grey to medium grey, soft to moderately hard, subblocky to blocky, 60% calcareous clay, trace siliceous silt, trace pyrite, trace foraminiferas, trace glauconite

##### **2495.0 – 3050.3 mMDRT**

###### **Interbeds of SANDSTONE, CLAYSTONE, SILTSTONE and CALCAREOUS CLAYSTONE**

**SANDSTONE (5 to 75%):** clear to translucent, yellowish grey, loose, medium to coarse, dominantly coarse, poor to moderately sorted, angular to subangular, elongate to spherical, trace glauconite, trace pyrite, good inferred porosity, no shows

**CLAYSTONE (1 to 40%):** light grey to medium dark grey, medium bluish grey, occasional greenish grey, soft to moderately hard, subblocky to blocky, minor calcareous clay, rare calcareous silt, minor siliceous silt, trace pyrite, trace glauconite, trace carbonaceous materials

**SILTSTONE (2 to 65%):** medium yellow brown, light olive grey to olive black grey, soft to firm, blocky to subblocky, minor siliceous clay, trace pyrite, trace coal, rare glauconite

**CALCAREOUS CLAYSTONE (50 to 80%):** dominantly medium dark grey, soft to moderately hard, subblocky to blocky, 60% calcareous clay, trace to abundant glauconite, minor silt, trace foraminiferas

**3050.3 – 3545.0 mMDRT:****Interbeds of SANDSTONE, SILTSTONE, ARGILLACEOUS SILTSTONE and COAL stringers**

**SANDSTONE (Type 1) (15 to 95%):** translucent, occasional light to medium light grey, loose, very fine to very coarse, poorly sorted, subangular to rounded, trace pyrite, trace rock flour, fair inferred porosity, no shows

**SILTSTONE (5 to 20%):** medium dark grey to dark brownish grey, firm to moderately hard, subblocky to blocky, minor siliceous clay, trace pyrite, trace to rare carbonaceous fragments

**ARGILLACEOUS SILTSTONE (20 to 79%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, trace pyrite trace to rare carbonaceous fragment

**SANDSTONE (Type 2) (15 to 95%):** translucent to opaque, medium light grey to brown grey, dominantly friable to firm, loose in parts, very fine to coarse, dominantly very fine to fine, subangular to rounded, poorly sorted, slightly spherical to elongate, common siliceous clay, trace pyrite, poor visible porosity

**FLUORESCENCE (trace):** very dull green yellow spotted to patch fluorescence with very weak diffuse to very slow streaming cut fluorescence and thin dull green yellow ring residual fluorescence

**3545.0 – 3599.0 mMDRT:****Interbeds of SANDSTONE, ARGILLACEOUS SILTSTONE and COAL stringers**

**ARGILLACEOUS SILTSTONE (5 to 77%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, trace pyrite, trace to rare carbonaceous fragment.

**COAL (1 to 10%):** black, firm to moderately hard, brittle, blocky to occasional sub fissile, dull to vitreous luster, occasional sub conchoidal fracture

**SANDSTONE (20 to 95%):** translucent to opaque, loose, fine to very coarse, dominantly medium to coarse, subangular to rounded, poorly to moderately sorted, slightly spherical to elongate, trace pyrite, good inferred porosity

**FLUORESCENCE (trace):** very dull green yellow spotted to patchy fluorescence with very weak diffuse to very slow streaming cut fluorescence and thin dull green yellow ring residual fluorescence

**3599.0 – 3658.0 mMDRT:****Interbeds of SANDSTONE, ARGILLACEOUS SILTSTONE and COAL stringers**

**ARGILLACEOUS SILTSTONE (5 to 80%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, trace pyrite, trace to rare carbonaceous fragment

**COAL (1 to 30%):** black, firm to moderately hard, brittle, blocky to occasional sub fissile, dull to vitreous luster, occasional sub conchoidal fracture

**SANDSTONE (19 to 94%):** translucent to opaque, loose, fine to very coarse, dominantly medium to coarse, subangular to rounded, poorly to moderately sorted, slightly spherical to elongate, trace pyrite, good inferred porosity

**FLUORESCENCE (trace to 35%):** dull yellow direct fluorescence, nil to very slow diffuse to very milky cut fluorescence, dull yellow residual fluorescence

**3658.0 – 3835.0 mMDRT:****Interbeds of SANDSTONE, ARGILLACEOUS SILTSTONE and COAL stringers**

**ARGILLACEOUS SILTSTONE (20 to 80%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, minor siliceous clay, trace pyrite, trace to rare carbonaceous fragment

**COAL (1 to 40%):** black, firm to moderately hard, brittle, blocky to occasional sub fissile, dull to vitreous luster, occasional sub conchoidal fracture

**SANDSTONE (10 to 79%):** light grey, transparent to translucent, dominantly loose, fine to coarse, dominantly fine to medium, sub rounded, moderately sorted, sub spherical to sub elongate, trace pyrite, moderately inferred porosity

**FLUORESCENCE (trace to 35%):** dull yellowish gold to greenish yellow direct fluorescence, very dull yellow direct fluorescence, weak diffuse, milky to white cut fluorescence, no natural cut, no natural residue

**3835.0 – 3871.0 mMDRT:****Interbeds of SANDSTONE, ARGILLACEOUS SILTSTONE and COAL stringers**

**ARGILLACEOUS SILTSTONE (10 to 85%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, minor siliceous clay, trace pyrite, trace to rare carbonaceous fragment

**COAL (trace):** black, firm to moderately hard, brittle, blocky to occasional sub fissile, dull to vitreous luster, occasional sub conchoidal fracture

**SANDSTONE (10 to 60%):** clear to very light grey, transparent, translucent, loose to dominantly friable, fine to medium grain, good sorting, sub rounded to rounded, sub spherical to spherical, trace 20% white light grey siliceous matrix, trace pyrite, poor to fair inferred porosity

**FLUORESCENCE (trace to 5%):** dull yellow direct fluorescence, very weak diffuse milky white cut fluorescence, dull to moderately yellow to white residual fluorescence

**3871.0 – 3921.0 mMDRT (TD):****VOLCANICS interbedded with SANDSTONE and ARGILLACEOUS SILTSTONE**

**VOLCANICS (70 to 95%):** predominantly weathered to clay, off white to very pale grey, light to medium grey, bluish grey to greenish grey, abundant green pyroxene, very soft to firm, amorphous to subblocky, slightly crumbly, relic flow banded texture and relic crystalline texture

**ARGILLACEOUS SILTSTONE (1 to 10%):** dominantly medium grey to brownish grey, occasional light grey to very dark grey, soft to firm, occasional crumbly, amorphous to subblocky, common very fine quartz, minor siliceous clay, trace pyrite, trace to rare carbonaceous fragment

**SANDSTONE (10 to 60%):** light brownish grey to very light grey, transparent to translucent quartz, friable to loose, dominantly medium to coarse grained, moderately sorted, sub rounded to rounded, sub spherical to sub elongate, common white to light grey siliceous matrix, trace pyrite, poor to moderately inferred porosity

**FLUORESCENCE (trace to 30%):** dull yellow to moderately bright yellow to white direct fluorescence, possible mineral fluorescence in parts, very weak and very slow pale milky to white diffuse cut fluorescence

**Average ROP and Total Gas Readings****311mm (12-1/4") Hole Section**

Interval (mMDRT)	ROP range (m/hr)	ROP average (m/hr)	Total Gas range (%)	Total Gas average (%)
1061.7 – 2100.0	15.8 – 167.7	90.3	0.0058 – 0.2956	0.1387
2100.0 – 2495.0	43.6 – 205.9	112.9	0.0117 – 0.2313	0.0694
2495.0 – 2918.0	2.8 – 178.9	36.47	0.0044 – 0.0371	0.0189

**216mm (8-1/2") Hole Section**

Interval (mMDRT)	ROP range (m/hr)	ROP average (m/hr)	Total Gas range (%)	Total Gas average (%)
2918.0 – 3050.3	3.3 – 216.1	40.1	0.0022 – 0.0357	0.0182
3050.3 – 3545.0	1.0 – 259.8	31.7	0.0017 – 0.2325	0.0467
3545.0 – 3599.0	8.3 – 59.4	31.8	0.0951 – 0.6853	0.2727
3599.0 – 3658.0	16.2 – 93.6	36.9	0.0699 – 0.8101	0.2724
3658.0 – 3835.0	3.4 – 87.0	25.7	0.0391 – 0.9875	0.3186
3835.0 – 3871.0	9.0 – 74.7	17.1	0.1677 – 1.1559	0.4575
3871.0 – 3921.0 TD	2.5 – 50.4	13.9	0.0535 – 0.9514	0.1875

**Average Chromatograph Readings****311mm (12-1/4") Hole Section**

Interval (mMDRT)	C1 (ppm)	C2 (ppm)	C3 (ppm)	iC4 (ppm)	nC4 (ppm)	iC5 (ppm)	nC5 (ppm)
1061.7 – 2100.0	895	10	8	2	1	1	0
2100.0 – 2495.0	475	7	5	1	1	1	0
2495.0 – 2918.0	107	6	4	1	1	0	0

**216mm (8-1/2") Hole Section**

Interval (mMDRT)	C1 (ppm)	C2 (ppm)	C3 (ppm)	iC4 (ppm)	nC4 (ppm)	iC5 (ppm)	nC5 (ppm)
2918.0 – 3050.3	87	17	10	0.9	1.4	0.2	0.07
3050.3 – 3545.0	218	33	17	2.4	4.2	1.2	1.3
3545.0 – 3599.0	1542	202	102	15.6	27.8	7.8	8.6
3599.0 – 3658.0	1398	164	78	12	22	6.6	7.4
3658.0 – 3835.0	1558	208	101	16	30.5	10	11
3835.0 – 3871.0	2145	286	146	23	47	15	17
3871.0 – 3921.0 TD	890	93	41	7	14	5	6

## **SECTION 4**

### **PORE PRESSURE**

## 4.1 Pore Pressure Evaluation

Baker Hughes INTEQ formation pressure evaluation services commenced at 1061.7m MDRT for Basker-7. An average seawater density of 1.05sg was assumed as the normal pressure gradient for all calculations for Basker-7. Using real time data, such as the hydrocarbon gas trend, lithology, flowline temperature, corrected Drilling Exponent (Dxc) data, drilling fluid parameters, pore pressure estimates were made during the drilling of the well. 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, Jordan 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 geopressed 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**)

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

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.

### 406mm (16") Hole Section: 210.7 to 1061.7 mMDRT

This section was drilled without riser. Due to the predicted unconsolidated nature of the lithology in this hole section, Dxc trends tend to be less useful for indicating overpressure.

**311mm (12-1/4") Hole section: 1061.7 to 2918.0 mMDRT**

The Dxc trend, in spite of being drilled with a PDC bit, displayed a positive (increasing) slope. Pore pressure analysis software shows a gradual increase from 1.00sg to 1.05sg. Pore pressures are inferred to be normal throughout.

The flow-line temperature ranged from 17.9°C to 52.9°C in the hole section. The low mud temperature reading is attributed to the cooling effect of seawater into the mud column in the riser. This and the occasional addition of fresh mud from the mixing and reserve pits rendered this tool of limited use in predicting pore pressure increase.

Background gas levels were generally low (0.005% - 0.010%). Max gas was recorded from drilling this section was 0.30%. No connection gases or swab gases were recorded.

There were no signs of pressure caving observed at the shale-shakers.

**216mm (8-1/2") Hole section: 2918.0 to 3921.0 mMDRT**

The Dxc trend, in spite of being drilled with two PDC bits, displayed a positive (increasing) slope. Pore pressure analysis software shows a gradual increase from 1.05sg to 1.08sg. Pore pressures are inferred to be normal throughout.

The flow-line temperature ranged from 17.2°C to 51.1°C in the hole section. The low mud temperature reading is attributed to the cooling effect of seawater into the mud column in the riser. This and the numerous trips and the occasional addition of fresh mud from the mixing and reserve pits rendered this tool of limited use in predicting pore pressure increase.

Background gas levels were generally low (0.05% - 0.30%). Moderate gas was recorded from the primary target (1.15%). No connection gases or swab gases were recorded.



There were no signs of pressure caving observed at the shale-shakers.



## TABLES

Table 1: Bit Run Summary

Tables

OPERATOR				WELL NAME			LOCATION			CONTRACTOR			RIG														
Anzon Australia Pty Ltd				Basker-7			VIC/L26			Diamond Offshore			Ocean Patriot														
<div></div>				Mud Pump Data Pumps 1, 2, and 3 6" Liners 12" Stroke 97% Efficiency, 0.1018 bbl/stk			BIT DULL CHARACTERISTICS										REASONS PULLED										
							BC - Broken Cone		CI - Cone Interference		JD - Junk Damage		PB - Pinched Bit		SS - Self-Sharpening		BHA - Bottomhole Assembly		LOG - Run Logs		FM - Formation Change		TD - Total / Csg depth				
							BT - Broken Teeth		CR - Cored		LC - Lost Cone		PN - Plugged Nozzle		TR - Tracking		DMF - Downhole Motor failure		RIG - Rig repair		HP - Hole Problems		TQ - Torque				
							BU - Balled Up		CT - Chipped Teeth		LN - Lost Nozzle		RG - Rounded Gauge		WO - Washed-Out Bit		DSF - Drill String failure		CM - Condition Mud		HR - Hours		TW - Twist Off				
CC - Cracked Cone		FC - Flat Crested Wear		LT - Lost Teeth		RO - Ring Out		WT - Worn Teeth		DST - Drill Stem Test		CP - Core Point		PP - Pump Pressure		WC - Weather Conditions											
CD - Cone Dragged		HC - Heat Checking		OC - Off-Center Wear		SD - Shurtail Damage		NO - No Dull Charac.		DTF - Downhole Tool Failure		DP - Drill Plug		PR - Penetration rate		WO - Washout - Drill String											
BHA #	BIT No.	MAKE	TYPE	TFA sq.in.	JETS	SERIAL No.	DEPTH IN m	METRES ON BIT	HRS ON BOTTOM	AV ROP m/hr	CIRC HRS	WOB klbs	RPM (surf/motor)	TBR krev	SPP psi	GPM	TQ kft-lbs	GRADE								MW sg	REMARKS
																		I	O	D	L	B	G	O	R		
660mm x 914mm (26" x 36" H/Opener) Hole Section 175.7 - 210.7 mMDRT																											
1	NB1	Reed	Y11C	1.3100	3x22, 1x16	Y11C	175.7	35.0	0.5	70.0	0.9	1.0-15.6	0-124	2.2	0-2075	800-1365	0-4.7	1	1	NO	N	0	1	WT	TD	1.06	26" x 36" section TD
406mm (16") Hole Section 210.7 - 1061.7 mMDRT																											
2	NB2	Smith	XR+VCPS	1.2862	3x22, 3x15	PM0198	210.7	851.0	13.9	61.2	23.0	0.1-45.2	0-123/60-273	144.2	424-3889	453-1506	0-7.1	1	1	NO	S	I	1	WT	TD	1.06	16" section TD
311mm (12-1/4") Hole Section 1061.7 - 2918.0 mMDRT																											
3	NB3	Smith	MSI 519	1.1635	2x14, 5x15	JY8882	1061.7	1856.3	26.9	69.0	46.9	2.1-51.8	68-240	293.7	1339-4727	741-1280	2.6-20.5	1	2	CT	S	X	1/8	FC	PR	1.16	12-1/4" section TD
216mm (8-1/2") Hole Section 2918.0 - 3921.0 mMDRT																											
4	NB4	Smith	MSI616WEBPX	0.8399	3x13, 3x14	JY3338	2918.0	530.8	18.7	28.4	27.8	5.7-45.3	115-201	175.5	3031-3920	632-866	29.2-34.1	1	0	CT	S	X	2	RO	T	1.13	Change BHA
5	NB5	Smith	MSI616WEBPX	0.7202	3x13, 3x12	JX6263	3448.8	88.2	2.1	42.0	5.8	1.0-37.5	25-96/117-165	26.5	2922-4260	499-631	19.2-31.7	1	0	CT	C	X	I	NO	DMF	1.14	Change motor
6	5RR	Smith	MSI616WEBPX	0.7202	3x13, 3x12	JX6263	3537.0	383.0	16.3	23.5	23.2	0.8-46.3	20-126/120-274	216.3	2394-3331	428-604	12.5-30.6	1	1	CT	S	X	I	WT	TD	1.14	well TD
TOTAL DEPTH (m)							3921.0																				

NOTE: Bit run number = BHA number ; NB = New Bit RR = Rerun Bit PDM = Downhole Motor

Table 2: Bit Hydraulics Summary

Tables

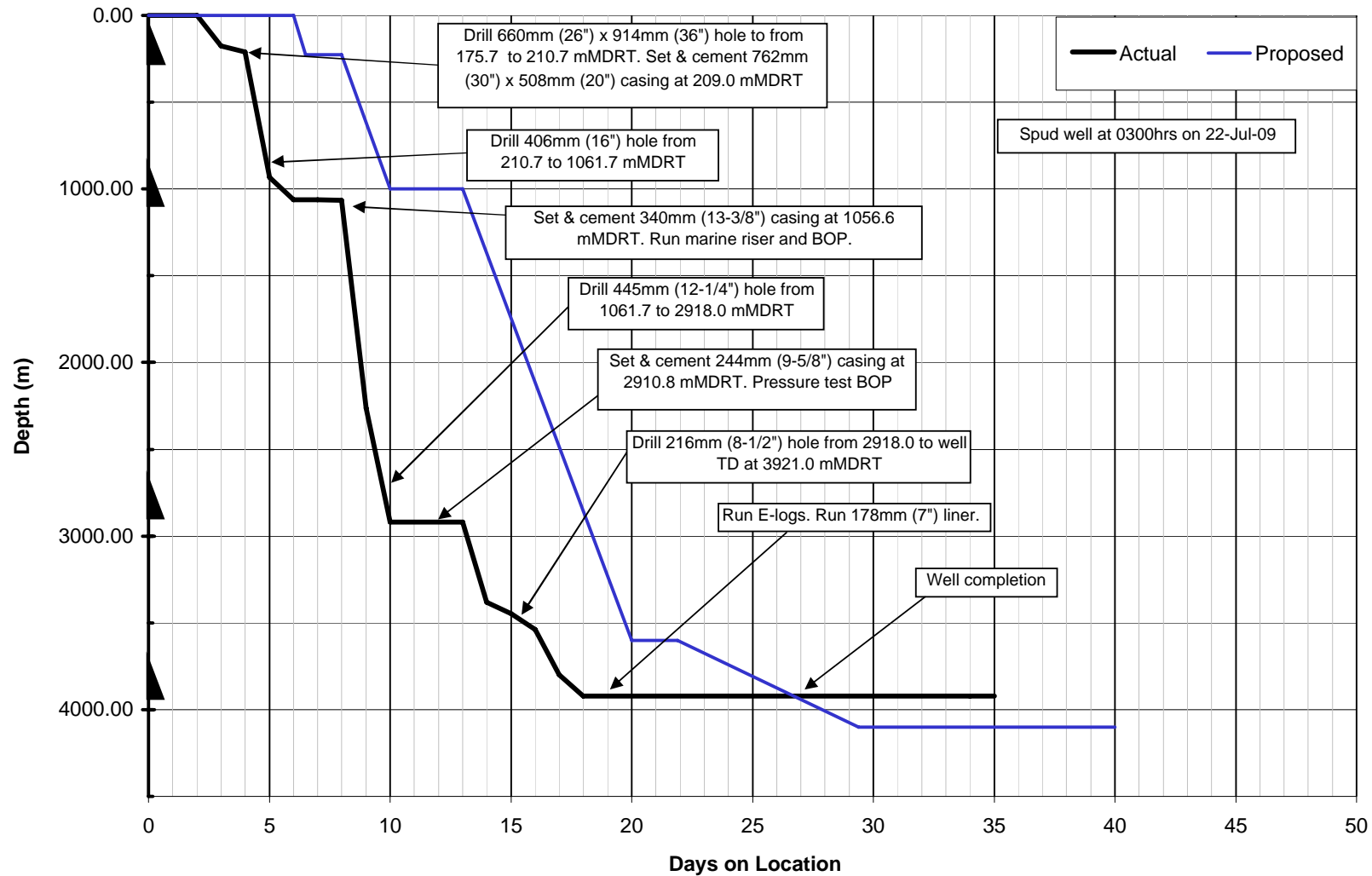
<div><div><div><div><div></div><div>BAKER HUGHES</div></div><div>INTEQ</div></div></div><div><div>ROC</div></div></div>										Bit Hydraulics Summary												
Operator Anzon Australia Pty Ltd					Well Name Basker-7					Location VIC/L26		Drilling Contractor Diamond Offshore					Rig Ocean Patriot					
Drillstring Abbreviations										S Powerdrive			Hydraulics Models									
N Normal M MWD										P Positive Displacement Motor A Adjustable Gauge Stabilizer			T TRACS Tool C Core			Power Law Model used for drilling with Mud Bingham Model used for coring and drilling with seawater						
Bit No.	Depth (m)	Hole Size in	Jets x 1/32"	Drill String Type	Mud Type	Mud Density sg	PV cP	YP lbs/100 ft sq	Flow Rate gpm	Jet Vel m/sec	Impact Force lbf / in <sup>2</sup>	Hydraulic Power hhp	Power/ Area hp/sq in	Bit Loss psi	Bit Loss %	Pipe Loss psi	ECD sg	Annular Velocities				
																		DP OH m/min	DC OH m/min	DP Max Dia m/min		
311mm (12-1/4") Hole Section 1061.7 - 2918.0 mMDRT																						
NB3	2918	12.25	2x14, 5x15	M P	KCL	1.16	18	26	1030	86.6	12.47	2635.4	3.14	607	13.8	1804	1.49	61.53	89.51	21.08		
216mm (8-1/2") Hole Section 2918.0 - 3921.0 mMDRT																						
NB4	3448	8.50	3x13, 3x14	M S	KCL	1.13	14	27	750	87.3	18.46	1648.7	4.69	1039	15.9	599	1.24	107.57	187.88	15.35		
NB5	3537	8.50	3x13, 3x12	M P	KCL	1.14	11	21	595	80.8	13.41	1311.0	3.15	508	13.4	709	1.30	94.07	177.91	12.18		
5RR	3921	8.50	3x13, 3x12	M P	KCL	1.14	16	30	550	74.7	11.70	980.8	2.54	443	14.5	715	1.48	86.96	153.96	11.26		



Anzon Australia Pty Ltd  
Basker-7  
Time vs. Depth



INTEQ



## **APPENDICES**

**FORMATION EVALUATION LOG**  
1:500

**DRILLING DATA PLOT**  
1:1000

**PRESSURE EVALUATION PLOT**  
1:1000



# **GAS RATIO PLOT**

1:500