Final Well Report

For

StatoilHydro

Well: 15/9-F-14

Rig: Mærsk Inspirer

Geoservices	StatoilHydro
Date :	Date :
Signed :	Signed :

Revision number: Date:

Contents

1. Introduction

1.1. Purpose of the project

Volve is an oil field located in the southern part of the North Sea approximately eight kilometres north of Sleipner Øst. The sea depth is approximately 90 metres. The development concept is a jack-up processing and drilling facility and a vessel for storing stabilized oil.

The reservoir contains oil in a combined stratigraphic and structural trap with Jurassic and Triassic sandstones in the Hugin formation. The western part of the structure is heavily faulted and it is uncertain if there is communication across the faults.

Volve will be recovered by water injection.

The rich gas will be transported to Sleipner A and exported onwards from there.

Well F-14 is designed as an oil producer in the Volve development drilling program. The F-14 well is the second oil producer on the Volve Field. The well is located in a structural high position on the crest of the structure 800m up flank of the NO 15/9-19A discovery well.

Main objectives:

To establish an oil production well draining the northern and northwest flank of the Volve structure, the reservoir being the Hugin Formation.

The upper fault block will be pressure supported by water injection in the F-4 and the F-5 Injection wells, whereas the lower fault block will receive support only from F-5.

Other objectives:

Collect data for planning of future wells and optimalization of production and well design.

- Collect pressure data.
- Logs, inclusive velocity.
- Stratigraphy, lithology, reservoir data.

2. Well & Rig Data

2.1. Well Data

Operator	StatoilHydro
Well Name	15/9-F-14
Classification	Oil Producer
Well path	Deviated
Country	Norway
Area	Volve
Prospect	Volve
Licence	PL 046BS
Template centre coordinates:	
Latitude	58° 26’ 29.807” N
Longitude	01° 53’ 14.929” E
UTM Co-ordinates	6 478 563.52 m N 435 050.02 m E
Slot centre coordinates:	
Latitude	58° 26' 29.769” N
Longitude	01° 53' 15.079” E
UTM Co-ordinates	6 478 562.31 m N 435 052.44 m E
RKB to MSL	54.9 m
Water depth	91.0 mMSL
Spud date	6th November 2007
TD reached	14th June 2008
Total Depth	3750m
Total Drilling Days	61
Final Well Status	Production

2.2. Rig Data

Rig name	Mærsk Inspirer
Rig type	Jack - up platform
Rig make	Hyundai Heavy Industries Comp. Ltd
RKB - MSL	54.9 m
Well head make	Vetco Gray MS-700 (Sub-sea)
Size	18¾"
Rating	1035 bar
BOP make	Shaffer
Annular Preventer	18¾”
Rating	690 bar (10000psi)
Upper Pipe Rams	5”-7”
Rating	1035 bar (15000psi)
Shear Rams	CVX”
Rating	1035 bar (15000psi)
Middle Pipe Rams	3½”-5½”
Rating	1035 bar (15000psi)
Lower Pipe Rams	5½”
Rating	1035 bar (15000psi)
Diverter make	Shaffer
Size (OD / ID)	24" / 49½"
Rating	34½ bar
HP Drilling Riser make	Aker Kværner
OD / ID	21” / 19”
Rating	345 bar (5000psi)
Choke make	Shaffer
Rating	1035 bar (15000psi)
Rig Pumps make	Wirth
Numbers	3
Model	TRK-7½”x14”/2200
Output 6½” liner	22.15 l/stk @ 97% efficiency
Rating	352 bar
Top Drive make	Varco Systems
Model	TDS-8SA
Drawworks make	Varco Systems
Model	ADS-10Q

3. Service Provided

3.1. Type of Service

Mudlogging equipment running Geoservices ALS3b (v1.09b) software was used for this well. The unit was manned at all times by a data engineer, with mud loggers present during drilling for cuttings sampling. Real time depth data were collected at 1m intervals throughout the well. Additionally, the time database for the well (4 second storage interval) was backed up to optical disk and is available for analysis. Other functions performed by the Geoservices data engineers included hydraulic and swab/surge simulation, pore pressure estimation, gas component analysis and day-to-day reporting of operational parameters. The mud loggers were responsible for cuttings sample collection and analysis.

3.2. Data Quality

No major sensor problems occurred during drilling this well.

Maintenance was performed according to Geoservices QA maintenance schedule. Checklists indicating regular maintenance are available on request.

During drilling of the first section of this well, the ALS3b system had not accepted the new database F14 as “Real Time”. This caused the drilling data to go into the F4 database. This was discovered during drilling, but it waited until we had finished the section before correcting the problem. The new well name had to be manually typed in on RTG computer and the system had to be rebooted. 1 hour of time data were lost after the drilling had ended, but all depth data was restored into the new database. The Company Rep and driller were informed of this before rebooting the system.

During the cementation of the 14” casing, no signals were received from the cementer’s computer. This problem was discovered when the cement lines were being pressure tested and no change in the cement unit pressure readout could be seen. The Geoservices system was checked to see if there was a fault with the WITS link to the cementer’s computer but the indicators showed that the link was connected but no data were being transmitted. As the cementer’s computer was by now in use and set up for the cement job, the link could not be investigated further. Once the cement job had finished a reboot of the cementer’s computer re-established communication with the WITS link and data was again being transmitted.

The same problem occurred during performing FIT in 8 ½” section. After investigation it turned out, that cementer computer has failed and was disconnected. All links and connections on the Geoservices side were checked and worked fine.

Crew:

Data Engineers

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4. Geology

4.1. Geological summary

Well 15/9-F-14 is the second producer in the Volve, draining the crestal north part and the north eastern flank of the field. For this well spot samples were taken from 1090 to 2210mMD every 10m, from 2215 to 2270mMD every 5m, and from 2270 to 2780mMD every 10m. From the depth 2010mMD to TD of 12¼" section (2788mMD) wet samples had been collected every 10m, as well. From 2774 to 2980mMD every 10m, and from 2980 to TD of 8½" section (3750mMD) wet samples were taken every 6m as per geologist request.

4.1.1. 36" Hole Section 145 m – 204 m MD (145 m – 204 m TVD)

This section was drilled riser less with cuttings going to seabed.

4.1.2. 26" Hole Section 204m – 1083mMD (204 m – 1082.5 mTVD)

As the previous section, the 26" section was drilled riserless with cuttings going to the seabed.

4.1.2.1. Nordland Group 145.0m – 1207.0mMD (145.0m – 1206.5mTVD)

Utsira Formation 882m – 1020mMD (881.5m – 1019.5mTVD)

Utsira Formation consists of sandstone with minor claystone interbeds. The interval interpreted upon ROP.

4.1.3. 17½" Hole Section 1083m – 2281mMD (1082.5m – 2279.5mTVD)

For this section spot samples were taken from 1090 to 2210mMD every 10m, from 2215 to 2270mMD every 5m, and from 2270 to 2280mMD every 10m. From the depth 2010mMD to section TD wet samples had been collected every 10m.

Only to be remarked the significant difference of the occurrence of the Grid Fm. top with respect of the prognosis. This formation was recognised clearly at 2137m MD against the prognosed 2062m MD (+75m MD difference). Despite this, the Balder Fm. top occurrence was recorded just 26m MD deeper than prognosed (at 2268m MD).

4.1.3.1.Nordland Group 145.0m – 1207.0mMD (145.0m – 1206.5mTVD)

The Nordland Group extends from sea bottom to the base of Miocene at 1207mRKB. Down to about 550m the lithology is mainly interbedded sand and clay. The sand is loose, fine to medium occasionally coarse grained with some pebbles and lithic fragments. The clay is medium greyish brown, soft, silty to very silty and calcareous. Fossils, and shell fragments are common throughout the group. With the exception of the Utsira Formation (drilled in previous section), the rest of the group consists of light to medium grey, soft, silty and calcareous clay with some stringers of medium to coarse, loose and rounded sand.

4.1.3.2.Hordaland Group 1207.0m -2268.0mMD (1206.5m - 2267.5mTVD)

The Hordaland Group consists mainly of claystone with traces of sandstone and limestone, except for the sandy formations Skade and Grid.

Claystone: Predominately olive grey to olive black and brownish black, soft to moderately hard, brittle in parts, sub blocky to blocky, calcareous in parts and silty in parts in the upper part of the formation

Limestone: yellowish grey, very light grey to white, soft to firm, crumbly, sub blocky, sandy, argillaceous.

Skade Formation 1207.0mMD – 2137.0mMD (1206.5mTVD – 2136.5mTVD)

Sandstone: Clear to translucent loose quartz grains, medium to fine, occasionally coarse, rounded, moderately to poorly sorted. Occasionally micaceous and glauconitic.

Sandstone: Clear to translucent loose quartz grains, medium to fine, occasionally coarse, rounded, moderately to poorly sorted. Occasionally micaceous and glauconitic.

Grid Formation 2137.00mMD – 2268.0mMD (2136.5 – 2267.5mTVD)

Grid Formation consists mainly of claystone and some sandstone.

Sandstone: Clear-translucent loose quartz grains, fine to coarse in the top of formation and very fine to coarse in lower part, sub angular to sub rounded, moderate sorted.

Claystone: Dark greenish gray to olive gray, brownish gray, medium dark gray, firm to moderate hard, sub blocky to blocky, non calcareous and silty in parts.

4.1.3.3. Rogaland Group 2268.0mMD – 2472.0mMD (2267.5mTVD – 2466.0mTVD)

The Rogaland Group consists of the Balder, Sele, Lista, and Ty Formations.

Balder Formation 2268.0mMD – 2331.0mMD (2267.5mTVD – 2329.0mTVD)

This Formation is dominated by claystone with traces of Sandstone and Limestone.

Claystone: Greenish gray to dark greenish grey, greyish brown, occasionally olive black and medium bluish, soft to moderately hard, subblocky to blocky, calcareous in parts and silty in parts.

Limestone: Yellowish grey, soft, crumbly, sub blocky.

Sandstone: Translucent, fine to coarse grains, sub rounded to rounded, moderately sorted.

4.1.4. 12¼" Hole Section 2281.0m – 2783.0mMD (2279.5m – 2727.3mTVD)

4.1.4.1.Rogaland Group 2268.0mMD – 2472.0mMD (2267.5mTVD – 2466.0mTVD)

The Rogaland Group consists of the Balder, Sele, Lista, and Ty Formations.

Balder Formation 2268.0mMD – 2331.0mMD (2267.5mTVD – 2329.0mTVD)

This Formation is dominated by claystone with traces of Sandstone and Limestone.

Claystone: Greenish gray to dark greenish grey, greyish brown, occasionally olive black and medium bluish, soft to moderately hard, subblocky to blocky, calcareous in parts and silty in parts.

Limestone: Yellowish grey, soft, crumbly, sub blocky.

Sandstone: Translucent, fine to coarse grains, sub rounded to rounded, moderately sorted.

Sele Formation 2331.0mMD – 2395.0mMD (2329.0mTVD – 2392.0mTVD)

This Formation is dominated by claystone with traces of sandstone, Limestone and Tuff.

Claystone: Predominately olive grey, occasionally medium bluish grey, brownish grey and dark greenish grey, soft to firm, sub blocky to blocky, non calcareous, silty in parts.

Limetone: Yellowish grey, soft, crumbly, sub blocky, sandy.

Sandstone: Translucent, fine to coarse grain, sub rounded to rounded, moderately sorted.

Lista Formation 2395.0mMD – 2472.0mMD (2392.0mTVD – 2466.0mTVD)

This Formation is dominated by claystone with traces of limestone. Stringers of sand were found at the top and bottom of the formation.

Claystone: Brownish grey to brownish black, medium grey to greyish black, greenish grey to dark greenish grey, olive grey to olive black, soft to moderately hard, sub blocky to blocky, non calcareous, silty in parts.

Sand: Clear translucent to milky white, the grains are fine to medium in the upper part of the formation and very fine to fine in the lowermost part, sub angular to sub rounded, moderately to well sorted. Calcareous sement to 2470mMD

Limestone: Yellowish grey, soft, crumbly, sub blocky, sandy

Ty Formation 2472.0mMD – 2608.0mMD (2466.0mTVD – 2589.0mTVD)

In section 12 1/4” the Ty formation appear as a mixture of claystone and sandstone. Limestone occurs in minority.

Claystone: Medium dark grey to olive grey, dark greenish grey, moderately hard, sub- blocky to blocky, non-calcareous.

Sandstone: Clear transparent, very fine to coarse, predominantly coarse, sub angular to sub rounded.

Limestone: Yellowish grey, very light grey to white, soft, crumbly, sub blocky, sandy

4.1.4.2. Shetland Group 2608.0mMD – 2913.9mMD (2589.0mTVD – 2817.2mTVD)

The Shetland Group consists of Ekofisk, Tor, Hod, Blodøks and Hildra Formations.

Ekofisk Formation 2608.0mMD – 2629.0mMD (2589.0mTVD – 2606.0mTVD

In the 12 ¼" section the Ekofisk formation is dominated by Limestone, some amount of sandstone and a trace of claystone.

Limestone: Greyish white to yellowish grey, moderately hard to hard, sub blocky
Our findings: very pale orange in colour, firm, blocky
Sandstone: Translucent, very fine to medium grains, sub- angular to sub- rounded, moderately sorted.

Claystone: Medium dark grey to olive grey, dark greenish grey, firm to moderately hard, sub- blocky to blocky, non-calcareous, silty in parts

Tor Formation 2629.0 mMD – 2783.0 mMD (2606.0mTVD – 2727.3TVD)

In the 12 ¼" section the Tor Formation is dominated by limestone with traces of claystone.

Claystone: Medium dark grey to dark greenish grey, occasionally olive grey, soft to moderate hard, sub-blocky to blocky, occasionally elongated.

Limestone: Very pale orange to yellowish grey, white, occurs, greyish orange pink, light brown to brownish grey, pale reddish brown, moderate brown in parts, firm to hard, elongated to sub-blocky, occurs blocky, microcrystalline, argillaceous laminations in parts.

4.1.5. 8 ½" section 2783.0mMD – 3750.0mMD (2727.3mTVD – 3158.0mTVD)

Wet cuttings samples were collected at 10m intervals from the 9 5/8" casing shoe down to the Draupne Formation at 2978mMD. Below this depth and, within the reservoir, the interval was changed to 6m. Having passed out of the reservoir, and with a fast drill rate, the interval was reduced to 12m. On re-entering the reservoir the interval was again increased to 6m.

The well path followed the planed route with only minor deviation. The Hugin reservoir was first penetrated at 3000.5m MD/2862.3m TVD (Block 1) and exited into the Sleipner at 3208m MD/2925.5m TVD. The Hugin reservoir was again encountered (unexpectedly) as a fault was drilled through at 3286.6m MD/2939.1m TVD. Drilling, in the Hugin, continued to the main fault which was considered to be a "fault zone" between 3457-3481m MD (2990.0-2999.9m TVD) On the distal side of the main fault (in Block 2) the well path continued in the Hugin reservoir to 3680m MD (3113.8m TVD) where it passed downwards into Sleipner formation as planned. The well was terminated at 3750m MD (3158.0m TVD) following the TD criteria (70mMD below base Hugin).

4.1.5.1. Shetland Group 2783.0mMD – 2913.9mMD (2727.3mTVD – 2817.2mTVD)

Tor Formation 2783.0 mMD – 2868.0 mMD (2727.3mTVD – 2788.0mTVD)

In the 8 ½" section the Tor Formation is dominated by limestone with traces of claystone and sandstone.
We did not see traces of sandstone.

Claystone: Greenish grey to dark greenish grey, dark grey, occasionally brownish grey, soft to moderate hard, sub-blocky to blocky, earthy lustre.

Limestone: White to off-white, pinkish grey to light brownish grey, brownish grey, occasionally greyish red, firm to moderately hard, elongated to sub-blocky, occurs blocky, microcrystalline, argillaceous laminations in parts.

Blodøks Formation 2868.0mMD – 2903.6mMD (2788.0mTDV – 2810.4mTVD)

The Blodøks formation consists in the upper part of limestone grading to marl with depth.

Limestone: Very light grey to moderately dark grey, pale red. They are soft to firm, brittle in parts, occurs hard, blocky to sub-blocky, platy, microcrystalline, slightly silty in parts, grading to marls, argillaceous laminations in places, glauconitic.

Hidra Formation 2903.6mMD –2913.9mMD (2810.4mTVD – 2817.2 mTVD)

This formation consists of argillaceous limestone grading to dark grey marl.

Limestone: very light grey to dark grey, firm to moderately hard, subblocky, microcrystalline, argillaceous, occasionally silty, glauconitic, grading to marl.

4.1.5.2. Cromer Knoll Group 2913.9mMD – 2978.0mMD (2817.2mTVD – 2851.0mTVD)

The Cromer Knoll group consists of Rødby and Åsgard formation.

Rødby Formation 2913.9mMD – 2926.4mMD (2817.2mTVD – 2824.2mTVD)

This formation consists mainly of limestone with argillaceous laminations grading to marl.

Limestone: Medium grey to dark grey, pale reddish brown, predominantly moderately hard, subblocky, microcrystalline, fine argillaceous laminations, glauconitic, grading to marl.

Åsgard Formation 2926.4mMD – 2978.0mMD (2824.2mTVD - 2851.0mTVD)

This formation consists of interbedded limestone grading to marl with some minor layers of claystone.

Limestone: White to off-white, light grey, firm to hard, subblocky, microcrystalline, argillaceous laminated in parts, occasionally silty, occasionally glauconitic, grading to marl.

Claystone: Dark grey to greyish black, brownish black, soft to moderately hard, sub blocky, very silty, earthy, occasionally waxy, slightly calcareous in parts, grading to marl.

4.1.5.3. Viking Group 2978.0mMD – 3000.5mMD (2851.0mTVD – 2862.3mTVD)

Draupne Formation 2978.0mMD – 3000.5mMD (2851.0mTVD – 2862.3mTVD)

The Draupne formation consists of very organic rich claystone.

Claystone: Medium grey to dark grey, brownish brown, moderate bluish grey to medium grey, occasionally olive black, firm to moderately hard, subblocky, very calcareous, silty, very pyritic in places.

4.1.5.4. Vestland Group 3000.5mMD – 3750.0mMD (2862.3mTVD – 3158.0mTVD)

The Vestland group consists of the Hugin formation and Sleipner formation.

Hugin Formation 3000.5mMD – 3208.0mMD (2868.3mTVD – 2925.0mTVD)

The Hugin formation consists of a thin claystone layer at the bottom over the main sandstone presence that dominates the entire section. There were also stringers of coal and limestone.

Claystone: Dark grey to olive black, occasionally grayish black, firm to moderately hard, subblocky, slightly calcareous, silty, carbonaceous material.

Sandstone: Clear to translucent quartz grain, occasionally milky white, very fine to very coarse, predominantly medium to coarse, subangular to subrounded, moderate sorted, siliceous cement in places, frequently with argillaceous and silty matrix, traces of pyrite.

Limestone: White to off-white, moderate orange pink, firm to hard, subblocky to blocky, microcrystalline, argillaceous laminated.

Coal: brownish black, crumbly, amorphous, glassy.

Siltstone: Dark grey to grayish black, firm, subblocky, non calcareous, argillaceous, sticky in places.

Sleipner Formation 3208.0mMD – 3286.6mMD (2925.0mTVD – 2939.1mTVD)

The Sleipner formation consists mainly of sandstone with thin layers of claystone, siltstone and coal in between.

Sandstone: Clear to translucent, occasionally milky white, very fine to medium grains, predominantly fine, subangular, subrounded, loose quartz grains, firm to moderate hard, occasionally calcite cemented, silty and argillaceous matrix.

Claystone: Greenish grey to dark greenish grey, firm to moderate hard, subblocky to blocky, silty.

Siltstone: Light olive grey to grayish black, soft to moderately hard, amorphous to subblocky, crumbly to argillaceous.

Coal: Black, moderately hard, blocky, fibrous.

The sequence was repeated due to fault presence. Both correspond to the same lithology as described above.

Hugin Formation 3286.6mMD – 3680.0mMD (2939.1mTVD – 3113.8mTVD)

Sleipner Formation 3680.0mMD – 3750.0mMD (3113.8mTVD –3158.0mTVD)

During the drilling of the reservoir Schlumberger's Stethoscope tool was set at fourteen stations with a successful pressure reading at each. Initially the testing procedure involved drilling a predetermined section then pulling back to correlate and conduct pressure tests. After following this procedure for the first three pressure points it was decided to identify a suitable pressure station from the real-time GR-Resistivity-Density-Neutron logs then

set the Stethoscope tool when pulling back for a connection. This was then the procedure for the remainder of the well.
The well was drilled with only minor aberration from a pre-planned well path. The reservoir was penetrated at 3000.5m MD at 65° after which the hole angle was built up to 81,08° allowing the well path to follow the lower part of the Hugin sandstone. The hole angle was gradually reduced towards 49° starting at 3273mMD in preparation for crossing the expected fault zone which was located at 3457-3481m MD. It was intended to maintain a tangent section from 3638m MD to TD.

Target One (Top Hugin) was entered 1.43m below and 3.43m right. Target Two (base Hugin) was entered 0.14m above and 0.48m left.
TD was 0.10m above and 1.65m left of the plan.

The presence of hydrocarbons was indicated by the raised gas levels once the source rock (Draupne Fm) and reservoir were penetrated. Background levels rose from 0.03% to 1.0 - 3.0% with peaks of drilled gas to 9.0%. Hydrocarbon presence was also indicated by the persistent shows recorded on cuttings. A typical show would be as follows. Good show: patchy (80%) bright white/green direct fluorescence, instantaneous bright white/green cut fluorescence, no visible cut, pale green fluorescent residue, no visible residue. This level of show intensity was maintained until passing into the Sleipner at 3680m after which depth there were no shows.

4.2. Pore Pressure Discussion

Pore pressure estimates were based on interpretations from recorded data such as ROP, gas, torque and flowline temperature combined with results from D'exponent calculations. Information from MWD sources were used, when available, to help in these estimations. During the drilling of the reservoir Schlumberger's Stethoscope tool was set at fourteen stations with a successful pressure reading at each.

4.2.1. 36" Hole Section 145 m – 204 mTVD (145 m – 204 mMD)

The 36" hole was drilled without riser, with returns going to the seabed. ROV was standby observing for gas. There was no indication of shallow gas during the drilling. We then can assume this section has a normal compaction as expected in a top hole. The D'exponent gave a scattered picture due to the loose nature of the uppermost sediments, and was of no use.

4.2.2. 26" Hole Section 204 m – 1082.5 mTVD (204 m – 1083 mMD)

The 26" hole was drilled without riser, with returns going to the seabed. ROV was standby observing for gas. There was no indication of shallow gas during the drilling.

In this section the trend line was set in the d-exponent program. Pore pressure prognosis for this section showed normal hydrostatic gradient, and the d-exponent also indicated that this section had a normal compaction. At 883 meter as we entered Utsira formation the d-exponent jumped to the left as expected, but still indicated a normal compaction. After drilling out of Utsira at 1065 meter, the d-exponent went back to the right and followed the same compaction trend as above.

The 20" casing was run and set at 1076.9 m MD (1076.0 m TVD RKB).

4.2.3. 17½" Hole Section 1082.5 m – 2279.5 mTVD (1083 mMD – 2281 mMD)

A FIT was performed at the start of this section, below the 20" casing shoe at 1086 mMD (1085.5 mTVD). The FIT was performed with 1.20 sg mud and resulted in a surface pressure of 21.5 bars. This gave a resultant EMW of 1.38 sg.

It can be assumed this section has a normal compaction as predicted in the drilling program. The maximum estimated pore pressure of 1.08sg extrapolated upon D-exponent calculations was picked out just above the Skade formation at the depth of 1206.5mTVD.

The background gas was varying from 0.6 % to 2.32% in upper part of Hordaland Group in Skade formation due to high ROP at 35m/hr – 45m/hr. In lower part of Hordaland Group the ROP was reduced due to signs of resistance and the background gas dropped to 0.1% - 1.5% which was kept throughout of the section to 2281m MD.

Table 1: Gas Background Levels 17½" Section

DEPTH INTERVAL			TOTAL GAS	C1	C2	C3	iC4	nC4	iC5	nC5
from(m)		to (m)	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
1083	-	1300	0.01 - 1.51	309 - 13285	0 - 0	0 - 2	0 - 1	1 - 56	1 - 5	0 - 2
1300	-	2000	0.6 - 2.32	4365 - 18934	0 - 83	1 - 32	1 - 6	18 - 87	1 - 6	0 - 2
2000	-	2281	0.06 - 0.82	464 - 7084	3 - 72	2 - 16	0 - 4	4 - 35	1 - 1	0 - 0

Table 2: Gas Peaks 17½" Section

DEPTH m	TVD m	BACKGROUND GAS %	TOTAL GAS %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
1100	1099.5	0.01 - 0.6	0.69	7270	0	0	0	29	3	1
1200	1199.5	0.6 - 1.11	1.34	9859	0	1	0	41	6	2
1300	1299.5	0.6 - 1.51	1.78	14372	0	2	1	65	4	1
1394	1393.5	0.6 - 2.32	2.32	18057	0	4	2	83	1	0
1400	1399.5	0.6 - 1.51	1.51	12308	18	3	1	57	8	3
1500	1499.5	0.06 - 0.32	0.45	3383	11	2	1	15	1	0
1600	1599.5	0.1 - 0.82	1.39	11249	48	9	2	52	1	0
1700	1699.5	0.6 - 1.51	1.62	13816	68	23	5	65	1	0
1800	1799.5	0.6 – 1.51	1.86	15881	82	30	6	76	1	0
1900	1899.5	0.6 - 1.51	1.68	14219	69	29	6	68	2	0
2000	1999.5	0.2 – 0.51	0.82	7093	34	14	4	35	1	0
2100	2099.5	0.06 - 0.32	0.53	4726	32	5	0	26	1	0
2200	2199.3	0.01 - 0.06	0.06	477	10	4	0	4	1	0
2281	2279.4	0.06 - 0.32	0.32	2627	58	20	0	23	1	0

4.2.4. 12¼" Hole Section 2279.5m – 2727.3mTVD (2281.0m – 2783.0mMD)

The shoe was drilled out at 2275 mMD and the rat hole cleaned out to 2281m. The shoe was reamed through several times to ensure that the assembly could pass through satisfactorily. 3m of new formation was then drilled to 2284m and the mud was circulated and conditioned prior to performing an Extended Leak Off Test.

An Extended LOT was performed with 1.30sg mud. The result of which gave an EMW of 1.67sg.

After the XLOT the well was displaced to 1.30sg Enviromul OBM. Before drilling continued the active system was circulated and conditioned to ensure that the mud weight was even in and out.

Pore pressure prognosis for this section showed normal hydrostatic gradient down to approximately 2466mTVD RKB. From there, the pore pressure was expected to drop when entering Ty formation.

No connection gas, overpressure cavings or gain in the active system were observed, and the background gas was low throughout the whole section. The small losses described above indicate that the mud weight was in the upper limit of what the well could take, this goes for at least some of the layers drilled through. This suggests that the section was drilled overbalanced. The real time ECD varied between 1.37 and 1.39sg.

Table 3: Gas Background Levels 12¼" Section

DEPTH INTERVAL from(m)	to (m)	TOTAL GAS %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
2281	2400	0.07 - 0.23	777 - 1876	11 - 53	2 - 13	0 - 0	5 - 12	2 - 12	6 - 12
2400	2600	0.09 - 0.33	766 - 2527	25 - 119	6 - 28	0 - 0	7 - 19	1 - 12	0 - 12
2600	2783	0.03 - 0.17	217 - 1236	24 - 70	8 - 23	0 - 4	6 - 11	7 - 12	0 - 11

Table 4: Gas Peaks 12 ¼" Section

DEPTH m	TVD m	BACKGROUND GAS %	TOTAL GAS %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
2300	2298.2	0.07 - 0.23	0.05	541	9	2	0	3	9	9
2400	2396.2	0.07 - 0.23	0.10	886	23	6	0	6	11	11
2500	2491.8	0.09 - 0.33	0.22	1743	63	12	0	11	1	9
2600	2581.9	0.09 - 0.33	0.19	1407	63	14	0	11	12	11
2605	2586.1	0.09 - 0.33	0.32	2501	70	15	0	16	12	11
2700	2663.6	0.03 - 0.17	0.04	182	25	10	3	5	12	10
2780	2725.0	0.03 - 0.17	0.17	1278	63	18	3	11	7	7

4.2.5. 8½" Hole Section 2731.15m – 3158.0mTVD (2788m – 3750mMD)

An FIT was performed at the start of this section, below the 9 5/8" casing shoe at 2791 mMD (2733.2 mTVD). The FIT was performed with 1.30 sg mud and gave a surface pressure of 69.7 bars. This resulted with EMW of 1.56 sg.

The section was drilled without incident. Problems were expected when penetrating the Draupne claystone which was thought to be pressured to 1.30sg. However, drilling proceeded smoothly with little sign of any significant cavings in the returned cuttings. An increasing ECD once drilling the depleted reservoir did cause some concern and efforts were made to maintain a level below 1.46sg. No losses occurred during the drilling of the section. A further worry for the section was the possibility of differential sticking. However, even with the setting of Schlumberger's Stethoscope tool at fourteen different stations there was no indication of sticking.

Background pore pressure in this section was estimated at 0.95 - 1.04sg owing to the effects of production depletion. The exception was the Draupne Formation claystone (2978 - 2991mMD) where an overpressure of 1.30sg was suspected. Within the Hugin sandstone reservoir section fourteen formation pressure tests were undertaken employing Schlumberger's Stethoscope tool. The pressures recorded were of the range (286.59-302.52bars) equating to an equivalent pore pressure range of 1.02 - 1.00sg.

Table 5: StethoScope pressure point results, 8½" Section

Test #	Bit depth (m MD)	Probe depth (m MD)	Probe depth (m TVD)	Initial Hydrostatic pressure (bar)	BU pressure (bar)	Mobility (mD/cP)	Temperature (degC)
1	3031.7	3006		402.43	286.63	32.53	75
2	3042.7	3017		403	286.94	164.45	75
3	3056.7	3031		404	287.07	1427.08	75
4	3185.7	3160		414	289.65	4447.27	72
5	3140.7	3115		412	288.69	272.88	75
6	3203.7	3178		413	289.71	217.88	75
7	3225.7	3200		412.3	289.99	162.61	72
8	3315.7	3290		412.4	291.55	349.54	79
9	3332.7	3307		413.4	291.82	55.82	76
10	3490.7	3465		426.3	295.08	0.1 (?)	82
11	3525.7	3500		418.4	296.21	5632.91	84
12	3570.7	3545		422.5	297.98	58.39	85
13	3613.7	3588		428.9	299.86	38.08	86
14	3668.7	3643		439.7	302.39	16.93	92

Table 6: Gas Background Levels 8½" Section

DEPTH INTERVALS (m MD)		DEPTH INTERVALS (m TVD)		Background Gas (%)	
From	To	From	To	Min	Max
2788	2975	2731,15	2848,53	0,02	0,07
2975	3070	2848,53	2886,38	0,23	2,48
3070	3210	2886,38	2925,75	2,26	10,6
3210	3250	2925,75	2932,19	1,18	3,71
3250	3300	2932,19	2937,51	1,1	5,61
3300	3400	2937,51	2970,65	2,08	7,7
3400	3600	2970,65	3059,64	1,02	7,01
3600	3700	3059,64	3128,38	0,59	6,82
3700	3750	3128,38	3157,98	0,21	1,11

Table 7: Gas Background Levels – details, 8½" Section

DEPTH INTERVAL from(m)	to (m)	TOTAL GAS %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm
2783	2800	0.02 - 0.16	129 - 1192	3 - 59	1 - 17	0 - 6	0 - 11	1 - 7	0 - 6
2800	2900	0.02 - 0.06	152 - 466	4 - 23	1 - 7	1 - 3	0 - 1	1 - 3	0 - 1
2900	3000	0.03 - 1.74	205 - 12498	12 - 801	4 - 322	1 - 20	1 - 71	2 - 11	0 - 13
3000	3100	2.69 - 9.25	16726 - 57261	1295 - 4650	660 - 2110	43 - 146	160 - 797	26 - 86	35 - 113
3100	3200	3.93 - 10.63	24844 - 63540	2078 - 5391	1139 - 2659	95 - 196	474 - 1024	70 - 135	95 - 184
3200	3300	1.15 - 6.32	6164 - 40711	600 - 3649	309 - 1809	29 - 139	141 - 706	34 - 106	50 - 146
3300	3400	2.08 - 7.7	12689 - 46800	1268 - 4040	666 - 1960	60 - 146	0 - 687	48 - 99	77 - 135
3400	3500	1.74 - 6.77	9174 - 41072	955 - 3672	631 - 1929	63 - 147	231 - 531	65 - 113	92 - 155
3500	3550	0.96 - 7.2	4409 - 44261	476 - 3842	357 - 1965	42 - 148	154 - 528	51 - 110	73 - 150

Table 8: Gas Peaks 8½" Section

DEPTH m	TVD m	BACKGROUND GAS %	TOTAL GAS %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm	DESCRIPTION
3009	2862.4	2.6 - 2.7	9.25	18232	1463	662	42	149	23	28	
3100	2896.9	3.9 - 9.4	10.63	56859	4787	2208	154	832	96	125	
3200	2923.7	1.1 - 6.3	9.87	60175	5182	2560	190	986	131	179	
3300	2937.5	2.0 - 5.7	7.7	36470	3246	1536	109	564	73	97	
3400	2970.6	1.7 - 5.0	6.77	31546	2698	1381	105	386	85	116	
3500	3007.6	0.9 - 6.9	7.2	39296	3616	1929	148	529	113	154	
3543	3028.5	1.8 - 2.2	5.75	35708	3046	1492	110	384	82	111	
3565	3040.0	3.2 - 4.4	7.24	45043	3782	1799	129	448	91	123	
3572	3043.8	4.3 - 0.6	4.62	28462	2535	1316	104	357	81	109	
3578	3047.1	0.6 - 2.5	7.05	42822	3887	1963	146	502	103	137	Connection gas
3580	3048.2	3.0 - 6.5	6.88	42362	3760	1850	136	468	97	129	
3586	3051.6	2.5 - 3.0	5.39	32727	2931	1443	110	373	82	108	
3591	3054.4	3.0 - 3.9	4.02	25190	2191	1085	84	290	67	90	
3599	3059.1	3.7 - 3.4	4.26	25786	2214	1085	84	287	66	89	
3604	3062.0	3.2 - 2.7	4.16	26138	2253	1108	86	294	68	91	
3613	3067.3	2.7 - 0.8	3.84	23307	2174	1172	97	334	81	107	
3618	3070.4	0.5 - 0.7	3.51	20864	2032	1081	176	421	229	97	Connection gas
3621	3074.8	0.7 - 0.5	3.68	21993	2134	1116	94	430	72	96	
3637	3085.7	0.2 - 3.4	4.86	30790	2214	1100	90	467	70	95	
3642	3089.2	3.0 - 3.2	6.79	40030	3408	1641	126	631	85	112	
3658	3100.6	0.5 - 6.2	7.57	44923	3625	1728	130	670	91	114	Connection gas
3666	3106.4	6.0 - 4.2	6.96	39732	3356	1607	122	618	84	111	
3676	3111.4	3.0 - 0.2	3.43	4526	570	364	39	156	41	53	
3679	3113.5	0.2 - 1.0	1.38	7422	805	464	46	201	47	63	
3695	3124.8	1.0 - 0.6	1.58	8850	856	447	41	199	45	60	
3709	3134.9	0.8 - 0.4	1.20	6109	758	487	50	209	50	67	

5. Drilling Technology

5.1. Drilling Summary

5.1.1. 36” Section 145 m – 204 mMD (145 m – 204mTVD)

Well 15/9-F-14 was spudded on 6th November, 2007 at 145.7 mMD as the seabed was tagged. The inclination criterion for the well was to have less than 0.75° at section TD. The bit flushed down through the sediments. Initially the flow rate was low at approximately 500 to 1200 lpm (the first 16 meters drilled) and then increased to about 4400 lpm. Towards the end of the section at a TD of 204 mMD, the flow was increased to about 5000 lpm.

The inclination criterion was maintained throughout the whole section.

Drilling progressed without any significant problems.

At TD, the well was circulated clean with sea water before a hi-vis pill was pumped around the well. The hole was then displaced with 1.40sg mud before pulling the drilling assembly out of hole. Just below the sea bed the well was topped up with the same mud.

The conductor casing was then run to 196.8 mMD. During circulating prior to cementing, the ROV observed that some returns came out of the neighbouring well - F7. After pumping several times to investigate the problem, the 30” conductor was eventually cemented. After waiting for 12 hr for the cement to harden, a top up job was performed in order to try to solve the problem with the communication between the two wells. The top up job did not solve the leakage.

5.1.2. 26” Hole Section 204 m – 206 mMD (204 m – 206mTVD)

During the building of the 26” steerable assembly, the ROV dropped a peace of its arm into the well. The BHA was then pulled out to surface and a new BHA#2 with a Smith milling bit was made up and run in hole. The assembly tagged cement at ~183 meter and started milling and drilling the cement. The cement and 3 meters of new formation were drilled out without any significant problems.

The well was circulated clean using a high viscosity pill before the assembly was pulled out of hole.

5.1.3. 26” Hole Section 206m – 1083mMD (206m – 1082.5mTVD)

BHA#3 comprised of a 26” Smith bit and Gyro MWD, with a Power Pulse MWD as a backup. The section was drilled riserless in one bit run, with ROV monitoring at the seabed. At the beginning of the section, several single shot surveys were made with Gyro MWD. From approximately 300mMD, surveys were taken every stand. Hi-vis pills were pumped 2-3 times per stand. The average ROP was 19.4 m/hr. At section TD, hi-vis pills were pumped, before circulating the well clean and displacing it to 1.40sg WBM. The string took weight when pulling out at 809mMD, and also between 768 to 554mMD.

5.1.4. 17½” Hole Section 1083 m – 2281 mMD (1082.5 m – 2279.5 mTVD)

The 17½” hole section was drilled in one bit run. BHA#4 comprised of a Reed Hycalog RSR616M 17½” bit attached to a directional BHA that had incorporated within it a Flexi Joint, Arc tool, PowerPulse MWD and Sonic Vision LWD tools.

The assembly was made up and ran in hole. The downhole tools were shallow tested before the bit tagged the top of the cement at 1048 mMD. The float collar at 1050 mMD was drilled out together with the hard cement from the shoe track and the casing shoe was drilled out at 1077 mMD. An increase in returns was observed after breaking through the shoe and so the well was flow checked. This proved the well to be static. The rat hole was then cleaned out to 1083m before 3m of new formation were drilled, ready for the FIT.

At this point the well was displaced to 1.20 sg Performadrill WBM. Circulation continued whilst the mud was conditioned prior to performing the FIT. Once the mud weight was even at 1.21 sg, an LCM pill was pumped and spotted on bottom. A FIT was then performed to a pressure of 21.5 bars. This gave a resultant EMW of 1.38 sg. The MWD pressure point from the FIT gave an EMW of 1.408 sg.

Drilling of the 17½" section commenced with the drilling parameters being established. This section proved to be difficult to drill with respect to the handling capacity of the shale shakers. Initially the flow rate of 3000 lpm could not be handled and the shale shaker configuration was adjusted and coarser top and bottom screens had to be installed. Plugging of the header box occurred and there was uneven distribution of the flow at the shale shakers. The ROP was reduced in order for the shakers to cope better with the returns.

The ECD gradually increased with the amount of solids within the mud system. Sand plugging at the shakers caused massive overflows on the lower shaker screens. The screens were cleaned and various flow / screen configurations were made in an attempt to solve this problem. The problem was exacerbated by the fact that shaker #3 was being repaired. All shakers were dressed with 145 mesh on the bottom screens before they could handle the drilling flow rate of 4200 lpm.

At 1395 m the bit was picked up off bottom for a flow check due to high gas readings of 4% and no loss in the active. The well proved to be static.

Further problems were experienced with a blockage on the CRI and conveyer screw as well as a continued tendency for the shaker screens to plug and overflow. Drilling continued and the mud weight was slowly increased to 1.30 sg. This was to maintain the mud weight above the estimated Stable Formation Gradient of around 1.28 sg. There were no significant indications of cavings observed at the shakers.

The assembly was initialized into its steering mode from 2105m in order to increase the inclination from the vertical. This was achieved successfully and the final hole angle was 8.60° inc, on a heading of 20.27° at section TD.

A negative drilling break was observed, together with an increase in torque at 2135m on entering the Grid formation sands. The sands cause further problems at the shakers, with plugging of the screens leading to them overflowing.

A TD in the Balder Formation, the well was circulated clean. Once the hole was clean, an attempt was made to downlink to the MWD tools in order to set the SonicVision tool into logging mode. This proved to be unsuccessful.

10 m3 of LCM was spotted at TD and 5 stands were pulled wet. The pipe was observed to be dry and after a flow check, the pipe was slugged and the drilling assembly pulled to surface. No tight spots were observed whilst pulling out of hole. Preparations were then made to run the 14" casing.

The 14" casing was run and cemented without problems. However, when attempting to release the running tool, the tool would not free itself correctly from the casing. After discussing the problem with town, the running tool was eventually freed by increasing the overpull to 60 tons. Once the running tool had been pulled to surface it was found to be clogged with cuttings.

5.1.5. 12¼" Hole section 2281 m – 2788 mMD (2279.5m – 2730.9 mTVD)

The 12¼" hole section was drilled in one bit run. BHA #5 comprised of a Smith MDI716 12¼" bit attached to a BHA that had incorporated within it an Xceed rotary steerable assembly, Vortex downhole mud motor, Arc 8 tool, PowerPulse MWD and Sonic Vision LWD tools. The TFA of the bit was 1.075 in2. The K factor for the mud motor was 0.028 revs/litre.

The assembly was run in hole and shallow tested successfully. Hard cement was tagged at 2247 mMD and the cement and shoe track were then drilled out. The shoe was drilled out at 2275 mMD and the rat hole cleaned out to 2281m. The shoe was reamed through several times to ensure that the assembly could pass through satisfactorily. 3m of new formation was then drilled to 2284m and the mud was circulated and conditioned prior to performing an Extended Leak Off Test.

An Extended LOT was performed with 1.30sg mud. The result of which gave an EMW of 1.67sg.

After the XLOT the well was displaced to 1.30sg Enviromul OBM. Before drilling continued the active system was circulated and conditioned to ensure that the mud weight was even in and out.

Drilling of the 12¼" hole section commenced with a flow rate of 3000 lpm. This flow rate was adjusted due to the shakers overflowing as the mud was relatively cold. Drilling continued however problems were experienced with the MWD signal and it was proving difficult to decode the signal. Various parameters were changed in an attempt to receive better signals but this proved to be difficult to achieve. The ROP was limited to 20-30 m/hr occasionally in order the try and obtain a better decoding of the MWD signal.

At 2299m, there was a problem with the FWR PRS. A reboot of its system solved the problem and drilling continued.

Hard stringers were encountered between 2518m-2519m and from 2565m-2568m.

When downlinking to the PowerDrive at 2591m, several attempts were required and it was proving difficult to obtain the correct angle when drilling. Meanwhile the bit drilled with a limited ROP through the limestone of the Ekofisk formation. Several more attempts were made to downlink to the PowerDrive with limited success. At 2788mMD, it was decided to TD the 12¼" section early as the hole was not building the correct hole angle.

The hole was circulated clean and a Gyro survey tool was dropped and pumped down to 2659.9m. Rotational shots were taken before 5 stands were pulled out wet. A flow check proved the well was static and a slug was then pumped. The assembly was then pulled out of hole whilst a gyro survey was performed.

The 9 5/8" casing was run and cemented without problems. When displacing the cement, the plug was bumped successfully.

5.1.6. 8½" Hole section 2788 m – 3750 mMD (2730.9m – 3158.0 mTVD)

The 8½" hole section was drilled in one bit run. BHA # 6 consisted of a Smith MDI716 8½" bit, an Xceed 675 rotary steerable assembly, Ecoscope LWD with APRS, Telescope MWD, StethoScope 675 and Sonic Vision LWD tools. The TFA of the bit was 0,702 in2.

The assembly was run in hole and shallow tested successfully at 544 mMD. TOC was tagged at 2754 mMD. Drilled out Float collar at 2756 mMD, 9 5/8" Shoe at 2783.5 mMD and the 12¼" rat hole cleaned out to 2788 mMD. The shoe was reamed through several times to ensure that the assembly could pass through satisfactorily.

3m of new formation was then drilled to 2791m and the mud was circulated and conditioned prior to performing the Formation Integrity Test.

The FIT was successfully performed with 1.30sg oil based mud to 69.7 bars what resulted in 1.56sg EMW.

The section was drilled without incident. Commenced with a mud weight 1.30sg and weighted up to 1.35sg OBM while drilling through Hugin. Problems were expected when penetrating the Draupne claystone which was thought to be pressured to 1.30sg. However, drilling proceeded smoothly with little sign of any significant cavings in the returned cuttings. An increasing ECD once drilling the depleted reservoir did cause some concern and efforts were made to maintain a level below 1.46sg. Neither hole cleaning problems nor losses occurred during the drilling of the section. There were no indications of wellbore instability.
A further worry for the section was the possibility of differential sticking. However, even with the setting of Schlumberger's Stethoscope tool at fourteen different stations there was no indication of sticking.

Below the casing shoe until the reservoir was reached the hole was drilled with the flow rate of 1970-2050 lpm, SPP 167-187 bars, WOB 4-13 tons, RPM 100-170, Torque 9.8-14.7 kNm, ROP 4.7-23.1 m/hrs.

Within reservoir, the hole was drilled with the flow rate of 1920-2050 lpm, SPP 171-187 bars, and ECD 1.39-1.49 kg/l, WOB 4-12 tons, RPM 156-180, Torque 11.1-16.3 kNm, ROP 10-31.7 m/hrs.

The Reservoir part of section was drilled in several stages:
2940-3070 mMD,
3070-3254 mMD,
3254-3577 mMD,
3577-3619 mMD,
3619-3750 mMD.

After each stage drilled the well has been circulated clean and StethoScope pressure points have been taken.

Good performance was obtained within planed wellpath and with good data collection. The well was drilled with only minor aberration from a pre-planned well path. The reservoir was penetrated at 3000.5m MD at 65° after which the hole angle was built up to 81,08° allowing the well path to follow the lower part of the Hugin sandstone. The hole angle was gradually reduced towards 49° starting at 3273mMD in preparation for crossing the expected fault zone which was located at 3457-3481m MD. It was intended to maintain a tangent section from 3638mMD to TD.

Target One (Top Hugin) was entered 1.43m below and 3.43m right. Target Two (base Hugin) was entered 0.14m above and 0.48m left. TD was 0.10m above and 1.65m left of the plan.

At TD in the Sleipner Formation, the well was circulated 3 times bottoms up.

There were no problems during POOH, no restrictions observed.

While RIH with 7” liner no problems encountered until the last 70m. It was planned to wash the hole down to TD, but from the top of Sleipner Formation at 3680m restrictions occurred, and it was difficult to pass below 3701m, most probably because of coal stringers and interbeds. It was decided to set the liner shoe at 3695m. The liner hanger was installed at 2816m, and the liner was successfully cemented.

5.2. Drilling Bits Summary

Hole Section		36”	26”	26”	17½”
BHA Number		1	2	3	4
Bit Number		1	2	3	4
Bit size		17½”+ 26”x36” HO	26”	26”	17½”
Manufacturer		Smith	Smith	Smith	Reed
Bit type		XR+	XR+	MG04BC	RSR616M
Serial number		MR9953	MY9701	MY8397	217590
Nozzles (n/32”)		14, 3x18 + 12x12	2x21, 1x20, 1x23	1x20, 3x22	8x15
TFA (in2)		0.897 / tot.2,21	1.39	1.421	1.381
Motor type		-	-	PowerPak	-
Motor bend		-	-	1.5º	-
MWD Type		PowerPulse	-	PowerPulse	PowerPulse
Depth in (m)		145	204	206	1083
Depth out (m)		204	206	1083	2281
Metres formation drilled		59	3	877	1198
Hours on bottom:		7.66	0.23	45.15	46.56
Hours on bottom: Cement		-	1.43	-	4.34
Circulation hours		7.38	4.57	56.21	84.36
Total bit revolutions		22	12	378	425
Average ROP (m/hr)		7.70	13.04	19.42	25.73
Min-Max Flow (l/min)		377 – 4478	4400 – 4400	3094 – 4412	3455 – 4430
Min-Max Pressure (bar)		2 – 85	61 – 62	64 – 140	110 – 200
Min-Max WOB (ton)		1.2 – 3.3	2.4 – 3.8	1.4 – 13.6	1 – 9
Min-Max String RPM		12 – 90	45 – 45	0 – 40	80 – 160
Min-Max Bit RPM		12 – 90	45 – 45	93 – 172	80 – 160
Min-Max Torque (kNm)		1.4 – 7.6	1.5 – 3.5	0 – 10	5 – 27
Average Torque (kNm)		5.1	2.5	3.2	11.0
Mud Weight (g/cc)		1.03	1.03	1.03	1.20 – 1.30
Mud Type		SW with Hi-Vis pills	SW with Hi-Vis pills	SW with hi-vis pills	Performadril WBM
Start - end inclination		0.00º – 0.26º	-	0.27º – 0.18º	0.23° - 8.60°
Max inclination		0.43º	-	5.10º	8.60°
Start - end Azimuth		0.00º - 123.73º	-	334.05º - 168.91º	241.47° - 20.27°
Lithology		-	-	-	Claystone, sandstone, limestone.
Grade	I	1	2	1	1
	O	1	1	1	3
	D	WT	CD	WT	WT
	L	A	M	G	S
	B	E	E	E	X
	G	0	0	0	IN
	O	NO	JD	RG	BT
	R	TD	BHA	TD	TD
Reason pulled		Section TD	Drilled cement	Section TD	Section TD

Hole Section		12¼”	8½”
BHA Number		5	6
Bit Number		5	6
Bit size		12¼”	8½”
Manufacturer		Smith	Smith
Bit type		MDI716	MDI716
Serial number		JX8700	SCD971/ER2570
Nozzles (n/32”)		6x14,1x15	4x11, 3x12
TFA (in2)		1.075	0,702
Motor type		Vortex	
Motor bend		-	
MWD Type		PowerPulse	TeleScope
Depth in (m)		2281	2788
Depth out (m)		2788	3750
Metres formation drilled		507	962
Hours on bottom:		24.90	58.4
Hours on bottom: Cement		3.96	2.88
Circulation hours		49.54	91.93
Total bit revolutions		443	582
Average ROP (m/hr)		20.36	16.4
Min-Max Flow (l/min)		3191 – 3524	1762-2050
Min-Max Pressure (bar)		209 – 252	163-190
Min-Max WOB (ton)		3 – 15	3.2-13.9
Min-Max String RPM		30 – 141	81-180
Min-Max Bit RPM		144 – 253	81-180
Min-Max Torque (kNm)		8.7 – 24.4	9.0-16.9
Average Torque (kNm)		13.2	13.4
Mud Weight (g/cc)		1.30sg	1.35sg
Mud Type		Enviromul OBM	Enviromul OBM
Start - end inclination		8.60º - 40.19º	40.19º -50.17º
Max inclination		40.19º	81.08º
Start - end Azimuth		20.27º - 55.74º	55.74º -93.80º
Lithology		Claystone, Sandstone, Limestone.	Sandstone, Marl, Claystone.
	I	1	1
	O	2	1
	D	CT	WT
Grade	L	S	A
	B	X	X
	G	IN	IN
	O	WT	NO
	R	TD	TD
Reason pulled		Unable to build hole angle.	Well TD

5.3. Casing Summary

Casing Size	Intervals		Grade	Weight	Thread	No.	Centalisers	Remarks
	From (m)	To (m)		Lbs/ft	Type	Joints	(No.)	
30”	140.1	165.6	X-65	456.6	ABB RL-4HC	1	-	30” housing
30”	165.6	196.8	X-52	309.7	ABB ST-2 FB	6	-	
20”	138.9	1076.9	N-80	133	AntaresER	81	15	-
14”	140.5	2275.4	P-110	96.9	VAM TOP	172	33	-
9 5/8” / 10 ¾”	145.2	2783.5	13Cr80	53.5 / 60.7	VAM TOP	234	39	
7” Liner	2616	3695	13CrS110	29	VAM TOP HT	86		

5.4. Appendices to this chapter

5.4.1. Composite Plot

5.4.2. Torque Plot

5.4.3. Casing Run Plot

5.4.4. Cement–Job Plot

5.4.5. Pump–Rate / SPP plot

5.4.1. Composite Plot

5.4.2. Torque Plot

5.4.3. Casing Run Plot

5.4.4. Cement Job Plot

5.4.5. Pump Rate / SPP Plot

6. Appendices

6.1. Formation Evaluation Log (Scale 1:500)

6.2. Depth Based Drilling Log (Scale 1:1000)

6.3. Drilling Data Printouts (5 m averaged)

6.4. Gas Ratio Analysis Log (1:1000)

6.5. Pressure Log (1:5000)

6.6. Field related plots
    6.6.1. FIT/LOT Plots

6.7. Enclosures
    6.7.1. Digital Data

6.1. Formation Evaluation Log (1:500)

6.2. Depth Based Drilling Log (1:1000)

6.3. Drilling Data Printouts (5 m averaged)

Tot Depth	TVD Depth	ROP	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/hr m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
155	155	9.74	1.94	2.21	11	3	1200	0	1.03	0.86
160	160	6.65	2.23	5.01	48	44.9	3257	0	1.03	0.87
165	165	12.03	2.32	6.38	70	82.2	4456	0	1.03	0.87
170	170	20.21	2.01	5.04	90	82.1	4456	0	1.03	0.87
175	175	17.05	2.4	6.2	90	82.2	4457	0	1.03	0.87
180	180	14.92	1.89	4.94	90	81.6	4456	0	1.03	0.87
185	185	14.99	3.32	7.58	90	81.7	4456	0	1.03	0.87
190	190	13.21	3.19	7.84	90	80	4456	0	1.03	0.87
195	195	13.35	2.65	7.25	90	79.7	4456	0	1.03	0.87
200	200	14.58	2.02	5.09	90	82.3	4456	0	1.03	0.87
205	205	12.98	2.34	1.44	45	61.5	4407	0	1.03	0.87
210	210	3.58	1.96	2.37	125	61.1	3072	0	1.03	0.88
215	215	11.08	1.28	0.01	93	60.5	3116	0	1.03	0.88
220	220	45.59	3.84	-0.01	93	65.2	3117	0	1.03	0.88
225	225	37.8	5.51	-0.01	93	65.8	3117	0	1.03	0.88
230	230	12.78	7.91	4.28	123	65.6	3116	0	1.03	0.88
235	235	15.12	10.24	5.45	128	68.1	3116	0	1.03	0.88
240	240	9.61	7.92	0.63	94	69.6	3116	0	1.03	0.88
245	245	13.04	8.06	3.29	94	69.4	3117	0	1.03	0.88
250	250	7.75	8.46	1.16	94	68.7	3117	0	1.03	0.88
255	255	50.8	3.11	-0.01	94	59.3	3117	0	1.03	0.89
260	260	13.45	8.46	6.01	129	68.6	3117	0	1.03	0.89
265	264.99	11.86	8.39	6.56	128	68.7	3116	0	1.03	0.89
270	269.99	6.5	8.09	2.86	94	68.5	3117	0	1.03	0.89
275	274.99	1.62	3.43	-2.93	55	32.4	1742	0	1.03	0.89
280	279.99	12.13	8.4	-0.01	93	66.7	3094	0	1.03	0.89
285	284.99	13.73	8.1	-0.01	93	64.5	3094	0	1.03	0.89
290	289.98	12.45	9.54	6.35	133	72.3	3095	0	1.03	0.89
295	294.98	18.88	9.13	6.2	133	68.6	3095	0	1.03	0.89
300	299.98	18.01	6.5	4.69	160	101.6	4009	0	1.03	0.89
305	304.98	19.73	3.54	2.48	147	78.7	3563	0	1.03	0.9
310	309.98	18.77	2.99	2.23	160	96.7	4009	0	1.03	0.9
315	314.97	12.67	4.03	1.2	126	74	3458	0	1.03	0.9
320	319.97	93.98	4.09	0.23	92	58.8	3050	0	1.03	0.9
325	324.97	94.89	3.97	0.15	92	59.5	3051	0	1.03	0.9
330	329.97	8.31	8.23	1.67	92	63.9	3050	0	1.03	0.9
335	334.97	43.37	14.23	9.36	160	111.9	4008	0	1.03	0.9
340	339.96	62.99	10.07	7.68	160	107.4	4009	0	1.03	0.9
345	344.96	50.54	15.28	10.16	147	102	3563	0	1.03	0.9
350	349.96	52.43	14	9.82	160	112.9	4009	0	1.03	0.9
355	354.95	16.28	8.44	3.87	133	80.5	3434	0	1.03	0.91
360	359.95	19.01	9.67	2.58	93	70.3	3094	0	1.03	0.91
365	364.95	17.81	9.5	2.13	93	67.7	3095	0	1.03	0.91
370	369.94	18.35	9.65	2.13	93	67.4	3096	0	1.03	0.91
375	374.94	14.24	10.49	2.59	93	68.9	3096	0	1.03	0.91
380	379.94	49.96	10.75	7.21	160	107.6	4010	0	1.03	0.91
385	384.93	41.02	12.72	8.53	147	99.1	3565	0	1.03	0.91
390	389.91	52.63	11.48	7.35	160	108	4010	0	1.03	0.91
395	394.9	43.87	12.19	8.43	160	110.2	4010	0	1.03	0.91
400	399.89	12.3	8.15	2.11	93	64.5	3096	0	1.03	0.92
405	404.88	17.11	8.85	2.09	93	67.6	3097	0	1.03	0.92

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
410	409.86	16.78	9.17	2.1	93	68.3	3096	0	1.03	0.92
415	414.85	63.59	11.48	7.65	160	109.9	4010	0	1.03	0.92
420	419.84	63.01	12.84	8.06	160	110.3	4009	0	1.03	0.92
425	424.82	57.64	14.18	9.51	160	114.5	4009	0	1.03	0.92
430	429.81	52.35	14.78	9.56	160	113.8	4010	0	1.03	0.92
435	434.79	16.82	9.63	4.51	138	93.2	3708	0	1.03	0.92
440	439.78	23.87	10.28	2.08	93	70.8	3096	0	1.03	0.92
445	444.76	22.87	10.12	3.6	96	75.4	3188	0	1.03	0.93
450	449.74	23.44	6.88	3.01	99	80	3297	0	1.03	0.93
455	454.73	26.19	3.02	5.32	155	105.3	4011	0	1.03	0.93
460	459.71	37.95	3.8	5.63	155	106.1	4010	0	1.03	0.93
465	464.7	33.03	5.45	6.93	141	94.5	3520	0	1.03	0.93
470	469.69	31.85	3.69	6.62	155	109.4	4010	0	1.03	0.93
475	474.68	32.37	5.5	6.29	155	106.7	4010	0	1.03	0.93
480	479.66	22.25	5.68	1.78	120	107.5	4011	0	1.03	0.93
485	484.65	21.44	5.94	2.25	120	106.8	4010	0	1.03	0.93
490	489.64	20.56	5.82	2.24	113	97.6	3757	0	1.03	0.93
495	494.63	21.14	6.3	2.26	120	107.3	4011	0	1.03	0.94
500	499.61	21.69	3.75	4.89	167	123.1	4412	0	1.03	0.94
505	504.61	20.93	3.56	5.1	167	125.1	4412	0	1.03	0.94
510	509.6	22.62	4.37	5.34	167	124.3	4411	0	1.03	0.94
515	514.59	18.72	4.36	5.96	141	89.2	3520	0	1.03	0.94
520	519.58	26.48	7.11	1.85	132	124.3	4411	0	1.03	0.94
525	524.57	25.24	8.6	1.85	132	123.9	4412	0	1.03	0.94
530	529.56	21.21	7.94	1.85	106	88.7	3520	0	1.03	0.94
535	534.55	17.94	6.04	1.22	132	121.3	4412	0	1.03	0.94
540	539.55	22.47	3.94	5.42	167	121.6	4412	0	1.03	0.95
545	544.54	20.68	4.63	5.82	167	123.1	4411	0	1.03	0.95
550	549.54	22.05	3.27	5.31	167	121.3	4411	0	1.03	0.95
555	554.53	21.17	2.65	5.35	153	102.4	3939	0	1.03	0.95
560	559.53	26.07	6.35	1.72	132	123.2	4411	0	1.03	0.95
565	564.53	19.09	6.53	1.93	132	124.4	4411	0	1.03	0.95
570	569.53	22.6	6.39	1.93	132	123.5	4412	0	1.03	0.95
575	574.52	21.19	6.09	1.54	132	123.8	4411	0	1.03	0.95
580	579.52	29.1	5.61	6.67	167	124.2	4412	0	1.03	0.95
585	584.52	24.97	6.35	7.09	141	93.2	3520	0	1.03	0.96
590	589.52	30.24	5.69	6.1	167	124	4411	0	1.03	0.96
595	594.52	28.22	4.45	5.96	152	104.9	3902	0	1.03	0.96
600	599.52	20.25	7.27	-1.16	132	126.5	4411	0	1.03	0.96
605	604.52	20.74	6.9	-1.16	132	124.6	4411	0	1.03	0.96
610	609.52	21.46	6.8	-1.16	132	126.5	4411	0	1.03	0.96
615	614.52	19.81	6.9	-1.16	132	127.2	4411	0	1.03	0.96
620	619.51	24.01	5.34	6.77	172	126.1	4412	0	1.03	0.96
625	624.51	19.47	6.21	7.1	148	92.9	3594	0	1.03	0.96
630	629.51	20.35	5.36	7.14	172	126.4	4411	0	1.03	0.97
635	634.51	19.47	5.69	7.46	156	104.4	3864	0	1.03	0.97
640	639.51	20.98	5.5	6.65	172	127.1	4411	0	1.03	0.97
645	644.51	21.99	5.96	7.23	172	127.3	4413	0	1.03	0.97
650	649.51	22.67	5.77	7.2	172	127.4	4413	0	1.03	0.97
655	654.51	19.81	5.81	7.05	172	127.5	4412	0	1.03	0.97
660	659.51	20.83	5.11	6.56	172	127.3	4411	0	1.03	0.97
665	664.51	18.52	5.69	6.75	162	112.7	4068	0	1.03	0.97
670	669.51	20.11	5.07	6.94	172	126.4	4411	0	1.03	0.98
675	674.51	18.67	5.21	6.92	172	127.3	4411	0	1.03	0.98
680	679.51	20.02	6.45	6.95	172	127.5	4410	0	1.03	0.98
685	684.51	28.25	4.24	6.14	172	126	4410	0	1.03	0.98

Tot Depth	TVD Depth	ROP	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
690	689.51	20.43	5.41	6.12	172	126.9	4411	0	1.03	0.98
695	694.51	20.43	4.61	6.07	161	115.2	4053	0	1.03	0.98
700	699.51	21.82	4.44	5.69	172	126.8	4411	0	1.03	0.98
705	704.51	17.91	5.36	6.7	151	99	3700	0	1.03	0.98
710	709.51	17.06	5.2	6.27	172	128.5	4411	0	1.03	0.98
715	714.51	15.64	5.61	6.8	172	127.8	4411	0	1.03	0.99
720	719.51	20.19	6.01	6.66	172	129	4410	0	1.03	0.99
725	724.51	19.56	6.42	7.05	172	130	4411	0	1.03	0.99
730	729.51	18.46	6.2	6.95	172	129.4	4411	0	1.03	0.99
735	734.51	17.08	6.64	7.44	172	129.2	4411	0	1.03	0.99
740	739.51	17.31	6.37	7.73	172	129.6	4411	0	1.03	0.99
745	744.51	23.46	4.71	5.5	172	127.6	4412	0	1.03	0.99
750	749.51	16.79	6.3	6.54	172	129.4	4410	0	1.03	0.99
755	754.51	20.93	4.72	5.38	172	128.1	4411	0	1.03	0.99
760	759.51	20.63	5.27	5.55	172	127.8	4411	0	1.03	1
765	764.51	25.22	6.4	6.2	172	131.3	4411	0	1.03	1
770	769.51	26.49	6.37	6.24	172	129.5	4412	0	1.03	1
775	774.51	17.6	7.28	7.59	170	134.9	4336	0	1.03	1
778	777.51	28.05	7.09	5.88	172	131.1	4412	0	1.03	1
785	784.51	24.47	8.8	7.52	172	134	4412	0	1.03	1
790	789.51	24.03	8.38	6.9	172	132.8	4412	0	1.03	1
795	794.51	24.31	8.49	7.09	172	134.1	4410	0	1.03	1
800	799.51	40.12	9.72	7.9	172	136.7	4412	0	1.03	1.01
805	804.51	38.51	10.27	8.33	172	138	4411	0	1.03	1.01
810	809.51	27.56	11.31	9.3	172	139.4	4411	0	1.03	1.01
815	814.51	20.61	14.01	10.54	164	137.2	4128	0	1.03	1.01
819	818.51	26.69	13.58	10	172	140.8	4411	0	1.03	1.01
825	824.51	32	10.1	8.37	172	137.4	4412	0	1.03	1.01
830	829.51	23.94	13.75	9.79	172	141.5	4411	0	1.03	1.01
835	834.51	24.08	11.89	9.21	172	140.9	4411	0	1.03	1.01
840	839.51	31.34	10.79	8.81	177	138.6	4412	0	1.03	1.01
845	844.51	36.24	10.05	8.18	177	139.1	4410	0	1.03	1.02
850	849.51	24.93	11.42	8.87	177	140	4411	0	1.03	1.02
855	854.51	25.44	11.07	9.25	146	101.8	3519	0	1.03	1.02
860	859.51	21.5	5.81	9.29	172	140.5	4410	0	1.03	1.02
865	864.51	19.26	7.64	9.78	172	141.9	4411	0	1.03	1.02
870	869.51	19.79	7.76	10.26	172	142.9	4411	0	1.03	1.02
875	874.51	21.84	7.7	9.3	172	140.4	4411	0	1.03	1.02
880	879.51	16.11	6.59	9.13	160	121.2	4010	0	1.03	1.02
885	884.51	107.32	0.01	3.95	160	109.5	4010	0	1.03	1.03
890	889.51	16.51	6.1	8.89	160	122.1	4011	0	1.03	1.03
895	894.51	61.63	0.01	2.9	148	89	3567	0	1.03	1.03
900	899.51	84.08	1.13	5.66	144	73.5	3475	0	1.03	1.03
905	904.51	38	2.17	3.52	160	103.8	4009	0	1.03	1.03
910	909.51	39.14	0.94	2.54	149	101.1	3654	0	1.03	1.03
915	914.51	37.44	0.86	2.07	160	110.9	4010	0	1.03	1.03
920	919.51	63.87	1.75	2.37	160	111.3	4014	0	1.03	1.03
925	924.51	107.33	1.64	3.21	160	112.1	4012	0	1.03	1.03
930	929.51	103.06	1.89	2.23	160	113.6	4011	0	1.03	1.04
935	934.51	25.75	5.49	5.4	154	107.9	3781	0	1.03	1.04
940	939.51	71.3	9.02	9.43	146	111.4	3519	0	1.03	1.04
945	944.51	104.86	1.79	2.36	160	115.2	4009	0	1.03	1.04
950	949.51	90.02	3.52	4.29	160	117.2	4008	0	1.03	1.04
955	954.51	89.92	2.17	3.27	160	113.2	4000	0	1.03	1.04
960	959.51	3.37	2.48	-3.87	79	62.7	2183	0	1.03	1.04
965	964.51	40.01	8.87	7.81	160	125.8	4010	0	1.03	1.04

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
970	969.51	103.03	2.41	2.7	160	115.7	4010	0	1.03	1.05
975	974.51	105.96	2.61	2.57	160	114.9	4010	0	1.03	1.05
980	979.51	104.2	2.74	3.28	146	97.7	3520	0	1.03	1.05
985	984.51	89.52	2.59	3.06	160	117.1	4009	0	1.03	1.05
990	989.51	104.49	2.54	2.89	160	116.7	4010	0	1.03	1.05
995	994.51	87.82	2.55	3.06	148	98.8	3583	0	1.03	1.05
1000	999.51	3.51	3.14	-4.01	84	67.8	2311	0	1.03	1.05
1005	1004.51	101.19	3.2	3.47	160	118.1	4012	0	1.03	1.05
1010	1009.51	102.94	2.95	2.9	160	118.2	4011	0	1.03	1.06
1015	1014.51	102.91	3.27	3.45	160	118	4012	0	1.03	1.06
1020	1019.51	50.2	2.87	3.24	144	95.4	3478	0	1.03	1.06
1025	1024.51	37.74	2.55	2.65	160	117.5	4011	0	1.03	1.06
1030	1029.51	38.4	2.66	3.46	160	117.4	4011	0	1.03	1.06
1035	1034.51	36.76	2.29	2.69	160	117.6	4011	0	1.03	1.06
1040	1039.51	20.69	4.1	3.41	154	119.4	4011	0	1.03	1.06
1045	1044.51	41.99	2.98	3.31	160	116.7	4012	0	1.03	1.06
1050	1049.51	41.86	3.45	5.47	160	119.4	4011	0	1.03	1.07
1055	1054.51	40.8	2.95	5.45	160	118.4	4012	0	1.03	1.07
1060	1059.51	28.61	4.92	4.46	157	122.2	3901	0	1.03	1.07
1065	1064.51	13.61	10.23	8.29	160	128.9	4012	0	1.03	1.07
1070	1069.51	17.31	13.65	12.31	160	141	4001	0	1.03	1.07
1075	1074.51	16.43	14.16	12.77	172	155.5	4412	0	1.03	1.07
1080	1079.51	32.96	12.18	11.14	158	129.1	3916	0	1.03	1.07
1085	1084.51	14.87	3.47	6.31	60	98.5	3430	0	1.02	0.66
1090	1089.51	25.36	5.44	7.74	80	109.4	3652	0	1.19	0.66
1095	1094.51	25	5.82	8.11	80	111.2	3653	0	1.19	0.67
1100	1099.51	24.48	5.85	8.09	80	112.8	3653	0	1.19	0.67
1105	1104.51	25.14	5.88	7.95	80	112.8	3652	0	1.19	0.67
1110	1109.51	24.99	5.82	7.96	80	110.4	3601	0	1.18	0.67
1115	1114.51	10	4.36	5.27	120	104	3521	0	1.19	0.67
1120	1119.51	11.04	5.1	5.17	120	154.9	4421	0	1.19	0.67
1125	1124.51	15.6	5.23	5.88	120	143.7	4233	0	1.19	0.67
1129	1128.51	15.12	4.92	5.75	120	138.2	4156	0	1.19	0.67
1135	1134.51	24.81	5.46	7.24	120	138.3	4156	0	1.19	0.67
1140	1139.51	23.77	5.68	7.03	120	129.5	3985	0	1.19	0.67
1145	1144.51	25.04	5.32	6.92	120	117.1	3720	0	1.19	0.67
1150	1149.51	25	5.35	7.3	120	127	3959	0	1.19	0.67
1155	1154.51	24.8	5.28	7.3	120	129	3959	0	1.19	0.67
1160	1159.51	27.32	4.29	6.85	120	131	3959	0	1.18	0.68
1165	1164.51	25.7	4.01	6.69	140	112.7	3631	0	1.21	0.68
1170	1169.51	35.03	4.37	7.55	140	129.4	3959	0	1.21	0.68
1175	1174.51	34.68	4.36	7.91	140	128.8	3959	0	1.21	0.68
1180	1179.51	33.58	4.18	7.74	140	131.4	3959	0	1.22	0.68
1185	1184.51	34.18	4.3	7.92	140	131.9	3959	0	1.21	0.68
1190	1189.51	35.43	4.25	7.66	140	132.4	3959	0	1.2	0.68
1195	1194.51	35.44	4.27	7.84	140	132.5	3959	0	1.2	0.68
1200	1199.51	11.74	3.52	5.83	140	136.9	4038	0	1.2	0.68
1205	1204.51	36.54	2.12	7.81	140	139.4	4090	0	1.21	0.68
1210	1209.51	36.67	1.21	7.78	80	140.8	4089	0	1.21	0.68
1215	1214.51	34.47	1.18	8.96	80	141.1	4090	0	1.2	0.68
1220	1219.51	33.13	2.08	9.11	80	141.7	4089	0	1.19	0.69
1225	1224.51	34.05	2.63	9.13	80	141.5	4090	0	1.2	0.69
1230	1229.51	34.72	2.49	9.24	80	143.2	4094	0	1.21	0.69
1235	1234.51	34.73	2.46	8.99	80	154	4290	0	1.2	0.69
1240	1239.51	30.82	1.17	7.12	80	132.8	3960	0	1.22	0.69
1245	1244.51	35.84	1.33	8.47	80	133.3	3959	0	1.22	0.69

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
1250	1249.51	34.82	1.21	8.57	80	146.3	4156	0	1.21	0.69
1255	1254.51	39.18	1.3	9.14	80	144.5	4156	0	1.21	0.69
1260	1259.51	38.7	1.3	9.26	90	145.9	4156	0	1.21	0.69
1265	1264.51	45.55	1.34	9.08	90	146.6	4156	0	1.21	0.69
1270	1269.51	45.55	1.3	9.25	90	144.9	4156	0	1.21	0.69
1275	1274.51	45.01	1.37	9.67	90	145.9	4156	0	1.21	0.69
1280	1279.51	34.53	1.43	7.54	98	145.7	4156	0	1.22	0.69
1285	1284.51	50.98	2.41	10.51	100	152.2	4290	0	1.22	0.7
1290	1289.51	35.53	3.07	9.8	100	152.6	4290	0	1.22	0.7
1295	1294.51	37.45	1.3	9.1	100	153.8	4290	0	1.21	0.7
1300	1299.51	42.82	5.57	9.96	100	152.9	4290	0	1.21	0.7
1305	1304.51	38.85	5.53	9.76	100	154.2	4290	0	1.21	0.7
1310	1309.51	40.78	5.05	8.94	100	153.4	4290	0	1.21	0.7
1315	1314.51	56.07	4.37	10.06	100	153.7	4290	0	1.21	0.7
1320	1319.51	12.46	4.58	6.36	105	130.9	3885	0	1.23	0.7
1325	1324.51	42.72	6.28	9.3	105	136.4	3966	0	1.23	0.7
1330	1329.51	43	6.37	9.66	105	136.5	3966	0	1.23	0.7
1335	1334.51	35.04	6.53	9.77	105	155.3	4296	0	1.23	0.7
1340	1339.51	38.31	6.81	10.29	105	154.7	4296	0	1.23	0.7
1345	1344.51	40.09	6.58	9.82	105	169	4538	0	1.23	0.71
1350	1349.51	40.56	6.5	9.92	105	168.9	4538	0	1.23	0.71
1355	1354.51	39.14	6.14	9.16	150	170.7	4538	0	1.24	0.71
1360	1359.51	17.19	5.73	6.64	150	170.2	4524	0	1.24	0.71
1365	1364.51	41.96	6.46	8.78	150	164.7	4427	0	1.23	0.71
1370	1369.51	42.43	6.84	9.1	150	164.3	4427	0	1.23	0.71
1375	1374.51	40.1	3.87	9.84	150	164.5	4427	0	1.23	0.71
1380	1379.51	43.01	3.59	10.26	160	163.8	4427	0	1.23	0.71
1385	1384.51	43.92	3.4	9.06	160	164.5	4427	0	1.23	0.71
1390	1389.51	45.06	3.55	9.72	160	164.4	4427	0	1.23	0.71
1395	1394.51	12.82	2.81	6.85	160	164.4	4429	0	1.23	0.71
1400	1399.51	17.05	2.65	6.78	160	164	4446	0	1.23	0.71
1405	1404.51	46.79	3.61	10.29	160	165.5	4427	0	1.24	0.72
1410	1409.51	52.29	4.44	11.87	160	164.6	4427	0	1.24	0.72
1415	1414.51	49.49	3.98	10.88	160	165	4427	0	1.24	0.72
1420	1419.51	47.9	4.4	11.66	160	165.4	4427	0	1.24	0.72
1425	1424.51	49.91	3.99	10.94	160	164.7	4427	0	1.24	0.72
1430	1429.51	50.56	4.38	11.79	160	164.6	4427	0	1.23	0.72
1435	1434.51	48.66	4.29	11.4	160	165	4427	0	1.23	0.72
1440	1439.51	50.67	4.17	11.31	160	164.8	4427	0	1.23	0.72
1445	1444.51	53.19	4.23	11.61	160	165.2	4427	0	1.24	0.72
1450	1449.51	51.76	4.28	11.46	160	165.7	4442	0	1.24	0.72
1455	1454.51	24.83	2.98	8.28	160	135.3	3965	0	1.23	0.72
1460	1459.51	9.65	2.24	6.59	160	108.6	3457	0	1.22	0.72
1465	1464.51	19.89	2.34	7.4	160	109.7	3457	0	1.24	0.73
1470	1469.51	19.7	2.51	7.63	160	142.9	4056	0	1.24	0.73
1475	1474.51	19.84	2.79	7.8	160	144.7	4097	0	1.24	0.73
1480	1479.51	19.84	2.6	7.48	160	138.9	4006	0	1.24	0.73
1485	1484.51	20.55	3.78	7.8	160	142.4	3965	0	1.24	0.73
1490	1489.51	20.62	3.66	7.87	160	141.8	3965	0	1.24	0.73
1495	1494.51	19.88	3.67	7.87	160	141.2	3965	0	1.24	0.73
1500	1499.51	18.86	3.45	8.14	160	145.1	4032	0	1.23	0.73
1505	1504.51	20.45	2.22	8.81	160	143.1	3987	0	1.24	0.73
1510	1509.51	19.89	1.88	7.82	160	144.2	3987	0	1.24	0.73
1515	1514.51	22.13	2.2	8.84	160	144.9	3987	0	1.24	0.73
1520	1519.51	20	1.65	8.19	160	144.1	3987	0	1.24	0.73
1525	1524.51	20.77	2.44	8.24	160	144.5	3965	0	1.25	0.74

Tot Depth	TVD Depth	ROP	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
1530	1529.51	26.11	2.76	9.14	160	144.7	3965	0	1.24	0.74
1535	1534.51	25.19	2.49	8.61	160	145	3965	0	1.25	0.74
1540	1539.51	24.43	2.79	9.21	160	144.6	3965	0	1.28	0.74
1545	1544.51	30.33	3.15	10.3	160	144.5	3965	0	1.27	0.74
1550	1549.51	35.63	3.49	11	160	144.8	3965	0	1.26	0.74
1555	1554.51	35.25	3.26	10.44	160	145.2	3965	0	1.26	0.74
1560	1559.51	28.02	2.8	10.01	160	145.8	3965	0	1.26	0.74
1565	1564.51	39.39	4.6	11.62	160	147.3	3965	0	1.26	0.74
1570	1569.51	35.6	4.31	10.94	160	147.2	3965	0	1.26	0.74
1575	1574.51	34.84	4.3	10.94	160	146.3	3965	0	1.26	0.74
1580	1579.51	22.53	5.2	12.34	160	146.6	3965	0	1.27	0.75
1585	1584.51	26.3	4.84	11.24	160	146.4	3965	0	1.27	0.75
1590	1589.51	32.97	4.49	11.08	160	146.4	3965	0	1.27	0.75
1595	1594.51	34.43	4.25	11.06	160	147.2	3965	0	1.26	0.75
1600	1599.51	26.64	3.48	9.75	160	148.3	3965	0	1.26	0.75
1605	1604.51	37.52	2.56	9.84	180	148.9	3965	0	1.26	0.75
1610	1609.51	42.9	3.11	10.63	179	147.9	3965	0	1.25	0.75
1615	1614.51	39.94	4.76	13.53	160	147.6	3965	0	1.27	0.75
1620	1619.51	40.08	4.76	14.05	160	148.3	3965	0	1.27	0.75
1625	1624.51	39.13	3.71	12.43	160	148.1	3965	0	1.27	0.75
1630	1629.51	40.43	5.93	12.96	159	148	3965	0	1.27	0.75
1635	1634.51	40.11	5.55	12.45	160	148.5	3965	0	1.26	0.75
1640	1639.51	34.27	5.31	12.4	160	149.8	3965	0	1.26	0.76
1645	1644.51	42	5.85	12.35	160	149.1	3970	0	1.26	0.76
1650	1649.51	35.6	6.21	12.76	160	148.3	3970	0	1.26	0.76
1655	1654.51	40	5.65	12.36	160	147.5	3969	0	1.27	0.76
1660	1659.51	35.16	5.05	11.14	160	147.3	3969	0	1.27	0.76
1665	1664.51	38.31	5.94	12.84	160	146.6	3969	0	1.27	0.76
1670	1669.51	38.1	6.44	13.59	160	157.3	4097	0	1.26	0.76
1675	1674.51	36.41	6.43	12.86	160	158	4097	0	1.25	0.76
1680	1679.51	40.43	5.2	11.76	160	158.7	4097	0	1.26	0.76
1685	1684.51	43.67	4.01	11.82	160	161.2	4097	0	1.27	0.76
1690	1689.51	36.89	4.84	12.7	160	169.3	4230	0	1.27	0.76
1695	1694.51	35.78	4.34	11.56	160	160.9	4097	0	1.26	0.77
1700	1699.51	34.84	4.92	11.88	160	160.1	4096	0	1.27	0.77
1705	1704.51	34.01	4.5	11.69	160	159.8	4097	0	1.27	0.77
1710	1709.51	41.58	4.83	12.14	160	163.8	4163	0	1.27	0.77
1715	1714.51	38.2	5.67	13.45	160	164	4163	0	1.27	0.77
1720	1719.51	38.42	5.53	13.57	160	156.1	4033	0	1.27	0.77
1725	1724.51	20.82	5.09	11.42	160	162	4137	0	1.27	0.77
1730	1729.51	41.25	4.83	13.27	160	166	4163	0	1.27	0.77
1735	1734.51	39.54	4.59	12.96	160	166.5	4163	0	1.27	0.77
1740	1739.51	44.07	4.5	13.25	160	170.4	4230	0	1.28	0.77
1745	1744.51	38.31	3.72	12.14	160	170.7	4230	0	1.28	0.77
1750	1749.51	42.7	4.37	13.39	160	170.5	4230	0	1.27	0.78
1755	1754.51	42.15	4.11	12.34	160	169.5	4230	0	1.29	0.78
1760	1759.51	40.11	2.79	10.78	160	170.5	4230	0	1.29	0.78
1765	1764.51	26.33	2.3	8.49	160	174.5	4230	0	1.3	0.78
1770	1769.51	47.56	3.71	12.06	160	175	4230	0	1.3	0.78
1775	1774.51	45.53	4.34	10.95	160	175.8	4230	0	1.29	0.78
1780	1779.51	45.51	4.73	10.61	160	175.5	4230	0	1.29	0.78
1785	1784.51	42.82	4.67	10.64	160	173.7	4230	0	1.3	0.78
1790	1789.51	45.04	5.37	11.3	160	173.8	4230	0	1.3	0.78
1795	1794.51	44.93	5.55	11.16	160	174.1	4230	0	1.31	0.78
1800	1799.51	45.55	5.24	10.46	160	174.2	4230	0	1.31	0.78
1805	1804.51	48.95	5.61	10.7	160	176	4230	0	1.3	0.79

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
1810	1809.51	46.87	6.04	11.49	160	175.9	4229	0	1.3	0.79
1815	1814.51	40.12	7.51	12.83	160	175.8	4229	0	1.3	0.79
1820	1819.51	20.21	4.93	9.13	160	176.1	4229	0	1.31	0.79
1825	1824.51	37.14	6.97	12.77	160	176.1	4229	0	1.31	0.79
1830	1829.51	45.06	5.28	10.83	160	176	4229	0	1.31	0.79
1835	1834.51	44.93	5.38	10.46	160	176.1	4229	0	1.31	0.79
1840	1839.51	45.55	5.23	10.48	160	176.3	4229	0	1.3	0.79
1845	1844.51	13.96	3.63	5.84	159	175.1	4214	0	1.3	0.79
1850	1849.51	48.31	5.57	11.1	160	177.2	4230	0	1.3	0.79
1855	1854.51	46.29	5.74	11.04	160	177.2	4230	0	1.3	0.79
1860	1859.51	33.13	6.78	11.64	160	177	4229	0	1.3	0.8
1865	1864.51	42.34	5.86	11.76	160	176	4229	0	1.31	0.8
1870	1869.51	34.2	6.71	12.43	160	176.1	4229	0	1.31	0.8
1875	1874.51	43.11	5.6	11.49	160	176.3	4229	0	1.31	0.8
1880	1879.51	45.55	5.25	11.15	160	176.5	4229	0	1.31	0.8
1885	1884.51	3.87	4.97	6.89	134	173.9	4163	0	1.3	0.8
1890	1889.51	45.97	5.44	11.62	160	175.8	4185	0	1.3	0.8
1895	1894.51	47.51	5.17	11.07	160	176.3	4185	0	1.3	0.8
1900	1899.51	44.97	4.72	11.02	160	176.4	4185	0	1.31	0.8
1905	1904.51	42.33	4.39	11.55	160	176.4	4185	0	1.31	0.8
1910	1909.51	43.92	4.43	11.7	160	176.4	4185	0	1.31	0.81
1915	1914.51	45.61	4.39	11.36	160	176.1	4185	0	1.31	0.81
1920	1919.51	45.06	4.33	11.54	160	175.7	4185	0	1.31	0.81
1925	1924.51	10	2.33	7.1	160	175.5	4185	0	1.3	0.81
1930	1929.51	34.59	4.95	10.98	160	178.1	4207	0	1.28	0.81
1935	1934.51	47.89	4.86	11.55	160	178.5	4207	0	1.3	0.81
1940	1939.51	44.65	5.03	11.62	160	178.3	4207	0	1.3	0.81
1945	1944.51	42.3	4.62	11.78	160	198.9	4493	0	1.31	0.81
1950	1949.51	45.69	4.68	11.76	160	198.4	4493	0	1.31	0.81
1955	1954.51	43.85	4.81	12.1	160	198.3	4493	0	1.31	0.81
1960	1959.51	40.09	5.26	12.81	160	198.9	4493	0	1.31	0.81
1965	1964.51	6.49	2.94	6.58	151	196.6	4467	0	1.31	0.82
1970	1969.51	48.82	4.91	11.31	160	195.4	4428	0	1.31	0.82
1975	1974.51	48.09	5.04	12.1	160	195.9	4428	0	1.3	0.82
1980	1979.51	44.37	4.91	11.61	160	195.9	4428	0	1.31	0.82
1985	1984.51	43.42	4.93	11.93	160	195.4	4428	0	1.31	0.82
1990	1989.51	46.2	4.73	11.64	160	197.3	4428	0	1.31	0.82
1995	1994.51	45.11	4.39	11.12	160	196.8	4428	0	1.31	0.82
2000	1999.51	45.06	4.8	12.07	160	196.1	4428	0	1.31	0.82
2005	2004.51	13.17	2.9	8.06	160	195.8	4428	0	1.31	0.82
2010	2009.51	42.74	4.66	11.7	160	197.1	4427	0	1.31	0.82
2015	2014.51	43.74	4.72	11.96	160	197.1	4427	0	1.31	0.83
2020	2019.51	44.84	5.26	12.76	160	197.4	4427	0	1.31	0.83
2025	2024.51	40.43	4.82	12.46	160	197.6	4427	0	1.31	0.83
2030	2029.51	45.55	4.21	11.76	160	197.1	4427	0	1.31	0.83
2035	2034.51	45.06	4.19	11.84	160	197	4427	0	1.31	0.83
2040	2039.51	45.06	4.56	12.22	160	197.1	4427	0	1.31	0.83
2045	2044.51	46.2	4.3	11.77	160	197.3	4427	0	1.31	0.83
2050	2049.51	46.17	3.66	11.95	160	198.8	4427	0	1.31	0.83
2055	2054.51	42.75	4.9	13.13	160	198.9	4427	0	1.31	0.83
2060	2059.51	41.92	4.48	13.16	120	200.5	4427	0	1.31	0.83
2065	2064.51	42.43	4.34	12.53	120	200.8	4427	0	1.31	0.83
2070	2069.51	37.87	4.43	13.51	120	200.7	4427	0	1.31	0.84
2075	2074.5	42.32	4.66	12.91	120	201.1	4427	0	1.31	0.84
2080	2079.5	33.18	4.27	14.74	120	200.8	4427	0	1.3	0.84
2085	2084.5	14.17	2.34	8.7	120	200.1	4427	0	1.3	0.84

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
2090	2089.5	37.38	3.55	11.75	120	199	4406	0	1.32	0.84
2095	2094.5	35.34	2.53	11.56	120	196.5	4367	0	1.32	0.84
2100	2099.5	34.34	4.95	12.14	120	199.1	4405	0	1.32	0.84
2105	2104.5	29.68	3.14	11.31	120	185.2	4220	0	1.3	0.84
2110	2109.5	37.66	3.66	12.47	120	201.4	4405	0	1.31	0.84
2115	2114.49	36.53	6.11	12.71	120	200.3	4405	0	1.31	0.84
2120	2119.49	32.29	6.17	11.55	120	199.3	4405	0	1.31	0.85
2125	2124.49	32.53	5.32	12.5	120	199	4405	0	1.31	0.85
2130	2129.49	13.3	8.93	10.94	120	200.3	4427	0	1.31	0.85
2135	2134.49	14.15	8.27	11.87	120	198.6	4427	0	1.31	0.85
2140	2139.49	23.03	2.13	8.76	120	196.6	4427	0	1.31	0.85
2145	2144.49	49.92	4.95	24.99	120	197.1	4427	0	1.31	0.85
2150	2149.48	34.68	6.2	24.37	100	197.9	4427	0	1.31	0.85
2155	2154.46	33.17	6.46	25.95	102	198.7	4427	0	1.31	0.85
2160	2159.45	28.04	4.26	18.04	160	197.1	4427	0	1.31	0.85
2165	2164.44	45.65	4.02	20.69	160	197.2	4427	0	1.31	0.85
2170	2169.42	25.62	3.92	14.3	160	198.5	4427	0	1.31	0.86
2175	2174.41	47.14	6.48	19.33	160	196.3	4427	0	1.31	0.86
2180	2179.4	29.83	6.35	12.37	160	195.3	4427	0	1.31	0.86
2185	2184.39	39.94	2.74	11.88	160	197.4	4427	0	1.3	0.86
2190	2189.35	9.97	1.54	7.65	120	167.6	3964	0	1.32	0.86
2194	2193.32	19.84	1.63	9.27	120	198.9	4428	0	1.32	0.86
2200	2199.28	20.09	2.12	10.73	120	196.1	4428	0	1.32	0.86
2205	2204.24	20.17	2.68	13.41	120	196.6	4428	0	1.31	0.86
2210	2209.2	8.29	2.68	8.08	110	162.2	3895	0	1.32	0.86
2215	2214.16	15.7	4.95	17.24	120	166.3	3964	0	1.32	0.86
2220	2219.12	14.28	4.42	15.99	120	156.9	3831	0	1.32	0.87
2225	2224.08	14.81	6.75	13.26	120	162.2	3964	0	1.32	0.87
2230	2229.03	8.8	5.48	10.75	120	163.1	3964	0	1.32	0.87
2235	2233.97	10.26	4.51	9.83	120	164.3	3964	0	1.31	0.87
2240	2238.92	9.37	5.18	9.53	128	163.6	3964	0	1.31	0.87
2245	2243.86	16.74	6	11.91	120	162.5	3964	0	1.31	0.87
2250	2248.8	14.21	9.28	13.54	120	166.1	3964	0	1.3	0.87
2255	2253.74	18	8.12	12.35	120	165.7	3964	0	1.3	0.87
2260	2258.68	11.8	9.49	11.28	120	165.3	3964	0	1.31	0.87
2265	2263.63	17.5	7.41	13.12	120	163.7	3940	0	1.31	0.87
2270	2268.57	4.42	7.88	11.3	120	156.7	3832	0	1.31	0.88
2275	2273.51	9.35	8.05	12.38	120	159	3832	0	1.31	0.88
2280	2278.45	9.42	7.64	12.91	120	166.1	3970	0	1.31	0.88
2285	2283.4	5.8	1.77	7.16	119	155.2	2966	0	1.3	0.85
2290	2288.34	6.58	1.53	6.15	132	185.8	3091	0	1.3	0.86
2295	2293.28	19.94	2.21	8.82	144	235.2	3548	0	1.3	0.86
2300	2298.22	6.59	2.02	6.22	143	229.8	3538	0	1.3	0.86
2305	2303.16	26.33	4.15	8.96	144	233.4	3525	0	1.3	0.86
2310	2308.1	21.65	4.36	8.93	144	233.5	3524	0	1.3	0.86
2315	2313.02	18.09	4.5	9.59	144	235.2	3524	0	1.3	0.86
2320	2317.95	15.27	5.36	9.85	144	235.4	3524	0	1.3	0.86
2325	2322.87	16.16	5.12	9.85	154	234.7	3524	0	1.29	0.86
2330	2327.8	15.52	5.07	9.69	154	234.4	3524	0	1.3	0.86
2335	2332.73	18.84	4.3	9.63	154	234.2	3524	0	1.29	0.86
2340	2337.65	10.19	3.15	7.35	154	230	3524	0	1.29	0.87
2345	2342.56	20.67	2.8	9.8	219	232.4	3523	0	1.3	0.87
2350	2347.45	20.73	3.02	9.39	219	230.6	3523	0	1.3	0.87
2355	2352.35	22.32	2.99	10.77	219	234.4	3523	0	1.3	0.87
2360	2357.24	24.95	3.11	11.3	219	235.6	3523	0	1.3	0.87
2365	2362.13	25.08	2.89	10.46	219	233.9	3523	0	1.3	0.87

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
2370	2367.02	25.49	3.01	10.86	219	234.3	3523	0	1.3	0.87
2375	2371.91	21.75	2.55	10.59	219	234.2	3523	0	1.3	0.87
2380	2376.8	18.69	2.14	10.76	219	233.4	3524	0	1.3	0.87
2385	2381.67	25.05	4.92	11.06	219	234.8	3523	0	1.3	0.87
2390	2386.52	21.22	3.32	9.78	219	231.2	3523	0	1.3	0.88
2395	2391.36	24.92	3.45	9.22	219	231.2	3523	0	1.3	0.88
2400	2396.2	23.97	3.37	10.19	219	233.1	3523	0	1.3	0.88
2405	2401.04	25.37	3.84	11.11	218	233.7	3512	0	1.3	0.88
2410	2405.88	25.13	4.14	11.18	219	235.6	3523	0	1.3	0.88
2415	2410.73	24.71	3.81	11.05	219	234.9	3523	0	1.3	0.88
2420	2415.57	23.04	4.81	10.86	219	233.9	3523	0	1.3	0.88
2425	2420.4	32.21	4.51	11.69	239	234.9	3523	0	1.3	0.88
2430	2425.19	25.32	3.61	9.77	239	231.6	3524	0	1.3	0.88
2435	2429.98	29.68	3.9	10.74	232	205.1	3284	0	1.3	0.88
2440	2434.77	29.34	3.36	9.52	239	231.9	3524	0	1.31	0.89
2445	2439.56	26.74	5.17	11.53	239	236.8	3524	0	1.31	0.89
2450	2444.35	33.34	5.79	11.6	239	235.7	3524	0	1.31	0.89
2455	2449.13	41.25	4.08	9.92	230	200.9	3224	0	1.31	0.89
2460	2453.92	39.93	4.18	10.03	239	233	3523	0	1.31	0.89
2465	2458.71	30.39	6.27	10.81	239	235.2	3523	0	1.31	0.89
2470	2463.43	39.77	6.61	11.27	239	236.4	3523	0	1.31	0.89
2475	2468.16	41.97	6.19	10.73	239	234.9	3523	0	1.31	0.89
2480	2472.88	36.14	7.49	14.37	239	240.9	3523	0	1.31	0.89
2485	2477.61	34.25	7.62	13.87	239	242	3523	0	1.31	0.89
2490	2482.34	29.63	7.41	11.86	236	228.7	3408	0	1.31	0.9
2495	2487.06	45.61	8.76	14.26	239	243.7	3523	0	1.31	0.9
2500	2491.79	48.15	6.02	12.9	239	240.5	3523	0	1.31	0.9
2505	2496.51	50.61	5.77	11.38	239	240	3523	0	1.31	0.9
2510	2501.13	53.74	5.35	8.93	239	237.1	3523	0	1.31	0.9
2515	2505.74	50	6.65	13.13	239	243.4	3523	0	1.31	0.9
2520	2510.35	41.46	5.88	10.85	239	238.3	3523	0	1.32	0.9
2525	2514.96	51.5	6.64	12.15	239	241.5	3523	0	1.31	0.9
2530	2519.57	53.14	5.45	11.63	239	240.3	3524	0	1.31	0.9
2535	2524.19	50.9	4.38	8.76	239	235.3	3523	0	1.32	0.9
2540	2528.8	50.19	4.1	8.8	239	235.6	3523	0	1.32	0.9
2545	2533.41	53.85	5.29	9.67	239	237.8	3523	0	1.32	0.91
2550	2537.87	50.85	5.63	10.81	230	210.7	3209	0	1.32	0.91
2555	2542.32	24.68	7.91	14.19	239	244.2	3523	0	1.32	0.91
2560	2546.77	49.33	5.19	9.95	231	210.6	3240	0	1.32	0.91
2565	2551.21	48.48	7.13	12.12	238	242.5	3523	0	1.32	0.91
2570	2555.66	28.47	9.5	13.76	239	246.2	3523	0	1.32	0.91
2575	2560.11	51.6	8.28	14.6	239	247.4	3523	0	1.32	0.91
2580	2564.55	46.13	8.29	16.49	229	210.2	3187	0	1.32	0.91
2585	2569	43.58	7.48	14.18	226	197.7	3051	0	1.32	0.91
2590	2573.31	35.54	8.49	14.92	238	244.3	3487	0	1.32	0.91
2595	2577.58	22.38	7.72	13.81	239	242.4	3523	0	1.32	0.92
2600	2581.85	49.3	6.33	11.49	239	239.4	3523	0	1.32	0.92
2605	2586.13	48.06	4.85	10.11	239	235.5	3524	0	1.32	0.92
2610	2590.4	25.03	9.85	17.57	239	251.3	3523	0	1.32	0.92
2615	2594.68	28.26	8.67	16.97	239	249.5	3523	0	1.32	0.92
2620	2598.95	24.11	8.32	16.11	239	246.9	3523	0	1.32	0.92
2625	2603.22	32.5	9.84	17.82	239	249.3	3523	0	1.32	0.92
2630	2607.36	21.03	11.46	16.97	239	247.6	3523	0	1.32	0.92
2635	2611.44	22.49	10.79	18.24	237	248.4	3523	0	1.32	0.92
2640	2615.52	25.29	10.18	19.02	226	215.6	3216	0	1.32	0.92
2645	2619.6	13.55	10.18	15.54	236	234.3	3427	0	1.32	0.92

Tot Depth	TVD Depth	ROP	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
2650	2623.69	15.7	10.56	15.8	239	240.4	3523	0	1.32	0.93
2655	2627.77	17.4	10.28	16.82	239	241.8	3523	0	1.32	0.93
2660	2631.85	11.1	11	14.51	239	238.1	3523	0	1.32	0.93
2665	2635.93	16.81	11.33	17.01	238	240.4	3523	0	1.32	0.93
2670	2640.01	10.21	12.73	14.44	239	237.1	3523	0	1.32	0.93
2675	2644.06	12.73	11.33	16.13	239	239.3	3523	0	1.32	0.93
2680	2647.96	11.48	11.74	15.98	239	237.7	3523	0	1.32	0.93
2685	2651.87	8.67	12.52	14.34	239	236.8	3523	0	1.32	0.93
2690	2655.78	12.45	12.32	15.6	238	238.2	3523	0	1.32	0.93
2695	2659.68	8.99	11.1	14.49	239	235	3523	0	1.32	0.93
2700	2663.59	10.39	11.77	14.44	239	235.8	3523	0	1.32	0.93
2705	2667.49	4.03	8.32	11.85	239	228	3523	0	1.32	0.93
2710	2671.35	14.67	10.58	16.79	254	233.6	3521	0	1.32	0.94
2715	2675.18	14.58	10.07	17.69	254	240	3523	0	1.32	0.94
2720	2679.01	28.92	11.97	20.77	252	246.6	3523	0	1.32	0.94
2725	2682.84	38.4	11.21	23.31	253	250	3523	0	1.32	0.94
2730	2686.67	32.8	12.71	22.83	253	250.9	3523	0	1.32	0.94
2735	2690.5	30.06	12.86	22.81	253	250.8	3523	0	1.33	0.94
2740	2694.33	39.38	11.44	22.41	253	252.1	3523	0	1.33	0.94
2745	2698.16	8.9	9	14.06	254	235.6	3523	0	1.33	0.94
2750	2701.99	39.79	15.23	23.29	253	254.9	3523	0	1.32	0.94
2755	2705.83	20.21	10.54	18.96	246	216.8	3259	0	1.32	0.94
2760	2709.67	33.68	13.45	23.51	253	254.5	3523	0	1.33	0.94
2765	2713.5	35.15	16.08	24.57	253	258.6	3523	0	1.33	0.94
2770	2717.34	38.86	15.96	25.17	252	259.3	3523	0	1.33	0.95
2775	2721.18	52.78	16	28.79	236	230.7	3191	0	1.32	0.95
2780	2725.02	49.89	17.45	28.94	235	233	3192	0	1.32	0.95
2785	2728.85	38.37	14.77	24.19	241	225.9	3192	0	1.32	0.95
2790	2732.69	3.04	5.45	10.73	70	128.3	1675	0	1.31	1.06
2795	2736.24	6.85	6.14	12.39	100	171.2	1985	0	1.3	1.06
2800	2740.03	7.32	5.87	12.26	100	169	1985	0	1.3	1.06
2805	2743.83	7.15	5.9	12.26	100	167.1	1966	0	1.3	1.07
2810	2747.62	6.24	9.67	11.51	100	169.3	1985	0	1.31	1.07
2815	2752.02	11.96	12.53	14.78	100	169.2	1985	0	1.31	1.07
2820	2755.89	12	12.42	13.98	100	170	1985	0	1.31	1.07
2825	2759.78	12.76	12.3	14.65	100	160.5	1921	0	1.31	1.07
2830	2763.66	11.28	12.36	14.66	100	167.6	1985	0	1.31	1.07
2835	2767.55	13.97	11.8	14.02	140	167.4	1985	0	1.31	1.07
2840	2771.44	14.82	11.82	14.46	140	166.3	1985	0	1.31	1.07
2845	2775.34	13.61	11.88	14.09	140	168.8	1985	0	1.32	1.07
2850	2779.24	13.54	12.01	13.56	140	167.3	1985	0	1.32	1.07
2855	2783.14	18.56	14.13	14.58	140	167.4	1985	0	1.33	1.08
2860	2787.05	17.39	14.31	13.89	140	170.8	1985	0	1.33	1.08
2865	2787.06	4.48	12.41	10.08	140	166.8	1952	0	1.34	1.08
2870	2790.42	9.4	12.16	12.64	140	168.2	1985	0	1.35	1.08
2875	2793.75	11.36	6.51	12.64	140	169.5	1985	0	1.34	1.08
2880	2797.06	11.01	7.08	12	140	171.5	1985	0	1.35	1.08
2885	2800.31	5.5	6.1	10.36	140	170.3	1985	0	1.35	1.08
2890	2803.54	7.59	6.46	11.23	160	173.3	1985	0	1.35	1.08
2895	2805.93	4.91	4.2	9.57	160	172.7	1985	0	1.36	1.08
2900	2808.94	5.98	5.65	10.18	160	173.7	1985	0	1.36	1.08
2905	2811.91	2.72	5.37	10.07	160	179	2023	0	1.36	1.08
2910	2814.82	8.9	5.79	10.95	160	182.8	2051	0	1.36	1.08
2915	2817.69	12.69	5.41	11.19	160	182.8	2051	0	1.36	1.08
2920	2820.51	12.8	5.63	11.9	160	182.4	2051	0	1.36	1.08
2925	2823.28	12.36	5.76	11.53	160	182.1	2051	0	1.36	1.09

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
2930	2825.99	8.32	6.1	10.98	160	181.9	2051	0	1.36	1.09
2935	2828.98	12.41	7.34	11.93	160	183.6	2051	0	1.36	1.09
2940	2831.65	19.09	7.37	12.17	170	184.7	2051	0	1.36	1.09
2945	2834.28	15.88	5.89	12.09	170	183.2	2051	0	1.36	1.09
2950	2836.86	15.36	6.08	11.85	170	184.2	2051	0	1.36	1.09
2955	2839.39	12.89	6.21	11.84	170	183.5	2051	0	1.36	1.09
2960	2841.88	13.68	6.13	11.43	170	182.8	2051	0	1.36	1.09
2965	2844.32	14.36	5.74	11.59	170	184.2	2051	0	1.36	1.09
2970	2846.72	13.28	5.86	11.91	170	184.5	2051	0	1.36	1.09
2975	2848.53	18.15	5.84	12.4	170	185	2051	0	1.36	1.09
2980	2850.72	22.86	4.34	10.75	170	187	2051	0	1.36	1.09
2985	2852.86	22.85	4.52	10.25	170	187.6	2051	0	1.36	1.09
2990	2854.95	19.94	4.47	10.35	170	186.4	2051	0	1.36	1.09
2995	2856.97	23.11	5.79	11.75	170	186.5	2051	0	1.36	1.09
3000	2858.94	29.72	4.58	10.01	170	186.7	2051	0	1.36	1.09
3005	2860.84	16.61	6.02	11.48	170	186.9	2051	0	1.37	1.09
3010	2862.7	25.16	4.81	11.35	170	186.9	2051	0	1.37	1.1
3015	2864.49	23.96	5.29	12.34	170	186	2051	0	1.37	1.1
3020	2866.22	28.69	5.66	11.93	170	187.2	2051	0	1.37	1.1
3025	2869.61	24.25	5.95	12.36	170	188.3	2051	0	1.36	1.1
3030	2871.47	21.99	5.23	11.03	170	185.3	2019	0	1.37	1.1
3035	2873.29	28.53	5.53	12.33	170	175.6	1963	0	1.36	1.1
3040	2875.07	27.23	6.21	11.79	170	175.7	1963	0	1.37	1.1
3045	2876.81	28.06	5.77	10.92	160	175.1	1963	0	1.37	1.1
3050	2878.5	23.33	5.61	11.96	160	175	1962	0	1.37	1.1
3055	2880.15	31.39	6.05	11.12	160	177.5	1984	0	1.37	1.1
3060	2883.36	30.26	6.94	12.67	160	178.8	1984	0	1.37	1.1
3065	2885.17	29.79	7.03	12.1	140	179.1	1984	0	1.37	1.1
3069	2886.61	21.03	7.65	12.39	140	179.6	1984	0	1.37	1.1
3075	2888.74	29.02	7.5	13.19	170	188.8	2051	0	1.37	1.1
3080	2890.47	30.51	7.93	12.96	170	188.8	2051	0	1.37	1.1
3085	2892.18	28.64	8.1	12.43	170	189.9	2051	0	1.37	1.1
3090	2893.87	20.33	9.42	13.14	170	189.6	2051	0	1.37	1.1
3095	2895.53	27.01	10.16	12.73	105	173.2	1940	0	1.37	1.1
3100	2896.92	30.98	9.18	12.56	170	173.3	1940	0	1.37	1.1
3105	2898.48	31.26	9.44	13.74	170	174.1	1940	0	1.37	1.1
3109	2899.71	30.47	9.51	13.78	170	174.3	1940	0	1.37	1.1
3115	2901.52	28.73	9.58	13.42	170	174.7	1940	0	1.37	1.11
3120	2902.99	30.2	9.28	13.73	170	175.1	1940	0	1.37	1.11
3125	2904.44	23.93	10.21	13.88	170	174.8	1940	0	1.37	1.11
3130	2905.86	22.32	9.13	11.86	170	174.3	1940	0	1.37	1.11
3135	2907.68	32.45	10.92	13.85	170	175.6	1940	0	1.37	1.11
3140	2909.11	31.02	11.02	13.89	170	175.3	1940	0	1.37	1.11
3145	2910.53	30.9	12.22	14.3	170	175.6	1940	0	1.38	1.11
3150	2911.92	29.49	11.23	12.31	170	176.7	1940	0	1.38	1.11
3155	2913.29	28.47	11.55	13.33	170	176.2	1940	0	1.38	1.11
3160	2914.63	30.09	11.9	13.33	170	176.7	1940	0	1.38	1.11
3165	2915.95	28.63	11.77	13.8	170	176.4	1940	0	1.38	1.11
3170	2917.25	25.54	11.38	13.47	170	176.1	1940	0	1.38	1.11
3175	2918.53	29.55	12.16	13.29	170	177.2	1940	0	1.38	1.11
3180	2919.78	28.55	12.1	13.38	170	175.6	1940	0	1.38	1.11
3185	2920.43	27	12.61	12.43	170	176.6	1940	0	1.38	1.11
3190	2921.55	31.54	12.54	13.62	170	177	1940	0	1.38	1.11
3195	2922.64	29.22	12.78	13.84	170	177	1940	0	1.38	1.11
3200	2923.71	27.06	12.9	12.91	170	177.3	1940	0	1.38	1.11
3205	2924.74	18.76	12.75	12.17	169	177.5	1940	0	1.38	1.11

Tot Depth	TVD Depth	ROP m/hr	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
3210	2925.75	17.47	14.8	14.43	170	176.9	1940	0	1.38	1.11
3215	2926.72	3.61	2.95	1.61	38	45.1	432	0	1.35	1.11
3220	2927.67	28.52	5.08	14.79	160	178.7	1963	0	1.35	1.11
3225	2928.31	32.2	2.57	11.5	160	178.4	1963	0	1.35	1.11
3230	2929.15	29.13	3.67	12.98	160	178.1	1963	0	1.35	1.11
3235	2929.96	28.73	4.05	13.11	160	179	1963	0	1.35	1.11
3240	2930.74	28.2	3.94	13.23	160	178.3	1963	0	1.35	1.11
3245	2931.48	27.2	4.07	13.24	160	170.7	1895	0	1.35	1.11
3250	2932.19	19.27	4.39	13.34	160	179	1963	0	1.36	1.11
3255	2932.87	7.85	3.2	9.94	153	170	1899	0	1.35	1.11
3260	2933.52	32.5	2.72	11.88	160	176.4	1963	0	1.35	1.11
3265	2934.15	30.49	2.45	11.11	160	176.1	1963	0	1.35	1.11
3270	2934.73	30.4	3.72	13.81	160	175.1	1963	0	1.35	1.11
3275	2935.28	22.03	5.65	15.06	160	173.1	1963	0	1.35	1.11
3280	2935.79	29.44	4.13	12.01	146	174	1963	0	1.35	1.11
3285	2936.27	15.01	4.9	12.72	133	176	1963	0	1.34	1.11
3290	2936.71	18.91	5.68	14.32	95	174.6	1963	0	1.34	1.11
3295	2937.13	10.62	4.55	12.14	160	174.1	1965	0	1.35	1.11
3300	2937.51	18.15	8.78	15.78	160	175.3	1985	0	1.35	1.11
3305	2937.86	30.99	6.09	14.6	160	158	1839	0	1.35	1.11
3310	2938.17	28.28	6.98	15.56	160	174	1963	0	1.35	1.11
3315	2942.34	27.48	7.03	14.49	160	176.1	1963	0	1.35	1.12
3320	2943.09	24.76	6.88	14.17	140	176.9	1963	0	1.34	1.12
3325	2943.83	21.65	6.94	13.48	140	176.2	1963	0	1.35	1.12
3330	2944.57	23.51	6.51	13.85	160	174.4	1963	0	1.35	1.12
3335	2945.3	7.67	5.93	11.51	161	174.6	1961	0	1.35	1.12
3340	2946.03	32.35	8.97	14.46	170	173.2	1963	0	1.35	1.12
3345	2946.75	30.45	9.12	15.48	170	173.4	1963	0	1.35	1.12
3350	2952.98	28.15	9.19	15.48	170	173.6	1963	0	1.35	1.12
3355	2954.42	22.89	8.29	13.95	170	175.1	1963	0	1.35	1.12
3360	2955.91	17.82	6.56	14.02	170	174.9	1963	0	1.35	1.12
3365	2957.44	16.97	6.67	13.83	170	175.2	1963	0	1.35	1.12
3370	2959.02	18.75	6.69	13.78	170	174.6	1963	0	1.35	1.12
3375	2960.63	16.99	6.95	13.44	170	175.3	1963	0	1.35	1.12
3380	2962.29	28.84	7.87	15.33	170	175.9	1963	0	1.35	1.12
3385	2963.99	30.42	7.68	15.57	180	175.8	1963	0	1.35	1.12
3390	2966.75	6.31	5.72	11.88	180	170.1	1917	0	1.35	1.12
3395	2968.68	29.7	7.14	15.52	180	175.1	1963	0	1.35	1.12
3400	2970.65	27.84	6.54	14.86	180	175.1	1963	0	1.35	1.12
3405	2972.67	18.24	7.72	14.88	180	176	1963	0	1.35	1.12
3410	2974.75	26.26	7.21	13.99	180	176.5	1963	0	1.35	1.12
3415	2976.86	18.47	7.3	13.66	180	178.3	1963	0	1.35	1.12
3420	2979.04	23.47	5.97	14.71	180	175.2	1940	0	1.35	1.13
3425	2981.25	20.95	5.95	14.37	180	173.8	1940	0	1.35	1.13
3430	2978.65	20.01	5.75	14.41	180	173.3	1940	0	1.35	1.13
3435	2980.29	16.83	7.2	15.06	180	177.1	1963	0	1.35	1.13
3440	2981.94	18.18	6.24	14.68	180	177.2	1963	0	1.35	1.13
3445	2983.6	19.19	6.46	14.69	180	176.3	1963	0	1.35	1.13
3450	2985.26	24.51	6.88	15.79	180	176.8	1963	0	1.36	1.13
3455	2986.93	20.69	6.64	14.42	180	177.5	1963	0	1.36	1.13
3460	2988.6	21.61	8.82	16.58	179	177.2	1962	0	1.36	1.13
3465	2992.86	14.72	6.48	14	180	172.1	1905	0	1.36	1.13
3470	2994.94	20.61	6.95	15.16	180	177.6	1963	0	1.36	1.13
3475	2997.06	21.65	7.64	15.05	180	177.5	1962	0	1.36	1.13
3480	2999.21	14.54	8.18	14.86	180	178	1962	0	1.36	1.13
3485	3001.4	23.78	7.41	14.85	180	178.2	1962	0	1.36	1.13

Tot Depth	TVD Depth	ROP	WOB	TORQUE	RPM	SPP 1	FLWpmps	Tot Gas	MW IN	Dexp TR
m	m	m/h	tons	kNm	rpm	bar	l/mn	%	kg/l	....
3490	3003.61	23.26	7.46	16.15	180	177.8	1963	0	1.36	1.13
3495	3005.86	22.94	7.76	15.21	180	178.3	1962	0	1.36	1.13
3500	3007.63	15.28	7.03	13.9	180	168.8	1900	0	1.36	1.13
3505	3009.86	27.58	8.24	16.12	180	179.1	1963	0	1.36	1.13
3510	3012.12	25.34	7.89	16.44	180	179.5	1962	0	1.36	1.13
3515	3014.4	17.11	8.6	15.18	180	180.1	1963	0	1.36	1.13
3520	3016.72	27.55	7.76	14.61	180	178.8	1962	0	1.36	1.14
3525	3019.05	29.92	6.65	15.32	180	178.7	1962	0	1.36	1.14
3530	3021.41	26.91	7.7	17.27	179	167.7	1879	0	1.36	1.14
3535	3023.8	6.39	5.34	13.01	180	172.6	1887	0	1.33	1.14
3540	3026.21	27.71	5.89	17.19	180	172.7	1962	0	1.33	1.14
3545	3029.48	25.51	5.14	16.55	180	171.1	1962	0	1.34	1.14
3550	3032.06	25.72	5.26	15.02	180	170.7	1962	0	1.34	1.14
3555	3034.68	24.87	4.89	14.55	180	173.5	1963	0	1.34	1.14
3560	3037.31	23.86	5.13	15.41	180	173.4	1963	0	1.34	1.14
3565	3039.99	24.18	5.05	15.3	180	173.6	1962	0	1.34	1.14
3570	3042.7	29.9	6	16.58	179	173.2	1962	0	1.34	1.14
3575	3045.45	18.32	4.81	14.12	180	175.3	1962	0	1.34	1.14
3580	3048.23	32.44	5.51	15.07	180	175.6	1963	0	1.34	1.14
3585	3051.03	31.02	5.7	16.15	180	174.7	1963	0	1.34	1.14
3590	3053.87	25.87	6.12	15.43	180	176.1	1963	0	1.34	1.15
3595	3056.75	19.73	5.24	14.86	180	177.8	1963	0	1.34	1.15
3600	3059.64	18.9	5.41	15.31	180	177	1963	0	1.34	1.15
3605	3062.59	20.34	4.69	14.69	180	176.2	1963	0	1.35	1.15
3610	3065.54	19.15	4.67	15.1	180	176.3	1963	0	1.35	1.15
3615	3068.54	18.39	4.75	15.07	180	175.3	1963	0	1.35	1.15
3620	3071.57	21.1	4.86	14.53	180	177.7	1963	0	1.35	1.15
3625	3077.5	8.88	4.22	13.08	180	180.1	1963	0	1.35	1.15
3630	3080.88	16.36	7.51	14.52	180	179.1	1963	0	1.35	1.15
3634	3083.61	6.16	10.61	14.51	179	173.6	1962	0	1.35	1.15
3640	3087.77	18.96	6.44	15.2	180	175.5	1962	0	1.35	1.15
3645	3091.27	29.36	6.93	16.71	180	176.1	1962	0	1.35	1.16
3650	3094.82	28.71	7.04	16.17	180	176.8	1962	0	1.35	1.16
3655	3098.41	22.02	7.56	16.59	179	176.1	1962	0	1.35	1.16
3660	3102.04	33.44	9.41	16.53	180	177.5	1962	0	1.35	1.16
3665	3105.7	32.27	9.32	16.07	180	177.2	1963	0	1.35	1.16
3670	3107.26	32.29	9.93	16.21	180	177.5	1962	0	1.35	1.16
3675	3110.72	29.89	9.88	16.23	180	179	1962	0	1.35	1.16
3680	3114.21	25.75	9.94	16.01	180	179.1	1962	0	1.35	1.16
3685	3117.72	23.64	9.96	14.97	180	180.1	1962	0	1.35	1.16
3690	3121.24	17.11	10.84	15.05	180	182.2	1963	0	1.36	1.16
3695	3124.8	27.2	8.37	13.75	180	161.8	1819	0	1.36	1.16
3700	3128.38	29.19	10.19	15.43	180	181.8	1963	0	1.36	1.17
3705	3131.97	21.71	11.28	15	180	181.5	1963	0	1.36	1.17
3710	3135.6	13.97	12.16	15.06	180	181.2	1962	0	1.36	1.17
3715	3135.55	22.32	10.73	15.35	180	183.4	1963	0	1.36	1.17
3720	3138.72	19.25	11.14	14.73	180	181.2	1962	0	1.36	1.17
3725	3141.87	18.51	11.08	15.3	180	182.8	1963	0	1.36	1.17
3730	3145.02	17.96	11.53	15.56	180	182	1962	0	1.36	1.17
3735	3148.17	14.68	11.34	15.37	180	182	1962	0	1.36	1.17
3740	3151.3	27.15	10.55	15.76	180	180.6	1963	0	1.35	1.17
3745	3154.8	25.39	10.98	16.54	180	178.7	1962	0	1.35	1.17

6.4. Gas Ratio Analysis Log (1:1000)

6.5. Pressure Log (1:5000)

6.6. Field Related Plots and Printouts

6.6.1. FIT/LOT plots

6.7. Enclosures

6.7.1. Digital Data

7. Distribution of Final Well Report to Company