OFFSHORE NORWAY

PL 256 - BLOCK 6406/1

Report title:

WELL 6406/1-2

FINAL WELL REPORT

Abstract:

This report deals with the geological and drilling results of the well.
In section 1 general information is reported. Section 2 comprises a geological summary and a description of the acquisition of data with their interpretation. Section 3, the drilling report, details all drilling operations and results.
Enclosed are the composite log and the computer processing interpretation of the reservoir section.

Note:

Date: December 2003	**Report no.:**	
Prepared by:	**Verified by:**	**Approved by:**
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1. GENERAL

1.1 Introduction

Well 6406/1 -2 is an exploration well on the S Prospect situated on the Sklinna High in Block 6406 /1. This block together with the adjacent block 6506/10 constitutes PL 256. The license was awarded in the 16th round, 12.05.2000.

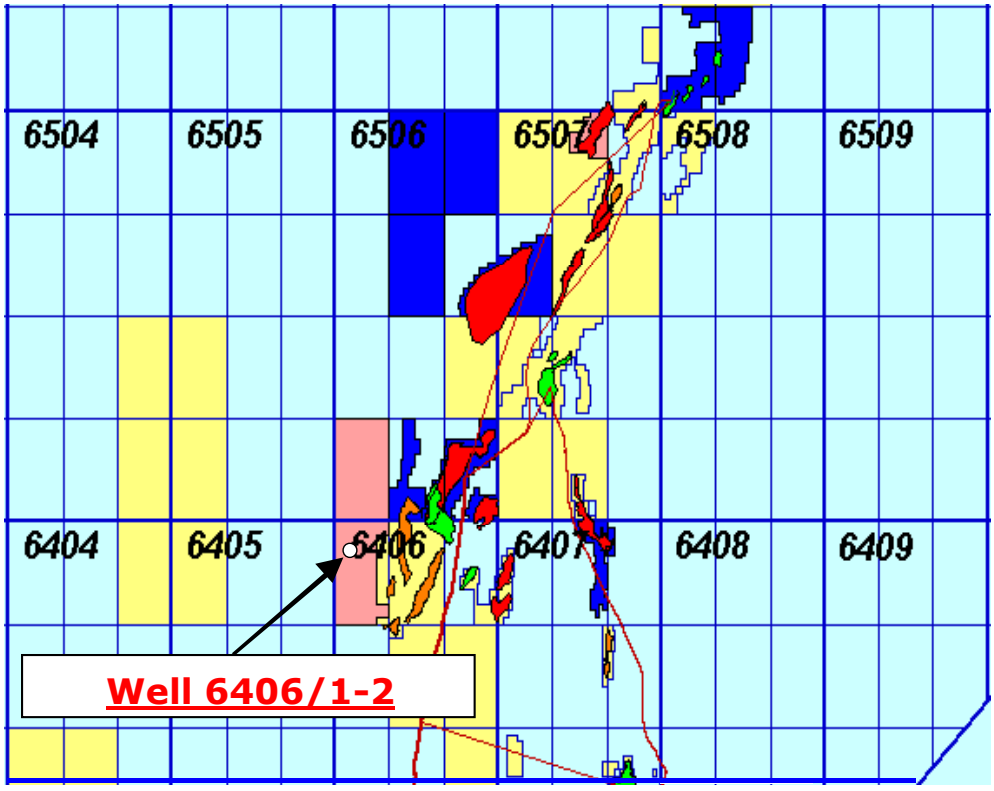
The purpose of drilling the well 6406/1-2 was to test the hydrocarbon potential of the primary target in the Lower Jurassic sandstone reservoirs of the Båt Group in the S Prospect. Secondary target for the well was to test the Lower Cretaceous Lysing and intra Lange sandstones.

Costs of this well were shared in the following percentages:

Norsk Agip A/S	30%
Petoro	20%
RWE-DEA	15 %
Dong	10 %
ENI Norge	25%

The well 6406/1-2 was drilled to a total depth of 4500m. Gas / Condensate was discovered in sandstones of the Lange Formation, Cromer Knoll Group. The top of the reservoir was found at 4163m RT (4157m TVD RT, 4134m. msl).
The sandstone was sampled with MDT.

1.2 Map Location



1.3 Basic Well Data

COUNTRY	:	Norway	
AREA	:	Halten, Norwegian Sea	
PRODUCTION LICENCE No.	:	PL 256	
BLOCK	:	6406/1	
WELL NAME	:	6406/1-2	
PROSPECT	:	Sklinna S	
SEISMIC REFERENCE	:	Seismic Survey NA0 M2 – 3D	
COORDINATES	:	N 64 deg 55 min 32,28 sec	
	:	E 06 deg 07 min 55,67 sec	
	:	UTM X 364 414,38 m E	
		Y 7 203 421,02 m N	
		Zone 32, CM 9^0 E, ED-1950	
DISTANCE	:	220 km from Kristiansund shore base with helicopter	
SPUDDING CLASSIFICATION	:	Exploration	
WATER DEPTH	:	383 m	
RT ELEVATION	:	23m	
RT-SEA FLOOR	:	406m	
TOTAL DEPTH	:	4500 m RT	
SECONDARY TARGET	:	Cromer Knoll Group, Intra Lange Sandstone	
DEPTH TO SEC. TARGET	:	4155 m TVD RT	
TARGET TOLERANCE	:	Radius of 50 m	
DRILLING RIG	:	Deepsea Bergen	
OPERATOR	:	Norsk Agip A/S	30 %
PARTNERS	:	ENI Norge	25%
		Petoro	20 %
		RWE-DEA	15 %
		Dong	10 %

2. GEOLOGY AND GEOPHYSICS

2.1 GEOLOGICAL SUMMARY

All depth in the geological part of the final well report is referred to RT if not otherwise is mentioned

The purpose of drilling the well 6406/1-2 was to test the hydrocarbon potential of the primary target in the Lower Jurassic sandstone reservoirs of the Båt Group in the Sklinna Prospect.
The Sklinna prospect is a faulted structural closure within a huge structure at Base Cretaceous level on the Sklinna High. The area closure was about 60 km^2, the crestal depth is 4162m msl. The structural relief was 638m.

The structural closure is observed on all levels from The Lysing Fm and deeper. Therefore all possible reservoir levels like the Lysing and Lange sandstones were possible targets.
The well encountered Hydrocarbon bearing sandstone of the Lower Lange Formation from 4163m – 4185m / 4157 – 4181m TVD.

The well was drilled to a total depth of 4500m (4492, 4m TVD)

Well 6406/1-2 Prognosis vs Actual

Location NA01 M2-3D, inline 2386, Crossline 1600 X = 364414.38 Y =7203421,02 RT = 23 m

Tops	Calibr. Sonic Log TWT (sec.)	Progn. Depth (m MSL)	Progn. Depth (m RT)	Actual Depth (m TVDMSL)	Actual Depth (mRT)	Delta (m)	%
Sea Floor	0.512	383	406	383	406	0	0 %
Top Kai Fm	1.646	1614	1637	1565	1588	-49	-3 %
Top Brygge Fm	2.143	2169	2192	2061	2084	-108	-5 %
Top Tare Fm	2.488	2513	2536	2434	2458	-79	-3 %
Top Springar Fm	2.579	2636	2659	2550	2574	-86	-3 %
Top Lysing Fm	3.215	3435	3458	3343	3368	-92	-3%
Top Lange Fm	3.301	3558	3581	3362	3385	-196	-5,5%
Top Intra Lange Fm	3.760	4248	4271	4134	4163	-114	-3%
Base Cretaceous Unc	3.799	4304	4327	4204	4232	- 100	-3%
Base Reservoir		4651	4674				
TD		4700	4723	4469.5	4500		

2.2 MAIN RESULTS

The well was drilled to a depth of 4500 mMD / 4492.4 mTVD in Triassic formations.

The well was drilled to a total depth of 4500m (4504m logger's depth) and terminated in very dusky red calcareous siltstone of Triassic age. The gas condensate reservoir in intra Lange sandstone of the Cromer Knoll Group was encountered at 4163 mMD (4157 mTVD), 112m above the prognosis depth. (Fig.2.2.1).

Shows evaluation on cuttings was difficult due to mineral fluorescence from $CaCO_3$ mud additives and cut fluorescence from the oil based mud. Patchy yellowish green direct fluorescence with no visible cut was observed in side-wall cores from the interval 4178 – 4184m. Maximum total gas in Intra Lange sandstone was 5.45 % over a background gas of 0, 5 %.

Due to tight hole and cemented formation MDT pressure test and sampling was only successful at 4178m MD /4171,8m TVD. 7 samples were taken, 4 MPSR, 2 SPMC and one gallon sample.

Conditions during sampling:	Formation pressure	748.95 bar (1.83 g/cm^3 EMW)
	Hydrostatic pressure	806.53 bar (1.97 g/cm^3 EMW)
	Formation temperature	146 ^{o}C
	Mobility	2.6 md/cp

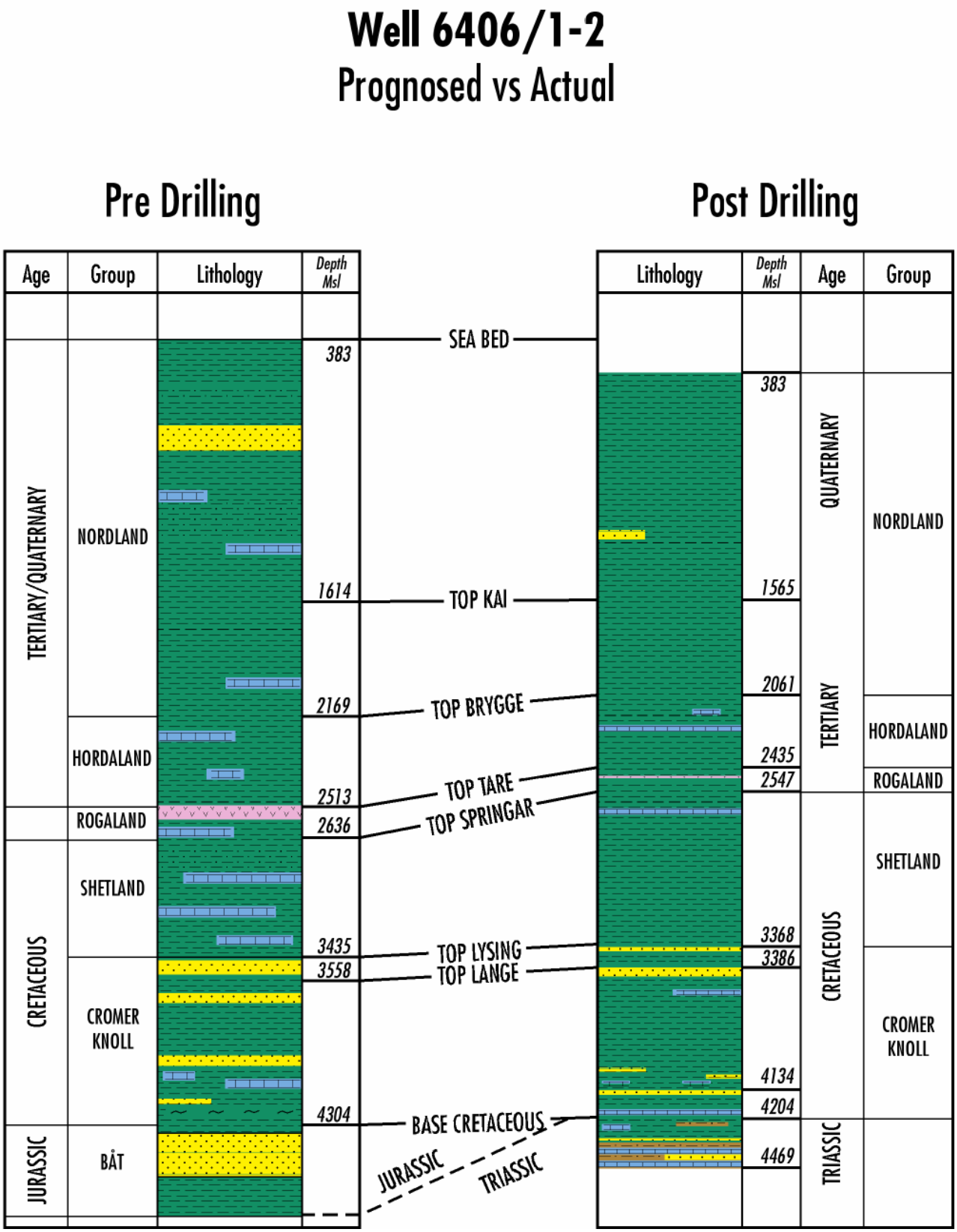
Gas, condensate and mud filtrate was sampled, no formation water was observed.

Main reservoir parameters Lower Lange Hydrocarbon bearing reservoir:

Top:	4163m
Base:	4185m
Gross:	22m
Net:	10m
Average porosity:	0.13
Average Sw:	0.38

(Vcl max:0.4, Porosity min.: 0.1, Sw max: 0.7)

2.3


Well 6406/1-2
Prognosed vs Actual
Pre Drilling
Post Drilling
Age
Group
Lithology
Depth Msl
TERTIARY/QUATERNARY
CRETACEOUS
JURASSIC
NORDLAND
HORDALAND
ROGALAND
SHETLAND
CROMER KNOLL
BÅT
383
1614
2169
2513
2636
3435
3558
4304
SEA BED
TOP KAI
TOP BRYGGE
TOP TARE
TOP SPRINGAR
TOP LYSING
TOP LANGE
BASE CRETACEOUS
JURASSIC
TRIASSIC
Lithology
Depth Msl
Age
Group
383
1565
2061
2435
2547
3368
3386
4134
4204
4469
QUATERNARY
TERTIARY
CRETACEOUS
TRIASSIC
NORDLAND
HORDALAND
ROGALAND
SHETLAND
CROMER KNOLL

DATA ACQUISITION

2.3.1 Routine Sampling

Cuttings were collected and described offshore by Geoservices personnel (see Mud logging Final Well Report) and revised by the Norsk Agip wellsite geologist.

Sampling in the 17 ½" section; 1210m - 2415mMD (1209.9m – 2414.6mTVD):
One set of 5kg unwashed wet sample, two sets of washed and dried samples were collected every 10m; one set of 0.5kg unwashed biostratigraphic sample were collected every 50m and one geochemical sample was collected every 100m.

Sampling in the 12¼" and 8½" section; 2415m - 4140mMD (2414.6m – 4134.2.8mTVD)
One 5kg unwashed wet sample and two sets of washed and dried samples were collected every 5m; one 0.5kg set of biostratigraphic unwashed wet sample and one geochemical sample were collected every 50m through most of the section. At one interval wet and dry samples were collected every 3m.

Sampling in the 6½" section; 4140m - 4500mMD (4134.2m - 4492.4mTVD)
This section was drilled using a 6½" bit to 4348mMD and a 6 1/8" bit to well TD at 4500mMD. The samples were collected according to the well programme and on instructions from the well site geologists. This section was drilled with an average ROP of 6m/hr. The sampling rate was one set of wet sample, one set of washed and dried sample and one spot sample at 5m and 3m, as stipulated by the well site geologist. Biostratigraphic samples were taken at 50m, 25m and upon request. Additional biostratigraphic samples were taken every 9m and extra samples on request from the geologist. These extra biostratigraphic samples were sent in by helicopter for dating. Mud samples were collected at every 200m.

Special composite geochemical bulk samples in glass vials were taken every 25 – 50m from 3950 to TD at 4500m.

Gas samples in pre-sealed glass walls were collected at 17 intervals with high gas readings between 3505 and 4176m.

Mud samples were taken throughout the well in 200m intervals

2.3.2 Shows

During drilling of the pilot hole section from 461m to 1210m no shallow gas was encountered. Pathfinder CWR, Sonic tools and ROV was run for detection of shallow gas.

The gas monitoring system installed on Deepsea Bergen by Geoservices was a GZG degasser taking suction from the pit and a Reserval FID recording the breakdown gases in the Geoservices unit.

Hydrocarbon shows on cuttings, side-wall cores were described by Norsk Agip's wellsite geologist. Show evaluation on cuttings was difficult due to mineral fluorescence from $CaCO_3$ mud additives and cut fluorescence from the oil based mud.

In the 17 ½" hole section the gas values were generally flat and around 1.2%, almost entirely methane in content. Some gas peaks were noted on connections and once the mud weight was raised these connections gases were eliminated. Max gas reading 3.4 % over a background of 1 % at 2288 m MD.

The bbackground gas values in the 12 ¼" hole were of the order of 0.7% throughout the section with occasional peaks due to elevated drilling rates between 2% and 3%. The gas chromatography showed an increased presence of heavier hydrocarbons but still predominately methane.
No connection gases were encountered and trip gases, max 7.4 %, were originated from just below the shoe.

The 8 ½" section was drilled from 3908 m to 4140m in the Lange formation. Connection gas was seen from all pump - off events throughout this section. These were in the range 5.5% to 29.7% with the highest peaks recorded from 3967m to 4039m. The trend was for lower connection gas values with increasing depth. The gas chromatography showed predominately methane.

In the 6 ½" – 6 1/8" section were the gas levels much lower than in the 8½" section. No connection gas was seen before 4349m; below this depth connection gas was seen from all pumps off events to the end of the section. These values were very low, with a maximum of 0.18%, but were double, or more, than the background gas level. The low gas values were due to the increased mud weight and the well cemented formations drilled.

In the Lower Lange Sandstone formation 4163–4185m MD LWD resistivity indicated hydrocarbons. Patchy yellowish green direct fluorescence with no visible cut was observed in sidewall cores from the interval 4178 – 4184m. Maximum total gas in Lower Lange sandstone was 5.45 % over a background gas of 0.5 %. From MDT sampling in Lower Lange Sat 1 gallon sample was drained at surface. The liquid had a HC odor, flashed fluid density of 0.814 g/cm^3 and a GOR of 380 m^3/m^3

2.3.3 Measurements while Drilling and Wireline Logs

Pathfinder MWD/LWD was run as per table below.

Run No	Hole Diam	Drilled Intvl.	Tool Type	Comments
1	9 7/8"	454.5 – 1210	8" GR-Res-Dir-Sonic	Pilot hole
2	26"	454.5 – 1205	9 ½" Dir	Hole opening
3	17 ½"	1205 – 2415	8" GR-Res-Dir-Sonic	
4	12 ¼"	2415 – 2415	8" GR-Res-Dens-Neu-PWD-Dir	Probl.with BOP
5	12 ¼"	2427 – 3645	8" GR-Res-Sonic-Dens-Neu-PWD-Dir	
6	12 ¼"	3645 – 3656	8" GR-Dir	Not able to drop
7	12 ¼"	3656 – 3852	8" GR-Dir	Mud motor
8	12 ¼"	3852 – 3908	8" GR-Res-Sonic-Dens-Neu-PWD-Dir	
9	8 ½"	3908 – 4140	6 ¾" GR-Res-Dir	
10	6 ½ "	4140 – 4177	4 ¾" GR-Res-Dir	No data transmitted
11	6 ½ "	4177 – 4348	4 ¾" GR-Res-Dir	
12	6 1/8"	4348 – 4500	4 ¾" GR-Res-Dir	GR and Res probl.

Wireline Logs

The following is a summary of the 6.5" / 6.125" hole wireline logs run in the well.

Run	Logging Tools	Op.Time	Lost time	Comments
1A	OBDT/DSI	11:45	30 min	Probl. w/depth encoder
1A	IPLT / AIT	12:15	None	High porosity readings
1A	MDT / APS rerun	18:15	None	Stuck - Fishing
1A/1B	VSP /APS - missrun	16:15	8 hrs 45 min	ACTS failed. IPLT failed
1A/1B	VSP /APS	08:30	2 hrs	Leakage in one gun
1A	MSCT	13:15	None	Cut 25 cores. Recovered 15
1B	MDT	10:15	None	One pretest. 7 samples

Comments:

Run 1 OBDT/DSI.
Caliper consistently read 1" undergauge in open hole and cased hole.
Encoder wheel malfunctioned requiring cased hole section from 3750-3500m to be relogged.

Run 2 IPLT/AIT
Some tight hole. Stuck at 4344, 4337 and 4258m. Porosity log reads to high values. Had to be reprocessed.

Run 3 MDT / IPLT-rerun.
Tool became stuck at 4180m after taking three tight pretests. Fired electronic release,
Fished out MDT tool. Illmenite from the mud packed off flow lines. Performed wiper trip.

Run 4 miss run VSP/APS
Short in head tension and could not switch to VSP

Run 5 VSP/APS
Porosity log failed some minutes after start logging at TD. Porosity APS log worked intermittently. Eventually achieved a valid up-log. Leakage in one gun. Signatures OK with two guns, 20 m intervals up to 2400m. Above 2400m 100m check shot intervals.

Run 6 MSCT
Cut 25 of 25 cores. Some tight spots. Recovered 15 cores. Core shaft was packed full of Illmenite solids.

Run 7 MDT. Took one pretest and recovered 2x450cc, 4x250cc and 1 gallon chamber

Total lost time for wire line logging was 11 hours and 30 minutes.

2.3.4 Formation Pressure

Knowledge System, KSI, performed the pore pressure evaluation. Pore pressures were analyzed using LWD gamma ray and resistivity data. Eaton's Resistivity model was used for the real time application using the software PREDICT. Sonic and density data was used to calibrate the pore pressure derived from resistivity.

A normal pore pressure gradient of 1.03 g /cm^3 is interpreted from seabed to approximately 1550 m where the increase starts. The pressure gradient builds up through the Tertiary to a local maximum of 1.5 g /cm^3 at 2600 m just below the top of Cretaceous. From 2700 m the pressure gradient drops rapidly back to 1.4 g /cm^3 at 2800 m. The pressure gradient is then constant through Shetland Group and starts to increase again at 3700m in the Cromer Knoll Group. Mud loses occurred as soon as new formation was being drilled in the 8 ½" section with 1.98sg MW. A LOT of 2.00 SG EMW at 3901m was performed and was significantly lower than the expected 2.10 SG FG and the MW was cut back to 1.92 SG. There was connection gas throughout the section, however when the mud weight was lowered to 1.9 sg the follow back volumes and CG decreased significantly, indicating that the well was breathing from a faulted zone. Circulation after trips indicated that the CG was coming from around the shoe at 3901m.
A maximum pore pressure of 1.83 g/cm^3 (748.95 bar) was measure with MDT in the Lower Lange Sandstone at 4178m MD / 417.,8m TVD. From that depth the gradient is decreasing to 1.80 g/cm^3 at TD 4500m

2.3.5 Formation Temperature

The static bottom hole temperature (SBHT) has been extrapolated by the Horner method from wire line thermometers. The SBHT is 164^{0}C at 4492m TVD RT. This value gives a geothermal gradient of 3.92^{0}C / 100m (fig. 2.3.3)

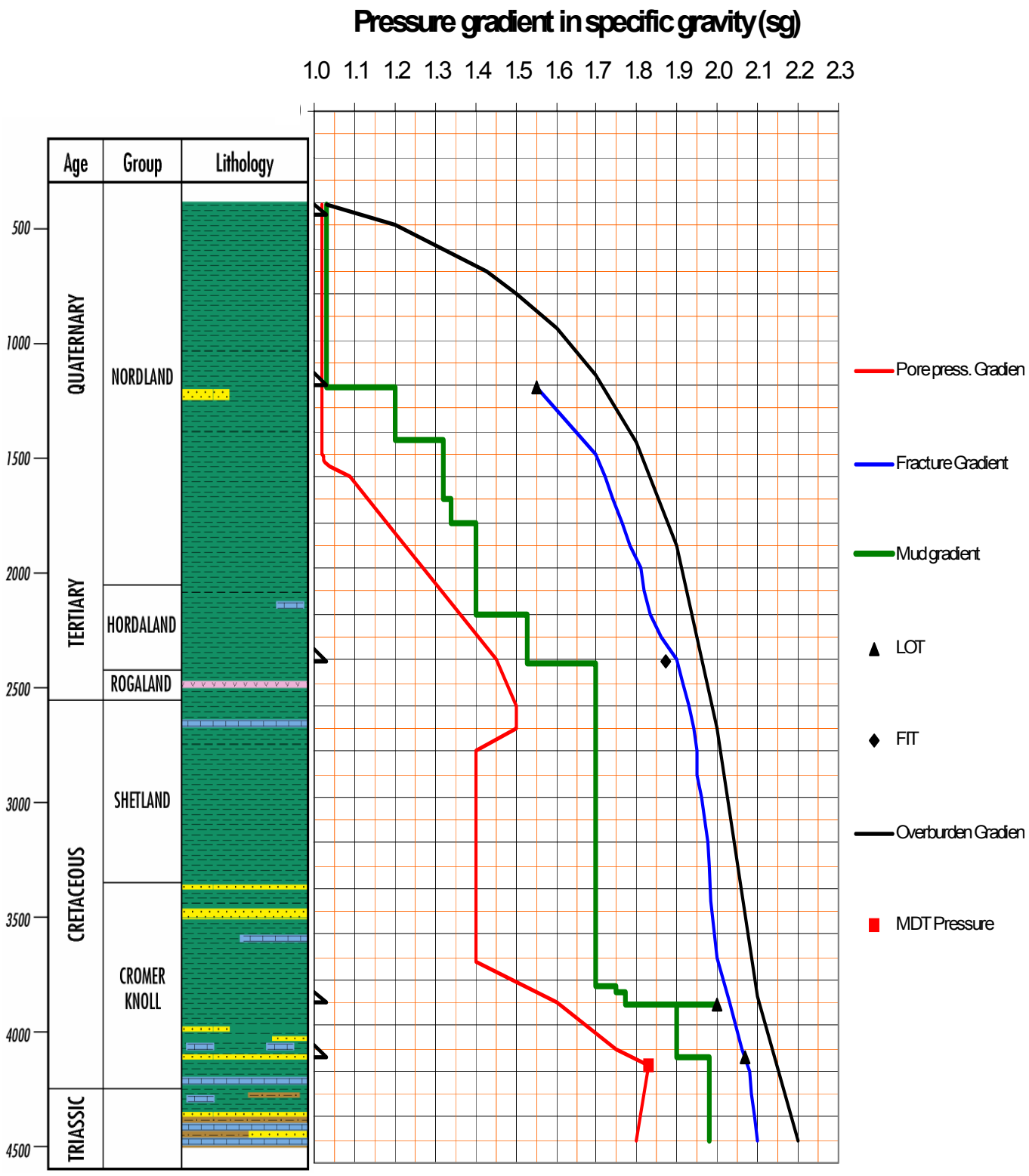
2.3.6 Side wall cores.

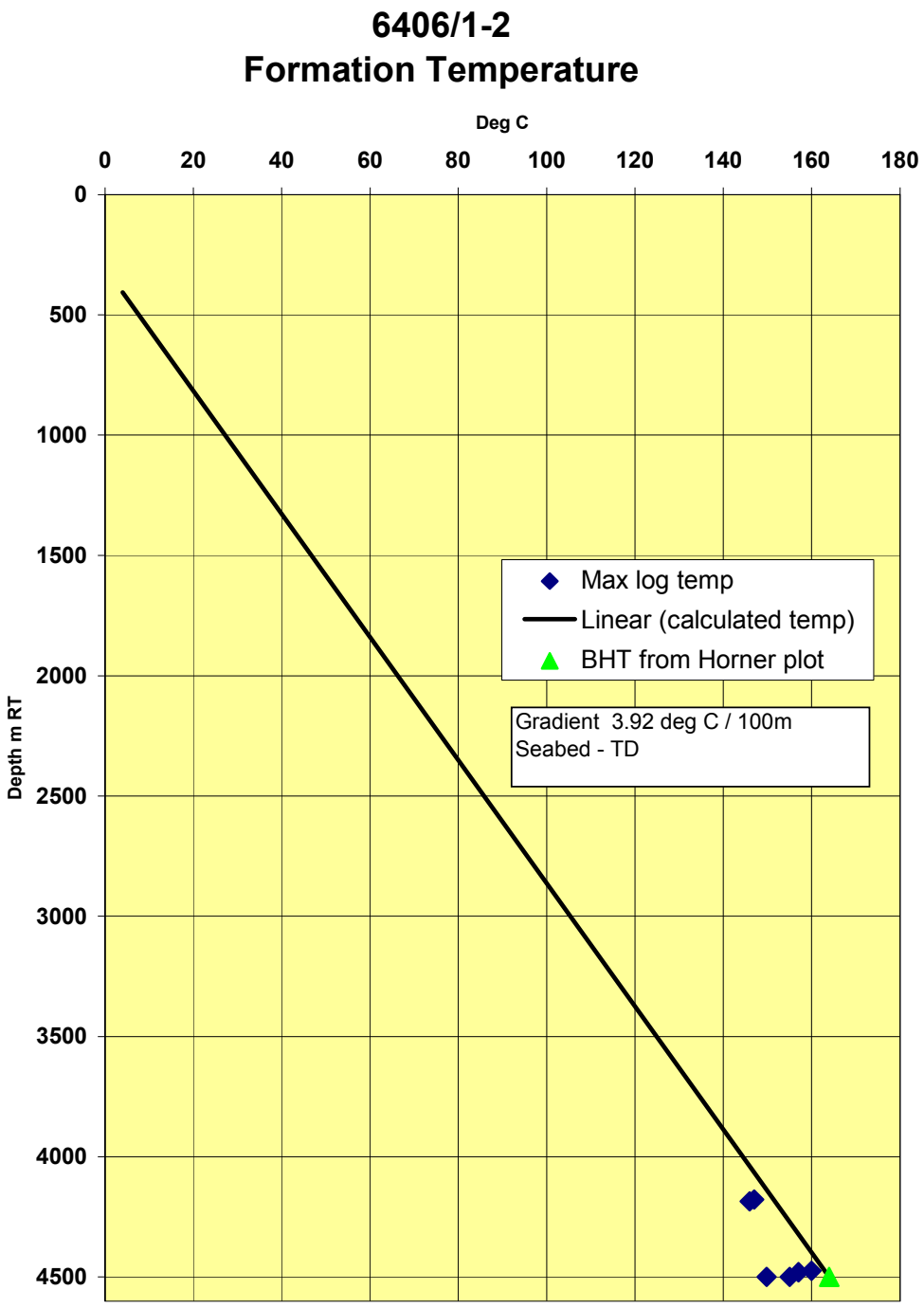
25 cores were cut in the 6.5" – 6.125" with Schlumberger's Mechanical Sidewall Coring Tool (MSCT). Core shaft was packed full of Illmenite solids when tool recovered at surface. This most likely prevented recovery of some cores.
The side wall cores taken in the Lower Lange reservoir section were sent to the laboratory for routine core analysis. The remaining cores were used for biostratigraphical and geochemical analysis. (See separate reports.)

The following side wall core descriptions were made on the rig:

No.	Depth mMD RT	LITHOLOGY	Rec. mm	SHOWS
1	4178	Sandstone: brown black, Quarts, clear – moderately brown , very fine – fine, rarely medium, well sorted , hard, well silica cemented, common carbonaceous material, occasional micaceous, traces Glauconite angular – sub-rounded, no visual porosity,	50	Nil odour, .Nil stain, uniform moderate yellow/green direct fluorescence, no visible cut, moderate yellow/green discolour cut, moderate yellow/green fluorescence residual, no visible residual.
2	4179	Sandstone: as 4178m, very hard, banded paler in parts.	45	Patchy direct fluorescence else as 4178m
3	4180	Sandstone: as 4178m, hard, less cemented than at 4179m	30	As 4178m
4	4181	Sandstone: brown grey else as 4178m, very fine – fine, occasionally medium	50	Patchy direct fluorescence else as 4178m
5	4182	Sandstone.: as 4181m very fine – fine, common Mica	42	Patchy dull yellow/green direct fluorescence else as 4178m
6	4184	Sandstone: dark brown grey – brown black, Quartz,, clear – brown, , very fine – fine, rarely medium, moderately - well sorted, hard, well silica cemented, discontinuity mineralised with silica, common Mica	38	Patchy dull yellow/green direct fluorescence else as 4178m
7	4211	Not recovered		
8	4221	Not recovered		
9	4256	Claystone: dark grey, poorly laminated, hard, silty, calcareous, traces micromicaceous	43	
10	4272	Claystone: olive grey, moderately hard, blocky, non calcareous, occasionally polished surfaces	43	
11	4276	Claystone: medium dark grey, moderately hard, blky, non calcareous, slightly silty, traces disseminated carbonaceous material	48	
12	4284	Claystone: as 4276m	47	
13	4292	Sandstone: dark grey brown, Quartz, clear – moderately brown, very fine, well sorted, sub-angular, well dolomitic cemented, hard, common micromicaceous, non visible porosity	44	Nil odour, .Nil stain, patchy moderate yellow/green direct fluorescence, moderate yellow/green discolour cut fluorescence, no visible cut, pale pl yellow/green fluorescence residual, no visible residual
14	4294	Sandstone:: as 4292m	39	Patchy dull yellow/green direct fluorescence else as 4292m
15	4296	Not recovered		
16	4349.5	Not recovered		
17	4362.5	Not recovered		
18	4395	Not recovered		
19	4410.5	Not recovered		
20	4415	Claystone: medium dark grey – dark grey, blocky, hard, non calcareous, slightly silty, traces micromicaceous.	42	
21	4442	Not recovered		
22	4467	Claystone: Dark grey brown, blocky, hard, non calcareous, 50° semi polished discontinuity	38	
23	4474	Sandstone: medium grey, Quartz, clear – moderately brown, very fine, sub-angular, well sorted, hard, silty matrix, well calcareous cemented, non visible porosity	50	No show
24	4169	Not recovered		
25	4155	Not recovered		

Well 6406/1-2
Pressure gradients





2.4 SHALLOW GAS

No indication of shallow gas was seen at the well location on the high resolution 2D seismic lines from the site survey. However at some distance from the well location seismic amplitudes indicated possible gas at 726, 803 and 950m. A 9 7/8" pilot hole was drilled from 30" shoe to 1210m with gamma ray and resistivity real time to locate possible shallow gas.

No sign of shallow gas was observed. Low resistivity sands were observed at 915, 975 and 1130m.

2.5 STRATIGRAPHY

2.5.1 Biostratigraphy

Routine Biostratigraphical analysis for well 6406/1-2 was performed by Robertson. For details see report "6406/1-2" Norwegian Sea Well Biostratigraphy." The main stratigraphy is noted in table 2.5.1. Detailed biostratigraphy based on side wall cores and cuttings was performed by the ENI lab in Milan. (fig. 2.5.1)

Successions and Biostratigraphic Zonations

Age		Depths (metres)	Inferred tops (metres)
Pleistocene - Pliocene		1210-1220	
Late Pliocene		1230-1450	
Early Pliocene		1500-1730	
Early Pliocene - Late Miocene		1770-1820	
Late Miocene		1830-1930	
Middle Miocene		1970-2060	
Early Miocene		2070-2130	
----------	?Stratigraphic break ----------		
intra-Late Oligocene - ?Early Oligocene		2140-2210	
Early Oligocene		2220-2270	
----------	?Stratigraphic break ----------		2277(log)
Late Eocene		2280-2320	
Middle Eocene		2330-2410	
----------	?Stratigraphic break ----------		
Early Eocene		2420-2440	
----------	Stratigraphic break----------		2444(log)
earliest Eocene		2450-2470	
?Late Paleocene		2480-2500	
Late - Early Paleocene		2510-2570	
----------	Stratigraphic break----------		2575(log)
Late Cretaceous	late Campanian	2580-2630	
	early Campanian	2645-2720	
	late Santonian	2730-2900	
	early Santonian	2910-3090	
	late Coniacian	3100-3310	
	early Coniacian	3320-3550	
	late Turonian	3560-3610	
	middle Turonian	3620-4163	
	early Turonian	4166-4182	
	late - middle Cenomanian	4185-4221	
----------	Stratigraphic break----------		
Early Cretaceous	middle Albian	4224-4230	
	---------- Stratigraphic break ----------		
	early Barremian	4233	
----------	Stratigraphic break----------		4233(log)
Late Triassic	Rhaetian - Norian	4236-4325	
	late - early? Carnian	4330-4401	
	early? Carnian	4407-4473	
Late? - ?Middle Triassic		4479-4500TD	

Table 2.5.1

The detailed biostratigraphy indicates that the hydrocarbon bearing sandstone in well 6406/1-2 is of Late to Middle Cenomanian age.

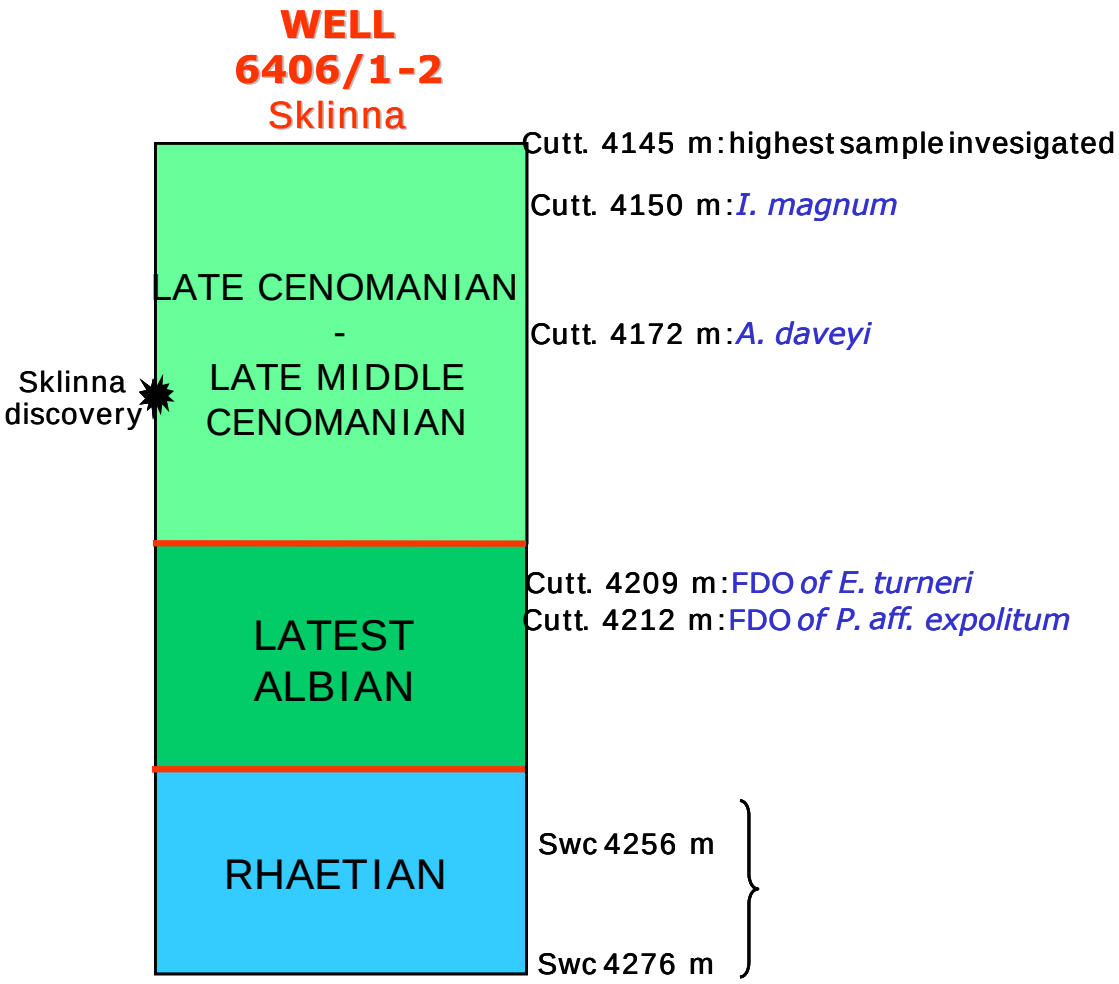


Fig. 2.5.1

2.5.2 Lithostratigraphy

The following summary is compiled predominantly from LWD data in the pilot hole from seabed at 406m RT (383m MSL) to 1210m (1187m MSL). This section was drilled with return to seabed and Gamma ray, resistivity, sonic and ROP were used for interpretation.
From 1210m cuttings and sidewall cores were used in addition to LWD and wire line data for the interpretation.

Nordland Group **406m – 2084m RT, (406 – 2083.7mTVD RT) (383m – 2060.7m TVD MSL)**

System: Tertiary - Quaternary
Age: Pleistocene

The Nordland group comprises the Quaternary, Naust and Kai Formations.

The well was drilled with returns to seabed down to 1210m. Interpretations from the MWD log suggest mostly clay with some thin stringers/layers of sand and gravel in the uppermost part. No shallow gas was observed.

Quaternary **406m – 716m RT, (406 – 716mTVD RT) (383m – 692m TVD MSL)**

System: Pleistocene to Holocene

The formation is interpreted as clay with some thin stringers/layers of sand/gravel. Clay from the 26" bit is firm to stiff medium grey clay with gravel/rock fragment.

Naust Formation **716 – 1585.5m RT, (716 – 1585.5m TVD RT) (692 – 1562.5m TVD MSL)**

Age: Pliocene - Pleistocene

Upper Boundary: The top is picked at a base of a gamma ray peak and a change to a smoother resistivity pattern...

The formation below 1210 m is described from cuttings as claystone with some thin stringer of sand/sandstone. The **claystone** is medium - medium dark – dark grey – olive grey, firm occasionally moderately hard, blocky occasionally subfiss, very silty grading siltstone – very sandy grading argillaceous sandstone, slightly – very calcareous, disseminated carbonaceous material,

Kai Formation **1585.5 – 2084m RT, (1585.5 – 2080.5m TVD RT) (1562.5 – 2057.5m TVD MSL)**

System: Tertiary
Age: Miocene – Pliocene

Upper Boundary: The top is picked from a clearly decrease in the transit time on the sonic log and by a decrease in the resistivity.

The litho logy is a massive silty sandy claystone with a few sandstone and limestone stringers.

The **claystone** is medium dark – dark grey – dark olive grey, dark brown, olive - brown black, firm, blocky - subfiss, very silty grading siltstone – very sandy grading argillaceous sandstone, slightly – very calcareous, traces of carbonaceous material. The **sandstone** is described as olive grey, very fine, sub angular, well sorted, common argillaceous matrix, firm – moderately hard, disseminated carbonaceous material, occasionally micromicaceous, no visible porosity. The **limestone** is very light - light grey, firm – moderately hard, blocky, argillaceous, micro crystalline

Hordaland Group **2081 - 2458m RT, (2080.5 – 2457.5m TVD RT) (2057.5 – 2434.5m TVD MSL)**

The Brygge Formation is the only stratigraphic unit within the Hordaland Group.

Brygge Formation **2081 – 2458m RT, (2080.5 – 2457.5m TVD RT) (2057.5 – 2434.5m TVD MSL)**

Age: Eocene - Miocene

Upper Boundary: Shows an increase in interval transit time on the sonic log and by a slight decrease in the gamma ray readings.
The lithology is a massive claystone, grading into siltstone and argillaceous sandstone with occasionally thin limestone stringers.

The **claystone** is varying in greyish colour, brownish grey – olive grey, greenish grey – medium dark grey – dark olive grey – dark brownish grey and brownish black – olive black. Soft to firm, blocky, rarely sub-fissile, occasionally waxy, very silty grading siltstone, traces to common sandy, very fine, in parts grading into argillaceous sandstone, non to very calcareous, rare - trace micromicaceous, trace carbonaceous material and traces of lithographic material,
is dark grey, earthy, firm to hard, occasionally soft and sticky, fissile in parts, amorphous to sub blocky, occasionally calcareous with abundant pyrite.
The **sandstone** is dark brown – dark brownish grey, very fine, sub-angular – sub-rounded, moderately to well calcareous cemented,
Limestone stringers are white – very light grey, occasionally yellowish grey, soft to firm, occasionally moderately hard, micro – crypto crystalline, argillaceous in parts and traces of

Rogaland Group **2458 - 2574m RT, (2457.5 – 2573.5m TVD RT) (2434.5 – 2550.5m TVD MSL)**

The Rogaland group comprises the Tare and the Tang Formations.
The lithology is a varicoloured claystone, with thin stringers of sandstone, tuff and limestone.

Tare Formation **2458 – 2519m RT, (2457.5 – 2518.5 m TDV RT) (2434.5 – 2595.5 m TVD MSL)**

Age: Paleocene - Eocene

Upper Boundary: The top is defined by a decrease in interval transit time; increase in density and by a slight decrease in the gamma ray readings.

The **claystone** is varicoloured grey – dusky blue green – pale blue – greyish red, waxy, firm to moderately hard, blocky to sub-fissile, non calcareous, dolomitic in parts, pyrite, non to slight swelling. The traces of the **sandstone** are olive grey, very fine and argillaceous/silty.

Tang Formation **2519 – 2574m RT, (2518.5 – 2573.5m TDV RT) (2595.5 – 2550.5m TVD MSL)**

Age: Paleocene

Upper Boundary: An increase in interval transit time on the sonic log and a decrease in density and resistivity readings

The **claystone** is varicolored grey – dusky blue green – pale blue – grayish red, waxy, firm to soft, sub-blocky – blocky, non – slight calcareous, micro pyritic, tuffaceous grading into tuffaceous claystone. The **tuff** is described as light bluish – light greenish grey, soft, amorphous and with very fine disseminated pyrite. **Limestone** is very light grey, hard and blocky

Shetland Group **2574 - 3368m RT, (2573.5 – 3366.5m TVD RT)**
(2550.5 – 3343.5m TVD MSL)

System: Cretaceous

The Shetland group comprises the Springar, Nise and Kvitnos Formations.
The lithology consists of claystone with stringers of limestone, dolomite and siltstone

Springar Formation **2574 - 2648m RT, (2573.5 – 2647.5m TVD RT)**
(2550.5 – 2624.5m TVD MSL)

Age: Campanian

Upper Boundary: The top is defined by a decrease in interval transit time; increase in density and by a general shift to increasing resistivity readings.

The **claystone** is medium and light grey, waxy, soft to hard, amorphous to blocky, slightly swelling, calcareous, cryptofissle, micropyritic and micromicaceous. Abundant to nil traces of **Limestone**. Very light grey, cryptocrystalline, hard, crumbly to blocky, occasionally light orange brown. **The dolomite** is light brownish grey – yellowish grey to yellowish brown, hard and crumbly

Nise Formation **2648 –2730m RT, (2647.5 – 2729.5 m TVD RT)**
(2624.5 – 2706.5m TVD MSL)

Age: Campanian

Upper Boundary: The top is defined by a decrease in interval transit time and an increasing resistivity trend. .

The **claystone** is medium to dark grey, earthy - waxy, granular, hard occasionally soft, amorphous to blocky, non calcareous to calcareous, slightly swelling, non to very silty, grading to argillaceous **siltstone**, becoming sandy grading to very argillaceous/silty sandstone in parts, micro carbonaceous. The **limestone** is yellow grey becoming yellow orange to yellow brown, generally cryptocrystalline, rarely crystalline, hard, rarely very hard, crumbly, rarely splintery, occasionally argillaceous, . Dolomitic, grading to dolomite in parts. **Dolomite**, light brown grey, yellow grey to yellow brown, hard, crumbly.

Kvitnos Formation **2730 - 3368m RT, (2729.5 – 3366.5m TVD RT)**
(2706.5– 3343.5m TVD MSL)

Age: Santonian

Upper Boundary: The top is defined by a decrease in interval transit time; increase in density and by a general shift to increasing resistivity.

The **claystone** in the Kvitnos formation is medium grey earthy, hard to very hard, soft in parts, blocky, amorphous in parts, calcareous, dolomitic, nil to rare silt/sand, microcarbonaceous, microcalcite grains. The **limestone** is yellow brown, generally cryptocrystalline, moderately hard, and crumbly.

Cromer Knoll Group **3368 - 4232m RT, (3366.5 – 4227m TVD RT)**
(3343.5 – 4204m TVD MSL)

The Cromer Knoll group comprises a thin Lysing formation and the Lange formation with the Intra Lange sandstone.

Lysing Formation **3368 – 3386.5m RT, (3366.5 – 3385m TVD RT)**
(3343.5 – 3362m TVD MSL)

Age: Coniacian

Upper Boundary: The top is defined by a decrease in the gamma ray combine with a decrease in the density.

The lithology consists mainly of sandstone with some interbedded claystone layers in between

The **sandstone** is very light grey to pale green with dark green mottles, fine to medium, becoming medium to coarse with depth, occasionally silt to very fine, poor to medium sorted, sub-round to sub-angular to angular when medium & coarse, soft becoming moderately hard, friable, argillaceous matrix, slightly calcareous, very glauconitic, nil becoming moderate visible porosity.

Lange Formation **3386.5 – 4232m RT, (3385 – 4227m TVD RT)**
(3362 – 4204m TVD MSL)

Age: Turonian/ Albian

Upper Boundary: The top of the formation is picked on a two meter thick stringer with a large increase in the gamma ray values.

The Lange formation consists of silty claystone with occasional sandstone and limestone layers stringers. In the upper and lower parts to units occur with interbedded sandstone and claystone

The **claystone** is light grey – medium dark - dark grey, olive grey – olive black, brown black, earthy, occasionally soft, mainly firm- to hard, sub-blocky to blocky, sub-fissile in parts, occasionally slightly swelling occasionally silty–to very silty grading siltstone, non calcareous, slightly micro carbonaceous, trace of glauconite The **sandstone** stringer is very fine - fine occasionally medium – coarse, moderately sorted, sub-angular – sub-rounded, slight to well silica cemented, argillaceous. **Limestone** is white – very light grey, dark yellowish orange – yellowish white – light brown, moderately hard to hard, occasionally crumbly, blocky, occasionally argillaceous – very argillaceous grading calcareous claystone, micro – crypto crystalline, micritic in parts, dolomitic in parts. Limestone stringers below Intra Lange I is light blue green-green grey, pink grey - moderate orange pink - grey orange pink, firm, blocky-amorphous, cryptocrystalline, becoming finely crystalline in argillaceous matrix argillaceous becoming very argillaceous, intergrading to very calcareous Claystone.

Upper Lange Sandstone **3476 – 3525m RT, (3474.5 – 3523m TVD RT)**
(3451.5 – 3500m TVD MSL)

Upper Boundary: The top of the sandstone is picked by a decrease in the gamma ray values and an increase in the interval transit time on the sonic log

The **sandstone** is fine to coarse, occasionally very coarse, mod to poorly sorted, sub-angular, argillaceous, glauconitic, occasionally slight calcareous. The **claystone** is medium dark to dark grey, firm to moderately hard, blocky, silty occasionally very silty, non calcareous

Lower Lange Sandstone **4163 – 4185m RT, (4157 – 4180m TVD RT)**
(4134 – 4157m TVD MSL)

Upper Boundary: The top of the sandstone is picked by a decrease in the gamma ray values and an increase in the resistivity and the interval transit time on the sonic log

Sandstone, brown black, moderately brown (illmenite contaminated ?) clear – brown, very fine – fine, rarely medium, moderately to well sorted, angular – sub-rounded, hard, well silica cemented, common carbonaceous material, occasional micaceous, traces Glauconite, no visual porosity. The **claystone** is light brown grey to light grey, soft, amorphous, non silty, slightly swelling.

Triassic **4232 – 4500m RT, (4227 – 4992.4m TVD MSL)**
(4204 – 4469.4m TVD RT)

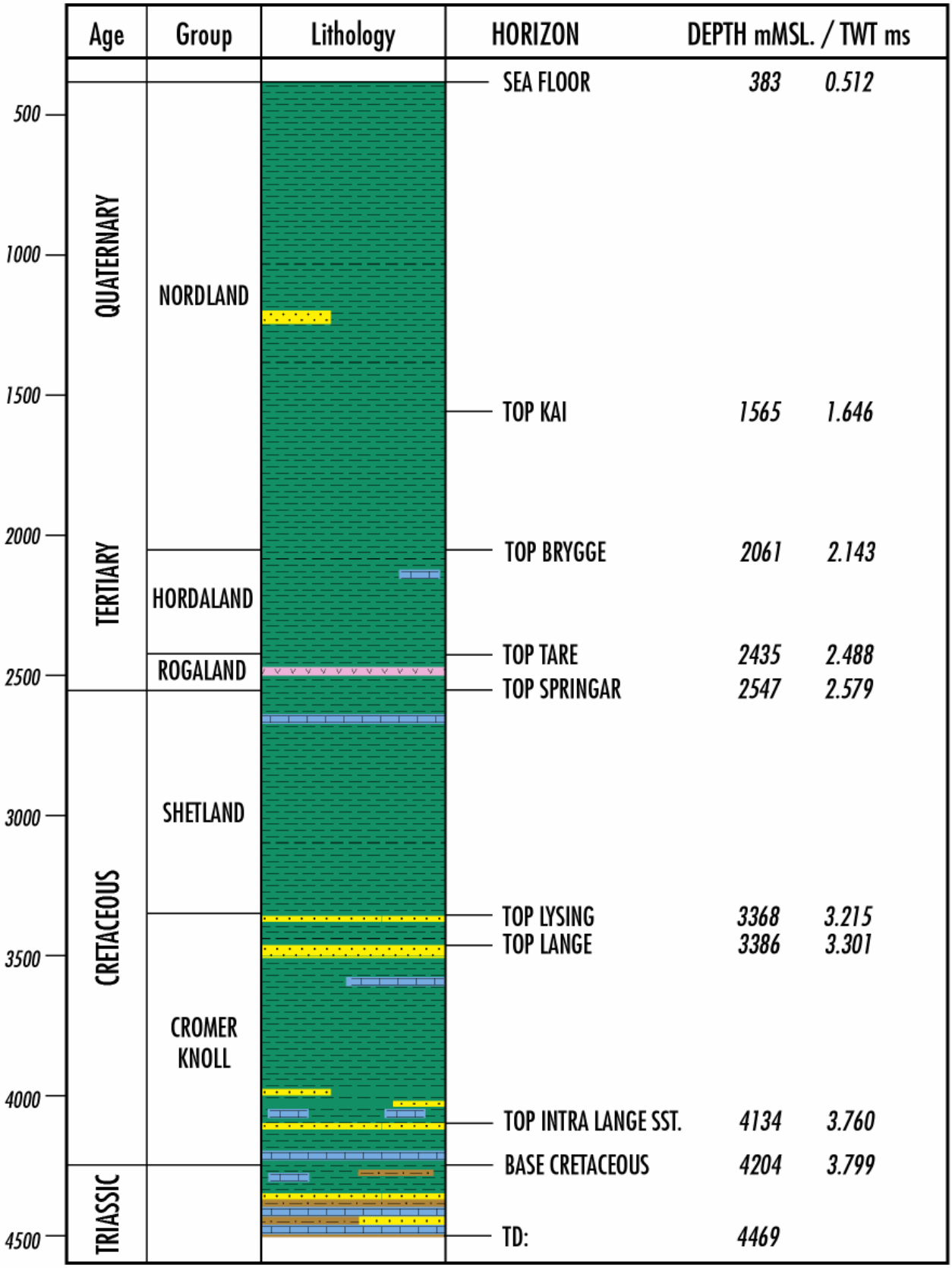
System: Triassic
Age: Ladinian - Norian

Upper Boundary: The top is picked by a decrease and change into a more erratic pattern in the gamma ray values and a general increase in the resistivity. The interval transit time on the sonic log is decreasing.

The drilled Triassic formation consists of claystone interbedded with calcareous sandstone, calcareous siltstone and limestone of varied thickness

The **claystone** is dark grey – olive grey – dark grayish brown, blocky, hard, slight silty – silty, non calcareous. The **calcareous sandstone / sandy limestone** is light - medium light grey – grayish orange – medium brown, very fine – medium , traces coarse, moderately – well sorted, sub rounded, firm – hard, friable, dark greenish brown, silty matrix, no visible porosity. **Siltstone** is light grey - medium dark - dark grey – olive grey, and at the bottom very dusky red. Firm, blocky, clayey, occasionally grading to silty claystone, occasionally slight sandy calcareous to very calcareous grading into silty limestone, occasionally grading to silty sandy limestone , The **limestone** in the upper part is light grey – very light grey – light brownish grey, firm, blocky, occasionally amorphous, argillaceous, occ. arenaceous, crypto – microcrystalline. The limestone in the lower part is grading into calcareous sandstone as described above.

Well 6406/1-2
Stratigraphic Column



2.6 WELL VELOCITY

A VSP survey was recorded in well 6406/1-2. The main aims of this were to provide a correlation between the well logs and the seismic data and to obtain seismic velocities for depth conversion purposes.

2.6.1 V.S.P.

Full details of the vertical seismic profile are given in the report by Schlumberger entitled "6406/1-2 VSP data processing".

The VSP survey was recorded on 24th August 2003. A 2 level assembly with 20 m spacing between the receivers was used. The VSP interval was between 4480 m and 2380 m RKB. Checkshots were recorded between 2300 m and 1880 m RKB. The seismic source was 2 x 155 cu.in. Bolt 1900 LLX airguns at a pressure of 3000 psi. The source was at 78 m offset and 350° azimuth from the wellhead.

At the onshore processing centre, full processing of the VSP was performed, to produce the final "zero phase upgoing wavefield" and corridor stacks. The figure shows the positions of the main formation tops where they intersect the first arrival curve of the VSP display.

2.6.2 Synthetic Seismogram

Compressional sonic logs from wireline or MWD measurements are available between 4490 m and 1892 m RKB. Within this interval, two gaps in the density logging have been filled by linear interpolation. The sonic log was calibrated and used with the density log to calculate the acoustic impedance log and reflection coefficients.

Using zero and minimum phase Ricker wavelets, synthetic seismograms have been generated for a series of central frequencies. The figure shows the zero phase 40 Hz synthetic with a Ricker wavelet.

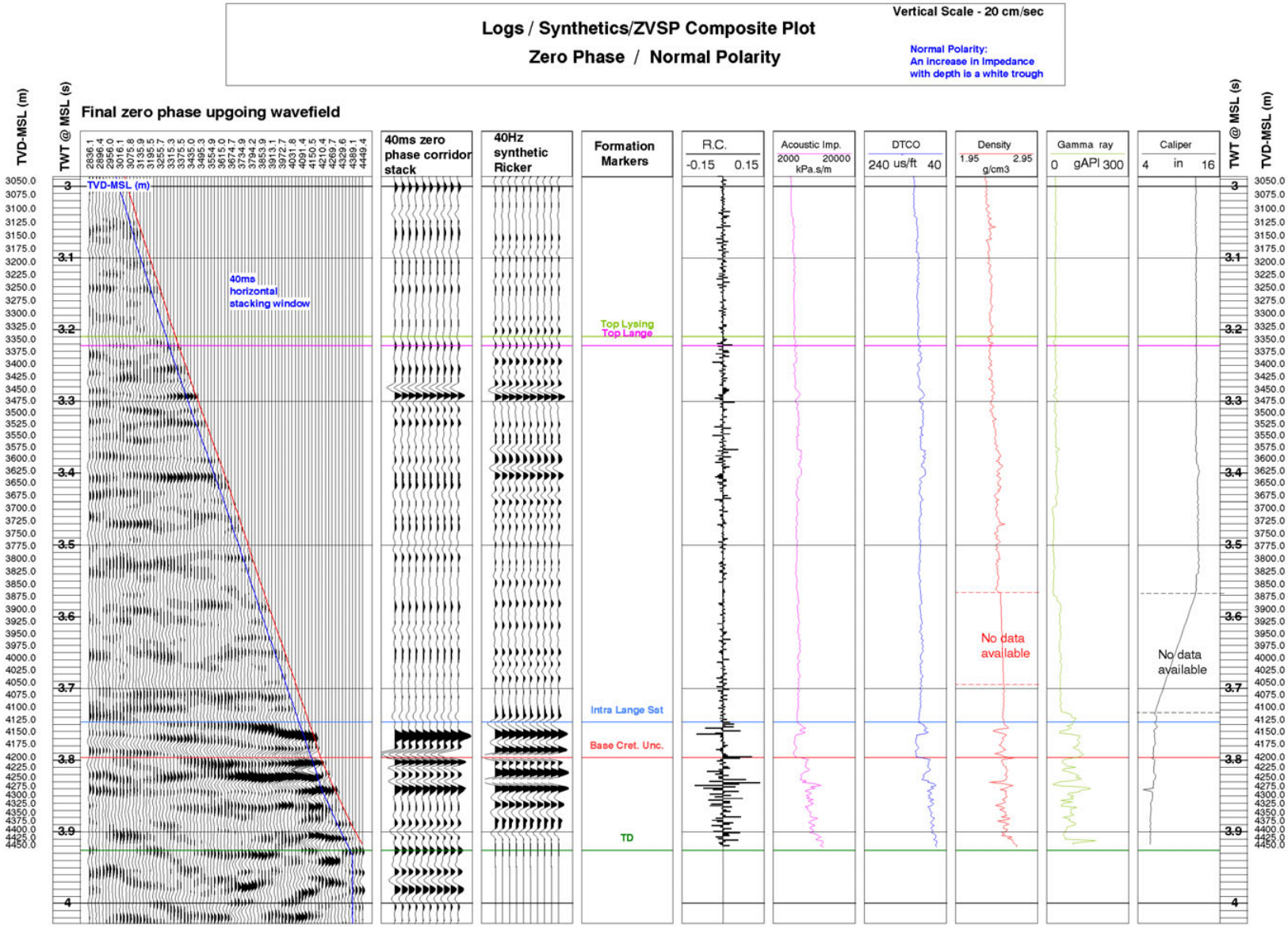

Logs / Synthetics/ZVSP Composite Plot
Zero Phase / Normal Polarity
Vertical Scale - 20 cm/sec
Normal Polarity:
An increase in impedance
with depth is a white trough
Final zero phase upgoing wavefield
TVD-MSL (m)
TWT @ MSL (s)
40ms zero phase corridor stack
40Hz synthetic Ricker
Formation Markers
R.C.
-0.15 0.15
Acoustic Imp.
2000 20000
kPa.s/m
DTCO
240 us/ft 40
Density
1.95 2.95
g/cm3
Gamma ray
0 gAPI 300
Caliper
4 in 16
40ms horizontal stacking window
Top Lysing
Top Lange
Intra Lange Sst
Base Cret. Unc.
TD
No data available
No data available
(s)
Norsk AGIP - Eni Group
Sklinna S - 6406/1-2

Figure 24n

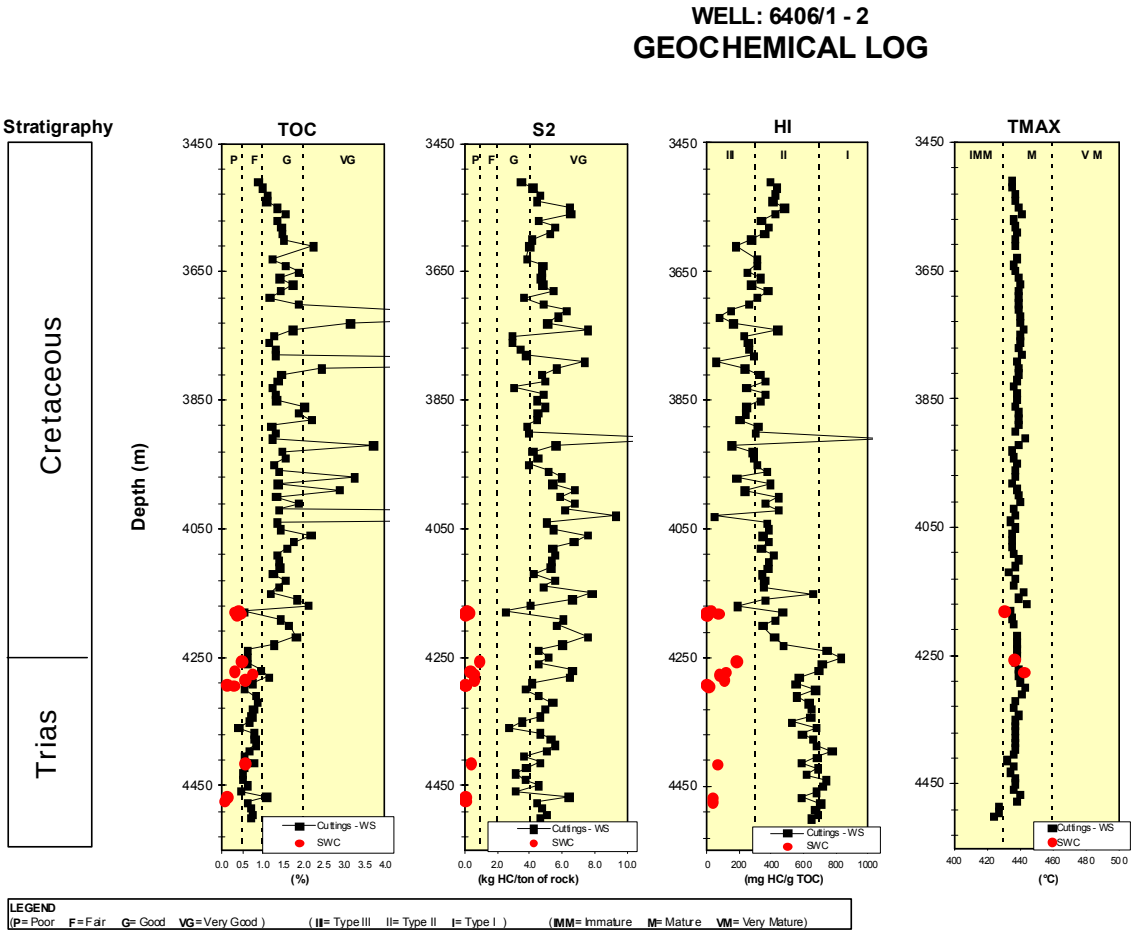
2.7 GEOCHEMISTRY

The full geochemical study can be found in the report "Well **6406/1-2 (Sklinna) Geochemical study"** Edited by R. Galimberti.
The main conclusions can be summarized as follows.

Aim of the study:

- Identification of pay zones
- Source rock evaluation
- Definition of the well maturity profile
- Characterization of the recoverable HC`s defining their origin

Results:



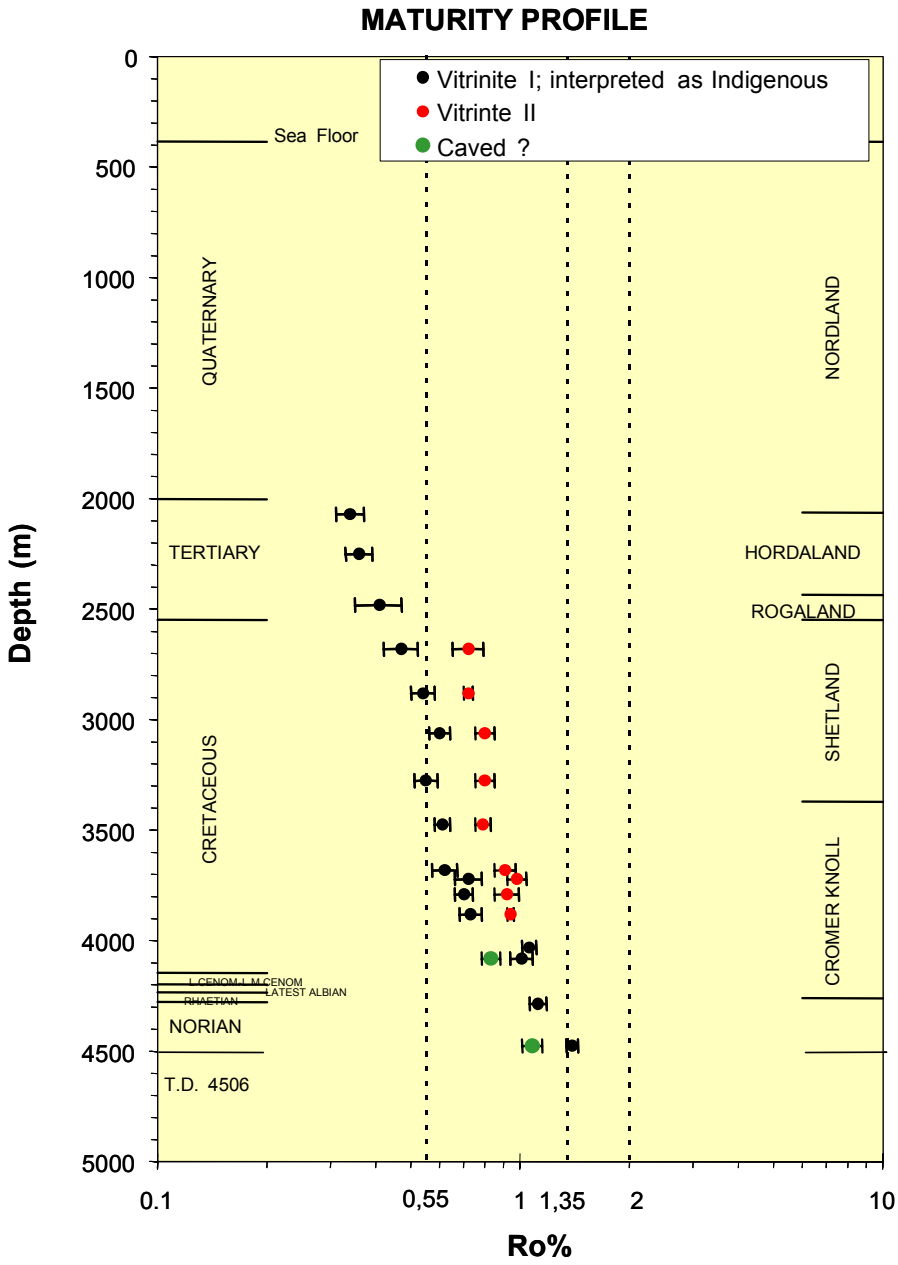
The **drilling mud** (OBM) used in the well 6406/1-2 drilled in the Sklinna South structure contains different organic compounds (in particular Versatrol) which affect the results of the geochemical analyses.
As a result, the geochemical characterisation by TOC and RockEval of the cuttings (aimed both to the identification of pay zones and to the source rock evaluation) can not supply completely reliable results while the fluid characterisation is totally prevented for the C10+ fraction and for biomarker in particular.
The following methodologies have got reliable results: Light hydrocarbons, Gas characterisation, Head space analysis, Optical Analysis

A very rough estimation of the **source rock potential** can be attempted assuming a constant pollution of the OBM along the studied interval. In this case the real characteristics of the source rock should be the following:
In general the Cretaceous sequences range between 0.3-0.6% of TOC and 2-4 kg hc/ton of rock for the S2, with a HI lower than 200.
The Triassic shows a TOC values generally lower than 0.5%, an S2 between 1 and 2‰ and an HI lower than 200
The SWC samples, although quite sparse in the interval, seem to confirm the poor source rock characteristics.
Some scattered samples (3720, 3790 and 4030 m) show very high TOC values representing possible coaly levels with a low residual potential.

Due to the presence of the OBM described above, **the origin of the Sklinna fluids** is still unclear; some ambiguous indications come from the condensate and gas analyses.
The analysis of the light fraction of the condensate suggests:
An aromatic character of the fluid, probably due to a terrestrial input of organic matter in its source rock;
A high thermal maturity;
Some correlation with Ellida, Hvitveis and, partially, with Kristin and Norne;
A not likely involvement of the Lower Jurassic Åre Fm. in its origin (according to the criteria suggested by Odden et al.).
The analysis of the gas shows a thermogenic origin from a sapropelic source rock (based on the Schoell's classification). The thermal maturity is equivalent to a vitrinite reflectance (Ro %) around 1.4.
According to the AkerGeo criteria used to interpret a large database of Mid Norway gases the Sklinna gas is similar to the wet gases with isotopically light methane. This type most likely is sourced from the marine Spekk Fm.

The **head space analysis** was able to detect four main gas shows: the first one around 2400-2900 interval, then in more limited intervals around 3400, 3950 and in the reservoir zone around 4175 m. In agreement to the Gas While Drilling data, in the Triassic section, below 4232 m, a strong decrease of the gas content is observed.
The gas is thermogenic along the whole studied interval and its maturity varies in relation with the depth in a Vitrinite reflectance range of 0.6 to 1.5 Ro%.

The **optical analysis** shows a maturity profile based on the Ro% values increasing regularly. The indigenous vitrinite shows an immature facies (Ro% from 0.34 to 0.54) in the 2070 – 2900 m interval, while from 3000 m to TD the sediments are in the oil window, mature facies (Ro from 0.60% to 1.39%). The other optical parameters (Thermal Alteration Index and Fluorescence Colours) confirm the maturity trend identified by the vitrinite reflectance.
The kerogen composition analysis shows a mainly continental organic matter (CHF and CWF predominating), with some marine organic matter (MPH) input in the 2070 – 2680 interval.


MATURITY PROFILE
Vitrinite I; interpreted as Indigenous
Vitrinte II
Caved ?
Sea Floor
QUATERNARY
TERTIARY
CRETACEOUS
L CENOM
L M CENOM
LATEST ALBIAN
RHAETIAN
NORIAN
T.D. 4506
NORDLAND
HORDALAND
ROGALAND
SHETLAND
CROMER KNOLL
Depth (m)
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
0.1
0,55
1
1,35
2
10
Ro%

2.8 FORMATION EVALUATION

2.8.1 Reservoir Petrophysical Description

Top reservoir: 4163 m
Base: 4285m

Hydrocarbon bearing sandstone reservoir was found in the Lange Formation. The reservoir is of Cenomanian age. No cores were cut in the reservoir, but based on 6 rotary side wall cores the sandstone is described as brown to grey, very fine to fine, medium, well sorted, hard, well silica cemented, common carbonaceous material, traces of Glauconitic, poor to no visual porosity.

The routine core analysis of the side wall core gave the following result:

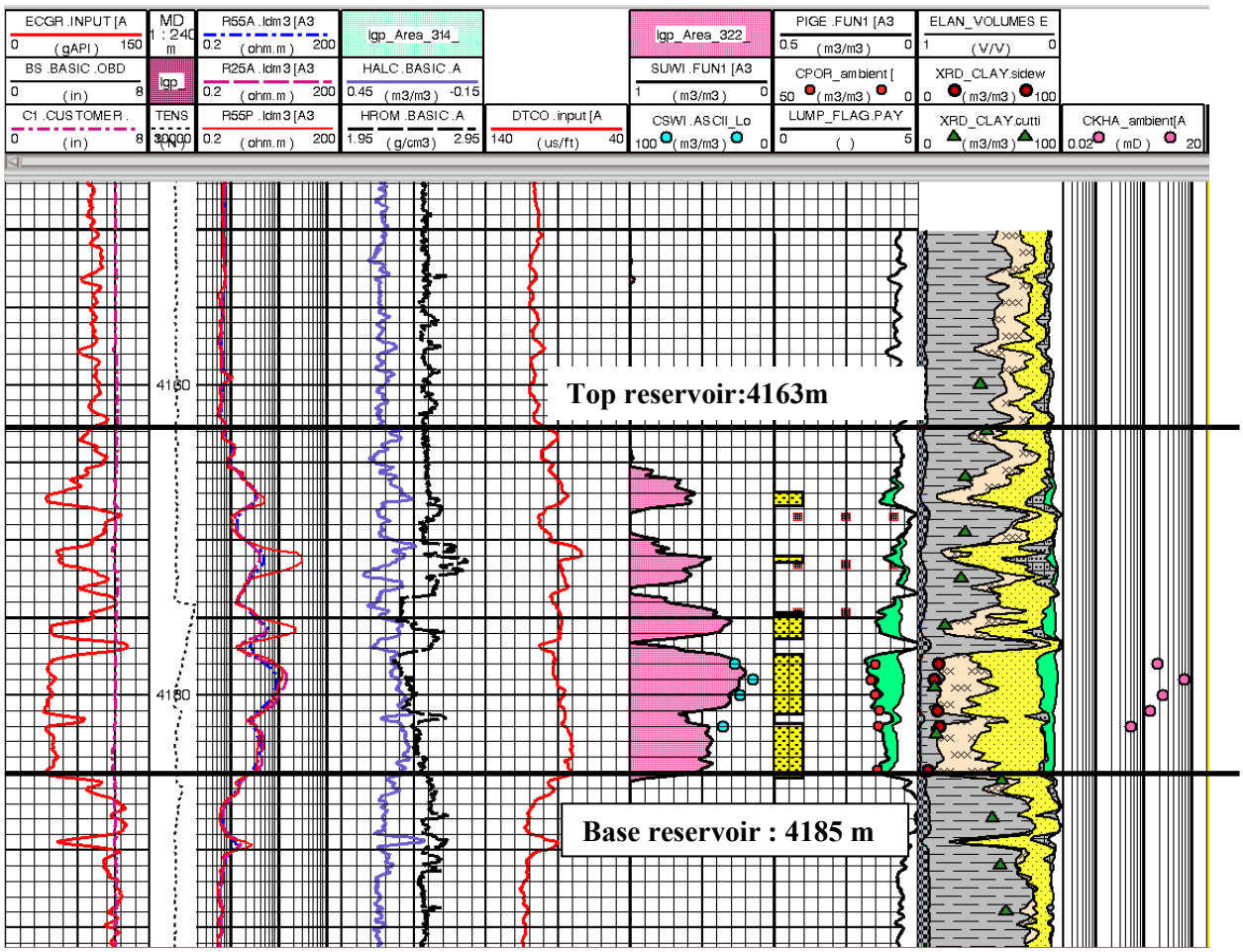
Sample no	Depth m	Porosity %	Grain density g/cc	Horizontal Permeability md
1	4178	15.2	2.69	1.87
2	4179	16.8	2.65	6.44
3	4180	15.1	2.64	2.31
4	4181	13.8	2.65	1.28
5	4182	14.2	2.66	0.52
6	4184	14.3	3.11	

2.8.2 Log Evaluation

The CPI was performed by using ELANPLUS software (GEOQUEST- GeoFrame version 3.8.1)
Due to hole problems while logging the well with wire line, the resistivity curves used in the computation was the LWD curves.
The following parameters were used for the saturation calculation:

a=1
m=1.83
n = 1.8 for sequence2
n = 1.6 for sequence3 from m 4165 to m 4181.5
n = 1.4 for sequence 3 from 4181.5 to 4190

The water salinity used was 60 g/l that is Rw= .03 at 150 deg. C.
The water salinity is taken from DST of the Lange Formation well 6506/11-2



Main Results:

Gross Pay:	22m
Net pay:	10m
Average porosity	14%
Average Sw:|	38%

Cut off values:

Porosity:	>10%
V clay:	<40%
Sw:	<70%

2.8.3 FMT Pressure and sampling

Schlumberger`s Modular Dynamic Tester was used for formation pressure measurements and reservoir fluid sampling in well 6406/1-2. There were a total of 2 separate MDT runs (table 2.8.1).The first run tried 3 pressure points before getting stuck. All the tree points were either tight or supercharged.
After fishing the MDT tool a second attempt were made to sample the Lange sandstone. This time one valid pressure point and a total of 6 sample bottles and the 1 gallon chamber were filled.
The samples were sending to Core lab in Aberdeen for PVT analysis.

The reservoir hydrocarbon samples taken at 4178 m RT were all found to have more than 90 % mud contamination. Due to this strong contamination the PVT program was reduced.

Test No.	Depth mMD RKB	Initial Hydrostatic Pressure Quartz	Initial Hydrostatic Pressure Strain	Formation Pressure Quartz	Formation Pressure Strain	Final Hydrostatic Pressure Quartz	Final Hydrostatic Pressure Strain	Formation Pressure sg EMW	Mud Gradient g/cc	Test Temp. degC	Pretest Volume cc	Quartz Mobility md/cp	Remarks
1	4186	811.7	811.4			811.8	811.1	#####	-	143.3	13.8		Tight
2	4184	811.7	811.5			811.7	811.3	#####	-	143.6	8.1		Supercharged
3	4180	811.6	811.3			811.6	811.3	#####	-	142.7	5.5		Tight
4	4177.5	811.4	809.150			811.2	809.1	#####	-	143.5	20		Supercharged
								-	-				
1b	4178	806.5	806.0	748.9	748.40			1.830	1.980	141.8	20	2.6	Sampling

Table 8.2.1 MDT summary.

•I Sample taken at 4178mMD RT / 4171.8 mTVD RT
•4 MPSR, 2 SPMC and 1 gallon samples

•Formation pressure	748.946 bar
•Hydrostatic pressure	806.530 bar
•Formation Temperature	146.0^{o} C
•Mobility	2.6 md/cp

•1 Gallon chamber:

Density	0.814 g/cm^{3}
GOR	380 m^{3} / m^{3}

Table 2.8.2
Sampling data

Summary of PVT Samples

Bottomhole Samples						
Sample Number	Cylinder Number	Sampling Depth (m)	Laboratory Opening Pressure (bara)	Temp. (°C)	Entrained Water Content (wt%)	Approx. Sample Volume (cm3)
1.01	6939-MA	4178	190.6	15.6	0.12	330
1.02	9840-MA	4178	725.0	15.6	0.07	215
1.03	9841-MA	4178	759.4	15.6	0.35	215
1.04	6836-MA	4178	380.2	15.6	0.06	390
1.05	9810-MA	4178	759.4	15.6	0.04	215
1.06	9323-MA	4178	759.4	15.6	0.05	215

Summary of Bottomhole Samples - Contents

Cylinder Number	Nature of Fluid (cm3)	Estimated Contamination of Flashed Oil (wt%)
6939-MA Sample pumped from top of cylinder	Gas	**> 90**
9840_MA! Sample pumped from top of cylinder	Gas	**> 90**
9841_MA Sample pumped from top of cylinder	Gas	**> 90**
6836-MA Sample pumped from top of cylinder	Gas	**> 90**
9810-MA Sample pumped from top of cylinder	Gas	**> 90**
9323-MA Sample pumped from top of cylinder	Gas	**> 90**

Calculated Uncontaminated Composition of Bottomhole Sample

Sample 6939-MA	Flashed Liquid	Reservoir Fluid
Density at 15.0°C (kg m-3)	808.5	
Gas-Oil Ratio (Sm3/m3) (1)		4229
Sample 6836-MA		
Density at 15.0°C (kg m-3)	808.6	
Gas-Oil Ratio (Sm3/m3) (1)		12152
Sample 9323-MA		
Density at 15.0°C (kg m-3)	801.4	
Gas-Oil Ratio (Sm3/m3) (1)		11925
Sample 9840-MA		
Density at 15.0°C (kg m-3)	812.7	
Gas-Oil Ratio (Sm3/m3) (1)		4423

3. DRILLING

3.1 Introduction

Norsk Agip A/S drilled the exploration well 6406/1-2 in Block 6406/1 (PL 256) in the Haltenbanken area with the semi-submersible drilling rig "Deepsea Bergen". After reaching TD at 4500 m and finishing the logging, the well was plugged and abandoned. The total time on the well was 78.4 days, consisting of 71.1 days used for drilling related operations and 7.3 days for moving the drilling rig to/from the well location. The cost for the drilling related operations was NOK 163.8 million (40 013 NOK/m), and the cost for the rig move to/from the well location NOK 48.2 million. Total cost for the well was NOK 212 million.

As % of total well time the distributed between the main operation groups was:

Drilling	51%
BOP	10%
Casing/liner	11%
Logging	6%
P&A	9%
Rig move	11%
Other	2%

The unplanned/unproductive time was 7.4 % of the total time.

The time for well 6406/1-2 started on 21 June 2003 at 2030 hrs by the rig Deepsea Bergen being taken on contract by Norsk Agip. The rig was towed to the 6406/1-2 drilling location where the anchors were set and the rig ballasted down to drilling draft; these operations were completed in 3.94 days. At drilling draft the distance from the rotary table to the sea surface (RT – MSL) was 23 m.

The 36" conductor was installed by driving it with a specially designed hydraulic hammer assembly placed in the bottom of the conductor. The 36" conductor penetrated the seabed on 26 June 2003 at 0730 hrs which was recorded as the spud time for the well. The conductor was installed with the shoe at 455 m.

The distance from the rotary table to the seabed (RT – seabed) was 406 m.
(Distance RT – MSL was 23 m).

A 9 7/8" pilot hole was drilled to 1210 m, and then re-drilled to 26" down to 1205 m. The 20" casing was set at 1199 m.

17 ½" hole section was drilled to 2415 m and the 13 3/8" casing was set at 2404 m.

12 ¼" hole was drilled to 3908 m and 9 7/8"x 9 5/8" casing set at 3901 m.

8 ½" hole was drilled to 4140 m and a 7" drilling liner was set at 4139 m, with top of the liner at 3721 m.

A 6 ½"x 6 1/8" open hole section was drilled below the liner shoe to TD of the well at 4500 m.

After reaching TD the well was logged and abandoned. The permanent abandoned of the well was finished on 3 September and the rig left location on 4 September 2003 at 2040 hrs.

The rig was then moved to the CCB base outside Bergen and went off contract on 8 September 2003 at 0630 hrs.

The purpose of drilling well 6406/1-2 was to investigate the hydrocarbon potential of the Middle Jurassic/ Lower Jurassic Båt Group.

3.1.1 Well Data summary

Well 6406/1-2

HOLE SECTION	1	2	3	4	5	6	7
Hole size & depth	30" conductor was driven to 455 m (seabed at 406 m)	9 7/8" pilot hole was drilled from 30" shoe to 1210 m in order to check for shallow gas	26" hole was drilled to 1205 m	17 1/2" hole was drilled to 2415 m	12 1/4" hole was drilled to 3908 m	8 1/2" hole was drilled to 4140 m (TD of well)	6.5" x 6.125" hole to 4500 m (TD), drilled with bi-centered bits.
Drilling fluids	Prior to reaching planned depth the 30" conductor hit refusal depth two times and pre-drilling with 26" bit through the conductor had to be done before driving could continue. A total of 12.5 m of 26" hole was drilled. Drilling fluid was seawater with sweeps of high viscosity seawater/PAC spud mud.	Type: Seawater/ High Viscous Sweeps with seawater/PAC spud mud Viscous Sweeps: Density: 1.03 -1.20 sg FV: 110 -120 Pilot hole displaced to 1.2 sg mud prior to POOH	Type: Seawater/ High Viscous Sweeps with seawater/PAC spud mud Viscous Sweeps: Density: 1.03 -1.20 sg FV: 110 26" hole displaced to 1.2 sg mud prior to POOH	Type: SilDril water based mud Density: 1.15 – 1.53 sg PV: 12 –24 cP YP: 16 – 25.5 Pa pH: 11.6 – 11.7	Type: Versapro Oil based mud Density: 1.70– 1.80 sg PV: 43 - 50 YP: 9 – 12 Pa Cl-: 143 – 196 g/l	Type: Versapro Oil based mud Density: 1.90 – 1.93 sg PV: 37 - 55 YP: 8 – 10.5 Pa Cl-: 171 – 238 g/l	Type: Versapro Oil based mud Density: 1.80 – 1.98 sg PV: 29 - 47 YP: 4.5 – 9 Pa Cl-: 136 – 200 g/l
Coring					No coring	No coring	No coring
Logging	Drilling: None Logging in open hole: None	Drilling: MWD-GR-Sonic-Res. -directional Logging in open hole: None	Drilling: MWD- directional Logging in open hole: None	Drilling: MWD-GR-Sonic-Res. -directional Logging in open hole: None	Drilling: MWD-GR-Sonic-Res. -directional -density Logging in open hole: None	Drilling: MWD-GR-Sonic-Res. -directional -density Logging in open hole: None	Drilling: MWD-GR- Res.-directional Logging in open hole: OBDT-DSI IPLT-AIT MDT VSP-APS MSCT
Casing	30" casing to 455 m.		20" casing to 1199 m. Vetco MS-700 Wellhead System 18 ¾" x 15000 psi	13 3/8" casing to 2404 m	9 7/8" x 9 5/8" casing to 3901 m.	7" liner to 4139 m (top of liner at 3721 m)	
Cement			Cement type: Class G Mixwater: Seawater (lead), freshwater (tail) Density: 1.46 sg lead, 1.92 sg tail Top cement: Lead: Seabed Tail: 1002 m	Cement type: Class G Mixwater: Freshwater Density: 1.92 sg Top cement: 2106 m	Cement type: Class G Mixwater: Fresh water Density: 1.95 sg Top cement: 3094 m	Cement type: Class G Mixwater: Fresh water Density: 2.05 sg Top cement: 3721 m	

3.1.2 Operational Achievements

The well was drilled to TD in an efficient manner.
The planned "dry hole" time (time on well excluding well testing operations) was planned to 80 days including the moving of the rig to and from the well location. Actual time used was only 78.4 days (71.1 days drilling related operations + 7.3 days rig move), which was 1.6 days less than planned.

3.1.3 Operational problems

The 36" conductor was driven, and it had been planned to drive it to planned depth without pre-drilling. It was, however, necessary to pull the hammer two times and pre-drill short sections ahead of the conductor shoe with a 26" bit run through the conductor, in order to drive it to planned TD. The total time for the additional pre-drilling operations was 12.5 hrs.

When drilling the 9 7/8" pilot hole and the 26" hole from the conductor shoe and down to the setting depth for the 20" casing, no particular drilling problems were experienced.

The 17 ½" hole was drilled with Sildril water based mud. When POOH after section TD at 2415 m had been reached, stickiness due to water sensitive shale/clay was observed and the string had to be pumped out of hole. This, however, did not constitute any particular time loss – since the Sildril mud is a very good inhibitive mud for water sensitive shale/clay it is probable that if a less inhibitive mud had been used the water sensitive formation might have become a drilling problem.

Prior to running the 13 3/8" casing, the riser was circulated out by pumping down choke and kill line at maximum rate. Large amounts of "big chunks" of cuttings then came out over the shaker and also plugged up the flowline. This was obviously cuttings accumulated in the riser during the drilling of the 17 ½" hole. The "big chunks" of cuttings that came out seems to have been created by the silicate in the Sildril mud "cementing" cuttings together in lumps while they stayed accumulated in the riser for some time. The experience from this is that when using the Sildril mud it is important to regularly circulate out the riser to remove cuttings accumulation while doing the drilling.
Circulation and cleaning of the riser prior to running casing took approx. 3 hrs.

In the BOP test following the installing the 13 3/8" casing, the shear rams could not be pressure tested. It was found that the cause for this was that the front part of the upper shear ram sealing rubber on one of the shear rams was missing and that the upper ram block was damaged at the leading edge. The BOP had to be pulled and repaired before it could be reinstalled on the wellhead and tested. When drilling out the cement in the 13 3/8" casing, two junk baskets were run above the bit and 1.35 kg steel junk from the shear ram was recovered. The malfunction of the shear ram caused a total "unplanned" time addition to the well operations of approx. 3 days (of this time period, 44.5 hours were classified as unproductive time).

When drilling the 12 ¼" hole section the hole started to build angle. Attempts to slow the inclination build by reducing the weight on bit were unsuccessful. In order to ensure that the planned well target could be hit, the rotary BHA was changed to a directional BHA with mud motor at 3656 m. Directional drilling to correct the hole inclination towards vertical was done down to 3852 m. The slow drilling in this section to correct the hole angle caused an unplanned time addition to the well operations in the order of 4 days as compared to drilling the same section with a rotary BHA.

The 9 5/8" casing shoe was set at 3901 m. When drilling out of the casing shoe with 8 1/2" bit, the mud weight was 1.98 sg and a mud loss of approx. 500 l/minute into the formation started

immediately. The mud weight was reduced in steps and the mud losses stopped at a mud weight of 1.90 sg. During the drilling of the 8 ½" hole section (TD of section at 4140 m) "ballooning/ breathing" effects were experienced repeatedly. The typical well behavior due to these effects was:

When the well was flow checked for 30 minutes (as per HPHT procedures) it started to flow back. After a time the flow-back rate decreased and then the stopped. Typical flow-back volumes after flow checks before the flow stopped ranged from 0.2 m^3 to 2.6 m^3.

The third time this flow-back occurred the mud weight was raised to 1.93 sg. This, however, caused mud losses into the formation to start again and the mud weight had to be reduced to 1.92 sg to stop the mud loss. The mud weight was later reduced to 1.90 sg without any significant changes in the well behavior being observed.

Other than the mud gain from "ballooning effects" and the mud losses, no significant hole problems were encountered in the 8 ½" hole.

The upper part of the open hole below the 7" liner was drilled to 6.5" with a 5 7/8" x 6 ½" Bi-center bit. The bottom part of the open hole was drilled to 6.125", also with a 5 7/8" Bi-center bit. No significant hole problems were encountered when drilling the 6 1/2" x 6 1/8" open hole.

During logging the MDT tool became stuck and had to be fished. This event resulted in 26 hours classified as non-productive time.

During plugging and abandonment of the well three attempts were made to cut the 13 3/8" casing before succeeding. This event resulted in 6 hours of non-productive time.

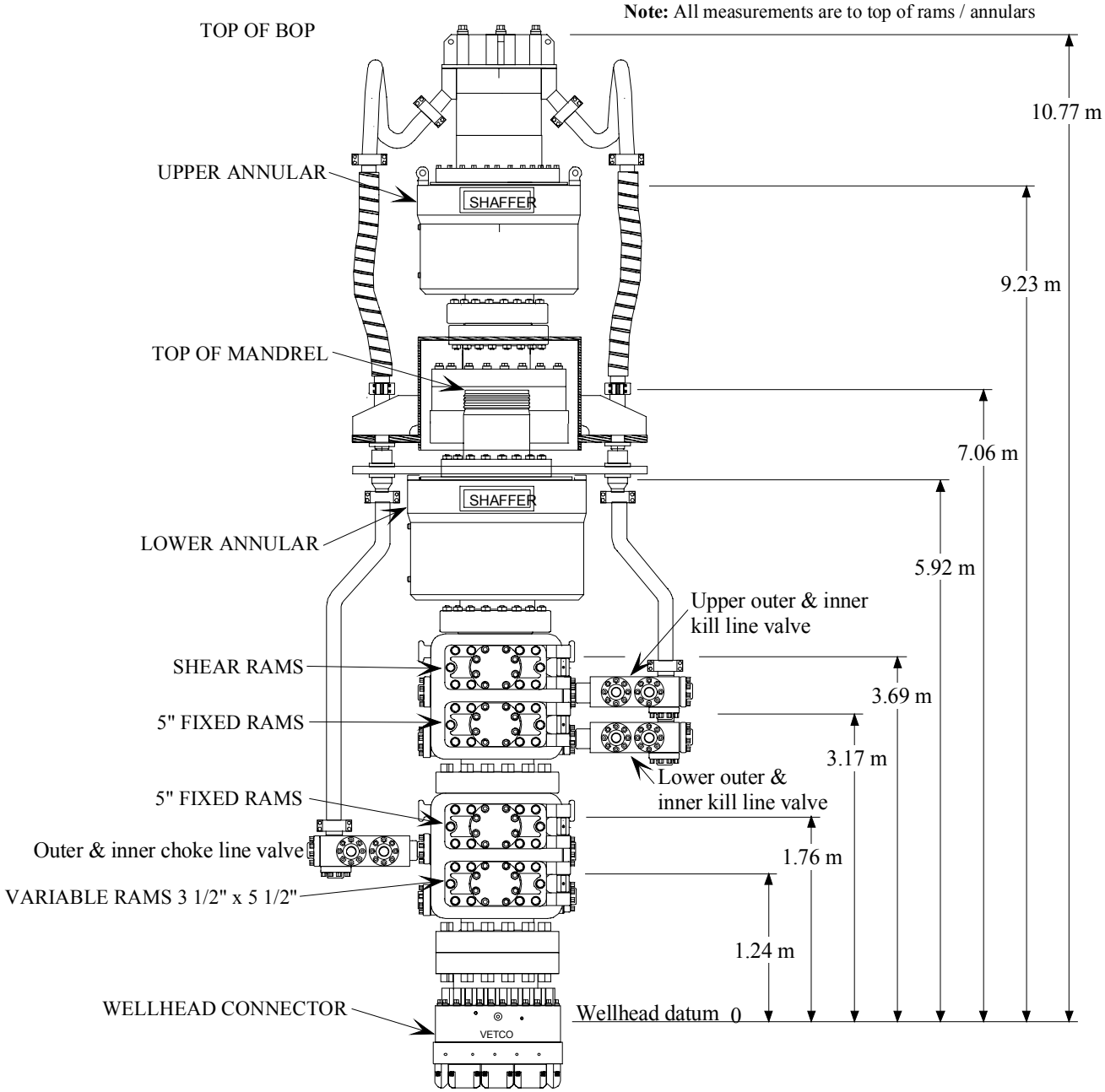
3.1.4 BOP Sketch

18 5/8” 15000 psi BOP

DEEPSEA BERGEN

09.04.03

BLOWOUT PREVENTERS:
2 each NL Shaffer 18 3/4", 10 Kpsi annular preventes
4 each NL Shaffer type "SLK" ram 18 3/4", 15 Kpsi preventers



Weight of BOP in air = 137 ton In water = 118.916 ton
Weight of LMRP in air = 54 ton In water = 47.188 Ton
Weight of 18 3/4" wellhead estimated to ca. 1.5 - 2 ton

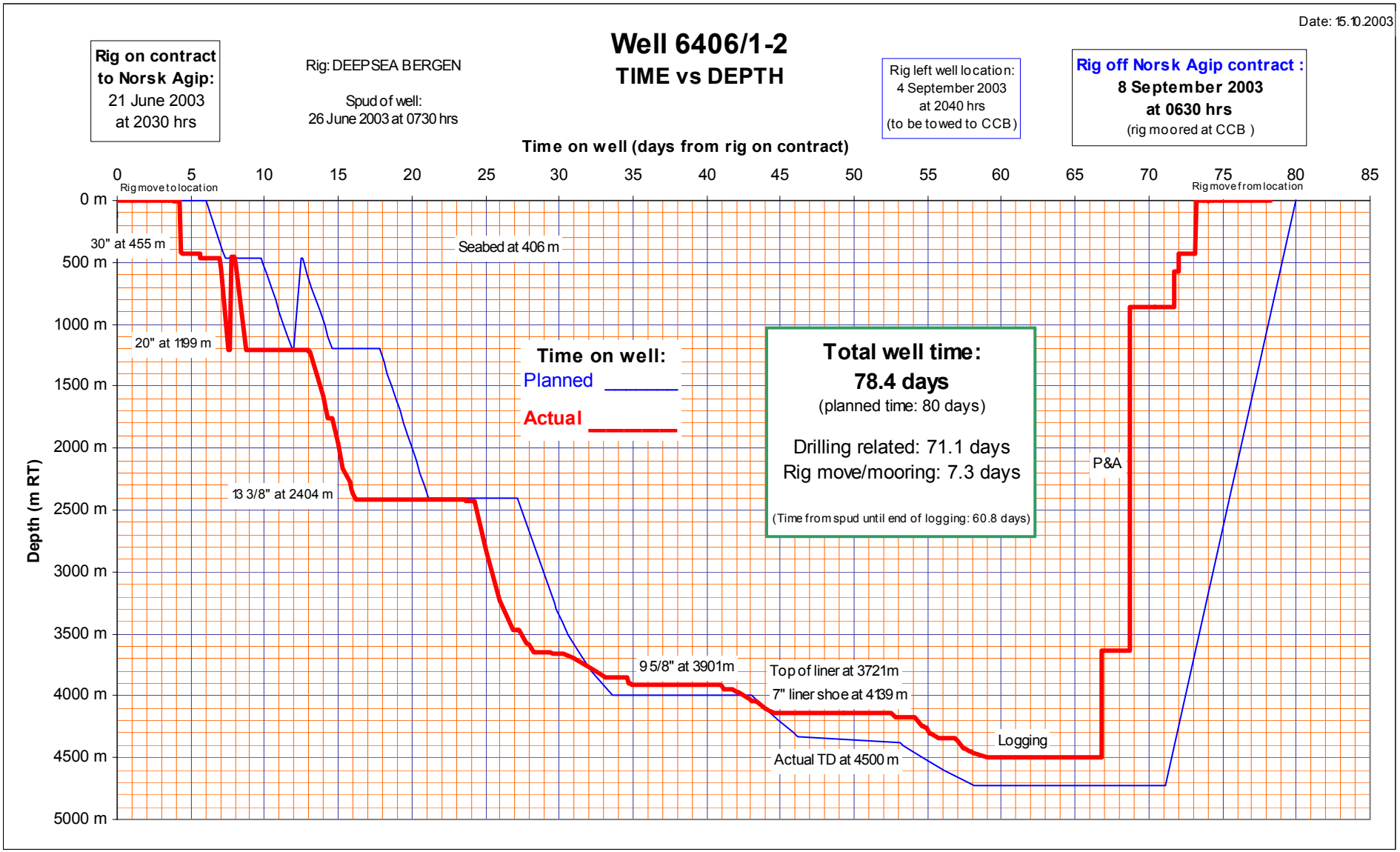
Pressure testing of the BOP stack on Well 6406/1-2

The BOP stack was pressure tested as follows:

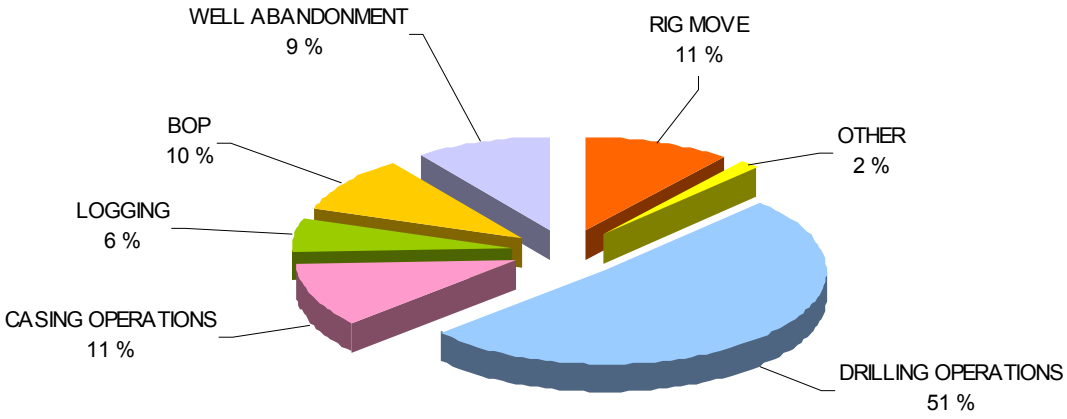
	CASING STRINGS INSTALLED	SHEAR RAMS	BAGS (annular preventer)	PIPE RAMS, FAIL SAFES	WELLHEAD CONNECTION	K/C-LINES, HOSES
Before installation	None	500 psi/ 15000 psi	500 psi/ 7500 psi	500 psi/ 15000 psi	None	None
First test on 18 ¾" wellhead	20" casing	500 psi/ 2100 psi	None	None	500 psi/ 15000 psi	500 psi/ 15000 psi
Bi-weekly in open hole (17 ½")	20" casing				500 psi/ 2100 psi	500 psi/ 2100 psi
Weekly in open hole (17 ½")	20" casing					500 psi/ 2100 psi
Prior to drilling out of 13 3/8" casing	20" casing + 13 3/8 " casing	500 psi/ 5000 psi	500 psi/ 5000 psi	500 psi/ 5000 psi	500 psi/ 5000 psi	500 psi/ 5000 psi
Bi-weekly in open hole (12 ¼")	20" casing + 13 3/8 " casing	None				
Weekly in open hole (12 ¼")	20" casing + 13 3/8 " casing	None				500 psi/ 7000 psi
Prior to drilling out of 9 7/8" casing	20" casing + 13 3/8 " casing + 9 7/8" casing	500 psi/ 9000 psi	500 psi/ 5000 psi	500 psi/ 10000 psi	500 psi/ 10000 psi	500 psi/ 10000 psi
Bi-weekly in open hole (8 ½")	20" casing + 13 3/8 " casing + 9 7/8" casing	None				
Weekly in open hole (8 ½")	20" casing + 13 3/8 " casing + 9 7/8" casing	None				500 psi/ 9200 psi
Prior to drilling out of 7" liner	20" casing + 13 3/8 " casing + 9 7/8" casing + 7" liner	500 psi/ 10000 psi	500 psi/ 5000 psi	500 psi/ 10000 psi	500 psi/ 10000 psi	500 psi/ 10000 psi
Bi-weekly in open hole (6 1/2")	20" casing + 13 3/8 " casing + 9 7/8" casing + 7" liner	None				
Weekly in open hole (6 1/2")	20" casing + 13 3/8 " casing + 9 7/8" casing + 7" liner	None				500 psi/ 9500 psi

3.2 Time and Cost Analysis

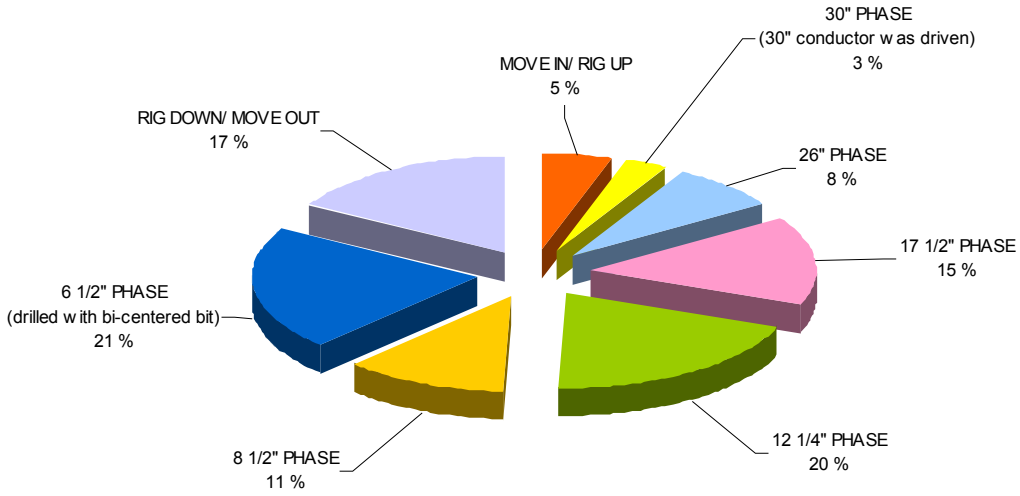
3.2.1 Days vs. Depth



3.2.2 Total Well Time Breakdown by Function



3.2.3 Time by Phase

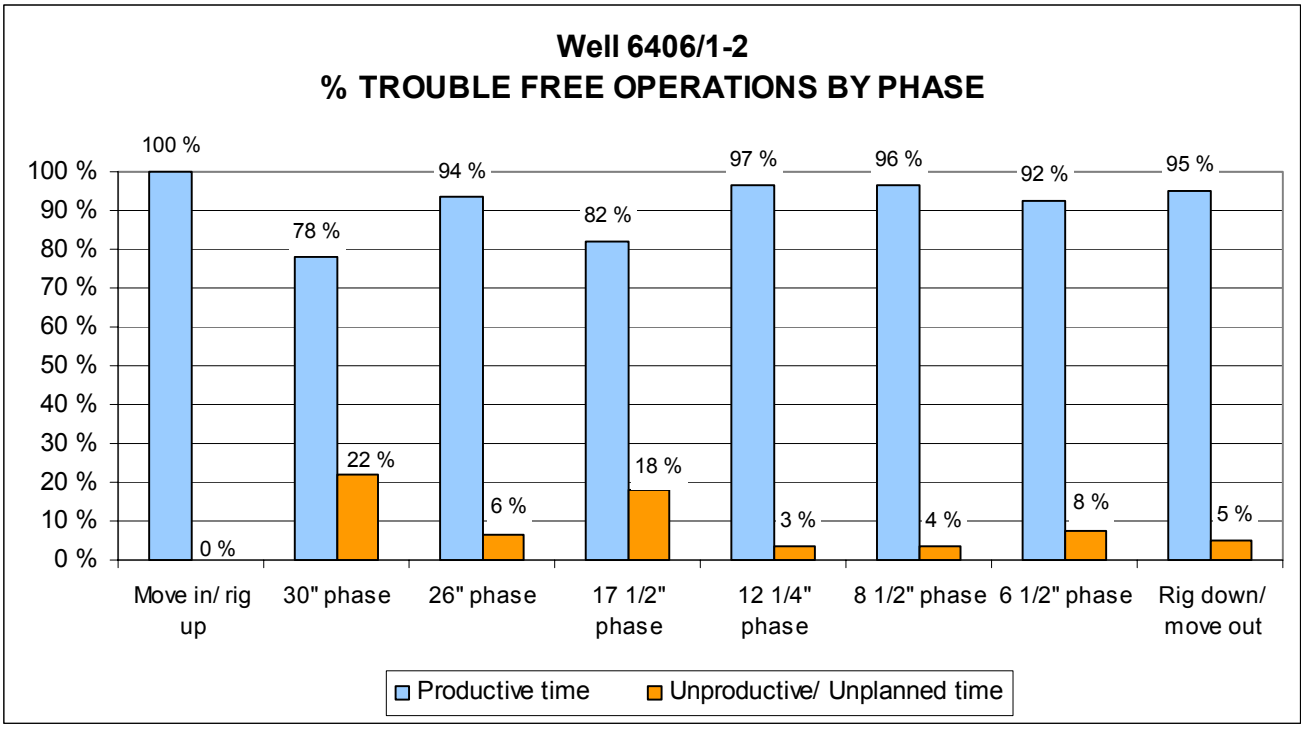


Time Breakdown by Phase

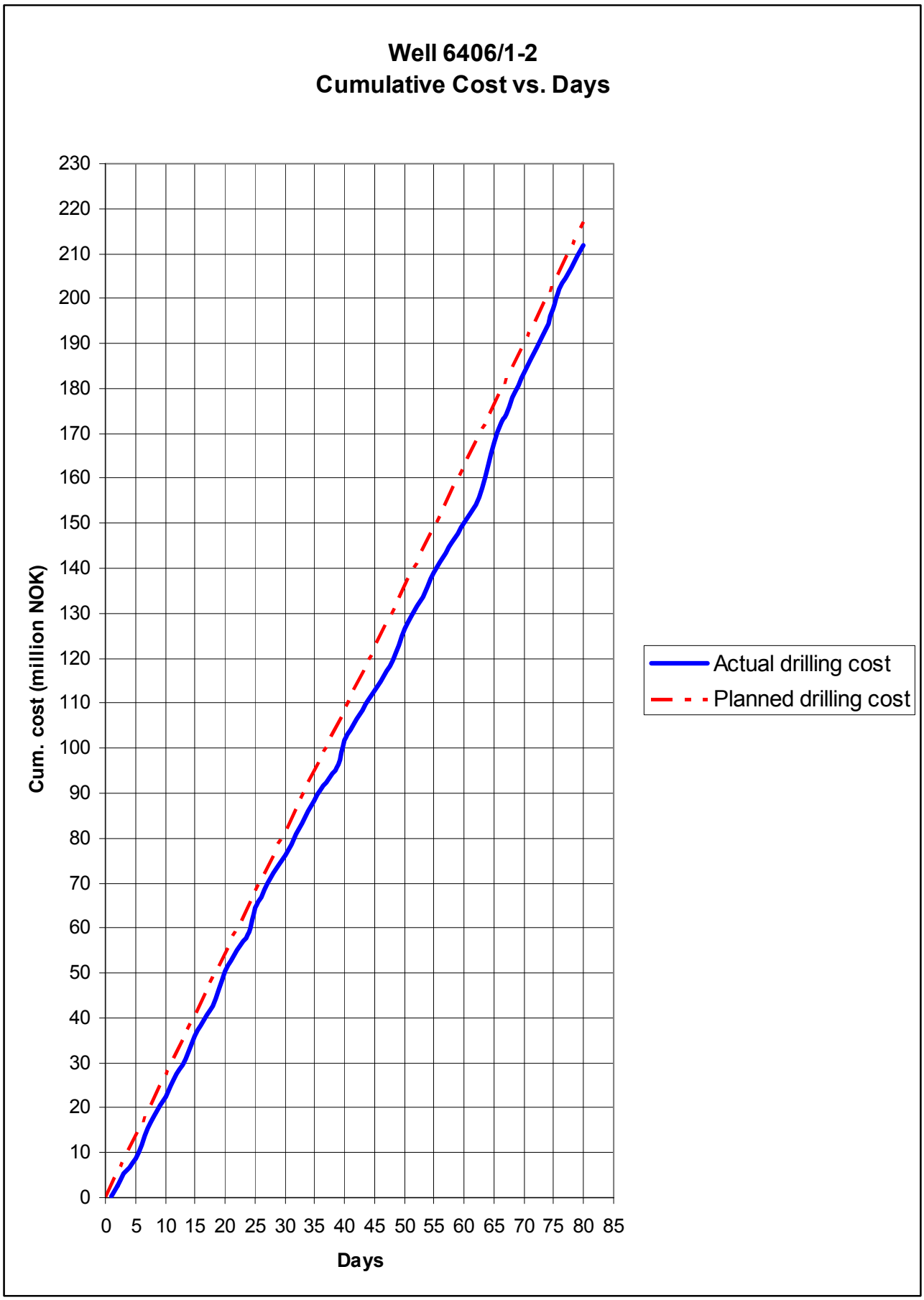
WELL 6406/1-2 TIME BREAKDOWN

	Start	End	Days	Tot. hrs	Tot. m	m/Day
	Year 2003	Year 2003				
Move In/Rig Up	21 June 2030 hrs	25 June 1900 hrs	3.94	94.5	n / a	n / a
30" Phase (30" conductor was driven)	25 June 1900 hrs	28 June 0330 hrs	2.35	56.5	55	23.4
26" Phase (including pilot hole)	28 June 0330 hrs	4 July 0600 hrs	6.10	146.5	744	121.9
				9 7/8" pilot hole: 33	749	542.8
17.5" Phase	4 July 0600 hrs	15 July 2400 hrs	11.75	282	1216	103.5
12.25" Phase	16 July 0000 hrs	31 July 1400 hrs	15.58	374	1504	96.5
8.5" Phase	31 July 1400 hrs	9 August 1530 hrs	9.06	217.5	239	26.4
6.5" Phase (drilled with bi-centered bit)	9 August 1530 hrs	26 August 0300 hrs	16.48	395.5	361	21.9
Rig Down/Move Out (including P&A)	26 August 0300 hrs	8 September 0630 hrs	13.15	315.5	n / a	n / a
Total time Drilling Operations Phases			*61.33*	*1472*	*4094*	*66.8*
Total time	2030 hrs 21 June Year 2003	0630 hrs 8 September Year 2003	78.42	1882	4094	52.2

3.2.4 Non-Productive vs. Productive Time

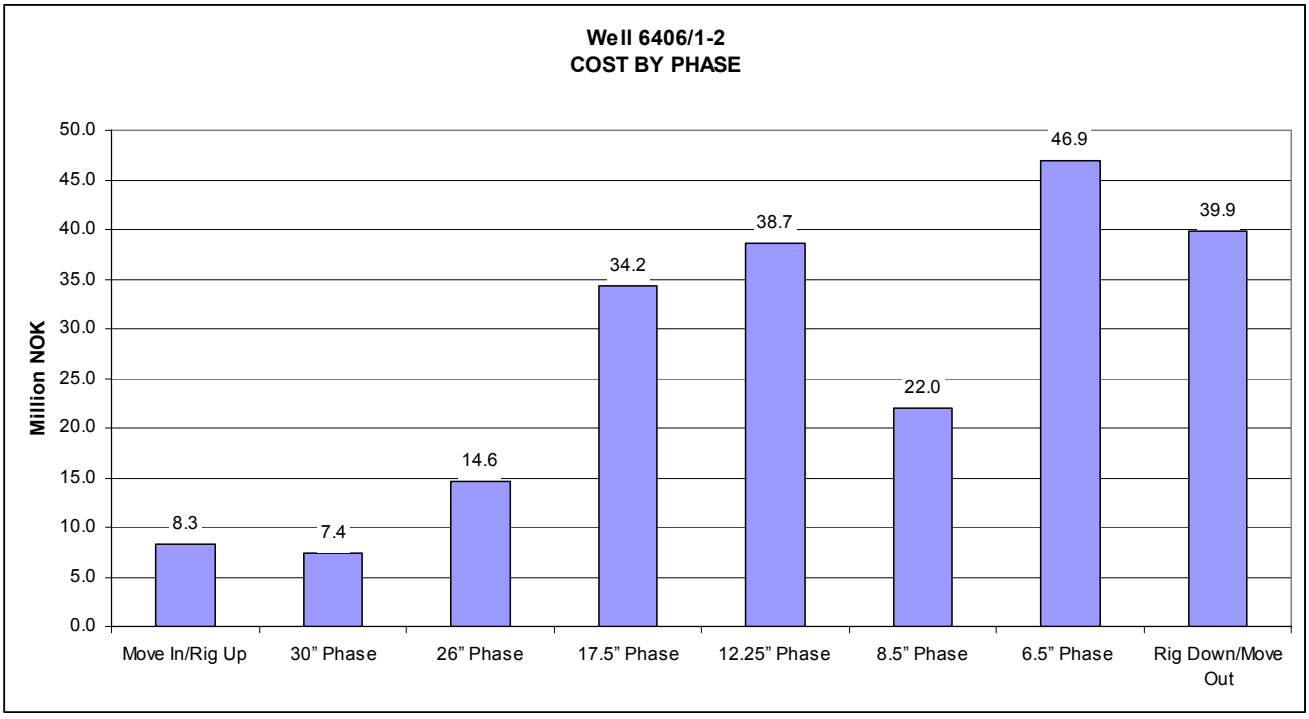


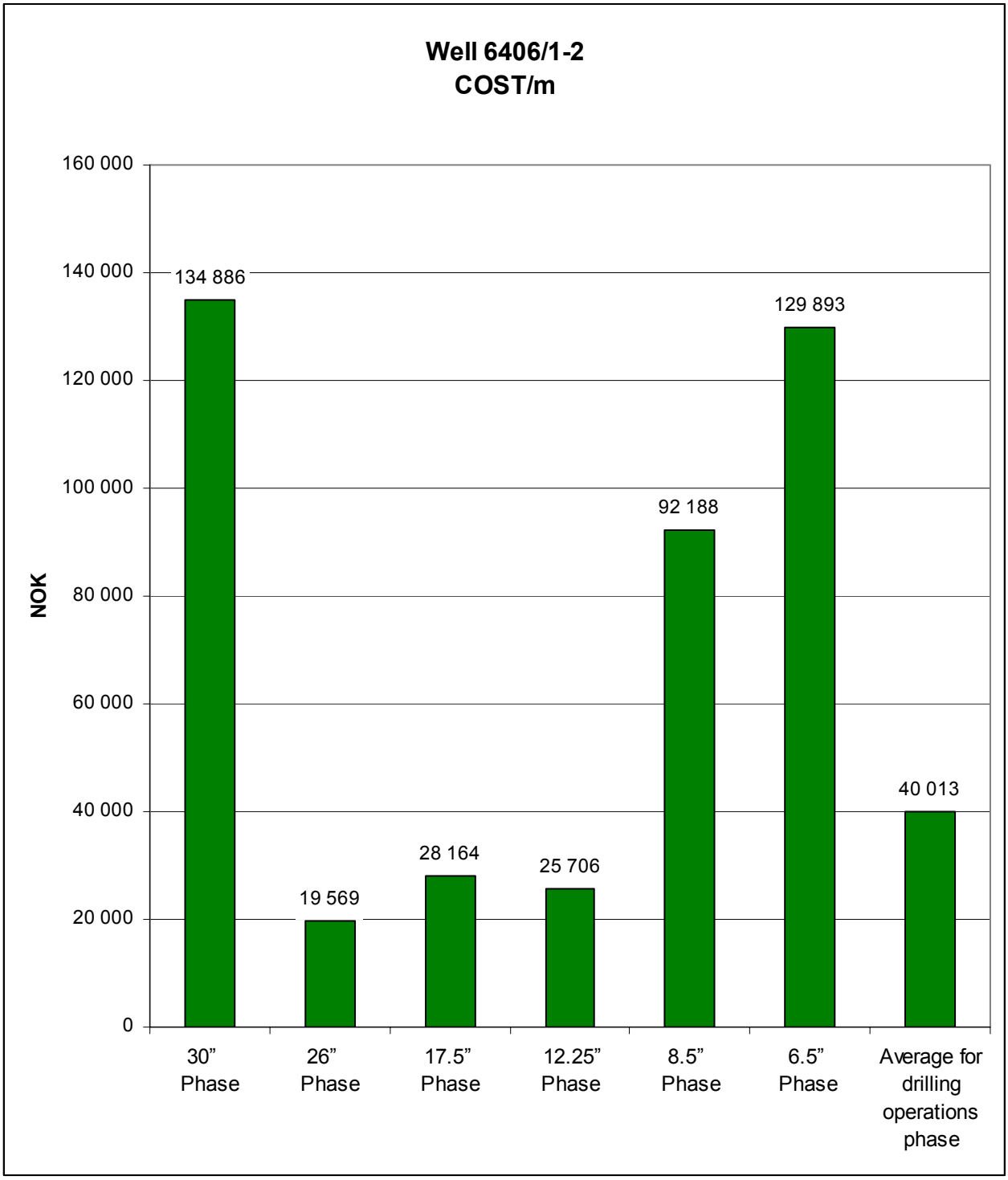
3.2.5 Cost vs. Depth



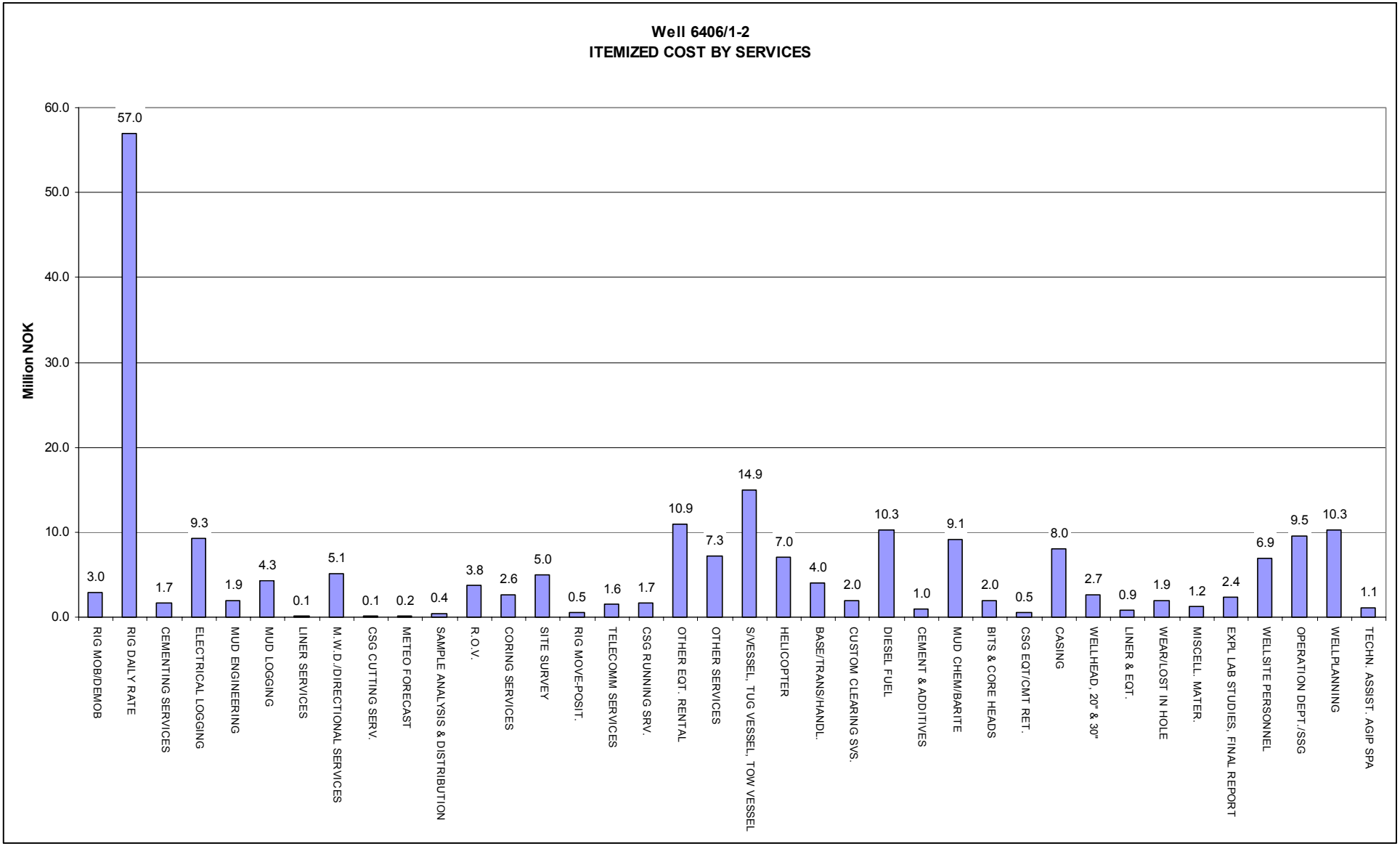
3.2.6 Cost per Phase

Well 6406/1-2	Start	End	Days	PHASE Cost	Meter	Cost/Meter
COST BY PHASE	**Year 2003**	**Year 2003**		**MMNOK**		**NOK**
Move In/Rig Up	21 June 2030 hrs	25 June 1900 hrs	3.94	8.3	n / a	n / a
30" Phase (30" conductor was driven)	25 June 1900 hrs	28 June 0330 hrs	2.35	7.4	55	134 886
26" Phase	28 June 0330 hrs	4 July 0600 hrs	6.10	14.6	744	19 569
17.5" Phase	4 July 0600 hrs	15 July 2400 hrs	11.75	34.2	1216	28 164
12.25" Phase	16 July 0000 hrs	31 July 1400 hrs	15.58	38.7	1504	25 706
8.5" Phase	31 July 1400 hrs	09.aug 1530 hrs	9.06	22.0	239	92 188
6.5" Phase (drilled with bi-centered bit)	09.aug 1530 hrs	26.aug 0300 hrs	16.48	46.9	361	129 893
Rig Down/Move Out	26.aug 0300 hrs	08.sep 0630 hrs	13.15	39.9	n / a	n / a
Total time Drilling Operations Phases			*61.33*	*163.8*	*4094*	*40 013*
Total time	2030 hrs 21 June Year 2003	0630 hrs 08.sep Year 2003	78.42	212.0	4094	51 783




Well 6406/1-2
COST/m
NOK
160 000
140 000
120 000
100 000
80 000
60 000
40 000
20 000
0
134 886
19 569
28 164
25 706
92 188
129 893
40 013
30" Phase
26" Phase
17.5" Phase
12.25" Phase
8.5" Phase
6.5" Phase
Average for drilling operations phase

3.2.7 Itemized Cost by Service



3.3 Operations

3.3.1 Unplanned Events

During the entire well operations the unplanned/ unproductive time amounted to 140 hours (7.4% of total time). Of this unplanned time 46% was related to equipment problems, 38% to general drilling related problems, and 16% was caused by various other problems.

3.3.2 Drilling Summary

Rig Move In & Mooring Operations:

The rig "Deepsea Bergen" was taken on contract by Norsk Agip on 21 June 2003 at 2030 hrs after having finished an exploration well for Marathon. The rig was towed to the drilling location where the anchors were set and the rig ballasted down to drilling draft, these operations were completed in 94.5 hours. At drilling draft the distance from the rotary table to the sea surface (RT – MSL) was 23 m.

Total time for the rig move to location, until starting the installation of the 30" conductor was 3.94 days. Total cost for this phase was NOK 8.3 million.

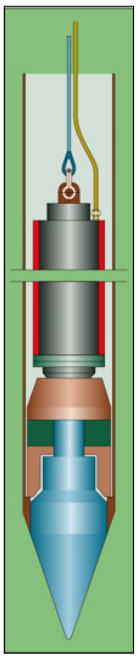
Final rig Geographical Location:

Lat. = 64 deg. 55 min 32.28" N
Long. = 6 deg. 07 min 55.67" E

UTM Location:
X = 364414.38 m Easting
Y = 7203421.02 m Northing

The co-ordinates above refer to UTM Zone 32, CM 9 deg East, ED-1950
The final rig heading was observed to be 224.4 deg.

30" Conductor



DEPTH INTERVAL: Seabed (at 406 m RT) – 455 m RT

General - Installation method:
The 30" conductor was driven, using a new driving method called Toe Driven Conductor (TDC).

When using this drive method a special drive shoe is installed in the bottom end of the 30" conductor. The hydraulic drive hammer assembly is run on wire, with hydraulic hoses attached, down into the bottom of the conductor. While the conductor is held vertical from the rig, the hammer assembly drives the conductor down by hitting at the drive shoe and the formation below the drive shoe.
The hammer will alternately deepen the hole below the drive shoe, and then hit the drive shoe to drive the conductor down.

The total cost for the 30" conductor installation phase was NOK 7.4 million. The total time for the conductor installation operation was 56.5 hours (2.35 days).

Conductor installation:
The 30" conductor was lowered down to seabed on 5" drillpipe and with the hammer assembly installed in the conductor at the drive shoe. The conductor had a self penetration of 11.5 m into the seabed under its own weight (28 ton).

The original expectation was that the hammer assembly should be able to drive the conductor to planned setting depth which was 50 m below seabed without the requirement for pre-drilling. However, the conductor first hit refusal depth 27 m below seabed. The hammer assembly was then retrieved and a drilling assembly with 26" bit was run down through the conductor. A 26" hole was drilled from the conductor shoe and 3 m down. The driving of the conductor was then resumed, and the conductor was driven down to 45 m below seabed before it again hit refusal depth. The 26" bit and drilling assembly was run, and pre-drilling was done to 10 m below the conductor shoe. The 30" conductor was then driven to 455 m (49 m below seabed) which was decided to be the actual setting depth for the conductor.

With the exception of the unplanned pre-drilling, there was no particular operational problems encountered during the installation of the 30" conductor. One concern prior to starting the operation had been whether or not the verticality of the conductor could be controlled during the driving. The operation showed that to control the verticality was no problem.

9 7/8" pilot hole and 26" hole / 20" Casing

DEPTH INTERVAL: 455 – 1210 m RT

General:
The 9 7/8" pilot hole was drilled to check for shallow gas down to the setting depth for the 20" casing. No shallow gas was observed. The pilot hole was then re-drilled to 26". The 20" casing was set at 1199 m. Total time for the 26" interval (including pilot hole and installation of the 20" casing) was 6.10 days. 9.5 hours of this time was due to unscheduled events. The cost for the 26" phase was NOK 14.6 million or 19 569 NOK/m.

Drilling:
A 9 7/8" pilot hole with MWD & LWD in the BHA was drilled from the conductor shoe and down to 1210 m to check for shallow gas. A flow check was made at section TD, no shallow gas was observed.

The pilot hole was then opened up by re-drilling the pilot hole with a 26" bit from the conductor shoe and down to 1205 m. The hole was swept with high viscosity mud and a wiper trip was made. The hole was circulated clean and again displaced to 1.2 sg high viscosity mud prior to pulling out for running 20" casing.

Bits/BHA:
In this hole section one 9 7/8" bit and one 26" bit were used.

The pilot hole was drilled with a 9 7/8" Hughes MX-C1 steel tooth bit (IADC Code 117) and came out with bearings approx. 36% worn.

The 26" Hughes GTX-C3G1 steel tooth bit (IADC Code 111) used for re-drilling the pilot hole came out with teeth approx 25% worn.

The drilling assemblies are described in the BHA report section.

Mud/Solids Control:
Seawater was used to drill both the 9 7/8" pilot hole and the 26" hole, together with high viscosity sweeps to help clean the hole.

A pre-mixed spud mud made of NaCl/KCl brine and polymer was used for sweeps. For the 1.20 sg displacement mud, Illmenite was used as the weighting material when displacing the 26" hole prior to running casing.

Casing/Cementing/ install BOP & riser:
The 20" casing was run on 5" drill pipe. The 30" wellhead with guide base been pre-installed around the 18 ¾" wellhead & housing. The 30" wellhead had a modified ST2 Squnch connection on bottom. After installing the 18 ¾" wellhead housing x 30" wellhead on top of the 20" casing string, the 20" string was landed by the 30" Squnch connection stabbing on to and latching on top of the driven 30" conductor. The 20" casing was cemented up to seabed with 123.8 m^3 1.46 sg lead slurry and 32.4 m^3 1.92 sg tail slurry. When running the 20" casing, the casing joints were hanging up at the couplings in the 30" conductor drive shoe and had to be worked through. The ROV, stationed at the seabed during the cementing, observed returns during the entire cement job.

The BOP stack was run on the marine riser and installed on the 18 ¾" wellhead. The diverter was installed, and the choke and kill line were pressure tested. The BOP test tool was run, and the BOP stack was pressure and function tested.
.

<u>17 1/2" Hole section / 13 3/8" Casing</u>

DEPTH INTERVAL: 1199 – 2415 m RT

General:
The 17 1/2" hole section was drilled with the intention to set the 13 3/8" casing deep enough to achieve a leak-off sufficient for drilling to the next casing point. The 13 3/8" casing was set at 2404 m. Total time for the 17 1/2" interval was 11.75 days. 50.5 hours of this time was due to unscheduled events, primarily caused by the failure of the BOP shear ram (ref. below: "*Casing/BOP – malfunction of shear ram")*. The cost for the 17 1/2" phase was 34.2 MM NOK or 28 164 NOK/m.

Drilling:
The same 17 1/2" bit was used to drill out the 20" shoe and the open hole section below the shoe down to 2415 m.

When the 20" shoe track was drilled out to 4 m above the shoe, the well was displaced to 1.15 sg water based Sildril mud. Below the 20" shoe a LOT (leak-off test) was made to an equivalent mud density of 1.50 sg. At 1757 m the LOT was repeated and gave a leak-off of 1.55 sg. The "formation healing/strengthening" ability of the silicate in the Sildril mud is regarded as the main reason for the improved LOT.

At 2331 m cavings were observed on the shaker and a torque increase to 15000 ft lbs was seen (during the drilling of the hole section the normal torque range seen was 7000 – 8000 ft lbs).

As the drilling of the 17 ½" hole progressed, the mud weight was raised in steps, to end at 1.53 sg when reaching section TD at 2415 m.

When POOH after section TD at 2415 m had been reached, stickiness due to water sensitive shale/clay was observed and the string had to be pumped out of hole. This, however, did not constitute any particular time loss – if a less inhibitive mud than Sildril had been used it is possible that the water sensitive formations might have become a drilling problem.

Prior to running the 13 3/8"casing the riser was circulated out by pumping down choke and kill line at maximum rate. Large amounts of "big chunks" of cuttings then came out over the shake. They also plugged up the flowline. This was obviously cuttings accumulated in the riser during the drilling of the 17 ½" hole. The "big chunks" of cuttings that came out seems to some extent to have been created by the silicate in the Sildril mud "cementing" cuttings together in lumps while they stayed accumulated in the riser for some time. The experience from this is that when using the Sildril mud it is important to regularly circulate out the riser to remove cuttings accumulation while doing the drilling.

Bits/BHA:
In this hole section one 17 1/2" Hughes MX-C303DX insert bit (IADC Code 415) was used for drilling out cement in the 20" shoe and then drilling the 17 ½" hole section. The bit came out with inserts approx. 12% worn.

The drilling assembly is described in the BHA report section.

Mud/Solids Control:
The 17 1/2" hole section was drilled with the water based Sildril mud which is a shale/clay inhibitive KCL type mud with a silicate concentration of minimum 12%. Illmenite was used as weighting material.

During the drilling of the hole section the mud weight was raised from 1.15 sg to 1.53 sg.

It was seen that the mud gave excellent cuttings integrity, with defined edges and no sign of mud intrusion. As the mud weight was increased by addition of Illmenite the rheology showed a distinct increasing trend. Towards the end of the hole section the mud had reached to the high end of the specifications, and had to be diluted with low viscosity premixes and water.

When the drilling started all three shakers had 84 mesh screens, but the screens had to be changed to 60 mesh to handle the flow. As the mud heated up and was sheared through the bit, the screens were changed to 100 mesh. Towards the end of the hole section the screens were changed back to 60 and 80 mesh due to increasing rheology and heavy loading of cuttings on the shakers. Despite using coarse screens the content of sand sized particles in the mud was kept below 1% at all times.

Casing/Cementing:
The 13 3/8" casing was run on drill pipe and the hanger was landed in the 18 ¾" wellhead housing, with the shoe set at 2404 m. The 13 3/8" casing was cemented up to 2106 m (calculated) with 28 m^3 of 1.92 sg slurry. During displacement of the cement a mud loss of 54 m^3 was registered on the surface. Indications were that the mud loss occurred at the 20" casing shoe due to high ECD, and that it was not caused by any loss of cement slurry into the formation further down.

Casing/BOP – malfunction of shear ram:
In the BOP test following the installing the 13 3/8" casing, the shear rams could not be pressure tested. It was found that cause for this was that the front part of the upper shear ram sealing rubber on one of the shear rams was missing and that the upper ram block was damaged at the leading edge. The BOP had to be pulled and repaired before it could be reinstalled on the wellhead and tested. When drilling out the cement in the 13 3/8" casing, two junk baskets were run in the drill string and 1.35 kg steel junk from the shear ram was recovered. The malfunction of the shear ram caused a total "unplanned" time addition to the well operations of approx. 3 days (of this a time period of 44.5 hours was classified as unproductive time).

12 1/4” Hole section / 9 7/8”x 9 5/8” Casing

DEPTH INTERVAL: 2404 – 3908 m RT

General:
The 12 1/4” hole section was initially planned to be drilled to 4000 m, but due to hitting formations at 3908 m that might indicate higher than expected pressure further down, and to the HPHT status if the well, it was decided to set the casing higher (the casing was set at 3901 m), and to utilize the option of setting a 7” drilling liner down past 4000 m.

The total time for the 12 ¼” phase was 15.58 days with 13 hours of unscheduled events. Total cost for the 12 ¼” phase was NOK 38.7 million, or 25 706 NOK/m.

Drilling:
Before starting to drill out the cement in the 13 3/8” shoe track, the well was displaced to 1.70 sg VersaPro oil based mud.

A 12 1/4” junk bit was used to drill out the 13 3/8” shoe and 5 m of new formation, and a FIT (formation integrity test) was made to an equivalent mud density of 1.87 sg.

The BHA was changed and a 12 ½” PDC bit was run. At 3471 m a wiper trip was made back to the 13 3/8” shoe and tight spots requiring 20 ton overpull were observed when pulling through the Lysing Formation (approx. 3415 m – 3300 m).

When the 12 ¼” hole was drilled to 3572 m it became evident that the hole inclination, which had been increasing slowly, would need to be corrected back towards vertical to insure that the well would hit within the planned target (the horizontal distance from target center was then 77 m).

It was first attempted to halt the inclination build-up by drilling with reduced bit weight, but this had negligible influence on the build.

At 3645 m the BHA was changed to a deviation BHA with mud motor and a 7-bladed PDC bit. This bit, however, was not capable of holding the tool face, and at 3656 m the drill string had to be pulled to change to a new bit.

With the new bit, which was an insert bit, the 12 ¼” hole was drilled deviated to 3852 m. This resulted in the horizontal distance to the target center being reduced to 30 m which was within the target tolerance. The mud weight was increased to 1.77 sg.

The bottom hole assembly was then changed to a rotary BHA and the 12 ¼” hole was drilled to 3908 m. At this depth high torque (up to 20 000 ft lbs) was experienced and formation change might indicate higher than expected formation pressures further down. The mud weight was increased to 1.80 sg. It was decided to stop the drilling at this depth and run 9 7/8”x 9 5/8” casing, and then utilize the option of setting a 7” drilling liner down past 4000 m.

Bits/BHA:
To drill out the cement (and junk) in the 13 3/8” shoe track and then drill down to 23 m below the shoe, a 12 ¼” Hughes steel tooth ATJG8 bit (IADC Code 347) was used.

The drilling from 2427 m to 3645 m was done with a 12 ¼” Hughes HC606 6-bladed PDC bit (IADC Code M333). This bit drilled with a good average ROP and was only pulled because it became necessary to run a deviation BHA to correct the hole inclination. The bit came out only worn approx. 25 % on the inner cutters and was later re-run to drill the bottom part of the 12 ½” hole from 3852 m to section TD at 3908 m.

At 3645 m a deviation BHA with mud motor, 1° bent housing and a 7-bladed Hughes ATX437MA PDC bit (IADC Code M423) was run to correct the hole inclination. This bit, however, could not keep the tool face and was pulled after drilling only 11 m.

At 3656 m the string was pulled and the bit was changed to a Hughes MXB-C18DT insert bit (IADC Code 447). The drilling now continued with the deviation BHA down to 3852 m where the hole deviation had been sufficiently corrected to go back to rotation drilling.

A rotation BHA was run with the previously used HC606 PDC bit and the 12 ¼" hole was drilled to section TD at 3908 m.

The drilling assemblies are described in the BHA report section.

Mud/Solids Control:
Before starting to drill out the cement in the 13 3/8" shoe track, the well was displaced to 1.70 sg VersaPro oil based mud.

When starting the drilling of the 12 ¼" hole section, the VersaPro OBM had a high content of water due to contamination of water during the displacement. Treatment was therefore carried out to increase the oil/water ratio and chloride concentration. During the drilling of the hole section VersaPro P/S was added for emulsion stability, Versavert Vis for viscosity and Lime for alkalinity. All other additions to maintain active mud were carried out through premixes.

At 3852 m the mud weight was increased to 1.80 sg. As drilling continued to section TD at 3908 m, the oil/water ratio was adjusted to 80/20 by addition of premix that had a high oil content.

The shakers were dressed with 60, 60 and 100 mesh screens as the drilling of the section started and had difficulties in handling the flow because of the cold mud and the boosting of the riser. Due to the course screens the concentration of low gravity solids (LGT) increased in the mud. Finer screens were installed when the mud had warmed up and the boosting of the riser had stopped. Most of the section was drilled with 175 mesh screens on one shaker and 210 mesh screens on the other two shakers.

Casing/Cementing:
The 9 7/8"x 9 5/8" casing string was run on drill pipe and the 9 7/8" hanger was landed in the 18 ¾" wellhead housing. The casing shoe was set at 3901 m. The 9 5/8" casing (the lower part of the casing string) was cemented up to 3094 m (calculated) with 31.6 m^3 of 1.95 sg slurry.

8 1/2" Hole section/ 7" liner

DEPTH INTERVAL: 3901 – 4140 m RT

General:
After drilling out of the 9 5/8" casing shoe, the 8 1/2" hole was drilled to TD at 4140 m.

The total time used for the 8 1/2" phase was 9.06 days. This time includes the installation of the 7" drilling liner. 8 hours of this time was due to unscheduled events. The interval cost was NOK 22.0 million, or 92 188 NOK/m.

Drilling:
While drilling out the cement in the 9 5/8" shoe track and cleaning the rat hole below the shoe, the mud was weighted up to 1.98 sg in anticipation of possible higher formation pressures to be

encountered in the 8 1/2" hole. When starting to drill new formation, however, a mud loss of approx. 500 l/minute into the formation started immediately. The mud weight was reduced in steps and the mud losses stopped at a mud weight of 1.90 sg.

At 3952 m a LOT was made to an equivalent mud density of 2.00 sg.

During the drilling of the 8 ½" hole (section TD at 4140 m) "ballooning/ breathing" effects were experienced repeatedly. The typical well behavior was:

When the well was flow checked for 30 minutes (as per HPHT procedures) it started to flow back. After a time the flow-back rate decreased and then the stopped. Typical flow-back volumes after flow checks before the flow stopped ranged from 0.2 m^3 to 2.6 m^3.

After the third time this flow-back occurred the mud weight was raised to 1.93 sg. This, however, caused mud losses into the formation to start again and the mud weight had to be reduced to 1.92 sg to stop the mud loss. The mud weight was later reduced to 1.90 sg without any significant changes in the well behavior being observed.

Other than the mud gain from "ballooning effects" and the mud losses, no significant hole problems were encountered in the drilling of the 8 ½" hole – section TD at 4140 m.

Bits/BHA:
One bit, a Hughes HRC607 7-bladed PDC bit (IADC Code 347) was used to drill the 8 ½" hole section. The bit came out only worn approx. 12 % on the inner cutters. This bit was later re-run together with a 9 5/8" casing scraper to clean the inside of the lower part of the casing prior to running the 7" drilling liner.

The drilling assemblies are described in the BHA report section.

Mud/solids control:
The mud used for the 8 1/2" hole section was the same VersaPro OBM as used for the 12 ¼" section. The mud weight when drilling out of the 9 5/8" casing shoe was 1.98 sg, but has to be reduced to 1.90 sg to stop the mud losses that occurred when starting to drill new formation below the casing shoe. During the drilling of the 8 ½" hole a small treatment of the mud with LCM material (273 kg of Ven Fyber) was made to reduce the seepage losses. Just before reaching section TD (at 4140 m) a small treatment with Versatrol was carried out to ensure adequate fluid loss and thin filter cake during the liner operation. On the scraper run a 50 m^3 premix at 1.90 sg was added to the active system to increase the oil/water ratio and lower the rheology. The premix was made of EDC-99 baseoil and mud chemicals.

210 mesh screens were used on the shakers.

Liner/Cementing:
The 7" drilling liner was run on 5" drill pipe and set with the liner shoe at 4139 m. The liner hanger was set inside the 9 5/8" casing with top of the liner (PBR) at 3721 m.

The 7" liner was cemented up to above top of the liner with 7.9 m^3 of 2.05 sg slurry.

6 ½" & 6 1/8" Hole section/ Logging/P&A

DEPTH INTERVAL: 4139 – 4500 m RT

General:
After drilling out of the 7" casing shoe, a 6 ½"& 6 1/8" open hole section was drilled to TD of the well at 4500 m using bi-centered bits. (The operation phase has been named the "6 ½" Phase" in this report).

The total time for the 6 ½" Phase was 16.48 days. This time includes the final logging and permanent abandonment of the well. 30.5 hours of this time was due to unscheduled events. The interval cost was NOK 46.9 million or 129 893 NOK/m.

Drilling:
An 8 ½" rerun bit was used to clean out cement in the 9 5/8" casing down to the top of the liner. A BHA with a 5 7/8" 6-bladed PDC bit was then run to drill out the cement in the 7" liner and 3 m of new formation to 4143 m. The mud weight was raised to 1.98 sg and a LOT was made to an equivalent mud density of 2.08 sg.

In order to make clearance for the wireline logging tools to be run in the hole section below the liner shoe at the end of the drilling, it was decided to use bi-centered bits to drill the last hole section. The bi-centered bits could pass through the liner and would drill a hole with a larger diameter than the ID of the liner.

The upper part of the hole from liner shoe and down to 4348 m was drilled with a 5 7/8" x 6 ½" bi-centered bit. During the drilling with this bit, the drill string had to be pulled once to change out a malfunctioned MWD.

The last part of the hole from 4348 m down to TD of the well at 4500 m was drilled with a 5 7/8" x 6 1/8" bi-center bit. After having made a wiper trip to the liner shoe and circulated to clean the hole, the drill string was pulled to start the logging of the hole.

The two bi-centered bits performed well, and no particular drilling problems were experienced during the drilling of the 6 ½"& 6 1/8" hole section.

During the logging operations the MDT tool became stuck and had to be fished. Afterwards one clean-up run with drill string and the 6 1/8" bi-centered bit was done before continuing with the logging.

Logging
Schlumberger was the logging contractor. The time required for the wireline logging in the 6 1/2"& 6 1/8" hole was 4.65 days (the logging time is included in the total time for the 6 1/2" Phase).

During the logging operations a MDT tool became stuck and had to be fished with an overshot run on a tapered 3 ½"x 5" dp string. This fishing operation took 26 hours (unplanned time).

At TD (4500 m) the following log runs were made:
Run no. 1: OBDT/DSI
Run no. 2: IPLT/AIT
Run no. 3: MDT (tool became stuck – fishing operation to recover tool)
Run no. 4: VSP/APS (tool failure)
Run no. 5: VSP/APS
Run no. 6: MSCT
Run no. 7: MDT

Bits/BHA:
To drill out the cement in the 7" shoe track and 3 m of new formation, a 5 7/8" Hughes 6-bladed PDC bit (IADC Code M333) was used.

The hole section was then drilled with two bi-centered bits, both bits were made by DPI. The first on, a 5 7/8"x 6 ½" PS13BC PDC bit was used to drill from the liner shoe and down to 4348m. This bit came out with the cutters fully worn out.

The second bi-centered bit, a 5 7/8"x 6 1/8" PS13BC PDC bit was used to drill from 4348 m and down to TD of the well at 4500 m. Also this bit came out with the cutters almost fully worn out.

The drilling assemblies are described in the BHA report section.

Mud/solids control:
The mud used for the 6 1/2"& 6 1/8" hole section was the same VersaPro OBM as used for the 8 1/2" section. The mud weight when drilling out of the 7" liner shoe was 1.98 sg.

When drilling the cement in the 7" liner the mud picked up water. 100 m^3 of premix made up of baseoil and chemicals was therefore added to the active system in two steps to increase the oil/water ratio, improve the rheology and decrease the ECD values. During drilling no further treatments were carried out, only small additions of premix to control the mud weight. The mud properties showed a very stable mud system.

210 mesh screens were used on the shakers.

Plug and Abandonment Summary:
The time required for the permanent plugging and abandonment operations for well 6406/1-2 was 8.6 days (this time is included in the Rig Down & Move Out time).

Plug no. 1: Cement from 4500 m up to 3637 m.

9 7/8" casing was cut at 947 m (541 m below seabed) and retrieved.

Plug no. 2: Cement from 1000 m up to 858 m.

13 3/8" casing was cut at 649 m (243 m below seabed) and retrieved.

Plug no. 3: Cement from 700 m up to 578 m.

Plug no. 4: Cement from 578 m up to 429 m.

The 20" and 30" casing strings were cut at 412 m (6 m below seabed) and retrieved.

Plug no. 5: Cement from 429 m and up to 406 m (seabed).

Note: The 30" conductor was driven.
There was cement behind the 20" casing string up to seabed at 406 m.
Top of cement behind the 13 3/8" casing was calculated to be at 2106 m.
Top of cement behind the 9 5/8" casing was calculated to be at 3094 m.

See also the attached figure of P & A.

Rig down/Move out

The total time used for the Rig down/Move out Phase was 13.15 days with 16 hours of unscheduled events, and the cost of this phase was NOK 39.9 million. The operations under "Rig down/Move out" includes the well abandonment (8.6 days) and 8.5 hours of waiting on weather before the anchors could be recovered. The rig was then towed to the CCD base outside Bergen where the rig went off contract with Norsk Agip on 8 September 2003 at 0630 hours. This ended the operations on well 6406/1-2.

3.3.3 Daily Operations

NORSK AGIP **Operations Summary Report**						
Well:	**6406/1-2**			Start:	21 June 2003	
Rig Contractor:	ODFJELL			End:	8 September 2003	
Rig name:	DEEPSEA BERGEN			Spud:	26 June 2003	
Date	From	To	Hours	Depth (m)	Phase	Description of operations
21.06.2003	20:30	24:00	3.5		MIRU	Accepted Deepsea Bergen from Marathon at 20:30 hrs on 21/06/03. Loading spud equipment and prepare for moving to location.
22.06.2003	00:00	13:30	13.5	0	MIRU	Continue loading spud equipment and prepare for towing.
22.06.2003	13:30	24:00	10.5	0	MIRU	Towing rig to 6406/1-2 location, Northern Admiral and Troms Supporter on anchor chains, Stril Supporter on St By 16:00 hrs N 59deg 38' E 2deg 41' - Speed 7 kts, to go 344 NM 20:00 hrs N 60deg 00' E 2deg 52' - Speed 7 kts, to go 316 NM 24:00 hrs N 60deg 13' E 3deg 01' - Speed 7 kts, to go 290 NM General rig maintenance Stb crane on cradle for repair work
23.06.2003	00:00	24:00	24	0	MIRU	Towing rig to 6406/1-2 location, Northern Admiral and Troms Supporter on anchor chains, Stril Hercules on St By 04:00 hrs N 60deg 53' E 3deg 15' - Speed 7 kts, to go 261 NM 08:00 hrs N 61deg 22' E 3deg 15' - Speed 7 kts, to go 252 NM 12:00 hrs N 61deg 49' E 3deg 29' - Speed 7 kts, to go 199 NM 16:00 hrs N 62deg 16' E 3deg 57' - Speed 7 kts, to go 170 NM 20:00 hrs N 62deg 31' E 4deg 16' - Speed 7 kts, to go 153 NM 24:00 hrs N 62deg 55' E 4deg 41' - Speed 8 kts, to go 126 NM General rig maintenance Stb crane on cradle for repair work Northern Corona along side 16:00 -16:30
24.06.2003	00:00	24:00	24	0	MIRU	Towing rig to 6406/1-2 location, Northern Admiral and Troms Supporter on anchor chains, Stril Hercules on St By 04:00 hrs N 63deg 13' E 4deg 58' - Speed 6 kts, to go 101 NM 08:00 hrs N 63deg 33' E 5deg 08' - Speed 4 kts, to go 86 NM 12:00 hrs N 63deg 48' E 5deg 28' - Speed 4 kts, to go 70 NM 16:00 hrs N 64deg 03' E 5deg 52' - Speed 5 kts, to go 57 NM 20:00 hrs N 64deg 19' E 6deg 21' - Speed 5 kts, to go 37 NM 24:00 hrs N 64deg 36' E 6deg 13' - Speed 6 kts, to go 20 NM Norther Corona along port side to offload 9 containers @ 21:00-21:30 during transit. General rig maintenance, install stand pipe, install pathfinder sensors. Load test main block stb. crane OK crane downgraded to 45 MT, whip line still inoperational. Pathfinder continue rig up, IHC continue rig up, Geoservices approx. 50% complete.
25.06.2003	00:00	05:00	5	0	MIRU	Rig on tow to location, Northern Admiral & Troms Supporter on anchor chains.

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Operations Summary Report

Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
25.06.2003	05:00	12:00	7	0	MIRU	Anchor handling. Drop anchor No 5 at 05:00 hrs 05:58 Northern Corona run out No 6 06:20 Troms Supporter run out No 9 06:25 Northern Admiral run out No 2 07:30 Northern Corona run out No 7 08:15 Troms Supporter run out No 8 08:35 Northern Admiral run out No 3 09:00 Northern Corona run out No 4 Start ballasting rig at 10:10 hrs, Rig heading 225
25.06.2003	12:00	19:00	7	0	MIRU	Start pre-tensioning anchor to 180 MT at 15:20 hrs. Reset anchor No 7. Ballasting rig to drilling draft 22 m, finished ballasting at 15:45 hrs. Meanwhile P/U 5" DP in derrick.
25.06.2003	19:00	19:30	0.5	0	CSGDRV	Pre-job meeting to run 30" C.P.
25.06.2003	19:30	20:00	0.5	0	CSGDRV	Removed excessive equipment from Drill floor and prepare for CP.
25.06.2003	20:00	22:00	2	0	CSGDRV	Prepare to run 30" C.P. & R/U running equipment, ROV made a seabed survey at 20:00 -20:05.
25.06.2003	22:00	23:00	1	0	CSGDRV	Run 30" conductor, total length 49,53m.
25.06.2003	23:00	24:00	1	0	CSGDRV	Attached ST2 Running tool to C.P.
26.06.2003	00:00	00:30	0.5	0	CSGDRV	Hang of conductor in rotary. L/D conductor handl. eq. L/D Merlin eq.
26.06.2003	00:30	01:00	0.5	0	CSGDRV	Held safety meeting prior to R/U of hammer assembly. P/U hammer assembly with wire & umbilicals & run same into conductor.
26.06.2003	01:00	02:30	1.5	0	CSGDRV	Change to 5" handl. eq. & P/U shock sub assembly, attach same to 30" conductor.
26.06.2003	02:30	04:00	1.5	0	CSGDRV	Run conductor w/hammer through RT & connect umbilicals.
26.06.2003	04:00	06:00	2	0	CSGDRV	Held safety meeting prior run conductor w/umbilicals. Run conductor w/hammer on 5" DP.
26.06.2003	06:00	07:30	1.5	0	CSGDRV	Cont. to run conductor w/hammer on 5" DP. Space out string. Tag sea bed @ 406 m @ 0713 hrs. Incr. weight in steps to 28 ton. Self penetration 11,5 m. Inclination 0,2 degrees. WELL SPUD @ 07:30.
26.06.2003	07:30	11:00	3.5	433	CSGDRV	Start hammering @ 0738 hrs. w/low energy blows. Observed conductor R/T loose from conductor @ 0815 hrs. Hammer from 417 m to refusal @ 433 m.
26.06.2003	11:00	12:30	1.5	433	CSGDRV	POOH w/hammer on 5" DP from 433 m. Set hammer R/T in slips.
26.06.2003	12:30	14:00	1.5	433	CSGDRV	Prep. eq. & held safety meeting prior to hang off hammer assembly on cellar deck trolley.
26.06.2003	14:00	15:00	1	433	CSGDRV	H/O hammer assembly on trolley.
26.06.2003	15:00	15:30	0.5	433	CSGDRV	Prep. BHA for 26" pilot hole for conductor. P/U handl. eq. for 9 1/2" DC. Change to 5 1/2" inserts in BX elevator.
26.06.2003	15:30	16:30	1	433	CSGDRV	P/U 26" bit, bit sub & 3 x 9 1/2" DC from deck.
26.06.2003	16:30	21:30	5	433	CSGDRV	Change broken torque cylinder on IR.
26.06.2003	21:30	24:00	2.5	433	CSGDRV	Held safety meeting & cont. to M/U 26" BHA & RIW to 57 m.

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Operations Summary Report

Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
27.06.2003	00:00	00:30	0.5	433	CSGDRV	Cont. M/U & RIH w/26" BHA from 57 m to 85 m. RIH w/26" BHA on 5" DP.
27.06.2003	00:30	02:30	2	456	CSGDRV	Tag bttm. @ 433,5 m. Start drilling w/1500 lpm - 17 bar, WOB 2 ton. Incr. pump rate to 3700 lpm - 100 bar, WOB: 0-2 ton, 80 rpm, 0 - 5000 ft/lbs. Stop drilling @ 456 m. Sweep 6 m3 hivis @ TD. Spot 10 m3 1,16 sg mud.
27.06.2003	02:30	03:30	1	456	CSGDRV	POOH w/26" assembly. R/B 26" BHA in derrick.
27.06.2003	03:30	05:30	2	456	CSGDRV	R/U to lift hammer assembly from cellar deck to DF. P/U wire slings from cellar deck to DF. Attach to TDS & lift hammer/shock sub assembly to DF. R/D wire slings.
27.06.2003	05:30	08:30	3	456	CSGDRV	Held safety meeting prior to run hammer. Run hammer on 5" DP. Sting in conductor @ 0745 hrs. Cont. to lower hammer slowly. Tag bttm @ 0830 hrs.
27.06.2003	08:30	10:30	2	456	CSGDRV	Hammer from 433 m to refusal @ 451 m.
27.06.2003	10:30	11:30	1	456	CSGDRV	POOH w/hammer assembly, to drill 26" pilot hole below 30" conductor toe.
27.06.2003	11:30	12:00	0.5	456	CSGDRV	R/U HOS to hang off hammer assembly on trolley. Held safety meeting prior to hang off hammer.
27.06.2003	12:00	13:00	1	456	CSGDRV	Hang off hammer assembly on trolley.
27.06.2003	13:00	14:00	1	456	CSGDRV	R/D slings from TDS & install BX elevator. Change to 5 1/2" inserts in BX elevator.
27.06.2003	14:00	15:30	1.5	456	CSGDRV	P/U 26" BHA from derrick. RIH w/26" on 5" DP to 451 m.
27.06.2003	15:30	16:00	0.5	461	CSGDRV	Tag bttm @ 451 m & start drilling from 451m to 461m.
27.06.2003	16:00	17:30	1.5	461	CSGDRV	POOH w/5" DP from 461 m to 84 m. R/B 26" BHA in derrick.
27.06.2003	17:30	18:00	0.5	461	CSGDRV	Held pre-job meeting prior to R/U hammer. R/U slings from cellar deck & lift up shock sub assembly & hammer assembly to DF.
27.06.2003	18:00	18:30	0.5	461	CSGDRV	Cont. P/U hammer & shock sub assembly from cellar deck to DF.
27.06.2003	18:30	21:00	2.5	461	CSGDRV	Held pre-job meeting prior to running hammer. Run hammer & umbilicals. Run same on 5" DP into 30" conductor housing @ 20.45 hrs. Landed hammer assembly in 30" conductor. Hammer conductor from 451 m to 454 m. Observe w/ROV while hammering.
27.06.2003	21:00	22:00	1	461	CSGDRV	POOH w/hammer assembly from 454 m to 72 m.
27.06.2003	22:00	24:00	2	461	CSGDRV	Held pre-job meeting w/involved personnel. Removed umbilicals. L/D hammer assembly & wires.
28.06.2003	00:00	03:30	3.5	461	CSGDRV	Cont. L/D hammer assembly. Disconnect hydr. hoses. L/D on deck. P/U shock sub assembly from deck, B/O 5" pup jnt, L/D same.
28.06.2003	03:30	04:30	1	461	DRLSUR	Slip 100' drlg. Line.
28.06.2003	04:30	05:00	0.5	461	DRLSUR	Held SJA meeting, P/U 9 1/2" DC std. from derrick. B/O 26" bit & bit sub. R/B 9 1/2" DC in derrick. ROV installed transponders on sea bed.
28.06.2003	05:00	06:00	1	461	DRLSUR	Held pre-job meeting. P/U 6 joints 5" DP from deck. Adjusted crown o'matic. R/B 5" DP in derrick.
28.06.2003	06:00	13:00	7	461	DRLSUR	Cont. to P/U 5" DP from deck & R/B in derrick.
28.06.2003	13:00	14:00	1	461	DRLSUR	Haul MWD tools from stb. box girder to reach of knuckle boom crane due to stb. crane inoperability. Plug in and check MWD assembly on DF - OK.

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Operations Summary Report

Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
28.06.2003	14:00	14:30	0.5	461	DRLSUR	Clean & clear DF. Prep. to M/U 9 7/8" BHA. Meanwhile Geoservice R/U depth sensor to drwk's.
28.06.2003	14:30	16:30	2	461	DRLSUR	Held pre-job meeting prior to use of manual tongs & M/U of 9 7/8" BHA. Check all connections on Pathfinder tool string (estimated additional time used: 1 hour). RIH w/9 7/8" BHA.
28.06.2003	16:30	17:30	1	461	DRLSUR	Function tested MWD tool - OK.
28.06.2003	17:30	20:00	2.5	461	DRLSUR	Cont. M/U 9 7/8" BHA & RIW to 197 m.
28.06.2003	20:00	21:00	1	461	DRLSUR	Changed to 5" handl. eq. P/U 1 std. HWDP from derrick. & P/U 5" HWDP from deck, tot. 15 joints & RIW to 323 m.
28.06.2003	21:00	21:30	0.5	461	DRLSUR	Cont. RIW from 323 m w/5" DP, stab into conductor housing @ 21:15 hrs. RIH to 446 m. Top housing @ 406 m.
28.06.2003	21:30	22:00	0.5	461	DRLSUR	Held shallow gas meeting w/crew. Circ. w/water 1000 lpm, 10 rpm, tag bttm @ 461 m. No fill.
28.06.2003	22:00	24:00	2	552	DRLSUR	Drill 9 7/8" pilot hole from 461 m to 552 m. Drilling parameters: Pumps: 2700 lpm, pressure: 98 bar, rpm: 120-140, WOB:0-2 ton. Pumped 3 m3 hivis pill ea. std.
29.06.2003	00:00	14:00	14	1210	DRLSUR	Continue drill 9 7/8" pilot hole from 552 m to 1210 m. Drilling parameters: WOB: 0-3 ton, 170 rpm, 145 bar, 3270 lpm, torque: 2000 - 4000 ft/lbs. Sweep 1,5 m3 hivis mud & ream on every std.
29.06.2003	14:00	14:30	0.5	1210	DRLSUR	Pump sweep pill & circ. hole clean 2 x bttm's up. Checked survey @ TD.
29.06.2003	14:30	15:00	0.5	1210	DRLSUR	ROV watch for shallow gas 30 min.
29.06.2003	15:00	17:00	2	1210	DRLSUR	Displace hole to 1,2 sg mud, pumped 37 m3. POOH w/9 7/8" BHA on 5" DP from 1210 m to 332 m.
29.06.2003	17:00	19:30	2.5	1210	DRLSUR	R/B BHA. Held safety meeting prior to use of manual tongs. B/O 9 7/8" bit, L/D MWD tools.
29.06.2003	19:30	23:00	3.5	1210	DRLSUR	P/U MWD w/26" bit & monel, w/26" stab's, RI w/same. Checked MWD tool. Cont. M/U & RIW w/26" assembly. Stab into 30" housing @ 2230 hrs. Tag bttm @ 458 m.
29.06.2003	23:00	24:00	1	1210	DRLSUR	Drill to open hole to 26" from 458 m to 520 m. Drilling parameters: WOB: 2-5 ton, 90 rpm, 243 bar, 4700 lpm, 5000 ft/lbs. Sweep 3 m3 hivis pills every std.
30.06.2003	00:00	19:00	19	1210	DRLSUR	Cont. opening 9 7/8" to 26" from 520 m to 1205 m. Parameters: WOB: 10-12 ton, 244 bar, 4600 lpm, 110 rpm, 10-12000 ft/lbs torque. Sweep 3 m3 hivis mud every std.
30.06.2003	19:00	19:30	0.5	1210	DRLSUR	Sweep hole w/6 m3 hivis mud, take MWD.
30.06.2003	19:30	21:30	2	1210	DRLSUR	Flow check 10 min. w/ROV - OK. POOH for wipertrip 10 ton OP @ 1002 m, 10 ton OP @ 960 m. Compensated string & pulled 26" STB into 30" shoe.
30.06.2003	21:30	22:00	0.5	1210	DRLSUR	IR failed to M/U connection. Trouble shoot same.
30.06.2003	22:00	23:00	1	1210	DRLSUR	P/U Cmt. head from deck, check same as per Weatherford instructions. Installed cmt. hose & auto kelly cock. M/U 2 5" singles & R/B in derrick. Meanwhile repair IR.
30.06.2003	23:00	24:00	1	1210	DRLSUR	Run back in hole from 454 m to 970 m.
01.07.2003	00:00	01:30	1.5	1210	DRLSUR	Run in hole with 26" bit from 970 m to 1110 m - tight spot at 1080 m. Wash down to TD at 1205 m at 3800 lpm & 240 bar.
01.07.2003	01:30	03:00	1.5	1210	DRLSUR	Sweep hole with 20 m3 hivis pill and displace hole to 1.2 sg mud.
01.07.2003	03:00	04:00	1	1210	DRLSUR	POOH from 1205 m to 620 m.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
01.07.2003	04:00	04:30	0.5	1210	DRLSUR	Top up hole with 40 m3 1.2 sg mud. Total pumped 275 m3.
01.07.2003	04:30	08:00	3.5	1210	DRLSUR	POOH 26" BHA and rack back in derrick washing wellhead on way out.
01.07.2003	08:00	09:30	1.5	1210	CSGSUR	Clear rig floor and skid guide base beneath rotary table. Held pre job meeting and rig up to run 20" casing.
01.07.2003	09:30	10:30	1	1210	CSGSUR	Problems with 20" BX elevator. Changed out same with manual side door elevators.
01.07.2003	10:30	13:30	3	1210	CSGSUR	P/U 20" shoe joint and test floats ok. RIH 20" 133# X-56 Vetco RL4S casing as per tally to 402 m filling every joint.
01.07.2003	13:30	14:30	1	1210	CSGSUR	Wait for visibility to improve to stab 20" casing into 30" housing. Move rig to position 20" shoe above wellhead.
01.07.2003	14:30	19:00	4.5	1210	CSGSUR	Continue running 20" casing to 785m filling each joint.
01.07.2003	19:00	21:30	2.5	1210	CSGSUR	Install BX elevator and pick up 18 3/4" wellhead and made up to 20" casing string. Checked running tool and hanger and install master bushing in rotary. RIH, landed wellhead in guide base on cellar deck and made up. String weight on MD 160 ton.
01.07.2003	21:30	24:00	2.5	1210	CSGSUR	RIH 20" casing on 5" DP - all casing joints hanging up at couplings inside the 30" housing. Worked same through housing. Landed 18 3/4" housing in 30" wellhead and confirm successful latching with 5 ton OP. PGB 1 deg port forward.
02.07.2003	00:00	01:30	1.5	1210	CSGSUR	Held pre job meeting prior to 20" cementing operations. Circulated 1 x casing volume of 137 m3 seawater at 2000 lpm & 35 bar.
02.07.2003	01:30	02:00	0.5	1210	CSGSUR	Pressure tested surface lines to 140 bar x 15 minutes. Commenced mixing 1,46 sg Class G slurry and pumped 1,4 m3 - unable to continue due to leaking hydraulic pump to cooling fans of cement unit motor.
02.07.2003	02:00	05:00	3	1210	CSGSUR	Lined up to mud pumps and displaced 1,4 m3 cement to rig floor, down casing and up annulus with 256 m3 seawater at 2000 lpm. Changed out leaking hydraulic pump.
02.07.2003	05:00	05:30	0.5	1210	CSGSUR	Identify problem with mix water recirculation pump - troubleshoot and rectify problem. Test cement unit - okay.
02.07.2003	05:30	11:00	5.5	1210	CSGSUR	Commence mixing 1,46 sg Class G lead slurry and pumped 123 m3 followed by 32 m3 1,92 sg Class G Tail slurry at 800 lpm. Dropped dart, displaced with 3.7 m3 with cement unit and sheared out plug at 180 bar - displaced cement with 137 m3 seawater at 3000 lpm & 25 bar.
02.07.2003	11:00	11:30	0.5	1210	CSGSUR	Bumped plug with 7070 strokes and tested casing to 75 bar. Checked for backflow - negative.
02.07.2003	11:30	12:00	0.5	1210	CSGSUR	Rigged down cement hoses and released 20" running tool with 5 x RH rotations at surface. Bullseyes on PGB: port side bullseye = 1 deg stb/fwd, forward bullseye = 1/2 deg stb.
02.07.2003	12:00	14:30	2.5	1210	CSGSUR	Racked back cement stand and POOH landing string. Laid out wellhead running tool and rigged down 20" handling equipment. Laid out cement head.
02.07.2003	14:30	16:00	1.5	1210	CSGSUR	Laid out 26" BHA.
02.07.2003	16:00	16:30	0.5	1210	CSGSUR	Clean and cleared rig floor. Checked lock down dogs to diverter.
02.07.2003	16:30	18:30	2	1210	CSGSUR	Make up lift stand and rigged up to run BOP.

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Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
02.07.2003	18:30	23:30	5	1210	CSGSUR	Held pre job meeting and picked up 15 ft pup and 2 x 5 ft floats. Made up same. Skidded BOP to moon pool and made up riser joint to BOP. Installed guide lines, beacon and pod wires. Lifted BOP off carrier and ran BOP through splash zone.
02.07.2003	23:30	24:00	0.5	1210	CSGSUR	Filled kill and choke lines with water and installed test tool.
03.07.2003	00:00	01:00	1	1210	CSGSUR	Line up to cement unit, installed test tool and pressure tested kill and choke lines to 35/1035 bar for 5/10 min - good test.
03.07.2003	01:00	06:00	5	1210	CSGSUR	Run BOP on marine riser from 45 m to 250 m. ROV jetted 18 3/4" wellhead and installed VX ring.
03.07.2003	06:00	06:30	0.5	1210	CSGSUR	Installed test tool and pressure tested kill and choke lines to 35/1035 bar for 5/10 minutes - good test.
03.07.2003	06:30	12:30	6	1210	CSGSUR	Continue running BOP on marine riser.
03.07.2003	12:30	13:30	1	1210	CSGSUR	Installed test tool and pressure tested kill and choke lines to 35/1035 bar for 5/10 minutes - good test.
03.07.2003	13:30	15:30	2	1210	CSGSUR	Picked up and run slip joint. Installed lift pipe stand.
03.07.2003	15:30	16:30	1	1210	CSGSUR	Installed support ring and pressure tested kill and choke lines to 35/1035 bar for 5/10 minutes - good test. Skidded rig to well centre.
03.07.2003	16:30	17:30	1	1210	CSGSUR	Released support ring from housing and installed saddles for BOP pod hoses.
03.07.2003	17:30	18:30	1	1210	CSGSUR	Established guide lines to guide base and checked bullseyes: BOP bullseye 0.25 deg stb/fwd, LMRP bullseye 0.50 deg prt/fwd. Landed BOP and set down 20 ton. Locked BOP to wellhead connector and confirmed with 25 ton OP.
03.07.2003	18:30	19:00	0.5	1210	CSGSUR	Stroked out slip joint innerbarrel and racked back landing stand.
03.07.2003	19:00	20:00	1	1210	CSGSUR	Picked up diverter and installed same.
03.07.2003	20:00	22:00	2	1210	CSGSUR	Rigged down BOP handling equipment. Changed out bails on topdrive and installed BX elevator and floor monkey on catwalk. Cleared rig floor of excess equipment.
03.07.2003	22:00	24:00	2	1210	CSGSUR	Made up rubber nosed jetting sub and BOP test tool to stand 5" DP and function tested same. RIH with test tool to 125 m picking up 5" ITAG pipe from deck.
04.07.2003	00:00	03:00	3	1210	CSGSUR	Continue to RIH BOP test tool picking up 5" ITAG pipe from deck. Landed test tool in 18 3/4" wellhead and clamped on index line 1 m above connection on landing string.
04.07.2003	03:00	04:00	1	1210	CSGSUR	Lined up to cement unit and flushed lines from BJ pump via choke line. Closed middle pipe rams and attempted to pressure test BOP connector, pressure bleeding off. Opened rams and re-set test tool as per ABB procedures. Closed middle pipe rams and tested BOP connector to 35/1035 bar for 5/10 minutes.
04.07.2003	04:00	05:00	1	1210	CSGSUR	Function tested BOP on yellow pod from driller's panel and blue pod from toolpusher's office - good tests. Function tested acoustic BOP control system and checked pressure/temperatures sensors - OK.
04.07.2003	05:00	06:00	1	1210	CSGSUR	POOH BOP test tool and laid out same. While POOH closed shear rams and pressure tested 20" casing to 145 bar for 10 minutes.
04.07.2003	06:00	07:00	1	1210	DRLIN1	Changed out handling equipment and laid down 9 1/2" DC from derrick.

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Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
04.07.2003	07:00	11:30	4.5	1210	DRLIN1	Made up EDPHOT and laid down same on deck. Made up 17 1/2" BHA.
04.07.2003	11:30	12:30	1	1210	DRLIN1	Trouble shoot and repair malfunction with MWD cable. Plugged in MWD tool and changed settings on Sonic tool.
04.07.2003	12:30	13:00	0.5	1210	DRLIN1	Changed out BX elevator inserts to 5 1/2" and RIH 1 stand 8" DC's and tested MWD.
04.07.2003	13:00	14:30	1.5	1210	DRLIN1	Ran 17 1/2" BHA to 338 m.
04.07.2003	14:30	15:30	1	1210	DRLIN1	Changed out washpipe on topdrive due to excessive hours. Meantime positioned starboard crane across catwalk to change out sheave.
04.07.2003	15:30	18:00	2.5	1210	DRLIN1	RIH 17 1/2" BHA to 850 m picking up 5" DP from deck.
04.07.2003	18:00	19:00	1	1210	DRLIN1	Continue RIH 17 1/2 BHA on 5" DP to 1150 m. Made up drilling stand.
04.07.2003	19:00	22:30	3.5	1210	DRLIN1	Filled string and washed down to TOC at 1172 m. Drilled out firm cement, float and shoe track to 1195 m. Drilling parameters: 5-10 ton WOB, 105-200 bar, 60-95 rpm, 2900-4200 lpm and 4000 - 6000 ft-lbs torque.
04.07.2003	22:30	23:30	1	1210	DRLIN1	Displaced well to 1,15 sg Sildril mud and continue drilling out cement and shoe track to 1199m.
04.07.2003	23:30	24:00	0.5	1210	DRLIN1	Drilled out rat hole from 1199 m to 1210 m. Drilling parameters: : 0-1 ton WOB, 126 bar, 100 rpm, 3500 lpm and 3000 ft-lbs torque.
05.07.2003	00:00	00:30	0.5	1215	DRLIN1	Drill ahead 17 1/2" hole from 1210 m to 1215 m with 3800 lpm, 145 bar, 95 rpm, 5 ton WOB and 400 ft/lbs torque.
05.07.2003	00:30	01:30	1	1215	DRLIN1	Circulated and conditioned mud to 1,15 sg all round and pulled back into 20" shoe. Lined up to cement unit and pressure tested surface lines to 180 bar for 10 minutes. Performed leak off test to 1,5 sg EMW, 42 bar.
05.07.2003	01:30	24:00	22.5	1573	DRLIN1	Drill ahead 17 1/2" hole from 1215 m to 1573 m increasing mud weight slowly to 1,32 sg. Drilling parameters: 4300 lpm, 210 bar, 180 rpm, 10-15 ton WOB and 7,000 ft/lbs torque.
06.07.2003	00:00	08:00	8	1757	DRLIN1	Continue drilling 17 1/2" hole section from 1573 m to 1757 m. Drilling parameters: 4300 lpm, 230 bar, 180 rpm, 10 ton WOB and 7000 ft/lbs torque. Commence increasing mud weight from 1742 m to 1,34 sg. Flow checked well at 1638 m - well static.
06.07.2003	08:00	09:30	1.5	1757	DRLIN1	Circulated bottoms up with 4400 lpm, 265 bar and 100 rpm.
06.07.2003	09:30	11:30	2	1757	DRLIN1	Flow checked - well static. Pumped slug and POOH from 1757 m to 1322 m. No OH problems encountered.
06.07.2003	11:30	12:30	1	1757	DRLIN1	Tight spots encountered from 1322 m to 1310 m. Engaged TDS and pumped/backreamed out of hole to 1235 m. POOH conventional to 14 m inside 20" shoe.
06.07.2003	12:30	13:00	0.5	1757	DRLIN1	Continued to circulate bottoms up. No significant increase in cuttings over shakers.
06.07.2003	13:00	13:30	0.5	1757	DRLIN1	Lined up to cement unit and pressure tested surface lines to 100 bar for 5 minutes. Conducted FIT to 1,55 sg EMW, 25 bar.
06.07.2003	13:30	15:00	1.5	1757	DRLIN1	RIH to HUD at 1710 m - 15 ton down. Washed/light reamed through HUD (saw nothing) down to TD at 1575 m with 4000 lpm and 100 rpm.

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
06.07.2003	15:00	24:00	9	1959	DRLIN1	Continued drilling ahead 17 1/2" hole section from 1757 m to 1959 m. Drilling parameters: 4500 lpm, 270 bar, 180 rpm, 10-15 ton WOB and 7000 ft/lbs torque. Increased mud weight slowly from 1795 m to 1.4 sg.
07.07.2003	00:00	06:00	6	2075	DRLIN1	Continued drilling ahead 17 1/2" hole section from 1959 m to 2160 m. Drilling parameters: 4300 lpm, 300 bar, 200 rpm, 10-15 ton WOB and 10000 ft/lbs torque.
07.07.2003	06:00	18:00	12	2276	DRLIN1	Drill ahead 17 1/2" hole section to 2276 m. Increase mud weight to 1,5 sg and flush kill and choke lines.
07.07.2003	18:00	21:00	3	2331	DRLIN1	Continue drilling 17 1/2" hole section from 2276 m to 2331 m. Drilling parameters: 4000 lpm, 300 bar, 200 rpm, 15 ton WOB and 10000ft/lbs torque.
07.07.2003	21:00	21:30	0.5	2276	DRLIN1	At 2331 m observe torque increase to 15000 ft/lbs. Stopped drilling and circulated/worked string, increasing mud weight to 1,53 sg. Observed cavings at shakers.
07.07.2003	21:30	24:00	2.5	2373	DRLIN1	Drill ahead 17 1/2" hole section to 2373 m. Drilling parameters: 4000 lpm, 300 bar, 200 rpm, 5-10 ton WOB and 8000 ft/lbs torque. Well stable.
08.07.2003	00:00	04:00	4	2415	DRLIN1	Drill ahead 17 1/2" hole section from 2373 m to section TD at 2415 m. Drilling parameters: 3700 lpm, 302 bar, 100-200 rpm, 5-10 ton WOB and 8000 ft/lbs torque.
08.07.2003	04:00	06:00	2	2415	DRLIN1	Circulated bottoms up 150% and worked string with 3700 lpm and 302 bar. Flow checked - well static.
08.07.2003	06:00	09:00	3	2415	DRLIN1	Pumped out of hole from 2415 m to 1601 m with 3500 lpm, 280 bar, 80 rpm and 4000 ft/lbs torque.
08.07.2003	09:00	11:30	2.5	2415	DRLIN1	Attempted to POOH conventional from 1601 m with no success - hole sticky. Engaged TDS and continued to pump out of hole until inside 20" casing shoe at 1177 m.
08.07.2003	11:30	12:00	0.5	2415	DRLIN1	Circulated bottoms up - large volume of cuttings at shakers.
08.07.2003	12:00	13:30	1.5	2415	DRLIN1	Made up cement stand and changed out sub on la-fleure circulating sub. Meantime circulated riser through choke and kill lines at maximum rate. Large volume of cuttings at shakers.
08.07.2003	13:30	15:00	1.5	2415	DRLIN1	While circulating, diverter and flowline plugged with cuttings. Clear plugged lines and clean out same.
08.07.2003	15:00	16:30	1.5	2415	DRLIN1	Cut and slipped drilling line.
08.07.2003	16:30	18:00	1.5	2415	DRLIN1	RIH to HUD at 2409 m - 6 m of fill. No other open hole problems encountered.
08.07.2003	18:00	19:00	1	2415	DRLIN1	Washed down to TD at 2415 m.
08.07.2003	19:00	21:00	2	2415	DRLIN1	Circulated bottoms up with 3700 lpm, 300 bar, 50 rpm and 4000 ft/lbs.
08.07.2003	21:00	24:00	3	2415	DRLIN1	Flow checked - well static. Pumped slug and POOH conventional from 2415 m to inside shoe at 1177 m. No open hole problems encountered.
09.07.2003	00:00	01:30	1.5	2415	DRLIN1	Flow checked well at 20" casing shoe - well static. Continue POOH 17 1 /2" BHA from 1177 m to 338 m.
09.07.2003	01:30	04:00	2.5	2415	DRLIN1	Recovered 17 1/2" BHA to surface - collars clean, stabilizers balled up 60% and minimal wear on 17 1/2" bit. Bit grading 1,1,NO,G,E,1,NO,TD. Racked back BHA in derrick. Meanwhile circulated riser through kill, choke and booster lines at maximum rate.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
09.07.2003	04:00	05:00	1	2415	DRLIN1	Made up jetting sub, 2 joints of DP and nominal bore protector retrieval tool.
09.07.2003	05:00	07:00	2	2415	DRLIN1	RIH jet sub and bore protector retrieving tool on 5" ITAG pipe. Sat down at 37 m - commenced washing through clay build up in riser at 3700 lpm, 230 bar to a depth of 421 m - large quantity of cuttings at shakers. Circulated riser through kill and choke lines at maximum rate.
09.07.2003	07:00	08:30	1.5	2415	DRLIN1	Landed out in wellhead and latched nominal bore protector. Pulled free same with 13 ton overpull. Jetted wellhead and POOH to surface with bore protector and laid out. Racked back retrieval tool in derrick.
09.07.2003	08:30	09:00	0.5	2415	DRLIN1	Clean and cleared rig floor.
09.07.2003	09:00	10:00	1	2415	CSGIN1	Installed BX elevator and rigged up casing tong to run 13 3/8" casing.
09.07.2003	10:00	11:30	1.5	2415	CSGIN1	Held pre job meeting. Picked up 13 3/8" casing shoe, 1 x joint casing and float and made up. Tested floats - okay.
09.07.2003	11:30	18:00	6.5	2415	CSGIN1	RIH 13 3/8" 72# P110 AMS casing to 1190 m filling every 5 joints.
09.07.2003	18:00	24:00	6	2415	CSGIN1	Made up circulating swedge and broke circulation with 500 lpm and 9 bar. Continue running 13 3/8" casing to 1745 m filling every 5 joints and circulating riser through kill and choke lines with 1000 lpm and 15 bar.
10.07.2003	00:00	02:30	2.5	2415	CSGIN1	Continue running 13 3/8" casing from 1745 m to 1997 m filling every 5 joints and circulate riser through kill and choke lines.
10.07.2003	02:30	03:00	0.5	2415	CSGIN1	Changed out to 5" elevators and picked up 13 3/8" casing hanger and made up to casing.
10.07.2003	03:00	03:30	0.5	2415	CSGIN1	Unable to tilt 5" elevators with topdrive due to angle of bails. Changed out tilt assembly on 13 3/8 BX elevators and made up same to drilling BX elevators. Installed 5" BX elevator.
10.07.2003	03:30	04:00	0.5	2415	CSGIN1	Removed FMS and installed master bushing in rotary. Inspected seal assembly on hanger. Cleared 13 3/8" handling equipment from rig floor.
10.07.2003	04:00	06:30	2.5	2415	CSGIN1	RIH with 13 3/8" casing on 5" ITAG landing string to 2392 m circulating riser through kill and choke lines with 1000 lpm.
10.07.2003	06:30	07:00	0.5	2415	CSGIN1	Made up cement stand and circulated through casing string at 645 lpm and 29 bar - clean returns at shakers. Landed out 13 3/8" casing hanger as per Vetco procedures.
10.07.2003	07:00	08:00	1	2415	CSGIN1	Circulated through casing string at 813 lpm and 34 bar. Increased rate to 980 lpm and 40 bar with clean returns at shakers. No losses while circulating.
10.07.2003	08:00	09:00	1	2415	CSGIN1	Held pre job meeting prior to cementing operations and pumped 200 liter freshwater to flush surface lines. Pressure tested surface lines to 200 bar for 15 minutes. Commenced cement job: Pumped 15 m3 spacer with rig pumps, released bottom dart, mixed and pumped 28 m3 class 'G' 1,92 sg slurry at 1000 lpm, followed by 250 liter freshwater. Released second dart and sheared out top plug with 138 bar.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
10.07.2003	09:00	11:00	2	2415	CSGIN1	Displaced cement with rig pumps 151 m3, 1,53 sg mud at 2000 lpm. Bumped plug with 9572 strokes (96% efficiency) and maintained 90 bar for 5 minutes. Bled off pressure and checked for back-flow - negative. No losses while pumping cement. Lost during displacement 54 m3.
10.07.2003	11:00	12:00	1	2415	CSGIN1	Rigged down cement head and hoses and set 13 3/8" seal assembly as per Vetco procedures. Closed middle pipe rams and pressured up above casing hanger to 207 bar for 5 minutes to set seal assembly. Pressure tested same to 345 bar for 10 minutes - good test.
10.07.2003	12:00	15:30	3.5	2415	CSGIN1	Pressure test BOP to 35/345 bar on blue pod. Function tested BOP from yellow pod on remote panel - good tests.
10.07.2003	15:30	16:30	1	2415	CSGIN1	Released casing hanger running tool as per Vetco procedures and recovered to surface.
10.07.2003	16:30	20:00	3.5	2415	CSGIN1	Picked up jetting sub, WBRRT, engaged wear bushing. RIH and set wear bushing in wellhead. Jetted BOP area and POOH and laid out WBRRT.
10.07.2003	20:00	21:30	1.5	2415	CSGIN1	Clean and cleared rig floor. Picked up and installed diverter running tool and pulled diverter as per Odfjell procedures. Cleaned out diverter and lines and washed drain pan area. Re-installed diverter and laid down diverter running tool.
10.07.2003	21:30	22:30	1	2415	CSGIN1	Laid out cement head from derrick.
10.07.2003	22:30	24:00	1.5	2415	CSGIN1	Rig up surface lines and pressure tested 2 x IBOP and rotary hose on rig floor to 35/345 bar for 5/15 minutes - good tests.
11.07.2003	00:00	03:00	3	2415	CSGIN1	Laid down 17 1/2" BHA, changed probe in MWD, changed out string stab from 17 1/2" to 12 1/4".
11.07.2003	03:00	04:00	1	2415	CSGIN1	Made up 12 1/4" BHA. Meanwhile attempted to pressure test 13 3/8" casing to 345 bar. Pumped 400 lpm, pressure 24 bar and dropping. Stopped pumping and observed returns back to trip tank.
11.07.2003	04:00	04:30	0.5	2415	CSGIN1	Pathfinder load CLSS on deck. Meanwhile circulate 1/2 riser volume at 3000 lpm and 295 bar through upper kill line to clean shear ram area.
11.07.2003	04:30	05:30	1	2415	CSGIN1	Continued making up 12 1/4" BHA. Meanwhile attempt to test 13 3/8" casing against shear ram - no success. Returns back to trip tank.
11.07.2003	05:30	07:00	1.5	2415	CSGIN1	Made up XO and tested MWD tool. Installed radioactive sources.
11.07.2003	07:00	10:00	3	2415	CSGIN1	Continued making up 12 1/4" BHA and RIH same to 399 m. Meanwhile spotted 5 m3 brine pill down choke line and allowed to soak across BOP for 1 hour.
11.07.2003	10:00	11:00	1	2415	CSGIN1	With bit at shear ram depth washed cavity with 4200 lpm.
11.07.2003	11:00	11:30	0.5	2415	CSGIN1	Closed shear rams and attempted to pressure up with rig pumps - no success. Increased shear rams closing pressure to 2500 psi. Attempted to pressure test ram against 13 3/8" casing - no success, returns back to trip tank.
11.07.2003	11:30	12:00	0.5	2415	CSGIN1	RIH 12 1/4" BHA from 399 m to 740 m.
11.07.2003	12:00	13:30	1.5	2415	CSGIN1	Pressure tested surface lines with cement unit to 345 bar - good test. Flushed lines with mud pumps, closed middle pipe rams and tested 13 3/8" casing to 345 bar for 10 minutes - good test. 2 m3 pumped, 2 m3 returned.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
11.07.2003	13:30	15:00	1.5	2415	CSGIN1	POOH 12 1/4" BHA to above shear rams. Attempted to obtain seal on shear rams by pumping while closing - no success. Spotted 8 m3 brine pill to shear rams and allowed to soak.
11.07.2003	15:00	15:30	0.5	2415	CSGIN1	POOH 12 1/4" BHA and racked back in derrick.
11.07.2003	15:30	17:30	2	2415	CSGIN1	Disabled battery on MWD and changed inserts on BX elevators to 5". Held pre job meeting and unloaded radioactive sources from MWD tool.
11.07.2003	17:30	19:00	1.5	2415	CSGIN1	Made up bull nose jetting sub and RIH. Lightly tag shear rams and commence circulating at maximum rate.
11.07.2003	19:00	20:00	1	2415	CSGIN1	Opened shear rams and jetted area at maximum rate. Attempted to pressure test rams - no success - repeated sequence x 3 with no success. Each time returns at trip tank.
11.07.2003	20:00	20:30	0.5	2415	CSGIN1	RIH to 753 m, 350 m below wellhead.
11.07.2003	20:30	21:00	0.5	2415	CSGIN1	Spotted 30 m3, 1,7 sg Sildril mud in annulus.
11.07.2003	21:00	23:00	2	2415	CSGIN1	POOH to wellhead and displaced BOP and riser to seawater. Opened K/C and booster and displace same. Jetted across shear ram area with seawater at maximum rate. Picked up above, closed shear rams on low pressure and attempted to pressure test same - no success.
11.07.2003	23:00	23:30	0.5	2415	CSGIN1	POOH jetting sub.
11.07.2003	23:30	24:00	0.5	2415	CSGIN1	Cleaned rig floor and prepare to pull BOP.
12.07.2003	00:00	02:00	2	2415	CSGIN1	Continued rigging up to pull riser and BOP.
12.07.2003	02:00	02:30	0.5	2415	CSGIN1	Recovered diverter and laid out same.
12.07.2003	02:30	03:30	1	2415	CSGIN1	Made up slip joint handling stand and made up to slip joint. Unlatched BOP and pulled clear of PGB.
12.07.2003	03:30	04:00	0.5	2415	CSGIN1	Hung off support ring and disconnected guidelines with ROV.
12.07.2003	04:00	05:00	1	2415	CSGIN1	Racked back slip joint handling stand. Meanwhile skidded rig 30 m starboard.
12.07.2003	05:00	06:00	1	2415	CSGIN1	Pulled slip joint and laid out same.
12.07.2003	06:00	12:00	6	2415	CSGIN1	Continued to pull riser and BOP.
12.07.2003	12:00	17:00	5	2415	CSGIN1	Pulled BOP through splash zone, landed on BOP carrier and latched same. Skidded BOP to handling area (at parked position 15:30) and laid down remaining riser joints. Opened BOP and inspected same. Front part of the upper shear ram sealing rubber missing and upper block damaged at leading edge.
12.07.2003	17:00	18:00	1	2415	CSGIN1	Commenced changing out shear ram blocks for new. Meanwhile cleaned and cleared rig floor and rigged down riser handling equipment. Removed BOP elevators and 500 ton bails.
12.07.2003	18:00	20:00	2	2415	CSGIN1	Continued changing out shear ram blocks. Changed out to drilling bails and BX elevator. Cleared setback area.
12.07.2003	20:00	23:00	3	2415	CSGIN1	Continued working on BOP - upper pipe ram rubber also showing signs of wear and damage. Installed new UPR rubbers, cleaned and inspected all ram cavities - small amount of grinding required in LPR & MPR cavities. Meanwhile rearranged stands in derrick to accommodate 5” DP.
12.07.2003	23:00	24:00	1	2415	CSGIN1	Commenced picking up 5" DP from deck while repairing and inspecting BOP.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
13.07.2003	00:00	09:00	9	2415	CSGIN1	Continued picking up 5" DP from deck while repairing and inspecting BOP.
13.07.2003	09:00	14:00	5	2415	CSGIN1	Continued picking up 5" DP from deck. Meanwhile commenced pressure testing BOP: All pipe rams, shear rams and fail safes to 35/1035 bar for 5/10 minutes. Annulars to 35/482 bar for 5/10 min. Good tests.
13.07.2003	14:00	15:30	1.5	2415	CSGIN1	Rigged down BOP test equipment, meanwhile rigged up BOP/riser handling equipment. Function tested hydraulic spider.
13.07.2003	15:30	17:00	1.5	2415	CSGIN1	Held SJA and pre job meeting. Picked up 5 ft pup joint and 2 x 50 ft riser float joints and made up.
13.07.2003	17:00	18:00	1	2415	CSGIN1	Skidded BOP to moon pool area and nippled up same. Established guide wires and ROV changed out VX-ring on wellhead.
13.07.2003	18:00	19:30	1.5	2415	CSGIN1	Made up riser to BOP, check beacon and bullseyes and ran through splash zone.
13.07.2003	19:30	24:00	4.5	2415	CSGIN1	Ran riser and BOP, testing every 10 joints k/c to 35/1035 bar for 5/10 min.
14.07.2003	00:00	06:00	6	2415	CSGIN1	Continued running riser and BOP. Picked up slip joint and connected support ring. Pressure tested kill & choke lines and support ring stabs to 35/1035 bar for 5/10 min. Meanwhile skidded rig over location.
14.07.2003	06:00	11:00	5	2415	CSGIN1	Established guidelines with ROV. Landed and latched BOP at 06:45. Took overpull - okay. Stroked out slip joint, racked back landing stand and installed diverter. Rigged down riser and BOP handling equipment and rigged up drilling bails and BX elevator. BOP bullseye 0.5 deg stb/fwd, LMRP bullseye 0.50 deg prt/fwd.
14.07.2003	11:00	12:00	1	2415	CSGIN1	Made up BOP plug type test tool to 1 stand of ITAG drill pipe and RIH on 5" DP.
14.07.2003	12:00	15:00	3	2415	CSGIN1	Landed out test tool on 13 3/8" WB. Attempted to pressure test connector - pressure drop observed at 1000 bar - suspect possible leak path through WB 'O' rings. POOH and racked back BOP test tool stand - seals okay.
14.07.2003	15:00	17:00	2	2415	CSGIN1	Recovered 13 3/8" WB with 38 ton overpull - both 'O' rings lost. Racked back WBRT in derrick.
14.07.2003	17:00	20:00	3	2415	CSGIN1	Picked up BOP plug type test tool from derrick and RIH same. Landed out in 13 3/8" hanger. Pressure tested connector against UPR to 1035 bar for 10 minutes - good test. Function tested BOP on both pods - okay. POOH with test tool and laid out.
14.07.2003	20:00	22:00	2	2415	CSGIN1	Made up WB, RIH and set same. POOH WBRT and laid out.
14.07.2003	22:00	24:00	2	2415	CSGIN1	Made up 12 1/4" BHA with junk bit and 2 x junk baskets and RIH to 107 m.
15.07.2003	00:00	04:30	4.5	2415	CSGIN1	Cont. RIH from 107m to 2345m. M/U TDS & wash down to 2364 m.
15.07.2003	04:30	08:30	4	2415	CSGIN1	Took wt. @ 2364m. P/U string 2m & displace hole to OBM w/13 800 strokes. Held safety meeting prior to displacement.

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Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
15.07.2003	08:30	10:00	1.5	2415	CSGIN1	Drill on junk @ 2364m. Parameters: 5-15 ton WOB, 50-80 rpm, 5-10 kft*lbs, 2400 lpm, 270 bars. Work junk basket continuously.
15.07.2003	10:00	12:30	2.5	2415	CSGIN1	Drill on plugs, firm cmt. from 2365m to 2405m (shoe depth). Work junk basket frequently while drilling cmt. Drill through shoe @ 1215 hrs. Clean out rathole from 2405m to 2415m.
15.07.2003	12:30	13:30	1	2420	CSGIN1	Drill new formation from 2415m to 2420m. Parameters: 5 ton WOB, 80 rpm, 3 kft/lbs, 2250 lpm - 230 bar.
15.07.2003	13:30	14:00	0.5	2420	CSGIN1	Circ. to condition mud, 1,70 sg in/out.
15.07.2003	14:00	15:00	1	2420	CSGIN1	Perform FIT to 1,87 sg EMW.
15.07.2003	15:00	15:30	0.5	2427	CSGIN1	Cont. drill 12 1/4" hole from 2420m to 2427m.
15.07.2003	15:30	16:30	1	2427	CSGIN1	Circ. prior to POOH. 15 min. flow check - Neg. Slug pipe.
15.07.2003	16:30	21:30	5	2427	CSGIN1	POOH w/junk assembly from 2427m. Flow check w/BHA below BOP's - Neg. Break off bit & junk subs. Recovered approx. 1,35 kg junk.
15.07.2003	21:30	24:00	2.5	2427	CSGIN1	P/U MWD std. from derrick. Pathfinder set batteries & logging sample rates. Pathfinder install radioactive sources.
16.07.2003	00:00	01:30	1.5	2427	DRLIN2	M/U MWD & test same.
16.07.2003	01:30	03:30	2	2427	DRLIN2	Cont. RIH to 750m.
16.07.2003	03:30	05:00	1.5	2427	DRLIN2	Cont. RIH w/12 1/4" BHA to 2170m.
16.07.2003	05:00	06:00	1	2427	DRLIN2	Held pit drill w/crew - OK. Record choke line friction: SPM/bar 10/7,5 20/13 30/17 40/24 50/40
16.07.2003	06:00	06:30	0.5	2427	DRLIN2	M/U drilling stand. Take SCR@2400m w/1,70 sg mud: MPI: 10/20, 20/21, 30/26
16.07.2003	06:30	07:00	0.5	2427	DRLIN2	Wash down from 2400m to 2415m. Log interval to 2427m as per Pathfinder instructions.
16.07.2003	07:00	24:00	17	2835	DRLIN2	Tag bttm w/firm wt. @2427m. Flush bttm w/2700 lpm - 300 bar, 100 rpm for 5 min. Start drilling from 2427m to 2835m. Parameters: 7 - 12 ton WOB, 150 rpm, 2700 lpm - 300 bar, 4 – 13 kft/lbs torque.
17.07.2003	00:00	24:00	24	3224	DRLIN2	Drill 12 1/4" hole from 2835 m to 3224 m. Flow check @ 2929m - Neg. Parameters: 1 - 15ton WOB, 150 - 200rpm, 4 – 14 kft/lbs, 300 bar, 2600 lpm.
18.07.2003	00:00	20:30	20.5	3471	DRLIN2	Continue drill 12 1/4" hole from 3224 m to 3471m. Parameters: 0 – 2 ton WOB, 296 bar – 2560 lpm, 200 rpm - 5-6 kft/lbs.
18.07.2003	20:30	23:00	2.5	3471	DRLIN2	Survey @ TD. Circ. bttm's up & until cuttings decrease on shaker screens.
18.07.2003	23:00	24:00	1	3471	DRLIN2	Flow check - OK. Pull from 3471m to 3300m. 20 ton OP several times in "Lysing" formation from 3415m to 3350m. Spot OP 20 ton @3405m, @3377m, @3367m, @3327m, @3300m.
19.07.2003	00:00	03:00	3	3471	DRLIN2	Cont. pull from 3300m to shoe @ 2400m. Flow check @ shoe - OK.
19.07.2003	03:00	03:30	0.5	3471	DRLIN2	Slip 100 ft. drill line, check COM, check brake lining.
19.07.2003	03:30	05:30	2	3471	DRLIN2	RIH w/12 1/4" BHA from 2400m. Took wt. @ 3451m.
19.07.2003	05:30	06:00	0.5	3471	DRLIN2	Black out rig.
19.07.2003	06:00	19:00	13	3572	DRLIN2	P/U TD & wash from 3451 m to 3471 m. Cont. drill from 3471m to 3572 m. Max gas bttm's up: 7,3%. Drilling parameters: 2 - 4 ton WOB, 150 – 200 rpm, 5 - 10 kft/lbs 300 bar – 2560 lpm.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
19.07.2003	19:00	19:30	0.5	3572	DRLIN2	Stopped drilling due to high temp. alarm on TDS. Check alarm - OK.
19.07.2003	19:30	24:00	4.5	3593	DRLIN2	Cont. drill 12 1/4" hole from 3572m to 3593m. Drilling parameters: 0 - 3ton WOB, 200rpm, 5 - 10 kft/lbs, 294 bar - 2500lpm. Drilling with low weight for directional purpose, attempting to drop angle.
20.07.2003	00:00	07:30	7.5	3645	DRLIN2	Drill 12 1/4" hole from 3593 m to 3645 m. Drilling parameters: 2 - 10 ton WOB, 200rpm, 5 - 10 kft/lbs, 292 bar - 2500 lpm. Max. gas 0,8%.
20.07.2003	07:30	09:30	2	3645	DRLIN2	Circ. bttm's up w/2600lpm - 300bar.
20.07.2003	09:30	10:30	1	3645	DRLIN2	Circ. to clean riser w/MP1 & 2 thru kill & choke line. MP 3 circ. thru string @ 3645m.
20.07.2003	10:30	19:00	8.5	3645	DRLIN2	Flow check - OK. Pull 5 stands wet - OK. Slug pipe & POOH from 3527m to shoe @ 2404m, flow check - OK. Cont. POOH & R/B 12 1/4" BHA in derrick. L/D radioactive sources. Break bit.
20.07.2003	19:00	21:30	2.5	3645	DRLIN2	Download CWR, DNSC & CLSS - OK. Pathfinder had trouble shutting off batteries & trouble w/data cable from 20:10 hrs to 21:18 hrs. Meanwhile troubleshoot TDS cooling system. R/B pathfinder std. in derrick.
20.07.2003	21:30	22:30	1	3645	DRLIN2	P/U mud motor & test same.
20.07.2003	22:30	23:30	1	3645	DRLIN2	M/U 12 1/4" bit (RR) & took scribe line. Cont. M/U BHA.
20.07.2003	23:30	24:00	0.5	3645	DRLIN2	Change probe in MWD.
21.07.2003	00:00	01:00	1	3645	DRLIN2	PU and MU directional BHA to correct well bore inclination and re-enter target tolerance radius. Test mud motor & MWD together.
21.07.2003	01:00	01:30	0.5	3645	DRLIN2	Cont. RIH w/12 1/4" BHA to 177m
21.07.2003	01:30	02:00	0.5	3645	DRLIN2	Inspect & clean filters on TDS cooling.
21.07.2003	02:00	08:00	6	3645	DRLIN2	Cont. RIH from 177m to 3630m.
21.07.2003	08:00	13:30	5.5	3656	DRLIN2	Wash down from 3630m to TD @ 3645m, 3m fill. Drill & orient 12 1/4" hole from 3545m to 3656m. Drilling parameters: 2 - 10 ton WOB, 305 bar - 2450 lpm.
21.07.2003	13:30	16:00	2.5	3656	DRLIN2	POOH from 3656m to 2404m due to inability to keep toolface. Held kick drill. Flow check @ 13 3/8" shoe (2404m) - OK.
21.07.2003	16:00	18:00	2	3656	DRLIN2	Change damaged wire on standlifter.
21.07.2003	18:00	21:00	3	3656	DRLIN2	Cont. POOH from 2404m. Flow check prior to pulling BHA thru BOP - OK.
21.07.2003	21:00	23:00	2	3656	DRLIN2	Cont. POOH from 580m to surface. Change string stab. & L/O bit.
21.07.2003	23:00	24:00	1	3656	DRLIN2	M/U new 12 1/4" Rock bit & reset scribe line.
22.07.2003	00:00	04:30	4.5	3656	DRLIN2	RIH w/12 1/4" assembly to 2380m. Tested MWD going in. Broke circ. @ shoe.
22.07.2003	04:30	05:00	0.5	3656	DRLIN2	Function test BOP's - OK.
22.07.2003	05:00	07:00	2	3656	DRLIN2	Cont. RIH from 2380m to 3630m.
22.07.2003	07:00	07:30	0.5	3656	DRLIN2	Wash down from 3630m to 3656m. Tag bttm @ 3656m.
22.07.2003	07:30	24:00	16.5	3698	DRLIN2	Drill & orient 12 1/4" hole from 3656 m to 3698 m. Drilling parameters: 13 - 23 ton WOB, 310 bar - 2600 lpm.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
23.07.2003	00:00	24:00	24	3769	DRLIN2	Drill & orient 12 1/4"Hole from 3698m to 3769m. Rotate 3703m - 3708m, 3755m - 3760m. Drilling parameters: 10 - 23 ton WOB, 310 bar - 2600 lpm.
24.07.2003	00:00	24:00	24	3844	DRLIN2	Orient & drill 12 1/4" hole from 3769m to 3844m by sliding & rotation. Drilling parameters: 10 - 20 ton WOB, 310 - 317 bar, 2600 lpm, 90 - 200 rpm (DH), 6 - 9 kft/lbs. Start incr. MW from 1,70sg @ 16:30 hrs. Had 1,75 sg in/out @ 19:00 hrs.
25.07.2003	00:00	01:30	1.5	3852	DRLIN2	Orient & drill 12 1/4" hole from 3844m to 3852m. Drilling parameters: 20 ton WOB, 317 bar - 2550 lpm, 60 rpm, 7 kft/lbs
25.07.2003	01:30	04:00	2.5	3852	DRLIN2	Took survey & Circ. bttm's up while incr. mud wt. from 1,75 sg to 1,77 sg.
25.07.2003	04:00	10:00	6	3852	DRLIN2	Flow check - OK. Slug pipe & POOH from 3852m to 285m. MOP 30 ton @ tight spots 3832m - 3690m. Flow check @ 2386m - OK.
25.07.2003	10:00	14:00	4	3852	DRLIN2	Pull & R/B 12 1/4" BHA in derrick. Change 12" string stb. to 12 1/4". L/D 8" NM X/O due to damaged seal. Change probe in MWD, R/B same in derrick. L/D pony DC, motor, stabs & bit.
25.07.2003	14:00	18:30	4.5	3852	DRLIN2	M/U new BHA. Change sleeve from 17 1/2" to 12 1/4". Inst. radioactive probe. Test MWD - OK.
25.07.2003	18:30	21:30	3	3852	DRLIN2	RIH w/BHA to 300m.
25.07.2003	21:30	22:30	1	3852	DRLIN2	P/U & M/U cmt. std. R/B same in derrick.
25.07.2003	22:30	24:00	1.5	3852	DRLIN2	RIH w/12 1/4" assembly from 300m to 1100m. Fill pipe @ 1000m.
26.07.2003	00:00	01:30	1.5	3852	DRLIN2	RIH w/12 1/4" assembly from 1100m to 2373m. Fill pipe @ 2057m.
26.07.2003	01:30	02:30	1	3852	DRLIN2	Trouble with slip & cut drill line.
26.07.2003	02:30	04:00	1.5	3852	DRLIN2	Slip & cut drill line.
26.07.2003	04:00	06:30	2.5	3852	DRLIN2	Cont. RIH w/12 1/4" from 2373m to 3630m. Filled pipe.
26.07.2003	06:30	15:00	8.5	3852	DRLIN2	Log w/MWD from 3630m to 3852m. Parameters: 290 - 307bar. 2400 - 2450lpm. 100 - 120rpm. 0 - 25kft/lbs. ROL: 20 - 50m/hr. Found 1,5 fill.
26.07.2003	15:00	18:00	3	3900	DRLIN2	Drill 12 1/4" hole from 3852m to 3900m. Bit dug in, torque up, jar free @ 3892m & 3897m. Drilling parameters: 10 - 15 ton WOB, 305 bar - 2460 lpm, 150 rpm, 7 - 20 kft/lbs. Incr. mud wt. while drilling from 1,77 sg to 1,80 sg. Max. gas while drilling 4,5%.
26.07.2003	18:00	20:00	2	3900	DRLIN2	Circ. bttm's up @ 3900m w/2450 lpm - 300 bar, 40 rpm - 3 kft/lbs.
26.07.2003	20:00	21:00	1	3908	DRLIN2	Cont. drill from 3900m to 3908m. Drilling parameters: 0 - 5 ton WOB, 300 bar - 2450 lpm, 160 - 200 rpm, 5 - 15 kft/lbs.
26.07.2003	21:00	21:30	0.5	3908	DRLIN2	Took SCR @ 3908m. MP1: 20 SPM - 15 bar, 30 SPM - 23 bar, 40 SPM - 34 bar. R/U drilling std. in derrick.
26.07.2003	21:30	23:30	2	3908	DRLIN2	Circ. bttm's up @ 3908m. 302 bar - 2450 lpm, 40 rpm - 3 kft/lbs.
26.07.2003	23:30	24:00	0.5	3908	DRLIN2	Flow check well prior to wiper trip - OK. Slug pipe.
27.07.2003	00:00	01:30	1.5	3908	DRLIN2	Perform wipertrip from 3908m to 3617m. Took 20 ton OP @ 3800m - 3750m. RIH to 3906m, P/U single & wash down to TD, 3908m. No restrictions.
27.07.2003	01:30	02:00	0.5	3908	DRLIN2	R/U circ. swedge & hose. Prep. to change washpipe.

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27.07.2003	02:00	05:00	3	3908	DRLIN2	Circ. bttm's up w/circ. swedge 225 bar - 1700 lpm, rotate string w/RT - 40 rpm while changing washpipe. R/D circ. swedge @ 02:55 hrs. Install TDS & cont. circ. w/300 bar - 2450 lpm, 60 rpm - 3 kft/lbs. Max gas: 1,7%. Flow check - OK.
27.07.2003	05:00	12:00	7	3908	DRLIN2	Slug pipe & POOH from 3908m to 300m. Flow check @ shoe (2374m) & prior to pulling BHA thru BOP - OK. Flush BOP thru string, booster line, kill & choke line w/3500 lpm.
27.07.2003	12:00	15:30	3.5	3908	DRLIN2	Cont. POOH & R/B BHA. Remove radioactive source from LWD. L/D Pathfinder BHA on deck.
27.07.2003	15:30	16:30	1	3908	DRLIN2	Clear drill floor, Prep. cmt. std. w/cmt. hose & remote control.
27.07.2003	16:30	18:00	1.5	3908	DRLIN2	M/U jet sub 2 joints below WB R/T. RIH w/WB R/T & wash to 403m.
27.07.2003	18:00	21:00	3	3908	DRLIN2	Retrieve WB, OP: 45 ton & wash wellhead. Boost riser 200 bar - 1500 lpm. POOH w/WB & R/B in derrick.
27.07.2003	21:00	24:00	3	3908	DRLIN2	Prep. to run 9 5/8" casing. Held pre-job meeting.
28.07.2003	00:00	01:00	1	3908	CSGIN2	P/U 9 5/8" float & shoe joint. Check same.
28.07.2003	01:00	10:30	9.5	3908	CSGIN2	Cont. run 9 5/8" & 9 7/8" csg. acc. to csg. tally. Bakerlok first 4 connection. Install. 8 centralizers, fill csg. every 10 joints. OWS M/U computer fail, run without.
28.07.2003	10:30	11:30	1	3908	CSGIN2	OWS remote csg. tong fail. Change to OWS manual B/U tong. Held safety meeting on use of manual tong.
28.07.2003	11:30	24:00	12.5	3908	CSGIN2	Cont. run 9 5/8" & 9 7/8" csg. acc. to csg. tally to 2857m. Enter open hole @ 2045 hrs. Fill every 10 joints. Boost riser in-between, 30 bar - 500 lpm. Held safety meeting with night crew on manual csg. tong.
29.07.2003	00:00	05:00	5	3908	CSGIN2	Continued running 9 5/8" & 9 7/8" csg using OWS manual tong as per tally from 2857 m to 3492 m filling every 10 joints. Boost riser with 500 lpm & 30 bar.
29.07.2003	05:00	06:00	1	3908	CSGIN2	Rigged down BX elevator and installed manual 5" DP elevator. Picked up and made up 9 7/8" casing hanger as per Vetco procedures.
29.07.2003	06:00	08:30	2.5	3908	CSGIN2	RIH 9 5/8" x 9 7/8" casing on 5" ITAG landing string. Made up cement stand and landed out casing hanger as per Vetco procedures.
29.07.2003	08:30	10:30	2	3908	CSGIN2	Circulated 1 x annulus volume at 1360 lpm & 75 bar - max gas 5,2%.
29.07.2003	10:30	12:00	1.5	3908	CSGIN2	Held pre job meeting prior to cementing operations and pumped 600 liters freshwater to flush surface lines. Pressure tested surface lines to 345 bar. Commenced cement job: Pumped 4 m3 base oil and 15 m3 spacer with rig pumps, released bottom dart, mixed and pumped 31,6 m3 class 'G', 1,95 sg slurry at 800 lpm, followed by 600 liter OBM. Port cement pump failed - shut down same and continued with starboard pump. Released second dart, pumped 2,6 m3 OBM and sheared out top plug with 155 bar.
29.07.2003	12:00	14:00	2	3908	CSGIN2	Displaced cement with 130 m3, 1,8 sg OBM at 1500 lpm & 80 bar. Bumped plug with 8134 strokes (95.5% efficiency) and maintained 100 bar. 21 m3 mud losses during displacement of cement - suspect losses occurred above cement column in annulus due to increasing pressure when displacing cement from 9 5/8" casing shoe.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
29.07.2003	14:00	14:30	0.5	3908	CSGIN2	Bled off pressure and checked for backflow - negative. Rigged down cement hoses.
29.07.2003	14:30	17:00	2.5	3908	CSGIN2	Set 9 7/8" seal assembly as per Vetco procedures and tested same to 35/690 bar for 5/10 minutes - good test.
29.07.2003	17:00	17:30	0.5	3908	CSGIN2	Repaired leak on cement unit.
29.07.2003	17:30	23:00	5.5	3908	CSGIN2	Tested BOP rams and failsafes to 35/690 bar for 5/10 minutes and upper and lower annular to 35/345 bar for 5/10 minutes - all good tests. Function tested BOP from yellow pod on remote panel.
29.07.2003	23:00	24:00	1	3908	CSGIN2	Released casing hanger running tool as per Vetco procedures and racked back cement stand in derrick.
30.07.2003	00:00	01:00	1	3908	CSGIN2	Changed out to drilling bails and rigged up BX elevator.
30.07.2003	01:00	02:30	1.5	3908	CSGIN2	Pumped slug and POOH casing hanger running tool to surface - checked lead impression blocks on RT as per Vetco procedures - confirmed seal assembly set okay. Laid out RT.
30.07.2003	02:30	05:00	2.5	3908	CSGIN2	Picked up wear bushing running tool and engaged wear bushing. RIH and set wear bushing as per Vetco procedures. Pumped slug, POOH WBRRT and laid out same.
30.07.2003	05:00	06:00	1	3908	CSGIN2	Laid out cement stand from derrick.
30.07.2003	06:00	09:30	3.5	3908	CSGIN2	Laid out 12 1/4" BHA.
30.07.2003	09:30	11:30	2	3908	CSGIN2	Pressure tested 2 x IBOP and rotary hose to 35/345 bar for 5/10 minutes.
30.07.2003	11:30	12:00	0.5	3908	CSGIN2	Changed out top drive saver sub.
30.07.2003	12:00	18:30	6.5	3908	CSGIN2	Picked up 9 5/8" RTTS packer and made up to 1 x stand 5" DP and RIH picking up 21 x joints 5" DP from deck. Meanwhile pressure tested 9 5/8" x 9 7/8" casing against shear rams to 35/414 bar for 5/10 minutes - good test.
30.07.2003	18:30	19:00	0.5	3908	CSGIN2	Set RTTS packer at 1810 m as per BJ procedures.
30.07.2003	19:00	19:30	0.5	3908	CSGIN2	Pressure tested 9 7/8" casing against pipe rams to 570 bar for 10 min - good test.
30.07.2003	19:30	22:30	3	3908	CSGIN2	Unseated RTTS packer, pumped slug and POOH.
30.07.2003	22:30	24:00	1.5	3908	CSGIN2	Picked up and made up WBRRT. RIH, latched wear bushing and released with 45 ton OP as per Vetco procedures. POOH same.
31.07.2003	00:00	01:30	1.5	3908	CSGIN2	POOH wear bushing and racked back in derrick. Meanwhile pressure tested standpipe manifold to 345 bar.
31.07.2003	01:30	05:00	3.5	3908	CSGIN2	Made up BOP plug type test tool above 5 x stands 5" HWDP c/w 2 x kelly cocks and made up to EHOT assembly. Checked ACME threads prior to running. RIH test tool and landed out in wellhead.
31.07.2003	05:00	06:00	1	3908	CSGIN2	Slacked off landing string weight and attempted to disengage EHOT assembly at ACME thread with 5 x RH rotations - unable to back out thread. Repeated same with varying slack-off weights without success. Closed middle pipe rams around mandrel body and attempted to disengage from ACME thread without success. Pressured up above BOP test tool to 70 bar and repeated same - managed torque increase of 18k ft/lbs but still unable to disengage.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
31.07.2003	06:00	07:00	1	3908	CSGIN2	Commenced POOH with BOP test tool - observed 7 ton loss in string weight. Continued POOH with landing string. Observed backed off at ACME thread. Inspected same - lower thread damaged.
31.07.2003	07:00	11:00	4	3908	CSGIN2	Pressure tested shear rams to 620 bar for 10 minutes - good test. Meantime RIH with landing string. Engaged doughnut with 4 1/2 IF pin and made up to 15 ft/klbs. POOH BOP test plug and laid out same. Laid out 2 x IBOP valves and racked back 5 stands x 5" HWDP.
31.07.2003	11:00	11:30	0.5	3908	CSGIN2	Cleaned and cleared rig floor.
31.07.2003	11:30	14:00	2.5	3908	CSGIN2	Made up WB, RIH and set as per Vetco procedures. POOH WBRRT.
31.07.2003	14:00	16:30	2.5	3908	DRLPRO	Made up drilling stand as per HPHT procedures and racked back. Made up kill joint as per HPHT procedures and laid down.
31.07.2003	16:30	17:00	0.5	3908	DRLPRO	Made up EHOT assembly and laid down.
31.07.2003	17:00	21:00	4	3908	DRLPRO	Made up 8 1/2" BHA and RIH to 253 m. Surface tested MWD.
31.07.2003	21:00	24:00	3	3908	DRLPRO	RIH 8 1/2" BHA to 1980 m.
01.08.2003	00:00	00:30	0.5	3908	DRLPRO	Continued RIH 8 1/2" BHA to 2130 m.
01.08.2003	00:30	01:00	0.5	3908	DRLPRO	Made up grey valve to string and rigged up 10000 psi cement hose. Meanwhile tested left and right auto chokes to 35/690 bar for 5/10 minutes.
01.08.2003	01:00	02:00	1	3908	DRLPRO	Continued RIH 8 1/2" BHA from 2130 m to 2900 m.
01.08.2003	02:00	02:30	0.5	3908	DRLPRO	Pressure tested 10k cement hose to 35/690 bar for 5/10 minutes - good test.
01.08.2003	02:30	03:00	0.5	3908	DRLPRO	Continued RIH 8 1/2" BHA from 2900 m to 3600 m.
01.08.2003	03:00	06:00	3	3908	DRLPRO	Commenced stripping drill: Filled string and made up grey valve. Closed UAP and recorded closing parameters. Pressured up well to 35 bar and stripped through 1 x stand DP - 10 ton force required. Observed well pressure increase to 106 bar. Bled back pressure to 30 bar and stripped in 1 x stand keeping choke line pressure constant - 220 liter returned. Installed kelly cock and closed (2 minutes) and made up kill stand (12 minutes). Recorded cement unit & mud pump SCR's & established choke Line frictions. Noted partially blocked auto choke valve #32 on down stream choke line.
01.08.2003	06:00	08:00	2	3908	DRLPRO	Laid down kill joint and continued RIH 8 1/2" BHA. Tagged cement plugs at 3872 m. Meanwhile inspected and flushed auto choke valve#32.
01.08.2003	08:00	12:30	4.5	3908	DRLPRO	Commenced drilling out plugs and cement to 3896 m while weighing up mud from 1,8 sg to 1,98 sg. Drilling parameters 1800 lpm, 238 bar, 100 rpm, 7 ton WOB & 5-10 kft/lbs torque. Meantime pressure tested valve #32 on choke manifold.
01.08.2003	12:30	13:00	0.5	3908	DRLPRO	Picked up off bottom and flushed through choke manifold to check valve #32 - okay.
01.08.2003	13:00	14:00	1	3908	DRLPRO	Drilled out cement, shoe @ 3901m and cleaned out rathole to 3908 m. Continued weighing up mud to 1,98 sg.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
01.08.2003	14:00	14:30	0.5	3913	DRLPRO	Drilled ahead 5 m new formation from 3908 m to 3913 m - observed 500 lpm losses to formation. Drilling parameters: 1800 lpm, 255 bar, 100 rpm, 5 ton WOB. Mud weight in 1.98, out 1.92. ECD from DPM sub at 2.11 sg.
01.08.2003	14:30	18:00	3.5	3913	DRLPRO	Pulled back into 9 5/8" shoe. Commenced reducing flow rate until well static @ 500 lpm. Flow Rate (lpm) / Losses (lpm) / Mud In (sg) / Mud Out (sg) / ECD (DPM sub) (sg) 1500 / 500 / 1.98 / 1.92 / 2.11 1200 / 150 / 1.96 / 1.92 / 2.09 1000 / 120 / 1.96 / 1.94+ / 2.08 800 / 120 / 1.94 / 1.94+ / 2.08 600 / 40 / 1.93 / 1.94 / NA 500 / NIL / 1.94 / 1.94 / NA Cumulative mud losses 26.5 m3.
01.08.2003	18:00	21:30	3.5	3913	DRLPRO	Reduced mud weight to 1.90 sg - hole gave back 12 m3. Increased pump rate to 1500 lpm - max gas 1.89%. Cycled MWD tool.
01.08.2003	21:30	24:00	2.5	3927	DRLPRO	Drilled ahead 8 1/2" section from 3913 m to 3927 m. Drilling parameters 1500 lpm, 193 bar, 120 rpm, 5 ton WOB & 2-12 kft/lbs torque.
02.08.2003	00:00	03:00	3	3952	DRLPRO	Drilled ahead 8 1/2" section from 3927 m to 3952 m. Drilling parameters 1500 lpm, 194 bar, 150 rpm, 5 ton WOB & 3-10 kft/lbs torque. Maximum connection gas 3.5%.
02.08.2003	03:00	04:30	1.5	3952	DRLPRO	Circulated bottoms up at 1500 lpm & 190 bar and conditioned mud to 1.9 sg all round. Max gas 5%.
02.08.2003	04:30	06:00	1.5	3952	DRLPRO	Took SCR's, pulled bit back to shoe. Performed leak off test to 2.0 sg EMW, 40 bar - 350 liter pumped, 350 returned.
02.08.2003	06:00	06:30	0.5	3952	DRLPRO	Flow checked well for 30 minutes - total gain 200 liter before well became stable.
02.08.2003	06:30	08:00	1.5	3952	DRLPRO	Ran back to bottom. Cycled MWD and took survey. Circulated bottoms up at 1500 lpm & 180 bar - max gas reading 28%. Continued circulating until gas reading leveled out at 1%.
02.08.2003	08:00	08:30	0.5	3952	DRLPRO	Flow checked well for 30 minutes - total gain 700 liter before well became stable.
02.08.2003	08:30	11:30	3	3952	DRLPRO	Circulated bottoms up with 1400 lpm & 180 bar - max gas 9.1%.
02.08.2003	11:30	12:00	0.5	3952	DRLPRO	Performed check trip from 3952 m to 9 5/8" shoe at 3901 m.
02.08.2003	12:00	13:00	1	3952	DRLPRO	Installed kelly cock and flow checked well - 170 liter gain before well became stable.
02.08.2003	13:00	15:30	2.5	3952	DRLPRO	Circulated bottoms up at 1700 lpm & 228 bar - max gas 11.7%.
02.08.2003	15:30	18:00	2.5	3952	DRLPRO	Increased mud weight to 1.93 sg while circulating at 1300 lpm and 151 bar - observed 4 m3/hr losses - reduced circulating rate to 1200 lpm and 130 bar - 2.09 ECD from DPM sub. Reduced mud weight to 1.92 sg.
02.08.2003	18:00	24:00	6	3967	DRLPRO	Drilled ahead 8 1/2" hole from 3951 m to 3967 m. Drilling parameters: 1300 lpm, 174 bar, 170 rpm, 8 ton WOB & 5-9 kft/lbs torque. Performed pump-off tests each single - max gas 11.7%. Background gas 0.5%.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
03.08.2003	00:00	00:30	0.5	3967	DRLPRO	Drilled ahead 8 1/2" hole from 3966 m to 3967 m. Drilling parameters: 1200 lpm, 185 bar, 170 rpm, 8 ton WOB & 5-9 kft/lbs torque.
03.08.2003	00:30	01:30	1	3967	DRLPRO	Flow checked well - 2600 liter gained with well gradually stabilizing.
03.08.2003	01:30	03:00	1.5	3975	DRLPRO	Drilled ahead from 3968 m to 3975 m with 1300 lpm, 175 bar, 170 rpm, 8 ton WOB & 5-7 kft/lbs torque. Background gas 0.7%.
03.08.2003	03:00	03:30	0.5	3975	DRLPRO	Circulated flow check bottoms up prior to making connection - max gas 29.7% dropping back to 1%.
03.08.2003	03:30	24:00	20.5	4032	DRLPRO	Drilled ahead 8 1/2" hole from 3967 m to 4032 m. Average drilling parameters: 1300 lpm, 178 bar, 195 rpm, 5-7 ton WOB & 5-7 kft/lbs torque. ECD from DPM sub at 2.08 sg. Performed dummy connections as per HPHT procedures every single drilled - max gas 17.2%. Average background gas while drilling ahead 0.5%.
04.08.2003	00:00	02:00	2	4039	DRLPRO	Continued to drill ahead 8 1/2" section from 4032 m to 4037 m. Drilling parameters 1400 lpm, 196 bar, 195 rpm, 5-8 kft/lbs torque & 10 ton WOB. Background gas 0.5%. Observed drilling break to 20 m/hr from 4037 m to 4039 m. Stopped drilling and picked up off bottom.
04.08.2003	02:00	03:30	1.5	4039	DRLPRO	Flow checked well - 1200 liter gained with well gradually stabilizing.
04.08.2003	03:30	04:30	1	4039	DRLPRO	Continued to circulate at 1400 lpm and 183 bar until bottoms up from last dummy connection at surface - max gas 6.8%.
04.08.2003	04:30	09:00	4.5	4039	DRLPRO	Continued to drill ahead 8 1/2" section from 4039 m to 4052 m. Commenced reducing mud weight from 1,92 to 1,90 sg.
04.08.2003	09:00	24:00	15	4099	DRLPRO	Continued to drill ahead 8 1/2" section from 4052 m to 4099 m as per HPHT procedures performing dummy connections each single. Drilling parameters 1300-1400 lpm, 190-196 bar, 197 rpm, 5-8 kft/lbs torque & 10 ton WOB. Background gas during drilling 0.5%. Maximum gas peak 1,90 sg mud 8.9%. ECD from DPM sub 2.08 - 2.10 sg. Observed reduction in gains at each flow check/dummy connection with 1,90 sg mud.
05.08.2003	00:00	12:30	12.5	4140	DRLPRO	Continued to drill ahead 8 1/2" section from 4099 m to section TD at 4140 m as per HPHT procedures performing dummy connections each single. Average drilling parameters 1350 lpm, 185 bar, 196 rpm, 5-17 kft/lbs torque, 7-10 ton WOB. Background gas during drilling 0.5%. Maximum gas peaks 7.8%.
05.08.2003	12:30	15:00	2.5	4140	DRLPRO	Circulated bottoms up with 1350 lpm & 167 bar.
05.08.2003	15:00	16:00	1	4140	DRLPRO	Took survey at 4140 m and flow checked well for 30 minutes - 150 liter gained with well gradually stabilizing.
05.08.2003	16:00	18:30	2.5	4140	DRLPRO	Circulated bottoms up at 1350 lpm & 165 bar - maximum gas peak from previous flow check 7.4%.
05.08.2003	18:30	19:00	0.5	4140	DRLPRO	Flow checked well for 30 minutes - 220 liter gained with well gradually stabilizing.
05.08.2003	19:00	21:00	2	4140	DRLPRO	POOH wet from 4140 m to 3892 m at 10 min/stand monitoring well volumes - 200 liter short on first 2 x stands, after which well taking correct volumes.
05.08.2003	21:00	22:00	1	4140	DRLPRO	Flow checked well at 3892 m - well static.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
05.08.2003	22:00	23:00	1	4140	DRLPRO	RIH 1 x stand below 9 5/8" shoe to 3934 m. Circulated 24 m3 1.90 sg mud (1500 strokes) at 1300 lpm & 179 bar. Continued RIH to 4140 m.
05.08.2003	23:00	24:00	1	4140	DRLPRO	Circulated bottoms up at 1350 lpm & 157 bar.
6. august 03	00:00	02:00	2	4140	DRLPRO	Continued circulating bottoms up at 1350 lpm & 157 bar. Maximum gas peak 16.3% (from the 1500 strokes pumped 1 x stand below shoe - gas peak at surface 1000 strokes before theoretical).
06.08.2003	02:00	02:30	0.5	4140	DRLPRO	Flow checked at 4140 m - 200 liter gained before well gradually stabilizing.
06.08.2003	02:30	04:00	1.5	4140	DRLPRO	POOH from 4140 m to 3882 m at 10 min/stand monitoring well volumes - well static and taking correct volumes.
06.08.2003	04:00	04:30	0.5	4140	DRLPRO	Flow checked well at 3882 m - well static.
06.08.2003	04:30	09:00	4.5	4140	DRLPRO	Pumped slug and POOH from 3882 m to 743 m.
06.08.2003	09:00	09:30	0.5	4140	DRLPRO	Flow checked well at 743 m prior to pulling BHA through BOP's as per HPHT procedures - well static.
06.08.2003	09:30	10:00	0.5	4140	DRLPRO	Function tested BOP annulars, rams and failsafes from drillers & toolpusher panels - good tests.
06.08.2003	10:00	12:30	2.5	4140	DRLPRO	Continued POOH 8 1/2" BHA and racked back MWD. Broke out bit & NB stab - 2 x plugged nozzle on bit.
06.08.2003	12:30	13:30	1	4140	DRLPRO	Made up 8 1/2" RR bit, NB stab c/w float, X/O, bit sub c/w float and RIH with HWDP to 281 m. Made up 9 5/8" casing scraper for scraping 9 5/8" casing prior to run 7" drilling liner.
06.08.2003	13:30	15:30	2	4140	DRLPRO	Continued RIH scraper BHA to 1000 m filling string every 400 m.
06.08.2003	15:30	16:00	0.5	4140	DRLPRO	Observed leak on top drive wash pipe - changed out same.
06.08.2003	16:00	22:00	6	4140	DRLPRO	Continued RIH casing scraper BHA to 3981 m filling string every 400 m.
06.08.2003	22:00	22:30	0.5	4140	DRLPRO	Scraped 9 5/8" casing across interval 3700 - 3750 m x 3.
06.08.2003	22:30	24:00	1.5	4140	DRLPRO	Continued RIH and tagged TD at 4140 m - no fill - scraper depth at 3859 m.
07.08.2003	00:00	03:30	3.5	4140	DRLPRO	Circulated bottoms up with 1350 lpm & 123 bar. Max gas peak 10%. Continued circulating to condition mud.
07.08.2003	03:30	04:00	0.5	4140	DRLPRO	Flow checked well at 4140 m - 220 liter gained before becoming static.
07.08.2003	04:00	05:00	1	4140	DRLPRO	POOH with scraper BHA from 4140 m to 3854 m.
07.08.2003	05:00	06:00	1	4140	DRLPRO	Flow checked well at 3854 m - 100 liter gained before becoming static. Meanwhile made up and racked back cementing stand.
07.08.2003	06:00	07:00	1	4140	DRLPRO	Slipped 100 ft drilling line and checked COM.
07.08.2003	07:00	08:00	1	4140	DRLPRO	RIH scraper assembly to 4140 m - no open hole problems.
07.08.2003	08:00	11:00	3	4140	DRLPRO	Circulated bottoms up with 1350 lpm and 135 bar. Max gas 1.7% after 8400 strokes (theoretical BU 10300 strokes).
07.08.2003	11:00	11:30	0.5	4140	DRLPRO	Flow checked well at 4140 m - 120 liter gained before well became static.
07.08.2003	11:30	13:00	1.5	4140	DRLPRO	POOH with scraper BHA from 4140 m to 3883 m.
07.08.2003	13:00	14:00	1	4140	DRLPRO	Flow checked well at 3883 m - well static. Meanwhile rigged up Weatherford casing running equipment on rig floor.

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07.08.2003	14:00	16:30	2.5	4140	DRLPRO	Circulated bottoms up with 1350 lpm and 155 bar. Max gas 0.35%.
07.08.2003	16:30	17:00	0.5	4140	DRLPRO	Flow checked well at 3883 m - well static.
07.08.2003	17:00	21:30	4.5	4140	DRLPRO	Pumped slug and POOH scraper assembly from 3883 m to 713 m.
07.08.2003	21:30	22:00	0.5	4140	DRLPRO	Flow checked well prior to pulling BHA through BOP - well static. Performed kick drill with crew.
07.08.2003	22:00	23:00	1	4140	DRLPRO	Continued POOH scraper assembly to 281m, conducting H2S checks - negative.
07.08.2003	23:00	24:00	1	4140	DRLPRO	Laid down 9 5/8" casing scraper and racked back BHA.
08.08.2003	00:00	00:30	0.5	4140	DRLPRO	Clean and cleared rig floor prior to running 7" liner.
08.08.2003	00:30	01:30	1	4140	CSGPRO	Held pre job meeting and rigged up liner running equipment.
08.08.2003	01:30	05:00	3.5	4140	CSGPRO	Picked up 7" shoe and float and made up. Tested floats - okay. RIH 7" 32# P110 NEW VAM liner to 411 m filling every 5 joints.
08.08.2003	05:00	06:00	1	4140	CSGPRO	Picked up 7" liner hanger and checked same. Installed wiper plug. Made up hanger to 7" liner and circulated 8 m3 1,90 sg mud at minimum rate. Filled hanger PBR with drill water.
08.08.2003	06:00	17:00	11	4140	CSGPRO	RIH 7" liner on 5" DP to 3891 m filling string every 10 stands. Broke circulation at 9 5/8" shoe.
08.08.2003	17:00	18:30	1.5	4140	CSGPRO	Continued RIH 7" liner. Broke circulation with 404 lpm and tagged bottom at 4140 m.
08.08.2003	18:30	19:00	0.5	4140	CSGPRO	Racked back 1 x stand 5" DP and made up cement stand. Broke circulation at 404 lpm & 20 rpm, RIH 7" liner and tagged bottom at 4140 m. Pulled back string to 4139 m.
08.08.2003	19:00	23:00	4	4140	CSGPRO	Circulated bottoms up with 1012 lpm, 80 bar & 20 rpm - maximum gas peak 6.8%. Dropped ball and chased at 450 lpm & 34 bar.
08.08.2003	23:00	24:00	1	4140	CSGPRO	Pressured up string to 160 bar and set 7" hanger as per Weatherford procedures - top of PBR at 3720 m. Sat down 20 ton on hanger and verified hanger set. Picked up and released setting tool with 10 x RH rotations. Pressured up string to 210 bar and sheared out ball seat.
09.08.2003	00:00	03:00	3	4140	CSGPRO	Cement mix water in pit#5 became contaminated due to incorrect transfer of chemicals. Empty pit and make up new batch of mix water.
09.08.2003	03:00	04:00	1	4140	CSGPRO	Held pre job meeting prior to 7" liner cement job. Flushed lines from cement unit to rig floor and pressure tested same to 100 bar for 5 minutes. Pumped 15 m3 spacer at 700 lpm with rig pumps.
09.08.2003	04:00	05:00	1	4140	CSGPRO	Mixed and pumped 8.2 m3, 2.05 sg class 'G' cement slurry at 700 lpm & 70 bar. Displaced cement to rig floor with 200 liter OBM and dropped dart.
09.08.2003	05:00	06:30	1.5	4140	CSGPRO	Displaced with cement unit 41.58 m3 1.90 sg mud at 1050 lpm & 160 bar. Bumped plug with 130 bar and held for 5 minutes. Bled off pressure and checked for backflow - negative.
09.08.2003	06:30	07:00	0.5	4140	CSGPRO	Racked back cement stand and POOH 4 x stands DP.
09.08.2003	07:00	09:00	2	4140	CSGPRO	Circulated bottoms up at 2000 lpm & 198 bar. Trace of spacer and cement at shakers.
09.08.2003	09:00	09:30	0.5	4140	CSGPRO	Pumped slug and commenced POOH liner hanger running tool to 3050 m.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
09.08.2003	09:30	10:00	0.5	4140	CSGPRO	Repaired broken bolt on iron roughneck spinner tong.
09.08.2003	10:00	13:30	3.5	4140	CSGPRO	Continued POOH liner running tool to surface. Laid down running tool and stinger.
09.08.2003	13:30	14:30	1	4140	CSGPRO	Laid down cement stand.
09.08.2003	14:30	15:30	1	4140	CSGPRO	Laid down MWD stand and pulled probe.
09.08.2003	15:30	16:00	0.5	4140	CSGPRO	Made up 8 1/2" RR bit, NB stab c/w float, X/O, bit sub c/w float.
09.08.2003	16:00	21:30	5.5	4140	CSGPRO	RIH clean out assembly from 222 m to 3600 m filling string every 10 stands.
09.08.2003	21:30	22:30	1	4140	CSGPRO	Washed down from 3600 m with 1800 lpm, 215 bar and tagged top of cement with 10 ton at 3686 m without rotation. Washed and reamed down from 3686 m at 1800 lpm, 215 bar, 120 rpm & 1-2 ton WOB - tagged top of 7" PBR at 3721 m with slow rotation and 4 ton WOB.
09.08.2003	22:30	24:00	1.5	4140	CSGPRO	Circulated for 30 minutes, racked back 1 x stand DP and circulated bottoms up at 1800 lpm & 215 bar. Firm cement pebbles seen in returns at BU - no gas. Meantime serviced top drive and travelling block.
10.08.2003	00:00	00:30	0.5	4140	CSGPRO	Continued circulating bottoms up at 1800 lpm & 215 bar. Firm cement pebbles seen in returns at BU - no gas.
10.08.2003	00:30	07:00	6.5	4140	CSGPRO	Pumped slug and POOH clean out assembly from 3683 m to 222 m, laying out 57 x singles DP.
10.08.2003	07:00	08:30	1.5	4140	CSGPRO	Laid down jar, 11 x joints HWDP, 8 1/2" bit, bit sub and float sub.
10.08.2003	08:30	11:30	3	4140	CSGPRO	Made up jetting sub on 4 x stands 5" HWDP, WBRRT and RIH. Jetted BOP's and wellhead at 2160 lpm & 60 bar. Engaged WB and released with 42 ton overpull.
10.08.2003	11:30	13:00	1.5	4140	CSGPRO	POOH wear bushing.
10.08.2003	13:00	14:00	1	4140	CSGPRO	Made up BOP test tool and RIH.
10.08.2003	14:00	19:30	5.5	4140	CSGPRO	Pressure tested rams and failsafes to 35/690 bar for 5/10 minutes. Tested annulars to 35/345 bar for 5/10 minutes. Function tested BOP's on blue pod from driller's panel - all good tests.
10.08.2003	19:30	20:30	1	4140	CSGPRO	POOH BOP test tool.
10.08.2003	20:30	22:00	1.5	4140	CSGPRO	Made up BOP test tool on 4 x stands 5" HWDP c/w 2 x kelly cocks and made up to EHOT assembly. Checked ACME threads prior to running.
10.08.2003	22:00	23:00	1	4140	CSGPRO	RIH plug type test tool, filing string and landed in wellhead. Slacked off landing string weight and disengaged EHOT assembly with 5 x RH rotations.
10.08.2003	23:00	24:00	1	4140	CSGPRO	POOH landing string. Meanwhile pressure tested shear rams to 35/690 bar for 5/10 minutes - good test. Broke out ACME sub on landing string and RIH to recover BOP test tool assembly.
11.08.2003	00:00	02:00	2	4140	CSGPRO	RIH BOP test tool landing string and engaged doughnut with 4 1/2" IF pin. Made up to 15 kft/lbs. POOH test tool and laid out same.
11.08.2003	02:00	02:30	0.5	4140	CSGPRO	Made up EHOT assembly and laid down.
11.08.2003	02:30	04:00	1.5	4140	CSGPRO	Made up WB, RIH and set as per Vetco procedures. POOH WBRRT.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
11.08.2003	04:00	05:00	1	4140	CSGPRO	Closed shear rams and pressure tested 7" liner lap to 266 bar for 10 minutes - good test.
11.08.2003	05:00	11:00	6	4140	CSGPRO	Pressure tested kelly hose to 35/345 for 5/10 minutes - good test. Pressure tested 2 x IBOP's and drilling stand to 35/690 bar for 5/10 minutes - good test.
11.08.2003	11:00	12:30	1.5	4140	CSGPRO	Rearranged derrick, meantime pressure tested 3 1/2" & 5" kelly cocks and grey valves to 35/690 bar for 5/10 minutes.
11.08.2003	12:30	17:00	4.5	4140	DRLPRO	Picked up 5 7/8" BHA and RIH to 288 m.
11.08.2003	17:00	19:00	2	4140	DRLPRO	Picked up 3 1/2" DP and RIH 5 7/8" BHA to 514 m.
11.08.2003	19:00	21:30	2.5	4140	DRLPRO	Continued RIH 5 7/8" BHA on 5" DP to 1955 m.
11.08.2003	21:30	22:00	0.5	4140	DRLPRO	Conducted choke drill.
11.08.2003	22:00	24:00	2	4140	DRLPRO	Continued RIH 5 7/8" BHA to 3426 m.
12.08.2003	00:00	00:30	0.5	4140	DRLPRO	Cont. to RIH from 3426m to 3715m w/ 5 7/8" BHA. Fill every 10 std.
12.08.2003	00:30	01:00	0.5	4140	DRLPRO	Wash down thru liner hanger from 3715m to 3773m.
12.08.2003	01:00	01:30	0.5	4140	DRLPRO	Cont. RIH from 3773m. Tag cmt. @ 4018m w/5 ton.
12.08.2003	01:30	02:00	0.5	4140	DRLPRO	Wash/drill cmt. from 4018m to top plug @ 4111m.
12.08.2003	02:00	08:30	6.5	4140	DRLPRO	Drill plug & landing collar @ 4112m. Parameters: 3-5 ton WOB, 1300 lpm, 160 bar, 100 -120 rpm, 5 kft/lbs. Incr. MW to 1,98 sg in 2 circ. Drill cmt. from 4112m to 4140m. Same parameters.
12.08.2003	08:30	09:00	0.5	4143	DRLPRO	Drill new formation from 4140m to 4143m. Parameters: 3 - 5 ton WOB, 1300 lpm, 160 bar, 150 rpm, 3 - 5 kft/lbs.
12.08.2003	09:00	10:30	1.5	4143	DRLPRO	Circ. to condition mud.
12.08.2003	10:30	11:30	1	4143	DRLPRO	Perform LOT. 39 bar w/ 1,98 sg mud. EMW 2.08 s.g.
12.08.2003	11:30	14:00	2.5	4143	DRLPRO	Circ. bttm's up w/ 1100 lpm - 195 bar.
12.08.2003	14:00	14:30	0.5	4143	DRLPRO	Flow check - Well static.
12.08.2003	14:30	16:30	2	4143	DRLPRO	Slug pipe & POOH from 4143m to 3300m.
12.08.2003	16:30	17:00	0.5	4143	DRLPRO	Check gas alarm in shakers - OK
12.08.2003	17:00	22:00	5	4143	DRLPRO	Cont. POOH from 3300m to surface. R/B BHA in derrick.
12.08.2003	22:00	22:30	0.5	4143	DRLPRO	Clear & clean DF. Changed lower kelly cock & changed saver sub to 3 1/2".
12.08.2003	22:30	24:00	1.5	4143	DRLPRO	P/U & M/U new BHA w/ 5 7/8" - 6 1/2" bi-centered bit. RIH to 36m.
13.08.2003	00:00	02:00	2	4143	DRLPRO	RIH from 36m to 570m. Test MWD - OK.
13.08.2003	02:00	05:00	3	4143	DRLPRO	P/U 3 1/2" DP from deck while RIH from 570m to 1092m.
13.08.2003	05:00	12:00	7	4143	DRLPRO	Change saver sub on TDS to 4 1/2" IF. Cont. RIH w/5" DP from 1092m to 4143m. Fill string every 10 stands. Tag bttm @ 4143 m.
13.08.2003	12:00	19:30	7.5	4177	DRLPRO	Drill 6 1/2" hole from 4143 m to 4177 m according to HPHT procedures. MWD failed. Parameters: 3 - 5 ton WOB, 200 bar, 850 lpm, 120 rpm, 4 - 6k ft/lbs. Boost riser while drilling w/ 900 lpm - 90 bar.
13.08.2003	19:30	22:00	2.5	4177	DRLPRO	Circ. bttm's up w/ 850 lpm - 200 bar, 120 rpm. Max gas: 5,4%
13.08.2003	22:00	23:30	1.5	4177	DRLPRO	Flow check 15 min - OK. POOH to 7" shoe @ 4139 m. Flow check 30 min - OK. RIH to TD @ 4177 m.
13.08.2003	23:30	24:00	0.5	4177	DRLPRO	Circ. bttm's up 850 lpm - 200 bar, 50 rpm.

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Date	From	To	Hours	Depth (m)	Phase	Description of operations
14.08.2003	00:00	02:00	2	4177	DRLPRO	Circ. bttm's up @ 4177m w/ 850 lpm - 200 bar, 50 rpm. Max. gas: 0,3%.
14.08.2003	02:00	03:30	1.5	4177	DRLPRO	Flow check 15 min - OK. Pull to 4116m, flow check 30 min - OK. Slug pipe.
14.08.2003	03:30	12:00	8.5	4177	DRLPRO	POOH from 4116m to surface. Wash wellhead & BOP w/1270 lpm thru string + 990 lpm w/ booster line on way up. Observe no incr. in cuttings.
14.08.2003	12:00	13:00	1	4177	DRLPRO	Pull probe out of faulty MWD tool & L/D same. L/D pony DC & check bit - OK.
14.08.2003	13:00	15:00	2	4177	DRLPRO	M/U new 5 7/8" - 6 1/2" BHA, test MWD - OK.
14.08.2003	15:00	20:30	5.5	4177	DRLPRO	RIH w/ 5 7/8" - 6 1/2" BHA to 3682m. Changed to 5" handling eq. incl. saver sub @ 1085m. Test MWD @ 1954m & 3682m - OK.
14.08.2003	20:30	21:30	1	4177	DRLPRO	Cut 200' & slip 100' drill line.
14.08.2003	21:30	22:30	1	4177	DRLPRO	Cont. RIH to 4140m.
14.08.2003	22:30	23:30	1	4177	DRLPRO	Log w/ MWD from 4140m to 4174m bit depth. Survey @ 4170m; Inc: 8,44 degrees. Azimuth: 146,70 degrees.
14.08.2003	23:30	24:00	0.5	4177	DRLPRO	Circ. bttm's up @ TD w/ 850 lpm, 90 bar, 50 rpm.
15.08.2003	00:00	02:00	2	4177	DRLPRO	Circ. bttm's up @ 4174m w/ 850 lpm, 90 50 rpm. Max gas: 1,0%
15.08.2003	02:00	02:30	0.5	4177	DRLPRO	Log w/ MWD from 4174m to 4177m.
15.08.2003	02:30	15:00	12.5	4243	DRLPRO	Drill 6 1/2" hole from 4177m to 4243m. Drill stringers: 4221m - 4243m. Drilling parameters: 1 - 5 ton WOB, 850 lpm, 188 - 196 bar, 90 -140 rpm, 4 - 6,5k ft/lbs. Boost riser while drilling w/ 1000 lpm, 100 bar. Dummy connection at each half stand.
15.08.2003	15:00	17:30	2.5	4243	DRLPRO	Flow check - OK. Circ. bttm's up w/ 850 lpm, 90 bar, 40 rpm. Max gas: 1,1%.
15.08.2003	17:30	20:30	3	4263	DRLPRO	Cont. drill 6 1/2" hole from 4243m to 4263m. Drilling parameters: 2 - 5 ton WOB, 850 lpm, 193 bar, 120 rpm, 3 - 8k ft/lbs.
15.08.2003	20:30	22:00	1.5	4263	DRLPRO	Logging shut down due to loss of overpressure caused by crane operation (damaged duct). Reboot & reset computers. Meanwhile circ. w/ 770 lpm, 163 bar, 17 rpm.
15.08.2003	22:00	24:00	2	4282	DRLPRO	Cont. drill 6 1/2" hole from 4263m to 4282m. Drilling parameters: 3 - 6 ton WOB, 850 lpm, 200 bar, 125 rpm, 4 - 10k ft/lbs.
16.08.2003	00:00	03:30	3.5	4301	DRLPRO	Drill 6 1/2" hole from 4282m to 4301m. Drilling parameters: 3 - 6 ton WOB, 850 lpm, 195 bar, 125 rpm, 4 - 10k ft/lbs.
16.08.2003	03:30	06:30	3	4301	DRLPRO	Circ. bttm's up @ 4301m w/ 850 lpm, 188 bar, 50 rpm.
16.08.2003	06:30	17:30	11	4347	DRLPRO	Cont. drill 6 1/2" hole from 4301m to 4347m. Drilling parameters: 4 - 9 ton WOB, 850 lpm, 191 - 194 bar, 90 - 165 rpm, 4 - 9k ft/lbs. 5 bar std. pipe press. incr. @ 4346m & 10 bar incr. @ 4347m.
16.08.2003	17:30	20:30	3	4347	DRLPRO	Circ. bttm's up @ 4347m w/ 850 lpm, 206 bar, 50 rpm. Flow check 15 min - OK.
16.08.2003	20:30	22:00	1.5	4348	DRLPRO	Cont. drill 6 1/2" hole from 4347m to 4348m. Drilling parameters: 7 - 9 ton WOB, 850 lpm, 194 bar, 65 - 85 rpm, 3 - 6k ft/lbs.
16.08.2003	22:00	23:00	1	4348	DRLPRO	Flow check 15 min - OK. Pull to shoe @ 4139m.
16.08.2003	23:00	24:00	1	4348	DRLPRO	Flow check 15 min - OK. RIH to 4348m.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
17.08.2003	00:00	03:00	3	4348	DRLPRO	Circ. bttm's up w/ 850 lpm, 188 bar, 18 rpm @ 4348m. Max gas: 0,3.
17.08.2003	03:00	11:00	8	4348	DRLPRO	Flow check 15 min - OK. POOH from 4348m. Flow check @ shoe 30 min - OK. Slug pipe & cont. POOH to surface.
17.08.2003	11:00	11:30	0.5	4348	DRLPRO	M/U new 6 1/8" bit. Dump LWD data from MWD tool.
17.08.2003	11:30	18:30	7	4348	DRLPRO	RIH w/ 6 1/8" assembly to 4319m. Fill pipe every 15 std.
17.08.2003	18:30	19:00	0.5	4348	DRLPRO	Wash from 4319m to 4348m w/ 850 lpm, 175 bar, 20 - 50 rpm.
17.08.2003	19:00	24:00	5	4371	DRLPRO	Drill from 4348m to 4371m. Break-in parameters: 0 - 2 ton WOB, 650 lpm, 195 bar, 50 - 70 rpm, 3 - 7k ft/lbs. Incr. drilling parameters to: 3 - 4 ton WOB, 850 lpm, 204 bar, 120 rpm, 3 - 8k ft/lbs. Boost riser w/ 1000 lpm - 95 MP1.
18.08.2003	00:00	11:30	11.5	4428	DRLPRO	Drill 6 1/8" hole from 4371m to 4428m. Drilling parameters: 2 - 5 ton WOB, 850 lpm, 200 - 204 bar, 80 - 125 rpm, 3 - 8k ft/lbs. Test MWD @ 4405m - OK.
18.08.2003	11:30	12:00	0.5	4428	DRLPRO	Flow check @ 4415m - OK.
18.08.2003	12:00	20:00	8	4452	DRLPRO	Drill 6 1/8" from 4428m to 4452m. Drilling parameters: 6 ton WOB, 850 lpm, 203 bar, 90 rpm, 4 - 8k ft/lbs.
18.08.2003	20:00	22:00	2	4452	DRLPRO	P/U of bttm & circ. due to crane operations w/ rearranging Schlumberger cont. on deck. Reciprocate string w/ 850 lpm, 197 bar, 60 rpm.
18.08.2003	22:00	24:00	2	4459	DRLPRO	Cont. drill 6 1/8" hole from 4452m to 4459m. Drilling parameters: 4 - 6 ton WOB, 850 lpm, 200 bar, 75 rpm, 3 - 8k ft/lbs.
19.08.2003	00:00	24:00	24	4500	DRLPRO	Drill 6 1/8" hole from 4459m to 4500m. Drilling parameters: 5 - 10 ton WOB, 850 lpm, 200 - 204 bar, 75 - 80 rpm, 3 - 8k ft/lbs.
20.08.2003	00:00	02:30	2.5	4500	DRLPRO	Circ. bttm's up w/ 850 lpm, 200 bar, 60 rpm. Max gas: 0,06%.
20.08.2003	02:30	04:00	1.5	4500	DRLPRO	Flow check 15 min - OK. Wiper trip to shoe @ 4139m.
20.08.2003	04:00	05:30	1.5	4500	DRLPRO	Flow check 30 min - OK. Run back to TD @ 4500m.
20.08.2003	05:30	08:30	3	4500	DRLPRO	Circ. bttm's up w/ 850 lpm, 200 bar, 60 rpm. Boost riser w/ 1000 lpm, 95 bar.
20.08.2003	08:30	10:00	1.5	4500	DRLPRO	Flow check 15 min - OK. POOH to 4116m.
20.08.2003	10:00	13:30	3.5	4500	DRLPRO	Flow check 15 min - OK. Slug pipe & POOH to 1081m.
20.08.2003	13:30	16:00	2.5	4500	DRLPRO	Flow check 15 min - OK. Meanwhile change to 3 1/2" handl. eq. Cont. POOH from 1081m. L/D NMDC, Stb's, SCWR, MWD, float sub's & break bit.
20.08.2003	16:00	17:00	1	4500	DRLPRO	B/O kelly valve's on drlg. std. & kick jnt. L/D same.
20.08.2003	17:00	17:30	0.5	4500	DRLPRO	Clean & clear RF.
20.08.2003	17:30	18:30	1	4500	EVALPR	Held prejob meeting prior to logging w/ Schlumberger & R/U logging eq.
20.08.2003	18:30	24:00	5.5	4500	EVALPR	Schlumberger run dipmeter (OBDT) & sonic (DSI) log. Depth @ 2400 hrs: 4199,5m.
21.08.2003	00:00	05:00	5	4500	EVALPR	Run log #1, Dipmeter (OBDT) & Sonic (DSI) log w/ Schlumberger. Out @ 0500 hrs.
21.08.2003	05:00	06:00	1	4500	EVALPR	L/D logging tools.
21.08.2003	06:00	15:30	9.5	4500	EVALPR	P/U density, porosity & resistivity (IPLT & AIT) logging tools, inst. radioactive source & RIW w/ log #2 w/ Schlumberger. In @ 0645 hrs, out @ 1355 hrs. Remove radioactive source.

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
21.08.2003	15:30	20:30	5	4500	EVALPR	P/U pressure probe sampling tool (MDT) & RIW w/ log #3 w/ Schlumberger. In @ 1715 hrs. Hung up while correlating 4206m to 4212m @ 1920 hrs.
21.08.2003	20:30	24:00	3.5	4500	EVALPR	Tool stuck after #3 pressure point @ 4180m @ 2030 hrs. Attempt to release tool by slack/tens. cable. Attempt pump out unit to release tool - no go. Release log. head fr. tool @ 2242 hrs. POOH with log. head.
22.08.2003	00:00	00:30	0.5	4500	EVALPR	R/D logging eq. change to 3 1/2" DP handl. eq.
22.08.2003	00:30	09:00	8.5	4500	EVALPR	M/U overshot & RIH to 4123m. Fill string every 1000m.
22.08.2003	09:00	11:00	2	4500	EVALPR	Break & circ. bttm's up w/ 895 - 1111 lpm, 150 - 200 bar @ 4123m. Max gas: 0,42%.
22.08.2003	11:00	14:00	3	4500	EVALPR	Take SCR @ 4123m 20/30 spm - 19/48 bar. Wash from 4123m to 4464m w/ 48 bar press. No significant press. incr. @ theoretical fish depth (4154m). Took wt. @ 4464m.
22.08.2003	14:00	22:00	8	4500	EVALPR	Flow check 30 min - OK. Slug pipe & POOH. Flow check 30 min @ 4050m - OK. Cont. POOH. Held kick drill w/ crew - 45 sec. Flow check below BOP - OK.
22.08.2003	22:00	22:30	0.5	4500	EVALPR	Release fish. Conn. MDT tool to wire & Schlumberger verified MDT, no irregularities found & working OK. L/D same.
22.08.2003	22:30	24:00	1.5	4500	EVALPR	M/U B/S & 6 1/8" bi-centered bit & RIH to 55m.
23.08.2003	00:00	07:30	7.5	4500	EVALPR	RIH from 55m to 4172m. Fill pipe every 1000m.
23.08.2003	07:30	10:00	2.5	4500	EVALPR	Ream W/L logging tight spots: 4172m - 4182m, 4245m - 4255m, 4335m - 4345m, 4407m - 4417m, 4440m - 4450m w/ 1000 lpm, 185 bar, 120 rpm, 3k ft/lbs.
23.08.2003	10:00	12:30	2.5	4500	EVALPR	Circ. bttm's up @ TD w/ 1050 lpm, 200 bar, 50 rpm. Boost riser w/ 1000 lpm, 95 bar. Max gas: 0,46%.
23.08.2003	12:30	20:00	7.5	4500	EVALPR	Flow check 30 min - OK. Slug pipe & POOH to 4055m. Flow check - OK. Cont. POOH. B/O & L/D dart sub, float sub, X/O, bit & bit sub.
23.08.2003	20:00	22:00	2	4500	EVALPR	M/U jet sub 1 std. below BOP test tool & RIH. Wash BOP & wellhead.
23.08.2003	22:00	24:00	2	4500	EVALPR	Press. test BOP acc. to Odfjell proc.
24.08.2003	00:00	00:30	0.5	4500	EVALPR	Test BOP in accordance to Odfjell procedures - OK.
24.08.2003	00:30	01:00	0.5	4500	EVALPR	Func. test BOP on Blue pod from mini panel - OK.
24.08.2003	01:00	01:30	0.5	4500	EVALPR	POOH w/BOP test tool while function test fail safes & shear rams - OK. Check acoustic system - OK.
24.08.2003	01:30	03:30	2	4500	EVALPR	R/U for wire line logging, M/U wire line tool string.
24.08.2003	03:30	07:00	3.5	4500	EVALPR	RIW w/ porosity (VSP-APS) log #4 on W/L.
24.08.2003	07:00	09:00	2	4500	EVALPR	Tool fail. POOW w/ log #4.
24.08.2003	09:00	10:00	1	4500	EVALPR	Troubleshot logging tool. Changed tension head.
24.08.2003	10:00	24:00	14	4500	EVALPR	RIW & log w/ porosity (VSP-APS) log #5 on W/L.
25.08.2003	00:00	01:30	1.5	4500	EVALPR	Perform porosity (VSP-APS) log #5 on W/L.
25.08.2003	01:30	03:00	1.5	4500	EVALPR	L/D VSP-APS tool string.
25.08.2003	03:00	04:00	1	4500	EVALPR	P/U & prep. for log #6, sidewall core (MSCT).
25.08.2003	04:00	15:30	11.5	4500	EVALPR	Run sidewall core (MSCT) log #6 on W/L.
25.08.2003	15:30	17:30	2	4500	EVALPR	L/D MSCT tool. P/U & R/U pressure probe sample (MDT) log #7.

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
25.08.2003	17:30	24:00	6.5	4500	EVALPR	Run pressure probe sample (MDT) log #7 on W/L.
26.08.2003	00:00	01:00	1	4500	EVALPR	POOH MDT toolstring.
26.08.2003	01:00	03:00	2	4500	EVALPR	Laid down MDT toolstring and rigged down Schlumberger wireline equipment.
26.08.2003	03:00	03:30	0.5	4500	RDMO	Slipped 100 ft drilling line.
26.08.2003	03:30	04:00	0.5	4500	RDMO	Made up cement stand.
26.08.2003	04:00	06:00	2	4500	RDMO	Changed out handling equipment and RIH muleshoe on 3 1/2" DP to 850 m.
26.08.2003	06:00	11:30	5.5	4500	RDMO	Continued RIH 3 1/2" cement stinger on 5" DP to 4129 m. Filled pipe and broke circulation. Continued RIH and tagged TD with circulation at 4500 m.
26.08.2003	11:30	14:00	2.5	4500	RDMO	Circulated bottoms up with 1100 lpm, 180 bar & 50 rpm. Held pre job meeting prior to cementing operations. Maximum gas at bottoms up 9.7%.
26.08.2003	14:00	17:00	3	4500	RDMO	Racked back 1 x stand 5" DP and made up cement stand. Pressure tested surface lines to 250 bar. Pumped 3.5 m3, 2.05 sg spacer with rig pumps. Set balanced cement plug#1 from 4500 m to 4202 m: Mixed and pumped 6.3 m3, 2.15 sg class 'G' cement slurry followed by 690 liter spacer. Displace with mud pumps 34 m3, 1.98 sg mud at 1000 lpm & 180 bar.
26.08.2003	17:00	18:00	1	4500	RDMO	Checked for backflow - negative. Racked back cement stand and POOH to 4202 m.
26.08.2003	18:00	20:30	2.5	4500	RDMO	Circulated bottoms up at 1100 lpm, 180 bar & 50 rpm.
26.08.2003	20:30	21:00	0.5	4500	RDMO	Made up cement stand and pumped 2.5 m, 2.05 sg spacer with rig pumps. Set balanced cement plug#2 from 4207 m to 3914 m: Mixed and pumped 6.2 m3, 2.15 sg class 'G' cement slurry followed by 700 liter spacer. Displaced with mud pumps 30.5 m3, 1.98 sg mud at 1000 lpm & 180 bar.
26.08.2003	21:00	22:00	1	4500	RDMO	Checked for backflow - negative. Racked back cement stand and POOH from 4202 m to 3914 m.
26.08.2003	22:00	24:00	2	4500	RDMO	Circulated bottoms up at 1100 lpm, 180 bar & 50 rpm.
27.08.2003	00:00	02:00	2	3914	RDMO	Continued circulating bottoms up at 1100 lpm, 180 bar & 50 rpm.
27.08.2003	02:00	04:00	2	3914	RDMO	Made up cement stand and pumped 5 m3, 2.05 sg spacer with rig pumps. Set balanced cement plug#3 from 3914 m to 3621 m as follows: Mixed and pumped 8 m3, 2.15 sg class 'G' cement slurry followed by 560 liter spacer. Displaced with mud pumps 28.72 m3, 1.98 sg mud at 1000 lpm & 180 bar.
27.08.2003	04:00	05:00	1	3621	RDMO	POOH from 3914 m to 3592 m.
27.08.2003	05:00	06:30	1.5	3621	RDMO	Circulated bottoms up at 1500 lpm, 268 bar & 50 rpm.
27.08.2003	06:30	11:00	4.5	3621	RDMO	Slugged pipe and POOH laying out 5" DP.
27.08.2003	11:00	12:00	1	3621	RDMO	Rearranged derrick and changed out handling equipment to 3 1/2".
27.08.2003	12:00	13:30	1.5	3621	RDMO	RIH 3 1/2" HWDP, DP & 4 3/4" jar.
27.08.2003	13:30	16:00	2.5	3621	RDMO	Laid out 29 x 3 1/2" DP, 18 x 3 1/2" HWDP and 4 3/4" jar.

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Operations Summary Report

Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
27.08.2003	16:00	17:30	1.5	3621	RDMO	Changed out handling equipment to 5". Made up 9 7/8" seal retrieval tool, bumper sub and racked back same in derrick.
27.08.2003	17:30	19:00	1.5	3621	RDMO	Continued RIH 3 1/2" cement stinger on 5" DP to 3587 m.
27.08.2003	19:00	19:30	0.5	3637	RDMO	Broke circulation. Trickled pumps over, washed down from 3587 m and tagged TOC at 3637 m with 10 ton.
27.08.2003	19:30	20:30	1	3637	RDMO	Pulled back to 3580 m and pressure tested cement plug to 125 bar x 10 minutes - good test.
27.08.2003	20:30	23:00	2.5	3637	RDMO	Slugged pipe and POOH to 1300 m.
27.08.2003	23:00	24:00	1	3637	RDMO	Commenced displacing well to 1.8 sg OBM.
28.08.2003	00:00	02:00	2	3637	RDMO	Continued displacing well to 1.8 sg OBM.
28.08.2003	02:00	02:30	0.5	3637	RDMO	Flow checked well - static. Pumped slug.
28.08.2003	02:30	03:30	1	3637	RDMO	Laid down cement stand and POOH cement stinger to 850 m.
28.08.2003	03:30	05:30	2	3637	RDMO	Continued POOH cement stinger laying out 48 x joints 3 1/2" DP.
28.08.2003	05:30	06:00	0.5	3637	RDMO	Racked backed 13 x stands 3 1/2" DP.
28.08.2003	06:00	07:00	1	3637	RDMO	Cleared rig floor and changed out to 5" handling equipment.
28.08.2003	07:00	10:30	3.5	3637	RDMO	Picked up 9 7/8" casing cutter and function tested same. RIH 18 x stands 5" DP and made up WBRRT. Continued RIH 5" DP and landed out in wellhead with WBRRT.
28.08.2003	10:30	11:30	1	3637	RDMO	Closed lower annular and cut 9 7/8" casing at 947 m with 1850 lpm & 180 bar - good indication of cut observed at surface. Flow checked well - static. Opened annular, slugged pipe and pulled wear bushing with 45 ton overpull as per Vetco procedures.
28.08.2003	11:30	14:30	3	3637	RDMO	POOH casing cutter, released wear bushing and racked back running tool. Continued POOH 5" DP and laid out 9 7/8" casing cutter assy - minimal wear on cutters.
28.08.2003	14:30	17:00	2.5	3637	RDMO	Picked up 9 7/8" casing spear and made up to seal assembly retrieval tool. RIH on 5" DP and landed out in wellhead. Sat down 5 ton and engaged seal assembly as per Vetco procedures. Closed annular and pulled seal assembly free with 35 ton overpull. Flow checked well – static. Opened annular. Engaged casing spear and observed weight increase to 40 ton. Pulled hanger free from wellhead flow checked well – static.
28.08.2003	17:00	19:00	2	3637	RDMO	POOH with 9 7/8" casing. Broke out seal assembly and running tool and recovered 9 7/8" casing hanger to rotary table. Released spear and laid out same.
28.08.2003	19:00	23:30	4.5	3637	RDMO	Rigged up 9 7/8" casing handling equipment and held pre job meeting. Laid out 41 x joints 9 7/8" casing.
28.08.2003	23:30	24:00	0.5	3637	RDMO	Rigged down casing handling equipment and changed out to 5".
29.08.2003	00:00	00:30	0.5	3637	RDMO	Cleaned rig floor and laid out seal assembly running tool.
29.08.2003	00:30	03:30	3	3637	RDMO	RIH 3 1/2" cement stinger to 1260 m.
29.08.2003	03:30	04:00	0.5	3637	RDMO	Spotted 10 m3 hi-vis pill.
29.08.2003	04:00	04:30	0.5	3637	RDMO	POOH to 1003 m.
29.08.2003	04:30	06:00	1.5	3637	RDMO	Circulated bottoms up at 2300 lpm & 200 bar.

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
29.08.2003	06:00	07:30	1.5	3637	RDMO	Rigged up lo-torque and cement hose. Pressure tested surface lines to 250 bar x 5 minutes. Pumped 11 m3, 1.95 sg spacer with rig pumps. Set cement plug#4 from 1000 m to 850 m as follows: Mixed and pumped 11 m3, 1.95 sg class 'G' cement slurry followed by 500 liter spacer. Displaced with cementing unit 4.9 m3, 1.8 sg OBM at 900 lpm & 55 bar.
29.08.2003	07:30	08:00	0.5	3637	RDMO	POOH 3 1/2" cement stinger to 820 m.
29.08.2003	08:00	09:00	1	3637	RDMO	Circulated bottoms up at 2200 lpm, 195 bar & 25 rpm - diverted 19 m3 spacer/OBM contaminate to slops tank.
29.08.2003	09:00	15:00	6	3637	RDMO	Laid out excess DP.
29.08.2003	15:00	16:00	1	3637	RDMO	POOH 3 1/2" cement stinger.
29.08.2003	16:00	17:30	1.5	858	RDMO	RIH with jetting sub on 5" DP. Trickled pumps over, washed down and tagged TOC at 858 m with 10 ton.
29.08.2003	17:30	18:00	0.5	858	RDMO	Pulled back to 800 m and attempted to pressure test plug - test unsuccessful.
29.08.2003	18:00	23:00	5	858	RDMO	Continued laying out excess DP while waiting on cement plug to firm up.
29.08.2003	23:00	23:30	0.5	858	RDMO	POOH to 209 m.
29.08.2003	23:30	24:00	0.5	858	RDMO	Repaired broken valve on iron roughneck.
30.08.2003	00:00	00:30	0.5	858	RDMO	Repaired hydraulic valve block on iron roughneck.
30.08.2003	00:30	01:00	0.5	858	RDMO	Pressure tested cement plug against shear rams to 87 bar for 10 minutes - good test.
30.08.2003	01:00	01:30	0.5	858	RDMO	Continued repairing iron roughneck.
30.08.2003	01:30	03:00	1.5	858	RDMO	RIH with bull nose jetting tool on 5" drill pipe to 858 m (top of cement plug).
30.08.2003	03:00	06:30	3.5	858	RDMO	Displaced well to 1.53 sg Sildril mud. Displaced choke/kill lines, booster line and all surface lines. Cleaned out drip can below rotary table.
30.08.2003	06:30	09:00	2.5	858	RDMO	POOH.
30.08.2003	09:00	12:30	3.5	858	RDMO	Picked up 13.3/8" casing cutting assembly and RIH. Made up Seal Assembly recovery tool and ran whole assembly in hole with space out to cut casing at 796 m.
30.08.2003	12:30	13:30	1	858	RDMO	Engaged seal assembly and closed UA. Pulled seal assembly from wellhead with 40T overpull. Checked for pressure build up - well static. Cut 13.3/8" casing at 796 m with 2000 l/m, 170 bar. After 15 minutes still had no surface indications of casing cut. Shut down pumps and observed well. Opened UA and brought pumps up to speed, slid down 1/2 m with knives open to identify top of stump - no reactive torque seen. Picked back up to cutting depth and saw reactive torque. Shut down pumps, closed UA and restarted cutting operations. Observed old mud at shakers indicating circulation up 20"/13.3/8" annulus. Shut down pumps and observed well - static.
30.08.2003	13:30	14:30	1	858	RDMO	Slugged pipe and POOH with assembly.
30.08.2003	14:30	16:00	1.5	858	RDMO	Seal Assembly Recovery tool at surface - no seal assembly present. Racked back Seal Assembly Recovery tool in derrick. Continue POOH.
30.08.2003	16:00	16:30	0.5	858	RDMO	Cutting assembly at surface. Observed slight wear on knives and steel cuttings jammed in the knife pockets. All measurements indicated casing cut.

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
30.08.2003	16:30	18:30	2	858	RDMO	Picked up Spear Assembly and Seal Assembly Recovery tool and RIH.
30.08.2003	18:30	19:30	1	858	RDMO	M/U TDS and established circulation at 500 l/m, 5 bar. Lowered assembly into top of hanger and observed pressure increase. Shut down pump and engaged spear at 405 m. Attempt to pull casing free with 120T overpull - no success. Attempted to break circulation - no success. Disengaged spear and landed Seal Assembly Recovery tool on top of hanger and engaged seal assembly as per Vetco procedures. Pulled seal assembly clear of hanger. Re-engaged spear and attempted circulation to free casing - no success.
30.08.2003	19:30	22:30	3	858	RDMO	POOH and laid out spear assembly. Recovered seal assembly running tool with energizing ring attached - seal ring missing.
30.08.2003	22:30	24:00	1.5	858	RDMO	Made up 13 3/8" casing cutter and function tested same. RIH cutter on 5" DP to 339 m. Made up casing spear and continued RIH.
31.08.2003	00:00	02:00	2	858	RDMO	RIH 13 3/8" casing cutter & spear assembly on 5" ITAG DP.
31.08.2003	02:00	03:00	1	858	RDMO	Engaged spear at 406 m with casing cutter spaced out at 749 m and took 10 ton overpull. Closed UA and commenced cutting 13 3/8" casing at 749 m with 2200 lpm & 195 bar. No surface indications of casing cut.
31.08.2003	03:00	04:00	1	858	RDMO	Continued cutting casing varying parameters from 1500 - 2600 lpm & 105 - 250 bar, still with no surface indication of casing cut. Shut down pumps, opened UA and took 160 ton overpull - unable to pull free casing.
31.08.2003	04:00	04:30	0.5	858	RDMO	Disengaged casing spear and brought up pumps to 2000 lpm, picked up string 1/2 m with knifes open and observed slight overpull and reactive torque. Slid back down with pumps on and knifes open to identify top of stump - lost 5 ton weight and observed reactive torque. Shut down pumps and observed well - static. 650 g of metal shavings recovered on shaker magnets.
31.08.2003	04:30	06:00	1.5	858	RDMO	Pumped slug and POOH casing cutting assembly.
31.08.2003	06:00	08:00	2	858	RDMO	Laid out spear assembly and POOH casing cutter - observed slight wear on knives. Laid down casing cutter and motor.
31.08.2003	08:00	09:00	1	858	RDMO	Changed out wire on stand lift racking arm.
31.08.2003	09:00	10:30	1.5	858	RDMO	Picked up casing cutter c/w new knives (minus PDM motor) and function tested same.
31.08.2003	10:30	11:00	0.5	858	RDMO	Repaired make-up torque regulator on iron roughneck.
31.08.2003	11:00	13:00	2	858	RDMO	RIH casing cutter to 240 m. Made up marine swivel assy and continued RIH.
31.08.2003	13:00	13:30	0.5	858	RDMO	Landed out marine swivel in casing hanger with casing cutter spaced out at 649 m. Closed UA and cut 13 3/8" casing at 649 m with 120 rpm, 2000 lpm & 113 bar - observed positive surface indication of cut from tension jump and corresponding pressure drop across casing cutter toolstring. Continued casing cut with overpull on knives. Flow check – well static.
31.08.2003	13:30	15:00	1.5	858	RDMO	Pumped slug, POOH and laid out casing cutting assembly.
31.08.2003	15:00	18:00	3	858	RDMO	Made up pack-off, casing spear assembly c/w jar/accelerator and RIH on 5" ITAG DP.
31.08.2003	18:00	18:30	0.5	858	RDMO	Engaged casing spear at 406 m and pulled free 13 3/8" casing with 35 ton overpull.

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
31.08.2003	18:30	20:30	2	858	RDMO	POOH 13 3/8" casing on 5" DP. Recovered casing hanger to rotary table and released spear assembly.
31.08.2003	20:30	21:30	1	858	RDMO	Held pre job meeting and rigged up 13 3/8" casing handling equipment.
31.08.2003	21:30	22:00	0.5	858	RDMO	Changed out hydraulic coupling on BX elevator.
31.08.2003	22:00	23:30	1.5	858	RDMO	Laid out 19 x joints 13 3/8" casing.
31.08.2003	23:30	24:00	0.5	858	RDMO	Rigged down 13 3/8" casing handling equipment.
01.09.2003	00:00	00:30	0.5	858	RDMO	Continued rigged down 13 3/8" casing handling equipment.
01.09.2003	00:30	01:00	0.5	858	RDMO	Clean & cleared rig floor.
01.09.2003	01:00	03:30	2.5	858	RDMO	RIH 3 1/2" cement stinger to 705 m.
01.09.2003	03:30	05:00	1.5	858	RDMO	Reduced mud weight from 1,53 sg to 1,47 sg.
01.09.2003	05:00	06:30	1.5	580	RDMO	Rigged up lo-torque and cement hose. Pressure tested surface lines to 250 bar. Pumped 10 m3, 1.70 sg spacer with cement unit. Set cement plug#5 from 700 - 580 m as follows: mixed and pumped 18 m3, 1.92 class 'G' slurry followed by 200 liter spacer. Displaced with cement unit 2.8 m3, 1.47 sg WBM at 1200 lpm & 40 bar.
01.09.2003	06:30	07:00	0.5	580	RDMO	POOH 3 1/2" cement stinger to 540 m.
01.09.2003	07:00	08:00	1	580	RDMO	Circulated bottoms up at 3100 lpm & 180 bar. Rec. 15 m3 spacer/WBM contaminate to slops tank.
01.09.2003	08:00	10:30	2.5	580	RDMO	POOH cement stinger and jetted across BOP at maximum rate. Laid out 15 x joints 5 1/2" DP and racked back cement stinger.
01.09.2003	10:30	14:00	3.5	580	RDMO	Laid out from derrick seal assembly running tool, WBRRT and marine swivel assembly. Continued laying out excess DP.
01.09.2003	14:00	14:30	0.5	580	RDMO	Changed out broken hydraulic hose on topdrive/dolly retracting system.
01.09.2003	14:30	17:00	2.5	580	RDMO	Laid out excess DP.
01.09.2003	17:00	18:00	1	578	RDMO	RIH 3 1/2" cement stinger. Trickled pumps over, washed down and tagged TOC at 578 m with 10MT .
01.09.2003	18:00	19:00	1	578	RDMO	Racked back 1 stand and pressure tested cement plug to 80 bar for 10 minutes - good test.
01.09.2003	19:00	21:00	2	578	RDMO	Displaced well to seawater.
01.09.2003	21:00	22:00	1	578	RDMO	Rigged up lo-torque and cement hose. Pressure tested surface lines to 250 bar. Set cement plug #6 from 578 - 430 m as follows: mixed and pumped 27 m3, 1.95 class 'G' slurry. Displaced with 1.7 m3 seawater at 1200 lpm & 8 bar.
01.09.2003	22:00	22:30	0.5	578	RDMO	POOH 3 1/2" cement stinger to 425 m.
01.09.2003	22:30	23:00	0.5	578	RDMO	Circulated bottoms up at 4300 lpm & 185 bar - no cement observed in returns.
01.09.2003	23:00	24:00	1	578	RDMO	POOH 3 1/2" cement stinger, washing across BOP's at maximum rate.
02.09.2003	00:00	00:30	0.5	430	RDMO	Flushed diverter lines.
02.09.2003	00:30	01:30	1	430	RDMO	POOH 3 1/2" cement stinger.
02.09.2003	01:30	03:30	2	430	RDMO	Held pre job meeting and rigged up riser handling equipment.
02.09.2003	03:30	05:00	1.5	430	RDMO	Laid down diverter.

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Rig Contractor:	ODFJELL	End:	8 September 2003
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Date	From	To	Hours	Depth (m)	Phase	Description of operations
02.09.2003	05:00	06:00	1	430	RDMO	Made up slip joint handling stand and made up to slip joint. Unlatched BOP and pulled clear of PGB. Rigged down pod line saddles and ROV disconnected guidelines.
02.09.2003	06:00	06:30	0.5	430	RDMO	Hung off support ring and racked back landing stand. Meanwhile skidded rig 20 m to starboard.
02.09.2003	06:30	14:00	7.5	430	RDMO	Laid out slip joint and continued to pull riser and BOP - laid out 13 x joints riser direct to boat.
02.09.2003	14:00	16:00	2	430	RDMO	Pulled BOP through splash zone, landed on BOP carrier and latched same. Skidded BOP to parked position and laid down remaining riser joints. Rigged down riser handling equipment.
02.09.2003	16:00	17:30	1.5	430	RDMO	Rigged up DP handling equipment and picked up MOST 20"/30" casing cutter assembly.
02.09.2003	17:30	19:30	2	430	RDMO	RIH MOST tool on 5" ITAG DP. Skidded rig over well centre and engaged MOST tool to wellhead with casing cutter spaced out to 412 m. Took 10 ton overpull, ROV locked in MOST tool.
02.09.2003	19:30	21:00	1.5	430	RDMO	Cut 20" & 30" casing at 412 m with 3200 lpm & 190 bar.
02.09.2003	21:00	22:30	1.5	430	RDMO	Pulled free PGB c/w 30" & 18 3/4" wellheads. POOH same.
02.09.2003	22:30	23:30	1	430	RDMO	Recovered PGB to cellar deck and secured on trolley. Released 30" & 18 3/4" wellheads from PGB.
02.09.2003	23:30	24:00	0.5	430	RDMO	Pulled MOST tool and wellheads to rig floor and secured in rotary table.
03.09.2003	00:00	01:00	1	430	RDMO	Unlatched MOST tool from 18 3/4" wellhead and laid out same.
03.09.2003	01:00	02:00	1	430	RDMO	Picked up 18 3/4" CART tool, engaged in 18 3/4" wellhead and laid out together with 30" wellhead and casing stump.
03.09.2003	02:00	02:30	0.5	430	RDMO	Picked up MOST tool, broke out cutter and laid out same.
03.09.2003	02:30	04:00	1.5	429	RDMO	RIH 3 1/2" cement stinger and tagged TOC at 429 m with 10 ton.
03.09.2003	04:00	05:30	1.5	0	RDMO	Pulled back 1 x single and rigged up lo-torque and cement hose. Pressure tested surface lines. Mixed and pumped 30 m3, 1.95 sg class 'G' slurry at 900 lpm & 32 bar and filled well from 429 m back to seabed.
03.09.2003	05:30	06:00	0.5	0	RDMO	POOH 3 1/2" stinger.
03.09.2003	06:00	17:30	11.5	0	RDMO	Laid out excess tubulars from derrick.
03.09.2003	17:30	24:00	6.5	0	RDMO	WOW to recover anchors. Time / Wind (knots/dir) / Seas (m/dir) / Pitch / Roll / Heave 19:00 — 20 / 283 — 4.0 / 280 — 0.8 — 1.4 — 0.7 20:00 — 21 / 274 — 4.1 / 270 — 0.9 — 1.5 — 0.8 22:00 — 21 / 268 — 3.6 / 270 — 1.5 — 1.3 — 1.0 24:00 — 20 / 275 — 3.7 / 270 — 1.8 — 2.0 — 1.1
04.09.2003	00:00	02:00	2	0	RDMO	WOW to recover anchors. Time / Wind (knots/dir) / Seas (m/dir) / Pitch / Roll / Heave 01:00 — 20 / 275 — 3.5 / 270 — 1.8 — 1.8 — 1.0 02:00 — 21 / 270 — 3.6 / 270 — 1.3 — 1.5 — 0.9

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Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
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Date	From	To	Hours	Depth (m)	Phase	Description of operations
04.09.2003	02:00	08:00	6	0	RDMO	Deballasted rig to working draft.
04.09.2003	08:00	20:30	12.5	0	RDMO	Commenced anchor handling operations: Anchor PCP To Boat Anchor off Bttm Bolstered 7 07:55 08:50 10:40 3 08:00 08:50 10:50 8 10:50 11:30 13:15 4 11:05 11:35 13:45 9 13:25 13:55 15:55 Northern Corona on towing bridle at 16:15 hrs 2 13:55 14:30 16:35 5 16:50 17:40 19:45 6 Recovered by rig 20:40
04.09.2003	20:30	24:00	3.5	0	RDMO	Rig on tight tow at 20:40 hrs. Standby vessel released and Northern Crusader on route to Kristiansund at 20:40 hrs. Midnight position: N 64 deg 43.6' E 5 deg 59.4' Average speed: 4.0 knots Distance from location:13 Nm Distance to new location:282 Nm ETA at new location: 16:00 hrs 07.09.2003
05.09.2003	00:00	06:00	6	0	RDMO	Rig on tight tow to CCB Bergen. 06:00 Position: N 64 deg 18.3' E 005 deg 39.8' Average speed: 4.0 knots Distance from location:40 Nm Distance to new location:255 Nm
05.09.2003	06:00	12:00	6	0	RDMO	12:00 Position: N 63 deg 55.0' E 005 deg 22.0' Average speed: 4.0 knots Distance from location:64 Nm Distance to new location:231 Nm
05.09.2003	12:00	18:00	6	0	RDMO	18:00 Position: N 63 deg 32.6' E 005 deg 05.5' Average speed: 4.0 knots Distance from location:88 Nm Distance to new location:207 Nm
05.09.2003	18:00	24:00	6	0	RDMO	24:00 Position: N 63 deg 09.5' E 004 deg 49.3' Average speed: 4.0 knots Distance from location:112 Nm Distance to new location:183 Nm ETA at new location: 21:00 hrs, 07.09.2003

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Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
06.09.2003	00:00	06:00	6	0	RDMO	Rig on tight tow to CCB Bergen. 06:00 Position: N 62 deg 44.3' E 004 deg 31.6' Average speed: 5.0 knots Distance from location: 139 Nm Distance to new location: 156 Nm
06.09.2003	06:00	12:00	6	0	RDMO	12:00 Position: N 62 deg 18.9' E 004 deg 12.5' Average speed: 4.5 knots Distance from location: 165 Nm Distance to new location: 130 Nm
06.09.2003	12:00	18:00	6	0	RDMO	18:00 Position: N 61 deg 52' E 004 deg 00' Average speed: 4.5 knots Distance from location: 194 Nm Distance to new location: 101 Nm
06.09.2003	18:00	24:00	6	0	RDMO	24:00 Position: N 61 deg 29.6' E 003 deg 59.7' Average speed: 4.0 knots Distance from location: 215 Nm Distance to new location: 79 Nm ETA at new location: 18:00 hrs, 07.09.2003 At 21:00 hrs shackle parted from port side bridle. Continued towing at reduced speed, meantime mobilized Northern Crusader from Bergen to assist with tow.
07.09.2003	00:00	14:30	14.5	0	RDMO	Rig on tight tow to CCB Bergen. 06:00 Position: N 61 deg 03.6' E 003 deg 59.6' Average speed: 6.2 knots Distance from location: 241 Nm Distance to new location: 53 Nm Nothern Crusader on location at 03:00 hrs to assist with tow.

NORSK AGIP

Operations Summary Report

Well:	**6406/1-2**	Start:	21 June 2003
Rig Contractor:	ODFJELL	End:	8 September 2003
Rig name:	DEEPSEA BERGEN	Spud:	26 June 2003

Date	From	To	Hours	Depth (m)	Phase	Description of operations
07.09.2003	14:30	24:00	9.5	0	RDMO	Rig arrived at CCB location 14:30 hrs. Commenced anchor handling operations: Anchor PCP To Boat Anchor on Bttm 5 16:40 18:05 2 17:00 18:15 3 19:20 20:00 4 18:30 19:15 Commenced mooring chains to quayside bollards: 7 19:55 20:20 8 20:25 21:10 6 21:40 22:45 9 22:10 23:15 Tested all anchors to 150 ton.
08.09.2003	00:00	04:00	4	0	RDMO	Moved rig from stand-off position 350 m to quayside.
08.09.2003	04:00	06:30	2.5	0	RDMO	Completed backload of equipment from rig to Northern Crusader. Northern Corona off contract at 00:30 hrs. Deepsea Bergen end of contract at 06:30 hrs. Northern Crusader to quayside for offloading of equipment & to continue with tank cleaning.

3.4 Technical Information and Reports

3.4.1 Bit Record

Well: 6406/1-2 Rig on contract: 21 June 2003 Spud date: 26 June 2003
Rig: Deepsea Bergen Rig released: 8 September 2003

6406/1-2 Bit Record **TABLE 1a**

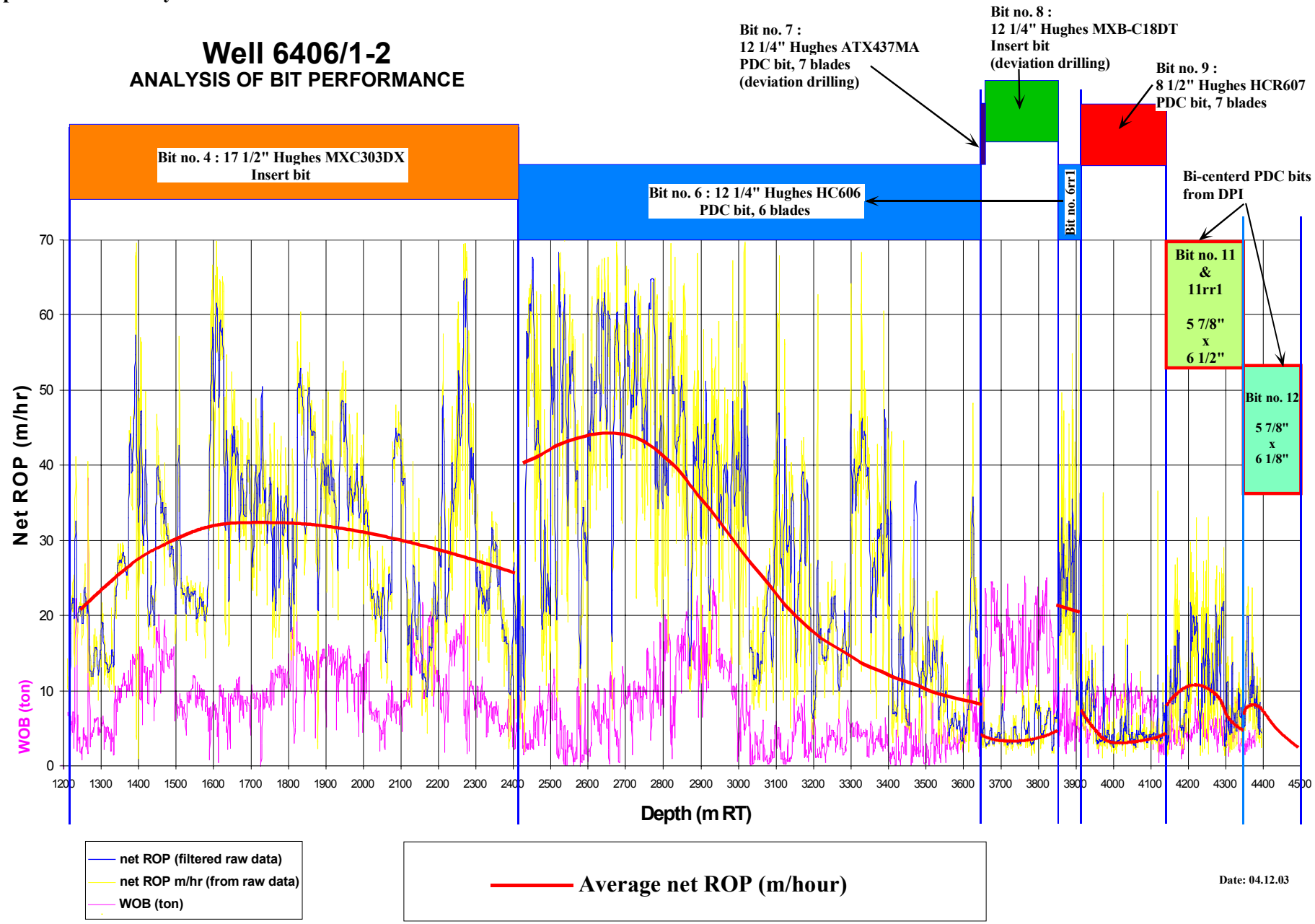
Bit no.	Bit size inches	Bit Category	Bit make	Bit type	Serial Number	IADC Code	Depth in m	Depth out m	Drilled interval m	Rotation hours	ROP m/hr	WOB (min/max) ton	RPM (min/max) rpm	I	O	D	L	B	G	O	R
1	26	Steel Tooth bit	Hughes	GTXC3MG1	L95DW	115	433	456	23	2	11.5	2	50/80	0	0	NO	A	0	I	NO	TD
1rr1	26	Steel Tooth bit	Hughes	GTXC3MG1	L95DW	115	451	461	10	0.5	20	2	50/80								
2	9.875	Steel Tooth bit	Hughes	MXC1	5032876	117	461	1210	749	16	46.8	2/9	120/170	1	1	NO	A	3	I	NO	TD
3	26	Steel Tooth bit	Hughes	GTXC3G1	6004327	111	458	1205	747	20	23.6	2/20	90/130	2	2	NO	G	2	I	NO	TD
4	17.5	Insert bit	Hughes	MXC303DX	6016138	415	1210	2415	1205	51	23.63	1/39	89/204	1	1	NO	G	E	I	NO	TD
5	12.25	Steel Tooth (junk) bit	Hughes	ATJ G8	6010770	347	2415	2427	12	1	12.00	5	80	2	1	BT	C	E	I	JD	BHA
6	12.25	PDC bit, 6 blades	Hughes	HC606	1904582	M333	2427	3645	1218	68.5	17.78	1/15	150/200	2	1	WT	M	D	I	BT	BHA
7	12.25	PDC bit, 7 blades	Hughes	ATX437MA	Z0402062	M423	3645	3656	11	2.5	4.40	2/10									
8	12.25	Insert bit	Hughes	MXB-C18DT	6008347	447	3656	3852	196	52	3.77	10/20	93/200	0	0	NO	A	E	I	NO	BHA
6rr1	12.25	PDC bit, 6 blades	Hughes	HC606	1904582	M333	3852	3908	56	3	18.67	5/8	100/150	2	1	WT	N	D	I	BT	TD
9	8.5	PDC bit, 7 blades	Hughes	HCR607	0402526	M223	3908	4140	232	57.5	4.03	1/12	120/197	1	1	PN	A	D	I	NO	TD
9rr1	8.5	PDC bit, 7 blades	Hughes	HCR607	0402526	M223	4140	4140	0	n/a	n/a										
10	5.875	PDC bit, 6 blades	Hughes	STR436XLG	1214152	M333	4140	4143	3	0.5	6.00	3/5	100/150	1	1	NO		D	I	NO	BHA
11	6.5	Bi-center PDC bit	DPI	PS13BC	1962465		4143	4177	34	5.5	6.18	3/6	62/120	0	0	NO		D	I	NO	DTF
11rr1	6.5	Bi-center PDC bit	DPI	PS13BC	1962465		4177	4348	171	26	6.58	2/8	65/140	8	8	LT	A	D	I	RO	PR
12	6.125	Bi-center PDC bit	DPI	PS-13BC	1961050		4348	4500	152	48.5	3.13	2/10	75/120	7	8	LT	G	D	I	RO	TD
12rr1	6.125	Bi-center PDC bit	DPI	PS-13BC	1961050		4500	4500	0	n/a	n/a		120								

Well: 6406/1-2 Rig on contract: 21 June 2003 Spud date: 26 June 2003
Rig: Deepsea Bergen Rig released: 8 September 2003

6406/1-2 Bit Record TABLE 1b

Bit no.	Bit Size inches	Bit Category	Bit make	Bit type	Jet size in 1/32"	T.F.A. mm2	Pump output Lpm	Pump pressure bar	deltaP Bit bar	Jet vel. m/s	Mud type	Mud weight sg	Mud visc. cp	Mud Y.P. lb/100ft2	Depth m	Incl. Deg.	Az. Deg.
1	26	Steel Tooth bit	Hughes	GTXC3MG1	20/20/20	593.8	1500	17	10	42	Seawater	1.03			456	0.34	73.15
1rr1	26	Steel Tooth bit	Hughes	GTXC3MG1	20/20/20	593.8	1500	17	10	42	Seawater	1.03			461		
2	9.875	Steel Tooth bit	Hughes	MXC1	14/18/20/20	653.2	3260	165	40	83	Spud Mud	1.03			1210	1.24	348.91
3	26	Steel Tooth bit	Hughes	GTXC3G1	12/12/12/16/18/18	661.1	4460	245	72	113	Spud Mud	1.03			1205		
4	17.5	Insert bit	Hughes	MXC303DX	12/12/12/20/20/20	807.6	4200	300	64	87	Sildril (WBM)	1.53	24	25	2415	1.76	315.28
5	12.25	Steel Tooth (junk) bit	Hughes	ATJ G8	24/24/24	855.1	2250	230	18	44	Sildril (WBM)	1.70	24	25	2420		
6	12.25	PDC bit, 6 blades	Hughes	HC606	16/16/16/20/20/20	973.8	2510	297	17	43	Versapro (OBM)	1.70	45	10	3645	3.30	288.96
7	12.25	PDC bit, 7 blades	Hughes	ATX437MA	12/12/12/12/12/12/12	498.8	2450	305	63	82	Versapro (OBM)	1.70	45	10	3656		
8	12.25	Insert bit	Hughes	MXB-C18DT	16/22/22/22	845.2	2550	310	25	50	Versapro (OBM)	1.75	45	10	3852	7.30	121.73
6rr1	12.25	PDC bit, 6 blades	Hughes	HC606	16/16/16/20/20/20	973.8	2450	300	18	42	Versapro (OBM)	1.80	47	10	3908	7.90	120.30
9	8.5	PDC bit, 7 blades	Hughes	HCR607	12/12/12/12/12/12/12	498.8	1350	164	21	45	Versapro (OBM)	1.90	47	10	4140	8.61	143.96
9rr1	8.5	PDC bit, 7 blades	Hughes	HCR607	12/12/12/12/12/12/12	498.8					Versapro (OBM)	1.90	47	10	4140		
10	5.875	PDC bit, 6 blades	Hughes	STR436XLG	22/22/22	718.5	1300	160	10	30	Versapro (OBM)	1.98	44	9	4143		
11	6.5	Bi-center PDC bit	DPI	PS13BC	12/12/12/14/14	407.7	850	200	13	35	Versapro (OBM)	1.98	39	5.5	4177	7.88	147.81
11rr1	6.5	Bi-center PDC bit	DPI	PS13BC	12/12/12/14/14	407.7	850	194	13	35	Versapro (OBM)	1.98	35	5.5	4348	5.52	150.90
12	6.125	Bi-center PDC bit	DPI	PS-13BC	11/11/11/12/12	322.1	850	204	21	44	Versapro (OBM)	1.98	35	6	4500	1.49	243.44
12rr1	6.125	Bi-center PDC bit	DPI	PS-13BC	11/11/11/12/12	322.1					Versapro (OBM)	1.98	34	6			

Bit performance analysis



3.4.2 BHA Record

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Pre-drill below 36" conductor	**1**	**1**	**27 jun.03**	**27 jun.03**	**433 m**	**461 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	26.00		0.55		7 5/8 R
Bit Sub	1	9.50	3.00	1.72	217.0	7 5/8 R
Drill Collar	3	9.50	3.00	27.26	217.0	7 5/8 R
Cross Over	1	9.50	3.00	1.00	217.0	7 5/8 R pin x 6 5/8 R box
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.97	149.9	7 H90
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF
H.W.D.P.	3	5.00	3.00	26.73	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**85.41**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 9 7/8" pilot hole	**2**	**2**	**28 jun.03**	**29 jun.03**	**461m**	**1210 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	9.875		0.26		
Bit Sub	1	8.00	2.81	0.91	149.9	6 5/8 R
Cross Over /Float Sub	1	8.00	2.81	1.01	149.9	6 5/8 R pin x 5 1/2 IF box
MWD	2	7.938	4.25	16.52		5 1/2 IF
LWD	1	8.00	4.25	9.15	203.6	5 1/2 IF
NM Cross Over	1	8.00	4.25	1.02	147.0	5 1/2 IF pin x 6 5/8 R box
NMDC	1	8.00	2.75	9.23	149.7	6 5/8 R
Drill Collar	15	8.00	2.81	131.13	149.9	7 H90
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.97	149.9	7 H90
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF box
H.W.D.P.	15	5.00	3.00	134.72	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**332.10**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Re-drill pilot hole to 26"	**3**	**3**	**29 jun.03**	**01 jul.03**	**458 m**	**1205 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	26.00		0.55		7 5/8 R
Bit Sub	1	9.50	3.00	1.29		7 5/8 R
Cross Over /Float Sub	1	9.38	3.13	0.61	133.6	7 5/8 R pin x 6 5/8 R box
MWD	1	9.50	3.25	9.16	203.6	6 5/8 R pin x 7 5/8 R box
NM Stabilizer	1	26.00	3.00	1.38		7 5/8 R
NMDC	1	9.50	3.00	8.64	217.2	7 5/8 R
String Stabilizer	1	26.00	3.00	2.48		7 5/8 R
Drill Collar	3	9.50	3.00	27.26	217.2	7 5/8 R
Cross Over	1	9.50	3.00	1.00		7 5/8 R pin x 6 5/8 R box
Drill Collar	15	7.88	2.81	131.13	139.4	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.97	149.9	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF box
H.W.D.P.	15	5.00	3.00	134.72	49.3	NC 50
Drill Pipe		5.00	4.25			
			Total length	**346.37**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 17 1/2" hole	**4**	**4**	**04 jul.03**	**09 jul.03**	**1210 m**	**2415 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	17.50		0.41		7 5/8 R
Stab (NB) 17 1/4" FG	1	17.25	3.00	2.64		7 5/8 R
Cross Over	1	9.50	3.00	1.00		7 5/8 R pin x 5 1/2 IF box
NM Float Sub	1	8.00	3.00	0.69		5 1/2 IF
MWD	1	8.00	4.25	7.57		5 1/2 IF
NM Data Link w/17 1/2" Stab. Sleeve	1	17.50	4.25	1.57		5 1/2 IF
LWD	1	8.00	4.25	8.75		5 1/2 IF
NM Data Link w/17 1/2" Stab. Sleeve	1	17.50	4.25	1.58		5 1/2 IF
MWD	1	8.00	4.25	9.15		5 1/2 IF
NM Crossover Sub	1	8.00	4.25	1.02		5 1/2 IF pin x 6 5/8 R
NM Stab (IB) 17 1/2" FG	1	17.50	4.25	1.86		6 5/8 R
NMDC	1	8.00	4.25	8.11	149.7	6 5/8 R
Drill Collar	15	8.00	2.81	131.13	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.97	149.9	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF
H.W.D.P.	15	5.00	3.00	134.72	49.3	NC 50
Drill Pipe		5.00	4.25			
			Total length	**338.35**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill out cement in 13 3/8" csg.	**5**	**5**	**14 jul.03**	**15 jul.03**	**2415 m**	**2427 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	12.25		0.30		6 5/8 R
Junk Basket	1	9.56	3.50	0.80		6 5/8 R
Junk Basket	1	9.56	3.50	0.80		6 5/8 R
Bit Sub	1	8.00	3.00	0.83		6 5/8 R
Drill Collar	12	8.00	2.81	104.36	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.57	149.9	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R box x 4 1/2 IF box
H.W.D.P.	12	5.00	4.25	107.74	49.3	4,5 IF
Drill Pipe		5.00	4.25			
			Total length	**242.58**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 12 1/4" hole	**6**	**6**	**16 jul.03**	**20 jul.03**	**2427 m**	**3645 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	12.25		0.40		6 5/8 R
12 1/8” NM NB Stab. w/Float	1	12.13	3.00	1.00		6 5/8 R box x 5 1/2 IF box
MWD w/ 12" Stab. Sleeve	1	12.00	4.25	7.56		5 1/2 IF
MWD	1	8.00	4.25	1.39		5 1/2 IF
LWD	1	8.00	4.25	7.16		5 1/2 IF
Data Link w/12" Stab. Sleeve	1	12.00	4.25	1.57		5 1/2 IF
LWD	1	8.00	4.25	8.74		5 1/2 IF
MWD	1	8.00	4.25	9.15		5 1/2 IF
NM Crossover Sub	1	8.00	4.25	1.02		5 1/2 IF pin x 6 5/8 R box
12" NM String Stabilizer	1	12.00	4.25	1.90		6 5/8 R
NMDC	1	8.00	4.25	8.11		6 5/8 R
Drill Collar	13	8.00	2.81	113.49	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	6 5/8 R
Drill Collar	2	8.00	2.81	17.57	149.9	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF box
H.W.D.P.	12	5.00	3.00	107.74	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**296.98**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 12 1/4" hole	**7**	**7**	**21 jul.03**	**21 jul.03**	**3645 m**	**3656 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	12.25		0.34		6 5/8 R
Mud Motor w/ 1° Bent Housing	1	8.00	2.50	9.84	147.0	6 5/8 R
Stab (IB) 12 1/4" FG	1	12.25	3.50	1.63	160.4	6 5/8 R
NM Pony Collar	1	8.00	4.25	2.41		6 5/8 R
Cross Over w/Float Sub	1	8.00	3.00	0.55	147.0	6 5/8 R pin x 5 1/2 IF box
MWD	1	8.00	4.25	9.15		5 1/2 IF
Cross Over	1	8.00	4.25	1.02	147.0	5 1/2 IF pin x 6 5/8 R box
NM String Stabilizer	1	8.00	4.25	1.90		6 5/8 R
NMDC	1	8.00	4.25	8.11	149.7	6 5/8 R
Spiral Drill Collars	13	8.00	2.82	113.49	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.82	9.19	154.4	7 H90
Spiral Drill Collars	2	8.00	2.82	17.57	160.8	6 5/8 R
Cross Over	1	8.00	2.82	0.99	149.9	6 5/8 R pin x 5 1/2 IF box
H.W.D.P.	12	5.00	3.00	107.74	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**283.93**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 12 1/4" hole	**8**	**8**	**22 jul.03**	**25 jul.03**	**3656 m**	**3852 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	12.25		0.29		6 5/8 R
Mud Motor w/ 1° Bent Housing	1	8.00	3.00	9.84	147.0	6 5/8 R
Stab (IB) 12" FG	1	8.00	2.68	2.26	160.4	6 5/8 R
NM Pony Collar	1	8.00	2.68	2.41		6 5/8 R
Cross Over w/Float Sub	1	8.00	3.00	0.55	147.0	6 5/8 R pin x 5 1/2 IF box
MWD	1	8.00	4.25	9.15		5 1/2 IF
NM Crossover Sub	1	8.00	4.25	1.02	147.0	5 1/2 IF pin x 6 5/8 R box
NM String Stabilizer	1	12.00	4.25	1.90		6 5/8 R
NMDC	1	8.00	4.25	8.11	149.7	6 5/8 R
Drill Collar	13	8.00	2.81	113.49	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	7 H90
Drill Collar	2	8.25	2.81	17.57	160.8	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 5 1/2 IF box
H.W.D.P.	12	5.00	3.00	107.74	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**284.51**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 12 1/4" hole	**9**	**6rr1**	**25 jul.03**	**27 jul.03**	**3852 m**	**3908 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	12.25		0.40		6 5/8 R pin
Stab (NB) 12 1/4" FG	1	12.25	2.50	1.72	154.4	6 5/8 R
Cross Over /Float Sub	1	8.00	3.00	1.02	147.0	6 5/8 R pin x 5 1/2 IF
MWD	1	8.00	4.25	7.77		5 1/2 IF
NM Data Link w/String Stab. Sleeve	1	12.25	4.25	1.57		5 1/2 IF
MWD	1	8.00	4.25	1.39		5 1/2 IF
LWD	1	8.00	4.25	7.16		5 1/2 IF
NM String Stabilizer	1	8.00	4.25	1.57		5 1/2 IF
LWD	1	8.00	4.25	8.82		5 1/2 IF
MWD	1	8.00	4.25	9.15		5 1/2 IF
NM Crossover Sub	1	8.00	4.25	0.76		5 1/2 IF pin x 6 5/8 R box
NM String Stabilizer	1	12.25	2.81	1.87		6 5/8 R
NMDC	1	8.00	2.81	8.11		6 5/8 R
Drill Collar	13	8.00	2.81	113.49	149.9	6 5/8 R
Jar - Griffith	1	8.00	2.81	9.19	154.4	7 H90
Drill Collar	2	8.00	2.81	17.57	149.9	6 5/8 R
Cross Over	1	8.00	2.81	0.99	149.9	6 5/8 R pin x 4 1/2 IF box
H.W.D.P.	12	5.00	3.00	107.74	49.3	NC50
Drill Pipe		5.00	4.25			
			Total length	**300.29**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 8 1/2" hole	**10**	**9**	**31 jul.03**	**06 aug.03**	**3908 m**	**4140 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	8.50		0.28		4 1/2 R pin
Stab (NB) 8 1/2" FG w/Float	1	8.50	2.25	1.67	90.9	4 1/2 R box x 4 1/2 IF box
NM Cross Over /Float Sub	1	6.75	2.81	0.66	100.6	4 1/2 IF pin x 5 1/2 FHB box
MWD	1	6.85		7.79		5 1/2 R
NM Data Link w/String Stab. Sleeve	1	8.37		1.57		5 1/2 R
MWD	1	6.75		1.42		5 1/2 R
LWD	1	6.75		9.23		5 1/2 R
NM Cross Over	1	6.75		1.02		5 1/2 R pin x 4 1/2 IF box
Non Mag. String Stabilizer (8 1/2")	1	8.50		2.26		4 1/2 IF
NMDC	1	6.50	2.81	8.38		4 1/2 IF
H.W.D.P.	12	5.00	3.00	107.74	49.3	4 1/2 IF
Jar - Bowen Hyd/Mech	1	6.75	2.25	11.13	68.9	4 1/2 IF
H.W.D.P.	11	5.00	3.00	99.70	49.3	4 1/2 IF
DART SUB	1	6.50	2.81	0.63		4 1/2 IF
Drill Pipe		5.00	4.25			
			Total length	**253.48**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Clean-out of 8 ½" hole & casing scraper run in 9 5/8" casing prior to running 7" liner	**11**	**9rr1**	**06 aug.03**	**07 aug.03**	**4140 m**	**4140 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	8.50		0.28		4 1/2 R pin
Stab (NB) 8 1/2" FG	1	8.50	2.25	1.67	90.9	4 1/2 R
Cross Over	1	6.50	2.25	1.01		4 1/2 R pin x 4 1/2 IF box
Float Sub	1	6.44	2.25	0.85		4 1/2 IF
H.W.D.P.	12	5.00	3.00	107.74	49.3	4 1/2 IF
Jar - Bowen Hyd/Mech	1	6.75	2.25	11.13	68.9	4 1/2 IF
H.W.D.P.	11	5.00	3.00	99.70	49.3	4 1/2 IF
Drill Pipe	6	5.00	4.25	57.79	19.5	4 1/2 IF
Circulation Sub	1	6.25	2.00	0.86		4 1/2 IF
		5.00	4.25			
			Total length	**281.03**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill out cement in 7" liner	**12**	**10**	**11 aug.03**	**12 aug.03**	**4140 m**	**4143 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	5.875		0.35		3 1/2 Reg
Bit Sub	1	4.12	2.37	0.85		3 1/2 Reg
Cross Over /Float Sub	1	4.94	3.12	1.81		3 1/2 Reg pin x 3 1/2 IF box
Float Sub	1	4.75	3.12	1.02		3 1/2 IF
Spiral Drill Collars	12	4.75	2.37	109.66		3 1/2 IF
H.W.D.P.	9	3.50	2.25	83.11		3 1/2 IF
Jar - Dailey Mech.	1	4.75	2.25	9.19		3 1/2 IF
H.W.D.P.	9	3.50	2.25	82.61		3 1/2 IF
Drill Pipe	23	3.50	2.50	224.56		3 1/2 IF
Cross Over	1	6.56	2.25	1.01		3 1/2 IF pin x 4 1/2 IF box
DART SUB	1	6.50	2.25	0.64		4,5 IF
Drill Pipe		5.00	4.25			
			Total length	**514.81**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 6 1/2" hole	**13**	**11**	**12 aug.03**	**14 aug.03**	**4143 m**	**4177 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	6.50		0.46		
Bit Sub	1	4.75	2.37	0.85		
Float Sub	1	4.75	3.12	1.02		
Pup	1	4.75	2.75	3.07		
Float Sub	1	4.75	3.12	1.02		
LWD	1	4.75	2.50	8.88		
LWD	1	4.75	2.50	1.43		
MWD	1	4.75	2.50	9.09		
NM String Stabilizer 5 7/8"	1	5.88	2.75	1.83	15.9	
NMDC	1	4.75	2.75	8.45	0.0	
Drill Collar	15	4.75	2.25	137.24	46.8	
H.W.D.P.	6	3.50	2.25	55.40	23.2	
Jar - Dailey Mech.	1	4.75	2.25	9.19	49.6	
H.W.D.P.	12	3.50	2.25	110.32	23.2	
Drill Pipe	76	3.50	2.76	742.24	17.6	
Cross Over	1	6.56	2.25	1.01	0.0	
DART SUB	1	6.50	2.25	0.64	0.0	
Drill Pipe		5.00	4.25			
			Total length	**1092.14**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 6 1/2" hole	**14**	**11rr1**	**14 aug.03**	**17 aug.03**	**4177 m**	**4348 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	6.50		0.46		
Bit Sub	1	4.75	2.38	0.85		
LWD	1	4.75	2.50	9.09		
FS	1	4.75	2.56	8.95		
Float Sub	1	4.75	3.13	1.02		
Float Sub	1	4.75	3.13	1.02		
NM String Stabilizer 5 7/8"	1	5.88	2.75	1.83		
NMDC	1	4.75	2.75	8.45		
NM String Stabilizer	1	5.88	2.25	1.67		
Drill Collar	15	4.13	2.25	137.24	32.0	
H.W.D.P.	6	3.50	2.06	55.40	25.3	
Jar - Dailey Hyd.	1	4.75	2.25	9.19	46.8	
H.W.D.P.	12	3.50	2.06	110.32	25.3	
Drill Pipe	76	3.50	2.76	742.24	17.6	
Cross Over	1	6.56	2.25	1.01		
DART SUB	1	6.50	2.25	0.64		
Drill Pipe		5.00	4.25			
			Total length	**1089.38**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Drill 6 1/8" hole	**15**	**12**	**17 aug.02**	**20 aug.03**	**4348 m**	**4500 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	6.125		0.65		
Bit Sub	1	4.75	2.35	0.85		
MWD	1	4.75	2.50	9.09		
LWD	1	4.75	2.56	8.95		
Float Sub	1	4.75	3.13	1.02		
Float Sub	1	4.75	3.13	1.02		
NM String Stabilizer	1	5.85	2.75	1.83		
NMDC	1	4.75	2.75	8.45		
NM String Stabilizer	1	5.85	2.25	1.64		
Drill Collar	15	4.75	2.25	137.24	46.8	
H.W.D.P.	6	3.50	2.06	55.40	25.3	
Jar - Dailey Hyd.	1	4.75	2.25	9.19	46.8	
H.W.D.P.	12	3.50	2.06	110.32	25.3	
Drill Pipe	76	3.50	2.76	742.24	17.6	
Cross Over	1	6.56	2.25	1.01		
DART SUB	1	6.50	2.25	0.64		
Drill Pipe		5.00	4.25			
			Total length	**1089.54**		

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
Clean-out of open hole prior to logging	**16**	**12rr1**	**22 aug.03**	**23 aug.03**	**4500 m**	**4500 m**

Description	Number	OD (inches)	ID (inches)	Length (m)	Weight (lbs/ft)	Connection
Bit	1	6.125		0.45		
Bit Sub	1	4.75	2.50	0.85		
H.W.D.P.	6	3.50	2.06	55.07	25.3	
Jar - Dailey Hyd.	1	4.75	2.25	9.19	46.8	
H.W.D.P.	12	3.50	2.06	110.32	25.3	
Drill Pipe	76	3.50	2.60	742.24	16.4	
Cross Over	1	6.53	2.25	1.01		
Cross Over	1	6.50	2.25	1.00		
Float Sub	1	6.50	2.31	0.64		
Drill Pipe	3	5.00	4.28	28.88	22.1	
DART SUB	1	6.50	2.25	0.64		
Drill Pipe		5.00	4.25			
			Total length	**950.29**		

3.4.3 Casing Data Summary

OD	30" (Driven conductor)	20"	13 3/8"	9 7/8" x 9 5/8"		7" Drilling liner
				9 7/8" (Upper section)	9 5/8" (Lower section)	
WEIGHT (PPF)	310	133	72	62.8	53.5	32
GRADE	X-52	X-56	P-110	P-110	P-110	P-110
CONNECTION	ST-2	RL-4S	Antares MS	Antares MS	New VAM	New VAM
PIPE ID (IN)	28	18.73	12.347	8.625	8.535	6.184
PIPE DRIFT (IN)	27.813	18.543	12.25	8.469	8.5	6.059
CONN. OD (IN)	33	21.5	14.374	10.827	10.626	7.657
CONN. ID (IN)	28	18.63	12.559	9.102	8.876	6.307
BURST (bar)		211	510	840	752	859
BURST Design	N/A	96	305	662	505	257
BURST SF	N/A	2.19	1.67	1.27	1.49	3.34
COLLAPSE (bar)	N/A	103	199	709	548	743
COLLAPSE Design	N/A	75	152	269	385	396
COLLAPSE SF	N/A	1.36	1.31	2.63	1.42	1.88
TENSION (MT)		964	1036	906	775	465
TENSION Design	45	488	279	303	135	20
TENSION SF		1.98	3.70	2.99	5.74	23.35
CASING TOP (m)	2 m above seabed	2.8 m above seabed	Approx. 2 m above seabed	Approx. 2 m above seabed	Top of section at 2200 m	Top of section at 3721 m
CASING BTM. (m)	455	1199	2404	Bottom of section at 2200	Bottom of section at 3901	4139
CASING LENGTH (m)	51	796	2000	1796	1701	418

3.4.4 Leak-Off Test Results

In well 6406/1-2 the following Leak-Off Tests (LOT) and Formation Integrity Tests (FIT) were done:

1. After drilling out of the 20" shoe set at 1199 m a LOT was carried out in the 17 ½" hole below the 20" shoe to an equivalent mud weight of 1.50 sg.
   The test was done with 1.15 sg Sildril water based mud at a drilled depth of 1215 m.

2. 36 hours after the first LOT had been done in the 17 ½" hole a new LOT was carried out to an equivalent mud weight of 1.55 sg.
   The test was done with 1.34 sg Sildril water based mud at a drilled depth of 1757 m.
   (The "formation healing/strengthening" ability of the silicate in the Sildril mud is regarded as the main reason for the improved LOT).

3. After drilling out of the 13 3/8" shoe set at 2404 m a FIT was carried out in the 12 ¼" hole below the 13 3/8" shoe to an equivalent mud weight of 1.87 sg.
   The test was done with 1.70 sg oil based mud at a drilled depth of 2420 m.

4. After drilling out of the 9 5/8" shoe set at 3901 m a LOT was carried out in the 8 1/2" hole below the 9 5/8" shoe to an equivalent mud weight of 2.00 sg.
   The test was done with 1.90 sg oil based mud at a drilled depth of 3913 m.

5. After drilling out of the 7" liner shoe set at 4139 m a LOT was carried out in the 5 7/8" hole below the shoe to an equivalent mud weight of 2.08 sg.
   The test was done with 1.98 sg oil based mud at a drilled depth of 4143 m.

3.4.5 Cementing Reports

3.4.5.1 20" Casing

Well 6406/1-2			GENERAL DATA					20" casing	
SHOE DEPTH	1199	m-RKB	20.00"	CSG - I.D.=	18.730"	WT=	133	ppf
PREVIOUS CASING	455	m-RKB	30.00"	CSG - I.D.=	28.00"	WT=	310	ppf
HOLE SIZE	26.00	"						
EXCESS (lead slurry/open hole)	36	%		FRAC.GRAD @ SHOE		1.55	sg-EMW	
TOP CMT LEAD SLURRY	406	m-RKB		FG @ PREVIOUS CSG		1.20	sg-EMW	
TOP CMT TAIL SLURRY	1002	m-RKB		MUD WEIGHT		1.20	sg	
B.H.S.T.	37	Deg C		WATER DEPTH		383	m	

TOTAL DRY CMT REQUIRED >>>	120.0 ton	<<<

SLURRY VOLUME CALCULATION				
ANNULAR VOLUME CSG-OPEN HOLE	104.05	m^3	3 674.0	cuft
EXCESS OVER THEOR.LEAD VOLUME (or tail volume if lead slurry is not used)	37.81	m^3	1 335.2	cuft
ANNULAR VOLUME CSG-CSG	9.53	m^3	336.7	cuft
27 m INTERNAL VOLUME (SHOE-COLLAR)	4.80	m^3	169.5	cuft
TOTAL SLURRY VOLUME =	**156.20**	m^3	5 515.6	cuft

SPACERS					LENGTH
TYPE :	**Seawater**	**1.02 sg**	VOL. =	**137.00 m^3**	980 m

CEMENT SLURRY COMPOSITION

LEAD SLURRY	1.46 sg	from	1002	TO	406 m				
SLURRY VOLUME		579 m	of ANNULUS + EXCESS			123.80	m^3	4 371.3	cuft
"G" CEMENT	Yield	161.35	l/100kg	0.620	ton/m3	76.73	ton	1 799.4	sx
A-3L		5.40	l/100kg			4143.21	liter	1 096.1	gal
R-15L		1.15	l/100kg			882.35	liter	233.4	gal
FP-16LG/DEFOAMER		0.20	l/100kg			153.45	liter	40.6	gal
SEAWATER		123.64	l/100kg			94.86	m^3	596.6	bbls
TOTAL MIX FLUID		130.39	l/100kg			100.04	m^3	629.2	bbls
ESTIMATED TICKENING TIME @ 70 BC		+/- 7 hrs							

TAIL SLURRY	1.92 sg	from	1199 m	to	1002 m				
SLURRY VOLUME		214 m	of ANNULUS+INT.VOL.(SHOE-COLL)			32.40	m^3	1 144.0	cuft
"G" CEMENT	Yield	74.96	l/100kg	1.334	ton/m3	43.22	ton	1 014.0	sx
R-12L		0.35	l/100kg			151.28	liter	40.0	gal
FP-16LG/DEFOAMER		0.20	l/100kg			86.44	liter	22.9	gal
Fresh water		43.35	l/100kg			18.74	m^3	117.8	bbls
TOTAL MIX FLUID		43.90	l/100kg			18.97	m^3	119.3	bbls
ESTIMATED TICKENING TIME @ 70 BC		+/- 4 hrs							

3.4.5.2 13 3/8" Casing

Well 6406/1-2			GENERAL DATA					13 3/8" casing	
SHOE DEPTH	2404	m-RKB	13.375"	CSG - I.D.=	12.347"	WT=	72	ppf	
PREVIOUS CASING	1199	m-RKB	20.00"	CSG - I.D.=	18.730"	WT=	133	ppf	
HOLE SIZE	17.50	"							
EXCESS (in open hole)	30	%		FRAC.GRAD @ SHOE		1.87	sg-EMW		
TOP CMT LEAD SLURRY	#N/A	m-RKB		FG @ PREVIOUS CSG		1.55	sg-EMW		
TOP CMT (TAIL) SLURRY	2106	m-RKB		MUD WEIGHT		1.53	sg		
B.H.S.T.	85	Deg C		WATER DEPTH		383	m		

TOTAL DRY CMT REQUIRED >>>	37.3 ton	<<<

SLURRY VOLUME CALCULATION				
ANNULAR VOLUME CSG-OPEN HOLE	19.22	m^3	678.6	cuft
EXCESS OVER THEOR.LEAD VOLUME (or tail volume if lead slurry is not used)	5.77	m^3	203.6	cuft
ANNULAR VOLUME CSG-CSG	0.00	m^3	0.0	cuft
39 m INTERNAL VOLUME (SHOE-COLL)	3.01	m^3	106.4	cuft
TOTAL SLURRY VOLUME =	28.00	m^3	988.6	cuft

SPACER					LENGTH
TYPE: MCS Spacer	1.70 sg		VOL. =	15 m^3	232 m
Fresh water	716	l/m^3		10740 liter	
FP-16LG	10	l/m^3		150 liter	
MCS-J	52	l/m^3		780 liter	
Soda Ash	8	kg/m^3		120 kg	
GW-22	1.8	kg/m^3		27 kg	
Ilmenite	0.913	ton/m^3		13.70 ton	

CEMENT SLURRY COMPOSITION									
TAIL SLURRY	1.92 sg	from	2404 m	to	2106 m				
SLURRY VOLUME	301	m of ANNULUS+INT.VOL.(SHOE-COLL)				28.00	m^3	988.5	cuft
"G" CEMENT Yield	75.05	l/100kg		1.332	ton/m3	37.30	ton	875.1	sx
R-12L	0.85	l/100kg				317.08	liter	83.9	gal
FP-16LG	0.20	l/100kg				74.61	liter	19.7	gal
Fresh water	42.95	l/100kg				16.02	m^3	100.8	bbls
TOTAL MIX FLUID	44.00	l/100kg				16.41	M^3	103.2	bbls
ESTIMATED TICKENING TIME @ 70 BC	4.25 hrs								

3.4.5.3 9 7/8” x 9 5/8” Casing

Well 6406/1-2			GENERAL DATA					9 7/8" x 9 5/8" casing	
SHOE DEPTH	3901	m-RKB	9.625"	CSG - I.D.=	8.535"	WT=	53.5	ppf	
PREVIOUS CASING	2404	m-RKB	13.375"	CSG - I.D.=	12.347"	WT=	72.0	ppf	
HOLE SIZE	12.25	"							
EXCESS (in open hole)	30	%		FRAC.GRAD @ SHOE		2.08	sg-EMW		
TOP CMT LEAD SLURRY	#N/A	m-RKB		FG @ PREVIOUS CSG		1.87	sg-EMW		
TOP CMT (TAIL) SLURRY	3094	m-RKB		MUD WEIGHT		1.81	sg		
B.H.S.T.	140	Deg C		WATER DEPTH		383	m		

TOTAL DRY CMT REQUIRED >>>	32.93 ton	<<<

SLURRY VOLUME CALCULATION				
ANNULAR VOLUME CSG-OPEN HOLE	23.29	m^3	829.1	cuft
EXCESS OVER THEOR.LEAD VOLUME (or tail volume if lead slurry is not used)	7.04	m^3	248.7	cuft
ANNULAR VOLUME CSG-CSG	0.00	m^3	0.0	cuft
29 m INTERNAL VOLUME (SHOE-COLL)	1.07	m^3	37.8	cuft
TOTAL SLURRY VOLUME =	**31.60**	m^3	1 115.8	cuft

SPACER					LENGTH
TYPE : **MCS Spacer**	**1.85 sg**	VOL. =	**15.00**	m3.	397 m
Fresh water	659	l/m^3	9885.00	liter	
FP-16LG	10	l/m^3	150.00	liter	
MCS-J	104	l/m^3	1560.00	liter	
Soda Ash	8	l/m^3	120.00	liter	
GW-22	1.8	kg/m^3	27.00	kg	
Ilmenite	1.067	ton/m^3	16.01	ton	

CEMENT SLURRY COMPOSITION									
TAIL SLURRY	**1.95 sg**	**from**	**3901 m**	**to**	**3094 m**				
SLURRY VOLUME	**800 m**	of ANNULUS+INT.VOL.(SHOE-COLL)				**31.60**	**m^3**	**1 115.6**	**cuft**
"G" CEMENT Yield	**95.96**	l/100kg		1.042	ton/m3	32.93	ton	772.4	sx
R-15L (retarder)	**0.80**	l/100kg				263.40	liter	69.7	gal
CD-31L (dispencer)	**3.00**	l/100kg				987.76	liter	261.3	gal
FL-63L (fluid loss additive)	**2.00**	l/100kg				658.51	liter	174.2	gal
SL-1 (liquid silica & gas block)	**26.50**	l/100kg				8.73	m^3	54.9	bbls
FP-16LG (defoamer)	**0.20**	l/100kg				65.85	liter	17.4	gal
Fresh water	**32.40**	l/100kg				10.67	m^3	67.1	bbls
TOTAL MIX FLUID	**64.90**	l/100kg				21.37	m^3	134.4	bbls
ESTIMATED TICKENING TIME @ 70 BC	**7 hrs**								

3.4.5.4 7” Liner

Well 6406/1-2			GENERAL DATA					7" liner	
LINER SHOE DEPTH	**4139**	m-RKB	**7.00"**	Liner - I.D.=	**6.184"**	WT=	**29**	ppf	
PREVIOUS CASING	**3901**	m-RKB	**9.625"**	CSG - I.D.=	**8.535"**	WT=	**54**	ppf	
HOLE SIZE	**8.50**	"							
EXCESS (in open hole)	**0**	%		FRAC.GRAD @ SHOE		**2.11**	sg-EMW		
LINER HANGER	**3721**	m-RKB		FG @ PREVIOUS CSG		**2.08**	sg-EMW		
B.H.S.T.	**165**	Deg C		MUD WEIGHT		**1.90**	sg		
Top of cem. slurry at end of displ.	*3622*			WATER DEPTH		**383**	m		
OD of liner running string =	*5.00"*								

TOTAL DRY CMT REQUIRED >>>	7.2	ton	<<<

SLURRY VOLUME CALCULATION				
Cement volume above hanger after displacement (to be circulated/drilled out)	*2.40*	*m^2*		
ANNULAR VOLUME CSG-OPEN HOLE	2.80	m^3	99.0	cuft
EXCESS OVER THEORETICAL OPEN HOLE VOLUME	0.00	m^3	0.0	cuft
ANNULAR VOLUME CSG-CSG	2.17	m^3	76.8	cuft
27 m INTERNAL VOL. (SHOE-COLL)	0.52	m^3	18.5	cuft
TOTAL SLURRY VOLUME =	**7.90**	m^3	279.0	cuft

SPACERS					LENGTH
TYPE : **MCS Spacer**	**1.95 sg**	VOL. =	**15.00**	**m^3**	1273 m
Fresh water	628	l/m^3	9420.00	liter	
FP-16LG	10	l/m^3	150.00	liter	
MCS-J	104	l/m^3	1560.00	liter	
Soda Ash	8	kg/m^3	120.00	kg	
GW-22	1	kg/m^3	15.00	kg	
Ilmenite	1.2	ton/m^3	18.00	ton	

CEMENT SLURRY COMPOSITION

SLURRY	**2.05 sg**	**from**	**4139 m**	**to**	**3620 m**				
SLURRY VOLUME		**519.5**	m of ANNULUS+INT.VOL.(SHOE-COLL)			**7.90**	**m^3**	**279.0**	**cuft**
"G" CEMENT	Yield	**109.61**	l/100kg	0.912	ton/m3	7.21	ton	169.1	sx
R-15L (retarder)		**1.43**	l/100kg			103.09	liter	27.3	gal
CD-31L (dispencer)		**3.00**	l/100kg			216.28	liter	57.2	gal
FL-63L (fluid loss additive)		**2.00**	l/100kg			144.19	liter	38.1	gal
W-10 (weighting material)		**30.00**	% BWOC			2.16	ton	4 768	lbs
SL-1 (liquid silica & gas block)		**26.50**	l/100kg			1.91	m^3	12.0	bbls
FP-16LG (defoamer)		**0.20**	l/100kg			14.42	liter	3.8	gal
Fresh water		**39.17**	l/100kg			2.82	m^3	17.8	bbls
TOTAL MIX FLUID		**78.55**	l/100kg			5.66	m^3	35.6	bbls
ESTIMATED TICKENING TIME @ 70 BC		**8.25 hrs**							

3.4.6 Mud Summary by Phase

Drilling during the driving of the 30" conductor

The 36" conductor was driven, and it was therefore not required to drill the usual 36" hole. During the piling operation, however, it became necessary to pre-drill short sections two times:

When driving the conductor it first hit refusal depth at 433 m. A 26" bit was then run down through the 30" conductor and a short 26" hole section was drilled below the drive shoe from 433 m to 456 m.

The second time the conductor hit refusal depth was at 451 m. Again a 26" bit was run down to the drive shoe and a 26" hole section was drilled from 451 m to 461 m.

Only seawater and viscous sweeps were circulated while drilling the two short 26" sections.

Mud summary for the 9 7/8" pilot hole and 26" hole section

After having driven the 30" conductor to a depth of 455 m, a 9 7/8" pilot hole was drilled down to 1210 m without any drilling problems using seawater, and with high viscosity sweeps to keep the hole clean. A flow check was made at section TD (no shallow gas detected).

The pilot hole was re-drilled to 26" down to 1205 m, using the same drilling fluids as for the pilot hole; 3 m^3 high viscosity mud was used to sweep the hole for every stand drilled. When reaching section TD the hole was circulated clean and then displaced with high viscosity mud. A wiper trip was made to the seabed; a tight spot was encountered at 1080 m when running back to bottom. The 26" hole was swept with a 20 m^3 pill of 1.20 sg high viscosity mud, and prior to coming out hole the well was displaced to 1.20 sg high viscosity spud mud.

A pre-mixed spud mud made of NaCl/KCl brine and polymer was used for sweeps. For the 1.20 sg displacement mud Illmenite was used as the weighting material when displacing the 26" hole prior to running casing.

Mud summary for the 17 1/2" hole section

After having installed the 20" casing (shoe at 1199 m), a 17 ½" bit was run to drill out the float and shoe track to 1195 m with spud mud. The well was then displaced with 1.15 sg water based **Sildril** mud, which is a shale/clay inhibitive KCL type mud with a silicate concentration of minimum 12%. Ilmenite was used as weighting material. The cement in the 20" shoe was drilled out, and new hole was drilled to 1215 m where a leak-off test was made.

As the drilling of the 17 ½" hole continued, the mud weight was raised in increments. At 2331 m, where some torque increase was observed, the mud weight was increased to 1.53 sg. This mud weight was kept until section TD at 2415 m was reached.

At section TD a volume equal to 1.5 times bottoms up was circulated prior to making a wiper trip into the 20" shoe. On the way out it was necessary to engage the top drive and pump out due to sticky hole. When inside the 20" shoe, bottoms up was circulated and large volumes of cuttings came out over the shaker. When running back in hole, 6 m of fill was found at section TD, no other open hole problems were encountered. Prior to POOH the hole was flow checked and found static. With the BHA back at surface the stabilizers were found to be 60% balled up.

It was seen that the Sildril mud gave excellent cuttings integrity, with defined edges and no sign of mud intrusion. As the mud weight was increased by addition of Illmenite, the rheology showed a distinct increasing trend. Towards the end of the hole section the mud had reached to the high end of the specifications, and had to be diluted with low viscosity premixes and water.

The drilling started with 84 mesh screens on all 3 shakers, but the screens had to be changed to 60 mesh in the start of the drilling to handle the flow. As the mud heated up and was sheared through the bit the screens were changed to 100 mesh. Towards the end of the hole section the screens were changed to 60 and 80 mesh due to increasing rheology and heavy loading of cuttings on the shakers. Despite using coarse screens the content of sand sized particles in the mud was kept below 1% at all times.

Mud summary for the 12 ¼" hole section

A 12 ¼" bit with 2 junk baskets in the BHA was used to drill out the shoe of the 13 3/8" casing due to junk laying on top of the cement inside the casing. Prior to drilling out the shoe track the 13 3/8" casing was displaced with 1.70 sg VersaPro oil based mud. When the shoe track was drilled out and new formation was drilled to 2420 m, a new 12 2/4" BHA was run in hole to drill the 12 2/4" hole section.

When starting the drilling of the 12 ¼" hole section, the VersaPro OBM had a high content of water due to contamination of water during the displacement. Treatment was therefore carried out to increase the oil/water ratio and chloride concentration. During the drilling of the hole section VersaPro P/S was added for emulsion stability, Versavert Vis for viscosity and Lime for alkalinity.

While drilling through the Lysing Formation, overpull of 20 ton was experienced several times while making short trips in the interval from 3471 m to 3300 m.

The drilling down to 3645 m had been done with a packed 12 ¼" BHA, but due to problems in keeping the hole inclination within tolerance the hole from now on and down to 3852 m was drilled with 12 ¼" directional bottom hole assemblies with mud motor. Rotation drilling was then resumed down to section TD at 3908 m.

At 3844 m the mud weight was increased to 1.77 sg, and at 3852 m it was increased to 1.80 sg. As drilling continued to section TD at 3908 m, the oil/water ratio was adjusted to 80/20 by addition of premix that had a high oil content.

The shakers were dressed with 60, 60 and 100 mesh screens as the drilling of the section started and had difficulties in handling the flow because of the cold mud and the boosting of the riser. Due to the course screens the concentration of low gravity solids (LGT) increased in the mud. Finer screens were installed when the mud had warmed up and the boosting of the riser had stopped. Most of the section was drilled with 175 mesh screens on one shaker and 210 mesh screens on the other two shakers.

Mud summary for the 8 1/2" hole section

The mud used for the 8 1/2" hole section was the same VersaPro OBM as used for the 12 ¼" section. The mud weight when drilling out of the 9 5/8" casing shoe was 1.98 sg, but had to be reduced to 1.90 sg to stop the mud losses that occurred when starting to drill new formation below the casing shoe – cumulative mud losses to formation were 26.5 m^3.

While drilling the 8 ½" hole typical "ballooning effects" were experienced with moderate mud gains during flow checks.

At 3952 m the mud weight was raised to 1.93 sg – resulting in slight mud loss, and the mud weight was reduced to 1.92 sg.

At 4052 the mud weight was reduced to 1.90 sg.

The 8 ½" hole section was drilled down to 4140 m, which was TD for this hole section.

After POOH, a wiper trip with 8 ½" bit and 9 5/8" casing scraper was done. There was no fill on bottom of the 8 ½" hole. Preparations were made to run 7" liner.

During the drilling of the 8 ½" hole a small treatment of the mud with LCM material (273 kg of Ven Fyber) was made to reduce the seepage losses. The mud was regularly treated with lime to maintain alkalinity in the hot downhole environment. Just before reaching section TD (at 4140 m) a small treatment with Versatrol was carried out to ensure adequate fluid loss and thin filter cake during the liner operation. On the scraper run inside the 9 5/8" casing prior to starting the installation of the 7" liner, 50 m^3 of premix at 1.90 sg was added to the active system to increase the oil/water ratio and lower the rheology. The premix was made of EDC-99 baseoil and mud chemicals.

210 mesh screens were used on the shakers.

Mud summary for the 6 1/2" & 6 1/8" hole section

The mud used for the 6 1/2"& 6 1/8" hole section was the same VersaPro OBM as used for the 8 1/2" section. The mud weight when drilling out of the 7" liner shoe was 1.98 sg.

By using bi-center bits, a 6 ½"& 6 1/8" hole was drilled from the liner shoe and down to well TD at 4500 m. No particular hole problems were experienced in the drilling of the open hole below the 7" liner.

When drilling the cement in the 7" liner the mud picked up water. 100 m^3 of premix made up of baseoil and chemicals were therefore added to the active system in two steps to increase the oil/water ratio, improve the rheology and decrease the ECD values. During the drilling no further treatments were carried out, only small additions of premix to control the mud weight. The mud properties showed a very stable mud system.

210 mesh screens were used on the shakers.

MUD SUMMARY REPORT
Well 6406/1-2

Day no.	Date	Depth	MW	FV	AV	PV	YP	Gel 10 sec	Gel 10 min	API	pH	Pf	Mf	Cl- x 1000	TH	Ca++	KCl	Solids correct.	MBT	HGS	LGS	Sil
		m	sg	s/qt.	cP	cP	Pa	Pa	Pa	ml	·	ml	ml	kg/m3	mg/l	mg/l	kg/m3	%	kg/m3	kg/m3	kg/m3	%
	36" Section: SW/PAC Spud Mud.																					
6	26.06.2003	0	1.03	120																		
7	27.06.2003	455	1.03	120																		
	9 5/8" Pilot" Section: SW/PAC Spud Mud.																					
8	28.06.2003	552	1.03	120																		
9	29.06.2003	1205	1.03	110																		
	26" Section: SW/PAC Spud Mud.																					
10	30.06.2003	1205	1.03	110																		
11	01.07.2003	1205	1.03	111																		
12	02.07.2003	1205	1.03	110																		
13	03.07.2003	1205	1.03	110																		
	17.5" Section: Sildril mud.																					
14	04.07.2003	1209	1.15		17	12	4.5	2	3	3.0	11.7	33	38	38	0	0	80	6.0	0	10	160	16.0
15	05.07.2003	1573	1.32		34	18	16.0	5	8	3.2	11.7	25.5	28.5	47	0	0	80	13.0	21			11.4
16	06.07.2003	1959	1.40		41	20	21.0	7	10	3.6	11.65	33	37	45	0	0	81	18	24			15.5
17	07.07.2003	2373	1.50		52	24	27.5	12	16	5.0	11.6	28	31	45	0	0	45	21.0	42			13.0
18	08.07.2003	2415	1.53		50	24	25.5	10	13	4.5	11.65	27.5	30.5	51	0	0	82	21	42	507	152	12.75
19	09.07.2003	2415	1.53		50	24	25.5	10	13	4.5	11.7	27.5	30.5	51	0	0	82	21	42	507	152	12.75
20	10.07.2003	2415	1.53		50	24	25.5	10	13	4.5	11.7	27.5	30.5	51	0	0	82	21	42	507	152	12.75

Day no.	Date	Depth	MW	T	AV	PV	YP	Gel 10sec	Gel 10min	Gel 30min	HTHP	ES	Ex Lime	Cl-	Solids	Oil	Water	O/W	HGS	LGS
		m	sg	°C	cP	cP	Pa	Pa	Pa	ml	ml	V	kg/m3	g/l	%	%	%		kg/m3	kg/m3
	12 1/4" Section: VersaPro																			
25	15.07.2003	2427	1.70		61	50	10.5	5	8		2.4	620	10.36	145	26.0	54.0	20.0	73/27	961	52
26	16.07.2003	2835	1.70	34	60	50	10.0	6	8		2.0	625	8.51	143	24.5	53.0	22.5	70/30	925	72
27	17.07.2003	3194	1.70	38	58	48	10.0	5	8	9	1.4	640	8.88	143	24.9	53.4	21.7	71/23	912	92
28	18.07.2003	3471	1.70	42	57	46	10.5	6	8	9	3.9	625	9.62	168	24.8	56.2	19.0	75/25	929	77
29	19.07.2003	3593	1.70	45	55	45	10.0	5	8	9	4.2	620	8.14	153	25.7	54.6	19.7	74/26	884	131
30	20.07.2003	3645	1.70		55	46	9.0	5	8	9	4.5	615	7.77	153	25.8	54.6	19.6	74/26	882	134
31	21.07.2003	3656	1.70		56	46	9.5	6	8	9	4.5	620	6.66	159	25.8	55.4	18.8	75/25	893	124
32	22.07.2003	3698	1.70	60	54	45	9.0	5	8	9	4.0	618	8.88	163	26.3	55.3	18.4	75/25	875	147
33	23.07.2003	3769	1.70	59	53	43	10.0	6	8	9	4.8	620	5.92	146	26.6	55.3	18.1	76/24	867	164
34	24.07.2003	3844	1.75	64	58	47	10.5	6	8	10	4.2	644	5.92	185	26.9	56.9	16.2	78/22	980	101
35	25.07.2003	3852	1.79		59	48	10.5	7	9	10	4.4	610	5.55	190	28.2	56.0	15.8	78/22	974	139
36	26.07.2003	3908	1.80	54	57	47	10.0	6	8	10	4.3	644	4.44	190	28.8	57.0	14.3	80/20	1031	124
37	27.07.2003	3908	1.80		57	47	10.0	6	8	10	4.3	644	4.44	189	28.8	57.0	14.2	80/20	1030	125
38	28.07.2003	3908	1.80		57	47	10.0	6	8	10	4.3	644	4.44	189	28.8	57.0	14.2	80/20	1030	125
39	29.07.2003	3908	1.80		58	47	11.0	6	8	10	4.3	646	4.44	189	28.8	57.0	14.2	80/20	1032	125
40	30.07.2003	3908	1.80		56	47	9.0	6	8	10	4.8	625	4.44	196	28.8	56.0	14.2	80/20	1010	162
41	31.07.2003	3908	1.80		60	48	12.0	7	8	10	4.8	612	4.44	193	29.7	56.0	14.3	80/20	1014	157
	8 1/2" Section: VersaPro																			
42	01.08.2003	3927	1.90		60	49	10.5	6	8	10	4.6	620	5.55	198	31.8	54.6	13.5	80/20	1167	124
43	02.08.2003	3955	1.93	44	66	55	10.5	7	9	10	4.1	608	8.88	191	32.4	54.6	13.0	80/20	1195	125
44	03.08.2003	4032	1.92	26	58	48	10.0	6	8	10	3.9	645	7.4	181	31.8	54.9	13.3	80/20	1193	113
45	04.08.2003	4090	1.90	25	57	47	10.0	7	9	10	4	623	11.5	189	32.0	55.0	13.0	80/20	1155	130
46	05.08.2003	4140	1.90	23	57	47	10.0	7	9	10	3.8	621	11.1	171	31.6	54.7	13.7	80/20	1156	128
47	06.08.2003	4140	1.90	23	56	46	9.5	6	9	10	3.8	615	11.1	171	31.6	54.7	13.7	80/20	1156	128
48	07.08.2003	4140	1.90	37	45	37	8.0	5	7	8	4.4	600	11.5	238	30.5	59	10.5	84/16	1240	49
49	08.08.2003	4140	1.90		51	43	8.0	5	8	8	5.5	600	12.2	183	31.2	56	12	82/18	1171	132

Day no.	Date	Depth	MW	T	AV	PV	YP	Gel 10sec	Gel 10min	Gel 30min	HTHP	ES	Ex Lime	Cl-	Solids	Oil	Water	O/W	HGS	LGS
		m	sg	°C	cP	cP	Pa	Pa	Pa	ml	ml	V	kg/m3	g/l	%	%	%		kg/m3	kg/m3
6 1/2" & 6 1/8" Section: VersaPro																				
50	09.08.2003	4140	1.90		54	46	8.0	5.5	7.5	9.0	5.5	600	12.9	171	32	54	14	79/21	1147	144
51	10.08.2003	4140	1.91	37	56	47	8.5	5.5	8.0	9.0		600	11.5	179	31	55	14	80/20	1200	86
52	11.08.2003	4140	1.90		52	44	8.0	5.0	7.5	8.0		600	12.2	175	30	56	14	80/20	1231	43
53	12.08.2003	4143	1.98	31	54	45	9.0	5.0	7.0	7.5	3.9	603	12.2	179	34	54	12	82/18	1253	137
54	13.08.2003	4177	1.98	25	45	39	5.5	5.0	6.5	7.0	4.0	608	14.8	181	33	56	11	84/16	1302	84
55	14.08.2003	4177	1.98		42	36	5.5	4.5	6.0	7.0	3.8	605	14.8	181	33	56	11	84/16	1302	84
56	15.08.2003	4281	1.98	21	42	36	5.5	4.5	6.0	7.0	4.0	608	14.8	200	33	57	10	85/15	1307	81
57	16.08.2003	4347	1.98	24	41	35	5.5	4.5	6.0	7.0	4.2	603	11.1	200	33	57	10	85/15	1307	81
58	17.08.2003	4370	1.98	23	41	35	6.0	4.0	5.5	6.0	4.2	610	10.4	200	33	57	10	85/15	1307	81
59	18.08.2003	4459	1.98	23	40.5	35	5.5	4.0	6.0	6.5	4.4	607	11.1	200	33	57	10	85/15	1307	81
60	19.08.2003	4500	1.98	24	40	35	5.0	4.0	6.0	6.5	4.2	602	12.6	190	33	57	10	85/15	1308	82
61	20.08.2003	4500	1.98		40	34	6.0	4.0	6.0	6.5	4.0	604	12.2	190	33	57	10	85/15	1308	82
62	21.08.2003	4500	1.98		40	34	6.0	4.0	6.0	6.5	4.0	604	12.2	190	33	57	10	85/15	1308	82
63	22.08.2003	4500	1.98		41	35	5.5	4.5	6.0	6.5	4.0	604	12.2	190	33	57	10	85/15	1308	82
64	23.08.2003	4500	1.98		40	34	6.0	4.0	6.0	6.5	4.2	602	11.1	190	33	57	10	85/15	1308	82
65	24.08.2003	4500	1.98		41	35	5.5	4.5	6.0	6.5	4.0	609	11.8	200	33	57	10	85/15	1307	81
66	25.08.2003	4500	1.98		41	35	6.0	4.5	6.0	6.5	4.2	609	11.8	190	33	57	10	85/15	1308	82
67	26.08.2003	4500	1.98		41	35	6.0	4.5	6.0	6.5	4.2	609	11.8	190	33	57	10	85/15	1308	82
68	27.08.2003	4500	1.80		34	29	4.5	4.0	5.0		4.0	424	11.8	142	28	60	12	83/17	1085	84
69	28.08.2003	1270	1.80		34	29	4.5	4.0	5.5		4.0	443	11.8	136	28	61	11	85/15	1092	81
70	29.08.2003	1270	1.80		34	29	4.5	4.0	5.5		4.0	443	11.8	136	28	61	11	85/16	1092	81

Day no.	Date	Depth	MW	FV	AV	PV	YP	Gel 10 sec	Gel 10 min	API	pH	Pf	Mf	Cl- x 1000	TH	Ca++	KCl	Solids correction	MBT	HGS	LGS	Sil
		m	sg	s/qt.	cP	cP	Pa	Pa	Pa	ml		ml	ml	kg/m3	mg/l	mg/l	kg/m3	%	kg/m3	kg/m3	kg/m3	%
P&A Section: Sildril mud.																						
71	30.08.2003	858	1.53		35	18	17.0	8	10.0	4		11.5						18				
72	31.08.2003	858	1.53		36	18	18.0	9	10.5	4		11.5						18				
73	01.09.2003	858	1.53		36	18	18.0	9	10.5	4		11.5						18				
74	02.09.2003	383	1.50		35	18	17.0	9	10.5	4		11.5						18				

3.4.7 Deviation Summary

Deviation Summary
Well 6406/1-2
Note: Datum (0 depth) is 23 m above MSL (water depth = 383 m)

TMD (m RT)	Angle (deg.)	Azimuth (deg.)	CMT (Calc./ Misrunn/ Tie-in)	TVD (m RT)	North (m)	East (m)	Horizontal distance (m)	DLS (deg./30m)	BUR (deg./30m)	TYPE
0.00	0.00	0.00	NNN	0.00	0.00	0.00	0.00	0.00	0.00	
406.00 (seabed)	0.00	0.00	NNN	406.00	0.00	0.00	0.00	0.00	0.00	MWD
484.10	0.53	114.26	YNN	484.10	-0.15	0.33	0.36	0.20	0.20	MWD
504.50	0.79	108.81	YNN	504.50	-0.23	0.55	0.60	0.39	0.38	MWD
534.00	0.35	132.45	YNN	534.00	-0.36	0.81	0.88	0.50	-0.45	MWD
558.00	0.70	101.08	YNN	558.00	-0.44	1.01	1.10	0.55	0.44	MWD
590.00	0.26	99.32	YNN	589.99	-0.49	1.27	1.36	0.41	-0.41	MWD
615.00	0.53	152.58	YNN	614.99	-0.60	1.38	1.50	0.51	0.32	MWD
649.00	0.53	112.68	YNN	648.99	-0.80	1.60	1.78	0.00	0.00	MWD
677.00	0.70	86.49	YNN	676.99	-0.84	1.89	2.06	0.35	0.18	MWD
702.00	0.53	71.11	YNN	701.99	-0.79	2.15	2.29	0.28	-0.20	MWD
735.00	0.88	70.75	YNN	734.99	-0.66	2.53	2.62	0.32	0.32	MWD
765.00	0.62	75.41	YNN	764.98	-0.54	2.91	2.96	0.27	-0.26	MWD
794.00	0.53	103.27	YNN	793.98	-0.53	3.19	3.23	0.30	-0.09	MWD
823.00	0.44	77.61	YNN	822.98	-0.54	3.43	3.47	0.24	-0.09	MWD
852.00	0.44	73.13	YNN	851.98	-0.48	3.64	3.67	0.00	0.00	MWD
880.00	0.35	75.50	YNN	879.98	-0.43	3.83	3.85	0.10	-0.10	MWD
908.00	0.53	37.44	YNN	907.98	-0.31	3.99	4.00	0.36	0.19	MWD
937.00	0.44	60.82	YNN	936.98	-0.15	4.17	4.17	0.22	-0.09	MWD
967.00	0.53	51.42	YNN	966.98	0.00	4.38	4.38	0.12	0.09	MWD
995.00	0.62	22.15	YNN	994.98	0.22	4.54	4.54	0.32	0.10	MWD
1024.00	0.44	30.15	YNN	1023.97	0.46	4.65	4.67	0.20	-0.19	MWD
1053.00	0.26	42.36	YNN	1052.97	0.61	4.75	4.79	0.20	-0.19	MWD
1082.00	0.44	37.53	YNN	1081.97	0.74	4.86	4.92	0.19	0.19	MWD
1112.00	0.35	27.07	YNN	1111.97	0.92	4.98	5.06	0.11	-0.09	MWD
1140.00	0.62	30.15	YNN	1139.97	1.12	5.09	5.21	0.29	0.29	MWD
1169.00	0.18	342.51	YNN	1168.97	1.30	5.16	5.32	0.53	-0.46	MWD
1199.00	0.97	332.84	YNN	1198.97	1.57	5.03	5.27	0.79	0.79	MWD
1204.00	1.14	351.48	YNN	1203.97	1.66	5.00	5.27	2.28	1.02	MWD
1235.00	1.67	338.21	YNN	1234.96	2.38	4.79	5.35	0.60	0.51	MWD
1265.00	1.58	339.52	YNN	1264.95	3.18	4.48	5.49	0.10	-0.09	MWD
1294.50	1.49	337.02	YNN	1294.44	3.91	4.19	5.73	0.11	-0.09	MWD
1323.00	1.58	336.01	YNN	1322.93	4.61	3.88	6.03	0.10	0.09	MWD
1351.50	1.51	332.67	YNN	1351.42	5.30	3.55	6.38	0.12	-0.07	MWD
1380.00	1.32	328.36	YNN	1379.91	5.92	3.21	6.73	0.23	-0.20	MWD
1409.00	1.32	326.34	YNN	1408.90	6.48	2.85	7.08	0.00	0.00	MWD
1439.00	1.32	319.48	YNN	1438.89	7.03	2.43	7.44	0.00	0.00	MWD
1467.00	1.49	325.55	YNN	1466.88	7.57	2.01	7.84	0.24	0.18	MWD
1496.00	1.58	323.26	YNN	1495.87	8.21	1.56	8.35	0.11	0.09	MWD
1525.00	1.49	322.21	YNN	1524.86	8.82	1.09	8.89	0.10	-0.09	MWD
1554.00	1.41	322.74	YNN	1553.85	9.41	0.64	9.43	0.08	-0.08	MWD
1583.00	1.41	316.93	YNN	1582.84	9.95	0.18	9.95	0.00	0.00	MWD
1612.00	1.41	321.07	YNN	1611.84	10.49	-0.28	10.49	0.00	0.00	MWD
1641.00	1.49	319.40	YNN	1640.83	11.05	-0.75	11.08	0.09	0.08	MWD

TMD (m RT)	Angle (deg.)	Azimuth (deg.)	CMT (Calc./ Misrunn/ Tie-in)	TVD (m RT)	North (m)	East (m)	Horizontal distance (m)	DLS (deg./30m)	BUR (deg./30m)	TYPE
1670.00	1.32	318.78	YNN	1669.82	11.59	-1.22	11.65	0.18	-0.18	MWD
1698.00	1.41	318.96	YNN	1697.81	12.09	-1.66	12.21	0.10	0.10	MWD
1727.00	1.14	315.53	YNN	1726.80	12.57	-2.09	12.74	0.29	-0.28	MWD
1756.00	1.32	313.60	YNN	1755.80	13.00	-2.54	13.25	0.19	0.19	MWD
1785.00	1.23	311.75	YNN	1784.79	13.44	-3.01	13.77	0.10	-0.09	MWD
1814.00	1.32	309.99	YNN	1813.78	13.86	-3.50	14.30	0.10	0.09	MWD
1843.00	1.49	301.55	YNN	1842.77	14.28	-4.08	14.85	0.28	0.18	MWD
1872.00	1.41	306.83	YNN	1871.76	14.69	-4.68	15.42	0.16	-0.08	MWD
1900.50	1.49	300.15	YNN	1900.25	15.08	-5.29	15.98	0.20	0.08	MWD
1929.50	1.49	298.74	YNN	1929.24	15.45	-5.94	16.56	0.00	0.00	MWD
1958.50	1.49	296.81	YNN	1958.23	15.80	-6.61	17.13	0.00	0.00	MWD
1987.50	1.76	292.33	YNN	1987.22	16.14	-7.36	17.74	0.31	0.28	MWD
2016.50	1.85	283.54	YNN	2016.21	16.42	-8.22	18.37	0.30	0.09	MWD
2045.50	1.41	283.98	YNN	2045.20	16.62	-9.03	18.91	0.46	-0.46	MWD
2075.50	1.49	282.22	YNN	2075.19	16.79	-9.77	19.42	0.09	0.08	MWD
2105.00	1.23	276.07	YNN	2104.68	16.91	-10.45	19.88	0.30	-0.26	MWD
2133.00	1.14	280.64	YNN	2132.67	16.99	-11.03	20.25	0.14	-0.10	MWD
2161.00	1.23	282.57	YNN	2160.67	17.11	-11.59	20.66	0.11	0.10	MWD
2190.00	1.23	296.54	YNN	2189.66	17.31	-12.18	21.17	0.00	0.00	MWD
2219.00	1.41	300.41	YNN	2218.65	17.63	-12.76	21.77	0.21	0.19	MWD
2248.00	1.58	296.02	YNN	2247.64	17.99	-13.43	22.45	0.21	0.18	MWD
2277.00	1.58	306.39	YNN	2276.63	18.40	-14.11	23.19	0.00	0.00	MWD
2306.00	1.67	311.64	YNN	2305.62	18.92	-14.75	23.99	0.18	0.09	MWD
2335.00	1.85	317.64	YNN	2334.61	19.54	-15.38	24.87	0.27	0.19	MWD
2363.50	1.67	318.61	YNN	2363.09	20.20	-15.96	25.74	0.19	-0.19	MWD
2386.00	1.76	320.63	YNN	2385.58	20.71	-16.40	26.42	0.14	0.12	MWD
2426.00	1.76	313.25	YNN	2425.56	21.61	-17.24	27.64	0.00	0.00	MWD
2455.00	1.67	307.36	YNN	2454.55	22.17	-17.90	28.49	0.20	-0.09	MWD
2483.00	1.67	319.49	YNN	2482.54	22.72	-18.49	29.29	0.00	0.00	MWD
2512.00	1.49	323.62	YNN	2511.53	23.35	-18.99	30.09	0.22	-0.19	MWD
2540.00	1.67	310.79	YNN	2539.52	23.91	-19.51	30.86	0.42	0.19	MWD
2571.00	1.49	304.99	YNN	2570.51	24.44	-20.18	31.69	0.23	-0.17	MWD
2599.00	1.14	307.01	YNN	2598.50	24.81	-20.70	32.31	0.38	-0.38	MWD
2628.00	1.32	301.83	YNN	2627.49	25.16	-21.22	32.91	0.22	0.19	MWD
2657.00	1.41	299.63	YNN	2656.48	25.51	-21.81	33.57	0.11	0.09	MWD
2686.00	1.49	287.85	YNN	2685.47	25.81	-22.48	34.22	0.32	0.08	MWD
2715.50	1.49	281.96	YNN	2714.96	26.00	-23.22	34.86	0.00	0.00	MWD
2744.50	1.23	291.98	YNN	2743.96	26.20	-23.88	35.45	0.36	-0.27	MWD
2772.50	1.58	288.82	YNN	2771.95	26.43	-24.52	36.06	0.38	0.38	MWD
2801.50	1.76	289.52	YNN	2800.93	26.71	-25.32	36.81	0.19	0.19	MWD
2830.50	1.93	286.89	YNN	2829.92	27.00	-26.21	37.63	0.20	0.18	MWD
2855.00	1.85	284.16	YNN	2854.41	27.22	-26.99	38.33	0.15	-0.10	MWD
2886.50	1.93	279.94	YNN	2885.89	27.44	-28.00	39.20	0.15	0.08	MWD
2912.00	2.29	285.74	YNN	2911.37	27.65	-28.91	40.01	0.49	0.42	MWD
2939.00	2.55	283.64	YNN	2938.35	27.94	-30.02	41.01	0.31	0.29	MWD
2972.00	3.25	284.78	YNN	2971.31	28.35	-31.63	42.48	0.64	0.64	MWD
3003.00	4.04	282.58	YNN	3002.24	28.81	-33.55	44.22	0.78	0.76	MWD
3031.00	3.96	283.20	YNN	3030.17	29.25	-35.45	45.96	0.10	-0.09	MWD
3056.00	3.78	281.00	YNN	3055.12	29.60	-37.10	47.46	0.28	-0.22	MWD
3088.00	3.52	282.93	YNN	3087.05	30.02	-39.10	49.29	0.27	-0.24	MWD
3117.00	3.43	281.70	YNN	3116.00	30.40	-40.81	50.89	0.12	-0.09	MWD

TMD (m RT)	Angle (deg.)	Azimuth (deg.)	CMT (Calc./ Misrunn/ Tie-in)	TVD (m RT)	North (m)	East (m)	Horizontal distance (m)	DLS (deg./30m)	BUR (deg./30m)	TYPE
3146.50	3.52	280.82	YNN	3145.44	30.74	-42.57	52.51	0.11	0.09	MWD
3176.50	3.52	282.14	YNN	3175.39	31.11	-44.37	54.19	0.00	0.00	MWD
3205.00	3.43	280.73	YNN	3203.84	31.45	-46.07	55.78	0.13	-0.09	MWD
3234.50	3.69	282.76	YNN	3233.28	31.83	-47.86	57.48	0.29	0.26	MWD
3263.00	3.34	281.44	YNN	3261.73	32.20	-49.57	59.10	0.38	-0.37	MWD
3293.00	3.34	283.37	YNN	3291.67	32.57	-51.27	60.74	0.00	0.00	MWD
3324.00	3.43	282.23	YNN	3322.62	32.98	-53.06	62.47	0.11	0.09	MWD
3353.00	3.34	280.56	YNN	3351.57	33.31	-54.74	64.08	0.14	-0.09	MWD
3378.50	3.52	281.00	YNN	3377.02	33.60	-56.23	65.51	0.21	0.21	MWD
3407.00	3.61	280.65	YNN	3405.47	33.93	-57.98	67.18	0.10	0.09	MWD
3436.50	3.52	279.68	YNN	3434.91	34.26	-59.78	68.90	0.11	-0.09	MWD
3467.00	3.43	280.47	YNN	3465.36	34.58	-61.60	70.64	0.10	-0.09	MWD
3497.50	3.34	280.91	YNN	3495.80	34.91	-63.37	72.35	0.09	-0.09	MWD
3524.50	3.43	282.40	YNN	3522.76	35.24	-64.93	73.88	0.14	0.10	MWD
3555.00	3.61	282.32	YNN	3553.20	35.64	-66.76	75.68	0.18	0.18	MWD
3582.50	3.52	281.88	YNN	3580.64	36.00	-68.43	77.32	0.10	-0.10	MWD
3612.00	3.52	284.87	YNN	3610.09	36.41	-70.19	79.08	0.00	0.00	MWD
3623.00	3.52	284.60	YNN	3621.07	36.59	-70.85	79.74	0.00	0.00	MWD
3629.50	3.43	289.35	YNN	3627.56	36.70	-71.22	80.12	1.39	-0.42	MWD
3637.00	3.52	290.23	YNN	3635.04	36.86	-71.65	80.57	0.42	0.36	MWD
3653.00	3.08	287.68	YNN	3651.02	37.16	-72.52	81.49	0.87	-0.83	MWD
3666.00	2.20	296.91	YNN	3664.00	37.37	-73.08	82.08	2.25	-2.03	MWD
3694.00	0.88	140.90	YNN	3692.00	37.45	-73.42	82.42	3.24	-1.41	MWD
3724.00	3.34	119.19	YNN	3721.97	36.85	-72.51	81.34	2.54	2.46	MWD
3782.00	6.68	118.20	YNN	3779.74	34.43	-68.06	76.28	1.73	1.73	MWD
3811.00	6.77	118.58	YNN	3808.54	32.81	-65.08	72.88	0.10	0.09	MWD
3828.00	6.95	117.51	YNN	3825.42	31.86	-63.28	70.85	0.39	0.32	MWD
3841.00	7.30	117.35	YNN	3838.32	31.11	-61.85	69.24	0.81	0.81	MWD
3867.00	7.30	124.73	YNN	3864.11	29.42	-59.03	65.95	0.00	0.00	MWD
3933.00	8.27	117.60	YNN	3929.50	24.83	-51.38	57.06	0.62	0.44	MWD
3954.00	8.44	120.60	YNN	3950.28	23.34	-48.71	54.01	0.67	0.24	MWD
3983.50	8.62	124.82	YNN	3979.46	20.98	-45.03	49.68	0.66	0.18	MWD
4013.00	8.71	125.78	YNN	4008.62	18.41	-41.40	45.31	0.17	0.09	MWD
4043.00	8.53	130.53	YNN	4038.28	15.64	-37.87	40.97	0.73	-0.18	MWD
4073.00	8.44	134.75	YNN	4067.95	12.64	-34.62	36.85	0.63	-0.09	MWD
4100.00	8.62	138.53	YNN	4094.65	9.73	-31.87	33.32	0.65	0.20	MWD
4121.00	8.71	142.22	YNN	4115.41	7.29	-29.85	30.73	0.80	0.13	MWD
4170.00	8.44	146.70	YNN	4163.87	1.36	-25.61	25.64	0.44	-0.17	MWD
4198.00	6.77	150.04	YNN	4191.62	-1.79	-23.65	23.72	1.85	-1.79	MWD
4227.00	6.33	154.52	YNN	4220.43	-4.72	-22.11	22.61	0.70	-0.46	MWD
4256.00	6.77	143.89	YNN	4249.24	-7.54	-20.42	21.76	1.33	0.46	MWD
4284.00	6.77	146.17	YNN	4277.05	-10.25	-18.52	21.17	0.00	0.00	MWD
4314.00	6.24	146.44	YNN	4306.85	-13.07	-16.64	21.16	0.53	-0.53	MWD
4341.00	5.63	151.10	YNN	4333.71	-15.45	-15.19	21.67	0.86	-0.68	MWD
4369.00	5.19	150.30	YNN	4361.58	-17.76	-13.90	22.55	0.48	-0.47	MWD
4400.00	4.31	140.20	YNN	4392.48	-19.87	-12.46	23.45	1.17	-0.85	MWD
4429.00	3.52	140.81	YNN	4421.41	-21.40	-11.20	24.15	0.82	-0.82	MWD
4458.00	2.81	141.08	YNN	4450.37	-22.64	-10.19	24.83	0.73	-0.73	MWD
4472.00	1.93	157.86	YNN	4464.35	-23.13	-9.88	25.15	2.38	-1.89	MWD
4494.00	1.58	225.10	YNN	4486.35	-23.68	-9.96	25.69	2.68	-0.48	MWD
Estimated values for well TD:										

TMD (m RT)	Angle (deg.)	Azimuth (deg.)	CMT (Calc./ Misrunn/ Tie-in)	TVD (m RT)	North (m)	East (m)	Horizontal distance (m)	DLS (deg./30m)	BUR (deg./30m)	TYPE
4500.00	*1.49*	*243.44*		*4492.34*	*-23.78*	*-10.09*	*25.83*	*2.49*	*-0.48*	*Estimate*

3.5 Plug and Abandonment

Found below:
- P&A Program used for well 6406/1-2
- Listing of the actual P&A of the well
- Sketch of actual P&A

3.5.1 P&A Program used for the well

1. OBJECTIVES

The plugging and abandonment program has the following objectives:

1) Isolate the permeable zones with cement plugs to permanently prevent the flow of gas or other formation fluids.

2) Isolate the casing annuli; 30" x 20" x 13 3/8" x 9 5/8". Then remove casings a minimum of 5 m below the mud line.

3) To ensure that there will be no obstructions of any kind remaining on the seabed at the location site which may cause damage or impediment to fishing, shipping or other activities.

2. DESIGN CRITERIA

Safety: Procedures will be applied to insure the safety of the installation and personnel onboard during the abandonment operation.

Environment: The well will be plugged to insure that no contamination to the environment occurs during plugging or in the future.

Regulatory Requirements: All requirements outlined by the NPD will be implemented as a minimum requirement for permanent plugging.

3. CASING DESIGN

Casing	Weight #	Drift ID	Capacity l/m	Shoe Depth MRDT
30"	309	28"	407.8	455 m
20"	133	18.575"	178.1	1199 m
13 3/8"	72	12.25	772	2404 m
9 5/8"	53.5	8.5"	36.9	3901 m
7" liner	32	5.9"	18.8	4139 m

4. SAFETY

Care is to be taken when handling and laying down casing, especially wellhead and 30" conductor.

Pre-job Safety Meetings to be conducted as required, during these operations.

5. REGULATORY REQUIREMENTS

1. The wellhead installation must be removed to at least 5 m below the seabed.

2. Two barriers are required. A cement plug must be placed in the production and intermediate casing/ liner.

3. A minimum 100 meter cement plug must be set across permeable or potential flowing zones such tat the top of the plug is at least 50 m above the top of the zone.

4. A minimum 200 m cement plug must be set in the top part of the well such that the top of the plug is not more than 50 m below the seabed.

5. Cement plugs acting as barriers between the open hole and annulus require to be tagged with 10 ton set-down weight and to be pressure tested to 70 bar above the measured formation strength at the casing shoe between the open hole and annulus in question.

6. The ROV will do a final seabed survey to check for any debris at well location.

6. PLUGGING PROGRAM

Plug # 1 will be a cement plug isolating the interval: 4500-3620m.
The plug will be set in multiple stages as a continuous cement plug.
The plug will be tagged and pressure tested.

The 9 5/8" casing will then be cut at 950 m.

Plug # 2 will be a balanced cement plug set from 1000 m to 850 m.
The plug will be tagged and pressure tested.

The 13 3/8" casing will then be cut at 800 m.

Plug # 3 will be a balanced cement plug set from 850 m to 650 m.
The plug will be tagged and pressure tested.

Plug # 4 will be a cement plug set from top of Plug # 3 and up to 430 m (seabed is at 406 m). The plug will be tagged.

The BOP-stack will then be pulled.

The 30" conductor together with the 20" casing will be cut at 412 m (6 m below seabed).

A seabed survey will be conducted at the conclusion of the well operations.

7. PLUGGING PROCEDURE

The slurry composition for the cement plugs will be provided prior to starting the P&A.

PLUG #1, (4500m – 3620m)

1. Set a cement plug (in stages) in the open hole from bottom of the hole and up to 100 m above the top of the 7" liner. (4500 m to 3720 m).

2. When Plug no. 1 has set, RIH and perform the following tests:

   a) Tag the plug with 10 MT to confirm the depth to top of the plug, and that the plug has set properly.

   b) Pressure test the plug for 10 minutes to 125 bar with 1.98 s.g. mud.

   Note: If depth to firm top of Plug no. 1 is confirmed to be less than 50 m above top of the 7" liner, then an additional cement plug must be set on top of Plug no. 1. In this case the additional plug must be tagged and pressure tested as stated above for Plug no. 1.

CUTING AND RETRIEVING 9 5/8" CASING AT 950m

3. Cut the 9 7/8" casing at 950 m and retrieve the cut-off casing.

   a) Make up and RIH wear bushing retrieving tool and 9 7/8" casing cutter assembly on mud motor spaced out to cut the 9 5/8" casing in middle of a joint at 950 m and also that the UAP can be closed around DP.

   b) Displace hole to 1.8 s.g. Oil based mud

   c) Close the UAP on DP and line up to take the returns through the choke line. Cut the casing and note pressure drop when casing is cut.

   d) With the UAP closed, monitor for any pressure build-up. If no build up, open choke and flow check well on trip tank. Open UPA and observe well static prior to POOH.

   e) POOH, while retrieve wear bushing, lay down the cutting assembly.

   f) Make up and RIH with 9 5/8" casing spear, latch and retrieve 9 5/8" casing and seal assembly.

3.5.2 Actual Plugging and Abandonment of well 6406/1-2

Well 6406/1-2 was permanently plugged and abandoned as follows:

Plug no. 1: Cement from 4500 m up to 3637 m.

9 7/8" casing was cut at 947 m (541 m below seabed) and retrieved.

Plug no. 2: Cement from 1000 m up to 858 m.

13 3/8" casing was cut at 649 m (243 m below seabed) and retrieved.

Plug no. 3: Cement from 700 m up to 578 m.

Plug no. 4: Cement from 578 m up to 429 m.

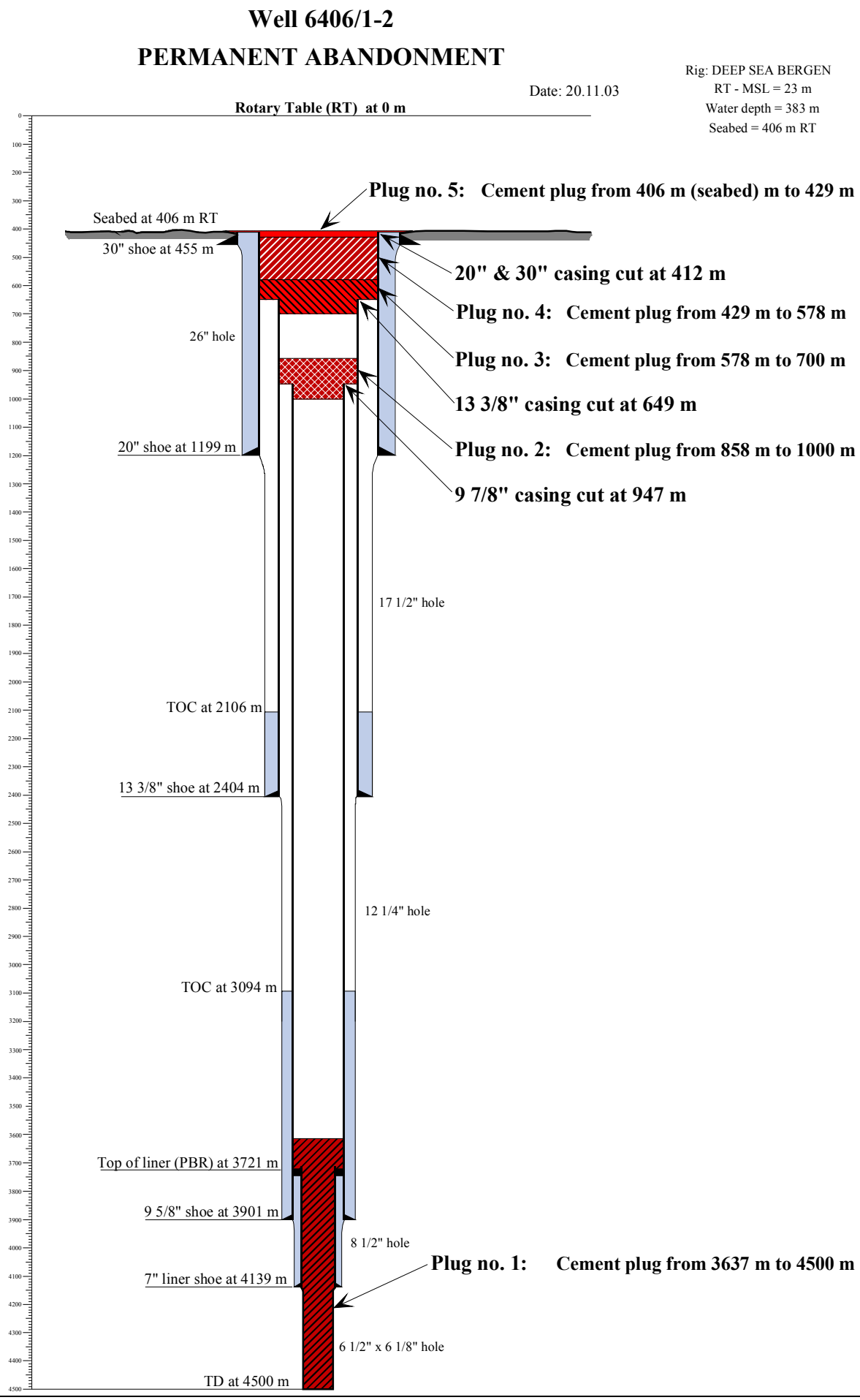
The 20" and 30" casing strings were cut at 412 m (6 m below seabed) and retrieved.

Plug no. 5: Cement from 429 m and up to 406 m (seabed).

Note: The 30" conductor was driven.
There was cement behind the 20" casing string up to seabed at 406 m.
Top of cement behind the 13 3/8" casing was calculated to be at 2106 m.
Top of cement behind the 9 5/8" casing was calculated to be at 3094 m.

See also the attached figure of P & A.

3.5.3 P & A Sketch



3.6 Logistics & Materials

3.6.1 Offices

The drilling operations office was located at Norsk Agip offices, Forus. The main logistics coordinator was placed at Vestbase in Kristiansund.

3.6.2 Supply base

The operating supply base for the rig during the drilling of well 6406/1-2 was Vestbase in Kristiansund.

Offices
2 adjourning offices, fully furnished (phone, fax, copy machine etc.) were rented in the Vestbase main building. The offices had a view over the base and the sea and were of good standard.

Flats
1 bungalow and 1 flat were rented through Vestbase for the period of operation (rent from 15.05.03 to 07.09.03). They were furnished, and found adequate and satisfactory by Norsk Agip's personnel in Kristiansund.

Cars
Vestbase provided 2 rented cars (1 Mazda 323 – 1 Subaru Impress) for the Norsk Agip personnel.

Vestbase storage facilities used by Norsk Agip
Outdoor storage/pipe racks: An area of 2000 m^2 used for storage of tubulars and heavy equipment. The area was considered as "Bounded area".

Indoor storage: A dedicated area was used in the same warehouse as used by Shell & Hydro.

A transit area of 400 m^2 was at Agip's disposal for materials/ equipment out/in. It was situated in front of Vestbase Quay Office.

The materials & equipment transported to/from the rig Deepsea Bergen was handled by a supply vessel (Northern Corona and her substitutes).

The service loading/offloading and handling/stacking was proved by Vestbase.

Other services such as external transports, rental of offshore transport units, basket, containers etc. and waste handling, were also included in the logistics service contract with Vestbase.

Supply of marine diesel oil
Marine diesel oil was supplied by Hydro Texaco (Contract no. 4500003132) receiving loading facilities into Vestbase.

Total purchase of diesel oil was 2425 m^3 (605 m^3 left on board Deepsea Bergen and debited to Odfjell).

The organization of Vestbase was found to be efficient, reliable and of high professional standard.

The services offered by Vestbase covered the requirements by Norsk Agip. Vestbase carried out these services in a satisfactory manner.

3.6.3 Helicopter

The contract for helicopter services was awarded to Norsk Helikopter A/S. The Heliport was at Kvernberget Airport at Kristiansund.

The craft used was a Sikorsky S 76C LN-ONY configured with 10 seats.

5 flights per week to/from Deepsea Bergen was the standard schedule used. Extra flights were satisfactorily arranged on short notice (4-5 hours).

The computerized Passengers/cargo booking system "DaWinci" was utilized and found satisfactory for Norsk Agip's helicopter booking requirements.

The security control at Kristiansund Heliport was carried out by SECURITAS A/S.

During the well operations the helicopter activity (21.06. 03 – 07.09.03) was:

	Number of flights	Hours	Passengers out	Passengers in	Cargo in/out kg
JUNE	14	25.50	71	85	650
JULY	37	70.59	246	249	600
AUGUST	30	57.44	215	217	280
SEPT.	7	13.39	30	54	250

The helicopter services were performed to a high standard in an efficient and professional manner.

3.6.4 Supply/standby vessels

For moving the rig to the 6406/1-2 well location and for anchor handling operations, the vessels S/V Northern Admiral and Troms Supporter were chartered ad-hoc. Northern Admiral also provided transportation for the first materials/equipment shipment from Aker Base in Tananger.

For routine operations two vessels were chartered on long term:

- S/V Stril Herkules DNV class 3615 BHP as stand-by vessel
- S/V Norhern Corona AHTS class 15612 BHP

On 15.08.03 Northern Corona had a serious breakdown and went off hire. She was replaced temporarily by S/V Normand Mermaid – PSV class, 14200 BHP (from 15.08.03 to 22.08.03).

From 20.08.03 S/V Northern Crusader (AHTS class – 15612 BHP) was on hire (replacing Northern Corona) till the end of the well operations.

S/V Highland Monarch was hired from 04.08.03 to 08.08.03 for the transport of coring equipment from Aberdeen to Deepsea Driller – spot hire for the round trip.

During the last anchor handling and the towing of the rig to CCB outside Bergen, S/V Northern Corona was spot hired (from 01.09.03 – 08.09.03).

No major operational problems related to hired vessels were encountered during the well & rig move operations and all vessels showed to be reliable and efficient in their respective duties.

A total of 6654 ton of deck cargo was transported out/in during the well operations.

3.6.5 Materials

Ad-hoc contracts were issued for this drilling campaign, and they all including consignment/ restocking charge clauses. At the end of the operations all surplus items were therefore returned to the various suppliers.

Of consumables, only 13 3/8", 9 7/8", 9 5/8" and 7" casing was directly purchased by Norsk Agip.

The surplus casing have been transport to Polarbase, Hammerfest (where there is a rented stocking area) to be used in the next drilling campaign in the Barents Sea.

The scrap casing recovered from the well during the Plugging & Abandonment phase (75 ton of 13 3/8" and 9 7/8" casing) was sold to Petroleum Services A/S, Florø according to company procedure.

97 ton of unused Grade "G" cement was donated to a project working on remediation of contaminated sediments at Trondheim Harbor.

3.7 SAFETY AND ENVIRONMENT

3.7.1 Risk Analysis Summary and Implementation

Before starting the drilling operations on the well 6406/1-2 a risk analysis session was carried out and documented in a report. The report was submitted to the rig for follow-up by the drilling supervisors.

During the drilling of the well, various types of safety meetings and drills were held on the rig:

34 Pre-job Meetings, Safety Meetings & Safe Job Analysis
3 Kick Drills
1 Stripping Drill

General Safety Meetings with the various crews were held frequently, and along with the various safety meetings a general operation meeting was held daily on the rig with key personnel to discuss upcoming operations and improvement of communications on the rig site.

Unintentional Events related to personnel safety during the drilling of the well:

1 Medical treatment caused by accident during work.
1 Medical treatment caused by accident during private activities on time off.

3.7.2 Discharges, Emissions and Waste

3.7.3 Discharges, Emissions and Waste

Regular discharges to sea

Component	Discharge in ton
Illmenite	297,0
Barite	24,3
Cementing chemicals	21,7
Mud chemicals	638,8
Rig chemicals	8,2
Cuttings	1 149,0
Total discharges	**2 139,0**

Chemical discharges, categorized using SFT's color categories:

Category	Discharges in ton			
	Cement	Mud	Rig	Total
Green	45,88	935,79	5,71	**987,38**
Yellow	0,09	0,00	1,12	**1,21**
Red	**0,00**	**0,00**	**1,36**	**1,36**
Total	**45,97**	**935,79**	**8,20**	**989,95**

Of the 1,36 ton of red chemicals, 79 kg was red substances (hazardous component in the red chemicals). The discharge permit given by SFT allowed for discharges of 381 kg Red substance.

Accidental discharges:

Total amount of accidental discharges:	1 accidental discharge
Total volume discharged:	Ca. 2 m^3 oil-based mud
Estimated amount of Red substance discharged:	61 kg
Estimated amount of Yellow chemical discharged:	953 kg
Estimated amount of Green chemicals discharged:	1910 kg

Discharges to air from drilling operations:

Component	**Emissions from rig (ton)**
CO_2	4 201
NO_X	91,90
VOC	6,57
CO	9,19
NO_2	0,26
SO_2	3,68
Total emissions (ton)	**4 313**

Waste returned to shore

Ordinary Waste	**Total (kg)**	Final treatment method
Food contaminated waste	3 960	Energy recovery
Paper	140	Material recovery
Cardboard (brown paper)	1 350	Material recovery
Hard plastic	170	Material recovery
Wood	4 300	Energy recovery
G-cement	96 860	To be re-used
Unsorted waste	17 314	Recovery/Land fill
Total Ordinary Waste	**124 094**	

Metals	**Total (kg)**	**Final treatment method**
Metal	15 120	Segregate=>re-melt
Empty barrels	240	Segregate=>re-melt
Total Metals	**15 360**	

Hazardous Waste	**Total (kg)**	**Final treatment method**
Batteries	100	Material recovery
Fluorescent tubes/light bulbs	60	Material recovery
Paint	880	Material, energy
Oil contaminated material	26 625	Material, energy
Spray cans	150	Material recovery
Drilling waste	262 500	Material, energy
Chemical mixture w/ halogen	6 000	Material, energy
Total Hazardous Waste	**296 315**	

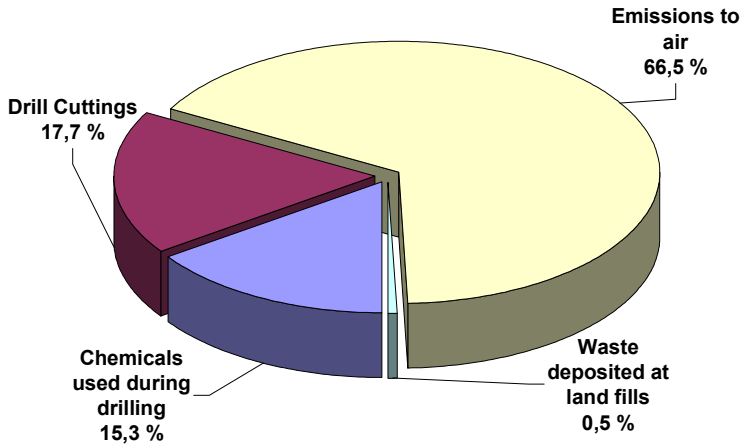
	Total (kg)
Total waste generation:	**435 769**

Estimated recycling rate (material and/or energy recycling) is 92,7 %.
97 ton of unused Grade “G” Cement was donated to a project working on remediation of contaminated sediments at Trondheim Harbor, sponsored in part by SFT.

An estimated total of 31,9 ton of waste was not recovered or incinerated, i.e. sent to landfills.

Total emissions, discharges and non-recycled waste generation

Component	Amount in ton
Chemicals used during drilling	990
Drill Cuttings	1 198
Emissions to air	4 313
Waste deposited at land fills	31,9



4. Enclosures

ENCLOSURE 1 6406/1-2 Composite Log

ENCLOSURE 2 6406/1-2 C.P.I.