OFFSHORE NORWAY

PL 238 - BLOCK 3/6

Report title:

WELL 3/6-1

FINAL WELL REPORT

Abstract:

This report deals with the geological and drilling results of well 3/6-1.
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, the computer processing interpretation of the reservoir section and the well test report.

Note:

Date: January 2001	**Report no.:**	
Prepared by:	**Verified by:**	**Approved by:**
D. Stensland (Subsurface Geologist)	T. Lorentzen-Styr (Project leader)	F. Conticini (Exploration manager)
T. Austlid (Drilling Engineer)	M. Zuvo (Drilling manager)	S. Bore (Development manager)

Distribution list

Norsk Agip A/S

Well file

Operation manager

Drilling Superintendent

Exploration Department (2 copies)

Agip Milan (2 copies)

SDØE (2 copies)

Enterprise Oil (2 copies)

NPD (2 copies)

TABLE OF CONTENTS

1. GENERAL

1.1 Introduction

Well 3/6-1 was drilled as an exploration well on the southern flank of the Hilde prospect induced by a salt diapir located in the southern part of Block 3/6, 3 km away from the Norwegian-Danish border.
The objectives of drilling the well 3/6-1 were:

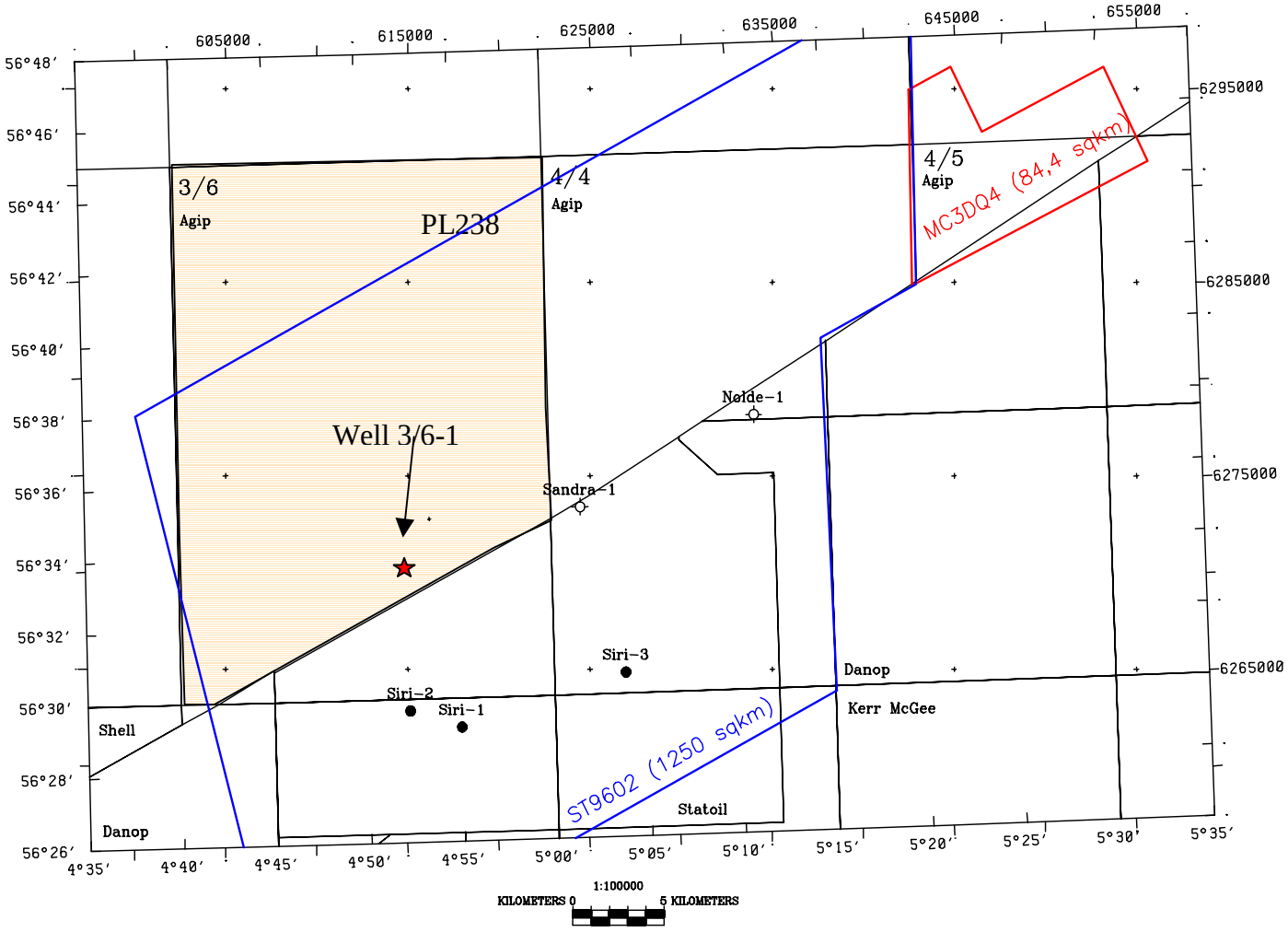
- To test hydrocarbon potential of the Heimdal formation
- To test the secondary target: Oligocene Lower Skade sands.
- To test the Chalk reservoir potential.

Costs of this well were shared in the following percentages:

Norsk Agip:	40%
Enterprise Oil:	35%
Statoil:	25%

The 3/6-1 well was drilled to total depth of 2167 meters.

1.2 LOCATION MAP



1.3 Basic Well Data

COUNTRY	:	Norway	
AREA	:	Offshore Norway	
PRODUCTION LICENCE No.	:	PL 238	
BLOCK	:	3/6	
WELL NAME	:	3/6-1	
PROSPECT	:	Hilde	
SEISMIC REFERENCE	:	3D seismic survey ST9602	
		inline 3466, crossline 3910	
COORDINATES (ED-50)	:	N 56deg 35min 00,142	
	:	E 04deg 53min 30,353	
	:	616199,25 East, 6272751,54 North	
TOLERANCE	:	50 m in any direction	
DISTANCE	:	260 Km from Shore Base	
SPUDDING CLASSIFICATION	:	Wildcat	
WATER DEPTH	:	64m	
RKB ELEVATION	:	34 m	
RKB-SEA FLOOR	:	98 m	
TOTAL DEPTH	:	2167 m RKB	
PRIMARY TARGET	:	Paleocene sandstones.	
DEPTH TO PRIMARY TARGET	:	2003 m RKB	
SECONDARY TARGET	:	Lower Skade Fm.	
DEPTH TO SECONDARY TARGET	:	1530 m RKB	
TARGET TOLERANCE	:	Radius of 50 m	
DRILLING RIG	:	Transocean Nordic	
OPERATOR	:	Norsk Agip A/S	40%
PARTNERS	:	Enterprise Oil Norwegian A/S	35%
		Den norske stats oljeselskap a.a	25%

2. GEOLOGY AND GEOPHYSICS

2.1 GEOLOGICAL SUMMARY

The purpose of drilling well 3/6-1was to test the hydrocarbon potential of the Paleocene sandstones of the Heimdal formation in the Hilde prospect.
The Hilde prospect was a structural four-way dip closure, induced by halokinesis of the Zechstein salt. The Paleocene reservoir pinches out towards the crest of the structure.

The top of the main reservoir was found at 2003 m RKB, 23m below the prognosis. The reservoir was waterbearing and the well was abandoned after final logging at a TD of 2167 m RKB, 75 m into the Chalk Group.

TWT (msec)	Progn. Depth KB (m)	Actual Depth KB (m)	Delta (m)	%	Horizon (post well)
87	98	98	0	0,0 %	Top Nordland Group
445	434	434	0	0,0 %	Base Quaternary
830	804	791	-13	-1,7 %	Top Hordaland Group
989	971	974	3	0,3 %	Top Sequence 5
1124	1122	1116	-6	-0,6 %	Top Hotlips sands
1140	1140	1133	-7	-0,6 %	Top Sequence 4
1522	**1567**	**1530**	**-37**	**-2,5 %**	**Top Lower Skade sands**
1578	1630	1639	9	0,6 %	Base Lower Skade sands
1817	1917	1931	14	0,7 %	Top Balder Formation
		1957			Top Sele Formation
1864	**1980**	**2003**	**23**	**1,2 %**	**Top Hermod sands**
		2033			Top Lista Formation
		2051			**Top Heimdal sands**
1931	2070	2092	22	1,1 %	Top Chalk Group
	2145	2167			TD (75 m into Chalk)

2.2 MAIN RESULTS

The well was drilled to a total depth of 2167 m RKB and terminated in Cretaceous Limestones of the Tor Fm. The main reservoir of Paleocene age was encountered at 2003 m, 23 m below the prognosis. (Fig. 2.2.1). Paleocene sandstones of both the Hermod Fm and Heimdal Fm were encountered in this well. RCI pressure measurements proved that the sandstones are in communication and they are described here as one reservoir unit named Paleocene sandstone.

The Paleocene sandstone was found water bearing. This is confirmed both by the wireline logs, the formation pressures and sampling. The only shows recorded were from 2008m to 2010,6m in sandstone in the core and in a sidewall core at 2003m. Phenols analysis of formation water at 2009 and 2075 m indicate that migrated hydrocarbons have been present in this reservoir.

The secondary target was the Oligocene Lower Skade Sands. This reservoir was encountered at 1530 m. The reservoir was water bearing.

The well was plugged and abandoned as a dry well.

FH8•P•06•PL238•progVSact•evy2
Date:030101•ds

Norsk Agip

PL 238

Prognosis Versus Actual

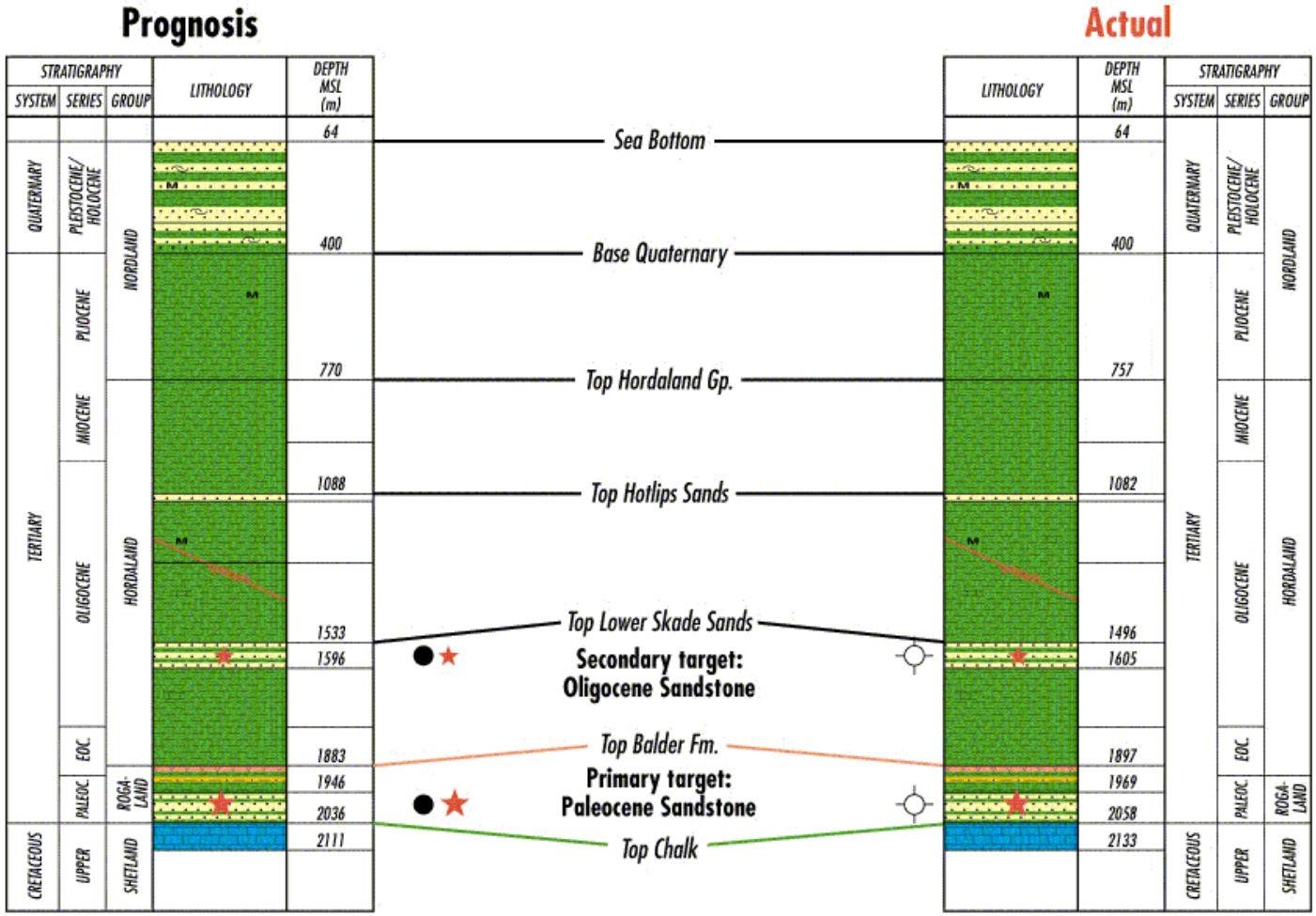


Fig.2.2.1

2.3 DATA ACQUISITION

A complete data acquisition programme including Mudlog data, coring, MWD and wireline logs, RCI measurements and sampling and sidewall cores was implemented in the well 3/6-1.

Sperry Sun Drilling Services provided an Insite service from 98m to 2167m BRT (TD). In addition to formation evaluation and conventional mudlogging, automatic real time data monitoring, recording and pressure analysis were carried out.

MWD service was provided by Sperry Sun Drilling Services, in order to identify shallow gas and in order to achieve a better well control.
Wireline log services and VSP acquisition were provided by Baker Atlas.

2.3.1 Routine Sampling

Cuttings were collected and described offshore by Sperry Sun personnel (see Mudlogging Final Well Report) and revised by the Norsk Agip wellsite geologist.

The cuttings sample interval was:
- Every 10m from 190m (below30" casing shoe) to 1037m;
- Every 3 to 5m from 1037m to 2167m.

Exceptions were made for excessive drill rates to maintain good sampling and descriptions.

Approximately 4kgs of unwashed cuttings were collected offshore and sent on shore for preparation and distribution according to NPD and partners, requirements.

Geochemical samples (canned cuttings samples) were collected each 100m from 200m to 2167m and sent to Reslab for analysis.

2.3.2 SHOWS

The evaluation of hydrocarbon shows was carried out at the wellsite by Sperry Sun using a standard gas trap and digital gas chromatograph from 172m to 2167m. Gas values were consistent in quality through out the well.

Hydrocarbon shows on cuttings and sidewall cores were evaluated by Norsk Agip's wellsite geologist.

Totalised gas values predominantly remained at or below 1,00% until 868m to 943m were the background gas averaged 4,2% with a maximum gas peak of 21,92% at 936m. other peaks over this interval were 15.17% (possible connection gas) at 898m and 15,14% at 913m. From 943m to casing point at 1047m gas levels dropped progressively to around 1,30%

From 1047m to 2003m gas levels remained between 1,00% and 0,20% except for peaks associated with limestone stringers, these being 3,20% at 1210m; 3,50% at 1217m and 1.78% at 1248m.

Gas levels did not exceed 0,50% from 2050m for the remainder of the well.

It is suspected that the high overbalance was responsible for the consistently low gas levels throughout the 12 ¼" hole section.

The only oil shows recorded were from 2008m to 2010,6m in sandstone in the core (weak brown fluorescence) and dull brown cut fluorescence in a sidewall core at 2003m

2.3.3 Measurements while Drilling and Wireline Logs

Sperry Sun Drilling Services provided a Gamma Ray, Resistivity and Directional Survey package from 172m RKB to TD at 2167m RKB to provide real time data, directional control and to identify possible shallow gas.

Run No m RKB	Hole	Drilled Interval	Tool Type	Logs	Operational Mode
0200	9 7/8"	181-1040m	8.00" MPT	GR/DIR/RE	Drilling
0300	12 ¼"	1040-2008m	8.00" MPT	GR/DIR/RE	Drilling
0400	12 ¼"	2008-2167m	8.00" MPT	GR/DIR/RE	Drilling

Data quality was good over the whole well. Gamma Ray readings read higher than expected in the Heimdal Formation, this was probably due to the high glauconite content of the sandstone.

Wireline Logs

The following is a summary of wireline logs run in the well.

Run No	Hole Diam mRKB	Interval (Logger)	Logs	Date	BHT DegC
1	12 1/4"	2148-1012	GR/ZDL/CN/DSL/TTRM	4/7/00	69
2	12 1/4"	2143-1052	STAR - II/ GR/TTRM	5/7/000	
3	12 1/4"	2139-998	HDLL/MAC/HLL/GR/TTRM	5/7/00	69
4	12 1/4"	2118.5-1532	RCI /GR/TTRM	6/7/00	66
5	12 1/4"	2136-800	VSP/GR	7/7/00	66
6	12 1/4"	2115-1518	CST/GR	8/7/00	N/A

For registration of temperature and tension, TTRM (cablehead tension, total tension and borehole temperature was included in all runs.

Run No 1 HDLL/GR/MAC failed, due to electrical connections, before reaching open hole, it was run separately as Run No 3. 8 ¼ hours were lost.

Run No 3 HDLL at 1283m whilst logging up. The run was completed without HDLL with no lost time.

Run No 4 Following standard cable integrity tests whilst running in cased hole replacement of 200m of damaged cable resulted in 3 ¼ hours of lost time.

Run No 6 25 sidewall cores were taken with 92% recovery

No other problems occurred during 12 ¼" electric logging. Total lost time was 12 ½ hours

2.3.4 Formation Pressure

Sperry Sun / Halliburton performed the pore pressure evaluation while drilling supervised by the Norsk Agip well site geologist.
The formation pressure was hydrostatic from the 30 csg. Shoe at 107 m to approximately 900 m where the formation pressure started to increase due to undercompaction of the Hordaland shales. The formation pressure increased from 1.05 g/cc at 900 m to a maximum of 1.30 g/cc at 1957 m (top Sele Formation). The pore pressure drops quickly to 1,1 g/cc in the Hermod sandstones. The Lower Skade sandstones at 1530 – 1639 m RKB are also hydrostatic pressured (fig. 2.3.1)

2.3.5 Formation Temperature

The extrapolated static bottom hole temperature (SBHT) from wireline logs is 69.7 deg C at 2148m (Logger's TD). This value give a geothermal gradient of 3.2deg C / 100m.

The following table summarises the bottom hole temperature recorded during wireline logging

Run No	Hole Diam	Logs	Depth m RKB	Circ'n Time	Time from *Circ'n*	BHT Deg C	SBHT Deg C
1	12 1/4"	GR/ZDL/CN/DSL	2148	2hr 00min	17,42hr	69,00	*69,7*
2	12 1/4"	STAR - II/ GR	2142	2hr 00min	29,80hr	70,00	69,7
3	12 1/4"	HDLL/MAC/HLL/GR	2139	2hr 00min	40,25hr	69,00	69,7
4	12 1/4"	RCI /GR/TTRM/TTRM	2118,5	1 hr 50min	16,00hr	42,00	44,9
5	12 1/4"	VSP/GR	2136	1 hr 50min	29,00hr	42,3	*44,9*
6	12 1/4"	CST/GR	2115	1 hr 50min	37,00hr	N/A	-

2.3.6 Side Wall Cores

Sidewall cores were taken in the Heimdal and Lower Skade Formations and the Chalk. The programme was aimed at securing high quality stratigraphic and lithological data. Sidewall cores were taken between 2115m and 1518m RKB with the following results:

- 25 cores attempted
- 23 cores recovered
- 2 empty shots
- 0 lost in hole

Sidewall cores were used for biostratigraphical and sedimentological studies (See separate reports)

The following sidewall core descriptions were made at the rigsite:

SWC No.	Depth m BRT	Rec mm	Lithology and Show Description	Show
1	2115	37	SILTSTONE: medium brownish grey, moderately hard, blocky, laminated, slightly to moderately calcareous, argillaceous	No
2	2100		empty	
3	2091	15	SANDSTONE: quartzose, glauconitic, greyish green, transparent, colourless, light to dark green, fine, angular, subspherical, well sorted, firm, weak calcareous cement, abundang glauconite, trace micropyrite, good porosity	No
4	2089	10	SANDSTONE: quartzose, glauconitic, greyish green, transparent, colourless, light to dark green, fine, angular, subspherical, well sorted, firm, weak calcareous cement, abundant glauconite, trace micropyrite, good porosity	No
5	2074	30	SANDSTONE: quartzose, glauconitic, greyish green, transparent, colourless, light to dark green, fine, angular, subspherical, well sorted, soft, crumbly, slightly calcareous, weak cement, abundant glauconite, trace micropyrite, good porosity	No
6	2063	20	SANDSTONE: quartzose, glauconitic, greyish green, transparent, colourless, light to dark green, fine, angular, subspherical, well sorted, soft, crumbly, slightly calcareous, weak cement, abundant glauconite, trace micropyrite, good porosity	No
7	2051	10	SANDSTONE: quartzose, glauconitic, greyish green, transparent, colourless, very fine, subangular to subrounded, well sorted, firm, non calcareous, common glauconite grains, commonly micritic, occasional lithic grains,poor porosity	No
8	2048	10	SILTSTONE: greyish olive green, mottled medium grey, moderately hard, blocky, non to slightly calcareous, commonly very fine grains, common glauconite grains	
9	2031	10	Predominantly CLAYSTONE: dark grey,hard, blocky, non calcareous with 1mm interlaminations of SANDSTONE: quartzose, medium grey, very fine, subangular, well sorted, moderately hard, non calcareous, commonly glauconitic, poor porosity	No
10	2014	5	Predominantly CLAYSTONE: dark grey,hard, blocky, non calcareous with 1-3mm interlaminations of SANDSTONE: quartzose, medium grey, very fine, subangular, well sorted, moderately hard, moderately calcareous cement, commonly glauconitic, poor porosity	No
11	2003	13	ARGILLACEOUS SILTSTONE: dark grey, moderately hard, blocky, non calcareous, grading to ARGILLACEOUS SANDSTONE, SHOWS: moderate hydrocarbon odour, nil oil stain, nil fluorescence, very slow dull brown cut fluor-escence, dull pale white residual evaporation fluorescence	Yes
12	1998	40	CLAYSTONE: dark grey, hard, blocky, non calcareous, laminated	
13	1989		empty	
14	1688	5	ARGILLACEOUS SILTSTONE: medium brownish grey, moderately hard, blocky, non calcareous	No
15	1645	30	ARGILLACEOUS SILTSTONE: medium brownish grey, moderately hard, blocky, non calcareous	No
16	1633	15	SANDSTONE: quartzose, light olive grey, very fine, subangular to angular, well sorted, firm, crumbly, moderately calcareus, occasional lithic grains, fair porosity	No

SWC No.	Depth m BRT	Rec mm	Lithology and Show Description	Show
17	1621	18	CLAYSTONE: light olive grey, moderately hard, blocky, non calcareous, fissile, interbedded with SILTSTONE: medium grey, firm to moderately hard, blocky, moderately hard, blocky, moderately calcareous, hygroturgid	
18	1594	25	CLAYSTONE: medium brownish grey, firm to moderately hard, blocky, non calcareous, hygroturgid	
19	1554	25	SANDSTONE: quartzose, greenish grey, transparent, colourless, predominantly very fine to fine, angular to subangular, subspherical, well sorted soft, crumbly, moderately calcareous, weak cement, occasional lithic grains	No
20	1550	20	SANDSTONE: quartzose, greenish grey, transparent, colourless, predominantly very fine to fine, angular to subangular, subspherical, well sorted soft, crumbly, moderately calcareous, weak cement, occasional lithic grains	No
21	1546	42	CLAYSTONE: medium brownish grey, firm, blocky to subblocky, moderately calcareous, micromicaceous	
22	1537	35	SILTY SANDSTONE: quartzose, olive grey, transparent, colourless , very fine, subangular, subspherical, well sorted, soft, crumbly, moderately calcareous, weak cement, argillaceous matrix, rare lithic grains	No
23	1532	25	SANDSTONE: quartzose, olive grey, transparent, colourless , very fine, subangular, subspherical, well sorted, soft, crumbly, moderately calcareous, weak cement, rare lithic grains SST: qtz, olv gy, trnsp, clss, vf, sbang, sbsphr,	No
24	1528	45	CLAYSTONE: medium brownish grey, moderately hard, blocky, moderately calcareous, hygroturgid, micromicaceous in part	
25	1518	40	CLAYSTONE: medium brownish grey, moderately hard, blocky to subblock, hard, fissile, moderately calcareous, hygroturgid, micromicaceous in part, moderately silty	

Bottom Hole Cores

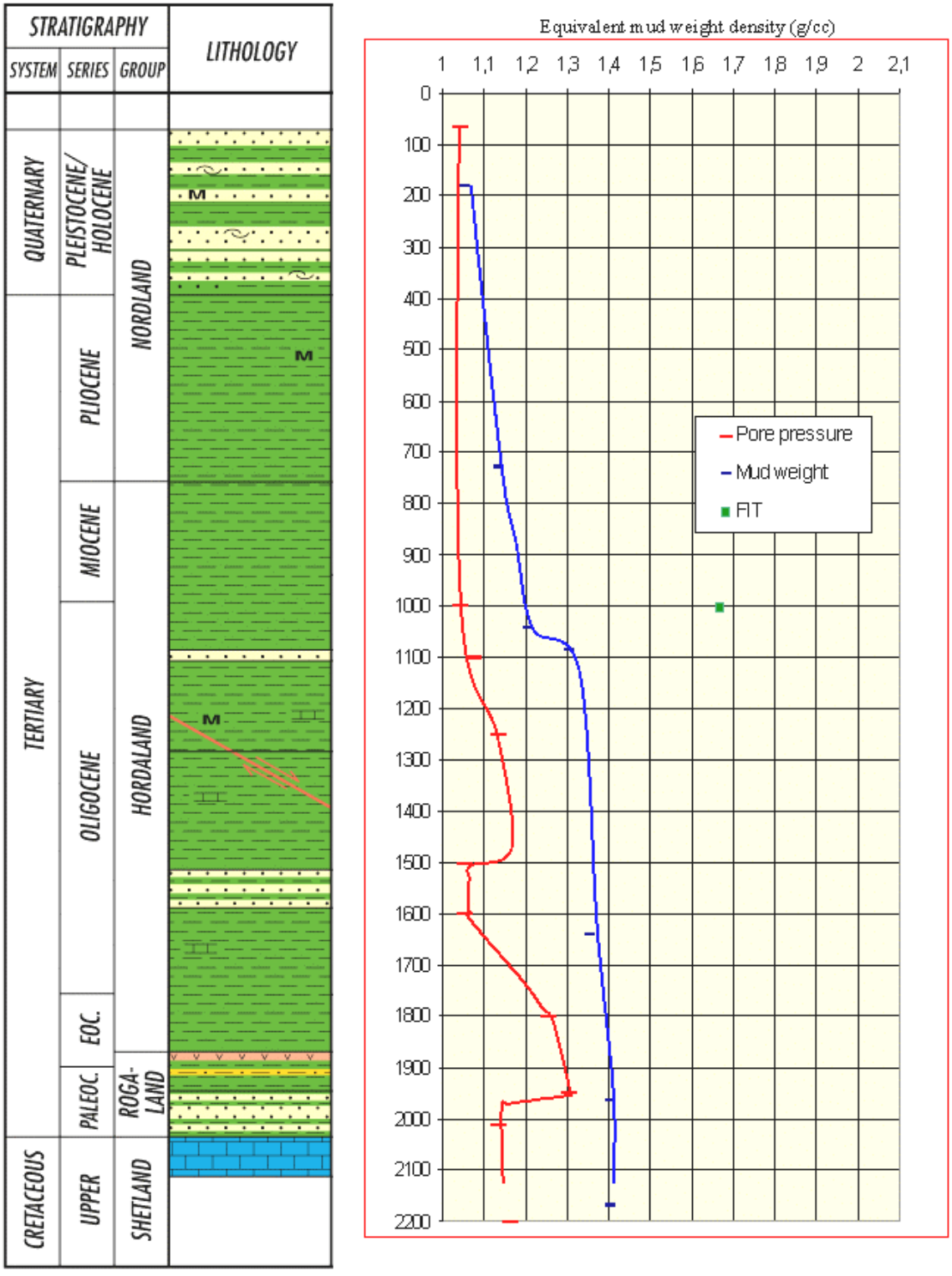
One bottom hole was cut according to the programme. The coring programme was intended to acquire petrophysical, stratigraphic, and sedimentological data in the potential reservoir. Conventional core was cut from 2088m to 2011,5m BRT with an 18m aluminium sleeved core barrel. The core jammed off after drilling 3,5m. A full core analysis was made onshore (see separate report).

When recovered the core was scanned for Gamma Ray to aid correlation and analysis.

Below is the wellsite core report summary:

Core No: 1 ***Interval:*** *2008m-2011.5m* ***Cut:*** *3.5m* ***Recovery:*** *2.6m = 74%*		
Formation: Heimdal Sands **Age:** Paleocene **Barrel size:** 8 15/32" **Barrel type:** aluminium liner **Core purpose:** reservoir analysis		
Depth	Lithology	Shows
2008	SANDSTONE: quartzose, medium grey, transparent, colourless, very fine to fine, predominantly subangular, occasionally subrounded, well sorted, moderately hard, weak siliceous cement, rarely calcareous cement, abundant disseminated glauconite, occasional SILTSTONE laminations, good porosity	strong hydrocarbon odour, nil oil stain, 100% weak brown gold fluorescence, nil cut fluorescence, nil evaporation fluorescence
2009,1	SANDSTONE: quartzose, greyish green,firm, very fine to fine, predominantly subangular, occasionally subrounded, well sorted, moderately hard, weak calcareous cement, occasional DOLOMITE fragments, abundant glauconite, good porosity	weak hydrocarbon odour, nil oil stain, 100% weak brown gold fluorescence, nil cut fluorescence, nil evaporation fluorescence
2010,1	SANDSTONE: quartzose, greyish green,firm, very fine to fine, predominantly subangular, occasionally subrounded, well sorted, moderately hard, weak calcareous cement, occasional DOLOMITE fragments, abundant glauconite, good porosity	weak hydrocarbon odour, nil oil stain, 100% weak brown gold fluorescence, nil cut fluorescence, nil evaporation fluorescence
2010,6	SANDSTONE: quartzose, medium bluish grey, firm, very fine to fine, predominantly subangular, occasionally subrounded, well sorted, moderately hard, weak calcareous cement, laminated, occasional DOLOMITE fragments, abundant glauconite, good porosity	weak hydrocarbon odour, nil oil stain, 100% weak brown gold fluorescence, nil cut fluorescence, nil evaporation fluorescence

Pressure well 3/6-1



2.4

STRATIGRAPHY

2.4.1 Biostratigraphy

Stratlab carried out the biostatigraphical evaluation of Well 3/6-1.
The analysis was based on studies of lithology, micropaleontology, palynology and nannofossils, which were made on ditch cuttings and sidewall core covering the interval 180m to 2167m BRT (TD).
Fig. 2.4.1 shows a summarised chronostratigraphic and lithostratagraphic subdivision of the well.
Further details may be found in the report "Norsk Agip Well 3/6-1, Biostratigraphic analysis of the interval 180m – 2167m"

2.4.2 Lithostratigraphy

The following summary is compiled predominantly from ditch cuttings descriptions. Sidewall cores were available from 2115m to 1518m. One conventional core was recovered from this well. Wireline and MWD logs were used to aid lithological interpretation and the picking of formation boundaries.
The well was drilled with returns to seabed from 98m to 180m before setting the 30" conductor pipe. The first drill cuttings sample was taken from 190m.
All depth values stated below are measured depth (RKB)

Nordland Group (180m – 791m)
Age: Pleistocene – Pliocene

Top Nordland (180m – 434m)

Upper Boundary: The Nordland group is represented initially by sand passing down into higher gamma silt and clay units.
The interval consisted of sands grading down to silts and clays.
The unconsolidated quartzose **sand** comprised colourless, transparent to translucent quartz, fine to very coarse grains, subrounded to subangular, moderately sorted, accessories included mica, pyrite, wood fragments and occasionally abundant shell fragments.
The **silts** were medium grey, soft, amorphous, slightly calcareous and grading to sand in part.
The **clay** was predominantly medium grey, soft, amorphous, sticky, and silty and non-calcareous with good traces of shell fragments and carbonaceous material.

From Base Quaternary (434m – 791m)

Upper Boundary: The lower part of this group is represented initially by 7m of low gamma ray sand rapidly grading to silt. Distinctive, reddish brown clay was seen from 440m to 460m.
The **sand** was quartzose with transparent, very fine to fine grains, subangular to subrounded, spherical, and well sorted loose, with mica and micropyrite and commonly argillaceous.
The **siltstone** was medium grey becoming light grey to light grey with depth, it was soft, amorphous, slightly to non-calcareous and graded to sand in part.
The **clay**, starting from 527m, was dark greenish grey becoming predominantly medium grey, and rarely medium reddish brown, subblocky, soft, amorphous, sticky, slightly to moderately calcareous with traces of nodular pyrite, mica and carbonaceous specks.
With the **clays** were occasional stringers of **limestone** and **dolomite**. The Limestone was light grey to light grey and yellowish grey to very pale orange, hard, brittle, blocky and cryptocrystalline.
The **dolomite** was light grey, yellowish grey, hard, subblocky and cryptocrystalline.

Hordaland Group (791m – 1942m)
Age Miocene to Eocene

Top Hordaland (791m – 974m)
Age: Late to Early Miocene

Upper Boundary: The top of the Hordaland Group is represented by a small increase in resistivity and a colour change in the clay to brownish grey to brownish black.
The interval comprises clays with minor sands with abundant mica and pyrite. Rare limestone stringers were noted.
The **clay** was brownish grey to brownish black, soft; occasionally firm, subblocky, calcareous, with traces of mica and nodular pyrite, abundant carbonaceous material and glauconite were present. The clay was silty in part.
The **sand** was quartzose, brownish grey to brownish black in the upper part, becoming colourless and transparent grains, very fine to fine grained, subangular to subrounded, subspherical and loose with a non to slightly calcareous, argillaceous matrix.
Rare **limestone** stringers were light grey to orange grey, hard, blocky with a cryptocrystalline / wackestone texture and rarely pyritic.

Sequence 5 (974m – 1116m)
Age: Early Miocene

Upper Boundary: This siltier clay sequence is marked by a small increase and smoothing of the resistivity curve. Minor sands and rare limestone and dolomite stringers were present.
The **clay** was brownish grey to brownish black, soft, subblocky to blocky and sticky in parts. It was non-calcareous to calcareous and commonly very silty with traces of nodular pyrite, glauconite, mica and carbonaceous material.
The loose quartzose **sand** was brownish black with translucent, very fine to fine grains; these were subangular to subrounded, subspherical and well sorted. Mica and micropyrite were common accessories and the sand was commonly argillaceous.
Limestone stringers were light grey to creamy white, soft with a wackestone texture with rare pyrite.
Dolomites were dark yellowish orange, firm, subblocky to blocky, crumbly and crystalline with occasional carbonaceous inclusions.

Hotlips Sands (1116m – 1133m)
Age: Early Miocene

Upper Boundary: The sequence has a very distinctive resistivity trace, dropping sharply too less than 0,2 ohm-m.
This sequence comprised silty claystones with stringers of argillaceous sand and traces of limestone.
The **clay** was brownish grey to brownish black, soft, subblocky to blocky and occasionally sticky. It was non-calcareous, silty and micropyritic with traces of glauconite and carbonaceous specks.
The quartzose **sand** was brownish black with translucent, very fine to fine grains; these were subrounded, subspherical, well sorted and loose with an argillaceous matrix, occasionally grading to siltstone. Traces of pyrite nodules, and carbonaceous material were noted.
Limestone was very light grey to yellowish grey, firm to moderately hard, subblocky to blocky with a wackestone texture. It had traces of glauconite and carbonaceous material.

Sequence 4 (1133m – 1564m)
Age: Oligocene

Upper Boundary: Resistivity returns to a smoother, but lower, resistivity trace as previous to the Hotlips Sands.

The sequence consists of calcareous claystone grading to siltstone and minor sands from ca. 1220m to 1330m, returning to a calcareous claystone to the base.
Clays were brownish grey to brownish black, becoming light to medium grey, occasionally dark grey and olive grey with depth, soft to subblocky, non to slightly calcareous becoming moderately calcareous from 1400m.
The **siltstone** was medium brownish grey to light grey, soft to firm, subblocky and slightly to very calcareous; it was glauconitic and commonly graded to claystone.
The brownish black **sand** comprised loose, translucent quartz grains which were very fine, subrounded with occasional lithic fragments and traces of glauconite and pyrite. With depth the sand became olive grey.
Limestones were light grey to yellowish grey, soft to hard, brittle with a wackestone texture.

Lower Skade Sands (1564m – 1639m)
Age: Early Oligocene

Upper Boundary: This is denoted by a cutback in gamma ray and resistivity. The topmost 8m comprised 30% olive grey, silty sands grading to siltstone.
Formation consisted of claystones grading to siltstones and increasing limestone to the base.
The **claystone** was olive grey to medium dark grey, soft to firm, blocky and slightly calcareous commonly grading to siltstone, with occasional traces of glauconite and mica.
The **siltstone** was olive grey, medium grey to medium dark grey, soft to firm, subblocky and very calcareous; it was argillaceous and glauconitic, commonly grading to claystone.
Limestone was yellowish grey, off white, soft, blocky and argillaceous with a wackestone texture.

Hordaland Group below the Lower Skade Sands (1639m – 1942m)
Age: Eocene to early Oligocene

Upper Boundary: The Base Lower Skade Sands were identified by an increase in gamma ray and resistivity, the latter curve becoming significantly less erratic.
The formation consisted of silty claystone grading to siltstone. From 1880m the claystone colour changed from dark grey and olive grey to greyish blue green and light brownish grey. It is suspected that the colour change may represent reworked Balder tuffs.
Siltstone, sandstone and limestone stringers were present throughout the section.
Claystone was dark grey to greenish grey to olive grey, soft to firm, blocky, non to slightly calcareous and occasionally pyritic and commonly graded to **siltstone, which** was very similar in character. From 1880m the claystone changed colour as described above, it was soft, blocky, non to moderately calcareous and rarely pyritic
The quartzose **sands** comprised clear, colourless very fine to fine grains, these were subrounded, subspherical, well sorted and loose with an argillaceous matrix and traces of glauconite.

Rogaland Group (1931m – 2092m)
Age: Late Paleocene to Early Eocene

Balder Formation (*1942*m – *1958*m)
Age: Early Eocene

Upper Boundary: The Balder Tuffs are indicated by the rock's distinctive characteristics, gamma ray response and the sonic log response.
The formation consists of tuff with stringers of claystone.
The **tuff** was medium bluish grey, very pale green, occasionally medium reddish brown and speckled. It was soft to firm, crumbly with an ashy texture.
The **claystone** was medium bluish grey, firm, blocky and non-calcareous.

Sele Formation (1958m – 2033m)
Age: Late Paleocene

Upper Boundary: The Sele Formation comprised entirely dark grey / olive grey claystone with a sharp increase in gamma ray and drop in resistivity.
The **claystone** was dark grey to olive grey, soft to firm, blocky and non-calcareous.

Hermod Formation (2003m – 2012m)
Age: Late Paleocene

Upper Boundary: a very distinctive drop in gamma ray and resistivity marks The Hermod reservoir.
The lithology comprises two sandstone units interbedded with a claystone.
The **sandstone** is quartzose, medium grey with transparent, colourless, very fine to fine grains, these are predominantly subangular, occasionally subrounded, well sorted, moderately hard with weak silicic, rarely calcareous cement, there was abundant disseminated glauconite and occasional SILTSTONE laminations, visible porosity was good. Shows were poor; there was a strong hydrocarbon odour, no oil stain, and 100% weak brown sample fluorescence, no cut fluorescence and no residual evaporation ring

Lista Formation (2033m – 2051m)
Age: Late Paleocene

Upper Boundary: There is no clear change in the log character from Sele to Lista Fm. Biostrat data indicates an unconformity at app. 3033m and the samples below this depth are associated with the Lista Fm. (see Biostrat. Report).
The **claystone** was dark greenish grey, medium dark grey, blocky to subblocky, firm to hard, non-calcareous and occasionally pyritic

Heimdal Formation (2051m – 2092)

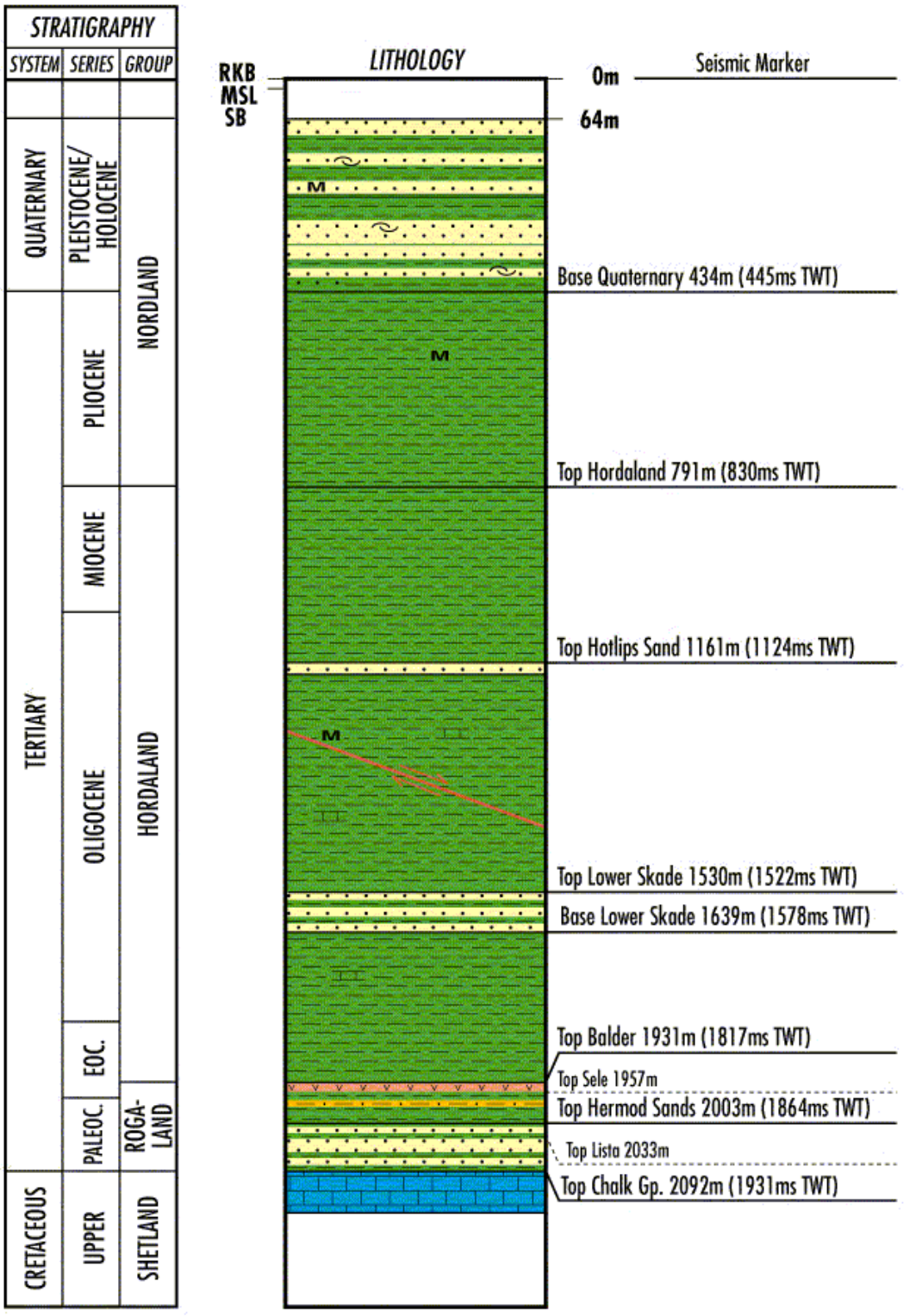
Upper Boundary: a very distinctive drop in gamma ray and resistivity marks The Heimdal reservoir.

The **sandstone** was quartzose, very light grey, commonly greyish green, transparent to translucent, colourless, very fine becoming medium to very coarse, subrounded, subspherical to spherical, well sorted, moderately hard, calcareous cement with glauconite becoming abundant with depth. There were no shows.

Top Chalk (2092m – 2167m TD)

Upper Boundary: The pick was based on gamma ray decrease, resistivity increase and lithology.
The lithology was chalk with minor sandstone beds.
The chalk was white to off white, becoming milky white, soft to firm becoming firm to hard, subblocky to blocky. It was crumbly, with a chalky mudstone texture and commonly argillaceous. There were traces of pyrite and micropyrite.
The quartzose sandstone consisted of loose, colourless, transparent, very fine grains; these were subrounded to well rounded, subsherical, well sorted, firm to moderately hard. There were traces of micropyrite.

Well 3/6-1
Lithology Column



FH•P•06•PL238•3/6-1LithologyColumn•evy2
Date:040101•ds

Fig. 2.4.1

2.5

WELL VELOCITY

A VSP was recorded in 3/6-1 in order to provide a correlation between the well logs and the seismic data.

2.5.1 V.S.P.

Full details of the vertical seismic profile are given in the Baker Hughes report "VSP Processing Report, Zero Offset VSP and Acoustic Log Calibration", well 3/6-1.

The survey was recorded on July 7th and 8th, 2000 from 800m to 2146m using a 5-level Multi-Level Receiver, consisting of five AWS-1300GM tool. The seismic source consists of 2x100 and 2x150 cu.in. sleeve airguns. The horizontal offset of the source from the wellbore was 35 m , in direction 54 degrees. The data acquisition provided good quality VSP data.

At the onshore processing centre normal processing was performed. Fig. 2.5.1 show the VSP displayed with logs, synthetic seismograms and some traces from seismic survey ST 9602.

2.5.2 Synthetic Seismogram

Norsk Agip supplied Baker Hughes with Acoustic Logs, Gamma Ray, Caliper and Density Log, all had same sampling interval. Acoustic log calibration was performed, resulting in one calibrated acoustic log and one time-depth curve.

The synthetic seismogram was derived from the calibrated velocity log and density log data. The final data were displayed both as minimum and zero phase after convolving with two different wavelets. The bandwidth in both cases were 8-70 Hz.

VSP and Synthetic Seismogram Correlation Display for 3/6-1

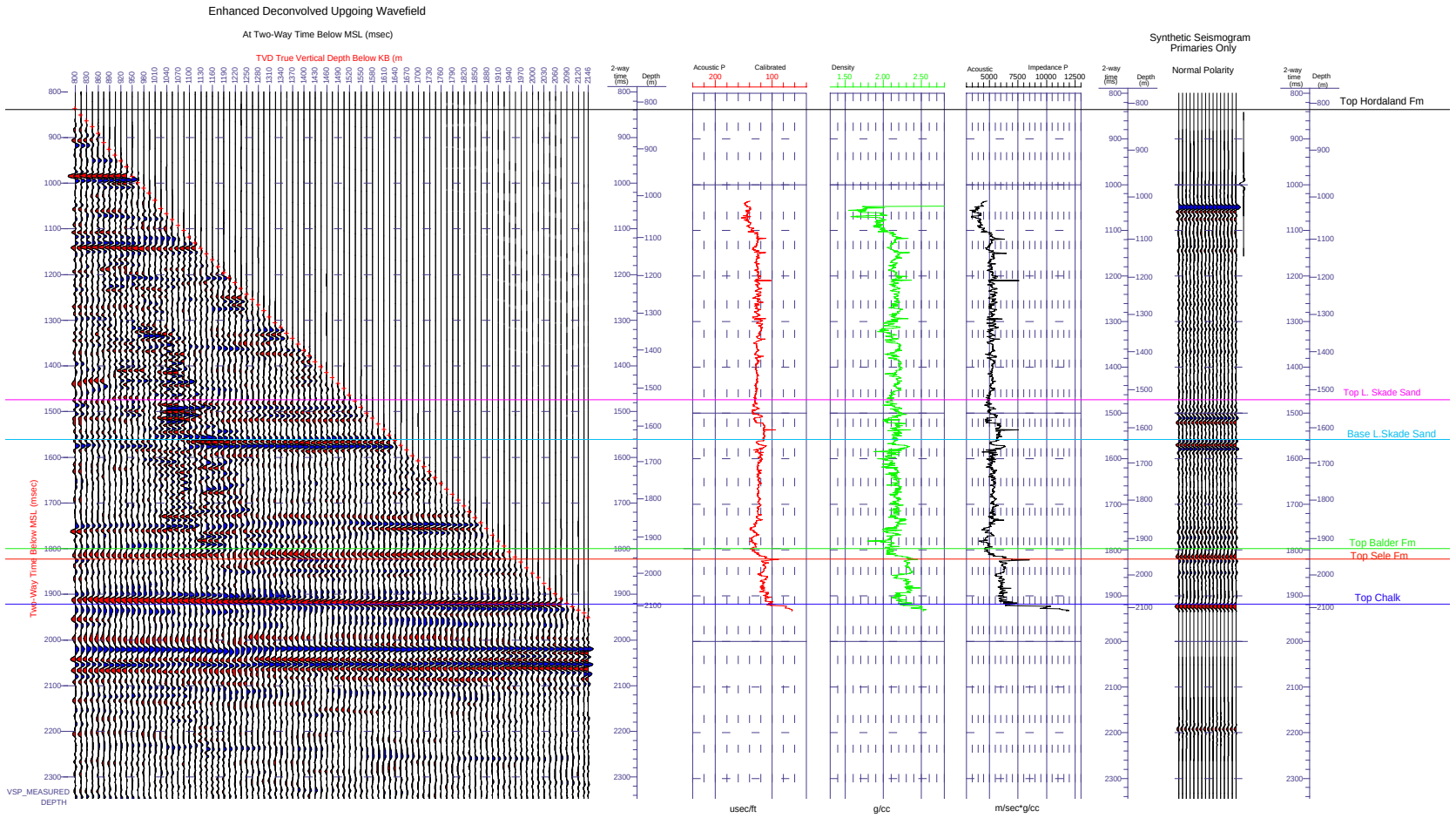


Fig.2.5.1

2.6 FORMATION EVALUATION

2.6.1 Reservoir Petrophysical Description

Paleocene reservoir.

The main target (Hermod and Heimdal Formations) was encountered at 2003 m. (23 m below prognosis). From RCI measurements, log analysis and all the information collected during the drilling phase, the reservoir is water bearing.
The pertrophysical properties of the reservoir were found to be good. One core was cut from 2008 to 2011,5 m RKB. Core porosity / permeabilility are listed below.

Core no.	Sample no.	Depth (m)	Kg, hor. (mD)	1/Pm, hor.	Kl, hor (mD)	Kg, vert. (mD)	1/Pm, vert.	Kl, vert. (mD)	Por., hor. (%)	Gr.dens. hor. (g/cc)
	TOP	2008.00								
1	1	2008.15	237	0.951	217	300	0.961	277	33.4	2.65
1	2	2008.35	593	0.980	557	507	0.977	475	34.0	2.67
1	3	2008.50	705	0.982	665	691	0.987	651	34.7	2.68
1	4	2008.75	800	0.986	756	NPP	NPP	NPP	33.6	2.67
1	5	2009.00	NPP	NPP	NPP	NPP	NPP	NPP	NPP	NPP
1	6	2009.35	787	0.985	744	712	0.984	672	34.0	2.69
1	7	2009.50	845	0.985	800	757	0.984	715	34.5	2.67
1	8	2009.80	749	0.984	707	581	0.979	546	33.9	2.69
1	9	2010.00	758	0.984	716	649	0.983	611	34.9	2.67
1	10	2010.25	671	0.982	632	441	0.972	411	34.1	2.66
1	11	2010.50	NMP	NMP	NMP	0,102	0,495	0,061	22.2	2.64

Lower Skade Sands

The secondary target (Lower Skade Formation) was encountered at 1530 m. (37 m above prognosis). From RCI measurements, log analysis and all the information collected during the drilling phase, the reservoir is water bearing.
The reservoir consists of thin layers of fine sandstone grading to siltstone, interbedded with claystone. No core was taken in the reservoir, but porosity calculated from the logs indicates high porosity in the more clean sandstone intervals.

The results of the petrophysical evaluation are summarised below

RESERVOIR	INTERVAL	GROSS	NET	N/G	Ø	SW
Paleocene reservoir	2003 – 2092	89 m	28 m	31 %	20-28 %	95%
Lower Skade sands	1530 – 1639	109 m	44 m	44 %	0-35 %	98%

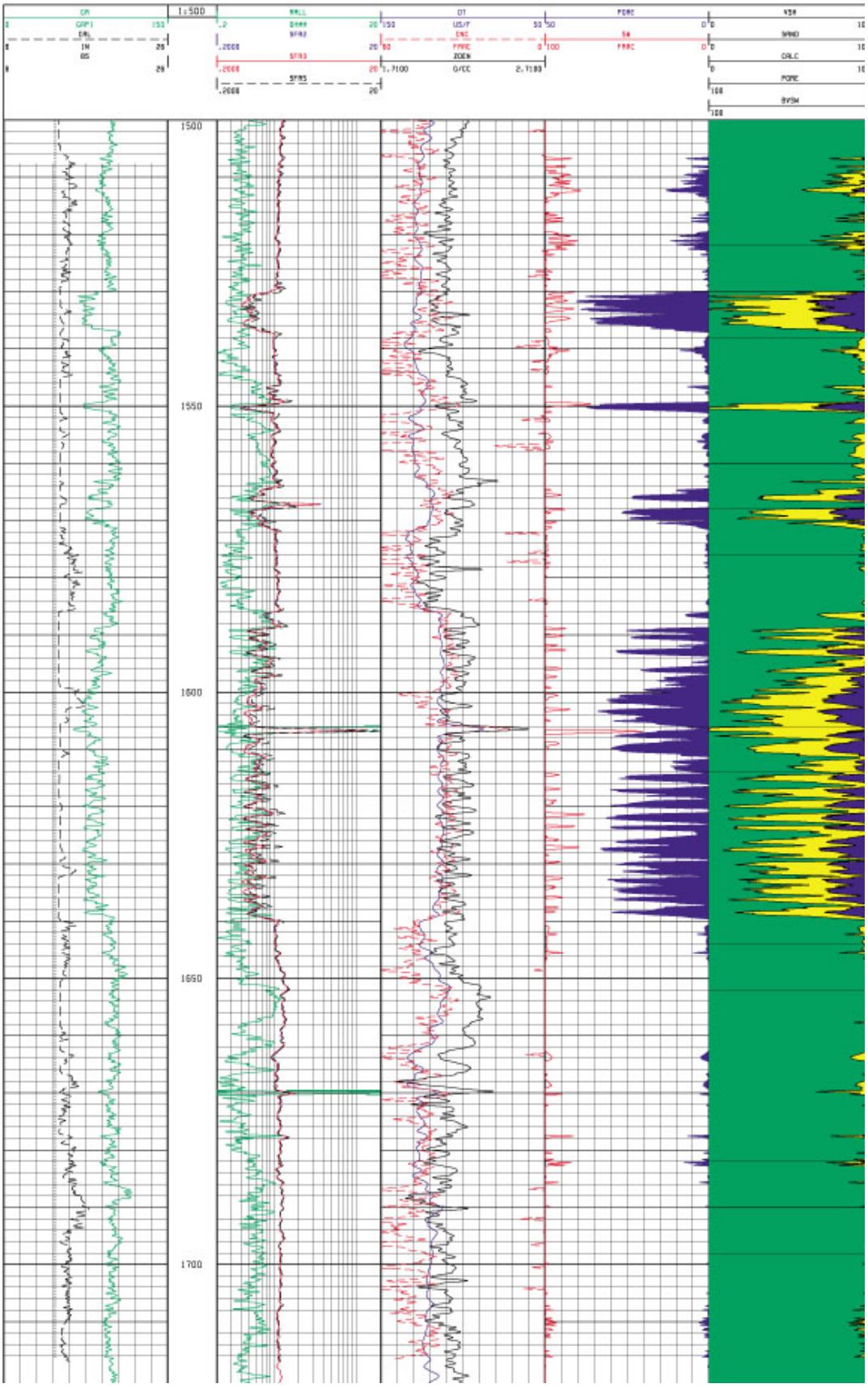
2.6.2 Log Evaluation

The quantitative well log analysis has been carried out.
The analysis was based on a set of logs acquired by Baker Atlas including Gamma ray (GR), High definition later log (HDLL), sonic (MAC) and density – neutron log.
For further details related to log interpretation see report: " Well 3/6-1 Quicklook Petrophysical Analysis".

Fig. 2.6.1 and 2.6.2 gives the main results of the log interpretation.

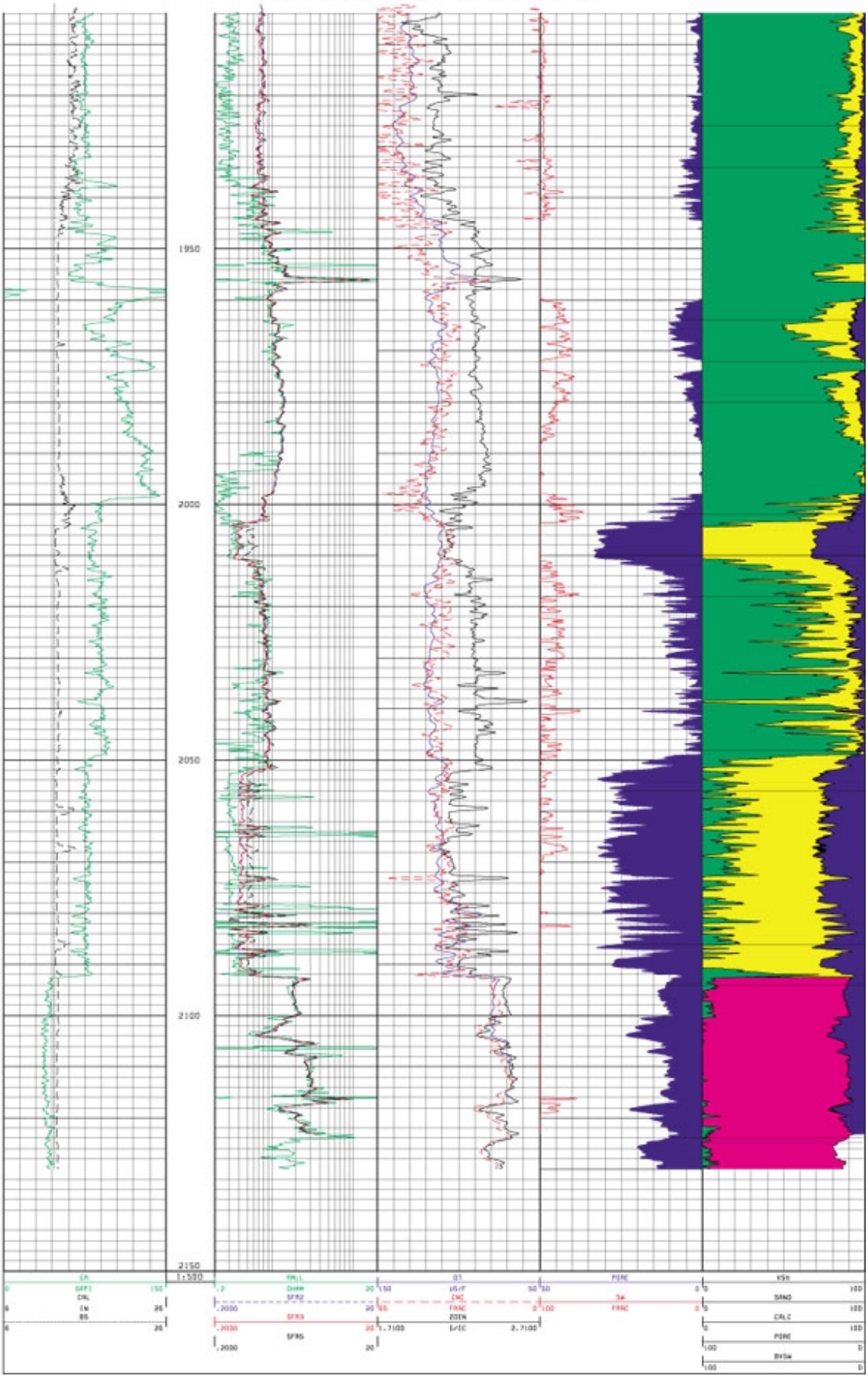
Well 3/6-1

Lower Skade Reservoir



Well 3/6-1

Paleocene Reservoir



2.6.3 FMT Pressure Interpretation

17 FMT pre tests were taken in the well. 6 pressures in the Lower Skade Sands giving a water gradient of 1,031 bar/10m, 7 pressures in the Paleocene reservoir giving a water gradient of 0,9824 bar/10 m. There is 15 bar pressure difference between the Skade and Paleocene sands.
(Fig. 2.6.3). 4 pressure points were taken in the chalk, but due to tight formation no formation pressure was obtained

The pressure tests are listed below.

No.	DEPTH	MUD HYDROSTATIC before	FORMATION PRESSURE	MUD HYDROSTATIC after	PRE TEST PERMEABILITY	Temp	COMMENTS
	m BRT	Gauge Bar	Gauge Bar	Gauge Bar	md	deg C	
1	1532	202,55	156,34	202,58	687,9	52,7	Good
2	1535	202,96	156,65	202,98	427,1	52,9	Good
3	1550	204,93	158,22	204,94	96,5	53,3	Good
4	1609,5	212,67	164,44	212,66	115,5	53,7	Good
5	1622	214,29	165,73	214,3	75,8	54	Good
6	1635	215,99	167,09	216,01	63,4	54,4	Good
7	2005,5	263,86	220,03	263,86	41	57,8	Good
8	2009	264,33	220,43	264,34	73,5	60,8	Good
9	2054	270,19	224,64	270,19	38,6	62,7	Good
10	2069	272,13	226,2	272,14	22,9	63,7	Good
11	2075	272,93	226,83	272,91	49,2	64,5	Good
12	2079,6	273,52	227,33	273,53	2,14	65,3	Good
13	2090	274,88	228,44	274,88	21,63	66,1	Good
14	2104	276,7	234,5	276,1	_		Tight
15	2103,5	286,65		276,65			Tight
16	2118	278,52		278,54			Tight
17	2118,5	278,6		278,62			Tight

2.6.4 Fluid Sampling

Three water samples taken at 1622 m (Oligocene), 2009 and 2075 m (Paleocene) have been analysed in the Eni central Laboratories to verify the possible presence of phenol; an indicator of oil-water interaction.

The sample at 1622 m contains only 37,59 ppb of phenols, which is too low to be significative. The samples taken at 2009 and 2075-m contain respectively 309,22 and 221,88 ppb of phenols. Such amounts clearly indicate that these waters have had the possibility to exchange phenols with liquid hydrocarbons.

For further details see: "HILDE 3/6-1 WELL (NORWAY) GEOCHEMICAL CHARACTERIZATION OF HYDROCARBONS EXTRACTED FROM CORE AND WATER SAMPLES."

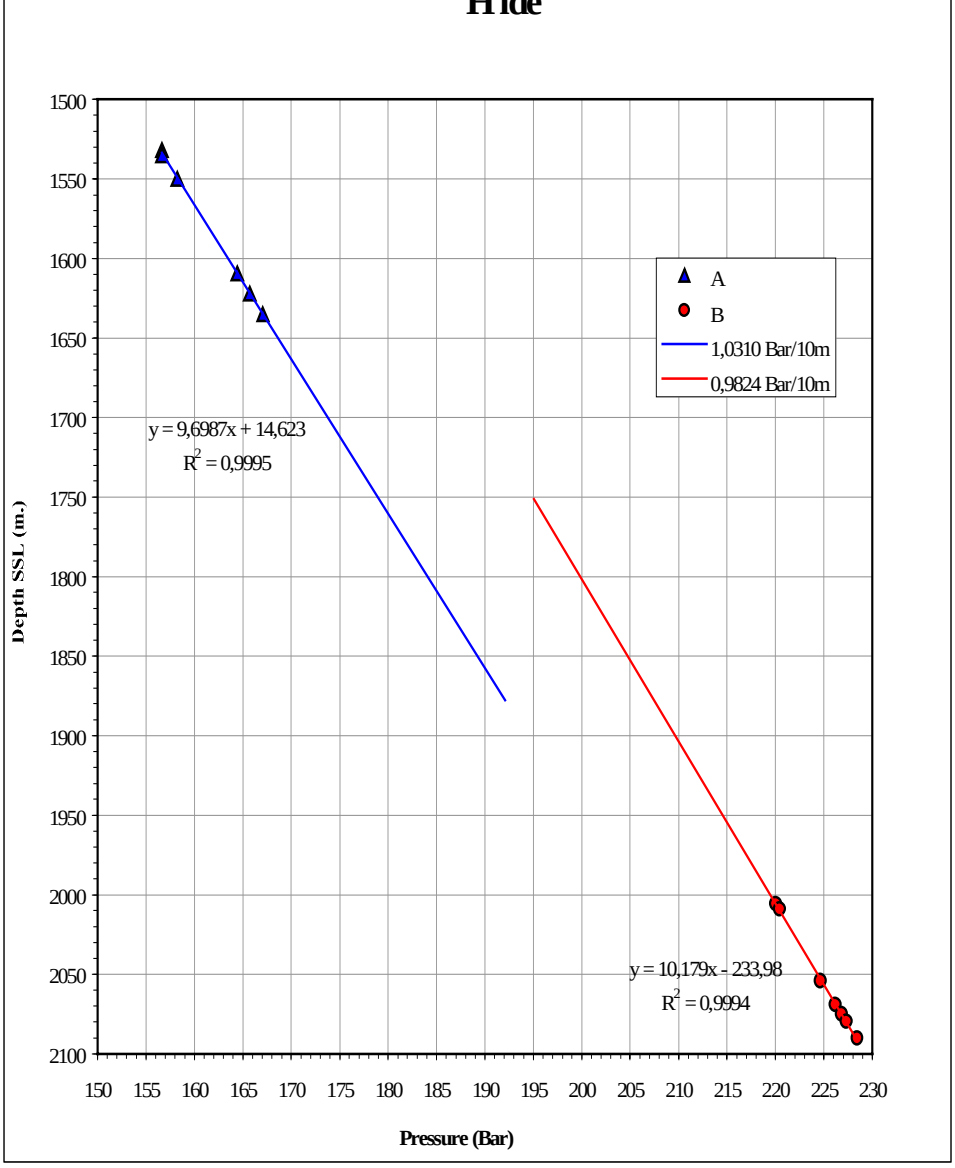

Hide
Depth SSL (m.)
Pressure (Bar)
A
B
1,0310 Bar/10m
0,9824 Bar/10m
y = 9,6987x + 14,623
R2 = 0,9995
y = 10,179x - 233,98
R2 = 0,9994
1500
1550
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
150
155
160
165
170
175
180
185
190
195
200
205
210
215
220
225
230

Fig.2.6.3

3. DRILLING

3.1 Introduction

Norsk Agip A/S drilled the 3/6-1 exploration well in the PL 238, Block 3/6 offshore North Sea area. "Transocean Nordic", a Jack-Up Rig, was used to drill and abandon the well. The well was not flow tested. The total time on the well was 24.24 days, and the total "dry hole" drilling costs of well 3/6-1 was 45 MM NOK (21561 NOK /m).

Of the 24.24 days total well time, the drilling operation time amounted to 42% and evaluation time (coring and logging) to 16%. Only 4.5% of the total time was unproductive time.

The "Transocean Nordic" jack up rig was mobilized from Great Yarmouth on June 13, 2000 at 1900 hrs (GMT+1). The rig was towed to the drilling location in 3.2 days. The legs were pinned on location and the rig accepted to be in position at 0015 hrs on June 17, 2000. After preloading the rig was jacked up to an airgap of 17 m and the cantilever was skidded out. The distance from the rotary table to the sea surface (RT – MSL) was 34 m. Due to authority requirements a soil boring had to be made before starting the drilling of the well. On 19 June soil sample coring was done down to 128 m. The seabed was tagged at 97.54 m RT.

After picking-up drill pipe and 36" bottom hole assembly, the well was spudded at 1345 hrs on June 20, 2000. The 36" hole was drilled to 180 m. The 30" conductor pipe was set at 171.8 m and cemented on June 21, 2000. The Transocean Nordic jack-up rig drilled the 3/6-1 exploration well to a total depth of 2167 m MD RT (2167 m TVD RT). After reaching TD the well was logged, and permanently abandoned on July 11. The well was finished and the rig went off contract on July 11, 2000 at 0600 hrs.

The objective of the well 3/6-1 was to investigate the hydrocarbon potential of the Lista reservoir in the Hilde prospect.

3.1.1 Well Data summary

Well 3/6-1

HOLE SECTION	1	2	3	4
Hole size	36" hole to 180 m (seabed at 98 m RT) (water depth: 64 m)	9 7/8" pilot hole to 1040 m	17 1/2" hole to 1047 m	12 1/4" hole to 2167 m
Drilling fluids	Type: Seawater / High Viscous Sweeps with prehydrated bentonite mud Viscous Sweeps: Density: 1.05 - 1.20 sg	Type: Seawater / bentonite mud Density: 1.13 - 1.20 sg	Type: Seawater / bentonite mud Density: 1.20 sg	Type: KCL/Pac/Glycol Density: 1.30 – 1.40 sg
Coring				Core no. 1: 2008 m – 2011.5 m
Logging	Drilling: None Logging in open hole: None	Drilling: MWD-GR-Resistivity Logging in open hole: None	Drilling: None Logging in open hole: None	Drilling: MWD-GR-Resistivity Logging in open hole: Run no. 1: ZDL/CN/DSL/TTRM/GR Run no. 2: STAR/ORIT/GR/TTRM Run no. 3: HDLL/MLL/MAC/TTRM/ ORIT/GR Run no. 4: RCI/GR/TTRM Run no. 5: VSP Run no. 6: SWC/GR
Casing	30" casing, shoe at 172m ABB NT Surface Wellhead System & MLC Mudline system, 5000 psi WP 30", 456 lbs/ft, grade X-56, with RL-4S threads		13 3/8" casing, shoe at 1037 m 13 3/8", 72 lbs/ft, grade N-80, with Buttress threads	
Cement	Cement type: Norcem Class G Mixwater: Seawater (lead & tail) Density: 1.56 sg lead, 1.95 sg tail Top of cement: At seabed		Cement type: Norcem Class G Mixwater: Seawater (lead & tail) Density: 1.56 sg lead, 1.95 sg tail Top of cement: At seabed	

3.1.2 Operational Achievements

1. The well was drilled to TD in a very efficient and optimum manner. During the well operations the non-productive time was only 4.5% (26 hrs) of total time.

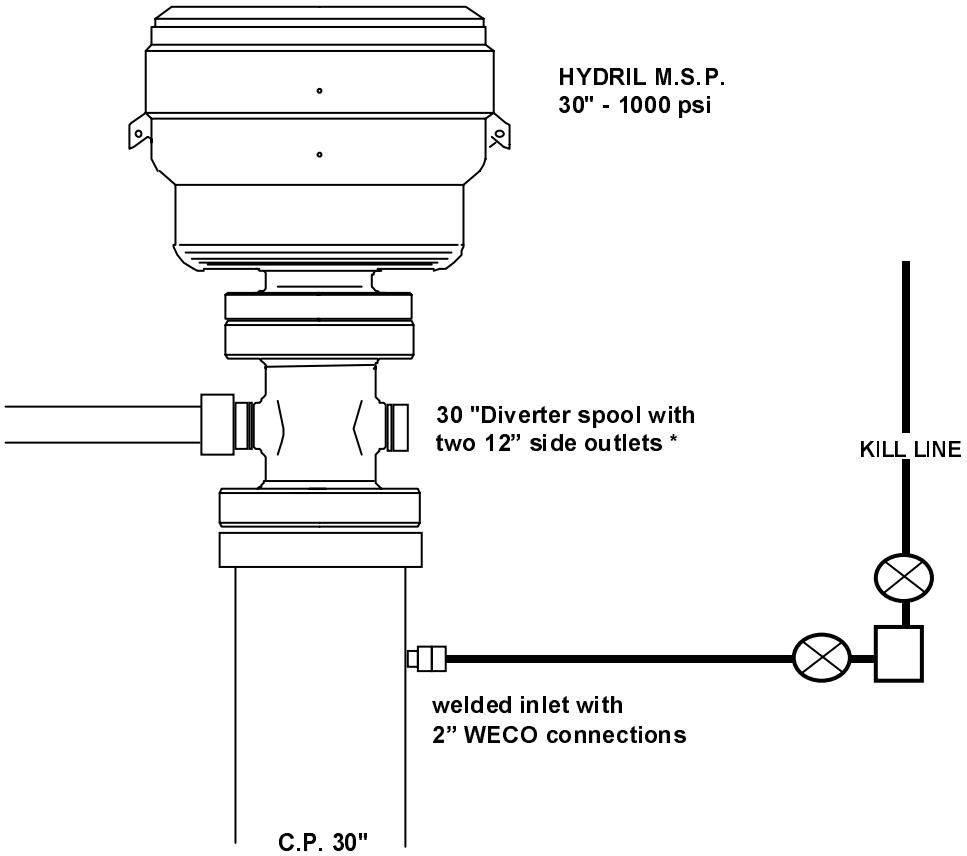
2. The operational time on the well was 5.5 days less than planned.

3.1.3 Operational problems

The only operational difficulty occurred during logging after having reached TD. For the first log run, lost signal on the MAC resulted in 3 re-runs having to be made.

3.1.4 BOP Sketch

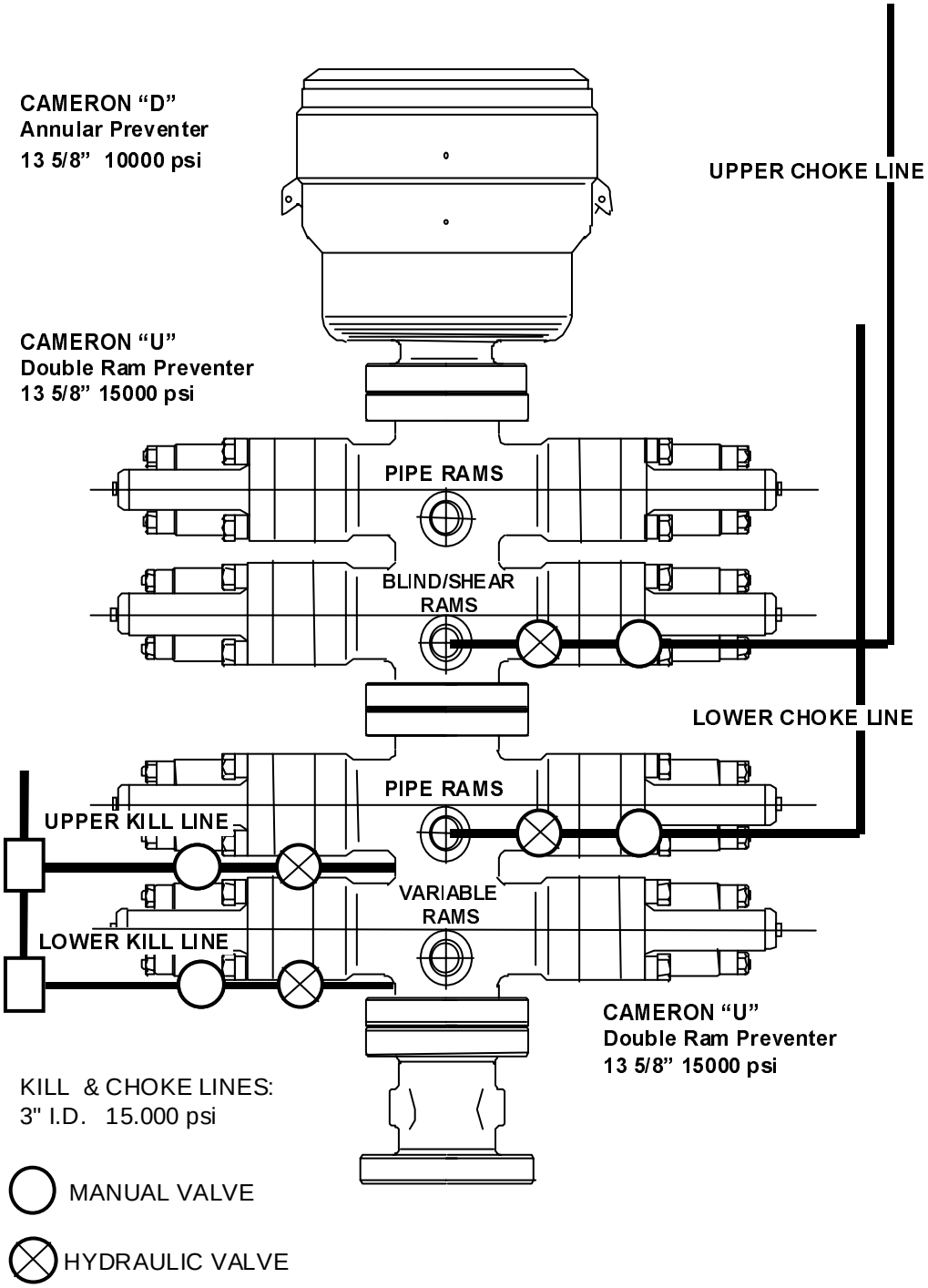
Fig A. DIVERTER SYSTEM



*One outlet is fitted with a flange and the other is fitted with a 12" 2,000 psi W.P. hydraulically operated ball valve connected to a 12" pipe to dump directly overboard

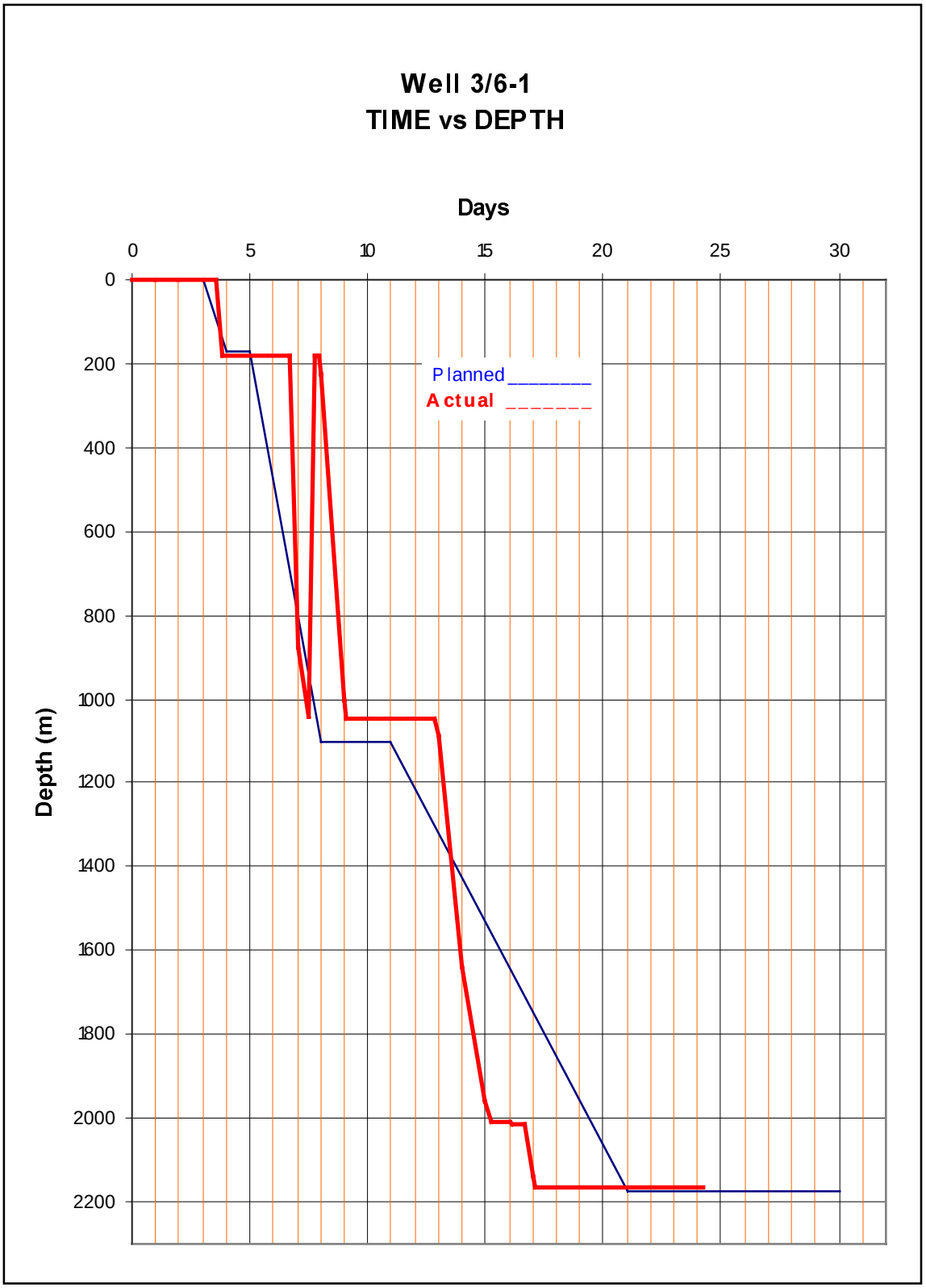
Fig. B. 13 8/8" 10000 psi BOP

TEST	PIPE RAMS (bar)	ANNULAR (bar)	BLIND RAMS (bar)	LINES (bar)
After setting 13 3/8" csg.	34/308	34/103	165	34/308

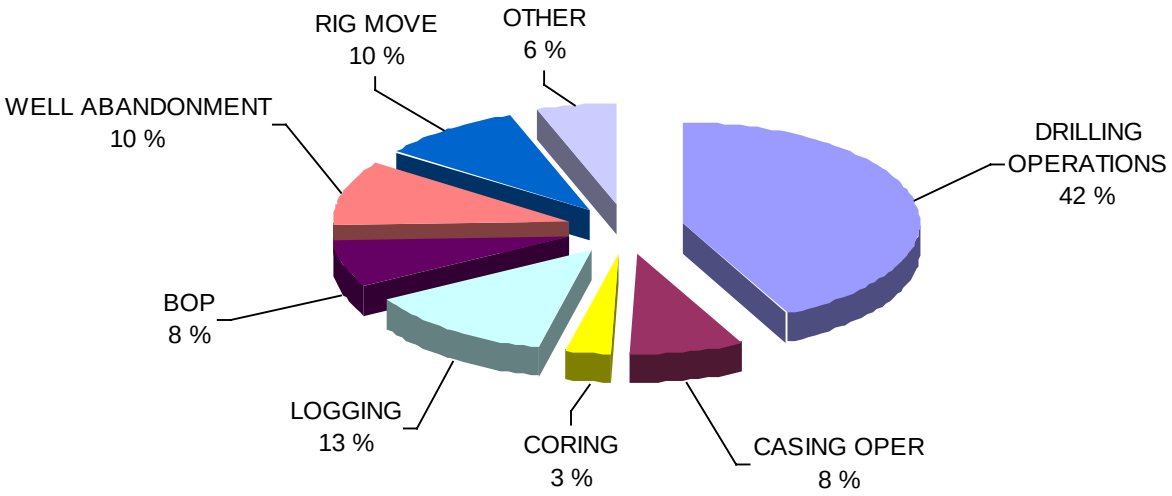


3.2 Time and Cost Analysis

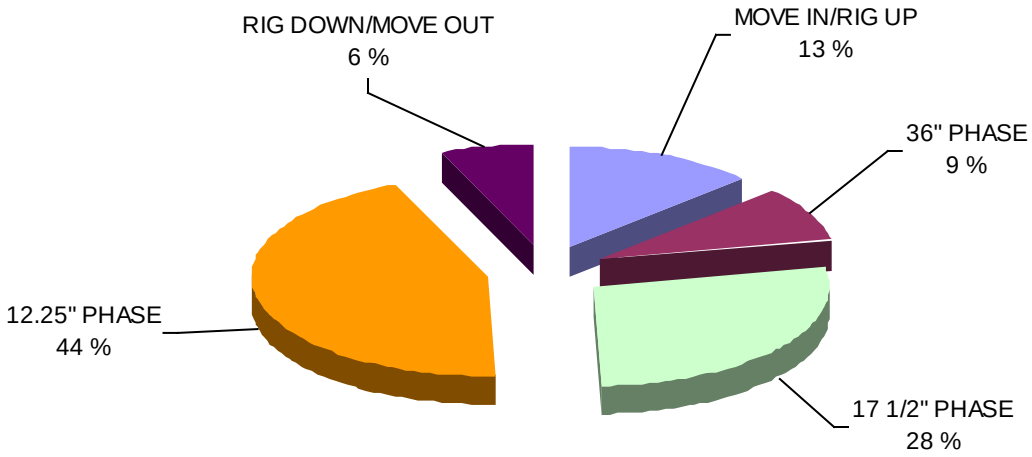
3.2.1 Days vs. Depth



3.2.2 Total Well Time Breakdown by Function



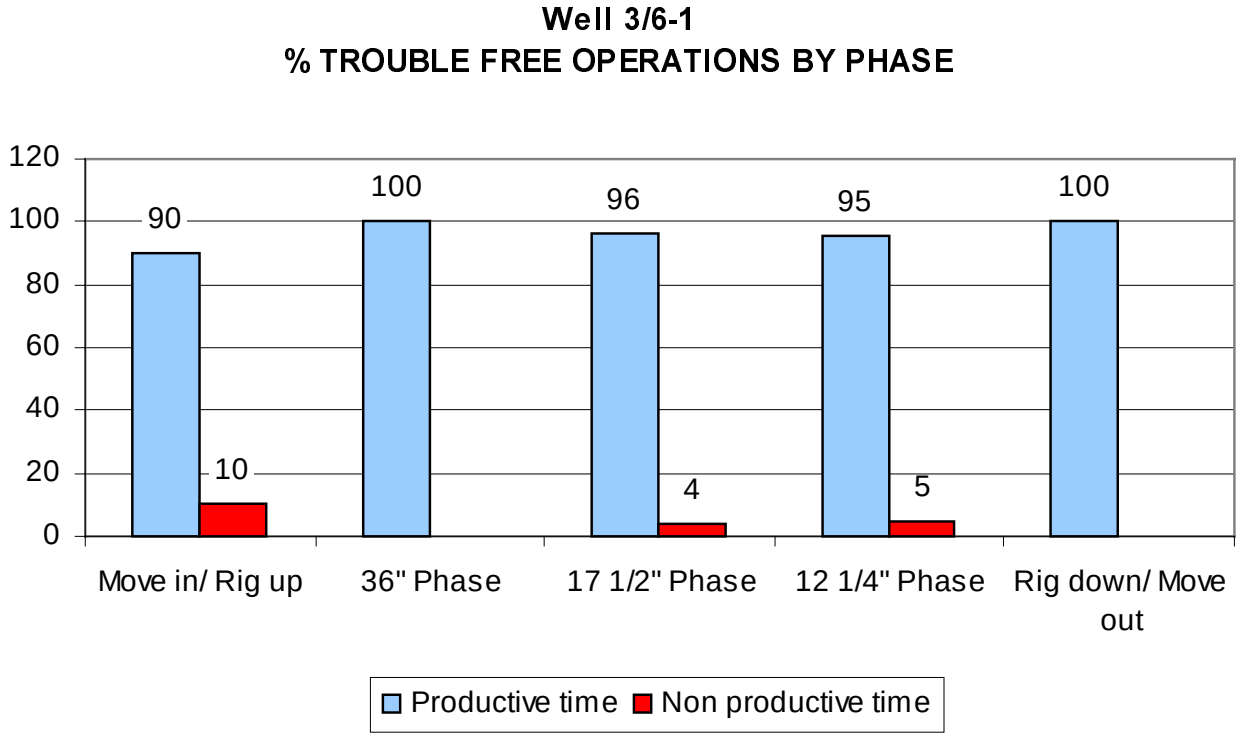
3.2.3 Time by phase



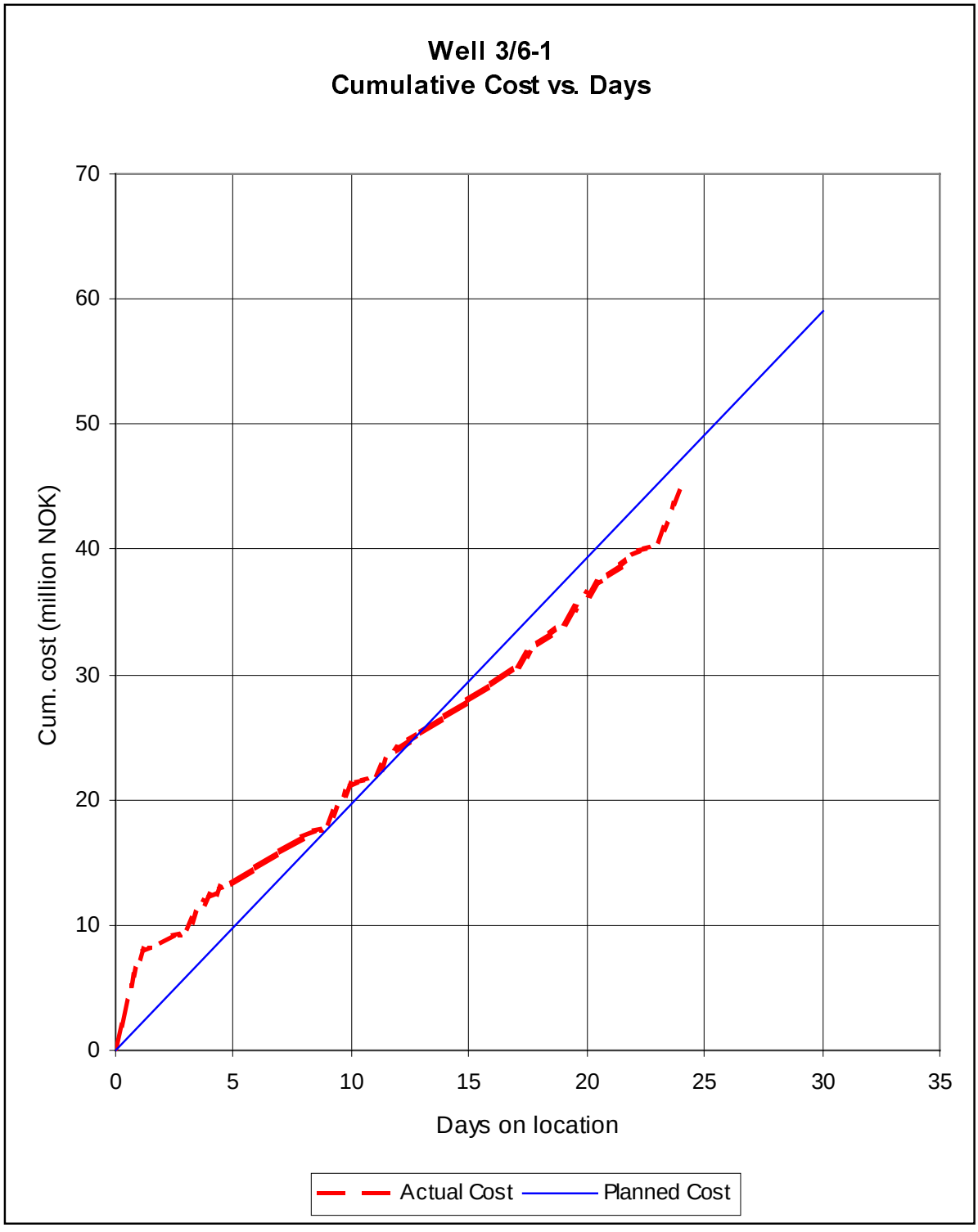
WELL 3/6-1 TIME BREAKDOWN

	Start	End	Days	Tot. hrs	Tot. m	m/Day
	2000	2000				
Move In/Rig Up	June 17 0015	June 20 0330	3.14	75.25	n / a	n / a
36" Phase	June 20 0330	June 22 0800	2.19	52.5	82	37.7
17.5" Phase	June 22 0800	June 29 0000	6.66	160	860	129
				9 7/8" pilot hole: 59 17 ½" hole : 101	860	349.8 204.3
12.25" Phase	June 29 0000	July 9 1700	10.71	257	1127	105.2
12.25" Phase excluding time for logging and P&A			5	120	1127	233.4
Rig Down/Move Out	July 9 1700	July 11 0600	1.54	37	n / a	n / a
Total	0015 June 17 2000	0600 July 11 2000	24.24	581.75	2069	85.35

3.2.4 Non-Productive vs. Productive Time

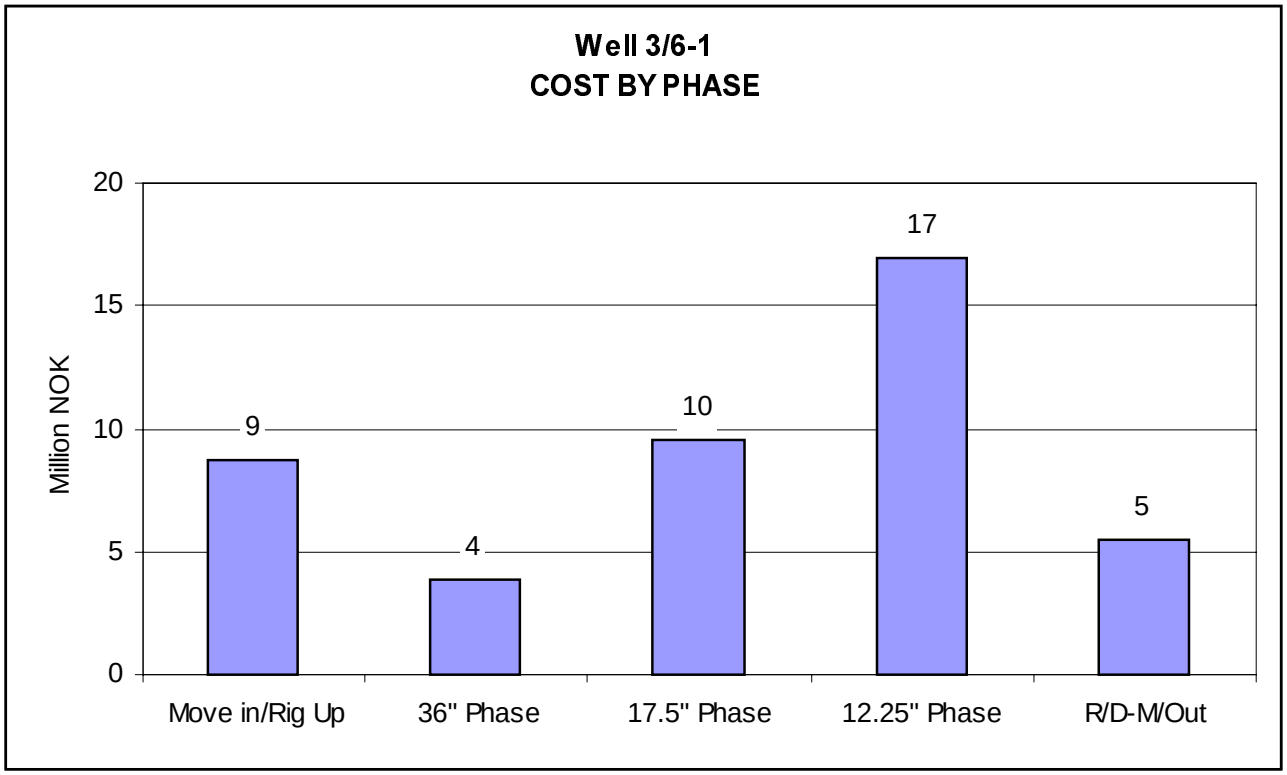


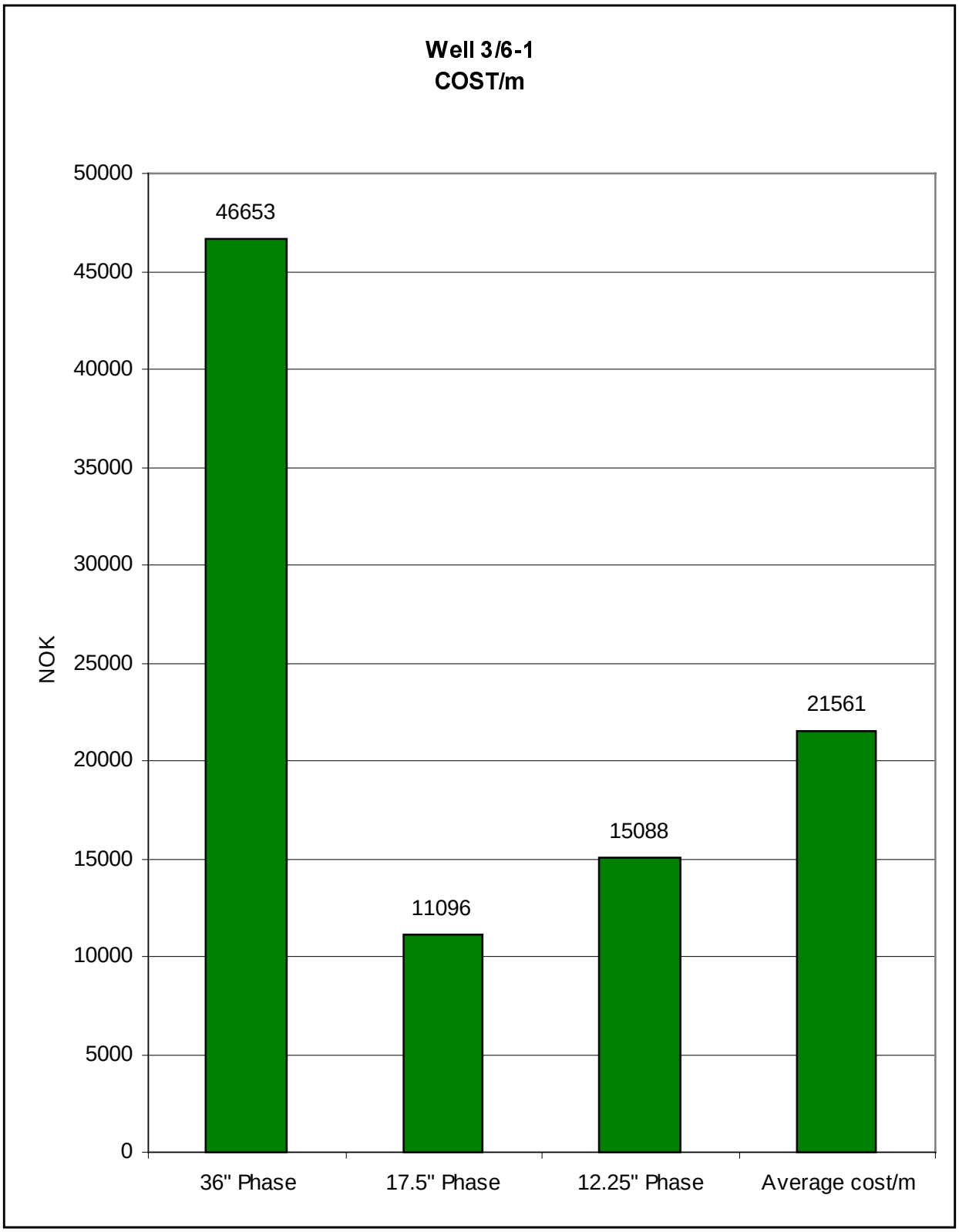
3.2.5 Cost vs. Depth



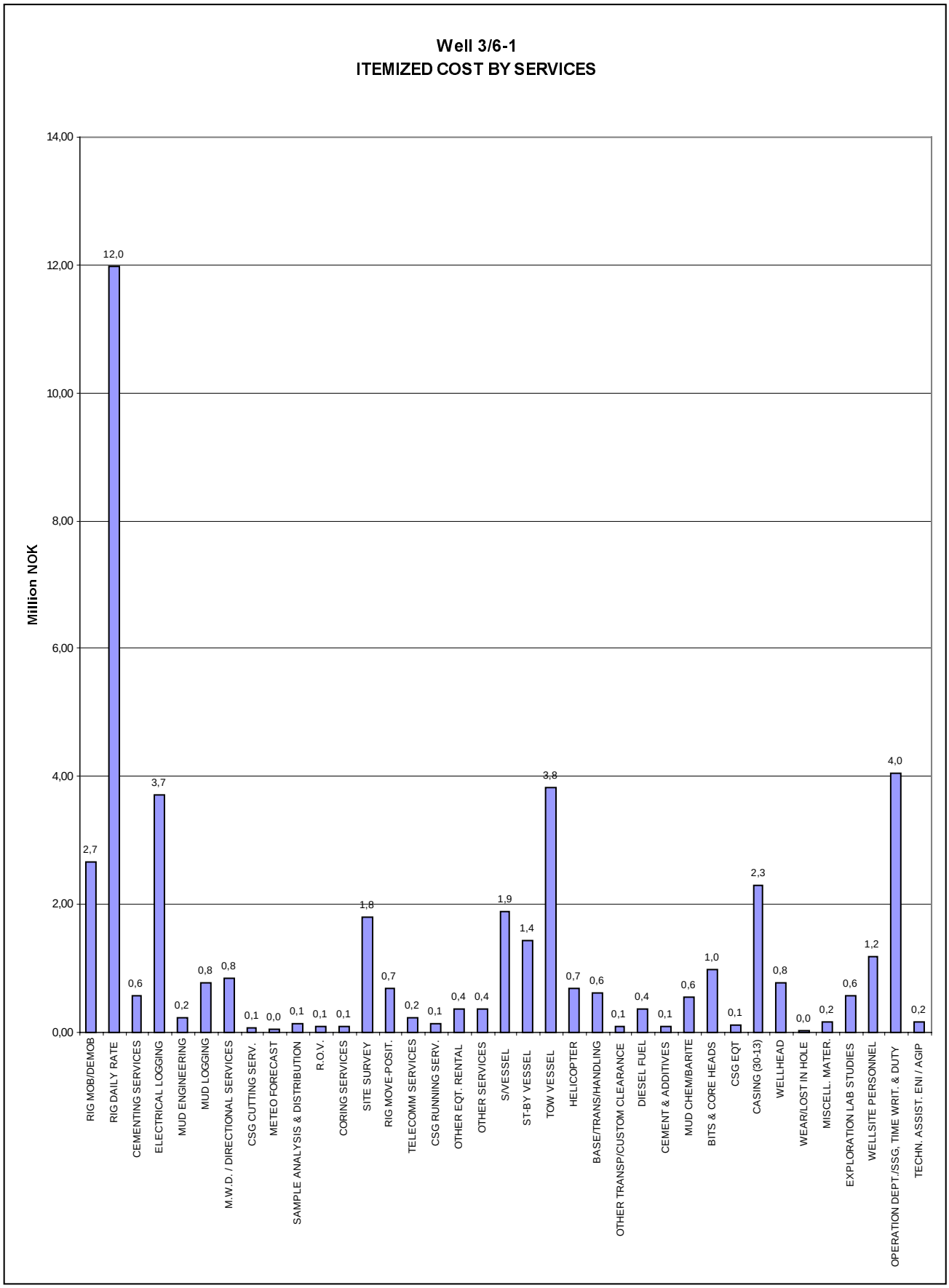
3.2.6 Cost per Phase

COST BY PHASE	Start 2000	End 2000	Days	Section Cost MMNOK	Meter	Cost/Meter NOK
Move in/Rig Up	June 17 0015	June 20 0330	3.14	9		
36" Phase	June 20 0330	June 22 0800	2.19	4	82	46653
17.5" Phase	June 22 0800	June 29 0000	6.66	10	860	11096
12.25" Phase	June 29 0000	July 9 1700	10.71	17	1127	15088
Rig Down Move Out	July 9 1700	July 11 0600	1.54	5		
TOTAL	June 17 0015	July 11 0600	24.24	45	2069	21561




Well 3/6-1
COST/m
NOK
50000
45000
40000
35000
30000
25000
20000
15000
10000
5000
0
46653
11096
15088
21561
36" Phase
17.5" Phase
12.25" Phase
Average cost/m

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 only 26 hours (4.5% of total time). Of this time 7.5 hours was "waiting on weather" prior to the jack-up being able to pin down on location, 10 hours were used for service & repair of rig equipment, 7.5 hours were for problems/repairs of logging equipment and 1 hour for unplanned flow check.

3.3.2 Drilling Summary

Move In and Jack Up Operations:

The "Transocean Nordic" jack up rig was mobilized from Great Yarmouth on June 13, 2000 at 1900 hrs (GMT+1). The rig was towed to the drilling location in 3.2 days. The legs were pinned on location and the rig accepted to be in position at 0015 hrs on June 17, 2000. After preloading the rig was jacked up to an airgap of 17 m and the cantilever was skidded out. The distance from the rotary table to the sea surface (RT – MSL) was 34 m. Due to authority requirements a soil boring had to be made before starting the drilling of the well. On 19 June soil sample coring was done down to 128 m. The seabed was tagged at 97.54 m RT.

The "Transocean Nordic" jack up rig was mobilized from Great Yarmouth on June 13, 2000 at 1900 hrs (GMT+1). Two supply boats (Anglian Monarch and Esvagt Connector) towed the Transocean Nordic to the 3/6-1 location. The towing of the rig to the drilling location took 3.2 days.

The total distance towed was 272.8 nautical miles. The average towing speed was 3.5 knots. Sailing time was reduced when entering Norwegian waters, due to NPD regulations for lowering the legs. The ROV was jumped and the spud cans observed. To pin the legs and jack-up the rig to 3 meters air gap took 11.25 hrs.

Final rig Geographical Location (International Spheroid ED 50):

Lat. = 56 deg. 35 min 0.142" N
Long. = 04 deg. 53 min 30.353" E

UTM Location:
X = 616199.25 m Easting
Y = 6272751.54 m Northing

The rig was preloaded and the preload held for 3 hours. After dumping the preload the rig was jacked up to 17 m airgap. The water depth was 64 m. The distance from rotary table (RT) to mean sea level (MSL) was 34 m. This gave an RT – seabed distance of 98 m.

Since there had not been time to perform soil sampling on the drilling location prior to moving in the rig, authority requirements demanded that soil sampling was done from the rig prior to starting the drilling operations. For this soil boring the company Fuegro was used. For the soil boring a Fuergro-McClelland open hole winged drag bit was used and run on 5" drillpipe. The soil sampler was run on the sandline inside the drillpipe to take samples at regular intervals. The bit was run and tagged seabed at 97.54 m RT. The first soil sample was taken 20 m below seabed. Thereafter soil samples were taken at 1 -2 m intervals down to 135 m (37 m below seabed). 24 soil samples taken with 57 mm diameter sample tubes were recovered. The soil sampling operation took 17 hours.

36" Hole section /30" Conductor

DEPTH INTERVAL: Seabed – 180 m RT

General:
After the soil boring operation the rig was prepared for drilling the 36" hole section.

The major goals established for drilling this section of hole was to drill the hole quickly, use a high viscosity/weighted drilling fluid to keep the hole open, run casing as quickly as possible, and set the mud line hanger system at the appropriate spot. The casing would then be cemented to surface to provide enough structural strength to support the remainder of the casings and BOP system.

The total cost for the 36" phase, from spud of the 36" hole to start of the 17 ½" phase, was 4 MM NOK or 46653 NOK/m. From the time of the rig move until spud was 6.77 days and there was 7.5 hours of unscheduled events (Move in and Rig up). The lost time was due to waiting on weather. The total time from spud until starting the drilling of the 17 ½" hole section was 2.17 days with no unscheduled events occurring.

Drilling:
The 36" section of hole was drilled using a 26" bit followed by a 36" hole opener behind the bit. This section was drilled with seawater using high viscosity sweeps to clean the hole. Once the 36" hole had been drilled to the depth of 180 m, the hole was displaced to high viscosity bentonite slurry. A Totco survey tool was dropped and a trip was made to the seafloor to check hole conditions and to recover the Totco. The drill string was run back to bottom without encountering any tight spots and the hole was again circulated until clean and displaced with the same 1.2 sg high viscosity fluid prior to pulling out of hole to run 30" casing.

Casing/Cementing:
The 30" casing string consisted of 14 joints of 456 lbs/ft, grade X-52 casing. The bottom 6 joints (from shoe joint and up – including the MSL hanger joint) had DQ H-90 connections. It was then crossed over to RL-4 S connections, and this thread was used up to the landing joint where it was crossed back to DQ H-90. The casing was landed off on the 30" tensioning system, reaction / tensioning ring, with the jacks in mid-stroke. The mudline hanger was placed at 105 m, (7 m below the seabed). A cement stinger was made up and run inside the 30" casing and stung into the float shoe. The ROV was jumped to observe for cement returns to the seabed. A 1.56 sg lead slurry and a 1.9 sg tail slurry were used. The 30" casing was cemented with returns to seabed.

Nipple Up:
After the casing was cemented, the 30" Hydril M.S.P., 1000 psi diverter system was installed.

BHA/Bits:
A Security S3SJ4, 26 inch bit was used to drill the section. The BHA used was a slick assembly. The detailed assembly is in the BHA report section.

Mud/Solids Control:
Seawater was used to drill this hole section. High viscosity sweeps were employed to help clean the hole. Upon displacement, a high viscosity mud was used to ensure good cleaning of the hole. On the final trip out of the hole before running the 30", the mud was displaced to a high viscosity/weighted system to improve hole stability while running the casing.

17.5" Hole section / 13.375" Casing

DEPTH INTERVAL: 180 – 1047 m RT

General:
This hole section was drilled with the intention of drilling the shallow gas reflectors where shallow gas might be encountered, and to set casing deep enough to achieve a leak-off sufficient to drill to the next casing point. To check for shallow gas a 9 7/8" hole was first drilled from the 30" shoe and down to 1040 m. Shallow gas in the form of residual gas was found, with a maximum surface gas readings in the order of 21%, but flow checks showed this gas to have no flow potential. The pilot hole was then opened up to 17 ½" and then drilled to 1047 m.
The 13 3/8" casing was run and cemented without problems.
The entire 17 1/2" interval was drilled, cased, and cemented in 6.66 days with 6.5 hours of unscheduled events. Total 17 ½" interval cost was 10 MM NOK or 11096 NOK/m.

Drilling:
A 26" bit was used to drill out the shoe of the 30" shoe and rat hole. With a 9 7/8" bit, and with MWD in the BHA, a pilot hole was drilled down to 1040 m to check for shallow gas. While drilling each stand was reamed once. Shallow gas in the form of residual gas was found in the approximate interval 870 – 950 m. Maximum gas reading while drilling was 21.9% at 936 m (circulating bottoms up at this depth gave a gas reading of 32%). Flow checks were made while drilling at 931 m and 1040 m, and on the way out at 755 m – no flow.

The 9 7/8" pilot hole was then opened up to 17 ½" down to 1040 m, and the 17 ½" hole was continued down to 1047 m which was section TD. The mud in the hole was circulated and conditioned, a flow check was made and the Totco survey was dropped. When pulling out of hole to the 30" shoe several tight spots had to be reamed. When tripping back to TD several tight spots had to be reamed. The mud was circulated and conditioned, and when pulling out several tight spots had again to be reamed. Preparations were made for the installation of the 13 3/8" casing.

Casing/Cementing/ NU:

The 13 3/8" casing was run without difficulties and landed in the mudline hanger. Prior to the cementing a 16 m^3 fresh water spacer was pumped. The 13 3/8" casing was cemented with 86.9 m^3 1.56 sg lead slurry and 16.6 m^3 1.95 sg tail slurry.

The wash ports in the casing were opened and the annulus between the 30" and 13 3/8" casing was flushed above the mudline hanger; the wash ports were then closed. Overboard lines and bell nipple were nippled down and the diverter was lifted to enable rough cutting the 13 3/8" casing. The cut 13 3/8" casing, diverter and casing handling equipment were laid out. After final cutting of the 13 3/8" casing the wellhead assembly was installed and tested. The BOP stack was installed and tested and the wear bushing installed.

Bits/BHA:
In this hole section 26" bit, one 9 7/8" bit and one 17 1/2" bit were used. The 26" Security S3SJ4 was used for drilling out cement in the 30" shoe. The 9 7/8" Smith FGSS+2C (IADC Code 117) was used for the pilot hole and came out with the teeth approx. 50% worn. The 17 ½" Hughes GTX-CG1 (IADC Code 115) came out with the teeth approx. 20 – 30% worn.

Mud/Solids Control:

The drilling used for this hole section was a 1.20 sg seawater/bentonite system with barite used as the weighting material.

12.25" Hole section/Logging/P&A

DEPTH INTERVAL: 1047 – 2167 m RT

General:

After drilling out of the 13 3/8" casing shoe, the 12 ¼" hole was first drilled down to 2008 m where the interval 2008 – 2011.5 m was cored with a 8 ½" core bit. The cored interval was then opened to 12 ¼" and the drilling of the 12 ¼" section resumed until the TD of the well was reached at 2167 m.
The total time for the 12 ¼" phase was 10.71 days. 6.5 hours of this time was due to unscheduled events mainly caused by problems with logging tools and some rig equipment repair work. The interval cost was 17MM NOK or 15088 NOK/m.

Drilling:
A 12 ¼" bit was run to drill out the 13 3/8" shoe and rat hole to 1047 m. A FIT was performed to an equivalent mud density of 1.65 sg. The drilling of the 12 ¼" hole section then continued down to 2008 m where it was decided to take a core. During wiper trips prior to reaching 2008 m it was necessary to ream multiple tight spots both when pulling out and going back in hole. Using 8 ½" core bit coring assembly a core was taken from 2008 m to 2011.5 m where the core barrel jammed. When pulling out 2.6 m of the core was recovered (74% of cored interval). The cored section was opened to 12 ¼", and the drilling of the 12 ¼" hole section continued down to 2167 m which was TD of the well. During the drilling to TD tight spots had to be reamed during wiper trips. After reaching TD two wiper trips were made to ream tight spots and the mud in the hole was circulated and conditioned prior to pulling out of hole for logging.

Logging
Baker Atlas was the logging contractor. Log Run no. 1 was made (MLL/HDLL/ZDL/CN/ DSL/ TTRM), but malfunctioned due to lost signal on MAC. The next two re-runs malfunctioned for the same reason. The tool string was then re-built to ZDL/CN/DSL/ TTRM and Run no. 1 was finally successful.
Then followed Log Run 2 and 3:
Run no. 2: STAR/ ORIT/GR/TTRM
Run no. 3: HDLL/ MLL/MAC/TTRM/ORIT/ GR – had intermittent problems with lost signal on the HDLL and finally lost signal completely.

A round trip was made with 12 ¼" bit to clean the hole and condition the mud; the mud weight was reduced from 1.40 to 1.34 sg. Max. gas at bottoms up was 2.05%.

Then followed Log Run 4, 5 and 6:
Run no. 4: RCI/GR/TTRM – malfunctioned both on the first run and on the first re-run. Only on the second re-run were satisfactory samples obtained.
Run no. 5: VSP
Run no. 6: SWC/GR

Bits/BHA:
One 12 ¼" Hughes FM2665R bit (IADC Code 111) was used to drill the entire 12 ¼" hole section. At TD it came out with 25 – 30% wear on the inner tooth row, no wear on the outer row. For the coring run an 8 ½" core bit of the type Hughes ARC427 was used.
A simple pendulum assembly was run for the entire interval. The MPR was run right above the bit to obtain quicker information on new formation drilled.

Mud/solids control:
The mud system used for the 12 ¼" hole section was a KCL/Pac system where glycol was added to provide additional lubricating properties. This mud did not give any problems during the drilling of this hole section.

Plug and Abandonment Summary:
The time required for the permanent abandonment operations for well 3/6-1 was 2.5 days (the P&A time is included in the total time for the 12 ¼" Phase).

Plug no. 1: Cement from 2150 m up to 1800 m.

Plug no. 2: Cement from 1140 m up to 860 m.

13 3/8" casing disconnected at 105 m and retrieved.

30" casing cut at 103 m (5 m below seabed) and retrieved.

Plug no. 3: Cement from 300 m up and to seabed (at 98 m).

Note: There was cement between the 30" and 13 3/8" casings to above the mud line hanger at 105 m.

The BOP stack and wellhead were nippled down after setting Plug no. 2 (the nippling down of the BOP stack and wellhead took 9 hours which are included in the total time for the 12 ¼ Phase).

See also the attached figure of P & A.

Rig down/Move out

The Rig down/Move out Phase began on July 9, 2000, and the total time used for this phase was 1.54 days. The drilling package and cantilever were skidded in. The boats were backloaded and the rig secured. The cost for the phase was 5 million NOK. The rig was jacked partly down and checked for watertight integrity, prior to pulling the legs. The Transocean Nordic was released from contract on July 11, 2000 at 0600 hours.

3.3.3 Daily Operations

NORSK AGIP
Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
17-jun-00	01:00	02:30	1,5	M	P	c	MIRU	Rig entered the 1 km radius at 00:15 hrs on 17/06/00. Lowered legs till 2.5 m off seabed. Reported water dept: 64 m.
	02:30	03:00	0,5	M	P	c	MIRU	Sea state unsuitable for pinning. Raised legs to 4.5 m.
	03:00	10:30	7,5	M	U	f	MIRU	Waited on weather.
	10:30	11:30	1	M	P	b	MIRU	Commence moving to location. Final approach. Tagged bottom @ 10:46 hours. Jacked up to 3 m air gap.
	11:30	12:00	0,5	M	P	c	MIRU	Disconnected Esvagt Connector and Anglian Monarc.
	12:00	15:30	3,5	M	P	c	MIRU	Jump ROV and performed spud can survey. Rigged up deepwell pumps.
	15:30	00:00	8,5	M	P	c	MIRU	Commence to preload.
18-jun-00	00:00	03:00	3	M	P	c	MIRU	Performed preload operation.
	03:00	06:00	3	M	P	c	MIRU	Hold Preload.
	06:00	08:30	2,5	M	P	c	MIRU	Dumped Preload.
	08:30	11:00	2,5	M	P	c	MIRU	Prepared and moved Upper drilling package to forward position.
	11:00	18:30	7,5	M	P	c	MIRU	Rigged up walkways, stairways, "c"plates, conductor tensioning system, handrails etc from pipedeck.
	18:30	19:30	1	M	P	c	MIRU	Jacked up to 17m air gap.
	19:30	23:00	3,5	M	P	c	MIRU	Skidded Cantilever to E1 position and secured it.
	23:00	00:00	1	M	P	c	MIRU	Skidded Upper package to drilling position.
19-jun-00	00:00	03:00	3	M	P	c	MIRU	Skidded upper package to drilling position.
	03:00	09:00	6	M	P	c	MIRU	Rigged up for drilling and offloaded supply boat.
	09:00	10:30	1,5	N	P	f	MIRU	Rigged up Fugro soil coring equipment.
	10:30	12:30	2	N	P	f	MIRU	Made up coring bit and picked up 5" DP. Tagged seabed at 97.54 m.
	12:30	00:00	11,5	N	P	f	MIRU	Took soil samples and drilled 98 m - 128 m.
20-jun-00	00:00	02:00	2	N	P	f	MIRU	Took soil samples from 128 m to 135 m.
	02:00	03:30	1,5	N	P	f	MIRU	POOH and laid down soil sampling assembly and equipment.
	03:30	09:00	5,5	A	P	b	DRLCON	Made up and drifted 6 stand 5" dp, 5 stand HWDP and a jar stand.
	09:00	13:30	4,5	A	P	b	DRLCON	Picked up and made up 36" BHA.
	13:30	20:30	7	A	P	a	DRLCON	Held prespud meeting. Tagged seabed at 98 m. Spudded well at 13:14. Drilled 36" hole from 98 m to 180 m
	20:30	21:00	0,5	A	P	c	DRLCON	Circulated high vis pill around and displaced hole to gel mud.
	21:00	21:30	0,5	H	P	f	DRLCON	Dropped Totco survey.
	21:30	22:00	0,5	A	P	b	DRLCON	POOH to 101m.
	22:00	22:30	0,5	H	P	f	DRLCON	Recovered survey barrel. Angel 0 deg.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
20-jun-00 (cont.)	22:30	23:00	0,5	A	P	b	DRLCON	RIH to TD, no drag or fill.
	23:00	00:00	1	A	P	c	DRLCON	Pumped 15 m^3 high vis pill around and displaced hole to 1.2 SG mud.
21-jun-00	00:00	01:00	1	A	P	b	DRLCON	POOH and racked back 36" hole assembly.
	01:00	02:30	1,5	C	P	e	CSGCON	Prepared to run 30" casing.
	02:30	11:00	8,5	C	P	b	CSGCON	Held safety meeting. Run 30" Conductor pipe, worked pipe through 25 ton tight spot at 168 m.
	11:00	13:30	2,5	C	P	b	CSGCON	Installed reaction ring, landed 30" conductor and energized tensioners to 62 bar on mid stroke.
	13:30	14:00	0,5	C	P	b	CSGCON	Unlatched and laid down landing joint.
	14:00	15:00	1	C	P	e	CSGCON	Rigged down casing handling equipment and changed bails.
	15:00	16:30	1,5	C	P	b	CSGCON	Made up and run cement stinger with centralize assembly.
	16:30	19:00	2,5	C	P	c	CSGCON	Held safety meeting. Rigged up for cementing and pressure tested lines. Mixed and pumped lead slurry as per program. Mixed and pumped tail slurry as per program. Displaced cement using cementing pump.
	19:00	21:00	2	C	P	c	CSGCON	POOH and laid down stinger with centralizer. Laid down cementing equipment.
	21:00	00:00	3	I	P	b	CSGCON	Installed spool piece and nippled up diverter.
22-jun-00	00:00	08:00	8	I	P	b	CSGCON	Nippled up diverter and bell nipple.
	08:00	11:00	3	A	P	b	DRLIN1	Picked up and racked back 5" DP stand in derrick.
	11:00	11:30	0,5	N	U	e	DRLIN1	Serviced topdrive while working helicopter.
	11:30	16:30	5	A	P	b	DRLIN1	Picked up and racked back 5" DP stand in derrick.
	16:30	18:30	2	A	P	e	DRLIN1	Laid out 36" Holeopener. RIH with 26" bit.
	18:30	19:00	0,5	I	P	d	DRLIN1	Function tested diverter system 240 str/min - 76 bar.
	19:00	21:00	2	A	P	a	DRLIN1	Tagged cement at 170.5 m. Drilled cement, casing shoe and cleaned out rat hole.
	21:00	21:30	0,5	A	P	c	DRLIN1	Swept hole with 10 m^3 hi-vis pill.
	21:30	23:00	1,5	A	P	b	DRLIN1	POOH and laid out 26" bit.
	23:00	00:00	1	A	P	b	DRLIN1	M/U and function tested MWD tool.
23-jun-00	00:00	01:00	1	A	P	b	DRLIN1	Programmed MWD.
	01:00	03:00	2	A	P	b	DRLIN1	Made up and RIH with 9 7/8" BHA.
	03:00	03:30	0,5	A	P	a	DRLIN1	Drilled 9 7/8" pilot hole from 180 m to 184 m.
	03:30	04:00	0,5	O	D	e	DRLIN1	Kelly hose caught on manipulator arm. Pulled into shoe. Attempted to pressure test hose to 290 bar, no go due to leakage.
	04:00	07:30	3,5	O	D	e	DRLIN1	Changed kelly hose and test it to 290 bar, OK .
	07:30	00:00	16,5	A	P	e	DRLIN1	Drilled 9 7/8" pilot hole from 184 m to 728 m at 3700 lpm, 70 rpm and 0- 5 ton WOB. Reamed each stand once.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
24-jun-00	00:00	08:30	8,5	A	P	a	DRLIN1	Drilled 9 7/8" pilot hole from 728 to 954m at 3700 LPM, 70/ 105 RPM and 5/ 10 ton WOB. Flowchecked 15% gaspeak at 931 m, OK.
	08:30	09:30	1	N	U	f	DRLIN1	Flowchecked 21% gaspeak, OK. Circulated bottoms up, max gas 32%.
	09:30	12:30	3	A	P	a	DRLIN1	Drilled 9 7/8" pilot hole from 954 m to 1040 m at 3700 LPM, 90RPM and 5/12 ton WOB. gas peaks: 872 m 13.2% 913 m 15.5% 936 m 21.9%
	12:30	13:30	1	A	P	c	DRLIN1	Circulated hole clean at 4000 LPM.
	13:30	17:30	4	A	P	b	DRLIN1	POOH and laid down stabilizers and bit. Flowchecked on TD and 755 m, OK.
	17:30	19:00	1,5	A	P	b	DRLIN1	Downloaded MWD data and laid down tool.
	19:00	22:30	3,5	A	P	b	DRLIN1	Made up 17 1/2" BHA and RIH to 180 m.
	22:30	00:00	1,5	A	P	d	DRLIN1	Opened hole to 17 1/2" from 180 m to 224 m at 4000 lpm, 95 RPM and 0 to 2 ton WOB.
25-jun-00	00:00	12:00	12	A	P	d	DRLIN1	Opened hole to 17 1/2" from 224 m to 638 m, 3900 l/min, 80 - 100 rpm, 0 - 9 ton.
	12:00	12:30	0,5	A	U	c	DRLIN1	Circulated with reduced rate while changing screens on shaker.
	12:30	19:00	6,5	A	P	d	DRLIN1	Opened hole to 17 1/2" from 638 m to 878 m.
	19:00	19:30	0,5	A	U	c	DRLIN1	Circulated with reduced rate while cleaning up shakers.
	19:30	00:00	4,5	A	P	d	DRLIN1	Opened hole to 17 1/2" from 878 m to 1000 m, 3900 l/min, 95 RPM, 2-15 ton.
26-jun-00	00:00	02:00	2	A	P	d	DRLIN1	Opened hole to 17 1/2" from 1000 m to 1040 m, 3900 l/min, 95 rpm, 2 - 15 ton.
	02:00	02:30	0,5	A	P	a	DRLIN1	Drilled 17 1/2" hole from 1040 m to 1047 m, 3900 l/min, 95 rpm, 15 - 17 ton.
	02:30	04:00	1,5	A	P	c	DRLIN1	Circulated and conditioned the mud.
	04:00	04:30	0,5	H	P	f	DRLIN1	Flowchecked, ok. Dropped Totco survey.
	04:30	09:00	4,5	A	P	b	DRLIN1	POOH to shoe. Reamed and worked several tight spots.
	09:00	10:00	1	H	P	f	DRLIN1	Flow checked, ok. Retrieved survey 0.5 deg.
	10:00	12:30	2,5	A	P	b	DRLIN1	RIH to TD, reamed tight spot at 402 m.
	12:30	14:00	1,5	A	P	c	DRLIN1	Circulated and conditioned mud.
	14:00	19:30	5,5	A	P	b	DRLIN1	POOH. Tight spots at 972m, 992m, 1030m and 1045m - max overpull 20 ton.
	19:30	21:30	2	C	P	e	CSGIN1	Rig up to run 13 3/8" casing. Held pre casing meeting with crew.
	21:30	00:00	2,5	C	P	b	CSGIN1	Run 13 3/8" casing to 124 m. Flowchecked and flowback checked floating equipment and bakerlocked first 3 connections. Installed 2,2,1,1 centralizers on lower joints.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
27-jun-00	00:00	08:30	8,5	C	P	b	CSGIN1	Run 13 3/8" casing.
	08:30	11:00	2,5	C	P	b	CSGIN1	Picked up hanger and installed Vetco centralizer. Continued to run 13 3/8" casing. Landed out in mudline hanger.
	11:00	11:30	0,5	C	P	f	CSGIN1	Rigged up cementing head.
	11:30	13:30	2	C	P	c	CSGIN1	Circulated sting vol. 20 bar with 100 spm and 40 bar with 126 spm. Held pre cementing meeting.
	13:30	17:00	3,5	C	P	c	CSGIN1	Pressure tested lines to 300 bar. Pumped 16 m^3 fresh water spacer. Mixed and pumped 86.9 m^3 1.56 SG lead slurry with 3.20 l/100kg econolite, 1.5 l/100kg HR-4L and 0.1 l/100kg NF-6. Mixed and pumped 16.6 m^3 1.95 SG tail slurry with 0.9 HR-4L l/100kg and 0.1l.
	17:00	17:30	0,5	C	P	f	CSGIN1	Rigged down cementing head.
	17:30	19:30	2	C	P	c	CSGIN1	Opened washports with 4 turns on casing and installed circulation swedge assembly. Flushed annulus above hanger and spotted a sweetwater pill in same annulus. Closed washed ports and tested them to 260 bar.
	19:30	20:00	0,5	C	P	f	CSGIN1	Rigged down circulation swedge assembly.
	20:00	22:30	2,5	I	P	b	CSGIN1	Nippled down overboard line, ball valve and bell nipple.
	22:30	23:30	1	I	P	b	CSGIN1	Lifted diverter, rough cut 13 3/8" casing and laid out the casing cut.
	23:30	00:00	0,5	C	P	f	CSGIN1	Laid out 13 3/8" handling equipment.
28-jun-00	00:00	00:30	0,5	C	P	e	CSGIN1	Laid out casing handling equipment.
	00:30	02:00	1,5	I	P	b	CSGIN1	Laid out bell nipple and racked back diverter.
	02:00	03:30	1,5	I	P	b	CSGIN1	Installed 13 3/8" centralizer and final cut 13 3/8" casing.
	03:30	05:30	2	I	P	b	CSGIN1	Installed 13 3/8" head assembly, energize seals and tested it, ok. Installed wellhead valves.
	05:30	06:00	0,5	I	P	b	CSGIN1	Installed casing head XO and double studded adapter.
	06:00	16:30	10,5	I	P	b	CSGIN1	Installed BOP, nippled up kill and choke and Koomey hoses. Rigged up tensioners and nippled up bellnipple and flowlines.
	16:30	17:30	1	I	P	d	CSGIN1	Function tested stack from rigfloor and remote panel.
	17:30	18:30	1	I	P	d	CSGIN1	Install teststring.
	18:30	22:00	3,5	I	P	d	CSGIN1	Rigged up Halliburton and pressure tested test line. Pressure tested kill and choke hoses, upper and lower IBOP, and kelly hose to 345 bar, ok. Pulled test plug.
	22:00	23:30	1,5	I	P	d	CSGIN1	Pressure tested wellhead valves against shear ram to 260 bar, ok.
	23:30	00:00	0,5	I	P	e	CSGIN1	Installed wear bushing.

NORSK AGIP
Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
29-jun-00	00:00	01:30	1,5	A	P	b	DRLIN2	Laid out 17 1/2" BHA from derrick.
	01:30	05:30	4	A	P	b	DRLIN2	Picked up and racked back 5" DP in derrick.
	05:30	11:00	5,5	A	P	b	DRLIN2	Made up 12 1/4" BHA and RIH. Loaded MWD and tested it.
	11:00	15:30	4,5	A	P	b	DRLIN2	Picked up DP and continued RIH.
	15:30	17:30	2	A	P	d	DRLIN2	Drill firm cement from 1008 m to 1024 m with float collar at 1010 m.
	17:30	18:30	1	I	P	e	DRLIN2	Performed kick drills with both drilling crews.
	18:30	20:00	1,5	A	P	d	DRLIN2	Drilled firm cement from 1024 m 1037 m with shoe at 1037m. Drilled and reamed rathole from 1037m to 1047 m.
	20:00	20:30	0,5	A	P	a	DRLIN2	Drilled 12 1/4" hole from 1047 m to 1050 m.
	20:30	21:30	1	A	P	c	DRLIN2	Circulated hole to even mud.
	21:30	22:30	1	I	P	d	DRLIN2	Performed FIT to 1.65 SG EMW.
	22:30	00:00	1,5	A	P	a	DRLIN2	Drilled 12 1/4" hole from 1050 m to 1085 m, 3200-3500 l/min, 2-5 ton, 80-130 RPM.
30-jun-00	00:00	18:30	18,5	A	P	a	DRLIN2	Drilled 12 1/4" hole f/ 1085 - 1537 m, 3450 l/min, 130 RPM, 2-6 ton.
	18:30	19:00	0,5	A	P	c	DRLIN2	Circulated for samples prior to coring point.
	19:00	00:00	5	A	P	a	DRLIN2	Drilled 12 1/4" hole f/ 1537 - 1640 m, 3450 l/min, 130 RPM, 2-6 ton.
01-jul-00	00:00	04:30	4,5	A	P	a	DRLIN2	Drilled 12 1/4" Hole f/ 1640 - 1745 m. 3400 l/min, 120-140 rpm 2 - 6 ton.
	04:30	05:00	0,5	A	P	c	DRLIN2	Circulated condition mud 1.37 sg and btms up prior to wipertrip, 3400 l/min.
	05:00	06:30	1,5	A	P	b	DRLIN2	Pulled out of the hole from 1744 - 1413 m. Tight spots @ 1679, 1659, 1537, 1527 m. Max overpull 30 ton. Flowchecked prior to tripping.
	06:30	09:30	3	A	P	d	DRLIN2	Backreamed f/ 1413 - 1037 m, 2300 l/min, 120 rpm, 180 spm.
	09:30	10:30	1	A	P	c	DRLIN2	Circulated hole clean @ 13 3/8" shoe. 2300 l/min.
	10:30	12:30	2	O	D	e	DRLIN2	Repaired intermediate racking arm. Continued to circulate 2300 l/min and clean hole while repairing IRA.
	12:30	14:30	2	A	P	b	DRLIN2	Ran in the hole f/ 1037 - 1693 m. Tight spot @ 1693 m & max down wt. 30 ton.
	14:30	15:00	0,5	A	P	d	DRLIN2	Washed & reamed f/ 1693 - 1745 m. 2900 l/min, 95 rpm.
	15:00	00:00	9	A	P	a	DRLIN2	Drilled 12 1/4" hole f/ 1745 - 1961 m. Wob1-4, 3400 l/min, 136 rpm. Reamed & circ. twice before connection.
02-jul-00	00:00	00:30	0,5	A	P	c	DRLIN2	Circulate for samples. Flow 3400 l/min. No show.
	00:30	04:00	3,5	A	P	a	DRLIN2	Drilled 12 1/4" hole f/ 1961 - 2008 m. WOB 2-8, rpm 140, 3500 l/min.
	04:00	06:00	2	A	P	c	DRLIN2	Circulated for samples prior to coring point @ 2008 m. Flow 3400 l/min. Wet sand no hydrocarbons.
	06:00	08:00	2	A	P	b	DRLIN2	POOH from 2008-1886 . Tight spots @ 1998, 1990, 1917, 1886. Mop 25 ton.
	08:00	09:30	1,5	A	P	d	DRLIN2	Backreamed from 1886 to 1603 m. Mop 25 ton.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
02-jul-00 (cont.)	09:30	10:30	1	A	P	b	DRLIN2	Pumped out of the hole from 1603-1590 m. No drag.
	10:30	11:30	1	A	P	b	DRLIN2	POOH from 1590-1037m No drag.
	11:30	12:30	1	A	P	b	DRLIN2	Observed well and pumped slug.
	12:30	13:30	1	A	P	b	DRLIN2	Pulled out of hole from 1037 to 288 m.
	13:30	15:30	2	A	P	b	DRLIN2	Pulled out of the hole. Laid down stab's and downloaded the MWD.
	15:30	16:00	0,5	B	P	e	DRLIN2	Held prejob and safety meeting prior to running coring assy.
	16:00	18:00	2	B	P	b	EVAL 1	Made up the 8 1/2" conventional coring assembly.
	18:00	20:00	2	B	P	b	EVAL 1	Ran in the hole to 1037 m with the 8 1/2" coring assembly. Filled pipe every 500 m.
	20:00	20:30	0,5	O	P	e	EVAL 1	Serviced the topdrive.
	20:30	22:30	2	B	P	b	EVAL 1	Ran in the hole with 8 1/2" coring assy to 1970 m.
	22:30	23:00	0,5	B	P	c	EVAL 1	Washed down to 2008 m. 1000 l/min, 0-2 WOB.
	23:00	00:00	1	B	P	c	EVAL 1	Circulated string volume and spaced out string prior to coring. Performed Slow pump rate.
03-jul-00	00:00	01:00	1	B	P	c	EVAL 1	Circulated string volume prior to coring. Flow 1000 l/min.
	01:00	01:30	0,5	B	P	c	EVAL 1	Dropped ball and circulated down. Spaced out string prior to coring.
	01:30	03:00	1,5	B	P	a	EVAL 1	Cut core from 2008 - 2011.5 m. Core jammed attempted to continue no success. Flow 1000 l/min, WOB 2-10 ton, Rpm 20 - 100.
	03:00	07:00	4	B	P	b	EVAL 1	Pulled out of the hole with the core assy. Flowchecked in prior to pulling out.
	07:00	08:00	1	B	P	b	EVAL 1	Laid out Core innerbarrel and recovered 2.6 m with core. Sandstone.
	08:00	09:30	1,5	B	P	b	EVAL 1	Laid down coring assy and handling equipment.
	09:30	10:00	0,5	A	P	b	DRLIN2	Made up the 12 1/4" BHA.
	10:00	11:00	1	A	P	e	DRLIN2	Loaded the MWD.
	11:00	12:00	1	A	P	e	DRLIN2	Continued to make up the BHA and RIH to 262 m.
	12:00	14:00	2	A	P	b	DRLIN2	RIH to 1990 m. Tight spot @ 1990 m Down wt. 25 ton.
	14:00	14:30	0,5	A	P	c	DRLIN2	Washed and reamed 12 1/4" hole from 1990 - 2008 m. Flow 2100 l/min rpm 120, WOB 0-2 ton.
	14:30	15:00	0,5	A	P	d	DRLIN2	Reamed and opened 8 1/2" hole to 12 1/4" hole from 2008 - 2011 m. Flow 2100 l/min rpm 120, WOB 0-5 ton.
	15:00	21:30	6,5	A	P	a	DRLIN2	Drilled 12 1/4" hole from 2011 - 2092 m. Flow 3400 l/min, WOB 2-10 ton, rpm 134.
	21:30	22:30	1	A	P	c	DRLIN2	Circulated for samples @ 2094 m. Chalk, no show. Flow 3400 l/min.
	22:30	00:00	1,5	A	P	a	DRLIN2	Drilled 12 1/4" hole from 2094 - 2140 m. Flow 3400 l/min, WOB 5 - 15 ton, rpm 134.

NORSK AGIP
Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
04-jul-00	00:00	01:30	1,5	A	P	c	DRLIN2	Drilled 12 1/4" hole from 2140 - 2167 m. Flow 3400 l/min, RPM 140, WOB 7-10 ton.
	01:30	02:30	1	A	P	c	DRLIN2	Circulated bottoms up and samples from 2167 m. Chalk. Flow 3400 l/min.
	02:30	03:00	0,5	A	P	b	DRLIN2	Flowchecked well. POOH from 2167 - 2107 m. Tight spots @ 2122 m. MOP 25 ton.
	03:00	04:30	1,5	A	P	d	DRLIN2	Backreamed from 2107 - 2004 m. Flow 1500 l/min. RPM 100 - 140.
	04:30	05:00	0,5	A	P	b	DRLIN2	POOH from 2004 - 1888 m. Tight spot @ 1919 m. MOP 10 ton.
	05:00	05:30	0,5	A	P	b	DRLIN2	RIH from 1888 - 2167 m. Max drag 10 ton.
	05:30	07:00	1,5	A	P	c	DRLIN2	Circulated condition mud 1.40 sg. Flow 3400 l/min.
	07:00	10:00	3	A	P	b	DRLIN2	POOH from 2167 - 1037 m.. MOP 10 ton.
	10:00	10:30	0,5	A	P	c	DRLIN2	Flowchecked well and pumped slug.
	10:30	11:00	0,5	O	D	e	DRLIN2	Repaired auto elevator, changed out latch piston holding pin.
	11:00	13:30	2,5	A	P	b	DRLIN2	POOH from 1037m.
	13:30	14:30	1	A	P	e	DRLIN2	Downloaded and laid down the MWD.
	14:30	16:00	1,5	F	P	f	EVAL 1	Rigged up Baker Atlas Wireline.
	16:00	17:30	1,5	F	P	f	EVAL 1	Run # 1 MLL/HDLL/ZDL/CN/DSL/TTRM. In hole @ 16:30, lost signal on MAC. POOH.
	17:30	18:00	0,5	F	D	f	EVAL 1	Trouble shooting, and changed electronic package on MAC.
	18:00	20:30	2,5	F	D	f	EVAL 1	Run # rr-1 in hole @ 18:00 hrs. Lost signal on MAC. POOH. Replaced 1 knuckle jnt and removed 1 knuckle jnt and 1 centralizer. Function tested ok.
	20:30	21:30	1	F	D	f	EVAL 1	Run 2rr-1 in hole @ 2035 hrs. Lost signal to MAC @ 330 m. POOH.
	21:30	23:00	1,5	F	D	f	EVAL 1	Rebuilt toolstring # 1, GR/ZDL/DSL. Function tested ok.
	23:00	00:00	1	F	P	a	EVAL 1	Run 3rr-1 in hole @ 23:05 hrs.
05-jul-00	00:00	00:30	0,5	F	P	a	EVAL 1	RIH with ZDL/CN/DSL/ TTRM to 2148 m. Took weight @ 2148 m.
	00:30	03:30	3	F	P	a	EVAL 1	Logged section from 2148 - 1037 m. 3 - 3.5 m shallow comp. to MWD log @ 2000 m.
	03:30	04:00	0,5	F	P	a	EVAL 1	RIH to 2039 m.
	04:00	04:30	0,5	F	P	a	EVAL 1	Opened the Caliper @ 2039 m and logged repeat section to 1975 m.
	04:30	06:30	2	F	P	a	EVAL 1	POOH with ZDL/CN/DSL/ TTRM. Performed after log verification.
	06:30	07:00	0,5	F	P	f	EVAL 1	Rigged down the ZDL/ CN/DSL/TTRM logs.
	07:00	08:00	1	F	P	f	EVAL 1	Calibrated the RB on Star. Laid down slam, Star picked up to Cantilever deck.
	08:00	09:00	1	F	P	f	EVAL 1	Rigged up the STAR/ ORIT/GR/TTRM log. Function tested log ok.
	09:00	11:00	2	F	P	a	EVAL 1	Run # 2 Star log in hole @ 09:25 hrs. RIH to 2140 m. Logging weight @ 1250 m 2900 lbs.
	11:00	16:30	5,5	F	P	a	EVAL 1	Logged section from 2140 - 1037 m. Recorded correction pass from 1250 m. 1.2 m shallow, added 1.2 m.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
05-jul-00 (cont.)	16:30	17:00	0,5	F	P	a	EVAL 1	RIH to 2050 m. Stopped main pass @ casing.
	17:00	18:00	1	F	P	a	EVAL 1	Logged repeat section from 2050 - 2000 m. MOP 1000 lbs @ 2048m.
	18:00	19:00	1	F	P	a	EVAL 1	POOH with the Star log.
	19:00	20:00	1	F	P	f	EVAL 1	Performed after log verification and laid down the Star log.
	20:00	22:00	2	F	P	f	EVAL 1	Rigged up the HDLL/ MLL/MAC/TTRM/ORIT/ GR. Function tested logs ok.
	22:00	00:00	2	F	P	a	EVAL 1	Run # 3 in hole @ 22:05 hrs. Calibrated MLL/ HDLL @ 1000 m. RIH to 2140 m. Mop 1800 lbs to come off td 2140 m. 3 m deep compared to ZDL/CN log run # 1.
06-jul-00	00:00	02:30	2,5	F	P	a	EVAL 1	Logged section from 2138 m to 1544 m with HHDL/MLL/MAC/TTRM/ ORIT/GR. Pulled 1 k overpull @ 1544 m. Lost signal on HDLL @ 1283 m.
	02:30	03:00	0,5	F	P	a	EVAL 1	RIH to 2025 m to repeat log. Lost weight @ 1470 m, HDDL problem intermittent.
	03:00	04:30	1,5	F	P	a	EVAL 1	Logged repeat section from 2025 to 1037 m. HDLL failed @ 1330 m. Attempted to regain HDLL signal, no success.
	04:30	05:30	1	F	P	a	EVAL 1	POOH with run # 3.
	05:30	06:30	1	F	P	f	EVAL 1	Rigged down logging tools and wireline sheaves.
	06:30	07:30	1	O	D	b	DRLIN2	Repaired electrical fault on Drawworks purge system.
	07:30	10:30	3	A	P	b	DRLIN2	Made up 12 1/4" BHA and RIH to 248 m.
	10:30	14:00	3,5	A	P	b	DRLIN2	RIH from 248 to 2025 m.
	14:00	15:00	1	A	P	d	DRLIN2	Reamed and washed from 2025 to 2167 m. No fill. Flow 3350 l/min, rpm 110, WOB 0 - 2 ton
	15:00	16:30	1,5	A	P	c	DRLIN2	Circulated and condition mud. Reduced mud weight from 1.40 to 1.34 sg. Flow 3350 l/min, rpm 90. Max gas 2.05 % on btms up.
	16:30	18:00	1,5	A	P	b	DRLIN2	POOH from 2167 to 1740 m. No drag.
	18:00	20:30	2,5	A	P	b	DRLIN2	Continued to POOH. Flowchecked @ 1740 m ok. No drag in open hole 1740 to 1037 m.
	20:30	21:30	1	A	P	b	DRLIN2	POOH, laid down stab and bit. Flowchecked prior to pulling BHA.
	21:30	22:00	0,5	O	D	b	DRLIN2	Started to change drawworks break bands.
	22:00	22:30	0,5	F	P	f	EVAL 1	Rigged up Baker Atlas wireline, sheaves and WL equipment.
	22:30	00:00	1,5	F	P	f	EVAL 1	Assembled the RCI/GR/ TTRM toolstring. and unction tested it.
07-jul-00	00:00	00:30	0,5	F	P	a	EVAL 1	Run # 4 in hole @ 00:05 hrs. RCI/GR/TTRM.
	00:30	01:00	0,5	F	D	a	EVAL 1	Current on RCI log increased with 1 amps. POOH.
	01:00	02:30	1,5	F	D	f	EVAL 1	Checked cable and located 1 + 4 bad leads. Cut 210 m cable and rebuilt the cable head.
	02:30	03:00	0,5	F	D	f	EVAL 1	Function tested the cable and toolstring # 4.
	03:00	04:00	1	F	P	a	EVAL 1	Run # 4 - rr in hole @ 03:15 hrs. Tied in @ 1500 m.

NORSK AGIP
Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
07-jul-00 (cont.)	04:00	09:30	5,5	F	P	a	EVAL 1	Performed pressure tests. All tests good except the two last in chalk formation. Tested @ 1532, 1535, 1550, 1609.5, 1622, 1635 and 2005.5 m.
	09:30	10:30	1	F	P	a	EVAL 1	Caught sample @ 2075 m. Press. up immediately trying to fill 4 ltr tank. No success. MOP 3 klbs.
	10:30	11:00	0,5	F	P	a	EVAL 1	Performed trial pumping @ 2009 m.
	11:00	12:00	1	F	P	a	EVAL 1	Caught sample @ 1532 m. Lost seal while started pumping @ 1532 and 1531.5 m.
	12:00	13:00	1	F	P	a	EVAL 1	POOH with run # 4.
	13:00	14:00	1	F	P	a	EVAL 1	Drained samples, upper full 600 cc, upper 4 ltr - 0.5 ltr.
	14:00	15:00	1	F	P	a	EVAL 1	Run # 4 - rr2 in hole @ 14:15 hrs. RIH to 1622 m and tied in.
	15:00	16:00	1	F	P	a	EVAL 1	Caught sample @ 1622 m.
	16:00	16:30	0,5	F	P	a	EVAL 1	POOH with run # 4.
	16:30	18:00	1,5	F	P	f	EVAL 1	Rigged down RCI/GR/ TTRM.
	18:00	19:00	1	F	P	f	EVAL 1	Rigged up toolstring for VSP log run # 5. Function tested VSP ok.
	19:00	21:30	2,5	F	P	a	EVAL 1	Run # 5 VSP in hole @ 19:15 hrs. Checked VSP @ 28, 500, 980 and tied in @ 1100, 1950, 2136 m.
	21:30	00:00	2,5	F	P	a	EVAL 1	Performed VSP logging. GR tie in pass @ 1700, 1650, 1325,1270 m.
08-jul-00	00:00	01:00	1	F	P	a	EVAL 1	Performed VSP logging from 1270 to 800 m.
	01:00	01:30	0,5	F	P	a	EVAL 1	POOH with VSP log.
	01:30	03:00	1,5	F	P	f	EVAL 1	Rigged down the VSP log.
	03:00	03:30	0,5	F	P	f	EVAL 1	Rigged up toolstring # 6, SWC/GR.
	03:30	04:00	0,5	F	P	f	EVAL 1	Function tested VSP fire through PFC / Centralizer.
	04:00	05:30	1,5	F	P	a	EVAL 1	Run # 6 VSP/GR in hole @ 04:10 hrs. RIH to 2120 m.
	05:30	07:30	2	F	P	a	EVAL 1	Performed SWC shots f/ 2115 to 1518 m. (More info Coregun sheet).
	07:30	09:00	1,5	F	P	a	EVAL 1	POOH with SWC/GR.
	09:00	10:00	1	F	P	f	EVAL 1	Rigged down toolstring # 6, wireline sheaves and equipment.
	10:00	14:30	4,5	L	P	b	DRLIN2	RIH on 5" DP to 2150 m.
	14:30	15:30	1	L	P	c	DRLIN2	Circulated btms up and condition mud 1.35 sg. Max gas on btms up 1.74 %. Flow 2700 l/m- 77 bar.
	15:30	16:00	0,5	L	P	c	DRLIN2	Pressure tested surface lines to 207 bar. Pumped 10 m^3 fresh water spacer.
	16:00	17:00	1	L	P	c	DRLIN2	Sat balanced cmt. plug from 2150 - 1800 m. 10 m^3 spacer, 26.6 m^3 1.90 sg cmt., 1.4 m^3 spacer. Displaced cmt. w/ 13.5 m^3 1.30 sg. mud.
	17:00	18:00	1	L	P	c	DRLIN2	POOH to 1650 m.
	18:00	19:00	1	L	P	c	DRLIN2	Circulated btms up @ 1650 m. Signs of contaminated cmt in spacer returns. Flow 3400 l/min-135 bar.
	19:00	20:00	1	F	P	b	DRLIN2	POOH to 1290 m. Spot 72 m^3 hi-visc pill f/ 1290 to 1140 m. Flow 4600 l/min - 135 bar.
	20:00	20:30	0,5	L	P	b	DRLIN2	POOH to 1140 m.

NORSK AGIP

Operations Summary Report

Well Name:	3/6-1	Start:	17.06.00
Contractor Name:	TRANSOCEAN	End:	11.07.00
Rig name:	TRANSOCEAN NORDIC	Spud:	19.06.00

Date	From	To	Hours	Code 1	Code 2	Sub Code	Phase	Description of Operations
08-jul-00 (cont.)	20:30	21:00	0,5	L	P	c	DRLIN2	Circulated btms up @ 1140 m. Flow 3400 l/min - 100 bar. Held prejob meeting prior to cmt. job.
	21:00	22:30	1,5	L	P	c	DRLIN2	Sat balanced cmt. plug from 1140 - 837 m. 10 m^3 spacer, 23.2 m^3 1.90 sg cmt., 1.4 m^3 spacer. Displaced cmt. with 5.3 m^3 1.30 sg. mud. Signs of cont. cmt in spacer returns.
	22:30	23:30	1	L	P	b	DRLIN2	POOH to 741 m. Circ. btms up @ 832 m. Flow 2000 l/min - 15 bar.
	23:30	00:00	0,5	L	P	b	DRLIN2	POOH, laid down excess 5" DP, while waiting on cement.
09-jul-00	00:00	03:00	3	L	P	b	DRLIN2	POOH from 741 m, laid down 5" DP.
	03:00	09:00	6	L	P	b	DRLIN2	Laid down excess tubulars from derrick. 5" dp, 5" hwdp and dc's.
	09:00	10:30	1,5	L	P	b	DRLIN2	RIH and tagged top cement @ 860 m. Applied 10 ton weight and confirmed cement.
	10:30	11:30	1	L	P	c	DRLIN2	Pressure tested the cement plug to 100 bar.
	11:30	15:30	4	L	P	b	DRLIN2	POOH , laid down excess 5" dp and diverter tool.
	15:30	16:30	1	I	P	b	DRLIN2	Jet washed wellhead, bop and surface lines.
	16:30	17:00	0,5	I	P	b	DRLIN2	Retrieved the wear bushing.
	17:00	20:00	3	I	P	c	RDMO	Nippled down kill and choke line, Pod hoses, bell nipple and Bop tensioners.
	20:00	22:30	2,5	I	P	b	RDMO	Nippled down 13 5/8" Bop Stack. Secured Bop stack on Bop test stump.
	22:30	00:00	1,5	L	P	e	RDMO	Nippled down double studded adapter and x-overs from wellhead.
10-jul-00	00:00	00:30	0,5	L	P	e	RDMO	Nippled down wellhead and x-overs.
	00:30	02:00	1,5	L	P	d	RDMO	Made up 13 3/8 csg spear.
	02:00	04:30	2,5	L	P	e	RDMO	RIH, engaged spear and back out csg at MLH.
	04:30	06:00	1,5	L	P	e	RDMO	L/D 13 3/8 csg joints and spear assy, L/D wellhead.
	06:00	07:00	1	L	P	d	RDMO	M/U 30" csg cutter.
	07:00	08:00	1	L	P	b	RDMO	RIH to 103 m.
	08:00	20:00	12	L	P	e	RDMO	Cut 30" at 103m (5m below seabed), POH and L/D cutter. P/U landing joint latch and retrieve CP, L/D 30" CP.
	20:00	22:30	2,5	L	P	f	RDMO	Jumped ROV, RIH with DP stinger had problem to enter hole due to current.
	22:30	23:00	0,5	L	P	f	RDMO	Enter csg and RIH to 300m.
	23:00	00:00	1	L	P	f	RDMO	Set surface cmt plug from 300m to seabed. Pumped 10m^3 seawater 20m^3 of 1,9 sg slurry, displaced with seawater. Performed seabed survey with ROV.
11-jul-00	00:00	03:30	3,5	L	P	f	RDMO	L/D remaining tubulars.
	03:30	06:00	2,5	L	P	f	RDMO	Prepared rig for skidding, backloaded equipment released rig at 06:00hrs.

3.4 Technical Information and Reports

3.4.1 Bit Record

Well: **3/6-1** Spud date: June 20, 2000
Rig: Transocean Arctic Release date: July 11;2000

Bit no.	Bit size in	Bit make	Bit type	IADC Code	Bit cost NOK	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	Security	S3SJ4	111	33575	98	180	82	7	11,71	7	40/80	2	2	WT	A	D	I	NO	TD
2	9,875	Smith	FGSS+2C	117	41650	180	1040	860	28,5	30,18	2/14	90/110	4	5	EC	A	E	I	WT	TD
3	17,5	Hughes	GTX-CG1	115	85000	180	1047	867	27	32,11	17	90/100	2	3	WT	A	E	I	NO	TD
4	12,25	Security	FM2665R	111	391850	1047	2008	961	42	22,88	1/6	80/136	1	3	CT	S	D	I	NO	CP
5	8,5	Hughes	ARC427	CORE	170000	2008	2011	3	1,5	2,00	2/10	20/100	1	1	WT	A	1	1	NO	BC
rr4	12,25	Security	FM2665R	111	391850	2011	2167	156	9,5	16,42	5/20	100/134	1	3	CT	S	D	1	NO	LOC

Bit no.	Bit size in	Jet size in 1/32"	T.F.A. mm2	Pump output lpm	Pump pressure bar	deltaP Bit kPa	HHP kW/cm2	Jet vel. m/min	Mud type	Mud weight sg	Mud visc. Cp	Mud Y.P. lb/100ft2	Depth m	Incl. deg.	Az. deg.
1	26	3x18 1x16	607,7	3993	80	6804	0,853	109,5	SW-GE	1,05			98	0	0
2	9,875	2x18 2x18	574	3400	207	6441	4,765	98,7	SW-GE	1,18	4	23	404	0,2	125,4
3	17,5	1x22 2x20 1x14	732,4	3900		5206	1,407	88,8	SW-GE	1,2	6	14	1031	0,3	205,7
4	12,25	6x14	581,9	3400	227	7311	3,515	97,4	KCL-PO	1,4	27	9	1994	0,7	304,5
5	8,5			1000	50				KCL-PO	1,4	27	9	2021	0,6	303,5
rr4	12,25	6x14	581,9	3400	237	7311	3,515	97,4	KCL-PO	1,4	25	10	2049	0,4	330,2

3.4.2 BHA Record

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
36" hole	1	1	20-jun-00	21-jun-00	98	180

Description	Number	OD	ID	Length
Bit	1	26,00	2,81	0,57
Hole Opener	1	36,00	2,81	2,49
Bit Sub	1	9,50	3,13	1,37
Drill Collar	3	9,50	2,81	26,78
Cross Over	1	9,50	3,00	1,31
Drill Collar	6	8,00	2,81	56,26
Jar - Dailey Mech.	1	7,75	2,75	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	0	8,00	2,81	0
		Total	**length**	**108,1**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
26" cleanout assembly	2	rr1	22-jun-00	22-jun-00	180	180

Description	Number	OD	ID	Length
Bit	1	26,00	2,81	0,57
Bit Sub	1	9,50	3,00	1,37
Drill Collar	3	9,50	2,81	26,78
Cross Over	1	9,50	3,00	1,31
Drill Collar	6	8,00	2,81	56,26
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	0	5,00	3,00	0
		Total	**length**	**106,63**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
9 7/8" pilot hole	3	2	23-jun-00	24-jun-00	180	1040

Description	Number	OD	ID	Length
Bit	1	9,875	2,81	0,27
M.W.D.	1	8,00	2,50	12,73
Float Sub	1	8,00	2,81	0,68
Drill Collar	1	8,00	2,81	9,42
Stab (IB) 9 7/8" FG	1	7,25	2,81	1,91
Drill Collar	6	8,00	2,81	56,26
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	15	5,00	3,00	140,13
		Total	**length**	**241,47**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
17 1/2" hole opening	4	3	24-jun-00	26-jun-00	180	1047

Description	Number	OD	ID	Length
Bit	1	17,50	2,81	0,42
Cross Over	1	9,50	3,00	1,37
Drill Collar	2	9,00	2,81	17,91
Stab (IB) 17 1/2" FG	1	9,00	3,00	1,8
Drill Collar	1	8,00	2,81	8,81
Stab (IB) 17 1/2" FG	1	9,00	3,00	1,72
Cross Over	1	9,50	3,00	1,31
Drill Collar	7	8,00	2,81	65,68
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	15	5,00	3,00	140,13
		Total	**length**	**259,49**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
12 1/4" hole	5	4	29-jun-00	02-jul-00	1047	2008

Description	Number	OD	ID	Length
Bit	1	12,25	2,81	0,33
M.W.D.	1	8,00	2,50	12,73
Float Sub	1	8,00	2,81	0,67
Drill Collar	1	8,00	2,81	9,46
Stab (IB) 12 1/4" FG	1	8,00	2,50	2,03
Drill Collar	1	0,00	0,00	9,43
Stab (IB) 12 1/4" FG	1	0,00	0,00	1,72
Drill Collar	7	0,00	0,00	65,68
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	0,00	0,00	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	15	5,00	3,00	140,13
		Total	**length**	**262,52**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
8 1/2" coring	6	5	02-jul-00	03-jul-00	2008	2011

Description	Number	OD	ID	Length
Core Bit	1	8,50	4,00	0,43
Stab (IB) 10 5/8" FG	1	8,50	5,37	0,79
Cross Over	1	6,75	5,37	8,35
Stab (IB) 10 5/8" FG	1	8,50	5,37	0,79
Cross Over	1	6,75	5,37	8,35
Stab (IB) 10 5/8" FG	1	8,50	5,37	0,79
Cross Over	1	6,75	5,37	8,35
Stab (IB) 10 5/8" FG	1	8,50	5,37	0,79
Cross Over	1	6,75	3,16	0,93
Cross Over	1	6,75	2,75	0,44
Cross Over	1	6,50	2,25	0,49
Cross Over	1	7,43	3,00	0,67
Bit Sub	1	7,43	3,18	1,52
Drill Collar	7	8,00	2,81	65,68
Jar - Eastman Hyd.	1	8,00	2,75	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,87	1,02
H.W.D.P.	15	5,00	3,00	140,13
Cross Over	1	7,31	3,00	0,15
		Total	**length**	**258,99**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
12 1/4" hole (after coring)	7	5	03-jul-00	04-jul-00	2011	2167

Description	Number	OD	ID	Length
Bit	1	12,25	2,81	0,33
M.W.D.	1	8,00	2,50	12,73
Float Sub	1	8,00	2,81	0,67
Drill Collar	1	8,00	2,81	9,46
Stab (IB) 12 1/4" FG	1	8,00	2,50	2,03
Drill Collar	1	0,00	0,00	9,43
Stab (IB) 12 1/4" FG	1	8,00	2,50	1,72
Drill Collar	7	8,00	2,81	65,68
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	15	5,00	3,00	140,13
		Total	**length**	**262,52**

Purpose	BHA No	Bit No	Date in	Date out	Depth in	Depth out
12 1/4" hole cleanup	8	4rr	06-jul-00	06-jul-00	2167	2167

Description	Number	OD	ID	Length
Bit	1	12,25	2,81	0,33
Float Sub	1	8,00	2,81	0,67
Drill Collar	1	8,00	2,81	9,46
Drill Collar	1	8,00	2,81	9,43
Stab (IB) 12 1/4" FG	1	8,00	2,50	1,72
Drill Collar	7	8,00	2,81	65,68
Jar - Dailey Hyd.	1	7,75	3,00	9,72
Drill Collar	1	8,00	2,81	9,6
Cross Over	1	8,00	2,81	1,02
H.W.D.P.	15	5,00	3,00	140,13
		Total	**length**	**247,76**

3.4.3 Casing Data Summary

OD	30”	13 3/8”
WEIGHT (lbs/ft)	456	72
GRADE	X-56	N-80
CONNECTION	RL-4 S / DQ H-90	ANTARES
PIPE ID	28”	12.347”
CONNECTION ID	28”	12.250”
DRIFT	28”	12.250”
BURST RESISTANCE (Bar)	n/a	371
COLLAPSE RESISTANCE (Bar)	n/a	184
CASING TOP (m)	11,64	104
CASING BOTTOM (m)	171,8	1037
CASING LENGTH (m)	160	933
BURST S.F.	n/a	2.82
MINIMUM S.F.	n/a	1.10
COLLAPSE SAFETY FACTOR	n/a	1.64
MINIMUM S.F.	n/a	1.10
TENSION S.F.		3.23
MINIMUM S.F.		1.70

3.4.4 Leak-Off Test Results

In well 34/6-1 no leak-off tests were made. After drilling out of the 13 3/8" shoe a Formation Integrity Test was performed to an equivalent mud weight of 1.65 sg.

3.4.5 Cementing Reports

3.4.5.1 30" Conductor Pipe

GENERAL DATA							
SHOE DEPTH	172 m-RKB	30 CSG - I.D.=	28,000	WT=	456,00	ppf	
MUD LINE	98 m-RKB	OH - I.D.=	36,000				
HOLE SIZE	36 in						
EXCESS IN OPEN HOLE	100 %	FRAC.GRAD @ SHOE	1,40 SG-EMW				
TOP CMT LEAD SLURRY	98 m-RKB	FG @ ML	1,03 SG-EMW				
TOP CMT TAIL SLURRY	142 m-RKB	MUD WEIGHT (SW)	1,03 SG				
B.H.S.T.	9 Deg C	WATER DEPTH	64 m				
TOTAL DRY CMT REQUIRED		>>>	29,7 ton	<<<			

SLURRY VOLUME CALCULATION				
ANNULAR VOLUME CSG-OPEN HOLE	200,66 l/m =	14,85 m3.	524,3 Cuft	
EXCESS OVER THEOR.ANN.VOLUME	200,66 l/m =	14,85 m3.	524,3 Cuft	
ANNULAR VOLUME CSG-CSG	200,66 l/m =	0,00 m3.	0,0 Cuft	
0 m INTERNAL VOL. (SHOE-COLL)	397,26 l/m =	0,00 m3.	0,0 Cuft	
TOTAL SLURRY VOLUME =		29,70 m3.	1 048,6 Cuft	

SPACERS				LENGTH
TYPE : SEA WATER	1,03 SG	VOL. =	16,00 m3.	79,7 m.

CEMENT SLURRY COMPOSITION				
LEAD SLURRY @ 1,56 SG F/ 142 TO 98 m.				
SLURRY VOLUME	44 m of ANNULUS + OPEN HOLE EXCESS		17,66 m3.	623,5 Cuft
"G" CEMENT Yield	129,42 l/100kg	0,773 ton/m3	13,64 ton	320,0 Sx
RETARDER	0,00 l/100kg		0,00 liter	0,0 Gall
NF-5/ANTIFOAM	0,10 l/100kg		13,64 liter	3,6 Gall
ECONOLITE/EXTENDER	3,20 l/100kg		436,60 liter	115,5 Gall
SEAWATER	95,07 l/100kg		12,97 m3.	81,6 Bbl
MIXING				
TOTAL MIX FLUID	98,37 l/100kg		13,42 m3.	84,4 Bbl
ESTIMATED TICKENING TIME @ 70 BC hr.min		> 6		
TAIL SLURRY @ 1,95 SG F/ 172 TO 142 m.				
SLURRY VOLUME	30 m of ANNULUS		12,04 m3.	425,1 Cuft
"G" CEMENT Yield	75,06 l/100kg	1,332 ton/m3	16,04 ton	376,3 Sx
NF-5/ANTIFOAM	0,10 l/100kg		16,04 liter	4,2 Gall
DISPERSANT	0,00 l/100kg		0,00 liter	0,0 Gall
CaCl2/ACCELERATOR	4,35 l/100kg		697,72 liter	184,6 Gall
SEAWATER	39,56 l/100kg		6,35 m3.	39,9 Bbl
MIXING				
TOTAL MIX FLUID	44,01 l/100kg		7,06 m3.	44,4 Bbl
ESTIMATED TICKENING TIME @ 70 BC hr.min		+/- 3		
CEMENTING TECHNIQUE :	5" DP INNER STRING STAB IN SHOE			

CMT SLURRY HYROSTATIC GRADIENT : EVALUATION		
FRACTURE-P @ NEW SHOE	23,61 Bar	342 Psi
HYDRO-P @ MUD LINE	6,46 Bar	94 Psi
CMT HYDRO-P @ NEW SHOE	18,93 Bar	275 Psi
MIN. PRESSURE MARGIN AT NEW SHOE AT THE END OF THE CEMENT JOB	4,68 Bar	68 Psi

3.4.5.2 13 3/8" Casing

GENERAL DATA								
SHOE DEPTH	1037	m-RKB	13,375	CSG - I.D.=	12,347	WT=	72,00	#
PREVIOUS CASING	178	m-RKB	30	CSG - I.D.=	28,000	WT=	456,00	#
HOLE SIZE	17,50	in						
EXCESS (Lead slurry)	50	%		FRAC.GRAD @ SHOE	1,65	SG-EMW		
TOP CMT LEAD SLURRY	108	m-RKB		FG @ PREVIOUS CSG	1,40	SG-EMW		
TOP CMT TAIL SLURRY	887	m-RKB		MUD WEIGHT	1,20	SG		
B.H.S.T.	35	Deg C						
TOTAL DRY CMT REQUIRED		>>>			98,2	ton	<<<	

SLURRY VOLUME CALCULATION				
ANNULAR VOLUME CSG-OPEN HOLE	64,53	l/m =	55,43 m3.	1 957,4 Cuft
EXCESS OVER THEOR.LEAD VOLUME	43,12	l/m =	33,59 m3.	1 186,1 Cuft
ANNULAR VOLUME CSG-CSG	306,61	l/m =	21,46 m3.	757,9 Cuft
36 m INTERNAL VOL. (SHOE-COLL)	77,25	l/m =	2,78 m3.	98,2 Cuft
TOTAL SLURRY VOLUME =			113,27 m3.	3 999,6 Cuft

SPACERS				LENGTH
TYPE : SPACER 500	1,60 SG	VOL. =	15,00 m3.	48,9 m.

CEMENT SLURRY COMPOSITION						
LEAD SLURRY @	**1,56 SG**	**F/**	**887**	**TO**	**108 m.**	
SLURRY VOLUME	779 m of ANNULUS + EXCESS				97,79 m3.	3 453,0 Cuft
"G" CEMENT Yield	130,01 l/100kg		0,769 ton/m3		75,22 ton	1 764,0 Sx
ECONOLITE	3,20 l/100kg				2406,97 liter	636,8 Gall
	0,00 l/100kg				0,00 liter	0,0 Gall
HR-4L/RETARDER	2,00 l/100kg				1504,36 liter	398,0 Gall
	0,00 l/100kg				0,00 liter	0,0 Gall
NF-5/DEFOAMER	0,10 l/100kg				75,22 liter	19,9 Gall
	0,00 % BWOC				0,00 ton	0,0 Lbs
SEAWATER	93,65 l/100kg				70,44 m3.	443,0 Bbl
TOTAL MIX FLUID	98,95 l/100kg				74,43 m3.	468,1 Bbl
ESTIMATED TICKENING TIME @ 70 BC	hr.min	> 6				
TAIL SLURRY @	**1,92 SG**	**F/**	**1037**	**TO**	**887 m.**	
SLURRY VOLUME	150 m of ANNULUS+INT.VOL.(SHOE-COLL)				17,30 m3.	610,9 Cuft
"G" CEMENT Yield	75,14 l/100kg		1,331 ton/m3		23,03 ton	540,2 Sx
HALAD 344L/FILTER LOSS	0,50 l/100kg				115,13 liter	30,5 Gall
HR-4L/RETARDER	1,00 l/100kg				230,25 liter	60,9 Gall
NF-5/DEFOAMER	0,10 l/100kg				23,03 liter	6,1 Gall
DRLG WATER MIXING	42,49 l/100kg				9,78 m3.	61,5 Bbl
TOTAL MIX FLUID	44,09 l/100kg				10,15 m3.	63,8 Bbl
ESTIMATED TICKENING TIME @ 70 BC	hr.min	3 - 4				

CEMENTING TECHNIQUE : CONVENTIONAL DOUBLE PLUG CEMENTING

CMT SLURRY HYROSTATIC GRADIENT : EVALUATION		
FRACTURE-P @ PREVIOUS SHOE	24,44 Bar	354 Psi
FRACTURE-P @ NEW SHOE	167,79 Bar	2434 Psi
CMT HYDRO-P @ PREV. SHOE	25,34 Bar	367 Psi
CMT HYDRO-P @ NEW SHOE	162,04 Bar	2350 Psi
MIN. PRESSURE MARGIN AT PREV. SHOE AT THE END OF THE CEMENT JOB	-0,90 Bar	-13 Psi
MIN. PRESSURE MARGIN AT NEW SHOE AT THE END OF THE CEMENT JOB	5,75 Bar	83 Psi

3.4.6 Mud Summary by Phase

Summary for the 36" hole section

The 36" hole section was drilled using seawater. High viscosity sweeps were used to keep the hole clean while drilling this section. After drilling to section TD at 180 meters, the hole was first displaced to a viscous pre-hydrated bentonite slurry. A wiper trip was made to the seabed. The hole was then displaced to a high viscosity, weighted fluid to improve hole stability prior to running the 30" casing.

Summary for the 9 7/8" pilot hole and 17 1/2" hole section

When drilling out the 30" casing shoe. The 9 7/8" pilot hole was drilled to 1040 m without any drilling problems using seawater/bentonite mud of 1.05 sg. (Max. surface gas reading while drilling the pilot hole was 21.9%). Using the same mud, the pilot hole was then opened up to 171/2" down to 1047 m. The hole was swept with a high viscosity weighted pill prior to running the 13 3/8" casing.

Summary for the 12 ¼" hole section

Because of the inadequate solids control system on the Transocean Nordic, a simple KCl/Pac mud was used. The initial mud weight was 1.35 sg, but the weight was increased to 1.40 sg at 1632 m and kept until TD of the well was reached at 2167 m. During the drilling of the 12 ¼" section the mud was diluted as required with pre-mixes of a higher concentration of KCl and seawater.
XC Polymer was used to maintain the rheology of the mud and prevent barite sag. PAC was used to maintain fluid loss properties. Soda ash was used to raise pH and prepare for possible increase in calcium when drilling into the chalk formations. Initially the cuttings were sticky, but changed to firm towards the bottom of the Hordaland Formation. No particular drilling problems were encountered during the drilling of the 12 ¼" hole.

MUD SUMMARY
Well 3/6-1

Day no.	TMD (m)	Hole size (in)	Mud type	MW (g/cm^3)	Viscosity (s/L)	PV (mPa*s)	YP (Pa)	Gels 10s/10m (Pa)	API WL (mL)	HTHP WL (mL)	HTHP Temp. (^oC)	pH	Cl- (mg/L)	Sand (%)	TS (%)	LGS (kg/m^3)	MBT (kg/m^3)	Tot. Hard. (mg/L)	Oil (%)	Tot. Vol. (m^3)
4	180	36	Spud Mud	1,05	165	0	0	0 / 0	0	0	0	0	0	0	0	0	0	0	0	195
5	180	36	Spud Mud	1,05	165	0	0	0 / 0	0	0	0	0	0	0	0	0	0	0	0	60
6	180	9,785	SW/Bentonite	1,05	47	4	7	4 / 7	0	0	0	8,5	0	0	0	0	0	0	0	265
7	728	9,785	SW/Bentonite	1,13	44	4	23	17 / 22	0	0	0	8,4	0	1	0	0	0	0	0	341
8	1040	17,50	SW/Bentonite	1,20	41	5	17	13 / 17	0	0	0	8,0	0	0,5	0	0	0	0	0	410
9	973	17,50	SW/Bentonite	1,20	38	4	17	13 / 17	0	0	0	8,1	0	0,4	0	0	0	0	0	408
10	1047	17,50	SW/Bentonite	1,20	40	5	14	11 / 15	0	0	0	8,1	0	0,3	0	0	0	0	0	403
11	1047	17,50	SW/Bentonite	1,20	44	6	14	12 / 16	0	0	0	8,0	0	0,4	0	0	0	0	0	113
12	1047	12,25	SW/Bentonite	1,20	44	6	14	12 / 16	0	0	0	8,0	0	0,4	0	0	0	0	0	113
13	1085	12,25	KCl/PAC/Glycol	1,30	49	19	10	1 / 2	2,8	0	0	10,0	48000	0	12	6	0	680	0	350
14	1640	12,25	KCl/PAC/Glycol	1,35	51	26	10	1 / 3	3,0	12,0	0	8,3	44000	0,5	11	3	42	400	0	322
15	1961	12,25	KCl/PAC/Glycol	1,40	54	27	10	2 / 4	2,6	11,6	0	7,9	54000	0,5	13	111	63	480	0	363
16	2008	12,25	KCl/PAC/Glycol	1,40	59	27	9	2 / 4	2,2	11,2	0	7,9	61000	0,6	17	106	56	480	0	347
17	2140	12,25	KCl/PAC/Glycol	1,40	51	25	10	2 / 4	2,8	12,0	0	8,2	61000	0,6	18	133	56	520	0	318
18	2167	12,25	KCl/PAC/Glycol	1,40	56	25	10	2 / 4	2,2	11,0	0	8,0	63000	0,5	18	155	70	800	0	305
19	2167	12,25	KCl/PAC/Glycol	1,40	63	26	10	2 / 4	2,6	12,0	100	8,0	62000	0,5	18	155	70	680	0	303
20	2167	12,25	KCl/PAC/Glycol	1,34	49	21	8	2 / 3	1,8	8,4	100	8,0	59000	0,3	16	129	62	440	0	355
21	2167	12,25	KCl/PAC/Glycol	1,35	48	21	9	2 / 3	1,8	8,4	100	7,9	59000	0,3	16	113	62	440	0	353
22	2167	12,25	KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,4	0	0	8,6	52000	0,4	16	117	62	0	0	253
23	860		KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	206
24			KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	206
25			KCl/PAC/Glycol	1,35	50	21	10	2 / 3	2,8	0	0	9,1	57000	0,4	16	117	62	0	0	

3.4.7 Deviation Summary

Deviation Summary Well 3/6-1										
TMD (m)	Angle (deg.)	Azimuth (deg.)	CMT	TVD (m)	N-S (m)	E-W (m)	Section (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	
98,00	0,00	0,00	NNN	98,00	0,00	0,00	0,00	0,00	0,00	
175,00	0,72	172,65	YYN	175,00	-0,48	0,06	-0,48	0,28	0,28	MWD
201,00	0,77	180,11	YYN	201,00	-0,82	0,08	-0,82	0,13	0,06	MWD
231,00	0,40	173,68	YYN	230,99	-1,12	0,09	-1,12	0,38	-0,37	MWD
259,00	0,27	186,82	YYN	258,99	-1,28	0,10	-1,28	0,16	-0,14	MWD
288,00	0,18	221,87	YYN	287,99	-1,39	0,06	-1,39	0,17	-0,09	MWD
317,00	0,37	184,92	YYN	316,99	-1,51	0,02	-1,51	0,26	0,20	MWD
345,00	0,31	132,69	YYN	344,99	-1,66	0,07	-1,66	0,33	-0,06	MWD
373,00	0,23	145,71	YYN	372,99	-1,75	0,15	-1,75	0,11	-0,09	MWD
404,00	0,21	125,44	YYN	403,99	-1,84	0,24	-1,84	0,08	-0,02	MWD
433,00	0,28	127,92	YYN	432,99	-1,91	0,34	-1,91	0,07	0,07	MWD
460,00	0,21	144,44	YYN	459,99	-1,99	0,42	-1,99	0,11	-0,08	MWD
487,00	0,11	118,00	YYN	486,99	-2,04	0,47	-2,04	0,14	-0,11	MWD
518,00	0,20	148,93	YYN	517,99	-2,11	0,52	-2,11	0,12	0,09	MWD
547,00	0,21	136,14	YYN	546,99	-2,19	0,58	-2,19	0,05	0,01	MWD
575,00	0,17	128,22	YYN	574,99	-2,25	0,65	-2,25	0,05	-0,04	MWD
603,00	0,15	120,93	YYN	602,99	-2,29	0,72	-2,29	0,03	-0,02	MWD
631,00	0,20	128,93	YYN	630,99	-2,34	0,79	-2,34	0,06	0,05	MWD
658,00	0,00	119,23	YYN	657,99	-2,37	0,82	-2,37	0,22	-0,22	MWD
687,00	0,00	115,92	YYN	686,99	-2,37	0,82	-2,37	0,00	0,00	MWD
717,00	0,00	102,30	YYN	716,99	-2,37	0,82	-2,37	0,00	0,00	MWD
746,00	0,13	117,13	YYN	745,99	-2,39	0,85	-2,39	0,13	0,13	MWD
774,00	0,19	120,61	YYN	773,99	-2,43	0,92	-2,43	0,07	0,06	MWD
803,00	0,23	125,19	YYN	802,99	-2,48	1,01	-2,48	0,04	0,04	MWD
859,00	0,14	105,02	YYN	858,99	-2,57	1,17	-2,57	0,06	-0,05	MWD
888,00	0,16	91,62	YYN	887,99	-2,58	1,24	-2,58	0,04	0,02	MWD
916,00	0,01	32,18	YYN	915,99	-2,58	1,28	-2,58	0,17	-0,16	MWD
945,00	0,06	294,54	YYN	944,99	-2,57	1,27	-2,57	0,06	0,05	MWD
972,00	0,26	211,14	YYN	971,99	-2,61	1,23	-2,61	0,29	0,22	MWD
1003,00	0,26	212,37	YYN	1002,99	-2,73	1,15	-2,73	0,01	0,00	MWD
1031,00	0,25	205,69	YYN	1030,99	-2,84	1,09	-2,84	0,03	-0,01	MWD
1051,00	0,18	221,87	YYN	1050,99	-2,91	1,05	-2,91	0,14	-0,11	MWD
1079,00	0,07	97,60	YYN	1078,99	-2,94	1,04	-2,94	0,24	-0,12	MWD
1107,00	0,09	164,63	YYN	1106,99	-2,96	1,06	-2,96	0,10	0,02	MWD
1193,00	0,60	9,09	YYN	1192,99	-2,58	1,15	-2,58	0,24	0,18	MWD
1222,99	0,13	11,59	YYN	1222,98	-2,40	1,18	-2,40	0,47	-0,47	MWD
1251,18	0,20	168,80	YYN	1251,17	-2,41	1,20	-2,41	0,34	0,07	MWD
1279,96	0,19	276,55	YYN	1279,95	-2,46	1,16	-2,46	0,33	-0,01	MWD
1308,61	0,26	278,58	YYN	1308,60	-2,44	1,05	-2,44	0,07	0,07	MWD
1337,32	0,19	291,13	YYN	1337,31	-2,41	0,94	-2,41	0,09	-0,07	MWD
1366,11	0,26	293,35	YYN	1366,10	-2,37	0,84	-2,37	0,07	0,07	MWD
1394,95	0,31	288,46	YYN	1394,94	-2,32	0,70	-2,32	0,06	0,05	MWD
1423,56	0,19	301,60	YYN	1423,55	-2,27	0,59	-2,27	0,14	-0,13	MWD
1452,13	0,23	286,61	YYN	1452,12	-2,23	0,49	-2,23	0,07	0,04	MWD
1509,02	0,26	278,62	YYN	1509,00	-2,18	0,26	-2,18	0,02	0,02	MWD
1537,12	0,35	296,90	YYN	1537,10	-2,13	0,12	-2,13	0,14	0,10	MWD
1565,32	0,30	278,87	YYN	1565,30	-2,08	-0,03	-2,08	0,12	-0,05	MWD
1593,58	0,25	258,99	YYN	1593,56	-2,08	-0,17	-2,08	0,11	-0,05	MWD
1622,15	0,40	313,36	YYN	1622,13	-2,02	-0,30	-2,02	0,34	0,16	MWD
1650,78	0,41	312,96	YYN	1650,76	-1,89	-0,45	-1,89	0,01	0,01	MWD
1679,29	0,31	306,24	YYN	1679,27	-1,77	-0,59	-1,77	0,11	-0,11	MWD
1707,70	0,37	275,51	YYN	1707,68	-1,72	-0,74	-1,72	0,20	0,06	MWD
1735,50	0,36	287,10	YYN	1735,48	-1,68	-0,91	-1,68	0,08	-0,01	MWD
1765,35	0,39	280,90	YYN	1765,33	-1,63	-1,10	-1,63	0,05	0,03	MWD
1793,83	0,52	293,19	YYN	1793,81	-1,57	-1,31	-1,57	0,17	0,14	MWD
1821,75	0,56	299,56	YYN	1821,73	-1,45	-1,55	-1,45	0,08	0,04	MWD
1850,29	0,61	303,35	YYN	1850,27	-1,30	-1,80	-1,30	0,07	0,05	MWD
1879,05	0,60	306,48	YYN	1879,03	-1,12	-2,05	-1,12	0,04	-0,01	MWD
1908,10	0,53	306,20	YYN	1908,07	-0,95	-2,28	-0,95	0,07	-0,07	MWD
1936,90	0,72	315,22	YYN	1936,87	-0,75	-2,51	-0,75	0,22	0,20	MWD
1966,50	0,75	308,74	YYN	1966,47	-0,49	-2,79	-0,49	0,09	0,03	MWD
1993,70	0,71	304,05	YYN	1993,67	-0,29	-3,07	-0,29	0,08	-0,04	MWD
2020,89	0,58	303,54	YYN	2020,86	-0,12	-3,33	-0,12	0,14	-0,14	
2049,00	0,40	330,15	YYN	2048,96	0,05	-3,50	0,05	0,30	-0,19	
2077,90	0,20	339,54	YYN	2077,86	0,18	-3,56	0,18	0,21	-0,21	
2136,20	0,83	302,50	YYN	2136,16	0,50	-3,95	0,50	0,35	0,32	MWD
2156,60	0,90	305,61	YYN	2156,56	0,68	-4,21	0,68	0,12	0,10	MWD
TMD of well = 2167 m										

3.5 Plug and Abandonment

3.5.1 P & A Program

Objectives:

The plugging and abandonment program had the following objectives:

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

2) Isolate the 30" x 13 3/8" casing annulus. Cut/disconnect the casing strings a minimum of 5 m below seabed.

3) To insure 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.

Permanent abandonment of well 3/6-1

The well 3/6-1 was permanently as follows (ref. figure "Well 3/6-1 FINAL STATUS" on next page):

1. Plug no. 1:
   A cement plug was set in the 12 ¼" hole from 2150 m up to 1800 m.

2. Plug no. 2:
   A cement plug was set across the 13 3/8" casing shoe from 1140 m up to 860 m.

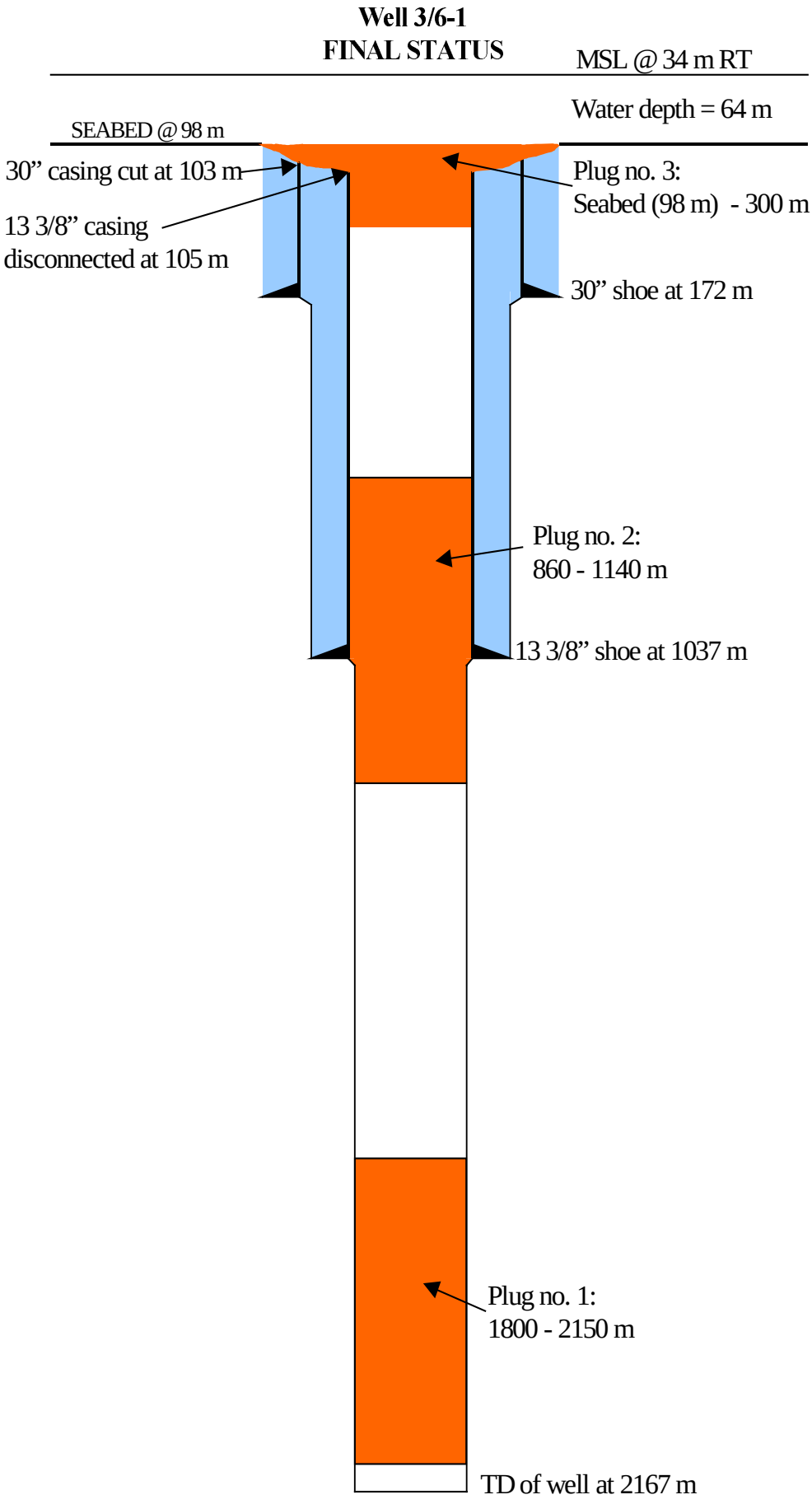
3. The 13 3/8" casing was disconnected and retrieved from the Mud Line Hanger at 105 m (7 m below seabed).

4. The 30" conductor was cut at 103 m (5 m below seabed) and retrieved.

5. Plug no. 3:
   A cement plug was set in the well from 300 m and up to seabed.

6. An ROV survey of the seabed within a 50 m radius around the well location was performed to ensure that no debris had been left.

3.5.2 P&A Sketch



3.6 LOGISTICS

3.6.1 Offices

The operations office was located at Norsk-Agip, Forus. The logistics were handled by the logistics coordinator, located at the Forus office. The logistics coordinator communicated with the materials coordinator at the Aker Base, Tananger, to insure the vessels were loaded and offloaded properly.

3.6.2 Base

The operating base was located in Tananger at the Aker Base. There was no office for Agip personnel at the Aker Base in Tananger. However, a materials coordinator was subcontracted to coordinate/supervise the loading and offloading of vessels to the rig.

3.6.3 Helicopter

The helicopter services were contracted from Helikopter Service AS.

There were 3 regular crew change flights scheduled each week: Tuesday, Thursday, and Friday.

3.6.4 Boats

During the drilling operations on well 3/6-1 two supply vessels and one standby vessel were used.

3.6.5 Risk Analysis Summary and Implementation of Results

Risk Analysis was carried out and documented in a report. The report was submitted to the rig and followed up by the drilling supervisor. During the course of the well, each potential risk phase was addressed on the rig site and preventive actions implemented.

Comments and suggestions were made at the conclusion of each phase and recorded on the work sheets. Several general recommendations include additional drills and safety meeting for special applications. Several more were made to insure the proper equipment was on board for special applications. Along with the risk analysis a number of pre-job safety meetings were held, along with other tasks, to improve awareness of safety issues:

25 Pre-job Safety Meetings
5 Safe Job Analyses
4 General Safety Meetings
7 Fire and Boat Drills
4 Tripping Drills
3 Pit Drills

Along with the documented 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.

4. ENCLOSURES

ENCLOSURES

- ENCLOSURE 1 - 3/6-1Composite Log