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FINAL WELL REPORT

WELL 26/4-2
The Beluga Prospect

PL 266, South Viking Graben

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1. SUMMARY AND GENERAL INFORMATION

Production Licence 266 comprises Blocks 26/4, 26/1 & part of 31/10 (Figure 1.1) and consisted of the following licence group at the time of spudding Well 26/4-2:

A/S Norske Shell	30% (Operator)
Norsk Hydro	30%
RWE – Dea	30%
Paladin Resources	10%

The Seismic Area Stord Basin was awarded to Enterprise Oil Norge (40%, Operator), Norsk Hydro (30%) and RWE–Dea (30%) on the 27th April 2001. The licence consisted of 8 blocks (26/1,2,4,5,7,8 and 31/10, 11) for an initial 10-year period and a commitment to acquire and interpret 1000 km^2 of 3D seismic. This data was acquired between August and September 2001.

The licence group at the time of the spudding of exploration well 26/4-2 resulted from the takeover of Enterprise Oil Norge by A/S Norske Shell and a subsequent 10% equity farm-out to Paladin Resources in 2003.

In December 2003, the licence group applied to the authorities to activate Production Licence 266 comprising Blocks 26/4, 26/1 & part of 31/10. The application was approved in February 2004 with a commitment to drill one exploration well to test the prospectivity of rocks of Palaeocene age. The well had to be drilled at least 50m into the underlying Cretaceous section.

The primary objective of Well 26/4-2 was to determine the presence of commercial volumes of hydrocarbons within the Hermod Sands of the 'Beluga' stratigraphic trap. No well test was planned. If hydrocarbons were encountered in the vertical well, a sidetrack had been planned from below the 9 " casing shoe to gain additional reservoir information.

Well 26/4-2 was spudded by the *Deepsea Delta* on the 13th April 2004 and reached a total depth of 2302m MD RKB (-2273m TVD MSL) on the 21st April 2004. The well encountered 46m of water-bearing Hermod sandstone with a mean porosity of 31%. There were no indications of hydrocarbons from cuttings or wireline logs. The well was plugged and abandoned on completion of a modest data gathering programme and the rig moved off location on the 27th April 2004, almost 10 days ahead of schedule. A summary of the key information of the well is given in Table 1.1.

SUMMARY OF WELL DATA		
Licence	PL 266	
Operator	A/S Norske Shell	
Licencees	A/S Norske Shell 30% Norsk Hydro 30% RWE – Dea 30% Paladin Resources 10%	
Well Name	26/4-2 (Beluga prospect)	
Well Classification	Exploration, Wildcat	
Completion Status	Plugged & Abandoned, Dry	
Surface location	Latitude: 59° 44' 22.044" N Longitude: 03° 06' 03.757" E (Spheroid: Intl. 1924; Datum: ED 50)	UTM (N): 6622554.2m UTM (E): 505680.5m (Projection: UTM 31; CM 03° E)
Surface seismic location	Seismic survey: EN0101fi	Inline: 2160; Crossline: 3126
Bottom Hole location	Latitude: 59° 44' 21.474" N Longitude: 03° 06' 04.365" E (Spheroid: Intl. 1924; Datum: ED 50)	UTM (N): 6622536.63m UTM (E): 505690.04m (Projection: UTM 31; CM 03° E)
Drilling rig	Deepsea Delta	
Rig type	Semi submersible	
RT elevation	29m	
Water depth	131m	
Well objective	Intra Sele Formation Hermod Sandstones	
Rig on contract	11th April 2004	
Spudded well	13th April 2004	
Reached TD	21st April 2004	
Rig off contract	27th April 2004	
Total Time	15.2 days	
Total Depth (Driller)	2302m MD RKB (-2273m TVD MSL)	
Total Depth (Logger)	2293m MD RKB (-2264m TVD MSL)	
Formation at TD	Tor Fm (Late Maastrichtian)	

Table 1.1: Summary of Well 26/4-2

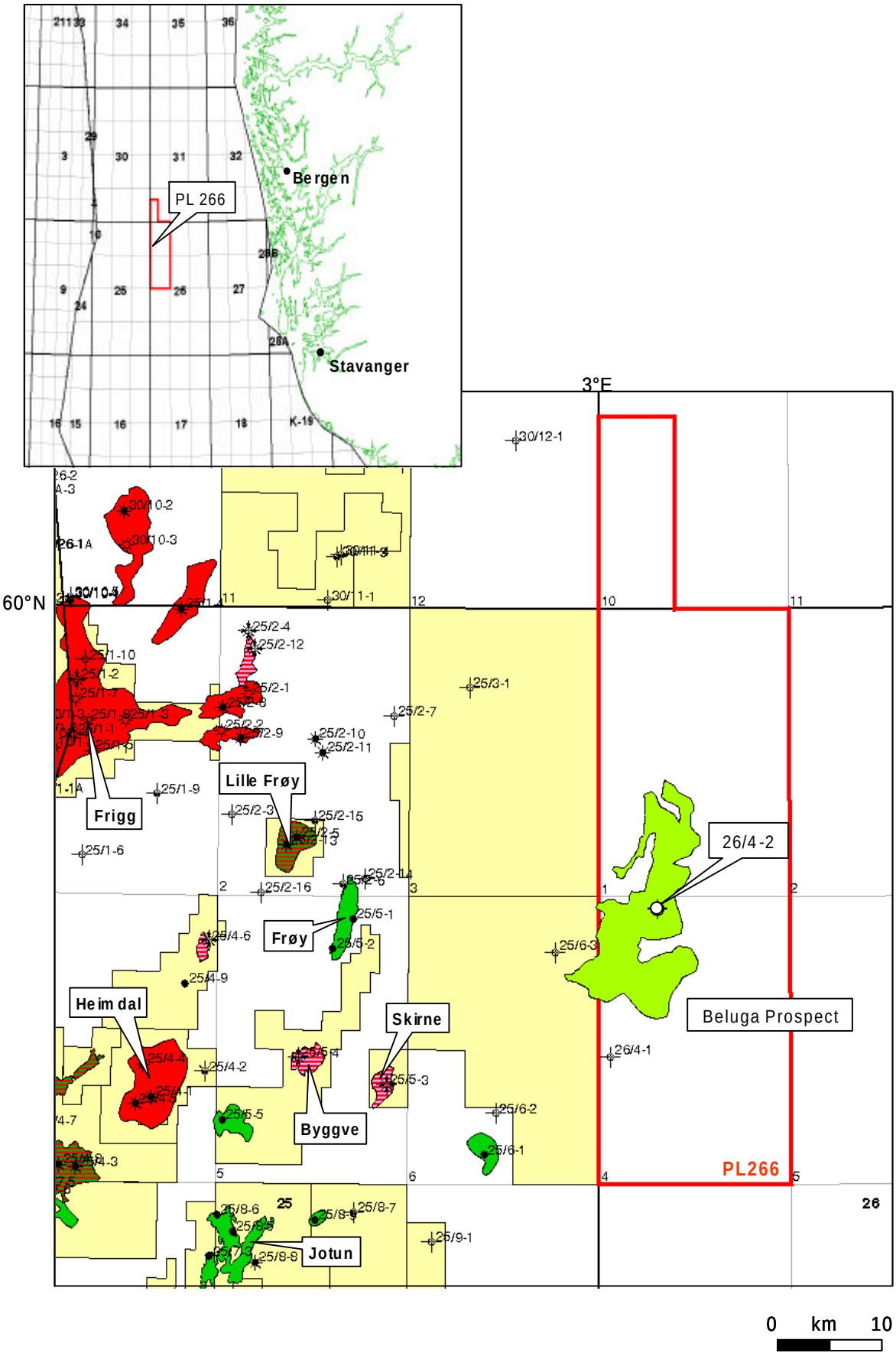


Figure 1.1: Location of Exploration Well 26/4-2

2. GEOLOGICAL REPORT

2.1 GEOLOGICAL SETTING

Production Licence 266 is located on the eastern margin of the South Viking Graben, about 110 km off the Norwegian coast between Bergen and Haugesund (Figure 1.1). The area to the west of the licence is a prolific petroleum province with several producing fields and discoveries within the Jurassic (Frøy, Byggve and Skirne, 25/6-1 discovery) and Tertiary (Heimdal, Frigg, Frigg satellites, Jotun, Balder and Grane) sections.

Well 26/4-2 targeted the Hermod sandstone (Intra Sele Formation) stratigraphic trap play. Several large Hermod-aged submarine fan channel-lobe complexes had been mapped to head in an easterly direction from Block 25/6 before finally terminating in discrete lobate fans within PL266 in Blocks 26/1 and 26/4. The Beluga prospect was formed by the stratigraphic pinch-out of these channel-lobe submarine fan Hermod sandstones with the mudstones of the Sele Formation forming both the lateral seal and top seal (Figure 2.1). The prospect was dip closed towards the west with a deepest closing contour at -2070m TVD MSL (Figure 2.2)

2.2 OBJECTIVES OF THE WELL

The primary objective of Well 26/4-2 was to determine the presence of commercial volumes of hydrocarbons within the Hermod Sands of the 'Beluga' stratigraphic trap. The well location targeted the central axis of the Beluga 'Central Channel' where a thick, massive channel sand with excellent reservoir qualities was expected. The well was located high on the Beluga structure to ensure that economic volumes of hydrocarbons were not potentially left updip and targeted an area where a far offset amplitude anomaly had been identified.

The specific objectives of the well were as follows (in order of importance):

- Drill the well without any harm to human or environment
- Determine the presence of commercial volumes of hydrocarbons within the Hermod Sands (Palaeocene-age) of the 'Beluga' stratigraphic trap
- Obtain sufficient data of good quality to quantify the volume of hydrocarbons present and to fully characterise the stratigraphy in the well bore. Obtain a high quality sample of any moveable hydrocarbons
- Accurate cost estimates (±10%) and well prognosis
- Key Stakeholders satisfied with performance
- Lessons learned, captured and communicated

If a moveable hydrocarbon column was encountered in the vertical well, a geological sidetrack was planned from the 9 5/8" casing shoe with the following objectives:

- Penetrate and core the Hermod Sands to investigate fluid content and geological facies changes outside the 'central channel' axis
- Obtain high quality LWD data to fully characterise the reservoir interval. Obtain formation pressure data to investigate pressure communication with the vertical well

2.3 RESULTS OF THE WELL

Well 26/4-2 was spudded in a water depth of 131m by the *Deepsea Delta* on the 13th April 2004 and reached a total depth of 2302m MD RKB (-2273m TVD MSL) on the 21st April 2004. The operation did not experience any significant difficulties and was

completed almost 10 days ahead of the planned duration of the well. Shallow gas and glacial boulders were recognised as potential hazards in the overburden in the area, but neither were encountered in the well. Potential sloughing created by over-pressured shales within the Hordaland Group in the 8½" hole section was also successfully controlled by mud weight and with use of inhibitive mud properties.

The stratigraphy and lithology found in the well was as expected and within the prognosis error bars. The actual versus prognosed lithology and depths are shown in Figures 2.3 and 2.4. The well encountered 46m of water-bearing Hermod sandstone with a mean porosity of 31%. There were no indications of hydrocarbons from cuttings or wireline logs. The well was plugged and abandoned on completion of a modest data acquisition programme and the rig moved off location on the 27th April 2004.

2.4 STRATIGRAPHY

Well 26/4-2 penetrated strata from the Recent to the Upper Cretaceous. From seabed to 1200m MD RKB returns were taken to seabed and therefore LWD data and correlation with offset wells have been used to determine the lithology and stratigraphy. From 1200m MD RKB the lithostratigraphy is based on descriptions from ditch cutting samples together with wireline log responses.

The division of the encountered stratigraphy is based upon the separate biostratigraphic report for the well and on correlation with nearby wells. A summary of the lithostratigraphy and biostratigraphy are given in Tables 2.1 and 2.2 respectively.

Group	Formation	Prognosed		Actual		+/-
		(m MD RKB)	(-m TVD MSL)	(m MD RKB)	(-m TVD MSL)	
Nordland	Seabed	159 ± 2	-130 ± 2	160	-131	+1
	Top Utsira	734 ± 40	-705 ± 40	695	-666	-39
Hordaland		884 ± 40	-855 ± 40	900	-871	+16
	Eocene Marker	1619 ± 40	-1590 ± 40	1611	-1582	-8
Rogaland	Top Balder	1979 ± 30	-1950 ± 30	1978	-1949	-1
	Top Sele	2029 ± 30	-2000 ± 30	2020.5	-1991.5	-8.5
	Top Hermod Sst	2045 ± 30	-2016 ± 30	2040	-2011	-5
	Top Lista	2114 ± 30	-2085 ± 30	2113	-2084	-1
	Top Våle			2214	-2185	
Shetland	Top Tor	2254 ± 40	-2225 ± 40	2252	-2223	-2
TD		2304 ± 40	-2275 ± 40	2302	-2273	-2

Table 2.1: Summary of the lithostratigraphy in Well 26/4-2

Age	Depth (m MD RKB)	Depth (-m TVD MSL)
Early Oligocene (top not seen)	1210 - 1610	1181 - 1581
Late Eocene	1620 - 1620	1591 - 1591
Middle Eocene	1660 - 1924	1631 - 1895
Early Eocene	1930 - 2044	1901 - 2015
Late Palaeocene	2050 - 2252	2021 - 2223
?Late Maastrichtian (base not seen)	2252 - 2302	2223 - 2273

Table 2.2: Summary of the Chronostratigraphy in Well 26/4-2

2.4.1 Nordland Group — 160m to 900m MD RKB (-131m to -871m TVD MSL)

Vertical thickness: 740m
Age: Miocene to Holocene

The entire Nordland Group from seabed (160m MD RKB) was drilled with returns to seafloor. The section from 230m MD RKB to 900m MD RKB is interpreted from the LWD logs to consist of various claystones with thin interbedded sandstones and the thicker sand intervals that constitute the Utsira Formation.

Utsira Fm. — **695m to 900m MD RKB (-666m to -871m TVD MSL)**

Vertical thickness: 205m
Age: Miocene to Oligocene

The Utsira Formation consists of sandstones with interbedded claystone layers. No cutting descriptions are available due to all returns to seabed. The top of the interval is identified on the LWD data by the first occurrence of thick, blocky low gamma ray signatures, corresponding with a decreasing resistivity response that is consistent with water-bearing sandstones.

2.4.2 Hordaland Group — 900m to 1978m MD RKB (-871m to -1949m TVD MSL)

Vertical thickness: 1078m
Age: Oligocene to Lower Eocene

The Hordaland Group consists of claystones with stringers of limestone and dolomite. Cutting descriptions are available below 1200m MD RKB.

The claystones are described as being generally homogenous, light grey to olive grey, rarely light green, firm, blocky, weakly calcareous, slightly silty in parts, with rare pyrite and disseminated carbonaceous material. From 1525m MD RKB the claystones are described as homogenous, light to medium blue grey, moderately hard, sub-blocky to platy, generally waxy, non-calcareous, with rare pyrite. From 1830m MD RKB the claystones grade towards being light grey, moderately hard, sub-blocky to platy, non-calcareous, rarely waxy.

In the lowermost parts from 1942m MD RKB the claystones are described as homogenous, medium red brown, moderately hard, sub-blocky.

The limestones are described as lime mudstone, off white to light grey, moderately hard to hard, angular to blocky, microcrystalline to chalky texture with very poor or no inferred porosity. In lower parts from 1800m MD RKB they are described as dolomitic, buff to medium brown, hard, angular, microcrystalline, rarely sparry with no visable porosity.

2.4.3 Rogaland Group — 1978m to 2252m MD RKB (-1949m to -2223m TVD MSL)

Vertical thickness: 274m
Age: Lower Eocene to Upper Palaeocene

The top of the Rogaland Group is recognised by a characteristic increase in resistivity response in conjunction with a decreasing gamma ray response and by the appearance of tuffaceous claystones of the Balder Formation.

Balder Fm.	**1978m to 2020.5m MD RKB**
	(-1949m to –1991.5m TVD MSL)
Vertical thickness:	42.5m
Age:	Lower Eocene

The Balder Formation consists of interbedded multi-coloured claystones and tuffs together with stringers of limestone.

The claystones are varicoloured, light to medium grey, medium blue grey, occasionally olive grey, moderately hard, sub-blocky to sub-platy and waxy in parts. Pyrite occurs as traces throughout the formation.

The tuffs are described as light blue grey to light purple grey, moderately hard, hackly, rarely friable, ashy with corroded feldspar and common fine ferromagnesian crystals.

The limestones are off white to light grey, moderately hard, micritic and occasionally argillaceous, angular to blocky, with no inferred porosity.

Sele Fm.	**2020.5m to 2113m MD RKB**
	(-1991.5m to -2084m TVD MSL)
Vertical thickness:	92.5m
Age:	Lower Eocene to Upper Palaeocene

The Sele Formation is recognised by a decrease in resistivity response coupled with an increase in gamma ray response. It consists of claysones, thin stringers of limestone and the Hermod sandstone member.

The claystones are dark grey, moderately hard, sub-blocky to sub-platy. They are slightly silty in parts with rare carbonaceous material.

Hermod Sandstone Member	**2040m to 2093m MD RKB**
	(-2011m to -2064m TVD MSL)

The top of the Hermod Sandstone Member is picked at the top of the first thin sandstone, characterised by a sharp decrease in gamma ray log response. The uppermost 7m of the unit consists of claystone, with thin interbeds of sandstone and limestone.

The claystones are dark grey, moderately hard, sub-blocky to sub-platy. They are slightly silty in parts with rare carbonaceous material.

At 2048m MD RKB a 45m thick homogenous sandstone consists of loose white, translucent to opaque, occasionally frosted quartz. The grains are fine (upper) to very coarse (lower), subrounded to well rounded, subspherical, poorly sorted, with very good inferred porosity.

Lista Fm.	**2113m to 2214m MD RKB**
	(-2084m to -2185m TVD MSL)
Vertical thickness:	101m
Age:	Upper Palaeocene

The top of the Lista Formation is defined by a gamma ray peak and a change to more erratic sonic and resistivity log responses. The formation consists of claystones with limestone stringers and rare thin sandstone/siltstone stringers.

The claystones demonstrate a subtle change in the colour from the overlying Sele Formation to light to medium blue grey, occasionally dark red grown, moderately hard, sub-blocky, plastic in parts and occasionally silty. They are non calcareous in upper parts but become slightly calcareous towards the base of the formation and contains rare traces of pyrite.

The limestones are micritic, white to off white, hard blocky to angular, microcrystalline, with a chalky texture and poor porosity.

The sandstones consist of clear to white quartz grains, fine grained, subrounded and well sorted. They are strongly cemented with calcareous and siliceous cements and contain glauconite throughout. The visible porosity is poor.

Våle Fm. **2214m to 2252m MD RKB**
(-2185m to -2223m TVD MSL)

Vertical thickness: 38m

Age: Upper Palaeocene

The top of the Våle Formation is tentatively picked at the onset of an increasing sonic and resistivity log response and by a subtle colour change of the claystones from the overlying formation. The claystones are medium to light brown grey, moderately hard, sub-blocky to sub-fissile, calcareous and with rare traces of glauconite.

2.4.4 Shetland Group — 2252m to 2302m MD RKB (-2223m to -2273m TVD MSL)

Tor Fm.

Vertical thickness: 50m

Age: Late Maastrichtian

The Tor Formation (the Ekofisk Formation appears to be absent) is defined by a sharply decreasing gamma ray log response and an increasing resistivity log response. The section consists of limestones interbedded with occassional thin claystones.

The limestones are chalky to micritic, white to occasionally light grey, moderately hard and blocky with rare traces of glauconite. They have a chalky texture with fair visible porosity.

The claystones are described as medium grey, moderately hard, sub-platy to sub-fissile and calcareous.

2.5 HYDROCARBON INDICATIONS

2.5.1 Shallow gas

No indications of shallow gas were encountered.

2.5.2 Gas Detection

The standard gas logging system from Baker Hughes Inteq was used during the well. The background gas values were very low (maximum 0.05%) throughout the 8½" section (Table 2.3). There was not a significant increase in the background gas levels through the Hermod sandstone reservoir interval.

Depth MD RKB	Total Gas %	Background %	C1 ppm	C2 ppm	C3 ppm	iC4 ppm	nC4 ppm	iC5 ppm	nC5 ppm	Remarks
1692	0.07	0.04	403	3	1					Formation gas
1871	0.08	0.05	401	4	3					Formation gas
1990	0.07	0.03	232	1	3					Formation gas

Table 2.3: Gas peak summary

2.5.3 Fluorescence in Cuttings

No shows/fluorescence were described in the cuttings samples from the well.

2.6 ROCK SAMPLES

2.6.1 Cutting Samples

Samples were not recovered down to 1210m MD RKB as the well was drilled with cuttings to seabed. Cuttings samples were collected every 10m from 1210m to 1900m MD RKB (Intra Hordaland Group). Over the interval 1900m to 2050m MD RKB samples were taken every 6m and from 2050m MD RKB to TD every 10m. The sampling interval deviated from the planned programme due to faster than expected rates of penetration in the 8½" hole section.

One washed and dried sample (100-200 g) and one bulk unwashed sample (5 litres) was collected per sample depth. The bulk sample was split into the following sample sets by ResLab (Sandnes):

- NPD: According to NPD regulations - 1 set (kilo) dried sample, 1 set washed and dried
- Norske Shell – 1 wet sample, 1 washed and dried
- Norsk Hydro – 1 wet sample
- 10 washed and dried trade sets cuttings, stored at Reslab

Two further subsets were sent to Petrostrat Ltd and to Fluid Inclusion Technologies Inc. for biostratigraphical and fluid inclusion analysis respectively.

2.6.2 Conventional Core

The criteria for cutting conventional core was not met.

2.6.3 Sidewall Cores

The criteria for cutting conventional core was not met.

2.7 FORMATION PRESSURES AND TEMPERATURES

2.7.1 Pore pressure estimate

The pre-drill pore pressure prognosis was based on the data available from the surrounding wells. Pore pressure estimates during drilling are based on interpretations from recorded mudweight, MWD tools, ROP, gas, torque and flowline temperature data

combined with results from D'exponent calculations. The pore pressure estimates supplied during drilling were in general similar to the prognosed pressures (Figure 2.5). The pore pressure per hole section is described below:

36" and 12¼" Hole Sections: 160m to 1200m (-131m to -1171m TVD)
These sections were drilled without a riser.

There were no indications of shallow gas or overpressure so this section is assumed to be normally pressured.

8½" Hole Section: 1200m to 2302m (-1171m to -2273m TVD)
The 8½" hole section was drilled with a riser. After drilling 2m of new formation below the casing shoe a LOT was performed to 1.65sg using a 1.29sg mud weight. This test result is consistent with the regional fracture gradient estimated from the nearby wells.

Within the Hordaland Group, pore pressure was prognosed to increase to c.1.20sg and therefore the mud weight was increased to 1.31sg. The section was drilled with no problems and the maximum observed formation pressure was 1.21sg.

Formation pressure within the Rogaland Group was prognosed to be near hydrostatic and this proved to be the case. The pore pressure in Hermod sandstones was expected to be 25 bars or more below hydrostatic pressure (0.90 to 0.85sg), owing to depletion created by production from the Frigg Field. However, formation pressure data were not collected in the well as Schlumberger's Modular Dynamic Tester (MDT) tool was not run and therefore the degree of pressure depletion remains unknown.

Within the shales of the Rogaland Group and the underlying chalk of the Ekofisk Formation, pore pressure was prognosed to remain at, or near, hydrostatic pressure. The observations in the well indicate that this was indeed the case.

2.7.2 Temperature

The temperatures measured on the different logging runs are listed below:

RUN	Interval logged (m MD RKB)	Log Acquired	Operation Time	Max BHT (°C)	Time since last Circ.
Last circulation (TD) ended: 12:55 hrs on 21st April 2004 *Duration of last circulation: 1:55 hrs* *Max. recorded circulation temp. 60.0 °C at 2302m MD*					
#1A	2293m to 1200m	DSI-HRLA-TLD-CNL-GR-ACTS-ECRD	12.58	85.0	16.13
#2A	2280m to 360m (128 levels)	VSI-GR-ACTS-LEH-V (Zero Offset VSP)			

Table 2.4: Temperature data 26/4-2

The corrected maximum bottom hole temperature has been extrapolated using the Horner Method, to give a geothermal gradient of 3.8ºC/100m (Figure 2.6). The temperature of the Hermod reservoir is therefore estimated to be 77ºC, slighty higher than pre-drill prognosis (74ºC).

Top Hermod Depth Structure Map (contours) & 'Most Likely' Net Sand Thickness (colours)

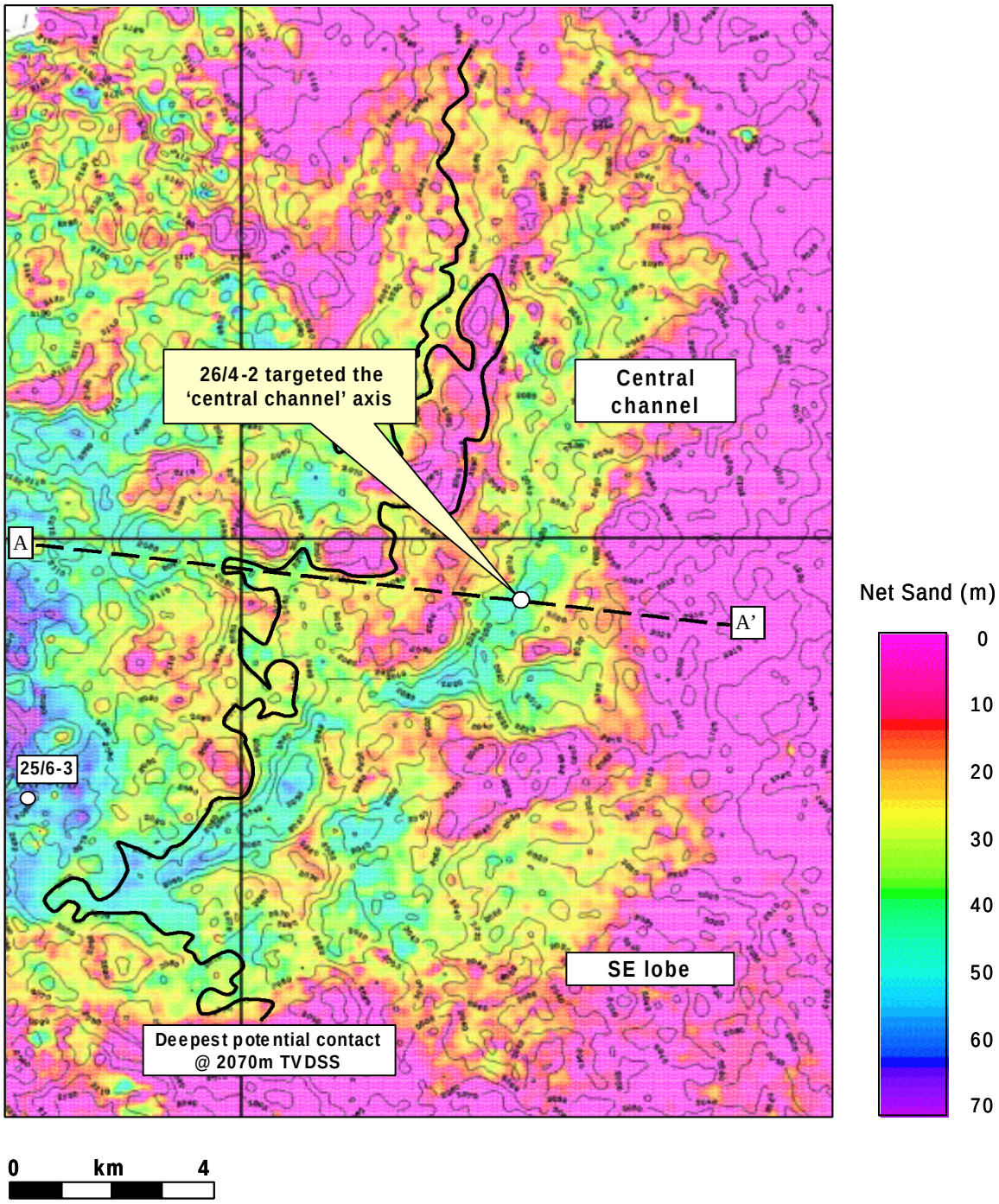


Figure 2.1: Beluga prospect map

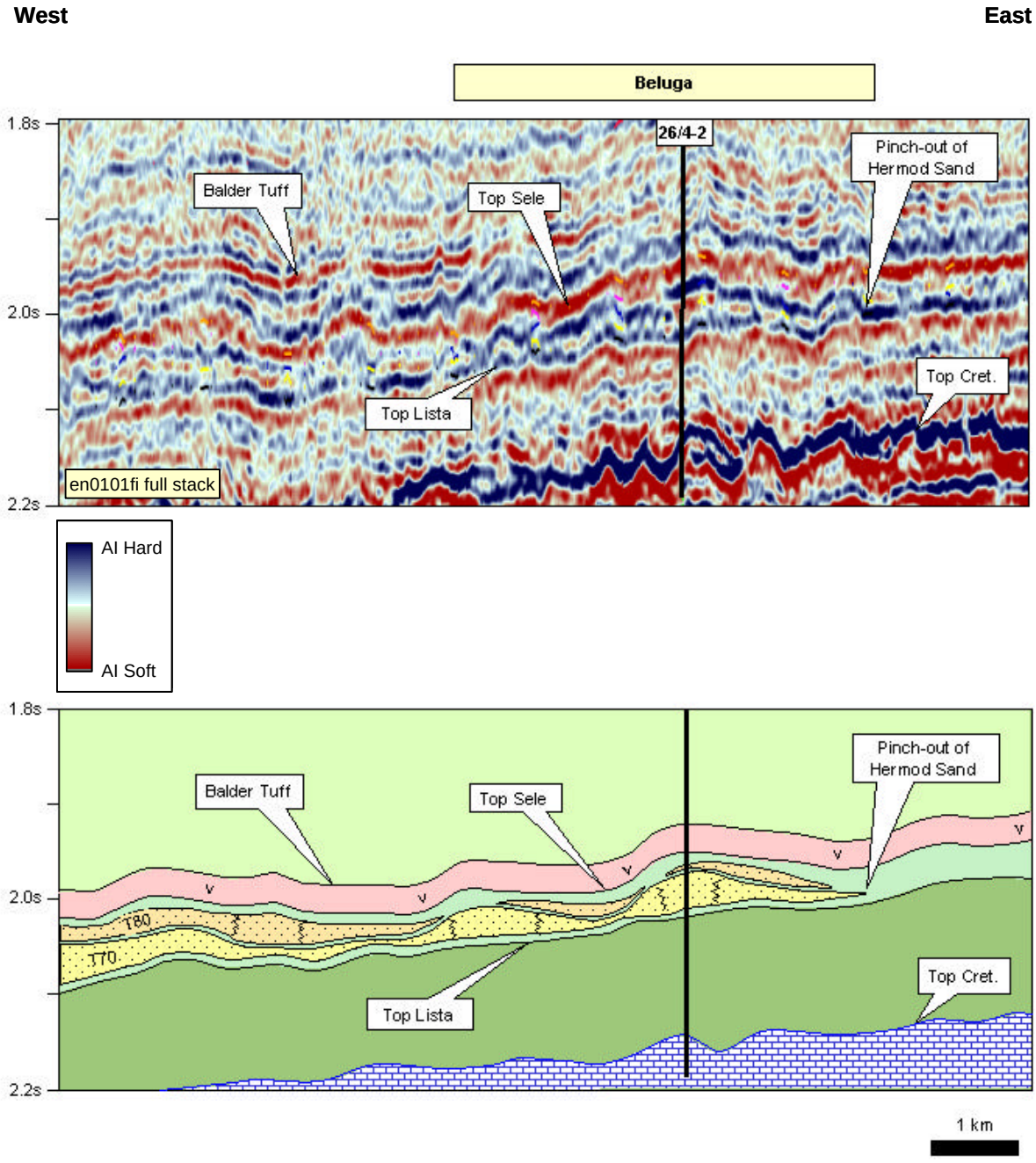


Figure 2.2: Seismic line (A-A') and geoseismic interpretation through the well location

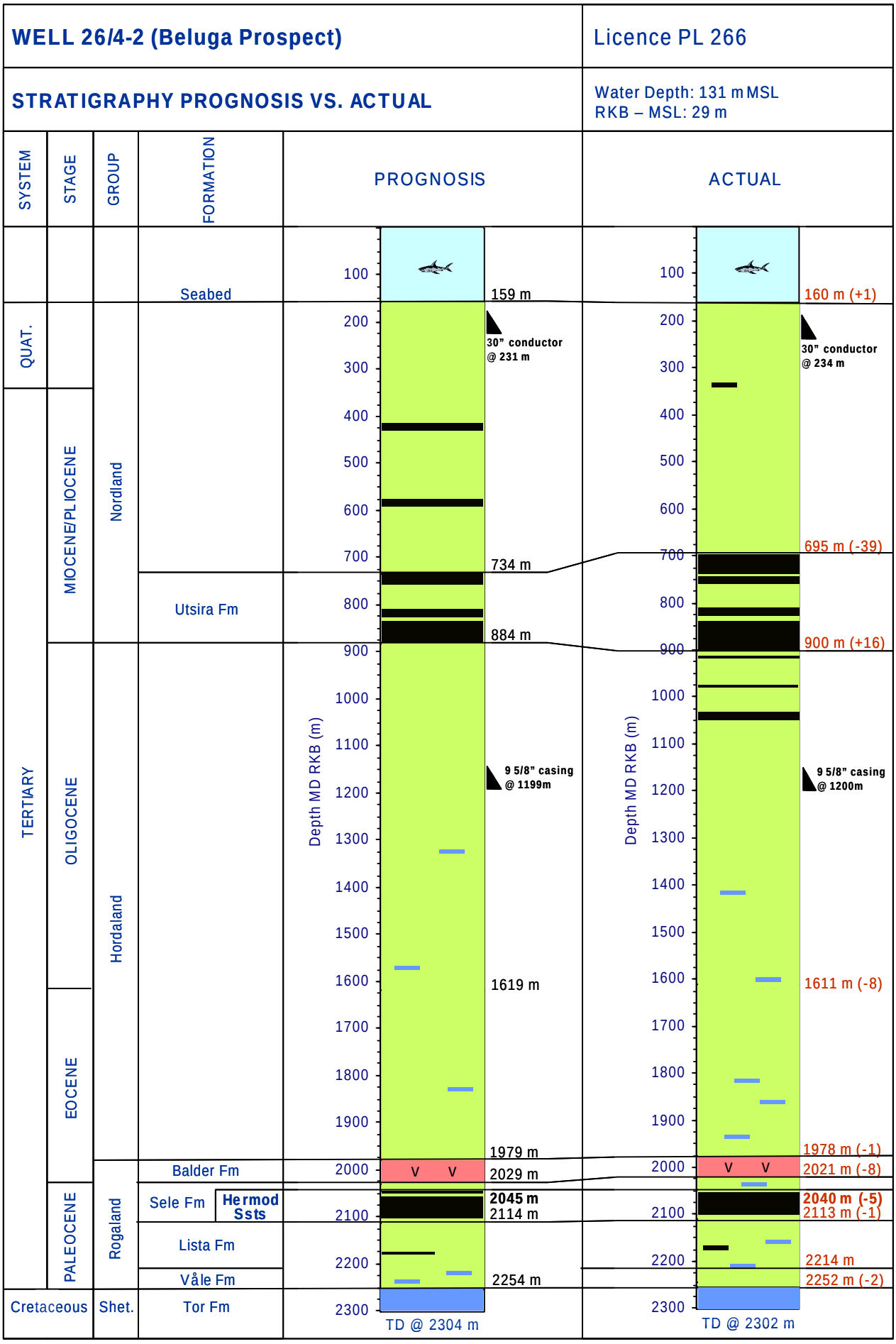

WELL 26/4-2 (Beluga Prospect)
Licence PL 266
STRATIGRAPHY PROGNOSIS VS. ACTUAL
Water Depth: 131 m MSL
RKB – MSL: 29 m
SYSTEM
STAGE
GROUP
FORMATION
PROGNOSIS
ACTUAL
Depth MD RKB (m)
TERTIARY
QUAT.
MIOCENE/PLIOCENE
OLIGOCENE
EOCENE
PALEOCENE
Cretaceous
Nordland
Hordaland
Rogaland
Shet.
Seabed
Utsira Fm
Balder Fm
Sele Fm
Hermod Ssts
Lista Fm
Våle Fm
Tor Fm
159 m
734 m
884 m
1619 m
1979 m
2029 m
2045 m
2114 m
2254 m
TD @ 2304 m
30" conductor @ 231 m
9 5/8" casing @ 1199m
160 m (+1)
695 m (-39)
900 m (+16)
1611 m (-8)
1978 m (-1)
2021 m (-8)
2040 m (-5)
2113 m (-1)
2214 m
2252 m (-2)
TD @ 2302 m
30" conductor @ 234 m
9 5/8" casing @ 1200m

Figure 2.3

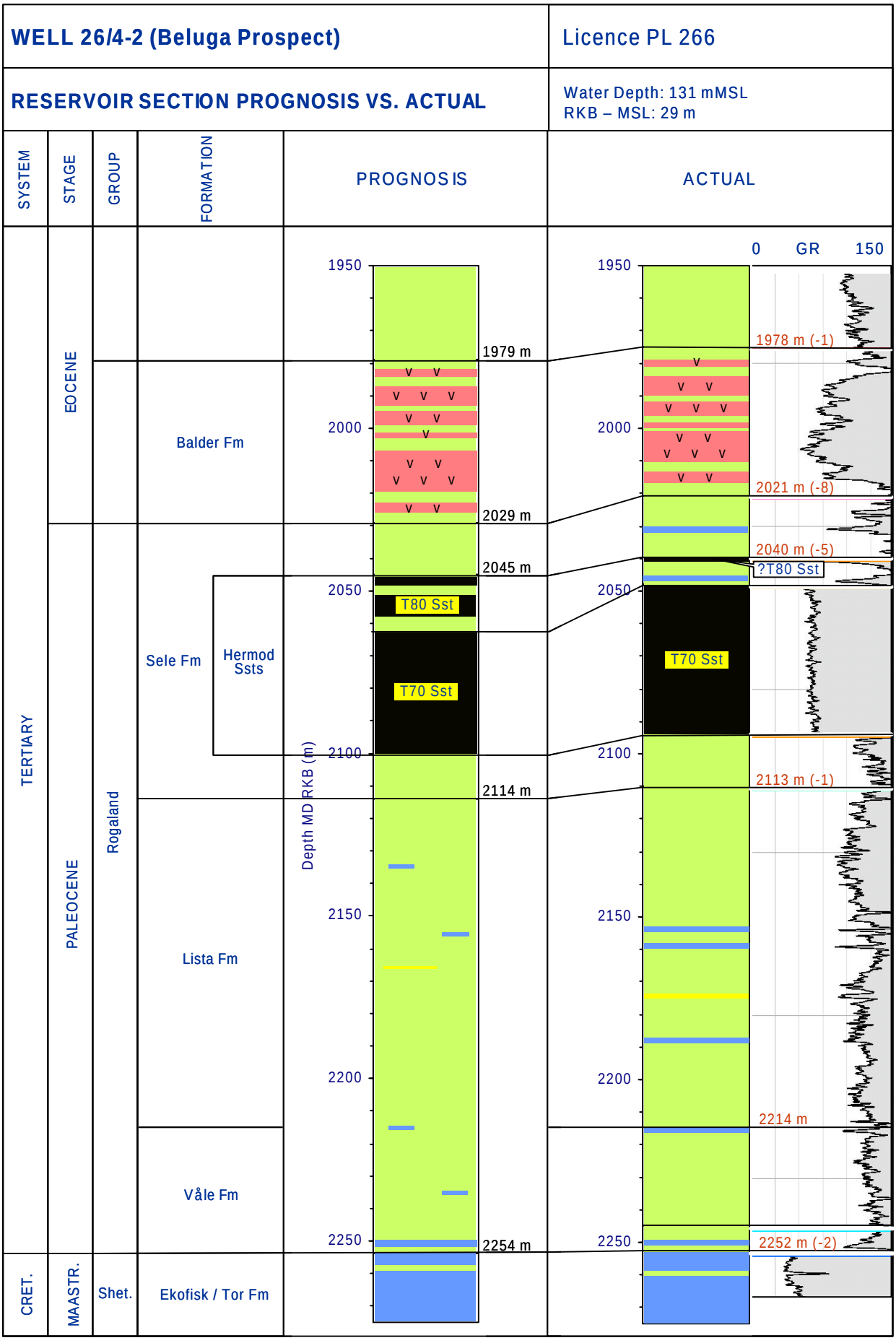

WELL 26/4-2 (Beluga Prospect)
Licence PL 266
RESERVOIR SECTION PROGNOSIS VS. ACTUAL
Water Depth: 131 mMSL
RKB – MSL: 29 m
SYSTEM
STAGE
GROUP
FORMATION
PROGNOSIS
ACTUAL
0 GR 150
TERTIARY
EOCENE
PALEOCENE
CRET.
MAASTR.
Rogaland
Shet.
Balder Fm
Sele Fm
Hermod Ssts
Lista Fm
Våle Fm
Ekofisk / Tor Fm
T80 Sst
T70 Sst
?T80 Sst
1979 m
2029 m
2045 m
2114 m
2254 m
1978 m (-1)
2021 m (-8)
2040 m (-5)
2113 m (-1)
2214 m
2252 m (-2)
Depth MD RKB (m)
1950
2000
2050
2100
2150
2200
2250

Figure 2.4

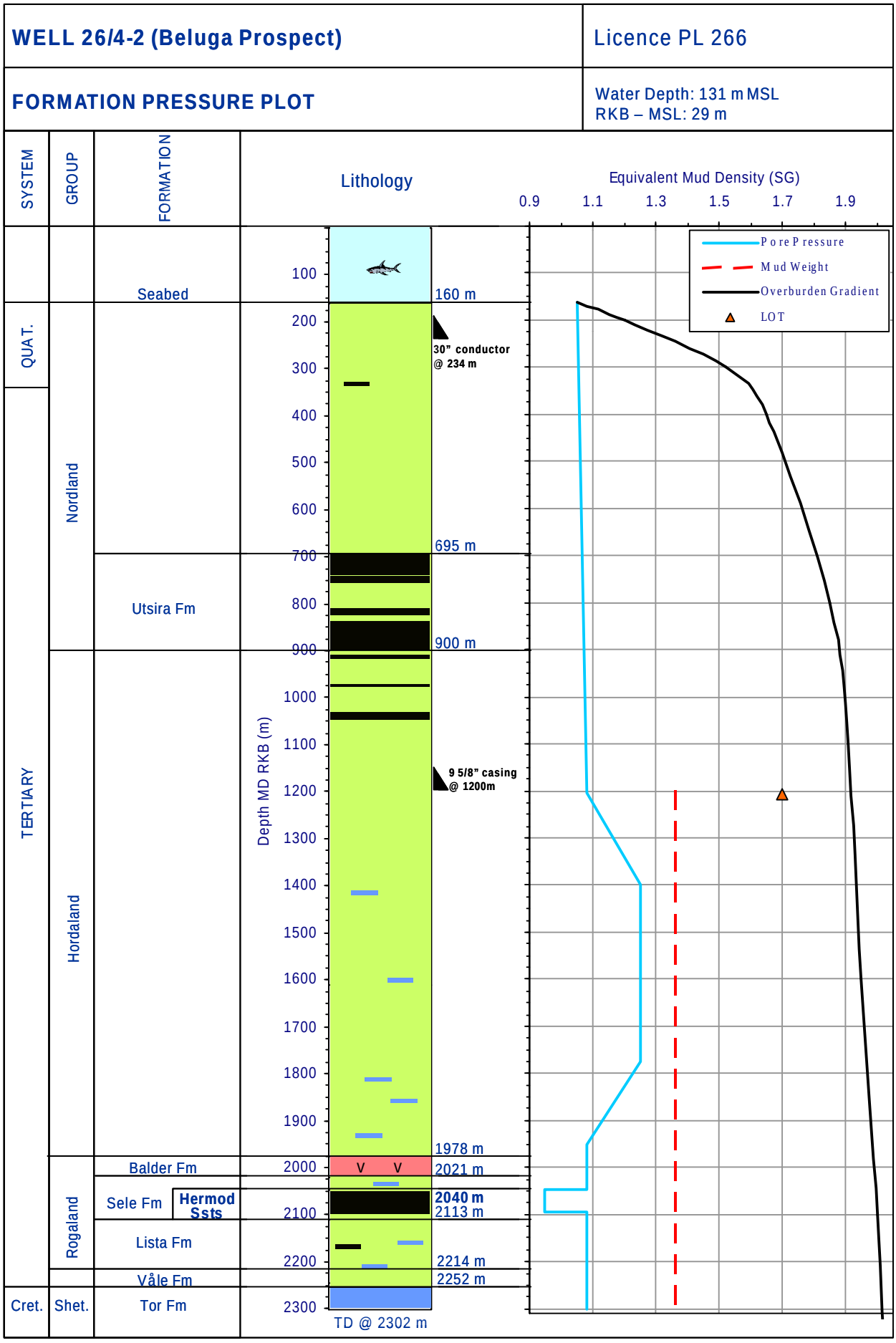

WELL 26/4-2 (Beluga Prospect)
Licence PL 266
FORMATION PRESSURE PLOT
Water Depth: 131 m MSL
RKB – MSL: 29 m
SYSTEM
GROUP
FORMATION
Lithology
Equivalent Mud Density (SG)
0.9
1.1
1.3
1.5
1.7
1.9
Pore Pressure
Mud Weight
Overburden Gradient
LOT
Depth MD RKB (m)
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
QUAT.
TERTIARY
Cret.
Nordland
Hordaland
Rogaland
Shet.
Seabed
160 m
30" conductor
@ 234 m
695 m
Utsira Fm
900 m
9 5/8" casing
@ 1200m
1978 m
Balder Fm
2021 m
Sele Fm
Hermod Ssts
2040 m
2113 m
Lista Fm
2214 m
Våle Fm
2252 m
Tor Fm
TD @ 2302 m

Figure 2.5

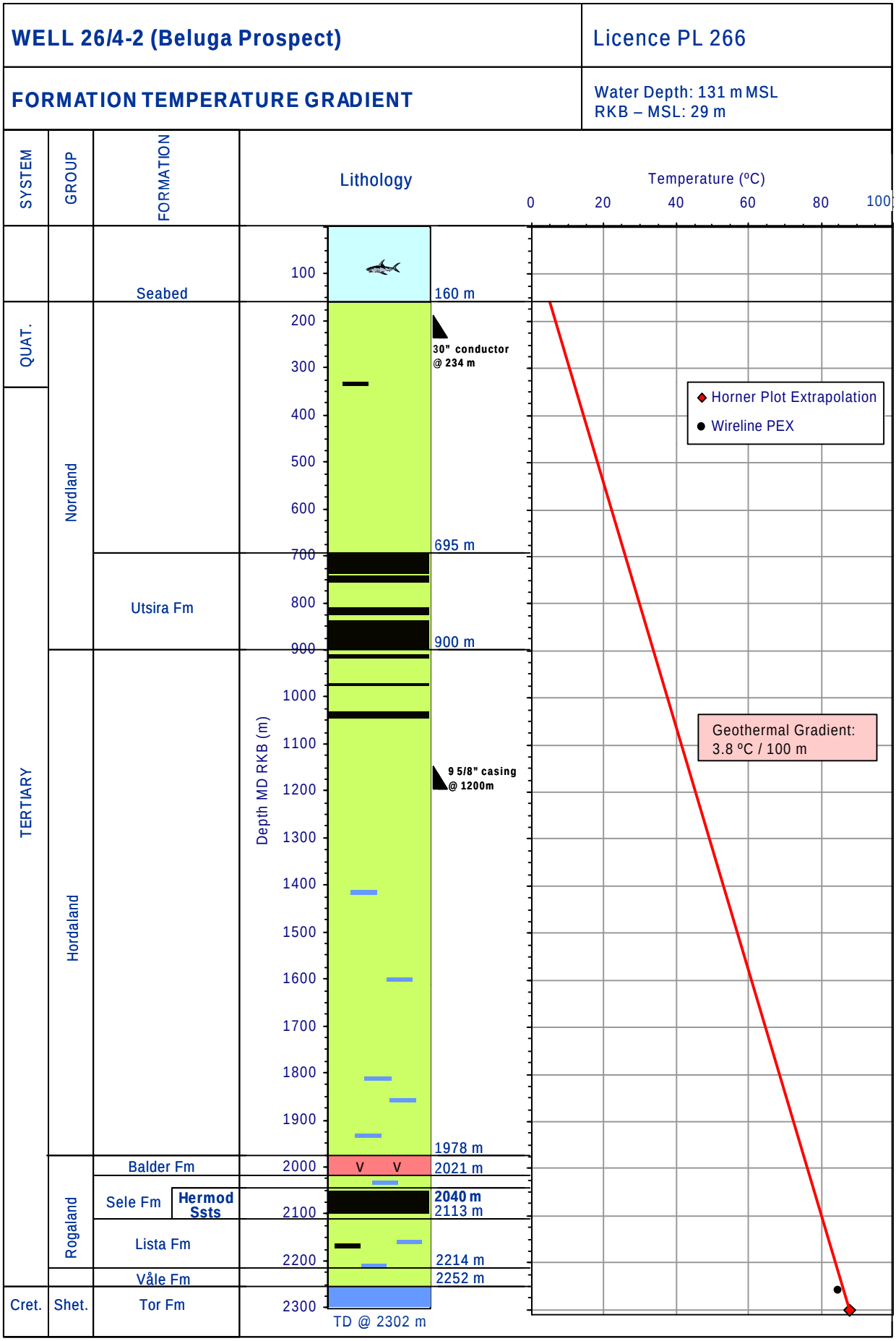

WELL 26/4-2 (Beluga Prospect)
Licence PL 266
FORMATION TEMPERATURE GRADIENT
Water Depth: 131 m MSL
RKB – MSL: 29 m
SYSTEM
GROUP
FORMATION
Lithology
Temperature (ºC)
0
20
40
60
80
100
Seabed
160 m
QUAT.
Nordland
30" conductor
@ 234 m
Horner Plot Extrapolation
Wireline PEX
695 m
Utsira Fm
900 m
TERTIARY
Hordaland
Geothermal Gradient:
3.8 ºC / 100 m
9 5/8" casing
@ 1200m
Depth MD RKB (m)
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
1978 m
Balder Fm
2021 m
Sele Fm
Hermod Ssts
2040 m
2113 m
Rogaland
Lista Fm
2214 m
Våle Fm
2252 m
Cret.
Shet.
Tor Fm
TD @ 2302 m

Figure 2.6

3. PETROPHYSICAL REPORT

3.1 LWD/MWD DATA

LWD and MWD data were acquired by Anadrill. The main purposes of the LWD were to provide early stratigraphic information and fluid content in order to enable rapid decision-making and to provide data over intervals that would not be logged with wireline. Pressure While Drilling (PWD) information and directional/survey data were also recorded. Realtime data from the tools were accessed via the Schlumberger InterAct service. Table 3.1 provides an overview of the LWD/MWD runs in the well.

Section	Depth (m MD RKB)	Logs	Purpose /Comments
36”	160 to 234	MWD	**Purpose**: To survey hole inclination
12¼”	234 to1200	MWD- ARC-A *(Res-GR-PWD)*	**Purpose**: To identify possible shallow gas; to provide stratigraphic information; to provide data where no wireline logs were acquired; to survey hole inclination **Comments**: No tool problems; good hole cleaning was ensured by monitoring the PWD data
8½”	1200 to 2302	MWD- RAB-A- *(Res-GR at-bit)* ARC-A *(Res-GR-PWD)*	**Purpose**: To provide stratigraphic information to identify coring point and hole TD; to survey hole inclination **Comments**: Depth sensor failed – problem was fixed prior to drilling into top reservoir; PWD sub failed

Table 3.1: LWD/MWD logging data

There were no problems with the acquisition and quality of the LWD/MWD data in the 36” and 12¼” hole sections in the well. However, prior to drilling out the 8½” hole it was discovered that the depth sensor for the MWD/LWD system had failed, with no signal being received from the sensor to the MWD unit. It was decided to drill ahead using the Baker Hughes Inteq depth sensor data stream. This resulted in poor quality realtime LWD data. However, the problem was fixed prior to drilling into top reservoir and good quality at-bit resistivity and gamma ray LWD data was used to make a decision not to core the Hermod reservoir sands. Good quality memory LWD data was recovered from the tool over the entire 8½” hole section when the BHA was brought to surface.

3.2 WIRELINE LOGGING DATA

Wireline data were acquired in two separate runs after the TD of the 8½” hole section (Table 3.2). Following the identification of a water-bearing reservoir on the LWD data, a more extensive wireline data acquisition program that had been planned to fully evaluate a hydrocarbon discovery was cancelled.

The purpose of Run #1A was to acquire sufficient data to allow a thorough and complete evaluation of the Hermod sandstone reservoir and other potential Tertiary-aged reservoir intervals, including net sand determination, porosity and hydrocarbon saturation. The hole was found to be in excellent condition and good quality data was obtained up to the 9 5/8” casing shoe at 1200m MD RKB, with the gamma ray log continuing to 930m.

Run #2A, a zero offset VSP survey, was also performed in order to acquire data to better understand the origin of the amplitude anomaly that was observed to accompany the prospect prior to drilling.

Run	Depth (m MD RKB)	Logs	Comments
#1A	2293m to 1200m	DSI-HRLA-TLD-CNL-GR-ACTS-ECRD	**Comments**: No hole problems; Some minor problems with the spooling of the wireline cable; GR to 930m.
#2A	2280m to 360m (128 levels)	VSI-GR-ACTS-LEH-V (Zero Offset VSP)	**Comments**: Leak in gun assembly due to loose air hose connection caused 30mins delay to the run.

Table 3.2: Wireline logging data

3.3 PETROPHYSICAL EVALUATION

3.3.1 Net Sand Determination

The Gamma Ray and Density/Neutron logs were used to calculate Vsh. The following cutoffs were used to define the net sand:

- Vsh < 40%
- PHIT (total porosity) < 12%

3.3.2 Porosity Calculation

The porosity was calculated from the density logs according to the equation:

$$\phi = \frac{\rho(ma) - \rho(b)}{\rho(ma) - \rho(fl)}$$

- The bulk density ρ (b) was taken from the density log.
- The fluid density ρ (fl) was assumed to be 1.0 g/cc
- The matrix density ρ (ma) was assumed to be 2.65 g/cc, based on the available core data from nearby wells.

3.3.3 Water Saturation Calculation

The water saturation was calculated from the Archie equation:

$$Sw = \left(\frac{Rw}{Rt * \phi^{m}} \right)^{1/n}$$

The true formation resistivity Rt was taken from the deep resistivity log.
The cementation exponent m and the saturation exponent n was taken from regional experience:

- m = 2.0
- n = 2.0

The water resistivity Rw was determined by constructing a Pickett plot (Figure 3.1):

- Rw = 0.09 @ 60°C

3.3.4 Petrophysical Summary

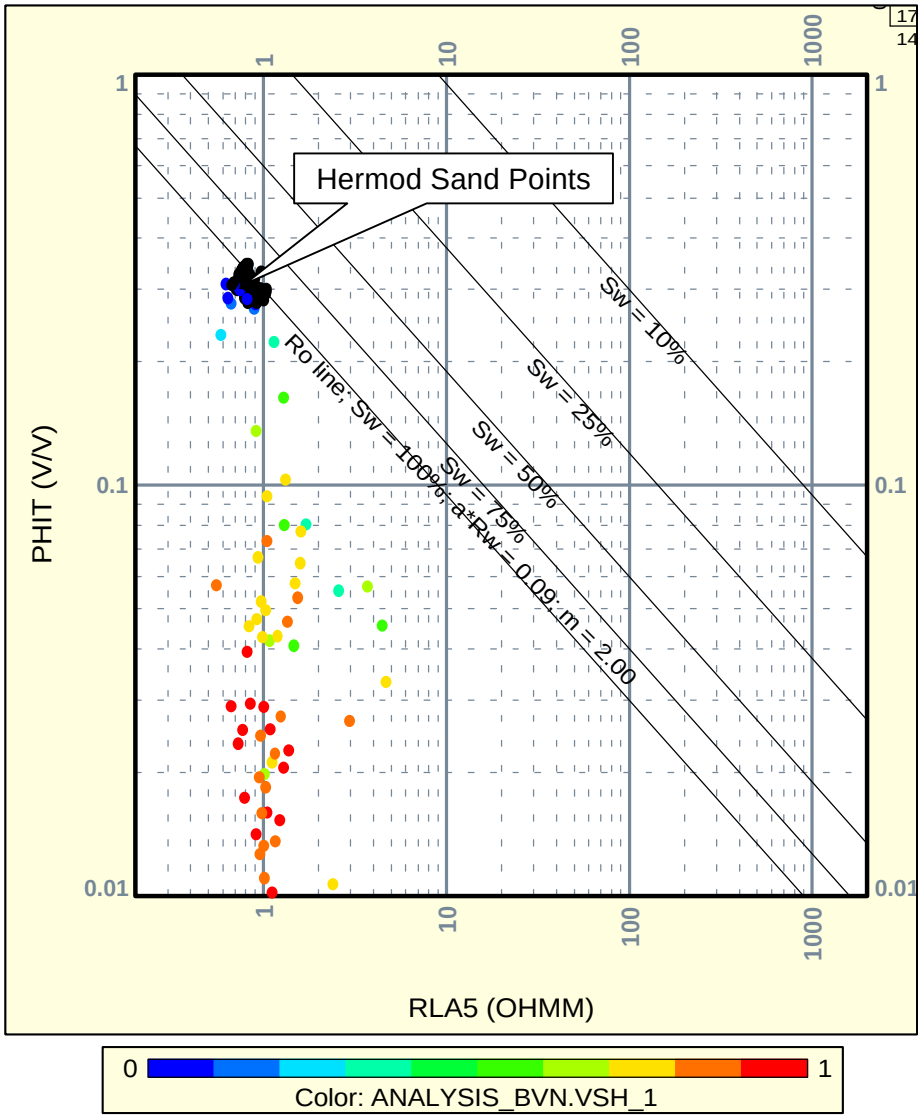
The petrophysical evaluation of the 8½" hole section is shown in Figure 3.2. The Hermod reservoir intervals are obviously water bearing, but of very good quality. The main Hermod sandstone is 45.6m thick, with porosity of up to 37%, although porosity is slightly lower (28%) in the central parts of the body. The average porosity for the main sand body

is 31%. These values are similar to those observed in the nearest offset well 25/6-3, where core cut had porosities of up to 38% and permeabilities up to 10 darcies.

The thin sand interval above the main sand also has excellent reservoir properties (29% porosity) despite being less than 1m thick. Without core information it is difficult to ascertain whether this sand is depositional, or a sand injection from the main sand body.

Reservoir	Top (m MD RKB)	Base (m MD RKB)	Gross (m)	Net Sand (m)	Mean Porosity (%)
Hermod ?T80	2039.7	2040.5	0.8	0.8	29
Hermod T70	2048.0	2093.6	45.6	45.6	31
Hermod Total	**2039.7**	**2093.7**	**54.0**	**46.4**	**31**

Table 3.3 : Summary of Hermod Sandstone reservoir properties



Rw = 0.09 @ 60°C

Figure 3.1: Hermod Sandstone Pickett Plot (PHIT vs. RLA5 Crossplot)

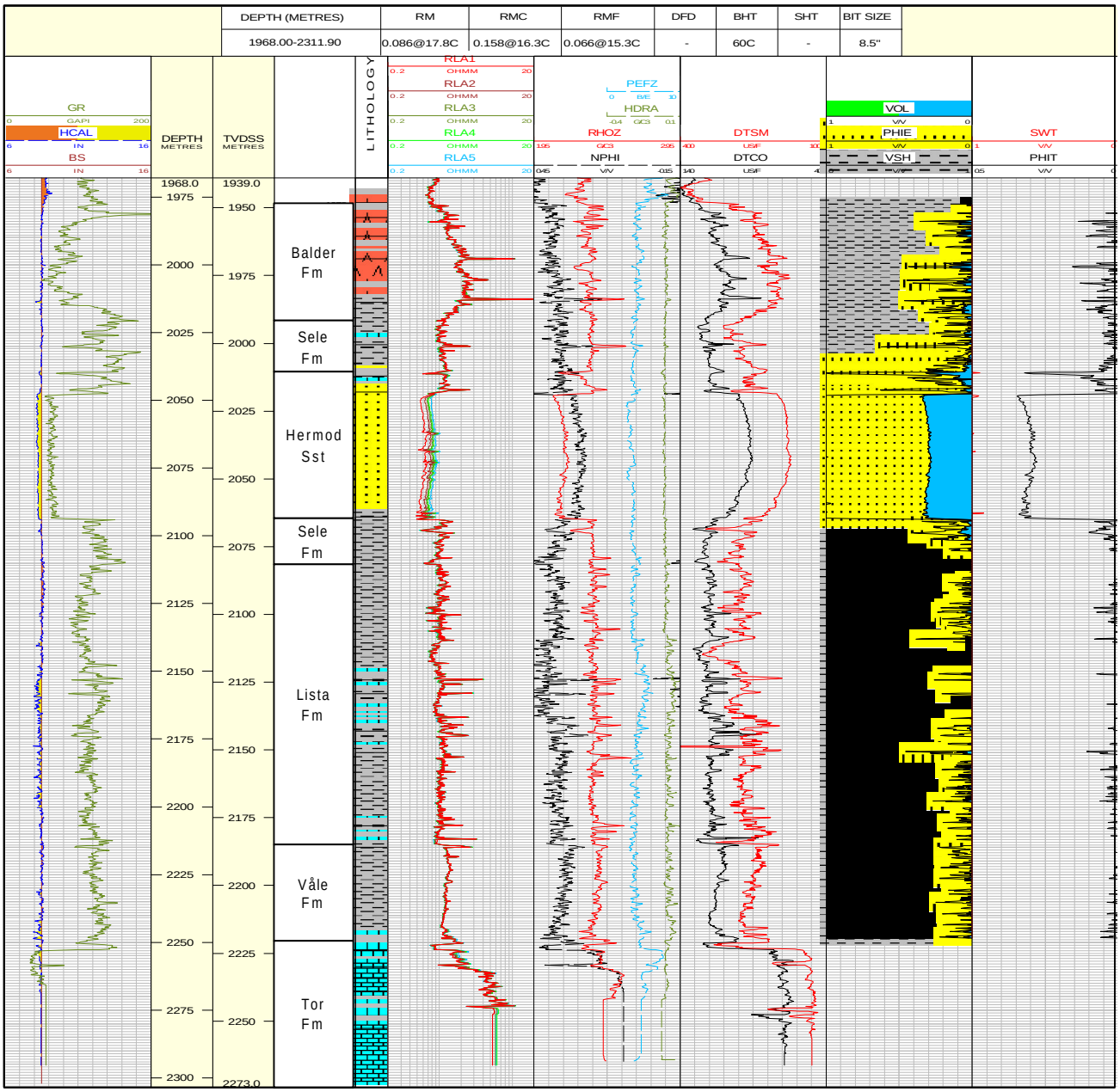


Figure 3.2: Petrophysical evaluation of the Palaeocene section in Well 26/4-2

4 GEOPHYSICAL REPORT

4.1 VSP Acquisition

A zero offset vertical seismic profile (ZVSP), was conducted by Sclumberger (see Schlumber processing report). The survey was acquired in cased and open hole using a wireline conveyed four level Versatile Seismic Imager tool (VSI) with an individual shuttle spacing of 15m. A tuned array of three 150 cu.in. G-GUN airguns was used as surface source for the ZVSP survey and positioned at an offset and azimuth of 61m and 305^{o} referenced to the wellhead. 128 VSP levels were recorded from 2280m to 360m measured depth below drill floor with a minimum of 5 good shots at each level required.

4.2 VSP Processing

The processing of the data was carried out by Sclumberger. The raw downhole data was quality controlled prior to vertical stacking. This involved both a visual shot to shot inspection and RMS amplitude evaluation for all shots prior to stack. Overlapping levels and Run in Hole shots were removed pre stack. The near field hydrophone break times were picked on the inflection point tangent of the first motion in accordance with Schlumberger VSP processing standards and used as the timing reference for the downhole traces. The recorded VSP traces at each depth level are summed, using a median stacking technique to increase signal to noise in the resultant stack. The overall data quality of the Z (vertical) component is very good with a distinct first break on all traces below 707.5m MD-DF and several upgoing P-events easily recognisable in the total recorded wavefield. The levels recorded above 707.5m show interference by casing induced energy and were omitted from the VSP processing (Figure 4.1). Details of the processing parameters are found in the final Schlumberger processing report.

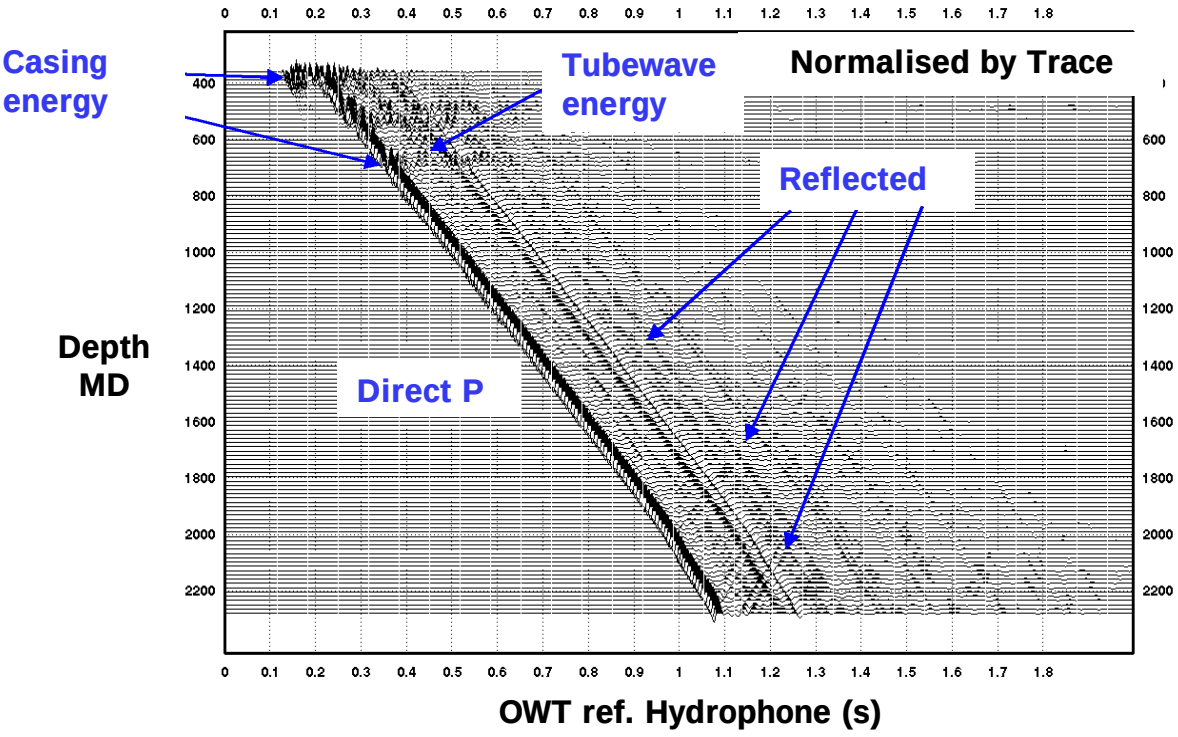


Fig 4.1: Z Component Vertical Stack

4.3 Corridor Stack and Synthetic Seismogram Generation

Processed compressional sonic log-data was only available from 2130-1170m MD-DF. An estimated sonic response computed from a calibrated Gardner's equation was used to extrapolate the sonic log to 2270m MD-DF. The extended compressional sonic log was calibrated using the geometrically corrected, vertical time-depth relationship from the ZVSP survey. Prior to calibration, the sonic log data was corrected for well deviation and bulk shifted to the seismic reference datum (MSL). Other companion logs: Density, gamma ray, neutron porosity and caliper were included and likewise corrected for well deviation and bulk shifted to the seismic reference datum (MSL). The compressional sonic log drift-profile is uncomplicated over the logged interval exhibiting an overall small (< 5ms) positive drift gradient. The maximum drift near TD before calibration was approximately 5ms (OWT) reduced to an overall maximum drift of 0.1ms after calibration.

Corridor Stack

A 80ms horizontal stacking window was chosen to include only the near well response and to ensure that any remnant multiple energy did not contribute to the corridor stack computation.

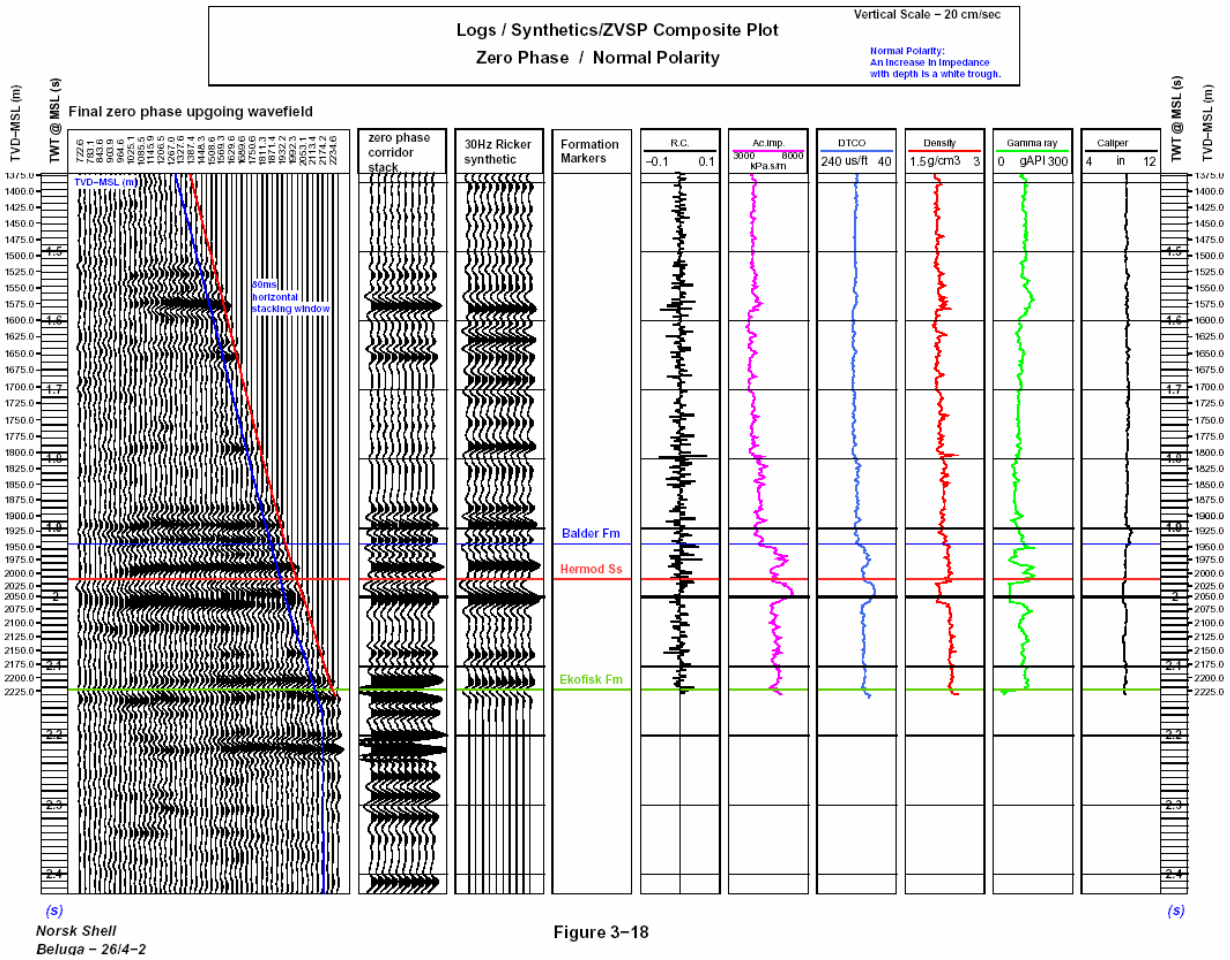


Fig 4.2 Logs / Synthetic / ZVSP Composite Plot

Figure 4.2 shows the computed corridor stack alongside synthetics and TWT resampled log-data. The overall tie between the VSP corridor stack and the computed synthetic seismogram is very good with only minor amplitude variations.

3-Way composite plots including the VSP corridor stack, synthetic seismogram, surface seismic in-line & x-line from the near field stacks and associated log-data are displayed in Figure 4.3. A -14ms TWT shift has been applied to the near-field surface seismic stack to obtain a tie with the VSP and synthetic seismogram.

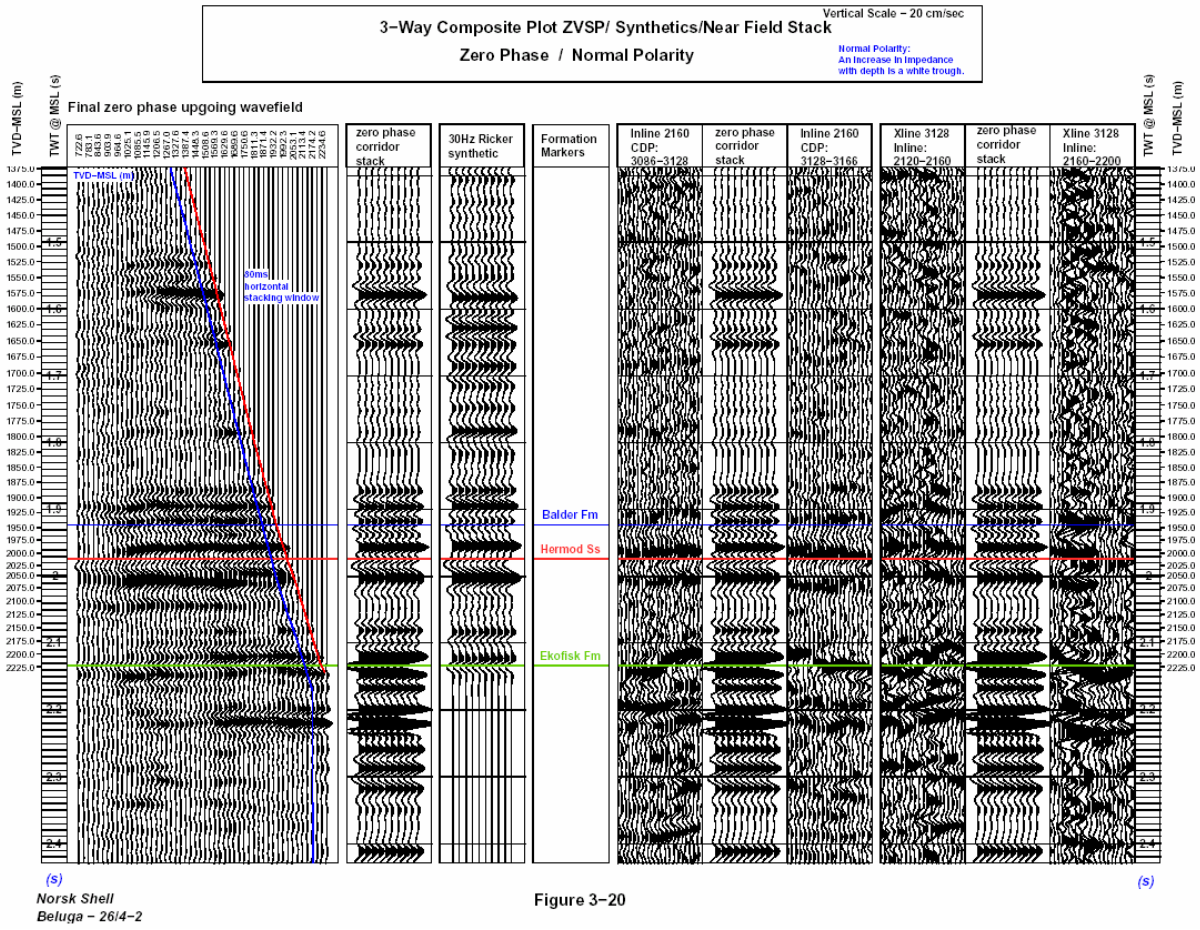


Fig 4.3 3 Way Composite Plot ZVSP / Synthetics / Near Field Stack

Synthetic Seismogram Generation

Compressional sonic and other companion logs were time indexed based on the vertical, time-depth function derived from the integrated travel times of the calibrated compressional sonic log extended to seabed. Acoustic impedance and reflection coefficient series (input for synthetic seismogram) were computed from time indexed calibrated compressional sonic and density logs. Zero phase Ricker wavelets with a range of central frequencies: 15Hz, 25Hz, 35Hz and 45Hz are displayed (Figure 4.4).

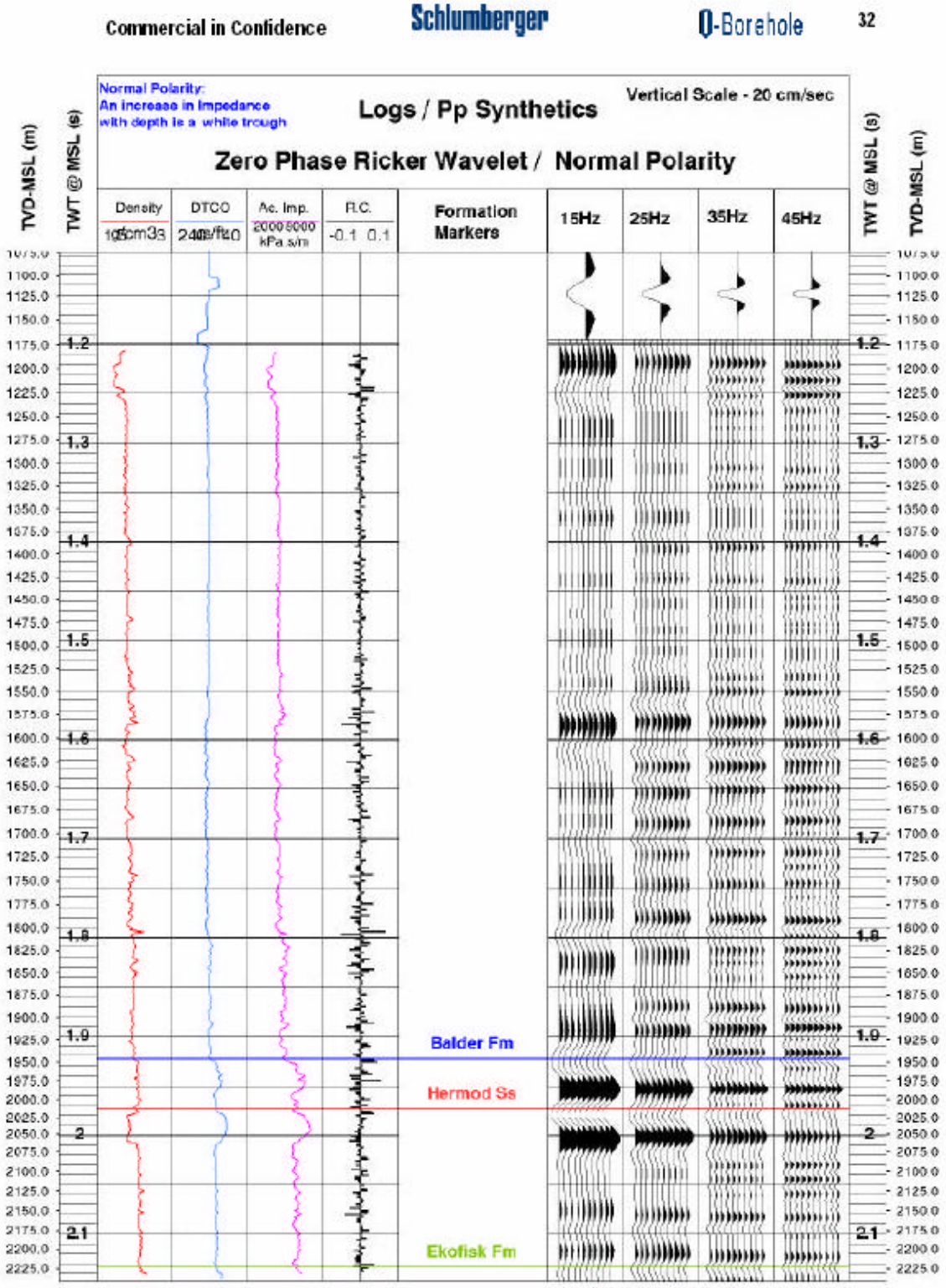


Figure 5-1: Zero phase (Ricker) synthetics seismograms (normal polarity)

Fig 4.4 Zero Phase Synthetic Seismograms

Group	Formation	Depth		Time TWT secs)
		(m MD RKB)	(-m TVD MSL)	
Nordland	Seabed	160	-131	0.175
	Top Utsira	695	-666	0.714
Hordaland		900	-871	0.913
	Eocene Marker	1611	-1582	1.582
Rogaland	Top Balder	1978	-1946	1.923
	Top Sele	2020.5	-1991.5	1.958
	Top Hermod Sst	2040	-2011	1.973
	Top Lista	2113	-2084	2.025
	Top Våle	2214	-2185	2.115
Shetland	Top Tor	2252	-2223	2.135
TD		2302	-2273	2.175

Table 4.1: Time – Depth relationship for the main horizons in Well 26/4-2

5 SUMMARY OF OPERATIONS

A full operational listing, together with bit, BHA, drilling fluid, cement and survey data are included in this report as enclosures. A schematic of the final well bore (Figure 5.1) and an operation time-depth curve (Figure 5.2) are also provided.

Note that all depths in this section are in driller's depth TVD RKB.

5.1 Rig move, positioning and anchor handling

The rig *Deepsea Delta* was towed from Block 24/9 to the Beluga well location in Block 26/4 in 10.8 hrs in marginal weather conditions. The use of larger class anchor handling vessels (AHV's) meant that the conditions did not impact upon the transit.

The rig positioning and deployment of anchors was performed efficiently despite the marginal weather. The use of the larger vessels meant that the operation was less reliant on the rig winches as the AHV's were powerful enough to pull the anchors out from the rig without the rig paying out line.

No health safety or environmental issues were recorded.

5.2 36" Hole Section

The 36" hole section was drilled with a 17½" bit and 26" x 36" heavy-duty hole opener assembly. Drilling parameters were varied to maximise ROP while ensuring that the hole remained vertical. No boulders or cobbles were encountered. MWD tools were used to survey the hole and the maximum angle observed was 0.86 deg. Shallow gas procedures were implemented throughout with the ROV mounted sonar being used to monitor for any gas at the wellhead. At the section TD at 233.8m, the hole was displaced to 1.2sg viscous mud.

The hole was drilled with seawater and 10m^3 viscous sweeps were pumped twice during each stand drilled. This proved to be an effective hole cleaning method for this section and no difficulties were experienced during the entire interval.

The conductor was cemented successfully to seabed with the guide base angle observed to be less than 0.5 degs.

5.3 12¼" Hole Section

The 26" clean-out BHA was stabbed into the 30" wellhead housing with ROV assistance, and ran in hole until cement was tagged at 231m (3m above the 30" shoe). Hard cement was drilled to 234m, at approximately the TD of the 26" hole. The hole was washed down to 237m, and reamed through the 30" shoe several times to ensure a slick conductor. After pumping a 15m^3 high viscosity pill, the hole was displaced to 1.2 s.g. mud prior to pulling out of hole.

Whilst making and running in hole with the 12¼" BHA, the upper racking arm (URA) shear pins sheared as the URA was not retracted, causing the travelling block to hit it when moving downwards. The shear pins had to be replaced, causing 2 hours downtime.

The 12¼" BHA was stabbed into the wellhead housing with ROV assistance and ran into the hole to 237m. The 12¼" hole was drilled with optimised parameters without problems until approx. 1,040m to 1,060m, where an interbedded soft and hard formation was drilled through. The formation effect was to increase the inclination of the hole to a maximum of 1.19 deg, effectively creating a potential ledge. The section was reamed in an attempt to remove the potential ledge, and drilling continued with reduced WOB in an attempt to reduce the hole inclination. Subsequently, the hole was reamed every stand if MWD surveys showed the inclination to be greater than 1 deg. TD was called as per programme at 1,204m.

High viscosity pills were pumped prior to connections and mid-stand, as per programme throughout the hole section. The hole was in good shape, with no excessive torque or overpulls being observed. Care was taken whilst pulling past the hard/soft interbedded formation, however, no indications of the existence of a ledge were observed. Once at 1,070m, the hole was displaced to 1.2 s.g. mud. The well was topped up once the BHA was inside the 30" conductor.

The 9 5/8" casing was run smoothly apart from two minor hang-ups at 1,043m (probably due to the ledge created by the increase in the inclination of the hole) and at 1,198m (6m off bottom, probably fill). The casing was cemented without major problems. Both bullseyes showed angles of less than 1 deg.

Earlier during the operation, a fault with a choke line connector was detected whilst inspecting the BOP. The component was sent ashore for repairs and brought back out to the rig on a helicopter once it had been successfully pressure tested. The choke line was subjected to a further, successful, pressure test to 5,000 psi once the connector had been re-installed. The problems with the choke line connector resulted in approximately 4 hours non-productive time. Whilst waiting to complete the BOP repairs the TDS and lower IBOP were pressure tested to 5,000 psi. Schlumberger prepared the 8½" MWD/LWD tools, as well as downloading the memory data from the 12¼" BHA.

No major safety issues were identified during this section.

5.4 8½" Hole Section

Following the successful installation and testing of the BOP and riser, the 8½" BHA was picked up and run in the hole with the plugs being tagged at 1,197m.

The well was displaced to 1.29 s.g. Glydrill mud whilst drilling the plugs, float collar and shoe. The plugs were difficult to drill through caused the plugs rotating, as they were not held in place by either cement or a shark bite and because of the lack of bite of the PDC bit. The casing shoe was drilled out at 1,199m. No cement was found below the casing shoe. The rathole was cleaned out and 2m of new formation was drilled to 1,206m in preparation for the FIT. Bottoms-up were circulated and the casing shoe was reamed through several times to ensure a slick shoe. The mud was circulated to an even weight of 1.29 s.g. before a LOT was conducted (leak-off was apparent) to 1.65 s.g.

The 8½" hole was drilled very efficiently to 1,863m. At this point the ROP was restricted to allow full real time LWD logs in preparation to pick coring point. The hole was reamed

each stand prior to connections. The Hermod reservoir target was encountered at 2,045m where the at-bit data indicated a water-bearing sandstone. A decision was made, as per programme, to drill to TD without coring. No further MWD surveys were taken in the reservoir section, to reduce the potential of differential sticking. The 8½" hole was drilled to TD at 2,302m (50m into the Ekofisk formation, as per programme). The inclination at TD was 1.53 deg, azimuth 159.99 deg. The hole was circulated clean, and flowchecked before pulling out of hole. The string had to be worked through tight hole at 2,100m, 2,087m, 2,079m and 2,043m, at the transition from the Lista/Sele Formation to the Hermod Sandstone. The hole was reamed until no additional torque was observed whilst pulling past the tight spots without rotating the pipe. The BHA was laid down at surface and the rig floor was then cleared and prepared for wireline logging.

Logging Run #1 (GR-PEX-DSI-HRLA) was rigged up and ran in hole. The 9 5/8" casing was observed at 1,200m. The neutron logging tool (CNL) was activated and the toolstring ran in hole, logging down at 2,300 ft/hr. At 1,256m it was noticed that the HRLA (laterolog) image was not being displayed on the wireline unit computer. The tools were therefore pulled into the shoe & the problem corrected. The hole was logged down to 2,031m, where the tools were changed to the high-resolution mode. The hole was then logged up to 1,999m, before running downhole (not logging) through the Hermod formation to 2,200m. The toolstring was then pulled up to 2,194m to check up-tension. The toolstring was run in hole and TD was tagged at 2,293m logger's depth. The HRLA one-armed calliper was opened and the hole was logged up to 2,079m. At this depth the wireline jumped off the guide wheels in the unit, and logging had to be stopped for a few minutes to re-attach the wire. Logging restarted up until 2,030m, above Hermod formation. The toolstring was then ran down to 2,130m and logged up (main pass) at 1,800 ft/hr. Once inside the 9 5/8" casing shoe, all tools were turned off apart from the GR (GR turned off at 930m) and pulled to surface where the radioactive sources were removed and the tools rigged down.

During ***Logging Run #2 (VSI-4)*** weather conditions were poor, with the standby boat reporting a maximum wind speed of 40 knots and maximum wave heights of 6m. However, following a comprehensive safe job analysis the guns were successfully deployed. The wireline tools were checked and calibrated prior to running in hole. The depth was calibrated with the GR and ran in hole to 1,978m where a function test was successfully performed. The toolstring was ran in hole to 2,234m and pulled up to first station at 2,220.5m (top of receiver). At the third VSP station, a leak was observed in the gun assembly. The guns were pulled up to the helideck and a loose air hose connection was found and repaired. The tools were returned to sea resulting in a total downtime of 30 minutes. The VSP survey was completed as per programme until 345m where the survey had to be terminated due to a loss of signal. The toolstring was pulled out of the hole and rigged down. The gun assembly was recovered without problems.

No reportable incidents occurred during the 8½" hole section.

5.5 Plugging and Abandonment

After the completion of the logging programme, a 421m cement plug was set in two steps from the bottom of the well. The theoretical top of cement of plug #2 set at 1,881m, with 77.5m^3 of 1.31s.g. mud placed above the plug. An EZSV bridge plug was set at 1,192m (top plug) as per Halliburton procedures and successfully pressure tested to 111 bar/10 mins. Cement plug #3 (theoretical top of cement at 992m) was set directly on the EZSV bridge plug. The well was subsequently displaced to 96.1m^3 of seawater. The wear bushing, riser and BOP were recovered to surface without problems. Initial attempts to

cut the 20" extension joint & 30" conductor housing were unsuccessful. A second attempt using different operating parameters was successful. It later transpired that Smith Red Baron had provided incorrect operational information for the tool on the first attempt to cut and retrieve the wellhead, resulting in a total of ten hours of non-productive time.

Pulling of the anchors and deballasting of the rig was completed with no problems.

ACTUAL					PLAN		
Depth (m) AHBDF	Depth (m) TVBDF	INC Deg	SCHEMATIC	DESCRIPTION	Depth (m) AHBDF	Depth (m) TVBDF	INC Deg
160,00	**160,00**			***Seabed***	**159,00**	**159,00**	
163,45	**163,45**	**0,00**		30" Conductor x 20" WHH Extension (cut and retrieved).	**164,00**	**164,00**	**0,00**
233,72	233,70	1,07		30" X-52 x 1" Wall Thickness Shoe	231,00	231,00	0,00
992,00				TTOC Plug #3	989,00	989,00	0,00
1192,00	1192,00			Top 9.5/8" EZSV Bridge Plug	1189,00	1189,00	
1200,00	1200,00	0,41		9 5/8" 47# L80 Shoe	1200,00	1200,00	0,00
					1204,00	1203,90	
1881,00				TTOC Plug #2	1904,00	1904,00	0,00
2101,00				TOC Plug #1	2104,00	2104,00	0,00
2302,00		1,52		8 1/2" hole	2304,00	2304,00	0,00

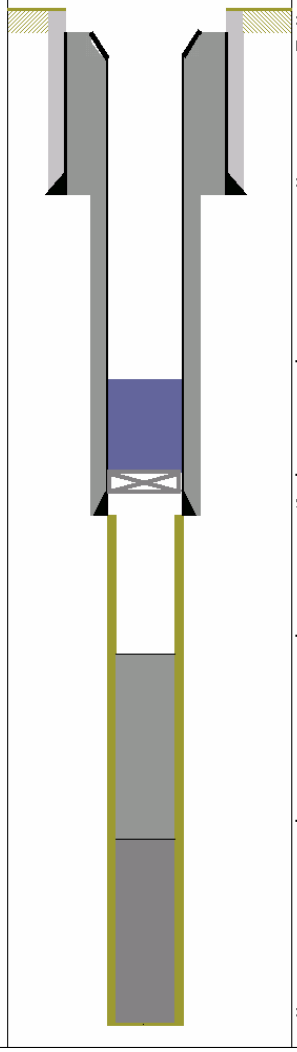
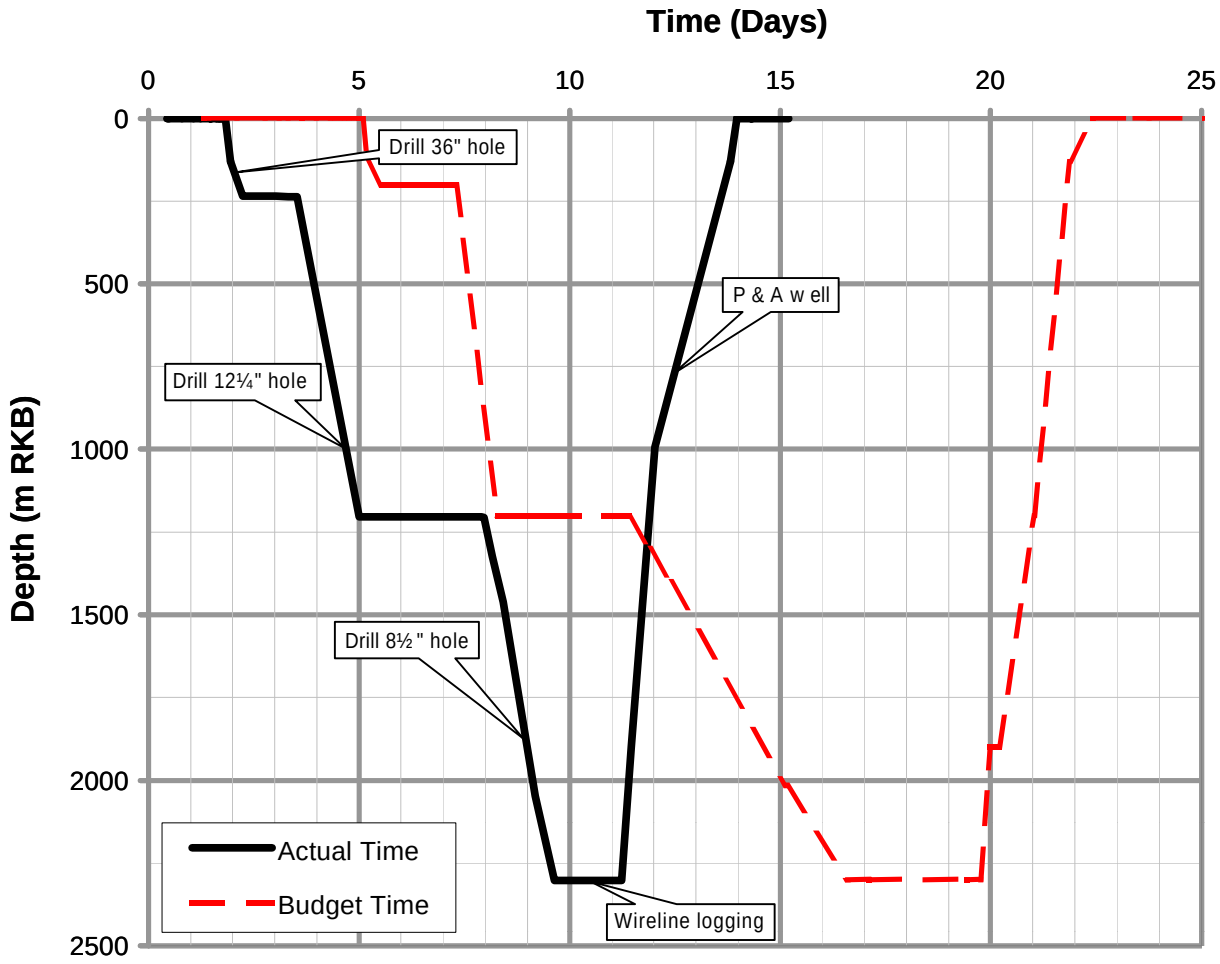


Figure 5.1: Well Bore Schematic



Rig on contract	11th April 2004
Well spudded	13th April 2004
Reached TD	21st April 2004
Rig off contract	27th April 2004
Total days	15.2 days (9.88 days ahead of dry hole AFE of 26.1 days)
Total Depth (Driller)	2302m MD RKB (-2273m TVD MSL)
Formation at TD	Ekofisk Fm

Figure 5.2: Operation Time - Depth Curve

6 APPENDICES

A: Operational Listing

A/S Norske Shell — Page 1 of 13

Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga — Spud Date: 13/04/2004
Event Name: ORIG DRILLING — Start: 11/04/2004 — End:
Contractor Name: Odfjell — Rig Release: 27/04/2004
Rig Name: Deep Sea Delta — Rig Number:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
						Last anchor #4 bolstered on AHV Olympic Hercules. Rig Deepsea Delta off contract with Marathon on contract with Shell. Rig in transit from Hamsun well 24/9-7 to Beluga prospect.
12/04/2004	00:00 - 05:00	5.00	MOV	1a		In transit to Beluga prospect. 21Nm to go.
	05:00 - 06:30	1.50	MOV	5a		Problem with telemetry data. AHV's to rig good. Data from rig to AHV's not recieved. Worked around problem to position rig.
	06:30 - 07:30	1.00	MOV	2a		07:21 - Anchor #9 on seabed. Middle fluke confirmed. AHV Olympic Pegasus.
	09:00 - 10:00	1.00	NPO	11a		Winch #3 problems with gear.
	10:00 - 11:00	1.00	MOV	2a		10:49 - Anchor #4 on seabed. Middle Fluke confirmed. AHV Olympic Hercules.
	11:00 - 13:00	2.00	MOV	2a		11:06 - Anchor #3 on seabed. Middle Fluke confirmed. AHV Olympic Pegasus.
	13:00 - 13:15	0.25	MOV	2a		13:05 - Anchor #10 on seabed. Middle Fluke confirmed. AHV Olympic Poseidon.
	13:15 - 14:35	1.33	MOV	2a		13:22 - Anchor #8 on seabed. Middle Fluke confirmed. AHV Far Scout.
	14:35 - 14:36	0.02	MOV	2a		AHV re-establish receipt of telemetry data from rig.
	14:36 - 14:45	0.15	MOV	2a		14:45 - Anchor #2 on seabed. Middle Fluke confirmed. AHV Olympic Pegasus.
	14:45 - 16:15	1.50	MOV	2a		16:07 - Anchor #11 on seabed. Middle Fluke confirmed. AHV Olympic Poseidon.
	16:15 - 16:30	0.25	MOV	2a		16:18 - Anchor #7 on seabed. Middle Fluke confirmed. AHV Far Scout.
	16:30 - 17:15	0.75	MOV	2a		17:12 - Anchor #1 on seabed. Middle Fluke confirmed. AHV Olympic Pegasus.
	17:15 - 17:45	0.50	MOV	2a		17:39 - Anchor #5 on seabed. Middle Fluke confirmed. AHV Olympic Hercules.
	17:45 - 19:00	1.25	MOV	2a		18:45 Olympic Pegasus left location Fuel 345m3 lube 26267ltr FW 61m3 ETA Aberdeen 13.04.04 13:40 18:54 - Anchor #12 on seabed. Middle Fluke confirmed. AHV Olympic Poseidon.
	19:00 - 21:15	2.25	MOV	2a		21:09 - Anchor #6 on seabed. Middle Fluke confirmed. AHV Olympic Hercules. 20:54 - 200tn Tension test #2 & #8 OK.
	21:15 - 00:00	2.75	MOV	2c		21:32 - 200tn Tension test #3 & #9 OK. 21:35 - 200tn Tension test #1 & #7 OK. 22:30 - 200tn Tension test #4 & #10 OK. 23:50 - 200tn Tension test #5 & #11 OK.
13/04/2004	00:00 - 01:15	1.25	MOV	2c		Continued pre-tensioning operations 00:36 - 200tn Tension test #5 & #11 OK. 00:005 Olympic Hercules Depart location Fuel 455m3 Lube 33930ltr FW 80m3 ETA Dusavik 13.04.04 08:30
	01:15 - 02:00	0.75	MOV	2a		01:20 - 200tn Tension test #6 & #12 OK. 01:25 Olympic Poseidon Depart location. Fuel 354.4m3 Lube 16750ltr FW 635m3 ETA Dusavik 13.04.04 08:30 01:50 Far Scout Depart location. Fuel 530m3 Lube 28131ltr FW 260m3 ETA Dusavik 13.04.04 08:00
	02:00 - 06:30	4.50	MOV	5b		Commence ballasting rig down to drilling draft.

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
13/04/2004	06:30 - 07:00	0.50	MOV	5b		Held Pre-spud meeting with both shifts. Completed ballasting down operation at 07:00.
	07:00 - 10:30	3.50	DRI	5b		M/U cmt. stand. 1jnt 5" HWDP x kelly cock x pump in sub w/low-torque x 2jnts 5" HWDP. Racked back same in derrick.
	10:30 - 12:00	1.50	DRI	5b		M/U 30" WHHRT and cmt stinger. 1jnt 5" HWDP x pup x RT x 2jnts 5" HWDP. Racked back same in derrick.
	12:00 - 17:00	5.00	DRI	5b		P/U BHA # 1. RIH to 148m.
	17:00 - 18:30	1.50	DRI	5b		Installed saver sub to TDS. Function tested MWD. Held toolbox talk prior to spud well. RIH and tagged sea bottom at 160m.
	18:30 - 00:00	5.50	DRI	DMH1		Drilled 36" hole from 160m to 227m. Pumped 2x10m3 hi-vis mud every stand. Max. incl. 0.86deg. Shallow gas procedures in place.
14/04/2004	00:00 - 01:30	1.50	DRI	DMH1		Cont. drilling 36" hole from 227m to 233,8m. Confirmed depth with ROV. Called section TD.
	01:30 - 02:00	0.50	DRI	9b		Pumped 25m3 hi-vis pill. Circulated same OOH. Made check survey and displaced hole to 1.20 s.g. mud.
	02:00 - 02:30	0.50	DRI	5a		POOH 5"HWDP from 237m to 163m while displacing steel volume. No restrictions observed.
	02:30 - 03:00	0.50	DRI	16b		Installed marker buoys on seabed with ROV.
	03:00 - 05:00	2.00	DRI	5a		POOH BHA #1. L/D 36" HO. 17 1/2" dull grading: 1-1-No-A-1-I-No-TD. Tidied rig floor.
	05:00 - 05:30	0.50	DRI	16a		Changed bails & elevators.
	05:30 - 06:00	0.50	DRI	16a		Held toolbox talk prior to running 30" conductor.
	06:00 - 09:30	3.50	CAS	SCA2		P/U 30" shoe jnt. Checked function of shoe. Ran 30" conductor as per tally. P/U 30" housing jnt. Changed to DP elevators. Installed RT in housing and housing in RGB on cellar deck as pr. Dril-Quip instructions. RIH to seabed while filling 30" conductor with seawater (until RGB below sealevel). Stabbed 30" conductor in 36" hole assisted by ROV. Closed fill-up valve on RT w/ROV. RIH to TD (233.7m)
	09:30 - 11:00	1.50	CAS	SCA4		Inspected RGB heading & bullseye - 0.5deg fwd. Held toolbox talk prior to 30" cmt job. Circulated 50m3 seawater at 4000lpm. PT surface lines to 100bar.
	11:00 - 11:15	0.25	CEM	1d		Pumped 8m3 hi-vis pill w/mica.
	11:15 - 11:30	0.25	NPE	NOS2		Preparing mixwater: Unable to pump seawater in displacemet tanks - no pressure on fill lines - troubleshoot seawater supply.
	11:30 - 11:45	0.25	CEM	1b		Able to pump seawater - prepared mixwater.
	11:45 - 12:00	0.25	CEM	1c		Started to mix cmt. in batch tank using silo no. 11.
	12:00 - 12:30	0.50	NPE	NOS2		Unstable flow of cmt. from silo no. 11. Switched to manual mixing - no improvement. Stopped mixing cmt. - switched to silo no. 10.
	12:30 - 13:45	1.25	CEM	1c		Pumped total 45.5m3 (18 x 1.5m3 tanks of mixwater) 1.95sg class G cmt (CaCl2 - 4.35l/100kg) at 800lpm. using silo no.10 and no.12. Collected 10l sample and placed submerged in seawater at approx. 6 deg C. Collected mixwater sample.
	13:45 - 14:00	0.25	CEM	1d		Displaced cmt. with 22.95m3 (14 x 1.5m3 tanks + 950l) seawater at 1300lpm using the cmt unit. Recorded final circulating pressure - 3.5bar (TTOC - 4.4m bellow seabed). No backflow.
	14:00 - 18:30	4.50	CEM	SCA5		WOC while holding string in tension. Monitored conductor with ROV.
	18:30 - 19:00	0.50	CEM	1f		Set down string weight to neutral. Bullseye reading - 0deg. Released RT as per Dril-Quip instructions. Pulled and racked back cmt stand in derrick. Flushed landing string and washed PGB w/seawater.
	19:00 - 19:30	0.50	CAS	SCA6		POOH landing string.
	19:30 - 20:00	0.50	CAS	SCA1		Broke out and L/D CAM tool.
	20:00 - 20:30	0.50	CAS	SCA1		Flushed through cmt. stand and and racked back same.
	20:30 - 21:30	1.00	DRI	16a		Changed to drilling bails on TDS. Changed rotary bowls. Rearranged

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Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
14/04/2004	20:30 - 21:30	1.00	DRI	16a		stands in derrick.
	21:30 - 23:00	1.50	DRI	5a		M/U and RIH with 26" clean out assy (BHA #2) to 160m (seabed). Stabbed in well assisted by ROV. Cont. RIH from 160m to 218m. Washed down from 218m. Tagged TOC at 231m (3m above shoe).
	23:00 - 23:30	0.50	DRI	DMH1		Drilled hard cmt from 231m to 234m. Washed down from 234m to 237m. Reamed through 30" shoe several times . Pumped 15m3 hi-vis pill of seawater. Spotted 5m3 1.20sg mud in open hole.
	23:30 - 00:00	0.50	DRI	5a		POOH from 237m. 06:00: cont POOH. Slip & cut block line. Started to M/U 12 1/4" BHA. Reparing Upper racking arm.
15/04/2004	00:00 - 00:30	0.50	DRI	5b		L/D 26" bit, bitsub & X-over (BHA#2 - Clean out assy). Dullgrading: 1-1-No-A-1-I-No-TD. Cleared rigfloor.
	00:30 - 02:30	2.00	NPE	NSL		Changed out wire on standlift arm due to excess wear.
	02:30 - 04:00	1.50	MNT	RMA2		Slipped & cut 35m of drilling line.
	04:00 - 04:30	0.50	DRI	5b		M/U 12 1/4" bit w/bit sub and ARC-sub.
	04:30 - 05:00	0.50	DRI	5b		RIH BHA#3 to 36m.
	05:00 - 07:00	2.00	NPE	NSL		Changed out shearpins. Upper Racking arm was not retracted. Travelling block moving downwards causing elevator to hit URA. Shearpins in URA sheared (as per design).
	07:00 - 08:30	1.50	DRI	5b		Cont. to RIH BHA#3 from 36m to 130m. Function tested MWD. RIH to seabottom and stabbed in well w/string assisted by ROV. RIH to 237m.
	08:30 - 00:00	15.50	DRI	DMH1		Drilled 12 1/4" hole from 237m to 654m. Taking surveys every 10m. Survey requirement relaxed to one every stand as BHA trend was found. Hole incl. less than 1deg. Hole in good shape. Pumped 2x 10m3 hi-vis pills. One at mid stand and one prior to connection. Drilling parameters: - WOB 0-5ton - Torque 2-6kft-lbs - RPM 150 - SPP 138bar 06:00 update: Drilling ahead at 866m HSE: RUH - 13 Green stop cards - 9 Red stop cards - 4
16/04/2004	00:00 - 20:00	20.00	DRI	DMH1		Drilled 12 1/4" hole from 654m to 1,057m. Pumped 2 x 10 m3 HIVIS pills each stand. Took MWD surveys every 3 stands or as required. Maximum inclination 1.19 deg. Drilling parameters: ROP: average 42.2 m/hr WOB: 0 - 12 MT, average 3 MT Rotary torque: 1.7 - 4.9 kft-lbs, average 2.9 kft-lbs RPM: 101 - 200 rpm, average 144 rpm Pump rate: 2,994 - 3,602 lpm, average 3,490 lpm SPP: 116 - 169 bar, average 147 bar Softer formation was observed at 1,025 - 1,040m, followed by a harder

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
16/04/2004	00:00 - 20:00	20.00	DRI	DMH1		formation to 1,060m. Reduced WOB to max 5 MT to reduce inclination. Drilled with reduced WOB (max 5 - 7 MT) to TD @ 1,204m. Reamed stand if inclination greater than 1 deg.
	20:00 - 20:30	0.50	DRI	9a		Pumped a 15 m3 HIVIS pill and circulated hole clean with seawater.
	20:30 - 21:00	0.50	DRI	9a		Took an MWD check survey @ TD, inclination 0.41 deg. Pumped a 10 m3 KCl mud pill & a 8 m3 HIVIS pill.
	21:00 - 21:30	0.50	DRI	5a		POOH from 1,204m to 1,070m. Hole in good conditions - no major overpull or additional torque observed at Utsira formation.
	21:30 - 22:00	0.50	DRI	9b		Displaced hole to 1.2 s.g. spud mud.
	22:00 - 00:00	2.00	DRI	5a		Continued POOH to 230m. Topped up well with 3.68 m3 1.2 s.g. spud mud. POOH. R/B BHA. 06:00 update: Cleared rig floor. R/U casing running equipment. P/U shoe/float collar joint & tested same - ok. P/U intermediate joint, bakerlocked same to shoe & RIH. RIH casing to 378m (total of 29 joints run, incl shoe & intermediate). Average running speed 15 jts/hr. HSE: Conducted safety inspection with night crew. Areas covered: Koomey unit, engine room & cement room. No major findings. Minor housekeeping issues. Number of Stop-cards received: 2 safe, 4 unsafe RUHs: 6 green Incidents: 0 Near- misses: 0
17/04/2004	00:00 - 01:30	1.50	CEM	1f		M/U & R/B cement stand.
	01:30 - 03:00	1.50	CAS	SCA1		R/U to run 9 5/8" casing.
	03:00 - 03:30	0.50	CAS	SCA1		Held pre-job meeting with all involved personnel.
	03:30 - 04:00	0.50	CAS	SCA2		P/U shoe/collar joint & tested same. P/U intermediate joint & M/U & bakerlocked same to the shoe/collar joint.
	04:00 - 05:00	1.00	CAS	SCA2		RIH 9 5/8" casing as per tally to 158m, filled the first 10 with seawater. Stabbed into 30" wellhead housing with ROV assistance.
	05:00 - 10:00	5.00	CAS	SCA2		Continued RIH 9 5/8" to 1,030m, filling joints with seawater as required. No hole problems observed whilst RIH casing.
	10:00 - 10:30	0.50	CAS	SCA5		R/D casing elevator & R/U DP elevator. Filled casing with seawater.
	10:30 - 11:30	1.00	CAS	SCA5		P/U & M/U 18 3/4" wellhead joint. R/D casing running equipment. Installed vent valve in the WH running tool. Continued RIH, casing hung up at 1,043m. Worked casing string through hang-up point.
	11:30 - 12:00	0.50	CAS	SCA2		RIH 9 5/8" casing on HWDP landing string to 1,100m.
	12:00 - 12:30	0.50	CAS	SCA2		Filled casing with seawater.
	12:30 - 13:00	0.50	CAS	SCA2		Continued RIH 9 5/8" casing on landing string - casing hung up at 1,198m. Worked string down 2m to 1,200m. Latched onto 30" wellhead housing. Conducted a 25 MT overpull test. Shoe depth of 9 5/8" casing: 1200.0m

A/S Norske Shell

Operations Summary Report

Legal Well Name: 26/4-2 Beluga
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Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
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Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
17/04/2004	12:30 - 13:00	0.50	CAS	SCA2		Top of 18 3/4" wellhead (datum): 157.57m
	13:00 - 14:15	1.25	CAS	SCA4		Circulated 110% casing contents with mud pumps. Meanwhile, R/U cement head control lines. Held pre-job safety meeting prior to cement job.
	14:15 - 14:45	0.50	NPE	NSI		Attempted to pump from cement unit - immediate pressure build up. Checked surface lines - no leaks. Checked valves - no problems identified. Isolated cement unit & tested same - good test. Broke out cement line at rig floor & attempted to pump from cement unit - able to pump. M/U the cement line & pressure tested line against cement head lo-torque - found lo-torque valve to be passing fluid down drill string.
	14:45 - 15:00	0.25	CEM	1f		Pressure tested cement line to 240 bar / 10 mins.
	15:00 - 15:45	0.75	CEM	SCA4		Pumped 6 m3 seawater spacer with cement pump. Dropped ball for bottom wiper plug.
	15:45 - 17:30	1.75	CEM	1a		Mixed and pumped 67 m3 1.56 s.g. lead cement slurry as per programme.
	17:30 - 17:45	0.25	CEM	1a		Mixed and pumped 10 m3 1.92 s.g. tail cement slurry as per programme.
	17:45 - 18:30	0.75	CEM	1d		Dropped dart for top plug. Flag functioned ok. Chased dart with seawater using cement pump. Plug sheared at 131 bar @ 1,054 litres pumped. Displaced cement with 52.7m3 1.2 s.g. mud using rig pumps. Bumped top plug & pressure tested casing with rig pumps to 207 bar / 10 mins. Bled off pressure. Checked for backflow - no backflow.
	18:30 - 19:00	0.50	CAS	SCA6		Disconnected cement head control lines. Released 18 3/4" WHRT as per programme. B/O & R/B cement stand.
	19:00 - 19:30	0.50	CAS	16a		P/U landing string & flushed WH & RGB area at 4,800 lpm using rig pumps with ROV assistance.
	19:30 - 20:30	1.00	CAS	SCA6		POOH landing string & WHRT. L/D R/T. Cleared rig floor.
	20:30 - 21:30	1.00	CEM	1f		B/O & L/D cement head.
	21:30 - 22:00	0.50	CAS	SCA1		L/D casing tong. Changed to drilling bails.
	22:00 - 23:00	1.00	DRI	5c		M/U EDPHOT on 5" DP & R/B same in derrick.
	23:00 - 00:00	1.00	DRI	5b		L/D 12 1/4" BHA & prepared same for backload. Note: BOP choke line connector arrived on helicopter @ 23:00 hrs. 06:00 hrs update: R/U 3 1/2" handling equipment. M/U 3 1/2" cement stinger & R/B same. Pressure tested TDS & IBOP. Prepared MWD tools for 8 1/2" BHA. Downloaded memory data from 12 1/4" MWD/ARC. Meanwhile, worked on choke line connector for BOP. Continued backloading to boat. HSE: Conducted a fire&abandonment drill. Number of Stop-cards received: 7, 1 safe, 6 unsafe Number of RUHs: 8, 7 green, 1 red Incidents: 0 Near-misses: 0
18/04/2004	00:00 - 01:30	1.50	DRI	5b		L/D 12 1/4" BHA.
	01:30 - 02:00	0.50	DRI	16a		Installed 3 1/2" bushing on BX elevator.
	02:00 - 05:30	3.50	DRI	5c		P/U & R/B 36 joints 3 1/2" cement stinger.
	05:30 - 06:00	0.50	DRI	16a		L/D 3 1/2" BX elevator bushing.

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
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Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
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End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
18/04/2004	06:00 - 08:00	2.00	BOP	SBO3		M/U swedge & cement hose to TDS. Pressure tested mud hose & upper kelly cock to 35 bar/5 mins & 345 bar/15 mins.
	08:00 - 09:30	1.50	NPE	NSI		Observed pressure drop on cement unit. Investigated same. Found pop-off valve to be leaking. Changed the rubbers on the discharge valves, replaced the bleed-off valve and changed pop-off valve. Greased & re-tested the unit, good test.
	09:30 - 10:00	0.50	BOP	SBO3		Pressure tested lower kelly cock to 35 bar/5 mins & 345 bar/15 mins.
	10:00 - 13:30	3.50	BOP	SBO		Prepared to run BOP & riser. Changed to 500 ST bails & elevator. Installed riser spider. Held pre-job meeting with involved personnel prior to running BOP.
	13:30 - 16:00	2.50	BOP	SBO		Moved rig 30m off location. M/U 2 x 50' riser joints. Skidded BOP under rotary & M/U riser to BOP. Connected guide & pod wires.
	16:00 - 16:30	0.50	BOP	SBO1		P/U BOP off skid & ran BOP & riser through moonpool.
	16:30 - 17:00	0.50	BOP	SBO1		Pressure tested kill & choke lines to 35 bar/5 mins & 345 bar/15 mins.
	17:00 - 18:30	1.50	BOP	SBO1		Continued running BOP on riser to 105m.
	18:30 - 19:00	0.50	BOP	SBO1		Pressure tested kill & choke lines to 35 bar/5 mins & 345 bar/15 mins.
	19:00 - 20:00	1.00	BOP	SBO1		Continued running BOP on riser to 126m.
	20:00 - 21:30	1.50	BOP	SBO1		P/U & installed slip joint & landing joint. Closed rotating dogs & conducted a 5 MT overpull test. Released support dogs.
	21:30 - 22:00	0.50	BOP	SBO1		Installed choke & kill lines onto slip joint.
	22:00 - 00:00	2.00	BOP	SBO1		Installed support ring & pod saddles. 06:00 hrs update: Moved rig to above wellhead. Inspected BOP bullseyes with ROV assistance, latched guide wires with ROV. Adjusted compensator & landed BOP. Locked BOP connector & inspected lock indicator with ROV assistance. Conducted a 50 MT overpull test. Inspected bullseyes - no change. Unlocked slip joint inner barrel & L/O landing joint. Installed diverter. R/D riser running equipment. Pressure tested riser connector to 207 bar/15 mins. Started M/U & RIH 8 1/2" BHA. HSE: Conducted a safety tour with OIM. Held Norwegian & English speaking safety meetings. Number of Stop-cards received: 5, 5 unsafe Number of RUHs: 17, 14 green, 3 red Incidents: 0 Near-misses: 0
19/04/2004	00:00 - 01:00	1.00	BOP	SBO1		Moved rig to above wellhead. Inspected BOP bullseyes with ROV assistance. Latched guidewires with ROV.
	01:00 - 01:30	0.50	BOP	SBO1		Adjusted compensator & landed BOP. Locked WH connector & inspected indicator pin with ROV assistance. Conducted a 50 MT overpull test. Inspected bullseyes - no change. Stroked out slip joint inner barrel.
	01:30 - 03:00	1.50	BOP	SBO1		L/O landing joint. Pressure tested BOP connector to 35 bar/5 mins, 207 bar/10 mins. P/U & Installed diverter.
	03:00 - 04:30	1.50	BOP	SBO1		R/D riser spider & BOP running equipment. Changed to drilling bails and BX-elevator.
	04:30 - 08:30	4.00	DRI	5b		M/U 8 1/2" BHA (#4) & RIH same to 485m. Tested MWD with 2000 lpm, 85 bar.

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Legal Well Name: 26/4-2 Beluga
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Start: 11/04/2004
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Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
19/04/2004	08:30 - 09:30	1.00	BOP	SBO2		Function tested BOP on blue pod from driller's panel & on yellow pod from toolpusher's office. Tested upper pipe ram with acoustic system.
	09:30 - 10:30	1.00	DRI	5a		Continued RIH BHA #4 to 1,168m.
	10:30 - 11:30	1.00	DRI	9a		Installed drilling pup. Broke circulation, observed 20 bar back pressure due to hydrostatic difference (seawater in string, mud in annulus). Continued RIH to 1,178m. Circulated mud out of annulus.
	11:30 - 12:00	0.50	DRI	5a		Washed down & tagged plugs at 1,197m. Conducted choke drill.
	12:00 - 12:30	0.50	DRI	16a		Held pre-job meeting prior to displacing well to Glydril mud.
	12:30 - 17:00	4.50	DRI	DMH1		Drilled plugs and float collar from 1,197m to 1,199m. Found plugs difficult to drill. Pumped a 13.5 m3 Hivis pill & 10 m3 seawater prior to displacing the well to 1.29 s.g. Glydril mud. Displaced well whilst drilling the plugs.
	17:00 - 17:30	0.50	DRI	DMH1		Drilled out casing shoe at 1,199m. No cement below casing shoe. Cleaned out rat hole and drilled 2m new formation from 1,204m from 1,206m. Circulated bottoms up. Reamed past casing shoe several times.
	17:30 - 19:30	2.00	FOR	EFS		Circulated to an even mud weight of 1.29 s.g. Closed middle pipe rams & performed LOT to an equivalent mud weight of 1.65 s.g (expected valve of a limit test was 1.70 s.g.). Repeated LOT twice to confirm result. Closed annular preventer on second test to confirm no leaks at BOP. Volume pumped 606 litres, volume returned 480 litres, cement unit surface pressure 42.1 bar.
	19:30 - 00:00	4.50	DRI	DMH1		Took SCRs. Drilled 8 1/2" hole from 1,206m to 1,324m. Reamed each stand once prior to connections. Drilling parameters: ROP: average 38.7 m/hr WOB: 0 - 9 MT, average 4 MT Flow: 2,337 - 2,514 lpm, average 2,400 lpm SPP: 201 - 234 bar, average 217 bar Torque: 1.1 - 5.6 kft-lbs, average 3.6 kft-lbs RPM: 41 - 147 rpm, average 126 rpm 06:00 hrs update: Continued drilling 8 1/2" hole to 1,461m. Conducted a kick drill during a connection. HSE: Management visit from Shell & Odfjell Drilling. Number of Stop-cards received: 8, 1 safe, 7 unsafe Number of RUHs raised: 11, 10 green, 1 red Incidents: 0 Near misses: 0
20/04/2004	00:00 - 18:30	18.50	DRI	DMH1		Drilled 8 1/2" hole from 1,324m to 1,893m. Reamed stand once every connection & took MWD surveys every stand. Conducted a kick drill during a connection at 1,407m. Drilling parameters: ROP: 12.5- 179.7 m/hr, average 45 m/hr WOB: 0.0 - 11.9 MT, average 6 MT

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
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Start: 11/04/2004
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Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
20/04/2004	00:00 - 18:30	18.50	DRI	DMH1		Torque: 1.2 - 5.2 kft-lbs, average 4.4 kft-lbs RPM: 94 - 166 rpm, average 137 rpm SPP: 206 - 257 bar, average 231 bar Flow: 2,274 - 2,462 lpm, average 2,340 lpm
	18:30 - 00:00	5.50	DRI	DMH1		Restricted ROP to 40 m/hr maximum to obtain full LWD log data for top reservoir identification. Continued drilling 8 1/2" hole to 2,020 m/hr. Reamed stand once every connection & took MWD surveys every stand. Drilling parameters: ROP: 17.4 - 62.6 m/hr, average 33.8 m/hr WOB: 0.0 - 11.9 MT, average 6 MT Torque: 2.4 - 4.7 kft-lbs, average 4.2 kft-lbs RPM: 131 - 165 rpm, average 139 rpm SPP: 229 - 252 bar, average 235 bar Flow: 2,279 - 2,394 lpm, average 2,335 lpm Conducted a kick drill during a connection prior to drilling into reservoir. 06:00 hrs update: Drilled 8 1/2" hole to top Hermod reservoir at 2,045m bdf. No further MWD surveys were taken in the reservoir to reduce the potential for differential sticking. Confirmed reservoir sand to be water bearing. Continued drilling 8 1/2" hole to 2,180m. HSE: Conducted an inspection of the derrick. Number of Stop-cards received: 5; 2 safe, 3 unsafe Number of RUHs raised: 12; 11 green, 1 red Incidents: 0 Near-misses: 0
21/04/2004	00:00 - 11:00	11.00	DRI	DMH1		Drilled 8 1/2" hole to top Hermod at 2,045m. No further MWD surveys were taken in the reservoir to reduce the potential of differential sticking. Confirmed reservoir sand to be water bearing. Continued drilling to TD @ 2,302m. Took SCR's at 2,243m. Took an MWD check survey at TD (2,292m survey depth), inclination 1.53 deg, azimuth 159.99 deg. Drilling parameters: ROP: average 34 m/hr WOB: 0 - 14 MT, average 7 MT SPP: 219 - 267 bar, average 235 bar Torque: 2.7 - 12.4 kft-lbs, average 5.3 kft-lbs Flow: 2,177 - 2,434 lpm, average 2,305 lpm RPM: 108 - 173 rpm, average 137 rpm
	11:00 - 13:00	2.00	DRI	9a		Circulated hole clean with 2,420 lpm, 253 bar. Total volume pumped 251.4 m3.

A/S Norske Shell

Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
21/04/2004	13:00 - 13:30	0.50	DRI	8a		Flowchecked well - static.
	13:30 - 15:30	2.00	DRI	5a		POOH from 2,302m to 1,955m. Worked through tight spots at 2,100m, 2,087m, 2,079m and 2,043m. Maximum overpull observed 20 MT.
	15:30 - 16:30	1.00	DRI	9a		Circulated bottoms up with 2,400 lpm, 236 bar.
	16:30 - 17:00	0.50	DRI	5a		Continued POOH to 1,840m.
	17:00 - 20:00	3.00	DRI	5a		Slugged pipe and continued POOH to 276m. Flowchecked well at 1,178m & 448m, well static. L/D 12 jts 5" DP.
	20:00 - 21:30	1.50	DRI	5b		POOH 8 1/2" BHA #4. L/D NM HWDP, NM stab, ARC-6, PowerPulse, RAB-6 & 8 1/2" bit. R/B HWDP, jar & accelerator. Bit grading: 1-1-NO-A-X-I-NO-TD. No evidence of bit balling, as anticipated.
	21:30 - 22:30	1.00	FOR	EME		Cleared rig floor. R/U wireline sheave & compensator wire.
	22:30 - 00:00	1.50	FOR	EM2a		Held prejob meeting. P/U Schlumberger toolstring #1; LEH-V - ACTS - GR - PEX - DSI - HRLA. 06:00 hrs update: M/U Schlumberger toolstring #1. RIH same. Logged down to TD @ 2,292m logging depth. Started logging up to casing shoe. Observed a misalignment on wireline drum cable mounted tension device, corrected same. Continued logging into shoe. HSE: Number of Stop-cards received:5; 2 safe, 3 unsafe Number of RUHs raised: 14; 11 green, 3 red Incidents: 0 Near-misses: 0
22/04/2004	00:00 - 01:45	1.75	FOR	EM2a		Tested toolstring #1: LEH-V - ACTS - GR- PEX - DSI - HRLA at surface. Loaded radioactive sources.
	01:45 - 03:15	1.50	FOR	EM2b		RIH to casing shoe @ 1,201m logging depth.
	03:15 - 03:30	0.25	NPE	NOS2		TDS hoses blowing onto logging cable on rig floor. Moved hoses.
	03:30 - 03:45	0.25	NPL	1c		Continued RIH to 1,256m. HRLA image not displayed on logging unit computer. Pulled into shoe & corrected problem.
	03:45 - 05:30	1.75	FOR	EM2b		Continued RIH toolstring #1. Tagged TD @ 2,292m.
	05:30 - 06:00	0.50	FOR	EM2c		Logged up to 2,030m - 17m above Hermod reservoir.
	06:00 - 08:15	2.25	FOR	EM2c		RIH to 2,130m & logged main log into shoe to 1,150m. Recorded shoe depth @ 1,199.5m. Caliper indicated full gauge (8 1/2") hole.
	08:15 - 08:45	0.50	FOR	EM2c		RIH to 2,130m. Logged up with GR only to 930m.
	08:45 - 09:00	0.25	NPL	1c		Observed misalignment on wireline drum cable mounted tension device. Corrected same.
	09:00 - 09:30	0.50	FOR	EM2b		POOH toolstring #1 to surface.
	09:30 - 11:30	2.00	FOR	EME		Unloaded radioactive sources. R/D toolstring #1.
	11:30 - 11:45	0.25	FOR	EM4a		Held toolbox talk prior to deploying gun assembly & rigging up seismic tools.
	11:45 - 12:30	0.75	FOR	EM4a		R/U toolstring #2: LEH-V - ACTS - DTC - SGT - VSI-4. Checked & calibrated tools at surface. Set zero depth.
	12:30 - 14:15	1.75	FOR	EM4b		Calibrated depth with GR & RIH toolstring #2 to 1,978.6m. Fired check shots - 5 in total.

A/S Norske Shell

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
22/04/2004	14:15 - 14:30	0.25	FOR	EM4b		Continued RIH toolstring #2 to 2,234m. Depth calibrated GR & reset logging depth (1.5m correction)
	14:30 - 15:00	0.50	FOR	EM4c		Started VSP logging @ 2,220.5m (winch depth - bottom tool depth 2,280m).
	15:00 - 15:30	0.50	NPL	1c		Observed leak in gun assembly. Pulled guns to Helideck & inspected same. Found a loose air hose connection. Tightenened connection & returned guns to sea.
	15:30 - 18:45	3.25	FOR	EM4c		Continued logging with VSP to 345m. Stopped VSI survey due to loss of signal.
	18:45 - 19:30	0.75	FOR	EM4b		POOH toolstring #2.
	19:30 - 20:30	1.00	FOR	EM4a		L/O toolstring#2 & R/D wireline. Removed gun assembly from sea. Cleared rig floor.
	20:30 - 21:00	0.50	DRI	5c		L/D 4 jts 5" HWDP, 6 1/2" jar & 6 1/2" accelerator.
	21:00 - 22:00	1.00	CEM	ACP		Installed diverter element. Installed 3 1/2" handling equipment & RIH 9 stands 3 1/2" cement stinger & muleshoe to 262m.
	22:00 - 00:00	2.00	CEM	ACP		Changed to 5" handling equipment & continued RIH cement stinger on 5" DP to 2,170m. 06:00 hrs update: Continued RIH cement stinger to 2,270m. M/U cement stand, broke circulation & washed down to 2,301m. Pumped 16 m3 1.31 s.g. mud. M/U cement hose & P/T same to 100 bar/5 mins. Set cement plug #1. POOH to above plug. Cement returns observed on shaker when circulating clean above plug. Set cement plug #2. POOH above plug. Circulated clean above plug #2. Spacer returns observed on shaker. HSE: Number of Stop-cards received: 7; 2 safe, 5 unsafe Number of RUHs raised: 6; 5 green, 1 red Incidents: 0 Near-misses: 0
23/04/2004	00:00 - 00:30	0.50	CEM	ACP		RIH cement stinger from 2,170m. M/U cement stand, broke circulation & washed down last stand to 2,301m with 2,000 lpm.
	00:30 - 01:00	0.50	CEM	SCA4		Circulated 78.5 m3 1.31 s.g. mud with 2,000 lpm, 107 bar SPP. M/U cement hose & pressure tested same to 100 bar/5 mins. Meanwhile, held pre-job safety meeting prior to cement job.
	01:00 - 02:00	1.00	CEM	ACP		Pumped 5 m3 1.6 s.g. spacer & 8.05 m3 1.9 s.g. cement slurry with cement unit. Displaced slurry to rig floor with 1.75 m3 1.6 s.g. spacer & 600 ltrs 1.31 s.g. mud. Displaced slurry using rig pumps with 16 m3 1.31 s.g. mud (0.58 m3 under-displaced) with 2,000 lpm.
	02:00 - 03:00	1.00	CEM	ACP		Broke out cement stand & POOH to 2,102m. Attempted to reverse circulate - no go due to high friction losses, pump pressure 35 bar at 170 lpm.
	03:00 - 04:00	1.00	CEM	ACP		Circulated conventionally above plug with 2,500 lpm, 160 bar pump pressure. Observed cement returns on shaker after 81.7 m3. Circulated clean, total volume pumped 104.1 m3.
	04:00 - 04:30	0.50	CEM	1f		POOH 1 stand & R/B same. M/U cementing stand & RIH to 2,102m. M/U cement hose & pressure tested same to 100 bar/5 mins.
	04:30 - 05:00	0.50	CEM	ACP		Pumped 5 m3 1.6 s.g. spacer & 8.05 m3 1.9 s.g. cement slurry with

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
23/04/2004	04:30 - 05:00	0.50	CEM	ACP		cement unit. Displaced slurry to rig floor with 1.75 m3 1.6 s.g. spacer & 600 ltrs 1.31 s.g. mud. Displaced slurry using rig pumps with 14.3 m3 1.31 s.g. mud (0.5 m3 under-displaced) at 2,000 lpm.
	05:00 - 05:30	0.50	CEM	ACP		Broke out cement stand & POOH to 1,800m.
	05:30 - 06:30	1.00	CEM	ACP		Drop wiper ball & circulated 77.5 m3 1.31 s.g. mud conventionally above plug with 2,500 lpm, 145 bar. Observed spacer & cement returns on shaker. Theoretical top of cement of plug # 2 is 1,881m. Flowchecked well prior to POOH.
	06:30 - 07:30	1.00	CEM	ACP		Pumped slug & POOH to 1,165m. Flowchecked.
	07:30 - 11:30	4.00	CEM	ACP		Continued POOH to 262m. L/D 94 jts 5" DP.
	11:30 - 12:00	0.50	CEM	ACP		Changed to 3 1/2" handling equipment & POOH cement stinger. L/D muleshoe.
	12:00 - 12:30	0.50	CAS	AMP		M/U EZSV, running tool & X/O.
	12:30 - 16:30	4.00	CAS	AMP		RIH EZSV on 3 1/2" DP to 350m. Changed to 5" handling equipment & continued RIH EZSV on 5" DP to 1,192m. Filled pipe.
	16:30 - 17:00	0.50	CAS	AMP		Set EZSV plug at 1,192m (top plug) as per Halliburton procedures. P/U 8m above plug & pressure tested same to 111 bar/10 mins.
	17:00 - 17:30	0.50	CEM	1f		POOH 1 stand & R/B same. M/U cementing stand & cement hose. Pressure tested surface lines to 100 bar/5 mins.
	17:30 - 18:30	1.00	CEM	ACP		Pumped 8 m3 fresh water spacer, 7.4 m3 1.9 s.g. cement slurry & 2.53 m3 post-flush with cement unit. Displaced cement slurry using rig pumps with 5.5 m3 1.31 s.g. mud.
	18:30 - 20:30	2.00	CEM	ACP		Broke out cement stand & POOH to 916m. Attempted to drop wiper ball - no go due to 20 bar back-pressure. Displaced well to 96.1 m3 seawater. No cement, spacer or Hivis returns observed on shaker. Theoretical top of cement of plug #3 is 992m.
	20:30 - 22:00	1.50	DRI	5c		POOH to 350m. L/D 57 jts 5" DP.
	22:00 - 00:00	2.00	DRI	5c		Changed to 3 1/2" handling equipment. POOH to surface. L/D 36 jts 3 1/2" DP & EZSV running tool. 06:00 hrs update: L/D remaining 5" DP from derrick, 1 stand 6 1/2" DC, EPHOT stand & cementing stand. Recovered wearbushing. HSE: Number of Stop-cards received: 10; 4 safe, 6 unsafe Number of RUHs raised: 7 green Incidents: 0 Near-misses: 0
24/04/2004	00:00 - 04:00	4.00	DRI	5c		L/D 19 joints 5" DP - total 5" DP L/D 57 jts. L/D cement stand & EDPHOT. L/D 3 jts 6 1/2" DC.
	04:00 - 05:30	1.50	BOP	7c		M/U Multi Utility Tool (MUT) & RIH same. Washed down past BOP to wellhead with 3,400 lpm. Pulled wearbushing with 30 MT overpull. POOH wearbushing & L/D same. L/D MUT.
	05:30 - 08:30	3.00	P&A	SBO		Cleared rig floor & R/U riser pulling equipment. Held pre-job meeting prior to pulling BOP.
	08:30 - 10:00	1.50	P&A	SBO		L/D diverter. P/U landing joint. Collapsed slip joint.
	10:00 - 10:30	0.50	P&A	SBO		Disconnected BOP as per Odjfell procedures. Unlatched guidewires with ROV assistance.

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
24/04/2004	10:30 - 11:30	1.00	MOV	5a		Moved rig 20m off location.
	11:30 - 14:00	2.50	P&A	SBO		Removed choke & kill lines, pod wires and clamps from slip joint. L/O landing joint and slip joint.
	14:00 - 15:30	1.50	NPW	NWB		Suspended riser pulling operations. Waiting for crane - crane working on priority backload.
	15:30 - 19:00	3.50	P&A	SBO		Continued pulling riser & BOP. Landed BOP on BOP trolley. Removed guidewires & disconnected riser from BOP. Skidded BOP. L/D 2 riser joints. Moved rig back onto location.
	19:00 - 20:00	1.00	P&A	SBO		R/D riser pulling equipment. Cleared rig floor.
	20:00 - 22:00	2.00	P&A	SBO		P/U Smith Red Baron cutting assembly. RIH same to 166m (knives at 163.45m, 5.88m below top WH).
	22:00 - 00:00	2.00	P&A	SBO		Landed no go in wellhead. Set down 5 MT, took 20 MT overpull & slacked off 10 MT. Started cutting the 20" extension joint & 30" wellhead housing with 2,000 lpm, 33 bar SPP. Increased flowrate in steps to 2,520 lpm. 06:00 hrs update: Continued cutting the 20" extension joint & 30" conductor housing as per Smith Red Baron procedure. HSE: Conducted a weekly inspection with day shift, focused on main deck & cellar deck. Number of Stop-cards received: 8; 1 safe, 8 unsafe Number of RUHs raised: 12; 9 green, 3 red Incidents: 0 Near-misses: 0
25/04/2004	00:00 - 06:30	6.50	P&A	SBO		Cut 20" extension joint & 30" conductor housing with Red Baron pipe cutting assembly @ 2,500 lpm, 50 bar SPP.
	06:30 - 07:00	0.50	P&A	SBO		Attempted to pull wellhead free with maximum 160 MT overpull - no go.
	07:00 - 08:30	1.50	NPO	11a		POOH Red Baron cutting assembly. Inspected knives - no major wear. Redressed cutter & RIH assembly through splash zone. Shallow tested assembly - cutters opened @ 2,300 lpm, 30 bar SPP.
	08:30 - 09:00	0.50	NPO	11a		RIH Red Baron cutting assembly.
	09:00 - 15:30	6.50	NPO	10a		Landed no go in wellhead & performed a 20 MT overpull test. Continued cutting 20" extension joint & 30" conductor housing with 2,800 lpm, 59 bar SPP. Increased flowrate in stages to 4,000 lpm, 121 bar SPP. Made 5 attempts at pulling free with overpulls ranging 200 - 260 MT - no go. Condtinued cutting; WH & RGB came free @ 15:15 hrs. Flushed drill pipe & inspected top drive for loose parts prior to POOH.
	15:30 - 16:30	1.00	P&A	SBO		POOH WH & RGB. Landed & secured assembly on work skid.
	16:30 - 18:00	1.50	P&A	SBO		L/D Red Baron cutter assembly. M/U 18 3/4" WH running tool.
	18:00 - 19:00	1.00	P&A	SBO		M/U running tool to 18 3/4" WH & released 30" conductor housing x 20" extension joint from RGB.
	19:00 - 19:30	0.50	P&A	SBO		L/D 18 3/4" WH & WH running tool. Cleared rig floor.
	19:30 - 20:30	1.00	DRI	5c		L/D 6 x 8" DCs & 12 jts 5" HWDP.
	20:30 - 21:30	1.00	NPW	NWB		Suspended L/O pipe - waiting on crane. Crane working on priority backload.
	21:30 - 22:15	0.75	DRI	5c		L/D 12 jts 5" HWDP.

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Operations Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Date	From - To	Hours	Code	Sub Code	Phase	Description of Operations
25/04/2004	22:15 - 00:00	1.75	MOV	2a		Commenced anchor handling. Passed pennant wires #7, 6, 1 & 12. Anchors #1 & #6 secured on deck. Meanwhile, commenced deballasting @ 23:10 hrs. 06:00 hrs update: Anchor #12 secured on deck @ 02:45 hrs. Suspended anchor handling operations whilst deballasting rig. HSE: Conducted weekly safety meeting with night shift. Number of Stop-cards received: 3, all unsafe Number of RUHs raised: 7, all green Incidents: 0 Near-misses: 0
26/04/2004	00:00 - 00:00	24.00	MOV	2a		Anchor handling operations. Anchor # 12 on bolster @ 09:10 hrs. Anchor # 6 on bolster @ 10:02 hrs. Anchor # 7 on bolster @ 12:06 hrs. Anchor # 2 on bolster @ 12:15 hrs. Anchor # 11 on bolster @ 14:23 hrs. Anchor # 5 on bolster @ 15:14 hrs. Anchor # 8 on bolster @ 16:50 hrs. Anchor # 3 on bolster @ 18:24 hrs. Anchor # 4 on bolster @ 23:30 hrs. Anchor # 10 on bolster @ 23:36 hrs 06:00 hrs update: Continued anchor handling. Anchor # 9 on bolster @ 00:30 hrs. Deep Sea Delta off contract @ 00:40 hrs.
27/04/2004	00:00 - 00:40	0.67	MOV	2a		Anchor handling operations. Anchor # 9 on bolster @ 00:30 hrs. Deep Sea Delta off Shell contract @ 00:40 hrs.

B: Bit Record

A/S Norske Shell

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Bits Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta

Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:

Spud Date: 13/04/2004
End:

Bit No/ Run	Size (in.)	Make/ Type	IADC Code	Serial Number	TFA (in²) JETS (/32")	TMD In/ Out (m)	Total Drilled (m)	Cum./ Tot Rot Hours	ROP	WOB Min/Max (kdaN)	RPM	Pump Press (bar)	Pump Output (lpm)	deltaP Bit (psi)	Nozzle Velocity (m/s)	HHP (HHP/in²)	API Cond. I O D L B G O R
1/	17.500	Smith /	111		0.942	160.0/	144.0	4.40	32.73			42,000	4,500				1-1-NO-A
1		DSJ			18.0/18.0/18.0/16.0/ ////	237.0		4.40			94						E-I -NO-TD
	Remarks																
2/	26.000	/			1.452	234.0/	3.0	0.18	16.67	/		118	3,907	405	69.5	296.278	1-1-NO-A
2					22.0/22.0/22.0/21.0/ ////	237.0		4.58		5	82						E-I -NO-TD
	Remarks																
3/	12.250	Smith /	111		1.065	237.0/	967.0	22.50	42.98	/		155	3,490	602	84.7	1,770.314	2-3-NO-A
3		FGXi			16.0/18.0/22.0/18.0/ ////	1,204.0		27.08		12	200						E-I -NO-TD
	Remarks																
4/	8.500	Security /	S424		0.552	1,204.0/	1,098.0	27.90	39.35	/	41	250	2,419	1	113.2	5.675	1-1-NO-A
4		FS2565			12.0/12.0/12.0/12.0/12.0 ////	2,302.0		54.98		11	173						D-I -NO-TD
	Remarks																

C: Bottom Hole Assemblies

BHA #1

BHA Name	Bit#	Purpose	Bit to Survey (m)	Min Id (in)	Motor	Pred. Perf. Act. Perf.	Pred. Build/Walk Act. Build/Walk /(m/30m)	I O D L B G O R
Spud assy	1	Spud assy	10.23	69.850	N			1/1/NO/A E/I/NO/TD

Date In: 13/04/2004 Time In: 18:30 TMD In: 160.0 (m) Date Out: 14/04/2004 Time Out: 05:00 TMD Out: 237.0 (m)

BHA Detail Item Description	# Jts	Length (m)	OD (in)	ID (in)	Connection Size	Connection Type	Pin Box	Gauge In	Gauge Out	Serial #	Spiral	Fishing Neck (in)	Blade Width
	1	0.43	17.500		7,625	REG							
	1	0.89	10.750	3.000	7,625	REG							
36" Hole Opener	1	4.33	36.000			7 5/8 R	P						
Cross Over	1	0.63	9.500			7 5/8 R	P						
8" Powerpulse	1	8.80	8.500	5.125		6 5/8 R	P						
NM Stab 12 1/4" FG	1	2.12	12.250			6 5/8 R	P					0.79	
8" NM DC	1	8.93	8.000	2.875		6 5/8"							
Drill Collar	3	27.71	8.000	2.875		6 5/8 R	P						
8" WH Jar	1	9.70	8.000	3.000		6 5/8 R	P						
Drill Collar	3	27.22	8.000	2.813		6 5/8 R	P						
Cross Over	1	1.07	6.500	2.813		2 7/8 R	P					0.59	
Drill Collar	3	28.10	6.500	2.813		4 1/2 I	P						
H.W.D.P.			5.000			NC50	P						
Total Length:		**119.93**											

BHA #2

BHA Name	Bit#	Purpose	Bit to Survey (m)	Min Id (in)	Motor	Pred. Perf. Act. Perf.	Pred. Build/Walk Act. Build/Walk /(m/30m)	I O D L B G O R
Clean out assy	2	Spud assy	10.23	69.850	N			1/1/NO/A E/I/NO/TD

Date In: 14/04/2004 Time In: 21:30 TMD In: 237.0 (m) Date Out: 15/04/2004 Time Out: 00:30 TMD Out: 237.0 (m)

BHA Detail Item Description	# Jts	Length (m)	OD (in)	ID (in)	Connection Size	Connection Type	Pin Box	Gauge In	Gauge Out	Serial #	Spiral	Fishing Neck (in)	Blade Width
	1	0.65	26.000		7,625	REG							
		0.97	9.250										
Cross Over	1	1.09	9.250	3.000		7 5/8 R	P						
Drill Collar	2	18.74	8.000	3.000		6 5/8 R	P						
8" WH Jar	1	9.70	8.000	3.000		6 5/8 R	P						
Drill Collar	3	27.22	8.000	2.750		6 5/8 R	P						
Cross Over	1	1.07	6.500	2.813		2 7/8 R	P					0.59	
Drill Collar	3	28.10	6.500	2.813		4 1/2 I	P						
H.W.D.P.			5.000			NC50	P						
Total Length:		**87.54**											

BHA #3

BHA Name	Bit#	Purpose	Bit to Survey (m)	Min Id (in)	Motor	Pred. Perf. Act. Perf.	Pred. Build/Walk Act. Build/Walk /(m/30m)	I O D L B G O R
12 1/4" Drilling BHA	3		11.25	69.850	N			2/3/NO/A E/I/NO/TD

Date In: 15/04/2004 Time In: 21:30 TMD In: 237.0 (m) Date Out: 16/04/2004 Time Out: 00:00 TMD Out: 1,204.0 (m)

BHA Detail Item Description	# Jts	Length (m)	OD (in)	ID (in)	Connection Size	Connection Type	Pin Box	Gauge In	Gauge Out	Serial #	Spiral	Fishing Neck (in)	Blade Width
	1	0.33	12.250										
Bit sub	1	0.91	8.000			6 5/8	B						
M.W.D.	1	6.02	9.000			6 5/8 R	P						
8" Powerpulse	1	8.32	8.500			6 5/8 R	P						
NM Stab 12 1/4" FG	1	2.12	12.250			6 5/8 R	P					0.79	
8" NM DC	1	8.93	8.000	2.875		6 5/8"							
Drill Collar	3	27.71	8.000	2.875		7 H90	P						
8" WH Jar	1	9.70	8.000	3.000		6 5/8 R	P						
Drill Collar	2	17.79	8.000	2.813		7 H90	P						
Cross Over	1	1.07	7.813	2.813		6 5/8 R	P					0.59	
Drill Collar	3	28.10	6.500	2.813		NC50	P						
H.W.D.P.	25	224.55	5.000			NC50	P						
Total Length:		**335.55**											

BHA #4

BHA Name	Bit#	Purpose	Bit to Survey (m)	Min Id (in)	Motor	Pred. Perf. Act. Perf.	Pred. Build/Walk Act. Build/Walk /(m/30m)	I O D L B G O R
8 1/2" BHA	4	Drill 8 1/2" hole	6.36		N			1/1/NO/A D/I/NO/TD

Date In: 19/04/2004 Time In: 04:30 TMD In: 1,204.0 (m) Date Out: 21/04/2004 Time Out: 20:00 TMD Out: 2,302.0 (m)

BHA Detail Item Description	# Jts	Length (m)	OD (in)	ID (in)	Connection Size	Connection Type	Pin Box	Gauge In	Gauge Out	Serial #	Spiral	Fishing Neck (in)	Blade Width
8.1/2" PDC Bit	1	0.33	8.500			4 1/2 R	P			1042570			
RAB-6 w/ 8 1/4" stab	1	3.68	8.250			5 1/2 F				31375			
6.3/4" Powerpulse	1	9.65	6.750	0.108		5 1/2 F	P			109			
L.W.D.	1	6.64	7.625			4 1/2 I	B			1704			
NMStab (IB) 8.1/4" UG	1	2.26	8.250	0.111		4 1/2 I	P			26882		0.79	
H.W.D.P.	1	9.14	5.000	0.111		NC50	P			25088			
H.W.D.P.	17	159.17	5.000	0.118		NC50	P						
6.1/2" WH Jar	1	9.76	6.375	0.108		4 1/2 I	P			2983			
H.W.D.P.	5	46.70	5.000	0.111		NC50	P						
6.1/2" WH Accelerator	1	9.76	6.500	0.108		4 1/2 I	P			1019			
H.W.D.P.	2	18.78	5.000	0.118		NC50	P						
Total Length:		**275.87**											

BHA #5

BHA Name	Bit#	Purpose	Bit to Survey (m)	Min Id (in)	Motor	Pred. Perf. Act. Perf.	Pred. Build/Walk Act. Build/Walk /(m/30m)	I O D L B G O R
WH cutting assy		WH cutting			Y			

Date In: 24/04/2004 Time In: 20:00 TMD In: 157.7 (m) Date Out: Time Out: : TMD Out: (m)

BHA Detail Item Description	# Jts	Length (m)	OD (in)	ID (in)	Connection Size	Connection Type	Pin Box	Gauge In	Gauge Out	Serial #	Spiral	Fishing Neck (in)	Blade Width
Stab (IB) 8 1/2" FG	1	3.18	6.000	2.813		4 1/2 R	P					2.00	
Cross Over	1		7.500	3.000		6 5/8 R	P					1.50	
8" x 11 3/4" pipe cutter	1	5.58	8.000	3.000	7	6 5/8 R							
Stabiliser	1		6.000	2.000		6 5/8 R						0.85	
Jet sub	1		8.000			6 5/8 R							
Stop sub w/ stop plate	1		8.000	2.813		6 5/8"						0.30	
9 1/2" Drillex motor	1	7.85	9.500			6 5/8"						6.75	
8" Bumper Sub	1		8.000	3.000		6 5/8 R	P						
Drill Collar	6		8.000	2.813		6 5/8 R	P						
Cross Over	1		6.750	2.250		4 1/2 I	P					1.50	
H.W.D.P.	17	150.00	5.000	3.000		NC50	P						
Total Length:		**166.61**											

D: Drilling Fluids Summary

Mud Summary Report

Legal Well Name: 26/4-2 Beluga
Common Well Name: Beluga
Event Name: ORIG DRILLING
Contractor Name: Odfjell
Rig Name: Deep Sea Delta
Start: 11/04/2004
Rig Release: 27/04/2004
Rig Number:
Spud Date: 13/04/2004
End:

Day	TMD (m)	Hole Sz. (in)	Mud Type	MW (sg)	Visc. (s/qt)	PV (cp)	YP (lb/100ft²)	Gels 10s/10m/30m (lb/100ft²)	API WL (cc/30min)	HTHP WL (cc/30min)	HTHP T (°C)	pH	Cl- (mg/L)	Sand (%)	TS (%)	LGS (kg/m3)	MBT (sg)	Oil (%)	Tot. Hard. (mg/L)	Tot. Vol. (m³)
5	654.0	12.250	Disp.mud	1.05								9.8								227.0
6	1,204.0	12.250	Glycol mud	1.20	95	13	9	5 / 11 / 0	6.0			9.4			8.0	87.0				246.0
7	1,204.0	12.250	Glycol mud	1.20	95	13	9	5 / 11 / 0	6.0			9.4			8.0	87.0				0.0
8	1,204.0	12.250	Glycol mud	1.31		25	7	2 / 3 / 0	2.8			8.8	78,000		13.0	25.7				379.0
9	1,324.0	8.500	Glycol mud	1.31		23	7	2 / 3 / 0	2.4			8.9	77,000		13.5	70.4				373.0
10	2,020.0	8.500	Glycol mud	1.31		24	8	3 / 4 / 0	2.4			8.2	77,000		16.0	155.3	15.00			363.0
11	2,302.0	8.500	Glycol mud	1.31		24	9	3 / 5 / 0	2.2			8.0	75,000	0.25	14.0	77.8	22.00			365.0
12	2,302.0	8.500	Glycol mud	1.31		25	9	3 / 5 / 0	2.2			8.0	75,000	0.25	14.0	77.8	22.00			256.0
13	2,302.0	8.500	Glycol mud	1.31		25	9	3 / 5 / 0	2.2			8.0	75,000	0.25	14.0	77.8	22.00			198.0

E: Cementing Report – 30" Conductor

Cementing Report

Legal Well Name:	Beluga			Spud Date:	13/04/2004
Common Well Name:	Beluga	Report #:	1	Report Date:	14/04/2004
Event Name:	ORIG DRILLING	Start:	11/04/2004	End:	

Cement Job Type: Primary

Primary	Squeeze Open Hole	Squeeze Casing	Plug
Hole Size: 36.00 ()	Hole Size:	Hole Size:	Hole Size:
TMD Set: 234 (m)	SQ TMD: (m)	TMD Set:	Top Set: (m)
Date Set: 14/04/2004	SQ Date:	Date Set:	BTM set: (m)
Csg Type: 30" Conductor	SQ Type:	Csg Type:	Plug Date:
Csg Size: 30.000 (in.)		SQ TMD:	Plug Type:
		SQ Date:	Drilled Out:
Cmtd. Csg: 30" Conductor	Cmtd. Csg:	Cmtd. Csg:	Cmtd. Csg:

Cement Co: Halliburton Cementer: Skaanes-Larsen Pipe Movement: No movement

Pipe Movement

Rot Time Start: :	Time End: :	RPM:	Init Torque:	(ft-lbf)	Avg Torque:	(ft-lbf)	Max Torque: (ft-lbf)
Rec Time Start: :	Time End: :	SPM:	Stroke Length:	(m)	Drag Up:	(lbs)	Drag Down: (lbs)

Stage No: 1 of 1

Type:	Lead	Start Mix Cmt:	11:45	Disp Avg Rate:	8.18 (bbl/min)	Returns:	To seabed
Volume Excess %:	200.00	Start Slurry Displ:	12:30	Disp Max Rate:	8.18 (bbl/min)	Total Mud Lost:	(bbl)
Meas. From:	Seabed	Start Displ:	13:45	Bump Plug:	N	Cmt Vol to Surf:	26.91 (bbl)
Time Circ Prior		End Pumping:	14:00	Press Prior:	(psi)		
To Cementing:	1.50	End Pump Date:	14/04/2004	Press Bumped:	(psi)	Ann Flow After:	N
Mud Circ Rate:	25.16 (bbl/min)	Top Plug:	N	Press Held:	(min)	Mixing Method:	Rec
Mud Circ Press:	836 (psi)	Bottom Plug:	N	Float Held:	Y	Density Meas By:	Densiomete

Mud Data

Type: Seawater Density: 1,050.00 (sg) Visc: 100 (s/qt) PV/YP: (cp)/ (lb/100ft²) Gels 10 sec: (lb/100ft²) Gels 10 min: (lb/100ft²)
Bottom Hole Circulating Temperature: 7 (°C) Bottom Hole Static Temperature: 7 (°C)
Displacement Fluid Type: Seawater Density: 8.8 (ppg) Volume: 144.35 (bbl)

Stage No: 1 Slurry No: 1 of 1

Slurry Data

Fluid Type:	LEAD	Description:	LIQUID ADDITIVE EXTENDED		Class: G NEAT	Purpose:	CONDUCTOR
Slurry Interval: (m)	To: 234 (m)	Cmt Vol:	57.00 (ton)	Density: 16.28 (ppg)	Yield: 1.13 (ft³/sk)	Mix Water:	169.83 (bbl)
Water Source:	Seawater	Slurry Vol:	286 (bbl)	Water Vol: 141.8 (bbl)	Other Vol: ()	Foam Job:	N

Test Data			**Time**	**Temp**	**Pressure**
Thickening Time: 3.53	Temperature: (°C)	Compressive Strength 1:		7.0 (°C)	400 (psi)
Free Water: (%)	Temperature: (°C)	Compressive Strength 2:		(°C)	(psi)
Fluid Loss: (cc)	Temperature: (°C)				

Stage No: 1 Slurry No: 1 of 1 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
CACL2 (LIQUID)	ACCELERATOR	4.35	LITERS	15.60	bbls
NF-6	DEFOAMER	0.10	LITERS	0.36	bbls

Cementing Report – 12¼" Casing

Cementing Report

Legal Well Name:	Beluga			Spud Date:	13/04/2004
Common Well Name:	Beluga	Report #:	2	Report Date:	17/04/2004
Event Name:	ORIG DRILLING	Start:	11/04/2004	End:	

Cement Job Type: Primary

Primary	Squeeze Open Hole	Squeeze Casing	Plug
Hole Size: 12.25 ()	Hole Size:	Hole Size:	Hole Size:
TMD Set: 1,200 (m)	SQ TMD: (m)	TMD Set:	Top Set: (m)
Date Set: 17/04/2004	SQ Date:	Date Set:	BTM set: (m)
Csg Type: Surface Casing	SQ Type:	Csg Type:	Plug Date:
Csg Size: 9.625 (in.)		SQ TMD:	Plug Type:
		SQ Date:	Drilled Out:
Cmtd. Csg: Surface Casing	Cmtd. Csg:	Cmtd. Csg:	Cmtd. Csg:

Cement Co: Halliburton Cementer: Danvik/Skaanes Pipe Movement: No movement

Pipe Movement

Rot Time Start:	:	Time End:	:	RPM:	Init Torque:	(ft-lbf)	Avg Torque:	(ft-lbf)	Max Torque: (ft-lbf)
Rec Time Start:	:	Time End:	:	SPM:	Stroke Length:	(m)	Drag Up:	(lbs)	Drag Down: (lbs)

Stage No: 1 of 1

Type:	Primary job	Start Mix Cmt:	15:40	Disp Avg Rate:	14.80 (bbl/min)	Returns:	To seabed
Volume Excess %:	75.00	Start Slurry Displ:	15:45	Disp Max Rate:	15.54 (bbl/min)	Total Mud Lost:	(bbl)
Meas. From:	Open hole	Start Displ:	17:45	Bump Plug:	Y	Cmt Vol to Surf:	(bbl)
Time Circ Prior		End Pumping:	18:30	Press Prior:	1,194 (psi)		
To Cementing:	2.00	End Pump Date:	17/04/2004	Press Bumped:	3,002 (psi)	Ann Flow After:	N
Mud Circ Rate:	6.29 (bbl/min)	Top Plug:	Y	Press Held:	10 (min)	Mixing Method:	Recirculat
Mud Circ Press:	478 (psi)	Bottom Plug:	Y	Float Held:	Y	Density Meas By:	Densiomete

Mud Data

Type: SW/Bentonite Density: 1.20 (sg) Visc: 95 (s/qt) PV/YP: 13 (cp)/18 (lb/100ft²) Gels 10 sec: 9 (lb/100ft²) Gels 10 min: 22 (lb/100ft²)
Bottom Hole Circulating Temperature: 42 (°C) Bottom Hole Static Temperature: 23 (°C)
Displacement Fluid Type: Mud Density: 10.0 (ppg) Volume: 331.48 (bbl)

Stage No: 1 Slurry No: 1 of 2

Slurry Data

Fluid Type:	LEAD		Description: LIQUID ADDITIVE EXTENDED		Class: G NEAT	Purpose: ZONAL ISOLA	
Slurry Interval: (m)	To: 857 (m)	Cmt Vol: 53.20 (ton)	Density: 13.02 (ppg)	Yield: 1.95 (ft³/sk)	Mix Water: 329.92 (bbl)		
Water Source: Seawater		Slurry Vol:421 (bbl)	Water Vol: 316.2 (bbl)	Other Vol: ()	Foam Job: N		

Test Data			**Time**	**Temp**	**Pressure**
Thickening Time: 8.29	Temperature: 23 (°C)	Compressive Strength 1:	4.50	23.0 (°C)	(psi)
Free Water: (%)	Temperature: (°C)	Compressive Strength 2:	8.29	23 (°C)	(psi)

Stage No: 1 Slurry No: 1 of 2 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
ECONOLITE	EXTENDER	3.20	LITERS	11.00	bbls
HR-4L	RETARDER	0.80	LITERS	4.40	bbls
NF-6	DEFOAMER	0.10	LITERS	0.19	bbls

Stage No: 1 Slurry No: 2 of 2

Slurry Data

Fluid Type:	TAIL		Description: LIQUID ADDITIVE EXTENDED		Class: G NEAT	Purpose: SHOE INTEG	
Slurry Interval:	857 (m)	To: 1,200 (m)	Cmt Vol: 13.80 (ton)	Density: 16.03 (ppg)	Yield: 1.13 (ft³/sk)	Mix Water: 38.10 (bbl)	
Water Source:	Fresh water		Slurry Vol:63 (bbl)	Water Vol: 38.0 (bbl)	Other Vol: ()	Foam Job: N	

Test Data			**Time**	**Temp**	**Pressure**
Thickening Time: 5.23	Temperature: 23 (°C)	Compressive Strength 1:	4.23	23.0 (°C)	(psi)
Free Water: (%)	Temperature: (°C)	Compressive Strength 2:	5.23	23 (°C)	(psi)
Fluid Loss: (cc)	Temperature: (°C)				
Fluid Loss Pressure: (°C)					

Stage No: 1 Slurry No: 2 of 2 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
NF-6	DEFOAMER	0.10	LITERS	0.07	bbls

Casing Test	Shoe Test	Liner Top Test
Test Press: 3,002 (psi)	Pressure: 13.77 (ppge)	Liner Lap:
For: 10 (min)	Tool: N	Pos Test: (ppge) Tool: N
Cement Found between	Open Hole: (m)	Neg Test: (ppge) Tool: N
Shoe and Collar: Y	Hrs Before Test:	Hrs Before Test:
		Cement Found on Tool: N

Cementing Report – Plug #1

Cementing Report

Legal Well Name:	Beluga			Spud Date:	13/04/2004
Common Well Name:	Beluga	Report #:	3	Report Date:	23/04/2004
Event Name:	ORIG DRILLING	Start:	11/04/2004	End:	

Cement Job Type: Plug

Primary	Squeeze Open Hole	Squeeze Casing	Plug
Hole Size:	Hole Size:	Hole Size:	Hole Size: 8.50 ()
TMD Set: (m)	SQ TMD: (m)	TMD Set:	Top Set: 992.0 (m)
Date Set:	SQ Date:	Date Set:	BTM set: 2,302.0 (m)
Csg Type:	SQ Type:	Csg Type:	Plug Date: 23/04/2004
Csg Size:		SQ TMD:	Plug Type: plug type 1
		SQ Date:	Drilled Out: N
Cmtd. Csg:	Cmtd. Csg:	Cmtd. Csg:	Cmtd. Csg: OPEN HOLE

Cement Co: Halliburton Cementer: Haaland/Lodden Pipe Movement: No movement

Pipe Movement

Rot Time Start: :	Time End: :	RPM:	Init Torque: (ft-lbf)	Avg Torque: (ft-lbf)	Max Torque: (ft-lbf)	
Rec Time Start: :	Time End: :	SPM:	Stroke Length: (m)	Drag Up: (lbs)	Drag Down: (lbs)	

Stage No: 1 of 3

Type: Plug #1	Start Mix Cmt: 01:35	Disp Avg Rate: 12.58 (bbl/min)	Returns: Trace cement
Volume Excess %: 10.00	Start Slurry Displ: 01:38	Disp Max Rate: 12.58 (bbl/min)	Total Mud Lost: (bbl)
Meas. From: Open hole	Start Displ: 01:58	Bump Plug: N	Cmt Vol to Surf: (bbl)
Time Circ Prior	End Pumping: 02:05	Press Prior: (psi)	
To Cementing: 0.50	End Pump Date: 23/04/2004	Press Bumped: (psi)	Ann Flow After:
Mud Circ Rate: 12.58 (bbl/min)	Top Plug: N	Press Held: (min)	Mixing Method: Reciprocat
Mud Circ Press: 1,552 (psi)	Bottom Plug: N	Float Held:	Density Meas By: Densiomete

Mud Data

Type: Glycol mud Density: 1.31 (sg) Visc: (s/qt) PV/YP: 25 (cp)/9 (lb/100ft²) Gels 10 sec: 3 (lb/100ft²) Gels 10 min: 5 (lb/100ft²)
Bottom Hole Circulating Temperature: 55 (°C) Bottom Hole Static Temperature: 80 (°C)
Displacement Fluid Type: Mud Density: 10.9 (ppg) Volume: 100.64 (bbl)

Stage No: 1 Slurry No: 1 of 1

Slurry Data

Fluid Type: TAIL	Description: LIQUID ADDITIVE EXTENDED			Class: G NEAT	Purpose: ZONAL ISOLA
Slurry Interval: 2,302 (m) To: 2,102 (m)	Cmt Vol: 10.36 (ton)	Density: 15.86 (ppg)		Yield: 1.17 (ft³/sk)	Mix Water: 39.94 (bbl)
Water Source: Fresh water	Slurry Vol:51 (bbl)	Water Vol: 20.3 (bbl)		Other Vol: ()	Foam Job: N

Stage No: 1 Slurry No: 1 of 1 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
GASCON 469	GAS MIGRATION	3.50	LITERS	2.44	bbls
HR-5L	RETARDER	0.40	LITERS	0.55	bbls
HALAD-613L	FLUID LOSS	9.00	LITERS	6.10	bbls
CFR-5LE+	THINNER	2.50	LITERS	1.73	bbls
NF-6	DEFOAMER	0.10	LITERS	0.10	bbls

Cementing Report – Plug #2

Stage No: 2 of 3			
Type: Plug #2	Start Mix Cmt: 04:25	Disp Avg Rate: 12.58 (bbl/min)	Returns: Trace
Volume Excess %: 10.00	Start Slurry Displ: 04:27	Disp Max Rate: 14.15 (bbl/min)	Total Mud Lost: (bbl)
Meas. From: Open hole	Start Displ: 04:41	Bump Plug: N	Cmt Vol to Surf: (bbl)
Time Circ Prior	End Pumping: 04:48	Press Prior: (psi)	
To Cementing: 1.00	End Pump Date: 23/04/2004	Press Bumped: (psi)	Ann Flow After:
Mud Circ Rate: 15.73 (bbl/min)	Top Plug: N	Press Held: (min)	Mixing Method: Reciprocat
Mud Circ Press: 2,320 (psi)	Bottom Plug: N	Float Held:	Density Meas By: Densiomete

Mud Data		
Type: Glycol mud Density: 1.31 (sg) Visc: (s/qt)	PV/YP: 25 (cp)/9 (lb/100ft²) Gels 10 sec: 3 (lb/100ft²) Gels 10 min: 5 (lb/100ft²)	
Bottom Hole Circulating Temperature: 55 (°C)	Bottom Hole Static Temperature: 80 (°C)	
Displacement Fluid Type: Mud	Density: 10.9 (ppg)	Volume: 89.95 (bbl)

Stage No: 2 Slurry No: 1 of 1

Slurry Data

Fluid Type: TAIL	Description: LIQUID ADDITIVE EXTENDED		Class: G NEAT		Purpose: ZONAL ISOLA
Slurry Interval: 2,102 (m) To: 1,881 (m)	Cmt Vol: 10.36 (ton)	Density: 15.86 (ppg)	Yield: 1.17 (ft³/sk)		Mix Water: 39.94 (bbl)
Water Source: Fresh water	Slurry Vol:51 (bbl)	Water Vol: 20.3 (bbl)	Other Vol: ()		Foam Job: N

Test Data			**Time**	**Temp**	**Pressure**
Thickening Time:	Temperature: (°C)	Compressive Strength 1:		(°C)	(psi)
Free Water: (%)	Temperature: (°C)	Compressive Strength 2:		(°C)	(psi)
Fluid Loss: (cc)	Temperature: (°C)				
Fluid Loss Pressure: (°C)					

Stage No: 2 Slurry No: 1 of 1 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
GASCON 469	GAS MIGRATION	3.50	LITERS	2.44	bbls
HR-5L	RETARDER	0.40	LITERS	0.55	bbls
HALAD-613L	FLUID LOSS	9.00	LITERS	6.01	bbls
CFR-5LE+	THINNER	2.50	LITERS	1.73	bbls
NF-6	DEFOAMER	0.10	LITERS	0.10	bbls

Cementing Report – Plug #3

Stage No: 3 of 3			
Type: Plug #3	Start Mix Cmt: 18:00	Disp Avg Rate: 9.04 (bbl/min)	Returns: None
Volume Excess %:	Start Slurry Displ: 18:06	Disp Max Rate: 9.44 (bbl/min)	Total Mud Lost: (bbl)
Meas. From:	Start Displ: 18:26	Bump Plug: N	Cmt Vol to Surf: (bbl)
Time Circ Prior	End Pumping: 18:32	Press Prior: (psi)	
To Cementing: 1.00	End Pump Date: 26/04/2004	Press Bumped: (psi)	Ann Flow After:
Mud Circ Rate: 15.73 (bbl/min)	Top Plug: N	Press Held: (min)	Mixing Method: Reciproca
Mud Circ Press: 2,103 (psi)	Bottom Plug: N	Float Held:	Density Meas By: Densiomete

Mud Data		
Type: Glycol mud Density: 1.31 (sg) Visc: (s/qt)	PV/YP: 25 (cp)/9 (lb/100ft²) Gels 10 sec: 3 (lb/100ft²) Gels 10 min: 5 (lb/100ft²)	
Bottom Hole Circulating Temperature: 55 (°C)	Bottom Hole Static Temperature: 80 (°C)	
Displacement Fluid Type: Seawater	Density: 8.8 (ppg)	Volume: 604.47 (bbl)

Stage No: 3 Slurry No: 1 of 1

Slurry Data

Fluid Type: TAIL	Description: LIQUID ADDITIVE EXTENDED		Class: G NEAT	Purpose: ZONAL ISOLA
Slurry Interval: 1,192 (m) To: 992 (m)	Cmt Vol: 9.66 (ton)	Density: 15.86 (ppg)	Yield: 1.15 (ft³/sk)	Mix Water: 27.67 (bbl)
Water Source: Fresh water	Slurry Vol:47 (bbl)	Water Vol: 27.6 (bbl)	Other Vol: ()	Foam Job: N

Test Data			**Time**	**Temp**	**Pressure**
Thickening Time:	Temperature: (°C)	Compressive Strength 1:		(°C)	(psi)
Free Water: (%)	Temperature: (°C)	Compressive Strength 2:		(°C)	(psi)
Fluid Loss: (cc)	Temperature: (°C)				
Fluid Loss Pressure: (°C)					

Stage No: 3 Slurry No: 1 of 1 - Additives

Trade Name	Type	Concentration	Units	Liquid Conc.	Units
NF-6	DEFOAMER	0.10	LITERS	0.06	bbls

F: Survey Listing

Depth MD m	Incl deg	Azim deg	Depth TVD m	N/S m	E/W m	Northing m	Easting m	Latitude Deg	Min	Sec		Longitude Deg	Min	Sec	
697.38	0.32	285.02	697.34	3.16	-4.84	6622557.4	505675.68	59	44	22.146	N	3	6	3.448	E
726.36	0.47	305.53	726.32	3.25	-5.01	6622557.49	505675.51	59	44	22.149	N	3	6	3.436	E
754.99	0.67	216.21	754.95	3.18	-5.21	6622557.42	505675.31	59	44	22.147	N	3	6	3.424	E
785.08	0.31	195.9	785.04	2.96	-5.33	6622557.2	505675.19	59	44	22.14	N	3	6	3.416	E
812.46	0.35	183.24	812.42	2.81	-5.36	6622557.05	505675.16	59	44	22.135	N	3	6	3.414	E
871.49	0.41	92.61	871.45	2.62	-5.16	6622556.86	505675.36	59	44	22.128	N	3	6	3.427	E
898.82	0.41	146.17	898.77	2.53	-5.01	6622556.77	505675.51	59	44	22.126	N	3	6	3.437	E
927.76	0.58	233	927.71	2.36	-5.07	6622556.6	505675.45	59	44	22.12	N	3	6	3.433	E
956.6	0.53	216.32	956.55	2.16	-5.26	6622556.4	505675.26	59	44	22.114	N	3	6	3.42	E
985.06	0.35	264.16	985.01	2.05	-5.43	6622556.29	505675.09	59	44	22.11	N	3	6	3.41	E
1013.88	0.26	265.64	1013.83	2.03	-5.58	6622556.27	505674.94	59	44	22.11	N	3	6	3.4	E
1042.79	0.97	70.82	1042.74	2.11	-5.41	6622556.35	505675.11	59	44	22.112	N	3	6	3.411	E
1072.76	1.19	59.16	1072.71	2.35	-4.91	6622556.59	505675.61	59	44	22.12	N	3	6	3.443	E
1102.11	1.14	67.09	1102.05	2.62	-4.38	6622556.86	505676.14	59	44	22.129	N	3	6	3.477	E
1131.33	1.16	68.79	1131.26	2.84	-3.83	6622557.08	505676.69	59	44	22.136	N	3	6	3.512	E
1158.85	0.75	63.56	1158.78	3.02	-3.41	6622557.26	505677.11	59	44	22.142	N	3	6	3.539	E
1187.18	0.57	48.66	1187.11	3.2	-3.14	6622557.44	505677.38	59	44	22.147	N	3	6	3.556	E
1192.05	0.41	53.01	1191.98	3.22	-3.11	6622557.46	505677.41	59	44	22.148	N	3	6	3.559	E
1252.4	0.51	47.18	1252.33	3.54	-2.74	6622557.78	505677.78	59	44	22.158	N	3	6	3.582	E
1281.36	0.41	36.92	1281.28	3.71	-2.58	6622557.95	505677.94	59	44	22.164	N	3	6	3.592	E
1313.45	0.37	48.14	1313.37	3.87	-2.43	6622558.11	505678.09	59	44	22.169	N	3	6	3.602	E
1342.3	0.41	37.87	1342.22	4.01	-2.3	6622558.25	505678.22	59	44	22.173	N	3	6	3.61	E
1397.37	0.7	118.84	1397.29	4	-1.89	6622558.24	505678.63	59	44	22.173	N	3	6	3.637	E
1425.89	0.7	135.45	1425.81	3.8	-1.61	6622558.04	505678.91	59	44	22.166	N	3	6	3.654	E
1484.55	1.1	134.47	1484.46	3.15	-0.96	6622557.39	505679.56	59	44	22.145	N	3	6	3.696	E
1511.76	1.33	132.7	1511.67	2.75	-0.54	6622556.99	505679.98	59	44	22.133	N	3	6	3.723	E
1540.42	1.51	135.64	1540.32	2.25	-0.03	6622556.49	505680.49	59	44	22.117	N	3	6	3.755	E
1570.27	1.37	139.13	1570.16	1.7	0.48	6622555.94	505681	59	44	22.099	N	3	6	3.788	E
1626.67	1.49	141.88	1626.54	0.62	1.37	6622554.86	505681.89	59	44	22.064	N	3	6	3.845	E
1657.04	1.54	147.21	1656.9	-0.04	1.84	6622554.2	505682.36	59	44	22.042	N	3	6	3.875	E
1684.43	1.43	143.02	1684.28	-0.62	2.24	6622553.62	505682.76	59	44	22.024	N	3	6	3.901	E
1713.07	1.56	143.45	1712.91	-1.22	2.69	6622553.02	505683.21	59	44	22.004	N	3	6	3.929	E
1742.9	1.52	139.04	1742.73	-1.84	3.19	6622552.4	505683.71	59	44	21.984	N	3	6	3.961	E
1772.46	1.57	146.92	1772.28	-2.48	3.67	6622551.76	505684.19	59	44	21.963	N	3	6	3.992	E
1800.46	1.4	147.07	1800.27	-3.09	4.06	6622551.15	505684.58	59	44	21.944	N	3	6	4.017	E
1828.67	1.58	151.76	1828.47	-3.72	4.43	6622550.52	505684.95	59	44	21.923	N	3	6	4.041	E
1857.91	1.68	156.35	1857.7	-4.47	4.8	6622549.77	505685.32	59	44	21.899	N	3	6	4.064	E
1915.42	1.86	155.27	1915.18	-6.09	5.52	6622548.15	505686.04	59	44	21.847	N	3	6	4.11	E
1944.8	2.12	155.29	1944.54	-7.01	5.95	6622547.23	505686.47	59	44	21.817	N	3	6	4.138	E
1972.87	2.09	163.67	1972.59	-7.98	6.31	6622546.26	505686.83	59	44	21.786	N	3	6	4.161	E
2002.08	2.05	159.93	2001.78	-8.98	6.64	6622545.26	505687.16	59	44	21.753	N	3	6	4.182	E
2202.85	1.73	162.62	2202.45	-15.24	8.78	6622539	505689.3	59	44	21.55	N	3	6	4.318	E
2230.78	1.58	164.47	2230.36	-16.02	9.01	6622538.22	505689.53	59	44	21.525	N	3	6	4.332	E
2292.46	1.53	160	2292.02	-17.61	9.52	6622536.63	505690.04	59	44	21.474	N	3	6	4.365	E

7 ENCLOSURES