Title:
Final well report **34/10-43S**

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General well data **Exemption and non-conformances** **Geology and data report** **Drilling report**
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Contents

1 Introduction

1.1 Well data record

License Number:	PL050
Block Number:	0034/10
Well:	0034/10-43S
Well type:	Exploration well
Rig:	T.O. Wildcat
Water depth:	139.0m MSL
RKB-MSL:	25.0m
Primary objective:	Exploration of Statfjord prospect
TD:	5725m MD RKB (3219.9m TVD RKB)
Group at TD:	Cromer Knoll Group
Start of operation:	24.02.2001
End of operation:	11.04.2001
Well status:	Plugged and abandoned

Slot co-ordinates:

UTM:	Geographic:
6 775 410.98 m N	61° 06' 30.8" N
448 789.00 m E	02° 02' 59.8" E

1.2 Well objectives

Primary objective for 34/10-43S was to test the potential for hydrocarbons in Middle Jurassic sandstones of the Statfjord Formation.
The secondary objective was another hydrocarbon investigation of the Brent Group, Cook- and Lunde Formation.
A tertiary objective was to penetrate Paleocene in an optimal position for exploring the lowermost part for sand/hydrocarbons (Ty Formation) and at TD, a prospect of the Late Jurassic, Munin Member.

1.3 Result of the well

The drilling progress was very good down to the temporarily TD in the upper part of the Lunde Formation. After the logging of the reservoir section, the drilling continued to a Late Jurassic prospect in segment 15B (Munin Formation), east of the main fault between O6B and 15B. This part was significantly slower to drill, caused by places of tight hole and also because of hard lithology. Several bits had to be implemented before TD at 5725m MD was achieved in Cromer Knoll Formation with an inclination of approx. 101°. The well was drilled in 48 days, 12 days ahead of the budget.

There were no sands in the Paleocene prospect of the Ty Formation. Thus, Shetland was penetrated more than 100m shallower than expected. An alternative interpretation indicated

that BCU might occur up to 200m deeper than prognosed, which also proved the case. The secondary Brent objective, which is located close to the BCU, is a water zone. Also the Cook Formation is hosting water, which was penetrated in an optimal position in the structure. 8m MD (3m TVD) of hydrocarbons were identified in the upper Statfjord- (Nansen) and Lunde Formation, in a reservoir with very good properties. Middle/Lower Statfjord showed yet another water zone. The logging revealed up to 15 bar pressure loss in Brent, but initial pressure in Cook-, Statfjord- and Lunde Formation. The pressure points in the Upper Statfjord were tested in very short-range interval. Then the conclusion indicates that the Upper Statfjord is hosting an oil zone with a density of approx. 0.05 bar/m.
The extended part of the well penetrated Munin sands, exactly as prognosed, yet without hydrocarbons. Structurally, the deepest Munin sand is of very good reservoir potential and thus represents an important data asset for further mapping of the Upper Jurassic. This well is also giving very good seismic reflectors, as the reflector defining the Jurassic/Cretaceous border in this complex sub-basin. Top Statfjord occurred 40m TVD deeper than prognosis, which derived from the velocity model and depth conversion. Consequently, the deeper tops were displaced correspondingly, until the main fault.

The OWC in the Statfjord reservoir is at 2848m MSL, and is interpreted to correspond with the independent structural seal of O6B Statfjord. The proven volumes equal the expected case of 0.65 x $10^6 m^3$ HKPV. Most likely this gives a STOOIP of 0.3 x $10^6 Sm^3$ and 0.145 x $10^6 Sm^3$ of recoverable oil. Based on experiences from Statfjord and Rimfaks Fields, where the main fault is continuously proven 100 – 150m further east, i.e. likely that even with the deterministic estimate, the potential of the displaced section might be 3 times more than the calculated estimate above.

The oil show in Statfjord is insignificantly and thus was plugged and abandoned.

1.4 Drilling summary

1.4.1 Casing

Casing size	Casing depth m MD RKB/ m TVD RKB	Hole depth m MD RKB /m TVD RKB	Mud type/ mud weigth	Type	Result g/cm^3	Comments
30”	223/223	228/228	KCl			
20”	709/702	716/710	KCl	LOT	1.55	Good
13 3/8”	2128/2053	2138/2061	Versavert/1.10-1.45	FIT	1.95	Good
		5725/3220	Versavert/1.62-1.72	LOT	1.84	Good

See appendix G, Other Reports for further details

1.4.2 Drilling fluids

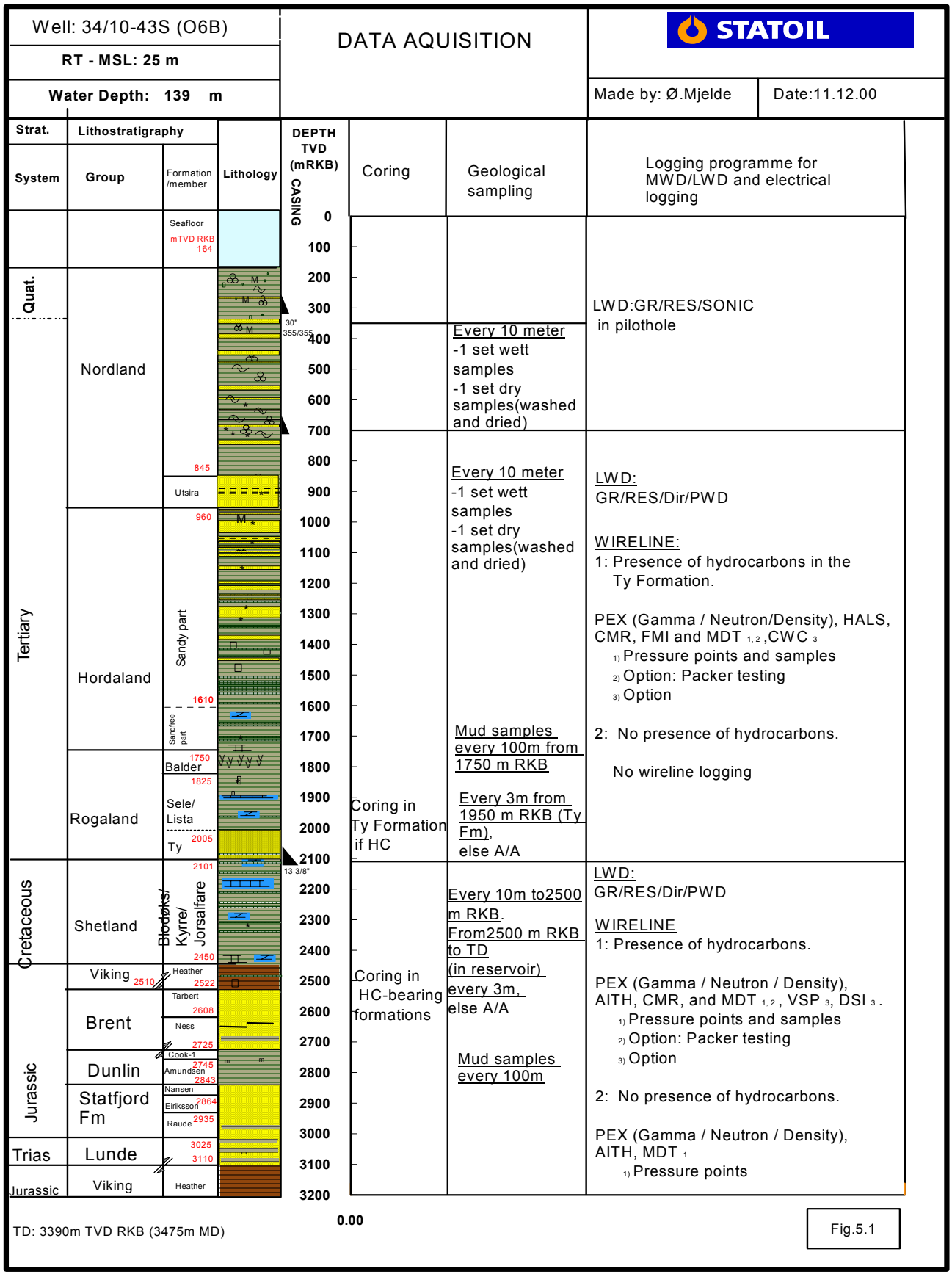
KCl above 26” hole / 20” casing. Below 26” hole / 20” casing versavert mud

Mud type/ mud weigth	Casing size	Casing depth m MD RKB/ m TVD RKB	Hole depth m MD RKB /m TVD RKB	Type	Result g/cm^3
KCl	30”	223/223	228/228		
KCl	20”	709/702	716/710	LOT	1.55

Versavert/1.10-1.45	13 3/8”	2128/2053	2138/2061	FIT	1.95
Versavert/1.62-1.72			5725/3220	LOT	1.84

See appendix G, Other Reports for further details

1.5 Data Acquisition Summary



2 Exemptions and non-conformances

Exemption: Initially a low quantity of data aquasition was planned, with 1 core and 1 run with WL. A desition was taken to spend 5% more for this well and drill an extension of 1200m, which was still in conjunction with the initial budget.
As rather low reserves were proven, the coring was cancelled, while the WL did 1 run. Even with 1000m extension of the well, the cost was 9 Mil. NOK ahead of AFE-Budget, which was caused by good organisation and planning, good operational progress and no WOW.

Exemptions from Statoil's Handbook of drilling and well activities – KP10 and Handbook for Exploration Well Projects in Statoil – TB 10-01:
KP10-K240 – Ch. 4.2.5 – Testing of BOP Shear Ram
An exemption has been granted from the following requirement (Ref. Exemption No. GFS98008F, dated 12.03.98, covering all relevant GFSAT wells):
Prior to drilling out of casing, the shear ram shall be tested to the maximum expected pressure in the next hole section.
The objective is to test the shear ram against the well and this means that in practice, the shear ram is tested to the test pressure of the relevant casing installed.
The project will be run and administrated by the Gullfaks Satellites in Bergen. The Exploration department in Stavanger has verified the drilling programme.

See appendix G, Other Reports for further details

3 Health, safety, environment and quality (HSE&Q)

3.1 Exemptions and non-conformance

See appendix G, Other Reports

3.2 RUH

Noting to report.

3.3 Comments to RUH

3.4 Experience summary

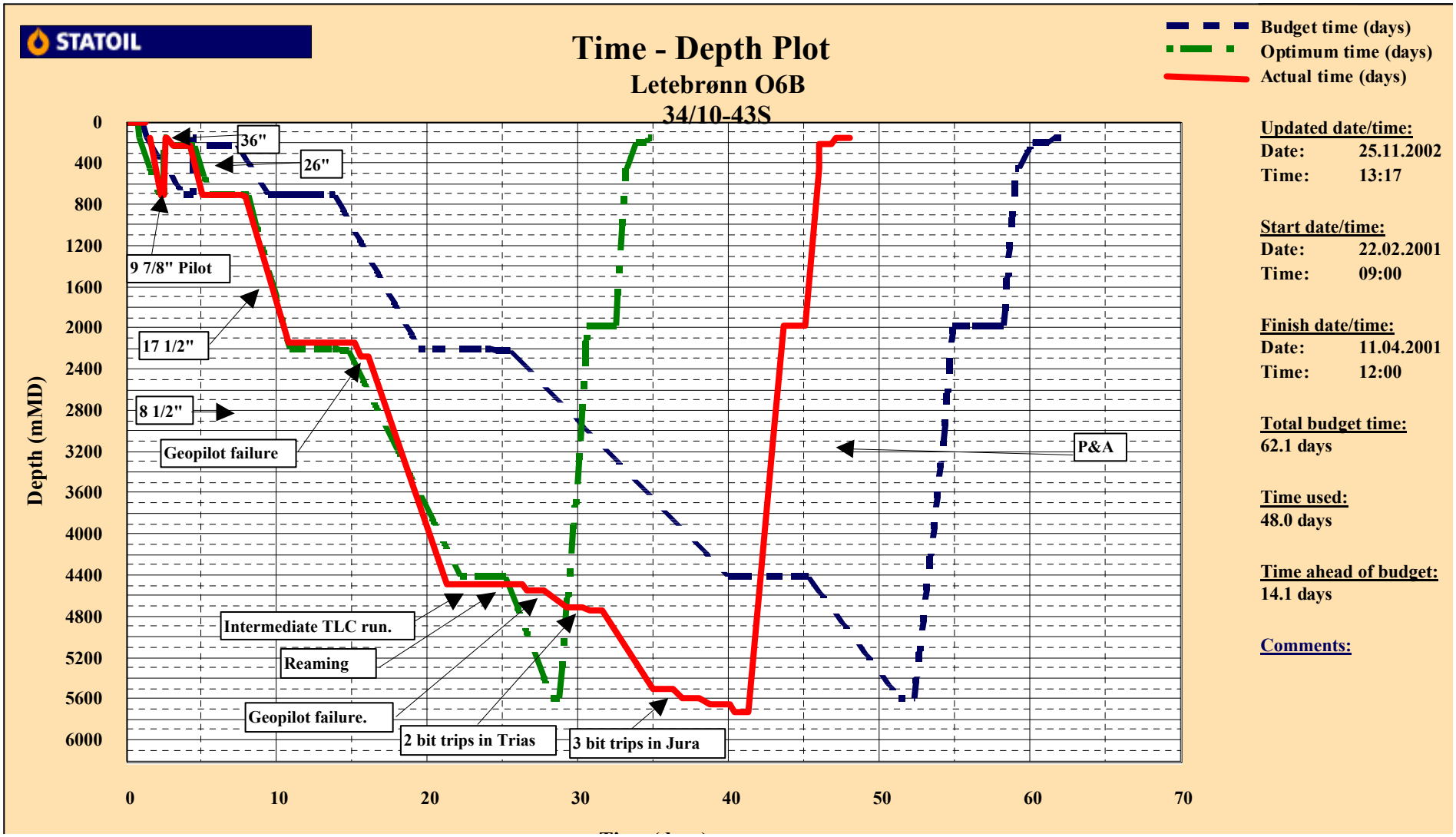
Experience listing

Wellbore: 0034/10-043S

Section	Down time (hrs)	Time Impr. (hrs)	Experience (subject and description)	Immediate solution	Solution recommended for future
8 1/2"					
10.03.2001	14	14	Boret 8 1/2" hull med Geo-Pilot i styre-mode på dyp 2267 m. Boret 8 1/2" hull med Geo-Pilot i styre-mode på dyp 2267 m. da en skulle re-sette Geo-pilot (skru av deflection), var dette umulig. TUAH.Boret 8 1/2" hull med Geo-Pilot i styre-mode på dyp 2267 m. da en skulle re-sette Geo-pilot (skru av deflection), var dette umulig. TUAH..Tool ble sendt til land for inspeksjonTool ble sendt til land for inspeksjon	0034/10-043S;8 1/2";HALLIBURTON/SPERRY SUN;DIRECTIONAL;Contractor not found. User-Defined Exception	Inspeksjon av Geo-pilot å dekk viste at 2 av anti-rotasjon devices var delvis tilbaketrukket, samt at alle var pakket med kaks.Inspeksjon av Geo-pilot å dekk viste at 2 av anti-rotasjon devices var delvis tilbaketrukket, samt at alle var pakket med kaks.
15.03.2001	0		Under boring av 8 1/2" hull på dyp 4310 m, mistet en kommunikasjon mellom Geo-pilot og MWD-tool. Under boring av 8 1/2" hull på dyp 4310 m, mistet en kommunikasjon mellom Geo-pilot og MWD-tool. Geo-pilot var satt i nøytral (deflection av) da dette inntraff. Planen var å holde en tangent på ca 61 grader til innboring i Lundefm. på ca.	0034/10-043S;8 1/2";HALLIBURTON/SPERRY SUN;DIRECTIONAL;Contractor not found. User-Defined Exception	Fortsatte boring til 4490 m, BHA droppet svakt, siste survey viste 59,3 grader. OK for videre boring.
20.03.2001	0	35	Hadde store problemer med å trippe inn i hullet etter TLC. Hadde store problemer med å trippe inn i hullet etter TLC.Hullet var trangt,måtte rømme inn fra 3164m-3400m og 4260m-4490m(TD).Hullet pakket av flere ganger og vi mistet sirk.Var stuck på 4418m.Hadde ingen probl. på trip ut og heller ikke.Geo-pilot BHA.Geo-pilot fungerte ikke da vi startet boring, ikke mulig å sette deflection.	0034/10-043S;8 1/2";STATOIL;HOLE PROBLEMS	Caliper logg viste UG hull i områder der det var problemer.Inspeksjon av BHA/bit viste at alle stabs&bit var IG.Vannveier på bit var delvis plugget av formasjon.Årsaken til probl. kan være formasjonsrel. i komb. med ikke-roterende sleeve på Geo-pilot
21.03.2001	0		Det var planlagt å GIH med 8 1/2" FM2841DRX borekrone (RR) på ny Geo-pilot. Det var planlagt å GIH med 8 1/2" FM2841DRX borekrone (RR) på	0034/10-043S;8 1/2";HALLIBURTON/SPERRY SUN;DIRECTIONAL;Contractor not found. User-Defined Exception	FM2745DRX hadde boret hele 8 1/2" seksjonen, og var gradert til 1-2-I.Borekronen var i god stand, og like god/bedre enn

		ny Geo-pilot.Det viste seg at ny Geo-pilot hadde pin ned og borekronen hadde pin opp.Hadde ikke x-over.Valgte å kjøre FM2745DRX (RR) isteden, da denne hadde boks opp..Sperry må levere utstyr (Geo-pilot/bit) ihht Statoils planer (ref. seksjonsmøte).		FM2845DRX (back-up borekrone brukt på Statfjord).
22.03.2001	0	Ved reaming ble det observert bit balling med konsekvens hurtige trykkendringer og avpakking. Ved reaming ble det observert bit balling med konsekvens hurtige trykkendringer og avpakking. Boret med Versavert OBM 1,70 SG..Boret med Geopilot og Security DBS 9FM2841DRX	0034/10-043S;8 1/2";HALLIBURTON/SPERRY SUN;HOLE PROBLEMS;Contractor not found. User-Defined Exception	Stoppe pumper, høy rotasjon (150 RPM) og samtidig trekke/senke hele standet 2 til 3 ganger.

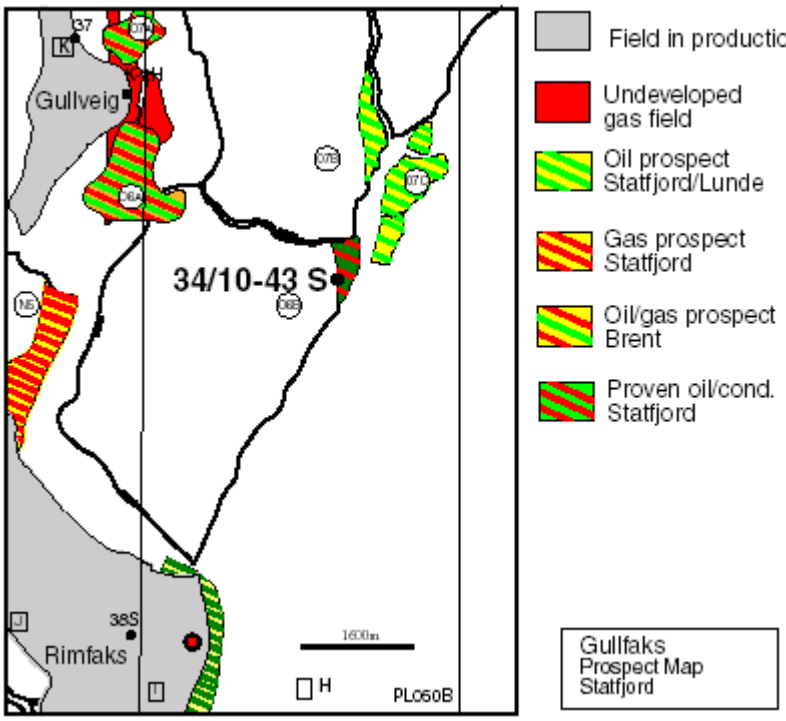
3.5 **Time distribution** (see appendix G, Other reports for further details)



4 Geology and formation data report

4.1 Geological setting and results

The structure for the 34/10-43S well is situated in the south-eastern part of the Tampen Spur area, on one of the westerly-rotated fault blocks east of the Beta Ridge. The structure is eroded, successive deeper towards east, and is limited by east-west fault towards north. The dip of the structure is towards west and south. The dominating rifting phase was in Late Jurassic/Early Cretaceous, which originated in earlier Late Permian/Early Triassic phase. Small faults observed at the base Cretaceous might be a result of differential compaction over Late Jurassic faults.

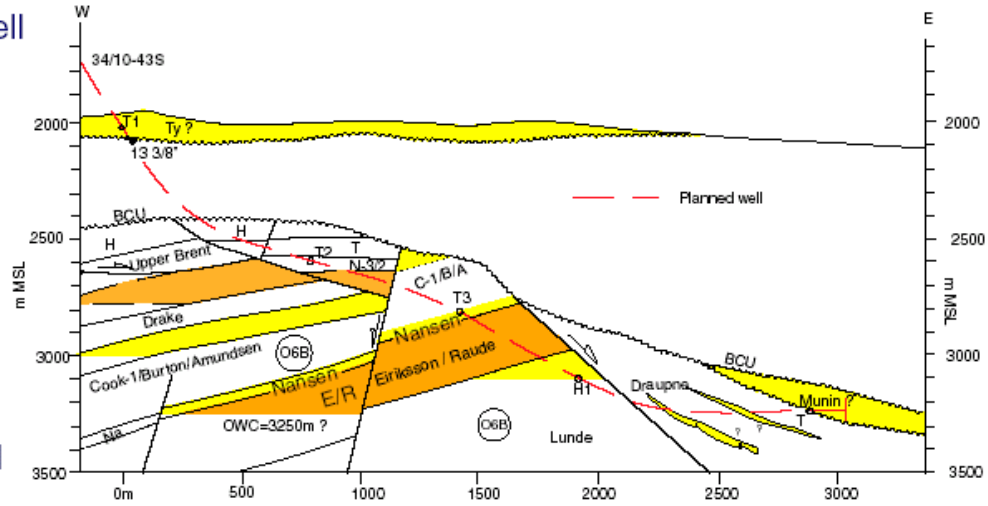


Surface name	MD	TVD	Easting	Northing
Utsira Fm. Top	866.00	855.40	448896.2	6775411.8
Utsira Fm. Base	997.00	982.92	448925.9	6775407.8
HORDALAND GP. Top	997.00	982.92	448925.9	6775407.8
HORDALAND GP. Base	1817.00	1775.97	449131.9	6775398.3
Balder Fm. Top	1817.00	1775.97	449131.9	6775398.3
Balder Fm. Base	1891.00	1844.84	449158.9	6775399.3
Lista Fm. Top	1891.00	1844.84	449158.9	6775399.3
Lista Fm. Base	2049.00	1984.70	449232.3	6775401.9
SHETLAND GP. Top	2049.00	1984.70	449232.3	6775401.9
SHETLAND GP. Base	3162.50	2625.48	450089.9	6775399.3
CROMER KNOLL GP. Top	3162.50	2625.48	450089.9	6775399.3
CROMER KNOLL GP. Base	3175.00	2629.66	450101.7	6775398.9
BCU	3175.00	2629.66	450101.7	6775398.9
Heather Fm. Top	3175.00	2629.66	450101.7	6775398.9

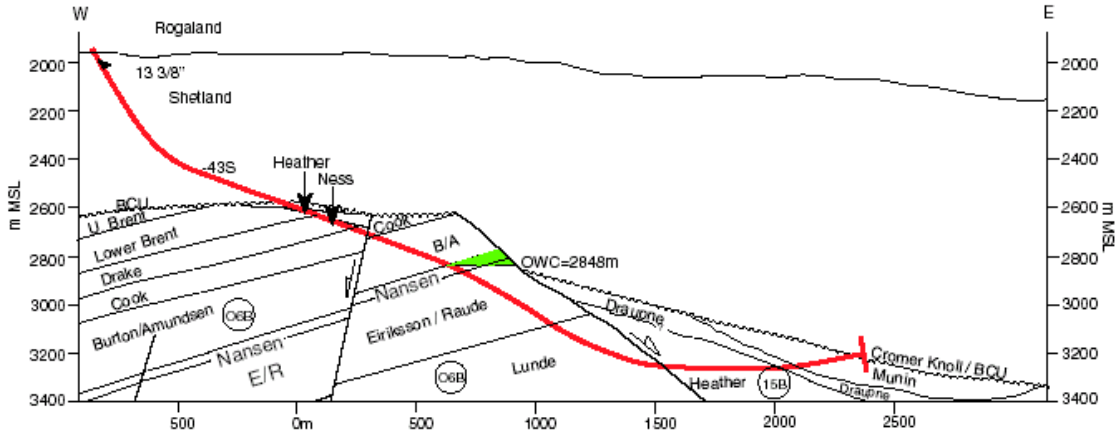
Heather Fm. Base	3204.00	2639.24	450129.0	6775397.9
BRENT GP. GF-SAT Top	3204.00	2639.24	450129.0	6775397.9
Ness Fm. GF-SAT Top	3204.00	2639.24	450129.0	6775397.9
Ness-1 GF-SAT Top	3204.00	2639.24	450129.0	6775397.9
Ness-1 GF-SAT Base	3303.00	2671.35	450222.6	6775394.3
Ness Fm. GF-SAT Base	3303.00	2671.35	450222.6	6775394.3
Etive Fm. GF-SAT Top	3303.00	2671.35	450222.6	6775394.3
Rannoch Fm. GF-SAT Top	3326.00	2678.78	450244.4	6775393.7
Etive Fm. GF-SAT Base	3326.00	2678.78	450244.4	6775393.7
Drake Fm. GF-SAT Top	3345.00	2684.92	450262.3	6775393.2
Rannoch Fm. GF-SAT Base	3345.00	2684.92	450262.3	6775393.2
BRENT GP. GF-SAT Base	3345.00	2684.92	450262.3	6775393.2
DUNLIN GP. GF-SAT Top	3345.00	2684.92	450262.3	6775393.2
Cook-3 GF-SAT Top	3434.00	2712.90	450346.8	6775390.4
Drake Fm. GF-SAT Base	3434.00	2712.90	450346.8	6775390.4
Cook Fm. GF-SAT Top	3434.00	2712.90	450346.8	6775390.4
Cook-3 GF-SAT Base	3483.00	2729.27	450392.9	6775389.1
Cook-2 GF-SAT Top	3483.00	2729.27	450392.9	6775389.1
Cook-2 GF-SAT Base	3508.00	2738.37	450416.2	6775388.4
Cook-1 GF-SAT Top	3508.00	2738.37	450416.2	6775388.4
Cook-1 GF-SAT Base	3544.00	2751.44	450449.7	6775387.4
Cook Fm. GF-SAT Base	3544.00	2751.44	450449.7	6775387.4
Burton Fm. GF-SAT Top	3544.00	2751.44	450449.7	6775387.4
Amundsen Fm. GF-SAT Top	3600.00	2770.70	450502.3	6775386.2
Burton Fm. GF-SAT Base	3600.00	2770.70	450502.3	6775386.2
Nansen-1 GF-SAT Top	3877.50	2869.75	450761.4	6775382.8
Amundsen Fm. GF-SAT Base	3877.50	2869.75	450761.4	6775382.8
DUNLIN GP. GF-SAT Base	3877.50	2869.75	450761.4	6775382.8
Statfjord Fm. GF-SAT Top	3877.50	2869.75	450761.4	6775382.8
Nansen Mbr. GF-SAT Top	3877.50	2869.75	450761.4	6775382.8
Nansen-1B GF-SAT Top	3877.50	2869.75	450761.4	6775382.8
Nansen-1B GF-SAT Base	3911.50	2883.57	450792.5	6775382.6
Nansen-1A GF-SAT Top	3911.50	2883.57	450792.5	6775382.6
Nansen-1A GF-SAT Base	3946.00	2898.46	450823.6	6775382.6
Nansen-1 GF-SAT Base	3946.00	2898.46	450823.6	6775382.6
Nansen Mbr. GF-SAT Base	3946.00	2898.46	450823.6	6775382.6
Eiriksson Mbr. GF-SAT Top	3946.00	2898.46	450823.6	6775382.6
Eiriksson-2 GF-SAT Top	3946.00	2898.46	450823.6	6775382.6
Eiriksson-2B GF-SAT Top	3946.00	2898.46	450823.6	6775382.6
Eiriksson-2B GF-SAT Base	3985.00	2917.00	450857.9	6775383.0
Eiriksson-2A GF-SAT Top	3985.00	2917.00	450857.9	6775383.0
Eiriksson-2A GF-SAT Base	4037.10	2942.96	450903.1	6775384.4
Eiriksson-2 GF-SAT Base	4037.10	2942.96	450903.1	6775384.4
Eiriksson-1 GF-SAT Top	4037.10	2942.96	450903.1	6775384.4
Eiriksson-1B GF-SAT Top	4037.10	2942.96	450903.1	6775384.4
Eiriksson-1B GF-SAT Base	4131.50	2990.20	450984.7	6775386.5
Eiriksson-1A GF-SAT Top	4131.50	2990.20	450984.7	6775386.5
Eiriksson-1A GF-SAT Base	4164.92	3006.13	451014.1	6775386.1
Eiriksson-1 GF-SAT Base	4164.92	3006.13	451014.1	6775386.1

Eiriksson Mbr. GF-SAT Base	4164.92	3006.13	451014.1	6775386.1
Raude Mbr. GF-SAT Top	4164.92	3006.13	451014.1	6775386.1
Raude-2 GF-SAT Top	4164.92	3006.13	451014.1	6775386.1
Raude-2B GF-SAT Top	4164.92	3006.13	451014.1	6775386.1
Raude-2B GF-SAT Base	4214.00	3029.24	451057.4	6775385.4
Raude-2A GF-SAT Top	4214.00	3029.24	451057.4	6775385.4
Raude-2A GF-SAT Base	4269.50	3055.57	451106.3	6775384.9
Raude-2 GF-SAT Base	4269.50	3055.57	451106.3	6775384.9
Raude-1 GF-SAT Top	4269.50	3055.57	451106.3	6775384.9
Raude-1B GF-SAT Top	4269.50	3055.57	451106.3	6775384.9
Raude-1B GF-SAT Base	4318.00	3078.47	451149.0	6775384.3
Raude-1A GF-SAT Top	4318.00	3078.47	451149.0	6775384.3
Raude-1A GF-SAT Base	4370.11	3102.96	451195.0	6775383.5
Raude-1 GF-SAT Base	4370.11	3102.96	451195.0	6775383.5
Raude Mbr. GF-SAT Base	4370.11	3102.96	451195.0	6775383.5
Statfjord Fm. GF-SAT Base	4370.11	3102.96	451195.0	6775383.5
HEGRE GP. GF-SAT Top	4370.11	3102.96	451195.0	6775383.5
Lunde Fm. GF-SAT Top	4370.11	3102.96	451195.0	6775383.5
Lunde Fm. GF-SAT Base	4950.00	3285.67	451733.8	6775383.4
HEGRE GP. GF-SAT Base	4950.00	3285.67	451733.8	6775383.4
Heather Fm. Base	4950.00	3285.67	451733.8	6775383.4
Heather Fm. Top	5360.00	3280.83	452140.2	6775427.1
Draupne Fm. Base	5360.00	3280.83	452140.2	6775427.1
Munin Mbr. Base	5449.00	3272.30	452228.2	6775437.4
Munin Mbr. Top	5462.00	3270.59	452240.9	6775439.0
Munin Mbr. Base	5522.00	3259.89	452299.7	6775445.0
Munin Mbr. Top	5528.00	3258.72	452305.5	6775445.5
Draupne Fm. Top	5675.00	3229.97	452448.7	6775461.9
Cretaceous Base	5675.00	3229.97	452448.7	6775461.9
CROMER KNOLL GP. Base	5675.00	3229.97	452448.7	6775461.9
CROMER KNOLL GP. Top	5725.00	3219.88	452497.1	6775469.4
TD	5725.00	3219.88	452497.1	6775469.4

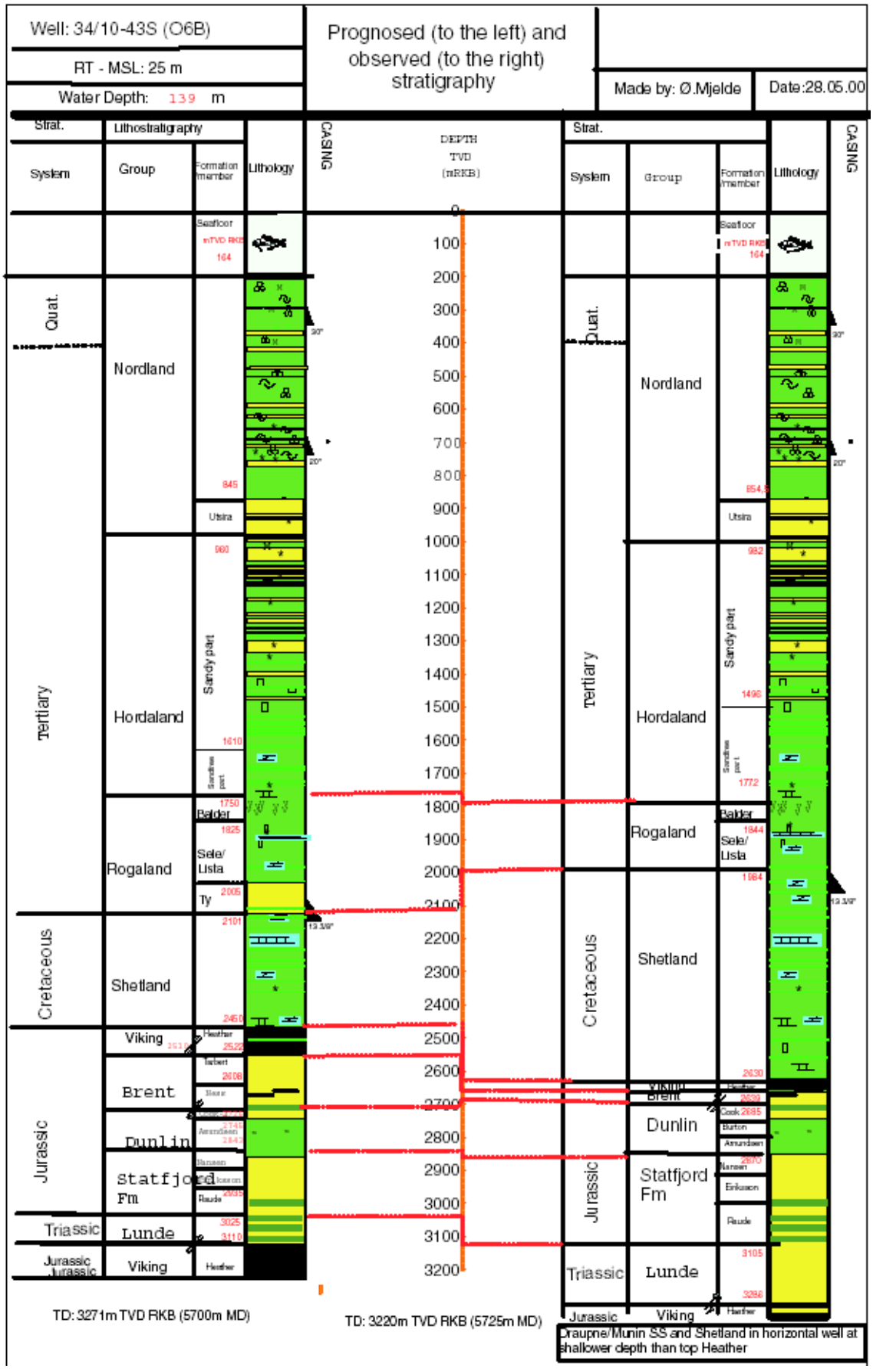
Before 43S well



After 43S well



PROGNOSE (MRKB) OBSERVED (MRKB)



4.2 Shallow gas results

A 9 7/8" pilot well was drilled to 710 m MD according to standard shallow gas procedure. A CDR and a velocity tool were placed near the bit. The CDR showed no typical shallow gas response. A 45 min flowcheck at 380 m MD revealed no shallow gas. According to nearby wells drilled from the K and H templates, site surveys and the pilot well, the conclusion of shallow gas existence was negative.

4.3 Stratigraphy

The stratigraphic zonation is based on previous logs from near-situated exploration wells and production wells from the K and H template.

4.3.1 Table of chronostratigraphy

PALYNOLOGICAL ANALYSIS OF INTERVAL 2000 - 2138m
SAMPLES: 2000, 2025, 2050, 2075, 2100, 2138m (all wet samples)

STRATIGRAPHIC BREAKDOWN

2000 - 2025M: LATE PALEOCENE LISTA FM (HEIMDAL/LISTA transitional)

2050M: EARLY PALEOCENE (UPPER PART) VÅLE/TY FM?

2075 - 2100m: LATE MASSTRICHTIAN (UPPER PART) SHETLAND GP

2138M: LATE MAASTRICHTIAN (MIDDLER-LOWER PART) SHETLAND GP.

COMMENTS

All samples produced rich and well preserved palynomorph assemblages. Reworked Jurassic elements are common throghout, mostly from the Heather Fm., but also from the Drake.

The 2000m sample is charcterised by common/abundant Areoligera gippingensis together with common Alisocysta margarita and rare Palaeoperidinium pyrophorum.
The sample is thought to be derived from the basal Heimdal Fm. or equivalent, based on the acme in A.gippingensis.

The 2025m sample is characterised by abundant Glaphyrocysta oligacantha (int.name) and common Alisocysta margarita. A.gippingensis shows a decrease. This assemblage is usually characteristic of beds transitional between the base of the Heimdal Fm. and the Lista shale unit below. The presence of rare Palaeocystodinium bulliforme and Cerodinium striatum indicates that the sample is from the Lista unit.

We propose a stratigraphic break between samples 2025 and 2050m, though the sampling space leaves some uncertainty.
We have not seen any sign of the Isabelidinium viborgense zone or the Late

Paleocene zone below this. This indicates that the major part of the Ty/Våle is eroded or not deposited.

The 2050m sample is characterised by Alisocysta reticulata, which is a key fossil to the upper part of the Early Paleocene. This sample may represent a thin lower part of the Våle/Ty Fms.

Again the sample spcing leaves some uncertainty, but there are no signs of the middle and lower parts of the Early Paleocene, and we indicate a hiatus between samples 2050 and 2075m

The 2075 and 2100m samples are similar and they are characterised by common Palynodinium grallator, a key fossil to the uppermost Late Maastrichtian. The presence of Triblastula utinensis at 2138m demostrates a deeper penetration into the Late Maastrichtian.

3 wet samples were analysed from; 4550, 4670 and 4710m.

The cuttings samples were prepared for palynology. The results cannot be used, since there is no control with the relatively large intervals between the samples. All samples are infected by obviously caved fossils, from the Late Cretaceous. Observations from older strata may be caved as well.

4.3.2 Table of lithostratigraphy

See table, 4.1 Geological Setting and Results.

4.4 Lithostratigraphic description

NORDLAND GROUP 164 (SB) - 997 m MD RKB (164 – 983 m TVD RKB)

The Quaternary sediments are interpreted as clays with occasional layers of sand. The clay is soft, silty and sandy. The sand is poor to well sorted, loose and contains silt and clay. Boulders might be present in the upper part of the Quaternary sequence. The boundary between Quaternary and Tertiary is recognized as an erosive horizon over large areas. The Nordland Group consists predominantly of clays with occasional beds of sand. The clay is light to medium grey, soft and sticky, moderately calcareous, becoming non to slightly calcareous in the deeper parts.

The sands are generally loose quartz grains, clear to translucent, very fine to coarse grained, predominantly fine to very fine, subangular to subrounded and poor to well sorted. Traces of lignite, shell fragments, glauconite and pyrite are found throughout the whole section.

In the lowermost 115 m of the Nordland Group, the Utsira Formation, comprises predominantly fine to medium grained sand with beds of medium to pale grey, soft and slightly calcareous claystone.

HORDALAND GROUP 997 m - 1817 m MD RKB (983 – 1776 m TVD RKB)

The Hordaland Group comprises an upper pale grey claystone, with minor sandstone layers, a middle section dominated by thick sandstones with beds of claystones and a lower brownish grey to greenish grey claystone, with beds of sandstone and limestones/dolomites. The claystone in the upper part is generally soft and sticky, slightly to moderately calcareous, sandy and/or silty in places, with common occurrence of fossil fragments and glauconite. Traces of pyrite with associated shell fragments are also seen. The lower section claystone is greenish grey to brownish grey, soft to firm, blocky, slightly to very micromicaceous, and with occasional glauconite. Traces of pyrite are seen throughout the section.
The sand/sandstone is mostly clear quartz, fine to medium grained, occasionally coarse, subangular to rounded, loose, moderately to poorly sorted.

In the lowermost part of the Hordaland Group a few distinct layers of limestone/dolomite are seen; cream colored, buff, firm to hard, variably microcrystalline to sucrosic.

ROGALAND GROUP 1817 m - 2049 m MD RKB (1776 – 1985 m TVD RKB)

The Rogaland Group is 209 metres thick. The group includes the Balder and Lista Formations.
Prior to drilling the well Ty sandstones were expected, but a hiatus was encountered as the well was drilled.

Balder Formation 1817 m - 1891 m MD RKB (1776 – 1845 m TVD RKB)

The Balder Formation consists of tuffaceous claystones with stringers of tuff and speaks of limestone.
The claystones are light grey to greenish grey, brownish grey, soft to firm, occasionally sticky, occasionally blocky, slightly silty, non to slightly calcareous and occasionally micromicaceous. The tuff is bluish grey, soft, non to slightly calcareous and black mottled.
Occasional streaks of limestone as well as traces of sandstones are also expected.
The limestone speaks appear as white to buff, firm to moderate hard and slightly argillaceous.
The traces of sandstone consist of clear quartz, fine to coarse, loose and subrounded.

Lista Formation 1891 m - 2049 m MD RKB (1845 – 1985 m TVD RKB)

The Lista Formation is composed of a claystone with some stringers of limestone. Traces of sandstone are seen in the section. The claystone is light grey to brownish grey, firm, blocky, occasionally slightly subfissile, non calcareous and micromicaceous.
The limestones are tan to light yellow white, light brown, firm to moderate hard and slightly argillaceous.
Traces of sandstone, especially seen in the lower part of the formation, consisting of clear quartz, medium to very coarse, loose, subangular to subrounded, occasionally rounded.

There are traces of pyrite in the formation.

SHETLAND GROUP 2049 m – 3162.5 m MD RKB (1985 – 2625 m TVD RKB)

The lithology of the Shetland Group includes claystones, with frequent stringers of limestones or dolomitic limestone and occasionally layers of marl.
The claystones are medium grey, occasionally bluish grey, soft to firm, blocky, occasionally subfissile, micromicaceous, non to very calcareous and occasionally slightly silty and pyritic.
The marl is abundant in large parts of the group. It is greyish white, soft and occasionally silty.
The limestones and dolomitic limestones are light brown to tan, firm to moderate hard, slightly argillaceous, occasionally crystalline, also greyish white to light brown, moderate hard and crystalline.

CROMER KNOLL GROUP 3162.5 m – 3175 m MD RKB (2625 – 2630 m TVD RKB)

The Cromer Knoll Group is an interbedding of limestone and marl.
The limestone is white and light grey, hd microcrystalline, argillaceous and laminated.
The marl is either dark grey, greenish grey or red brown, firm and subfissile.

JURASSIC 3175 m - 4950 m MD RKB (2630 – 3286 m TVD RKB)

VIKING GROUP 3175 m - 3204 m MD RKB (2630 – 2639 m TVD RKB)

Heather Formation 3175 m - 3204 m MD RKB (2630 – 2639 m TVD RKB)

The Heather Formation consists of claystone with stringers of limestone/dolomite.
The claystone is dark to light grey, firm, microcalcareous and non calcareous.
Occasionally the claystone is silty. The limestone is light grey to yellow brown, firm to hard, microcrystalline in parts.

BRENT GROUP 3204 m - 3345 m MD RKB (2639 – 2685 m TVD RKB)

The Brent Group is represented by the Ness-, Etive- and Rannoch Formations, while the top of the Group is eroded. Totally the Group is 46 m in TVD thick.

Ness Formation 3204 m - 3303 m MD RKB (2685 – 2671 m TVD RKB)

The lithology of the Ness Formation is characterised by interbedded sandstones, claystones, siltstones and layers of coal.
The sandstones are generally described as clear quartz, fine to coarse grained, moderately to well sorted, loose, subrounded to rounded, changing to mostly medium, occasionally fine to coarse, subangular to subrounded, non calcareous, occasionally brown coating on quartz

grains, slightly micaceous and carbonaceous. The porosity is good. In the lower parts the sandstone becomes more angular and poor sorted.
The claystones/shales are varicoloured, light brown, light greenish blue, light grey, soft, silty, micromicaceous and non to slightly calcareous.
Occasionally buff to tan, soft to firm, cryptocrystalline to crystalline limestones are seen.
The section has frequent occurrences of black, brittle and hard coal stringers of varying thickness.
Pyrite is seen throughout the formation.

Etive Formation **3303 m - 3326 m MD RKB (2671 – 2679 m TVD RKB)**

Is dominated by sandstone, with rare, thin layers of claystone.
The sandstone comprises loose quartz grains, which are clear to translucent, light grey, predominantly fine to medium, occasionally coarse, subangular to subrounded, moderately sorted, and micaceous.
The claystone is medium dark grey to greyish black, firm to hard, blocky to subblocky, grading into siltstone. Trace of pyrite, glauconite and calcite are seen.

Rannoch Formation **3326 m - 3345 m MD RKB (2679 – 2685 m TVD RKB)**

Is dominated by sandstone, interbedded by claystone in the middle and lower part of the unit and with traces of coal.
The sandstone comprises clear to translucent and light grey quartz grains, predominantly fine to medium, occasionally very fine and coarse, subangular to subrounded, moderately sorted, calcit cemented and micaceous.
The claystone is medium dark grey to greyish black, firm to hard, blocky to subblocky, grading into siltstone, trace of pyrite, glauconite and calcite.

DUNLIN GROUP **3345 m – 3877.5 m MD RKB (2685 – 2870 m TVD RKB)**

Drake Formation **3345 m - 3434 m MD RKB (2685 – 2713 m TVD RKB)**

The Drake Formation is showing a shale in the upper part and a claystone in the lower part of the formation.
The shale is dark grey, firm to moderately hard, subfissile, slightly silty and non to slightly calcareous.
The claystone dark grey, firm to moderately hard, subfissile, slightly silty and slightly calcareous

Cook Formation **3434 m - 3544 m MD RKB (2713 – 2751 m TVD RKB)**

The well path penetrates a fault in the Cook Formation. The Cook Formation on the backside of the fault is upthrown, and thus the well path penetrates only 110 m MD of the Cook Formation.

The Cook Formation is composed of sandstones and Claystones/shales. The sandstones consist of clear quartz, fine to very fine, occasionally coarse to medium, subangular to subrounded, well sorted and calcite cemented. There is abundant pyrite, mica and occasional limestone stringers. The sandstone is dominantly loose.
The formation can divided into three different parts. The lowermost part, Cook-1, is a silty/sandy dark brown gray shale with some lenses of limestone. Cook-2 is a dark yellow gray, very fine to fine bioturbated sandstone. Cook-3, on the top, consists of coarser and more clean sandstone.

Burton/Amundsen Formation 3544 m - 3877.5 m MD RKB (2751 – 2870 m TVD RKB)

The Burton Formation is a light to medium grey claystone/shale, occasionally silty and a total thickness of 29 m TVD.

The Amundsen Formation consists of a firm, medium to dark grey shale with sporadic occurance of limestone stringers/nodules. Occurrence of sand is strongly variable but is increasing towards the bottom.

STATFJORD FORMATION 3877.5 m - 4375 m MD RKB (2870 – 3105 m TVD RKB)

The Statfjord Formation is dominated by thicker sandstone units, interbedded with units consisting of alternating thin sandstone, shale and silty shale. Thin streaks of coal and limestone are also observed in the Statfjord Formation.
The sandstones consist of clear quartz, very fine to medium, occasionally coarse, poor to fairly sorted, loose, non calcareous, angular to subrounded and occasionally micaceous.
The shales are dark to medium grey and red, moderate hard, micromicaceous, slightly carbonaceous, non calcareous and silty.
The limestone streaks are white to buff, occasionally tan, moderate hard and occasionally slightly argillaceous.
There are traces of pyrite and mica.

Nansen Member 3877.5 m - 3946 m MD RKB (2870 – 2898 m TVD RKB)

The Nansen Member is dominating sandy, medium to coarse grained, occasionally grading to gravel/conglomerate. Thin layers of shale and coal occur.

Eiriksson Member 3946 m - 4214 m MD RKB (2898 – 3029 m TVD RKB)

Lithology is principally as the Nansen Member but is more shaly towards the base. The sandstone is also becoming more immature with increasing amount of feldspar.

Raude Member 4214 m - 4375 m MD RKB (3029 – 3105 m TVD RKB)

Lithology principally as the members above, but the sand layers become thinner.
The transition to the Raude Member is characterized by occurrence of red shale.

TRIASSIC **4375 m - 4950 m MD RKB (3105 – 3286 m TVD RKB)**

HEGRE GROUP **4375 m - 4950 m MD RKB (3105 – 3286 m TVD RKB)**

Lunde Formation **4375 m - 4950 m MD RKB (3105 – 3286 m TVD RKB)**

The description of the Lunde Formation is mainly as for the Raude Member, but the sandlayers are often thinner and rich in caolinite. The shales are dominantly red, but may variate from green to gray. The formation is in general firmer than the Raude Member and the upper parts of the Statfjord Formation. No coal layers are observed in the Lunde Formation.

VIKING GROUP **4950 m - 5360 m MD RKB (3286 – 3281 m TVD RKB)**

Heather Formation **4950 m - 5360 m MD RKB (3286 – 3281 m TVD RKB)**

The Heather Formation consists of claystone with stringers of limestone/dolomite.
The claystone is dark to light grey, firm, microcalcareous and non calcareous.
Occasionally the claystone is silty. The limestone is light grey to yellow brown, firm to hard, microcrystalline in parts.

Draupne Formation **5360 m - 5685 m MD RKB (3281 – 3228 m TVD RKB)**

The Draupne Formation is dominantly represented by claystone/shale and addtionally by two layers of an intra Drupne Formation sandstones.
The shale is very dark brownish grey to very dark brownish black, firm, subfissile to fissile, occasionally slightly calcareous in lower parts of the unit, occasionally very carbonaceous and grading into coal, micromicaceous and micropyritic.
The claystone is very light grey to light grey, crumbly to sticky, occasionally slightly swelling, argillaceous in parts, very calcareous and grading into limestone.
The sandstone is light grey to off white, friable, very fine to fine, subangular to subrounded, silty matrix, occasionally calcareous and abundant mica.
The Limestone is light grey, hard, blocky, slightly argillaceous.

CROMER KNOLL GROUP **5685 m – 5725 m MD RKB (3228 – 3220 m TVD RKB)**

The Cromer Knoll Group is an interbedding of limestone and marl.
The limestone is white and light grey, hd microcrystalline, argillaceous and laminated.
The marl is either dark grey, greenish grey or red brown, firm and subfissile.

TD **5725 m MD RKB (3220 m TVD RKB)**

4.5 Hydrocarbon indications

Gas:

Bitrun #1: 2141mMD/2063mTVD - 2265mMD/2170mTVD **BG: 0.01 - 0.1%**
Bitrun #2: 2265mMD/2170mTVD - 4490mMD/3162mTVD **BG: 0.01 - 0.5%**
Bitrun #3: 4490mMD/3162mTVD - 4553mMD/3194mTVD **BG: 0.05 - 0.1%**
Bitrun #4: 4553mMD/3194mTVD - 4718mMD/3258mTVD **BG: 0.03 - 0.4%**
Bitrun #5: 4718mMD/3258mTVD - 4739mMD/3263mTVD **BG: 0.06 - 0.1%**
Bitrun #6: 4739mMD/3263mTVD - 5503mMD/3263mTVD **BG: 0.06 - 0.1%**
Bitrun #7: 5503mMD/3263mTVD - 5594mMD/3246mTVD **BG: 0.10 - 0.35%**
Bitrun #8: 5594mMD/3246mTVD - 5655mMD/3234mTVD **BG: 0.05 - 0.25%**
Bitrun #9: 5655mMD/3234mTVD - 5725mMD/3218mTVD **BG: 0.10 - 0.15%**

DEPTH (MD)	DEPTH (TVD)	%	BG	C1	C2	C3	IC4	NC4	TYPE
3248.0	2653.5	1.7	0.25	10879	703	334	0	0	FG
3892.0	2875.4	2.4	0.3	12676	1732	1046	0	0	FG
4250.0	3046.3	0.9	0.06	8460	955	288	0	0	FG
4553.0	3194.3	0.4	0.03	3125	0	0	0	0	TG
4567.0	3211.2	0.2	0.06	1212	0	0	0	0	FG
4686.0	3249.7	0.3	0.06	1223	0	0	0	0	FG
4864.0	3284.4	0.4	0.06	2360	0	0	0	0	FG

Shows:
The logs indicate HC in the Upper Statfjord Formation.

The logs showed high resistivity and good porosity in top Statfjord Formation. Pressure points indicate good permeability as well. The pressure points in the Upper Statfjord were tested in very short-TVD intervals and indicate that the Upper Statfjord is hosting an oil zone with a density of approx. 0.05 bar/m.

4.6 Data acquisition

4.6.1 Cuttings and mud samples

One set of bulk sample (5 litre bucket) and one set of washed and dried sample (100g) were collected at each interval. Samples are taken at 10m intervals from 30” casing and down to 1950m RKB and between 2150 – 2450m RKB. Sampling intervals were every 3m between 1950 – 2150m RKB and from 2450m RKB down to TD.
One mud sample (1 litre in tin cans) are collected from the active pits every 100m from 1750m RKB and down to TD.

4.6.2 Conventional coring

No cores have been collected.

4.6.3 MWD/LWD

A 9 5/8" pilot hole will be drilled to the 20" shoe depth. This was logged with GR/RES/SONIC.

MWD incorporating GR, Resistivity, directional services and a pressure sub was run from 20" casing to TD

4.6.4 Wireline logging

8 ½" section	Depth m MD RKB	Contractor	Comments
PEX/AIT-H/MDT	3133-4476	Schlumberger	Ok

4.6.5 Data quality

The quality of data was good. There are no indications of poor data that might influence calculations or conclusions.

4.7 Formation pressure

The pressure prognosis was mainly based on information from exploration well 34/10-38S and the wells drilled from the Gullveig template, 34/10-K-2H and -K-4H. Experiences from well 34/10-37 and the Rimfaks wells drilled from the H-, I- and J-templates are also taken into consideration.

The development of the pore pressure can be summarized as follow:

The pore pressure is expected to be hydrostatic down to early Eocene at approximately 1610 m TVD RKB where this is equal 1.02 g/cm^3 EMW.

The pressure buildup starts where the sand content of the Hordaland Group decreases, at the same time as presence of limestone and calcite cemented zones increase. The pore pressure increases rapidly through the rest of the Hordaland Group and the Rogaland Group. At the top of the Balder Formation the pore pressure gradient is equal to 1.14 g/cm^3 EMW and 1.18 g/cm^3 EMW at top of the Lista Formation.

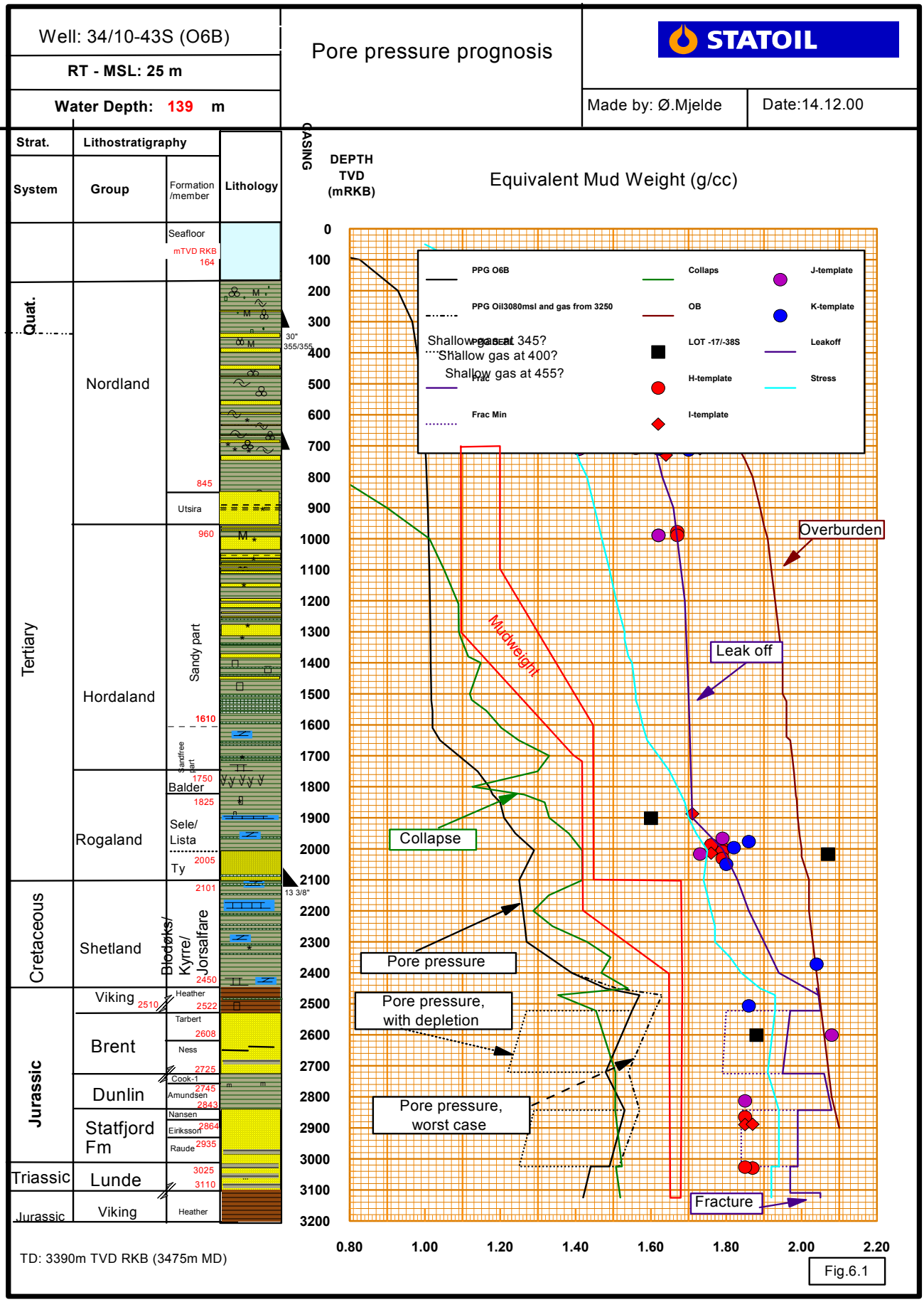
Through the upper parts of the Shetland Group the pressure/depth ratio is nearly constant, but it increases strongly from approx. 2300 m TVD down to close base Heather Formation where pore pressure reach a pressure equal to 1.57 g/cm^3 EMW.
The reservoir pore pressures came close to prognosis. According to the MDT-pressure points the Cook- and Statfjord Formations showed initial pressures (equals 1.47 til 1,42 g/cm^3 EMW), while the Brent Group was minorly depleted from 14,5 bar at top to 33,4 bar at base (equals 1,43-1,34 g/cm^3).

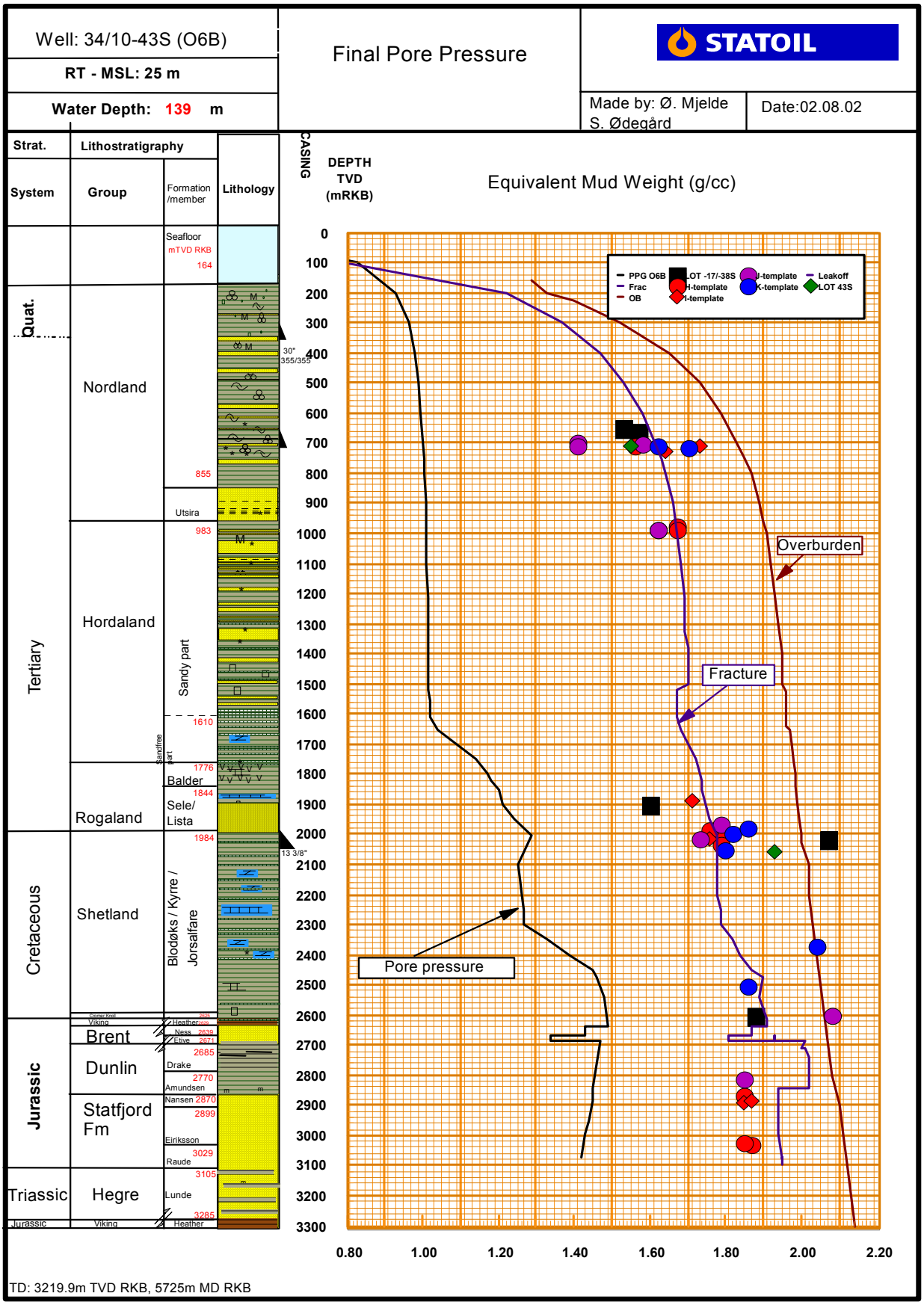
The development of the pore pressure in EMW is showed in figure - *Pore Pressure Prognosis and Final Pore Pressure.*

Overburden gradient

Since non of the wells drilled from the Gullveig and Rimfaks templates have been logged in the top section, the overburden gradient used is based on older exploration wells and is the same as given for the Gullveig Field in the main drilling program for the Gullfaks Satellittes.

This is mainly based on well 34/10-38S and the wells drilled from the Gullveig template, 34/10-K-2H -K-4H, but also experiences from well 34/10-37 and the Rimfaks wells drilled from the H-, I- and J-templates.


Well: 34/10-43S (O6B)
RT - MSL: 25 m
Water Depth: 139 m
Pore pressure prognosis
STATOIL
Made by: Ø.Mjelde
Date:14.12.00
Strat.
Lithostratigraphy
System
Group
Formation /member
Lithology
CASING
DEPTH TVD (mRKB)
Equivalent Mud Weight (g/cc)
Seafloor
mTVD RKB 164
Quat.
Nordland
30" 355/355
845
Utsira
960
Tertiary
Hordaland
Sandy part
1610
Sandfree part
1750
Balder
1825
Rogaland
Sele/ Lista
Ty
2005
2101
Cretaceous
Shetland
Blodøks/ Kyrre/ Jorsalfare
13 3/8"
2450
Viking
2510
Heather
2522
Tarbert
2608
Brent
Ness
2725
Cook-1
2745
Dunlin
Amundsen
2843
Nansen
Statfjord Fm
Eiriksson
2864
Raude
2935
Jurassic
Triassic
Lunde
3025
3110
Jurassic
Viking
Heather
PPG O6B
PPG Oil3080msl and gas from 3250
Shallow gas at 345?
Shallow gas at 400?
Shallow gas at 455?
Frac
Frac Min
Collaps
OB
LOT -17/-38S
H-template
I-template
J-template
K-template
Leakoff
Stress
Overburden
Mudweight
Leak off
Collapse
Pore pressure
Pore pressure, with depletion
Pore pressure, worst case
Fracture
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
0.80
1.00
1.20
1.40
1.60
1.80
2.00
2.20
TD: 3390m TVD RKB (3475m MD)
Fig.6.1


Well: 34/10-43S (O6B)
RT - MSL: 25 m
Water Depth: 139 m
Final Pore Pressure
STATOIL
Made by: Ø. Mjelde
S. Ødegård
Date:02.08.02
Strat.
Lithostratigraphy
System
Group
Formation /member
Lithology
CASING
DEPTH TVD (mRKB)
Equivalent Mud Weight (g/cc)
Seafloor
mTVD RKB
164
Quat.
Nordland
30" 355/355
855
Utsira
983
Hordaland
Sandy part
1610
Sandfree part
1776
Balder
1844
Sele/ Lista
Rogaland
Tertiary
1984
13 3/8"
Shetland
Blodøks / Kyrre / Jorsalfare
Cretaceous
Heather
Ness 2639
Etive 2671
Brent
2685
Drake
Dunlin
2770
Amundsen
Nansen 2870
2899
Statfjord Fm
Eiriksson
3029
Raude
Jurassic
3105
Triassic
Hegre
Lunde
3285
Jurassic
Viking
Heather
PPG O6B
Frac
OB
LOT -17/-38S
H-template
I-template
J-template
K-template
Leakoff
LOT 43S
Overburden
Fracture
Pore pressure
0
100
200
300
400
500
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
2900
3000
3100
3200
3300
0.80
1.00
1.20
1.40
1.60
1.80
2.00
2.20
TD: 3219.9m TVD RKB, 5725m MD RKB

Formation pressure - MDT on TLC

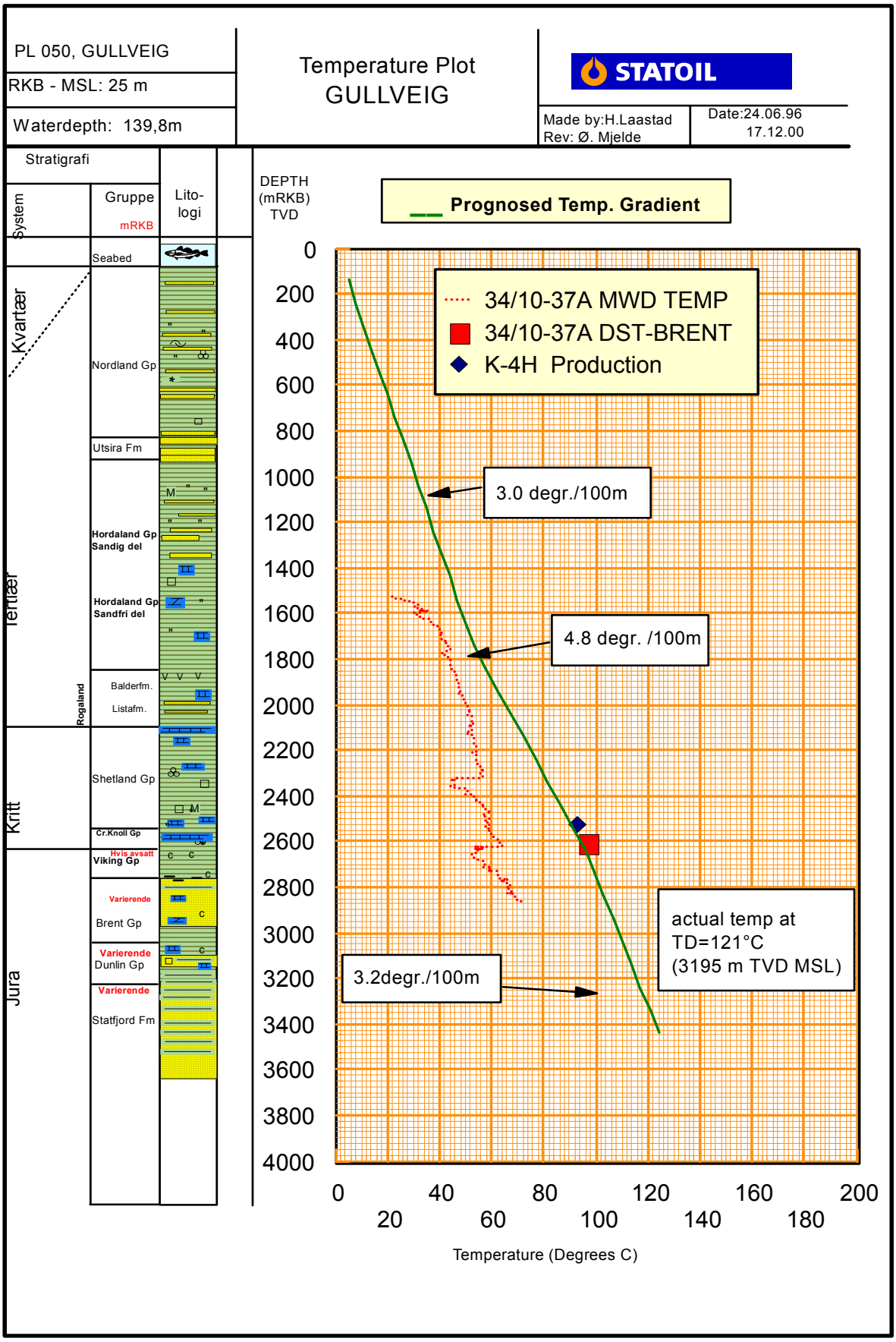
FORMASJONSTRYKK BRØNN: 34/10-43S					KJØRING: 1A			DATO: 16.03 - 17.03.01				
TST #	SONE NAVN	DYBDE mMD BD	DYBDE mTVD	INIT. RES. TRYKK (BAR)	MÅLT RES. TRYKK (BAR)	TRYKK AVL. (BAR)	PORE TRYKK ref. BD	BRØNN TRYKK (BAR)HP /after	TRYKK MÅLER schlum. file no.	KRFT md-CP	TEMP ºC	KOMMENT
1.	Brent/Ness	3206	2614.9	385,34	-	10,97	1,44	433	BQP1	-	-	lost seal
2.	Ness	3208	2615.5	385,40	370,94	14,46	1,43	433,2	"	725	-	ok
3.	Ness	3206	2614.9	385,34	370,88	14,46	1,43	433	"	565	-	ok
4.	C-3	3453,5	2693.8	393,46	393,13	0	1,47	445,2	"	1.7	-	ok
5.	Amundsen	3628	2755.3	399,79	-	-	-	455,1	"	-	-	dry test
6.	Amundsen	3651	2763.2	400,61	-	-	-	456.1	"	-	-	dry test
7.	Na-1B	3880	2845.7	409,10	409,48	0	1,45	469.3	"	2976	-	ok
8.	Na-1B	3881	2846.1	409,15	409,46	0	1,45	469.2	"	468	-	ok
9.	Na-1B	3882	2846.5	409,19	409,48	0	1,45	469.2	"	8800	-	ok
10.	Na-1B	3880	2845.7	409,10	409,63	0	1,45	468.9	"	687	-	ok
11.	Na-1B	3883,8	2847.2	409,26	409,54	0	1,45	469.0	"	1352	-	ok
12.	Na-1B	3890	2849.7	409,52	409,78	0	1,45	469.5	"	230	-	ok
13.	Na-1A	3907	2856.7	410,24	410,41	0	1,45	470.6	"	103	-	ok
14.	Ei-2B	3976,7	2887.4	413,45	413,56	0	1,45	475.9	"	2145	-	ok
15.	Ei-1B	4107	2953.2	420,18	420,04	0	1,44	486.9	"	23	-	ok
16.	Ei-1A	4194	2994.8	424,46	424,20	0	1,43	494.0	"	91	-	ok
17.	Ra-1A	4369	3077.4	432,98	-	-	-	508.8	"	-	-	dry test
18.	Ra-1A	4365	3075.6	432,79	433,23	0	1,42	508.2	"	0.51	-	ok
19.	Lunde	4399	3091.7	434,45	-	0	-	511.1	BQP1	-	-	dry test
20.	Lunde	4404	3093.7	434,66	-	0	-	511.6	"	-	-	dry test
21.	Lunde	4457	3095.5	437,40	-	0	-	516.7	"	-	-	dry test
22.	Ness	3308	2648.0	-	-	-	-	433.1	"	408	-	ok
23.	Ness	3320	2651.8	-	-	-	-	433.9	"	185	-	ok
24.	Ness	3282	2639.5	-	-	-	-	431.8	"	38	-	ok
25.												
Antall tester: 24 nivåer					Vellykkete tester: 17 nivåer						Antall væskeprøver: 0	
Hydrostatisk gradient til overflaten : x.xx g/cm^3												
Hydrostatisk gradient i loggeintervallet : x.xx g/cm^3												
Maks. poretrykksgradient i intervallet ref . BD : x.xx g/cm^3												
Min. poretrykksgradient i intervallet ref. BD : x.xx g/cm^3												
KOMMENTARER :												

MDT pressures show initial pressure in Cook- and the Statfjord Formations, which are ranging from 1.47 to 1,42 g/cm^3 ESV. The Brent Group showed pressure depletion from 14.5 bar at top and 33.4 bar at base. This is analogue in EVS 1,43-1,34 g/cm^3.

4.8 Reservoir fluid sampling

No fluid samples were collected.

4.9 Formation temperature



The formation temprature at TD was revealed from a ratio between some measured mud temprature values and their respective circulation time. These ratios were plotted in a Horner diagram. The generated linear was extended towards the cross point on the Y-axis, which is giving the formation temprature.

The formation temprature at TD is 121°C, which is close to the prognosed formation temprature at TD (see figure above).

5 Drilling operations report

5.1 Rig move and anchor handling

Transocean Wildcat was moved from I template to 34/10-43S in 8 hours including 2,5 hours WOW. Anchor handling and ballasting rig was done in 11 ½ hours without any problems.

5.1.1 Experiences / recommendations

The previous well was 34/10-I3H. To rough weather to perform anchor handling for 2 ½ hours.

5.2 Comparison final / original well design

The planed TD of the well was at 4505 m MD, 2565 mTVD with an inclitation of 66,45 degrees and azimut of 90,75 degrees. After logging the reservoir section it was decided to extend the well to penetrate prognosed Munin sand. The well was drilled to 5725 m MD with TD in the Cromer Knoll Group, building the angle to 101 degrees and turning the azimut to approximately 84 degrees.

5.3 Drilling top hole section

5.3.1 Summary

The well was classified as class 0, no shallow gas. However, since the area where the well was drilled is known to have shallow gas, a 9 7/8" pilot hole was drilled to 710 m MD. The pilot hole was drilled with seawater and sviped with hi-vis pills and displaced to 1,40 sg WBM while pulling out of hole.
CDR and velocity tool was situated close to the bit. The CDR showed no response of shallow gas. A 45 min flowcheck at 380 m MD revealed no shallow gas indications. The conclusion concerning shallow gas was therefore negative.
A 36" hole opener assembly with a 17 ½" bit and a 26"x36" hole opener was used to drill the 36" section to 226 m. The hole was drilled with an average ROP of 9,3 m/hr. Seawater was used as drilling fluid and the hole was wiped with hi-vis pill and displaced to 1,40 sg WBM before POOH.
30" X-52 casing with ST 2 coupling was run to 223 mMD and cemented with 16,1 m3 1,56 sg lead slurry followed by 15,5 m3 1,92 sg tail slurry. Stick up off 30" casing above seabed, 3,15 m. Angle according to bulls eye 0,5 degrees.

5.3.2 Experiences / recommendations

No problems related to boulders etc, was detected while drilling.

5.4 Drilling intermediate sections

5.4.1 Summary

The 26" section was drilled to a depth of 716 mMD, building inclitation to 13 degrees and azimut 90 degrees. The section was drilled with an average ROP or 38,7 m/hr. Seawater was used as drilling fluid, spotting hi-vis pills while drilling. The hole was displaced with 1,20 sg prior to POOH. Boulders was experienced while drilling from 234 m to 236 m.
20" N-80 with Big Omega coupling was run to 709 m and cemented with 95 m3 1,56 sg lead slurry followed by 32 m3 1,92 sg tail slurry. Casing was tested to 90 bar / 10 min.
BOP and riser was run and tested before drilling 17 ½" section.
17 ½" section was drilled to a depth of 2138 mMD, building angle to 32,4 degrees and azimut 90 degrees. The section was drilled with average ROP of 33,1 m/hr.
LOT to 1,55 sg EMW was performed at 721 m. MW of the section started with 1,10 sg WBM, building to 1,45 sg at the end of section.
13 3/8" Q-125 with New Wam coupling was run to 2128 m and cemented with 61,8 m3 1,90 sg slurry. Casing tested to 320 bar / 10 min.

5.4.2 Experiences / recommendations

Drilling with 1,45 sg MW at this angle seems to keep the Balder formation in good shape.
Experienced 25 ton overpull in the Balder formation while POOH.

5.5 Drilling reservoir section

5.5.1 Summary

Due to the fact that this well was an exploration well the 12 ¼" section was only run to drill out shoe track, rat hole and 3 m new formation. FIT was performed to 1,95 sg EMW.
8 ½" section was first drilled to a depth of 4490 mMD , building angle to 59,4 degrees and azimut to 92 degrees. This part of the section was drilled with average ROP of 24,4 m/hr. The well was displaced from 1,45 sg WBM to 1,62 sg OBM prior to start drilling the 8 ½" section. The section had two bitrun due to error on Geopilot.
POOH and performed logging, PEX/AIT-H/MDT on TLC.
Ran in with new 8 ½" BHA to 3200 m. Hole packed off, lost circulation. Re-established circulation and reamed down to 3312 m. RIH to 3369 m, took weight. Reamed down to 3398 m, took weight. Circulated and back reamed to 3372 m . Reamed down and took weight. Hole packed off. Established circulation and reamed down to 3400 m. RIH to 4260 m, took weight. Reamed down to 4430 m. Back reamed to 4418 m, pipe stuck and hole packed off. Established circulation, worked jar and came free. Increased circulation to 2000 LPM, and built MW to 1,70 sg. Reamed down to 4490 m.

Drilled 8 ½" section to 4553 m. Error on Geopilot. Average ROP 11,1 m/hr. POOH, hole in good condition.
RIH with new 8 ½" BHA, took weight at 4305 m. Reamed down to 4313 m. RIH to 4543 m.
Drilled 8 ½" section to 4718 m. Average ROP 5,5 m/hr. POOH due to low penetration rate. Hole in good condition.
RIH with new 8 ½" bit to 4686 m, took weight. Washed/reamed down to 4718 m.
Drilled 8 ½" section to 4739 m. Average ROP 1,9 m/hr. POOH due to low penetration rate. Hole in good condition.
RIH with new 8 ½" bit and Geopilot, hole in good condition.
Drilled 8 ½" section to 5503 m. Lost comunication with Geopilot at 5445 m. Average ROP 13,9 m/hr. POOH due to low penetration rate. Tight hole from 5020 m to 4950 m.
RIH with 8 ½" BHA. Took weight at 4890 m, pack off tendency. Washed down to 4945 m. Took weight, hole packed off. Came free, reamed down to 5040 m. RIH to 5450 m. Washed down to 5460 m. Reamed down to 5503 m.
Drilled 8 ½" section to 5594 m. Average ROP 7,5 m/hr. POOH due to low penetration rate, hole in good condition.
MU new bit and slick assembly and RIH to 5594 m, tight spot several places.
Drilled 8 ½" section to 5655 m. Average ROP 4,1 m/hr. POOH due to low penetration rate, hole in good condition.
MU new bit and RIH to 5598 m, tight spots. Reamed down to 5655 m.
Drilled 8 ½" section to TD at 5725 m. Average ROP 14,0 m/hr
Angle at TD 5725 m, inclination 101 degrees, azimut 82 degrees.
No casing/liner was run. The reservoir section was plugged back, see P&A summery.

5.5.2 Experiences / recommendations

The Late Triassic Lunde Formation was very difficult to drill. After having penetrated a major fault the ROP increased when drilling Late Jurassic formations.
Increasing MW from 1,62 sg mud to 1,70 sg mud improved the hole stability.
Geopilot failed, most likely due to jarring and reaming/back reaming.

5.6 P&A

5.6.1 Summary

The reservoir section was plugged back by six cement plugs. Started at the bottom of the section and all the way up to 1983 m, pumping a total off 71 m3 1,90 sg cement slurry. Cement plug was verified by running 12 ¼" clean up assembly to top of cement at 1983 m and set down 10 ton weight. The cement plug was tested by pumping up well to 110 bar for 10 min.
13 3/8" casing was cutted at 550 m and pulled to surface. Cement plugs was set from 600 m to 450 m and tested by pumping up well to 70 bar / 10 min. Another cement plug was set from 450 m to 180 m.
Cut 20" x 30" casing at 169 m and pulled to surface. Performed seabed inspection with ROV.

5.6.2 Experiences / recommendations

Pumping cement pills at a volum between 9 m3 to 15 m3 gave a very good result while cementing the reservoir section.
Cutting both 20" and 30" casing at the same time caused that 18 ¾" wellhead realesed unintentionally.

6 Appendices

App A Operational listing

From DBR.

Operations

Wellbore: 0034/10-043S

					---- Status ----		
Time from	**Time to**	**Time used**	**Depth mMD**	**Act code**	**During opr**	**End of opr**	**Description of activities**
22.02.2001.09:00	13:00	4,0		MNRU	OK		RIG ON TOW TO WELL 34/10-43S.
22.02.2001.13:00	15:30	2,5		MNWW	OK		WOW TO DEBALLAST RIG.
22.02.2001.15:30	19:30	4,0		MNBU	OK		MOVED RIG TO FINAL LOCATION WHILE DEBALLASTING RIG.
22.02.2001.19:30	00:00	4,5		MARU	OK		ANCHOR NO 5 ON BOTTOM AT 22:13 HRS. ANCHOR NO 1 ON BOTTOM AT 23:24 HRS.
23.02.2001.00:00	03:00	3,0		MARU	OK		ANCHOR NO 4 ON BOTTOM AT 00:07 HRS. ANCHOR NO 8 ON BOTTOM AT 00:31 HRS. ANCHOR NO 2 ON BOTTOM AT 00:59 HRS.ANCHOR NO 3 ON BOTTOM AT 01:21 HRS. ANCHOR NO 7 ON BOTTOM AT 01:47 HRS. ANCHOR NO 6 ON BOTTOM AT 02:30 HRS.
23.02.2001.03:00	06:00	3,0		NMBU	OK		BALLASTING RIG.
23.02.2001.06:00	07:00	1,0		MNBU	OK		BALLASTED RIG TO SURVIVAL DRAFT.
23.02.2001.07:00	09:00	2,0		DTPU	OK		PU 5 1/2" DP AND RACKED STANDS IN DERRICK.
23.02.2001.09:00	10:30	1,5		DERD	O FAIL		DISCOVERED WATER INTO PT - NO 17. INVESTIGATED PROBLEM. EMPTIED PT - NO 17 FOR WATER AND CHECKED FOR LEAKS. NO LEAKS.
23.02.2001.10:30	15:30	5,0		PTPU	OK		PU 5 1/2" DP AND 5 1/2" HWDP. RACKED STANDS IN DERRICK. BALLASTED RIG. RIG AT DRILLING DRAFT AT 11:30 HRS. MIXED 1,5 SG KILL MUD AND 1,4 SG MUD TO BE LEFT IN HOLE.
23.02.2001.15:30	20:30	5,0	150,0	DTDU	OK		MU AND RAN IN WITH 9 7/8" BHA TO 150 M. CONTINUED MIXING 1,4 SG MUD.
23.02.2001.20:30	23:30	3,0	150,0	MARU	OK		TENSIONED UP ANCHORS AND POSITIONED RIG. RESET ANCHOR NO 5 (PIGGY BACK) AND NO 6 AT 20:01 HRS. TENSIONED UP ANCHOR NO 5 AND 6. HELD SJA AND PRESPUD/SHALLOW GAS MEETING.
23.02.2001.23:30	00:00	0,5	164,0	DTDU	OK		TAGGED SEABED AT 164 M. ROV SET OUT AND POSITIONED INDICATOR BUOYS ON SEABED.
24.02.2001.00:00	06:00	6,0	379,0	DDRU	OK		DRILLED 9 7/8" PILOTHOLE FROM 164 M TO 379 M WITH 2000 - 2500 LPM, 25 - 42 BAR, 43 - 90 RPM, 2 - 7 TON WOB AND 1,1 - 2 KNM TORQUE. WASHED DOWN FIRST METER. DRILLED WITH REDUCED ROP FROM 335 M TO 355 M. NO INDICATION OF SHALLOW GAS.
24.02.2001.06:00	15:30	9,5	710,0	DDRU	OK		DRILLED 9 7/8" PILOT HOLE FROM 379 M TO 710 M WITH 2500 LPM, 50 - 59 BAR, 90 RPM, 1 - 10 TON AND 1 - 5 KNM TORQUE. FLOWCHECKED FOR 45 MINUTES AT 423 M DUE TO LWD LOG RESPONSE. NEGATIVE. PUMPED HIGHVIS PILLS TWICE PER STAND.
24.02.2001.15:30	16:00	0,5	710,0	DCAU	OK		PUMPED HIVIS PILL AND CIRCULATED BU WITH SEAWATER, 2500 LPM, 50 BAR, 90 RPM, FLOWCHECKED WELL BY ROV.
24.02.2001.16:00	20:00	4,0	300,0	DDOU	OK		PUMPED OUT OF HOLE WITH 3 M3 1,4 SG MUD PR STAND FROM 710 M TO 164 M. PULLED OUT AND LD 9 7/8" BHA.
24.02.2001.20:00	22:30	2,5		DTPU	OK		MU CEMENT STAND WITH PUMP IN SUB AND HOSE. PRESSURE TESTED AGAINST LOW TORQUE TO 200 BAR. RACKED SAME IN DERRICK. MU 30" RT TO DP STAND AND RACKED IN DERRICK.

24.02.2001.22:30	00:00	1,5		DTPU	OK	PU AND MU 36" HOLE OPENER ASSEMBLY.
25.02.2001.00:00	02:00	2,0	164,0	DTPU	OK	MU 17 1/2" BIT TO 26" X 36" HOLE OPENER ASSEMBLY AND RIH. TAGGED BOTTOM AT 164 M.
25.02.2001.02:00	06:00	4,0	183,0	DDRU	OK	SPUDDED WELL AND WASHED DOWN FIRST METERS. DRILLED 36" HOLE FROM 164 M TO 183 M (17 1/2" BIT AT 185 M) WITH 1000 - 3500 LPM, 1 - 45 BAR, 1 - 5 TON WOB, 50 - 110 RPM AND 3 - 8 KNM TORQUE.
25.02.2001.06:00	11:00	5,0	228,0	DDRU	OK	DRILLED 36" HOLE FROM 183 M TO 228 M (17 1/2" BIT AT 230 M) WITH 3600 LPM, 49 BAR, 110 RPM, 2 - 5 TON WOB AND 6 - 9 KNM TORQUE.
25.02.2001.11:00	13:30	2,5		DTCU	OK	PUMPED 20 M3 HIVIS, DISPLACED SAME WITH SEWATER AND DISPLACED HOLE TO 1,4 SG WBM WITH 3600 LPM/48 BAR/10 RPM. POOH WITH 26 X 36 " HOLE OPENER ASSEMBLY. LD HOLEOPENER ASSEMBLY AND BIT.
25.02.2001.13:30	14:00	0,5		CERU	OK	HELD PREJOBMEETING WITH RIG CREW AND RIGGED UP TO RUN 30" CONDUCTOR. PU SHOE JOINT AND CHECKED FLOAT FOR FLOW THROUGH WITH SEAWATER.
25.02.2001.14:00	17:00	3,0	150,0	CARU	OK	RAN 30" CONDUCTOR AND LANDED 30" HOUSING IN PGB ON CELLAR DECK. CONNECTED SAME. RELEASED AND RETRIVED RT. MU GLASSFIBER STINGER ON RT, STABBED INTO CONDUCTOR AND MU RT TO HOUSING. CONTINUED TO RUN 30" CONDUCTOR ON DP TO 150 M.
25.02.2001.17:00	19:30	2,5	223,0	CARU	OK	STABBED 30" CONDUCTOR INTO 36" HOLE. CLOSED VALVE ON RT WITH ROV. TOOK WEIGHT AT 214 M. CIRCULATED DOWN CONDUCTOR WITH 3500 LPM AND 14 BAR. LANDED 30" CONDUCTOR WITH SHOE AT 223 M. CHECKED STICK UP WITH ROV. STICK UP ABOVE SEABED - 3,1 M.
25.02.2001.19:30	21:00	1,5	223,0	CSSU	OK	TESTED CEMENT LINE TO 150 BAR. MIXED AND PUMPED 16,1 M3 1,56 SG LEAD SLURRY WITH 900 - 1000 LPM, 20 - 23 BAR AND 15,5 M3 1,95 SG TAIL SLURRY WITH 900 - 1050 LPM, 30 - 38 BAR. DISPLACED CEMENT WITH 6,6 M3 SEAWATER, 950 LPM /15 BAR. CHECKED STICK UP OF 30" CONDUCTOR (3,15 M) AND BULLS EYE (0,50 DEG) WITH ROV AFTER CEMENT JOB.
25.02.2001.21:00	00:00	3,0	223,0	CSOU	OK	HELD 30" CONDUCTOR WHILE WAITING FOR CEMENT TO SET UP.
26.02.2001.00:00	06:00	6,0	223,0	CSOU	OK	HELD 30" CONDUCTOR WHILE WAITING FOR CEMENT TO SET UP.
26.02.2001.06:00	07:00	1,0	223,0	CSOU	OK	HELD 30" CONDUCTOR WHILE WAITING FOR CEMENT TO SET UP.
26.02.2001.07:00	09:00	2,0		CTTU	OK	RELEASED 30" CONDUCTOR RT. PULLED OUT 30" CONDUCTOR RT WITH CEMENT STINGER, LD SAME.
26.02.2001.09:00	11:00	2,0		CSSU	OK	MU CEMENT STAND AND PRESSURE TESTED TO 150 BAR. RACKED CEMENT STAND IN DERRICK.
26.02.2001.11:00	14:00	3,0		DTPU	OK	MU 26" BHA.
26.02.2001.14:00	14:30	0,5	219,0	DTDU	OK	RIH WITH 26" BHA. TAGGED CEMENT AT 219 M.
26.02.2001.14:30	16:00	1,5	228,0	CDDU	OK	DRILLED CEMENT AND SHOE FROM 219 M TO 223 M WITH 4000 LPM, 118 BAR, 50 RPM, 5 TON WOB AND 2 - 5 KNM TORQUE. WASHED AND REAMED SHOETRACK AND RATHOLE TO 228 M WITH 4000 LPM, 118 BAR, 50 RPM AND 2 - 5 KNM TORQUE.
26.02.2001.16:00	17:00	1,0	238,0	DDTU	OK	DRILLED 26" HOLE FROM 228 M TO 238 M WITH 4000 LPM, 118 BAR, 90 RPM, 5 - 7 TON WOB AND 2 - 10 KNM TORQUE. HAD BOULDERS FROM 234 M TO 236 M. PUMPED 15 M3 HIVIS AND RACKED BACK DRILLING STAND. PU 2 SINGLE HWDP WHILE CHECKING CONDUCTOR HOUSING AND PGB WITH ROV.
26.02.2001.17:00	00:00	7,0	388,0	DDTU	OK	DRILLED/ORIENTED 26" HOLE FROM 238 M TO 388 M WITH 3000 - 4500 LPM, 85 - 150 BAR, 80 RPM, 15 - 20 TON WOB AND 2 - 11 KNM TORQUE.
27.02.2001.00:00	06:00	6,0	540,0	DDTU	OK	DRILLED /ORIENTED 26" HOLE FROM 388 M TO 540 M WITH 4500 LPM, 150 BAR, 15 - 20 TON WOB, 80 RPM AND 2 - 11 KNM TORQUE.
27.02.2001.06:00	12:00	6,0	716,0	DDTU	OK	DRILLED 26" HOLE FROM 540 M TO 716 M WITH 4500 LPM, 160 - 180 BAR, 110 RPM, 10 - 20 TON WOB AND 10 - 16 KNM TORQUE.

27.02.2001.12:00	13:30	1,5	716,0	DCAU	OK	PUMPED 20 M3 HIVIS AND DISPLACED SAME WITH SEAWATER AND 4600 LPM/170 BAR. DISPLACED HOLE TO 1,2 SG MUD WITH 4600 LPM AND 130 BAR.
27.02.2001.13:30	17:00	3,5		DTCU	OK	POOH WITH 26" BHA TO 170 M AND TOPPED UP HOLE WITH 1,2 SG MUD. PULLED OUT. BROKE AND LD 26" BIT.
27.02.2001.17:00	19:00	2,0		CERU	OK	HELD SAFETY MEETING WITH CREW AND RIGGED UP TO RUN CASING.
27.02.2001.19:00	20:30	1,5	150,0	CARU	OK	PU SHOE JOINT, INTEMEDIATE JOINT AND FLOAT COLLAR JOINT. CHECKED FOR FLOW THROUGH WITH SEWATER. RIH WITH 20" CASING TO 150 M. FILLED UP EVERY 5. JOINT WITH 1,2 SG MUD.
27.02.2001.20:30	00:00	3,5	319,0	CARU	OK	POSITIONED RIG AND STABBED 20" CASING INTO 30" CONDUCTOR. CONTINUED TO RIH WITH 20" CASING TO 319 M. FILLED UP EVERY 5. JOINT WITH SEAWATER.
28.02.2001.00:00	02:00	2,0	542,0	CARU	OK	RIH WITH 20" CASING FROM 319 M TO 542 M. FILLED EVERY 5. JOINT WITH SEAWATER.
28.02.2001.02:00	03:30	1,5	709,0	CARU	OK	CHANGED FROM 20" ELEVATOR TO 5 1/2" DP ELEVATOR. PU 18 3/4" HOUSING. RIH WITH 20" CASING ON LANDING STRING. LANDED CASING AND PERFORMED PULL TEST TO 20 TON. SHOE DEPTH 709 M. ROV CHECKED BULLS EYE - 0,5 DEG.
28.02.2001.03:30	06:00	2,5	709,0	CSSU	OK	PUMPED 50 M3 SEAWATER WITH 2000 LPM AND 83 BAR. PRESSURE TESTED CEMENT LINE TO 200 BAR. MIXED AND PUMPED 80 M3 1,56 SG LEAD SLURRY WITH 900 - 1000 LPM AND 20 - 24 BAR.
28.02.2001.06:00	07:00	1,0	709,0	CSSU	OK	MIXED AND PUMPED 15 M3 1,56 SG LEAD SLURRY AND 32 M3 1,92 SG TAIL SLURRY WITH 900 - 1000 LPM/ 20 - 24 BAR. DROPPED DART AND DISPLACED CEMENT WITH 3 M3 SEAWATER FROM CEMENT UNIT. SHEARED OUT PLUG WITH 65 BAR.
28.02.2001.07:00	08:00	1,0	709,0	CSSU	OK	CONTINUED DISPLACING CEMENT WITH 92,3 M3 SEAWATER WITH RIG PUMPS. BUMPED PLUG, PRESSURED UP TO 90 BAR AND TESTED 20" CASING FOR 10 MIN. BLED OFF PRESSURE AND CHECKED FOR BACKFLOW.
28.02.2001.08:00	09:00	1,0		CTTU	OK	RELEASED RUNNING TOOL. MOVED RIG OFF LOCATION WHILE POOH. RACKED BACK CEMENT STAND. LD RUNNING TOOL.
28.02.2001.09:00	10:00	1,0		DTPU	OK	LD MWD AND MOTOR.
28.02.2001.10:00	15:00	5,0		BBRU	OK	HELD SAFETY MEETING AND RU TO RUN BOP. MOVED BOP TO MOONPOOL CENTER AND INSTALLED GUIDE WIRES. CONNECTED DOUBLE RISER JOINT TO BOP. LIFTED BOP FROM CARRIER. LOWERED BOP AND INSTALLED BULLS EYE TO BOP. TESTED KILL AND CHOKE LINE TO 345 BAR.
28.02.2001.15:00	19:30	4,5		BBRU	OK	RAN BOP AND RISER TO 140 M. PRESSURE TESTED KILL AND CHOKE LINE BEFORE PU SLIP JOINT TO 35/345 BAR.
28.02.2001.19:30	00:00	4,5		BBRU	OK	PU SLIP JOINT AND LANDED IN SPIDER. PU LANDING JOINT AND RAN SLIP JOINT THROUGH DIVERTER HOUSING. INSTALLED KILL AND CHOKE LINE.
01.03.2001.00:00	06:00	6,0		BBRU	OK	PRESSURE TESTED KILL AND CHOKE LINES TO 35/345 BAR. MOVED RIG OVER LOCATION AND LANDED BOP. PULL TESTED WITH 40 TON. PRESSURE TESTED KILL AND CHOKE LINE TO 35/690 BAR. LD LANDING JOINT. INSTALLED DIVERTER AND FUNCTION TESTED DIVERTER. MU BOP TEST TOOL AND WEARBUSHING. RIH WITH TOOL AND WEARBUSHING.
01.03.2001.06:00	07:30	1,5		BBDU	OK	INSTALLED WEAR BUSHING. PRESSURE TESTED WH CONNECTOR TO 35/410 BAR AGAINST MIDDLE PIPE RAM. FUNCTION TESTED BOP ON BLUE AND YELLOW POD. POOH AND LD BOP TEST TOOL. TESTED DIVERTER SYSTEM.
01.03.2001.07:30	08:30	1,0		DTPU	OK	INSTALLED ROTATOR ON BX ELEVATOR.
01.03.2001.08:30	17:30	9,0		DTPU	OK	PU FROM DECK AND RACKED BACK 40 STD 5 1/2" DP.
01.03.2001.17:30	18:30	1,0	28,0	DTDU	OK	MU 17 1/2" BHA.
01.03.2001.18:30	00:00	5,5	634,0	DTPU	OK	RIH WITH 17 1/2" BHA FROM 28 M TO 634 M. PU 60 JNTS 5 1/2" DP WHILE RIH. DISMANTELED ROTATORS ON BX ELEVATOR.

02.03.2001.00:00	01:00	1,0	634,0	DEOU	OK	INSTALLED TORQUE WRENCH IN DDM.
02.03.2001.01:00	02:00	1,0	686,0	DTDU	OK	RIH WITH 17 1/2" BHA. WASHED DOWN AND TAGGED CEMENT AT 686,5 M.
02.03.2001.02:00	02:30	0,5	686,0	DDOU	OK	PERFORMED D5 KICK DRILL.
02.03.2001.02:30	06:00	3,5	710,0	CDDU	OK	DRILLED FLOAT,CEMENT AND SHOE. 3400 LPM, 102 BAR, 0-3 TON, 3-4 KNM. CLEAND OUT RAT HOLE TO 710 M.
02.03.2001.06:00	07:00	1,0	721,0	CDDU	OK	CLEANED OUT RAT HOLE BELOW 20" CASING SHOE FROM 710 M TO 716 M. DRILLED NEW FORMATION FROM 716 M TO 721 M. 4000 LPM, 120 BAR, 50 RPM, 4-6 KNM. DISPLACED HOLE TO 1,10 SG MUD WHILE DRILLING.
02.03.2001.07:00	07:30	0,5	721,0	DDOU	OK	DISPLACED KILL AND CHOKE LINES TO 1,10 SG MUD. PRESSURE TESTED CEMENT LINE TO 100 BAR.
02.03.2001.07:30	08:00	0,5	721,0	EXLU	OK	PERFORMED LOT TO 1,55 SG EMW.
02.03.2001.08:00	12:30	4,5	863,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 721 M TO 863 M. 4000-4400 LPM, 100-160 BAR, 80-110 RPM, 4-12 KNM, 10-15 TON.
02.03.2001.12:30	13:00	0,5	863,0	DCAU	OK	CIRCULATED HOLE CLEAN ABOVE UTSIRA FM. 4000 LPM, 140 BAR.
02.03.2001.13:00	22:00	9,0	1178,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 863 M TO 1178 M. 3200-4500 LPM, 100-185 BAR, 110 RPM, 7-11 KNM, 0-13 TON. INCREASED MW FROM 1,10 SG TO 1,19 SG WHILE DRILLING.
02.03.2001.22:00	00:00	2,0	1178,0	DERD	E FAIL	RACKED BACK 1 STD, CIRCULATED AND RESIPROCATED PIPE WHILE TROUBLESHOOTED DDM TORQUE PROBLEMS.
03.03.2001.00:00	01:00	1,0	1178,0	DERD	E FAIL	CIRCULATED AND RESIPROCATED PIPE WHILE TROUBLESHOOTED DDM TORQUE PROBLEMS.
03.03.2001.01:00	06:00	5,0	1322,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 1178 M TO 1322 M. 4000-4500 LPM, 145-185 BAR, 110 RPM, 7-11 KNM, 0-13 TON. INCREASED MW FROM 1,20 SG TO 1,23 SG WHILE DRILLING.
03.03.2001.06:00	11:30	5,5	1464,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 1322 M TO 1464 M. 3500-4500 LPM, 120-200 BAR, 130 RPM, 7-12 KNM, 5-17 TON. INCREASED MUDWEIGHT FROM 1,23 SG TO 1,30 SG WHILE DRILLING.
03.03.2001.11:30	12:30	1,0	1464,0	DERD	E FAIL	CIRCULATED AND RESIPROCATED PIPE WHILE WORKING ON HYDRAULIC PUMP ON DDM. 4500 LPM, 200 BAR.
03.03.2001.12:30	00:00	11,5	1730,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 1464 M TO 1730 M. 4000-4400 LPM, 199-245 BAR 110 RPM, 12-15 KNM, 15-25 TON. INCREASED MUDWEIGHT FROM 1,30 SG TO 1,43 SG DURING DRILLING. PERFORMED D2 DRILL WITH DAYSHIFT AT 1587 M.
04.03.2001.00:00	06:00	6,0	1836,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 1730 M TO 1836 M. 4000-4400 LPM, 242-255 BAR 110 RPM, 12-15 KNM, 15-25 TON. INCREASED MW FROM 1,43 SG TO 1,45 SG DURING DRILLING. PERFORMED D2 DRILL WITH NIGHTSHIFT AT 1788 M
04.03.2001.06:00	00:00	18,0	2087,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 1836 M TO 2087 M. 4000-4500 LPM, 255-280 BAR, 80-100 RPM, 11-18 KNM, 20-35TON. PERFORMED D2 DRILL WITH DAYSHIFT AT 1933 M.
05.03.2001.00:00	01:00	1,0	2093,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 2087 M TO 2093 M. 4000-4500 LPM, 255-280 BAR, 80-100 RPM, 11-18 KNM, 20-35TON.
05.03.2001.01:00	02:00	1,0	2093,0	EECU	OK	CIRCULATED BOTTOMS UP FOR SAMPLES. 4300 LPM, 255 BAR. ROTATED 30 RPM/ 7 KNM AND RESIPROCATED PIPE WHILE CIRCULATING.
05.03.2001.02:00	06:00	4,0	2138,0	DDTU	OK	DRILLED 17 1/2" HOLE FROM 2093 M TO 2138 M. 4200 LPM. 260 BAR, 80-90 RPM, 15-19 KNM, 35 TON.
05.03.2001.06:00	09:30	3,5	2138,0	DCAU	OK	CIRCULATED HOLE CLEAN WITH 4200 LPM, 250 BAR. RESIRPOCATED AND ROTATED PIPE 120 RPM WHILE CIRCULATING. RAN BOOSTER PUMP.
05.03.2001.09:30	10:00	0,5	2138,0	DCAU	OK	FLOWCHECKED AND PUMPED SLUG.
05.03.2001.10:00	18:30	8,5		CTTU	OK	POOH AND LD 17 1/2" BHA. HAD MAX. 25 MT OVERPULL IN BALDER.
05.03.2001.18:30	20:00	1,5		DERD	OK	SLIPPED AND CUT DRILLING LINE. HELD SAFETY

						MEETING AND SJA WITH 2 CREWS.
05.03.2001.20:00	20:30	0,5		DEOU	OK	CHANGED WASH PIPE.
05.03.2001.20:30	00:00	3,5		CTTU	OK	RIH WITH JET SUB AND WASHED BOP AND RISER. 4500 LPM, 33 BAR. MU WEAR BUSHING RT AND RIH WITH SAME ON HWDP. PU HWDP WHILE RIH.
06.03.2001.00:00	01:30	1,5		CTTU	OK	RIH WITH WEAR BUSHING RT AND LANDED SAME IN WELL HEAD. TOOK VETCO MEASUREMENT, OPERATED RAM AND RETRIEVED WEAR BUSHING.
06.03.2001.01:30	02:30	1,0		CTTU	OK	POOH WITH WEAR BUSHING AND LD SAME. WASHED WH AND BOP ON WAY OUT.
06.03.2001.02:30	03:00	0,5		CERU	OK	MU CEMENT STAND AND PRESSURE TESTED CEMENT HEAD TO 200 BAR.
06.03.2001.03:00	03:30	0,5		CERU	OK	INSTALLED DART IN CEMENT HEAD AND RACKED BACK SAME IN DERRICK.
06.03.2001.03:30	05:00	1,5		CERU	OK	MU 13 3/8" HANGER WITH PLUGS AND RT. RACKED SAME IN DERRICK.
06.03.2001.05:00	06:00	1,0		CERU	OK	HELD SAFETY MEETING WITH SJA. RU TO RUN 13 3/8" CASING.
06.03.2001.06:00	07:30	1,5		CERU	OK	RU TO RUN 13 3/8" CASING. HELD SAFETY MEETING WITH SJA WITH DAY CREW.
06.03.2001.07:30	08:00	0,5		CAOD	E FAIL	REPAIRED LEAK ON WEATHERFORD HYDRAULIC POWER SLIPS. CHANGED HOSE ON SAME.
06.03.2001.08:00	09:30	1,5		CARU	OK	PU AND BAKERLOCKED SHOE, INTERMEDIATE JNT AND FLOAT COLLAR. CHECKED SHOE AND FLOAT COLLARS FOR FLOW THROUGH.
06.03.2001.09:30	00:00	14,5	1968,0	CARU	OK	RAN 13 3/8" CASING TO 1968 M. FILLED CASING WITH 1,45 SG MUD EVERY 5.TH JNT.
07.03.2001.00:00	02:00	2,0	2128,0	CARU	OK	CHANGED ELEVATOR. MU 13 3/8" CASING HANGER AND RIH WITH CASING ON LANDING STRING. TOOK 50 TON WEIGHT AT 1982 M. CIRCULATED CASING DOWN WITH 200 LPM, 40 BAR FROM 2120 M. LANDED CASING WITH SHOE AT 2128 M. CONFIRMED LANDING POINT WITH VETCO MEASUREMENT.
07.03.2001.02:00	03:30	1,5	2128,0	CCCU	OK	CIRCULATED 80 M3 1,45 SG MUD, FOLLOWED BY 40 M3 TREATED 1,45 SG MUD WITH 1500 - 2200 LPM, 93 - 160 LPM. NO LOSSES. PUMPED 40 M3 TREATED SEA WATER SPACER WITH 2000 LPM, 100 BAR
07.03.2001.03:30	06:00	2,5	2128,0	CSSU	OK	MIXED AND PUMPED 61.8 M3 1,90 SG CEMENT SLURRY WITH 1100 LPM. DISPLACED CEMENT WITH 3 M3 FRESH WATER FROM CEMENT UNIT.TOP PLUG SHEARED AT 142 BAR. DISPLACED CEMENT WITH 149.7 M3 1,45 SG MUD WITH RIG PUMPS, 3000 LPM, 10-70 BAR AND FULL RETURN. BUMPED PLUG WITH 70 BAR ABOVE CIRC.PRESSURE. PUMP EFF. 96%. ESTIMATED TOC: 1440M.
07.03.2001.06:00	07:00	1,0	2128,0	CSSU	OK	PRESSURE TESTED 13 3/8" CASING TO 320 BAR/10 MIN. CHECKED FOR BACK FLOW. DISCONNECTED HYDRAULIC HOSES ON CEMENT HEAD.
07.03.2001.07:00	07:30	0,5	161,0	BHSU	OK	CLOSED PIPE RAM AND ACTIVATED SEAL ASSEMBLY.PRESSURE TESTED SAME TO 390 BAR/10 MIN. OPENED PIPE RAM.
07.03.2001.07:30	08:00	0,5	161,0	BHSU	OK	RACKED BACK CEMENT STAND. POOH WITH STT AND LD SAME.
07.03.2001.08:00	09:00	1,0		CAOU	OK	LAID DOWN CEMENT STAND.
07.03.2001.09:00	10:00	1,0	161,0	BBDU	OK	MU AND RIH WITH WEAR BUSHING ON SLT. SET WEAR BUSHING.
07.03.2001.10:00	12:30	2,5	159,0	BBDU	OK	PRESSURE TESTED BOP ON BLUE POD FROM DRILLERS PANEL. TEST PRESSURE: 35/360/245 BAR ON BOP/ANNULARS. CHECKED SIGNAL FROM ACCOUSTIC. FUNCTION TESTED ON YELLOW POD FROM MINI PANEL.
07.03.2001.12:30	13:00	0,5		BBDU	OK	POOH AND LAID DOWN SLT.
07.03.2001.13:00	14:00	1,0		DUSU	OK	RIG UP TO RUN CONTINOUS GYRO.
07.03.2001.14:00	17:30	3,5	2093,0	DUSU	OK	RAN CONTINOUS GYRO TO 2093 M. POOH WITH SAME.
07.03.2001.17:30	18:00	0,5		DUSU	OK	RIGGED DOWN GYRO EQUIPMENT.
07.03.2001.18:00	19:30	1,5		DTPU	OK	LD 1 9 1/2"DC, 2 MONEL AND STABILIZER. CLEANED RIG FLOOR. HELD SAFETY MEETING WITH SJA.

07.03.2001.19:30	21:00	1,5		DTPU	OK	MU 12 1/4" BHA. PRESSURE TESTED SHEAR RAM TO 320 BAR AGAINST CASING WHILE MU BHA.
07.03.2001.21:00	00:00	3,0	2102,0	DTDU	OK	RIH WITH 12 1/4" BHA. WASHED DOWN FROM 2073 M TO TOP CEMENT AT 2102 M.2000 LPM, 63 BAR, 15 RPM, 5 KNM.
08.03.2001.00:00	00:30	0,5	2102,0	DCAU	OK	PERFORMED KICK DRILL, D5.
08.03.2001.00:30	04:30	4,0	2128,0	DDTU	OK	DRILLED PLUGS AND FLOAT, CEMENT AND SHOE. 3000 LPM, 126 BAR, 50-70 RPM, 10-12 KNM, 5-7 TON.
08.03.2001.04:30	05:00	0,5	2141,0	DDTU	OK	CLEANED OUT RAT HOLE AND DRILLED 3 M NEW FORMATION. 3100 LPM, 131 BAR, 70 RPM, 10 KNM, 12 TON.
08.03.2001.05:00	06:00	1,0	2141,0	EXFU	OK	CIRCULATED AND PERFORMED LOT EQUIVALENT TO 1,95 SG.
08.03.2001.06:00	08:00	2,0		DTDU	OK	SLUGGED PIPE AND POOH WITH 12 1/4" BHA
08.03.2001.08:00	10:00	2,0		DTPU	OK	LAID DOWN 9 JNTS 5 1/2" DP, 9 JNTS HWDP, 8 JNTS 8"DC AND JAR.
08.03.2001.10:00	11:00	1,0		DTPU	OK	BROKE 12 1/4" BIT AND LAID DOWN SAME. LAID DOWN 6 JNTS 5 1/2" HWDP.
08.03.2001.11:00	13:00	2,0		DTPU	OK	MADE UP 8 1/2" GEOPILOT, CDR AND MWD.
08.03.2001.13:00	14:30	1,5		DTPU	OK	MADE UP FLEX JNT, NMDC, 6 1/2" DC, JAR AND 5 1/2" HWDP.
08.03.2001.14:30	00:00	9,5	1742,0	DTPU	OK	RIH WITH 8 1/2" BHA TO 1742 M. PU 5" DP FROM DECK WHILE RIH. FILLED PIPE AND TESTED MWD AT 1000 M.
09.03.2001.00:00	01:30	1,5	2045,0	DTPU	OK	RIH WITH 8 1/2" BHA FROM 1742 M TO 2045 M. PU 5" DP FROM DECK WHILE RIH.
09.03.2001.01:30	02:00	0,5	1641,0	DTPU	OK	POOH WITH 8 1/2" BHA FROM 2045 M TO 1641 M, AND RACKED 5" STD IN DERRICK.
09.03.2001.02:00	03:00	1,0	1641,0	DTPU	OK	MADE UP 5" DRILLING STD AND RACKED BACK IN DERRICK.
09.03.2001.03:00	06:00	3,0	2068,0	DTPU	OK	RIH WITH 8 1/2" BHA FROM 1641 M TO 2068 M. PU 5" DP FROM DECK WHILE RIH, FILLED PIPE AT 1641 M.
09.03.2001.06:00	06:30	0,5	2102,0	DTPU	OK	RIH WITH 8 1/2" BHA FROM 2068 M TO 2102 M. PU 5" DP FROM DECK WHILE RIH.
09.03.2001.06:30	07:00	0,5	2102,0	DTPU	OK	MU DRILLING STAND AND FILLED PIPE.
09.03.2001.07:00	11:00	4,0	2102,0	DDOU	OK	PREPARED FOR DISPLACING HOLE TO OBM.
09.03.2001.11:00	14:00	3,0	2141,0	DCAU	OK	RIH WITH 8 1/2" BHA AND TAGGED BOTTOM AT 2141 M. DISPLACED HOLE FROM 1,45 SG WBM TO 1,62 SG OBM. 800-1500 LPM, 25-100 BAR, 30 RPM, 5 KNM. HELD PREJOB MEETING PRIOR TO DISPLACE TO OBM.
09.03.2001.14:00	00:00	10,0	2265,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2141 M TO 2265 M. 1800-2000 LPM, 180-200 BAR, 100-170 RPM, 6-10 KNM, 10-15 TON.
10.03.2001.00:00	00:30	0,5	2276,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2265 M TO 2276 M. 2000 LPM, 198 BAR, 100-170 RPM, 7-9 KNM, 15 TON.
10.03.2001.00:30	01:30	1,0	2276,0	DEDD	E FAIL	CIRCULATED WHILE TROUBLESHOOTING PROBLEMS WITH GEOPILOT.
10.03.2001.01:30	02:00	0,5	2276,0	DEDD	OK	CIRCULATED HOLE CLEAN, FLOWCHECKED AND PUMPED SLUG.
10.03.2001.02:00	06:00	4,0		DEDD	OK	POOH WITH 8 1/2" BHA TO CHANGE GEOPILOT.
10.03.2001.06:00	07:00	1,0		DEDD	OK	LD MWD AND GEOPILOT.
10.03.2001.07:00	07:30	0,5		DEDD	OK	PU NEW GEOPILOT, MU 8 1/2" BIT.
10.03.2001.07:30	10:00	2,5		DEDD	OK	ATTEMPTED TO PROGRAM GEOPILOT, NEG. CLEANED CONTACT AREA AND MADE A NEW ATTEMPT, NEG. CHANGED OUT FLEX JNT ON TOP OF GEOPILOT AND PROGRAMMED TOOL.
10.03.2001.10:00	10:30	0,5	115,0	DEDD	OK	MU 8 1/2" BHA.
10.03.2001.10:30	13:30	3,0	2138,0	DEDD	OK	RIH WITH 8 1/2" BHA FROM 115 M TO 2138 M. FILLED PIPE AND TESTED MWD AT 1000 M. TOOK 15 TON WEIGHT AT 2138 M.
10.03.2001.13:30	14:30	1,0	2276,0	DEDD	OK	FILLED PIPE AND WASHED DOWN FROM 21138 M TO 2276 M. 2000 LPM, 180 BAR, 30 RPM.
10.03.2001.14:30	00:00	9,5	2477,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2276 M TO 2477 M. 2000 LPM, 200 BAR, 100-120 RPM, 5-11 KNM, 7-13 TON.

11.03.2001.00:00	06:00	6,0	2558,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2477 M TO 2558 M. 2000 LPM, 220-225 BAR, 120 RPM, 7-11 KNM, 10-13 TON. ECD 1,64 SG.
11.03.2001.06:00	00:00	18,0	2908,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2558 M TO 2908 M. 2000 LPM, 220-240 BAR, 120-150 RPM, 8-12 KNM, 12-17 TON. MAX ECD 1,70 SG.
12.03.2001.00:00	06:00	6,0	3010,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 2908 M TO 3010 M. 2000 LPM, 220-240 BAR, 150 RPM, 9-12 KNM, 15 TON. MAX ECD 1,70 SG.
12.03.2001.06:00	14:30	8,5	3178,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3010 M TO 3178 M. 2000 LPM, 235 BAR, 150 RPM, 9-12 KNM, 15 TON. MAX ECD 1,70 SG.
12.03.2001.14:30	16:30	2,0	3178,0	ECSU	OK	CIRCULATED FOR SAMPLES, 2000 LPM, 220 BAR, 68 RPM, 4-6 KNM. RESIPROCATED PIPE WHILE CIRCULATING.
12.03.2001.16:30	17:00	0,5	3194,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3178 M TO 3194 M. 2000 LPM, 235 BAR, 150 RPM, 12 KNM, 15 TON. MAX ECD 1,70 SG.
12.03.2001.17:00	19:00	2,0	3194,0	ECSU	OK	CIRCULATED FOR SAMPLES, 2000 LPM, 220 BAR, 68 RPM, 4-6 KNM. RESIPROCATED PIPE WHILE CIRCULATING.
12.03.2001.19:00	00:00	5,0	3298,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3194 M TO 3298 M. 2000 LPM, 235 BAR, 150 RPM, 12-18 KNM, 15 TON. MAX ECD 1,72 SG.
13.03.2001.00:00	06:00	6,0	3413,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3298 M TO 3413 M. 2000 LPM, 235 BAR, 150 RPM, 12-18 KNM, 15 TON. MAX ECD 1,74 SG.
13.03.2001.06:00	00:00	18,0	3782,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3413 M TO 3782 M. 2090 LPM, 250 BAR, 150 RPM, 14-16 KNM, 15 TON. MAX ECD 1,75 SG.
14.03.2001.00:00	06:00	6,0	3876,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3782 M TO 3876 M. 2070 LPM, 240 BAR, 150 RPM, 14-15 KNM, 17 TON. MAX ECD 1,75 SG.
14.03.2001.06:00	00:00	18,0	4272,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 3876 M TO 4272 M. 2030-2050 LPM, 240-250 BAR 100-150 RPM, 14-18 KNM, 10-17 TON. MAX ECD 1,77 SG.
15.03.2001.00:00	06:00	6,0	4343,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4272 M TO 4343 M. 2030-2050 LPM, 240-250 BAR 120-150 RPM, 14-18 KNM, 10-17 TON. MAX ECD 1,75 SG.
15.03.2001.06:00	19:00	13,0	4490,0	DDTU	OK	DRILLED 8 1/2" HOLE FROM 4343 M TO 4490 M. 2030 LPM, 253 BAR, 150 RPM, 14 - 18 KNM. MAX ECD 1,76 SG.
15.03.2001.19:00	21:00	2,0	4490,0	DCAU	OK	CIRCULATED HOLE CLEAN WITH 2200 LPM, 290 BAR, 150 RPM. FLOWCHECKED WELL.
15.03.2001.21:00	00:00	3,0	3210,0	DTLU	OK	PUMPED SLUG AND POOH TO 3210 M.
16.03.2001.00:00	06:00	6,0		DTLU	OK	POOH. FLOWCHECKED AT SHOE. TIGHT SPOT AT 3170 M, MAX OVERPULL 12 TON. DUMPED DATA FROM MWD.
16.03.2001.06:00	07:30	1,5		DTLU	OK	DUMPED DATA FROM MWD. LD MWD AND GEOPILOT. BROKE BIT AND CLEANED RIG FLOOR.
16.03.2001.07:30	09:30	2,0		ELDU	OK	MU TLC LOGGING TOOLS, PEX/AIT-H/MDT. INSTALLED RADIOACTIVE SOURCES. HELD SAFETY MEETING PRIOR TO MU.
16.03.2001.09:30	15:00	5,5	2100,0	ELDU	OK	RIH WITH LOGGING TOOL ON 5" DP TO 2100 M.
16.03.2001.15:00	15:30	0,5	2100,0	BBDU	OK	FUNCTION TESTED BOP. MEANWHILE CUT AND SLIP DRILL LINE.
16.03.2001.15:30	16:00	0,5	2100,0	DERD	OK	CUT AND SLIP DRILL LINE.
16.03.2001.16:00	20:30	4,5	2375,0	ELDU	OK	RIH WITH LOGGING TOOL ON 5" DP. CIRCULATED 5 MIN/10 STD WHILE RIH. HELD SAFETY MEETING. RU WIRELINE SHEAVE IN DERRICK. CIRCULATED WITH 1300 LPM, 56 BAR WHILE RIGGING UP SHEAVE. INSTALLED SIDE ENTRY SUB. PUMPED IN WITH LOCOMOTIVE AND CABLE, 200 - 1250 LPM, 15 - 70 BAR. LATCHED LOCOMOTIVE AND TESTED CONNECTION TO LOGGING TOOL.
16.03.2001.20:30	00:00	3,5	2952,0	ELDU	OK	RIH WITH LOGGING STRING ON DP FROM 2376 M TO 2952 M. FILLED PIPE EVERY 10 STAND.
17.03.2001.00:00	06:00	6,0	3871,0	ELDU	OK	RIH WITH LOGGING STRING ON DP TO 3200 M. LOGGED DOWN WITH MDT FROM 3200 M TO 3871 M.

						TOOK 6 PRESSURE POINTS.
17.03.2001.06:00	12:30	6,5	4480,0	ELDU	OK	RAN TLC AND LOGGED DOWN WITH MDT FROM 3871 M TO 4480 M. TOOK 22 PRESSURE POINTS.
17.03.2001.12:30	18:00	5,5	3140,0	ELDU	OK	LOGGED UP FROM 4480 M TO 3140 M WITH PEX/AIT-H.
17.03.2001.18:00	00:00	6,0	2465,0	ELDU	OK	RIH WITH LOGGING STRING FROM 3140 M TO 3282 M. LOGGED DOWN WITH MDT FROM 3282 M TO 3336 M. TOOK 3 PRESSURE POINTS. LOGGED UP WITH PEX/AIT-H FROM 3336 M TO 3155 M. POOH WITH LOGGING STRING ON DP TO 2465 M.
18.03.2001.00:00	06:00	6,0	536,0	ELDU	OK	POOH WITH LOGGING STRING ON DP TO SIDE ENTRY SUB AT 2376 M. PULLED OUT CABLE AND LOCOMOTIVE. RD SIDE ENTRY SUB. FLOWCHECKED WELL WHILE RD. SLUGGED PIPE AND POOH WITH LOGGING TOOL TO 536 M.
18.03.2001.06:00	08:30	2,5		ELDU	OK	POOH WITH LOGGING TOOL FROM 536 M. LD LOGGING TOOL AND CLEANED RIG FLOOR.
18.03.2001.08:30	14:30	6,0		BBDU	OK	MU BOP TEST TOOL AND RIH. PRESSURE TESTED BOP ON BLUE POD FROM DRILLERS PANEL. TESTED RAMS TO 35/390 BAR AND ANNULARS TO 35/245 BAR. FUNCTION TESTED BOP ON YELLOW POD. FUNCTION TESTED BOP ACOUSTIC SYSTEM. POOH WITH TEST TOOL AND LD SAME.
18.03.2001.14:30	18:30	4,0		DTPU	OK	MU 8 1/2" GEOPILOT BHA. DOWNLOADED AND TESTED MWD TOOL.
18.03.2001.18:30	00:00	5,5	1181,0	DTDU	OK	RIH WITH 8 1/2 BHA TO 1181 M. PU 111 JOINTS 5" DP ON THE WAY IN.
19.03.2001.00:00	05:30	5,5	3200,0	DTDU	OK	RIH WITH 8 1/2" BHA FROM 1181 M TO 3200 M. FILLED PIPE AND TESTED MWD AT 2185 M. TIGHT HOLE FROM 3196 M TO 3200 M. REAMED TIGHT HOLE WITH 300 - 1800 LPM, 60 - 120 RPM, 6 - 25 KNM TORQUE.
19.03.2001.05:30	06:00	0,5	3164,0	DCRK	OK	HOLE PACKED OFF. LOST CIRCULATION. PULLED OUT 1 STAND, RE-ESTABLISHED CIRCULATION 350 - 2000 LPM, 25 - 254 BAR, 115 RPM. LOST 6 M3 MUD TO FORMATION.
19.03.2001.06:00	11:00	5,0	3312,0	DCRK	OK	REAMED DOWN FROM 3164 M TO 3312 M, 1780 LPM, 187 BAR, 150 RPM.
19.03.2001.11:00	11:30	0,5	3369,0	DTDU	OK	RIH WITH 8 1/2" BHA FROM 3312 M TO 3369 M, TOOK WEIGHT AT 3369 M.
19.03.2001.11:30	12:00	0,5	3398,0	DCRK	OK	REAMED DOWN FROM 3369 M TO 3398 M, 1780 LPM, 187 BAR, 150 RPM. TOOK WEIGHT AT 3398 M.
19.03.2001.12:00	13:00	1,0	3398,0	DCAU	OK	CIRCULATED WITH 1100 LPM, 160 BAR, 150 - 110 RPM.
19.03.2001.13:00	14:00	1,0	3372,0	DCRK	OK	BACK REAMED TO 3372 M, 1100 LPM, 110 RPM. ATTEMTED TO REAM DOWN, TOOK WEIGTH. HOLE PACKED OFF, LOST MUD TO FORMATION. REDUCED PUMP RATE TO 380 LPM. ATTEMPTED TO TO PULL OUT. OBSERVED OP.
19.03.2001.14:00	20:30	6,5	3372,0	DCAU	OK	ESTABLISHED CIRCULATION IN STEP TO 2000 LPM, 235 BAR. RESIPROCATED PIPE. NO LOSSES.
19.03.2001.20:30	21:00	0,5	3400,0	DCRK	OK	REAMED TIGHT HOLE FROM 3372 M TO 3400 M, 2000 LPM, 235 - 260 BAR. 50 - 60 RPM.
19.03.2001.21:00	00:00	3,0	3937,0	DTDU	OK	RIH WITH 8 1/2" BHA FROM 3400 M TO 3937 M.
20.03.2001.00:00	01:30	1,5	4260,0	DTDU	OK	RIH WITH 8 1/2" BHA FROM 3937 M TO 4260 M. TOOK WEIGHT AT 4260 M.
20.03.2001.01:30	04:30	3,0	4329,0	DCRK	OK	REAMED TIGHT HOLE FROM 4260 M TO 4329 M, 2000 LPM, 260 - 300 BAR, 0 - 5 WOB, 6 - 15 KNM TORQUE.
20.03.2001.04:30	05:30	1,0	4329,0	DCAU	OK	CIRCULATED BU WITH 2000 LPM, 262 - 284 BAR, 60 RPM.
20.03.2001.05:30	06:00	0,5	4337,0	DCRK	OK	REAMED TIGHT HOLE FROM 4329 M TO 4337 M, 2000 LPM, 274 BAR, 50 RPM.
20.03.2001.06:00	07:00	1,0	4430,0	DCRK	OK	REAMED TIGHT HOLE FROM 4337 M TO 4346 M, 2000 LPM, 280 - 300 BAR, 50 RPM. TOOK WEIGTH. CIRCULATED WITH 2000 LPM, 280 - 300 BAR, 120 RPM.
20.03.2001.07:00	09:30	2,5	4418,0	DCRK	OK	REAMED DOWN FROM 4346 M TO 4384 M, 1100 - 1800 LPM, 130 - 230 BAR, 85 RPM. TOOK WEIGHT DOWN/UP. WORKED JAR WITH 90 TON OP. REAMED DOWN FROM 4384 M TO 4430 M, 1200 LPM, 200 - 150 BAR. 60 RPM. NOT ABLE TO PASS 4430 M. BACK REAMED TO 4418 M, 1000 - 1500 LPM, 210 - 300 BAR, 60 RPM.

20.03.2001.09:30	10:00	0,5	4418,0	DDJD	STUCK	STUCK PIPE AT 4418 M. HOLE PACKED OFF. REDUCED FLOWRATE TO 400 LPM WORKED JAR UP/DOWN, PIPE CAME FREE. LOST 9 M3 MUD TO FORMATION.
20.03.2001.10:00	14:00	4,0	4418,0	DCRK	OK	ESTABLISED CIRCULATION IN STEP TO 2000 LPM. INCREASED MW TO 1,70 SG.
20.03.2001.14:00	18:30	4,5	4490,0	DCRK	OK	REAMED DOWN FROM 4418 M TO 4490 M, 1600 LPM, 190 - 300 BAR, 110 - 150 RPM, 13 - 28 KNM TORQUE.
20.03.2001.18:30	22:30	4,0	4536,0	DDXU	OK	DRILLED 8 1/2" HOLE FROM 4490 M TO 4536 M, 2000 LPM, 262 BAR, 125 RPM, 10 -12 TON WOB, 10 - 15 KNM TORQUE. UNABLE TO SET DEFLECTION ON GEOPILOT.
20.03.2001.22:30	00:00	1,5	4536,0	DUSU	OK	SYNCHRONISED MWD AND MUDPUMPS. NOT ABLE TO GET SURVEY DUE TO INTERFERENCE.
21.03.2001.00:00	02:30	2,5	4553,0	DDXU	OK	DRILLED 8 1/2" HOLE FROM 4536 M TO 4553 M, 2000 LPM, 260 BAR, 125 RPM, 10 - 12 T WOB, 10 - 15 KNM TORQUE.
21.03.2001.02:30	04:30	2,0	4553,0	DEDD	E FAIL	CIRCULATED BU WITH 2000 LPM, 270 BAR, 120 RPM. FLOWCHECKED WELL. SLUGGED PIPE.
21.03.2001.04:30	06:00	1,5	3961,0	DEDD	OK	POOH WITH 8 1/2" BHA TO 3961 M. HOLE IN GOOD CONDITION.
21.03.2001.06:00	14:30	8,5		DCWK	OK	POOH FROM 3961 M. FLOWCHECKED AT SHOE. BROKE BIT. DUMPED DATA FROM MWD. LD MWD AND GEOPILOT. CLEANED FLOOR, INSPECTED DRILLING EQUIPMENT.
21.03.2001.14:30	16:00	1,5		DCWK	OK	MU 8 1/2" GEOPILOT BHA. DOWNLOADED AND TESTED MWD TOOL.
21.03.2001.16:00	20:30	4,5	2072,0	DCWK	OK	RIH WITH 8 1/2" BHA TO 2072 M.
21.03.2001.20:30	21:00	0,5	2072,0	DCWK	OK	CIRCULATED AND CONDITIONED MUD AT SHOE WITH 2200 LPM, 250 BAR. RAN BOOSTER PUMP.
21.03.2001.21:00	21:30	0,5	2072,0	BBDU	OK	PRESSURE TESTED IBOP AND KELLY HOSE TO 35/345 BAR.
21.03.2001.21:30	00:00	2,5	3650,0	DCWK	OK	RIH WITH 8 1/2" BHA FROM 2100 M TO 3650 M. FILLED PIPE AND TESTED MWD AT 2185 M.
22.03.2001.00:00	02:00	2,0	4305,0	DCWK	OK	RIH WITH 8 1/2" BHA FROM 2185 M TO 4305 M. TOOK WEIGHT AT 4305 M.
22.03.2001.02:00	02:30	0,5	4313,0	DCWK	OK	REAMED TIGHT HOLE FROM 4287 M TO 4313 M, 2000 LPM, 265 BAR, 60 RPM.
22.03.2001.02:30	03:00	0,5	4543,0	DCWK	OK	RIH WITH 8 1/2" BHA FROM 4313 M TO 4543 M.
22.03.2001.03:00	04:00	1,0	4543,0	DCWK	OK	SYNCHRONISED MWD AND MUDPUMPS. NOT ABLE TO GET SURVEY DUE TO INTERFERENCE. REAMED DOWN TO 4553 M, 2000 LPM, 265 BAR, 110 RPM.
22.03.2001.04:00	06:00	2,0	4568,0	DDXU	OK	DRILLED 8 1/2" HOLE FROM 4553 M TO 4568 M, 2200 LPM, 270 BAR, 110 RPM, 5 - 17 TON WOB, 10 - 20 KNM TORQUE.
22.03.2001.06:00	00:00	18,0	4632,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4568 M TO 4632 M, 2100 LPM, 263 - 285 BAR, 70 - 150 RPM, 10 - 16 TON WOB, 10 - 21 KNM. MAX ECD 1,79 SG. RAISED MW T0 1.72 SG WHILE DRILLING.
23.03.2001.00:00	06:00	6,0	4689,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4632 M TO 4689 M, 2100 LPM, 285 - 300 BAR, 110 - 140 RPM, 8 - 16 TON WOB, 12 - 21 KNM TORQUE. MAX ECD 1,78 SG
23.03.2001.06:00	07:30	1,5	4705,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4689 M TO 4705 M, 2100 LPM, 285 - 300 BAR, 110 - 140 RPM, 8 - 16 TON WOB, 12 - 21 KNM TORQUE. MAX ECD 1,78 SG.
23.03.2001.07:30	08:00	0,5	4705,0	DERD	E FAIL	MUDLOGGING UNIT AND DRILL FLOOR SCREENS SHUT DOWN DUE TO TOO LOW RIG AIR SUPPLY PRESSURE.
23.03.2001.08:00	16:30	8,5	4718,0	DDDU	OK	DRILLED 8 1/2" HOLE 4705 M TO 4718 M, 1800 - 2100 LPM, 250 - 285 BAR, 70 - 150 RPM, 16 - 20 TON WOB, 10 - 14 KNM TORQUE. MAX ECD 1,78 SG. STOPPED DRILLING DUE TO NO PROGRESS.
23.03.2001.16:30	00:00	7,5	450,0	DTBK	OK	FLOWCHECKED WELL. PUMPED SLUG AND POOH TO 450 M. FLOWCHECKED AT SHOE AND PRIOR TO ENTER BOP. HOLE IN GOOD CONDITION.
24.03.2001.00:00	03:00	3,0		DTBK	OK	POOH. BROKE BIT. DUMPED DATA FROM MWD. CHECKED GEOPILOT.
24.03.2001.03:00	06:00	3,0	1178,0	DTBK	OK	MU NEW BIT. DOWNLOADED AND TESTED MWD. RIH WITH 8 1/2" BHA TO 1178 M.

24.03.2001.06:00	07:30	1,5	2103,0	DTBK	OK	RIH WITH 8 1/2" BHA TO 2103 M.
24.03.2001.07:30	09:00	1,5	2103,0	DERD	OK	CUT & SLIP DRILLING LINE.
24.03.2001.08:30	10:00	1,5	2103,0	DEOU	OK	CHANGED IBOP DUE TO LEAKAGE.
24.03.2001.09:00	10:00	1,0	2103,0	DERD	E FAIL	CHANGED IBOP DUE TO LEAKAGE.
24.03.2001.10:00	15:00	5,0	4619,0	DTBK	OK	RIH WITH 8 1/2" BHA FROM 2103 M TO 4686 M. TOOK 15 TON DOWNWEIGHT.
24.03.2001.15:00	18:00	3,0	4718,0	DTBK	OK	WASHED/REAMED DOWN FROM 4619 M TO 4718 M, 1800 - 2100 LPM, 250 - 300 BAR, 40 - 150 RPM.
24.03.2001.18:00	00:00	6,0	4732,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4718 M TO 4732 M, 2100 LPM, 270 - 285 BAR, 40 - 110 RPM, 6 - 18 TON WOB, 10 - 14 KNM TORQUE. MAX ECD 1,78 SG.
25.03.2001.00:00	06:00	6,0	4739,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4732 M TO 4739 M, 2100 LPM, 285 BAR, 40 - 90 RPM, 15 - 17 TON WOB, 10 - 13 KNM TORQUE. MAX ECD 1,78 SG.
25.03.2001.06:00	06:30	0,5	4739,0	DDDU	OK	ATTEMPTED TO DRILL 8 1/2" HOLE. STOPPED DRILLING DUE TO ROP LESS THAN 1 M/HR.
25.03.2001.06:30	17:00	10,5		DTBK	OK	FLOWCHECKED WELL. TOOK CHECK SURVEY AND PUMPED SLUG. POOH. FLOWCHECKED AT SHOE AND BOP. DUMPED MWD DATA. LD 8 1/2" BHA ON CATWALK. CHANGED BATTERY PACKAGE ON MWD TOOLS WHILE INSTALLING WRENCH ASSY AND CHANGED SPEED SETTING VALVE ON DDM UNIT.
25.03.2001.17:00	00:00	7,0	3700,0	DTBK	OK	MU NEW GEO PILOT AND BIT. DOWNLOADED AND TESTED MWD. RIH WITH 8 1/2" BHA TO 3700 M. PU 2 JNTS 5" HWDP AND 6 JNTS 5" DP ON THE WAY IN. CIRCULATED 15 MIN EVERY 1000 M TO CLEAN BIT.
26.03.2001.00:00	02:00	2,0	4739,0	DTBK	OK	RIH WITH 8 1/2" BHA. WASHED DOWN THE LAST STAND TO 4739 M WITH 2000 LPM, 260 BAR, 70 RPM. CIRCULATED 15 MIN EVERY 1000 M TO CLEAN BIT.
26.03.2001.02:00	06:00	4,0	4783,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4739 M TO 4783 M, 2000 - 2100 LPM, 285 - 305 BAR, 110 - 125 RPM, 7 - 15 TON WOB, 10 - 20 KNM TORQUE. MAX ECD 1,80 SG.
26.03.2001.06:00	00:00	18,0	5013,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 4783 M TO 5013 M, 2100 LPM, 260 - 300 BAR, 120 - 150 RPM, 8 - 14 TON WOB, 14 - 26 KNM TORQUE, MAX ECD 1,81 SG.
27.03.2001.00:00	06:00	6,0	5077,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5013 M TO 5077 M, 2100 LPM, 280 - 300 BAR, 140 - 165 RPM, 8 - 14 TON WOB, 10 - 22 KNM TORQUE, MAX ECD 1,80 SG. RAN BOOSTER PUMP WHILE DRILLING.
27.03.2001.06:00	00:00	18,0	5197,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5077 M TO 5197 M, 2100 LPM, 280 - 290 BAR, 60 - 165 RPM, 10 - 16 TON WOB, 11 - 25 KNM TORQUE. MAX ECD 1,79 SG.
28.03.2001.00:00	06:00	6,0	5278,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5197 M TO 5278 M, 2000 LPM, 275 - 295 BAR, 130 - 160 RPM, 10 - 16 TON WOB, 13 - 24 KNM TORQUE. MAX ECD 1,82 SG.
28.03.2001.06:00	00:00	18,0	5474,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5278 M TO 5474 M, 2000 LPM, 275 - 285 BAR, 50 - 165 RPM, 10 - 15 TON WOB, 13 - 26 KNM TORQUE. MAX ECD 1,82 SG. LOST CONTACT WITH GEOPILOT AT 5445 M.
29.03.2001.00:00	06:00	6,0	5501,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5474 M TO 5501 M, 2000 LPM, 275 - 285 BAR, 70 - 120 RPM, 10 - 16 TON WOB, 13 - 26 KNM TORQUE. MAX ECD 1,80 SG.
29.03.2001.06:00	10:30	4,5	5503,0	DDDU	OK	DRILLED 8 1/2" HOLE FROM 5501 M TO 5503 M, 2000 LPM, 275 - 285 BAR, 50 - 170 RPM, 10 - 16 TON WOB, 12 - 23 KNM TORQUE. MAX ECD 1,79 SG. STOPPED DRILLING DUE TO NO PROGRESS.
29.03.2001.10:30	23:00	12,5		DTBK	OK	FLOWCHECKED WELL. PUMPED SLUG AND POOH. TIGHT HOLE FROM 5020 M TO 4950 M, MAX OVERPULL 35 TON. FLOWCHECKED AT SHOE AND BOP. DUMPED MWD DATA. BROKE BIT. LD GEOPILOT AND MWD.
29.03.2001.23:00	00:00	1,0		DTBK	OK	MU NEW RLL AND BIT. LOADED MWD.
30.03.2001.00:00	01:30	1,5	40,0	DTBK	OK	TESTED MWD. PU AND MU ADN MEMORY TOOL. CHECKED FLOAT VALVE AND INSTALLED RADIOACTIVE SOURCES.
30.03.2001.01:30	05:00	3,5	2100,0	DTBK	OK	RIH WITH 8 1/2" BHA TO 2100 M. CIRCULATED 15 MIN. EVERY 1000 M TO CLEAN BIT.
30.03.2001.05:00	06:00	1,0	2100,0	DERD	E FAIL	CHANGED SAVER SUB BELOW TOP DRIVE DUE TO LEAKAGE.

30.03.2001.06:00	06:30	0,5	2100,0	DERD	E FAIL	CHANGED SAVER SUB BELOW TOP DRIVE DUE TO LEAKAGE.
30.03.2001.06:30	07:00	0,5	2100,0	BBDU	OK	FUNCTION TESTED BOP ON BLUE-POD FROM KOOMEY UNIT AND YELLOW-POD FROM MINI PANEL. FUNCTION TESTED ACOUSTIC.
30.03.2001.07:00	13:00	6,0	4905,0	DTBK	OK	RIH, TOOK 30 TON WEIGHT AT 4890 M. BROKE CIRCULATION, HOLE STARTED TO PACK OFF. WORKED STRING FREE AND INCREASED PUMP RATE IN STEPS TO 1500 LPM, 160 BAR. NO LOSSES. RIH TO 4905 M.
30.03.2001.13:00	14:00	1,0	4998,0	DTBK	OK	RIH, TOOK WEIGHT AT 4945 M. BROKE CIRCULATION. RIH WHILE CIRCULATING WITH 400 LPM, 35 BAR FROM 4945 M TO 4998 M. HOLE PACKED OFF.
30.03.2001.14:00	16:30	2,5	5040,0	DTBK	OK	ROTATED PIPE FREE. INCREASED PUMP RATE IN STEPS TO 2100 LPM, 280 BAR, 110 RPM, 12 KNM TRQ. NO LOSSES. REAMED DOWN TO 5040 M WITH 400 LPM, 38 BAR, 40 RPM, 12 KNM TORQUE.
30.03.2001.16:30	18:00	1,5	5450,0	DTBK	OK	RIH WITH 8 1/2" BHA FROM 5040 M TO 5450 M.
30.03.2001.18:00	19:30	1,5	5503,0	DTBK	OK	WASHED DOWN FROM 5450 M TO 5460 M. REAMED/LOGGED FROM 5460 M TO 5503 M WITH 2020 LPM, 282 BAR, 105 RPM AND 12 - 15 KNM TORQUE.
30.03.2001.19:30	00:00	4,5	5556,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5303 M TO 5556 M WITH 2050 LPM, 280 BAR, 5 - 12 TON WOB, 70 - 140 RPM AND 11 - 17 KNM TORQUE. MAX ECD - 1,81.
31.03.2001.00:00	06:00	6,0	5593,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5556 M TO 5593 M WITH 2080 LPM, 275 BAR, 10 - 17 TON WOB, 70 - 140 RPM AND 14 - 24 KNM TORQUE. MAX ECD - 1,81.
31.03.2001.06:00	10:00	4,0	5594,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5593 M TO 5594 M WITH 1200 - 2040 LPM, 120 - 280 BAR, 10 - 15 TON WOB, 30 - 160 RPM, 12 - 20 KNM TORQUE. STOPPED DRILLING DUE TO NO PROGRESS.
31.03.2001.10:00	22:00	12,0		DTBK	OK	FLOWCHECKED WELL. PUMPED SLUG AND POOH. FLOWCHECKED AT SHOE AND BOP. REMOVED RADIOACTIVE SOURCES FROM ADN AND LD SAME. BROKE BIT AND DUMPED MWD DATA.
31.03.2001.22:00	00:00	2,0		DTBK	OK	CUT AND SLIPPED DRILLINE WHILE PROGRAMMING NEW SLICK ADN MEMORY TOOL.
01.04.2001.00:00	00:30	0,5		DTBK	OK	SERVICED DDM WHILE PROGRAMMING NEW ADN TOOL.
01.04.2001.00:30	02:00	1,5		DTBK	OK	MU NEW BIT AND ADN MEMORY TOOL. CHECKED FLOAT VALVE AND INSTALLED RADIOACTIVE SOURCES.
01.04.2001.02:00	06:00	4,0	2260,0	DTBK	OK	RIH WITH 8 1/2" BHA TO 2260 M. FILLED PIPE/CIRCULATED EVERY 1000 M.
01.04.2001.06:00	12:30	6,5	5594,0	DTBK	OK	RIH TO 5594 M. CIRCULATED 15 MIN EVERY 1000 M. TIGHT HOLE: 4910 M - 4922 M, 5000 M - 5005 M AND 5016 M - 5030 M.
01.04.2001.12:30	00:00	11,5	5654,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5594 M TO 5654 M, 2000 - 2100 LPM, 280 - 290 BAR, 5 - 15 TON WOB, 100 - 170 RPM, 16 - 26 KNM TORQUE. MAX ECD - 1,84 SG.
02.04.2001.00:00	05:30	5,5	5655,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5654 M TO 5655 M WITH 1500 - 2050 LPM, 180 - 280 BAR, 30 - 150 RPM, 8 - 20 TON WOB AND 15 - 24 KNM TORQUE. ATTEMPTED TO DRILL WITH DIFFERENT DRILLING PARAMETERS WITHOUT ANY SUCCESS.
02.04.2001.05:30	06:00	0,5	5655,0	DTBK	OK	FLOWCHECKED AND TOOK SURVEY.
02.04.2001.06:00	17:00	11,0		DTBK	OK	POOH. FLOWCHECKED AT SHOE AND BOP. REMOVED RADIOACTIVE SOURCES FROM ADN AND DUMPED DATA FROM SAME. BROKE BIT AND DUMPED MWD DATA. LD MWD.
02.04.2001.17:00	21:30	4,5	160,0	BBDU	OK	MU AND RIH WITH BOP TEST TOOL. PRESSURE TESTED BOP ON YELLOW POD FROM DRILLERS PANEL. TESTED ANNULARS TO 35/245 BAR AND RAMS/FAIL SAFE VALVES TO 35/390 BAR. FUNCTION TESTED BOP ON BLUE POD. FUNCTION TESTED BOP ACOUSTIC SYSTEM.
02.04.2001.21:30	22:30	1,0		BBDU	OK	POOH WITH TEST TOOL AND LD SAME.
02.04.2001.22:30	00:00	1,5		DTBK	OK	MU NEW BIT. MU ADN MEMORY TOOL AND INSTALLED RADIOACTIVE SOURCES.

03.04.2001.00:00	06:00	6,0	2900,0	DTBK	OK	MU 8 1/2" BHA AND RIH TO 2900 M. FILLED PIPE EVERY 1000 M.
03.04.2001.06:00	13:30	7,5	5655,0	DTBK	OK	RIH WITH 8 1/2" BHA TO 5598 M. FILLED PIPE/CIRCULATED EVERY 1000 M. TIGHT HOLE 4905 M - 4925 M, TIGHT SPOTS 5116 M, 5120 M AND 5140 M. REAMED DOWN FROM 5598 M TO TD, 1800 LPM, 254 BAR, 120 - 160 RPM, 15 -28 KNM TORQUE.
03.04.2001.13:30	21:00	7,5	5725,0	DDRU	OK	DRILLED 8 1/2" HOLE FROM 5655 M TO TD AT 5725 M WITH 2000 - 2100 LPM, 280 - 290 BAR, 100 - 165 RPM, 5 - 8 TON WOB AND 16 - 24 KNM TORQUE. TOOK SURVEY AT TD.
03.04.2001.21:00	00:00	3,0	5725,0	DCAU	OK	CIRCULATED HOLE CLEAN WITH 2000 LPM, 275 - 290 BAR AND 130 - 150 RPM.
04.04.2001.00:00	02:00	2,0	4975,0	DDOU	OK	FLOWCHECKED, PUMPED SLUG AND POOH WITH 8 1/2" BHA TO 4975 M.
04.04.2001.02:00	06:00	4,0	4837,0	ELDU	OK	LOGGED WITH ADN MEMORY TOOL FROM 4975 M TO 4837 M WITH 55 M/HR, 80 RPM AND 13 - 15 KNM TORQUE.
04.04.2001.06:00	10:00	4,0	4691,0	ELDU	OK	LOGGED WITH ADN MEMORY TOOL FROM 4837 M TO 4691 M WITH 55 M/HR, 80 RPM, AND 12 - 15 KNM TORQUE. TIGHT SPOT AT 4790 M, 25 TON OVERPULL.
04.04.2001.10:00	18:30	8,5		DDOU	OK	POOH. FLOWCHECKED AT SHOE AND BOP. REMOVED RADIOACTIVE SOURCES FROM ADN. LD BHA.
04.04.2001.18:30	00:00	5,5	3021,0	PTTU	OK	PU AND RIH WITH 3 1/2" CEMENT STINGER AND 5" DP TO 3021 M.
05.04.2001.00:00	05:30	5,5	5725,0	PTTU	OK	RIH WITH CEMENT STINGER TO 5725 M. BROKE CIRCULATION EVERY 1000 M IN OPEN HOLE. WASHED DOWN LAST STAND TO 5725 M.
05.04.2001.05:30	06:00	0,5	5725,0	PCCU	OK	CIRCULATED BU WITH 1900 LPM, 300 BAR AND 150 RPM.
05.04.2001.06:00	07:30	1,5	5725,0	PCCU	OK	CIRCULATED BU AT 5725 M WITH 1950 LPM, 290 BAR AND 150 RPM.
05.04.2001.07:30	09:00	1,5	5725,0	PSSU	OK	PUMPED 8.0 M3 1.80 SG SPACER WITH 900 LPM, 105 BAR AND 150 RPM. MIXED AND PUMPED 13.7 M3 1.90 SG CEMENT SLURRY WITH 1100 LPM AND 150 BAR FOLLOWED BY 1 M3 1.80 SG SPACER. DROPPED WIPER DART AND DISPLACED CEMENT WITH MUD PUMPS, 2000 LPM, 274-300 BAR AND 150 RPM.
05.04.2001.09:00	12:00	3,0	4440,0	PSSU	OK	POOH FROM 5725 M TO 5350 M WHILE PUMPING 27 STROKES/STAND 1,72 SG MUD AND ROTATING WITH 15 RPM. PULLED OUT TO 4440 M.
05.04.2001.12:00	13:30	1,5	4440,0	PCCU	OK	CIRCULATED BU WITH 2000 LPM, 293 BAR, 150 RPM AND 9 KNM. NO CEMENT IN RETURN.
05.04.2001.13:30	15:00	1,5	4440,0	PSSU	OK	PUMPED 8 M3 1.80 SG SPACER 1000 LPM, 110 BAR AND 150 RPM. MIXED AND PUMPED 12.1 M3 1.90 SG CEMENT SLURRY WITH 1000 LPM AND 130 BAR FOLLOWED BY 1.0 M3 1.80 SG SPACER. DISPLACED CEMENT WITH MUD PUMPS, 2000 LPM AND 245-262 BAR AND 150 RPM.
05.04.2001.15:00	16:00	1,0	4110,0	PSSU	OK	POOH FROM 4440 M TO 4110 M WHILE PUMPING 32 STROKES/STAND 1,72 SG MUD AND ROTATING WITH 15 RPM.
05.04.2001.16:00	17:30	1,5	4100,0	PCCU	OK	POOH TO 4100 M AND CIRCULATED BU WITH 2100 LPM, 280-290 BAR, 150 RPM AND 8 KNM. NO CEMENT IN RETURN.
05.04.2001.17:30	19:00	1,5	4100,0	PSSU	OK	PUMPED 8 M3 1,80 SG SPACER WITH 1000 LPM, 90 BAR AND 150 RPM. MIXED AND PUMPED 12,1 M3 1,90 SG CEMENT SLURRY WITH 1100 LPM/130 BAR, FOLLOWED BY 1 M3 1,8 SG SPACER. DROPPED DART AND DISPLACED CEMENT WITH 32,8 1,72 SG MUD, 2000 LPM, 234 - 255 BAR, 150 RPM AND 7 KNM TORQUE.
05.04.2001.19:00	20:30	1,5	3780,0	PSSU	OK	POOH FROM 4100 M TO 3780 M WHILE PUMPING 32 STROKES/STAND 1,72 SG MUD AND ROTATING WITH 15 RPM.
05.04.2001.20:30	23:00	2,5	3584,0	PCCU	OK	POOH TO 3584 M AND CIRCULATED BU WITH 2150 LPM, 290 BAR AND 150 RPM. NO CEMENT IN RETURN.
05.04.2001.23:00	00:00	1,0	3584,0	PSSU	OK	PUMPED 8 M3 SPACER WITH 900 LPM, 80 BAR AND 150 RPM. MIXED AND PUMPED 8,9 M3 1,9 SG CEMENTSLURRY WITH 1000 LPM AND 95 BAR

							FOLLOWED BY 1 M3 1,8 SG SPACER. DROPPED DART AND DISPLACED CEMENT WITH 24 M3 1,72 SG MUD, 2000 LPM, 198 - 226 BAR AND 15 RPM.
06.04.2001.00:00		02:00	2,0	3342,0	PSSU	OK	POOH FROM 3584 M TO 3530 M WHILE PUMPING 41 STROKES/STAND 1,72 SG MUD AND ROTATING WITH 15 RPM. DDM MUD HOSE BURSTED AT 340 BAR DUE TO VALVE ON TOP DRIVE NOT OPENED AFTER CONNECTION. DISCONNECTED DRILLING STAND AND CONTINUED TO POOH TO 3342 M DISPLACING CEMENT OUT OF DP WITH CEMENT HOSE.
06.04.2001.02:00		03:00	1,0	3315,0	PCCU	OK	POOH TO 3315 M AND CIRCULATED BU WITH 860 LPM/100 BAR USING CEMENT HOSE. ROTATED STRING SLOWLY IN SLIPS WHILE CHANGING MUD HOSE.
06.04.2001.03:00		06:00	3,0	3315,0	DERD	E FAIL	CHANGED OUT BROKEN MUD HOSE. CIRCULATED WITH 860 LPM/100 BAR AND ROTATED STRING SLOWLY IN SLIPS WHILE CHANGING MUD HOSE. NO CEMENT IN RETURN.
06.04.2001.06:00		07:30	1,5	3315,0	PSSU	OK	PUMPED 8 M3 1,8 SG SPACER WITH 1000 LPM, 90 BAR AND 150 RPM. MIXED AND PUMPED 8,9 M3 1,9 SG CEMENTSLURRY WITH 1000 LPM AND 105 BAR FOLLOWED BY 1 M3 SG SPACER. DROPPED WIPER DART AND DISPLACED CEMENT WITH 21,7 M3 1,72 SG MUD, 2000 LPM, 220 BAR, 150 RPM AND 6 KNM TORQUE.
06.04.2001.07:30		09:30	2,0	2380,0	PSSU	OK	POOH FROM 3315 M TO 3083 M WHILE PUMPING 43 STROKES/STAND 1,72 SG MUD AND ROTATING WITH 15 RPM. POOH TO 3030 M, PUMPED 1 M3 1,72 SG MUD AND CONTINUED TO POOH TO 2380 M.
06.04.2001.09:30		11:30	2,0	2380,0	PCCU	OK	CIRCULATED BU AT 2380 M WITH 2400 LPM, 290 BAR, 150 RPM AND 3 - 5 KNM TORQUE. NO CEMENT IN RETURN. PUMPED 10 M3 1,72 SG BENTONITE PILL AND DISPLACED SAME WITH 1,72 SG MUD.
06.04.2001.11:30		12:00	0,5	2365,0	PTTU	OK	POOH TO 2365 M.
06.04.2001.12:00		12:30	0,5	2365,0	DERD	E FAIL	CHANGED FROM BX ELEVATOR TO AIR ELEVATOR DUE TO WORN FITTINGS. HOOKED UP NEW AIR HOSE FOR ELEVATOR.
06.04.2001.12:30		13:30	1,0	2180,0	PTTU	OK	CONTINUED TO POOH TO 2180 M WITH CEMENT STINGER.
06.04.2001.13:30		14:30	1,0	2180,0	PSSU	OK	PUMPED 8 M3 1,8 SG SPACER WITH 800 LPM, 90 - 120 BAR AND 150 RPM. MIXED AND PUMPED 15,5 1,9 SG CEMENT SLURRY WITH 1000 LPM AND 80 - 40 BAR. DROPPED WIPER DART AND DISPLACED CEMENT WITH 11,9 M3 1,72 SG MUD, 2000 LPM, 127 - 160 BAR AND 150 RPM.
06.04.2001.14:30		15:30	1,0	1920,0	PSSU	OK	POOH TO 2020 M WHILE PUMPING 50 STROKES/STAND AND ROTATING WITH 15 RPM. POOH TO 1980 M AND PUMPED 1 M3 1,72 SG MUD. CONTINUED TO POOH TO 1920 M.
06.04.2001.15:30		17:00	1,5	1920,0	PCCU	OK	CIRCULATED BU AT 1920 M WITH 2450 LPM, 280 BAR, 150 RPM AND 3 KNM TORQUE. GOT 13 M3 CONTAMINATED MUD IN RETURN.
06.04.2001.17:00		00:00	7,0	300,0	PTPU	OK	SLUGGED PIPE AND POOH TO 300 M. LD 5" AND 3 1/2" DP WHILE POOH.
07.04.2001.00:00		00:30	0,5	199,0	PTPU	OK	POOH FROM 300 M TO 199 M WITH 3 1/2" CEMENT STINGER AND LD SAME.
07.04.2001.00:30		01:00	0,5	199,0	DERD	E FAIL	REPAIRED BOLT ON PILOTVALVE TO DDM TILT DUE TO HYDRAULIC LEAKAGE.
07.04.2001.01:00		02:00	1,0		PTPU	OK	POOH FROM 199 M AND LD 3 1/2" CEMENT STINGER. CLEANED AND CLEARED FLOOR.
07.04.2001.02:00		03:00	1,0		DERD	OK	CUT AND SLIPPED DRILLINE.
07.04.2001.03:00		06:00	3,0	1640,0	PTTU	OK	MU AND RIH WITH 12 1/4" CLEAN OUT BHA TO 1640 M. FILLED PIPE AT 1000 M.
07.04.2001.06:00	< /TD>	07:00	1,0	1983,0	PSSU	OK	RIH WITH 12 1/4" CLEAN OUT BHA TO 1901 M. WASHED DOWN FROM 1901 M WITH 1550 LPM, 72 BAR AND 60 RPM. TAGGED CEMENT AT 1983 M. SET DOWN 10 TON.
07.04.2001.07:00		07:30	0,5	1975,0	PSTU	OK	CLOSED UAP AND TESTED CEMENT PLUG TO 120 BAR/ 10 MIN.
07.04.2001.07:30		11:00	3,5	1983,0	PCCU	OK	DISPLACED HOLE TO 1.42 SG WBM.
07.04.2001.11:00		13:30	2,5		PTTU	OK	POOH FROM 1983 M WITH 12 1/4" CLEAN UP ASSEMBLY

07.04.2001.13:30	15:00	1,5		PACU	OK	MU SLT WITH ONE SINGLE AND JET TOOL BELOW. RIH AND WASHED WELLHEAD WITH 2200 LPM, 20 BAR AND 10 RPM. PULLED WEARBUSHING WITH 20 TON OVERPULL. POOH AND LD WEARBUSHING.
07.04.2001.15:00	17:00	2,0		PACU	OK	RIH WITH SLT. LANDED IN WELLHEAD. CLOSED UAP. PULLED SEAL ASSEMBLY WITH 10 TON OVERPULL. FLOWCHECKED FOR 10 MIN THROUGH CHOKE. OPENED UAP AND FLOWCHECKED. POOH AND LD SEAL ASSEMBLY, SLT AND JET SUB.
07.04.2001.17:00	21:00	4,0	550,0	PACU	OK	MU 13 3/8" CASING CUTTING ASSEMBLY AND RIH. TOOK TORQUE READINGS AND LANDED IN WH. SET DOWN 5 TON AND TOOK TORQUE READINGS. CLOSED UAP. CUT CASING AT 550 M WITH 825 LPM, 40 BAR AND 150 RPM. OBSERVED 2 BAR PRESSURE DROP, DROP IN TORQUE AND CHANGE ON WEIGHT INDICATOR. OBSERVED ANNULUS PRESSURE AND FLOWCHECKED THROUGH CHOKELINE.
07.04.2001.21:00	23:00	2,0		PACU	OK	POOH WITH 13 3/8" CUTTING ASSEMBLY. LD X-OVER, PIN X PIN SUB, BIT SUB AND PIPE CUTTER.
07.04.2001.23:00	00:00	1,0		PACU	OK	CLEARED FLOOR AND PU 13 3/8" CASING SPEAR ASSEMBLY.
08.04.2001.00:00	01:30	1,5	550,0	PACU	OK	RIH WITH 13 3/8" CASING SPEAR ASSEMBLY. LANDED SPEAR STOP IN WH AND SET DOWN 5 TON. PULLED CASING FREE WITH 5 TON OVERPULL.
08.04.2001.01:30	03:00	1,5	390,0	PACU	OK	CIRCULATED ANNULUS CLEAN UP CHOKELINE WITH 1100 LPM AND 8,5 BAR. PUMPED SLUG AND POOH WITH CASING AND SPEAR ASSEMBLY. SECURED 13 3/8" CASING IN ROTARY AND RELEASED CASING SPEAR ASSEMBLY.
08.04.2001.03:00	06:00	3,0	220,0	PACU	OK	RU TO RETRIEVE 13 3/8" CASING. POOH WITH 13 3/8" CASING FROM 390 M TO 220 M AND LD SAME.
08.04.2001.06:00	10:00	4,0		PACU	OK	POOH WITH 13 3/8" CASING FROM 220 M AND LD SAME.
08.04.2001.10:00	11:00	1,0	800,0	PTTU	OK	RIH TO 800 M WITH 5" DP OPEN ENDED.
08.04.2001.11:00	12:00	1,0	800,0	PCCU	OK	CIRCULATED BU WITH 3600 LPM, 58 BAR AND 130 RPM. PUMPED 16 M3 BENTONITE PILL AND DISPLACED SAME WITH 4.8 M3 MUD.
08.04.2001.12:00	13:00	1,0	600,0	PTTU	OK	POOH TO 600 M.
08.04.2001.13:00	13:30	0,5	600,0	PSSU	OK	PUMPED 10 M3 SEA WATER WITH 1100 LPM, 30-45 BAR AND 150 RPM. MIXED AND PUMPED 21.6 M3 1.90 SG CEMENT WITH 1000 LPM, 35-50 BAR AND 150 RPM. DISPLACED CEMENT WITH 200 L SEA WATER AND 3.4 M3 MUD WITH CEMENTPUMP.
08.04.2001.13:30	14:00	0,5	430,0	PSSU	OK	POOH TO 430 M.
08.04.2001.14:00	14:30	0,5	430,0	PCCU	OK	DROPPED WIPER PLUG AND CIRCULATED BU WITH 3600 LPM AND 35 BAR.
08.04.2001.14:30	17:00	2,5		PTPU	OK	POOH AND LD 5" DP.
08.04.2001.17:00	00:00	7,0		PTPU	OK	LD 5" DP FROM DERRICK.
09.04.2001.00:00	06:00	6,0		PTPU	OK	LD 5" AND 5 1/2" DP FROM DERRICK.
09.04.2001.06:00	10:30	4,5		PTPU	OK	LD DP FROM DERRICK. TESTED CEMENTPLUG TO 70 BAR/10 MIN WHILE LD DP.
09.04.2001.10:30	11:30	1,0		PTPU	OK	LD SPEAR ASSEMBLY AND CUTTING ASSEMBLY.
09.04.2001.11:30	13:00	1,5	450,0	PSSU	OK	RIH TO 430 M WITH 5 1/2" DP OPEN ENDED. WASHED DOWN TO 450 M. PUMPED 10 M3 SEA WATER WITH 1100 LPM, 30 BAR AND 150 RPM. MIXED AND PUMPED 42.7 M3 1.90 SG CEMENT WITH 1200 LPM, 45 BAR AND 150 RPM. DISPLACED CEMENT WITH 0.7 M3 SEA WATER AND 1.0 M3 MUD.
09.04.2001.13:00	15:00	2,0	180,0	PSSU	OK	POOH TO 180 M. REVERSE CIRCULATED TWO STRING VOLUMES AND DUMPED CEMENT AND MUD TO SEA WITH 1500 LPM AND 20 BAR. INSERTED WIPER PLUG IN DP AND DISPLACED HOLE AND RISER TO SEA WATER WITH 3400 LPM.
09.04.2001.15:00	15:30	0,5		PTTU	OK	POOH. WASHED BOP AND CHOKE-LINES ON WAY OUT.
09.04.2001.15:30	00:00	8,5		BBRU	OK	CLEARED FLOOR AND PREPARED TO PULL BOP. HELD SAFETY MEETING/SJA. INSTALLED RISER HANDLING JOINT. DISCONNECTED BOP AT 19:00 HRS. MOVED RIG OFF LOCATION. ND KILL/CHOKE AND BOSTER LINE. PULLED BOP.

10.04.2001.00:00	04:00	4,0		BBRU	OK	PULLED BOP. DISCONNECTED BEACON AND BULLS EYE. LANDED BOP ON CARRIER. SECURED BOP. UNLATCHED GUIDE LINES, POD LINES AND RISER. MOVED BOP TO PARKED POSITION.
10.04.2001.04:00	06:00	2,0		PTPU	OK	PU AND MU 20" X 30" CUTTING ASSEMBLY.
10.04.2001.06:00	07:00	1,0		PTPU	OK	MU 20" X 30" CUTTING ASSEMBLY. TESTED CUTTERS AT SURFACE WITH 500 LPM AND 5 BAR.
10.04.2001.07:00	08:00	1,0	168,0	PTPU	OK	RIH AND SET DOWN 5 TON. ENGAGED SPEAR AND TOOK 10 TON OVERPULL.
10.04.2001.08:00	09:00	1,0	169,0	PACU	OK	CUT CASING WITH 80-120 RPM, 1100 LPM AND 270 BAR. CUT THROUGH 20" CASING. 18 3/4" WELLHEAD RELEASED UNINTENTIONALLY. POOH WITH 18 3/4" WELLHEAD AND 20" CASING.
10.04.2001.09:00	10:00	1,0		PACU	OK	RELEASED SPEAR AND LD HOUSING.
10.04.2001.10:00	13:00	3,0	169,0	PTPU	OK	MU 30" CASING CUTTER ASSEMBLY AND RIH. STABBED INTO 30" CONDUCTOR AND SET DOWN 5 TON. ENGAGED SPEAR AND TOOK 15 TON OVERPULL.
10.04.2001.13:00	14:30	1,5	169,0	PACU	OK	CUT 30" CASING WITH 100-120 RPM, 1000 LPM AND 170 BAR. ATTEMPTED TO PULL CASING WITH 250 TON MAX OVERPULL.
10.04.2001.14:30	15:30	1,0	169,0	PACU	OK	CUT 30" CASING WITH 120 RPM, 1200 LPM AND 235 BAR. TORQUE INCREASED. STOPPED ROTATION AND PUMPS. 30" CASING FREE.
10.04.2001.15:30	16:00	0,5		PAHU	OK	POOH WITH 30" HOUSING AND PGB. LANDED ON TROLLEY. MEANWHILE ROV PERFORMED SEABED INSPECTION.
10.04.2001.16:00	22:00	6,0		MNBU	OK	STARTED TO DEBALLAST THE RIG WHILE SECURING PGB AND RELEASING 30" HOUSING. WHILE DEBALLASTING: RELEASED SPEAR FROM HOUSING AND LD SAME. LD 30" CUTTING ASSEMBLY. RACKED 1 STAND 8" DC AND 5 1/2" DP IN DERRICK. PERFORMED MAINTANCE ON DDM. CHANGED I.BOP AND PIN X PIN SUB ON DDM.
10.04.2001.22:00	00:00	2,0		DERD	E FAIL	ATTEMPTED TO COMPLETE DEBALLASTING THE RIG. PROBLEMS WITH BALLASTING SYSTEM.
11.04.2001.00:00	04:30	4,5		DERD	E FAIL	COMPLETED DEBALLASTING THE RIG. SLOW OPERATION DUE TO PROBLEMS WITH AIR IN BALLASTING SYSTEM DUE TO A LEAKING VALVE. MEANWHILE: CHANGED TO 6 1/2" LINERS ON MUD PUMPS. PERFORMED MAINTANCE ON DDM DW. WORKED ON PILOT LEAK ON WEDGE-LOCK ON BOP.
11.04.2001.04:30	06:00	1,5		MARU	OK	ANCHOR HANDLING.
11.04.2001.06:00	12:00	6,0		MARU	OK	ANCHOR HANDLING. ANCHOR NO 3 ON BOLSTER AT 0648 HRS. ANCHOR NO 6 ON BOLSTER AT 0704 HRS. ANCHOR NO 2 ON BOLSTER AT 0744 HRS. ANCHOR NO 1 ON BOLSTER AT 0900 HRS. ANCHOR NO 7 ON BOLSTER AT 0925 HRS. ANCHOR NO 5 SECURED ON SUPLY BOAT AT 0833 HRS. ANCHOR NO 4 SECURED ON SUPLY BOAT AT 1112 HRS. ANCHOR NO 8 ON BOLSTER AT 1146 HRS.

App B Directional data, well schematic depth conversion

Directional Data

Depth Conversion

16.01.01

DYBDE										
KONVERTERING							k1			
LINVEL							0,465			
Brønn O6										
Treffpkt.	Linje	CDP	UTM N	UTM E	t1	t2	k2	vo1	vo2	Dyp(m MHN)
T1 Intra Ty	1754	2082	6775403,7	449281,3	2,000			1601		2038
T2	1754	2147	6775392,3	450093,7	2,315	2,429	1,130	1600	-229	2603
T3 T. Statfjord	1754	2196	6775383,8	450706,2	2,412	2,576	1,130	1599	-229	2818
H1	1754	2238	6775376,4	451231,1	2,630	2,778	0,800	1596	400	3100
T4 Draupne	1754	2318	6775362,5	452231,0	2,800	2,869	0,800	1596	250	3246

Linje /CDP punkter referer til seismisk undersøkelse ST9607

App C Contractors list

Service	Company
Drilling Contractor	Transocean
Directional Drilling	Baker Hughes INTEQ
Mudlogging	Baker Hughes INTEQ
MWD	Sperry Sun
Wireline Logging	Schlumberger
Drilling Fluids	MI-Norge
Cement	Haliburton
Subsea Wellhead	FKS
ROV	Subsea Norge

App D Wellsite sample description

Cuttings description

Country: Norway	**Area:** North Sea	**Field: O6B**
Well no: 34/10-43S		
RKB: 25 meter	**Company:** Statoil, Norsk Hydro	
Hole size: 17 1/2"	**Geologists: Graue/Netland**	**Date: 02.03.01**

Depth m MD	Lithology (%)	LITHOLOGY DESCRIPTION	Comments
720	70	clyst: olv gry, lt gry, sft, stcky, calc	Lot of cement
	30	sd: clr-mky qtz, v f-f, occ m, ang-rnd	
	TR	pyr, shell frags	
730	50	clyst: a/a	
	50	sd: occ crs, else a/a	
	TR	shell frags	
740	80	clyst: a/a	
	20	sd: dom f-v f, w srt, else a/a	
	TR	shell frags	
750	80	clyst: a/a	
	20	sd: occ m-crs, dom f, else a/a	
	TR	shell frags	
760	A/A		
770	A/A		
780	A/A		
790	90	clyst: a/a	
	10	sd: a/a	
800	80	clyst: a/a	
	20	sd: a/a	
810	90	clyst: a/a	
	10	sd: a/a	
820	A/A		
830	80	clyst: occ glauc, else a/a	
	20	sd: a/a	

840	A/A		
850	A/A		
860	70	clyst: a/a	
	30	sd: a/a	
870	100	sd: clr-mky qtz, f-m, occ v f-crs, ang-w rnd, mod srt	
	TR	clyst: olv gry, lt gry, sft, calc	
890	100	sd: dom m, else a/a	
	TR	clyst: a/a	
900	100	sd: dom f-m, else a/a	
910	A/A		
920	100	sd: occ crs-v crs, dom m, else a/a	
	TR	clyst: occ dk gry, else a/a	
	TR	shell frags, glauc	
930	95	sd: a/a	
	5	glauc	
940	70	sd: a/a	
	30	glauc	
950	A/A		
970	A/A		
980	80	sd: a/a	
	20	glauc	
	TR	lt mica	
1 000	A/A		
1 010	A/A		
1 020	70	glauc: black-gnsh black, aggr, subang-rnd, fst	
	30	sd: a/a	
	tr	shell frags	
1 030	60	glauc: a/a	
	40	sd: a/a	
	TR	shell frags, lt mica	

1 040		sd: dom f, else a/a	
	40	glauc: a/a	
	tr	a/a	
1 050	60	sd: clr-mky qtz, f-m, grd crs-v crs, subang-rnd, mod srt	
	30	glauc: blk-gnsh blk, aggr, subang-rnd, fst	
	10	clyst: olv gry, sft, calc, sltg	
1 060	40	sd: a/a	
	30	glauc: a/a	
	30	clyst: a/a	
1 070	70	clyst: occ sft-hd, grad gry, else a/a	
	20	sd: a/a	
	10	glauc: a/a	
1 080	A/A		
1 090	A/A		
1 100	90	clyst: a/a	
	10	sd: a/a	
	TR	glauc	
1 110	A/A		
1 120	70	clyst: a/a	
	30	sd: f-m, gd srt, else a/a	
	TR	glauc	
1 130	A/A		
1 140	60	sd: grad m-crs, occ v crs, subang-rnd, else a/a	
	30	clyst: a/a	
	10	glauc: a/a	
	TR	lt mic	
1 150	90	clyst: dom dk gnsh gry, occ gry-olv gry, frm-sft, slty	
	10	sd: clr-mky qtz, dom f-m, mod srt, subang-rnd	
	TR	glauc	
1 160	50	clyst: a/a	
	40	sd: grad m-crs, else a/a	
	10	glauc	
	TR	lt mic	
1 170	80	sd: a/a	
	20	clyst: a/a	

	TR	glauc, lt mic	
1 180	A/A		
1 190	50	clyst: a/a	
	50	sd: a/a	
	TR	a/a	
1 200	80	sd: a/a	
	20	clyst: a/a	
1 210	A/A		
1 220	A/A		
1 230	80	sd: occ crs, else a/a	
	20	clyst: a/a	
	TR	glauc	
1 240	60	clyst: a/a	
	40	sd: a/a	
	TR	a/a	
1 250	60	sd: a/a	
	40	clyst: a/a	
	TR	a/a	
1 260	80	sd: a/a	
	20	clyst: a/a	
	TR	a/a	
1 270	80	sd: clr-mky qtz, dom f-m, mod-gd srt, subang-rnd	
	20	clyst: dom gnsh gry, gry-olv gry, frm-sft, slty, non calc	
	TR	glauc, lt mic	
1 280	100	sd: a/a	
	GD TR	clyst: a/a	
	TR	glauc	
1 290	95	sd: a/a	
	5	clyst: a/a	
	TR	glauc	
1 300	80	sd: dom f, else a/a	
	20	clyst: a/a	
	TR	glauc, mic	

1 310	60	sd: a/a	
	40	clyst: a/a	
	TR	a/a	
1 320	A/A		
1 340	90	sd: a/a	
	10	clyst: a/a	
	TR	a/a	
1 350	80	sd: a/a	
	20	clyst: a/a	
	TR	a/a	
1 360	80	clyst: a/a	
	20	sd: a/a	
	TR	a/a	
1 370	70	clyst: a/a	
	30	sd: a/a	
	TR	a/a	
1 380	60	sd: clr-mky qtz, dom f, occ crs, mod srt, subang-rnd	
	40	clyst: dom gn gry, gry-olv gry, frm, slty, non calc	
	TR	glauc, pyr	
1 390	85	sd: a/a	
	15	clyst: a/a	
	TR	glauc	
1 400	60	clyst: a/a	
	40	sd: a/a	
	TR	glauc	
1 410	70	sd: a/a	
	30	clyst: a/a	
	TR	glauc	
1 420	60	clyst: a/a	
	40	sd: a/a	
	TR	glauc	
1 430	90	clyst: a/a	
	10	sd: a/a	
	TR	glauc	
1 440	A/A		

1 450	85	clyst: a/a	
	15	sd: a/a	
	TR	glauc	
1 460	90	clyst: a/a	
	10	sd: a/a	
	TR	glauc	
1 470	80	clyst: occ gry-dk brn gry, else a/a	
	20	sd: a/a	
	TR	glauc	
1 480	90	sd: a/a	
	10	clyst: a/a	
	TR	glauc	
1 490	A/A		
1 500	70	sd: clr-mky qtz, dom f, occ m, occ crs, mod srt, subang-rnd	
	30	clyst: dom gn gry, gry-olv gry, gry brn gry, frm, blky, slty, non calc, micro pyr	
	TR	glauc	
1 510	A/A		
1 520	80	clyst: a/a	
	20	sd: a/a	
	TR	glauc, pyr	
1 530	A/A		
1 540	90	clyst: a/a	
	10	sd: a/a	
	TR	a/a	
1 550	80	clyst: a/a	
	20	sd: a/a	
	TR	a/a	
1 560	A/A		
1 570	A/A		
1 580	100	clyst: a/a	
	GD TR	sd: a/a	
1 590	A/A		

1 600	A/A		
1 610	A/A		
1 620	A/A		
1 630	A/A		
1 640	100	clyst: a/a	
	GD TR	sd: occ aggr w/ weak cmt, s f-f, else a/a	
1 650	A/A		
1 660	100	clyst: dom gn gry-dk gn gry, occ med dk gry, frm-hd, blky, non-weak silty, non calc, glauc	
	TR	sd: clr-mky qtz, v f-m, subrnd, mod srt	
1 670	A/A		
1 680	100	clyst: grad med gry-gn gry, occ med bl-gry, else a/a	
	TR	sd: a/a	
1 690	A/A		
1 700	A/A		
1 710	100	clyst: dom med gry-gn gry, occ med bl gry, slty, weak calc, frm-sft	
1 720	A/A		
1 730	A/A		
1 740	A/A		
1 750	A/A		
1 760	100	clyst: dom a/a, grad lt, med bl-med gry, occ brn gry-rd gry	
1 770	75	clyst: a/a	
	25	clyst: brn gry-lt rd brn, frm-hd, blky	
	TR	pyr, glauc	
1 780	70	clyst: brn gry-lt rd brn a/a, occ olv gry, frm-sft	
	30	clyst: dom a/a, med gry-bl gry	

1 790	A/A		
1 800	80	clyst: brn gry-rd brn a/a	
	20	clyst: med gry-bl gry a/a	
	TR	clyst: lt bl gry, sft, slty	
1 810	A/A		
1 820	60	Clyst: brn gry-rd brn, frm, blky, non calc, glau, slty	
	40	clyst: med gry-bl gry, frm, blky, non calc	
	TR	clyst: lt gry, frm-sft, blky	
	TR	pyr	
1 830	A/A		
1 840	80	clyst: med gry-bl gry a/a	
	20	clyst: brn gry-rd brn a/a	
	TR	a/a	
1 850	A/A		
1 860	A/A		
1 870	80	clyst: med gry-bl gry a/a	
	15	clyst: brn grå-rd brn a/a	
	5	clyst: lt gry a/a	
	TR	pyr, tf	
1 880	A/A		
1 890	90	clysst: med gry-gn gry-olv gry a/a	
	5	clyst: brn gry-rd brn a/a	
	5	clysst: lt gry a/a	
	TR	pyr	
1 900	100	clyst: med gry-gn gry/olv gry, occ brn gry, occ lt gry, else a/a	
	TR	pyr, glauc	
1 910	A/A		
1 920	A/A		
1 930	A/A		
1 940	100	clyst: a/a	
	TR	pyr, glauc, tf	

1 950	A/A		
1 960	100	clyst: occ dk rd brn-gry rd, else a/a	
	TR	lst, pyr, glauc, tf	
1 970	100	clyst: med gry-gn gry/olv gry, occ brn gry, frm, blky, non calc, slty-v slty	
1 980	90	clyst: a/a	
	10	sltst: med gry, frm-lse, grad v f sd, clr qtz, mod srt, subang	
1 990	90	clyst: dom mid gry-lt gn gry, else a/a	
	10	sltst: a/a	
2 000	A/A		
2 010	A/A		
2 020	100	clyst: grad sd sltst, sft-frm, else a/a	
2 030	100	clyst: slty clyst, occ grad sdy, else a/a	
	TR	sd: clr qtz, f-m, subrnd, glauc	
2 034	A/A		
2 037	A/A		
2 040	100	clyst: calc-mod calc, else a/a	
	TR	a/a	
2 043	A/A		
2 046	100	clyst: a/a	
	TR	lst: gry wh, frm	
2 049	A/A		
2 052	A/A		
2 055	A/A		
2 058	A/A		
2 061	100	clyst: a/a	
	TR	glauc, lst: a/a	
2 064	100	clyst: mod-v calc, else a/a	
	TR	a/a	
2 067	100	clyst: grad olv gry, occ rd brn, v calc, else a/a TR=	

		lst	
2 073	100	clyst: med gry-med bl gry, grad olv gry-lt olv grå, frm-sft, occ hd, slty, v calc	
	GD TR	sd/sst: v f-f, mod srt	
	TR	lst: gry wh, frm-sft	
2 082	100	clyst: stcky, else a/a	
	TR	a/a	
2 088	100	clyst: slty, occ grad sltst, v calc, else a/a	
	GD TR	lst: a/a	
2 091	A/A		
2 094	A/A		
2 100	100	clyst: a/a	
	GD TR	clyst: rd brn, frm, blky, lst: a/a	
2 106	A/A		
2 112	100	clyst: dom med gry.med bl gry, a/a	
	TR	a/a	
2 118	100	clyst: dom med gry-med olv gry, a/a	
	TR	a/a	
2 124	A/A		
2 130	100	clyst: a/a	
	TR	clyst: rd brn, frm, blky, lst:a/a	
2 136	100	clyst: a/a	
	GD TR	lst: a/a	
	TR	pyr	
	TR	sd: clr qtz, crs- v crs, rnd	
2 138	A/A		
2 150	100	Clyst: gy blk, frm, blky, calc	
	Tr	Sltst: md gy, frm, v calc	
2 160	100	Clyst: dk gy - gysh blk, olv blk, occ dk gnsh gy, frm,	
		sl slty, tr glau	
2 170	100	Clyst: a/a	
2 180	100	Clyst: a/a	
2 190	100	Clyst: occ grdng sltst, else a/a	
2 200	100	Clyst: abun calc cmt, else a/a	
2 210	100	clyst: a/a	

2 220	100	Clyst: a/a	
2 230	100	Clyst: a/a	
2 240	100	Clyst: gysh blk, frm-mod hd, sb blky, calc, sl slty	
2 250	100	Clyst: a/a TR: lst, dol	
2 260	100	Clyst: a/a " "	
2 270	100	Clyst: a/a " "	
2 280	100	Clyst: a/a " "	
2 290	100	Clyst: a/a, v calc - grdng mrl TR: lst, dol	
2 300	100	Clyst: a/a	
2 310	100	Clyst: sl calc cmtd, else a/a	
2 320	100	Clyst: a/a	
2 330	100	Clyst: a/a	
2 340	100	Clyst: a/a	
2 350	100	Clyst: occ mod brn, v slty - grdng sltst, else a/a	
2 360	100	Clyst: a/a	
2 370	100	Clyst: a/a	
2 380	100	Clyst: a/a	
2 390	100	Clyst: a/a	
2 400	100	Clyst: a/a	
2 410	100	Clyst: a/a	
2 420	100	Clyst: a/a	
2 430	100	Clyst: dk gy-gysh blk, calc cmtd a/a	
2 440	100	Clyst: a/a	
2 450	100	Clyst: a/a	
2 460	100	Clyst: occ olv gy, else a/a	
2 470	100	Clyst: a/a, tr. lst, dol	
2 480	100	Clyst: a/a, tr. lst, dol	
2 490	100	Clyst: a/a, tr. lst, dol	
2 500	100	Clyst: a/a, tr. lst, dol	
2 510	100	Clyst: a/a, tr. lst, dol	
2 520	100	Clyst: a/a, tr. lst, dol	
2 530	100	Clyst: a/a, tr. lst, dol	
2 540	100	Clyst: a/a, tr. lst, dol	
2 550	100	Clyst: a/a, tr. lst, dol	
2 560	100	Clyst: a/a, tr. lst, dol	
2 570	100	Clyst: a/a, tr. lst, dol	
2 580	100	Clyst: gysh blk, frm-mod hd, sb blky, calc, sl slty	
	Tr	Lst, dol	
2 590	100	Clyst: a/a	
2 600	100	Clyst a/a, tr lst; buff, wh	
2 610	100	Clyst: a/a, tr. lst	
	Tr	Sltst: gnsh gy, frm-hd, calc, v glau	
2 620	100	Clyst: dk gy, v sl calc a/a Tr: lst,dol	
2 630	100	Clyst: a/a, non calc, slty, tr. lst	
2 640	100	Clyst: a/a, sl calc, tr lst	
2 650	100	Clyst: a/a	
2 660	100	Clyst: a/a, non calc	
2 670	100	Clyst: occ mrl, else a/a Tr lst	
2 680	100	Clyst: non calc, else a/a	
2 690	100	Clyst: a/a	
2 700	100	Clyst: a/a	

2 710	100	Clyst: sl calc, else a/a	
2 720	a/a		
2 730	a/a		
2 740	a/a		
2 750	a/a		
2 760	a/a		
2 780	a/a		
2 790	a/a		
2 800	a/a		
2 810	a/a		
2 820	a/a		
2 830	a/a		
2 840	a/a		
2 850	a/a		
2 860	a/a		
2 870	a/a		
2 880	a/a		
2 890	a/a		
2 900	a/a		
2 910	a/a		
2 920	a/a		
2 930	a/a		
2 940	a/a		
2 950	a/a		
2 960	a/a		
2 970	100	Clyst: calc, else a/a	
2 980	100	Clyst: a/a	
2 990	100	Clyst: a/a, tr lst, sltst: lt gy, frm, calc cmtd	
3 000	100	Clyst: a/a, tr lst	
3 010	100	Clyst: a/a	
3 020	100	Clyst: dk gy - gysh blk, occ yel brn, frm-mod hd, sb blky, sl slty, calc cmtd, tr lst	
3 030	100	Clyst: a/a, tr. lst	
3 040	100	Clyst: a/a, tr. lst	
3 050	100	Clyst: a/a, tr. lst	
3 060	100	Clyst: a/a, tr. lst	
3 070	100	Clyst: a/a, tr. clyst: dk gnsh gy, tr. lst	
3 080	100	Clyst: a/a, tr. lst	
3 090	100	Clyst: a/a	
3 100	100	Clyst: a/a	
3 110	100	Clyst: a/a	
3 120	50	Clyst: a/a	
	50	Sltst: lt-md gy, frm, calc cmtd, glau, pyr	
3 130	100	Clyst: a/a	
3 140	100	Clyst: a/a	
3 150	100	Clyst: a/a, glauc	
3 160	100	Clyst: a/a	
3 163	100	Clyst: a/a, glauc	
3 165	70	Clyst: a/a	
	30	Lst: lt gy, gnsh gy, rd brn, frm, arg lam, microxln,	
3 167	70	Clyst: a/a, 30% lst a/a	

3 170	60	Lst: a/a	
	40	Clyst: a/a	
3 173	a/a	Tr. sd, clr qtz, vfn-fn, ls, sb rndd	
3 176	a/a		
3 178	50	Clyst: dk gy-gysh blk, frm-mod hd, sb blky-blky, sl	Sirk. btm`s up#1
	50	Lst/mrl: lt gy, gnsh gy, rd brn, frm, arg lam,	
3 179	50	Clyst: dk gy-gysh blk a/a	
	50	Lst/mrl a7a	
3 182	a/a		
3 185	a/a		
3 188	a/a		
3 191	a/a		
3 192	a/a		Btm`s up#2
3 194	70	clyst: dk gy-gnsh blk, rd brn, occ olv blk, a/a	
	30	Lst: a/a	
3 197	90	Clyst: a/a	
	10	Lst: a7a	
	Tr	Sd: clr-transl qtz, vfn-med, subang-sub rndd	
3 200	100	Clyst: sltv occ grdng sst a/a	
	Tr	Lst/sst: a/a	
3 203	a/a		
3 206	95	Clyst: dk gy-gysh blk a/a, tr micropyr, sl calc	
	5	Sd: pred vfn, occ fn &med, mod srtd a/a	
3 209	95	Clyst: also lt gy, else a/a	
	5	Sd: a/a	
3 212	70	Clyst: a/a	
	30	Sd: clr-transl, lt gy qtz, vfn-md a/a	
3 215	90	Clyst: a/a	
	10	Sd: a/a	
	Tr	Coal: blk. frm, britl	
3 218	90	Clyst: dk gy-gysh blk, olv blk, occ rd brn, occ lt gy,	
		grdng sltst, frm-hd, blky-sbblky, sl calc, tr micropyr,	
	5	Sd: Clr - transl qtz, pred vfn, occ fn &med, sbang-	
		mica	
	5	Coal: a/a	
3 221	75	Clyst: pred lt gy- wh, grdng sltst a/a	
	20	Sd: vfn grdng sltst a/a	
	5	Coal: a/a	
3 224	50	Clyst: a/a	
	50	Sd: clr-transl, lt gy qtz, pred vfn - grdng sltst, occ	
		subrnd, mod-w srtd, tr pyr	
3 227	a/a		
3 230	65	Clyst: a/a	
	30	Sd: a/a	
	5	Coal: a/a	
3 233	60	Clst: a/a	
	30	sd:a/a	
	10	Coal: a/a	
3 236	a/a		
3 239	a/a		

3 242	50	Clyst: a/a	
	50	Sd: vfn-fn, also med a/a	
3 245	a/a		
3 248	a/a		
3 251	a/a		
3 254	40	Clyst: a/a	
	60	Sd/ssT: a/a	
	Tr	Coal: a/a	
3 257	50	Clyst: dkgy-gysh blk, olv blk, tr rd brn, slty grdng	
		frm-hd, blky-sb blky, tr pyr, glau, calc	
	50	Sd/sst: clr-transl, lt gy qtz, vfn-fn, micaceous subang-	
	Tr	Coal: blk, frm-hd, brit, occ grdng coaly sh	
3 281	a/a		
3 284	a/a		
3 287	a/a		
3 290	a/a		
3 293	50	Clyst: md dk gy-gysh blk a/a	
	50	Sd/sst: also med, else a/a	
	Tr	Coal: a/a	
3 296	70	Clyst : a/a	
	30	Sd/ssT: a/a	
	Tr	Coal: a/a	
3 299	70	Clst: a/a	
	30	Sd/sst: a/a Tr. coal	
3 307	a/a		
3 305	60	Clyst: a/a	
	40	Sd/sst: a/a Tr. coal	
3 308	50	Clst: a/a	
	50	Sd/sst: a/a	
3 314	90	Sd/sst: pred fn-med, occ crs, else a/a	
	10	Clyst: a/a Tr. Coal a7a	
3 317	a/a		
3 320	a/a		
3 323	a/a		
3 326	a/a		
3 329	a/a		
3 332	20	Clyst: a/a	
	80	Sd/sst: calc cmtd, also vfn, else a/a Tr. coal	
3 335	a/a		
3 338	a/a		
3 341	a/a		
3 344	40	Clst: a/a	
	60	Sd/sst: a/a	
3 347	80	Clyst: dk gy-gnsh blk, olv blk a/a	
	20	Sd/sst: a/a Tr. coal	
3 350	a/a		
3 353	a/a		
3 356	90	Clyst: a/a	
	10	Sd/sst: a/a	
3 359	90	Clyst: a7a	
	10	Sd/sst: a7a	

3 362	95	Clyst: a/a	
	5	Sd/sst: a/a	
3 365	a/a		
3 368	a/a		
3 371	a/a		
3 374	100	Clyst: dk gy - gysh blk, frm-mod hd, sbfiss, sl slty, sl	
3 377	100	Clyst: a/a Tr. sd, vfn-fn	
3 380	100	Clyst: a/a	
3 383	a/a		
3 386	a/a		
3 389	a/a		
3 392	a/a		
3 395	a/a		
3 398	a/a	Tr. lst	
3 401	a/a		
3 404	100	Sh. dk gy a/a, prtly sh: md gy, frm, fiss, sl calc, sl slty	
3 407	100	Sh: dk gy a/a, tr. sd vfn-fn clr -transl qtz	
3 410	a/a		
3 413	a/a		
3 416	a/a		
3 419	a/a		
3 422	a/a		
3 425	a/a		
3 428	a/a		
3 434	a/a		
3 440	100	Sst: clr-transl qtz, frm, vfn-fn, sb rndd, w srtd, calc	
3 443	100	Sst: clr-transl qtz, frm, ls, vfn-fn, occ med a7a	
3 446	a/a		
3 449	100	Sd, pred fn, else a/a	
3 452	80	Sst a/a	
	20	Lst: lt gy, frm, microxln, organic lam, slty	
3 455	a/a		
3 458	a/a		No pyr coatings
3 461	90	Sst: a/a	visible
	10	Lst: a/a	
3 464	a/a		
3 467	100	Sst: a/a, tr lst: a/a	
3 470	100	Sst: a/a, tr a/a	
3 473	a/a		
3 476	a/a		
3 479	a/a		
3 482	a/a		
3 485	a/a		
3 488	80	Sst: a/a, 20% Sltst: a/a	
3 491	80	Sst: a/a. 20% Sltst a/a	
3 494	50	Sst: a/a	
	50	Sh: dk gy a/a	
3 497	a/a		
3 500	a/a		

3 503	30	Sst: clr-transl qtz, frm, vfn-fn, sb rndd, w srtd, calc	
	50	Sh. dk gy a/a, prtly sh: md gy, frm, fiss, sl calc, slty	
3 506	a/a		
3 509	a/a		
3 512	10	Sst: a/a	
	90	Sh: a/a, tr. coal	
3 515	a/a		
3 518	a/a		
3 521	20	Sltst: dk gy, frm, calc cmtd Tr: sst	
	80	Sh: a/a	
3 524	a/a		
3 527	70	Sh: a/a	
	30	sltst: a/a	
3 530	a/a	Tr. lst	
3 533	a/a		
3 536	50	Sh: a/a	
	50	Sltst: a/a	
3 539	a/a	Tr. lst	
3 542	80	Sh: a/a	
	20	Sltst: a/a	
3 545	a/a		
3 548	90	Sh: a/a	
	10	Sltst: a/a	
3 551	a/a		
3 554	100	Sh: a/a, Tr. sltst: a/a	
3 560	a/a		
3 563	100	Sh: a/a, Tr. lst/sltst, sst	
3 566	a/a		
3 569	a/a		
3 572	a/a		
3 575	a/a		
3 578	a/a		
3 581	a/a		
3 584	a/a	tr. lst	
3 587	a/a		
3 590	a/a	tr sltst	
3 593	a/a		
3 596	a/a		
3 599	a/a		
3 602	a/a		
3 604	a/a		
3 608	a/a		
3 611	a/a		
3 614	a/a		
3 617	a/a		
3 620	100	Sh. dk gy a/a, prtly sh: md gy, frm, fiss, sl calc, slty	
3 623	a/a		
3 629	a/a		
3 632	a/a		
3 635	90	Sh: a/a	
	10	Lst: lt gy, frm, microxln, arg lam	

3 644	90	Sh: a/a	
	10	Sltst: dk gy, frm, calc cmtd	
3 647	90	Sh: a/a	
	10	Lst: a/a	
3 650	a/a		
3 653	a/a		
3 656	a/a		
3 659	a/a		
3 662	a/a		
3 665	a/a		
3 668	a/a		
3 671	a/a		
3 674	a/a		
3 677	100	Sh: dk gy-gysh blk, olv blk, frm-mod hd, sbblky-fiss,	
		sltst, micropyr, tr glau	
	Tr	Sd: vfn grdng slt	
3 680	a/a		
3 683	100	Sh: sl calc, else a/a Tr. sd: a/a	
3 686	a/a		
3 689	a/a		
3 692	a/a		
3 695	100	Sh: a/a, Tr. dol, sd: a/a	
3 698	a/a		
3 701	a/a		
3 704	a/a		
3 707	a/a		
3 710	a/a		
3 713	90	Sh: a/a	
	10	Sd: clr-transl qtz, pred vfn-fn, occ med, subang-	mod srtd
3 716	100	Sh: a/a Tr. Sd: a/a	
3 719	85	Sh: a/a	
	15	Sd: a/a	
3 722	95	Sh: a/a	
	5	Sd: a/a	
3 725	90	Sh: a/a	
	10	Sd: a/a	
3 728	100	Sh: a/a Tr: Sd: a/a	
3 731	a/a		
3 734	a/a		
3 737	100	Sh: dk gy-gysh blk, olv blk, frm-mod hd, sbblky-fiss,	
		sltst, micropyr, tr glau, sd	
3 740	a/a		
3 743	a/a		
3 746	95	Sh: a/a	
	5	Sd: clr-transl qtz, pred vfn-fn, occ med, sbang-	
3 749	100	Sh: a/a Tr. Sd	
3 752	a/a		
3 755	95	Sh: a/a	
	5	Sd: sl calc cmt, else a/a	
3 758	100	Sh: a/a Tr. Sd: a/a	
3 761	a/a		

3 764	a/a		
3 767	a/a		
3 770	a/a		
3 776	a/a		
3 782	95	Sh: a/a	
	5	Sd: a/a	
3 788	a/a		
3 794	a/a		
3 797	a/a		
3 800	a/a		
3 803	a/a		
3 806	a/a		
3 809	a/a		
3 812	a/a		
3 815	a/a		
3 818	a/a		
3 821	a/a		
3 824	a/a		
3 827	a/a		
3 830	a/a		
3 831	90	Sh: dk gy-gysh blk, frm-mod hd, sbblky-fiss, calc	
	10	Sltst: md-dk gy, frm, arg, sl calc cmtd, pyr	
3 833	50	Sh: a/a	
	50	Sltst: a/a	
3 836	a/a		
3 839	a/a		
3 842	a/a		
3 845	a/a		
3 848	a/a		
3 851	a/a		
3 857	a/a		
3 860	a/a		
3 863	100	Sltst: a/a	
3 866	a/a		
3 869	a/a		
3 872	a/a		
3 875	a/a		
3 878	a/a		T. Statfjord Fm
3 881	a/a	Tr. sst	
3 884	a/a	Tr. Sst	
3 890	70	Sltst: a/a	
	20	Sst: clr-transl qtz, vfn/fn-med, occ crs-v crs, ls, pr	
		sbrndd, i/p kaolinite clay mtx	
	10	Lst: lt gy, frm, microxln, sdy	
3 893	50	Sst: a/a	
	50	Sltst: a/a	
	Tr	Lst: a/a	
3 896	90	Sst: a/a	
	10	Sltst: a/a	
3 899	a/a		

3 905	a/a		
3 908	95	Sst: /aa	
	5	Sltst: a/a	
3 920	a/a		
3 923	a/a		
3 926	a/a		
3 929	a/a		
3 932	a/a		
3 935	a/a		
3 944	a/a		
3 947	a/a		
3 956	a/a		
3 959	a/a		
3 962	50	Sst: a/a	
	50	Sh: md gy-md dk gy, brnsh gy, frm, sb fiss, freqv arg	
		non calc, micromic, carb, slty - grdng sltst, tr coal,	
3 968	a/a		
3 974	80	Sh: a/a	
	20	Sst: a/a	
3 980	a/a		
3 986	50	Sst: a/a	
	50	Sh/sltst: a/a	
3 992	a/a		
3 998	a/a		
4 004	60	Sst: a/a	
	20	Sh/sltst: a/a	
	20	Lst: lt gy, frm, microxln, arg lam	
4 010	a/a		
4 016	80	Sst: a/a	
	10	Sh/sltst: a/a	
	10	Lst: a/a	
4 022	70	Sst: a/a	
	30	Sh/sltst: a/a	
4 025	a/a		
4 028	a/a		
4 031	a/a		
4 034	90	Sst: a/a	
	10	sh/sltst: a/a	
4 037	a/a		
4 040	70	Sst: a/a	
	30	Sltst/sh: a/a	
4 043	50	Sst: a/a	
	50	Sltst/sh: a/a	
	Tr	Coal	
4 046	70	Sltst/sh: a/a	
	30	Sst: a/a	
4 049	a/a		
4 052	90	Sltst/sh: a/a	
	10	Sst: a/a	
4 055	a/a		

4 058	a/a		
4 061	50	Sltst/sh: a/a	
	45	Coal: blk, v hd	
	5	Sst: a/a	
4 064	a/a		
4 070	60	Sltst/sh: a/a	
	35	Coal: a/a	
	5	Sst: a/a	
4 073	80	Sltst/sh: md gy-md dk gy, brnsh gy, frm, sb fiss,	
		lam, non calc, micromic, carb, slty - grdng sltst, tr	
	10	Sst: clr-transl qtz, vfn/fn-med, occ crs-v crs, ls, pr	
		sbrndd, i/p kaolinite clay mtx	
	10	Coal: blk, v hd	
4 076	60	Sltst/sh: a/a	
	30	Sst: a/a	
	10	Coal: a/a	
4 079	a/a		
4 085	70	Sltst/sh: a/a	
	20	Lst: lt gy, frm, microxln, arg lam	
	10	Sst: a/a	
4 088	a/a		
4 091	a/a		
4 094	80	Sltst/sh: a/a	
	10	Lst: a/a	
	10	Sst: a/a	
4 097	a/a		
4 100	80	Sltst/sh: a/a	
	10	Sh: dk gn, frm, sbfiss, slty, glauc, sl calc, sl slty	
	10	Sst: a/a	
4 103	a/a		
4 106	50	Sltst/sh: a/a	
	40	Sh: dk gn a/a	
	10	Sst: a/a	
4 109	a/a		
4 112	40	Sltst/sh: a/a	
	40	Sh: dk gn a/a	
	20	Sst: a/a	
4 115	60	Sst: a/a	
	20	Sltst/sh: a/a	
	10	Sh: dk gn a/a.	
	10	Lst: a/a	
4 118	40	Sst: a/a	
	20	Sltst/sh: a/a	
	20	Sh: dk gn a/a	
	20	Lst: a/a	
	Tr	Sh: brick rd brn	
4 121	70	Sst: a/a	
	10	Sltst/sh: a/a	
	10	Sh: dk gn: a/a	
	10	Lst: a/a	

4 124	a/a		
4 127	a/a		
4 130	a/a	4133: a/a	
4 136	80	Sh: md brnsh gy, dk gy, dk gn gy, **red brn**, frm-	Topp Raude
		sbfiss, non calc, occ sl slty, glauc	
	20	Sd/sltst: clr-transl qtz, vfn-fn, occ med/crs, kaol	
	Tr	Lst: lt gy, frm, microxln, arg lam	
4 139	80	Sd/sst: clr-transl, lt gy qtz, pred fn-med, occ	
		pred fn-med, occ vfn&crs, sbang-sbrndd, mod srtd,	
	20	Sh: slty occ grdng sltst, else a/a	
4 142	a/a		
4 145	90	Sst: sl calc cmtd, occ v crs, else a/a	
	10	Sh: tr oyr, else a/a	
4 148	a/a		
4 151	80	Sst: calc cmtd, a/a	
	20	Sh: a7a	
4 154	90	Sst: a/a	
	10	Sh: a/a	
4 157	70	Sst: a/a	
	30	Sh: a/a	
4 160	90	Sst: a/a	
	10	Sh: a/a	
4 163	60	Sst: a/a	
	40	Sh: a/a	
4 166	a/a		
4 169	a/a		
4 172	40	Sst: tr calc cmt, a/a	
	60	Sh: a/a	
4 175	20	Sst: a7a	
	80	Sh: a/a	
4 178	a/a		
4 181	30	Sst: a/a	
	70	Sh: a/a	
4 184	90	Sst: a/a	
	10	Sh: a/a	
4 187	80	Sst: a/a	
	20	Sh: a/a	
4 190	40	Sst: a/a	
	60	Sh: a/a	
4 193	a/a		
4 196	80	Sst: a/a	
	20	Sh: a7a	
4 199	90	Sst: a/a	
	10	Sh: a7a	
4 202	a/a		
4 205	a/a		
4 211	a/a		
4 214	a/a		
4 217	90	Sst: clr-transl, lt gy qtz, pred fn-med, occ vfn&crs,	

		occ vfn, crs&vcrs, sbang-sbrndd, mod srtd, kaol	
		Tr. Pyr, tr calc cmtd	
	10	Sh: brnsh gy, dk gy, dk gn gy, dk rd-rd brn, frm-	
		Sbfiss, slty grdng sltst, tr glau	
4 187	80	Sst: a/a	
	20	Sh: a/a	
4 190	40	Sst: a/a	
	60	Sh: a/a	
4 193	a/a		
4 196	80	Sst: a/a	
	20	Sh: a/a	
4 199	90	Sst: a/a	
	10	Sh: a/a	
4 202	a/a		
4 205	a/a		
4 211	a/a		
4 214	a/a		
4 217	a/a		
4 220	60	Sst: a/a	
	40	Sh: a/a	
4 223	20	Sst: a/a	
	80	Sh: a7a	
4 226	a/a		
4 229	70	Sst: a/a	
	30	Sh: dk gy-gysh blk, dk gn gy, else a/a	
4 232	a7a		
4 235	a/a		
4 238	a/a		
4 241	a/a		
4 244	70	Sst: a/a	
	30	Sh: a/a	
4 247	30	Sst: a7a	
	70	Sh: also brnsh gy, else a7a	
4 250	a/a		
4 253	a/a		
4 256	20	Sst: a/a	
	80	Sh: a/a	
4 259	10	Sst: a/a	
	90	Sh: a/a	
4 262	50	Lst: lt gy, frm, microxln, arg lam, sdy	
	40	Sh: a/a	
	10	Sst: a/a	
4 265	80	Sh: a/a	
	10	Lst: a/a 10% Sst: a/a	
4 268	5	Sst: clr-transl, lt gy qtz, pred fn-med, occ vfn, crs&v	
		sbang-sbrndd, mod srtd, kaol & calc cmtd, tr pyr	
	90	Sh: dk gy-gysh blk, brnsh gy, dk gn gy, dk rd-rd	
		sbfiss, slty grd sltst, tr glau	
	5	Lst: lt gy, frm-hd, microxln, arg lam	
4 271	a/a		
4 274	70	Sh: a/a	

	30	Sst: a/a	
	Tr	Lst: a/a	
4 277	40	Sh: a/a	
	40	Sst: a/a	
	20	Lst: a/a	
4 280	70	Sst: a/a	
	20	Sh: a/a	
	10	Lst. a/a	
4 283	a/a		
4 286	a/a		
4 289	90	Sst: a/a	
	10	Sh: a/a	
	Tr	Lst, coal	
4 292	a/a		
4 295	100	Sst: a/a	
	Tr	Sh: a/a, lst, coal	
4 298	90	Sst: a/a	
	10	Ls: a/a	
	Tr	Sh: a/a	
4 301	a/a		
4 304	80	Sst: a/a	
	10	Sh: a/a	
	10	Lst: a/a	
4 307	a/a		
4 310	a/a		
4 313	a/a		
4 320	70	Sst: a/a	
	20	Lst: a/a	
	10	Sh: a/a	
4 319	a/a		
4 322	90	Sst: a/a	
	10	Sh: a/a	
	Tr	Lst: a/a	
4 325	80	Sst: a/a	
	20	Sh: a/a	
	Tr	Lst	
4 328	a/a		
4 331	50	Sst: clr-transl, lt gy qtz, pred fn-med, occ vfn, crs&v	
		sbang-sbrndd, mod srtd, kaol & calc cmtd, tr pyr	
	50	Sh: dk gy-gysh blk, brnsh gy, dk gn gy, dk rd-rd	
		sbfiss, slty grd sltst, tr glau	
	Tr	Lst	
4 334	80	Sh: a/a	
	20	Sst: a/a	
	Tr	Lst	
4 337	a/a		
4 340	a/a		
4 343	60	Sh: a/a	
	40	Sst: a/a	
	Tr	Lst	

4 346	40	Sst: a/a	
	40	Sh: a/a	
	20	Lst: a/a	
		Samples between 4340 and 4370 are not described.	
		described a/a by Baker	
4370	70	SST: clr-trnsl-mlky wh qtz,pred fn-med,occ vfn &	No shows
		sbang-sbrnd,mod srtd,kaol & calc cmtd	
	30	SH: dk red-red brn,frm-mod hd,sbfis,sl slty,occ sl	
4373	a/a		
4376	a/a		
4379	30	SST: a/a	
	70	SH: a/a	
4382	10	SST: a/a	
	90	SH: a/a	
4385	a/a		
4388	a/a		
4391	100	SH a/a	
	tr	SST: a/a	
4394	90	SH: a/a	
	10	SST: a/a	
4397	70	SH: a/a	
	30	SST: a/a	
4400	60	SH: a/a	
	40	SST: a/a	
4403	40	SH: a/a	
	60	SST:a/a	
4406	a/a		
4409	70	SH: a/a	
	30	SST: a/a	
4412	60	SST: a/a	
	40	SH: a/a	
4415	a/a		
4418	a/a		
4421	a/a		
4424	20	SST: a/a	
	80	SH: dom dk red-red brn,else a/a	
4427	a/a		
4430	10	SST: a/a	
	90	SH: a/a	
4433	a/a		
4436	a/a		
4439	a/a	but SH vary between dk gry-grn gry and dk red-red	
4442	20	SST: a/a	
	80	SH. a/a	
4445	a/a		
4448	20	SST: clr-trnsl-mlky wh qtz,pred fn-med,occ vfn &	No shows
		sbang-sbrnd mod srtd kaol & calc cmtd	

	80	SH: Dom dk gry-grn gy,frm-mod hd,sbfis,sl slty,occ	
4451	a/a		
4454	a/a	But SH vary between dk gry-grn gry and dk red-red	
4457	a/a		
4460	a/a		
4 463	80	Sst, off wh-gry, loc grn, frm. fri, slt to f, subrnd,v w	
		mtx and in pt sl to mod calc mtx, tr carb lam and	
	20	Sh, gry, grnsh, dull to dk red/brn, frm,	
		sdy, grdg to arg sst, gen non calc	
4 466	40	Sst slt to f a/a	
	60	Sh a/a	
4 469	tr	Sst	
	100	Sh a/a	
4 472	100	Sh a/a	
4 475	100	Sh a/a	
4 478	100	Sh red/brn less common gry	
4 481	90	Sh a/a	
	10	Sst slt-f a/a	
4 484	80	Sh a/a	
	20	Sst slt-f, sil and calc mtx	
4 487	80	Sh a/a	
	20	Sst a/a	
4 490	50	Sh a/a	
	50	Sst slt-f, variably calc mtx	
4 500	90	Sst, off wh-gry, loc grn, frm. fri, vf to f, in pt m, clr,	
		fros, pl-red/brn and gn mafic grns, subrnd, v w srtd,	
		mod calc mtx, tr muscovite	
	10	Sh, dk gry, grnsh,dk red/brn, occ yel, silty and sdy,	
		arg sst, non calc, micmica	
4 510	90	Sst gen a/a more calc	
	10	Sh a/a	
4 520	80	Sst vf-f, loc m, gen calc	
	20	Sh a/a	
4 530	80	Sh predom dk red brn	
	20	Sst a/a	
4 540	100	Sh a/a	
	tr	Sst a/a	
4 550	100	Sh a/a	
	tr	Sst a/a	
4 553	100	Sh a/a	
	tr	Sst a/a	
4 560	100	Sh a/a	
4 570	50	Sst, slt-f, subrnd, predom lse, variable calc mtx, tr	
		predom musc, occ green chloritic and red hematitic	
	50	Sh a/a	
4 580	80	Sh, a/a, slty grdg to arg sltst	
	20	Sst a/a	
	Tr	Lst, red/brn, hd, britt, hkly frac, arg-micro xln, amor,	
	Tr	Ca veining, fros-wh, xln	
4 590	60	Sst, slt-f, a/a gen more calc	

	40	Sh, a/a	
	Tr	Caveining	
4 600	50	Sst, off wh-red brn, slt to f, subang-subrnd, v w srtd,	
		clr qz, occ fros, yel, pl-red/brn and gn mafic grns, gen lse,	
		in pt frm, fri, w/arg mtx and less com sil to mod calc xln	
		mtx, tr mica, gen musc.	
	50	Sh, dk red/brn, frm, subfiss, loc v slty & sdy grdg to arg	
		sltst and sst, gen non calc, micmica.	
4 610	90	Sh, dk redsh brn, a/a occ v. slty, grding Sltst	
	10	Sst, rdsh brn, slt-v.f, sbang-sbrnd a/a	
	tr	Lst, yelsh brn, frm, blky	
4 620	90	Sh, pred rdsh brn, occ gnsh gry, occc med gry-dk gry, loc	
		slty & sndy, grding Sltst	
	tr	Sst, a/a	
	10	Lst, pred lt gry-off wh, occ yelsh brn, frm, blky.	
4 630	40	Sh, rdsh brn, grnsh gry, occ med gry, a/a	
	60	Sst, pred lt gry, fri, vf-med, clr qtz, sbang-sbrnd a/a	
4 640	20	Sh, a/a	
	70	Sst, lt gry-off wh, fri, vf-med, sbang-sbrnd, abnt kaol, calc	
		cmt ip	
	10	Lst, off wh, hd, aren, grding Sst	
4 650	30	Sh, a/a	
	70	Sst, a/a less kaol, less calc	
4 660	70	Sh, pred lt-med gry, frm, blky, slty, occ yel, occ purp,	
		occ gnsh gry, occ rdsh brn.	
	30	Sst, a/a	
	tr	Coal, blk, hd, brit, lust.	
4 670	70	Sh, lt and dk gry,	
	30	Sst, lt gry-off wh, vf-f and in pt m-crs, clr, occ fros and grn	
		mafic grns, subang to subrnd, loc rnd, mod w srtd, lse and,	
		fri, sil and calc xln mtx.	
4 680	90	Sst vf-crs a/a	
	10	Sh, gry a/a	
	tr	coal a/a	
4 690	90	Sst vf-crs a/a	
	10	Sh gry a/a	
4 700	80	Sst, abnt rock flour	
	20	Sh, lt-dk gry	
4 710	70	Sst, a/a	
	30	Sh, a/a	
4 718	90	Sst, f-crs, occ fros,	

	10	Sh, a/a occ calc	
4 720	40	Sst, lse, clr qtz, vf-med, sbang-sbrnd.	
	60	Sh, pred lt gry, occ med gry, occ rdsh brn, occ gnsh gry, rr	
		yel, frm, blky, occ wxy, non calc.	
4 727	30	Sst, lse, clr qtz, vf-med, subang-sbrnd, occ kaol, occ calc	
	70	Sh, pred lt gry, occ med gry, rdsh brn, gnsh gry, yel a/a	
4 730	50	Sst, off wh-lt gry, fri, abnt lse clr qtz, vf-med, sbang-	No Show
		abnt kaol mtx, occ calc cmt	
	50	Sh, pred lt gry, med gry, rdsh brn., gnsh gry, frm,	
		wxy ip, non calc.	
	tr	blk, hd , brit, lust	
4 739	70	Sst, off wh-brnsh gry, fri, vf-f, with lse med grns,	
		sbang, occ kaol.	
	30	Sh, lt-med gry, rdsh brn, gnsh gry, frm-hd, blky-ang	
4 750	90	Sst, off wh, fri, vf-f, med lse grns, tr kaol, non calc	
	10	Sh, a/a	
4 760	90	Sst a/a	
	10	Sh a/a	
4 770	50	Sst vf-f, loc m, subang-subrnd, w srtd, clr, loc fros, lt-	
		brn and ltihic grns, sil and calc xln and arg mtx, tr	
	50	Sh, med and dk gry, brnsh, v frm, subfiss-subblky,	
		micmica, occ slty and sdy grdg to arg sst	
4 780	50	Sst a/a	
	50	Sh a/a	
4 790	90	Sh a/a	
	10	Sst a/a	
4 800	50	Sst slt-f, predom sil mtx	
	50		
4 810	80	Sst slt-f, a/a	
	10	Sh, a/a	
	10	Coal, blk, hd, britt and v frm lignitic	
4 820	90	Sst slt-f, a/a	
	10	Sh, a/a	
	tr	Coal, blk, hd, britt and v frm lignitic	
4830	100	Sst slt-f, a/a	
	tr	Sh, a/a	
	tr	Coal, blk, hd, britt and v frm lignitic	
4 840	100	Sst slt-f, a/a	

	tr	Sh, a/a	
	tr	Coal, blk, hd, britt and v frm lignitic	
4 850	100	Sst slt-f, a/a	
	tr	Sh, a/a	
	tr	Coal, blk, hd, britt and v frm lignitic	
4 860	100	Sst, off wh-lt gry, slt-f, subang-subrnd, loc m, rnd, v	
		clr occ fros, lt-dk pk/brn and gn mafic grns, fri	
		in pt calc xln and arg mtx, tr musc	
	tr	Sh, m-dk gry brnsh, v frm, subfiss-subblky, non calc,	
		sdy grdg to arg sst, micmica	
	tr	Coal a/a	
4 870	90	Sst, slt-f a/a	
	tr	Sh a/a	
	10	Coal	
4 880	40	Sh v dk brn/blk, v frm, fiss-subfiss, carbonaceous	
		non calc, slty grdg to arg sltst	
	60	Sst a/a	
4 890	100	Sh, brn/blk carb a/a	
4900	100	Sh, brn/blk carb a/a	
4 910	40	Sst, off wh-lt gry, vf-m, loc crs, subang-rnd, w srtd,	
		clr v occ fros and col grns, fri w/predom sil-sl calc	
	60	Sh, brn/blk carb a/a	
4 920	10	Sst, slt-m a/a	
	tr	Coal	
	90	Sh, brn/blk carb a/a	
4 930	20	Sd, lse, vf-med, sbang-sbrnd-rnd, clr-opq grns, felsp	
	20	Sst, med-dk gry, fri, vf, grding Sltst	
	60	Sh, dk gry-dk brnsh gry-blk, frm-hd, sbfiss-fiss, carb	
	tr	Coal, blk-dk brn, hd-frm, brit ip	
4 940	80	Sd, lse, f-crs, ang-sbrnd, felsp ip, tr calc cmt	
	20	Sst, a/a med-dk gry	
	tr	Sh, a/a	
4 950	70	Sst, med gry, fri, vf-f, v.slty, grding Sltst, occ f-med	
	30	Sh, dk brn-blk, frm-hd, blky-ang, carb	
4 960	60	Sst, a/a, with abnt f-med lse grns, sbang-occ rnd	
	40	Sh, dk gry-dk brn gry-blk, a/a	
	tr	Coal, blk, hd, brit	
4 970	50	Sst, a/a, med gry, vf-f, & lse, f-med.	
	50	Sh, v.dk gry brn-blk, frm-hd, sbfiss-fiss, micromic,	
		slty ip, occ aren.	
4 980	90	Sh, dk gry-dk brnsh gry, frm, blky, micromic, carb,	
	10	Sst, a/a	
	tr	Lst, yelsh brn, frm, blky.	
4 990	90	Sh, a/a	
	10	Lst, off wh-yelsh brn, frm-hd, ang-blky, occ dol	

5 000	100	Sh, dk gry-dk brnsh gry, a/a	
	tr	Lst, a/a	
5 010	80	Sh, dk gry-dk brnsh gry, frm, blky, micromic, carb ip,	
		mod slty, occ aren, non-sl calc.	
	10	Sst, lse, clr-occ opq, f-med, sbang-rnd,	
	10	Lst, off wh-yelsh brn, frm-hd, blky-ang, occ dol	
5 020	90	Sh, dk gry-dk brnsh gry, occ dg gn, micropyr ip a/a	
	10	Lst, yelsh brn, a/a	
5 030	100	Sh, dk gry-dk brnsh gry, occ lt gry, tr pyr nods.	
	tr	Lst, off wh-yelsh brn a/a	
5 040	100	Sh, dk gry, occ dk brnsh gry, a/a	
	tr	Lst, yelsh brn, a/a	
5 050	100	Sh, a/a	
	tr	Lst, a/a	
5 060	100	Sh , v dk brnsh gry, carb, a/a	
	tr	Lst, off wh-pl brn, microxln amor to Wkst /Pkst w/sd,	
		debris and ass clasts in mic mtx, mod hd, hkly frac	
5 070	100	Sh a/a	
	tr	Lst a/a	
5 080	100	Sh a/a	
		Lst a/a	
5 090	100	Sh a/a	
		Lst a/a	
5 100	90	Sh a/a	
	10	Lst a/a	
5 110	90	Sh a/a	
	10	Lst a/a	
5 117	100	Sh a/a	
	tr	Lst a/a	
5 120	100	Sh a/a	
	tr	Lst a/a	
5 125	90	Sh, v dk brn/gry, carb and v dk gry	
	10	Sltst, lt-dk gry, calc, sdy, arg	
5 130	90	Sh, v dk brn/gry, carb and v dk gry	
	10	Sltst, lt-dk gry, calc, sdy, arg	
5 140	100	Sh, dk gry-v.dk brnsh gry, frm, blky, micromic, occ	
		occ slily calc.	
	tr	Lst, off wh-velsh brn-tan, sft-frm, occ dol	
5 150	100	Sh, dk gry-v.dk brnsh gry, frm, blky, sbfiss,	
		carb ip, occ slty, occ slily calc-calc	

	tr	Lst, off wh-yelsh brn-tan, sft-frm, occ dol	
5 160	100	Sh, a/a	
	str tr	Lst, a/a	
5 170	100	Sh, dk gry-v dk brnsh gry, micromic, a/a	
	tr	Lst, yelsh brn, dol, a/a	
5 180	100	Sh, dk gry a/a	
	tr	Lst, a/a	
5 190	100	Sh, dk gry-v.dk brnsh gry, a/a	
	tr	Lst a/a	
5 200	90	Sh, dk gry-v.dk brnsh gry-blk, frm-hd, blky,	
		carb, occ grding coal.	
	10	Lst, pred lt gry, frm-hd, ang, dol ip, occ off wh-yelsh	
5 210	100	Sh, dk gry, a/a	
	tr	Lst, a/a, pred yelsh brn	
5 220	100	Sh, a/a occ blk, grding Coal	
	tr	Lst, a/a	
5 230	100	Sh, dk gry, occ v.dk brnsh gry, frm-hd, blky,	
	tr	Lst, yelsh brn, frm, occ dol	
5 240	100	Sh, pred dk gry, occ v.dk brnsh gry, a/a	
	tr	Lst, lt gry, yelsh brn, frm, occ dol	
5 250	100	Sh, v dk brn/gry, carb a/a	
5 260	100	Sh, v dk brn/gry, carb a/a slty and sdy grdg to calc sst	
5 270	100	Sh, v dk brn/gry, carb a/a slty	
5 280	100	Sh, v dk brn/gry, carb a/a slty	
5 290	100	Sh, v dk brn/gry, carb a/a slty	
5 300	100	Sh, v dk brn/gry, carb a/a, loc v hd, blky silicified	
	tr	Lst, dol, m brn, micritic Mdst	
5 310	100	Sh a/a	
5 320	100	Sh, v dk brn/blk, v frm-mod hd-britt, subfiss-fiss,	
		slty, micmica, non calc,	
	tr	Lst, off wh-pl brn, micritic Mdst - Wkst/Pkts w/	
		clasts and occ sdy grdg to calc sst.	
5 330	100	Sh a/a	

5 340	100	Sh a/a slty	
5 350	100	Sh a/a	
5 359	100	Sh a/a, dkbrn/blk and v dk gry, slty	
5 368	100	Sh, vdk brn/blk, v dk gry, frm, fiss, carb, micmica,	
		txt, non calc, loc sl slty	
5 377	100	Sh a/a	
5 395	100	Sh, 'barite conamination' poss silt	
5 404	100	Sh, a/a	
5 419	100	Sh, v.dk brnsh blk, frm, micromic, carb, wxy tex ip,	
		slty.	
5 422	100	Sh, v. dk brnsh gry-v. dk brns blk, carb, occ mod slty	
5 428	100	Sh, a/a	
5 434	100	Sh, v.dk brnsh blk, abnt micropyr, tr pyr nods	
5 437	100	Sh, a/a	
	tr	Sst, lt gry, fri, vf-f, sbang, abnt mica	
5 440	100	Sh, v. dk brnsh blk-v. dk brnsh gry, a/a occ mica,	
		micropyr, non calc, v. carb ip grding Coal	
	tr	Sst, a/a	
	tr	Lst, lt gry, hd, ang,	
5 443	100	Sh, v. dk brnsh gry-v. dk brnsh blk, frm, sbfiss,	
		carb, occ v. micropyr, non calc	
	tr	Sst, lt gry, fri, vf-f, mica, v.slty, grding Sltst	
5 446	100	Sh, a/a, occ v. carb, occ v. slty,	
5 449	100	Sh, a/a	
		Sst, lt gry-off wh, fri, vf, occ f, sbang, v. calc cmt	
5 455	90	Sh, v. dk brnsh gry-v. dk brnsh blk, frm, sbfiss,	
		carb, occ v. micropyr, non calc	
	10	Sst, off wh-lt brnsh gry, fri, vf-f, occ med, sbang, occ	
		mtx, non-occ mod calc, grding Sltst ip	
5 464	60	Sh, a/a	
	40	Sst, pred lt brnsh gry, fri, vf-f, occ med, slty mtx, non	
5 467	10	Sh, a/a	
	90	Sst, occ lt brnsh gry, fri, slty mtx, pred lse grns, clr-	

		vf-med, ang-sbang	
5 473	70	Sh, v. dk brnsh blk-blk, frm, fiss, micromic, carb-v.	
	30	Sst, a/a	
5 479	90	Sh, a/a occ v. carb	
	10	Sst, a/a	
	tr	Lst, lt gry, hd, arg.	
5 491	80	Sh, a/a occ v. carb	
	10	Sst, lse, clr-opq, vf-med, carb, a/a	
	10	Clst, lt gry, rdsh brn, sft, amor (caving?)	
5 494	100	Sh, v. dk gry-blk, a/a	
	tr	Clst, a/a	
5 497	100	Sh, v. dk gry-blk, v. dk brnsh gry, a/a	
	tr	Clst a/a	
5 500	100	Sh, v. dk gry- blk, a/a	
5 503	100	Sh, dk gry-blk, a/a occ mod slty	
	tr	Sst, lt gry, vf, slty, non calc, grding Sltst	
5 506	100	Sh, dk gry-blk, occ v. dk brnsh gry, frm-hd, blky-ang,	
		-fiss, micropyr ip, micromic, non-slily calc (dol), occ	
		grding Coal.	
	tr	Clst. lt gry, v.hd, ang.	
5 512	100	Sh, dk gry-blk, a/a, occ v. carb, grding Coal	
	tr	Clst. a/a	
	tr	Sst, off wh-lt brnsh gry-lt gry, fri, vf-f, slty mtx, ang-	
		occ v. calc cmt.	
5 515	100	Sh, dk gry-occ blk, v. dk brnsh gry, frm-hd, blky-ang,	
		fiss, micropyr ip, micromic, v. carb ip, non-v. slily	
5 521	90	Sh, dk gry-occ blk, v. dk brnsh gry, frm-hd, blky-ang,	
		fiss, micropyr ip, micromic, v. carb ip, non-v. slily	
	10	Sst, off wh-lt brnsh gry-lt gry, fri, vf-f, ang-sbang,	
		occ calc cmt.	
5 527	90	Sh, a/a occ blk, v. carb, grding coal	
	10	Sst, pred off wh, calc cmt	
5 533	80	Sh, a/a, pred v. dk brnsh gry-blk	
	20	Sst, pred off wh, occ lt gry-lt brnsh gry, vf-f a/a	
5 539	90	Sh, a/a pred v. dk brnsh gry -blk	
	10	Sst, pred off wh, occ lt brnsh gry, vf-f	

5 548	80	Sh, a/a	
	20	Sst, a/a, pred non calc cmt	
5 554	70	Sh, dk gry-v. dk brnsh gry	
	30	Sst, off wh-lt brnsh gry, fri, less calc cmtd, a/a	
5 560	70	Sh, pred dk gry, occ blk, v. carb, grding Coal	
	30	Sst, a/a vf-f, non calc cmtd	
5 566	80	Sh, a/a occ blk, v. carb	
	20	Sst, pred off wh, vf-f, slty mtx	
5 572	100	Sh, dk gry-dk brnsh gry, a/a	
	tr	Sst, a/a, off wh-crm	
5 578	100	Sh, a/a, micropyr, micromic	
5 584	100	Sh, a/a, occ v. carb, blk	
5 590	90	Sh, a/a occ v. carb, occ grding to Coal	
	10	Sst, a/a	
5 595	90	Sh, dk gry-blk, occ med-dk brnsh gry, frm-mod hd,	
		fiss, v. carb ip, occ grding coal, tpr micropyr, tr pyr	
		also med olv gry, sft, crmb, non calc	
	10	Sst, a/a occ sil cmt, v. hd, tr glauc.	
5 602	90	Sh, a/a	
	10	Sst, a/a tr silica ? 'flakes'	
5 608	100	Sh, a/a	
	tr	Sst, a/a, gen calc cmtd	
5 614	100	Sh, a/a	
	tr	Sst, a/a	
5 620	100	Sh, a/a	
	tr	Sst, a/a tr crs, sbrnd, clr qtz	
5 626	100	Sh, dk gry, occ blk, frm-hd, blky-ang, sbfiss- fiss,	
		micropyr, occ v. carb, pyr nods, non calc.	
	tr	Sst, lt gry-occ lt brnsh gry, af-f, occ med, clr-opq, occ	
		cmtd, occ arg	
	tr	Sh, (2) lt gry, v. hd, slily micromic, non calc	
5 632	90	Sh, a/a, pyr nods	
	10	Sst, lt gry, a/a, occ slily calc cmtd, arg ip	
	tr	Sh, (2) lt gry, v.hd, a/a	
5 638	90	Sh, a/a, occ blk.	
	10	Sst, lt gry-occ lt brnsh gry, occ str sil cmt, occ slily	

5 644	100	Sh, a/a, dk gry-dk brnsh gry.	
	tr	Sh, (2), lt gry, v. hd, ang, occ slily micromic, non	
	tr	Sst, a/a	
5 650	100	Sh, a/a, pre dk gry-occ dk brnsh gry, occ pyr nods	
	tr	Sst, a/a	
5 654	100	Sh, dk gry-dk brnsh gry, a/a	
5 655	100	Sh, a/a	
5 662	90	Sh, a/a	
	10	Sst, lt gry, frm-fri, calc cmt, occ sil cmt	
	tr	Lst, lt gry-off wh-lt yelsh brn, frm, blky, microxln.	
5 668	100	Sh, a/a	
	tr	Sst, a/a	
	tr	Lst, a/a	
5 674	100	Sh, a/a	
	tr	Clst, lt gry, crmb-stky, v. calc	
	tr	Sst, a/a	
5 680	80	Sh, a/a	
	20	Clst, lt gry-v. lt gry, crmb-stky, occ slily swlg, arg ip,	
		grding Lst	
	tr	Sst., a/a	
5 686	80	Sh, dk gry, a/a	
	10	Clst, lt gry-occ v. l gry, v. calc, grding arg Lst	
	10	Lst, wh, hd, ang, microxln	
5 692	70	Sh, a/a	
	20	Clst, lt gry- v. lt gry, a/a v. calc ip, micropyr ip	
	10	Lst, a/a	
5 698	30	Sh, a/a (cav)	
	40	Clst, lt gry-occ v. lt gry, a/a	
	30	Lst, wh-off wh, hd , ang, microxln	
5 704	30	Sh, a/a, dk gry-v. dk brnsh gry,	
	40	Clst, lt gry-occ med gry, frm, blky, v. calc, occ	
	30	Lst, wh-off wh, hd, ang, microxln.	
5 710	20	Sh, a/a	
	20	Clst, lt gry-occ med gry, a/a	
	60	Lst, pred wh-occ off wh, a/a	
5 716	30	Sh, a/a	
	20	Clst, a/a, occ micropyr	

	50	Lst, off wh-lt gry, hd, ang, microxln	
5 722	20	Sh, a/a	
	20	Clst, occ v. lt gry, a/a	
	60	Lst, wh-off wh, occ arg, a/a	
	tr	Clst (2) rdsh brn, frm, blky-crmb, occ slty, non calc	
5 725	20	Sh, a/a dk gry (cav)	
	40	Clst, lt gry-occ med gry, a/a	
	20	Lst, off wh-wh, a/a	
	20	Clst, (2) rdsh brn, frm, blky-crmb, occ slty, occ mod	Total Depth
			5725 mMD

App E Core descriptions

No cores have been taken for this well.

App F Sidewall core descriptions

No sidewall core have been taken for this well.

App G Other reports

Exemptions and non-conformance

Time distribution

Well Schematic

Cement Program

Bit Record

BHA Report

Drilling Fluids

7 Enclosures

Composite log