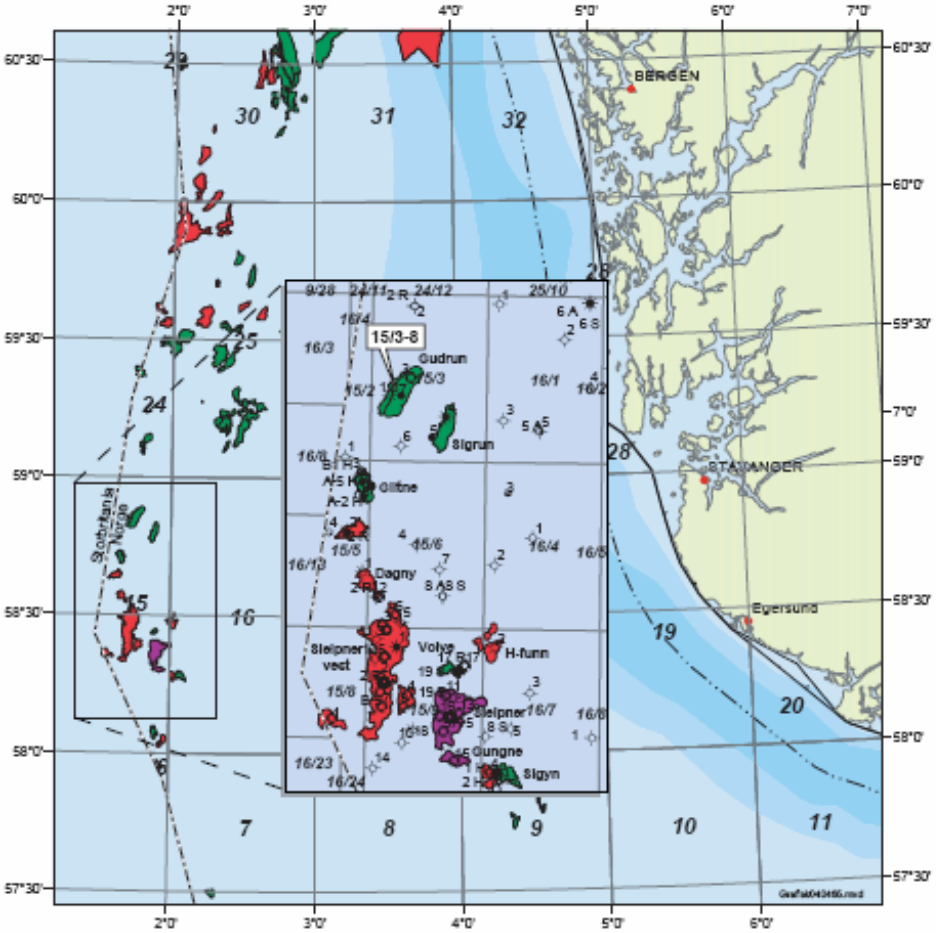
Final Well Report
Well 15/3-8 PL025
UPN - LET OPR



November 2006

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Marathon Oil Corporation

Gaz de France

Final Well Report
Well 15/3-8
Gudrun PL025

Doc. no.: Well 15/3-8 Nr. 21

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1 Introduction

1.1 Well data record

Well name	:	15/3-8	
Type of well	:	Appraisal/Segment	
Prospect	:	Gudrun	
Country	:	Norway	
Area	:	North Sea	
License	:	PL 025	
Licences	:	Statoil ASA (Operator)	46.8 %
		Marathon Petroleum Norge AS	28.2 %
		BP Norge AS	12.5 %
		Gaz de France Norge AS	12.5 %

Drilling unit	:	Transocean Leader
Type	:	Semi submersible Rig
Water depth	:	109.0 m MSL
Air gap	:	23.5 m
On license	:	24.10.05
Rig release	:	11.04.06
Formation at TD	:	Draupne Formation

Geographical coordinates :

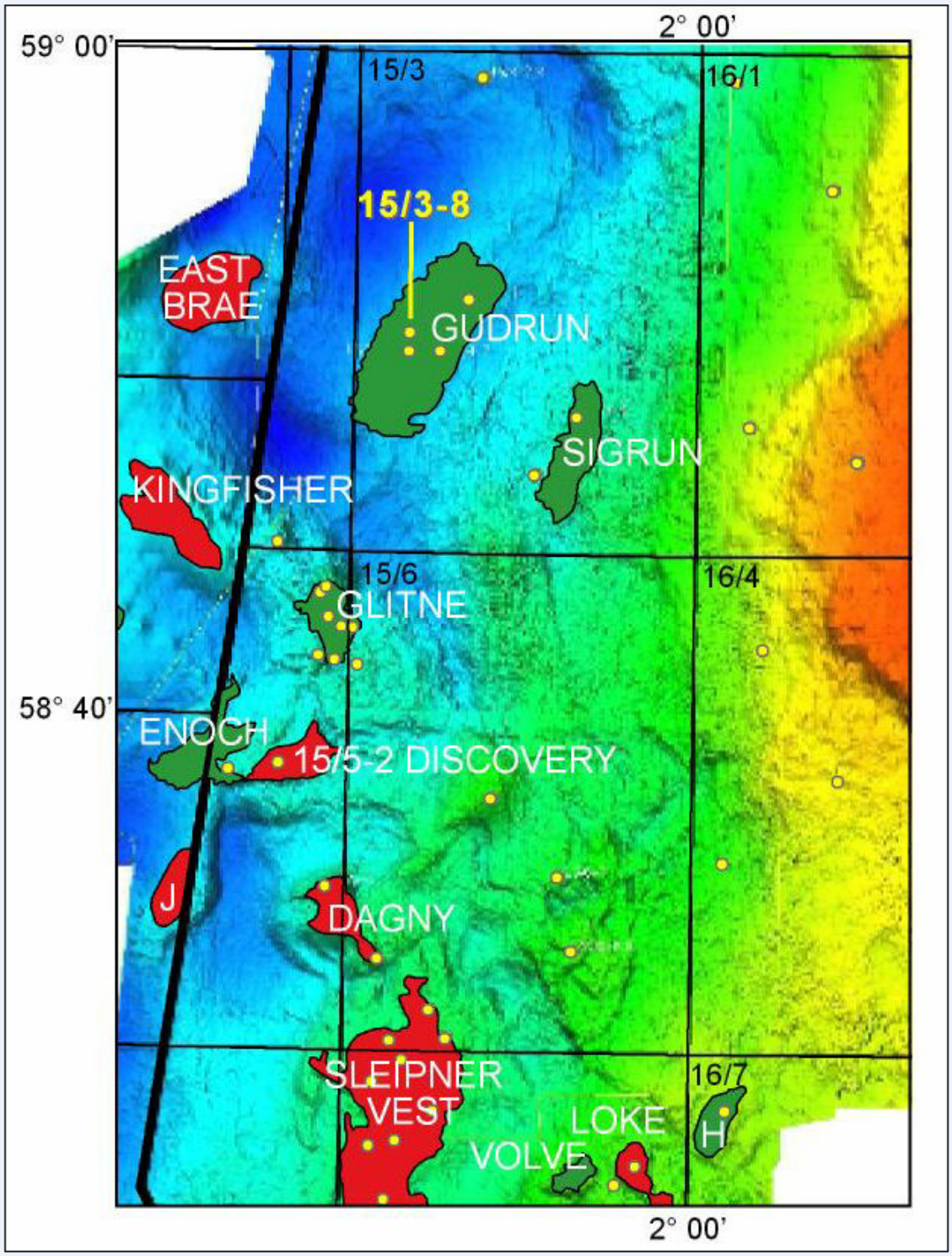
Geographic coordinates (Surface)	58° 51’ 27.8” N
	01° 43’ 17.0” E
Datum / Spheroid	ED50 / INT.1924
UTM coordinates	6 525 064 m N
	426 237 m E
Zone	Zone 31, CM 3°E

Seismic location :

3D survey ST0208	Inline 2620
	Crossline 2328

All depths in this report refer to RKB (Rotary Kelly Bushing) unless otherwise stated. Also, unless otherwise written, the depths refer to loggers depth. Exception to this is chapter five, which refers to drillers depth unless otherwise written.

Figure 1.1 Location map



1.2 Well objectives

Re-mapping of the Gudrun discovery, based on the new seismic survey ST0208 from 2002 together with re-evaluation of the well15/3-7 results during the last years, revealed uncertainties with respect to reservoir properties, fluid types and segmentation etc. within the Upper Jurassic reservoir section.

The main purpose of well 15/3-8 was to gather the necessary information required to ascertain whether the reservoir rocks of the Draupne Formation in the Gudrun Discovery can be developed commercially. This well was expected to be the last before an eventual PDO is submitted.

It was very important to gain good quality data in the following areas:

- reservoir pressures
- petrophysical parameters (including core data)
- fluid characteristics (including fluid samples)
- production properties (including drill-stem testing)

1.3 Result of the well

Well 15/3-8 was spudded in a water depth of 109 m MSL and drilled to a total depth of 4592 m. Generally the prognosis was good, but slightly shallow. This had however no effect on the operation, which overall went as planned and ahead of time and budget.

The top of the reservoir (UJsst1) came in 38.9 m deeper than expected. However, the sand quality was significantly better than observed in the neighbouring wells. The good quality of the sand was proven by the production test DST1 perforated in SST 1A. Flow properties from dynamic data (mostly buildups) were essentially consistent with information obtained from cores and logs. The well clearly showed that there were significant lateral reservoir variations over small distances within the field. Sandstone layer 2 (UJsst2) was surprisingly water wet at a level shallower than the oil/water-contact observed in the neighbouring well 15/3-1, only 800 m away. As similar pressure and no barriers were observed between the two wells, the few meter of oil in well 15/3-1 is probably a local accumulation with a contact not representative for the sandstone 2 reservoir unit. This complicates and has a negative effect on the sandstone 2 estimated oil volumes. Sandstone unit 3 came in 60.1 m deeper than expected, but with a similar gas/water-contact and sand quality as observed in well 15/3-1.

Reservoir pressure interpreted from DST 1 in SST1C showed oil with GOR = 562 Sm3/Sm3 and a reservoir pressure of 785 bars that is almost similar to what was observed with the MDT in the well 15/3-7 in SST1A. Fluid samples from SST3 showed gas condensate with GOR = 1086 Sm3/Sm3. This is somewhat lower than observed in Sigrun well 15/3-3, Hugin Formation (~1200 Sm3/Sm3), that was used as an analogue to SST3 in the Gudrun model. Reservoir pressure from the MDT in SST3 is 819 bars.

1.4 Drilling summary

1.4.1 Casing

Table 1.1 Casing programme summary

Casing	Shoe depth [mMD, drillers depth]	LOT / FIT [Equivalent mud weight]
30”	179.8	N/A
20”	1001.0	LOT: 1.50 sg
14”	2754.0	LOT: 1.71 sg
9 7/8” liner	3910.0	FIT: 2.12 sg
7” liner	4298.0	N/A

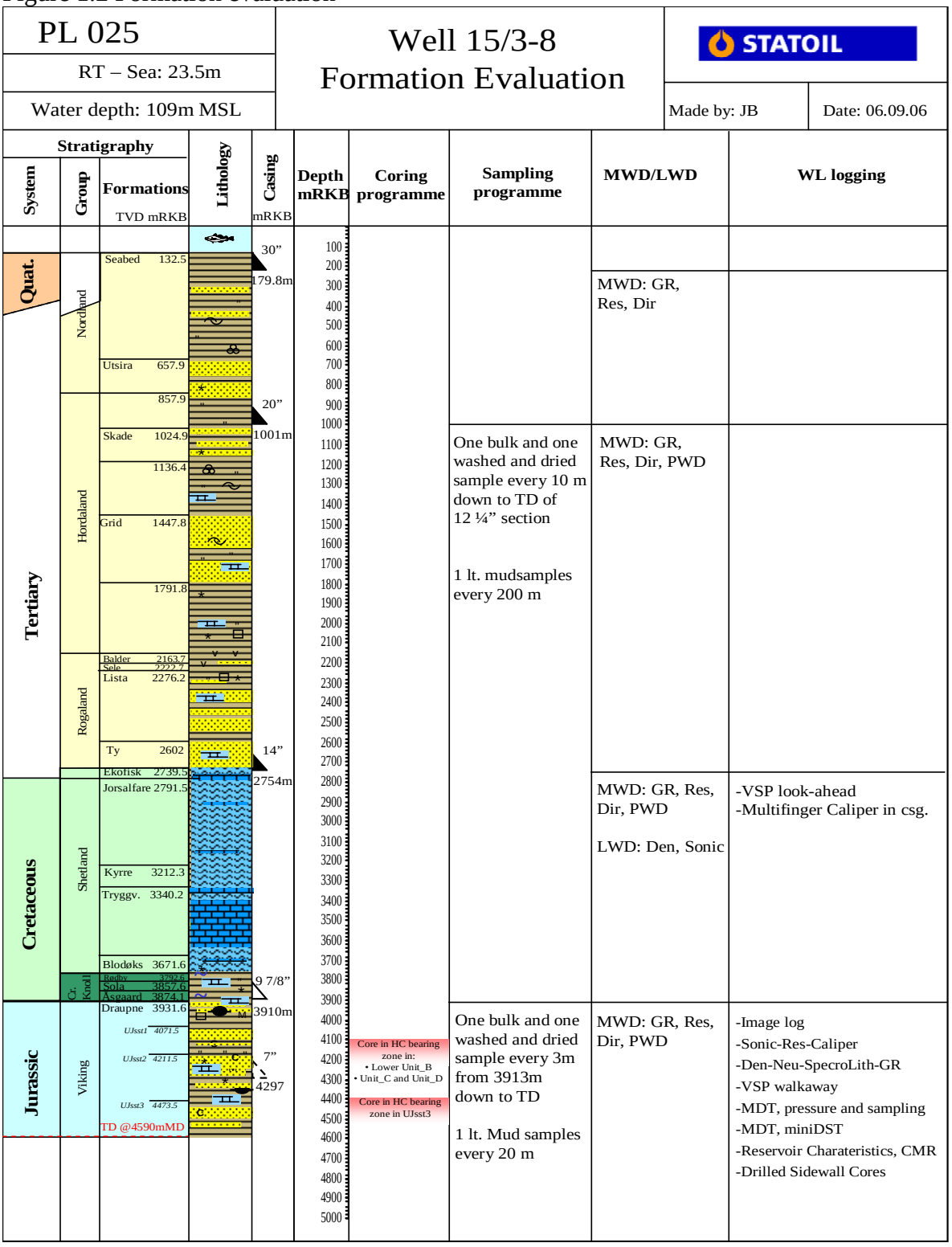
1.4.2 Drilling fluids

Table 1.2 Drilling fluids summary

Section	Section TD [m MD, drillers depth]	Max mud weight [g/cm³]	Mud type
36”	179	1.05	Seawater / Bentonite with high visc. Pills
26”	1010	1.03	Seawater / Bentonite
17 ½”	2765	1.36	Glydrill #12
12 ¼”	3908	1.64	Paratherm OBM
8 ½”	4590	2.03	Paratherm OBM

1.5 Data acquisition summary

Figure 1.2 Formation evaluation



2 Exemptions

Table 2.1 Exemptions

Exception from	Report no	Date	Title
NPD	None	None	None
WR0436	39720	24.11.2005	Dispensation from 14 day interval test of BOP on Transocean Leader.
WR0436	40597	13.03.2006	Dispensation from 14 day interval test of BOP on Transocean Leader.
WR0436	40807	23.03.2006	Point 9.4.1, 4. line – exemption from cutting/perforation 14” casing shallow before pulling the seal assembly.
WR0436	40929	29.03.2006	Dispensation from 14 day interval test of BOP on Transocean Leader.

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

3.1 RUH

Table 3.1 Summary RUH

Type (colour code)	Synergi code	Number of RUH's
Yellow	3	5
Green	5	21
Green	4	7
Sum		33

3.1.1 RUH details

WELLBORE: NO 15/3-8

Table 3.2 RUH details

Synergi no	Hazard	Description
362843	3	Synergi 362843 (Closed) - 05.01.2006 - Condition - Low overpressure in accommodation Lack of overpressure /low overpressure in the accommodation. Observed that there was suction of air in to the changing room, instead of over-pressure. This was caused by the galley doors left open to handle provisions from a container. Not all personell have the full understanding that all doors must be closed to maintain overpressure.
364504	3	Synergi 364504 (Closed) - 14.01.2006 - Near miss - Fallende tjæreklump i boretårnet Det ble observert en fallende gjenstand i boretårnet. Det ble senere funnet en tjæreklump på boredekk etter noe leting. Den har fallt via top drive, videre via taket på drillerbua og ned på boredekket. Ingen personer var i nærheten av der tjæreklumpen traff. Tjæreklumpen antas å komme fra løpeblokka (ca 30 m) eller fra kronblokka (ca 50 m høyde). Vekt på tjæreklumpen: 97 gram
370555	3	Synergi 370555 (Closed) - 07.02.2006 - Near miss - Observed smoke and fire round engine # 2 exhaust pipe on aft deck. Schlumberger wirelineoperator heard 2-3 big bangs from one of the main engines exhaust pipes and then smoke and fire was observed in the area around the exhaust pipe. Operator called CCR and the general alarm was activated at 05:00. Fireteam was on scene at 05:10, no fire or smoke observed due to engine had been stopped immediately after smoke was detected
375024	3	Synergi 375024 (Closed) - 03.03.2006 - Condition - Master valve (manual operated) on STT is extremely hard to operate when opposed to pressure. When pressure on well: The master valves on the STT are extremely difficult to operate, requiring a lot of effort and considerable time. When these valves are several meters above the floor and the operators need to be in riding belts. This is a very dangerous operation. We need give serious consideration to what we are doing. If no one else objects I have no problems accepting testing these valves on the deck prior to pick up (we do this anyway) and I cannot see any occasion where we would have to use the valves to control the well. I understand that PWS have a tree with hydraulic lower master valve. This does not solve the problem on the STT which is in use right now. Maintenance needs to be done on the tree between the tests to try to ease the valve operation. A proposal needs to be made, discussed and agreed by all parties as to how we can go forward.

Synergi no	Hazard	Description
376166	3	Synergi 376166 (Closed) - 06.03.2006 - Accident - Injured while positioning a crane load. The task being performed at the time of the incident was to move a Halliburton lubricator valve (weight 500 KG) from the storage basket to the port forward pipe deck to perform a pre operational pressure test. The valve was slung up and a tag line installed. The valve was then moved using the Miko crane from the basket to the test site. When the load was approx 18" of the wooden landing area the IP stepped in to position the load and land it on the wood. At this time the lubricator valve hit an adjacent valve and moved towards the IP trapping his calf between the valve and a drilling bail which was located adjacent to the landing point.

3.2 Experience listing

Subject:	Weight of displacement mud for 36" tophole
Section:	NO 15/3-8, 36"
Rep date:	04.11.2005
Keywords:	DRILLING FLUID
Comp inv:	Statoil

Description:
The 36" tophole was drilled in two bit runs and the hole was displaced to 1.35 SG Bentonite mud prior to POOH for running 30" conductor. Indications of boulders/large rocks were observed while drilling.
Tight hole was experienced while running the 30" conductor, and it had to be worked down with circulation and weight to TD.

Immediate solution:
None.
Future recommended solution:
If boulders/rocks are experienced and/if the tophole is open for a longer period, it should be considered to increase the MW of the displacement fluid from 1.35 SG to 1.45 SG. Even though this only equals a pressure differene of +/- 1 Bar at TD, this might have a positive influence on stability of the hole while running conductor.
This is normal practise on the Åsgard and other Haltenbanken fields if boulders are experienced.

Subject:	36" BHA dressed with incorrect nozzles
Section:	NO 15/3-8, 36"
Rep date:	04.11.2005
Keywords:	PLANNING
Comp inv:	Baker Hughes Inteq
References:	Synergi 349132

Description:
The 17 1/2" BHA on the premade HO BHA was dressed with large nozzles and a plugged centre nozzle (TFA=1.062), which results in a flow distribution of 60/40% on the bit/HO. The planned TFA on the bit was twice as low (TFA=0.602), with a flow distribution of 40/60 to be able to distribute more of the flow across the cutters on the HO's.
Immediate solution:
Nozzles should have been measured while the BHA was inspected.
Future recommended solution:
Reference is made to seperate topic regarding 36" Drilling - low ROP.

Subject:	9 1/2" DC in 36" BHA
Section:	NO 15/3-8, 36"
Rep date:	05.11.2005
Keywords:	BHA
Comp inv:	Statoil

Description:
1 stand of 9 1/2" DC was MU and LD in conjunction with drilling the tophole to get a stiff and heavy BHA.
These DC are not used in the other BHA's.

Immediate solution:

Future recommended solution:
Consider if it is deemed required with 9 1/2" DC's. These are heavy and extra care and handling is required on the drill floor. On TOL the connections can be made up with the IR, but on other rigs manual rig tongs are required so this is also an HSE issue.

8" DC is in most cases sufficient in areas where boulders and excessive WOB are not expected. No clear difference are observed on exploration wells were 8" DC has been used instead of 9 1/2" DC's.
The 8" DC will then be ready for use with the 26" BHA.

In most cases the weight of the HO BHA is higher then applied WOB.

Subject:	Drilling 36" hole - unexpected low ROP
Section:	NO 15/3-8, 36"
Rep date:	05.11.2005
Keywords:	DRILLING
Comp inv:	Statoil

Description:
The previous well in the area, 15/3-7 (2 km away), was drilled in 6 hrs with 10 m/hr.
No boulders or hard driling were reported.

In this well hard driling and low progress was experienced after +/- 10 m and decreased to 1-2 m/hr from 149 - 158 m.
At this depth the BHA was changed and the ROP increased immediately to 4-5 m/hr from 158 m to TD.
Ref. attached file.

Indications of boulders were observed with occasionally erratic torque peaks, also of bottom.

Possible reasons :

1. More boulders and scattered rocks then expected from site survey/reference wells. Erratic torque peaks around 155 m indicates that scattered boulders falled into 17 1/2" pilot hole and caused low progress and problems drilling through (ref. junk marks on bit).
2. Hydraulics and drilling parametres.
The first 15 m was drilled with low RPM and only 1000 LPM. Due to the inncorrect nozzles in the 17 1/2" Bit, 60% of the total flow was through the bit. With 3x11 nozzles on the 26" HO, this equals 200 LPM across the 26" HO.
In conjunction with increased WOB, this might be a reason why the ROP dropped to +/- 1 m/hr and two of the cones on the 26" was locked and had signs of not cutting properly. One of the 26" cones were packed of clay.
This might also be the reason why the new HO BHA with the correct nozzles and high flow from the start experienced 5 times as high ROP from the start at the same depth as the previous one drilled with +/- 1 m.

Immediate solution:

Future recommended solution:
Ensure correct nozzle configuration with sufficient flow on the HO cutters (recommended LBOR standard is 60/40 on HO/Bit).
The flow should be increased prior to start drilling formation with the 26"/36" HO to avoid packing of the cutters and locking the cones when the WOB is increased. Also higher RPM will reduce the risk for packing the cones with clay.

Subject:	Running surface casing through splash-zone in rough weather
Section:	NO 15/3-8, 26"
Rep date:	08.11.2005
Keywords:	CASING/LINER
Downtime:	**Pot time improvements:** 3
Comp inv:	Transocean

Description:
Due to rough weather and rig movement, severe problems were experienced to MU connections and stab the 20" into the 30".

The string is moveing a lot and no proper system are present in the moonpool to guide the string.
One joint had to be LD due to damaged threads while MU.

Immediate solution:
Preliminary rigging with tuggers on the trolley in moonpool to reduce movements.

Future recommended solution:
Future projects on TOL should consider to MU a guiding/funnel system that can be installed on the trolley to guide the casing prior to stab in if rough weather.

Subject:	26" section - ROP and verticality
Section:	NO 15/3-8, 26"
Rep date:	08.11.2005
Keywords:	DRILLING
Comp inv:	Statoil

Description:
A motor was included in the BHA to be able to do any correction of the wellpath if any inclination build up was observed. This was based ob the 14" csg wear limitations in case of high doglegs.

The section was therefore drilled with controlled ROP of max. 8-10 tons to avoid building angle.
Also reduced parameters were used through Utsira, due to a twist of in the reference well.

Future recommended solution:
1. The angle dropped with this BHA when high WOB was applied and no doglegs were experienced. In future wells this section should be able to drilled with higher ROP and WOB with similar BHA without building angle.
2. Drilling with reduced parametres through Utsira might be too conservative. The sand was very loose and no WOB was required - no stick-slip/vibrations were measured on the MWD. High flowrates should be maintained throughout the section as potential wash-out in the Utsira is not critical in a vertical well.

Subject:	18 3/4" Wellhead housing handling
Section:	NO 15/3-8, 26"
Rep date:	09.11.2005
Keywords:	CASING/LINER
Comp inv:	Drill Quip

Description:
The 18 3/4" Wellhead housing was pre-made onshore with 0,5 m xo and 5,0 m HT55 pup joint on top to ease handling on the rig. No extra makeup or breaking connection were needed.

The 5,0 m pup was the optimum lenght for handling on Transocean Leader, as the assembly was longer the 14,4 m. The assembly was lifted to the rig floor from aft. (riser deck).

Immediate solution:
NA.

Future recommended solution:
Also recommended for furture 18 3/4" wellhead housing installation.

Subject:	Mud pumps and liner size.
Section:	NO 15/3-8, 17 1/2"
Rep date:	23.11.2005
Keywords:	RIG EQUIPMENT
Comp inv:	Transocean

Description:
It was decided to use 6" liner in mud pumps in all sectionsl. When drilling 17 1/2" section, one pump failed frequently. With 2 ea. mud pumps max pump rate was 3300 lpm, the plan was to pump 4600 lpm. With 6 1/2" liner size we could have pumped 3800 - 3900 lpm with 2 ea. pumps. The low pump rate resulted in difficult to keep well vertical.
Immediate solution:
Reduced ROP weight on bit.
Future recommended solution:
Consider to use 6 1/2" liner.

Subject:	Vertitrak steering mode did not appear to be operational
Section:	NO 15/3-8, 12 1/4"
Rep date:	04.12.2005
Keywords:	DIRECTIONAL
Comp inv:	Baker Hughes Inteq

Description:
Background: The Vertitrak BHA was initially used on BHA#9 successfully with no inclination build. The BHA was pulled due to penetration rate. Same BHA was re-run with new bit on BHA#10. Inclination built from 0.56 deg to 2.54 deg in 115m of drilling. Several attempts to "steer" with no success. The VertiTrak was then operated in "ribs off" mode which made the BHA similar to a pendulum assembly. The well gradually dropped to vertical with light WOB. No further attempts were made to get the tool to steer since it was assumed the tool steering mechanism had failed.
Inteq Investigation Summary: The VertiTrak was investaged in depth onshore by Inteq which reported the tool was fully functional. Appeas the problem was the excessive heave was not compensated properly which resulted in large WOB flucuations which resulted in large fluctiations in the differential pressure across the motor. The result from this was very erratic reactive torque which affects the tool orientation of the tool for steering.
Immediate solution:
The immediate solution to the problem of tool not being able to steer was to have "ribs off" and thus make the BHA a pendulum assembly and let angle drop to verical by using light WOB and higher RPM.
Future recommended solution:
Ensure the rig's heave compensator is working adequately so the WOB will not vary with heave in rough weather.

Subject:	After Action Review, not able to stab wiperplug into protector sleeve.		
Section:	NO 15/3-8, 12 1/4"		
Rep date:	10.12.2005		
Keywords:	CASING/LINER		
Downtime:	1	**Pot time improvements:**	
Comp inv:	Drill Quip		
Synergi no:	357118	**Cost:**	84995

Synergi title:
Problems when trying to stab liner wiperplug into protective sleeve.
Description:
When wiper plug was installed on drillfloor, the protector sleeve was not able to pass. To small OD/ID margins.
Immediate solution:
Lay down protector sleeve, RIH without same.
Future recommended solution:
Need to be re-designed

Subject:	XO joints
Section:	NO 15/3-8, 12 1/4"
Rep date:	19.12.2005
Keywords:	CASING/LINER

Description:
XO casing joints of full length (~11-12m) should be supplied instead of pup joints. Pup joints (~3m) are more difficult to handle with the pipe handling equipment.
Immediate solution:

Future recommended solution:
Order xo joints of minimum 5m length or preferably same length as normal casing joints.

Subject:	Consistent values between predicted mud weight and actual mud weight.
Section:	NO 15/3-8, 8 1/2"
Rep date:	03.02.2006
Keywords:	DRILLING FLUID
Comp inv:	M-I Drilling Fluids

Description:
Experience # 1:

MDT pressure data indicated that the predicted mud weight (Equivalent Static Density - ESD) for the mud in the well as close to the actual pressure measured.

MDT pressure recorded MW of 2,05 SG versus the predicted mudweight of 2,045 SG.

This gives an indication that the model used in calculating the static values is more or less accurate.

Calculated values were:

MW (@45deg C): 2,03 sg ESD (0 hrs) at TD: 2,039 sg ESD (0 hrs) at Top Draupne : 2,038 sg
ESD (24 hrs) at TD: 2,045 sg ESD (24 hrs) at Top Draupne : 2,045 sg

Subject:	Drill string compensator (DSC)/ Bit weight variation (WOB)while drilling/ coring.
Section:	NO 15/3-8, 8 1/2"
Rep date:	25.01.2006
Keywords:	RIG EQUIPMENT
Comp inv:	Transocean

Description:
Excessive variation of WOB has been experienced while drilling and coring.

Bad weather/rig heave have caused up to 6-8 tons of WOB variation while drilling and taking first cores.
This is not acceptable.

Especially commencement of coring requires stable WOB.
Directional driiling will be difficult to conduct and the MWD has problems with handling this conditions.

Old/"stiff" or inflexible packer elements for DSC-cylinder or misallignment of DSC-cylinders was believed to be the cause of this problem.
Allignment seams now to be OK.
The problem does not improve when DSC is used above midstroke. That also rules out the packing element of the cylinder to cause the problem.

The only equipment that can cause the problem is the active heave compensator (AHC).
There seems to be some trapped pressure in the servo valve.

Recommend that Transocean overhaul or change the servo valve for the AHC. Need for MH vendor?

Subject:	Flush mounted spider not suited for short liner strings
Section:	NO 15/3-8, DST
Rep date:	19.02.2006
Keywords:	CASING/LINER
Comp inv:	Weatherford Norge AS

Description:
The 7" liner was only 40 joints. It was chosen not to use the supplied Flush Mounted Spider for this short job. Equipment is heavy and there is a risk involved in installation and removal. Furthermore it would have been required to run a safety collar for app. the first 15 joints.
For this short liner jobs the prefered type of slips is air operated single piston slips (MH design or similar) "vippeslips"

Subject:	Excessive welding to rig up test unit.
Section:	NO 15/3-8, DST
Rep date:	19.02.2006
Keywords:	TEST COMPLETION
Comp inv:	Halliburton - Power Well Services

Description:
When installing test facilities prior to well testing, extensive welding, cutting and grinding has been performed when installing equipment. The well has been open to reservoir in most of the period. Hot work has been stopped in periods with circulation. However, there is still a risk for sudden release of hydrocarbons. Ideally no hot work should be performed when the well is open to reservoir - especially on a HTHP well. As a minimum, as much as possible should be prefabricated onshore.

Subject:	Handling equipment
Section:	NO 15/3-8, DST
Rep date:	20.03.2006
Keywords:	DRILL STEM TEST
Comp inv:	Halliburton

Description:
Elevators provided by DST contractor are tubing slips type elevators designed for flush pipe or tubing with collar type connections. This type of elevator is not suitable for running drill pipe with external upset and PH6 tubing. This type of manual elevator is prone to set with block movement upward as there is very little clearance between the pipe and the slips. The slips also have a tendency to grip the pipe when a connection is being mad up underneath. This poses a risk of other connections in the BHA breaking out.

This is most likely what happened with the connection on the Simba carrier.

Subject:	Influx during well kill		
Section:	NO 15/3-8, DST		
Rep date:	10.03.2006		
Keywords:	KILLING WELL		
Comp inv:	Statoil		
Synergi no:	383875	**Cost:**	2,9 mill. NOK

Description:
During the killing and circulating operation after DST no. 1 and MiniFrac it was observed the the kill mud had become gas cut and contaminated. It appeared that the well had taken some influx during the initial killing and circulation of the fluid system. It was later observed that constant bottomhole pressure had not been kept during circulation, there was lack of volume control,

and that the setting pressure on the burst disc of the RD Safety circulating valve had been modified offshore and was not set according to the DST procedures. This caused the RD Safety circulating valve to remain open during the killing and circulation, leaving the reservoir open to the kill fluid during circulation. The mud became contaminated and had to be changed out and extra boat had to be chartered for supply of additional mud material.

For future killing and circulation operation after DST's it is recommended to spend more time in the planning of this operation including the procedure details. Other improvements are good volume control, maintaining constant bottomhole pressure during circulation, and to ensure that the downhole DST tools and valves have the correct pressure matrix settings.

Subject:	Transfer pump
Section:	NO 15/3-8, DST
Rep date:	24.03.2006
Keywords:	DRILL STEM TEST
Comp inv:	Halliburton – Power Well Services

Description:
During the main flow period on DST no. 2 the well testing Transfer Pump broke down (motor main shaft) and the pump was not repairable. There was no backup pump available. Without the transfer pump it was difficult to take the remaining desired meter factors. A spare low volume pump was connected up to the system and the stock tank was emptied to spare slop tanks on deck. Thereafter remaining meter factors could be taken.

For future DST's it is recommended to either install dual transfer pumps in paralell, or to ensure sufficient slop tanks and spare pump are available for transfer of oil to slop tanks on deck.

Subject:	Circulating B/U prior to mixing/pumping cement
Section:	NO 15/3-8, DST
Rep date:	22.02.2006
Keywords:	CEMENTING
Comp inv:	Statoil

Description:
In the initial program for cementing the liner it was not planned to circulate bottoms up prior to pumping cement. This was changed shortly prior to job in order to cool down formation and prevent premature setting of cement. However, the risk for getting into a situation were it is required to shut in while circulating B/U must be considered. If shut in is required while cement is on its way down the consequences may be severe.

Therefore it is recommended to always circulate B/U prior to starting to mix cement on HTHP well.

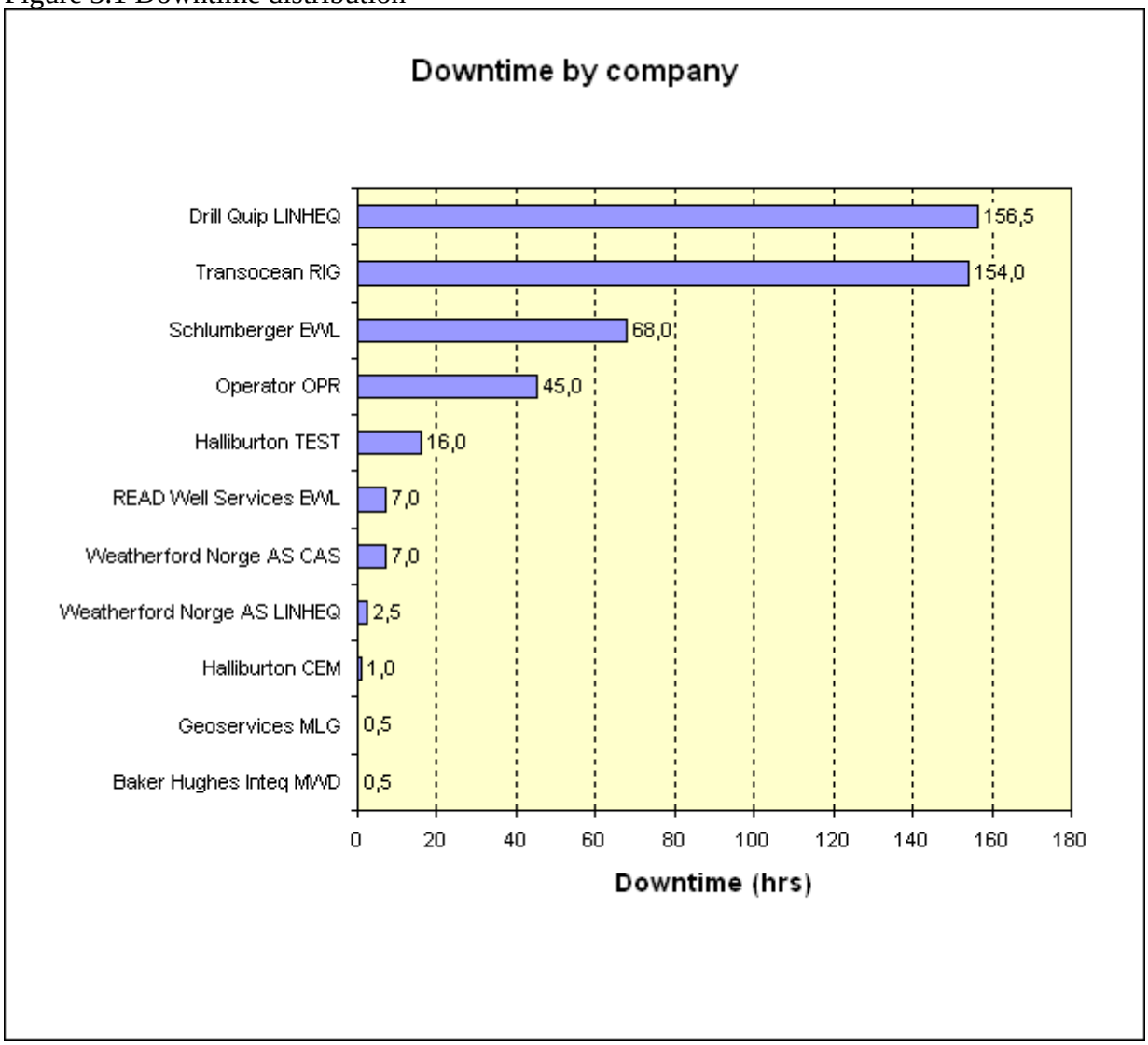
Subject:	Omitted clean out run in 7" liner prior to running CBL log		
Section:	NO 15/3-8, DST		
Rep date:	22.02.2006		
Keywords:	LOGGING/EVALUATION		
Downtime:		**Pot time improvements:**	20
Comp inv:	Statoil		

Description:
The planned clean out run in the 7" liner was omitted and approximately 20 hrs was saved.

For this to be successful is it important that the PBR is flushed properly prior to pulling out with the liner running string. Problems with this procedure may occur at high inclination wells and/or if mud is unstable (settles out). However this should be the standard procedure and clean out runs should only be run after a problem has been experienced.

3.3 Incidents by service and company

Figure 3.1 Downtime distribution



SERVICE COMPANY: Casing Crew Service CAS Weatherford Norge AS
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
25.11.2005 18:30:00	CAS-E05 BX-elevator supplied by contractor	354057	Hydraulic hose coupling on rental BX elevator was observed leaking.	42500	2040000	0,5	100	0,5

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
26.11.2005 10:30:00	CAS-E06 500 T spider elevator suppl. by contractor	354152	500 ton air operated casing elevator malfunctioned after installation.	84995	2039880	1,0	100	1,0
10.12.2005 00:00:00	CAS-E04 Power unit	356951	Power unit for csg. tong shut down.	42497	2039856	0,5	100	0,5
18.12.2005 22:30:00	CAS-E01 Remote oper. tongs w/integrated B-U	358766	Feilsøkte casing tong under MU av 9 7/8" liner.	212488	1699904	3,0	100	3,0
05.04.2006 12:30:00	CAS-02 Doc./Spec.	381997	For svak casing tang til brekking av 14" casing	170000	2040000	2,0	100	2,0
			Total	552480				7,0

SERVICE COMPANY: Cementing CEM Halliburton
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
27.11.2005 14:30:00	CEM-E01 Equipment functions	354243	Remote operated lo-torque valv on cement head malfunctioning.	84995	2039880	1,0	100	1,0
			Total	84995				1,0

SERVICE COMPANY: Drill Stem Testing/Testing TEST Halliburton
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
27.02.2006 18:30:00	TEST-E20 Other equipment (serv. or perm)	375520	Hydraulic hose for 3 1/2" elevator bursted.	42500	2040000	0,5	100	0,5
27.02.2006 19:30:00	TEST-02 Doc./Spec.	375521	Unable to fit 3 1/2" elevator on Gauge carrier.	42500	2040000	0,5	100	0,5
02.03.2006 11:30:00	TEST-E01 STT	375814	Several leaks observed while attempting to test kill- and flow- line coflexip hoses for STT.	935000	2040000	11,0	100	11,0

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
19.03.2006 19:30:00	TEST-01 Procedure	377971	No ducumentation on pre-made assembly from town on the rig.	169990	2039880	2,0	100	2,0
22.03.2006 01:30:00	TEST-E20 Other equipment (serv. or perm)					3,0	50	1,5
04.04.2006 10:00:00	TEST-E20 Other equipment (serv. or perm)	382597	Failure of airoperated slip type elevator	44500	2136000	0,5	100	0,5
			Total	1234490				16,0

SERVICE COMPANY: Electric Wireline Logging EWL READ Well Services
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
03.02.2006 03:30:00	EWL-E04 Cables/Heads & Assoc..	369237	Mis-run Zero offset VSP	594965	2039880	7,0	100	7,0
			Total	594965				7,0

SERVICE COMPANY: Electric Wireline Logging EWL Schlumberger
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
31.01.2006 06:00:00	EWL-E01 Primary mechanical	368528	Nedetid på grunn av feilmontert wire-trommel på loggeunit	85000	2040000	1,0	100	1,0
01.02.2006 09:00:00	EWL-E05 Downhole electronic	368809	Telemetry problems with CMR tool	85000	2040000	1,0	100	1,0
06.02.2006 18:00:00	EWL-E05 Downhole electronic	370109	Surface related communication trouble with MDT-logging tools.	2188750	1910182	27,5	100	27,5
08.02.2006 18:00:00	EWL-E04 Cables/Heads & Assoc..	370306	Fault on wireline logging equipment.	1189930	2039880	14,0	100	14,0
12.02.2006 06:30:00	EWL-E06 D/H Mechanical equipment	371172	Failed pump in MDT tool	2422500	2373061	24,5	100	24,5
			Total	5971180				68,0

SERVICE COMPANY: Liner Hanger Equipment LINHEQ Drill Quip
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
10.12.2005 16:00:00	LINHEQ-E01 Other equipment	357118	Problems when trying to stab liner wiperplug into protective sleeve.	84995	2039880	1,0	100	1,0
10.12.2005 21:00:00	LINHEQ-E01 Other equipment	357225	Not able to RIH with 9 7/8" linerhanger.	13216722	2039880	155,5	100	155,5
			Total	13301717				156,5

SERVICE COMPANY: Liner Hanger Equipment LINHEQ Weatherford Norge AS
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
20.02.2006 11:30:00	LINHEQ-E01 Other equipment	372696	First ball dropped for activating the 7" linar hanger did not bump.	212488	2039885	2,5	100	2,5
			Total	212488				2,5

SERVICE COMPANY: Measurement While Drilling MWD Baker Hughes Inteq
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
30.11.2005 16:30:00	MWD-E02 Decoding	355441	MWD decoding problems	42500	2040000	0,5	100	0,5
			Total	42500				0,5

SERVICE COMPANY: Mud Logging MLG Geoservices
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
10.01.2006 03:00:00	MLG-E01 Mudlogging unit blackout	363362	Mudlogging unit shut down	42500	2040000	0,5	100	0,5
			Total	42500				0,5

SERVICE COMPANY: Operator OPR Operator
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
15.11.2005 03:00:00	MWD-E02 Decoding	351747	Trip to change MWD tool due to tool failure, at 1520m.	1529910	2039880	18,0	100	18,0
21.11.2005 00:00:00	MWD-E01 Transmission	352974	Trip to change MWD tool due to tool failure at 2472m.	1997383	2084226	23,0	100	23,0
28.11.2005 19:00:00	RIG-01 Procedure	355137	Missrun to set the Wear Bushing.	212488	2039885	2,5	100	2,5
22.03.2006 01:30:00	TEST-E20 Other equipment (serv. or perm)					3,0	50	1,5
			Total	3739781				45,0

SERVICE COMPANY: Rig Operations RIG Transocean
WELLBORE: NO 15/3-8

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
06.11.2005 06:00:00	RIG-E343 Power packs	349851	Fault on field regulator for draw work.	254985	2039880	3,0	100	3,0
11.11.2005 03:30:00	RIG-E013 Diverter	350918	Support dog for diverter	382478	2039883	4,5	100	4,5
11.11.2005 17:00:00	RIG-E347 Pipe handling equ/sys other	350919	Fault on forward pipe reciver.	169990	2039880	2,0	100	2,0
12.11.2005 22:00:00	RIG-E14 Mud pumps	351008	Fault on drillers panel SCR selection.	42500	2040000	0,5	100	0,5
13.11.2005 01:30:00	RIG-E07 Top drive	351010	Unable to open TDS IBOP.	42500	2040000	0,5	100	0,5

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
14.11.2005 18:00:00	RIG-E14 Mud pumps	351580	Failure on 2 ea. mud pumps, MP 1 and MP 3.	212488	2039885	2,5	100	2,5
17.11.2005 14:00:00	RIG-E14 Mud pumps	352242	Temporarily stopped drilling operation due to piston leak in MP #3	42500	2040000	0,5	100	0,5
20.11.2005 06:00:00	RIG-E14 Mud pumps	352818	Temporarily stopped drilling while changing liner seal on MP#1 which was leaking.	42500	2040000	0,5	100	0,5
25.11.2005 00:00:00	RIG-E341 Vert pipe handling system	354029	Contact between upper racking arm and elevator.	84995	2039880	1,0	100	1,0
28.11.2005 12:30:00	RIG-E07 Top drive	355127	Leaking Wash Pipe.	84995	2039880	1,0	100	1,0
28.11.2005 18:30:00	RIG-E347 Pipe handling equ/sys other	355128	Repaired Crown Floor saver.	169990	2039880	2,0	100	2,0
06.12.2005 06:00:00	RIG-E14 Mud pumps	356302	Leak on suction line on pump and damaged valve on mud pump.	42500	2040000	0,5	100	0,5
13.12.2005 15:00:00	RIG-E09 Electric power system	357952	Trouble shot park brake. Rebooted computer to rectify problem.	42500	2040000	0,5	100	0,5
14.12.2005 17:30:00	RIG-E345 Elevator	358105	Oil leak on BX-elevator.	84995	2039880	1,0	100	1,0
16.12.2005 10:30:00	RIG-E07 Top drive	358555	Set weight on pipe guide on topdrive pipe handler.	297483	2039883	3,5	100	3,5
16.12.2005 18:00:00	RIG-E10 Drawwork	358556	Oil leak on drawworks.	297483	2039883	3,5	100	3,5
29.12.2005 00:00:00	RIG-E07 Top drive	361087	Failure of actuator on IBOP prevented proper closure of valve by remote furntion.	1614905	11073634	3,5	100	3,5
29.12.2005 16:00:00	RIG-E03 BOP stack/valves	361401	Leakage on mainifold regulator of yellow pod.	7054585	2039880	83,0	100	83,0
06.01.2006 01:30:00	RIG-E10 Drawwork	362701	Main brake on drawwork suddenly activated	42500	2040000	0,5	100	0,5
10.01.2006 20:30:00	RIG-E07 Top drive	363751	Leak on wash pipe	127500	2040000	1,5	100	1,5
18.01.2006 06:00:00	RIG-03 Procedure not followed	366083	Pumping accidently 5,5 m3 light mud down string	42500	2040000	0,5	100	0,5
21.01.2006 09:00:00	RIG-E345 Elevator	366147	Unable to open 5" BX elevator.	84955	2038920	1,0	100	1,0

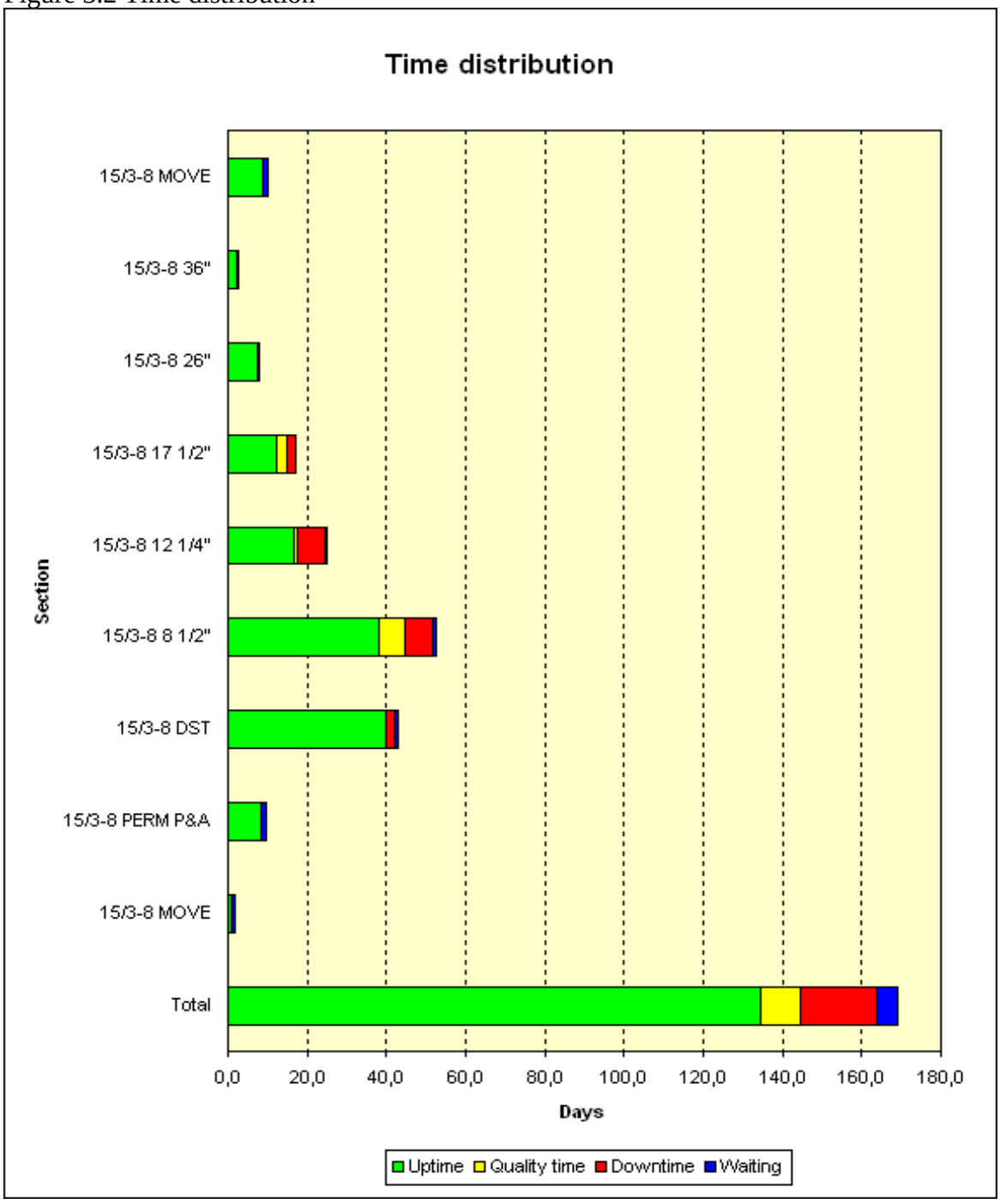
Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
24.01.2006 00:00:00	RIG-E341 Vert pipe handling system	366725	Observed burst hose on upper racking arm.	127493	2039888	1,5	100	1,5
29.01.2006 01:30:00	RIG-01 Procedure	367812	Laid out Ontrak MWD for motor assembly and picked up MWD for rotary assembly.	84995	2039880	1,0	100	1,0
10.02.2006 20:00:00	RIG-E07 Top drive	370849	Leakage on pipe handler pressure gauge.	42497	2039856	0,5	100	0,5
11.02.2006 18:00:00	RIG-E10 Drawwork	370858	Main brakes on drawwork started to heat.	84995	2039880	1,0	100	1,0
16.02.2006 01:30:00	RIG-E07 Top drive	371904	Leak on mudhose/goosneck to DDM	425000	1700000	6,0	100	6,0
18.02.2006 06:00:00	RIG-E342 Drillfloor tub handl system	372387	Hydraulic failure on iron roughneck.	84995	2039880	1,0	100	1,0
18.02.2006 11:00:00	RIG-E14 Mud pumps	372388	Popoff valves went off	42497	2039856	0,5	100	0,5
21.02.2006 06:00:00	RIG-E341 Vert pipe handling system	374216	Bursted hose on derick racking arm	50000	1200000	1,0	100	1,0
25.02.2006 06:00:00	RIG-E342 Drillfloor tub handl system	373997	Hydraulic leak on iron roughneck.	85000	2040000	1,0	100	1,0
26.02.2006 00:00:00	RIG-E342 Drillfloor tub handl system	373999	Ironroughneck stuck on DP stand.	42500	2040000	0,5	100	0,5
27.02.2006 11:00:00	RIG-E345 Elevator	374002	Unable to operate air operated elevator.	297500	3570000	2,0	100	2,0
27.02.2006 16:30:00	RIG-E345 Elevator	374002	Unable to operate air operated elevator.	297500	4760000	1,5	100	1,5
17.03.2006 00:30:00	RIG-E10 Drawwork	377743	Drawwork caliper failure.	1189930	1784895	16,0	100	16,0
01.04.2006 00:00:00	RIG-E07 Top drive					1,0	100	1,0
04.04.2006 06:00:00	RIG-E347 Pipe handling equ/sys other	382321	Unable to move Eagle Light downwards	178000	1708800	2,5	100	2,5
			Total	14294729				154,0

3.4 Time distribution

Section	Start time	Length m	Budget		TL		Actual		Ops (f)
			hrs	days	hrs	days	hrs	days	
NO 15/3-8 MOVE	24.10.2005 01:10	0,0	218,0	9,1	147,0	6,1	241,3	10,1	100,0
NO 15/3-8 36"	03.11.2005 02:30	49,0	73,0	3,0	54,0	2,3	65,0	2,7	100,0
NO 15/3-8 26"	05.11.2005 19:30	828,0	204,0	8,5	137,0	5,7	185,5	7,7	94,3
NO 15/3-8 17 1/2"	13.11.2005 13:00	1755,0	353,0	14,7	284,0	11,8	410,5	17,1	87,0
NO 15/3-8 12 1/4"	30.11.2005 16:30	1145,0	458,0	19,1	550,0	22,9	594,5	24,8	71,1

Section	Start time	Length m	Budget hrs	Budget days	TL hrs	TL days	Actual hrs	Actual days	Ops (f)
NO 15/3-8 8 1/2"	25.12.2005 11:00	680,0	1403,0	58,5	1281,0	53,4	1261,5	52,6	86,6
NO 15/3-8 DST	16.02.2006 01:30	0,0	1320,0	55,0	832,0	34,7	1025,5	42,7	95,2
NO 15/3-8 PERM P&A	30.03.2006 20:00	-69,0	252,0	10,5	121,0	5,0	229,5	9,6	97,4
NO 15/3-8 MOVE	09.04.2006 09:30	-133,0	30,0	1,3	23,0	1,0	41,0	1,7	100,0
Sum			4311,0	179,7	3429,0	142,9	4054,3	169,0	

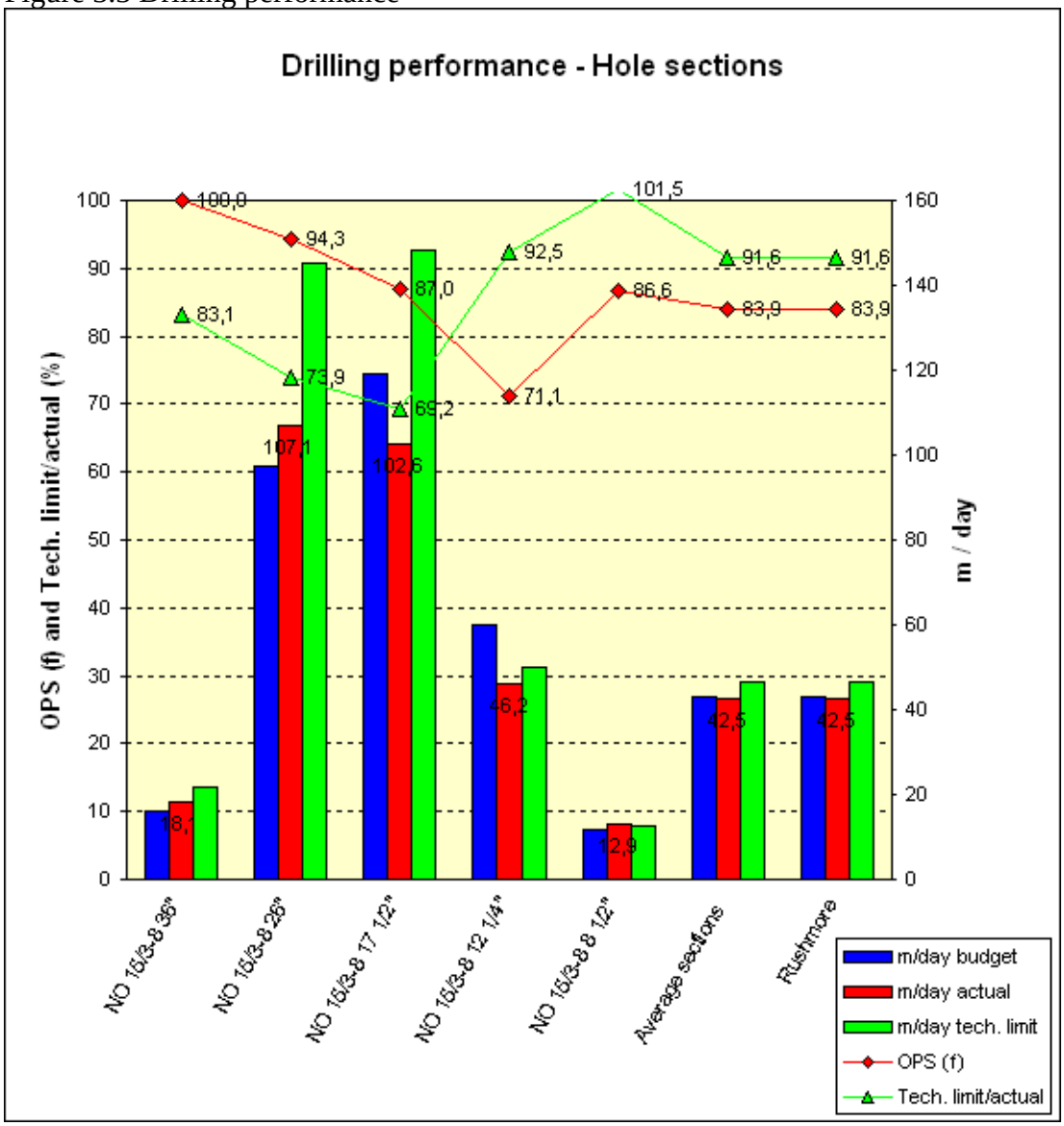
Figure 3.2 Time distribution



The graph above is based on the following details:

Section	Downtime	Uptime	Quality time	Waiting time	Total time
15/3-8 MOVE	0,0	8,9	0,0	1,2	10,1
15/3-8 36"	0,0	2,3	0,3	0,2	2,7
15/3-8 26"	0,4	7,3	0,0	0,0	7,7
15/3-8 17 1/2"	2,2	12,5	2,4	0,0	17,1
15/3-8 12 1/4"	7,1	16,6	0,8	0,3	24,8
15/3-8 8 1/2"	7,1	38,0	6,8	0,7	52,6
15/3-8 DST	2,0	39,8	0,0	0,9	42,7
15/3-8 PERM P&A	0,3	8,1	0,0	1,2	9,6
15/3-8 MOVE	0,0	1,0	0,0	0,7	1,7
Total	19,1	134,4	10,3	5,2	168,9

Figure 3.3 Drilling performance



3.5 Cost

Project kind	WBS	Currency	Budget	Actual cost
Drilling	T.O025A.AP.30120	NOK	351 699 000	336 376 000
Mobilize/Demobilize	T.O025A.AP.30130	NOK	32 491 000	32 491 000
Planning	T.O025A.AP.30110	NOK	23 871 000	22 857 000
Testing Exploration wells	T.O025A.AP.30140	NOK	153 361 000	114 721 000
Total		NOK	561 422 000	506 445 000

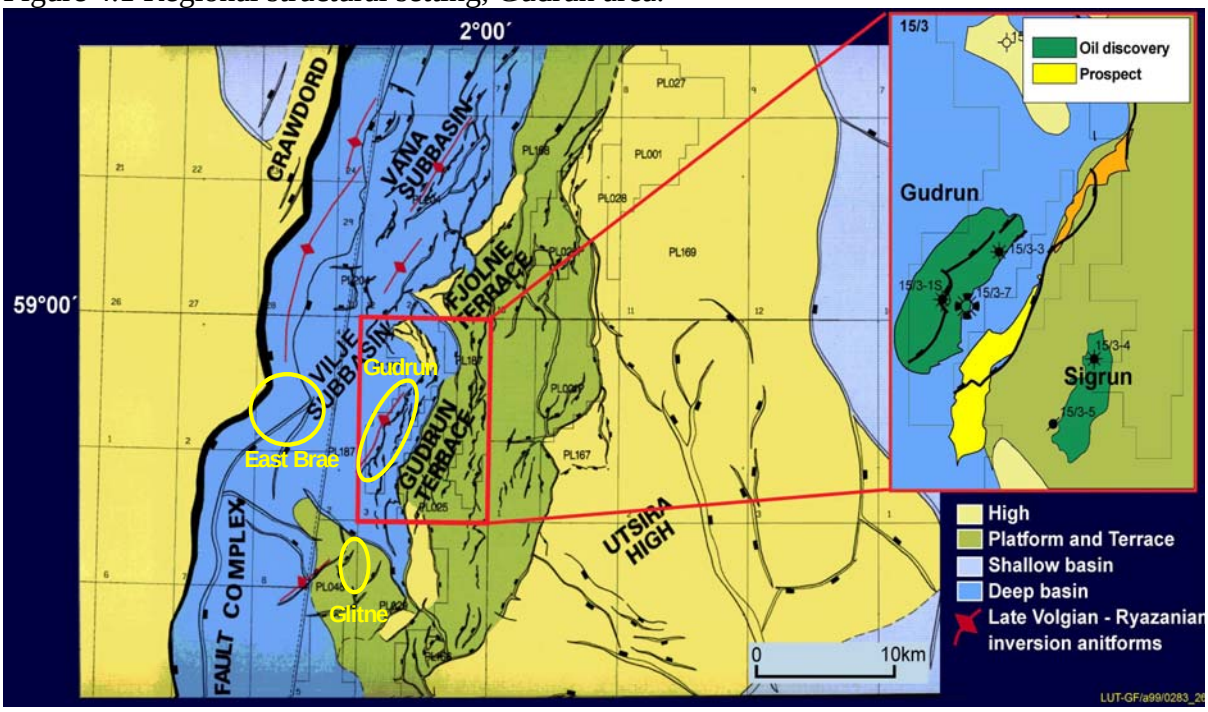
4 Geology and formation data report

4.1 Geological setting

Licence PL 025 is situated in the central part of the Viking Graben near the UK - Norway border line and 10 km to the east of the British oil and gas field East Brae. The Glitne Field is located approximately 12 km to the south.

The Gudrun structure is situated on the east flank of the South Viking Graben and west of the Utsira High. Figure 4.1 is a structural element map of the area, illustrating the structural relationship to the surrounding fields and showing the position of the existing wells on the structure.

Figure 4.1 Regional structural setting, Gudrun area.



Gudrun is located in the Vilje Sub-basin west of the Gudrun Terrace and is an inversion structure. A thick Upper Jurassic clastic package is deposited in the half graben of the Vilje Sub-basin. This half graben developed after deposition of the shallow marine Hugin and Sleipner Formations at the same time as the Upper Jurassic sediments were deposited. The inversion of the Gudrun structure was initiated during Late Volgian. The whole Upper Jurassic package is rapidly thinning towards the Gudrun Terrace and is absent onto the Utsira High.

4.2 Shallow gas results

Shallow gas was not predicted in the well and therefore no pilot hole was drilled.

No shallow gas was observed. The standard NPD shallow gas form is presented in appendix F.

4.3 Stratigraphy

The stratigraphical zonation is based on interpretation of the biostratigraphic report, log curves and on correlation with nearby wells. The stratigraphy of the entire well is shown in Table 4.2 and in the Figure 4.4.

4.3.1 Table of chronostratigraphy

Table 4.1 Chronostratigraphy

Stratigraphic succession			Interval	
System	**Series**	**Stage**	**From (m MD RKB)**	**To (m MD RKB)**
Tertiary	Paleogene	Early Paleocene	2740*	2790
Cretaceous	Upper Cretaceous	Late Maastrichtian	2810	2990
		Early Maastrichtian	3000	3120
		Late Campanian	3130	3190
		Middle Campanian	3200	3210
		Early Campanian	3220	3350
		Early Santonian	3360	3370
		Coniacian	3380	3420
		Late Turonian	3430	3650
		Middle Turonian	3660	3690
		Late Cenomanian	3700	3730
		Middle Cenomanian	3740	3760
		Early Cenomanian	3770	3800
	Lower Cretaceous	Late Albian	3810	3870
		Early Albian	3880	3885
		Aptian	3890	3895
		? Unconformity		
		Early Barremian	3900	3905
		? Unconformity		
		Early Valanginian	3908	3913
		Early Ryazanian	3921	3939
Jurassic	Upper Jurassic	Late Volgian	3942	3963
		Middle Volgian	3969	4055
		Early Volgian	4066	4164
		Late Kimmeridgian	4167	4458
		Early Kimmeridgian	4464	4530
		Late Oxfordian	4536	4590
		TD	4590	

* Upper depth of biostratigraphic analysis.

4.3.2 Table of lithostratigraphy

Table 4.2 Lithostratigraphy

FORMATION	PROGNOSED			OBSERVED				
TOPS	m MD RT	m TVD RT	m MSL	m MD RT	m TVD RT	m MSL	DIFF. PROG. m TVD	TWT Sec.
NORDLAND GP (seabed)	132	132	109.0	132.5	132.5	109	0	0.130
Tertiary	447	447	424	449.0	449.0	425.5	+2.0	
Utsira Fm	670	670	647	658.0	657.9	634.4	-12.1	
HORDALAND GP	824	824	801	858.0	857.9	834.4	+33.9	
Top Skade Fm	1035	1035	1012	1025.0	1024.9	1001.4	-10.1	
Base Skade Fm	1183	1183	1160	1136.5	1136.4	1112.9	-46.6	
* Top Grid Fm	1433	1433	1410	1448.0	1447.8	1424.3	+14.8	
Base Grid Fm	1863	1863	1840	1792.0	1791.8	1768.3	-71.2	
ROGALAND GP	2153	2153	2130	2164.0	2163.7	2140.2	+10.7	2.074
Balder Fm	2153	2153	2130	2164.0	2163.7	2140.2	+10.7	2.074
Sele Fm	2203	2203	2180	2223.0	2222.7	2199.2	+19.7	
Lista Fm	2240	2240	2217	2276.5	2276.2	2252.7	+36.2	
Ty Fm	2597	2597	2574	2602.5	2602.0	2578.5	+5.0	
SHETLAND GP	2728	2728	2705	2740.0	2739.5	2716.0	+11.5	2.462
Ekofisk Fm	2728	2728	2705	2740.0	2739.5	2716.0	+11.5	2.462
Jorsalfare Fm	2778	2778	2755	2792.0	2791.5	2768.0	+13.5	
Kyrre Fm	3223	3223	3200	3213.0	3212.3	3188.8	- 10.7	
Tryggvason Fm	3342	3342	3319	3341.0	3340.2	3316.7	- 1.8	
Blodøks Fm	3671	3671	3648	3672.5	3671.6	3648.1	+ 0.6	
Hidra/Svarte Fm	3686	3686	3663	3685.5	3684.6	3661.1	- 1.4	
CR. KNOLL GP	3748	3748	3725	3793.5	3792.6	3769.1	+ 44.6	3.010
Rødby Fm	3748	3748	3725	3793.5	3792.6	3769.1	+ 44.6	3.010
Sola Fm	3813	3813	3790	3858.5	3857.6	3834.1	+ 44.6	
Åsgard Fm	3853	3853	3830	3875.0	3874.1	3850.6	+ 21.1	
VIKING GP	3895	3895	3872	3932.5	3931.6	3908.1	+36.6	3.095
Draupne Fm	3895	3895	3872	3932.5	3931.6	3908.1	+36.6	3.095
Top UJsst1,UnitA	4033	4033	4009	4072.5	4071.5	4048.0	+38.5	
Top UJsst1,UnitB	4065	4065	4041	4107.0	4106.0	4082.5	+41.0	
Top UJsst1,UnitC	4112	4112	4088	4167.0	4166.0	4142.5	+54.0	3.230
Base UJsst1,UnitC	4159	4159	4135	-	-	-		

Top UJsst2,UnitD	4174	4174	4150	4212.5	4211.5	4188.0	+37.5	
Top UJsst2,UnitE	4235	4235	4212	4261	4260.0	4236.5	+25.0	
Top UJsst2,UnitF	-	-	-	4323	4322	4298.5		
Base UJsst2	4343	4343	4319	4346	4345	4321.5	+2.0	3.346
Top UJsst3	4410	4410	4387	4474.5	4473.5	4450.0	+63.5	3.426
Base UJsst3	4570	4570	4546	-	-	-		
Top Heather	4736	4736	4713	-	-	-		3.598
TD	4805	4805	4782	4592	4591	4567.5	-214	

*Top Grid is primarily based on cuttings due to noise affect on the MWD log.

4.4 Lithostratigraphic description

NORDLAND GROUP **132.5 - 858.0 m RT (132.5 – 857.9 m TVD RT)**
(109 – 834.4 m TVD MSL)

Series: -
Depositional environment: Marine, inner shelf.

The complete Nordland Group was penetrated with all returns to seabed. A MWD service was run from 182m and down. One formation is defined within the Nordland Group. This is the Utsira Formation, which makes up the lowermost part of the Nordland Group in this area.

Apart from the sand rich Utsira Formation, the Nordland Group is dominated by clay/ claystones. In addition, a few scattered sand beds can be seen on the logs.

Utsira Formation **658.0 - 858.0 m RT (657.9 – 857.9 m TVD RT)**
(634.4 – 834.4 m TVD MSL)

The top of the Utsira Formation is defined by a drop in GR compared to the overlying claystones of the Nordland Group.

In this well the uppermost 20m comprises argillaceous and silty sediments before entering the first of the massive sand beds that are typical for the Utsira Formation. The Utsira Formation is dominated by sandstones with minor fine grained argillaceous sediments.

HORDALAND GROUP **858.0 – 2164.0m MD RT (857.9 – 2163.7m TVD RT) (834.4 - 2140.2m TVD MSL)**

Series: -
Depositional environment: Deep water, outer shelf to upper bathyal, marine

Fifteen meters (MD) of olive grey and brownish grey claystone was drilled before penetrating top Skade Formation, giving a change in lithology to interbedded sandstone/claystone.

Skade Formation **1025.0 – 1136.5 m MD RT (1024.9– 1136.4 m TVD RT) (1001.4 – 1112.9 m TVD MSL)**

Top of Skade Formation is defined by a drop in GR and resistivity logs compared to the overlying claystones.

The claystone is olive grey, brownish grey, soft-firm, blocky, silty, slightly micaceous, calcareous and glauconitic in parts.

The sandstone beds comprise clear quartz, very fine to fine, occasionally medium, loose, sub angular to sub rounded and moderately to well sorted with common glauconite. Base Skade Formation was picked at 1136.5 m MD. From this depth the formation changed to olive grey claystone with occasional stringers of limestone until top Grid Formation was penetrated at 1448 m MD.

Grid Formation **1448.0 – 1792.0 m MD RT (1447.8 – 1791.8 m TVD RT) (1424.3 – 1768.3 m TVD MSL)**

The top of the Grid Formation is picked at a decrease in both in the GR and resistivity log responses. The Grid formation is an interbedded and locally interlaminated sequence of sandstones and claystones.

The sandstones are seen as loose, clear to translucent quartz, which also has traces of light red and orange staining. It is variable in grain size, locally very fine to fine and well sorted but dominantly fine to medium with occasional to common coarse grains. There is also locally trace to common very coarse grains. The sandstones varied from moderately to mainly poorly to very poorly sorted. There are constant traces of associated loose mica, glauconite and pyrite. Locally traces of off white to pale grey clean rock flour/matrix are seen.

The claystones are mainly olive grey to medium dark grey and dark greenish grey. They are occasionally brownish grey and bluish grey. The claystones are soft to firm, fissile to subblocky, and non calcareous. They are slightly to moderately micromicaceous, with traces of glauconitice. Traces of moderately to very silty/sandy claystone are also seen, which grade into argillaceous/silty very fine to fine grained sandstones.

ROGALAND GROUP **2164.0 - 2740.0 m MD RT (2163.7 - 2739.5 m TVD RT)**
2140.2 - 2716.0 m TVD MSL

Series: Paleogene
Depositional environment: Deep marine

The top of the Rogaland Group is identified by a trend shift in the resistivity log response to lower readings, associated with the start of a decreasing GR log response seen throughout the Balder Formation. The Rogaland Group comprises the Balder, Sele, Lista and Ty Formations in this well.

Balder Formation **2164.0 - 2223.0 m MD RT (2163.7 - 2222.7 m TVD RT)**
2140.2 - 2199.2 m TVD MSL

Series: Paleogene
Depositional environment: Deep marine

The Balder Formation consists of claystones with increasing amounts of tuff with depth, in addition to minor limestones and sandstones.

The claystones are medium grey to brownish grey and bluish grey to bluish green, soft to firm, fissile to subblocky, non to slightly calcareous, micromicaceous and traces of micropyrite.

The tuffs are speckled light to medium grey to greenish grey, soft, slightly silty/sandy and non to slightly calcareous.

Limestones are seen as light grey, yellowish brown, microcrystalline, slightly dolomitic and slightly to moderately argillaceous.

The sandstones consist of loose, clear to translucent and off white quartz, very fine to fine and well sorted.

Sele Formation **2223.0 - 2276.5 m MD RT (2222.7 – 2276.2 m TVD RT)**
2199.2 - 2252.7 m TVD MSL

Series: Paleogene
Depositional environment: Deep marine

The top of the Sele Formation is marked by a sharp increase in the GR log response at the base of a fining upwards sequence. There is an associated small shift in resistivity readings to lower values. The Sele Formation consists of claystones with thin limestone stringers and minor sandstones beds near the base.

The claystones are medium dark to dark grey to brownish grey, soft to firm, fissile, blocky, slightly calcareous, micromicaceous, slightly silty and traces of micropyrite. Traces of very sandy claystone grading to argillaceous sandstone are present near the base.

The limestones are the same as in the overlying Balder Formation appearing as light grey, yellowish brown, microcrystalline, slightly dolomitic and slightly to moderately argillaceous.

The sandstones are loose, clear to translucent with traces of off white quartz. The grain size is very fine to mainly fine, moderately sorted, with rare loose glauconite, mica and pyrite.

Lista Formation **2276.5 - 2602.5 m MD (2276.2 – 2602.0 m TVD RT)**
2252.7 - 2578.5 m TVD MSL
Series: Paleogene
Depositional environment: deep marine, marine

The top of the Lista Formation is picked at small shift in the resistivity trend to lower values. There is no significant change in the GR log response. The Lista Formation consists of interbedded sandstones and claystones.

The sandstones are comprised mainly of loose, clear to translucent quartz. The quartz is occasionally off white, with traces of pink and red stain. The sandstone is very fine, occasionally medium, and moderately to poorly sorted. The grains are predominantly subangular to subroun and coarse. There are traces of loose pyrite.

The claystones are medium to dark grey, occasionally greenish grey, with traces of light to medium brownish grey. They are soft to firm, subfissile to subblocky and non to slightly calcareous in part. The claystones are moderately micromicaceous with traces of pyrite, occasionally becoming very sandy and grading to argillaceous sandstone.

Ty Formation **2602.5 - 2740.0 m MD RT (2602.0 - 2739.5 m TVD RT)**
2578.5 - 2716.0 m TVD MSL
Series: Paleogene
Depositional environment: Marine

The top of the Ty Formation is picked at a slight decrease in the GR log response to an even lower reading signature. The resistivity log response at the top of the Ty Formation shows also a slight decrease and the frequence of high log spikes is reduced. The Ty Formation is composed of sandstone with minor, thin claystone stringers.

The sandstone is comprised of loose quartz grains which are predominantly clear, transparent, translucent and occasionally light grey in colour. The grain size is variable from very fine to coarse, though it is dominantly fine to medium and the sandstone is poorly sorted. The grains are subangular to subrounded, occasionally round with some calcite cement, traces of pyrite, mica and glauconite. Towards the base of the formation the sandstones become pale yellow orange to pinkish in colour.

The claystone is medium dark grey, dark greenish grey, occasionally dark brownish grey, light grey and rarely bluish grey in colour. It is firm to occasionally hard, subblocky and non to slightly calcareous.

Minor amounts of limestone which is light brown, angular, hard and microcrystalline are also present.

SHETLAND GROUP 2740.0 – 3793.5 m MD RT (2739.5 – 3792.6 m TVD RT)
2716.0 – 3769.1 m TVD MSL
Series: Upper Cretaceous - Paleogene
Stage: Early Ryazanian – Early Paleocene
Depositional environment:

Ekofisk Formation 2740.0 – 2792 m MD RT (2739.5 – 2791.5 m TVD RT)
2716.0 – 2768.0 m TVD MSL
Series: Paleogene
Stage: Early Paleocene
Depositional environment: Open marine

The Ekofisk Formation is comprised of marl and limestone.

The marl is pale grey to medium dark grey, becoming very pale grey to off white and partly pink towards section TD. The marl is firm, partly moderately hard, it is sub-blocky and grades to argillaceous limestone in places. There are occasional dark/carbonaceous micro laminae.

The limestone is white to off white, pale red and very pale grey. It is blocky, hard, brittle to crumbly in parts, and it is microcrystalline to chalky.

Claystone and sandstone are also seen, most likely contamination from the overlying formations.

Jorsalfare Formation 2792.0 – 3213.0 m MD RT (2791.5 – 3212.3 m TVD RT)
2768.0 – 3188.8 m TVD MSL
Series: Upper Cretaceous
Stage: Late Maastrichtian
Depositional environment: Open marine

The Jorsalfare Formation is consisting of marl and limestone.

The marl is medium to dark grey to dark green grey, occasionally olive grey. It is firm to moderately hard, sub-blocky to blocky, and grades to argillaceous limestone in places. In the sample interval 3060 to 3110 m, the marl was brown grey to grey red and moderately hard to hard.

The limestone is white to off white, light grey or green grey to light olive grey. It is blocky, firm to moderately hard, brittle to crumbly in parts and it is microcrystalline. The limestone is non to very argillaceous and locally grading to marl.

Small amounts of calcareous claystone are seen, in parts grading to marl.

Kyrre Formation **3213.0 – 3341.0 m MD RT (3212.3 – 3340.2 m TVD RT)**
3188.8 – 3316.7 m TVD MSL
Series: Upper Cretaceous
Stage: Early Campanian
Depositional environment: Open marine

The Kyrre Formation is consisting of marl with stringers of limestone.

The marl is dark green grey, occasionally green grey, firm to moderately hard, occasionally hard, and sub-blocky. It is grading to argillaceous limestone in places.

The limestone is off white to grey white to light grey. It is blocky, firm to moderate hard, brittle to crumbly in parts, and it is microcrystalline. The limestone is generally argillaceous, in parts also with argillaceous lamina.

Minor amounts of calcareous claystone are seen, in parts grading to marl.

Tryggvason Formation **3341.0 – 3672.5 m MD RT (3340.2 – 3671.6 m TVD RT)**
3316.7– 3648.1 m TVD MSL
Series: Upper Cretaceous
Stage: Middle Turonian - Early Santonian
Depositional environment: Open marine

The Trygvasson Formation consists of marl in the uppermost section and limestone in the lower section.

The marl is predominately medium to dark grey, in parts dark green grey, firm to moderately hard, and sub-blocky. It has commonly argillaceous lamina, and grades to argillaceous limestone in places.

The limestone is light to medium grey, in lower part also light olive grey to green grey. It is blocky, moderately hard, occasionally hard, occasionally brittle, and microcrystalline. The limestone is generally argillaceous, in parts also with argillaceous lamina.

Blodøks Formation **3672.5 – 3685.5 m MD RT (3671.6 – 3684.6 m TVD RT)**
3648.1 – 3661.1 m TVD MSL
Series: Upper Cretaceous
Stage: Middle Turonian
Depositional environment: Open marine

The Blodøks comprises very similar lithology as the overlying Trygvasson Formation, but with a slight increase of the dark greenish grey to greenish black color.

Hidra/Svarte Formation 3685.5 – 3793.5 m MD RT (3684.6 – 3792.6m TVD RT)
3661.1 – 3769.1 m TVD MSL
Series: Upper Cretaceous
Stage: Early Cenomanian – Middle Turonian
Depositional environment: Open marine

As the Blodøks and Trygvasson Formations, the marly sequences prevail also towards the bottom of the Shetland Group, hence constituting a predominant medium to dark grey, with variegated brownish to olive variations in the micrite dominated (marly) lithology. A slight increase in organic content was observed (associated with very modest increase in the formation gas levels).

CROMER KNOLL GP 3793.5 – 3932.5 m MD RT (3792.6 – 3931.6 m TVDRT)
3769.1 – 3908.1 m TVD MSL
Series: Lower Cretaceous
Stage: Early Ryazanian - Early Cenomanian
Depositional environment:

The top of the Cromer Knoll Group is defined by a slight increase in gamma-ray readings, together with a corresponding decrease in resistivity. This is most likely due to the increasing argillaceous content relative to the lowermost Shetland Group.

The Cromer Knoll Group comprises the Rødby, Sola and Åsgard Formations.

Rødby Formation 3793.5 – 3858.5 m MD RT (3792.6 – 3857.6 m TVD RT)
3769.1 – 3834.1 m TVD MSL
Series: Lower Cretaceous
Stage: Late Albian – Early Cenomanian
Depositional environment: Open marine, offshore marine

The Rødby Formation is comprised of interbedded claystone with minor marl and limestone stringers.

The claystone consists of a dark grey to (olive) black claystone, firm to hard, predominantly blocky in shape, very calcareous and in parts grading to marl. From 3850 m the first occurrence of pale reddish grey to greyish red and partly sticky occurs.

The marl is predominantly medium to dark grey to olive grey shades, but greenish grey tints also occur. Generally firm to hard, microcrystalline, and in parts grading to claystone.

The modest limestone stringers are seen as yellowish to off white and very light grey, firm to hard, amorphous micritic to crystalline cuttings, which are ranging from slightly argillaceous to argillaceous. The occurrence of limestone has also some randomly occurring concretions in addition to continuous strata.

Sola Formation **3858.5 – 3875.0 m MD RT (3857.6 – 3874.1 m TVD RT)**
3834.1 – 3850.6 m TVD MSL

Series: Lower Cretaceous
Stage: Late Albian
Depositional environment: Offshore marine

The top of the Sola Formation is defined by a slight increase in gamma-ray readings and slight decrease in resistivity, which also in character becomes less erratic than in the overlying Rødby Formation.

The Sola Formation is comprised of claystone with minor stringers of limestone.

The claystone is medium dark grey to dark grey as well as pale reddish brown and greyish red. It is soft to firm, amorphous to blocky, very calcareous to calcareous, slightly sticky, silty and microglauconitic in parts.

The limestone is medium light grey and in parts light olive grey to greenish grey. It is firm, amorphous to subblocky, micritic, slightly argillaceous and in parts also microglauconitic.

Åsgard Formation **3875.0 – 3932.5 m MD RT (3874.1 – 3931.6 m TVD RT)**
3850.6 – 3908.1 m TVD MSL
Series: Lower Cretaceous
Stage: Early Ryazanian – Early Albian
Depositional environment: Open marine

The top of the Åsgard Formation is defined by a decrease in gamma-ray along with an increase in resistivity, related to the highly calcareous formation.

The Åsgard Formation is comprised of claystone and marl.

The claystone is medium dark grey to brownish grey and reddish grey to greyish red.
It is soft to firm, amorphous to blocky, very calcareous to calcareous occasionally grading into marl. It is occasionally microglauconitic, micropyritic and sticky in parts.

The marl is medium grey to black, firm, amorphous to subblocky. Occasionally it grades into claystone.

VIKING GROUP **3932.5 – TD @ 4592 m MD RT (3931.6 - 4591 m TVD RT)**
3908.1 – 4567.5 m TVD MSL
Series: Upper Jurassic
Stage: Late Oxfordian – Early Ryazanian

The top of the Viking Group is defined by a distinct increase in gamma-ray and resistivity readings.

The Viking Group consists of the Draupne Formation and the Heather Formation in this well.

Draupne Formation **3932.5 – TD @ 4592 m MD RT (3931.6 - 4591 m TVD RT)**
3908.1 - 4567.5 m TVD MSL
Series: Upper Jurassic
Stage: Late Oxfordian – Early Ryazanian
Depositional environment: Marine

The Draupne Formation consists of the interbedded lithologies sandstone, claystone and limestone, with varying thicknesses from laminas to stringers and layers. The formation may be subdivided into the sequences below.

UJsst1,UnitA	*4072.5 – 4107.0 m RT (4071.5 – 4106.0 m TVD RT)* *4048.0 – 4082.5 m TVD MSL*
UJsst1,UnitB	*4107.0 – 4167.0 m RT (4106.0 – 4166.0 m TVD RT)* *4082.5 – 4142.5 m TVD MSL*
UJsst1,UnitC	*4167.0 - 4212.5 m RT (4166.0 – 4211.5 m TVD RT)* *4142.5 – 4188.0 m TVD MSL*
UJsst2,UnitD	*4212.5 – 4261.0 m RT (4211.5 – 4260.0 m TVD RT)* *4188.0 – 4236.5 m TVD MSL*
UJsst2,UnitE	*4261.0 – 4323.0 m RT (4260.0 – 4322.0 m TVD RT)* *4236.5 – 4298.5 m TVD MSL*
UJsst2,UnitF	*4323.0 – 4346.0 m RT (4322.0 – 4345.0 m TVD RT)* *4298.5 – 4321.5 m TVD MSL*
Top UJsst3	*4474.5 m RT (4473.5 m TVD RT) 4450.0 m TVD MSL*

The claystone, as a general trend, is at first very organic rich and has the distinct content of micropyrite, giving vast amounts as microscopic metallic luster when investigated with highest magnification. It starts off as olive grey to light olive black and becoming predominantly black. It further evolves into an olive black to dusky yellow brown and greyish black to black kerogen prone source rock in the deepest part of the Draupne Formation. It is moderately hard

to hard in the upper parts, becoming firm when organic content exceed the normal level. Some zones are hard to very hard, almost felsic. These zones are typically also calcareous. Further down into the Draupne sandstone units the occurrence of kaolinite/illite rich strata makes the shale grade into claystone which occasionally are silty to very silty and sandy in parts, and also predominantly non calcareous to occasionally calcareous. Some of the lower sandstones in UJsst3 are in parts becoming very calcareous, grading into argillaceous or arenaceous limestone. The most typical characteristics is still carbonaceous to very carbonaceous component, and as mentioned commonly micropyritic. The cuttings shapes are blocky to subfissile throughout the entire section.

Roughly three different sandstone sequences can be distinguished in the Draupne Formation. Starting from the top the sandstone consists of clear to translucent and medium grey to dark grey quartz, locally also pale yellow and moderately yellow brown colors are seen. The sand is often loose, very fine to fine grained, well sorted, subangular to subrounded and occasionally rounded. It is locally argillaceous to very argillaceous. Key component is visually identified as detritus feldspars seen as significant kaolinite/illite mineralization. Thus these units are grading into sandy claystone. Later in the UJsst3 these sandstones become more calcite cemented and maintains a slight content of carbonaceous/coaliferous material. A moderate content of muscovite mica is seen throughout the entire section.

From approximately 4296m, in the UJsst2, a color change is seen. The sandstone matrix becomes medium light grey to medium dark grey. The sandstone is still very fine to fine, but in thin stringers it is also becoming medium to coarse grained. The sand is typically subrounded with rare rounded coarse grains. It is also seen as well recognizable smoky quartz. Throughout the unit the sandstone is mostly moderately to well sorted, with some moderately to poorly sorted interbeds. The sandstone are moderately hard to hard and becoming very hard. It is slightly silica cemented, but in parts also calcite cemented. They are very commonly moderately to very argillaceous (kaolinitic) and commonly also massively calcareous. Glauconite is seen in the upper sandstones and also small amounts of pyrite are seen overall. As these sandstones are very arkosic (rich in detrital feldspars) the inferred porosity from visual inspection is generally poor to fair. Some sand zones are grading into tight claystone/siltstone or shaly siltstone. In between these tighter zones some good porosity intervals can be identified from the visual inspection of the chipped core material.

In the UJsst3, below 4480m, the color changes into light grey, with typical shade of olive grey and light brownish grey, but still with the clear and translucent quartz as main aggregate mineral. The sand is predominantly seen as loose grains in the cuttings, but silica and calcite cementations are occasionally seen, giving a friable to firm cementation in the cores. The grain size is most commonly very fine to medium with occasional coarse grains. It is moderately to poorly sorted, subangular to subrounded, with rare traces of rounded coarse grains. Some hard to very hard sandstone beds are found under the interpreted oil-water contact. Traces of micropyrite and coal/carboniferous material are observed throughout.

The inferred visible porosity is ranging from poor to fair. Only minor intervals have good porosity.

The occurrence of limestone is characterized as light grey to medium light grey, also typically off-white with light to dark micro laminations. The limestone is ranging from firm to very hard, but predominantly it is moderately hard and micritic. It is mostly slightly argillaceous to argillaceous, grading into argillaceous laminas and claystone/shale. Some of the stringers are also slightly too moderately sandy. Occasionally, it is slightly pyritic and in parts traces of glauconite is seen in the upper parts of Draupne.

The micritic stringers mostly occur in the upper part of the Draupne Formation while in the middle and lower parts it is more dominated by sparry calcite and rarely slightly dolomittic limestone. It is a light olive grey shaded with speckled olive grey, moderate hard to hard, subblocky to blocky micritic (marly) stringers that locally grades into argillaceous limestone.

TD (drillers depth) at 4590 m MD (4565.5 m TVD MSL)
TD (loggers depth) at 4592 m MD (4567.5 m TVD MSL)

4.5 Hydrocarbon indications

Gas peaks are listed in the appendix D.

The 36” and 26” sections were drilled down to 1010 m with returns to seafloor, hence no gas measurements were possible. No indications of shallow gas were registered using the ROV sonar and MWD logs while drilling these sections.

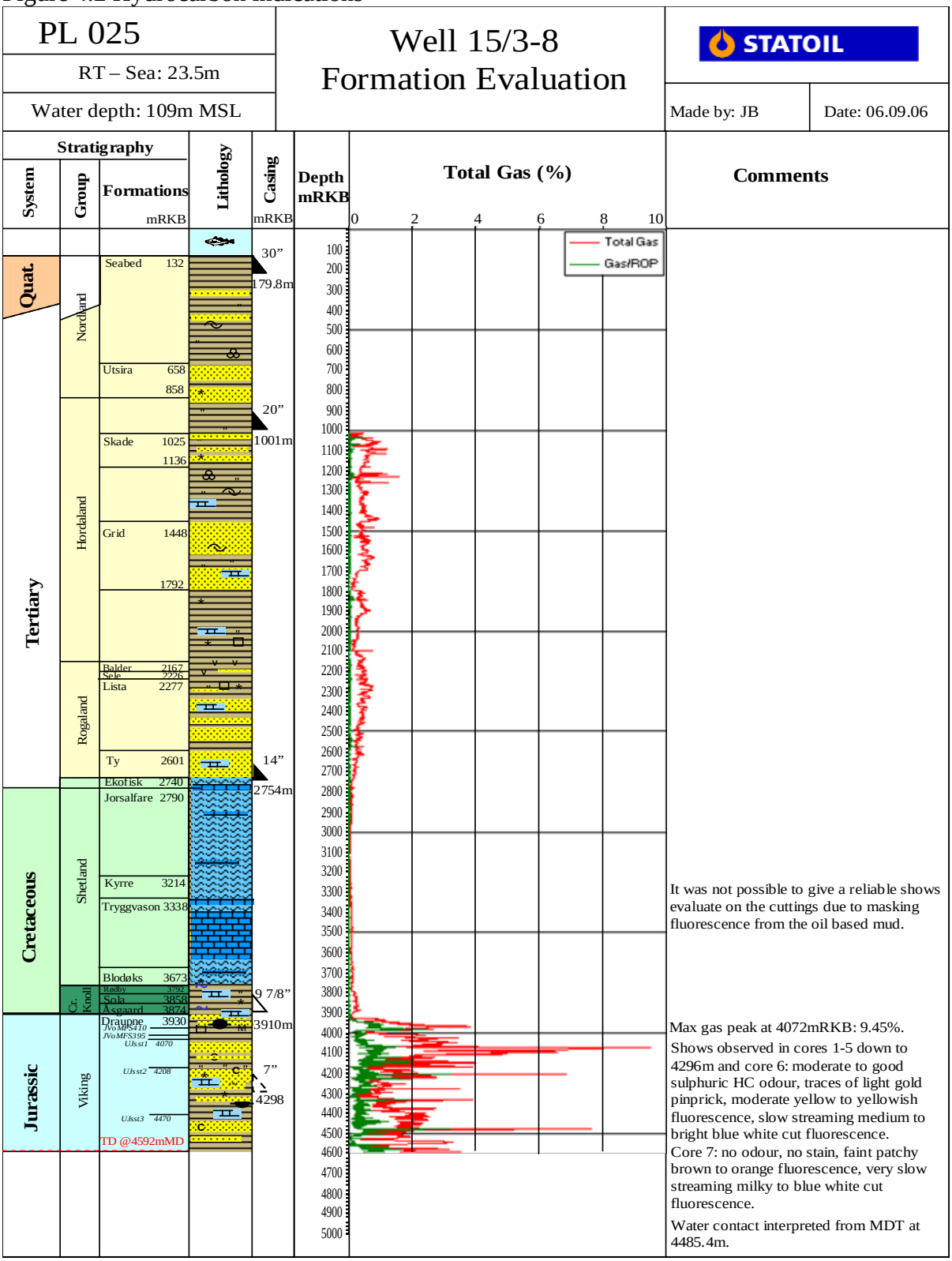
Gas measurements were performed from the top of the 17 ½” section at 1010m and down to TD. No shows were observed during 17 ½” section drilling. A few gas peaks were seen, presumably related to formation- and ROP changes.

Gas peaks with a maximum of 1.24% were seen in the lowest part of the 12 ¼” section at bottoms up during junk trips. Generally, there were low gas values registerted in the 12 ¼” section.

Good shows were seen in the cores from the reservoir section as they were recovered on deck. The detailed core description is enclosed in this report. A general shows description is also given in the figure 4.2 on the next page.

It was no possible to give a reliable evaluation of the shows on cuttings during drilling. This was due to the background fluorescence from the oil based mud. In addition, some of the most marginal shows described from the cored section are hampered by the existence of formation derived kerogens in the mud. Some of the cores were also bleeding HC from very tight zones at surface. A general caution must be mentioned, as seepages from these zones might contaminate better sandstone sections below. From the general fluorescence picture there seem to be a presence of heavier HC in the tight zones than in the more porous zones.

Figure 4.2 Hydrocarbon indications

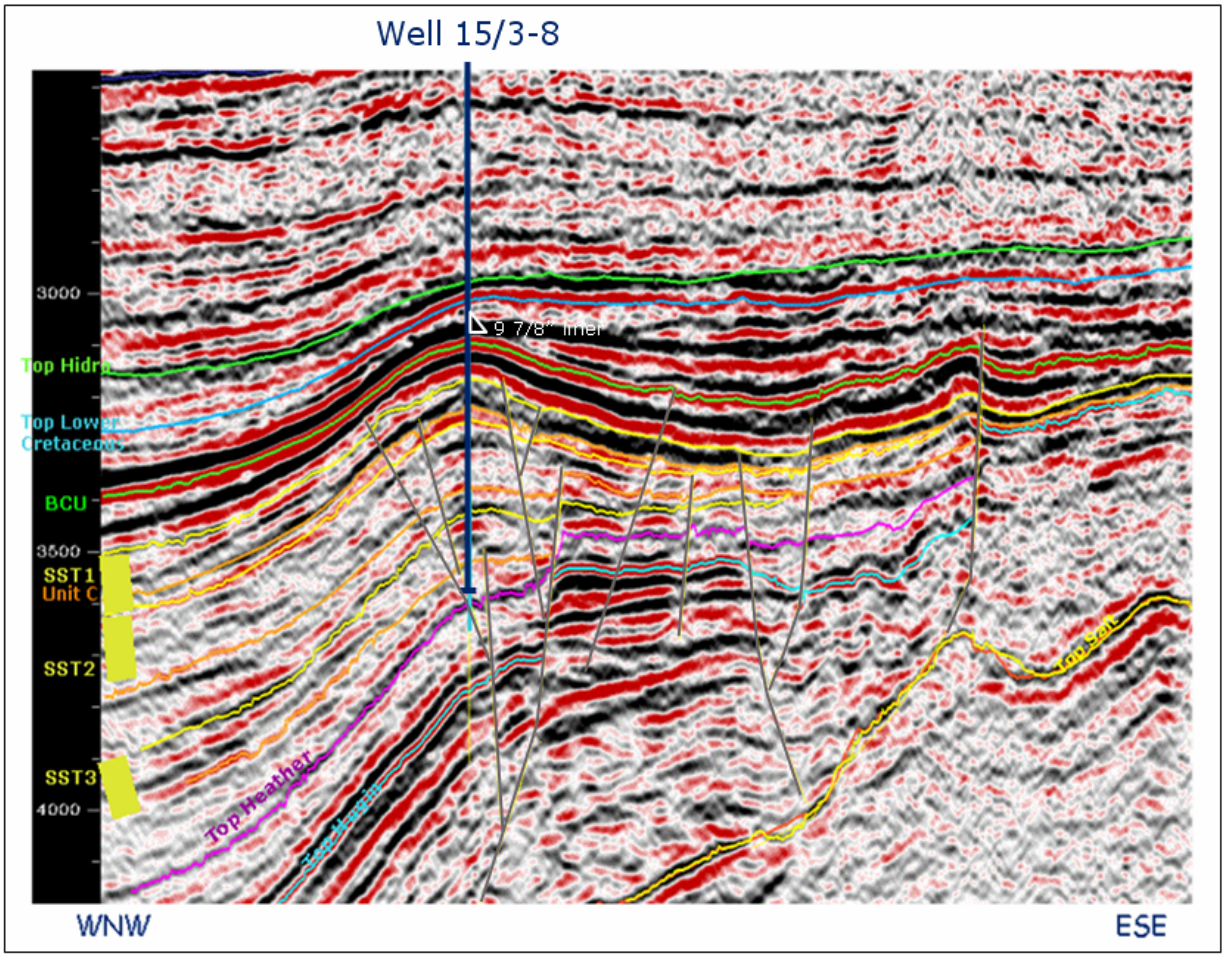


4.6 Geophysical results

As seen in Figure 4.4 and table 4.2, most of the observed formation tops came in deeper than expected. From the Cromer Knoll Group and downwards, this is mainly a result of the applied velocity model in the overburden and not due to the seismic interpretation as seen on seismic line ST0208-2620 in Figure 4.3.

The depth of the main reservoir units UJsst1 (+38.5m), UJsst2 (+37.5m) and UJsst3 (+63.5m) is based on the stacking velocities for the Base Cretaceous level and interval velocities below. As Base Cretaceous came in 36.6m too deep (the stacking velocity nearly 1% too high in well area) it affects the estimated depth of the reservoir units below. However, even though there was a discrepancy between the original formation top prognosis and some of the actual results, this caused no operational problem due to continuous updating of the prognosis during the operation, integrating incoming VSP and other velocity wireline data. Consequently, the casing depths were set as planned according to the pore pressure prognosis There was at no time risk for entering the reservoir before the 9 7/8" casing point.

Figure 4.3 Seismic line ST0208-2620



4.7 Data acquisition

4.7.1 Cuttings and mud samples

Table 4.3 Cuttings and mud sampling intervals

Depth/interval (driller depth)	Cutting interval	Mud sample interval
1020 – 3900	10	100
3913 – 4590	3	20

4.7.2 Conventional coring

Table 4.4 Coring summary.

Core no.	Depth interval m MD RT (drillers depth)	ROP m/hr	Cut m	Rec. m (%)	Barrel length m	Depth shift to WL logs (m)	Formation
1	4167-4179.6	3.4	12.6	100	27	+3.0	Draupne Fm (interb. sst-sh) (Standard innerbarrels)
2	4179.6-4202	2.6	22.4	95.6	27	+3.0	Draupne Fm (interb. sst-sh) (Jambuster equipment)
3	4202-4238.5	2.5	36.5	100	36	+2.2	Draupne Fm (interb. sst-sh) (Jambuster equipment)
4	4238.5-4275	2.3	36.5	100	36	+2.4	Draupne Fm (interb. sst-sh) (Jambuster equipment)
5	4275-4304	2.5	27.3	94.8	36	+2.4	Draupne Fm (interb. sst-sh) (Jambuster equipment)
6	4478.5-4494	1.8	15.5	90	36	+1.6	Draupne Fm (interb. sst-sh) (Jambuster equipment)
7	4494-4506	2.0	12	92.1	36	+2.5	Draupne Fm (interb. sst-sh) (Jambuster equipment)

Comments to the coring:

Core no. 1: 27 m Standard barrel 4167 – 4179.6 m. Jammed off in catcher at 4179.6 m

Core no. 2: 27 m Telescope 4179.6 – 4202 m. First jam was at 4199 m (second sleeve activated). Second jam was at 4201 m in catcher.

Core no. 3: 36 m Telescope 4202 – 4238.5 m. No jamming.

Core no. 4: 36 m Telescope 4238.5 – 4275.2 m. First jam was at 4272 m (second sleeve activated).

Core no. 5: 36 m Telescope 4275.2 – 4304 m. First jam was at 4289 m (second sleeve activated). Second jam was at 4302.5 caused by wedged core in catcher.

Core no. 6: 36 m telescope 4478.5 – 4494 m. First jam was at 4480 m (first sleeve activated). Second jam was at 4490.5 (second sleeve activated). Third jam was in catcher at 4492.5 m. From this point to 4494 m the core was milled away.

Core no. 7: 36 m Telescope 4494 - 4506 m. First jam was at 4496 m (first sleeve activated). Second jam was at 4497.5 m (second sleeve activated). Third jam was in catcher at 4506 m.

The general cause of jamming seems to be formation related.

4.7.3 MWD logging

Table 4.5: MWD logging

RUN no.	Depth interval (m drillers depth)	Collar diameter	Tool type [1)]	Comments
1	182 - 1010	8 ¼”	OnTrak	Logs not on depth to 434 m, real time ECD not working for the whole section.
2	1010 – 1520	8 ¼”	OnTrak	Problems with decoding. Not able to get surveys from 1402 m. Also bad log quality due to decoding/tool failure.
3	1520 – 2095	8 ¼”	OnTrak	No major decoding problems.
4	2095 - 2472	8 ¼”	OnTrak	Decoding problems due to erratic torque & several pump problems.
5	2472 - 2574	8 ¼”	OnTrak	OK.
6	2574 - 2765	8 ¼”	OnTrak	OK.
7	2765-2957	8 ¼”	OnTrak, BCPM, ORD, APX	Poor realtime data decoding. Lost Density tool at 2796m.
8	2957-3908	8 ¼”	OnTrak, BCPM, APX	All realtime curves reading OK. Memory data recovered OK at rigsite
9	3910 - 3989	6 ½”	OnTrak	Intermittent res. receiver #2 failure from 3950m.
10	3989 - 4167	6 ½”	OnTrak	Stopped and POOH after reaching core point
11	4167 – 4478.5	6 ½”	OnTrak	None
12	4506 – 4590	6 ½”	OnTrak	None

[1)] OnTrak: consists of GR, RES, DIR, PWD and ECD.

4.7.4 Wireline logging

Schlumberger performed openhole wireline logging in 8 ½" sections. Read Well Services performed intermediate VSP and Multifinger Caliper in the 12 ½" section. A total of 13 successful runs and 4 misruns were performed. The failures experienced were related to tool failure and telemetry.
There were no large hole problems experienced during logging, and the wiper trips that were performed went smoothly.
Complete overview over the logging runs is in Table 4.6. Completion logs are presented in Figure 4.7b and in the enclosure.

Table 4.6 Wireline logging program

LOGGING PROGRAM			
#	TOOL COMBINATION	RUN	INTERVAL m MD RKB
1	VSP (Zero offset)	1A	1000 – 3901
2	MFC - 80	1A	129 – 2007.5
3	OBMI-2-GR	2A	3900 - 4590
4	AIT-DSI-EMS-GR-	2A	4590 – 2750
5	CMR-ECS-IPLT-GR	2A	4592 – 3910 (CMR failed)
6	MDT pre-tests	2A	3946 - 4519
7	VSP (Zero offset)	2B	Mis-run
8	VSP (Zero offset)	2B	4474 – sea level
9	VSP (Walk-away+zero offset)	2C	3300 - 130
	Wiper trip		
10	MDT	2B	Mis-run
11	MDT sampling	2B	4479 - 4332
12	MDT		Mis-run
13	MDT Revers Low Shock H2S and water sampling	2C	4514 - 4074
	Wiper trip		
14	MDT Mini-DST and sampling	2D	4514 - 3946
	BOP test		
15	MDT water and oil sampling, oil scanning	2E	4514,5 - 4180
16	CMR	2A	Replacement for failed CMR in run 5.
17	MSCT	2A	4581 - 3945.8

4.7.5 Well testing

4.7.5.1 Summary

Well test operations from the well 15/3-8 are summarized in this chapter. Three mini-DST and two full drill stem test (DST) were performed.

The production tests were planned in accordance with HPHT regulations and the current industry practice. For the two DST operations a period of 54 days was planned inclusive running the liner. The actual operation time used was 42.7 days.

One of the mini-DST was performed in the same zone as one of the DST. The data from the mini-DST gave the same indications and results as the full scale DST. For more detailed information on mini-DST and DST operations and interpretation results, please look up the separate ”Well Test Report” that is issued.

4.7.5.2 Mini-DST

Three mini-DSTs with the HPHT straddle packer MDT tool were performed in this well. Schlumberger had developed HPHT straddle packers specifically for the Gudrun well, and there were high expectations to the performance of this new service. Also, fluid samples were collected in conjunction with the tests. The two first mini-DST stations were performed with an ENG6 version of the HPHT straddle packer. When this straddle packer came out of hole, it was severely worn by gas blisters and could not been rerun. In the second straddle packer run, an ENG7 version was run. With one setting, this tool came back to surface with a small OD increase. It could however been rerun. None of these mini-DST stations had problems falling off the depth station. The test results are listed in table 4.8.

Table 4.7 Mini-DST interpretation results

Depth (m)	Pumping time (Hrs)	Build-up time (Hrs)	Hor. perm. (mD)	Vert. perm (mD)	Thickness (m)	Skin	Radius of investigation (m)
4180	~2	~2	110	11	3	2.03	20
4182.1	~1.5	~1.7	25	5	2	0.31	70
4481.3	~1.5	~2.3	100	5	3	3.95	26

4.7.5.3 DST

The two Drill Stem Tests were performed in the Draupne sandstone Formation. The first interval was in UJsst1C and the second interval in the UJsst1A.

The primary objectives of the tests were:
- Flow properties
- PVT analysis
- Boundaries and productivities

The secondary objective of the test was to:
- Obtain high quality single phase fluid samples

In both DST strings, 7 pressure gauges were run, 6 gauges in the tubing and 1 gauge in the annulus. Four bottom hole samplers were also in the DST strings.

Both DST were performed with initial flow, initial build up, clean up and a main flow period. The bottom hole sampling was conducted when stable condition was in place after the clean up period.

For the DST no. 1, the well was opened to flow for a total of 28 hours. The main flow duration was 14 hours with an approximate oil rate of 733 m3/day and a GOR of 473 m3/m3. This was followed by a 96 hours build up period.

For the DST no. 2, the well was open to flow for a total of 26 hours. The main flow duration was 10 hours with an approximate oil rate of 670m3/day and a GOR of 500m3/m3. This was followed by a 96 hours build up period.

After each of the DST a minifrac was performed through the perforated interval. Also, after cementing the reservoir interval back to the casing shoe after the DST, an interval in the tubing was perforated just below the 9 5/8” casing shoe. A minifrac was performed in this overburden interval.

For the detailed test interpretations please refer to the “Well Test Report” which covers the results from both the miniDST’s and the DST’s.
For more detailed information about the fluid sampling and PVT properties, please refer to the separate PVT fluid reports. The main well test results are summarized in Table 4.8.

Table 4.8: Well test results

DST	Fm.	Perf.Interval (m MD RT)	Height (m)	Flow period	Choke size (mm)	WHP (bar)	WHT (°C)	BHP at ref. depth (bar)	BHT at ref. depth (°C)	Ref. Depth (m MD RKB)	Liquid rate (m^3/d)
1	Sst 1C	4141-4183	42	Main	12.7	335	54	691	133	4049.4	~733
2	Sst 1A	4073-4087	14	Main	11.1	430	46	756	130	3979.6	~670

4.7.6 Data quality

Even though operational problems with equipment were ascertained, high quality data was gathered from most of the wireline logging runs.

Very good Zero offset VSP and Walkaway VSP data was collected, which covers the interval from TD to seabed.

One sidewall core (MSCT) run was performed, with a performance of 48 out of 50 possible cores.

The OBMI-2 (Oil Based Mud Imager) gave bad results. Two OBMI tools were run in Tandem to increase hole coverage. During both OBMI runs, one to two arms were continuously out of function. This gave low image resolution. Also, this run was affected by sticking, which further redused the quality.

The CMR failed in the orginal run. This resulted in a CMR rerun, which was run in a CMR+ mode.

High quality water samples were acquired. The wireline Quicksilver sampling did not give as good results as hoped for. Even with oil based mud it was expected results better than the contamination level of 5 %.

A reverse low-shock sampling was performed with MDT with inert sample chambers to optimize for H2S sampling. The results from this wireline H2S sampling gave lower results compared to the DST downhole sampling. The conclusion from this is that, given the extra tool configuration complexity and the risk for failure this sampling technic gives, it did not pay off in high accuracy data.

The MWD logging performance was good and the general data quality was good.

4.8 Formation pressure

The pore pressure gradient, mud weight and overburden gradient, and relevant drilling- and log data, are presented graphically in the Figures 4.5, 4.7a and 4.7b (in sg equivalent mud weight).

The pore pressure quantification is mainly based on drilling parameters and log data (resistivity, sonic and MDT measurements). Data from well 15/3-8 has been compared with the data from the reference wells 15/3-1S, 15/3-7, and 15/3-3. Compaction trends and pore pressure profile in well 15/3-8 are similar to the reference wells. There are only minor shifts due to different depth to formation tops.

Seabed to Base Tertiary
A normal pore pressure gradient of 1.03 g/cm³ is interpreted in the Quaternary and Tertiary down to approximately 1220 m. Formation pressure measurements performed in offset wells indicate that all sandstone bearing intervals in the Tertiary, including the Utsira, Skade, Grid, Lista and Ty Formation sandstones, are normally pressured. Sonic log trends from reference wells indicate, however, slight overpressure in the Hordaland Group, in shale-dominated intervals between the Utsira and Skade Formation sandstones and in the shale dominated intervals below the Grid Formation. Then again, the porosity trend, which is based on the resistivity log, indicates that decrease in resistivity in Tertiary shales could be a lithology effect and not necessarily related to overpressure.

Cretaceous
Low permeability limestones and marls dominate the Upper Cretaceous. It is not possible to quantify the pore pressure in these formations by evaluation of compaction trends. However, the drilling indicate no abnormal pore pressure in the Upper Cretaceous. The pore pressure gradient is therefore interpreted to be normal throughout the entire Upper Cretaceous.
An abnormal pore pressure is interpreted in the Cromer Knoll Group. It is interpreted as a rapid increase in the pore pressure gradient from a normal gradient of 1.03 g/cm³ in the upper parts of the Rødby Formation to approximately 1.52 g/cm³ in the Åsgard Formation. The Formation pressure in the Rødby, Sola and the Åsgard Formation is very uncertain. However, the pore pressure increases very rapidly in the lowermost parts of the Cromer Knoll Group to approximately 2.0 g/cm³ at the top of the Draupne Formation at 3930 m.

Jurassic to TD
The pore pressure in the top of the Draupne Formation could not be measured due to tight formation. Based on the reference wells and the assumption that the maximum pressure in Draupne Formation can be extrapolated by using a fluid gradient of 0.586 g/cm³, the maximum pore pressure gradient at the top Draupne Formation is 2.0 g/cm³.

The formation pressure gradient was measured to 1.95 g/cm³ at 4072.4 m in the Draupne Formation UJsst1A, 1.91 g/cm³ at 4212.1 m in the Draupne Formation, UJsst2, water zone and to 1.86 g/cm³ at 4474 m in UJsst3. The pore pressure gradient decreases towards TD and is interpreted to be 1.84 g/cm³ at TD.

4.8.1 Reservoir pressure summary

One wireline MDT run was conducted for pressure test survey only. The primary objective was to get good pressure data in the reservoir sands before deciding any sampling.

Out of 52 pretest points 35 were good pretest data, 14 points were tight, 2 points were supercharged and one point had no seal. Good hydrocarbon and water gradients could be defined.

Hydrocarbon and formation water samples were taken in the Draupne Formation. Hydrocarbon samples were taken in UJsst1A, UJsst2F and UJsst3 and formation water samples were taken in UJsst2D and UJsst3.

MDT with Dual Packer was set at three stations. Two Mini-DST's were conducted using dual packer and observation probe, whereas one Mini DST in UJsst3 and one Mini DST in UJsst1C. One scanning station and sampling through dual packer can also be interpreted as a Mini DST.

Gradients:
It is possible to establish hydrocarbon and water gradients in the Draupne Formation. Two different hydrocarbon gradients and two different water gradients can be established from the pretest surveys.

The pressure readings in the Draupne Formation plot on a gradient that corresponds to a density of **0.586 g/cm³** in UJsst1A, UJsst1B and UJsst1C. UJsst2 was found to be water filled and a water gradient of **1.041 g/cm³** can be defined. UJsst3 includes a lighter hydrocarbon system and a gradient of **0.473 g/cm³** can be defined. The OWC in UJsst3 can be defined from the pretest pressures to be at 4485.4 m. However, a scanning station at 4486.5 m indicates hydrocarbon being movable fluid. This could indicate the OWC being deeper than 4486 m. The water gradient in UJsst3 has been evaluated to be **1.029 g/cm³.**

Hydrocarbon in UJsst1A, 1B and 1C	: 0.586 g/cm³
Water in UJsst2	: 1.041 g/cm³
Hydrocarbon in UJsst3	: 0.473 g/cm³
Water in UJsst3	: 1.029 g/cm³

See tables in appendix E for pressure measurements and sampling overview. Figure 4.6 shows plot of the pressure measurements and the fluid gradients.

For details of analysis results, see the following reports:

- Core Lab: Reservoir Fluid Study
- West Lab: Analysis Water samples
- Petrotech: Validity checks and Analysis of MDT samples, oil and water
- Oilphase: Field Operation Report

Table with pressure points are enclosed in Appendix E.

4.9 Reservoir fluid sampling

Samples were collected in the Draupne Sandstones. During the wireline program hydrocarbon samples were taken in UJsst3, UJsst2F, UJsst1A and UJsst1C. Water samples were taken in the UJsst3 and UJsst2D.

Both of the DST's included 4 bottom samples, several monophase samples at wellhead and also surface sampling according to plan.

The fluid tested in DST 1 is a high shrinkage volatile oil similar to that sampled by MDT in 15/3-7. It is a highly undersaturated oil with a bubble-point pressure of 347 bar. The single flash GOR is 561 Sm³/Sm³ and the oil formation volume factor Bo from a 2-stage flash is 2299 m³/Sm³ at reservoir conditions.

H_2S content measured on separator gas by Petrotech during the test gave a maximum value of 10 ppm.

The fluid tested in DST 2 is a high shrinkage volatile oil similar to that from DST 1, but with a higher GOR, possibly due to a compositional gradient. It is a highly undersaturated oil with a bubble-point pressure of 350 bar. The single flash GOR is 627 Sm³/Sm³ and the oil formation volume factor Bo from a 2-stage flash is 2453 m³/Sm³ at reservoir conditions.

H_2S content measured on separator gas by Petrotech during the test gave a maximum value of 12 ppm.

The fluid sampled in UJsst2F is a volatile oil with a bubble-point pressure of 317 bar and single flash GOR of 394 Sm^3/Sm^3. The sample was taken with relatively low drawdown (15 bar) and is slightly contaminated by oil-based mud (3.2 wt% in stabilised oil). The corrected GOR is 408 Sm^3/Sm^3.

The fluid sampled in UJsst3 is a near-critical gas-condensate with a dew-point pressure of 368 bar and single flash GOR of 1014 Sm^3/Sm^3. The sample was taken with relatively low drawdown (8 bar) and is slightly contaminated by oil-based mud (6.3 wt% in stabilised condensate). The corrected GOR is 1086 Sm^3/Sm^3.

The tables for reservoir fluid samples are enclosed in Appendix E.

4.10 Leak off test

Three formation tests were performed in the well. An extended leak-off test (XLOT) was performed at 1014 m (below 20” casing), a LOT at 2769 m (below 14” casing) and a FIT was performed at 3914 m (below 9 7/8” liner).

The XLOT below the 20” casing shore went as planned to 1.50 g/cm^3. The LOT below 14” casing at 2743 m was planned as a FIT to 1.72 g/cm^3, but ended up to be a LOT to 1.71 g/cm^3. This was found acceptable. The planned FIT below the 9 7/8” liner was perfomed to 2.12 g/cm^3.

During the DST program XLOT’s were performed in each of the two test intervals and in the overburden. The results from the two minifrac’s in the DST intervals gave respectively 2.22 g/cm^3 in the interval 4073 to 4087 m MD and 2.25 g/cm^3 in the interval 4141 to 4183 m MD. The formation fracture gradient of in the perforated 7” liner at 3925 to 3931 m MD gave 2.14 g/cm^3.

4.11 Formation temperature

The formation temperature evaluation is based on data recorded during the different logging runs and using seven downhole gauges during each of the drill stem tests.

Table 4.9 shows the temperature measurements from the wireline logging. Table 4.10 and 4.11 shows the maximum temperature readings from the downhole gauges during the flow and the shut-in periods. All the gauges showed a higher temperature while flowing the well than during the build-up period.

Figure 4.8 shows the measured and the extrapolated temperature. The temperature gradient from seabed to TD at 4592m is evaluated to be 3.2 ^{o}C/100m. Using 4 ^{o}C at seabed, maximum formation temperature at TD in the well is 146.4 ^{o}C.

Table 4.9 Temperature from wireline logging

Source	**Run**	**Ref. Depth m RKB**	**Time since circ. (hrs)**	**Circ. Time (hrs)**	**Measured temp. °C**	**Extrapolated temperature Horner method °C**
Drilled to TD=4590 m MD. Circulation stopped 28.01.06 02:00 hrs. Circulation time approx. 5 hrs						
OBMI 2 -GR	2A	4574	80.75	5	135	Uncertain horner correction due to different depths gives 145 Deg C at approximately 4560 m
AIT-DSI-EMS-GR	2A	4557	94.2	5	137	
CMR-ECS-IPLT-GR	2A	4567	107.3	5	138	
MDT pressure points	2A	4529	129.5	5	138.5	
Wipertrip. Circulation stopped 05.02.06 at 21:30 hrs. Circulation time . 8.5 hrs.						
MDT sampling	2B	4479.2	55	8.5	138	
MDT Reverse Low Snock H2S and Water	2C	4514.5	97	8.5	138.4	
Wipertrip. Circulation stopped 11.02.06 at 13:00 hrs. Circulation time 9.0 hrs.						
MDT, PA	2D	4481.3	31.5	9	134	
BOP-Test						
MDT water and oil sampling	2E	4514.3		9	138	
CMR	2A	4571		9	138	
MSCT	2A	4568		9	140	
DST1, UJsst1C Buildup/Flow		4049.4			126/ 132.8	Temperature at mid perforations: 133 ^{o}C
DST2, UJsst1A Buildup/Flow		3979.6			122/ 129	Temperature at mid perforations: 130 ^{o}C

Table 4.10 DST#1. Downhole gauge recording depth and temperature at the end of the main flow and build-up

DST # 1 Gauge #	Depth (m MD)	Flow ^{o}C	BU ^{o}C
20412	4068.83	133.3	127.3
20340	4068.29	133.4	127.3
20342	4049.35	132.8	126
20414 A	4048.72	132.7	125.9
7821	4049.37	131.5	124.8
7820	4033.93	131.5	124.2
7822	4033.93	131.5	124.2

Table 4.11 DST#2. Downhole gauge recording depth and temperature at the end of the main flow and build-up

DST # 2 Gauge #	Depth (m MD)	Flow °C	BU °C
7826	3964.46	128	120.4
20342	3979.58	129.1	122.1
20428	3999.22	129.7	124.3
20341	3999.22	130.1	124.7
20414 A	3978.95	129.1	122
7821	3979.6	127.9	121
7514	3964.46	128.6	121.1

The flowing temperature is expected to be the most representative temperature for both DST's. PVT simulations indicate a temperature increase of approximately 1.7 °C due to flow with a drawdown of 50 bars.

An estimate of the formation temperature at mid perforations for DST # 1 is 133 °C at 4162 m and for DST#2 130 °C at 4080 m. This gives a temperature gradient of 3.66 °C/100 m between the two tested intervals.

4.12 Experiences / recommendations

Realtime data transmission

- All data were displayed realtime in InterAct, Schlumberger system. The MWD data from BHI is transferred in WITS format to InterAct, hence no realtime editing is possible. This is a problem when corrections are necessary on the LWD data.
- Problems experienced displaying ECD data from MWD on InterAct. The interface between BHI and Geoservices is not good enough.

Data acquisition

- MWD logs
  - Small discrepancy between Gamma ray in realtime and in memory. This was corrected during the well.
- Telescope coring system was used with good experience.
  - Undesirable milling incident on one occasion.
- Wireline
  - Very likely that Capstan and high tension cable avoided stuck tool.
  - Transfer of water samples destroyed by glycol. New procedure in place for cold weather transfer to avoid o-rings failure.
  - Shortage of tool is a recurring problem (MSCT, AIT).
  - A lot of logistics with personnel, tools and spare parts.
  - Good design of method to drain big volume sample. But not used on this well.

- DST and MiniDST
  - Data quality issues on the mini-DST acquisition.
  - Good DST downhole gauge and sampling performance.
  - Problems with displacing back to mud after first DST
  - Good XLOT data from DST intervals
  - Problems with meter factors during both tests.

Pore pressure estimation

- Stable realtime data feed to Predict (pore pressure software).
- Gas measurements were the most trusted pressure indicator.

Miscellaneous

- In general, improve on communication between shifts and new personnel.

Figure 4.4 Well stratigraphy with progn vs. actual

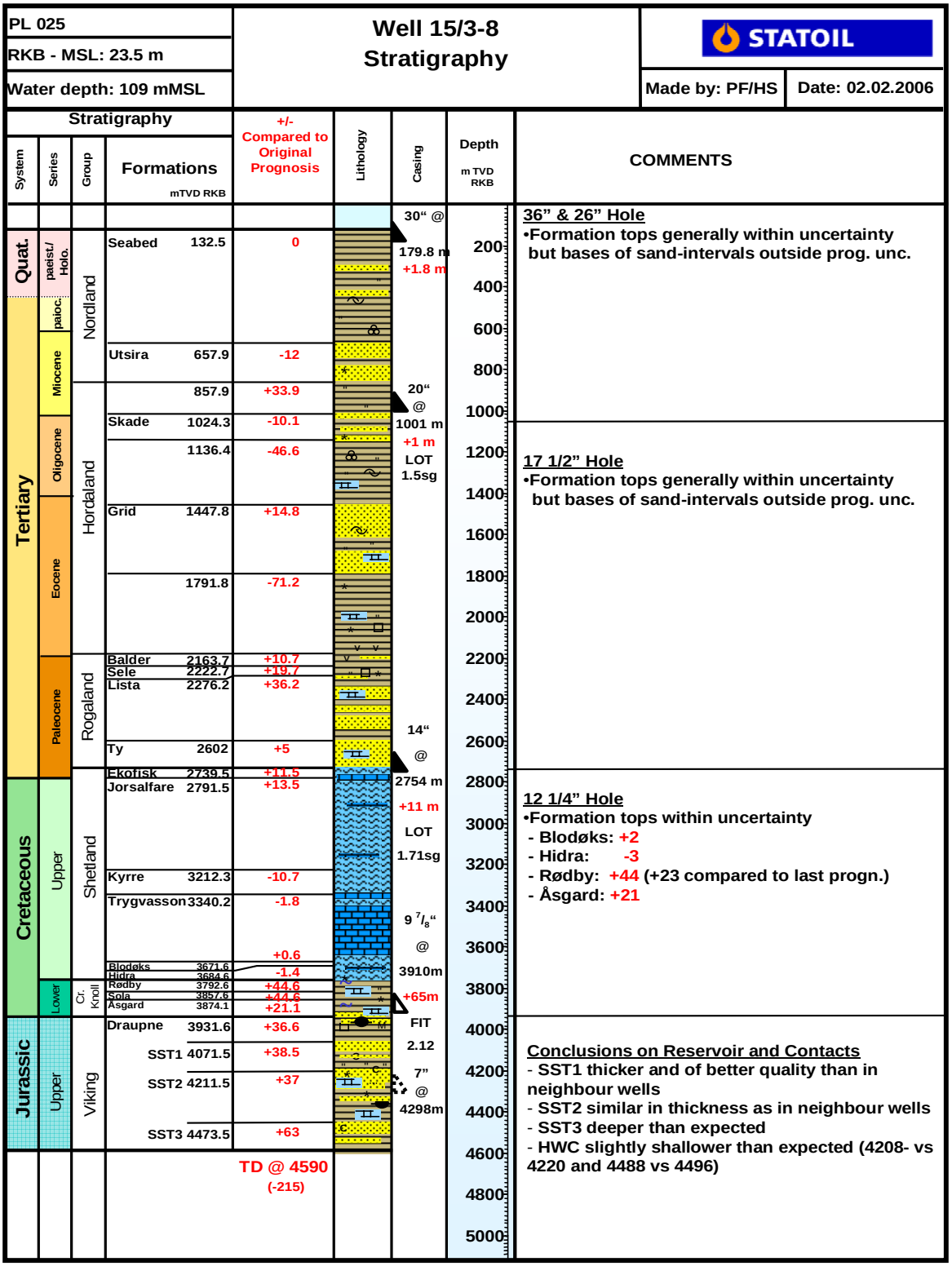


Figure 4.5 Pressure plot

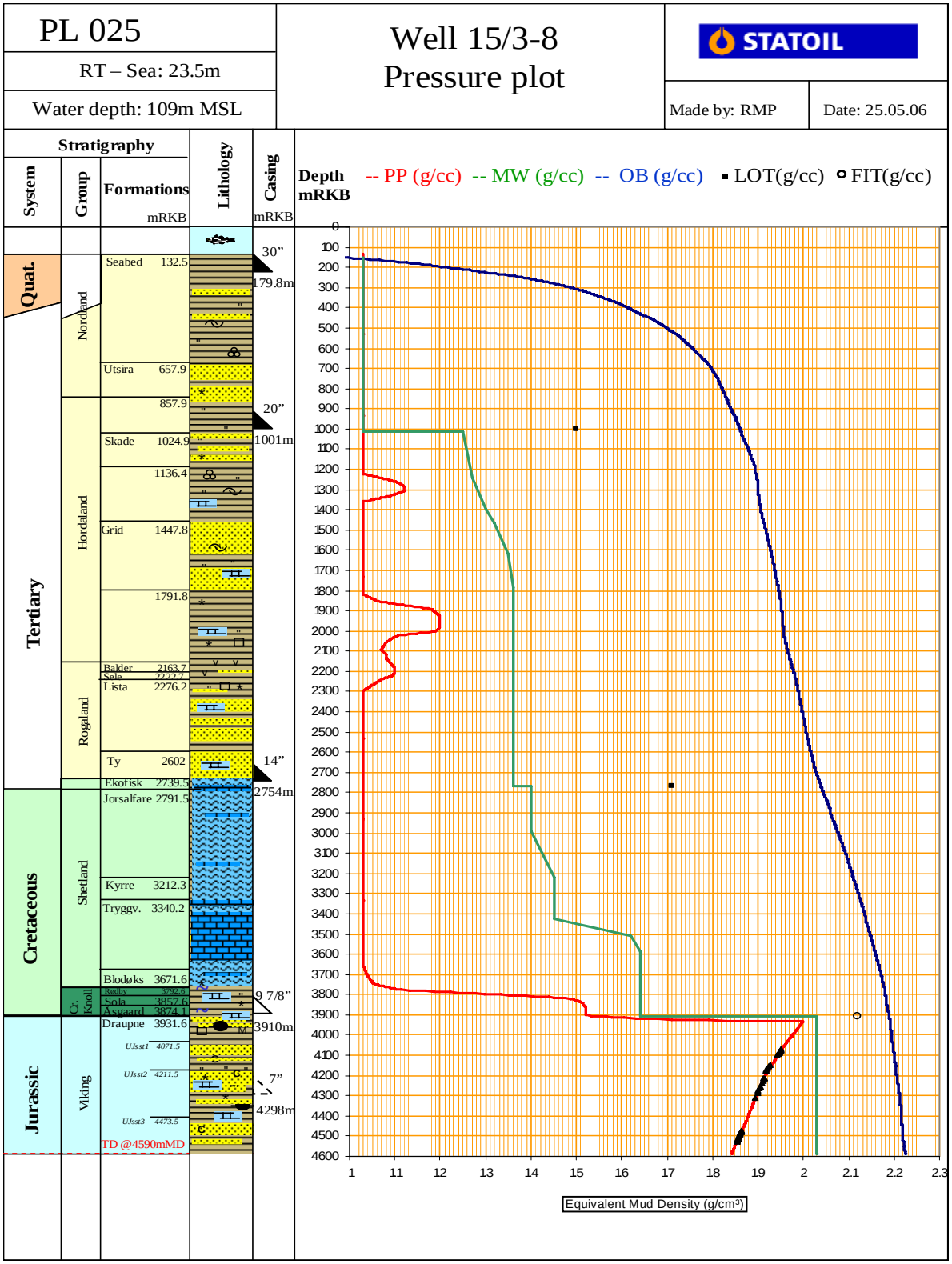
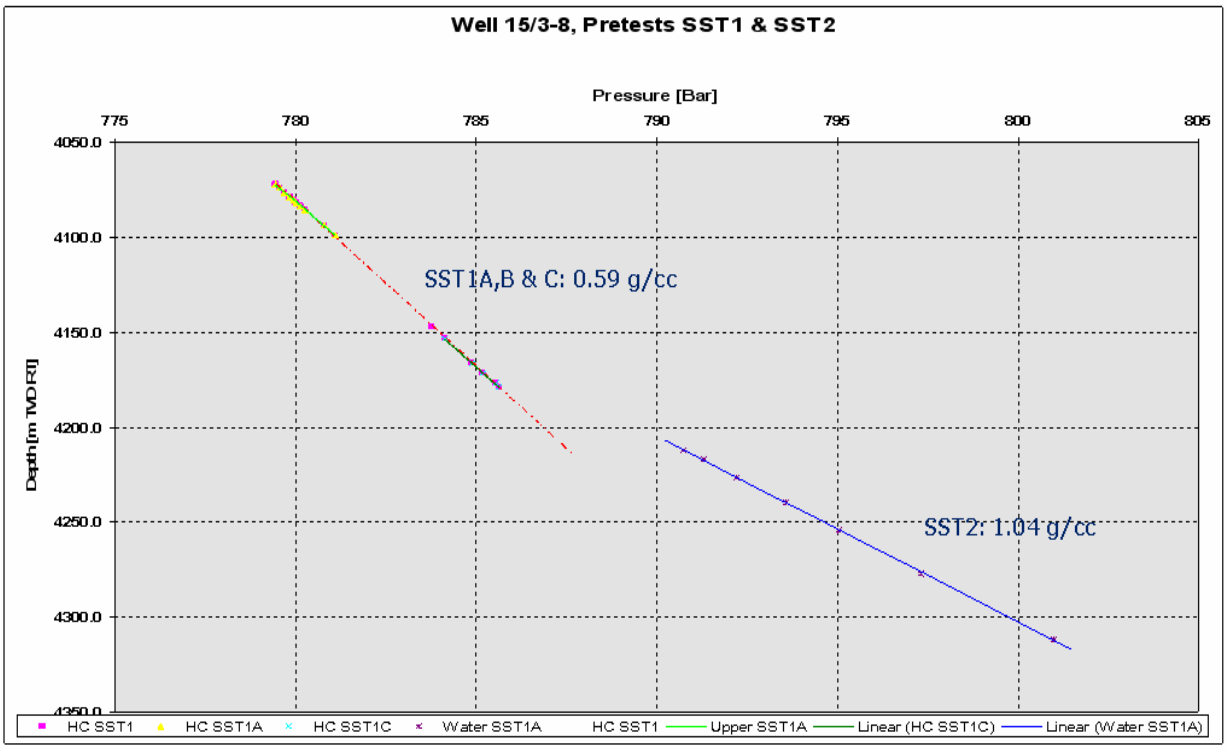


Figure 4.6 MDT plots



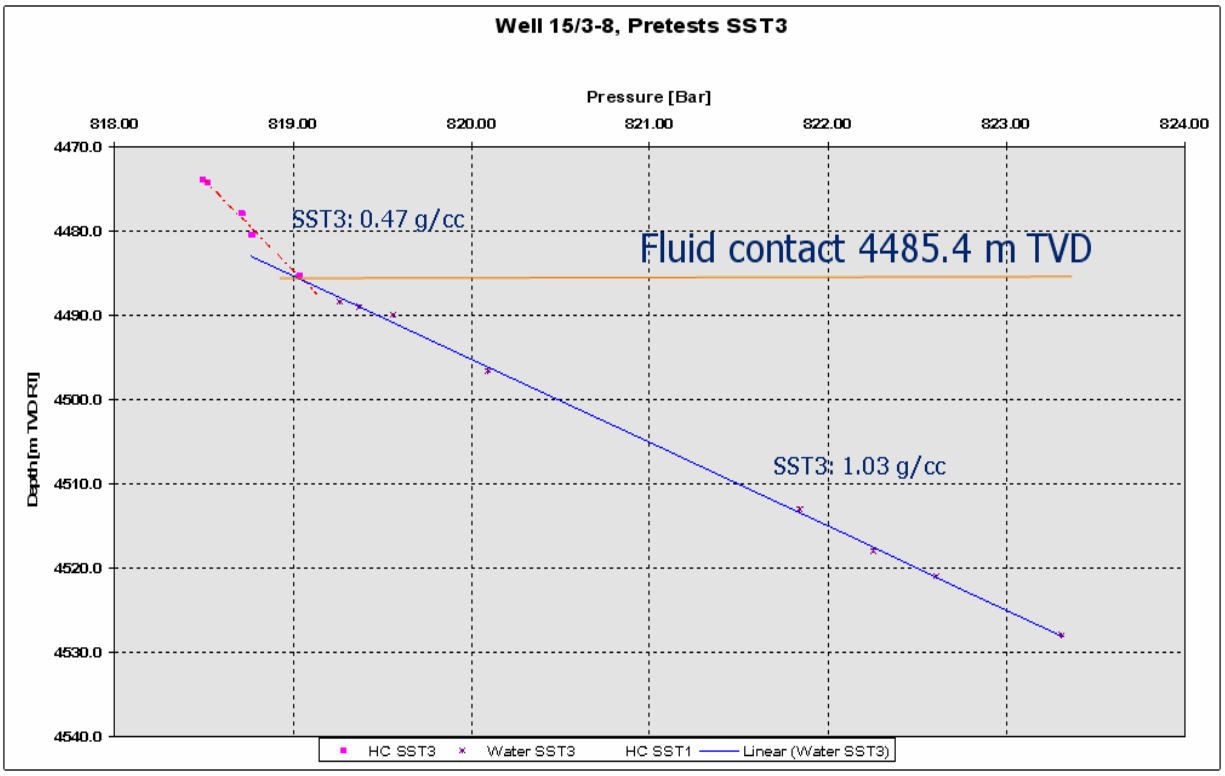


Figure 4.7a Composite plot, drilling parameters

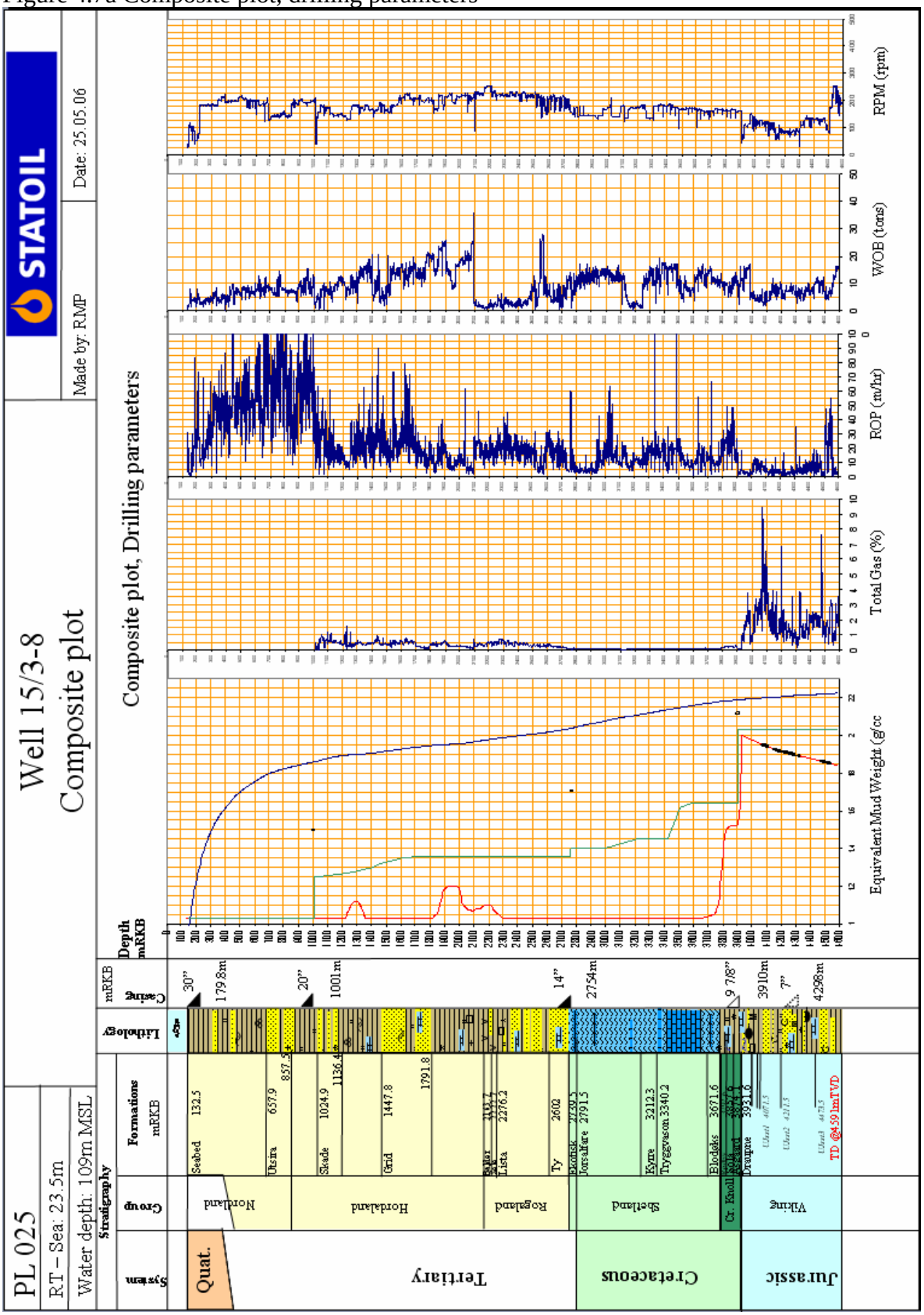


Figure 4.7b Composite plot, logs

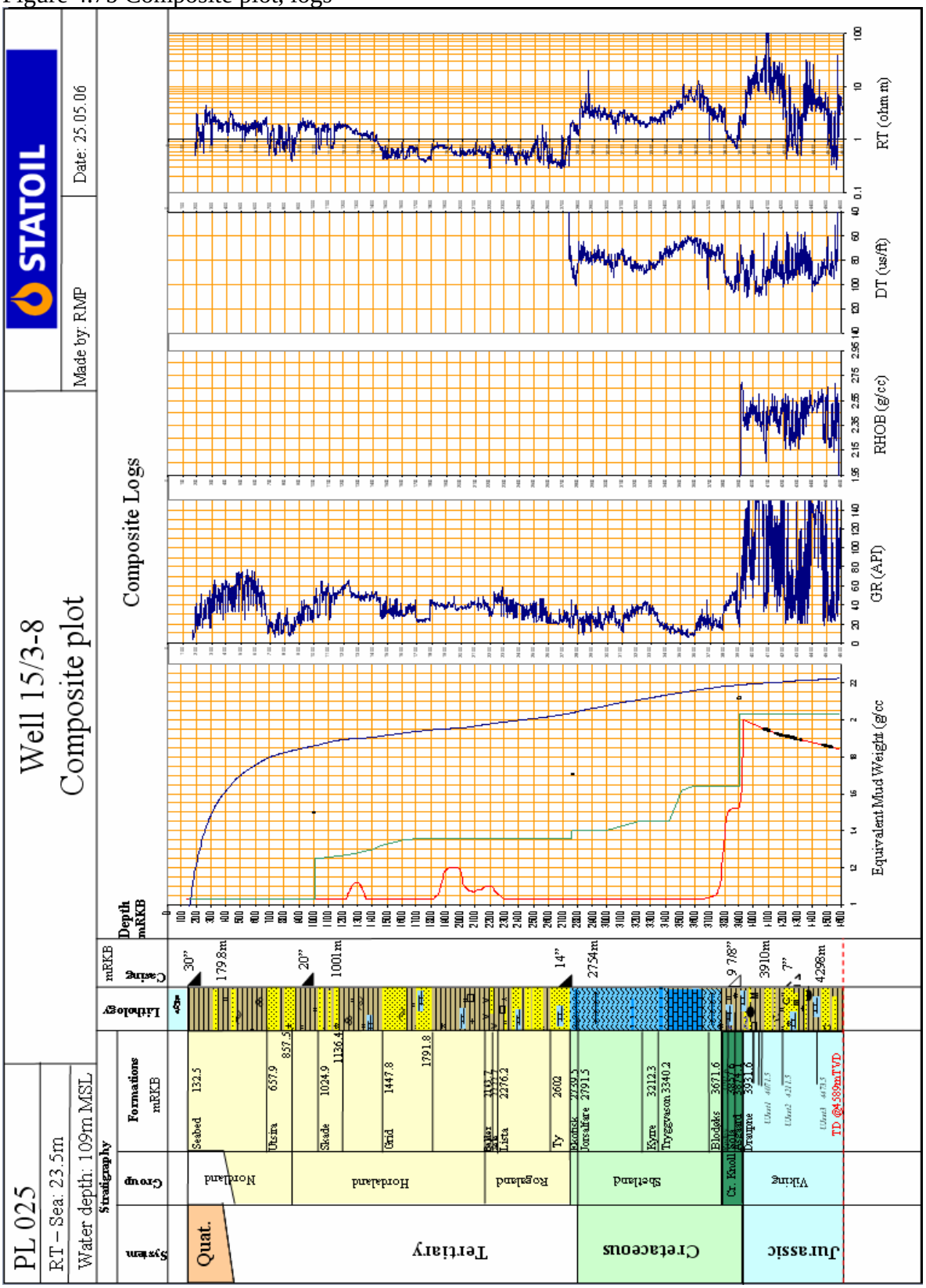
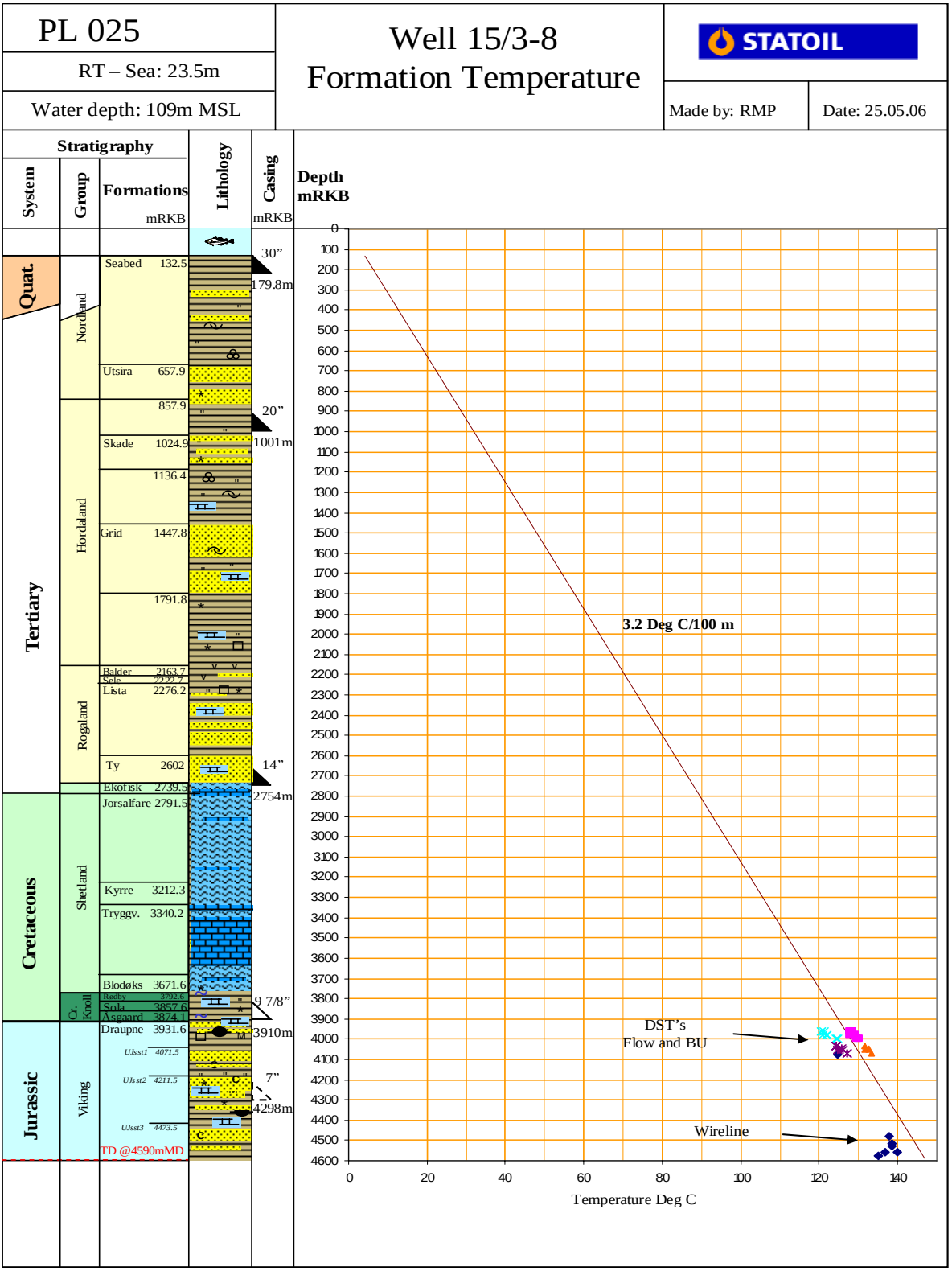


Figure 4.8 Temperature gradient



5 Drilling operations report

5.1 NO 15/3-8, MOVE (24.10.2005 01:10)

START: 24.10.2005 01:10 0 mMD
END : 03.11.2005 02:30 0 mMD

OBJECTIVE
Move rig from Stetind to Gudrun location and set anchors.

SUMMARY
The rig was handed over from Hydro ASA to Statoil ASA on the 24.10.2005 at 01:10 hrs.
The rig was towed from Stetind and arrived at Gudrun location on 01.11.2005 at 03:00 hrs.
Two times the tow was stopped due to bad weather / maintenance on main engine cooling system.

Total distance sailed: 479 Nm
Total time spent (anchor handling and picking up DP/BHA not included): 194 hours
Average speed (stop not included): 2.9 knots.

General maintenance and derrick inspection (dropped object group) was performed during rig move.
Further information for the rig move operation is given in the DBR system.

5.2 NO 15/3-8, 36" (03.11.2005 02:30)

START: 03.11.2005 02:30 133 mMD
END : 05.11.2005 19:30 182 mMD

OBJECTIVE
Drill 36" hole from sea bed (133 m) to 182 m. 26" TD should be based on conductor length and planned stick-up.

Cement conductor using Tuned Light Slurry (1.52 SG) with 300% excess. If inclination and stick-up were acceptable, the conductor running tool should be released directly after the cement job.

SUMMARY
Sufficient 5 1/2" DP were PU and racked back prior to making up the 36" BHA (Anderdrift, 26"/36"Odfjell HO and 17 1/2" mill tooth bit). Meanwhile the marker buoys and the transponder were deployed in a dedicated ROV basket.

The bit was set on bottom on seabed with 10 ton (no penetration) meanwhile the ROV installed the marker buoys and the transponder.

It was only possible to wash down 0.5 m before WOB was required to get progress.
The 36" hole was drilled down to 150 m with reduced flow (1000-2000 LPM) and low WOB to avoid angle build-up. From 150 m the flow was increased in steps up to 5200 LPM, but low progress was experienced from 146 - 154 m (1-2 m/hr). Indications of boulders were observed and erratic torque was observed with the bit of bottom.

It was then decided to POOH and check if the bit and HO's were OK. The BHA was inspected by the ROV, and it was decided to replace both the bit and the HO. The bit was severe worn on the shirt tail and two cones on the 26" BHA were locked and balled up.

The new BHA was RIH and took weight at 140 m. From this depth the BHA was washed down to TD with 2000 LPM.
The new BHA drilled immediately faster with ROP ranging from 2-20 m/hr with equal parameters as the first run. Excessive reaming was observed while the hole was reamed due to the inclination increased to 1.5 degrees.
The hole was then displaced to 1.35 SG Bentonite mud prior to POOH. No significant wear was observed on the last 36" BHA.

4 joints of conductor were MU and RIH. The string took weight at 165 m, and was worked down to TD with 1500 LPM and set on bottom with 1 degree on the bulls-eye. The rig was then moved and the inclination was reduced to 0.75 degrees.

The 30" conductor was then cemented while the landing string was kept in tension. .

BIT RUNS
Drilled the 36" section in two runs.

DRILLING FLUID
The section was drill with sea water and hi-vis sweeps every 15 m. At TD the hole was swept with 35 m^3 pill and displaced 1.5 times to 1.35 sg mud.

CASING
4 joints of conductor were MU and RIH.

MWD/BHA
Odfjell hole opener assembly (dual 26" x 36" hole opener).

CEMENTING
Tuned light slurry was selected for the conductor job on Gudrun.

The 30" conductor was then cemented while the landing string was kept in tension to reduce the inclination on the conductor.
The conductor RT was released after 4.5 hours of WOC.

5.3 NO 15/3-8, 26" (05.11.2005 19:30)

START: 05.11.2005 19:30 182 mMD
END : 13.11.2005 13:00 1010 mMD

OBJECTIVE
Drill 26" hole from the 30" conductor shoe at 180 m down to section TD at 1010 m with SW and Hi-vis pills.
Section TD depth is based on a safe distance from the Skade sands to ensure a good LOT.

Due to casing wear limitations on the 14" csg, high focus was on avoiding high doglegs.
Use a motor with AKO 1.0 deg to be able to correct the wellpath in case of angle build-up.

Displace hole to 1.30 SG Bentonite and POOH.
Run and cement 20" csg with TOC at seabed.

SUMMARY
The section was drilled from 180 m to TD at 1010 m with controlled parameters and an average ROP of 39 m/hr.
The overall ROP was restricted by the focus on getting a straight hole and therefore WOB was not optimised.

No corrections with the mud motor were required as the well was vertical from the start to TD with a maximum inclination of 1.3 deg.
The well was displaced to 1.30 SG Bentonite and only a few tight spots (20 t) were observed while POOH.

Set 20" csg @ 1001 m. Took wt. 995m.

Cemented 20" casing with 167 m3 1.56 SG cement slurry. Cemeter's failure of proper dart release resulted in 1.4 m3 of seawater being displaced in front of top plug. The bottom plug was eliminated in this section. The plug was bumped at 96% pump efficiency. Pumping displacement was 3500 lpm with seawater.

Successfully installed BOP and Diverter.

RIH with 17 1/2" PDM assembly w/milltooth bit and tagged cement/plug at 972.5 m which was 3.5 m higher than anticipated. Drilled out shoe track from 972.5-1001 in 6 hours. Even with 1,4m3 of seawater below plug, there was good cement in shoe track. Drilled/RIH 1001-1010 (rat hole). Drilled 4 m of new formation from 1010 m to 1014m. Successfully performed

extended leak-off test that resulted in leak-off equivalent of 1.50 SG which is almost the overburden pressure at this depth.

BIT RUNS

The 26" section was drilled in one run with milltooth bit.

DRILLING FLUID

26 " hole was drilled with sea water and Hi-vis pills. The well was displaced to 1.30 SG SW/Bentonite prior to 20" casing.

CASING

Set 20" surface casing @ 1001 m. Took wt. 995m

MWD/BHA

26" motor BHA.
MWD: GR, REs., Dir. and PWD.

CEMENTING

Pumped 11 m3 1.40 SG Tuned Light Cement as spacer, 167 m3 1.56 SG Norcem G cement at 800 lpm and 20 m3 of tail slurry. Incorrect dart release resulted in 1.4 m3 of seawater being displaced in front of top plug. Displaced with 3500 lpm. Bumped plug @ 96% pump efficiency. However the TOC was found above the wiper plug.

5.4 NO 15/3-8, 17 1/2" (13.11.2005 13:00)

START: 13.11.2005 13:00 1010 mMD
END : 30.11.2005 16:30 2765 mMD

OBJECTIVE

Drill section from 1010 m to 20 m into the Ekofisk formation at approximately 2750 m (XLOT @ shoe in 26" section). Two BHA runs are planned with a mill-tooth bit on a BHI X-treme motor (AKO 1.0 deg) drilling out the shoe and a PDC as a 2nd bit with the same BHA configuration. Objective is to keep vertical hole to minimize casing well. Glydrill mud will be 1,25 drilling out shoe and increased to 1,36 @ 1800m.

14" csg will be set a minimum 15 m into Ekofisk at approximately 2745m. TOC is minimum 200m above shoe. Goal is to ensure sufficient seal around 14" csg shoe.

SUMMARY

Drilled out shoe and performed extended LOT (listed in 26" section). Drilled upper Hordaland with mill-tooth on X-treme (high torque, low speed) motor with 40-80 string RPM (105 RPM at motor with 4600 lpm). WOB was initially kept low @ 8 ton for 3-4 stands to ensure well was vertical. Angle actually dropped from 1° to 0,8°. WOB was increased in increments to 15-17 tons. ROP increased from 15 to 25m/hr with increasing WOB. At around 1390m began to experience MWD decoding problems (pulsar unit -DCPM tool). Attempted to change pumps, flow amount, drilling parameters, etc. to eliminate or minimize downhole noise. All attempts failed problems worsened with time. Mud pump problems from 1400 m reduced flowrate to

3300 lpm. Surveys were still being taken even though there were MWD decoding problems. Continued drilling with severe MWD noise problems to 1416m and took successfully survey. Increased flow to 4600 lpm and drilled to 1452 m but could not get survey. Proceeded to drill with 2 mud pumps (3300 lpm) at reduced ROP to 1520 m due to pump problems. No successful surveys were recorded, POOH to change MWD tool.
RIH with new milltooth bit and same motor with new MWD unit. No or low vibrations recorded until 1400m where stick-slip became slightly evident. From 1520m-1600m high stick slip and some high lateral vibrations. Vibrations decreased from 1600m to 1650m but then increased both stick-slip and lateral vibrations. Drilling parameters (WOB, RPM) were varied and optimized to reduce vibrations. It appears that the BHA is contributing to the vibrations. The vibrations are occurring in the Grid formation (1443m - 1863m prognoses) which is predominately sand with claystone. Vibrations appear to be highest in the sands. From 1400m onwards the stand is being backream/reamed due to vibrations. At 1825m - 1915 m had to reduce the flow to 3600 lpm due to MP#1 down. Had to reduce WOB with lower flow since the well began to build angle up to 1.48°. In lower Hordaland with 4650 LPM, 20-24 ton average ROP 15,0 m/hr (1855m-1915m) while with 3600 LPM (2 pumps), 15 ton, average ROP 8.1 m/hr (1855m-1915m). Except from short intervals only 2 pumps (3600 LPM) were used until 2063 m. Drilled from 2063 m to 2095 m with 4700 lpm with ROP slowing gradually. With ROP of less than 3 m/hr decided to POOH.
RIH with Lyng PDC LD560BHG with no problems with tight spots. Washed down last stand at 4600 lpm and began drilling with low WOB 1-2 ton, string RPM 80 -120. Drilled the lower Hordaland, Balder and Lista with very conservative drilling parameters. Very low WOB and high RPM was utilized to minimize balling tendency. Set a limit of 3-4 tons WOB and ROP of 25 m/hr while drilling Hordaland, Balder and Lista. Increased WOB and ROP in Lista Drilled to 2472m and POOH due to MWD failure. Hole was slick pulling out.
Lyng LD560BHG was rerun. Took weight at 2452 m while washing down. Had to ream/drill from 2452m-2472m with 1-6 ton for 2 hours. The WOB and ROP were similiar to drilling this 20m. Pipe tallies were checked to verify the depth. It is unknown why it would be so hard to ream to bottom if the hole was coming in. Initially the bit appeared to drill as before, but at 2510m the ROP dropped significantly and continuing slowing down. Compared to the offset well it was slower, POOH from 2574m.
Found the bit severely worn out. MU new bit (Smith S68VPX) on same BHA and RIH, washed down the two last stands. Drilled 17 1/2" hole (TY Fm. from 2601m, Ekofisk Fm. fram 2640 m) to TD at 2765 m, TD to allow for setting the 14" shoe 15 m into the Ekofisk Fm. Typical drilling parameters for this interval were WOB 2-15 ton, ROP 15-25 m/hr in TY Fm, 5-10 m/hr in Ekofisk Fm. Performed 10 stand wipertrip, wiped two tight spots until no OP. Circulated well clean and increased MW from 1.36 to 1.38 sg. Flow checked well and POOH to run casing. Hole was in good condition tripping out.

BIT RUNS
1st Run: Milltooth (135) Reed T13CDHP on BHI X-treme motor with 1.0 AKO. Bit was nozzles with3x20 and 1x18. Reason pulled was MWD failure. Bit was graded 1-3-BT-G-EEE-In-WT-DTF. Very little wear except on Cone 1 Gauge row which had 80% broken teeth. It would appear that the gauge row was damaged while drilling the show track. Very likely once one or two teeth broke off, this started a chain reaction where the 1st broken tooth contributed to the 2nd tooth being broken off and then the 3rd, etc. If it had happened while drilling new

formation, the broken tooth would have been pushed into the formation and would not have been that destructive to the cone. But in the shoe track the teeth would have rested on the bottom of hole in the same path of the gauge row for that one cone. There was also junk damage on the shirt-tail of cone 3. Also the damage was mechanical and not gradual wear which again would indicate the damage happened in a short time an not over an extended period while drilling. It was decided the 2nd 17-1/2" bit should be again a Reed T13CDHP milltooth bit (identical to previous bit). The 1st TC13CDHP drilled 80+m of Grid formation and showed very little wear (except for one gauge row). Because of this, it was assumed the bit could drill the addtional 340 m of Grid and still have good cutting structure left to drill the lower Hordaland claystone, Balder tuffaceaus claystone and the Sele claystone at a higher ROP than a 415 type insert bit.

2nd Run: Milltooth (135) Reed T13CDHP on BHI X-treme motor with 1.0 AKO. Bit was nozzled 3x20 and 1x18. Bit was pulled for ROP after drilling 575m @ 11.4 m/hr with a grading of 2-3-PB-G-FFF-10-SD-PR. The cutting structure was very much intact which would indicate the formation did not contribute to bearing failure and pinched bit. Viewing the ROP plot of 15/3-7 and 15/3-8 the bit had significant lower ROP at around 1700m when compared to offset (415 insert bit). The mud log samples indicated similar formations and there is no evidence that the two wells would be significantly different lithologically. The 15/3-7 was also handicapped due to pump problems and had low flow (3000 lpm) and low WOB (9 ton) for drilling. Therefore the poor performance of the T13CDHP can not be explained by mud pump problems. The ROP of the T13CDHP (15/3-8) versus the Smith 415 insert bit (15/3-7) was 60% slower for the given interval. The mill-tooth was the correct bit type to pick for this interval (drill into Lista) based on cutting structure wear. It is unknown how this bit became pinched. Normally a bit is pinched by forcing it into an undergauged hole, improperly drifted casing or BOP stack. Drilling with high WOB should not pinch a bit. A roller cone bit is designed to push the cones outward. It can not be explained why cones pinched.

3rd Run: PDC Lyng LD560BHG was specifically designed for Gudrun well. Six bladed, 13 mm cutters with passive features (high back rake angle, depth of cut limitors) to minimize vibrations. The bit has a negatively charged coating which minimizes balling tendencies. Drilled the lower Hordaland, Balder and Lista with very conservative drilling parameters. Very low WOB and high RPM was utilized to minimize balling tendency. It is unknown how much higher ROPs could have been achieved without balling. Set a limit of 3-4 tons WOB and ROP of 25 m/hr while drilling Hordaland, Balder and Lista. Increased WOB and ROP in Lista Had to POOH due to MWD failure. Bit graded 1-2-CT-G-In-XXX-BT-DTF. A couple of chipped cutters and one broken cutter on gauge.

4th Run: Rerun Lyng LD560BHG. Had to ream 2452m-2472 for 2 hours to get to bottom. Initially drilled similiar to offset 15/3-7 but slowed down to less than 1 m/hr. Bit graded 2-8-RO-S-2-X-WT-PR.

5 Run: Smith Bits S98VPX (8 bladed, 16mm cutter steel body bit). Totally drilled 191 meters with ROP 10,2 m/hr. Bit graded 1-2-WT-A-X-I-NO-TD.

DRILLING FLUID
Gradually increased Glydril WBM from 1.25 sg (shoe) to 1.36 sg by 1760 m. At TD the WM was increased to 1.38 sg. prior to POOH for running casing.

CASING
RU and ran 14" casing according to plan. Average running speed was 6.5 joints/hr. No joints were laid out. Mud losses during casing running were 12 m3. Tight spots/hole observed while running casing was: 1865m to 1885m set down max 30 MT, 1980m to 1985m set down max 70 MT. From 1995m to 2164m had variations in hook load 20 MT, from 2164m to 2623m had variations in hook load 30 MT. When running in on 5 1/2" landing string the hook load varied 35 MT. Had no clear indication on weight indicator of landing casing, confirmed casing landed with index line.
The use of pneumatic activated casing packer (La Fleur) and air operated elevator restricted the progress due to improper centring of casing. Centering of casing would be improved with short bails.
From a safety view point the use of air operated type elevator and Flush Mounted Spider gives high stick-up and increased risk due to climbing. Furthermore, frequent greasing of slips with 400 MT suspended above, is not acceptable.

MWD/BHA
Low vibrations were generally recorded until hitting approximately 1400m and then increased rapidly in the Grid Formation at approximately 1440m. Stick-slip was the primary vibration with lateral vibration as secondary. Angle began to build at 1785 m when only 2 pumps were working. Had to limit WOB from 20-24 ton to only 15 ton to keep from building angle. Decreased ROP by 46% with WOB reduction. For the lower part of the section no problems were encountered.

CEMENTING
The cement job was performed according to objectives. Bumped the top wiper plug according to program. (97% effiency on the mud pumps). Final circulating pressure (FCP) was 40± bars, bumped with 60± bars above FCP. Partial losses were experienced during the cement job, a total of 35 m3 Glydril mud. Problems encountered during the operation was a stuck remote operated lo-torque valve on the cement head witch had to be replaced by a manual type and a manual ball valve on the cement LAP-system that was unintentionally closed.

5.5 NO 15/3-8, 12 1/4" (30.11.2005 16:30)

START: 30.11.2005 16:30 2765 mMD
END : 25.12.2005 11:00 3910 mMD

OBJECTIVE
Drill 12 ¼" hole to 3845± m with Oil Based Mud, TD controlled by estimated thickness of Cromer Knoll minus a safe distance.

Run "look ahead VSP" log to determine top Draupne formation. Run and cement 9 7/8" liner.

SUMMARY
Run #1:
MU VertiTrak BHA and RIH. Drilled out wiper plugs successfully in 30 minutes (SharkBiteTM installed in 14" casing). Primary Bit: Smith M716VPX. Drilled shoe, rat hole and 4 metres new formation. No obvious signs of cement in rat hole. Attempted to perform FIT to 1.72 sg EMW, got LOT at 1.71 sg EMW. Displaced hole from 1.38 sg Glydril to 1.40 sg Paratherm OBM and commenced drilling 12 ¼" hole. Drilled Ekofisk Fm. with low ROP, typical 3-10 m/hr. entered the Jorsalfare Fm. at 2790 m drilling with still lower ROP, typical 3-5 m/hr. The overall penetration rate for this bit run was low (2-6 m/hr). Most of the interval was drilled in sliding mode due to erratic torque readings in rotation mode (35-40 rpm). Experienced fluctuating pump rates in sliding mode indicating too aggressive bit and stick-slip tendencies. At 2957 m the bit was pulled due to the low penetration rate, hole was in good condition.

Run #2:
Made up new bit (Hughes HCM605) and RIH on same VertiTrak BHA as previous run minus the ORD tool (density sub). Found no fill on bottom, set VertiTrak in ribs off mode and drilled ahead in rotary mode. Once optimum drilling parameters were found a significant increase in ROP was seen, 15-25 m/hr (11-15 ton, 3450 lpm, 270-295 bar, 30-40 rpm, ECD: 1.42-1.45 sg). Drilled mainly in rotation mode with the VertiTrak.

The VeriTrack tool was not working in steering mode through the bitrun, and most of the run was drilled in rotating mode (+/- 40 rpm on string). Due to increasing angle with maximum of 2,54 deg at 3118 m, the weight was held back through intervals below this depth (1-15 ton). The angle dropped back, and at section TD 0.89 deg was measured.

From 3600 m partly HPHT procedure was introduced, ie drilling with dedicated HPHT drilling stand.

The 12 1/4" hole was drilled down to 3908 m, from where the bit was pulled out at 3908 m to run VSP "look ahead" log on wireline.

Rigged up and ran 9 7/8" liner, linerhanger took weight and had to be POOH. Found linerhanger damaged and missing slips. Performed two fishing run to TD to recover fish (approx 17 kg.). Recovered 8.6 kg in first run, and 3.8 kg in second run, no more fish in hole.

Performed two multifinger caliper wear log, from 300 m to WH and from 2000 m to WH. The 14" casing damage/wear were found to be acceptable for further operations.

Ran in hole with junk mill BHA.

After the linerhanger modifications the 9 7/8" liner were re-run and successfully installed and cemented in place.

After installing the 9 7/8" liner, the well was displaced to 2.03 sg mud (Paratherm oil based mud) before start drilling drilling. The shoetrack and new formation was drilled to 3914 m where a formation integry test was done to 2.12 sg.

BIT RUNS

The section was drilled using 2 bit runs.

Bit #9: Smith M716PX.
The bit was run together with a VertiTrack (vertical seeking steerable tool). The bit drilled out the wiper plugs successfully in just 30 minutes (SharkBiteTM installed). Shoe track, rat hole and 4 metres new formation was drilled with no obvious signs of cement in rat hole.
Attempted to perform FIT to 1.72 sg EMW. Got LOT at 1.71 sg EMW.
Displaced the hole from 1.38 sg Glydril to 1.40 sg Paratherm OBM and commenced drilling 12 ¼" hole.
The section was mainly drilled without string rotation due to severe stick-slip experienced during drilling with string rotation (only 40-50 rpm allowed due to the VertiTrack tool).
Drilled the Ekofisk Fm. with low ROP, typical 3-8 m/hr, with 2-12 t WOB, 3400 lpm/ 0-30 RPM (string). Entered the Jorsalfare Fm at 2790 m. The penetration rate was low through the bit run (2-6 m/hr). Typical parameters used: 10-20 t WOB/ 3300-3450 lpm/ no string RPM. At 2957 m the bit was pulled due to the low penetration rate.

Bit #10: Baker Hughes Christensen HCM605
A new bit was run in on a slightly modified assembly, using the same VertiTrack tool, but with the ORD tool laid out.
The bit was washed down the last stand with 3000 lpm/ 207 bar. No fill was seen. New hole was drilled from 2957 m. The bit was bedded in using 1-3 t WOB/ 3000 lpm/ 40 rpm (string). Thereafter significant increase in ROP was seen, varying between 10 and 25 m/hr, using the drilling parameters 11-15 t WOB/ +/-3450 lpm/ 40 rpm (string).
It appears that the Extreme motor (Verti Track tool) combined with the HCM 605 PDC bit, is the ideal combination for drilling this type of formation. They performed superbly with ROPs over four times that of the previous M716VPX PDC bit and this was with only 50% of the motor's efficiency due to restrictions on the flow (for maximum pressure limitations).

The VeriTrack tool was not responding to steering commands, and was not working in steering mode through the bitrun. Most of the run was therefore drilled in rotating mode (+/- 40 rpm on string). Due to increasing angle with maximum of 2,54 deg at 3118 m, the weight was held back through intervals below this depth (1-15 ton). The angle dropped back, and at section TD 0,89 deg was measured.

From 3600 m partly HPHT procedure was introduced, ie drilling with dedicated HPHT drilling stand.
The bit was pulled out at 3908 m for VSP logging.

DRILLING FLUID
The section was drilled with Paratherm OBM. Initially the mud weight was 1.40 sg. which was increased to 1.64 sg prior to 3600 m.

CASING
First liner run (misrun):

The 9 7/8" liner was run in according to the tally (two joints were laid out due to giving incorrect make up torque/ bad threads.
The planned setting depth for the 9 7/8" liner shoe was 3907 m (one meter above the 12 1/4" TD), and the planned setting depth for the packer on the liner hanger was at 2648 m, which is in the middle of one of the 14" casing joints.
Shoe jnt, one intermediate jnt, float jnt and landing collar joint were run in the shoetrack. The connections in the shoetrack and on the first two joints above were thread locked (total 6 jnts thread locked). Radioactive pip tag was installed in connection at 458.8 m.The casing was filled every 5 joint during running in.

When preparing the liner hanger for installation of the mule shoe sub outside the cement plug, the mule shoe sub was to tight to slide on the cement plug. After a few attempts to install the mule shoe, the cement plug was disconnected from the hanger again, and new attempts were done to slide the mule shoe jnt above the plug. After no success doing this, the backup cement plug was installed on the hanger, and decision was made to run the hanger without the protector outside (DrillQuip consulted their office for this decision).

After running in with the liner on drill pipe landing string to 1474 m, with the liner hanger at 215 m, the string was filled. After the connection 15 ton weight was seen when attempted to run in. The string was worked with maximum over pull of 20 ton.
The stand was racked back, and the liner was pulled out by working the string up and down. At 1450 m, with the packer at 198.9 m, it was not possible to continue pulling out.
The string was free to work downwards. Circulation was established with 300 lpm / 18 bar, and the string was rotated with 10-15 rpm with 15 kNm torque. However it was still unable to pass 1450 meters upwards, and after a while it was impossible to move the string downwards.
After the circulation and the rotation were stopped, it was possible to work the pipe upwards to 1445 m with maximum over pull at 65 ton.
At 1445 m it was impossible to move or rotate the pipe, and circulation was established with 300-700 lpm (18-32 bar).
After this it was still impossible to move the string, and it was possible to set of all the string weight.
One full stand was standing above rotary, with the connection 1 m above the rotary.
An attempt to break out stand by setting the slips was done.
Pipe started coming up even further, and this attempt was aborted.
As it was not possible to use the slips, the stand was broken off by leaving the pipe free standing in the rotary, secured by the DP elevator.
The whole string weight was hanging on the stuck point while breaking off stand.
Thereafter the string was pulled out to the wellhead by working the pipe upwards.
Maximum peak over pull seen (due to rig heave) was 200 ton.

Minor over pull was also observed when the liner hanger passed the well head area.

With the liner hanger at surface, it showed up that both the packer hold down slips and the liner hanger slips were missing.
Parts of the packer hold down slips were jammed in the lip where the liner hanger slips was broken out from.
Also the wear bushing from the wellhead was jammed across the packer area, and came out together with the liner hanger.
The liner hanger was disconnected from the liner and laid down. Thereafter the liner was pulled out of the hole.

The linerhanger with backup was sent to town. The backup linerhanger was changed with respect to original design:
1. Hold down slip design cause of problem. Required redesign.
Modification for the rerun of liner consisted of removing the hold-down slips and replace bras shear pins with steel pins. This modification did not affect the setting procedures.
2. Wiper plug / canister design.

After the modification the 9 7/8" liner was re-run and successfully installed.

MWD/BHA
Run #1:
The 12 1/4" section was drilled with a VertiTrak BHA. A full MWD/LWD string was run dressed with GR/RES/DIR/PRESS/SONIC/DENSITY. During the first run hudge problems detecting/decoding the MWD pulses were seen. Data were lost in minor intervals and the density log was permanently lost from 2796 m.

Run #2:
Ran in with the same MWD/LWD assembly minus the ODR tool. During the trip a broken valve spring was replaced on mud pump #1. Experienced good MWD signals from start drilling down to TD @ 3908 m TVD.

Run #3:
Ran in with fishing BHA (Bowen Reverse Curc. junk basket), to fish linerhanger slips out of the hole. Recovored 8.6 kg. steel from linerhanger. Approx. 4 kg. steel still left in hole.

Run #4:
Ran in with fishing BHA (Bowen Reverse Curc. junk basket), to fish linerhanger slips out of the hole. Approx. 4 kg recovered.

Run #5:
Ran in with junk mill BHA.

CEMENTING
Reduced MW from 1.64 sg to 1.61 sg. prior to cement job. Pumped 41 m3 cmt. (20%/6 m3 excess on OH to top of liner) and displaced with 1500 lpm. Had no losses during the cmt. job. Circulated B/U and had 5 m3 cmt. in return.

LOGGING
Intermediate logging performed using REED hydrophone/gun & acquisition systems on Schlumberger wireline.
Conducted Run1 VSP-GR to acquire well bore seismic for a "look ahead" processing at REED processing centre.
Experienced moderate noise at the deepest VSP sample point was at 3901 m. S/N ratio improved above 3790m. From ~1700m the noise level got dramatically worse and only regular seismic check shots were conducted from that level to 1000m. A supply boat was on the field to facilitate a "walk away" with seismic guns to achieve the basis for the "look ahead" seismic processing. The acquired trace data was transferred to the REED processing centre using the Schlumberger Interact communication facilities as the Statoil FTP upload option was dysfunctional.

Performed two multifinger caliper wear log, from 300 m to WH and from 2000 m to WH.

5.6 NO 15/3-8, 8 1/2" (25.12.2005 11:00)

START: 25.12.2005 11:00 3910 mMD
END : 16.02.2006 01:30 4590 mMD

OBJECTIVE
The objective for the 8 1/2" section is to drill from the 9 7/8" liner shoe through the Draupne Fm (reservoir) and down to TD at approximately
4805 m.
Cores are planned to be taken in reservoir intervals in the Draupne Fm.

SUMMARY
Full HPHT procedures, including use of drilling stand, was used during drilling of the first part of the 8 1/2" section. From after the first core run, simplified HPHT procedures were followed. This without the check trip before pulling out, and without the circulation of bottoms up before dropping the ball for start the coring after tripping in the hole.

New hole was drilled down to the coring point at 4167 m, using 2 drill bits. The well was flow checked in accordance with the HPHT procedures prior to connections, and off bottom torque and up weight was monitored. At drilling breaks the well was flow checked and pump off tests were used to verify the well was stabile. Max gas seen from bottoms up after drilling break at 4070 m: 9.45 %. ROP limitations were maintained in accordance with the HPHT procedures, and to allow for proper interpretation of biostrategraphic samples. At 4165 m a drilling break was seen, increasing ROP from 2-3 m/hr to +/-15 m/hr. After flow checking 2 more meters was

drilled to confirm the formation with the MWD tool. Bottoms up were circulated with max. gas seen: 3.52 %. Decision was made to start coring. A check trip was performed, and the bit was pulled out of the hole in accordance with the HPHT procedures.

The interval from 4167 m to 4304 m was cored (five runs), and the interval from 4304 m to 4478 m, between the cored sections was drilled in one bit run. The interval from 4478 m to 4506 m was cored (two runs). New hole was drilled from 4506 m to TD at 4590 m (TD of section changed from 4805 m).

After logging the 8 1/2" section with wireline logging, the 8 1/2" section was plugged back to 4299 m, and a 7" liner installed. A CBL log was run on wireline to confirm the cement behind the liner, before the well was inflow tested.

A heavy wireline data acquisition programme was taking place in the 8 1/2" section (ref. the logging chapter). A total of 15 wireline runs were performed, with two clean out runs in between. This was bit run # 26 and #27.
During run #27, hydrocarbons from the MDT logging were circulated out. This is described in the DBR Experience listing.

After the last logging run was finished, a 3 1/2" cement string was run in, and the bottom of the 8 1/2" section was plugged back to 3300 m. (See the cementing chapter). Previous to the pumping of cement, the hydrocarbons left in the hole from the mini DST run and the last MDT runs, were circulated out.

BIT RUNS
Bit #10 (Run #14)
The first bit used in the 8 1/2" section, a Reed- Hycalog DSX816M-B1, was run in hole on an "Ontrack" MWD tool rotary assembly.

Bit #11 (Run #15)
The second bit used in the 8 1/2" section, a Hughes Christensen HCR507Z, was run in hole on an "Ontrack" MWD tool rotary assembly. After run in the hole the well was circulated bottoms up and flow checked with bottoms up at 800 m in accordance with the HPHT procedures. Max gas seen at bottoms up: 2.25 %. New hole was drilled from 3989 m to 4167 mMD, where the first coring point was picked. Mud weight of 2.03 sg was used, and HPHT procedures were followed through the run.
Parameters used: WOB: 1-12 MT, 60-150 rpm / 8-19 kNm, 1500-1600 lpm / 215-243 bar, ECD: 2.06-2.08 sg.

Core #1 was cut from 4167 m to 4179.6 m, at which it jammed off. (90 foot core barrel, conventional inner barrel).
Parameters: WOB: 4-8 MT, 60-110 rpm / 9-19 kNm, 1000 lpm / 105-110 bar.
At 4179.6 m indications told that the core had jammed off. It was seen by no ROP, torque "dying", and a slight drop in pump pressure. Adjusting of the parameters in an attempt to restart coring was done without success. The core bit was picked off bottom with over pull.

The bit was set on bottom again in a second attempted to restart the coring. This with no success, and the core assembly was pulled out of the hole.

Core #2 was cut from 4179.6 m to 4202 m, where it jammed off. (90 foot core barrel, "Jam Buster" telescopic inner barrel).
Parameters: WOB: 4-10 MT, 60-100 rpm / 8-20 kNm, 1000 lpm / 108-116 bar.
At 4202 m, indications seen told that the core had jammed off. ROP was dropping towards zero, and torque dropping suddenly, levelling out at a lower level. Pump pressure had been observed increasing +-15 bar 10 minutes earlier, and was observed dropping again to original level, at the same time the torque dropped. The coring bit was picked off bottom with no over pull.

Core #3 was cut from 4202 m to 4238.5 m, where it was pulled off. (120 foot core barrel, "Jam Buster" telescopic inner barrel).
Parameters: WOB: 6-10 MT / 90-100 rpm / 6-15 kNm / 1000 lpm / 108-112 bar.
Connection made by adding one single DP while core bit sitting on bottom with string in compression.

Core #4 was cut from 4238.5 m to 4275 m, where it was pulled off. (120 foot core barrel, "Jam Buster" telescopic inner barrel).
Connection made by adding one single DP while core bit sitting on bottom with string in compression.
Parameters: WOB: 6-10 MT, 70-90 rpm / 6-15 kNm, 1000 lpm / 110-115 bar.

Core #5 was cut from 4275 m to 4304 m, where it jammed off. (120 foot core barrel, "Jam Buster" telescopic inner barrel).
Parameters: WOB:6-10 MT/ 70-90 rpm/ 1000 lpm / 100-110 bar/ 6-15 kNm.

Bit #11RR (Run #21)
The same bit as used during run #15, a Hughes Christensen HCR507Z, was run in hole on an "Ontrack" MWD tool rotary assembly.

Core #6 was cut from 4478 m to 4494 m, where it jammed off. (120 foot core barrel, "Jam Buster" telescopic inner barrel).
Core #7 was cut from 4494 m to 4506 m, where it jammed off. (120 foot core barrel, "Jam Buster" telescopic inner barrel).

Bit #14 (Run #24)
This motor BHA drilled new hole from 4506 m to 4590 m.

Bit #15 RR-1/2/ (Run #25/26/27)
Wiper trips while logging.

Bit # 11RR2 (run # 29), a Hughes Christensen HCR507Z, was run in on the same rotary BHA as used during the previous clean out run (run # 27), and was used to dress off the plug back cement plug set before running the 7" liner.

DRILLING FLUID
The section was drilled with Paratherm OBM. (Same mud as used in the 12 1/4" section). A mud weight of 2.03 was kept during the section. Good experiences were done regarding the stability of the mud rheology during the HPHT drilling.

CASING
7" liner:
After dressing of the cement plug, set on bottom of the 8 1/2" hole, down to 4299 m, the 7" liner was run and installed with the shoe at 4298 m. Top of the liner/hanger was installed at 3810 m, giving 100 m liner lap to the 9 7/8" casing. The shoe of the liner was run in to 4298 m. A radioactive marker was installed on the liner at the top end, below the box, on a pup joint at +/- 4011.2 m.
The liner was tested to 170 bars with 2.03 sg mud in the hole after the cement was set up.

MWD/BHA
BHA #14
This rotary BHA used an "Ontrack" MWD tool with GR/RES/DIR/PRESS.
Drilled new hole from 9 7/8" shoe to 3998 m, had to do a bit trip due to low ROP.

BHA #15
This rotary BHA used an "Ontrack" MWD tool with GR/RES/DIR/PRESS.
Drilled new hole from 3998 m to the coring point at 4167 m.

BHA # 16:
90 foot core barrel, conventional inner barrel.
Cut core #1 from 4167 m to 4179.6 m. Core jammed off in catcher at 4179.6 m.

BHA # 17:
90 foot core barrel, "Jam Buster" telescopic inner barrel.
This BHA was changed to telescopic type inner barrel due to the previous core had jammed off before the core was filled.
Cut core #2 from 4179.6 m to 4202 m. Core jammed off. 1st jam at 4199 m (2nd sleeve activated). 2nd jam at 4201 m in catcher.

BHA # 18:
120 foot core barrel, "Jam Buster" telescopic inner barrel.
This BHA was changed to 120 foot outer barrel to ensure at least 27 m core in case the "jam buster" function was trigged during the first meters of the run.
Cut core #3 from 4202 m to 4238.5 m. No jamming.

BHA # 19:
120 foot core barrel, "Jam Buster" telescopic inner barrel). Same BHA as used on the previous run.
Cut core #4 from 4238.5 m to 4275 m. No jam at end of run. 1 jams at 4272 m (2nd sleeve activated).

BHA # 20:
120 foot core barrel, "Jam Buster" telescopic inner barrel. Same BHA as used on the previous run.
Cut core #5 from 4275 m to 4304 m. Core jammed off. 1st jam at 4289 m (2nd sleeve activated). 2nd jam at 4302.5 caused by wedged core in catcher.

BHA # 21:
This rotary BHA used a "Ontrack" MWD tool with GR/RES/DIR/PRESS, and was identical with the BHA # 15, except for one more joint of 6 1/2" DC, and the roller reamer one joint higher.
Drilled new hole from 4304 m to the coring point at 4478 m.

BHA #22:
120 foot core barrel, "Jam Buster" telescopic inner barrel. Same BHA as used on the previous run.
Cut core #6 from 4478 m to 4494 m. Core jammed off.

BHA #23:
120 foot core barrel, "Jam Buster" telescopic inner barrel. Same BHA as used on the previous run.
Cut core #7 from 4494 m to 4506 m. Core jammed off.

BHA #24:
This motor BHA used a "Ontrack" MWD tool with GR/RES/DIR/PRESS.
Drilled new hole from 4506 m to 4590 m. TD was changed from 4805 m to 4590 m.

BHA #25:
This was a wipertrip run while logging.

BHA # 26
This was a wipertrip run performed after the VSP runs during the wireline logging programme. A tri cone bit was run on a BHA containing the ontrack MWD tool.

BHA # 27
This was a wipertrip run performed after wireline run # 11, a MDT run. It was done to circulate out hydrocarbons left in the hole after the MDT logging. The same tree cone bit as used during the previous wiper trip was useed, together with the same BHA, but this time without the MWD tool.

After the last logging run was finished, a 3 1/2" cement string was run in, and the bottom of the 8 1/2" section was plugged back to 3300 m. (See the cementing chapter). Previous the pumping of cement, the hydrocarbons left in the hole from the mini DST run and the last MDT runs, was circulated out.

BHA # 29 was more or less identical as the rotary BHA as used during the previous clean out run (run # 27), and was used to dress off the plug back cement plug set before running the 7" liner.

BHA # 30 consisted of 13 3/8" RTTS run in the hole to with a Racor Back casing scraper below. It was run to inflow test the 9 7/8" liner to 260 bar.

CEMENTING
Plug back the 8 1/2" hole to liner setting depth::
After finishing the wireline logging, a 3 1/2" cement stinger was run in the hole, and a cement plug was set at bottom of the 8 1/2" hole at 4590 m.
The cement was displaced using "pump and pull" method up to approximately 4232 m, from then to more stands was pulled out to approximately 4170 m. Here bottoms up were circulated before pulling out. A batch mixer cement unit was used. During the next bit run, dressing off the cement plug, firm cement was tagged and drilled from 4180 m

Cementing the 7" liner:
After dressing of the cement plug down to 4299 m, the liner was run and installed with the shoe at 4298 m. Top of the liner/hanger was at 3810 m, giving 100 m linerlap to the 9 7/8" casing.
The liner was cemented in its full length, using a batch mixer cement unit. 12 m3 spacer was pumped in front of 11,3 m3 cement. The cement was displaced using the rig pumps, and bumping of the top plug was verified by pressuring up to 170 bar.

LOGGING
A total of 14 WL runs was made to achieve the data acquisition program.

1 OBMI-2- GR 2A
2 AIT-DSI-EMS- GR 2A
3 CMR-ECS-IPLT-GR 2A
4 MDT pre-tests 2A
5 VSP 2B Mis-run
6 VSP 2B
7 VSP walkaway 2C
Wiper trip
8 MDT 2B Mis-run
9 MDT sampling 2B
10 MDT Mis-run
11 MDT Revers Low Shock H2S and water sampling 2C
Wiper trip
12 MDT Mini-DST and sampling 2D
13 MDT water and oil sampling, oil scanning 2E
14 CMR 2A
15 MSCT 2A

Due to delayed arrival of the AIT tool one had to change the running order. The OMBI-2 was decided to be the first run while waiting for the AIT to arrive the rig.

The first run with OBMI-2 achieved the data acquisition and was logged from 3900m-4590m.

Run 2 was logged with resistivity, sonic and caliper. The logs covered the interval of 4590m-2750m.

On run 3 the CMR failed from the start of the logging and had to be rerun later in the program. Else the logs were achieved to specifications with ECDS and the radioactive source tool IPLT covering the interval of 4592m-3910m.

Run 4 was the first run with MDT. This run was made with formation pressure points only.

Run 5 were decided to be VSP due to beneficial weather forecasts for logging conditions. This VSP run was a misrun and a second attempt had to be done.

Run 6 achieved the VSP data and covered the interval from 4474m to sea level.

Run 7 Walkaway VSP from 3300 to 130 m.

Run 8 MDT sampling was a misrun as tool failed to communicate with surface cabin.

Run 9 MDT sampling on hydrocarbon zones. A total of 1x2 3/4 gallon, 2x1 gallon, 4x420cc and 2x250cc samples were taken.

Run 10 MDT water and oil sampling was a misrun. There was found a short cut in the 1 gallon chamber when troubleshooting back at surface.

Run11 Rerun of MDT water and oil sampling. When sampling there was seen problems with the 2 3/4" gallon chamber and 3 of the 420cc MPSR chambers. Back on surface these were confirmed not functional. The total of water samples achieved was a 1 gallon chamber from 4213.5m and 1x450cc chamber at 4514.5m. Also 2x250cc SPMC bottles were filled with HC samples from 4074m. When transferring the water samples from MPSR chambers to transit bottles glycol was found mixed with the water both from the 1 gallon and the 450cc chamber.

Run12 Was set to do miniDST with dual packers and recover the water samples from previous run. When cleaning up for the first water sample the upper pump on the MDT tool failed and sampling was no longer achievable. The miniDST program was performed as planned. When scanning a last dual packer station at 4182m to check if the movable fluid contained oil, the MDT tool failed and one had to POOH.

Run13 MDT dual packer to sample water and scanning for oil at 4182m. All goals were achieved on this run and 4x420cc bottles was filled with water and 2x420 bottles with HC.

Run14 was a rerun of the CMR. Log interval was 4570m-3935m.

Run15 was a MSCT tool used to get sidewalls cores. A total of 50 cores were drilled.

CBL log in the 7" liner:
After cementing the 7" liner, the cement behind the liner was verified by running a CBL/GR/CCL log with the Schlumberger wireline unit.

5.7 NO 15/3-8, DST (16.02.2006 01:30)

START: 16.02.2006 01:30 4590 mMD
END : 30.03.2006 20:00 4590 mMD

OBJECTIVE
The objective was to perform 2 DST's in the Draupne formation in Unit SST1, Zone C and Unit SST1, Zone A.

Primary DST objectives were to determine deliverability, boundaries, fluid properties, formation damage and permeability.
Secondary DST objective was to obtain representative fluid samples.

SUMMARY
During the period of logging the well a temporary Well Test Process package was installed and commissioned on the riser deck. A water cooling system was installed on each burner boom for protection of rig and personnel against undesired heat exposure.
The well was cemented and dressed to 4299 meters. A 7" liner was run to bottom of the hole and cemented in place. After cleaning out the liner, an inflow test was successfully performed. The well was displaced to 1.03 g/cc inhibited seawater with 1.08 g/cc 50:50 mixture of inhibited seawater and MEG in the packer setting area at bottom of the well. The liner cement quality was checked by a CBL wireline log. The complete well system including 14" casing was pressure tested.

DST 1, Zone C:
A permanent packer was run on wireline and set at 4108 meters. The BOP was tested and a dummy run with the Subsea Tree fluted hanger was performed for spaceout in the BOP. The DST string including 3 3/8" TCP guns with 3 ½" tubing and 4 ½" landing string was then run and installed through the permanent packer including confirming spaceout run for the perforation guns. For downhole pressure and temperature measurements and sampling a total of 7 gauges (1 reading annulus) and 4 bottomhole samplers were installed in the DST string below the downhole tester valve. The well was perforated underbalanced in the interval between 4141 to 4183 meters. The well was opened for flowing and a flowing sequence with initial flow, initial build-up, clean-up flow, bottomhole sampling flow, main flow and main build-up (96 hours) was performed. Thereafter the well was killed with 2.03 g/cc oil based mud and 2 mini frac tests were done. During the final killing and circulation of the well the oil based mud got contaminated with hydrocarbons due to loss of constant bottomhole pressure and the mud had to be replaced. The test string was then pulled to surface and bottomhole gauges and samplers were recovered. The zone was then isolated by 2 EZSV plugs, 1 run on

wireline and set at 4106 meters, the other run on tubing and set at 4103 meters. Both plugs were integrity tested. The BOP was again tested.

DST 2, Zone A:
The well was displaced to 1.03 g/cc inhibited seawater with 1.08 g/cc 50:50 mixture of inhibited seawater and MEG in the packer setting area at bottom of the well. A permanent packer was run on wireline and set at 4038.6 meters. The DST string including 3 3/8" TCP guns with 3 ½" tubing and 4 ½" landing string was then run and installed through the permanent packer including confirming spaceout run for the perforation guns. For downhole pressure and temperature measurements and sampling a total of 7 gauges (1 reading annulus) and 4 bottomhole samplers were installed in the DST string below the downhole tester valve. The well was perforated underbalanced in the interval between 4073 to 4087 meters. The well was opened for flowing and a flowing sequence with initial flow, initial build-up, clean-up flow, bottomhole sampling flow, main flow and main build-up (96 hours) was performed. During the main flow period the transfer pump broke down causing difficulties in taking the necessary meter factors. Thereafter the well was killed with 2.03 g/cc oil based mud and 3 mini frac tests were done. The test string was then pulled to surface and bottomhole gauges and samplers were recovered. The zone was then isolated by EZSV plugs and cement, 1 plug run on wireline and set at 4035 meters.

Upon completion of the DST's a separate report "Experiences/learnings from DST's Gudrun" was issued for future experience transfer.

5.8 NO 15/3-8, PERM P&A (30.03.2006 20:00)

START: 30.03.2006 20:00 4106 mMD
END : 09.04.2006 09:30 4037 mMD

OBJECTIVE
Permanent P&A of the Gudrun well.

SUMMARY
RIH and set EZSV on WL @ 4037 m above upper perforations (DST #2 interval 4073 m to 4087 m). Pressure tested EZSV to 70 bar above minifrac pressure or to max csg. test pressure.

RIH to approx 3925 m with w/ perf. guns on WL. Perforated below 9 7/8 shoe, interval 3925 m - 3931 m. RIH with (1000 m 5 ½ DP and DST tubing) to perforated depth and perform XLOT.

Cement plug #1:
Placed a cement plug above 7" EZSV @ 4037 m, top of cement @ 3760 m (minimum 50 m above 7" linertop). POOH. Lay down excess 3 ½" tubing.

14" EZSV and cement plug #2:
RIH with (1000 m 5 ½" DP and DST tubing) 14" EZSV (dressed as a bridge plug) on mechanical setting tool with an open circulation sub above setting tool. Pressure tested cement

plug #1 to 70 bar above XLOT pressure or to max csg. test pressure. Set 14” EZSV at 2630 m. Sting out of EZSV and pressure test same to 70 bar above 14” csg. LOT pressure. Check volume pumped against volume pumped in item 2. Displaced well to 1.40 sg WBM with maximum rate. Placed a 100 m balanced cement plug above 14” EZSV.

RIH with 14” casing cutting assembly (rotary), land off in wear bushing. Closed annular and cutted 14” casing @ 480 m by pumping 2000 LPM (optimum 2700 - 3300 LPM). RIH and pulled out with 14" casing.

Cement plug #3:
RIH with 5 ½” open ended DP to 535 m and dropped CST at 535 m. Placed a cement plug from 530 m to 380 m. Displaced well to sea water.

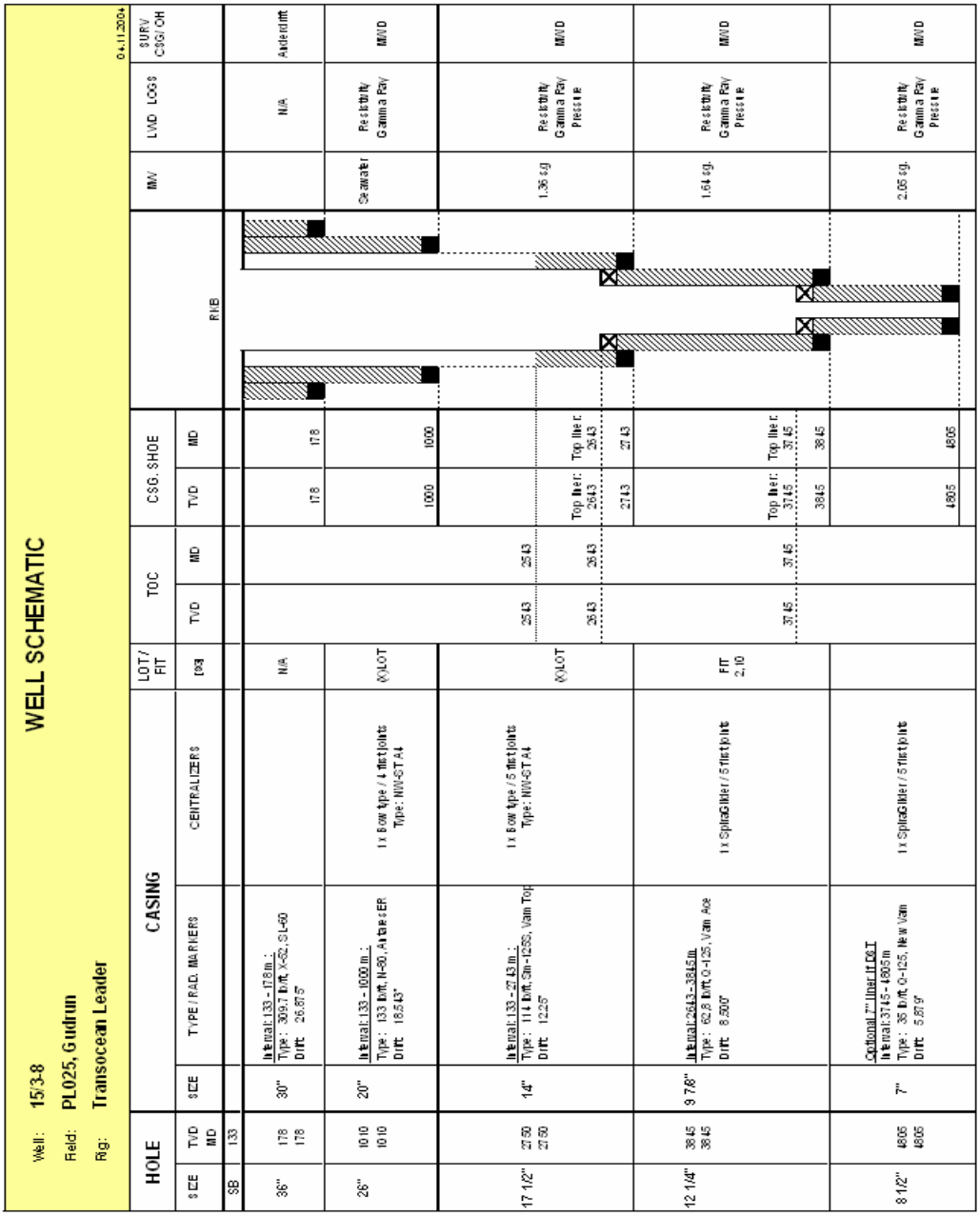
Cement plug #4:
Placed a surface cement plug from 380 m to 180 m. Pull above cement and circulate pipe clean. POOH.

RIH with MOST-tool. Sat MOST-tool and lok T- bars on arms with ROV. Cut 20” / 30” casing @ 138 m (~5 m below seabed) in tension by pumping 2700 - 3300 lpm. Retrieved 20” / 30” casing. Performed an inspection of the seabed utilizing the ROV.

5.9 Figures and tables

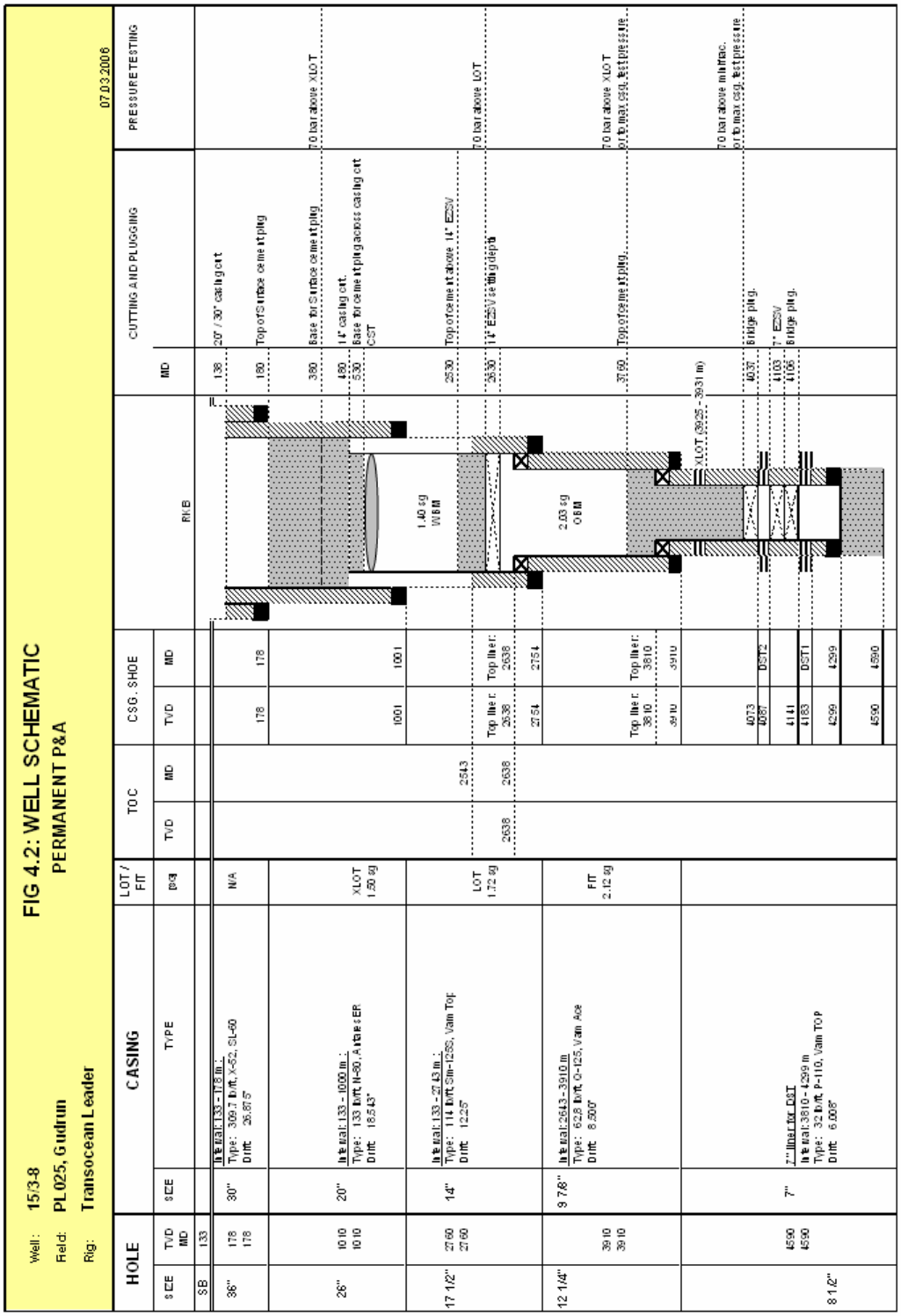
5.9.1 Well schematic

Figure 5.1 Well Schematic



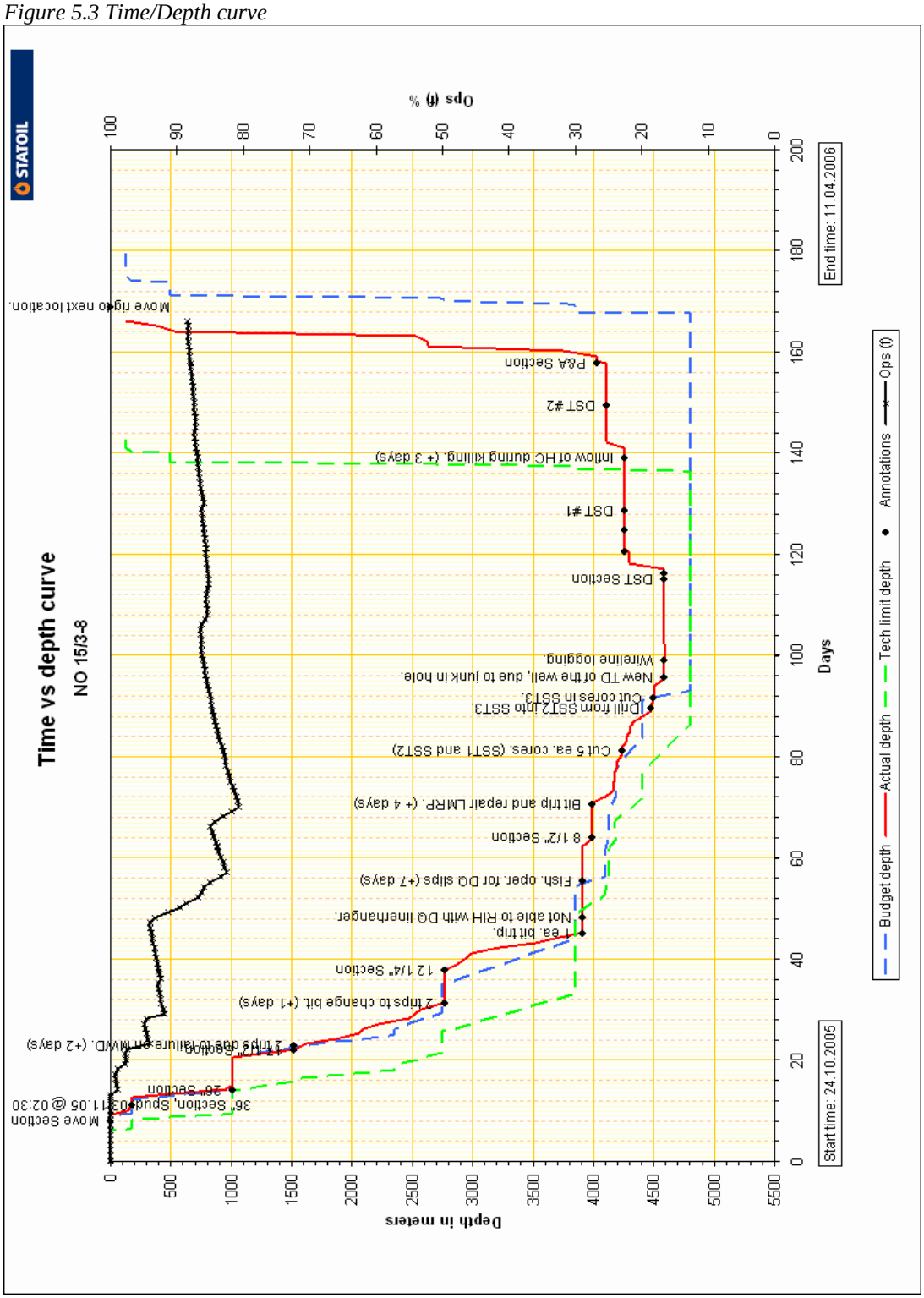
5.9.2 P&A wellbore schematic

Figure 5.2 P&A Schematic



5.9.3 Time/depth curve

Figure 5.3 Time/Depth curve



5.9.4 Timeplanner

Table 5.1 Timeplanner

PROJECT NAME: Gudrun
PROJECT NUMBER: T.O025A.AP.30100

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
24.10.2005 01:10	03.11.2005 02:30	218,0	9,1	147,0	6,1	142,0	241,3	10,1	0,0	MOVE [NO 15/3-8]	
24.10.2005 01:10	01.11.2005 03:00	142,0	5,9	100,0	4,2	100,0	193,8	8,1	0,0	1 Move rig from Hydro location Stetind to Gudrun 15/3-8 (470 nm)	Trans
01.11.2005 03:00	02.11.2005 00:00	48,0	7,9	27,0	5,3	24,0	21,0	9,0	0,0	2 Set anchors and ballast rig. Finalize rig positioning / prep. for spud.	Trans,Ocean
02.11.2005 00:00	02.11.2005 02:30	8,0	8,3	6,0	5,5	6,0	2,5	9,1	0,0	3 PU 9 1/2" and 8" DC and R/B same.	Trans,Geo
02.11.2005 02:30	02.11.2005 18:00	8,0	8,6	6,0	5,8	5,0	15,5	9,7	0,0	4 PU 5 1/2" landing string, 5 1/2" DP (3 stand) and 5 1/2" HWDP and rack back. Pos rig and placed ROV buoys on seabed	Trans,Ocean,Geo
02.11.2005 18:00	02.11.2005 20:30	6,0	8,8	4,0	6,0	3,0	2,5	9,8	0,0	5 MU cement stand and 30" cond RT. R/B same.	Geo,Trans
02.11.2005 20:30	03.11.2005 02:30	6,0	9,1	4,0	6,1	4,0	6,0	10,1	0,0	6 MU 36" BHA. RIH and position rig.	Geo,Trans,Ocean
03.11.2005 02:30	05.11.2005 19:30	73,0	3,0	54,0	2,2	46,0	65,0	2,7	0,0	36" [NO 15/3-8]	
03.11.2005 02:30	04.11.2005 07:30	12,0	9,6	9,0	6,5	9,0	29,0	11,3	0,0	7 Drill 36" hole to 178 m. Circulate hole clean. Displace to 1.35 sg mud.	Geo,Trans,Ocean,MI
04.11.2005 07:30	04.11.2005 10:00	8,0	9,9	6,0	6,8	4,0	2,5	11,4	0,0	8 POOH. R/B DC and HWDP. L/D HO BHA.	Geo,Trans
04.11.2005 10:00	04.11.2005 20:00	12,0	10,4	9,0	7,1	8,0	10,0	11,8	0,0	9 RU and RIH 30" conductor and 5 1/2" cement inner string.	Geo,DQ,Trans,Ocean,Weath
04.11.2005 20:00	05.11.2005 02:00	8,0	10,7	6,0	7,4	4,0	6,0	12,0	0,0	10 Pump and displace Tuned Light cement.	Geo,Trans,Ocean,Hall
05.11.2005 02:00	05.11.2005 05:00	10,0	11,2	7,0	7,7	6,0	3,0	12,2	0,0	11 POOH with landing string and RT.	Geo,DQ,Trans,Ocean
05.11.2005 05:00	05.11.2005 11:00	9,0	11,5	7,0	8,0	7,0	6,0	12,4	0,0	12 MU cement head. LD 9 1/2" DC. PU 5 1/2" DP +/- 800 m while WOC.	Geo,DQ,Trans,Ocean
05.11.2005 11:00	05.11.2005 18:30	8,0	11,9	6,0	8,2	5,0	7,5	12,7	0,0	13 MU and RIH with 26" BHA	Geo,Trans,Ocean,BHI,BHI, OWS
05.11.2005 18:30	05.11.2005 19:30	6,0	12,1	4,0	8,4	3,0	1,0	12,8	0,0	14 Drill out cement and 30" shoe	Geo,Trans,BHI,BHI,OWS
05.11.2005 19:30	13.11.2005 13:00	204,0	8,5	137,0	5,7	124,0	185,5	7,7	10,5	26" [NO 15/3-8]	

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
05.11.2005 19:30	07.11.2005 08:00	50,0	14,2	29,0	9,6	25,0	36,5	14,3	3,0	15 Drill 26"hole to 1010 m.	Trans,OWS,BHI,Geo,BHI
07.11.2005 08:00	07.11.2005 15:00	4,0	14,4	3,0	9,7	3,0	7,0	14,6	0,0	16 Circulate well clean, displace to 1.30 sg mud.	Geo,Trans,MI,OWS
07.11.2005 15:00	07.11.2005 21:00	7,0	14,7	5,0	9,9	5,0	6,0	14,8	0,0	17 POOH. R/B DC and HWDP. L/D Motor and MWD	Geo,BHI,BHI,Trans,OWS
07.11.2005 21:00	09.11.2005 01:30	42,0	16,4	23,0	10,9	17,0	28,5	16,0	0,0	18 R/U and run 20" casing and 18 3/4" WH housing.	Geo,Trans,DQ
09.11.2005 01:30	09.11.2005 09:00	8,0	16,7	6,0	11,1	6,0	7,5	16,3	0,0	19 Circulate. Pump and displace cement.	Geo,Trans,Ocean,Hall
09.11.2005 09:00	09.11.2005 11:00	6,0	17,0	4,0	11,3	4,0	2,0	16,4	0,0	20 Release RT and wash WH area. POOH.	Geo,Trans,Ocean
09.11.2005 11:00	09.11.2005 12:30	5,0	17,2	4,0	11,5	3,0	1,5	16,5	0,0	21 L/D RT, cement head.	Geo,DQ,Trans
09.11.2005 12:30	11.11.2005 17:00	32,0	18,5	24,0	12,5	24,0	52,5	18,7	4,5	22 RU and run BOP/riser. Pressure test WH conn. and casing.	Geo,Trans,Ocean
11.11.2005 17:00	11.11.2005 18:00	6,0	18,8	5,0	12,7	4,0	1,0	18,7	0,0	23 M/U cement head and hang off tool.	Geo,Trans,Ocean,DQ
11.11.2005 18:00	13.11.2005 04:00	32,0	20,1	24,0	13,7	26,0	34,0	20,1	3,0	24 M/U 17 1/2" BHA. PU +- 1800 m 5 1/2" DP.	Geo,Trans
13.11.2005 04:00	13.11.2005 10:30	7,0	20,4	6,0	13,9	4,0	6,5	20,4	0,0	25 Drill out shoe track and drill 3 m new formation while disp. to 1.25 g/cm³ mud	Trans,BHI,BHI,MI,Geo
13.11.2005 10:30	13.11.2005 13:00	5,0	20,6	4,0	14,1	3,0	2,5	20,5	0,0	26 Pull in to casing shoe, circulate and perform XLOT	Geo,Trans,BHI,BHI
13.11.2005 13:00	30.11.2005 16:30	353,0	14,7	284,0	11,8	273,0	411,5	17,1	53,5	17 1/2" [NO 15/3-8]	
13.11.2005 13:00	15.11.2005 06:00	45,0	22,5	41,0	15,8	41,0	41,0	22,2	2,5	27 Drill 17 1/2" hole to +/- 1500 m. MWD Failure	Trans,MI,BHI,Geo,BHI,OWS
15.11.2005 06:00	16.11.2005 00:00	0,0	22,5	12,0	16,3	18,0	18,0	23,0	18,0	28 Circulate hole clean. POOH to change BCPM/MWD. RIH	Trans,MI,BHI,BHI,Geo,OWS
16.11.2005 00:00	18.11.2005 17:30	64,0	25,2	44,0	18,1	44,0	65,5	25,7	0,5	29 Drill 17 1/2" hole to 2095 m.	BHI,BHI,Geo,Trans,MI,OWS
18.11.2005 17:30	19.11.2005 21:00	23,0	26,1	18,0	18,9	17,0	27,5	26,8	0,0	30 Circulate hole clean. POOH to change Bit/BHA. RIH. Function test BOP.	Trans,MI,BHI,Geo,BHI,OWS
19.11.2005 21:00	24.11.2005 12:30	80,0	29,5	60,0	21,4	60,0	111,5	31,5	23,5	31 Drill 17 1/2" hole to +/- 2750 m, incl. 2 ea trips to change MWD and bit	Trans,Geo,MI,BHI,BHI,OWS
24.11.2005 12:30	25.11.2005 08:00	20,0	30,3	17,0	22,1	13,0	19,5	32,3	1,0	32 Circulate hole clean BU 3 times, POOH. LD 17 1/2" BHA.	Trans,BHI,BHI,Geo,MI,OWS
25.11.2005 08:00	25.11.2005 13:30	7,0	30,6	5,0	22,3	5,0	5,5	32,5	0,0	33 Wash wellhead and pull bore protector	Geo,Trans,DQ
25.11.2005 13:30	27.11.2005 14:30	45,0	32,5	34,0	23,7	30,0	49,0	34,6	1,5	34 RU and run 14" casing.	Geo,Trans,Weath
27.11.2005 14:30	27.11.2005 20:00	7,0	32,7	5,0	23,9	4,0	5,5	34,8	1,0	35 Circulate, pump and displace cement.	Geo,Hall,MI,Trans
27.11.2005 20:00	28.11.2005 02:00	11,0	33,2	8,0	24,3	5,0	6,0	35,0	0,0	36 Set seal assembly, test same and BOP	Geo,Trans
28.11.2005 02:00	28.11.2005 21:00	6,0	33,5	5,0	24,5	4,0	19,0	35,8	3,0	37 Release RT, POOH. LD RT. Test IBOP's to 690 bar, and mudhose.	Geo,Trans
28.11.2005 21:00	29.11.2005 08:00	7,0	33,7	5,0	24,7	5,0	11,0	36,3	2,5	38 Run WB and LD cement head.	Geo,Trans

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
29.11.2005 08:00	30.11.2005 09:30	25,0	34,8	19,0	25,5	20,0	25,5	37,3	0,0	39 MU and RIH with 12 1/4" BHA. PU +- 1000 m DP. Pressure test casing.	Trans,BHI,BHI,Geo,OWS
30.11.2005 09:30	30.11.2005 14:00	8,0	35,1	7,0	25,8	4,0	4,5	37,5	0,0	40 Drill out shoe track and 3 m new formation.	Trans,MI,BHI,BHI,Geo,OWS
30.11.2005 14:00	30.11.2005 16:30	5,0	35,3	4,0	25,9	3,0	2,5	37,6	0,0	41 Circulate and perform FIT to 1,72 sg. EMW.	Trans,Geo,OWS
30.11.2005 16:30	25.12.2005 11:00	458,0	19,1	550,0	22,9	487,0	594,5	24,8	169,5	12 1/4" [NO 15/3-8]	
30.11.2005 16:30	30.11.2005 23:00	8,0	35,7	6,0	26,2	5,0	6,5	37,9	0,5	42 Displace the well to 1,40 sg. OBM.	Trans,Geo,BHI,MI,OWS
30.11.2005 23:00	08.12.2005 05:00	200,0	44,0	167,0	33,1	140,0	174,0	45,2	0,5	43 Drill 12 1/4" hole to +/- 3850 m (HPHT mode from +/- 3600 m).	Trans,MI,BHI,Geo,BHI,MIS WACO,OWS
08.12.2005 05:00	08.12.2005 21:30	24,0	45,0	20,0	34,0	15,0	16,5	45,8	0,0	44 Circulate hole clean and POOH.	Trans,BHI,BHI,Geo,MI,MIS WACO,OWS
08.12.2005 21:30	08.12.2005 23:00	1,5	45,1	2,0	34,0	2,0	1,5	45,9	0,0	45 RU for WL*	Trans,Geo,Schlum
08.12.2005 22:59	08.12.2005 23:00	4,0	45,2	3,0	34,2	2,0	0,0	45,9	0,0	46 PU & MU new cement stand. Rack same.	Trans,Geo
08.12.2005 23:00	09.12.2005 11:00	12,0	45,7	8,0	34,5	10,0	12,0	46,4	0,0	47 Run VSP look ahead logging*	Schlum,Trans,Geo
09.12.2005 11:00	09.12.2005 12:30	1,5	45,8	2,0	34,6	2,0	1,5	46,5	0,0	48 RD WL equipment*	Geo,Schlum,Trans
09.12.2005 12:30	09.12.2005 21:30	5,0	46,0	12,0	35,1	12,0	9,0	46,8	0,0	49 Evaluate VSP logging. Meanwhile: Pick up DP/planned rig maintenance*	Trans
09.12.2005 21:30	10.12.2005 16:00	24,0	47,0	19,0	35,9	18,0	18,5	47,6	0,5	50 RU and RIH with +/- 1200 m 9 7/8" liner.	Trans,Weath,Geo
10.12.2005 16:00	10.12.2005 18:30	5,0	47,2	4,0	36,0	3,0	2,5	47,7	1,0	51 MU liner hanger.	Trans,DQ,Hall,Weath,Geo
10.12.2005 18:30	11.12.2005 09:00	20,0	48,0	17,0	36,7	7,0	14,5	48,3	11,0	52 RIH with 9 7/8" liner hanger on 5 1/2" DP to 1474 m, no go. POOH.	DQ,Trans,Geo
11.12.2005 09:00	12.12.2005 02:30	0,0	48,0	18,0	37,5	18,0	17,5	49,1	17,5	53 Layed out damaged linerhanger and 9 7/8" liner jnts.*	Trans,Geo,DQ
12.12.2005 02:30	12.12.2005 16:00	0,0	48,0	6,0	37,7	6,0	13,5	49,6	13,5	54 RIH and clean BOP and install wearbushing, POOH*	Geo,MI,Trans
12.12.2005 16:00	13.12.2005 15:00	0,0	48,0	24,0	38,7	24,0	23,0	50,6	23,0	55 RIH with fishing assembly#1, clean hole POOH.*	Geo,Trans
13.12.2005 15:00	14.12.2005 01:00	0,0	48,0	8,0	39,1	8,0	10,0	51,0	0,5	56 RIH with BOP test tool, test BOP*	Trans,Geo
14.12.2005 01:00	15.12.2005 08:30	0,0	48,0	18,0	39,8	24,0	31,5	52,3	31,5	57 RIH with fishing assembly#2, clean hole POOH.*	Geo,Trans,Hall,MI
15.12.2005 08:30	15.12.2005 09:30	0,0	48,0	2,0	39,9	2,0	1,0	52,3	1,0	58 RU for WL*	Trans,Geo,Schlum
15.12.2005 09:30	15.12.2005 14:00	0,0	48,0	6,0	40,2	6,0	4,5	52,5	4,5	59 Run caliper wear log*	Schlum,Trans,Geo
15.12.2005 14:00	15.12.2005 14:30	0,0	48,0	2,0	40,2	2,0	0,5	52,6	0,5	60 RD WL equipment*	Schlum,Trans,Geo
15.12.2005 14:30	18.12.2005 14:00	0,0	48,0	24,0	41,2	24,0	71,5	55,5	32,0	61 RIH with 12 1/4" junk bit and junk sub. Pick up 5" DP. POOH*	Geo,BHI,BHI,Trans
18.12.2005 14:00	18.12.2005 19:00	0,0	48,0	3,0	41,4	3,0	5,0	55,7	5,0	62 Pull wearbushing.	Trans,Geo
18.12.2005 19:00	19.12.2005 18:00	0,0	48,0	18,0	42,1	18,0	23,0	56,7	23,0	63 RU and RIH with +/- 1200 m 9 7/8" liner.*	Geo,Trans,Weath
19.12.2005 18:00	19.12.2005 21:00	0,0	48,0	3,0	42,2	3,0	3,0	56,8	3,0	64 MU liner hanger*	Geo,DQ,Trans,Weath
19.12.2005 21:00	20.12.2005 09:30	0,0	48,0	15,0	42,9	15,0	12,5	57,3	1,0	65 RIH with 9 7/8" liner hanger on 5 1/2" DP.*	Geo,DQ,Trans,Weath

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
20.12.2005 09:30	20.12.2005 12:00	7,0	48,3	5,0	43,1	4,0	2,5	57,5	0,0	66 Circulate. Drop ball and set hanger slips.	Trans,DQ,Geo,MISWACO
20.12.2005 12:00	20.12.2005 15:30	0,0	48,3	4,0	43,2	6,0	3,5	57,6	0,0	67 Reduce mud weight in well from 1,64 Sg to 1,61 SG	Trans,DQ,Geo,MI
20.12.2005 15:30	20.12.2005 19:00	6,0	48,6	4,0	43,4	3,0	3,5	57,7	0,0	68 Mix and displace cmt.	Trans,Hall,MI,Geo
20.12.2005 19:00	21.12.2005 06:00	14,0	49,2	11,0	43,9	8,0	11,0	58,2	0,0	69 Set packer. POOH. LD RT and cmt head.	DQ,Trans,Geo
21.12.2005 05:59	21.12.2005 06:00	14,0	49,7	11,0	44,3	10,0	0,0	58,2	0,0	70 MU kick joint w/ KC. Pressure test well control equipment.	Trans
21.12.2005 06:00	21.12.2005 17:00	0,0	49,7	9,0	44,7	6,0	11,0	58,7	0,0	71 Repair driller's cabin and chair (Transocean maintenance).	Trans,Geo
21.12.2005 17:00	22.12.2005 08:00	12,0	50,2	8,0	45,0	8,0	15,0	59,3	0,0	72 RIH with Wearbushing and BOP test tool and test BOP/surface system. POOH.	Trans,Geo
22.12.2005 08:00	22.12.2005 20:30	0,0	50,2	6,0	45,3	5,0	12,5	59,8	0,0	73 MU 14" RTTS and pressure test liner/14" csg. LD RTTS.	Trans,Geo,Hall,MI,Ocean
22.12.2005 20:30	23.12.2005 05:30	0,0	50,2	10,0	45,7	10,0	9,0	60,2	0,0	74 Test surface equipment, Kill joint,	MI,Trans,Geo,Ocean,Hall
23.12.2005 05:30	24.12.2005 05:00	35,0	51,7	27,0	46,8	15,0	23,5	61,2	0,0	75 MU & RIH with 8 1/2" BHA (PU +/- 1400 m 5" DP). Need 5" DP to 9 7/8" liner top at all times.	DQ,Trans,Geo,OWS
24.12.2005 05:00	24.12.2005 15:00	20,0	52,5	17,0	47,5	12,0	10,0	61,6	0,0	76 Displace to +/- 2.03 SG while drilling 1/2 shoetrack.	Trans,BHI,Geo,BHI,MI,OWS
24.12.2005 15:00	25.12.2005 03:00	24,0	53,5	18,0	48,3	18,0	12,0	62,1	0,0	77 Perform well control exercises and fingerprinting.	Geo,Trans,OWS
25.12.2005 03:00	25.12.2005 09:30	12,0	54,0	8,0	48,6	7,0	6,5	62,3	0,0	78 Drill shoe and 3 m fm. Circulate and adjust MW.	Trans,BHI,Geo,BHI,MI,MISWACO,OWS
25.12.2005 09:30	25.12.2005 11:00	9,0	54,4	5,0	48,8	6,0	1,5	62,4	0,0	79 Perform FIT. Circulate and adjust MW.	Trans,Geo,MI,OWS
25.12.2005 11:00	27.12.2005 07:30	43,0	56,2	91,0	52,6	60,0	44,5	64,3	0,0	80 Drill 8 1/2" hole to 3989 m (POOH due to low ROP).	Trans,BHI,Geo,BHI,MI,MISWACO,OWS
25.12.2005 11:00	16.02.2006 01:30	1403,0	58,5	1281,0	53,4	978,0	1262,5	52,6	169,5	8 1/2" [NO 15/3-8]	
27.12.2005 07:30	02.01.2006 20:30	30,0	57,5	0,0	52,6	25,0	157,0	70,8	86,5	81 POOH. RIH after bit/MWD change. Change IBOP. Pull LMRP, repair leak, re-run LMRP. Recover HOT.	Trans,Geo,BHI,MI,MISWACO,OWS,BHI
02.01.2006 20:30	05.01.2006 14:00	71,0	60,4	0,0	52,6	50,0	65,5	73,5	0,0	82 Drill 8 1/2" hole from 3989 m to coring point at 4167 m (HPHT mode).	BHI,BHI,Geo,MI,MISWACO,OWS,Trans
05.01.2006 14:00	06.01.2006 22:00	35,0	61,9	27,0	53,7	24,0	32,0	74,9	0,5	83 POOH and rack back 8 1/2" BHA.	Trans,Geo,OWS,BHI,BHI,MI,MISWACO
06.01.2006 22:00	08.01.2006 19:30	70,0	64,8	106,0	58,2	45,0	45,5	76,8	0,0	84 MU 90 ft core BHA and RIH. Cut core #1 (12 m - jammed). POOH.	BHI,Geo,MI,Trans,BHI,MISWACO
08.01.2006 19:30	11.01.2006 01:30	70,0	67,7	50,0	60,2	45,0	54,0	79,0	2,0	85 MU 90 ft JB core BHA and RIH. Cut core#2 (4179 m to 4202 m, 23 m - jammed). POOH.	MI,Trans,Geo,BHI,MISWACO,BHI

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
11.01.2006 01:30	13.01.2006 13:00	50,0	69,8	40,0	61,9	40,0	59,5	81,5	0,0	86 MU 120ft JB core BHA and RIH. Cut core #3(4202 m to 4238,5 m). POOH.	MI,Trans,Geo,BHI,MISWACO,BHI
13.01.2006 13:00	15.01.2006 16:30	60,0	72,3	45,0	63,8	0,0	51,5	83,6	0,0	87 MU 120ft JB core BHA and RIH. Cut core #4(4238,5 m to 4275 m). POOH.	Trans,BHI,BHI,Geo,MI,MISWACO
15.01.2006 16:30	16.01.2006 00:30	8,0	72,6	8,0	64,1	8,0	8,0	84,0	0,0	88 Pressure test BOP.	Trans,Geo,BHI,MI,MISWACO,OWS,BHI
16.01.2006 00:29	16.01.2006 00:30	40,0	74,3	29,0	65,3	0,0	0,0	84,0	0,0	89 Drill 8 1/2" hole from SST1 into SST2 (+/- 4202 m).	Trans,BHI,BHI,Geo,MI,MISWACO,OWS
16.01.2006 00:30	18.01.2006 01:00	71,0	77,2	48,0	67,3	48,0	48,5	86,0	0,0	90 MU 120ft JB core BHA and RIH. Cut core #5(4275 m to 4304 m). POOH.	Trans,Geo,BHI,MI,MISWACO,OWS,BHI
18.01.2006 01:00	21.01.2006 18:30	162,0	84,0	106,0	71,7	70,0	89,5	89,7	1,5	91 Drill 8 1/2" hole from SST2 into SST3 (+/- 4444 m).	Trans,BHI,BHI,Geo,MI,MISWACO,OWS
21.01.2006 18:30	23.01.2006 22:00	85,0	87,5	65,0	74,5	55,0	51,5	91,9	0,0	92 MU 120ft JB core BHA and RIH. Cut core # 6 (16 m - jammed). POOH.	Trans,BHI,BHI,Geo,MI,MISWACO
23.01.2006 22:00	26.01.2006 01:00	92,0	91,4	55,0	76,7	55,0	51,0	94,0	1,5	93 MU 120ft JB core BHA and RIH. Cut core # 7 (11 m - jammed). POOH.	MI,Trans,Geo,BHI,MISWACO,BHI
26.01.2006 01:00	27.01.2006 21:00	44,0	93,2	228,0	86,2	140,0	44,0	95,8	0,0	94 Drill 8 1/2" hole to TD +/- 4590 m.	Trans,MI,BHI,Geo,BHI,MISWACO,OWS
27.01.2006 21:00	29.01.2006 17:00	84,0	96,7	36,0	87,7	36,0	44,0	97,7	1,0	95 POOH and change BIT/Motor RIH	Trans,Geo,BHI,MI,MISWACO,OWS,BHI
29.01.2006 17:00	31.01.2006 03:00	40,0	98,4	30,0	89,0	30,0	34,0	99,1	0,0	96 Circulate hole clean (BU 3 - 4 times) and POOH.TEST BOP Rack back 8 1/2" BHA.	Trans,MI,Geo,MISWACO
31.01.2006 03:00	31.01.2006 06:00	3,0	98,5	2,0	89,1	2,0	3,0	99,2	0,0	97 RU for WL.	Trans,Schlum,Geo
31.01.2006 06:00	31.01.2006 17:30	16,0	99,2	12,0	89,6	15,0	11,5	99,7	1,0	98 WL run 1 : OBMI - 2	Trans,Schlum,Geo
31.01.2006 17:30	01.02.2006 07:00	22,0	100,1	17,0	90,3	12,0	13,5	100,2	0,0	99 WL run 2 : AIT/DSI	Trans,Schlum,Geo
01.02.2006 07:00	01.02.2006 19:30	16,0	100,8	12,0	90,8	12,0	12,5	100,8	1,0	100 WL run 3 : AIPTL/CMR	Trans,Schlum,Geo
01.02.2006 19:30	02.02.2006 17:00	38,0	102,3	29,0	92,0	18,0	21,5	101,7	0,0	101 WL run 4 : MDT pretests (30-50)	Trans,Schlum,Geo
02.02.2006 16:59	02.02.2006 17:00	0,0	102,3	35,0	93,5	0,0	0,0	101,7	0,0	102 Wipertrip (not performed)	Trans,Geo,Schlum
02.02.2006 17:00	04.02.2006 20:00	42,0	104,1	35,0	94,9	24,0	51,0	103,8	7,0	103 WL run 5a and b : VSP zero offset+walkaway	Trans,Geo,Schlum,Read
04.02.2006 20:00	06.02.2006 15:00	42,0	105,8	32,0	96,2	34,0	43,0	105,6	0,0	104 Wiper trip BOP function test	Geo,Trans,BHI,MI
06.02.2006 15:00	08.02.2006 16:00	25,0	106,9	19,0	97,0	15,0	49,0	107,6	27,5	105 WL run 6a : MDT samples	Trans,Schlum,Geo
08.02.2006 16:00	10.02.2006 11:00	26,0	108,0	19,0	97,8	15,0	43,0	109,4	14,0	106 WL run 6b : MDT samples	Trans,Schlum,Geo
10.02.2006 11:00	12.02.2006 03:00	42,0	109,7	35,0	99,3	35,0	40,0	111,1	1,5	107 Wipertrip	Trans,Geo,MI
12.02.2006 03:00	13.02.2006 12:30	42,0	111,5	32,0	100,6	24,0	33,5	112,5	5,5	108 WL run 6c : MDT samples incl. MiniDST	Trans,Schlum,Geo
13.02.2006 12:30	13.02.2006 20:30	8,0	111,8	6,0	100,9	6,0	8,0	112,8	0,0	109 BOP test	Geo,Schlum,Trans

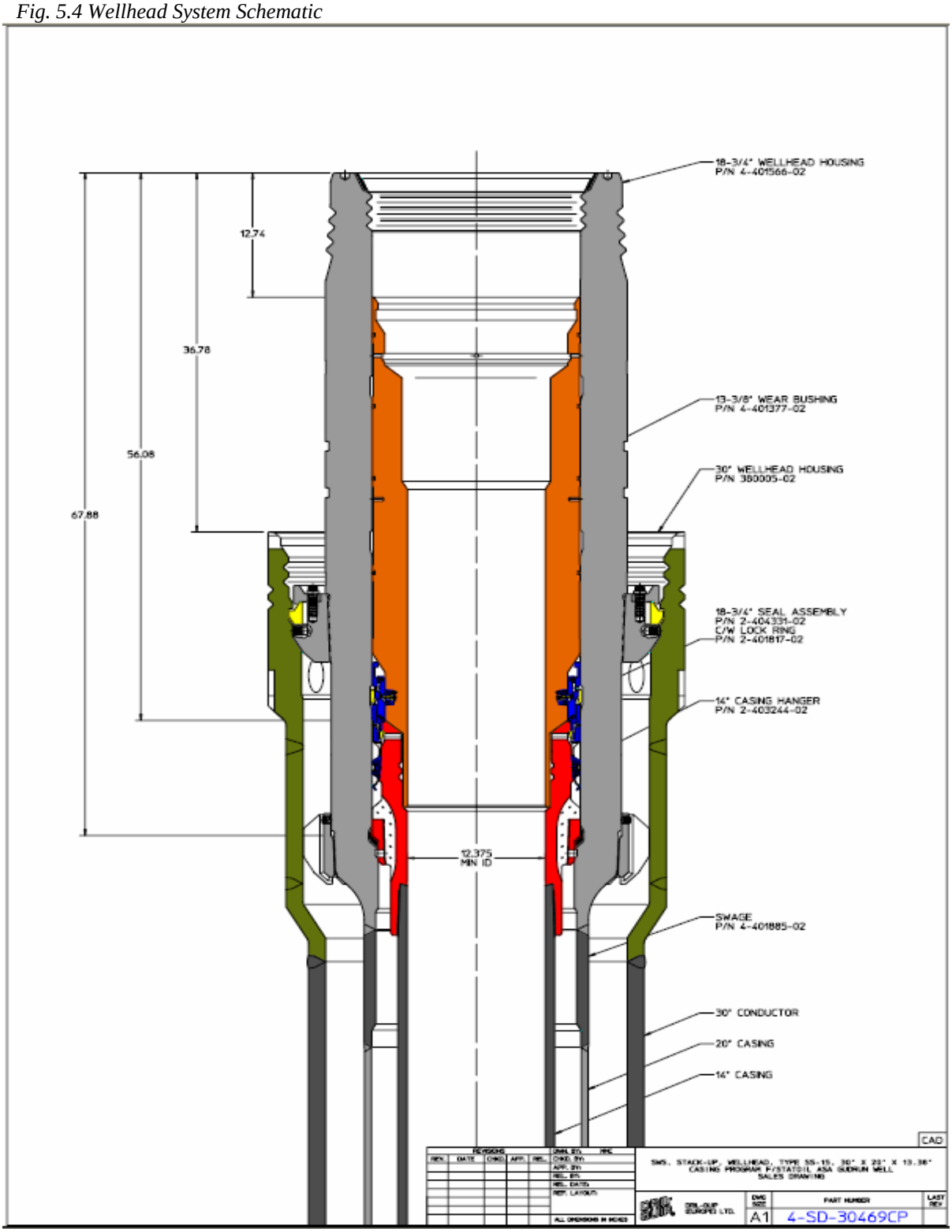
Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
13.02.2006 20:30	14.02.2006 21:30	0,0	111,8	12,0	101,4	12,0	25,0	113,8	12,5	110 WL run 6d: MDT samples	Geo,Schlum,Trans
14.02.2006 21:30	15.02.2006 08:00	0,0	111,8	6,0	101,6	6,0	10,5	114,3	6,5	111 WL run 7 : CMR	Trans,Schlum,Geo
15.02.2006 08:00	16.02.2006 00:30	23,0	112,7	12,0	102,1	15,0	16,5	115,0	0,0	112 WL run 8: MSCT	Schlum,Trans,Geo
16.02.2006 00:30	16.02.2006 01:30	3,0	112,9	2,0	102,2	2,0	1,0	115,0	0,0	113 RD WL equipment.	Trans,Schlum,Geo
16.02.2006 01:30	30.03.2006 20:00	1320,0	55,0	832,0	34,7	809,0	1026,5	42,8	49,0	DST [NO 15/3-8]	
16.02.2006 01:30	16.02.2006 10:00	18,0	113,6	5,0	102,4	5,0	8,5	115,4	1,5	114 Test slange + IBOP/FOSV.Pick up +/-500 m 3 1/2" DP.	Trans,Geo
16.02.2006 10:00	17.02.2006 07:00	44,0	115,5	20,0	103,2	24,0	21,0	116,2	0,0	115 RIH with 3 1/2" open ended DP to TD. Circulate B/U.	Trans,Geo,MI
17.02.2006 07:00	17.02.2006 10:30	15,0	116,1	10,0	103,7	10,0	3,5	116,4	0,0	116 Set cement plug from TD to 4300 m. (optimized pump and pull)	Geo,Hall,MI,Trans
17.02.2006 10:30	18.02.2006 00:00	24,0	117,1	16,0	104,3	16,0	13,5	117,0	0,0	117 Circulate BU from 4250 m. POOH	Geo,MI,Trans
18.02.2006 00:00	19.02.2006 10:30	42,0	118,8	35,0	105,8	36,0	34,5	118,4	1,5	118 RIH with dressing assembly. dress cmt. plug down to 4300 m. POOH	Geo,MI,Trans
19.02.2006 10:30	19.02.2006 12:00	9,0	119,2	5,0	106,0	5,0	1,5	118,5	0,0	119 PU & MU Weatherford cement stand. Rack same.	MI,Trans,Geo,Weath,Weath
19.02.2006 12:00	19.02.2006 23:00	30,0	120,5	12,0	106,5	12,0	11,0	118,9	0,0	120 RU and RIH with +/- 500 m 7" liner.	MI,Trans,Geo,Weath,Weath
19.02.2006 23:00	20.02.2006 11:30	32,0	121,8	16,0	107,2	18,0	12,5	119,4	0,0	121 RIH with 7" liner hanger on 5" and 5 1/2" DP to 3810 m.	MI,Weath,Weath,Geo,Trans
20.02.2006 11:30	20.02.2006 18:00	7,0	122,1	4,0	107,3	4,0	6,5	119,7	2,5	122 Circulate. Drop ball and set hanger slips.	MI,Weath,Geo,Trans
20.02.2006 18:00	20.02.2006 20:00	7,0	122,4	4,0	107,5	4,0	2,0	119,8	0,0	123 Mix and displace cmt.	MI,Hall,Weath,Geo,Trans
20.02.2006 20:00	21.02.2006 13:00	20,0	123,2	15,0	108,1	15,0	17,0	120,5	1,0	124 Set linerpacker. POOH and function test BOP. LD RT and cmt head.	MI,Geo,Trans
21.02.2006 13:00	21.02.2006 21:00	12,0	123,7	6,0	108,4	6,0	8,0	120,8	0,0	125 R/U and run WL run: CBL/GR/CCL VDL. R/D WL.	Schlum,Trans,Geo,MI
21.02.2006 21:00	22.02.2006 00:30	2,0	123,8	1,0	108,4	1,0	3,5	121,0	3,5	126 Rep leak on DDM, meanwhile pressure test well to 170 bar against shear ram.	MI,Geo,Trans
22.02.2006 00:30	22.02.2006 12:00	20,0	124,6	12,0	108,9	12,0	11,5	121,5	1,0	127 Run #1: RIH with scraper and 13 3/8" RTTS to 2600 m.	MI,SPS,Hall,Geo,Trans
22.02.2006 12:00	23.02.2006 09:30	20,0	125,5	12,0	109,4	12,0	21,5	122,3	0,0	128 Perform inflow test of 9 7/8" linertop. (260 bar u-tube pressure). POOH.	Hall,SPS,MI,Trans,Geo
23.02.2006 09:30	23.02.2006 23:30	26,0	126,5	15,0	110,0	15,0	14,0	122,9	0,0	129 Run #2: RIH with scraper, Well Commissioner.	MI,SPS,Geo,Trans
23.02.2006 23:30	24.02.2006 07:30	12,0	127,0	6,0	110,3	6,0	8,0	123,3	0,0	130 Clean out and inflow test 7" liner. (374 bar u-tube pressure)	Trans,Geo,MI,Hall,SPS
24.02.2006 07:30	26.02.2006 03:00	40,0	128,7	30,0	111,5	35,0	43,5	125,1	1,5	131 Displace well to seawater. POOH. L/D excess drillpipe.	Hall,SPS,MI,Trans,Geo

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
26.02.2006 02:59	26.02.2006 03:00	2,0	128,8	1,0	111,6	0,0	0,0	125,1	0,0	132 Pressure test well (14" x 9 7/8" x 7") to 610 bar with SW.	Trans,Geo
26.02.2006 03:00	26.02.2006 11:30	10,0	129,2	6,0	111,8	8,0	8,5	125,4	0,0	133 Perform BOP test. Jet BOP/ WH.	MI,Geo,PWS,Trans
26.02.2006 11:30	26.02.2006 19:00	11,0	129,7	7,0	112,1	7,0	7,5	125,7	0,0	134 Run and set production packer.	MI,Geo,PWS,Trans,Hall
26.02.2006 19:00	27.02.2006 02:30	15,0	130,3	10,0	112,5	6,0	7,5	126,1	0,0	135 Perform dummy run with fluted hanger. P/U 4 1/2" land. string.	Trans,PWS,Geo,Hall
27.02.2006 02:30	27.02.2006 09:30		130,3	7,0	112,8	8,0	7,0	126,3	0,0	136 Hook up kill and flow hoses in derrick.	Trans,Geo,PWS,Hall
27.02.2006 09:30	02.03.2006 01:00	90,0	134,0	56,0	115,2	56,0	63,5	129,0	4,5	137 R/U and run test string.	Hall,Schlum,Weath,MI,Geo, PWS,Trans,Hall
02.03.2006 01:00	03.03.2006 12:00	20,0	134,9	4,0	115,3	10,0	35,0	130,5	11,0	138 M/U SST and L/D. Run 3 lnd jts. Run STT. RU hoses, test surf syst.	MI,Geo,PWS,Trans,Hall,Hal l
03.03.2006 12:00	03.03.2006 13:30	6,0	135,1	5,0	115,5	3,0	1,5	130,5	0,0	139 Perforate well for DST #1.	MI,Geo,PWS,Trans,Hall
03.03.2006 13:30	03.03.2006 16:00	15,0	135,7	8,0	115,9	8,0	2,5	130,6	0,0	140 Initial flow and build up.	MI,Geo,PWS,Trans,Hall
03.03.2006 16:00	08.03.2006 20:00	220,0	144,9	150,0	122,1	123,0	124,0	135,8	0,0	141 Main flow and build up including sampling.	MI,Geo,PWS,Trans,Hall
08.03.2006 20:00	12.03.2006 06:00	26,0	146,0	15,0	122,8	15,0	82,0	139,2	0,0	142 Kill well and minifrac.	MI,Geo,PWS,Trans,Hall
12.03.2006 06:00	14.03.2006 03:30	50,0	148,1	30,0	124,0	35,0	45,5	141,1	0,0	143 POOH with test string.	MI,Geo,PWS,Trans,Hall
14.03.2006 03:30	14.03.2006 10:30	9,0	148,5	6,0	124,3	6,0	7,0	141,4	0,0	144 Set bridge plug on wireline.	MI,Geo,PWS,Trans,Hall
14.03.2006 10:30	19.03.2006 07:30	51,0	150,6	34,0	125,7	39,0	117,0	146,3	14,0	145 RIH with EZSV on tubing to 1500 m, test BOP. Continue RIH and set EZSV plug at 4108 m. Pressure test, inflow test. Displace to seawater. POOH	MI,Geo,PWS,Trans,Hall
19.03.2006 07:30	19.03.2006 15:00	11,0	151,0	7,0	126,0	7,0	7,5	146,6	0,0	146 Run and set production packer.	MI,Geo,PWS,Trans,Hall
19.03.2006 15:00	22.03.2006 15:30	100,0	155,2	48,0	128,0	48,0	72,5	149,6	5,0	147 R/U and run test string.	MI,Geo,PWS,Trans,Hall
22.03.2006 15:30	22.03.2006 16:30	6,0	155,5	3,0	128,1	3,0	1,0	149,6	0,0	148 Perforate well for DST #2.	MI,Geo,PWS,Trans,Hall
22.03.2006 16:30	22.03.2006 20:00	12,0	156,0	8,0	128,4	3,0	3,5	149,8	0,0	149 Initiell flow and build up.	MI,Geo,PWS,Trans,Hall
22.03.2006 20:00	27.03.2006 22:00	220,0	165,1	150,0	134,7	125,0	122,0	154,9	0,0	150 Main flow and build up including sampling.	MI,Geo,PWS,Trans,Hall
27.03.2006 22:00	28.03.2006 23:00	24,0	166,1	15,0	135,3	15,0	25,0	155,9	0,0	151 Kill well and minifrac.	MI,Geo,PWS,Trans,Hall
28.03.2006 23:00	30.03.2006 06:30	42,0	167,9	30,0	136,5	40,0	31,5	157,2	0,0	152 POOH with test string.	MI,Geo,PWS,Trans,Hall
30.03.2006 06:30	30.03.2006 20:00		167,9	8,0	136,9	8,0	13,5	157,8	2,0	153 Perform BOP test, meanwhile installed IR torque wrench assy.	Trans,Geo,Schlum
30.03.2006 20:00	09.04.2006 09:30	252,0	10,5	121,0	5,0	162,0	229,5	9,6	6,0	PERM P&A [NO 15/3-8]	
30.03.2006 20:00	31.03.2006 02:00	9,0	168,2	6,0	137,1	6,0	6,0	158,0	0,0	154 Set EZSV on WL above upper perforations (DST#2). Pressure test.	Trans,Schlum,Geo,MI
31.03.2006 02:00	31.03.2006 08:00	9,0	168,6	5,0	137,3	6,0	6,0	158,3	0,0	155 RIH with w/ perf. guns. on WL. Perforate below 9 7/8" shoe.	MI,Trans,Geo,Schlum

Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
31.03.2006 08:00	01.04.2006 01:30	16,0	169,3	3,0	137,5	12,0	17,5	159,0	1,0	157 RIH with 5 1/2" DP and tubing to perforate depth and perform XLOT.	Trans,Schlum,Geo,MI
01.04.2006 01:30	01.04.2006 05:00	8,0	169,6	3,0	137,6	3,0	3,5	159,2	0,0	158 Place cmt plug above EZSV and 50 m into 9 7/8" liner.	Trans,Hall,Geo,MI
01.04.2006 05:00	02.04.2006 04:30	12,0	170,1	6,0	137,8	12,0	23,5	160,1	0,0	159 POOH. LD excess tubing.	Trans,Geo,MI
02.04.2006 04:30	02.04.2006 17:30	15,0	170,7	3,0	138,0	8,0	13,0	160,7	0,0	160 RIH with 14" EZSV on 5 1/2" DP and tubing. Pressure test cement plug.	Trans,Hall,MI,Geo
02.04.2006 17:30	02.04.2006 18:30	4,0	170,9	3,0	138,1	3,0	1,0	160,7	0,0	161 Set 14" EZSV at 2630 m and pressure test.	Trans,Geo
02.04.2006 18:30	04.04.2006 18:30	10,0	171,3	7,0	138,4	20,0	48,0	162,7	3,0	162 Boat delayed 13 hrs. Displace well to 1.40 sg WBM. Place a 100 m cmt. plug above 14" EZSV. POOH and LD all the tubing.	Trans,Geo,Hall
04.04.2006 18:30	05.04.2006 00:30	10,0	171,7	6,0	138,6	6,0	6,0	163,0	0,0	163 RIH with 14" csg. cutting assembly. Cut 14" csg. at 480 m. POOH	Trans,MI,Geo
05.04.2006 00:30	05.04.2006 04:00	7,0	172,0	4,0	138,8	4,0	3,5	163,1	0,0	164 RIH and retrieve wear bushing. POOH.	Trans,Geo
05.04.2006 04:00	05.04.2006 08:00	7,0	172,3	4,0	139,0	4,0	4,0	163,3	0,0	165 RIH and retrieve seal assembly with lock ring. POOH.	Trans,Geo
05.04.2006 08:00	05.04.2006 21:00	20,0	173,2	15,0	139,6	15,0	13,0	163,8	2,0	166 MU spear and RIH. Engage spear and POOH and LD 14" csg jnts.	Trans,Geo,Weath
05.04.2006 21:00	06.04.2006 06:00	6,0	173,4	4,0	139,8	4,0	9,0	164,2	0,0	167 RIH with 5 1/2" open ended DP to 535 m. Drop CST. Place a cmt. plug from 530 m to 380 m. POOH	Trans,Geo
06.04.2006 06:00	06.04.2006 18:00	10,0	173,8	8,0	140,1	10,0	12,0	164,7	0,0	168 WOC. LD pipe. Pressure test.	Trans,Geo
06.04.2006 18:00	07.04.2006 11:00	12,0	174,3	6,0	140,3	6,0	17,0	165,4	0,0	169 RIH and displace well to SW. Place a surface cmt plug from 380 m to 180 m. POOH. L/D 5 1/2" DP	Trans,Geo
07.04.2006 11:00	08.04.2006 11:30	23,0	175,3	18,0	141,1	22,0	24,5	166,4	0,0	170 Pull riser/BOP.	Trans,DQ,Ocean,Geo
08.04.2006 11:30	09.04.2006 00:00	20,0	176,1	12,0	141,6	12,0	12,5	167,0	0,0	171 MU Most tool and cut 20" x 30" WH. Retrieve WH.	DQ,Trans,Ocean,Geo,Weath
09.04.2006 00:00	09.04.2006 02:30	4,0	176,3	3,0	141,7	4,0	2,5	167,1	0,0	172 L/D WH and cutting assembly	Trans,Geo,Weath
09.04.2006 02:30	09.04.2006 09:30	50,0	178,4	5,0	141,9	5,0	7,0	167,3	0,0	173 LD remaining DP, DC, hang-off tool.	Trans,Geo
09.04.2006 09:30	11.04.2006 02:30	30,0	1,2	23,0	1,0	36,0	41,0	1,7	0,0	MOVE [NO 15/3-8]	
09.04.2006 09:30	11.04.2006 02:00	30,0	179,6	23,0	142,9	36,0	40,5	169,0	0,0	174 Retrieve anchors.	Trans,Geo
11.04.2006 02:00	11.04.2006 02:30	0,0	179,6	0,0	142,9	0,0	0,5	169,1	0,0	175 End of operation	Trans,Geo

5.9.5 Wellhead system

Fig. 5.4 Wellhead System Schematic



5.9.6 Drilling fluids

Figure 5.5 Summary of Drilling fluids program

DRILLING FLUIDS PROGRAMME

Well: 15/3-8
Field: PL025, Gudrun
Rig: Transocean Leader

HOLE SIZE	HOLE TVD MD	CASING SIZE	CASING TVD MD	MUD TYPE	MW [SG]	LGS [%/cm3]	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	O/W ratio	PV [mPa]	API FL [ml]	HTHP FL [ml]	MBT [kg/m3]	pH	Kcl [kg/m3]	Glyc. [%]	ES	Funnel Visc. [s]	Usage Volume [m3]
36"	190 190	30"	190 190	GW/ Bentonite Sweeps	1.03 - 1.35											8 - 9				> 150	255
COMMENTS, Ref. M-I, Operational Procedures - Rev. 7 - 26.07.04: This section will be drilled using seawater and Bentonite hivis sweeps. 200 m³ of 1.60 s.g. kill mud will be prepared for the top hole sections. At least 60 m³ must be ready prior to start drilling 36" section. Mix hivis bentonite mud according to programmed specifications. Pump 8 - 10 m3 hivis pills every 15 m. At TD the hole will be displaced to 1.35 sg mud by pumping 1.3 - 1.5 times the hole volume. Add 3 - 5 kg/m3 of CMC EHV to the displacement fluid in order to provide extra fluid loss control. If a wipertrip is performed, a 30 m3 hivis bentonite pill will be swept around the hole, before the hole is displaced to 1.35 sg mud. * As a contingency in case bulk Bentonite can not be used, or time dont allow to mix Bentonite mud, 14-16 kg/m3 CMC EHV is a sacked viscosifying alternative.																					
26"	1000 1000	20"	1000 1000	GW/ Bentonite Sweeps	1.03 - 1.30											8 - 9				> 150	1041
COMMENTS, Ref. M-I, Operational Procedures - Rev. 7 - 26.07.04: This section will be drilled using seawater and Bentonite hivis sweeps. Before drilling the cement in the 30" conductor, have available 200 m³ of 1.60 sg kill mud. Mix hivis bentonite mud according to programmed specifications. Pump 8 - 10 m3 hivis pills every 15 m. At TD the hole will be displaced to 1.30 sg mud by pumping 1.3 - 1.5 times the hole volume. At this stage, the kill mud will be diluted back for this purpose. * Add 3 - 5 kg/m3 of CMC EHV to the displacement fluid in order to provide extra fluid loss control. If a wipertrip is performed, a 30 m3 hivis bentonite pill will be swept around the hole, before the hole is displaced to 1.30 sg mud. * As a contingency in case bulk Bentonite can not be used, or time dont allow to mix Bentonite mud, 14-16 kg/m3 CMC EHV is a sacked viscosifying alternative.																					
17 1/2"	2810 2810	14"	2800 2800	Glydrill	1.25 - 1.36	< 180	> 4	< 20	10 - 15				2 - 4		< 60	7.5 - 8.5	120 - 140	3.5 - 5			1132
COMMENTS: Ref. MI Operational Procedures - Rev. 7 - 26.07.04: The Glydrill/OWBM will be used on this section. Drill out cement using seawater fine bentonite sweeps from previous section and displace to Glydrill prior to drilling out the shoe. Pretreat the surface volume with Sodium Bicarbonate and treat the hivis with Citric Acid and Sodium Bicarbonate to counteract cement contamination. KCl concentrations will initially be 120-130 kg/m³ and Glycol content 3.5 - 4 %. Increase KCl to upper part of specification and Glycol content to +- 4.5 % before drilling into Balder formation. Ensure good dilution rate while drilling to prevent stock build up in the system. Permit additions should be made on KCl content to counteract depletion from cuttings drilled. Rheology and API fluid loss will be kept in the mid range of the programmed specs. during drilling. Optimize the solids equipment at all times for the same purpose. The mud weight in this section will be increased in steps from 1.25 sg to max 1.36 sg before 1500m, and maintained at this value until section TD. If losses occour, pump LCM material according to separate contingency plan. LCM material on the rig will be according to Statoil contractor and separate contingency procedure. NOTE : LGS concentration, Glycol content and weight and volume of sings will be reported on the DBR.																					

Well:	15/3-8
Field:	PL025, Gudrun
Rig:	Transocean Leader

5.9.7 Cementing data

Figure 5.6 Summary of Cementing data

CEMENT PROGRAM

Well: 15/3-8
Field: PL025, Gudrun
Rig: Transocean Leader

HOLE SIZE	HOLE TVD	HOLE MD	CASING SHOE SIZE	CASING SHOE TVD	CASING SHOE MD	TOC TVD	TOC MD	VOLUME EXCESS	CEMENT SLURRY DESIGN: Components	Lead (sx/100kg)	Tail (sx/100kg)	Density (SG)	Yield (l/sx/100kg)	Stat./Circ. Temp (°C)	Thickening time (hrs to 30 Bc)	AR Free Water (%)	API Fluid loss (cc/30min)	24 hrs C.S. (psi)	SPACER	DISPLACEMENT Fluid and Rates
36"	178 178	178 178	30"	178 178	Seabed Seabed			±40 m3 incl 300 % OH excess	Slurry 10 - DWL SP X-lite Cement CaCl2 liquid NF-6 Sea water		4,50 0,10 53,84	1,52	106,06	5-7	3-4	n/a	n/a	±500	Minimum 30 m3 Sea Water	Sea water 1000-5000 l/m
26"	1010 1010	1010 1010	20"	1000 1000	Seabed Seabed			L:±166 m3 incl 50% excess T:±20 m3	L: Slurry 5 - STL40 T: Slurry 24 B-MPT14 Norcem G+0,1% BWOC EZ-FLO Economite HR-4L Halad-99LE+ NF-6 Sea water Fresh Water	3,30 2,40 - 0,10 93,37	- 1,00 0,50 0,10 - 42,49	L:1,56 T:1,92	130,13 75,15	32/24 API	L:>7 T:±4	L:<1,4 T:<1,4	n/a	L:±500 T:±1500	2 casing volumes recommended Sea Water	Sea water 3000-3500 l/m
17 1/2"	2810 2810	2810 2810	14"	2800 2800	2600 2600			±19 m3 incl 50 % OH excess	Slurry 25 B-MPT05 Norcem G + 0,1% BWOC EZ-FLO HR-4L Halad-99LE+ NF-6 Fresh Water		1,50 1,00 0,10 41,57	1,92	75,22	91/64 API	4-5	<0,5	n/a	4-5	20 m3 Spacer t3	WBM 2500-5000 l/m
12 1/4"	3830 3830	3830 3830	9 7/8"	3820 3820	2700 2700			± 39 m3 incl 30% OH excess	Slurry 38 - GTTTZ Norcem G + 35% BWOC SSA-1 Microsilica Liquid FDP-C701L SCR-100L Halad-600LE+ NF-6 Fresh water		12,00 2,00 5,70 10,00 0,10 33,53	1,90	107,39	124/93 API	6-8	0	<50	±2000	20 m3 Spacer 4T	OBM 2000 l/m
8 1/2"	4805 4805	4805 4805	7"	4805 4805	3720 3720			±19 m3 calpertoolume incl 5 m3 excess	Slurry 19C - HTG15 Norcem G + 35% BWOC SSA-1 SA-541 Microsilica Microsilica Liquid FDP-C701L Halad-413L SCR-500L NF-6 Fresh water		15,00 2,00 8,00 6,00 0,10 28,86	2,07	110,66	157/120 API	6-8	0	<50	±2000	20 m3 Spacer 4T hole tender and drill loss additive if necessary	OBM ±800 l/m

Temperatures for slurry design will be dictated by WellCat

5.9.8 Bottom hole assemblies

Table 5.2 Bottom hole assemblies

WELLBORE: NO 15/3-8
BHA NO: 1
BHA KIND:
DESCRIPTION: 36" Tophole BHA (run #1).
BHA NAME: 1

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,40	0,40
SUB	12,000	3,000	2,01	2,41
HO TWO STAGE 26" X 36"	36,000	3,000	3,75	6,16
BIT SUB	9,500	3,000	1,28	7,44
ANDERDRIFT	9,500	3,000	3,06	10,50
DRILL COLLAR	9,500	3,000	9,26	19,76
DRILL COLLAR	9,500	3,000	8,96	28,72
DRILL COLLAR	9,500	3,250	9,33	38,05
XO SUB	9,500	3,000	1,23	39,28
DRILL COLLAR	8,000	3,000	8,80	48,08
DRILL COLLAR	8,000	2,875	9,12	57,20
DRILL COLLAR	8,000	2,930	9,16	66,36
XO SUB	8,000	3,000	1,36	67,72
H W DRILL PIPE	5,500	4,670	27,04	94,76

BHA NO: 2
BHA KIND:
DESCRIPTION: 36" Tophole BHA (run #2).
BHA NAME: 2

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,44	0,44
SUB	12,000	3,000	0,83	1,27
HO TWO STAGE 26" X 36"	36,000	3,000	3,84	5,11
BIT SUB	9,500	3,000	0,90	6,01
ANDERDRIFT	9,500	3,000	3,03	9,04
DRILL COLLAR	9,500	3,000	9,26	18,30
DRILL COLLAR	9,500	3,000	8,96	27,26
DRILL COLLAR	9,500	3,250	9,33	36,59
XO SUB	9,500	3,000	1,23	37,82
DRILL COLLAR	8,000	3,000	8,80	46,62
DRILL COLLAR	8,000	2,875	9,12	55,74
DRILL COLLAR	8,000	2,930	9,16	64,90
XO SUB	8,000	3,000	1,36	66,26
H W DRILL PIPE	5,500	4,670	27,04	93,30

BHA NO: 3
BHA KIND:
DESCRIPTION: 26" BHA with motor.

BHA NAME: 3

String component	OD in	ID in	Length m	Acc length m
BIT	26,000	3,000	0,65	0,65
MOTOR	12,250	3,000	10,40	11,05
STAB STRING	25,750	2,810	2,30	13,35
X-OVER	8,000	3,000	0,78	14,13
ON TRAK	8,250	2,750	5,78	19,91
BCPM	8,250	1,000	3,57	23,48
SAVER SUB	8,250	3,000	0,78	24,26
STAB STRING	24,750	2,810	2,33	26,59
DRILL COLLAR	8,000	2,875	8,97	35,56
DRILL COLLAR	8,000	2,875	9,08	44,64
DRILL COLLAR	8,000	2,875	8,94	53,58
DRILL COLLAR	8,000	2,875	9,28	62,86
DRILL COLLAR	8,000	2,875	9,07	71,93
DRILL COLLAR	8,000	2,875	9,00	80,93
DRILL COLLAR	8,000	2,875	9,15	90,08
DRILL COLLAR	8,000	2,930	8,70	98,78
JAR	8,062	3,000	9,74	108,52
DRILL COLLAR	8,000	2,875	8,80	117,32
DRILL COLLAR	8,000	2,875	9,12	126,44
DRILL COLLAR	8,000	2,930	9,16	135,60
XO SUB	8,000	3,000	1,36	136,96
H W DRILL PIPE	5,500	4,670	81,19	218,15

BHA NO: 4
BHA KIND:
DESCRIPTION: 17 1/2" BHA with motor.
BHA NAME: 4

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,46	0,46
MOTOR, EXTREME	12,750		10,30	10,76
STAB STRING	17,375	3,000	2,31	13,07
X-OVER	9,500	3,000	0,64	13,71
STOP SUB,	8,250	3,000	0,78	14,49
ON TRAK	8,250	2,750	5,78	20,27
BCPM	8,250	1,000	3,57	23,84
STOP SUB,	8,250	3,000	0,78	24,62
XO SUB	9,500	3,000	0,76	25,38
STAB STRING	17,375	3,000	2,30	27,68
XO SUB	9,500	3,000	1,03	28,71
DRILL COLLAR	8,000	2,875	8,97	37,68
DRILL COLLAR	8,000	2,875	9,08	46,76
DRILL COLLAR	8,000	2,875	8,94	55,70
DRILL COLLAR	8,000	2,875	9,28	64,98
DRILL COLLAR	8,000	2,875	9,07	74,05
DRILL COLLAR	8,000	2,875	9,00	83,05
DRILL COLLAR	8,000	2,875	9,15	92,20
DRILL COLLAR	8,000	2,930	8,70	100,90
JAR	8,062	3,000	9,74	110,64
DRILL COLLAR	8,000	2,875	8,80	119,44
DRILL COLLAR	8,000	2,875	9,12	128,56
DRILL COLLAR	8,000	2,930	9,16	137,72

String component	OD in	ID in	Length m	Acc length m
XO SUB	8,000	3,000	1,36	139,08
H W DRILL PIPE	5,500	4,670	81,19	220,27

BHA NO: 5
BHA KIND:
DESCRIPTION: 17 1/2" BHA with motor.
BHA NAME: 5

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,48	0,48
MOTOR, EXTREME	12,750		10,30	10,78
STAB STRING	17,375	3,000	2,30	13,08
X-OVER	9,500	3,000	0,64	13,72
STOP SUB,	8,250	3,000	0,78	14,50
ON TRAK	8,250	2,750	5,78	20,28
BCPM	8,250	1,000	3,58	23,86
STOP SUB,	8,250	3,000	0,78	24,64
XO SUB	9,500	3,000	0,76	25,40
STAB STRING	17,375	3,000	2,30	27,70
XO SUB	9,500	3,000	1,03	28,73
DRILL COLLAR	8,000	2,875	72,19	100,92
JAR	8,062	3,000	9,74	110,66
DRILL COLLAR	8,000	2,875	27,08	137,74
XO SUB	8,000	3,000	1,36	139,10

BHA NO: 6
BHA KIND:
DESCRIPTION: 17 1/2" BHA with motor.
BHA NAME: 6

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,46	0,46
MOTOR, EXTREME	12,750		10,91	11,37
STAB STRING	17,375	3,000	2,30	13,67
X-OVER	9,500	3,000	0,64	14,31
STOP SUB,	8,250	3,000	0,78	15,09
ON TRAK	8,250	2,750	5,78	20,87
BCPM	8,250	1,000	3,58	24,45
STOP SUB,	8,250	3,000	0,78	25,23
XO SUB	9,500	3,000	0,76	25,99
STAB STRING	17,375	3,000	2,30	28,29
XO SUB	9,500	3,000	1,03	29,32
DRILL COLLAR	8,000	2,875	72,19	101,51
JAR	8,062	3,000	9,74	111,25
DRILL COLLAR	8,000	2,875	27,08	138,33
XO SUB	8,000	3,000	1,36	139,69
H W DRILL PIPE	5,500	4,670	81,19	220,88

BHA NO: 7
BHA KIND:

DESCRIPTION: 17 1/2" BHA with motor.
BHA NAME: 7

String component	OD in	ID in	Length m	Acc length m
BIT	17,500	3,000	0,46	0,46
MOTOR, EXTREME	12,750		10,91	11,37
STAB STRING	17,375	3,000	2,30	13,67
X-OVER	9,500	3,000	0,64	14,31
STOP SUB,	8,250	3,000	0,78	15,09
ON TRAK	8,250	2,750	5,77	20,86
BCPM	8,250	1,000	3,58	24,44
STOP SUB,	8,250	3,000	0,78	25,22
XO SUB	9,500	3,000	0,76	25,98
STAB STRING	17,375	3,000	2,30	28,28
XO SUB	9,500	3,000	1,03	29,31
DRILL COLLAR	8,000	2,875	72,19	101,50
JAR	8,062	3,000	9,74	111,24
DRILL COLLAR	8,000	2,875	27,08	138,32
XO SUB	8,000	3,000	1,36	139,68
H W DRILL PIPE	5,500	4,670	81,19	220,87

BHA NO: 8
BHA KIND:
DESCRIPTION: 17 1/2" BHA with motor.
BHA NAME: 8

String component	OD in	ID in	Length m	Acc length m
BIT	17,500		0,34	0,34
MOTOR, EXTREME	12,750		10,91	11,25
STAB STRING	17,375	3,000	2,30	13,55
X-OVER	9,500	3,000	0,64	14,19
STOP SUB,	8,250	3,000	0,78	14,97
ON TRAK	8,250	2,750	5,77	20,74
BCPM	8,250	1,000	3,58	24,32
STOP SUB,	8,250	3,000	0,78	25,10
XO SUB	9,500	3,000	0,76	25,86
STAB STRING	17,375	3,000	2,30	28,16
XO SUB	9,500	3,000	1,03	29,19
DRILL COLLAR	8,000	2,875	72,19	101,38
JAR	8,062	3,000	9,74	111,12
DRILL COLLAR	8,000	2,875	27,08	138,20
XO SUB	8,000	3,000	1,36	139,56
H W DRILL PIPE	5,500	4,670	81,19	220,75

BHA NO: 9
BHA KIND:
DESCRIPTION: 12 1/4" BHA with Vertitrac motor
BHA NAME: 9

String component	OD in	ID in	Length m	Acc length m
12-1/4" BIT	12,250		0,37	0,37
10-1/8" VERTITRAK	10,125	7,500	10,12	10,49
X-OVER	9,500	3,060	0,70	11,19
STAB STRING	12,125	2,813	1,85	13,04
STOP SUB	8,250	3,000	0,81	13,85
ON TRAK	8,250	2,750	5,77	19,62
MWD, STAB	11,750	3,000	1,85	21,47
BCPM	8,250	2,750	3,55	25,02
ORD	12,125	2,750	2,68	27,70
X-OVER	8,250	3,000	0,78	28,48
APX	8,250	3,000	10,00	38,48
STOP SUB	8,250	3,750	0,50	38,98
FLOAT SUB,	7,750	2,813	0,56	39,54
STAB STRING	12,125	2,813	2,46	42,00
FLOAT SUB,	7,750	2,813	0,78	42,78
DRILL COLLAR	8,000	2,813	63,25	106,03
JAR	8,250	3,000	9,35	115,38
DRILL COLLAR	8,000	2,813	36,02	151,40
X-OVER	8,000	3,000	1,36	152,76
HW DRILL PIPE	5,500	4,670	81,19	233,95

BHA NO: 10
BHA KIND:
DESCRIPTION: 12 1/4" BHA with Vertitrac motor
BHA NAME: 10

String component	OD in	ID in	Length m	Acc length m
12-1/4" BIT	12,250		0,40	0,40
10-1/8" VERTITRAK	10,125	7,500	10,12	10,52
X-OVER	9,500	3,060	0,70	11,22
STAB STRING	12,062	2,813	1,85	13,07
STOP SUB	8,250	3,000	0,81	13,88
ON TRAK	8,250	2,750	5,78	19,66
MWD, STAB	11,750	3,000	1,85	21,51
BCPM	8,250	2,750	3,55	25,06
X-OVER	8,250	3,000	0,78	25,84
APX	8,250	3,000	10,00	35,84
STOP SUB	8,250	3,750	0,50	36,34
FLOAT SUB,	7,750	2,813	0,56	36,90
STAB STRING	12,125	2,813	2,46	39,36
FLOAT SUB,	7,750	2,813	0,78	40,14
DRILL COLLAR	8,000	2,813	63,25	103,39
JAR	8,250	3,000	9,35	112,74
DRILL COLLAR	8,000	2,813	36,02	148,76
X-OVER	8,000	3,000	1,36	150,12
HW DRILL PIPE	5,500	4,670	81,19	231,31

BHA NO: 11
BHA KIND:
DESCRIPTION: Fishing assembly

BHA NAME: 11

String component	OD in	ID in	Length m	Acc length m
REV.CIRC.JUNK BASKET	11,875	8,000	1,50	1,50
MAGNET	8,000	3,000	1,90	3,40
MAGNET	8,000	3,000	2,01	5,41
DRILL COLLAR	8,000	3,000	45,40	50,81
JAR	8,000	3,000	9,35	60,16
DRILL COLLAR	8,000	3,000	9,15	69,31
X-OVER	8,000	3,000	1,36	70,67
HW DRILL PIPE	5,500	4,670	45,09	115,76
DRILL PIPE	5,500	4,778	1084,55	1200,31
X-OVER	7,125	3,000	1,22	1201,53
CSG SCRAPER	8,000	2,813	3,31	1204,84
X-OVER	8,000	3,000	1,29	1206,13

BHA NO: 12
BHA KIND:
DESCRIPTION: Fishing assembly
BHA NAME: 12

String component	OD in	ID in	Length m	Acc length m
REV.CIRC.JUNK BASKET	11,875	8,000	1,50	1,50
MAGNET	8,000	3,000	1,90	3,40
MAGNET	8,000	3,000	2,01	5,41
DRILL COLLAR	8,000	3,000	45,40	50,81
JAR	8,000	3,000	9,35	60,16
DRILL COLLAR	8,000	3,000	9,15	69,31
X-OVER	8,000	3,000	1,26	70,57
HW DRILL PIPE	5,500	4,670	45,09	115,66
DRILL PIPE	5,500	4,778	1084,55	1200,21
X-OVER	7,125	3,000	1,22	1201,43
CSG SCRAPER	8,000	2,813	3,31	1204,74
X-OVER	8,000	3,000	1,29	1206,03

BHA NO: 13
BHA KIND:
DESCRIPTION: Milling assembly
BHA NAME: 13

String component	OD in	ID in	Length m	Acc length m
MILL, FLAT BOTTOM	12,250	2,800	1,30	1,30
JUNK BASKET	9,500	3,000	1,05	2,35
JUNK BASKET	9,500	3,000	1,02	3,37
MAGNET	8,000	3,000	1,90	5,27
MAGNET	8,000	3,000	2,01	7,28
BIT SUB W/FLOAT	8,380	2,750	1,10	8,38
DRILL COLLAR	8,000	3,000	45,40	53,78

String component	OD in	ID in	Length m	Acc length m
JAR	8,000	3,000	9,35	63,13
DRILL COLLAR	8,000	3,000	9,15	72,28
X-OVER	8,000	3,000	1,36	73,64
X-OVER	8,000	3,000	1,22	74,86
DRILL PIPE	5,000	4,276	1075,00	1149,86
X-OVER	7,000	3,000	1,26	1151,12
DRILL PIPE	5,500			1151,12

BHA NO: 14
BHA KIND:
DESCRIPTION: 8 1/2" BHA
BHA NAME: 14

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,29	0,29
MWD, ONTRAK W/GR&RES	8,250	2,250	10,17	10,46
FLOAT SUB	6,750	2,875	0,83	11,29
STAB STRING	8,200	2,750	1,75	13,04
FLOAT SUB	6,750	2,875	0,90	13,94
DRILL COLLAR	6,500	2,813	54,96	68,90
JAR	6,500	2,750	9,36	78,26
DRILL COLLAR	6,500	2,813	28,61	106,87
DART SUB	6,500	3,000	0,60	107,47
HW DRILL PIPE	5,000	4,000	84,51	191,98
DRILL PIPE	5,000	4,200	1603,53	1795,51
DRILL PIPE	5,500			1795,51

BHA NO: 15
BHA KIND:
DESCRIPTION: 8 1/2" BHA (#2)
BHA NAME: 15

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,32	0,32
MWD, ONTRAK W/GR&RES	8,250	2,250	10,19	10,51
FLOAT SUB	6,750	2,250	0,63	11,14
FLOAT SUB	6,750	2,250	0,67	11,81
ROLLER REAMER	8,500	2,125	1,82	13,63
DRILL COLLAR	6,500	2,813	54,96	68,59
JAR	6,500	2,750	9,36	77,95
DRILL COLLAR	6,500	2,813	28,61	106,56
DART SUB	6,500	3,000	0,60	107,16
HW DRILL PIPE	5,000	4,000	84,51	191,67
DRILL PIPE	5,000	4,200	1603,53	1795,20
X-OVER	7,250	3,000	1,22	1796,42
DRILL PIPE	5,500			1796,42

BHA NO: 16
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #1, 90 ft
BHA NAME: 16

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	4,000	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
EXTENSION SUB	6,750	5,375	1,14	30,11
TOP SUB	6,750		0,65	30,76
FLOAT SUB	6,625	2,812	0,83	31,59
FLOAT SUB	6,750	2,875	0,90	32,49
DRILL COLLAR	6,500	2,937	9,13	41,62
STAB STRING	8,375	2,750	1,69	43,31
DRILL COLLAR	6,500	2,875	36,46	79,77
JAR	6,500	2,750	9,36	89,13
DRILL COLLAR	6,500	2,813	28,61	117,74
HW DRILL PIPE	5,000	3,000	18,78	136,52
DART SUB	6,500	3,000	0,60	137,12
HW DRILL PIPE	5,000	3,000	65,73	202,85
DRILL PIPE	5,000	4,200	1603,53	1806,38
X-OVER	7,250	3,000	1,22	1807,60
DRILL PIPE	5,500			1807,60

BHA NO: 17
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #2 (Jambuster)
BHA NAME: 17

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
EXTENSION SUB	6,750	5,375	1,14	30,11
TOP SUB	6,750		0,65	30,76
FLOAT SUB	6,625	2,812	0,63	31,39
FLOAT SUB	6,750	2,875	0,67	32,06
DRILL COLLAR	6,500	2,937	9,13	41,19
STAB STRING	8,375	2,750	1,69	42,88
DRILL COLLAR	6,500	2,875	36,46	79,34
JAR	6,500	2,750	9,36	88,70
DRILL COLLAR	6,500	2,813	28,61	117,31
HW DRILL PIPE	5,000	3,000	18,78	136,09

String component	OD in	ID in	Length m	Acc length m
DART SUB	6,500	3,000	0,60	136,69
HW DRILL PIPE	5,000	3,000	65,73	202,42
DRILL PIPE	5,000	4,200	1603,53	1805,95
X-OVER	7,250	3,000	1,22	1807,17
DRILL PIPE	5,500			1807,17

BHA NO: 18
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #3, 120 ft (Jambuster)
BHA NAME: 18

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
CORE BARREL	6,750	5,375	7,92	36,89
STAB STRING	8,468	5,375	1,22	38,11
EXTENSION SUB	6,750	5,375	1,14	39,25
TOP SUB	6,750		0,65	39,90
FLOAT SUB	6,625	2,812	0,83	40,73
FLOAT SUB	6,750	2,875	0,90	41,63
DRILL COLLAR	6,500	2,937	9,13	50,76
STAB STRING	8,375	2,750	1,69	52,45
DRILL COLLAR	6,500	2,875	45,83	98,28
JAR	6,500	2,750	9,36	107,64
DRILL COLLAR	6,500	2,813	28,61	136,25
HW DRILL PIPE	5,000	3,000	18,78	155,03
DART SUB	6,500	3,000	0,60	155,63
HW DRILL PIPE	5,000	3,000	65,73	221,36
DRILL PIPE	5,000	4,200	1603,53	1824,89
X-OVER	7,250	3,000	1,22	1826,11
DRILL PIPE	5,500			1826,11

BHA NO: 19
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #4, 120 ft (Jambuster)
BHA NAME: 19

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75

String component	OD in	ID in	Length m	Acc length m
STAB STRING	8,468	5,375	1,22	28,97
CORE BARREL	6,750	5,375	7,92	36,89
STAB STRING	8,468	5,375	1,22	38,11
EXTENSION SUB	6,750	5,375	1,14	39,25
TOP SUB	6,750		0,65	39,90
FLOAT SUB	6,625	2,812	0,83	40,73
FLOAT SUB	6,750	2,875	0,90	41,63
DRILL COLLAR	6,500	2,937	9,13	50,76
STAB STRING	8,375	2,750	1,69	52,45
DRILL COLLAR	6,500	2,875	45,83	98,28
JAR	6,500	2,750	9,36	107,64
DRILL COLLAR	6,500	2,813	28,61	136,25
HW DRILL PIPE	5,000	3,000	18,78	155,03
DART SUB	6,500	3,000	0,60	155,63
HW DRILL PIPE	5,000	3,000	65,73	221,36
DRILL PIPE	5,000	4,200	1603,53	1824,89
X-OVER	7,250	3,000	1,22	1826,11
DRILL PIPE	5,500			1826,11

BHA NO: 20
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #5, 120 ft (Jambuster)
BHA NAME: 20

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
CORE BARREL	6,750	5,375	7,92	36,89
STAB STRING	8,468	5,375	1,22	38,11
EXTENSION SUB	6,750	5,375	1,14	39,25
TOP SUB	6,750		0,65	39,90
FLOAT SUB	6,625	2,812	0,83	40,73
FLOAT SUB	6,750	2,875	0,90	41,63
DRILL COLLAR	6,500	2,937	9,13	50,76
STAB STRING	8,375	2,750	1,69	52,45
DRILL COLLAR	6,500	2,875	45,83	98,28
JAR	6,500	2,750	9,36	107,64
DRILL COLLAR	6,500	2,813	28,61	136,25
HW DRILL PIPE	5,000	3,000	18,78	155,03
DART SUB	6,500	3,000	0,60	155,63
HW DRILL PIPE	5,000	3,000	65,73	221,36
DRILL PIPE	5,000	4,200	1603,53	1824,89
X-OVER	7,250	3,000	1,22	1826,11
DRILL PIPE	5,500			1826,11

BHA NO: 21
BHA KIND:
DESCRIPTION: 8 1/2" BHA
BHA NAME: 21

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,32	0,32
MWD, ONTRAK W/GR&RES	8,250	2,250	10,83	11,15
FLOAT SUB	6,750	2,250	0,83	11,98
FLOAT SUB	6,750	2,250	0,90	12,88
DRILL COLLAR	6,500	2,250	9,13	22,01
ROLLER REAMER	8,500	2,125	1,82	23,83
DRILL COLLAR	6,500	2,813	55,48	79,31
JAR	6,500	2,750	9,36	88,67
DRILL COLLAR	6,500	2,813	28,64	117,31
HW DRILL PIPE	5,000	4,000	84,51	201,82
DART SUB	6,500	3,000	0,60	202,42
DRILL PIPE	5,000	4,200	1603,53	1805,95
X-OVER	7,250	3,000	1,22	1807,17
DRILL PIPE	5,500			1807,17

BHA NO: 22
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #6, 120 ft (Jambuster)
BHA NAME: 22

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
CORE BARREL	6,750	5,375	7,92	36,89
STAB STRING	8,468	5,375	1,22	38,11
EXTENSION SUB	6,750	5,375	1,14	39,25
TOP SUB	6,750		0,65	39,90
FLOAT SUB	6,625	2,812	0,83	40,73
FLOAT SUB	6,750	2,875	0,90	41,63
DRILL COLLAR	6,500	2,937	9,13	50,76
STAB STRING	8,375	2,750	1,69	52,45
DRILL COLLAR	6,500	2,875	45,83	98,28
JAR	6,500	2,750	9,36	107,64
DRILL COLLAR	6,500	2,813	28,61	136,25
HW DRILL PIPE	5,000	3,000	18,78	155,03
DART SUB	6,500	3,000	0,60	155,63
HW DRILL PIPE	5,000	3,000	65,73	221,36
DRILL PIPE	5,000	4,200	1750,20	1971,56
X-OVER	7,250	3,000	1,22	1972,78
DRILL PIPE	5,500			1972,78

BHA NO: 23
BHA KIND:
DESCRIPTION: 8 1/2" Coring assembly #7, 120 ft (Jambuster)
BHA NAME: 23

String component	OD in	ID in	Length m	Acc length m
CORE HEAD	8,500	3,500	0,43	0,43
STAB STRING	8,468	5,375	1,22	1,65
CORE BARREL	6,750	5,375	7,92	9,57
STAB STRING	8,468	5,375	1,22	10,79
CORE BARREL	6,750	5,375	7,92	18,71
STAB STRING	8,468	5,375	1,22	19,93
CORE BARREL	6,750	5,375	7,82	27,75
STAB STRING	8,468	5,375	1,22	28,97
CORE BARREL	6,750	5,375	7,92	36,89
STAB STRING	8,468	5,375	1,22	38,11
EXTENSION SUB	6,750	5,375	1,14	39,25
TOP SUB	6,750		0,65	39,90
FLOAT SUB	6,625	2,812	0,83	40,73
FLOAT SUB	6,750	2,875	0,90	41,63
DRILL COLLAR	6,500	2,937	9,13	50,76
STAB STRING	8,375	2,750	1,69	52,45
DRILL COLLAR	6,500	2,875	45,83	98,28
JAR	6,500	2,750	9,36	107,64
DRILL COLLAR	6,500	2,813	28,61	136,25
HW DRILL PIPE	5,000	3,000	18,78	155,03
DART SUB	6,500	3,000	0,60	155,63
HW DRILL PIPE	5,000	3,000	65,73	221,36
DRILL PIPE	5,000	4,200	1750,20	1971,56
X-OVER	7,250	3,000	1,22	1972,78
DRILL PIPE	5,500			1972,78

BHA NO: 24
BHA KIND:
DESCRIPTION: 8 1/2" motor BHA
BHA NAME: 24

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,37	0,37
MOTOR, EXTREME	8,375		10,64	11,01
STRING STAB	8,375	2,750	1,69	12,70
MWD, ONTRAK W/GR&RES	8,250	2,250	9,14	21,84
FLOAT SUB	6,750	2,250	0,83	22,67
FLOAT SUB	6,750	2,250	0,90	23,57
DRILL COLLAR	6,500	2,250	9,13	32,70
ROLLER REAMER	8,500	2,125	1,82	34,52
DRILL COLLAR	6,500	2,813	55,48	90,00
JAR	6,500	2,750	9,60	99,60
DRILL COLLAR	6,500	2,813	28,64	128,24
HW DRILL PIPE	5,000	4,000	84,51	212,75
DART SUB	6,500	3,000	0,60	213,35
DRILL PIPE	5,000	4,200	2044,07	2257,42
X-OVER	7,250	3,000	1,22	2258,64
DRILL PIPE	5,500			2258,64

BHA NO: 25
BHA KIND:
DESCRIPTION: 8 1/2" BHA w/ junk bit
BHA NAME: 25

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,24	0,24
STRING STAB, NM	8,250		1,43	1,67
MWD, ONTRAK W/GR&RES	8,375	2,750	8,17	9,84
STOP SUB	8,250	2,250	0,46	10,30
FLOAT SUB	6,750	2,250	0,83	11,13
FLOAT SUB	6,750	2,250	0,90	12,03
DRILL COLLAR	6,500	2,250	9,13	21,16
ROLLER REAMER	8,500	2,125	1,82	22,98
DRILL COLLAR	6,500	2,813	55,48	78,46
JAR	6,500	2,750	9,60	88,06
DRILL COLLAR	6,500	2,813	28,64	116,70
HW DRILL PIPE	5,000	4,000	84,51	201,21
DART SUB	6,500	3,000	0,60	201,81
DRILL PIPE	5,000	4,200	2044,07	2245,88
X-OVER	7,250	3,000	1,22	2247,10

BHA NO: 26
BHA KIND:
DESCRIPTION: 8 1/2" BHA for wiper trip while logging
BHA NAME: 26

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,24	0,24
BIT SUB W/FLOAT	6,250	2,750	0,92	1,16
MWD, ONTRAK W/GR&RES	8,250	2,250	9,13	10,29
FLOAT SUB	6,750	2,250	0,83	11,12
DRILL COLLAR	6,500	2,250	64,61	75,73
JAR	6,500	2,750	9,60	85,33
DRILL COLLAR	6,500	2,813	28,64	113,97
HW DRILL PIPE	5,000	4,000	84,51	198,48
DART SUB	6,500	3,000	0,60	199,08
DRILL PIPE	5,000	4,200	2044,07	2243,15
X-OVER	7,250	3,000	1,22	2244,37

BHA NO: 27
BHA KIND:
DESCRIPTION: 8 1/2" BHA for wiper trip while logging
BHA NAME: 27

String component	OD in	ID in	Length m	Acc length m
BIT, TRI CONE	8,500		0,24	0,24
BIT SUB W/FLOAT	6,250	2,750	0,92	1,16
FLOAT SUB	6,750	2,250	0,83	1,99
DRILL COLLAR	6,500	2,250	64,61	66,60

String component	OD in	ID in	Length m	Acc length m
JAR	6,500	2,750	9,60	76,20
DRILL COLLAR	6,500	2,813	28,64	104,84
HW DRILL PIPE	5,000	4,000	84,51	189,35
DART SUB	6,500	3,000	0,60	189,95
DRILL PIPE	5,000	4,200	2044,07	2234,02
X-OVER	7,250	3,000	1,22	2235,24
DRILL PIPE	5,500			2235,24

BHA NO: 28
BHA KIND:
DESCRIPTION: 3 1/2" cement stinger
BHA NAME: 28

String component	OD in	ID in	Length m	Acc length m
DIVERTING SUB	3,500	2,602	9,08	9,08
3 1/2" DRILL PIPE	3,500	2,602	436,10	445,18
XO SUB	6,500	2,812	0,91	446,09
FLOAT SUB	6,625	2,812	0,83	446,92
5" DRILL PIPE	5,000	4,276	1603,53	2050,45
XO SUB	7,500	3,000	1,22	2051,67
5 1/2" DRILL PIPE	5,500			2051,67

BHA NO: 29
BHA KIND:
DESCRIPTION: 8 1/2" BHA for tagging and dressing off cement plug
BHA NAME: 29

String component	OD in	ID in	Length m	Acc length m
BIT, PDC	8,500		0,32	0,32
BIT SUB W/FLOAT	6,250	2,750	0,92	1,24
FLOAT SUB	6,750	2,250	0,83	2,07
DRILL COLLAR	6,500	2,250	64,61	66,68
JAR	6,500	2,750	9,60	76,28
DRILL COLLAR	6,500	2,813	28,64	104,92
HW DRILL PIPE	5,000	4,000	84,51	189,43
DART SUB	6,500	3,000	0,60	190,03
DRILL PIPE	5,000	4,200	2044,07	2234,10
X-OVER	7,250	3,000	1,22	2235,32
DRILL PIPE	5,500			2235,32

BHA NO: 30
BHA KIND:
DESCRIPTION: 13 3/8" RTTS for inflow testing of 9 7/8" liner lap
BHA NAME: 30

String component	OD in	ID in	Length m	Acc length m
JET SUB	6,500	2,300	0,86	0,86
PUP JOINT	5,000	3,250	1,85	2,71
RAZOR BACK	12,186	2,812	2,06	4,77

String component	OD in	ID in	Length m	Acc length m
PUP JOINT	5,000	3,250	2,98	7,75
PUP JOINT	5,000	3,250	2,15	9,90
RTTS	11,940	3,750	2,24	12,14
PUP JOINT	5,000	3,250	2,16	14,30
PUP JOINT	5,000	3,270	2,17	16,47
RTTS SAFETY JT	6,120	3,100	1,24	17,71
CIRCULATING VALVE	6,250	3,000	1,43	19,14
PUP JOINT	5,000	3,270	2,16	21,30
HWDP 5"	5,000	3,000	84,51	105,81

BHA NO: 31
BHA KIND:
DESCRIPTION: Clean out assy/ commissioner packer for inflow testing of 7" liner lap
BHA NAME: 31

String component	OD in	ID in	Length m	Acc length m
BIT	6,000		0,18	0,18
BIT SUB	4,750	2,000	0,91	1,09
PUP JOINT	5,000	2,250	1,51	2,60
RAZOR BACK	6,563	2,000	1,49	4,09
DRIFT SUB	6,000	2,250	0,71	4,80
PUP JOINT	4,750	2,250	2,46	7,26
3 1/2" DRILL PIPE	4,750	2,250	426,39	433,65
PUP JOINT	5,000	2,250	1,54	435,19
POLISH MILL	7,438	2,250	1,27	436,46
WELL COMMISIONER	8,500	2,250	2,66	439,12
MFCT	7,250	2,000	4,76	443,88
WELLSWEEP MAGNET	8,250	2,250	1,36	445,24
PUP JOINT	6,563	3,250	1,80	447,04
5" DRILL PIPE	5,000	3,270		447,04

BHA NO: 32
BHA KIND:
DESCRIPTION: Wireline string for EZSV setting
BHA NAME: 32

String component	OD in	ID in	Length m	Acc length m
EZSV	5,720		0,80	0,80
AH-ADAPTER			0,36	1,16
AH-CPST			1,94	3,10
AH-FIRING HEAD			0,13	3,23
PEH-PEK-B			0,71	3,94
MH 22			0,57	4,51
CABLE (7-46 HEPTA)			0,09	4,60

BHA NO: 33
BHA KIND:
DESCRIPTION: Wireline string for perforating for XLOT
BHA NAME: 33

String component	OD in	ID in	Length m	Acc length m
AH-BOTTOM NOSE	4,720		0,06	0,06
SHM GUN			6,34	6,40
AH-X-OVER			0,07	6,47
AH-TCP GUN ADAPTER			0,20	6,67
AH-FIRING HEAD			0,30	6,97
AH-83			0,16	7,13
PGGT-D			1,78	8,91
AH-66			0,24	9,15
PEH-PEK-B			0,57	9,72
MH 22			0,09	9,81
CABLE (7-46 HEPTA)				9,81

BHA NO: 34
BHA KIND:
DESCRIPTION: String for setting of EZSV mechanically, and for setting cement plug.
BHA NAME: 34

String component	OD in	ID in	Length m	Acc length m
JET SUB	8,000		2,00	2,00
X-OVER	6,250		0,83	2,83
5 1/2" DRILL PIPE	6,750			2,83

BHA NO: 35
BHA KIND:
DESCRIPTION: Clean casing before P&A cement plug
BHA NAME: 35

String component	OD in	ID in	Length m	Acc length m
JET SUB	8,000		2,00	2,00
X-OVER,	6,250		0,50	2,50
5 1/2" DRILL PIPE	6,750		372,50	375,00

BHA NO: 36
BHA KIND:
DESCRIPTION: Cut 30" conductor / 20" casing
BHA NAME: 36

String component	OD in	ID in	Length m	Acc length m
BULL NOSE	8,000	1,500	0,35	0,35
CASING CUTTER	12,000		1,83	2,18
TOP SUB	8,000	3,500	0,90	3,08
STABILIZER	17,500	2,813	1,40	4,48

String component	OD in	ID in	Length m	Acc length m
SPACER SUB	8,000	3,063	0,89	5,37
SUB PIN X PIN	8,000	2,750	0,97	6,34
MOST TOOL	37,000		8,80	15,14
DRILL COLLAR	8,000	2,813	27,30	42,44
DRILL PIPE	5,500		95,50	137,94

5.9.9 Bit record

Table 5.3 Bit run listing

WELL: NO 15/3-8

Run no	Bit size	Bit no	BHA no	Bit type	IADC code	Bit manufacturer
1	17 1/2"	1RR1	1	MXT1	115	Hughes Christensen
1	26"/36"	2	1	HOLE OPENER		Odfjell Drilling AS
1	36"	HO #1	1	HOLE OPENER		Odfjell Drilling AS
2	17 1/2"	3RR1	2	XR-ODVC	115	Smith Bits
2	26"/36"	4	2	HOLE OPENER		Odfjell Drilling AS
3	26"	5	3	XR+	117	Smith Bits
4	17 1/2"	4	4	T13CDHTP	135	Reed-Hycalog
5	17 1/2"	5	5	T13CDHTP	135	Reed-Hycalog
6	17 1/2"	6	6	LD560BHG	M433	Lyng
7	17 1/2"	6RR	7	LD560BHG	M433	Lyng
8	17 1/2"	7	8	S68VPX	S332	Smith Bits
9	12 1/4"	8	9	M716VPX	M223	Smith Bits
10	12 1/4"	9	10	HCM605	M323	Hughes Christensen
13	8 1/2"	10	14	DSX816M-B1		Reed-Hycalog
14	8 1/2"	10	14	DSX816M-B1		Reed-Hycalog
15	8 1/2"	11	15	HCR507Z	M323	Hughes Christensen
16	8 1/2"	12	16	BHC606		Baker Hughes Inteq
17	8 1/2"	13	17	BHC606		Baker Hughes Inteq
18	8 1/2"	13RR 1	18	BHC606		Baker Hughes Inteq
19	8 1/2"	13RR 2	19	BHC606		Baker Hughes Inteq
20	8 1/2"	13RR 3	20	BHC606		Baker Hughes Inteq
21	8 1/2"	11RR 1	21	HCR507Z	M323	Hughes Christensen
22	8 1/2"	13RR 4	22	BHC606		Baker Hughes Inteq
23	8 1/2"	13RR 5	23	BHC606		Baker Hughes Inteq
24	8 1/2"	14	24	HCM506Z	M323	Hughes Christensen
25	8 1/2"	15	25	ATJG8	347	Hughes Christensen
26	8 1/2"	15RR 1	26	ATJG8	347	Hughes Christensen
27	8 1/2"	15RR 2	27	ATJG8	347	Hughes Christensen
29	8 1/2"	11RR 2	29	HCR507Z	M323	Hughes Christensen

					Nozzles (n/32")				
Run no	Bit size	Bit no	BHA no	Serial no	no x n	no x n	no x n	no x n	Flow area in
1	17 1/2"	1RR1	1	6007094	1 x 18	1 x 22	1 x 24	1 x 0	1,0620

					Nozzles (n/32”)				
Run no	**Bit size**	**Bit no**	**BHA no**	**Serial no**	**no x n**	**no x n**	**no x n**	**no x n**	**Flow area in**
1	26"/36"	2	1	OWS-HO3611	3 x 14	3 x 11	x	x	0,73
1	36"	HO #1	1	OWS-HO3611	3 x 14	3 x 14	x	x	0,9020
2	17 1/2"	3RR1	2	MX2303	4 x 14	x	x	x	0,6020
2	26"/36"	4	2	OWS-HO3604	3 x 11	3 x 14	x	x	0,73
3	26"	5	3	MX6713	3 x 20	1 x 14	x	x	1,0710
4	17 1/2"	4	4	D80063	3 x 20	1 x 18	x	x	1,1690
5	17 1/2"	5	5	H24877	3 x 20	1 x 18	x	x	1,1690
6	17 1/2"	6	6	3065	6 x 14	3 x 16	x	x	1,4920
7	17 1/2"	6RR	7	3065	6 x 14	3 x 16	x	x	1,4920
8	17 1/2"	7	8	JT4314	2 x 14	8 x 13	x	x	1,3380
9	12 1/4"	8	9	SCB010	3 x 16	4 x 18	x	x	1,5840
10	12 1/4"	9	10	7204642	2 x 16	5 x 18	x	x	1,6360
13	8 1/2"	10	14	211521	4 x 14	x	x	x	0,6020
14	8 1/2"	10	14	211521	4 x 14	x	x	x	0,6020
15	8 1/2"	11	15	7204951	5 x 10	2 x 9	x	x	0,5080
16	8 1/2"	12	16	7202566	x	x	x	x	
17	8 1/2"	13	17	7202569	x	x	x	x	1,18
18	8 1/2"	13RR 1	18	7202569	x	x	x	x	1,18
19	8 1/2"	13RR 2	19	7202569	x	x	x	x	1,18
20	8 1/2"	13RR 3	20	7202569	x	x	x	x	1,18
21	8 1/2"	11RR 1	21	7204951	5 x 10	2 x 9	x	x	0,5080
22	8 1/2"	13RR 4	22	7202569	x	x	x	x	1,18
23	8 1/2"	13RR 5	23	7202569	x	x	x	x	1,18
24	8 1/2"	14	24	7205127	6 x 12	x	x	x	0,6630
25	8 1/2"	15	25	6010891	3 x 22	x	x	x	1,1140
26	8 1/2"	15RR 1	26	6010891	3 x 22	x	x	x	1,1140
27	8 1/2"	15RR 2	27	6010891	3 x 22	x	x	x	1,1140
29	8 1/2"	11RR 2	29	7204951	5 x 10	2 x 9	x	x	0,5080

Run no	**Bit size**	**Pump rate l/min**	**Pump press bar**	**Depth in mMD**	**Depth out mMD**	**Form drld m**	**Total drld m**	**Drld hrs**	**Circ hrs**	**ROP m/hrs**
1	17 1/2"	5100	117	133,0	158,0	25,0	25,0	11,3	16,0	2,2
1	26"/36"	5100	117	133,0	154,0	21,0	21,0	11,3	16,0	1,9
1	36"	1000	19	133,0	145,0	12,0	14,0	3,1	4,1	3,9
2	17 1/2"	5000	122	158,0	182,0	24,0	24,0	4,0	8,0	6,0
2	26"/36"	5000	122	154,0	180,0	26,0	26,0	4,0	8,0	6,5
3	26"	4400	210	182,0	1010,0	828,0	828,0	21,0	36,9	39,4
4	17 1/2"	4600	215	1010,0	1520,0	510,0	230,0	29,0	44,6	17,6
5	17 1/2"	4700	290	1520,0	2095,0	575,0	575,0	50,4	64,2	11,4
6	17 1/2"	4760	280	2095,0	2472,0	377,0	377,0	21,5	29,7	17,5
7	17 1/2"	4600	290	2472,0	2574,0	102,0	102,0	14,7	21,0	6,9

Run no	Bit size	Pump rate l/min	Pump press bar	Depth in mMD	Depth out mMD	Form drld m	Total drld m	Drld hrs	Circ hrs	ROP m/hrs
8	17 1/2"			2574,0	2765,0	191,0	191,0	18,8	28,6	10,2
9	12 1/4"	3450	320	2765,0	2957,0	192,0	192,0	40,7	64,7	4,7
10	12 1/4"	3000	305	2957,0	3908,0	951,0	951,0	78,6	91,4	12,1
13	8 1/2"	1400	169	3910,0	3989,0	79,0	1,0	31,0	69,7	2,5
14	8 1/2"	1400	169	3910,0	3989,0	79,0	118,0	31,0	69,7	2,5
15	8 1/2"	1600	243	3989,0	4167,0	178,0	178,0	47,4	67,5	3,8
16	8 1/2"	1000	110	4167,0	4179,6	12,6	12,6	3,8	11,7	3,3
17	8 1/2"	1000	116	4179,6	4202,0	22,4	22,4	8,6	15,8	2,6
18	8 1/2"	1000	112	4202,0	4238,5	36,5	36,5	14,6	23,0	2,5
19	8 1/2"	1000	115	4238,5	4275,0	36,5	36,5	16,2	21,5	2,3
20	8 1/2"	1000	110	4275,0	4304,0	29,0	29,0	11,8	14,6	2,5
21	8 1/2"	1600	250	4304,0	4478,5	174,5	352,5	37,7	54,7	4,6
22	8 1/2"	1000	117	4478,5	4494,0	15,5	15,5	8,4	17,0	1,8
23	8 1/2"	1000	112	4494,0	4506,0	12,0	12,0	6,1	11,3	2,0
24	8 1/2"	1400	250	4506,0	4590,0	84,0	84,0	19,4	28,5	4,3
25	8 1/2"			4590,0	4590,0	0,0	0,0	0,5	11,5	0,0
26	8 1/2"			4590,0	4590,0	0,0				
27	8 1/2"	1800	210	4590,0	4590,0	0,0			7,0	
29	8 1/2"	1650	253	4180,0	4299,0	119,0	119,0	2,7	6,7	44,1

Run no	Bit size	Min WOB ton	Max WOB ton	Min RPM	Max RPM	Torque Min Nm	Torque Max Nm	Con drag Min 1000 daN	Con drag Max 1000 daN
1	17 1/2"	0	6	40	115	1000	8600		
1	26"/36"	0	6	40	115	1000	8600		
1	36"	0	5	40	98	2300	7000	0	7
2	17 1/2"	0	5	80	105	3000	8000		
2	26"/36"	0	5	80	105	3000	8000		
3	26"	0	13	120	210	3500	14000		
4	17 1/2"	2	22	40	80	4000	16000		
5	17 1/2"	8	25	80	120	6500	30000		
6	17 1/2"	1	6	80	150	6000	30000		
7	17 1/2"	3	30	40	120	5000	30000		
8	17 1/2"	6	15	60	120	6000	10000	140	143
9	12 1/4"	5	20	140	180	6000	20000		
10	12 1/4"	8	10	168	174	10000	28000		
13	8 1/2"	0	16	50	150	5000	10000		
14	8 1/2"	0	16	50	150	5000	10000		
15	8 1/2"	1	12	60	140	7000	19000		
16	8 1/2"	4	8	60	110	9	19		
17	8 1/2"	4	10	60	110	8000	20000		
18	8 1/2"	6	10	90	100	6000	15000		
19	8 1/2"	8	10		90	6000	15000		
20	8 1/2"	8	10	70	90	6000	15000		
21	8 1/2"	7	12	80	150	10000	24000		
22	8 1/2"	6	11	90	140	10000	24000		
23	8 1/2"	2	10	60	100	9000	17000		
24	8 1/2"	4	16	150	250	9000	14000		
25	8 1/2"	0	12	0	60				
26	8 1/2"								
27	8 1/2"			20	120				
29	8 1/2"	2	5	80	120	9	12		

Run no	Bit size	I	O	DC	L	B	G	OC	RP
1	17 1/2"	2	2	WT	A	E	IN	SD	PR
1	26"/36"	3	4	CD	1	E	IN	WT	PR
1	36"								
2	17 1/2"	2	2	WT	A	E	IN	NO	TD
2	26"/36"	2	2	WT	A	E	IN	NO	TD
3	26"	1	1	WT	A	E	1	NO	TD
4	17 1/2"	1	4	BT	G	E	1	NO	DTF
5	17 1/2"	2	4	PB	G	F	10	WT	PR
6	17 1/2"	1	2	WT	A	X	0	CT	DTF
7	17 1/2"	2	8	RO	S	X	2	WT	PR
8	17 1/2"	1	2	WT	A	X	I	NO	TD
9	12 1/4"	1	3	WT	S	X	IN	CT	PR
10	12 1/4"	1	2	CT	S	X	IN	ER	LOG
13	8 1/2"								
14	8 1/2"	2	3	WT	T	X	I	NO	PR
15	8 1/2"	1	1	WT	T	X	I	NO	CP
16	8 1/2"	1	1	CT	N	X	I	PN	PR
17	8 1/2"	1	1	WT	A	X	IN	PN	PR
18	8 1/2"	1	1	WT	A	X	IN	PN	CP
19	8 1/2"	1	1	WT	A	X	IN	PN	CP
20	8 1/2"	1	1	WT	A	X	IN	PN	PR
21	8 1/2"	1	2	WT	S	X	IN	NO	CP
22	8 1/2"	1	1	WT	A	X	In	PN	PR
23	8 1/2"	1	1	WT	A	X	IN	PN	PR
24	8 1/2"	8	8	RO	T	X	1	BT	PR
25	8 1/2"	1	1	CT	N	E	i	JD	LOG
26	8 1/2"	1	1	CT	N	E	I	JD	LOG
27	8 1/2"	1	1	CT	N	E	I	JD	LOG
29	8 1/2"	1	2	WT	S	X	I	NO	TD

Run no	Bit size	Remarks
1	17 1/2"	Run in front of hole opener. Done 73 k revs on bottom. One plugged nozzle.
1	26"/36"	Two stage 26" x 36" Hole Opener. Done 73 k revs on bottom. 26" HO: 3, 4, CD, 1, E, IN, WT, PR. One cone dragged. Unable to move remaining two cones. 36" HO: 2, 2, WT, A, E, IN, NO, PR. Stab protection below 26" HO worn.
1	36"	Two stage 26" x 36" Hole Opener
2	17 1/2"	Run in front of hole opener.
2	26"/36"	Two stage 26" x 36" Hole Opener.
3	26"	Bit run on mud motor. String RPM: 32 - 116
4	17 1/2"	Motor RPM is 0.023 x LPM (4600 LPM is 105 RPM)
5	17 1/2"	Motor RPM is 0,023 rev/lpm (105 RPM @ 4600 LPM). Total on-bottom revs 621k. Wear on motor bearing stabilizer: 5/16" (from originally 17 3/8" OD). Bearing gap was 30 mm, whereas max. acceptable for rerun is 9 mm.
6	17 1/2"	Motor RPM is 0,023 rev/lpm (109 RPM @ 4760 LPM).
7	17 1/2"	
8	17 1/2"	
9	12 1/4"	439 Krevs on btm. One small piece of hard rubber from wiper plug stuck in center of bit. All CT was on area between S (shoulder) and G (gauge). Also wear on gauge. Bit has also drilled 34 m cmt in shoetrack.

Run no	Bit size	Remarks
10	12 1/4"	660 Krevs on btm.
13	8 1/2"	Bit in hole. Drilled shoe track from 3871 m. No cement in shoe track. Krevs: 187. Limited ROP from 3978 m.
14	8 1/2"	Drilled shoe track from 3871 m. No cement in shoe track. Krevs: 187. Limited ROP from 3978 m.
15	8 1/2"	Drilled with controlled ROP in long periods. Total bit revolutions: 278 K. Bit was hardly worn after run. On some cutters in taper area, a slight wear can be observed, otherwise none.
16	8 1/2"	Core bit. 4" ID, ie run with conventional inner barrel. Core jammed off after 12 m drilled. Upon recovery, core length was measured to 12,6 m. Based on this TD of well was adjusted accordingly, ie new TD: 4179,6 m. 1 ea "nozzle", was plugged.
17	8 1/2"	2 ea plugged nozzles.
18	8 1/2"	3 ea plugged nozzles. Upon recovery, core length was measured to 36,5 m. Based on this TD of well was adjusted accordingly, ie new TD: 4238,5 m. This depth was confirmed while RIH with next assy.
19	8 1/2"	4 plugged nozzles. Bit has cored from 4179,6 m.
20	8 1/2"	This bit has cored from 4179,6 m.
21	8 1/2"	Total drilled meteres incl 178 m drilled as bit 11(from 3989 - 4167 m). Tot revs on btm: 278 + 285 = 563 Krevs.
22	8 1/2"	5 out of 6 nozzles plugged.
23	8 1/2"	This corehead had drilled totally 152,5 m; from 4179 - 4304 m and from 4478,5 - 4506 m. Total 73,06 hrs and tot revs on bottom: 291,6 krevs.
24	8 1/2"	Bit in hole. Krevs: 111 Bit is severly ringed out and 3 of 6 blades are broken.
25	8 1/2"	Junk bit used to work junk at bottom of hole. Observed slight chipping of a few inner row teeth, and some junk damage on the sides of the bit. Thie bit looks like is has been on something, but there is very little damage/wear. Krevs: 13
26	8 1/2"	Rerun bit for wipertrip during logging. Grading from junk run.
27	8 1/2"	Wiper trip to clean and condition hole and mud, after MDT sampling. Max 81 % gas level recorded when HC remains (430ltr) rom sampling was circulated out.
29	8 1/2"	Drilled and dressed off cement from 4180 m to 4299 m. Plug-back depth 4299 m, prior to running liner.

6 Appendices

App A Extract of daily activities (DBR summary of activities)

WELLBORE ID: NO 15/3-8
INTERVAL: MOVE
START TIME: 24.10.2005 01:10
END TIME: 03.11.2005 02:30

Report date	Description
24.10.2005	Handed rig over from Norsk Hydro to Statoil. Towed rig from Stetind towards Gudrun. Estimated arrival 12:00, 28.10.
25.10.2005	Towing rig from Stetind to Gudrun. 123 miles traveled. 353 miles to go.
26.10.2005	Towing rig from Stetind to Gudrun. Distance sailed 226 miles. Distance to go 250 miles.
27.10.2005	Rig in transit from Stetind location to Gudrun location. Total sailed distance 329 nm, remaining distance 166 nm.
28.10.2005	Rig in transit from Stetind location to Gudrun location. Total sailed distance 325 nm. WOW.
29.10.2005	WOW. Rig in transit from Stetind location to Gudrun location.
30.10.2005	Rig in transit from Stetind location to Gudrun location.
31.10.2005	Ballasted rig to survival draft. Rig in transit from Stetind location to Gudrun location at reduced speed. Deballasted rig toward transit draft.
01.11.2005	Deballasted rig to transit draft. Continued tow towards Gudrun location. Anchor handling 1 nm off location; anchors no 5 and 1.
02.11.2005	Completed anchor handling: Ran anchors no 1, 4, 8, 3, 7, 6 and 2. Pretensioned same. Deballasted rig to 21 m. PU and racked 8" and 9 1/2" DC. Prepared Spud and handling equipment for same.

INTERVAL: 36"
START TIME: 03.11.2005 02:30
END TIME: 05.11.2005 19:30

Report date	Description
03.11.2005	PU and racked 5 1/2" DP/ landing string, Cmt stand and 30" Hsg RT. RIH with 36" BHA to seabed. Drilled 36" hole to 145 m (17 1/2" hole to 149 m).
04.11.2005	Drilled 36" hole to 154 m (17 1/2" hole to 158 m). Displace hole to 1,35 sg mud and POOH due to low progress. Changed HO assy and bit. RIH to 140 m. Washed down to TD at 158 m. Drilled 36" hole to 176 m (17 1/2" hole to 179 m).
05.11.2005	Drilled 36" hole to TD. Circulated and displaced hole to 1,35 sg mud. POOH. LD HO assy. Ran 30" conductor and cemented same. Held conductor in place while WOC. Retrieved WHRT. MU new drilling stand. LD cmt stand, PU and rack remote cmt stand. LD 3 x 9 1/2" DC.

INTERVAL: 26"
START TIME: 05.11.2005 19:30
END TIME: 13.11.2005 13:00

Report date	Description

Report date	Description
06.11.2005	PU and racked 11 stds of 5 1/2" DP and 2 stds of 5 1/2" HWDP. PU 26" BHA. RIH with same. Drilled cmt and shoe from 178-180 . Cleaned rathole to 182 m. Drilled 26" hole from 182 - 390 m.
07.11.2005	Drilled 26" hole from 390 to 955 m.
08.11.2005	Drilled 26" hole from 955 m to section TD at 1010 m. POOH. Prepared to run 26" casing. Ran casing to above wellhead. Positioned the rig to stab the 20" casing into the WH.
09.11.2005	Stabbed 20" casing into 30" housing. Ran 20" casing. Landed casing in 30" housing on 5 1/2" landing string. Circulated 2 x 20" CSG volume. Cemented 20" csg.
10.11.2005	Completed pumping and displacing cement for 20" csg. POOH with running string. Prepared to run riser and BOP. Ran BOP to 60 m.
11.11.2005	Ran and landed BOP. Attempted to install diverter.
12.11.2005	Troubleshot diverter support dog problem. Istalled diverter. Pressuretested upper / lower IBOP. Troubleshot forward pipe receiver. Racked back cement stand. P/U 60 jnts 5 1/2" DP and racked same in drk.
13.11.2005	P/U 69 jnts 5 1/2" dp and racked in drk. M/U 17 1/2" BHA and rih. Function tested BOP. Performed BOP exercice. Drilled cmt in shoe track from 972,5 m to 992 m.

INTERVAL: 17 1/2"
START TIME: 13.11.2005 13:00
END TIME: 30.11.2005 16:30

Report date	Description
14.11.2005	Continued drilling shoetrack and 3 m new formation. Displaced hole to 1,25 sg glydrill mud while drilling. Performed XLOT. Drilled 17 1/2" Hole from 1014 m to 1240 m.
15.11.2005	Drilled 17 1/2" hole from 1180 m to 1404 m, where severe noise on MWD signal arised. Attempted to remove noise, without success. Extensive MP problems, resulted in drilling with reduced ROP, using 2 ea MP's. Stopped drilling for 2 hrs due to break down of 2 ea MP's simultaneously. Drilled ahead to 1520 m, mainly with 2 ea mudpumps avaliable, thus limiting the ROP. MWD noise problem still not solved.
16.11.2005	Circulated to clean hole, meanwhile troubleshooting MWD. POOH. Changed BCPM (MWD bi-directional communication and power module) and bit, and RIH. Washed down last stand, recorded survey and drilled 17 1/2" hole from 1520 m to 1617 m.
17.11.2005	Drilled 17 1/2" hole from 1617 m to 1866 m.
18.11.2005	Drilled 17 1/2" hole from 1866 m to 2054 m.
19.11.2005	Drilled 17 1/2" hole to 2095 m, with ROP dropping off. POOH, experiencing increasing numbers of tight intervals up to 1819 m. Circulated bottoms up and continued pumping out to 1735 m. POOH, working string through tight intervals, limiting o/p to 30 MT. Hole in good condition from +- 1500 m. Pumped slug at 1370 m and continued POOH for bit change. Inspected motor at surface, not rerunable. Broke worn bit.
20.11.2005	Changed motor, M/U 17 1/2" PDC bit and RIH to 947 m (inside 20" shoe), and filled drillstring. Cut and slipped drill line. Function tested BOP from both pods. Continued RIH, breaking circulation and washing/reaming down from 2050 m to TD at 2095 m. Started drilling as per PDC bit procedure and drilled 17 1/2" hole to 2215 m, limiting ROP to 20-25 m/hr to minimize bit balling tendencies.
21.11.2005	Drilled 17 1/2" hole from 2215 m to 2238 m. Stopped drilling temporarily, circulating, while repairing leak on MP #1. Continued drilling 17 1/2" hole to 2472 m (last survey recorded 100 m up). Circulated hole clean and POOH to replace malfunctioning MWD tool, to 2172 m.
22.11.2005	POOH to change MWD tool. Changed BCPM and OnTrak, inspected mud motor and bit. RIH with 17 1/2" BHA to 2430 m, filling string every 1000 m. Washed down precautionary, from 2430 m, resistance from 2452m. Reamed/drilled to TD at 2472 m. Drilled 17 1/2" hole to 2522 m.
23.11.2005	Drilled 17 1/2" hole from 2522 m to 2574m, ROP dropping towards 0 in the end, suspected bit worn out. Circulated bottoms up, and until shakers clean. POOH for bit change. Inspected BHA, changed worn bit and RIH with new 17 1/2" PDC bit to 49m.
24.11.2005	RIH with 17 1/2" BHA, after bit change, to 2517 m. Reamed section, slowly from 2540 m to TD at 2574m. Drilled 17 1/2" hole from 2574m to 2742 m.

Report date	Description
25.11.2005	Drilled 17 1/2" hole to 2765m. Circulated bottoms up and performed a 10 stands wiper trip. Some tights spots were wiped through. Back on bottom circulated until shakers clean, including increasing mud weight to 1,38 sg. POOH to 1761m. Accidentally hit upper racking arm with elevator, shearing pins on arm. Reciprocated string while replacing shear pins. POOH to 83 m.
26.11.2005	POOH with 17 1/2" BHA. M/U MPT and RIH to retrieve bore protector. Performed function test of BOP from both pods with MPT landed in bore protector. Retrieved bore protector, POOH, B/O and L/D bore protector and MPT. R/U to run 14" casing. Ran 14" casing to 644 m. (1/2 hrs NPT to repair leaking hydraulic connection on BX elevator).
27.11.2005	Ran 14" casing from 700 m to 980 m. Changed to 500 tons elevator. 1 hrs NPT to repair and maintain elevator. Tested La Fleur packer. Ran 14" casing from 980 m to 2164 m, working through tight area from 1865 m to 1885 m, and with circulation, to pass tight area around 1985 m.
28.11.2005	Ran and landed 14" casing. Tight 5 m off bottom, worked string with max 350 MT down, with pumps running, and got casing landed, with shoe at 2754m. Attempted to establish circulation, but only minor returns. 1 hr NPT to change out malfunctioning valve on cement head. Pumped 18 m3 1.64 sg spacer, mixed and pumped 19.9 m3 1.92 sg slurry, and displaced with 1,38 sg mud. Sheared top plug with 186 bar, bumped plug with 100 bar. Set seal assembly, after verifying floats not leaking, and tested BOP to 35/635 bar. Released R/T and POOH with landing string. L/D R/T and cement head.
29.11.2005	Changed washpipe. Installed 10K coflex hose in derrick. Pressure tested IBOP's and mud hose to 690/345 bar. Serviced and calibrated crown/floor saver system. Attmepted to install 13 3/8" wear bushing, misrun, assumed due to cuttings accumulation in landing area. Jetted WH, then made a new installation attempt, ok. L/D 17 1/2" BHA.
30.11.2005	L/D 17 1/2" BHA. M/U 12 1/4" BHA, w/VertiTrak, MWD/LWD, and RIH to 500 m. Performed choke drill with day crew. RIH to 1000 m. Filled string, broke circulation and function tested MWD/LWD and VertiTrak. RIH to 1959 m, picking up a total of 130 singles 5 1/2" DP during trip in. Performed stripping drill with night crew.

INTERVAL: 12 1/4"
START TIME: 30.11.2005 16:30
END TIME: 25.12.2005 11:00

Report date	Description
01.12.2005	Completed well control exercise. RIH to 2719 m. Drilled out plugs, floats and cement in shoe track. Cleaned rathole to 2765 m. Driled 4 m of new formation to 2769 m. Circulated and conditioned mud. Performed LOT to 1.71 sg. Displaced well to 1.40 sg OBM. Drilled 12 1/4" hole from 2769 - 2800 m.
02.12.2005	Drilled 12 1/4" hole from 2800 - 2879 m.
03.12.2005	Drilled 12 1/4" hole from 2879 - 2951 m.
04.12.2005	Drilled 12 1/4" hole from 2951 - 2957 m. POOH. Changed bit/ LD ORD tool. RIH. Drilled 12 1/4" hole from 2957 - 2991 m.
05.12.2005	Drilled 12 1/4" hole from 2991 - 3217 m.
06.12.2005	Drilled 12 1/4" hole from 3217 - 3510 m.
07.12.2005	Drilled 12 1/4" hole from 3510 - 3602 m. MU HPHT drilling stand. Took connection fingerprints. Drilled 12 1/4" hole from 3602 - 3675 m.
08.12.2005	Drilled 12 1/4" hole from 3675 - 3908 m. Commenced circulating hole clean.
09.12.2005	Circulated hole clean. POOH. Ran VSP look-ahead from 3850 - 3070 m.
10.12.2005	Completed VSP look-ahead run. Evaluate VSP result. Meanwhile LD BHA and MU cmt stand. RU and run 9 7/8" liner to 387 m.
11.12.2005	Ran 9 7/8" liner to 1256 m. MU hgr. Run liner on landing string to 1474 m. String took weight. Worked pipe and POOH to 1358 m.
12.12.2005	POOH. LD damaged liner hgr and wear bushing. Retrieved 9 7/8" liner to surface. RIH. Jetted wellhead/ BOP. Installed wear bushing.
13.12.2005	Cleaned WH and BOP area with jet sub assembly. POOH with MPT. RIH w/ reverse circulating junk basket and casing scraper. Circulated BU at TD. Cut core from 3908 - 3908,5 m. POOH to 2688 m.

Report date	Description
14.12.2005	Continued POOH w/ casing scraper, string magnets and reverse circulating junk basket. Removed junk from junk basket and string magnets. Cleaned rig floor. RIH with BOP test tool. Tested BOP. POOH with test tool. Reran reverse circulating junk basket. RIH to 1050 m.
15.12.2005	RIH with reverse circulating junk basket from 1050 m to 3808 m. Circulated bottoms up. Cut core from 3908,5 m to 3909 m. POOH with junk basket. Removed packed formation from mill shoe.
16.12.2005	Emptied junk basket and recovered 3,8 kg junk. Have recovered total of 16,6 kg junk of 17 kg lost in hole. Ran MFC-80 caliper on wireline and surveyed from 2007 m to 129 m. Layed out 34 stands 5 1/2" DP from derrick. Made up 12 1/4" milling BHA.
17.12.2005	Made up 12 1/4" milling BHA. RIH with BHA while picking up 5" drill pipe from deck. Picked up total of 210 joints from deck.. POOH and racked back 5" stands in derrick. Repaired pipe handler on top drive. Repaired hydraulic hose on drawworks.
18.12.2005	POOH and racked back 5" drill pipe stands in derrick. RIH with 12 1/4" milling BHA from 1151 m to 2722 m on 5 1/2" drill pipe. WOW due to problems getting supply boat in to unload casing string. Meanwhile performed general rig maintenance. RIH from 2722 m to 3909 m. Milled/drilled from 3909 m to 3910 m. POOH from 3910 m to 3592 m.
19.12.2005	POOH with 12 1/4" Milling assembly from 3592 m. Retrieved wear bushing. Rigged up to run casing. Ran 9 7/8" liner to 301 m.
20.12.2005	Ran 9 7/8" liner from 301 m to 1260 m. Installed liner hanger and continued to RIH with 9 7/8" liner on 5 1/2" drill pipe from 1260 m to 3083 m.
21.12.2005	RIH with 9 7/8" liner to 3910 m. Set liner hanger. Reduced mud weight from 1,64 SG to 1,61 SG. Cemented liner and set liner packer. Circulated out excess cement. POOH with liner hanger running tool.
22.12.2005	Performed maintenance on top drive and drawworks control system. RIH and set wear bushing. Tested BOP.
23.12.2005	Function tested BOP. RIH with RTTS packer. Set packer at 217 m and tested 14" x 9 7/8" casing liner to 338 bar for 10 minutes. Tested 14" casing above RTTS packer to 632 bar for 10 minutes. POOH with RTTS. Tested kick joint, kick stand, top drive IBOP's, and other surface safety equipment to 35/345 bar and 35/635 bar as applicable.
24.12.2005	RIH with 8 1/2" BHA to 3735 m. Slipped and cut drill line. Washed down from 3745 m . Tagged cement at 3871 m. Drilled cement/shoe track from 3871m to 3872 m.
25.12.2005	Drilled shoe track and displaced well to 2,03 SG mud. Drilled shoe at 3910 m. Performed HPHT fingerprinting. Circulated and conditioned mud. Drilled 3 m new formation with limited ROP to 3914 m. Performed pumps off test.

INTERVAL: 8 1/2"
START TIME: 25.12.2005 11:00
END TIME: 16.02.2006 01:30

Report date	Description
26.12.2005	Circulated bottoms up after pumps off test. No gas observed. Performed FIT to 2,12, SG EMW. Drilled 8 1/2" hole from 3914 m to 3949 m according to HPHt procedures. Checked for gas at 3935 m. Observed 1,1% gas at bottoms up.
27.12.2005	Drilled 8 1/2" hole accodring to HPHT procedures from 3949 m to 3989 m.
28.12.2005	Established full circulation and attempted to drill ahead. Stopped due to low penetration rate. Ciruclated bottoms up according to HPHT procedures. Max gas: 0,7%. Flow checked well, well static. Performed short trip from 3989 m to 3832 m. RIH and circulated bottoms up according to HPHT procedures. Pumped out from 3989 m to 3396 m. Flow checked well, well static. Performed kick drill. POOH from 3396 m to 337 m. Flow checked well, well static. POOH to 112 m.
29.12.2005	POOH with 8 1/2" BHA. Changed bit, MWD and replaced 1 ea stabilizer with roller reamer. RIH to 3835 m, as per HPHT procedures. Performed 1 hrs inspection of derrick for potential falling objects, meanwhile function testing MWD tool. Performed function test of BOP. Started work to change malfunctioning IBOP on topdrive.
30.12.2005	Replaced the IBOP on the topdrive, and tested the mud hose and the IBOP to 345/635 bar. Inspected the BOP with ROV and verified leakage to originate from manifold regulator on yellow pod. Installed hang-off tool, landed in WH and released from string. POOH with landing string, closed shear ram and displaced riser to SW. Rigged up to pull LMRP. Disconnected LMRP and prepared for moving rig.

Report date	Description
31.12.2005	Moved the rig to parking position, prior to pulling the riser and LMRP. Secured LMRP in moonpool, changed leaking manifold regulator and function tested both pods. Waiting for weather to improve sufficiently to rerun and land LMRP.
01.01.2006	Waited for weather to improve sufficiently to be able to re-run LMRP after repair of leakage on yellow pod. Held prejob meeting with crew and started to run in LMRP.
02.01.2006	Ran LMRP and riser to 115 m. Deballasted rig 2 m. Moved rig into WH position. Landed and latched LMRP onto BOP. Pressure tested choke/kill lines to 35/635 bar. Ballasted rig 2 m, back to drilling draft. Nippled up the riser and installed the diverter. R/d riser handling equipment. Filled the riser with SW and verified no leaks in system. Displaced riser to 2.03 sg mud. RIH with retrieving tool for HOT, engaged same, and POOH with HOT and drill string. Redressed and laid out HOT. M/U BOP test tool, RIH and landed in WH. Pressure tested BOP to 35/635 bar (annulars to 483 bar).
03.01.2006	Performed pressure and funtion test of BOP. POOH with BOP test tool and laid out same. RIH to TD at 3989m, filling string, breaking circulation and washing down last stand. Circulated bottoms up, max gas 2.25 %. Continued circulating to condition mud prior to start drilling. Drilled 8 1/2" hole from 3989 m to 4014 m, adhering to HPHT procedures.
04.01.2006	Drilled 8 1/2" hole from 4014 m to 4100 m, adhering to dedicated HPHT procedures. Flowchecked drilling breaks at 4036 m and 4072 m. Max. gas readings 9,45% from 4072 m.
05.01.2006	Drilled 8 1/2" hole from 4100 m to 4156 m, as per HPHT procedures.
06.01.2006	Drilled 8 1/2" hole from 4156 m to 4167 m. Drilling break at 4165 m was flowchecked prior to drilling 2 m more, and circulating bottoms up for samples. Decision made to POOH for coring. Performed check trip to 9 7/8" shoe. Circulated bottoms up when back at TD, flowchecking and verifying well stable with returns at 1000 m. Pumped out of hole up to 3600 m. Dropped and pumped to land dart in dart sub, prior to pumping slug and POOH. POOH to 2160 m, with restricted tripping speed inside 9 7/8" liner.
07.01.2006	POOH with 8 1/2" BHA from 2160 m, flowchecking well before pulling BHA through BOP. Broke and laid out dart sub w/dart, 8 1/2" roller reamer, bit, float subs and MWD tools. Pressure tested 3 ea FOSV's (full opening safety valves) in drilling stand and 2 ea loose ones. MU 90 ft core barrel and RIH to 2247 m, filling string every 500 m.
08.01.2006	RIH with 90 ft corebarrel from 2247 m to 4135 m, filling string every 500m, and restricting tripping speed inside 9 7/8" liner and in open hole. Broke circulation and washed down last stand. Tagged bottom at 4167m, no fill. Circulated bottoms up. Dropped ball, recorded SCR, and cut core #1 from 4167m to 4179m, where it jammed off. Attempted to restart coring, without success. Circulated bottoms up, flowchecked well, and pumped out of hole to 3600m. Flowchecked well prior to pumping slug and starting POOH to 3140 m, limiting tripping speed.
09.01.2006	POOH from 3140 m with core #1. Reduced pulling speed towards surface to allow for gas evacuation from core. Verified well stable prior to pulling BHA through BOP. Recovered core #1 (12.6 m / 100 % rec). Redressed corebarrel, now with "jam-buster" (telescopic) inner barrel, and new, smaller ID, bit. RIH with 90 ft core assembly to 3115 m, filling string every 500 m, and with reduced tripping speed inside 9 7/8" liner.
10.01.2006	RIH with 90 ft core barrel from 3115 m, limiting tripping speed to avoid surge effects. Broke circulation inside 9 7/8" liner shoe, prior to proceeding trip in. Established circulation and washed down last stand from 4162 m. Tagged bottom and circulated bottoms up, no increase in gas level recorded. Spaced out string, pumped down ball, recorded SCR's and cut core #2 from 4179,6 m to 4202 m. Core jammed off at 4202 m. Flowchecked well and circulated bottoms up. No gas reading increase. Pumped out of hole, 1 min/stand with 1000 lpm, to 3705 m.
11.01.2006	Pumped out of hole from 3705 m to 3600m. flowchecked well. Flushed kill/choke lines. Pumped slug. function tested BOP. POOH from 3600 m to surface, adjusting pulling speed as per HPHT procedures, changing to 5" handling equipment at 1806 m, and flowchecking well prior to pulling BHA through BOP. Recovered core #2 (21.4 m recovered out of 22.4 m cored). Pressure tested IBOP's, mudhose and 2 ea FOSV's on kill single, 1 1/2 hrs NPT due to leaking washpipe. MU and RIH with 120 ft core barrel, with "jambuster", to 592 m.
12.01.2006	RIH with 120 ft core barrel from 592 - 4182 m (Flowchecked at 2755 m. Flowchecked and circulated at 3160 m). Washed down from 4182 - 4202 m. Dropped/ circulated down ball. Cut core no 3 from 4202 - 4228 m.
13.01.2006	Cut core no3 from 4228 - 4238,5 m. Flow checked. Circulated bottoms up. Flow checked. Pumped out of hole to 3600 m. Flow check. POOH to 136 m.
14.01.2006	POOH and recovered core no 3. Evaluated core result. RIH with core no 4 to 3890 m. Cut and slipped drilline. RIH to 4238,5 m. Cut core no 4 from 4238,5 - 4241 m.
15.01.2006	Completed cutting core no 4 from 4041 - 4075 m (36,5 m). Flow checked. Circulated BU. Pumped out of hole to 3600 m. Flow checked. POOH to 2842 m.
16.01.2006	POOH and recovered core no 4. Tested BOP. MU core barrel no 5. RIH with same to 1700 m.
17.01.2006	RIH to 4239 m. Washed down from 4239 - 4275 m. Cut core no 5 from 4275 - 4304 m. Core jammed off. Flow checked. Circulated BU.

Report date	Description
18.01.2006	Completed circulating BU. Pumped out of hole to 3600 m. POOH and recover core no 5. RIH with 8 1/2" drilling BHA to 1000 m.
19.01.2006	RIH with 8 1/2" drilling BHA to 4134 m. Logged/ reamed with MWD from 4134 - 4304 m (cored section). Drilled 8 1/2" hole from 4304 - 4337 m.
20.01.2006	Drilled 8 1/2" hole from 4337 - 4422 m.
21.01.2006	Drilled 8 1/2" hole to 4478,5 m. Circulated for samples. Flow checked. Circulated BU. Flow checked. Pumped out of hole to 3900 m.
22.01.2006	Pumped out of hole to 3600 m. Flow checked. POOH. MU and RIH with core barrel no 6 to 3544 m.
23.01.2006	RIH to 3570 m. Slipped and cut drilline. RIH to TD. Circulated BU. Cut core no 6 from 4478,5 - 4494 m (jammed off). Circulated BU. Flow checked. Pumped out of hole to 3893 m.
24.01.2006	Pumped out of hole to 3600 m. Flow check. Circulated. POOH and recovered core no 6. MU/ RIH with core barrel no 7 to 1500 m.
25.01.2006	RIH with core barrel no 7 to TD (function tested BOP on the way in). Cut core no 7 from 4494 - 4506 m (core jammed). Flow checked. Circulated BU. Pumped out of hole to 4320 m.
26.01.2006	POOH with and recovered core #7. Recovered 11,06 m core (92,1% recovery). Made up and RIH with 8 1/2" to 430 m.
27.01.2006	RIH with 8 1/2" BHA to 4468 m. Logged/reamed cored interval from 4468 m to 4506 m. Drilled 8 1/2" hole from 4506 m to 4563 m according to HPHT procedures.
28.01.2006	Drilled 8 1/2" hole from 4564 m to 4590 m. Observed possible motor failure. Flow checked well, well static. Circulated bottoms up.Flow checked well. Pumped out of hole from 4590 m to 3858 m.
29.01.2006	Pumped out with 8 1/2" BHA from 3857 m to 3595 m. Flow checked. POOH from 3595. Observed bit severly damaged. Tested surface well control equipment. RIH with junk bit to 502 m.
30.01.2006	RIH to 4590 m. Worked bit on junk while circulating and conditioning well for logging.Circulated total of 4 bottoms up. Pumped out of hole from 4590 m to 4024 m according to HPHT procedures.
31.01.2006	Pumped out of hole to 3500 m. Installed BOP test tool and TIH. Tested BOP to 35/635 bar for 5/10 minutes. POOH. Rigged up to run wireline log # 1(dual OBMI).
01.02.2006	RIH and performed log run # 1 - OBMI-ECRD. POOH. Rigged down tools from run # 1. Rigged up tools for run #2. RIH and performed log run # 2 - DSI-AIT. POOH. Rigged down tools from run # 2.
02.02.2006	Ran log #3 IPTL/CMR as per program. CMR failed. POOH. RIH with log # 4 MDT pretest. Logged with MDT pretest as per program.
03.02.2006	Performed 35 MDT pressure points according to program. POOH. Rigged down MDT. Rigged VSP 4 level tool and RIH. Observed telemetry problems. Attempted to perform survey, no success. POOH with VSP to 2250 m.
04.02.2006	POOH with VSP tools. Repaired burnt pin connector. RIH. Observed tools sticking while RIH. Performed VSP zero offset survey. Tool stuck at 4474 m. Pulled free with 4000 lbs overpull. Competed VSP survey. POOH. RIH with VSP walkaway tools. Positioned boat and performed VSP walkaway survey.
05.02.2006	Completed VSP walkaway survey. POOH and rigged down wireline equipment. Made up 8 1/2" BHA for wipertrip. RIH to 3178 m. Filled pipe and broke circulation every 500 m.
06.02.2006	RIH to 4570 m. Washed down from 4570 m to 4590 m. Circulated bottoms up. Max gas 9,8 %. Circulated and conditioned mud. Flow checked well. Pumped out of hole from 4590 m to 3600 m. Flow checked well. POOH from 3600 m to 2871 m.
07.02.2006	POOH from 2871 function tested BOP. POOH. Rigged up to run MDT sampling tools. RIH to 4479,2 m. Tool failed. POOH to 2000 m. Tool working. Evaluated situation. RIH to 4479,2 m. Tool failed. Identified which tool failed. POOH. Laid out MDT sampling tools. General alarm sounded on rig. Muster according to station bill. Continued to Lay out MDT tools.
08.02.2006	Rebuilt MDT tool string and troubleshot telemetry problems. RIH and tested tools. Performed MDT sampling according to program.
09.02.2006	Finished MDT sampling as per program. POOH with tool string and recovered samples. Redressed MDT tool string and RIH to 9 7/8" shoe. Indications of low voltage supply. Troubleshot to find cause of fault, without success. POOH, troubleshot cable head at surface. Located fault to cable head. Changed cable head, and reterminated rope socket precautionary. Reconnected cable to tool string and attempted to function test the MDT string, still problems. Troubleshot and located another fault in 1 gallon module. Replaced same and worked to rebuild MDT tool string.

Report date	Description
10.02.2006	Finished rebuilding MDT toolstring and RIH for sampling. At 1600 m it was observed that logging cable had been routed on incorrect side of compensating wire. POOH, disconnected, re-routed and re-connected cable correctly, and RIH for MDT sampling. Recorded water samples from 2 different depths, recorded 5 ea pressure points for confirmation of previous measurements, in interval from 4474 m to 4486 m. Moved to 4074m, and started to clean-up formation fluid for sampling in HC zone. Filled 1 ea 250 cc bottle.
11.02.2006	Finished MDT sampling, filling 2 ea 250 cc bottles at 4074 m. POOH, recovered samples and rigged down WL equipment. RIH with 8 1/2" BHA for wiper trip, to 2525 m. Cut and slipped drill line. 1/2 hr NPT to repair hydraulic leak on racking arm, and remote operation of IBOP. RIH to TD of well, filling string every 500 m, and breaking circulation at 3400 m. Washed down last stand and circulated to clean and condition hole and mud. Flowchecked well with returns from upper sampling point (4074 m) at 1000 m.
12.02.2006	Circulated to get HC remains from MDT sampling out of the well. Flowchecked with HC remains estimated at 500 m, and when starting to approach surface, due to excessive gas readings (45 %). After verification of stable well, circulation was resumed, w/1400 lpm, until gas peak out of well (max. 81 %). Circulated until gas level had dropped below 2 %, before flowchecking once more. Circulated 1 more full circulation, while treating/conditioning the mud. Pumped out of hole to 3600 m. Verified well stable prior to pumping slug and continue POOH. At 2234 m, when changing to 5" handling equipment, it was observed that main brake bands had been adjusted with too small clearances. 1 hr NPT to re-adjust bands. POOH with 8 1/2" BHA, racked BHA in derrick, and RU WL equipment for sampling with MDT tool string.
13.02.2006	RIH with MDT for water sampling, formation pressure recording, and mini DST's. Water sampling was aborted after 4,5 hrs due to pump failure. Formation pressure recording in sand lenses in top reservoir did not succeed due to very tight formation. 2 ea mini DST's were performed, at 4481,3 m and at 4180,0 m, respectively.
14.02.2006	Finished 2nd mini DST at 4180m. Attempted to check fluid mobility at 4182,5 m, when tool failed. POOH with MDT and rigged down WL equipment. RIH with BOP test plug. Pressure tested BOP to 35/483/635 bar for 5/10 min. Function tested BOP from other pod (yellow). POOH with BOP test plug. RU WL equipment and RIH with MDT tool for water and HC sampling. Sampled 2 ea 420 cc water samples at 4213,5 m. Moved to next water sampling depth at 4514,5 m.
15.02.2006	Sampled 2 ea 420 cc water samples at 4514, 5 m, and 2 ea 420 cc oil samples at 4182,1 m. POOH with MDT. Recovered samples and LD MDT components. MU CMR tool string and RIH. Performed logging with CMR across reservoir section, as per program. POOH, at 2700 m.

INTERVAL: DST
START TIME: 16.02.2006 01:30
END TIME: 30.03.2006 20:00

Report date	Description
16.02.2006	POOH and LD CMR logging tool string. RIH with MSCT tool string and cut 50 ea sidewall cores. POOH and LD tool string, verifying acceptable recovery (48 ea cores recovered). RD WL equipment. Pressure tested mud hose, DDM and kick joint valves. 1 1/2 hrs NPT, related to pressure testing of mud hose.
17.02.2006	RIH with 3 1/2" diverting tool on 3 1/2" X 5" x 5 1/2" DP, filling string every 500 m, and breaking circulation at 2000 m and at 3500 m. Washed down last stand and tagged TD at 4590 m. Circulated bottoms up to clean well from HC remains from MDT sampling, and to condition mud. Flowchecked well when returns from HC sampling point reached 1000 m and 500 m, respectively. Max. gas when HC remains reached surface was 52,5 %. Continued circulating to condition mud prior to cement job, stepwise increasing flow rate to 1800 lpm / 280 bar. MU kick single with T-outlet and FOSV's, hooked up and pressure tested cement hose to 300 bar, while circulating through topdrive.
18.02.2006	Pumped 10,6 m3 2,05 sg spacer (incl. surface line). Pumped 14 m3 2,07 sg cement slurry, pre mixed in batch mixer, and displaced cement line with 300 ltr DW. Changed line-up through DDM and displaced cement with 1,6 m3 2,05 sg spacer, followed by 38,5 m3 2,03 sg mud. Pumped and pulled out of cement plug, pumping 240 ltr while pulling each of 12 ea stands. At 4174 m, circulated bottoms up to clean well. 26 m3 contaminated mud/spacer was diverted out of active. POOH with cement stinger. MU and RIH with 8 1/2" BHA and PDC bit at 2300 m, for tagging and dressing of cement.

Report date	Description
19.02.2006	RIH with 8 1/2" BHA from 2300 m to 3890 m. 1 hr NPT to repair iron roughneck. RIH and tagged cement at 4180 m. Broke circulation and washed down. 1/2 hrs NPT to reset all 3 ea pop-off valves. Drilled and dressed cement down to 4299 m. Circulated bottoms up and until shakers clean. Flowchecked and verified well stable, prior to pumping out of hole to 3600 m. Flowchecked well once more, before pumping slug and dropping dart for drifting purposes. POOH to 620 m.
20.02.2006	POOH with 8 1/2" BHA, and racked in derrick. Cleared rig floor. M/U cement head stand and racked in derrick. Drifted 16 ea stands 5 1/2" DP in derrick, 2 3/4" drift. RU and ran 7" liner, total 40 ea joints. Replaced rig's BX elevator with rental BX, due to too tight tolerances when latching on FC joint. PU and MU liner hanger to string, circulated liner volume with 800 lpm / 12 bar, and ran in with 7" liner on 5" DP landing string to 2536 m, filling landing string every 10 stands. Changed to 5 1/2" handling equipment and RIH with 7" liner on 5" x 5 1/2" DP landing string to 3030 m.
21.02.2006	RIH 7" liner from 3030 m and set liner hanger with top PBR at 3810 m, and with liner shoe at 4298 m, requiring a 2nd ball to be dropped, to seal in ball seat. Circulated bottoms up and until 2,07 sg cement slurry premixed in batch mixer. Pumped 12 m3 2,05 sg spacer, before dropping dart #1, pumping 11,3 m3 cement slurry, dropping dart #2, and displacing slurry with 46,9 m3 2,03 sg mud. Bumped plug, pressured up and kept 170 bar for 5 min, prior to bleeding off and verifying no back flow. Set top packer, prior to circulating well clean of spacer and excess cement slurry. Racked cement head stand, flushed through string with 2 ea sponge balls, before pumping slug and POOH to 2480 m. Performed function test of BOP prior to continuing POOH to 2330 m.
22.02.2006	POOH with liner hanger running tool from 2330 m. BO and LD cement head stand from derrick. Logged across 7" liner with CBL. Performed repair work on formerly discovered minor leak in fine threaded connection on nipple between goose neck and s-pipe to mud hose, DDM. Meanwhile, pressure tested well against closed shear ram to 170 bar / 10 min. MU 13 3/8" scraper, RTTS, safety joint and circulating sub, and RIH to 740 m. Pressure tested mud hose to 345 bar / 10 min, with FW, to verify integrity of overhauled fine threaded connection. 4,5 hrs NPT related to repair of damaged seal in fine threaded connection on DDM, and testing.
23.02.2006	RIH with 13 3/8" RTTS assembly to 2600 m. Scraped across planned setting depth for RTTS packer. Displaced DP to 0,76 sg base oil. Set RTTS packer. Inflow tested 9 7/8" liner lap. Pressured up to 280 bar, opened circulating valve, released RTTS, and U-tubed base oil in string back to mud pit via choke. POOH with 13 3/8" RTTS assembly to 379 m (LD 90 singles of 5" DP).
24.02.2006	POOH and LD 13 3/8" RTTS assembly. MU and RIH with well clean-out assembly to 4237 m. Dressed off PBR. Set commissioner packer. Performed inflow test of 7" liner.
25.02.2006	Completed inflow test of 7" liner. Displaced well to treated SW. POOH with clean out string to 2305 m while LD excess DP.
26.02.2006	POOH LD excess DP. RIH with BOP test tool. Commenced testing BOP.
27.02.2006	Pressure and function tested BOP. Jetted/ cleaned BOP/ WH area. Installed production packer on wire line (meanwhile pressure tested well to 610 bar). Performed dummy run with fluted hanger. LD 5 1/2"DP and 6 1/2" DC. RD 15 k coflexip kill hose from kill standpipe in derrick. Commenced hooking up 15 k flow coflexip hose on flow standpipe in derrick.
28.02.2006	Completed installing kill and flow hoses in derrick. RU and run test string with 3 3/8" HSD guns, BHA and 3 1/2" PH-6 tbg to 785 m.
01.03.2006	Ran BHA for DST # 1 on 3 1/2" PH-6 tbg to 3558 m.
02.03.2006	Run BHA for DST # 1 on 3 1/2" PH-6 tbg. Perform space out run on 5 1/2" DP. POOH with same. RUN SSTT and landing string. MU STT and LD same on single tbg. Run remaining landing string. PU STT. Installed long bails. Prepared kill and flow hoses.
03.03.2006	Installed kill and flow hoses on SST. RIH and landed DST # 1 string. Pressure tested string and STT. Tested surface equipment.
04.03.2006	Completed testing surface equipment. Checked lines and status of testing euipment. Pressured up and perforate well. Performed clean-up flow, bottom hole sampling flow and commenced performing main flow.
05.03.2006	Performed main flow. Shut in well against LPR-N. Performed main build up.
06.03.2006	Performed main build-up. Well shut in against LPR-N.
07.03.2006	Performed main build-up. Well shut in against LPR-N.
08.03.2006	Performed main build-up. Well shut in against LPR-N.
09.03.2006	Performed main build-up. Well shut in against LPR-N. Bled off bressure over LPRN. Filled tubing with 12,8 m3 2,03 SG mud. Opened LPR-N. Bullheaded 2,4 m3 mud into tubing. Observed pressure build-up. Performed 2 mini-frac cycles. Closed LPR-N valve. Opened RD valve and commenced killing annulus.

Report date	Description
10.03.2006	Displaced annulus to 2,03 mud. Observed gas cut mud in return. Observed losses. Established loss rate of 12 m3 / hr. Circulated down annulus with cement unit to activate RD circulation safety valve and isolate test string from reservoir. Had return down to 1,66 sg due to gas cut mud. Observed max gas in mud of 97 %. Weighted up mud and displaced annulus to 2,03 sg mud in several stages until mud weight out was 1,99 sg and barite supply on rig exhausted. SICP= 3 bar and SIDPP= 5 bar. Waiting on new mud supplies from shore.
11.03.2006	Monitored shut in well (SIDPP= 5 bar, SICP = 3 bar) while waiting on mud supplies from shore. WOW due to high sea conditions for offloading mud from boat. Offloaded 60 ton barite from boat and mixed 50 m3 2,03 SG mud. Diplaced mud in annulus in several stages to 2,03 SG. Stopped and treated mud as required. MW out after last stage = 2,01 SG. Max gas in mud observed = 36 %. Offloaded mud and barite from supply boat. Prepared mud to circulate into well. Monitored shut in well (SIDPP= 3 bar, SICP = 6 bar).
12.03.2006	Circulated and conditioned mud through choke until mud weight even in/out at 2,03 SG. Flow checked well, well static. Displaced marine riser to 2,03 SG mud. Evacuated trapped gas from under MPR. Opened MPR. Flow checked well, well static. Circulated and conditioned mud up riser until even mud weigh in/out at 2,03 SG. Flow checked well, well static. Pressrued up annulus and opened lower RD circulation valve. Bullheaded 1,5 m3 mud into formation with 124 bar. Flow checked well, well static. Prepared to pick up DST string 10 m.
13.03.2006	Laid out surface test tree. Pulled DST string out of PBR. Bullheaded xx m3 2,03 SG mud to displace reamining seawater/hydrocarbons back to formation. Circulated and conditioned mud. Flow checked when bottoms up at 1000 m, well sstatic. Continued to circulate and condition mud. Commenced POOH with DST String from 4171 m to 4001 m.
14.03.2006	POOH with DST string from 4001 m to surface. Recovered downhole guages and sample bottles. Rigged up to run EZSV bridge plug on wireline. Ran EZSV plug to 1300 m
15.03.2006	RIH with EZSV bridge plug on wireline from 1300 m. Set plug at 4106 m. POOH and rigged down wireline equipment. Tested bridge plug from above to 170 bar against shear ram for 10 minutes, OK. RIH with EZSV retainer on 3 1/2" tubing to 1440 m. Picked up BOP test tool and RIH. Set test tool in wellhead. Diplaced kill/choke lines and BOP to seawater.
16.03.2006	Tested BOP to 35/540 bar, Annular to 490 bar for 5/10 minutes. POOH with test plug. RIH with EZSV retainer plug from 1415 m to 4103 m. Set EZSV retainer plug at 4103 m.
17.03.2006	Tested EZSV retainer plug from below to 170 bar. Circulated and conditioned mud. Reverse circulated with mud to establish pressure losses for displacement. Pumped 16 m3 base oil down string. Max pressure on cement unit 437 bar. Bled down to 10 bar and inflow tested lower EZSV bridge plug. Recovered base oil out of string. Observed drawworks break caliper failure. Troubleshot and commenced repairing same.
18.03.2006	Repaired, inspected and tested drawworks brake system. Waited on Northern Wave (supply boat for displacment) to return from assisting Aberdeen Coast Guard with fishing vessel in distress. Displaced riser to seawater. Reverse circulated out mud in well with seawater.
19.03.2006	Completed reverse circulating well to seawater. Flow checked well, well static.Opened BOP and displaced well to treated seawater. Flow checked well. POOH with work string from 4103 m to 229 m.
20.03.2006	POOH with 3 1/2" work string from 229 m to surface. Rigged up wireline and RIH with permanet packer. Set packer at 4038,6 m. POOH and rigged down wireline. Rigged up to and ran DST #2 tool string to 167 m. Tested tool string to 610 bar for 10 minutes, OK. RIH with DST #2 string on 3 1/2" tubing from 167 m to 739 m.
21.03.2006	Run BHA for DST #2 on 3 1/2" PH-6 tubing. Pressure tested tubing. Perform space out run on 5 1/2" DP. POOH with same. Perform BOP function test, OK. PU and MU SSTT.
22.03.2006	Tested SSTT. RIH with test string from 3948 m to 4035 m. Installed and tested SSLV. RIH with test string from 4035 m to 4082 m. Picked up STT and installed kill and production hoses. Installed STT to string and landed fluted hange in wellhead. Attempted to test kill hose, observed leaks. Troubleshot and repaired leaks on cement unit and STT. Tested kill hose against STT to 610 bar, OK. Prepared to inflow testing SSLV.
23.03.2006	Pressure tested landing string to 610 bar, and pressure tested/inflow tested rest of surface barriers to 610/35 bar, as per program. Shifted RD bypass valve and LPR-N to well flowing mode by pressuring up annulus to 100 bar. Held pre job meeting with all involved personnel. Pressure tested packer/seal assembly from below to 590 bar. Verified PSD-1 functions working as intended, from drill floor and from control room. Pressured up to 300 bar with cement unit to activate TCP guns. Perforated well against closed choke manifold, with 90 bar underbalance. Performed initial flow, initial build up, and clean up flow as per program. Prepared for bottom hole sampling flow.
24.03.2006	Prepared for and performed bottom hole sampling, while flowing via 20/64" choke. Increased choke size to 28/64" and continued flowing well under stable conditions for another 10 hrs, main flow period. Shut in well on LPR-N, thereafter on choke manifold. Performed main build up test.
25.03.2006	Well shut in for main build up.
26.03.2006	Well shut in for main build up (planned total shut in period of 96 hrs).
27.03.2006	Well shut in for main build up.

Report date	Description
28.03.2006	Well shut in for main build up. Bleed of string above LPR-N, flush surface lines with MEG/SW. Fill string with 10,8 m3 MEG/SW. Pressure up to 352 bar above LPR-N and opened valve. Bullheaded string content into formation with max 380 bar starting pressure, filling string with 2,03 sg mud. Unable to bullhead any 2,03 sg mud into formation within the preset pressure limitation of 208 bar. Made several attempts to fracture the formation, without success. Closed LPR-N, changed line-up and pressured up with cement unit on annulus to 290 bar and established communciation between tubing and annulus, at the same time sealing off the communication with reservoir by closing the RD safety valve. Prepared to displace annulus to 2,03 sg mud.
29.03.2006	Displaced annulus to 2.03 sg mud, using Drillers method. Circulated until 2.03 sg mud in return. Flowchecked and verified well stable. Opened lower RD circulating valve and verified bullheading possible at this stage. Performed 3 ea cycles of mini fracturing, pumping a total of 10,7 m3 into formation. Flowchecked well via choke line and verified stable. Displaced riser to 2.03 sg mud, prior to opening middle pipe ram, and observing well stable on triptank, 30 min. Picked up string, broke and laid out flowhead. Changed bails. MU DDM to teststring and lifted up until bottom string above packer. Bullheaded 2 m3 into formation.
30.03.2006	Circulated to condition mud and hole, prior to POOH. LD kil/flow coflex hoses while circulating. Flowchecked well. Pumped slug. POOH, LD 4 1/2" tubing landingstring, SSLV and SSTT. Cleared rigfloor of all DST equipment. Changed to 3 1/2" handling equipment. POOH to 3780 m, racking 3 1/2" tubing in derrick. Flowchecked and verified well stable, with bottom test string above top of 7" liner. POOH with 3 1/2" teststring, racking 3 1/2" tubing in derrick. Flowchecked well with down hole tools below BOP. POOH rest of string, LD all downhole tools.

INTERVAL: PERM P&A
START TIME: 30.03.2006 20:00
END TIME: 09.04.2006 09:30

Report date	Description
31.03.2006	RIH with BOP test tool. Pressure tested BOP to 35/483/550 bar for 5/10 min, and function tested from other pod. Meanwhile, installed torque wrench assembly on iron roughneck. POOH with BOP test tool. Cut and slipped drill line, with 5 1/2" DP through BOP. 2 hrs NPT, while reinstalling and calibrating missing brake caliper segment on drawwork. POOH 5 1/2" DP. RU WL. RIH with 7" EZSV bridge plug on WL and set plug at 4035 m. POOH with WL. Prepared WL perforation tool, meanwhile pressure tested 7" EZSV to 208 bar against closed shear ram. RIH with perforation tool on WL, perforated 7" liner from 3925 m to 3931 m. POOH with perforation tool.
01.04.2006	POOH with perforating gun, LD toolstring and RD WL. RIH with 3 1/2" x 5 1/2" cement stinger, with diverting tool on bottom, and with gauge carrier incorporated +- 400m from bottom. Tagged and located EZSV at 4033 m (drillers tally). Circulated string volume. Performed XLOT with cement unit. 1 hrs NPT to open IBOP due to low rig air pressure. Circulated and conditioned mud and hole prior to cement job. MU T-sub with FOSV below, in string, attached low torque valve and cement hose. Continued circulation while mixing cement slurry in batch mixer. Pumped 9 m3 2,05 sg spacer with rig pumps, 6,7 m3 2,07 sg cement slurry with cement unit, before displacing slurry with 1 m3 2,05 sg spacer and 17 m3 2,03 sg mud. POOH slowly through cement plug, up to 3900 m.
02.04.2006	POOH with cement stinger to 3500 m. Flushed through string with max rate (1150 lpm / 280 bar). POOH, changing to 3 1/2" handling equipment at 3053 m, and LD a total of 158 joints of 3 1/2" tubing, from 2083 m. LD gauge carrier and diverting tool. MU and RIH with mechanical setting tool, with 14" EZSV bridge plug attached, on 3 1/2" tubing to 90 m.
03.04.2006	RIH with ported sub, and mechanical setting tool with 14" EZSV bridge plug, and ported sub, on 3 1/2" tubing x 5 1/2" DP, to 2630 m. Pressured up to 150 bar to test cement plug inside 9 7/8" liner (TOC at 3750 m). Set EZSV at 2630 m, and pressure tested plug to 270 bar / 10 min. Planned boat for mud storage during well displacement was cancelled. Waited for alternative vessel to arrive, ETA 03.04.06 10:00 hrs.
04.04.2006	Waited for boat to arrive, to be able to start displacement of well. Displaced riser to 1,40 sg water based mud. Rearranged line up and reverse circulated, with MPR closed, to displace well to 1,40 sg WBM, transferring 2,03 sg from well, via 2 alternating pits, to boat. Set cement plug from 2630 m (EZSV) to 2530 m. POOH slowly with string, up to 2335 m. Flushed through string to clean same. POOH and racked 5 1/2" DP in derrick. Changed to 3 1/2" handling equipment and continued POOH to 880 m, LD 3 1/2" tubing in singles.

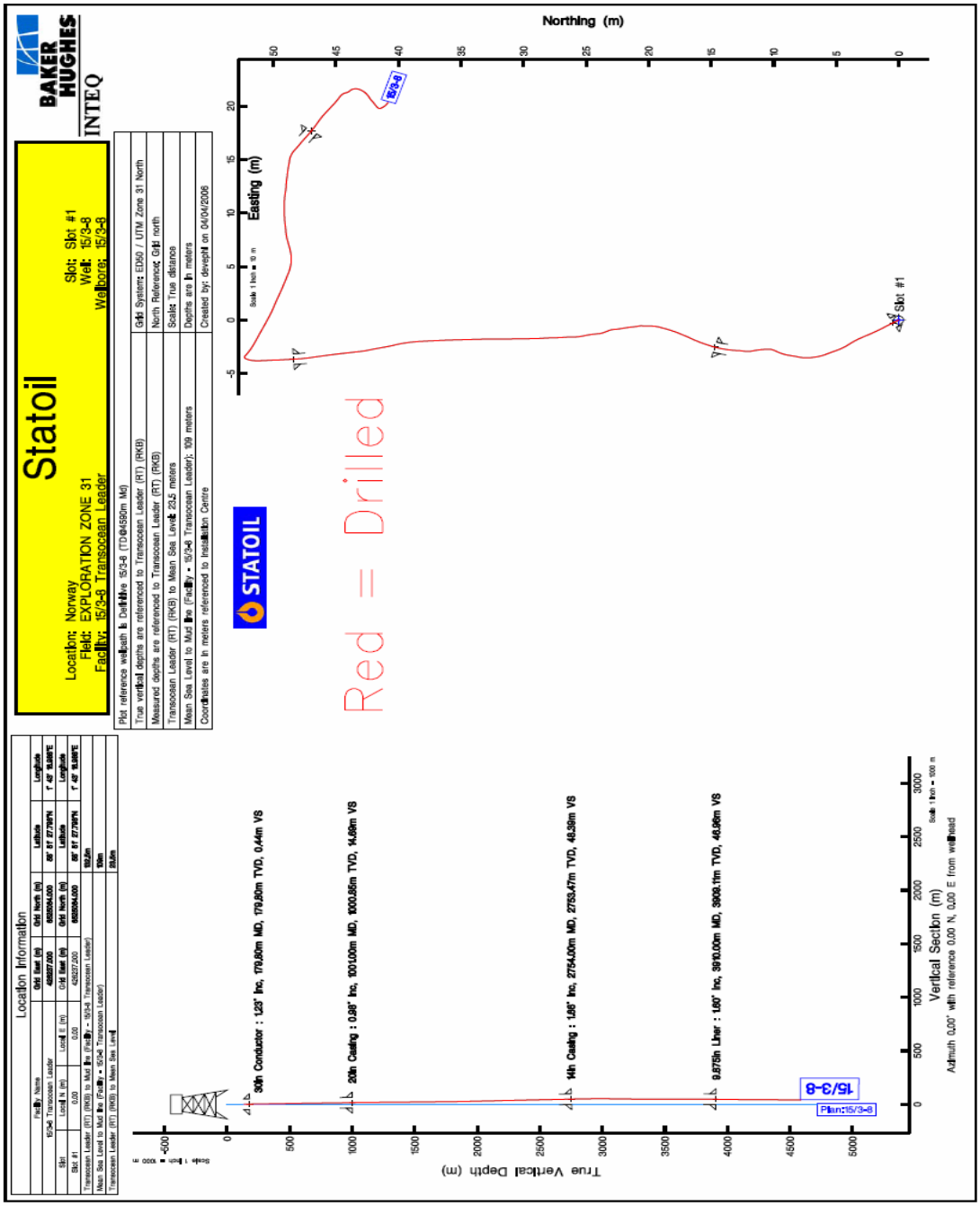
Report date	Description
05.04.2006	POOH with 3 1/2" string from 880 m, LD 3 1/2" tubing in singles. 2,5 hrs NPT due to problems with Eagle Light, and 1/2 hr NPT due to problems with rental air operated elevator. RIH with 14" cutting assembly. Cut 14" casing at 484 m, with pressure control (UAP closed, choke and kill lines open). Verified well not gaining, before circulating bottoms up from cut point. Level in mud pits dropped 9 m3 before well was full, and level stabilized. Opened UAP and POOH, LD annular swivel sub and marine swivel. Dressed MPT for retrieval of wearbushing and RIH with cutting assembly below for weight purposes. Retrieved WB with 32 MT overpull, and POOH. Dressed MPT for retrieval of seal assembly, RIH. Pulled seal assembly free with pressure control (UAP closed), with 47 MT overpull, verified well stable before and after opening UAP, POOH with landing string to recover seal assembly and rest of string.
06.04.2006	Pulled seal assembly. RIH with spear and retrieved 14" casing. Had problems breaking out casing joints. RIH on 5 1/2" open ended DP. Pumped Casing Support Tool (CTS) and spotted 22,5m3 1.95sg ballanced cement plug from approximately 535m to 380m. POOH.
07.04.2006	WOC. Attempted to pressure test cement plug - Minor leak through cement plug. Jetted area for next cement plug. Set same from 375 - 175m. Pressure tested plug 85bar/10min. Laid down various assemblies and 5 1/2" DP.
08.04.2006	Laid down 5 1/2" DP. WOW. Pulled BOP
09.04.2006	Parked BOP. RIH with casing cutter. Cut 30"/20" casings at 138m. POOH with WH/casings and laid down same. Laid down remaining tubulars in derrick.

INTERVAL: MOVE
START TIME: 09.04.2006 09:30
END TIME: 11.04.2006 02:30

Report date	Description
10.04.2006	Laid down remaining tubulars from derrick. WOW. Started to deballast rig.

App B Directional data; well plot & survey listing

Well plot 15/3-8



Survey listing for Well 15/3-8

Baker Hughes Incorporated
Survey Report

Company:	STATOIL - Norway	**Date:** 04/04/2006 **Time:** 10:55:52	**Page:** 1
Field:	EXPLORATION - UTM Zone 31	**Co-ordinate(NE) Reference:**	Well: 15/3-8, Grid North
Site:	15/3-8	**Vertical (TVD) Reference:**	SITE 23.5
Well:	15/3-8	**Section (VS) Reference:**	Site (0.00N,0.00E,26.60Azi)
Wellpath:	15/3-8	**Survey Calculation Method:**	Minimum Curvature **Db:** Oracle

Field: EXPLORATION - UTM Zone 31

Norway

Map System:	Universal Transverse Mercator	**Map Zone:**	UTM Zone 31, North 0 to 6E
Geo Datum:	ED50 (International 1924)	**Coordinate System:**	Well Centre
Sys Datum:	Mean Sea Level	**Geomagnetic Model:**	bggm2005

Site: 15/3-8
15/3

Site Position:			**Northing:**	6525064.00	m	**Latitude:**	58	51	27.798 N
From:	Map		**Easting:**	426237.00	m	**Longitude:**	1	43	16.988 E
Position Uncertainty:		0.00 m				**North Reference:**			Grid
Water Depth:		109.00 m				**Grid Convergence:**			-1.094 deg

Well: 15/3-8 **Slot Name:**

Surface Position:	+N/-S	0.00 m	**Northing:**	6525064.00	m	**Latitude:**	58	51	27.798 N
	+E/-W	0.00 m	**Easting :**	426237.00	m	**Longitude:**	1	43	16.988 E
Position Uncertainty:		0.00 m							
Reference Point:	+N/-S	0.00 m	**Northing:**	6525064.00	m	**Latitude:**	58	51	27.798 N
	+E/-W	0.00 m	**Easting :**	426237.00	m	**Longitude:**	1	43	16.988 E
			Measured Depth:	132.50	m	**Inclination:**			0.00 deg
			Vertical Depth:	132.50	m	**Azimuth :**			0.00 deg

Wellpath:	15/3-8		**Drilled From:**	Well Ref. Point
	Gudrun		**Tie-on Depth:**	132.50 m
Current Datum:	SITE	**Height** 23.50 m	**Above System Datum:**	Mean Sea Level
Magnetic Data:	09/28/2004		**Declination:**	-2.876 deg
Field Strength:	50346 nT		**Mag Dip Angle:**	71.884 deg

Vertical Section: Depth From (TVD) m	+N/-S m	+E/-W m	Direction deg
132.50	0.00	0.00	26.60

Survey Program for Definitive Wellpath
Date: 01/30/2006 **Validated:** No **Version:** 1

Actual From m	To m	Survey	Toolcode	Tool Name
199.90	983.60	15/3-8 MWD 26" (199.90-983.60)	Magnetic, std, mag-corr	Magnetic Tools (MWD, EMS)
1023.40	2746.20	15/3-8 MWD 17 1/2" (1023.40-27	Magnetic, std, mag-corr	Magnetic Tools (MWD, EMS)
2771.80	3890.80	15/3-8 MWD 12 1/4" (2771.80-38	Magnetic, std, mag-corr	Magnetic Tools (MWD, EMS)
3941.50	4582.90	15/3-8 MWD 8 1/2" (3941.50-458	Magnetic, std, mag-corr	Magnetic Tools (MWD, EMS)

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
132.50	0.00	0.00	132.50	0.00	0.00	0.00	0.000	0.000	0.000	TIE LINE
179.80	1.23	329.78	179.80	0.44	-0.26	0.28	0.779	0.779	0.000	30"
199.90	1.75	329.78	199.89	0.89	-0.52	0.56	0.779	0.779	0.000	Magnetic, std, mag-corr
209.50	1.70	328.36	209.49	1.14	-0.67	0.72	0.206	-0.156	-4.437	Magnetic, std, mag-corr
226.80	1.38	330.13	226.78	1.54	-0.90	0.97	0.561	-0.555	3.069	Magnetic, std, mag-corr
256.50	1.00	332.51	256.47	2.08	-1.20	1.32	0.387	-0.384	2.404	Magnetic, std, mag-corr
285.10	1.14	334.76	285.07	2.56	-1.44	1.64	0.153	0.147	2.360	Magnetic, std, mag-corr
314.50	1.19	331.77	314.46	3.09	-1.71	2.00	0.080	0.051	-3.051	Magnetic, std, mag-corr
343.50	1.11	327.05	343.46	3.59	-2.00	2.31	0.128	-0.083	-4.883	Magnetic, std, mag-corr
372.60	1.09	322.28	372.55	4.05	-2.33	2.58	0.097	-0.021	-4.918	Magnetic, std, mag-corr
401.70	1.23	332.66	401.64	4.54	-2.64	2.88	0.260	0.144	10.701	Magnetic, std, mag-corr
431.80	1.37	337.91	431.74	5.16	-2.92	3.31	0.183	0.140	5.233	Magnetic, std, mag-corr
460.00	1.31	334.96	459.93	5.77	-3.19	3.73	0.097	-0.064	-3.138	Magnetic, std, mag-corr
489.00	1.22	346.49	488.92	6.37	-3.40	4.17	0.279	-0.093	11.928	Magnetic, std, mag-corr
518.00	1.21	352.29	517.92	6.97	-3.51	4.66	0.128	-0.010	6.000	Magnetic, std, mag-corr
547.50	1.01	4.87	547.41	7.54	-3.53	5.16	0.319	-0.203	12.793	Magnetic, std, mag-corr
577.10	1.01	13.61	577.01	8.05	-3.45	5.66	0.156	0.000	8.858	Magnetic, std, mag-corr
606.10	0.94	9.57	606.00	8.53	-3.35	6.13	0.101	-0.072	-4.179	Magnetic, std, mag-corr
634.50	0.85	14.02	634.40	8.97	-3.26	6.56	0.120	-0.095	4.701	Magnetic, std, mag-corr
693.70	1.04	29.87	693.59	9.86	-2.88	7.53	0.163	0.096	8.032	Magnetic, std, mag-corr
722.70	0.66	5.39	722.59	10.26	-2.74	7.94	0.535	-0.393	-25.324	Magnetic, std, mag-corr
751.00	1.15	355.74	750.88	10.70	-2.74	8.34	0.542	0.519	-10.230	Magnetic, std, mag-corr

Baker Hughes Incorporated
Survey Report

Company:	STATOIL - Norway	**Date:** 04/04/2006	**Time:** 10:55:52	**Page:**	2
Field:	EXPLORATION - UTM Zone 31	**Co-ordinate(NE) Reference:**	Well: 15/3-8, Grid North		
Site:	15/3-8	**Vertical (TVD) Reference:**	SITE 23.5		
Well:	15/3-8	**Section (VS) Reference:**	Site (0.00N,0.00E,26.60Azi)		
Wellpath:	15/3-8	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Oracle

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
808.80	0.76	345.86	808.67	11.65	-2.88	9.13	0.219	-0.202	-5.128	Magnetic, std, mag-corr
867.60	0.83	10.59	867.47	12.45	-2.90	9.83	0.177	0.036	12.617	Magnetic, std, mag-corr
896.90	0.98	1.81	896.77	12.91	-2.85	10.26	0.209	0.154	-8.990	Magnetic, std, mag-corr
926.30	1.04	7.70	926.16	13.42	-2.81	10.75	0.122	0.061	6.010	Magnetic, std, mag-corr
954.50	1.00	10.13	954.36	13.92	-2.73	11.22	0.063	-0.043	2.585	Magnetic, std, mag-corr
983.60	0.96	14.63	983.45	14.40	-2.62	11.71	0.089	-0.041	4.639	Magnetic, std, mag-corr
1001.00	0.98	17.37	1000.85	14.69	-2.54	12.00	0.091	0.043	4.716	20"
1023.40	1.02	20.68	1023.25	15.06	-2.41	12.38	0.091	0.047	4.439	Magnetic, std, mag-corr
1053.80	0.97	21.56	1053.64	15.55	-2.22	12.91	0.052	-0.049	0.868	Magnetic, std, mag-corr
1082.70	0.87	24.87	1082.54	15.98	-2.04	13.37	0.118	-0.104	3.436	Magnetic, std, mag-corr
1111.90	0.83	26.15	1111.73	16.37	-1.85	13.81	0.045	-0.041	1.315	Magnetic, std, mag-corr
1140.80	0.71	30.64	1140.63	16.71	-1.67	14.19	0.139	-0.125	4.661	Magnetic, std, mag-corr
1169.60	0.78	24.65	1169.43	17.04	-1.50	14.57	0.109	0.073	-6.240	Magnetic, std, mag-corr
1197.70	0.69	26.60	1197.53	17.37	-1.34	14.93	0.100	-0.096	2.082	Magnetic, std, mag-corr
1228.90	0.70	24.90	1228.73	17.71	-1.18	15.31	0.022	0.010	-1.635	Magnetic, std, mag-corr
1257.30	0.67	20.13	1257.12	18.02	-1.05	15.64	0.068	-0.032	-5.039	Magnetic, std, mag-corr
1286.70	0.64	21.78	1286.52	18.33	-0.93	15.98	0.036	-0.031	1.684	Magnetic, std, mag-corr
1316.00	0.66	16.45	1315.82	18.65	-0.82	16.31	0.065	0.020	-5.457	Magnetic, std, mag-corr
1344.50	0.63	17.85	1344.32	18.96	-0.73	16.62	0.036	-0.032	1.474	Magnetic, std, mag-corr
1373.40	0.57	14.56	1373.22	19.25	-0.64	16.92	0.072	-0.062	-3.415	Magnetic, std, mag-corr
1402.50	0.51	6.87	1402.31	19.51	-0.59	17.19	0.097	-0.062	-7.928	Magnetic, std, mag-corr
1481.60	0.52	357.45	1481.41	20.22	-0.56	17.83	0.032	0.004	-3.573	Magnetic, std, mag-corr
1509.70	0.62	5.97	1509.51	20.50	-0.55	18.08	0.140	0.107	9.096	Magnetic, std, mag-corr
1539.20	0.74	346.66	1539.01	20.84	-0.58	18.38	0.261	0.122	-19.637	Magnetic, std, mag-corr
1569.30	0.77	353.79	1569.11	21.24	-0.65	18.70	0.098	0.030	7.106	Magnetic, std, mag-corr
1625.90	0.84	348.71	1625.70	22.02	-0.77	19.35	0.053	0.037	-2.693	Magnetic, std, mag-corr
1654.20	0.75	350.35	1654.00	22.41	-0.84	19.66	0.098	-0.095	1.739	Magnetic, std, mag-corr
1683.30	0.79	356.03	1683.09	22.79	-0.89	19.98	0.089	0.041	5.856	Magnetic, std, mag-corr
1712.30	0.89	335.32	1712.09	23.20	-0.99	20.30	0.329	0.103	-21.424	Magnetic, std, mag-corr
1742.10	0.79	335.40	1741.89	23.60	-1.18	20.57	0.101	-0.101	0.081	Magnetic, std, mag-corr
1771.50	0.74	354.33	1771.29	23.97	-1.28	20.86	0.262	-0.051	19.316	Magnetic, std, mag-corr
1800.80	0.97	353.39	1800.58	24.40	-1.33	21.23	0.236	0.235	-0.962	Magnetic, std, mag-corr
1831.20	0.96	346.60	1830.98	24.91	-1.42	21.64	0.113	-0.010	-6.701	Magnetic, std, mag-corr
1855.20	1.25	347.46	1854.97	25.36	-1.52	21.99	0.363	0.362	1.075	Magnetic, std, mag-corr
1887.20	1.48	0.30	1886.96	26.11	-1.59	22.64	0.357	0.216	12.038	Magnetic, std, mag-corr
1915.70	1.45	354.87	1915.46	26.84	-1.62	23.27	0.149	-0.032	-5.716	Magnetic, std, mag-corr
1946.50	1.43	359.62	1946.25	27.61	-1.66	23.95	0.118	-0.019	4.627	Magnetic, std, mag-corr
1975.10	1.49	355.76	1974.84	28.34	-1.69	24.58	0.121	0.063	-4.049	Magnetic, std, mag-corr
2004.10	1.55	358.29	2003.83	29.11	-1.73	25.25	0.093	0.062	2.617	Magnetic, std, mag-corr
2033.00	1.50	359.03	2032.72	29.88	-1.75	25.93	0.056	-0.052	0.768	Magnetic, std, mag-corr
2060.50	1.38	359.45	2060.21	30.57	-1.76	26.55	0.131	-0.131	0.458	Magnetic, std, mag-corr
2074.90	1.42	357.57	2074.60	30.92	-1.77	26.86	0.127	0.083	-3.917	Magnetic, std, mag-corr
2092.50	1.60	359.25	2092.20	31.38	-1.78	27.26	0.316	0.307	2.864	Magnetic, std, mag-corr
2122.00	1.46	0.53	2121.69	32.17	-1.78	27.97	0.147	-0.142	1.302	Magnetic, std, mag-corr
2151.40	1.55	359.45	2151.08	32.94	-1.78	28.66	0.096	0.092	-1.102	Magnetic, std, mag-corr
2179.70	1.49	357.97	2179.37	33.69	-1.80	29.32	0.076	-0.064	-1.569	Magnetic, std, mag-corr
2209.20	1.49	358.30	2208.86	34.46	-1.82	30.00	0.009	0.000	0.336	Magnetic, std, mag-corr
2237.40	1.52	358.43	2237.05	35.20	-1.84	30.65	0.032	0.032	0.138	Magnetic, std, mag-corr
2267.90	1.52	357.28	2267.54	36.01	-1.87	31.36	0.030	0.000	-1.131	Magnetic, std, mag-corr
2322.70	1.52	357.02	2322.32	37.46	-1.95	32.62	0.004	0.000	-0.142	Magnetic, std, mag-corr
2354.40	1.56	355.90	2354.00	38.31	-2.00	33.36	0.047	0.038	-1.060	Magnetic, std, mag-corr
2437.50	1.27	343.83	2437.08	40.32	-2.34	35.01	0.150	-0.105	-4.357	Magnetic, std, mag-corr
2469.60	1.45	348.04	2469.17	41.06	-2.52	35.59	0.192	0.168	3.935	Magnetic, std, mag-corr
2498.30	1.38	348.34	2497.86	41.76	-2.66	36.14	0.074	-0.073	0.314	Magnetic, std, mag-corr
2526.60	1.29	346.18	2526.15	42.40	-2.81	36.65	0.109	-0.095	-2.290	Magnetic, std, mag-corr
2555.20	1.36	352.53	2554.75	43.05	-2.93	37.18	0.171	0.073	6.661	Magnetic, std, mag-corr
2585.10	1.43	352.30	2584.64	43.77	-3.03	37.78	0.070	0.070	-0.231	Magnetic, std, mag-corr
2614.00	1.50	352.55	2613.53	44.50	-3.12	38.39	0.073	0.073	0.260	Magnetic, std, mag-corr

Baker Hughes Incorporated
Survey Report

Company:	STATOIL - Norway	**Date:** 04/04/2006	**Time:** 10:55:52	**Page:**	3
Field:	EXPLORATION - UTM Zone 31	**Co-ordinate(NE) Reference:**	Well: 15/3-8, Grid North		
Site:	15/3-8	**Vertical (TVD) Reference:**	SITE 23.5		
Well:	15/3-8	**Section (VS) Reference:**	Site (0.00N,0.00E,26.60Azi)		
Wellpath:	15/3-8	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Oracle

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
2638.30	1.57	351.68	2637.82	45.15	-3.21	38.93	0.096	0.091	-1.079	9 7/8" Top
2643.50	1.59	351.50	2643.02	45.29	-3.23	39.05	0.096	0.092	-1.017	Magnetic, std, mag-corr
2672.60	1.64	351.03	2672.11	46.10	-3.36	39.72	0.053	0.052	-0.485	Magnetic, std, mag-corr
2701.40	1.59	350.26	2700.89	46.90	-3.49	40.37	0.057	-0.052	-0.802	Magnetic, std, mag-corr
2746.20	1.67	356.34	2745.68	48.16	-3.64	41.44	0.128	0.054	4.071	Magnetic, std, mag-corr
2754.00	1.66	356.22	2753.47	48.39	-3.65	41.63	0.027	-0.023	-0.453	14"
2771.80	1.65	355.95	2771.27	48.90	-3.69	42.08	0.027	-0.023	-0.459	Magnetic, std, mag-corr
2799.90	1.57	357.63	2799.35	49.69	-3.73	42.76	0.099	-0.085	1.794	Magnetic, std, mag-corr
2831.00	1.22	356.79	2830.45	50.45	-3.77	43.42	0.338	-0.338	-0.810	Magnetic, std, mag-corr
2860.20	0.95	358.33	2859.64	51.00	-3.79	43.91	0.279	-0.277	1.582	Magnetic, std, mag-corr
2894.10	0.73	1.98	2893.54	51.50	-3.79	44.35	0.200	-0.195	3.230	Magnetic, std, mag-corr
2918.10	0.63	11.46	2917.53	51.78	-3.76	44.62	0.188	-0.125	11.850	Magnetic, std, mag-corr
2944.00	0.56	19.62	2943.43	52.04	-3.69	44.88	0.127	-0.081	9.452	Magnetic, std, mag-corr
2974.00	0.48	39.25	2973.43	52.27	-3.56	45.15	0.194	-0.080	19.630	Magnetic, std, mag-corr
3002.90	0.56	128.83	3002.33	52.28	-3.38	45.23	0.763	0.083	92.990	Magnetic, std, mag-corr
3029.90	1.05	125.86	3029.33	52.05	-3.07	45.17	0.546	0.544	-3.300	Magnetic, std, mag-corr
3059.20	1.30	119.45	3058.62	51.73	-2.57	45.11	0.289	0.256	-6.563	Magnetic, std, mag-corr
3087.40	1.85	114.84	3086.81	51.38	-1.87	45.11	0.600	0.585	-4.904	Magnetic, std, mag-corr
3118.30	2.54	115.83	3117.69	50.87	-0.80	45.13	0.671	0.670	0.961	Magnetic, std, mag-corr
3148.60	2.25	114.49	3147.96	50.34	0.34	45.16	0.292	-0.287	-1.327	Magnetic, std, mag-corr
3176.10	1.98	109.42	3175.44	49.95	1.28	45.24	0.358	-0.295	-5.531	Magnetic, std, mag-corr
3207.00	2.08	112.22	3206.32	49.56	2.30	45.35	0.137	0.097	2.718	Magnetic, std, mag-corr
3237.50	2.14	109.08	3236.80	49.17	3.35	45.47	0.128	0.059	-3.089	Magnetic, std, mag-corr
3265.10	2.07	110.30	3264.38	48.83	4.31	45.59	0.090	-0.076	1.326	Magnetic, std, mag-corr
3293.20	2.22	96.36	3292.47	48.59	5.32	45.83	0.578	0.160	-14.883	Magnetic, std, mag-corr
3321.60	2.12	78.52	3320.85	48.63	6.39	46.35	0.718	-0.106	-18.845	Magnetic, std, mag-corr
3350.90	1.86	75.74	3350.13	48.86	7.38	46.99	0.284	-0.266	-2.846	Magnetic, std, mag-corr
3379.50	1.71	85.77	3378.71	49.01	8.25	47.51	0.363	-0.157	10.521	Magnetic, std, mag-corr
3408.00	1.62	84.03	3407.20	49.08	9.08	47.95	0.109	-0.095	-1.832	Magnetic, std, mag-corr
3438.80	1.38	89.51	3437.99	49.13	9.88	48.35	0.272	-0.234	5.338	Magnetic, std, mag-corr
3468.60	1.09	89.50	3467.78	49.13	10.52	48.64	0.292	-0.292	-0.010	Magnetic, std, mag-corr
3497.90	1.07	91.88	3497.08	49.13	11.08	48.89	0.050	-0.020	2.437	Magnetic, std, mag-corr
3527.60	1.03	97.01	3526.77	49.08	11.62	49.09	0.103	-0.040	5.182	Magnetic, std, mag-corr
3555.40	1.03	96.89	3554.57	49.02	12.11	49.26	0.002	0.000	-0.129	Magnetic, std, mag-corr
3584.30	1.06	92.23	3583.46	48.98	12.64	49.46	0.094	0.031	-4.837	Magnetic, std, mag-corr
3613.20	0.95	97.38	3612.36	48.94	13.14	49.65	0.148	-0.114	5.346	Magnetic, std, mag-corr
3641.50	0.89	95.24	3640.66	48.89	13.60	49.80	0.073	-0.064	-2.269	Magnetic, std, mag-corr
3671.20	0.83	97.60	3670.35	48.84	14.04	49.96	0.070	-0.061	2.384	Magnetic, std, mag-corr
3700.90	0.81	99.55	3700.05	48.78	14.46	50.09	0.035	-0.020	1.970	Magnetic, std, mag-corr
3730.50	0.72	95.07	3729.65	48.73	14.85	50.22	0.109	-0.091	-4.541	Magnetic, std, mag-corr
3758.30	0.72	106.40	3757.45	48.66	15.19	50.31	0.153	0.000	12.227	Magnetic, std, mag-corr
3789.10	0.77	115.50	3788.24	48.52	15.56	50.35	0.125	0.049	8.864	Magnetic, std, mag-corr
3819.00	1.14	129.50	3818.14	48.24	15.98	50.29	0.436	0.371	14.047	Magnetic, std, mag-corr
3847.50	1.33	124.80	3846.63	47.87	16.47	50.18	0.226	0.200	-4.947	Magnetic, std, mag-corr
3876.30	1.29	128.28	3875.42	47.48	16.99	50.07	0.093	-0.042	3.625	Magnetic, std, mag-corr
3890.80	1.50	127.52	3889.92	47.27	17.27	50.00	0.436	0.434	-1.572	Magnetic, std, mag-corr
3910.00	1.60	124.74	3909.11	46.96	17.69	49.91	0.200	0.162	-4.347	9 7/8" Shoe
3941.50	1.78	120.89	3940.60	46.46	18.48	49.81	0.200	0.168	-3.665	Magnetic, std, mag-corr
3971.40	1.56	127.36	3970.49	45.97	19.20	49.70	0.290	-0.221	6.492	Magnetic, std, mag-corr
3980.60	1.52	129.20	3979.68	45.82	19.39	49.65	0.207	-0.130	6.000	Magnetic, std, mag-corr
4027.80	1.34	128.18	4026.87	45.08	20.31	49.40	0.116	-0.114	-0.648	Magnetic, std, mag-corr
4057.90	1.19	120.62	4056.96	44.71	20.86	49.31	0.223	-0.150	-7.535	Magnetic, std, mag-corr
4091.00	1.11	163.24	4090.06	44.22	21.24	49.05	0.761	-0.073	38.628	Magnetic, std, mag-corr
4115.10	0.72	132.30	4114.15	43.90	21.42	48.84	0.767	-0.485	-38.515	Magnetic, std, mag-corr
4144.60	0.54	165.39	4143.65	43.64	21.60	48.69	0.405	-0.183	33.651	Magnetic, std, mag-corr
4242.90	0.70	221.11	4241.95	42.74	21.32	47.76	0.182	0.049	17.005	Magnetic, std, mag-corr
4302.20	0.60	244.26	4301.24	42.33	20.80	47.16	0.141	-0.051	11.712	Magnetic, std, mag-corr
4332.50	0.62	230.64	4331.54	42.16	20.53	46.89	0.145	0.020	-13.485	Magnetic, std, mag-corr
4361.80	0.55	236.38	4360.84	41.98	20.29	46.62	0.093	-0.072	5.877	Magnetic, std, mag-corr

Baker Hughes Incorporated
Survey Report

Company:	STATOIL - Norway	**Date:** 04/04/2006	**Time:** 10:55:52	**Page:**	4
Field:	EXPLORATION - UTM Zone 31	**Co-ordinate(NE) Reference:**	Well: 15/3-8, Grid North		
Site:	15/3-8	**Vertical (TVD) Reference:**	SITE 23.5		
Well:	15/3-8	**Section (VS) Reference:**	Site (0.00N,0.00E,26.60Azi)		
Wellpath:	15/3-8	**Survey Calculation Method:**	Minimum Curvature	**Db:**	Oracle

Survey

MD m	Incl deg	Azim deg	TVD m	+N/-S m	+E/-W m	VS m	DLS deg/30m	Build deg/30m	Turn deg/30m	Tool/Comment
4418.10	0.45	231.81	4417.14	41.69	19.89	46.19	0.057	-0.053	-2.435	Magnetic, std, mag-corr
4469.20	0.42	155.36	4468.24	41.40	19.81	45.89	0.316	-0.018	-44.883	Magnetic, std, mag-corr
4486.20	0.53	147.75	4485.23	41.27	19.86	45.81	0.223	0.194	-13.429	Magnetic, std, mag-corr
4508.10	0.51	138.36	4507.13	41.12	20.00	45.72	0.120	-0.027	-12.863	Magnetic, std, mag-corr
4536.30	0.43	127.69	4535.33	40.96	20.17	45.65	0.126	-0.085	-11.351	Magnetic, std, mag-corr
4566.00	0.28	118.76	4565.03	40.85	20.32	45.63	0.161	-0.152	-9.020	Magnetic, std, mag-corr
4582.90	0.31	108.27	4581.93	40.82	20.40	45.63	0.109	0.053	-18.621	Magnetic, std, mag-corr
4590.00	0.31	108.27	4589.03	40.81	20.43	45.64	0.000	0.000	0.000	

Casing Points

MD m	TVD m	Diameter in	Hole Size in	Name
179.80	179.80	30.000	36.000	30"
1001.00	1000.85	20.000	26.000	20"
2754.00	2753.47	14.000	17.500	14"
2638.30	2637.82	9.875	12.250	9 7/8" Top
3910.00	3909.11	9.875	12.250	9 7/8" Shoe

App C List of contractors

Service	Contract no	Contractor
Liner Hanger Equipment	SAP4600002689	Weatherford Norge AS
Plug	SAP4600004878	Weatherford Norge AS
Mud Logging	SAP4600002064	Geoservices
Subsea WH/X-mas tree	SAP4600005076	Drill Quip
Rig Operations	SAP4600005941	Transocean
Compl/sand contr. equip.	SAP4600006671	SPS International
Cuttings injection	SAP4600002159	MI Swaco DWM
Liner Hanger Equipment	SAP4600006480	Drill Quip
Electric Wireline Logging	SAP4600002337	Schlumberger
Cementing	SAP4600002160	Halliburton
Directional Drilling	SAP4500974775	Odfjell Well Services
Casing Crew Service	SAP4600004001	Weatherford Norge AS
Drill Stem Testing/Testing	SAP4600004050	Halliburton
Core company	SAP4600004965	Baker Hughes Inteq
Directional Drilling	SAP4600002063	Baker Hughes Inteq
TCP Equipment	SAP4600004034	Schlumberger
ROV Systems	SAP4600002882	Oceaneering
Electric Wireline Logging	SAP4600005543	READ Well Services
Drilling Fluids	SAP4600002159	M-I Drilling Fluids
Drill Stem Testing/Testing	SAP4600002522	Power Well Services
Measurement While Drilling	SAP4600002063	Baker Hughes Inteq

App D List of gas peaks

Table of gas peaks (drillers depth), ref. chapter 4.5.

DEPTH m MD RT	DEPTH m TVD RT	GAS %	C_1 ppm	C_2 ppm	C_3 ppm	iC_4 ppm	nC_4 ppm	iC_5 ppm	nC_5 ppm	TYPE	BG %	COMMENTS
1255	1255	1.24	11804	28	6	2	1	1	1	FG	0.5	
1435	1435	0.93	8469	18	4	2	1	1	1	FG	0.5	
2095	2095	0.75	6560	29	4	3	2	9	1	TG	0.18	
2472	2472	0.46	4057	73	38	9	14	16	1	TG	0.24	
2574	2574	0.45	3760	135	70	30	32	14	10	FG	0.12	
3890	3890	0.61	4910	61	14	2	1	1	1	TG	0.01	Junk basket trip # 1
3908	3908	0.31	2353	37	8	2	2	1	1	TG	0.06	Junk basket trip # 2
3909	3909	0.45	3363	70	22	1	3	10	1	TG	0.06	Junk bit trip
3920	3919.1	0.095	305	94	37	2	6	5	2	FG	0.04	CK
3934	3933.1	1.10	6851	626	273	13	55	9	9	FG	0.10	Draupne
3948	3947.1	1.37	8444	998	329	12	59	8	9	FG	0.20	“
3951	3950.1	1.69	10205	1355	415	12	67	8	12	FG	0.40	“
3953	3952.1	1.94	12084	1534	473	13	80	8	12	FG	0.50	“
3957	3956.1	1.93	12521	1394	374	14	60	8	12	FG	0.60	“
3962	3961.1	2.35	14955	1895	546	17	90	9	16	FG	0.70	“
3969	3968.1	3.83	25276	2859	792	21	126	10	24	FG	1.00	“
3972	3971.1	3.44	21317	2879	839	23	137	11	28	FG	1.00	“
3982	3981.1	2.64	16621	2040	612	13	112	29	18	FG	0.70	“
3988	3987.1	0.72	3814	629	273	10	69	25	14	FG	0.5	“
3989	3988.1	0.35	1772	248	146	8	46	6	14	STG	0.21	“
3989	3988.1	2.25	14592	1161	712	44	182	29	34	TG	0.1	“
3991	3990.1	0.92	6436	481	187	9	37	8	9	FG	0.2	“
4000	3999.1	0.98	6543	573	227	12	45	8	11	FG	0.3	“
4002	4001.1	1.15	7632	620	242	13	50	9	13	FG	0.3	“
4005	4004.1	1.11	7556	635	230	13	45	9	10	FG	0.3	“
4006	4005.1	0.63	4114	332	168	11	39	8	9	CG	0.4	“
4014	4013.1	2.39	16732	1353	436	24	76	13	16	FG	0.4	“

4020	4019.1	1.81	12694	1037	332	19	58	11	13	FG	0.3	“
4026	4025.1	3.38	24016	2014	646	36	110	17	23	FG	0.3	“
4030	4029.1	2.78	19544	1658	535	32	93	16	20	STG	0.4	“
4035	4034.1	0.83	5435	468	208	14	46	10	11	CG	0.4	“
4041	4040.1	2.86	19382	1677	545	33	97	16	22	FG	0.5	“
4050	4049.1	3.40	24194	2018	613	35	101	17	22	FG	0.5	“
4051	4050.1	0.82	5472	488	191	14	42	10	12	CG	0.6	“
4065	4064.1	4.05	29102	2413	749	48	125	21	25	STG	1.2	“
4066	4065.1	3.59	26567	2188	678	43	114	19	23	TG	0.8	“
4072	4071.1	9.45	69035	5698	1709	111	272	40	50	FG	0.8	“
4075	4074.1	8.64	60913	5134	1574	103	255	39	47	FG	2.6	“
4093	4092.1	6.06	43607	4051	1364	95	239	39	49	FG	2.1	“
4099	4098.1	5.31	38232	3449	1131	78	198	32	40	FG	1.5	“
4104	4103.1	4.68	33517	2897	939	65	168	29	36	FG	1.4	“
4106	4105.1	4.81	33859	2940	970	70	178	31	38	FG	1.4	“
4122	4121.1	2.71	20716	1615	550	42	110	23	28	FG	0.8	“
4123	4122.1	1.29	8894	875	380	33	96	21	25	CG	0.6	“
4124	4123.1	2.62	18656	1743	592	45	117	24	30	FG	0.6	“
4127	4126.1	2.49	17972	1580	527	40	105	22	26	FG	0.5	“
4138	4137.1	3.13	22560	1929	628	46	118	23	29	FG	0.7	“
4142	4141.1	2.18	15400	1360	447	33	86	18	22	FG	0.65	“
4145	4144.1	2.47	17087	1561	528	39	101	21	27	FG	0.43	“
4147	4146.1	3.86	25826	2373	781	55	135	24	29	FG	0.43	“
4099	4098.1	5.31	38232	3449	1131	78	198	32	40	FG	1.5	“
4104	4103.1	4.68	33517	2897	939	65	168	29	36	FG	1.4	“
4106	4105.1	4.71	34551	2934	965	69	176	31	38	FG	1.4	“
4122	1421.1	2.71	20716	1615	550	42	110	23	28	FG	0.8	“
4124	4123.1	2.62	18656	1743	592	45	117	24	30	FG	0.6	“
4127	4126.1	2.49	17972	1580	527	40	105	22	26	FG	0.5	“
4138	4137.1	3.13	22560	1929	628	46	118	23	29	FG	0.7	“
4142	4141.1	2.17	15606	1364	447	33	86	18	22	FG	0.65	“
4144	4143.1	2.46	17087	1561	528	39	101	21	27	FG	0.43	“
4147	4146.1	3.96	27784	2526	120	57	142	26	32	FG	0.43	“

4154	4153.1	2.52	17733	1684	567	40	104	20	25	FG	1.00	“
4161	4160.1	2.49	17920	1620	530	36	94	18	22	FG	0.40	“
4163	4162.1	2.77	19682	1779	597	42	109	21	25	FG	0.50	“
4166	4165.1	3.52	25171	2196	725	49	128	24	29	FG	0.50	“
4176	4175.1	1.03	8334	505	133	6	19	4	4	FG	0.60	“
4184	4183.1	2.05	15228	1199	340	18	50	9	10	FG	1.15	“
4196	4195.1	2.14	15832	1302	396	20	64	11	13	FG	1.10	“
4203	4202.1	6.85	56222	2708	698	33	107	17	18	TG	0.30	“
4212	4211.1	2.59	19577	1384	405	18	61	10	11	FG	0.52	“
4219	4218.1	2.73	20690	1514	439	19	65	10	12	FG	1.50	“
4238.5	4237.6	3.35	27388	1620	413	18	61	5	10	TG	1.00	“
4240	4239.1	0.92	6235	661	185	6	29	5	7	FG	0.55	“
4242	4241.1	0.85	5686	651	182	5	29	5	7	FG	0.37	“
4247	4246.1	1.22	8529	1008	272	7	39	9	9	FG	0.80	“
4253	4252.1	1.77	11591	1117	294	7	43	6	8	FG	0.90	“
4259	4258.1	1.34	8376	1144	328	7	51	7	12	FG	0.75	“
4265	4264.1	1.31	8682	1143	323	7	49	6	11	FG	0.81	“
4275	4274.1	3.00	24996	1345	331	12	48	9	8	TG	0.20	“
4278	4277.3	1.13	74+7	960	256	4	39	5	9	FG	0.70	“
4284	4283.1	1.10	7441	859	246	7	38	8	8	FG	0.55	“
4291	4290.1	0.95	6726	579	180	7	31	6	9	FG	0.56	“
4314	4213.1	0.91	620	476	155	10	25	7	5	FG	0.20	“
4322	4321.1	1.06	816	529	160	9	25	6	4	FG	0.60	“
4332	4331.1	3.88	29850	2001	612	31	88	12	14	FG	0.6	“
4337	4336.1	2.94	23844	1594	500	26	74	10	12	FG	0.8	“
4345	4344.1	1.77	21428	1629	533	25	86	12	15	FG	0.9	“
4349	4348.1	1.40	10245	945	292	13	48	8	7	FG	0.9	“
4375	4374.1	2.74	13542	1069	344	17	54	8	7	FG	1.0	“
4385	4384.1	1.50	11519	941	330	18	58	10	12	FG	0.4	“
4395	4394.1	2.30	18284	1371	461	24	78	13	15	FG	1.0	“
4401	4400.1	2.35	19069	1405	468	25	80	15	18	FG	2.0	“
4435	4434.1	2.47	20025	1495	510	30	91	17	19	FG	2.0	“
4475	4474.1	7.62	62209	4303	1196	73	184	27	32	FG	2.1	“

4481	*4480.1*	*5.20*	*41097*	*2387*	*594*	*31*	*84*	*14*	*16*	*FG*	*1.0*	*“*
4486	*4485.1*	*2.00*	*15495*	*1132*	*289*	*12*	*43*	*7*	*9*	*FG*	*1.0*	*“*
4489	*4488.1*	*1.99*	*13989*	*1287*	*340*	*7*	*51*	*7*	*11*	*FG*	*1.0*	*“*
4492	*4491.1*	*1.54*	*10700*	*118*	*303*	*12*	*49*	*11*	*11*	*FG*	*1.1*	*“*
4503	*4502.1*	*1.72*	*12230*	*984*	*269*	*11*	*41*	*9*	*8*	*FG*	*1.0*	*“*
4506	*4505*	*3.1*	*23997*	*1302*	*308*	*13*	*42*	*11*	*8*	*TG*	*0.15*	*“*
4514	*4513*	*1.91*	*14825*	*834*	*206*	*14*	*31*	*7*	*4*	*FG*	*1.5*	*“*
4516	*4515*	*1.96*	*14272*	*788*	*200*	*13*	*30*	*8*	*5*	*FG*	*1.5*	*“*
4540	*4539*	*3.28*	*24739*	*1598*	*406*	*21*	*60*	*10*	*9*	*FG*	*0.2*	*“*
4560	*4559*	*1.26*	*8187*	*1092*	*288*	*8*	*47*	*7*	*8*	*FG*	*0.35*	*“*
4571	*4570*	*2.76*	*18335*	*2381*	*595*	*9*	*93*	*7*	*14*	*FG*	*0.3*	*“*
4575	*4574*	*2.67*	*17459*	*2541*	*624*	*8*	*101*	*18*	*14*	*FG*	*0.4*	*“*
4589	*4588*	*3.55*	*24450*	*3355*	*841*	*9*	*135*	*31*	*20*	*FG*	*1*	*“*
4590	*4589*	*9.8*	*70939*	*4204*	*904*	*40*	*115*	*17*	*16*	*TG*	*0.19*	*Wireline logging*

App E MDT pressure measurements and sampling

Table for MDT pressure measurements, ref. chapter 4.7

MDT Run no. 2A, Pretest Pressures.

No.	Zone	Depth m MD	Depth m TVD RT	Depth m TVD MSL	Hydrostatic pressure before bar	Eqv.mud weight g/cc	Formation pressure bar	Formation pressure (g/cc) Ref RKB	Hydrostatic pressure after bar	Temp. deg C	Mobility md/cP	Seal	Comments
1	Draupne	3946	3945.1	3921.6	794.60	2.053			794.37	113.90		y	Tight
2	Draupne	3969.3	3968.4	3944.9	799.39	2.053			799.18	114.70		y	Tight
3	SST 1A	4073.3	4072.4	4048.9	820.06	2.053	779.458	1.951	819.83	117.30	513.40	y	Good
4	SST 1A	4075.2	4074.2	4050.7	820.23	2.052	779.568	1.950	820.05	118.50	9.20	y	Good
5	SST 1A	4077.2	4076.3	4052.8	820.47	2.052	779.691	1.950	820.33	119.10	10.30	y	Good
6	SST 1A	4079.6	4078.7	4055.2	820.80	2.051	779.839	1.949	820.61	119.80	82.80	y	Good
7	SST 1A	4081.4	4080.5	4057.0	820.93	2.051	779.948	1.948	820.78	120.20	55.50	y	Good
8	SST 1A	4082.5	4081.6	4058.1	820.96	2.050	780.013	1.948	820.85	120.60	79.10	y	Depth cor. 0,5m. Good test
9	SST 1A	4084.6	4083.7	4060.2	821.35	2.050	780.131	1.947	821.23	120.80	90.9	y	Good
10	SST 1A	4086.5	4085.6	4062.1	821.67	2.050	780.243	1.947	821.52	121.00	35.40	y	Good
11	SST 1A	4094.8	4094.1	4070.6	823.60	2.051	780.782	1.944	823.19	121.30	1.10	y	Good test; tight formation
12	SST 1A	4100	4099.1	4075.6	824.40	2.050	781.089	1.942	824.07	121.50	1.30	y	Good test; tight formation
13	SST 1B	4108.7	4107.8	4084.3	826.15	2.050			826.04	121.60		y	Tight
14	SST 1B	4139.5	4138.5	4115.0	833.29	2.052			833.10	121.90		y	Depth cor. 0,0 m. Tight
15	SST 1C	4148.3	4147.3	4123.8	835.11	2.053	783.775	1.926	834.72	122.30	2.00	y	Good test; tight formation
16	SST 1C	4154.7	4153.7	4130.2	836.24	2.052	784.139	1.924	835.80	122.90	1.10	y	Good test; tight formation

17	SST 1C	4165.2	4164.2	4140.7	838.45	2.052			838.14	123.10		y	Tight
18	SST 1C	4167.52	4166.6	4143.1	838.64	2.052	784.88	1.920	838.38	123.40	79.70	y	Excellent test
19	SST 1C	4172.63	4171.7	4148.2	839.71	2.052	785.19	1.919	839.26	123.80	4.80	y	Good test, long stabilisation time
20	SST 1C	4178.1	4177.1	4153.6	840.66	2.052	785.53	1.917	840.37	124.00	1.90	y	Tight
21	SST 1C	4180.06	4179.1	4155.6	840.79	2.051	785.64	1.916	840.48	124.30	14.90	y	Good test, depth corr 0,0 m
22	SST2 Zone D	4213.11	4212.1	4188.6	848.20	2.053	790.73	1.914	847.96	124.60	408.20	y	Good
23	SST2 Zone D	4218.07	4217.1	4193.6	849.17	2.053	791.30	1.913	848.78	125.20	206.30	y	Good
24	SST2 Zone D	4227.5	4226.5	4203.0	851.08	2.053	792.21	1.911	850.81	125.60	412.80	y	Good
25	SST2 Zone D	4240.53	4239.6	4216.1	853.83	2.053	793.59	1.908	853.39	126.10	189.20	y	Good
26	SST2 Zone D	4255.59	4254.6	4231.1	856.86	2.053	795.04	1.905	856.57	126.40	202.80	y	Good
27	SST2 Zone D	4266	4265.0	4241.5	858.93	2.053	796.54	1.904	858.35	127.00	38.30	y	Tight.
28	SST2 Zone E	4278.03	4277.1	4253.6	861.34	2.053	797.30	1.900	861.07	127.20	92.40	y	Good
29	SST2 Zone E	4285.57	4284.6	4261.1	862.84	2.053	798.49	1.900	862.11	127.80	132.40	y	Tight,superharged
30	SST2 Zone E	4313	4312.0	4288.5	868.49	2.053	801.00	1.894	868.20	128.00	18.20	y	Good
31	SST2 Zone E	4339.16	4338.2	4314.7	873.86	2.053			873.62	128.50		y	Tight
32	SST2 Zone E	4357.5	4356.5	4333.0								n	No seal.Retract/reset
33	SST 3	4474.8	4473.8	4450.3								y	Tight,drop 0.2m
34	SST 3	4475	4474.0	4450.5	900.52	2.052	818.50	1.865	900.22	131.80	7.60	y	Good
35	SST 3	4475.4	4474.4	4450.9	900.11	2.051	818.52	1.865	899.93	132.20	4.90	y	Pretest volume 15cc
36	SST 3	4479	4478.0	4454.5	900.98	2.051	818.72	1.864	900.79	132.60	36.30	y	Pretest volume 20cc
37	SST 3	4481.5	4480.5	4457.0								y	Tight. 0.5 m too deep?
38	SST 3	4486.4	4485.4	4461.9	902.20	2.050	819.04	1.861	902.04	133.60	168.00	y	Good
39	SST 3	4489.1	4488.1	4464.6								y	Tight
40	SST 3	4489.38	4488.4	4464.9	902.26	2.049	819.26	1.861	902.19	134.10	5.40	y	Good

41	SST 3	4490.01	4489.0	4465.5	902.37	2.049	819.37	1.861	902.19	134.40	19.90	y	Good
42	SST 3	4491	4490.0	4466.5	902.38	2.049	819.56	1.861	902.16	134.60	22.40	y	Good
43	SST 3	4497.62	4496.6	4473.1	904.03	2.049	820.09	1.859	903.82	134.70	22.40	y	Good
44	SST 3	4500	4499.0	4475.5								y	Tight
45	SST 3	4502.4	4501.4	4477.9								y	Tight
46	SST 3	4514	4513.0	4489.5	907.68	2.050	821.84	1.856	907.49	135.5	25.20	y	Good
47	SST 3	4522	4521.0	4497.5	909.43	2.051	822.61	1.855	909.20	136.00	31.10	y	Good
48	SST 3	4529	4528.0	4504.5	911.04	2.051	823.31	1.853	910.82	136.30	68.70	y	Good
49	SST 3	4519	4518.0	4494.5	908.18	2.049	822.26	1.855	908.07	136.50	66.00	y	Good
50	SST 3	4503.98	4503.0	4479.5								y	Tight
51	SST 3	4503.68	4503.7	4480.2	904.45	2.047	821.28	1.859	904.34	136.50		y	Supercharged
52	SST 3	4481.5	4480.5	4457.0	899.66	2.047	818.77	1.863	899.88	136.20	63.60	y	Good

Table for MDT pressure measurements (repeat pretests in SST3 on sampling run 2C), ref. chapter 4.7

MDT Run no. 2C, Pretest pressures

No.	Zone	Depth m MD	Depth m TVD RT	Depth m TVD MSL	Hydrostatic pressure before bar	Eqv.mud weight g/cc	Formation pressure bar	Formation pressure (g/cc) Ref RKB	Hydrostatic pressure after bar	Temp. deg C	Mobility md/cP	Seal	Comments
1	SST 3	4474.9	4473.9	4450.4	899.18	2.049	818.5	1.865	899.56	134.7	17.9	y	Good
2	SST 3	4479.1	4478.1	4454.6	899.51	2.048	818.77	1.864	899.17	135.3	61	y	Good
3	SST 3	4481.4	4480.4	4456.9	899.73	2.047			899.59			y	Tight
4	SST 3	4481.7	4480.7	4457.2	899.33	2.046			899.23			y	Tight
5	SST 3	4485.9	4484.9	4461.4	900.36	2.046	819.14	1.862	900.09	153.6	35.8	y	Good
6	SST 3	4486.7	4485.7	4462.2								y	Tight

7	SST 3	4486.7	4485.7	4462.2	899.86		819.42	1.862	899.49	136	1.4	y	Tight, slow buildup
9	SST 3	4486.7	4485.7	4462.2	898.78				898.75			y	Tight
10	SST 3	4481.4	4480.4	4456.9	897.56		818.73	1.863	897.56	136.7	90.8	Y	Good

Table for Sampling overview (Quiqsilver probe), run 2B, ref. chapter 4.7

Depth m MD RKB	Sample Size	Chamber Code & Serial No.	Shut-in pressure bar	Opening pressure bar	Shut-in temp deg. C	Pump Vol. Litres	OCM Predicted Cont. (/%)	Maximum drawdown pressure bar	Mobility md/cp	Sampling			Transferred to bottles	Comments
										Date	Start	Stop		
Run 2B 4479.1 m HC sample SST3	2.75 g	G-JA 115	810+160	30	134.8	80	8.5	8	26.9	08.02.06	02:00	02:47	ATM	
	1 g	GA-172	810+185	300	136.8	125	7	8	26.9	08.02.06	03:05	03:20	TS47402	
	1 g	GA-170	810+185	300	137.5	160	6	8	26.9	08.02.06	03:28	03:45	TS 407403	5 % Cont.
	420	MPSR-55	810+180	310	137.8	180	6.2	8	26.9	08.02.06	03:52	03:55	PT6038	
	420	MPSR-643	810+185	320	137.8	196	6	8	26.9	08.02.06	04:02	04:05	PT 6010	6% Cont.
	250	SPMC-049	810	780	137.9	210	6	8	26.9	08.02.06	04:11	04:13	PT 25K032	
	250	SPMC-111	810	780	138	235	6	8	26.9	08.02.06	04:21	04:24	PT 25K034	
Run 2B 4332..9 m HC sample SST2 F	420	MPSR-927	803+180	200	132.3		4	18	13.3	08.02.06	10 :12	10 :14	PT 6017	
	420	MPSR-930	803+180	200	132.3	125	4	18	13.3	08.02.06	10 :20	10 :22	PT 6015	3.5 % Cont.

Table for Sampling overview, run ref. chapter 4.7

Depth m MD RKB	Sample Size	Chamber Code & Serial No.	Shut-in pressure bar	Opening pressure bar	Shut-in temp deg. C	Pump Vol. Litres	OCM Predicted Cont. (/%)	Maximum drawdown pressure bar	Mobility md/cp	Sampling			Transferred to bottles	Comments
										Date	Start	Stop		
Run 2C 4213.5 m Water sample SST2D	2.75 g	G-JA 113			128.4	210	NA			09.02.06	16:55			Failed
	1 g	GA-194	1074	20	128.3	216	NA	14	443	09.02.06	17:05	17:09	TS47401	Glycol Contaminated
	420	MPSR 36	1074	NA	128.3	220	NA	14	443	09.02.06	17:12	17:14		Failed
	420	MPSR 756	1072	NA	128.3	228	NA	12	443	09.02.06	17:15	17:17		Failed
Run 2C 4514.5 m Watersample SST3	420	MPSR 694	777		138.4	71	NA	44	25.2	09.02.06	22 :00	22 :04		Failed
	420	MPSR 710	777	15	138.4	81	NA	44	25.2	09.02.06	22 :35	22 :39	PT 6013	Glycol Contaminated
Run 2C 4074 m HC sample SST1A	250	SPMC 187	1060	772	124.2	92	5	10	106	10.02.06	05:58	06:02	PT 25K022	
	250	SPMC 193	1060	772	124.2	106	5	10	106	10.02.06	06:22	06:26	PT 25K022	

Table for Sampling overview, run 2E, ref. chapter 4.7

Depth m MD RKB	Sample Size	Chamber Code & Serial No.	Shut-in pressure bar	Opening pressure bar	Shut-in temp deg. C	Pump Vol. Litres	OCM Predicted Cont. (/%)	Maximum drawdown pressure bar	Mobility md/cp	Sampling			Transferred to bottles	Comments
										Date	Start	Stop		
Run 2E 4213.5 m Watersample SST2D	420	MPSR 756	1054		127.5	90	NA	1	1083	14.02.06	03:59	04:00	PT 6034	Resampling Water
	420	MPSR 927	1054		127.7	175	NA	1	1083	14.02.06	05:12	05:14	PT 6016	Resampling Water
Run 2E	420	MPSR 36	1045		137	102	NA	45	40.7	14.02.06	10 :00	10 :01	PT 6039	Resampling

4514.5 m Watersampe SST3														Water
	420	MPSR 643	1046		137	128	NA	45	40.7	14.02.06	10 :43	10 :44	PT 6037	Resampling Water
Run 2E 4182.1m HC sample SST1C	420	MPSR 55	1054		127.5	163	25	2	30.7	14.02.06	14:21	14:22	PT 6012	Usimg Dual PA-module
	420	MPSR 610	1054		127.5	170	25	2	30.7	14.02.06	14:27	14:29	PT 6008	Usimg Dual PA-module

App F NPD standard sheet for reporting shallow gas, well 15/3-8

1. Avstand fra boredekk til havnivå: 23.5m

2. Vanndyp: 109m

3a. Settedyp for lederør: 179.8mMD RT

3b. Evt. formasjonstyrketest (g/cc): -----

4a. Settedyp for foringsrør hvorpå BOP settes: 1001 mMD RT

4b. Formasjonstyrketest (g/cc): 1.50

6. *Dybdeintervall (mRT, TVG) og alder for sandlag grunnere enn 1000 m under havbunnen. Oppgi hvilke lag som evt. inneholder gass.* (eks. Kvartær 133-447 mRT, Pliocene 447-658 mRT)
   Kvartær sandlag 240- 243mMD RT, vannvåt
   Kvartær sandlag 290 - 294mMD RT, vannvåt
   Utsira Formasjonen 658 - 858mMD, vannvåt

7. Grunn gass er ikke påvist i brønnen.

8. Sammensetning og opprindelse til gassen: -------

9. Beskriv alle målinger i gassførende lag: -------

10. *Angi dyp (mRT og TVG) til inkonformiteter i borehullsposisjonen.*
    Bunn Kvartær er prognosert ti 447mMD RT, og er observert på 449mMD RT på MWD loggen.

11. Angi utbredelsen av sandlagene (kommunikasjon, kontinuitet, trunkering, etc.): -----

12. Angi utbredelsen av evt. gass- skygging ("gas blanking"): -----

13. Angi evt seismiske indikasjoner på at gassen stammer fra dypere nivå.
    Beskrivelse dersom gassen stammer fra dypere nivå: ------

14. *Hvordan samsvarer tolkingen av borestedsundersøkelsen med borehuldata m.h.t. :*

- *grunn gass*
  Stemmer godt. Det var ikke prognosert grunn gass og grunn gass var heller ikke observert.

- *sandlag*
  God korrelasjon fra sitesurvey
- *inkonformiteter*
  Bunn Kvartær er prognosert på 447mMD RT.
  Bunn kvartær er plukket på 449mMD RT på MWD loggen.

- *korrelasjon til nærliggende borehull*
  God korrelasjon til referansebrønn 15/3-7 som ligger 2.0 km mot øst og 15/3- 1S som ligger 1 km mot sørøst.

App G Listing of other reports

REPORTS	COMPANY
Site Survey at planned well location 15/3-8, Gudrun (ST0492)	Fugro
Borestartsnotat, Well 15/3-8, Gudrun	STATOIL
Borestartsfigur, Well 15/3-8, Gudrun	STATOIL
Well Programme, Well 15/3-8, Gudrun	STATOIL
Navigation and Positioning of Transocean Leader to 15/3-8	iSURVEY AS
Well Test Programme, Well 15/3-8, Gudrun Transocean Leader	STATOIL
Well Test Procedure, Well 15/3-8, Gudrun	STATOIL
P&A program på Gudrun, 15/3-8 PL025A	STATOIL
SCAN, Surface Data Acquisition Reports, Zone 1&2, Well 15/3-8, Gudrun m/CD	STATOIL
Core Photographs, Core 1-7, Scale 1:4 - White light/UV-light, Well 15/3-8 + CD	RESLAB
DVD: CORINMAG, - White/UV-Light, Well 15/3-8 (3 DVD)	RESLAB
Characterization of water samples, Well 15/3-8, Gudrun	STATOIL
Conventional Core Analysis, Well 15/3-8	RESLAB
Final Well Report, Drilling, Well 15/3-8	STATOIL
Petrography, diagenesis and reservoir quality, Draupne Formation sandstones, well 15/3-8	STATOIL
Geochemistry, HCS tm of Well 15/3-8	APT
End of Well Report, MWD and Directional Drilling, Well 15/3-8	Baker Hughes Inteq
Reservoir Fluid Studiy, Well 15/3-8 Gudrun MDT (2 reports)	CORE LAB
End of Well Report Coring, Well 15/3-8	Baker Hughes Inteq
Final Well Report, Well 15/3-8	STATOIL
Biostratigraphy of Jurassic-Earliest Cretaceous (Late Oxfordian-Valanginian) in well 15/3-8 (3924m-4590m)	BioStrat Ltd.
Final Well Report, Mudlogging Well 15/3-8	Geoservices
Validity checks and Analysis of WFS samples Report version 02	Petrotech
Sampling and Trace analyses, DST1 & DST2 - Gudrun	Petrotech
Field Operations Report	Oilphase
Well Test report 15/3-8 Zone 1 Rev.A	PowerWell Services
Well Test report 15/3-8 Zone 2 Rev.A	PowerWell Services

7 Enclosures

7.1 Wellsite Sample Descriptions

7.2 Conventional Core Descriptions

7.3 Sidewall Core Descriptions

7.4 Composite Log, Well 15/3-8 (50% reduction in the PDF format)

7.5 Formation Evaulation Log, Well 15/3-8

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country: Norway	Area: North Sea	Field: Gudrun	
Well no: 15/3-8	Company: Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB: 23.5 meters	Geologist: O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size: 17 ½”	Cut solvent: Iso Propyl Alcohol	Date: 20.11.2005	

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
			Samples returned to seabed down to 1010m	
1020			Cont. with cmt	
1030	70	CLST	Olv gry - lt gry - dk grn gry, sft – frm, blky, calc, slty loc grd SLIST, Tr Shl Frag, Tr Glauc, Tr Mic, loc vf sdy grd SST	
	30	SST	Clr – trnsl Qtz, vf, Tr f – m, lse, sbang – sbrndd, w srt, abdt Glauc	
	Tr	CMT		
1040	70	CLST	a.a.	
	30	SST	a.a.	
1050	80	CLST	a.a.	
	20	SST	a.a.	
1060	80	Clyst	Olv gry, prtly brnsh gry, gnsh gry, sft-frm, blky, slty, sli mic, calc, Glauc	
	20	SST	Clr-trnsl Qtz, vf-f, lse, sbang-sbrnd, w srt, Glauc	
1070	90	CLST	a.a.	
	10	SST	a.a.	
1080	70	CLST	Olv gry, brnsh gry, else a.a.	
	30	SST	f-m, else a.a.	
1090	90	CLST	a.a.	
	10	SST	a.a.	
1100	90	CLST	a.a.	
	10	SST	Vf-m, mod srt, else a.a.	
1110	70	CLST	a.a.	
	30	SST	a.a.	
1120	50	CLST	a.a.	
	50	SST	Vf-f, occ m, else a.a.	
1130	70	SST	Vf-f, else a.a.	
	70	CLST	a.a.	
1140	70	SST	Vf-f, occ m, else a.a.	
	30	CLST	Olv gry, brnsh gry, a.a.	
1150	60	CLST	Olv brnsh gry, sft-frm, blky, slty, Micromic, calc	
	40	SST	Clr, trnsl Qtz, lse, vf-f, occ m, sbang-sbrnd, mod srt, Glauc	
1160	50	CLST	a.a.	
	50	SST	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1170	50	CLST	Brnsh blk, else a.a.	
	50	SST	a.a.	
1180	50	CLST	Olv gry, brnsh gry, else a.a.	
	50	SST	a.a.	
1190	50	CLST	Dk brnsh gry, pty olv gry, else a.a.	
	50	SST	Vf-f, else a.a.	
1200	50	CLST	a.a.	
	50	SST	a.a.	
1210	60	CLST	a.a.	
	40	SST	a.a.	
1220	80	CLST	a.a.	
	20	SST	a.a.	
1230	90	CLST	Olv gry – lt gry, lt brn gry, sft – frm, blky, sli calc, v sdy, v slty i.p., Tr Micromic, loc Glauc, Tr Micropyr	
	10	SST	Lse Qtz, vf –f, a.a.	
1240	60	CLST	a.a.	
	40	SST	a.a.	
1250	70	CLST	a.a.	
	30	SST	a.a.	
1260	80	CLST	a.a.	
	20	SST	Vf – f, Tr Glauc a.a.	
1270	100	CLST	a.a.	
1280	100	CLST	Tr calc – calc, r Glauc, else a.a.	
1290	100	CLST	Olv gry – lt gry, lt brn gry, blky, frm, loc ea, sli calc – calc, loc Glauc, Tr slty, r Micromic, r Micropyr	
1300	100	CLST	a.a.	
1310	100	CLST	a.a.	
1320	100	CLST	a.a.	
	TR	LS	Pa yel – lt gry, mod hd, blky, microxln	
1330	100	CLST	a.a.	
	TR	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1340	100	CLST	a.a. also Tr Foss Frag	
	TR	LS	a.a.	
1350	90	CLST	a.a.	
	10	SST	Clr – trnsl Qtz, vf – f , lse, sbang - sbrndd, w srt, Tr Glauc	
	Tr	LS	a.a.	
1360	90	CLST	a.a.	
	10	SST	a.a.	
1370	100	CLST	a.a.	
1380	90	CLST	a.a.	
	10	SST	Clr – trnsl Qtz, vf – f, v hd, sbang, w srt, w cmt, silic cmt, no Mtrx, also lse Sd	
1390	80	CLST	a.a.	
	20	SST	a.a., also Tr Pyr, Tr Glauc	
1400	100	CLST	a.a.	
	TR	LST	Gry wh – pl yel, mod hd – hd, blky, loc arg, Tr Glauc	
1410	100	CLST	Olv gry – brn gry, loc gn gry, loc grad SLST, else a.a.	
	TR	LS	a.a.	
1420	100	CLST	Olv gry, frm, blky, sli mic, Micromic, slty, calc, Glauc	
	TR	LS	a.a.	
1430	100	CLST	Olv gry, sli calc, else a.a.	
	TR	LS	a.a.	
1440	90	CLST	Olv gry, a.a.	Grid Fm.
	10	SST	Clr Qtz, trnsl, ls, vfn, occ fn, w srt, sbang-sbrnd, Glauc	
1450	80	SST	Clr Qtz, trnsl, ls, m, w srt, sbang-sbrnd, Glauc, pyr	
	20	CLST	Olv gry a.a.	
	TR	LS	a.a.	
1460	80	SST	f-m, occ crs, mod srt, else a.a.	
	20	CLST	Olv gry, a.a.	
1470		LOST		
1480	60	SST	Vf-f, occ m, else a.a.	
	40	CLYST	olv gry, prtly med gry, else a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1490	50	SST	Clr Qtz, trnsl, lse, vf – f, occ m, w srt, sbang-sbrnd, Glauc	
	50	CLST	Olv gry, frm, blky, sli mic, Micromic, slty, calc, Glauc	
1500	50	SST	a.a.	
	50	CLST	a.a.	
	TR	LS	Gry wh – pa yel, mod hd – hd, blky, loc arg, Tr Glauc	
1510	80	SST	Vf – f, occ m, a.a.	
	20	CLST	a.a.	
	TR	LST	a.a.	
1520	60	SST	a.a.	
	40	CLST	a.a.	
1530	80	SST	F – m, Mic, Pyr, else a.a.	
	20	CLST	Olv gry, prtly brn gry, dk gn gry, else a.a.	
1540	90	SST	F – m, occ crs, a.a.	
	10	CLST	a.a.	
1550	60	SST	Vf – f, occ m – crs, a.a.	
	30	SLITST	Lt gry, sft – frm, blky, sli calc, v Glauc, Kao Mtrx	
	10	CLST	a.a.	
1560	70	SST	a.a.	
	30	CLST	Dk gn gry, else a.a.	
1570	70	SST	Pred vf – f, occ m – v crs, a.a.	
	30	CLST	a.a.	
	TR	LS	Wh, frm, blky, microxln	
1580	50	SST	Vf-f, a.a.	
	40	CLST	a.a.	
	10	SLITS	a.a.	
1590	80	SST	Vf – f, occ m, a.a.	
	20	CLST	a.a.	
1600	60	SST	a.a.	
	40	CLST	a.a.	
1610	90	SST	Clr – trnsl – mlky Qtz, f – m, Tr crs, lse, sbang – sbrndd, mod – pr srt, no cmt, Tr Mic	
	10	CLST	a.a.	
1620	70	SST	a.a.	
		CLST	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1630	60	SST	F – crs, else a.a.	
	40	CLST	Gn gry – olv gry, loc brn gry, sbblky, mod hd, non calc, Tr slty, Tr Micropyr, Tr Micromic	
1640	40	SST	Vf – f, Tr m, a.a.	
	60	CLST	a.a.	
1650	20	SST	a.a.	
	80	CLST	a.a.	
1660	10	SST	Vf – f, a.a.	
	90	CLST	a.a.	
1670	100	SST	f-m, occ crs, else a.a.	
	TR	LST	mica, Glaucc	
1680	100	SST	Vf-m, mod srt, else a.a.	
	TR	LST	a.a.	
1690	90	SST	a.a.	
		CLST	Dk gn gry, blky, frm, Micromic, non calc	
	TR	LST	a.a.	
1700	90	SST	a.a.	
	10	CLST	Dk gn gry, prtly dk brn gry, else a.a.	
	TR	LST	a.a.	
1710	90	SST	m, prtly vf-f/crs, kaol cmtd i/p	
	10	CLST	Dk gn gry, else a.a.	
	TR	LST	a.a.	
1720	100	SST	M, prtly f/crs, else a.a.	
	TR	LST	a.a.	
1730	100	SST	m-crs, prtly vf-f, else a.a.	
	TR	LST	a.a.	
1740	100	SST	Vf-f, occ m/crs	
	TR	LST	a.a.	
1750	50	SST	f-m, occ crs, else a.a.	
	50	SLITST	Lt gry, sft-frm, blky, arg lam, w kaol cmtd, Glaucc	
	TR	LST	mica, Glaucc	
1760	50	SST	Vf-f, occ m, else a.a.	
	50	SLITST	a.a.	
	TR	LST	a.a.	

WELLSITE SAMPLE DESCRIPTION

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1770	60	SST	Vf-f, occ m, else a.a.	
	40	SLITST	a.a.	
	TR	a.a.		
1780	70	SST	Lse, pred vf-f, occ med-crs, clr-op, ang-occ sbrnd-rnd, pr srt	
	20	SLITST	Lt gry-off wh, sft-frm, kaol mtx	
	10	LS	Wh, sft, amor-blky, micr	
1790	80	SST	Lse, pred vf-f, occ med-crs, a.a.	
	20	SLITST	Lt gry a.a	
1800	20	SST	Lse, pred vf-f, occ v crs, ang-occ rnd, Tr Pyr nods, Tr Glauc, Tr mica	
	80	CLST	Olv gry-med gry, occ gnsh gry, sft-occ frm, slty, Micromic, non-slily	
			Calc	
1810	10	SST	Lse, vf-f, occ med-crs, ang-occ rnd, a.a.	
	90	CLST	Olv-med gry, occ gnsh gry, sft-occ frm, slty, Micromic, non-v slily Calc	
1820	10	SST	Lse, vf-f, occ med a.a.	
	90	CLST	Olv gry-med gry, a.a.	
1830	5	SST	Lse, vf-f, occ med, a.a.	
	95	CLST	Olv gry-med gry, sft-frm, a.a.	
	TR	LS	Lt gry, sft-frm, arg, micr	
1840	TR	SST	Lse, clr-mlky, vf-f, occ med, a.a.	
	100	CLST	Olv gry-med gry, sft-frm, blky, slty, Micromic, non calc	
	TR	LS	Lt gry-off wh, pred sft, amor, arg	
1850	TR	SST	Lse, clr-mlky a.a.	
	100	CLST	Olv gry-med gry, sft-frm, blky, slty, a.a.	
1860	100	CLST	Dk gnsh gry, frm, blky, sli slity, Micromic, non calc	
	TR	LST	a.a.	
	TR	SST	a.a.	
1870	100	CLST	a.a.	
	TR	LST	a.a.	
	TR	SST	a.a.	
1880	100	CLST	a.a., Tr a.a.	
1890	100	CLST	a.a., Tr a.a.	
1910	100	CLYST	a.a., Tr a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
1920	100	CLST	Dk gnsh gry, frm, blky, Micromic i.p., non calc	
	TR	LST	Lt gry, microxln, frm, arg lam	
		SST	Clr, trnsl Qtz, ls, vf-f, sbang-sbrnd, w srt	
1930	90	CLST	a.a.	
	10	LST	a.a.	
	TR	SST	a.a.	
1940	90	CLST	a.a.	
	10	LST	a.a.	
	TR	SST	a.a.	
1950	100	CLST	Med-dk gnsh gry, sft-frm, amor-blky, slily slty, non calc, Tr Pyr.	
	TR	LS	Off wh-occ pa yel, sft-frm, occ microxln	
1960	100	CLST	Med gry-dk gnsh gry, Micromic, Tr Glauc a.a.	
1970	100	CLST	Olv-med gry-dk gnsh gry, frm, blky, slily slty, Tr Glauc, a.a.	
1980	100	CLST	Olv gry-med gry-occ gnsh gry, frm, blky, slily slty, slily Micromic,	No cavings
			Tr Glauc, non calc.	
	TR	SST	Lse, clr-op, sbang-sbrnd, vf-f, mod srt.	
	TR	LS	Off wh-pa yel a.a.	
1990	100	CLST	Med gry, occ gnsh gry, a.a.	
	TR	LS	Off wh-pa yel a.a.	
2000	100	CLST	Med gry, a.a. bcm lt gry i.p.	
	TR	LS	Off wh-yelsh brn, frm, blky, occ aren, pred micr	
2020	100	CLST	Olv gry-med gry, occ lt gry, sft-frm, amor-blky, occ Micromic, non calc	No cavings
2030	100	CLST	Olv gry-occ gnsh gry, a.a. Tr Glauc	
2040	100	CLST	Olv gry-med gry, a.a.	
2050	100	CLST	Olv gry, frm, blky, Micromic, slily slty, calc, Glauc	
	TR	SST	Lse, clr-trnsl Qtz, vf-f, w srt.	
	TR	LS	Lt gry, frm, microxln, arg lam	
2060	100	CLST	Olv gry, a.a.	
	TR	SST/LS	a.a.	
2070	100	CLST	Olv gry, a.a.	
	TR	SST/LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
2080	50	CLST	Olv gry, a.a.	
	50	SST	Clr Qtz, trnsl, lt gry, vf-f, sbang-sbrnd, w srt, mica Flk.	
	TR	LS	a.a.	
2090	100	CLST	Olv gry, a.a.	
	TR	SST/LS	a.a.	
2095	100	CLST	Olv gry, loc dsky blsh gry, hd blky, Micromic, slily slty, calc	
	TR	SST/LS	a.a.	
2100	100	CLST	Olv gry-blsh gry, occ gnsh gry, frm, blky, slly calc i.p.	
	TR	LS	Off wh-yelsh brn, frm, amor-blky, micr	
2110	100	CLST	Olv gry-blsh gry, a.a. occ waxy	
2120	100	CLST	Olv gry-blsh gry-occ brnsh gry, frm, blky, slily slty, occ Pyr nods	
2130	100	CLST	Med gry-blsh gry-brnsh gry, occ gnsh gry, frm, slily calc, Micromic	
			i.p., Tr Pyr nods, occ Micropyr	
2140	100	CLST	Pred brnsh gry-med gry-blsh gry, occ rdsh brn, sft-frm, blky, slily	
			slity, occ mod calc, Micromic i.p., Micropyr i.p.	
		LS	Lt gry, frm, blky-ang, arg.	
2150	100	CLST	Blsh gry-brnsh gry, frm, blky, a.a.	
	TR	LS	Lt yelsh brn, frm, blky, dol	
2160	100	CLST	Multicol, pred blsh gry-ash gry, med gry, gnsh gry, occ brnsh gry,	
			Frm, blky, slily slty, slily-mod calc, occ spkld, Tuff	
	TR	LS	Off wh-lt yelsh brn, frm, blky, dol i.p.	
2170	100	CLST	Blsh gry-gnsh gry, occ brnsh gry, frm, blky-occ crmb, occ slty, non-	
			Mod calc, occ pyr	
	TR	LS	Lt gry-occ yelsh brn, frm, blky, micr, dol i.p.	
2180	100	CLST	Med gry-brnsh gry, occ blsh gry-gnsh gry, frm, blky, slily calc, Tr pyr	
	TR	LS	a.a.	
	TR	SST	Off wh, vf-f, wh calc cmt	
2190	100	CLST	Med brnsh gry, occ blsh gry, tr gnsh gry, a.a., occ blk ang incls, tuff	
	TR	LS	Off wh, sft-frm, blky, a.a.	
2200	100	CLST	Med dk gry, lt brn gry, ps bl, prtly grysh gn, frm, blky, Micromic i.p., Calc	
	TR	LST/SST	a.a.	
2210	100	CLST	Md dk gry, pa bl gry, yel gry, frm, blky, Micromic i.p., calc	
	TR	LST/SST	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
2220	100	CLST	Med dk gry, brnsh gry, pa bl gry, yel gry, lt gry, else a.a.	
	TR	LST/SST	a.a.	
2230	100	CLST	Varic a.a.	
	TR	LST/SST	a.a.	
2240	100	CLST	Med dk gry, prtly brnsh gry, pa bl gry, yel gry, lt gry, else a.a.	
	TR	LST/SST	a.a.	
2250	100	CLST	Varic a.a.	
	TR	LST/SST	a.a.	
2260	60	CLST	Md dk gry, prtly blsh gry, frm., blky, sli Micromic, sli calc	
	40	SST	Clr, trnsl Qtz, lse, vfn-fn, mod srt, sbang-sbrnd	
2270	80	CLST	Med dk gry a.a.	
	20	SST	a.a.	
2280	80	SST	F-med a.a.	
	20	CLST	Med dk gry a.a.	
2290	60	CLST	Med dk gry, prtly md gry, brnsh gry, gnsh gry, else a.a.	
	40	SST	Vf-md, occ crs, pr srt, else a.a.	
2300	20	CLST	Med dk gry, frm, sbfiss, Micromic, slily slty, slily calc	
	80	SST	Clr, trnsl Qtz, lse, f-med, occ crs, sbang-sbrnd, mod srt, mica Flk	
	TR	LS	Lt gry, frm, microxln, arg lam, pyr, Glauc	
2310	80	SST	Clr, trnsl Qtz, lse, f-med, pyr, Glauc a.a.	
	20	CLST	Med dk gry, a.a.	
	TR	LS	Lt gry, a.a.	
2320	80	SST	Vf-med, occ crs, pr srt, else a.a.	
	20	CLST	a.a.	
2330	80	SST	Pred med, occ vf-f, w srt, pyr, Glauc, else a.a.	
	20	CLST	a.a.	
2350	80	SST	Lse, clr-trnsl, pred f-med, occ crs, sbang-sbrnd, occ rnd, pr-mod srt	
	20	CLST	Med gry- occ gnsh-blsh gry, frm, blky, waxy ip, slily calc	
2360	80	SST	Lse, pred med-crs, Tr Glauc nods, else a.a.	
	10	CLST	Med gry-gnsh gry, occ lt gry-blsh gry, a.a.	
	10	LS	Lt gry-off wh a.a.	
2370	90	SST	Lse, clr-trnsl, occ op, r org, med-crs, pred subrnd, Tr Glauc	
	10	CLST	Med gry-lt gry-gnsh gry, else a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
2380	80	SST	a.a. pred vf-crs, pr srt, Glauc nods	
	20	CLST	Med-gnsh gry a.a.	
2390	90	SST	Pred vf-med, occ crs, sbang-occ rnd, clr-trnsl, occ org	
	10	CLST	a.a.	
2400	100	SST	Lse, clr-trnsl, occ op, vf-f, occ med-crs, mod srt, Tr pyr	
	TR	CLST	Med gry-gnsh gry, frm, blky, slily calc	
	Tr	LS	Wh-lt gry, else a.a.	
2410	90	SST	Lse, clr-opq, r org, vf-med, occ crs, sbang-sbrnd, a.a.	
	10	CLST	Lt gry-blsh gry, med gry, frm, a.a.	
	TR	LS	Off wh- crm, else a.a.	
2420	100	SST	Lse, trnsl-op, f-med, occ crs, abang-occ rnd, pr-mod srt, r Pyr nods,.	
	TR	CLST	Pred lt-blsh gry, sft-frm, amor-blky, non calc	
2430	100	SST	Lse, occ org grns, else a.a.	
	TR	CLST	a.a.	
	TR	LS	Wh, sft-frm, amor-blky, mica	
2440	90	SST	Lse, clr-trnsl-op, f-med, abnt crs-v crs (rnd), Pyr nods, Mica.	
	10	CLST	Lt gry-gnsh gry-med gry, sft-frm, blky- occ crmb, occ mod slty,	
			Micromic ip	
2460	90	SST	Lse, pred f-med, occ crs, tr Glauc nods, pyr nods, a.a.	
	TR	CLST	Lt gry-gnsh gry, med gry, a.a.	
2472	80	SST	Lse, vf-med, mod srt, a.a.	
BU	20	CLST	Lt gry-gnsh gry-blsh gry, sft, a.a.	
2480	20	SST	Ls, clr-trnsl Qtz, vf-f, Tr pur, Glauc	
	80	CLST	Lt gry-gnsh gry md gry, occ rdsh brn, frm, slty i.p., mod-sli calc	
	TR	LST	Off wh-lt gry, else a.a.	
2490	20	SST	f-m, occ crs	
	80	CLST	Med gry-blsh gry-gnsh gry, occ rd brn, frm, blky, occ slty, occ Micromic, non sli calc	
	TR	LST	a.a.	
2500	20	SST	Clr, trnsl Qtz, ls, vf-m, occ crs	
	70	CLST	Gnsh gry, occ med gry, rd brn, frm, blky, occ slity, occ Micromic, non-sli calc	
	10	LST	Off wh-lt gry, buff, frm, microxln, occ aren grdng sst, arg lam	
2510	20	SST	Vf-f, occ m, else a.a.	
	70	CLST	Md gry, frm, sbfiss, Micromic, sli slity, v calc, grd Mrl, Glauc	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
2520	70	SST	Clr, trnsl Qtz, ls, med, prtly vfn-fn, w srt, sbang-sbrnd, Glauc	
	20	CLST	a.a.	
	10	LST	a.a.	
2530	80	SST	Med, prtly vf-f, occ med, v slity i/p, else a.a.	
	10	CLST	a.a.	
	10	LST	a.a.	
2540	60	SST	a.a.	
	20	SLIST	Med gry, frm, blky, sli calc, Glauc	
	10	CLST	a.a.	
	10	LST	a.a.	
2550	80	CLST	Med gry, md dk gry, gn gry, dk gn gry, brn gry, brn blk, frm, sbblky, Micro calc, sli slty i.p., Glauc	
	10	SST	f-m, else a.a.	
	10	LST	a.a.	
2560	80	CLST	a.a.	
	10	SST	F-med, occ vf a.a.	
2570	70	CLST	Pred med gry-gnsh gry, frm, blky, slily slty, slily Micromic, occ calc	
	20	SST	Lse, clr-trnsl, occ opq, r orng, vf-med, occ crs (rnd), pred sbang-	
			sbrnd, pr srt, Tr pyr, occ calc cmt.	
	10	LST	Wh-off wh, frm-hd, mica, occ aren, grd vf SST	
2574	60	CLST	Pred med gry-gnsh gry, a.a.	
	30	SST	Pred lse, a.a. occ calc cmt	
	10	LST	Wh-off wh, a.a. grd vf calc SST i.p.	
2580	80	CLST	Med gry, med dk gry, gnsh gry, prtly brnsh gry, frm, sbblky,	
			Micromic, sli slty, occ Glauc, calc.	
	10	SST	Vf-f, else a.a.	
	10	LST	a.a.	
2590	80	SST	Clr, transl Qtz, lse, v fn-fn, sbang-sbrnd, w srt, Glauc	
	10	CLST	Med gk gry, prtly gnsh gry, brnsh gry, a.a.	
	10	LST	a.a.	
2600	80	SST	Vf-f, occ med, a.a.	
	10	CLST	Med gk gry, gnsh gry, a.a.	
	10	LST	a.a.	
2610	80	SST	a.a.	
	10	CLST	a.a.	
	10	LST	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
2620	80	SST	Vf-f, med, mod srt, a.a.	
	10	CLST	a.a.	
	10	LST	a.a.	
2630	90	SST	Cls, transp Qtz, lse, f-m, occ c, sbang-sbrnd, sbelong-spher, mod srt,	
			Tr pyr	
	10	CLST	Med-dk gry, occ brn gry, sft-frm, blky	
2640	90	SST	F-c, occ v crs, predom med, pr srt, a.a.	
	10	LST	Wh, sft, amor, microxln	
2650	100	SST	V f-f, tr med, r crs, else a.a.	
	Tr	LST	a.a.	
	Tr	CLST	a.a.	
2660	100	SST	a.a.	
	TR	LST	a.a.	
	TR	CLST	a.a.	
2670	100	SST	F-m, Tr crs, subang-sbrnd, a.a.	
	TR	LST	a.a.	
	TR	CLST	a.a.	
2680	90	SST	V f-f, tr m, tr c, a.a..	
	10	CLST	Lt-med gry, lt gn gry, sft-frm, crumb-blky.	
	TR	LST	Wh, sft-frm, crumb, microxln.	
2700	90	SST	F-m, occ c, a.a.	
	TR	LST	a.a.	
	TR	CLST	a.a.	
2710	100	SST	V f, occ m, a.a.	
	TR	CLST	Lt gry, sf-frm, blky, calc.	
	TR	LST		
2720	80	SST	Lse sd, m – crs, occ f, lse, sbang – sbrndd, sb spher	
	10	CLST	Lt – med gry, sft – frm, blky, calc	
	10	LS	Wh, sft, crumb, occ arg strk, microxln	
2730	80	SST	a.a.	
	10	CLST	V calc, else a.a.	
	10	LS	a.a.	
2740	80	MRL	Med lt gry, med gry, frm, sbblky, microxln	
	10	SST	Lse, v f – f, else a.a.	
	10	LS	a.a.	
2750	80	LST/MRL	Pred Ls, wh, lt brn gry – pl rd, gn gry, sft - frm, blky – sbblky	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	15	SST	Occ med, else a.a.	
	5	CLST	Gn gry, occ dk gn gry, sbblky, frm – sft, v calc	
2760	80	LST/MRL	Gn gry, wh, occ lt brn gry – pl rd, incr arg bec more mrly, microxln –	
			mirc, else a.a.	
	15	CLST	Loc grd mrl, else a.a.	
	5	SST	Pred v f, else a.a.	
2765	60	LST/MRL	Pred a.a.	B.U.
	30	SST	a.a.	
	10	CLST	a.a.	
2770	100	MRL	Med blu gry, else a.a.	abund mud chem co
2780	100	MRL	Med-dk blu gry, frm-hd, blky-brit, occ microcarb lam	
	TR	LST	Wh, frm, blky-crumb, occ carb microlams, micr, microxln	
2790	90	MRL	Med-dk blu gry, tr rd brn, else a.a.	
	10	LST	Wh-off wh, else a.a.	
2800	50	MRL	Gn gry – med bl gry, gen frm, blky, i.p. grd to arg LST	
	30	CLST	Olv gry – dk gn gry, blky, frm, v calc	
	20	LS	a.a.	
	TR	SST	Occ med, else a.a.	
2810	60	LST	Wh – off wh, gn gry – lt olv gry, gen blky, frm, microxln, i.p. arg	
	20	CLST	a.a.	
	20	MRL	a.a.	
	TR	SST	a.a.	
2820			Pred a.a.	
2830	80	LS	Pred arg, loc grad to Mrl, else a.a.	
	20	CLST	Mod – v calc, else a.a.	
	TR	SST	a.a.	
2840	60	LS	Off wh-lt gry, frm-mod hd, blky-brit, tr carb microlams, micr,	
			microxln	
	40	MRL	Med-dk gry, occ olv gry, tr blu gry, frm-mod hd, blky-brit, loc grd	
			CALC CLST.	
2850	80	MRL	Occ dk gry, loc grd CALC CLST, else a.a.	
	20	LS	a.a.	
2860	70	MRL	Predom med gry, else a.a.	
	30	LS	Off wh, else a.a.	
2870	90	MRL	Med – dk gry, loc grd calc Clst, else a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	10	LS	Off wh – v lt gry, else a.a.	
2880	50	MRL	Med - dk gry, dk gn gry, occ olv gry, frm - mod hd, blky - brit, loc grd calc Clst	
	50	LS	Off wh, gn gry – lt olv gry, gen blky, frm – mod hd, microxln, i.p. arg	
2890	60	LS	a.a.	
	40	MRL	a.a.	
2900	70	MRL	a.a.	
	30	LS	a.a.	
2910	80	LS	a.a.	
	20	MRL	a.a.	
2920	70	MRL	a.a	
	30	LS	Off wh-v lt gry, else a.a.	
2930	70	LS	Off wh-lt gry, frm-mod hd, blky-brit, occ ang, sli arg i.p., Tr carb	
			microlam	
	30	MRL	Med-dk gry	
2940	50	LS		
	50	MRL	Predom dk gry, occ carb microlam, else a.a.	
2950	60	LS	Yel gry - lt olv gry, frm-brit, arg, blky	
	40	MRL	Dk gn gry – gn blk – olv gry, frm – mod hd, blky	
2960	50	LS	Lt gry, frm-mod hd, blky-brit, sli arg, microxln.	
	50	MRL	Med gry, occ dk gry, frm-mod hd	
2970	50	LS	a.a.	
	50	MRL	a.a.	
2980	50	LS	a.a.	
	50	MRL	a.a.	
2990	70	MRL	a.a.	Tr – 5 % vf – f SD,
	30	LS	a.a.	probl. from Baryte
	TR	PYR	Nods	
3000	70	MRL	a.a.	a.a.
	30	LS	a.a.	
	TR	PYR	a.a.	
3010	70	MRL	a.a.	a.a.
	30	LS	a.a.	
	TR	PYR	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3020	80	MRL	Med gry – dk gn gry, frm – mod hd, blky – flky, i.p. v arg grd to	
			calc Clst	
	20	LS	Lt gry – lt olv gry, frm – brt, bly – flky, arg, loc grd to Mrl	
	TR	PYR	Nods	
3030	80	MRL	a.a.	
	20	LS	a.a.	
3040	80	MRL	a.a.	
	20	LS	a.a.	
3050	90	MRL	a.a.	
	10	LS	a.a.	
	TR	PYR	a.a.	
3060	70	MRL	Occ brn gry, else a.a.	
	30	LS	a.a.	
3070	60	MRL	Also brn gry, else a.a.	
	40	LS	Pred lt olv gry, else a.a.	
3080	70	MRL	Also brn gry – gry rd, mod hd - hd, occ frm, else a.a.	Change in color &
	30	LS	Gry wh – lt olv gry, mod hd, occ hd, else a.a.	hardness of marl
3090	80	MRL	Pred brn gry – gry rd, else a.a.	
	20	LS	i.p. arg lam, else a.a.	
3100	90	MRL	a.a.	
	10	LS	a.a.	
3110	90	MRL	Lt gry, red brn, brn gry, med-dk gry, a.a.	
	10	LS	a.a.	
3120	100	MRL	Med-dk gry, tr rd brn, frm-mod hd, blky-brit, occ arg microlams.	
	Tr	LS	Off wh-crm, frm-mod hd, brit, microxln.	
3130	100	MRL	a.a.	
	TR	LS	a.a.	
3140	100	MRL	Med-dk gry, tr rd brn.	
	TR	LS	a.a.	
3150	100	MRL	Med-dk gry, a.a.	
3160	100	MRL	a.a.	
	TR	LS	Off wh-lt gry, frm, blky-brit, microxln.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3170	100	MRL	Dk gry, dk brn gry, frm-mod hd, blky-brit, occ arg microlam	
	R TR	LS	Off wh-lt gry, frm, blky-brit, microxln.	
3180	100	MRL	a.a.	
	R TR	LS	a.a.	
3190	100	MRL	Dk gry, occ rd brn, a.a.	
	R TR	LS	a.a.	
3200			a.a.	
3210	100	MRL	Pred dk gn gry, tr med gry, tr rd brn, else a.a.	
3220	100	MRL	a.a.	
	TR	LS	Gry wh – lt olv gry, frm, microxln, arg	
3230			a.a.	
3240	100	MRL	Occ gn gry, loc mod hd – hd, else a.a.	
	TR	LS	a.a.	
3250			a.a.	
3260			a.a.	
3270	100	MRL	a.a.	
	TR	LS	a.a.	
	TR	PYR	Nods	
3280			a.a.	
3290			a.a.	
3300			a.a.	
3210	100	MRL	a.a.	
	TR	LS	a.a.	
3220	100	MRL	Gn gry – dk gn gry, tr rd brn – gry rd, sbblky – blky, pred mod hd, i.p., v calc calc grad to arg Lst	
	Tr	LS	Gry wh – lt olv gry, frm – mod hd, microxln, arg, loc arg lam	
3330			a.a.	
3340	100	MRL	Dk gry, occ med gry, com arg microlam	
3350	100	MRL	Med-dk gry, frm-mod hd, blky-crumb, occ arg microlams	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3360	100	MRL	Dk gry, occ med-lt gry, a.a.	
3370	100	MRL	Med-dk gry, occ blu gry, lt gry	
3380	100	MRL	Med-dk gry, occ lt gry, com arg microlam	
3390	100	MRL	a.a.	
	TR	LS	Off wh, frm, blky-crumb, micr-microxln	
3400	100	MRL	Lt gry-dk gry, occ rd brn, tr pyr, occ microcarb	
	TR	LS		
3410	90	MRL	a.a	
	10	LS	Lt gry, sli arg, com blk arg microlam	
3420	90	MRL	a.a	
	10	LS	a.a.	
3430	100	MRL	a.a	
	TR	LS	a.a.	
3440	80	MRL	Lt-med gry, occ rd brn	
	20	LS	a.a.	
3450	90	MRL	Lt-med gry	
	10	LS	V lt gry	
3460	100	MRL	a.a	
	TR	LS	a.a.	
3470	100	MRL		
	TR	LS		
3480	70	LS	Lt gry, mod hd, occ hd, blky, microxln, i.p. arg, loc v arg grd to Mrl	SD grns from barite
	30	MRL	Dk gn gry, mod hd, blky, loc v calc grad to Lst	
3490	80	LS	Occ gry wh, else a.a.	
	20	MRL	a.a.	
3500			a.a.	
3510	90	LS	Gen mod hd, else a.a.	
	10	MRL	a.a.	
	TR	CLST	Olv blk, mod hd, calc	
3520	90	LS	Lt gry, occ gry wh, mod hd, blky, microxln, i.p. arg, loc v arg grd to Mrl	SD grns from barite

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	10	MRL	Dk gn gry, mod hd, blky, loc v calc grd to Lst	
3530	100	LS	a.a.	
	TR	MRL	a.a.	
	TR	CLST	a.a.	
3540			a.a.	
3550			a.a.	
3560	100	LS	Frm – mod hd, loc brit, else a.a.	
	TR	MRL	a.a.	
3570			a.a.	
3580	100	LS	Occ Glauc, else a.a.	
	TR	MRL	a.a.	
3590	90	LS	Tr Glauc	
	10	MRL		
3600	90	LS	Lt-med gry, frm-mod hd, blky-brit, com Glauc, microlxn	
	10	MRL	Med-dk gry a.a	
3610	90	LS	a.a, no Glauc.	
	10	MRL	a.a	
3620	90	LS	Lt-med gry, frm-mod hd, blky-brit, com arg lam, com Glauc, microxln-micr	
	10	MRL	Med-dk gry	
3630	90	LS	a.a.	
	10	MRL	a.a.	
3640	90	LS	Predom lt gry, tr off wh, a.a	
	10	MRL	a.a.	
3650	90	LS	a.a.	
	10	MRL	a.a.	
3660	80	LS	Lt – med lt gry, lt olv gry – gn gry, occ gry wh, frm – hd, gen mod hd, blky, occ brit, microxln, loc Glauc, arg lam	
	20	MRL	Dk gn gry, mod hd, blky, loc v calc grd to ls	
	TR	PYR nods		
3670	80	LS	Lt – med lt gry, lt olv gry – gn gry, occ gry wh, frm – hd, gen mod hd, blky, occ brit, microxln, loc Glauc, arg lam	
	20	MRL	Dk gn gry, mod hd, blky, loc v calc grd to Lst	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3680	90	LS	a.a.	
	10	MRL	a.a.	
3690	80	LS	a.a.	
	20	MRL	Dk gn gry – gry blk, else a.a.	
3700	60	LS	a.a.	
	40	MRL	a.a.	
3710			Pred a.a.	
3720	70	LS	Tr Glauc, else a.a.	
	30	MRL	Also mod med – dk gry, else a.a.	
3730	80	LS	a.a.	
	20	MRL	a.a.	
3740	70	LS	a.a.	
	30	MRL	a.a.	
3750	60	LS	a.a.	
	40	MRL	a.a.	
3760			Pred a.a.	
3770	70	MRL	a.a.	
	30	LS	bcm v arg	
3780	70	LS	Pred lt olv gry, sli grnsh gry, red brn, mod hd – hd, blky, occ microxln, sli arg, occ grd to Mrl	
	30	MRL	a.a.	
3790			a.a.	
3800	80	CLST	dk gry – blk, occ med gry, mod hd – hd, calc – v calc, grd to Mrl i.p.,	Rødby Fm.
			blky	
	20	MRL	a.a	
3810	90	CLST	a.a	
	10	LST	a.a	
3820			a.a	
3830	95	CLST	a.a	
	5	LS:	a.a	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3840	50	LS/MRL	lt gry – wh, dk gn gry, hd, blky, occ brit, v calc	
	50	CLST	gn blk, dk gry blk, dk gry, hd, blky, mod calc	
	TR	Pyr		
3850	60	LS/MRL	a.a.	
	40	CLST	pred a.a., also rd brn, mod hd, mass, sli calc	
3860			a.a.	
3870	90	CLST	Dk gry, gry blk, hd, blky-sbblky, occ sli slty, pred non calc	
3880	30	CLST:	Rd brn, dk brn, mod hd – hd, mass, non calc	Åsgård Fm.
	30	CLST	dk gry – greyish blk, hd, blky-sbblky, occ sli slty, mod – v calc	
	40	LS	Gen sli-mod arg, else a.a.	
3890			a.a.	
3900			a.a.	
			8 ½” section	
3913			Cont with Barite and mud add.	The mud is giving very good bl wh flu cut
3915			Cont with Barite and mud add	
3918	20	LS	Lt gry – gry wh, v hd – hd, sbfis, loc plty, microxln, loc arg	
	80	CLST	Lt gry – olv gry, brn gry – rd gry, blky – sbfis, v hd – hd, v calc grd MRL, Tr – abd Micropyr	
3921	10	LS	a.a.	
	90	CLST	Gen olv gry – lt gry, mnr brn gry else a.a.	
3924	90	SH	Olv gry, md dk gry, lt gry, hd, sbfis, Micromic, calc	
	10	LS	a.a.	
3927	80	SH	a.a.	
	20	LS	a.a.	
3930	80	SH	Olv blk, grysh blk, med blsh gry, hd, sbfiss, Micromic, sli slty i.p., calc	
	20	LS	a.a.	
3935	100	SH	Pred brnsh gry, prtly med dk gry, md blsh gry, hd, sbfis, Micromic, sli calc	T. Draupne
	TR	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
3936	100	SH	Grysh blk, hd, fiss, Micromic, sli slty i.p., gen non calc, btm	
	TR	LS	a.a.	
3939	100	SH	a.a.	
	TR	LS	a.a.	
3942	100	SH	a.a.	
	TR	LS	a.a.	
3945	100	SH	Loc vf sdy, slty i.p., else a.a.	
	TR	LS	a.a.	
3948	100	SH	Brn blk – gry blk, hd, fiss – sbfiss, non calc,carb – v carb, Micromic, slty I.P., loc vf sdy	
	TR	LS	Lt gry – wh, hd, microxln, arg lam	
3949			a.a.	Spt. from C.G
3951	100	SH	a.a.	
	TR	LS	a.a.	
3953	100	SH	Gd Tr vf sdy, else a.a.	F.G. peak
3954	100	SH	Bcm r sdy, else a.a.	
	TR	LS	a.a.	
3957	60	SH	a.a.	
	40	LS	a.a.	
3960	80	SH	V carb, loc ea, else a.a.	
	20	LS	a.a.	
3963			a.a.	
3966	90	SH	a.a.	
	10	LS	a.a.	
3969	100	SH	a.a.	
	TR	LS	a.a.	
3972	100	SH	Gry blk, prtly brn blk, hd, fis, Micromic, sli slty i.p., non calc	
	TR	LS	Wh, lt gry, hd, microxln, arg lam	
3975	90	SH	a.a.	
	10	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	TR	SLITST	Brn blk, hd, Micromic, arg, non calc	
3978	80	SH	a.a.	
	10	LS	a.a.	
	10	SLITST	Brnsh blk, hd, Micromic, arg, non calc	
3981	90	SH	a.a.	
	10	LS	a.a.	
	TR	SLIST	a.a.	
3984	70	SH	a.a.	
	20	SLITST	a.a.	
	10	LS	a.a.	
3987	80	SH	a.a.	
	10	SLITST	a.a.	
	10	LS	a.a.	
3989	80	SH	a.a.	
	10	SLITST	a.a.	
	10	SST	Lt gry, clr – trnsl Qtz, vf, sbang, w srt, v hd – hd, w calc cmtd, i.p. arg, r carb, Glauc, n.v.p.	
	Tr	LS	a.a.	
3990	60	SH	V dk gry, brn blk, frm, blky, loc earth, carb	
	40	LS	Lt gry, frm, blky-crmb, micr, arg lam	
3993	70	SH	a.a.	
	30	LS	a.a.	
3996	80	SH	a.a.	
	20	LS	a.a.	
3999	90	SH	a.a.	
	10	LS	a.a.	
4002	80	SH	a.a.	
	20	LS	a.a.	
4005	60	SH	V dk gry, dk brn gry, hd, fis, Micromic, carb, non calc	
	40	LS	Lt gry, blky, microxln, arg lam	
4008	80	SH	a.a.	
	40	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4011	90	Sh	a.a.	
	10	LS	a.a.	
4014	100	SH	a.a., hom Sh	
	TR	LS	a.a.	
4017	100	SH	Sli calc i.p.	
	TR	LS	a.a.	
4020	90	SH	a.a.	
	10	LS	a.a.	
4023	100	SH	a.a.	
	TR	LS	a.a.	
4026	100	SH	a.a.	
	TR	LS	a.a.	
4029	100	SH	a.a.	
	TR	LST	a.a.	
4032	100	SH	a.a.	
	TR	LS	a.a.	
4035	100	SH	a.a.	
	TR	LS	a.a.	
4038	100	SH	a.a.	
	TR	LS	a.a.	
4041	100	SH	a.a.	
	TR	LS	a.a.	
4044	100	SH	a.a.	
	TR	LS	a.a.	
4047	100	SH	a.a.	
	TR	LS	a.a.	
4050	100	SH	Blk-brn blk, frm-mod hd, blky-sbfiss, loc ea, carb, non calc	
4053	100	SH	a.a.	
	TR	LS	Off wh, frm, crumb, occ blk arg microlams, micritic-cyrptoxln	
4056	100	SH	a.a.	
	TR	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4059	90	SH	Blk-brn blk, frm-mod hd, blky-sbfiss, carb, n calc	
	10	LS	Off wh, frm, blky-crumb, microxln-micr, occ blk arg/carb lams	
4062	60	LS	a.a.	
	40	SH	a.a.	
	TR	SST	Occ lse grns, transp-smoky, med, sbang	
4065	90	SH	a.a.	
	10	LS	a.a.	
4068	70	SH	a.a.	
	30	LS	a.a.	
	TR	SST	Lse, trnsp, med, occ crs, sbang-rnd	
4071	100	LS	Off wh, frm, crumb, cryptoxln-micr, occ f-med snd	
	TR	SH	a.a.	
4072	80	SST	Lse, trnsp-trnsl, f-crs, ang-sbrnd, sbelong-sbspher, pr-mod srt,	
			occ blk & rd Rk incl.	
	10	SH		
	10	LS		
4074	70	SST	f-med, predom f, sbrnd.	
	20	SH		
	10	LS		
4077			Lost - No base oil available for washing	
4080	90	SST	Lse, clss, trnsp, f-med, occ crs, sbang-rnd, sbelong-spher, mod srt, occ	
			facetted	
	10	SH		
4083	100	SST		
	TR	SH		
	TR	LS		
4086	50	SST	Clr-trnsl Qtz, ls, fn, prtly md-crs, sbrnd, w srt	
	40	SH	Blk-brn-blk, mod hd, fiss, Micromic, carb, non calc	
	10	LS	Lt gry, frm-mod hd, fiss, Micromic	
4089	50	SST	Vf-f, prtly med-crs, mod srt, else a.a.	
	40	SH	a.a.	
	10	LS	a.a.	
4091	80	SH	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	10	SST	a.a.	
	10	LS	a.a.	
4095	70	SH	a.a.	
	20	SST	a.a.	
	10	LS	a.a.	
4098	50	SST	F-med, occ crs, pr srt, else a.a.	
	50	SH	a.a.	
	TR	LS	a.a.	
4101	60	SST	a.a.	
	40	SH	a.a.	
	TR	LS	a.a.	
4104	80	SH	a.a.	
	20	SST	a.a.	
	TR	LS	a.a.	
4107	100	SH	a.a.	
	TR	LS	a.a.	
4110	80	SH	a.a.	
	20	SST	Clr-trnsl Qtz, ls, med-crs, mod srt, sbrnd	
	TR	LS	a.a.	
4113	100	SH	a.a.	
	TR	SST	a.a.	
	TR	LS	a.a.	
4116	100	SH	Blk-brn blk a.a.	
	TR	LS	Lt gry a.a.	
4119	100	SH	a.a.	
	TR	LS	a.a.	
4122	100	SH	Blk-brnsh blk, mod hd, fiss, Micromic, carb, non calc	
	TR	LS	Lt gry, frm-mod hd, crumb, micritic-cryptxln.	
4125	100	SH	a.a.	
	TR	LS	a.a.	
4128	80	SH	a.a.	
	20	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4131	40	SST	Trnsp-trnsl, lse, vf-f, occ med, subang-subrnd, w srt	
	40	SH		
	20	LS		
4134	50	SST	a.a.	
	40	SH	a.a.	
	10	LS	a.a.	
4137	50	SST	a.a.	
	40	SH	a.a.	
	10	LS	a.a.	
4140	70	SST	a.a., f-med, pred f	
	30	SH	a.a.	
	TR	LS	a.a.	
4143	60	SST	a.a.	
	40	SH	a.a.	
4146	40	LS	Lt gry-off wh, frm, crumb, com blk arg microlam, micr-microxln	
	30	SST	F, occ vf, r med, mod w srt	
	30	SH	a.a.	
4149	50	SH	Dk gry, mod hd, blky, flky, Micromic, non calc	
	40	SST	Gen a.a., but also gry aggr, arg mtrx, pr vis por	
	10	LST	a.a.	
4152	50	LST	a.a.	
	30	SST	a.a., but also tr v crs subrnd Qtz grns	
	20	SH	a.a.	
4155	40	LST	a.a.	
	40	SST	a.a.	
	20	SH	a.a.	
4158	60	LST	Lt gry-off wh, occ dk lam, frm-mod hd, crmbl, microxln, occ cryptxln	
	20	SST	Clr, trnsl, mlky wh Qtz grns, gen fn – med, occ crs, gen subrnd, mod srt	
			also gry aggr, arg, calc mtrx, pr vis por	
	20	SH	Dk gry, mod hd, blky, flky, Micromic, non calc	
4161	60	LST	a.a.	
	20	SST	a.a.	
	20	SH	a.a.	
4164	60	LST	a.a.	
	20	SST	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	20	SH	a.a.	
4167	90	SST	Clr, lse Qtz grns, f-med, occ vf, occ crs, ang-subrnd, mod srt	
	5	LST	a.a.	
	5	SH	a.a.	
4168	80	SST	Gen med-crs, occ v crs, subang-ang, else a.a.	Spot sample-BU
	10	LST	a.a.	
	10	SH	a.a.	
4167-4304			Core 1 – Core 5 for Description please refer to Conventional Core Description	
			Cont. Drilling w/ 8 ½” rotary BHA	
4308	40	SST	Pred vf- med, dom Qtz, clr-trnsl, sbrndd, wl srt, pred lse grns	No shows
	50	CLST/SH	Dk olv gry – olv blk, amor – blky, carb, loc carb, non calc – slily calc, Tr Pyr ptch, pred dissem Micropyr (metallic lstr),	
	10	LS	Arg, off wh – med gry, dom micr, frm-hd	
4311	10	SST	Pred a.a.	
	60	CLST	Bcm dom lt gry, abd kaol, frm-mod hd, pred non calc	
	25	SH	Dk olv gry- olv blk, mod hd, sbfis-fis, i.p., brit, frm, non calc, Micropyr	Cavings?
	5	COAL	Dk gry-blk, arg, ea, frm	
4314	20	SST	Pred a.a.	
	40	CLST	Pred a.a.	
	20	SH	a.a.	
	20	COAL	a.a.	
4317	10	SST	Pred a.a.	
	60	CLST	Pred a.a.	
	20	SH	a.a.	
	10	COAL	a.a.	
4320	5	SST	Pred a.a.	
	90	CLST	V abd kaol, frm-mod hd, pred non calc, else a.a.	
	5	SH	a.a.	
4323	5	SST	Pred a.a.	
	50	CLST	V abd kaol, frm-mod hd, pred non calc, else a.a.	
	25	SH	a.a.	
	20	COAL	a.a.	
4326	40	CLST	a.a	
	5	SST	a.a	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	50	SH	a.a.	
	5	COAL	a.a.	
4329	40	CLST	a.a.	
	5	SST	a.a.	
	50	SH	a.a.	
	5	COAL	a.a.	
4332	30	CLST	a.a.	
	10	SST	a.a.	
	60	SH	a.a.	
4335	30	LS	Lt gry-yelsh gry, sft-fri, arg i.p., sdy i.p.	Yelwh flu, bluwh
	30	CLST	a.a.	cut, Gas 3.88 %
	20	SST	Clr-trnsl Qtz, lse-calc cmtd, v cmt, f-med, occ crs, sbang-sbrnd	
	20	SH	a.a.	
4338	40	SD/SST	Clr-transli Qtz, pred med-crs, gen lse, occ calc cmt, v cmt, sbang-sbrnd	Yelwh flu, bluwh
	20	CLST	Lt gry-olv gry, kaol, frm-mod hd	cut
	40	SH	Med-dk olv gry-olv blk, blky-subfiss, frm-mod hd, carb, occ grd coal	
4341	70	SH	a.a.	
	10	CLST	a.a.	
	20	SD/SST	Gen lse, pred med-crs, sbang, vf-f grn in Clst cmt agg, else a.a	
4344	50	SH	a.a.	
	40	CLST	a.a., very calc occ grad to arg Lst	
	10	SD	a.a.	
4347	90	SH	Gen dk gry-olv gry, blky, frm-mod hd, carb, Tr coal	
	5	CLST	a.a.	
	5	SD	a.a.	
4350	50	SH	a.a.	
	50	CLST	a.a.	
4353	90	SH	Gen dk gry-blk, blky-sbfiss, frm-mod hd, carb	
	10	CLST	a.a.	
4356	70	SH	a.a.	
	30	CLST	a.a.	
4359	70	SH	Gen carb, else a.a.	
	30	CLST	Dom lt gry, calc, microlam dk gry SH, else a.a.	
4362	10	SST	Pred clr Qtz, f-med, sbrndd, lse grns only	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
	60	SH	a.a.	
	30	CLST	V calc, i.p., grd arg Lst	
4365	70	SH	Gen v carb, a.a.	
	30	CLST	V calc, a.a.	
4368	70	SH	Gen less carb, else pred a.a.	
	30	CLST	V calc, a.a.	
4371	90	SH	Gen carb again, i.p. grd arg C	
	10	CLST/LS:	V calc, else a.a.	
4374	80	SH	Gen carb again, i.p. grd arg C	
	10	LS	Off wh – med gry, microlam, arg, gen hd	
	10	SST	Gen lse Qtz, pred f-m, subrndd, f grn in arg mtx	
4377	70	LS	Off wh – med gry, microlam arg, gen hd	No shows
	30	SH	dk olv gry-dk gry, blk, ang –sbang, blky, also subfiss, mod hd-hd, carb, occ slty, crmbly txt, dissem Micropyr w/metallic lstr	
4380	90	SH	a.a.	
	10	LS	a.a.	
4383	90	SH	a.a.	
	10	LS	a.a.	
4386	90	SH	a.a.	
	10	LS	a.a.	
4389	80	SH:	a.a.	
	20	LS/DOL	Bcm also yel wh – lt orn, slily dol i.p., else pred a.a.	
4392	85	SH	a.a.	
	15	LS	a.a.	
4395	90	SH	Pred slity, i.p. slily calc, hd, else pred a.a.	
	10	LS	a.a.	
4398	90	SH	Slty, pred unif, else a.a.	
	10	LS	a.a.	
4401	90	SH	a.a.	
	10	LS	a.a.	
4404	100	SH	a.a.	
	TR	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4407	100	SH	a.a.	
	TR	LS	a.a.	
4410	100	SH	a.a.	
	TR	LS	a.a.	
4413	100	SH	a.a.	
	TR	LS	a.a.	
4416	100	SH	a.a.	
	TR	LS	a.a.	
4419	100	SH	a.a.	
	TR	LS	a.a.	
4422	100	SH	Dk gry-gryblk, frm-mod hd, blkf-fiss, carb, sli slty, gen non calc	
	TR	LS	Off wh-yel wh-lt orng, microlam arg, hd	
4425	100	SH	a.a.	
	TR	LS	a.a.	
4428	100	SH	a.a.	
	TR	LS	a.a.	
4431	100	SH	a.a.	
	TR	LS	a.a.	
4434	100	SH	a.a.	
	TR	LS	a.a.	
4437	100	SH	a.a.	
	TR	LS	a.a.	
4440	100	SH	a.a.	
	TR	LS	a.a.	
4443	100	SH	a.a.	
	TR	LS	a.a.	
4446	100	SH	a.a.	
	TR	LS	a.a.	
4449	100	SH	a.a.	
	TR	LS	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4452	100	SH	a.a.	
	TR	LS	a.a.	
4455	90	SH	a.a.	
	10	LS	a.a.	
4458	100	SH	a.a.	
	TR	LS	a.a.	
4461	100	SH	a.a.	
	TR	SST	Lt brnsh gry, clr-trnsl Qtz, f-m, ti calc mtx, no vis por	
4464	100	SH	a.a.	
	TR	SST	a.a.	
4467	100	SH	a.a.	
	TR	SST	a.a.	
4470	90	SH	a.a.	
	10	SST	Ti kao mtx, else dom Qtz, f-crs, mod hd, Tr mlky Qtz	
4473	60	SST	Lt brn gry arg (kao/ill) mtx, clr-trnsl Qtz, sbrnd-Tr rnd, slily calc cmt, frm-hd, pr vis por	
	40	SH	a.a.	
4476	60	SST	v abd kao, pred grd Clst	V wk even dk yel di fluor (min. fluor?), v wk slow blush Wh cut fluor
	40	SH	a.a.	
4478,5	90	SST	pred a.a., incr mlky crs-vcrs, rnd	B.U.
	10	SH	a.a.	
4479 – 4506			Core 6 – Core 7 for Description please refer to Conventional Core Description	
4509	90	SST	Gry-wh, clr-trnsl Qtz, vf-f, tr m - crs, lse-fri, loc mod hd, sbang-sbrndd, Tr rnd, mod-w srt, gen Kao Mtrx, loc calc cmt, loc arg, r mic, r carb, pr vis por	Even dull org dir fluor,wk slow strm dull yel wh cut fluor, Shows from mud?
	10	SH	Brn-brn blk, sft-frm, sbblky-blky, slity, carb, r Micropyr.	
4512	90	SST	a.a.	a.a.
	10	SH	a.a.	

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
4515	90	SST	a.a.	a.a.
	10	SH	a.a.	
4518	90	SST	a.a.	a.a.
	10	SH	a.a.	
4521	95	SST	a.a.	a.a.
	5	SH	a.a.	
4524	95	SST	a.a.	a.a.
	5	SH	a.a.	
4527	100	SST	Abd Kao Mtrx, bcm v crs – crs, else a.a	a.a.
4530	60	SST	a.a.	a.a.
	40	SH	Brn gry – brn blk a.a	
4533	50	SST	a.a.	a.a.
	50	SH	a.a.	
4536	60	SST	Vf – f, Tr crs – v crs, abdt Kao Mtrx a.a.	a.a.
	40	SH	V slity a.a.	
4539	80	SST	Gry-wh, clr-trnsl Qtz, vf-f, tr m - crs, lse-fri, loc mod hd, sbang-sbrndd, Tr rnd, mod-wl srt, gen abdt Kao Mtrx, loc calc cmt, loc arg, r mic, r carb, pr vis por	Even dull orng dir f slio strmg dull yel c Shows from mud?
	20	SH	Brn gry - brn blk, sft-frm, sbblky-blky, slty, carb, r Micropyr	
4542	90	SST	a.a.	a.a
	10	SH	a.a.	
4545	80	SST	a.a.	a.a.
	20	SH	a.a.	
4548			a.a.	
4551	80	SST	Bcm calc – v calc cmt, gen vf	a.a.
	20	SH	Bcm mod hd i.p., else a.a.	
4554	40	SST	Abd Kaol mtx, clr-smky Qtz, f-vcrs, dom crs, pr srt, sbang-sbrndd, dom arg mtx/cmt.	
	50	LS	Off wh-lt gry, ang-blky, mod hd-hd.	
	10	SH	Blk, mod hd-hd, ang-blky, slity, non calc	

STATOIL

WELLSITE SAMPLE DESCRIPTION

Country:	Norway	Area:	North Sea	Field:	Gudrun
Well no:	15/3-8	Company:	Statoil ASA, Marathon Petr. Norge AS, BP Norge AS, Gaz de France Norge AS		
RKB:	23.5 meters	Geologist:	O.Giskeødegaard, M. Aslagsen, J. Wayne		
Hole size:	17 ½”	Cut solvent:	Iso Propyl Alcohol	Date:	20.11.2005

Depth (m RKB)	Lithologry (%)	Lithological Description		Remarks
		Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Shows, cavings, mud additives, etc.
4557	70	SST	a.a., occ srt	
	30	SH	a.a.	
4560	70	SH	a.a	
	30	SST	a.a.	
4563	90	SH	a.a.	
	10	SST	a.a., pred f	
4566	90	SH	a.a.	
	10	SST	a.a.	
4569	90	SH	a.a., blk, med hd-fm, occ sft, blky-sbblky	
	10	SST	a.a.	
4572	50	SST	a.a., r calc cmt, occ crs, pred f-med	
	50	SH	a.a.	
4575	90	SH	a.a.	
	10	SST	a.a.	
4578	60	SH	a.a.	
	40	SST	a.a.	
4581	90	SH	a.a.	
	10	SST	a.a	
4584	80	SH	Blk – brn blk, mod hd-hd, ang-blky, slity, non calc.	
	20	SST	Gry-wh, clr-trnsl Qtz, vf-f, r m - crs, frm - mod hd, loc v hd, sbang-sbrndd, mod-wl srt, loc Kao Mtrx, gen calc cmt, loc arg, r carb, pr vis por	Min fluor
4587	80	SH	a.a.	
	20	SST	a.a.	
4590	70	SH	a.a.	
(TD)	30	SST	a.a.	

STATOIL

SIDEWALL CORE DESCRIPTION

Country: Norway	Area: Norwegian Sea	Field: Gudrun	
Well no: 15/3-8	Company: Statoil ASA		
RKB: 23.5 meters	Geologist: Susan Renshaw		
Hole size: 8 1/2 "	Cut solvent: Only UV light used	Date: 22 February 2006	
Run no.: 3B	Reference log: Wireline GR and Res		

Shot no.	Depth (mRKB)	Recov. (mm)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
Most samples in range hard to very hard. All samples have oil odour due to OBM. * indicates good poss for biostrat analysis				
1	4109,2	44	100 SST: Mtrx: v hd, dsky yelsh brn, slty, non calc, Sd Gr: vf-f, wl srt, mod yelsh brn	no Fluor
2	4108,2	47	50 SST: a.a., v calc, v hd	sli Fluor
			50 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, i.p. xln, f-crs, pr srt	
3	4100,5	50	100 SST: vf-f, dsky yelsh brn-blk Mtrx, v hd, slty, non-calc	no Fluor
4	4099,3	49	100 SST: vf-f, dsky yelsh brn-blk Mtrx, v hd, slty, non-calc, bnd	gd Fluor in more por Bnd
5	4097	44	10 SST: lse Sd Gr a.a., calc	sli fluor
			90 SST: vf-f, dsky yelsh brn, a.a., calc	
6	4095	44	100 SST: vf-f, occ med-crs, ang, pr srt, dsky yelsh brn-blk Mtrx, v hd, cal	gd Fluor
7	4090,1	28	100 SST: vf-f, occ med-crs, ang, pr srt, dsky yelsh brn-blk Mtrx, v hd, cal abd blk Xl, f-med	sli Fluor
8	4088,8	50	10 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, pred crs, pr srt	sli Fluor
			90 SST: vf-f, occ med-crs, ang, pr srt, dsky yelsh brn-blk Mtrx, v hd, cal abd blk Xl, f-med	
9	4087	45	100 SST: f-med, v ps srt, ang, dsky yelsh brn-blk spkld Mtrx, v hd, non-calc	v sli Fluor
10	4085,8	0		missing
11	4084,3	0		missing
12	4082,8	46	100 SST: vf-f occ crs, pr srt, mod yelsh brn, abd dsky yelsh brn-blk Mtrx, hd, mod calc	sli Fluor
13	4081	47	10 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, med-crs, pr srt	No Fluor
			90 SST: vf-f occ crs, pr srt, mod yelsh brn, abd dsky yelsh brn-blk Mtrx, v hd, mod calc	
14	4079,5	46	50 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, med-crs, pr srt	v sli Fluor
			50 SST: vf-f occ crs, dsky yelsh brn-blk Mtrx, hd, slily calc	
15	4076,8	46	5 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, med-crs, pr srt	v sli Fluor
			95 SST: vf-f occ crs, dsky yelsh brn-blk Mtrx, hd, slily calc	
16	4075	46	60 SST: lse Sd Gr, clr-trnsl, ang-sbrndd, med-crs, pr srt	No Fluor
			40 SST: vf-f occ crs, dsky yelsh brn-blk Mtrx, hd, slily calc, occ blk, xln, f-med	

STATOIL

SIDEWALL CORE DESCRIPTION

Country: Norway	Area: Norwegian Sea	Field:	Gudrun
Well no: 15/3-8	Company: Statoil ASA		
RKB: 23.5 meters	Geologist: Susan Renshaw		
Hole size: 8 1/2 "	Cut solvent: Only UV light used	Date:	22 February 2006
Run no.: 3B	Reference log: Wireline GR and Res		

Shot no.	Depth (mRKB)	Recov. (mm)	Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination		Remarks: Shows, cavings, mud additives, etc.
17	4073,8	44	40	SST: lse Sd Gr, clr-trnsl, ang-sbrndd, med-crs, pr srt	gd Fluor in bnd & spots
			60	SST: vf-f occ crs, dsky yelsh brn-blk Mtrx, hd, slily calc, occ blk xln, f-med	
					All samples 18-30:
				End of U Jurassic SST1, Unit 1A	v hd
18	4168,5	48	100	SST: clr-trnsl Sd Gr, f- med occ crs, ang, dsky brn Mtrx, slily calc	No Fluor
19	4168	48	100	SLTST: grad to v f Sst, mod yelsh brn, extr hd	No Fluor
20	4167,5	49	100	SST: clr-trnsl Qtz Gr, f, abd f blk Min, v hd, v slily calc	sli Fluor
21	4165	46	100	SLTST: dk dsky brn Mtrx, occ Sd, med-crs, v abd blk Min, f-med	sli Fluor
22	4160,7	51	100	SLTST: dk dsky brn, v f Gr, abd fibres up to 5mm lg	sli Fluor
23	4154,6	45	100	SLTST: grad to v f Sst, predom dk Min, dk dsky brn, abd Biot, slily calc	No Fluor
24	4152,2	49	100	SST: no vis por, clr-trnsl Sd Gr, crs, ang, abd dk Min	
25	4150,3	48	100	SST: f-med Qtz Gr, abd f-med blk Min, dsky brn Mtrx, v hd	gd Fluor
26	4148	50	100	SST: a.a.	
27	4146,3	48	100	SST: Qtz Gr: clr-trnsl, med-crs, ang, pr srt, extr hd	
				:Mtrx: brnsh blk, v hd, slily calc	
28	4141	47	100	SST: a.a., extr hd, no vis por	
				End of U Jurassic SST1, Unit 1C	
29	4581	18	100	SST: 10% Qtz Gr, med-crs, ang , 90% Mtrx, brnsh blk, abd blk Min, v hd, non calc	No Fluor
30	4531	41	100	SST: lse Qtz Gr, gd por, v Ltl Mtrx, mlky wh Qtz, f-med, mod wl srt, occ blk Min, non calc, fri	gd vis por, No Fluor
31	4514	45	100	SST: a.a., better cmt, hd - fri	No Fluor
32	4480,5	41	100	SST: 50% Qtz Gr, clr-trnsl, crs, ang	No Fluor
				50% dk brnsh gry Mtrx, v hd , Qtz Cmt, v slily calc	
33	4479	47	100	SLTST: blksh gry & mod brnsh gry, predom dk Min, microMic Calc, extr hd	
34	4475,5	47	100	SLTST: dsky brn, hd, grad to vf Sst, v slily calc, occ Qtz, ang	No Fluor

STATOIL

SIDEWALL CORE DESCRIPTION

Country: Norway	Area: Norwegian Sea	Field: Gudrun	
Well no: 15/3-8	Company: Statoil ASA		
RKB: 23.5 meters	Geologist: Susan Renshaw		
Hole size: 8 1/2 "	Cut solvent: Only UV light used	Date: 22 February 2006	
Run no.: 3B	Reference log: Wireline GR and Res		

Shot no.	Depth (mRKB)	Recov. (mm)		Lithological Description: Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
35	4474,8	48	100	SLTST: dsky brn & mod yelsh brn, hd, non calc	No Fluor, *
36	4472	48	100	SLTST: dsky brn, mod hd, occ Qtz Gr, f, ang, non calc	No Fluor, *
				End of U Jurassic SST3	
37	4332,5	44	100	SLTST: dsky brn, hd, abd crs-med Musc Xl, abd dk Min, v slily calc	mod Fluor
38	4332,3	46	80	SST: hd, Qtz Gr pred f, occ med-crs, pr srt, abd f-med blk Min, V slily calc	gd Fluor
			20	SLTST: dsky brn, hd	
39	4328	46		As sample 37	sli Fluor
				End of U Jurassic SST2 Unit F	
40	4134,5	49	100	SLTST: dk dsky brn, med hd, occ f Mic, pred dk Min, non calc	No Fluor, *
41	4126,5	52	100	SLTST: dk dsky brn, v hd, occ Qtz Gr, med-crs, ang, pr srt, pred dk Min, mod calc	gd Fluor
42	4112,8	47	100	SST: mod hd, vf-crs, ang, pr srt, crs Gr-clr-trnsl, Mtrx dsky brn to mod yelsh brn, abd dk Min, calc	gd odour gd Fluor
43	4110,5	47	100	SST: vf-f, occ med, ang, dk dsky brn, abd dk Min, hd, calc	mod Fluor
				End of U Jurassic SST1, Unit 1B	
44	4068	48	50	SLTST: mod yelsh brn, med sft, consol, non calc	sli Fluor, *
			50	SLTST: dk dsky brn-blk, med sft, consol, only dk Min, non calc	
45	4066	48	100	SLTST: dk dsky brn-blk, med hd, only dk Min, slily calc	No Fluor, gd odour, *
46	4065,5	44	100	SLTST: v dk gry-blk, v hd, occ Qtz Gr, crs, ang, trnsl, smoky, microMic, occ dk Min, f-med-crs, v pr srt	sli Fluor
47	4055,6	48	100	SLTST: dk dsky brn-blk, mod hd, non calc, grad vf Sst, mod yelsh brn	No Fluor,*
48	3980,9	47	100	SLTST: dk dsky brn-blk, v hd, no Qtz vis, dk Min occ blk, shiny, med, ang, slily calc	v Sli Fluor, *
49	3946,5	49	100	SLTST: v dk gry, occ mod yelsh brn, mod hd, non calc	mod Fluor,*
					Spl frac

STATOIL

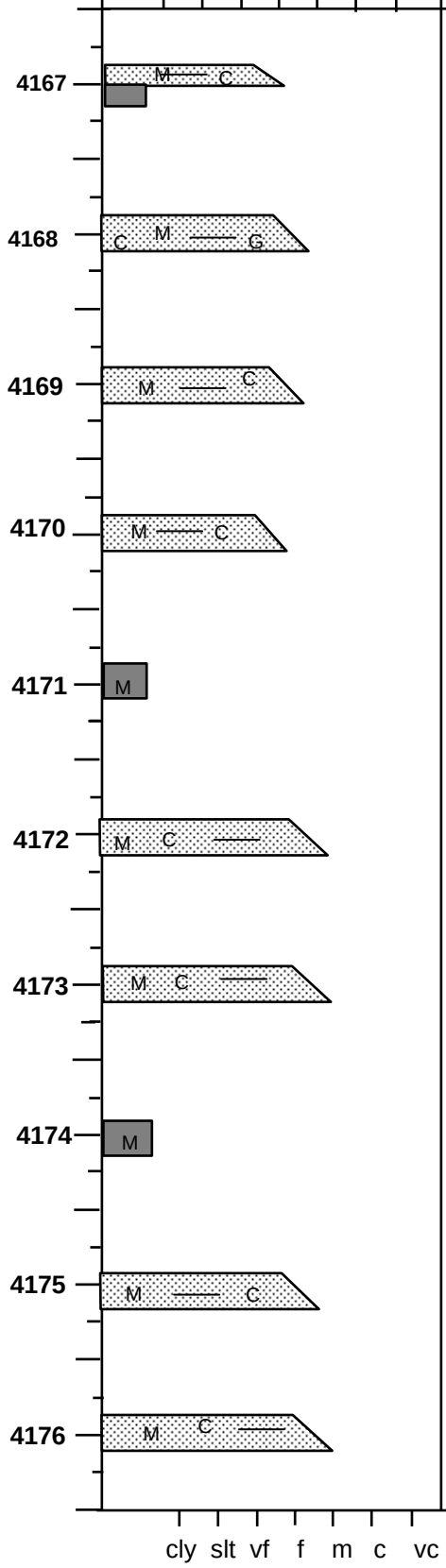
SIDEWALL CORE DESCRIPTION

Country: Norway	Area: Norwegian Sea	Field: Gudrun	
Well no: 15/3-8	Company: Statoil ASA		
RKB: 23.5 meters	Geologist: Susan Renshaw		
Hole size: 8 1/2 "	Cut solvent: Only UV light used	Date: 22 February 2006	
Run no.: 3B	Reference log: Wireline GR and Res		

Shot no.	Depth (mRKB)	Lithological Description: Recov. (mm)	Rock name, mod.lith, colour, grain size, sorting, roundness, matrix, cementation, hardness, sed.structures, accessories, fossils, porosity, contamination	Remarks: Shows, cavings, mud additives, etc.
				Lengthwise giving good Clean surface for analysis
50	3945,8	39	100 SLTST: hd, brit, grad to clst, grysh blk, v slily calc	No vis por No Fluor
			End of U Jurassic Draupne Fm over SST1	

CONVENTIONAL CORE DESCRIPTION

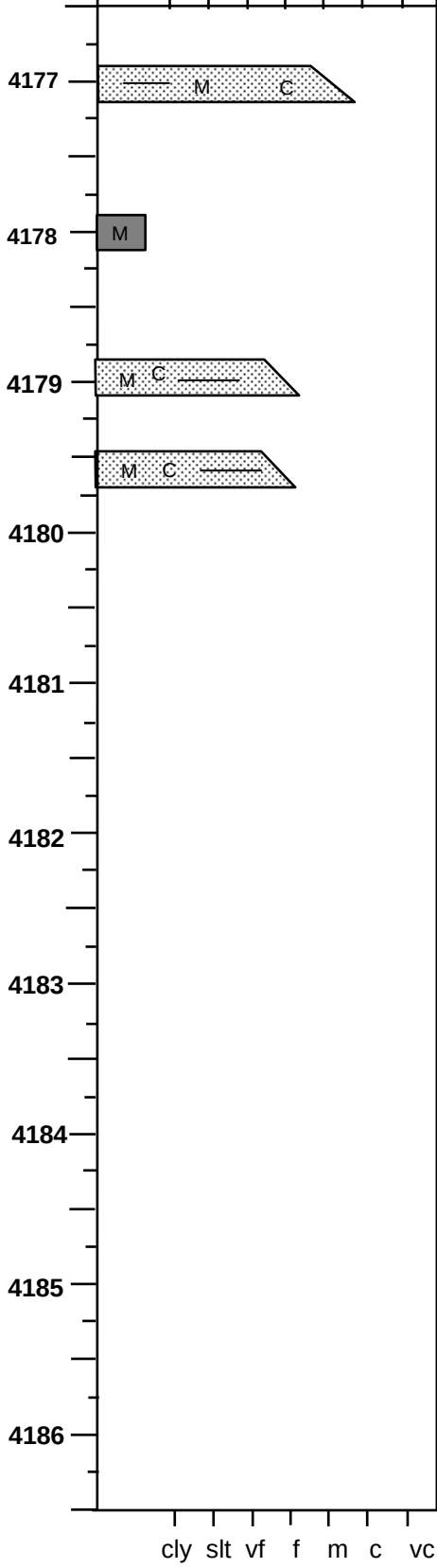
Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm	
Core no: 1 Page 1/2	**Interval:** 4167 – 4179.6m MD	**Cored:** 12.6 m **Rec:** 12.6m 100%
Core size: 4"	**Geologists:** L. Nilssen / J. Wayne / Ø. Hovden	**Date:** 08. 01. 06



Depth (mRT)	Shows: STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4167		▮	▮	▮			**SST :** v dk gry, v hd, brit, arg, Qtz : clr, transp, vf – f, occ m, sbspher-spher, mod wl srt, sbang - sbrnd, v strng sil cmt, loc calc cmt, Mic, occ carb, dk gry-blk arg Mtrx, pr vis por.	mod Hydc odour, P-P-bri yel dirt Fluor, slow strm blu wh cut Fluor, pa yel res col, blu wh-pa gold res Fluor.
							SH : dk gry - blk, v hd, brit - fis, sl slty, Mic, carb, sl calc i.p.	
4168		▮	▮	▮			**SST :** v dk gry,mod hd-hd, brit - crmb, arg, Qtz: clr, transp, f, occ m, sbang - sbrndd, sbspher - spher, wl srt, strng sil cmt, loc calc cmt, v Mic, carb, dk gry - blk arg Mtrx, Tr Glauc, pr vis por.	strng Hydc odour, P-P-bri yel dir Fluor, slow strm blu wh cut Fluor, pa yel res col, blu wh res Fluor.
4169		▮	▮	▮			**SST :** v dk gry, hd, brit, arg, Qtz : clr, transp, f, occ m, sbang - sbrnd, sbspher - spher, wl srt, predom gd sil cmt, occ calc cmt, v Mic, carb, dk gry - blk arg Mtrx, occ wh sil spg Spic, pr vis por.	a.a.
4170		▮	▮	▮			**SST :** dk gry, v hd, brit, arg, Qtz : clr, transp, v f, Tr m, sbang - rnd, spher, wl srt, v strng sil cmt, Tr calc cmt, v Mic, occ carb, dk gry arg Mtrx, pr vis por.	gd Hydc odour, P-P-gold dir Fluor, occ min Fluor, slow strm blu wh cut fluor, pa yel res col, blu wh res Fluor.
4171							**SH :** v dk gry - blk, mod hd, sbfis - fis, sl slty, v Mic, carb, loc sl calc i.p.	
4172		▮	▮	▮			**SST :** dk brn gry, v hd, brit, arg, Qtz : clr, transp, f - m, Tr crs, ang - sbrnd, sbelong - spher, wl srt, strng calc/sil cmt, v Mic, occ carb, dk gry arg Mtrx, pr vis por.	gd Hydc odour, P-P-gold dir Fluor, slow strm blu wh cut fluor, pa yel res col, bri blu wh res Fluor.
4173		▮	▮	▮			**SST :** dk gry, v hd, brit, arg, Qtz : clr, transp, f - m, ang - sbrnd, elong - sbspher, mod wl srt, v strng sil cmt, occ calc cmt, occ mafic Rk Frag, Mic, Tr carb, dk gry - dk brn arg Mtrx, occ wh sil spg Spic, pr vis por.	a.a.
4174							**SH :** dk gry - blk, hd, sbfis, sl slty, mic, carb, non calc.	Sh sealed in base oil.
4175	▮	▮	▮	▮			**SST :** v dk gry, v hd, brit, arg, Qtz : clr, transp, f - m, ang - sbrnd, elong - sbspher, mod wl srt, v strng sil cmt, occ calc cmt, occ mafic Rk Frag, Mic, Tr carb, dk gry - dk brn arg Mtrx, occ wh sil spg Spic, pr vis por.	v strng Hydc odour, P-P-lt yel dir Fluor, slow strm blu wh cut Fluor, pa yel res col, bri blu wh res Fluor.
4176		▮	▮	▮			**SST:** f - m, occ crs, Tr calc, a.a.	gd Hydc odour, Pp gold dir Fluor, slow strng blu wh cut Fluor, pa yel res col, bri blu res Fluor.

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne FM	
Core no: 1 Page 2/2	**Interval:** 4167 – 4179.6m MD	**Cored:** 12.6 m **Rec:** 100 %
Core size: 4"	**Geologists:** L. Nilssen / J. Wayne / Ø. Hovden	**Date:** 08. 01. 06



Shows						Lithological Description	Remarks
STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination	Shows, etc.
						SST : lt gry & dk gry, hd, brit, arg, Qtz : clr, transp, m occ f, Tr crs ang - sbrnd, elong - sbspher, mod wl srt, mod calc cmt, mafic Rk Frag, Mic, Tr carb, loc dk gry arg Mtrx, pr vis por.	v strng Hydc odour, P-P-lt yel dir Fluor, slow strm blu wh cut Fluor, pa yel res col, bri blu wh res Fluor.
						SH : blk, hd, sbfis, sl slty, Mic, Tr carb, Tr f Sd lam, non calc.	
						SST : v dk gry-blk, v hd, brit, arg, Qtz : clr, occ brn stn, transp, f - m, sbang - sbrnd, sbelong - spher, mod srt, strng calc/sil cmt, com mafic Rk Frag, Mic, occ carb, dk gry - dk brn arg Mtrx, com wh sil spg Spic, pr vis por.	v strng Hydc odour, P-P-pa gold dir Fluor, slow strm bri yel-blu wh cut Fluor, pa yel res col, mod blu wh res Fluor.
						SST: a.a.	a.a.

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm	
Core no: 2	**Interval:** 4179.63 – 4202m MD	**Cored:** 22.4m **Rec:** 21.4m 95.6%
Core size: 3.5"	**Geologists:** L. Nilssen / J. Wayne / Ø. Hovden	**Date:** 10.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows (STAIN, FLUOR, CUT, POOR, FAIR, GOOD)	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4179.6				
4180	G M Kaol	POOR	**SST :** lt gry, v hd, brit, Qtz : clr, transp, f - m, ang - sbrnd, sbspher - spher, wl srt, v strng calc/sil cmt, Tr mafic Rk Frag, Glauc, Mic, occ wh kaol clast in Mtrx, no vis por.	wk Hydc odour, bri yel min Fluor only, no cut.
4181	M		**SH :** v dk gry – blk, mod hd, sbfis - fis, sl slty, com Biot Mic, non calc.	
4182	M C		**SH :** v dk gry – blk, mod hd, sbfis - fis, sl slty, com Biot micromic, microcarb, non calc.	
4183	M		**SH :** v dk gry – blk, mod hd, sbfis - fis, sl slty, com Biot Mic, non calc.	
4184	M		**SH :** a.a.	
4185	M		**SH :** a.a.	
4186	M Kaol		**SST :** lt gry, v hd, brit, Qtz ;clr, transp, f, occ m, sbrndd - rnd, spher, wl srt, v strng calc/sil cmt, Tr mafic Rk Frag, com Glauc, Mic, occ wh kaol clasts in Mtrx, no vis por.	wk Hydc odour, bri yel min Fluor only, no cut.
M				
4187	M		**SH :** v dk gry – blk, mod hd, sbfis - fis, sl slty, com Biot Mic, non calc.	
4188	M P	STAIN, CUT, POOR	**SST :** dk gry, frm - hd, crumb - brit, arg, Qtz : clr - mlky wh, transp - transl, f - crs, occ v crs, ang - sbrnd, elong - sbspher, pr srt, blk arg Mtrx, Pyr Nod, mod sil cmt, no vis por, grad sdy Sh.	strng Hydc odour, lt gold pinpoint dir Fluor, slw strm bri blu wh cut Fluor, bri blu wh-yel wh res Fluor.
4189	Kaol G	POOR	**SST :** lt gry, v hd, brit, Qtz : clr, transp, predom f, occ m, sbrndd - rnd, spher, wl srt, v strng calc cmt, wh & lt yel arg clast kaol Mtrx, Glauc, no vis por.	wk Hydc odour, bri yel min Fluor only, no cut.

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne FM	
Core no: 2	**Interval:** 4179.6 – 4202m MD	**Cored:** 22.4m **Rec:** 21.4m 95.6 %
Core size: 3.5"	**Geologists:** L. Nilssen / J. Wayne / Ø. Hovden	**Date:** 10.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows (STAIN, FLUOR, CUT)	Φ (POOR, FAIR, GOOD)	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4190	Kaol G			**SST :** dk gry - blk, hd, brit, Qtz : clr, brn or stn, transp, f, occ m, sbang - sbrndd, spher, wl srt, mod calc/sil cmt, abd dk gry - blk arg Mtrx, Mic, grad sdy Sh, interlam w/ Sh, no vis por.	strng Hydc odour, lt gold pinpoint dir Fluor, slw strm mod blu wh cut Fluor, strng blu wh-yel wh res Fluor.
4191	M C			**SH :** dk gry - blk, mod hd, sbfis, sli slty, v Mic, occ carb, non calc.	
4192	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty, v Mic, occ carb, non calc.	
4193	M C			**SH :** dk gry – blk, mod hd, sbfis, sl slty, Mic - v mic, occ carb, occ f Sst microlam, non calc.	
4194	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty, Tr micromic, occ carb, occ f Sst microlam, non calc.	
4195	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty, Tr Mic, occ carb, non calc.	
4196	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty, com Mic, occ carb, non calc.	
4197	M C			**SH :** dk gryd-dblk, mod hd, sbfis, sl slty, Tr Mic, Tr carb, non calc.	
4198	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty,micromic, Tr carb org mat, non calc.	
4199	M C			**SH :** dk gry - blk, mod hd, sbfis, sl slty, mic, Tr carb org mat, non calc.	

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

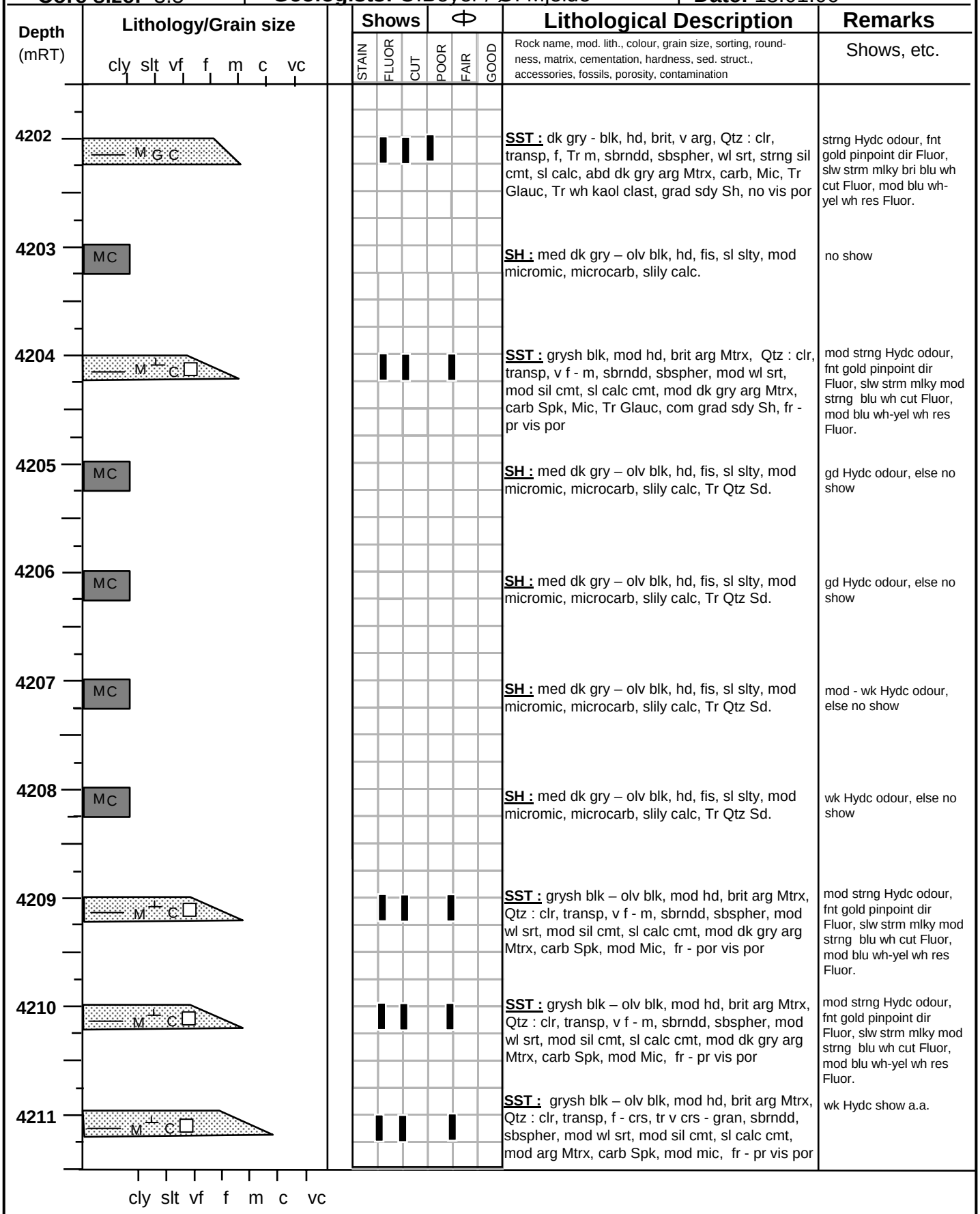
Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 2	**Interval:** 4179.6 – 4202 m MD	**Cored:** 22.4 m **Rec:** 21.4 m 95.6%
Core size: 3.5"	**Geologists:** L. Nilssen / J. Wayne / Ø. Hovden	**Date:** 10.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4200	M G C Kaol							**SST :** dk gry - blk, hd, brit, v arg, Qtz : clr, transp, f, Tr m, sbrnd, sbspher, wl srt, strng sil cmt, sl calc, abd dk gry arg Mtrx, carb, Mic, Tr Glauc, Tr wh kaol clast, grad sdy Sh, no vis por	strng Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky bri blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4201	MC							**SH :** dk gry – blk, hd, sbfis - fis, sl slty, micromic, microcarb, non calc.	
4202	No recovery								
4203									
4204									
4205									
4206									
4207									
4208									
4209									

cly slt vf f m c vc

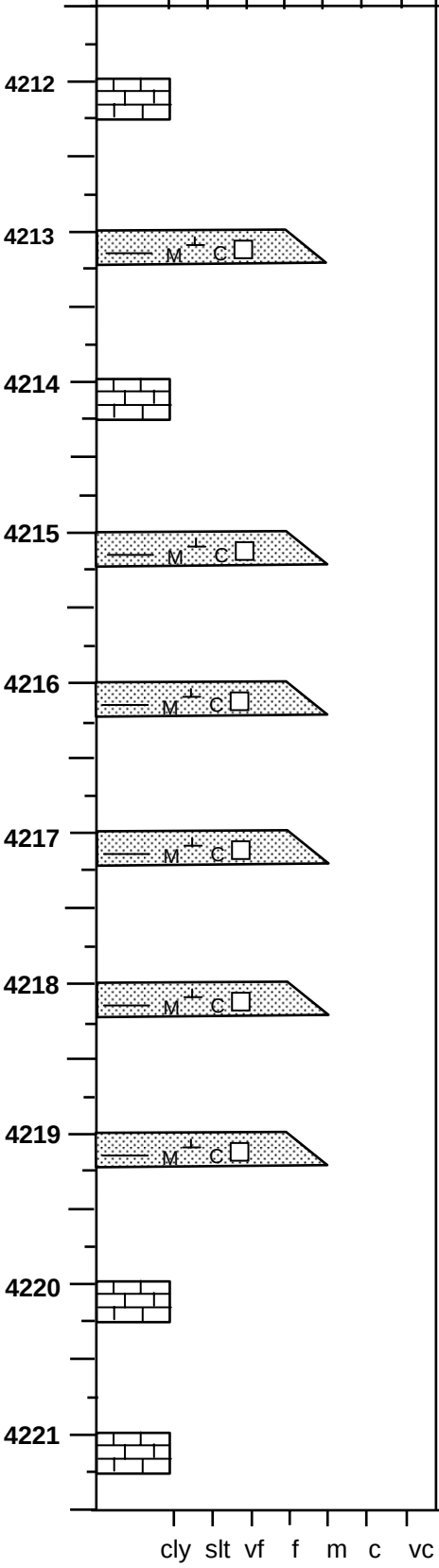
CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm	
Core no: 3	**Interval:** 4202 – 4238.5m MD	**Cored:** 36.5m **Rec:** 36.6m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06



CONVENTIONAL CORE DESCRIPTION

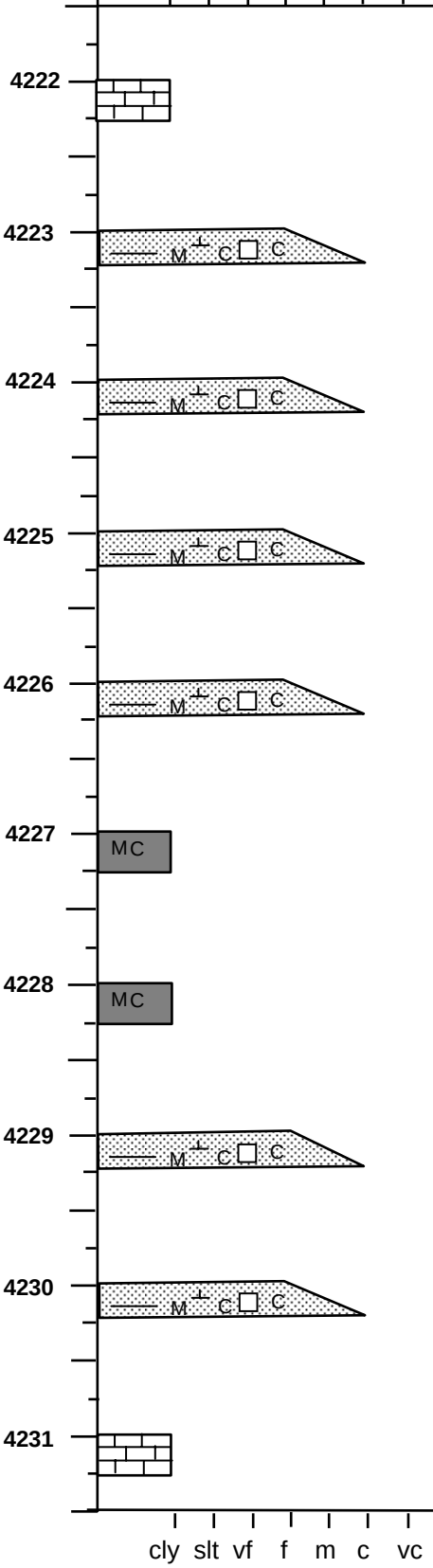
Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne FM	
Core no: 3	**Interval:** 4202 – 4238.5m MD	**Cored:** 36.5m **Rec:** 36.6m 100 %
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06



Depth (mRT)	Shows: STAIN	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4212							**LS :** lt - med gry, hd – v hd, xln, cln uni sparry cal	no show
4213		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, brit arg Mtrx, Qtz : clr, transp, dom f - m, Tr crs – v crs, sbrndd, mod wl srt, mod sil cmt, sl calc cmt, mod dk gry arg Mtrx/Cmt, abd carb Spk, mod mic, fr - pr vis por	mod - strng Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4214							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4215		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, brit arg Mtrx, Qtz : clr - transp, dom f - m, Tr crs – v crs, sbrndd, mod wl srt, mod sil cmt, sl calc cmt, mod dk gry arg Mtrx/Cmt, abd carb Spk, mod mic, loc Pyr ptch, fr - pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4216		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, abd brit arg Mtrx pred grad aren Sh, fr - pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4217		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, abd brit arg Mtrx pred grad aren Sh, fr - pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky fnt - mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4218		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, abd brit arg Mtrx pred grad aren Sh, fr - pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, fnt-mod blu wh-yel wh res Fluor.
4219		▮	▮		▮		**SST :** grysh blk – olv blk, frm - mod hd, abd brit arg Mtrx pred grad aren Sh, fr - pr vis por	mod Hydc odour, fnt gold pinprick dir Fluor, slw strm mlky mod blu wh cut Fluor, fnt - mod blu wh - yel wh res Fluor.
4220							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4221							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show

CONVENTIONAL CORE DESCRIPTION

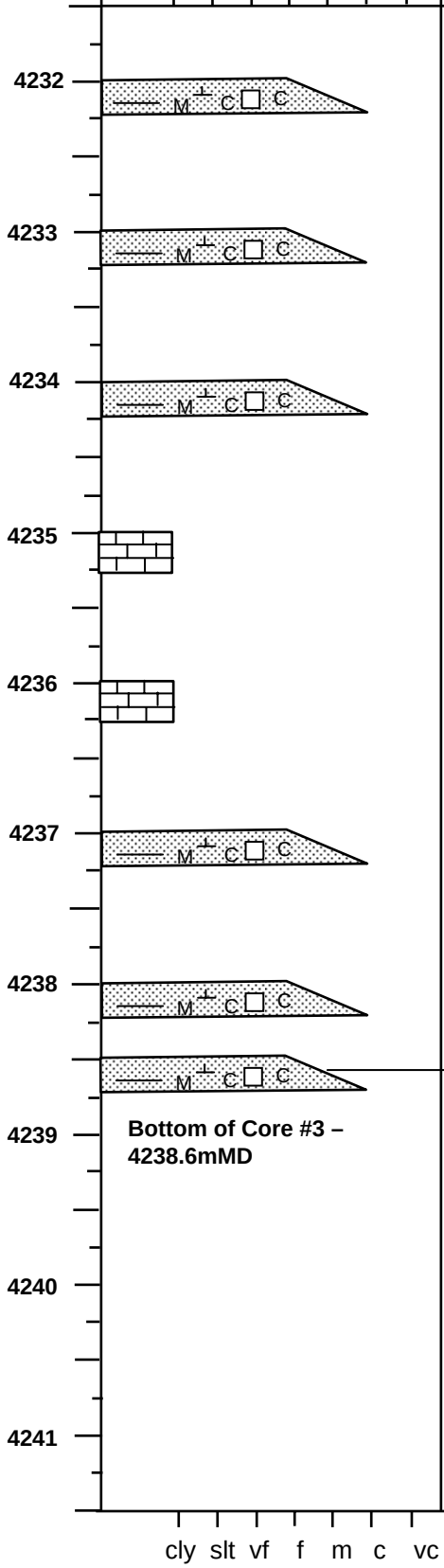
Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 3	**Interval:** 4202 – 4238.5m MD	**Cored:** 36.5m **Rec:** 36.6 m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06



Depth (mRT)	Shows: STAIN	FLUOR	CUT	Φ POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4222							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4223		▮	▮	▮			**SST :** grysh blk – olv blk, frm - mod hd, brit arg Mtrx, Qtz : clr - transp, f - crs, dom sbrndd, mod wl srt, mod sil cmt, sl calc cmt, abd dk gry arg Mtrx/cmt, abd carb Spk, mod Mic, loc Pyr ptch/dissem micropyr, pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4224		▮	▮	▮			**SST/SH :** bec v. abd dk gry arg Mtrx/cmt, abd carb Spk, mod Mic, loc Pyr ptch/dissem micropyr, pr vis por	mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull - mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4225		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, abd carb Spk, mod Mic, loc Pyr ptch/dissem micropyr, pr vis por	fr-mod Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull - mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4226		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, abd carb Spk, mod Mic, loc Pyr ptch/dissem micropyr, pr vis por	fr Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4227							**SH :** olv blk – blk, hd, fis, mod micromic, mod microcarb, non, uni, mass	no show
4228							**SH :** olv blk – blk, hd, fis, mod micromic, mod microcarb, non, uni, mass	no show
4229		▮	▮	▮			**SST :** grysh blk – olv blk, frm - mod hd, brit arg Mtrx, Qtz : clr - transp, f - crs, dom sbrndd, mod wl srt, mod sil cmt, sl calc cmt, abd dk gry arg Mtrx/cmt, abd carb Spk, mod micromic, loc Pyr ptch/dissem micropyr, pr vis por	mod - gd Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull - mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4230		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, abd carb Spk, mod Mic, loc Pyr ptch/dissem micropyr, gen grad Sh, sil spg Spic, pr vis por	fr Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4231							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 3	**Interval:** 4202 – 4238.5m MD	**Cored:** 36.5m **Rec:** 36.6 m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06



Depth (mRT)	Shows: STAIN	FLUOR	CUT	Porosity: POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4232		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz : clr - transp, dom f - crs, dom sbrndd, mod wl srt, mod sil cmt, sl calc cmt abd carb spk, mod Mic, loc pyr ptch/dissem micropyr, gen grad Sh, sil spg Spic, pr vis por	wk -fr Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4233		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz : a.a., gen grad Sh, sil spg Spic, pr vis por	fr - gd Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod - dull blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4234		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz : a.a., gen grad Sh, sil spg Spic, pr vis por	fr - gd Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod - dull blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4235							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4236							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4237		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz : clr - transp, dom f - crs, dom sbrndd, mod wl srt, mod sil cmt, sl calc cmt abd carb spk, mod Mic, loc Pyr ptch/dissem micropyr, gen grad Sh, sil spg spic, pr vis por	fr - gd Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod-dull blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4238		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz : a.a., gen grad SH, sil spg Spic, pr vis por	gd Hydc odour, fnt gold pinpoint dir Fluor, slw strm mlky mod-dull blu wh cut Fluor, mod blu wh-yel wh res Fluor.
		▮	▮	▮			**SST/SH :** v abd dk gry arg Mtrx/cmt,Qtz : a.a., gen grad Sh, sil spg Spic, pr vis por	

CONVENTIONAL CORE DESCRIPTION

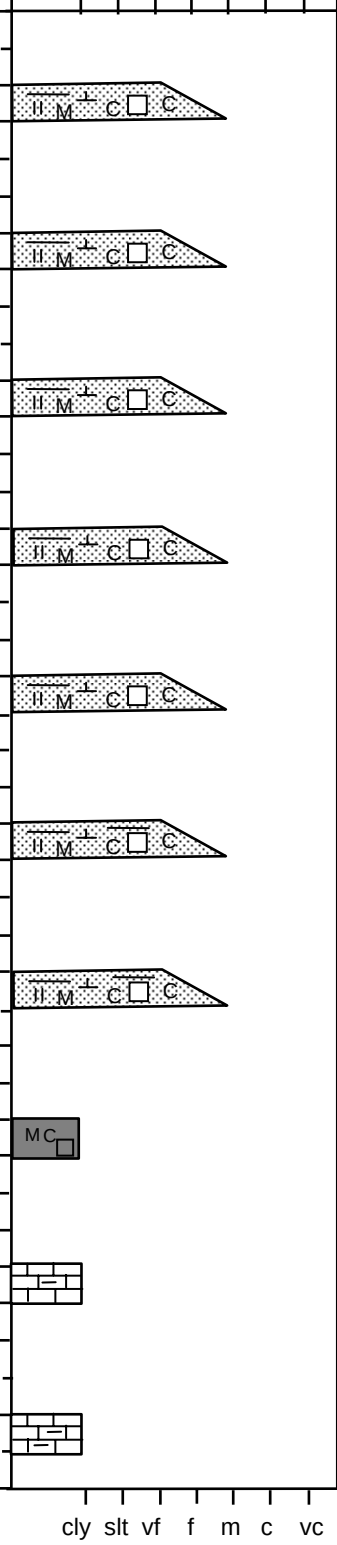
Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm	
Core no: 4	**Interval:** 4238.5-4275m MD	**Cored:** 36.5m **Rec:** 36,7m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 15.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4239	M C C							**SST :** abd dk gry arg Mtrx/cmt, dom Qtz; clr - transl, dom f - crs, dom sbrndd, mod wl srt, hd, Tr sil cmt, mod calc cmt, abd carb spks, mod Musc Mic, loc Pyr ptch/dissem micropyr, pr - fr vis por	fnt - fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky mod-dull blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4240	M C C							**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz; a.a., mod hd, gen grad Sh, Tr Sil spg Spic, pr vis por	fr Hydc odour/stn, fnt gold pinpoint dir Fluor, slw strm mlky mod - dull blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4241	M C C							**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz; a.a., gen grd to Sh, Tr Sil spg spic, pr vis por	fr Hydc odour/stn, Fluor a.a.
4242	M C C							**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz; a.a., gen grd to Sh, Tr Sil spg spic, pr vis por	fr Hydc odour/stn, Fluor a.a.
4243								**LS :** lt - med olv gry, hd - v hd, xln, sdy, sparry cal - Clclt	no show of Hydc
4244	MC							**SH :** med dk gry – olv blk, hd, fis, sl slty, mod micromic, microcarb, slily calc, Tr Qtz Sd.	no show of Hydc
4245	MC							**SH :** med dk gry – olv blk, hd, fis, sl slty, mod micromic, microcarb, slily calc, tr Qtz Sd.	no show of Hydc
4246	C M C							**SST:** abd dk gry arg Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, Tr crs, sbrndd - sbang, wl srt, hd, Tr sil cmt, mod calc cmt, abd carb Spk, mod Musc Mic, loc pyr ptch/dissem micropyr, pr - fr vis por	gd Hydc odour/stn, mod even gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4247	C M C							**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz; a.a., gen grad Sh, Tr sil spg Spic, pr vis por	fr Hydc odour/stn, Fluor a.a.
4248	C M							**SST/SH :** v abd dk gry arg Mtrx/cmt, Qtz; a.a., gen grad Sh, Tr sil spg spic, pr vis por	fr Hydc odour/stn, Fluor a.a.

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne FM	
Core no: 4	**Interval:** 4238.5 – 4275m MD	**Cored:** 36.5m **Rec:** 36.7m 100 %
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06



Depth (mRT)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4249							**SST/SLTST:** abd dk gry arg/slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, sbrndd - sbang, mod wl srt, mod hd, mod calc cmt, abd carb Spk, mod Musc Mic, loc Pyr ptch/dissem micropyr, pred i.p. to Sltst, pr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky mod - dull blu wh cut fluor, mod blu wh - yel wh res Fluor.
4250							**SST/SLTST:** abd dk gry arg/slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, a.a pred i.p. to Sltst, pr vis por	fr Hydc odour, Fluor & cut reaction a.a.
4251							**SST/SH:** abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, a.a pred i.p. to Sltst, pr vis por	fr Hydc odour, Fluor & cut reaction a.a.
4252							**SST:** dk gry arg/slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, sbrndd - sbang, wl srt, mod hd, slily calc cmt, com carb Spk, mod Musc Mic, loc Pyr ptch/dissem micropyr, bec fr vis por	gd Hydc odour, fr -mod even gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh - yel wh res Fluor.
4253							**SST:** dk gry arg/slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, sbrndd - sbang, wl srt, mod hd, slily calc cmt, com carb Spk, mod Musc Mic, loc Pyr ptch/dissem micropyr, gen fr vis por	gd Hydc odour, fr -mod even gold pinpoint dir Fluor, slw strm mlky mod blu wh cut fluor, mod blu wh - yel wh res Fluor.
4254							**SST/SH:** bec abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, else pred a.a pred i.p. to slty Sh, tight - pr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4255							**SST/SH:** abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, else pred a.a pred i.p. to slty Sh, tight - pr vis por	fr Hydc odour, Fluor & cut reaction a.a.
4256							**SH :** olv blk – blk, hd, fis, mod micromic, mod microcarb, slily calc, uni, mass	no show
4257							**LS :** lt - med olv gry, hd – v hd, xln, ptchy slily arg, uni sparry cal	no show
4258							**LS :** lt gnsh gry - med olv gry, v hd, xln, loc ptchy slily arg, else uni sparry cal	no show

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 4	**Interval:** 4238.5 – 4275m MD	**Cored:** 36.5m **Rec:** 36.7 m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4259	MC							**SH :** blk – grysh blk, hd, fis, mod micromic, mod microcarb, slily calc, uni, mass	no show
4260	II M C C	▮	▮	▮	▮			**SST/SH:** abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, dom v f - med, sbrndd - sbang, mod wl srt, mod hd - hd, mod calc cmt, abd carb Spk/ptch, mod Musc Mic, loc Pyr ptch/dissem micropyr, pred i.p. to slty Sh, pr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4261	MC							**SH :** olv blk – blk, hd, fis, mod micromic, mod microcarb, non calc, uni, mass	no show
4262								**LS :** pa gnsh gry - lt olv gry, vhd, xln, ptchy slily arg, uni sparry cal	no show
4263	II M C C	▮	▮	▮	▮			**SST :** dk brnsh blk – olv blk, mod hd - hd, brit arg Mtrx, Qtz; clr - transp, dom f - crs, dom sbrndd, mod wl srt, Tr sil cmt, sl calc cmt, abd dk gry arg Mtrx/cmt, abd carb Spk, mod Musc Mic, loc Pyr ptch/dissem micropyr, pr vis por	gd Hydc odour/stn, Fr-mod even gold pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, mod blu wh-yel wh res Fluor.
4264	MC							**SH :** olv blk – blk, hd, fis, mod micromic, mod microcarb, non, unif, mass	no show
4265	II M C C	▮	▮	▮	▮			**SST :** dk brnsh blk – olv blk, mod hd - hd, brit arg Mtrx, Qtz; clr - transp, f - crs, dom sbrndd, mod wl srt, Tr sil cmt, Slt calc cmt, abd dk gry arg Mtrx/cmt, abd carb Spk, mod Musc Mic, loc pyr ptch/dissem micropyr, pr vis por	fr Hydc odour, fr even gold pinpoint dir Fluor, slw strm mlky, fr blu wh cut Fluor, fr blu wh - yel wh res Fluor.
4266								**LS :** pa gnsh gry - lt olv gry, v hd, xln, ptchy slily arg, uni sparry cal	no show
4267	M C II	▮	▮	▮	▮			**SST/SH:** abd dk gry arg, slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a., i.p. grd to slty Sh, tight - pr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4268	M C II	▮	▮	▮	▮			**SST/SLTST:** abd dk gry arg, slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a., i.p. grd to slty, tight - pr vis por	fr Hydc odour, wk Fluor & cut reaction a.a.

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 4	**Interval:** 4238.5 – 4275.0m	**Cored:** 36.5m **Rec:** 36.7 m 100%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 13.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4269	M ⊥ C □ ll	▌	▌	▌	▌			**SST/SLTST:** v abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transp, dom f - crs, dom sbrndd, mod wl srt, sl calc cmt, abd dk gry arg Mtrx/cmt, abd carb Spk, mod Musc Mic, loc Pyr ptch/dissem micropyr, pred i.p. grd to Slst, tight - pr vis por	fnt Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4270	M ⊥ C □ ll	▌	▌	▌	▌			**SST/SLTST:** v abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a. pred i.p. to Slsts, tight - pr vis por	fr Hydc odour, wk Fluor & cut reaction a.a.
4271	M ⊥ C □ ll	▌	▌	▌	▌			**SST/SLTST:** v abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a. pred i.p. to Slsts, tight - pr vis por	fr Hydc odour, wk Fluor & cut reaction a.a.
4272	ll M ⊥ C □	▌	▌	▌	▌			**SST/SLTST:** abd dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a. pred i.p. to Sltst/Sh, pr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky fnt - dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4273	ll M ⊥ C □	▌	▌	▌	▌			**SST:** dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a.	fr Hydc odour, wk Fluor & cut reaction a.a.
4274	ll M ⊥ C □	▌	▌	▌	▌			**SST:** dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a.	fr Hydc odour, wk Fluor & cut reaction a.a.
4275	ll M ⊥ C □	▌	▌	▌	▌			**SST:** dk gry arg/slily slty Mtrx/cmt, dom Qtz; clr - transl, v f - med, else pred a.a., bec fr vis por	fr Hydc odour, fnt even gold pinpoint dir Fluor, slw strm mlky fnt - dull blu wh cut fluor, dull blu wh - yel wh res Fluor.

Bottom of Core #4 – 4275mMD

cly slt vf f m c vc

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm	
Core no: 5	**Interval:** 4275.0-4304m MD	**Cored:** 29.00m **Rec:** 27.30 94.8%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 18.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4275	II M ⊥ C □	▮	▮	▮	▮			**SST/SH:** abd dk gry arg/carb Mtrx, dom Qtz; clr - transl, v f - med, sbrndd - sbang, mod wl srt, mod hd - hd, mod calc cmt, abd carb Spk/ptch, mod Musc Mic, loc Pyr ptch/dissem micropyr, pred i.p. to slty Sh, pr vis por	fnt Hydc odour, fnt even gold pinpoint dir Fluor, slw strng mlky fnt - dull blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4276	II M ⊥ C □	▮	▮	▮	▮			**SST/SH:** abd dk gry arg/carb Mtrx, dom Qtz; clr - transl, v f - med, a.a.	v wk Hydc show a.a.
4277	II M ⊥ C □ S	▮	▮	▮			▮	**SST :** med brnsh blk – olv gry, mod arg Mtrx, Qtz; clr - transp, v f - crs, sbrndd - sbang, mod srt, mod hd, sl calc cmt, Tr carb Spk, Min Musc Mic, loc micropyr, fr - gd vis por	v strng sulphuric Hydc odour/stn, mod gold pinpoint dir Fluor, fst strm mlky mod blu wh cut Fluor, mod - strng blu wh - yel wh res Fluor.
4278	MC II							**SH :** slty, olv blk – blk, frm - mod hd, fis, brit, mod micromic, mod - abd microcarb, uni, mass	no show
4279	II M ⊥ C ⊥ □ ⊥	▮	▮	▮	▮			**SST :** dk brnsh blk – olv gry, mod arg/coal Mtrx, Qtz; clr - transp, v f - crs, sbrndd - sbang, mod srt, mod hd, v abd calc cmt, mod Musc Mic, loc Tr micropyr, grad Ls, tight - pr vis por	fnt Hydc odour, fnt even orng pinprick dir Fluor, slw strm mlky fnt blu wh cut Fluor, dull blu wh - yel wh res Fluor.
4280	II M ⊥ C ⊥ □ ⊥	▮	▮	▮	▮			**SST/LS :** abd dk gry arg/calc Mtrx, dom Qtz; clr - transl, v f - crs, dom calc cmt, v tight	v wk Hydc show a.a.
4281	II M ⊥ C ⊥ □ ⊥	▮	▮	▮		▮		**SST/LS :** mod dk gry arg/calc Mtrx, dom Qtz; clr - transl, v f - crs, sli calc cmt, fr vis por	wk Hydc show a.a.
4282	II M ⊥ C ⊥ □ ⊥	▮	▮	▮	▮			**SST/LS :** abd dk gry arg/calc Mtrx, dom Qtz; clr - transl, v f - crs, dom calc cmt, sil cmt, v tight	mod strng sulphuric Hydc odour/stn, fnt - mod gold - orng pinpoint dir Fluor, slw strm mlky mod blu wh cut Fluor, fnt blu wh - yel wh res Fluor.
4283	II M ⊥ C ⊥ □ ⊥	▮	▮	▮	▮			**SST/LS :** mod dk gry arg/calc Mtrx, dom Qtz; clr - transl, v f - crs, sli calc cmt, fr vis por	v wk Hydc show a.a.
4284	II M ⊥ C ⊥ □ ⊥	▮	▮	▮	▮			**SST/LS :** mod dk gry arg/calc Mtrx, dom Qtz; clr - transl, v f - crs, sli calc cmt, fr vis por	wk Hydc show a.a.

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne FM	
Core no: 5	**Interval:** 4275 – 4304m MD	**Cored:** 29.00m **Rec:** 27.30m 94.8 %
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 18.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4285		▮	▮	▮	▮			**SST :** mod dk gry arg/carb Mtrx, dom Qtz; clr - transl, dom v f - med, Tr crs sbrndd - sbang, mod srt, mod hd - hd, mod calc cmt, mod Musc Mic, loc pyr ptch/dissem micropyr, sil spik, pr vis por	fr Hydc odour, fnt even gold - orng pinpoint dir Fluor, slw strm mlky fnt - dull blu wh cut fluor, dull blu wh - yel wh res Fluor.
4286		▮	▮	▮	▮			**SST :** mod dk gry arg/carb Mtrx, dom Qtz; a.a. gen pr vis por	wk Hydc show a.a.
4287		▮	▮	▮	▮			**SST :** pred a.a, gen pr vis por lam **LS :** pa gnsh gry - lt olv gry, v hd, xln, ptchy slily arg, uni sparry cal	wk Hydc show a.a. no show
4288		▮	▮	▮	▮			**SST :** abd dk gry arg/carb Mtrx, dom Qtz; clr - transl, dom v f - med, sbrndd - sbang, mod wl srt, mod hd - hd, mod calc cmt, mod Musc Mic, loc Pyr ptch/dissem micropyr, sil spik, pr vis por	wk Hydc show a.a.
4289								**SH :** slty, olv blk – blk, frm - mod hd, fis, brit, mod micromic, mod - abd microcarb, uni, mass	no show. (C jammed here– actuated 2nd. sleeve)
4290								**SH :** slty, uni, fiss, a.a.	no show
4291								**SH :** slty, uni, fiss, a.a. **SST :** abd fn lam dk gry arg/carb Mtrx, dom Qtz; clr - transl, dom f - med, sbrndd - sbang, mod wl srt, mod hd - hd, mod calc cmt, mod Musc Mic, loc Pyr ptch/dissem micropyr, sil spik, pr - fr vis por	no show wk Hydc show a.a.
4292		▮	▮	▮	▮			**SST & SH :** slty, fn interlam, pred Lith a.a.	wk Hydc show a.a.
4293		▮	▮	▮		▮		**SST :** mod dk gry arg/carb Mtrx, dom Qtz; a.a. gen pr - fr vis por	wk Hydc show a.a.
4294		▮	▮	▮		▮		**SST:** mod dk gry arg/carb Mtrx, dom Qtz; a.a. gen pr - fr vis por	wk Hydc show a.a.

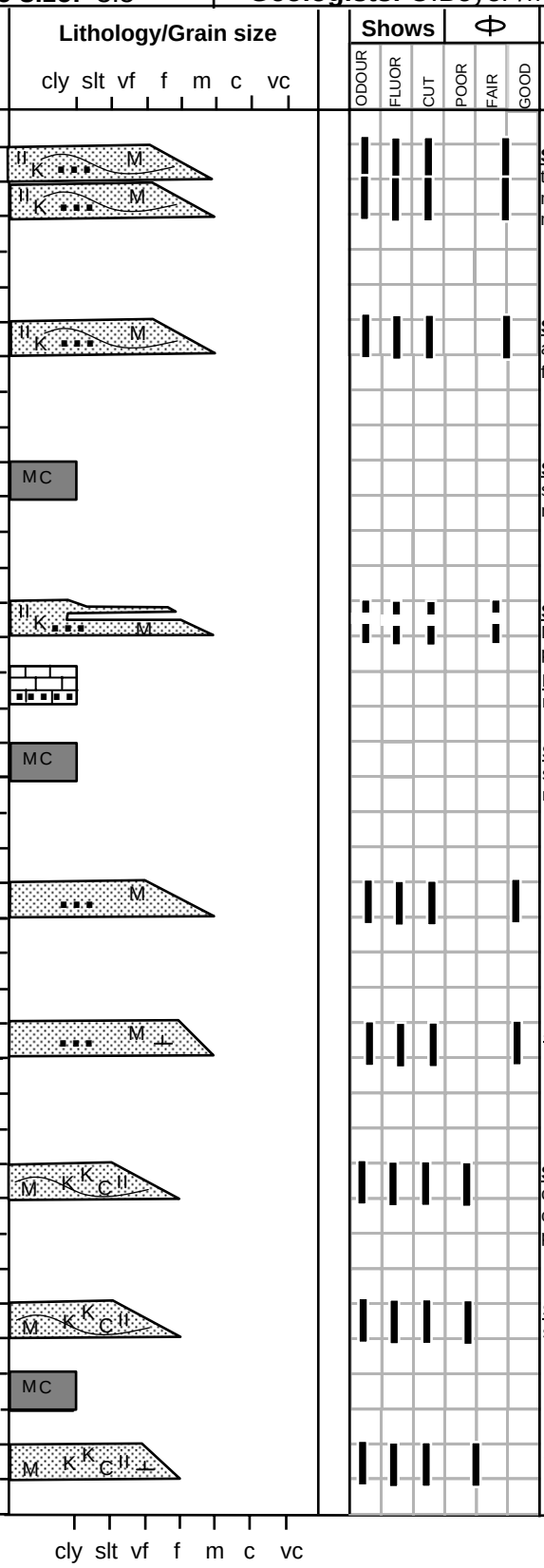
CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm.	
Core no: 5	**Interval:** 4275 – 4304m MD	**Cored:** 29.0m **Rec:** 27.30m 94.8%
Core size: 3.5"	**Geologists:** O.Beyer / Ø. Mjelde	**Date:** 18.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4295		▮	▮	▮		▮		**SST :** mod med gry - olv gry arg Mtrx, dom Qtz; clr - transl, dom v f - med, pred sbang, mod srt, mod hd, mod calc cmt, mod Musc Mic, Tr dissem Pyr, Tr sil spik, pr - fr vis por	fnt Hydc odour, fnt gen orng pinpoint dir Fluor, v slw strm mlky fnt blu wh cut fluor, dull blu wh - yel wh res Fluor. Inferred OWC contact?
4296		▮	▮	▮		▮		**SST :** mod dk gry arg/carb Mtrx, dom Qtz; a.a. gen fr vis por	wk Hydc show a.a.
4297						▮		**SST :** mod med gry - olv gry arg Mtrx, dom Qtz; clr - transl, dom v f - med, pred sbang, mod srt, mod hd, mod calc cmt, mod Musc Mic, Tr dissem Pyr, Tr sil spik, gen fr vis por	no show of Hydc NB : some contam due to seepage from tight Zn above after pres rel. to 1 atm.
4298								**LS :** pa gnsh gry - lt olv gry, v hd, xln, ptchy slily arg, uni	no show
4299						▮		**SST :** mod med gry - olv gry arg (Kaol) Mtrx, dom Qtz; clr - transl, dom f - med, pred sbang, mod srt, bec fri - frm, no calc cmt, Tr Musc Mic, Tr Pyr, Tr sil spik, pr - fr vis por	no show NB: some contamnn due to seepage from tight Zn above after pres rel. to 1 atm.
4300						▮		**SST :** mod med gry - olv gry arg (Kaol) Mtrx, dom Qtz; pr - fr vis por	no show. NB: some contam due to seepage from tight Zn above after pres rel. to 1 atm.
4301						▮		**SST :** mod med gry - olv gry arg (Kaol) Mtrx, dom Qtz; pr - fr vis por	no show
4302						▮		**SST :** mod med gry - olv gry arg (Kaol) Mtrx, dom Qtz; pr - fr vis por	no show NB: some contam due to seepage from tight Zn above after pres rel. to 1 atm.
						▮		**SST :** mod med gry - olv gry arg (Kaol) Mtrx, dom Qtz; pr - fr vis por	
	TD of Core# 5 at 4302.50m								
4303									
4304									

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne SST3	
Core no: 6	**Interval:** 4478.5-4494m MD	**Cored:** 15.5m **Rec:** 13.95m 90.0%
Core size: 3.5"	**Geologists:** O.Beyer /M.Saltnes	**Date:** 23.01.06



Depth (mRT)	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4479	**SST :** lt brnsh gry arg (Kaol) Mtrx, dom Qtz; clr - transl, v f - med, Tr crs, sbang - sbrndd, Tr rndd, mod srt, fri - frm, non calc cmt, Tr sil cmt, slily - mod arg Mtrx, Tr Musc Mic fr - gd vis por	mod gd Hydc odour, fnt even Hydc stn, mod yel - yel wh dir Fluor, fst strm mlky mod strng blu wh cut Fluor, mod - bri blu wh resid Fluor (w/ 2-Iso-Proponol)
4480	**SST :** dom v f - med, Tr crs – v crs, mod arg Mtrx, a.a. fr - gd vis por	mod gd Hydc odour, fnt even Hydc stn, mod yel - yel wh dir Fluor, fst strm mlky mod strng blu wh cut Fluor, mod - bri blu wh resid Fluor. Mod strng yel wh crsh cut
4481	**SH :** slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily calc, slily micromic, slily microcarb/c, microlam, mass	no show
4482	**SST/SH :** dom v f - med, Tr crs – v crs, mod arg Mtrx, pred a.a. fr - gd vis por w/microlam Sh : pred a.a. **LS :** pa gnsh gry - lt olv gry, v hd, xln, sdy, v f - m, pred grad calc Sst	mod Hydc odour, fnt spty Hydc stn, mod yel - yel wh dir Fluor, fst strm mlky mod strng blu wh cut Fluor, mod - bri blu wh resid Fluor (In Sst lam, except calc Sst)
4483	**SH :** slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily calc, slily micromic, slily microcarb/c, microlam, mass	no show
4484	**SST :** slily lt brnsh gry arg (Kaol) Mtrx, dom Qtz; clr - transl, f - med, Tr crs, sbang - sbrndd, Tr rndd, wl srt, pred fri, Tr calc cmt, Tr sil cmt, slily arg Mtrx, Tr Musc Mic, pred gd vis por	v gd sulphuric Hydc odour, mod even lt brn Hydc stn, mod yel - yel wh dir Fluor, fst strm mlky mod - strng blu wh cut Fluor, mod - bri blu wh resid Fluor. Mod strng yel wh crsh cut
4485	**SST :** dom f - med, Tr crs – v crs, mod arg Mtrx, pred a.a. gd vis por	v gd sulphuric Hydc odour, & Hydc show a.a.
4486	**SST :** abd lt brnsh gry arg (Kaol) Mtrx, dom Qtz; clr - transl, slt - f, dom sbang, mod - gd srt, frm, Tr calc cmt, arg Mtrx/cmt, Tr Musc Mic, bec pr vis por	mod Hydc odour, fnt ptchy Hydc stn, dull yel - yel wh dir Fluor, mod fst strm mlky mod blu wh cut Fluor, mod blu wh resid Fluor. Mod strng yel wh crsh cut
4487	**SST :** abd lt brnsh gry arg (Kaol) Mtrx, dom Qtz; slt - f, dom a.a., pr vis por	Mod Hydc odour, fnt ptchy Hydc stn, etc, a.a.
	SH : slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily calc, slily micromic, slily microcarb/c, microlam, mass	no show
4488	**SST :** mod - abd lt brnsh gry arg (Kaol) Mtrx, dom Qtz; v f - f, else dom a.a., pr - fr vis por	mod Hydc odour, fnt ptchy Hydc stn, dull yel - yel wh dir Fluor, mod fst strm mlky mod blu wh cut fluor

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne SST3	
Core no: 6	**Interval:** 4478.5 – 4494m MD	**Cored:** 15.5m **Rec:** 13.95m 90.0 %
Core size: 3.5"	**Geologists:** O.Beyer /M.Saltnes	**Date:** 23.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4489	M ⊥ K K ll							**SST :** mod abd lt brnsh gry arg (Kaol) Mtrx, dom Qtz; clr - transl, slt - f, dom sbang, mod - gd srt, frm - mod hd, slily calc cmt, arg Mrtx/cmt, pr - fr vis por	mod Hydc odour, dull yel - yel wh dir Fluor, dull - mod fst strm mlky mod blu wh cut Fluor, mod blu wh resid Fluor. Mod yel wh crsh cut
4490	M c K ll ⊥							**SST :** mod abd lt brnsh gry arg (Kaol) Mtrx, dom Qtz; clr - transl, v f - f, mod slty, dom sbang, mod - gd srt, frm - mod hd, slily calc cmt, arg Mtrx/cmt, fr vis por	fnt - mod Hydc odour, dull yel - yel wh dir Fluor, dull - mod fst strm mlky mod blu wh cut fluor, mod blu wh resid Fluor. Mod yel wh crsh cut
4491	M C							**SH :** slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily calc, slily micromic, Tr microcarb/c, microlam, mass	no show
4492	M C **Bottom of Core #6 at 4492.45m**							**SH :** slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily calc, slily micromic, Tr microcarb/c, microlam, mass	no show
4493									
4494									

cly slt vf f m c vc

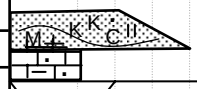
CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne Fm SST3	
Core no: 7	**Interval:** 4494-4506m MD	**Cored:** 12.0m **Rec:** 11.06m 92.1 %
Core size: 3.5"	**Geologists:** O.Beyer / O.Giskeødegaard	**Date: 25**.01.06

Depth (mRT)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4494							**SH/SLTST :** slily slty - slty, dk gry - grysh blk, hd – v hd, mass - sbfis, slily - mod calc, slily, micromic, ptchy/microlam microcarb/c, microlam slt, grad Slst	no show
4495		▮	▮	▮			**SST :** abd lam dk gry arg Kao Mtrx, clr - transl Tr smky Qtz, dom v f - f, Tr m - crs, sbang - sbrndd, Tr rndd, mod wl srt, mod hd - hd, Tr calc cmt, slily Musc Mic, Tr micropyr, Tr sil spic, tight - pr vis por	No Hydc odour, fnt ptchy brn - orng dir Fluor, v slw strm mlky blu wh cut Fluor, fnt - dull blu wh resid Fluor. Dull orng crsh cut
4496							**SH/SLTST :** pred slty, grysh blk - blk, hd – v hd, mass - sbfis, slily - non calc, slily micromic, ptchy/microlam microcarb/cl, microlam slt, grad Slst	no show
4497							**SH/SLTST :** pred grad Slst, a.a.	no show
4498		▮	▮	▮			**SST :** abd dk gry arg Kao Mtrx, clr - transl Tr smky Qtz, dom v f - f, Tr m - crs, pred sbang, Tr sbrndd - rndd, mod srt, mod hd - hd, Tr calc cmt, slily Musc Mic, Tr micropyr, Tr sil spic, tight - pr vis por	no Hydc odour, fnt ptchy brn - orng dir Fluor, v slw strm mlky - blu wh cut Fluor, fnt blu wh resid Fluor. Dull orng crsh cut
4499							**SST/SH :** dom v f - med, Tr crs – v crs, mod arg Mtrx, pred a.a. fr-gd vis por w/microlam Sh: pred a.a.	no how
4500							**SH/SLTST :** pred grad Slst, a.a.	
4501							**SH/SLTST :** pred grad v tight Slst, a.a.	no show
4502		▮	▮	▮			**SST :** abd dk gry arg Kao Mtrx, clr – transl Tr smky Qtz, dom v f - f, Tr m - crs, pred sbang, Tr sbrndd - rndd, mod srt, mod hd - hd, Tr calc cmt, slily Musc Mic, Tr micropyr, Tr sil spic, pred pr vis por	no Hydc odour, fnt ptchy brn - orng dir Fluor, v slw strm mlky - blu wh cut Fluor, fnt blu wh resid Fluor. Dull-fnt orng crsh cut
		▮	▮	▮			**SST :** abd arg Kao Mtrx, clr – transl Tr smky Qtz, dom v f - f, Tr m - crs, pred sbang, Tr sbrndd - rndd, mod srt, mod hd - hd, Tr calc cmt, slily Musc Mic, Tr micropyr, Tr sil spic, pred pr vis por	no HC odour, fnt ptchy brn -orng dir Fluor, v slw strm mlky - blu wh cut Fluor, fnt - dull blu wh resid Fluor. Dull orng crsh cut
4503		▮	▮	▮			**SST/SLTST :** dom v f - f, Tr crs, mod arg/slty Mtrx, pred frm, mod wl srt, slily calc, tight – pr vis por w/microlam Sh: pred a.a.	v fnt Fluor/cut fluor a.a.

CONVENTIONAL CORE DESCRIPTION

Country: Norway	**Area:** North Sea	**Field:** Gudrun
Well no: 15/3-8	**Formation:** Draupne SST3	
Core no: 7	**Interval:** 4494 – 4506m MD	**Cored:** 11.06m **Rec:** 11.06 92.1 %
Core size: 3.5"	**Geologists:** O.Beyer / O.Giskeødegaard	**Date:** 25.01.06

Depth (mRT)	Lithology/Grain size (cly slt vf f m c vc)	Shows: ODOUR	FLUOR	CUT	POOR	FAIR	GOOD	Lithological Description (Rock name, mod. lith., colour, grain size, sorting, roundness, matrix, cementation, hardness, sed. struct., accessories, fossils, porosity, contamination)	Remarks (Shows, etc.)
4504			▌	▌	▌			**SST :** abd dk gry arg Kao & slty Mtrx, clr – transl Tr smky Qtz, dom v f - f, Tr m - crs, pred sbang, Tr sbrndd - rndd, mod srt, mod hd - hd, Tr calc cmt, slily Musc Mic, Tr micropyr, Tr sil spic, pred tight arkosic - pr vis por	pred no show, lam fnt ptchy , brn -orng dir Fluor, v slw strm fnt mlky - blu wh cut fluor, fnt blu wh resid Fluor. Fnt orng crsh cut
4505			▌	▌	▌			**LS :** pa gnsh gry - lt olv gry, v hd, xln, v sdy	no show
4506	Bottom of Core #7 4505.06m								
4294									

cly slt vf f m c vc

Company
Well 15/9-A, Sodium
Field
Sodium, UK North Sea Province

Well 15/9-A, Sodium

Completion Log
Scale 1:200

Location:
Block 15/9
Sodium Field
UK North Sea
Offshore Platform
Well 15/9-A
Sodium Field
Block 15/9
UK North Sea
Offshore Platform

Elevations:
KB: 34.0 m AMSL
DF: 32.0 m AMSL
GL: 30.0 m AMSL

Dates:
Spud: 14-Jan-1991
TD: 22-Mar-1991
Completion: 29-Mar-1991

Operator:
Sodium Petroleum
Offshore Drilling
Rig: Sodium Rig 1

Logging Co.:
Sodium Logging
Sodium Logging
Sodium Logging

Log Run:
Run 1: 1000 - 2500 m
Run 2: 2500 - 3500 m
Run 3: 3500 - 4500 m

FORMATION EVALUATION LOG

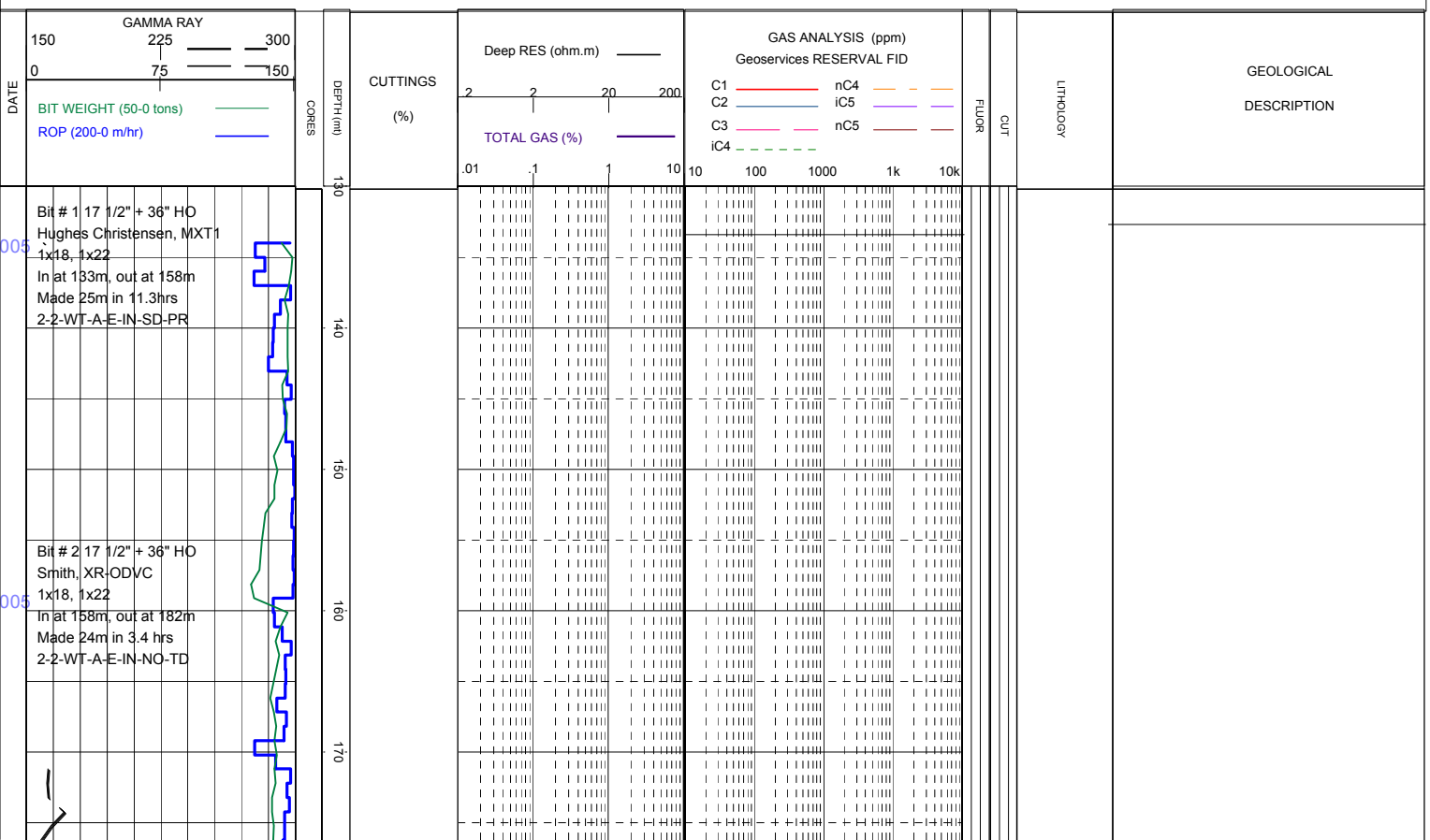
Well : 15/3-8

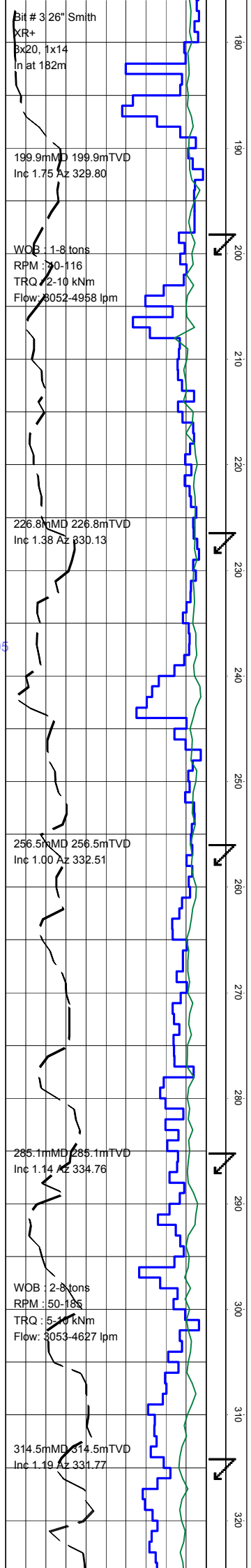
STATOIL_FEL.UPF

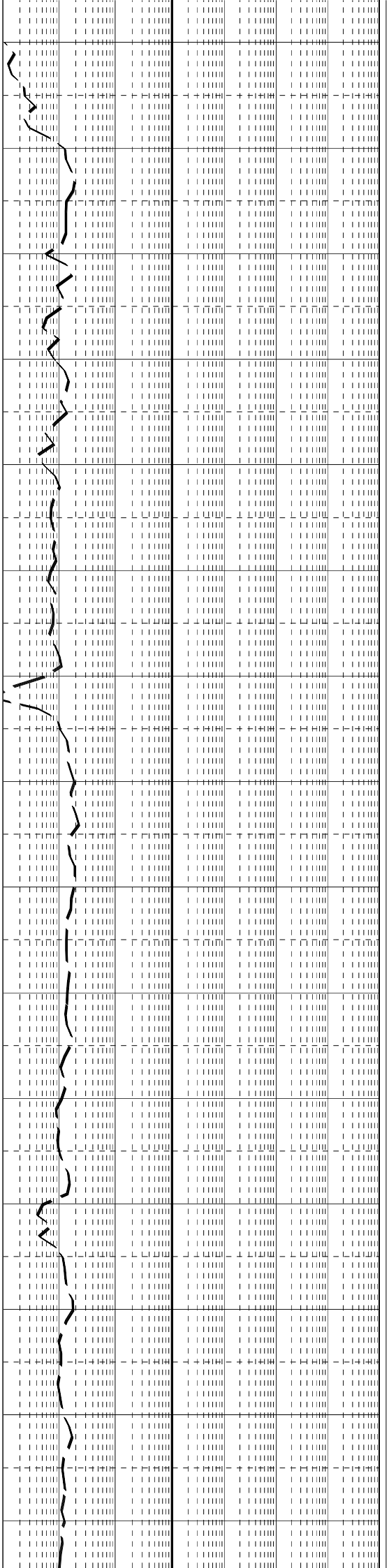
Well name	: Geoservices	Location lat	: 58 deg 51' 27.81" N	Rig Name	: TO LEADER
Client name	: STATOIL	Location long	: 01 deg 43' 17.0" E	Rig Type	: Semi Submersible
Field	: Gudrun	UTM loc [N] (m)	: 6 525 063 mN	Contractor	: Trancocean
Country	: NORWAY	UTM loc [E] (m)	: 426 236 mE		
Area	: North Sea	Spud Date	: Nov 3rd 2005	Total Depth (m)	: 4590.00 m
Block	: 15/3	TD reached	: Jan 29th 2006	TVD (m)	: 4589.03 m
				RT - MSL (m)	: 23.5
				MSL - Seabed (m)	: 109.5
				Depth Reference	: ROTARY TABLE
Plot Scale	: 1: 500				

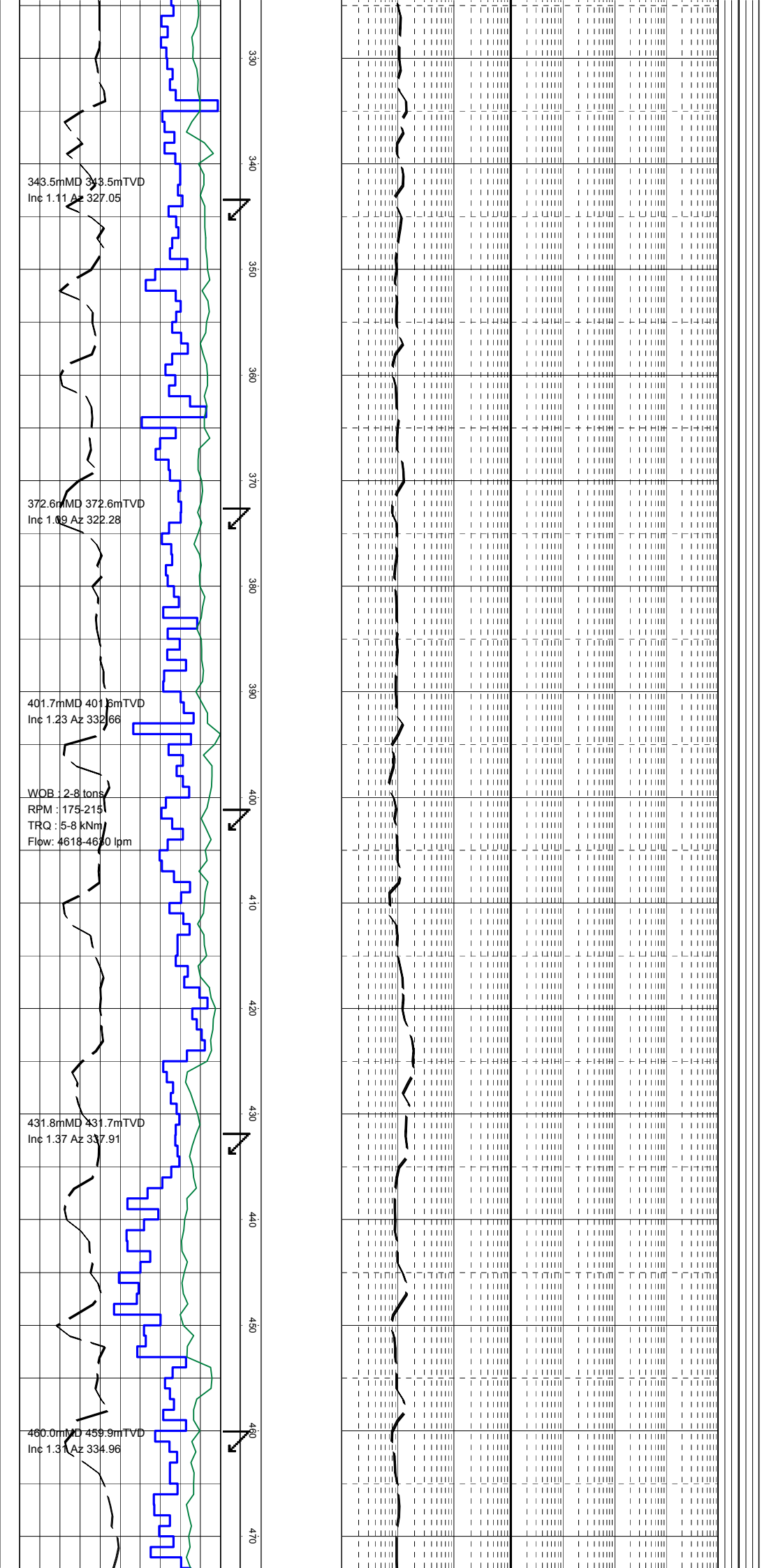
Generated by geoNEXT Package

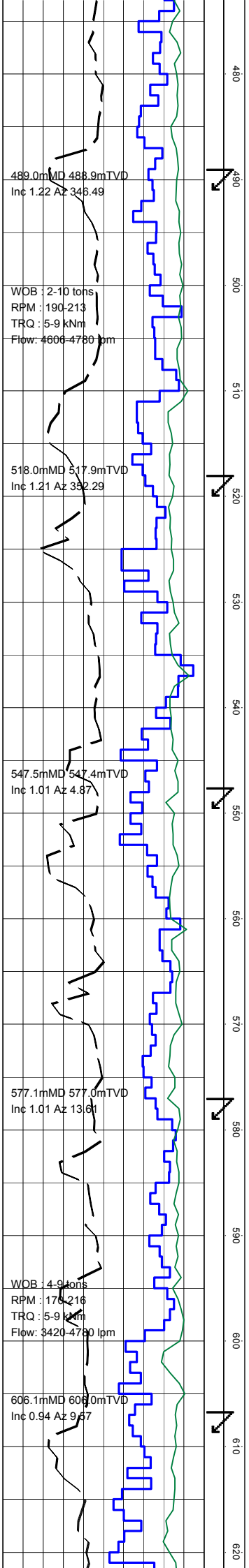
Clay	Silstone	Argillaceous siltsto	Limestone	Dolomite	Argillaceous	Survey
Silty clay-shale	Fine sand	Fine sandstone	Dolomitic limestone	Calcareous dolomite	Silty	Casing shoe
Sandy clay-shale	Medium sand	Medium sandstone	Argillaceous limesto	Argillaceous dolomit	Sandy	Core
Calcareous clay-shal	Coarse sand	Coarse sandstone	Sandy limestone	Sandy dolomite	Glauconite	Mud gain
Dolomitic clay-shale	Quartzite	Argillaceous sandsto	Chalk	Volcanic cinder, tuf	Pyrite	Mud loss
Marl	Chert	Calcareous sandstone	Coal-lignite	Fossils	Mica	

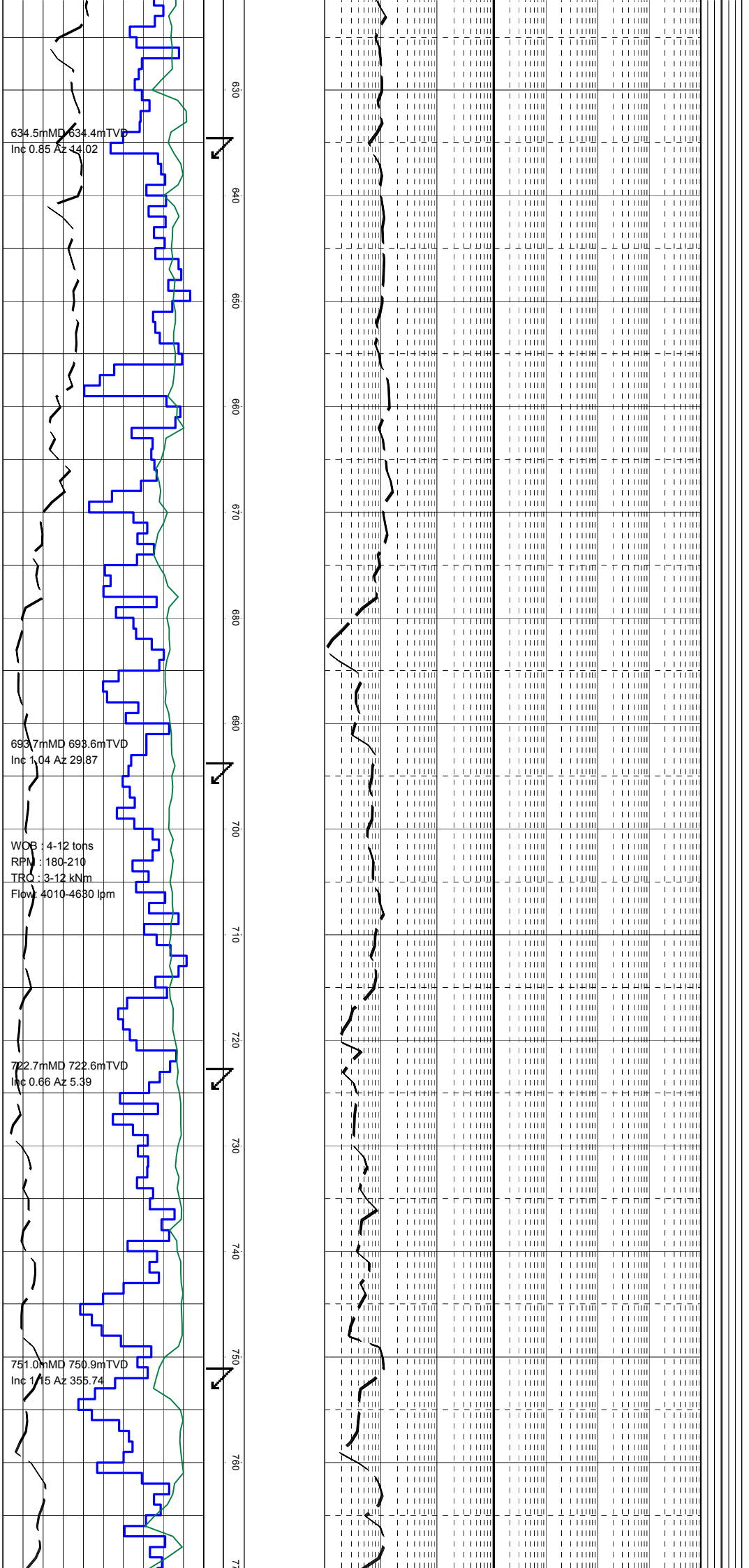


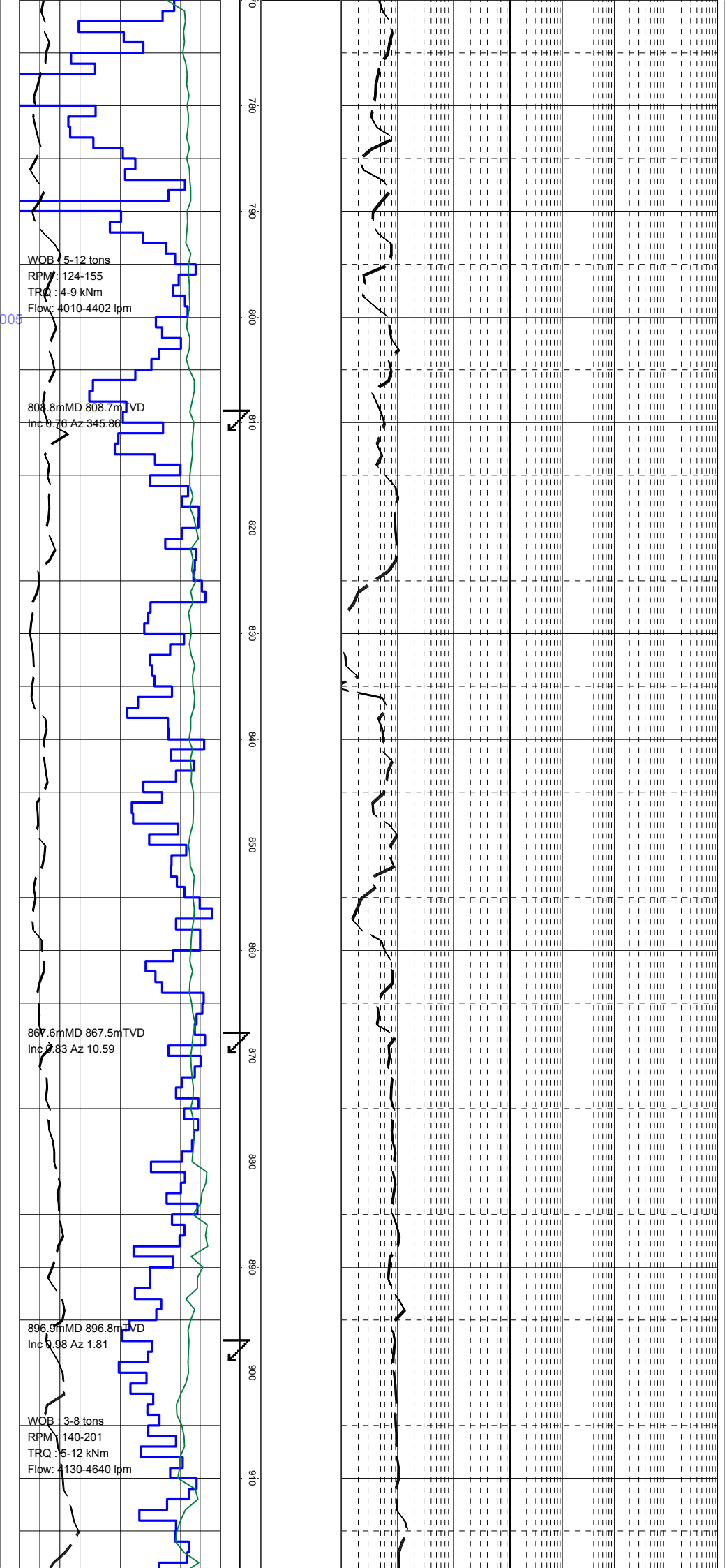

Bit # 3 26" Smith
XR+
3x20, 1x14
In at 182m
199.9mMD 199.9mTVD
Inc 1.75 Az 329.80
WOB : 1-8 tons
RPM : 90-116
TRQ : 2-10 kNm
Flow: 3052-4958 lpm
226.8mMD 226.8mTVD
Inc 1.38 Az 330.13
256.5mMD 256.5mTVD
Inc 1.00 Az 332.51
285.1mMD 285.1mTVD
Inc 1.14 Az 334.76
WOB : 2-8 tons
RPM : 50-185
TRQ : 5-10 kNm
Flow: 3053-4627 lpm
314.5mMD 314.5mTVD
Inc 1.19 Az 331.77
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320

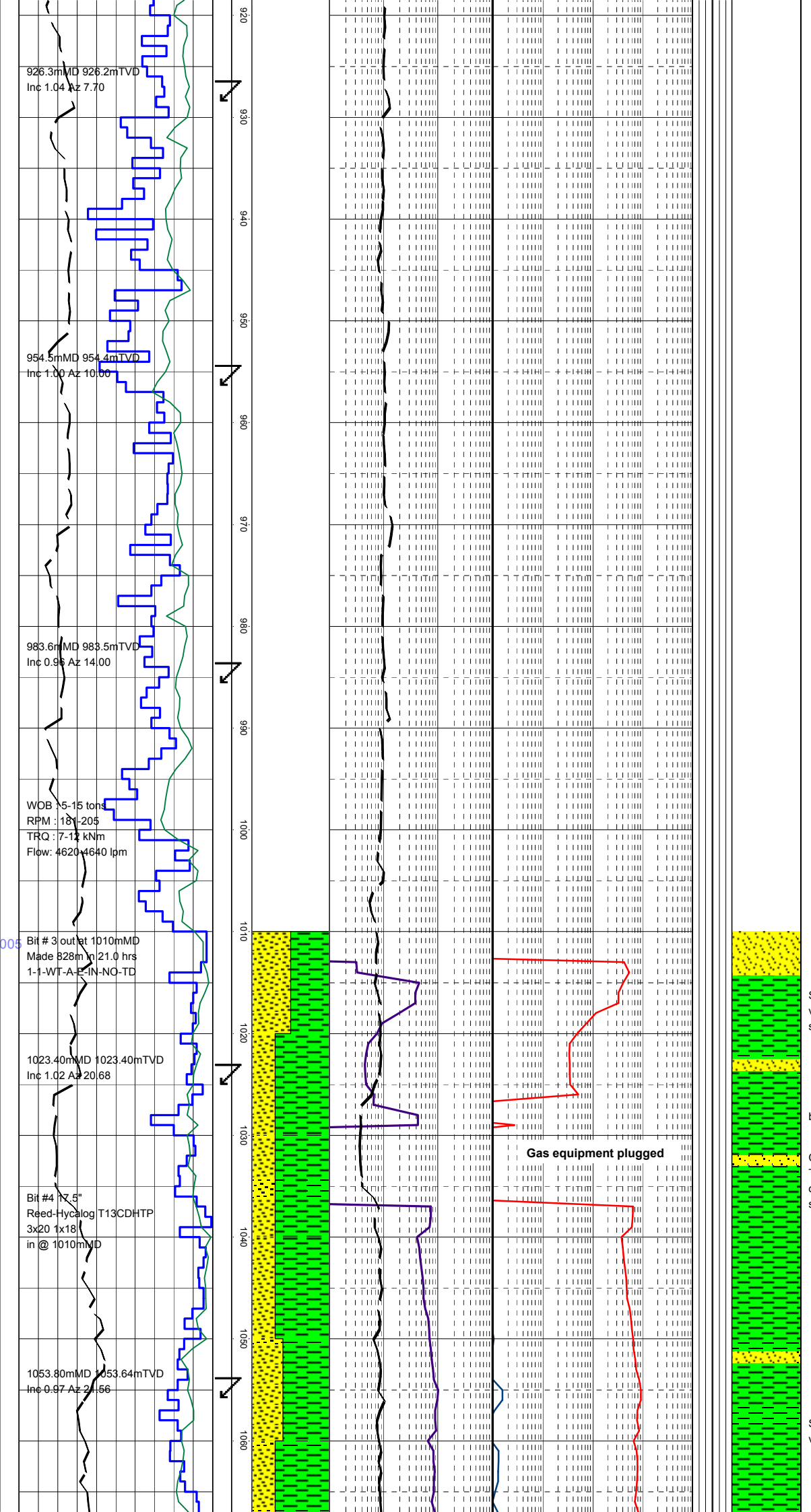


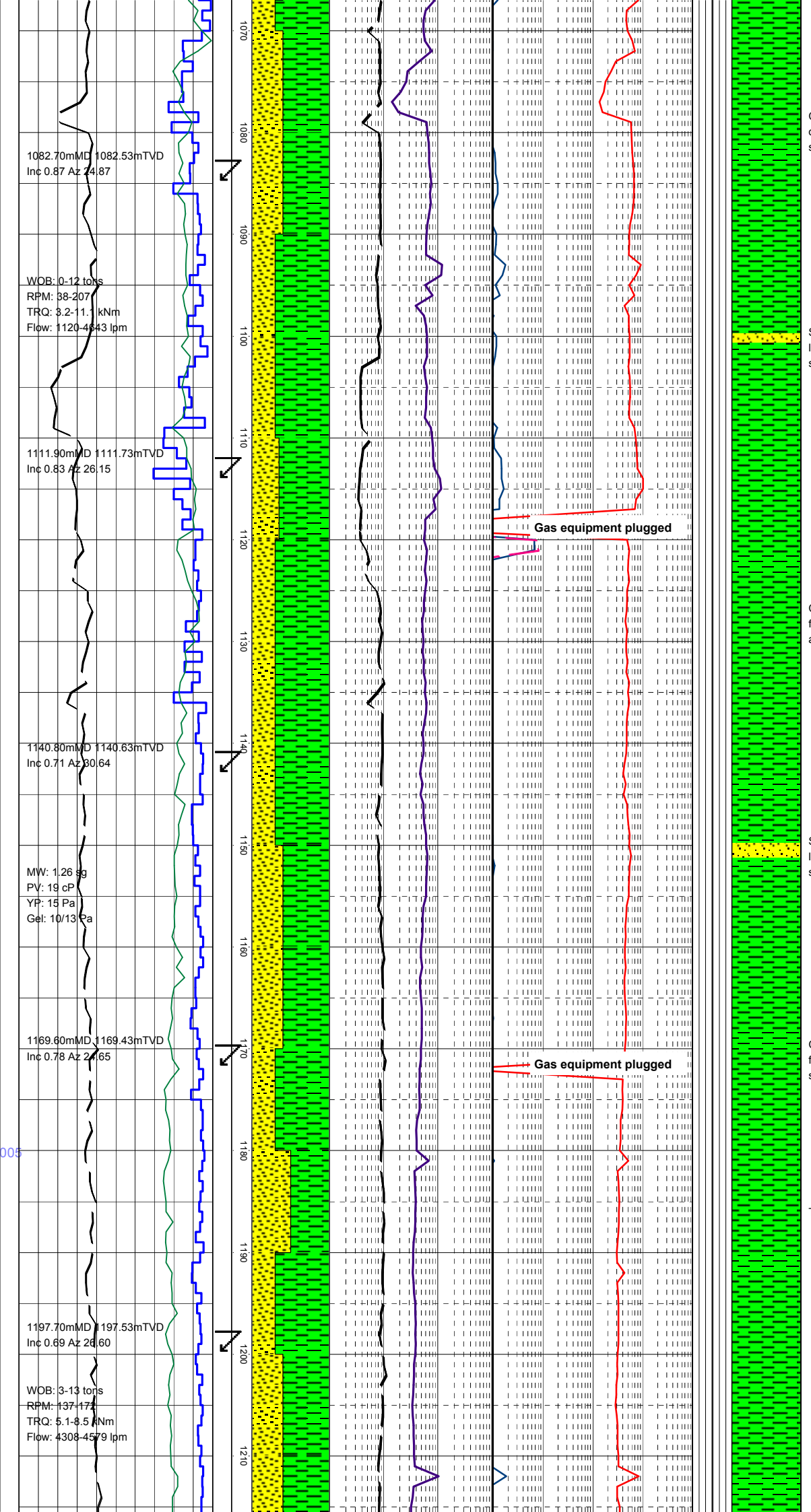

330
340
343.5mMD 343.5mTVD
Inc 1.11 Az 327.05
350
360
370
372.6mMD 372.6mTVD
Inc 1.09 Az 322.28
380
390
401.7mMD 401.6mTVD
Inc 1.23 Az 332.66
400
WOB : 2-8 tons
RPM : 175-215
TRQ : 5-8 kNm
Flow: 4618-4630 lpm
410
420
430
431.8mMD 431.7mTVD
Inc 1.37 Az 337.91
440
450
460
460.0mMD 459.9mTVD
Inc 1.31 Az 334.96
470

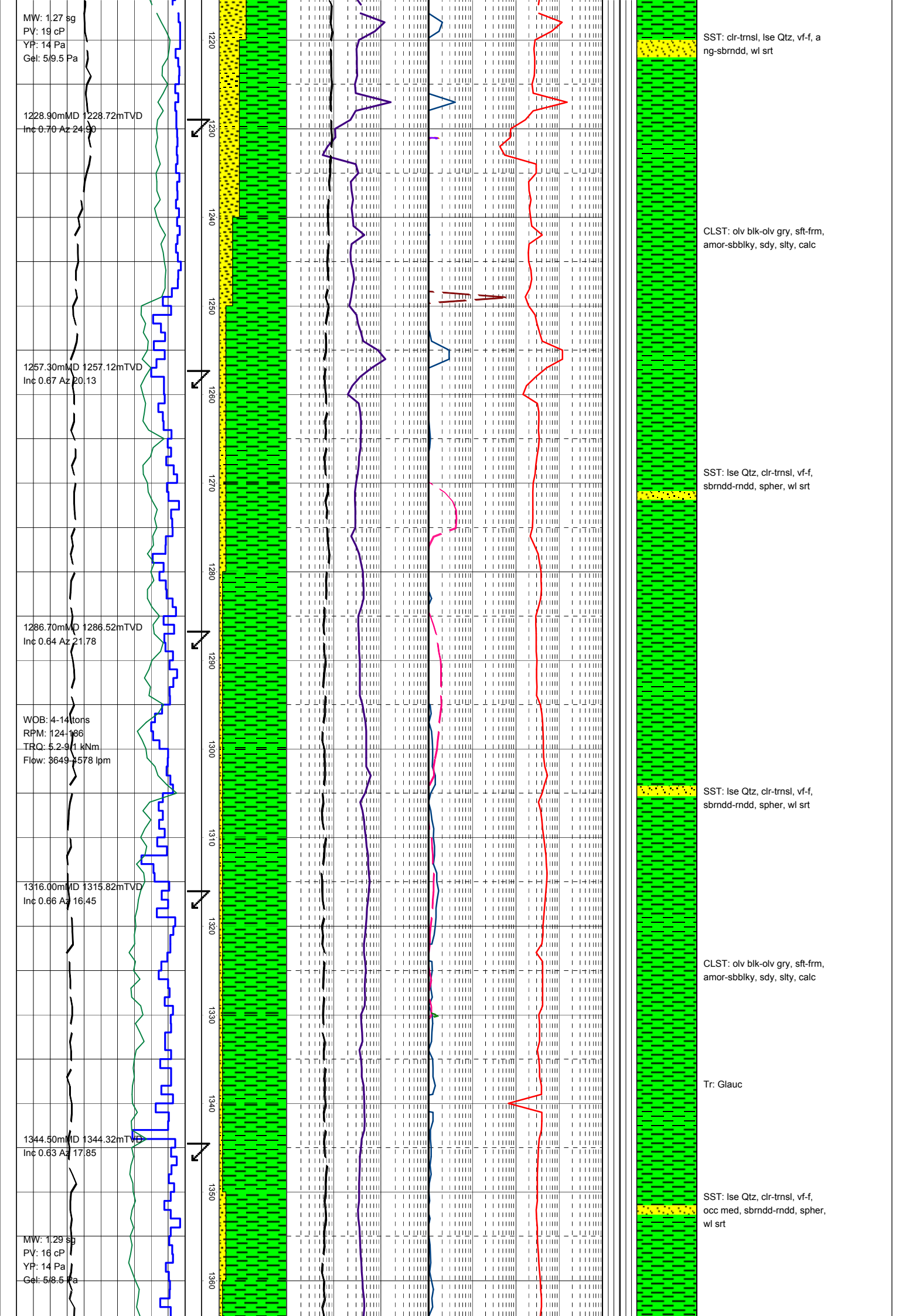

489.0mMD 488.9mTVD
Inc 1.22 Az 346.49
WOB : 2-10 tons
RPM : 190-213
TRQ : 5-9 kNm
Flow: 4606-4780 lpm
518.0mMD 517.9mTVD
Inc 1.21 Az 352.29
547.5mMD 547.4mTVD
Inc 1.01 Az 4.87
577.1mMD 577.0mTVD
Inc 1.01 Az 13.61
WOB : 4-9tons
RPM : 176-216
TRQ : 5-9 kNm
Flow: 3420-4780 lpm
606.1mMD 606.0mTVD
Inc 0.94 Az 9.67
480
490
500
510
520
530
540
550
560
570
580
590
600
610
620

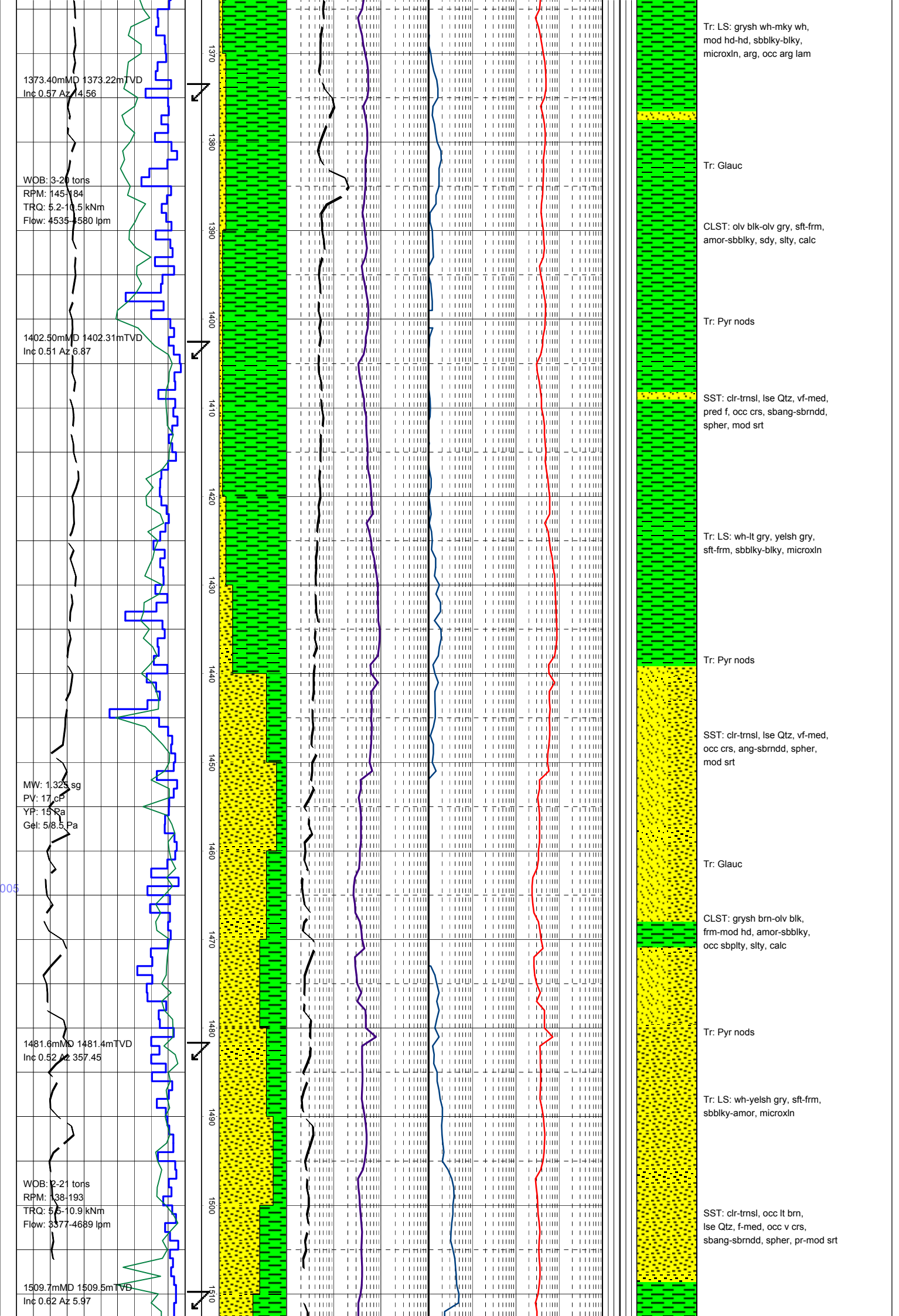

634.5mMD 634.4mTVD
Inc 0.85 Az 14.02
693.7mMD 693.6mTVD
Inc 1.04 Az 29.87
WOB : 4-12 tons
RPM : 180-210
TRQ : 3-12 kNm
Flow: 4010-4630 lpm
722.7mMD 722.6mTVD
Inc 0.66 Az 5.39
751.0mMD 750.9mTVD
Inc 1.15 Az 355.74
630
640
650
660
670
680
690
700
710
720
730
740
750
760

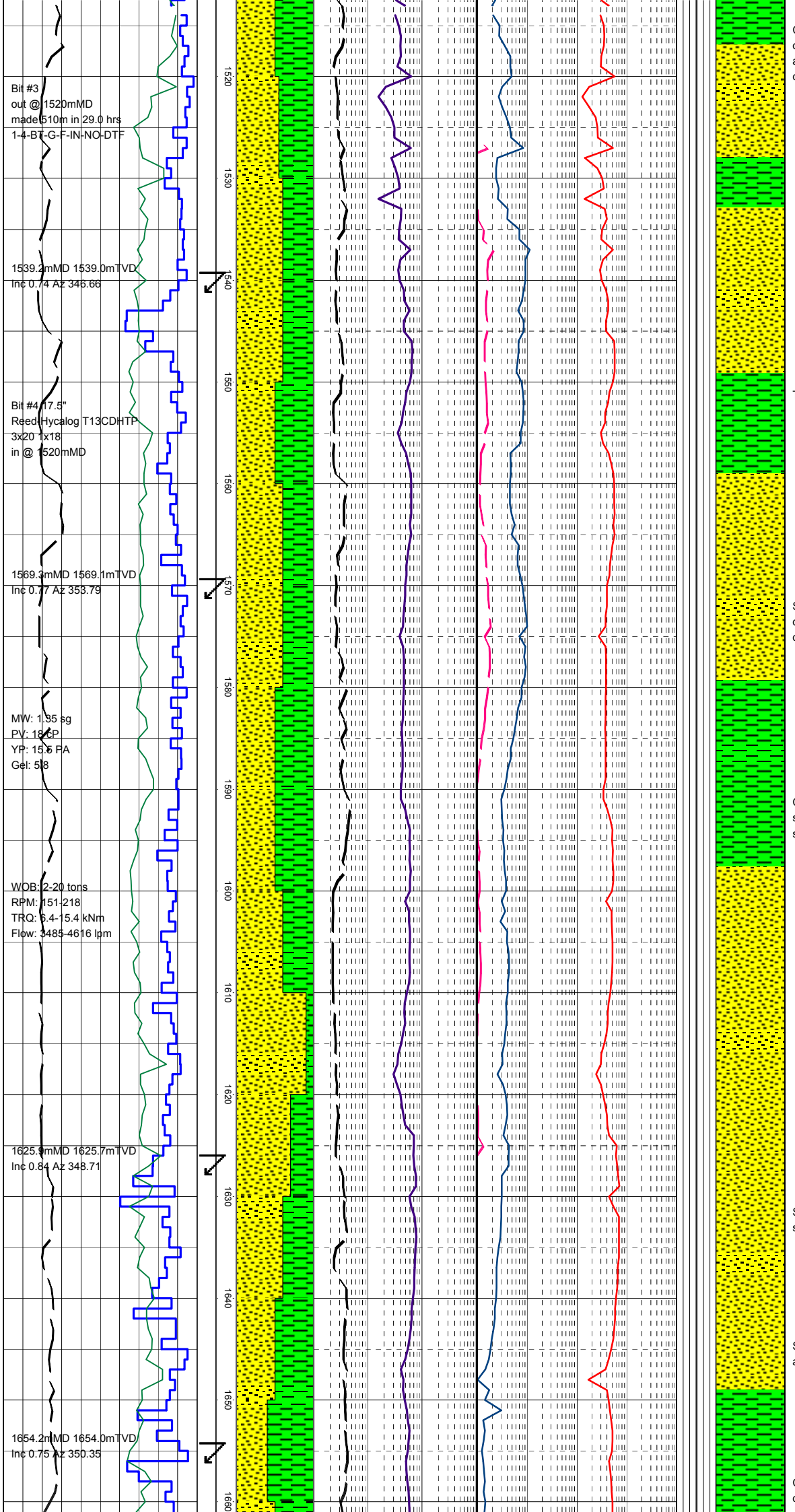

WOB : 5-12 tons
RPM : 124-155
TRQ : 4-9 kNm
Flow: 4010-4402 lpm
808.8mMD 808.7mTVD
Inc 0.76 Az 345.86
867.6mMD 867.5mTVD
Inc 0.83 Az 10.59
896.9mMD 896.8mTVD
Inc 0.98 Az 1.81
WOB : 3-8 tons
RPM : 140-201
TRQ : 5-12 kNm
Flow: 4130-4640 lpm
780
790
800
810
820
830
840
850
860
870
880
890
900
910

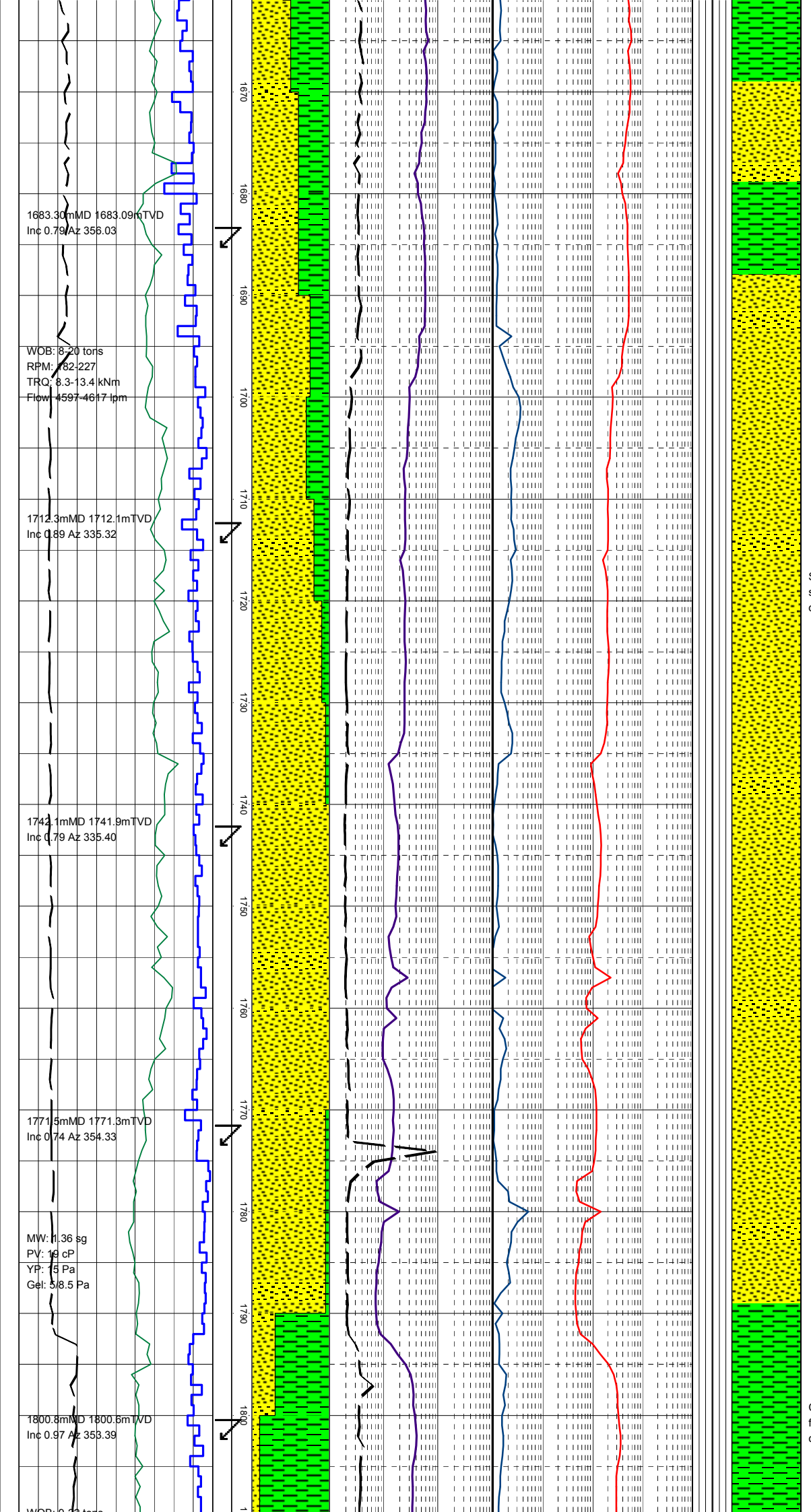

926.3mMD 926.2mTVD
Inc 1.04 Az 7.70
954.5mMD 954.4mTVD
Inc 1.00 Az 10.00
983.6mMD 983.5mTVD
Inc 0.96 Az 14.00
WOB : 5-15 tons
RPM : 181-205
TRQ : 7-12 kNm
Flow: 4620-4640 lpm
Bit # 3 out at 1010mMD
Made 828m in 21.0 hrs
1-1-WT-A-E-IN-NO-TD
1023.40mMD 1023.40mTVD
Inc 1.02 Az 20.68
Bit #4 17.5"
Reed-Hycalog T13CDHTP
3x20 1x18
in @ 1010mMD
1053.80mMD 1053.64mTVD
Inc 0.97 Az 21.56
920
930
940
950
960
970
980
990
1000
1010
1020
1030
1040
1050
1060
Gas equipment plugged
SST: pred lse Qtz, clr-trnsl, vf, occ crs, rndd, mod-wl srt, spher
blky-sbblky, amor, v sdy, slty,
CLST: dk gry-brnsh gry, sft, Tr Glauc
occ frm, sbblky-amor, v sdy, slty, v calc
SST: pred lse Qtz, clr-trnsl, vf-crs, rndd, mod srt, spher

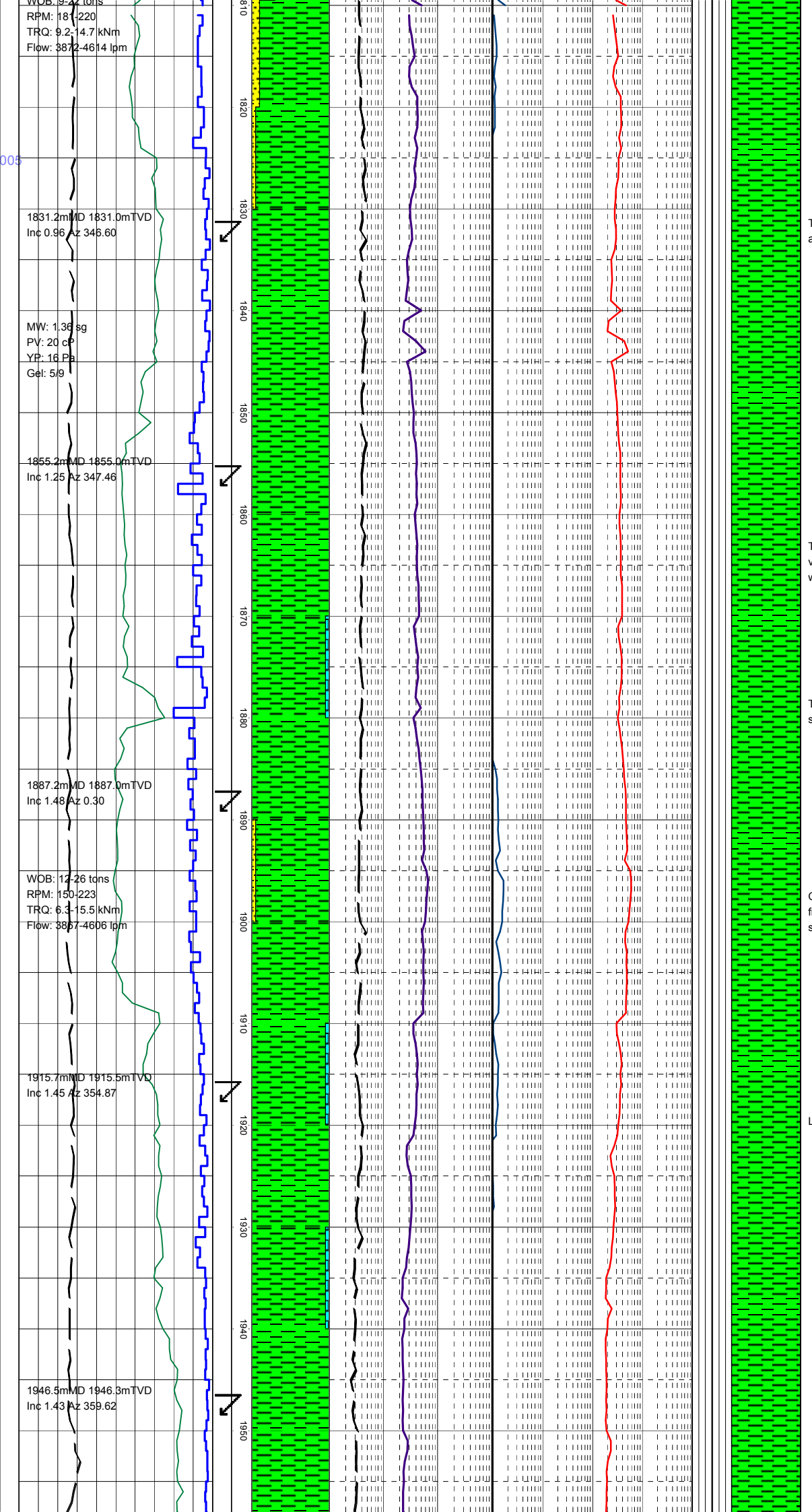

1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1082.70mMD 1082.53mTVD
Inc 0.87 Az 24.87
WOB: 0-12 tons
RPM: 38-207
TRQ: 3.2-11.1 kNm
Flow: 1120-4643 lpm
1111.90mMD 1111.73mTVD
Inc 0.83 Az 26.15
1140.80mMD 1140.63mTVD
Inc 0.71 Az 30.64
MW: 1.26 sg
PV: 19 cP
YP: 15 Pa
Gel: 10/13 Pa
1169.60mMD 1169.43mTVD
Inc 0.78 Az 24.65
1197.70mMD 1197.53mTVD
Inc 0.69 Az 26.60
WOB: 3-13 tons
RPM: 137-172
TRQ: 5.1-8.5 kNm
Flow: 4308-4579 lpm
Gas equipment plugged
Gas equipment plugged
CLST: dk gry-brnsh gry, sft, occ frm, sbblky-amor, v sdy, slty, v calc
SST: smoky gry, clr-transl, lse Qtz, vf-f, occ med, sbrndd-rndd, mod srt
CLST: grysh brn-olv blk, frm-mod hd, plas, sbblky-amor, slty, calc
SST: smky gry, clr-transl, lse Qtz, vf-f, occ med, sbrndd-rndd, wl srt
CLST: grysh brn-olv blk, frm-mod hd, plas, amor-sbblky, slty, v calc
Tr: Glauc


MW: 1.27 sg
PV: 19 cP
YP: 14 Pa
Gel: 5/9.5 Pa
1228.90mMD 1228.72mTVD
Inc 0.70 Az 24.90
1257.30mMD 1257.12mTVD
Inc 0.67 Az 20.13
1286.70mMD 1286.52mTVD
Inc 0.64 Az 21.78
WOB: 4-14 tons
RPM: 124-186
TRQ: 5.2-9.1 kNm
Flow: 3649-4578 lpm
1316.00mMD 1315.82mTVD
Inc 0.66 Az 16.45
1344.50mMD 1344.32mTVD
Inc 0.63 Az 17.85
MW: 1.29 sg
PV: 16 cP
YP: 14 Pa
Gel: 5/8.5 Pa
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
SST: clr-trnsl, lse Qtz, vf-f, a
ng-sbrndd, wl srt
CLST: olv blk-olv gry, sft-frm,
amor-sbblky, sdy, slty, calc
SST: lse Qtz, clr-trnsl, vf-f,
sbrndd-rndd, spher, wl srt
SST: lse Qtz, clr-trnsl, vf-f,
sbrndd-rndd, spher, wl srt
CLST: olv blk-olv gry, sft-frm,
amor-sbblky, sdy, slty, calc
Tr: Glauc
SST: lse Qtz, clr-trnsl, vf-f,
occ med, sbrndd-rndd, spher,
wl srt


1373.40mMD 1373.22mTVD
Inc 0.57 Az 14.56
WOB: 3-20 tons
RPM: 145-184
TRQ: 5.2-10.5 kNm
Flow: 4535-4580 lpm
1402.50mMD 1402.31mTVD
Inc 0.51 Az 6.87
MW: 1.325 sg
PV: 17 cP
YP: 15 Pa
Gel: 5/8.5 Pa
1481.6mMD 1481.4mTVD
Inc 0.52 Az 357.45
WOB: 2-21 tons
RPM: 138-193
TRQ: 5.5-10.9 kNm
Flow: 3377-4689 lpm
1509.7mMD 1509.5mTVD
Inc 0.62 Az 5.97
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
Tr: LS: grysh wh-mky wh, mod hd-hd, sbblky-blky, microxln, arg, occ arg lam
Tr: Glauc
CLST: olv blk-olv gry, sft-frm, amor-sbblky, sdy, slty, calc
Tr: Pyr nods
SST: clr-trnsl, lse Qtz, vf-med, pred f, occ crs, sbang-sbrndd, spher, mod srt
Tr: LS: wh-lt gry, yelsh gry, sft-frm, sbblky-blky, microxln
Tr: Pyr nods
SST: clr-trnsl, lse Qtz, vf-med, occ crs, ang-sbrndd, spher, mod srt
Tr: Glauc
CLST: grysh brn-olv blk, frm-mod hd, amor-sbblky, occ sbplty, slty, calc
Tr: Pyr nods
Tr: LS: wh-yelsh gry, sft-frm, sbblky-amor, microxln
SST: clr-trnsl, occ lt brn, lse Qtz, f-med, occ v crs, sbang-sbrndd, spher, pr-mod srt


Bit #3
out @ 1520mMD
made 510m in 29.0 hrs
1-4-BT-G-F-IN-NO-DTF
1539.2mMD 1539.0mTVD
Inc 0.74 Az 346.66
Bit #4 17.5"
Reed Hycalog T13CDHTP
3x20 1x18
in @ 1520mMD
1569.3mMD 1569.1mTVD
Inc 0.77 Az 353.79
MW: 1.35 sg
PV: 18 cP
YP: 15.6 PA
Gel: 5/8
WOB: 2-20 tons
RPM: 151-218
TRQ: 6.4-15.4 kNm
Flow: 3485-4616 lpm
1625.9mMD 1625.7mTVD
Inc 0.84 Az 348.71
1654.2mMD 1654.0mTVD
Inc 0.75 Az 350.35
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
CLST: grysh brn-olv blk,
occ dk gnsh gry, sft-mod hd,
amor-sbblky, slty, sdy,
calc I.P
Tr: Mica
SST: clr-trnsl, lse Qtz, f-crs,
occ v crs, sbang-sbrndd,
occ ang, mod srt, Kaol cmt
CLST: olv gry-grysh olv gn,
sft-mod hd, amor-sbblky,
slty, calc
SST: clr-trnsl, lse Qtz, vf-crs,
sbang-sbrndd, spher, p-mod srt
SLTST: grysh wh, sft-frm,
amor-sbblky, Kaol cmt, arg
CLST: pred dk gnsh gry,
occ olv gry, sft-mod hd,


1683.30mMD 1683.09mTVD
Inc 0.79 Az 356.03
WOB: 8-20 tons
RPM: 182-227
TRQ: 8.3-13.4 kNm
Flow: 4597-4617 lpm
1712.3mMD 1712.1mTVD
Inc 0.89 Az 335.32
1742.1mMD 1741.9mTVD
Inc 0.79 Az 335.40
1771.5mMD 1771.3mTVD
Inc 0.74 Az 354.33
MW: 1.36 sg
PV: 19 cP
YP: 15 Pa
Gel: 5/8.5 Pa
1800.8mMD 1800.6mTVD
Inc 0.97 Az 353.39
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
SST: clr-trnsl, lse Qtz, vf-crs, sbang-sbrndd, spher, p-mod srt, occ Kaol cmt
CLST: m dk gry, olv blk, frm-mod hd, sbblky-blky, slty, calc



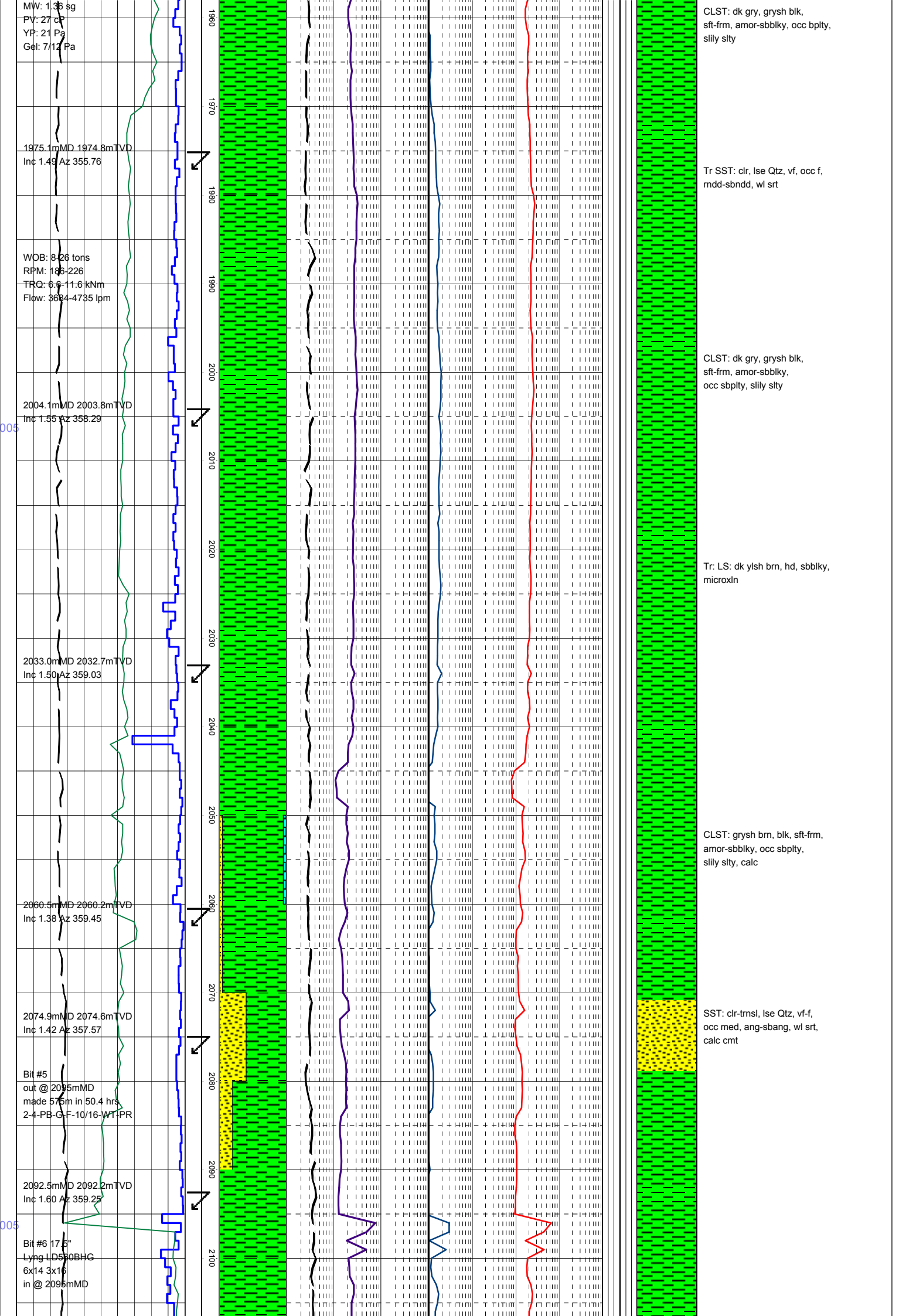
Tr LS: v lt gry, sft-frm, amor-sbblky, microxln

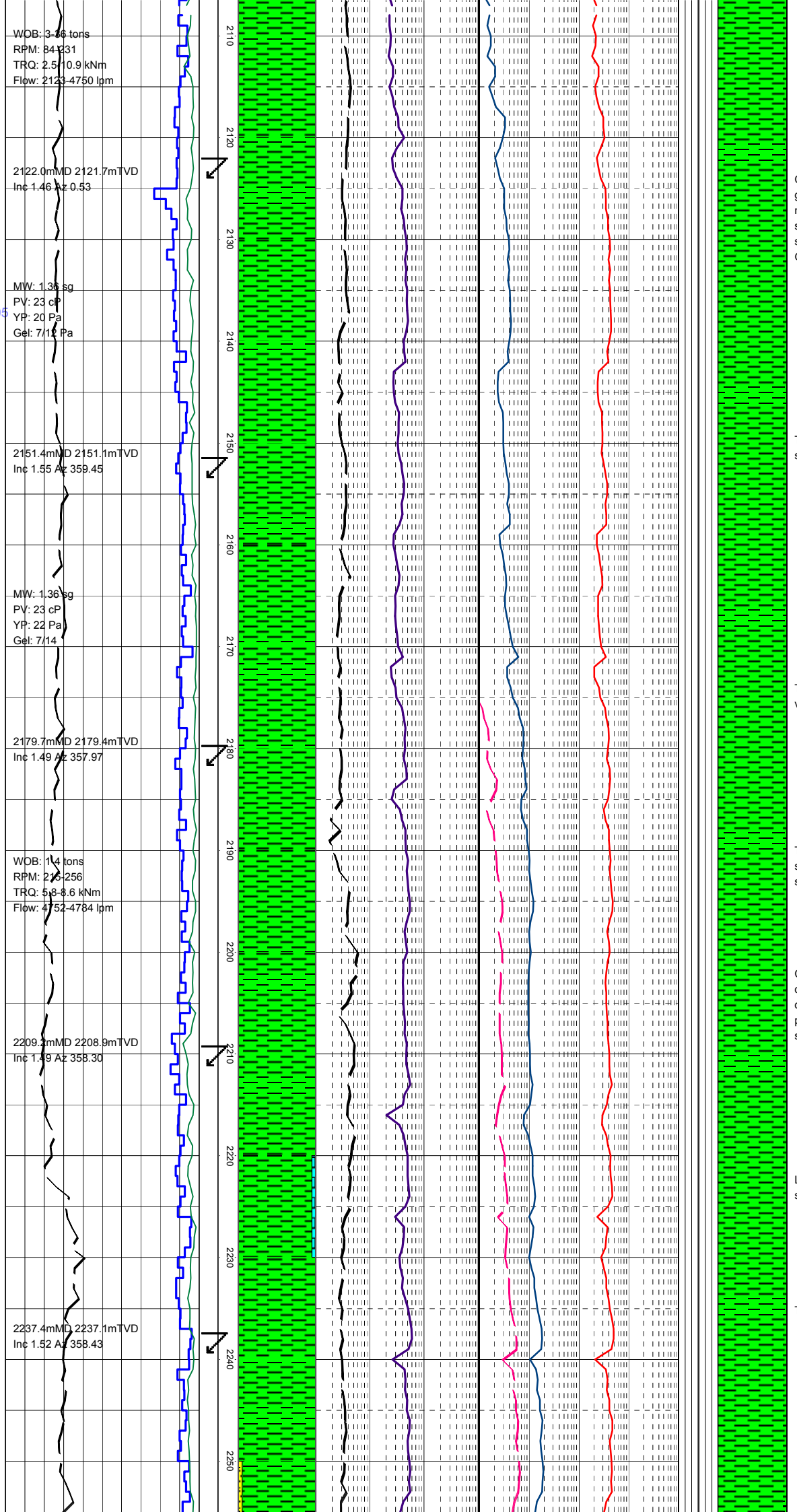
Tr: SST: clr-transl, lse Qtz, vf-f, occ med, sbrndd-rndd, wl srt, Calc Cmt

Tr: LS: wh-v lt gry, sft-frm, sbblky, microxln, slily arg

CLST: med dk gry-brnsh gry, frm-mod hd, amor-sbblky, slty, slily calc

LS: wh-yelsh gry, sft-frm,


MW: 1.36 sg
PV: 27 cP
YP: 21 Pa
Gel: 7/12 Pa
1975.1mMD 1974.8mTVD
Inc 1.49 Az 355.76
WOB: 8-26 tons
RPM: 186-226
TRQ: 6.6-11.6 kNm
Flow: 3684-4735 lpm
2004.1mMD 2003.8mTVD
Inc 1.55 Az 358.29
2033.0mMD 2032.7mTVD
Inc 1.50 Az 359.03
2060.5mMD 2060.2mTVD
Inc 1.38 Az 359.45
2074.9mMD 2074.6mTVD
Inc 1.42 Az 357.57
Bit #5
out @ 2095mMD
made 575m in 50.4 hrs
2-4-PB-G-F-10/16-WT-PR
2092.5mMD 2092.2mTVD
Inc 1.60 Az 359.25
Bit #6 17.5"
Lyng LD580BHG
6x14 3x16
in @ 2095mMD
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
CLST: dk gry, grysh blk, sft-frm, amor-sbblky, occ bplty, slily slty
Tr SST: clr, lse Qtz, vf, occ f, rndd-sbndd, wl srt
CLST: dk gry, grysh blk, sft-frm, amor-sbblky, occ sbplty, slily slty
Tr: LS: dk ylsh brn, hd, sbblky, microxln
CLST: grysh brn, blk, sft-frm, amor-sbblky, occ sbplty, slily slty, calc
SST: clr-trnsl, lse Qtz, vf-f, occ med, ang-sbang, wl srt, calc cmt



CLST: m blsh gry, dusky bl grn, grysh blk, dusky yelsh brn, m dk gry, sft-frm, amor-mod hd, slily slty, calc, Tr Pyr, Tr slty, calc, Tr Pyr, Tr Glauc Glauc

Tr: LS: wh-v lt gry, sft-frm, sbplty, microxln

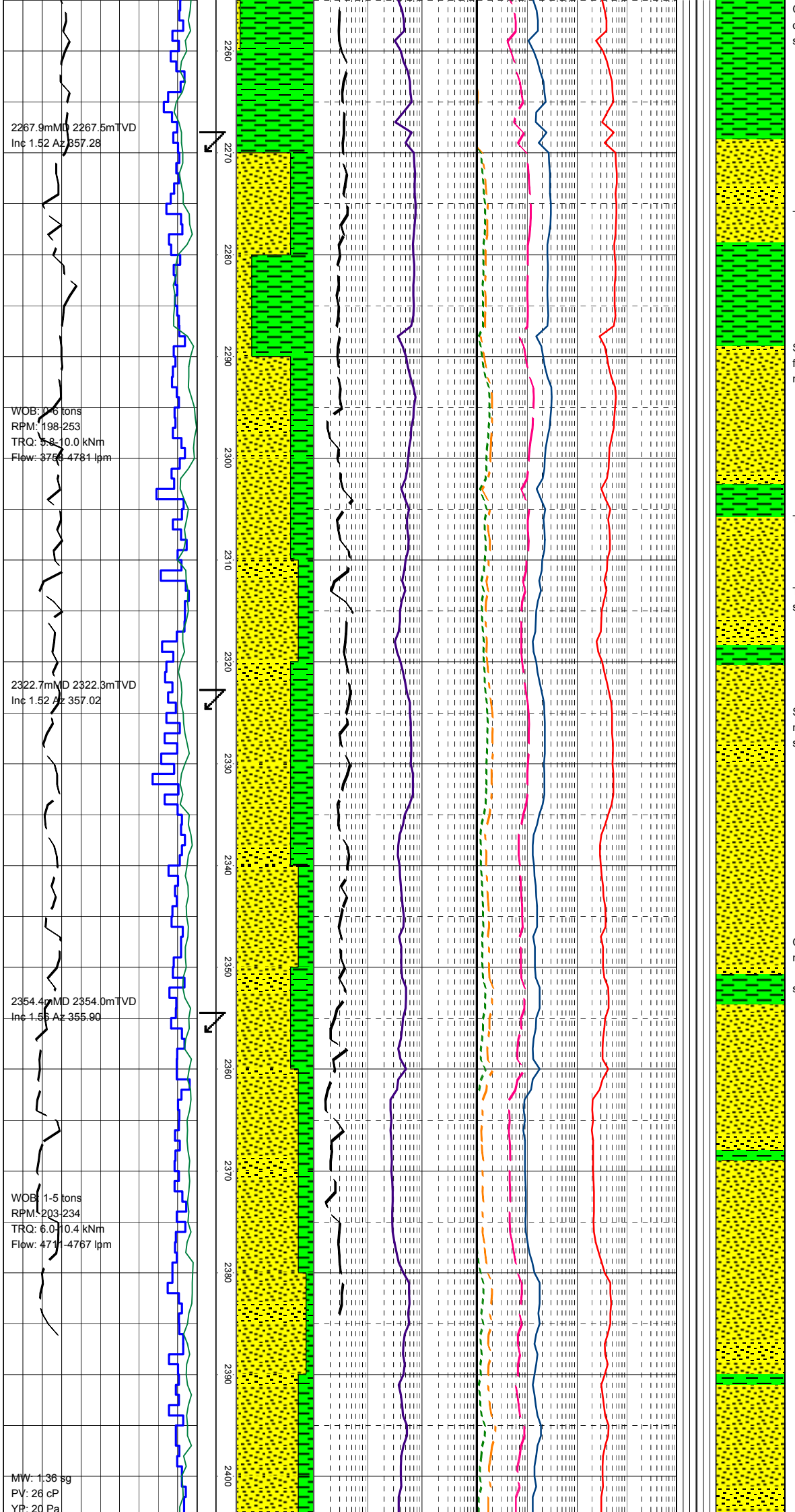
Tr: SST: clr, transl, lse Qtz, vf-f, ang-sbrndd, wl srt

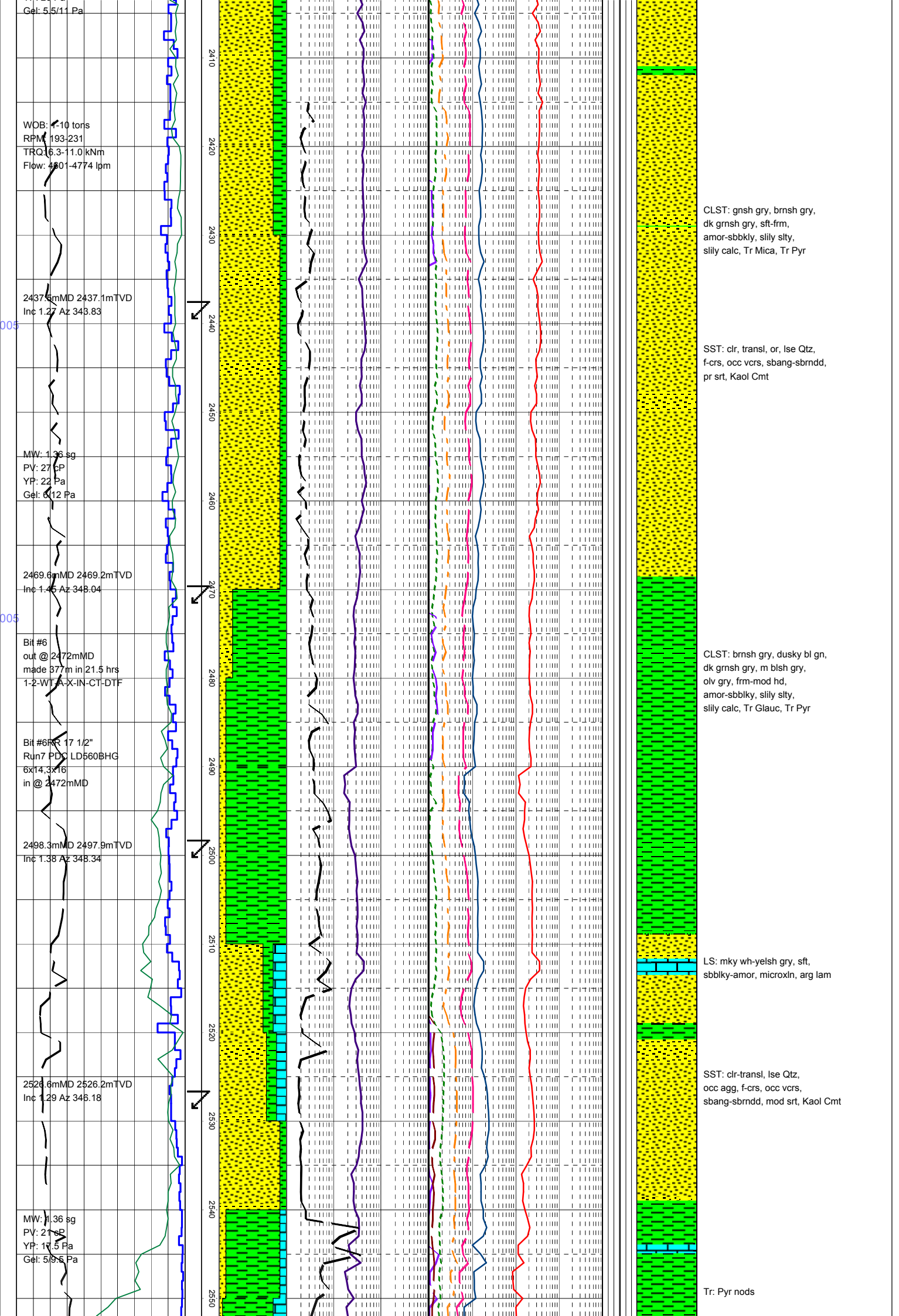
Tr: Tuff: lt gry-med gry, sft-frm, sbblky-sbplty, slily slty

CLST: med gry-med dk gry, dk gnsh gry, occ lt brnsh gry, occ lt blsh gry, sft-frm, pred frm, sbplty-sbblky, slily slty, calc

LS: mky wh, gry, sft-frm, sbblky, microxln, arg

Tr: Pyr nods


2267.9mMD 2267.5mTVD
Inc 1.52 Az 357.28
WOB: 0-6 tons
RPM: 198-253
TRQ: 5.8-10.0 kNm
Flow: 3756-4781 lpm
2322.7mMD 2322.3mTVD
Inc 1.52 Az 357.02
2354.4mMD 2354.0mTVD
Inc 1.56 Az 355.90
WOB: 1-5 tons
RPM: 203-234
TRQ: 6.0-10.4 kNm
Flow: 4711-4767 lpm
MW: 1.36 sg
PV: 26 cP
YP: 20 Pa
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
CLST: brnsh gry-olv blk,
occ med gry-med dk gry, sft-frm,
sbblky-sbplty, slty, slily calc
Tr: Pyr nods
SST: clr-trnsl, occ mky wh,
f-med, occ crs, sbrndd-rndd,
mod srt, Kaol Cmt
Tr: Mica
Tr: LS: mky wh-v lt gry, sft,
sbplty, microxln
SST: clr-transl, occ lt brn,
med-v crs, sbrndd-rndd, wl-mod
srt, Kaol Cmt
CLST: m dk gry, brnsh gry,
m gnsh gry-gnsh gry, frm-mod hd
sbblky-sbplty, slily slty,
slily calc, Tr Pyr


Gel: 5.5/11 Pa
WOB: 1-10 tons
RPM: 193-231
TRQ:16.3-11.0 kNm
Flow: 4801-4774 lpm
2437.5mMD 2437.1mTVD
Inc 1.27 Az 343.83
MW: 1.36 sg
PV: 27 cP
YP: 22 Pa
Gel: 6/12 Pa
2469.6mMD 2469.2mTVD
Inc 1.45 Az 348.04
Bit #6
out @ 2472mMD
made 377m in 21.5 hrs
1-2-WT-A-X-IN-CT-DTF
Bit #6RR 17 1/2"
Run7 PDC LD560BHG
6x14,3x16
in @ 2472mMD
2498.3mMD 2497.9mTVD
Inc 1.38 Az 348.34
2526.6mMD 2526.2mTVD
Inc 1.29 Az 346.18
MW: 1.36 sg
PV: 21 cP
YP: 17.5 Pa
Gel: 5/9.5 Pa
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
CLST: gnsh gry, brnsh gry, dk grnsh gry, sft-frm, amor-sbbkly, slily slty, slily calc, Tr Mica, Tr Pyr
SST: clr, transl, or, lse Qtz, f-crs, occ vcrs, sbang-sbrndd, pr srt, Kaol Cmt
CLST: brnsh gry, dusky bl gn, dk grnsh gry, m blsh gry, olv gry, frm-mod hd, amor-sbblky, slily slty, slily calc, Tr Glauc, Tr Pyr
LS: mky wh-yelsh gry, sft, sbblky-amor, microxln, arg lam
SST: clr-transl, lse Qtz, occ agg, f-crs, occ vcrs, sbang-sbrndd, mod srt, Kaol Cmt
Tr: Pyr nods

2555.2mMD 2554.7mTVD
Inc 1.36 Az 352.53

Bit #6RR1
Out @ 2574mMD
made 102m in 14.7 hrs
2-8-RO-S-X-2/16-WT-PR

2585.1mMD 2584.6mTVD
Inc 1.43 Az 352.34

Bit #7 17.5" Smith
S68VPX
2x14+8x13
in @ 2574mMD

WOB: 1-28 tons
RPM: 131-233
TRQ: 6.0-18.2 kNm
Flow: 3975-4646 lpm

2614.0mMD 2613.5mTVD
Inc 1.50 Az 352.55

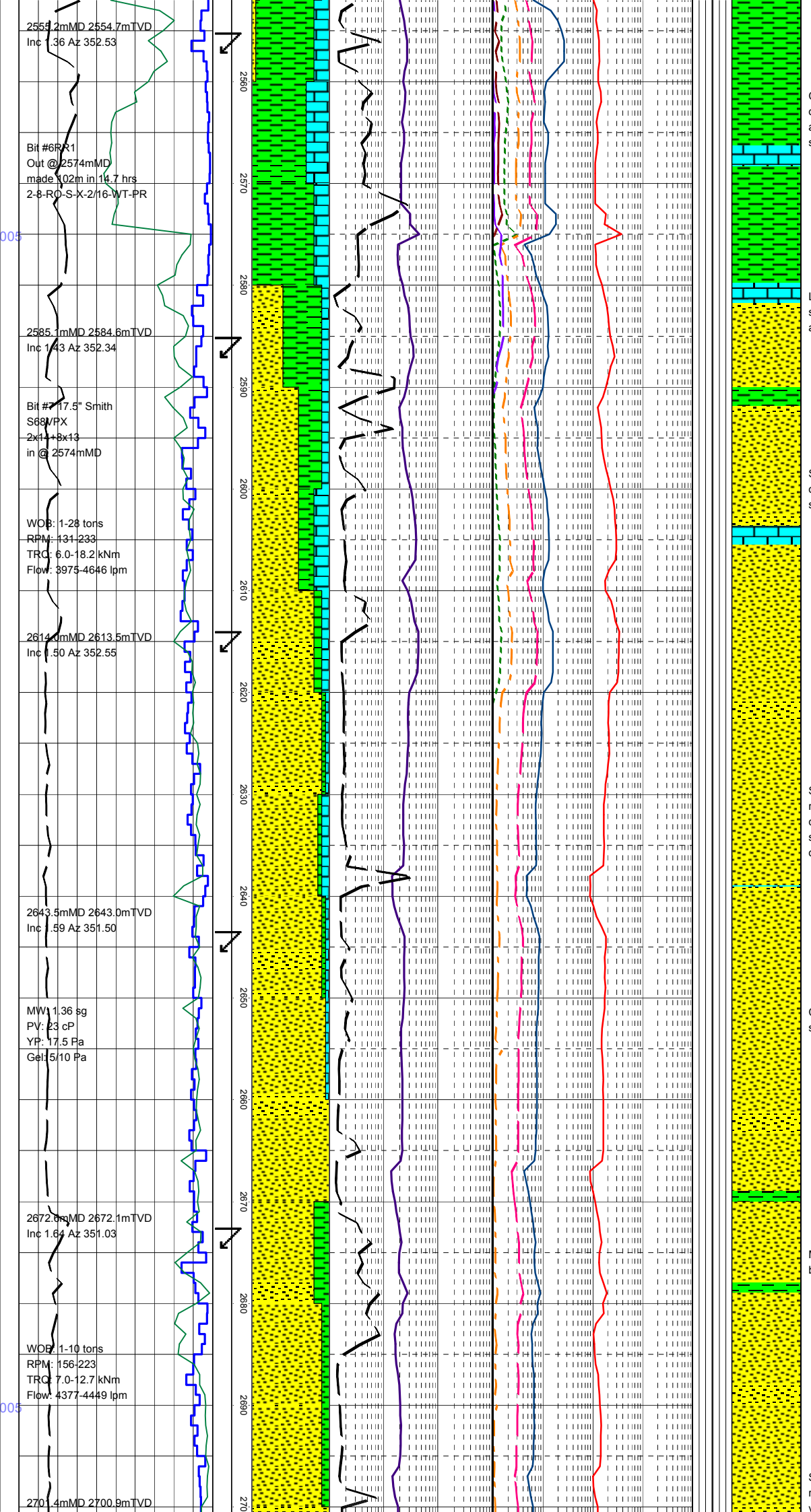
2643.5mMD 2643.0mTVD
Inc 1.59 Az 351.50

MW: 1.36 sg
PV: 23 cP
YP: 17.5 Pa
Gel: 5/10 Pa

2672.6mMD 2672.1mTVD
Inc 1.64 Az 351.03

WOB: 1-10 tons
RPM: 156-223
TRQ: 7.0-12.7 kNm
Flow: 4377-4449 lpm

2701.4mMD 2700.9mTVD



CLST: med dk gry-dk gnsh gry, occ grysh blk, sft-frm, amor-sbplty, occ lam, slty, slily calc

LS: mky wh, dk yelsh brn, sft-frm, amor-sbblky, microxln, arg lam

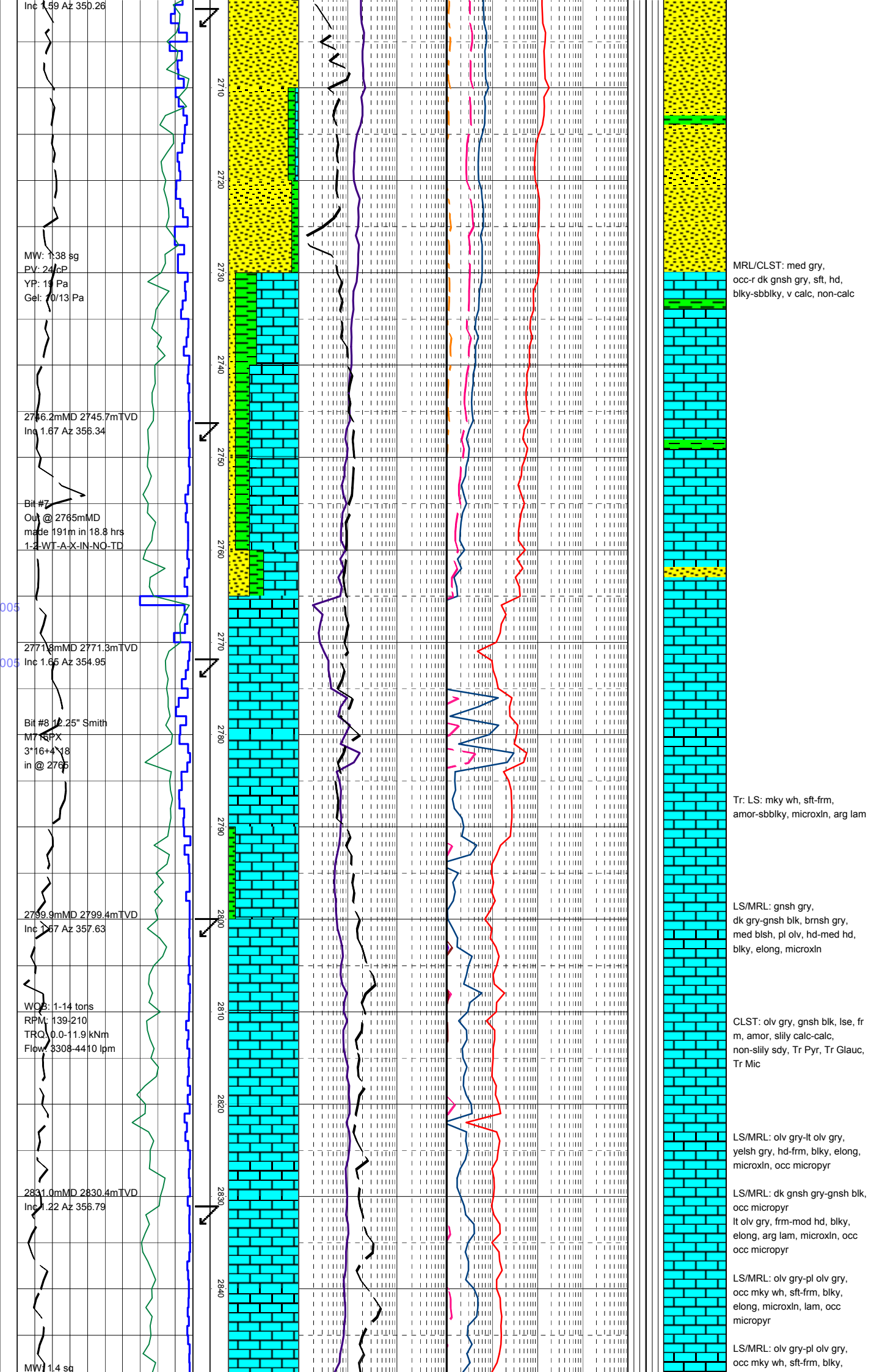
SST: clr-trnsl, occ or, lse Qtz, occ agg, f-med, occ crs, sbang-sbrndd, pr srt, Kaol Cmt

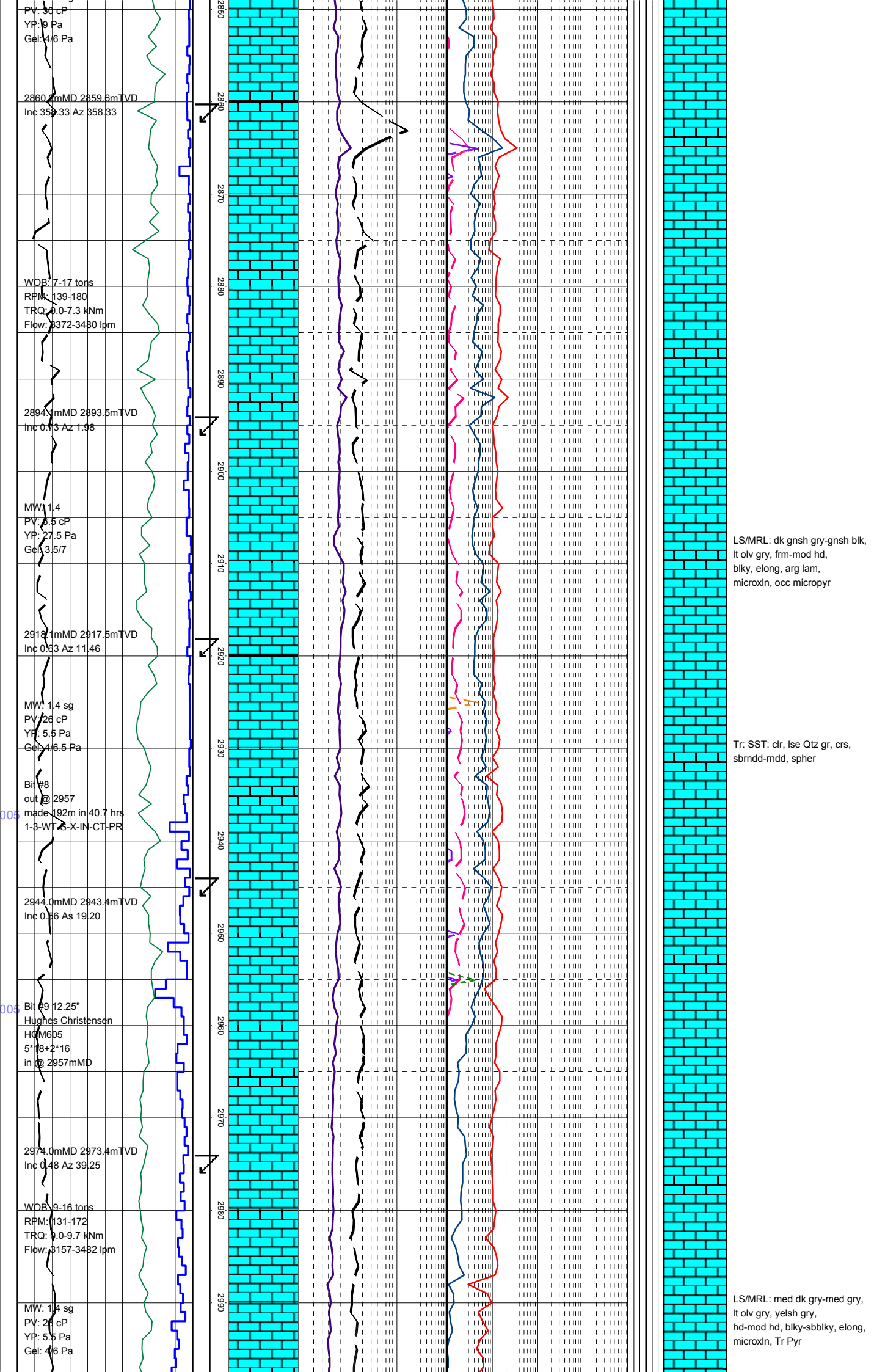
SST: trnsl-clr, occ mod rdsh or, r mky wh, lse Qtz gr, f-med, crs-v crs, sbang-rndd, slily spher-v spher, pr srt, occ calc Cmt

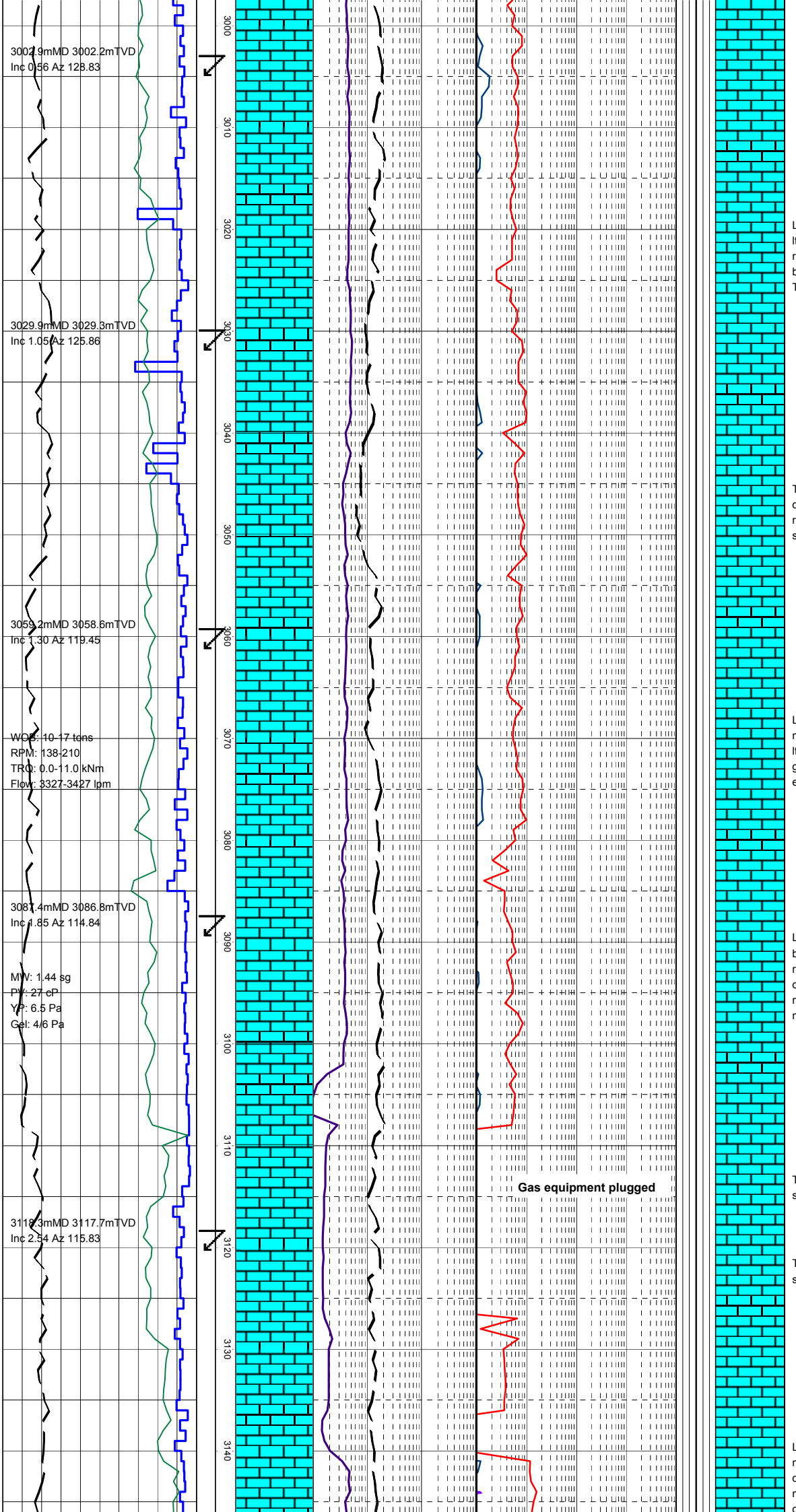
CLST: olv blk-med blsh gry, sft-hd, sbblky, calc, Tr Pyr

MRL: med gry-med dk gry, sft, blky-sbblky, v calc

SST: trnsl-clr, r mky wh, r mod rdsh or, lse Qtz gr, v f-med, occ r crs, r v crs,


Inc 1.59 Az 350.26
MW: 1.38 sg
PV: 24 cP
YP: 19 Pa
Gel: 10/13 Pa
2746.2mMD 2745.7mTVD
Inc 1.67 Az 356.34
Bit #7
Out @ 2765mMD
made 191m in 18.8 hrs
1-2-WT-A-X-IN-NO-TD
2771.8mMD 2771.3mTVD
Inc 1.65 Az 354.95
Bit #8 12.25" Smith
M716PX
3*16+4*18
in @ 2765
2799.9mMD 2799.4mTVD
Inc 1.67 Az 357.63
WOB: 1-14 tons
RPM: 139-210
TRQ: 0.0-11.9 kNm
Flow: 3308-4410 lpm
2831.0mMD 2830.4mTVD
Inc 1.22 Az 356.79
MW: 1.4 sg
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
MRL/CLST: med gry,
occ-r dk gnsh gry, sft, hd,
blky-sbblky, v calc, non-calc
Tr: LS: mky wh, sft-frm,
amor-sbblky, microxln, arg lam
LS/MRL: gnsh gry,
dk gry-gnsh blk, brnsh gry,
med blsh, pl olv, hd-med hd,
blky, elong, microxln
CLST: olv gry, gnsh blk, lse, fr
m, amor, slily calc-calc,
non-slily sdy, Tr Pyr, Tr Glauc,
Tr Mic
LS/MRL: olv gry-lt olv gry,
yelsh gry, hd-frm, blky, elong,
microxln, occ micropyr
LS/MRL: dk gnsh gry-gnsh blk,
occ micropyr
lt olv gry, frm-mod hd, blky,
elong, arg lam, microxln, occ
occ micropyr
LS/MRL: olv gry-pl olv gry,
occ mky wh, sft-frm, blky,
elong, microxln, lam, occ
micropyr
LS/MRL: olv gry-pl olv gry,
occ mky wh, sft-frm, blky,


PV: 30 cP
YP: 9 Pa
Gel: 4/6 Pa
2860.2mMD 2859.6mTVD
Inc 359.33 Az 358.33
WOB: 7-17 tons
RPM: 139-180
TRQ: 0.0-7.3 kNm
Flow: 3372-3480 lpm
2894.1mMD 2893.5mTVD
Inc 0.93 Az 1.98
MW 11.4
PV: 6.5 cP
YP: 27.5 Pa
Gel: 3.5/7
2918.1mMD 2917.5mTVD
Inc 0.63 Az 11.46
MW: 1.4 sg
PV: 26 cP
YP: 5.5 Pa
Gel: 4/6.5 Pa
Bit #8
out @ 2957
made 192m in 40.7 hrs
1-3-WT-S-X-IN-CT-PR
2944.0mMD 2943.4mTVD
Inc 0.66 As 19.20
Bit #9 12.25"
Hughes Christensen
HCM605
5*18+2*16
in @ 2957mMD
2974.0mMD 2973.4mTVD
Inc 0.48 Az 39.25
WOB: 9-16 tons
RPM: 131-172
TRQ: 0.0-9.7 kNm
Flow: 3157-3482 lpm
MW: 1.4 sg
PV: 26 cP
YP: 5.5 Pa
Gel: 4/6 Pa
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
LS/MRL: dk gnsh gry-gnsh blk,
lt olv gry, frm-mod hd,
blky, elong, arg lam,
microxln, occ micropyr
Tr: SST: clr, lse Qtz gr, crs,
sbrndd-rndd, spher
LS/MRL: med dk gry-med gry,
lt olv gry, yelsh gry,
hd-mod hd, blky-sbblky, elong,
microxln, Tr Pyr



LS/MRL: med dk gry-med gry, lt olv gry, occ dk gnsh gry, r yelsh gry, hd-mod hd, blky-sbblky, elong, microxln, Tr Pyr

Tr: CLST: grysh blk, occ dk gnsh gry-gnsh blk, r mod brn, mod hd,frm, sft, sbblky, non-slily calc

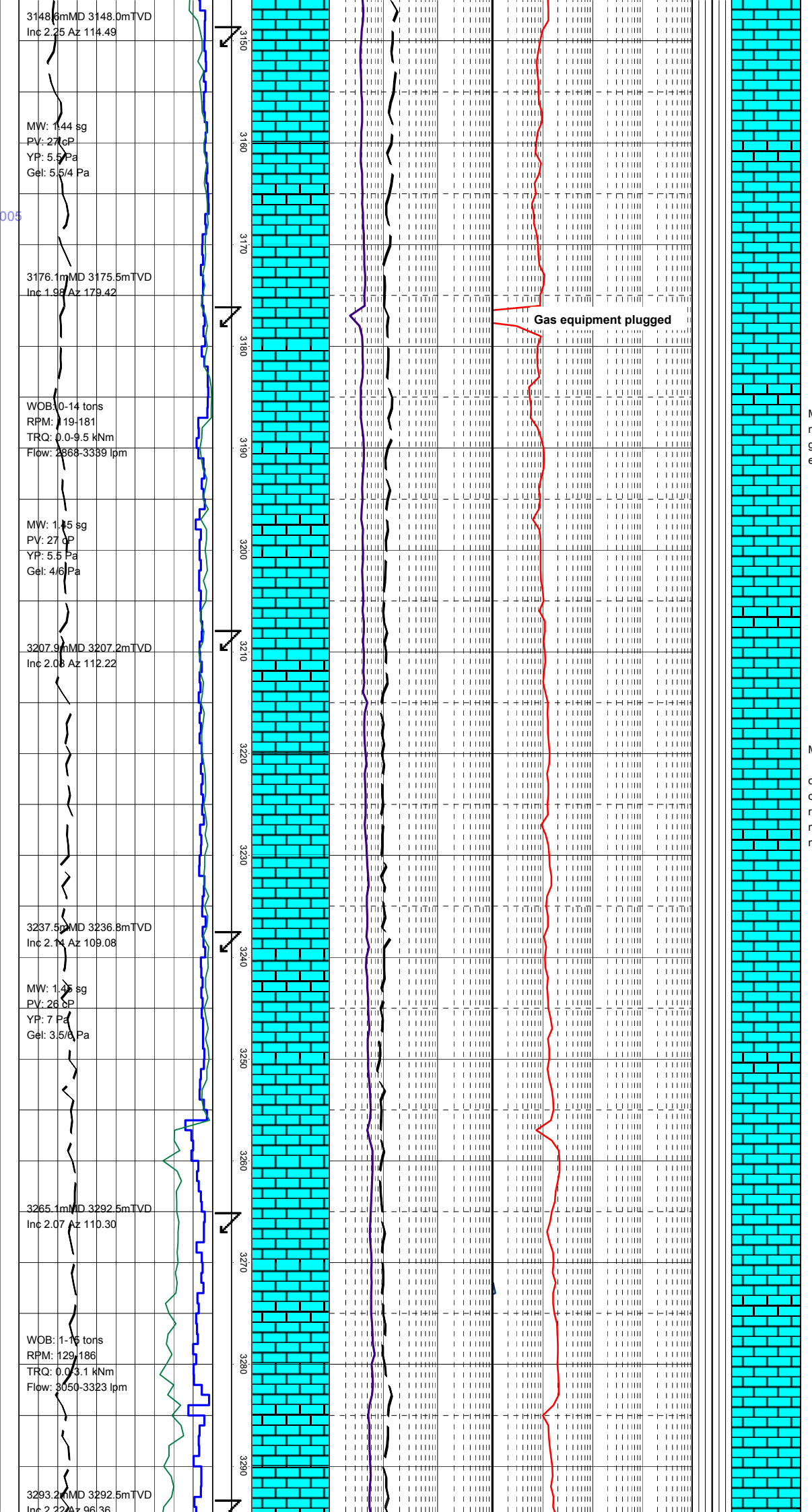
LS/MRL: lt olv gry, yelsh gry, med dk gry-med gry, lt brnsh gry-brnsh gry, grysh brn, mod hd, blky-sbblky, elong, microxln

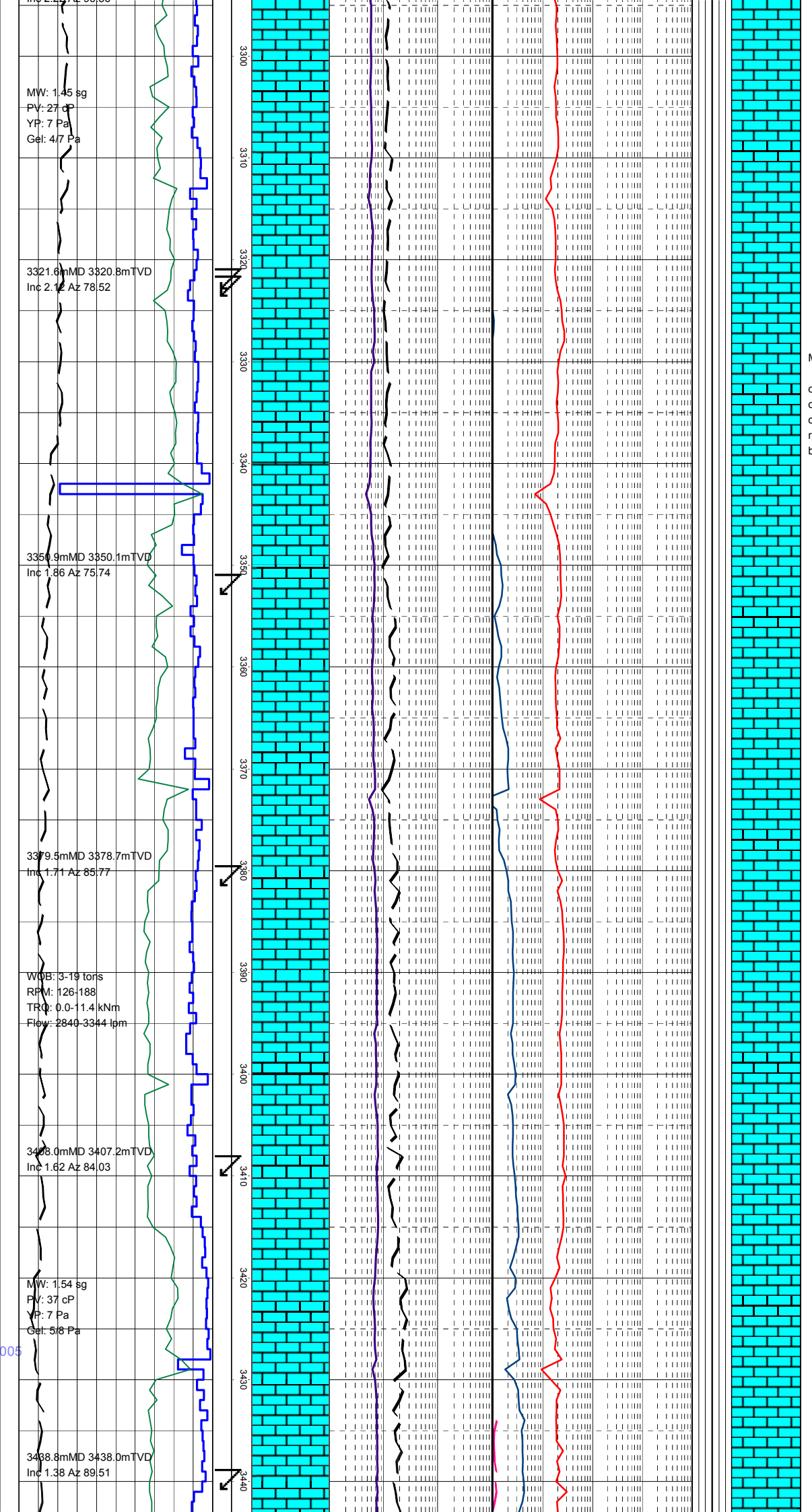
LS/MRL: grysh brn, brnsh gry-lt brnsh gry, lt olv g ry, occ dk gnsh gry, occ med dk gry, r yelsh gry, mod-sft, blky-sbblky, elong, microxln

Tr SST: clr, ls Qtz gr, m-c, sbang-ang

Tr CLST: gnsh blk, frm-sft, sbblky-amor, micropyr

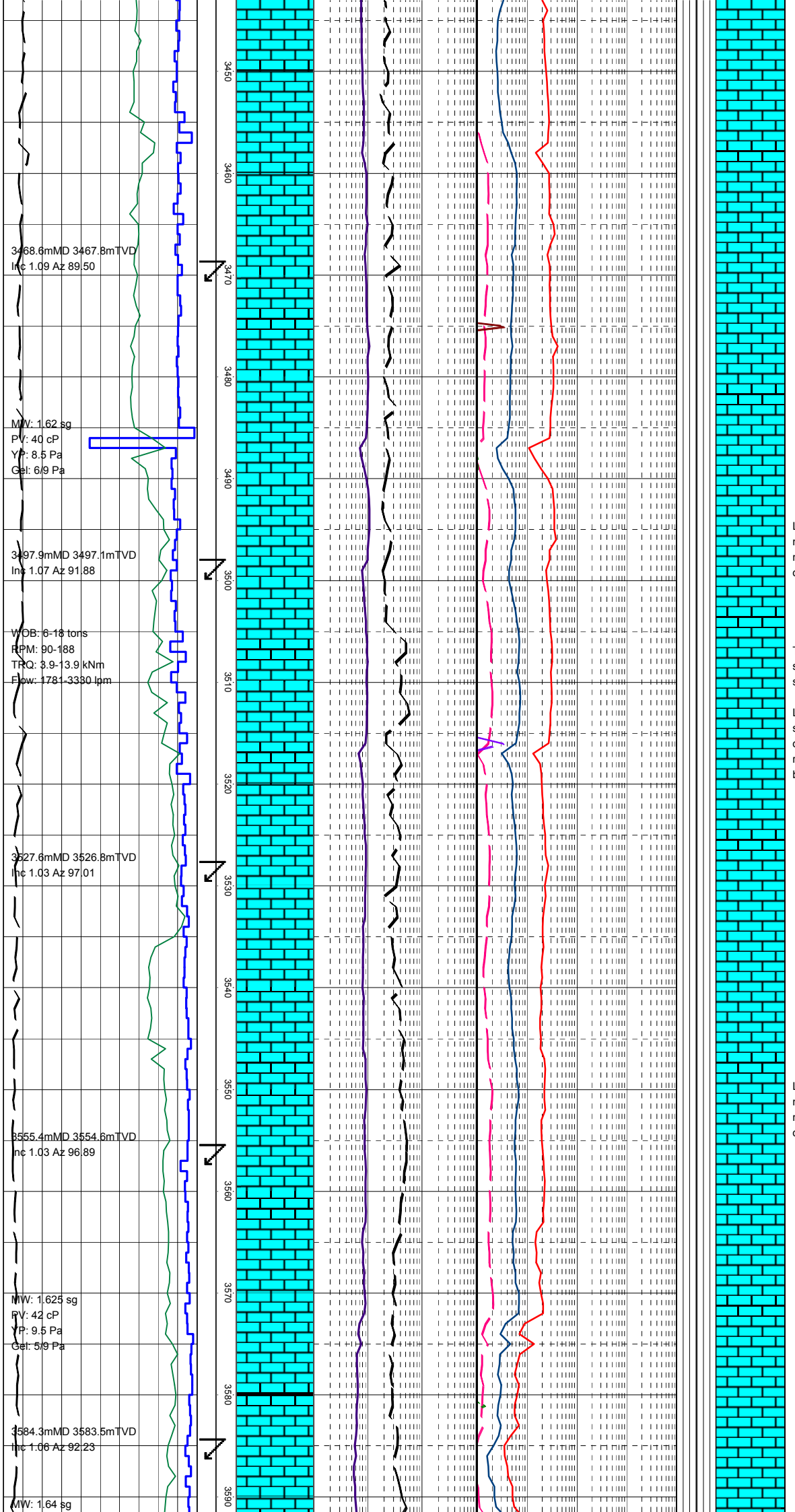
LS/MRL: lt olv gry, dk gnsh gry, med dk gry, occ ylsh gry, occ brnsh gry-lt brnsh gry, mod hd-sft, blky-sbblky, elong, occ arg lam, microxln


3148.6mMD 3148.0mTVD
Inc 2.25 Az 114.49
MW: 1.44 sg
PV: 27 cP
YP: 5.5 Pa
Gel: 5.5/4 Pa
3176.1mMD 3175.5mTVD
Inc 1.98 Az 179.42
WOB: 10-14 tons
RPM: 119-181
TRQ: 0.0-9.5 kNm
Flow: 2868-3339 lpm
MW: 1.45 sg
PV: 27 cP
YP: 5.5 Pa
Gel: 4/6 Pa
3207.9mMD 3207.2mTVD
Inc 2.08 Az 112.22
3237.5mMD 3236.8mTVD
Inc 2.14 Az 109.08
MW: 1.45 sg
PV: 26 cP
YP: 7 Pa
Gel: 3.5/6 Pa
3265.1mMD 3292.5mTVD
Inc 2.07 Az 110.30
WOB: 1-15 tons
RPM: 129-186
TRQ: 0.0-3.1 kNm
Flow: 3050-3323 lpm
3293.2mMD 3292.5mTVD
Inc 2.22 Az 96.36
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
Gas equipment plugged
MRL/LS: lt olv gry, dk gnsh gry, med dk gry, brnsh gry-lt brnsh, gry, mod hd-sft, blky-sbblky, elong, microxln
MRL/LS: dk gnsh gry, med dk gry
occ grysh brn, occ brnsh gry-lt brnsh gry, r lt olv gry, r lt gnsh gry, mod hd-sft, blky-sbblky, elong, microxln



MRL/LS: med dk gry, dk gnsh gry

occ lt olv gry,
occ brnsh gry-lt brnsh gry,
occ grysh brn, r lt gnsh gry,
r yelsh gry, med hd-sft, occ hd,
blky-sbblky, elong, microxln

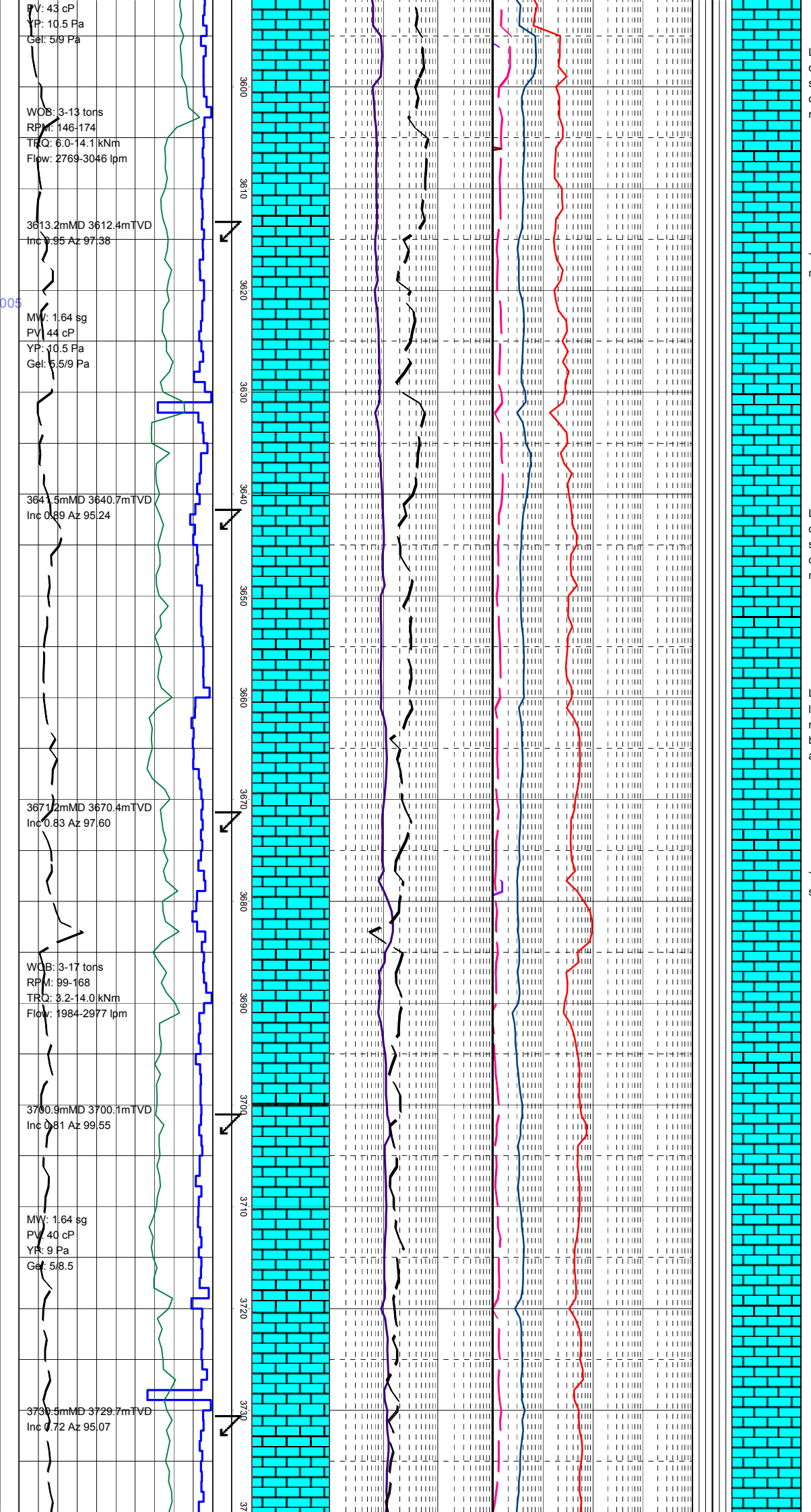


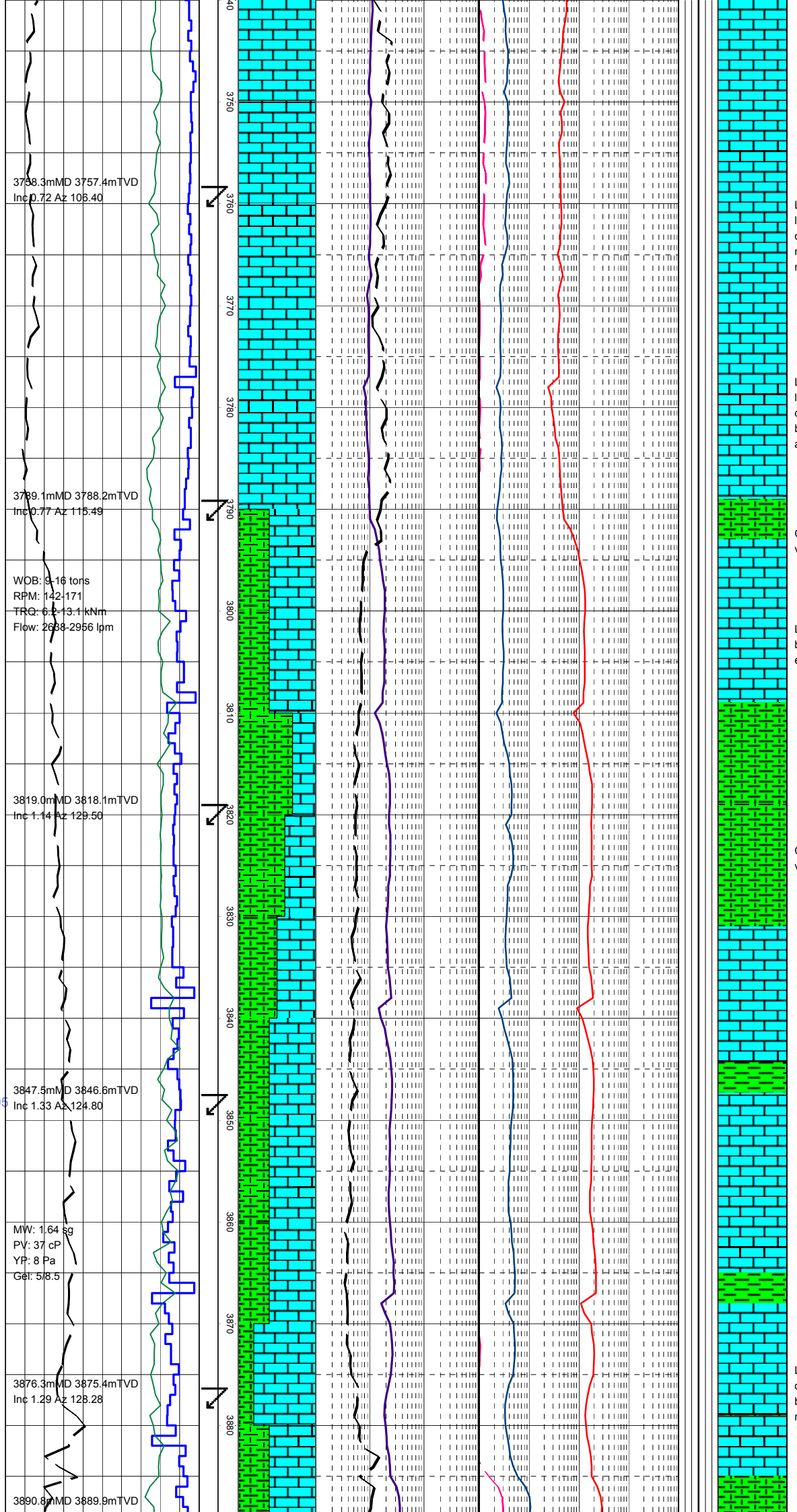
LS/MRL: olv gry-lt olv gry,
med dk gry, r yelsh gry,
med hd-frm, blky-sbblky,
occ elong, microxln

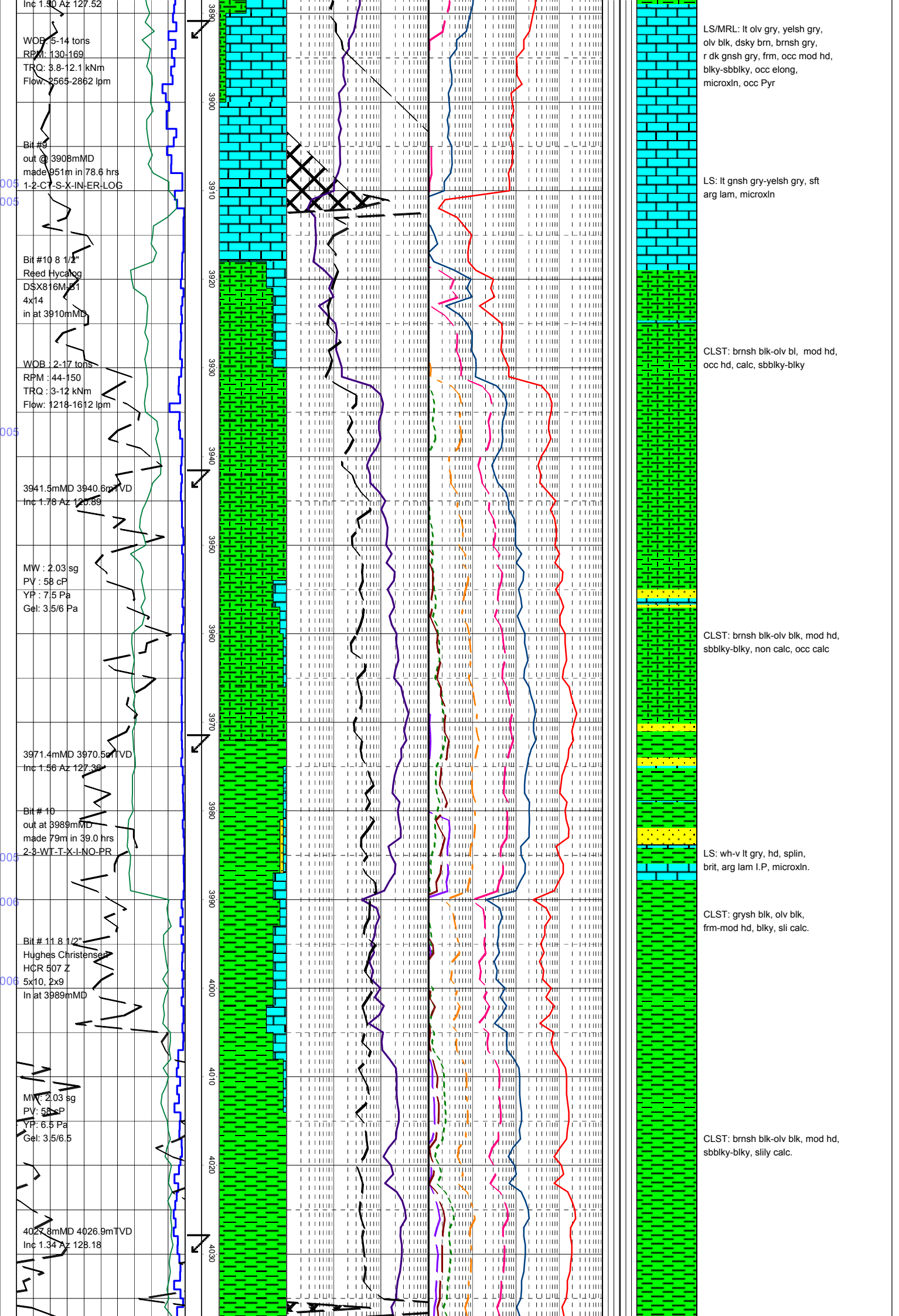
Tr: CLST: grysh blk, mod hd,
sbblky, non calc-v calc
sbblky, v calc-non calc

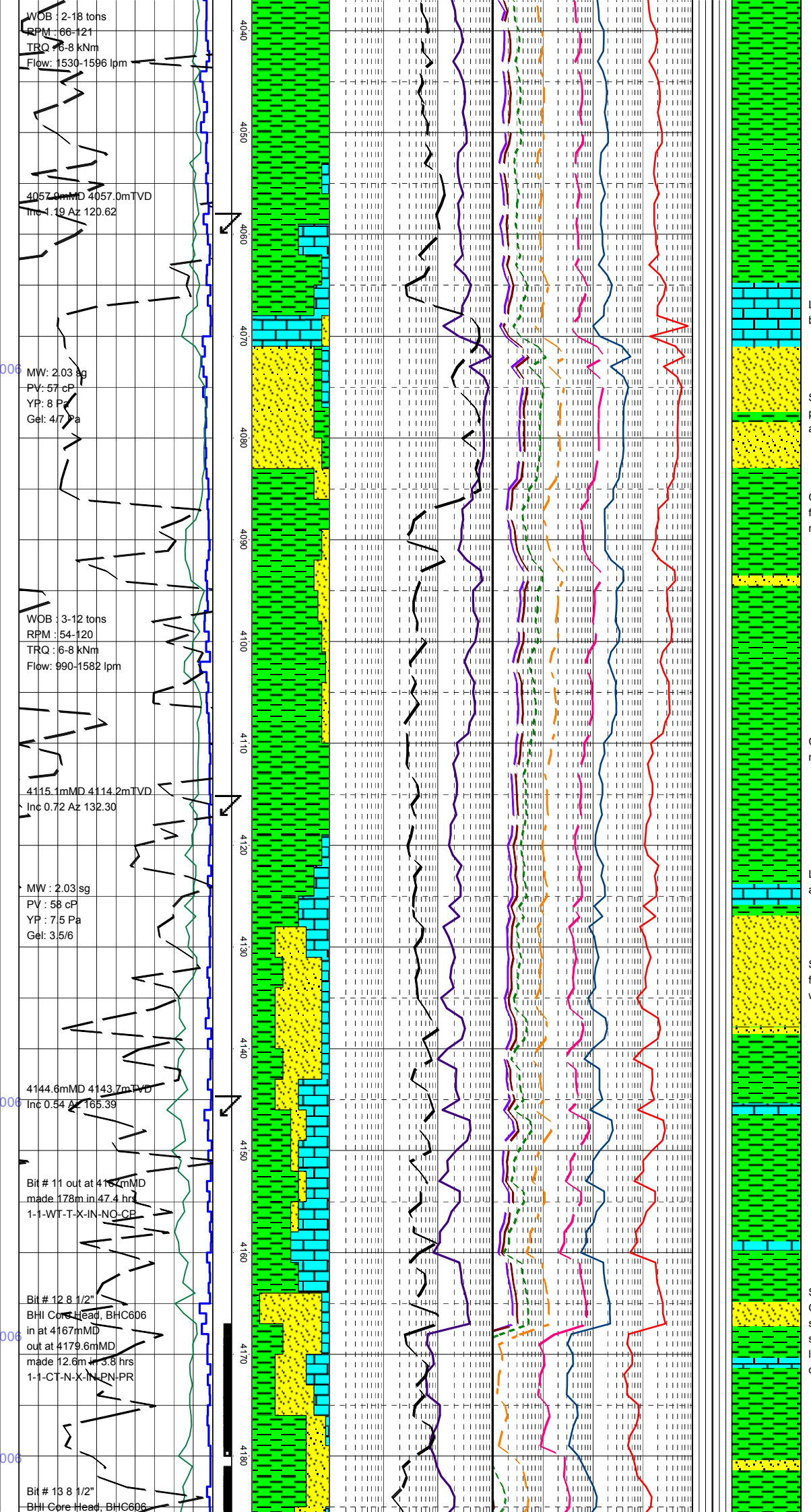
LS/MRL: olv gry-lt olv gry,
sbblky, v calc-non calc
occ med dk gry, r yelsh gry,
r grysh brn, med hd-frm,
blky-sbblky, occ elong, microxln

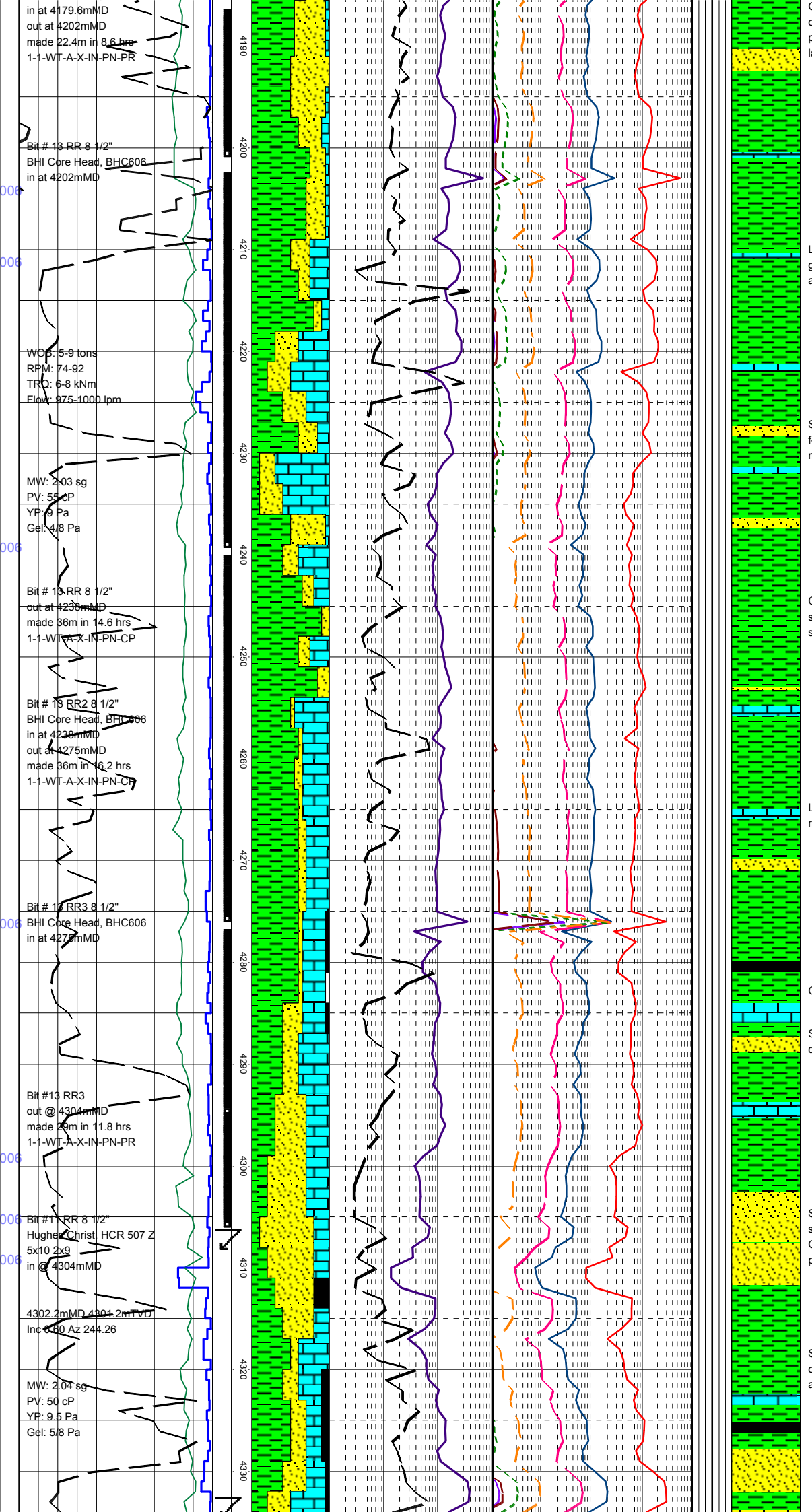
LS/MRL: olv gry-lt olv gry,
med dk gry, occ dk gry,
med hd-frm, occ hd, blky-sbblky,
occ elong, microxln

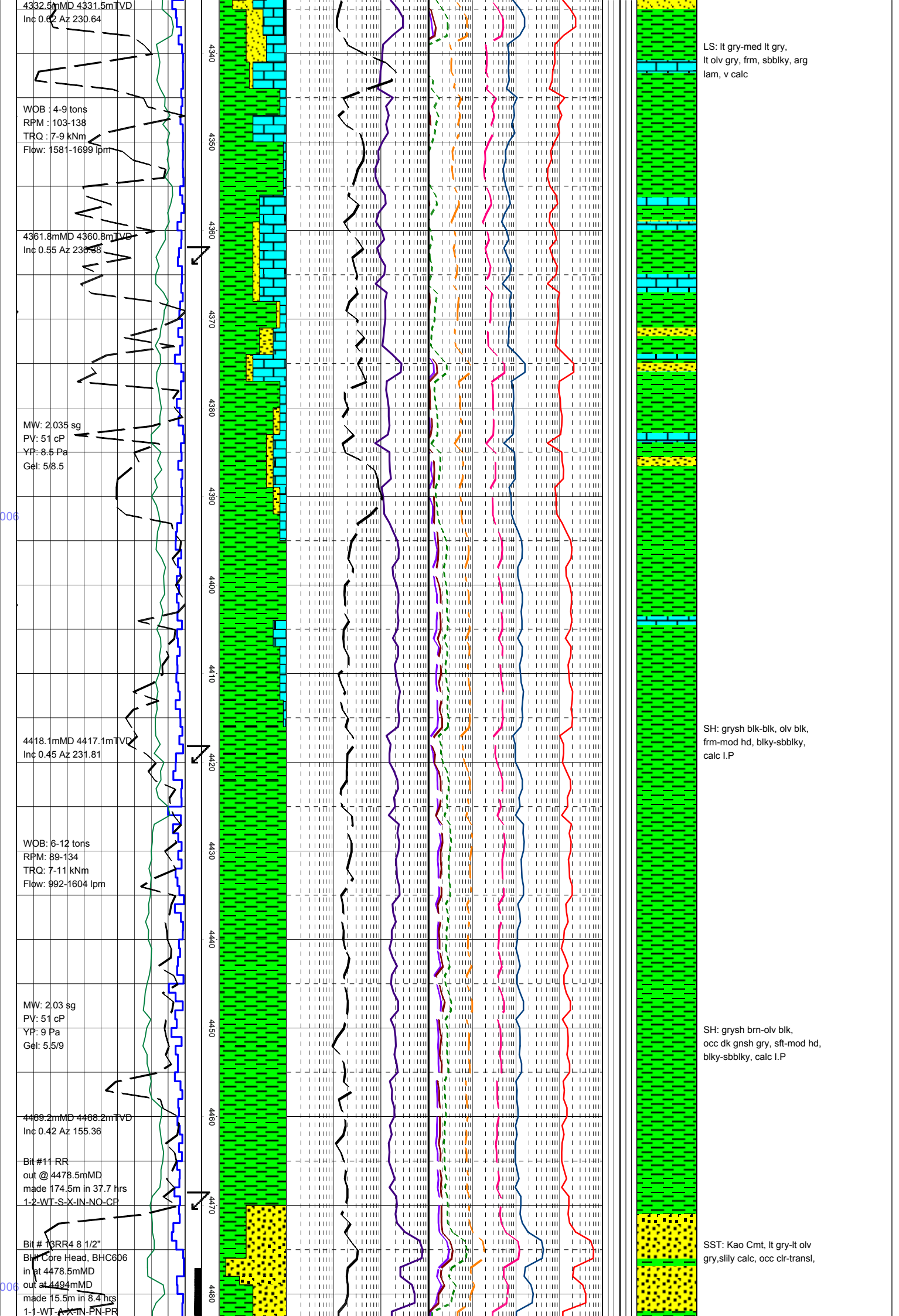

PV: 43 cP
YP: 10.5 Pa
Gel: 5/9 Pa
WOB: 3-13 tons
RPM: 146-174
TRQ: 6.0-14.1 kNm
Flow: 2769-3046 lpm
3613.2mMD 3612.4mTVD
Inc 0.95 Az 97.38
MW: 1.64 sg
PV: 44 cP
YP: 10.5 Pa
Gel: 5.5/9 Pa
3641.5mMD 3640.7mTVD
Inc 0.89 Az 95.24
3671.2mMD 3670.4mTVD
Inc 0.83 Az 97.60
WOB: 3-17 tons
RPM: 99-168
TRQ: 3.2-14.0 kNm
Flow: 1984-2977 lpm
3700.9mMD 3700.1mTVD
Inc 0.81 Az 99.55
MW: 1.64 sg
PV: 40 cP
YP: 9 Pa
Gel: 5/8.5
3730.5mMD 3729.7mTVD
Inc 0.72 Az 95.07
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
LS/MRL: yelsh gry, med dk gry, dsky gn, occ gnsh blk, sft-med hd, blky-sbblky, occ elong, occ arg lam, microxln, occ Glauc
Tr CLST: gnsh blk, sft, amor, micropyr
LS/MRL: yelsh gry, med dk gry, dsky gn, occ gnsh blk, sft-med hd, blky-sbblky, occ elong, occ arg lam, microxln, r glauc
LS/MRL: med dk gry-dk gry, lt olv gry-olv gry, lt gnsh gry, r-occ yelsh gry, frm, mod hd, blky-sbblky, elong, microxln, arg lam, Glauc
Tr: CLST: gnsh blk, blk, frm, sft, sbblky, non calc

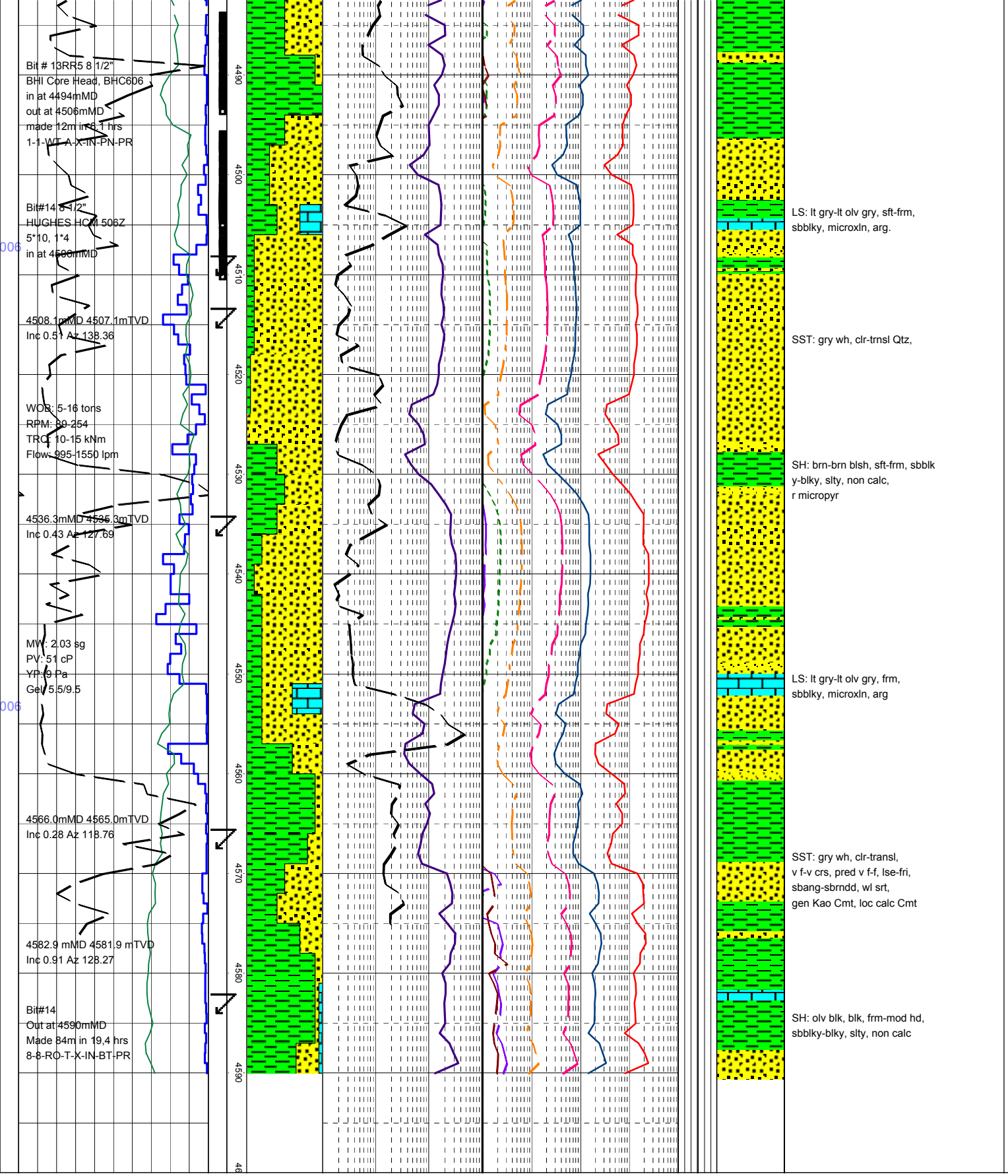

3758.3mMD 3757.4mTVD
Inc 0.72 Az 106.40
3789.1mMD 3788.2mTVD
Inc 0.77 Az 115.49
WOB: 9-16 tons
RPM: 142-171
TRQ: 6.2-13.1 kNm
Flow: 2638-2956 lpm
3819.0mMD 3818.1mTVD
Inc 1.14 Az 129.50
3847.5mMD 3846.6mTVD
Inc 1.33 Az 124.80
MW: 1.64 sg
PV: 37 cP
YP: 8 Pa
Gel: 5/8.5
3876.3mMD 3875.4mTVD
Inc 1.29 Az 128.28
3890.8mMD 3889.9mTVD
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
LS/MRL: med dk gry-dk gry, lt olv gry-olv gry, lt gnsh gry, occ dk yelsh brn-dsky brn, mod hd-frm, blky-sbblky, elong, microxln, arg lam
LS/MRL: med dk gry-dk gry, lt olv gry-olv gry, lt gnsh gry, occ dk gnsh gry, mod hd-frm, blky-sbblky, elong, microxln, arg lam
CLST: gnsh blk, hd, blky-sbblky, v calc
LS/MRL: lt gry, dk gnsh gry, brnsh gry, mod-hd, blky-sbblky, elong, microxln, occ tr Glauc
CLST: gnsh blk, hd, blky-sbblky, v calc, occ non calc
LS/MRL: lt gry, dk gnsh gry, dsky brn, brnsh gry, mod-hd, blky-sbblky, elong, microxln, r Glauc


Inc 1.30 Az 127.52
WOB: 5-14 tons
RPM: 130-169
TRQ: 3.8-12.1 kNm
Flow: 2565-2862 lpm
Bit #9
out @ 3908mMD
made 951m in 78.6 hrs
1-2-CT-S-X-IN-ER-LOG
Bit #10 8 1/2"
Reed Hycalog
DSX816M-B1
4x14
in at 3910mMD
WOB : 2-17 tons
RPM : 44-150
TRQ : 3-12 kNm
Flow: 1218-1612 lpm
3941.5mMD 3940.6mTVD
Inc 1.78 Az 120.89
MW : 2.03 sg
PV : 58 cP
YP : 7.5 Pa
Gel: 3.5/6 Pa
3971.4mMD 3970.5mTVD
Inc 1.56 Az 127.36
Bit # 10
out at 3989mMD
made 79m in 39.0 hrs
2-3-WT-T-X-I-NO-PR
Bit # 11 8 1/2"
Hughes Christensen
HCR 507 Z
5x10, 2x9
In at 3989mMD
MW: 2.03 sg
PV: 58 cP
YP: 6.5 Pa
Gel: 3.5/6.5
4027.8mMD 4026.9mTVD
Inc 1.34 Az 128.18
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
LS/MRL: lt olv gry, yelsh gry, olv blk, dsky brn, brnsh gry, r dk gnsh gry, frm, occ mod hd, blky-sbblky, occ elong, microxln, occ Pyr
LS: lt gnsh gry-yelsh gry, sft arg lam, microxln
CLST: brnsh blk-olv bl, mod hd, occ hd, calc, sbblky-blky
CLST: brnsh blk-olv blk, mod hd, sbblky-blky, non calc, occ calc
LS: wh-v lt gry, hd, splin, brit, arg lam I.P, microxln.
CLST: grysh blk, olv blk, frm-mod hd, blky, sli calc.
CLST: brnsh blk-olv blk, mod hd, sbblky-blky, slily calc.


WOB : 2-18 tons
RPM : 66-121
TRQ : 6-8 kNm
Flow: 1530-1596 lpm
4057.0mMD 4057.0mTVD
Inc 1.19 Az 120.62
MW: 2.03 sg
PV: 57 cP
YP: 8 Pa
Gel: 4/7 Pa
WOB : 3-12 tons
RPM : 54-120
TRQ : 6-8 kNm
Flow: 990-1582 lpm
4115.1mMD 4114.2mTVD
Inc 0.72 Az 132.30
MW : 2.03 sg
PV : 58 cP
YP : 7.5 Pa
Gel: 3.5/6
4144.6mMD 4143.7mTVD
Inc 0.54 Az 165.39
Bit # 11 out at 4167mMD
made 178m in 47.4 hrs
1-1-WT-T-X-IN-NO-CP
Bit # 12 8 1/2"
BHI Core Head, BHC606
in at 4167mMD
out at 4179.6mMD
made 12.6m in 3.8 hrs
1-1-CT-N-X-IN-PN-PR
Bit # 13 8 1/2"
BHI Core Head, BHC606
4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
LS: wh, v lt gry, frm-mod hd, blky-elong, arg lam, microxln.
SST: clr-trnsl lse Qtz gr, pred f-m, occ crs-v crs, ang-sbrndd, pr srtd
CLST: m dk gry-dk gry, frm-mod hd, sbblky-blky, non calc.
CLST: grysh blk-olv blk, mod hd, sbblky-blky, sli calc.
LS: v lt gry, frm, brit, blky, arg lam, microxln
SST: clr-transp, lse Qtz gr, vf-f, occ med, sbrndd-rndd, wl srt
SST: v dk gry, v hd, brit, arg, Qtz, clr, trnsp, vf-f, occ m, sbspher-spher, mod-wl srt, sbang-sbrnd, v strng sil cmt, loc calc cmt, mic, occ carb, dk gry-blk arg mtx, pr vis por


in at 4179.6mMD
out at 4202mMD
made 22.4m in 8.6 hrs
1-1-WT-A-X-IN-PN-PR
Bit # 13 RR 8 1/2"
BHI Core Head, BHC606
in at 4202mMD
WOB: 5-9 tons
RPM: 74-92
TRQ: 6-8 kNm
Flow: 975-1000 lpm
MW: 2.03 sg
PV: 55 cP
YP: 9 Pa
Gel: 4/8 Pa
Bit # 13 RR 8 1/2"
out at 4238mMD
made 36m in 14.6 hrs
1-1-WT-A-X-IN-PN-CP
Bit # 13 RR2 8 1/2"
BHI Core Head, BHC606
in at 4238mMD
out at 4275mMD
made 36m in 16.2 hrs
1-1-WT-A-X-IN-PN-CP
Bit # 13 RR3 8 1/2"
BHI Core Head, BHC606
in at 4275mMD
Bit #13 RR3
out @ 4304mMD
made 29m in 11.8 hrs
1-1-WT-A-X-IN-PN-PR
Bit #14 RR 8 1/2"
Hughes Christ. HCR 507 Z
5x10 2x9
in @ 4304mMD
4302.2mMD 4301.2mTVD
Inc 0.60 Az 244.26
MW: 2.04 sg
PV: 50 cP
YP: 9.5 Pa
Gel: 5/8 Pa
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
CLST: brnsh blk-olv blk,
occ gnsh blk, frm-mod hd,
pred frm, sbblky-sbplty,
lam I.P, slily calc I.P
LS: yelsh gry-lt gry, occ med
gry, frm-brit, blky, microxln,
arg lam
SST: clr-transl, lse Qz gr,
f-crs, occ v crs, sbang-sbrnnd,
mod-pr srt, Tr Pyr nods, Tr Mic
CLST: brnsh blk-olv blk, occ gry
sh blk, frm-mod hd, occ hd,
sbblky, lam, calc I.P
LS: wh-lt gry, frm-brit, blky,
microxln, arg lam
CLST: blk, hd, blky-sbblky
SST: clr-transl, hd, m-crs, sbrn
dd-rndd, mod srt
SST: Kao Cmt, lt gry-lt olv gry,
slily calc, occ clr-transl,
Qtz gr, f-v crs, sbrndd,
pr srt
SH: grysh brn-olv blk,
occ dk gnsh gry, mod hd,
amor, sbblky, calc I.P


4332.5mMD 4331.5mTVD
Inc 0.62 Az 230.64
WOB : 4-9 tons
RPM : 103-138
TRQ : 7-9 kNm
Flow: 1581-1699 lpm
4361.8mMD 4360.8mTVD
Inc 0.55 Az 230.58
MW: 2.035 sg
PV: 51 cP
YP: 8.5 Pa
Gel: 5/8.5
4418.1mMD 4417.1mTVD
Inc 0.45 Az 231.81
WOB: 6-12 tons
RPM: 89-134
TRQ: 7-11 kNm
Flow: 992-1604 lpm
MW: 2.03 sg
PV: 51 cP
YP: 9 Pa
Gel: 5.5/9
4469.2mMD 4468.2mTVD
Inc 0.42 Az 155.36
Bit #11 RR
out @ 4478.5mMD
made 174.5m in 37.7 hrs
1-2-WT-S-X-IN-NO-CP
Bit # 13RR4 8 1/2"
BHI Core Head, BHC606
in at 4478.5mMD
out at 4494mMD
made 15.5m in 8.4 hrs
1-1-WT-A-X-IN-PN-PR
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
LS: lt gry-med lt gry,
lt olv gry, frm, sbblky, arg
lam, v calc
SH: grysh blk-blk, olv blk,
frm-mod hd, blky-sbblky,
calc I.P
SH: grysh brn-olv blk,
occ dk gnsh gry, sft-mod hd,
blky-sbblky, calc I.P
SST: Kao Cmt, lt gry-lt olv
gry,slily calc, occ clr-transl,


Bit # 13RR5 8 1/2"
BHI Core Head, BHC606
in at 4494mMD
out at 4506mMD
made 12m in 6.1 hrs
1-1-WT-A-X-IN-PN-PR
Bit#14 8 1/2"
HUGHES HCM 506Z
5*10, 1*4
in at 4506mMD
4508.1mMD 4507.1mTVD
Inc 0.51 Az 138.36
WOB: 5-16 tons
RPM: 89-254
TRQ: 10-15 kNm
Flow: 995-1550 lpm
4536.3mMD 4535.3mTVD
Inc 0.43 Az 127.69
MW: 2.03 sg
PV: 51 cP
YP: 9 Pa
Gel: 5.5/9.5
4566.0mMD 4565.0mTVD
Inc 0.28 Az 118.76
4582.9 mMD 4581.9 mTVD
Inc 0.91 Az 128.27
Bit#14
Out at 4590mMD
Made 84m in 19.4 hrs
8-8-RO-T-X-IN-BT-PR
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
LS: lt gry-lt olv gry, sft-frm, sbblky, microxln, arg.
SST: gry wh, clr-trnsl Qtz,
SH: brn-brn blsh, sft-frm, sbblky-blky, slty, non calc, r micropyr
LS: lt gry-lt olv gry, frm, sbblky, microxln, arg
SST: gry wh, clr-transl, v f-v crs, pred v f-f, lse-fri, sbang-sbrndd, wl srt, gen Kao Cmt, loc calc Cmt
SH: olv blk, blk, frm-mod hd, sbblky-blky, slty, non calc