

Final Well Report

Drilling and P&A
PL110B - Well 7122/6-2



Title: FINAL WELL REPORT Drilling and P&A Licence no: PL110B Well: NO 7122/6-2		
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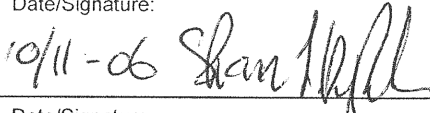
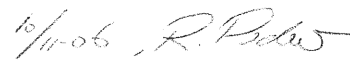
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1 General well data

Licence number: PL110B
 Well name: NO 7122/6-2
 Type of well: Exploration
 Water depth / airgap: 408 m MSL / 23 m RT
 Wellhead: Dril-Quip SS10
 Primary objective: The primary objective of well 7122/6-2 Tornerose was to prove hydrocarbons in Upper Triassic sandstones of early Carnian age in the Snadd Formation, Ingøydjupet Group. Sandstones in the Stø and Kobbe Formations are secondary targets.
 Well status: Permanently plugged and abandoned

Section	Start time	End time	Rig name
NO 7122/6-2 MOVE	09.08.2006 11:30	09.08.2006 19:30	POLAR PIONEER
NO 7122/6-2 PRESPUD	09.08.2006 19:30	10.08.2006 14:00	POLAR PIONEER
NO 7122/6-2 36"	10.08.2006 14:00	16.08.2006 20:00	POLAR PIONEER
NO 7122/6-2 17 1/2"	16.08.2006 20:00	23.08.2006 08:00	POLAR PIONEER
NO 7122/6-2 12 1/4"	23.08.2006 08:00	30.08.2006 19:00	POLAR PIONEER
NO 7122/6-2 8 1/2"	30.08.2006 19:00	14.09.2006 02:00	POLAR PIONEER
NO 7122/6-2 PERM P&A	14.09.2006 02:00	18.09.2006 09:00	POLAR PIONEER
NO 7122/6-2 MOVE	18.09.2006 09:00	19.09.2006 13:00	POLAR PIONEER

Wellhead coordinates:

Geographical coordinates:

Bredde: 71° 35' 13.54" N
 Lengde: 22° 51' 21.60" Ø

Datum: ED50
 Spheroid: INT.1924

UTM coordinates:

Northing: 7 944 098 m
 Easting: 565 426 m

UTM Zone: 34
 Central meridian: 21°E

Accuracy: ± 2-3 meter

Deviation:

1.9 meter in direction 158.3° (Grid) from intended position.

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2 Exemption data

Exception from	Report no	Date	Title
WR 0436	42262	13.09.2006	Søknad om avvik fra krav om periodisk testing av BOP hver 14nde dag
WR 0442	41727	23.06.2006	Unntak for ikke gjennomført peer review

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

3.1 RUH

Type (colour code)	Synergi code	Number of
Green	5	6
Green	4	2
Yellow	3	3
Sum		11

3.1.1 RUH details

WELLBORE: NO 7122/6-2

Synergi no	Hazard	Description
404751	3	Synergi 404751 (Closed) - 08.08.2006 - Condition - Satcom system failed to provide communication. Satcom system failed to provide communication facilities for a period of 4 days. Antenna tracking system disrupted by rig move (reason unknown). Communications blocked due to poor support control by schlumberger/DMS.
405171	3	Synergi 405171 (Closed) - 19.08.2006 - Condition - Magnetåk mangelfullt sikret. Merket risting/vibrasjon i magnetåk da det ble løftet opp. Løfteoperasjonen ble stoppet og magnetåk sjekket. Det ble oppdaget at sikringspinner for holdebolter på aktre magnet ikke var satt i. Det resulterte i at holdebolter hadde begynt å skli ut, slik at det ble vibrasjoner.
405582	3	Synergi 405582 (Closed) - 19.08.2006 - Near miss - Ukontrollert låring av borestreng. Under trekking av wellhead running tool ble strengen slakket ukontrollert ned 2-3 m slik at running tool traff wellhead. Dette kunne ha forårsaket store skader på wellhead. Clutch på drawwork slapp slik at strengen droppet ukontrollert inntil drawwork bremse ble aktivert. Clutch slapp pga stikke for drawwork speed regulator på drillers stol ikke var langt nok fremme til at den kom i inngrep når bremse for drawwork ble deaktivert. Før borer fikk aktivert bremsen hadde running toolet landet på wellhead. Strengen var hele tiden kompensert, også etter landing.
404744	4	Synergi 404744 (Closed) - 09.08.2006 - Condition - Back-up system for kommunikasjon til/fra land. Kommunikasjon mellom rigg og land - både telefon og data, er basert på kun ett satellittoppsett. Det har vært og er stadig tilbakevendende problemer med dette ved forflytting og/eller ankerkjøring - hvilket gjør at kontakten med omverdenen faller bort i kortere og lengre perioder. Dersom feil skulle oppstå på utstyret (antenne eller tuner/antennestyling) vil det antakelig fort bli flere dager uten forbindelse. Det er montert en Iridiumtelefon for nødsamtaler, men denne kan ikke benyttes til overføring av verken faks eller data.

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Synergi no	Hazard	Description
408747	4	Synergi 408747 (Closed) - 10.09.2006 - Accident - Arbeid på mud pump. Under arbeid med utskifting av mud pump 2 manifold skulle manifolden flyttes vekk. Da kom finger til arbeideren i klem mellom manifolden, som da hang på en kjettingtalje, og et flatjern som støttet gulvet ved siden. Sykepleier måtte sy sju sting på lillefingeren.
404594	5	Synergi 404594 (Closed) - 14.08.2006 - Near miss - Branntiløp Vaskeri Varme element i vaskemaskin glødde, kontaktoeren til varmeelementet hadde brent seg fast.
405583	5	Synergi 405583 (Closed) - 21.08.2006 - Accident - Pod klemme. Ved demontering av pod slange fra sadel på slip joint falt en halvdel av gummi insert ut av slange klamme og på havet. Vekt ca 300 gram. pod sadel har en utforming som tilsier at den etter all sannsynlighet dunker borti annet utstyr ved transfer til/fra slip joint. Årsak: Festebolt for insert: Dårlige gjenger, evt dårlige gjenger på klemme?
406694	5	Synergi 406694 (Closed) - 28.08.2006 - Accident - Hydraulic oil spill from ROV winch. On the ROV winch a temporary blanking plug on the high pressure side on the motor blew off. Approx. 200 litres of hydraulic oil (Tellus-46) was spilled in collection tray of the winch and on deck. The winch shut down on the emergency float switch, and ROV supervisor immediately organized cleaning up of the oil and informed the OIM. No spill to sea or in drains. The original plug had a small leak, and was changed out with a non-original plug. No spare original plug was on board. After fitting the new plug a full function test was performed. No leaks were detected.
406891	5	Synergi 406891 (In process) - 27.08.2006 - Other non-conformities - Chemical tank missing on manifest. One PP tank with Duotc NS was missing from boat manifest (Northern Corona). MI did not write on the transfer ticket the name of the vessel the tank had been loaded to. Could have resulted in down time in the event that PP tank had not been found and sent back to shore.
407580	5	Synergi 407580 (Closed) - 02.09.2006 - Other non-conformities - Lost gas data during coring of 8 1/2" section Flair data was lost between 2458 - 2472 m, 8 1/2" section on well 7122/6-2. This happened during coring of the section. The reason for this was that one of the servers in the Flair unit crashed during this operation. The Flair programs lost communication with the ALS system in the Mudlogging unit. This resulted in the lack of depth data on the Flair gas data. For this reason, the gas data was not recorded in the database. No lost time.
408117	5	Synergi 408117 (Closed) - 05.09.2006 - Accident - 7122/6-2: Skadet wireline spooler arm. Ved kjøring av styrbord forre traverskran under transport av kakseskipper fra riser dekk til stb. forre main dekk, huket en wiresling (som var festet i forre krok) i spooling arm på wireline unit. Dette medførte at spooling arm røk fra feste. Flaggmann oppdaget at wiresling huket seg opp, men fikk ikke stoppet kran i tide.

3.2 Experience listing

Subject: Tuned light (x-lite) cmt for cementing conductor

Section: NO 7122/6-2, 36"

Rep date: 02.10.2006

Keywords: CEMENTING

Downtime:

Comp inv: Halliburton

References:

Synergi no:

Synergi title:

Pot time improvements:

Cost:

Description:

Tuned light (X-Lite) cement allowed 30" conductor running tool to be retrieved as soon as the cement was displaced in place, as the low slurry weight reduces conductor buoyancy.

Immediate solution:

Future recommended solution:

Tuned light cmt slurry is recommended for cementing conductor in the future.

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Subject: Poor visibility
Section: NO 7122/6-2, 36"
Rep date: 09.10.2006
Keywords: CASING/LINER
Downtime:
Comp inv: Statoil
References:
Synergi no:
Synergi title:

Pot time improvements:

Cost:

Description:

Problems to locate well due to poor visibility at seabed. Used extra length on marker buoys, but visibility was still a problem. Attempt to stab. conductor in blind.

Immediate solution:

Future recommended solution:

Use extra length on marker buoys.

Subject: Securing PGB on transporter - Polar Pioneer
Section: NO 7122/6-2, 36"
Rep date: 14.08.2006
Keywords: CASING/LINER
Downtime:
Comp inv: Transocean
References:
Synergi no:
Synergi title:

Pot time improvements:

Cost:

Description:

The 30" conductor from Drill-quip was hung off on the BOP transporter. However, there have been earlier instances where the 30" conductor and wellhead housing has been lost to sea. In addition, the PGB in use had a gimball underneath which was not designed for large tension force. The gimball was secured to the PGB with four bolts which again is a part of the locking mechanism which will be used if the PGB were to be released separately from the 30" conductor housing. Just a 1/4 turn is necessary to unlock the gimball.

Therefore was the PGB secured the following way:

- i) A manual 5 1/2" drill pipe elevator was hung up in the BOP crane.
- ii) The 30" running tool was made up to the 30" conductor housing
- iii) The elevator was locked around the 30" running tool.
- iv) Lifted BOP crane to take 7 tons of the 30" conductor weight. Parked BOP crane.

Immediate solution:

Future recommended solution:

Subject: Tandem 36" Hole Openers run in tandem
Section: NO 7122/6-2, 36"
Rep date: 28.08.2006
Keywords: HOLE OPENING/UNDERREAMING
Downtime:
Comp inv: Statoil
References:
Synergi no:
Synergi title:

Pot time improvements:

Cost:

Description:

Experienced very hard drilling in boulders from 5 m below sea bed and all the way to TD. It proved impossible to get the 30" conductor past a tight spot/ledge at 452 m. A clean out run/wiper trip was carried out to no avail, as the second attempt to land

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the 30" conductor also failed. Eventually two 36" HO's were made up in tandem and used to ream the hole. This BHA constellation proved to give sufficient stiffness and the 30" conductor was run to TD without problems afterwards.

Immediate solution:

Future recommended solution:

If very severe boulders' drilling is experienced, the above mentioned BHA with two HO's in tandem is a possible solution.

Subject:	Bit performance	
Section:	NO 7122/6-2, 17 1/2"	
Rep date:	09.10.2006	
Keywords:	BIT	
Downtime:		Pot time improvements:
Comp inv:	Statoil	
References:		
Synergi no:		Cost:
Synergi title:		

Description:

Used rotary assembly and a milled tooth bit (IADC 115). Among the fastest ROP recorded in this region.

Immediate solution:

Future recommended solution:

Use as aggressive milled tooth bit as possible for drilling 17½" sections in future wells in similar formations.

Subject:	Hole cleaning	
Section:	NO 7122/6-2, 17 1/2"	
Rep date:	09.10.2006	
Keywords:	HOLE CLEANING	
Downtime:		Pot time improvements:
Comp inv:		
References:		
Synergi no:		Cost:
Synergi title:		

Description:

Drilled 17 1/2" hole from 481 m to 1104.5 m using sea water and high viscous pills. Pumped 2 x 15 m3 high visc pills per stand, last pill timed to be at bit at stand down. Reamed each stand prior to connection. Pump rate 5000 lpm, SPP 200 bar, rotation 150 rpm, torque 5-8 kNm, WOB 5-15 MT. Max ECD 1.05 sg

Immediate solution:

Future recommended solution:

For drilling top hole sections with SW and hi-vis pills in the Barents Sea region, the Snøhvit project's hole cleaning practices are recommended.

Subject:	Tight hole when POOH (20 T overpull)	
Section:	NO 7122/6-2, 17 1/2"	
Rep date:	19.08.2006	
Keywords:	FRICTION FORCES	
Downtime:		Pot time improvements:
Comp inv:	Baker Hughes Inteq	
References:		
Synergi no:		Cost:
Synergi title:		

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Description:

When POOH 20 ton over pull was noticed all the way. Had to work several tight spots. Stabilizer on the premaked BHA assy was a "screw on" (had sharp edges that made high friction forces when POOH). In the future it is recommended to use tapered stabilizers.

Immediate solution:

Future recommended solution:

Use stabilizers with tapered ends.

Subject: Jetlube SealGuard ECF casing dope

Section: NO 7122/6-2, 17 1/2"

Rep date: 20.08.2006

Keywords: CASING/LINER

Downtime:

Pot time improvements:

Comp inv: Weatherford Norge AS

References:

Synergi no:

Cost:

Synergi title:

Description:

Jetlube SealGuard ECF casing dope ble brukt under kjøring av 20" x 13 3/8" casing. Sammenskruing gikk uten problemer. Ingen rør ble kjørt på nytt. Været var fint slik at riggen ikke hadde noe bevegelse. Derfor bør en gjøre erfaringer under vanskeligere forhold før en kan si at dopet holder mål. Problemet med miljødope er ofte at det ikke smører tilstrekkelig når det blir friksjon og varme i gjengene.

Immediate solution:

Future recommended solution:

Subject: Motor in 12 1/4" section

Section: NO 7122/6-2, 12 1/4"

Rep date: 09.10.2006

Keywords: BHA

Downtime:

Pot time improvements:

Comp inv:

References:

Synergi no:

Cost:

Synergi title:

Description:

Drill 12 1/4" to top of reservoir at 2044 m using motor assembly and KCl/glycol/polymer based drilling fluid. Motor drilling severely increased rate of penetration. Fastest ROP's recorded in this region using WBM (held back to 20 m/hr due to data acquisition).

Immediate solution:

Future recommended solution:

Use of motor is recommended for drilling this section in future wells.

Subject: 9 5/8 liner

Section: NO 7122/6-2, 12 1/4"

Rep date: 09.10.2006

Keywords: CASING/LINER

Downtime:

Pot time improvements:

Comp inv: Statoil

References:

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Synergi title:

Cost:

Description:
Using a 9 5/8" liner instead of casing made P&A easier.

Immediate solution:

Future recommended solution:

Subject: MWD Stab design
Section: NO 7122/6-2, 12 1/4"
Rep date: 28.08.2006
Keywords: BHA
Downtime:
Comp inv:
References:
Synergi no:
Synergi title:

Pot time improvements:

Cost:

Description:
See attached word document for pictures. This MWD stab has a very wide body and narrow waterways, increasing the potential for clogging. Consequences were problems tripping out of the well.
Immediate solution:

Future recommended solution:
Have a good stabilizer design with respect to flow by area is important

Subject: BOP test tool
Section: NO 7122/6-2, 12 1/4"
Rep date: 30.08.2006
Keywords: BOP/WB/BP
Downtime:
Comp inv:
References:
Synergi no:
Synergi title:

Pot time improvements:

Cost:

Description:
It was not possible to test lower pipe ram on BOP with Dril-Quip BOP tool. Reason being position of tool joint coming in conflict with LPR. Correct space-out should be checked in planning phase.
Immediate solution:
Tested LPR on DP against well (cemented 9 5/8" liner) after running 8 1/2" BHA through BOP and down to 1000 m. This test was taken after shear ram had been tested against well.
Future recommended solution:
Correct space-out of test tool should be checked in planning phase.

Subject: Bit performance in 8 1/2" section
Section: NO 7122/6-2, 8 1/2"
Rep date: 03.09.2006
Keywords: BIT
Downtime:
Comp inv: Statoil
References:
Synergi no:

Pot time improvements:

Cost:

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Description:

Drilled 8 1/2" hole from 2043 m to 2452 m with a 8 1/2" Smith PDC bit - type MRS616LGEBPX (IADC 223), nozzles: 3 x 12, 3 x 11, TFA 0,6, Rotary assembly. Parameters: 2000 lpm, 140 bar, 100 - 150 rpm, 3 - 12 kNm, 5 - 8 ton, Average ROP 17.7 m/hr. Grading: 2 1 BT N X I NO CP. See separate bit report for details.

Drilled 8 1/2" hole from 2506 to 3000 m with a Hughes Christensen HCM507Z (IADC: M323), nozzles 7 x 11/32", TFA = 0.650 in². Rotary assembly. Parameters: 2000 lpm, 155 bar, 140 - 150 RPM, 5 - 10 ton, 6 - 18 kNM, Average ROP 20.2 m/h. Dull grading 1-1-NO-A-X-I-NO-TD.

ROP was held back to maximum 30 m/hr instantaneous due to logging requirements.

Immediate solution:

Future recommended solution:

Subject: Coring performance

Section: NO 7122/6-2, 8 1/2"

Rep date: 03.09.2006

Keywords: CORING

Downtime:

Pot time improvements:

Comp inv: Baker Hughes Inteq

References:

Synergi no:

Cost:

Synergi title:

Description:

Cut core from 2452 m to 2506 m, 1000 lpm, 65 bar, 60 - 90 rpm, 4 - 10 kNm, 2 - 8 tons. Max gas 3%. Rop: 14 m/hr, WOB: 5 ton, Coring time 3,9 hours, 100% recovery. See attachment for more details

Immediate solution:

Future recommended solution:

Subject: Wireline logging performance

Section: NO 7122/6-2, 8 1/2"

Rep date: 17.09.2006

Keywords: LOGGING/EVALUATION

Downtime:

Pot time improvements:

Comp inv: Schlumberger

References:

Synergi no:

Cost:

Synergi title:

Description:

While wireline logging the 8 1/2" open hole section (2043 -3070 m RKB) was exposed for 135 hours static. No hole problems encountered when plugging back open hole section. 1.28 sg. KCl / Glycol WBM was used in this section.

Immediate solution:

Future recommended solution:

KCl / Glycol water based mud is recommended for drilling this section in future wells in this area.

Subject: Used perforated cmt stinger when pumping CST and dart.

Section: NO 7122/6-2, PERM P&A

Rep date: 17.09.2006

Keywords: CEMENT PLUG

Downtime:

Pot time improvements:

Comp inv: Statoil

References:

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Cost:

Description:

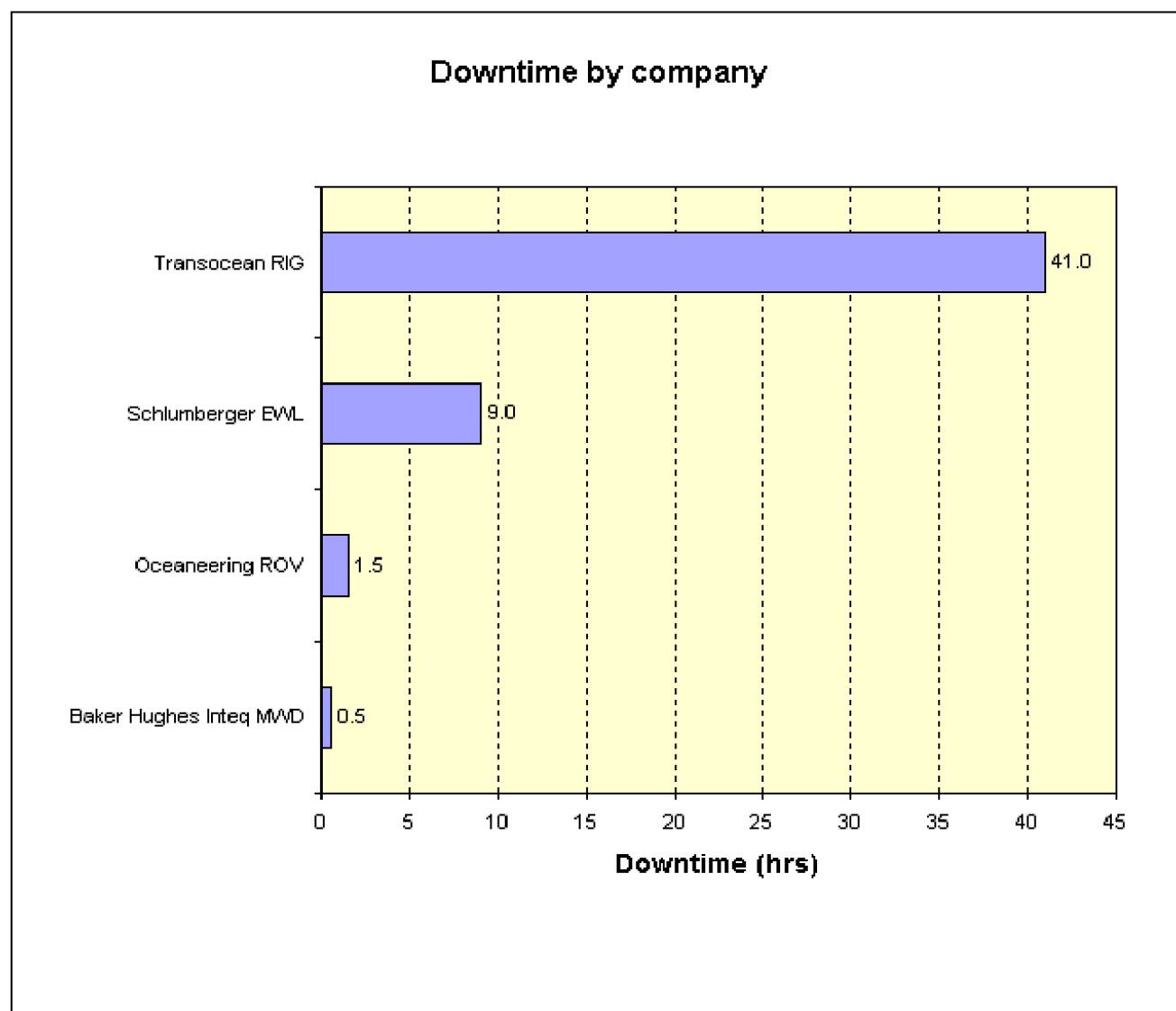
When plugging back 8½" open hole section with 4 cmt plugs, a 3½" perforated cement stinger was used. As seat for the bottom plug a CST was used. The CST was pumped down the 5½" x 3½" DP followed by a dart. When POOH dart and several sponge balls was found plugged in the perforated cmt stinger approx. 50 cm from bottom (see attached doc). When dart reached the perforated stinger cmt and mud flow choose the easiest way through the first perforations, hence the pressure over dart decreased and the dart got stuck. Worst case would be if the perforated area on cmt stinger had been longer the dart would get stuck further up in the cmt stinger. If that had happened the CST would stop inside the cmt. stinger and not reached open hole.

Immediate solution:

Future recommended solution:

It is not recommended to use perforated cmt stingers when pumping CST and dart.

3.3 Incidents by service and company



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SERVICE COMPANY: Electric Wireline Logging EWL Schlumberger
WELLBORE: NO 7122/6-2

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
11.09.2006 00:00:00	EWL-E03 Acquisition/Computers	409644	Logging computer locked up	173800	4171200	1,0	100	1,0
11.09.2006 18:00:00	EWL-E06 D/H Mechanical equipment	409186	7122/6-2: MSCT tool failure.	1042800	4171200	6,0	100	6,0
12.09.2006 01:30:00	EWL-01 Procedure	409187	7122/6-2: Logging configuration.	86900	4171200	0,5	100	0,5
13.09.2006 14:00:00	EWL-E02 Auxiliary mechanical	409392	Lost power to MSCT wireline tool.	260700	4171200	1,5	100	1,5
			Total	1564200				9,0

SERVICE COMPANY: Measurement While Drilling MWD Baker Hughes Inteq
WELLBORE: NO 7122/6-2

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
04.09.2006 00:00:00	MWD-E24 Surface equipment	407818	Reboot of computers	86900	4171200	0,5	100	0,5
			Total	86900				0,5

SERVICE COMPANY: ROV Systems ROV Oceaneering
WELLBORE: NO 7122/6-2

Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
14.08.2006 17:00:00	ROV-E02 Propulsion	404746	Lost ROV manoeuvring.	260700	4171200	1,5	100	1,5
			Total	260700				1,5

SERVICE COMPANY: Rig Operations RIG Transocean
WELLBORE: NO 7122/6-2

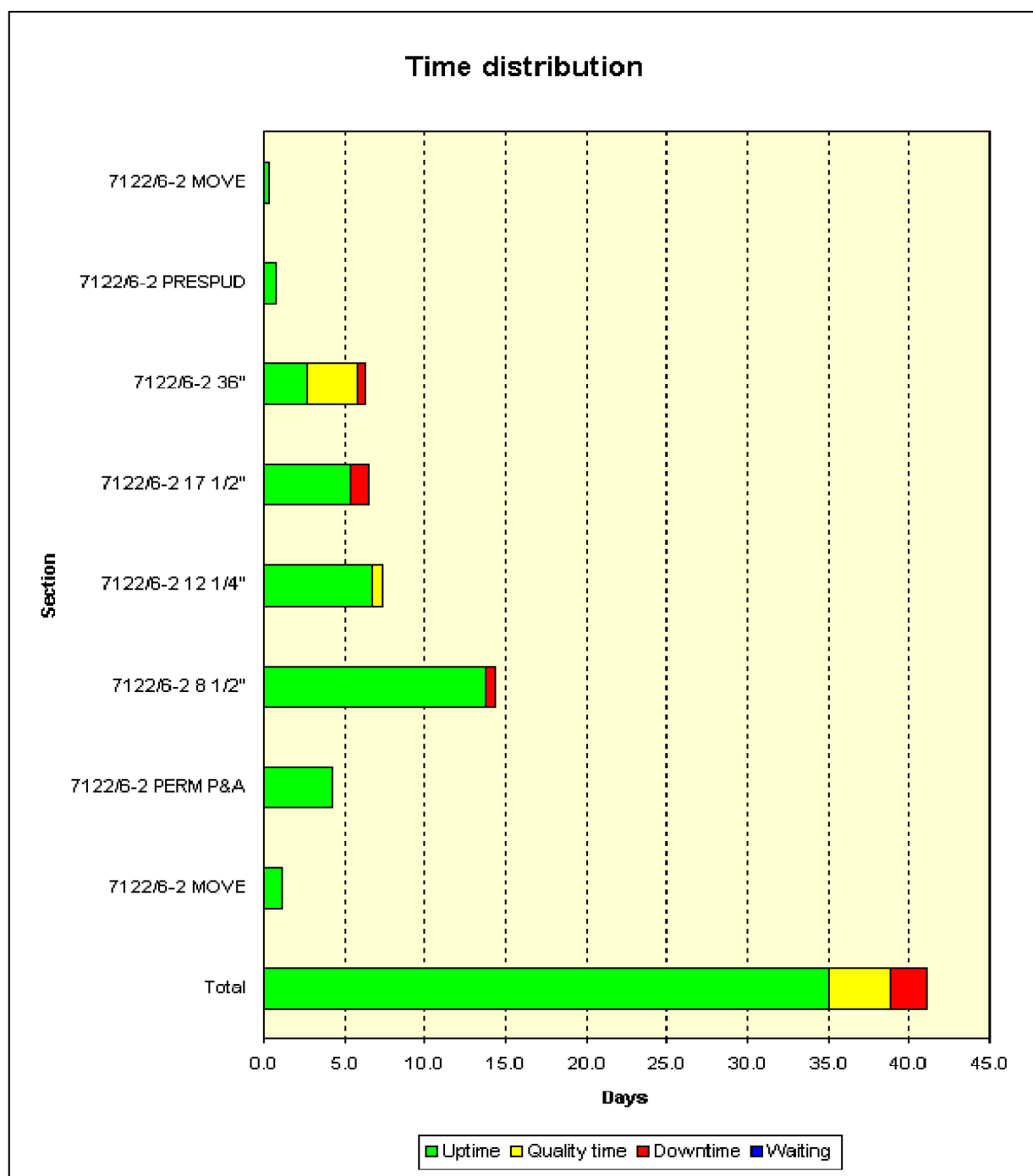
Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
14.08.2006 06:00:00	RIG-E10 Drawwork	404745	Drawwork high clutch	956000	4171636	5,5	100	5,5

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Incident start time	Failure code	Synergi no	Title	Quality cost		Downtime		
				NOK	NOK/d	Total hrs	Comp share %	Comp share hrs
15.08.2006 12:00:00	RIG-E10 Drawwork	405039	Drawwork parking brake	521400	4171200	3,0	100	3,0
19.08.2006 01:30:00	RIG-E348 Slips	405170	PS 30 slips dressed with wrong type of dies.	86900	4171200	0,5	100	0,5
21.08.2006 00:00:00	RIG-01 Procedure	406036	Kjørte en Riser for lite	1303500	3680471	8,5	100	8,5
21.08.2006 07:00:00	RIG-E314 Tensioning system	406037	Kill Stab	3041500	4171200	17,5	100	17,5
22.08.2006 22:00:00	RIG-E07 Top drive	406035	Knekt Hydraulisk kobling på DDM	86900	4171200	0,5	100	0,5
24.08.2006 10:00:00	RIG-E07 Top drive	406688	DDM slangebrudd	86900	4171200	0,5	100	0,5
26.08.2006 00:00:00	RIG-E341 Vert pipe handling system	406686	Slange upper racking arm	260700	4171200	1,5	100	1,5
29.08.2006 06:00:00	RIG-E347 Pipe handling equ/sys other	407092	Vertical EDM	86900	4171200	0,5	100	0,5
02.09.2006 00:00:00	RIG-03 Procedure not followed	407487	DP stand under øvre bu.	86900	4171200	0,5	100	0,5
06.09.2006 22:00:00	RIG-E347 Pipe handling equ/sys other	408565	7122/6-2: Ødelagt fittings på BX-elevator	86900	4171200	0,5	100	0,5
07.09.2006 03:00:00	RIG-03 Procedure not followed	408565	7122/6-2: Ødelagt fittings på BX-elevator	86900	2085600	1,0	100	1,0
09.09.2006 00:00:00	RIG-E06 Deck crane	408567	7122/6-2: STB FWD traverse crane.	86900	4171200	0,5	100	0,5
15.09.2006 05:00:00	RIG-E06 Deck crane	409845	7122/6-2: STB Aktre Traverse kran.	86000	4128000	0,5	100	0,5
			Total	6864300				41,0

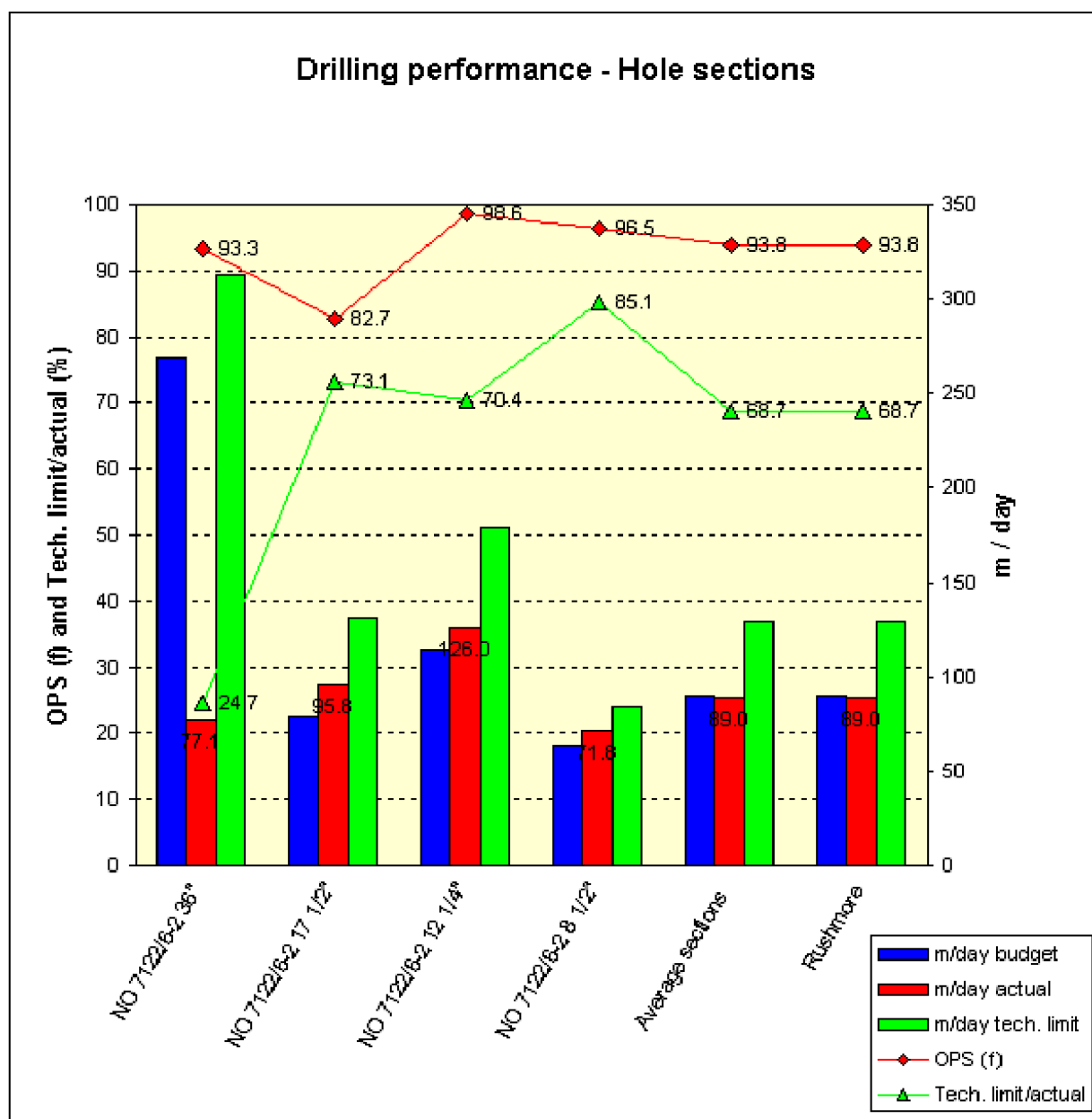
3.4 Time distribution

Section	Start time	Length m	Budget		TL		Actual		Ops (f)
			hrs	days	hrs	days	hrs	days	
NO 7122/6-2 MOVE	09.08.2006 11:30	0,0	10,0	0,4	6,0	0,3	8,0	0,3	100,0
NO 7122/6-2 PRESPUD	09.08.2006 19:30	431,0	38,0	1,6	24,0	1,0	18,5	0,8	100,0
NO 7122/6-2 36"	10.08.2006 14:00	482,0	43,0	1,8	37,0	1,5	150,0	6,3	93,3
NO 7122/6-2 17 1/2"	16.08.2006 20:00	622,5	188,0	7,8	114,0	4,8	156,0	6,5	82,7
NO 7122/6-2 12 1/4"	23.08.2006 08:00	939,5	197,0	8,2	126,0	5,3	179,0	7,5	98,6
NO 7122/6-2 8 1/2"	30.08.2006 19:00	1026,0	389,0	16,2	292,0	12,2	343,0	14,3	96,5
NO 7122/6-2 PERM P&A	14.09.2006 02:00	0,0	137,0	5,7	77,0	3,2	103,0	4,3	99,5
NO 7122/6-2 MOVE	18.09.2006 09:00	0,0	20,0	0,8	5,0	0,2	28,0	1,2	100,0
Sum			1022,0	42,5	681,0	28,5	985,5	41,2	



The graph above is based on the following details:

Section	Downtime	Uptime	Quality time	Waiting time	Total time
7122/6-2 MOVE	0,0	0,3	0,0	0,0	0,3
7122/6-2 PRESPUD	0,0	0,8	0,0	0,0	0,8
7122/6-2 36"	0,4	2,7	3,1	0,0	6,3
7122/6-2 17 1/2"	1,1	5,4	0,0	0,0	6,5
7122/6-2 12 1/4"	0,1	6,7	0,7	0,0	7,5
7122/6-2 8 1/2"	0,5	13,7	0,1	0,0	14,3
7122/6-2 PERM P&A	0,0	4,3	0,0	0,0	4,3
7122/6-2 MOVE	0,0	1,2	0,0	0,0	1,2
Total	2,2	35,0	3,9	0,0	41,1



3.5 Cost

Project kind	WBS	Currency	Budget	Actual cost
Planning	T.O110B.AP.20110	NOK	12 968 697	13 584 636
Drilling	T.O110B.AP.20120	NOK	166 758 147	161 216 208
Rig mob/demob, P&A	T.O110B.AP.20130	NOK	20 000 000	20 000 000
Total			199 726 844	194 800 844

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4 Activity highlights

4.1 NO 7122/6-2, MOVE (09.08.2006 11:30)

START: 09.08.2006 11:30 0 mMD

END : 09.08.2006 19:30 0 mMD

OBJECTIVE

Move rig from Snøhvit to Tornerose location.

SUMMARY

Move rig from Snøhvit well 7121/4-F-2 H to 7122/6-2 Tornerose well location. Distance sailed: 34 nm. Total hours: 8hr. Average speed 4 knots. The rig was towed by Nothern Corona and Olympic Poseidon in anchor chains no. 1 and 8. Mærsk Asserter followed in chain no. 5.

4.2 NO 7122/6-2, PRESPUD (09.08.2006 19:30)

START: 09.08.2006 19:30 0 mMD

END : 10.08.2006 14:00 431 mMD

OBJECTIVE

Run anchors and ballast rig.

SUMMARY

Position and ballast rig to drilling draft. Deploy 8 anchors. Time used: 12 hr. Vessels used: Olympic Poseidon, Mærsk Asserter and Nothern Corona. M/U 36" BHA. RIH to seabed. Mix bentonite mud.

4.3 NO 7122/6-2, 36" (10.08.2006 14:00)

START: 10.08.2006 14:00 0 mMD

END : 16.08.2006 20:00 482 mMD

OBJECTIVE

Drill 17½" x 26" x 36" hole to 482 m, run 30" conductor and PGB. Cement same with tuned light cement.

SUMMARY

Drilled 17½" x 26" x 36" hole to 481 m; severe boulders. Displaced hole to 1.35 sg displacement fluid prior to POOH. R/U casing equipment, stood up on obstruction at 452 m. Attempted to work pipe free. No go. POOH with conductor and PGB. RIH with back up BHA, ream through ledge, continued to TD and drilled 1 meter new formation. Displaced well to 1.45 sg mud. POOH. RIH with 30" conductor, stood up on same obstruction at 352 m. POOH. M/U dual HO assy. Poor visibility, managed to enter hole after ca. 19 hrs. Reamed 17½" x 26" x 36" hole to TD at 482 meter. Displaced well to 1.45 sg mud. POOH. Again experienced problems to locate well due to poor visibility. Attempt to stab. conductor in blind. Managed to enter hole after approx. 6 hours. RIH with 30" conductor and land on 26" shoulder (479 meter). Took 5 ton weight at 452 m which increased to 11 ton at 479 m. Pumped 46.5 m3 Tuned Light cement. Verified 2.5 meter stick up with ROV.

BIT RUNS

Both Andersdrift and HO worked fine.

DRILLING FLUID

Seawater and havis bentonite sweeps. Displacement fluid: 1.35 - 1.45 sg bentonite mud. Increased MW due to hole problems.

CASING

Ran 4 joints 30" conductor and PGB; 1 shoe joint, 2 intermediate joints and 1 housing joint.

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MWD/BHA

No problems with the Anderdrift tool.

CEMENTING

Pulled conductor 1 m up from bottom. Circ 30 m3 SW using 4000l/min. Mixed and pumped 46.5 m3 1.52 sg. Tuned light slurry. Displaced cement using 11 m3 SW. Set 30" conductor on bottom with 28 ton, bulls eye 0,75 and 1,0 deg. Measured stick up to be 2,5 m using ROV.

4.4 NO 7122/6-2, 17 1/2" (16.08.2006 20:00)

START: 16.08.2006 20:00 482 mMD

END : 23.08.2006 08:00 1104.5 mMD

OBJECTIVE

Drill 17 1/2" hole from 30" conductor shoe to approx. 1106 meter. Run and cement 13 3/8" casing.

SUMMARY

Tagged cmt in 30" conductor shoe at 476meter, and cleaned out rathole. The 17 1/2" hole was drilled to TD at 1104,5 mMD in one run. A pump rate of 5000 lpm was used throughout the section. The hole was swept with 2 x 15 m3 havis pills on each stand, and each stand was reamed prior to connection. The last pill was timed to be out of bit at stand down. Drilling parameters: SPP: 190 - 200 bar; rotation 130 - 180 rpm; torque 4 - 10 kNm; WOB 7 - 20 MT; Max ECD 1,08 sg.

At TD, the hole was swept with one 15 m3 havis pill, followed by 10 m3 SW, then another 20 m3 havis pill was swept trough hole, followed by 10 m3 SW and one 40 m3 havis pill. Then the hole was circulated clean before displacing to 1.35 sg Sildril inhibitive mud.

When POOH, 20 ton overpull was registrated all the way. Had to work several tight spots. It is supposed that a stabilizer on the premaked BHA was responsible for that (see experiences).

No problems while running casing - hole in good conditions.

BIT RUNS

A Hughes Christensen MX-ST31 IADC 115 milled tooth bit was used. See separate bit report for details.

DRILLING FLUID

Seawater and havis bentonite pills. Displacement fluid: 1.35 sg Sildril mud (silicate mud).

CASING

Ran 13 3/8" csg. to 1098 m MD with 6 m rathole. 1 shoe joint, 1 intermediate joint, 1 float joint, 1 no-cross joint, one 18 3/4" x 13 3/8" well head housing joint and 53 casing joints. Total 58 joints. No joints laid out. Pressure tested casing to 175 bar.

MWD/BHA

A premade OnTrak assembly was run, without any problems. See separate BHA reports for details.

CEMENTING

60 m3 1.56 sg lead slurry @ 1200lpm and 15 m3 1.92 sg tail slurry @ 800 lpm was pumped as per plan without incidents. Pump pressure lead: 40 bar and tail: 30 bar. Displaced cement with seawater at 3000 lpm. The plug was bumped with 72 bar and 1500 lpm after 2504 strokes. Pump efficiency on displacement was 98%.

4.5 NO 7122/6-2, 12 1/4" (23.08.2006 08:00)

START: 23.08.2006 08:00 1104.5 mMD

END : 30.08.2006 19:00 2044 mMD

OBJECTIVE

Drill 12 1/4" hole from the 13 3/8" casing shoe to section TD @ 2044m.

Run and cement 9 5/8" liner with shoe in the Hekkingen formation. The casing shall seal of the possible unstable shales in the Kolmule, Kolje, Knurr and Hekkingen formations.

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SUMMARY

Cleaned rathole and drilled new formation from 1104.5 m to 1107 m and performed a FIT to 1.50 sg EMW. Then drilled to 2044m without problems. Due to indications of targeted formation the section TD was adjusted to this depth. Drilling parameters: WOB 2-10 tons, 3000-3500 lpm, 140-150 rpm, torque 4-17 kNm, Max ECD 1,35 sg.

Had problems with well not taking correct amount of fluid when POOH. Lubricated out of hole to 1484m. Lost circulation and reamed down to 1490m where circulation where regained. Reamed down to 1524m, then backreamed out to 651m. Flow checked before backreaming to BOP and POOH. When inspecting the BHA, it was concluded that the problems was likely to occur from a bad designed MWD Stab. that made it clog and restrict waterways downhole (ref experience listing for this well - 7122/6-2).

MU and RIH with 9 5/8" liner to 2043 m. Tight spots at 2020m and 2029m. At TD, liner was lifted 1m of bottom and hanger was set at 1039 m RKB. Then the liner was cemented and packer was set and pressure tested to 225 bar. No problems while setting hanger and packer or while cementing.

BIT RUNS

A 12 1/4" Reed Hycolog, RSX516S / IADC S322 was used as primary bit in this section. The section was drilled with one bit run. IADC Dull grading: 1 3 WT G X 2 LT TD (2 lost cutters). See separate bit report for details.

DRILLING FLUID

1.28 sg low sulphate Glydril / KCl mud was used in this section. No problems. Sulphate measurement interval: 100 -125 mg/l.

CASING

Ran 9 5/8" liner to 2043m with 1m rathole. 1 shoejoint, 1 intermediate joint, 1 float joint and 80 casing joints. Total 83 joints. Top of liner is at 1039m. Pressure tested liner to 225 bar.

MWD/BHA

A premade OnTrak assembly with a BHI Extreme motor w/ 0.8 degrees was run. Had problems while POOH because of tight waterways past a MWD Stab. See experience listing regarding this. See separate BHA reports for details.

CEMENTING

After pumping spacer, the bottom SSR dart was dropped followed by 17,3 m3 1.90 sg cement at 800 lpm with full returns. Dropped upper SSR dart and displaced cement with approx. 47,5 m3 mud at 2000 lpm with loss rate 970 lpm. Bumped plug with 2900 stks / 122 bar. Pump efficiency; 98.1%.

4.6 NO 7122/6-2, 8 1/2" (30.08.2006 19:00)

START: 30.08.2006 19:00 2044 mMD

END : 14.09.2006 02:00 3070 mMD

OBJECTIVE

Drill and core 8 1/2" hole according to coring program. Perform wireline logging.

SUMMARY

Tagged 9 5/8" cement/ plug @ 2015 meter. Drilled plugs, shoe track and 2 meter new formation to 2046 m. Adjusted mud weight to 1.28 sg. while drilling shoe track. Performed a FIT to 1.50 sg (EMW - 44 bar). Drilled to first possible coring point @ 2052 m with ROP limited to max 20 m/hr. Circulated B/U, max gas 8,4%. Checked logs and samples. Decided to drill ahead with following parameters: WOB 3-8 tons, 2000 lpm, 135-150 rpm, torque 3-12 kNm, 140 bar, Max ECD 1,41 sg, max ROP restricted to 20 m/ hr. Observed max 13% gas-in-mud peak @ 2392 meter, circulated for 20 min and decided to drill further. Observed 1.5 m3 gain at 2425 m, flow checked well 10 min - well stable. Drilled to 2452 and observed max gas-in-mud 12%. Decided to POOH for coring run. Observed 10 ton overpull @ 2409 m, otherwise hole in good condition.

RIH with 54 m coring assy. and cut core from 2452 to 2506 m. Max gas 3 % (2465 lag depth). POOH with coring assy. at limited speed.

RIH with a new Hughes Christensen pdc bit. Drilled to TD @ 3000 meter with following parameters: WOB 5-10 tons, 2000 lpm, 140-150 rpm, torque 6-18 kNm, 155 bar, Max ECD 1.45 sg, max ROP restricted to 30 m/ hr. No sign of Kobbé sand. Circulated well clean with 3 x B/U. POOH for wireline logging. Tight spot from 2500 - 2450 meters (max 16 ton).

RIH with PEX_HRLA_ECS_HNGR_CMV. POOH AND R/D WL. Decided to drill ahead. RIH with same HC bit and drilled to 3070 meters (max gas 2.5%). POOH. R/U WL and perform a total of 8 runs.

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BIT RUNS

A Smith MRS616LGEBPX / IADC M223 was used to drill the 9 5/8" shoe track and down to first coring point @ 2452 m. Nozzles: 3x11, 3x12 - TFA: 0,610. IADC Dull grading: 2 1 BT N X I NO CP.

For the coring run a Hughes Christensen bit was used (BHC606).

A Hughes Christensen bit type HCM507Z / IADC M323 was used from 2506 m to section TD @ 3070 meter. Nozzles: 7x11 - TFA: 0,650. IADC dull grading: 1-1-NO-A-X-I-NO-TD. For more bit info, see separate bit sheet.

DRILLING FLUID

1.28 sg. low sulphate Glydril (KCl) water based mud was used in this section (same as 12 1/4" section).

Sulphate measurement interval: 167 -195 mg/l.

CASING

No casing in this section.

MWD/BHA

A premade OnTrak assembly with a core point finder was run, without any problems. See separate BHA reports for details.

CEMENTING

No cement job in this section.

LOGGING

Run 1: PEX_HRLA_ECS_HNGR_CMV

Run 2: PEX_HRLA (after new TD of well)

Run 3: MSIP_FMI

Run 4: MDT Pretest and water sampling

Run 5: MDT Dual packer - sampling and mini DST

Run 6: VSP - zero offset

Run 7: MSCT - sidewall cores misrun

Run 8: MDT Dual packer sampling and pretest

Run 9: MSCT sidewall coring

4.7 NO 7122/6-2, PERM P&A (14.09.2006 02:00)

START: 14.09.2006 02:00 3070 mMD

END : 18.09.2006 09:00 3070 mMD

OBJECTIVE

Permanently plug back the 8 1/2" section by setting four balanced cement plugs on top of an CST ("umbrella") in the open hole from 2970m (100m above TD @ 3070m) to 1843 meter, 200m inside the 9 5/8" liner. Set 13 3/8" EZSV at 680m MD and place a 200m cement plug on top of the EZSV bridge plug. Cut and retrieve 20" x 30" conductor and PGB.

SUMMARY

RIH with cmt. stinger on 3 1/2" x 5 1/2" DP to 2970 meter. Circulated B/U until gas < 2% (max: 46%). Plugged back 8 1/2" open hole section with 4 ea. balanced plugs (2970 - 2690m; 2680 - 2400m; 2390 - 2110m; 2100 - 1843m). POOH with cement stinger on 3 1/2" x 5 1/2" DP. Pressure tested cement plug to 153 bar. RIH and set 13 3/8" EZSV at 680 m. Pressure tested EZSV to 100 bar. Spotted 200 m 1.90 sg cement plug on top of EZSV. POOH. RIH with WBRRT, pulled wear bushing, POOH. Pulled BOP/riser. Cut and retrieved PGB and 20" x 30" wellhead

4.8 NO 7122/6-2, MOVE (18.09.2006 09:00)

START: 18.09.2006 09:00 0 mMD

END : 19.09.2006 13:00 0 mMD

OBJECTIVE

Deballast rig and pull anchors.

SUMMARY

Deballasted rig and pulled 8 anchors. Transferred rig to Eni.

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5 Formation evaluation

5.1 Coring summary

WELLBORE ID: NO 7122/6-2

Cored interval m MD	m	Rec %	Cbbl length m	Core Head type	ROP m/hr	RPM	LPM	Remarks
2452 / 2506	54,7	101,2	54,0	HT-30 / BHC 606	14,0	90	1000	

5.2 Pressure points

MDT pre-test run 2a

Test no	Depth m MD RKB	Depth m TVD RKB	Meter TVD MSL	Hyrostatic pressure before (bar)	Formation pressure (bar)	Hyrostatic pressure after (bar)	Formation	Comments
1	2759.8	2759.5	2736.5	351.200		351.30	Carn	Tight
2	2715.9	2715.6	2692.6	345.54		345.64	Carn	Tight
3	2646.8	2646.5	2623.5	336.95		336.97	Carn	Tight
4	2645.0	2644.7	2621.7	336.70		336.70	Carn	Tight
5	2582.0	2581.7	2558.7	328.70		328.90	Carn	Tight
6	2542.0	2541.8	2518.8	323.72		323.77	Carn	Tight
7	2532.9	2532.7	2509.7	322.56		322.6	Carn	Tight
8	2533.1	2532.9	2509.9	322.63	275.16	322.60	Carn	Good
9	2528.0	2527.8	2504.8	321.92		321.96	Carn	Tight - seal leaking
10	2526.0	2525.8	2502.8	321.67		321.69	Carn	Tight
11	2525.9	2525.7	2502.7	321.67		321.69	Carn	Tight
12	2467.0	2466.8	2443.8	314.24	277.486	314.24	Carn	Stable/supercharged.
13	2452.3	2452.1	2429.1	312.28	268.489	312.40	Carn	Not stable
14	2452.3	2452.1	2429.1	312.34	268.36	312.39	Carn	Not stable
15	2450.0	2449.8	2426.8	312.09		312.11	Carn	Tight/supercharged
16	2448.5	2448.3	2425.3	311.89		311.94	Carn	Supercharged
17	2397.3	2397.1	2374.1	305.50		305.56	Snadd	Tight/supercharged
18	2395.9	2395.7	2372.7	305.37		305.39	Snadd	Tight/supercharged
19	2393.3	2393.1	2370.1	305.05	262.50	305.11	Snadd	Not stable
20	2393.2	2393.0	2370.0	305.07	262.80	305.13	Snadd	Good
21	2220.3	2220.1	2197.1	283.27		283.46	Snadd	Tight
22	2206.7	2206.6	2183.6	281.638		281.74	Snadd	Tight
23	2228.9	2228.7	2205.7	284.55		284.58	Snadd	Tight
24	2155.0	2154.9	2131.9	275.175	236.01	275.27	Fruholmen	Good
25	2136.0	2135.9	2112.9	272.8	233.92	272.88	Fruholmen	Good
26	2126.9	2126.8	2103.8	271.7	232.97	271.73	Fruholmen	Good
27	2108.1	2108.0	2085.0	269.3	230.93	269.37	Nordmela	Good
28	2087.5	2087.4	2064.4	266.719	228.68	266.77	Stø	Good
29	2080.6	2080.5	2057.5	265.881	227.94	265.90	Stø	Good
30	2073.9	2073.8	2050.8	264.997	227.22	265.05	Stø	Good
31	2067.0	2066.9	2043.9	264.132	226.48	264.18	Stø	Good
32	2062.0	2061.9	2038.9	263.497	225.95	263.54	Stø	Good
33	2060.3	2060.2	2037.2	263.294	225.76	263.33	Stø	Good
34	2057.5	2057.4	2034.4	262.945	225.46	262.98	Stø	Good

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35	2055.0	2054.9	2031.9	262.616	225.45	262.65	Stø	Good
36	2051.1	2051.0	2028.0	262.124	224.83	262.12	Stø	Good
37	2050.0	2049.9	2026.9	261.962	224.72	261.99	Stø	Good
38	2055.0	2054.9	2031.9	262.66	225.44	262.61	Stø	Good
39	2052.2	2052.1	2029.1	262.204	225.02	262.24	Stø	Good
40	2695.5	2695.2	2672.2	343.473	288.87	288.855	Carn	Unstable pressure.
41	2050.0	2049.9	2026.9	261.84	224.68	261.855	Stø	Good sample

MDT pre-test run 2b

Test no	Depth m MD RKB	Depth m TVD RKB	Meter TVD MSL	Hyrostatic pressure before (bar)	Formation pressure (bar)	Hyrostatic pressure after (bar)	Formation	Comments
1	2393.4	2393.2	2370.2	304.81	259.40	304	Snadd	Pretest, sampling
2	2452.4	2452.2	2429.2	312.76	255.45	312.57	Carn	Pretest, sampling

MDT pre-test run 2c

Test no	Depth m MD RKB	Depth m TVD RKB	Meter TVD MSL	Hyrostatic pressure before (bar)	Formation pressure (bar)	Hyrostatic pressure after (bar)	Formation	Comments
1	2533.4	2533.2	2510.2				Carn	Sampling point, no pretest
2	2695.5	2695.2	2672.2	340.3		384.384	Carn	Sampling point, no pretest
3	3027.1	3026.7	3003.7	384.7		384.916	Kobbe	Tight
4	3032	3031.6	3008.6	385.102		385.003	Kobbe	Tight
5	3033.1	3032.7	3009.7	385.088		385.125	Kobbe	Tight
6	3034	3033.6	3010.6	385.162		385.661	Kobbe	Tight
7	3037.5	3037.1	3014.1	385.647		384.384	Kobbe	Tight

5.3 Geological formation tops

This is just preliminary formation tops. Final formation tops will be decided when the result of Biostrat is recorded.

Formation	Actual m MD RKB	Actual m TVD RKB	Prognosed m MD RKB	Prognosed m TVD RKB	Deviation m TVD +shallow / -deep
Kveite Fm	790	790	785	785	-5m
Kolmule Fm	852	852	945	945	+93m
Kolje	1623	1623	1640	1640	+17m
Knurr	1875	1875	1875	1875	0
Hekkingen	1936	1936	1990	1990	+54m
Stø	2047,5	2046,4	2075	2075	+28,5m
Nordmela	2088	2087,8			
Tubåen	2103,5	2102,8			
Fruholmen	2113	2112,8	2125	2125	+12,2m
Snadd	2202	2201,8	2220	2220	+18,2m
Carnian Sst.	2387	2386,8	2420	2420	+33,2m
Kobbe Fm.	3005	3004,8	2920	2920	+81,2m

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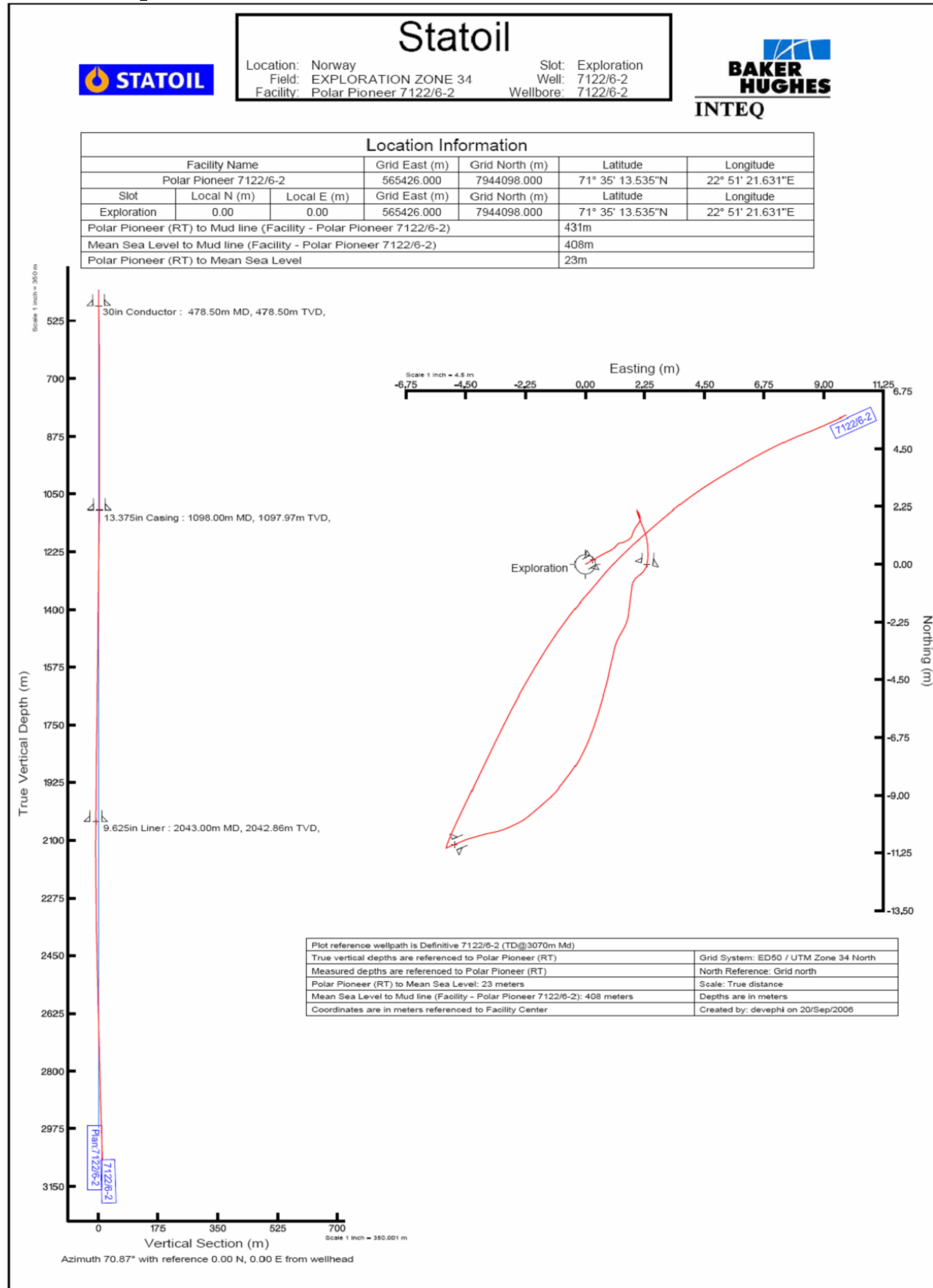


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6 Appendix 1: Directional data

Directional plot



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Survey listing.

 STATOIL	Actual Wellpath Report Definitive 7122/6-2 (TD@3070m Md) Page 1 of 4							
REFERENCE WELLPATH IDENTIFICATION								
Operator	Statoil	Slot	Exploration					
Area	Norway	Well	7122/6-2					
Field	EXPLORATION ZONE 34	Wellbore	7122/6-2					
Facility	Polar Pioneer 7122/6-2							
REPORT SETUP INFORMATION								
Projection System	ED50 / UTM Zone 34 North	Software System	WellArchitect™ 1.2					
North Reference	Grid	User	Devephi					
Scale	0.999652	Report Generated	09/20/06 at 07:35:52					
Wellbore last revised	09/19/06	Database/Source file	WA_STATOIL_SERVER/7122_6-2.xml					
WELLPATH LOCATION								
	Local coordinates		Grid coordinates	Geographic coordinates				
	North [meters]	East [meters]	Easting [meters]	Northing [meters]	Latitude [°]	Longitude [°]		
Slot Location	0.00	0.00	565426.00	7944098.00	71 35 13.535N	22 51 21.631E		
Facility Reference Pt			565426.00	7944098.00	71 35 13.535N	22 51 21.631E		
Field Reference Pt			0.00	0.00	0 00 00.000	16 30 41.157E		
WELLPATH DATUM								
Calculation method	Minimum curvature	Polar Pioneer (RT) to Facility Vertical Datum		23.00	meters			
Horizontal Reference Pt	Facility Center	Polar Pioneer (RT) to Mean Sea Level		23.00	meters			
Vertical Reference Pt	Polar Pioneer (RT)	Facility Vertical Datum to Mud Line (Facility)		408.00	meters			
MD Reference Pt	Polar Pioneer (RT)	Section Origin		N 0.00, E 0.00 m				
Field Vertical Reference	Mean Sea Level	Section Azimuth		70.87°				

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Definitive 7122/6-2 (TD@3070m Md)

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INTEQ

REFERENCE WELLPATH IDENTIFICATION

Operator	Statoil	Slot	Exploration
Area	Norway	Well	7122/6-2
Field	EXPLORATION ZONE 34	Wellbore	7122/6-2
Facility	Polar Pioneer 7122/6-2		

WELLPATH DATA (76 stations) † = interpolated/extrapolated station

MD [meters]	Inclination [°]	Azimuth [°]	TVD [meters]	Vert Sect [meters]	North [meters]	East [meters]	DLS [°/30m]
0.00†	0.000	0.000	0.00	0.00	0.00	0.00	0.00
431.00	0.000	0.000	431.00	0.00	0.00	0.00	0.00
490.90	1.010	58.960	490.90	0.52	0.27	0.45	0.51
520.70	0.910	63.560	520.69	1.01	0.51	0.89	0.13
548.40	0.560	35.290	548.39	1.34	0.72	1.16	0.54
577.80	0.360	87.350	577.79	1.54	0.84	1.34	0.45
606.70	0.700	60.300	606.69	1.80	0.93	1.58	0.43
635.80	0.370	16.020	635.79	2.03	1.11	1.76	0.52
722.70	0.330	38.100	722.69	2.40	1.58	2.00	0.05
809.50	0.340	331.960	809.48	2.57	2.00	2.03	0.13
896.50	0.390	161.170	896.48	2.53	1.95	2.00	0.25
982.80	0.480	157.850	982.78	2.55	1.34	2.23	0.03
1070.30	0.760	179.170	1070.28	2.39	0.42	2.38	0.12
1096.60	0.960	190.230	1096.57	2.22	0.03	2.34	0.30
1132.00	1.090	235.200	1131.97	1.75	-0.46	2.02	0.67
1159.40	1.100	186.800	1159.36	1.39	-0.87	1.77	0.98
1188.70	1.130	187.410	1188.66	1.14	-1.43	1.70	0.03
1217.70	1.070	186.970	1217.65	0.89	-1.98	1.63	0.06
1247.90	1.670	209.800	1247.84	0.43	-2.65	1.38	0.79
1276.70	1.030	192.290	1276.64	-0.02	-3.26	1.11	0.79
1305.80	0.980	193.100	1305.73	-0.29	-3.76	1.00	0.05
1334.90	1.030	190.800	1334.83	-0.55	-4.26	0.90	0.07
1364.00	1.020	195.520	1363.92	-0.83	-4.77	0.78	0.09
1392.60	1.010	194.960	1392.52	-1.11	-5.26	0.64	0.01
1421.60	0.950	196.680	1421.51	-1.40	-5.73	0.51	0.07
1450.80	0.900	198.040	1450.71	-1.68	-6.18	0.37	0.06
1479.60	0.930	199.690	1479.51	-1.96	-6.62	0.22	0.04
1508.80	0.950	203.570	1508.70	-2.27	-7.06	0.04	0.07
1538.00	0.880	206.520	1537.90	-2.60	-7.49	-0.15	0.09
1566.90	0.860	211.190	1566.80	-2.92	-7.87	-0.37	0.08
1595.80	0.830	216.360	1595.69	-3.26	-8.22	-0.60	0.09
1624.80	0.780	216.650	1624.69	-3.60	-8.55	-0.84	0.05
1653.70	0.780	220.550	1653.59	-3.93	-8.86	-1.09	0.06
1682.60	0.730	227.890	1682.48	-4.27	-9.13	-1.35	0.11
1711.60	0.750	227.610	1711.48	-4.62	-9.38	-1.63	0.02
1740.70	0.700	229.130	1740.58	-4.96	-9.63	-1.91	0.06
1769.60	0.670	229.580	1769.48	-5.28	-9.85	-2.17	0.03
1797.70	0.760	241.430	1797.58	-5.61	-10.05	-2.46	0.18
1827.50	0.760	244.570	1827.37	-6.01	-10.23	-2.81	0.04
1856.00	0.740	250.680	1855.87	-6.38	-10.37	-3.15	0.09
1885.90	0.630	259.830	1885.77	-6.73	-10.46	-3.50	0.16
1914.40	0.640	254.860	1914.27	-7.05	-10.53	-3.81	0.06
1943.00	0.570	252.420	1942.86	-7.35	-10.62	-4.09	0.08
1971.70	0.530	251.760	1971.56	-7.62	-10.70	-4.36	0.04
2001.50	0.480	245.590	2001.36	-7.89	-10.80	-4.60	0.07

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WELLPATH DATA (76 stations)

MD [meters]	Inclination [°]	Azimuth [°]	TVD [meters]	Vert Sect [meters]	North [meters]	East [meters]	DLS [°/30m]
2027.90	0.480	247.160	2027.76	-8.11	-10.89	-4.80	0.01
2088.60	0.260	243.870	2088.46	-8.50	-11.04	-5.16	0.11
2117.10	0.020	296.820	2116.96	-8.56	-11.07	-5.22	0.26
2146.20	0.150	13.680	2146.06	-8.55	-11.03	-5.22	0.15
2175.20	0.440	18.940	2175.06	-8.46	-10.89	-5.18	0.30
2232.30	0.840	23.580	2232.16	-8.04	-10.30	-4.94	0.21
2290.80	1.120	24.920	2290.65	-7.35	-9.39	-4.52	0.14
2318.90	1.220	24.140	2318.74	-6.95	-8.86	-4.29	0.11
2347.10	1.360	25.270	2346.93	-6.51	-8.29	-4.02	0.15
2377.00	1.520	24.750	2376.82	-5.99	-7.61	-3.70	0.16
2405.80	1.550	25.080	2405.61	-5.45	-6.91	-3.38	0.03
2435.50	1.610	25.800	2435.30	-4.88	-6.17	-3.03	0.06
2522.50	1.800	30.250	2522.26	-2.98	-3.89	-1.81	0.08
2552.40	1.660	32.160	2552.15	-2.29	-3.11	-1.34	0.15
2580.60	1.610	35.040	2580.34	-1.65	-2.44	-0.89	0.10
2609.70	1.570	36.510	2609.43	-0.99	-1.79	-0.42	0.06
2638.10	1.490	40.840	2637.82	-0.34	-1.20	0.05	0.15
2666.40	1.500	38.010	2666.11	0.29	-0.63	0.52	0.08
2696.00	1.470	42.750	2695.70	0.95	-0.04	1.02	0.13
2755.00	1.540	47.470	2754.68	2.34	1.05	2.11	0.07
2784.00	1.540	48.090	2783.67	3.06	1.57	2.69	0.02
2812.50	1.560	50.150	2812.16	3.77	2.08	3.27	0.06
2840.60	1.640	52.460	2840.25	4.51	2.57	3.89	0.11
2870.10	1.640	56.050	2869.73	5.32	3.06	4.57	0.10
2899.00	1.700	58.550	2898.62	6.14	3.51	5.28	0.10
2928.50	1.620	58.990	2928.11	6.98	3.96	6.01	0.08
2957.50	1.670	61.190	2957.10	7.79	4.37	6.73	0.08
2985.80	1.650	63.700	2985.39	8.60	4.75	7.46	0.08
3015.00	1.810	67.940	3014.57	9.48	5.11	8.26	0.21
3044.00	1.810	65.110	3043.56	10.39	5.48	9.10	0.09
3070.00	1.810	65.110	3069.55	11.21	5.82	9.85	0.00

HOLE & CASING SECTIONS Ref Wellbore: 7122/6-2 Ref Wellpath: Definitive 7122/6-2 (TD@3070m Md)

String/Diameter	Start MD [meters]	End MD [meters]	Interval [meters]	Start TVD [meters]	End TVD [meters]	Start N/S [meters]	Start E/W [meters]	End N/S [meters]	End E/W [meters]
36in Open Hole	431.00	480.00	49.00	431.00	480.00	0.00	0.00	0.18	0.30
30in Conductor	431.00	478.50	47.50	431.00	478.50	0.00	0.00	0.17	0.28
17.5in Open Hole	480.00	1104.50	624.50	480.00	1104.47	0.18	0.30	-0.10	2.31
13.375in Casing	431.00	1098.00	667.00	431.00	1097.97	0.00	0.00	0.00	2.34
12.25in Open Hole	1104.50	2044.00	939.50	1104.47	2043.86	-0.10	2.31	-10.93	-4.92
9.625in Liner	1039.00	2043.00	1004.00	1038.98	2042.86	0.80	2.36	-10.93	-4.91
8.5in Open Hole	2044.00	3070.00	1026.00	2043.86	3069.55	-10.93	-4.92	5.82	9.85

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7 Appendix 2: Operational listing

WELLBORE ID: NO 7122/6-2
INTERVAL: PRESPUD
START TIME: 09.08.2006 19:30
END TIME: 10.08.2006 14:00

Report date	Description
10.08.2006	Moved rig to 7122/6-2. Ran anchors and ballasted rig.

INTERVAL: 36"
START TIME: 10.08.2006 14:00
END TIME: 16.08.2006 20:00

Report date	Description
11.08.2006	Ballasted rig. Performed seabed survey. RIH and spudded well. Drilled 36" hole from 433 m to 454 m (severe bolder beds).
12.08.2006	Drilled 36" hole from 454 m to 479 m, severe boulders.
13.08.2006	Drilled 36" hole from 479 m to 481 m. Circulated and displaced hole to 1,35 sg mud. POOH and ran 30" casing. Ran stinger inside casing, installed PGB, ran and stabbed 30" casing shoe into 36" hole. Attempted to work 30" casing shoe through tight spot at 452 m, no go. Pulled 30" casing. Hung casing off on BOP carrier.
14.08.2006	M/U 36" assembly. RIH to 452 m. Reamed tight spot 452 m - 455 m and washed to 481 m. Drilled to 482 m and pumped high vis pills around. Displaced well to 60 m ³ 1,45 sg mud. POOH. Prepared and ran 30" casing from moonpool to 452 m. Attempted to pass tight spot at 452m, no go. POOH w/ casing and hung off PGB and casing in moonpool.
15.08.2006	Repaired broken air piping for drawwork high clutch. M/U a 2 x 36" HO assembly and ran to 430 m. Attempted to locate well using ROV, no go due to poor visibility.
16.08.2006	Work to locate well using ROV. Stabbed 36" BHA. Reamed tight area from 350 m to 354 m. Rectified drawwork brake problem. Reamed tight area from 450 m to 454 m. Washed and reamed to 481 m, 1,2 m fill. Reamed from 481 to 482 m. Pumped high vis pill around. Displaced well to 1,45 sg mud. POOH. Prepared and ran 30" conductor in water.

INTERVAL: 17 1/2"
START TIME: 16.08.2006 20:00
END TIME: 23.08.2006 08:00

Report date	Description
17.08.2006	Ran 30" casing in water. Located well. Ran 30" casing to 478 m. Circulated. Performed cementing job. POOH w/ landingstring. M/U 17 1/2" BHA and RIH. Drilled cement from 476 m to 478 m. Cleaned out rathole. Drilled 17 1/2" hole from 482 m to 494 m.
18.08.2006	Drilled 17 1/2" hole from 494 m to 1078 m.
19.08.2006	Drilled 17 1/2" hole to section TD at 1104,5 m. Circulated hole clean, displaced to 1,35 sg mud. POOH, max overpull 20 tons. RU and ran 13 3/8" casing to 333 m.
20.08.2006	Ran, landed and cemented 13 3/8" casing. Rigged up and started running BOP/Riser, in water at 05:30 hrs. Filled up kill and choke lines and pressure tested same to 35/345 bar 5/10 min.
21.08.2006	Ran BOP/riser. Prepared to land BOP, found that riser was one joint short. Laid out landing joint and slip joint. PU one riser joint. Continued to run BOP/Riser.
22.08.2006	Installed slip joint and landing joint. Pressure tested kill and choke lines, got leak on kill line stab on support ring. Repaired kill line stab. Pressure tested kill and choke lines to 35/690 bar 5 /10 min. Ran and landed BOP.
23.08.2006	Pressure tested WH connector/casing to 175 bar/10 min. Function tested BOP. MU 12 1/4" BHA. Drilled float and cement from 1070 m to 1092 m. Drilled cement/shoe from 1092 m and cleaned rat hole to 1101 m while displacing to 1.25 sg Glydril mud.

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INTERVAL: 12 1/4"

START TIME: 23.08.2006 08:00

END TIME: 30.08.2006 19:00

Report date	Description
24.08.2006	Cleaned rat hole and drilled new formation from 1104,5 to 1197 m. Performed FIT to 1.50 sg EMW. Drilled 12 1/4" hole to 1615 m.
25.08.2006	Drilled 12 1/4" hole from 1615 m to 1990 m.
26.08.2006	Drilled 12 1/4" hole to section TD at 2044 m. Circulated hole clean. POOH to 1930 m, hole not taking correct amount of fluid. RIH, circulated well clean. Lubricated out to 1524 m.
27.08.2006	Lubricated out of hole to 1484 m. Lost circulation. Slided/reamed down to 1490, regained circulation, slided/reamed down to 1494 m. RIH to 1524 m. Backreamed out of hole to inside 13 3/8" shoe. Pulled 4 stands. Backreamed to 651 m. Flowchecked before backreaming to BOP. POOH. PU cement head.
28.08.2006	MU and racked cement stand. Ran 9 5/8" liner to 995 m. PU and MU hanger/PBR assembly. RIH with 9 5/8" liner on 5 1/2" landing string to 1855 m. Filled pipe and circulated 5 min at 1000 lpm every 5th stand while RIH.
29.08.2006	RIH with 9 5/8" liner. Set hanger. Circulated, pumped and displace cement. Set packer and pressure tested same to 175 bar. POOH. LD running tool. LD 8 1/4" drill collars. Pressure tested DDM.
30.08.2006	Picked up 5 1/2" drill pipe. Pressure tested rig choke, kill and choke lines. Pressure tested BOP, DDM hose, IBOP and drilling pup kelly cock. MU 8 1/2" BHA and RIH to 442 m.

INTERVAL: 8 1/2"

START TIME: 30.08.2006 19:00

END TIME: 14.09.2006 02:00

Report date	Description
31.08.2006	RIH, drilled shoetrack an 2 m new formation to 2046 m. Performed FIT to 1,50 sg EMW. Drilled to 2052 m, circulated bottoms up and evaluated samples/logs. Drilled 8 1/2" hole to 2155 m.
01.09.2006	Drilled 8 1/2" hole from 2155 m to 2446 m.
02.09.2006	Drilled 8 1/2" hole from 2246 m to 2452 m. Circulated bottoms up. POOH and racked back BHA. MU and RIH with 8 1/2" coring BHA. Cut core from 2452 m to 2485 m.
03.09.2006	Cut core no. 1 from 2485 m to 2506 m. Circulated btms up. POOH. LD core no. 1. Slipped and cut. MU and RIH 8 1/2" drilling BHA to 760 m.
04.09.2006	RIH with 8 1/2" rotary BHA from 760 m. RIH while logging with MWD from 2440 m to 2506 m. Drilled 8 1/2" hole fom 2506 m to 2740 m.
05.09.2006	Drilled 8 1/2" hole from 2740 m to 3000 m. Circulated hole clean with 3 x bottoms up. POOH to 2780 m.
06.09.2006	POOH with 8 1/2" rotary BHA from 2780 m. Function tested BOP on way out. Prepared wireline tools on deck. RU wireline. RIH to 2000 m. Began logging down pass with CMR-PEX-HRLA-HNGS-ECS.
07.09.2006	Logged with CMR-PEX-HRLA-HNGS-ECS from 3000 m to 2043 m. POOH. RD wireline. MU and RIH with 8 1/2" rotary BHA to 2020 m. Installed DDM torque wrench. Repaired hydraulic hose on elevator. RIH to 2790 m.
08.09.2006	RIH with 8 1/2" rotary BHA from 2790 m to 3000 m, reamed 2835 m - 2865 m on way in. Drilled 8 1/2" hole to 3011 m. Circulated bottoms up for samples. Drilled 8 1/2" hole to 3070 m. Circulated hole clean. POOH. LD MWD assemblies. LD coring BHA from derrick.
09.09.2006	RU wireline. RIH with PEX-HRLA. Logged over interval 3070 m to 2000 m. POOH. RIH with FMI-PPC-MSIP-GR. Logged over interval 3070 m to 2015 m. POOH. RIH with MDT-PB. Took pressure point at 2760 m.
10.09.2006	Logged with MDT-PB, recorded 41 pressure points, took fluid sample from 2050 m. POOH. LD MDT-PB. MU MDT toolstring.
11.09.2006	MU and RIH with MDT-mini DST. Performed fluid sampling and pressure build-up logging at 2393,4 m and 2452,4 m. Performed fluid scanning at 2533,4 m and 2467,3 m.
12.09.2006	POOH from 2467 m with MDT-mini DST. RIH with VSI to 3005 m, logged with VSI, POOH. RIH with MSCT to 2864 m. Unable to core due to hydraulic fault in MSCT. POOH. RIH with MDT-AFA to 1900 m.
13.09.2006	RIH with MDT-AFA from 1900 m. Took formation fluid samples at 2544 m and 2695 m. Attempted to take pressure points in Kobbe Fm at 3044,5 m, 3033,1 m and 3032 m, formation tight. POOH to 2600 m.

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INTERVAL: PERM P&A

START TIME: 14.09.2006 02:00

END TIME: 18.09.2006 09:00

Report date	Description
14.09.2006	POOH from 2600 m with MDT-AFA. LD toolstring. MU MSCT. RIH with MSCT, cut 36 cores. Surface generator for MSCT failed, attempted to repair, negative. POOH, LD MSCT. RD wireline. RIH with cement stinger on 3 1/2" x 5 1/2" DP to 350 m.
15.09.2006	RIH with cement stinger on 3 1/2" x 5 1/2" DP from 350 m to 2970 m. Function tested BOP in way in. Circulated bottoms up, until gas < 2%. Plugged back well with 4 ea. balanced plugs, 2970 m to 2690 m, 2680 m to 2400 m, 2390 m to 2110 m, and 2100 m to 1843 m. POOH to 1675 m. Pumped 47.1 m3 1.36 sg mud/spacer and displaced same with 5 m3 1.28 sg mud. POOH to 1620 m, LD singles on way out.
16.09.2006	POOH with cement stinger on 3 1/2" x 5 1/2" DP from 1620 m, LD 75 singles 5 1/2" DP and 33 singles 3 1/2" DP on way out. Pressure tested cement plug, 153 bar. RIH and set 13 3/8" EZSV at 680 m. Pressure tested EZSV to 100 bar. Spotted 200 m 1.90 sg cement plug over EZSV. POOH. RIH with WBRRT, pulled wear bushing, POOH, LD 7 singles 6 1/2" DC's on way out.
17.09.2006	LD wear bushing and WBRRT. LD cement stand. MU BOP wash tool and racked back. Pulled BOP/riser. Landed BOP on fork. LD double riser joint.
18.09.2006	RD riser handling equipment. Washed BOP. Moved BOP to stack-up area. MU MOST/cutting tool. Ran in and landed MOST on WH at 427 m. Cut 20" csg/ 30" conductor. Pulled out with WH housing and PBG. Secured PGB on fork. Released WH housing from PGB and pulled same to rig floor. Released MOST tool. Prepared to LD WH housing.

INTERVAL: MOVE

START TIME: 18.09.2006 09:00

END TIME: 19.09.2006 13:00

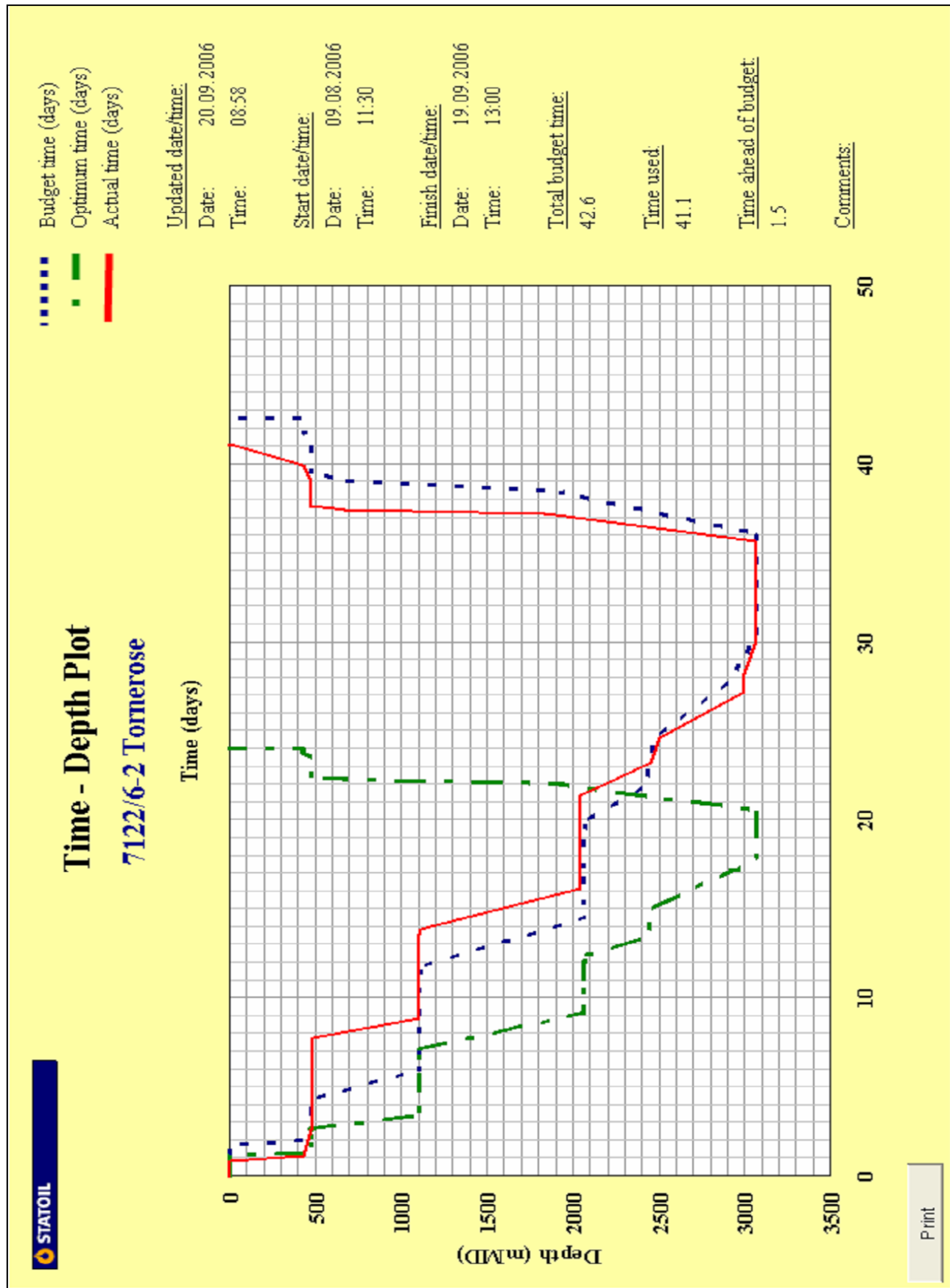
Report date	Description
19.09.2006	Laid down 20"/30" wellhead, cutter assembly and MOST tool. Deballasted rig. Started to pull anchors.

8 Appendix 3: Figures and tables

8.1 Wellbore schematic

WELL SCHEMATIC												
Well: 712216-2 Field: Tornerose Rig: Polar Pioneer												
HOLE		CASING/LINER			LOT / FIT	TOC		CSG. SHOE		RKB	LWD LOGS	SURV CSG/OH
SIZE	TYD MD	SIZE	TYPE/RAD. MARKERS	CENTRALIZERS	[S6]	TYD	MD	TYD	MD			
SB	431											
36"	482 482	30"	Type: 303.72 lb/ft X-52, S-60 Drift: 26.875"		N/A			479	479		VIA	A-void drift
17 1/2"	1105 1105	13 3/8"	Type: 72.00 lb/ft P-110, Varn Top Drift: 12.258"	1 x STA down type per joint for the first 2 joints				Top line: 1039 1039	Top line: 1039 1039		Resistivity Gamma Ray Pressure	MWD
12 1/4"	2044 2044	9 5/8"	Type: 53.5 lb/ft P-110 Varn Top Drift: 8.558"	1 x Centek (down type) per joint for the first 7 joints	-IT 1.50 sq	1343	1643				Resistivity Gamma Ray Pressure	MWD
8 1/2"	3070 3070	N/A	N/A		-IT 1.50 sq			2043	2043		Resistivity Gamma Ray Pressure	MWD

8.2 Time/depth curve



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8.3 Project planner

PROJECT NAME: Tornerose
PROJECT NUMBER: T.O110B.AP

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
09.08.2006 11:30	09.08.2006 19:30	10,0	0,4	6,0	0,2	8,0	8,0	0,3	0,0	MOVE [NO 7122/6-2]	
09.08.2006 11:30	09.08.2006 19:30	10,0	0,4	6,0	0,3	8,0	8,0	0,3	0,0	Transit from Snøhvit	Trans
09.08.2006 19:30	10.08.2006 14:00	38,0	1,6	24,0	1,0	30,0	18,5	0,8	0,0	PRESPUD [NO 7122/6-2]	
09.08.2006 19:30	10.08.2006 07:30	30,0	1,7	20,0	1,1	24,0	12,0	0,8	0,0	Position rig. Deploy anchors	Trans,Ocean
10.08.2006 07:30	10.08.2006 14:00	8,0	2,0	4,0	1,3	6,0	6,5	1,1	0,0	MU and RIH with 36" BHA	Trans,Ocean
10.08.2006 14:00	12.08.2006 08:00	15,0	2,6	10,0	1,7	12,0	42,0	2,9	0,0	Drill 36" hole	Trans,MI,Ocean
10.08.2006 14:00	16.08.2006 20:00	43,0	1,8	37,0	1,5	49,0	150,0	6,2	10,0	36" [NO 7122/6-2]	
12.08.2006 08:00	12.08.2006 09:00	3,0	2,8	1,0	1,7	2,0	1,0	2,9	0,0	Circulate hole clean. Displace hole to 1.35 sg mud.	Trans,MI,Ocean
12.08.2006 09:00	12.08.2006 12:30	5,0	3,0	3,0	1,8	4,0	3,5	3,0	0,0	POOH. LD BHA	Trans,Ocean
12.08.2006 12:30	13.08.2006 06:00	13,0	3,5	8,0	2,2	10,0	17,5	3,8	0,0	Rig up and run 30" conductor, PGB and cement stinger.	Trans,Weath,DQ,Ocean
13.08.2006 06:00	13.08.2006 16:30	0,0	3,5	0,0	2,2	10,0	10,5	4,2	0,0	Run in hole with 36" HO assembly and clean out 36" hole. Displace hole to 1.45 SG drilling fluid.	Ocean,DQ,Trans,Weath
13.08.2006 16:30	16.08.2006 15:00	0,0	3,5	12,0	2,7	6,0	70,5	7,1	10,0	Re-run 30" conductor.	DQ,Trans,Ocean
16.08.2006 15:00	16.08.2006 16:30	3,0	3,6	2,0	2,8	2,0	1,5	7,2	0,0	Pump and displace cement	Trans,DQ,Ocean,Hall
16.08.2006 16:30	16.08.2006 20:00	4,0	3,8	1,0	2,8	3,0	3,5	7,4	0,0	Retrieve running tool	Trans,DQ,Ocean
16.08.2006 20:00	17.08.2006 04:30	10,0	4,2	6,0	3,0	7,0	8,5	7,7	0,0	MU 17 1/2" BHA and RIH.	Trans,BHI,Ocean
16.08.2006 20:00	23.08.2006 08:00	188,0	7,8	114,0	4,8	148,0	156,0	6,5	27,0	17 1/2" [NO 7122/6-2]	
17.08.2006 04:30	18.08.2006 07:30	42,0	6,0	21,0	3,9	31,0	27,0	8,8	0,0	Drill 17 1/2" hole.	Trans,BHI,MI,Ocean
18.08.2006 07:30	18.08.2006 09:00	4,0	6,1	2,0	4,0	3,0	1,5	8,9	0,0	Circulate hole clean	Trans,MI,BHI,Ocean
18.08.2006 09:00	18.08.2006 10:00	3,0	6,3	1,0	4,0	2,0	1,0	8,9	0,0	Displace to 1.35 sg mud	Trans,MI,Ocean
18.08.2006 10:00	18.08.2006 22:00	15,0	6,9	10,0	4,5	12,0	12,0	9,4	0,0	POOH. Wash WH area. Cont. POOH.	Trans,Ocean
18.08.2006 22:00	19.08.2006 16:00	30,0	8,1	20,0	5,3	24,0	18,0	10,2	0,5	Rig up and run 20" x 13 3/8" casing. Land in 30" housing	Trans,Ocean,DQ,Weath
19.08.2006 16:00	19.08.2006 18:00	6,0	8,4	3,0	5,4	4,0	2,0	10,3	0,0	Pump and displace cement.	Ocean,Hall,DQ,Trans,MI
19.08.2006 18:00	19.08.2006 22:00	6,0	8,6	4,0	5,6	5,0	4,0	10,4	0,0	Release RT, POOH and wash WH area. LD cement head and RT.	Ocean,DQ,Trans
19.08.2006 22:00	22.08.2006 13:30	45,0	10,5	32,0	6,9	40,0	63,5	13,1	26,0	RU and run BOP and riser. Pressure test BOP, WH connector and 20" x 13 3/8" casing.	Ocean,Trans,Hall

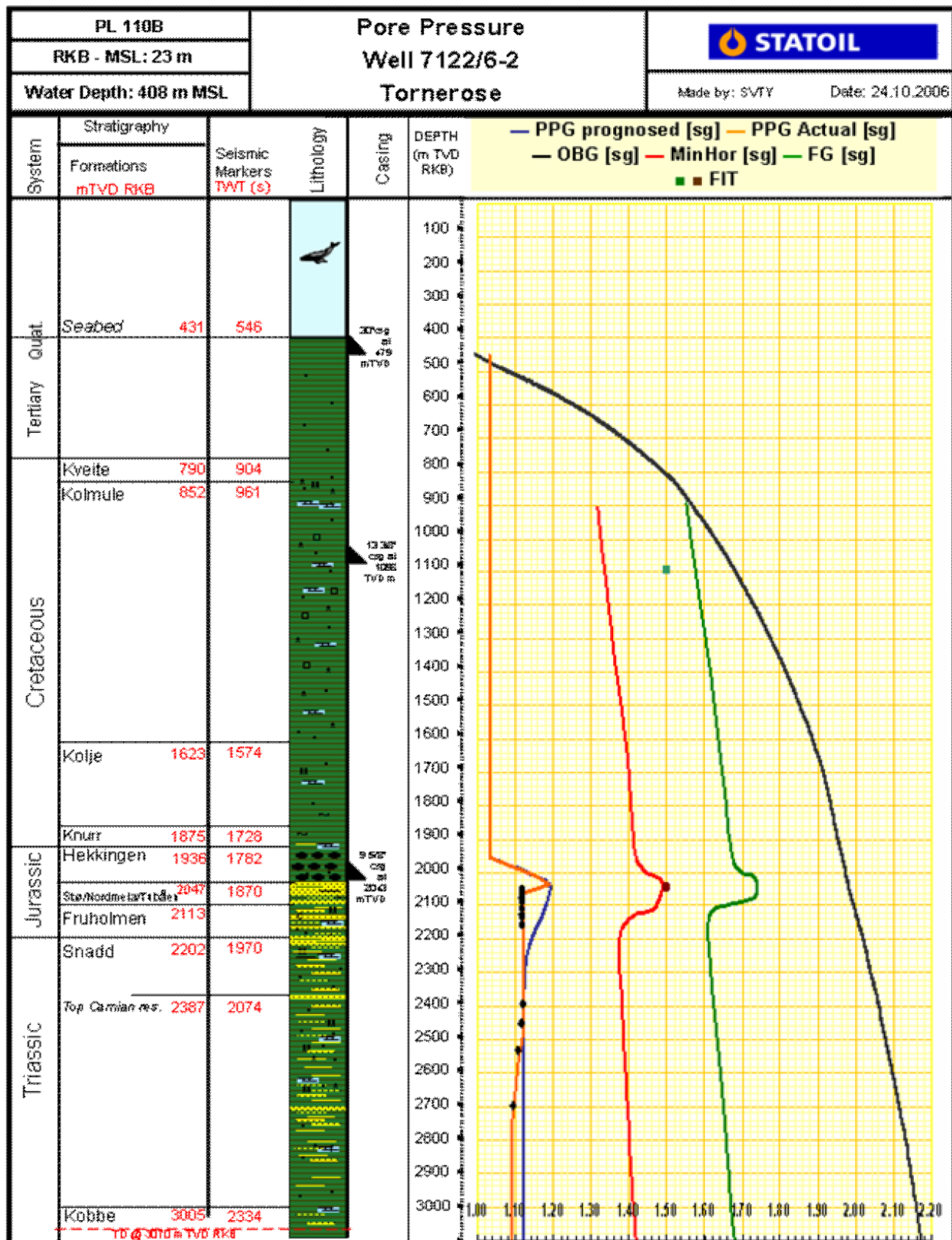
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Start time	End time	Budget time hrs	Acc budget days	Tech limit hrs	Acc tech days	Plan time hrs	Act time hrs	Acc actual days	Down time	Description	Companies
22.08.2006 13:30	23.08.2006 01:00	16,0	11,2	9,0	7,3	12,0	11,5	13,6	0,5	MU and RIH with 12 1/4" BHA.	Trans,BHI,MI,Schlum
23.08.2006 01:00	23.08.2006 06:30	8,0	11,5	5,0	7,5	6,0	5,5	13,8	0,0	Drill out shoe track and 3 m new formation while displacing to Glydril WBM	MI,BHI,Schlum,Trans
23.08.2006 06:30	23.08.2006 08:00	3,0	11,6	1,0	7,5	2,0	1,5	13,9	0,0	Circulate and condition mud. Perform FIT to 1.50 sg EMW	Schlum,Trans,BHI,MI,Hall
23.08.2006 08:00	30.08.2006 19:00	197,0	8,2	126,0	5,2	158,0	179,0	7,5	2,5	12 1/4" [NO 7122/6-2]	
23.08.2006 08:00	25.08.2006 14:00	75,0	14,8	53,0	9,8	60,0	54,0	16,1	0,5	Drill 12 1/4" hole.	Trans,Schlum,BHI,MI
25.08.2006 14:00	27.08.2006 05:00	16,0	15,4	10,0	10,2	12,0	39,0	17,7	1,5	Circulate hole clean and POOH	BHI,MI,Schlum,Trans
27.08.2006 05:00	28.08.2006 13:30	36,0	16,9	20,0	11,0	28,0	32,5	19,1	0,0	Rig up and run 9 5/8" liner. Set liner hanger.	Weath,Trans,Schlum
28.08.2006 13:30	28.08.2006 16:00	4,0	17,1	2,0	11,1	3,0	2,5	19,2	0,0	Pump and displace cement.	Hall,MI,Trans,Schlum
28.08.2006 16:00	28.08.2006 17:00	4,0	17,3	2,0	11,2	3,0	1,0	19,2	0,0	Set liner packer and pressure test	Trans,Hall,Schlum
28.08.2006 17:00	29.08.2006 00:00	7,0	17,5	4,0	11,3	6,0	7,0	19,5	0,0	Circulate out excess cement and POOH. LD cement head and running tool.	Hall,Trans,Schlum
29.08.2006 00:00	30.08.2006 01:00	8,0	17,9	4,0	11,5	7,0	25,0	20,6	0,5	LD 12 1/4". (+ Test BOP)	BHI,Trans
30.08.2006 01:00	30.08.2006 12:00	36,0	19,4	25,0	12,5	30,0	11,0	21,0	0,0	MU 8 1/2" BHA. RIH while picking up 5" drill pipe.	Trans,BHI
30.08.2006 12:00	30.08.2006 18:30	8,0	19,7	5,0	12,8	7,0	6,5	21,3	0,0	Drill shoe track and 3 m new formation. Adjust mud weight.	BHI,Trans,Schlum
30.08.2006 18:30	30.08.2006 19:00	3,0	19,8	1,0	12,8	2,0	0,5	21,3	0,0	Perform FIT to 1.50 sg EMW.	Trans,Hall,MI,BHI,Schlum
30.08.2006 19:00	14.09.2006 02:00	389,0	16,2	292,0	12,2	417,0	343,0	14,3	12,0	8 1/2" [NO 7122/6-2]	
30.08.2006 19:00	01.09.2006 17:00	50,0	21,9	25,0	13,8	33,0	46,0	23,2	0,0	Drill to core point.	Trans,MI,BHI,Schlum
01.09.2006 17:00	03.09.2006 02:30	60,0	24,4	40,0	15,5	48,0	33,5	24,6	0,5	Cut two cores	Trans,Schlum,BHI,MI
03.09.2006 02:30	05.09.2006 16:00	84,0	27,9	52,0	17,7	54,0	61,5	27,2	0,5	RIH and drill to second core point. POOH.	Trans,Schlum,BHI,MI
05.09.2006 16:00	06.09.2006 17:00	25,0	29,0	40,0	19,3	120,0	25,0	28,2	0,0	Rig up and perform wirelin logging.	Trans,Schlum
06.09.2006 17:00	08.09.2006 06:00	36,0	30,5	20,0	20,2	30,0	37,0	29,8	1,5	RIH with 8 1/2" BHA and drill to 3060 m (TD). POOH.	Schlum,Trans
08.09.2006 06:00	14.09.2006 02:00	134,0	36,0	115,0	25,0	132,0	140,0	35,6	9,5	Continue wireline logging.	Schlum,Trans
14.09.2006 02:00	18.09.2006 09:00	137,0	5,7	77,0	3,2	89,5	105,0	4,4	0,5	PERM P&A [NO 7122/6-2]	
14.09.2006 02:00	15.09.2006 15:00	56,0	38,4	35,0	26,4	36,0	37,0	37,1	0,5	RIH with with cmt stinger. Plug back open hole. POOH while L/D 5 1/2" DP	Trans,Hall
15.09.2006 15:00	15.09.2006 22:00	14,0	39,0	5,0	26,6	7,0	7,0	37,4	0,0	RIH w/13 3/8" EZSV and plaze same. Pressure test EZSV.	Hall,Trans
15.09.2006 22:00	16.09.2006 02:00	10,0	39,4	4,0	26,8	5,0	4,0	37,6	0,0	Place 200 meter top cmt plug from 680 m to 480 m.	Hall,Trans
16.09.2006 02:00	17.09.2006 11:00	40,0	41,0	24,0	27,8	30,0	33,0	39,0	0,0	Pull BOP	Trans
17.09.2006 10:59	18.09.2006 09:00	15,0	41,7	8,0	28,1	10,0	22,0	39,9	0,0	Cut and retrieve 18 3/4" WH and conductor WH housing.	Trans
17.09.2006 11:00	17.09.2006 13:00	2,0	41,8	1,0	28,2	1,5	2,0	40,0	0,0	Pressure test OH cmt plug	Trans,Hall
18.09.2006 09:00	19.09.2006 13:00	20,0	0,8	5,0	0,2	16,0	28,0	1,2	0,0	MOVE [NO 7122/6-2]	
18.09.2006 09:00	19.09.2006 13:00	20,0	42,6	5,0	28,4	16,0	28,0	41,1	0,0	Pull anchors. Deballast rig.	Trans

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8.4 Borehole stability figure with final pressure/fracture gradients



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8.5 Bit record

WELL: NO 7122/6-2

Run no	Bit size	Bit no	BHA no	Bit type	IADC code	Bit manufacturer
1	17 1/2"	1	1	MX-3 (17 1/2" x 26" x 36" HO)	135	Hughes Christensen
2	17 1/2"	1 RR	2	MX-3 (17 1/2" x 26" x 36" HO)	135	Hughes Christensen
3	17 1/2"	1 RR2	3	MX-3 (17 1/2" x 26" x 36" HO)	135	Hughes Christensen
4	17 1/2"	2	4	MX-ST31	115	Hughes Christensen
5	12 1/4"	3	5	RSX516S	S332	Reed-Hycalog
6	8 1/2"	4	6	MRS616LGEBPX	M223	Smith Bits
7	8 1/2"	5	7	BHC606		Baker Hughes Inteq
8	8 1/2"	6	8	HCM507Z	M323	Hughes Christensen
10	8 1/2"	6RR	10	HCM507Z	M323	Hughes Christensen

Run no	Bit size	Bit no	BHA no	Serial no	Nozzles (n/32")				Flow area in
					no x n	no x n	no x n	no x n	
1	17 1/2"	1	1	6031817	4 x 14	x	x	x	0,6020
2	17 1/2"	1 RR	2	6031817	4 x 14	x	x	x	0,6020
3	17 1/2"	1 RR2	3	6031817	4 x 14	x	x	x	0,6020
4	17 1/2"	2	4	6042884	1 x 18	3 x 20	x	x	1,1690
5	12 1/4"	3	5	213185	6 x 13	1 x 12	x	x	0,8890
6	8 1/2"	4	6	SCA988	3 x 12	3 x 11	x	x	0,61
7	8 1/2"	5	7	7206678	x	x	x	x	
8	8 1/2"	6	8	7105835	7 x 11	x	x	x	0,65
10	8 1/2"	6RR	10	7105835	7 x 11	x	x	x	0,65

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"	4500	147	431,0	481,0	50,0	50,0	23,8	39,9	2,1
2	17 1/2"	4500		481,0	482,0	1,0	0,5	0,5		2,0
3	17 1/2"	4500		482,0	482,0	0,0	0,0			0,0
4	17 1/2"	5000	210	482,0	1104,5	622,5	628,5	18,4		33,8
5	12 1/4"	3500	211	1104,5	2044,0	939,5	974,0	29,7		31,6
6	8 1/2"	2000	140	2044,0	2452,0	408,0	437,0	24,2	43,3	16,9
7	8 1/2"	1000	65	2452,0	2506,0	54,0	54,0	3,9	7,6	13,8
8	8 1/2"	2000	155	2506,0	3000,0	494,0	494,0	24,4	40,7	20,2
10	8 1/2"	2000	149	3000,0	3070,0	70,0	70,0	4,5	13,2	15,6

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	30	70	3000	9000		
2	17 1/2"								
3	17 1/2"								
4	17 1/2"	7	20	130	180	4000	10000		
5	12 1/4"	2	10	140	150	4000	18000		
6	8 1/2"	3	10	100	150	4000	10000		
7	8 1/2"	2	8	60	90	4000	10000		
8	8 1/2"	5	12	140	150	6000	18000		
10	8 1/2"	7	9	140	140	7000	14000		

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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
Run no	Bit size	I	O	DC	L	B	G	OC	RP
1	17 1/2"								
2	17 1/2"								
3	17 1/2"								
4	17 1/2"	1	1	WT	A	E	0	NO	TD
5	12 1/4"	1	3	WT	G	X	2	LT	TD
6	8 1/2"	2	1	BT	N	X	I	NO	CP
7	8 1/2"	1	1	WT	G	X	I	NO	CP
8	8 1/2"	1	1	NO	A	X	I	NO	TD
10	8 1/2"	1	1	NO	A	X	I	NO	TD

Run no	Bit size	Remarks
1	17 1/2"	36" section: 17 1/2" bit and 36" x 26" Holeopener
2	17 1/2"	36" section: 17 1/2" bit and 36" x 26" Holeopener. Trip to ream hole.
3	17 1/2"	36" section: 17 1/2" bit and two 36" x 26" Holeopeners. Trip to ream hole.
4	17 1/2"	Drilled rathole and 17 1/2" hole from 480m to 1104,5 meters.
5	12 1/4"	Drilled float/cement/shoe/rat hole from 1070 m. 2 lost cutters.
6	8 1/2"	Drilled floats/shoetrack/cement from 2015 to 2044 m
7	8 1/2"	Cored 8 1/2" hole from 2452 m to 2506m.
8	8 1/2"	Drilled from 2506m to 3000m.
10	8 1/2"	Drilled from 3000m to 3070m.

8.6 Bottom hole assembly

WELLBORE: NO 7122/6-2

BHA NO: 1

BHA KIND:

DESCRIPTION: 17 1/2" Bit and 36" HO assy

BHA NAME: 1

String component	OD in	ID in	Length m	Acc length m
MX-3-NA	17,500		0,42	0,42
HOLE OPENER	36,000		4,24	4,66
ANDERDRIFT	9,625		3,23	7,89
XO SUB	9,437		1,05	8,94
FLOAT SUB	7,937		0,77	9,71
DRILL COLLAR	8,062		81,76	91,47
XO SUB	8,062		1,24	92,71
HW DRILL PIPE, 5"	5,500		82,87	175,58

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BHA NO: 2

BHA KIND:

DESCRIPTION: 2nd 17 1/2" Bit and 36" HO assy

BHA NAME: 2

String component	OD in	ID in	Length m	Acc length m
MX-3~NA	17,500		0,43	0,43
HOLE OPENER	36,000		4,33	4,76
ANDERDRIFT	9,625		2,80	7,56
XO SUB	9,437		1,05	8,61
FLOAT SUB	7,937		0,77	9,38
DRILL COLLAR	8,062		81,76	91,14
XO SUB	8,062		1,24	92,38
HW DRILL PIPE, 5"	5,500		82,87	175,25

BHA NO: 3

BHA KIND:

DESCRIPTION: 3th 17 1/2" Bit and 36" HO assy

BHA NAME: 3

String component	OD in	ID in	Length m	Acc length m
MX-3~NA	17,500		0,43	0,43
HOLE OPENER	36,000		4,33	4,76
XO SUB	8,250		1,00	5,76
XO SUB	7,875		0,56	6,32
XO SUB	9,500		1,31	7,63
HOLE OPENER	36,000		7,47	15,10
XO SUB	9,500		1,24	16,34
XO SUB	8,500		1,25	17,59
FLOAT SUB	7,937		0,77	18,36
DRILL COLLAR	8,062		81,76	100,12
XO SUB	8,062		1,24	101,36
HW DRILL PIPE, 5"	5,500		82,87	184,23

BHA NO: 4

BHA KIND:

DESCRIPTION: 17 1/2" rotary assembly

BHA NAME: 4

String component	OD in	ID in	Length m	Acc length m
MX-ST31~17 1/2"	17,500		0,42	0,42
BIT SUB	17,500		0,90	1,32
STOP SUB	9,500		0,59	1,91
ONTRAK	9,500		5,46	7,37
BCPM	9,500		3,69	11,06
STOP SUB	9,500		0,49	11,55
STAB SPIRAL IB	17,250		2,05	13,60
DRILL COLLAR	8,125		9,01	22,61
STAB SPIRAL IB	17,250		1,70	24,31
DRILL COLLAR	8,125		80,73	105,04
JAR	7,750		9,58	114,62
DRILL COL	8,125		27,43	142,05
XO SUB	8,125		1,24	143,29
HW DRILL PIPE, 5"	5,500		82,87	226,16

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BHA NO: 5
BHA KIND:
DESCRIPTION: 12 1/4" motor assembly
BHA NAME: 5

String component	OD in	ID in	Length m	Acc length m
RSX516S~12 1/4"	12,250		0,24	0,24
X-TREME MOTOR	9,500	3,000	8,97	9,21
STABILIZER	12,125	2,750	2,21	11,42
STOP SUB	8,000	2,750	0,62	12,04
ONTRAK	9,500	2,750	5,46	17,50
X-OVER	8,250	2,750	1,07	18,57
MWD STAB	8,250	2,750	1,82	20,39
BCPM	8,250	2,750	3,57	23,96
STOP SUB	8,250	2,750	0,79	24,75
STRING STAB	8,250	2,750	1,61	26,36
DRILL COLLAR	8,063	2,875	44,61	70,97
JAR	7,750	3,000	9,58	80,55
DRILL COLLAR	8,063	2,875	27,03	107,58
X-OVER	8,063	3,000	1,24	108,82
HW DRILL PIPE, 5"			82,87	191,69

BHA NO: 6
BHA KIND:
DESCRIPTION: 8 1/2" rotary assembly
BHA NAME: 6

String component	OD in	ID in	Length m	Acc length m
MRS616LGEBPX~8 1/2"	8,500		0,28	0,28
CPF	8,375	2,250	1,19	1,47
ONTRAK	7,000	2,250	5,05	6,52
MOD STAB	8,375	2,250	1,27	7,79
BCPM	7,188		3,24	11,03
STOP SUB	7,000	2,250	0,45	11,48
FLOAT SUB	6,500	2,250	1,21	12,69
ROLLER REAMER	8,375	2,250	1,94	14,63
DRILL COLLAR	6,500	2,813	46,35	60,98
JAR	6,500	2,750	9,57	70,55
DRILL COLLAR	6,500	2,813	18,48	89,03
X-OVER	7,250	3,000	1,25	90,28
HW DRILL PIPE, 5"	5,500	3,500	91,76	182,04

BHA NO: 7
BHA KIND:
DESCRIPTION: 8 1/2" coring BHA with 54 m inner barrel
BHA NAME: 7

String component	OD in	ID in	Length m	Acc length m
BHC606~8 1/2"	8,500	4,000	0,43	0,43
CORE BARREL	8,469	5,375	56,11	56,54
CORE BARREL EXT	7,250	5,375	1,14	57,68
TOP SUB	7,250	3,156	0,44	58,12
FLOAT SUB	6,888	2,750	1,23	59,35
DRIL COL	6,500	2,250	46,35	105,70
JAR,	6,500	2,750	9,57	115,27

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String component	OD in	ID in	Length m	Acc length m
DRIL COL	6,500	2,250	18,48	133,75
X-OVER	7,250	3,000	1,25	135,00
HWDP 5 1/2"	5,500	3,550	91,76	226,76

BHA NO: 8
BHA KIND:
DESCRIPTION: 8 1/2" rotary assembly
BHA NAME: 8

String component	OD in	ID in	Length m	Acc length m
HCM507Z~12 1/4"	8,500		0,32	0,32
CPF	8,375	2,250	1,19	1,51
ONTRAK	7,000	2,250	5,05	6,56
MOD STAB	8,375	2,250	1,27	7,83
BCPM	7,188		3,24	11,07
STOP SUB	7,000	2,250	0,45	11,52
FLOAT SUB	6,500	2,250	1,21	12,73
ROLLER REAMER	8,375	2,250	1,94	14,67
DRILL COLLAR	6,500	2,813	46,35	61,02
JAR	6,500	2,750	9,57	70,59
DRILL COLLAR	6,500	2,813	18,48	89,07
X-OVER	7,250	3,000	1,25	90,32
HW DRILL PIPE, 5"	5,500	3,500	91,76	182,08

BHA NO: 9
BHA KIND:
DESCRIPTION: Run CMR-PEX-HRLA-HNGS-ECS on 7-46 PSX cable.
BHA NAME: 9

String component	OD in	ID in	Length m	Acc length m
BNS-CCS			0,14	0,14
CMRT-B	6,630		4,75	4,89
AH-107			0,61	5,50
HRLT-B			7,38	12,88
HILT-FTB			6,59	19,47
ECS-A			2,03	21,50
ECC-B			1,07	22,57
HNGC-B			1,07	23,64
HNGS-BA			2,49	26,13
DTC-H			0,92	27,05
ACTS-B1			1,22	28,27
AH-169			0,40	28,67
LEH-ECRD			0,89	29,56

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BHA NO: 10
BHA KIND:
DESCRIPTION: 8 1/2" rotary assembly.
BHA NAME: 10

String component	OD in	ID in	Length m	Acc length m
HCM507Z~12 1/4"	8,500		0,32	0,32
CPF	8,375	2,250	1,19	1,51
ONTRAK	7,000	2,250	5,16	6,67
MOD STAB	8,375	2,250	1,27	7,94
BCPM	7,188		3,24	11,18
STOP SUB	7,000	2,250	0,45	11,63
FLOAT SUB	6,500	2,250	1,21	12,84
ROLLER REAMER	8,375	2,250	1,94	14,78
DRILL COLLAR	6,500	2,813	46,35	61,13
JAR	6,500	2,750	9,57	70,70
DRILL COLLAR	6,500	2,813	18,48	89,18
X-OVER	7,250	3,000	1,25	90,43
HW DRILL PIPE, 5"	5,500	3,500	91,76	182,19

BHA NO: 11
BHA KIND:
DESCRIPTION: Run PEX-HRLA on 7-46 PSX cable
BHA NAME: 11

String component	OD in	ID in	Length m	Acc length m
BNS-CCS			0,14	0,14
AH			1,22	1,36
AH			1,22	2,58
AH-184			0,61	3,19
HRLT-B			7,37	10,56
HILT-FTB	6,630		6,60	17,16
DTC-H			0,92	18,08
ACTS-B1			1,22	19,30
AH-169			0,40	19,70
LEH-ECRD			0,89	20,59

BHA NO: 12
BHA KIND:
DESCRIPTION: Run FMI-PPC-MSIP-GR on 7-46 PSX cable
BHA NAME: 12

String component	OD in	ID in	Length m	Acc length m
FBST-B	6,000		7,43	7,43
SGT-N			1,68	9,11
MAXS-B			6,17	15,28
MAPC-B			6,41	21,69
PPC1-B			1,99	23,68
EDTC			1,98	25,66
SAH-F			1,49	27,15
ACTS-B1			1,22	28,37
LEH-ECRD			0,89	29,26

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BHA NO: 13

BHA KIND:

DESCRIPTION: Run MDT-PB on 7-46 PSX cable

BHA NAME: 13

String component	OD in	ID in	Length m	Acc length m
MRPS	5,000		2,44	2,44
MRHY			2,57	5,01
LFA			1,55	6,56
MRPO			3,24	9,80
MRSC			2,88	12,68
MRSC			2,88	15,56
MRSC			1,87	17,43
MRSC			1,87	19,30
MRMS			4,02	23,32
MRPC			1,51	24,83
DTA-A			1,22	26,05
SGT-N			1,68	27,73
DTC-H			0,91	28,64
ACTS-B1			1,22	29,86
LEH-ECRD			0,89	30,75

BHA NO: 14

BHA KIND:

DESCRIPTION: Run MDT-min DST on 7/46 PSX cable

BHA NAME: 14

String component	OD in	ID in	Length m	Acc length m
MRSC			4,01	4,01
MRMS			4,02	8,03
MRSC			2,89	10,92
MRSC			2,88	13,80
MRSC			1,87	15,67
MRPO	6,750		3,23	18,90
LFA			1,55	20,45
MRPO			5,10	25,55
MRPS			2,43	27,98
MRHY			2,58	30,56
MRPC			1,51	32,07
SGT-L			1,68	33,75
TCC-BF			0,91	34,66

BHA NO: 15

BHA KIND:

DESCRIPTION: Run VSI on 7/46 PSX cable.

BHA NAME: 15

String component	OD in	ID in	Length m	Acc length m
VSIA			0,10	0,10
VSIS-4			1,95	2,05
VSII-4			13,17	15,22
VSIS-3			1,95	17,17
VSII-3			13,17	30,34
VSIS-2			1,95	32,29
VSII-2			13,17	45,46

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String component	OD in	ID in	Length m	Acc length m
VSIS-1			1,95	47,41
VSII-1			13,17	60,58
VSCC			3,13	63,71
VSPC			3,20	66,91
AH-199			0,31	67,22
SGT-N			1,68	68,90
DTC-H			0,91	69,81
ACTS-B1			1,22	71,03
LEH-QT			0,89	71,92

BHA NO: 16

BHA KIND:

DESCRIPTION: Run MSCT on 7/46 PSX cable

BHA NAME: 16

String component	OD in	ID in	Length m	Acc length m
MSCT	5,250		10,40	10,40
SGT-E			1,53	11,93
LEH-Q			0,88	12,81

BHA NO: 17

BHA KIND:

DESCRIPTION: Run MDT-AFA on 7/46 PSX cable.

BHA NAME: 17

String component	OD in	ID in	Length m	Acc length m
MRSC			1,00	1,00
MRPO	6,750		5,09	6,09
MRSC			1,87	7,96
MRBA			0,99	8,95
MRPO			3,24	12,19
MRFA			1,55	13,74
MRSC			1,87	15,61
MRSC			1,86	17,47
MRMS			4,02	21,49
MRPS			1,51	23,00
MRHY			3,50	26,50
MRPC			1,52	28,02
DTA-A			1,22	29,24
SGT-N			1,68	30,92
DTC-H			0,91	31,83
ACTS-B1			1,22	33,05
LEH-ECRI			0,89	33,94

BHA NO: 18

BHA KIND:

DESCRIPTION: Run MSCT on 7/46 PSX cable

BHA NAME: 18

String component	OD in	ID in	Length m	Acc length m
MSCT	5,250		10,40	10,40
SGT-E			1,53	11,93
LEH-Q			0,88	12,81

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8.7 Drilling fluids program

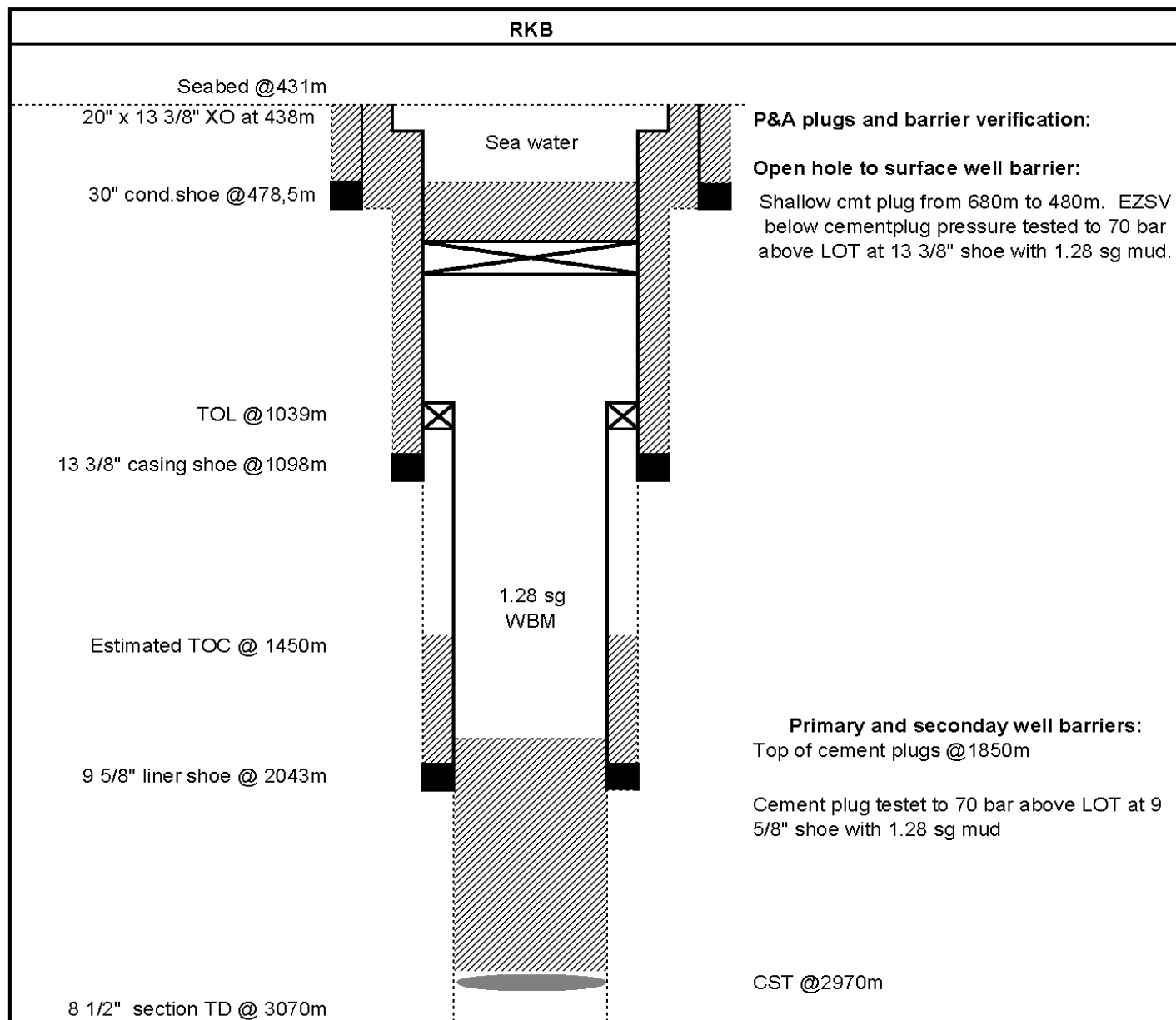
DRILLING FLUIDS SUMMARY - END OF WELL																				
Well: 7122/6-2				Tornerose																
Field: Tornerose				Polar Pioneer																
Rig: Polar Pioneer																				
HOLE	CASING/LINER		MUD TYPE	MW [SG]	LGS [KG/m ³]	10 sec. [Pa]	10 min. [Pa]	Fann 100 rpm	Fann 3 rpm	Sulphat _e mg/l	PV [mPa]	API FL [ml]	HTHP FL [ml]	MBT [KG/m ³]	pH	KCl [KG/m ³]	Glyc. [%]	ES	Funnel Visc. [%]	Usage Volume [m ³]
	SIZE	TVD MD																		
36"	482	479	SW/ Bentonite Spec #1	1.03																472
	482	479														9			>200	
Cleaned hole with hi-vis bentonite pills as required. Displaced hole at TD to 1,35 sg bentonite mud by 1,5 times hole volume. Wipetrip 1: Displaced hole at TD to 1,45 sg bentonite mud by 1,8 times hole volume. Wipetrip 2: Displaced hole at TD to 1,45 sg bentonite mud by 1,8 times hole volume. The use of high viscous Bentonite/CMC EHV sweeps to clean the hole, worked satisfactorily for this section.																				
17 1/2"	1104	1098	Bentonite Spec #1 Sildril (displ.fluid)	1.03															80	969
	1104	1098														-			-	
Sweeps performed well. A total of 785 m3 Bentonite/CMC mud was used in this section. 130 m3 1,30 sg Sildril mud was received from shore to be used as Kill/Displacement mud. Diluted Sildril Kill fluid to a total of 174 m3 1,35 sg prior to displace the open hole. The Sildril mud was charged off as spec. # 17.																				
12 1/4"	2044	2043	Glydri Spec #74	1.25	23	3	4	4	100	19	2.5	0	0	0	8.5	150				346
	2044	2043		-	-	-	-	-	-	-	-	-	-	-	-	-	-	4		
The 99% KCl Glydri mud was mixed new on the rig, due to required low sulphate content in the mud (<200 mg/ltr) when performing logging in the 8 1/2" section. It was decided to use this system from 12 1/4" due to logistic limitations. Premix additions maintained a low solids mud with good inhibition. . The top screens should be dressed with 10 mesh. The flow rate and volume of cuttings means that finer mesh top screens blind, causing mud losses It is recommended to dress the shakers with 10 mesh top screens for future wells. This will prevent losses over the shakers.																				
8 1/2" & P&A	3070	128	Glydri Spec #74	41	3.5	4.5	6	167	17	3	11	8	155	3						145
	3070	119		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
The fluid from the previous section was carried over. The fluid properties were maintained by adding premix to the active. Overall, the mud properties proved to be remarkable stable and only small adjustments were needed to maintain rheology and other parameters. Because of pit leakage Active 2 was used as active. Mud was taken out of the active pit and transferred to Reserve pits. The centrifuge was then used to reduce the mud weight before it was bled back into active to maintain weight. Pretreated the mud system C. Acid and S. Bicarbonate before displacing the cement plugs. The usage of mud is for both 8 1/2" (69 m3) and P&A (76 m3) section.																				

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8.8 Cementing program

CEMENT PROGRAMME																		
Well: 7122/6-2 Field: Tornerose Rig: Polar Pioneer																		
HOLE	CASING SHOE		TOC	VOLUME/ EXCESS	CEMENT SLURRY DESIGN								SPACER	DISPLACEMENT				
	SIZE	TVD MD			TVD MD	Components	Lead [lbr/100kg]	Tail [lbr/100kg]	Density [SG]	Yield [lbr/100kg]	Stat. /Circ. Temp [°C]	Thickening time [hrs to 30 Bc]			API Free Water [%]	API Fluid loss [cc/crmin]	24 hrs C.S. [psi]	
36"	482 482	479 479	Sea bed Sea bed	46,5 m³ 300 %	Tuned Light XL CaCl ₂ liquid NF-6 Seawater	4.50 0.10 57.44	1.52	103.49 Coce DWLSP	6-8 API	05:00 (to 70 bc)	n/a	n/a	740	30 m³ Seawater	Sea water 1500 lpm			
17 1/2"	1105 1105	1098 1098	Sea bed Sea bed	Lead: 60 m³ Tail: 15 m³ 50 % (Lead)	Norcem "G" + 0.1 % EZ-FLO Econolite NF-6 Sea Water	3.20 0.10 95.16	- 0.10 45.06	L: 1.53 T: 1.92	32 / 15 (Weicat)	L: 03:10 T: 04:45 Code STTNT	n/a	n/a	L: +/- 500 T: 1360	Casing volume Sea water	Sea water 3000 lpm			
12 1/4"	2044 2044	2043 2043	1643 1643	17,3 m³ 40 %	Norcem "G" + 0.1 % EZ-FLO Gascon 469 Haac-400- CFR-3L HR-5L NF-6 Fresh Water	3.50 2.50 1.50 1.50 0.10 37.57	1.90	77.85 Code GTT90	72 / 44 (Weicat)	03:54	0	33	2700	2' m3 1,60 SG T-jud Spacer	WBM 2000 lpm			
8 1/2"	3070 3070	2970 2680 2390 2100	2690 2400 2110 1843	10.25 m³ 10.25 m³ 10.25 m³ 9,50 m³ 0 %	Norcem "G" + 0.1 % EZ-FLO Gascon 469 Haac-400- CFR-3L HR-5L NF-6 Fresh Water	3.50 2.50 1.00 1.50 0.10 37.99	1.90	77.77 Code GTT90	108 / 75 (Weicat)	05:36	0	57	2300	4 - 5 m3 1,60 SG T-jud Spacer	WBM 2000 lpm			
13 3/8" casing		680	480	15,6 m³ 0 %	Norcem "G" + 0.1 % EZ-FLO NF-6 Sea Water	0.10 46.59	1.90	77.87 Code STTNT	14 / 12 (API)	> 04:00	n/a	n/a	+/- 1000	Sea Water	Sea Water 2000 lpm			

8.9 P&A schematic



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9 Appendix 4: Contractors list

Service	Contract no	Contractor
Cementing	SAP4600002160	Halliburton
Core company	SAP4600004965	Baker Hughes Inteq
Mud Logging	SAP4600002064	Geoservices
Electric Wireline Logging	SAP4600007180	Schlumberger
Drilling Fluids	SAP4600002159	M-I Drilling Fluids
Measurement While Drilling	SAP4600002063	Baker Hughes Inteq
Subsea WH	SAP4600005076	Drill Quip
Casing Crew Service	SAP4600004001	Weatherford Norge AS
Rig Operations	SAP4600005980	Transocean
ROV Systems	SAP4600006702	Oceaneering