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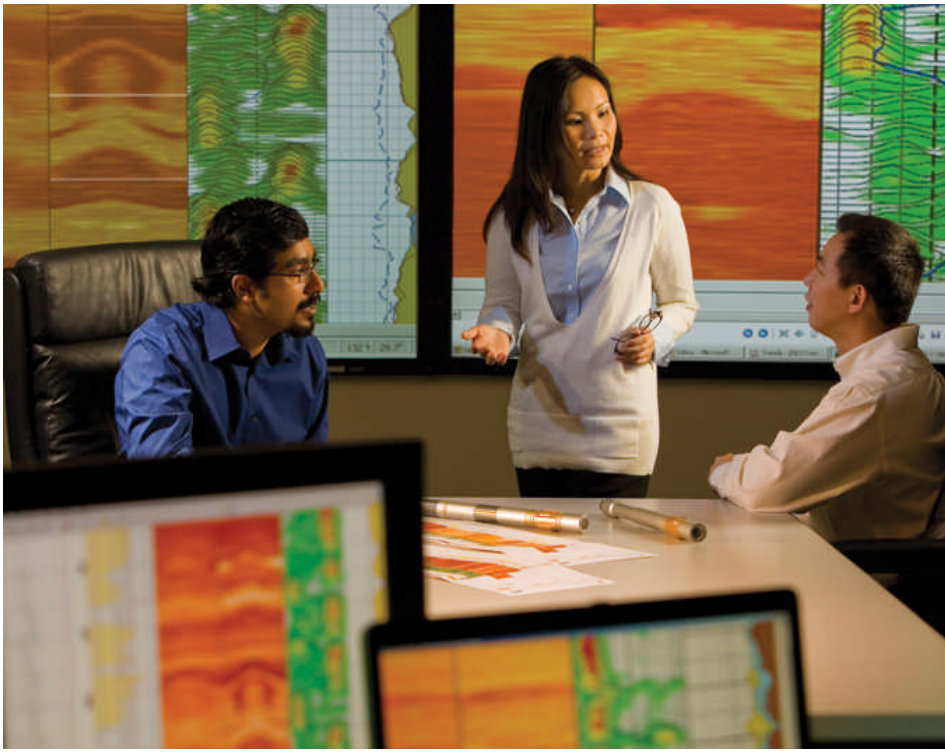
End Of Well Report

Directional Drilling, MWD, Mudlogging



Statoil ASA
Volve
Maersk Inspirer

15/9-F-1, F-1 A, F-1 B

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BAKER HUGHES

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BAKER HUGHES

OCTOBER 2013

CONTENTS

Verified by: Marthe L. Gundersen ..... Baker Hughes
Reporting Supervisor

Approved by: Øyvin Johnsen ..... Baker Hughes
Project Leader

Introduction

Operator:	Statoil ASA
Well Name:	15/9-F-1, F-1 A, F-1 B
Field:	Volve
Rig:	Maersk Inspirer
Contractor:	Maersk Drilling
Well Co-ordinates:	6 478 566.69m N - 435 046.49m E
RT to MSL:	54.9m
RT to Seabed:	145.9m
MSL to Seabed:	91m
Completion status:	Oil Producer

Wellbore Name	**15/9-F-1**	**15/9-F-1 A**	**15/9-F-1 B**
Spud Date:	23/Jul/13	22/Aug/13	29/Aug/13
TD Date:	16/Aug/13	25/Aug/13	06/Sep/13
Total Measured	3632.0	3682.0	3465.0
Total Vertical Depth	3330.4	3239.7	3259.9

Section	**Start m MD**	**End m MD**	**Start m TVD**	**End m TVD**	**Casing/liner etc.**	**Start m MD**	**End m MD**	**Start m TVD**	**End m TVD**
26”	226.0	1355.0	226.0	1342.9	20”	223.0	1348.0	223.0	1336.4
17 ½”	1355.0	2602.0	1342.9	2456.7	13 ⅜”	223.0	2595.0	223.0	2451.0
8 ½”	2602.0	3632.0	2456.7	3330.4					
8 ½” A	2621.0	3682.0	2473.1	3239.7					
12 ¼” B	2617.0	3097.0	2469.8	2901.5	9 ⅝”	223.0	3090.0	223.0	2895.1
8 ½” B	3097.0	3465.0	2901.5	3259.9					

SERVICE PROVIDED

Directional Drilling
Software System/Revision: Advantage 2.2.U4
Well Architect: 3.0.3 & 4.0

Type of service:
26" Steerable Motor Assembly: 12 ¾ Ultra X-treme AKO
17 ½" Rotary Steerable Assembly: AutoTrak G 3.0, SDTK
12 ¼" Rotary drill out Assembly
12 ¼" Injector: Rotary Steerable Assembly: AutoTrak G 3.0
8 ½" Pilot: Rotary Steerable Assembly: AutoTrak G 3.0, CoP, OTK, BCPM-II, ORD-2.6, CCN, TTK, SDTK, MTK
8 ½" Injector: Rotary Steerable Assembly: AutoTrak G 3.0, CoP, OTK, BCPM-II, ORD-2.6, CCN, TTK, SDTK

MWD
Software System/Revision: Advantage 2.2U4, PATS 6.4.1.34

Type of service:

26" Hole Section:	Gamma Ray, Multiple Propagation Resistivity, Annular Pressure, Flow-Off Service, Directional and VSS.
17 ½" Hole Section:	Gamma Ray, Multiple Propagation Resistivity, Near Bit Gamma Ray, Annular Pressure, Flow-Off Service, Directional and VSS.
8 ½" Hole Section:	Gamma Ray, Multiple Propagation Resistivity, Density, Neutron, Caliper, Acoustic, Magnetic Resonance, Formation Pressure Testing, Annular Pressure, Flow-Off Service, Directional and VSS.
8 ½" Hole Section A:	Gamma Ray, Multiple Propagation Resistivity, Density, Neutron, Caliper, Acoustic, Formation Pressure Testing, Annular Pressure, Flow-Off Service, Directional and VSS.
12 ¼" Hole Section B:	Gamma Ray, Multiple Propagation Resistivity, Annular Pressure, Flow-Off Service, Directional and VSS.
8 ½" Hole Section B:	Gamma Ray, Multiple Propagation Resistivity, Density, Neutron, Caliper, Acoustic, Formation Pressure Testing, Annular Pressure, Flow-Off Service, Directional and VSS.

SLS
Software System/Revision: Advantage 2.2U4, PATS 6.4.1.34

Type of service: Monitoring, analysing, reporting and storing of live well data.

Third Party Data Acquisition Supplied By: National Oil Varco**.**

Additional Service: Full sampling and formation service.

Crew:

ARTE/RPS

Maria Griffin	Bjørn A. Albrektsen	Tural Baghirov	Jamie Lowe	Jan Erik Solum
Eirik Pedersen	Anders Bjørklund	Pete Waldron	Gareth Lowe	Viktor Rubach

DDX

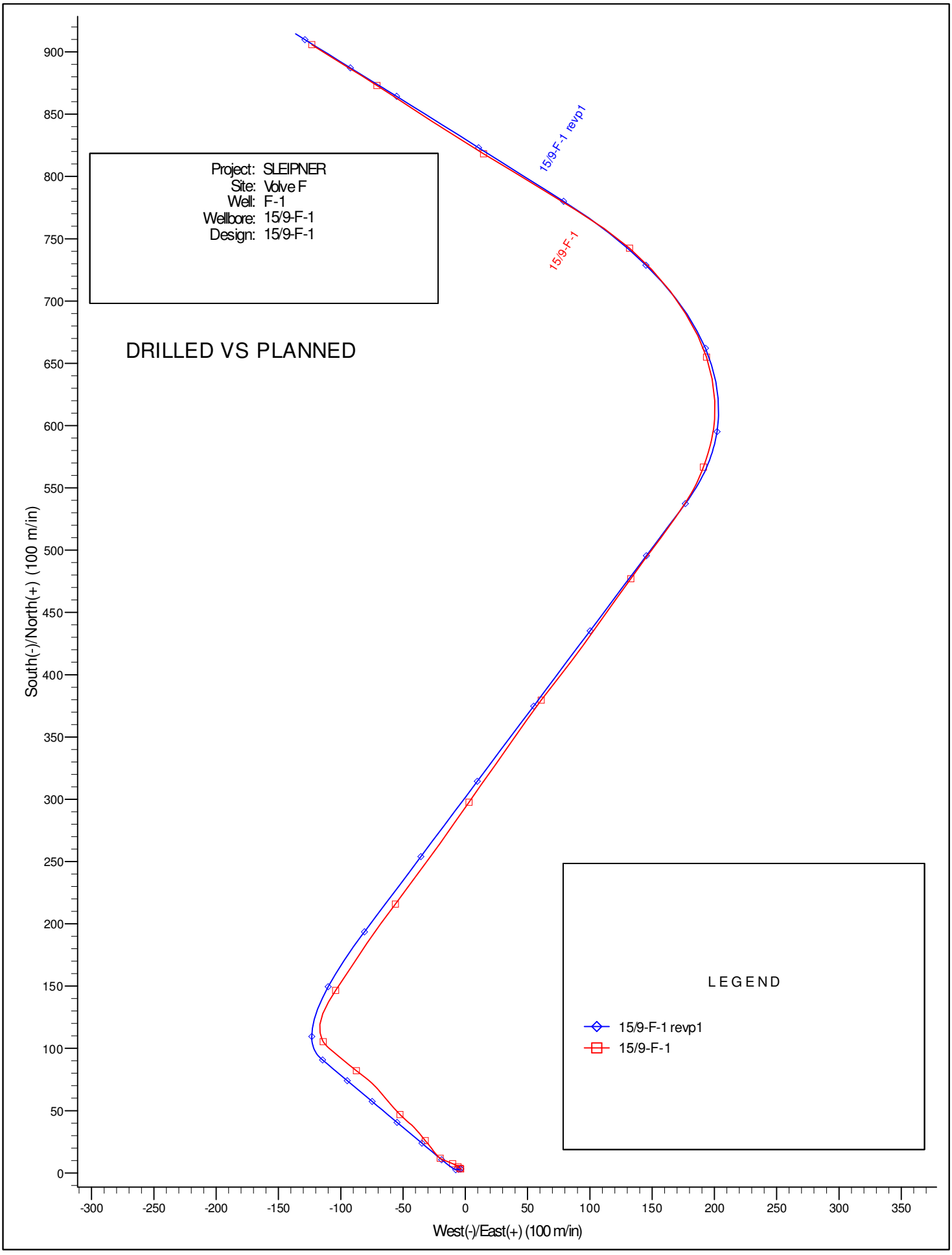
Alfred Herzog	Luc De Ripainsel	Geir Sliper	Paul Kingsley	Philip Corbin
Bennie Thole	Tor Berg	Duncan Halliwell		

BEACON

N-K. Nguyen	R. Maleknasri	M. Ajetunmobi	I. Hodneland	M. Panczyk
R. Ludwig	T. Meling	L.H. Hegland	R. Ludwig	J. Odland
K. Vevik	D. Nguyen	T. Fivelstad	A. Hovet	

LOGGER

Jan Roger Johnsen	Christer Vedø	Eivind Susort	Ivar Gundby	Ingeborg Odland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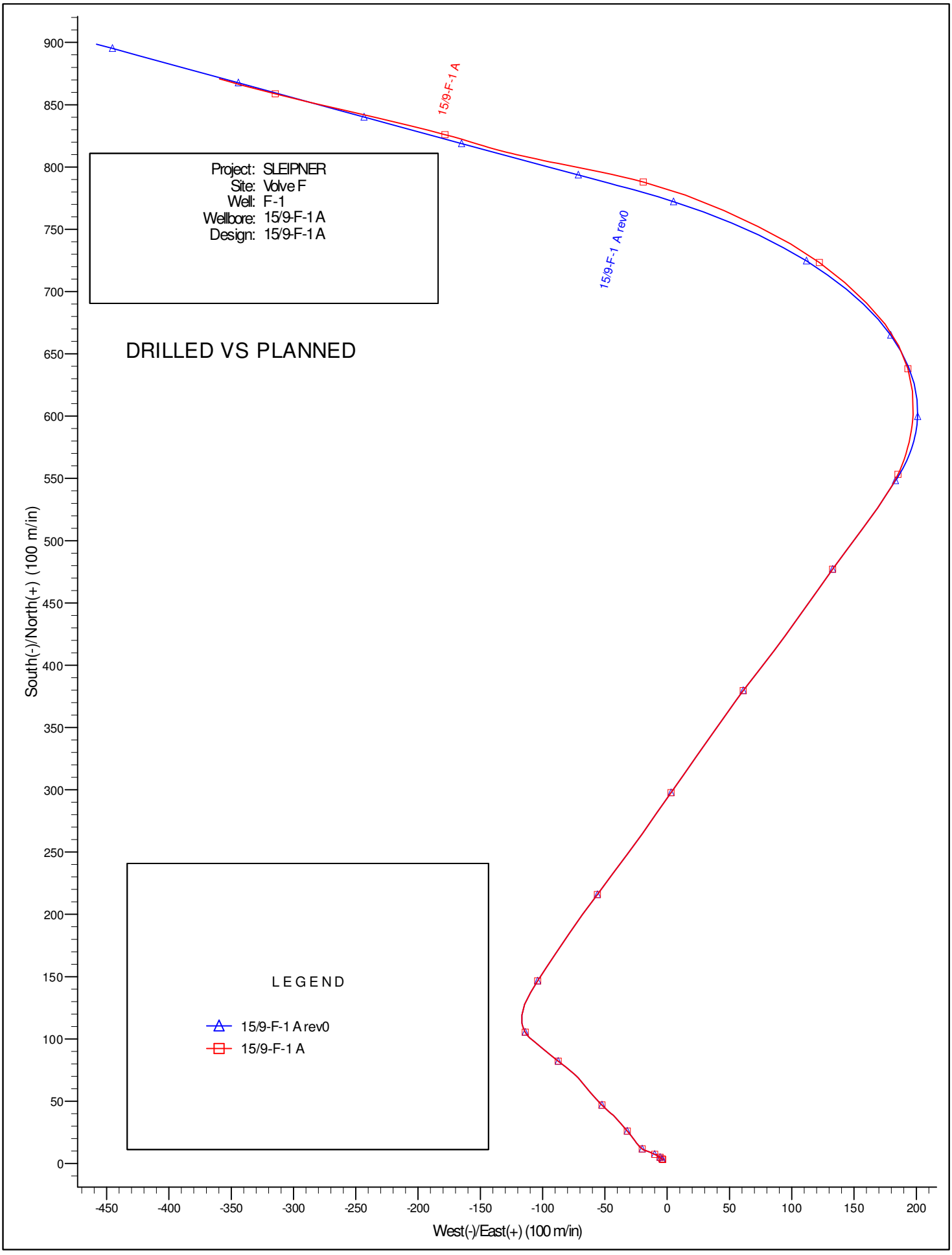
Site: Volve F
Well: F-1
Wellbore: 15/9-F-1
Design: 15/9-F-1
DRILLED VS PLANNED
15/9-F-1 revp1
15/9-F-1
South(-)/North(+) (100 m/in)
West(-)/East(+) (100 m/in)
LEGEND
15/9-F-1 revp1
15/9-F-1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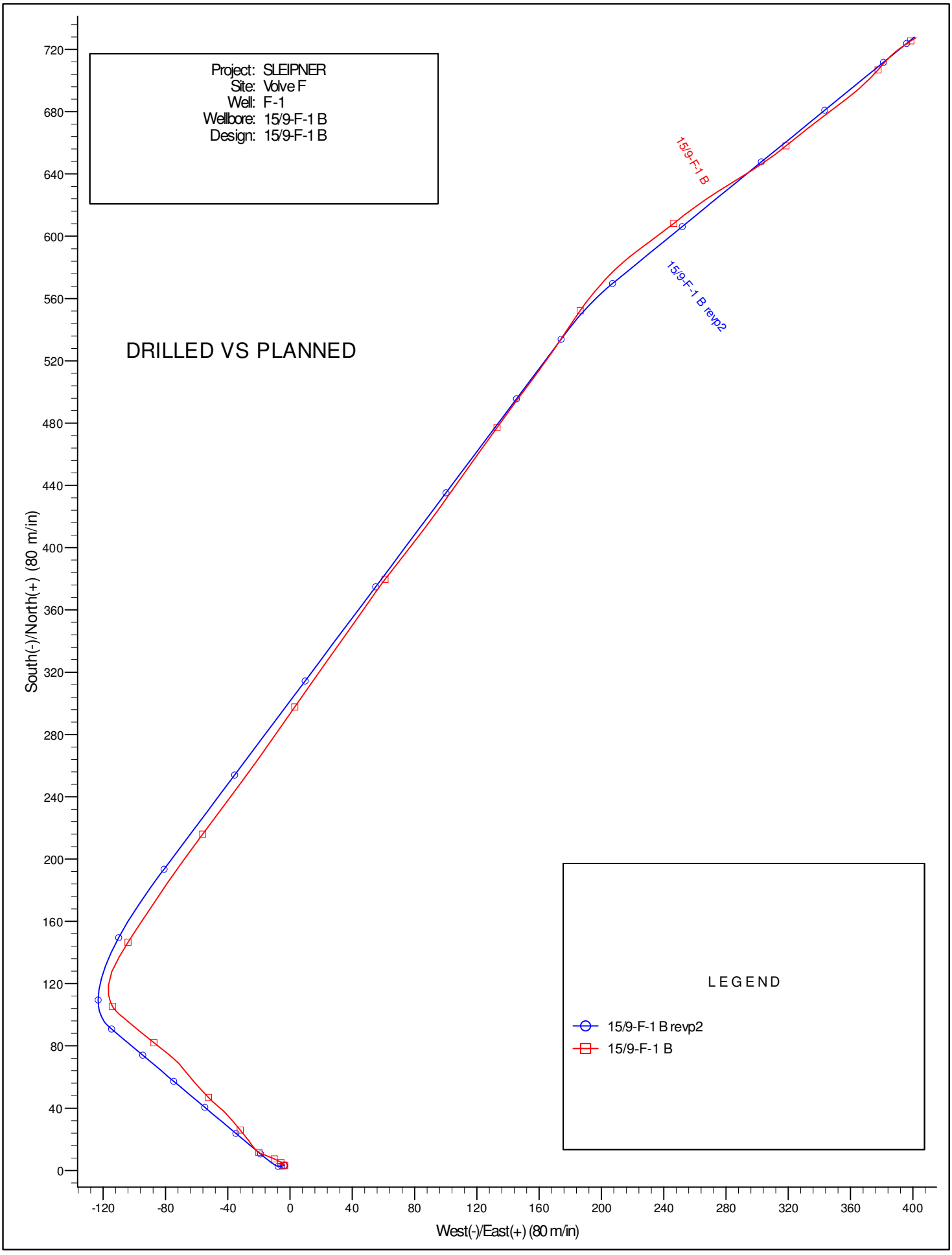
Site: Volve F
Well: F-1
Wellbore: 15/9-F-1 A
Design: 15/9-F-1 A
DRILLED VS PLANNED
15/9-F-1 A
15/9-F-1 A rev0
LEGEND
15/9-F-1 A rev0
15/9-F-1 A
South(-)/North(+) (100 m/in)
West(-)/East(+) (100 m/in)
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
-450
-400
-350
-300
-250
-200
-150
-100
-50
0
50
100
150
200


Project: SLEIPNER
Site: Volve F
Well: F-1
Wellbore: 15/9-F-1 B
Design: 15/9-F-1 B
DRILLED VS PLANNED
15/9-F-1 B
15/9-F-1 B revp2
LEGEND
15/9-F-1 B revp2
15/9-F-1 B
South(-)/North(+) (80 m/in)
West(-)/East(+) (80 m/in)
720
680
640
600
560
520
480
440
400
360
320
280
240
200
160
120
80
40
0
-120
-80
-40
0
40
80
120
160
200
240
280
320
360
400

26" Hole Section **226m - 1355m MD (226.0m – 1342.9m TVD)**

Hole Section Summary	This section was drilled in one bit run using a 26" bit, Motor, OnTrak II, BCPM and a GyroTrak (with a Scientific Drilling Gyro). The Scientific Modular Gyro sub was not able to take good quality Gyro surveys from 414m to 756m. Wireline was used to take surveys instead.		
Directional Objective	Drill out 36" conductor at 221m MD (TOC ±217m MD). Clean 36" rat hole to TD at 223m MD and 17 ½" rat hole to TD at 226m MD in steps. Drill 26" hole section to ±1360m MD. Build inclination from 0° along 260° azimuth from 226m MD within one stand (40m), without taking surveys. Drill tangent to 464m MD. Build inclination to 10° along 310° azimuth with 1.5° DLS. Drill tangent to section TD. No rotary drilling is foreseen through the Utsira sand formation from 888m to 1071m MD and through the Skade sand formation from 1205m to 1324m MD. Drilling will be done in sliding mode to avoid any drastic drop in inclination through these loose formations.		
LOT/FIT	None performed.		
Lithology	N/A (Returns to seabed)		
Mud type	Seawater with high viscosity sweeps. At TD, the well was displaced to1.35 SG KCl /polymer mud.		
Cavings	N/A (Returns to seabed)		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
		N/A	
Hole Condition/Cleaning	Some overpull was observed pulling out from TD. Pumping of seawater was necessary. A wiper trip to the conductor shoe was performed before running back into TD and again displace to 1.35 SG KCl/polymer mud.		
Gas	N/A (Returns to seabed)		
Casing	A shoe joint, a float collar assembly and 93 20" 133 lbs. /ft. N80 Tenaris ER casing joints and a casing hanger was run to a total depth of 1348.4m MD.		
Cementing	304m³ 1.56 SG lead slurry was pumped ahead of 30m³ 1.92 SG tail slurry. The cement was displaced with 212.6m³ seawater.		

Bit number	2
BHA run number	2
MWD run number	1
Bit size	26”
Manufacturer	HCC
Bit type	VG-1
Serial number	5219421
Nozzles	3x22, 1x20
TFA (in2)	1.4205
Motor type	Ultra X
Motor bend	1.4
MWD suite	OTKII-GTK-Motor
Depth IN (m)	226
Depth OUT (m)	1355
Date IN	22/Jul/2013
Date OUT	27/Jul/2013
Meters formation drilled	1129
HRS on bottom: formation	45.4
HRS on bottom: cement	2.6
Circulation HRS	127.0
Total Bit Revs (TBR)	317425
Avg ROP (m/hr)	24.9
Min - Max FLOW (l/min)	1373 - 4490
Min - Max PRESSURE (bar)	45 - 181
Min - Max WOB (tonnes)	1 - 18
Min - Max STRING RPM	0 - 121
Min - Max BIT RPM	29 - 210
Min - Max TORQUE (kNm)	0 - 20
Average TORQUE (kNm)	6.8
Mud weight (SG)	1.03
Mud type	Seawater
Max DOWNHOLE T (°C)	28
Start-End INCLINATION	0° - 10.17°
Max INCLINATION	12.06°
Start-End AZIMUTH	0° - 309.34°
Reason pulled	TD Section

17 ½" Hole Section 1355m - 2602m MD (1342.9m – 2456.7m TVD)

Hole Section Summary	This section was drilled in one bit run using a 17 ½" PDC bit, Near Bit Gamma, Steering Head, OnTrak and BCPM.		
Directional Objective	Drill cement and shoe track in 20" casing. Drill out rat hole to bottom of 26" hole at 1355m MD. Build inclination from 10° to 30.25° and simultaneously turn the well from 310° to 36.8° Azimuth with a dogleg severity of 2.5°. This should be accomplished by 1731m MD. A tangent section to 2590m MD will be drilled to the 13 ⅜" casing setting depth. Final depth for this 17 ½" section will be 20m TVD above the Ty Formation.		
LOT/FIT	FIT to 1.55 SG EQMW		
Lithology	Sandstone and claystone.		
Mud type	1.40 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
	1.0 – 1.3	1342.9 – 2456.7	From prognosis
Hole Condition/Cleaning	Hole cleaning was generally good, the ECD stayed low between 1.40 and 1.41 SG. There was little mud loss to the formation with most of the 4m³/hr. loss accounted for by mud on cuttings. This trend line indicated that this mud on cuttings was 70% of the cuttings coming out of the hole.		
Gas	Gas readings varied between 0.01% and 1.51% with an average of 0.47%.		
Casing	A shoe joint, a float collar assembly and 65 13 ⅜" 72 lbs./ft. Q125 Vam Top casing stands and a casing hanger were run to a total depth of 2595.4m MD.		
Cementing	There was 25m³ of spacer pumped ahead of 27.7m³ 1.92 SG lead slurry. Another spacer of 3m³ was pumped by the cement unit before the cement was displaced by pumping 186.5m³ of oil based mud with the rig pumps. There was 0.5m³ loss during pumping of the spacer, 0.5m³ loss during the pumping of the slurry and finally 10m³ during the displacement of the cement with oil based mud.		

Bit number	3
BHA run number	3
MWD run number	2
Bit size	17 ½"
Manufacturer	HCC
Bit type	QD606X
Serial number	7902062
Nozzles	2x16, 2x14, 3x12
TFA (in2)	1.3254
Motor type	N/A
Motor bend	N/A
MWD suite	OTK-BCPM-NBG
Depth IN (m)	1355
Depth OUT (m)	2602
Date IN	03/Aug/2013
Date OUT	09/Aug/2013
Meters formation drilled	1247
HRS on bottom: formation	67.3
HRS on bottom: cement	N/A
Circulation HRS	110.3
Total Bit Revs (TBR)	543170
Avg ROP (m/hr)	18.5
Min - Max FLOW (l/min)	3000 - 4500
Min - Max PRESSURE (bar)	140 - 296
Min - Max WOB (tonnes)	1 - 21
Min - Max STRING RPM	60 - 160
Min - Max BIT RPM	60 - 160
Min - Max TORQUE (kNm)	5 - 32
Average TORQUE (kNm)	18
Mud weight (SG)	1.4
Mud type	OBM
Max DOWNHOLE T (°C)	100
Start-End INCLINATION	7.77° - 30.19°
Max INCLINATION	30.25°
Start-End AZIMUTH	329.93° - 33.06°
Reason pulled	TD

12 ¼" Hole Section 2602m – 2605m MD (2456.7m – 2459.3m TVD)

Hole Section Summary	This was a drill out run, using a 12 ¼" bit and Near Bit Stabiliser. Drilled out the shoe track, cement, and 3m of new formation to perform an FIT.		
Directional Objective	Drill out 13 ⅜" shoe track. Displace well to 1.28 SG oil based mud. Perform FIT to 1.55 SG. Perform drop Gyro.		
LOT/FIT	FIT to1.55 SG EQMW.		
Lithology	Sandstone and claystone.		
Mud type	1.28 - 1.40 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
	1.3	2456.7 – 2459.3	From prognosis
Hole Condition/Cleaning	Hole cleaning good through the 3 meters drilled.		
Gas	Gas readings varied between 0.01% and 0.02%		
Casing	N/A		
Cementing	N/A		

Bit number	4
BHA run number	4
MWD run number	-
Bit size	12 ¼"
Manufacturer	HCC
Bit type	VM-1
Serial number	5203220
Nozzles	3x18, 1x22
TFA (in2)	1.1167
Motor type	N/A
Motor bend	N/A
MWD suite	N/A
Depth IN (m)	2602
Depth OUT (m)	2605
Date IN	13/Aug/2013
Date OUT	14/Aug/2013
Meters formation drilled	3
HRS on bottom: formation	0.2
HRS on bottom: cement	3.0
Circulation HRS	4.32
Total Bit Revs (TBR)	10831
Avg ROP (m/hr)	20
Min - Max FLOW (l/min)	2450 - 2950
Min - Max PRESSURE (bar)	105 - 140
Min - Max WOB (tonnes)	5 - 15
Min - Max STRING RPM	60 - 120
Min - Max BIT RPM	60 - 120
Min - Max TORQUE (kNm)	5 - 18
Average TORQUE (kNm)	14
Mud weight (SG)	1.28 - 1.4
Mud type	OBM
Max DOWNHOLE T (°C)	N/A
Start-End INCLINATION	N/A
Max INCLINATION	N/A
Start-End AZIMUTH	N/A
Reason pulled	TD

8 ½" Hole Section 2602m – 3632m MD (2456.7m – 3330.4m TVD)

Hole Section Summary	This section was drilled in one bit run using an 8 ½" PDC bit, Steering Head, CoPilot, OnTrak, BCPM II, ORD, CCN, TesTrak, SoundTrak and MagTrak.		
Directional Objective	Drill 8 ½" hole with 3° DLS turning 90° left from 33 to 302° azimuth and building up from 30° to 45° inclination by 3134m. A short tangent will be drilled before a straight drop at 3°/30m to 21° inclination. There will then be a 150m tangent section to TD at 3598m. The Hugin reservoir will be penetrated on the North Upside to examine its prospect, prove oil and define the OWC. A gyro will be dropped at TD.		
LOT/FIT	None performed.		
Lithology	Sandstone, claystone and limestone.		
Mud type	1.28-1.32 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
	2459-2470	1.03	From prognosis
	2470-2600	0.865	
	2600-3006	1.00-1.29	
	3006-3046	1.29	
	3046-3632	1.12-1.07	
			TesTrak pressure points
	3172.2	353.49 (bar)	Good Test
	3162.2	351.33 (bar)	Good Test
	3080.0	342.05 (bar)	Good Test
	3060.0	368.59 (bar)	Tight
	3056.0	340.64 (bar)	Good Test
	3046.3	345.38 (bar)	Tight
Hole Condition/Cleaning	Hole cleaning was generally good, the ECD stayed between 1.297 and 1.404 SG. There was little mud loss to the formation with most of the 1.5m³/hr. loss accounted for by mud on cuttings. This trend lines indicated that this mud on cuttings was 150% of the cuttings coming out of the hole.		
Gas	Gas readings varied between 0.01% and 0.98% with an average of 0.10%.		
Casing	N/A		
Cementing			

Bit number	5	6
BHA run number	5	6
MWD run number	3	4
Bit size	8 ½ ”	8 ½ ”
Manufacturer	HCC	HCC
Bit type	TD406X	TD406X
Serial number	7144696	7145926
Nozzles	2x15, 4x14	2x15, 4x14
TFA (in2)	0.9465	0.9465
Motor type	N/A	N/A
Motor bend	N/A	N/A
MWD suite	BCPMII-CoPilot-OTK-LTK-MTK-APX-FPT	BCPMII-OTK-APX-FPT
Depth IN (m)	2605	3632
Depth OUT (m)	3632	3632
Date IN	14/Aug/2013	17/Aug/2013
Date OUT	17/Aug/2013	19/Aug/2013
Meters formation drilled	1027	N/A
HRS on bottom: formation	43.8	N/A
HRS on bottom: cement	N/A	N/A
Circulation HRS	61.3	27.4
Total Bit Revs (TBR)	393896	N/A
Avg ROP (m/hr)	23.4	N/A
Min - Max FLOW (l/min)	1951 - 2412	N/A
Min - Max PRESSURE (bar)	100 - 221	N/A
Min - Max WOB (tonnes)	3 - 13	3 - 15 (off bottom)
Min - Max STRING RPM	60 - 162	N/A
Min - Max BIT RPM	60 - 160	60 - 150
Min - Max TORQUE (kNm)	10 - 24	N/A
Average TORQUE (kNm)	18	N/A
Mud weight (SG)	1.28 - 1.32	1.32
Mud type	OBM	OBM
Max DOWNHOLE T (°C)	102	91
Start-End INCLINATION	27.05° - 20.89°	N/A
Max INCLINATION	40.86°	N/A
Start-End AZIMUTH	19.76° - 302.46°	N/A
Reason pulled	TD	TD

8 ½" Hole Section A 2621m – 3682m MD (2473.1m – 3239.7m TVD)

Hole Section Summary	This section was drilled in one bit run using an 8 ½" PDC bit, Steering Head, CoPilot, OnTrak, BCPM II, ORD, CCN, TesTrak and SoundTrak.		
Directional Objective	Perform sidetrack at 2610m MD in the cemented pilot hole below the 13 ⅜" casing shoe. Build inclination from 30.19° to 64.65° and turn the direction from 33° to 284° with a 3.75°/30m DLS. Continued by a straight drop to 44.2° with a 3.75°/30m DLS. Drill tangent section to TD at 3829m MD. A gyro will be dropped at TD.		
LOT/FIT	None performed.		
Lithology	Sandstone, claystone and limestone.		
Mud type	1.28-1.32 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
	2459-2440	1.03	From prognosis
	2440-2600	0.865	
	2600-3006	1.00-1.29	
	3006-3046	1.29	
	3046-3632	1.12-1.07	
			TesTrak pressure points
	3104.1	367.97 (bar)	No/Lost Seal
	3103.5	366.07 (bar)	Good Test
	3094.2	377.66 (bar)	Tight
	3095.0	327.80 (bar)	Tight
	3081.8	351.82 (bar)	Good Test
	3078.3	351.44 (bar)	Good Test
	3063.1	350.31 (bar	Good Test
Hole Condition/Cleaning	Hole cleaning was generally good, the ECD stayed between 1.321 and 1.420 SG. There was little mud loss to the formation with most of the 0.8m³/hr. loss is accounted for by mud on cuttings. This trend line indicated that this mud on cuttings was 120% of the cuttings coming out of the hole.		
Gas	Gas readings varied between 0.01% and 3.74% with an average of 0.34%.		
Casing	N/A		
Cementing	Four cement plugs were set to plug and abandon the pilot hole. For the first plug, 11.6m^3 of 1.60 SG spacer were pumped with the rig pumps ahead of the cement. The first plug was set from 3682-3387m MD, pumping 14m^3 of 1.90 SG ThermaCem cement slurry. The cement was displaced with 29.1m^3 of 1.32 SG oil based mud. For the second plug, 11.6m^3 of 1.60 SG spacer were pumped using the rig pumps. The plug was set from 3387m-3092m MD, by pumping 14m^3 of 1.90 SG ThermaCem cement slurry. The cement was then displaced with 25.9m^3 of 1.32 SG oil based mud. For the third plug, 11.6m^3 of 1.60		

	SG spacer were pumped with rig pumps ahead of the cement. The plug was set from 3092m-2797m MD, by pumping 14m^3 of 1.90 SG ThermaCem cement slurry, and the cement was then displaced pumping 22.6m^3 1.32 SG oil based mud. For the fourth plug, 11.6m^3 of 1.60 SG spacer were pumped with rig pumps ahead the cement. The plug was set from 2797m-2547m MD by pumping 13.3m^3 of 2.00 SG PlugCem cement slurry. It was displaced by 22.3m^3 of 1.32 SG oil based mud.

Bit number	6RR
BHA run number	7
MWD run number	5
Bit size	8 ½ ”
Manufacturer	HCC
Bit type	TD406X
Serial number	7145926
Nozzles	2x15, 4x14
TFA (in2)	0.9465
Motor type	N/A
Motor bend	N/A
MWD suite	BCPMII-CoPilot-OTK-LTK-APX-FPT
Depth IN (m)	2620
Depth OUT (m)	3682
Date IN	22/Aug/2013
Date OUT	26/Aug/2013
Meters formation drilled	1062
HRS on bottom: formation	54.4
HRS on bottom: cement	3.3
Circulation HRS	80.5
Total Bit Revs (TBR)	480279
Avg ROP (m/hr)	19.6
Min - Max FLOW (l/min)	1800 - 2400
Min - Max PRESSURE (bar)	92 - 198
Min - Max WOB (tonnes)	4 - 14
Min - Max STRING RPM	80 - 160
Min - Max BIT RPM	60 - 160
Min - Max TORQUE (kNm)	10 - 20
Average TORQUE (kNm)	18
Mud weight (SG)	1.28 - 1.32
Mud type	OBM
Max DOWNHOLE T (°C)	100
Start-End INCLINATION	29.93° - 44.05°
Max INCLINATION	63.21°
Start-End AZIMUTH	25.32° - 283.7°
Reason pulled	TD

12 ¼" Hole Section B 2617m – 3097m MD (2469.8m – 2901.5m TVD)

Hole Section Summary	This section was drilled in one bit run using a 12 ¼" PDC bit, ASS, CoPilot, Extreme Motor, OnTrak and a BCPM.		
Directional Objective	Perform a sidetrack at 2604m MD in the cemented pilot hole below 13 ⅜" casing shoe. The plan is to drop inclination from 29.75° to 25.99°, turn the direction from 38.02° to 50.77° with a 2.5°/30m dogleg and continue drilling a tangent to TD.		
LOT/FIT	None performed.		
Lithology	Claystone, sandstone and limestone. No samples collected.		
Mud type	1.28 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From – To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
		N/A	
Hole Condition/Cleaning	Hole cleaning was generally good, the ECD stayed between 1.31 and 1.33 SG. Up and down weights at connection as well as torque trends, followed the expected trends. No indications of hole problems. Mud loss trend was generally consistent trough the section with trend lines indicated that mud on cuttings was 120% of the cuttings coming out of the hole.		
Gas	Gas readings varied between 0.01% and 1.35% with an average of 0.29%.		
Casing	A 9 ⅝" casing shoe joint was run before two 9 ⅝" 53.5lbs/ft. P110 Vam Top intermediate joint, a float joint assembly and 198 joints of 9 ⅝" 53.5lbs/ft. P110 Vam Top casing a crossover joint, 36 joints of 10 ¾" 65.7lbs/ft. P110 Vam Top casing joints and a casing hanger. The casing shoe was set at 3090.1m MD.		
Cementing	22m³ of 1.60 SG spacer was pumped ahead of 14m³ 1.90 SG cement slurry and displaced with 1.28 SG oil based mud. Top plug bumped at 5190 strokes (95.6% efficiency). Pressured up to 70 bars above final circulating pressure. A total of 8m³ was lost during the cement job.		

Bit number	7
BHA run number	1
MWD run number	6
Bit size	12 ¼ ”
Manufacturer	HCC
Bit type	TD605
Serial number	7145013
Nozzles	7x15
TFA (in2)	1.2080
Motor type	9 ½” X-treme
Motor bend	-
MWD suite	ATK-3.0, MXT, OTK-II, CoP, BCPM
Depth IN (m)	2617
Depth OUT (m)	3097
Date IN	28/Aug/2013
Date OUT	31/Aug/2013
Meters formation drilled	480
HRS on bottom: formation	22.7
HRS on bottom: cement	5.0
Circulation HRS	37.4
Total Bit Revs (TBR)	272472
Avg ROP (m/hr)	37.4
Min - Max FLOW (l/min)	2713 - 3522
Min - Max PRESSURE (bar)	147 - 241
Min - Max WOB (tonnes)	1 - 15
Min - Max STRING RPM	40 - 111
Min - Max BIT RPM	128 - 250
Min - Max TORQUE (kNm)	11 - 30
Average TORQUE (kNm)	21
Mud weight (SG)	1.28 - 1.28
Mud type	OBM
Max DOWNHOLE T (°C)	94.1
Start-End INCLINATION	30.19° - 23.40°
Max INCLINATION	30.19°
Start-End AZIMUTH	33.06° - 52.18°
Reason pulled	TD

8 ½" Hole Section B 3097m – 3465m MD (2901.5m – 3259.9m TVD)

Hole Section Summary	This section was drilled in one bit run using an 8 ½" PDC bit, ASS, CoPilot, OnTrak, BCPM-II, ORD, CCN, TesTrak and SoundTrak.		
Directional Objective	Drop inclination from 26° to 5° with a 2.5°/30m dogleg and keep direction at ±50° to TD. After re-logging, TesTrak pressure points were to be taken.		
LOT/FIT	FIT to 1.60 SG EQMW		
Lithology	Calcareous claystone (Marl) with some limestone stringers and sandstone.		
Mud type	1.32 SG Enviromul oil based mud		
Cavings	None observed.		
Formation Pressure	**Depth m TVD From - To**	**Pore Pressure SG MSL (RT)**	**Indicators/Comments**
	2901.5 – 3259.9	1.05– 1.39	**From prognosis** Increasing from 1.05 at top down towards Draupne. Maximum in Draupne Dropping beneath Heather about 3160m TVD.
			TesTrak pressure points
	3125.28m	1.12 SG	Good Test
	3096.94m	1.15 SG	Good Test
	3091.49m	1.15 SG	Good Test
	3086.55m	1.15 SG	Good Test
	3076.14m	1.15 SG	Good Test
	3069.29m	1.15 SG	Good Test
	3062.41m	1.15 SG	Good Test
	3056.98m	1.15 SG	Good Test
	3051.12m	1.15 SG	Good Test
	3043.32m	1.15 SG	Good Test
Hole Condition/Cleaning	Hole cleaning was generally good, the ECD stayed between 1.31 and 1.33 SG. Up and down weights at connection as well as torque trends, followed the expected trends. No indications of hole problems.		
Gas	Gas readings varied between 0.01% and 6.60% with an average of 0.94%.		
Casing	A 7" reamer shoe, three 7" intermediate joints, a landing collar assembly and 37 joints of 7" 13 CrS-110 Vam Top HT liner was run followed by a liner hanger assembly. The shoe was set at 3463.5m MD.		

Cementing	15m³ of 1.38 SG Tuned Spacer E+ was pumped ahead of 11.20m³ of 1.90 SG cement slurry. The cement was displaced with 41m³ oil based mud with a calculated pump efficiency of 95.3%. Bumped the plug with a final circulation pressure of 100bar and pressured up to 170bar.

Bit number	8
BHA run number	2
MWD run number	7
Bit size	8 ½”
Manufacturer	HCC
Bit type	TD606X
Serial number	7144992
Nozzles	2x15, 4x14
TFA (in2)	0.9465
Motor type	N/A
Motor bend	N/A
MWD suite	ATK-3.0, MXT, OTK-II, CoP, BCPM
Depth IN (m)	3097
Depth OUT (m)	3465
Date IN	04/Sep/2013
Date OUT	07/Sep/2013
Meters formation drilled	368
HRS on bottom: formation	15.9
HRS on bottom: cement	6.2
Circulation HRS	40.3
Total Bit Revs (TBR)	124624
Avg ROP (m/hr)	23.1
Min - Max FLOW (l/min)	1342 - 2392
Min - Max PRESSURE (bar)	124 - 233
Min - Max WOB (tonnes)	1 - 11
Min - Max STRING RPM	52 - 141
Min - Max BIT RPM	40 - 140
Min - Max TORQUE (kNm)	8 - 24
Average TORQUE (kNm)	18
Mud weight (SG)	1.32 - 1.32
Mud type	OBM
Max DOWNHOLE T (°C)	96
Start-End INCLINATION	20.83° - 4.32°
Max INCLINATION	20.83°
Start-End AZIMUTH	52.58° - 59.58°
Reason pulled	TD

26" HOLE SECTION 226m - 1355m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run #1, using OnTrak II, Scientific Modular Gyro sub and a motor. The Scientific Modular Gyro sub was not able to take good quality Gyro surveys from 414m to 756m. Wireline was used to take surveys instead. Otherwise, tools performed to specifications.

LOGGING SUMMARY

The log quality in this section was good, except for small gaps due to insufficient flow during pumping of Hi-Vis pills and sweeps. This section was drilled with 1.03 SG seawater, and the Gamma Ray was not corrected for borehole size or mud weight. Memory logs had as mentioned some gaps; real-time was even worse because of poor decoding due to the same reasons and in addition the high ROP.

17 ½" HOLE SECTION 1355m - 2602m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run#2, using OnTrak II, ZoneTrak G and an AutoTrak G3. The tools performed to specifications.

LOGGING SUMMARY

The log quality in this section was good. A 1-meter gap was generated in the QC-logs due to a faulty depth shift, at 2047m MD. The logs produced did not exhibit any gaps. This section was drilled with 1.4 SG oil based mud.

8 ½" HOLE SECTION 2602m – 3632m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run #3, utilizing AutoTrak G3, OnTrak, BCPMII, CoPilot, TesTrak, SoundTrak, LithoTrak and MagTrak. It was discovered that the SoundTrak was not working properly while drilling this hole section, nor were any TesTrak points were taken due to problems with tool. The customer was notified and decision was made to drill ahead. Due to this, a separate logging run was performed utilizing OnTrak, BCPMII, TesTrak and SoundTrak.
In logging run, all sensors performed to specifications, six TesTrak points were taken, two tight and four good.

LOGGING SUMMARY

This section was drilled with 1.28-1.32 SG oil based mud. Drilled this section with NRZ 10bps/20Hz that gave a good real-time log. Memory data was also of good quality, though soundtrack data was bad data and deleted. After drilling to TD in this hole section, a re-log while backreaming was performed in the Hugin Formation on customers request. Six formation pressure points were taken with the TesTrak tool prior to re-logging/backreaming out of hole.

8 ½" HOLE SECTION A 2621m – 3682m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run #5, utilising AutoTrak G3, OnTrak, BCPMII, CoPilot, TesTrak, SoundTrak and LithoTrak. All tools worked to specifications, seven TesTrak points were taken, three tight and four good.

LOGGING SUMMARY

This section was drilled with 1.28-1.32 SG oil based mud. Drilled this section with NRZ 10bps/20Hz that gave a good real-time log and memory data. Gap in data from 3591m – 3598.8m MD due to RPI feed lost connection. Seven formation pressure points were taken with TesTrak tool, three tight and four of good quality.

12 ¼" HOLE SECTION B 2617m - 3097m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run #6, using OnTrak II, AutoTrak and CoPilot. The tools performed to specifications.

LOGGING SUMMARY

This section was drilled with 1.28 SG oil based mud. All sensors in this run performed to specifications.

8 ½" HOLE SECTION B 3097m - 3465m MD

TOOL PERFORMANCE

This section was drilled in one run, LWD Run #7, utilising AutoTrak G3, OnTrak, BCPMII, CoPilot, TesTrak, SoundTrak and LithoTrak. All tools worked to specifications. In total, ten TesTrak points were taken and all were good.

LOGGING SUMMARY

This section was drilled with 1.32 SG oil based mud. Drilled with NRZ 10bps/20Hz that gave a good real-time log. Memory data was also of good quality. After drilling to TD, a re-log while backreaming was performed on customer's request.

MWD/LWD DOWNHOLE EQUIPMENT OPERATION SUMMARY

Job #: NOR2241 **Rig:** Maersk Inspirer **Client:** Statoil **Well:** 15/9-F-1 Rev. 6.2 - 04.02.06 - RS

Run	Diameter, inches		Depth		Drilled	Tool in		Tool out		Hours		Operating Hours													Operating Distance - meters logged, m MD													#	Prob.
No.	Hole	Tool	Start	End	m	Date	Time	Date	Time	D'hole	Circ	Pulse	Mem	Dir	Nbi	GR	Res	Por	Dens	Ap	Dyn	APX	FPT	Cal	Pulse	Mem	Dir	Nbi	GR	Res	Por	Dens	Ap	Dyn	APX	FPT	Cal	Svys	Y/N
1	26.00	9 1/2"	221.0	1355.0	1134.0	22-Jul-13	6:40	28-Jul-13	9:00	146.3	81.6	81.6	81.6	81.6	N/A	81.6	81.6	N/A	N/A	81.6	81.6	N/A	N/A	N/A	1134	1134	1134	N/A	1134	1134	N/A	N/A	1134	1134	N/A	N/A	N/A	41	N
2	17.50	9 1/2"	1355.0	2602.0	1247.0	4-Aug-13	2:00	9-Aug-13	11:45	129.8	101.1	101.1	101.1	101.1	101.1	101.1	101.1	N/A	N/A	N/A	101.1	N/A	N/A	N/A	1247	1247	1247	N/A	1247	1247	N/A	N/A	N/A	1247	N/A	N/A	N/A	30	N
3	8.50	6 3/4"	2605.0	3632.0	1027.0	14-Aug-13	0:45	17-Aug-13	21:45	93.0	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	61.6	0.0	0.0	61.6	1027	1027	1027	1027	1027	1027	1027	1027	1027	1027	0	0	1027	26	Y
4	8 1/2"	6 3/4"	3236.0	3236.0	0.0	17-Aug-13	22:00	20-Aug-13	7:00	57.0	27.4	27.4	27.4	27.4	N/A	27.4	27.4	N/A	N/A	27.4	27.4	27.4	27.4	N/A	1027	1027	1027	N/A	1027	1027	N/A	N/A	1027	1027	1027	1027	N/A	0	N
5	8 1/2"	6 3/4"	2602.0	3682.0	1080.0	22-Aug-13	5:30	26-Aug-13	0:00	90.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	80.5	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	1080	28	N
6	12.25	9 1/2"	2603.0	3097.0	494.0	28-Aug-13	23:30	31-Aug-13	10:45	59.3	37.4	37.4	37.4	37.4	37.4	37.4	37.4	N/A	N/A	37.4	37.4	N/A	N/A	N/A	494	494	494	494	494	494	N/A	N/A	494	494	N/A	N/A	N/A	14	N
7	8 1/2"	6 3/4"	3097.0	3465.0	368.0	4-Sep-13	10:00	7-Sep-13	9:16	71.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	368	368	368	368	368	368	368	368	368	368	368	368	368	9	N
			TOTAL:		5350			TOTALS:		647.1	429.9	429.9	429.9	429.9	320.9	429.9	429.9	182.4	182.4	328.8	429.9	148.2	148.2	182.4	6377	6377	6377	2969	6377	6377	2475	2475	5130	6377	2475	2475	2475	148	

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Rev. 6.2 - 04.02.06 - RS

Run No.	1
Date in	22-Jul-13
Time in	6:40
Depth in	221.0
Date out	28-Jul-13
Time out	9:00
Depth out	1355.0
Directional Information:	
Drill Collar S/N (DC)	10461297
Drill Collar OD	9 1/2"
Directional offset to bit	19.28
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	
AutoTrak OD	
Directional offset to bit	
Gamma Information:	
Gamma type	OnTrak II
Gamma sub OD	9 1/2"
Gamma (1) S/N	10461297
GRAPICF	4.068
Gamma (2) S/N	10461297
GRAPICF	4.051
Sensor offset to bit	17.82
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	10461297
Resitivity OD	9 1/2"
Sensor offset to bit	15.64
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak II
Pressure/Dynamics sub S/N	10461297
Pressure/Dynamics sub OD	9 1/2"
Sensor offset to bit	16.93
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	
FPT sub S/N	
FPT sub OD	
Sensor offset to bit	

Hole Size (inches)	26.00
Assembly Type	
Reason run	
Why laid down	#REF!
Near Bit Inclination Information:	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	
Neutron Sub OD / Type	
Run with Neutron Source S/N	
Calibrated to Neutron Source S/N	
Neutron Calibration factor (a / b)	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Density Information:	
Density Sub S/N (MDL/ORD)	
Density Sub OD	
Density Stabiliser S/N	
Density Stabiliser OD	
Density Stabiliser	
Density Detector spacing type	
Run with Gamma Source S/N	
Calibrated to Gamma Source S/N	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Acoustic Information:	
Acoustic Sub Type	
Acoustic Sub S/N	
Acoustic Sub OD	
Sensor offset to bit	

Job Number	NOR2241
Rig	Maersk Inspirer
Well	15/9-F-1
Client	Statoil
Telemetry format	Hercules
Max circulating temperature (TCDX)	28

Environmental Correction Information - data set 1:	
Date	21-Jul-13
Time	22:39
Bit Depth	0.0
Mud Type	Sea Water
Mudweight	1.03
Mud Chlorides	35.00
Oil/Water Ratio	0/100
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	0.230
Rmf (mudfiltrate) at surface conditions	0.230
Rmc (mudcake) at surface conditions	0.230
Surface conditions temperature	10.0
Bottom hole temperature	10.0
Rm at bottom hole temperature	0.230
Rmf at bottom hole temperature	0.230
Rmc at bottom hole temperature	0.230

Logging dates / times:	
Start Log - Date	22-Jul-13
Start Log - Time	20:08
Start Bit Depth	20.9
End Log - Date	28-Jul-13
End Log - Time	1:53
End Bit Depth	20.9

ASO Mud Corrections	
True Vertical Depth	
Mud Weight	
BHCT	
% Oil based	
ASO calibration factor used	
Casing ID (inches)	
CALX (inches)	
CCF (Caliper Correction Factor)	

Environmental Correction Information - data set 2:	
Date	
Time	
Bit Depth	
Mud Type	
Mudweight	
Mud Chlorides	
Oil/Water Ratio	
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	
Rmf (mudfiltrate) at surface conditions	
Rmc (mudcake) at surface conditions	
Surface conditions temperature (deg C)	
Bottom hole temperature (deg C)	
Rm at bottom hole temperature	
Rmf at bottom hole temperature	
Rmc at bottom hole temperature	

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	OTK-II GTK BCPM
LWD Service Code:	G-t3 d1 g1 r3 p3 v2

Run Summary	Modular Gyro Ser.No.10231321 Sensor offset to bit: 28.11
	Total depth 1355

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	2
Date in	4-Aug-13
Time in	2:00
Depth in	1355.0
Date out	9-Aug-13
Time out	11:45
Depth out	2602.0
Directional Information:	
Drill Collar S/N (DC)	
Drill Collar OD	
Directional offset to bit	
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	10461297
AutoTrak OD	9 1/2"
Directional offset to bit	13.59
Gamma Information:	
Gamma type	OnTrak
Gamma sub OD	9 1/2"
Gamma (1) S/N	10461297
GRAPICF	4.060
Gamma (2) S/N	10461297
GRAPICF	4.050
Sensor offset to bit	12.09
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	10461297
Resitivity OD	9 1/2"
Sensor offset to bit	9.89
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak
Pressure/Dynamics sub S/N	10461297
Pressure/Dynamics sub OD	9 1/2"
Sensor offset to bit	11.19
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	
FPT sub S/N	
FPT sub OD	
Sensor offset to bit	

Hole Size (inches)	17.50
Assembly Type	AutoTrak
Reason run	Drill out Casing Shoe
Why laid down	End of Hole Section
Near Bit Inclination Information:	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	
Neutron Sub OD / Type	
Run with Neutron Source S/N	
Calibrated to Neutron Source S/N	
Neutron Calibration factor (a / b)	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Density Information:	
Density Sub S/N (MDL/ORD)	
Density Sub OD	
Density Stabiliser S/N	
Density Stabiliser OD	
Density Stabiliser	
Density Detector spacing type	
Run with Gamma Source S/N	
Calibrated to Gamma Source S/N	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Acoustic Information:	
Acoustic Sub Type	
Acoustic Sub S/N	
Acoustic Sub OD	
Sensor offset to bit	

Job Number	NOR2241
Rig	Maersk Inspirer
Well	15/9-F-1
Client	Statoil
Telemetry format	Hercules
Max circulating temperature (TCDX)	100

ASO Mud Corrections	
True Vertical Depth	
Mud Weight	
BHCT	
% Oil based	
ASO calibration factor used	
Casing ID (inches)	
CALX (inches)	
CCF (Caliper Correction Factor)	

Environmental Correction Information - data set 1:	
Date	8-Aug-13
Time	22:30
Bit Depth	2510.0
Mud Type	OBM Other
Mudweight	1.40
Mud Chlorides	4.40
Oil/Water Ratio	75/25
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	50.0
Bottom hole temperature	97.0
Rm at bottom hole temperature	60.334
Rmf at bottom hole temperature	60.334
Rmc at bottom hole temperature	60.334

Environmental Correction Information - data set 2:	
Date	5-Aug-13
Time	6:44
Bit Depth	1527.0
Mud Type	OBM Other
Mudweight	1.40
Mud Chlorides	6.24
Oil/Water Ratio	75/25
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature (deg C)	50.0
Bottom hole temperature (deg C)	70.0
Rm at bottom hole temperature	78.140
Rmf at bottom hole temperature	78.140
Rmc at bottom hole temperature	78.140 #

Logging dates / times:	
Start Log - Date	4-Aug-13
Start Log - Time	7:48
Start Bit Depth	1148.4
End Log - Date	9-Aug-13
End Log - Time	10:05
End Bit Depth	1148.4

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	
LWD Service Code:	

Run Summary	

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	3
Date in	14-Aug-13
Time in	0:45
Depth in	2605.0
Date out	17-Aug-13
Time out	21:45
Depth out	3632.0
Directional Information:	
Drill Collar S/N (DC)	12082923
Drill Collar OD	6 3/4"
Directional offset to bit	10.84
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	10059636
AutoTrak OD	6 3/4"
Directional offset to bit	10.77
Gamma Information:	
Gamma type	OnTrak
Gamma sub OD	6 3/4"
Gamma (1) S/N	12082923
GRAPICF	2.885
Gamma (2) S/N	12082923
GRAPICF	2.895
Sensor offset to bit	7.87
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	12082923
Resitivity OD	6 3/4"
Sensor offset to bit	9.07
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak
Pressure/Dynamics sub S/N	12082923
Pressure/Dynamics sub OD	6 3/4"
Sensor offset to bit	7.57
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	
FPT sub S/N	12552090
FPT sub OD	6 3/4"
Sensor offset to bit	33.21

Hole Size (inches)	8.50
Assembly Type	AutoTrak
Reason run	Drill new hole
Why laid down	Well TD
Near Bit Inclination Information:	
Near Bit Inclination type	AutoTrak (ATI)
NBI S/N	10059636
Sensor offset to bit	1.28
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	10526868
Neutron Sub OD / Type	6 3/4" - 7 3/4" CCN
Run with Neutron Source S/N	77873B
Calibrated to Neutron Source S/N	77873B
Neutron Calibration factor (a / b)	0.760/04.31
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	25.26
Density Information:	
Density Sub S/N (MDL/ORD)	12779095
Density Sub OD	6 3/4"
Density Stabiliser S/N	12641413
Density Stabiliser OD	8 3/8"
Density Stabiliser	centric
Density Detector spacing type	ORD 2.60
Run with Gamma Source S/N	SN-80476B
Calibrated to Gamma Source S/N	SN-80476B
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	22.53
Acoustic Information:	
Acoustic Sub Type	APX
Acoustic Sub S/N	12541886
Acoustic Sub OD	6 3/4"
Sensor offset to bit	38.47

Job Number	NOR 2241
Rig	Mærsk Inspirer
Well	15/9-F-1
Client	Statoil
Telemetry format	OnTrak
Max circulating temperature (TCDX)	101.6

ASO Mud Corrections	
True Vertical Depth	3100
Mud Weight	1.28
BHCT	115
% Oil based	75
ASO calibration factor used	0.868
Casing ID (inches)	12.347
CALX (inches)	
CCF (Caliper Correction Factor)	0.000

Environmental Correction Information - data set 1:	
Date	14-Aug-13
Time	4:00
Bit Depth	2605.0
Mud Type	OBM Other
Mudweight	1.28
Mud Chlorides	19.10
Oil/Water Ratio	75/25
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	50.0
Bottom hole temperature	100.0
Rm at bottom hole temperature	58.844
Rmf at bottom hole temperature	58.844
Rmc at bottom hole temperature	58.844

Environmental Correction Information - data set 2:	
Date	15-Aug-13
Time	17:00
Bit Depth	3259.0
Mud Type	OBM Other
Mudweight	1.32
Mud Chlorides	23.50
Oil/Water Ratio	75/25
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature (deg C)	50.0
Bottom hole temperature (deg C)	100.0
Rm at bottom hole temperature	58.844
Rmf at bottom hole temperature	58.844
Rmc at bottom hole temperature	58.844 #

Logging dates / times:	
Start Log - Date	14-Aug-13
Start Log - Time	9:42
Start Bit Depth	2395.0
End Log - Date	17-Aug-13
End Log - Time	11:49
End Bit Depth	2395.0

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	ATK-3.0 OTK CoP TTK MTK SDTK CCN ORD-2.6 BCPM-II
LWD Service Code:	G-t6 d3 g1 r3 n2 n3 f1 f2 f45 u1 u2 u5 u6 u7 u8 p3 p5 m2 c1 h1 v3

Run Summary	Section drilled in one run. APX and TesTrak failed. APX sent data, but curve was very erratic. TesTrak was not able to perform tests.
	MAgTrak tool did not start up several times. Lost 71m of MagTrak data while drilling.

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	4
Date in	17-Aug-13
Time in	22:00
Depth in	3236.0
Date out	20-Aug-13
Time out	7:00
Depth out	3236.0
Directional Information:	
Drill Collar S/N (DC)	12082923
Drill Collar OD	6 3/4"
Directional offset to bit	10.69
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	
AutoTrak OD	
Directional offset to bit	
Gamma Information:	
Gamma type	OnTrak
Gamma sub OD	6 3/4"
Gamma (1) S/N	12082923
GRAPICF	2.885
Gamma (2) S/N	12082923
GRAPICF	2.895
Sensor offset to bit	7.69
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	12082923
Resitivity OD	6 3/4"
Sensor offset to bit	8.92
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak
Pressure/Dynamics sub S/N	12082923
Pressure/Dynamics sub OD	6 3/4"
Sensor offset to bit	7.42
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	TesTrak 400 bar pump
FPT sub S/N	10524155
FPT sub OD	6 3/4"
Sensor offset to bit	27.13

Hole Size (inches)	8 1/2"
Assembly Type	Other
Reason run	Other
Why laid down	Well TD
Near Bit Inclination Information:	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	
Neutron Sub OD / Type	
Run with Neutron Source S/N	
Calibrated to Neutron Source S/N	
Neutron Calibration factor (a / b)	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Density Information:	
Density Sub S/N (MDL/ORD)	
Density Sub OD	
Density Stabiliser S/N	
Density Stabiliser OD	
Density Stabiliser	
Density Detector spacing type	
Run with Gamma Source S/N	
Calibrated to Gamma Source S/N	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Acoustic Information:	
Acoustic Sub Type	APX
Acoustic Sub S/N	10165602
Acoustic Sub OD	6 3/4"
Sensor offset to bit	32.42

Job Number	NOR 2241
Rig	Mærsk Inspirer
Well	15/9-F-1
Client	Statoil
Telemetry format	OnTrak
Max circulating temperature (TCDX)	91

Environmental Correction Information - data set 1:	
Date	17-Aug-13
Time	22:51
Bit Depth	2596.0
Mud Type	Gas
Mudweight	1.32
Mud Chlorides	22.00
Oil/Water Ratio	73/27
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	91.0
Bottom hole temperature	91.0
Rm at bottom hole temperature	100.000
Rmf at bottom hole temperature	100.000
Rmc at bottom hole temperature	100.000

Logging dates / times:	
Start Log - Date	18-Aug-13
Start Log - Time	10:15
Start Bit Depth	2395.0
End Log - Date	19-Aug-13
End Log - Time	20:50
End Bit Depth	2395.0

ASO Mud Corrections	
True Vertical Depth	
Mud Weight	
BHCT	
% Oil based	
ASO calibration factor used	
Casing ID (inches)	
CALX (inches)	
CCF (Caliper Correction Factor)	

Environmental Correction Information - data set 2:	
Date	
Time	
Bit Depth	
Mud Type	
Mudweight	
Mud Chlorides	
Oil/Water Ratio	
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	
Rmf (mudfiltrate) at surface conditions	
Rmc (mudcake) at surface conditions	
Surface conditions temperature (deg C)	
Bottom hole temperature (deg C)	
Rm at bottom hole temperature	
Rmf at bottom hole temperature	
Rmc at bottom hole temperature	

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	OTK SDTK BCPM-II
LWD Service Code:	G-t6 d3 g1 r3 u1 u2 u5 u6 u7 u8 p3 h1 v2

Run Summary	Reason for this run was relogging of 8 1/2" section due to failure in APX and TesTrak in the drilling assembly

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	5
Date in	22-Aug-13
Time in	5:30
Depth in	2602.0
Date out	26-Aug-13
Time out	
Depth out	3682.0
Directional Information:	
Drill Collar S/N (DC)	12082923
Drill Collar OD	6 3/4"
Directional offset to bit	10.84
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	10059636
AutoTrak OD	6 3/4"
Directional offset to bit	1.28
Gamma Information:	
Gamma type	OnTrak
Gamma sub OD	6 3/4"
Gamma (1) S/N	12082923
GRAPICF	2.885
Gamma (2) S/N	12082923
GRAPICF	2.895
Sensor offset to bit	7.84
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	12082923
Resitivity OD	6 3/4"
Sensor offset to bit	9.07
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak
Pressure/Dynamics sub S/N	12082923
Pressure/Dynamics sub OD	6 3/4"
Sensor offset to bit	7.57
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	TesTrak 400 bar pump
FPT sub S/N	10524155
FPT sub OD	6 3/4"
Sensor offset to bit	33.08

Hole Size (inches)	8 1/2"
Assembly Type	AutoTrak
Reason run	Drill new hole
Why laid down	Well TD
Near Bit Inclination Information:	
Near Bit Inclination type	AutoTrak (ATI)
NBI S/N	10059636
Sensor offset to bit	1.28
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	10526868
Neutron Sub OD / Type	6 3/4" - 7 3/4" CCN
Run with Neutron Source S/N	sn-77873B
Calibrated to Neutron Source S/N	sn-77873B
Neutron Calibration factor (a / b)	0.76/0.431
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	25.26
Density Information:	
Density Sub S/N (MDL/ORD)	12779095
Density Sub OD	6 3/4"
Density Stabiliser S/N	12641413
Density Stabiliser OD	Other
Density Stabiliser	centric
Density Detector spacing type	ORD 2.60
Run with Gamma Source S/N	sn-80476B
Calibrated to Gamma Source S/N	sn-80476B
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	22.53
Acoustic Information:	
Acoustic Sub Type	APX
Acoustic Sub S/N	12165602
Acoustic Sub OD	6 3/4"
Sensor offset to bit	39.65

Job Number	NOR 2241
Rig	Maersk Inspirer
Well	15/9-F-1 A
Client	Statoil
Telemetry format	OnTrak
Max circulating temperature (TCDX)	100.1

ASO Mud Corrections	
True Vertical Depth	3100
Mud Weight	1.28
BHCT	115
% Oil based	75
ASO calibration factor used	0.868
Casing ID (inches)	12.347
CALX (inches)	
CCF (Caliper Correction Factor)	0.000

Environmental Correction Information - data set 1:	
Date	22-Aug-13
Time	11:00
Bit Depth	2596.0
Mud Type	OBM Other
Mudweight	1.28
Mud Chlorides	21.50
Oil/Water Ratio	75/25
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	80.0
Bottom hole temperature	80.0
Rm at bottom hole temperature	100.000
Rmf at bottom hole temperature	100.000
Rmc at bottom hole temperature	100.000

Environmental Correction Information - data set 2:	
Date	23-Aug-13
Time	23:51
Bit Depth	3000.0
Mud Type	OBM Other
Mudweight	1.32
Mud Chlorides	21.00
Oil/Water Ratio	76/24
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature (deg C)	100.0
Bottom hole temperature (deg C)	100.0
Rm at bottom hole temperature	100.000
Rmf at bottom hole temperature	100.000
Rmc at bottom hole temperature	100.000 #

Logging dates / times:	
Start Log - Date	22-Aug-13
Start Log - Time	15:07
Start Bit Depth	2395.0
End Log - Date	26-Aug-13
End Log - Time	12:00
End Bit Depth	2395.0

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	ATK-3.0 OTK CoP TTK SDTK CCN ORD-2.6 BCPM-II
LWD Service Code:	G-t6 d3 g1 r3 n2 n3 f1 f2 f45 u1 u2 u5 u6 u7 u8 p3 p5 c1 h1 v3

Run Summary	Drilled from 2620-3682m MD. Tools performed to specifications.

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	**6**
Date in	28-Aug-13
Time in	23:30
Depth in	2603.0
Date out	31-Aug-13
Time out	10:45
Depth out	3097.0
Directional Information:	
Drill Collar S/N (DC)	12523580
Drill Collar OD	9 1/2"
Directional offset to bit	23.32
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	
AutoTrak OD	
Directional offset to bit	
Gamma Information:	
Gamma type	OnTrak II
Gamma sub OD	9 1/2"
Gamma (1) S/N	12523580
GRAPICF	4.028
Gamma (2) S/N	12523580
GRAPICF	3.966
Sensor offset to bit	21.82
Resistivity Information:	
Resistivity type	OnTrak II
Resistivity S/N	12523580
Resitivity OD	9 1/2"
Sensor offset to bit	19.62
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak II
Pressure/Dynamics sub S/N	12523580
Pressure/Dynamics sub OD	9 1/2"
Sensor offset to bit	20.92
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	
FPT sub S/N	
FPT sub OD	
Sensor offset to bit	

Hole Size (inches)	12.25
Assembly Type	AutoTrak
Reason run	
Why laid down	
Near Bit Inclination Information:	
Near Bit Inclination type	AutoTrak (ATI)
NBI S/N	10176200
Sensor offset to bit	1.53
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	
Neutron Sub OD / Type	
Run with Neutron Source S/N	
Calibrated to Neutron Source S/N	
Neutron Calibration factor (a / b)	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Density Information:	
Density Sub S/N (MDL/ORD)	
Density Sub OD	
Density Stabiliser S/N	
Density Stabiliser OD	
Density Stabiliser	
Density Detector spacing type	
Run with Gamma Source S/N	
Calibrated to Gamma Source S/N	
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	
Acoustic Information:	
Acoustic Sub Type	
Acoustic Sub S/N	
Acoustic Sub OD	
Sensor offset to bit	

Job Number	NOR 2241
Rig	Mærsk Inspirer
Well	15/9-F1 B
Client	Statoil
Telemetry format	Ontrak
Max circulating temperature (TCDX)	94

ASO Mud Corrections	
True Vertical Depth	
Mud Weight	
BHCT	
% Oil based	
ASO calibration factor used	
Casing ID (inches)	
CALX (inches)	
CCF (Caliper Correction Factor)	

Environmental Correction Information - data set 1:	
Date	29-Aug-13
Time	3:26
Bit Depth	2603.0
Mud Type	OBM Other
Mudweight	1.28
Mud Chlorides	24.00
Oil/Water Ratio	77.1/22.9
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	100.0
Bottom hole temperature	100.0
Rm at bottom hole temperature	100.000
Rmf at bottom hole temperature	100.000
Rmc at bottom hole temperature	100.000

Environmental Correction Information - data set 2:	
Date	
Time	
Bit Depth	
Mud Type	
Mudweight	
Mud Chlorides	
Oil/Water Ratio	
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	
Rmf (mudfiltrate) at surface conditions	
Rmc (mudcake) at surface conditions	
Surface conditions temperature (deg C)	
Bottom hole temperature (deg C)	
Rm at bottom hole temperature	
Rmf at bottom hole temperature	
Rmc at bottom hole temperature	

Logging dates / times:	
Start Log - Date	29-Aug-13
Start Log - Time	6:08
Start Bit Depth	2395.0
End Log - Date	31-Aug-13
End Log - Time	1:22
End Bit Depth	2395.0

Start Relog - Date	
Start Relog - Time	
Start Bit Depth	
End Relog - Date	
End Relog - Time	
End Bit Depth	

Tool String Code:	ATK-3.0 MXT OTK-II CoP BCPM
LWD Service Code:	G-t3 d1 d2 d3 g1 r3 p3 c1 h3 v3

Run Summary	Drilled from 2603-3097m MD. Good logging run. Tools performed to specifications.

MWD/LWD DOWNHOLE EQUIPMENT CORRECTION FACTORS and SENSOR OFFSETS

Run No.	7
Date in	4-Sep-13
Time in	10:00
Depth in	3097.0
Date out	7-Sep-13
Time out	9:16
Depth out	3465.0
Directional Information:	
Drill Collar S/N (DC)	12082923
Drill Collar OD	6 3/4"
Directional offset to bit	10.83
Enter Total scribeline correction (internal + AKO)	
AutoTrak (S/N)	10092654
AutoTrak OD	6 3/4"
Directional offset to bit	1.32
Gamma Information:	
Gamma type	OnTrak
Gamma sub OD	6 3/4"
Gamma (1) S/N	12082923
GRAPICF	2.885
Gamma (2) S/N	12082923
GRAPICF	2.895
Sensor offset to bit	7.93
Resistivity Information:	
Resistivity type	OnTrak
Resistivity S/N	12082923
Resitivity OD	6 3/4"
Sensor offset to bit	9.13
Dynamics & Pressure Information:	
Pressure/Dynamics sub type	OnTrak
Pressure/Dynamics sub S/N	12082923
Pressure/Dynamics sub OD	6 3/4"
Sensor offset to bit	7.63
Formation Pressure Tester Information:	
Formation Pressure Tester sub type	TesTrak 400 bar pump
FPT sub S/N	10524155
FPT sub OD	6 3/4"
Sensor offset to bit	33.14

Hole Size (inches)	8 1/2"
Assembly Type	AutoTrak
Reason run	
Why laid down	Other
Near Bit Inclination Information:	
Near Bit Inclination type	AutoTrak (ATI)
NBI S/N	10092654
Sensor offset to bit	1.32
Near Bit Inclination type	
NBI S/N	
Sensor offset to bit	
Neutron Information:	
Neutron Sub S/N (MNP/CCN)	10526868
Neutron Sub OD / Type	6 3/4" - 7 3/4" CCN
Run with Neutron Source S/N	sn-77873B
Calibrated to Neutron Source S/N	sn-77873B
Neutron Calibration factor (a / b)	0.76/0.431
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	25.32
Density Information:	
Density Sub S/N (MDL/ORD)	12779095
Density Sub OD	6 3/4"
Density Stabiliser S/N	12641413
Density Stabiliser OD	Other
Density Stabiliser	centric
Density Detector spacing type	ORD 2.60
Run with Gamma Source S/N	sn-80476B
Calibrated to Gamma Source S/N	sn-80476B
Scribeline angle offset from MWD	
Scribeline angle offset from AKO	
Sensor offset to bit	22.59
Acoustic Information:	
Acoustic Sub Type	APX
Acoustic Sub S/N	12165602
Acoustic Sub OD	6 3/4"
Sensor offset to bit	39.71

Job Number	NOR 2241
Rig	Maersk Inspirer
Well	15/9-F-1 B
Client	Statoil ASA
Telemetry format	OnTrak
Max circulating temperature (TCDX)	96

Environmental Correction Information - data set 1:	
Date	4-Sep-13
Time	12:44
Bit Depth	3097.0
Mud Type	OBM Other
Mudweight	1.32
Mud Chlorides	22.00
Oil/Water Ratio	74/26
KCl	0.00
KCl entered (%)	0.00
Rm (mud) at surface condtions	100.000
Rmf (mudfiltrate) at surface conditions	100.000
Rmc (mudcake) at surface conditions	100.000
Surface conditions temperature	100.0
Bottom hole temperature	100.0
Rm at bottom hole temperature	100.000
Rmf at bottom hole temperature	100.000
Rmc at bottom hole temperature	100.000

Logging dates / times:	
Start Log - Date	4-Sep-13
Start Log - Time	22:33
Start Bit Depth	2890.0
End Log - Date	6-Sep-13
End Log - Time	21:33
End Bit Depth	2890.0

ASO Mud Corrections	
True Vertical Depth	
Mud Weight	1.28
BHCT	
% Oil based	
ASO calibration factor used	
Casing ID (inches)	9.535
CALX (inches)	
CCF (Caliper Correction Factor)	

Environmental Correction Information - data set 2:	
Date	
Time	
Bit Depth	
Mud Type	
Mudweight	
Mud Chlorides	
Oil/Water Ratio	
KCl	
KCl entered (%)	
Rm (mud) at surface condtions	
Rmf (mudfiltrate) at surface conditions	
Rmc (mudcake) at surface conditions	
Surface conditions temperature (deg C)	
Bottom hole temperature (deg C)	
Rm at bottom hole temperature	
Rmf at bottom hole temperature	
Rmc at bottom hole temperature	

Start Relog - Date	6-Sep-13
Start Relog - Time	16:58
Start Bit Depth	3278.8
End Relog - Date	6-Sep-13
End Relog - Time	18:43
End Bit Depth	3236.5

Tool String Code:	ATK-3.0 OTK CoP TTK SDTK CCN ORD-2.6 BCPM-II
LWD Service Code:	G-t6 d3 g1 r3 n2 n3 f1 f2 f45 u1 u2 u5 u6 u7 u8 p3 p5 c1 h1 v3

Run Summary	Drilled from 3097-3465m MD. Good logging run. Tools performed to specifications.

Run Number(s)	Circulating hours	Tool Type	Serial Number	Description	Problem: Yes / No
1,2	182.7	BCPM	10131080	Tool performed to specifications.	No
1	81.6	Scientific Modular Gyro sub	10231321	Not able to get good quality Gyro surveys from Scientific Modular Gyro sub from 414m to 756m. Fracas written.	Yes
1,2	182.7	OnTrak II	10461297	Tool performed to specifications.	No
2	101.1	ZoneTrak G	10685649	Tool performed to specifications.	No
2	101.1	ASS	10176200	Tool performed to specifications.	No
3,4,5,7	209.8	BCPMII	10623172	Tool performed to specifications.	No
3,4,5,7	182.4	OnTrak	12082923	Tool performed to specifications.	No
3,5,7	182.4	ORD v2.6	12779095	Tool performed to specifications.	No
3,5,7	182.4	CCN	10526868	Tool performed to specifications.	No

Run Number(s)	Circulating hours	Tool Type	Serial Number	Description	Problem: Yes / No
3	61.6	MagTrak	10466438	Tool performed to specifications.	No
3	61.6	APX	12541886	Tool sending erratic values while drilling. Bad data quality. FRACAS written.	Yes
3	61.6	TesTrak	12673574	Not able to take FPT with this tool. FRACAS written.	Yes
3,5	142.1	ASS	10059636	Tool performed to specifications.	No
3,5,7	182.4	CoPilot	12691133	Tool performed to specifications.	No
4,5	107.9	APX	10165602	Tool performed to specifications.	No
4,5,7	148.2	TesTrak	10524155	Tool performed to specifications.	No
7	40.3	APX	12165602	Tool performed to specifications.	No
7	40.3	ASS	10092654	Tool performed to specifications.	No

DISCUSSION

26" Hole Section (226m - 1355m MD)

Drilled the 30" conductor shoe track (shoe at 221m MD) and cleaned out the rat hole from 221m - 226m without problems.
The initial one hundred present oriented drilling resulted in 2.09° DLS.
At 251m MD, the rate of penetration went to zero. Increase in the flow rate to 4500 LPM caused higher drill string vibration. The suspected cement lump causing the hang up was crushed and drilling commenced as normal. Initially one Gyro single survey was taken on wireline, followed by multiple Gyro MWD Modular surveys. Unfortunately, from 375m MD these surveys became unreliable, most likely due to vibration. Further surveys and tool faces were made with wireline Gyro single shots.
At 740m MD, the distance was sufficient to eliminate further Gyro measurement and surveys were taken successfully with OnTrak. A rotational check shot was taken at the same depth (776m MD), all within specification.
The Utsira Formation was drilled in sliding mode as agreed earlier. No significant drop in inclination was recorded.
At top of the Skade sand, a 25m distance was successfully oriented to high side before drilling at high ROP in rotating mode trough the unconsolidated sand. Inclination held to 10°. Rotary drilling continued to the end of this 26" section at 1355m MD.

17 ½" Hole Section (1355m – 2602m MD)

The 20" shoe track (shoe at 1348m MD) was drilled and then the rat hole cleaned out from 1348m - 1355m MD without problems while displacing the well to 1.40 SG oil based mud. Drilled 3m of formation in ribs off to 1358m MD and performed an FIT to 1.55 SG.
Downlinked to Hold Mode with target inclination 10.1° and walk force 45%, to turn the well to right according to the plan. Since this gave a dropping inclination tendency, steer direction 45° with 70% force was downlinked. The assembly continued to drop so the steer force was increased to 100% with direction high side. This had the desired effect and inclination was built to 10.5° keeping hold mode engaged. 35% build force gave a build rate of 2°+ and the BHA had a right walk tendency and was going straight with WF of -6.45%. Built to 30° inclination and turned to 36° azimuth within 1770m MD, 5m above and 6m right of plan. There was a tangent from this point and inclination was maintained slightly less than that required and azimuth slightly left of the desired in order to gradually getting closer on the line.
The ROP was restricted on numerous occasions due to cuttings handling limitations before it was determined that 30m/hr. was the optimum ROP that the cuttings handling equipment could cope with. Drilling was on the borderline of the maximum torque during several intervals, which also had the effect of reduced ROP.
From ~2200m the average ROP was ~20m/hr. and despite varying the parameters to improve and optimise this gradually decayed to an average below ~10m/hr. for the last ~200m before TD.

12 ¼" Hole Section (2602m – 2605m MD)

The assembly was a simple rotary BHA that drilled the shoe track in good time and without any major challenges. The shoe and rat hole were cleaned after there was an initial string stall but after reaming the area four times there were no further issues.
The mud weight was cut back from 1.40 SG to 1.28 SG while the shoe track was drilled. After drilling a further 3m of formation, an FIT was performed to 1.55 SG.
After the FIT, a multi-shot gyro was dropped in order to confirm MWD surveys from the previous sections.

8 ½" Pilot Hole Section (2605m – 3632m MD)

Run in hole and washed down the last stand, drilled the first 3m of 8 ½" section in ribs off. New formation was drilled with low angle (28.5°-30°) and a low vibration picture. Drilling flat left turn at 26.5° NBI from 2660m MD, started building inclination, and continued left turn steadily from 2860m MD.
During the build section to 49.5° higher than expected, build force was needed to achieve the required build rate.
When the Tor Formation was entered, the inclination dropped with a build force of 38%. Build force of 58 to 80% was required to achieve the 2°/30m build. Reducing the ROP from 35 to 25m/hr. improved the build rate.
Very steady ROP at 25m/hr. from 2920m MD as formation became much more homogeneous, but climbed up to 35m/hr. from around 3000m to 3035m MD with formation becoming slightly less dense. Drilling continued at steady ROP of 25-30m/hr. while building toward 49.5° at 3188m MD. This is 1.5° above the proposed plan due to getting behind in the build-up section. A tangent of 12m was drilled before starting the drop at 3230m MD. The ROP was reduced from 3231m MD to 20m/hr. as per geologist's instructions, which helped to maintain a steady drop rate through the changing formations. At low inclination from 3400m MD, the azimuth was responsive to low walk-forces, but easily maintained.
Intermittent whirl levels of 3-5 from 3450m MD due to low hole curvature, otherwise very low VSS levels throughout the run. The ROP was slowed to 15m/hr. from 3563m MD to TD due to pressure increase and increase in hole drag.
TD was set at 3632m MD. After the hole was circulated clean at TD, several TesTrak points were attempted without success. Re-logging for the LithoTrak was performed from 3349m to 3390m MD.
The SoundTrak tool failed from the start of drilling.
Max ECD was 1.4 SG while drilling 40m/hr. with 1.32 SG mud and at TD where pump pressure increased.

8 ½" Pilot Hole re-log Section (2605m – 3632m MD)

This is an additional logging run for SoundTrak and TesTrak due to those tools failing in the previous drilling assembly. The entire pilot hole will be re-logged with the SoundTrak tool.
Six TesTrak points are planned from 3321m to 3463m MD. It is planned to log while pulling out of hole.

Reaming was performed at tight spots while running in hole. It was attempted to lubricate down through the Draupne Formation but noted immediate pack off tendencies. Tripping in through Draupne was problem free.
The hole was circulated clean before pulling up for the TesTrak points. Six TesTrak points were taken as requested – all successful.
Ran back to bottom and began backreaming and logging out of the hole. Problems with high torque packing off were encountered in the Draupne Formation. It was necessary to tip out the stand then wash down and back up with reduced flow. Rotation was not possible due to stalling. Normal parameters were established above Draupne and RPM was adjusted to mitigate stick slip.

8 ½" Pilot Hole Section A (2621m – 3682m MD)

Tagged cement at 2592m MD. Cleaned out the rat hole stepwise to 2601m MD where the string packed off and became stuck.
Got string free with 150 tons overpull. Continued cleaning out the rat hole and drilled to 2602m MD where the sidetrack was initiated. The official kick-off depth was set to 2321m MD.
Around 2641m MD the drilling parameters were brought up to normal levels, and the CoPilot WOB/TQ sensors were tared. After achieving the desired distance to the main branch, the planned build section was initiated whilst turning the well path to the left hand side. Overall, acceptable ROP of 20-30m/hr. was achieved and the vibration picture stayed low due to the low inclination at the beginning of the run.
When drilling the Tor and Hod Formations, difficulties to achieve the required build rates were experienced.
Build force of up to 100% was used to achieve the required build rate of 3°/30m. The ROP was also controlled to 10m/hr. to achieve better build rates. When drilling into the Hidra Formation, building became easier and the rate of penetration was increased.
Minor swabbing was observed around 2980m MD while pulling out.

12 ¼" Hole Section B (2617m – 3097m MD)

Made up the 12 ¼" BHA according to pick up-plan and ran in hole without any problems. Firm cement was tagged at 2555m MD. Firm cement was drilled down to casing shoe at 2595m MD. Soft cement was cleaned out of the rat hole stepwise down to the kick-off point at 2604m MD. The sidetrack was initiated in steer-mode at steer direction 127°. Good directional control was achieved using the CoPilot bending moment for direction.
Official kick-off point was set to 2617m MD. The drilling parameters were brought up gradually and from 2667m MD, the ROP was set to 30m/hr. The ROP was in periods increased to 35m/hr. After reaching the tangent section, adjustments had to be done to keep up with the direction. The required walk-force was a bit hard to predict in some areas. At TD of the section, we ended up 1.01m below the plan and 2.73m to the right of plan.
At 3078m MD, drilled into a new formation (Hidra Fm.) and the dWOB/dTQ increased. Drilled with torque spikes and stick-slip spikes up to level 6. Parameters were adjusted in attempt to reduce this but with limited success. At 3092m MD, lost communication with the CoPilot and the steering head. Drilling continued to TD at 3097m MD without any reduction in performance. No downtime was recorded. Hole was circulated clean and a gyro was dropped prior pull out of the hole. Pulled out without any overpull.

8 ½" Hole Section B (3097m – 3465m MD)

Running in the hole a shallow test was performed at 1005m MD, where all tools were working normally. The cement was tagged at 3044m MD. Drilling the plug took a while but varying the parameters, especially reducing the flow to reduce the pump off force gave good results. During the drill out, the mud weight was increased from 1.28 SG to 1.32 SG. The shoe track was drilled out to the shoe without problem. The shoe was drilled in ribs off where a baffle plate gave some resistance. The rat hole was drilled out in 1-meter steps and the shoe area checked before drilling 3m of formation. The mud was conditioned prior to the FIT. The FIT performed to 1.60 SG.
Due to the variable formation, getting a steady drop was difficult with many changes in build force required. The drop fell behind and 3.5°/30m doglegs were required to catch up with the plan. The drilling operation was carried on, with more or less steady penetration rate. The Draupne Formation was indicated by a faster sleeve rotation from 3170m MD but the interval was drilled through without any issues.
Overall, the stick-slip and vibration picture was low for the entire run.
At the target, the hole was 1.51m above, 0.0m right plan; travelling cylinder 1.51m bearing 50.788° N. Average ROP was 23.14m/hr.
The hole was drilled to a TD of 3465m MD and circulated clean prior to re-logging and taking TesTrak points. Ten points were taken at (Pad Depths MD) 3329.3m, 3300.8m, 3295.3m, 3290.3m, 3279.8m, 3272.8m, 3265.8m, 3260.3m, 3254.3m, and 3246.3m.

CONCLUSIONS AND RECOMMENDATIONS

26" Hole Section (226m - 1355m MD)

The well was circulated clean and displaced to 1.35 SG KCL mud. When tripping out to surface significant overpull was observed of 30 tons at 1245m MD and higher up at 543m MD. The decision was taken therefore to make an additional wiper trip to bottom.

Overall, it can be concluded that the assembly performed well, effective orientation were made, no remarkable vibration were seen and good control was make towards surrounding wells regarding proximities.
The 26" section was drilled successfully to a final depth of 1355m MD.
Pull out of the hole to run 20" conductor.

17 ½" Hole Section (1355m – 2602m MD)

The steering capability of the AutoTrak had an effective dogleg gradient of 0.065° well above the theoretical for the tool. Despite the initial inability to build, switching to steer mode had the desired effect, and once the build and turn was initiated, the AutoTrak gave excellent steering response.
At surface the bit was graded 4-3 with numerous broken cutters and also several lost cutters and this is almost certain why the ROP was below ~10m/hr. for the last ~200m.

12 ¼" Hole Section (2602m – 2605m MD)

This was an excellent assembly for its purpose as it drilled the float, cement and shoe smoothly and efficiently.

8 ½" Pilot Hole Section (2605m – 3632m MD)

BHA performance was acceptable and all directional requirements were fulfilled, but due to difficulties, building inclination plans with much higher dogleg requirements should be reconsidered.

8 ½" Pilot Hole re-log Section (2605m – 3632m MD)

The tool was set up for logging either sliding or with rotation. This was necessary due to problems encountered in the Draupne Formation.

8 ½" Pilot Hole Section A (2621m – 3682m MD)

As a result of drilling out the cement in the 13 ⅜" casing and 17 ½" rat hole with an 8 ½" bit resulted in a stuck BHA just outside the casing shoe. A dedicated 12 ¼" drill out rotary BHA could have avoided this problem.
Overall performance of the BHA was good and all directional requirements were achieved.
Close to maximum bending moments were needed to achieve the required build drop and turn rates.

12 ¼" Hole Section B (2617m – 3097m MD)

Overall, a good performance was achieved with the BHA and all directional requirements were met. Section ROP was 21.14m/hr.
In this kind of short 12 ¼" section, the use of AutoTrak X-treme may not be necessary. Use of a modular motor can increase the amount of wear on equipment below the motor. Risk and performance must be evaluated against each other in every application.

8 ½"Hole Section B (3097m – 3465m MD)

When using pumps 2 and 3 there were some issues getting downlink confirmation due to erratic pressures and the pumps cutting out. This required multiple downlinks and a pause in drilling to be sure the AutoTrak had the correct steering parameters. At 3223m MD, there was difficult getting confirmation on a walk force and target inclination combined downlink. Sending the downlinks separately solved that problem. Changing to pumps 1 and 3 improved the downlink difficulties. From 3266m MD, the geologist requested that all downlinks be sent off bottom to avoid data gaps in the log.
Out of hole, some wear was observed on the ORD graded to 3-3. In addition, some of the wear-band on the CoPilot was missing.

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	26 **in**
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405 **ASU S/N**

BHA Description

26"

BHA Run Parameters

BHA Run #	2	**MTR Run #**	1	**Distance**	1129.00	**m**	**P/U Date**	22/Jul/2013 06:40
ATK Run #		**MTR Rerun #**		**Avg ROP**	24.87	**m/hr**	**L/D Date**	28/Jul/2013 09:00
ATK Rerun #				**Max Temp**	23.5	**degC**		
MWD #	1	**MD In**	226.00 **m**	**On Btm Circ**	45.40	**hours**	**Start Drilling**	23/Jul/2013 02:30
Bit #	2	**MD Out**	1355.00 **m**	**Off Btm Circ**	81.60	**hours**	**Stop Drilling**	26/Jul/2013 18:50

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
21	Drill pipe				5 7/8	5.153		13.00	225.94
20	HWDP	Rig			5 1/2	3 7/8		108.37	212.94
19	Sub - X/O	Rig			8	3		0.78	104.57
18	Accelerator		1591-1148		8	3		9.70	103.79
17	Drill collar	Rig			8 1/4	2 7/8		18.28	94.09
16	Jar		1588-1072		8	3		9.69	75.81
15	Drill collar				8	3		17.69	66.12
14	Stab - string		OMM5718	12	8	2 13/16	8 1/4	2.33	48.43
13	Drill collar	Rig			8 1/4	2 7/8		8.83	46.10
12	Sub - X/O	Rig	SSMG5146		9 1/2	3		1.16	37.27
11	Sub - orienting	SDC	7-208		9 1/2	3		1.36	36.11
10	Stab - string	OWS	OMM3292	22	9 1/2	3 1/8	9 7/16	1.91	34.75
9	NMSub - stop	BH	12778207		9 1/2	3		0.74	32.84
8	Other	SDC	10231321		9 1/2	3		5.75	32.10
7	BCPM	INTEQ	10131080		9 1/2	3		3.60	26.35
6	MWD - stab - mod	INTEQ	11948250	23 7/8	9 1/2	3 1/8	9 3/8	1.79	22.75
5	OnTrak - MWD	INTEQ	10461297	11 3/4	9 1/2			6.97	20.96
4	NMSub - stop	BH	10401681		9 1/2	3 1/8		0.68	13.99
3	Stab - string	BH	12589244	25 3/4	9 1/2	3	9 1/2	2.75	13.31
2	Motor - steerable	BH	EC7	25 3/4	12 3/4	3	11 1/4	9.97	10.56
1	Bit - insert - roller cone	Hughes Christensen	5219421	26				0.59	0.59

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0								
Grade Out	1	0	NO	A	1	2	NO	TD	317425	BH

Type	VG-1	**IADC Code**	115	**TFA**	1.4205	**in^2**	**Jets**	20,3x22	**Gauge Len** **mm**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len mm	Blade Width in	Gge Len mm	Gge In in	Gge Out in
14		OMM5718						
10	Integral	OMM3292	Spiral	685.8	5	609.6	22	22
6	Integral	11948250	Spiral	609.6	3.800	431.8	23 7/8	23 7/8
5	Integral		Spiral	400.0	3	203.2	11 3/4	11 3/4
3	Integral	12589244	Spiral	812.8	4 1/4	812.8	25 3/4	25 3/4
2	UBHS (Screw-On)		Straight	457.2	2 1/2	177.8	25 3/4	25 3/4

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m
21	S-135	5 7/8	34.82	13.00

BHA Buoyed Wt	0.0	**tonne**
BHA Wt Below Jars	0.0	**tonne**

Motor Details

Manufacturer	BH	**Nozzle**	**in/32**
Type	Ultra X	**Operating Delta P** 80.000	**bar**
S/N	EC7	**No Load Delta P** 16.000	**bar**
Motor Size	12 3/4 **in**	**Bit To AKO Bend**	**m**
Tilt Angle	1.400 **deg**	**Bit To UBHS**	**m**
UBHS To Stator Stab	**m**	**PDM Gap In / Out** 3.0 / 3.0	**mm**

Component Details

Geology

Formation	Top MD m	Top TVD m	Description

Fluid Parameters

Mud Type	Sea Water	
Mud Weight	1.030	**sg**
PV		**mPa.s**
YP		**Pa**
Gels	/	**Pa**
% Sand		**%**
% Solids		**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
0.000	10.170	0.000	309.340	1342.86	1.500	0.130/2.790

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Rotate	700.00	28.87	24.25		0/90		0.00/16.00	0.00/12.00			9.472
Orientate	429.00	24.22	17.72								8.586
Off Btm Circ		81.60									
Total	1129.00	127.00	24.87	0.0/16.0	0/90		0.00/16.00	0.00/12.00	4000	140.000	9.077

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	26 **in**	
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**

BHA Objective

Drill out 36" conductor 221 m (TOC+/-217 m). Clean 36" rat hole to TD at 223 m, 17 ½" rat hole to TD at 226 m in steps. . Drill 26" hole section to +/-1360 m. Build inclination from 0 along 260° AZ from 226 m within one stand (40 m) without taking surveys. Drill tangent to 464 m. Build inclination to 10° along 310° AZ with 1.5° DLS. Drill tangent to section TD.
No rotary drilling foreseen through the Utsira sand formation from 888m to 1071m and through the Skåde sand formation from 1205m to 1324m. Drilling will be done in sliding mode to avoid any drastic drop in inclination through these loose formations.

BHA Performance / Observations

Drilled the 30" conductor shoe track (shoe at 221 m) and cleaned out the rat hole from 221 m - 226 m without problems.
The initial one hundred percent oriented drilling resulted in 2.09° DLS.
At 251 m the rate of penetration went to zero. Increasing the flow rate to 4500 LPM caused higher drill string vibration. The suspected cement lump causing the hang up was crushed and drilling commenced as normal. Initially one Gyro single survey was taken on wireline, followed by multiple Gyro MWD Modular surveys. Unfortunately from 375m these surveys became unreliable, most likely due to vibration. Further surveys and toolfaces were made with wireline Gyro single shots. At 740 meter the distance was sufficient to eliminate further Gyro measurement and surveys were taken successfully with OnTrak. A rotational check shot was taken at the same depth - 776m - all within specification.
The Utsira formation was drilled in sliding mode as agreed earlier. No significant drop in inclination was recorded.
At top of Skade sand a 25 meter distance was successfully oriented to High side before drilling at high ROP in rotating mode through the very unconsolidated sand. Inclination held to 10°. Rotary drilling continued to the end of this 26" section at 1355m.

BHA Conclusions / Recommendations / Remarks

The well was circulated clean and displaced to 1.35 sg KCL mud. When tripping out to surface significant overpull was observed of 30 MT at 1245m and higher up at 543m. The decision was taken therefore to make an additional wiper trip to bottom.

Overall one can conclude that the assembly performed well, effective orientation were made, no remarkable vibration were seen and good control was made towards surrounding wells regarding proximities.

BHA Reason POOH

The 26" Section was drilled successfully to a final depth of 1355m MD.
POOH to run 20" conductor.

Directional Drillers

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	17 1/2 **in**		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10176200

BHA Description

17 1/2" AutoTrak NB Gamma OTK BCPM

BHA Run Parameters

BHA Run #	3	**MTR Run #**		**Distance**	1247.00	**m**	**P/U Date**		03/Aug/2013 22:30
ATK Run #	1	**MTR Rerun #**		**Avg ROP**	18.53	**m/hr**	**L/D Date**		09/Aug/2013 16:45
ATK Rerun #				**Max Temp**	100.1	**degC**			
MWD #	2	**MD In**	1355.00 **m**	**On Btm Circ**	67.30	**hours**	**Start Drilling**		04/Aug/2013 13:00
Bit #	3	**MD Out**	2602.00 **m**	**Off Btm Circ**	43.00	**hours**	**Stop Drilling**		08/Aug/2013 21:45

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
18	HWDP	Rig	Tally		5 1/2	3 7/8		108.37	218.07
17	Sub - X/O	Rig	NOS1134415-2		7	3		0.78	109.70
16	Accelerator	Dailey	1591-1148		8	3	8	9.70	108.92
15	Drill collar	Rig	Tally		8 1/4	2 7/8		27.00	99.22
14	Jar	Dailey	1588-1072		8	3	8	9.69	72.22
13	Drill collar	Rig	Tally		8 1/4	2 7/8		27.00	62.53
12	Stab - string	BH	OMM5718	12	8	2 7/8	8 1/4	2.33	35.53
11	Drill collar	Rig	GUA24		8 1/4	2 13/16	8 1/4	8.83	33.20
10	Sub - float	BH	SDT6893		8	2 7/8		0.64	24.37
9	Stab - string	BH	BHIN6334	16 3/4	8 1/16	2 7/8	7 7/8	2.25	23.73
8	NMSub - stop	BH	10239628		8 1/4	3 1/8	8 1/4	1.02	21.48
7	BCPM	INTEQ	10131080		9 1/2	3 1/4	9 1/2	3.60	20.46
6	MWD - stab - mod	INTEQ	10102568	16 7/8	9 1/2	3 1/4	9 1/2	1.65	16.86
5	OnTrak - MWD	INTEQ	10461297	11 3/4	9 1/2	3 1/4	9 1/2	6.97	15.21
4	Flex sub w/ Stab	INTEQ	12811378	17 3/8	9 1/2	3 1/4	9 1/2	3.78	8.24
3	Near Bit Gamma	INTEQ	10685649		9 1/2	3	9 1/2	1.46	4.46
2	ATK Steerable Stab	INTEQ	10176200		9 1/2	3	9 1/2	2.54	3.00
1	Bit - PDC - fixed cutter	Hughes Christensen	7902062	17 1/2		3		0.46	0.46

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0	NO	A	0	I	NO			
Grade Out	4	3	CT	N	X	I	LT	TD	543170	Baker Hughes DD

Type	QD606X	**IADC Code**		**TFA**	1.3254	**in^2**	**Jets**	3x12,4x14,2x16	**Gauge Len**	**in**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
12	Integral	OMM5718	Spiral	24.00	3	14.00	12	12
9	Integral	BHIN6334	Straight	28.00	2 3/4	14.00	16 3/4	16 3/4
6	Integral	10102568	Spiral	17.00	4 1/2	5.00	16 7/8	16 7/8
5	Integral	12674969	Spiral	17.00	3	6.00	11 3/4	11 3/4
4	Integral	12811378	Spiral	17.00	5 1/2	5.00	17 3/8	17 3/8

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	32.9	**tonne**
BHA Wt Below Jars	16.5	**tonne**

Motor Details

Manufacturer		**Nozzle**		**in/32**	
Type		**Operating Delta P**		**bar**	
S/N		**No Load Delta P**		**bar**	
Motor Size	**in**	**Bit To AKO Bend**		**m**	
Tilt Angle	**deg**	**Bit To UBHS**		**m**	
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	/	**in**	

Component Details

Directional (mag) / Bit	13.57	**m**
Gamma / Bit	12.07	**m**
Ann. Pressure / Bit	11.17	**m**
Resistivity / Bit	9.87	**m**
Near Bit Gamma / Bit	3.64	**m**
Near Bit Inclination / Bit	1.67	**m**

Geology

Formation	Top MD m	Top TVD m	Description
Hordaland Group	1070.00		
Balder Formation	2430.00		
Lista	2527.00		

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.400	**sg**
PV	34	**mPa.s**
YP	10.00	**Pa**
Gels	5.70/7.70	**Pa**
% Sand	0.20	**%**
% Solids	17.00	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
7.660	30.190	329.930	33.060	2456.70	2.500	0.006/3.250

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Hold	1208.00	80.13	17.72								
Steer	39.00	1.42	27.53								
Ribs Off	3.00	0.08	36.00								
Orient Circ		0.00									
Off Btm Circ		43.00									
Total	1247.00	110.30	18.53	2.0/20.0	50/160		8.00/30.00	6.00/8.00	4400	270.000	

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	17 1/2 **in**		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10176200

BHA Objective

Drill cement and shoe track in 20" Casing. Drill out rathole to bottom of 26" hole at 1355m.
Build inclination from 10° to 30.25° and simultaneously turn the well from 310° to 36.8° Azimuth with a dogleg severity of 2.5°. This should be accomplished by 1731 meters. A tangent section to 2590 meter will be drilled to the 13 3/8" Casing setting depth.

Final depth for this 17 1/2" section will be 20m TVD above the Ty formation.

BHA Performance / Observations

The 20" shoe track (shoe at 1348m) was drilled and then the rathole cleaned out from 1348m - 1355m without problems while displacing the well to 1.40sg OBM. Drilled 3m of formation in ribs off to 1358m and performed an FIT to 1.55sg.
Downlinked to Hold Mode with target inclination 10.1° and walk rate 45% to turn the well to the right according to the plan. Since this gave a dropping inclination tendency, steer direction 45° with 70% force was downlinked. The assembly continued to drop so the steerforce was increased to 100% with direction highside. This had the desired effect and inclination was built to 10.5° and hold mode was engaged. 35% BF gave a build rate of 2°+ and the BHA had a right walk tendency and was going straight with WF of -6.45%. Built to 30° inc and turned to 36° azi within 1770m, 5m above and 6m right of plan. There was a tangent from this point and inclination was maintained slightly less than that required and azimuth slightly left of the desired in order to gradually close on the line.
The ROP was restricted on numerous occasions due to cuttings handling limitations before it was determined that 30 m/hr was the optimum ROP that the cuttings handling equipment could cope with. Drilling on the borderline of maximum torque during several intervals, which also had the effect of reduced ROP. From ~2200m the average ROP was ~20 m/hr and despite varying the parameters to improve and optimise this gradually decayed to an average below ~10 m/hr for the last ~200m before TD.

BHA Conclusions / Recommendations / Remarks

The steering capability of the Autotrak had an effective dogleg gradient of 0.065 well above the theoretical for the tool. Despite the initial inability to build, switching to Steer Mode had the desired effect, and once the build and turn was initiated, the AutoTrak gave excellent steering response.
At surface the bit was graded 4-3 with numerous broken cutters and also several lost cutters and this is almost certain why the ROP was below ~10 m/hr for the last ~200m.

BHA Reason POOH

Section TD.

Directional Drillers

P.Corbin, P.Kingsley, G.Sliper

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	12 1/4 **in**
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405 **ASU S/N**

BHA Description

12 1/4" Drill Out Assy.

BHA Run Parameters

BHA Run #	4	**MTR Run #**		**Distance**	3.00	**m**	**P/U Date**	13/Aug/2013 03:00
ATK Run #		**MTR Rerun #**		**Avg ROP**	20.00	**m/hr**	**L/D Date**	14/Aug/2013 23:45
ATK Rerun #				**Max Temp**		**degC**		
MWD #		**MD In**	2602.00 **m**	**On Btm Circ**	0.15	**hours**	**Start Drilling**	13/Aug/2013 14:52
Bit #	4	**MD Out**	2605.00 **m**	**Off Btm Circ**	4.17	**hours**	**Stop Drilling**	13/Aug/2013 15:01

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
8	HWDP	Rig			5 1/2	3 7/8		81.28	167.38
7	Sub - X/O	Rig	NOS1134415-2		7 5/16	2 7/8		0.78	86.10
6	Accelerator	Dailey	1591-1148		8	3	6 7/16	9.70	85.32
5	Drill collar	RIG			8	3		27.18	75.62
4	Jar	Dailey	1588-1072		8	3	6 1/2	9.69	48.44
3	Drill collar	Rig			8 1/4	2 7/8		35.98	38.75
2	Stab - NB	Baker Hughes	OMM 6073	12 1/4	8	3	8	2.44	2.77
1	Bit - mill tooth - roller cone	Baker Hughes	5203220	12 1/4				0.33	0.33

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	1	1	WT	A	E	I	NO			
Grade Out	1	1	WT	A	E	I	NO	TD	10831	DD

Type VM-1 **IADC Code** 117 **TFA** 1.1167 **in^2** **Jets** 3x18,22 **Gauge Len** **in**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
2	Integral	OMM 6073	Spiral	24.00	2	6.00	12 1/4	12 1/4

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt 0.0 **tonne**
BHA Wt Below Jars 7.7 **tonne**

Motor Details

Manufacturer		**Nozzle**	**in/32**
Type		**Operating Delta P**	**bar**
S/N		**No Load Delta P**	**bar**
Motor Size	**in**	**Bit To AKO Bend**	**m**
Tilt Angle	**deg**	**Bit To UBHS**	**m**
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	/ **in**

Component Details

Geology

Formation	Top MD m	Top TVD m	Description
Lista	2527.00	2392.00	

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.280	**sg**
PV		**mPa.s**
YP		**Pa**
Gels	/	**Pa**
% Sand		**%**
% Solids		**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
30.190		33.060				/

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Drill	3.00	0.15	20.00	12.0/12.0	120/120		14.00/14.00	10.00/10.00	2500	108.000	
Off Btm Circ		4.17									
Total	3.00	4.32	20.00	12.0/12.0	120/120		14.00/14.00	10.00/10.00	2500	108.000	

Advantage BHA Performance Report

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	12 1/4 **in**	
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**

BHA Objective

Drill out 13 3/8" shoe track. Displace well to 1.28 sg OBM. Perform FIT to 1.55 sg. Perform drop Gyro.

BHA Performance / Observations

The assembly was a simple rotary BHA that drilled the shoetrack in good time and without any major challenges. The shoe and rathole were cleaned after there was an initial string stall but after reaming the area four times there were no further issues.
The mud weight was cut back from 1.40 sg to 1.28 sg while the shoetrack was drilled and after drilling a further 3m of formation an FIT was performed to 1.55 sg.
After the FIT a multi-shot gyro was dropped in order to confirm MWD surveys from the previous sections.

BHA Conclusions / Recommendations / Remarks

Totco Ring placed in top of accelerator.

This was an excellent assembly for its purpose as it drilled the float, cement and shoe smoothly and efficiently.
Bit Hrs on Cmt=2,6; Bit Circ Hrs on cement= 3; Bit Hrs on Formation = 0,15; Total Circ Hrs=7.1

BHA Reason POOH

TD.

Directional Drillers

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10059636

BHA Description

8 1/2" Pilot ATK-3 CoP OTK BCPM-II ORD-2.6 CCN TTK SDTK MTK

BHA Run Parameters

BHA Run #	5	**MTR Run #**		**Distance**	1027.00	**m**	**P/U Date**		14/Aug/2013 00:30
ATK Run #	2	**MTR Rerun #**		**Avg ROP**	23.45	**m/hr**	**L/D Date**		17/Aug/2013 21:45
ATK Rerun #				**Max Temp**	101.6	**degC**			
MWD #	3	**MD In**	2605.00 **m**	**On Btm Circ**	43.80	**hours**	**Start Drilling**		14/Aug/2013 11:05
Bit #	5	**MD Out**	3632.00 **m**	**Off Btm Circ**	17.50	**hours**	**Stop Drilling**		16/Aug/2013 16:20

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
28	HWDP	Rig			5 1/2	3 7/8		40.64	203.90
27	Sub - X/O	Rig	7200-5		7 5/16	2 7/8		1.23	163.26
26	Accelerator	Dailey	1465-1076		6 3/4	2 3/4	6 3/8	9.77	162.03
25	Sub - X/O	Rig	5155		7 1/4	2 7/8		1.11	152.26
24	HWDP	Rig			5 1/2	3 7/8		40.66	151.15
23	Sub - X/O	Rig	5238		7 5/16	3		1.20	110.49
22	Jar	Dailey	1760-5707		6 1/2	2 3/4	6 1/2	9.91	109.29
21	Sub - X/O	Rig	5154		7 1/4	3		1.21	99.38
20	HWDP	Rig			5 1/2	3 7/8		40.64	98.17
19	Sub - X/O	Rig			7 1/4	2 13/16		1.15	57.53
18	Sub - float	INTEQ	OMM3709		6 3/4	3		0.84	56.38
17	Stab - string	INTEQ	SDT7227	8 1/4	6 13/16	2 1/4	6 13/16	2.17	55.54
16	NMSub - stop	INTEQ	10211820		7	3		0.56	53.37
15	MagTrak Sensor	INTEQ	10466438		7 1/8	3	7 1/8	5.51	52.81
14	MagTrak Stab	INTEQ	10310118	8 3/8	7 3/16	3	7 13/16	1.70	47.30
13	APX	INTEQ	12541886		6 7/8	3	7	9.96	45.60
12	MWD - stab - mod	INTEQ	10487632	8 3/8	6 13/16	3	6 13/16	1.24	35.64
11	TesTrak	INTEQ	12673574		6 7/8	3	6 7/8	7.49	34.40
10	CCN	INTEQ	10526868	8 1/8	6 3/4	3	6 3/4	2.77	26.91
9	ORD	INTEQ	12779095	8 3/8	6 13/16	3	6 13/16	3.03	24.14
8	Flex sub w/ Stab	INTEQ	10696387	8 3/8	7	3	7	2.56	21.11
7	BCPM	INTEQ	10623172		7 1/8	3	6 7/8	4.92	18.55
6	MWD - stab - mod	INTEQ	12664448	8 3/8	7	3	7	1.30	13.63
5	OnTrak - MWD	INTEQ	12082923		7	3	7	5.16	12.33
4	CoPilot	INTEQ	12691133		7 1/8	3	6 15/16	2.24	7.17
3	Flex sub w/ Stab	INTEQ	10604393	8 3/8	6 15/16	3	6 15/16	2.48	4.93
2	ATK Steerable Stab	INTEQ	10059636		7 5/8	2	6 15/16	2.17	2.45
1	Bit - PDC - fixed cutter	Baker Hughes	7144696	8 1/2				0.28	0.28

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0	NO	A		I				
Grade Out	1	1	WT	A	X	I	NO	TD	393896	BakerHughes

Type	TD406X	**IADC Code**	M223	**TFA**	0.9465	**in^2**	**Jets**	4x14,2x15	**Gauge Len**	4.00 **in**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
17	Integral	SDT7227	Spiral	15.00	2 1/2	10.00	8 1/4	8 1/4
14	Sleeve	10310118	Straight				8 3/8	8 3/8
12	Integral	10487632	Spiral	11.00	3 1/2	7.50	8 3/8	8 3/8
10							8 1/8	8 1/8
9							8 3/8	8 3/8
8	Integral	10696387	Spiral	9.50	3 1/2	6.00	8 3/8	8 3/8
6	Integral	12664448	Spiral	11.50	3 1/2	8.50	8 3/8	8 3/8
3	Integral	10604393	Spiral	10.00	3 1/2	6.00	8 3/8	8 3/8

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	0.0	**tonne**
BHA Wt Below Jars	0.0	**tonne**

Motor Details

Manufacturer		**Nozzle**		**in/32**	
Type		**Operating Delta P**		**bar**	
S/N		**No Load Delta P**		**bar**	
Motor Size	**in**	**Bit To AKO Bend**		**m**	
Tilt Angle	**deg**	**Bit To UBHS**		**m**	
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	/	**in**	

Component Details

Magnetic Resonance / Bit	50.45	**m**
Acoustic / Bit	38.49	**m**
Formation Pressure / Bit	33.41	**m**
Porosity / Bit	25.46	**m**
Caliper / Bit	23.42	**m**
Density / Bit	22.74	**m**
Directional (mag) / Bit	12.22	**m**
Ann. Pressure / Bit	10.76	**m**
Gamma / Bit	9.81	**m**
Resistivity / Bit	8.76	**m**
Dynamic / Bit	5.50	**m**
Near Bit Inclination / Bit	1.32	**m**

Geology

Formation	Top MD m	Top TVD m	Description
Lista	2527.00	2392.00	
Ty Sand	2631.00	2482.00	
Ekofisk Formation	2769.00	2605.00	
Tor Formation	2788.00	2622.00	
Hod Formation	2971.00	2783.00	
Hidra Formation	3111.00	2893.00	
Rodby Formation	3145.00	2919.00	
Asgard Formation	3214.00	2964.00	
Draupne	3270.00	3005.00	
Heather Formation	3320.00	3046.00	
Top Hugin	3325.00	3050.00	
Skagerrak Formation	3450.00	3160.00	

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.320	**sg**
PV	33	**mPa.s**
YP	8.00	**Pa**
Gels	4.30/6.70	**Pa**
% Sand	0.20	**%**
% Solids	14.20	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
27.050	20.890	19.760	302.460	3620.30	3.000	0.050/3.830

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Hold	1024.00	43.45	23.57								
Steer	0.00	0.00	0.00								
Ribs Off	3.00	0.32	9.47								
Orient Circ		0.00									
Off Btm Circ		17.50									
Total	1027.00	61.30	23.45	2.0/11.0	60/160	60/160	12.00/22.00	10.00/13.00	2400	210.000	

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10059636

BHA Objective

Drill 8 ½" hole with 3° DLS turning 90° left from 33 to 302° azimuth and building up from 30° to 45° inclination by 3134m. A short tangent will be drilled before a straight drop at 3°/30m to 21° inclination. There will then be a 150m tangent section to TD at 3598m. The Hugin reservoir will be penetrated on the North Upside to examine its prospect, prove oil and define the OWC. A gyro will be dropped at TD.

BHA Performance / Observations

RIH and washed down the last stand, drilled the first 3m of 8 1/2" section in Ribs Off.
Continued drilling new formation with low angle (28.5°-30°) and low vibration picture. Drilling flat left turn at 26.5 deg NBI from 2660m MD and started building inclination and continue left turn steadily from 2860m MD.
During the build section to 49.5° higher then expected buildforce was needed to achieve the required buildrate.
When the Tor formation was entered the inclination dropped with a buidforce of 38%. Build force of 58 to 80% was required to achieve the 2°/30m build. Reducing the ROP from 35 to 25m/hr improved the build rate.
Very steady ROP at 25m/hr from 2920m MD as formation became much more homogeneous, but climbed up to 35m/hr from around 3000m to 3035m MD with formation becoming slightly less dense.
Drilling continued at steady ROP of 25-30m/hr while building toward 49.5° at 3188m. This is 1.5° above the proposed plan due to getting behind in the build up section. A tangent of 12m was drilled before starting the drop at 3230m. The ROP was reduced from 3231 mMD to 20 m/hr as per geologist's instructions which helped to maintain a steady drop rate through the changing formations. At low inclination from 3400m the azimuth was responsive to low walk forces but easily maintained.
Intermittent Whirl level 3-5 from 3450 mMD due to low hole curvature, otherwise very low VSS levels throughout the run. The ROP was slowed to 15m/hr from 3563m to TD due to pressure increase and increase in hole drag.
Geological observations were contrary to expectations and TD was set at 3632m. After the hole circulated clean at TD several TesTrak points were attempted without success. Re-Logging for the LithoTrak was performed from 3349 to 3390m.
The SoundTrak tool failed from the start of drilling.
Max ECD was 1.4 while drilling 40m/hr with 1.32sg mud and at TD where pump pressure increased.

BHA Conclusions / Recommendations / Remarks

BHA performance was acceptable and all directional requirements were fulfilled, but due to difficulties building inclination future plans with much higher dog leg requirements should be reconsidered.
Scribe line OTK - TTK is 175°.

BHA Reason POOH

Section TD.

Directional Drillers

P.Corbin, B.Thole

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405 **ASU S/N**

BHA Description

8 1/2" Logging BHA_OTK BCPM-II TTK SDTK

BHA Run Parameters

BHA Run #	6	**MTR Run #**			**Distance**	0.00	**m**	**P/U Date**	17/Aug/2013 22:00
ATK Run #		**MTR Rerun #**			**Avg ROP**		**m/hr**	**L/D Date**	19/Aug/2013 07:00
ATK Rerun #					**Max Temp**	91.1	**degC**		
MWD #	4	**MD In**	3632.00	**m**	**On Btm Circ**	0.00	**hours**	**Start Drilling**	
Bit #	6	**MD Out**	3632.00	**m**	**Off Btm Circ**	27.40	**hours**	**Stop Drilling**	

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
25	HWDP	Rig			5 1/2	3 7/8		40.64	190.64
24	Sub - X/O	Rig	7200-5		7 5/16	2 7/8		1.23	150.00
23	Accelerator	Dailey	1465-1076		6 3/4	2 3/4	6 3/8	9.77	148.77
22	Sub - X/O	Rig	5155		7 1/4	2 7/8		1.11	139.00
21	HWDP	Rig			5 1/2	3 7/8		40.66	137.89
20	Sub - X/O	Rig	5238		7 5/16	3		1.20	97.23
19	Jar	Dailey	1760-5707		6 1/2	2 3/4	6 1/2	9.91	96.03
18	Sub - X/O	Rig	5154		7 1/4	3		1.21	86.12
17	HWDP	Rig			5 1/2	3 7/8		40.64	84.91
16	Sub - X/O	Rig			7 1/4	2 13/16		1.15	44.27
15	Sub - float	INTEQ	OMM3709		6 3/4	3		0.84	43.12
14	Stab - string	INTEQ	SDT7227	8 1/4	6 13/16	2 1/4	6 13/16	2.17	42.28
13	NMSub - stop	INTEQ	10211820		7	3		0.56	40.11
12	APX	INTEQ	12165602		7	3	7	9.97	39.55
11	MWD - stab - mod	INTEQ	10507326	8 3/8	6 13/16	3	6 13/16	1.29	29.58
10	TesTrak	INTEQ	10524155		6 7/8	3	6 7/8	7.33	28.29
9	Flex sub w/ Stab	INTEQ	10696387	8 3/8	7	3	7	2.56	20.96
8	BCPM	INTEQ	10623172		7 1/8	3	6 7/8	4.92	18.40
7	MWD - stab - mod	INTEQ	12664448	8 3/8	7	3	7	1.30	13.48
6	OnTrak - MWD	INTEQ	12082923		7	3	7	5.16	12.18
5	MWD - sub - stop	Baker Hughes	10601949		7	2 1/4		0.81	7.02
4	Stab - string	Baker Hughes	OMM6572	8 1/8	6 1/2	2 1/2	6 1/2	1.59	6.21
3	Drill collar - short	Baker Hughes	OMM4169		6 3/8	2 3/4	6 3/8	2.04	4.62
2	Stab - NB	Baker Hughes	SDT 7276	8 1/2	6 3/4	2 3/4	6 3/4	2.30	2.58
1	Bit - PDC - fixed cutter	Baker Hughes	7145926	8 1/2				0.28	0.28

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0	NO	A	X	I	NO			
Grade Out	0	0	NO	A	X	I	NO	TD		Baker Hughes

Type	TD406X	**IADC Code**	M223	**TFA**	0.9465	**in^2**	**Jets**	4x14,2x15	**Gauge Len**	4.00 **in**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
14	Integral	SDT7227	Spiral	15.00	2 1/2	10.00	8 1/4	8 1/4
11	Integral	10507326	Spiral	11.00	3 1/2	7.50	8 3/8	8 3/8
9	Integral	10696387	Spiral	9.50	3 1/2	6.00	8 3/8	8 3/8
7	Integral	12664448	Spiral	11.50	3 1/2	8.50	8 3/8	8 3/8
4	Integral	OMM6572	Spiral	17.00	2 1/2	15.00	8 1/8	8 1/8
2	Integral	SDT 7276	Spiral	15.00	3	7.00	8 1/2	8 1/2

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	0.0	**tonne**
BHA Wt Below Jars	0.0	**tonne**

Motor Details

Manufacturer		**Nozzle**		**in/32**
Type		**Operating Delta P**		**bar**
S/N		**No Load Delta P**		**bar**
Motor Size	**in**	**Bit To AKO Bend**		**m**
Tilt Angle	**deg**	**Bit To UBHS**		**m**
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	/	**in**

Component Details

Acoustic / Bit	38.49	**m**
Formation Pressure / Bit	33.41	**m**
Directional (mag) / Bit	12.22	**m**
Ann. Pressure / Bit	10.76	**m**
Gamma / Bit	9.81	**m**
Resistivity / Bit	8.76	**m**

Geology

Formation	Top MD m	Top TVD m	Description

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.320	**sg**
PV	34	**mPa.s**
YP	10.50	**Pa**
Gels	4.80/6.70	**Pa**
% Sand	0.10	**%**
% Solids	16.10	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
20.890		302.460				/

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Drill	0.00	0.00							2400	215.000	
Off Btm Circ		27.40									
Total	0.00	27.40							2400	215.000	

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**	
Well	15/9-F-1	**Wellbore**	15/9-F-1	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**

BHA Objective

8 ½" Pilot Hole re-log section (2605m - 3632m)
This is an additional logging run for SoundTrak and TesTrak due those tools failing in the previous drilling assembly.
The entire Pilot hole will be re-logged with the SoundTrak.
Six TesTrak points are planned from 3321m to 3463m.
It is planned to log while backreaming out of hole.

BHA Performance / Observations

Reaming was performed at tights spots while running in hole. It was attempted to lubricate down through Draupne formation but noted immediate pack off tendencies. Tripping in through Draupne was problem free.
The hole was circulated clean before pulling up for the TesTrack points. 6 x TesTrak points were taken as requested - all successful.
Ran back to bottom and began backreaming and logging out of the hole. Problems with high torque packing off were encountered in the Draupne. It was necessary to tip out the stand then wash down and back up with reduced flow. Rotation was not possible due to stalling. Normal parameters were established above Draupne and RPM was adjusted to mitigate stick slip.

BHA Conclusions / Recommendations / Remarks

Scribe line OTK - TTK is 150°.
The tool was set up for logging either sliding or with rotation. This was necessary due to problems encountered in Draupne.

BHA Reason POOH

TD

Directional Drillers

P.Corbin, B.Thole

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10059636

BHA Description

8 1/2" Pilot ATK-3 CoP OTK BCPM-II ORD-2.6 CCN TTK SDTK

BHA Run Parameters

BHA Run #	7	**MTR Run #**			**Distance**	1062.00 **m**		**P/U Date**	22/Aug/2013 05:30
ATK Run #	3	**MTR Rerun #**			**Avg ROP**	19.82 **m/hr**		**L/D Date**	26/Aug/2013 21:30
ATK Rerun #	1				**Max Temp**	94.1 **degC**			
MWD #	5	**MD In**	2620.00 **m**		**On Btm Circ**	54.50 **hours**		**Start Drilling**	23/Aug/2013 01:45
Bit #	6RR1	**MD Out**	3682.00 **m**		**Off Btm Circ**	26.00 **hours**		**Stop Drilling**	25/Aug/2013 15:20

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
26	HWDP	Rig			5 1/2	3 7/8		40.64	197.87
25	Sub - X/O	Rig	7200-5		7 5/16	2 7/8		1.23	157.23
24	Accelerator	Dailey	1465-1076		6 3/4	2 3/4	6 3/8	9.77	156.00
23	Sub - X/O	Rig	5155		7 1/4	2 7/8		1.11	146.23
22	HWDP	Rig			5 1/2	3 7/8		40.66	145.12
21	Sub - X/O	Rig	5238		7 5/16	3		1.20	104.46
20	Jar	Dailey	1760-5707		6 1/2	2 3/4	6 1/2	9.91	103.26
19	Sub - X/O	Rig	5154		7 1/4	3		1.21	93.35
18	HWDP	Rig			5 1/2	3 7/8		40.64	92.14
17	Sub - X/O	Rig			7 1/4	2 13/16		1.15	51.50
16	Sub - float	INTEQ	OMM3709		6 3/4	3		0.84	50.35
15	Stab - string	INTEQ	SDT7227	8 1/4	6 13/16	2 1/4	6 13/16	2.17	49.51
14	NMSub - stop	INTEQ	10211820		7	3		0.56	47.34
13	APX	INTEQ	12165602		6 7/8	3	7	9.97	46.78
12	Flex sub w/ Stab	INTEQ	11885915	8 3/8	6 15/16	3	6 15/16	2.57	36.81
11	TesTrak	INTEQ	10524155		6 7/8	3	6 7/8	7.33	34.24
10	CCN	INTEQ	10526868	8 1/8	6 3/4	3	6 3/4	2.77	26.91
9	ORD	INTEQ	12779095	8 3/8	6 13/16	3	6 13/16	3.03	24.14
8	Flex sub w/ Stab	INTEQ	10696387	8 3/8	7	3	7	2.56	21.11
7	BCPM	INTEQ	10623172		7 1/8	3	6 7/8	4.92	18.55
6	MWD - stab - mod	INTEQ	12664448	8 3/8	7	3	7	1.30	13.63
5	OnTrak - MWD	INTEQ	12082923		7	3	7	5.16	12.33
4	CoPilot	INTEQ	12691133		7 1/8	3	6 15/16	2.24	7.17
3	Flex sub w/ Stab	INTEQ	10604393	8 3/8	6 15/16	3	6 15/16	2.48	4.93
2	ATK Steerable Stab	INTEQ	10059636		7 5/8	2	6 15/16	2.17	2.45
1	Bit - PDC - fixed cutter	Baker Hughes	7145926	8 1/2				0.28	0.28

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0	NO	A	X	I	NO			
Grade Out	0	0	NO	A	X	I	NO	TD	480279	

Type	TD406X	**IADC Code**	M223	**TFA**	0.9465 **in^2**	**Jets**	4x14,2x15	**Gauge Len**	4.00 **in**	

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
15	Integral	SDT7227	Spiral	15.00	2 1/2	10.00	8 1/4	8 1/4
12	Integral	11885915	Spiral	10.00	3	6.00	8 3/8	
10							8 1/8	8 1/8
9							8 3/8	8 3/8
8	Integral	10696387	Spiral	9.50	3 1/2	6.00	8 3/8	8 3/8
6	Integral	12664448	Spiral	11.50	3 1/2	8.50	8 3/8	8 3/8
3	Integral	10604393	Spiral	10.00	3 1/2	6.00	8 3/8	8 3/8

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	0.0	**tonne**
BHA Wt Below Jars	0.0	**tonne**

Motor Details

Manufacturer		**Nozzle**			**in/32**
Type		**Operating Delta P**			**bar**
S/N		**No Load Delta P**			**bar**
Motor Size	**in**	**Bit To AKO Bend**			**m**
Tilt Angle	**deg**	**Bit To UBHS**			**m**
UBHS To Stator Stab	**m**	**PDM Gap In / Out**		/	**in**

Component Details

Acoustic / Bit	38.49	**m**
Formation Pressure / Bit	33.41	**m**
Porosity / Bit	25.46	**m**
Caliper / Bit	23.42	**m**
Density / Bit	22.74	**m**
Directional (mag) / Bit	12.22	**m**
Ann. Pressure / Bit	10.76	**m**
Gamma / Bit	9.81	**m**
Resistivity / Bit	8.76	**m**
Dynamic / Bit	5.50	**m**
Near Bit Inclination / Bit	1.32	**m**

Geology

Formation	Top MD m	Top TVD m	Description

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.320	**sg**
PV	38	**mPa.s**
YP	12.90	**Pa**
Gels	6.80/7.20	**Pa**
% Sand	0.10	**%**
% Solids	15.60	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
29.930	44.050	25.320	285.440	3231.87	3.730	0.020/5.220

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Hold	1080.00	54.50	19.82								
Steer	0.00	0.00	0.00								
Ribs Off	0.00	0.00	0.00								
Orient Circ		0.00									
Off Btm Circ		26.00									
Total	1062.00	80.50	19.82	4.0/14.0	80/160	80/160	10.00/20.00	8.00/16.00	2400	190.000	

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10059636

BHA Objective

Perform sidetrack at 2610m. in the cemented pilot hole below 13 3/8" casing shoe.
Build inclination from 30.19° to 64.65° and turn the direction from 33° to 284° with a 3.75 °/30m. dogleg.
Continued by a straight drop to 44.2° with a 3.75 °/30m. dogleg.
Drill tangent section to TD at 3829m.

BHA Performance / Observations

Tagged cement at 2592m. Cleaned out rathole stepwise to 2601m. when string packed off and became stuck.
Got string free with 150 Tons overpull. Continued cleaning out rathole and drilled to 2602m. were the sidetrack was initiated. The official KO depth was set to 2320 mMD.
Around 2641m MD the drilling parameters were brought up to normal level, and the CoPilot WOB/TQ sensors were tared. After getting desired distance to the main branch the planned build section was initiated whilst turning the wellpath to the left hand side. Overall acceptable ROP of 20-30 was achieved and the vibration picture stayed low due to the low inclination in the beginning of the run.
When drilling Tor and Hod formation difficulties to achieve the required build rates were experienced.
Build force of up to 100% was used to achieve the required build rate of 3 deg/30m. The ROP was also controlled to 10 m/hr to achieve better build rates. When drilling into the Hidra formation, building became easier and ROP was increased.
Minor swabbing around 2980m. was observed when POOH.

BHA Conclusions / Recommendations / Remarks

As a result of drilling out the cement in the 13 3/8" casing and 17 ½" rathole with a 8 ½" bit resulted in a stuck BHA just outside the casing shoe. A dedicated 12 ¼" drill out rotary bha could have avoided this problem.
Overall performance of the BHA was good and all directional requirements were achieved.
Close to maximum bending moments were needed to achieve the required build drop and turn rates.

BHA Reason POOH

Pilot hole TD.

Directional Drillers

T.Berg, B.Thole

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	12 1/4 **in**		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10176200

BHA Description

12 1/4" AutoTrak-CoPilot-Mod Motor-OnTrakII-BCPM

BHA Run Parameters

BHA Run #	1	**MTR Run #**		**Distance**	480.00	**m**	**P/U Date**		28/Aug/2013 20:45
ATK Run #	4	**MTR Rerun #**		**Avg ROP**	21.14	**m/hr**	**L/D Date**		31/Aug/2013 10:45
ATK Rerun #				**Max Temp**	80.0	**degC**			
MWD #	6	**MD In**	2617.00 **m**	**On Btm Circ**	22.70	**hours**	**Start Drilling**		29/Aug/2013 12:30
Bit #	7	**MD Out**	3097.00 **m**	**Off Btm Circ**	11.80	**hours**	**Stop Drilling**		30/Aug/2013 17:15

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
16	HWDP				5 1/2	3		121.92	247.52
15	Sub - X/O				8	3		0.79	125.60
14	Accelerator	Weatherford	1591-1143		8	2 3/4	6 3/4	9.70	124.81
13	HWDP				6 5/8	2 7/8		45.44	115.11
12	Jar	Weatherford	1588-1072		8	3	6 1/2	9.69	69.67
11	HWDP	Maersk			6 5/8	2 7/8		27.24	59.98
10	Sub - float	INTEQ	OMM 5988		8	2 7/8		1.11	32.74
9	Stab - string	INTEQ	12649945	11 3/4	7 7/8	2 7/8	7 7/8	1.68	31.63
8	MWD - sub - stop	INTEQ	12806461		9 3/8	3	8 1/4	1.10	29.95
7	BCPM	INTEQ	12710477		9 3/8	3	9 3/8	3.87	28.85
6	OnTrak - MWD	INTEQ	1252380	11 3/4	9 1/2	3	9 1/2	7.00	24.99
5	Flex sub w/ Stab	INTEQ	10578580	12 1/8	9 3/8	3.118	9 3/8	3.63	17.99
4	Modular Motor	INTEQ	11814565	12 1/8	10	6.780	9 3/8	9.22	14.36
3	CoPilot	INTEQ	12024930		9 3/8	2.480	9 3/8	2.27	5.14
2	ATK Steerable Stab	INTEQ	10176200		10 3/8	2.480	9 3/8	2.54	2.87
1	Bit - PDC - fixed cutter	HC	7145013	12 1/4				0.33	0.33

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In	0	0	NO	A	X	I	NO			
Grade Out	0	2	WT	T	X	I	NO	TD	272472	T. Berg

Type	TD605	**IADC Code**	M323	**TFA**	1.2080	**in^2**	**Jets**	7x15	**Gauge Len**	76.2 **mm**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len mm	Blade Width in	Gge Len mm	Gge In in	Gge Out in
9	Integral	12649945	Spiral	508.0	3 1/4	469.9	11 3/4	
5	Integral	10578580	Spiral	355.6	5	165.1	12 1/8	
4	Stator Stab			279.4	2 1/2	139.7		

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	0.0	**tonne**
BHA Wt Below Jars	0.0	**tonne**

Motor Details

Manufacturer	INTEQ	**Nozzle**		**in/32**	
Type	Modular X-treme	**Operating Delta P**	80.000	**bar**	
S/N	11814565	**No Load Delta P**	15.000	**bar**	
Motor Size	10 **in**	**Bit To AKO Bend**		**m**	
Tilt Angle	**deg**	**Bit To UBHS**		**m**	
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	3.0 / 3.5	**mm**	

Component Details

Directional (mag) / Bit	23.32	**m**
Gamma / Bit	21.82	**m**
Ann. Pressure / Bit	20.92	**m**
Resistivity / Bit	19.62	**m**
Dynamic / Bit	3.37	**m**
Near Bit Inclination / Bit	1.53	**m**

Geology

Formation	Top MD m	Top TVD m	Description

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.280	**sg**
PV	36	**mPa.s**
YP	11.00	**Pa**
Gels	5.70/6.80	**Pa**
% Sand	0.10	**%**
% Solids	15.00	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
28.920	24.850	35.260	52.810	2901.34	2.500	0.320/2.360

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Hold	419.00	15.70	26.69								
Steer	61.00	7.00	10.57								
Ribs Off	0.00	0.00	0.00								
Orient Circ		0.00									
Off Btm Circ		11.80									
Total	480.00	37.40	21.14	2.0/15.0	20/110	132/250	13.00/25.00	11.00/12.00	2500	225.000	

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	12 1/4 **in**		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10176200

BHA Objective

Perform a sidetrack at 2604m in the cemented pilot hole below 13 3/8" casing shoe. The plan is to drop inclination from 29.75° to 25.99°; turn the direction from 38.02° to 50.77° with a 2.5°/30m dogleg and continue drilling a tangent to TD.

BHA Performance / Observations

Made up 12 1/4" BHA according to pickup-plan and ran in hole without any problems.Tagged firm cement at 2555m. Drilled firm cement down to casing-shoe at 2595m. Soft cement was cleaned out of the rathole stepwise down to kick-off point at 2604m. The sidetrack was initiated in steer-mode at steer direction 127°. Good directional control was achieved using the CoPilot bending moment for direction.
Official kick-off point was set to 2617m.
The drilling parameters were brought up gradually and from 2667m the ROP was set to 30 m/hr. ROP was in periods increased to 35 m/hr.
After reaching the tangent section, adjustments had to be done to keep up with the direction. The required walk-force was a bit hard to predict in some areas.
At TD of section we ended up 1.01m below the plan and 2.73m to the right of plan.
At 3078 we drilled into new formation (Hidra Fm.) and dWOB/dTQ increased. Drilled with torque spikes and stick-slip spikes up to level 6. Parameters were adjusted in attempt to reduce this but with limited success. At 3092m we lost communication to the CoPilot and the steering head. Drilling continued to TD at 3097m without any reduction in performance. No downtime was recorded. Hole was circulated clean and a gyro was dropped prior POOH. Pulled out without any overpull.

BHA Conclusions / Recommendations / Remarks

Overall a good performance was achieved with the BHA and all directional requirements were met. Section ROP was 21.14 m/hr.
In this kind of short 12 ¼" section, the use of AutoTrak X-treme may not be necessary. Use of a modular motor can increase the amount of wear on equipment below the motor. Risk and performance must be evaluated against each other in every application.

BHA Reason POOH

TD of section.

Directional Drillers

T.Berg, D.Halliwell, B.Thole

Advantage BHA Performance Report

BAKER HUGHES INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10092654

BHA Description

ASS-CoPilot-OnTrak-BCPM II-ORD-CCN-TesTrak-APX

BHA Run Parameters

BHA Run #	2	**MTR Run #**			**Distance**	368.00	**m**	**P/U Date**	04/Sep/2013 10:00
ATK Run #	5	**MTR Rerun #**			**Avg ROP**	23.14	**m/hr**	**L/D Date**	07/Sep/2013 09:15
ATK Rerun #					**Max Temp**	96.0	**degC**		
MWD #	7	**MD In**	3097.00	**m**	**On Btm Circ**	15.90	**hours**	**Start Drilling**	05/Sep/2013 06:35
Bit #	8	**MD Out**	3465.00	**m**	**Off Btm Circ**	24.40	**hours**	**Stop Drilling**	06/Sep/2013 07:15

String Parameters

#	Component	Mfr	S/N	Gauge OD in	OD in	ID in	Fishing Neck in	Length m	Total Length m
26	HWDP	Rig			5 1/2	3 7/8		40.68	198.02
25	Sub - X/O	Rig	XOS 3728		7	3		1.21	157.34
24	Accelerator	Dailey	1465-5052		6 1/2	2 3/4	6 1/2	9.74	156.13
23	Sub - X/O	Rig	XOS 2883		7 1/16	3 1/16	6 5/8	1.13	146.39
22	HWDP	Rig			5 1/2	3 7/8		40.64	145.26
21	Sub - X/O	Rig	5238		7	3	7	1.18	104.62
20	Jar	Dailey	1760-5691		6 1/2	2 3/4	6 3/8	9.93	103.44
19	Sub - X/O	Rig	XOS 2356		7	3 1/16	7	1.27	93.51
18	HWDP	Rig			5 1/2	3 7/8		40.62	92.24
17	Sub - X/O	Rig	XOS 3729		7	3	7	1.21	51.62
16	Sub - float	INTEQ	OMM3709		6 3/4	3		0.84	50.41
15	Stab - string	INTEQ	SDT7227	8 1/4	6 13/16	2 1/4	6 13/16	2.17	49.57
14	NMSub - stop	INTEQ	10211820		7	3		0.56	47.40
13	APX	INTEQ	12165602		6 7/8	3	7	9.97	46.84
12	Flex sub w/ Stab	INTEQ	11885915	8 3/8	6 15/16	3	6 15/16	2.57	36.87
11	TesTrak	INTEQ	10524155		6 7/8	3	6 7/8	7.33	34.30
10	CCN	INTEQ	10526868	8 1/8	6 3/4	3	6 3/4	2.77	26.97
9	ORD	INTEQ	12779095	8 3/8	6 13/16	3	6 13/16	3.03	24.20
8	Flex sub w/ Stab	INTEQ	10696387	8 3/8	7	3	7	2.56	21.17
7	BCPM	INTEQ	10623172		7 1/8	3	6 7/8	4.92	18.61
6	MWD - stab - mod	INTEQ	12664448	8 3/8	7	3	7	1.30	13.69
5	OnTrak - MWD	INTEQ	12082923		7	3	7	5.16	12.39
4	CoPilot	INTEQ	12691133		7 1/8	3	6 15/16	2.24	7.23
3	Flex sub w/ Stab	INTEQ	10185818	8 3/8	7	3	7 1/16	2.50	4.99
2	ATK Steerable Stab	INTEQ	10092654		7 3/4	2	7	2.17	2.49
1	Bit - PDC - fixed cutter	Baker Hughes	7144922	8 1/2				0.32	0.32

Bit Parameters

	I	O	D	L	B	G	O	R	TBR/Run	Graded By
Grade In										
Grade Out	0	0	NO	A	X	I	NO	TD	124624	Tor Berg

Type	TD606X	**IADC Code**	M223	**TFA**	0.9465	**in^2**	**Jets**	4x14,2x15	**Gauge Len**	4.00 **in**

Stabilization Details

Comp #	Type	Ser #	Shape	Blade Len in	Blade Width in	Gge Len in	Gge In in	Gge Out in
15	Integral	SDT7227	Spiral	15.00	2 1/2	10.00	8 1/4	8 1/4
12	Integral	11885915	Spiral	10.00	3	6.00	8 3/8	
10							8 1/8	8 1/8
9							8 3/8	8 3/8
8	Integral	10696387	Spiral	9.50	3 1/2	6.00	8 3/8	8 3/8
6	Integral	12664448	Spiral	11.50	3 1/2	8.50	8 3/8	8 3/8
3	Integral	10185818	Spiral	11.00	3 1/2	6.50	8 3/8	8 3/8

Drill Pipe Details

Drill Pipe Sect	Grade	OD in	Nom Wt kg/m	Len m

BHA Buoyed Wt	21.0	**tonne**
BHA Wt Below Jars	12.1	**tonne**

Motor Details

Manufacturer		**Nozzle**		**in/32**	
Type		**Operating Delta P**		**bar**	
S/N		**No Load Delta P**		**bar**	
Motor Size	**in**	**Bit To AKO Bend**		**m**	
Tilt Angle	**deg**	**Bit To UBHS**		**m**	
UBHS To Stator Stab	**m**	**PDM Gap In / Out**	/	**in**	

Component Details

Acoustic / Bit	39.71	**m**
Formation Pressure / Bit	33.14	**m**
Porosity / Bit	25.32	**m**
Caliper / Bit	23.27	**m**
Density / Bit	22.59	**m**
Directional (mag) / Bit	10.83	**m**
Resistivity / Bit	9.13	**m**
Gamma / Bit	7.93	**m**
Ann. Pressure / Bit	7.63	**m**
Dynamic / Bit	5.48	**m**
Near Bit Inclination / Bit	1.32	**m**

Geology

Formation	Top MD m	Top TVD m	Description
Hidra Formation	3102.00	2909.00	
Rodby Formation	3112.00	2916.00	
Asgard Formation	3141.00	2942.00	
Draupne	3168.00	2968.00	
Heather Formation	3210.00	3007.00	
Hugin	3245.00	3041.41	
Sleipner	3304.00	3099.42	

Fluid Parameters

Mud Type	Oil Based Mud	
Mud Weight	1.320	**sg**
PV	37	**mPa.s**
YP	10.00	**Pa**
Gels	5.70/6.80	**Pa**
% Sand	0.10	**%**
% Solids	15.00	**%**

Survey Update

Inc In deg	Inc Out deg	Azi In deg	Azi Out deg	Max TVD m	Max DLS Plan deg/30m	DLS Range deg/30m
20.830	4.320	52.580	59.580	3259.89	2.500	0.000/3.563

Drilling Parameters

Mode	Dist. m	Time hours	Avg ROP m/hr	WOB tonne	Surf RPM	On Btm RPM	On Btm Torq kN.m	Off Btm Torq kN.m	Flow l/min	SPP bar	Avg Diff bar
Hold	365.00	15.48	23.57								
Steer	0.00	0.00	0.00								
Ribs Off	3.00	0.42	7.14								
Orient Circ		0.00									
Off Btm Circ		24.40									
Total	368.00	40.30	23.14	1.0/11.0	80/140	80/140	12.00/20.00	11.00/12.00	2200	200.000	

Advantage BHA Performance Report

BAKER HUGHES
INTEQ

Operator	Statoil	**Fields**	Sleipner	**Location**	North Sea	**Hole Size**	8 1/2 **in**		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**Rig**	Maersk Inspirer	**Job #**	5588405	**ASU S/N**	10092654

BHA Objective

Drop inclination from 26° to 5° with a 2.5°/30m dogleg and keep direction at +/- 50° to TD. After re-logging, TesTrak pressure points were to be taken.

BHA Performance / Observations

Running in the hole a shallow test was performed at 1005 m, where all tools were working normally. The cement was tagged at 3044 m. Drilling the plug took a while but varying the parameters, especially reducing the flow to reduce the pump off force gave good results. During the drill out, the mud weight was increased from 1.28 sg to 1.32 sg. The shoe track was drilled out to the shoe without problem. The shoe was drilled in Ribs Off where a baffle plate gave some resistance. The rathole was drilled out in 1-metre steps and the shoe area checked before drilling 3 metres of formation. The mud was conditioned prior to the FIT. FIT performed to 1.60 sg.
Due to the variable formation, getting a steady drop was difficult with many changes in build force required. The drop fell behind and 3.5°/30 m doglegs were required to catch up with the plan. The drilling operation was carried on with more or less steady penetration rate. The Draupne formation was indicated by a faster sleeve rotation from 3170 m but the interval was drilled through without any issues.
Overall the stick-slip and vibration picture was low during the entire run.
At the target the hole was 1.51 m above, 0.0 m right plan; travelling cylinder 1.51 m bearing 50.788° N. Average ROP were 23.14 m/hr.
The hole was drilled to a TD of 3465 mMD and circulated clean prior to re-logging and taking TesTrak points. Ten points were taken at (Pad Depths MD) 3329.3 m, 3300.8 m, 3295.3 m, 3290.3 m, 3279.8 m, 3272.8 m, 3265.8 m, 3260.3 m, 3254.3 m and 3246.3 m.

BHA Conclusions / Recommendations / Remarks

When using pumps 2 and 3 there were some issues getting downlink confirmation due to erratic pressures and the pumps cutting out. This required multiple downlinks and a pause in drilling to be sure the AutoTrak had the correct steering parameters. At 3223 m there was difficulty getting confirmation on a Walk Force and Target Inclination combined downlink. Sending separately solved that problem. Changing to pumps 1 and 3 improved the downlink difficulties.
From 3266m the geologist requested that all downlinks be sent off bottom to avoid data gaps in the log.
OOH some wear was observed on the ORD graded to 3-3. Also some of the wear-band on the CoPilot was missing.

BHA Reason POOH

Section and hole TD.

Directional Drillers

T.Berg, D.Halliwell

Motor Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	20:10 22/Jul/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	19:50 27/Jul/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	2	**Hole Size**	26 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data														
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	TFO	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press On	Press Off	Delta Press	Mud Wt	Comments
		hours			m			m/hr		deg		kN.m		tonne				l /min	bar			sg	
22/Jul/2013																							
20:10	20:10		0.00	0.00		216.50			WR		0	0.00		2.0	98.0	95.0	99.0	1000	0.000	50.000			Tag top of cement at 216.5m.
20:30	21:00		0.50	0.50	216.50	219.00	2.50	5.00	DC		60	6.00	3.00	2.0				3000	60.000	50.000	10.000		
21:00	21:30		0.50	1.00	219.00	220.00	1.00	2.00	DC		60	10.00	6.00	2.0				3500	85.000	50.000	35.000		
21:30	22:00		0.50	1.50	220.00	221.00	1.00	2.00	DC		60	8.00	6.00	2.0				3500	85.000	50.000	35.000		
22:00	23:30		1.50	3.00	221.00	224.00	3.00	2.00	DC		60	10.00	6.00	2.0				3500	85.000	50.000	35.000		
23:30	23:59		0.50	3.50	224.00	226.00	2.00	4.00	DC		60	10.00	6.00	2.0				3500	85.000	50.000	35.000		
23/Jul/2013																							
00:45	02:10		1.42	4.92	226.00				C		0	0.00	0.00	0.0				0	0.000	50.000			Rig up Aker wire line for first SDC Gyro single shot.
02:30	03:30	1.00		5.92	226.00	239.00	13.00	13.00	O	270GY	0	0.00	0.00	15.0	98.0	93.0		2500	70.000	50.000	20.000		Start kick off at 226m. - stall out at 239m.
03:30	05:25	1.92		7.83	239.00	251.00	12.00	12.00	O	270GY	0	0.00	0.00	10.0				2900	75.000	55.000	20.000		Hanging up at 251m.
05:25	05:40	0.25		8.08	251.00	252.00	1.00	4.00	R		50	8.00	6.00	4.0				2900	75.000	55.000	20.000		Rotate 1 meter.
06:10	07:00		0.83	8.92	252.00				C		0	0.00	0.00	0.0				0	0.000	55.000			Take SDC Gyro single shot #2.
07:00	07:40	0.67		9.58	252.00	253.00	1.00	1.50	O	270GY	0	0.00	0.00	5.0				2968	60.000	55.000	5.000		
08:00	08:40	0.67		10.25	253.00	253.00	0.00	0.00	O	310GY	0	0.00	0.00	5.0				3430	84.000	83.000	1.000		GTF off btm. No penetration. Suspected cement debris jamming on stabilizer
08:55	09:30	0.58		10.83	253.00	253.00	0.00	0.00	O	310GY	0	0.00	0.00	5.0				3990	116.000	114.000	2.000		GTF off btm.
09:30	11:05	1.58		12.42	253.00	260.00	7.00	4.42	O	310GY	0	0.00	0.00	3.0				3990	116.000	114.000	2.000		GTF off btm.
11:05	11:50	0.75		13.17	260.00	267.00	7.00	9.33	O	310GY	0	0.00	0.00	3.0				3990	116.000	114.000	2.000		GTF off btm
12:35	13:16	0.68		13.85	267.00	280.00	13.00	19.02	R		90	8.00	4.00	3.0				4400	140.000	135.000	5.000		
14:40	15:05	0.42		14.27	280.00	292.00	12.00	28.80	R		90	8.00	6.00	3.0				4400	140.000	135.000	5.000		Pull back to the shoe - Repair topdrive
20:10	22:45	2.58		16.85	292.00	323.00	31.00	12.00	R		90	8.00	6.00	3.0				4400	140.000	140.000	0.000		Ran back to btm. - continue rotating. - Orientated w/ GyroMWD 2x
23:25	23:59	0.57		17.42	323.00	332.00	9.00	15.88	O	290GY	0	0.00	0.00	6.0				3500	95.000	95.000	0.000		Reduce flow to eleminate drop.
24/Jul/2013																							
00:55	01:55	1.00		18.42	332.00	347.00	15.00	60.00	O	280GY	0	0.00	0.00	7.0				3500	95.000	95.000	0.000		
02:20	04:25	2.08		20.50	347.00	375.00	28.00	16.80	R		60	8.00	6.00	6.0				3500	95.000	95.000	0.000		Re-take survey 2x.

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, R - Rotary, O - Orient, DC - Drilling Cement, WR - Wash and/or Ream, G-Gyro, HSL - High Side Left, HSR - High Side Right, M - Magnetic

Motor Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	20:10 22/Jul/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	19:50 27/Jul/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	2	**Hole Size**	26 in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	TFO	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press On	Press Off	Delta Press	Mud Wt	Comments
		hours			m			m/hr		deg		kN.m		tonne				l /min	bar			sg	
04:55	07:00	2.08		22.58	375.00	413.00	38.00	18.24	R		60	8.00	6.00	4.0				3500	100.000	95.000	5.000		On survey decoding and movment problems took Gyro wireline survey
10:52	11:37	0.75		23.33	413.00	442.00	29.00	38.67	R		60	8.00	6.00	4.0				4000	125.000	116.000	9.000		Movment problems on SDC gyro modular
12:35	12:50	0.25		23.58	442.00	454.00	12.00	48.00	R		60	8.00	6.00	8.0				4000	130.000	116.000	14.000		
13:55	15:05	1.17		24.75	454.00	494.00	40.00	34.29	R		60	8.00	6.00	7.0				4000	130.000	120.000	10.000		
16:10	17:23	1.22		25.97	494.00	534.00	40.00	32.88	R		60	8.00	6.00	8.0				4000	130.000	120.000	10.000		
18:21	19:40	1.32		27.28	534.00	575.00	41.00	31.14	R		60	8.00	6.00	9.0				4000	135.000	120.000	15.000		
20:35	21:20	0.75		28.03	575.00	594.00	19.00	20.73	O	330GY	0	0.00	0.00	9.0				4000	130.000	120.000	10.000		Poor orientation - slow decoding.
21:20	21:30	0.17		28.20	594.00	600.00	6.00	14.40	R		60	8.00	6.00	9.0				4000	130.000	120.000	10.000		
21:40	23:00	1.33		29.53	600.00	615.00	15.00	11.25	O	320M	0	0.00	0.00	6.0				3750	110.000	100.000	10.000		
25/Jul/2013																							
00:15	00:35	0.33		29.87	615.00	625.00	10.00	30.00	R		60	8.00	6.00	9.0				3750	117.000	100.000	17.000		
00:45	02:00	1.25		31.12	625.00	645.00	20.00	16.00	O	30R	0	0.00	0.00	8.0				3750	115.000	100.000	15.000		
02:00	02:23	0.38		31.50	645.00	656.00	11.00	28.70	R		60	11.00	8.00	7.0				3750	120.000	100.000	20.000		
03:45	04:00	0.25		31.75	656.00	666.00	10.00	40.00	R	R	60	10.00	7.00	4.0				3700	117.000	100.000	17.000		
04:10	05:00	0.83		32.58	666.00	690.00	24.00	28.80	O	25R	0	0.00	0.00	6.0				3750	125.000	100.000	25.000		
05:00	05:15	0.25		32.83	690.00	696.00	6.00	24.00	R		60	12.00	8.00	3.0				3750	120.000	100.000	20.000		
06:20	06:45	0.42		33.25	696.00	705.00	9.00	21.60	R		60	12.00	8.00	8.0				3750	115.000	100.000	15.000		
06:55	08:00	1.08		34.33	705.00	725.00	20.00	18.46	O	25L	0	0.00	0.00	7.0				3750	120.000	100.000	20.000		
08:00	08:30	0.50		34.83	725.00	736.00	11.00	22.00	R		60	15.00	8.00	10.0				3965	130.000	120.000	10.000		
09:22	10:26	1.07		35.90	736.00	776.00	40.00	37.50	R		60	12.00	8.00	13.0				3965	130.000	120.000	10.000		Take lap over surveys OK - take rotational check shot OK
13:19	14:28	1.15		37.05	776.00	817.00	41.00	35.65	R		60	12.00	8.00	13.0				3965	130.000	120.000	10.000		
15:35	16:04	0.48		37.53	817.00	833.00	16.00	33.10	R		60	12.00	8.00	13.0				4010	137.000	129.000	8.000		
16:11	17:26	1.25		38.78	833.00	857.00	24.00	19.20	O	45L	0	0.00	0.00	12.0				4010	136.000	129.000	7.000		
17:50	18:45	0.92		39.70	857.00	888.00	31.00	33.82	R		60	0.00	8.00	12.0				4010	136.000	129.000	7.000		
19:15	19:35	0.33		40.03	888.00	893.00	5.00	15.00	O	0R	0	0.00	0.00	2.0				4000	140.000	130.000	10.000		Top Utsira sand

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, R - Rotary, O - Orient, DC - Drilling Cement, WR - Wash and/or Ream, G-Gyro, HSL - High Side Left, HSR - High Side Right, M - Magnetic

Motor Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	20:10 22/Jul/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	19:50 27/Jul/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	2	**Hole Size**	26 in	**Page No.**	3

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	TFO	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press On	Press Off	Delta Press	Mud Wt	Comments
		hours			m			m/hr		deg		kN.m		tonne				l /min	bar			sg	
19:35	19:50	0.25		40.28	893.00	898.00	5.00	20.00	R		60	15.00	10.00	10.0				4000	140.000	130.000	10.000		Hard crench
20:00	20:10	0.17		40.45	898.00	900.00	2.00	12.00	R	L	60	12.00	10.00	9.0				4040	140.000	130.000	10.000		
20:20	20:50	0.50		40.95	900.00	939.00	39.00	78.00	O	0R	0	0.00	0.00	0.0				4000	140.000	125.000	15.000		
21:00	21:40	0.67		41.62	939.00	965.00	26.00	39.00	O	0R	0	0.00	0.00	0.0				4500	160.000	150.000	10.000		
21:40	21:45	0.08		41.70	965.00	966.00	1.00	12.00	R		60	12.00	10.00	0.0				4500	160.000	150.000	10.000		Hanging up at 965
21:45	22:00	0.25		41.95	966.00	978.00	12.00	48.00	O	0R	0	0.00	0.00	0.0				4500	160.000	155.000	5.000		
22:10	23:30	1.33		43.28	978.00	1019.00	41.00	30.75	O	20L	0	0.00	0.00	2.0				4430	160.000	155.000	5.000		
23:40	23:59	0.32		43.60	1019.00	1034.00	15.00	47.37	O	0L	0	0.00	0.00	2.0				3700	120.000	115.000	5.000		
26/Jul/2013																							
00:00	00:30				1034.00	1060.00	26.00		O	0L	0	0.00	0.00	2.0				3700	120.000	115.000	5.000		
01:10	01:12	0.03		43.63	1060.00	1069.00	9.00	270.00	O	30L	0	0.00	0.00	2.0				3700	120.000	115.000	5.000		Base of Utsira at 1069m - hit hard layer.
01:12	02:30	1.30		44.93	1069.00	1077.00	8.00	6.15	O	L	0	0.00	0.00	8.0				4000	140.000	135.000	5.000		Hard layer below Utsira. TQ peeaks.
02:30	03:40	1.17		46.10	1077.00	1100.00	23.00	19.71	R		60	16.00	12.00	10.0				4000	148.000	135.000	13.000		
03:46	04:10	0.40		46.50	1100.00	1102.00	2.00	5.00	R		60	16.00	12.00	10.0				4000	148.000	135.000	13.000		
04:10	06:00	1.83		48.33	1102.00	1128.00	26.00	14.18	O	45L	0	0.00	0.00	16.0				4450	170.000	155.000	15.000		
06:00	06:48	0.80		49.13	1128.00	1140.00	12.00	15.00	R		60	16.00	12.00	12.0				4450	160.000	155.000	5.000		
07:14	09:07	1.88		51.02	1140.00	1180.00	40.00	21.24	R		60	16.00	12.00	12.0				4450	165.000	161.000	4.000		
09:07	09:35		0.47	51.48	1180.00	1140.00	-40.00		WR		60	0.00	12.00	12.0				4450	0.000	161.000			
09:50	11:26	1.60		53.08	1180.00	1220.00	40.00	25.00	R		60	15.00	12.00	12.0				4450	163.000	161.000	2.000		
11:26	11:47		0.35	53.43	1220.00	1180.00	-40.00		WR		60	0.00	12.00	12.0				4450	0.000	161.000			
12:02	12:10	0.13		53.57	1220.00	1223.00	3.00	22.50	R		60	12.00	10.00	7.0				4430	164.000	161.000	3.000		Top Skade at 1223m
12:20	13:00	0.67		54.23	1223.00	1232.00	9.00	13.50	O	L	0	0.00	0.00	5.0				4430	164.000	161.000	3.000		Attempt to orient. Unstable toolfaces.
13:00	14:00	1.00		55.23	1232.00	1247.00	15.00	15.00	O	25L	0	0.00	0.00	12.0				3700	144.000	135.000	9.000		
14:00	14:35	0.58		55.82	1247.00	1254.00	7.00	12.00	O	0L	0	0.00	0.00	15.0				4500	173.000	160.000	13.000		
14:35	14:45	0.17		55.98	1254.00	1259.00	5.00	30.00	O	0L	0	0.00	0.00	2.0				4450	165.000	160.000	5.000		Soft Skade formation.

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, R - Rotary, O - Orient, DC - Drilling Cement, WR - Wash and/or Ream, G-Gyro, HSL - High Side Left, HSR - High Side Right, M - Magnetic

Motor Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	20:10 22/Jul/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	19:50 27/Jul/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	2	**Hole Size**	26 in	**Page No.**	4

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	TFO	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press On	Press Off	Delta Press	Mud Wt	Comments
		hours			m			m/hr		deg		kN.m		tonne				l /min	bar			sg	
14:45	14:55	0.17		56.15	1259.00	1261.00	2.00	12.00	R		60	10.00	10.00	0.0				4450	165.000	160.000	5.000		
15:05	15:35	0.50		56.65	1261.00	1301.00	40.00	120.00	R		60	12.00	10.00	2.0				4430	165.000	165.000	0.000		Very soft Skåde - no resistence
15:45	15:52	0.12		56.77	1301.00	1316.00	15.00	128.57	R		60	8.00	7.00	1.0				4000	123.000	120.000	3.000		Exit Skåde at 1318m MD
15:52	17:15	1.38		58.15	1316.00	1342.00	26.00	29.43	R		60	13.00	10.00	12.0				4450	173.000	160.000	13.000		
17:20	18:50	1.50		59.65	1342.00	1355.00	13.00	26.00	R		60	13.00	10.00	12.0				4450	173.000	160.000	13.000		High torque from 1351m - ream interval. - Drilled to section TD at 1355m.
18:50	22:15		3.42	63.07	1355.00	1355.00			C		90	0.00	9.00	0.0				4430	0.000	163.000			Circulate B/U.
22:15	23:50		1.58	64.65	1355.00				C		20	0.00	6.00	0.0				4430	0.000	154.000			Displace open hole to 1.35sg KCL mud.
27/Jul/2013																							
16:45	18:20		1.58	66.23	1355.00	1355.00			C		90	0.00	6.00	0.0				4700	0.000	127.000			Circulate B/U.
18:20	19:50		1.50	67.73	1355.00				C		60	0.00	6.00	0.0				4650	0.000	177.000			Displace to 1.35sg KCL mud.

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, R - Rotary, O - Orient, DC - Drilling Cement, WR - Wash and/or Ream, G-Gyro, HSL - High Side Left, HSR - High Side Right, M - Magnetic

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	08:50 4/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	05:15 9/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	3	**Bit #**	3	**Hole Size**	17 1/2 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
4/Aug/2013																								
08:50	09:05		0.25	0.25	1280.00	1321.00	41.00	164.00	WR	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				3800	120.000		Washing down last stand.
09:15	12:20		3.08	3.33	1321.00	1348.00	27.00	8.76	DC	0.00	0.000	0.00	0.000	60	15.00	0.00	10.0				4140	240.000		Drill cement, float collar and shoe.
12:20	13:00		0.67	4.00	1348.00	1355.00	7.00	10.50	DC	0.00	0.000	0.00	0.000	60	5.00	0.00	2.0				4190	232.000		Drill rathole.
13:00	13:05	0.08		4.08	1355.00	1358.00	3.00	36.00	RO	0.00	0.000	0.00	0.000	60	10.00	6.00	3.0				4190	232.000		Drill 3m new formation. Perform FIT to 1.55sg.
15:15	15:30		0.25	4.33	1358.00	1358.00	0.00	0.00	WR	0.00	0.000	0.00	0.000	60	0.00	0.00	0.0				4300	248.000		
15:30	16:05	0.58		4.92	1358.00	1361.00	3.00	5.14	H	41.90	0.000	45.20	10.080	60	11.00	6.00	10.0				4500	271.000		
16:25	17:05	0.67		5.58	1361.00	1364.00	3.00	4.50	H	41.90	0.000	45.20	10.080	60	9.00	6.00	20.0				4500	271.000		
17:05	17:40	0.58		6.17	1364.00	1378.00	14.00	24.00	H	41.90	0.000	45.20	10.080	50	13.00	6.00	20.0				4500	273.000		
17:40	18:10	0.50		6.67	1378.00	1394.00	16.00	32.00	S	71.00	45.000	0.00	0.000	60	17.00	6.00	12.0				4500	273.000		Losing inclination, switch to steer mode.
18:10	18:35	0.42		7.08	1394.00	1401.00	7.00	16.80	S	100.00	0.000	0.00	0.000	120	17.00	6.00	20.0				4000	215.000		
18:55	19:25	0.50		7.58	1401.00	1417.00	16.00	32.00	S	100.00	0.000	0.00	0.000	120	17.00	6.00	20.0				3200	149.000		Losing at shakers - reduce flow.
19:25	19:35	0.17		7.75	1417.00	1423.00	6.00	36.00	H	41.90	0.000	45.20	10.080	120	17.00	6.00	20.0				3200	149.000		
19:35	19:50	0.25		8.00	1423.00	1430.00	7.00	28.00	H	51.60	0.000	45.20	10.440	120	17.00	6.00	20.0				3800	202.000		
19:50	19:55	0.08		8.08	1430.00	1435.00	5.00	60.00	H	51.60	0.000	32.30	10.440	120	17.00	6.00	20.0				4100	226.000		Stalled, p/u and reseat gently
20:00	20:20	0.33		8.42	1435.00	1441.00	6.00	18.00	H	51.60	0.000	32.30	10.440	120	17.00	6.00	6.0				4100	226.000		
21:00	21:13	0.22		8.63	1441.00	1446.00	5.00	23.08	H	51.60	0.000	32.30	10.440	120	17.00	6.00	8.0				4200	238.000		Attempt to ream bottom single over high torque area prior to connection. 20k ove ...
21:13	22:24	1.18		9.82	1446.00	1482.00	36.00	30.42	H	51.60	0.000	32.30	12.240	120	17.00	6.00	10.0	132.0	118.0	125.0	4430	260.000		Ream bottom single to ensure overpull isn't still an issue. Smooth.
22:54	23:06	0.20		10.02	1482.00	1489.00	7.00	35.00	H	51.60	0.000	32.30	12.240	120	17.00	6.00	10.0				4430	260.000		
23:06	23:59	0.90		10.92	1489.00	1517.00	28.00	31.11	H	45.16	0.000	32.30	13.680	120	17.00	6.00	10.0				4430	261.000		
5/Aug/2013																								
00:00	00:10	0.15		11.07	1517.00	1522.00	5.00	33.27	H	45.16	0.000	32.30	13.680	120	17.00	6.00	10.0				4430	261.000		
00:34	00:43	0.15		11.22	1522.00	1525.00	3.00	20.00	H	45.16	0.000	32.30	13.680	120	17.00	6.00	10.0				4430	261.000		
00:43	02:48		2.08	13.30	1525.00	1528.00	3.00		C	0.00	0.000	0.00	0.000	140	0.00	7.00	0.0				4430	256.000		Cuttings handling issue - reciprocate and circulate upper part of the stand.
02:55	03:30		0.58	13.88	1528.00				C	0.00	0.000	0.00	0.000	140	0.00	7.00	0.0				4430	256.000		Rack a stand and continue to reciprocate and circulate whilst working on cutting ...

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	08:50 4/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	05:15 9/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	3	**Bit #**	3	**Hole Size**	17 1/2 in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
03:30	04:10		0.67	14.55	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	7.00	0.0				4000	211.000		DL SF0 and cut flow and RPM as cuttings handling problem may continue for some t ...
04:10	05:08		0.97	15.52	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3000	131.000		
05:20	06:25		1.08	16.60	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3960	212.000		Rack another stand.
06:40	06:55		0.25	16.85	1528.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				3990	213.000		
07:05	08:05		1.00	17.85	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3990	213.000		Run in one stand.
08:15	08:45		0.50	18.35	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3990	213.000		
09:00	11:50		2.83	21.18	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3990	213.000		
12:30	13:30		1.00	22.18	1528.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				0	0.000		Pull inside casing to reset software on drillfloor.
14:10	14:30		0.33	22.52	1528.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				0	0.000		Run in hole to continue drilling.
14:50	15:55		1.08	23.60	1528.00				C	0.00	0.000	0.00	0.000	100	0.00	6.00	0.0				3990	217.000		
16:25	16:27	0.03		23.63	1528.00	1529.00	1.00	30.00	H	45.16	0.000	3.23	15.480	120	8.00	6.00	2.0				3990	217.000		Losing at shakers when back on bottom.
16:45	17:40	0.92		24.55	1529.00	1556.00	27.00	29.45	H	45.16	0.000	3.23	15.480	120	17.00	6.00	12.0				4190	236.000		
17:40	17:55	0.25		24.80	1556.00	1565.00	9.00	36.00	H	29.00	0.000	3.23	18.000	120	17.00	6.00	12.0				4470	268.000		
18:10	19:15	1.08		25.88	1565.00	1598.00	33.00	30.46	H	29.00	0.000	3.23	18.000	120	17.00	6.00	12.0				4500	270.000		
19:15	19:22	0.12		26.00	1598.00	1603.00	5.00	42.86	H	29.00	0.000	-3.23	30.250	120	17.00	8.00	12.0	137.0	121.0	127.0	4500	270.000		
19:44	20:13	0.48		26.48	1603.00	1613.00	10.00	20.69	H	29.00	0.000	-3.23	30.250	140	17.00	8.00	10.0				4500	272.000		Restrict ROP to 30m/hr due to cuttings handling limitations.
20:13	20:33	0.33		26.82	1613.00	1623.00	10.00	30.00	H	29.00	0.000	-3.23	30.250	140	17.00	8.00	10.0				4200	237.000		Cuttings handling problems. P/u & reciprocate.
20:33	20:58		0.42	27.23	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				2500	96.000		DL SF0 as problem will take some time.
20:58	21:40		0.70	27.93	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				3000	136.000		Rack a stand
21:50	22:55		1.08	29.02	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				3000	135.000		
22:55	23:40		0.75	29.77	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				4440	267.000		Rack a stand
23:50	23:59		0.17	29.93	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				4410	260.000		
6/Aug/2013																								
00:00	00:35	0.58		30.52	2087.00	2099.00	12.00	20.56	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	14.0				4380	265.000		Tdrive stall. P/u & reseat.
00:00	00:25		0.40	30.92	1623.00				C	0.00	0.000	0.00	0.000	120	0.00	8.00	0.0				4410	260.000		Stop circulating, run back to bottom and prepare to drill.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	08:50 4/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	05:15 9/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	3	**Bit #**	3	**Hole Size**	17 1/2 in	**Page No.**	3

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow l /min	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne					bar	sg	
00:40	01:58	1.30		32.22	2099.00	2127.00	28.00	21.54	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	12.0				4360	268.000		Continuing high and erratic torque. Problems breaking Tdrive saver sub.
01:43	02:45	1.03		33.25	1623.00	1643.00	20.00	19.35	H	29.03	0.000	-6.45	30.250	140	17.00	8.00	6.0				4410	265.000		Hold ROP to 20m/hr for remainder of the stand due to cuttings handling.
02:53	03:03	0.17		33.42	2127.00	2131.00	4.00	24.00	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	15.0				4360	280.000		
03:02	03:09	0.12		33.53	1643.00	1646.00	3.00	25.71	H	29.03	0.000	-6.45	30.250	140	17.00	8.00	8.0				4430	265.000		Increase ROP to 25 m/hr.
03:03	03:35	0.53		34.07	2131.00	2142.00	11.00	20.63	H	35.48	0.000	0.00	29.880	140	19.00	8.00	20.0				4300	274.000		hard formation - max WOB, vary other parameters.
03:09	03:20	0.18		34.25	1646.00	1650.00	4.00	21.82	H	35.48	0.000	-6.45	30.250	140	17.00	8.00	6.0				4430	266.000		Back to 20 m/hr.
03:20	04:00	0.67		34.92	1650.00	1666.00	16.00	24.00	H	35.48	0.000	-6.45	30.250	140	17.00	8.00	9.0				4430	266.000		Back to 25 m/hr.
03:35	04:55	1.33		36.25	2142.00	2168.00	26.00	19.50	H	35.48	0.000	0.00	29.880	120	19.00	8.00	20.0				4300	274.000		
04:00	04:35	0.58		36.83	1666.00	1683.00	17.00	29.14	H	35.48	0.000	-6.45	30.250	140	17.00	8.00	13.0				4430	266.000		Increase ROP to 30 m/hr.
04:53	05:35	0.70		37.53	1683.00	1704.00	21.00	30.00	H	35.48	0.000	-6.45	30.250	140	18.00	8.00	15.0				4430	266.000		ROP 35 m/hr.
05:10	05:23	0.22		37.75	2168.00	2171.00	3.00	13.85	H	35.48	0.000	0.00	29.880	120	19.00	8.00	20.0				4320	276.000		
05:23	05:40	0.28		38.03	2171.00	2175.00	4.00	14.12	H	35.48	0.000	9.70	29.880	160	21.00	8.00	16.0				4320	275.000		High torque, vary RPM
05:35	06:08	0.55		38.58	1704.00	1724.00	20.00	36.36	H	35.48	0.000	3.20	30.060	140	18.00	8.00	15.0				4430	266.000		ROP 40 m/hr.
05:40	05:47	0.12		38.70	2175.00	2177.00	2.00	17.14	H	35.48	0.000	9.70	29.880	90	19.00	8.00	10.0				4320	275.000		
05:47	07:00	1.22		39.92	2177.00	2189.00	12.00	9.86	H	35.48	0.000	9.70	29.880	140	19.00	8.00	12.0				4320	275.000		No impovement in torque with various RPMs
06:24	07:00	0.60		40.52	1724.00	1745.00	21.00	35.00	H	35.48	0.000	3.20	30.060	140	18.00	8.00	15.0				4430	266.000		
07:00	07:45	0.75		41.27	1745.00	1765.00	20.00	26.67	H	35.48	0.000	3.20	30.060	140	18.00	8.00	15.0	142.0	122.0	130.0	4430	266.000		Hold back ROP to 25 m/hr for remainder of the stand due to cuttings handling.
07:00	07:25	0.42		41.68	2189.00	2198.00	9.00	21.60	H	35.48	0.000	9.70	29.880	140	14.00	8.00	8.0				4320	275.000		Lower torque, ROP improvement.
07:25	08:05	0.67		42.35	2198.00	2209.00	11.00	16.50	H	35.48	0.000	9.70	29.880	140	27.00	8.00	15.0	154.0	129.0	142.0	4320	275.000		Backream single prior to connection.
08:00	09:25	1.42		43.77	1765.00	1805.00	40.00	28.24	H	35.48	0.000	-6.45	30.060	120	18.00	8.00	10.0				4430	266.000		Hold back ROP to 25 m/hr due to cuttings handling.
08:25	09:35	1.17		44.93	2209.00	2230.00	21.00	18.00	H	35.48	0.000	-6.45	29.880	140	28.00	8.00	15.0				4320	275.000		Max WOB according to topdrive stall limit.
09:35	10:25	0.83		45.77	2230.00	2249.00	19.00	22.80	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	15.0				4320	275.000		
09:35	11:05	1.50		47.27	1805.00	1845.00	40.00	26.67	H	35.48	0.000	-6.45	30.060	140	15.00	8.00	8.0				4430	270.000		Hold back ROP to 25 m/hr.
10:40	11:35	0.92		48.18	2249.00	2270.00	21.00	22.91	H	35.48	0.000	-12.90	30.060	140	16.00	8.00	15.0				4430	292.000		Stringer at 2263m.
11:20	13:00	1.67		49.85	1845.00	1886.00	41.00	24.60	H	35.48	0.000	-6.45	30.060	140	15.00	8.00	10.0				4430	275.000		Stringers at 1855m and 1858m. Hold back ROP to 25 m/hr.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	08:50 4/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	05:15 9/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	3	**Bit #**	3	**Hole Size**	17 1/2 in	**Page No.**	4

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
11:35	12:30	0.92		50.77	2270.00	2290.00	20.00	21.82	H	35.48	0.000	-12.90	30.060	140	30.00	8.00	15.0				4430	292.000		
12:45	13:45	1.00		51.77	2290.00	2305.00	15.00	15.00	H	35.48	0.000	-12.90	30.060	140	30.00	8.00	15.0				4430	292.000		
13:15	14:45	1.50		53.27	1886.00	1926.00	40.00	26.67	H	35.48	0.000	-9.68	29.880	140	15.00	8.00	12.0				4430	275.000		Hold back ROP 30 m/hr.
13:45	14:00	0.25		53.52	2305.00				H	35.48	0.000	-12.90	30.060	140	18.00	8.00	18.0				4430	292.000		Stringer at 2309m. Circulate B/U prior to entering Balder.
15:05	16:30	1.42		54.93	1926.00	1967.00	41.00	28.94	H	35.48	0.000	-6.45	29.880	140	15.00	8.00	8.0				4430	275.000		Hold back ROP 30 m/hr.
16:45	18:05	1.33		56.27	1967.00	2007.00	40.00	30.00	H	35.48	0.000	-6.45	29.880	140	15.00	8.00	8.0				4430	280.000		Hold back ROP 30 m/hr.
18:20	20:16	1.93		58.20	2007.00	2047.00	40.00	20.69	H	35.48	0.000	-6.45	29.880	140	18.00	8.00	12.0				4430	280.000		High and erratic torque up to 30kNm. Backream 15m. SCRs
21:06	21:24	0.30		58.50	2047.00	2053.00	6.00	20.00	H	35.48	0.000	-6.45	29.880	140	18.00	8.00	15.0				4450	281.000		Hold ROP to 30 m/hr for rest of the section due to cuttings handling limitations ...
21:24	21:43		0.32	58.82	2053.00				C	0.00	0.000	0.00	0.000	140	0.00	8.00	0.0				2250	81.000		Pump problems
21:43	22:30	0.78		59.60	2053.00	2057.00	4.00	5.11	H	35.48	0.000	-6.45	29.880	140	14.00	8.00	4.0				4030	241.000		Restrict ROP to 3m/hr whilst investigate pump issues.
22:30	22:48	0.30		59.90	2057.00	2061.00	4.00	13.33	H	35.48	0.000	-6.45	29.880	140	14.00	8.00	5.0				4380	265.000		Restrict ROP to 10 m/hr whilst gradually optimising parameters.
22:48	23:46	0.97		60.87	2061.00	2087.00	26.00	26.90	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	10.0				4380	265.000		ROP restricted to 30 m/hr due to cuttings handling equipment restrictions.
23:46	23:59	0.23		61.10	2087.00	2087.00	0.00	0.00	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	10.0				4380	265.000		
7/Aug/2013																								
00:00	00:05	0.08		61.18	2087.00	2090.00	3.00	35.88	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	10.0				4380	265.000		
00:05	01:55	1.83		63.02	2090.00	2127.00	37.00	20.18	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	15.0				4380	265.000		Top drive maintenance.
02:55	04:55	2.00		65.02	2127.00	2168.00	41.00	20.50	H	35.48	0.000	0.00	29.880	120	16.00	8.00	19.0				4380	265.000		
05:10	08:05	2.92		67.93	2168.00	2208.00	40.00	13.71	H	35.48	0.000	9.45	29.880	140	16.00	8.00	19.0				4380	265.000		Vary RPM
08:05	09:35	1.50		69.43	2208.00	2230.00	22.00	14.67	H	35.48	0.000	-6.45	29.880	140	27.00	8.00	15.0				4380	265.000		High torque.
09:35	10:25	0.83		70.27	2230.00	2249.00	19.00	22.80	H	35.48	0.000	-6.45	29.880	140	16.00	8.00	13.0				4380	268.000		
10:25	11:35	1.17		71.43	2249.00	2270.00	21.00	18.00	H	35.48	0.000	-12.90	30.060	140	16.00	8.00	13.0				4380	268.000		
11:35	12:30	0.92		72.35	2270.00	2289.00	19.00	20.73	H	35.48	0.000	-12.90	30.060	140	28.00	8.00	13.0				4380	273.000		High torque.
12:30	13:45	1.25		73.60	2289.00	2305.00	16.00	12.80	H	35.48	0.000	-12.90	30.060	140	28.00	8.00	13.0				4380	273.000		High torque.
13:45	15:15	1.50		75.10	2305.00	2330.00	25.00	16.67	H	35.48	0.000	-12.90	30.060	140	16.00	8.00	18.0				4380	282.000		Take SCR's.
15:35	17:10	1.58		76.68	2330.00	2370.00	40.00	25.26	H	35.48	0.000	-6.45	30.060	160	20.00	8.00	11.0				4430	295.000		Mud pump problem.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	08:50 4/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	05:15 9/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	3	**Bit #**	3	**Hole Size**	17 1/2 in	**Page No.**	5

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
18:10	18:25	0.25		76.93	2370.00	2375.00	5.00	20.00	H	35.48	0.000	-6.45	30.060	160	20.00	8.00	11.0				4430	295.000		
18:40	21:00	2.33		79.27	2375.00	2410.00	35.00	15.00	H	35.48	0.000	-6.45	30.060	160	20.00	8.00	17.0				4450	293.000		
21:17	21:33	0.27		79.53	2410.00	2414.00	4.00	15.00	H	35.48	0.000	-6.45	30.060	160	20.00	8.00	15.0	160.0	132.0	143.0	4430	293.000		
21:33	23:38	2.08		81.62	2414.00	2438.00	24.00	11.52	H	35.48	0.000	0.00	30.240	160	22.00	8.00	18.0				4430	290.000		Flow check
8/Aug/2013																								
00:03	01:25	1.37		82.98	2438.00	2451.00	13.00	9.51	H	35.48	0.000	0.00	30.240	160	22.00	8.00	19.0				4470	292.000		
01:40	01:50	0.17		83.15	2451.00	2453.00	2.00	12.00	H	35.48	0.000	0.00	30.240	160	22.00	8.00	19.0				4470	292.000		
01:50	02:28	0.63		83.78	2453.00	2457.00	4.00	6.32	H	35.48	0.000	0.00	30.240	120	20.00	8.00	19.0				4470	293.000		Reduce RPM. Torque fluctuating more and ROP decreasing.
02:28	04:35	2.12		85.90	2457.00	2473.00	16.00	7.56	H	35.48	0.000	0.00	30.240	90	19.00	8.00	18.0				4470	293.000		Improved ROP with lower RPM. 18 tonnes better than 20.
04:35	05:20	0.75		86.65	2473.00	2479.00	6.00	8.00	H	35.48	0.000	0.00	30.240	90	18.00	8.00	16.0				4470	291.000		
05:20	06:47	1.45		88.10	2479.00	2491.00	12.00	8.28	H	35.48	0.000	0.00	30.240	90	18.00	8.00	18.0				4470	291.000		
07:05	08:15	1.17		89.27	2491.00	2500.00	9.00	7.71	H	35.48	0.000	-9.68	30.240	120	20.00	8.00	18.0				4360	286.000		Increase RPM due to stick slip.
08:15	10:30	2.25		91.52	2500.00	2518.00	18.00	8.00	H	35.48	0.000	-9.68	30.240	140	20.00	8.00	10.0				4360	286.000		Pick off bottom several times due to stick slip.
10:30	11:25	0.92		92.43	2518.00	2531.00	13.00	14.18	H	35.48	0.000	-9.68	30.240	140	20.00	8.00	14.0				4360	286.000		SCR's.
11:45	14:45	3.00		95.43	2531.00	2551.00	20.00	7.27	H	35.48	0.000	-9.68	30.240	140	17.00	8.00	14.0				4360	286.000		High stick-slip, vary RPM and WOB.
14:45	17:45	3.00		98.43	2551.00	2572.00	21.00	7.00	H	35.48	0.000	-9.68	30.240	160	15.00	8.00	8.0				4360	286.000		
18:05	21:45	3.67		102.10	2572.00	2602.00	30.00	8.18	H	35.48	0.000	-9.68	30.240	160	15.00	8.00	8.0				4320	286.000		TD 17 1/2" section
21:45	23:59		2.25	104.35	2602.00				C	0.00	0.000	0.00	0.000	160	0.00	10.00	0.0	167.0	135.0	150.0	4340	286.000		DL SF0 and circulate the hole clean.
9/Aug/2013																								
00:00	05:15		5.23	109.58	2570.00				C	0.00	0.000	0.00	0.000	120	0.00	10.00	0.0				4300	280.000		Rack a stand & continue circulating. Reduce RPM due to lateral vibration. DL RO.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

Rotary Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	09:40 13/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	15:58 13/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	4	**Bit #**	4	**Hole Size**	12 1/4 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data											
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr			kN.m		tonne				l /min	bar	sg	
13/Aug/2013																				
09:40	09:50		0.17	0.17	2538.00	2543.00	5.00	30.00	DC	30	12.00	10.00	6.0				2000	84.000		Tag cement
09:50	10:10		0.33	0.50	2543.00	2549.00	6.00	18.00	DC	60	16.00	10.00	10.0				2500	123.000		Increase parameters
10:25	11:00		0.58	1.08	2549.00	2563.00	14.00	24.00	DC	60	16.00	10.00	10.0				2500	120.000		Cutting MW f/1.4sg to 1.28 sg
11:00	11:30		0.50	1.58	2563.00	2564.00	1.00	2.00	DC	60	18.00	10.00	15.0				2500	120.000		Drill float
11:30	13:00		1.50	3.08	2564.00	2587.00	23.00	15.33	DC	60	16.00	10.00	12.0				2500	120.000		
13:20	13:45		0.42	3.50	2587.00	2595.00	8.00	19.20	DC	60	16.00	10.00	15.0				2500	110.000		
13:45	13:55		0.17	3.67	2595.00	2596.00	1.00	6.00	DC	60	16.00	10.00	7.0				2500	108.000		Drill shoe
14:10	14:40		0.50	4.17	2596.00	2602.00	6.00	12.00	WR	80	0.00	10.00	4.0				2500	103.000		Clean shoe and rathole. Ream through shoe x 4
14:52	15:01	0.15		4.32	2602.00	2605.00	3.00	20.00	D	120	14.00	10.00	12.0				3000	142.000		Drill 3m formation prior to FIT
15:18	15:58		0.67	4.98	2605.00				C	30	0.00	10.00	0.0				3000	142.000		Circulate until MW even all around at 1.28 sg, FIT, Drop Gyro.

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, D - Drill Formation, DC - Drilling Cement, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	10:12 14/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	02:52 17/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	5	**Bit #**	5	**Hole Size**	8 1/2 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
14/Aug/2013																								
10:12	10:40		0.47	0.47	2585.00	2605.00	20.00	42.86	WR	0.00	0.000	0.00	0.000	60	0.00	0.00					1730	116.000		Wash through shoe and to bottom in ribs off
10:40	11:05		0.42	0.88	2605.00	2605.00	0.00		C	0.00	0.000	0.00	0.000	60	0.00	10.00	0.0				1950	141.000		DL take SCR's
11:05	11:24	0.32		1.20	2605.00	2608.00	3.00	9.47	RO	0.00	0.000	0.00	0.000	60	12.00	10.00	6.0				1950	141.000		Bury Ribs
11:24	11:57	0.55		1.75	2608.00	2616.00	8.00	14.55	H	32.26	0.000	-45.00	29.500	60	12.00	10.00	6.0				1950	141.000		Controlled to exit top stab.
12:55	13:22	0.45		2.20	2616.00	2623.00	7.00	15.56	H	32.26	0.000	-45.00	27.900	60	12.00	10.00	9.0				2000	141.000		
13:22	13:37	0.25		2.45	2623.00	2637.00	14.00	56.00	H	32.26	0.000	-38.70	26.400	60	12.00	10.00	9.0	158.0	130.0	143.0	2000	141.000		
13:37	14:20	0.72		3.17	2637.00	2652.00	15.00	20.93	H	32.26	0.000	-38.70	26.400	80	14.00	10.00	9.0				2000	141.000		
14:20	14:42	0.37		3.53	2652.00	2661.00	9.00	24.55	H	32.26	0.000	-29.03	26.400	80	14.00	10.00	9.0				2000	141.000		
14:42	14:52	0.17		3.70	2661.00	2664.00	3.00	18.00	H	32.26	0.000	-29.03	26.400	100	14.00	10.00	9.0				2000	145.000		Top stab out of casing
15:20	16:26	1.10		4.80	2664.00	2699.00	35.00	31.82	H	32.26	0.000	-12.90	26.400	120	16.00	11.00	5.0				2200	173.000		Driller zero WOB
16:26	16:37	0.18		4.98	2699.00	2704.00	5.00	27.27	H	32.26	0.000	-41.90	26.400	120	16.00	11.00	5.0				2200	173.000		
16:52	17:55	1.05		6.03	2704.00	2745.00	41.00	39.05	H	32.26	0.000	-41.90	26.400	130	16.00	11.00	4.0				2400	205.000		
18:10	18:55	0.75		6.78	2745.00	2774.00	29.00	38.67	H	32.26	0.000	-41.90	26.400	130	17.00	11.00	5.0				2400	204.000		
18:55	19:10	0.25		7.03	2774.00	2785.00	11.00	44.00	H	32.26	0.000	-35.48	26.400	130	18.00	11.00	10.0				2400	204.000		Top Ekofisk.
19:30	20:10	0.67		7.70	2785.00	2809.00	24.00	36.00	H	32.26	0.000	-35.48	26.400	130	18.00	11.00	10.0	161.0	130.0	144.0	2400	204.000		
20:10	20:45	0.58		8.28	2809.00	2826.00	17.00	29.14	H	32.26	0.000	-35.48	26.400	160	18.00	11.00	10.0				2400	204.000		Adjusting Parameters, SS of 5.
21:00	21:50	0.83		9.12	2826.00	2857.00	31.00	37.20	H	32.26	0.000	-38.71	28.080	160	18.00	11.00	10.0				2400	204.000		
21:50	22:15	0.42		9.53	2857.00	2866.00	9.00	21.60	H	45.16	0.000	-38.71	28.080	160	18.00	11.00	8.0				2400	202.000		Increase BF, NB dropping.
22:25	23:10	0.75		10.28	2866.00	2884.00	18.00	24.00	H	58.06	0.000	-41.94	29.160	160	18.00	11.00	8.0				2400	202.000		
23:10	23:45	0.58		10.87	2884.00	2900.00	16.00	27.43	H	58.06	0.000	-38.71	29.160	160	18.00	11.00	8.0				2400	202.000		
23:45	23:55	0.17		11.03	2900.00	2906.00	6.00	36.00	H	38.71	0.000	-38.71	31.680	160	18.00	11.00	10.0				2400	202.000		
15/Aug/2013																								
00:30	00:40	0.17		11.20	2906.00	2912.00	6.00	36.00	H	38.71	0.000	-38.71	31.680	160	18.00	11.00	10.0				2400	202.000		
00:40	01:50	1.17		12.37	2912.00	2944.00	32.00	27.43	H	58.06	0.000	-38.71	31.680	160	18.00	11.00	10.0				2400	202.000		Increase BF, NB dropping.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	10:12 14/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	02:52 17/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	5	**Bit #**	5	**Hole Size**	8 1/2 in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
01:50	02:00	0.17		12.53	2944.00	2946.00	2.00	12.00	H	58.06	0.000	-35.48	34.560	160	18.00	11.00	8.0	166.0	132.0	148.0	2400	202.000		
02:10	03:30	1.33		13.87	2946.00	2980.00	34.00	25.50	H	58.06	0.000	-35.48	34.560	160	18.00	11.00	8.0				2400	202.000		
03:30	03:50	0.33		14.20	2980.00	2987.00	7.00	21.00	H	58.06	0.000	-35.48	37.080	160	18.00	11.00	7.0				2400	202.000		
04:05	05:10	1.08		15.28	2987.00	3020.00	33.00	30.46	H	58.06	0.000	-38.71	37.080	160	18.00	11.00	10.0				2400	202.000		
05:10	05:25	0.25		15.53	3020.00	3027.00	7.00	28.00	H	58.06	0.000	-38.71	40.140	160	19.00	11.00	11.0				2400	203.000		
05:40	05:55	0.25		15.78	3027.00	3034.00	7.00	28.00	H	58.06	0.000	-38.71	40.140	160	19.00	11.00	11.0				2400	203.000		
05:55	06:50	0.92		16.70	3034.00	3059.00	25.00	27.27	H	67.74	0.000	-38.71	40.140	160	19.00	11.00	11.0				2400	203.000		DL to pressure mode and AIHM off.
06:50	07:12	0.37		17.07	3059.00	3067.00	8.00	21.82	H	67.74	0.000	-38.71	43.020	160	19.00	11.00	11.0				2400	204.000		
07:30	08:00	0.50		17.57	3067.00	3080.00	13.00	26.00	H	74.19	0.000	-38.71	43.020	160	20.00	11.00	11.0	173.0	133.0	150.0	2400	204.000		Poor inclination control
08:00	08:17	0.28		17.85	3080.00	3086.00	6.00	21.18	H	74.19	0.000	-38.71	43.020	160	20.00	11.00	11.0				2400	204.000		DL Power consumption mode
08:17	09:08	0.85		18.70	3086.00	3108.00	22.00	25.88	H	80.65	0.000	-38.71	43.020	160	20.00	11.00	11.0				2400	204.000		
09:23	09:52	0.48		19.18	3108.00	3119.00	11.00	22.76	H	80.65	0.000	-19.60	45.540	160	21.00	11.00	7.0	174.0	133.0	152.0	2400	205.000		More clay - better B/up.
09:52	10:07	0.25		19.43	3119.00	3125.00	6.00	24.00	H	70.97	0.000	-6.45	45.540	160	22.00	11.00	6.0				2400	206.000		Informed that APX failed.
10:07	10:39	0.53		19.97	3125.00	3138.00	13.00	24.37	H	51.60	0.000	-6.45	45.540	160	21.00	11.00	6.0				2400	206.000		
10:39	11:02	0.38		20.35	3138.00	3148.00	10.00	26.09	H	61.30	0.000	-6.45	49.500	160	20.00	11.00	9.0				2400	206.000		
11:30	12:08	0.63		20.98	3148.00	3164.00	16.00	25.26	H	70.97	0.000	0.00	49.500	160	21.00	11.00	7.0				2400	206.000		Start weight up mud.
12:08	12:42	0.57		21.55	3164.00	3181.00	17.00	30.00	H	61.30	0.000	0.00	49.500	160	21.00	11.00	11.0				2400	206.000		
12:42	12:56	0.23		21.78	3181.00	3188.00	7.00	30.00	H	61.30	0.000	0.00	45.000	160	20.00	11.00	8.0				2400	210.000		Start Drop.
13:21	13:45	0.40		22.18	3188.00	3200.00	12.00	30.00	H	51.60	0.000	0.00	45.000	160	20.00	11.00	9.0				2400	210.000		
13:45	14:25	0.67		22.85	3200.00	3220.00	20.00	30.00	H	41.94	0.000	0.00	45.000	160	19.00	11.00	11.0				2400	210.000		
14:25	14:42	0.28		23.13	3220.00	3229.00	9.00	31.76	H	41.94	0.000	0.00	40.680	160	19.00	12.00	9.0				2400	210.000		
15:00	15:45	0.75		23.88	3229.00	3244.00	15.00	20.00	H	41.94	0.000	6.45	40.680	160	18.00	12.00	4.0				2400	211.000		Control to 20m/hr. Åsgard came in 53m TVD higher
15:45	16:15	0.50		24.38	3244.00	3253.00	9.00	18.00	H	35.48	0.000	6.45	40.680	160	17.00	12.00	5.0				2400	211.000		
16:15	16:45		0.50	24.88	3253.00				C	0.00	0.000	0.00	0.000	20	0.00	10.00	0.0				2400	211.000		Troubleshoot MagTrak
16:45	17:05	0.33		25.22	3253.00	3259.00	6.00	18.00	H	35.48	0.000	6.45	40.680	160	18.00	12.00	5.0				2400	211.000		

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	10:12 14/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	02:52 17/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	5	**Bit #**	5	**Hole Size**	8 1/2 in	**Page No.**	3

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
17:05	17:34	0.48		25.70	3259.00	3269.00	10.00	20.69	H	35.48	0.000	6.45	36.540	160	17.00	12.00	6.0				2400	211.000		
17:51	18:41	0.83		26.53	3269.00	3282.00	13.00	15.60	H	35.48	0.000	6.45	36.540	160	19.00	12.00	4.0				2400	211.000		
18:41	19:35	0.90		27.43	3282.00	3300.00	18.00	20.00	H	32.26	0.000	6.45	36.540	160	19.00	12.00	4.0				2400	211.000		
19:35	20:00	0.42		27.85	3300.00	3309.00	9.00	21.60	H	32.26	0.000	6.45	32.400	160	19.00	12.00	4.0				2400	211.000		
20:25	21:20	0.92		28.77	3309.00	3325.00	16.00	17.45	H	32.26	0.000	6.45	32.400	160	19.00	12.00	2.0				2400	211.000		
21:20	21:30		0.17	28.93	3325.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2400	211.000		Troubleshoot MagTrak
21:30	22:10	0.67		29.60	3325.00	3339.00	14.00	21.00	H	32.26	0.000	6.25	32.400	160	18.00	12.00	4.0				2400	211.000		
22:10	22:50	0.67		30.27	3339.00	3349.00	10.00	15.00	H	38.71	0.000	6.25	27.900	160	18.00	12.00	6.0	173.0	138.0	153.0	2400	211.000		Taring CoPilot
23:20	23:59	0.67		30.93	3349.00	3365.00	16.00	24.00	H	45.16	0.000	-3.25	27.900	160	18.00	12.00	6.0				2400	211.000		
16/Aug/2013																								
00:00	00:45	0.75		31.68	3365.00	3380.00	15.00	19.99	H	45.16	0.000	-3.25	27.900	160	18.00	12.00	6.0				2400	211.000		
00:45	01:20	0.58		32.27	3380.00	3390.00	10.00	17.14	H	45.16	0.000	3.25	23.680	160	18.00	13.00	6.0	174.0	139.0	153.0	2400	211.000		
01:35	03:30	1.92		34.18	3390.00	3420.00	30.00	15.65	H	45.16	0.000	3.25	23.680	160	18.00	13.00	6.0				2400	211.000		
03:30	04:00	0.50		34.68	3420.00	3430.00	10.00	20.00	H	38.70	0.000	3.25	21.060	160	18.00	13.00	8.0				2400	211.000		
04:20	05:45	1.42		36.10	3430.00	3463.00	33.00	23.29	H	38.70	0.000	-3.25	21.060	160	18.00	13.00	8.0				2400	211.000		
05:45	06:10	0.42		36.52	3463.00	3471.00	8.00	19.20	H	38.70	0.000	0.00	21.060	160	18.00	13.00	8.0				2400	211.000		
06:30	08:20	1.83		38.35	3471.00	3511.00	40.00	21.82	H	38.70	0.000	0.00	21.060	160	18.00	13.00	11.0				2400	213.000		
08:40	10:28	1.80		40.15	3511.00	3551.00	40.00	22.22	H	38.70	0.000	0.00	21.060	160	20.00	13.00	10.0	191.0	143.0	160.0	2400	216.000		
10:28	11:20	0.87		41.02	3551.00	3563.00	12.00	13.85	H	38.70	0.000	3.20	20.880	160	20.00	13.00	10.0				2400	217.000		
11:20	13:09	1.82		42.83	3563.00	3591.00	28.00	15.41	H	38.70	0.000	3.20	20.880	160	19.00	13.00	6.0				2400	217.000		Control ROP to 15m/hr due to Press & drag increase.
13:52	16:21	2.48		45.32	3591.00	3632.00	41.00	16.51	H	38.70	0.000	3.20	20.880	160	19.00	13.00	9.0				2400	218.000		
16:21	20:30		4.15	49.47	3632.00				C	0.00	0.000	0.00	0.000	140	0.00	13.00	0.0				2400	218.000		Take suvey, DL St. Mode '0', Circ clean.DL Ribs Off.
21:40	23:50		2.17	51.63	3509.00	3470.00	-39.00		BR	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2400	212.000		POOH, attempted TTK points - TTK failed. PPOH for re-log
17/Aug/2013																								
00:24	02:37		2.22	53.85	3349.00	3390.00			OL	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2400	212.000		re-log while backreaming 100rpm.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	10:12 14/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	02:52 17/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	5	**Bit #**	5	**Hole Size**	8 1/2 in	**Page No.**	4

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
02:37	02:52		0.25	54.10	3629.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2400	218.000		RIH to TD. Drop Gyro & pump down same. POOH.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

Rotary Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	11:30 17/Aug/2013		
Well	15/9-F-1	**Wellbore**	15/9-F-1	**End Time/Date**	23:55 18/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	6	**Bit #**	6	**Hole Size**	in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data											
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr			kN.m		tonne				l /min	bar	sg	
17/Aug/2013																				
11:30	12:05		0.58	0.58	2936.00	2976.00	40.00	68.57	WR	80	0.00	13.00	1.0	165.0	135.0	148.0	2000	115.000		Back ream tight spot 2976 - 2936m
12:50	13:25		0.58	1.17	3220.00	3265.00	45.00	77.14	WR	80	0.00	15.00	1.0				1000	38.000		Ream stringer at 3260m.
13:50	14:15		0.42	1.58	3265.00				C	0	0.00	0.00	0.0				600	23.000		Attempt to wash thru Draupne - Pack off tenedncy. Trip in without pumps - ok
15:30	17:00		1.50	3.08	3265.00				C	130	0.00	20.00	0.0				2400	184.000		Circ min 3x B/up.
17:00	20:30		3.50	6.58	3265.00				C	150	0.00	20.00	0.0				2400	184.000		Better StkSlip with 150rpm.
20:30	23:59		3.50	10.08	3265.00	3265.00			C	150	0.00	20.00	0.0				2400	184.000		
18/Aug/2013																				
00:00	00:40		0.67	10.75	3265.00				C	150	0.00	20.00	0.0				2400	184.000		TesTrak points at 3321, 3332, 3337, 3361, 3451.5, 3463m.
00:40	23:55				3265.00					150	0.00	20.00	0.0				2400	184.000		
01:55	07:40		5.75	16.50	3630.00	3333.00	-297.00		BR	100	0.00	18.00	0.0				2400	184.000		Relogging. Rotary stalled out Press increse at 3333m
07:40	08:00		0.33	16.83	3333.00				C	0	0.00	0.00	0.0	175.0	140.0	155.0	2000	121.000		Top stabs entering Draupne. Rotation not possible. Packing off
08:00	10:20		2.33	19.17	3333.00	3268.00	-65.00		WR	0	0.00	0.00	0.0				1600	88.000		Pull ot stand, wash down & back up. Poor decoding. Log in memeory.
10:20	11:20		1.00	20.17	3268.00	3203.00	-65.00		BR	100	0.00	16.00	0.0				2400	162.000		Continue logging out.
11:20	13:00		1.67	21.83	3203.00	3093.00	-110.00		BR	120	0.00	18.00	0.0				2400	162.000		Increse RPM due to Higher StkSlp in Limestone.
13:00	20:30		7.50	29.33	3093.00	2598.00	-495.00		BR	100	0.00	15.00	0.0				2400	150.000		Continue logging out.
20:30	22:00		1.50	30.83	2598.00				C	0	0.00	0.00	0.0				2400	140.000		Circ btm's up.

Legend: M - Mode, BR - Back Ream, C - Circulate off Bottom, D - Drill Formation, DC - Drilling Cement, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	15:30 22/Aug/2013		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**End Time/Date**	23:45 25/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	7	**Bit #**	6RR1	**Hole Size**	in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
22/Aug/2013																								
15:30	16:20		0.83	0.83	2545.00	2592.00	47.00	56.40	WR	0.00	0.000	0.00	0.000	30	0.00	0.00	0.0	153.0	130.0	142.0	1800	94.000	1.320	Wash down tag soft cement at 2592m
16:20	21:00		4.67	5.50	2592.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				1800	94.000		displace to 1.28sg.
21:00	21:10		0.17	5.67	2592.00	2598.00	6.00	36.00	DC	0.00	0.000	0.00	0.000	60	12.00	0.00	3.0				1800	92.000	1.280	
21:10	21:15		0.08	5.75	2598.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				1800	92.000	1.280	Holding with 5 Tons.
21:15	21:30		0.25	6.00	2598.00	2601.00	3.00	12.00	DC	0.00	0.000	0.00	0.000	60	13.00	0.00	5.0				1800	92.000	1.280	
21:30	23:30		2.00	8.00	2601.00	2601.00			C	0.00	0.000	0.00	0.000		0.00		0.0						1.280	Stuck at 2600, packing off. Pulled free with 160T overpull.
23:30	23:59		0.50	8.50	2601.00	2601.00	0.00	0.00	WR	0.00	0.000	0.00	0.000	120	0.00	0.00	1.0				2400	160.000	1.280	Clean out Rathole after getting stuck.
23/Aug/2013																								
00:00	00:50		0.83	9.33	2601.00	2601.00	0.00	0.00	WR	0.00	0.000	0.00	0.000	120	0.00	0.00	1.0				2400	160.000	1.280	
00:50	00:55		0.08	9.42	2601.00	2602.00	1.00	12.00	DC	0.00	0.000	0.00	0.000	120	12.00	0.00	4.0				2400	160.000	1.280	
00:55	01:30		0.58	10.00	2602.00	2602.00	0.00	0.00	WR	0.00	0.000	0.00	0.000	120	0.00	0.00	4.0				2400	160.000	1.280	Clean out Rathole.
01:45	03:00	1.25		11.25	2602.00	2608.00	6.00	4.80	H	35.48	0.000	-46.88	30.060	80	10.00	8.00	4.0				2000	113.000	1.280	Controlled rop 5 m/hr.
03:00	03:45	0.75		12.00	2608.00	2613.00	5.00	6.67	H	45.16	0.000	-46.88	30.060	80	10.00	8.00	4.0				2000	116.000	1.280	
03:45	05:20	1.58		13.58	2613.00	2623.00	10.00	6.32	H	45.16	0.000	-46.88	30.060	80	10.00	8.00	4.0				2000	116.000	1.280	Start of F-1 A at 2620m. (50% formation)
05:20	06:20	1.00		14.58	2623.00	2632.00	9.00	9.00	H	32.30	0.000	-46.88	28.620	80	10.00	8.00	4.0				2000	116.000	1.280	Increase to 10m/hr at 2626m
06:37	07:05	0.47		15.05	2632.00	2637.00	5.00	10.71	H	32.30	0.000	-46.88	28.620	80	12.00	8.00	4.0				2000	116.000	1.280	
07:05	07:58	0.88		15.93	2637.00	2650.00	13.00	14.72	H	32.30	0.000	-38.70	28.620	120	14.00	8.00	6.0				2000	118.000	1.280	Top stab out of shoe at 2640m increase rpm to 120
07:58	08:25	0.45		16.38	2650.00	2658.00	8.00	17.78	H	32.30	0.000	-38.70	27.180	120	13.00	8.00	6.0	154.0	130.0	141.0	2200	143.000	1.280	
08:40	09:10	0.50		16.88	2658.00	2670.00	12.00	24.00	H	32.30	0.000	-38.70	27.180	120	13.00	8.00	6.0				2200	143.000	1.280	
09:10	10:10	1.00		17.88	2670.00	2699.00	29.00	29.00	H	32.30	0.000	-38.70	27.180	140	15.00	8.00	5.0				2400	165.000	1.280	
10:23	11:15	0.87		18.75	2699.00	2729.00	30.00	34.62	H	32.30	0.000	-41.90	26.820	140	17.00	9.00	6.0				2400	171.000	1.280	
11:15	11:30	0.25		19.00	2729.00	2738.00	9.00	36.00	H	32.30	0.000	-45.00	26.820	140	16.00	9.00	6.0				2400	171.000	1.280	
11:45	13:00	1.25		20.25	2738.00	2780.00	42.00	33.60	H	32.30	0.000	-48.40	26.820	140	16.00	9.00	6.0				2400	171.000	1.280	Top Ekofisk 2770m.
13:20	14:35	1.25		21.50	2780.00	2811.00	31.00	24.80	H	32.30	0.000	-54.80	28.080	160	16.00	9.00	10.0				2400	171.000	1.280	Increase RPM due to high SS of 5.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	15:30 22/Aug/2013		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**End Time/Date**	23:45 25/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	7	**Bit #**	6RR1	**Hole Size**	in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
14:35	15:00	0.42		21.92	2811.00	2819.00	8.00	19.20	H	51.60	0.000	-54.80	28.080	160	16.00	9.00	10.0				2400	171.000	1.280	
15:10	16:25	1.25		23.17	2819.00	2852.00	33.00	26.40	H	38.70	0.000	-61.29	30.240	160	16.00	9.00	10.0				2400	171.000	1.280	
16:25	16:50	0.42		23.58	2852.00	2860.00	8.00	19.20	H	38.70	0.000	-61.29	32.580	160	16.00	9.00	10.0				2400	171.000	1.280	
17:15	18:15	1.00		24.58	2860.00	2883.00	23.00	23.00	H	38.70	0.000	-61.29	32.580	160	16.00	9.00	14.0				2400	171.000	1.280	
18:15	18:35	0.33		24.92	2883.00	2890.00	7.00	21.00	H	48.39	0.000	-54.80	32.580	160	16.00	9.00	14.0				2400	171.000	1.280	
18:35	19:05	0.50		25.42	2890.00	2898.00	8.00	16.00	H	48.39	0.000	-45.16	35.640	160	16.00	9.00	14.0				2400	171.000	1.280	
19:05	19:15	0.17		25.58	2898.00	2900.00	2.00	12.00	H	58.06	0.000	-35.48	35.640	160	16.00	9.00	14.0				2400	173.000	1.280	Need high force for building.
19:25	20:05	0.67		26.25	2900.00	2917.00	17.00	25.50	H	58.06	0.000	-35.48	35.640	160	16.00	9.00	14.0				2400	173.000	1.280	
20:05	20:25	0.33		26.58	2917.00	2927.00	10.00	30.00	H	67.74	0.000	-35.48	35.640	160	16.00	9.00	14.0				2400	173.000	1.280	
20:25	20:40	0.25		26.83	2927.00	2934.00	7.00	28.00	H	67.74	0.000	-35.48	38.700	160	16.00	9.00	14.0				2400	173.000	1.280	
20:40	21:00	0.33		27.17	2934.00	2941.00	7.00	21.00	H	80.65	0.000	-35.48	38.700	160	16.00	9.00	14.0				2400	173.000	1.280	
21:10	22:35	1.42		28.58	2941.00	2976.00	35.00	24.71	H	80.65	0.000	-35.48	38.700	160	16.00	9.00	14.0				2400	173.000	1.280	
22:35	22:45	0.17		28.75	2976.00	2982.00	6.00	36.00	H	80.65	0.000	-35.48	42.480	160	16.00	9.00	14.0				2400	173.000	1.280	
23:00	23:30	0.50		29.25	2982.00	2994.00	12.00	24.00	H	80.65	0.000	-35.48	42.480	160	16.00	9.00	14.0				2400	173.000	1.280	
23:30	23:40		0.17	29.42	2994.00	2994.00	0.00	0.00	WR	0.00	0.000	0.00	0.000	160	0.00	0.00	0.0				2400	173.000	1.280	Reame formation change due to high stick slip.
23:40	23:59	0.33		29.75	2994.00	3004.00	10.00	30.00	H	80.65	0.000	-35.48	42.480	160	16.00	10.00	7.0				2400	173.000	1.280	
24/Aug/2013																								
00:00	00:05	0.08		29.83	3004.00	3006.00	2.00	23.92	H	80.65	0.000	-35.48	42.480	160	16.00	10.00	7.0				2400	173.000	1.280	
00:05	00:20	0.25		30.08	3006.00	3013.00	7.00	28.00	H	51.61	0.000	-38.71	42.480	160	16.00	10.00	7.0				2400	173.000	1.280	
00:20	00:45	0.42		30.50	3013.00	3022.00	9.00	21.60	H	51.61	0.000	-38.71	46.260	160	16.00	10.00	11.0				2400	173.000	1.280	
00:55	01:10	0.25		30.75	3022.00	3029.00	7.00	28.00	H	51.61	0.000	-38.71	46.260	160	16.00	10.00	11.0				2400	173.000	1.280	
01:10	01:50	0.67		31.42	3029.00	3047.00	18.00	27.00	H	80.65	0.000	-38.71	46.260	160	16.00	11.00	11.0				2400	173.000	1.280	
01:50	02:25	0.58		32.00	3047.00	3062.00	15.00	25.71	H	87.10	0.000	-38.71	46.260	160	16.00	11.00	11.0				2400	173.000	1.280	
02:40	02:50	0.17		32.17	3062.00	3067.00	5.00	30.00	H	87.10	0.000	-38.71	46.260	160	16.00	11.00	11.0				2400	173.000	1.280	
02:50	03:05	0.25		32.42	3067.00	3074.00	7.00	28.00	H	90.32	0.000	-38.71	50.400	160	16.00	11.00	11.0				2400	173.000	1.280	

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	15:30 22/Aug/2013		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**End Time/Date**	23:45 25/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	7	**Bit #**	6RR1	**Hole Size**	in	**Page No.**	3

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow l /min	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne					bar	sg	
03:05	03:40	0.58		33.00	3074.00	3082.00	8.00	13.71	H	90.32	0.000	-38.71	50.400	160	16.00	12.00	11.0				2400	173.000	1.280	Restrickt ROP to 15 m/hr to increase bildrate.
03:40	04:25	0.75		33.75	3082.00	3094.00	12.00	16.00	H	96.77	0.000	-22.58	50.400	160	16.00	12.00	11.0				2400	173.000	1.280	
04:25	05:00	0.58		34.33	3094.00	3100.00	6.00	10.29	H	100.00	0.000	0.00	50.400	160	16.00	12.00	4.0				2400	173.000	1.280	Restrickt ROP to 10 m/hr to increase bildrate
05:00	05:10	0.17		34.50	3100.00	3102.00	2.00	12.00	H	100.00	0.000	0.00	50.400	160	16.00	12.00	4.0				2400	173.000	1.280	power consumption mode
05:30	06:05	0.58		35.08	3102.00	3108.00	6.00	10.29	H	100.00	0.000	0.00	50.400	160	16.00	12.00	4.0				2400	173.000	1.280	
06:05	06:45	0.67		35.75	3108.00	3115.00	7.00	10.50	H	100.00	0.000	0.00	54.540	160	16.00	12.00	4.0				2400	173.000	1.320	
06:45	07:40	0.92		36.67	3115.00	3125.00	10.00	10.91	H	93.55	0.000	-32.26	54.540	160	16.00	12.00	4.0				2400	180.000	1.320	Build is OK again.
07:40	08:00	0.33		37.00	3125.00	3128.00	3.00	9.00	H	93.55	0.000	-41.90	52.900	160	16.00	12.00	4.0				2400	180.000	1.320	
08:00	09:00	1.00		38.00	3128.00	3141.00	13.00	13.00	H	70.90	0.000	-41.90	57.450	160	18.00	12.00	8.0				2400	184.000	1.320	
09:10	09:40	0.50		38.50	3141.00	3152.00	11.00	22.00	H	70.90	0.000	-41.90	57.450	160	18.00	13.00	13.0	173.0	130.0	147.0	2400	184.000	1.320	
09:40	10:30	0.83		39.33	3152.00	3172.00	20.00	24.00	H	58.05	0.000	-41.90	57.450	160	18.00	13.00	13.0				2400	184.000	1.320	
10:30	11:05	0.58		39.92	3172.00	3182.00	10.00	17.14	H	58.05	0.000	-41.90	61.710	160	18.00	13.00	13.0				2400	184.000	1.320	
11:25	13:05	1.67		41.58	3182.00	3223.00	41.00	24.60	H	58.05	0.000	-41.90	61.710	160	18.00	13.00	13.0				2400	184.000	1.320	Taring CoPilot
13:20	14:40	1.33		42.92	3223.00	3250.00	27.00	20.25	H	58.05	0.000	-41.90	63.540	160	18.00	13.00	13.0				2400	184.000	1.320	
14:40	15:30	0.83		43.75	3250.00	3262.00	12.00	14.40	H	45.16	0.000	0.00	57.960	160	18.00	13.00	13.0				2400	184.000	1.320	Finished build and turn, start drop.
15:45	16:10	0.42		44.17	3262.00	3274.00	12.00	28.80	H	45.16	0.000	0.00	57.960	160	18.00	13.00	13.0				2400	184.000	1.320	
16:10	16:40	0.50		44.67	3274.00	3283.00	9.00	18.00	H	51.61	0.000	0.00	57.960	160	18.00	13.00	13.0				2400	184.000	1.320	
16:40	17:10	0.50		45.17	3283.00	3293.00	10.00	20.00	H	51.61	0.000	12.90	57.960	160	18.00	13.00	13.0				2400	184.000	1.320	
17:10	17:45	0.58		45.75	3293.00	3303.00	10.00	17.14	H	51.61	0.000	12.90	52.200	160	18.00	13.00	13.0				2400	184.000	1.320	
18:05	18:50	0.75		46.50	3303.00	3334.00	31.00	23.25	H	41.90	0.000	19.30	52.200	160	18.00	13.00	13.0				2400	184.000	1.320	
19:25	19:50	0.42		46.92	3334.00	3344.00	10.00	24.00	H	41.90	0.000	25.81	46.840	160	18.00	13.00	13.0				2400	188.000	1.320	
20:00	20:15	0.25		47.17	3344.00	3350.00	6.00	24.00	H	41.90	0.000	25.81	46.840	160	18.00	13.00	13.0				2400	188.000	1.320	
20:15	20:55	0.67		47.83	3350.00	3367.00	17.00	25.50	H	41.90	0.000	51.61	46.840	160	18.00	13.00	13.0				2400	190.000	1.320	
20:55	21:35	0.67		48.50	3367.00	3379.00	12.00	18.00	H	41.90	0.000	25.81	46.840	160	18.00	13.00	13.0				2400	188.000	1.320	Ream 10 m due to high bending in the drop
21:35	21:50	0.25		48.75	3379.00	3384.00	5.00	20.00	H	41.90	0.000	25.81	44.280	160	18.00	13.00	13.0				2400	188.000	1.320	

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	15:30 22/Aug/2013		
Well	15/9-F-1 A	**Wellbore**	15/9-F-1 A	**End Time/Date**	23:45 25/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	7	**Bit #**	6RR1	**Hole Size**	in	**Page No.**	4

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
21:55	22:05	0.17		48.92	3384.00	3385.00	1.00	6.00	H	41.90	0.000	25.81	44.280	80	18.00	13.00	13.0				2400	188.000	1.320	Drill with reduced RPM whilw CCN passing area with high bending.
22:05	22:25	0.33		49.25	3385.00	3395.00	10.00	30.00	H	41.90	0.000	-32.26	44.280	80	18.00	13.00	13.0				2400	188.000	1.320	
22:25	22:35	0.17		49.42	3395.00	3399.00	4.00	24.00	H	41.90	0.000	-32.26	44.280	100	18.00	13.00	13.0				2400	198.000	1.320	
22:35	23:35	1.00		50.42	3399.00	3425.00	26.00	26.00	H	41.90	0.000	-32.26	44.280	160	18.00	13.00	8.0				2400	197.000	1.320	
23:35	23:59	0.42		50.83	3425.00	3426.00	1.00	2.40	H	41.90	0.000	0.00	44.280	160	18.00	13.00	8.0				2360	190.000	1.320	
25/Aug/2013																								
00:00	00:10	0.17		51.00	3426.00	3431.00	5.00	29.95	H	41.90	0.000	0.00	44.280	160	18.00	13.00	8.0				2360	190.000	1.320	
00:10	01:30	1.33		52.33	3431.00	3465.00	34.00	25.50	H	41.90	0.000	-16.13	43.560	160	18.00	13.00	8.0				2360	190.000	1.320	
01:40	01:50	0.17		52.50	3465.00	3470.00	5.00	30.00	H	41.90	0.000	-16.13	43.560	160	18.00	13.00	8.0				2360	193.000	1.320	
01:50	03:20	1.50		54.00	3470.00	3505.00	35.00	23.33	H	41.90	0.000	0.00	44.100	160	20.00	13.00	8.0				2360	193.000	1.320	
03:30	05:10	1.67		55.67	3505.00	3545.00	40.00	24.00	H	41.90	0.000	0.00	44.100	160	20.00	13.00	10.0				2360	193.000	1.320	
05:40	07:15	1.58		57.25	3545.00	3585.00	40.00	25.26	H	41.90	0.000	0.00	44.100	160	20.00	13.00	10.0				2360	197.000	1.320	
07:30	09:40	2.17		59.42	3585.00	3626.00	41.00	18.92	H	41.90	0.000	9.38	44.100	160	20.00	16.00	10.0				2360	197.000	1.320	
09:50	13:30	3.67		63.08	3626.00	3666.00	40.00	10.91	H	41.90	0.000	9.38	44.100	160	18.00	16.00	5.0				2360	197.000	1.320	Reduced rop for hole cleaning.
13:45	15:20	1.58		64.67	3666.00	3682.00	16.00	10.11	H	41.90	0.000	9.38	44.100	160	18.00	16.00	5.0				2360	197.000	1.320	
15:20	15:30		0.17	64.83	3682.00				C	0.00	0.000	0.00	0.000	140	0.00	16.00	0.0				2360	198.000	1.320	Circulate hole clean, steerforce 0.
15:30	20:30		5.00	69.83	3682.00				C	0.00	0.000	0.00	0.000	140	0.00	0.00	0.0				2360	198.000	1.320	Circulate hole clean 3 x BU
21:00	21:45		0.75	70.58	3682.00				C	0.00	0.000	0.00	0.000	140	0.00	0.00	0.0				2000	146.000	1.320	Relogging from 3503m to 3491m
22:00	23:45		1.75	72.33	3682.00				C	0.00	0.000	0.00	0.000	140	0.00	0.00	0.0				2000	146.000	1.320	Relogging from 3544m to 3506m

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	07:50 29/Aug/2013		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**End Time/Date**	21:10 30/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	1	**Bit #**	7	**Hole Size**	12 1/4 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
29/Aug/2013																								
07:50	08:25		0.58	0.58	2507.00	2555.00	48.00	82.29	WR	0.00	0.000	0.00	0.000	30	0.00	0.00	1.0				500	17.000		Wash down to top cement @ 2555m.
08:55	11:00		2.08	2.67	2555.00	2595.00	40.00	19.20	DC	0.00	0.000	0.00	0.000	20	15.00	0.00	6.0				2250	124.000		Drill cement inside casing, Ribs off mode.
11:20	12:00		0.67	3.33	2595.00	2604.00	9.00	13.50	DC	0.00	0.000	0.00	0.000	20	15.00	0.00	3.0				2250	124.000		Clean out Rathole stepwise.
12:30	13:30	1.00		4.33	2604.00	2607.00	3.00	3.00	S	38.70	127.500	0.00	0.000	20	13.00	11.00	4.0				2800	124.000		
13:30	14:15	0.75		5.08	2607.00	2611.00	4.00	5.33	S	38.70	127.500	0.00	0.000	40	15.00	11.00	4.0				2800	124.000		
14:15	15:00	0.75		5.83	2611.00	2615.00	4.00	5.33	S	29.00	127.500	0.00	0.000	40	15.00	11.00	4.0				2800	124.000		Reduce Steerforce, Bending up to 30KNm.
15:00	15:45	0.75		6.58	2615.00	2620.00	5.00	6.67	S	29.00	127.500	0.00	0.000	40	15.00	11.00	4.0				2800	124.000		Official kick off depth 2617m.
15:45	16:45	1.00		7.58	2620.00	2627.00	7.00	7.00	S	35.48	120.000	0.00	0.000	40	15.00	11.00	5.0				2800	124.000		Increase Steerforce, Bending 15 KNm.
17:10	18:00	0.83		8.42	2627.00	2635.00	8.00	9.60	S	35.48	120.000	0.00	0.000	80	15.00	11.00	5.0				3500	215.000		
18:00	18:25	0.42		8.83	2635.00	2645.00	10.00	24.00	S	35.48	120.000	0.00	0.000	80	15.00	11.00	5.0				3500	215.000		Increase ROP to 20 m/hr.
18:45	19:30	0.75		9.58	2645.00	2667.00	22.00	29.33	S	35.48	120.000	0.00	0.000	80	18.00	11.00	6.0				3500	215.000		Checkshot @ 2620.5m inc_28.92 az_35.26
19:30	19:55	0.42		10.00	2667.00	2670.00	3.00	7.20	S	35.48	120.000	0.00	0.000	80	18.00	11.00	6.0				3500	215.000		Increase ROP to 30 m/hr
20:05	20:25	0.33		10.33	2670.00	2678.00	8.00	24.00	S	41.94	109.500	0.00	0.000	80	18.00	12.00	4.0				3500	215.000		
20:30	21:35	1.08		11.42	2678.00	2708.00	30.00	27.69	H	22.58	0.000	38.71	26.100	80	17.00	12.00	3.0				3500	217.000		
21:35	22:35	1.00		12.42	2708.00	2730.00	22.00	24.00	H	22.58	0.000	38.71	26.100	80	14.00	12.00	2.0				3500	214.000		
22:35	23:10	0.58		13.00	2730.00	2749.00	19.00	32.57	H	22.58	0.000	38.71	26.100	80	14.00	12.00	5.0				3500	214.000		Increase ROP to 35 m/hr
23:30	23:35	0.08		13.08	2749.00	2751.00	2.00	24.00	H	22.58	0.000	38.71	26.100	80	14.00	12.00	5.0				3500	214.000		
23:40	23:59	0.33		13.42	2751.00	2763.00	12.00	-0.51	H	22.58	0.000	-19.36	26.100	80	14.00	11.00	2.0				3500	212.000		
30/Aug/2013																								
00:00	00:10	0.17		13.58	2763.00	2769.00	6.00	35.94	H	22.58	0.000	-19.36	26.100	80	14.00	11.00	2.0				3500	212.000		
00:10	01:00	0.83		14.42	2769.00	2789.00	20.00	24.00	H	22.58	0.000	-19.36	26.100	100	14.00	11.00	2.0				3500	220.000		
01:25	01:45	0.33		14.75	2789.00	2799.00	10.00	30.00	H	22.58	0.000	-19.36	26.100	100	14.00	11.00	2.0				3500	220.000		
01:45	02:30	0.75		15.50	2799.00	2821.00	22.00	29.33	H	22.58	0.000	0.00	25.930	100	14.00	11.00	12.0				3500	220.000		Stop due to cutting handling problems.
02:45	03:00	0.25		15.75	2821.00	2829.00	8.00	32.00	H	22.58	0.000	0.00	25.930	100	22.00	11.00	12.0				3500	220.000		

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	07:50 29/Aug/2013		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**End Time/Date**	21:10 30/Aug/2013	**Rig**	Maersk Inspirer
BHA Run #	1	**Bit #**	7	**Hole Size**	12 1/4 in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
03:25	03:30	0.08		15.83	2829.00	2831.00	2.00	24.00	H	22.58	0.000	0.00	25.930	100	22.00	11.00	12.0				3500	220.000		
03:35	05:05	1.50		17.33	2831.00	2869.00	38.00	25.33	H	22.58	0.000	25.81	25.740	100	22.00	11.00	10.0				3500	220.000		
05:05	05:30	0.42		17.75	2869.00	2873.00	4.00	9.60	H	22.58	0.000	25.81	25.740	100	22.00	11.00	10.0				3500	220.000		
05:30	06:55	1.42		19.17	2873.00	2907.00	34.00	24.00	H	35.48	0.000	9.68	25.740	100	22.00	11.00	11.0				3500	225.000		
06:55	07:05	0.17		19.33	2907.00	2910.00	3.00	18.00	H	35.48	0.000	0.00	25.740	100	22.00	11.00	11.0				3500	228.000		
07:30	08:40	1.17		20.50	2910.00	2934.00	24.00	20.57	H	35.48	0.000	-19.36	25.740	100	22.00	11.00	11.0	182.0	135.0	149.0	3500	228.000		
08:40	09:20	0.67		21.17	2934.00	2950.00	16.00	24.00	H	35.48	0.000	-25.81	25.740	100	25.00	11.00	13.0				3500	229.000		Taring CoPilot.
09:45	11:05	1.33		22.50	2950.00	2990.00	40.00	30.00	H	35.48	0.000	-25.81	25.740	100	25.00	12.00	11.0				3500	231.000		
11:20	12:40	1.33		23.83	2990.00	3031.00	41.00	30.75	H	35.48	0.000	-25.81	25.740	100	25.00	12.00	11.0				3500	231.000		
12:55	13:10	0.25		24.08	3031.00	3034.00	3.00	12.00	H	35.48	0.000	0.00	26.100	100	25.00	12.00	13.0				3500	231.000		
13:10	14:45	1.58		25.67	3034.00	3071.00	37.00	23.37	H	48.39	0.000	0.00	26.100	100	25.00	12.00	15.0				3500	234.000		Not able hold target incl. Increase buildforce.
14:55	15:40	0.75		26.42	3071.00	3085.00	14.00	18.67	H	48.39	0.000	0.00	26.100	100	25.00	12.00	15.0				3500	239.000		
15:40	16:45	1.08		27.50	3085.00	3092.00	7.00	6.46	H	48.39	0.000	0.00	26.100	110	25.00	12.00	13.0				3500	239.000		Increase RPM and reduce WOB due to high amount of stick slip.
16:45	17:15	0.50		28.00	3092.00	3097.00	5.00	10.00	H	48.39	0.000	0.00	26.100	110	25.00	12.00	13.0				3500	239.000		Lost contact with ASS and CoPilot 2 3092 mMD.
17:15	21:10		3.92	31.92	3097.00				C	0.00	0.000	0.00	0.000	100	0.00	14.00	0.0				3550	220.000		TD @ 3097 mMD. Take TD-survey. Attempt to DL to Steer 0/0. NO GO.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	19:00 4/Sep/2013		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**End Time/Date**	18:55 6/Sep/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	8	**Hole Size**	8 1/2 in	**Page No.**	1

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
4/Sep/2013																								
19:00	19:20		0.33	0.33	1005.00				C	0.00	0.000	0.00	0.000	0	0.00	11.00	0.0				1970	121.000		Shallow test MWD, OK.
23:30	23:45		0.25	0.58	2983.00	3022.00	39.00	156.00	WR	0.00	0.000	0.00	0.000	30	0.00	0.00	0.0	165.0	124.0	148.0	1350	90.000		Wash to top of cement.
23:50	23:59		0.17	0.75	3022.00	3027.00	5.00	30.05	WR	0.00	0.000	0.00	0.000	30	0.00	0.00	0.0				1600	121.000		
5/Sep/2013																								
00:00	00:10		0.17	0.92	3027.00	3044.00	17.00	102.00	WR	0.00	0.000	0.00	0.000	30	0.00	0.00	0.0				1600	121.000		Tag cement at 3044m with 5T
00:10	00:30		0.33	1.25	3044.00				DL	0.00	0.000	0.00	0.000	30	0.00	11.00	0.0				2000	169.000		DL Steer 0, 0. Troubleshoot loss of air.
00:30	01:15		0.75	2.00	3044.00	3045.00	1.00	1.33	DC	0.00	0.000	0.00	0.000	60	12.00	0.00	7.0	165.0	124.0	140.0	2000	169.000		Drill Landing Collar.
01:15	03:15		2.00	4.00	3045.00	3045.70	0.70	0.35	DC	0.00	0.000	0.00	0.000	60	12.00	0.00	7.0				200	170.000		
03:15	03:30		0.25	4.25	3045.70	3046.20	0.50	2.00	DC	0.00	0.000	0.00	0.000	80	14.00	0.00	7.0				1800	145.000		
03:30	04:00		0.50	4.75	3046.20	3047.00	0.80	1.60	DC	0.00	0.000	0.00	0.000	80	14.00	0.00	7.0				1800	145.000		
04:00	04:20		0.33	5.08	3047.00	3055.00	8.00	24.00	DC	0.00	0.000	0.00	0.000	80	14.00	0.00	5.0				2200	206.000		
04:20	04:45		0.42	5.50	3055.00	3056.50	1.50	3.60	DC	0.00	0.000	0.00	0.000	80	14.00	0.00	7.0				2200	215.000		
04:45	05:05		0.33	5.83	3056.50	3058.00	1.50	4.50	DC	0.00	0.000	0.00	0.000	80	12.00	0.00	10.0				2200	220.000		
05:05	05:20		0.25	6.08	3058.00	3062.00	4.00	16.00	DC	0.00	0.000	0.00	0.000	80	12.00	0.00	7.0				2200	220.000		
05:35	06:35		1.00	7.08	3062.00	3086.00	24.00	24.00	DC	0.00	0.000	0.00	0.000	80	12.00	0.00	7.0				2200	200.000		
06:35	08:00	1.42		8.50	3086.00	3089.00	3.00	2.12	RO	0.00	0.000	0.00	0.000	80	13.00	11.00	7.0				2200	204.000		
08:00	08:20	0.33		8.83	3089.00	3090.00	1.00	3.00	RO	0.00	0.000	0.00	0.000	80	12.00	11.00	4.0				1800	145.000		Drill casing shoe.
08:20	09:00	0.67		9.50	3090.00	3097.00	7.00	10.50	RO	0.00	0.000	0.00	0.000	80	15.00	12.00	1.0				2200	190.000		Clean rathole stepwise. Partly cemented.
09:05	09:30	0.42		9.92	3097.00	3100.00	3.00	7.20	RO	0.00	0.000	0.00	0.000	80	15.00	12.00	5.0	161.0	130.0	140.0	2200	192.000		Drill 3m new formation prior FIT.
09:30	10:40		1.17	11.08	3088.00				C	0.00	0.000	0.00	0.000	60	0.00	11.00	0.0				2350	214.000		Circulate untill even MW in/out.
11:55	12:10	0.25		11.33	3100.00	3102.00	2.00	8.00	H	22.58	0.000	-9.38	20.880	100	15.00	11.00	7.0				2370	219.000		
12:20	12:45	0.42		11.75	3102.00	3107.00	5.00	12.00	H	22.58	0.000	-9.38	20.880	100	15.00	11.00	7.0				2370	219.000		Restrict ROP and RPM to 15 m/hr until BHA out of casing.
12:45	13:35	0.83		12.58	3107.00	3119.00	12.00	14.40	H	16.13	0.000	-19.35	20.880	110	15.00	11.00	7.0				2370	219.000		Increase RPM due to high stickslip.
13:35	15:00	1.42		14.00	3119.00	3140.00	21.00	14.82	H	9.68	0.000	-25.81	20.880	110	15.00	11.00	7.0				2370	219.000		Reduce build and increase walk.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	19:00 4/Sep/2013		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**End Time/Date**	18:55 6/Sep/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	8	**Hole Size**	8 1/2 in	**Page No.**	2

Time / Depth Data									Drilling Parameters Data															
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
15:00	15:15	0.25		14.25	3140.00	3142.00	2.00	8.00	H	9.68	0.000	-25.81	20.880	140	17.00	11.00	7.0	167.0	129.0	142.0	2200	195.000		Tare CoPilot @ 3122 mMD.
15:45	16:00	0.25		14.50	3142.00	3146.00	4.00	16.00	H	9.68	0.000	-25.81	20.880	140	17.00	11.00	8.0				2200	193.000		
16:00	16:40	0.67		15.17	3146.00	3162.00	16.00	24.00	H	22.58	0.000	-35.48	20.880	140	17.00	11.00	8.0				2200	196.000		ROP 30 m/hr.
16:40	16:50	0.17		15.33	3162.00	3168.00	6.00	36.00	H	16.13	0.000	-35.48	18.360	140	17.00	11.00	8.0				2200	216.000		
16:50	17:20	0.50		15.83	3168.00	3182.00	14.00	28.00	H	25.80	0.000	-35.48	18.360	140	17.00	11.00	2.0	164.0	132.0	144.0	2200	198.000		
17:35	17:50	0.25		16.08	3182.00	3189.00	7.00	28.00	H	25.80	0.000	-35.48	18.360	140	17.00	11.00	7.0				2400	225.000		
17:50	18:15	0.42		16.50	3189.00	3203.00	14.00	33.60	H	25.80	0.000	0.00	15.840	140	17.00	11.00	7.0				2400	225.000		
18:15	18:50	0.58		17.08	3203.00	3219.00	16.00	27.43	H	25.80	0.000	0.00	15.840	140	17.00	11.00	10.0				2200	210.000		
18:50	19:00	0.17		17.25	3219.00	3223.00	4.00	24.00	H	25.80	0.000	0.00	15.840	140	17.00	11.00	10.0				2200	210.000		Before connection, DL 2 x WF and TI, no go.
19:25	19:45		0.33	17.58	3223.00				DL	0.00	0.000	0.00	0.000	80	0.00	11.00	0.0				2200	210.000		DL WF & TI, no go. DL WF 15.6% only OK. DL TI 12.0deg, OK.
19:45	20:20	0.58		18.17	3223.00	3236.00	13.00	22.29	H	25.80	0.000	15.60	12.060	140	17.00	11.00	10.0	163.0	132.0	145.0	2200	210.000		DL, no go. Pump issues.
20:20	20:35		0.25	18.42	3236.00				DL	0.00	0.000	0.00	0.000	140	0.00	11.00	0.0				2200	210.000		Swap pumps. DL BF 55% OK.
20:35	20:50	0.25		18.67	3236.00	3247.00	11.00	44.00	H	54.80	0.000	15.60	12.060	140	17.00	11.00	10.0				2200	200.000		
20:50	21:05	0.25		18.92	3247.00	3260.00	13.00	52.00	H	71.00	0.000	25.00	12.060	140	17.00	11.00	10.0				2200	200.000		
21:05	21:20	0.25		19.17	3260.00	3263.00	3.00	12.00	H	58.00	0.000	25.00	12.060	140	17.00	11.00	10.0	166.0	134.0	146.0	2200	200.000		
21:35	21:50	0.25		19.42	3263.00	3265.00	2.00	8.00	H	58.00	0.000	25.00	12.060	140	17.00	11.00	10.0				2200	200.000		
21:50	22:05		0.25	19.67	3265.00				DL	0.00	0.000	0.00	0.000	80	0.00	11.00	0.0				2200	200.000		Problem with downlink confirmation. Geologist request down links off bottom.
22:05	23:05	1.00		20.67	3265.00	3294.00	29.00	29.00	H	58.00	0.000	25.00	7.900	140	17.00	11.00	10.0				2200	200.000		
23:05	23:35	0.50		21.17	3294.00	3303.00	9.00	18.00	H	51.60	0.000	25.00	4.300	140	17.00	11.00	10.0				2200	200.000		
23:40	23:59	0.32		21.48	3303.00	3306.00	3.00	9.47	H	51.60	0.000	25.00	4.300	140	17.00	11.00	10.0	168.0	134.0	169.0	2200	201.000		
6/Sep/2013																								
00:00	00:40	0.67		22.15	3306.00	3319.00	13.00	19.49	H	51.60	0.000	0.00	4.300	140	16.00	11.00	10.0				2200	202.000		
00:40	01:45	1.08		23.23	3319.00	3343.00	24.00	22.15	H	51.60	0.000	-12.50	4.300	140	16.00	11.00	11.0				2200	204.000		
01:50	04:00	2.17		25.40	3343.00	3384.00	41.00	18.92	H	51.60	0.000	3.10	4.300	140	17.00	11.00	11.0	168.0	134.0	169.0	2200	205.000		
04:00	05:30	1.50		26.90	3384.00	3418.00	34.00	22.67	H	51.60	0.000	3.10	4.300	140	18.00	11.00	7.0				2200	212.000		

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

AutoTrak Parameters Report

BAKER HUGHES INTEQ

Operator	Statoil	**Field**	Sleipner	**Start Time/Date**	19:00 4/Sep/2013		
Well	15/9-F-1 B	**Wellbore**	15/9-F-1 B	**End Time/Date**	18:55 6/Sep/2013	**Rig**	Maersk Inspirer
BHA Run #	2	**Bit #**	8	**Hole Size**	8 1/2 in	**Page No.**	3

Time / Depth Data									Drilling Parameters Data														
Time From	Time To	Drill Time	Circ. Time	Total Time	MD From	MD To	Dist	Avg ROP	M	B/S Force	Vect Dir	Walk Force	Targ Inc	Surf RPM	TQ On	TQ Off	WOB	P/U Hkld	S/O Hkld	Rot Hkld	Flow	Press	Mud Wt	Comments
		hours			m			m/hr		%	deg	%	deg		kN.m		tonne				l /min	bar	sg	
05:30	05:40	0.17		27.07	3418.00	3424.00	6.00	36.00	H	51.60	0.000	3.10	4.300	140	18.00	11.00	8.0				2100	196.000		Reduce flow for ECD.
05:45	07:15	1.50		28.57	3424.00	3465.00	41.00	27.33	H	51.60	0.000	3.10	4.300	140	20.00	11.00	8.0				2100	192.000		TD of section 3465 mMD.
07:15	07:50		0.58	29.15	3465.00				C	0.00	0.000	0.00	0.000	140	0.00	14.00	0.0				2100	192.000		Circulate hole clean.
07:50	08:10		0.33	29.48	3465.00				C	0.00	0.000	0.00	0.000	140	0.00	14.00	0.0				2330	222.000		Increase flowrate.
08:10	09:40		1.50	30.98	3465.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2450	247.000		Increase flowrate. ECD: 1.53 SG.
10:10	11:30		1.33	32.32	3465.00	3451.00	-14.00		BR	0.00	0.000	0.00	0.000	40	0.00	12.00	0.0				2200	196.000		Relog
12:30	12:45		0.25	32.57	3451.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2200	189.000		TesTrak
12:45	13:05		0.33	32.90	3451.00				C	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2200	189.000		
13:20	16:50		3.50	36.40	3451.00	3279.00	-172.00		BR	0.00	0.000	0.00	0.000	0	0.00	0.00	0.0				2200	188.000		Take TesTrak points.
16:50	17:40		0.83	37.23	3279.00	3263.00	-16.00		BR	0.00	0.000	0.00	0.000	60	0.00	14.00	0.0				2200	191.000		Relog
17:50	18:55		1.08	38.32	3263.00	3231.00	-32.00		BR	0.00	0.000	0.00	0.000	60	0.00	14.00	0.0				2200	190.000		Relog. Flow check. Drop drift. POOH.

Legend: M- Mode, BR - Back Ream, C - Circulate off Bottom, DC - Drilling Cement, DL - Down Link Off Bottom, H - Hold, RO - Ribs Off, S - Steer, WR - Wash and/or Ream

15/9-F-1

Geological Prognosis:
Well 15/9-F-1 is the north upside pilot where the objective of the well is to test the Volve North-upside prospect for hydrocarbon accumulation and prove Minimum Economic Volume (M.E.V.). The well path is planned to target a down-flank location within the North-upside segment with the aim of proving oil in the Hugin Formation reservoir and proving M.E.V.

26" Hole Section*:* In this section, the TD is to be set ~30m below Skade Formation. The intention is to case off both the Utsira and the Skade sandstones.

17 ½" Hole Section*:* The 17 ½" is to be drilled into the lower part of Lista Formation. The TD will be set approximately two times the uncertainty above the top Ty Formation. The intention is to case off the Hordaland group and the upper part of Rogaland group, without entering the depleted Ty Formation.

8 ½" Hole Section*:* The TD of the pilot hole will be set below base Hugin Formation with enough rat hole for all LWD sensors.

Evaluation and sampling program:
Logging commenced at 1355m MD depth in 17 ½" section. The sampling interval was set up to be 10m sampling down to TD of the 17 ½". Two wet samples, one dry sample and one spot sample for analysis were collected. In the 8 ½" section the sampling interval was set to 10m down to 20m TVD above BCU and then 3m to TD of well. Two wet samples, one dry sample and one spot sample for analysis were collected. Mud samples were collected with an interval of 30m from top Heather SST Formation to TD.

Gas measurement:
Gas analysis was done using HP FID gas system. Total gas is measured as percentage equivalent methane in air (%EMA)
Chromatograph breakdown of total gas is expressed in parts per million (ppm). A list of gas peaks and chromatographic breakdown is included for every formation interval.

Rotary closed drilling systems were used to drill the section.

17 ½" Hole Section (1355.0m MD to 2602.0m MD):
This section was drilled with yellow Enviromul oil based mud. Mud weight was 1.40 SG for the whole section.

8 ½" Hole Section (2602m MD to 3632m MD):
This section was drilled with yellow Enviromul oil based mud. Mud weight was 1.28 – 1.32 SG for this section.

17 ½" Hole Section (1355m - 2602m MD):

Geological and Show Summary
Formation tops based on preliminary tops when reaching TD. TVD observed is calculated from MD in the Advantage survey program.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
Hordaland GP		1355.0	1342.9	**Claystone** The claystone was dusky brown to brownish black and dark greenish grey to greenish black. The cuttings were very firm to moderately hard, blocky to subblocky, non-calcareous and micropyritic.
		2175.0	2087.1	**Sandstone (Grid FM)** The sandstone was light olive grey to light grey and clear to translucent. It consisted of aggregates and loose sand. The grains were very fine to coarse, predominately fine to medium, subrounded and moderately sorted. Abundant kaolinite matrix was present. No to weak visual porosity were observed.
Rogaland GP	Balder FM	2394.4	2277.2	**Claystone** The claystone was multi-coloured, predominately light bluish grey to dark greyish black. The cuttings were firm to moderately hard, and the shape was blocky to subblocky. Abundant amount of tuff was seen. Pyrite was rare. **Traces of Sandstone** The sandstone was clear to transparent. Grains were very fine to medium, predominately fine, subrounded to rounded and well sorted.
	Sele FM	2449.3	2324.7	**Claystone** The claystone was light greenish grey and dark grey to dark greyish black. The cuttings were firm to moderately hard and subblocky to blocky. The claystone was non-calcareous. Tuff and pyrite were rare.
Rogaland GP	Lista FM	2527.1	2392.0	**Claystone** The claystone was medium dark grey and moderately brown. The cuttings were very firm to moderately hard, blocky to subblocky. It was non-calcareous and occasionally micropyritic.

Caving summary: No cavings observed.

8 ½" Hole Section (2602m MD to 3632m MD):

Geological and Show Summary:
Formation tops based on preliminary tops when reaching TD. TVD observed is calculated from MD in the Advantage survey program.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
Rogaland GP	Ty FM	2631.0	2482.2	**Sandstone:** The sandstone consisted of clear to translucent quarts grains. Grains were very fine to coarse, predominately very fine to fine with a subrounded shape. Moderately sorted. Both aggregate and loose quartz grain were seen. Aggregate was light olive grey to light grey with abundant kaolinite matrix. No visual porosity. **Claystone** The claystone was olive black, dark greenish grey to dark grey and greenish black. Cuttings were moderate hard with a blocky shape. The claystone was non-calcareous and micropyrite was common in the cuttings.
Shetland GP	Ekofisk FM	2769.0	2605.5	**Limestone:** The limestone was white and light greenish grey in colour and cryptocrystalline. The cuttings were very firm to moderately hard, brittle and blocky.
	Tor FM	2788.0	2622.5	**Limestone:** The limestone was white and cryptocrystalline. The cuttings were amorphous, firm to hard and rounded.
	Hod FM	2970.5	2782.6	**Limestone:** The limestone was light brown to reddish brown and white in colour. It was cryptocrystalline. The cuttings were very firm to hard, brittle and had a blocky shape.
	Blodøks FM	3066.0	2859.3	**Marl:** The marl was greenish grey to dark greenish grey. The cuttings were very firm to moderate hard and blocky. The marl was grading to limestone in parts.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
	Hidra FM	3111.0	2893.5	**Limestone:** The limestone was white, light pinkish white, pale yellowish pink and light grey. The cuttings were firm to moderate hard and amorphous to blocky. The limestone was argillaceous in parts. **Marl:** The marl was greenish grey to dark greenish grey. Moderate hard and blocky cuttings. The marl was grading to limestone in parts.
Cromer Knoll GP	Rødby FM	3145.0	2917.8	**Marl:** The marl was greenish grey to very dark grey. The cuttings were very firm to moderate hard and had a blocky shape. Grading to limestone in parts.
	Åsgård FM	3214.0	2964.3	**Limestone:** The limestone was white, very light grey, reddish yellow to yellowish red and brown. The cuttings were very firm to moderate hard. **Marl:** The marl was medium dark grey to dark grey and greenish grey to very dark greenish grey. The cuttings were firm to moderate hard with an amorphous to subblocky shape.
Viking GP	Draupne FM	3270.0	3005.7	**Claystone:** The claystone was black with abundant organic material. It was non-calcareous. The cuttings were blocky to splintery and had an earthy appearance. **Marl:** The marl was reddish brown, bluish grey, greenish grey, pale pink and very pale yellow. The cuttings were predominant amorphous, crumbly to firm, but occasionally smooth and platy. The marl had commonly an earth appearance, was silty and had trace of carbonaceous material and glauconite.
	Heather FM	3320.0	3045.6	**Claystone:** The claystone was dark brownish black and brownish grey. The cuttings were firm, blocky to splintery with an earthy texture in parts. The claystone was non-calcareous, commonly pyritic and had a high content of carbonaceous and organic material.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
				Sandstone: The sandstone was white, light brownish grey and pale brown. The grains were fine to medium, occasionally coarse, rounded, spherical and moderate to well sorted. The grains were cemented with friable silica cement. Abundant pyrite and occasionally friable kaolinite matrix were seen. Moderate visible porosity.
Vestland GP	Hugin FM	3325.0	3049.8	**Sandstone:** The sandstone was white and light brownish grey. The grains were very fine to medium, occasionally coarse, rounded, spherical and moderate to well sorted. Friable kaolinite matrix and rare to trace pyrite were seen. Pale visible porosity. **Claystone:** The claystone was dark brownish black and brownish grey. The cuttings were firm, blocky to splintery and earthy in parts. The claystone had a high content of carbonaceous and organic material. It was non-calcareous and commonly pyritic.
	Sleipner FM	3365.0	3083.6	**Sandstone:** The sandstone was white, light brownish grey and pale brown. The grains were fine to medium, occasionally coarse, rounded to spherical and moderate to well sorted. Friable silica cement, abundant pyrite and occasionally friable kaolinite matrix were seen. Moderate visible porosity. **Claystone:** The claystone was dark brownish black and brownish grey. The cuttings were firm, blocky to splintery and earthy in parts. It was non-calcareous with a high content of carbonaceous and organic material. Commonly pyritic.
Hegre GP	Skagerak FM	3450.0	3160.5	**Sandstone:** The sandstone was light brown, light greyish brown, pale yellow and white. The grains were very fine to fine, rounded to spherical and well sorted. Friable, argillaceous and kaolinite matrix and traces of carbonaceous material and glauconite were seen. Rare calcareous in parts. **Claystone:** The non-calcareous claystone was pale bluish grey to bluish grey and greenish grey in colour. The cuttings were

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
				amorphous and soft to firm
	Smith Bank FM	3499	3206.2	**Sandstone:** The sandstone was light grey to brownish grey and brownish grey in colour. The grains were very fine to fine and well sorted. Abundant kaolinite, and light grey argillaceous matrix were seen. Aggregates were typically friable to firm. The sandstone was calcareous in parts. **Claystone:** The claystone was light bluish grey to bluish grey, greenish grey and rare dark reddish brown in colour. The cuttings were soft to firm and had an amorphous to subblocky shape. The claystone was non-calcareous.

Caving summary: No cavings observed.

Gas peaks 17 ½" Hole Section (1355m - 2602m MD):

Date	Time	Ret.-depth	TVD depth	Gas peak	Back-gr.	C1	C2	C3	iC4	nC4	iC5	nC5	Comment
04/08/13	19:13	1389	1376.5	1.06	0.25	10106	478	-	-	-	-	-	FG
04/08/13	20:26	1417	1402.2	1.51	0.25	14712	478	1363	2399	-	-	-	FG
04/08/13	23:10	1472	1456.2	1.17	0.24	11172	6069	29	41	-	-	-	FG
05/08/13	20:14	1593	1574.2	0.78	0.02	6992	2	28	41	-	-	-	FG
06/08/13	04:25	1651	1628.6	0.53	0.05	4735	2	28	41	-	-	-	CG
06/08/13	11:29	1820	1778.5	0.87	0.10	8054	2	3	41	-	-	-	FG
06/08/13	19:04	1996	1931.9	0.76	0.23	6573	2	3	41	-	-	-	FG
07/08/13	09:27	2207	2114	0.66	0.29	3741	917	169	41	24	-	-	FG
07/08/13	10:11	2217	2121.8	0.66	0.16	3864	902	164	41	23	-	-	FG

Gas peaks 8 ½" Hole Section (2602m MD to 3632m MD):

Date	Time	Ret.-depth	TVD depth	Gas peak	Back-gr.	C1	C2	C3	iC4	nC4	iC5	nC5	Comment
04/08/13	19:13	1389	1376.5	1.06	0.25	10106	478	-	-	-	-	-	FG
04/08/13	20:26	1417	1402.2	1.51	0.25	14712	478	1363	2399	-	-	-	FG
04/08/13	23:10	1472	1456.2	1.17	0.24	11172	6069	29	41	-	-	-	FG
05/08/13	20:14	1593	1574.2	0.78	0.02	6992	2	28	41	-	-	-	FG
06/08/13	04:25	1651	1628.6	0.53	0.05	4735	2	28	41	-	-	-	CG
06/08/13	11:29	1820	1778.5	0.87	0.10	8054	2	3	41	-	-	-	FG
06/08/13	19:04	1996	1931.9	0.76	0.23	6573	2	3	41	-	-	-	FG
07/08/13	09:27	2207	2114	0.66	0.29	3741	917	169	41	24	-	-	FG
07/08/13	10:11	2217	2121.8	0.66	0.16	3864	902	164	41	23	-	-	FG
07/08/13	21:30	2396	2278.6	0.41	0.13	3274	16	10	41	3	-	-	FG
08/08/13	12:47	2527	2391	0.42	0.15	3276	61	19	41	2	-	-	FG
13/08/13	12:34	2602	2456.9	0.21	0.02	1389	138	40	0	0	0	0	FG
15/08/13	08:05	3051	2846.7	0.34	0.05	2395	103	58	8	22	5	6	FG
15/08/13	20:03	3280	3013.7	0.80	0.05	6301	312	110	8	20	4	4	FG
15/08/13	21:09	3298	3027	0.94	0.13	7377	369	133	9	24	5	4	FG
15/08/13	22:26	3316	3042.6	0.96	0.13	7410	538	200	14	40	8	8	FG

15/9-F-1 A

Geological Prognosis:
Well 15/9-F-1 A is a sidetrack pilot well where the objective of the well is to test the Volve North-upside prospect for hydrocarbon accumulation and prove Minimum Economic Volume (M.E.V.). The well path is planned to proving oil in the Hugin Formation reservoir and proving M.E.V.

8 ½" Hole Section*:* The TD of the pilot hole will be set below base Hugin Formation with enough rat hole for all LWD sensors.

Evaluation and sampling program:
Logging commenced at 2621m MD depth in 8 ½" section. The sampling interval was set up to be 10m down to 20m TVD above BCU (3280m MD) and then 3m to 3590m MD, and then 10m sampling interval to TD. Two wet samples, one dry sample and one spot sample for analysis were collected. Mud samples were collected with an interval of 30m from top Hugin Formation to base Hugin Formation.

Gas measurement:
Gas analysis was done using HP FID gas system. Total gas is measured as percentage equivalent methane in air (%EMA)
Chromatograph breakdown of total gas is expressed in parts per million (ppm). A list of gas peaks and chromatographic breakdown is included for every formation interval.

Rotary closed drilling systems were used to drill the section.

8 ½" Hole Section (2621m to 3682m MD):
This section was drilled with Yellow Enviromul oil based mud. Mud weight was 1.28 SG to 3000m MD and it was increased to 1.32 SG from 3100m MD to TD.

8 ½" Hole Section A (2621m - 3682m MD):

Geological and Show Summary:
Formation tops based on preliminary tops when reaching TD. TVD observed is calculated from MD in the Advantage survey program.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
Rogaland GP	Ty FM	2632.0	2482.7	**Sandstone:** The sandstone consisted of clear to translucent quartz grains. The grains were very fine to coarse, predominately very fine to fine with a subrounded shape, moderately sorted. Abundant kaolinite matrix. No visual porosity. Both aggregate and loose quartz grains were present. Aggregate was light olive grey to light grey. **Claystone** The claystone was olive black, dark greenish grey to dark grey, greenish black. The cuttings were moderate hard with a blocky shape. The claystone was non-calcareous. Micropyrite was common in the cuttings.
Shetland GP	Ekofisk FM	2771.0	2606.1	**Limestone:** The limestone was white and light greenish grey in colour. The cuttings were very firm to moderately hard, brittle, and cryptocrystalline and had a blocky shape.
	Tor FM	2790.0	2623.0	**Limestone:** The limestone was white and cryptocrystalline. The cuttings were predominantly firm to hard and rounded.
	Hod FM	2987.0	2788.6	**Limestone:** The limestone was light brown to reddish brown and white. The cuttings were very firm to hard, brittle, blocky and cryptocrystalline.
	Blodøks FM	3104.0	2871.6	**Marl:** The marl was greenish grey to dark greenish grey, in parts grading to limestone. The cuttings were very firm to moderate hard and had a blocky shape.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
	Hidra FM	3153.0	2901.0	**Limestone:** The limestone was seen in different colours; white, light pinkish white, pale yellowish pink and light grey. The cuttings were firm to moderate hard, amorphous to blocky, and argillaceous in part. **Marl:** The marl was greenish grey to dark greenish grey in colour. The cuttings were moderate hard with a blocky shape. The marl was in parts grading to limestone.
Cromer Knoll GP	Rødby FM	3193.0	2922.4	**Marl:** The marl was greenish grey to very dark grey, with very firm to moderate hard and blocky cuttings. In parts grading to limestone.
	Åsgård FM	3279.0	2962.9	**Limestone:** The limestone was seen in different colours; white, very light grey, reddish yellow to yellowish red and brown. The cuttings were very firm to moderate hard. **Marl:** The marl was medium dark grey to dark grey, greenish grey to very dark greenish grey. The cuttings were firm to moderate hard with an amorphous to subblocky shape.
Viking GP	Draupne FM	3358.0	3008.3	**Claystone:** The claystone was black, with an earthy texture. It contained abundant organic material and was non-calcareous. The cuttings were blocky to splintery. **Marl:** The marl was reddish brown, bluish grey, greenish grey, pale pink and very pale yellow. The cuttings were predominant amorphous, crumbly to firm, silty, occasionally smooth and platy. The marl contained traces of carbonaceous material and glauconite, and had commonly an earth appearance.
	Heather FM	3429.0	3057.8	**Claystone:** The claystone was dark brownish black to brownish grey. It contained a high amount carbonaceous and organic material, traces of pyrite and was non-calcareous. An earthy appearance was seen in parts. The cuttings were firm and blocky to splintery.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
				Sandstone: The sandstone was white, light brownish grey and pale brown. The grain size were fine to medium, occasionally coarse. The grains were rounded and moderate to well sorted. The sandstone had silica cement, and the aggregates were friable. Abundant pyrite and occasionally friable kaolinite matrix were seen. Moderate visible porosity.
Vestland GP	Hugin FM	3454.0	3075.8	**Sandstone:** The sandstone was white and light brownish grey. The grains were very fine to medium, occasionally coarse, rounded to spherical and moderate sorted. Friable kaolinite matrix and rare to trace pyrite were seen. Pale visible porosity. **Claystone:** The claystone was dark brownish black and brownish grey. The cuttings were firm and blocky to splintery with an earthy appearance in parts. The claystone had a high concentration of carbonaceous and organic material. It was non-calcareous and commonly pyritic.
	Sleipner FM	3500.0	3109.0	**Sandstone:** The sandstone was white, light brownish grey and pale brown in colour. The grains were fine to medium, occasionally coarse, rounded and moderate to well sorted. The sandstone contained friable silica cement, abundant pyrite, and occasionally friable kaolinite matrix. Moderate visible porosity **Claystone:** The claystone was dark brownish black and brownish grey. The cuttings were firm with a blocky to splintery shape. An earthy appearance was seen in parts. The claystone had a high content of carbonaceous and organic material. It was non-calcareous and commonly pyritic.

Caving summary: No cavings observed.

Gas peaks 8 ½" Hole Section A (2621m - 3682m MD):

Date	Time	Ret.-depth	TVD depth	Gas peak	Back-gr.	C1	C2	C3	iC4	nC4	iC5	nC5	Comment
24/08/13	04:36	3074	2851.3	0.66	0.11	4686	210	123	15	41	10	12	FG
24/08/13	22:19	3362	3010.6	2.63	0.15	22536	973	341	25	62	11	11	FG
25/08/13	00:17	3400	3036.5	3.74	3.1	32610	1580	609	48	124	24	25	FG

15/9-F-1 B

Geological Prognosis:
Well 15/9-F-1 B is a water injector and placed in a down-flank location. It will support oil production from the Volve Northwest segment via existing producers up-flank in the Main Field.

8 ½" Hole Section*:* The TD of the pilot hole will be set below base Hugin Formation.

Evaluation and sampling program:
Logging commenced at 3097m MD depth in 8 ½" section. The sampling interval was set to 10m and two wet samples, one dry sample and one spot sample for analysis were collected. Mud samples were collected with an interval of 30m from top Hugin Formation.

Gas measurement:
Gas analysis was done using HP FID gas system. Total gas is measured as percentage equivalent methane in air (%EMA)
Chromatograph breakdown of total gas is expressed in parts per million (ppm). A list of gas peaks and chromatographic breakdown is included for every formation interval.

Rotary closed drilling systems were used to drill the section.

8 ½" Hole Section (3097m MD to 3465m MD):
This section was drilled with Yellow Enviromul oil based mud. Mud weight was 1.32 SG.

8 ½" Hole Section B (3097m - 3465m MD):

Geological and Show Summary:
Formation tops based on preliminary tops when reaching TD. TVD observed is calculated from MD in the Advantage survey program.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
	Hidra FM	3102.0	2906.0	**Claystone:** The claystone was light grey to light greenish grey in colour. It was firm to moderate hard and the shape was blocky. The cuttings consisted of local grading of argillaceous limestone; it had traces of micropyritic streaks and rare carbonaceous material.
Cromer Knoll GP.	Rødby FM	3113.0	2916.0	**Limestone:** The limestone was light grey and hard to very hard. The cuttings were blocky and the limestone was microcrystalline and locally argillaceous. There were traces of micropyrite and microglauconite observed. **Claystone:** The claystone was light grey to light greenish grey in colour. It was firm to moderate hard and the shape was blocky. The cuttings consisted of local grading of argillaceous limestone. It had traces of micropyritic streaks and rare carbonaceous material.
	Åsgård FM	3141.0	2943.0	**Limestone:** The limestone was very light grey and hard to very hard. The cuttings were blocky and the limestone was microcrystalline, locally argillaceous and locally marly. There were traces of micropyrite and microglauconite observed. **Claystone:** The cutting was light grey to light greenish grey and locally moderately brown to yellowish brown. It was firm to moderately hard and blocky in shape. The cuttings consisted of local grading of argillaceous limestone. It had traces of micropyritic streaks and rare carbonaceous material.

Formation Tops		Observed		Lithological Descriptions
		m MD	m TVD	
Viking GP	Draupne FM	3168.0	2698.0	**Claystone:** The claystone was olive black to brownish black. It was firm to moderately hard. The shape was blocky to subplaty. It was waxy, had locally silty laminates and was non-calcareous. It contained general dissembled carbonaceous material and had traces of micromica.
	Heather FM	3210.0	3007.0	**Claystone:** The claystone was medium to dark grey. It was firm to moderately hard. The shape was blocky to subplaty. It was locally silty and had very fine sandy laminates. It contained traces of carbonaceous material and micropyritic nodules. In addition, it had rare traces of micromica.
Vestland GP	Hugin FM	3245.0	3041.0	**Sandstone:** The sandstone was medium grey to dark grey, greyish brown and light greyish brown aggregates. The aggregates were locally light grey to greenish grey in the lower parts. The quartz grains were very firm to medium loose and milky white, smoky grey and pink. The grains were very fine and well sorted and were rounded to subrounded. It had firm to moderately hard cement aggregates in the lower parts. In the upper parts, it was silty, argillaceous, and carbonaceous and contained micromica and rare pyrite. In the lower parts, it contained traces of calcite and kaolinit cement. It also had traces of argillaceous to silty matrix in addition to glauconite. **Show:** The cuttings had moderate petroleum odour with oil film on the mud. The show gave yellowish, white directly fluorescence from the stain. It was slow streaming bluish white cut fluorescence and had a yellowish brown residual ring.
	Sleipner FM	3336.0	3041.0	**Sandstone:** The sandstone was predominantly light grey to light greenish grey cement subblocky aggregates. The Quartz grains were very firm to moderate hard and locally clear to translucent loose grains. The grains were very fine medium to moderate sorted and subrounded. There was no visible porosity. The sandstone contained traces of argillaceous to silty matrix, had traces of kaolinit cement and rare calcite cement. It was also observed rare amounts of glauconite, pyrite and coal. **Siltstone:** The siltstone was light to medium greenish grey. The cuttings were firm to moderate hard, blocky to subplaty. The siltstone was argillaceous, non-calcareous and contained traces of micropyrite, microglauconite and micromica.

Caving summary: No cavings observed.

Gas peaks 8 ½" Hole Section B (3097m - 3465m MD):

Date	Time	Ret.-depth	TVD depth	Gas peak	Back-gr.	C1	C2	C3	iC4	nC4	iC5	nC5	Comment
30/08/13	13:37	3025	2836.1	1.31	0.26	11539	420	176	22	52	14	18	FG
05/09/13	18:03	3182	2980	1.94	0.21	14929	554	165	16	32	8	7	FG
05/09/13	18:35	3192	2989.5	2.04	0.23	15994	688	219	21	44	10	9	FG
05/09/13	21:46	3248	3043.4	4.10	0.32	32480	2748	1230	100	270	53	66	FG
05/09/13	23:07	3274	3068.9	4.34	0.25	33057	2901	1373	116	321	66	84	FG
05/09/13	23:52	3293	3087.5	6.54	0.33	53881	4484	2096	177	488	99	126	FG
06/09/13	00:21	3303	3098.5	4.85	1.0	37147	3133	1458	122	340	69	89	FG

PORE PRESSURE EVALUATION

INTRODUCTION

A pore pressure evaluation was performed using Press Check DE 2013 version 4.0.38.0. The DXC values were primarily used in this analysis, although resistivity, gas and hole conditions were also considered. All depths are in meters TVD.
This is a pore pressure analysis of the well 15/9-F-1/ F-1 B, drilled by Maersk Inspirer in the period from 23/Jul/2013 to 06/Sep/2013. The data used in this analysis was collected from the 26", 17 ½", 12 ¼" and 8 ½" sections, ranging from 226m TVD to 3259.9m TVD.

DISCUSSION

Overburden pressure gradient

The overburden gradient (OBG) was made from Density data. This OBG was used to calculate the PP and fracture gradient.

Pore pressure gradient

The pore pressure gradient was calculated using Eaton's method with an exponent of 1.2. A resultant pore pressure gradient was extracted from the DXC, with adjustments made based on observation of SLS and LWD data and the end of well report.

Since pore pressure (PP) is not performed in sandstone or limestone, it is the PP in the reservoir section based on TesTrak data taken in the 8 ½" B section. In the area between Top Ty Formation down to Top Rødby Formation, the PP is set based on the PP analysis above and below this area.

From top of the well down to 1660m TVD, the PP calculated (PP calc) show a normal hydrostatic pressure. From 1660m TVD the PP calculated starts to increase, and reaches a value of 1.17 SG at 1925m TVD, this is 0.17 SG higher than the PP predicted from the drilling program (PP pred). From 1925m TVD, the PP calculated starts to decrease to a value of 1.09 SG, 0.09 SG higher than PP predicted, before it starts to increase again and reaches 1.16 SG at 2205m TVD. From 2205m TVD the PP predicted starts to decrease again and reaches 1.02 SG at 2333 m TVD, this is the same value as the PP calc. From 2333m TVD, the PP calculated starts to increase again and reaches a maximum value of 1.26 SG at 3026m TVD, 0.02 SG lower than the PP predicted. From 3026m TVD the PP calculated start to decrease and reaches 1.15 SG at the top of the reservoir, 0.15 SG higher than the PP predicted. This value holds down to TD.

Fracture pressure gradient

The fracture pressure gradient (FG) was calculated using Matthews and Kelly's method with a 0.8 exponent.
FG calculated (FG calculated) starts at 146m TVD with the same value as the FG predicted from the drilling program (FG predicted). Downward, the two curves start to separate, with the FG calculated getting higher values. At TD, the difference is 0.15 SG.

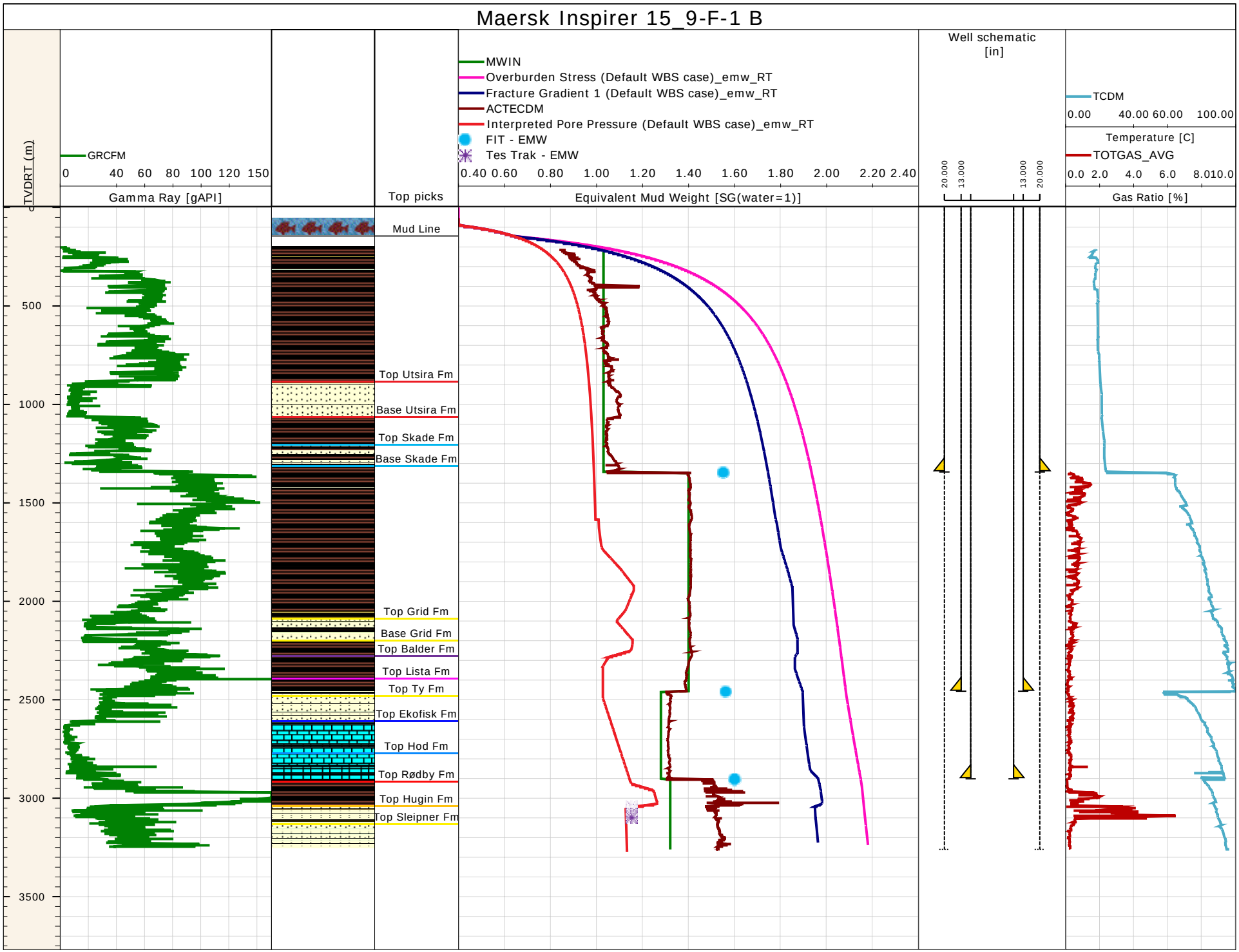
Other Parameters

Cavings

No cavings observed.

Gas

26” Hole Section: N/A (Returns to seabed)
17 ½” Hole Section: Gas readings varied between 0.01% and 1.51% with an average of 0.47%
12 ¼” Hole Section: Gas readings varied between 0.01% and 1.35% with an average of 0.29%
8 ½” Hole Section: Gas readings varied between 0.01% and 6.60% with an average of 0.94%


Maersk Inspirer 15_9-F-1 B
TVDRT (m)
GRCFM
0 40 60 80 100 120 150
Gamma Ray [gAPI]
Top picks
MWIN
Overburden Stress (Default WBS case)_emw_RT
Fracture Gradient 1 (Default WBS case)_emw_RT
ACTECDM
Interpreted Pore Pressure (Default WBS case)_emw_RT
FIT - EMW
Tes Trak - EMW
0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.20 2.40
Equivalent Mud Weight [SG(water=1)]
Well schematic [in]
20.000 13.000 13.000 20.000
TCDM
0.00 40.00 60.00 100.00
Temperature [C]
TOTGAS_AVG
0.0 2.0 4.0 6.0 8.010.0
Gas Ratio [%]
0
500
1000
1500
2000
2500
3000
3500
Mud Line
Top Utsira Fm
Base Utsira Fm
Top Skade Fm
Base Skade Fm
Top Grid Fm
Base Grid Fm
Top Balder Fm
Top Lista Fm
Top Ty Fm
Top Ekofisk Fm
Top Hod Fm
Top Rødby Fm
Top Hugin Fm
Top Sleipner Fm

PROBLEMS AND RECOMMENDATIONS

Service	Problem	Impact	Likely cause	Recommendations
SLS	1.	1.	1.	1.
DDX	1. Poor build rate in Tor Formation.	1. Got behind on well path, dropped below the line.	1. Disagreeable formations, difficulty passing 'break-over' point on inclination.	1. BHA performance was acceptable and all directional requirements were fulfilled, but due to difficulties, building inclination plans with much higher dogleg requirements should be reconsidered.
MWD	1.	1.	1.	1.

APPENDIX A

SURVEY LISTINGS

Quality Control - Compass Database

Date: 17.09.2013

This document shall be initiated by MWD/DD contractor as part of the well planning process, and the various control points shall be signed out when planning is finished, after each section, and when the well is finished. Designated Statoil representative signs after controlling each checkpoint.
When finished the document shall be archieved as an attachment to the Wellbore in Compass

Asset:	Volve	Contractor:	Baker Hughes
Platform/Rig:	Maersk Inspirer	Statoil Eng:	Per Hagum
Well:	15/9-F-1	Contractor rep:	Øyvin Johnsen
MSL	91		
Wellhead Cor:	North: 6478566,69	East: 435046,49	

Pre well planning	Y/N
Principal plan accepted, given revision number and locked for editing	Yes
Survey program and casings checked	Yes
Anti-collision scan (Global filter)	Yes
Compass locked at all levels	Yes
Wall plots checked and signed	Yes
Geomagnetic References checked and signed off	Yes

	Sign Øyvin Johnsen	Sign Statoil
Planning completed	Øyvin Johnsen	Per Hagum

Sectionwise quality control
For each survey entered in Compass, sign for performed quality control
- Compass survey file identical to MWD/Gyro-contractors survey list
- New survey correctly tied
- New survey locked
- Actual design: Bottom line verified identical to Contractors bottom line
- If applicable, main bore/branches updated with new survey

Post well quality control Compass Database:	Y/N
- All Compass surveys verified identical to Contractors Final Survey.	Yes
- All surveys verified to be within specifications	Yes
- Actual Design consist of correct set of surveys.	Yes
- Correct error models (survey tools) applied.	Yes
- All tie-ons verified	Yes
- Total depth verified	Yes
- Casing details updated.	Yes
- Actual Design locked for further editing.	Yes
- Relevant documentation uploaded as attachment under Wellbore level. As a minimum:	
- Raw accelerometer and magnetometer measurements (temperature corrected)	Yes
- Gravity and geomagnetic reference components	Yes
- Gyro survey QC sheet	No

MD From	MD To	Survey (Wellbore)	Survey Tool
150,15	210,7	Schlumberger MWD	Magnetic, old
237,6	358,5	SDC MWD gyro	MWD gyro, Baker Hughes
378	737,4	SDC, Keeper sight mode	Gyro, old
756,8	1335,6	Baker MWD	Magn, IFR, mag-corr
1387,1	2587	Baker MWD	Magn, IFR, mag-corr, dual incl
2653,2	3620,3	Baker MWD	Magn, IFR, mag-corr, dual incl

By signing below both Statoil and Contractor verifies that all well positioning data and other relevant information have been correctly registered in the Statoil EDM database.

	Date	Sign Øyvin Johnsen	Sign Statoil
Final documentation OK	17.09.13	Øyvin Johnsen	Per Hagum

Norway

SLEIPNER
Volve F
F-1

F-1

Design: F-1

Standard Survey Report

17 september, 2013

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	GNETICREFERENCE	02.11.2005	-2,58	71,62	50 311

Design	F-1				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	145,90

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	302,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 653,20	3 620,00	15/9 F-1 8 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 632,00	3 632,00	15/9 F-1 8 1/2" Projection to TD (F-1)	Blind Drilling	No survey recorded - blind drilling

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
145,90	0,00	0,00	145,90	3,17	-3,53	0,00	0,000	0,000	0,000
150,15	0,00	0,00	150,15	3,17	-3,53	0,00	0,000	0,000	0,000
160,45	0,00	0,00	160,45	3,17	-3,53	0,00	0,000	0,000	0,000
170,04	0,00	0,00	170,04	3,17	-3,53	0,00	0,000	0,000	0,000
179,79	0,00	0,00	179,79	3,17	-3,53	0,00	0,000	0,000	0,000

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
189,74	0,00	0,00	189,74	3,17	-3,53	0,00	0,000	0,000	0,000
198,50	0,00	0,00	198,50	3,17	-3,53	0,00	0,000	0,000	0,000
210,70	0,00	0,00	210,70	3,17	-3,53	0,00	0,000	0,000	0,000
237,60	1,84	302,24	237,60	3,40	-3,90	0,43	2,052	2,052	0,000
251,10	1,91	304,70	251,09	3,64	-4,27	0,87	0,237	0,156	5,467
264,90	2,47	305,76	264,88	3,94	-4,70	1,40	1,221	1,217	2,304
279,20	2,05	306,81	279,17	4,28	-5,15	1,96	0,885	-0,881	2,203
292,70	1,80	304,00	292,66	4,54	-5,52	2,42	0,594	-0,556	-6,244
302,80	1,13	330,72	302,76	4,72	-5,70	2,66	2,791	-1,990	79,366
315,50	1,41	333,18	315,45	4,96	-5,83	2,91	0,674	0,661	5,811
332,20	2,40	314,19	332,14	5,39	-6,18	3,42	2,086	1,778	-34,114
342,20	2,78	301,18	342,13	5,66	-6,54	3,87	2,093	1,140	-39,030
358,50	3,30	293,10	358,41	6,05	-7,30	4,73	1,238	0,957	-14,871
378,00	3,07	298,60	377,88	6,52	-8,28	5,80	0,588	-0,354	8,462
414,80	3,30	293,64	414,62	7,42	-10,11	7,84	0,292	0,187	-4,043
455,40	3,07	292,72	455,16	8,31	-12,19	10,06	0,174	-0,170	-0,680
495,40	2,84	290,41	495,11	9,07	-14,10	12,09	0,194	-0,172	-1,732
535,60	2,77	293,07	535,26	9,79	-15,93	14,02	0,110	-0,052	1,985
575,80	3,06	287,04	575,41	10,49	-17,85	16,02	0,315	0,216	-4,500
616,50	4,01	305,32	616,03	11,63	-20,05	18,49	1,078	0,700	13,474
656,80	6,13	317,80	656,17	14,04	-22,65	21,97	1,770	1,578	9,290
697,10	8,24	324,71	696,15	17,99	-25,76	26,71	1,695	1,571	5,144
720,00	9,57	322,37	718,78	20,84	-27,87	30,01	1,805	1,742	-3,066
737,40	10,71	320,81	735,91	23,24	-29,78	32,90	2,022	1,966	-2,690
756,80	10,39	320,18	754,98	25,98	-32,04	36,28	0,526	-0,495	-0,974
798,90	9,88	320,50	796,42	31,68	-36,76	43,32	0,366	-0,363	0,228
838,30	10,04	315,72	835,23	36,75	-41,31	49,87	0,641	0,122	-3,640
868,00	11,16	309,73	864,42	40,44	-45,33	55,24	1,586	1,131	-6,051
878,20	11,28	310,41	874,43	41,72	-46,85	57,20	0,525	0,353	2,000
918,00	10,70	315,76	913,50	46,89	-52,39	64,65	0,884	-0,437	4,033
999,00	8,88	319,88	993,32	57,06	-61,67	77,92	0,722	-0,674	1,526
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	89,92	0,075	0,071	0,171
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	96,90	2,012	1,707	-6,044
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	104,96	0,768	0,356	-3,379
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	113,13	0,128	-0,127	0,097
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	121,52	0,611	0,557	1,203
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	130,03	0,285	-0,282	0,193
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	138,02	0,899	-0,894	0,466
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	140,40	1,591	-1,545	-2,068
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	147,96	2,343	-1,462	11,994
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	153,07	2,736	2,061	11,597
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	157,58	3,249	1,273	15,342
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	160,24	2,881	1,069	12,037
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	161,32	1,850	1,317	5,183

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	161,49	1,932	1,833	2,135
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	161,27	1,830	1,812	0,795
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	160,95	2,841	2,841	0,035
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	160,43	2,036	2,036	0,032
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	159,47	2,265	2,060	2,008
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	158,00	0,451	0,449	0,082
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	156,45	0,063	0,059	0,044
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	154,90	0,064	-0,022	0,120
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	153,55	0,526	-0,126	-1,022
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	152,54	0,221	-0,059	-0,429
1 992,80	29,92	35,24	1 929,10	297,71	3,06	151,56	0,189	0,103	0,318
2 027,30	29,89	35,13	1 959,01	311,77	12,97	150,67	0,054	-0,026	-0,096
2 066,30	29,92	34,80	1 992,82	327,70	24,11	149,75	0,129	0,023	-0,254
2 113,70	29,80	35,71	2 033,92	346,98	37,73	148,51	0,297	-0,076	0,576
2 154,70	29,85	34,79	2 069,49	363,63	49,50	147,44	0,337	0,037	-0,673
2 194,30	29,84	36,98	2 103,84	379,59	61,05	146,18	0,826	-0,008	1,659
2 234,70	29,79	38,27	2 138,89	395,50	73,31	144,30	0,478	-0,037	0,958
2 275,10	30,01	37,36	2 173,92	411,41	85,66	142,34	0,374	0,163	-0,676
2 305,90	29,96	35,61	2 200,60	423,78	94,81	141,20	0,853	-0,049	-1,705
2 396,50	30,06	35,35	2 279,05	460,68	121,11	138,64	0,054	0,033	-0,086
2 436,70	30,19	35,59	2 313,82	477,12	132,82	137,51	0,132	0,097	0,179
2 470,80	30,22	36,84	2 343,29	490,96	142,95	136,32	0,554	0,026	1,100
2 517,20	30,25	36,59	2 383,38	509,69	156,92	134,49	0,084	0,019	-0,162
2 557,90	30,19	34,71	2 418,55	526,33	168,86	133,28	0,699	-0,044	-1,386
2 587,00	30,19	33,06	2 443,70	538,48	177,02	132,86	0,855	0,000	-1,701
2 653,20	27,05	19,76	2 501,87	566,63	191,21	135,87	3,211	-1,423	-6,027
2 693,70	26,44	14,67	2 538,04	584,02	196,60	140,59	1,755	-0,452	-3,770
2 733,90	26,47	6,38	2 574,04	601,59	199,87	147,20	2,754	0,022	-6,187
2 774,30	26,45	356,36	2 610,23	619,53	200,30	156,40	3,312	-0,015	-7,441
2 814,80	26,44	349,52	2 646,50	637,40	198,08	167,81	2,255	-0,007	-5,067
2 855,30	26,84	342,30	2 682,71	654,98	193,66	180,93	2,415	0,296	-5,348
2 895,10	29,13	334,29	2 717,86	672,27	186,72	196,02	3,314	1,726	-6,038
2 935,60	30,82	327,98	2 752,95	689,96	176,94	213,73	2,648	1,252	-4,674
2 975,90	33,73	322,90	2 787,03	707,64	164,72	233,51	2,960	2,166	-3,782
3 016,30	36,82	316,60	2 820,02	725,39	149,62	255,74	3,542	2,295	-4,678
3 056,60	38,42	310,99	2 851,95	742,39	131,87	279,83	2,813	1,191	-4,176
3 097,10	40,86	304,69	2 883,15	758,19	111,47	305,51	3,481	1,807	-4,667
3 136,90	45,54	301,79	2 912,15	773,09	88,67	332,74	3,831	3,528	-2,186
3 177,30	49,50	301,46	2 939,43	788,71	63,31	362,53	2,946	2,941	-0,245
3 217,80	44,76	301,22	2 966,98	804,15	37,96	392,20	3,514	-3,511	-0,178
3 257,90	40,65	301,61	2 996,44	818,32	14,76	419,39	3,081	-3,075	0,292
3 298,50	36,47	301,87	3 028,18	831,62	-6,76	444,69	3,091	-3,089	0,192
3 338,70	32,86	302,97	3 061,24	843,87	-26,07	467,55	2,734	-2,694	0,821

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
3 379,00	28,30	302,94	3 095,93	855,02	-43,26	488,04	3,395	-3,395	-0,022
3 419,20	23,61	303,38	3 132,06	864,64	-57,99	505,63	3,503	-3,500	0,328
3 459,70	21,06	302,82	3 169,52	873,05	-70,88	521,02	1,895	-1,889	-0,415
3 499,90	21,06	301,73	3 207,03	880,76	-83,10	535,46	0,292	0,000	-0,813
3 540,50	21,02	301,56	3 244,93	888,41	-95,50	550,04	0,054	-0,030	-0,126
3 580,50	20,88	301,96	3 282,28	895,93	-107,66	564,34	0,150	-0,105	0,300
3 620,00	20,89	302,46	3 319,19	903,44	-119,58	578,42	0,135	0,008	0,377
3 632,00	20,89	302,46	3 330,40	905,74	-123,19	582,70	0,003	0,000	0,009

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,98	13 3/8"	13,375	17,500

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 632,00	3 330,40	905,74	-123,19	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Norway

SLEIPNER
Volve F
F-1

F-1

Design: F-1

Survey Report - Geographic

17 september, 2013

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	ɜNETICREFERENCE	02.11.2005	-2,58	71,62	50 311

Design	F-1				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	145,90

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	302,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 653,20	3 620,00	15/9 F-1 8 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 632,00	3 632,00	15/9 F-1 8 1/2" Projection to TD (F-1)	Blind Drilling	No survey recorded - blind drilling

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
145,90	0,00	0,00	145,90	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
150,15	0,00	0,00	150,15	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
160,45	0,00	0,00	160,45	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
170,04	0,00	0,00	170,04	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
179,79	0,00	0,00	179,79	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
189,74	0,00	0,00	189,74	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
198,50	0,00	0,00	198,50	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
210,70	0,00	0,00	210,70	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
237,60	1,84	302,24	237,60	3,40	-3,90	6 478 566,92	435 046,12	58° 26' 29,914 N	1° 53' 14,685 E
251,10	1,91	304,70	251,09	3,64	-4,27	6 478 567,17	435 045,75	58° 26' 29,922 N	1° 53' 14,662 E
264,90	2,47	305,76	264,88	3,94	-4,70	6 478 567,47	435 045,32	58° 26' 29,932 N	1° 53' 14,635 E
279,20	2,05	306,81	279,17	4,28	-5,15	6 478 567,80	435 044,87	58° 26' 29,942 N	1° 53' 14,607 E
292,70	1,80	304,00	292,66	4,54	-5,52	6 478 568,07	435 044,50	58° 26' 29,951 N	1° 53' 14,584 E
302,80	1,13	330,72	302,76	4,72	-5,70	6 478 568,24	435 044,32	58° 26' 29,956 N	1° 53' 14,572 E
315,50	1,41	333,18	315,45	4,96	-5,83	6 478 568,49	435 044,19	58° 26' 29,964 N	1° 53' 14,564 E
332,20	2,40	314,19	332,14	5,39	-6,18	6 478 568,92	435 043,85	58° 26' 29,978 N	1° 53' 14,542 E
342,20	2,78	301,18	342,13	5,66	-6,54	6 478 569,19	435 043,49	58° 26' 29,986 N	1° 53' 14,520 E
358,50	3,30	293,10	358,41	6,05	-7,30	6 478 569,58	435 042,72	58° 26' 29,998 N	1° 53' 14,472 E
378,00	3,07	298,60	377,88	6,52	-8,28	6 478 570,05	435 041,74	58° 26' 30,013 N	1° 53' 14,412 E
414,80	3,30	293,64	414,62	7,42	-10,11	6 478 570,94	435 039,91	58° 26' 30,041 N	1° 53' 14,298 E
455,40	3,07	292,72	455,16	8,31	-12,19	6 478 571,83	435 037,84	58° 26' 30,069 N	1° 53' 14,169 E
495,40	2,84	290,41	495,11	9,07	-14,10	6 478 572,59	435 035,92	58° 26' 30,092 N	1° 53' 14,050 E
535,60	2,77	293,07	535,26	9,79	-15,93	6 478 573,32	435 034,09	58° 26' 30,115 N	1° 53' 13,937 E
575,80	3,06	287,04	575,41	10,49	-17,85	6 478 574,01	435 032,18	58° 26' 30,136 N	1° 53' 13,818 E
616,50	4,01	305,32	616,03	11,63	-20,05	6 478 575,15	435 029,98	58° 26' 30,172 N	1° 53' 13,681 E
656,80	6,13	317,80	656,17	14,04	-22,65	6 478 577,56	435 027,38	58° 26' 30,248 N	1° 53' 13,518 E
697,10	8,24	324,71	696,15	17,99	-25,76	6 478 581,51	435 024,27	58° 26' 30,374 N	1° 53' 13,323 E
720,00	9,57	322,37	718,78	20,84	-27,87	6 478 584,36	435 022,16	58° 26' 30,465 N	1° 53' 13,190 E
737,40	10,71	320,81	735,91	23,24	-29,78	6 478 586,76	435 020,25	58° 26' 30,542 N	1° 53' 13,070 E
756,80	10,39	320,18	754,98	25,98	-32,04	6 478 589,50	435 018,00	58° 26' 30,629 N	1° 53' 12,928 E
798,90	9,88	320,50	796,42	31,68	-36,76	6 478 595,20	435 013,27	58° 26' 30,811 N	1° 53' 12,630 E
838,30	10,04	315,72	835,23	36,75	-41,31	6 478 600,26	435 008,72	58° 26' 30,972 N	1° 53' 12,345 E
868,00	11,16	309,73	864,42	40,44	-45,33	6 478 603,95	435 004,71	58° 26' 31,089 N	1° 53' 12,094 E
878,20	11,28	310,41	874,43	41,72	-46,85	6 478 605,23	435 003,19	58° 26' 31,130 N	1° 53' 11,999 E
918,00	10,70	315,76	913,50	46,89	-52,39	6 478 610,40	434 997,65	58° 26' 31,294 N	1° 53' 11,652 E
999,00	8,88	319,88	993,32	57,06	-61,67	6 478 620,56	434 988,38	58° 26' 31,618 N	1° 53' 11,070 E
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	6 478 630,23	434 980,30	58° 26' 31,926 N	1° 53' 10,562 E
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	6 478 635,38	434 975,28	58° 26' 32,090 N	1° 53' 10,248 E
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	6 478 640,59	434 969,04	58° 26' 32,255 N	1° 53' 9,857 E
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	6 478 645,60	434 962,55	58° 26' 32,413 N	1° 53' 9,452 E
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	6 478 650,87	434 955,95	58° 26' 32,580 N	1° 53' 9,040 E
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	6 478 656,31	434 949,34	58° 26' 32,752 N	1° 53' 8,627 E
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	6 478 661,49	434 943,16	58° 26' 32,916 N	1° 53' 8,240 E
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	6 478 663,03	434 941,31	58° 26' 32,965 N	1° 53' 8,125 E
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	6 478 668,88	434 936,07	58° 26' 33,151 N	1° 53' 7,796 E
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	6 478 674,84	434 933,79	58° 26' 33,343 N	1° 53' 7,649 E
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	6 478 682,62	434 933,36	58° 26' 33,594 N	1° 53' 7,615 E
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	6 478 691,25	434 935,66	58° 26' 33,874 N	1° 53' 7,747 E
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	6 478 700,81	434 940,42	58° 26' 34,186 N	1° 53' 8,031 E
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	6 478 710,05	434 946,05	58° 26' 34,487 N	1° 53' 8,369 E
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	6 478 721,06	434 953,25	58° 26' 34,847 N	1° 53' 8,802 E
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	6 478 731,55	434 960,25	58° 26' 35,190 N	1° 53' 9,222 E
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	6 478 748,09	434 971,29	58° 26' 35,731 N	1° 53' 9,886 E
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	6 478 763,39	434 982,08	58° 26' 36,231 N	1° 53' 10,536 E
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	6 478 779,35	434 993,88	58° 26' 36,753 N	1° 53' 11,247 E
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	6 478 795,70	435 006,01	58° 26' 37,288 N	1° 53' 11,978 E
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	6 478 811,75	435 017,98	58° 26' 37,814 N	1° 53' 12,700 E
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	6 478 828,08	435 029,88	58° 26' 38,348 N	1° 53' 13,417 E
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	6 478 844,59	435 041,48	58° 26' 38,888 N	1° 53' 14,115 E
1 992,80	29,92	35,24	1 929,10	297,71	3,06	6 478 861,14	435 053,08	58° 26' 39,429 N	1° 53' 14,813 E
2 027,30	29,89	35,13	1 959,01	311,77	12,97	6 478 875,19	435 062,98	58° 26' 39,888 N	1° 53' 15,410 E

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
2 066,30	29,92	34,80	1 992,82	327,70	24,11	6 478 891,12	435 074,12	58° 26' 40,409 N	1° 53' 16,080 E
2 113,70	29,80	35,71	2 033,92	346,98	37,73	6 478 910,38	435 087,74	58° 26' 41,039 N	1° 53' 16,900 E
2 154,70	29,85	34,79	2 069,49	363,63	49,50	6 478 927,03	435 099,50	58° 26' 41,584 N	1° 53' 17,609 E
2 194,30	29,84	36,98	2 103,84	379,59	61,05	6 478 942,99	435 111,05	58° 26' 42,106 N	1° 53' 18,304 E
2 234,70	29,79	38,27	2 138,89	395,50	73,31	6 478 958,89	435 123,31	58° 26' 42,626 N	1° 53' 19,044 E
2 275,10	30,01	37,36	2 173,92	411,41	85,66	6 478 974,79	435 135,65	58° 26' 43,147 N	1° 53' 19,788 E
2 305,90	29,96	35,61	2 200,60	423,78	94,81	6 478 987,16	435 144,80	58° 26' 43,552 N	1° 53' 20,340 E
2 396,50	30,06	35,35	2 279,05	460,68	121,11	6 479 024,05	435 171,09	58° 26' 44,758 N	1° 53' 21,923 E
2 436,70	30,19	35,59	2 313,82	477,12	132,82	6 479 040,48	435 182,79	58° 26' 45,296 N	1° 53' 22,628 E
2 470,80	30,22	36,84	2 343,29	490,96	142,95	6 479 054,31	435 192,92	58° 26' 45,748 N	1° 53' 23,239 E
2 517,20	30,25	36,59	2 383,38	509,69	156,92	6 479 073,04	435 206,89	58° 26' 46,361 N	1° 53' 24,081 E
2 557,90	30,19	34,71	2 418,55	526,33	168,86	6 479 089,67	435 218,82	58° 26' 46,905 N	1° 53' 24,800 E
2 587,00	30,19	33,06	2 443,70	538,48	177,02	6 479 101,82	435 226,98	58° 26' 47,302 N	1° 53' 25,290 E
2 653,20	27,05	19,76	2 501,87	566,63	191,21	6 479 129,96	435 241,16	58° 26' 48,219 N	1° 53' 26,136 E
2 693,70	26,44	14,67	2 538,04	584,02	196,60	6 479 147,35	435 246,56	58° 26' 48,784 N	1° 53' 26,451 E
2 733,90	26,47	6,38	2 574,04	601,59	199,87	6 479 164,91	435 249,82	58° 26' 49,354 N	1° 53' 26,634 E
2 774,30	26,45	356,36	2 610,23	619,53	200,30	6 479 182,84	435 250,25	58° 26' 49,933 N	1° 53' 26,643 E
2 814,80	26,44	349,52	2 646,50	637,40	198,08	6 479 200,70	435 248,03	58° 26' 50,510 N	1° 53' 26,488 E
2 855,30	26,84	342,30	2 682,71	654,98	193,66	6 479 218,28	435 243,62	58° 26' 51,075 N	1° 53' 26,198 E
2 895,10	29,13	334,29	2 717,86	672,27	186,72	6 479 235,57	435 236,68	58° 26' 51,631 N	1° 53' 25,752 E
2 935,60	30,82	327,98	2 752,95	689,96	176,94	6 479 253,25	435 226,90	58° 26' 52,197 N	1° 53' 25,132 E
2 975,90	33,73	322,90	2 787,03	707,64	164,72	6 479 270,92	435 214,68	58° 26' 52,762 N	1° 53' 24,360 E
3 016,30	36,82	316,60	2 820,02	725,39	149,62	6 479 288,67	435 199,59	58° 26' 53,327 N	1° 53' 23,411 E
3 056,60	38,42	310,99	2 851,95	742,39	131,87	6 479 305,66	435 181,84	58° 26' 53,867 N	1° 53' 22,300 E
3 097,10	40,86	304,69	2 883,15	758,19	111,47	6 479 321,45	435 161,45	58° 26' 54,367 N	1° 53' 21,026 E
3 136,90	45,54	301,79	2 912,15	773,09	88,67	6 479 336,35	435 138,66	58° 26' 54,836 N	1° 53' 19,606 E
3 177,30	49,50	301,46	2 939,43	788,71	63,31	6 479 351,96	435 113,30	58° 26' 55,327 N	1° 53' 18,026 E
3 217,80	44,76	301,22	2 966,98	804,15	37,96	6 479 367,39	435 087,97	58° 26' 55,813 N	1° 53' 16,448 E
3 257,90	40,65	301,61	2 996,44	818,32	14,76	6 479 381,56	435 064,77	58° 26' 56,258 N	1° 53' 15,003 E
3 298,50	36,47	301,87	3 028,18	831,62	-6,76	6 479 394,86	435 043,26	58° 26' 56,677 N	1° 53' 13,663 E
3 338,70	32,86	302,97	3 061,24	843,87	-26,07	6 479 407,11	435 023,96	58° 26' 57,062 N	1° 53' 12,461 E
3 379,00	28,30	302,94	3 095,93	855,02	-43,26	6 479 418,25	435 006,77	58° 26' 57,413 N	1° 53' 11,389 E
3 419,20	23,61	303,38	3 132,06	864,64	-57,99	6 479 427,86	434 992,05	58° 26' 57,716 N	1° 53' 10,472 E
3 459,70	21,06	302,82	3 169,52	873,05	-70,88	6 479 436,27	434 979,16	58° 26' 57,981 N	1° 53' 9,669 E
3 499,90	21,06	301,73	3 207,03	880,76	-83,10	6 479 443,98	434 966,95	58° 26' 58,224 N	1° 53' 8,908 E
3 540,50	21,02	301,56	3 244,93	888,41	-95,50	6 479 451,63	434 954,55	58° 26' 58,464 N	1° 53' 8,135 E
3 580,50	20,88	301,96	3 282,28	895,93	-107,66	6 479 459,15	434 942,39	58° 26' 58,701 N	1° 53' 7,378 E
3 620,00	20,89	302,46	3 319,19	903,44	-119,58	6 479 466,65	434 930,48	58° 26' 58,937 N	1° 53' 6,636 E
3 632,00	20,89	302,46	3 330,40	905,74	-123,19	6 479 468,95	434 926,87	58° 26' 59,009 N	1° 53' 6,411 E

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,98	13 3/8"	13,375	17,500

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Database:**	Production EDM P246N

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 632,00	3 330,40	905,74	-123,19	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Norway

SLEIPNER
Volve F
F-1

F-1

Design: F-1

Error Ellipse Survey Report

17 september, 2013

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	ɜNETICREFERENCE	02.11.2005	-2,58	71,62	50 311

Design	F-1				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	145,90

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	302,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 653,20	3 620,00	15/9 F-1 8 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 632,00	3 632,00	15/9 F-1 8 1/2" Projection to TD (F-1)	Blind Drilling	No survey recorded - blind drilling

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
145,90	0,00	0,00	145,90	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	UNDEFINED
150,15	0,00	0,00	150,15	0,01	0,00	0,01	0,00	1,77	0,00	0,00	0,01	0,01	0,00	Magnetic, old (1)
160,45	0,00	0,00	160,45	0,05	0,00	0,05	0,00	1,78	0,00	0,00	0,05	0,05	0,00	Magnetic, old (1)
170,04	0,00	0,00	170,04	0,10	0,00	0,10	0,00	1,79	0,00	0,00	0,10	0,10	0,00	Magnetic, old (1)

Statoil

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Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
179,79	0,00	0,00	179,79	0,14	0,00	0,14	0,00	1,79	0,00	0,00	0,14	0,14	0,00	Magnetic, old (1)
189,74	0,00	0,00	189,74	0,18	0,00	0,18	0,00	1,80	0,00	0,00	0,18	0,18	0,00	Magnetic, old (1)
198,50	0,00	0,00	198,50	0,22	0,00	0,22	0,00	1,81	0,00	0,00	0,22	0,22	0,00	Magnetic, old (1)
210,70	0,00	0,00	210,70	0,27	0,00	0,27	0,00	1,82	0,00	0,00	0,27	0,27	0,00	Magnetic, old (1)
237,60	1,84	302,24	237,60	0,34	0,00	0,34	0,00	0,93	0,00	0,00	0,34	0,34	45,00	MWD gyro, Baker Hughes (2)
251,10	1,91	304,70	251,09	0,36	0,00	0,35	0,00	0,93	0,00	0,00	0,36	0,35	33,10	MWD gyro, Baker Hughes (2)
264,90	2,47	305,76	264,88	0,38	0,00	0,38	0,00	0,94	0,00	0,00	0,38	0,38	45,00	MWD gyro, Baker Hughes (2)
279,20	2,05	306,81	279,17	0,42	0,00	0,42	0,00	0,95	0,00	0,00	0,42	0,42	45,00	MWD gyro, Baker Hughes (2)
292,70	1,80	304,00	292,66	0,45	0,00	0,46	0,00	0,96	0,00	0,00	0,46	0,45	135,00	MWD gyro, Baker Hughes (2)
302,80	1,13	330,72	302,76	0,49	0,00	0,49	0,00	0,97	0,00	0,00	0,49	0,49	135,00	MWD gyro, Baker Hughes (2)
315,50	1,41	333,18	315,45	0,53	0,00	0,53	0,00	0,98	0,00	0,00	0,53	0,53	78,49	MWD gyro, Baker Hughes (2)
332,20	2,40	314,19	332,14	0,59	0,00	0,59	0,00	0,99	0,00	0,00	0,59	0,59	76,58	MWD gyro, Baker Hughes (2)
342,20	2,78	301,18	342,13	0,62	0,00	0,63	0,00	1,00	0,00	0,00	0,63	0,62	102,18	MWD gyro, Baker Hughes (2)
358,50	3,30	293,10	358,41	0,69	0,00	0,69	0,00	1,01	0,00	0,00	0,69	0,69	120,49	MWD gyro, Baker Hughes (2)
378,00	3,07	298,60	377,88	0,73	0,00	0,74	0,00	2,05	0,00	0,00	0,74	0,74	125,55	Gyro, old (3)
414,80	3,30	293,64	414,62	0,83	0,00	0,86	0,00	2,11	0,00	0,00	0,86	0,83	117,19	Gyro, old (3)
455,40	3,07	292,72	455,16	1,04	0,00	1,10	0,00	2,19	0,00	0,00	1,10	1,05	115,37	Gyro, old (3)
495,40	2,84	290,41	495,11	1,32	0,00	1,40	0,00	2,27	0,00	0,00	1,40	1,32	114,24	Gyro, old (3)
535,60	2,77	293,07	535,26	1,62	0,00	1,72	0,00	2,35	0,00	0,00	1,72	1,62	113,65	Gyro, old (3)
575,80	3,06	287,04	575,41	1,94	0,00	2,06	0,00	2,44	0,00	0,00	2,06	1,93	112,95	Gyro, old (3)
616,50	4,01	305,32	616,03	2,27	0,00	2,41	0,00	2,54	0,00	0,00	2,42	2,26	113,70	Gyro, old (3)
656,80	6,13	317,80	656,17	2,62	0,00	2,78	0,00	2,63	0,00	0,00	2,80	2,60	117,68	Gyro, old (3)
697,10	8,24	324,71	696,15	2,97	0,00	3,19	0,00	2,73	0,00	0,00	3,23	2,93	123,60	Gyro, old (3)
720,00	9,57	322,37	718,78	3,14	0,00	3,46	0,00	2,79	0,00	0,00	3,49	3,13	126,49	Gyro, old (3)
737,40	10,71	320,81	735,91	3,28	0,00	3,68	0,00	2,83	0,00	0,00	3,70	3,27	128,30	Gyro, old (3)
756,80	10,39	320,18	754,98	3,36	0,00	3,81	0,00	1,47	0,00	0,00	3,83	3,34	129,30	Magnetic, IFR, mag-corr (4)
798,90	9,88	320,50	796,42	3,37	0,00	3,82	0,00	1,53	0,00	0,00	3,83	3,35	129,37	Magnetic, IFR, mag-corr (4)
838,30	10,04	315,72	835,23	3,37	0,00	3,85	0,00	1,58	0,00	0,00	3,85	3,36	129,48	Magnetic, IFR, mag-corr (4)
868,00	11,16	309,73	864,42	3,38	0,00	3,87	0,00	1,63	0,00	0,00	3,87	3,38	129,58	Magnetic, IFR, mag-corr (4)
878,20	11,28	310,41	874,43	3,39	0,00	3,88	0,00	1,64	0,00	0,00	3,88	3,39	129,62	Magnetic, IFR, mag-corr (4)
918,00	10,70	315,76	913,50	3,43	0,00	3,91	0,00	1,70	0,00	0,00	3,92	3,42	129,72	Magnetic, IFR, mag-corr (4)
999,00	8,88	319,88	993,32	3,54	0,00	4,01	0,00	1,83	0,00	0,00	4,02	3,51	130,07	Magnetic, IFR, mag-corr (4)
1 079,80	9,07	320,34	1 073,13	3,67	0,00	4,15	0,00	1,97	0,00	0,00	4,16	3,64	130,56	Magnetic, IFR, mag-corr (4)
1 120,40	11,38	312,16	1 113,08	3,72	0,00	4,24	0,00	2,04	0,00	0,00	4,24	3,71	130,81	Magnetic, IFR, mag-corr (4)
1 160,80	11,86	307,61	1 152,65	3,80	0,00	4,33	0,00	2,11	0,00	0,00	4,34	3,79	130,97	Magnetic, IFR, mag-corr (4)
1 201,00	11,69	307,74	1 192,01	3,89	0,00	4,44	0,00	2,18	0,00	0,00	4,44	3,88	131,02	Magnetic, IFR, mag-corr (4)
1 241,40	12,44	309,36	1 231,51	3,98	0,00	4,55	0,00	2,26	0,00	0,00	4,55	3,97	131,07	Magnetic, IFR, mag-corr (4)
1 281,80	12,06	309,62	1 270,99	4,08	0,00	4,66	0,00	2,34	0,00	0,00	4,67	4,06	131,12	Magnetic, IFR, mag-corr (4)
1 322,40	10,85	310,25	1 310,79	4,19	0,00	4,79	0,00	2,42	0,00	0,00	4,79	4,17	131,17	Magnetic, IFR, mag-corr (4)
1 335,60	10,17	309,34	1 323,76	4,22	0,00	4,83	0,00	2,45	0,00	0,00	4,83	4,20	131,18	Magnetic, IFR, mag-corr (4)
1 387,10	7,66	329,93	1 374,65	4,36	0,00	4,85	0,00	2,55	0,00	0,00	4,91	4,27	131,28	ɲn, IFR, mag-corr, dual incl (5)
1 428,00	10,47	345,74	1 415,04	4,50	0,00	4,74	0,00	2,63	0,00	0,00	4,93	4,28	131,55	ɲn, IFR, mag-corr, dual incl (5)
1 468,30	12,18	6,35	1 454,57	4,71	0,00	4,53	0,00	2,71	0,00	0,00	4,96	4,30	132,11	ɲn, IFR, mag-corr, dual incl (5)
1 508,70	13,62	22,56	1 493,96	4,84	0,00	4,41	0,00	2,79	0,00	0,00	4,99	4,32	133,04	ɲn, IFR, mag-corr, dual incl (5)
1 551,30	15,49	29,92	1 535,20	4,87	0,00	4,40	0,00	2,87	0,00	0,00	5,02	4,36	134,31	ɲn, IFR, mag-corr, dual incl (5)
1 589,10	17,80	32,61	1 571,41	4,87	0,00	4,44	0,00	2,95	0,00	0,00	5,06	4,41	135,68	ɲn, IFR, mag-corr, dual incl (5)
1 629,50	20,24	33,68	1 609,60	4,87	0,00	4,51	0,00	3,03	0,00	0,00	5,10	4,47	137,49	ɲn, IFR, mag-corr, dual incl (5)
1 663,40	23,45	33,72	1 641,07	4,84	0,00	4,58	0,00	3,10	0,00	0,00	5,14	4,53	139,44	ɲn, IFR, mag-corr, dual incl (5)
1 710,40	26,64	33,77	1 683,64	4,82	0,00	4,71	0,00	3,20	0,00	0,00	5,21	4,64	143,17	ɲn, IFR, mag-corr, dual incl (5)
1 750,30	29,38	36,44	1 718,87	4,81	0,00	4,83	0,00	3,28	0,00	0,00	5,28	4,75	147,67	ɲn, IFR, mag-corr, dual incl (5)
1 790,40	29,98	36,55	1 753,70	4,85	0,00	4,98	0,00	3,37	0,00	0,00	5,36	4,88	153,87	ɲn, IFR, mag-corr, dual incl (5)
1 831,10	30,06	36,61	1 788,94	4,91	0,00	5,16	0,00	3,46	0,00	0,00	5,46	5,00	161,94	ɲn, IFR, mag-corr, dual incl (5)
1 871,10	30,03	36,77	1 823,57	4,98	0,00	5,35	0,00	3,55	0,00	0,00	5,59	5,12	170,89	ɲn, IFR, mag-corr, dual incl (5)
1 911,60	29,86	35,39	1 858,66	5,04	0,00	5,57	0,00	3,65	0,00	0,00	5,75	5,23	179,40	ɲn, IFR, mag-corr, dual incl (5)

Statoil

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Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
1 952,20	29,78	34,81	1 893,89	5,12	0,00	5,80	0,00	3,75	0,00	0,00	5,93	5,32	6,19	Jn, IFR, mag-corr, dual incl (5)
1 992,80	29,92	35,24	1 929,10	5,20	0,00	6,03	0,00	3,86	0,00	0,00	6,14	5,41	11,26	Jn, IFR, mag-corr, dual incl (5)
2 027,30	29,89	35,13	1 959,01	5,27	0,00	6,24	0,00	3,95	0,00	0,00	6,34	5,49	14,52	Jn, IFR, mag-corr, dual incl (5)
2 066,30	29,92	34,80	1 992,82	5,35	0,00	6,48	0,00	4,05	0,00	0,00	6,56	5,57	17,33	Jn, IFR, mag-corr, dual incl (5)
2 113,70	29,80	35,71	2 033,92	5,46	0,00	6,78	0,00	4,17	0,00	0,00	6,86	5,67	19,91	Jn, IFR, mag-corr, dual incl (5)
2 154,70	29,85	34,79	2 069,49	5,55	0,00	7,05	0,00	4,29	0,00	0,00	7,12	5,75	21,62	Jn, IFR, mag-corr, dual incl (5)
2 194,30	29,84	36,98	2 103,84	5,66	0,00	7,30	0,00	4,40	0,00	0,00	7,38	5,84	22,99	Jn, IFR, mag-corr, dual incl (5)
2 234,70	29,79	38,27	2 138,89	5,77	0,00	7,56	0,00	4,51	0,00	0,00	7,65	5,93	24,25	Jn, IFR, mag-corr, dual incl (5)
2 275,10	30,01	37,36	2 173,92	5,86	0,00	7,86	0,00	4,63	0,00	0,00	7,93	6,02	25,34	Jn, IFR, mag-corr, dual incl (5)
2 305,90	29,96	35,61	2 200,60	5,93	0,00	8,10	0,00	4,72	0,00	0,00	8,15	6,09	25,99	Jn, IFR, mag-corr, dual incl (5)
2 396,50	30,06	35,35	2 279,05	6,17	0,00	8,76	0,00	4,99	0,00	0,00	8,80	6,31	27,40	Jn, IFR, mag-corr, dual incl (5)
2 436,70	30,19	35,59	2 313,82	6,28	0,00	9,06	0,00	5,11	0,00	0,00	9,10	6,41	27,89	Jn, IFR, mag-corr, dual incl (5)
2 470,80	30,22	36,84	2 343,29	6,39	0,00	9,30	0,00	5,21	0,00	0,00	9,36	6,50	28,30	Jn, IFR, mag-corr, dual incl (5)
2 517,20	30,25	36,59	2 383,38	6,53	0,00	9,66	0,00	5,36	0,00	0,00	9,71	6,62	28,82	Jn, IFR, mag-corr, dual incl (5)
2 557,90	30,19	34,71	2 418,55	6,63	0,00	9,99	0,00	5,48	0,00	0,00	10,02	6,72	29,17	Jn, IFR, mag-corr, dual incl (5)
2 587,00	30,19	33,06	2 443,70	6,70	0,00	10,23	0,00	5,58	0,00	0,00	10,24	6,80	29,36	Jn, IFR, mag-corr, dual incl (5)
2 653,20	27,05	19,76	2 501,87	6,95	0,00	10,48	0,00	5,77	0,00	0,00	10,56	6,90	29,37	Jn, IFR, mag-corr, dual incl (6)
2 693,70	26,44	14,67	2 538,04	7,10	0,00	10,46	0,00	5,88	0,00	0,00	10,65	6,92	29,15	Jn, IFR, mag-corr, dual incl (6)
2 733,90	26,47	6,38	2 574,04	7,43	0,00	10,27	0,00	5,98	0,00	0,00	10,74	6,95	28,84	Jn, IFR, mag-corr, dual incl (6)
2 774,30	26,45	356,36	2 610,23	7,94	0,00	9,90	0,00	6,09	0,00	0,00	10,83	6,98	28,41	Jn, IFR, mag-corr, dual incl (6)
2 814,80	26,44	349,52	2 646,50	8,34	0,00	9,61	0,00	6,21	0,00	0,00	10,92	7,02	27,86	Jn, IFR, mag-corr, dual incl (6)
2 855,30	26,84	342,30	2 682,71	8,75	0,00	9,25	0,00	6,32	0,00	0,00	11,00	7,07	27,23	Jn, IFR, mag-corr, dual incl (6)
2 895,10	29,13	334,29	2 717,86	9,11	0,00	8,82	0,00	6,44	0,00	0,00	11,08	7,12	26,49	Jn, IFR, mag-corr, dual incl (6)
2 935,60	30,82	327,98	2 752,95	9,36	0,00	8,52	0,00	6,55	0,00	0,00	11,17	7,19	25,62	Jn, IFR, mag-corr, dual incl (6)
2 975,90	33,73	322,90	2 787,03	9,44	0,00	8,34	0,00	6,66	0,00	0,00	11,25	7,28	24,61	Jn, IFR, mag-corr, dual incl (6)
3 016,30	36,82	316,60	2 820,02	9,50	0,00	8,12	0,00	6,77	0,00	0,00	11,33	7,38	23,44	Jn, IFR, mag-corr, dual incl (6)
3 056,60	38,42	310,99	2 851,95	9,59	0,00	8,01	0,00	6,88	0,00	0,00	11,40	7,51	22,12	Jn, IFR, mag-corr, dual incl (6)
3 097,10	40,86	304,69	2 883,15	9,59	0,00	7,94	0,00	6,99	0,00	0,00	11,47	7,67	20,64	Jn, IFR, mag-corr, dual incl (6)
3 136,90	45,54	301,79	2 912,15	9,32	0,00	8,08	0,00	7,09	0,00	0,00	11,53	7,86	18,96	Jn, IFR, mag-corr, dual incl (6)
3 177,30	49,50	301,46	2 939,43	9,06	0,00	8,37	0,00	7,18	0,00	0,00	11,60	8,10	16,90	Jn, IFR, mag-corr, dual incl (6)
3 217,80	44,76	301,22	2 966,98	9,45	0,00	8,69	0,00	7,28	0,00	0,00	11,68	8,37	14,55	Jn, IFR, mag-corr, dual incl (6)
3 257,90	40,65	301,61	2 996,44	9,76	0,00	9,02	0,00	7,40	0,00	0,00	11,76	8,62	12,14	Jn, IFR, mag-corr, dual incl (6)
3 298,50	36,47	301,87	3 028,18	10,07	0,00	9,34	0,00	7,52	0,00	0,00	11,86	8,85	9,69	Jn, IFR, mag-corr, dual incl (6)
3 338,70	32,86	302,97	3 061,24	10,31	0,00	9,66	0,00	7,65	0,00	0,00	11,96	9,05	7,31	Jn, IFR, mag-corr, dual incl (6)
3 379,00	28,30	302,94	3 095,93	10,61	0,00	9,92	0,00	7,79	0,00	0,00	12,07	9,23	5,08	Jn, IFR, mag-corr, dual incl (6)
3 419,20	23,61	303,38	3 132,06	10,88	0,00	10,17	0,00	7,94	0,00	0,00	12,18	9,39	3,12	Jn, IFR, mag-corr, dual incl (6)
3 459,70	21,06	302,82	3 169,52	11,06	0,00	10,35	0,00	8,09	0,00	0,00	12,29	9,52	1,40	Jn, IFR, mag-corr, dual incl (6)
3 499,90	21,06	301,73	3 207,03	11,15	0,00	10,49	0,00	8,25	0,00	0,00	12,39	9,65	179,77	Jn, IFR, mag-corr, dual incl (6)
3 540,50	21,02	301,56	3 244,93	11,21	0,00	10,69	0,00	8,40	0,00	0,00	12,51	9,78	178,11	Jn, IFR, mag-corr, dual incl (6)
3 580,50	20,88	301,96	3 282,28	11,25	0,00	10,91	0,00	8,56	0,00	0,00	12,63	9,91	176,45	Jn, IFR, mag-corr, dual incl (6)
3 620,00	20,89	302,46	3 319,19	11,29	0,00	11,13	0,00	8,71	0,00	0,00	12,75	10,04	174,82	Jn, IFR, mag-corr, dual incl (6)
3 632,00	20,89	302,46	3 330,40	11,30	0,00	11,16	0,00	8,76	0,00	0,00	12,77	10,06	174,59	Blind Drilling (7)

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,98	13 3/8"	13,375	17,500

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 632,00	3 330,40	905,74	-123,19	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Quality Control - Compass Database

Date: 17.09.2013

This document shall be initiated by MWD/DD contractor as part of the well planning process, and the various control points shall be signed out when planning is finished, after each section, and when the well is finished. Designated Statoil representative signs after controlling each checkpoint.
When finished the document shall be archieved as an attachment to the Wellbore in Compass

Asset:	Volve	Contractor:	Baker Hughes
Platform/Rig:	Maersk Inspirer	Statoil Eng:	Per Hagum
Well:	15/9-F-1 A	Contractor rep:	Øyvin Johnsen
MSL	91		
Wellhead Cor:	North: 6478566,69	East: 435046,49	

Pre well planning	Y/N
Principal plan accepted, given revision number and locked for editing	Yes
Survey program and casings checked	Yes
Anti-collision scan (Global filter)	Yes
Compass locked at all levels	Yes
Wall plots checked and signed	Yes
Geomagnetic References checked and signed off	Yes

	Sign Øyvin Johnsen	Sign Statoil
Planning completed	Øyvin Johnsen	Per Hagum

Sectionwise quality control
For each survey entered in Compass, sign for performed quality control
- Compass survey file identical to MWD/Gyro-contractors survey list
- New survey correctly tied
- New survey locked
- Actual design: Bottom line verified identical to Contractors bottom line
- If applicable, main bore/branches updated with new survey

Post well quality control Compass Database:	Y/N
- All Compass surveys verified identical to Contractors Final Survey.	Yes
- All surveys verified to be within specifications	Yes
- Actual Design consist of correct set of surveys.	Yes
- Correct error models (survey tools) applied.	Yes
- All tie-ons verified	Yes
- Total depth verified	Yes
- Casing details updated.	Yes
- Actual Design locked for further editing.	Yes
- Relevant documentation uploaded as attachment under Wellbore level. As a minimum:	
- Raw accelerometer and magnetometer measurements (temperature corrected)	Yes
- Gravity and geomagnetic reference components	Yes
- Gyro survey QC sheet	No

MD From	MD To	Survey (Wellbore)	Survey Tool
2621,1	3671,1	Baker MWD	Magn, IFR, mag-corr, dual incl

By signing below both Statoil and Contractor verifies that all well positioning data and other relevant information have been correctly registered in the Statoil EDM database.

	Date	Sign, Øyvin Johnsen	Sign Statoil
Final documentation OK	17.09.13	Øyvin Johnsen	Per Hagum

Norway

SLEIPNER
Volve F
F-1

F-1 A

Design: F-1 A

Standard Survey Report

17 september, 2013

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 A			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	GNETICREFERENCE	18.08.2013	-1,14	71,62	50 520

Design	F-1 A				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	337,69

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 621,10	3 671,10	15/9 F-1 A 8 1/2" Pilot AutoTrak (F-1 A)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
145,90	0,00	0,00	145,90	3,17	-3,53	0,00	0,000	0,000	0,000
150,15	0,00	0,00	150,15	3,17	-3,53	0,00	0,000	0,000	0,000
160,45	0,00	0,00	160,45	3,17	-3,53	0,00	0,000	0,000	0,000
170,04	0,00	0,00	170,04	3,17	-3,53	0,00	0,000	0,000	0,000
179,79	0,00	0,00	179,79	3,17	-3,53	0,00	0,000	0,000	0,000
189,74	0,00	0,00	189,74	3,17	-3,53	0,00	0,000	0,000	0,000

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
198,50	0,00	0,00	198,50	3,17	-3,53	0,00	0,000	0,000	0,000
210,70	0,00	0,00	210,70	3,17	-3,53	0,00	0,000	0,000	0,000
237,60	1,84	302,24	237,60	3,40	-3,90	0,35	2,052	2,052	0,000
251,10	1,91	304,70	251,09	3,64	-4,27	0,72	0,237	0,156	5,467
264,90	2,47	305,76	264,88	3,94	-4,70	1,16	1,221	1,217	2,304
279,20	2,05	306,81	279,17	4,28	-5,15	1,64	0,885	-0,881	2,203
292,70	1,80	304,00	292,66	4,54	-5,52	2,03	0,594	-0,556	-6,244
302,80	1,13	330,72	302,76	4,72	-5,70	2,26	2,791	-1,990	79,366
315,50	1,41	333,18	315,45	4,96	-5,83	2,54	0,674	0,661	5,811
332,20	2,40	314,19	332,14	5,39	-6,18	3,06	2,086	1,778	-34,114
342,20	2,78	301,18	342,13	5,66	-6,54	3,45	2,093	1,140	-39,030
358,50	3,30	293,10	358,41	6,05	-7,30	4,10	1,238	0,957	-14,871
378,00	3,07	298,60	377,88	6,52	-8,28	4,91	0,588	-0,354	8,462
414,80	3,30	293,64	414,62	7,42	-10,11	6,43	0,292	0,187	-4,043
455,40	3,07	292,72	455,16	8,31	-12,19	8,04	0,174	-0,170	-0,680
495,40	2,84	290,41	495,11	9,07	-14,10	9,47	0,194	-0,172	-1,732
535,60	2,77	293,07	535,26	9,79	-15,93	10,84	0,110	-0,052	1,985
575,80	3,06	287,04	575,41	10,49	-17,85	12,21	0,315	0,216	-4,500
616,50	4,01	305,32	616,03	11,63	-20,05	14,10	1,078	0,700	13,474
656,80	6,13	317,80	656,17	14,04	-22,65	17,32	1,770	1,578	9,290
697,10	8,24	324,71	696,15	17,99	-25,76	22,15	1,695	1,571	5,144
720,00	9,57	322,37	718,78	20,84	-27,87	25,59	1,805	1,742	-3,066
737,40	10,71	320,81	735,91	23,24	-29,78	28,53	2,022	1,966	-2,690
756,80	10,39	320,18	754,98	25,98	-32,04	31,92	0,526	-0,495	-0,974
798,90	9,88	320,50	796,42	31,68	-36,76	39,00	0,366	-0,363	0,228
838,30	10,04	315,72	835,23	36,75	-41,31	45,41	0,641	0,122	-3,640
868,00	11,16	309,73	864,42	40,44	-45,33	50,35	1,586	1,131	-6,051
878,20	11,28	310,41	874,43	41,72	-46,85	52,11	0,525	0,353	2,000
918,00	10,70	315,76	913,50	46,89	-52,39	59,00	0,884	-0,437	4,033
999,00	8,88	319,88	993,32	57,06	-61,67	71,92	0,722	-0,674	1,526
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	83,94	0,075	0,071	0,171
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	90,61	2,012	1,707	-6,044
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	97,80	0,768	0,356	-3,379
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	104,90	0,128	-0,127	0,097
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	112,28	0,611	0,557	1,203
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	119,83	0,285	-0,282	0,193
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	126,97	0,899	-0,894	0,466
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	129,10	1,591	-1,545	-2,068
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	136,50	2,343	-1,462	11,994
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	142,88	2,736	2,061	11,597
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	150,24	3,249	1,273	15,342
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	157,36	2,881	1,069	12,037
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	164,40	1,850	1,317	5,183
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	170,81	1,932	1,833	2,135

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	178,27	1,830	1,812	0,795
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	185,32	2,841	2,841	0,035
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	196,43	2,036	2,036	0,032
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	206,50	2,265	2,060	2,008
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	216,79	0,451	0,449	0,082
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	227,31	0,063	0,059	0,044
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	237,62	0,064	-0,022	0,120
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	248,22	0,526	-0,126	-1,022
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	259,09	0,221	-0,059	-0,429
1 992,80	29,92	35,24	1 929,10	297,71	3,06	270,00	0,189	0,103	0,318
2 027,30	29,89	35,13	1 959,01	311,77	12,97	279,24	0,054	-0,026	-0,096
2 066,30	29,92	34,80	1 992,82	327,70	24,11	289,75	0,129	0,023	-0,254
2 113,70	29,80	35,71	2 033,92	346,98	37,73	302,41	0,297	-0,076	0,576
2 154,70	29,85	34,79	2 069,49	363,63	49,50	313,35	0,337	0,037	-0,673
2 194,30	29,84	36,98	2 103,84	379,59	61,05	323,73	0,826	-0,008	1,659
2 234,70	29,79	38,27	2 138,89	395,50	73,31	333,80	0,478	-0,037	0,958
2 275,10	30,01	37,36	2 173,92	411,41	85,66	343,83	0,374	0,163	-0,676
2 305,90	29,96	35,61	2 200,60	423,78	94,81	351,80	0,853	-0,049	-1,705
2 396,50	30,06	35,35	2 279,05	460,68	121,11	375,96	0,054	0,033	-0,086
2 436,70	30,19	35,59	2 313,82	477,12	132,82	386,72	0,132	0,097	0,179
2 470,80	30,22	36,84	2 343,29	490,96	142,95	395,67	0,554	0,026	1,100
2 517,20	30,25	36,59	2 383,38	509,69	156,92	407,70	0,084	0,019	-0,162
2 557,90	30,19	34,71	2 418,55	526,33	168,86	418,56	0,699	-0,044	-1,386
2 587,00	30,19	33,06	2 443,70	538,48	177,02	426,71	0,855	0,000	-1,701
2 621,10	29,93	25,32	2 473,23	553,36	185,34	437,31	3,417	-0,229	-6,809
2 647,40	28,62	18,88	2 496,17	565,25	190,18	446,48	3,889	-1,494	-7,346
2 688,10	27,17	11,08	2 532,16	583,60	195,12	461,58	2,892	-1,069	-5,749
2 727,50	26,91	3,24	2 567,26	601,34	197,36	477,14	2,719	-0,198	-5,970
2 768,60	26,81	353,59	2 603,94	619,84	196,85	494,45	3,180	-0,073	-7,044
2 809,10	28,15	343,98	2 639,89	638,11	193,19	512,74	3,428	0,993	-7,119
2 849,40	30,20	333,38	2 675,10	656,32	186,02	532,32	4,132	1,526	-7,891
2 889,60	32,18	322,06	2 709,52	673,82	174,90	552,73	4,611	1,478	-8,448
2 930,40	34,72	315,89	2 743,57	690,74	160,12	573,99	3,119	1,868	-4,537
2 970,70	38,45	310,87	2 775,93	707,19	142,65	595,84	3,558	2,777	-3,737
3 010,90	42,29	305,91	2 806,56	723,31	122,23	618,50	3,735	2,866	-3,701
3 051,00	45,11	300,16	2 835,56	738,37	99,01	641,25	3,643	2,110	-4,302
3 091,40	48,20	296,12	2 863,29	752,20	73,10	663,88	3,165	2,295	-3,000
3 130,50	53,44	294,14	2 887,99	765,04	45,66	686,18	4,189	4,020	-1,519
3 171,20	57,55	289,29	2 911,05	777,41	14,51	709,44	4,224	3,029	-3,575
3 212,10	62,02	285,32	2 931,63	787,89	-19,22	731,95	4,132	3,279	-2,912
3 251,60	63,21	281,36	2 949,80	795,98	-53,34	752,38	2,819	0,904	-3,008
3 292,00	58,32	281,29	2 969,53	802,90	-87,89	771,90	3,631	-3,631	-0,052
3 333,10	53,03	282,89	2 992,70	809,99	-121,07	791,05	3,980	-3,861	1,168

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
3 373,40	46,91	287,36	3 018,61	817,98	-150,85	809,75	5,218	-4,556	3,328
3 413,80	44,30	285,04	3 046,88	826,05	-178,56	827,73	2,296	-1,938	-1,723
3 454,10	43,58	283,54	3 075,90	832,95	-205,66	844,40	0,942	-0,536	-1,117
3 494,30	44,11	283,07	3 104,89	839,36	-232,76	860,62	0,464	0,396	-0,351
3 534,60	44,10	283,10	3 133,83	845,71	-260,08	876,86	0,017	-0,007	0,022
3 574,30	44,13	283,44	3 162,33	852,05	-286,97	892,94	0,180	0,023	0,257
3 615,20	44,05	284,07	3 191,70	858,82	-314,61	909,69	0,327	-0,059	0,462
3 655,40	44,08	285,06	3 220,59	865,85	-341,67	926,47	0,514	0,022	0,739
3 671,10	44,05	285,44	3 231,87	868,72	-352,21	933,13	0,508	-0,057	0,726
3 682,00	44,05	285,44	3 239,71	870,74	-359,51	937,77	0,000	0,000	0,000

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 682,00	3 239,71	870,74	-359,51	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Norway

SLEIPNER
Volve F
F-1

F-1 A

Design: F-1 A

Survey Report - Geographic

17 september, 2013

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 A			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	GNETICREFERENCE	18.08.2013	-1,14	71,62	50 520

Design	F-1 A				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	337,69

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 621,10	3 671,10	15/9 F-1 A 8 1/2" Pilot AutoTrak (F-1 A)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
145,90	0,00	0,00	145,90	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
150,15	0,00	0,00	150,15	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
160,45	0,00	0,00	160,45	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
170,04	0,00	0,00	170,04	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
179,79	0,00	0,00	179,79	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
189,74	0,00	0,00	189,74	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
198,50	0,00	0,00	198,50	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
210,70	0,00	0,00	210,70	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
237,60	1,84	302,24	237,60	3,40	-3,90	6 478 566,92	435 046,12	58° 26' 29,914 N	1° 53' 14,685 E
251,10	1,91	304,70	251,09	3,64	-4,27	6 478 567,17	435 045,75	58° 26' 29,922 N	1° 53' 14,662 E
264,90	2,47	305,76	264,88	3,94	-4,70	6 478 567,47	435 045,32	58° 26' 29,932 N	1° 53' 14,635 E
279,20	2,05	306,81	279,17	4,28	-5,15	6 478 567,80	435 044,87	58° 26' 29,942 N	1° 53' 14,607 E
292,70	1,80	304,00	292,66	4,54	-5,52	6 478 568,07	435 044,50	58° 26' 29,951 N	1° 53' 14,584 E
302,80	1,13	330,72	302,76	4,72	-5,70	6 478 568,24	435 044,32	58° 26' 29,956 N	1° 53' 14,572 E
315,50	1,41	333,18	315,45	4,96	-5,83	6 478 568,49	435 044,19	58° 26' 29,964 N	1° 53' 14,564 E
332,20	2,40	314,19	332,14	5,39	-6,18	6 478 568,92	435 043,85	58° 26' 29,978 N	1° 53' 14,542 E
342,20	2,78	301,18	342,13	5,66	-6,54	6 478 569,19	435 043,49	58° 26' 29,986 N	1° 53' 14,520 E
358,50	3,30	293,10	358,41	6,05	-7,30	6 478 569,58	435 042,72	58° 26' 29,998 N	1° 53' 14,472 E
378,00	3,07	298,60	377,88	6,52	-8,28	6 478 570,05	435 041,74	58° 26' 30,013 N	1° 53' 14,412 E
414,80	3,30	293,64	414,62	7,42	-10,11	6 478 570,94	435 039,91	58° 26' 30,041 N	1° 53' 14,298 E
455,40	3,07	292,72	455,16	8,31	-12,19	6 478 571,83	435 037,84	58° 26' 30,069 N	1° 53' 14,169 E
495,40	2,84	290,41	495,11	9,07	-14,10	6 478 572,59	435 035,92	58° 26' 30,092 N	1° 53' 14,050 E
535,60	2,77	293,07	535,26	9,79	-15,93	6 478 573,32	435 034,09	58° 26' 30,115 N	1° 53' 13,937 E
575,80	3,06	287,04	575,41	10,49	-17,85	6 478 574,01	435 032,18	58° 26' 30,136 N	1° 53' 13,818 E
616,50	4,01	305,32	616,03	11,63	-20,05	6 478 575,15	435 029,98	58° 26' 30,172 N	1° 53' 13,681 E
656,80	6,13	317,80	656,17	14,04	-22,65	6 478 577,56	435 027,38	58° 26' 30,248 N	1° 53' 13,518 E
697,10	8,24	324,71	696,15	17,99	-25,76	6 478 581,51	435 024,27	58° 26' 30,374 N	1° 53' 13,323 E
720,00	9,57	322,37	718,78	20,84	-27,87	6 478 584,36	435 022,16	58° 26' 30,465 N	1° 53' 13,190 E
737,40	10,71	320,81	735,91	23,24	-29,78	6 478 586,76	435 020,25	58° 26' 30,542 N	1° 53' 13,070 E
756,80	10,39	320,18	754,98	25,98	-32,04	6 478 589,50	435 018,00	58° 26' 30,629 N	1° 53' 12,928 E
798,90	9,88	320,50	796,42	31,68	-36,76	6 478 595,20	435 013,27	58° 26' 30,811 N	1° 53' 12,630 E
838,30	10,04	315,72	835,23	36,75	-41,31	6 478 600,26	435 008,72	58° 26' 30,972 N	1° 53' 12,345 E
868,00	11,16	309,73	864,42	40,44	-45,33	6 478 603,95	435 004,71	58° 26' 31,089 N	1° 53' 12,094 E
878,20	11,28	310,41	874,43	41,72	-46,85	6 478 605,23	435 003,19	58° 26' 31,130 N	1° 53' 11,999 E
918,00	10,70	315,76	913,50	46,89	-52,39	6 478 610,40	434 997,65	58° 26' 31,294 N	1° 53' 11,652 E
999,00	8,88	319,88	993,32	57,06	-61,67	6 478 620,56	434 988,38	58° 26' 31,618 N	1° 53' 11,070 E
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	6 478 630,23	434 980,30	58° 26' 31,926 N	1° 53' 10,562 E
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	6 478 635,38	434 975,28	58° 26' 32,090 N	1° 53' 10,248 E
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	6 478 640,59	434 969,04	58° 26' 32,255 N	1° 53' 9,857 E
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	6 478 645,60	434 962,55	58° 26' 32,413 N	1° 53' 9,452 E
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	6 478 650,87	434 955,95	58° 26' 32,580 N	1° 53' 9,040 E
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	6 478 656,31	434 949,34	58° 26' 32,752 N	1° 53' 8,627 E
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	6 478 661,49	434 943,16	58° 26' 32,916 N	1° 53' 8,240 E
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	6 478 663,03	434 941,31	58° 26' 32,965 N	1° 53' 8,125 E
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	6 478 668,88	434 936,07	58° 26' 33,151 N	1° 53' 7,796 E
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	6 478 674,84	434 933,79	58° 26' 33,343 N	1° 53' 7,649 E
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	6 478 682,62	434 933,36	58° 26' 33,594 N	1° 53' 7,615 E
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	6 478 691,25	434 935,66	58° 26' 33,874 N	1° 53' 7,747 E
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	6 478 700,81	434 940,42	58° 26' 34,186 N	1° 53' 8,031 E
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	6 478 710,05	434 946,05	58° 26' 34,487 N	1° 53' 8,369 E
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	6 478 721,06	434 953,25	58° 26' 34,847 N	1° 53' 8,802 E
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	6 478 731,55	434 960,25	58° 26' 35,190 N	1° 53' 9,222 E
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	6 478 748,09	434 971,29	58° 26' 35,731 N	1° 53' 9,886 E
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	6 478 763,39	434 982,08	58° 26' 36,231 N	1° 53' 10,536 E
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	6 478 779,35	434 993,88	58° 26' 36,753 N	1° 53' 11,247 E
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	6 478 795,70	435 006,01	58° 26' 37,288 N	1° 53' 11,978 E
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	6 478 811,75	435 017,98	58° 26' 37,814 N	1° 53' 12,700 E
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	6 478 828,08	435 029,88	58° 26' 38,348 N	1° 53' 13,417 E
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	6 478 844,59	435 041,48	58° 26' 38,888 N	1° 53' 14,115 E
1 992,80	29,92	35,24	1 929,10	297,71	3,06	6 478 861,14	435 053,08	58° 26' 39,429 N	1° 53' 14,813 E
2 027,30	29,89	35,13	1 959,01	311,77	12,97	6 478 875,19	435 062,98	58° 26' 39,888 N	1° 53' 15,410 E
2 066,30	29,92	34,80	1 992,82	327,70	24,11	6 478 891,12	435 074,12	58° 26' 40,409 N	1° 53' 16,080 E

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
2 113,70	29,80	35,71	2 033,92	346,98	37,73	6 478 910,38	435 087,74	58° 26' 41,039 N	1° 53' 16,900 E
2 154,70	29,85	34,79	2 069,49	363,63	49,50	6 478 927,03	435 099,50	58° 26' 41,584 N	1° 53' 17,609 E
2 194,30	29,84	36,98	2 103,84	379,59	61,05	6 478 942,99	435 111,05	58° 26' 42,106 N	1° 53' 18,304 E
2 234,70	29,79	38,27	2 138,89	395,50	73,31	6 478 958,89	435 123,31	58° 26' 42,626 N	1° 53' 19,044 E
2 275,10	30,01	37,36	2 173,92	411,41	85,66	6 478 974,79	435 135,65	58° 26' 43,147 N	1° 53' 19,788 E
2 305,90	29,96	35,61	2 200,60	423,78	94,81	6 478 987,16	435 144,80	58° 26' 43,552 N	1° 53' 20,340 E
2 396,50	30,06	35,35	2 279,05	460,68	121,11	6 479 024,05	435 171,09	58° 26' 44,758 N	1° 53' 21,923 E
2 436,70	30,19	35,59	2 313,82	477,12	132,82	6 479 040,48	435 182,79	58° 26' 45,296 N	1° 53' 22,628 E
2 470,80	30,22	36,84	2 343,29	490,96	142,95	6 479 054,31	435 192,92	58° 26' 45,748 N	1° 53' 23,239 E
2 517,20	30,25	36,59	2 383,38	509,69	156,92	6 479 073,04	435 206,89	58° 26' 46,361 N	1° 53' 24,081 E
2 557,90	30,19	34,71	2 418,55	526,33	168,86	6 479 089,67	435 218,82	58° 26' 46,905 N	1° 53' 24,800 E
2 587,00	30,19	33,06	2 443,70	538,48	177,02	6 479 101,82	435 226,98	58° 26' 47,302 N	1° 53' 25,290 E
2 621,10	29,93	25,32	2 473,23	553,36	185,34	6 479 116,69	435 235,29	58° 26' 47,787 N	1° 53' 25,788 E
2 647,40	28,62	18,88	2 496,17	565,25	190,18	6 479 128,58	435 240,14	58° 26' 48,174 N	1° 53' 26,074 E
2 688,10	27,17	11,08	2 532,16	583,60	195,12	6 479 146,93	435 245,08	58° 26' 48,770 N	1° 53' 26,360 E
2 727,50	26,91	3,24	2 567,26	601,34	197,36	6 479 164,66	435 247,31	58° 26' 49,344 N	1° 53' 26,480 E
2 768,60	26,81	353,59	2 603,94	619,84	196,85	6 479 183,15	435 246,80	58° 26' 49,942 N	1° 53' 26,430 E
2 809,10	28,15	343,98	2 639,89	638,11	193,19	6 479 201,42	435 243,14	58° 26' 50,530 N	1° 53' 26,186 E
2 849,40	30,20	333,38	2 675,10	656,32	186,02	6 479 219,62	435 235,98	58° 26' 51,115 N	1° 53' 25,725 E
2 889,60	32,18	322,06	2 709,52	673,82	174,90	6 479 237,12	435 224,86	58° 26' 51,674 N	1° 53' 25,022 E
2 930,40	34,72	315,89	2 743,57	690,74	160,12	6 479 254,03	435 210,09	58° 26' 52,213 N	1° 53' 24,094 E
2 970,70	38,45	310,87	2 775,93	707,19	142,65	6 479 270,47	435 192,62	58° 26' 52,735 N	1° 53' 23,000 E
3 010,90	42,29	305,91	2 806,56	723,31	122,23	6 479 286,59	435 172,21	58° 26' 53,246 N	1° 53' 21,725 E
3 051,00	45,11	300,16	2 835,56	738,37	99,01	6 479 301,64	435 148,99	58° 26' 53,720 N	1° 53' 20,278 E
3 091,40	48,20	296,12	2 863,29	752,20	73,10	6 479 315,46	435 123,10	58° 26' 54,153 N	1° 53' 18,667 E
3 130,50	53,44	294,14	2 887,99	765,04	45,66	6 479 328,31	435 095,67	58° 26' 54,553 N	1° 53' 16,963 E
3 171,20	57,55	289,29	2 911,05	777,41	14,51	6 479 340,67	435 064,53	58° 26' 54,936 N	1° 53' 15,030 E
3 212,10	62,02	285,32	2 931,63	787,89	-19,22	6 479 351,15	435 030,81	58° 26' 55,257 N	1° 53' 12,940 E
3 251,60	63,21	281,36	2 949,80	795,98	-53,34	6 479 359,23	434 996,70	58° 26' 55,500 N	1° 53' 10,829 E
3 292,00	58,32	281,29	2 969,53	802,90	-87,89	6 479 366,15	434 962,16	58° 26' 55,705 N	1° 53' 8,692 E
3 333,10	53,03	282,89	2 992,70	809,99	-121,07	6 479 373,24	434 928,99	58° 26' 55,916 N	1° 53' 6,639 E
3 373,40	46,91	287,36	3 018,61	817,98	-150,85	6 479 381,23	434 899,22	58° 26' 56,159 N	1° 53' 4,796 E
3 413,80	44,30	285,04	3 046,88	826,05	-178,56	6 479 389,29	434 871,52	58° 26' 56,404 N	1° 53' 3,079 E
3 454,10	43,58	283,54	3 075,90	832,95	-205,66	6 479 396,19	434 844,44	58° 26' 56,613 N	1° 53' 1,402 E
3 494,30	44,11	283,07	3 104,89	839,36	-232,76	6 479 402,59	434 817,35	58° 26' 56,805 N	1° 52' 59,725 E
3 534,60	44,10	283,10	3 133,83	845,71	-260,08	6 479 408,94	434 790,04	58° 26' 56,996 N	1° 52' 58,034 E
3 574,30	44,13	283,44	3 162,33	852,05	-286,97	6 479 415,28	434 763,15	58° 26' 57,187 N	1° 52' 56,370 E
3 615,20	44,05	284,07	3 191,70	858,82	-314,61	6 479 422,05	434 735,52	58° 26' 57,390 N	1° 52' 54,659 E
3 655,40	44,08	285,06	3 220,59	865,85	-341,67	6 479 429,08	434 708,47	58° 26' 57,603 N	1° 52' 52,984 E
3 671,10	44,05	285,44	3 231,87	868,72	-352,21	6 479 431,95	434 697,94	58° 26' 57,690 N	1° 52' 52,331 E
3 682,00	44,05	285,44	3 239,71	870,74	-359,51	6 479 433,96	434 690,63	58° 26' 57,751 N	1° 52' 51,879 E

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Database:**	Production EDM P246N

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 682,00	3 239,71	870,74	-359,51	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Norway

SLEIPNER
Volve F
F-1

F-1 A

Design: F-1 A

Error Ellipse Survey Report

17 september, 2013

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 A			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	ɜNETICREFERENCE	18.08.2013	-1,14	71,62	50 520

Design	F-1 A				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	337,69

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 621,10	3 671,10	15/9 F-1 A 8 1/2" Pilot AutoTrak (F-1 A)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
145,90	0,00	0,00	145,90	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	UNDEFINED
150,15	0,00	0,00	150,15	0,01	0,00	0,01	0,00	1,77	0,00	0,00	0,01	0,01	0,00	Magnetic, old (1)
160,45	0,00	0,00	160,45	0,05	0,00	0,05	0,00	1,78	0,00	0,00	0,05	0,05	0,00	Magnetic, old (1)
170,04	0,00	0,00	170,04	0,10	0,00	0,10	0,00	1,79	0,00	0,00	0,10	0,10	0,00	Magnetic, old (1)
179,79	0,00	0,00	179,79	0,14	0,00	0,14	0,00	1,79	0,00	0,00	0,14	0,14	0,00	Magnetic, old (1)
189,74	0,00	0,00	189,74	0,18	0,00	0,18	0,00	1,80	0,00	0,00	0,18	0,18	0,00	Magnetic, old (1)

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
198,50	0,00	0,00	198,50	0,22	0,00	0,22	0,00	1,81	0,00	0,00	0,22	0,22	0,00	Magnetic, old (1)
210,70	0,00	0,00	210,70	0,27	0,00	0,27	0,00	1,82	0,00	0,00	0,27	0,27	0,00	Magnetic, old (1)
237,60	1,84	302,24	237,60	0,34	0,00	0,34	0,00	0,93	0,00	0,00	0,34	0,34	45,00	MWD gyro, Baker Hughes (2)
251,10	1,91	304,70	251,09	0,36	0,00	0,35	0,00	0,93	0,00	0,00	0,36	0,35	33,10	MWD gyro, Baker Hughes (2)
264,90	2,47	305,76	264,88	0,38	0,00	0,38	0,00	0,94	0,00	0,00	0,38	0,38	45,00	MWD gyro, Baker Hughes (2)
279,20	2,05	306,81	279,17	0,42	0,00	0,42	0,00	0,95	0,00	0,00	0,42	0,42	45,00	MWD gyro, Baker Hughes (2)
292,70	1,80	304,00	292,66	0,45	0,00	0,46	0,00	0,96	0,00	0,00	0,46	0,45	135,00	MWD gyro, Baker Hughes (2)
302,80	1,13	330,72	302,76	0,49	0,00	0,49	0,00	0,97	0,00	0,00	0,49	0,49	135,00	MWD gyro, Baker Hughes (2)
315,50	1,41	333,18	315,45	0,53	0,00	0,53	0,00	0,98	0,00	0,00	0,53	0,53	78,49	MWD gyro, Baker Hughes (2)
332,20	2,40	314,19	332,14	0,59	0,00	0,59	0,00	0,99	0,00	0,00	0,59	0,59	76,58	MWD gyro, Baker Hughes (2)
342,20	2,78	301,18	342,13	0,62	0,00	0,63	0,00	1,00	0,00	0,00	0,63	0,62	102,18	MWD gyro, Baker Hughes (2)
358,50	3,30	293,10	358,41	0,69	0,00	0,69	0,00	1,01	0,00	0,00	0,69	0,69	120,49	MWD gyro, Baker Hughes (2)
378,00	3,07	298,60	377,88	0,73	0,00	0,74	0,00	2,05	0,00	0,00	0,74	0,74	125,55	Gyro, old (3)
414,80	3,30	293,64	414,62	0,83	0,00	0,86	0,00	2,11	0,00	0,00	0,86	0,83	117,19	Gyro, old (3)
455,40	3,07	292,72	455,16	1,04	0,00	1,10	0,00	2,19	0,00	0,00	1,10	1,05	115,37	Gyro, old (3)
495,40	2,84	290,41	495,11	1,32	0,00	1,40	0,00	2,27	0,00	0,00	1,40	1,32	114,24	Gyro, old (3)
535,60	2,77	293,07	535,26	1,62	0,00	1,72	0,00	2,35	0,00	0,00	1,72	1,62	113,65	Gyro, old (3)
575,80	3,06	287,04	575,41	1,94	0,00	2,06	0,00	2,44	0,00	0,00	2,06	1,93	112,95	Gyro, old (3)
616,50	4,01	305,32	616,03	2,27	0,00	2,41	0,00	2,54	0,00	0,00	2,42	2,26	113,70	Gyro, old (3)
656,80	6,13	317,80	656,17	2,62	0,00	2,78	0,00	2,63	0,00	0,00	2,80	2,60	117,68	Gyro, old (3)
697,10	8,24	324,71	696,15	2,97	0,00	3,19	0,00	2,73	0,00	0,00	3,23	2,93	123,60	Gyro, old (3)
720,00	9,57	322,37	718,78	3,14	0,00	3,46	0,00	2,79	0,00	0,00	3,49	3,13	126,49	Gyro, old (3)
737,40	10,71	320,81	735,91	3,28	0,00	3,68	0,00	2,83	0,00	0,00	3,70	3,27	128,30	Gyro, old (3)
756,80	10,39	320,18	754,98	3,36	0,00	3,81	0,00	1,47	0,00	0,00	3,83	3,34	129,30	Magnetic, IFR, mag-corr (4)
798,90	9,88	320,50	796,42	3,37	0,00	3,82	0,00	1,53	0,00	0,00	3,83	3,35	129,37	Magnetic, IFR, mag-corr (4)
838,30	10,04	315,72	835,23	3,37	0,00	3,85	0,00	1,58	0,00	0,00	3,85	3,36	129,48	Magnetic, IFR, mag-corr (4)
868,00	11,16	309,73	864,42	3,38	0,00	3,87	0,00	1,63	0,00	0,00	3,87	3,38	129,58	Magnetic, IFR, mag-corr (4)
878,20	11,28	310,41	874,43	3,39	0,00	3,88	0,00	1,64	0,00	0,00	3,88	3,39	129,62	Magnetic, IFR, mag-corr (4)
918,00	10,70	315,76	913,50	3,43	0,00	3,91	0,00	1,70	0,00	0,00	3,92	3,42	129,72	Magnetic, IFR, mag-corr (4)
999,00	8,88	319,88	993,32	3,54	0,00	4,01	0,00	1,83	0,00	0,00	4,02	3,51	130,07	Magnetic, IFR, mag-corr (4)
1 079,80	9,07	320,34	1 073,13	3,67	0,00	4,15	0,00	1,97	0,00	0,00	4,16	3,64	130,56	Magnetic, IFR, mag-corr (4)
1 120,40	11,38	312,16	1 113,08	3,72	0,00	4,24	0,00	2,04	0,00	0,00	4,24	3,71	130,81	Magnetic, IFR, mag-corr (4)
1 160,80	11,86	307,61	1 152,65	3,80	0,00	4,33	0,00	2,11	0,00	0,00	4,34	3,79	130,97	Magnetic, IFR, mag-corr (4)
1 201,00	11,69	307,74	1 192,01	3,89	0,00	4,44	0,00	2,18	0,00	0,00	4,44	3,88	131,02	Magnetic, IFR, mag-corr (4)
1 241,40	12,44	309,36	1 231,51	3,98	0,00	4,55	0,00	2,26	0,00	0,00	4,55	3,97	131,07	Magnetic, IFR, mag-corr (4)
1 281,80	12,06	309,62	1 270,99	4,08	0,00	4,66	0,00	2,34	0,00	0,00	4,66	4,06	131,12	Magnetic, IFR, mag-corr (4)
1 322,40	10,85	310,25	1 310,79	4,19	0,00	4,79	0,00	2,42	0,00	0,00	4,79	4,17	131,17	Magnetic, IFR, mag-corr (4)
1 335,60	10,17	309,34	1 323,76	4,22	0,00	4,83	0,00	2,45	0,00	0,00	4,83	4,20	131,18	Magnetic, IFR, mag-corr (4)
1 387,10	7,66	329,93	1 374,65	4,36	0,00	4,85	0,00	2,55	0,00	0,00	4,91	4,27	131,28	gn, IFR, mag-corr, dual incl (5)
1 428,00	10,47	345,74	1 415,04	4,50	0,00	4,74	0,00	2,63	0,00	0,00	4,93	4,28	131,55	gn, IFR, mag-corr, dual incl (5)
1 468,30	12,18	6,35	1 454,57	4,71	0,00	4,53	0,00	2,71	0,00	0,00	4,96	4,30	132,11	gn, IFR, mag-corr, dual incl (5)
1 508,70	13,62	22,56	1 493,96	4,84	0,00	4,41	0,00	2,79	0,00	0,00	4,99	4,32	133,04	gn, IFR, mag-corr, dual incl (5)
1 551,30	15,49	29,92	1 535,20	4,87	0,00	4,40	0,00	2,87	0,00	0,00	5,02	4,36	134,31	gn, IFR, mag-corr, dual incl (5)
1 589,10	17,80	32,61	1 571,41	4,87	0,00	4,44	0,00	2,95	0,00	0,00	5,06	4,41	135,67	gn, IFR, mag-corr, dual incl (5)
1 629,50	20,24	33,68	1 609,60	4,87	0,00	4,51	0,00	3,03	0,00	0,00	5,10	4,47	137,47	gn, IFR, mag-corr, dual incl (5)
1 663,40	23,45	33,72	1 641,07	4,84	0,00	4,58	0,00	3,10	0,00	0,00	5,14	4,53	139,40	gn, IFR, mag-corr, dual incl (5)
1 710,40	26,64	33,77	1 683,64	4,82	0,00	4,71	0,00	3,20	0,00	0,00	5,21	4,64	143,10	gn, IFR, mag-corr, dual incl (5)
1 750,30	29,38	36,44	1 718,87	4,81	0,00	4,82	0,00	3,28	0,00	0,00	5,28	4,75	147,55	gn, IFR, mag-corr, dual incl (5)
1 790,40	29,98	36,55	1 753,70	4,85	0,00	4,98	0,00	3,37	0,00	0,00	5,36	4,88	153,67	gn, IFR, mag-corr, dual incl (5)
1 831,10	30,06	36,61	1 788,94	4,91	0,00	5,16	0,00	3,46	0,00	0,00	5,46	5,00	161,62	gn, IFR, mag-corr, dual incl (5)
1 871,10	30,03	36,77	1 823,57	4,97	0,00	5,35	0,00	3,55	0,00	0,00	5,58	5,12	170,48	gn, IFR, mag-corr, dual incl (5)
1 911,60	29,86	35,39	1 858,66	5,04	0,00	5,56	0,00	3,65	0,00	0,00	5,74	5,23	178,97	gn, IFR, mag-corr, dual incl (5)
1 952,20	29,78	34,81	1 893,89	5,12	0,00	5,79	0,00	3,75	0,00	0,00	5,92	5,32	5,80	gn, IFR, mag-corr, dual incl (5)
1 992,80	29,92	35,24	1 929,10	5,20	0,00	6,02	0,00	3,86	0,00	0,00	6,13	5,41	10,92	gn, IFR, mag-corr, dual incl (5)

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
2 027,30	29,89	35,13	1 959,01	5,27	0,00	6,22	0,00	3,95	0,00	0,00	6,32	5,48	14,22	in, IFR, mag-corr, dual incl (5)
2 066,30	29,92	34,80	1 992,82	5,35	0,00	6,46	0,00	4,05	0,00	0,00	6,55	5,56	17,07	in, IFR, mag-corr, dual incl (5)
2 113,70	29,80	35,71	2 033,92	5,46	0,00	6,76	0,00	4,17	0,00	0,00	6,84	5,66	19,69	in, IFR, mag-corr, dual incl (5)
2 154,70	29,85	34,79	2 069,49	5,55	0,00	7,03	0,00	4,29	0,00	0,00	7,10	5,75	21,43	in, IFR, mag-corr, dual incl (5)
2 194,30	29,84	36,98	2 103,84	5,66	0,00	7,28	0,00	4,40	0,00	0,00	7,36	5,84	22,82	in, IFR, mag-corr, dual incl (5)
2 234,70	29,79	38,27	2 138,89	5,77	0,00	7,54	0,00	4,51	0,00	0,00	7,63	5,93	24,10	in, IFR, mag-corr, dual incl (5)
2 275,10	30,01	37,36	2 173,92	5,86	0,00	7,83	0,00	4,63	0,00	0,00	7,91	6,02	25,20	in, IFR, mag-corr, dual incl (5)
2 305,90	29,96	35,61	2 200,60	5,93	0,00	8,07	0,00	4,72	0,00	0,00	8,12	6,09	25,87	in, IFR, mag-corr, dual incl (5)
2 396,50	30,06	35,35	2 279,05	6,17	0,00	8,73	0,00	4,99	0,00	0,00	8,77	6,31	27,29	in, IFR, mag-corr, dual incl (5)
2 436,70	30,19	35,59	2 313,82	6,28	0,00	9,02	0,00	5,11	0,00	0,00	9,06	6,41	27,79	in, IFR, mag-corr, dual incl (5)
2 470,80	30,22	36,84	2 343,29	6,39	0,00	9,26	0,00	5,21	0,00	0,00	9,32	6,50	28,20	in, IFR, mag-corr, dual incl (5)
2 517,20	30,25	36,59	2 383,38	6,53	0,00	9,62	0,00	5,36	0,00	0,00	9,67	6,62	28,73	in, IFR, mag-corr, dual incl (5)
2 557,90	30,19	34,71	2 418,55	6,63	0,00	9,95	0,00	5,48	0,00	0,00	9,97	6,72	29,09	in, IFR, mag-corr, dual incl (5)
2 587,00	30,19	33,06	2 443,70	6,70	0,00	10,18	0,00	5,58	0,00	0,00	10,20	6,80	29,27	in, IFR, mag-corr, dual incl (5)
2 621,10	29,93	25,32	2 473,23	6,77	0,00	10,35	0,00	5,67	0,00	0,00	10,36	6,85	29,31	in, IFR, mag-corr, dual incl (6)
2 647,40	28,62	18,88	2 496,17	6,89	0,00	10,33	0,00	5,74	0,00	0,00	10,42	6,86	29,21	in, IFR, mag-corr, dual incl (6)
2 688,10	27,17	11,08	2 532,16	7,15	0,00	10,23	0,00	5,85	0,00	0,00	10,52	6,88	28,94	in, IFR, mag-corr, dual incl (6)
2 727,50	26,91	3,24	2 567,26	7,49	0,00	10,03	0,00	5,95	0,00	0,00	10,61	6,91	28,58	in, IFR, mag-corr, dual incl (6)
2 768,60	26,81	353,59	2 603,94	7,99	0,00	9,65	0,00	6,06	0,00	0,00	10,70	6,95	28,08	in, IFR, mag-corr, dual incl (6)
2 809,10	28,15	343,98	2 639,89	8,49	0,00	9,19	0,00	6,18	0,00	0,00	10,79	6,99	27,46	in, IFR, mag-corr, dual incl (6)
2 849,40	30,20	333,38	2 675,10	8,96	0,00	8,61	0,00	6,29	0,00	0,00	10,87	7,04	26,69	in, IFR, mag-corr, dual incl (6)
2 889,60	32,18	322,06	2 709,52	9,36	0,00	8,01	0,00	6,40	0,00	0,00	10,94	7,11	25,76	in, IFR, mag-corr, dual incl (6)
2 930,40	34,72	315,89	2 743,57	9,44	0,00	7,80	0,00	6,50	0,00	0,00	11,01	7,19	24,67	in, IFR, mag-corr, dual incl (6)
2 970,70	38,45	310,87	2 775,93	9,35	0,00	7,72	0,00	6,61	0,00	0,00	11,08	7,30	23,43	in, IFR, mag-corr, dual incl (6)
3 010,90	42,29	305,91	2 806,56	9,21	0,00	7,71	0,00	6,71	0,00	0,00	11,14	7,45	22,00	in, IFR, mag-corr, dual incl (6)
3 051,00	45,11	300,16	2 835,56	9,11	0,00	7,75	0,00	6,81	0,00	0,00	11,19	7,63	20,36	in, IFR, mag-corr, dual incl (6)
3 091,40	48,20	296,12	2 863,29	8,95	0,00	7,94	0,00	6,90	0,00	0,00	11,24	7,86	18,47	in, IFR, mag-corr, dual incl (6)
3 130,50	53,44	294,14	2 887,99	8,60	0,00	8,23	0,00	6,98	0,00	0,00	11,28	8,16	16,23	in, IFR, mag-corr, dual incl (6)
3 171,20	57,55	289,29	2 911,05	8,35	0,00	8,62	0,00	7,06	0,00	0,00	11,33	8,58	13,21	in, IFR, mag-corr, dual incl (6)
3 212,10	62,02	285,32	2 931,63	8,09	0,00	9,18	0,00	7,14	0,00	0,00	11,38	9,15	8,81	in, IFR, mag-corr, dual incl (6)
3 251,60	63,21	281,36	2 949,80	8,06	0,00	9,89	0,00	7,20	0,00	0,00	11,45	9,84	1,43	in, IFR, mag-corr, dual incl (6)
3 292,00	58,32	281,29	2 969,53	8,41	0,00	10,69	0,00	7,28	0,00	0,00	11,60	10,49	166,66	in, IFR, mag-corr, dual incl (6)
3 333,10	53,03	282,89	2 992,70	8,80	0,00	11,44	0,00	7,38	0,00	0,00	11,96	10,86	147,01	in, IFR, mag-corr, dual incl (6)
3 373,40	46,91	287,36	3 018,61	9,21	0,00	12,13	0,00	7,49	0,00	0,00	12,44	11,00	135,58	in, IFR, mag-corr, dual incl (6)
3 413,80	44,30	285,04	3 046,88	9,46	0,00	12,61	0,00	7,61	0,00	0,00	12,92	11,07	130,03	in, IFR, mag-corr, dual incl (6)
3 454,10	43,58	283,54	3 075,90	9,59	0,00	13,08	0,00	7,73	0,00	0,00	13,40	11,12	126,44	in, IFR, mag-corr, dual incl (6)
3 494,30	44,11	283,07	3 104,89	9,61	0,00	13,58	0,00	7,85	0,00	0,00	13,89	11,16	123,81	in, IFR, mag-corr, dual incl (6)
3 534,60	44,10	283,10	3 133,83	9,66	0,00	14,11	0,00	7,97	0,00	0,00	14,40	11,21	121,80	in, IFR, mag-corr, dual incl (6)
3 574,30	44,13	283,44	3 162,33	9,70	0,00	14,65	0,00	8,09	0,00	0,00	14,92	11,25	120,27	in, IFR, mag-corr, dual incl (6)
3 615,20	44,05	284,07	3 191,70	9,74	0,00	15,22	0,00	8,22	0,00	0,00	15,46	11,29	119,04	in, IFR, mag-corr, dual incl (6)
3 655,40	44,08	285,06	3 220,59	9,77	0,00	15,80	0,00	8,34	0,00	0,00	16,00	11,33	118,11	in, IFR, mag-corr, dual incl (6)
3 671,10	44,05	285,44	3 231,87	9,78	0,00	16,03	0,00	8,39	0,00	0,00	16,22	11,35	117,80	in, IFR, mag-corr, dual incl (6)
3 682,00	44,05	285,44	3 239,71	9,80	0,00	16,17	0,00	8,43	0,00	0,00	16,36	11,36	117,60	PROJECTED to TD

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 A	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 A	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 682,00	3 239,71	870,74	-359,51	Projection to TD.

Checked By: _____ Approved By: _____ Date: _____

Quality Control - Compass Database

Date: 17.09.2013

This document shall be initiated by MWD/DD contractor as part of the well planning process, and the various control points shall be signed out when planning is finished, after each section, and when the well is finished. Designated Statoil representative signs after controlling each checkpoint.
When finished the document shall be archieved as an attachment to the Wellbore in Compass

Asset:	Volve	Contractor:	Baker Hughes
Platform/Rig:	Maersk Inspirer	Statoil Eng:	Per Hagum
Well:	15/9-F-1B	Contractor rep:	Øyvin Johnsen
MSL	91		
Wellhead Cor:	North: 6478566,69	East: 435046,49	

Pre well planning	Y/N
Principal plan accepted, given revision number and locked for editing	Yes
Survey program and casings checked	Yes
Anti-collision scan (Global filter)	Yes
Compass locked at all levels	Yes
Wall plots checked and signed	Yes
Geomagnetic References checked and signed off	Yes

	Sign Øyvin Johnsen	Sign Statoil
Planning completed	Øyvin Johnsen	

Sectionwise quality control
For each survey entered in Compass, sign for performed quality control
- Compass survey file identical to MWD/Gyro-contractors survey list
- New survey correctly tied
- New survey locked
- Actual design: Bottom line verified identical to Contractors bottom line
- If applicable, main bore/branches updated with new survey

Post well quality control Compass Database:	Y/N
- All Compass surveys verified identical to Contractors Final Survey.	Yes
- All surveys verified to be within specifications	Yes
- Actual Design consist of correct set of surveys.	Yes
- Correct error models (survey tools) applied.	Yes
- All tie-ons verified	Yes
- Total depth verified	Yes
- Casing details updated.	Yes
- Actual Design locked for further editing.	Yes
- Relevant documentation uploaded as attachment under Wellbore level. As a minimum:	
- Raw accelerometer and magnetometer measurements (temperature corrected)	Yes
- Gravity and geomagnetic reference components	Yes
- Gyro survey QC sheet	No

MD From	MD To	Survey (Wellbore)	Survey Tool
3131,1	3453,8	Baker MWD	Magn, IFR, mag-corr, dual incl

By signing below both Statoil and Contractor verifies that all well positioning data and other relevant information have been correctly registered in the Statoil EDM database.

	Date	Sign Øyvin Johnsen	Sign Statoil
Final documentation OK	17.09.13	Øyvin Johnsen	

Norway

SLEIPNER
Volve F
F-1

F-1 B

Design: F-1 B

Standard Survey Report

17 september, 2013

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 B				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	GNETICREFERENCE	02.05.2013	-1,20	71,62	50 512

Design	F-1 B				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	29,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 620,50	3 073,60	15/9 F-1 B 12 1/4" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 131,10	3 453,80	15/9 F-1 B 8 1/2" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
145,90	0,00	0,00	145,90	3,17	-3,53	0,00	0,000	0,000	0,000
150,15	0,00	0,00	150,15	3,17	-3,53	0,00	0,000	0,000	0,000
160,45	0,00	0,00	160,45	3,17	-3,53	0,00	0,000	0,000	0,000
170,04	0,00	0,00	170,04	3,17	-3,53	0,00	0,000	0,000	0,000
179,79	0,00	0,00	179,79	3,17	-3,53	0,00	0,000	0,000	0,000

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
189,74	0,00	0,00	189,74	3,17	-3,53	0,00	0,000	0,000	0,000
198,50	0,00	0,00	198,50	3,17	-3,53	0,00	0,000	0,000	0,000
210,70	0,00	0,00	210,70	3,17	-3,53	0,00	0,000	0,000	0,000
237,60	1,84	302,24	237,60	3,40	-3,90	0,02	2,052	2,052	0,000
251,10	1,91	304,70	251,09	3,64	-4,27	0,06	0,237	0,156	5,467
264,90	2,47	305,76	264,88	3,94	-4,70	0,11	1,221	1,217	2,304
279,20	2,05	306,81	279,17	4,28	-5,15	0,18	0,885	-0,881	2,203
292,70	1,80	304,00	292,66	4,54	-5,52	0,23	0,594	-0,556	-6,244
302,80	1,13	330,72	302,76	4,72	-5,70	0,29	2,791	-1,990	79,366
315,50	1,41	333,18	315,45	4,96	-5,83	0,45	0,674	0,661	5,811
332,20	2,40	314,19	332,14	5,39	-6,18	0,65	2,086	1,778	-34,114
342,20	2,78	301,18	342,13	5,66	-6,54	0,71	2,093	1,140	-39,030
358,50	3,30	293,10	358,41	6,05	-7,30	0,68	1,238	0,957	-14,871
378,00	3,07	298,60	377,88	6,52	-8,28	0,61	0,588	-0,354	8,462
414,80	3,30	293,64	414,62	7,42	-10,11	0,50	0,292	0,187	-4,043
455,40	3,07	292,72	455,16	8,31	-12,19	0,26	0,174	-0,170	-0,680
495,40	2,84	290,41	495,11	9,07	-14,10	-0,01	0,194	-0,172	-1,732
535,60	2,77	293,07	535,26	9,79	-15,93	-0,27	0,110	-0,052	1,985
575,80	3,06	287,04	575,41	10,49	-17,85	-0,60	0,315	0,216	-4,500
616,50	4,01	305,32	616,03	11,63	-20,05	-0,68	1,078	0,700	13,474
656,80	6,13	317,80	656,17	14,04	-22,65	0,15	1,770	1,578	9,290
697,10	8,24	324,71	696,15	17,99	-25,76	2,08	1,695	1,571	5,144
720,00	9,57	322,37	718,78	20,84	-27,87	3,53	1,805	1,742	-3,066
737,40	10,71	320,81	735,91	23,24	-29,78	4,70	2,022	1,966	-2,690
756,80	10,39	320,18	754,98	25,98	-32,04	5,98	0,526	-0,495	-0,974
798,90	9,88	320,50	796,42	31,68	-36,76	8,65	0,366	-0,363	0,228
838,30	10,04	315,72	835,23	36,75	-41,31	10,85	0,641	0,122	-3,640
868,00	11,16	309,73	864,42	40,44	-45,33	12,11	1,586	1,131	-6,051
878,20	11,28	310,41	874,43	41,72	-46,85	12,48	0,525	0,353	2,000
918,00	10,70	315,76	913,50	46,89	-52,39	14,28	0,884	-0,437	4,033
999,00	8,88	319,88	993,32	57,06	-61,67	18,63	0,722	-0,674	1,526
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	23,12	0,075	0,071	0,171
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	25,17	2,012	1,707	-6,044
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	26,66	0,768	0,356	-3,379
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	27,86	0,128	-0,127	0,097
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	29,23	0,611	0,557	1,203
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	30,76	0,285	-0,282	0,193
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	32,25	0,899	-0,894	0,466
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	32,69	1,591	-1,545	-2,068
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	35,24	2,343	-1,462	11,994
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	39,33	2,736	2,061	11,597
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	45,91	3,249	1,273	15,342
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	54,56	2,881	1,069	12,037
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	65,23	1,850	1,317	5,183

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	76,05	1,932	1,833	2,135
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	89,18	1,830	1,812	0,795
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	101,76	2,841	2,841	0,035
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	121,59	2,036	2,036	0,032
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	140,22	2,265	2,060	2,008
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	159,92	0,451	0,449	0,082
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	180,11	0,063	0,059	0,044
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	199,97	0,064	-0,022	0,120
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	220,04	0,526	-0,126	-1,022
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	240,13	0,221	-0,059	-0,429
1 992,80	29,92	35,24	1 929,10	297,71	3,06	260,23	0,189	0,103	0,318
2 027,30	29,89	35,13	1 959,01	311,77	12,97	277,34	0,054	-0,026	-0,096
2 066,30	29,92	34,80	1 992,82	327,70	24,11	296,69	0,129	0,023	-0,254
2 113,70	29,80	35,71	2 033,92	346,98	37,73	320,16	0,297	-0,076	0,576
2 154,70	29,85	34,79	2 069,49	363,63	49,50	340,44	0,337	0,037	-0,673
2 194,30	29,84	36,98	2 103,84	379,59	61,05	360,01	0,826	-0,008	1,659
2 234,70	29,79	38,27	2 138,89	395,50	73,31	379,88	0,478	-0,037	0,958
2 275,10	30,01	37,36	2 173,92	411,41	85,66	399,79	0,374	0,163	-0,676
2 305,90	29,96	35,61	2 200,60	423,78	94,81	415,06	0,853	-0,049	-1,705
2 396,50	30,06	35,35	2 279,05	460,68	121,11	460,11	0,054	0,033	-0,086
2 436,70	30,19	35,59	2 313,82	477,12	132,82	480,16	0,132	0,097	0,179
2 470,80	30,22	36,84	2 343,29	490,96	142,95	497,19	0,554	0,026	1,100
2 517,20	30,25	36,59	2 383,38	509,69	156,92	520,36	0,084	0,019	-0,162
2 557,90	30,19	34,71	2 418,55	526,33	168,86	540,71	0,699	-0,044	-1,386
2 587,00	30,19	33,06	2 443,70	538,48	177,02	555,30	0,855	0,000	-1,701
2 620,50	28,92	35,26	2 472,84	552,15	186,29	571,76	1,496	-1,137	1,970
2 644,10	27,75	38,27	2 493,62	561,13	192,99	582,86	2,347	-1,487	3,826
2 684,70	26,12	44,21	2 529,82	574,96	205,08	600,83	2,323	-1,204	4,389
2 725,10	26,09	51,43	2 566,11	586,87	218,23	617,65	2,358	-0,022	5,361
2 764,90	26,08	54,07	2 601,85	597,46	232,15	633,70	0,875	-0,008	1,990
2 805,70	25,90	51,49	2 638,53	608,27	246,39	650,08	0,842	-0,132	-1,897
2 845,80	25,71	53,87	2 674,63	618,86	260,27	666,10	0,788	-0,142	1,781
2 886,60	25,74	57,85	2 711,39	628,79	274,92	681,92	1,270	0,022	2,926
2 926,70	25,70	58,41	2 747,52	637,98	289,70	697,16	0,184	-0,030	0,419
2 967,10	25,70	55,21	2 783,92	647,56	304,35	712,68	1,030	0,000	-2,376
3 007,70	25,60	51,70	2 820,52	658,02	318,47	728,70	1,125	-0,074	-2,594
3 047,90	25,23	51,18	2 856,83	668,78	331,96	744,68	0,322	-0,276	-0,388
3 073,60	24,85	52,81	2 880,12	675,48	340,53	754,71	0,919	-0,444	1,903
3 131,10	20,83	52,58	2 933,10	689,00	358,28	775,18	2,098	-2,097	-0,120
3 171,20	19,80	46,81	2 970,71	697,98	368,89	788,20	1,684	-0,771	-4,317
3 211,50	16,19	40,87	3 009,03	706,90	377,55	800,22	3,011	-2,687	-4,422
3 252,10	12,88	44,88	3 048,33	714,39	384,45	810,12	2,555	-2,446	2,963
3 292,20	8,37	53,34	3 087,73	719,30	389,95	817,09	3,561	-3,374	6,329

Statoil

Survey Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Vertical Section (m)	Dogleg Rate (°/30m)	Build Rate (°/30m)	Turn Rate (°/30m)
3 332,30	4,50	57,22	3 127,57	721,90	393,61	821,15	2,912	-2,895	2,903
3 372,80	4,34	52,65	3 167,95	723,69	396,17	823,96	0,286	-0,119	-3,385
3 413,20	4,31	56,45	3 208,24	725,45	398,65	826,71	0,214	-0,022	2,822
3 453,80	4,32	59,58	3 248,72	727,07	401,24	829,39	0,174	0,007	2,313
3 465,00	4,32	59,58	3 259,89	727,50	401,97	830,11	0,000	0,000	0,000

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500
3 090,00	2 895,07	9 5/8"	9,625	12,250

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 465,00	3 259,89	727,50	401,97	Projected to TD.

Checked By: _____ Approved By: _____ Date: _____

Norway

SLEIPNER
Volve F
F-1

F-1 B

Design: F-1 B

Survey Report - Geographic

17 september, 2013

Statoil

Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 B				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	ɜNETICREFERENCE	02.05.2013	-1,20	71,62	50 512

Design	F-1 B				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	29,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 620,50	3 073,60	15/9 F-1 B 12 1/4" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 131,10	3 453,80	15/9 F-1 B 8 1/2" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
145,90	0,00	0,00	145,90	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
150,15	0,00	0,00	150,15	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
160,45	0,00	0,00	160,45	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
170,04	0,00	0,00	170,04	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
179,79	0,00	0,00	179,79	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
189,74	0,00	0,00	189,74	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E

Norway

SLEIPNER
Volve F
F-1

F-1 B

Design: F-1 B

Error Ellipse Survey Report

17 september, 2013

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Project	SLEIPNER, Norway		
Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	European 1950 - Mean		Using Well Reference Point
Map Zone:	Zone 31N (0 E to 6 E)		Using geodetic scale factor

Site	Volve F, 15/9				
Site Position:		**Northing:**	6 478 563,53 m	**Latitude:**	58° 26' 29,807 N
From:	Map	**Easting:**	435 050,02 m	**Longitude:**	1° 53' 14,929 E
Position Uncertainty:	0,00 m	**Slot Radius:**	13,200 in	**Grid Convergence:**	-0,95 °

Well	F-1					
Well Position	**+N/-S**	3,17 m	**Northing:**	6 478 566,69 m	**Latitude:**	58° 26' 29,907 N
	+E/-W	-3,53 m	**Easting:**	435 046,49 m	**Longitude:**	1° 53' 14,707 E
Position Uncertainty		0,00 m	**Wellhead Depth:**	91,00 m	**Water Depth:**	91,00 m

Wellbore	F-1 B				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	ɜNETICREFERENCE	02.05.2013	-1,20	71,62	50 512

Design	F-1 B				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2 587,00

Vertical Section:	**Depth From (TVD) (m)**	**+N/-S (m)**	**+E/-W (m)**	**Direction (°)**
	145,90	3,17	-3,53	29,24

Survey Program **Date** 17.09.2013

From (m)	To (m)	Survey (Wellbore)	Tool Name	Description
150,15	210,70	15/9 F1 36" MWD (F-1)	Magnetic, old	Magnetic Tools (MWD, EMS)
237,60	358,50	15/9 F1 26" Gyro Scientific Modular (F-1)	MWD gyro, Baker Hughes	Baker Hughes' MWD gyro service
378,00	737,40	15/9 F-1 26" SDI Keeper Gyro Single Shot	Gyro, old	Other Gyro Tools
756,80	1 335,60	15/9 F-1 26" OnTrak (F-1)	Magnetic, IFR, mag-corr	Magnetic Tools (MWD, EMS)
1 387,10	2 587,00	15/9 F-1 17 1/2" AutoTrak G3 (F-1)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
2 620,50	3 073,60	15/9 F-1 B 12 1/4" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)
3 131,10	3 453,80	15/9 F-1 B 8 1/2" AutoTrak G3 (F-1 B)	Magn, IFR, mag-corr, dual in	Magnetic Tools (MWD, EMS)

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
145,90	0,00	0,00	145,90	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	UNDEFINED
150,15	0,00	0,00	150,15	0,01	0,00	0,01	0,00	1,77	0,00	0,00	0,01	0,01	0,00	Magnetic, old (1)
160,45	0,00	0,00	160,45	0,05	0,00	0,05	0,00	1,78	0,00	0,00	0,05	0,05	0,00	Magnetic, old (1)
170,04	0,00	0,00	170,04	0,10	0,00	0,10	0,00	1,79	0,00	0,00	0,10	0,10	0,00	Magnetic, old (1)

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
179,79	0,00	0,00	179,79	0,14	0,00	0,14	0,00	1,79	0,00	0,00	0,14	0,14	0,00	Magnetic, old (1)
189,74	0,00	0,00	189,74	0,18	0,00	0,18	0,00	1,80	0,00	0,00	0,18	0,18	0,00	Magnetic, old (1)
198,50	0,00	0,00	198,50	0,22	0,00	0,22	0,00	1,81	0,00	0,00	0,22	0,22	0,00	Magnetic, old (1)
210,70	0,00	0,00	210,70	0,27	0,00	0,27	0,00	1,82	0,00	0,00	0,27	0,27	0,00	Magnetic, old (1)
237,60	1,84	302,24	237,60	0,34	0,00	0,34	0,00	0,93	0,00	0,00	0,34	0,34	45,00	MWD gyro, Baker Hughes (2)
251,10	1,91	304,70	251,09	0,36	0,00	0,35	0,00	0,93	0,00	0,00	0,36	0,35	33,10	MWD gyro, Baker Hughes (2)
264,90	2,47	305,76	264,88	0,38	0,00	0,38	0,00	0,94	0,00	0,00	0,38	0,38	45,00	MWD gyro, Baker Hughes (2)
279,20	2,05	306,81	279,17	0,42	0,00	0,42	0,00	0,95	0,00	0,00	0,42	0,42	45,00	MWD gyro, Baker Hughes (2)
292,70	1,80	304,00	292,66	0,45	0,00	0,46	0,00	0,96	0,00	0,00	0,46	0,45	135,00	MWD gyro, Baker Hughes (2)
302,80	1,13	330,72	302,76	0,49	0,00	0,49	0,00	0,97	0,00	0,00	0,49	0,49	135,00	MWD gyro, Baker Hughes (2)
315,50	1,41	333,18	315,45	0,53	0,00	0,53	0,00	0,98	0,00	0,00	0,53	0,53	78,49	MWD gyro, Baker Hughes (2)
332,20	2,40	314,19	332,14	0,59	0,00	0,59	0,00	0,99	0,00	0,00	0,59	0,59	76,58	MWD gyro, Baker Hughes (2)
342,20	2,78	301,18	342,13	0,62	0,00	0,63	0,00	1,00	0,00	0,00	0,63	0,62	102,18	MWD gyro, Baker Hughes (2)
358,50	3,30	293,10	358,41	0,69	0,00	0,69	0,00	1,01	0,00	0,00	0,69	0,69	120,49	MWD gyro, Baker Hughes (2)
378,00	3,07	298,60	377,88	0,73	0,00	0,74	0,00	2,05	0,00	0,00	0,74	0,74	125,55	Gyro, old (3)
414,80	3,30	293,64	414,62	0,83	0,00	0,86	0,00	2,11	0,00	0,00	0,86	0,83	117,19	Gyro, old (3)
455,40	3,07	292,72	455,16	1,04	0,00	1,10	0,00	2,19	0,00	0,00	1,10	1,05	115,37	Gyro, old (3)
495,40	2,84	290,41	495,11	1,32	0,00	1,40	0,00	2,27	0,00	0,00	1,40	1,32	114,24	Gyro, old (3)
535,60	2,77	293,07	535,26	1,62	0,00	1,72	0,00	2,35	0,00	0,00	1,72	1,62	113,65	Gyro, old (3)
575,80	3,06	287,04	575,41	1,94	0,00	2,06	0,00	2,44	0,00	0,00	2,06	1,93	112,95	Gyro, old (3)
616,50	4,01	305,32	616,03	2,27	0,00	2,41	0,00	2,54	0,00	0,00	2,42	2,26	113,70	Gyro, old (3)
656,80	6,13	317,80	656,17	2,62	0,00	2,78	0,00	2,63	0,00	0,00	2,80	2,60	117,68	Gyro, old (3)
697,10	8,24	324,71	696,15	2,97	0,00	3,19	0,00	2,73	0,00	0,00	3,23	2,93	123,60	Gyro, old (3)
720,00	9,57	322,37	718,78	3,14	0,00	3,46	0,00	2,79	0,00	0,00	3,49	3,13	126,49	Gyro, old (3)
737,40	10,71	320,81	735,91	3,28	0,00	3,68	0,00	2,83	0,00	0,00	3,70	3,27	128,30	Gyro, old (3)
756,80	10,39	320,18	754,98	3,36	0,00	3,81	0,00	1,47	0,00	0,00	3,83	3,34	129,30	Magnetic, IFR, mag-corr (4)
798,90	9,88	320,50	796,42	3,37	0,00	3,82	0,00	1,53	0,00	0,00	3,83	3,35	129,37	Magnetic, IFR, mag-corr (4)
838,30	10,04	315,72	835,23	3,37	0,00	3,85	0,00	1,58	0,00	0,00	3,85	3,36	129,48	Magnetic, IFR, mag-corr (4)
868,00	11,16	309,73	864,42	3,38	0,00	3,87	0,00	1,63	0,00	0,00	3,87	3,38	129,58	Magnetic, IFR, mag-corr (4)
878,20	11,28	310,41	874,43	3,39	0,00	3,88	0,00	1,64	0,00	0,00	3,88	3,39	129,62	Magnetic, IFR, mag-corr (4)
918,00	10,70	315,76	913,50	3,43	0,00	3,91	0,00	1,70	0,00	0,00	3,92	3,42	129,72	Magnetic, IFR, mag-corr (4)
999,00	8,88	319,88	993,32	3,54	0,00	4,01	0,00	1,83	0,00	0,00	4,02	3,51	130,07	Magnetic, IFR, mag-corr (4)
1 079,80	9,07	320,34	1 073,13	3,67	0,00	4,15	0,00	1,97	0,00	0,00	4,16	3,64	130,56	Magnetic, IFR, mag-corr (4)
1 120,40	11,38	312,16	1 113,08	3,72	0,00	4,24	0,00	2,04	0,00	0,00	4,24	3,71	130,81	Magnetic, IFR, mag-corr (4)
1 160,80	11,86	307,61	1 152,65	3,80	0,00	4,33	0,00	2,11	0,00	0,00	4,34	3,79	130,97	Magnetic, IFR, mag-corr (4)
1 201,00	11,69	307,74	1 192,01	3,89	0,00	4,44	0,00	2,18	0,00	0,00	4,44	3,88	131,02	Magnetic, IFR, mag-corr (4)
1 241,40	12,44	309,36	1 231,51	3,98	0,00	4,55	0,00	2,26	0,00	0,00	4,55	3,97	131,07	Magnetic, IFR, mag-corr (4)
1 281,80	12,06	309,62	1 270,99	4,08	0,00	4,66	0,00	2,34	0,00	0,00	4,66	4,06	131,12	Magnetic, IFR, mag-corr (4)
1 322,40	10,85	310,25	1 310,79	4,19	0,00	4,79	0,00	2,42	0,00	0,00	4,79	4,17	131,17	Magnetic, IFR, mag-corr (4)
1 335,60	10,17	309,34	1 323,76	4,22	0,00	4,83	0,00	2,45	0,00	0,00	4,83	4,20	131,18	Magnetic, IFR, mag-corr (4)
1 387,10	7,66	329,93	1 374,65	4,36	0,00	4,85	0,00	2,55	0,00	0,00	4,91	4,27	131,28	ɲn, IFR, mag-corr, dual incl (5)
1 428,00	10,47	345,74	1 415,04	4,50	0,00	4,74	0,00	2,63	0,00	0,00	4,93	4,28	131,55	ɲn, IFR, mag-corr, dual incl (5)
1 468,30	12,18	6,35	1 454,57	4,71	0,00	4,53	0,00	2,71	0,00	0,00	4,96	4,30	132,11	ɲn, IFR, mag-corr, dual incl (5)
1 508,70	13,62	22,56	1 493,96	4,84	0,00	4,41	0,00	2,79	0,00	0,00	4,99	4,32	133,04	ɲn, IFR, mag-corr, dual incl (5)
1 551,30	15,49	29,92	1 535,20	4,87	0,00	4,40	0,00	2,87	0,00	0,00	5,02	4,36	134,31	ɲn, IFR, mag-corr, dual incl (5)
1 589,10	17,80	32,61	1 571,41	4,87	0,00	4,44	0,00	2,95	0,00	0,00	5,06	4,41	135,67	ɲn, IFR, mag-corr, dual incl (5)
1 629,50	20,24	33,68	1 609,60	4,87	0,00	4,51	0,00	3,03	0,00	0,00	5,10	4,47	137,47	ɲn, IFR, mag-corr, dual incl (5)
1 663,40	23,45	33,72	1 641,07	4,84	0,00	4,58	0,00	3,10	0,00	0,00	5,14	4,53	139,40	ɲn, IFR, mag-corr, dual incl (5)
1 710,40	26,64	33,77	1 683,64	4,82	0,00	4,71	0,00	3,20	0,00	0,00	5,21	4,64	143,10	ɲn, IFR, mag-corr, dual incl (5)
1 750,30	29,38	36,44	1 718,87	4,81	0,00	4,82	0,00	3,28	0,00	0,00	5,28	4,75	147,56	ɲn, IFR, mag-corr, dual incl (5)
1 790,40	29,98	36,55	1 753,70	4,85	0,00	4,98	0,00	3,37	0,00	0,00	5,36	4,88	153,68	ɲn, IFR, mag-corr, dual incl (5)
1 831,10	30,06	36,61	1 788,94	4,91	0,00	5,16	0,00	3,46	0,00	0,00	5,46	5,00	161,64	ɲn, IFR, mag-corr, dual incl (5)
1 871,10	30,03	36,77	1 823,57	4,97	0,00	5,35	0,00	3,55	0,00	0,00	5,58	5,12	170,50	ɲn, IFR, mag-corr, dual incl (5)
1 911,60	29,86	35,39	1 858,66	5,04	0,00	5,56	0,00	3,65	0,00	0,00	5,74	5,23	178,98	ɲn, IFR, mag-corr, dual incl (5)

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Position uncertainty and bias at survey station

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	Highside Error (m)	Highside Bias (m)	Lateral Error (m)	Lateral Bias (m)	Vertical Error (m)	Vertical Bias (m)	Magnitude of Bias (m)	Semi-major Error (m)	Semi-minor Error (m)	Semi-minor Azimuth (°)	Tool
1 952,20	29,78	34,81	1 893,89	5,12	0,00	5,79	0,00	3,75	0,00	0,00	5,93	5,32	5,81	ɲn, IFR, mag-corr, dual incl (5)
1 992,80	29,92	35,24	1 929,10	5,20	0,00	6,02	0,00	3,86	0,00	0,00	6,13	5,41	10,93	ɲn, IFR, mag-corr, dual incl (5)
2 027,30	29,89	35,13	1 959,01	5,27	0,00	6,22	0,00	3,95	0,00	0,00	6,32	5,48	14,23	ɲn, IFR, mag-corr, dual incl (5)
2 066,30	29,92	34,80	1 992,82	5,35	0,00	6,47	0,00	4,05	0,00	0,00	6,55	5,56	17,08	ɲn, IFR, mag-corr, dual incl (5)
2 113,70	29,80	35,71	2 033,92	5,46	0,00	6,76	0,00	4,17	0,00	0,00	6,84	5,66	19,70	ɲn, IFR, mag-corr, dual incl (5)
2 154,70	29,85	34,79	2 069,49	5,55	0,00	7,03	0,00	4,29	0,00	0,00	7,10	5,75	21,44	ɲn, IFR, mag-corr, dual incl (5)
2 194,30	29,84	36,98	2 103,84	5,66	0,00	7,28	0,00	4,40	0,00	0,00	7,36	5,84	22,82	ɲn, IFR, mag-corr, dual incl (5)
2 234,70	29,79	38,27	2 138,89	5,77	0,00	7,54	0,00	4,51	0,00	0,00	7,63	5,93	24,11	ɲn, IFR, mag-corr, dual incl (5)
2 275,10	30,01	37,36	2 173,92	5,86	0,00	7,83	0,00	4,63	0,00	0,00	7,91	6,02	25,20	ɲn, IFR, mag-corr, dual incl (5)
2 305,90	29,96	35,61	2 200,60	5,93	0,00	8,07	0,00	4,72	0,00	0,00	8,12	6,09	25,87	ɲn, IFR, mag-corr, dual incl (5)
2 396,50	30,06	35,35	2 279,05	6,17	0,00	8,73	0,00	4,99	0,00	0,00	8,77	6,31	27,30	ɲn, IFR, mag-corr, dual incl (5)
2 436,70	30,19	35,59	2 313,82	6,28	0,00	9,02	0,00	5,11	0,00	0,00	9,07	6,41	27,80	ɲn, IFR, mag-corr, dual incl (5)
2 470,80	30,22	36,84	2 343,29	6,39	0,00	9,27	0,00	5,21	0,00	0,00	9,32	6,50	28,21	ɲn, IFR, mag-corr, dual incl (5)
2 517,20	30,25	36,59	2 383,38	6,53	0,00	9,62	0,00	5,36	0,00	0,00	9,67	6,62	28,73	ɲn, IFR, mag-corr, dual incl (5)
2 557,90	30,19	34,71	2 418,55	6,63	0,00	9,95	0,00	5,48	0,00	0,00	9,98	6,72	29,09	ɲn, IFR, mag-corr, dual incl (5)
2 587,00	30,19	33,06	2 443,70	6,70	0,00	10,19	0,00	5,58	0,00	0,00	10,20	6,80	29,28	ɲn, IFR, mag-corr, dual incl (5)
2 620,50	28,92	35,26	2 472,84	6,79	0,00	10,33	0,00	5,67	0,00	0,00	10,36	6,85	29,36	ɲn, IFR, mag-corr, dual incl (6)
2 644,10	27,75	38,27	2 493,62	6,85	0,00	10,35	0,00	5,73	0,00	0,00	10,42	6,86	29,38	ɲn, IFR, mag-corr, dual incl (6)
2 684,70	26,12	44,21	2 529,82	7,02	0,00	10,32	0,00	5,84	0,00	0,00	10,51	6,87	29,48	ɲn, IFR, mag-corr, dual incl (6)
2 725,10	26,09	51,43	2 566,11	7,28	0,00	10,18	0,00	5,95	0,00	0,00	10,61	6,89	29,69	ɲn, IFR, mag-corr, dual incl (6)
2 764,90	26,08	54,07	2 601,85	7,41	0,00	10,18	0,00	6,06	0,00	0,00	10,71	6,91	30,01	ɲn, IFR, mag-corr, dual incl (6)
2 805,70	25,90	51,49	2 638,53	7,32	0,00	10,40	0,00	6,17	0,00	0,00	10,82	6,94	30,37	ɲn, IFR, mag-corr, dual incl (6)
2 845,80	25,71	53,87	2 674,63	7,45	0,00	10,43	0,00	6,29	0,00	0,00	10,94	6,98	30,74	ɲn, IFR, mag-corr, dual incl (6)
2 886,60	25,74	57,85	2 711,39	7,67	0,00	10,38	0,00	6,41	0,00	0,00	11,06	7,02	31,18	ɲn, IFR, mag-corr, dual incl (6)
2 926,70	25,70	58,41	2 747,52	7,73	0,00	10,49	0,00	6,53	0,00	0,00	11,19	7,06	31,67	ɲn, IFR, mag-corr, dual incl (6)
2 967,10	25,70	55,21	2 783,92	7,59	0,00	10,79	0,00	6,65	0,00	0,00	11,33	7,11	32,15	ɲn, IFR, mag-corr, dual incl (6)
3 007,70	25,60	51,70	2 820,52	7,46	0,00	11,09	0,00	6,78	0,00	0,00	11,47	7,16	32,60	ɲn, IFR, mag-corr, dual incl (6)
3 047,90	25,23	51,18	2 856,83	7,48	0,00	11,27	0,00	6,91	0,00	0,00	11,62	7,22	33,00	ɲn, IFR, mag-corr, dual incl (6)
3 073,60	24,85	52,81	2 880,12	7,59	0,00	11,30	0,00	6,99	0,00	0,00	11,72	7,26	33,26	ɲn, IFR, mag-corr, dual incl (6)
3 131,10	20,83	52,58	2 933,10	7,67	0,00	11,49	0,00	7,18	0,00	0,00	11,88	7,31	33,67	ɲn, IFR, mag-corr, dual incl (7)
3 171,20	19,80	46,81	2 970,71	7,42	0,00	11,77	0,00	7,31	0,00	0,00	11,96	7,33	33,81	ɲn, IFR, mag-corr, dual incl (7)
3 211,50	16,19	40,87	3 009,03	7,28	0,00	11,98	0,00	7,45	0,00	0,00	12,03	7,35	33,89	ɲn, IFR, mag-corr, dual incl (7)
3 252,10	12,88	44,88	3 048,33	7,45	0,00	11,96	0,00	7,59	0,00	0,00	12,10	7,37	33,94	ɲn, IFR, mag-corr, dual incl (7)
3 292,20	8,37	53,34	3 087,73	7,95	0,00	11,72	0,00	7,74	0,00	0,00	12,15	7,40	34,01	ɲn, IFR, mag-corr, dual incl (7)
3 332,30	4,50	57,22	3 127,57	8,28	0,00	11,58	0,00	7,89	0,00	0,00	12,19	7,42	34,07	ɲn, IFR, mag-corr, dual incl (7)
3 372,80	4,34	52,65	3 167,95	8,00	0,00	11,82	0,00	8,05	0,00	0,00	12,22	7,45	34,11	ɲn, IFR, mag-corr, dual incl (7)
3 413,20	4,31	56,45	3 208,24	8,27	0,00	11,68	0,00	8,20	0,00	0,00	12,25	7,48	34,14	ɲn, IFR, mag-corr, dual incl (7)
3 453,80	4,32	59,58	3 248,72	8,53	0,00	11,56	0,00	8,36	0,00	0,00	12,29	7,52	34,19	ɲn, IFR, mag-corr, dual incl (7)
3 465,00	4,32	59,58	3 259,89	8,54	0,00	11,57	0,00	8,41	0,00	0,00	12,30	7,53	34,20	PROJECTED to TD

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500
3 090,00	2 895,07	9 5/8"	9,625	12,250

Statoil

Error Ellipse Report

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Output errors are at**	2,45 sigma
		Database:	Production EDM P246N

Design Annotations

Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 465,00	3 259,89	727,50	401,97	Projected to TD.

Checked By: _____ Approved By: _____ Date: _____

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Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
198,50	0,00	0,00	198,50	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
210,70	0,00	0,00	210,70	3,17	-3,53	6 478 566,69	435 046,49	58° 26' 29,907 N	1° 53' 14,707 E
237,60	1,84	302,24	237,60	3,40	-3,90	6 478 566,92	435 046,12	58° 26' 29,914 N	1° 53' 14,685 E
251,10	1,91	304,70	251,09	3,64	-4,27	6 478 567,17	435 045,75	58° 26' 29,922 N	1° 53' 14,662 E
264,90	2,47	305,76	264,88	3,94	-4,70	6 478 567,47	435 045,32	58° 26' 29,932 N	1° 53' 14,635 E
279,20	2,05	306,81	279,17	4,28	-5,15	6 478 567,80	435 044,87	58° 26' 29,942 N	1° 53' 14,607 E
292,70	1,80	304,00	292,66	4,54	-5,52	6 478 568,07	435 044,50	58° 26' 29,951 N	1° 53' 14,584 E
302,80	1,13	330,72	302,76	4,72	-5,70	6 478 568,24	435 044,32	58° 26' 29,956 N	1° 53' 14,572 E
315,50	1,41	333,18	315,45	4,96	-5,83	6 478 568,49	435 044,19	58° 26' 29,964 N	1° 53' 14,564 E
332,20	2,40	314,19	332,14	5,39	-6,18	6 478 568,92	435 043,85	58° 26' 29,978 N	1° 53' 14,542 E
342,20	2,78	301,18	342,13	5,66	-6,54	6 478 569,19	435 043,49	58° 26' 29,986 N	1° 53' 14,520 E
358,50	3,30	293,10	358,41	6,05	-7,30	6 478 569,58	435 042,72	58° 26' 29,998 N	1° 53' 14,472 E
378,00	3,07	298,60	377,88	6,52	-8,28	6 478 570,05	435 041,74	58° 26' 30,013 N	1° 53' 14,412 E
414,80	3,30	293,64	414,62	7,42	-10,11	6 478 570,94	435 039,91	58° 26' 30,041 N	1° 53' 14,298 E
455,40	3,07	292,72	455,16	8,31	-12,19	6 478 571,83	435 037,84	58° 26' 30,069 N	1° 53' 14,169 E
495,40	2,84	290,41	495,11	9,07	-14,10	6 478 572,59	435 035,92	58° 26' 30,092 N	1° 53' 14,050 E
535,60	2,77	293,07	535,26	9,79	-15,93	6 478 573,32	435 034,09	58° 26' 30,115 N	1° 53' 13,937 E
575,80	3,06	287,04	575,41	10,49	-17,85	6 478 574,01	435 032,18	58° 26' 30,136 N	1° 53' 13,818 E
616,50	4,01	305,32	616,03	11,63	-20,05	6 478 575,15	435 029,98	58° 26' 30,172 N	1° 53' 13,681 E
656,80	6,13	317,80	656,17	14,04	-22,65	6 478 577,56	435 027,38	58° 26' 30,248 N	1° 53' 13,518 E
697,10	8,24	324,71	696,15	17,99	-25,76	6 478 581,51	435 024,27	58° 26' 30,374 N	1° 53' 13,323 E
720,00	9,57	322,37	718,78	20,84	-27,87	6 478 584,36	435 022,16	58° 26' 30,465 N	1° 53' 13,190 E
737,40	10,71	320,81	735,91	23,24	-29,78	6 478 586,76	435 020,25	58° 26' 30,542 N	1° 53' 13,070 E
756,80	10,39	320,18	754,98	25,98	-32,04	6 478 589,50	435 018,00	58° 26' 30,629 N	1° 53' 12,928 E
798,90	9,88	320,50	796,42	31,68	-36,76	6 478 595,20	435 013,27	58° 26' 30,811 N	1° 53' 12,630 E
838,30	10,04	315,72	835,23	36,75	-41,31	6 478 600,26	435 008,72	58° 26' 30,972 N	1° 53' 12,345 E
868,00	11,16	309,73	864,42	40,44	-45,33	6 478 603,95	435 004,71	58° 26' 31,089 N	1° 53' 12,094 E
878,20	11,28	310,41	874,43	41,72	-46,85	6 478 605,23	435 003,19	58° 26' 31,130 N	1° 53' 11,999 E
918,00	10,70	315,76	913,50	46,89	-52,39	6 478 610,40	434 997,65	58° 26' 31,294 N	1° 53' 11,652 E
999,00	8,88	319,88	993,32	57,06	-61,67	6 478 620,56	434 988,38	58° 26' 31,618 N	1° 53' 11,070 E
1 079,80	9,07	320,34	1 073,13	66,73	-69,75	6 478 630,23	434 980,30	58° 26' 31,926 N	1° 53' 10,562 E
1 120,40	11,38	312,16	1 113,08	71,88	-74,76	6 478 635,38	434 975,28	58° 26' 32,090 N	1° 53' 10,248 E
1 160,80	11,86	307,61	1 152,65	77,09	-81,01	6 478 640,59	434 969,04	58° 26' 32,255 N	1° 53' 9,857 E
1 201,00	11,69	307,74	1 192,01	82,10	-87,50	6 478 645,60	434 962,55	58° 26' 32,413 N	1° 53' 9,452 E
1 241,40	12,44	309,36	1 231,51	87,37	-94,10	6 478 650,87	434 955,95	58° 26' 32,580 N	1° 53' 9,040 E
1 281,80	12,06	309,62	1 270,99	92,82	-100,72	6 478 656,31	434 949,34	58° 26' 32,752 N	1° 53' 8,627 E
1 322,40	10,85	310,25	1 310,79	97,99	-106,90	6 478 661,49	434 943,16	58° 26' 32,916 N	1° 53' 8,240 E
1 335,60	10,17	309,34	1 323,76	99,53	-108,75	6 478 663,03	434 941,31	58° 26' 32,965 N	1° 53' 8,125 E
1 387,10	7,66	329,93	1 374,65	105,39	-113,99	6 478 668,88	434 936,07	58° 26' 33,151 N	1° 53' 7,796 E
1 428,00	10,47	345,74	1 415,04	111,35	-116,27	6 478 674,84	434 933,79	58° 26' 33,343 N	1° 53' 7,649 E
1 468,30	12,18	6,35	1 454,57	119,13	-116,70	6 478 682,62	434 933,36	58° 26' 33,594 N	1° 53' 7,615 E
1 508,70	13,62	22,56	1 493,96	127,76	-114,40	6 478 691,25	434 935,66	58° 26' 33,874 N	1° 53' 7,747 E
1 551,30	15,49	29,92	1 535,20	137,33	-109,64	6 478 700,81	434 940,42	58° 26' 34,186 N	1° 53' 8,031 E
1 589,10	17,80	32,61	1 571,41	146,57	-104,01	6 478 710,05	434 946,05	58° 26' 34,487 N	1° 53' 8,369 E
1 629,50	20,24	33,68	1 609,60	157,59	-96,80	6 478 721,06	434 953,25	58° 26' 34,847 N	1° 53' 8,802 E
1 663,40	23,45	33,72	1 641,07	168,08	-89,81	6 478 731,55	434 960,25	58° 26' 35,190 N	1° 53' 9,222 E
1 710,40	26,64	33,77	1 683,64	184,62	-78,76	6 478 748,09	434 971,29	58° 26' 35,731 N	1° 53' 9,886 E
1 750,30	29,38	36,44	1 718,87	199,94	-67,97	6 478 763,39	434 982,08	58° 26' 36,231 N	1° 53' 10,536 E
1 790,40	29,98	36,55	1 753,70	215,90	-56,16	6 478 779,35	434 993,88	58° 26' 36,753 N	1° 53' 11,247 E
1 831,10	30,06	36,61	1 788,94	232,25	-44,02	6 478 795,70	435 006,01	58° 26' 37,288 N	1° 53' 11,978 E
1 871,10	30,03	36,77	1 823,57	248,31	-32,06	6 478 811,75	435 017,98	58° 26' 37,814 N	1° 53' 12,700 E
1 911,60	29,86	35,39	1 858,66	264,65	-20,15	6 478 828,08	435 029,88	58° 26' 38,348 N	1° 53' 13,417 E
1 952,20	29,78	34,81	1 893,89	281,16	-8,54	6 478 844,59	435 041,48	58° 26' 38,888 N	1° 53' 14,115 E
1 992,80	29,92	35,24	1 929,10	297,71	3,06	6 478 861,14	435 053,08	58° 26' 39,429 N	1° 53' 14,813 E
2 027,30	29,89	35,13	1 959,01	311,77	12,97	6 478 875,19	435 062,98	58° 26' 39,888 N	1° 53' 15,410 E

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Survey Report - Geographic

Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

Survey

Measured Depth (m)	Inclination (°)	Azimuth (°)	Vertical Depth (m)	+N/-S (m)	+E/-W (m)	Map Northing (m)	Map Easting (m)	Latitude	Longitude
2 066,30	29,92	34,80	1 992,82	327,70	24,11	6 478 891,12	435 074,12	58° 26' 40,409 N	1° 53' 16,080 E
2 113,70	29,80	35,71	2 033,92	346,98	37,73	6 478 910,38	435 087,74	58° 26' 41,039 N	1° 53' 16,900 E
2 154,70	29,85	34,79	2 069,49	363,63	49,50	6 478 927,03	435 099,50	58° 26' 41,584 N	1° 53' 17,609 E
2 194,30	29,84	36,98	2 103,84	379,59	61,05	6 478 942,99	435 111,05	58° 26' 42,106 N	1° 53' 18,304 E
2 234,70	29,79	38,27	2 138,89	395,50	73,31	6 478 958,89	435 123,31	58° 26' 42,626 N	1° 53' 19,044 E
2 275,10	30,01	37,36	2 173,92	411,41	85,66	6 478 974,79	435 135,65	58° 26' 43,147 N	1° 53' 19,788 E
2 305,90	29,96	35,61	2 200,60	423,78	94,81	6 478 987,16	435 144,80	58° 26' 43,552 N	1° 53' 20,340 E
2 396,50	30,06	35,35	2 279,05	460,68	121,11	6 479 024,05	435 171,09	58° 26' 44,758 N	1° 53' 21,923 E
2 436,70	30,19	35,59	2 313,82	477,12	132,82	6 479 040,48	435 182,79	58° 26' 45,296 N	1° 53' 22,628 E
2 470,80	30,22	36,84	2 343,29	490,96	142,95	6 479 054,31	435 192,92	58° 26' 45,748 N	1° 53' 23,239 E
2 517,20	30,25	36,59	2 383,38	509,69	156,92	6 479 073,04	435 206,89	58° 26' 46,361 N	1° 53' 24,081 E
2 557,90	30,19	34,71	2 418,55	526,33	168,86	6 479 089,67	435 218,82	58° 26' 46,905 N	1° 53' 24,800 E
2 587,00	30,19	33,06	2 443,70	538,48	177,02	6 479 101,82	435 226,98	58° 26' 47,302 N	1° 53' 25,290 E
2 620,50	28,92	35,26	2 472,84	552,15	186,29	6 479 115,49	435 236,25	58° 26' 47,749 N	1° 53' 25,848 E
2 644,10	27,75	38,27	2 493,62	561,13	192,99	6 479 124,46	435 242,94	58° 26' 48,042 N	1° 53' 26,252 E
2 684,70	26,12	44,21	2 529,82	574,96	205,08	6 479 138,28	435 255,03	58° 26' 48,496 N	1° 53' 26,983 E
2 725,10	26,09	51,43	2 566,11	586,87	218,23	6 479 150,19	435 268,17	58° 26' 48,888 N	1° 53' 27,781 E
2 764,90	26,08	54,07	2 601,85	597,46	232,15	6 479 160,78	435 282,09	58° 26' 49,237 N	1° 53' 28,629 E
2 805,70	25,90	51,49	2 638,53	608,27	246,39	6 479 171,59	435 296,32	58° 26' 49,594 N	1° 53' 29,495 E
2 845,80	25,71	53,87	2 674,63	618,86	260,27	6 479 182,17	435 310,20	58° 26' 49,944 N	1° 53' 30,340 E
2 886,60	25,74	57,85	2 711,39	628,79	274,92	6 479 192,10	435 324,84	58° 26' 50,272 N	1° 53' 31,233 E
2 926,70	25,70	58,41	2 747,52	637,98	289,70	6 479 201,28	435 339,62	58° 26' 50,577 N	1° 53' 32,134 E
2 967,10	25,70	55,21	2 783,92	647,56	304,35	6 479 210,87	435 354,27	58° 26' 50,895 N	1° 53' 33,028 E
3 007,70	25,60	51,70	2 820,52	658,02	318,47	6 479 221,32	435 368,38	58° 26' 51,240 N	1° 53' 33,887 E
3 047,90	25,23	51,18	2 856,83	668,78	331,96	6 479 232,07	435 381,86	58° 26' 51,595 N	1° 53' 34,708 E
3 073,60	24,85	52,81	2 880,12	675,48	340,53	6 479 238,77	435 390,43	58° 26' 51,816 N	1° 53' 35,230 E
3 131,10	20,83	52,58	2 933,10	689,00	358,28	6 479 252,28	435 408,18	58° 26' 52,262 N	1° 53' 36,310 E
3 171,20	19,80	46,81	2 970,71	697,98	368,89	6 479 261,26	435 418,79	58° 26' 52,558 N	1° 53' 36,955 E
3 211,50	16,19	40,87	3 009,03	706,90	377,55	6 479 270,18	435 427,44	58° 26' 52,851 N	1° 53' 37,480 E
3 252,10	12,88	44,88	3 048,33	714,39	384,45	6 479 277,67	435 434,34	58° 26' 53,097 N	1° 53' 37,897 E
3 292,20	8,37	53,34	3 087,73	719,30	389,95	6 479 282,58	435 439,83	58° 26' 53,259 N	1° 53' 38,231 E
3 332,30	4,50	57,22	3 127,57	721,90	393,61	6 479 285,17	435 443,50	58° 26' 53,344 N	1° 53' 38,455 E
3 372,80	4,34	52,65	3 167,95	723,69	396,17	6 479 286,96	435 446,05	58° 26' 53,404 N	1° 53' 38,610 E
3 413,20	4,31	56,45	3 208,24	725,45	398,65	6 479 288,73	435 448,53	58° 26' 53,462 N	1° 53' 38,761 E
3 453,80	4,32	59,58	3 248,72	727,07	401,24	6 479 290,35	435 451,12	58° 26' 53,516 N	1° 53' 38,919 E
3 465,00	4,32	59,58	3 259,89	727,50	401,97	6 479 290,77	435 451,85	58° 26' 53,530 N	1° 53' 38,964 E

Casing Points

Measured Depth (m)	Vertical Depth (m)	Name	Casing Diameter (in)	Hole Diameter (in)
220,90	220,90	30"	30,000	36,000
1 348,40	1 336,38	20"	20,000	26,000
2 595,40	2 450,97	13 3/8"	13,375	17,500
3 090,00	2 895,07	9 5/8"	9,625	12,250

Design Annotations

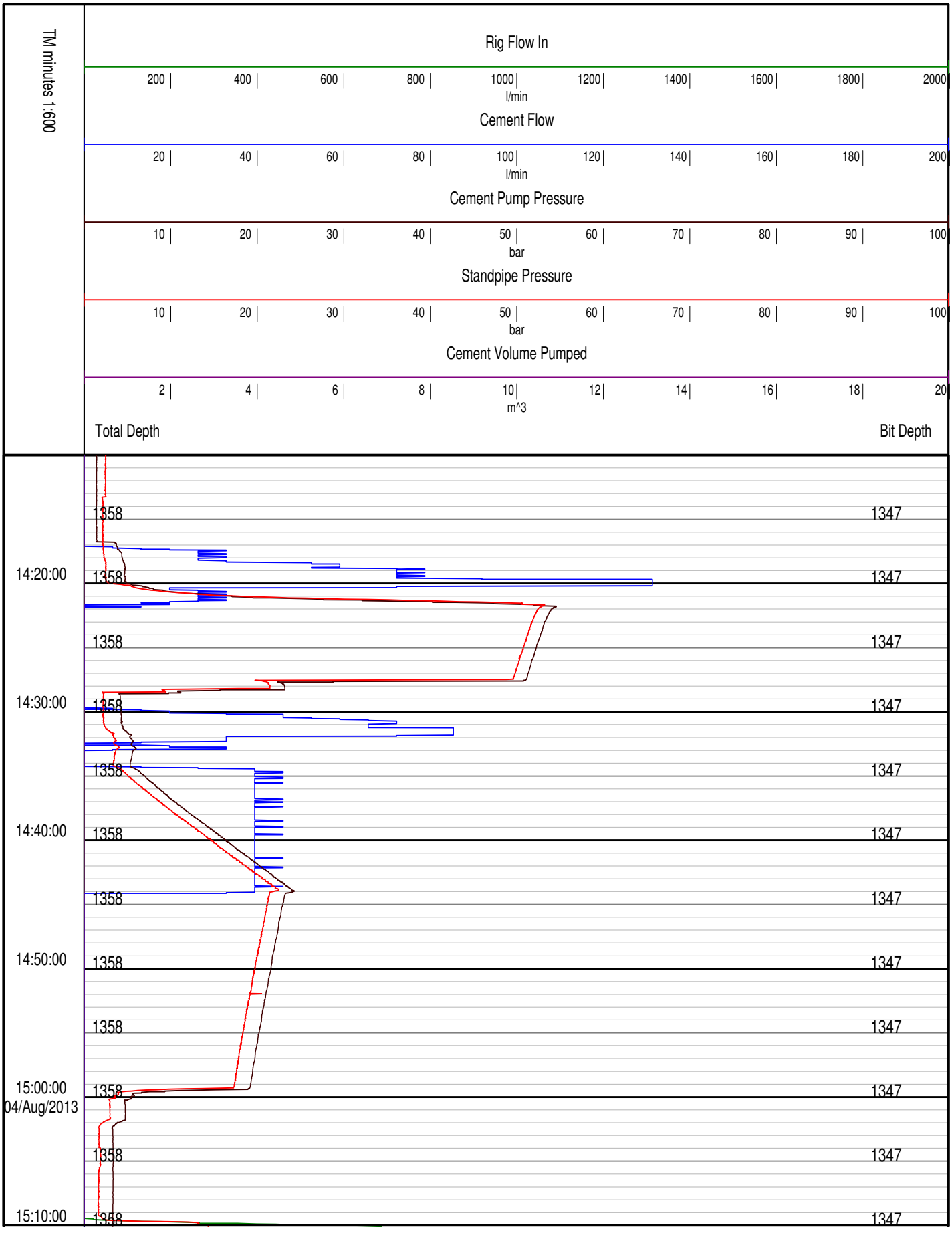
Measured Depth (m)	Vertical Depth (m)	Local Coordinates +N/-S (m)	Local Coordinates +E/-W (m)	Comment
3 465,00	3 259,89	727,50	401,97	Projected to TD.

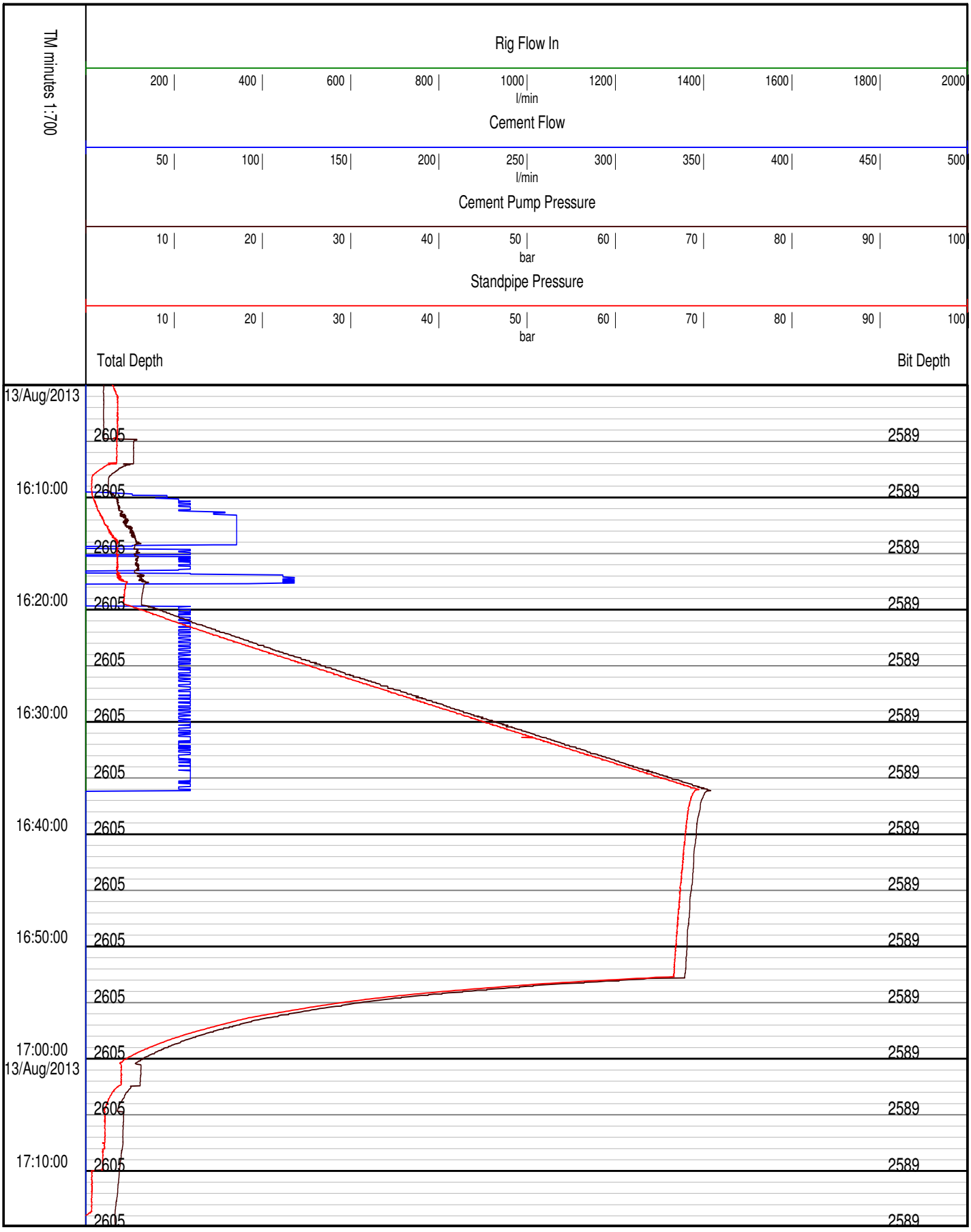
Company:	Norway	**Local Co-ordinate Reference:**	Site Volve F
Project:	SLEIPNER	**TVD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Site:	Volve F	**MD Reference:**	Rotary Table @ 54,90m (Rotary Table)
Well:	F-1	**North Reference:**	Grid
Wellbore:	F-1 B	**Survey Calculation Method:**	Minimum Curvature
Design:	F-1 B	**Database:**	Production EDM P246N

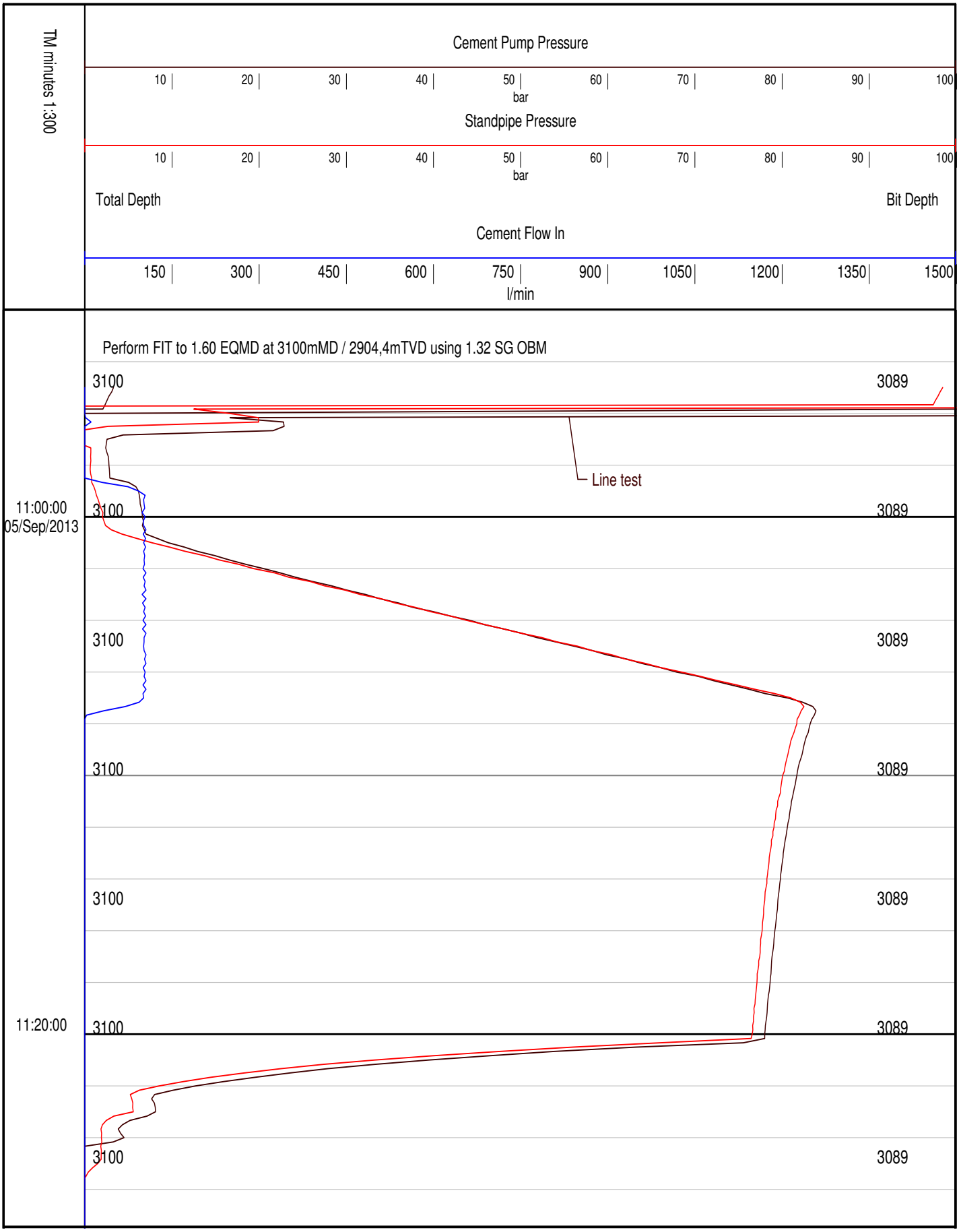
Checked By: _____ Approved By: _____ Date: _____

APPENDIX B

LOT/FIT PLOTS


TM minutes 1:600
Rig Flow In
200 400 600 800 1000 1200 1400 1600 1800 2000
l/min
Cement Flow
20 40 60 80 100 120 140 160 180 200
l/min
Cement Pump Pressure
10 20 30 40 50 60 70 80 90 100
bar
Standpipe Pressure
10 20 30 40 50 60 70 80 90 100
bar
Cement Volume Pumped
2 4 6 8 10 12 14 16 18 20
m^3
Total Depth
Bit Depth
14:20:00
14:30:00
14:40:00
14:50:00
15:00:00
04/Aug/2013
15:10:00
1358
1347

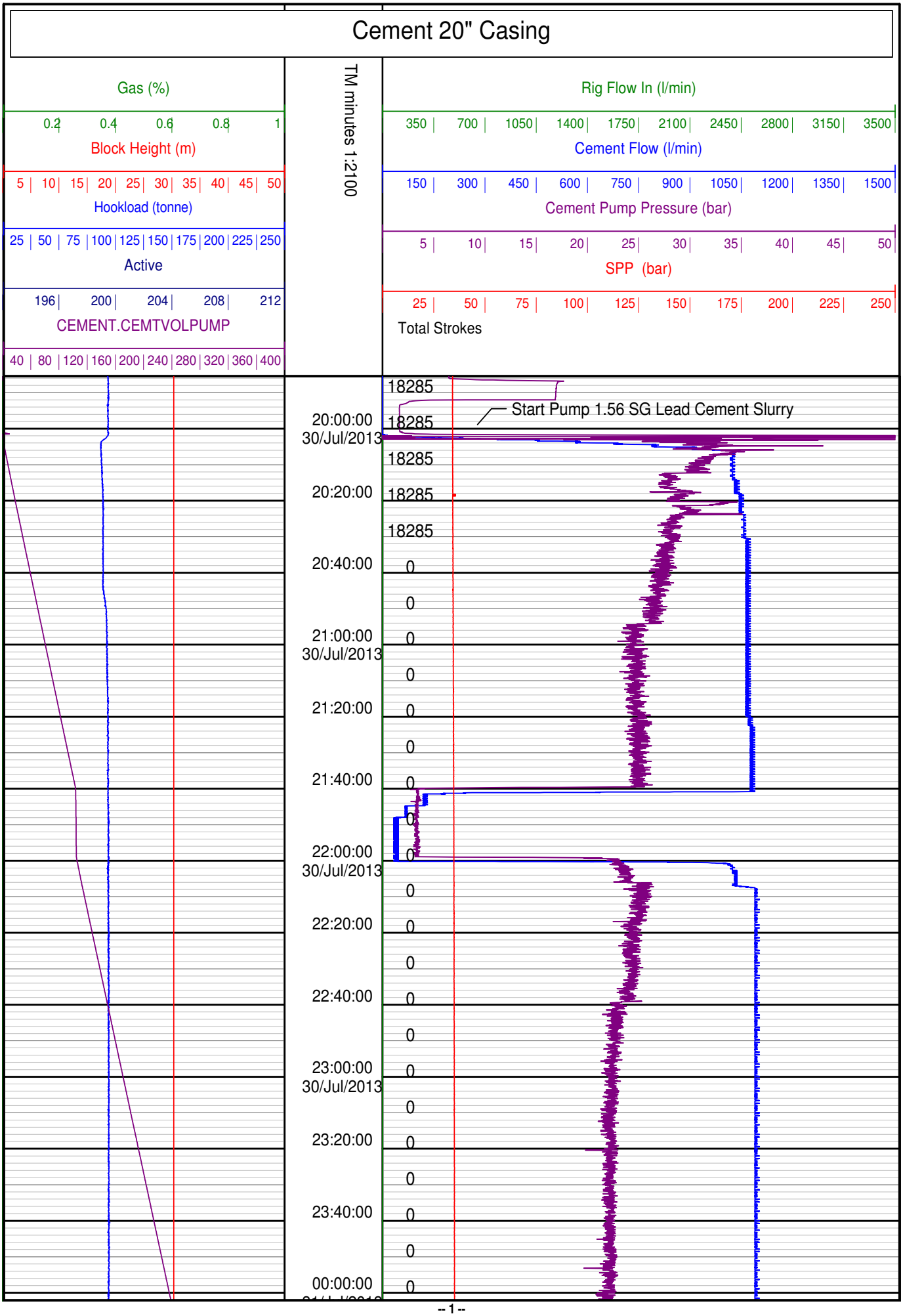

TM minutes 1:700
Rig Flow In
200 400 600 800 1000 1200 1400 1600 1800 2000
l/min
Cement Flow
50 100 150 200 250 300 350 400 450 500
l/min
Cement Pump Pressure
10 20 30 40 50 60 70 80 90 100
bar
Standpipe Pressure
10 20 30 40 50 60 70 80 90 100
bar
Total Depth
Bit Depth
13/Aug/2013
16:10:00
16:20:00
16:30:00
16:40:00
16:50:00
17:00:00
13/Aug/2013
17:10:00
2605
2589

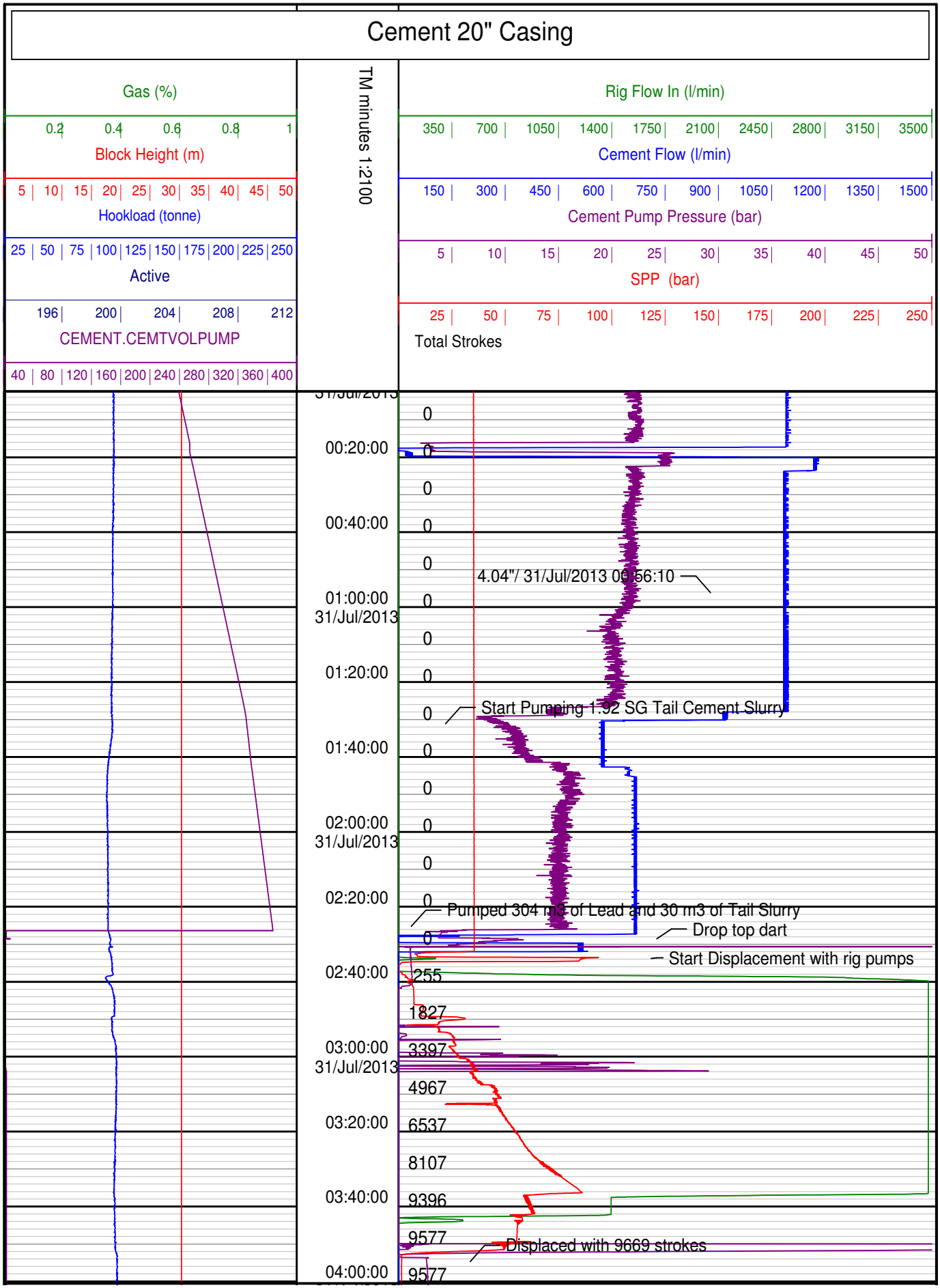

TM minutes 1:300
Cement Pump Pressure
10 20 30 40 50 60 70 80 90 100
bar
Standpipe Pressure
10 20 30 40 50 60 70 80 90 100
bar
Total Depth
Bit Depth
Cement Flow In
150 300 450 600 750 900 1050 1200 1350 1500
l/min
Perform FIT to 1.60 EQMD at 3100mMD / 2904,4mTVD using 1.32 SG OBM
3100
3089
Line test
11:00:00
05/Sep/2013
11:20:00

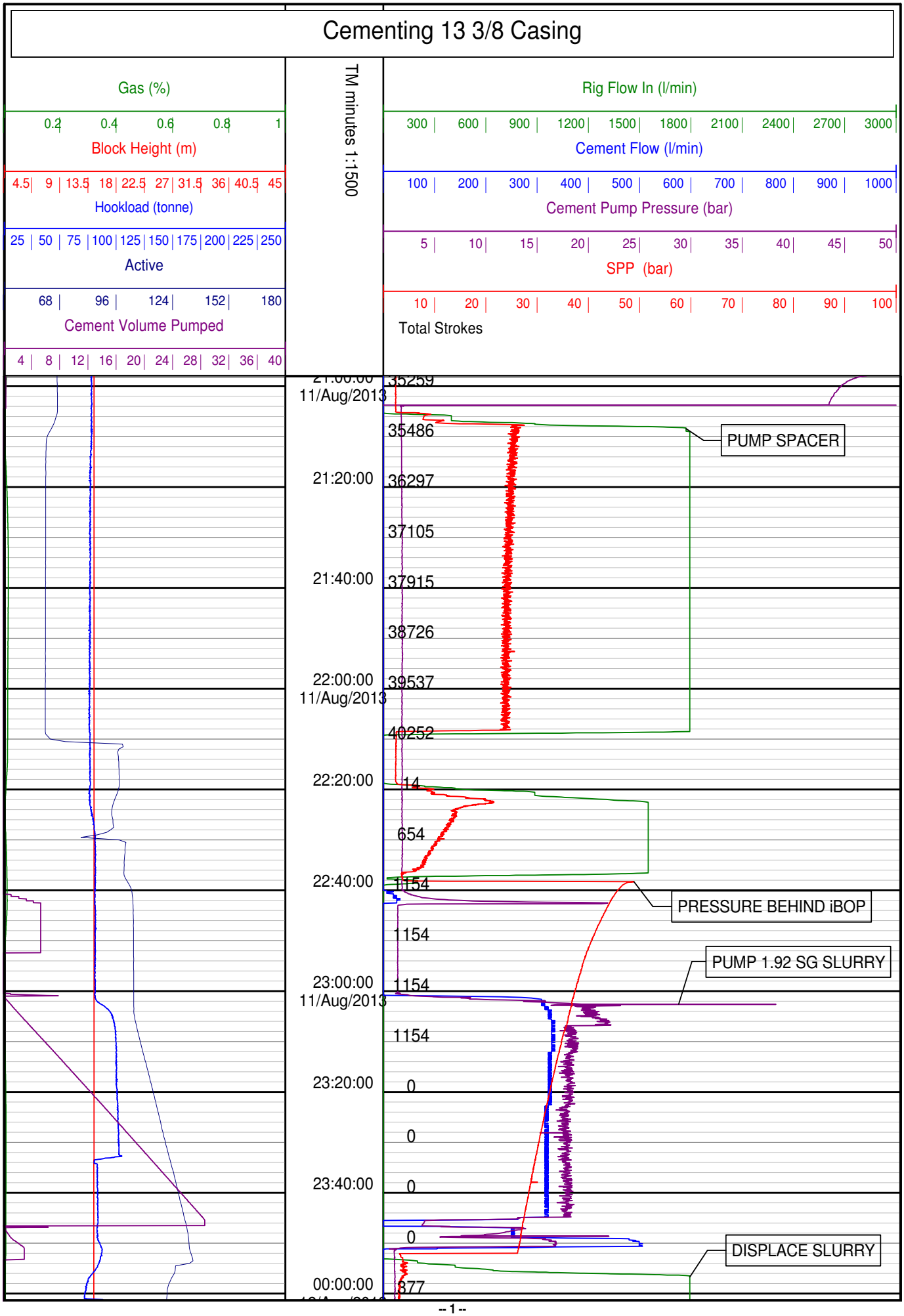
APPENDIX C

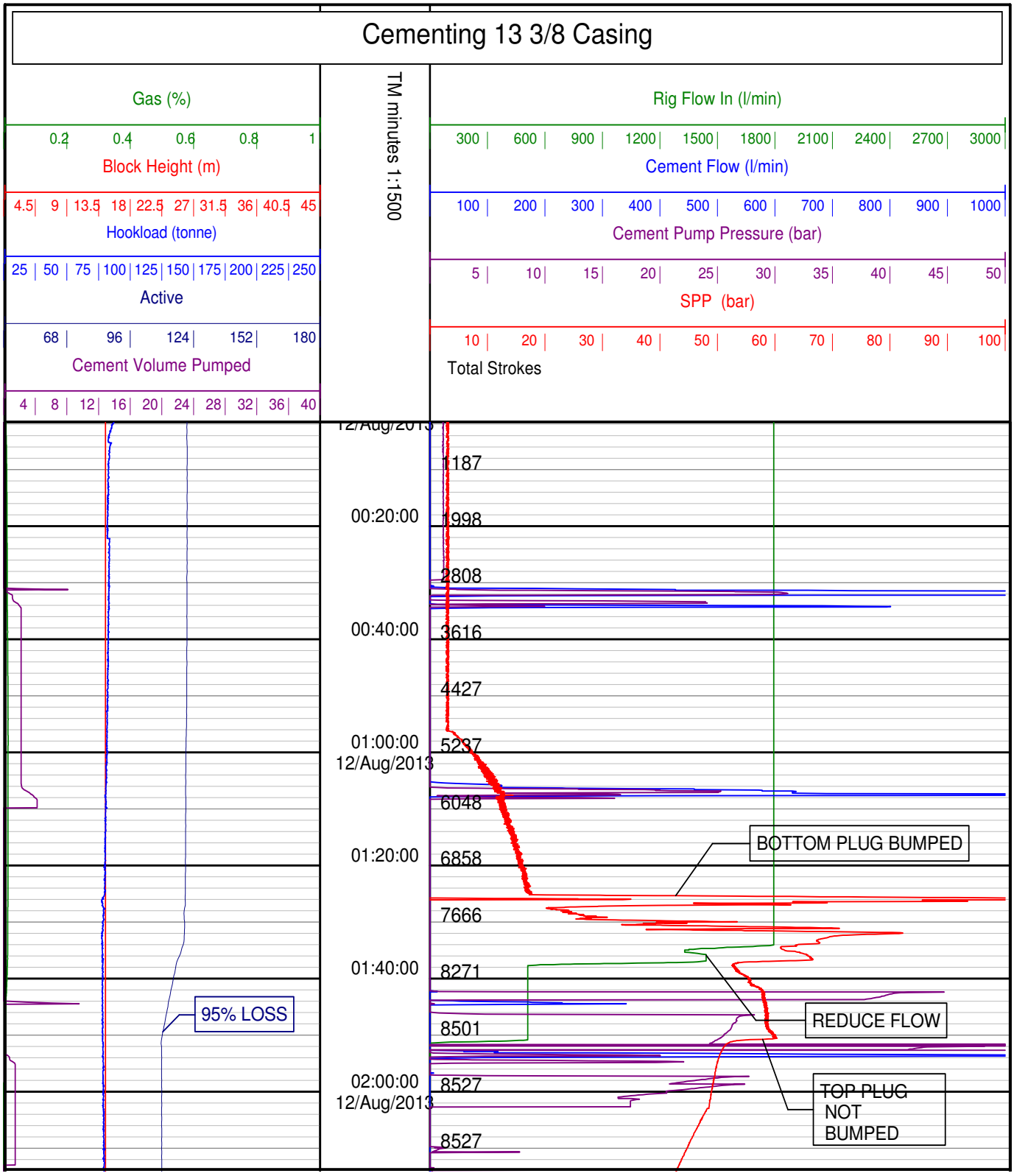
CEMENT PLOTS

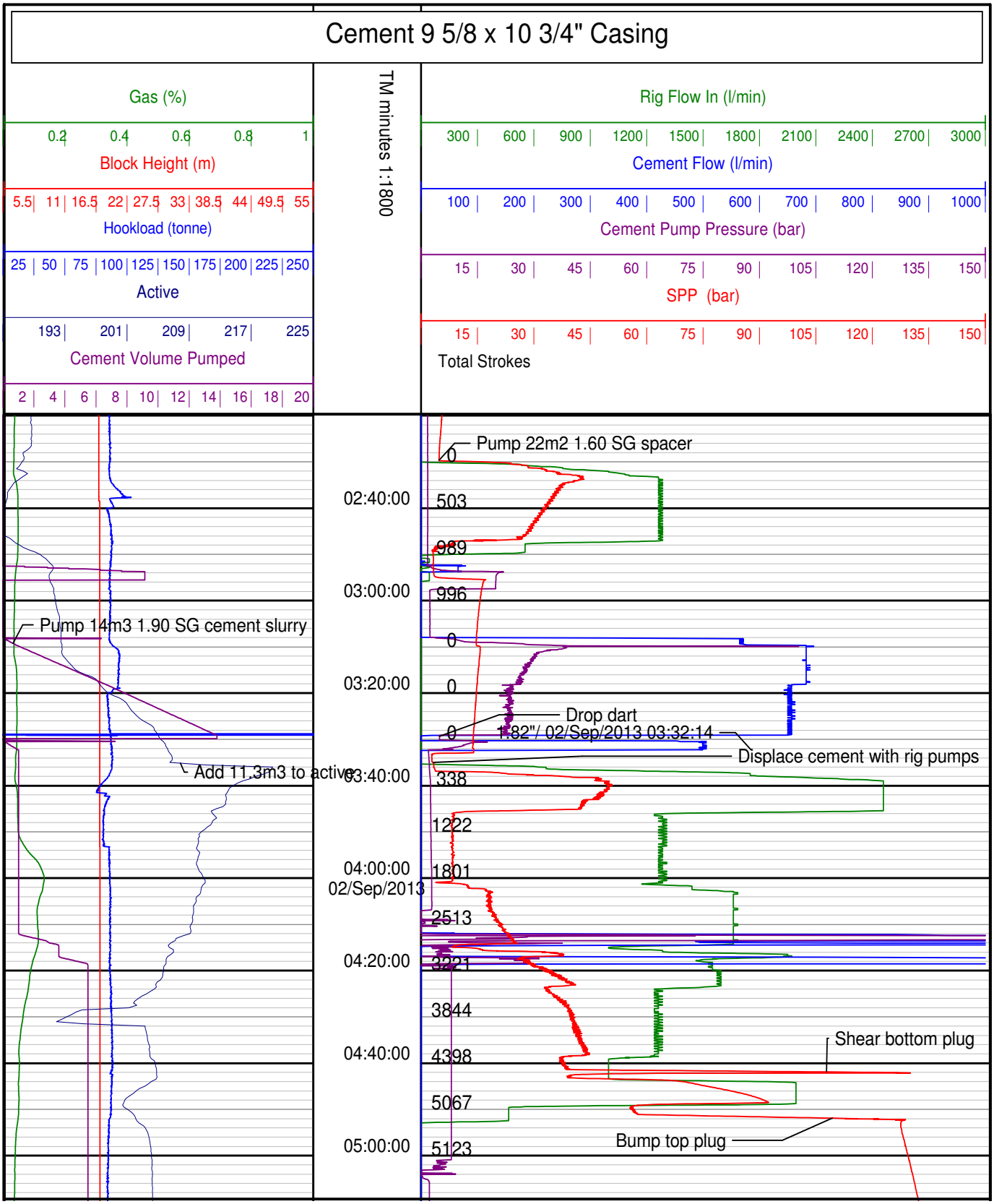
Cement 20" Casing

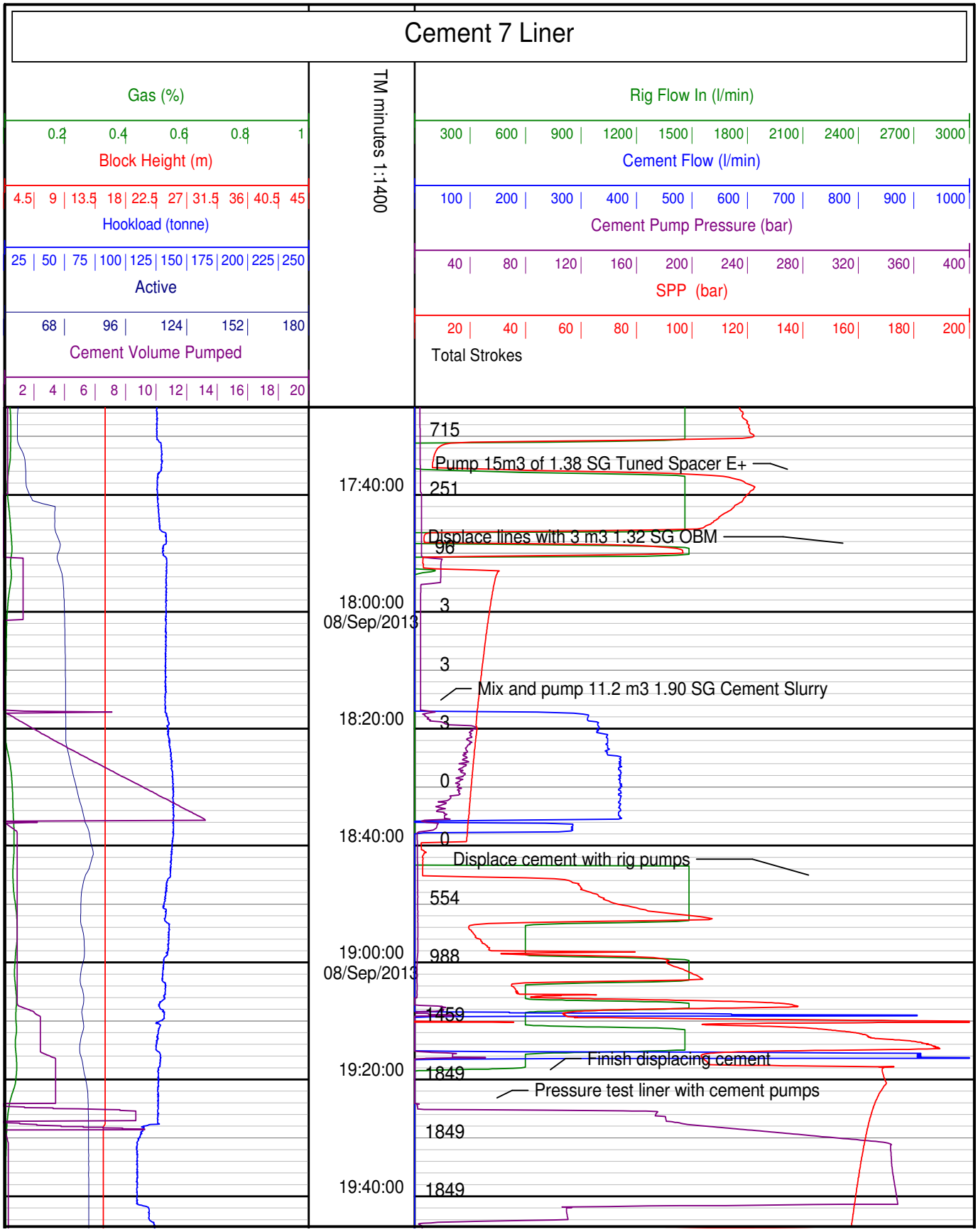



Cement 20" Casing
Gas (%)
0.2
0.4
0.6
0.8
1
Block Height (m)
5
10
15
20
25
30
35
40
45
50
Hookload (tonne)
25
50
75
100
125
150
175
200
225
250
Active
196
200
204
208
212
CEMENT.CEMTVOLPUMP
40
80
120
160
200
240
280
320
360
400
TM minutes 1:2100
Rig Flow In (l/min)
350
700
1050
1400
1750
2100
2450
2800
3150
3500
Cement Flow (l/min)
150
300
450
600
750
900
1050
1200
1350
1500
Cement Pump Pressure (bar)
5
10
15
20
25
30
35
40
45
50
SPP (bar)
25
50
75
100
125
150
175
200
225
250
Total Strokes
00:20:00
00:40:00
01:00:00
31/Jul/2013
01:20:00
01:40:00
02:00:00
31/Jul/2013
02:20:00
02:40:00
03:00:00
31/Jul/2013
03:20:00
03:40:00
04:00:00
0
255
1827
3397
4967
6537
8107
9396
9577
9577
4.04"/ 31/Jul/2013 09:56:10
Start Pumping 1.92 SG Tail Cement Slurry
Pumped 304 m3 of Lead and 30 m3 of Tail Slurry
Drop top dart
Start Displacement with rig pumps
Displaced with 9669 strokes


Cementing 13 3/8 Casing
Gas (%)
0.2
0.4
0.6
0.8
1
Block Height (m)
4.5
9
13.5
18
22.5
27
31.5
36
40.5
45
Hookload (tonne)
25
50
75
100
125
150
175
200
225
250
Active
68
96
124
152
180
Cement Volume Pumped
4
8
12
16
20
24
28
32
36
40
TM minutes 1:1500
Rig Flow In (l/min)
300
600
900
1200
1500
1800
2100
2400
2700
3000
Cement Flow (l/min)
100
200
300
400
500
600
700
800
900
1000
Cement Pump Pressure (bar)
5
10
15
20
25
30
35
40
45
50
SPP (bar)
10
20
30
40
50
60
70
80
90
100
Total Strokes
11/Aug/2013
35259
35486
PUMP SPACER
21:20:00
36297
37105
21:40:00
37915
38726
22:00:00
39537
11/Aug/2013
40252
22:20:00
14
654
22:40:00
1154
PRESSURE BEHIND iBOP
1154
PUMP 1.92 SG SLURRY
23:00:00
1154
11/Aug/2013
1154
23:20:00
0
0
23:40:00
0
0
DISPLACE SLURRY
00:00:00
877


Cementing 13 3/8 Casing
Gas (%)
0.2
0.4
0.6
0.8
1
Block Height (m)
4.5
9
13.5
18
22.5
27
31.5
36
40.5
45
Hookload (tonne)
25
50
75
100
125
150
175
200
225
250
Active
68
96
124
152
180
Cement Volume Pumped
4
8
12
16
20
24
28
32
36
40
TM minutes 1:1500
Rig Flow In (l/min)
300
600
900
1200
1500
1800
2100
2400
2700
3000
Cement Flow (l/min)
100
200
300
400
500
600
700
800
900
1000
Cement Pump Pressure (bar)
5
10
15
20
25
30
35
40
45
50
SPP (bar)
10
20
30
40
50
60
70
80
90
100
Total Strokes
1187
00:20:00
1998
2808
00:40:00
3616
4427
01:00:00
12/Aug/2013
5237
6048
01:20:00
6858
7666
01:40:00
8271
8501
02:00:00
12/Aug/2013
8527
8527
BOTTOM PLUG BUMPED
REDUCE FLOW
TOP PLUG NOT BUMPED
95% LOSS


Cement 9 5/8 x 10 3/4" Casing
Gas (%)
0.2
0.4
0.6
0.8
1
Block Height (m)
5.5
11
16.5
22
27.5
33
38.5
44
49.5
55
Hookload (tonne)
25
50
75
100
125
150
175
200
225
250
Active
193
201
209
217
225
Cement Volume Pumped
2
4
6
8
10
12
14
16
18
20
TM minutes 1:1800
Rig Flow In (l/min)
300
600
900
1200
1500
1800
2100
2400
2700
3000
Cement Flow (l/min)
100
200
300
400
500
600
700
800
900
1000
Cement Pump Pressure (bar)
15
30
45
60
75
90
105
120
135
150
SPP (bar)
15
30
45
60
75
90
105
120
135
150
Total Strokes
Pump 22m2 1.60 SG spacer
0
503
989
996
0
0
0
Drop dart
1.82"/ 02/Sep/2013 03:32:14
Displace cement with rig pumps
338
1222
1801
2513
3221
3844
4398
5067
5123
Shear bottom plug
Bump top plug
Pump 14m3 1.90 SG cement slurry
Add 11.3m3 to active
02:40:00
03:00:00
03:20:00
03:40:00
04:00:00
02/Sep/2013
04:20:00
04:40:00
05:00:00


Cement 7 Liner
Gas (%)
0.2
0.4
0.6
0.8
1
Block Height (m)
4.5
9
13.5
18
22.5
27
31.5
36
40.5
45
Hookload (tonne)
25
50
75
100
125
150
175
200
225
250
Active
68
96
124
152
180
Cement Volume Pumped
2
4
6
8
10
12
14
16
18
20
TM minutes 1:1400
Rig Flow In (l/min)
300
600
900
1200
1500
1800
2100
2400
2700
3000
Cement Flow (l/min)
100
200
300
400
500
600
700
800
900
1000
Cement Pump Pressure (bar)
40
80
120
160
200
240
280
320
360
400
SPP (bar)
20
40
60
80
100
120
140
160
180
200
Total Strokes
715
Pump 15m3 of 1.38 SG Tuned Spacer E+
17:40:00
251
Displace lines with 3 m3 1.32 SG OBM
96
18:00:00
08/Sep/2013
3
3
Mix and pump 11.2 m3 1.90 SG Cement Slurry
18:20:00
3
0
18:40:00
0
Displace cement with rig pumps
554
19:00:00
08/Sep/2013
988
1459
19:20:00
1849
Finish displacing cement
Pressure test liner with cement pumps
1849
19:40:00
1849