HALLIBURTON | Sperry Drilling

Surface Data Logging
Formation Evaluation Log

1 : 500

Company : Lundin
Rig : Bredford Dolphin
Well : 16/2-7
Field : Avaldsnes
Country : Norway
DOE Number :

Country : Norway
Field : Avaldsnes
Location : Lat: 58° 46' 47.77" North Long: 2° 39' 16.29" East
Well : 16/2-7
Company : Lundin
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LOCATION
Latitude : 58° 46' 47.77" North
Longitude : 2° 39' 16.29" East
UTM Easting = 480,024.15 m
UTM Northing = 6,515,749.33 m

Other Services: MWD, Directional Drilling

Elev. KB 25.00 m, DF 25.00 m, GL 0.00 m, WD 113.00 m

Permanent Datum : Mean Sea Level Elevation : 113.00 m
Log Measured From : Drill Floor 25.00 m Above Permanent Datum
Drilling Measured From : Drill Floor

MD LOG

Depth Logged : 138.00 m To 2,500.00 m
Date Logged : 18-Jul-11 To 26-Aug-11
Total Depth MD : 2,500.00 m TVD : 2,499.87 m
Spud Date : 18-Jul-11
Unit No. : 69358 Job No. : NR-XX-0007932643
Plot Type : Field
Plot Date : 13-Oct-11

Borehole Record (MD)

Run No.	Size	From	To
1	9.875 in	138.00 m	708.00 m
5	12.250 in	708.00 m	1,820.00 m
6	13.250 in	1,820.00 m	1,825.00 m
7	8.500 in	1,825.00 m	1,924.00 m
8	8.500 in	1,924.00 m	1,951.00 m
8RR	8.500 in	1,951.00 m	1,968.00 m
8RR2	8.500 in	1,968.00 m	1,973.00 m
7RR	8.500 in	1,973.00 m	2,050.00 m
9	12.500 in	2,050.00 m	2,100.00 m
7RR2	8.500 in	2,100.00 m	2,198.00 m
10	8.500 in	2,198.00 m	2,216.50 m
7RR3	8.500 in	2,216.50 m	2,283.00 m
7RR4	8.500 in	2,283.00 m	2,397.00 m
11	8.500 in	2,397.00 m	2,500.00 m

Casing Record (MD)

Size	Weight	From	To
30.000 in	461.00 kgpm	138.00 m	216.00 m
20.000 in	195.39 kgpm	138.00 m	700.00 m
13.375 in	107.15 kgpm	138.00 m	1,772.20 m
9.625 in	79.62 kgpm	1,707.00 m	2,098.00 m

Sand, Sandstone, Siltstone, Clay, Claystone, Coal, Limestone, Dolomite, Marl, Chalk, Tuff, Granite, No Sample

Limestone stringer, Dolomite stringer, Calcareous, Argillaceous, Silt / Silty, Sand / Sandy, Pyrite / Pyritic, Glauconite / Galuconitic, Mica / Micaceous, C Coal / Carbonaceous, V Tuff / Tuffaceous, Casing shoe

RPM Total (rev per min) 0–250; WOB Avg (mton) 0–50; ROP (m/hr) 100–0; m MD; m TVD; Cuttings Lithology; Deep Phase Res (ohmm) 0.2–200; Shallow Phase Res (ohmm) 0.2–200; Total Gas (%) 0–1; Gamma Ray (api) 0–150; C5 Norm Avg, C5 Iso Avg, C4 Norm Avg, C4 Iso Avg, C3 Avg, C2 Avg, C1 Avg (ppm) 10–100K; Interpreted Lithology; Lithology Descriptions

Remarks

Well spudded on 19.07.11. Seabed at 138 m MDRT

Bit 1 GX-C1X
9 7/8" Pilot hole
3x24,1x20
TFA: 1.632 in2
In 138m, Out 710m
Drilled 572m in 21.8hrs
1-1-WT-A-E-NO-TD

Drilled with SW and hi-vis sweeps
Returns to sea bed

30" Conductor at 216 m

Drilled with SW and hi-vis sweeps
Returns to sea bed

Drilled with SW and hi-vis sweeps
Returns to sea bed

19.07.11
20.07.11

Drilled with SW and hi-vis sweeps
Returns to sea bed

Drilled with SW and hi-vis sweeps
Returns to sea bed

Open Pilot Hole to 26"

20" Casing at 699.6 m

TD 9 7/8" Pilot Hole section
20.07.11
21.07.11

Bit 5 E145033
9 7/8" x 12 1/4" hole
8x10, 2x11
TFA: 0.7992 in2
17 1/2" under reamer
In 708 m, Out 1820 m
Drilled 1112 m in 75.1 hrs
0-0-NO-A-X-I-NO-TD

28.07.11
29.07.11

MW: 1.35
PV/YP: 23 / 7.2
Gels: 1.4 / 1.9

MW: 1.35
PV/YP: 24 / 9.1
Gels: 1.4 / 1.9

MW: 1.35
PV/YP: 30 / 11.5
Gels: 1.9 / 2.4

MW: 1.35
PV/YP: 30 / 13.4
Gels: 1.9 / 2.4

29.07.11
30.07.11

MW: 1.35
PV/YP: 39 / 15.3
Gels: 2.4 / 3.3

MW: 1.35
PV/YP: 40 / 15.8
Gels: 3.2 / 2.4

MW: 1.35
PV/YP: 40 / 15.8
Gels: 2.8 / 3.8

30.07.11
31.07.11

MW: 1.35
PV/YP: 39 / 16.3
Gels: 2.3 / 2.9

MW: 1.35
PV/YP: 46 / 17.2
Gels: 2.9 / 4.3

MW: 1.35
PV/YP: 36 / 22
Gels: 2.9 / 4.3

Lithology Descriptions

Start sampling @710m MD

CLST: med lt gry - med gry, med dk gry, sft, stky, sub bkkly, slty - non calc, r carb, occ micropyr.

CLST: med lt gry - med gry, med dk gry, sft, stky, sub bkkly, slty - calc, r carb. occ micropyr.

Utsira Fm @ 792m MD / 792m TVD

SST: clr - trnsl, f - med, sbrndd - rndd, mod srt, lse qtz Gr.

SST: lt gry - lt olv gry, sft, vf - m, clr - trnsl Qtz, sbang - sbrndd, occ rndd, mod - wl srt, pred arg/slty Mtrx, slity calc I.P., slity glauc/carb, lse I.P.

Hordaland Gp / Hordaland Undiff 892m MD / 892m TVD

CLST: Pred olv gry, occ m gry & dk gnsh gry, sft, sbblky-amor, slty, slity carb-v carb I.P., occ glauc, slity calc.

Skade Fm @ 976m MD / 976m TVD

SST: V lt gry-lt gry, calc cmt, lt brnsh gry-lt olv gry, slity calc, vf-m, sbang-sbrndd, mod-wl srt, also lse clr-trnsl Qtz Gr.

Undiff 1026m MD / 1026m TVD

CLST: Olv gry, dk gnsh gry, sft, sbblky, slity carb, abd glauc, slily calc, slily slty.

CLST: dk gnsh gry, olv gry, sft - frm, sbblky, slily carb, tr glauc, slily calc, Sltst.

CLST: olv gry-dk yelsh brn, occ dk gnsh gry, dsky yelsh brn - brnsi gry, v glauc I.P., sbblky, micromic, micropir r carb, slily calc

CLST: brnsh gry - olv gry, sft - frm, sbblky, slily calc, slily slty, slily micromica, slily micropyr, v slily carb spk

Grid Fm @ 1314m MD / 1314m TVD

CLST: Brnsh gry - olv gry, sft - frm, sbblky, slily calc, slily slty, slily micromica, slily micropyr, v slily carb spk

Rogaland Gp / Balder Fm @ 1399m MD / 1399m TVD

TF: m gry-m dk gry and med blush gry, sft, ashy, slily micropyr, slily carb, rare slty, pred non calc, occ slily calc

Top Sele Fm 1422.0 m MD / 1422 m TVD

CLST: m gry-m dk gry and med blush gry, sft, ashy, slily micropyr, slily carb, rare slty, pred non calc, occ slily calc

CLST: m dk gry-olv gry, dk gnsh gry, sft-frm, sbblky, slily microMica, slily micropyr, r slty, gen non calc-occ slily calc, r carb.

Våle Fm 1499 m MD / 1499 m TVD

LS: cln mky wh - v lt gry, com sft - frm, r blky, chlky i.p., sbblky, crpxln - microxln.

LS: cln mky wh - v lt gry, com sft - frm, r blky, chlky i.p., sbblky, crpxln - microxln.

LS: cln mky wh - v lt gry, com sft -


31.07.11
01.08.11
frm, r blky, chky i.p, sbblky, crpxln - microxln.
Hod Fm 1624 m MD / 1624 m TVD
LS: wh, frm - sft, sbblky - amor, occ blky, chky, r arg Strk.
MW: 1.35
PV/YP: 55 / 18.2
Gels: 2.9 / 4.7
MW: 1.35
PV/YP: 44 / 18.7
Gels: 2.9 / 4.8
LS: cln mky wh ,v r pksh gry, com sft - frm, r blky, chlky i.p, sbblky, crpxln - microxln.
Blodøks Fm 1737.5 m MD / 1737.5 m TVD
CLST: m lt gry, m gry, sft-frm, sbblky-blky, slily microMica, slily micropyr, slily slty, r carb, v calc grad Mrl.
MW: 1.35
PV/YP: 47 / 21.5
Gels: 3.3 / 5.2
Svarte Fm 1763.5 m MD / 1763.5 m TVD
LS: wh - v lt gry, sft - frm, sbblky - blky, chky.
13 3/8" Casing at 1772 m
MRL: lt brnsh gry - pksh gry, m lt gry - lt olv gry, lt brnsh gry, bcm pt m dk gry, sft - frm, sbblky - blky, slily slty, slily glauc/carb.
MW: 1.35
PV/YP: 48 / 21.1
Gels: 2.9 / 4.8
Displace to 1.2 sg mud
Cromer Knoll Gp @1802m MD / 1802m TVD
MRL: varic,lt olv gry - lt brnsh gry, m dk gry, grysh or pk, gnsh gry, bcm pt pl yelsh brn - pl brn, sft - frm, sbblky, slty, slily micromic, slily micropyr, slily carb spk.
01.08.11
05.08.11
Bit 6 MXL-3
12 1/4"
3x24
TFA: 1.325 in2
In 1820 m, Out 1825 m
Drilled 5 m in 0.7 hrs
1-1-WT-A-E-I-NO-BHA
Bit 7 SDR513D-A1-Z
8 1/5"
6x11, 2x12
TFA: 0.778 in2
In 1825 m, Out 1924 m
Drilled 98.5 m in 13.8 hrs
0-0-NO-A-X-I-NO-CP
MRL: m dk gry - m lt gry, olv gry - brnsh gry, sft, sbblky, ea, slily stky, slily slty - slty ,Tr microMic, LS, carb Mat,r Tr Glauc.
MRL: pred m gry - m dk gry, m dk gry, amor . sbblky, ea, slily stky, slily slty - slty, Tr carn Mat, r Tr microMic, pyr
Sola Fm 1886.5 m MD / 1886.5 m TVD
MRL: mod brn - lt brn, sft - frm, sbblky - amor, slily stky, slily slty, slily micromic, slily micropyr.
Åsgard Fm 1900 m MD / 1900 m TVD
LS: v lt gry - grysh or pk - lt brn, sft - frm, sbblky - occ amor, slily arg,
07.08.11
08.08.11
Bit 8 HDBS Coring
FC3647A
Core #1: 1924 - 1951m MD.
99.1% Recovery
Floating gas trap was used while cutting core #1
Viking Gp (Draupne fm) @1937.5m MD / 1937.5m TVD
Top Reservoir (Jurassic)@1941.5m MD / 1941.5m TVD
Core #2: 1951 - 1968m MD.
99.2% Recovery
Core #3: 1968 - 1974 m MD.
98.5% Recovery
SST: Lse qtz, clr - v ltgry, pred trnsl, f - crs, pred crs, sbrndd -rndd, mod - wl srt, no vis por Tr Mic incl, Pyr, Glauc.
10.08.11
11.08.11
Bit 7RR SDR513D-A1-Z
8 1/5"
6x11, 2x12
TFA: 0.778 in2
In 1974 m, Out 2050 m
Drilled 76.0 m in 3.4 hrs
1-1-CT-T-X-I-PN-TD
CLST: varic, dk rdsh brn - mod rdsh brn, dk gry -grysh blk, frm, blky, non - v sl slty, v calc, grad Mrl.
Top Triassic@1988.5m MD / 1988.5m
LS: wh - v lt gry, sft - frm, amor - blky, I.P. suc, I.P. arg, Tr carb Mat.
MW: 1.20
PV/YP: 30 / 12.4
Gels: 2.4 / 2.9
CLST: m lt gry - gnsh gry, dk rdsh brn - m rdsh brn, sft - frm, amor - sbblky, v sl slty, calc - v calc, I.P. grad Mrl.
CLST: m lt gry -gnsh gry, sft - frm, amor - sbblky, Kao, calc - v calc, aren, vf - f, grad arg Sst, Tr Mic, r Glauc.
SST: clr -trnsl, occ mky wh lse qtz Grs, f - gran, pred f - m, sbang - sbrndd, occ rndd, mod srt, gd Tr lse pl rdsh, rd - m brn Grs, TrPyr Nod
SST: dsky rdsh brn - grnsh brn, sft, fri, amor - sbblky, v slty, grad aren Stst, occ arg, grad Clst.
11.08.11
12.08.11
CLST: m lt gry -gnsh gry, sft - frm, fri, amor -sbblky, Kao calc - v calc, aren, vf - f grad Sst, Tr Mic, r Glauc.
Bit 9 SDF516S-B1-Z
8 1/5" x 12 1/4"
5x12, 5x10
TFA: 0.936 in2
In 2050 m, Out 2100 m
Drilled 50.0 m in 2.7 hrs
1-1-WT-A-X-I-CT-TD
SST: dk rdsh brn-mod brn, grysh brn, clr-lt gry, mod or pk-mod rdsh, vf-f, occ m-crs rndd Qtz Grs, pr srt, sft-frm, amor-sbblky, slty, dk rdsh brn-mod brn, calc arg Mtrx, v calc, pr vis por, Tr carb Mat, Pyr, Mic Incl, r Tr microMic.
SST: dk rdsh brn-mod brn, grysh brn, clr-lt gry, mod or pk-mod rdsh, vf-f, occ m-crs rndd Qtz Grs, pr srt, sft-frm, amor-sbblky, slty, dk rdsh brn-mod brn calc arg Mtrx, v calc, pr vis por, Tr carb Mat, Pyr, Mic Incl, r Tr microMic.
LS: v lt gry-lt gnsh gry, wh-pkish gry, sft-frm, amor, ang, suc-wxy, I.P. arg, dk gnsh gry Stks.
SST: dk rdsh brn-mod brn, grysh brn, occ pl yelsh brn-dk yelsh brn, yelsh brn, calc arg Mtrx, vf-f, occ m-crs.
9 5/8" Liner at 2098 m
16.08.11
17.08.11
Bit 7RR2 SDR513D-A1-Z
8 1/5"
6x11, 2x12
TFA: 0.778 in2
In 2100 m, Out 2198m
Drilled 98.0 m in 7.1 hrs
1-1-CT-T-X-I-NO-TD
SST: dk rdsh brn-mod brn, grysh brn, occ pl yelsh brn-dk yelsh brn, yelsh brn, calc arg Mtrx, vf-f, occ m-crs.
Top Zechstein@2133.5m MD / 2133.5m
ANHY: wh-v pl or, sft, crumbly, sbblky-amor, slily calc-calc, chky txt, mnr Pyr.
MW: 1.150
PV/YP: 20/ 6.2
Gels: 2.1 / 2.4
MRL: mod brn, frm, sbblky, grad arg Ls I.P., grad arg Ls I.P., grad calc Clst I.P., slty I.P.
MW: 1.150
PV/YP: 23 / 10.5
Gels: 2.1 / 2.4
CLST: grysh brn-mod brn, sft, sbblky-amor, slty I.P., v calc-v calc.
LS: mky wh-v pl or, r lt gnsh gry, sft-frm, r mod hd, crumbly, sbblky, microxln, Tr Clst+Mrl.
CLST: olv gry-dk gry-lt gry, sft-frm, amor-sbblky, crumbly, slily stky, calc-v calc, spkld, lam, slily slty-sdy I.P.
CLST: olv gry-dk gry-lt gry, sft-frm, amor-sbblky, crumbly, slily stky, calc-c calc, spkld, lam, slily slty-sdy I.P.
19.08.11
20.08.11
Bit 10 HDBS Coring
FC3843
Core #4: 2198 - 2216.5m MD.
99.5% Recovery
Core #4 2198-2216.5 m: Limestone and Dolomite
Ls: v lt gry-lt gry, yelsh gry, mod hd-hd, blky, brit-crumbly, microxln, slily suc I.P., v slily arg I.P., Dol I.P., tr micropyr & nod pyr (ca. 2mm), occ Shl Frags, no-v pr vis por
Dol Ls: yelsh gry-v pl yelsh brn,mod hd-hd, slily brit I.P, blky, suc I.P., v slily arg I.P., grad Dol Ls I.P, microxln, non-v pr vis por
20.08.11
21.08.11
Bit 7RR3 SDR513D-A1-Z
8 1/5"
6x11, 2x12
TFA: 0.778 in2
In 2216.5m, Out 2283m
Drilled 66.5m in 10 hrs
1-1-CT-T-X-I-NO-CP
CLST: med gry-brnsh gry, sft, sdbblky-amor, dk gry microcarb spks, r tr micropyr, s+l calc, sl slty I.P.
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
MW: 1.150
PV/YP: 24/ 11
Gels: 2.1 / 2.4
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
21.08.11
22.08.11
Bit 10RR HDBS Coring
FC3843
Core #5: 2283 - 2310m MD.
98.9% Recovery
Conglomerate: Brtl grnt, up to bpl sz, occ cobble sz, in mod brn to gresh, snd mtrx, clr trns to mlky wh to lt grey, pl org, occ bluish grey, and gnsh qrtz, silica cmt and sl calc, micaceous, no to poor, rare mod vis porosity.
22.08.11
23.08.11
Bit 7RR4 SDR513D-A1-Z
8 1/5"
6x11, 2x12
TFA: 0.778 in2
In 2311m, Out 2397m
Drilled 86m in 21.9 hrs
8-1-CR-C-X-I-PN-PR
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
23.08.11
24.08.11
MW: 1.155
PV/YP: 31 / 13.9
Gels: 2.5 / 3.0
CLYST:olc blk-dsky yelsh brn, frm, sbblky, mic com, slily slty, non calc.
Bit 11 E4328DP
8 1/2"
2x18, 1x20
TFA: 0.8038 in2
In 2397m, Out 2500m
Drilled 103m in 8.3 hrs
1-1-NT-A-E-1-NO-TD
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
25.08.11
26.08.11
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
MW: 1.150
PV/YP: 32 / 24.9
Gels: 2.0 / 3.5
SST: clr trnsl-lt gry, occ mod rdsh or Qtz, vf-v crs, pr srtd, sbang-ang, lse gr, occ calc & mod brn arg mtx, mic.
Well TD at 2500m MD/2499.9m TVD reached on 26.08.11
Remarks
100 ROP 0
m/hr
0 WOB Avg 50
mton
0 RPM Total 250
rev per min
m MD
m TVD
Cuttings Lithology
0.2 Shallow Phase Res 200
ohmm
0.2 Deep Phase Res 200
ohmm
0 Gamma Ray 150
api
0 Total Gas 1
%
10 C1 Avg 100K
ppm
10 C2 Avg 100K
ppm
10 C3 Avg 100K
ppm
10 C4 Iso Avg 100K
ppm
10 C4 Norm Avg 100K
ppm
10 C5 Iso Avg 100K
ppm
10 C5 Norm Avg 100K
ppm
Interpreted Lithology
Lithology Descriptions