



Generell informasjon

Brønnbane navn	16/1-13
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	EDVARD GRIEG
Funn	16/1-8 Edvard Grieg
Brønn navn	16/1-13
Seismisk lokalisering	LN0803 OBS -inline 3179 & crossline 2503
Utvinningstillatelse	338
Boreoperatør	Lundin Norway AS
Boretillatelse	1279-L
Boreinnretning	TRANSOCEAN WINNER
Boredager	53
Borestart	30.11.2009
Boreslutt	21.01.2010
Frigitt dato	21.01.2012
Publiseringsdato	21.01.2012
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	EARLY CRETACEOUS
1. nivå med hydrokarboner, formasjon.	NO FORMAL NAME
2. nivå med hydrokarboner, alder	LATE JURASSIC
2. nivå med hydrokarboner, formasjon	INTRA DRAUPNE FM SS
3. nivå med hydrokarboner, alder	JURASSIC/TRIASSIC
3. nivå med hydrokarboner, formasjon	UNDEFINED GP
Avstand, boredekk - midlere havflate [m]	26.0
Vanndybde ved midlere havflate [m]	109.5
Totalt målt dybde (MD) [m RKB]	2303.0
Totalt vertikalt dybde (TVD) [m RKB]	2301.0



Maks inklinasjon [°]	4.1
Temperatur ved bunn av brønnbanen [°C]	92
Eldste penetrerte alder	LATE TRIASSIC
Eldste penetrerte formasjon	HEGRE GP
Geodetisk datum	ED50
NS grader	58° 51' 17.39" N
ØV grader	2° 15' 17.8" E
NS UTM [m]	6524276.81
ØV UTM [m]	457013.22
UTM sone	31
NPDID for brønnbanen	6232

Brønnhistorie

**General**

Well 16/1-13 was drilled to appraise the Luno Discovery on the southern part of the Utsira High in the North Sea. The Luno discovery was made after drilling the 16/1-8 well in 2007 and confirmed by the appraisal well, 16/1-10. The objectives of well 16/1-13 were to confirm the resource estimates for the Luno Discovery, prove the presence of Jurassic sediments with good reservoir properties, and to improve understanding of the reservoir facies distribution.

Operations and results

Appraisal well 16/1-13 was spudded with the semi-submersible installation Transocean Winner on 30 November 2009 and drilled to TD at 2303 m in the Late Triassic Hegre Group. A precautionary 9 7/8" pilot hole was drilled from seabed to a depth of 606 m MD RKB. MWD logs in the pilot hole confirmed that all permeable formations were water bearing and shallow gas was not present. Minor gas sands were observed in the main bore at 631 and 726 m, but no gas flow occurred. The well was drilled with Seawater and hi-vis pills down to 606 m and with Glydril mud with 4 - 6 % glycol from 606 m to TD.

Well 16/1-13 proved a 50 m oil column in Jurassic / Triassic sandstones with excellent reservoir characteristics. The pressure at the top of the reservoir was measured at 193.2 bar (equivalent to a gradient of 1.028 g/cc). Pressure measurements and samples established an oil gradient of 0.069 bar/m with an oil-water contact at 1966.5 m (1939 m TVD MSL). A water gradient of 0.101 bar/m was established below the OWC. The water zone lithology consisted of sandstones and conglomerates, the latter of relatively poor reservoir quality. The first oil shows in well 16/1-13 were observed in the shale at the top of core number 2 at 1918 m. From 1967.4 m (1965.4 m TVD) in core number 4 the sandstones became thickly interbedded with tightly cemented conglomerates. The latter did not contain any visible hydrocarbon shows; however shows were present within the sandstone layers down to 1972.7 m (1970.7 m TVD). Below this depth and above reservoir level no oil shows were seen.

An extensive data acquisition program was undertaken. In total five cores were cut from 1917.0 to 2001.1 m with 97 % total recovery. Four cores covered the complete oil column and one core was taken in the water zone. MDT fluid samples were taken at 1924.5 m (oil), 1965 m (oil), 1967.2 m (water and trace oil), and 1973 m (water and trace oil).

The well was permanently abandoned on 21 January 2010 as an oil appraisal.

Testing

No drill stem test was performed.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
610.00	2303.50

Borekaks tilgjengelig for prøvetaking?	YES
--	-----

Borekjerne i Sokkeldirektoratet



Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1917.0	1917.7	[m]
2	1917.7	1919.5	[m]
3	1919.7	1944.7	[m]
4	1946.7	1973.3	[m]
5	1973.7	2001.1	[m]

Total kjerneprøve lengde [m]	81.5
Kjerner tilgjengelig for prøvetaking?	YES

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST		1924.50	0.00			YES
DST		1965.00	0.00			YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
135	NORDLAND GP
766	UTSIRA FM
878	HORDALAND GP
952	SKADE FM
1467	GRID FM
1764	ROGALAND GP
1764	BALDER FM
1771	SELE FM
1787	LISTA FM
1877	VÅLE FM
1888	SHETLAND GP
1888	EKOFISK FM
1917	HOD FM
1918	CROMER KNOLL GP
1918	ÅSGARD FM



1919	VIKING GP
1919	INTRA DRAUPNE FM SS
1920	UNDEFINED GP
1960	HEGRE GP

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
6232_16_1_13	pdf	0.47

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
FMI PPC MSIP PPC EDTC ACTS ECRD	1875	2304
HRLA PEX ECS HNGS ACTS LEH QT	1875	2298
MDT GR	1924	1973
MRX GR ACTS ECRD	1890	2301
MSCT GR ECRD	1890	2301
MWD LWD - GR RES PWD DIR	135	606
MWD LWD - GR RES PWD DIR	1881	1917
MWD LWD - GR RES PWD DIR	2200	2303
MWD LWD - GR RES PWD DIR SON DEN	606	1881
MWD LWD - GR RES PWD DIR SON DEN	1917	2200
VSI	616	2295
XPT GR ACTS ECRD	1918	2185

Foringsrør og formasjonsstyrketester

Type utforing	Utforing diam. [tommer]	Utforing dybde [m]	Brønnbane diam. [tommer]	Brønnbane dyp [m]	LOT/FIT slam eqv. [g/cm3]	Type formasjonstest
CONDUCTOR	30	213.0	36	213.0	0.00	LOT
SURF.COND.	20	600.0	26	606.0	1.61	LOT
PILOT HOLE		606.0	9 7/8	606.0	0.00	LOT
INTERM.	9 5/8	1875.0	12 1/4	1881.0	1.81	LOT





OPEN HOLE		2303.0	8 1/2	2303.0	0.00	LOT
-----------	--	--------	-------	--------	------	-----

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
217	1.04			Water	
290	1.00			Water	
606	1.04			Water	
1881	1.37			Water	
2001	1.21			Water	
2119	1.21			Water	
2200	1.21			Water	
2269	1.21			Water	
2303	1.27			Water	
2303	1.20			Water	
2303	1.21			Water	

Trykkplott

Porertrykksdataene kommer fra logging i brønnen hvis ingen annen kilde er oppgitt. I noen brønner der trykk ikke er logget, er det brukt informasjon fra formasjonstester eller brønnspark. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

Dokument navn	Dokument format	Dokument størrelse [KB]
6232_Formation_pressure_(Formasjonstrykk)	pdf	0.23

