Generell informasjon

Brønnbane navn	16/1-12
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Funn	16/1-12 Troldhaugen
Brønn navn	16/1-12
Seismisk lokalisering	inline:LN09M2 36056 Crossline:LN09M2 127920
Utvinningstillatelse	338
Boreoperatør	Lundin Norway AS
Boretillatelse	1262-L
Boreinnretning	SONGA DEE
Boredager	42
Borestart	29.07.2009
Boreslutt	08.09.2009
Frigitt dato	08.09.2011
Publiseringsdato	08.09.2011
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	PRE-DEVONIAN
1. nivå med hydrokarboner, formasjon.	BASEMENT
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	107.0
Totalt målt dybde (MD) [m RKB]	2055.0
Totalt vertikalt dybde (TVD) [m RKB]	2055.0
Maks inklinasjon [°]	1.3
Temperatur ved bunn av brønnbanen [°C]	80
Eldste penetrerte alder	PRE-DEVONIAN
Eldste penetrerte formasjon	BASEMENT
Geodetisk datum	ED50

NS grader	58° 48' 22.53'' N
ØV grader	2° 15' 50.77'' E
NS UTM [m]	6518862.54
ØV UTM [m]	457482.17
UTM sone	31
NPDID for brønnbanen	6166

Brønnhistorie

General

Well 16/1-12 was drilled south of the Luno Discovery on the south-western part of the Utsira High. The Luno Discovery sits in an inlier basin where well 16/1-8 Luno Discovery well proved a 275 m thick Late Triassic to Jurassic sequence, overlain by a 25 m thick Late Cretaceous chalk sequence. The purpose of the well is to prove oil-filled sediments of Late - Middle Jurassic fluvial/marine and pre-Jurassic sediments south of the established Luno sediment basin. The potential reservoir was expected from the top of the Jurassic conglomeratic sandstones to the base of the Triassic sandstones and conglomerates (TD).

Operations and results

Well was spudded with the semi-submersible installation Songa Dee on 29 July 2009 and drilled to TD at 2055 m in pre-Devonian Basement rock. The well was drilled with seawater and sweeps down to 603 m and with Glydril mud from 603 m to TD.

Well 16/1-12 proved oil in weathered and faulted/fractured granitic basement beneath a thin, 20 - 30 cm, Early Cretaceous conglomerate. An oil/water contact was established at approximately 1954 m. An extensive data acquisition program was undertaken and the oil column was confirmed by oil sampling, pressure measurements and observations in both cores and sidewall cores. The weathered and fractured basement showed moderate reservoir characteristics with an average porosity of 9% and an average permeability of 1 mD. As fractured basement plays are rare on the Norwegian continental shelf, a large uncertainty applied to both reservoir properties and the lateral outline of the discovery. The latter being due to seismic image quality and to difficulties mapping the fracture/fault density.

The first oil shows in well 16/1-12 were observed in Core 4 at 1912 m after penetrating the thin, Cretaceous age, conglomerate layer below the Cromer Knoll marls. Moderate oil shows continued throughout the remainder of the cored interval, which consisted of fractured basement rocks. In cuttings from the subsequent drilling below the cored interval oil shows were more difficult to detect, however, poor shows were reported down to 1956 m. Oil was present in both the fractures and in secondary pore spaces.

A total of 8 conventional cores were taken in well 16/1-12. As planned, coring operations commenced at 1864 m in the Shetland Group limestones in order to core the transition into the reservoir. Mini DSTs were performed at 1922.5 m, 1946.8 m, and 1956.6 m. Test interpretation indicated permeability ranges of 2-30 mD, 5-100 mD, and approximately 700 mD respectively, for the three tests. Oil samples were obtained from the first two DSTs and water from the last.

The well was permanently abandoned on 8 September 2009 as an oil discovery.

Testing

No drill stem test was performed.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
610.00	2055.00

Borekaks tilgjengelig for prøvetaking?	YES

Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1864.0	1877.9	[m]
2	1878.5	1904.7	[m]
3	1904.7	1912.0	[m]
4	1912.0	1919.4	[m]
5	1919.5	1922.8	[m]
6	1923.0	1925.8	[m]
7	1926.0	1931.1	[m]
8	1931.5	1937.5	[m]

Total kjerneprøve lengde [m]	71.8
Kjerner tilgjengelig for prøvetaking?	YES

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
1786.0	[m]	DC	LUNDIN
1795.0	[m]	DC	LUNDIN
1804.0	[m]	DC	LUNDIN
1813.0	[m]	DC	LUNDIN
1822.0	[m]	DC	LUNDIN
1831.0	[m]	DC	LUNDIN

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
132	NORDLAND GP
734	UTSIRA FM
930	HORDALAND GP
1003	SKADE FM
1179	NO FORMAL NAME
1633	GRID FM
1661	NO FORMAL NAME
1727	ROGALAND GP
1727	BALDER FM

1751	SELE FM
1777	LISTA FM
1837	VÅLE FM
1845	SHETLAND GP
1845	EKOFISK FM
1865	TOR FM
1888	HOD FM
1902	CROMER KNOLL GP
1902	SOLA FM
1909	ÅSGARD FM
1912	VIKING GP
1912	DRAUPNE FM
1913	BASEMENT

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
6166	pdf	0.41

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
6166_01_16_1_12_gch_transfer_1	txt	0.00
6166_02_16_1_12_gch_results_1	txt	0.22
6166_03_16_1_12_gch_transfer_2	txt	0.00
6166_04_16_1_12_gch_results_2	txt	0.09

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
FMI PPC MSIP GR	1570	2039
MDT	1922	1956
MSCT GR	1941	1986
MSCT GR	2027	2042
MWD LWD - GR RES PWD	1835	1864
MWD LWD - GR RES PWD DIR	131	592

MWD LWD - GR RES PWD DIR SON DEN	606	1835
MWD LWD - GR RES PWD DIR SON NEU	1938	2055
VSI GR	84	1981
XPT HRLT PEX	1826	2042

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	212.0	36	216.0	0.00	LOT
SURF.COND.	20	597.0	26	606.0	1.88	LOT
INTERM.	9 5/8	1826.0	12 1/2	1835.0	1.76	LOT
OPEN HOLE		2055.0	8 1/2	2055.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
272	1.04			Water	
606	1.30			Water	
1835	1.35			Water	
1910	1.20			Water	
1933	1.21			Water	
2055	1.20			Water	
2055	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]
6166_Formation_pressure_(Formasjonstrykk)	PDF	0.22