General information

Wellbore name	16/5-5
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SOLVEIG
Discovery	16/4-6 S Solveig
Well name	16/5-5
Seismic location	LN0902-inline4757 & crossline 1611
Production licence	410
Drilling operator	Lundin Norway AS
Drill permit	1484-L
Drilling facility	BREDFORD DOLPHIN
Drilling days	48
Entered date	11.11.2013
Completed date	29.12.2013
Plugged and abondon date	29.12.2013
Release date	29.12.2015
Publication date	29.12.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	100.0
Total depth (MD) [m RKB]	2085.0
Final vertical depth (TVD) [m RKB]	2085.0
Maximum inclination [°]	1
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	SKAGERRAK FM
Geodetic datum	ED50
NS degrees	58° 38' 25.84'' N
EW degrees	2° 20' 54.44'' E
NS UTM [m]	6500356.59
EW UTM [m]	462176.33
UTM zone	31
NPDID wellbore	7285

Wellbore history

General

Well 16/5-5 was drilled to test the southeast extension of the 16/4-6 S Luno discovery on the Utsira High in the North Sea. The primary objective was to prove the presence of reservoir in this area, to improve the understanding of the sedimentary sequence, and to confirm the OWC at 1950 m TVD MSL found in 16/4-6 S.

Operations and results

Appraisal well 16/5-5 was spudded with the semi-submersible installation Bredford Dolphin on 11 November 2013 and drilled to TD at 2085 m in the Triassic Hegre Group. No significant problem was encountered in the operations. The well was drilled with seawater and hi-vis pills down to 601 m and with Aquadril mud from 601 m to TD.

The well penetrated a thick sequence consisting of alluvial deposits of predominantly Middle-Early Triassic age with top at 1936 m. The alluvial deposits show in general poor reservoir quality although a 25 m interval with improved quality is seen close to TD. The cored section is strongly fractured and appears to have penetrated several fault zones. The sandstones are partly filled with heavy biodegraded oil; however, in the upper part the section was too tight to establish a pressure gradient. The reservoir pressure in the water zone is close to hydrostatic pressure, 4 bar above the Luno II discovery well 16/4-6 S, indicating a barrier between these two wells.

Six cores were cut in succession from 1937 to 1983.8 m, covering the Triassic to Early Cretaceous (Sola Fm) unconformity in the well and the upper 45 m of the Hegre Group. All six cores should be shifted -3.09 m to match with the logs in the well. RCX fluid sample were taken at 1938.8 m (water and trace heavy oil), 1939.9 m (water and trace heavy oil), 1940 m (water and trace heavy oil), 1977 m (water and trace heavy oil), and at 2034 m (water).

The well was permanently abandoned on 29 December 2013 as a well with shows.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
600.00	2085.00

Cuttings available for sampling?	YES

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	1937.0	1945.8	[m]

2	1945.8	1952.1	[m]
3	1952.5	1957.9	[m]
4	1958.5	1971.4	[m]
5	1972.0	1977.7	[m]
6	1977.7	1983.8	[m]

Total core sample length [m]	45.1
Cores available for sampling?	YES

Oil samples at the Norwegian Offshore Directorate

Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
MDT		1977.00	0.00	OIL		NO

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
125	NORDLAND GP
125	UNDIFFERENTIATED
753	UTSIRA FM
935	UNDIFFERENTIATED
1031	HORDALAND GP
1031	SKADE FM
1148	NO FORMAL NAME
1605	NO FORMAL NAME
1670	ROGALAND GP
1670	BALDER FM
1696	SELE FM
1734	LISTA FM
1845	VÅLE FM
1861	SHETLAND GP
1861	EKOFISK FM
1909	TOR FM
1927	HOD FM
1930	CROMER KNOLL GP

1930	SOLA FM
1935	ÅSGARD FM
1936	HEGRE GP
1936	UNDIFFERENTIATED

Logs

Log type	Log top depth [m]	Log bottom depth [m]
GR CN ZDL ZMAC ORIT RTEX MLL	1878	2081
GR FLEX MREX	1878	2081
GR MAXCOR	1905	2020
GR RCX IFX SENTINEL	1936	2050
GR RCX IFX SP	1936	1970
GR STAR ORIT UXPL	1878	2075
GR VSP	1109	2069
MWD-GR RES DIR CAL DEN NEU SON	557	1888
MWD-GR RES PWD DIR CAL DEN NEU S	1860	2084
MWD-GR RES SON PWD DIR	125	594

Casing and leak-off tests

Casing type	Casing diam. [inch]	Casing depth [m]	Hole diam. [inch]	Hole depth [m]	LOT/FIT mud eqv. [g/cm3]	Formation test type
CONDUCTOR	30	203.0	36	204.4	0.00	
SURF.COND.	20	590.0	26	590.0	1.79	LOT
PILOT HOLE		596.0	9 7/8	596.0	0.00	
OPEN HOLE		601.0	17 1/2	601.0	0.00	
INTERM.	9 5/8	1879.0	12 1/4	1888.0	1.50	FIT
OPEN HOLE		2085.0	8 1/2	2085.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
168	1.50	42.0		Water Based	
204	1.40	25.0		Water Based	
450	1.42	21.0		Water Based	

1888	1.40	26.0		Water Based	
2085	1.20	20.0		Water Based	