

**General information**

Wellbore name	16/2-16
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	JOHAN SVERDRUP
Discovery	16/2-6 Johan Sverdrup
Well name	16/2-16
Seismic location	LN0902 : inline 4191 & crossline 3733
Production licence	501
Drilling operator	Lundin Norway AS
Drill permit	1416-L
Drilling facility	TRANSOCEAN WINNER
Drilling days	32
Entered date	11.11.2012
Completed date	12.12.2012
Release date	12.12.2014
Publication date	11.03.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	JURASSIC
1st level with HC, formation	INTRA DRAUPNE FM SS
Kelly bushing elevation [m]	26.0
Water depth [m]	115.0
Total depth (MD) [m RKB]	2214.0
Final vertical depth (TVD) [m RKB]	2214.0
Maximum inclination [°]	3.3
Oldest penetrated age	PERMIAN
Oldest penetrated formation	ROTLIEGEND GP
Geodetic datum	ED50
NS degrees	58° 51' 1.14" N
EW degrees	2° 35' 50.55" E
NS UTM [m]	6523604.82
EW UTM [m]	476766.88



UTM zone	31
NPDID wellbore	7047

Wellbore history

General

Well 16/2-16 was drilled on the northeastern part of the Johan Sverdrup Field on the Utsira High. The main objective was to acquire information about the Jurassic reservoir properties and hydrocarbon column in this part of the field. Secondary objectives were to investigate the reservoir properties of the Zechstein Group, and to determine whether oil-bearing Paleocene sandstones (Heimdal and Hermod formations) were present.

Operations and results

Well 16/2-16 was spudded with the semi-submersible installation Transocean Winner on 11 November 2012 and drilled to TD at 2214 m in the Permian Rotliegend Group. A 9 7/8" pilot hole was drilled to a total depth of 706 m to check for shallow gas before opening up the pilot hole to 36" and 26" sections. No shallow gas was observed. No significant problem was encountered in the operations. The well was drilled with seawater and bentonite mud down to 695 m and with Glydril mud from 695 m to TD.

No Paleocene sands were present in the well. In total 15 m of net sandstone was found within a 60 m Jurassic sequence. The top of the reservoir was penetrated at 1950 m as prognosed. The oil/water contact was identified at 1952 m just above the good reservoir sand. This is the same level as observed in well 16/2-13 A and 3 m deeper than found in previously drilled wells in PL 501. The 6 m thick Intra Draupne Formation sandstone below the contact sand had good shows. A 3 m thick sandstone in the Vestland Group had similar, but weaker shows; otherwise, no shows were reported from the well. The Zechstein Group consisted of water-wet sandstones, limestones and siltstones with a water gradient in line with the above Jurassic sandstones.

Two successive cores were cut from 1947 m in the lower Draupne Formation and down to 1986.8 m in the Statfjord Group. Oil and water samples were collected using MDT. Water was sampled at 1952.1 and 1966.0 m. At 1951.6 m, formation water, mud filtrate and oil were sampled with 68 bars drawdown.

The well was plugged back and completed for sidetracking on 12 December 2012. It is classified as an oil appraisal well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
710.00	2214.00

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	1947.0	1965.8	[m]
2	1967.0	1986.8	[m]

Total core sample length [m]	38.6
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		1951.60	0.00	OIL	06.12.2012 - 00:00	NO

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
141	NORDLAND GP
833	UTSIRA FM
928	NO FORMAL NAME
992	HORDALAND GP
1020	SKADE FM
1107	NO FORMAL NAME
1451	NO FORMAL NAME
1505	ROGALAND GP
1505	BALDER FM
1535	SELE FM
1552	LISTA FM
1662	VÅLE FM
1685	SHETLAND GP
1685	EKOFISK FM
1690	TOR FM
1720	HOD FM
1787	BLODØKS FM



1791	SVARTE FM
1824	CROMER KNOLL GP
1824	RØDBY FM
1924	SOLA FM
1934	ÅSGARD FM
1946	VIKING GP
1946	DRAUPNE FM
1952	INTRA DRAUPNE FM SS
1957	HEATHER FM
1964	VESTLAND GP
1964	HUGIN FM
1966	STATFJORD GP
1966	EIRIKSSON FM
1999	HEGRE GP
1999	SKAGERRAK FM
2065	ZECHSTEIN GP
2165	ROTLIEGEND GP

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CMR XPT	1890	2201
GR RES DEN NEU SON DIR PWD	687	2213
MDT	1951	1968
MSCT	1920	2200
MSIP FMI	1872	2210
MWD - GR RES DIR PWD	142	701
PEX HRLA HNGS ECS	1873	2207
VSP	1237	2204

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	220.0	36	222.0	0.00	
SURF.COND.	20	686.0	26	695.0	1.91	LOT
OPEN HOLE		700.0	17 1/2	700.0	0.00	
PILOT HOLE		706.0	9 7/8	706.0	0.00	
INTERM.	9 5/8	1872.0	12 1/4	1878.0	1.77	LOT



OPEN HOLE		2214.0	8 1/2	2214.0	0.00	
-----------	--	--------	-------	--------	------	--

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
700	1.35	26.0		Brine	
732	1.35	22.0		Brine	
1283	1.39	24.0		Brine	
1835	1.39	24.0		Brine	
2214	0.00	21.0		Brine	
2214	0.00	14.0		Brine	