General information

Wellbore name	16/5-3
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	16/5-3
Seismic location	3D Survey:LN0902STR11 inline 4835 & xline 2875
Production licence	502
Drilling operator	Statoil Petroleum AS
Drill permit	1417-L
Drilling facility	OCEAN VANGUARD
Drilling days	27
Entered date	20.02.2013
Completed date	20.03.2013
Release date	20.03.2015
Publication date	20.05.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA DRAUPNE FM SS
Kelly bushing elevation [m]	22.0
Water depth [m]	108.0
Total depth (MD) [m RKB]	1993.0
Final vertical depth (TVD) [m RKB]	1993.0
Maximum inclination [°]	1.14
Oldest penetrated age	PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	58° 43' 53.95'' N
EW degrees	2° 33' 28.64'' E
NS UTM [m]	6510405.94

EW UTM [m]	474405.05
UTM zone	31
NPDID wellbore	7123

Wellbore history

General

Well 16/5-3 was drilled on a possible southern extension of the Johan Sverdrup discovery in the North Sea. The main objective was to prove hydrocarbons in Late Jurassic Intra-Draupne Formation sandstone. In case of discovery, it was important to verify the reservoir quality, fluid property, lateral extension and communication with the Johan Sverdrup discovery.

Operations and results

The location for well 16/5-3 was given a shallow gas class 1 warning in an interval between 295 and 422. A pilot hole was drilled (off location), well 16/5-U-1. No shallow gas was observed.

Appraisal well 16/5-3 was spudded with the semi-submersible installation Ocean Vanguard on 20 February 2013 and drilled to TD at 1993 m in the Permian Zechstien Group. A sidetrack 16/5-3 T2 was kicked off from 1774 m in 16/5-3 and drilled as a bypass track in order to perform coring in zone of interest identified in the main wellbore. No significant problem was encountered in the operations. The well was drilled with seawater down to 916 m and with Performadril mud from 916 m to TD. The sidetrack was drilled with Performadril mud with tritium tracer.

The Intra-Draupne Formation sandstone reservoir was entered at 1898 m, which was 38 m shallower than prognosed. The reservoir contained oil down to 1911 m and had a thickness of 13 m, which was 2 m thicker than prognosed. Oil shows continued down to 1914 m in the underlying Skagerrak Formation. Below 1914 m, no shows were observed. There were no hydrocarbon indications in the well above top Intra-Draupne Formation sandstones. One core was cut in the sidetrack well bore from 1895.3 to 1922.5 m (lower Åsgard Formation, Intra-Draupne Formation Sandstone and upper Skagerrak Formation). The core recovery was 100%. MDT fluid samples were taken at 1901.9 m. Oil without contamination was recovered.

The well was permanently abandoned on 20 March 2013 as an oil appraisal.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
920.00	1992.00

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	1895.3	1922.5	[m]

Total core sample length [m]	27.2
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
960.0	[unknown]	DC	ROBERTSO
980.0	[m]	DC	ROBERT
1000.0	[m]	DC	ROBERT
1020.0	[m]	DC	ROBERT
1040.0	[m]	DC	ROBERT
1060.0	[m]	DC	ROBERT
1080.0	[m]	DC	ROBERT
1100.0	[m]	DC	ROBERT
1120.0	[m]	DC	ROBERT
1140.0	[m]	DC	ROBERT
1160.0	[m]	DC	ROBERT
1180.0	[m]	DC	ROBERT
1200.0	[m]	DC	ROBERT
1220.0	[m]	DC	ROBERT
1240.0	[m]	DC	ROBERT
1260.0	[m]	DC	ROBERT
1280.0	[m]	DC	ROBERT
1300.0	[m]	DC	ROBERT
1320.0	[m]	DC	ROBERT
1340.0	[m]	DC	ROBERT
1360.0	[m]	DC	ROBERT
1380.0	[m]	DC	ROBERT
1400.0	[m]	DC	ROBERT
1420.0	[m]	DC	ROBERT
1440.0	[m]	DC	ROBERT
1460.0	[m]	DC	ROBERT
1480.0	[m]	DC	ROBERT

1500.0	[m]	DC	ROBERT
1520.0	[m]	DC	ROBERT
1540.0	[m]	DC	ROBERT
1760.0	[m]	DC	ROBERT
1780.0	[m]	DC	ROBERT
1800.0	[m]	DC	ROBERT
1820.0	[m]	DC	ROBERT
1840.0	[m]	DC	ROBERT
1860.0	[m]	DC	ROBERT
1880.0	[m]	DC	ROBERT
1898.0	[m]	C	ROBERT
1900.7	[m]	C	ROBERT
1941.0	[m]	C	ROBERT

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		1901.90	0.00	OIL		YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
130	NORDLAND GP
768	UTSIRA FM
907	NO FORMAL NAME
989	HORDALAND GP
989	SKADE FM
1062	UNDIFFERENTIATED
1417	ROGALAND GP
1417	BALDER FM
1434	SELE FM
1456	LISTA FM
1501	VÅLE FM
1504	SHETLAND GP
1504	EKOFISK FM
1512	TOR FM

1673	HOD FM
1764	BLODØKS FM
1776	SVARTE FM
1807	CROMER KNOLL GP
1807	RØDBY FM
1896	ÅSGARD FM
1898	VIKING GP
1898	INTRA DRAUPNE FM SS
1912	HEGRE GP
1912	SKAGERRAK FM
1990	ZECHSTEIN GP

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MDT GR	1899	1960
MDT PA MINI DST GR	1906	1910
MDT PAMINI DST GR	1904	1906
MSIP HRLA PEX ECS HGSN	1509	1993
MWD - DIR	0	197
MWD - GR RES ECD DIR	197	1993
USIT CBL GR	1509	1150
VSI4 GR	425	1983

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	193.0	36	197.0	0.00	
SURF.COND.	13 3/8	908.0	17 1/2	916.0	1.49	FIT
INTERM.	9 5/8	1509.0	12 1/4	1510.0	1.47	FIT
OPEN HOLE		1993.0	8 1/2	1993.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
160	1.22	25.0		Performadril	

197	1.03	7.0		Spud Mud	
325	1.35	12.0		Spud Mud	
1207	1.35	40.0		Performadril	
1510	1.22	26.0		Performadril	
1510	1.35	37.0		Performadril	
1776	1.23	22.0		Performadril	
1849	1.22	26.0		Performadril	
1993	1.22	25.0		Performadril	