General information

Wellbore name	16/1-30 S
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	SYMRA
Discovery	16/1-29 S Symra
Well name	16/1-30
Seismic location	LN12M02R16 Inline: 4701 Xline: 4139
Production licence	167
Drilling operator	Equinor Energy AS
Drill permit	1764-L
Drilling facility	WEST PHOENIX
Drilling days	36
Entered date	27.05.2019
Completed date	01.07.2019
Plugged date	01.07.2019
Release date	01.07.2021
Publication date	10.11.2021
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	EOCENE
1st level with HC, formation	GRID FM
2nd level with HC, age	JURASSIC
2nd level with HC, formation	DRAUPNE FM
Kelly bushing elevation [m]	38.6
Water depth [m]	113.0
Total depth (MD) [m RKB]	2140.0
Final vertical depth (TVD) [m RKB]	2057.0
Maximum inclination [°]	28.9
Bottom hole temperature [°C]	88
Oldest penetrated formation	BASEMENT
Geodetic datum	ED50
NS degrees	58° 58' 50.71'' N

EW degrees	2° 16' 50.88'' E
NS UTM [m]	6538281.90
EW UTM [m]	458655.69
UTM zone	31
NPDID wellbore	8748

Wellbore history

Well 16/1-30 S Lille Prinsen Outer Wedge was drilled to appraise the 16/1-29 Lille Prinsen Discovery on the north-western part of the Utsira High in the North Sea. The structure was first tested by wells 16/1-6S and 16/1-6 A, which made the Verdandi Discovery in the Eocene Grid and Paleocene Heimdal formations. The Lille Prinsen prospect is mapped in several geographically separate segments at Basement to Base Cretaceous level. These segments are: The Permian Main Carbonate Discovery penetrated by 16/1-29 S, the western Outer Wedge segment, and segments 2,3 and 5 (Carbonate upsides). The primary objective of 16/1-30 S was to appraise the Outer Wedge segment believed to consist of Permian carbonates in the 16/1-29 S with an overlying package of Triassic to Early Cretaceous siliciclastics. The secondary objective in 16/1-30 S was to appraise the oil and gas in the Grid and Heimdal formations found in the 16/1-6 S Verdandi discovery.

Operations and results

Appraisal well 16/1-30 S was spudded with the semi-submersible installation West Phoenix on 27 May 2019 and drilled to TD at 2140 m (1990 m TVD) m in basement rock. Operations proceeded without significant problems. The well was drilled with seawater and hi-vis pills down to 572 m, with Glydril mud from 572 to 1361 m, and with Versatec oil-based mud from 1361 m to TD.

Well 16/1-30 S encountered poor quality oil-filled sandstone in the Grid Formation. Shows were observed on core and cuttings in the interval 1499 to 1421 m, including fluorescence and oil stain, and the log responses indicated the sandstone being oil filled. MDT pressure points was not conclusive due to poor reservoir quality, but oil was sampled at 1507.1 m and water at 1548 m.

The Heimdal Formation was not present.

Good quality Viking Group sandstone and Basement Group granite reservoirs were encountered in the primary target. Shows were observed on core chips and sidewall cores in the interval 2016 to 2047 m, including odour, oil stains, fluorescence, and oil seeping from SWC's. MDT pressure points confirmed an oil and a water gradient in the Viking Group. Oil was sampled at 2023.8 m and water at 2042.7 m, and the oil and water gradients intersect at ca 2029 m.

Four cores were cut. Core 1 was cut in the Grid Formation from 1510.9 to 1537.9 m. Cores 2 to 4 were cut in the interval 2023.2 to 2104.3 m in Intra-Draupne and Intra-Heather sandstones and upper part of Basement. The core-log depth shifts are 0.9 m, 6.2 m, 0.6 m, and 2.05 m respectively for core 1, 2, 3, and 4. MDT fluid samples were taken at 1507.1 m (oil with 8 to 14% OBM contamination) and 1548 m (water) in the Grid Formation, and at 2023.76 m (oil with 8 to 15% OBM contamination) and 2042.7 m (water) in the Viking Group.

The well was permanently abandoned on 1 July 2019 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]
580.00	2140.00

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	1510.0	1536.0	[m]
2	2017.0	2035.1	[m]
3	2044.0	2074.6	[m]
4	2075.5	2102.4	[m]

Total core sample length [m]	101.6
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2078.0	[m]	C	CGG
2083.0	[m]	C	CGG
2087.0	[m]	C	CGG

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
150	NORDLAND GP
779	UTSIRA FM
1005	HORDALAND GP
1051	SKADE FM
1143	UNDIFFERENTIATED
1442	GRID FM
1453	UNDIFFERENTIATED
1829	ROGALAND GP
1829	BALDER FM
1867	SELE FM
1873	LISTA FM
1885	VÅLE FM
1993	SHETLAND GP
1999	VIKING GP
1999	DRAUPNE FM
2004	INTRA DRAUPNE FM SS

2047	INTRA HEATHER FM SS
2094	BASEMENT

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AIT PEX HNGS CMR	2008	2125
AIT PEX HNGS MSIP QGEO	200	1355
IBC HD CBL	700	1350
MDT	1997	2141
MDT CMR	1380	1999
MSIP NGI NEXT	1997	2141
MWD - ARC TELE	203	572
MWD - ARC TELE	1999	2140
MWD - PD ARC TELE	572	1999
MWD - TELE	152	203
XLR	2002	2128
ZO VSP	139	2136

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	36	202.0	42	203.0	0.00	
SURF.COND.	20	567.0	36	567.0	1.56	FIT
INTERM.	13 3/8	1355.0	16	1355.0	1.67	FIT
INTERM.	9 5/8	1999.0	12 1/4	1998.0	1.84	LOT
OPEN HOLE		2140.0	8 1/2	2140.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
561	1.20	13.0		Glydril	
1056	1.20	14.0		Glydril	
1355	1.30	27.0		Versatec	
1361	1.20	14.0		Glydril	
1536	1.30	31.0		Versatec	

1950	1.35	34.0		Versatec	
1999	1.30	34.0		Versatec	
2002	1.05	12.0		Versatec	
2017	1.08	13.0		Versatec	
2076	1.09	13.0		Versatec	
2140	1.09	4.0		Versatec	