General information

Wellbore name	35/11-20 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	35/11-20 S (Orion)
Well name	35/11-20
Seismic location	3D survey WIN14M05 Inline 22573 X-line 11942
Production licence	248 F
Drilling operator	Wintershall Norge AS
Drill permit	1625-L
Drilling facility	BORGLAND DOLPHIN
Drilling days	32
Entered date	19.05.2016
Completed date	19.06.2016
Release date	19.06.2018
Publication date	19.06.2018
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA HEATHER FM SS
Kelly bushing elevation [m]	31.0
Water depth [m]	373.0
Total depth (MD) [m RKB]	3584.0
Final vertical depth (TVD) [m RKB]	3468.0
Maximum inclination [°]	32.5
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	HEATHER FM
Geodetic datum	ED50
NS degrees	61° 13' 20.29'' N
EW degrees	3° 26' 25.57'' E
NS UTM [m]	6787789.95
EW UTM [m]	523655.76
UTM zone	31
NPDID wellbore	7978

Wellbore history

Wellbore history

General

Well 35/11-20 S is the replacement well for the junk well 35/11-19 S. It was drilled to test the Late Jurassic Antares and Orion prospects on the Marflo Spur in the North. The primary objective was to test the Antares prospect, a Kimmeridgian age Intra Heather Formation sandstone. Secondary objective was to test the Orion prospect, believed to consist of two Oxfordian age Intra-Heather Formation sandstones.

Operations and results

Wildcat well 35/11-20 S was spudded with the semi-submersible installation Borgland Dolphin on 19 May 2016 and drilled to TD at 3584 m (3468 m TVD) in the Late Jurassic Heather Formation. No significant problem was encountered in the operations. The well was drilled with Seawater and hi-vis pills down to 501 m, with KCl/polymer mud from 501 m to 1098 m, with Performadril water based mud from 1098 m to 1795.5 m, and with Innovert oil based mud from 1795.5 m to TD.

BCU/top Draupne Formation came in at 3032 m with at 48 m TVD thickness. Top Heather Formation came in at 3087 m with a 177 m TVD thickness. Based on TOC and Rock-Eval analyses of cuttings both Draupne and Heather are excellent oil-prone source rocks. The prognosed Kimmeridgian sandstone was not present, but an Oxfordian sandstone was penetrated from 3362 to 3432 m. The top 8 m of this sandstone was oil bearing with an OWC at 3370 m (3272 m TVD) based on logs. Residual hydrocarbons are interpreted throughout the Oxfordian sandstone below the OWC based on CPI analysis and shows on sidewall cores.

No cores were cut. MDT fluid samples were taken at 3366 m (oil), 3369.5 m (oil) and 3418.5 m (water and trace oil).

The well was plugged back for sidetracking on 19 June 2016. It is classified as an oil discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1100.00	3584.00

Cuttings 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		4135.70	0.00	OIL		YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
404	NORDLAND GP
724	UTSIRA FM
921	HORDALAND GP
1527	FRIGG FM
1625	ROGALAND GP
1625	BALDER FM
1694	SELE FM
1720	LISTA FM
1943	SHETLAND GP
1943	JORSALFARE FM
2138	KYRRE FM
2837	TRYGGVASON FM
2898	SVARTE FM
2914	CROMER KNOLL GP
2914	RØDBY FM
2928	SOLA FM
2935	ÅSGARD FM
3032	VIKING GP
3032	DRAUPNE FM
3087	HEATHER FM
3362	SOGNEFJORD FM
3432	HEATHER FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MDT NMR	3320	3480

MWD - GR RES DEN NEU SON DIR PWD	1795	3102
MWD - GR RES DEN NEU SON PS DIR	3102	3584
MWD - GR RES DIR PWD	501	1098
MWD - GR RES SON DIR PWD	1098	1795
MWD- DIR	403	501
SWC	3155	3577
VSP	1564	3584

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	494.0	36	501.0	0.00	
SURF.COND.	20	1091.8	26	1098.0	0.00	
		1101.0		1101.0	1.77	FIT
INTERM.	13 3/8	1789.3	17 1/2	1795.5	0.00	
		1798.5		1798.5	1.71	LOT
INTERM.	9 5/8	3094.9	12 1/4	3102.0	0.00	
		3105.0		3105.0	1.78	LOT
OPEN HOLE		3584.0	8 1/2	3584.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
313	1.44	19.0		INNOVERT OBM	
488	1.64	16.0		Kill / Displacement Mud	
501	1.39	16.0		Kill / Displacement Mud	
1098	1.29	22.0		PERFORMADRIL WBM	
1098	1.39	25.0		KCl Polymer GEM	
1101	1.29	20.0		PERFORMADRIL WBM	
1795	1.39	21.0		INNOVERT OBM	
1795	1.29	23.0		PERFORMADRIL WBM	
2424	1.39	20.0		INNOVERT OBM	

3102	1.42	22.0		INNOVERT OBM	
3270	1.44	26.0		INNOVERT OBM	
3584	1.44	24.0		INNOVERT OBM	