General information

Wellbore name	31/1-2 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	31/1-2 S (Røver Nord)
Well name	31/1-2
Seismic location	3D Survey CGG17M01: Inline: 7195. X-line: 26159
Production licence	923
Drilling operator	Equinor Energy AS
Drill permit	1836-L
Drilling facility	WEST HERCULES
Drilling days	29
Entered date	12.12.2020
Completed date	12.01.2021
Plugged date	12.01.2021
Release date	12.01.2023
Publication date	12.01.2021
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	ETIVE FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	OSEBERG FM
3rd level with HC, age	EARLY JURASSIC
3rd level with HC, formation	DRAKE FM
Kelly bushing elevation [m]	31.0
Water depth [m]	349.0
Total depth (MD) [m RKB]	3555.0
Final vertical depth (TVD) [m RKB]	3470.3
Maximum inclination [°]	35.8
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	AMUNDSEN FM

Geodetic datum	ED50
NS degrees	60° 57' 4.79'' N
EW degrees	3° 18' 33.26'' E
NS UTM [m]	6757565.95
EW UTM [m]	516751.83
UTM zone	31
NPDID wellbore	9178

Wellbore history

General

Well 31/1-2 S was drilled to test the Røver Nord prospect on the Lomre Terrace, 9 km north-west of the Troll Field in the North Sea. The primary objective was to confirm commercial hydrocarbons in the Early-Middle Jurassic Dunlin and Brent groups.

Operations and results

A pilot hole was drilled through cap-x down to 792 m to investigate for shallow gas and water, no flow was observed.

Wildcat well 31/1-2 S was spudded with the semi-submersible installation West Hercules on 12 December 2020 and drilled to TD at 3555 m (3470.3 m TVD) m in the Early Jurassic Amundsen Formation. Operations proceeded without significant problems. The well was drilled with seawater and sweeps down to 792 m, with Glydril mud from 792 to 1728 m, with oil-based Versatec mud from 1728 to 2834 m, and with oil based Exploradril mud from 2834 to TD.

Top Brent Group was encountered at 3205 m (3120 m TVD) and consisted mainly of mudstones with coal layers (Tarbert and Ness formations) down to top Etive Formation at 3293 m (3178 m TVD). Sandstones in the Middle Jurassic Etive and Oseberg formations and the Early Jurassic Drake Formation were gas and oil bearing. MDT pressure data indicate a gas-oil contact at ca 3334 m (3249 m TVD). No oil shows were observed outside of the hydrocarbon bearing reservoir sands in the well.

One eighty-one metre core was cut from 3301 to 3382 m with 100% recovery. MDT fluid samples were taken at 3298.5 m (gas), 3321.5 m (gas), 3348.0 m (oil), and 3377.3 m (oil). The formation temperature at TD based on Horner corrected temperatures from EDTC CTEM component in the BHA is 135.2 °C.

The well was permanently abandoned on 9 January 2021 as an oil and gas discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
800.00	3555.00

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	3301.0	3382.0	[m]

Total core sample length [m]	81.0
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
380	NORDLAND GP
380	UNDIFFERENTIATED
825	UTSIRA FM
885	HORDALAND GP
885	UNDIFFERENTIATED
1777	ROGALAND GP
1777	BALDER FM
1849	SELE FM
1894	LISTA FM
1927	NO FORMAL NAME
1930	LISTA FM
2013	NO FORMAL NAME
2147	VÅLE FM
2234	SHETLAND GP
2234	JORSALFARE FM
2404	KYRRE FM
2680	SVARTE FM
2692	CROMER KNOLL GP
2692	RØDBY FM
2771	SOLA FM
2801	ÅSGARD FM
2862	VIKING GP
2862	DRAUPNE FM
2949	HEATHER FM

3205	BRENT GP
3205	TARBERT FM
3218	NESS FM
3293	ETIVE FM
3301	RANNOCH FM
3319	OSEBERG FM
3364	DUNLIN GP
3364	DRAKE FM
3446	COOK FM
3494	AMUNDSEN FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MDT GR	3265	3460
MSIP NGI	2250	3558
MWD - GR RES	401	1728
MWD - GR RES	2830	3555
MWD - GR RES ST	1728	2830
MWD - NEXT CMR XPT	2831	3558
VSP GR	349	3558
XLR	3293	3490
ZAIT MSIP PEX HNGS	2831	3558

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	401.0	30	401.0	0.00	
INTERM.	20	787.2	26	792.0	1.36	FIT
INTERM.	13 3/8	1722.5	17 1/2	1728.0	1.57	FIT
LINER	9 5/8	2830.0	12 1/4	2830.0	1.55	FIT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
788	1.03	1.0	0.5	Seawater	

792	1.17	10.0	10.0	Glydril	
888	1.18	8.5	9.5	Glydril	
920	1.20	9.0	10.5	Glydril	
1661	1.30	30.0	8.0	Versatec	
1702	1.20	10.0	9.5	Glydril	
1918	1.28	28.0	8.5	Versatec	
2730	1.30	33.0	5.0	Versatec	
2817	1.28	27.0	7.0	Versatec	
2831	1.28	31.0	6.5	Versatec	
2831	1.30	17.0	4.5	Exploradrill	
2970	1.30	16.0	7.5	Exploradrill	
3301	1.31	15.0	9.5	Exploradrill	
3730	1.30	33.0	5.0	Versatec	