General information

Wellbore name	15/3-11
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	15/3-4 (Sigrun)
Well name	15/3-11
Seismic location	ST09M10-FULL-OFFSET-DISPSCAN-FORMATION. inline 2456 Xline 3069
Production licence	025
Drilling operator	Equinor Energy AS
Drill permit	1705-L
Drilling facility	DEEPSEA BERGEN
Drilling days	51
Entered date	14.06.2018
Completed date	09.08.2018
Plugged and abondon date	09.08.2018
Release date	09.08.2020
Publication date	09.08.2020
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	HUGIN FM
Kelly bushing elevation [m]	23.0
Water depth [m]	108.5
Total depth (MD) [m RKB]	4014.0
Final vertical depth (TVD) [m RKB]	4014.0
Maximum inclination [°]	4
Bottom hole temperature [°C]	132
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	SLEIPNER FM
Geodetic datum	ED50
NS degrees	58° 49' 8.09'' N
EW degrees	1° 52' 2.41'' E

NS UTM [m]	6520591.41
EW UTM [m]	434583.21
UTM zone	31
NPDID wellbore	8489

Wellbore history

General

Well 15/3-11 is the replacement well for 15/3-10, which was junked for technical reasons. It was drilled to appraise the 15/3-4 Sigrun discovery on the Gudrun Terrace in the North Sea. The target formation was located to the west and down dip of the original discovery well 15/3-4. The main objective was to prove more resources than already proven in the Middle Jurassic Hugin Formation in the 15/3-4 discovery well.

Operations and results

Appraisal well 15/3-11 was spudded with the semi-submersible installation Deepsea Bergen on 14 June 2018 and drilled to TD at 4014 m in the Middle Jurassic Sleipner Formation. Operations proceeded without significant problems. The well was drilled with seawater and hi-vis pills down to 1000 m, with KCl/polymer/GEM mud from 1000 m to 2350 m, with Enviromul oil-based mud from 2350 m to 3660 m, and with BaraECD oil-based mud from 3660 m to TD.

The target Hugin formation was penetrated from 3856 to 3959 m. The reservoir consisted of interbedded sandstones and claystone with a few thin coal layers. It was oil filled in the upper sands, whereas the deeper sands were water-bearing. The fluids are the same volatile oils as were encountered in 15/3-4. Like the previously drilled wells, 15/3-4 and 15/3-5, did the 15/3-11 well encounter oil-down-to (ODT) situations. Pressure data show a complex reservoir with two different oil gradients and three different water gradients. In the well site cuttings descriptions shows are described in the Draupne Formation from 3744 to 3798 m (direct and cut fluorescence but no visible oil stain). In the core description oil shows are described in the Hugin reservoir sandstones down to 3930 (typically direct and cut fluorescence with visible stain), and with weaker shows in a few samples around a coal layer at 3959 m. No other zones with shows are reported.

Two cores were cut in succession from3868 to 3975 m with 99.3% and 94% recovery, respectively. MDT fluid samples were taken at 3857.7 m (oil), 3888.46 m (oil) and 3927.5 m (water). The oil samples proved undersaturated volatile oil with small variations in GOR.

The well was permanently abandoned on 9 August 2018 as a dry well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
2330.00	4014.00

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	3868.0	3934.6	[m]
2	3935.0	3968.0	[m]

Total core sample length [m]	99.5
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2330.0	[m]	DC	PETROSTR
2340.0	[m]	DC	PETROS
2350.0	[m]	DC	PETROS
2360.0	[m]	DC	PETROS
2370.0	[m]	DC	PETROS
2380.0	[m]	DC	PETROS
2390.0	[m]	DC	PETROS
2400.0	[m]	DC	PETROS
2410.0	[m]	DC	PETROS
2420.0	[m]	DC	PETROS
2430.0	[m]	DC	PETROS
2440.0	[m]	DC	PETROS
2450.0	[m]	DC	PETROS
2460.0	[m]	DC	PETROS
2470.0	[m]	DC	PETROS
2480.0	[m]	DC	PETROS
2490.0	[m]	DC	PETROS
2500.0	[m]	DC	PETROS
2510.0	[m]	DC	PETROS
2520.0	[m]	DC	PETROS
2530.0	[m]	DC	PETROS
2540.0	[m]	DC	PETROS
2550.0	[m]	DC	PETROS
2560.0	[m]	DC	PETROS
2570.0	[m]	DC	PETROS

2580.0	[m]	DC	PETROS
2590.0	[m]	DC	PETROS
2600.0	[m]	DC	PETROS
2610.0	[m]	DC	PETROS
2620.0	[m]	DC	PETROS
2630.0	[m]	DC	PETROS
2640.0	[m]	DC	PETROS
2650.0	[m]	DC	PETROS
2660.0	[m]	DC	PETROS
2670.0	[m]	DC	PETROS
2680.0	[m]	DC	PETROS
2690.0	[m]	DC	PETROS
2700.0	[m]	DC	PETROS
2710.0	[m]	DC	PETROS
2720.0	[m]	DC	PETROS
2730.0	[m]	DC	PETROS
2740.0	[m]	DC	PETROS
2750.0	[m]	DC	PETROS
2760.0	[m]	DC	PETROS
2770.0	[m]	DC	PETROS
2780.0	[m]	DC	PETROS
2790.0	[m]	DC	PETROS
2800.0	[m]	DC	PETROS
3690.0	[m]	DC	PETROS
3699.0	[m]	DC	PETROS
3708.0	[m]	DC	PETROS
3717.0	[m]	DC	PETROS
3726.0	[m]	DC	PETROS
3735.0	[m]	DC	PETROS
3744.0	[m]	DC	PETROS
3753.0	[m]	DC	PETROS
3762.0	[m]	DC	PETROS
3771.0	[m]	DC	PETROS
3780.0	[m]	DC	PETROS
3783.0	[m]	DC	PETROS
3786.0	[m]	DC	PETROS
3789.0	[m]	DC	PETROS
3792.0	[m]	DC	PETROS
3795.0	[m]	DC	PETROS
3798.0	[m]	DC	PETROS

3801.0	[m]	DC	PETROS
3804.0	[m]	DC	PETROS
3807.0	[m]	DC	PETROS
3810.0	[m]	DC	PETROS
3813.0	[m]	DC	PETROS
3816.0	[m]	DC	PETROS
3819.0	[m]	DC	PETROS
3822.0	[m]	DC	PETROS
3825.0	[m]	DC	PETROS
3834.0	[m]	DC	PETROS
3843.0	[m]	DC	PETROS
3852.0	[m]	DC	PETROS
3855.0	[m]	DC	PETROS
3858.0	[m]	DC	PETROS
3861.0	[m]	DC	PETROS
3864.0	[m]	DC	PETROS
3867.0	[m]	DC	PETROS
3868.5	[m]	C	PETROS
3870.0	[m]	DC	PETROS
3870.2	[m]	C	PETROS
3872.3	[m]	C	PETROS
3875.9	[m]	C	PETROS
3877.0	[m]	C	PETROS
3879.9	[m]	C	PETROS
3881.8	[m]	C	PETROS
3882.5	[m]	C	PETROS
3886.2	[m]	C	PETROS
3889.6	[m]	C	PETROS
3893.5	[m]	C	PETROS
3896.6	[m]	C	PETROS
3899.3	[m]	C	PETROS
3901.5	[m]	C	PETROS
3904.1	[m]	C	PETROS
3909.3	[m]	C	PETROS
3912.7	[m]	C	PETROS
3915.7	[m]	C	PETROS
3918.7	[m]	C	PETROS
3920.6	[m]	C	PETROS
3922.6	[m]	C	PETROS
3925.7	[m]	C	PETROS

3930.9	[m]	C	PETROS
3931.5	[m]	C	PETROS
3934.6	[m]	C	PETROS
3936.7	[m]	C	PETROS
3939.7	[m]	C	PETROS
3943.9	[m]	C	PETROS
3946.6	[m]	C	PETROS
3949.6	[m]	C	PETROS
3952.5	[m]	C	PETROS
3954.4	[m]	C	PETROS
3956.6	[m]	C	PETROS
3957.5	[m]	C	PETROS
3960.9	[m]	C	PETROS
3962.2	[m]	C	PETROS
3964.6	[m]	C	PETROS
3967.2	[m]	C	PETROS
3969.0	[m]	DC	PETROS
3978.0	[m]	DC	PETROS
3987.0	[m]	DC	PETROS
3996.0	[m]	DC	PETROS
4005.0	[m]	DC	PETROS
4014.0	[m]	DC	PETROS

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
132	NORDLAND GP
692	UTSIRA FM
955	HORDALAND GP
1160	SKADE FM
1639	GRID FM
2252	ROGALAND GP
2252	BALDER FM
2308	SELE FM
2374	LISTA FM
2446	HEIMDAL FM
2620	VÅLE FM
2664	TY FM
2776	SHETLAND GP

2776	EKOFISK FM
2805	JORSALFARE FM
3058	KYRRE FM
3161	TRYGGVASON FM
3428	BLODØKS FM
3438	HIDRA FM
3540	CROMER KNOLL GP
3540	RØDBY FM
3667	SOLA FM
3697	ÅSGARD FM
3717	VIKING GP
3717	DRAUPNE FM
3798	HEATHER FM
3856	VESTLAND GP
3856	HUGIN FM
3959	SLEIPNER FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AIT PEX XPT SON IC SCA NGI	2770	4014
MWD LWD - GR RES DIR	182	4014

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	182.0	36	182.0	0.00	
SURF.COND.	20	955.0	26	962.0	1.50	LOT
INTERM.	14	2320.0	17 1/2	2328.0	1.66	FIT
INTERM.	9 7/8	3663.0	12 1/4	3666.0	2.00	FIT
OPEN HOLE		4014.0	8 1/2	4014.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
558	1.38	14.0		KCl/Polymer/GEM	

962	1.36	9.0		KCl/Polymer/GEM	
962	1.30	11.0		KCl/Polymer/GEM	
1155	1.35	14.0		KCl/Polymer/GEM	
1835	1.36	18.0		KCl/Polymer/GEM	
2124	1.37	18.0		KCl/Polymer/GEM	
2328	1.25	25.0		Enviromul	
2328	1.37	20.0		KCl/Polymer/GEM	
2653	1.26	28.0		Enviromul	
2779	1.25	26.0		Enviromul	
3075	1.26	23.0		Enviromul	
3114	1.38	17.0		KCl/Polymer/GEM	
3114	1.75	34.0		BaraECD	
3164	1.26	25.0		Enviromul	
3380	1.30	25.0		Enviromul	
3426	1.33	25.0		Enviromul	
3467	1.37	26.0		Enviromul	
3688	1.75	31.0		BaraECD	
3970	1.78	36.0		BaraECD	
4014	1.75	36.0		BaraECD	