General information

Wellbore name	6604/5-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Discovery	6604/5-1 (Balderbrå)
Well name	6604/5-1
Seismic location	BG0904R11. Inline 1470. Xline 2752
Production licence	894
Drilling operator	Wintershall Norge AS
Drill permit	1680-L
Drilling facility	WEST PHOENIX
Drilling days	65
Entered date	10.01.2018
Completed date	22.03.2018
Release date	22.03.2020
Publication date	22.03.2020
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS
Discovery wellbore	YES
1st level with HC, age	LATE CRETACEOUS
1st level with HC, formation	SPRINGAR FM
Kelly bushing elevation [m]	39.0
Water depth [m]	1219.0
Total depth (MD) [m RKB]	3858.0
Final vertical depth (TVD) [m RKB]	3858.0
Maximum inclination [°]	2
Bottom hole temperature [°C]	132
Oldest penetrated age	LATE CRETACEOUS
Oldest penetrated formation	SPRINGAR FM
Geodetic datum	ED50
NS degrees	66° 35' 37.43'' N
EW degrees	4° 32' 56.55'' E
NS UTM [m]	7387131.89
EW UTM [m]	568665.16

UTM zone	31
NPDID wellbore	8318

Wellbore history

General

Well 6604/5-1 was drilled to test the Balderbrå prospect in the Vøring Basin of the Norwegian Sea. The primary objective was to prove reservoir presence and hydrocarbon accumulations in Springar Sandstone intervals. TD was planned to be 150 m below the base of the deepest Springar Sandstone. In case of a discovery a technical side-track was planned to obtain cores from the reservoir.

Operations and results

A pilot hole 6604/5-U-1 was drilled 50 m away from the mainbore location in a 12 1/4" hole in order to identify the correct setting depth for the 20" x 13-3/8" casing below the ooze.

Wildcat well 6604/5-1 was spudded with the semi-submersible installation West Phoenix on 10 January 2018 and drilled to TD at 3858 m in the Late Cretaceous Springar Formation. Gas was discovered, and the well was side-tracked at 3308 m to obtain cores from the hydrocarbn-bearing sandstones. The side-track reached TD at 3760 m in the Late Cretaceous Springar Formation. During P&A in the mainbore a leak in the slip joint between the gator lock and inner barrel was discovered. This led to a 10 days repair period before normal operations were resumed. The well was drilled with seawater and hi-vis pills down to 2375 m and with Innovert oil-based mud from 2382 m to TD. Innovert OBM was used also in the side-track.

Three Springar was encountered at 3259 m. Intra-Springar sands were penetrated with tops in the mainbore at 3336 m, 3453 m, and 3582.5 m. In the side-track the sands were penetrated 1 – 2 m MD deeper. All three sands were gas filled with gas-down to contacts. Pressure measurements showed that the three sandstones have different pressure regimes. Weak, light-coloured shows were described in the two upper Springar sandstones, otherwise no oil shows were recorded in the well.

Two cores were cut in the two lower and thickest Springar sandstones in the side-track. Core one was cut from 3450 to 3504 m with 101% recovery. The core-log depth shift for this core is 2.42 m. Core two was cut from 3579 to 3634 m with 102% recovery. The core-log depth shift for this core is 3.90 m. MDT gas samples were taken at 3339.7 m, 3457.7 m, and 3592.7 m.

The well was permanently abandoned on 22 March 2018 as a 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]
2390.00	3857.65

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	3450.0	3504.7	[m]
2	3579.0	3634.1	[m]

Total core sample length [m]	109.8
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
1258	NORDLAND GP
1258	NAUST FM
1504	KAI FM
1730	HORDALAND GP
1730	BRYGGE FM
2513	ROGALAND GP
2513	TARE FM
2594	TANG FM
3259	SHETLAND GP
3259	SPRINGAR FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
LWD - DIR	1258	1348
LWD - DIR GR RES PWD	1348	2382
LWD - DIR GR RES PWD SON DEN	2382	3220
LWD - DIR GR RES PWD SON DEN POR	3220	3858
MDT GR SATURN	1257	3858
T2-CMR NEXT HNGS	3219	3760
T2-LWD - DIR	1258	1348
T2-LWD - DIR GR RES PWD	1348	2382

T2-LWD - DIR GR RES PWD	3308	3760
T2-LWD - DIR GR RES PWD SO DE PO	3220	3858
T2-LWD - DIR GR RES PWD SON DEN	2382	3220
T2-MDT	3340	3710
T2-QGEO MSIP	3219	3760
T2-ZAIT ADT PEX HNGS	3219	3760
T2-ZVSP	1200	3760

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	1344.0	42	1348.0	0.00	
INTERM.	13 3/8	2376.0	17 1/2	2382.0	1.34	LOT
INTERM.	9 5/8	3219.0	12 1/4	3220.0	1.45	LOT
OPEN HOLE		3858.0	8 1/2	3858.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1348	1.03			Water	
1348	1.30			Water	
1450	1.05			Water	
2100	1.04			Water	
2100	1.04			Oil	
2342	1.05			Water	
2382	1.12			Water	
2382	1.30			Water	
2561	1.14			Oil	
3070	1.25			Oil	
3157	1.15			Oil	
3202	1.25			Oil	
3221	1.25			Oil	
3221	1.15			Oil	
3504	1.25			Oil	
3858	1.25			Oil	