

**General information**

Wellbore name	6604/5-2 S
Type	EXPLORATION
Purpose	APPRAISAL
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	6604/5-2
Seismic location	
Production licence	894
Drilling operator	Wintershall Dea Norge AS
Drill permit	1806-L
Drilling facility	SCARABEO 8
Drilling days	36
Entered date	22.01.2020
Completed date	26.02.2020
Plugged and abandon date	26.02.2020
Release date	26.02.2022
Publication date	08.08.2022
Purpose - planned	APPRAISAL
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	34.0
Water depth [m]	1207.0
Total depth (MD) [m RKB]	4155.0
Final vertical depth (TVD) [m RKB]	3850.0
Oldest penetrated age	LATE CRETACEOUS
Oldest penetrated formation	SPRINGAR FM
Geodetic datum	ED50
NS degrees	66° 36' 33.48" N
EW degrees	4° 35' 34.3" E
NS UTM [m]	7388915.94
EW UTM [m]	570562.95
UTM zone	31
NPDID wellbore	8988



Wellbore history

General

Well 6604/5-2 S was drilled to appraise the 6604/5-1 Balderbrå discovery in the Vøring Basin of the Norwegian Sea. The primary objective was to verify continuation of reservoir and presence of hydrocarbons in the Late Cretaceous Springar Formation.

Operations and results

Appraisal well 6604/5-2 S was spudded with the semi-submersible installation Scarabeo 8 on 22 January 2020 and drilled to TD at 4155 m (3849.7 m TVD) in the Late Cretaceous Springar Formation. Operations proceeded without significant problems. The well was drilled with seawater and hi-vis pills down to 2328 m and with Innover NS oil-based mud from 2328 m to TD.

Three separate Springar sandstone units were penetrated: Sandstone 1 from 3645.4 to 3652.4 m (3386.9 to 3391.3 m TVD), Sandstone 2 from 3777.5 to 3853.4 m (3508.2 to 3577.2 m TVD), and Sandstone 3 from 3935.1 to 4082 m (3651.3 to 3784 m TVD). The reservoirs have reasonably good porosity but generally low permeability due to elevated detrital clay content. A fair amount of cementation is seen similar as in the Balderbrå discovery well. However, cementation also has affected the cleanest and coarsest sandstone units resulting in the absence of better reservoir quality zones. A total amount of 35 XPT pressure points was attempted out of which only 5 were considered valid. The five valid points aligned with the regional, near-hydrostatic, water gradient seen in the Gullstjerne exploration well 6604/6-1. A water density of 0.968 g/cc was estimated. There were no oil shows above the oil-based mud in the well.

Two cores were cut. Core 1 was cut from 3770 to 3842 m in the Springar 2 sand with 101.35 % recovery. The core-log depth shift for this core is 6 m. Core 2 was cut from 3934 to 4006 m in the Springar 3 sand with 101.56 % recovery. The core-log depth shift for this core is 3.6 m. MDT fluid samples were taken at 3647,7 m, 3782 m, 3827,5 m, and 3947 m. All samples contained formation water and OBM filtrate with gas traces. The temperatures recorded during the samplings were 112.8 °C, 116.28 °C, 119.16 °C, and 123.16 °C, respectively. These temperatures extrapolate to a temperature of 133 °C at well TD.

The well was permanently abandoned on 26 February 2020 as a dry 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]
2340.00	4155.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate



Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3770.0	3843.0	[m]
2	3934.0	4007.1	[m]

Total core sample length [m]	146.1
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
1241	NORDLAND GP
1504	KAI FM
1784	HORDALAND GP
1784	BRYGGE FM
1913	NO FORMAL NAME
2498	ROGALAND GP
2498	TARE FM
2594	TANG FM
3558	SHETLAND GP
3558	SPRINGAR FM
3645	UNDIFFERENTIATED
3652	UNDIFFERENTIATED
3778	UNDIFFERENTIATED
3853	UNDIFFERENTIATED
3935	UNDIFFERENTIATED
4082	UNDIFFERENTIATED

Logs

Log type	Log top depth [m]	Log bottom depth [m]
LWD - DIR	1240	1324
LWD - DIR GR RES	1324	2328
LWD - DIR GR RES DEN NEU	3570	4155
LWD - DIR GR RES DEN NEU SON	2328	3570
PQ PO SATPO IFA MS	3647	3947
ZAIT SS XPT PEX HNGS	2915	4162

**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	1322.0	36	1324.0	0.00	
SURF.COND.	13 3/8	2323.0	17 1/2	2328.0	1.35	LOT
INTERM.	9 5/8	3311.0	12 1/4	3317.0	1.55	LOT
OPEN HOLE		3850.0	8 1/2	3850.0	0.00	