

## General information

Wellbore name	7220/11-3
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	<a href="#">link to press release</a>
Factmaps in new window	<a href="#">link to map</a>
Main area	BARENTS SEA
Discovery	<a href="#">7220/11-1 (Alta)</a>
Well name	7220/11-3
Seismic location	LN12M01 inline 29006 crossline 24350
Production licence	<a href="#">609</a>
Drilling operator	Lundin Norway AS
Drill permit	1570-L
Drilling facility	<a href="#">ISLAND INNOVATOR</a>
Drilling days	81
Entered date	14.06.2015
Completed date	02.09.2015
Release date	02.09.2017
Publication date	02.09.2017
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	TRIASSIC
1st level with HC, formation	NO FORMAL NAME
2nd level with HC, age	EARLY PERMIAN
2nd level with HC, formation	ØRN FM
Kelly bushing elevation [m]	30.0
Water depth [m]	397.0
Total depth (MD) [m RKB]	1922.5
Final vertical depth (TVD) [m RKB]	1920.0
Maximum inclination [°]	7.9
Oldest penetrated age	PERMIAN
Oldest penetrated formation	ØRN FM
Geodetic datum	ED50
NS degrees	72° 1' 12.62" N
EW degrees	20° 31' 41.23" E
NS UTM [m]	8000137.25

EW UTM [m]	690231.43
UTM zone	33
NPDID wellbore	7714

### Wellbore history

**General**

Well 7220/11-3 was drilled to appraise the Alta discovery, about four kilometres south of discovery well 7220/11-1 and approximately 3 kilometres northeast of appraisal wells 7220/11-2 and 7220/11-2 A. The Alta discovery lie on the southern part of the Loppa High in the Barents Sea and comprises a structural trap with closures at the Permian-Triassic and Basement levels. The primary appraisal objectives were to confirm the presence of hydrocarbon columns and fluid contacts in a crestal position of the structure, and to test the reservoir properties of the Permian carbonates.

**Operations and results**

Appraisal well 7220/11-3 was spudded with the semi-submersible installation Island Innovator on 14 June 2015. During coring in karstified chalk and limestone at 1954 m, the core bit ran into a cavern of unknown size. The string suddenly dropped 2 meters with no WOB. Total fluid losses occurred at a loss rate of 60 m<sup>3</sup>/hr. The well was shut in with seawater in the annulus and a full well control incident occurred. The drill string was shot-off, leaving the core barrel in the hole. The main bore was drilled with seawater and hi-vis pills down to 598 m and with Aqua-Drill mud from 598 m to 1956 m, which became TD. The main wellbore was plugged back to the 13 3/8" casing shoe and a technical sidetrack, 7220/11-3 T2, was kicked off from 1087 m to secure missing data. The sidetrack was drilled to a total depth of 1922.5 m (1920 m TVD) in the Permian Ørn Formation. The technical sidetrack well 7220/11-3 T2 was drilled with Aqua-Drill mud from kick-off to TD.

Well 7220/11-3 encountered a 75-metre thick gas column and the upper part of an oil column in carbonates in the Gipsdalen Group of good to very good reservoir quality. The reservoir conglomerate was encountered at 1834.5 m (1832.0 m TVD) and the underlying carbonates at 1856 m (1853.5 m TVD). Due to concerns of further severe losses, the technical sidetrack was not drilled to a sufficient depth to penetrate the expected FWL, however, wireline pressures, fluid gradients and samples were acquired in the gas and oil zones suggesting a GOC at 1912.5 m (1910 m TVD). Fluid gradients and pressures were comparable with those acquired in the discovery well. Residual oil shows were observed in the main well bore at 645 to 650 m, 860 to 936 m, 1093 to 1202 m, and 1295 to 1650 m. In the sidetrack similar shows were observed, in addition to shows on cores from the Kobbe and Klappmyss formations (1820 - 1824 m and 1832 to 1834.5 m respectively), and in the reservoir Triassic conglomerates and Permian Carbonates.

A total of 11 cores were attempted of which 10 were recovered. Cores 1 to 10 were cut in succession from 1814 to 1945.9 m in the main bore with 98% total recovery. The last core was lost in hole because of severe mud losses. Wire line logs were run in the sidetrack where MDT fluid samples were taken at 1919.7 m (oil), 1912 m (gas), and at 1841.9 m (gas).

The well was plugged back to 1016 m on 2 September 2015 as an oil and gas appraisal well. A geological sidetrack well 7220/11-3 A followed for further drilling and testing.

**Testing**

No drill stem test was performed.

**Cuttings at the Norwegian Offshore Directorate**

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
610.00	1946.00

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	1814.0	1826.9	[m ]
2	1827.2	1852.2	[m ]
3	1852.2	1863.1	[m ]
4	1863.2	1881.8	[m ]
5	1882.2	1886.6	[m ]
6	1886.9	1893.7	[m ]
7	1893.9	1901.3	[m ]
8	1902.2	1928.7	[m ]
9	1928.7	1935.9	[m ]
10	1936.1	1945.8	[m ]

Total core sample length [m]	129.3
Cores available for sampling?	YES

### Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
427	<a href="#">NORDLAND GP</a>
427	<a href="#">UNDIFFERENTIATED</a>
492	<a href="#">SOTBAKKEN GP</a>
492	<a href="#">TORSK FM</a>
575	<a href="#">ADVENTDALEN GP</a>
575	<a href="#">KOLMULE FM</a>
601	<a href="#">KAPP TOSCANA GP</a>
601	<a href="#">SNADD FM</a>
1815	<a href="#">SASSENDALEN GP</a>
1815	<a href="#">KOBBE FM</a>
1830	<a href="#">KLAPPMYSS FM</a>
1832	<a href="#">UNDEFINED GP</a>
1849	<a href="#">GIPSDALEN GP</a>
1849	<a href="#">ØRN FM</a>

## Logs

Log type	Log top depth [m]	Log bottom depth [m]
MWD - GR PWD RES DIR AC	498	598
MWD - PWD DIR	498	598
MWD - PWD GR DIR	427	498
MWD - RES GR PWD DIR AC	598	1080
MWD - RES GR PWD DIR CAL DEN NEU	1077	1767
MWD - RES GR PWD DIR EDEN CAL NE	1767	1814

## 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	493.6	36	494.0	0.00	
SURF.COND.	20	590.1	26	598.0	1.41	LOT
PILOT HOLE		598.0	9 7/8	598.0	0.00	
INTERM.	13 3/8	1077.0	17 1/2	1085.0	1.40	LOT
INTERM.	9 5/8	1766.4	12 1/4	1774.0	1.60	FIT
OPEN HOLE		1922.5	8 1/2	1922.5	0.00	

## Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
450	1.40	16.0		Water Based	
463	1.03	2.0		Water Based	
498	1.03	20.0		Water Based	
498	1.50	17.0		Water Based	
598	1.20	12.0		Water Based	
598	1.03	20.0		Water Based	
705	1.15	12.0		Water Based	
1080	1.16	9.0		Water Based	
1094	1.20	11.0		Water Based	
1358	1.20	12.0		Water Based	
1515	1.15	13.0		Water Based	
1532	1.20	13.0		Water Based	
1746	1.15	12.0		Water Based	

1850	1.15	9.0		Water Based	
1920	1.16	11.0		Water Based	