General information

Wellbore name	7220/11-3 AR
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	BARENTS SEA
Discovery	7220/11-1 (Alta)
Well name	7220/11-3
Seismic location	LN12M01 inline 29006 xline 24350
Production licence	609
Drilling operator	Lundin Norway AS
Drill permit	1621-L
Drilling facility	LEIV EIRIKSSON
Drilling days	77
Entered date	27.07.2016
Completed date	10.10.2016
Plugged and abondon date	10.10.2016
Release date	10.10.2018
Publication date	10.10.2018
Purpose - planned	APPRAISAL
Reentry	YES
Reentry activity	DRILLING/TESTING/PLUGGING
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	LATE TRIASSIC
1st level with HC, formation	KLAPPMYSS FM
2nd level with HC, age	EARLY TRIASSIC
2nd level with HC, formation	NO FORMAL NAME
Kelly bushing elevation [m]	25.0
Water depth [m]	397.0
Total depth (MD) [m RKB]	2600.0
Final vertical depth (TVD) [m RKB]	2414.1
Maximum inclination [°]	41.3
Oldest penetrated age	CARBONIFEROUS
Oldest penetrated formation	UGLE 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	7959

Wellbore history

Wellbore history

General

Re-entry well 7220/11-3 AR was drilled to appraise the Alta Discovery on the southern part of the Loppa High in the Barents Sea. The objectives were to deepen the 7220/11-3 A well bore to Permian and Carboniferous strata, to evaluate the reservoir properties of Permian and Carboniferous carbonates (Ørn and Falk Formations), and to test the productivity of the Permo-Triassic Alta reservoir by a drill stem test.

Operations and results

Appraisal well 7220/11-3 A was re-entered with the semi-submersible installation Leiv Eiriksson on 27 June 2016. The extension was drilled as a 6-inch hole from 2130 m to a total depth of 2600 m (2414 m TVD) in the Carboniferous Ugle Formation. When drilling at 2246 m in fractured carbonates mud losses occurred. This caused 74 hrs NPT. During P&A the drill string parted when cutting and retrieving wellhead. This caused 43.5 hrs NPT. The well was drilled with KCl/Polymer/GEM mud from 2130 to TD.

The re-entry was drilled entirely within the water zone below the Alta reservoir. MDT pore pressure measurements confirmed the expected Permian water pressures and gradient previously seen in the 7220/11-1 discovery. The pressure points further confirmed a Free Water Level of 1924 m TVD MSL as found in well 7220/11-3 A. Traces of residual oil were observed in the dolomites and limestones from below the FWL (2089 m MD RKB for Leiv Eiriksson), down to approximately 2205 m.

Nine conventional cores were cut in four different coring runs in the interval 2133 to 2298.6 m. In total, 24.9 m was recovered. MDT fluid samples were acquired from two sampling stations in the water zone, one at 2161.1 m in the Ørn Formation and one at 2337.0 m in the Falk Formation. All samples contained water with minor dissolved gas.

The well was permanently abandoned on 10 October 2016 as an oil and gas appraisal well.

Testing

Three drill stem tests were performed in the well.

DST1 was a water injection test in the interval 2330 to 2360 m in the Falk Formation. The test performed with an injection rate of 800 m3 seawater/day

DST2 was a water injection test in the interval 2150 to 2180 m in the Ørn Formation. The test performed with an injection rate of 2900 m3 seawater/day

DST3 tested the interval 2012 to 2020 m in the Klappmyss Formation. This test produced 595,000 Sm3 gas per day through a 64/64 inch choke.

>

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
2133.00	2600.00

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	2133.0	2134.5	[m]
2	2140.5	2140.9	[m]
3	2143.0	2147.2	[m]
4	2149.2	2150.8	[m]
5	2186.0	2193.3	[m]
6	2193.3	2196.3	[m]
7	2196.8	2202.5	[m]
8	2297.0	2297.6	[m]
9	2297.8	2298.5	[m]

Total core sample length [m]	24.9
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
427	NORDLAND GP
427	UNDIFFERENTIATED
429	SOTBAKKEN GP
429	TORSK FM
575	ADVENTDALEN GP
575	KOLMULE FM
601	KAPP TOSCANA GP
601	SNADD FM
1982	SASSENDALEN GP
1982	KOBBE FM
2013	KLAPPMYSS FM
2064	UNDEFINED GP
2124	GIPSDALEN GP
2124	ØRN FM
2252	FALK FM
2535	UGLE FM

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
3.0	2012	2020	25.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
3.0				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
3.0		595000			

Logs

Log type	Log top depth [m]	Log bottom depth [m]
FMI MSIP	2144	2593
HRLA PEX ADT GR	2127	2592
MDT	2161	2337
MSCT GR	2138	2579
MWD - OTK BCPM2	2130	2133
MWD - OTK BCPM2 LTK STK	2091	2596
VSI	2115	2161
VSI	2115	2161
XPT CMR NEXT GR	2127	2573

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	488.6	36	489.0	0.00	
SURF.COND.	20	585.1	26	593.0	1.41	LOT
PILOT HOLE		593.0	9 7/8	593.0	0.00	
INTERM.	13 3/8	1072.3	17 1/2	1080.0	1.40	LOT
INTERM.	9 5/8	1899.7	12 1/4	1908.0	1.45	LOT
LINER	7	2128.5	8 1/2	2130.0	0.00	
		2133.0		0.0	1.35	FIT

LINER	5	2504.8	6	0.0	0.00	
OPEN HOLE		2600.0	6	2600.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
926	1.21	15.0		KCL/Gem	
926	1.15	12.0		KCL/Gem	
1609	1.21	15.0		KCL/Gem	
1609	1.20	12.0		KCL/Gem	
1633	1.14	14.0		KCL/Gem	
2138	1.14	14.0		WBM	
2145	1.14	18.0		KCL/Polymer/Gem	
2297	1.14	15.0		KCL/Gem	
2448	1.14	14.0		KCL/Gem	
2448	1.02	1.0		Other	
2448	1.14	1.0		BRINE	
2470	1.14	16.0		KCL/Gem	
2511	1.02	1.0		Other	
2511	1.13	1.0		BRINE	
2511	1.15	13.0		KCL/Gem	
2600	1.14	16.0		KCL/Gem	