General information

Wellbore name	7120/1-3
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	BARENTS SEA
Discovery	7120/1-3 (Gohta)
Well name	7120/1-3
Seismic location	LN11M07 inline4730 & crossline 3311
Production licence	492
Drilling operator	Lundin Norway AS
Drill permit	1457-L
Drilling facility	TRANSOCEAN ARCTIC
Drilling days	84
Entered date	16.07.2013
Completed date	07.10.2013
Release date	07.10.2015
Publication date	07.10.2015
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	PERMIAN
1st level with HC, formation	RØYE FM
Kelly bushing elevation [m]	24.0
Water depth [m]	342.0
Total depth (MD) [m RKB]	2542.0
Final vertical depth (TVD) [m RKB]	2539.0
Maximum inclination [°]	8
Bottom hole temperature [°C]	98
Oldest penetrated age	PERMIAN
Oldest penetrated formation	RØYE FM
Geodetic datum	ED50
NS degrees	71° 54' 10.37'' N
EW degrees	20° 16' 10.85'' E
NS UTM [m]	7978470.11
EW UTM [m]	474678.91

UTM zone	34
NPDID wellbore	7210

Wellbore history

General

Well 7120/1-3 was drilled on the Gotha prospect on the southern end of the Loppa High in the Barents Sea, ca 1.8 km south-west from well 7120/1-1. An 8 ½" pilot hole was drilled from seabed at 366 m to 665 m to check for shallow gas, which was not observed. The primary objective was to test the reservoir properties and hydrocarbon potential in sandstones of the Snadd Formation and in karstified carbonate at the top of the Permian Røye Formation. The secondary objective was to test a 10 m sandstone sequence at the top of the Kobbe Formation.

Operations and results

Wildcat well 7120/1-3 was spudded with the semi-submersible installation Transocean Arctic on 16 July 2013 and drilled to TD at 2542 m in the Permian Røye Formation. The well was drilled with seawater and hi-vis sweeps down to 665 m and with KCl/Polymer/GEM water based mud from 665 m to TD.

The well encountered sandstones in the Gotha Snadd target, but the reservoir proved water filled and the reservoir properties were found to be on the low side. The expected Kobbe Formation sandstone was poorly developed with only a tight siltstone present. Permian karstified carbonates were penetrated at 2281 m. These carbonates contained a gas column of 34 meters (GOC at 2310.3 m) and an oil column of 75 meters (OWC at 2389 m).

First oil show was observed in a sandstone at 700 m in the Fruholmen Formation. A second interval in the Fruholmen Formation, from 770 to 780 m also had weak oil shows. Weak oil shows were described from 1758 to 1835 m in the Snadd Formation. The Røye Formation had oil shows throughout the petroleum-bearing reservoir. Oil shows (fluorescence, but no stain or odour) continued below the OWC down to TD in the well.

A total of 50.15 m core (86% recovery) was recovered in six successive cores in the interval 2288.5 to 2346.8 m in the karstified carbonates. The core to log depth shifts for cores 1 to 6 were -3.25 m, -3.57 m, -3.67 m, -4.53 m, -4.91 m, and -4.91 m, respectively. RCI fluid samples were taken at 2305.5 m (gas), 2315.7 m (oil), 2361.6 m (oil), and 2477.5 m (water).

The well was permanently abandoned on 7 October 2013.

Testing

A drill stem test was conducted over the interval 2336.8 to 2377.3 m in the Røye Formation carbonates. The DST produced after acid treatment of the formation approximately 683 Sm3 oil and 220000 Sm3 gas /day through a 44/64" The GOR was 322 Sm3/Sm3. The DST temperature at 2349 m was 91.2 °C. This was the first successful DST in Permian carbonates on the Norwegian Continental Shelf. The main flow of the reservoir was stable over 24 hours and confirmed good production properties of the reservoir.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
670.00	2542.00

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	2288.5	2292.2	[m]
2	2293.5	2293.9	[m]
3	2293.9	2307.7	[m]
4	2310.0	2336.1	[m]
5	2336.5	2341.7	[m]
6	2344.0	2345.2	[m]

Total core sample length [m]	50.3
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
670.0	[m]	DC	ROBERTSO
680.0	[m]	DC	ROBERT
700.0	[m]	DC	ROBERT
720.0	[m]	DC	ROBERT
740.0	[m]	DC	ROBERT
760.0	[m]	DC	ROBERT
780.0	[m]	DC	ROBERT
800.0	[m]	DC	ROBERT
820.0	[m]	DC	ROBERT
840.0	[m]	DC	ROBERT
860.0	[m]	DC	ROBERT
880.0	[m]	DC	ROBERT
900.0	[m]	DC	ROBERT
920.0	[m]	DC	ROBERT
940.0	[m]	DC	ROBERT
960.0	[m]	DC	ROBERT
980.0	[m]	DC	ROBERT

1000.0	[m]	DC	ROBERT
1020.0	[m]	DC	ROBERT
1040.0	[m]	DC	ROBERT
1060.0	[m]	DC	ROBERT
1080.0	[m]	DC	ROBERT
1100.0	[m]	DC	ROBERT
1120.0	[m]	DC	ROBERT
1140.0	[m]	DC	ROBERT
1160.0	[m]	DC	ROBERT
1180.0	[m]	DC	ROBERT
1200.0	[m]	DC	ROBERT
1220.0	[m]	DC	ROBERT
1240.0	[m]	DC	ROBERT
1260.0	[m]	DC	ROBERT
1280.0	[m]	DC	ROBERT
1300.0	[m]	DC	ROBERT
1320.0	[m]	DC	ROBERT
1340.0	[m]	DC	ROBERT
1360.0	[m]	DC	ROBERT
1380.0	[m]	DC	ROBERT
1400.0	[m]	DC	ROBERT
1420.0	[m]	DC	ROBERT
1440.0	[m]	DC	ROBERT
1460.0	[m]	DC	ROBERT
1480.0	[m]	DC	ROBERT
1500.0	[m]	DC	ROBERT
1520.0	[m]	DC	ROBERT
1540.0	[m]	DC	ROBERT
1560.0	[m]	DC	ROBERT
1580.0	[m]	DC	ROBERT
1600.0	[m]	DC	ROBERT
1620.0	[m]	DC	ROBERT
1640.0	[m]	DC	ROBERT
1661.0	[m]	DC	ROBERT
1679.0	[m]	DC	ROBERT
1700.0	[m]	DC	ROBERT
1718.0	[m]	DC	ROBERT
1736.0	[m]	DC	ROBERT
1754.0	[m]	DC	ROBERT
1772.0	[m]	DC	ROBERT

1790.0	[m]	DC	ROBERT
1808.0	[m]	DC	ROBERT
1826.0	[m]	DC	ROBERT
1844.0	[m]	DC	ROBERT
1862.0	[m]	DC	ROBERT
1880.0	[m]	DC	ROBERT
1898.0	[m]	DC	ROBERT
1916.0	[m]	DC	ROBERT
1934.0	[m]	DC	ROBERT
1952.0	[m]	DC	ROBERT
1970.0	[m]	DC	ROBERT
1988.0	[m]	DC	ROBERT
2006.0	[m]	DC	ROBERT
2024.0	[m]	DC	ROBERT
2042.0	[m]	DC	ROBERT
2060.0	[m]	DC	ROBERT
2078.0	[m]	DC	ROBERT
2096.0	[m]	DC	ROBERT
2114.0	[m]	DC	ROBERT
2132.0	[m]	DC	ROBERT
2150.0	[m]	DC	ROBERT
2168.0	[m]	DC	ROBERT
2186.0	[m]	DC	ROBERT
2216.0	[m]	DC	ROBERT
2222.0	[m]	DC	ROBERT
2240.0	[m]	DC	ROBERT
2258.0	[m]	DC	ROBERT
2273.0	[m]	DC	ROBERT
2276.0	[m]	DC	ROBERT
2285.0	[m]	DC	ROBERT
2289.0	[m]	C	APT
2290.1	[m]	C	APT
2299.7	[m]	C	APT
2302.7	[m]	C	APT
2334.5	[m]	C	APT
2340.3	[m]	C	APT

Oil samples at the Norwegian Offshore Directorate

Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
DST		2315.70	0.00	OIL	04.09.2013 - 00:00	YES
DST		2361.60	0.00	OIL	04.09.2013 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
366	NORDLAND GP
366	UNDIFFERENTIATED
436	SOTBAKKEN GP
436	TORSK FM
689	KAPP TOSCANA GP
689	FRUHOLMEN FM
1101	SNADD FM
2203	SASSENDALEN GP
2203	KOBBE FM
2244	KLAPPMYSS FM
2281	TEMPELFJORDEN GP
2281	RØYE FM

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2336	2377	17.5

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				41

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	683	220000			322

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CN ZDL RTEX MLL GR	2133	2525
MAXCOR GR	1620	2164
MREX FLEX GR	2175	2525
MWD - PWD GR RES NEU DEN SON DIR	345	2538
PCOR GR	2195	2495
RCX GR	2204	2478
RCX GR	2300	2482
RCX GR 6CAL	1719	1826
STAR UXPL XMAC GR	2172	2524
VSP GR	1065	2510

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	430.0	36	435.0	0.00	
SURF.COND.	20	660.0	26	665.0	1.35	FIT
INTERM.	9 5/8	1613.0	12 1/4	1622.0	1.32	LOT
LINER	7	2175.0	8 1/2	2177.0	1.34	LOT
LINER	5	2449.0	6	2542.0	1.51	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
378	1.03	1.0		Water Based	
398	1.03	1.0		Water Based	
487	1.03	1.0		Water Based	
665	1.11	10.0		Water Based	
1276	1.16	12.0		Water Based	
1622	0.00	16.0		Water Based	
2010	0.00	18.0		Water Based	
2177	1.21	22.0		Water Based	
2221	1.27	26.0		Water Based	
2449	1.14	13.0		Water Based	
2449	1.11	13.0		Water Based	

2542	0.00	13.0		Water Based	