

**General information**

Wellbore name	7220/4-1
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	7220/4-1 (Kramsnø)
Well name	7220/4-1
Seismic location	3D survey WG08STR10 : inline 1324 & xline 4288
Production licence	532
Drilling operator	Statoil Petroleum AS
Drill permit	1494-L
Drilling facility	WEST HERCULES
Drilling days	65
Entered date	22.12.2013
Completed date	25.02.2014
Release date	25.02.2016
Publication date	25.02.2016
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	STØ FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	NORDMELA FM
3rd level with HC, age	TRIASSIC
3rd level with HC, formation	SNADD FM
Kelly bushing elevation [m]	31.0
Water depth [m]	403.0
Total depth (MD) [m RKB]	3240.0
Final vertical depth (TVD) [m RKB]	3239.0
Maximum inclination [°]	4.8
Bottom hole temperature [°C]	105
Oldest penetrated age	MIDDLE TRIASSIC
Oldest penetrated formation	SNADD FM



Geodetic datum	ED50
NS degrees	72° 35' 19.67" N
EW degrees	20° 14' 5.97" E
NS UTM [m]	8062450.07
EW UTM [m]	674650.00
UTM zone	33
NPDID wellbore	7307

Wellbore history

**General**

Well 7220/4-1 was drilled to test the Kramsnø prospect in the Johan Castberg area of the Barents Sea. The primary objective was to prove commercial volumes of hydrocarbons in the Stø, Nordmela and Tubåen formations and confirm the GOC and OWC seen on seismics. Secondary objective was to investigate the Snadd Formation and acquire data for exploration of the Triassic play.

Operations and results

Wildcat well 7220/4-1 was spudded with the semi-submersible installation West Hercules on 22 December 2013 and drilled to TD at 3240 m in the Triassic Snadd Formation. No significant problem was encountered in the operations. The well was drilled with Seawater and hi-vis pills down to 744 m, with KCl/polymer/glycol mud from 744 m to 2128 m, and with Low sulphate/KCl/polymer/glycol from 2128 m to TD.

A potential source rock section is proven by sidewall cores and elevated Gamma Ray in the interval 2220 to 2228 m within the Knurr Formation (Late Barremian). This section has TOC from 2.5 to 4.1% and Rock-Eval Hydrogen Index in the range 270 to 370 mg HC/g TOC. The Hekkingen Formation source rock is not present in the well. In the reservoir, the well penetrated sandstone and siltstone of the Jurassic Stø and Nordmela Formations. MDT pressure gradients show a gas column from top Stø Formation at 2267 m and down to a gas/water contact at 2400 m in the Nordmela Formation. The reservoir quality in Stø, Nordmela and Tubåen formations is deteriorated by extensive quartz cementation. There was no oil leg in the well, but weak oil shows are recorded from 2387 m and downwards in the cored section in Nordmela and Tubåen formations. Further weak oil shows (cut fluorescence) are described on cuttings down to 2503 m in the Tubåen Formation.

Triassic sandstones and claystones were encountered in the Fruholmen and Snadd Formations. Gas was found in two zones in the Snadd Formation: from 3002 m with gas down-to contact at 3047 m and from 3117 with gas down-to contact at 3162 m. The overall reservoir quality in Snadd is poor due to the low net thickness of permeable sandstones.

Three cores with a total recovery of 185.4 m were taken in the Stø, Nordmela and Tubåen formations. The core-log depth shifts are -1.7 m, -2.8 m and - 3.3 m for cores 1, 2, and 3, respectively. MDT fluid samples were taken at 2334.4 m (gas), 2393.6 m (gas), 2417.5 m (water), and 3009 m (gas),

The well was permanently abandoned on 25 February 2014 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]
755.00	3240.00

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	2274.0	2318.2	[m]
2	2319.0	2389.7	[m]
3	2390.0	2460.6	[m]

Total core sample length [m]	185.5
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
755.0	[m]	DC	ROBERTSO
790.0	[m]	DC	ROBERT
825.0	[m]	DC	ROBERT
860.0	[m]	DC	ROBERT
895.0	[m]	DC	ROBERT
930.0	[m]	DC	ROBERT
960.0	[m]	DC	ROBERT
990.0	[m]	DC	ROBERT
1020.0	[m]	DC	ROBERT
1050.0	[m]	DC	ROBERT
1080.0	[m]	DC	ROBERT
1110.0	[m]	DC	ROBERT
1140.0	[m]	DC	ROBERT
1170.0	[m]	DC	ROBERT
1200.0	[m]	DC	ROBERT
1230.0	[m]	DC	ROBERT
1260.0	[m]	DC	ROBERT
1290.0	[m]	DC	ROBERT
1320.0	[m]	DC	ROBERT
1350.0	[m]	DC	ROBERT
1380.0	[m]	DC	ROBERT
1410.0	[m]	DC	ROBERT
1440.0	[m]	DC	ROBERT
1470.0	[m]	DC	ROBERT
1500.0	[m]	DC	ROBERT
1530.0	[m]	DC	ROBERT
1560.0	[m]	DC	ROBERT



1590.0 [m]	DC	ROBERT
1620.0 [m]	DC	ROBERT
1650.0 [m]	DC	ROBERT
1680.0 [m]	DC	ROBERT
1710.0 [m]	DC	ROBERT
1740.0 [m]	DC	ROBERT
1770.0 [m]	DC	ROBERT
1800.0 [m]	DC	ROBERT
1830.0 [m]	DC	ROBERT
1860.0 [m]	DC	ROBERT
1890.0 [m]	DC	ROBERT
1920.0 [m]	DC	ROBERT
1950.0 [m]	DC	ROBERT
1980.0 [m]	DC	ROBERT
2010.0 [m]	DC	ROBERT
2040.0 [m]	DC	ROBERT
2070.0 [m]	DC	ROBERT
2100.0 [m]	DC	ROBERT
2140.0 [m]	DC	ROBERT
2146.0 [m]	DC	ROBERT
2152.0 [m]	DC	ROBERT
2158.0 [m]	DC	ROBERT
2164.0 [m]	DC	ROBERT
2170.0 [m]	DC	ROBERT
2176.0 [m]	DC	ROBERT
2182.0 [m]	DC	ROBERT
2188.0 [m]	DC	ROBERT
2194.0 [m]	DC	ROBERT
2200.0 [m]	DC	ROBERT
2206.0 [m]	DC	ROBERT
2212.0 [m]	DC	ROBERT
2218.0 [m]	DC	ROBERT
2224.0 [m]	DC	ROBERT
2230.0 [m]	DC	ROBERT
2236.0 [m]	DC	ROBERT
2242.0 [m]	DC	ROBERT
2248.0 [m]	DC	ROBERT
2248.0 [m]	SWC	ROBERT
2254.0 [m]	DC	ROBERT
2260.0 [m]	DC	ROBERT



2260.0	[m]	SWC	ROBERT
2266.0	[m]	DC	ROBERT
2274.0	[m]	DC	ROBERT
2274.2	[m]	C	ROBERT
2275.1	[m]	C	ROBERT
2282.6	[m]	C	ROBERT
2291.8	[m]	C	ROBERT
2297.7	[m]	C	ROBERT
2302.3	[m]	C	ROBERT
2304.6	[m]	C	ROBERT
2308.3	[m]	C	ROBERT
2314.5	[m]	C	ROBERT
2319.3	[m]	C	ROBERT
2325.5	[m]	C	ROBERT
2331.1	[m]	C	ROBERT
2335.2	[m]	C	ROBERT
2338.5	[m]	C	ROBERT
2343.9	[m]	C	ROBERT
2348.9	[m]	C	ROBERT
2353.7	[m]	C	ROBERT
2358.2	[m]	C	ROBERT
2363.6	[m]	C	ROBERT
2369.8	[m]	C	ROBERT
2374.6	[m]	C	ROBERT
2379.5	[m]	C	ROBERT
2383.6	[m]	C	ROBERT
2388.8	[m]	C	ROBERT
2392.8	[m]	C	ROBERT
2398.8	[m]	C	ROBERT
2400.8	[m]	C	ROBERT
2405.6	[m]	C	ROBERT
2407.8	[m]	C	ROBERT
2410.7	[m]	C	ROBERT
2413.9	[m]	C	ROBERT
2417.5	[m]	C	ROBERT
2421.5	[m]	C	ROBERT
2426.4	[m]	C	ROBERT
2434.8	[m]	C	ROBERT
2439.4	[m]	C	ROBERT
2443.7	[m]	C	ROBERT



2448.9 [m]	C	ROBERT
2453.2 [m]	C	ROBERT
2457.9 [m]	C	ROBERT
2460.1 [m]	C	ROBERT
2464.0 [m]	DC	ROBERT
2470.0 [m]	DC	ROBERT
2476.0 [m]	DC	ROBERT
2482.0 [m]	DC	ROBERT
2488.0 [m]	DC	ROBERT
2494.0 [m]	DC	ROBERT
2500.0 [m]	DC	ROBERT
2515.0 [m]	DC	ROBERT
2516.0 [m]	DC	ROBERT
2533.0 [m]	DC	ROBERT
2548.0 [m]	DC	ROBERT
2563.0 [m]	DC	ROBERT
2566.0 [m]	SWC	ROBERT
2581.0 [m]	DC	ROBERT
2596.0 [m]	DC	ROBERT
2611.0 [m]	DC	ROBERT
2629.0 [m]	DC	ROBERT
2644.0 [m]	DC	ROBERT
2659.0 [m]	DC	ROBERT
2677.0 [m]	DC	ROBERT
2692.0 [m]	DC	ROBERT
2707.0 [m]	DC	ROBERT
2725.0 [m]	DC	ROBERT
2740.0 [m]	DC	ROBERT
2755.0 [m]	DC	ROBERT
2773.0 [m]	DC	ROBERT
2788.0 [m]	DC	ROBERT
2803.0 [m]	DC	ROBERT
2821.0 [m]	DC	ROBERT
2836.0 [m]	DC	ROBERT
2838.0 [m]	SWC	ROBERT
2851.0 [m]	DC	ROBERT
2869.0 [m]	DC	ROBERT
2884.0 [m]	DC	ROBERT
2899.0 [m]	DC	ROBERT
2917.0 [m]	DC	ROBERT



2932.0 [m]	DC	ROBERT
2934.0 [m]	SWC	ROBERT
2947.0 [m]	DC	ROBERT
2965.0 [m]	DC	ROBERT
2980.0 [m]	DC	ROBERT
2980.0 [m]	SWC	ROBERT
2995.0 [m]	DC	ROBERT
3013.0 [m]	DC	ROBERT
3028.0 [m]	DC	ROBERT
3043.0 [m]	DC	ROBERT
3100.0 [m]	SWC	ROBERT
3109.0 [m]	DC	ROBERT
3124.0 [m]	DC	ROBERT
3139.0 [m]	DC	ROBERT
3157.0 [m]	DC	ROBERT
3172.0 [m]	DC	ROBERT
3185.0 [m]	SWC	ROBERT
3187.0 [m]	DC	ROBERT
3205.0 [m]	DC	ROBERT
3226.0 [m]	DC	ROBERT
3240.0 [m]	DC	ROBERT

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
434	NORDLAND GP
434	NAUST FM
490	SOTBAKKEN GP
490	TORSK FM
1294	ADVENTDALEN GP
1294	KOLMULE FM
2171	KOLJE FM
2185	KNURR FM
2267	KAPP TOSCANA GP
2267	STØ FM
2293	NORDMELA FM
2405	TUBÅEN FM
2513	FRUHOLMEN FM
2513	KRABBE MBR



2676	REKE MBR
2875	AKKAR MBR
2990	SNADD FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CMR HRLA PEX ECS HNGS	2128	3236
FMI MSIP GR	431	1343
FMI MSIP GR	1635	3263
MDT GR	2268	3204
MDT GR	2334	3204
MSCT GR	2160	3050
MSCT GR	2500	3050
MSCT GR	3050	3258
MWD-PDX5 RAB6 ARC6 TELE675	1355	2274
MWD-TELE ARCVRES	434	1355
USIT CBL	0	0
VSP	1270	3160
ZAIT HRLA PEX EXCS GR	734	1344

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	36	484.0	42	488.0	0.00	
SURF.COND.	20	734.5	26	744.0	1.18	FIT
INTERM.	13 3/8	1338.7	17 1/2	1355.0	1.40	LOT
LINER	9 5/8	2127.0	12 1/4	2128.0	1.33	LOT
OPEN HOLE		3240.0	8 1/2	3240.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
488	1.03	12.0		Spud Mud	
744	1.12	14.0		KCl/Polymer/Glycol	
748	1.12	14.0		KCl/Polymer/Glycol	



1220	1.12	19.0		KCl/Polymer/Glycol	
1355	1.12	15.0		KCl/Polymer/Glycol	
1920	1.23	17.0		Low Sulphate/KCl/Polymer/Glycol	
1920	1.28	24.0		Low Sulphate/KCl/Polymer/Glycol	
1972	1.12	29.0		KCl/Polymer/Glycol	
2128	1.12	27.0		KCl/Polymer/Glycol	
2134	1.22	19.0		KCl/Polymer/Glycol	
2165	1.22	18.0		Low Sulphate/KCl/Polymer/Glycol	
2395	1.22	20.0		Low Sulphate/KCl/Polymer/Glycol	
3240	1.28	24.0		Low Sulphate/KCl/Polymer/Glycol	
8000	1.12	19.0		KCl/Polymer/Glycol	