

**General information**

Wellbore name	6406/6-4 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Discovery	6406/6-4 S (Tvillingen Sør)
Well name	6406/6-4
Seismic location	3D kube WIN09M02.inline 1414 & crossline 3010
Production licence	510
Drilling operator	Maersk Oil Norway AS
Drill permit	1563-L
Drilling facility	LEIV EIRIKSSON
Drilling days	81
Entered date	11.08.2015
Completed date	30.10.2015
Plugged and abandon date	30.10.2015
Release date	05.07.2016
Publication date	05.07.2016
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	GARN FM
Kelly bushing elevation [m]	25.0
Water depth [m]	261.0
Total depth (MD) [m RKB]	4484.0
Final vertical depth (TVD) [m RKB]	4468.0
Maximum inclination [°]	10.5
Bottom hole temperature [°C]	165
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	TILJE FM
Geodetic datum	ED50
NS degrees	64° 38' 30.7" N
EW degrees	6° 46' 1.96" E



NS UTM [m]	7170598.91
EW UTM [m]	393313.20
UTM zone	32
NPDID wellbore	7658

Wellbore history

General

Well 6406/6-4 S is a replacement well for 6406/6-4, which was junked due to technical problems. The well was drilled to test the Tvillingen Sør prospect on the Halten Terrace in the Norwegian Sea. The primary objective was to test the hydrocarbon potential in the Middle Jurassic Garn and Ile formations. The Tofte and Tilje formations were secondary objectives, while the Åre Formation was a tertiary objective.

Operations and results

Wildcat well 6406/6-4 S was spudded with the semi-submersible installation Leiv Eiriksson on 11 August 2015 and drilled to TD at 4484 m (4468 m TVD) in the Early Jurassic Tilje Formation. The spud location was set 30 m away from the 6406/6-4 location. The well was drilled with an S-shaped trajectory. It was drilled vertical down to 1995 m, and then deviated with a sail angle of ca 9.5 ° from ca 2600 m to ca 3600 m, and then vertical again from 3700 m to TD. No significant problem was encountered in the operations. The well was drilled with Seawater down to 1364 m, with KCl/Glydril mud from 1364 m to 1995 m, and with EMS 4400 oil based mud from 1995 m to TD.

Top of the primary objective Garn Formation was encountered at 4006 m (3990 m TVD), 48 m TVD shallow to prognosis. The Garn sandstones held a 25 m gas/condensate column down to a hydrocarbon/water contact at 4031 m (4015 m TVD). The deeper Ile, Tofte and Tilje Formations also came in slightly shallow to prognosis but were all found to be water bearing. Shows were recorded all through the Garn and Ile formations. Due to water wet Tofte and Tilje formations, the Åre Formation was not drilled.

Coring was not performed due to the reservoir pressure being above the P50 predrill prediction. Gas/condensate MDT samples were taken at 4008.05 m and 4053.5 m. Analyses of the samples taken at 4008.05 m proved a moderately rich condensate with single stage flash GCR (gas-condensate ratio) varying between 921 and 978 m³/m³. The mud contamination from the oil base, consisting of mainly n-C12 to n-C14 alkanes, was estimated to be between 13.5% and 14.4%.

The well was permanently abandoned on 30 October 2015 as a minor gas/condensate discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1370.00	4482.00

Cuttings available for sampling?	YES
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**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
MDT		4008.50	0.00	OIL		NO

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
286	NORDLAND GP
286	UNDIFFERENTIATED
1404	KAI FM
1788	HORDALAND GP
1788	BRYGGE FM
2357	ROGALAND GP
2357	TARE FM
2415	TANG FM
2489	SHETLAND GP
2489	SPRINGAR FM
2636	NISE FM
2885	KVITNOS FM
3335	CROMER KNOLL GP
3335	LYSING FM
3340	LANGE FM
3957	LYR FM
3971	VIKING GP
3971	SPEKK FM
3980	MELKE FM
4006	FANGST GP
4006	GARN FM
4109	NOT FM
4153	ILE FM
4254	BÅT GP
4254	ROR FM
4306	TOFTE FM



4339	ROR FM
4430	TILJE FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	2485	3954
GR RES PWD NEU DEN SON FPWD	2604	4484
IS CBL VDL GR	3647	3956
MDT GR	4008	4187
MWD-DI	287	378
MWD-GR RES PWD DI	378	1995
MWD-GR RES PWD SON DI	1995	2604
QAIT HAPS HLDS PPC MSIP HNGS GR	3959	4477
VSI4 GR	1390	4460

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	374.0	42	374.0	0.00	
SURF.COND.	20	1356.0	26	1364.0	0.00	
INTERM.	16	1961.0	17 1/2	1995.0	0.00	
INTERM.	13 5/8	2592.0	14 1/2	2599.0	0.00	
LINER	9 7/8	3958.0	12 1/4	3966.0	0.00	
OPEN HOLE		4484.0	8 1/2	4484.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
863	1.03			Seawater	
1364	1.20			GLYDRIL	
1538	1.40			WATER BASED	
1947	1.60			WATER BASED	
2604	1.76			OIL BASED	
3584	1.80			OIL BASED	
3742	1.76			OIL BASED	



3768	1.86			OIL BASED	
3965	1.88			OIL BASED	