General information

Wellbore name	6406/12-3 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
Field	FENJA
Discovery	6406/12-3 S Fenja
Well name	6406/12-3
Seismic location	seismic data set MC3D-HT2007-08
Production licence	586
Drilling operator	VNG Norge AS
Drill permit	1500-L
Drilling facility	TRANSOCEAN ARCTIC
Drilling days	93
Entered date	21.01.2014
Completed date	26.04.2014
Release date	26.04.2016
Publication date	26.04.2016
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA MELKE FM SS
Kelly bushing elevation [m]	24.0
Water depth [m]	324.0
Total depth (MD) [m RKB]	4001.0
Final vertical depth (TVD) [m RKB]	3762.0
Maximum inclination [°]	33
Oldest penetrated age	LATE JURASSIC
Oldest penetrated formation	MELKE FM
Geodetic datum	ED50
NS degrees	64° 1' 52.32'' N
EW degrees	6° 45' 17.58'' E
NS UTM [m]	7102598.45
EW UTM [m]	390320.66

UTM zone	32
NPDID wellbore	7322

Wellbore history

General

The 6406/12-3 S, 6406/12-3 A, and 6406/12-3 B wellbores were drilled in concert on the Pil and Bue prospects in the southern end of the Halten Terrace in the Norwegian Sea. The 6406/12-3 S was the first well to be drilled. It was designed to test a seismic data anomaly and a flat spot recognised in the Pil prospect, at Late Jurassic level.

Operations and results

Wildcat well 6406/12-3 S was spudded with the semi-submersible installation Transocean Arctic on 21 January 2014 and drilled to TD at 4001 m (3762 m TVD) in the Late Jurassic Melke Formation. A 9 7/8" pilot hole was drilled from 418 to 1246 to check for shallow gas. No shallow gas was seen. Due to deteriorating hole conditions in the 8 1/2" section it was decided to set 7" liner early, at 3839 m, and continue the well as an unplanned 6" hole to TD. Otherwise, no significant problem was encountered in the operations. The well was drilled with seawater and sweeps down to 1246 m and with XP-07 oil based mud from 1246 m to TD.

Contrary to prognosis, there were no Rogn Formation sandstones in the well. Instead, the well encountered Intra Melke Formation sandstones at 3514 m (3276.5 m TVD). These sandstones had good to excellent reservoir quality and contained a 227 m TVD gross hydrocarbon column. The hydrocarbons in the reservoir zone consisted of a 93 TVD m thick gas cap overlying a 134 TVD m oil leg in. The GOC is located at 3608 m (3370 m TVD) and the OWC at 3742 m (3504 m TVD). Pressure data indicated a single gas gradient over an oil leg. Below the OWC, the well penetrated a further thick high net to gross reservoir package of Intra Melke sandstones with a continuous water gradient.

Five 54 m consecutive cores were cut in the interval 3524 to 3732 m with 100% overall recovery. RCX fluid samples were taken at 3579.1 m (gas), 3620.3 m (oil), 3641.7 m (oil) and 3758.5 m (water).

The well was permanently abandoned on 26 April 2014 as an oil and gas discovery.

Testing

One Drill Stem Test was conducted from perforations in the interval 3637.3 to 3724.5 m. The test produced oil at a rate of 1017 Sm3/day through a 56/64" choke. The GOR was 160 Sm3/Sm3 and the measured oil density was 0.850g/cm3 (36 °API).

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1250.00	3999.00

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	3524.0	3578.2	[m]
2	3578.0	3632.3	[m]
3	3632.3	3669.3	[m]
4	3669.3	3724.3	[m]
5	3724.3	3733.6	[m]

Total core sample length [m]	209.7
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
348	NORDLAND GP
348	NAUST FM
1091	KAI FM
1230	HORDALAND GP
1230	BRYGGE FM
1920	ROGALAND GP
1920	TARE FM
2031	TANG FM
2235	SHETLAND GP
2235	SPRINGAR FM
2318	NISE FM
2573	KVITNOS FM
3312	CROMER KNOLL GP
3312	LANGE FM
3505	LYR FM
3514	VIKING GP
3514	INTRA MELKE FM SS
3912	MELKE FM

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3637	3725	22.2

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	1017		0.845		160

Logs

Log type	Log top depth [m]	Log bottom depth [m]
LWD - GR RES DEN PWD DIR NPOR SO	3450	3839
LWD - GR RES PWD DEN POR SON	2260	3450
LWD - GR RES PWD DIR	1	418
LWD - GR RES PWD DIR TT	3839	4001
MREX	3500	3820
MREX	3838	3965
PS	3517	3777
PS	3841	3900
SBT	3296	3425
SLAM	348	3820
SLAM	3838	3900
SWC	3486	3507
VSP	1155	3990

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	414.7	36	418.0	0.00	
SURF.COND.	20	1238.6	26	1246.0	1.70	FIT
INTERM.	13 3/8	2265.2	17 1/2	2271.0	1.87	FIT
PROD.	9 5/8	3442.4	12 1/4	3450.0	1.98	LOT

LINER	7	3838.0	8 1/2	3839.0	0.00	
OPEN HOLE		4001.0	6	4001.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
418	1.34	14.0		KCL Polymer displacement mud	
454	1.05	18.0		High Viscosity Bentonite Mud	
460	1.34	14.0		KCL Polymer displacement mud	
484	1.05	18.0		High Viscosity Bentonite Mud	
916	1.34	14.0		KCL Polymer displacement mud	
964	1.05	18.0		High Viscosity Bentonite Mud	
980	1.34	14.0		KCL Polymer displacement mud	
985	1.63	53.0		Yellow XP-07	
1050	1.05	18.0		High Viscosity Bentonite Mud	
1180	1.49	30.0		Yellow XP-07	
1246	1.46	29.0		YELLOW XP-07 LOW ECD	
1246	1.02			KCL Polymer displacement mud	
1246	1.46	29.0		YELLOW XP-07 LOW ECD	
1252	1.49	18.0		Yellow XP-07	
1280	1.63	53.0		Yellow XP-07	
2195	1.61	40.0		YELLOW XP-07 LOW ECD	
2379	1.61	42.0		XP O71.62	
3176	1.65	39.0		Yellow XP-07	
3233	1.65	40.0		YELLOW XP-07 LOW ECD	
3450	1.73	45.0		XP O7	
3450	1.65	36.0		YELLOW XP-07 LOW ECD	
3506	1.73	41.0		YELLOW XP-07 LOW ECD	

3632	1.73	40.0		XP O7	
3738	1.65	36.0		Yellow XP-07	
3738	1.34			CaBr Brine	
3765	1.73	41.0		XP-07	
3839	1.61	27.0		YELLOW XP-07 LOW ECD	
3839	1.73	41.0		YELLOW XP-07 LOW ECD	
4001	1.61	30.0		Yellow XP-07	