General information

Wellbore name	6406/3-10 A
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	6406/3-10 A (Åre)
Well name	6406/3-10
Seismic location	
Production licence	836 S
Drilling operator	Wintershall Dea Norge AS
Drill permit	1849-L
Drilling facility	DEEPSEA ABERDEEN
Drilling days	49
Entered date	14.07.2021
Completed date	31.08.2021
Plugged and abondon date	31.08.2021
Release date	31.08.2023
Publication date	12.09.2023
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	EARLY JURASSIC
1st level with HC, formation	ÅRE FM
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	TILJE FM
3rd level with HC, age	MIDDLE JURASSIC
3rd level with HC, formation	FANGST GP
Kelly bushing elevation [m]	32.0
Water depth [m]	312.7
Total depth (MD) [m RKB]	5190.0
Final vertical depth (TVD) [m RKB]	4884.0
Maximum inclination [°]	43.4
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	ÅRE FM
Geodetic datum	ED50

NS degrees	64° 56' 16.19'' N
EW degrees	6° 46' 42.63'' E
NS UTM [m]	7203549.93
EW UTM [m]	395009.97
UTM zone	32
NPDID wellbore	9273

Wellbore history

General

Well 6406/3-10 A is a geological side-track to well 6406/3-10 on the Halten Terrace in the Norwegian Sea. The primary objective was to appraise the oil discovery in the Garn, Ile and Tilje formations made by the 6406/3-10 well. The 6406/3-10 well also found hydrocarbons in the re Formation, but it was not fully tested. A secondary objective with the side-track was therefore to drill deeper into re for a more complete evaluation of this formation.

Operations and results

Appraisal well 6406/3-10 A was kicked off at 2281 m in the main well on 14 July 2021. It was drilled with the semi-submersible installation DeepSea Aberdeen to TD at 5190 m (4884 TVD) m in the Early Jurassic re Formation. Operations proceeded without significant problems. The well was drilled with Innovert NS oil-based mud from kick-off to TD.

The Bergknapp side-track 6406/3-10 A confirmed an oil column of 6 meters in Garn Formation, with a sandstone layer of 62 meters net of moderate to poor reservoir quality. The oil-water contact (OWC) was found at 4408 m (4102 m TVD). This could be an oil-down-to (ODT) contact in case of a sealing layer underneath.

An oil column of 2.5 m was confirmed in the upper sandstone in the Ile Formation.

The Tilje Formation had oil in three zones: an upper 15 m zone with OWC/ODT at 4764 m (4458 m TVD), a thin sandstone at 4793 m as confirmed by sampling, and an 8-meter oil column with OWC/ODT at 4821.5 m (4516 m TVD). There were no oil shows other than in the hydrocarbon-bearing formations in the Fangst and B t Groups.

A total of 318.5 m core was recovered in 5 core runs. Garn/Not was cored from 4394 to 4477 m in two cores. The first core jammed of and got 89.6 % recovery , the second had 100.8% recovery. Ile/Ror was cored in one core from 4530 to 4602 m with 100.7 % recovery. Tilje/ re was cored in two cores from 4712 to 4874 m with 101.1 % and 100.9 % recoveries. The core-log depth shifts were in the range 5.6 to 7.4 m.

Wire line fluid samples were taken in the Garn Formation at 4406.4 m (OBM filtrate) and 4430.8 m (Water and OBM filtrate), in the Ile Formation at 4520.6 m (oil and OBM filtrate) and 4543.7 m (water and OBM filtrate), in the Tilje Formation at 4781.7 m (water and OBM filtrate), 4792.7 m (oil and OBM filtrate), and in the re Formation at 5025.3 m (gas condensate).

The well was permanently abandoned on 31 August 2021 as a as an oil and gas appraisal.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
2290.00	5190.00

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	4394.0	4403.9	[m]
2	4405.0	4477.6	[m]
3	4530.0	4602.5	[m]
4	4712.0	4803.0	[m]
5	4803.0	4875.5	[m]

Total core sample length [m]	318.4
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
342	NORDLAND GP
342	NAUST FM
1541	KAI FM
1963	HORDALAND GP
1963	BRYGGE FM
2339	ROGALAND GP
2339	TARE FM
2404	TANG FM
2465	SHETLAND GP
2465	SPRINGAR FM
2625	NISE FM
2845	KVITNOS FM
3580	CROMER KNOLL GP
3580	LYSING FM
3685	LANGE FM
4339	VIKING GP
4339	SPEKK FM
4360	MELKE FM
4399	FANGST GP
4399	GARN FM
4472	NOT FM
4519	ILE FM
4585	BÅT GP

4585	ROR FM
4624	TOFTE FM
4638	ROR FM
4715	TILJE FM
4862	ÅRE FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CMR HXPT	4400	4836
CMR SON XPT DEN HNGS	4850	5190
CORE	4712	4802
DM GM EWR PWD	4602	4712
LWD - ABG PCDC DGR EWR PWD ALD C	2281	4366
LWD - AFR DM GM EWR PWD	4366	4394
LWD - CORE	4394	4405
LWD - CORE	4405	4477
LWD - CORE	4530	4602
LWD - CORE	4802	4874
LWD - DIR	345	418
LWD - DIR PWD GR RES	418	1197
LWD - DIR PWD GR RES ABG	1197	2287
LWD - DIR PWD GR RES DEN NEU	4874	5057
LWD - DIR PWD GR RES DEN NEU	5057	5190
LWD - DM GM EWR PWD	4477	4530
MDT	4419	4796
MDT	4576	5190
ORA	4409	4790
QAIT ADT APS NEXT HLDS HNGS	3270	4927
QGEO PPC MSIP PPC	4100	4927
SWC	4990	5171
USIT CBL	2190	4363
VSI12 VIVSP WA	2158	4734

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
LINER	9 7/8	4365.0	12 1/4	4366.0	0.00	
OPEN HOLE		5190.0	8 1/2	5190.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
635	1.54	38.0	5.2	INNOVERT	
2318	1.73	33.0	4.3	INNOVERT	
3280	1.54	38.0	5.2	INNOVERT	
3380	1.47	45.0	7.6	INNOVERT	
3457	1.73	40.0	10.5	INNOVERT	
4258	1.73	38.0	15.3	INNOVERT	
4290	1.47	45.0	7.6	INNOVERT	
4350	1.73	42.0	12.4	INNOVERT	
4394	1.24	18.0	4.3	INNOVERT	
4549	1.24	20.0	6.2	INNOVERT	
4590	1.47	47.0	6.7	INNOVERT	
4602	1.24	23.0	4.7	INNOVERT	
4673	1.23	17.0	5.2	INNOVERT	
4802	1.24	21.0	3.8	INNOVERT	
4927	1.39	34.0	10.0	Innovert	
4951	1.38	36.0	8.6	Innovert	
5056	1.20	19.0	12.4	INNOVERT	
5056	1.36	24.0	5.7	INNOVERT	
5057	1.23	21.0	11.4	Oil Base	
5057	1.23	25.0	5.2	INNOVERT	
5100	1.24	24.0	4.7	Oil Base	
5131	1.37	38.0	9.5	Innovert	
5181	1.38	38.0	10.0	Innovert	
5190	1.44	42.0	9.5	Innovert	
5191	1.41	42.0	9.5	Innovert	