General information

Wellbore name	16/4-13 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SOLVEIG
Discovery	16/4-13 S
Well name	16/4-13
Seismic location	LN12M02R16. inline 3458. crossline 2169
Production licence	359
Drilling operator	Lundin Norway AS
Drill permit	1843-L
Drilling facility	WEST BOLLSTA
Drilling days	58
Entered date	12.02.2021
Completed date	10.04.2021
Plugged and abondon date	10.04.2021
Release date	10.04.2023
Publication date	10.04.2023
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	INDETERMINATE
1st level with HC, formation	BASEMENT
Kelly bushing elevation [m]	33.0
Water depth [m]	102.5
Total depth (MD) [m RKB]	2422.0
Final vertical depth (TVD) [m RKB]	2324.3
Maximum inclination [°]	29.8
Bottom hole temperature [°C]	92
Oldest penetrated age	PRE-DEVONIAN
Oldest penetrated formation	BASEMENT
Geodetic datum	ED50
NS degrees	58° 43' 40.23'' N
EW degrees	2° 9' 9.03'' E

NS UTM [m]	6510207.40
EW UTM [m]	450924.36
UTM zone	31
NPDID wellbore	9209

Wellbore history

General

Well 16/4-13 S was drilled to test the D-segment prospect in a sub-basin northwest of the Solveig Field and south of the Edvard Grieg Field in the North Sea. The primary objective was to prove petroleum in reservoir rocks of Triassic to Paleozoic Age.

Operations and results

Wildcat well 16/4-13 S was spudded with the semi-submersible installation West Bollsta on 12 February 2021. The well was drilled to 1985 m where pack-off occurred and losses were experienced. The losses could not be cured. The decision was made to plug back and make a side-track. Technical side-track 16/4-13 ST2 was kicked off at 1365 m and drilled to TD at 2422 m (2324.3 m TVD) in Paleozoic basement conglomerates. The well was drilled with seawater and hi-vis pills down to 426 m, with Hydraglyde Optima water-based mud from 426 m to 1365 m, with Glydril Plus water-based mud form 1365 m to 2010 m and with Hydraglyde Optima water-based mud from 2010 m to TD.

Paleozoic basement sandstone and conglomerates were encountered with top at 2020 m (1973.4 m TVD), directly underlying Late Cretaceous Tor Formation chalk. No Jurassic or Triassic sediments were present. The Basement was oil bearing down to an oil-water contact at ca 2031 m (1983 m TVD). About seven metres of the reservoir had poor to moderate reservoir quality. Shows on cuttings (no stain, no odour, direct and cut fluorescence) continued down to 2098 m and weaker shows (weak direct fluorescence only) down to 2175 m). No shows were described above top reservoir.

Three cores were cut in succession from 2022.8 to 2048.3 m in the basement conglomerates. ORA fluid samples were taken at 2022.2 m (oil), 2027.04 m (oil), and 2034.5 m (water).

The well was permanently abandoned on 10 April 2021 as an oil discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
430.00	1980.00

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	2022.8	2023.2	[m]
2	2025.2	2029.4	[m]
3	2029.6	2048.2	[m]

Total core sample length [m]	23.1
Cores available for sampling?	YES

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		2027.00	0.00	OIL		YES
MDT		2022.20	0.00	OIL		YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
136	NORDLAND GP
136	UNDIFFERENTIATED
738	UTSIRA FM
915	UNDIFFERENTIATED
950	HORDALAND GP
950	UNDIFFERENTIATED
979	SKADE FM
1212	NO FORMAL NAME
1598	NO FORMAL NAME
1702	GRID FM
1759	NO FORMAL NAME
1891	ROGALAND GP
1891	BALDER FM
1911	SELE FM
1953	LISTA FM
1993	VÅLE FM
2004	SHETLAND GP

2004	EKOFISK FM
2014	TOR FM
2020	UNDEFINED GP

Logs

Log type	Log top depth [m]	Log bottom depth [m]
FMI MSIP	135	2422
IBC CBL	420	1982
MWD - GR PWD RES DIR SON	0	0
MWD - GR PWD RES GR DIR	1342	1983
MWD - GR PWD RES SON CAL DEN NEU	1342	1982
MWD - GR RES PWD DEN CAL RES	1987	2020
MWD - NEU DIR SON	1987	2419
MWD - PWD GR DIR	135	185
MWD - PWD RES GR DIR	203	406
MWD - PWD RES GR DIR SON	202	744
ORA	2022	2250
PEX HRLA HNGS	1890	2422
XPT NEXT CMR	2021	2400

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	202.0	36	202.0	0.00	
INTERM.	20	418.0	26	426.0	1.53	FIT
INTERM.	13 3/8	1343.0	17 1/2	1348.0	1.98	LOT
OPEN HOLE		1985.0	12 1/4	1985.0	0.00	

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
201	1.39	19.0	33.0	Glydril	
220	1.47	30.0	19.0	Hydraglyde Optima	
223	1.39	16.5	13.5	HydraglydeOptima	
229	1.05	37.0	1.0	SWEEPS	

370	1.39	16.0	12.5	HydraglydeOptima	
426	1.39	13.0	9.5	Hydraglyde Optima	
426	1.50	20.0	28.0	Glydril	
655	1.50	21.0	27.0	Glydril	
736	1.39	17.0	13.5	Hydraglyde Optima	
750	1.05	38.0	1.0	SWEEPS	
750	1.50	21.0	27.0	Glydril	
750	1.05	38.0	1.0	SWEEPS	
1348	1.39	18.0	14.0	Hydraglyde Optima	
1383	1.45	19.0	12.5	Glydril Plus	
1822	1.20	16.0	10.5	Hydraglyde Optima	
1950	1.47	27.0	20.5	Hydraglyde Optima	
1985	1.45	21.0	14.5	Glydril	
2022	1.20	18.0	11.0	Hydraglyde Optima	
2422	1.20	17.0	12.5	Hydraglyde Optima	