

**General information**

Wellbore name	16/1-5
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	16/1-5
Seismic location	ST 9511- INLINE 457 & X-LINE 1361
Production licence	167
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	939-L
Drilling facility	BYFORD DOLPHIN
Drilling days	41
Entered date	12.10.1998
Completed date	21.11.1998
Release date	21.11.2000
Publication date	15.11.2001
Purpose - planned	WILDCAT
Reentry	NO
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	105.0
Total depth (MD) [m RKB]	2460.0
Final vertical depth (TVD) [m RKB]	2457.2
Bottom hole temperature [°C]	86
Oldest penetrated age	PRE-DEVONIAN
Oldest penetrated formation	BASEMENT
Geodetic datum	ED50
NS degrees	58° 47' 53.52" N
EW degrees	2° 9' 12.14" E
NS UTM [m]	6518040.86
EW UTM [m]	451073.37
UTM zone	31
NPDID wellbore	3279

**Wellbore history****General**

The objectives of well 16/1-5 were to prove hydrocarbon reserves in the Upper Jurassic (Oxfordian - Ryazanian) shallow marine sandstone as well as in the Middle Jurassic shallow to marginal marine sandstone. The well was also planned to provide a good stratigraphic tie to the Paleocene interval and test the possibility for Paleocene sands. A high amplitude at around 2070 ms TWT was also meant to be clarified with this well. The objective of the 16/1-5A sidetrack was to prove hydrocarbon reserves in an Upper Jurassic shallow marine sandstone, up-dip from the hydrocarbon shows that were recorded in well 16/1-5.

Operations and results

The main well, 16/1-5, was spudded and drilled with a water based mud to a total depth of 2460 m RKB. Both the Upper Jurassic sandstone, the Heather Formation "Sandstone Unit", and the Middle Jurassic Hugin Formation were encountered. Both sandstone sequences were water bearing, but oil shows were recorded in the upper 3 meters of the Heather Formation. A good stratigraphic tie to the Paleocene interval was established by the well, but no Paleocene sands were encountered. The high amplitude, observed on the seismic data at approximately 2070 ms TWT, most probably stems from the acoustic impedance contrast between the Heather sandstone - siltstone boundary and/or the Heather - Hugin boundary. No Permian sediments were encountered, with a stratigraphic succession going directly from Jurassic sediments into the Basement. Well 16/1-5 was terminated 194.5 m TVD into the Basement. Three cores were cut in the interval 2023 to 2066 m RKB in the Heather Formation. An FMT sample from 2024.5 m contained formation water and filtrate. The well was classified as dry.

The sidetrack, 16/1-5 A, was kicked off at 1440 m RKB and a 8 1/2" hole section was drilled to a total depth of 2150 m with no casing strings run. Oil based mud was used from kick off to TD. The well encountered the Heather Formation "Sandstone Unit" close to prognosis. Moderate hydrocarbon shows were recorded in the thin, Cretaceous limestone sequence above the Heather Formation as well as in the upper 8 meters of the Heather Formation sandstone. The sidetrack was terminated 24 m TVD into the Heather Formation where a core was cut from 2123 m RKB to TD. No wire line logs were run and the well was permanently plugged and abandoned.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1440.00	2460.00

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	2023.0	2028.9	[m]



2	2031.0	2038.9	[m]
3	2039.0	2066.0	[m]

Total core sample length [m]	40.8
Cores available for sampling?	YES

Core photos



2023-2028m



2028-2029m



2031-2036m



2036-2039m



2039-2044m



2044-2049m



2049-2054m



2054-2059m



2059-2064m



2064-2066m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1440.0	[m]	DC	STATO
1450.0	[m]	DC	STATO
1460.0	[m]	DC	STATO
1470.0	[m]	DC	STATO
1480.0	[m]	DC	STATO
1490.0	[m]	DC	STATO
1500.0	[m]	DC	STATO
1510.0	[m]	DC	STATO
1520.0	[m]	DC	STATO
1530.0	[m]	DC	STATO
1540.0	[m]	DC	STATO
1550.0	[m]	DC	STATO
1560.0	[m]	DC	STATO
1570.0	[m]	DC	STATO



1580.0	[m]	DC	STATO
1590.0	[m]	DC	STATO
1600.0	[m]	DC	STATO
1610.0	[m]	DC	STATO
1620.0	[m]	DC	STATO
1630.0	[m]	DC	STATO
1640.0	[m]	DC	STATO
1650.0	[m]	DC	STATO
1660.0	[m]	DC	STATO
1670.0	[m]	DC	STATO
1680.0	[m]	DC	STATO
1690.0	[m]	DC	STATO
1700.0	[m]	DC	STATO
1710.0	[m]	DC	STATO
1720.0	[m]	DC	STATO
1730.0	[m]	DC	STATO
1740.0	[m]	DC	STATO
1750.0	[m]	DC	STATO
1760.0	[m]	DC	STATO
1770.0	[m]	DC	STATO
1780.0	[m]	DC	STATO
1790.0	[m]	DC	STATO
1800.0	[m]	DC	STATO
1810.0	[m]	DC	STATO
1820.0	[m]	DC	STATO
1833.0	[m]	SWC	W-LAB
1839.0	[m]	DC	STATO
1845.0	[m]	DC	STATO
1851.0	[m]	DC	STATO
1857.0	[m]	DC	STATO
1862.0	[m]	SWC	W-LAB
1869.0	[m]	DC	STATO
1875.0	[m]	DC	STATO
1880.0	[m]	SWC	W-LAB
1884.0	[m]	DC	STATO
1891.0	[m]	SWC	W-LAB
1900.0	[m]	SWC	W-LAB
1905.0	[m]	DC	STATO
1920.0	[m]	SWC	W-LAB
1924.5	[m]	SWC	W-LAB



1929.0 [m]	DC	STATO
1935.0 [m]	DC	STATO
1940.0 [m]	SWC	W-LAB
1944.0 [m]	DC	STATO
1956.0 [m]	DC	STATO
1962.0 [m]	DC	STATO
1965.0 [m]	DC	STATO
1973.5 [m]	SWC	W-LAB
1980.3 [m]	SWC	W-LAB
1986.0 [m]	DC	STATO
1992.0 [m]	DC	STATO
1998.0 [m]	DC	STATO
2010.0 [m]	DC	STATO
2067.0 [m]	SWC	W-LAB
2067.0 [m]	DC	APT
2074.0 [m]	SWC	W-LAB
2079.0 [m]	DC	APT
2081.3 [m]	SWC	W-LAB
2091.0 [m]	DC	APT
2094.0 [m]	DC	STATOIL
2098.8 [m]	SWC	W-LAB
2100.0 [m]	DC	APT
2100.0 [m]	DC	STATOIL
2103.0 [m]	DC	STATOI
2107.5 [m]	SWC	W-LAB
2109.0 [m]	DC	APT
2109.0 [m]	DC	STATOIL
2116.1 [m]	SWC	W-LAB
2118.0 [m]	DC	STATOIL
2118.0 [m]	DC	APT
2121.0 [m]	DC	STATOIL
2121.5 [m]	SWC	W-LAB
2127.0 [m]	DC	APT
2130.9 [m]	SWC	W-LAB
2133.0 [m]	DC	STATOIL
2136.0 [m]	DC	APT
2145.0 [m]	DC	APT
2145.0 [m]	DC	STATOIL
2147.8 [m]	SWC	W-LAB
2156.0 [m]	SWC	W-LAB



2157.0	[m]	DC	APT
2163.8	[m]	SWC	W-LAB
2166.0	[m]	DC	APT
2169.0	[m]	DC	STATOIL
2174.5	[m]	SWC	W-LAB
2175.0	[m]	DC	APT
2180.0	[m]	SWC	W-LAB
2187.0	[m]	DC	STATOIL
2187.0	[m]	DC	APT
2193.0	[m]	DC	STATOIL
2196.0	[m]	DC	APT
2199.0	[m]	DC	STATOIL
2205.0	[m]	DC	STATOI
2205.0	[m]	DC	APT
2214.0	[m]	DC	STATOIL
2214.0	[m]	DC	APT
2220.0	[m]	DC	STATOIL
2223.0	[m]	DC	APT
2232.0	[m]	DC	APT
2241.0	[m]	DC	APT
2242.0	[m]	DC	STATOIL
2250.0	[m]	DC	APT

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
130	NORDLAND GP
745	UTSIRA FM
921	HORDALAND GP
1002	SKADE FM
1101	NO FORMAL NAME
1617	GRID FM
1733	NO FORMAL NAME
1896	ROGALAND GP
1896	BALDER FM
1922	SELE FM
1932	LISTA FM
2004	VÅLE FM
2008	SHETLAND GP



2008	HOD FM
2020	VIKING GP
2020	INTRA HEATHER FM SS
2155	HEATHER FM
2175	VESTLAND GP
2175	HUGIN FM
2247	NO GROUP DEFINED
2265	BASEMENT

Composite logs

Document name	Document format	Document size [MB]
3279	pdf	0.33

Geochemical information

Document name	Document format	Document size [MB]
3279_1	pdf	1.72

Documents - reported by the production licence (period for duty of secrecy expired)

Document name	Document format	Document size [MB]
3279_16_1_5_COMPLETION_LOG	.pdf	6.75
3279_16_1_5_COMPLETION_REPORT	.pdf	26.60

Logs

Log type	Log top depth [m]	Log bottom depth [m]
DIR	191	1425
FMT-GR	2202	2024
HDIL MAC DGR TTRM	1410	1975
HDIL-MAC-DGR-TTRM	1909	2461
MPR GR	196	1400
MPR GR	1410	2460





SWC GR	1833	1980
SWC PFC	2067	2459
SWC-PFC	2070	2169
VSP GR	1100	1944
VSP GR	1565	2455
ZDL CND DSL	1990	2461
ZDL CND DSL CHT	1410	1975

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	191.0	36	191.0	0.00	LOT
SURF.COND.	13 3/8	1410.0	17 1/2	1417.0	1.81	LOT
INTERM.	9 5/8	2021.0	12 1/4	2023.0	1.50	LOT
OPEN HOLE		2460.0	8 1/2	2460.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
130	0.00			sea water	
1410	1.15			KCL/PAC/GLY	
1410	0.00			sea water	
2021	1.15			KCL/PAC/GLY	
2460	1.92			hivis pill	

Pressure plots

The pore pressure data is sourced from well logs if no other source is specified. In some wells where pore pressure logs do not exist, information from Drill stem tests and kicks have been used. The data has been reported to the NPD, and further processed and quality controlled by IHS Markit.

Document name	Document format	Document size [MB]
3279 Formation pressure (Formasjonstrykk)	pdf	0.22

