General information

Wellbore name	31/6-3
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	31/6-3
Seismic location	ST 8007 - 107 SP 1025
Production licence	085
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	394-L
Drilling facility	NORTRYM
Drilling days	56
Entered date	01.11.1983
Completed date	26.12.1983
Release date	26.12.1985
Publication date	29.06.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	301.0
Total depth (MD) [m RKB]	2250.0
Final vertical depth (TVD) [m RKB]	2250.0
Maximum inclination [°]	0.8
Bottom hole temperature [°C]	76
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	60° 30' 4.77'' N
EW degrees	3° 59' 53.57'' E
NS UTM [m]	6707818.42
EW UTM [m]	554834.84
UTM zone	31
NPDID wellbore	35

Wellbore history

General

The primary objective of the wildcat 31/6-3 was to assess possible hydrocarbon accumulations in the sands and sandstones of the Late Jurassic Sognefjord Formation. The target was prospect C, a structural trap in the southeastern corner of block 31/6 extending into the adjacent blocks 31/9, 32/4 and 32/7. The well was located on the apex of prospect C. The secondary objective of the well was to obtain Sedimentological data for the Sognefjord Formation sandstones in the well location. The well was planned to reach total depth at ca 2200 m, approximately 100 m into the Triassic.

Operations and results

The well was spudded with the semi-submersible installation Nortrym on 1 November 1983. Repositioning of the rig had to be done due to anchoring problems. At 1950 m the drill string was hung off. Problems when attempting to retrieve the drill string resulted in pulling of BOP. When running in hole after 7 days, 10 m of fill was found. No other major problems occurred during drilling and the well reached planned TD at 2250 m in the Triassic Hegre Group. The well was drilled with seawater and hi-vis pills down to 618 m and with KCl/Polymer mud from 618 m to TD.

The well encountered water-bearing sandstones in the Late/Middle Jurassic Sognefjord Formation as well as in the lower lying sandstones. No oil shows were noted on cores, sidewall cores or cuttings in any section of the well. Gas readings were low or nil throughout except for a 2.6% methane reading in a shallow sand unit at 414 m. The Sognefjord Formation sandstones (1511-1647 m) are very fine to fine, occasionally medium grained, micaceous, occasionally carbonaceous and slightly argillaceous. In places the sandstones grade into siltstones. They are well to moderately sorted and have fair visible porosity. The underlying Sognefjord, Fensfjord, and Krossfjord Formations (1647-1931.5m) are dominated by fine to medium, locally very fine or coarse grained sandstones which are often calcite cemented and have a fair visible porosity. Occasional interbeds of siltstone are also present together with some stringers of limestone, in the upper part yellow brown and very hard, becoming light grey and softer further down. The log evaluation gave a net sand thickness of 382,75 m out of a gross thickness of 420,5 m for the interval (1511 m to 1931.5 m) with an average porosity of 21.0% and an average water saturation of 96.1% (cut-off values used in the calculations were: 0<0,12, VSH>0,40). Eighteen FMT pressure test were performed over the interval 1513,5 m to 2146 m. From the pressure tests a water gradient of 0.1012 bar/m (1.033 g/cc) was calculated. A total of twelve cores were cut in the well. The cores recovered most of the Heather and Sognefjord Formations, and 25 m from the upper part of Fensfjord Formatio. No fluid samples were taken in the well.

The well was permanently abandoned as a dry well on 26 December 1983.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
410.00	2250.00

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	1495.0	1499.4	[m]
2	1499.5	1509.0	[m]
3	1509.0	1521.5	[m]
4	1528.0	1528.6	[m]
5	1533.5	1542.7	[m]
6	1551.5	1565.4	[m]
7	1565.5	1582.5	[m]
8	1582.5	1601.3	[m]
9	1601.5	1620.0	[m]
10	1620.0	1638.5	[m]
11	1638.5	1665.8	[m]
12	1666.0	1694.1	[m]

Total core sample length [m]	178.3
Cores available for sampling?	YES

Core photos


1495-1499m


1499-1503m


1504-1508m


1509-1513m


1514-1518m


1519-1521m


1528-1529m


1533-1537m


1538-1542m


1551-1555m


1556-1560m


1561-1564m


1565-1569m


1570-1574m


1575-1579m


1580-1581m


1582-1588m


1587-1591m


1592-1596m


1597-1600m


1601-1605m


1606-1610m


1611-1615m


1616-1619m


1620-1624m


1625-1629m


1630-1624m


1635-1638m


1638-1642m


1643-1647m


1648-1652m


1653-1657m


1658-1662m


1663-1665m


1666-1670m


1671-1675m


1676-1680m


1681-1685m


1686-1690m


1691-1694m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
790.3	[m]	SWC	IKU
800.2	[m]	SWC	IKU
805.2	[m]	SWC	IKU
807.7	[m]	SWC	IKU
815.2	[m]	SWC	IKU
840.2	[m]	SWC	IKU
880.2	[m]	SWC	IKU
895.2	[m]	SWC	IKU
910.2	[m]	SWC	IKU
940.3	[m]	SWC	IKU
995.2	[m]	SWC	IKU
1005.0	[m]	SWC	IKU
1015.0	[m]	SWC	IKU
1035.0	[m]	SWC	IKU
1075.0	[m]	SWC	IKU
1110.0	[m]	SWC	IKU
1150.0	[m]	SWC	IKU
1220.0	[m]	SWC	IKU
1245.0	[m]	SWC	IKU
1255.0	[m]	SWC	IKU
1270.0	[m]	SWC	IKU
1290.0	[m]	SWC	IKU
1300.0	[m]	SWC	IKU
1302.0	[m]	DC	RRI
1310.0	[m]	SWC	IKU
1315.0	[m]	SWC	IKU
1332.0	[m]	SWC	IKU
1336.0	[m]	SWC	IKU
1363.7	[m]	SWC	IKU
1370.0	[m]	SWC	IKU
1370.0	[m]	DC	RRI
1375.0	[m]	SWC	IKU
1380.0	[m]	SWC	IKU
1390.0	[m]	SWC	IKU
1400.0	[m]	SWC	IKU
1400.0	[m]	DC	RRI

1410.0	[m]	SWC	IKU
1420.0	[m]	SWC	IKU
1430.0	[m]	SWC	IKU
1440.0	[m]	SWC	IKU
1440.0	[m]	DC	RRI
1452.0	[m]	SWC	IKU
1461.0	[m]	SWC	IKU
1470.0	[m]	SWC	IKU
1480.0	[m]	DC	RRI
1481.0	[m]	SWC	IKU
1490.0	[m]	SWC	IKU
1530.0	[m]	DC	RRI
1551.5	[m]	C	RRI
1622.0	[m]	DC	RRI
1700.0	[m]	SWC	IKU
1710.0	[m]	SWC	IKU
1720.0	[m]	SWC	IKU
1720.0	[m]	DC	RRI
1730.0	[m]	SWC	IKU
1750.0	[m]	SWC	IKU
1760.0	[m]	SWC	IKU
1800.0	[m]	DC	RRI
1810.0	[m]	SWC	IKU
1820.0	[m]	SWC	IKU
1830.0	[m]	SWC	IKU
1840.0	[m]	SWC	IKU
1880.0	[m]	SWC	IKU
1880.0	[m]	DC	RRI
1910.0	[m]	SWC	IKU
1930.0	[m]	SWC	IKU
1940.0	[m]	SWC	IKU
1950.0	[m]	SWC	IKU
1960.0	[m]	SWC	IKU
1963.0	[m]	DC	RRI
1970.0	[m]	SWC	IKU
1980.0	[m]	SWC	IKU
2010.0	[m]	SWC	IKU
2018.5	[m]	SWC	
2030.0	[m]	DC	RRI
2040.0	[m]	SWC	IKU

2040.0	[m]	SWC	
2060.0	[m]	SWC	IKU
2084.0	[m]	SWC	
2105.0	[m]	SWC	IKU
2117.0	[m]	SWC	
2130.0	[m]	DC	RRI
2131.5	[m]	SWC	
2140.0	[m]	SWC	IKU
2162.0	[m]	SWC	
2175.0	[m]	SWC	IKU
2180.0	[m]	SWC	
2220.0	[m]	DC	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
326	NORDLAND GP
508	ROGALAND GP
508	BALDER FM
550	SELE FM
702	LISTA FM
808	SHETLAND GP
808	HARDRÅDE FM
823	UNDIFFERENTIATED
998	CROMER KNOLL GP
998	RØDBY FM
1058	SOLA FM
1130	ÅSGARD FM
1370	VIKING GP
1370	DRAUPNE FM
1495	HEATHER FM
1511	SOGNEFJORD FM
1669	FENSFJORD FM
1756	KROSSFJORD FM
1932	BRENT GP
1974	DUNLIN GP
1974	DRAKE FM
2042	JOHANSEN FM
2125	AMUNDSEN FM

2143	STATFJORD GP
2195	HEGRE GP

Composite logs

Document name	Document format	Document size [MB]
35	pdf	0.43

Geochemical information

Document name	Document format	Document size [MB]
35_1_SOURCE_ROCK_ANALYSIS_OF_WELL31_6_3	pdf	6.70
35_2_Source_Rock_Analyses_for well31_6_3	pdf	1.19
35_3_Hydrocarbon_characterisation_of wells_31_6_1_and_31_6_3	pdf	7.09

Documents - older Norwegian Offshore Directorate WDSS reports and other related documents

Document name	Document format	Document size [MB]
35_01_WDSS_General_Information	pdf	0.17
35_02_WDSS_completion_log	pdf	0.25

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

Document name	Document format	Document size [MB]
35_31_6_3_COMPLETION_REPORT_AND_LOG	pdf	14.70

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CDL CNL GR CAL	399	616
CDL CNL GR CAL	600	1362
CDL CNL GR CAL	1350	2247

DIFL LS BHC SP GR	399	619
DIFL LS BHC SP GR	600	1362
DIFL LS BHC SP GR	1360	2250
FMT	1513	2146
GR	326	619
HRD	600	1364
HRD	1360	2243
MLL	1360	2250
SL	1350	2247
SWC	600	1364
SWC	1370	1800
SWC	1805	2230
VSP	700	2240

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	399.0	36	400.0	0.00	LOT
SURF.COND.	20	600.0	26	618.0	1.39	LOT
INTERM.	13 3/8	1360.0	17 1/2	1365.0	1.82	LOT
OPEN HOLE		2250.0	12 1/4	2250.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
700	1.24	36.0		water based	
1000	1.24	41.0		water based	
1300	1.25	45.0		water based	
1400	1.13	39.0		water based	
1510	1.22	44.0		water based	
1700	1.22	44.0		water based	
2100	1.22	44.0		water based	

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]
35_Formation_pressure_(Formasjonstrykk)	pdf	0.19