

General information

Wellbore name	31/2-2 R
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TROLL
Discovery	31/2-1 (Troll Vest)
Well name	31/2-2
Seismic location	79416 SP.200
Production licence	054
Drilling operator	A/S Norske Shell
Drill permit	241-L2
Drilling facility	WEST VENTURE OLD
Drilling days	126
Entered date	02.06.1980
Completed date	06.10.1980
Plugged and abondon date	06.10.1980
Release date	06.10.1982
Publication date	23.05.2006
Purpose - planned	WILDCAT
Reentry	YES
Reentry activity	DRILLING/PLUGGING
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	SOGNEFJORD FM
Kelly bushing elevation [m]	32.0
Water depth [m]	323.0
Total depth (MD) [m RKB]	2600.0
Final vertical depth (TVD) [m RKB]	2599.0
Maximum inclination [°]	3
Bottom hole temperature [°C]	68
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	60° 46' 47.8" N
EW degrees	3° 37' 23.5" E

NS UTM [m]	6738597.32
EW UTM [m]	533940.27
UTM zone	31
NPDID wellbore	504

Wellbore history

General

Well 31/2-2 R is a re-entry of well 31/2-2, which was suspended due to rig repair after setting the 9 5/8" casing. The aim of the re-entry was to drill through the Jurassic and into the Triassic, and to conduct a drill stem test in the Late Jurassic oil and gas zones. The oil test was considered very important and should replace the abandoned test of the oil zone in well 31/2-1.

Operations and results

Well 31/2-2 was re-entered (31/2-2 R) with the semi-submersible installation West Venture on 2 June 1980. The re-entry depth was 1857 m and new formation was drilled to TD at 2600 m in the Triassic Hegre Group. The testing phase was interrupted by a 31 days strike from 14 July 1980. The well was drilled with gel and lignosulphonate from the re-entry point to TD.

The well below re-entry depth consisted of well-developed Middle to Early Jurassic sequences (Brent and Dunlin Groups, Statfjord Formation) and 100 m of Triassic Hegre Group sediments before TD was reached.

After plugging the well it proved impossible to retrieve the Temporary Guide Base, which was left on the se floor, below the mud line in a crater. The well was permanently abandoned on 6 October 1980 as a gas and oil appraisal.

Testing

A full production test was carried out over three intervals in order to test both the oil zone from 1579 m to 1591 m and the gas zone from 1544 m to 1579 m.

Test #1 from the interval 1586.5 m to 1588.5 m tested the oil zone, and a gravel pack completion and regular production string were used. A total of 42 days were spent on this test as it was of extreme importance to get this zone properly tested. A maximum flow rate of 132 Sm3 oil/day at a GOR of 53 Sm3/Sm3 was obtained during 24 hours after acid stimulation of the well, but it declined to 76 Sm3/day during the next days. At this point operations were interrupted for a month by the strike. After the strike a further test of the oil zone was conducted, using gas lift to improve the production rates. A rate of 223 Sm3 oil/day with a GOR of 231 Sm3/Sm3 including lift gas was obtained. After acidisation the production rate increased to some 397 Sm3 oil/day but then declined rapidly to some 214 Sm3 oil/day. The reported oil gravity was 25 deg API for all flows.

Test #2 of the more micaceous sand was performed over the interval from 1570 m to 1575 m without applying a gravel pack. The maximum flow obtained was 1500800 m3 gas/day. Condensate was produced at a rate of 4 bbl/MMSCF (0.0000224 Sm3 condensate/Sm3 gas). Condensate gravity was from 46.2 to 49.5 deg API.

Test #3 was in the cleaner gas sand, from 1553 m to 1562 m. It was performed with a gravel pack and maximum flow obtained was 1407300 m3 gas/day.

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
DST		0.00	0.00		02.07.1980 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
355	NORDLAND GP
650	HORDALAND GP
650	NO FORMAL NAME
703	NO FORMAL NAME
1124	ROGALAND GP
1124	BALDER FM
1205	SELE FM
1303	LISTA FM
1374	SHETLAND GP
1424	CROMER KNOLL GP
1424	RØDBY FM
1431	ÅSGARD FM
1470	VIKING GP
1470	DRAUPNE FM
1545	SOGNEFJORD FM
1665	HEATHER FM
1700	FENSFJORD FM
1848	KROSSFJORD FM
1961	HEATHER FM
1985	BRENT GP
2070	DUNLIN GP
2070	DRAKE FM
2162	COOK FM
2202	AMUNDSEN FM
2233	JOHANSEN FM
2344	AMUNDSEN FM
2360	STATFJORD GP
2500	HEGRE GP

Composite logs

Document name	Document format	Document size [MB]
504	pdf	0.42

Geochemical information

Document name	Document format	Document size [MB]
504_1	pdf	0.58
504_2	pdf	1.97
504_3	pdf	0.91
504_4	pdf	1.04

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

Document name	Document format	Document size [MB]
504_01_WDSS_General_Information	pdf	0.16

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	1554	1556	12.7
2.0	1538	1543	25.4
3.0	1521	1530	25.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				
3.0				

Test number	Oil [Sm ³ /day]	Gas [Sm ³ /day]	Oil density [g/cm ³]	Gas grav. rel.air	GOR [m ³ /m ³]
1.0	128	5888	0.904		46
2.0	34	1501000	0.790		44147
3.0		1407000			

Logs

Log type	Log top depth [m]	Log bottom depth [m]
HDT	1845	2590
ISF BHC GR SP	1800	2590
LSS CTR	1845	2590
RFC CNL GR CAL	1800	2590

Casing and leak-off tests

Casing type	Casing diam. [inch]	Casing depth [m]	Hole diam. [inch]	Hole depth [m]	LOT/FIT mud eqv. [g/cm ³]	Formation test type
CONDUCTOR	30	398.0	36	400.0	0.00	LOT
SURF.COND.	20	768.0	26	780.0	1.72	LOT
INTERM.	13 3/8	1438.0	17 1/2	1448.0	1.64	LOT
INTERM.	9 5/8	1817.0	12 1/4	1826.0	1.65	LOT
OPEN HOLE		2568.0	8 1/2	2568.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm ³]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1817	1.16	48.0		seawater	
1919	1.15	52.0		seawater	
2225	1.17	52.0		seawater	
2348	1.18	48.0		seawater	