General information

Wellbore name	31/2-2
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
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-L
Drilling facility	WEST VENTURE OLD
Drilling days	57
Entered date	27.02.1980
Completed date	23.04.1980
Release date	23.04.1982
Publication date	23.05.2006
Purpose - planned	WILDCAT
Reentry	NO
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]	1857.0
Final vertical depth (TVD) [m RKB]	1857.0
Maximum inclination [°]	1.25
Bottom hole temperature [°C]	43
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	KROSSFJORD FM
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	227

Wellbore history

General

Well 31/2-2 was drilled some 4 km east of the discovery well 31/2-1 on seismic line 79-416 at SP 200. The concession requirement for the wells were complete penetration of the prospective Jurassic sequence and terminate in Triassic or older. The particular objectives of well 31/2-2 were: to evaluate lateral variation of reservoir parameters eastwards on the flank of the structure: to test the zone of oil shows seen in 31/2-1 in better reservoir conditions, to test the gas accumulation in a down-dip location: to evaluate the nature of the seismic flatspot, and to provide geological calibration of seismic reflectors above the reservoir for improved regional evaluation.

Operations and results

Well was spudded with the semi-submersible installation West Venture on 27 February 1980 and drilled to TD at 1857 m in the Middle Jurassic Krossfjord Formation. The 36" hole was drilled without incident to 433 m using seawater with viscous pills spotted on connections. From 422 m to 433 m hard drilling was experienced. This was interpreted as a boulder bed similar to that found at a comparable depth in the previous 31/2-1 well. Problems were encountered with the stability of the temporary guide base, and the well had to be abandoned. The rig was moved NE 25 m and re-spudded on 29 February. The well was drilled with seawater and hi-vis pills down to 800 m, and with gypsum/lignosulphonate mud from 800 m to TD.

Top reservoir (Sognefjord Formation) came in at 1544 m and was gas bearing down to a gas/oil contact at 1579 m, and oil-bearing from 1579 m down to an oil/water contact at 1591 m. Both contacts were clearly defined on logs, the gas/oil contact was confirmed by RFT pressure gradients, and moveable oil was confirmed by RFT sampling at 1587.5 m and 1590 m. Gas samples were obtained from 1548 m and 1571 m. Weak oil shows began at 1561 m in the gas zone, strong shows with stained and bleeding cores and a paraffinic smell were observed in the oil zone. Oil shows ceased at 1602 m.

Coring started at 1515 m in the Draupne Formation and terminated below the oil-water contact. A 120 m interval was cored with 94.2 m of core in 13 cores recovered at surface.

After coring and logging of the Late Jurassic sandstones the well was suspended at the 9 5/8 casing shoe and the rig towed to Bergen for inspection and repairs on 22 April 1980.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
490.00	2600.00

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	1515.0	1521.1	[m]
2	1525.0	1527.0	[m]
3	1535.0	1547.6	[m]
4	1553.0	1560.0	[m]
5	1560.0	1569.0	[m]
6	1569.0	1578.0	[m]
7	1578.0	1581.0	[m]
8	1585.0	1598.0	[m]
9	1598.0	1603.6	[m]
10	1604.0	1606.4	[m]
11	1608.0	1617.0	[m]
12	1617.0	1626.0	[m]
13	1626.0	1632.5	[m]

Total core sample length [m]	94.2
Cores available for sampling?	YES

Core photos


1515-1517m

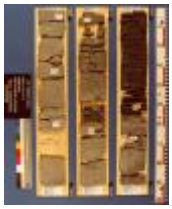

1517-1520m


1520-1521m


1525-1527m


1535-1537m


1537-1540m


1540-1543m


1543-1545m


1545-1547m


1555-1558m


1558-1560m


1560-1562m


1562-1565m


1565-1568m


1568-1569m


1569-1571m


1574-1577m


1578-1580m


1585-1587m


1587-1590m


1590-1593m


1593-1595m


1595-1598m


1598-1600m


1600-1603m


1603-1604m


1604-1606m


1608-1610m


1610-1611m


1616-1617m


1617-1618m


1619-1621m


1622-1623m


1624-1626m


1626-1628m


1628-1631m


1631-1632m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
870.0	[m]	DC	GEOCH
900.0	[m]	DC	GEOCH
930.0	[m]	DC	GEOCH
960.0	[m]	DC	GEOCH
990.0	[m]	DC	GEOCH
1167.0	[m]	DC	GEOCH
1203.0	[m]	DC	GEOCH
1233.0	[m]	DC	GEOCH
1263.0	[m]	DC	GEOCH
1287.0	[m]	DC	GEOCH
1317.0	[m]	DC	GEOCH
1347.0	[m]	DC	GEOCH
1377.0	[m]	DC	GEOCH
1398.0	[m]	DC	GEOCH
1428.0	[m]	DC	GEOCH
1455.0	[m]	DC	GEOCH

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

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

Document name	Document format	Document size [MB]
227_01_WDSS_General_Information	pdf	0.16
227_02_WDSS_completion_log	pdf	0.18

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

Document name	Document format	Document size [MB]
227_01_31_2_2_Completion_Report	pdf	5.70
227_01_31_2_2_Final_well_report_EXLOG	pdf	8.88
227_01_31_2_2_Well_summary_ANCHOR	pdf	2.76
227_02_31_2_2_Completion_log	pdf	1.32
227_02_31_2_2_Drilling_programme	pdf	2.48
227_02_31_2_2_Drilling_programme_encl_1	pdf	0.51
227_02_31_2_2_Drilling_programme_encl_2	pdf	0.17
227_02_31_2_2_Drilling_programme_encl_3	pdf	0.27
227_02_31_2_2_Drilling_programme_encl_4	pdf	0.77
227_02_31_2_2_Exploration_well_proposal	pdf	0.75
227_02_31_2_2_Exploration_well_proposal_encl_1	pdf	6.21
227_02_31_2_2_Exploration_well_proposal_encl_2	pdf	19.85
227_02_31_2_2_Exploration_well_proposal_encl_3	pdf	14.80
227_02_31_2_2_Exploration_well_proposal_encl_4	pdf	12.53
227_02_31_2_2_Exploration_well_proposal_encl_5	pdf	0.16
227_02_31_2_2_Exploration_well_proposal_encl_6	pdf	12.76
227_02_31_2_2_Exploration_well_proposal_encl_7	pdf	12.64
227_02_31_2_2_Exploration_well_proposal_encl_8	pdf	11.26

227_02_31_2_2_Exploration_well_proposal_encl_9	pdf	6.20
227_03_31_2_2_Geochemical_analysis	pdf	0.84
227_03_31_2_2_Geochemistry_evaluation_of_source_rock	pdf	0.57
227_03_31_2_2_Geochemistry_evaluation_of_source_rock_encl_1	pdf	0.07
227_04_31_2_2_Biostratigraphy	pdf	8.08
227_04_31_2_2_Biostratigraphy_appendix_3	pdf	3.79
227_05_31_2_2_Core_description	pdf	5.02
227_05_31_2_2_Core_report_core_1-13_Final_report	pdf	3.96
227_05_31_2_2_Evaluation_of_core_data	pdf	8.36
227_05_31_2_2_Geological_investigations_of_cores_vol_1	pdf	28.43
227_05_31_2_2_Geological_investigations_of_cores_vol_2	pdf	24.38
227_05_31_2_2_Geological_investigations_of_cores_vol_3	pdf	0.48
227_05_31_2_2_Sidewall_sample_description	pdf	0.70
227_05_31_2_2_Sieve_analysis	pdf	3.90
227_05_31_2_2_Source_rock_analysis_by_IKU	pdf	1.52
227_05_31_2_2_Source_rock_analysis_encl_1	pdf	0.06
227_05_31_2_2_Source_rock_analysis_encl_2	pdf	0.03
227_05_31_2_2_Source_rock_analysis_encl_3	pdf	0.02
227_05_31_2_2_Source_rock_analysis_encl_4	pdf	0.03
227_05_31_2_2_Source_rock_analysis_encl_5	pdf	0.02
227_05_31_2_2_Source_rock_analysis_encl_6	pdf	0.04
227_05_31_2_2_Special_core_analysis	pdf	2.58
227_06_31_2_2_Crude_oil_source_rock_correlation	pdf	1.22
227_06_31_2_2_Pressure_survey_report_completion_test_1_by_SPERR	pdf	0.79
227_06_31_2_2_Pressure_survey_report_completion_test_3_by_SPERR	pdf	2.78
227_06_31_2_2_Pressure_survey_report_test_1_run_1_by_SPERRY	pdf	0.09
227_06_31_2_2_Pressure_survey_report_test_1_run_1_SPERRY	pdf	0.89

227_06_31_2_2_Pressure_survey_report_test_2_run_1_by_SPERRY	pdf	1.99
227_06_31_2_2_Pressure_survey_report_test_3_run_1_by_SPERRY	pdf	0.55
227_06_31_2_2_Pressure_survey_report_test_3_run_2_by_SERRY	pdf	1.37
227_06_31_2_2_Pressure_survey_report_test_4_by_SPERRY	pdf	0.86
227_06_31_2_2_Pressure_survey_report_test_4_run_2_by_SPERRY	pdf	1.75
227_06_31_2_2_Pressure_survey_report_test_4_run_3_by_SPERRY	pdf	1.83
227_06_31_2_2_Pressure_survey_report_test_4_run_4_by_SPERRY	pdf	0.13
227_06_31_2_2_Pressure_survey_report_test_4_run_5_by_SPERRY	pdf	1.48
227_06_31_2_2_Production_test	pdf	0.30
227_06_31_2_2_Production_test_b	pdf	0.28
227_06_31_2_2_Production_test_nr1_part1_by_OTIS	pdf	7.44
227_06_31_2_2_Production_test_nr1_part2_by_OTIS	pdf	10.03
227_06_31_2_2_Production_test_nr1_part3_by_OTIS	pdf	6.68
227_06_31_2_2_Production_test_nr2_by_OTIS	pdf	11.62
227_06_31_2_2_Production_test_nr3_by_OTIS	pdf	8.95
227_06_31_2_2_Production_test_nr4_by_OTIS	pdf	8.22
227_06_31_2_2_Production_test_programme	pdf	2.42
227_06_31_2_2_Produksjonstest_nr_2_av_oljezone_by_OTIS	pdf	3.02
227_06_31_2_2_Produksjon_av_oljezonen	pdf	0.77
227_06_31_2_2_Well_test_interpretation_report	pdf	9.04
227_07_31_2_2_Reservoir_engineering	pdf	1.79
227_07_31_2_2_Reservoir_engineering_encl_1	pdf	1.33
227_07_31_2_2_Reservoir_engineering_encl_2	pdf	1.07
227_07_31_2_2_Reservoir_fluid_study	pdf	0.32
227_07_31_2_2_Reservoir_fluid_study_analysis	pdf	0.30
227_07_31_2_2_Reservoir_fluid_study_RFLA_80078A	pdf	0.70

227_07_31_2_2_True_boiling_point_distillation	pdf	0.19

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL CCL GR	775	1825
CBL GR CCL	354	1844
FDC CNL GR CAL	430	797
FIT	1506	1506
FIT	1595	1595
HDT	1469	1855
HDT	1845	2590
ISF BHC GR SP	430	809
ISF BHC GR SP	1800	2590
LSS CTR	1845	2590
LSS GR	1469	1855
MSFL DLL SP CAL	1469	1855
RFC CNL GR CAL	1800	2590
RFT	1	0
RFT	2	8
VELOCITY	0	0

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	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/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
708	1.22	41.0		seawater	
1000	1.22	49.0		seawater	

1408	1.22	50.0		seawater	
1624	1.26	45.0		seawater	

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]
227_Formation_pressure_(Formasjonstrykk)	PDF	0.20