General information

Wellbore name	33/5-2
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	33/5-2
Seismic location	SL 5 3 - 415 SP: 185.
Production licence	047
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	297-L
Drilling facility	NORTRYM
Drilling days	111
Entered date	31.07.1981
Completed date	18.11.1981
Release date	18.11.1983
Publication date	18.05.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	309.5
Total depth (MD) [m RKB]	4520.0
Maximum inclination [°]	8
Bottom hole temperature [°C]	137
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	LUNDE FM
Geodetic datum	ED50
NS degrees	61° 39' 47.14'' N
EW degrees	1° 37' 17.4'' E
NS UTM [m]	6837585.98
EW UTM [m]	427002.08
UTM zone	31
NPDID wellbore	405

Wellbore history

General

The prime objective of the well 33/5-2 was to test a Late Jurassic sandstone reservoir. The Middle Jurassic Brent Group and the Early Jurassic Statfjord Formation were considered secondary objectives. The Late Jurassic (Early Kimmeridgian) sandstone was assumed to be a continuation of the same deposits recorded at the Magnus Field and in the wells 211/8-1 and 211/13-3. These deposits constitute the oil reservoir at the Magnus Field and were also hydrocarbon bearing in 211/13-3. This objective was considered a high-risk prospect since the "Magnus Sandstone Member" had previously not been recorded on this side of the 211/13- 33/5- (Makrell-) horst. The Brent Group was expected to be as in the wells 211/13-2 and -6 where it is oil bearing. It was thought to be a typical shallow to marginal marine sandstone sequence, deposited during shoreline progradation. The location far down flank from the crest of the closure was considered to make hydrocarbon occurrence in the 33/5-2 Brent Group less likely. This was also the case for the Statfjord Formation. It was expected to consist of fine to coarse, occasionally pebbly sandstones with some shale interbeds of fluvial to marginal marine origin. The well was planned to drill approximately 50 m into the Statfjord Formation with an expected total depth at 4525 m.

Operations and results

A number of "pockmarks" typically 40 m across and 2 m deep were seen in the northern and eastern part of the area of the well location. To get some more information about the uppermost meters of soil, seafloor sampling and analysis were conducted by IKU. The seabed was found to consist of a fine sand, normally firm with shell fragments, plastic, silty clay and below greyish green sand.

Wildcat well 33/5-2 was spudded with the semi-submersible installation Nortrym on 31 July 1981 and drilled to a total depth of 4520 m in the Triassic Lunde Formation. The well was drilled with seawater and h-vis pills down to 960 m, with KCl/polymer mud from 960 m to 2714 m, and with KCl/Lignite/lignosulfonite/polymer mud from 2714 m to TD.

When attainting to run the 13 3/8" casing in the hole, the casing got stuck at 1653 m. After displacing Diesel/Milfree around the string, the casing came free and could be landed at 1974.5 m and cemented 100 m back into the 20" casing.

The only show recorded above Jurassic was an oil show on a sidewall core from 2525 m in the Late Cretaceous Kyrre Formation. No reservoir sands of Late Jurassic age were encountered in the well. Poor shows were reported in shales of the Kimmeridge Clay Formation. The Middle to Late Jurassic sequence in this well consists of Heather Formation shales on top of Brent Group sands repeated three times. This unusual event is interpreted as the two upper Brent Group sands are sediment packages that have slumped into the heather mudstones during deposition, the deepest Brent sequence likely represent autochthonous Brent. The Uppermost Brent sequence (4054 m to 4111 m) was cored and consists of Tarbert and Rannoch Formation sandstones. Poor to occasionally good shows were recorded from cuttings and from cores 1 and 2 cut over this interval. The logs showed, however, the sand to be water bearing with a water saturation of 91% and an average porosity of 13%. The next Brent sand interval from 4154 m to 4176 m was water bearing with a net sand of 5 m, a water saturation of 78% and an average porosity of 11%, while the deepest Brent sand interval from 4227 m to 4276 m had a net sand of 9 m, and was interpreted water bearing with a water saturation of 70% and an average porosity of 11%. The interval from 4270 m to 4275 m within the deepest Brent sand from 4227 m to 4276 m gave high mud gas readings (5.62%). Oil shows were not recorded on-rig in either of the two deeper Brent sands, but geochemical analyses detected shows of a "medium gravity crude" in the interval 4200 m to 4270. The Lower Jurassic Statfjord Formation was encountered at 4412 m. No distinct boundary against the underlying Triassic Hegre Group exists. The sandstone was both silica- and calcite cemented with a very low porosity and without any kind of shows.

Three cores were cut in this well, all three in the interval from 4053.5 m to 4100.5 m in the Tarbert and Rannoch Formations of the uppermost Brent slump package. No fluid samples were taken in this well.

The well was permanently abandoned on 18 November 1981 as a dry well with oil shows.

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	4520.00

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	4053.5	4069.8	[m]
2	4071.5	4083.5	[m]
3	4087.2	4099.7	[m]

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

Core photos


4053-4057m


4057-4061m


4061-4064m


4065-4068m


4071-4074m

4075-4079m 4080-4082m 4087-4090m 4091-4095m 4096-4099m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
3400.0	[m]	DC	OD
3425.0	[m]	DC	OD
3450.0	[m]	DC	OD
3475.0	[m]	DC	OD
3500.0	[m]	DC	OD
3530.0	[m]	DC	OD
3550.0	[m]	DC	OD
3600.0	[m]	DC	OD
3700.0	[m]	DC	OD
3760.0	[m]	DC	OD
3780.0	[m]	DC	OD
3800.0	[m]	DC	OD

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
335	NORDLAND GP
1009	UTSIRA FM
1098	HORDALAND GP
1558	ROGALAND GP
1558	BALDER FM
1607	LISTA FM
1717	SHETLAND GP
1717	JORSALFARE FM
2085	KYRRE FM
2828	TRYGGVASON FM
3349	BLODØKS FM
3359	SVARTE FM
3750	CROMER KNOLL GP
3750	RØDBY FM
3821	SOLA FM
3858	ÅSGARD FM
3900	VIKING GP

3900	DRAUPNE FM
3997	HEATHER FM
4054	BRENT GP
4054	TARBERT FM
4079	RANNOCH FM
4111	VIKING GP
4111	HEATHER FM
4154	BRENT GP
4176	VIKING GP
4176	HEATHER FM
4227	BRENT GP
4276	DUNLIN GP
4276	DRAKE FM
4340	COOK FM
4391	AMUNDSEN FM
4412	STATFJORD GP
4455	HEGRE GP
4455	LUNDE FM

Composite logs

Document name	Document format	Document size [MB]
405	pdf	0.64

Geochemical information

Document name	Document format	Document size [MB]
405_1	pdf	2.96
405_2	pdf	4.26
405_3	pdf	4.96

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

Document name	Document format	Document size [MB]
405_01_WDSS_General_Information	pdf	0.10
405_02_WDSS_completion_log	pdf	0.30

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

Document name	Document format	Document size [MB]
405_1_Completion_Report_and_Completion_log	pdf	21.83

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	690	1990
CBL VDL	1500	3635
CST	1557	1981
CST	2028	3542
CST	2037	3645
CST	4268	4527
CST	4268	4527
CST	4268	4527
CYBERDIP	4268	4527
DLL MSFL GR	4000	4276
FDC CAL GR	941	3647
FDC CNL CAL GR	3900	4273
FDC CNL CL GR	4268	4527
HDT	1975	3647
HDT	4268	4527
ISF BHC SP GR	334	4527
VSP	525	4527

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	394.0	36	399.0	0.00	LOT
SURF.COND.	20	939.0	26	960.0	1.69	LOT
INTERM.	13 3/8	1975.0	17 1/2	2020.0	1.81	LOT
INTERM.	9 5/8	3651.0	12 1/4	3664.0	1.92	LOT
LINER	7	4261.0	8 1/2	4279.0	2.07	LOT
OPEN HOLE		4520.0	6	4520.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
684	1.09			spud mud	
959	1.10			spud mud	
1013	1.25			water mud	
1906	1.35			water mud	
2014	1.40			water mud	
2279	1.45			water mud	
2957	1.35			water mud	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
4054.00	[m]
4054.70	[m]
4061.90	[m]
4072.10	[m]