

General information

Wellbore name	3/5-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	3/5-1
Seismic location	SP 1290 line 75-15
Production licence	022
Drilling operator	Norwegian Gulf Exploration Company AS
Drill permit	195-L
Drilling facility	ODIN DRILL
Drilling days	57
Entered date	03.05.1978
Completed date	28.06.1978
Release date	28.06.1980
Publication date	24.09.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	25.3
Water depth [m]	63.7
Total depth (MD) [m RKB]	3426.0
Final vertical depth (TVD) [m RKB]	3423.0
Bottom hole temperature [°C]	96
Oldest penetrated age	EARLY PERMIAN
Oldest penetrated formation	ROTLEGEND GP
Geodetic datum	ED50
NS degrees	56° 37' 25.78" N
EW degrees	4° 25' 11.97" E
NS UTM [m]	6276554.99
EW UTM [m]	587130.72
UTM zone	31
NPDID wellbore	290

Wellbore history

General

Exploration well 3/5-1 is located near the Coffee Soil Fault Complex on the northeast border of the Søgne Basin. The main objective of the well was to test the hydrocarbon potential of Rotliegendas sands on the crest of a tilted fault block, which was thought to mark the local eastern edge of the Central Graben of the North Sea. A secondary target was the basal Zechstein, where it was hoped that any dolomites present might have developed the secondary porosity exhibited in the Auk and Argyll Fields lying on the Western side of the Central Graben. There was no mappable closure at any post Zechstein horizon.

Operations and results

Wildcat well 3/5-1 was spudded with the semi-submersible installation Odin Drill on 3 May 1978 and drilled to TD at 3426m in basal conglomerates of the Permian Rotliegendas Group. While drilling at 2561 m the string twisted off at the jars, costing some six days lost time. A salt-water flow occurred while drilling at 2918 m, but was controlled by increasing the mud weight from 11.3 to 12.4 lb/gal. During abandonment 2.3 days were spent cutting and retrieving of the well head. The well was drilled with seawater and hi-vis slurry down to 466.3 m and with lime/Drispac mud from 466.3 m to ca 2228 m from where it was gradually displaced to a Spersene/Resinex mud system. This mud was in turn displaced to a salt saturated mud from ca 3058 m after it became clear that massive salt was being drilled. The salt saturated mud was used to drill the rest of the well to TD.

Schlumberger's CPI log showed almost 23 m of reservoir quality sands in the Late Jurassic (average log porosity 24 %), and almost 259 m in the Rotliegendas (average log porosity 23 %). A thick salt section covered the Zechstein carbonates. It is probable that the salt-water flow at 2918 m came not from this salt but from the overlying Jurassic sandstones. Shows were recorded while drilling the Late Jurassic Kimmeridgian "Hot" Shale (Mandal Fm) from 2734 m to 2752 m. Here small quantities of methane, ethane, propane, and butane were recorded together with a slight, streaming, crush cut oil fluorescence. The Zechstein carbonates also contained trace amounts of oil but post-well geochemical analyses indicated that these hydrocarbons could have originated from the Spersene/Resinex mud system. Log analysis confirmed that all potential reservoir sections were water-saturated. No conventional cores were taken, but 21 sidewall cores were recovered from the Rotliegendas and Jurassic. No fluid samples were taken. The well was permanently abandoned on 28 June 1978 as a dry hole.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
192.00	3724.00
Cuttings available for sampling?	NO

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2788.8	[m]	SWC	APT
2791.2	[m]	SWC	APT
2794.9	[m]	SWC	APT
2795.5	[m]	SWC	APT
2808.9	[m]	SWC	APT
2813.2	[m]	SWC	APT
2827.8	[m]	SWC	APT
2834.5	[m]	SWC	APT
2880.0	[m]	SWC	APT
2892.4	[m]	SWC	APT
2894.8	[m]	SWC	APT
2897.3	[m]	SWC	APT

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
89	NORDLAND GP
993	HORDALAND GP
2114	ROGALAND GP
2114	BALDER FM
2131	SELE FM
2142	LISTA FM
2150	VÅLE FM
2202	SHETLAND GP
2202	EKOFISK FM
2223	TOR FM
2435	HOD FM
2617	BLODØKS FM
2647	HIDRA FM
2683	CROMER KNOLL GP
2683	TUXEN FM
2691	ÅSGARD FM
2734	TYNE GP
2734	MANDAL FM
2795	ELDFISK FM
2817	HAUGESUND FM
2902	ZECHSTEIN GP

2902	UNDIFFERENTIATED
3100	KUPFERSCHIEFER FM
3103	ROTLEGEND GP

Composite logs

Document name	Document format	Document size [MB]
290	pdf	0.38

Geochemical information

Document name	Document format	Document size [MB]
290_1 Migrated crude oil detection in the 3_5_1 well	pdf	4.27
290_2 north sea source and migration study 3_5_1 and 3_5_2	pdf	7.06
290_3	pdf	0.50
290_4 Geochemical service report migrated crude oil detect	pdf	4.27

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

Document name	Document format	Document size [MB]
290_01 WDSS General Information	pdf	0.21
290_03 WDSS lithlog	pdf	0.08

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

Document name	Document format	Document size [MB]
290_1 Completion report	pdf	16.86
290_3 Stratigraphic tops	pdf	0.84
290_4 The petrology palynofacies and grain density of SWC	pdf	28.80
290_2 Biostratigraphy of the interval 630 - 11233	pdf	12.98

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	1402	1706
CBL	1432	2746
CDM	2765	3426
CDM AP	2769	3426
CDM PP	2769	3402
FDC CNL	2765	3426
ISF SONIC	166	481
ISF SONIC	467	1602
ISF SONIC	1591	2780
ISF SONIC	2765	3426
SRS	166	3426

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	165.0	36	166.0	0.00	LOT
SURF.COND.	20	466.0	26	480.0	0.00	LOT
INTERM.	13 3/8	1589.0	17 1/2	1603.0	0.00	LOT
INTERM.	9 5/8	2763.0	12 1/4	2779.0	0.00	LOT
OPEN HOLE		3425.0	8 1/2	3425.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
166	1.02	95.0		seawater	
480	1.16	55.0		seawater	
2201	1.25	48.0		seawater	
2560	1.26	49.0		seawater	
2955	1.48	63.0		seawater	
3425	1.48	45.0		seawater	