General information

Wellbore name	3/4-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	3/4-1
Seismic location	AN080-18.-SP. 313 AN080-21 & SP. 211
Production licence	006
Drilling operator	Amoco Norway Oil Company
Drill permit	781-L
Drilling facility	MÆRSK GALLANT
Drilling days	47
Entered date	11.01.1994
Completed date	26.02.1994
Release date	26.02.1996
Publication date	31.10.2003
Purpose - planned	WILDCAT
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	43.9
Water depth [m]	48.0
Total depth (MD) [m RKB]	3107.0
Final vertical depth (TVD) [m RKB]	3107.0
Maximum inclination [°]	1.3
Bottom hole temperature [°C]	107
Oldest penetrated age	LATE PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	56° 40' 53.56'' N
EW degrees	4° 15' 39.09'' E
NS UTM [m]	6282788.24
EW UTM [m]	577248.85
UTM zone	31
NPDID wellbore	2222

Wellbore history

General

Well 3/4-1 was the first well drilled in block 3/4 and was designed to penetrate and evaluate all potential hydrocarbon bearing formations above the Permian Zechstein Salt. The trap that was evaluated is a four way structural closure defined at Base Cretaceous level, formed by salt induced basin inversion, producing the present anticlinal configuration. The structure was identified using 2D seismic data in 1992, but, at that time, the structural configuration of the prospect and the composition of the clastic package could not be defined. Further geophysical, geological and geochemical studies were undertaken to better define the structure and Well 3/4-1 was drilled to help define the nature of the clastic package found in this part of block 3/4.

The primary reservoir objective was the Upper Jurassic, shallow marine sandstone deposits contained in the hanging wall clastic package of the Coffee Soil Fault. Middle Jurassic sandstones were regarded as secondary objectives.

Operations and results

Exploration well 3/4-1 was spudded with the jack-up installation Maersk Gallant on 11 January 1994 and drilled to TD at 3107 m, 18 m into the Permian Zechstein Salt Group. The well was drilled with seawater and bentonite sweeps down to 506 m and with "ANCO 2000" (ca 3% "ANCO 208" glycol additive) from 506 m to TD.

The top of the Hordaland at 1103 m and top of the Rogaland at 2317 m were 17 m shallow and 16 m deep respectively, in relationship to prognosed tops. The top of the Chalk (Shetland Group) 2415 m was 10 m shallower than prognosed, and was 252.5 m thick, 52.5 m thicker than prognosed. No hydrocarbon bearing intervals were found in the Chalk section as had been anticipated. A total of 295 m of Jurassic section was penetrated, versus a prognosed 450m, with 184m of reservoir quality sandstones (versus a prognosed 80m). The Upper Jurassic Ula Sandstone was 184 m thick, 104 m thicker than prognosed, and was dominantly clean sand. There were no free oil shows in the Jurassic section; however, the lower 20 m of the Ula Sandstone contained some bitumen. The Triassic Smith Bank Formation, not prognosed, was penetrated at 3013 m. The top of the Permian (Zechstein) at 3077 m was 58 m shallower than prognosed.

An 18 m core was cut from 2740 m to 2758 m in the Ula Formation Sand. A FMT sample was taken at 2758.5 m. It recovered 9.4 litres (upper chamber) and 4.1 litres (lower chamber) of formation water. Analyses on the water from the lower chamber, carried out by Geco-Prakla in Stavanger, gave results that closely matched those found at the rig site, but Geco-Prakla also found 29.2 mg/1 of nitrates. Its presence, plus an ionic imbalance and the presence of potassium and sulphate, indicated that this chamber contained formation water mixed with a little mud filtrate.

The well was permanently abandoned on 26 February 1994 as a dry hole with only rare bitumen shows.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
200.00	3105.00

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	2740.0	2758.1	[m]

Total core sample length [m]	18.1
Cores available for sampling?	YES

Core photos


2740-2744m


2744-2748m


2748-2752m


2752-2756m


2756-2758m

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
92	NORDLAND GP
1103	HORDALAND GP
2317	ROGALAND GP
2317	SELE FM
2330	LISTA FM
2375	VÅLE FM
2415	SHETLAND GP
2415	EKOFISK FM
2454	TOR FM
2589	HOD FM
2668	CROMER KNOLL GP
2668	TUXEN FM

2670	ÅSGARD FM
2718	TYNE GP
2718	MANDAL FM
2726	FARSUND FM
2736	VESTLAND GP
2736	ULA FM
2920	TYNE GP
2920	HAUGESUND FM
3013	HEGRE GP
3013	SMITH BANK FM
3077	ZECHSTEIN GP

Composite logs

Document name	Document format	Document size [MB]
2222	pdf	0.46

Geochemical information

Document name	Document format	Document size [MB]
2222_1	pdf	1.75
2222_2	pdf	0.66

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

Document name	Document format	Document size [MB]
2222_3_4_1_COMPLETION_REPORT_AND_LOG	pdf	131.22

Logs

Log type	Log top depth [m]	Log bottom depth [m]
COREGUN	2718	3048
DIFL DGR	2340	2964
DLL GR	500	1507

DLL MLL DAC DGR	1507	3095
DLL ZDEN GR	500	1507
FMT PRETEST	2738	2908
FMT SAMPLE	2758	2758
HEXDIP	1507	3100
MWD - DIR	506	3090
MWD - GR RES	92	506
VSP	500	3090
ZDEN CN GR	1507	3095

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	183.0	36	186.0	0.00	LOT
SURF.COND.	20	502.0	26	506.0	0.00	LOT
INTERM.	13 3/8	1509.0	17 1/2	1515.0	0.00	LOT
OPEN HOLE		3107.0	12 1/4	3107.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
254	1.08	5.0		WATER BASED	
375	1.07	5.0		WATER BASED	
506	1.14	7.0		WATER BASED	
1008	1.37	18.0		WATER BASED	
1250	1.38	20.0		WATER BASED	
1515	1.40	25.0		WATER BASED	
2297	1.49	24.0		WATER BASED	
2683	1.50	24.0		WATER BASED	
2724	1.50	23.0		WATER BASED	
2758	1.50	17.0		WATER BASED	
2776	1.51	29.0		WATER BASED	
3007	1.50	22.0		WATER BASED	
3107	1.50	22.0		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]
2222_Formation_pressure_(Formasjonstrykk)	pdf	0.21