General information

Wellbore name	25/2-13
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	HUGIN
Discovery	25/2-5 Lille Frøy
Well name	25/2-13
Seismic location	EL 8801 RAD 367 & KOLONNE 483
Production licence	026
Drilling operator	Elf Petroleum Norge AS
Drill permit	617-L
Drilling facility	WEST VANGUARD
Drilling days	142
Entered date	06.09.1989
Completed date	25.01.1990
Plugged and abondon date	06.08.2015
Release date	25.01.1992
Publication date	15.08.2008
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	HUGIN FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	SLEIPNER FM
3rd level with HC, age	EARLY JURASSIC
3rd level with HC, formation	STATFJORD GP
Kelly bushing elevation [m]	22.0
Water depth [m]	117.0
Total depth (MD) [m RKB]	3908.0
Final vertical depth (TVD) [m RKB]	3903.0
Maximum inclination [°]	6.2
Bottom hole temperature [°C]	128
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	SMITH BANK FM

Geodetic datum	ED50
NS degrees	59° 47' 37.69'' N
EW degrees	2° 27' 12.52'' E
NS UTM [m]	6628728.80
EW UTM [m]	469325.46
UTM zone	31
NPDID wellbore	1459

Wellbore history

General

Well 25/2-13 was drilled in the central part of the Viking Graben, east of the Frigg area. The block straddles the eastern flank of the graben and the north-western part of the Utsira High. It was the first appraisal well on the 25/2-5 discovery, which discovered oil in different reservoirs of the Vestland Group and the Statfjord Formation. The structure is a north-south trending horst, which is located on a terrace in the southern part of the block. Well 25/2-13 was drilled close to a major normal fault bounding the structure. The main objective was to evaluate the western panel. The well should test the fluid columns in both the Vestland Group and the Statfjord Formation, obtain data for fluid characterisation and productivity, and try to define the hydrocarbon contacts of the reservoirs.

Operations and results

Appraisal well 25/2-13 was spudded 6 June 1989 by the semi-submersible installation West Vanguard drilled to TD at 3909 m in the Triassic Smith Bank Formation. The well was drilled to 13" 3/8 casing point (2043 m) without problems, but at 2178 m the bit got stuck and a sidetrack was needed. The sidetrack was kicked off from 2070 m. The first attempt failed, but the second was successful. During coring of the Vestland Group, the core barrel was lost in hole and a second sidetrack was decided after unsuccessful fishing. This sidetrack was kicked off from 3306. The mud that was used in the Jurassic section (3318 - 3887 m) was an FCL type mud which was based on fresh water with added bentonite, polymers, lignosulfonate and barite.

Top Vestland Group came in at 3342 m as prognosed, and with mobile hydrocarbons in two layers; oil in the top ca 40 - 60 m of the reservoir with an unclear OWC in the interval 3382 - 3415 m, and with oil shows down to 3423 m; and gas-condensate in an isolated layer in the Lower Vestland Group with a gross thickness = 33 m. However, the reservoir properties in the Vestland Group were not as good as in 25/2-5. Top Statfjord came in at 3695.5 m, 50 m deeper than prognosed with thickness as expected, but with mobile oil only in a thin zone at the very top. A very tentative OWC was placed at 3709 m, based on RFT pressure data logs, and some moveable oil in DST 2A. Fair shows were recorded down to 3729 m.

A total of 19 cores were cut in this well. Cores 1 and 2 were cut in the original hole from 3340 to 3394.5 m, while cores 3 to 19 were cut in the sidetracked hole from 3387 to 3468.5 m. The core to log depth shifts for cores #1 to #7 are in the range 2.75 to 7.75 m. The core to log depth shifts for cores #11 to #19 are in the range 4.2 to 5.5 m. RFT samples were taken at 3696.5 m (mud filtrate with traces of oil very little gas) and 3727.5 m (mud filtrate with very little gas).

The well was suspended 25 January 1990 as an oil / gas / condensate appraisal.

Testing

Seven drill stem tests were conducted in this well (DST 1,2A & 2B, 3A & 3B, 4, 5). Tests 1 and 2 were conducted in the Statfjord Formation while tests 3, 4 and 5 were conducted in the Vestland Group.

DST #l tested the interval 3759 - 3785 m and produced a total of 42.5 m3 formation water. The final shut-in temperature was 124.4 deg C.

DST #2A tested the interval 3706 - 3713 m, which produced no formation fluids to surface.

DST #2B tested the interval 3695 - 3698 m in addition to the DST2 #A interval. The test flowed 69 sm3 oil and 29400 Sm3 gas /day on a 16/64" choke with a WHP of 85 bar and GOR of 425 sm3/sm3. The oil density was 0.821 g/cm3. The final shut-in temperature was 122.8 deg C.

DST #3A tested the interval 3480 - 3491. This zone was very tight and flowed 154 litres only. Due to the low rates the movable formation fluid could not be identified. The test confirmed that the zone was in a separate and higher pressure regime than the Vestland Group hydrocarbon reservoirs above it.

DST #3B tested the intervals 3437 - 3447 plus 3449.8 - 3460 in addition to the DST #3A interval. The test flowed 242000 sm3 gas-condensate /day with a GOR of 1115 sm3/sm3 and WHP of 170 bar on a 32/64" choke. The condensate density was 0.789 g/cm3. The final shut-in temperature was 115 deg C.

DST #4 tested the interval 3411.5 - 3423 and produced a total of 2856 litres Formation water. The final shut-in temperature was 112.8 deg C.

DST #5 tested the intervals 3343 - 3370 plus 3376.5 - 3382. The test flowed 651 sm3 oil and 213600 Sm3 gas /day on a 40/64" choke with a WHP of 125 bar and GOR of 328 sm3/sm3. The oil density was 0.825 g/cm3 and the gas gravity was 0.816 (air = 1). The final shut-in temperature was 111.8 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
205.00	3907.50

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	3340.0	3341.8	[m]
2	3367.0	3394.8	[m]
3	3387.0	3406.0	[m]
4	3405.0	3423.0	[m]
5	3429.0	3441.0	[m]
6	3441.0	3469.0	[m]
7	3459.0	3468.6	[m]

8	3649.0	3667.1	[m]
9	3667.1	3669.7	[m]
11	3709.0	3726.3	[m]
12	3727.0	3744.7	[m]
13	3745.0	3763.0	[m]
14	3763.0	3781.5	[m]
15	3781.5	3792.0	[m]
16	3792.0	3810.6	[m]
17	3810.5	3828.8	[m]
18	3829.0	3847.0	[m]
19	3847.0	3854.2	[m]

Total core sample length [m]	280.8
Cores available for sampling?	YES

Core photos


3340-3345m


3345-3350m


3350-3355m


3355-3360m


3360-3361m


3367-3372m


3372-3377m


3377-3382m


3382-3387m


3387-3392m


3392-3394m


3387-3392m


3392-3397m


3397-3402m


3402-3405m


3405-3410m


3410-3415m


3415-3420m


3420-3423m


3423-3428m


3428-3433m


3433-3438m


3438-3441m


3441-3446m


3446-3451m


3451-3456m


3456-3459m


3459-3464m


3464-3468m


3709-3714m


3714-3719m


3719-3724m


3724-3726m


3727-3732m


3732-3737m


3737-3742m


3742-3744m


3745-3750m


3750-3755m


3755-3760m


3760-3763m


3763-3768m


3768-3773m


3737-3778m


3778-3781m


3781-3786m


3786-3791m


3791-3792m


3792-3797m


3797-3802m


3802-3807m


3807-3810m


3810-3815m


3815-3820m


3820-3825m


3825-3828m


3829-3834m


3834-3839m


3839-3844m


3844-3847m


3847-3852m


3852-3854m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
3341.0	[m]	C	APT
3341.5	[m]	C	APT
3342.3	[m]	C	APT
3344.6	[m]	C	APT
3345.7	[m]	C	APT
3353.3	[m]	C	APT
3357.5	[m]	C	APT
3367.6	[m]	C	APT
3369.6	[m]	C	APT

3371.6	[m]	C	APT
3378.7	[m]	C	APT
3379.6	[m]	C	APT
3381.9	[m]	C	APT
3397.5	[m]	C	APT
3399.6	[m]	C	APT
3404.7	[m]	C	APT
3405.7	[m]	C	APT
3410.4	[m]	C	APT
3414.9	[m]	C	APT
3418.0	[m]	C	APT
3420.8	[m]	C	APT
3422.7	[m]	C	APT
3423.7	[m]	C	APT
3426.2	[m]	C	APT
3427.2	[m]	C	APT
3433.0	[m]	C	APT
3433.3	[m]	C	APT
3439.3	[m]	C	APT
3439.8	[m]	C	APT
3444.2	[m]	C	APT
3445.6	[m]	C	APT
3446.0	[m]	C	APT
3447.8	[m]	C	APT
3450.9	[m]	C	APT
3452.6	[m]	C	APT
3457.4	[m]	C	APT
3459.8	[m]	C	APT
3460.1	[m]	C	APT
3465.0	[m]	C	APT
3465.0	[m]	C	APT
3465.1	[m]	C	APT
3468.5	[m]	C	APT
3469.3	[m]	C	APT
3469.6	[m]	C	APT

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		2252.00	0.00		14.02.1986 - 00:00	NO
DST	DST2B	2706.00	2713.00		20.12.1989 - 00:00	YES
DST	DST3B	3396.96	0.00	WATER	01.01.1990 - 00:00	NO
DST	DST4	3403.00	3411.00	WATER	07.01.1990 - 15:43	YES
DST	DST5	3343.00	3382.00	WATER	15.01.1990 - 00:00	YES
DST	DST5	3343.00	3382.00		15.01.1990 - 00:00	YES
DST	DST5	3343.00	3382.00		15.01.1990 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
139	NORDLAND GP
437	UTSIRA FM
1067	HORDALAND GP
2170	ROGALAND GP
2170	BALDER FM
2240	HERMOD FM
2400	LISTA FM
2586	TY FM
2651	VÅLE FM
2706	SHETLAND GP
2706	HARDRÅDE FM
3032	KYRRE FM
3187	TRYGGVASON FM
3268	BLODØKS FM
3286	SVARTE FM
3318	VIKING GP
3318	DRAUPNE FM
3329	HEATHER FM
3342	VESTLAND GP

3342	HUGIN FM
3409	SLEIPNER FM
3491	DUNLIN GP
3491	DRAKE FM
3565	COOK FM
3645	AMUNDSEN FM
3696	STATFJORD GP
3887	NO GROUP DEFINED
3887	SMITH BANK FM

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

Document name	Document format	Document size [MB]
1459_01_WDSS_General_Information	pdf	0.26
1459_02_WDSS_completion_log	pdf	0.22

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

Document name	Document format	Document size [MB]
1459_25_2_13_COMPLETION_REPORT_AND_LOG	pdf	34.10

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3785	3774	4.7
2.0	3713	3706	0.0
2.3	3713	3695	6.3
3.1	3460	3437	12.5
5.0	3382	3343	15.8

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0	10.000	10.000		124
2.0				
2.3	8.500			123

3.1	16.000			115
5.0	12.500			112

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0					
2.3	69	29400	0.823	0.880	425
3.1	210	242000	0.800	0.800	1120
5.0	650	213600	0.829	0.818	330

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL CCL GR	1575	3300
CBL VDL GR	1330	2044
DIL BHC LDL GR	700	2022
DIL LSS GR	3300	3903
DIL MSFL GR AMS SP	3300	3529
DIL SLS LDL GR	2044	3319
DLL MSFL GR	3675	3900
FMS GR	3299	3700
FMS GR	3650	3812
LDL CNL NGL	3300	3529
LDL CNL NGT	3476	3901
MWD - GR RES DIR	202	3908
RFT	3346	3418
RFT	3354	3489
RFT	3482	3886
RFT	3696	3696
SHDT GR	2044	3312

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	199.0	36	201.0	0.00	LOT
INTERM.	20	700.0	26	714.0	1.20	LOT

INTERM.	13 3/8	2043.0	17 1/2	2057.0	1.72	LOT
INTERM.	9 5/8	3301.0	12 1/4	3315.0	1.90	LOT
LINER	7	3903.0	8 1/2	3908.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1314	1.16	20.0	6.8	WATER BASED	18.09.1989
1331	1.17	24.0	7.8	WATER BASED	18.09.1989
1631	1.17	22.0	5.8	WATER BASED	18.09.1989
1747	1.17	27.0	8.8	WATER BASED	19.09.1989
2036	1.17	20.0	5.8	WATER BASED	20.09.1989
2057	1.18	24.0	7.8	WATER BASED	21.09.1989
2188	1.20	26.0	11.7	WATER BASED	25.09.1989
2238	1.27	39.0	14.2	WATER BASED	04.10.1989
2301	1.27	36.0	13.2	WATER BASED	05.10.1989
2502	1.27	32.0	11.7	WATER BASED	09.10.1989
2502	1.27	32.0	10.7	WATER BASED	06.10.1989
2739	1.27	31.0	11.2	WATER BASED	09.10.1989
2807	1.27	33.0	12.2	WATER BASED	10.10.1989
2875	1.27	33.0	13.2	WATER BASED	12.10.1989
2938	1.27	34.0	12.2	WATER BASED	12.10.1989
3009	1.27	33.0	11.7	WATER BASED	13.10.1989
3159	1.20	37.0	10.7	WATER BASED	07.11.1989
3201	1.27	32.0	11.2	WATER BASED	16.10.1989
3215	1.27	33.0	11.2	WATER BASED	17.10.1989
3282	1.27	34.0	12.2	WATER BASED	18.10.1989
3315	1.27	32.0	10.7	WATER BASED	19.10.1989
3340	1.27	33.0	11.7	WATER BASED	27.10.1989
3395	1.27	30.0	8.8	WATER BASED	27.10.1989
3423	1.20	39.0	13.2	WATER BASED	07.11.1989
3525	1.20	34.0	10.2	WATER BASED	08.11.1989
3799	1.20	36.0	7.3	WATER BASED	21.11.1989
3811	1.20	38.0	8.3	WATER BASED	22.11.1989
3847	1.20	38.0	8.8	WATER BASED	22.11.1989
3856	1.21	38.0	9.8	WATER BASED	23.11.1989
3908	1.20	36.0	13.7	WATER BASED	24.11.1989

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
3340.10	[m]
3360.25	[m]
3405.24	[m]
3367.42	[m]
3421.10	[m]
3404.10	[m]
3394.67	[m]
3887.10	[m]
3441.05	[m]
3440.45	[m]
3424.20	[m]
3468.00	[m]
3459.30	[m]
3458.10	[m]

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]
1459_Formation_pressure_(Formasjonstrykk)	pdf	0.23