

**General information**

Wellbore name	1/3-7
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	OSELVAR
Discovery	1/3-6 Oselvar
Well name	1/3-7
Seismic location	BPN 9202 inline 1084 & xline3062
Production licence	065
Drilling operator	Elf Petroleum Norge AS
Drill permit	804-L
Drilling facility	WEST EPSILON
Drilling days	102
Entered date	13.02.1995
Completed date	25.05.1995
Release date	25.05.1997
Publication date	30.04.2010
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	PALEOCENE
1st level with HC, formation	FORTIES FM
Kelly bushing elevation [m]	44.7
Water depth [m]	72.0
Total depth (MD) [m RKB]	3345.0
Final vertical depth (TVD) [m RKB]	3342.0
Maximum inclination [°]	7
Bottom hole temperature [°C]	136
Oldest penetrated age	PALEOCENE
Oldest penetrated formation	VÅLE FM
Geodetic datum	ED50
NS degrees	56° 56' 25.15" N
EW degrees	2° 40' 34.61" E
NS UTM [m]	6310930.49
EW UTM [m]	480302.33



UTM zone	31
NPDID wellbore	2505

Wellbore history

**General**

Well 1/3-7 is located on the Hidra High in the North Sea. It was drilled to appraise the 1/3-6 Oselvar condensate discovery made in Paleocene Forties Formation sandstones. The well was placed down-flanks on the structure relative to the discovery well in order to penetrate the hydrocarbon-water contact and further appraise reservoir properties and production rates.

Operations and results

Appraisal well 1/3-7 was spudded with the 3 leg jack-up installation West Epsilon on 13 February 1995 and drilled to TD at 3345 m in the Paleocene Våle Formation. A gas kick was taken at 1740 m in the top of the Hordaland Group, later it was found that the gas probably originated from a limestone less than one meter thick. The hole packed off, the string had to be cut off at 1564 m, and the hole was plugged back. A technical sidetrack (1/3-7 T2) was made from 1204 m. This sidetrack failed as the bit fell back into the original hole during a wiper trip. A new and successful technical sidetrack (1/3-7 T3) was made from 1202 m. A second gas kick occurred in the T3 sidetrack when reaching 1741 m. This kick was controlled by the driller's method without significant problems or extra rig time. The extra activity caused by the first kick prolonged the rig time with 23 days. Due to poor hole conditions no open hole logging was performed in the 12 1/4" section. As the West Epsilon was available only up to 28 May open hole logging at final TD was also abandoned in order to secure time for the well test. The reservoir was logged through casing. The well was drilled with sea water down to 207 m and with gelled mud from 207 m to 1204 m. From 3103 m to TD it was drilled with a salt polymer.

Top Forties Formation was encountered at 3175 m. The Forties reservoir sandstones was encountered at 3183.5 m and proved to be oil bearing down to an oil-water contact at 3225 m. The logs indicated hydrocarbons down to 3229.4 m (3182.3 m MSL) and oil shows (direct and cut fluorescence) were reported down to 3232 m. This lower zone was considered to be only a residual oil zone, which was indicated also by the change in geochemical composition. No oil shows were reported above the Forties reservoir or below 3232 m, only background gas. The up-flanks 1/3-6 reservoir contains condensate. Hence, the 1/3-7 well suggests a ca 490 m hydrocarbon column with a gas/oil contact somewhere between the two wells. However, the depth of a GOC could not be determined, nor could it be deduced with any certainty that there is pressure communication between the reservoir sections penetrated in the two wells.

A total of 74.5 m core was cut and retrieved in 4 cores in the interval from 3164 to 3251 m. No wire line fluid samples were taken.

The well was permanently abandoned on 25 May 1995 as an oil appraisal well.

Testing

Two tests were performed on the reservoir.

DST 1A tested the interval 3183.5 to 3215.5 m. It produced 49 Sm³ oil and 16783 Sm³ gas /day through a 1/2" choke. The GOR was 333 with a well head flowing pressure (WHFP) of 15.4 bara. The density of the oil was 0.797 g/cm³.

DST 1B tested the intervals 3183.5 to 3215.5 m and 3220 to 3224.5 m. It produced 136.8 Sm³ oil and 37762 Sm³ gas /day through a 1/2" choke. The GOR was 280.9 Sm³/Sm³, with a well head flowing pressure of 35 bara. The formation temperature was measured in the tests to be 131.6 deg C. The formation temperature was taken as the highest flowing temperature just after opening the well for DST 1A. This is due to the temperature reducing with time because of the thermal expansion effect of gas (BHFP << Bubble point pressure).



Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3164.0	3181.7	[m]
2	3188.0	3204.7	[m]
3	3205.0	3223.3	[m]
4	3224.0	3245.8	[m]

Total core sample length [m]	74.5
Cores available for sampling?	YES

Core photos



3164-3169m



3169-3174m



3174-3179m



3179-3181m



3188-3189m



3189-3190m



3190-3191m



3191-3192m



3192-3193m



3193-3194m



3194-3195m



3195-3196m



3196-3197m



3197-3198m



3198-3199m



3199-3200m



3200-3201m



3201-3202m



3202-3203m



3203-3204m



3204-3205m



3205-3206m



3206-3207m



3207-3208m



3208-3209m



3209-3210m



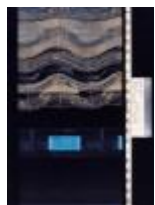
3210-3211m



3211-3212m



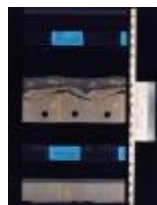
3212-3213m



3213-3214m



3214-3215m



3215-3216m



3216-3217m



3217-3218m



3218-3219m



3219-3220m



3220-3221m



3221-3222m



3222-3223m



3223-3224m



3224-3225m



3225-3226m



3226-3227m



3227-3228m



3228-3229m



3229-3230m



3230-3231m



3231-3232m



3232-3233m



3233-3234m



3234-3235m



3235-3236m



3236-3237m



3237-3238m



3238-3239m



3239-3240m



3240-3241m



3241-3242m



3242-3243m



3243-3244m



3244-3245m



3164-3169m



3169-3174m



3174-3179m



3179-3181m



3188-3193m



3193-3198m



3198-3203m



3203-3204m



3205-3210m



3210-3215m



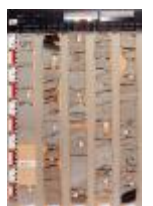
3215-3220m



3220-3223m



3224-3229m



3229-3234m



3234-3239m



3239-3244m



3244-3245m

**Lithostratigraphy**

Top depth [mMD RKB]	Lithostrat. unit
117	NORDLAND GP
1655	HORDALAND GP
3084	ROGALAND GP
3084	BALDER FM
3102	SELE FM
3175	FORTIES FM
3260	LISTA FM
3315	VÅLE FM

Geochemical information

Document name	Document format	Document size [MB]
2505 1	pdf	0.06
2505 2	pdf	0.94

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

Document name	Document format	Document size [MB]
2505 1 3 7 COMPLETION LOG	pdf	1.92
2505 1 3 7 COMPLETION REPORT	pdf	77.61

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.1	3184	3216	12.5
2.0	3184	3220	12.5

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.1		30.000		119
2.0		40.000	41.000	126





Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.1	49	16783	0.806		364
2.0	137	37762	0.790		281

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ARI MAFL GR	3035	3077
ARI MSFL GR ACTS	3035	3173
GR 4ARM CALI	3035	3077
GR DSI VDL CCL CBL	1199	3329
GR MAFL ARI	3055	3077
MSFL ARI AIT GR	3055	3077
MWD LWD - MGR CDR	207	3047
MWD LWD - MGR CDR SWD ADN	3035	3343
VSP ASI GR	1095	3315

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	203.0	36	205.0	0.00	LOT
SURF.COND.	13 3/8	1199.0	17 1/2	1204.0	1.66	LOT
INTERM.	9 5/8	3045.0	12 1/4	3050.0	1.71	LOT
LINER	7	3343.0	8 1/2	3345.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
400	1.76			WATER BASED	29.05.1995
400	1.76			WATER BASED	29.05.1995
518	1.76	20.0	24.4	WATER BASED	22.05.1995
520	1.76	22.0	58.0	WATER BASED	23.05.1995
570	1.75	18.0	10.5	WATER BASED	24.05.1995
758	1.76	20.0	9.6	WATER BASED	22.05.1995



1000	1.76	25.0	6.7	WATER BASED	18.04.1995
1585	1.76	27.0	8.1	WATER BASED	19.05.1995
3074	1.76	20.0	13.9	WATER BASED	18.04.1995
3074	1.76	22.0	5.3	WATER BASED	18.04.1995
3074	1.76	31.0	8.1	WATER BASED	18.04.1995
3074	1.76	22.0	14.4	WATER BASED	18.04.1995
3075	1.50	23.0	10.1	WATER BASED	18.04.1995
3137	1.50	27.0	11.5	WATER BASED	18.04.1995
3163	1.50	29.0	12.4	WATER BASED	18.04.1995
3182	1.50	25.0	10.1	WATER BASED	20.04.1995
3188	1.50	26.0	10.1	WATER BASED	20.04.1995
3205	1.50	26.0	21.0	WATER BASED	21.04.1995
3223	1.50	25.0	9.6	WATER BASED	24.04.1995
3251	1.50	28.0	10.1	WATER BASED	24.04.1995
3251	1.50	25.0	9.6	WATER BASED	24.04.1995
3307	1.50	27.0	10.1	WATER BASED	25.04.1995
3345	1.50	25.0	8.1	WATER BASED	27.04.1995
3345	1.50	28.0	10.1	WATER BASED	28.04.1995
3345	1.50	29.0	10.1	WATER BASED	03.05.1995
3345	1.51	29.0	11.0	WATER BASED	03.05.1995
3345	1.51	23.0	10.1	WATER BASED	03.05.1995
3345	1.50	24.0	10.5	WATER BASED	03.05.1995
3345	1.50	25.0	10.5	WATER BASED	05.05.1995
3345	1.33			WATER BASED	08.05.1995
3345	1.33			WATER BASED	08.05.1995
3345	1.33			WATER BASED	08.05.1995
3345	1.33			WATER BASED	10.05.1995
3345	1.33			WATER BASED	11.05.1995
3345	1.33			WATER BASED	15.05.1995
3345	1.33			WATER BASED	18.05.1995
3345	1.40	24.0	7.7	WATER BASED	18.05.1995
3345	1.40	24.0	7.7	WATER BASED	18.05.1995
3345	1.76	27.0	8.1	WATER BASED	18.05.1995
3345	1.51	31.0	12.0	WATER BASED	03.05.1995
3345	1.50	25.0	10.5	WATER BASED	05.05.1995
3345	1.33			WATER BASED	11.05.1995
3345	1.33			WATER BASED	12.05.1995
3345	1.76	27.0	8.1	WATER BASED	18.05.1995
3345	1.76	27.0	8.1	WATER BASED	22.05.1995

