

**General information**

Wellbore name	15/9-19 A
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	VOLVE
Discovery	15/9-19 S Volve
Well name	15/9-19
Seismic location	3D ST9407r96 & INLINE 1646& X-LINE 1711
Production licence	046
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	898-L
Drilling facility	BYFORD DOLPHIN
Drilling days	108
Entered date	25.07.1997
Completed date	09.11.1997
Release date	09.11.1999
Publication date	15.12.2006
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	HUGIN FM
Kelly bushing elevation [m]	25.0
Water depth [m]	85.0
Total depth (MD) [m RKB]	4131.0
Final vertical depth (TVD) [m RKB]	3319.0
Maximum inclination [°]	59
Bottom hole temperature [°C]	117
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	SMITH BANK FM
Geodetic datum	ED50
NS degrees	58° 26' 9.25" N
EW degrees	1° 55' 47.05" E
NS UTM [m]	6477887.72



EW UTM [m]	437506.71
UTM zone	31
NPDID wellbore	3145

Wellbore history

**General**

The well 15/9-19 SR on the Theta Vest structure North of the Sleipner East Field proved oil in the Hugin Formation in 1993. The objective for the well 15/9-19 A, a side-track from this well, was to confirm a minimum economic hydrocarbon volume in the Hugin Formation and map the extension of the oil-bearing formation.

General

The well 15/9-19 SR on the Theta Vest structure North of the Sleipner East Field proved oil in the Hugin Formation in 1993. The objective for the well 15/9-19 A, a side-track from this well, was to confirm a minimum economic hydrocarbon volume in the Hugin Formation and map the extension of the oil-bearing formation.

Operations and results

Well 15/9-19 A was kicked off from 2178 m in well bore 15/9-19 SR on 25 July 1997, using the semi-submersible installation Byford Dolphin. The well was drilled through the Skagerrak Formation and terminated approximately 30 m TVD into the Triassic Smith Bank Formation at 4131 m (3318.5 m TVD RKB). The final acquisition programme immediately after reaching the total depth of the well was strongly affected by a labour conflict, which delayed the well operations for 32.5 days. The originally planned open hole electric logging program had to be terminated and the 7" casing run to TD in order to secure the well. The later cased hole logging failed due to tool problems. The well was drilled oil based with the Ultidril mud system (oil base consists of synthetic olefins) from kick-off to TD.

Top of the Hugin Formation was penetrated at 3796.5 m (3015.5 m TVD RKB) approximately 60 m TVD deeper than prognosed. It was 153 m thick (TVD) and oil-bearing. The total oil column in the well was 80 m, but no clear oil-water contact was observed. The base of the reservoir was at 3919 m (-3126.5 m TVD RKB). Seven cores were cut in the interval 3838 m to 4017 m in the Hugin and Skagerrak Formations, with a total recovery of 177.6 m. One attempt was made to run FMT on PCL for pressure points and fluid sampling. The run failed for technical reasons and no further attempts were made due to the labour conflict.

The well was permanently abandoned on 9 November 1997 as an oil appraisal.

Testing

Three tests were performed in order to evaluate the well, one in the water zone and two in the oil zone.

Test 1 at 3952 - 3958 m (3159.8 - 3165.5 m TVD RKB), was in the water zone to obtain water samples due to MDT failure during wire line logging. Four good samples were obtained, indicating similar formation water as in other wells in the Sleipner area. Maximum recorded temperature in this test was 112.7 deg C.

Test 2A at 3885.5 - 3888.5 m (3100 - 3102.5 m TVD RKB) flowed 300 Sm³ oil and 27000 Sm³ gas /day through a 38/64" choke during the cleanup flow. The corresponding GOR was 90 Sm³/Sm³, the oil density was 0.892 g/cm³, and the gas gravity was 0.738 (air = 1) with 2.5 ppm H₂S and 3% CO₂. The temperature recorded in this flow period was 112.3 deg C.

Test 2B at 3885.5 - 3888.5 m + 3826 -3865 m (3100 - 3102.5 m + 3046.2 - 3081.3 m TVD RKB) flowed 528 Sm³ oil and 38107 Sm³ gas /day through a 34/64" choke during the main flow. The corresponding GOR was 72 Sm³/Sm³, the average oil density was 0.902 g/cm³, and the average gas gravity was 0.730 (air = 1) with 2.8 ppm H₂S and 3.5% CO₂. The temperature recorded in this flow period was 110.8 deg C.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
2200.00	4131.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3837.0	3852.2	[m]
2	3854.0	3881.7	[m]
3	3881.5	3908.4	[m]
4	3908.5	3934.5	[m]
5	3935.5	3963.0	[m]
6	3963.0	3991.0	[m]
7	3991.0	4016.7	[m]

Total core sample length [m]	177.0
Cores available for sampling?	YES

Core photos



3837-3842m



3842-3847m



3847-3852m



3852-3853m



3854-3859m



3859-3864m



3864-3869m



3869-3874m



3874-3879m



3879-3881m



3881-3886m



3886-3891m



3891-3896m



3896-3901m



3901-3906m



3906-3908m



3908-3913m



3913-3918m



3918-3923m



3923-3928m



3928-3933m



3933-3934m



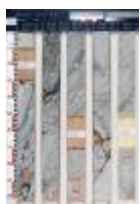
3935-3940m



3940-3945m



3945-3950m



3950-3955m



3955-3960m



3960-3963m



3963-3968m



3968-3973m



3973-3978m



3978-3983m



3983-3988m



3988-3991m



3991-3996m



3996-4001m



4001-4006m



4006-4011m



4011-4016m



4016-4017m

**Palynological slides at the Norwegian Offshore Directorate**

Sample depth	Depth unit	Sample type	Laboratory
3160.0	[m]	DC	STATOIL
3170.0	[m]	DC	STATOI
3180.0	[m]	DC	STATOI
3190.0	[m]	DC	STATOI
3200.0	[m]	DC	STATOI
3210.0	[m]	DC	STATOI
3220.0	[m]	DC	STATOI
3240.0	[m]	DC	STATOI
3250.0	[m]	DC	STATOI
3260.0	[m]	DC	STATOI
3280.0	[m]	DC	STATOI
3290.0	[m]	DC	STATOI
3300.0	[m]	DC	STATOI
3310.0	[m]	DC	STATOI
3320.0	[m]	DC	STATOI
3500.0	[m]	DC	GEOSTR
3510.0	[m]	DC	GEOSTR
3520.0	[m]	DC	GEOSTR
3530.0	[m]	DC	GEOSTR
3540.0	[m]	DC	GEOSTR
3550.0	[m]	DC	GEOSTR
3560.0	[m]	DC	GEOSTR
3570.0	[m]	DC	GEOSTR
3580.0	[m]	DC	GEOSTR
3590.0	[m]	DC	GEOSTR
3600.0	[m]	DC	GEOSTR
3610.0	[m]	DC	GEOSTR
3620.0	[m]	DC	GEOSTR
3630.0	[m]	DC	GEOSTR
3640.0	[m]	DC	GEOSTR
3651.0	[m]	DC	GEOSTR
3657.0	[m]	DC	GEOSTR
3663.0	[m]	DC	GEOSTR
3669.0	[m]	DC	GEOSTR
3675.0	[m]	DC	GEOSTR
3681.0	[m]	DC	GEOSTR



3687.0 [m]	DC	GEOSTR
3693.0 [m]	DC	GEOSTR
3699.0 [m]	DC	GEOSTR
3705.0 [m]	DC	GEOSTR
3708.0 [m]	DC	GEOSTR
3714.0 [m]	DC	GEOSTR
3720.0 [m]	DC	GEOSTR
3726.0 [m]	DC	GEOSTR
3732.0 [m]	DC	GEOSTR
3738.0 [m]	DC	GEOSTR
3744.0 [m]	DC	GEOSTR
3750.0 [m]	DC	GEOSTR
3756.0 [m]	DC	GEOSTR
3762.0 [m]	DC	GEOSTR
3768.0 [m]	DC	GEOSTR
3774.0 [m]	DC	GEOSTR
3780.0 [m]	DC	GEOSTR
3786.0 [m]	DC	GEOSTR
3792.0 [m]	DC	GEOSTR
3798.0 [m]	DC	GEOSTR
3804.0 [m]	DC	GEOSTR
3810.0 [m]	DC	GEOSTR
3816.0 [m]	DC	GEOSTR
3822.0 [m]	DC	GEOSTR
3828.0 [m]	DC	GEOSTR
3834.0 [m]	DC	GEOSTR
3837.2 [m]	C	GEOSTR
3837.2 [m]	C	GEOSTRAT
3841.4 [m]	C	GEOSTR
3841.4 [m]	C	GEOSTR
3846.0 [m]	C	GEOSTR
3851.8 [m]	C	GEOSTR
3854.8 [m]	C	GEOSTR
3859.7 [m]	C	GEOSTR
3870.9 [m]	C	GEOSTR
3876.7 [m]	C	GEOSTR
3881.6 [m]	C	GEOSTR
3887.5 [m]	C	GEOSTR
3891.2 [m]	C	GEOSTR
3894.1 [m]	C	GEOSTR



3898.2	[m]	C	GEOSTR
3908.0	[m]	C	GEOSTR
3913.6	[m]	C	GEOSTR
3919.0	[m]	C	GEOSTR
3919.2	[m]	C	GEOSTR
3923.6	[m]	C	GEOSTR
3927.7	[m]	C	GEOSTR
3931.3	[m]	C	GEOSTR
3937.5	[m]	C	GEOSTR
3945.5	[m]	C	GEOSTR
3950.5	[m]	C	GEOSTR
3957.4	[m]	C	GEOSTR
3964.4	[m]	C	GEOSTR
3972.2	[m]	C	GEOSTR
3976.4	[m]	C	GEOSTR
3983.5	[m]	C	GEOSTR
3991.2	[m]	C	GEOSTR
3998.2	[m]	C	GEOSTR
3998.5	[m]	C	GEOSTR
4001.7	[m]	C	GEOSTR
4007.5	[m]	C	GEOSTR
4011.7	[m]	C	GEOSTR
4017.0	[m]	DC	GEOSTR
4026.0	[m]	DC	GEOSTR
4035.0	[m]	DC	GEOSTR
4044.0	[m]	DC	GEOSTR
4053.0	[m]	DC	GEOSTR
4062.0	[m]	DC	GEOSTR
4071.0	[m]	DC	GEOSTR
4080.0	[m]	DC	GEOSTR
4089.0	[m]	DC	GEOSTR
4098.0	[m]	DC	GEOSTR
4107.0	[m]	DC	GEOSTR
4116.0	[m]	DC	GEOSTR
4125.0	[m]	DC	GEOSTR
4131.0	[m]	DC	GEOSTR

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	TEST1A	3885.00	3889.00		27.10.1997 - 16:15	YES
DST	TEST2B	3865.00	3826.00		30.10.1997 - 22:50	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
109	NORDLAND GP
850	UTSIRA FM
1111	HORDALAND GP
1316	SKADE FM
1454	NO FORMAL NAME
2778	GRID FM
2802	NO FORMAL NAME
2961	ROGALAND GP
2961	BALDER FM
3021	SELE FM
3102	LISTA FM
3178	HEIMDAL FM
3313	SHETLAND GP
3313	EKOFISK FM
3328	TOR FM
3476	HOD FM
3584	TRYGGVASON FM
3637	BLODØKS FM
3651	SVARTE FM
3655	CROMER KNOLL GP
3655	RØDBY FM
3663	ÅSGARD FM
3667	VIKING GP
3667	DRAUPNE FM
3706	HEATHER FM
3797	VESTLAND GP
3797	HUGIN FM
3966	NO GROUP DEFINED
3966	SKAGERRAK FM



4097 [SMITH BANK FM](#)

Geochemical information

Document name	Document format	Document size [MB]
3145_1	pdf	0.72

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

Document name	Document format	Document size [MB]
3145_15_9_19_A_COMPLETION_REPORT	pdf	21.49

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3099	3102	15.1
2.0	3046	3081	13.5

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0		3.000	21.000	112
2.0	9.000	9.000	32.000	111

Test number	Oil [Sm ³ /day]	Gas [Sm ³ /day]	Oil density [g/cm ³]	Gas grav. rel.air	GOR [m ³ /m ³]
1.0	200	27000	0.892	0.738	90
2.0	528	38107	0.902	0.730	72

Logs

Log type	Log top depth [m]	Log bottom depth [m]
HDIL MAC DGR CHT	2178	2754
HDIL MAC ZDL CND SP CAL CHT PCL	3487	4126





MAC GR	2490	3510
MWD - DPR TF5A	2178	4131
PERF	3952	3958
SBT GR CCL	2592	3986
VSP GR	980	2670
VSP GR PCL	2760	4080

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
INTERM.	9 5/8	2178.0	12 1/4	2179.0	0.00	LOT
LINER	7	4044.0	8 1/2	4044.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
2178	1.50	51.0		ULTIDRILL	
2768	1.50	41.0		ULTIDRILL	
3390	1.55	34.0		ULTIDRILL	
3573	1.55	32.0		ULTIDRILL	
3600	1.55	49.0		ULTIDRILL	
3955	1.47	52.0		ULTIDRILL	
4017	1.55	40.0		ULTIDRILL	
4131	1.48	45.0		ULTIDRILL	