

**General information**

Wellbore name	15/9-7
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SLEIPNER VEST
Discovery	15/6-3 Sleipner Vest
Well name	15/9-7
Seismic location	Line no 610 161 SP: 275.
Production licence	046
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	271-L
Drilling facility	NORDRAUG
Drilling days	125
Entered date	26.12.1980
Completed date	29.04.1981
Release date	29.04.1983
Publication date	24.09.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	GAS/CONDENSATE
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]	107.0
Total depth (MD) [m RKB]	3776.0
Final vertical depth (TVD) [m RKB]	3776.0
Maximum inclination [°]	1.3
Bottom hole temperature [°C]	127
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	SLEIPNER FM
Geodetic datum	ED50
NS degrees	58° 22' 56.07" N
EW degrees	1° 42' 45.99" E
NS UTM [m]	6472135.59
EW UTM [m]	424724.77



UTM zone	31
NPDID wellbore	218

Wellbore history

General

Well 15/9-7 was drilled as an appraisal well on the south part of the Sleipner Vest Field in the North Sea. The primary objective was to test for hydrocarbons in Callovian age sandstones in the Epsilon structure.

Operations and results

Appraisal well 15/9-7 was spudded with the semi-submersible installation Nordraug on 26 December 1980 and drilled to TD at 3776 m in the Middle Jurassic Sleipner Formation. A total of 20 days was spent on waiting on weather. The phase of running BOP after cemented 20" casing took 15 days due to several broken guide wires combined with bad weather. The well was drilled with spud mud down to 465 m, with gypsum/polymer mud from 465 m to 2823 m, and with gel/lignosulphonate/Drispac mud from 2823 m to TD.

The primary target Hugin Formation was penetrated at 3519 m and proved to hold gas and condensate down to a true gas/water contact at 3673 m based on RFT gas gradients. The gross reservoir thickness was 185 m (3519 to 3704 m) with a net pay of 83 m with 18% porosity and 12 % water saturation. There were no oil shows above top Hugin reservoir level. Oil shows were described on the cores from the reservoir and on cuttings down to 3677 m.

A total of 156 m core was recovered in 12 cores from the interval 3516 to 3671 m. The core-log depth shift was significant for all cores: from +6.0 to +9.1 meter, the largest shifts are for the deepest cores. Segregated RFT fluid samples were taken at 3560 m (gas, mud filtrate and condensate), 3603 m (gas, mud filtrate and condensate), 3658.5 m (gas, mud filtrate and condensate +dark oil emulsion), 3687 m (mud filtrate, formation water and minor gas), and 3672.2 m (mud filtrate and water).

The well was permanently abandoned on 29 April 1981 as a gas/condensate appraisal well.

Testing

Three drill stem tests were performed in the Hugin Formation.

DST1 tested the interval 3671 to 3674.5 m. It produced 194100 Sm³ gas and 38 Sm³ condensate /day through a 24/64" choke. The GOR was 5107 Sm³/Sm³, the condensate density was 0.797 g/cm³ and the gas gravity was 0.78 (air = 1). The gas contained 7-8% CO₂. The maximum temperature in the test was 127.8 °C.

DST2 tested the interval 3637 to 3638.5 m. It produced 322500 Sm³ gas and 93.2 Sm³ condensate /day through a 24/64" choke. The GOR was 3461 Sm³/Sm³, the condensate density was 0.790 g/cm³ and the gas gravity was 0.775 (air = 1). The gas contained 7-8% CO₂. The maximum temperature in the test was 121.1 °C.

DST3 tested the interval 3555 to 3565 m. It produced 912900 Sm³ gas and 242.8 Sm³ condensate /day through a 64/64" choke. The GOR was 3760 Sm³/Sm³, the condensate density was 0.792 g/cm³ and the gas gravity was 0.775 (air = 1). The gas contained 8-9% CO₂. The maximum temperature in the test was 118.3 °C.

**Cuttings at the Norwegian Offshore Directorate**

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
180.00	3770.00

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	3516.0	3530.2	[m]
2	3530.2	3531.5	[m]
3	3533.0	3551.0	[m]
4	3550.0	3567.8	[m]
5	3568.0	3585.6	[m]
6	3585.6	3597.9	[m]
7	3597.9	3616.7	[m]
8	3615.0	3620.4	[m]
9	3621.0	3633.4	[m]
10	3633.0	3642.5	[m]
11	3643.0	3653.0	[m]
12	3653.0	3671.8	[m]

Total core sample length [m]	156.1
Cores available for sampling?	YES

Core photos

3516-3518m



3518-3521m



3521-3524m



3524-3526m



3526-3529m



3529-3530m



3530-3531m



3533-3535m



3535-3538m



3538-3541m



3541-3543m



3543-3546m



3546-3549m



3549-3551m



3550-3552m



3552-3555m



3555-3558m



3558-3560m



3560-3563m



3563-3566m



3566-3567m



3568-3570m



3570-3573m



3573-3576m



3570-3573m



3573-3576m



3576-3578m



3578-3581m



3576-3578m



3578-3581m



3581-3584m



3584-3585m



3585-3588m



3588-3590m



3590-3593m



3593-3596m



3596-3597m



3597-3600m



3600-3603m



3603-3606m



3606-3608m



3608-3611m



3611-3614m



3614-3616m



3615-3617m



3617-3620m



3621-3623m



3623-3626m



3626-3629m



3629-3631m



3631-3633m



3633-3635m



3635-3638m



3638-3641m



3641-3642m



3643-3645m



3641-3642m



3643-3645m



3645-3548m



3648-3651m



3651-3653m



3653-3655m



3655-3658m



3658-3661m



3661-3663m



3663-3666m



3666-3669m



3669-3671m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2417.0	[m]	DC	RRI
2465.0	[m]	DC	RRI
2495.0	[m]	DC	RRI
2507.0	[m]	DC	RRI
2543.0	[m]	DC	RRI
2600.0	[m]	DC	RRI
2624.0	[m]	DC	RRI
2654.0	[m]	DC	RRI
2663.0	[m]	DC	RRI
2672.0	[m]	DC	RRI
2681.0	[m]	DC	RRI
2714.0	[m]	DC	RRI
2723.0	[m]	DC	RRI
2732.0	[m]	DC	RRI
2759.0	[m]	DC	RRI
2768.0	[m]	DC	RRI
2777.0	[m]	DC	RRI
2786.0	[m]	DC	RRI
2795.0	[m]	DC	RRI
2999.0	[m]	DC	
3029.0	[m]	DC	
3059.0	[m]	DC	
3089.0	[m]	DC	
3119.0	[m]	DC	
3149.0	[m]	DC	
3179.0	[m]	DC	
3209.0	[m]	DC	
3239.0	[m]	DC	
3269.0	[m]	DC	



3299.0 [m]	DC	
3329.0 [m]	DC	
3359.0 [m]	DC	
3389.0 [m]	DC	
3389.0 [m]	C	
3410.0 [m]	DC	
3419.0 [m]	DC	
3449.0 [m]	DC	
3459.0 [m]	DC	
3479.0 [m]	DC	
3509.0 [m]	DC	
3521.4 [m]	C	
3539.0 [m]	DC	
3541.0 [m]	C	
3568.0 [m]	C	
3568.8 [m]	C	
3569.0 [m]	DC	
3581.0 [m]	DC	
3581.6 [m]	C	
3582.9 [m]	C	
3585.3 [m]	C	
3588.3 [m]	C	
3590.2 [m]	C	
3591.5 [m]	C	
3598.6 [m]	C	
3600.1 [m]	C	
3605.6 [m]	C	
3608.5 [m]	C	
3611.5 [m]	C	
3614.0 [m]	C	
3615.9 [m]	C	
3623.6 [m]	C	
3626.3 [m]	C	
3628.1 [m]	C	
3631.2 [m]	C	
3634.5 [m]	C	
3635.0 [m]	C	
3638.4 [m]	C	
3641.1 [m]	C	
3643.5 [m]	C	



3646.5	[m]	C	
3647.2	[m]	C	
3651.2	[m]	C	
3658.4	[m]	C	
3660.0	[m]	C	
3661.9	[m]	C	
3668.2	[m]	C	
3670.0	[m]	C	
3671.0	[m]	DC	
3671.8	[m]	C	
3701.0	[m]	DC	
3731.0	[m]	DC	
3773.0	[m]	DC	

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	TEST3	3555.00	3565.00		19.04.1981 - 07:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
132	NORDLAND GP
132	UNDIFFERENTIATED
857	UTSIRA FM
1105	UNDIFFERENTIATED
1335	HORDALAND GP
1335	UNDIFFERENTIATED
1937	FRIGG FM
2305	ROGALAND GP
2305	BALDER FM
2350	SELE FM
2404	LISTA FM
2453	HEIMDAL FM
2651	LISTA FM
2703	MAUREEN FM



2779	SHETLAND GP
2779	EKOFISK FM
2810	TOR FM
2937	HOD FM
3180	BLODØKS FM
3222	HIDRA FM
3266	CROMER KNOLL GP
3266	RØDBY FM
3306	SOLA FM
3323	ÅSGARD FM
3412	VIKING GP
3412	DRAUPNE FM
3505	HEATHER FM
3519	VESTLAND GP
3519	HUGIN FM
3721	SLEIPNER FM

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

Document name	Document format	Document size [MB]
218_01_WDSS_General_Information	pdf	0.11
218_02_WDSS_completion_log	pdf	0.31

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

Document name	Document format	Document size [MB]
218_15_9_7_COMPLETION_LOG	pdf	2.34
218_15_9_7_COMPLETION_REPORT	pdf	25.28

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3671	3674	9.5
2.0	3637	3638	9.5
3.0	3555	3565	25.4





Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				
3.0				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	38	194000	0.797	0.780	5107
2.0	93	322000	0.790	0.775	3461
3.0	243	913000	0.792	0.775	3760

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	425	3656
CDM	2827	3778
CDM AP	2821	3780
DLL MSFL	3475	3778
FDC	449	2824
FDC CNL	2827	3779
GR	132	181
ISF SON	449	3777
ISF SON GR	181	463
RFT	0	0
VELOCITY	181	3777

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	181.0	36	182.0	0.00	LOT
SURF.COND.	20	449.0	26	465.0	1.52	LOT
INTERM.	13 3/8	1171.0	17 1/2	1185.0	1.64	LOT
INTERM.	9 5/8	2823.0	12 1/4	2839.0	1.84	LOT
LINER	7	3773.0	8 1/2	2773.0	0.00	LOT

**Drilling mud**

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
650	1.13	45.0		waterbased	
1275	1.14	45.0		waterbased	
1560	1.13	45.0		waterbased	
1800	1.12	40.0		waterbased	
2250	1.12	45.0		waterbased	
2700	1.12	42.0		waterbased	
3450	1.50	50.0		waterbased	

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]
218 Formation pressure (Formasjonstrykk)	pdf	0.22

