General information

Wellbore name	15/5-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	GINA KROG
Discovery	15/5-1 Gina Krog
Well name	15/5-1
Seismic location	
Production licence	048
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	186-L
Drilling facility	TREASURE SEEKER
Drilling days	134
Entered date	26.11.1977
Completed date	08.04.1978
Release date	08.04.1980
Publication date	05.01.2015
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	VESTLAND GP
Kelly bushing elevation [m]	25.0
Water depth [m]	119.0
Total depth (MD) [m RKB]	3775.0
Maximum inclination [°]	3.8
Bottom hole temperature [°C]	133
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	58° 35' 4.37'' N
EW degrees	1° 39' 8.35'' E
NS UTM [m]	6494728.58
EW UTM [m]	421641.42
UTM zone	31
NPDID wellbore	315

Wellbore history

General

Well 15/5-1 was drilled on the Ve Sub-basin north of the Sleipner Vest Field in the North Sea. The main objective of the well was to test sandstone reservoirs of Middle Jurassic age. In the nearby Sleipner field (in block 15/6 and 15/9) gas had been found previously in reservoirs of the same age. The well was located down flank on the structure at the Kimmerian level. This position was chosen to penetrate reservoirs believed to be wedging both above and below a strong seismic marker ("Red Marker").

Operations and results

Wildcat well 15/5-1 was spudded with the semi-submersible installation Treasure Seeker on 26 November 1977 and drilled to TD at 3775 m in Late Triassic sediments belonging to the Hegre Group. This was the first well drilled by Treasure Seeker, which was outfitted in Stavanger. About 25% of total rig time was counted as lost time, mainly due to wait-on-weather or equipment problems caused by rough weather in wintertime. The well was drilled with seawater and gel down to 1225 m, with seawater/gel/CMC/Spersene from 1225 m to 1910 m, and with a freshwater-based Spersene/gel/chrome-lignosulphonate/Drispac mud from 1910 m to TD.

The 15/5-1 well encountered gas condensate-bearing sandstones of Late and Middle Jurassic age (Callovian and Bathonian) from top at 3558 m down to 3614 m where a Bathonian/Bajocian deltaic series with up to five m thick coal beds appeared. From wireline log evaluation the sandstone section with a gross thickness of 56 m, has been subdivided into four separate pay zones, each zone being separated by thin impermeable layers, resulting in a net sand pay of 42.1 m. Average porosity was calculated to 14% and the average water-saturation to 14%. Sands were water wet below the coal beds at 3650 m. The actual oil-water contact was not seen. The strong seismic “Red Marker was correlated to the top of the deltaic coaly sequence of Middle Jurassic age. Oil shows were recorded on limestone in intervals from 2804 m to 2904 m (Tor Formation), from 3180 m to 3190 m (Hod Formation), and from 3365 m to 3375 m (top of Rødby Formation). Below the hydrocarbon-bearing reservoir, oil shows were recorded on sandstones in the intervals 3650 m to 3657 m and 3725 m to 3740 m.

Three cores were cut from 3561 m to 3601 m and two cores were cut from 3609 m to 3625.5 m. RFT samples were taken at 3560 m and 3611.8 m. They were found not to be representative of the formation fluid.

The well was permanently abandoned on 7 April 1977 as a condensate discovery.

Testing

Two zones were production tested

DST1 tested the interval 3610 m to 3614 m. The flow did not stabilise. On average, a production of 35720 Sm3 gas and 18.1 Sm3 oil /day through a 12/64” choke is reported. The GOR was ca 1970 Sm3/Sm3, the oil gravity was 43.0 °API and the gas gravity was 0.804 (air = 1). The bottom hole temperature was 125.6 °C.

DST2 tested the interval 3561 m to 3584 m. The test produced 660270 Sm3 gas and 474 Sm3 oil /day through a 48/64” choke. The GOR was 1390 Sm3/Sm3, the oil gravity was 43.4 °API, and the gas gravity was 0.778 (air = 1). The bottom hole temperature was 126.7 °C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
200.00	3728.00

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	3561.0	3577.9	[m]
2	3578.5	3590.2	[m]
3	3591.1	3600.4	[m]
4	3609.0	3620.0	[m]
5	3623.0	3624.5	[m]

Total core sample length [m]	50.4
Cores available for sampling?	YES

Core photos


3562-3565m


3565-3566m


3566-3568m


3568-3570m


3570-3572m


3572-3574m


3574-3575m


3575-3577m


3577-3577m


3578-3580m


3580-3582m


3582-3583m


3583-3585m


3585-3587m


3587-3589m


3589-3592m


3592-3593m


3593-3595m


3595-3597m


3597-3599m


3599-3600m


3609-3610m


3610-3612m


3612-3614m


3614-3616m


3616-3617m


3623-3624m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
3616.8	[m]	C	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
144	NORDLAND GP
777	UTSIRA FM
1150	HORDALAND GP
1706	FRIGG FM
2057	ROGALAND GP
2057	BALDER FM
2106	SELE FM
2164	HEIMDAL FM
2573	LISTA FM

2610	TY FM
2644	SHETLAND GP
2644	EKOFISK FM
2701	TOR FM
2904	HOD FM
3240	BLODØKS FM
3299	HIDRA FM
3363	CROMER KNOLL GP
3363	RØDBY FM
3492	VIKING GP
3492	DRAUPNE FM
3558	VESTLAND GP
3558	HUGIN FM
3616	SLEIPNER FM
3729	HEGRE GP

Geochemical information

Document name	Document format	Document size [MB]
315_GCH_1	pdf	0.11
315_GCH_2	pdf	3.47
315_GCH_3	pdf	0.88

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

Document name	Document format	Document size [MB]
315_01_WDSS_General_Information	pdf	0.43
315_03_WDSS_lithlog	pdf	0.09

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

Document name	Document format	Document size [MB]
315_15_5_1_Completionlog	pdf	3.51
315_15_5_1_Completion_report	pdf	9.87

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3610	3614	4.8
2.0	3561	3584	19.0

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	18	33700	0.810		1861
2.0	474	622900	0.800		1320

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	700	2688
CBL	1650	3295
DLL MSFL	3545	3598
FDC CNL	705	3773
HDT	1700	3773
ISF SON	192	3775
RFT	8	3611
RFT	3280	3738
RFT	3560	3597
RFT	3596	3728
VELOCITY	500	3772

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	194.0	36	194.5	0.00	LOT
SURF.COND.	20	705.0	26	712.0	0.00	LOT
INTERM.	13 3/8	2722.0	17 1/2	2738.0	0.00	LOT

INTERM.	8 5/8	3497.0	12 1/4	3511.0	0.00	LOT
OPEN HOLE		3766.0	8 1/2	3775.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
194	1.08			waterbased	
468	1.08			waterbased	
1065	1.12			waterbased	
1910	1.18			waterbased	
2733	1.26			waterbased	
3511	1.34			waterbased	
3775	1.46			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]
315_Formation_pressure_(Formasjonstrykk)	pdf	0.21