General information

Wellbore name	15/12-9 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	RE-CLASS TO DEV
Factmaps in new window	link to map
Main area	NORTH SEA
Field	VARG
Discovery	15/12-4 Varg
Well name	15/12-9
Seismic location	ST 8802- KOLONNE 919 & RAD 461
Production licence	038
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	732-L
Drilling facility	DEEPSEA BERGEN
Drilling days	84
Entered date	17.07.1992
Completed date	08.10.1992
Release date	08.10.1994
Publication date	06.01.2015
Purpose - planned	APPRAISAL
Reclassified to wellbore	15/12-A-11
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA HEATHER FM SS
Kelly bushing elevation [m]	23.0
Water depth [m]	84.0
Total depth (MD) [m RKB]	3848.0
Final vertical depth (TVD) [m RKB]	3213.0
Maximum inclination [°]	57.6
Bottom hole temperature [°C]	124
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	SKAGERRAK FM
Geodetic datum	ED50
NS degrees	58° 4' 40.43'' N
EW degrees	1° 53' 25.75'' E
NS UTM [m]	6438067.06

EW UTM [m]	434558.55
UTM zone	31
NPDID wellbore	1978

Wellbore history

General

Well 15/12-9 S was drilled on the Varg Field in the North Sea. The Varg Field reservoir is in Upper Jurassic sandstones at a depth of approximately 2700 metres. The Varg Field is segmented and includes several isolated compartments with varying reservoir properties. The well was drilled from a location near to the Varg A and Petrojarl A production installations and targeted a southern compartment in the Varg structure. The objective for the well was to prove hydrocarbons in Late Oxfordian sandstone and to reduce the uncertainty in the reserve estimate for this part of the Varg Field.

Operations and results

Appraisal well 15/12-9 S was spudded with the semi-submersible installation Deepsea Bergen on 17 July 1992 and drilled to TD at 3848 m (3213 m TVD) in the Triassic Skagerrak Formation. The well was drilled deviated from 623 m with a sail angle of ca 56 ° and then vertical again from ca 2400 m TVD through the target reservoir to TD. The well was drilled with seawater down to 620 m, with KCl/polymer mud from 620 mto 3226 m, and with Ancotemp/bentonite mud from 3226 m to TD.

The well penetrated top reservoir, the Oxfordian sandstones, at 3385 m (2750 m TVD). The reservoir was oil-bearing down to a well-defined OWC at 3501.5 m (2867.0 m TVD). Seven cores were cut with 100% recovery. Core 1 to 6 were cut in the interval 3689 m to 3555 m and core 7 was cut from 3649.5 m to 3668.0 m. The core to log depth shift was -2.45 m for core 7; for the other cores the core depth was equal to the logger's depth. Two segregated FMT oil samples were taken at 3498 m. Oil shows continued down to 3545m

The well is classified an oil appraisal well. It was suspended on 8 October 1992 and was later re-classified to oil production well 15/12-A-11 on the Varg Field.

Testing

Two drill stem tests were performed in the Oxfordian sandstones.

DST 1 tested the water zone from 3545 m to 3552 m (2910 – 2917 m). The test produced water at a rate of 890 m3/day through a 48/64" choke.

DST 2 tested the oil zone from 3385 m to 3443 m (2750 – 2809 m). The test produced on average 132200 Sm3 gas and 1520 Sm3 oil /day through a 40/64" choke. The GOR was 87 Sm3/Sm3, the oil density was 0.852 g/cm3 and the gas gravity was 0.751 (air = 1) with 1.5% CO2 and 4% H2S. Maximum flowing temperature was 124.6 °C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
630.00	3815.00

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	3389.0	3416.0	[m]
2	3416.0	3443.6	[m]
3	3443.6	3471.0	[m]
4	3471.3	3499.0	[m]
5	3499.1	3527.0	[m]
6	3527.3	3555.0	[m]
7	3652.0	3670.5	[m]

Total core sample length [m]	183.8
Cores available for sampling?	YES

Core photos


3389-3394m


3394-3399m


3399-3404m


3404-3409m


3409-3414m


3414-3416m


3416-3421m


3421-3426m


3426-3431m


3431-3436m


3436-3441m


3441-3443m


3443-3448m


3448-3453m


3453-3458m


3458-3463m


3463-3468m


3468-3471m


3471-3476m


3476-3481m


3481-3486m


3486-3491m


3491-3496m


3496-3499m


3499-3504m


3504-3509m


3509-3514m


3514-3519m


3519-3524m


3524-3527m


3527-3532m


3532-3537m


3537-3542m


3542-3547m


3547-3552m


3553-3555m


3652-3657m


3657-3662m


3662-3667m


3667-3670m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1350.0	[m]	DC	GEOCH
1370.0	[m]	DC	GEOCH
1390.0	[m]	DC	GEOCH

1410.0	[m]	DC	GEOCH
1430.0	[m]	DC	GEOCH
1450.0	[m]	DC	GEOCH
1470.0	[m]	DC	GEOCH
1490.0	[m]	DC	GEOCH
1510.0	[m]	DC	GEOCH
1530.0	[m]	DC	GEOCH
1550.0	[m]	DC	GEOCH
1570.0	[m]	DC	GEOCH
1590.0	[m]	DC	GEOCH
1610.0	[m]	DC	GEOCH
1630.0	[m]	DC	GEOCH
1650.0	[m]	DC	GEOCH
1670.0	[m]	DC	GEOCH
1690.0	[m]	DC	GEOCH
1710.0	[m]	DC	GEOCH
1730.0	[m]	DC	GEOCH
1750.0	[m]	DC	GEOCH
1770.0	[m]	DC	GEOCH
1790.0	[m]	DC	GEOCH
1810.0	[m]	DC	GEOCH
1830.0	[m]	DC	GEOCH
1850.0	[m]	DC	GEOCH
1870.0	[m]	DC	GEOCH
1890.0	[m]	DC	GEOCH
1910.0	[m]	DC	GEOCH
1930.0	[m]	DC	GEOCH
1950.0	[m]	DC	GEOCH
1970.0	[m]	DC	GEOCH
1990.0	[m]	DC	GEOCH
2010.0	[m]	DC	GEOCH
2030.0	[m]	DC	GEOCH
2050.0	[m]	DC	GEOCH
2070.0	[m]	DC	GEOCH
2090.0	[m]	DC	GEOCH
2110.0	[m]	DC	GEOCH
2130.0	[m]	DC	GEOCH
2150.0	[m]	DC	GEOCH
2170.0	[m]	DC	GEOCH
2190.0	[m]	DC	GEOCH

2210.0	[m]	DC	GEOCH
2230.0	[m]	DC	GEOCH
2250.0	[m]	DC	GEOCH
2270.0	[m]	DC	GEOCH
2290.0	[m]	DC	GEOCH
2310.0	[m]	DC	GEOCH
2330.0	[m]	DC	GEOCH
2350.0	[m]	DC	GEOCH
2370.0	[m]	DC	GEOCH
2390.0	[m]	DC	GEOCH
2410.0	[m]	DC	GEOCH
2430.0	[m]	DC	GEOCH
2450.0	[m]	DC	GEOCH
2470.0	[m]	DC	GEOCH
2490.0	[m]	DC	GEOCH
2510.0	[m]	DC	GEOCH
2530.0	[m]	DC	GEOCH
2550.0	[m]	DC	GEOCH
2570.0	[m]	DC	GEOCH
2590.0	[m]	DC	GEOCH
2610.0	[m]	DC	GEOCH
2630.0	[m]	DC	GEOCH
2650.0	[m]	DC	GEOCH
2670.0	[m]	DC	GEOCH
2690.0	[m]	DC	GEOCH
2710.0	[m]	DC	GEOCH
2730.0	[m]	DC	GEOCH
2750.0	[m]	DC	GEOCH
2770.0	[m]	DC	GEOCH
2790.0	[m]	DC	GEOCH
2810.0	[m]	DC	GEOCH
2830.0	[m]	DC	GEOCH
2850.0	[m]	DC	GEOCH
2870.0	[m]	DC	GEOCH
2890.0	[m]	DC	GEOCH
2910.0	[m]	DC	GEOCH
2930.0	[m]	DC	GEOCH
2950.0	[m]	DC	GEOCH
2970.0	[m]	DC	GEOCH
2990.0	[m]	DC	GEOCH

3010.0	[m]	DC	GEOCH
3030.0	[m]	DC	GEOCH
3050.0	[m]	DC	GEOCH
3070.0	[m]	DC	GEOCH
3080.0	[m]	DC	GEOCH
3327.0	[m]	DC	
3371.0	[m]	DC	
3391.6	[m]	C	
3391.6	[m]	C	
3399.2	[m]	C	STATOIL
3438.1	[m]	C	
3447.6	[m]	C	
3454.3	[m]	C	STATOIL
3459.6	[m]	C	
3462.5	[m]	C	STATOIL
3478.8	[m]	C	STATOI
3490.4	[m]	C	
3509.3	[m]	C	
3526.4	[m]	C	
3554.4	[m]	C	
3654.4	[m]	C	
3661.0	[m]	C	
3661.2	[m]	C	
3669.2	[m]	C	
3707.0	[m]	C	

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	DST2	3385.00	0.00	OIL	28.09.1992 - 17:50	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
107	NORDLAND GP
1083	UTSIRA FM

1400	HORDALAND GP
2930	ROGALAND GP
2930	BALDER FM
2945	SELE FM
3005	LISTA FM
3082	VÅLE FM
3091	SHETLAND GP
3091	TOR FM
3187	HOD FM
3260	BLODØKS FM
3295	CROMER KNOLL GP
3304	VIKING GP
3304	DRAUPNE FM
3385	VESTLAND GP
3385	HUGIN FM
3620	SLEIPNER FM
3688	HEGRE GP
3688	SKAGERRAK FM

Geochemical information

Document name	Document format	Document size [MB]
1978_GCH_1	pdf	0.26
1978_GCH_2	pdf	3.89
1978_GCH_3	pdf	0.92

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

Document name	Document format	Document size [MB]
1978_01_WDSS_General_Information	pdf	0.46
1978_02_WDSS_completion_log	pdf	0.20

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

Document name	Document format	Document size [MB]
1978_15_12_9_S_Completion_log	pdf	1.97

1978_15_12_9_S_Completion_report	pdf	17.64

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3545	0	19.0
2.0	3385	0	20.6

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0		2.000		
2.0		100.000		

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	1520		0.852	0.751	87

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBIL HXDIP GR	3350	3700
CBL VDL CCL GR	2925	3789
CBL VDL GR	1330	2191
CBL VDL GR	2450	3312
CCL GR	2930	3360
CST GR	3318	3833
DIFL ACL ZDL CNL GR	3306	3844
DLL MLL GR	3306	3676
FMT GR	3400	3673
HXDIP GR	3306	3848
MWD	175	3848
VSP	1570	3730

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	167.0	36	167.0	0.00	LOT
INTERM.	20	599.0	26	600.0	1.76	LOT
INTERM.	13 3/8	2207.0	17 1/2	2210.0	1.91	LOT
INTERM.	9 5/8	3313.0	12 1/4	3315.0	1.87	LOT
LINER	5 1/2	3846.0	8 1/2	3848.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
620	1.03			DUMMY	
620	1.03			WATER BASED	
623	1.39	34.0		DUMMY	
960	1.39	40.0		DUMMY	
1387	1.39	46.0		DUMMY	
1697	1.39	46.0		DUMMY	
2225	1.39	36.0		WATER BASED	
2228	1.39	31.0		WATER BASED	
2333	1.33	36.0		WATER BASED	
2447	1.39	31.0		WATER BASED	
2613	1.50	32.0		WATER BASED	
2895	1.53	48.0		WATER BASED	
3035	1.53	37.0		WATER BASED	
3169	1.53	39.0		WATER BASED	
3292	1.53	37.0		WATER BASED	
3326	1.53	40.0		WATER BASED	
3330	1.33	16.0		WATER BASED	
3333	1.33	27.0		WATER BASED	
3385	1.33	29.0		WATER BASED	
3389	1.33	27.0		WATER BASED	
3443	1.33	28.0		WATER BASED	
3471	1.33	25.0		WATER BASED	
3527	1.33	28.0		WATER BASED	
3555	1.33	21.0		WATER BASED	
3610	1.33	25.0		WATER BASED	
3655	1.33	32.0		WATER BASED	
3690	1.33	36.0		WATER BASED	

3848	1.33	34.0		WATER BASED	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
3525.70	[m]
3532.10	[m]
3532.70	[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]
1978_Formation_pressure_(Formasjonstrykk)	pdf	0.22