General information

Wellbore name	2/2-5
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	2/2-5 (Bumblebee)
Well name	2/2-5
Seismic location	SG - 8752 - 315 SP 310
Production licence	066
Drilling operator	Saga Petroleum ASA
Drill permit	705-L
Drilling facility	TREASURE SAGA
Drilling days	105
Entered date	07.11.1991
Completed date	19.02.1992
Release date	19.02.1994
Publication date	17.12.2003
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	ULA FM
Kelly bushing elevation [m]	26.0
Water depth [m]	63.0
Total depth (MD) [m RKB]	4082.0
Final vertical depth (TVD) [m RKB]	4081.0
Maximum inclination [°]	4.5
Bottom hole temperature [°C]	160
Oldest penetrated age	LATE PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	56° 50' 5.8'' N
EW degrees	3° 27' 22.9'' E
NS UTM [m]	6299246.57
EW UTM [m]	527846.84
UTM zone	31
NPDID wellbore	1846

Wellbore history

General

The main objective of the exploration well 2/2-5 was to test the hydrocarbon potential of the Upper Jurassic Ula Formation situated in the Epsilon structure. The structure is a salt induced anticline situated on a rotated, down thrown fault block in the Ula-Gyda Fault zone. The Oligocene Vade Formation was the secondary target. A seismic anomaly indicated a potential gas accumulation in this zone.

Operations and results

Well 2/2-5 was spudded by the semi submersible rig Treasure Saga on November 7 1991 and completed February 20 1992 in Permian Zechstein Group. The well was drilled with spud mud down to 918 m, with KCl mud from 918 m to 3484 m, and with HITEMP Polymer mud from 3484 m to TD.

The well penetrated mainly claystone with minor sandstone in Nordland, Hordaland, and Rogaland Group. The Vade Formation (within Hordaland Group) proved to be water bearing. After drilling throughout a typical sequence of the Shetland and Cromer Knoll groups, the top of the Tyne Group was encountered at 3418 m. The Ula Formation, which was reached at 3538 m, consisted of an interbedded sequence of sandstone, siltstone, and shale.

A 5-meter thick oil bearing zone within the Ula Formation was encountered at 3671 m. An attempt made to obtain an oil sample using RFT failed as the fluid chambers contained mud filtrate only. Geochemical analyses of oil from the DST revealed an unusual chemical and isotopic composition unlike any oil in the area. Sediments interpreted to be Triassic age were penetrated at 3989 m and may represent either a fault gouge above salt or the up thrown fault block. The well was permanently abandoned as an oil discovery on 19 February 1992.

Testing

One DST test was performed over the interval 3671.25 m to 3675.5 m. The well flowed oil at maximum rate 600 Sm3 / day. The oil had a density of 0.86 g/cm3 and the GOR was 44.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
920.00	4080.00

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	3592.0	3609.0	[m]

2	3678.0	3706.0	[m]

Total core sample length [m]	45.0
Cores available for sampling?	YES

Core photos


3592-3597m


3597-3602m


3602-3607m


3607-3609m


3678-3683m


3683-3688m


3688-3693m


3693-3698m


3698-3703m


3703-3706m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1620.0	[m]	DC	RRI
1640.0	[m]	DC	RRI
1680.0	[m]	DC	RRI
1700.0	[m]	DC	RRI
1740.0	[m]	DC	RRI
1760.0	[m]	DC	RRI
1780.0	[m]	DC	RRI
1800.0	[m]	DC	RRI
1840.0	[m]	DC	RRI
1860.0	[m]	DC	RRI
1880.0	[m]	DC	RRI
1930.0	[m]	DC	RRI
1950.0	[m]	DC	RRI
1970.0	[m]	DC	RRI
1990.0	[m]	DC	RRI

2030.0	[m]	DC	RRI
2050.0	[m]	DC	RRI
2090.0	[m]	DC	RRI
2130.0	[m]	DC	RRI
2150.0	[m]	DC	RRI
2200.0	[m]	DC	RRI
2240.0	[m]	DC	RRI
2280.0	[m]	DC	RRI
2340.0	[m]	DC	RRI
2360.0	[m]	DC	RRI
2380.0	[m]	DC	RRI
2400.0	[m]	DC	RRI
2420.0	[m]	DC	RRI
2440.0	[m]	DC	RRI
2460.0	[m]	DC	RRI
2480.0	[m]	DC	RRI
2520.0	[m]	DC	RRI
2540.0	[m]	DC	RRI
2580.0	[m]	DC	RRI
2600.0	[m]	DC	RRI
2620.0	[m]	DC	RRI
2660.0	[m]	DC	RRI
2680.0	[m]	DC	RRI
2720.0	[m]	DC	RRI
2820.0	[m]	DC	RRI
3320.0	[m]	DC	RRI
3380.0	[m]	DC	RRI
3400.0	[m]	DC	RRI
3421.0	[m]	DC	RRI
3429.0	[m]	DC	RRI
3441.0	[m]	DC	RRI
3450.0	[m]	DC	RRI
3459.0	[m]	DC	RRI
3468.0	[m]	DC	RRI
3480.0	[m]	DC	RRI
3489.0	[m]	DC	RRI
3501.0	[m]	DC	RRI
3510.0	[m]	DC	RRI
3510.0	[m]	DC	UOSHE
3519.0	[m]	DC	RRI

3531.0	[m]	DC	RRI
3531.0	[m]	DC	UOSHE
3540.0	[m]	DC	UOSHE
3540.0	[m]	DC	RRI
3549.0	[m]	DC	RRI
3560.0	[m]	DC	RRI
3570.0	[m]	DC	RRI
3580.0	[m]	DC	RRI
3582.0	[m]	DC	UOSHE
3588.0	[m]	DC	UOSHE
3592.1	[m]	C	UOSHE
3592.2	[m]	C	RRI
3593.7	[m]	C	RRI
3594.1	[m]	C	UOSHE
3595.5	[m]	C	UOSHE
3599.7	[m]	C	UOSHE
3601.0	[m]	C	UOSHE
3602.2	[m]	C	UOSHE
3604.0	[m]	C	UOSHE
3607.0	[m]	C	UOSHE
3608.0	[m]	C	UOSHE
3608.6	[m]	C	RRI
3609.0	[m]	C	UOSHE
3612.0	[m]	DC	UOSHE
3620.0	[m]	DC	RRI
3624.0	[m]	DC	UOSHE
3630.0	[m]	DC	RRI
3640.0	[m]	DC	RRI
3645.0	[m]	DC	UOSHE
3650.0	[m]	DC	RRI
3660.0	[m]	DC	RRI
3663.0	[m]	DC	UOSHE
3670.0	[m]	DC	RRI
3678.2	[m]	C	RRI
3678.2	[m]	C	UOSHE
3680.0	[m]	DC	RRI
3683.4	[m]	C	UOSHE
3689.2	[m]	C	UOSHE
3690.0	[m]	DC	RRI
3695.3	[m]	C	UOSHE

3703.0	[m]	C	UOSHE
3705.0	[m]	C	RRI
3705.8	[m]	C	RRI
3711.0	[m]	DC	UOSHE
3720.0	[m]	DC	RRI
3726.0	[m]	DC	UOSHE
3729.0	[m]	DC	RRI
3741.0	[m]	DC	RRI
3744.0	[m]	DC	UOSHE
3750.0	[m]	DC	RRI
3756.0	[m]	DC	UOSHE
3759.0	[m]	DC	RRI
3760.0	[m]	DC	RRI
3771.0	[m]	DC	RRI
3780.0	[m]	DC	RRI
3789.0	[m]	DC	RRI
3789.0	[m]	DC	UOSHE
3801.0	[m]	DC	RRI
3807.0	[m]	DC	UOSHE
3810.0	[m]	DC	UOSHE
3810.0	[m]	DC	RRI
3819.0	[m]	DC	RRI
3819.0	[m]	DC	UOSHE
3822.0	[m]	DC	UOSHE
3831.0	[m]	DC	RRI
3840.0	[m]	DC	RRI
3849.0	[m]	DC	RRI
3849.0	[m]	DC	UOSHE
3861.0	[m]	DC	RRI
3867.0	[m]	DC	UOSHE
3870.0	[m]	DC	RRI
3879.0	[m]	DC	RRI
3891.0	[m]	DC	RRI
3894.0	[m]	DC	UOSHE
3900.0	[m]	DC	RRI
3903.0	[m]	DC	UOSHE
3909.0	[m]	DC	RRI
3921.0	[m]	DC	RRI
3924.0	[m]	DC	UOSHE
3942.0	[m]	DC	RRI

3945.0	[m]	DC	UOSHE
3960.0	[m]	DC	RRI
3969.0	[m]	DC	RRI
3972.0	[m]	DC	UOSHE
3981.0	[m]	DC	RRI
3987.0	[m]	DC	UOSHE
3990.0	[m]	DC	RRI
4002.0	[m]	DC	RRI
4011.0	[m]	DC	RRI
4020.0	[m]	DC	RRI
4032.0	[m]	DC	RRI
4041.0	[m]	DC	RRI
4050.0	[m]	DC	RRI
4059.0	[m]	DC	UOSHE
4062.0	[m]	DC	RRI
4071.0	[m]	DC	RRI
4077.0	[m]	DC	UOSHE
4080.0	[m]	DC	RRI

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	TEST-1	3670.00	2666.00	OIL	12.02.1992 - 19:30	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
89	NORDLAND GP
1608	HORDALAND GP
2184	VADE FM
2746	ROGALAND GP
2746	BALDER FM
2778	SELE FM
2836	LISTA FM
2898	VÅLE FM
2947	SHETLAND GP

2947	EKOFISK FM
3009	TOR FM
3204	HOD FM
3262	CROMER KNOLL GP
3262	RØDBY FM
3281	TUXEN FM
3285	ÅSGARD FM
3418	TYNE GP
3418	MANDAL FM
3426	FARSUND FM
3538	VESTLAND GP
3538	ULA FM
3989	NO GROUP DEFINED
4079	ZECHSTEIN GP

Composite logs

Document name	Document format	Document size [MB]
1846	pdf	0.61

Geochemical information

Document name	Document format	Document size [MB]
1846_1	pdf	1.97
1846_2	pdf	1.99

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

Document name	Document format	Document size [MB]
1846_01_WDSS_General_Information	pdf	0.49
1846_02_WDSS_completion_log	pdf	0.23

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

Document name	Document format	Document size [MB]
1846_2_2_5_COMPLETION_REPORT_AND_LOG	pdf	19.59

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3666	3670	7.9

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				141

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	600				44

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	2227	3365
DIL MSFL LSS LDL CNL TLC	3352	3627
DLL LSS LDL CST	903	2365
DLL LSS LDL VDL CST	2363	3353
MWD - GR RES DIR	188	190
MWD DPR - GR RES DIR	190	918
MWD DPR - GR RES DIR	3365	4082
MWD MNP MDL DPR	3555	4087
MWD RGD - GR RES DIR	918	3365
RFT TLC	3610	3679
SHDT	3352	3627
VSP	2360	3349
VSP TLC	3522	3722

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	188.0	36	190.0	0.00	LOT
INTERM.	20	903.0	26	905.0	1.70	LOT
INTERM.	13 3/8	2362.0	17 1/2	2364.0	1.75	LOT
INTERM.	9 5/8	3349.0	12 1/4	3350.0	2.02	LOT
LINER	7	4082.0	8 1/2	4082.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
162	1.05			WATER BASED	
190	1.10			WATER BASED	
502	1.10			WATER BASED	
918	1.20			WATER BASED	
1029	1.20	27.0		WATER BASED	
1333	1.39	31.0		WATER BASED	
1680	1.39	36.0		WATER BASED	
1937	1.41	41.0		WATER BASED	
2044	1.45	40.0		WATER BASED	
2377	1.45	41.0		WATER BASED	
2523	1.45	33.0		WATER BASED	
2704	1.45	37.0		WATER BASED	
2790	1.48	43.0		WATER BASED	
2906	1.48	39.0		WATER BASED	
3034	1.48	32.0		WATER BASED	
3140	1.48	31.0		WATER BASED	
3148	1.48	28.0		WATER BASED	
3283	1.50	35.0		WATER BASED	
3334	1.52	37.0		WATER BASED	
3349	1.51	20.0		WATER BASED	
3365	1.52	34.0		WATER BASED	
3381	1.52	27.0		WATER BASED	
3418	1.50	25.0		WATER BASED	
3475	1.50	17.0		WATER BASED	
3484	1.50	16.0		WATER BASED	
3660	1.54	18.0		WATER BASED	
3666	1.54	20.0		WATER BASED	

3865	1.51	20.0		WATER BASED	
3951	1.51	19.0		WATER BASED	
3972	1.51	22.0		WATER BASED	
3981	1.51	20.0		WATER BASED	
3985	1.51	19.0		WATER BASED	
4059	1.51	18.0		WATER BASED	
4082	1.51	20.0		WATER BASED	