



Generell informasjon

Brønnbane navn	33/12-2
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	STATFJORD
Funn	33/12-1 Statfjord
Brønn navn	33/12-2
Seismisk lokalisering	LINE MNG-30 SP.160
Utvinningsstillatelse	037
Boreoperatør	Mobil Exploration Norway INC
Boretillatelse	111-L
Boreinnretning	NORSKALD
Boredager	79
Borestart	06.06.1974
Boreslutt	23.08.1974
Frigitt dato	23.08.1976
Publiseringsdato	02.12.2014
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	BRENT GP
2. nivå med hydrokarboner, alder	EARLY JURASSIC
2. nivå med hydrokarboner, formasjon	STATFJORD GP
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	147.0
Totalt målt dybde (MD) [m RKB]	4354.0
Temperatur ved bunn av brønnbanen [°C]	107
Eldste penetrerte alder	EARLY TRIASSIC
Eldste penetrerte formasjon	LOMVI FM
Geodetisk datum	ED50
NS grader	61° 13' 31.18" N



ØV grader	1° 51' 25.97" E
NS UTM [m]	6788583.71
ØV UTM [m]	438628.86
UTM sone	31
NPDID for brønnbanen	418

Brønnhistorie

General

Well 33/12-2 was drilled in the Tampen Spur area as one of the first wells in the Statfjord Field area. Primary target of the well was the Early Jurassic Statfjord Group, which was known to be productive in Brent Field located about 20 km to the southwest in the U.K. offshore. The Statfjord Formation was water wet in the 33/12-1 and 33/9-1 tests. The 33/12-2 wildcat was located to encounter the Statfjord Formation approximately 200 m high to the 33/12-1 well. The Middle Jurassic Brent Formation was prognosed to be erosionally thin or absent. Triassic, Permian and Devonian reservoirs were secondary targets. Planned total depth was 4572 m (15000 ft.), believed to be sufficient to reach Devonian age rocks or "Petroleum Basement". The well was one of the three deep tests called for by the License 037 work obligation.

The well is type well for the Alke and Lunde formations of the Hegre Group and the Raude and Eiriksson formations of the Statfjord Group. It is reference well for the Nansen Formation.

Operations and results

Wildcat well 33/12-2 was spudded with the semi-submersible installation Nordskald on 6 June 1974. Drilling proceeded to 4354 m in Early Triassic sediments of the Lomvi Formation. At this depth the drill string twisted off leaving a fish with top at 4157 m. Attempts to remove the fish were unsuccessful so 4354 m became TD of the well. No wire line logs were run below 4145 m. The well was drilled with water-based mud. Below 2716 m the mud contained from 2% to 8% oil.

As predicted, the Middle Jurassic Brent Group was thin (17.5 m) and oil bearing (12 m net). Test data and log correlation indicated that the upper reservoir in the 33/12-2 well is a section of the Brent sand and is in communication with the Brent Formation in the 33/12-1 and 33/9-1 wells. The Statfjord Formation top was found at 2700 m, which was 100 m lower than prognosed. The sand was oil bearing through a 126 m gross section with 87 m of net pay sand above an oil/shale contact at 2827 m. The next sand at 2836 m was definitely water bearing from log data. Log analysis indicated an average porosity of 25 percent and an average water saturation of 20 percent. Measured porosities from the cores range from 20 to 30 percent, with an average of 25 percent. Measured permeabilities from the cores range from 200 to as high as 15000 mD; average about 2500 mD. The reservoir sands are fine to coarse grained, occasionally conglomeratic, sub-rounded, poorly sorted, intercalated with carbonaceous laminae and contain kaolinite as matrix material.

Three cores were cut in the well. Core 1 was cut from 2637 m to 2652 m with 84 percent recovery. Cores 2 and 3 were cut in the top of the Statfjord Formation from 2704 m to 2725 m with 63% and 50% recovery. No wire line fluid samples were taken.

The well was permanently abandoned on 23 August 1974 as an oil appraisal well on the Statfjord Field.

Testing



Five drill stem tests were conducted in the Brent, Dunlin and Statfjord groups.

DST1 tested the interval 2813.3 to 2817 m in the Raude Formation. It produced 877 Sm3 oil and 82120 Sm3 gas per day through a 44/64" choke. The GOR was 92 Sm3/Sm3, oil gravity was 38.5 °API, and gas gravity was 0.692 (air = 1). Bottom hole temperature during the test was 96.4 °C.

DST2 tested the interval 2780.4 to 2784 m in the Eiriksson Formation. It produced 1939 Sm3 oil and 142720 Sm3 gas per day through a 44/64" choke. The GOR was 74 Sm3/Sm3, oil gravity was 39.5 °API, and gas gravity was 0.720 (air = 1). Bottom hole temperature during the test was 96.7 °C.

DST3 tested the interval 2700.8 to 2703.8 m in the Nansen Formation. It produced 284 Sm3 oil and 37095 Sm3 gas per day through a 16/64" choke. The GOR was 131 Sm3/Sm3, oil gravity was 41.2 °API, and gas gravity was 0.723 (air = 1). Bottom hole temperature during the test was 93.9 °C.

DST4 tested the interval 2526.5 to 2533.5 m in the Dunlin Group. The test produced slugs of oil, gas and mud. Bottom hole temperature during the test was 88.9 °C.

DST5 tested the interval 2485.4 to 2488.4 m in an upper Brent Group sandstone. It produced 230 Sm3 oil and 37660 Sm3 gas per day through a 16/64" choke. The GOR was 163 Sm3/Sm3, oil gravity was 37.2 °API, and gas gravity was 0.720 (air = 1). Bottom hole temperature during the test was 90.6 °C.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
512.00	4352.54

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerter i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	8659.5	8697.0	[ft]
2	8870.0	8901.0	[ft]
3	8919.0	8929.0	[ft]

Total kjerneprøve lengde [m]	23.9
Kjerter tilgjengelig for prøvetaking?	YES

Kjernebilder



Core2-Box1



Core2-Box2



Core2-Box3



Core2-Box4



Core2-Box5



Core2-Box6



Core3-box1



Core3-Box2

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
3820.0	[ft]	DC	GEOCH
3900.0	[ft]	DC	GEOCH
3980.0	[ft]	DC	GEOCH
4060.0	[ft]	DC	GEOCH
4140.0	[ft]	DC	GEOCH
4220.0	[ft]	DC	GEOCH
4300.0	[ft]	DC	GEOCH
4380.0	[ft]	DC	GEOCH
4460.0	[ft]	DC	GEOCH
4540.0	[ft]	DC	GEOCH
4620.0	[ft]	DC	GEOCH
4700.0	[ft]	DC	GEOCH
4780.0	[ft]	DC	GEOCH
4860.0	[ft]	DC	GEOCH
4940.0	[ft]	DC	GEOCH
5020.0	[ft]	DC	GEOCH
5100.0	[ft]	DC	GEOCH
5180.0	[ft]	DC	GEOCH
5260.0	[ft]	DC	GEOCH
5340.0	[ft]	DC	GEOCH
5420.0	[ft]	DC	GEOCH
5500.0	[ft]	DC	GEOCH
5580.0	[ft]	DC	GEOCH



5660.0 [ft]	DC	GEOCH
5740.0 [ft]	DC	GEOCH
5820.0 [ft]	DC	GEOCH
5900.0 [ft]	DC	GEOCH
5980.0 [ft]	DC	GEOCH
6060.0 [ft]	DC	GEOCH
6130.0 [ft]	DC	GEOCH
6150.0 [ft]	DC	GEOCH
6220.0 [ft]	DC	GEOCH
6500.0 [ft]	DC	
6600.0 [ft]	DC	
6700.0 [ft]	DC	
6800.0 [ft]	DC	
6900.0 [ft]	DC	
7000.0 [ft]	DC	
7100.0 [ft]	DC	
7200.0 [ft]	DC	
7300.0 [ft]	DC	
7390.0 [ft]	DC	
7500.0 [ft]	DC	
7600.0 [ft]	DC	
7700.0 [ft]	DC	
7800.0 [ft]	DC	
7900.0 [ft]	DC	
7990.0 [ft]	DC	
8090.0 [ft]	DC	
8190.0 [ft]	DC	
8290.0 [ft]	DC	
8400.0 [ft]	DC	
8500.0 [ft]	DC	
8600.0 [ft]	DC	
8658.1 [ft]	C	LAP
8661.4 [ft]	C	LAP
8667.9 [ft]	C	LAP
8671.2 [ft]	C	LAP
8674.5 [ft]	C	LAP
8677.8 [ft]	C	LAP
8684.3 [ft]	C	LAP
8687.6 [ft]	C	LAP
8690.9 [ft]	C	LAP



8694.2	[ft]	C	LAP
8700.0	[ft]	DC	
8810.0	[ft]	DC	
8910.0	[ft]	DC	
9000.0	[ft]	DC	
11935.6	[ft]	C	LAP

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
172	NORDLAND GP
953	HORDALAND GP
1678	ROGALAND GP
1678	BALDER FM
1721	SELE FM
1793	LISTA FM
1865	SHETLAND GP
1865	JORSALFARE FM
2049	KYRRE FM
2480	VIKING GP
2480	DRAUPNE FM
2483	BRENT GP
2483	UNDIFFERENTIATED
2500	DUNLIN GP
2500	UNDIFFERENTIATED
2700	STATFJORD GP
2700	NANSEN FM
2719	EIRIKSSON FM
2790	RAUDE FM
2951	HEGRE GP
2951	LUNDE FM
3749	ALKE FM
4048	LOMVI FM

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
418_GCH-2	pdf	1.91





418_GCH_1	pdf	0.27
418_GCH_3	pdf	0.23

Dokumenter - eldre Søkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
418_01_WDSS_General_Information	pdf	0.27

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
418_33_12_2_Completion_log	pdf	2.32
418_33_12_2_Completion_Report	pdf	3.01
418_33_12_2_Core_analysis	pdf	0.10
418_33_12_2_Core_analysis_results_1	pdf	0.13
418_33_12_2_Core_analysis_results_2	pdf	0.46
418_33_12_2_Core_analysis_results_3	pdf	0.10
418_33_12_2_Core_analysis_results_4	pdf	0.13
418_33_12_2_Drilling_program	pdf	0.53
418_33_12_2_Final_well_report	pdf	0.53
418_33_12_2_Geological_program	pdf	0.33
418_33_12_2_Micropalaeontology_and_stratigraphy	pdf	4.15
418_33_12_2_Petrography_of_sidewall_cores_and_ditch_cuttings	pdf	1.31
418_33_12_2_Report_on_light_hydrocarbon_vitrinite_reflec	pdf	3.30
418_33_12_2_Sidewall_cores	pdf	0.13
418_33_12_2_Well_history_operation_report	pdf	1.63

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	2813	2818	17.4
2.0	2780	2784	17.4
3.0	2701	2704	6.3
4.0	2526	2533	0.0





5.0	2485	2488	6.3
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Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningsstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				
2.0				
3.0				
4.0				
5.0				

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstygde rel. luft	GOR [m3/m3]
1.0	877	82118	0.832		
2.0	1939	142716	0.827		
3.0	284	37095	0.819		
4.0					
5.0	230	37661	0.838		

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BHC	494	4145
CBL	465	2905
CDM	1597	4145
CDM AP	1597	4145
CDM PP	1597	4145
DLL	2438	2903
FDC CNL	1597	4145
IES	494	4145
ML MLL	2438	2906
VELOCITY	494	4145

Foringsrør og formasjonsstyrketester

Type utforing	Utforing diam. [tommer]	Utforing dybde [m]	Brønnbane diam. [tommer]	Brønnbane dyp [m]	LOT/FIT slam eqv. [g/cm3]	Type formasjonstest
CONDUCTOR	30	222.0	36	222.0	0.00	



SURF.COND.	20	493.0	26	503.0	0.00	
INTERM.	13 3/8	1600.0	17 1/2	1615.0	0.00	
INTERM.	9 5/8	2908.0	12 1/4	2920.0	0.00	
OPEN HOLE		4354.0	8 1/2	4354.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
683	1.09	48.0		waterbased	
1666	1.11	47.0		waterbased	
2265	1.57	41.0		waterbased	
2492	1.61	48.0		waterbased	
3265	1.55	50.0		waterbased	
3520	1.49	48.0		waterbased	