



Generell informasjon

Brønnbane navn	1/3-1
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Funn	1/3-1
Brønn navn	1/3-1
Seismisk lokalisering	LINE 5651 SP. E165
Utvinningstillatelse	011
Boreoperatør	A/S Norske Shell
Boretillatelse	15-L
Boreinnretning	ORION
Boredager	129
Borestart	06.07.1968
Boreslutt	11.11.1968
Frigitt dato	11.11.1970
Publiseringsdato	30.04.2010
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	GAS
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	LATE CRETACEOUS
1. nivå med hydrokarboner, formasjon.	TOR FM
2. nivå med hydrokarboner, alder	EARLY CRETACEOUS
2. nivå med hydrokarboner, formasjon	CROMER KNOLL GP
Avstand, boredekk - midlere havflate [m]	26.0
Vanndybde ved midlere havflate [m]	71.0
Totalt målt dybde (MD) [m RKB]	4877.0
Maks inklinasjon [°]	18
Temperatur ved bunn av brønnbanen [°C]	182
Eldste penetrerte alder	LATE PERMIAN
Eldste penetrerte formasjon	ZECHSTEIN GP
Geodetisk datum	ED50
NS grader	56° 51' 21" N



ØV grader	2° 51' 5" E
NS UTM [m]	6301488.86
ØV UTM [m]	490936.87
UTM sone	31
NPDID for brønnbanen	154

Brønnhistorie

General

Well 1/3-1 was drilled on the crest of a salt-induced anticline on the Hydra High in the North Sea. The purpose of the well was to investigate Tertiary and Mesozoic sequences down to top salt.

The well is Type Well for the Våle, Hydra, Hod, and Tor Formations, and Reference Well for the Vidar, Ekofisk and Blodøks Formations.

Operations and results

Well 1/3-1 was spudded with the four leg jack-up installation Orion on 6 July 1968 and drilled to TD at 4877 m in the Permian Zechstein Group. From the deviation survey it is seen that the well starts to deviate significantly at 4037 m (8 deg deviation), and at TD the deviation is 18 deg. This will correspond to a TVD RKB that is ca 25 m less than MD RKB. Several drilling problems occurred during the drilling operations of well 1/3-1. While drilling the 17 1/2" hole for the 20" casing, circulation losses started at 220 m (720') and became total at 238 m (781'). While drilling on with sea water, without returns, the pipe stuck. The lost circulation zone eventually had to be sealed off with a cement plug. In the Tertiary plastic clays the problems included tight hole conditions, bit balling, and difficulties in lowering the logging tools. The mud weight had to be raised from 10.8 ppg to 13.6 ppg to stabilize the hole. At 4131 m (13554') the bit twisted off, but was retrieved on the second fishing run. A hydrocarbon bearing zone was encountered at 4567 m (14984'). The mud became gas cut. At 4592 m (15064') the degasser was overloaded and the circulation lost, probably higher in the hole. A cement plug was needed to combat the lost circulation problems. It was then decided to set a 7" casing. Circulation was lost while running the casing, which had to be cemented in two stages. Drilling continued with a 5 7/8" bit. Around 4677 m (15346'), when drilling into salt, the penetration rate increased from 10 to 50 ft/hr. Further deepening to TD went without problems. The well was drilled water based.

Well 1/3-1 found no sand of any significance in the Tertiary section. An unexpectedly thick Danian/Late Cretaceous chalk section (Shetland Group) was penetrated from 3258 m to 4441 m. The underlying Cromer Knoll Group was found resting directly on Permian salt at 4671 m. Minor gas was confirmed by testing in the Tor Formation. No source rock section was identified in the well. Shows were reported in the interval from 2999 m to 3423 m as follows: direct and cut "faint" fluorescence were reported on sidewall cores from the interval 2999 to 3002 m; weak cut fluorescence was recorded on cuttings from 3039 m; strong cuttings fluorescence and moderate cut was recorded at 3357 m; "fair" - "soaked w/oil, giving yellowish-grn flu, but no cut" on the conventional core at 3405 to 3423 m

One core was cut from 11165 to 11232 ft (3403.1 to 3423.5 m). No wire line fluid samples were taken. A sea bed core (0 - 46 m from seabed) was taken for geotechnical purposes at the 1/3-1 location. Samples from this core are available at the NPD.

The well was permanently abandoned on 11 November 1968 as a minor gas discovery.



Testing

Three Drill Stem Tests were conducted. They produced some fluids at very low rates:

DST 1 tested the interval 4583.6 - 4601.0 m in the Cromer Knoll Group and recovered a total of 0.74 bbl gas cut mud in 45 minutes, corresponding to a standard rate of 40 bbl (1133 Sm³) gas/day.

DST 2 tested the interval 4563.5 - 4581.8 m in the Cromer knoll Group and recovered a total of 18 bbl of gas cut mud with traces of condensate and slugs of gas in 140 minutes. This corresponds to a standard rate of 234 bbl (6626 Sm³) gas/day.

DST 3 tested the interval 3355.2 - 3359.8 m in the Tor Formation and recovered a total of 30 bbl of gas cut mud and slugs of gas in 45 minutes. This corresponds to a standard rate of 1000 bbl (28317 Sm³) gas/day.

Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	3403.4	3422.6	[m]

Total kjerneprøve lengde [m]	19.2
Kjerner tilgjengelig for prøvetaking?	YES

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
4510.0	[ft]	DC	
4780.0	[ft]	DC	
5170.0	[ft]	DC	
5440.0	[ft]	DC	
5740.0	[ft]	DC	
6070.0	[ft]	DC	
6280.0	[ft]	DC	
6600.0	[ft]	DC	
6860.0	[ft]	DC	
7140.0	[ft]	DC	
7400.0	[ft]	DC	
7690.0	[ft]	DC	
7960.0	[ft]	DC	
8240.0	[ft]	DC	
8550.0	[ft]	DC	



8800.0	[ft]	DC	
9060.0	[ft]	DC	
9350.0	[ft]	DC	
9570.0	[ft]	DC	
9780.0	[ft]	DC	
10080.0	[ft]	DC	UNIVSHEF
10140.0	[ft]	DC	UNIVSH
10270.0	[ft]	DC	UNIVSH
10330.0	[ft]	DC	UNIVSH
10390.0	[ft]	DC	UNIVSH
10600.0	[ft]	DC	
10810.0	[ft]	DC	
11370.0	[ft]	DC	
11680.0	[ft]	DC	
11980.0	[ft]	DC	
12210.0	[ft]	DC	
12490.0	[ft]	DC	
12780.0	[ft]	DC	
13060.0	[ft]	DC	
13350.0	[ft]	DC	
13560.0	[ft]	DC	
13840.0	[ft]	DC	
14050.0	[ft]	DC	
14310.0	[ft]	DC	
14590.0	[ft]	DC	
14850.0	[ft]	DC	
15100.0	[ft]	DC	
15310.0	[ft]	DC	
15560.0	[ft]	DC	

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
97	NORDLAND GP
2995	ROGALAND GP
2995	BALDER FM
3006	SELE FM
3013	LISTA FM
3095	VIDAR FM



3147	LISTA FM
3209	VÅLE FM
3258	SHETLAND GP
3258	EKOFISK FM
3354	TOR FM
3828	HOD FM
4343	BLØDØKS FM
4371	HIDRA FM
4441	CROMER KNOLL GP
4441	RØDBY FM
4482	SOLA FM
4671	ZECHSTEIN GP

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
154 1	pdf	0.88
154 2	pdf	1.24

Dokumenter - eldre Sjøkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
154 01 WDSS General Information	pdf	0.21

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
154 01 1 3 1 Completion log	pdf	3.01
154 01 1 3 1 Core report	pdf	4.16
154 01 1 3 1 Well Resume	pdf	24.93
154 1 3 1 COMPLETION LOG	pdf	2.31
154 1 3 1 COMPLETION REPORT	pdf	23.69

Dokumenter - Sjøkeldirektoratets publikasjoner





Dokument navn	Dokument format	Dokument størrelse [KB]
154_01_NPD_Paper_No.15_Lithology_Well_1_3_1	pdf	14.98
154_02_NPD_Paper_No.15_Interpreted_Lithology_log_Well_1_3_1	pdf	78.91

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	4585	4602	12.5
2.0	4565	4602	12.5
3.0	3356	3361	12.5

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0	80.000	61.000		
2.0	52.000	40.000		
3.0	70.000	50.000		

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0		1132			
2.0		6626			
3.0		28317			

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BRIDGEPLUG-1	3480	3480
BRIDGEPLUG-2	3337	3337
BS GRC	137	4745
CALI	365	1435
CBL	71	1310
CBL	2895	4583
CDM	1529	4757
FDC	405	4645





IE.7	1530	4758
IES	408	3736
MLLC	1529	4867
PERF	3355	3359
PERF	4563	4565
PERF	4573	4578
PERF	4580	4581
SNP	2819	4767
SWS	1533	3116
SWS	4588	4733
TS	30	3313
VELOCITY	609	4458

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	36	140.0	36	137.0	0.00	LOT
SURF.COND.	20	408.0	26	415.0	0.00	LOT
INTERM.	13 3/8	1529.0	17 1/2	1535.0	0.00	LOT
INTERM.	9 5/8	3118.0	12 1/4	3128.0	0.00	LOT
LINER	7	4585.0	8 1/2	4593.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
415	1.07	42.0		waterbased	
861	1.12	48.0		waterbased	
1218	1.13	43.0		waterbased	
1534	1.18	45.0		waterbased	
2034	1.31	49.0		waterbased	
2455	1.34	46.0		waterbased	
3127	1.53	48.0		waterbased	
3409	1.56	47.0		waterbased	
4220	1.60	48.0		waterbased	

Tynnslip i Sokkeldirektoratet



Dybde	Enhet
11221.00	[ft]
11221.00	[ft]