Generell informasjon

Brønnbane navn	16/1-3
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Brønn navn	16/1-3
Seismisk lokalisering	SC 75 - 30 2110
Utvinningstillatelse	001
Boreoperatør	Esso Exploration and Production Norway A/S
Boretillatelse	340-L
Boreinnretning	GLOMAR BISCAY II
Boredager	61
Borestart	29.07.1982
Boreslutt	27.09.1982
Frigitt dato	27.09.1984
Publiseringsdato	24.09.2004
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL SHOWS
Funnbrønnbane	NO
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	108.0
Totalt målt dybde (MD) [m RKB]	3498.0
Totalt vertikalt dybde (TVD) [m RKB]	3496.0
Maks inklinasjon [°]	1.2
Temperatur ved bunn av brønnbanen [°C]	97
Eldste penetrerte alder	PRE-DEVONIAN
Eldste penetrerte formasjon	BASEMENT
Geodetisk datum	ED50
NS grader	58° 48' 48.9'' N
ØV grader	2° 2' 56.45'' E
NS UTM [m]	6519834.64
ØV UTM [m]	445067.06
UTM sone	31
NPDID for brønnbanen	84

Brønnhistorie

General

Well 16/1-3 is located on the Gudrun Terrace west of the Utsira High. The main objective of the well was to evaluate the hydrocarbon potential of Jurassic sand reservoirs. Eocene and Paleocene sands were secondary objectives. 16/1-3 was drilled on the flank of a seismically defined structure. The prime crestal location could not be tested due to the presence of a telephone cable on the sea floor.

Operations and results

Well 16/1-3 was spudded with the semi-submersible installation Glomar Biscay II on 29 July 1982 and drilled to TD at 3498 m in granite basement. After losing returns while drilling at 210 m, the 30" casing was re-cemented. Shallow gas was encountered between 400 and 444 meters. Tight hole, swabbing on trips and reaming were recurrent problems in the 12 1/4" hole due mainly to swelling of claystone and siltstone. Mud was lost when drilling through a flint layer at 2638 m. The well was drilled with seawater and bentonite down to 702 m, with a lignosulphonate/CMC mud from 702 m to 2282 m, and with lignosulphonate/lignite mud from 2282 m to TD.

Mechanical log analysis over the Jurassic interval indicated the presence of about 60 meters of gross sand. Two thin zones of approximately 4 meters each in thickness were interpreted to be hydrocarbon bearing. The remaining sands were judged to be water bearing or non-reservoir. No reservoir was believed to be present in the Triassic sand, siltstones and shales. Minor shows, consisting of stain, fluorescence and/or mud gas manifestations were recorded in the Pliocene-Eocene, Miocene and Paleocene sections. In addition, oily mud was recovered in one of the MFT samples from the Jurassic Sleipner Formation. The Zechstein formation contained generally tight anhydritic dolomites at the top. A porous but interpreted water bearing limestone section was found in the middle portion of the Zechstein Group. Below the limestone a 36 m thick sandstone sequence was encountered. At the base of the Zechstein Group 3 m of Kupferschiefer Formation was encountered. The Kupferschiefer Formation is present in several wells in the area. The Permian Rotliegendes formation contained poor reservoir quality felspathic sandstones, siltstones and shales. Also the Permian reservoirs appeared to be water bearing on wire line logs.

One core was cut from 2282 m to 2290.5 m in the Lista Formation. Two Multi Formation Test (MFT) samples were taken at 2742 m and 2742.5 m in a thin sand in the Jurassic Sleipner Formation. The first sample contained mud filtrate only. The second sample contained mud filtrate and 75 cc of light gravity oil. The well was permanently abandoned as a dry well with shows on 27 September 1982.

Testing

No drill stem test was performed

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
200.00	3498.50

Borekaks tilgjengelig for prøvetaking?	YES

Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2282.0	2291.8	[m]

Total kjerneprøve lengde [m]	9.8
Kjerner tilgjengelig for prøvetaking?	YES

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
500.0	[unknown]	DC	
530.0	[unknown]	DC	
560.0	[unknown]	DC	
590.0	[unknown]	DC	
620.0	[unknown]	DC	
650.0	[unknown]	DC	
680.0	[unknown]	DC	
710.0	[unknown]	DC	
740.0	[unknown]	DC	
770.0	[unknown]	DC	
800.0	[unknown]	DC	
840.0	[unknown]	DC	
860.0	[unknown]	DC	
890.0	[unknown]	DC	
920.0	[unknown]	DC	
950.0	[unknown]	DC	
980.0	[unknown]	DC	
1010.0	[unknown]	DC	
1040.0	[unknown]	DC	
1070.0	[unknown]	DC	
1100.0	[unknown]	DC	
1130.0	[unknown]	DC	
1160.0	[unknown]	DC	
1190.0	[unknown]	DC	
1220.0	[unknown]	DC	
1250.0	[unknown]	DC	

1280.0	[unknown]	DC	
1310.0	[unknown]	DC	
1340.0	[unknown]	DC	
1350.0	[unknown]	DC	RRI
1370.0	[unknown]	DC	
1410.0	[unknown]	DC	
1410.0	[unknown]	DC	RRI
1430.0	[unknown]	DC	
1460.0	[unknown]	DC	
1470.0	[unknown]	DC	RRI
1490.0	[unknown]	DC	
1520.0	[unknown]	DC	
1530.0	[unknown]	DC	RRI
1550.0	[unknown]	DC	
1580.0	[unknown]	DC	
1590.0	[unknown]	DC	RRI
1610.0	[unknown]	DC	
1640.0	[unknown]	DC	
1650.0	[unknown]	DC	RRI
1680.0	[unknown]	DC	
1700.0	[unknown]	DC	
1730.0	[unknown]	DC	RRI
1730.0	[unknown]	DC	
1760.0	[unknown]	DC	
1762.0	[unknown]	SWC	
1790.0	[unknown]	DC	RRI
1790.0	[unknown]	DC	
1820.0	[unknown]	DC	
1850.0	[unknown]	DC	RRI
1850.0	[unknown]	DC	
1880.0	[unknown]	DC	
1910.0	[unknown]	DC	
1910.0	[unknown]	DC	RRI
1930.0	[unknown]	DC	
1960.0	[unknown]	DC	
1970.0	[unknown]	DC	RRI
1990.0	[unknown]	DC	
2010.0	[unknown]	DC	
2021.0	[unknown]	SWC	
2030.0	[unknown]	DC	RRI

2040.0	[unknown]	DC	
2056.5	[unknown]	SWC	
2056.5	[unknown]	SWC	OD
2070.0	[unknown]	DC	
2090.0	[unknown]	DC	RRI
2092.5	[unknown]	SWC	
2100.0	[unknown]	DC	
2101.5	[unknown]	SWC	
2110.0	[unknown]	SWC	
2130.0	[unknown]	DC	
2143.0	[unknown]	SWC	
2143.0	[unknown]	SWC	OD
2150.0	[unknown]	DC	RRI
2156.0	[unknown]	SWC	
2160.0	[unknown]	DC	
2170.0	[unknown]	SWC	OD
2174.0	[unknown]	SWC	OD
2174.0	[unknown]	SWC	
2178.5	[unknown]	SWC	
2190.0	[unknown]	DC	
2200.0	[unknown]	DC	RRI
2220.0	[unknown]	DC	
2231.0	[unknown]	DC	
2250.0	[unknown]	DC	
2257.0	[unknown]	SWC	
2278.5	[unknown]	SWC	
2279.3	[unknown]	SWC	OD
2279.3	[unknown]	SWC	
2280.0	[unknown]	DC	
2310.0	[unknown]	DC	
2316.0	[unknown]	SWC	
2340.0	[unknown]	DC	
2345.0	[unknown]	SWC	
2370.0	[unknown]	DC	
2372.5	[unknown]	SWC	OD
2372.5	[unknown]	SWC	
2399.0	[unknown]	SWC	OD
2399.0	[unknown]	SWC	
2400.0	[unknown]	DC	
2405.0	[unknown]	DC	

2410.0	[unknown]	DC	ENTERPR
2410.0	[unknown]	DC	
2419.0	[unknown]	SWC	
2430.0	[unknown]	DC	
2431.0	[unknown]	SWC	
2450.0	[unknown]	DC	
2465.0	[unknown]	DC	
2470.0	[unknown]	DC	ENTERPR
2500.0	[unknown]	DC	
2530.0	[unknown]	DC	
2560.0	[unknown]	DC	
2590.0	[unknown]	DC	
2620.0	[unknown]	DC	
2650.0	[unknown]	DC	
2680.0	[unknown]	DC	
2710.0	[unknown]	DC	
2710.0	[unknown]	SWC	
2710.0	[unknown]	SWC	OD
2713.5	[unknown]	SWC	
2713.5	[unknown]	SWC	OD
2722.0	[unknown]	SWC	OD
2722.0	[unknown]	SWC	
2728.0	[unknown]	SWC	
2728.0	[unknown]	SWC	OD
2740.0	[unknown]	DC	
2764.5	[unknown]	SWC	
2770.0	[unknown]	DC	
2800.0	[unknown]	DC	
2830.0	[unknown]	DC	
2857.0	[unknown]	DC	
2887.0	[unknown]	DC	
2917.0	[unknown]	DC	
2947.0	[unknown]	DC	
2977.0	[unknown]	DC	
3007.0	[unknown]	DC	
3037.0	[unknown]	DC	
3067.0	[unknown]	DC	
3090.0	[unknown]	SWC	
3091.0	[unknown]	DC	
3113.5	[unknown]	SWC	

3113.5	[unknown]	SWC	OD
3114.5	[unknown]	SWC	
3114.5	[unknown]	SWC	OD
3121.0	[unknown]	DC	
3151.0	[unknown]	DC	
3181.0	[unknown]	DC	
3211.0	[unknown]	DC	
3240.0	[unknown]	DC	
3271.0	[unknown]	DC	
3301.0	[unknown]	DC	
3331.0	[unknown]	DC	
3361.0	[unknown]	DC	
3391.0	[unknown]	DC	
3421.0	[unknown]	DC	
3451.0	[unknown]	DC	
3481.0	[unknown]	DC	
3498.5	[unknown]	C	

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
133	NORDLAND GP
732	UTSIRA FM
923	UNDIFFERENTIATED
951	HORDALAND GP
1043	SKADE FM
1143	NO FORMAL NAME
1610	GRID FM
1760	NO FORMAL NAME
1834	GRID FM
1893	NO FORMAL NAME
2125	ROGALAND GP
2125	BALDER FM
2168	SELE FM
2219	LISTA FM
2423	HEIMDAL FM
2423	MEILE MBR (INFORMAL)
2458	SHETLAND GP
2603	CROMER KNOLL GP

2707	VIKING GP
2707	HEATHER FM
2730	VESTLAND GP
2730	SLEIPNER FM
2754	UNDIFFERENTIATED
2840	NO GROUP DEFINED
2840	SMITH BANK FM
3082	ZECHSTEIN GP
3082	UNDIFFERENTIATED
3227	KUPFERSCHIEFER FM
3230	ROTLIEGEND GP
3440	BASEMENT

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
84	pdf	0.62

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
84_1	pdf	3.24

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
84_01_WDSS_General_Information	pdf	0.17
84_02_WDSS_completion_log	pdf	0.23

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
84_16_1_3_COMPLETION_LOG	pdf	2.30
84_16_1_3_COMPLETION_REPORT	pdf	22.20

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
4ARM CAL	170	521
4ARM CAL	506	1201
CDL CN GR	2724	3097
CN CDL GR	1242	2737
CNL CD GR	3050	3495
CNL CDR GR	3050	3271
DIPLOG	2725	3270
DLL MLL GR	2250	2732
IEL AC GR	195	520
IEL AC GR	506	1277
IEL AC GR	1242	2735
IEL AC GR	2724	3095
IEL AC GR	2724	3269
IEL AC GR	3200	3495
MFT	1850	2750
MFT	2741	3073
MFT	2742	3194
MFT	2742	2742
SRC	2733	3095
SWC	1762	2729
SWC	2733	3095
SWC	3101	3266
TEMP CCL	10	1237
TEMP CCL	1235	2200
VEL	1242	3495

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	192.0	36	194.0	0.00	LOT
SURF.COND.	20	506.0	26	521.0	1.55	LOT
INTERM.	13 3/8	1263.0	17 1/2	1278.0	1.70	LOT
INTERM.	9 5/8	2727.0	12 1/4	2738.0	1.80	LOT
OPEN HOLE		3498.0	8 1/2	3498.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
280	1.02	45.0		water	
350	1.06	38.0		water	
470	1.08	32.0		water	
640	1.18	41.0		water	
730	1.16	36.0		water	
1240	1.20	37.0		water	
1470	1.18	40.0		water	
2090	1.22	48.0		water	
2380	1.26	59.0		water	
2650	1.17	50.0		water	
2790	1.50	57.0		water	
3040	1.56	60.0		water	
3160	1.19	48.0		water	
3460	1.20	49.0		water	

Trykkplott

Porertrykksdataene kommer fra logging i brønnen hvis ingen annen kilde er oppgitt. I noen brønner der trykk ikke er logget, er det brukt informasjon fra formasjonstester eller brønnspark. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

Dokument navn	Dokument format	Dokument størrelse [KB]
84_Formation_pressure_(Formasjonstrykk)	pdf	0.22