



Generell informasjon

Brønnbane navn	2/11-10 S
Type	EXPLORATION
Formål	WILDCAT
Status	RE-CLASS TO DEV
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	HOD
Funn	2/11-10 S
Brønn navn	2/11-10
Seismisk lokalisering	INLINE 824-CROSSLINE 928
Utvinningstillatelse	033
Boreoperatør	Amoco Norway Oil Company
Boretillatelse	784-L
Boreinnretning	MÆRSK GIANT
Boredager	100
Borestart	28.02.1994
Boreslutt	14.06.1994
Plugget dato	14.06.1994
Frigitt dato	14.06.1996
Publiseringsdato	17.09.2007
Opprinnelig formål	WILDCAT
Reklassifisert til brønnbane	2/11-A-5
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	LATE CRETACEOUS
1. nivå med hydrokarboner, formasjon.	TOR FM
Avstand, boredekk - midlere havflate [m]	47.0
Vanndybde ved midlere havflate [m]	72.0
Totalt målt dybde (MD) [m RKB]	4090.0
Totalt vertikalt dybde (TVD) [m RKB]	2920.0
Maks inklinasjon [°]	60.9
Temperatur ved bunn av brønnbanen [°C]	102
Eldste penetrerte alder	LATE CRETACEOUS
Eldste penetrerte formasjon	HOD FM



Geodetisk datum	ED50
NS grader	56° 10' 35.52" N
ØV grader	3° 27' 36.22" E
NS UTM [m]	6225960.63
ØV UTM [m]	528563.36
UTM sone	31
NPDID for brønnbanen	2297

Brønnhistorie

General

The Hod Pod Prospect on the northeast flank of East Hod Field was first identified in 1991 as an anomaly on the existing 2D data. Additional work and mapping defined the prospect as a stratigraphic trap in the upper chalk that appeared to be separate from the main Tor reservoir of East Hod Field. The final well objective was defined by 3D seismic data completed in April 1993 as two stacked (upper and lower) pods in the uppermost part of the chalk. They were believed to be allochthonous chalk in an upper pod (Ekofisk Formation) and a lower pod (uppermost Tor Formation).

Operations and results

Wildcat well 2/11-10 S was drilled deviated from the centre slot (slot #4) of the Hod Platform with the Maersk Giant jack-up rig. It was spudded 28 February 1994 and drilled to TD at 4090 m (2920 m TVD RKB) in the Late Cretaceous Hod Formation. Severe problems with running the 13 3/8" casing were encountered, caused by mismatch in make between casing running tool and the casing thread. When pulling out casing centralisers and stop rings were left in the hole. The junk could not be fished and the well was sidetracked (2/11-10 S T2) from between 1397 m and 1547 m. The well was drilled with seawater down to 382 m, and with Novadril oil based mud from 382 m to TD.

Some oil shows were noted on claystone of the Hordaland Group from 1725 m and down to 1960 m. Top of the chalk, Ekofisk Formation, came in at 3900.5 m (2820.7 m TVD RKB), and oil was present. The high porosities predicted from seismic prior to drilling were present in both the Tor and Ekofisk Formations. The Ekofisk, however, had narrower pore throats than the Tor resulting in lower permeability. Oil staining was present in the cored upper Tor reservoir from 3913 m down to 3957 m. An oil column height of around 28 m (above the 95% Sw entry point) was calculated from special core analysis. The Tor Formation cored below 3957 m had lower porosity and permeability than the oil stained chalk above that point, indicating a diagenetic/lithological down-to fluid contact.

The prognosed two separate high porosity chalks were not seen in this well, however due to drilling problems the well was terminated shallower than planned and thus a second pod is not ruled out. It is thought that the lower pod is offset and that the well bore may have just penetrated it at its pinch-out.

FMT pressures from the reservoir were only 180 psi less than the virgin pressure from East Hod Field (6700psi VS 6880psi). The 2/11-10 initial reservoir pressures are more than twice the current depleted field pressures (about 3000psi), indicating that the Hod Pod prospect is indeed separate from the partially depleted Tor reservoir of East Hod Field. Since FMT pressures were slightly less than virgin pressure, the Tor reservoir in the pod prospect is not totally isolated from the Hod Field.

One 49.5 m core was retrieved from 3913 - 3962.5 m from base Ekofisk and into the Tor



Formation. FMT fluid samples were taken at 3919.9 m (10 l mud and oil) and at 3953.9 m (4 l oil).

The well was permanently abandoned on 14 June 1994 as an oil discovery.

Testing

The well was perforated in four clusters at 3915 -3915.3 m (test 1; base Ekofisk)), 3925 - 3925.3 m (test 2; Tor Formation), 3933 - 3933.3 m (test 3; Tor Formation), and 3940 - 3940.3 m (test 4; Tor Formation), each zone separately metered from the separator and meter station on the Hod Platform. Test 1 was at base Ekofisk Formation level, the other three were in the Tor Formation. A production test over 45 days was conducted. Testing gave poor results because of high water saturations.

Test 1 gave no flow

Test 2 flowed 63 Sm³/day of oil with a 55% water cut.

Test 3 flowed 13 Sm³/day of oil with a 65% water cut.

Test 4 flowed 29 Sm³/day of oil with a 47% water cut.

On average the total flow was thus 105 Sm³/day with ca 50% water and 50% oil. 87SR/86SR ratios obtained from core and produced water samples identified the produced water to be of Tor Formation origin (as opposed to Ekofisk Formation).

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
210.00	4089.70

Borekaks tilgjengelig for prøvetaking?	YES
--	-----

Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	3913.0	3962.5	[m]

Total kjerneprøve lengde [m]	49.5
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



3913-3917m



3918-3922m



3923-3927m



3928-3931m



3932-3935m



3936-3955m



3956-3960m



3961-3962m

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
119	NORDLAND GP
1725	HORDALAND GP
3802	ROGALAND GP
3802	BALDER FM
3820	SELE FM
3851	LISTA FM
3893	VÅLE FM
3901	SHETLAND GP
3901	EKOFISK FM
3917	TOR FM
4074	HOD FM

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
2297	pdf	0.46

Geokjemisk informasjon





Dokument navn	Dokument format	Dokument størrelse [KB]
2297_1	pdf	0.28
2297_2	pdf	5.81
2297_3	pdf	5.99

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
2297_2_11_10_COMPLETION_REPORT_AND_LOG	pdf	57.54

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CN GR	3946	4000
FMT	3920	3999
HEXDIP	3906	4017
MAC	3600	3906
MAC DIFL DGR	3906	4062
MWD - DIR	200	385
MWD - DIR	1400	1587
MWD - DIR GR	1575	3911
MWD - DIR GR EWR	360	1560
MWD - DIR GR EWR	3816	4090
SWC	0	0
VSP	500	4050
ZDEN CN GR	3906	4000
ZDEN DIFL DGR	1587	3913

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	200.0	36	200.0	0.00	LOT
SURF.COND.	20	385.0	26	385.0	0.00	LOT
INTERM.	13 3/8	1587.0	16	1587.0	0.00	LOT
INTERM.	9 5/8	3911.0	12 1/4	3911.0	0.00	LOT





LINER	7	4090.0	8 1/2	4090.0	0.00	LOT
-------	---	--------	-------	--------	------	-----

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
223	1.10	11.0		WATER BASED	
385	1.22	20.0		OIL BASED	
606	1.26	24.0		OIL BASED	
1228	1.34	29.0		OIL BASED	
1560	1.37	25.0		OIL BASED	
1587	1.39	31.0		OIL BASED	
2117	1.74	37.0		OIL BASED	
3911	1.76	36.0		OIL BASED	
3963	1.76	42.0		OIL BASED	
4022	1.76	40.0		OIL BASED	
4090	1.68	46.0		OIL BASED	

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]
2297_Formalion_pressure_(Formasjonstrykk)	pdf	0.21

