



Generell informasjon

Brønnbane navn	2/4-11
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Funn	2/4-11 (Eспен)
Brønn navn	2/4-11
Seismisk lokalisering	LINE PG-0312 SP.633-833
Utvinningstillatelse	018
Boreoperatør	Phillips Petroleum Company Norway
Boretillatelse	103-L
Boreinnretning	ZAPATA EXPLORER
Boredager	106
Borestart	25.12.1973
Boreslutt	09.04.1974
Frigitt dato	09.04.1976
Publiseringsdato	02.04.2007
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	PALEOCENE
1. nivå med hydrokarboner, formasjon.	EKOFISK FM
Avstand, boredekk - midlere havflate [m]	35.0
Vanndybde ved midlere havflate [m]	66.0
Totalt målt dybde (MD) [m RKB]	4281.0
Eldste penetrerte alder	LATE PERMIAN
Eldste penetrerte formasjon	ZECHSTEIN GP
Geodetisk datum	ED50
NS grader	56° 44' 45.9" N
ØV grader	3° 13' 21.8" E
NS UTM [m]	6289284.20
ØV UTM [m]	513622.57
UTM sone	31
NPDID for brønnbanen	255



Brønnhistorie

**General**

Wildcat well 2/4-11 should evaluate the southern part of a northwest-southeast trending seismic high about 3.2 km long and 2.4 km wide. The well was drilled just south of the boundary between blocks 2/1 and 2/4 about two km southeast of the 2/1-1 well. The objective formations were the Danian-Late Cretaceous limestone in addition to sandstones of the Jurassic, which had gas and condensate shows in the 2/1-1 well. Top Paleocene was anticipated at 2972 m (9750 ft), top Danian at 3078 m (10100 ft), top Late Cretaceous at 3277 m (10750 ft), and top Jurassic at 3962 m (13000 ft). Planned TD was at 4267 m (14000 ft).

Operations and results

Well 2/4-11 was spudded with the jack-up installation Zapata Explorer on 25 December 1973 and drilled to TD at 4281 m in the Late Permian Zechstein Group. Running 7" casing at 3838 m, the casing could not get passed 3019 m. Pulling out of hole the casing stuck when 20 stands were left. Eleven days were spent working on the fish before it came loose. The hole was reamed and casing was set. Maximum hole deviation down to a depth of 2757 m was 4.75 deg, at 149 m. The well was drilled with spud mud (Seawater gel and Flosal) down to 321 m, with Shale Trol mud from 321 m to 2265 m, and with a Lignosulphonate mud (Unical and Ligcon) from 2265 m to TD. Below 792 m one to four percent diesel was added to the mud.

Top Paleocene was found at 2936 m, top Danian limestone at 3146 m, top Late Cretaceous limestone at 3268 m, top Early Cretaceous was found at 3782 m, top Late Jurassic (Kimmeridgian) at 3968 m, and top of the Permian was encountered at 4211 m. Sub-commercial amounts of oil was tested from the Danian and even smaller amounts from the Late Cretaceous. The Jurassic section penetrated consisted of shale, claystone, and siltstone and contained no reservoir rocks.

Source rock analyses of sidewall cores from the Jurassic showed TOC in the range 0.6 - 2% and vitrinite reflection from 0.78 to 0.80 %Ro. Relatively low hydrogen indices indicate that the source rock has reached past mid oil window and that a major part of the hydrocarbon potential had been realised.

No conventional cores were cut and no wire line fluid samples taken.

The well was permanently abandoned on 9 April 1974 as an oil discovery.

Testing

Five DST's were carried out: DST 1, 2 and 3 in the Late Cretaceous limestone, DST 4 and 5 in the Danian limestone. All results given here are after acidization:

DST 1 from the interval 3758 to 3770 m flowed slowly and sluggishly. Two hours after acidization the well started to flow water, gas, mud and trace of crude oil, but due to observed mud loss in the casing the well was killed.

DST 2 from the interval 3639 to 3667 m was a misrun. DST 3 from the same interval flowed slowly and irregularly 5 - 8 Sm³ oil and some gas.

DST 4 from 3188 -3200 m flowed only water cushion to surface, at a very poor rate.

DST 5 from 3146 - 3161 m in the topmost Danian limestone flowed 50 Sm³ oil, 2 m³ water, and 1051 Sm³ gas /day on a 64/64" choke. Oil gravity was 39.9 deg API and the GOR was 21 Sm³/Sm³. The down hole temperature measured in the test was reported to be 124 deg C.



Borekaks i Sökkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
1228.34	4279.40

Borekaks tilgjengelig for prøvetaking?	NO
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Palynologiske preparater i Sökkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
3901.0	[m]	DC	OD
3911.0	[m]	DC	OD
3920.0	[m]	DC	OD
3929.0	[m]	DC	OD
3938.0	[m]	DC	OD
3947.0	[m]	DC	OD
3956.0	[m]	DC	OD
3965.0	[m]	DC	OD
3975.0	[m]	DC	OD
3984.0	[m]	DC	OD
3993.0	[m]	DC	OD
4002.0	[m]	DC	OD
4011.0	[m]	DC	OD
4020.0	[m]	DC	OD
4029.0	[m]	DC	OD
4039.0	[m]	DC	OD
4048.0	[m]	DC	OD
4057.0	[m]	DC	OD
4066.0	[m]	DC	OD
4075.0	[m]	DC	OD
4084.0	[m]	DC	OD
4093.0	[m]	DC	OD
4103.0	[m]	DC	OD
4112.0	[m]	DC	OD
4121.0	[m]	DC	OD
4130.0	[m]	DC	OD
4139.0	[m]	DC	OD
4148.0	[m]	DC	OD
4157.0	[m]	DC	OD
4167.0	[m]	DC	OD
4176.0	[m]	DC	OD



4185.0	[m]	DC	OD
4194.0	[m]	DC	OD
4194.0	[m]	DC	OD
4203.0	[m]	DC	OD
4212.0	[m]	DC	OD
4221.0	[m]	DC	OD
4231.0	[m]	DC	OD
4240.0	[m]	DC	OD
4249.0	[m]	DC	OD
4258.0	[m]	DC	OD
4267.0	[m]	DC	OD
4276.0	[m]	DC	OD
4279.0	[m]	DC	OD

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
101	NORDLAND GP
1707	HORDALAND GP
2939	ROGALAND GP
2939	BALDER FM
2960	SELE FM
2987	LISTA FM
3060	VIDAR FM
3094	LISTA FM
3131	VÅLE FM
3146	SHETLAND GP
3146	EKOFISK FM
3268	TOR FM
3542	HOD FM
3747	BLODØKS FM
3764	HIDRA FM
3787	CROMER KNOLL GP
3787	RØDBY FM
3818	ÅSGARD FM
3969	TYNE GP
3969	MANDAL FM
3990	FARSUND FM
4211	ZECHSTEIN GP



Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
255_1	pdf	0.85
255_2	pdf	0.41
255_3	pdf	1.60

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
255_01_WDSS_General_Information	pdf	0.26

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
255_01_2_4_11_Completion_log	pdf	1.28
255_01_2_4_11_Completion_Report	pdf	89.47
255_01_2_4_11_Well_Completion_Report	pdf	89.47
255_02_2_4_11_Mud_Program_and_Record	pdf	15.32
255_04_2_4_11_Palynology_Zonation	pdf	0.21
255_05_2_4_11_DSTs	pdf	6.73
255_05_2_4_11_Formation_Testing_Service_Report	pdf	4.01
255_05_2_4_11_Source_Rock_Potential_of_the_Upper_Jurassic	pdf	2.87
255_05_2_4_11_Thermal_Alteration_and_Source_Rock_Potential	pdf	3.02

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	3758	3770	0.0
2.0	3639	3667	0.0
3.0	3639	3667	0.0
4.0	3188	3200	0.0





5.0	3146	3161	0.0
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Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [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					
2.0					
3.0	8				
4.0					
5.0	50	1050	0.822		

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BHC	1224	2763
BHC	3813	4270
BHC-C	2755	3837
CAL BG	1226	2765
CBL CCL	2743	3813
CDM	2755	3838
CDM AP	2755	3838
CDM PP	2755	3838
DLL	2756	3835
FDC	2755	3838
IES	1224	4212
PML	2755	3838
SNP	2972	3838
VELOCITY	1224	4270



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	131.0	36	131.0	0.00	LOT
SURF.COND.	20	487.0	26	487.0	0.00	LOT
INTERM.	13 3/8	1219.0	17 1/2	1219.0	0.00	LOT
INTERM.	9 5/8	2743.0	12 1/4	2743.0	0.00	LOT
LINER	7	3962.0	8	3962.0	0.00	LOT
LINER	5	4281.0	6	4281.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
137	1.07			seawater	
487	1.31			seawater	
1219	1.31			seawater	
2438	1.64			seawa/barit	
3962	1.71			seawa/barit	