



Generell informasjon

Brønnbane navn	6407/1-5 S
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Felt	MARIA
Funn	6406/3-8 Maria
Brønn navn	6407/1-5
Seismisk lokalisering	ST0614WIR10 -inline7836 & crossline 2118
Utvinningstillatelse	475 BS
Boreoperatør	Wintershall Norge ASA
Boretillatelse	1357-L
Boreinnretning	BORGLAND DOLPHIN
Boredager	112
Borestart	31.01.2012
Boreslutt	21.05.2012
Frigitt dato	21.05.2014
Publiseringsdato	21.05.2014
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	GARN FM
Avstand, boredekk - midlere havflate [m]	31.0
Vanndybde ved midlere havflate [m]	298.0
Totalt målt dybde (MD) [m RKB]	4177.0
Totalt vertikalt dybde (TVD) [m RKB]	4164.0
Maks inklinasjon [°]	10.6
Temperatur ved bunn av brønnbanen [°C]	145
Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	TILJE FM



Geodetisk datum	ED50
NS grader	64° 59' 20.12" N
ØV grader	7° 0' 17.16" E
NS UTM [m]	7208885.51
ØV UTM [m]	405879.91
UTM sone	32
NPDID for brønnbanen	6774

Brønnhistorie

General

Well 6407/1-5 S was drilled to appraise the northern extension of the Maria Field in the Haltenbanken area in the Norwegian Sea. The primary objective was to test the sands in the Middle Jurassic Garn, Ile and Tilje Formations. In case of petroleum in the Garn Formation, a DST was planned to be carried out.

Operations and results

Appraisal well 6407/1-5 S was spudded with the semi-submersible installation Borgland Dolphin on 31 January 2012 and drilled to TD at 4177 m (4164 m TVD) in the Early Jurassic Tilje Formation. A 12 1/4" pilot hole was drilled from 398 m to 703 m and shallow gas was indicated. The 20" casing was set above the shallow gas zone, at 563 m. Due to the shallow gas, rough weather, rig repair, and additional coring and wire line runs total rig time became 26 days longer than planned, but otherwise there were no serious problem related to the operations and all objectives were met. It was drilled vertically down to 2300 m, with a 10.6 deg deviation from ca 2300 m to ca 3200 m and then again vertically from 3200 m through the reservoir section and down to TD. The well was drilled water based down to 1199 m and with Omniflow oil based mud from 1199 m to TD.

The target Garn Formation was encountered at 3811 m (3797.8 m TVD) with a 40 m oil column down to the OWC at 3851 m. The Garn sandstone had a net/gross ratio of 0.99 only using a calcite flag as cut-off. The Ile and Tilje Formations were water bearing. Apart from shows in the hydrocarbon bearing section in the Garn Formation the only oil shows above the oil based mud in the well were in thin sandstone stringers in the lower part of the Melke Formation.

Three cores were cut from 3785 m in the base of the Melke Formation to 3859 m in the Garn Formation. A fourth core was attempted but was accidentally left in the hole. RCI wire line samples were taken at 3826.5 m (oil), 3841.5 m (oil), 3858 m (water), and 3863.4 m (water).

The well was permanently abandoned on 21 May 2012 as an oil and gas appraisal well.

Testing

One drill stem test was carried out from the interval 3809 m to 3832 m in the Garn Formation. The test produced 101 Sm3 oil and 18512 Sm3 gas /day through a 28/64" choke. The gas contained 6 ppm H2S and 4 % CO2. The GOR was 183 Sm3/Sm3. The bottom hole temperature in the main flow was 135.2 deg C.



Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
570.00	4175.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	3785.0	3793.1	[m]
2	3793.1	3832.6	[m]
3	3832.6	3858.8	[m]

Total kjerneprøve lengde [m]	73.8
Kjerner tilgjengelig for prøvetaking?	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
329	NORDLAND GP
329	NAUST FM
1483	KAI FM
1868	HORDALAND GP
1868	BRYGGE FM
2225	ROGALAND GP
2225	TARE FM
2289	TANG FM
2358	SHETLAND GP
2358	SPRINGAR FM
2536	NISE FM
2730	KVITNOS FM
3188	CROMER KNOLL GP
3188	LYSING FM
3228	LANGE FM
3737	VIKING GP
3737	SPEKK FM
3758	MELKE FM



3811	FANGST GP
3811	GARN FM
3902	NOT FM
3939	ILE FM
4024	BÅT GP
4024	ROR FM
4119	TILJE FM

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	3809	3822	16.0

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				135

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0	101	18512	0.789	0.904	183

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
GR GEOWAVES	2100	3900
LWD - DIR GR PWD	329	562
LWD - DIR GR RES PWD	562	3908
LWD - DIR GR SON RES PWD	398	703
LWD - RES BIT DIR GR RES PWD	2015	4177
MARCH JAR TTR GR XMAC 6CAL ORIT	3766	4177
MARCH JAR TTRM DSL CN ZDL FLEX	3766	4177
MRCH JAR GR PCOR	3857	3869
MRCH JAR TTR DSL CN ZDL ORIT XMA	2015	3773



MRCH JAR TTRM 6TC IFX RCI SPKR D	3826	3858
MRCH JAR TTRM GR EI ORIT ECBIL G	3766	3975
MRCH JAR TTRM GR MREX	3766	4040
MRCH JAR TTRM GR RCI IFX 6TC 4L	3912	3950
RCI	2015	3215
TLD APS ECS IS EDTC GR	3766	3895
ZAIT ADT5 HNGS IS EDTC	3766	3908

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	395.0	36	0.0	0.00	
SURF.COND.	20	556.0	26	556.0	1.36	FIT
LINER	16	1163.0	17 1/2	1202.0	1.63	FIT
LINER	13 3/8	1976.0	14 3/4	2019.0	1.77	FIT
LINER	9 5/8	3766.0	12 1/4	3776.0	1.60	FIT
LINER	7	4175.0	8 1/2	0.0	0.00	
OPEN HOLE		4177.0	8 1/2	0.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Fløtegrense [Pa]	Type slam	Dato, måling
395	1.24	21.0		Aqua-Drill	
434	1.39	32.0		Aqua-Drill	
468	1.53	19.0		Aquadrill	
533	1.24	18.0		Aqua-Drill	
1200	1.24	14.0		Aqua-Drill	
1235	1.34	20.0		Aqua-Drill	
1935	1.53	25.0		Aqua-Drill	
3726	1.69	36.0		Carbo-sea OBM	
3832	1.19	23.0		Omniflow DIF	
3840	1.69	46.0		Carbosea	
3840	1.19			Brine	
4177	1.19	23.0		Omniflow DIF	

