



Generell informasjon

Brønnbane navn	35/11-21 S
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Funn	35/12-2 (Grosbeak)
Brønn navn	35/11-21
Seismisk lokalisering	Inline: 8175. Xline: 28062
Utvinningstillatelse	248 I
Boreoperatør	Wellesley Petroleum AS
Boretillatelse	1718-L
Boreinnretning	TRANSOCEAN ARCTIC
Boredager	41
Borestart	26.07.2018
Boreslutt	05.09.2018
Plugget dato	05.09.2018
Frigitt dato	05.09.2020
Publiseringsdato	05.09.2020
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	NESS FM
2. nivå med hydrokarboner, alder	MIDDLE JURASSIC
2. nivå med hydrokarboner, formasjon	ETIVE FM
Avstand, boredekk - midlere havflate [m]	24.0
Vanndybde ved midlere havflate [m]	360.0
Totalt målt dybde (MD) [m RKB]	2800.0
Totalt vertikalt dybde (TVD) [m RKB]	2588.0
Maks inklinasjon [°]	44.42
Temperatur ved bunn av brønnbanen [°C]	103



Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	COOK FM
Geodetisk datum	ED50
NS grader	61° 9' 28.17" N
ØV grader	3° 38' 56.48" E
NS UTM [m]	6780701.21
ØV UTM [m]	534929.97
UTM sone	31
NPDID for brønnbanen	8533

Brønnhistorie

General

Well 35/11-21 S was drilled to appraise the 35/12-2 Grosbeak discovery on the Ryggsteinen Ridge in the North Sea. The primary objective was to explore the reservoir potential of the Ness Formation and to prove oil in the Etive Formation.

Operations and results

Appraisal well 35/11-21 S was spudded with the semi-submersible installation Transocean Arctic on 26 July 2018 and drilled to TD at 2800 m (2588 m TVD) m in the Early Jurassic Cook Formation. Operations proceeded without significant problems. The well was drilled with seawater and bentonite sweeps down to 449 m, with KCl/polymer/GEM mud from 449 to 996 m, and with Innover NS oil-based mud from 996 m to TD.

Top of Brent Group, Ness Formation was penetrated at 2595.2 m (2383 m TVD). The Ness and Etive formations were oil-bearing down to top Rannoch Formation at 2686 m (2474 m TVD). Of this ca 90 m oil column 45 m was effective reservoir sandstone with good to very good reservoir properties. In addition to shows in Ness-Etive, there were oil shows in Rannoch Formation sandstone, described as very weak patchy pale yellow direct fluorescence, very slow, very weak, blue white to pale yellow cut fluorescence, weak, pale yellow fluorescent residue. Otherwise there were no shows in the well.

Three 54 m cores were cut from 2566 to 2620.9 m, from 2620.90 to 2675.4 m, and from 2675.4 to 2729.8 m. Each core was cut with 100% recovery. MDT fluid samples were taken at 2615.5 m (oil), 2634.49 m (oil), 2657.54 m (oil), 2681 m (oil), and 2698.5 m (water).

The well was permanently abandoned on 5 September 2018 as an oil appraisal well.

Testing

A formation production test (DST) from 2625 to 2637 m in the Ness Formation was performed. The test produced 825 Sm³ oil and 92517 Sm³ gas /day through a 46/64" choke in the main flow. The GOR was 112 Sm³/Sm³. The gas contained 1.3% CO₂ and 1.9% H₂S. The DST temperature was 97°C.

Borekaks i Sokkeldirektoratet



Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
460.00	2800.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2566.0	2620.9	[m]
2	2620.9	2675.4	[m]
3	2675.4	2729.8	[m]

Total kjerneprøve lengde [m]	163.8
Kjerner tilgjengelig for prøvetaking?	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
384	NORDLAND GP
384	NO FORMAL NAME
579	UTSIRA FM
720	HORDALAND GP
720	NO FORMAL NAME
1142	NO FORMAL NAME
1375	ROGALAND GP
1375	BALDER FM
1450	SELE FM
1603	LISTA FM
1620	NO FORMAL NAME
1784	LISTA FM
1950	VÅLE FM
1990	SHETLAND GP
1990	JORSALFARE FM
2080	KYRRE FM
2318	VIKING GP
2318	FENSFJORD FM
2361	HEATHER FM
2390	INTRA HEATHER FM SS



2398	HEATHER FM
2595	BRENT GP
2595	NESS FM
2665	ETIVE FM
2686	RANNOCH FM
2724	OSEBERG FM
2758	DUNLIN GP
2758	UNDIFFERENTIATED
2771	COOK FM

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
0.0	2625	2637	18.3

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
0.0				97

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
0.0	825	92517			112

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
LWD - GR PWD RES CIB DEN NEU CAL	2451	2800
LWD - GR PWD RES VIB DIR SON	996	2451
LWD - PWD DIR	384	449
LWD - PWD RES GR VIB DIR SON	449	996
MDT	2595	2777
NEXT ADT PEX CMR	2445	2801
VIVSP GR	400	2798
ZAIP MSIP NGI	2400	2801



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	449.5	36	449.5	0.00	
INTERM.	13 3/8	990.2	17 1/2	996.0	1.46	FIT
INTERM.	9 5/8	2445.0	12 1/4	2451.0	1.52	FIT
LINER	7	2794.0	8 1/2	2800.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
449	1.39	27.0		KCL- GEM- Polymer WBM	
449	1.02			Water based bentonite sweeps	
878	1.33	18.0		INNOVERT OBM	
996	1.33	18.0		Innovert OBM	
996	1.39	32.0		KCl-Gem-Polymer	
1000	1.34	19.0		Innovert OBM	
2216	1.32	17.0		INNOVERT OBM	
2360	1.34	20.0		Innovert OBM	
2400	1.19	13.0		Innovert OBM	
2400	1.34	20.0		Innovert OBM	
2455	1.19	12.0		Innovert OBM	
2730	1.21	15.0		Innovert OBM	
2730	1.20	15.0		Innovert OBM	
2800	1.19	16.0		INNOVERT OBM	
2800	1.19	2.0		Packer Fluid	