



Generell informasjon

Brønnbane navn	6506/9-4 S
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Funn	6506/9-2 S (Fogelberg)
Brønn navn	6506/9-4
Seismisk lokalisering	CE08M1FB. Inline 2687 Crossline 2602
Utvinningstillatelse	433
Boreoperatør	Spirit Energy Norge AS
Boretillatelse	1686-L
Boreinnretning	ISLAND INNOVATOR
Boredager	84
Borestart	03.02.2018
Boreslutt	27.04.2018
Plugget dato	27.04.2018
Frigitt dato	27.04.2020
Publiseringsdato	27.04.2020
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	GAS
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	JURASSIC
1. nivå med hydrokarboner, formasjon.	GARN FM
2. nivå med hydrokarboner, alder	JURASSIC
2. nivå med hydrokarboner, formasjon	ILE FM
Avstand, boredekk - midlere havflate [m]	30.0
Vanndybde ved midlere havflate [m]	301.0
Totalt målt dybde (MD) [m RKB]	4738.0
Totalt vertikalt dybde (TVD) [m RKB]	4611.0
Maks inklinasjon [°]	20.7
Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	TOFTE FM



Geodetisk datum	ED50
NS grader	65° 15' 38.11" N
ØV grader	6° 42' 35.62" E
NS UTM [m]	7239619.65
ØV UTM [m]	393072.48
UTM sone	32
NPDID for brønnbanen	8355

Brønnhistorie

**General**

Well 6506/9-4 S was drilled appraise the 6506/9-2 S Fogelberg discovery. The Fogelberg discovery is located on a small fault block on the Halten Terrace, north-northwest of the Smørbukk Field and northeast of the Morvin Field. The primary objective was to reduce the volume uncertainties of the discovery by establishing the hydrocarbon contacts within the Garn and Ile Formations, verifying reservoir quality, and collecting representative fluid samples.

Operations and results

A 9 7/8" pilot hole was drilled to 1381 m in order to check for shallow gas. No shallow gas was encountered.

Appraisal well 6506/9-4 S was spudded with the semi-submersible installation Island Innovator on 3 February 2018 and drilled to TD at 4738 m in the Early Jurassic Tofte Formation. Low penetration rate was experienced in the Lange Formation shales in the 12 1/4" section. After logging at final TD liner was run to perform a DST. The liner hanger running tool stuck in cement, leading to a significant period of NPT. The well was drilled with seawater and hi-vis pills down to 1381 m and with RheGuard Prime oil-based mud from 1381 m to TD.

The Garn formation was encountered at 4520 m (4405 m TVD), 14 m shallower than prognosis and the top Ile Formation was picked at 4591.5 m (4475.0 m TVD), 13 m shallower than the prognosis. Approximately 67 m gross of gas bearing sandstone was proven in the Garn Formation whilst 70 m gross of sandstone with high water saturation was encountered in the Ile Formation. The gas-water contact(s) was not observed in the well. The reservoir quality of the Garn formation is variable, ranging from moderate to high, in line with the previous understanding of the reservoir. The reservoir quality of the Ile Formation is poor in the well.

There were no reliable oil shows above the OBM in the well. Elevated resistivity and gas readings in the Cretaceous Intra-Lange and Lysing formation sandstones indicate some HC saturation, possibly with a small pocket of live hydrocarbons in Lysing. The intra-Lange sandstones were seen in the intervals 4031 to 4110 m and 4174 to 4244 m. All three Cretaceous intervals were however considered tight without flow potential.

Four successive cores were cut from 4520 to 4618.8 m in the Garn, Not and Ile formations. Core recoveries varied from 96 to 104%. MDT fluid samples were taken at 4532.8 m (condensate and gas), 4553 m (condensate and gas) and 4568.7 m (hydrocarbons).

The well was permanently abandoned on 27 April as a gas appraisal well.

Testing

No drill stem test was performed.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
1390.00	4738.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	4520.0	4546.0	[m]
2	4546.1	4584.7	[m]
3	4584.9	4590.5	[m]
4	4590.7	4618.9	[m]

Total kjerneprøve lengde [m]	98.4
Kjerner tilgjengelig for prøvetaking?	YES

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
MDT		0.00	0.00			YES
MDT		4325.00	4290.00			YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
331	NORDLAND GP
331	NAUST FM
1465	KAI FM
1895	HORDALAND GP
1895	BRYGGE FM
2042	ROGALAND GP
2042	TARE FM
2124	TANG FM
2164	SHETLAND GP
2164	SPRINGAR FM
2409	NISE FM
2579	KVITNOS FM
3179	CROMER KNOLL GP
3179	LYSING FM



3246	LANGE FM
4031	NO FORMAL NAME
4110	LANGE FM
4174	NO FORMAL NAME
4244	LANGE FM
4339	LYR FM
4387	VIKING GP
4387	SPEKK FM
4389	MELKE FM
4520	FANGST GP
4520	GARN FM
4588	NOT FM
4592	ILE FM
4662	BÅT GP
4662	ROR FM
4720	TOFTE FM

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
DEN NEU SPGR MAGRES	4450	4740
FTNG SAMP	4450	4550
HXPT PP	4450	4740
LWD - DI	331	397
LWD - GR RES PWD DI NEU DEN CAL	4500	4738
LWD - GR RES PWD DI SON	331	2290
LWD - GR RES PWD DI SON NEU DEN	2290	4519
MDT SAT SAMP	4450	4600
MDT SAT SAMP	4568	4569
RES IMG SON GR	4450	4740
SEIS VSI4	473	4482

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	397.0	36	397.5	0.00	



SURF.COND.	20	1374.5	26	1381.0	1.60	LOT
PILOT HOLE		1381.0	9 7/8	1381.0	0.00	
INTERM.	14	2284.0	17 1/2	2290.0	0.00	
		2293.0		0.0	1.96	LOT
LINER	9 7/8	4463.0	12 1/4	4465.0	2.18	LOT
OPEN HOLE		4738.0	8 1/2	4738.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
351	1.03	10.0		Hivis Bentonite Sweeps	
397	1.03	10.0		Hivis Bentonite Mud	
397	1.34	32.0		Glydril	
817	1.03	10.0		Hivis Bentonite Sweeps	
1198	1.03	10.0		Hivis Bentonite Mud	
1361	1.34	19.0		Glydril	
1381	1.02	1.0		Glydril	
1381	1.03	10.0		Bentonite	
1385	1.39	32.0		OBM	
1710	1.59	42.0		Rheguard Prime	
2119	1.59	46.0		OBM	
2360	1.69	49.0		OBM	
3139	1.69	47.0		OBM	
3621	1.80	64.0		OBM	
4419	1.77	53.0		OBM	
4465	1.80	55.0		OBM	
4547	1.77	52.0		OBM	
4738	1.64	41.0		OBM	
4738	1.80	60.0		OBM	