



Generell informasjon

Brønnbane navn	6506/9-4 A
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	1694-L
Boreinnretning	ISLAND INNOVATOR
Boredager	78
Borestart	28.04.2018
Boreslutt	13.07.2018
Plugget og forlatt dato	14.07.2018
Frigitt dato	13.07.2020
Publiseringsdato	14.07.2020
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]	4497.0
Totalt vertikalt dybde (TVD) [m RKB]	4458.0
Maks inklinasjon [°]	11.2
Temperatur ved bunn av brønnbanen [°C]	159



Eldste penetrerte alder	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	8411

Brønnhistorie

**General**

Well 6506/9-4 A is a geological side-track to well 6506/9-4 S, drilled on The Fogelberg Discovery on a small fault block on the Halten Terrace, north-northwest of the Smørbukk Field and northeast of the Morvin Field. The side-track was drilled up-flank to the crestal part of the structure where future production wells would be located. The primary objective of the side-track was to perform a DST and collect representative fluid samples.

Operations and results

Appraisal well 6506/9-4 A was kicked off in 14" casing at 2201 m on 28 April 2018. It was drilled with the semi-submersible installation Island Innovator to TD at 4497 m (4458 m TVD) m in the Early Jurassic Tofte Formation. Low penetration rate was experienced in the Lange Formation shales in the 12 1/4" section. The well was drilled with RheGuard Prime oil-based mud from kick-off to TD.

The Garn Formation was encountered at 4289.5 m (4254 m TVD), 13.5 m shallower than prognosis and top Ile Formation was picked at 4350.5 m (4313.8 m TVD), 13 m shallower than the prognosis. Approximately 57 m TVD gross sandstone of moderate to high quality was encountered in the Garn Formation and 66 m TVD gross moderate quality sandstone in the Ile Formation. Both formations were gas bearing.

Shows in the form of cut fluorescence was observed in several Intra-Lange sandstones, but not significantly different from the fluorescence caused by the oil-based mud.

Two cores were cut in succession from 4288.9 to 4341 m in the Garn Formation. The core recovery was 80.04% and 98.38% for core 1 and 2, respectively. The core-log depth shifts were +1.8m and +1.1 m for core 1 and 2, respectively. No fluid sample was taken on wire line.

The well was permanently abandoned on 13 July 2018 as a gas appraisal well.

Testing

A drill stem test was conducted from the interval 4290.0 - 4325.0 m (4253.4-4287.4 m TVD) in the Garn Formation. Maximum production rate from the formation was 570 000 Sm³ of gas and 80 Sm³ of condensate per day through a 36/64 inches choke opening. The gas contains 6 ppm H₂S and 4-5% CO₂. The temperature recorded in the test was 153 °C.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
2220.00	4497.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet



Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	4288.9	4310.7	[m]
2	4316.2	4340.6	[m]

Total kjerneprøve lengde [m]	46.2
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
DST		0.00	0.00			YES
DST		4325.00	4191.60	CONDE NSATE	23.06.2018 - 17:53	YES
MDT		4325.00	4290.00	CONDE NSATE	23.06.2018 - 17:45	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
2163	SHETLAND GP
2163	SPRINGAR FM
2425	NISE FM
2596	KVITNOS FM
3200	CROMER KNOLL GP
3200	LYSING FM
3228	LANGE FM
3924	NO FORMAL NAME



3974	LANGE FM
4035	NO FORMAL NAME
4053	LANGE FM
4133	LYR FM
4149	VIKING GP
4149	SPEKK FM
4153	MELKE FM
4290	FANGST GP
4290	GARN FM
4347	NOT FM
4351	ILE FM
4420	BÅT GP
4420	ROR FM
4471	TOFTE FM

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	4290	4325	14.3

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				153

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0	80	570000			

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
APS LDS ADT HNGS CMR	3103	4499
IBC CBL PMIT	335	2188
LWD - GR RES PWD DI SON NEU DEN	2201	4497
PS LPD XLDP HY PC GR	4299	4399



PS XLDP HY PC GR	4292	4296
QAIT QGEO PPC MSIP GR	3103	4499

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	
		2201.0		0.0	1.93	FIT
INTERM.	14	2284.0	17 1/2	2200.0	0.00	
INTERM.	9 7/8	4249.0	12 1/4	4250.0	2.10	LOT
LINER	7	4496.0	8 1/2	4497.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
2211	1.64	42.0		Rheguard	
2525	1.69	53.0		Rheguard	
3469	1.78	64.0		Rheguard	
3577	1.74	56.0		Rheguard	
3754	1.75	63.0		Rheguard	
3936	1.76	63.0		Rheguard	
4150	1.78	66.0		Rheguard	
4250	1.79	64.0		Rheguard	
4288	1.74	56.0		Rheguard	
4314	1.75	54.0		Rheguard	
4497	1.75	58.0		Rheguard	
4497	1.77	69.0		Rheguard	
4497	1.14			Calcium Chloride Brine	
4497	1.75	58.0		Rheguard	
4497	1.50	34.0		Rheguard OBM	
4497	1.29	6.0		WBM	
4497	1.02			WBM	