Generell informasjon

Brønnbane navn	7220/11-5 S
Type	EXPLORATION
Formål	APPRAISAL
Status	PLUGGED
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	BARENTS SEA
Funn	7220/11-1 (Alta)
Brønn navn	7220/11-5
Seismisk lokalisering	LN15M02. Inline 2220. crossline 2449
Utvinningstillatelse	609
Boreoperatør	Lundin Norway AS
Boretillatelse	1690-L
Boreinnretning	LEIV EIRIKSSON
Boredager	186
Borestart	06.04.2018
Boreslutt	08.10.2018
Plugget dato	08.10.2018
Frigitt dato	08.10.2020
Publiseringsdato	08.10.2020
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	CARBONIFEROUS
1. nivå med hydrokarboner, formasjon.	FALK FM
2. nivå med hydrokarboner, alder	EARLY PERMIAN
2. nivå med hydrokarboner, formasjon	ØRN FM
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	386.0
Totalt målt dybde (MD) [m RKB]	3057.0
Totalt vertikalt dybde (TVD) [m RKB]	1937.0
Maks inklinasjon [°]	90.1
Temperatur ved bunn av brønnbanen [°C]	72

Eldste penetrerte alder	EARLY PERMIAN
Eldste penetrerte formasjon	ØRN FM
Geodetisk datum	ED50
NS grader	72° 1' 21.13'' N
ØV grader	20° 29' 21.26'' E
NS UTM [m]	8000277.53
ØV UTM [m]	688872.81
UTM sone	33
NPDID for brønnbanen	8381

Brønnhistorie

General

Well 7220/11-5 S was drilled to appraise the Alta oil and gas discovery on the Loppa High in the Barents Sea. The well was planned to drill horizontally through the Falk and Ørn formations oil leg in the Alta discovery. The objective was to demonstrate horizontal drillability through karstified and fractured carbonates using currently available technology. If successful, an extended test production was planned.

Operations and results

Appraisal well 7220/11-5 S was spudded with the semi-submersible installation Leiv Eiriksson on 6 April 2018. The well was drilled to TD in the 26” hole without significant problems. When installing BOP and riser the BOP suffered severe damage and 26.5 days were spent on repairs. After this drilling commenced without further significant issues. It was drilled vertical down to 1100 m, then building angle landing at 90° at 2375 m (1937 m TVD) in the oil leg in the Late Carboniferous Falk Formation. From this point it was drilled stratigraphically upwards from carbonates and heterolithics of the Falk Formation into younger carbonates of the Early Permian Ørn Formation. Well TD was set at 3057 m (1937 m TVD RKB) in the reef-type facies of the Ørn Formation. The well was drilled with seawater and hi-vis pills down to 478 m, with KCl/Polymer/GEM mud from 478 m to 794 m, with Performadril mud from 794 m to 2336 m, and with Baradril-N mud from 664 m to TD.

Base Triassic/top Falk Formation gas-filled carbonates was encountered at 1911 m (1787 m TVD). The well penetrated a 117-metre TVD gas column in the Carboniferous Falk formation, and a 720-meter horizontal section was drilled in the Falk and Ørn formation. The horizontal section is situated 32 metres under the gas-oil contact at 2161 m (1905 m TVD), and 12 metres TVD over the regional oil-water contact. The reservoir consists of a mix of siliciclastic and carbonate rocks in the Falk formation and carbonate rocks in the Ørn formation from the Late Carboniferous to Early Permian period. The reservoir quality is good to very good.

Above 1660 m numerous sandstone beds in the Snadd formation, varying in thickness from a meter to ca 20 m, had oil shows in the form of direct and cut fluorescence. Towards the top of the Snadd Formation the shows also included trace to 10% oil staining.

No cores were cut. No fluid sample was taken on wireline, but extensive fluid sampling was conducted during the production test.

After reaching final TD on 25 June 2018 the well bore was formally renamed as 7220/11-T-5 S for the long-term test. The well bore was permanently abandoned on 8 October 2018 as an oil and gas appraisal.

Testing

A successful long-term test of approximately two months duration was conducted beginning at 13 July 2018. The first main flow period of 30 days gave a controlled production rate of up to 1200 Sm3/day through a 60/64 inch choke. For the second main flow period of 35 days the rate was increased to up to 3000 Sm3/day through a 118/64 inch choke. The GOR during clean up and first flow period was 105 Sm3/Sm3, increasing to 165 Sm3/Sm3 at higher production rates in the second main flow. Two production logging runs (PLT) were performed during the production tests to measure the contribution from different reservoir zones. The production testing revealed good and very good reservoir properties and production rates without significant breakthrough of water or gas. About 110,000 Sm3 of liquid in total was produced during the test production. The temperature was measured by the downhole gauges during the extended well test. Based on these, the static formation temperature is estimated to be 72°C at 1927 m.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
480.00	3056.00

Borekaks tilgjengelig for prøvetaking?	YES

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
490.0	[m]	DC	APT
510.0	[m]	DC	APT
530.0	[m]	DC	APT
550.0	[m]	DC	APT
570.0	[m]	DC	APT
590.0	[m]	DC	APT

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	OIL	31.07.2018 - 16:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
411	NORDLAND GP
411	NO FORMAL NAME
462	SOTBAKKEN GP
462	TORSK FM
578	ADVENTDALEN GP
578	KOLMULE FM
608	KAPP TOSCANA GP
608	SNADD FM
1904	SASSENDALEN GP
1904	KOBBE FM

1911	GIPSDALEN GP
1911	FALK FM
2787	ØRN FM

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
IBC CBL GR	494	1667
IBC CBL GR	497	1729
MRM EZSV	930	1036
MWD LWD - GR RES AC DENS NEU	410	3052
PLT-FSI PCMS GR CCL MAXTRAC	1805	3036
PLT-FSI RST PBMS MAXTRAC	1800	3050

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	477.5	36	478.0	0.00	
SURF.COND.	20	787.4	26	794.0	1.40	FIT
INTERM.	10 3/4	1847.6	12 1/4	1862.0	1.40	FIT
LINER	8 5/8	2330.0	9 1/2	2336.0	1.35	FIT
LINER	5 1/2	3051.0	8 1/2	3057.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
411	1.05	18.0		SWEEPS	
411	1.00	1.0		Drill water	
424	1.50	20.0		KCL/Gem Kill Mud	
450	1.05	18.0		SWEEPS	
478	1.05	20.0		SWEEPS	
478	1.50	17.0		KCL/Gem Kill Mud	
479	1.35	16.0		KCL/Polymer/GEM	
481	1.34	17.0		KCL/Polymer/GEM	
497	1.35	17.0		KCL/Polymer/GEM	
511	1.36	15.0		KCL/Poly/GEM	

554	1.39	18.0		KCL/Polymer/GEM	
621	1.40	19.0		KCL/Polymer/GEM	
794	1.39	24.0		KCL/Poly/GEM	
794	1.22	14.0		Performadril	
794	1.03	10.0		Sea Water	
794	1.40	22.0		KCL/Poly/GEM	
1075	1.22	14.0		KCL/Gem	
1075	1.39	15.0		KCL/Gem	
1774	1.39	16.0		KCL/Gem	
1774	1.06	0.1		Riser completion fluid	
1774	1.27	0.1		BRINE	
1783	1.20	19.0		Performadril	
1813	1.22	18.0		Performadril	
1847	1.20	19.0		Performadril	
1847	1.22	18.0		Performadril	
2048	1.22	17.0		Performadril	
2105	1.20	19.0		Performadril	
2260	1.14	19.0		Baradril-N	
2289	1.20	19.0		Performadril	
2330	1.14	19.0		BARADRIL-N	
2330	1.20	17.0		Performadril	
2340	1.14	11.0		BARADRIL-N	
2646	1.15	12.0		BARADRIL-N	
2756	1.15	12.0		BARADRIL-N	
2794	1.14	11.0		Performadril	
2794	1.15	11.0		BARADRIL-N	
2810	1.14	13.0		Performadril	
3057	1.14	10.0		Baradril-N	
3057	1.14	18.0		Baradril-N	