



Generell informasjon

Brønnbane navn	6607/12-2 S
Type	EXPLORATION
Formål	WILDCAT
Status	SUSPENDED
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Felt	ALVE NORD
Funn	6607/12-2 S Alve Nord
Brønn navn	6607/12-2
Seismisk lokalisering	TO06 M02-inline5080 & crossline 3494
Utvinningstillatelse	127
Boreoperatør	Total E&P Norge AS
Boretillatelse	1367-L
Boreinnretning	SONGA DELTA
Boredager	96
Borestart	22.07.2011
Boreslutt	25.10.2011
Plugget dato	25.10.2011
Frigitt dato	25.10.2013
Publiseringsdato	25.10.2013
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	FANGST GP
2. nivå med hydrokarboner, alder	EARLY JURASSIC
2. nivå med hydrokarboner, formasjon	BÅT GP
3. nivå med hydrokarboner, alder	EARLY CRETACEOUS
3. nivå med hydrokarboner, formasjon	LANGE FM
Avstand, boredekk - midlere havflate [m]	29.0
Vanndybde ved midlere havflate [m]	369.0
Totalt målt dybde (MD) [m RKB]	4404.0



Totalt vertikalt dybde (TVD) [m RKB]	4274.0
Maks inklinasjon [°]	30
Temperatur ved bunn av brønnbanen [°C]	158
Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	ÅRE FM
Geodetisk datum	ED50
NS grader	66° 1' 17.99" N
ØV grader	7° 51' 50.3" E
NS UTM [m]	7322976.96
ØV UTM [m]	448482.96
UTM sone	32
NPDID for brønnbanen	6642

Brønnhistorie

General

Well 6607/12-2 S was drilled on the Alve North structure about eight kilometres west of the Norne field. The primary exploration target for the well was to prove petroleum in Middle and Lower Jurassic reservoir rocks (Fangst and Båt group). The secondary exploration target was to prove petroleum in Cretaceous reservoir rocks (Cromer Knoll group). The Åre Formation should also be evaluated, but the probability of hydrocarbons here was considered low due to a dry Åre Formation in 6507/3-1. The well was designed to be suspended as a possible producer in the event of a discovery. For this reason it was placed as high as possible and in the centre of the structure, deviated and kept parallel to the main fault for keeping a safe distance from potential associated fractures and at the same time access the fluids as efficiently as possible.

Operations and results

Well 6607/12-2 S was spudded with the semi-submersible installation Songa Delta on 22 July and drilled to TD at 4404 m (4274 m TVD) in the Early Jurassic Åre Formation. The well was drilled as high as possible on the NW part of the structure, down to a kick off point above BCU at 3500 m, and then deviated at 30 deg angle in order to stay parallel to the main bounding fault. Drilling the well went without significant problems. A total of 30 days (8 days for Cretaceous and 22 days for Jurassic) was necessary to perform the wire line logging on this well. Three different logging sequences were needed: Cretaceous, Jurassic and Åre deepening to TD. Close to eight days was counted as lost time due to logging problems. The well was drilled with sea water and bentonite hi-vis pills down to 1355 m, with water based mud from 1355 m to 1981 m, and with oil based mud from 1981 m to TD.

The Cretaceous Lange Formation was encountered at 2862 m. Lange Sandstones were found hydrocarbon bearing in two units near the base. The Upper unit contained gas from 2994 m down to 3016 m and light oil from 3033 m down to 3057 m. The reservoir was a few meters net of thin sandstones interbedded in claystone. The Lower unit had 15 bar higher pressure than the gradient in the upper unit. It contained gas from 3094 to a GOC at 3137 and oil from there to an OWC at 3148.5 m. This reservoir was in thick medium to coarse grain sandstones with thin interbeds of claystone.



The Garn Formation was encountered at 3610 m (3587.5 m TVD), 15m deeper than expected. Except for a thin interval in the uppermost Garn, all reservoirs of the Fangst Group, Tofte Formation, and Tilje Formation had relatively poor reservoir properties. These reservoirs had gas from top Garn to a GOC at 3726 and oil down to an ODT at 3753 m. A second column with light oil was penetrated from 3760 to and ODT at 3780 m. The Tilje Formation contained condensate and light oil, but no contacts were established due to tight formation. The Åre Formation was encountered at 3935 m and contrary to expectation proved to contain hydrocarbons in thin or metric sandstones, with gas in the upper section and condensate/light oil in deeper sections. The hydrocarbon bearing sandstones did not have a common pressure gradient. Condensate and light oil were sampled in the thickest reservoir, a 50m stack of medium to coarse sandstones. No oil shows above the oil based mud were recorded.

A 53 m core was cut from 3613 m to 3667 m in Garn/Not with 98% recovery. Wire line (MDT and RCI) fluid samples were taken in the Lange Formation at 3006.5 m (gas), 3055 m (light oil), 3071 m (water), 3122 m (gas), 3140.5 m (oil), 3146.0 m (oil), 3149.5 m (water and trace oil), 3157 m (water and trace oil). In the Jurassic wire line fluid samples were taken at 3614.3 m (dry gas/condensate), 3622.6 m (dry gas/condensate), 3702.9 m (dry gas/condensate), 3738.0 m (light oil), 3761.3 m (light oil), 3775 m (light oil), 3815 m (condensate/light oil), 3872.5 m (light oil), 3926.4 m (light oil), 3944 m (condensate/light oil), 4132 m (condensate/light oil), and 4248.5 m (condensate/light oil).

Due to rig schedule obligations drilling operations were stopped on 2 October at 4404 m in the Åre Formation in an oil down to situation. After logging and 11 days WOW the well was suspended on 25 October 2011 as an oil and gas discovery.

Testing

No drill stem test was performed.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
1360.00	4404.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	3613.0	3666.0	[m]

Total kjerneprøve lengde [m]	53.0
Kjerner tilgjengelig for prøvetaking?	YES



Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
398	NORDLAND GP
398	NAUST FM
1376	KAI FM
1636	HORDALAND GP
1636	BRYGGE FM
1870	ROGALAND GP
1870	TARE FM
1912	TANG FM
1973	SHETLAND GP
1973	SPRINGAR FM
2102	NISE FM
2198	KVITNOS FM
2862	CROMER KNOLL GP
2862	LANGE FM
3258	VIKING GP
3258	SPEKK FM
3272	MELKE FM
3610	FANGST GP
3610	GARN FM
3633	NOT FM
3672	ILE FM
3753	BÅT GP
3753	ROR FM
3760	TOFTE FM
3815	TILJE FM
3935	ÅRE FM

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
GR CN MREX	3770	4070
GR CN ZDL MREX	3480	4211
GR CN ZDL RMEX	1971	3420
GR EI	3600	4215
GR EI XMAC F1 HDIL	1971	3495
GR HWGS QCNT CDT CMR	4100	4406



GR MDT SP	3727	3761
GR MDT SP	3775	3796
GR MDT SP	4230	4252
GR MDT SP PA	3613	3747
GR MDT SP PA	3642	3655
GR MREX	2840	3200
GR PPC GPIT MSIP AIT	3494	4407
GR RCI	2857	3157
GR RCI	3611	4174
GR RCI MINIDST	3055	3149
GR RCOR	3001	3265
GR RCOR	3863	4132
GR ZOVSP	1738	4207
HDIL XMEC EI	3395	4215
LWD - ASS PWD ECD GR DI	1981	3500
LWD - EWR DGR PWD DI	470	1355
LWD - PWD ECD GR DI	1355	1981
LWD - PWD ECD GR DI	4217	4404
LWD - RAB PWD ECD GR DI	3500	4217
VDL SBT GR CCL	2397	3494

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	464.0	36	470.0	0.00	
SURF.COND.	20	1348.0	26	1355.0	1.61	FIT
PILOT HOLE		1355.0	9 7/8	1355.0	0.00	
INTERM.	13 3/8	1972.0	17 1/2	1981.0	1.75	FIT
INTERM.	9 5/8	3494.0	12 1/4	3500.0	1.75	FIT
OPEN HOLE		4217.0	8 1/2	4217.0	0.00	

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
783	1.06			SPUD MUD	
1355	1.45	16.0		AQUACOL KCL/POLYMER/GLY COL	



1380	1.45	16.0		AQUACOL KCL/POLYMER/GLY COL	
1981	1.59	35.0		CARBO TECH	
2203	1.60	41.0		CARBO TECH	
2442	1.48	34.0		CARBO TECH	
2850	1.60	44.0		CARBO TECH	
3500	1.60	39.0		CARBO TECH	
3667	1.45	30.0		CARBO TECH	
4217	1.46	31.0		CARBO TECH	
4217	1.46	28.0		CARBO TECH	
4367	1.46	30.0		CARBO TECH	
4404	1.46	29.0		CARBO TECH	

Trykkplott

Porertrykksdataene kommer fra logging i brønnen hvis ingen annen kilde er oppgitt. I noen brønner der trykk ikke er logget, er det brukt informasjon fra formasjonstester eller brønnspark. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

Dokument navn	Dokument format	Dokument størrelse [KB]
6642 Formation pressure (Formasjonstrykk)	PDF	0.28

