Generell informasjon

Brønnbane navn	7225/3-1
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Pressemelding	lenke til pressemelding
Faktakart i nytt vindu	lenke til kart
Hovedområde	BARENTS SEA
Funn	7225/3-1 (Norvarg)
Brønn navn	7225/3-1
Seismisk lokalisering	inline 1438 & crossline 1874 BST4 PSTM FINAL
Utvinningstillatelse	535
Boreoperatør	Total E&P Norge AS
Boretillatelse	1350-L
Boreinnretning	WEST PHOENIX
Boredager	149
Borestart	30.04.2011
Boreslutt	25.09.2011
Frigitt dato	25.09.2013
Publiseringsdato	25.09.2013
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	GAS
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	STØ FM
2. nivå med hydrokarboner, alder	LATE TRIASSIC
2. nivå med hydrokarboner, formasjon	KOBBE FM
3. nivå med hydrokarboner, alder	EARLY TRIASSIC
3. nivå med hydrokarboner, formasjon	HAVERT FM
Avstand, boredekk - midlere havflate [m]	39.0
Vanndybde ved midlere havflate [m]	377.0
Totalt målt dybde (MD) [m RKB]	4150.0
Totalt vertikalt dybde (TVD) [m RKB]	4147.0
Maks inklinasjon [°]	5.1

Temperatur ved bunn av brønnbanen [°C]	157
Eldste penetrerte alder	PERMIAN
Eldste penetrerte formasjon	ISBJØRN FM
Geodetisk datum	ED50
NS grader	72° 54' 58.31'' N
ØV grader	25° 52' 2.67'' E
NS UTM [m]	8091704.90
ØV UTM [m]	462862.72
UTM sone	35
NPDID for brønnbanen	6587

Brønnhistorie

General

Well 7225/3-1 was the first well to be drilled on the faulted Norvarg Dome on the Bjarmeland Platform in the Barents Sea. It was drilled fairly close to the crest of the structure. The primary objective was to prove hydrocarbon presence, determine fluid nature and evaluate reservoir characteristics in sandstones of the Late Triassic (Carnian) Lower Snadd Formation and the Early Triassic Kobbe Formation. Secondary objective was to prove hydrocarbons in the Jurassic Stø Formation, the Early Triassic Havert Formation, and the Permian Tempelfjorden and Bjarmeland groups.

Operations and results

Wildcat well 7225/3-1 was spudded with the semi-submersible installation West Phoenix on 30 April 2011 and drilled to TD at 4150 m in the Permian Isbjørn Formation. No major drilling problems were encountered, but P&A in the upper part was subject to extensive delays associated with trying to retrieve casing, failed cement plugs or leak in 20" casing and extra time spent trying to locate the source of a gas leak. The well was drilled with bentonite mud with hiv-vis pills down to 672 m, and with KCl/polymer mud from 672 m to TD.

Gas was proven both in intervals from the Jurassic and the Triassic. The Jurassic Stø Formation was gas bearing from top at 726 m to a likely GWC at 766.5 m. In the Triassic the upper part of the Snadd Formation with top at 804 m was supposed to be gas bearing, but this was not proven by sampling. The best Snadd sands, below 1040 m, could be sampled and they were water bearing. An Intra-Carnian section was penetrated from 1146 m to 1521 m. It contained gas in two zones with GWC's at 1218 m and ca 1250 m, respectively, and in a third thin sandstone from 1347 m to 1357 m. The upper and the lowermost Intra-Carnian gas zone were confirmed by MDT sampling. The Kobbe Formation was encountered at 1521 m. It is 634 m thick with 27.5% net/gross based on petrophysical evaluations. Gas was tested in numerous thin sandstone beds from 1557 m to 1779 m by MDT sampling and by a DST. The Havert Formation with top at 2554 m had only poorly developed reservoir rocks. MDT testing failed, but it was assumed to be gas bearing as well based on logs.

Rig site analyses of fluorescence (oil shows) and by GCMS analyses of up to C7 components in mud gas ("FLAIR analysis") suggested that the Stø and upper Snadd gas zones were oil-associated. The deeper gas zones were practically devoid of liquid components based on these analyses.

Four conventional cores were cut. Core 1 was cut in intra-Carnian sandstone and claystone from 1204-1258 m with 98% recovery. Core 2 was cut in the Kobbe Formation from 1675 to 1695 m with 83.3% recovery (jammed off). Core 3 was cut from 2610 to 2637 m in the Havert Formation with 100% recovery. Core 4 was cut from 4013 to 4016 m in the Isbjørn Formation with 15% recovery (jammed off). During two successful MDT wire line runs a total of 9 sampling stations were performed. Samples were taken at 1090.01 m (Snadd Formation; water+gas), 1121.98 m (Snadd Formation water), 1215.26 m (Intra-Carnian Sandstone; gas), 1279.99 m (Intra-Carnian sandstone; water), 1349.78 m (Intra-Carnian sandstone; gas), 1353.41 m (Intra-Carnian sandstone; gas), 1560.21 m (Kobbe Formation: gas), 1595.97 m (Kobbe Formation: only fluid scanning; no sample), 1778.65 m (Kobbe Formation: gas).

The well was permanently abandoned on 25 September 2011 as a gas discovery.

Testing

The well was perforated from 1557-1570 m,1580-1621 m and 1631 m-1685 m in the Kobbe interval.The test produced 180000 Sm3 gas/day througt a 44/64" choke. The gas gravity 0,618(air=1)

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
690.00	4149.00

Borekaks tilgjengelig for prøvetaking?	YES

Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1204.0	1256.9	[m]
2	1675.0	1691.7	[m]
3	2610.0	2637.1	[m]
4	4013.0	4013.5	[m]

Total kjerneprøve lengde [m]	97.1
Kjerner tilgjengelig for prøvetaking?	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
416	ADVENTDALEN GP
416	KOLMULE FM
636	KNURR FM
670	HEKKINGEN FM
695	FUGLEN FM
727	KAPP TOSCANA GP
727	STØ FM
770	FRUHOLMEN FM
804	SNADD FM
1146	NO FORMAL NAME
1522	SASSENDALEN GP
1522	KOBBE FM
2155	KLAPPMYSS FM
2555	HAVERT FM
3666	TEMPELFJORDEN GP
3666	ØRRET FM

3771	RØYE FM
3931	BJARMELAND GP
3931	ISBJØRN FM

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	1557	1685	17.5

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

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0		180000		0.618	

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
FMI GR	3750	4150
FMI PPC MSIP PPC	3390	4147
HGNS CMR	3750	4150
IBC DCBL GR	800	2503
LEH EDTC HNGS APS TLD HRLA CMR S	2580	3745
LEH EDTC PPC MSIP PPC FMI	2425	3753
LWD - ADR SWRO GM PWD PCDC	4016	4150
LWD - AFR EWR DGR ALD CTN FTWD P	677	1067
LWD - EWR DGR PWD DI	440	3750
LWD - EWR P4 DGR PWD PCDC	3751	4013
MDT GR	1062	2064
MDT GR	1594	1889
MDT GR	1596	1976
MDT GR	2605	2640

MDT GR	2606	2606
MDT GR	2606	3472
MDT GR	2609	2620
MSCT GR	1090	2309
MSCT GR	1090	1826
MSCT GR	2605	3475
MSIP FMI	1062	2064
SP CMR HRLA TLD APS HNGS	1062	2064
SP GPIT PPC MSIP PPC TLD APS HNG	1062	2514
SP HRLA TLD APS	3750	4150
USIT CBL GR	395	1062
VSP GR	416	2514
VSP GR	2500	4143

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	482.0	36	484.0	0.00	LOT
SURF.COND.	20	665.0	26	672.0	1.50	LOT
PILOT HOLE		681.0	9 7/8	681.0	0.00	
INTERM.	13 5/8	1062.0	17 1/2	1070.0	1.82	LOT
INTERM.	9 5/8	2503.0	12 1/4	2514.0	1.85	LOT
LINER	7	3749.0	8 1/2	3750.0	1.90	LOT
OPEN HOLE		4150.0	6	4150.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
431	1.30	10.0		waterbased	
500	1.30	10.0		waterbased	
502	1.24	11.0		ManualEntry	
511	1.30	10.0		waterbased	
540	1.25	13.0		waterbased	
552	1.05	16.0		seawater	
552	1.25	10.0		waterbased	
652	1.30	10.0		waterbased	

680	1.05	16.0		waterbased	
854	1.25	12.0		waterbased	
854	1.37	14.0		waterbased	
957	1.35	14.0		waterbased	
1070	1.25	17.0		waterbased	
1730	1.36	1.0		brine	
2014	1.35	19.0		waterbased	
2100	1.45	24.0		waterbased	
2514	1.35	22.0		waterbased	
3750	1.52	22.0		waterbased	
4150	1.45	17.0		waterbased	

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]
6587_Formation_pressure_(Formasjonstrykk)	pdf	0.28