



Generell informasjon

Brønnbane navn	6507/7-6
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Felt	HEIDRUN
Funn	6507/7-2 Heidrun
Brønn navn	6507/7-6
Seismisk lokalisering	CN 8502-608 & SP.268
Utvinningstillatelse	095
Boreoperatør	Conoco Norway Inc.
Boretillatelse	524-L
Boreinnretning	NORTRYM
Boredager	46
Borestart	23.07.1986
Boreslutt	06.09.1986
Frigitt dato	06.09.1988
Publiseringsdato	17.09.2007
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	NO
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
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	350.0
Totalt målt dybde (MD) [m RKB]	2525.0
Totalt vertikalt dybde (TVD) [m RKB]	2470.0
Maks inklinasjon [°]	2.7
Temperatur ved bunn av brønnbanen [°C]	84
Eldste penetrerte alder	EARLY JURASSIC



Eldste penetrerte formasjon	ÅRE FM
Geodetisk datum	ED50
NS grader	65° 21' 30.03" N
ØV grader	7° 19' 10.35" E
NS UTM [m]	7249616.27
ØV UTM [m]	421821.65
UTM sone	32
NPDID for brønnbanen	922

Brønnhistorie



Well 6507/7 6 is an appraisal well on the crest of the Heidrun field structure on Haltenbanken off shore Mid Norway. The structure is a fault wedge. The main objectives of the well were to establish the Tilje gas/oil contact, to define Tilje and Åre oil properties, and to investigate the Åre oil/water contact. In addition, the well was expected to prove Fangst erosion and established lateral continuity of Tilje reservoir properties.

Operations and results

Appraisal well 6507/7 6 was spudded with the semi-submersible installation Nortrym on 23 July 1986 and drilled to TD at 2525 m in Early Jurassic sediments of the Åre Formation. At 419 m the drill string torqued up and spun out five joints below the kelly, dropping the string to the seabed. The well was re-spudded after being moved approximately 8 m, and this time drilling proceeded without significant problems. The well was drilled with seawater and pre-hydrated gel sweeps down to 1030 m and with KCl/polymer mud from 1030 m to TD.

Oil shows were recorded in 3 m thick sandstone at 2096 m in the Cretaceous. A marked unconformity separates the Middle Jurassic from the overlying Late Cretaceous sequence. The total hiatus was from Aalenian-Bajocian to Campanian-Santonian. Top Middle Jurassic Fangst Group, Ile Formation was encountered at 2144.5 m and was gas bearing. From good quality RFT pressure data, cores, and electric logs a gas/oil contact was established at 2339 m in the Tilje Formation and the oil/water contact at 2440 m in the Åre Formation. Shows continued down to 2445. Below this depth no shows were reported.

A total of 191 m core was recovered from the well. Two cores were cut from the Early Cretaceous through the Fangst Group and into the top Båt Group (2129 - 2185 m), and eight cores were cut from the gas zone in the lower part of the Tilje Formation, through the OWC and into the Åre Formation (2305 - 2462 m). One RFT run was made in the 12 1/4" hole. A water sample was attempted at 2457m without any recovery. The gas gradient was 0.073 psi/ft (0.169 g/cc). Two oil gradients were found. To 2390 m the gradient was 0.327 psi/ft (0.754 g/cc). Passing through the upper Åre Formation siltstone/claystone bed a pressure increase was encountered and the oil column down to the oil/water contact exhibited a higher oil gradient of 0.362 psi/ft (0.834 g/cc). The water gradient was 0.446 psi/ft (1.028 g/cc).

The well was permanently abandoned on 6 September 1986 as a gas and oil appraisal.

Testing

Two DST's were performed in this well.

DST 1 tested the combined intervals 2411.5 ? 2415 and 2421 ? 2424 m in the Åre Formation. Maximum flow was 782 Sm³ oil and 46100 Sm³ gas /day through a 90.5/64" choke. The GOR was 59 Sm³/Sm³, the oil gravity was 23 deg API, and the gas gravity was 0.627 with 3 % CO₂ and no detectable H₂S.

DST 2 tested the interval 2348.5 ? 2365 m in the Tilje Formation. The well flowed at maximum rates 628 Sm³ oil and 61450 Sm³ gas /day through a 132/64" choke. The GOR was 98 Sm³/Sm³, the oil gravity was 27 deg API, and the gas gravity was 0.614 with 1.7 % CO₂ and no detectable H₂S. Large amounts of sand were also produced in DST 2, leading to a pre-mature end of the flow period. The recorded down-hole temperatures were 83.3 and 78.9 deg C in DST 1 and DST 2 respectively.



Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
1040.00	2524.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2129.0	2156.7	[m]
2	2157.9	2184.4	[m]
3	2305.0	2306.6	[m]
4	2315.0	2341.9	[m]
5	2344.0	2363.3	[m]
6	2364.5	2390.4	[m]
7	2392.5	2404.7	[m]
8	2405.0	2419.8	[m]
9	2424.0	2441.0	[m]
10	2442.0	2460.3	[m]

Total kjerneprøve lengde [m]	190.2
Kjerner tilgjengelig for prøvetaking?	YES

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
2129.0	[m]	C	OD
2130.1	[m]	C	OD
2131.2	[m]	C	OD
2133.4	[m]	C	OD
2134.5	[m]	C	OD
2135.5	[m]	C	OD
2136.4	[m]	C	OD
2137.4	[m]	C	OD
2138.5	[m]	C	OD
2139.6	[m]	C	OD
2140.5	[m]	C	OD
2141.5	[m]	C	OD
2142.5	[m]	C	OD



2142.9	[m]	C	OD
2143.6	[m]	C	OD
2144.5	[m]	C	OD
2145.5	[m]	C	OD
2148.8	[m]	C	OD
2156.5	[m]	C	OD
2171.8	[m]	C	OD
2175.7	[m]	C	OD
2180.9	[m]	C	OD

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	DST1	2411.50	2424.00		24.08.1986 - 00:00	YES
DST	DST2	2348.50	2365.00		30.08.1984 - 00:00	YES
DST	TEST2	0.00	0.00		30.08.1986 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
375	NORDLAND GP
375	NAUST FM
1495	KAI FM
1852	HORDALAND GP
1852	BRYGGE FM
1935	ROGALAND GP
1935	TARE FM
1967	TANG FM
2016	SHETLAND GP
2145	FANGST GP
2159	BÅT GP
2190	TILJE FM
2369	ÅRE FM



Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
922_6507_7_6	pdf	0.26

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
922_1	pdf	0.67
922_2	pdf	0.14

Dokumenter - eldre Søkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
922_01_WDSS_General_Information	pdf	0.26
922_02_WDSS_completion_log	pdf	0.20

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
922_02_Completion_log	pdf	1.56
922_03_Test_Report	pdf	11.24
922_Completion_Report	pdf	7.86

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	2424	2412	35.9
2.0	2349	2365	52.4

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0		4.000	24.000	





2.0		2.000	22.000	
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Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0	782	46100	0.918	0.617	59
2.0	628	61450	0.895	0.617	98

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CBL VDL GR CCL	496	2045
CBL VDL GR CCL	1700	2478
DIL SLS GR SP	2079	2524
DLL MSFL GR	2079	2521
LDL CNL NGL	2079	2525
MSD	2085	2523
MWD - GR RES DIR	472	2525
RFT HP	2149	2504
RFT SG	2149	2504
SHDT FAST CHANNELS	2079	2524
SHDT GEOMETRY	2079	2524
VSP SAT	1800	2475

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	473.0	36	474.0	0.00	LOT
SURF.COND.	20	1024.0	26	1030.0	1.52	LOT
INTERM.	13 3/8	2080.0	17 1/2	2087.0	1.66	LOT
INTERM.	9 5/8	2510.0	12 1/4	2525.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
419	1.03			WATERBASED	23.07.1986



1030	1.14	20.0	12.9	WATERBASED	31.07.1986
1303	1.16	17.0	8.6	WATERBASED	04.08.1986
1769	1.38	24.0	9.1	WATERBASED	04.08.1986
1836	1.39	30.0	9.6	WATERBASED	04.08.1986
2050	1.42	27.0	8.1	WATERBASED	05.08.1986
2080	1.26			WATERBASED	08.08.1986
2087	1.44	28.0	8.6	WATERBASED	06.08.1986
2087	0.00	28.0	8.6	WATERBASED	07.08.1986
2305	1.27			WATERBASED	11.08.1986
2305	0.00			WATERBASED	12.08.1986
2525	1.26			WATERBASED	18.08.1986
2525	0.00			WATERBASED	21.08.1986
2525	0.00			WATERBASED	19.08.1986

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]
922_Formation_pressure_(Formasjonstrykk)	pdf	0.27

