



Generell informasjon

Brønnbane navn	6407/6-3
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Felt	MIKKEL
Funn	6407/6-3 Mikkel
Brønn navn	6407/6-3
Seismisk lokalisering	ST 8402-123 SP 762
Utvinningstillatelse	092
Boreoperatør	Den norske stats oljeselskap a.s
Boretillatelse	533-L
Boreinnretning	DYVI DELTA
Boredager	66
Borestart	13.12.1986
Boreslutt	16.02.1987
Frigitt dato	16.02.1989
Publiseringsdato	09.03.2009
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	GAS/CONDENSATE
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	FANGST GP
Avstand, boredekk - midlere havflate [m]	29.0
Vanndybde ved midlere havflate [m]	222.0
Totalt målt dybde (MD) [m RKB]	3220.0
Totalt vertikalt dybde (TVD) [m RKB]	3215.0
Maks inklinasjon [°]	7
Temperatur ved bunn av brønnbanen [°C]	98
Eldste penetrerte alder	LATE TRIASSIC
Eldste penetrerte formasjon	ÅRE FM
Geodetisk datum	ED50
NS grader	64° 42' 31.77" N



ØV grader	7° 40' 9.84" E
NS UTM [m]	7176849.07
ØV UTM [m]	436571.55
UTM sone	32
NPDID for brønnbanen	1024

Brønnhistorie

**General**

Well 6407/6-3 was drilled on the eastern side of the Halten Terrace, roughly mid-way between the Draugen and Midgard Discoveries off shore mid-Norway. It was drilled on the same structure as well 6407/6-2, which was junked due to a disastrous shallow gas blow-out. The primary objective was to test for hydrocarbon accumulation in sandstones of Middle Jurassic age (Fangst Group). Secondary objectives were possible hydrocarbon accumulations in Early Jurassic sandstone, and to verify the geophysical and structural interpretation and improve the geological, paleontological and geochemical understanding of the area. Total depth was to be in rocks of Triassic age or 4000 m in order to satisfy the licence commitment.

Operations and results

Wildcat well 6407/6-3 was spudded with the semi-submersible installation Dyvi Delta on 13 December 1986 and drilled to TD at 3220 m in Late Triassic sediments of the Åre Formation. No significant technical problems were encountered in the operations, which were completed within planned time and budget. No shallow gas was encountered in the well. At 512 m, the interval thought to correspond with that which caused the uncontrolled blow out from well 6407/6-2, a small resistivity peak was recorded, although the gamma ray reading remained constant. A negative drilling break was recorded at the same depth but here was no increase in gas. The well was drilled with spud mud down to 459 m, with gypsum/polymer mud from 459 m to 2470 m, and with gel/lignite/lignosulphonate mud from 2470 m to TD.

The Middle Jurassic sandstones were penetrated at 2461 m and were found to be gas/condensate bearing with a thin light oil leg. From FMT pressure gradients, logs and shows on cores an OWC can be set at 2583 m. There were shows and petroleum odour all through the reservoir down to 2583 m. Shows description, RFT pressure measurements, DST results and geochemical analyses indicated a gas/light oil contact at ca 2570 - 2575 m. Below 2583 m there was no fluorescence and only a weak, bluish white streaming cut. Sandstones of the Early Jurassic Tilje and Åre Formations were encountered at 2727 m. These were water wet without shows.

Seven cores were cut in the Fangst Group from 2472 to 2615 m. No wire line fluid samples were taken.

The well was permanently abandoned on 16 February 1987 as a gas/condensate discovery

Testing

Three drill stem tests were performed in the Fangst Group

DST 1 tested the interval 2570 - 2577 m (later corrected to 2574.2 – 2581.2 m). It produced 338600 Sm³ gas, 151.6 Sm³ condensate and 20 - 45 m³ water /day through a 72/64" choke. GOR was 2233 Sm³/Sm³, the oil density was 0.810 g/cm³, the gas gravity was 0.760 (air = 1). The bottom hole temperature measured in the test was 93 deg C.

DST 2 tested the interval 2546 - 2555 m (later corrected to 2550.2 – 2559.2 m). It produced 1249000 Sm³ gas, 512.7 Sm³ condensate and 1 m³ water /day through a 96/64" choke. GOR was 2437 Sm³/Sm³, the oil density was 0.737 g/cm³, the gas gravity was 0.723 (air = 1). The bottom hole temperature measured in the test was 98 deg C.

DST 3 tested the interval 2479 - 2489 m (later corrected to 2483 – 2493 m). It produced 1298000 Sm³ gas, 517.7 Sm³ condensate /day through a 72/64" choke. No water was produced. GOR was 2507 Sm³/Sm³, the oil density was 0.752 g/cm³, the gas gravity was 0.742 (air = 1). The bottom hole temperature measured in the test was 96 deg C.



Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
470.00	3220.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerper i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2472.0	2482.6	[m]
2	2491.0	2509.4	[m]
3	2509.4	2521.6	[m]
4	2522.0	2545.0	[m]
5	2552.0	2566.2	[m]
6	2575.0	2584.4	[m]
7	2588.0	2615.0	[m]

Total kjerneprøve lengde [m]	114.8
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



2472-2477m



2477-2482m



2482-2495m



2495-2500m



2500-2505m



2505-2509m



2509-2514m



2514-2519m



2519-2524m



2524-2529m



2529-2534m



2534-2539m



2539-2544m



2544-2558m



2556-2561m



2561-2566m



2566-2579m



2579-2584m



2584-2592m



2592-2597m



2597-2602m



2602-2607m



2607-2612m



2612-2615m

Oljeprøver i Sökkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	TEST1	2581.20	2574.20		31.01.1987 - 00:00	YES
DST	TEST2	2559.20	2550.20		05.02.1987 - 00:00	YES
DST	TEST3	2493.00	2483.00		10.02.1987 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
251	NORDLAND GP
251	NAUST FM
1227	KAI FM
1463	HORDALAND GP



1463	BRYGGE FM
1915	ROGALAND GP
1915	TARE FM
1978	TANG FM
2069	SHETLAND GP
2414	CROMER KNOLL GP
2445	VIKING GP
2445	SPEKK FM
2451	MELKE FM
2461	FANGST GP
2461	GARN FM
2492	NOT FM
2548	ILE FM
2639	BÅT GP
2639	ROR FM
2691	TOFTE FM
2698	ROR FM
2727	TILJE FM
2902	ÅRE FM

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
1024_1	pdf	0.13
1024_2	pdf	5.43
1024_3	pdf	0.45
1024_4	pdf	9.45

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
1024_01 WDSS General Information	pdf	0.44
1024_02 WDSS completion log	pdf	0.27

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)





Dokument navn	Dokument format	Dokument størrelse [KB]
1024 01 6407 6 3 Completion report	pdf	10.02
1024 02 6407 6 3 Completion log	pdf	3.17

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	2570	2577	12.7
2.0	2546	2555	19.1
3.0	2479	2489	19.1

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				
2.0				
3.0				

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0	115	228000	0.818	0.770	1979
2.0	260	753000	0.752	0.755	2897
3.0	326	746000	0.741	0.720	2288

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CBL	1100	2303
CDL CN GR	2455	3217
DIFL ACL GR	430	3090
DIFL BHC ACL GR SON	3078	3217
DIPLOG GR	2455	3090
DLL MLL GR	2455	3090
DTL	1300	2314
FMT HP	2455	3018
MWD - GR RES DIR	430	3100





SPL	2455	3090
SWC	470	538
TL	200	900
VSP	466	3181

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	324.0	36	332.0	0.00	LOT
SURF.COND.	20	430.0	26	459.0	1.55	LOT
INTERM.	13 3/8	1391.0	17 1/2	1418.0	1.95	LOT
INTERM.	9 5/8	2458.0	12 1/4	2470.0	1.98	LOT
LINER	7	3083.0	8 1/2	3100.0	1.89	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
459	1.15	7200.0	8.5	WATER BASED	19.12.1986
459	1.15	8800.0	8.5	WATER BASED	22.12.1986
459	1.15	8200.0	8.9	WATER BASED	22.12.1986
462	1.15	7200.0	8.9	WATER BASED	22.12.1986
545	1.59	6200.0	5.1	WATER BASED	16.02.1987
816	1.17	6400.0	11.0	WATER BASED	23.12.1986
1150	1.16	6300.0	8.0	WATER BASED	29.12.1986
1350	1.17	6300.0	9.3	WATER BASED	29.12.1986
1418	1.19	6500.0	9.3	WATER BASED	29.12.1986
1418	1.19	6000.0	6.4	WATER BASED	29.12.1986
1418	1.25	6000.0	8.0	WATER BASED	29.12.1986
1682	1.50	6700.0	8.9	WATER BASED	29.12.1986
1897	1.60	9000.0	9.7	WATER BASED	30.12.1986
2030	1.63	7000.0	8.9	WATER BASED	02.01.1987
2030	1.63	5900.0	6.8	WATER BASED	02.01.1987
2030	1.63	6900.0	7.2	WATER BASED	05.01.1987
2030	1.63	7400.0	9.3	WATER BASED	05.01.1987
2030	1.63	6800.0	7.2	WATER BASED	05.01.1987
2081	1.63	7800.0	8.9	WATERBASED	02.01.1987
2200	1.20	4800.0	3.0	WATER BASED	13.02.1987



Faktasider

Brønnbane / Leting

Utskriftstidspunkt: 14.5.2024 - 00:17

2463	1.20	5800.0	4.2	WATER BASED	12.01.1987
2463	1.20	6000.0	4.6	WATER BASED	14.01.1987
2463	1.20	5000.0	4.6	WATER BASED	08.01.1987
2463	1.20	5000.0	4.2	WATER BASED	09.01.1987
2463	1.20	5600.0	4.6	WATER BASED	12.01.1987
2463	1.20	6700.0	5.1	WATER BASED	12.01.1987
2463	1.20	5700.0	4.6	WATER BASED	13.01.1987
2463	1.20	5800.0	4.2	WATER BASED	15.01.1987
2463	1.20	5800.0	3.8	WATER BASED	16.01.1987
2470	1.20	6000.0	4.2	WATER BASED	19.01.1987
2472	1.25	6200.0	5.9	WATER BASED	06.01.1987
2491	1.25	4800.0	4.6	WATER BASED	07.01.1987
2536	1.20	4300.0	3.0	WATER BASED	09.02.1987
2536	1.20	5200.0	8.4	WATER BASED	09.02.1987
2536	1.20	5200.0	3.4	WATER BASED	10.02.1987
2536	1.20	5000.0	3.4	WATER BASED	11.02.1987
2536	1.20	5000.0	3.4	WATER BASED	12.02.1987
2565	1.20	4800.0	3.4	WATER BASED	09.02.1987
2565	1.20	5100.0	3.4	WATER BASED	02.02.1987
2565	1.20	5000.0	3.0	WATER BASED	03.02.1987
2565	1.20	5100.0	3.4	WATER BASED	04.02.1987
2565	1.20	4500.0	2.5	WATER BASED	05.02.1987
2565	1.20	4400.0	3.0	WATER BASED	09.02.1987
2640	1.20	6500.0	4.3	WATERBASED	27.01.1987
2640	1.20	7400.0	4.2	WATER BASED	28.01.1987
2640	1.20	7500.0	4.2	WATER BASED	29.01.1987
2640	1.20	4000.0	2.1	WATER BASED	30.01.1987
2640	0.00	4500.0	3.8	WATERBASED	02.02.1987
2640	1.20	4500.0	3.0	WATER BASED	02.02.1987
3083	1.20	8400.0	5.5	WATER BASED	19.01.1987
3083	1.20	7500.0	7.2	WATER BASED	19.01.1987
3119	1.20	7400.0	5.1	WATER BASED	21.01.1987
3125	1.20	9000.0	4.6	WATER BASED	21.01.1987
3197	1.20	6600.0	4.2	WATER BASED	22.01.1987
3220	1.20	7100.0	3.8	WATER BASED	23.01.1987
3220	1.20	7200.0	3.8	WATER BASED	26.01.1987
3220	1.20	6200.0	3.4	WATER BASED	26.01.1987
3220	1.20	6800.0	3.8	WATER BASED	26.01.1987



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]
1024 Formation pressure (Formasjonstrykk)	pdf	0.28

