Generell informasjon

Brønnbane navn	6407/4-1
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORWEGIAN SEA
Funn	6407/4-1 (Spinell Sør)
Brønn navn	6407/4-1
Seismisk lokalisering	HBGS 83 - 456 SP. 485
Utvinningstillatelse	106
Boreoperatør	Den norske stats oljeselskap a.s
Boretillatelse	474-L
Boreinnretning	ROSS ISLE
Boredager	119
Borestart	20.07.1985
Boreslutt	15.11.1985
Frigitt dato	15.11.1987
Publiseringsdato	18.05.2004
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	GAS/CONDENSATE
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	GARN FM
Avstand, boredekk - midlere havflate [m]	22.0
Vanndybde ved midlere havflate [m]	225.0
Totalt målt dybde (MD) [m RKB]	4835.0
Totalt vertikalt dybde (TVD) [m RKB]	4832.0
Maks inklinasjon [°]	5.2
Eldste penetrerte alder	LATE TRIASSIC
Eldste penetrerte formasjon	ÅRE FM
Geodetisk datum	ED50
NS grader	64° 35' 45.36'' N
ØV grader	7° 8' 42.17'' E
NS UTM [m]	7164900.01
ØV UTM [m]	411212.79

UTM sone	32
NPDID for brønnbanen	490

Brønnhistorie

General

Wildcat well 6407/4-1 was drilled on a structure in the Gimsan Basin on the Halten Terrace, in the central part of the block. The structure is an isolated domelike structure, all inside the block borders. Well 6407/4-1 is placed a little down flank on the biggest segment in the southeast part. The main objective was hydrocarbon accumulations in the Middle Jurassic, Garn Formation. The second objective was Middle Jurassic, Tilje Formation.

Operations and results

6407/4-1 was spudded with the semi-submersible rig Ross Isle on 20 July 1985 and drilled to TD at 4835 m in late Triassic sediments of the Åre Formation. The well was drilled with seawater and gel down to 849 m, with gypsum/polymer mud fro 849 m to 2121 m, with gypsum/polymer/lignosulphonate mud from 2121 m to 3817 m, and with gel/lignosulphonate/lignite mud from 3817 m to TD. Drilling the well proceeded without significant problems.

Oil shows were recorded in sandstone in the interval 2467 m to 2720 m in Campanian-Santonian-Coniacian age sediments of the Shetland Group. Hydrocarbon bearing Middle Jurassic sandstones were encountered at 3890 m KB. Good and strong continuous shows were recorded throughout the Spekk and Melke Formations and the Fangst Group. Geochemical analyses recorded continuous shows in the Tilje Formation (down to ca 4330 m), some shows in sandstones of the Åre Formation, and they confined the oil-water contact in the Garn Formation to between 3952.8 m and 3960.0 m. Above ca 3780 metres the shows involve a light to medium gravity oil, whilst below this depth the oils are waxier and of medium gravity. Top reservoir, in Garn Formation, came in at 3889.5 m, 28 m higher than prognosed. Gas was produced from the reservoir, but reservoir qualities were poor. Geochemical analyses showed very good source rock potential in the Spekk Formation. The geochemistry also indicated that Spekk is not classically oil-prone in the area, but has a mixed potential for oil and gas. Fifteen cores were recovered from 2286 m to 2293 m and 2384 m to 2392.3 m in the Shetland Group (cores 1 and 2), 3889 m to 3981 m in through the Garn and into the Not Formation (cores 3 to 6), 4021 m to 4076.2 m in the upper part of the Ile Formation (cores 7 and 8), 4278 m to 4337.8 m in the upper part of the Tilje Formation (cores 9 to 14), and from 4605 m to 4619.3 m in the Åre Formation (core 15). A segregated sample was taken with RFT at 3898.5 m. The well was permanently abandoned on 15 November 1985 as a gas/condensate discovery.

Testing

Two Drill Stem Tests were performed, one in the Tofte Formation from 4159 m to 4166 m, and one in the Garn Formation from 3889 m to 3919 m.

The Tofte test produced water only at a rate of 30 Sm3/day. The maximum temperature in this test was 148°C.

The Garn test produced condensate at a rate of 20 Sm3/day and gas at a rate of 32500 Sm3/day, giving a GOR of 1625 Sm3/Sm3. The condensate density was 0.807 g/cm3 and the gas gravity was 0.81 (air = 1). The maximum temperature in this test was 142.5°C.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
330.00	4835.00

Borekaks tilgjengelig for prøvetaking?	YES

Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2286.0	2293.4	[m]
2	2384.0	2392.3	[m]
3	3889.0	3896.0	[m]
4	3898.0	3926.0	[m]
5	3926.0	3953.5	[m]
6	3953.0	3981.2	[m]
7	4021.0	4048.6	[m]
8	4048.6	4076.2	[m]
9	4278.0	4283.7	[m]
10	4284.0	4299.7	[m]
11	4301.0	4304.5	[m]
12	4304.5	4313.6	[m]
13	4314.0	4325.1	[m]
14	4327.0	4337.8	[m]
15	4605.0	4619.3	[m]

Total kjerneprøve lengde [m]	231.8
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder


2285-2290m


4605-4611m


2291-2293m


4611-4617m


2384-2388m


4617-4619m


2389-2392m


3889-3894m


3895-3896m


3898-3903m


3904-3909m


3910-3915m


3916-3921m


3922-3925m


3926-3931m


3932-3937m


3938-3943m


3944-3949m


3950-3953m


3953-3958m


3959-3964m


3965-3970m


3971-3976m


3977-3981m


4021-4026m


4027-4032m


4033-4038m


4039-4044m


4045-4048m


4048-4053m


4054-4059m


4060-4065m


4066-4071m


4072-4076m


4278-4283m


4284-4289m


4290-4295m


4296-4299m


4301-4304m


4304-4309m


4310-4313m


4314-4319m


4320-4325m


4327-4332m


4333-4334m


4605-4611m


4611-4617m


4617-4619m

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
2080.0	[m]	DC	STRAT
2140.0	[m]	DC	STRAT
2159.0	[m]	SWC	STRAT
2160.0	[m]	DC	STRAT
2170.0	[m]	DC	STRAT
2180.0	[m]	DC	STRAT
2190.0	[m]	DC	STRAT
2210.0	[m]	DC	STRAT
2220.0	[m]	DC	STRAT
2228.0	[m]	SWC	STRAT
2240.0	[m]	DC	STRAT
2260.0	[m]	DC	STRAT
2269.0	[m]	DC	STRAT
2281.0	[m]	DC	STRAT
2292.8	[m]	C	STRAT
2294.0	[m]	DC	STRAT

2306.0	[m]	DC	STRAT
2315.0	[m]	DC	STRAT
2324.0	[m]	DC	STRAT
2333.0	[m]	DC	STRAT
2342.0	[m]	DC	STRAT
2351.0	[m]	DC	STRAT
2359.5	[m]	SWC	STRAT
2369.0	[m]	DC	STRAT
2387.0	[m]	DC	STRAT
2387.1	[m]	C	STRAT
2405.0	[m]	DC	STRAT
2414.0	[m]	DC	STRAT
2432.0	[m]	DC	STRAT
2441.0	[m]	DC	STRAT
2459.0	[m]	DC	STRAT
2473.0	[m]	SWC	STRAT
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2486.0	[m]	DC	STRAT
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2528.0	[m]	DC	STRAT
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2552.0	[m]	DC	STRAT
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2579.0	[m]	DC	STRAT
2594.0	[m]	DC	STRAT
2609.0	[m]	DC	STRAT
2624.0	[m]	DC	STRAT
2628.8	[m]	SWC	STRAT
2639.0	[m]	DC	STRAT
2654.0	[m]	DC	STRAT
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2684.0	[m]	DC	STRAT
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2864.0	[m]	DC	STRAT
2879.0	[m]	DC	STRAT
2894.0	[m]	DC	STRAT
2909.0	[m]	DC	STRAT
2939.0	[m]	DC	STRAT
2954.0	[m]	DC	STRAT
2969.0	[m]	DC	STRAT
2984.0	[m]	DC	STRAT
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3209.0	[m]	DC	STRAT
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3224.4	[m]	SWC	STRAT
3239.0	[m]	DC	STRAT
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3313.0	[m]	DC	STRAT
3359.0	[m]	DC	STRAT
3379.0	[m]	DC	STRAT
3384.0	[m]	DC	STRAT
3404.0	[m]	DC	STRAT
3488.0	[m]	SWC	STRAT

3494.0	[m]	DC	STRAT
3509.0	[m]	DC	STRAT
3524.0	[m]	DC	STRAT
3539.0	[m]	DC	STRAT
3554.0	[m]	DC	STRAT
3560.0	[m]	SWC	STRAT
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3599.0	[m]	DC	STRAT
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3643.0	[m]	DC	STRAT
3658.0	[m]	DC	STRAT
3673.0	[m]	DC	STRAT
3688.0	[m]	DC	STRAT
3698.0	[m]	SWC	STRAT
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3710.0	[m]	SWC	STRAT
3712.0	[m]	DC	PETROSTR
3718.0	[m]	DC	STRAT
3721.0	[m]	DC	PETROSTR
3724.0	[m]	DC	PETROS
3729.0	[m]	SWC	STRAT
3730.0	[m]	DC	PETROSTR
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3739.0	[m]	DC	PETROSTR
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3754.0	[m]	SWC	STRAT
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3766.0	[m]	DC	PETROSTR
3771.0	[m]	SWC	STRAT
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3780.0	[m]	SWC	STRAT
3790.0	[m]	DC	PETROSTR
3793.5	[m]	SWC	STRAT
3805.0	[m]	DC	STRAT
3822.0	[m]	SWC	STRAT
3823.0	[m]	DC	STRAT

3835.0	[m]	DC	PETROSTR
3838.0	[m]	DC	STRAT
3853.0	[m]	DC	STRAT
3864.0	[m]	SWC	STRAT
3868.0	[m]	DC	STRAT
3883.0	[m]	DC	STRAT
3886.0	[m]	DC	PETROSTR
3888.0	[m]	SWC	STRAT
3894.4	[m]	C	STRAT
3898.0	[m]	DC	STRAT
3899.5	[m]	C	STRAT
3906.3	[m]	C	STRAT
3913.0	[m]	DC	STRAT
3913.6	[m]	C	STRAT
3918.6	[m]	C	STRAT
3928.0	[m]	DC	STRAT
3928.2	[m]	C	STRAT
3943.0	[m]	DC	STRAT
3946.8	[m]	C	STRAT
3952.9	[m]	C	STRAT
3954.2	[m]	C	STRAT
3958.0	[m]	DC	STRAT
3959.7	[m]	C	STRAT
3966.5	[m]	C	STRAT
3973.0	[m]	DC	STRAT
3977.0	[m]	C	STRAT
3988.0	[m]	DC	STRAT
3997.5	[m]	SWC	STRAT
4003.0	[m]	DC	STRAT
4018.0	[m]	DC	STRAT
4018.5	[m]	SWC	STRAT
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4027.8	[m]	C	STRAT
4033.0	[m]	DC	STRAT
4033.9	[m]	C	STRAT
4040.0	[m]	C	STRAT
4046.7	[m]	C	STRAT
4048.0	[m]	DC	STRAT
4052.7	[m]	C	STRAT
4059.9	[m]	C	STRAT

4063.0	[m]	DC	STRAT
4067.3	[m]	C	STRAT
4073.6	[m]	C	STRAT
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4093.0	[m]	DC	STRAT
4108.0	[m]	DC	STRAT
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4258.0	[m]	DC	STRAT
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4286.4	[m]	C	STRAT
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4292.3	[m]	C	STRAT
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4304.5	[m]	C	STRAT
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4318.0	[m]	DC	STRAT
4318.4	[m]	C	STRAT
4327.9	[m]	C	STRAT
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4348.0	[m]	DC	STRAT
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4378.0	[m]	DC	STRAT
4389.0	[m]	SWC	STRAT
4393.0	[m]	DC	STRAT
4408.0	[m]	DC	STRAT

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4438.0	[m]	DC	STRAT
4453.0	[m]	DC	STRAT
4465.0	[m]	SWC	STRAT
4468.0	[m]	DC	STRAT
4483.0	[m]	DC	STRAT
4492.0	[m]	DC	STRAT
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4514.0	[m]	DC	STRAT
4526.0	[m]	DC	STRAT
4534.0	[m]	DC	STRAT
4540.0	[m]	DC	STRAT
4543.0	[m]	DC	STRAT
4549.0	[m]	DC	STRAT
4552.3	[m]	SWC	STRAT
4558.0	[m]	DC	STRAT
4566.3	[m]	SWC	STRAT
4567.0	[m]	DC	STRAT
4573.0	[m]	DC	STRAT
4576.0	[m]	DC	STRAT
4581.4	[m]	SWC	STRAT
4585.0	[m]	DC	STRAT
4603.0	[m]	DC	STRAT
4605.0	[m]	DC	STRAT
4605.9	[m]	C	STRAT
4609.0	[m]	C	STRAT
4611.6	[m]	C	STRAT
4612.7	[m]	C	STRAT
4613.9	[m]	C	STRAT
4618.0	[m]	C	STRAT
4618.1	[m]	C	STRAT
4624.0	[m]	DC	STRAT
4632.0	[m]	DC	STRAT
4639.0	[m]	DC	STRAT
4648.0	[m]	DC	STRAT
4654.0	[m]	DC	STRAT
4663.0	[m]	DC	STRAT
4678.0	[m]	DC	STRAT
4693.0	[m]	DC	STRAT
4705.0	[m]	DC	STRAT

4708.0	[m]	DC	STRAT
4723.0	[m]	DC	STRAT
4738.0	[m]	DC	STRAT
4744.0	[m]	DC	STRAT
4753.0	[m]	DC	STRAT
4762.0	[m]	DC	STRAT
4768.0	[m]	DC	STRAT
4783.0	[m]	DC	STRAT
4789.0	[m]	DC	STRAT
4795.0	[m]	DC	STRAT
4798.0	[m]	DC	STRAT
4801.0	[m]	DC	STRAT
4808.0	[m]	DC	STRAT
4810.0	[m]	DC	STRAT
4813.0	[m]	DC	STRAT
4828.0	[m]	DC	STRAT
4835.0	[m]	DC	STRAT

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	TEST2	3889.00	3919.00		04.11.1985 - 08:50	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
247	NORDLAND GP
247	NAUST FM
1265	KAI FM
1430	HORDALAND GP
1430	BRYGGE FM
2098	ROGALAND GP
2098	TARE FM
2174	TANG FM
2265	SHETLAND GP
2265	SPRINGAR FM

2422	NISE FM
2598	KVITNOS FM
3010	CROMER KNOLL GP
3010	LANGE FM
3682	LYR FM
3710	VIKING GP
3710	SPEKK FM
3772	MELKE FM
3890	FANGST GP
3890	GARN FM
3969	NOT FM
4021	ILE FM
4106	BÅT GP
4106	ROR FM
4150	TOFTE FM
4209	ROR FM
4272	TILJE FM
4500	ÅRE FM

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
490	pdf	1.02

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
490_1	pdf	6.54

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
490_01_WDSS_General_Information	pdf	0.31
490_02_WDSS_completion_log	pdf	0.38

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
490_6407_4_1_COMPLETION_REPORT_AND_LOG	pdf	10.56
490_6407_4_1_COMPLETION_REPORT	.PDF	101.71

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	4159	4166	0.0
2.0	3889	3919	17.5

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				148
2.0				142

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0					
2.0	20	32500	0.807	0.810	1625

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CBL VDL GR	247	2121
CBL VDL GR	2095	3816
CBL VDL GR	3608	4529
CST GR	2160	3822
CST GR	3488	3768
CST GR	3825	4521
CST GR	4534	4611
DLL MSFL GR	2120	4519
ISF LSS MSFL GR	322	4836

LDT CNL GR	322	3793
LDT CNL SGR	3817	4523
LDT CNL SGR	4529	4837
MWD	320	4280
RFT GR	3891	3944
RFT GR	3891	4495
SHDT GR	2120	3828
VSP	2100	4740

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	320.0	36	322.0	0.00	LOT
SURF.COND.	20	849.0	26	867.0	1.60	LOT
INTERM.	13 3/8	2121.0	17 1/2	2134.0	1.83	LOT
INTERM.	9 5/8	3825.0	12 1/4	3828.0	2.03	LOT
LINER	7	4528.0	8 1/2	4540.0	2.10	LOT
OPEN HOLE		4835.0	6	4835.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
1368	1.18	11.0	3.8	WATER BASED	02.08.1985
1458	1.25	12.0	6.0	WATER BASED	05.08.1985
1860	1.35	14.0	12.8	WATER BASED	05.08.1985
1904	1.35	14.0	12.8	WATER BASED	05.08.1985
1920	1.40	14.0	12.8	WATER BASED	05.08.1985
2058	1.48	11.0	13.8	WATER BASED	05.08.1985
2134	1.51	11.0	13.8	WATER BASED	07.08.1985
2134	1.54	13.0	8.0	WATER BASED	08.08.1985
2134	1.54	13.0	8.0	WATER BASED	08.08.1985
2286	1.57	19.0	6.8	WATER BASED	12.08.1985
2384	1.76	21.0	9.0	WATER BASED	12.08.1985
2935	1.76	24.0	9.0	WATER BASED	19.08.1985
3076	1.76	51.0	7.5	WATER BASED	21.08.1985
3668	1.76	50.0	7.0	WATER BASED	02.09.1985
3743	1.76	49.0	8.0	WATER BASED	02.09.1985

3747	1.45	22.0	11.0	WATER BASED	12.09.1985
3825	1.76	48.0	7.0	WATER BASED	04.09.1985
4189	1.38	24.0	6.0	WATER BASED	24.09.1985
4510	1.39	26.0	11.0	WATER BASED	07.10.1985
4529	1.41	20.0	7.5	WATER BASED	07.10.1985

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]
490_Formation_pressure_(Formasjonstrykk)	pdf	0.23