



Generell informasjon

Brønnbane navn	2/1-9
Type	EXPLORATION
Formål	WILDCAT
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	GYDA
Funn	2/1-9 Gyda Sør
Brønn navn	2/1-9
Seismisk lokalisering	X-OVER 3D LINE 560 AND X-LINE 570
Utvinningstillatelse	019 B
Boreoperatør	BP Norway Limited U.A.
Boretillatelse	676-L
Boreinnretning	ROSS ISLE
Boredager	83
Borestart	15.04.1991
Boreslutt	06.07.1991
Plugget dato	06.07.1991
Frigitt dato	06.07.1993
Publiseringsdato	16.10.2007
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	LATE JURASSIC
1. nivå med hydrokarboner, formasjon.	ULA FM
Avstand, boredekk - midlere havflate [m]	23.0
Vanndybde ved midlere havflate [m]	66.0
Totalt målt dybde (MD) [m RKB]	4298.0
Totalt vertikalt dybde (TVD) [m RKB]	4298.0
Maks inklinasjon [°]	2.2
Temperatur ved bunn av brønnbanen [°C]	160
Eldste penetrerte alder	LATE PERMIAN
Eldste penetrerte formasjon	ZECHSTEIN GP
Geodetisk datum	ED50



NS grader	56° 51' 37.77" N
ØV grader	3° 5' 4.77" E
NS UTM [m]	6302000.77
ØV UTM [m]	505162.30
UTM sone	31
NPDID for brønnbanen	1667

Brønnhistorie

General

Well 2/1-9 was drilled on the Gyda South structure, a fault/dip closure in the Late Jurassic fairway on the eastern flank of the Central Graben, 6 km south of the Gyda Field. The main objective of the well was to test the Late Jurassic "Gyda sandstone" (Ula Formation) target and prove a volume of oil that was commercial as a tie back development to the Gyda platform. Secondary reservoir potential existed in both the Middle Jurassic and in the uppermost part of the Triassic. Estimated TD was 4275 m TVD RKB.

Operations and results

Appraisal well 2/1-9 was spudded with the semi submersible rig Ross Isle 15 March 1991 and drilled to TD at 4298 m in the late Permian Zechstein Group. No significant problems were encountered in the operations. No shallow gas was detected. The well was drilled with seawater and high viscosity slugs down to 900 m, and with Aquamul ether-based invert emulsion mud system from 900 m to TD.

A 59 m Forties Formation sandstone sequence was encountered at 2923 m in the Late Paleocene and another ca 30 m thick sandstone sequence at 3025 m within the Lista Formation. Top Mandal Formation was encountered at 4013.5 m, 10.5m deeper than predicted. Top Ula Formation was encountered hydrocarbon bearing from 4048 to 4209 m, which was 111 m thicker than expected. The OWC was interpreted from logs to be at 4137.0 m, while the cores taken had good oil shows all through the cored section, i.e. down to 4153 m. No reservoir sections were encountered in the Middle Jurassic. No Triassic sediments were penetrated by the well.

Five cores were cut continuously from 4019 m to 4153 m with 100% recovery. Core 1 covered the lower part of the Mandal, Farsund, and the upper part of the Ula Formation. Cores 2, 3, 4 and 5 were cut in the Ula Formation. Good oil shows was observed throughout the cored section of the Ula sandstone. RFT fluid samples were taken at 4088.7 m (oil), 4137.0 m (oil), 4151 (water), and 4177 m (water).

Well 2/1-9 was considered a potential water injector for the Gyda South discovery, and to be sidetracked up-dip as a producer. A full evaluation of the DST and PVT data would be performed together with a geological remapping and evaluation of the discovery. The well was thus suspended on 6 July 1991, as an oil discovery. It would be re-entered later, after the above evaluations had been completed.

Testing

One DST was run in the interval 4078 - 4108 m and resulted in an oil rate of 166 Sm³ oil/day through a 32/64" choke. The gas rate was 91180 Sm³/day and the water rate was 120 Sm³/day. The GOR was 548 Sm³/Sm³ and the oil gravity was 43 deg API. Due to the presence of H₂S the lower part of the Ula Formation was not tested.



Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	4019.0	4046.0	[m]
2	4046.0	4074.0	[m]
3	4074.0	4102.0	[m]
4	4102.0	4124.5	[m]
5	4125.0	4153.0	[m]

Total kjerneprøve lengde [m]	133.5
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



4019-4024m



4024-4029m



4039-4034m



4034-4039m



4039-4044m



4044-4046m



4046-4051m



4051-4056m



4056-4061m



4061-4066m



4066-4071m



4071-4074m



4074-4079m



4079-4084m



4084-4089m



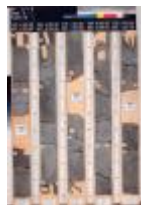
4089-4094m



4094-4099m



4099-4102m



4102-4107m



4107-4112m



4112-4117m



4117-4122m



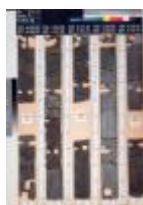
4122-4124m



4125-4130m



4130-4135m



4135-4140m



4140-4145m



4145-4150m



4150-4152m

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST		0.00	0.00			YES
DST	DST1	4108.00	4078.00		14.06.1991 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
89	NORDLAND GP
1814	HORDALAND GP
2898	ROGALAND GP
2898	BALDER FM
2915	SELE FM
2923	FORTIES FM



2982	LISTA FM
3055	VIDAR FM
3143	LISTA FM
3158	VÅLE FM
3168	SHETLAND GP
3168	EKOFISK FM
3256	TØR FM
3617	HOD FM
3765	BLØDØKS FM
3783	HIDRA FM
3800	CROMER KNOLL GP
3800	RØDBY FM
3838	SOLA FM
3852	TUXEN FM
3867	ÅSGARD FM
4014	TYNE GP
4014	MANDAL FM
4034	FARSUND FM
4048	VESTLAND GP
4048	ULA FM
4257	BRYNE FM
4289	ZECHSTEIN GP

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
1667	pdf	0.50

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
1667_1	pdf	0.33
1667_2	pdf	0.97

Dokumenter - eldre Søkeldirektoratets WDSS rapporter og andre relaterte dokumenter





Dokument navn	Dokument format	Dokument størrelse [KB]
1667_01_WDSS_General_Information	pdf	1.46
1667_02_WDSS_completion_log	pdf	0.22

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
1667_2_1_9_COMPLETION_LOG	pdf	1.76
1667_2_1_9_COMPLETION_REPORT	pdf	11.33

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	4078	4108	17.4

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningsstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0	7.000		23.600	160

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstygde rel. luft	GOR [m3/m3]
1.0	165	90577			549

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CBL VDL CCL GR	2040	2895
CBL VDL CCL GR	3761	4249
CST GR	3500	3947
CST GR	3957	4288
DIL LLS GR	0	3954
DIL SDT GR	3945	4298
ENERJET CCL	4078	4093
ENERJET CCL	4093	4108





GR CCL	2700	2700
GR CCL	4003	4003
GR CCL	4150	4150
JUNK BASKET CCL	3980	3980
JUNK BASKET CCL	4250	4250
LDL CNL NGT	3945	4298
MWD - RWD	88	4289
OBDT GR	3945	4298
PERM PACKER	4003	4003
RFT GR SAMPLE	4049	4243
RFT SAMPLE	4088	4088
RFT SAMPLE	4151	4151
RFT SAMPLE	4177	4177
VELOCITY	500	4213

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	164.0	36	166.0	0.00	LOT
INTERM.	20	895.0	26	897.0	1.74	LOT
INTERM.	13 3/8	2893.0	17 1/2	2896.0	2.03	LOT
INTERM.	9 5/8	3938.0	12 1/4	3940.0	2.15	LOT
LINER	7	4275.0	8 1/2	4289.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	flytegrense [Pa]	Type slam	Dato, måling
415	0.00			OIL BASED	
426	1.57	42.0		OIL BASED	
900	1.04			WATER BASED	
961	1.20	31.0		WATER BASED	
1583	1.39	49.0		WATER BASED	
2153	1.60	72.0		WATER BASED	
2474	1.60	64.0		WATER BASED	
2529	1.60	74.0		WATER BASED	
2682	1.60	73.0		WATER BASED	
2874	1.60	71.0		WATER BASED	



2901	1.60	77.0		WATER BASED	
3018	1.60	69.0		WATER BASED	
3114	1.60	68.0		WATER BASED	
3173	1.60	7.7		WATER BASED	
3193	1.60	57.0		WATER BASED	
3243	1.60	60.0		WATER BASED	
3253	1.60	68.0		WATER BASED	
3318	1.60	76.0		WATER BASED	
3413	1.60	79.0		WATER BASED	
3610	1.60	80.0		WATER BASED	
3775	1.73	85.0		WATER BASED	
3847	1.73	77.0		WATER BASED	
3910	1.73	82.0		OIL BASED	
3947	1.73	91.0		OIL BASED	
3967	1.72	82.0		OIL BASED	
4019	1.62	51.0		OIL BASED	
4039	1.56	49.0		OIL BASED	
4074	1.56	47.0		OIL BASED	
4102	1.57	53.0		OIL BASED	
4125	0.14	53.0		OIL BASED	
4153	1.57	53.0		OIL BASED	
4240	1.58	56.0		OIL BASED	
4289	1.59	72.0		OIL BASED	

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]
1667 Formation pressure (Formasjonstrykk)	PDF	0.21

