



Generell informasjon

Brønnbane navn	34/7-9
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	SNORRE
Funn	34/4-1 Snorre
Brønn navn	34/7-9
Seismisk lokalisering	SG 8420 ROW 011 COLUMN 470
Utvinningstillatelse	089
Boreoperatør	Saga Petroleum ASA
Boretillatelse	510-L
Boreinnretning	TREASURE SAGA
Boredager	61
Borestart	13.04.1986
Boreslutt	12.06.1986
Frigitt dato	12.06.1988
Publiseringsdato	20.06.2011
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	LATE TRIASSIC
1. nivå med hydrokarboner, formasjon.	LUNDE FM
Avstand, boredekk - midlere havflate [m]	26.0
Vanndybde ved midlere havflate [m]	330.0
Totalt målt dybde (MD) [m RKB]	3240.0
Totalt vertikalt dybde (TVD) [m RKB]	3239.0
Maks inklinasjon [°]	2.7
Temperatur ved bunn av brønnbanen [°C]	93
Eldste penetrerte alder	LATE TRIASSIC
Eldste penetrerte formasjon	LUNDE FM
Geodetisk datum	ED50
NS grader	61° 29' 11.99" N



ØV grader	2° 11' 43.6" E
NS UTM [m]	6817423.20
ØV UTM [m]	457150.88
UTM sone	31
NPDID for brønnbanen	889

Brønnhistorie

General

Well 34/7 9 was drilled on the Snorre structure in the northernmost part of the block. The main objective of the well was to test the hydrocarbon potential of the upper Lunde Formation in the Snorre structure.

Operations and results

Appraisal well 34/7-9 was spudded with the semi-submersible installation Treasure Saga on 13 April 1986 and drilled to TD at 3240 m in the Late Triassic Lunde Formation. Minor shallow gas peaks were observed from mud gas readings in the pilot hole below the 30" casing at 498 - 500 m. Drilling proceeded without significant problems. The well was drilled with spud mud down to 471 m, with gel mud from 471 m to 915 m, with gypsum/polymer mud from 915 m to 2479 m, and with gel mud from 2479 m to TD.

Well 34/7-9 penetrated the reservoir at 2442.5 m, 50 m deeper than prognosed. From FMT pressure points the oil water contact (OWC) was defined in the upper Lunde at 2600 m (2574 m MSL). The average log porosity in the oil zone was 25.6%, the net/gross was 0.24, and the average water saturation was 30%.

Shows were seen from 2100 to 2315 m in the Shetland Group. Below 2315 m the shows disappeared and did not reappear before the upper Lunde reservoir was penetrated at 2442.5 m. Down to a sandstone/claystone boundary at 2594 m, the sandstones showed a pale brown oil stain, fair to good odour, 100% - 90% strong, patchy, yellow to light yellow fluorescence, fast to instant streaming bluish white cut and a pale yellow residue upon evaporation. Below 2594 m no shows were seen.

A total of 10 cores were cut and recovered during drilling of the well. The cores were taken in the upper Lunde Formation from 2470.0 to 2720.5 m core depth. The average core recovery was 96.7%. Logger's depths for the cores were from 1.75 to 4.00 m shallower than the core depths. FMT fluid samples were taken at 2585 m and 2592 m. All analysed sample chambers contained black oil and brown-grey water with sediments.

The well was permanently abandoned on 12 June 1986 as an oil appraisal.

Testing

One DST was carried out with four zones in the upper Lunde Formation flowing simultaneously: 2501 - 2504 m, 2506 - 2515 m, 2527 - 2536 m, and 2550 - 2553. The zones were flowed for 175 hours, followed by a build-up of 50 hours. During the main flow period the flow rate through a 15.9 mm choke decreased from 1400 Sm³/day to 896 Sm³/day and the corresponding wellhead pressure decreased from 130 to 93 bar. Fluid analyses of pressurized samples from the test gave a GOR of 103 Sm³/Sm³ and stock tank oil density of 0.8258 g/cm³. The maximum temperature recorded at reference depth, mid-perforations, was 93.3 deg C.



Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
480.00	3240.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	2470.0	2494.5	[m]
2	2494.5	2518.0	[m]
3	2518.0	2546.0	[m]
4	2546.0	2574.0	[m]
5	2574.0	2593.0	[m]
6	2593.0	2607.7	[m]
7	2615.0	2642.3	[m]
8	2643.0	2670.5	[m]
9	2670.0	2692.5	[m]
10	2692.5	2720.5	[m]

Total kjerneprøve lengde [m]	243.0
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



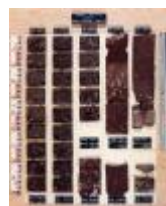
2470-2475m



2475-2480m



2480-2485m



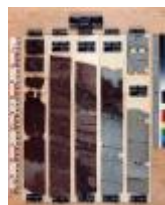
2485-2490m



2490-2495m



2495-2499m



2499-2504m



2504-2509m



2509-2514m



2514-2518m



2518-2523m



2523-2528m



2528-2533m



2533-2538m



2538-2543m



2543-2546m



2546-2551m



2551-2556m



2556-2561m



2561-2566m



2566-2571m



2571-2574m



2574-2579m



2579-2584m



2584-2589m



2589-2593m



2593-2598m



2598-2603m



2603-2608m



2615-2620m



2620-2625m



2625-2630m



2630-2635m



2635-2640m



2640-2642m



2643-2648m



2648-2653m



2653-2658m



2658-2663m



2663-2668m



2668-2670m



2670-2675m



2675-2679m



2680-2685m



2685-2690m



2690-2694m



2692-2697m



2697-2702m



2702-2707m



2707-2712m



2712-2717m



2717-2621m

Palynologiske preparater i Sjøkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
1839.0	[m]	SWC	R.R.I
1863.0	[m]	SWC	R.R.I
1900.0	[m]	SWC	R.R.I
1930.0	[m]	SWC	R.R.I
1965.0	[m]	SWC	R.R.I
1996.0	[m]	SWC	R.R.I
2026.0	[m]	SWC	R.R.I
2058.0	[m]	SWC	R.R.I
2095.0	[m]	SWC	R.R.I
2146.0	[m]	SWC	R.R.I
2212.0	[m]	SWC	R.R.I
2245.0	[m]	SWC	R.R.I
2330.0	[m]	SWC	R.R.I
2380.0	[m]	SWC	R.R.I



Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	DST1B	2524.00	2527.00	OIL	24.05.1986 - 20:30	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
356	NORDLAND GP
1077	UTSIRA FM
1172	HORDALAND GP
1445	NO FORMAL NAME
1511	NO FORMAL NAME
1657	ROGALAND GP
1657	BALDER FM
1681	LISTA FM
1807	SHETLAND GP
1807	JORSALFARE FM
2025	KYRRE FM
2429	CROMER KNOLL GP
2429	RØDBY FM
2435	ÅSGARD FM
2443	HEGRE GP
2443	LUNDE FM

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
889_1	pdf	0.36
889_2	pdf	2.18

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter





Dokument navn	Dokument format	Dokument størrelse [KB]
889_01_WDSS_General_Information	pdf	0.28
889_02_WDSS_completion_log	pdf	0.26

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
889_34_7_9_Completion_Log	pdf	1.84
889_34_7_9_Completion_report	pdf	37.25

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	2554	2501	15.9
1.1	2536	2527	15.9
1.2	2515	2506	15.9
1.3	2504	2501	15.9

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0	35.000	9.000	33.000	92
1.1				93
1.2				94
1.3				95

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstygde rel. luft	GOR [m3/m3]
1.0	896	79000	0.839	0.778	88
1.1	1135	109000	0.835	0.805	96
1.2	893	79000	0.835	0.795	89
1.3	896	79000	0.838	0.805	88

Logger





Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CDL CNL GR	2400	3154
CDL CNL GR FMT	1819	2717
DIFL LS BHC CDL GR	899	1832
DIFL LS BHC GR	1819	3154
DIFL LS BHC GR FMT	3120	3238
DIPLOG FMT	1819	3254
DLL MLL GR	1819	2716
MWD - GR	466	471
MWD - GR RES	466	915
MWD - GR RES DIR	466	3238
VSP	700	3238

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	465.0	36	471.0	0.00	LOT
SURF.COND.	20	899.0	26	1002.0	1.46	LOT
INTERM.	13 3/8	1821.0	17 1/2	2138.0	1.83	LOT
INTERM.	9 5/8	2802.0	12 1/4	3240.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
390	1.03			WATER BASED	15.06.1986
471	1.03			WATER BASED	21.04.1986
616	1.10	8.0	22.1	WATER BASED	21.04.1986
858	1.15	6.0	21.6	WATER BASED	21.04.1986
915	1.16	7.0	26.9	WATER BASED	21.04.1986
915	1.03			WATER BASED	21.04.1986
915	1.20	8.0	27.8	WATER BASED	21.04.1986
1002	1.10	12.0	7.7	WATER BASED	21.04.1986
1461	1.20	15.0	10.1	WATER BASED	23.04.1986
1498	1.20	16.0	9.6	WATER BASED	23.04.1986
1617	1.30	18.0	10.1	WATER BASED	25.04.1986
1709	1.73	20.0	5.8	WATER BASED	15.06.1986



1837	1.41	22.0	9.1	WATER BASED	28.04.1986
1837	1.41	22.0	9.6	WATER BASED	28.04.1986
1837	1.41	22.0	8.7	WATER BASED	02.05.1986
2138	1.58	25.0	10.1	WATER BASED	02.05.1986
2350	1.65	28.0	8.7	WATER BASED	09.05.1986
2430	1.70	29.0	6.8	WATER BASED	05.05.1986
2446	1.73	27.0	6.8	WATER BASED	05.05.1986
2446	1.73	28.0	6.3	WATER BASED	12.05.1986
2446	1.73	27.0	6.8	WATER BASED	12.05.1986
2446	1.73	18.0	4.8	WATER BASED	24.05.1986
2446	1.73	19.0	5.3	WATER BASED	06.06.1986
2446	1.73	27.0	6.3	WATER BASED	09.05.1986
2518	1.73	26.0	8.2	WATER BASED	05.05.1986
2546	1.73	26.0	6.8	WATER BASED	05.05.1986
2574	1.73	28.0	6.3	WATER BASED	05.05.1986
2603	1.73	25.0	8.7	WATER BASED	05.05.1986
2641	1.73	26.0	6.8	WATER BASED	09.05.1986
2670	1.73	25.0	6.8	WATER BASED	09.05.1986
2770	1.73	28.0	6.3	WATER BASED	09.05.1986
2802	1.73	19.0	5.3	WATER BASED	06.06.1986
2802	1.73	18.0	4.8	WATER BASED	25.05.1986
2802	1.73	18.0	4.8	WATER BASED	06.06.1986
2802	1.73	22.0	7.2	WATER BASED	21.05.1986
2802	1.73	20.0	5.8	WATER BASED	15.06.1986
2802	1.73	20.0	5.8	WATER BASED	15.06.1986
2802	1.73	20.0	5.8	WATER BASED	15.06.1986
2802	1.73	19.0	4.8	WATER BASED	24.05.1986
2802	1.73	19.0	5.8	WATER BASED	06.06.1986
2806	1.73	26.0	7.2	WATER BASED	12.05.1986
2813	1.73	20.0	6.3	WATER BASED	21.05.1986
2820	1.73	25.0	6.3	WATER BASED	21.05.1986
2937	1.73	26.0	8.2	WATER BASED	20.05.1986
3090	1.73	26.0	7.7	WATER BASED	20.05.1986
3156	1.73	23.0	7.2	WATER BASED	20.05.1986
3160	1.73	21.0	7.2	WATER BASED	21.05.1986
3240	1.73	24.0	8.2	WATER BASED	21.05.1986
3240	1.73	24.0	7.7	WATER BASED	21.05.1986





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]
889 Formation pressure (Formasjonstrykk)	pdf	0.21

