



Generell informasjon

Brønnbane navn	31/2-11
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	TROLL
Funn	31/2-1 (Troll Vest)
Brønn navn	31/2-11
Seismisk lokalisering	79 - 406 SP 778
Utvinningstillatelse	054
Boreoperatør	A/S Norske Shell
Boretillatelse	365-L
Boreinnretning	BORGNY DOLPHIN
Boredager	70
Borestart	17.03.1983
Boreslutt	25.05.1983
Frigitt dato	25.05.1985
Publiseringsdato	19.12.2007
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	LATE JURASSIC
1. nivå med hydrokarboner, formasjon.	SOGNEFJORD FM
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	336.0
Totalt målt dybde (MD) [m RKB]	1744.0
Totalt vertikalt dybde (TVD) [m RKB]	1744.0
Maks inklinasjon [°]	1.25
Temperatur ved bunn av brønnbanen [°C]	76
Eldste penetrerte alder	MIDDLE JURASSIC
Eldste penetrerte formasjon	FENSFJORD FM
Geodetisk datum	ED50
NS grader	60° 49' 27.76" N



ØV grader	3° 25' 30.16" E
NS UTM [m]	6743460.35
ØV UTM [m]	523116.74
UTM sone	31
NPDID for brønnbanen	6

Brønnhistorie

General

Well 31/2-11 was drilled as an appraisal well in the Troll West oil province in the Northern North Sea. The main objectives were to appraise the reservoir quality and the extension of the 28-m oil column in the southern part of the 31/2-7 accumulation in the Viking Group reservoir sequence. The well would assist in the mapping of the permeability distribution in the oil province, provide an additional data point for the correlation and mapping of the depositional units, and obtain additional oil production test data for input to the field development.

Operations and results

Well 31/2-11 was spudded with the semi-submersible installation Borgny Dolphin on 17 March 1983 and drilled to TD at 1744 m in the Middle Jurassic Fensfjord Formation. No major problems occurred during drilling. The well was drilled with Seawater and gel down to 810 m, with KCl/polymer mud from 810 m to 1535 m, and with CaCl₂/CaCO₃/polymer mud from 1535 m to TD.

Top Jurassic, Sognefjord Formation, was encountered at 1558 m. The reservoir sands were found to be hydrocarbon bearing with GOC at 1566 m (1541 m sub-sea) and OWC (50% saturation) at 1593 m (1567 m sub-sea), in-line with the regional contacts in this area of the Troll West Oil Province. Below OWC residual oil was interpreted down to some 1640 m.

A total of eight cores were cut. To enable investigation of the shallow sediments, 2 cores were cut in the interval 380 m to 399 m and one from 475 to 476 m. Five cores were cut in the Late Jurassic reservoir sands from 1555 to 1629 m using fibre glass sleeve techniques to achieve better recovery in the poorly consolidated sands. Attempts to obtain RFT fluid samples were unsuccessful due to plugging of the tool with chalk particles from the mud.

The well was permanently abandoned on 25 May 1983 as an oil and gas appraisal.

Testing

Two DST's were performed, one in the water zone and one in the oil zone. DST 1 tested the interval 1681 to 1685 m in the water zone with the objective of obtaining representative formation water samples. The test produced 20 m³ water before the well died. Representative Formation water samples were obtained. DST 2 in the oil zone was carried out in a clean sand interval between 1571 and 1582 m. It produced at maximum rate on 2x128/64" choke 1248 Sm³ oil with a GOR of 315 Sm³/Sm³. The oil produced had a gravity of 28.6 deg API and the separator gas gravity was 0.66 (air = 1). The gas contained about 2% CO₂ and no measurable H₂S. No water or gas breakthrough was observed, probably due to tight calcareous streaks above and below the tested interval. The maximum temperature recorded in DST 2 was 68.6 deg C.



Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
480.00	1734.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
4	1555.0	1562.4	[m]
5	1564.0	1568.9	[m]
6	1578.0	1587.5	[m]
7	1592.0	1610.5	[m]
8	1610.5	1628.8	[m]

Total kjerneprøve lengde [m]	58.7
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



1555-1561m



1561-1562m



1564-1568m



1578-1584m



1584-1587m



1592-1598m



1598-1604m



1604-1610m



1610-1611m



1610-1615m



1616-1622m



1622-1627m



1628-1629m

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST		1576.00	1582.00		08.05.1983 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
361	NORDLAND GP
788	HORDALAND GP
1342	ROGALAND GP
1342	BALDER FM
1408	SELE FM
1443	LISTA FM
1537	SHETLAND GP
1550	CROMER KNOLL GP
1558	VIKING GP
1558	SOGNEFJORD FM
1611	HEATHER FM
1678	FENSFJORD FM

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
6_01_WDSS_General_Information	pdf	0.18
6_02_WDSS_completion_log	pdf	0.18





Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
6 01 31 2 11 Completion Report and Completion log	PDF	9.09
6 02 31 2 11 Assey of crude oil sample	pdf	0.36
6 02 31 2 11 Drilling programme	pdf	1.33
6 02 31 2 11 Emulsions of Troll crude oil	pdf	0.31
6 02 31 2 11 Grain size analysis	pdf	0.14
6 02 31 2 11 High acc.press temp measurement	pdf	1.86
6 02 31 2 11 High acc.press temp measurement gravel pack	pdf	28.94
6 02 31 2 11 High acc.press temp measurement injection test	pdf	19.25
6 02 31 2 11 Production test programme b	pdf	1.87
6 02 31 2 11 PVT study	pdf	1.07
6 02 31 2 11 Report on the low damaging	pdf	0.29
6 02 31 2 11 Routine core analysis	pdf	0.85
6 02 31 2 11 Sedimentologi av kjerne	pdf	18.45
6 02 31 2 11 Water samples	pdf	0.29
6 02 31 2 11 Well summary	pdf	1.59
6 02 31 2 11 Well test.rep.no.83-2301-22 Anx	pdf	12.13
6 02 31 2 11 Well testing rep.no.83-2301-22	pdf	8.89
6 02 31 2 11 Well testing rep.no.83-2301-23	pdf	1.25
6 02 31 2 11 Well testing rep.no.83-2301-24	pdf	2.04
6 02 31 2 11 Well test Int Report 290	pdf	0.99

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	1681	1685	50.8
2.0	1576	1582	50.8





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

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0					
2.0	1240	69000	0.883	0.667	56

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
CBL VDL	500	1523
CBL VDL	1150	1686
CST	1537	1725
DLL MSFL	1523	1728
HDT	1523	1730
ISF BHC GR	460	814
ISF BHC GR	799	1534
ISF BHC GR	1523	1731
LDL CNL GR CAL	460	810
LDL CNL GR CAL	799	1535
LDL CNL NGT CAL	1523	1732
RFT	0	0
WST	1110	1725

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	460.0	36	470.0	0.00	LOT
SURF.COND.	20	799.0	26	810.0	1.49	LOT
INTERM.	13 3/8	1525.0	17 1/2	1535.0	1.50	LOT
INTERM.	9 5/8	1720.0	12 1/4	1744.0	0.00	LOT



Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
500	1.05			waterbased	
650	1.09			waterbased	
950	1.32	53.0		waterbased	
1200	1.33	53.0		waterbased	
1350	1.35	53.0		waterbased	
1600	1.15	77.0		waterbased	
1744	1.18	60.0		waterbased	

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]
6 Formation pressure (Formasjonstrykk)	pdf	0.17

