



Generell informasjon

Brønnbane navn	31/2-14
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	31/2-14
Seismisk lokalisering	Line 8007-147
Utvinningstillatelse	054
Boreoperatør	A/S Norske Shell
Boretillatelse	411-L
Boreinnretning	BORGNY DOLPHIN
Boredager	60
Borestart	23.04.1984
Boreslutt	21.06.1984
Frigitt dato	21.06.1986
Publiseringsdato	06.06.2006
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]	340.0
Totalt målt dybde (MD) [m RKB]	1725.0
Totalt vertikalt dybde (TVD) [m RKB]	1725.0
Maks inklinasjon [°]	1
Temperatur ved bunn av brønnbanen [°C]	74
Eldste penetrerte alder	MIDDLE JURASSIC
Eldste penetrerte formasjon	FENSFJORD FM
Geodetisk datum	ED50
NS grader	60° 51' 26.52" N



ØV grader	3° 25' 37.68" E
NS UTM [m]	6747135.56
ØV UTM [m]	523206.43
UTM sone	31
NPDID for brønnbanen	106

Brønnhistorie

General

Appraisal well 31/2-14 was drilled on the north-western margin of the Troll field. The main objectives of the well were to demonstrate the production potential for oil in the northern part of the Troll oil province, to evaluate the proposed template development scheme and to confirm the predicted extension of high energy progradation sands in the northern region.

Operations and results

Well 31/2-14 was spudded with the semi-submersible installation Borgny Dolphin on 23 April 1984 and drilled to TD at 1725 m in the Middle Jurassic Fensfjord Formation. The site survey before spud showed, as usual for the area, a seabed with numerous pockmarks (12 pockmarks/km³ on average). After setting the 13 3/8" casing shoe at 1498 m a leak in the kill-line was discovered, leading to repairs of the BOP and replacement of the marine riser. After 10 days lost time normal operations could resume. The well was drilled with seawater and hi-vis pills down to 814 m, with KCl/polymer mud from 814 m to 1513 m, and with chalk mud from 1513 m to TD.

No sands were encountered above the Jurassic. The well encountered hydrocarbons in the Late Jurassic Sognefjord Formation. Top reservoir was penetrated at 1533 m (1508 m SS). The GOC was at 1566 m (1541 m SS) and the FWL was at 1592 m (1567 m SS). The oil-bearing interval consists of medium to low quality sands with a very clean layer (7m) some 3 m above the OWC. Below 1595 m (top Heather Formation) the sands are micaceous. The core measured permeability values range from 10 mD to 10 Darcy. In the gas bearing part of the cored interval no to weak fluorescence was recorded. In the oil zone (1561 - 1592 m) the fluorescence varied from weak to strong. Below 1594 m no fluorescence was recorded. Seven cores were cut from 1535 m to 1599 m in the Late Jurassic sequence. No samples were taken on wire line.

The well was permanently abandoned on 21 June as a gas and oil appraisal.

Testing

The clean sand interval 1583.3 - 1590.3 m in the oil zone was perforated and completed with an internal gravel. A long duration production test was carried out in an attempt to obtain gas breakthrough. The well was beamed up to 1335 Sm³ oil/day and flowed for 9.5 days. Gas breakthrough did not occur. The oil was a 28.1 deg API gravity oil with a GOR of 60 Sm³/Sm³. Maximum temperature recorded during the test was 68.3 deg. C, which correspond to a temperature gradient of 53 deg C/km above the reservoir.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
490.00	1725.00



Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1535.0	1542.2	[m]
2	1544.5	1553.8	[m]
3	1560.0	1562.9	[m]
4	1564.0	1570.0	[m]
5	1571.0	1576.9	[m]
6	1580.0	1586.3	[m]
7	1589.5	1598.2	[m]

Total kjerneprøve lengde [m]	46.3
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



1535-1541m



1541-1542m



1544-1550m



1550-1553m



1560-1562m



1564-1570m



1570-1570m



1571-1576m



1580-1586m



1586-1586m



1589-1595m



1595-1598m



Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	TEST-1	1590.00	1583.00	OIL	10.06.1984 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
365	NORDLAND GP
799	HORDALAND GP
1326	ROGALAND GP
1326	BALDER FM
1375	SELE FM
1421	LISTA FM
1526	VÅLE FM
1530	SHETLAND GP
1532	VIKING GP
1532	DRAUPNE FM
1533	SOGNEFJORD FM
1595	HEATHER FM
1685	FENSFJORD FM

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
106	pdf	0.23

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
106_01_WDSS_General_Information	pdf	0.17





106 02 WDSS completion log	pdf	0.17
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Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
106 01 31 2 14 Completion Report and Co mpletion_log	PDF	8.20
106 02 31 2 14 Core description_core 1-7	pdf	2.69
106 02 31 2 14 Drilling programme encl 1	pdf	0.39
106 02 31 2 14 Drilling programme	pdf	1.27
106 02 31 2 14 Drilling programme	pdf	1.27
106 02 31 2 14 Drilling programme encl 0 1	pdf	0.39
106 02 31 2 14 Frigg field_res.simulation	pdf	2.69
106 02 31 2 14 Grain size distr.analysis	pdf	0.16
106 02 31 2 14 High accuracy pressure EL S84-49A	pdf	3.33
106 02 31 2 14 High accuracy pressure EL S84-49A encl 1	pdf	0.62
106 02 31 2 14 High accuracy pressure EL S84-49A encl 2	pdf	0.09
106 02 31 2 14 High accuracy pressure EL S84-49A encl 3	pdf	0.06
106 02 31 2 14 High accuracy pressure EL S84-49A encl 4	pdf	0.05
106 02 31 2 14 High accuracy pressure EL S84-49B	pdf	3.08
106 02 31 2 14 High accuracy pressure EL S84-49B encl 1	pdf	0.52
106 02 31 2 14 High accuracy pressure EL S84-49B encl 2	pdf	0.10
106 02 31 2 14 High accuracy pressure EL S84-49B encl 3	pdf	0.06
106 02 31 2 14 High accuracy pressure EL S84-49B encl 4	pdf	0.07
106 02 31 2 14 Palynological results	pdf	2.00
106 02 31 2 14 Petrofysisk hurtig-evaluering	pdf	1.02
106 02 31 2 14 Petrofysisk hurtig-evaluering encl 1	pdf	0.91
106 02 31 2 14 Pressure survey report	pdf	0.96
106 02 31 2 14 PVT Study	pdf	1.13
106 02 31 2 14 Routine core analysis	pdf	1.27





106 02 31 2 14 Well summary by Dresser	pdf	1.54
106 02 31 2 14 Well summary	pdf	0.89
106 02 31 2 14 Well summary 2	pdf	1.54
106 02 31 2 14 Well summary 3	pdf	0.53
106 02 31 2 14 Well summary by Anchor	pdf	0.89
106 02 31 2 14 Well summary by Shell	pdf	0.53
106 03 31 2 14 Frigg field res.simulation	pdf	2.69
106 03 31 2 14 Palynological results by Shell	pdf	2.00
106 03 31 2 14 Petrofysisk hurtig-evaluering by Statoil	pdf	1.02
106 03 31 2 14 Petrofysisk hurtig-evaluering encl 1	pdf	0.91
106 04 31 2 14 Core description core 1-7	pdf	2.69
106 04 31 2 14 Grain size distr.analysis	pdf	0.16
106 04 31 2 14 Routine core analysis	pdf	1.27
106 05 31 2 14 High accuracy ELS84-49A encl 4	pdf	0.05
106 05 31 2 14 High accuracy pressure EL S84-49A	pdf	3.33
106 05 31 2 14 High accuracy pressure EL S84-49A encl 1	pdf	0.62
106 05 31 2 14 High accuracy pressure EL S84-49A encl 2	pdf	0.09
106 05 31 2 14 High accuracy pressure EL S84-49A encl 3	pdf	0.06
106 05 31 2 14 High accuracy pressure EL S84-49B	pdf	3.08
106 05 31 2 14 High accuracy pressure EL S84-49B encl 1	pdf	0.52
106 05 31 2 14 High accuracy pressure EL S84-49B encl 2	pdf	0.10
106 05 31 2 14 High accuracy pressure EL S84-49B encl 3	pdf	0.06
106 05 31 2 14 High accuracy pressure EL S84-49B encl 4	pdf	0.07
106 05 31 2 14 Pressure survey report	pdf	0.96
106 05 31 2 14 PVT Study	pdf	1.13

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BGT GR	345	515





CBL VDL	364	1488
CBL VDL	900	1690
CET GR	900	1690
CNL GR	1530	1580
CST	1510	1602
CST	1604	1713
GR CCL	1550	1692
ISF SONIC GR	350	814
ISF SONIC GR	814	1506
ISF SONIC GR	1503	1719
LDL CNL GR	464	814
LDL CNL GR	814	1513
LDT CNL SGT	1496	1654
MSFL DLL GR	1496	1714
RFT	1533	1633
SHDT GR	1496	1718

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	464.0	36	474.0	0.00	LOT
SURF.COND.	20	799.0	26	810.0	1.37	LOT
INTERM.	13 3/8	1498.0	17 1/2	1514.0	1.52	LOT
INTERM.	9 5/8	1724.0	12 1/4	1725.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
500	1.03			WATER BASED	
550	1.12			WATER BASED	
600	1.14			WATER BASED	
650	1.10			WATER BASED	
750	1.11			WATER BASED	
800	1.12			WATER BASED	
850	1.25			WATER BASED	
900	1.26			WATER BASED	
1000	1.27			WATER BASED	



1200	1.31			WATER BASED	
1250	1.30			WATER BASED	
1515	1.16			WATER BASED	
1535	1.13			WATER BASED	
1545	1.16			WATER BASED	
1570	1.17			WATER 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]
106 Formation pressure (Formasjonstrykk)	pdf	0.14

