



Generell informasjon

Brønnbane navn	31/6-5
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	TROLL
Funn	31/6-1 (Troll Øst)
Brønn navn	31/6-5
Seismisk lokalisering	NH 8202 - 120 SP. 246
Utvinningstillatelse	085
Boreoperatør	Den norske stats oljeselskap a.s
Boretillatelse	409-L
Boreinnretning	DEEPSEA BERGEN
Boredager	67
Borestart	16.03.1984
Boreslutt	21.05.1984
Frigitt dato	21.05.1986
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]	23.0
Vanndybde ved midlere havflate [m]	304.0
Totalt målt dybde (MD) [m RKB]	2082.0
Totalt vertikalt dybde (TVD) [m RKB]	2028.0
Maks inklinasjon [°]	1.5
Temperatur ved bunn av brønnbanen [°C]	61
Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	DRAKE FM
Geodetisk datum	ED50
NS grader	60° 37' 6.8" N



ØV grader	3° 48' 20.98" E
NS UTM [m]	6720730.31
ØV UTM [m]	544106.97
UTM sone	31
NPDID for brønnbanen	105

Brønnhistorie

General

Well 31/6-5 was drilled in the southern part of the Troll East gas province, 30 m from well 31/6-4, which was junked for technical reasons. The main purpose was to appraise and test possible oil and gas accumulations in sandstones of Late to Middle Jurassic age, and to give further information about lateral facies changes within the reservoir sandstones.

Operations and results

Appraisal well 31/6-5 was spudded with the semi-submersible installation Deepsea Bergen on 5 March 1984 and drilled to TD at 2082 m in the Early Jurassic Drake Formation. In the 26" hole lost circulation occurred at 653 m, two cement plugs were set. Several wiper trips were taken due to tight hole. After setting of the 20" casing, the BOP had to be repaired due to leaking during pressure testing. A drilling break occurred at 1476 m in the 12 1/4" hole. The well was drilled with the spud mud from the previous hole (31/6-4) treated with CMC-EHV down to 389 m, with seawater/gel mud from 389 m to 663 m, with KCl/polymer mud from 663 m to 1720 m, and with seawater/gel/CMC mud from 1720 m to TD.

Sandstone of Late to Middle Jurassic age (Sognefjord Formation) was encountered at 1518 m with a 52 m gas column and a 4 m oil column. The gas/oil contact was at 1570 m and the oil/water contact at 1574 m. Oil shows were recorded on sidewall cores on top Fensfjord Formation sandstone from 1722 m to 1726 m and on a sandstone SWC from 2010 m in the Ness Formation. Ten cores were cut from 1470 m to 1721 m in the Late to Middle Jurassic sequence (Heather Formation to Fensfjord Formation). One FMT fluid sample was taken in the oil zone 1571.5 m. Geochemical analyses showed the oil to be biodegraded.

The well was permanently abandoned on 16 March 1984 as a gas and oil appraisal.

Testing

The Sognefjord Formation was tested through gravel pack from the interval 1558 m to 1568 m. The first test gave a non-representative flow due to obstructions in the hole. The second test, termed Test 1A, was ok and produced gas at a maximum rate of 1266000 Sm³/day on a 1.5" choke. Geochemical analyses showed the gas to be 92.4% methane and biodegraded.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
410.00	2081.50



Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1470.0	1497.3	[m]
2	1497.0	1518.0	[m]
3	1523.0	1550.5	[m]
4	1550.5	1557.4	[m]
5	1557.5	1584.0	[m]
6	1584.0	1611.0	[m]
7	1611.0	1637.8	[m]
8	1638.0	1665.8	[m]
9	1665.5	1693.5	[m]
10	1693.0	1720.7	[m]

Total kjerneprøve lengde [m]	246.2
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



1470-1475m



1475-1480m



1480-1485m



1485-1490m



1490-1495m



1495-1497m



1497-1502m



1502-1507m



1507-1512m



1512-1517m



1517-1518m



1523-1528m



1528-1533m



1533-1538m



1538-1543m



1543-1548m



1548-1550m



1550-1555m



1555-1557m



1557-1562m



1562-1567m



1567-1572m



1572-1577m



1577-1582m



1582-1584m



1584-1589m



1589-1594m



1594-1599m



1599-1604m



1604-1609m



1609-1611m



1611-1616m



1616-1621m



1621-1626m



1626-1631m



1631-1636m



1636-1637m



1638-1643m



1643-1648m



1648-1653m



1653-1658m



1658-1663m



1663-1665m



1665-1670m



1670-1675m



1675-1680m



1680-1685m



1685-1690m



1690-1693m



1693-1698m



1698-1703m



1703-1708m



1708-1713m



1713-1718m



1718-1720m

Palynologiske preparater i Søkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
690.0	[m]	SWC	STATO
752.0	[m]	SWC	STATO
790.0	[m]	SWC	STATO
850.0	[m]	SWC	STATO
890.0	[m]	SWC	STATO
930.0	[m]	SWC	STATO
1010.0	[m]	SWC	STATO
1050.0	[m]	SWC	STATO
1110.0	[m]	SWC	STATO
1130.0	[m]	SWC	STATO
1310.0	[m]	SWC	STATO
1380.0	[m]	SWC	STATO
1395.0	[m]	SWC	STATO
1400.0	[m]	SWC	STATO
1410.0	[m]	SWC	STATO
1415.0	[m]	SWC	STATO



1425.0	[m]	SWC	STATO
1430.0	[m]	SWC	STATO
1440.0	[m]	SWC	STATO
1442.0	[m]	SWC	STATO
1446.0	[m]	SWC	STATO
1452.0	[m]	SWC	STATO
1456.0	[m]	SWC	STATO
1460.0	[m]	SWC	STATO
1468.0	[m]	SWC	STATO
1473.7	[m]	SWC	STATO
1518.0	[m]	SWC	STATO
1520.0	[m]	SWC	STATO
1786.0	[m]	SWC	STATO
1821.0	[m]	SWC	STATO
1880.0	[m]	SWC	STATO
1993.0	[m]	SWC	STATO
1998.0	[m]	SWC	STATO
2036.0	[m]	SWC	STATO
2046.0	[m]	SWC	STATO
2080.0	[m]	SWC	STATO

Oljeprøver i Sökkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	TEST1A	1568.00	1558.00		15.05.1984 - 11:30	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
327	NORDLAND GP
455	HORDALAND GP
816	ROGALAND GP
816	BALDER FM
960	SELE FM
1080	LISTA FM
1144	SHETLAND GP



1144	HARDRÅDE FM
1157	UNDIFFERENTIATED
1256	CROMER KNOLL GP
1256	RØDBY FM
1312	SOLA FM
1347	ÅSGARD FM
1388	VIKING GP
1388	DRAUPNE FM
1480	HEATHER FM
1518	SOGNEFJORD FM
1677	HEATHER FM
1702	FENSFJORD FM
1937	KROSSFJORD FM
1972	HEATHER FM
1999	BRENT GP
2035	DUNLIN GP
2035	DRAKE FM

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
105	pdf	0.33

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
105_1	pdf	0.46
105_2	pdf	0.26
105_3	pdf	4.75

Dokumenter - eldre Sjøkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
105_01_WDSS_General_Information	pdf	0.18
105_02_WDSS_completion_log	pdf	0.21





Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
105 01 31 6 5 Completion Report and Completion log	pdf	28.81
105 03 31 6 5 Formation Resistivity Factor	pdf	1.31
105 03 31 6 5 Hydrocarbon Characterisation	pdf	6.37
105 03 31 6 5 PVT Analysis	pdf	0.81
105 03 31 6 5 Reservoir Gas Geochemistry on Sample	pdf	0.30
105 04 31 6 5 Grain Size Distribution Analysis	pdf	17.51
105 04 31 6 5 Routine Core Analysis	pdf	3.73
105 05 31 6 5 Compositional Analyses of Separator Samples	pdf	0.60
105 05 31 6 5 Exploration and production tests on gas	pdf	1.43
105 05 31 6 5 Gauge No 0001-0241	pdf	5.61
105 05 31 6 5 Gauge Performance Report	pdf	0.25
105 05 31 6 5 Pressure Survey Report DST No 1	pdf	9.77
105 05 31 6 5 Pressure Survey Report DST No 1A	pdf	10.32
105 05 31 6 5 Pressure Survey Report Gauge no.0052	pdf	2.28
105 05 31 6 5 TBP-Destillasjon DST1A	pdf	1.19
105 05 31 6 5 TBP-distillation FMT	pdf	0.88
105 05 31 6 5 Testrapport Nr.1-1A	pdf	15.53
105 05 31 6 5 Well Test Report Metric Conditions	pdf	16.88
105 05 31 6 5 Statoils Stromningsmaaler	pdf	6.44

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil størrelse [mm]
1.0	1558	1568	38.1





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

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0		1266000			

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
4-ARM DIP STRATADIP	1424	2081
ACBL	323	1424
CALIPER	1493	1534
CDL CNL GR CAL	1424	2079
CDL GR CAL	649	1445
COLLARLOG	1400	1600
DIFL BHC AC GR SP CAL	389	2082
DLL MLL GR	1424	2079
DLWD	401	504
FMT	1490	1602
PHOTONLOG	1488	1580
SPECTRALOG	1424	2076
VDL	1150	1705
VELOCITY	1000	2080

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	389.2	36	390.5	0.00	LOT
SURF.COND.	20	649.0	26	656.0	1.54	LOT
INTERM.	13 3/8	1424.0	17 1/2	1445.0	1.76	LOT
INTERM.	9 5/8	1706.9	12 1/4	1721.0	1.62	LOT
OPEN HOLE		2082.0	8 1/2	2082.0	0.00	LOT



Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
430	1.05	40.0		WATER BASED	
550	1.07	39.0		WATER BASED	
660	1.10	54.0		WATER BASED	
760	1.22	47.0		WATER BASED	
1065	1.23	48.0		WATER BASED	
1155	1.22	47.0		WATER BASED	
1260	1.26	49.0		WATER BASED	
1580	1.22	52.0		WATER BASED	
1725	1.10	59.0		WATER BASED	

Tynnslip i Sokkeldirektoratet

Dybde	Enhet
1492.55	[m]
1525.35	[m]
1536.50	[m]
1556.50	[m]
1562.35	[m]
1573.15	[m]
1587.10	[m]
1591.40	[m]
1601.75	[m]
1610.50	[m]
1627.50	[m]
1637.90	[m]
1646.73	[m]
1660.00	[m]
1664.00	[m]
16.00	[m]
1677.50	[m]
1686.70	[m]
1698.00	[m]
1491.00	[m]
1493.00	[m]
1514.00	[m]
1517.00	[m]



1591.00	[m]
1525.00	[m]
1573.00	[m]
1537.00	[m]
1541.00	[m]
1547.00	[m]
1557.00	[m]
1562.00	[m]
1580.00	[m]
1587.00	[m]
1602.00	[m]
1611.00	[m]
1622.00	[m]
1628.00	[m]
1638.00	[m]
1647.00	[m]
1653.00	[m]
1711.00	[m]

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 brønnspar. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

Dokument navn	Dokument format	Dokument størrelse [KB]
105_Formation_pressure_(Formasjonstrykk)	pdf	0.20

