



Generell informasjon

Brønnbane navn	31/2-7
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	31/2-7
Seismisk lokalisering	8007 - 147 SP 998
Utvinningstillatelse	054
Boreoperatør	A/S Norske Shell
Boretillatelse	326-L
Boreinnretning	BORGNY DOLPHIN
Boredager	54
Borestart	22.04.1982
Boreslutt	14.06.1982
Frigitt dato	14.06.1984
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]	338.0
Totalt målt dybde (MD) [m RKB]	1660.0
Totalt vertikalt dybde (TVD) [m RKB]	1660.0
Maks inklinasjon [°]	1
Temperatur ved bunn av brønnbanen [°C]	71
Eldste penetrerte alder	LATE JURASSIC
Eldste penetrerte formasjon	HEATHER FM
Geodetisk datum	ED50
NS grader	60° 51' 25.93" N



ØV grader	3° 27' 9.21" E
NS UTM [m]	6747126.56
ØV UTM [m]	524587.90
UTM sone	31
NPDID for brønnbanen	70

Brønnhistorie

General

Well 31/2-7 was drilled in the Troll West oil province in the Northern North Sea. The primary objective was to appraise the oil accumulation in the area west of well 31/2-4 in the Troll Field.

Operations and results

Well 31/2-7 was spudded with the semi-submersible installation Borgny Dolphin on 22 April 1982 and drilled to TD at 1660 m in the Late Jurassic Heather Formation. No significant problems were encountered during operations. Tight spots were encountered in the 17 1/2" section. The well was drilled with seawater and hi-vis pills down to 455, with seawater/gel/CMC/Drispac from 455 m to 825 m, with KCl/polymer mud from 825 m to 1517 m, and with KCl/polymer/gel/lingo mud from 1517 m to TD.

The well penetrated 11 m of Late Jurassic Draupne shale at 1535 m before entering the Sognefjord Formation reservoir sands at 1546 m. The Heather Formation was encountered at 1601 m. The Sognefjord Formation was hydrocarbon bearing with a 20.5 m gas column from 1545.5 - 1566 m and a 27.5 m oil column from 1566 to 1593.5 m. The gas reservoir consisted of alternating micaceous, bioturbated fine to medium grained sandstones and cross laminated, massive fine to coarse grained sandstones. The upper part of the oil reservoir (down to 1586 m) was of the same quality as the gas reservoir. Below 1586 m the sandstones were very fine to medium grained with high mica content. Weak shows (fluorescence and cut) were recorded on cores down to 1635 m.

Six fibreglass sleeve cores were taken from 1547.0 m to 1635.0 m in the 8 1/2" section. Thus 88 m of core were cut of which 72.25 m (82%) was recovered. In order to verify the higher than expected GOC several unsuccessful (due to probe plugging) attempts were made to obtain RFT fluid samples at around 1570 m. Eventually one of the RFT chambers was filled at 1568 m. After a few more attempts the other chamber was filled at 1566.5 m. At surface the contents of both chambers were checked and found to be 29 API oil. This proved a 27.5 m oil column in the well and thus the existence of oil above 1547 m SS (1572 m), which had been interpreted as the GOC in all previous wells.

The well was permanently abandoned on 14 June 1982 as an oil and gas appraisal.

Testing

The well was gravel packed and acidized before testing. A production test was carried out over the external gravel packed interval 1584 - 1590.5 m. The objectives were to investigate inflow performance and sand control, obtain representative fluid samples for PVT analyses, and to evaluate well coning performance. At maximum rate in the 92 hour long main flow the well flowed 1113 Sm³ oil/day on a 180/64" choke. The GOR was between 53 and 45 Sm³/Sm³, the oil density was 0.89 g/cm³ (27.5 deg API), and the gas gravity was 0.640. Maximum down-hole temperature recorded was 67.8 deg C.



Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
470.00	1660.00
Borekaks tilgjengelig for prøvetaking?	YES

Borekjerper i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	1547.0	1556.5	[m]
3	1562.0	1577.8	[m]
4	1587.5	1597.0	[m]
5	1597.0	1615.8	[m]
6	1616.0	1634.7	[m]

Total kjerneprøve lengde [m]	72.3
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



1547-1553m



1553-1556m



1562-1568m



1568-1574m



1574-1577m



1587-1593m



1593-1597m



1597-1603m



1603-1609m



1609-1615m



1615-1616m



1616-1622m



1622-1628m



1628-1634m



1634-1635m

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
1537.5	[m]	SWC	SHELL
1541.0	[m]	SWC	SHELL
1542.5	[m]	SWC	SHELL
1548.0	[m]	C	SHELL
1548.5	[m]	C	SHELL
1549.5	[m]	C	SHELL
1550.0	[m]	C	SHELL
1552.0	[m]	C	SHELL
1554.0	[m]	C	SHELL
1555.0	[m]	C	SHELL
1555.6	[m]	C	SHELL
1556.6	[m]	C	SHELL
1562.2	[m]	C	SHELL
1570.5	[m]	C	SHELL
1590.5	[m]	C	SHELL
1591.1	[m]	C	SHELL
1592.3	[m]	C	SHELL
1592.4	[m]	C	SHELL
1592.6	[m]	C	SHELL
1592.8	[m]	C	SHELL
1592.9	[m]	C	SHELL
1593.0	[m]	C	SHELL
1593.5	[m]	C	SHELL
1593.6	[m]	C	SHELL
1594.2	[m]	C	SHELL
1596.1	[m]	C	SHELL
1596.8	[m]	C	SHELL
1598.0	[m]	C	SHELL
1600.0	[m]	C	SHELL



1600.9	[m]	C	SHELL
1603.0	[m]	C	SHELL
1605.0	[m]	C	SHELL
1607.0	[m]	C	SHELL
1608.5	[m]	C	SHELL
1609.5	[m]	C	SHELL
1610.4	[m]	C	SHELL
1610.7	[m]	C	SHELL
1616.0	[m]	C	SHELL
1617.5	[m]	C	SHELL
1617.5	[m]	C	SHELL
1617.6	[m]	C	SHELL
1617.6	[m]	C	SHELL
1618.9	[m]	C	SHELL
1621.7	[m]	C	SHELL
1621.8	[m]	C	SHELL
1621.9	[m]	C	SHELL
1621.9	[m]	C	SHELL
1625.7	[m]	C	SHELL
1633.8	[m]	C	SHELL
1634.7	[m]	C	SHELL
1644.0	[m]	SWC	SHELL
1654.0	[m]	SWC	SHELL
1658.0	[m]	SWC	SHELL

Oljeprøver i Sökkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	DST1	1584.00	1590.00		06.06.1982 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
363	NORDLAND GP
776	HORDALAND GP
1304	ROGALAND GP



1304	BALDER FM
1366	SELE FM
1406	LISTA FM
1524	VÅLE FM
1531	CROMER KNOLL GP
1535	VIKING GP
1535	DRAUPNE FM
1546	SOGNEFJORD FM
1601	HEATHER FM

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
70_01_WDSS_General_Information	pdf	0.16
70_02_WDSS_completion_log	pdf	0.11

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
70_01_31_2_7_Completion_Report_and_Completion_log	PDF	9.78
70_02_31_2_7_Appraisal_well_proposal_encl_1	pdf	0.34
70_02_31_2_7_Appraisal_well_proposal_encl_2	pdf	0.38
70_02_31_2_7_Biostratigraphy_appraisal	pdf	1.78
70_02_31_2_7_Drilling_programme	pdf	1.09
70_02_31_2_7_Drilling_programme_encl_1	pdf	0.37
70_02_31_2_7_Drilling_programme_encl_2	pdf	0.34
70_02_31_2_7_Drilling_programme_encl_3	pdf	1.78
70_02_31_2_7_Frozen_core_analysis	pdf	2.16
70_02_31_2_7_Gravel_pack_operation	pdf	1.47
70_02_31_2_7_Investigation_of_cores	pdf	2.30
70_02_31_2_7_Mr-six_Press.survey_report	pdf	1.42
70_02_31_2_7_Mud_logging_report	pdf	2.50
70_02_31_2_7_Rel.perm.Measurements	pdf	0.61
70_02_31_2_7_Reservoir_Fluid_study	pdf	0.71
70_02_31_2_7_Resistivity_index_capp.pressure	pdf	0.93





70 02 31 2 7 Sieve analysis	pdf	1.51
70 02 31 2 7 Special core analysis	pdf	2.56
70 02 31 2 7 Well summary by Anchor	pdf	1.36
70 02 31 2 7 Well testing report	pdf	13.38
70 31 02 07 Appraisal well proposal by Shell	pdf	0.59
70 02 31 2 7 Bronntestrapport	pdf	3.31

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [mm]
1.0	1584	1590	71.0

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				68

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstygde rel. luft	GOR [m3/m3]
1.0	1113		0.887		45

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BGT GR	1518	1593
BGT GR	1522	1592
BGT GR	1529	1593
CBL VDL GR CCL	606	1660
CST	812	1510
CST	1498	1770
DLL MSFL GR	1498	1656
FDC CNL GR CAL	440	824
FDC CNL GR CAL	812	1510
FDC CNL GR CAL	1495	1660
HDT	1495	1660
ISF BHC GR	363	822





ISF BHC GR	812	1510
ISF BHC GR	1495	1659
LDT NGT CAL	1495	1660
RFT	0	0
VELOCITY	776	1650
WST	776	1650

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	449.0	36	455.0	0.00	LOT
SURF.COND.	20	812.0	26	825.0	1.54	LOT
INTERM.	13 3/8	1495.0	17 1/2	1517.0	1.59	LOT
INTERM.	9 5/8	1652.0	12 1/4	1660.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
465	1.07	50.0		waterbased	
600	1.09	50.0		waterbased	
800	1.10	50.0		waterbased	
800	1.10	48.0		waterbased	
950	1.31	47.0		waterbased	
1150	1.31	47.0		waterbased	
1650	1.19	54.0		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]
70_Formalion_pressure_(Formasjonstrykk)	PDF	0.16

