Generell informasjon

Brønnbane navn	7/12-2
Type	EXPLORATION
Formål	WILDCAT
Status	SUSPENDED
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	ULA
Funn	7/12-2 Ula
Brønn navn	7/12-2
Seismisk lokalisering	
Utvinningstillatelse	019
Boreoperatør	BP Norway Limited U.A.
Boretillatelse	161-L
Boreinnretning	NORSKALD
Boredager	82
Borestart	04.07.1976
Boreslutt	23.09.1976
Frigitt dato	23.09.1978
Publiseringsdato	13.08.2015
Opprinnelig formål	WILDCAT
Gjenåpnet	NO
Innhold	OIL
Funnbrønnbane	YES
1. nivå med hydrokarboner, alder	LATE JURASSIC
1. nivå med hydrokarboner, formasjon.	ULA FM
2. nivå med hydrokarboner, alder	EARLY JURASSIC
2. nivå med hydrokarboner, formasjon	GASSUM FM
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	71.0
Totalt målt dybde (MD) [m RKB]	3676.0
Temperatur ved bunn av brønnbanen [°C]	154
Eldste penetrerte alder	EARLY JURASSIC
Eldste penetrerte formasjon	GASSUM FM
Geodetisk datum	ED50
NS grader	57° 6' 41.05'' N

ØV grader	2° 50' 51.04'' E
NS UTM [m]	6329939.23
ØV UTM [m]	490763.87
UTM sone	31
NPDID for brønnbanen	295

Brønnhistorie

General

Well 7/12-2 was drilled on a salt induced structure on the east side of the Cod Terrace in the North Sea. The primary objective was to evaluate potential Upper Jurassic and Triassic reservoirs

The well is Type well for the Ula Formation and Reference well for the Farsund Formation.

Operations and results

Wildcat well 7/12-2 was spudded with the semi-submersible installation Norskald on 4 July 1976 and drilled to TD at 3676 m in the Early Jurassic Gassum Formation. The well was drilled with seawater/gel down to 158.5 m and with seawater/lime Drispac mud from 158.5 m to TD down to 495 m and with a lime/Drispac mud from 495 m to TD.

Well 7/12-2 penetrated a major Late Jurassic reservoir (Ula Formation) and was terminated within a hydrocarbon bearing sequence of poor quality sands and interbedded shales in the Gassum Formation. Core analysis and log interpretation indicate an Ula Formation sandstone reservoir of 128 m net thickness (154 m gross) with porosities ranging from 14 to 28%, permeabilities from a few millidarcy to over two darcy and water saturations from 5 to over 50%. The Ula Formation was oil bearing from top to base at 3532 m in an oil down-to setting. The Gassum Formation sandstones have a porosity between 11 and 19%, average permeability of 1 md and water saturation generally in excess of 70%.

Eleven cores were cut in the well. Cores one to ten were cut in succession from 3385.75 m (3380.95 m logger's depth) to 3476.9 m (3470.9 m logger's depth) in the Ula Formation. The overall core recovery for this section was 97.3%. Core no 11 was cut in the Early Jurassic from 3634.2 to 3652.3 m with 100% recovery. The core-log depth shifts varied from -4.8 m to -6.0 m. No fluid samples were taken on wire line.

The well was suspended on 23 September 1976 for later re-entry and testing of reservoir productivity. It is classified as an oil discovery.

Testing

Six drill stem tests were performed: DST 1 and 1a in the Early Jurassic Gassum Formation and the others in the Late Jurassic Ula Formation.

DST 1 tested the interval 3640.5 to 3665.5 m. the test did not produce oil to the surface, but about 3 - 5 gallons of clean oil was found in the drill collars immediately below the downhole valve. The oil gravity was estimated to 40°API. The DST temperature was 145.6 °C.

DST la was a retest of the DST 1 interval with a different test string. Again the test did not produce to surface, but about 0.6 m3 (four bbls) of clean oil was reversed out of the test string. The oil gravity was 41.3 °API and the gas gravity was 0.805 (air = 1). The gas and oil had an aromatic smell, guessed to be from toluene.

DST 2 tested the interval 3525 to 3532 m. The test produced small quantities of gas but no oil to surface. Based on reversed content the rates in the test was estimated to 24 Sm3 oil /day. The oil gravity was 37.7 °API. The DST temperature was 145.6 °C.

DST 3 tested the interval 3426.5 to 3438.7 m. The test produced 795 Sm3 oil /day through a 1" choke. The GOR was 102 Sm3/Sm3, the oil gravity was 40.2 °API and the gas gravity was 0.748 (air = 1). The test was a mechanical misrun, as the valves were not fully shut during build-ups.

DST 3a was a retest of the DST 3 interval with a different test string. The test produced up to 1132 Sm3 oil /day through a 0.5" choke. The GOR was 107 Sm3/Sm3, the oil gravity was 40.4 °API and the gas gravity was 0.751 (air = 1). The DST temperature was 146.1 °C and this temperature was regarded as the most representative of all DST temperatures in the well.

DST 4 tested the interval 3383.7 to 3393 m. The test did not achieve stabilised rates but produced on average ca 95 Sm3 oil /day. The GOR was similar as in DST 3a, the oil gravity was 41.0 °API and the gas gravity was 0.817. The DST temperature was 145.6.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
166.00	3676.00

Borekaks tilgjengelig for prøvetaking?	YES

Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	3385.8	3404.0	[m]
2	3404.0	3414.0	[m]
3	3414.0	3417.2	[m]
4	3417.2	3420.5	[m]
5	3421.7	3429.0	[m]
6	3430.0	3438.5	[m]
7	3439.1	3440.2	[m]
8	3440.3	3449.8	[m]
9	3449.8	3458.9	[m]
10	3458.9	3476.9	[m]
11	3634.2	3652.3	[m]

Total kjerneprøve lengde [m]	106.3
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder


3385-3390m


3390-3395m


3395-3397m


3395-3400m


3400-3404m


3404-3409m


3409-3414m


3414-3417m


3417-3420m


3421-3426m


3426-3430m


3430-3435m


3435-3438m


3439-3440m


3440-3449m


3445-3449m


3449-3454m


3454-3458m


3458-3463m


3463-3468m


3468-3473m


3473-3475m


3634-3639m


3639-3644m


3644-3649m

3649-3652m

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
3259.0	[m]	DC	PETROSTR
3265.0	[m]	DC	PETROS
3271.0	[m]	DC	PETROS
3277.0	[m]	DC	PETROS
3283.0	[m]	DC	PETROS
3289.0	[m]	DC	PETROS
3295.0	[m]	DC	PETROS
3301.0	[m]	DC	PETROS
3307.0	[m]	DC	PETROS
3313.0	[m]	DC	PETROS
3319.0	[m]	DC	PETROS
3325.0	[m]	DC	PETROS
3331.0	[m]	DC	PETROS
3337.0	[m]	DC	PETROS
3343.0	[m]	DC	PETROS
3349.0	[m]	DC	PETROS
3351.0	[m]	DC	PETROS
3361.0	[m]	DC	PETROS
3364.0	[m]	DC	PETROS
3367.0	[m]	DC	PETROS
3373.0	[m]	DC	PETROS
3379.0	[m]	DC	PETROS
3385.0	[m]	DC	PETROS
3385.9	[ft]	C	PETROS
3386.0	[m]	C	PETROS
3386.0	[m]	C	APT
3386.7	[ft]	C	PETROS
3391.0	[m]	C	APT
3396.6	[m]	C	APT

3397.1	[m]	C	APT
3397.7	[ft]	C	PETROS
3397.8	[m]	C	PETROS
3398.0	[m]	C	APT
3399.9	[m]	C	PETROS
3401.6	[m]	C	APT
3409.3	[m]	C	PETROS
3411.2	[m]	C	APT
3412.3	[ft]	C	PETROS
3414.0	[m]	C	APT
3416.5	[m]	C	PETROS
3416.5	[m]	C	PETROS
3416.5	[m]	C	APT
3419.4	[ft]	C	PETROS
3422.4	[m]	C	APT
3422.6	[m]	C	PETROS
3425.2	[m]	C	APT
3425.5	[ft]	C	PETROS
3425.5	[m]	C	APT
3426.1	[m]	C	PETROS
3432.6	[ft]	C	PETROS
3432.7	[m]	C	PETROS
3433.6	[ft]	C	PETROS
3434.0	[m]	C	APT
3434.3	[m]	C	APT
3437.0	[m]	C	APT
3438.2	[m]	C	APT
3438.3	[ft]	C	PETROS
3442.3	[ft]	C	PETROS
3442.7	[m]	C	PETROS
3443.0	[ft]	C	PETROS
3448.4	[m]	C	APT
3448.9	[m]	C	PETROS
3449.8	[ft]	C	PETROS
3449.9	[m]	C	APT
3452.3	[ft]	C	PETROS
3456.4	[m]	C	APT
3457.9	[ft]	C	PETROS
3458.8	[m]	C	APT
3461.0	[m]	C	PETROS

3463.2	[ft]	C	PETROS
3467.6	[m]	C	PETROS
3469.5	[ft]	C	PETROS
3469.6	[m]	C	APT
3469.7	[ft]	C	PETROS
3471.3	[m]	C	APT
3473.0	[m]	C	APT
3473.3	[ft]	C	PETROS
3474.0	[ft]	C	PETROS
3475.0	[m]	C	APT
3475.6	[m]	C	APT
3476.0	[m]	C	PETROS
3481.0	[m]	DC	PETROS
3487.0	[m]	DC	PETROS
3490.0	[m]	DC	PETROS
3493.0	[m]	DC	PETROS
3505.0	[m]	DC	PETROS
3511.0	[m]	DC	PETROS
3517.0	[m]	DC	PETROS
3520.0	[m]	DC	PETROS
3523.0	[m]	DC	PETROS
3529.0	[m]	DC	PETROS
3535.0	[m]	DC	PETROS
3547.0	[m]	DC	PETROS

Oljeprøver i Sokkeldirektoratet

Test type	Flaske nummer	Topp dyp MD [m]	Bunn dyp MD [m]	Væske type	Test tidspunkt	Prøver tilgjengelig
DST	DST1A	3640.20	3666.00		08.09.1976 - 00:00	YES
DST	DST2	3525.00	3532.00		11.09.1976 - 00:00	YES
DST	DST3	3426.50	3437.70		14.09.1976 - 00:00	YES
DST	DST4	3383.70	3393.00		18.09.1976 - 00:00	YES

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
96	NORDLAND GP
96	UNDIFFERENTIATED
1428	HORDALAND GP
1428	UNDIFFERENTIATED
2516	ROGALAND GP
2516	BALDER FM
2527	SELE FM
2583	LISTA FM
2628	VIDAR FM
2702	LISTA FM
2723	VÅLE FM
2730	SHETLAND GP
2730	EKOFISK FM
2795	TOR FM
2970	HOD FM
3028	BLODØKS FM
3040	CROMER KNOLL GP
3040	RØDBY FM
3053	SOLA FM
3100	ÅSGARD FM
3262	TYNE GP
3262	MANDAL FM
3306	FARSUND FM
3379	VESTLAND GP
3379	ULA FM
3532	BRYNE FM
3554	NO GROUP DEFINED
3554	GASSUM FM

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
295_GCH_1	pdf	0.24
295_GCH_2	pdf	0.46
295_GCH_3	pdf	0.10
295_GCH_4	pdf	0.29
295_GCH_5	pdf	0.14

295_GCH_6	pdf	1.05

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
295_01_WDSS_General_Information	pdf	0.28

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
295_7_12_2_COMPLETION_LOG	pdf	2.01
295_7_12_2_COMPLETION_REPORT	pdf	10.78

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsventil til størrelse [mm]
1.0	3640	3666	76.0
1.1	3640	3666	76.0
2.0	3525	3532	0.0
3.0	3427	3439	24.5
3.1	3427	3438	12.3
4.0	3384	3393	76.0

Test nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				145
1.1				
2.0				145
3.0				
3.1				146
4.0				145

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstyngde rel. luft	GOR [m3/m3]
1.0	6	8490	0.820		
1.1	1	8490	0.820		
2.0	23				
3.0	795		0.820	0.748	102
3.1	1129	11930	0.820	0.751	
4.0	84	7079	0.820	0.817	

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
BHC	3078	3501
CBL	2970	3666
CDM	3092	3668
DLL MSFL	3092	3668
FDC	1518	3113
FDC CNL	3092	3668
GR	94	484
ISF SON	484	3668
VELOCITY	96	3676

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	159.0	36	160.0	0.00	LOT
SURF.COND.	20	480.0	26	495.0	0.00	LOT
INTERM.	13 3/8	1523.0	17 1/2	1536.0	0.00	LOT
INTERM.	9 5/8	3092.0	12 1/4	3115.0	0.00	LOT
LINER	7	3675.0	8 1/2	3676.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
1219	1.31			waterbased	
3385	1.60			waterbased	