General information

Wellbore name	7/12-4
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
Factmaps in new window	link to map
Main area	NORTH SEA
Field	ULA
Discovery	7/12-2 Ula
Well name	7/12-4
Seismic location	
Production licence	019
Drilling operator	BP Norway Limited U.A.
Drill permit	183-L
Drilling facility	NORSKALD
Drilling days	93
Entered date	11.09.1977
Completed date	12.12.1977
Release date	12.12.1979
Publication date	06.01.2014
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	ULA FM
Kelly bushing elevation [m]	25.0
Water depth [m]	71.0
Total depth (MD) [m RKB]	3623.0
Final vertical depth (TVD) [m RKB]	3623.0
Maximum inclination [°]	1.9
Bottom hole temperature [°C]	144
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	BRYNE FM
Geodetic datum	ED50
NS degrees	57° 5' 36.66'' N
EW degrees	2° 51' 36.96'' E
NS UTM [m]	6327946.46
EW UTM [m]	491532.39

UTM zone	31
NPDID wellbore	298

Wellbore history

General

Well 7/12-4 was drilled as an appraisal well on the Ula Field in the North Sea. The main objective was to evaluate the extent and hydrocarbon potential of the Late Jurassic sands in the south eastern flank of the structure.

Operations and results

Appraisal well 7/12-4 was spudded with the semi-submersible installation Nordskald on 11 September 1977 and drilled to TD at 3623 m in Early Jurassic sediments of the Bryne Formation. Operations proceeded without significant problem. The well was drilled with fresh water/gel down to 498 m and with lime/Drispac mud from 498 m to TD.

The target reservoir Ula Formation was encountered at 3445 m, while the underlying Bryne Formation came in at 3529 m. Net sand in the reservoir was 73 m with porosity from 10 to 23%, permeability from a few millidarcy to 1750 millidarcy, and water saturation from 5 to over 60%. The reservoir was oil-bearing with a possible OWC at 3551 m in the Bryne Formation based on disappearance of oil shows; however, drill stem tests showed that the producible contact between oil and water was between 3530 and 3536 m.

Seven cores were cut from near top Ula Formation at 3447.5 m to 3556.7 m in the Bryne Formation. The recovery was 100% in core one to six and 96% in core seven. RFT fluid samples were taken at 3458 m (oil, emulsion and water), 3467 m (emulsion) and at 3528 m (water)

The well was suspended on 12 December 1977 for possible use as a producer at a later stage. It is classified as an oil appraisal well.

Testing

Production tests were carried out on three reservoir intervals to establish the producible oil-water contact and to obtain reservoir properties of the Middle and Late Jurassic sands.

DST 1 tested the intervals 3536 to 3540 m and 3550 to 3552 m. This test failed for mechanical reasons in the first attempt. The second attempt, DST 1B, produced 10 Sm3 water/day with no indication of hydrocarbons. This was the only test where the temperature gauge functioned correctly. The measured temperature was 141.1 deg C

DST 2 tested the interval 3527 to 3530 m. This test produced 6 Sm3 oil/day from low-permeable sands at the base of the reservoir. The oil density was 0.828 g/cm3.

DST 3 tested the main reservoir from the intervals 3453 to 3460 m and 3463.5 to 3471.5 m. This test produced in the final flow 1110 Sm3 oil, 73624 Sm3 gas /day through a 32/64" choke. The separator GOR was 66 Sm3/Sm3 while the total GOR was 96 Sm3/Sm3. The oil density was 0.830 g/cm3 and the gas gravity was 0.754 (air = 1).

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
180.00	3621.00

Cuttings available for sampling?	YES

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3447.5	3465.8	[m]
2	3465.8	3474.5	[m]
3	3474.5	3491.5	[m]
4	3492.5	3510.7	[m]
5	3510.7	3519.7	[m]
6	3519.7	3538.4	[m]
7	3538.4	3556.7	[m]

Total core sample length [m]	108.2
Cores available for sampling?	YES

Core photos


3447-3452m


3452-3457m


3457-3462m


3462-3465m


3465-3470m


3470-3474m


3474-3479m


3479-3484m


3484-3489m


3489-3491m


3492-3495m


3495-3497m


3500-3503m


3503-3506m


3497-3501m


3506-3510m


3510-3515m


3515-3519m


3522-3525m


3525-3527m


3527-3530m


3519-3531m


3531-3536m


3536-3538m


3538-3543m


3543-3548m


3548-3553m


3553-3556m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
3448.2	[m]	C	HYDRO
3449.8	[m]	C	HYDRO
3450.0	[m]	C	HYDRO
3456.5	[m]	C	HYDRO
3460.0	[m]	C	HYDRO
3465.0	[m]	C	HYDRO
3470.7	[m]	C	HYDRO
3471.6	[m]	C	HYDRO
3472.3	[m]	C	HYDRO

3473.8	[m]	C	HYDRO
3474.8	[m]	C	HYDRO
3479.7	[m]	C	HYDRO
3484.5	[m]	C	HYDRO
3485.3	[m]	C	HYDRO
3486.0	[m]	C	HYDRO
3487.8	[m]	C	HYDRO
3490.6	[m]	C	HYDRO
3495.4	[m]	C	HYDRO
3500.5	[m]	C	HYDRO
3505.2	[m]	C	HYDRO
3509.7	[m]	C	HYDRO
3514.5	[m]	C	HYDRO
3519.0	[m]	C	HYDRO
3523.0	[m]	C	HYDRO
3525.1	[m]	C	HYDRO
3525.5	[m]	C	HYDRO
3527.0	[m]	C	HYDRO
3528.0	[m]	C	HYDRO
3530.2	[m]	C	HYDRO
3534.1	[m]	C	HYDRO
3537.0	[m]	C	HYDRO

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
95	NORDLAND GP
1587	HORDALAND GP
2583	ROGALAND GP
2583	BALDER FM
2618	SELE FM
2672	LISTA FM
2704	MAUREEN FM
2737	SHETLAND GP
2737	EKOFISK FM
2899	TOR FM
3101	HOD FM
3145	CROMER KNOLL GP
3145	RØDBY FM

3350	TYNE GP
3350	MANDAL FM
3365	FARSUND FM
3445	VESTLAND GP
3445	ULA FM
3529	BRYNE FM

Geochemical information

Document name	Document format	Document size [MB]
298_1	pdf	0.56
298_2	pdf	0.48
298_3	pdf	0.54
298_4	pdf	1.43
298_5	pdf	0.64
298_6	pdf	0.63
298_7	pdf	0.27

Documents - older Norwegian Offshore Directorate WDSS reports and other related documents

Document name	Document format	Document size [MB]
298_01_WDSS_General_Information	pdf	0.26

Documents - reported by the production licence (period for duty of secrecy expired)

Document name	Document format	Document size [MB]
298_7_12_4_Completion_log	pdf	2.23
298_7_12_4_Drilling_Completion_report	pdf	8.41
298_7_12_4_Geological_Completion_Report	pdf	7.88

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3536	3552	0.0
2.0	3527	3530	0.0

3.0	3453	3472	12.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				141
2.0				
3.0				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	6		0.830		
3.0	1110	73624	0.830	1.000	96

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	85	3589
CDM AP	3367	3621
DLL MSFL	3366	3619
FDC CNL	3366	3620
GR	95	480
ISF SONIC	480	3618
SRS	80	3618

Casing and leak-off tests

Casing type	Casing diam. [inch]	Casing depth [m]	Hole diam. [inch]	Hole depth [m]	LOT/FIT mud eqv. [g/cm3]	Formation test type
CONDUCTOR	30	169.0	36	174.0	0.00	LOT
SURF.COND.	20	492.0	26	498.0	0.00	LOT
INTERM.	13 3/8	1678.0	17 1/2	1694.0	0.00	LOT
INTERM.	9 5/8	3369.0	12 1/4	3373.0	0.00	LOT
LINER	7	3620.0	8 1/2	3621.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
0	1.43			waterbased	
498	1.06			waterbased	
597	1.43			waterbased	
1125	1.40			waterbased	
1388	1.44			waterbased	
1694	1.45			waterbased	
2920	1.44			waterbased	
3339	1.44			waterbased	

Pressure plots

The pore pressure data is sourced from well logs if no other source is specified. In some wells where pore pressure logs do not exist, information from Drill stem tests and kicks have been used. The data has been reported to the NPD, and further processed and quality controlled by IHS Markit.

Document name	Document format	Document size [MB]
298_Formation_pressure_(Formasjonstrykk)	pdf	0.22