General information

Wellbore name	16/1-11 A
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Field	IVAR AASEN
Discovery	16/1-9 Ivar Aasen
Well name	16/1-11
Seismic location	inline 886 & crossline 1149
Production licence	001 B
Drilling operator	Det norske oljeselskap ASA
Drill permit	1308-L
Drilling facility	SONGA DELTA
Drilling days	14
Entered date	26.04.2010
Completed date	09.05.2010
Release date	09.05.2012
Publication date	09.05.2012
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	SLEIPNER FM
2nd level with HC, age	LATE TRIASSIC
2nd level with HC, formation	SKAGERRAK FM
Kelly bushing elevation [m]	29.0
Water depth [m]	112.0
Total depth (MD) [m RKB]	2595.0
Final vertical depth (TVD) [m RKB]	2528.0
Maximum inclination [°]	27.7
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	SKAGERRAK FM
Geodetic datum	ED50
NS degrees	58° 55' 36.15'' N
EW degrees	2° 11' 7.48'' E

NS UTM [m]	6532327.00
EW UTM [m]	453098.97
UTM zone	31
NPDID wellbore	6364

Wellbore history

General

Well 16/1-11 and the subsequent 16/1-11 A sidetrack was drilled to appraise the 16/1-9 discovery on the Gudrun Terrace just west of the Utsira High in the North Sea. The discovery well 16/1-9 was completed in April 2008 and revealed oil shows in the Middle Jurassic Vestland Group, but neither coring or logging was completed according to programme due to hole problems. In well 16/1-11, the Sleipner Formation proved to be hydrocarbon bearing with a gas cap of approximately 25 m thickness and a gas-oil contact interpreted at approximately 2407 m in the Skagerrak Formation. However, acquisition of pressure data and sampling in the water zone in the Skagerrak Formation proved to be difficult due to very low porosity and permeability. Thus, no reliable water gradient could be established from the RCI sampling programme.

The 16/1-11 A geological sidetrack was drilled down flank on the structure. The main objectives were to obtain pressure samples in order to delineate the oil/water contact and to obtain water samples from the Skagerrak Formation in order to establish reservoir properties. A sidetrack would also give useful facies and thickness variation input. Another objective was to acquire sidewall cores to pin down the expected hiatus on top of the Sleipner Formation.

Operations and results

Well 16/1-11 A was drilled with the semi-submersible installation Songa Delta. It was kicked off on 26 April 2010, with kick-off point at 1744 m in the parent well. It was drilled to TD at 2595 m (2528 m TVD), 94 m MD into the Late Triassic Skagerrak Formation. The well was drilled with Carbotech oil based mud from kick-off to TD.

The reservoir of the Sleipner Formation was penetrated at 2476 m (2393.2 TVD MSL) approximately 300 m down flank westward relative to the parent well, with an inclination of 27.6 degrees. Pressure data proved an oil gradient throughout. Top Skagerrak formation was penetrated at 2500.5 m (2414.9 m TVD MSL). Gas and oil shows were present through the reservoir interval and a possible OWC at 2526.1 m (2433.6 m TVD MSL) in the Skagerrak Formation was defined by pressure points and fluid samples. Oil shows above the OBM was recorded down to 2533 m.

The planned wire line logging program including pressure points, fluid samples, mini-DST and sidewall cores was performed. No conventional cores were cut. RCI oil samples were collected at 2478.02 m and 2510.52 m. Contamination from oil base in these samples was estimated to be between 2.5% and 8.5% by weight. Draw-down was 1.6 to 4.0 bar. RCI samples with both oil and water was collected at 2521.13 m. In these samples the mud contamination was estimated to be ca 76% by weight and the draw-down was 66 - 70 bar. Water samples were collected at 2522.1 m during a mini-DST with the MRCH-JAR-TTRm-GR-Straddle packer-Observation probe.

The well was permanently abandoned on 9 May 2010 as an oil and gas appraisal well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1760.00	2595.00

Cuttings available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
141	NORDLAND GP
754	UTSIRA FM
811	NO FORMAL NAME
825	HORDALAND GP
825	SKADE FM
837	NO FORMAL NAME
939	SKADE FM
1226	NO FORMAL NAME
1609	GRID FM
1738	NO FORMAL NAME
1994	ROGALAND GP
1994	BALDER FM
2031	SELE FM
2095	LISTA FM
2152	HEIMDAL FM
2207	LISTA FM
2262	SHETLAND GP
2262	EKOFISK FM
2283	CROMER KNOLL GP
2283	ÅSGARD FM
2320	VIKING GP
2320	DRAUPNE FM
2396	HEATHER FM
2476	VESTLAND GP
2476	SLEIPNER FM
2501	NO GROUP DEFINED
2501	SKAGERRAK FM

Geochemical information

Document name	Document format	Document size [MB]
6364_01_16_1_11A_gch_transfer_1	txt	0.00
6364_02_16_1_11A_gch_results_1	txt	0.01

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MRCH JAR TTRM GR RCI SW	2478	2544
MRCH JAR TTRM GR RCOR	2595	2425
MRCH JAR TTRM GR SP OP	2520	2562
MWD LWD - GR REMP BHPR MECH DEN	1756	2596

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
OPEN HOLE		2595.0	8 1/2	2595.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1565	1.21	13.0		AQUACOL KCL/POLYMER/GLYCOL	
2026	1.30	32.0		CARBO TECH	
2477	1.30	31.0		CARBO TECH	
2595	1.32	30.0		CARBO TECH	
2595	1.30	33.0		CARBO TECH	

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]
6364_Formation_pressure_(Formasjonstrykk)	pdf	0.23