



General information





Wellbore name	2/4-18 R
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	2/4-18
Seismic location	SG-9111- INLINE 1002 & CROSSLINE 1520
Production licence	146
Drilling operator	Saga Petroleum ASA
Drill permit	762-L2
Drilling facility	MÆRSK GUARDIAN
Drilling days	142
Entered date	19.02.1994
Completed date	10.07.1994
Plugged and abandon date	10.07.1994
Release date	10.07.1996
Publication date	18.01.2007
Purpose - planned	WILDCAT
Reentry	YES
Reentry activity	DRILLING
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	42.0
Water depth [m]	68.0
Total depth (MD) [m RKB]	5310.0
Final vertical depth (TVD) [m RKB]	5305.0
Maximum inclination [°]	8.8
Bottom hole temperature [°C]	199
Oldest penetrated age	LATE JURASSIC
Oldest penetrated formation	FARSUND FM
Geodetic datum	ED50
NS degrees	56° 41' 59.91" N
EW degrees	3° 9' 46.05" E
NS UTM [m]	6284141.35
EW UTM [m]	509969.18
UTM zone	31
NPDID wellbore	2253



Wellbore history

General

Well 2/4-18 R is located in the northern part of the block, on the eastern margin of the Feda Graben, Southern Norwegian North Sea. A number of wells originally operated by SAGA are located in this area on the Hidra Terrace, in the transition zone between the Hidra High-Steinbit Terrace to the NE, and the Feda Graben to the SW. The structural elements are separated by large NW-SE striking normal fault systems, forming series of rotated and downstepping terraces towards the axis of the Central Graben. The main objective of well was to test the reservoir potential of the Late Jurassic in a down-dip position with respect to previous wells 2/4-14 and 2/4-16. Secondary prospects were to be evaluated in the Late and Early Cretaceous. Planned TD was 5042 m +/- 150 m.

Operations and results

Well 2/4-18 R was spudded with the jack-up installation Maersk Guardian on 19 February 1994 and drilled to TD at 5310 m in the Late Jurassic Farsund Formation. Drilling went without significant technical problems and close to the planned time schedule. The well was drilled with spud mud down to 521 m; with gel mud from 521 m to 1008 m; with pseudo oil based mud (Novadrill with poly-alpha-olefins from 1008 m to 3230 m, and with HI TEMP Polymer mud from 3230 m to TD.

The well penetrated 3048 m of sediments confined to the Holocene-Eocene Nordland and Hordaland Groups. As in the previous wells in the area, the uppermost 900 m was composed of sand and clay. The rest was dominated by claystones with thin beds of limestone and sandstone. The Lowermost Eocene-Early Paleocene Rogaland Group proved a thickness of 193 m. The uppermost part was characteristically containing tuffaceous claystones. The middle part was dominated by claystones with traces of limestone/dolomite, whereas limestones and marls dominated the lower part. The Early Paleocene - Late Cretaceous Shetland Group had a thickness of 1113 m, and rested unconformable on the 252 m thick, Early Cretaceous Cromer Knoll Group. Chalky limestones and marls/claystones dominated the lithology, respectively. Weak hydrocarbon shows (limited porosity) was observed restricted zones in claystones of the Lista Formation and limestones in the lower part (i.e. not Ekofisk) Formation part of the Shetland Group.

The well terminated 594 m into the Late Jurassic Tyne Group, nearly 300 m deeper than originally planned. Base Cretaceous Unconformity was identified 26 m shallower than expected. Expanded thicknesses and additional sequences were penetrated, and potential reservoir intervals were discovered deeper than expected. The interval was dominated by organic rich shales, and with downward increasing sandstone content, predominantly calcite cemented and in parts with traces of hydrocarbon shows. Vitrinite reflection measurements reveal that the shales of the Tyne Group are no longer oil generative in the well location, but are well into the gas generation window (%Ro = 1.1 to 1.7). Analyses of source richness in the Tyne Group show there are several claystones lithologies with highly variable hydrocarbon potentials. The dominating lithology is reported as a variably grey claystone with a very limited potential (TOC < 0.5%). Subordinate lithologies are generally darker. They are commonly coaly and/or silty and are found in zones in the Mandal Formation (TOC in the range 6 - 8 %), and in the Farsund Formation (TOC in the range 2 - 5 %).

CPI data indicate net-pay hydrocarbon saturations in the order of 52% in an "Intra Farsund Sand" at 5137 to 5164 m. Several attempts of fluid sampling from 5150 m in this zone were unsuccessful. Sandstone beds below this level were water bearing and with a significantly higher pore pressure. Two conventional cores were cut in the Farsund Formation at 5105 m to 5114 m and at 5134 m to 5137.5 m.



The well was permanently abandoned on 10 July as a well with strong shows.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
240.00	5301.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	5134.0	5137.2	[m]
2	5105.0	5114.0	[m]

Total core sample length [m]	12.2
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
4690.0	[m]	DC	OD
4700.0	[m]	DC	OD
4710.0	[m]	DC	OD
4719.0	[m]	DC	OD
4731.0	[m]	DC	OD
4749.0	[m]	DC	OD
4761.0	[m]	DC	OD
4779.0	[m]	DC	OD
4791.0	[m]	DC	OD
4803.0	[m]	DC	OD
4812.0	[m]	DC	OD
4821.0	[m]	DC	OD
4830.0	[m]	DC	OD
4839.0	[m]	DC	OD
4851.0	[m]	DC	OD



5037.0	[m]	DC	OD
5105.0	[m]	C	OD
5114.0	[m]	C	OD
5135.0	[m]	C	OD
5136.7	[m]	C	OD
5184.0	[m]	DC	OD
5190.0	[m]	DC	OD
5196.0	[m]	DC	OD
5202.0	[m]	DC	OD
5250.0	[m]	DC	OD
5301.0	[m]	DC	OD

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
110	NORDLAND GP
822	NO FORMAL NAME
883	NO FORMAL NAME
1804	HORDALAND GP
3158	ROGALAND GP
3158	BALDER FM
3171	SELE FM
3188	LISTA FM
3277	VIDAR FM
3311	LISTA FM
3334	VÅLE FM
3351	SHETLAND GP
3351	EKOFISK FM
3475	TOR FM
3704	HOD FM
4435	BLODØKS FM
4445	HIDRA FM
4464	CROMER KNOLL GP
4464	RØDBY FM
4494	TUXEN FM
4544	ÅSGARD FM
4716	TYNE GP
4716	MANDAL FM
4772	FARSUND FM



Geochemical information

Document name	Document format	Document size [MB]
2253_1	pdf	7.11

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AS MSFL NGT AMS	4620	5202
CBL VDL GR	3219	4625
DLL MSFL AS LDT GR AMS	3219	4509
DLL MSFL DSI GPIT NGT GR AMS	4450	4635
FMI GR AMS	3219	4625
FMS GR AMS	4620	5185
LDT CNL CBL VDL GR AMS	3219	4550
MDT GR AMS	5100	5310
MSCT GR	3219	4625
MSCT GR	3219	4625
MWD - DIR	232	521
MWD - DIR GR RES	521	3230
PI LDT CNL NGT AMS	4620	5185
RFT GR	3561	5110
VELOCITY	2890	5110
VSP	3561	5110

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
INTERM.	18 5/8	996.0	26	1005.0	1.92	LOT
INTERM.	13 3/8	3219.0	17 1/2	3230.0	1.87	LOT
INTERM.	9 5/8	4619.0	12 1/4	4632.0	2.14	LOT
OPEN HOLE		5310.0	8 1/2	5310.0	0.00	LOT

Drilling mud





Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
232	1.05			WATER BASED	22.02.1994
410	1.10	6.0	20.0	WATER BASED	23.02.1994
521	1.10	6.0	20.0	WATER BASED	24.02.1994
521	1.10	5.0	20.0	WATER BASED	25.02.1994
521	1.10	5.0	20.0	WATER BASED	28.02.1994
521	1.10	5.0	20.0	WATER BASED	28.02.1994
521	1.09	5.0	20.0	WATER BASED	28.02.1994
744	1.20	9.0	20.0	GEL MUD	01.03.1994
1008	1.20	8.0	22.0	GEL MUD	03.03.1994
1008	1.40	26.0	11.0	OIL BASED	08.03.1994
1008	1.40	26.0	12.0	OIL BASED	08.03.1994
1008	1.20	10.0	17.0	GEL MUD	08.03.1994
1030	1.40	23.0	18.0	OIL BASED	08.03.1994
1570	1.50	27.0	24.0	OIL BASED	10.03.1994
1893	1.60	35.0	25.0	OIL BASED	10.03.1994
1893	1.60	36.0	28.0	OIL BASED	11.03.1994
1893	1.60	38.0	22.0	OIL BASED	14.03.1994
1893	1.60	37.0	30.0	OIL BASED	14.03.1994
2947	1.60	37.0	30.0	OIL BASED	14.03.1994
2983	1.60	38.0	18.0	OIL BASED	15.03.1994
2983	1.60	38.0	18.0	OIL BASED	16.03.1994
2998	1.60	37.0	19.0	OIL BASED	17.03.1994
3190	1.60	37.0	16.0	OIL BASED	18.03.1994
3230	1.60	35.0	15.0	OIL BASED	23.03.1994
3230	1.60	35.0	15.0	OIL BASED	22.03.1994
3230	1.60	29.0	13.0	DUMMY	24.03.1994
3251	1.60	25.0	10.0	DUMMY	25.03.1994
3490	1.61	21.0	11.0	DUMMY	05.04.1994
3549	1.61	21.0	10.0	DUMMY	05.04.1994
3549	1.60	24.0	11.0	DUMMY	29.03.1994
3549	1.61	27.0	13.0	DUMMY	30.03.1994
3917	1.61	24.0	11.0	DUMMY	05.04.1994
3996	1.60	25.0	12.0	DUMMY	05.04.1994
4067	1.60	30.0	12.0	DUMMY	05.04.1994
4124	1.60	29.0	11.0	DUMMY	05.04.1994
4142	1.60	29.0	11.0	DUMMY	06.04.1994
4142	1.61	28.0	12.0	DUMMY	07.04.1994



4208	1.60	27.0	11.0	DUMMY	08.04.1994
4283	1.60	26.0	11.0	DUMMY	11.04.1994
4283	1.60	29.0	12.0	DUMMY	11.04.1994
4352	1.60	26.0	9.0	DUMMY	11.04.1994
4353	1.60	22.0	9.0	DUMMY	12.04.1994
4398	1.60	26.0	9.0	DUMMY	14.04.1994
4398	1.62	24.0	9.0	DUMMY	14.04.1994
4398	1.62	23.0	9.0	DUMMY	18.04.1994
4426	1.62	22.0	9.0	DUMMY	18.04.1994
4433	1.62	25.0	10.0	DUMMY	18.04.1994
4468	1.64	25.0	9.0	DUMMY	18.04.1994
4501	1.64	27.0	10.0	DUMMY	19.04.1994
4501	1.66	30.0	11.0	DUMMY	21.04.1994
4504	1.66	24.0	10.0	DUMMY	21.04.1994
4504	1.66	22.0	9.0	DUMMY	22.04.1994
4504	1.66	22.0	9.0	DUMMY	25.04.1994
4504	1.66	22.0	9.0	DUMMY	25.04.1994
4524	1.66	23.0	8.0	DUMMY	25.04.1994
4541	1.68	24.0	10.0	DUMMY	26.04.1994
4541	1.68	24.0	9.0	DUMMY	27.04.1994
4541	1.68	24.0	10.0	DUMMY	28.04.1994
4557	1.68	23.0	11.0	DUMMY	29.04.1994
4583	1.74	25.0	10.0	DUMMY	02.05.1994
4584	1.75	25.0	8.0	DUMMY	02.05.1994
4602	1.76	24.0	11.0	DUMMY	02.05.1994
4602	1.76	26.0	10.0	DUMMY	03.05.1994
4602	1.76	24.0	10.0	DUMMY	04.05.1994
4621	1.76	23.0	11.0	DUMMY	05.05.1994
4632	1.82	24.0	8.0	DUMMY	09.05.1994
4632	0.00				09.05.1994
4632	1.82	22.0	8.0	DUMMY	10.05.1994
4632	1.82	21.0	9.0	DUMMY	16.05.1994
4632	1.82	21.0	9.0	DUMMY	16.05.1994
4632	1.82	22.0	8.0	DUMMY	18.05.1994
4632	1.82	21.0	9.0	DUMMY	18.05.1994
4632	1.82	21.0	9.0	DUMMY	18.05.1994
4635	1.82	19.0	10.0	DUMMY	19.05.1994
4635	1.82	25.0	10.0	DUMMY	19.05.1994
4651	1.90	21.0	6.0	DUMMY	19.05.1994
4687	1.90	28.0	17.0	DUMMY	24.05.1994



4711	1.94	32.0	19.0	DUMMY	24.05.1994
4711	1.95	31.0	22.0	DUMMY	24.05.1994
4746	1.95	33.0	25.0	DUMMY	24.05.1994
4804	1.97	31.0	24.0	DUMMY	24.05.1994
4804	1.97	35.0	19.0	DUMMY	25.05.1994
4804	1.97	29.0	17.0	DUMMY	26.05.1994
4832	2.00	31.0	17.0	DUMMY	27.05.1994
4832	2.02	17.0	6.0	DUMMY	20.06.1994
4832	2.02	18.0	6.0	DUMMY	10.06.1994
4832	2.02	17.0	6.0	DUMMY	10.06.1994
4832	2.02	18.0	6.0	DUMMY	14.06.1994
4832	2.02	17.0	7.0	DUMMY	14.06.1994
4832	2.02	19.0	9.0	DUMMY	14.06.1994
4832	2.02	20.0	8.0	DUMMY	14.06.1994
4832	2.02	20.0	8.0	DUMMY	15.06.1994
4832	2.02	16.0	5.0	DUMMY	16.06.1994
4832	2.02	17.0	6.0	DUMMY	17.06.1994
4832	2.02	17.0	3.0	DUMMY	20.06.1994
4832	2.02	17.0	6.0	DUMMY	20.06.1994
4832	2.02	18.0	3.0	DUMMY	21.06.1994
4832	2.02	18.0	3.0	DUMMY	22.06.1994
4832	2.02	18.0	3.0	DUMMY	23.06.1994
4832	2.04	17.0	6.0	DUMMY	24.06.1994
4832	2.04	17.0	6.0	DUMMY	28.06.1994
4867	2.00	32.0	16.0	DUMMY	30.05.1994
4897	2.00	28.0	27.0	DUMMY	30.05.1994
4930	2.00	22.0	18.0	DUMMY	30.05.1994
4930	2.03	23.0	22.0	DUMMY	31.05.1994
4944	2.02	21.0	18.0	DUMMY	02.06.1994
5001	2.02	22.0	19.0	DUMMY	02.06.1994
5041	2.04	21.0	20.0	DUMMY	03.06.1994
5041	2.04	23.0	22.0	DUMMY	07.06.1994
5105	2.02	17.0	6.0	DUMMY	07.06.1994
5105	2.02	17.0	6.0	DUMMY	07.06.1994
5114	2.02	16.0	6.0	DUMMY	07.06.1994
5114	2.02	17.0	7.0	DUMMY	09.06.1994
5221	2.04	17.0	4.0	DUMMY	28.06.1994
5221	2.04	20.0	8.0	DUMMY	28.06.1994
5221	2.04	21.0	10.0	DUMMY	28.06.1994
5221	2.04	20.0	10.0	DUMMY	29.06.1994



5221	2.04	26.0	16.0	DUMMY	30.06.1994
5221	2.04	25.0	10.0	DUMMY	01.07.1994

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]
2253 Formation pressure (Formasjonstrykk)	pdf	0.19

