

WDSS Report

Date: 18/09/96

PB/SKR

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| Well no: | Operator: |
|----------|-----------|
| 24/09-04 | FINA |

Well

| | | | |
|-------------------|--------------------------------------|---------------|-----------------------------|
| Coordinates : | 59° 23' 21.95" N 01° 47' 20.29" E | UTM coord. : | 6584194.97 N 431209.79 E |
| License no : | 150 | Permit no : | 675 |
| Rig : | BYFORD DOLPHIN | Rig type : | SEMI-SUB. |
| Contractor : | WILRIG | Elev. KB : | 25 M |
| Bottom hole temp: | 44 °C | Water depth : | 119 M |
| Spud. date : | 91.04.17 | Total depth : | 2208 M |
| Compl. date : | 91.06.17 | Form. at TD : | TERTIARY |
| Spud. class : | WILDCAT | Prod.form. : | |
| Compl. class : | P&A. OIL SHOWS | | |
| Seisloca : | FI89 X-1017 / FI89 Y-1804 | | |

Licenses

30.000000 FINA PRODUCTION LICENCES AS
 10.000000 SAGA PETROLEUM A.S.
 50.000000 DEN NORSKE STATS OLJESELSKAP A.S
 10.000000 ENTERPRISE OIL NORWEGIAN AS

Casing and Leak-off Tests

| Type | Casing diam | Depth below KB | Hole diam. | Hole depth below KB | Lot mud eqv. g/cm ³ |
|-----------|-------------|----------------|------------|---------------------|--------------------------------|
| CONDUCTOR | 30 | 205.5 | 36 | 211.0 | |
| INTERM. | 20 | 750.0 | 26 | 756.0 | 1.21 |
| INTERM. | 13 3/8 | 1179.0 | 17 1/2 | 1180.0 | 1.53 |
| INTERM. | 9 5/8 | 1585.0 | 12 1/4 | 1654.0 | 1.68 |
| OPEN HOLE | | 2208.0 | 8 1/2 | 2208.0 | |

| | |
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Conventional Cores

| Core no. | Intervals cored meters | Recovery m | % |
|----------|------------------------|------------|-------|
| 1 | 1773.0 - 1778.9 | 5.9 | 100.0 |
| 2 | 1782.0 - 1787.5 | 5.5 | 100.0 |
| | | | |

Mud

| Depth | Mud weight | Visc. | Mud type |
|--------|------------|-------|-------------|
| 170.0 | 1.03 | 13.0 | WATER BASED |
| 210.0 | 1.03 | 13.0 | WATER BASED |
| 650.0 | 1.20 | 31.0 | WATER BASED |
| 670.0 | 1.09 | 83.0 | DUMMY |
| 756.0 | 1.20 | 31.0 | WATER BASED |
| 756.0 | 1.03 | 14.0 | WATER BASED |
| 1155.0 | 1.03 | 14.0 | DUMMY |
| 1396.0 | 1.20 | 80.0 | DUMMY |
| 1532.0 | 1.20 | 80.0 | DUMMY |
| 1585.0 | 1.42 | 70.0 | WATER BASED |
| 1587.0 | 1.14 | 55.0 | WATER BASED |
| 1654.0 | 1.42 | 70.0 | WATER BASED |
| 1688.0 | 1.35 | 57.0 | WATER BASED |
| 1753.0 | 1.42 | 54.0 | WATER BASED |
| 1880.0 | 1.42 | 62.0 | WATER BASED |
| 1897.0 | 1.42 | 73.0 | WATER BASED |
| 1903.0 | 1.42 | 82.0 | WATER BASED |
| 1941.0 | 1.42 | 60.0 | WATER BASED |
| 1951.0 | 1.35 | 52.0 | WATER BASED |
| 1979.0 | 1.42 | 56.0 | WATER BASED |
| 1987.0 | 1.29 | 64.0 | WATER BASED |
| 2151.0 | 1.42 | 64.0 | WATER BASED |
| 2208.0 | 1.42 | 57.0 | WATER BASED |

Drill Stem Test (intervals and pressures)

| Test no. | Test interval meter | Choke size | Pressure (psi) WHP | BTHP | FFP |
|----------|---------------------|------------|--------------------|------|-----|
| | | | | | |

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Drill Stem Test (recovery)

| Test no. | Oil Sm ³ /d | Gas Sm ³ /d | Oil grav. g/cm ³ | Gas grav. rel. air | GOR m ³ /m ³ |
|----------|------------------------|------------------------|-----------------------------|--------------------|------------------------------------|
| | | | | | |

Drill Bit Cuttings and Wet Samples

| Sample type | Interval below KB | Number of samples |
|-------------|-------------------|-------------------|
| WET SAMPLES | 770 - 2161 | 330 |

Shallow Gas

| Interval below KB | Remarks |
|-------------------|---------|
| | |

Available Logs

| Log type | Intervals logged | 1/200 | 1/500 | |
|----------------------|------------------|-------|-------|--|
| CBL VDL GR | 1300.0 - 1518.0 | | | |
| CST GR | 1763.0 - 1850.0 | | | |
| DIL BHC CALI GR | 1585.0 - 1857.0 | | | |
| DIL BHC LDL AMS GR | 1179.0 - 1618.0 | | | |
| DIL BHC MSFL GR | 1585.0 - 1792.0 | | | |
| DIL LSS AMS GR | 1179.0 - 1443.0 | | | |
| DIL LSS CAL SP GR | 750.0 - 1169.0 | | | |
| DIL LSS CALI GR | 1585.0 - 1752.0 | | | |
| DLL MSFL GR | 1586.0 - 1855.0 | | | |
| DRILLING DATA PRESS. | 750.0 - 1650.0 | | | |
| LDL CAL GR | 750.0 - 1169.0 | | | |

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|----------------------|-----------------|--|--|--|
| LDL CNL GR | 1585.0 - 1857.0 | | | |
| LDL CNL NGS | 1585.0 - 1714.0 | | | |
| MUD | 750.0 - 1650.0 | | | |
| MWD | 1650.0 - 2200.0 | | | |
| NGS RATIOS | 1585.0 - 1714.0 | | | |
| RFT HP GR | 1766.0 - 1818.0 | | | |
| SONIC LOG CALIBR. | 700.0 - 1850.0 | | | |
| SYNTHETIC SEISMOGRAM | | | | |
| VELOCITY | 700.0 - 1820.0 | | | |
| VSP | 230.0 - 1580.0 | | | |
| VSP OFFSET | 230.0 - 1580.0 | | | |

Main operations for well: 24/9-4**Main operation: DRILLING**

| Sub operation: | Minutes: | Hours: | % of total: |
|----------------|--------------|--------------|---------------|
| BOP ACTIVITIES | 1575 | 26,3 | 2,94 |
| CASING | 10065 | 167,8 | 18,78 |
| CIRC/COND | 4800 | 80,0 | 8,96 |
| DRILL | 10125 | 168,8 | 18,89 |
| HOLE OPEN | 495 | 8,3 | 0,92 |
| OTHER | 660 | 11,0 | 1,23 |
| REAM | 6450 | 107,5 | 12,03 |
| SURVEY | 885 | 14,8 | 1,65 |
| TRIP | 17790 | 296,5 | 33,19 |
| WAIT | 750 | 12,5 | 1,40 |
| Total | 53595 | 893,3 | 100,00 |

Main operation: FORMATION EVAL

| Sub operation: | Minutes: | Hours: | % of total: |
|----------------|-------------|--------------|---------------|
| CIRC SAMPLES | 60 | 1,0 | 0,78 |
| CORE | 510 | 8,5 | 6,60 |
| LOG | 6075 | 101,3 | 78,64 |
| RFT/FIT | 1080 | 18,0 | 13,98 |
| Total | 7725 | 128,8 | 100,00 |

Main operation: INTERRUPTION

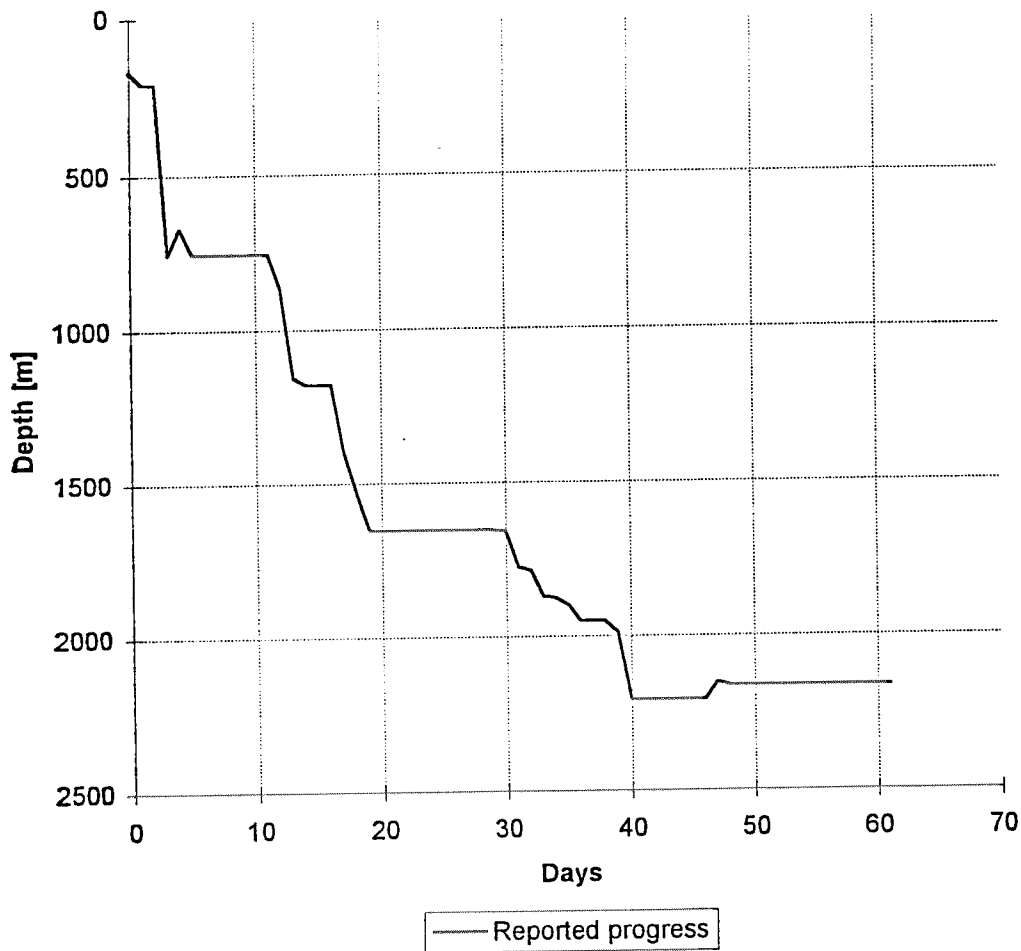
| Sub operation: | Minutes: | Hours: | % of total: |
|----------------|--------------|--------------|---------------|
| FISH | 4860 | 81,0 | 26,51 |
| MAINTAIN/REP | 5715 | 95,3 | 31,18 |
| SIDETRACK | 7020 | 117,0 | 38,30 |
| WAIT | 735 | 12,3 | 4,01 |
| Total | 18330 | 305,5 | 100,00 |

Main operation: MOVING

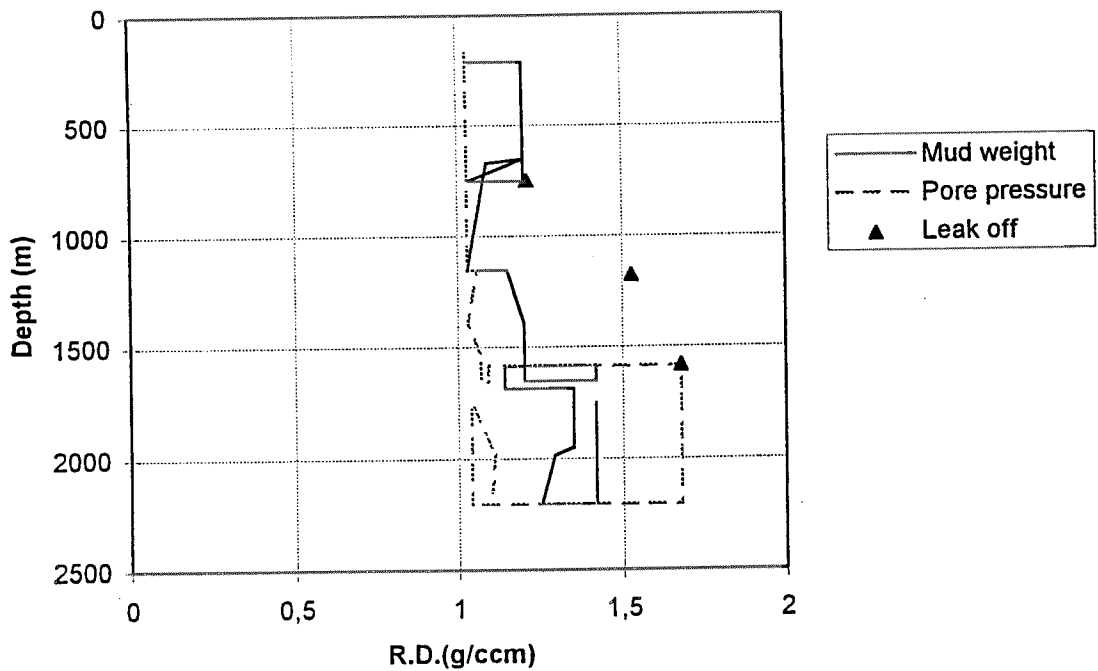
| Sub operation: | Minutes: | Hours: | % of total: |
|----------------|-------------|-------------|---------------|
| TRANSIT | 2655 | 44,3 | 100,00 |
| Total | 2655 | 44,3 | 100,00 |

Total time used: Hours

Depth vs time for well: 24/9-4



Composite plot for well: 24/9-4



Well History 24/9-4

General:

Well 24/9-4 was located on the western margin of the South Viking Graben, close to the UK border. Block 24/9 was previously licensed by a group operated by Conoco who drilled three exploration wells on the block. One well, 24/9-1, was drilled to the Jurassic, the other two were completed at shallower depths with Palaeocene objectives. The 24/9-4 well is located 1.95 km NNE from well 24/9-3, which made a discovery and tested oil of Lower Eocene age.

The objective of well 24/9-4 was:

- 1) to test the exploration potential of a Lower Eocene sand prone interval forming a stratigraphic play in the western part of the block. The reservoir was interpreted to result from submarine fan deposition.

The primary risk of the prospect was the presence of a reservoir. Shallow gas was previously recorded in offset wells, with a peak of 1.2% in well 24/12-2 between 500 and 100 m. In addition a severe clay swelling problem was expected in the Eocene clay section, as well as undercompaction of the shale section above the reservoir.

Operations:

Wildcat well 24/9-4 was spudded 17 April 1991 by the semi-submersible rig Byford Dolphin and completed 18 June 1991 at a total depth of 2208 m RKB (side-track 2164 m RKB) in Upper Palaeocene Lista Formation. The well penetrated the top of the Lower Eocene 'Frigg' Formation sands at 1766 m RKB, which was 51 metres deeper than prognosed. The base of the reservoir sequence was penetrated at 1953 m RKB (8 metres deeper than prognosed). The gross reservoir thickness was 187 m (43 m less than prognosed). Three conventional cores were cut at the top of the Lower Eocene 'Frigg' Formation sands. A total of 30 sidewall cores were attempted and 28 were recovered. Problems occurred while drilling the 8 1/2" hole. Hole instability was characterised by logging difficulties and the need for extensive wiper trips. Due to technical problems the well was side-tracked from 1753 m RKB and drilled to 2164 m RKB. The well was permanently plugged and abandoned as a dry hole.

Testing:

No DST tests were performed in this well.

Geological Tops.

Well: 24/9-4.

| | Depth m (RKB). |
|------------------|----------------|
| Nordland Group. | 143.5 |
| Hordaland Group. | 740.0 |
| Grid Fm | 1067.0 |
| Frigg Fm | 1766.0 |
| Rogaland Group. | 1974.0 |
| Balder Fm. | 1974.0 |
| Sele Fm. | 2098.0 |
| Lista Fm. | 2170.0 |

T.D. 2208.0