

1.4.7 Sampling

Table 1.5

| No | Run | Depth<br>m MD | Pumped<br>volume<br>ltr | Draw<br>Down<br>Bar | Fluid | Sampled                              | Remarks  |
|----|-----|---------------|-------------------------|---------------------|-------|--------------------------------------|--|
| 1  | 1A  | 1910,5        | 100                     | 9                   | Oil   | 1 Gallon<br>1 MS - 2 SF<br>18 Gallon |  |
| 2  | 1A  | 1994,8        | approx.<br>70           | 25                  | Water | 1 Gallon +<br>2 3/4 Gallon           | Problems with pumping module.<br>Tool stuck after sampling                     |
| 3  | 1B  | 1826,7        | 252                     | 13                  | Oil   | 1 MS + 2 SF<br>1 Gallon              | 18 Gallon sample did not open. Not<br>pressure on SF bottles                   |
| 4  | 1B  | 1940,5        | 112                     | 0                   | Oil   | 1 MS + 2 SF<br>1 Gallon              | Problems with pumping module.<br>Some contaminated with filtrate<br>Contaminat |

MS: Schlumberger multisampler chamber 450 ml  
SF: Oilphase single phase sample chamber 250 ml

The quality of the oil samples was good. The contamination of mud filtrate in the water sample reduced the quality of this sample. At the offshore site the content of the MS and SF bottles were transferred to other PVT bottles.  
After transferring oil/water to 3\*600cc PVT the 1 gallon sample chambers were bleed of and the rest of oil/water sampled on plastic bottles.  
The gas in the 18 gallon chamber was bleed off and the dead oil sampled in Jerry cans.

Measured on gas bleed of from oil offshore:  
CO<sub>2</sub> 1%, H<sub>2</sub>S not detectable

Table 4.4 MDT run 1A

| Test No. | DEPTH  |          |         | Hydrostatic |            | Formation |           |           | Mobility MD/CP | Comments                             |
|----------|--------|----------|---------|-------------|------------|-----------|-----------|-----------|----------------|--------------------------------------|
|          | mMD    | mTVD RKB | mMSL    | Before BARS | After BARS | BARS      | SG EMW RT | SG EMW SS |                |                                      |
|          |        |          |         |             |            |           |           |           |                |                                      |
| 1        | 1815   | 1814.9   | 1778.91 | 237.87      | 237.85     | 193.63    | 1.088     | 1.110     | 18.9           | Good                                 |
| 2        | 1821.5 | 1821.4   | 1785.41 | 238.68      |            |           |           |           |                | Probe retracted, pressure decreasing |
| 2        | 1821.5 | 1821.4   | 1785.41 |             | 238.65     | 195.48?   |           |           | 26.1?          | Pressure decreasing, plugging ?      |
| 3        | 1826.5 | 1826.4   | 1790.41 | 238.31      | 238.33     | 194.42    | 1.085     | 1.107     | 57.1           | Good                                 |
| 4        | 1830.5 | 1830.4   | 1794.41 | 239.83      | 239.83     | 194.79    | 1.085     | 1.107     | 3.6?           | Limited volume, pressure prob. OK    |
| 5        | 1838   | 1837.9   | 1801.91 | 240.8       | 240.81     | 195.69?   |           |           |                | Pressure not stable                  |
| 6        | 1838.5 | 1838.4   | 1802.41 | 240.83      | 240.86     | 195.25    | 1.083     | 1.104     | 68.8           | Good                                 |
| 7        | 1843   | 1842.9   | 1806.91 | 241.44      | 241.43     | 195.59    | 1.082     | 1.104     | 4.3            | Poor/Moderate                        |
| 8        | 1864   | 1863.9   | 1827.91 | 244.15      | 244.13     | 191.6     | 1.048     | 1.069     | 6              | Poor/Moderate                        |
| 9        | 1880   | 1879.9   | 1843.91 | 246.2       | 246.2      | 192.49    | 1.044     | 1.064     | 313            | Good                                 |
| 10       | 1884.5 | 1884.4   | 1848.41 | 246.76      | 246.78     | 192.89    | 1.044     | 1.064     | 165.3          | Good                                 |
| 11       | 1892.5 | 1892.4   | 1856.41 | 247.81      | 247.8      | 193.42    | 1.042     | 1.062     | 10.6?          | Poor                                 |
| 12       | 1897   | 1896.9   | 1860.9  | 248.4       | 248.38     | 194.02    | 1.043     | 1.063     | 105.1?         | Good                                 |
| 13       | 1905.4 | 1905.3   | 1869.3  | 249.5       | 249.47     | 194.45    | 1.040     | 1.061     | 1062           | Excellent                            |
| 14       | 1910.5 | 1910.4   | 1874.4  | 250.14      | 250.2      | 194.92    | 1.040     | 1.060     | 9469           | Excellent                            |
| 15       | 1920   | 1919.9   | 1883.9  | 251.35      | 251.33     | 195.71    | 1.039     | 1.059     | 815            | Excellent                            |
| 16       | 1939.5 | 1939.4   | 1903.4  | 253.86      | 253.87     | 197.76    | 1.040     | 1.059     | 1315           | Excellent                            |
| 17       | 1953.5 | 1953.4   | 1917.4  | 256.68      | 255.67     | 199.33    | 1.040     | 1.060     | 3.1            | Poor, not stable                     |
| 18       | 1967.3 | 1967.2   | 1931.2  | 257.41      | 257.42     |           |           |           |                | Tight                                |
| 19       | 1982   | 1981.9   | 1945.9  | 258.32      | 259.3      | 200.68    | 1.032     | 1.051     | 36.7           | Moderate                             |
| 20       | 1995   | 1994.9   | 1958.9  | 260.92      | 260.91     | 201.57    | 1.030     | 1.049     | 78.3           | Good, lost seal on first attempt     |
| 21       | 2003   | 2002.9   | 1966.9  | 261.97      | 261.96     | 202.26    | 1.030     | 1.048     | 642            | Excellent                            |
| 22       | 2015.6 | 2015.5   | 1979.49 | 263.58      | 263.56     | 203.47    | 1.029     | 1.048     | 1723           | Excellent                            |
| 23       | 2033   | 2032.9   | 1996.89 | 265.82      | 265.82     | 205.2     | 1.029     | 1.048     | 254            | Good                                 |
| 24       | 2040.5 | 2040.4   | 2004.39 | 266.79      | 266.8      | 205.95    | 1.029     | 1.048     | 2130           | Excellent                            |
| 25       | 2071   | 2070.9   | 2034.89 | 270.76      | 270.74     | 208.98    | 1.029     | 1.047     | 1146           | Excellent                            |
| 26       | 1905.4 | 1905.3   | 1869.3  | 249.2       | 249.2      | 194.44    | 1.040     | 1.060     | 585.2          | Sampling, plugging/seal problem      |
| 27       | 1920   | 1919.9   | 1883.9  | 251.2       | 251.2      | 195.67    | 1.039     | 1.059     | 26             | Sampling, aborted                    |
| 28       | 1910.5 | 1910.4   | 1874.4  | 249.92      |            | 194.87    | 1.040     | 1.060     | 344            | Sampling                             |
| 29       | 1826.5 | 1826.4   | 1790.41 | 239.1       | 239.1      | 194.39    | 1.085     | 1.107     | 120            | Sampling, plugging/seal problem      |
| 30       | 1838.5 | 1838.4   | 1802.41 | 240.6       | 240.6      | 195.3     | 1.083     | 1.105     | 69             | Sampling, plugging/seal problem      |
| 31       | 1839.5 | 1839.4   | 1803.41 | 240.4       | 240.4      | NA        |           |           | NA             | No seal                              |
| 32       | 1838.2 | 1838.1   | 1802.11 | 240.2       | 240.2      | NA        |           |           | NA             | No seal                              |
| 33       | 1839   | 1838.9   | 1802.91 | 240.7       | 240.7      | NA        |           |           | NA             | Sampling, poor permeability          |
| 34       | 1828   | 1825.9   | 1789.91 | 238.89      | 238.89     | NA        |           |           | NA             | Sampling, poor permeability          |
| 35       | 1827   | 1826.9   | 1790.91 | 239         | 239.02     | 194.43    | 1.085     | 1.107     | NA             | Sampling, high drawdown              |
| 36       | 1994.8 | 1994.7   | 1958.7  | 260.8       |            | 201.69    | 1.031     | 1.050     | NA             | Water sample                         |

Table 4.5 MDT run 1B

| Test No. | DEPTH  |        |         | Hydrostatic |        | Formation |       |        | Mobility MD/CP | Comments                              |
|----------|--------|--------|---------|-------------|--------|-----------|-------|--------|----------------|---------------------------------------|
|          | mMD    | mTVD   | mMSL    | Before      | After  | SG        | EMW   | SG EMW |                |                                       |
|          |        | RKB    |         | BARS        | BARS   |           | RT    | SS     |                |                                       |
| 1        | 1826.7 | 1826.6 | 1790.61 | 240.74      |        | 194.55    | 1.086 | 1.108  | 43.2           | Pressure from probe                   |
| 2        | 1826.7 | 1826.6 | 1790.61 | 240.94      |        | 195.90 ?  | 0.000 | 0.000  |                | Pressure slightly increasing. Sample. |
| 3        | 1859.7 | 1859.7 | 1823.7  | 244.61      |        | 191.34 ?  | 0.000 | 0.000  | 1.2            | Pressure still increasing             |
| 4        | 1859.5 | 1859.4 | 1823.41 | 244.6       |        |           | 0.000 | 0.000  |                | Aborted, press. still incr.           |
| 5        | 1859.9 | 1859.8 | 1823.81 | 244.65      |        | 191.45    | 1.049 | 1.070  |                | Supercharge ?                         |
| 6        | 1864   | 1863.9 | 1827.91 | 245.22      | 245.2  | 191.51    | 1.047 | 1.068  | 12.1           | Good/medium                           |
| 7        | 1868   | 1867.9 | 1831.91 | 245.72      | 245.73 | 192.099   | 1.048 | 1.069  | 1              | Poor                                  |
| 8        | 1875   | 1874.9 | 1838.91 | 246.64      | 246.22 | 192.215   | 1.045 | 1.066  | 5              | Medium                                |
| 9        | 1859.2 | 1859.1 | 1823.11 | 244.6       | 244.59 | 191.03    | 1.048 | 1.068  | 40             | Good                                  |
| 9        | 1923.7 | 1923.6 | 1887.6  | 252.97      | 252.96 | 196.03    | 1.039 | 1.059  | 1118           | Excellent                             |
| 10       | 1940.5 | 1940.4 | 1904.4  | 255.16      |        | 197.9     | 1.040 | 1.059  | 1232           | Excellent                             |
| 11       | 1953.5 | 1953.4 | 1917.4  | 256.86      | 256.88 | 199.02    | 1.039 | 1.058  | 121.6          | Good                                  |
| 12       | 1959.1 | 1959.0 | 1923    | 257.61      |        | 199.44    | 1.038 | 1.057  | 56.3           | Good                                  |
| 13       | 1967.1 | 1967.0 | 1931    | 258.67      | 258.7  | 199.72    | 1.035 | 1.054  | 51.5           | Good                                  |
| 14       | 1940.5 | 1940.5 | 1904.5  | 255.62      |        |           | 0.000 | 0.000  |                | Sample with dual packer.              |

A summary of the collected samples is listed in Table 1.5 in Chapter 1.4.7.

