

ResLab, Reservoir Laboratories AS

Fabrikkvn 35-37
P.O.Box 291
N-4066 Stavanger
Norway
Telephone: + 47 51 81 66 00
Telefax: + 47 51 81 66 10
Internett: <http://www.reslab.com>



Final Report

**Transfer and PVT analysis of
MDT samples from well
6407/7-7S, depth 3718.5 and
3733.0 m, Njord**

Authors: Egil Linjord/Anbjørg Ravnås

Date: April 2008

Key words:

Norsk Hydro

Well 6407/7-7S, Njord

MDT samples, 3718.5 m & 3733.0 m

Composition

PVT analysis

Transfer



4 RESULTS OF MDT SAMPLES, DEPTH 3718.5 AND 3733.0 M

4.1 Quality check of MDT Gas Condensate Samples

Table 4.1.1 Opening pressure at room temperature.

| Bottle no | Chamber no MPSR | Depth m | Opening pressure @ 70 °C bar | Reservoir temperature °C | Reservoir pressure bar |
|-----------|--------------------|------------|------------------------------------|-----------------------------|---------------------------|
| TS-36003 | 36 | 3718.5 | 430 | 134 | |
| TS-3821 | 650 | 3718.5 | 400 | 134 | |
| TS-51202 | 710 | 3718.5 | 400 | 134 | |
| TS-102305 | 783 | 3733.0 | 400 | 135 | 470 |
| TS-36205 | 776 | 3733.0 | 420 | 135 | 470 |
| TS-28715 | 781 | 3733.0 | 420 | 135 | 470 |
| TS-102106 | 928 | 3733.0 | 420 | 135 | 470 |
| TS-6418 | 990 | 3733.0 | 410 | 135 | 470 |

Table 4.1.2 Single stage separation, measured values.

| Bottle no. | Chamber no MPSR | Depth m | GCR/ GOR Sm ³ /Sm ³ | Density of stock tank cond./oil kg/m ³ | Molecular weight | Gas gravity |
|------------|--------------------|------------|---|---|---------------------|----------------|
| TS-36003 | 36 | 3718.5 | 792.5 | 814.1 | 168.6 | 0.787 |
| TS-3821 | 650 | 3718.5 | 772.8 | 809.2 | 168.4 | 0.784 |
| TS-51202 | 710 | 3718.5 | 767.3 | 813.0 | 166.5 | 0.788 |
| TS-102305 | 783 | 3733.0 | 596.8 | 816.0 | 168.9 | 0.850 |
| TS-36205 | 776 | 3733.0 | 542.3 | 813.0 | 167.4 | 0.825 |
| TS-28715 | 781 | 3733.0 | 553.4 | 812.7 | 165.9 | 0.823 |
| TS-102106 | 928 | 3733.0 | 493.6 | 813.1 | 168.9 | 0.822 |
| TS-6418 | 990 | 3733.0 | 496.0 | 813.1 | 169.6 | 0.818 |



Final Report

**PVT analysis of MDT samples
from well 6407/7-7S, depth
3397 m,**

Authors: Egil Linjord/Anbjørg Ravnås

Date: April 2008

Key words:

Norsk Hydro

Well 6407/7-7S, Njord

MDT gas condensate samples

Composition

PVT analysis

4 VALIDATION OF MDT GAS CONDENSATE SAMPLES, DEPTH 3397 M

4.1 Quality check of MDT Gas Condensate Samples

Table 4.1.1 Opening pressure at room temperature.

| Bottle no | Chamber no | Opening pressure @ 15 °C bar | Reservoir temperature °C | Reservoir pressure bar |
|-----------|------------|---------------------------------|--------------------------|------------------------|
| 4632-MA | MPSR-750 | 255 | 122 | 485.1 |
| 6708-MA | MRSC-228 | 345 | 122 | 485.1 |
| 9276-MA | MRSC-228 | 345 | 122 | 485.1 |
| 13952-QA | SPMC-514 | 690 | 122 | 485.1 |
| 6838-MA | MPSR-719 | 262 | 122 | 485.1 |
| 4507-MA | MPSR-644 | 262 | 122 | 485.1 |
| 9479-MA | SPMC-125 | 690 | 122 | 485.1 |
| 8755-MA | SPMC-145 | 691 | 122 | 485.1 |

Table 4.1.2 Single stage separation, measured values.

| Bottle no. | Chamber no | GCR Sm ³ /Sm ³ | Density of stock tank condensate kg/m ³ | Molecular weight | Gas gravity |
|------------|------------|---|---|------------------|-------------|
| 4632-MA | MPSR-750 | 1239.6 | 803.7 | 159.4 | 0.795 |
| 6708-MA | MRSC-228 | 4395.5 | 777.8 | 132.7 | 0.774 |
| 9276-MA | MRSC-228 | 2995.8 | 786.7 | 137.9 | 0.775 |
| 13952-QA | SPMC-514 | 1265.4 | 805.3 | 159.8 | 0.798 |
| 6838-MA | MPSR-719 | 1236.1 | 802.9 | 158.1 | 0.790 |
| 4507-MA | MPSR-644 | 1256.8 | 803.2 | 156.7 | 0.793 |
| 9479-MA | SPMC-125 | 1258.2 | 803.3 | 157.2 | 0.788 |
| 8755-MA | SPMC-145 | 1578.4 | 803.8 | 157.8 | 0.787 |

ResLab, Reservoir Laboratories AS

Fabrikkvn 35-37
P.O.Box 291
N-4066 Stavanger
Norway
Telephone: + 47 51 81 66 00
Telefax: + 47 51 81 66 10
Internett: <http://www.reslab.com>



Final Report

**PVT analysis of MDT samples
from well 6407/7-7S, depth
3623.35 m,**

Authors: Egil Linjord/Anbjørg Ravnås

Date: February 2008

Key words:

Norsk Hydro

Well 6407/7-7S, Njord

3623.35 m RKB

MDT samples

Composition

PVT analysis



4 RESULTS OF MDT GAS CONDENSATE SAMPLES, DEPTH 3623.35 M

4.1 Quality check of MDT Gas Condensate Samples

Table 4.1.1 Opening pressure at room temperature.

| Bottle no | Chamber no | Opening pressure @ 20 °C bar | Reservoir temperature °C | Reservoir pressure bar |
|-----------|------------|---------------------------------|--------------------------|------------------------|
| 0866-EA | SPMC-050 | 558.5 | 135 | 520.6 |
| 5236-EA | MRSR-166 | 344.7 | 135 | 520.6 |
| 5626-EA | MRSR-190 | 337.8 | 135 | 520.6 |
| 9832-MA | SPMC-111 | 582.6 | 135 | 520.6 |
| 0979-EA | SPMC-515 | 579.2 | 135 | 520.6 |
| 4639-EA | MPSR-086 | 365.4 | 135 | 520.6 |

Table 4.1.2 Single stage separation, measured values.

| Bottle no. | Chamber no | GCR Sm ³ /Sm ³ | Density of stock tank condensate kg/m ³ | Molecular weight | Gas gravity |
|------------|------------|---|---|------------------|-------------|
| 0866-EA | SPMC-050 | 1380.1 | 810.1 | 163.6 | 0.764 |
| 5236-EA | MRSR-166 | 1317.2 | 810.5 | 163.2 | 0.763 |
| 5626-EA | MRSR-190 | 1339.2 | 810.5 | 163.4 | 0.762 |
| 9832-MA | SPMC-111 | 1342.3 | 809.8 | 163.4 | 0.763 |
| 0979-EA | SPMC-515 | 1321.7 | 811.3 | 164.0 | 0.769 |
| 4639-EA | MPSR-086 | 1353.3 | 810.7 | 163.5 | 0.766 |

ResLab, Reservoir Laboratories AS

Fabrikkvn 35-37
P.O.Box 291
N-4066 Stavanger
Norway
Telephone: + 47 51 81 66 00
Telefax: + 47 51 81 66 10
Internett: <http://www.reslab.com>



Final Report

**PVT analysis of MDT samples
from well 6407/7-7S, depth
3829 m**

Authors: Egil Linjord/Anbjørg Ravnås

Date: February 2008

Key words:

Norsk Hydro

Well 6407/7-7S, Njord

3929 m RKB

MDT oil samples

Composition

PVT analysis



Table 2.1.2 Sample information.

| Sample no | Sampling time | Fluid type | Chamber no | Sampling depth m MD | Draw-down bar | Opening pressure at 14 °C bar | Transfer Pressure bar | Transfer Temp °C | Storage Pressure at 14 °C bar | Bottle no | Bottle type | Sample volume cc |
|-----------|----------------|------------|------------|------------------------|------------------|-------------------------------------|--------------------------|---------------------|-------------------------------------|-----------|-------------|---------------------|
| 2.01 | 05.09.07 20:22 | Oil | MPSR-537 | 3829 | 30 | 227.5 | 551.6 | 100 | 165.5 | 7107-MA | CSB | 405 |
| 2.02 | 05.09.07 20:23 | Oil | MPSR-147 | 3829 | 30 | 227.5 | 551.6 | 100 | 172.4 | 7089-MA | CSB | 410 |

4 RESULTS OF MDT OIL SAMPLES, DEPTH 3829 M

4.1 Quality check of MDT oil Samples

Table 4.1.1 Bubble point at room temperature.

| Bottle no | Chamber no | Bubble point @ 20 °C bar | Reservoir temperature °C | Reservoir pressure bar |
|-----------|------------|-----------------------------|--------------------------|------------------------|
| 7107-MA | MPSR-537 | 246 | 138 | 485.0 |
| 7089-MA | MPSR-147 | 247 | 138 | 485.0 |

Table 4.1.2 Single stage separation, measured values.

| Bottle no. | Chamber no | GOR Sm ³ /Sm ³ | Density of stock tank oil kg/m ³ | Molecular weight | Gas gravity |
|------------|------------|---|--|------------------|-------------|
| 7107-MA | MPSR-537 | 371.9 | 821.6 | 177.3 | 0.883 |
| 7089-MA | MPSR-147 | 385.5 | 821.9 | 177.4 | 0.888 |

Table 4.1.3 Single stage separation, corrected for mud filtrate contamination.

| Bottle no. | Chamber no | GOR Sm ³ /Sm ³ | Density of stock tank oil kg/m ³ | Molecular weight | Mud filtrate contamination % |
|------------|------------|---|--|------------------|------------------------------|
| 7107-MA | MPSR-537 | 430 | 821.1 | 170.9 | 13.5 |
| 7089-MA | MPSR-147 | 445 | 821.5 | 171.7 | 13.5 |

Pressure points (MDT)

| Test no. | Depth m MD RKB | Depth m TVD RKB | Pressure Bar | Test no. | Depth m MD RKB | Depth m TVD RKB | Pressure Bar |
|----------|-------------------|--------------------|-----------------|----------|-------------------|--------------------|-----------------|
| 5 | 3829 | 3615.5 | 534.900 | 27 | 3460.5 | 3249.7 | 487.904 |
| 8 | 3774.5 | 3561.4 | 531.104 | 28 | 3457 | 3246.2 | 487.743 |
| 10 | 3752 | 3539.0 | 529.570 | 29 | 3456.5 | 3245.7 | 487.726 |
| 14 | 3714 | 3501.3 | 524.588 | 30 | 3414 | 3203.5 | 485.867 |
| 15 | 3692 | 3479.5 | 523.623 | 31 | 3397 | 3186.7 | 485.202 |
| 16 | 3686 | 3473.5 | 523.367 | 32 | 3392 | 3181.7 | 485.002 |
| 18 | 3667 | 3454.6 | 522.553 | 33 | 3388.5 | 3178.2 | 484.857 |
| 19 | 3664 | 3451.7 | 522.424 | 34 | 3384 | 3173.7 | 484.689 |
| 20 | 3623.2 | 3411.1 | 520.628 | 45 | 3733 | 3520.2 | 525.822 |
| 21 | 3620.5 | 3408.5 | 520.511 | 46 | 3718.5 | 3505.8 | 524.820 |
| 22 | 3581.5 | 3369.8 | 518.947 | 47 | 3716 | 3503.3 | 524.771 |
| 24 | 3464.5 | 3253.7 | 488.067 | 48 | 3775 | 3561.9 | 531.230 |
| 25 | 3462 | 3251.2 | 487.975 | 49 | 3772.5 | 3559.4 | 530.850 |