# Conclusions & Recommendations

The well was drilled to TD, plugged and abandoned within the AFE days

**Summary**

**38" Section**

Drilled riserless from97.7 to 174 meters with seawater/hi vis sweeps.The formations drilled were claystone and sand. 32" casing was set at 169 m.

**9 7/8" Pilot Hole/24" hole**

Drilled riserless from174 to 1000 meters/174 to 969 meters with seawater/bentonite mud.The formations drilled were claystones. 18 5/8" casing was set at 955 m.

**17 1/2" hole**

Drilled from969 to 2400 meters with KCl/GEM GP/Polymer mud.The formations drilled were claystone. 13 5/8" casing was set at 2381 m.

**12 1/4" hole**

Drilled from2400 to 3730 meters with XP-07 NAP mud.The formations drilled were shale, chalk and shale. 9 5/8" casing was set at 3721 m.

**8 1/2" hole**

Drilled from3730 to 4153 meters with XP-07 NAP mud.The formations drilled were shale. No casing was set.

## Conclusions

**38" Section**

There were no major issues encountered and the casing was circulated to bottom successfully.

**9 7/8" Pilot Hole**

The hole was tight and had to be backreamed on the trip out to pick up the 24 BHA

# Fluid Property Recap:Water-Based Fluid

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Density | Fun Visc | Rheology @ 120F | | | | | Filtration | | | | | Filtrate Analysis | | | | | | Sand | Retort Analysis | | | | MBT | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels | | | API | HTHP | Cake | | Temp | pH | Pm | Pf | Mf | Cl | Total Hard | | Corr Sol | LGS | Oil | Water% | | | | | | | |
| | | | | | | lbs/100 ft2 | | | | ml/30 min | ml/30 min | API/HTHP 32nd in | | | | ml | ml | ml | mg/l | mg/l | % by Vol | % by Vol | % by Vol | % by Vol | % by Vol | | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | | | | | Deg C | | | | | | | | | | | | ppb Eq | 600 | 300 | 200 | 100 | 6 | 3 |
| 11/24/01 | 98.0 | 20 | 8.40 | 100 | 5 | 10 | 20 | 21 | 23 | 15.0 | | 3 | | | 9.00 | 0.10 | 0.01 | 0.15 | 0 | 0 | | 0.8 | 0.7 | | 99.0 | 0.0 | 20 | 15 | 10 | 5 | 2 | 1 |
| 11/25/01 | 0.0 | | 8.80 | 0 | | | | | | | | | | | | | | | 0 | 0 | | 1.7 | 0.0 | | 98.1 | 0.0 | | | | | | |
| 11/26/01 | 0.0 | | 8.80 | 0 | | | | | | | | | | | | | | | 0 | 0 | | 1.8 | 0.2 | | 98.0 | 0.0 | | | | | | |
| 11/27/01 | 174.0 | | 8.80 | 0 | 4 | 50 | 31 | 31 | | | | | | | | | | | 0 | 0 | | 1.8 | 0.2 | | 98.0 | 0.0 | 58 | 54 | 51 | 46 | 33 | 31 |
| 11/28/01 | 0.0 | | 8.80 | 0 | 4 | 50 | 31 | 31 | | | | | | | | | | | 0 | 0 | | 1.8 | 0.2 | | 98.0 | 0.0 | 58 | 54 | 51 | 46 | 33 | 31 |
| 11/29/01 | 195.0 | | 9.20 | 39 | 4 | 18 | 10 | 10 | | 70.0 | | 3 | | | 11.70 | | 0.40 | 0.70 | 12,000 | 1,160 | 0.10 | 3.3 | 1.0 | | 96.0 | 0.0 | 26 | 22 | 20 | 17 | 12 | 10 |
| 11/30/01 | 350.0 | 15 | 9.70 | 40 | 20 | 10 | 10 | 11 | 11 | 20.0 | | 2 | | | 9.00 | 0.10 | 0.02 | 1.00 | 16,800 | 720 | 2.00 | 7.1 | 5.2 | | 92.0 | 5.0 | 50 | 30 | 20 | 15 | 7 | 5 |
| 11/30/01 | 446.0 | | 9.70 | 41 | 21 | 10 | 11 | 12 | 12 | 21.0 | | 2 | | | 9.50 | 0.12 | 0.03 | 1.00 | 16,000 | 960 | 2.00 | 7.1 | 5.2 | | 92.0 | 5.0 | 52 | 31 | 21 | 15 | 6 | 6 |
| 12/01/01 | 475.0 | 15 | 9.40 | 77 | 27 | 28 | 9 | 30 | 31 | 7.0 | | 2 | | | 8.80 | 0.40 | 0.01 | 1.10 | 12,200 | 800 | 1.25 | 6.3 | 5.8 | | 93.0 | 20.0 | 82 | 55 | 43 | 29 | 9 | 7 |
| 12/01/01 | 850.0 | 15 | 9.40 | 80 | 28 | 33 | 27 | 61 | 63 | 7.0 | | 2 | | | 8.33 | 0.20 | 0.18 | 1.14 | 11,700 | 720 | 1.50 | 6.8 | 6.8 | | 92.5 | 20.0 | 89 | 61 | 50 | 38 | 20 | 20 |
| 12/01/01 | 1,016.0 | | 9.60 | 107 | 28 | 37 | 29 | 64 | | 8.0 | | 2 | | | 8.50 | 0.20 | 0.19 | 1.16 | 12,000 | 720 | 1.50 | 7.3 | 5.9 | | 92.0 | 20.0 | 93 | 65 | 51 | 38 | 21 | 20 |
| 12/02/01 | 0.0 | | 9.40 | 80 | 11 | 24 | 35 | 52 | | 10.0 | | 2 | | | 8.50 | 0.20 | 0.20 | 1.15 | 12,000 | 720 | 1.30 | 4.3 | 1.1 | | 95.0 | 10.0 | 46 | 35 | 33 | 30 | 28 | 28 |
| 12/03/01 | 500.0 | 15 | 9.60 | 60 | 15 | 32 | 21 | 28 | 31 | 9.0 | | 2 | | | 7.80 | | | 0.80 | 14,300 | 1,600 | 1.00 | 8.2 | 7.9 | | 91.0 | 16.0 | 62 | 47 | 40 | 32 | 18 | 16 |
| 12/03/01 | 786.0 | | 9.70 | 55 | 16 | 31 | 21 | 28 | | 10.0 | | 2 | | | 8.00 | | | 0.80 | 14,000 | 1,600 | 1.15 | 8.2 | 7.2 | | 91.0 | 15.0 | 63 | 47 | 39 | 33 | 17 | 16 |
| 12/04/01 | 1,016.0 | | 9.70 | 55 | 16 | 31 | 21 | 28 | | 10.0 | | 2 | | | 8.00 | | | 0.80 | 14,000 | 1,600 | 1.15 | 8.2 | 7.2 | | 91.0 | 15.0 | 63 | 47 | 39 | 33 | 17 | 16 |
| 12/05/01 | 1,016.0 | | 9.80 | 60 | 15 | 32 | 21 | 27 | | 10.0 | | 2 | | | 8.00 | | | 1.00 | 14,000 | 1,200 | 1.00 | 7.2 | 4.6 | | 92.0 | 16.0 | 62 | 47 | 40 | 32 | 18 | 16 |
| 12/06/01 | 1,016.0 | | 8.70 | 0 | | | | | | | | | | | | | | | 0 | 0 | | 1.4 | 0.0 | | 98.4 | 0.0 | | | | | | |
| 12/07/01 | 1,016.0 | | 9.20 | 0 | | | | | | | | | | | | | | | 0 | 0 | | 3.4 | 0.3 | | 96.4 | 0.0 | | | | | | |
| 12/08/01 | 0.0 | | 9.20 | 0 | | | | | | | | | | | | | | | 0 | 0 | | 3.4 | 0.3 | | 96.4 | 0.0 | | | | | | |
| 12/09/01 | 955.0 | | 10.00 | 0 | 25 | 10 | 2 | 2 | | | | | | | 10.40 | | | | 60,000 | 0 | | 4.1 | 0.2 | | 91.0 | 0.0 | 60 | 35 | 25 | 14 | 2 | 2 |
| 12/10/01 | 955.0 | | 10.00 | 0 | 25 | 10 | 1 | 2 | | 5.0 | | 1 | | | 10.30 | | | | 60,000 | 0 | | 4.1 | 0.2 | | 91.0 | 0.0 | 60 | 35 | 25 | 14 | 2 | 2 |
| 12/11/01 | 987.0 | 28 | 10.00 | 51 | 20 | 12 | 3 | 4 | | 5.0 | | 1 | | | 12.00 | 1.15 | | | 45,000 | 0 | | 5.4 | 1.7 | | 91.0 | 5.0 | 52 | 32 | 23 | 14 | 4 | 3 |
| 12/12/01 | 1,165.0 | 36 | 10.10 | 50 | 18 | 17 | 3 | 6 | | 5.4 | | 2 | | | 10.50 | 0.40 | 0.20 | 0.40 | 53,000 | 100 | 0.25 | 5.8 | 2.3 | | 90.0 | 10.0 | 53 | 35 | 27 | 19 | 4 | 3 |
| 12/12/01 | 1,236.0 | 40 | 10.30 | 55 | 21 | 22 | 6 | 11 | | 5.0 | | 2 | | | 9.10 | 0.50 | 0.10 | 0.50 | 58,000 | 200 | 0.50 | 6.9 | 3.4 | | 88.5 | 15.0 | 64 | 43 | 35 | 23 | 6 | 3 |
| 12/12/01 | 1,300.0 | 43 | 10.40 | 57 | 20 | 21 | 4 | 9 | | 5.0 | | 1 | | | 9.00 | 0.20 | 0.10 | 0.45 | 59,000 | 200 | 0.50 | 6.3 | 1.6 | | 89.0 | 15.0 | 61 | 41 | 33 | 23 | 6 | 4 |
| 12/13/01 | 1,540.0 | 53 | 10.80 | 59 | 22 | 23 | 7 | 22 | | 4.4 | | 2 | | | 8.40 | 9.20 | 0.05 | 0.50 | 64,500 | 320 | 0.50 | 7.9 | 2.2 | | 87.0 | 17.5 | 67 | 45 | 36 | 25 | 8 | 6 |
| 12/13/01 | 1,465.0 | 50 | 10.60 | 58 | 21 | 23 | 5 | 15 | | 5.0 | | 1 | | | 8.70 | 0.10 | 0.05 | 0.45 | 61,000 | 300 | 0.50 | 7.2 | 1.9 | | 88.0 | 15.0 | 65 | 44 | 36 | 24 | 7 | 5 |
| 12/13/01 | 1,628.0 | 43 | 11.10 | 55 | 21 | 21 | 6 | 22 | 24 | 4.6 | | 2 | | | 8.20 | | | 0.20 | 65,000 | 320 | 0.50 | 9.0 | 1.9 | | 86.0 | 17.5 | 63 | 42 | 33 | 23 | 7 | 6 |
| 12/14/01 | 1,672.0 | 46 | 12.00 | 69 | 24 | 25 | 12 | 38 | 48 | 5.4 | | 2 | | | 8.40 | 0.15 | | 0.50 | 60,000 | 360 | 0.50 | 14.7 | 6.0 | | 81.0 | 20.0 | 73 | 49 | 39 | 27 | 14 | 13 |
| 12/14/01 | 1,810.0 | 57 | 12.50 | 108 | 31 | 36 | 25 | 78 | 85 | 6.2 | | 2 | | | 8.00 | | | 0.20 | 60,000 | 360 | 0.50 | 17.8 | 8.4 | | 78.0 | 20.0 | 98 | 67 | 56 | 42 | 25 | 24 |
| 12/14/01 | 1,839.0 | 51 | 12.50 | 85 | 22 | 35 | 20 | 38 | | 6.0 | | 2 | | | 7.90 | | | 0.15 | 62,000 | 300 | 0.50 | 16.6 | 6.2 | | 79.0 | 20.0 | 79 | 57 | 49 | 38 | 25 | 22 |
| 12/15/01 | 1,850.0 | 55 | 12.50 | 70 | 23 | 24 | 12 | 42 | | 6.0 | | 2 | | | 8.00 | | | 0.20 | 66,000 | 320 | 0.50 | 15.8 | 4.8 | | 79.5 | 18.0 | 70 | 47 | 39 | 28 | 13 | 12 |
| 12/15/01 | 1,950.0 | 45 | 12.50 | 79 | 23 | 29 | 14 | 37 | 46 | 6.0 | | 1 | | | 8.10 | | | 0.20 | 64,000 | 300 | 0.50 | 17.5 | 8.0 | | 78.0 | 20.0 | 75 | 52 | 44 | 33 | 20 | 19 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Fluid Property Recap:Water-Based Fluid

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Density | Fun Visc | Rheology @ 120F | | | | | Filtration | | | | | Filtrate Analysis | | | | | | Sand | Retort Analysis | | | | MBT | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels | | | API | HTHP | Cake | | Temp | pH | Pm | Pf | Mf | Cl | Total Hard | | Corr Sol | LGS | Oil | Water% | | | | | | | |
| | | | | | | lbs/100 ft2 | | | | ml/30 min | ml/30 min | API/HTHP 32nd in | | | | ml | ml | ml | mg/l | mg/l | % by Vol | % by Vol | % by Vol | % by Vol | by Vol | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | | | | | Deg C | | | | | | | | | | | | ppb Eq | 600 | 300 | 200 | 100 | 6 | 3 |
| 12/15/01 | 2,065.0 | 61 | 12.70 | 88 | 23 | 33 | 45 | 56 | | 6.0 | | | | | 8.00 | | | 0.15 | 65,000 | 300 | 0.50 | 18.5 | 8.5 | | 77.0 | 25.0 | 79 | 56 | 50 | 41 | 35 | 35 |
| 12/16/01 | 2,067.0 | 52 | 12.70 | 0 | 23 | 13 | 5 | 18 | | 4.5 | | 1 | | | 8.70 | 0.20 | 0.15 | 0.50 | 65,000 | 300 | 0.50 | 15.3 | 2.3 | | 80.0 | 15.0 | 59 | 36 | 27 | 17 | 5 | 5 |
| 12/16/01 | 2,067.0 | 53 | 12.70 | 0 | 24 | 12 | 5 | 23 | | 4.0 | | 1 | | | 8.60 | 0.20 | 0.15 | 0.40 | 65,000 | 320 | 0.50 | 15.8 | 3.4 | | 79.5 | 10.0 | 60 | 36 | 27 | 18 | 6 | 5 |
| 12/16/01 | 2,067.0 | 52 | 12.80 | 0 | 23 | 17 | 7 | 22 | | 4.5 | | 1 | | | 8.40 | 0.20 | 0.20 | 0.55 | 66,000 | 360 | | 16.3 | 3.6 | | 79.0 | 15.0 | 63 | 40 | 31 | 21 | 7 | 6 |
| 12/17/01 | 2,067.0 | 55 | 13.20 | 57 | 23 | 18 | 6 | 25 | | 4.5 | | 2 | | | 8.30 | 0.15 | 0.20 | 0.60 | 66,000 | 300 | | 17.4 | 2.6 | | 78.0 | 20.0 | 64 | 41 | 32 | 22 | 7 | 6 |
| 12/17/01 | 2,067.0 | 56 | 13.20 | 56 | 24 | 19 | 5 | 14 | 16 | 4.1 | | 2 | | | 8.50 | 0.50 | 0.50 | 2.40 | 72,000 | 240 | | 16.9 | 2.1 | | 78.0 | 25.0 | 67 | 43 | 33 | 21 | 6 | 5 |
| 12/17/01 | 2,120.0 | 56 | 13.20 | 58 | 23 | 16 | 5 | 21 | | 4.2 | | 2 | | | 8.30 | 0.10 | 0.50 | 0.80 | 74,000 | 320 | 0.50 | 16.7 | 1.9 | | 78.0 | 25.0 | 62 | 39 | 30 | 20 | 6 | 5 |
| 12/18/01 | 2,221.0 | 58 | 13.20 | 56 | 22 | 16 | 5 | 26 | | 4.5 | | 2 | | | 8.00 | | 0.10 | 0.40 | 68,000 | 380 | | 17.2 | 2.5 | | 78.0 | 25.0 | 60 | 38 | 29 | 19 | 6 | 5 |
| 12/18/01 | 2,290.0 | 65 | 13.20 | 75 | 26 | 13 | 7 | 36 | 40 | 4.8 | | 2 | | | 8.00 | | | 1.20 | 70,000 | 380 | | 17.1 | 2.3 | | 78.0 | 32.5 | 65 | 39 | 30 | 19 | 6 | 5 |
| 12/18/01 | 2,358.0 | 64 | 13.20 | 81 | 30 | 24 | 19 | 49 | | 4.6 | | 2 | | | 7.90 | | 0.05 | 0.40 | 71,000 | 360 | 0.50 | 17.0 | 2.2 | | 78.0 | 30.0 | 84 | 54 | 43 | 31 | 14 | 14 |
| 12/19/01 | 1,650.0 | 50 | 13.30 | 78 | 28 | 20 | 13 | 48 | 52 | 4.8 | | 2 | | | 7.80 | | | | 69,000 | 380 | | 17.1 | 1.6 | | 78.0 | 35.0 | 76 | 48 | 37 | 25 | 11 | 10 |
| 12/19/01 | 1,450.0 | 40 | 13.20 | 0 | 23 | 20 | 9 | 42 | 46 | 4.8 | | 2 | | | 7.90 | | | 1.20 | 70,000 | 400 | | 17.1 | 2.3 | | 78.0 | 32.5 | 66 | 43 | 33 | 23 | 10 | 9 |
| 12/19/01 | 1,398.0 | 36 | 13.20 | 73 | 23 | 18 | 10 | 36 | | 5.2 | | 2 | | | 7.90 | | | 1.00 | 77,000 | 380 | 0.50 | 16.5 | 1.7 | | 78.0 | 30.0 | 64 | 41 | 31 | 21 | 10 | 9 |
| 12/20/01 | 1,205.0 | 35 | 13.20 | 0 | 25 | 21 | 22 | 59 | | 6.0 | | 2 | | | 7.91 | | | 1.00 | 66,000 | 700 | | 17.4 | 2.6 | | 78.0 | 35.0 | 71 | 46 | 38 | 28 | 20 | 19 |
| 12/20/01 | 1,250.0 | 45 | 13.20 | 0 | 23 | 15 | 20 | 42 | 45 | 6.0 | | 2 | | | 8.20 | | | | 61,000 | 800 | | 17.7 | 3.1 | | 78.0 | 30.0 | 61 | 38 | 29 | 20 | 10 | 10 |
| 12/20/01 | 1,066.0 | 45 | 13.20 | 0 | 23 | 17 | 13 | 55 | 58 | 6.0 | | 2 | | | 8.20 | | | | 61,000 | 800 | | 17.7 | 3.1 | | 78.0 | 30.0 | 63 | 40 | 30 | 21 | 10 | 9 |
| 12/20/01 | 700.0 | 34 | 13.20 | 0 | 24 | 15 | 14 | 49 | | 6.0 | | 2 | | | 7.90 | | | 0.80 | 72,000 | 900 | 0.50 | 16.9 | 2.1 | | 78.0 | 30.0 | 63 | 39 | 30 | 21 | 12 | 12 |
| 12/21/01 | 2,358.0 | 34 | 13.20 | 0 | 23 | 18 | 14 | 50 | 58 | 6.0 | | 2 | | | 9.00 | | | 0.80 | 70,000 | 900 | 0.50 | 17.1 | 2.3 | | 78.0 | 30.0 | 64 | 41 | 30 | 22 | 12 | 11 |
| 12/22/01 | 2,000.0 | | 13.20 | 0 | 22 | 10 | 4 | 22 | | 5.8 | | 2 | | | 8.10 | | | 1.10 | 69,000 | 400 | | 17.1 | 2.4 | | 78.0 | 30.0 | 54 | 32 | 23 | 15 | 4 | 4 |
| 12/22/01 | 2,350.0 | 45 | 13.60 | 0 | 28 | 11 | 7 | 29 | 31 | 5.0 | | 2 | | | 8.10 | | | 1.10 | 70,000 | 320 | | 19.2 | 3.4 | | 76.0 | 30.0 | 67 | 39 | 29 | 18 | 5 | 5 |
| 12/22/01 | 2,366.0 | 47 | 13.60 | 0 | 23 | 14 | 5 | 20 | | 5.5 | | 2 | | | 8.20 | | | 1.05 | 70,000 | 400 | | 19.2 | 3.4 | | 76.0 | 30.0 | 60 | 37 | 26 | 16 | 6 | 5 |
| 12/23/01 | 2,054.0 | 54 | 13.60 | 0 | 35 | 15 | 13 | 54 | 83 | 5.0 | | 2 | | | 8.10 | | | 1.10 | 73,000 | 380 | | 19.0 | 3.2 | | 76.0 | 30.0 | 85 | 50 | 37 | 24 | 9 | 8 |
| 12/23/01 | 0.0 | 55 | 13.60 | 0 | 34 | 15 | 13 | 53 | 80 | 5.0 | | 2 | | | 8.30 | | | 1.10 | 71,500 | 400 | | 19.1 | 3.3 | | 76.0 | 30.0 | 83 | 49 | 35 | 24 | 9 | 8 |
| 12/23/01 | 2,400.0 | 54 | 13.60 | 0 | 35 | 14 | 11 | 54 | 81 | 5.0 | | 2 | | | 8.00 | | | 1.10 | 70,000 | 400 | | 19.2 | 3.4 | | 76.0 | 30.0 | 84 | 49 | 35 | 24 | 9 | 8 |
| 12/24/01 | 2,400.0 | | 13.60 | 0 | 25 | 16 | 5 | 31 | | 5.0 | | 2 | | | 8.05 | | | 1.10 | 72,000 | 390 | | 19.0 | 3.3 | | 76.0 | 30.0 | 66 | 41 | 30 | 19 | 4 | 4 |
| 12/24/01 | 1,130.0 | 40 | 13.60 | 0 | 39 | 18 | 9 | 45 | | 4.0 | | 2 | | | 8.20 | | | 1.10 | 82,000 | 320 | | 18.3 | 2.4 | | 76.0 | 30.0 | 96 | 57 | 43 | 27 | 6 | 6 |
| 12/24/01 | 950.0 | | 13.60 | 0 | 39 | 16 | 9 | 44 | | 5.0 | | 2 | | | 8.30 | | | 1.10 | 82,000 | 320 | | 18.3 | 2.4 | | 76.0 | 30.0 | 94 | 55 | 41 | 26 | 6 | 6 |
| 12/25/01 | 2,400.0 | | 13.60 | 0 | 34 | 15 | 13 | 53 | 80 | 5.0 | | 2 | | | 8.20 | | | 1.10 | 71,000 | 400 | | 19.1 | 3.3 | | 76.0 | 30.0 | 83 | 49 | 35 | 24 | 9 | 8 |
| 12/26/01 | 2,400.0 | | 13.60 | 0 | 34 | 15 | 12 | 54 | 80 | 5.0 | | 2 | | | 8.10 | | | 1.10 | 71,500 | 400 | | 19.1 | 3.3 | | 76.0 | 30.0 | 83 | 49 | 35 | 24 | 9 | 8 |
| 12/27/01 | 2,400.0 | | 13.60 | 67 | 34 | 15 | 12 | 53 | 79 | 5.0 | | 2 | | | 8.40 | | | 1.10 | 71,500 | 400 | | 19.1 | 3.3 | | 76.0 | 30.0 | 83 | 49 | 35 | 24 | 9 | 8 |
| 12/28/01 | 2,400.0 | | 13.60 | 67 | 34 | 15 | 12 | 53 | 79 | 5.5 | | 2 | | | 8.50 | | | 1.10 | 71,500 | 400 | | 19.1 | 3.3 | | 76.0 | 28.0 | 83 | 49 | 35 | 24 | 9 | 8 |
| 12/29/01 | 2,400.0 | | 13.60 | 67 | 34 | 16 | 12 | 53 | 79 | 5.5 | | 2 | | | 8.50 | | | 1.10 | 71,500 | 400 | | 19.1 | 3.3 | | 76.0 | 25.0 | 84 | 50 | 35 | 24 | 9 | 8 |
| 01/03/02 | 2,400.0 | | 14.40 | 171 | 33 | 14 | 8 | 10 | 16 | | 2.8 | | 1 | 75 | | 1.00 | | | 39,000 | 9 | | 26.4 | 2.7 | 51.0 | 21.0 | 0.0 | 80 | 47 | 35 | 22 | 6 | 5 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Norway | North Sea | 2/5-12 | North Sea South | Baroid Drilling Fluids



Printed:31/May/2002

# Fluid Property Recap:Water-Based Fluid

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Density | Fun Visc | Rheology @ 120F | | | | | Filtration | | | | Filtrate Analysis | | | | | | Sand | Retort Analysis | | | | MBT | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels | | | API | HTHP | Cake | Temp | pH | Pm | Pf | Mf | Cl | Total Hard | | Corr Sol | LGS | Oil | Water% | | | | | | | |
| | | | | | | lbs/100 ft2 | | | | ml/30 min | ml/30 min | API/HTHP 32nd in | | | ml | ml | ml | mg/l | mg/l | % by Vol | % by Vol | % by Vol | % by Vol | by Vol | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | | | | Deg C | | | | | | | | | | | | ppb Eq | 600 | 300 | 200 | 100 | 6 | 3 |
| 01/04/02 | 2,400.0 | | 14.40 | 171 | 33 | 14 | 8 | 10 | 16 | | 2.8 | 1 | 75 | | | | | 0 | 0 | | 27.9 | 2.8 | 51.0 | 21.0 | 0.0 | 80 | 47 | 35 | 22 | 6 | 5 |

| | | |
|---|---|---|
| Norway | 2/5-12 | Baroid Drilling Fluids |
| North Sea | North Sea South | |



Printed:31/May/2002

# Fluid Property Recap:NAP-Based Fluid (API Titrations)

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Densit | Fun Vis | Rheology @ 120F | | | | | Elect Stab | Filtration | | | Whole Fluid Alk | Whole Fluid Cl | Whole Fluid Ca | Excess Lime | Sand % by Vol | Retort Analysis | | | | | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels lbs/100 ft2 | | | | HTHP ml/30 min | Cake 32nd i | Temp | | | | | | Corr Sol % by Vol | LGS % by Vol | NAP % by Vol | Water % by Vol | NAP Water Ratio | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | Volts | | | Deg C | ml | mg/l | mg/l | ppb | | | | | | | 600 | 300 | 200 | 100 | 6 | 3 |
| 01/05/02 | 2,320.0 | 42 | 14.40 | 171 | 33 | 14 | 8 | 10 | 16 | 620 | 2.8 | 0/1 | 75 | 1.00 | 0 | 0 | 1.30 | 0.00 | 27.9 | 2.8 | 51.0 | 21.0 | 70.8/29.2 | 80 | 47 | 35 | 22 | 6 | 5 |
| 01/06/02 | 2,458.0 | 56 | 14.20 | 69 | 32 | 16 | 6 | 8 | 10 | 250 | 3.2 | 0/1 | 75 | 1.00 | 0 | 0 | 1.30 | 0.00 | 26.9 | 2.9 | 47.0 | 26.0 | 64.4/35.6 | 80 | 48 | 36 | 24 | 6 | 5 |
| 01/06/02 | 2,535.0 | 56 | 14.20 | 66 | 31 | 14 | 6 | 8 | 10 | 490 | 3.2 | 0/1 | 75 | 1.00 | 0 | 0 | 1.30 | 0.00 | 26.9 | 2.5 | 49.5 | 23.5 | 67.8/32.2 | 76 | 45 | 35 | 23 | 6 | 5 |
| 01/07/02 | 2,672.0 | 57 | 14.20 | 58 | 30 | 20 | 7 | 9 | 11 | 800 | 3.2 | 0/1 | 75 | 1.10 | 44,500 | 18,000 | 1.42 | 0.00 | 24.9 | 1.7 | 49.5 | 23.5 | 67.8/32.2 | 80 | 50 | 38 | 26 | 8 | 6 |
| 01/07/02 | 2,832.0 | 67 | 14.20 | 57 | 30 | 20 | 9 | 12 | 13 | 600 | 2.2 | 0/1 | 75 | 1.55 | 44,500 | 18,200 | 2.01 | 0.10 | 24.9 | 1.7 | 49.5 | 23.5 | 67.8/32.2 | 80 | 50 | 39 | 26 | 9 | 7 |
| 01/07/02 | 2,990.0 | 67 | 14.20 | 55 | 32 | 18 | 8 | 11 | 13 | 680 | 2.2 | 0/1 | 75 | 1.35 | 35,000 | 16,000 | 1.75 | 0.00 | 25.5 | 1.9 | 51.0 | 22.0 | 69.9/30.1 | 82 | 50 | 39 | 27 | 9 | 7 |
| 01/08/02 | 3,080.0 | 67 | 14.20 | 48 | 30 | 16 | 8 | 10 | 12 | 740 | 2.2 | 0/1 | 75 | 1.30 | 44,500 | 16,000 | 1.68 | 0.00 | 25.3 | 2.2 | 51.5 | 21.0 | 71.0/29.0 | 76 | 46 | 36 | 25 | 8 | 6 |
| 01/08/02 | 3,183.0 | 68 | 14.20 | 51 | 29 | 17 | 8 | 10 | 12 | 580 | 2.2 | 0/1 | 75 | 1.30 | 44,500 | 16,000 | 1.68 | 0.00 | 24.8 | 1.1 | 52.0 | 21.0 | 71.2/28.8 | 75 | 46 | 35 | 24 | 7 | 6 |
| 01/08/02 | 3,218.0 | | 14.20 | 55 | 29 | 13 | 10 | 13 | 14 | 600 | 2.2 | 0/1 | 75 | 1.00 | 43,500 | 16,000 | 1.30 | 0.00 | 25.9 | 2.8 | 54.0 | 18.0 | 75.0/25.0 | 71 | 42 | 33 | 22 | 9 | 8 |
| 01/09/02 | 3,218.0 | 50 | 14.20 | 60 | 29 | 15 | 10 | 13 | 14 | 600 | 2.2 | 0/1 | 75 | 1.00 | 43,500 | 16,000 | 1.30 | 0.00 | 25.9 | 2.8 | 54.0 | 18.0 | 75.0/25.0 | 73 | 44 | 33 | 22 | 9 | 8 |
| 01/10/02 | 3,288.0 | 58 | 14.20 | 47 | 27 | 15 | 5 | 7 | 9 | 600 | 2.2 | 0/1 | 75 | 0.65 | 39,000 | 16,400 | 0.84 | 0.00 | 26.2 | 3.1 | 54.5 | 17.5 | 75.7/24.3 | 69 | 42 | 32 | 22 | 6 | 5 |
| 01/10/02 | 3,378.0 | 50 | 14.20 | 47 | 26 | 18 | 9 | 10 | 12 | 650 | 2.2 | 0/1 | 75 | 0.95 | 36,500 | 15,800 | 1.23 | 0.00 | 25.3 | 1.1 | 55.0 | 18.0 | 75.3/24.7 | 70 | 44 | 34 | 24 | 9 | 7 |
| 01/10/02 | 3,465.0 | 45 | 14.20 | 45 | 23 | 15 | 7 | 9 | 11 | 690 | 2.2 | 0/1 | 75 | 0.50 | 34,500 | 15,800 | 0.65 | 0.00 | 25.9 | 2.1 | 56.0 | 16.5 | 77.2/22.8 | 61 | 38 | 29 | 20 | 7 | 6 |
| 01/11/02 | 3,504.0 | 50 | 14.20 | 47 | 21 | 15 | 6 | 8 | 10 | 720 | 2.0 | 0/1 | 75 | 0.50 | 32,000 | 15,600 | 0.65 | 0.00 | 26.6 | 3.2 | 56.0 | 16.0 | 77.8/22.2 | 57 | 36 | 26 | 18 | 6 | 5 |
| 01/11/02 | 3,535.0 | 50 | 14.20 | 50 | 21 | 15 | 6 | 8 | 10 | 720 | 2.0 | 0/1 | 75 | 0.50 | 32,000 | 15,000 | 0.65 | 0.00 | 26.1 | 2.2 | 56.0 | 16.5 | 77.2/22.8 | 57 | 36 | 26 | 18 | 6 | 5 |
| 01/11/02 | 3,568.0 | 50 | 14.20 | 51 | 22 | 15 | 6 | 8 | 10 | 790 | 2.0 | 0/1 | 75 | 0.45 | 29,000 | 15,600 | 0.58 | 0.00 | 26.3 | 2.4 | 56.5 | 16.0 | 77.9/22.1 | 59 | 37 | 28 | 19 | 7 | 6 |
| 01/12/02 | 3,568.0 | | 14.20 | 60 | 22 | 15 | 6 | 8 | 10 | 780 | 2.0 | 1/2 | 75 | 0.50 | 29,000 | 15,600 | 0.65 | 0.00 | 26.3 | 2.4 | 56.5 | 16.0 | 77.9/22.1 | 59 | 37 | 28 | 19 | 7 | 6 |
| 01/12/02 | 3,566.0 | | 14.20 | 60 | 21 | 15 | 6 | 8 | 10 | 780 | 2.0 | 0/1 | 75 | 0.50 | 29,000 | 15,000 | 0.65 | 0.00 | 26.3 | 2.3 | 56.5 | 16.0 | 77.9/22.1 | 57 | 36 | 26 | 18 | 7 | 6 |
| 01/13/02 | 3,571.0 | 50 | 14.20 | 52 | 23 | 15 | 9 | 11 | 13 | 840 | 2.0 | 0/1 | 75 | 0.25 | 27,500 | 16,400 | 0.32 | 0.00 | 26.4 | 2.4 | 57.0 | 15.5 | 78.6/21.4 | 61 | 38 | 29 | 20 | 9 | 8 |
| 01/13/02 | 3,610.0 | 50 | 14.20 | 50 | 22 | 16 | 6 | 8 | 9 | 915 | 3.0 | 0/1 | 75 | 0.50 | 27,500 | 18,000 | 0.65 | 0.00 | 26.4 | 2.2 | 58.0 | 14.5 | 80.0/20.0 | 60 | 38 | 29 | 20 | 7 | 6 |
| 01/13/02 | 3,637.0 | 50 | 14.20 | 51 | 24 | 16 | 8 | 10 | 12 | 950 | 3.0 | 0/1 | 75 | 0.30 | 26,000 | 15,600 | 0.39 | 0.00 | 27.0 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 64 | 40 | 31 | 21 | 8 | 7 |
| 01/14/02 | 3,667.0 | 50 | 14.20 | 50 | 23 | 16 | 7 | 9 | 11 | 950 | 3.0 | 0/1 | 75 | 0.30 | 26,000 | 15,600 | 0.39 | 0.00 | 27.0 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 39 | 30 | 21 | 7 | 6 |
| 01/14/02 | 3,700.0 | 50 | 14.20 | 53 | 26 | 15 | 8 | 9 | 10 | 950 | 2.8 | 0/2 | 75 | 0.20 | 26,000 | 15,000 | 0.26 | 0.00 | 27.0 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 67 | 41 | 32 | 21 | 8 | 6 |
| 01/14/02 | 3,730.0 | 50 | 14.20 | 53 | 22 | 15 | 6 | 8 | 10 | 1,020 | 3.0 | 0/1 | 75 | 0.20 | 27,500 | 15,400 | 0.26 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 59 | 37 | 27 | 19 | 7 | 6 |
| 01/15/02 | 3,730.0 | 44 | 14.20 | 53 | 22 | 15 | 6 | 8 | 10 | 1,000 | 2.8 | 0/2 | 75 | 0.40 | 27,500 | 15,400 | 0.52 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 59 | 37 | 27 | 19 | 7 | 6 |
| 01/15/02 | 3,730.0 | 40 | 14.20 | 53 | 23 | 16 | 6 | 8 | 10 | 980 | 2.8 | 0/1 | 75 | 0.40 | 26,000 | 15,600 | 0.52 | 0.00 | 27.0 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 39 | 30 | 21 | 7 | 6 |
| 01/16/02 | 3,730.0 | | 14.20 | 53 | 23 | 16 | 6 | 8 | 10 | 980 | 2.8 | 0/1 | 75 | 0.40 | 27,500 | 15,400 | 0.52 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 39 | 30 | 21 | 7 | 6 |
| 01/17/02 | 3,730.0 | 39 | 14.20 | 62 | 26 | 11 | 7 | 9 | 11 | 970 | 2.8 | 0/2 | 75 | 0.40 | 27,500 | 15,400 | 0.52 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 63 | 37 | 28 | 19 | 6 | 5 |
| 01/18/02 | 3,730.0 | | 14.20 | 60 | 24 | 14 | 7 | 9 | 11 | 980 | 2.8 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 38 | 29 | 19 | 7 | 6 |
| 01/19/02 | 3,730.0 | | 14.20 | 60 | 24 | 14 | 7 | 9 | 11 | 980 | 2.8 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 38 | 29 | 19 | 7 | 6 |
| 01/20/02 | 3,730.0 | | 14.20 | 60 | 24 | 14 | 7 | 9 | 11 | 700 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 38 | 29 | 19 | 7 | 6 |
| 01/21/02 | 3,730.0 | | 14.20 | 60 | 24 | 14 | 7 | 9 | 11 | 650 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 38 | 29 | 19 | 7 | 6 |
| 01/21/02 | 3,730.0 | | 18.90 | 0 | 100 | 30 | 18 | 23 | 0 | 293 | 2.1 | 0/1 | 75 | 0.00 | 0 | 0 | 0.00 | 0.00 | 44.0 | 2.5 | 45.0 | 11.0 | 80.4/19.6 | 230 | 130 | 98 | 62 | 19 | 16 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Fluid Property Recap:NAP-Based Fluid (API Titrations)

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Densit | Fun Vis | Rheology @ 120F | | | | | Elect Stab | Filtration | | | Whole Fluid Alk | Whole Fluid Cl | Whole Fluid Ca | Excess Lime | Sand % by Vol | Retort Analysis | | | | | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels lbs/100 ft2 | | | | HTHP ml/30 min | Cake 32nd i | Temp | | | | | | Corr Sol % by Vol | LGS % by Vol | NAP % by Vol | Water % by Vol | NAP Water Ratio | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | Volts | | | Deg C | ml | mg/l | mg/l | ppb | | | | | | | 600 | 300 | 200 | 100 | 6 | 3 |
| 01/22/02 | 3,730.0 | | 14.20 | 60 | 24 | 14 | 7 | 9 | 11 | 600 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 62 | 38 | 29 | 19 | 7 | 6 |
| 01/23/02 | 3,730.0 | | 14.20 | 60 | 23 | 15 | 7 | 9 | 11 | 600 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 61 | 38 | 29 | 20 | 7 | 7 |
| 01/24/02 | 3,730.0 | | 14.20 | 60 | 23 | 14 | 8 | 10 | 12 | 600 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 60 | 37 | 29 | 19 | 7 | 6 |
| 01/25/02 | 3,730.0 | | 14.20 | 60 | 23 | 15 | 7 | 9 | 12 | 600 | 2.5 | 0/1 | 75 | 0.30 | 27,500 | 15,000 | 0.39 | 0.00 | 26.9 | 3.2 | 58.0 | 14.0 | 80.6/19.4 | 61 | 38 | 29 | 19 | 7 | 6 |
| 01/26/02 | 3,730.0 | 31 | 14.20 | 59 | 24 | 18 | 9 | 11 | 14 | 650 | 3.2 | 0/1 | 83 | 0.16 | 28,000 | 14,600 | 0.21 | 0.00 | 26.8 | 3.3 | 57.0 | 15.0 | 79.2/20.8 | 66 | 42 | 34 | 22 | 8 | 7 |
| 01/26/02 | 3,730.0 | 40 | 14.20 | 60 | 24 | 17 | 9 | 10 | 14 | 650 | 3.0 | 0/1 | 83 | 0.16 | 28,000 | 14,600 | 0.21 | 0.00 | 26.8 | 3.3 | 57.0 | 15.0 | 79.2/20.8 | 65 | 41 | 34 | 21 | 7 | 7 |
| 01/27/02 | 3,730.0 | 39 | 14.20 | 60 | 27 | 17 | 9 | 12 | 14 | 700 | 3.2 | 0/1 | 83 | 0.16 | 24,000 | 14,000 | 0.21 | 0.00 | 26.1 | 1.5 | 57.0 | 16.0 | 78.1/21.9 | 71 | 44 | 30 | 21 | 8 | 7 |
| 01/27/02 | 3,735.0 | 46 | 14.20 | 57 | 25 | 18 | 10 | 11 | 13 | 760 | 3.0 | 0/1 | 83 | 0.15 | 26,000 | 13,600 | 0.19 | 0.00 | 26.4 | 2.4 | 56.5 | 16.0 | 77.9/22.1 | 68 | 43 | 31 | 21 | 9 | 8 |
| 01/27/02 | 3,740.0 | 49 | 14.30 | 57 | 25 | 18 | 10 | 11 | 13 | 750 | 3.0 | 0/1 | 83 | 0.15 | 26,000 | 14,000 | 0.19 | 0.00 | 26.4 | 2.1 | 56.5 | 16.0 | 77.9/22.1 | 68 | 43 | 31 | 21 | 9 | 8 |
| 01/28/02 | 3,757.0 | 50 | 14.20 | 56 | 26 | 17 | 9 | 11 | 13 | 750 | 3.0 | 0/1 | 83 | 0.16 | 24,500 | 13,700 | 0.21 | 0.00 | 26.5 | 2.4 | 57.0 | 15.5 | 78.6/21.4 | 69 | 43 | 30 | 21 | 8 | 8 |
| 01/28/02 | 3,784.0 | 52 | 14.30 | 54 | 28 | 22 | 9 | 12 | 13 | 700 | 3.4 | 0/1 | 83 | 0.10 | 24,500 | 13,800 | 0.13 | 0.00 | 27.0 | 2.7 | 57.0 | 15.0 | 79.2/20.8 | 78 | 50 | 39 | 25 | 9 | 8 |
| 01/28/02 | 3,786.0 | 60 | 14.60 | 54 | 27 | 19 | 11 | 16 | 18 | 900 | 3.4 | 0/1 | 83 | 0.30 | 21,500 | 9,800 | 0.39 | 0.00 | 28.5 | 3.1 | 58.0 | 12.5 | 82.3/17.7 | 73 | 46 | 36 | 25 | 10 | 9 |
| 01/29/02 | 0.0 | 60 | 14.60 | 54 | 27 | 19 | 11 | 16 | 18 | 800 | 3.4 | 0/1 | 83 | 0.30 | 21,500 | 9,800 | 0.39 | 0.00 | 28.5 | 3.1 | 58.0 | 12.5 | 82.3/17.7 | 73 | 46 | 36 | 25 | 10 | 9 |
| 01/29/02 | 3,796.0 | 62 | 14.70 | 55 | 30 | 22 | 12 | 13 | 14 | 700 | 3.2 | 0/1 | 83 | 0.50 | 23,500 | 9,800 | 0.65 | 0.00 | 28.9 | 3.3 | 57.5 | 12.5 | 82.1/17.9 | 82 | 52 | 40 | 28 | 11 | 9 |
| 01/29/02 | 3,842.0 | 63 | 15.00 | 55 | 30 | 23 | 12 | 14 | 15 | 700 | 3.2 | 0/1 | 83 | 0.51 | 23,500 | 9,800 | 0.66 | 0.00 | 29.8 | 2.9 | 57.0 | 12.1 | 82.5/17.5 | 83 | 53 | 40 | 27 | 11 | 9 |
| 01/30/02 | 3,850.0 | 62 | 15.20 | 54 | 30 | 17 | 13 | 14 | 15 | 700 | 3.2 | 0/1 | 83 | 0.45 | 23,000 | 10,000 | 0.58 | 0.00 | 32.5 | 7.4 | 54.5 | 12.0 | 82.0/18.0 | 77 | 47 | 38 | 27 | 11 | 10 |
| 01/30/02 | 3,860.0 | 60 | 15.50 | 58 | 33 | 20 | 13 | 14 | 15 | 640 | 3.2 | 0/1 | 83 | 0.50 | 23,000 | 9,600 | 0.65 | 0.00 | 31.4 | 2.6 | 55.5 | 12.0 | 82.2/17.8 | 86 | 53 | 41 | 28 | 10 | 9 |
| 01/30/02 | 3,870.0 | 60 | 15.50 | 54 | 33 | 18 | 13 | 14 | 15 | 650 | 3.2 | 0/1 | 83 | 0.48 | 22,750 | 9,400 | 0.62 | 0.00 | 31.4 | 2.6 | 55.5 | 12.0 | 82.2/17.8 | 84 | 51 | 40 | 26 | 11 | 9 |
| 01/31/02 | 3,907.0 | 68 | 15.50 | 54 | 31 | 19 | 12 | 14 | 15 | 700 | 3.2 | 0/1 | 83 | 0.50 | 22,750 | 9,500 | 0.65 | 0.00 | 31.4 | 2.6 | 55.5 | 12.0 | 82.2/17.8 | 81 | 50 | 41 | 28 | 10 | 9 |
| 01/31/02 | 3,919.0 | 71 | 15.90 | 67 | 36 | 20 | 12 | 14 | 15 | 800 | 2.8 | 0/1 | 83 | 0.50 | 22,750 | 9,400 | 0.65 | 0.00 | 32.9 | 2.5 | 56.0 | 10.0 | 84.8/15.2 | 92 | 56 | 44 | 29 | 10 | 9 |
| 01/31/02 | 3,934.0 | 70 | 15.90 | 50 | 35 | 21 | 11 | 13 | 15 | 790 | 2.8 | 0/1 | 83 | 0.50 | 22,750 | 9,400 | 0.65 | 0.00 | 32.9 | 2.5 | 56.0 | 10.0 | 84.8/15.2 | 91 | 56 | 42 | 29 | 10 | 9 |
| 02/01/02 | 3,944.0 | 54 | 15.90 | 54 | 31 | 24 | 12 | 14 | 15 | 800 | 2.8 | 0/1 | 83 | 0.48 | 22,000 | 9,500 | 0.62 | 0.00 | 33.0 | 2.3 | 57.0 | 9.0 | 86.4/13.6 | 86 | 55 | 42 | 29 | 11 | 10 |
| 02/01/02 | 3,973.0 | 60 | 15.90 | 60 | 36 | 25 | 12 | 14 | 15 | 820 | 2.8 | 0/1 | 83 | 0.40 | 22,000 | 9,500 | 0.52 | 0.00 | 33.0 | 2.5 | 56.0 | 10.0 | 84.8/15.2 | 97 | 61 | 48 | 32 | 11 | 10 |
| 02/01/02 | 3,997.0 | 60 | 15.90 | 54 | 37 | 21 | 12 | 14 | 15 | 850 | 2.8 | 0/1 | 83 | 0.30 | 22,500 | 9,500 | 0.39 | 0.00 | 32.9 | 2.5 | 56.0 | 10.0 | 84.8/15.2 | 95 | 58 | 45 | 30 | 11 | 10 |
| 02/02/02 | 4,017.0 | 60 | 15.90 | 55 | 37 | 26 | 13 | 16 | 18 | 870 | 2.8 | 0/1 | 83 | 0.30 | 22,000 | 9,000 | 0.39 | 0.00 | 33.5 | 3.6 | 55.5 | 10.0 | 84.7/15.3 | 100 | 63 | 48 | 33 | 13 | 11 |
| 02/02/02 | 4,031.0 | 59 | 16.10 | 57 | 39 | 24 | 12 | 15 | 17 | 900 | 2.8 | 0/1 | 83 | 0.35 | 22,000 | 9,400 | 0.45 | 0.00 | 34.5 | 4.1 | 55.5 | 9.0 | 86.0/14.0 | 102 | 63 | 49 | 34 | 12 | 10 |
| 02/02/02 | 4,048.0 | 60 | 16.10 | 55 | 40 | 26 | 15 | 19 | 21 | 950 | 2.8 | 0/1 | 83 | 0.30 | 22,000 | 9,000 | 0.39 | 0.00 | 34.0 | 3.0 | 55.5 | 9.5 | 85.4/14.6 | 106 | 66 | 51 | 35 | 13 | 12 |
| 02/03/02 | 4,051.0 | 60 | 16.40 | 56 | 40 | 26 | 14 | 18 | 20 | 970 | 2.8 | 0/1 | 83 | 0.25 | 21,000 | 8,800 | 0.32 | 0.00 | 35.5 | 4.0 | 54.5 | 9.0 | 85.8/14.2 | 106 | 66 | 51 | 34 | 13 | 11 |
| 02/03/02 | 4,087.0 | 50 | 16.40 | 64 | 45 | 29 | 15 | 18 | 20 | 950 | 2.8 | 0/1 | 83 | 0.50 | 24,500 | 9,600 | 0.65 | 0.00 | 34.8 | 3.3 | 52.0 | 12.0 | 81.3/18.8 | 119 | 74 | 57 | 39 | 14 | 12 |
| 02/03/02 | 4,094.0 | 56 | 16.40 | 56 | 44 | 28 | 15 | 20 | 23 | 950 | 2.8 | 0/1 | 83 | 0.50 | 22,000 | 9,600 | 0.65 | 0.00 | 35.0 | 3.1 | 54.0 | 10.0 | 84.4/15.6 | 116 | 72 | 56 | 39 | 15 | 13 |
| 02/04/02 | 4,105.0 | 60 | 16.40 | 57 | 44 | 28 | 14 | 18 | 20 | 970 | 2.8 | 0/1 | 83 | 0.55 | 22,000 | 9,600 | 0.71 | 0.00 | 35.0 | 3.1 | 54.0 | 10.0 | 84.4/15.6 | 116 | 72 | 56 | 38 | 15 | 13 |
| 02/04/02 | 4,134.0 | 58 | 16.40 | 60 | 44 | 30 | 14 | 22 | 22 | 950 | 2.4 | 0/1 | 83 | 0.60 | 22,000 | 9,600 | 0.78 | 0.00 | 35.0 | 3.4 | 52.0 | 12.0 | 81.3/18.8 | 118 | 74 | 57 | 39 | 15 | 13 |
| 02/04/02 | 4,145.0 | 60 | 16.40 | 60 | 45 | 31 | 16 | 21 | 22 | 950 | 2.4 | 0/1 | 83 | 0.45 | 20,500 | 9,600 | 0.58 | 0.00 | 35.1 | 3.4 | 53.0 | 11.0 | 82.8/17.2 | 121 | 76 | 68 | 40 | 15 | 13 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Fluid Property Recap:NAP-Based Fluid (API Titrations)

**Well :** TYR 2/5-12
**Operator:** Amerada Hess Norway

| Date | Depth | FL Temp | Densit | Fun Vis | Rheology @ 120F | | | | | Elect Stab | Filtration | | | Whole Fluid Alk | Whole Fluid Cl | Whole Fluid Ca | Excess Lime | Sand % by Vol | Retort Analysis | | | | | Rheometer Dial Reading | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PV | YP | Gels lbs/100 ft2 | | | | HTHP ml/30 min | Cake 32nd i | Temp | | | | | | Corr Sol % by Vol | LGS % by Vol | NAP % by Vol | Water % by Vol | NAP Water Ratio | | | | | | |
| | m | Deg C | ppg | sec/qt | cP | | 10s | 10m | 30m | Volts | | | Deg C | ml | mg/l | mg/l | ppb | | | | | | | 600 | 300 | 200 | 100 | 6 | 3 |
| 02/05/02 | 4,145.0 | 60 | 16.70 | 59 | 48 | 27 | 14 | 19 | 21 | 990 | 2.4 | 0/1 | 83 | 0.45 | 21,000 | 9,200 | 0.58 | 0.00 | 35.5 | 2.2 | 52.0 | 11.5 | 81.9/18.1 | 123 | 75 | 58 | 39 | 14 | 12 |
| 02/05/02 | 4,149.0 | 54 | 16.70 | 63 | 45 | 29 | 15 | 19 | 21 | 950 | 2.4 | 0/1 | 83 | 0.40 | 22,000 | 9,200 | 0.52 | 0.00 | 36.0 | 3.1 | 52.0 | 11.0 | 82.5/17.5 | 119 | 74 | 56 | 39 | 14 | 13 |
| 02/05/02 | 4,153.0 | 52 | 16.70 | 59 | 45 | 29 | 15 | 19 | 20 | 950 | 2.4 | 0/1 | 83 | 0.40 | 22,000 | 9,200 | 0.52 | 0.00 | 36.5 | 4.1 | 52.0 | 10.5 | 83.2/16.8 | 119 | 74 | 57 | 39 | 15 | 13 |
| 02/06/02 | 4,153.0 | 50 | 16.70 | 60 | 45 | 29 | 15 | 19 | 21 | 970 | 2.4 | 0/1 | 83 | 0.40 | 22,000 | 9,200 | 0.52 | 0.00 | 36.5 | 4.1 | 52.0 | 10.5 | 83.2/16.8 | 119 | 74 | 56 | 39 | 14 | 13 |
| 02/06/02 | 4,153.0 | | 16.70 | 68 | 45 | 29 | 15 | 19 | 21 | 970 | 2.4 | 0/1 | 83 | 0.40 | 22,000 | 9,200 | 0.52 | 0.00 | 36.5 | 4.1 | 52.0 | 10.5 | 83.2/16.8 | 119 | 74 | 56 | 39 | 14 | 13 |
| 02/06/02 | 4,153.0 | 45 | 16.70 | 62 | 45 | 30 | 15 | 19 | 21 | 980 | 2.4 | 0/1 | 83 | 0.40 | 22,000 | 9,200 | 0.52 | 0.00 | 36.5 | 4.1 | 52.0 | 10.5 | 83.2/16.8 | 120 | 75 | 57 | 39 | 15 | 13 |
| 02/07/02 | 4,153.0 | 48 | 16.70 | 64 | 46 | 30 | 15 | 19 | 20 | 860 | 2.4 | 0/1 | 83 | 0.40 | 23,000 | 9,200 | 0.52 | 0.00 | 35.9 | 2.9 | 53.0 | 10.0 | 84.1/15.9 | 122 | 76 | 58 | 41 | 14 | 13 |
| 02/08/02 | 4,153.0 | | 16.70 | 68 | 47 | 29 | 15 | 19 | 21 | 0 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 123 | 76 | 58 | 40 | 14 | 13 |
| 02/09/02 | 3,500.0 | 45 | 16.70 | 70 | 50 | 26 | 14 | 23 | 25 | 970 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 126 | 76 | 59 | 40 | 14 | 12 |
| 02/10/02 | 3,362.0 | | 16.70 | 72 | 50 | 26 | 14 | 23 | 25 | 970 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 126 | 76 | 59 | 40 | 14 | 12 |
| 02/11/02 | 590.0 | | 16.70 | 76 | 50 | 26 | 14 | 23 | 25 | 970 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 126 | 76 | 59 | 40 | 14 | 12 |
| 02/12/02 | 509.0 | | 16.70 | 80 | 50 | 26 | 14 | 23 | 25 | 970 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 126 | 76 | 59 | 40 | 14 | 12 |
| 02/13/02 | 0.0 | | 16.70 | 85 | 50 | 26 | 14 | 23 | 25 | 970 | 2.4 | 0/1 | 83 | 0.30 | 22,000 | 9,200 | 0.39 | 0.00 | 36.0 | 3.0 | 53.0 | 10.0 | 84.1/15.9 | 126 | 76 | 59 | 40 | 14 | 12 |

# GEOCHEMICAL REPORT


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TITLE

## GEOCHEMICAL REPORT on NOCS WELL 2/5-12


AUTHOR(S)

Peter Barry Hall


| GEOLAB PROJECT NO. | DATE |
|---|---|
| 62599 | 22/05/02 |
| PROJECT MANAGER | QA RESPONSIBLE |
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| REPORT NO./FILE | PAGE 1 of 1 |

# Chapter 1

# INTRODUCTION

## 1.1 General Well Information

Problems were encountered with the analysis:

- The cans for headspace gas analysis were of five litre capacity holding from 2 to 10 kg of cuttings. Owing to the large size of the samples the gas analysis method was modified at the request of the client. Only 5 of the 24 samples were washed, dried and weighed. The dry weight of these was determined. The average ratio of dry to wet weight of these samples was used to calculate the dry weight of the other samples. This means that there will be inaccuracies in quantity of gas in these samples since the ratio of wet to dry weight varies somewhat.
- The very low gas content in all the samples is suspected to be due to the nature of the samples which contained no liquid, only mud stained cuttings.
- An oil-based mud system was used in drilling this well. Therefore the cuttings samples had to be washed and then mini-extracted before Rock-Eval analysis.
- Since the agreed scheme for the TOC/Rock-Eval analyses involved analysing samples from 15 metre intervals and as the samples came in 3 metre intervals it was necessary to make 15 metre composites before analysis.

## Chapter 2

# SOURCE ROCK EVALUATION

Headspace gas analysis was performed on the interval from 2990 m to 4153 m. Lithology description, TOC analysis and Rock-Eval pyrolysis were performed on source rock shales from the Jurassic Farsund Fm. The analytical program is presented in Table 2.1 below.

**Table 2.1. Number of samples and types of analysis for potential source rock intervals.**

| Lithology description | Screening Headspace gas | Screening TOC and Rock-Eval |
|---|---|---|
| 0 | 2 | 0 |
| 0 | 12 | 0 |
| 1 | 0 (included with top Farsund Fm sample) | 0 |
| 30 | 10 | 30 |
| 31 | 24 | 30 |

Table 1 Analytical Program for NOCS well 2/5-12

Amerada Hess Norge

| Sample type | Comments | Lower depth (m) | Headspace Gas | samples which were washed and for which dry weights determined* |
|---|---|---|---|---|
| CANS | 5 litre size | 3040 | x | |
| CANS | 5 litre size | 3090 | x | |
| CANS | 5 litre size | 3140 | x | |
| CANS | 5 litre size | 3191 | x | x |
| CANS | 5 litre size | 3240 | x | |
| CANS | 5 litre size | 3290 | x | |
| CANS | 5 litre size | 3340 | x | |
| CANS | 5 litre size | 3390 | x | x |
| CANS | 5 litre size | 3440 | x | |
| CANS | 5 litre size | 3490 | x | |
| CANS | 5 litre size | 3540 | x | |
| CANS | 5 litre size | 3590 | x | |
| CANS | 5 litre size | 3640 | x | |
| CANS | 5 litre size | 3690 | x | |
| CANS | 5 litre size | 3730 | x | |
| CANS | 5 litre size | 3787 | x | x |
| CANS | 5 litre size | 3836 | x | |
| CANS | 5 litre size | 3887 | x | |
| CANS | 5 litre size | 3938 | x | |
| CANS | 5 litre size | 3986 | x | x |
| CANS | 5 litre size | 4040 | x | |
| CANS | 5 litre size | 4088 | x | |
| CANS | 5 litre size | 4139 | x | |
| CANS | 5 litre size | 4153.5 | x | x |

| Sample type | Comments | Lower depth (m) | TOC | Rock-Eval |
|---|---|---|---|---|
| | composite made of 5 depths (e.g. this sample is | | | |
| WET BAGS | 3701-3716 m) | 3716 | x | x |
| WET BAGS | composite made of 5 depths | 3730 | x | x |
| WET BAGS | composite made of 5 depths | 3746 | x | x |
| WET BAGS | composite made of 5 depths | 3761 | x | x |
| WET BAGS | composite made of 5 depths | 3776 | x | x |
| WET BAGS | composite made of 5 depths | 3791 | x | x |
| WET BAGS | composite made of 5 depths | 3806 | x | x |
| WET BAGS | composite made of 5 depths | 3821 | x | x |
| WET BAGS | composite made of 5 depths | 3836 | x | x |
| WET BAGS | composite made of 5 depths | 3851 | x | x |
| WET BAGS | composite made of 5 depths | 3866 | x | x |
| WET BAGS | composite made of 5 depths | 3881 | x | x |
| WET BAGS | composite made of 5 depths | 3896 | x | x |
| WET BAGS | composite made of 5 depths | 3911 | x | x |
| WET BAGS | composite made of 5 depths | 3926 | x | x |
| WET BAGS | composite made of 5 depths | 3941 | x | x |
| WET BAGS | composite made of 5 depths | 3956 | x | x |
| WET BAGS | composite made of 5 depths | 3971 | x | x |
| WET BAGS | composite made of 5 depths | 3986 | x | x |
| WET BAGS | composite made of 5 depths | 4001 | x | x |
| WET BAGS | composite made of 5 depths | 4016 | x | x |
| WET BAGS | composite made of 5 depths | 4031 | x | x |
| WET BAGS | composite made of 5 depths | 4046 | x | x |
| WET BAGS | composite made of 5 depths | 4061 | x | x |
| WET BAGS | composite made of 5 depths | 4076 | x | x |
| WET BAGS | composite made of 5 depths | 4091 | x | x |
| WET BAGS | composite made of 5 depths | 4106 | x | x |
| WET BAGS | composite made of 5 depths | 4121 | x | x |
| WET BAGS | composite made of 5 depths | 4136 | x | x |
| WET BAGS | composite made of 5 depths | 4151 | x | x |

Table 2 $C_1$-$C_7$ Hydrocarbons in Headspace Gas (µl gas/kg rock) for NOCS well 2/5-12

Amerada Hess Norge

| Depth (m) | C1 | C2 | C3 | iC4 | nC4 | C5+ | sum C1-C4 | sum C2-C4 | % Wetness | iC4/nC4 |
|---|---|---|---|---|---|---|---|---|---|---|
| 3040 | 88 | 19 | 21 | 4 | 4 | 24 | 135 | 47 | 34.8 | 1.0 |
| 3090 | 89 | 23 | 22 | 4 | 3 | 4 | 142 | 53 | 37.3 | 1.3 |
| 3140 | 111 | 5 | 5 | 1 | 1 | 12 | 123 | 12 | 9.6 | 1.0 |
| 3191 | 321 | 20 | 11 | 2 | 2 | 59 | 356 | 35 | 9.8 | 1.0 |
| 3240 | 29 | 2 | 1 | 0 | 0 | 3 | 31 | 3 | 8.1 | |
| 3290 | 21 | 2 | 1 | 0 | 0 | 19 | 25 | 4 | 14.3 | |
| 3340 | 30 | 3 | 1 | 0 | 0 | 6 | 35 | 5 | 15.1 | |
| 3390 | 84 | 5 | 2 | 1 | 1 | 6 | 92 | 8 | 8.7 | |
| 3440 | 27 | 3 | 1 | 0 | 0 | 16 | 32 | 4 | 13.3 | |
| 3490 | 15 | 1 | 0 | 0 | 0 | 2 | 17 | 1 | 8.4 | |
| 3540 | 34 | 1 | 0 | 0 | 0 | 2 | 36 | 2 | 5.8 | |
| 3590 | 30 | 2 | 1 | 0 | 0 | 14 | 33 | 3 | 8.3 | |
| 3640 | 25 | 2 | 0 | 0 | 0 | 3 | 27 | 2 | 7.1 | |
| 3690 | 139 | 15 | 6 | 1 | 1 | 4 | 161 | 22 | 13.8 | |
| 3730 | 101 | 21 | 26 | 3 | 7 | 19 | 159 | 58 | 36.5 | 0.5 |
| 3787 | 316 | 60 | 67 | 10 | 25 | 42 | 477 | 161 | 33.8 | 0.4 |
| 3836 | 53 | 4 | 3 | 0 | 1 | 3 | 61 | 8 | 13.2 | |
| 3887 | 9 | 2 | 2 | 0 | 1 | 15 | 15 | 6 | 37.4 | |
| 3938 | 26 | 2 | 1 | 0 | 1 | 4 | 30 | 4 | 14.7 | |
| 3986 | 228 | 50 | 54 | 9 | 23 | 33 | 365 | 136 | 37.4 | 0.4 |
| 4040 | 73 | 7 | 3 | 1 | 1 | 31 | 86 | 13 | 14.8 | |
| 4088 | 53 | 5 | 3 | 0 | 2 | 9 | 63 | 10 | 16.3 | |
| 4139 | 114 | 11 | 5 | 1 | 2 | 9 | 133 | 18 | 13.8 | |
| 4153 | 224 | 11 | 4 | 0 | 1 | 17 | 239 | 16 | 6.5 | |

Table 3 : Lithology description for well NOCS 2/5-12 TYR

Depth unit of measure: m

| Depth | Type | | Grp | Frm | Age | Trb | Sample |
|---|---|---|---|---|---|---|---|
| Int Cvd | TOC% | % | Lithology description | | | | |
| 3701.00 | | | | | | | 0001 |
| | | 70 | Ca | : gy w to lt gy, st | | | 0001-1L |
| | | 30 | Sh/Clst | : m gy to brn blk, st | | | 0001-2L |
| | | tr | Other | : pyr | | | 0001-3L |
| 3716.00 | | | | | | | 0002 |
| | 1.92 | 95 | Sh/Clst | : drk gy to brn blk, st | | | 0002-2L |
| | | 5 | Ca | : gy w to lt gy, st | | | 0002-1L |
| 3730.00 | | | | | | | 0003 |
| | 2.04 | 100 | Sh/Clst | : drk gy to brn blk, st | | | 0003-1L |
| | | tr | Ca | : gy w to m gy, argill, st | | | 0003-2L |
| 3746.00 | | | | | | | 0004 |
| | 1.88 | 100 | Sh/Clst | : drk gy to brn blk, st | | | 0004-1L |
| | | tr | Ca | : gy w to m gy, argill, st | | | 0004-2L |
| 3761.00 | | | | | | | 0005 |
| | 1.70 | 100 | Sh/Clst | : drk gy to brn blk, st | | | 0005-1L |
| | | tr | Ca | : gy w to m gy, argill, st | | | 0005-2L |
| 3776.00 | | | | | | | 0006 |
| | 1.70 | 100 | Sh/Clst | : drk gy to brn blk, st | | | 0006-1L |
| | | tr | Ca | : gy w to m gy, argill, st | | | 0006-2L |
| 3791.00 | | | | | | | 0007 |
| | | 50 | Sh/Clst | : lt gy to brn gy | | | 0007-3L |
| | | 45 | Sh/Clst | : drk gy to brn blk, st | | | 0007-1L |
| | | 5 | Ca | : gy w to m gy, argill, st | | | 0007-2L |
| | 1.50 | | bulk | | | | 0007-0B |

Table 3 : Lithology description for well NOCS 2/5-12 TYR

Depth unit of measure: m

| Depth | Type | | Grp | Frm | Age | Trb | Sample |
|---|---|---|---|---|---|---|---|
| Int Cvd | TOC% | % | Lithology description | | | | |
| 3806.00 | | | | | | | 0008 |
| | 1.23 | 100 | Sh/Clst: drk brn gy to brn blk, st | | | | 0008-1L |
| | | tr | Ca : lt gy to brn gy, argill, st | | | | 0008-2L |
| 3821.00 | | | | | | | 0009 |
| | 1.35 | 100 | Sh/Clst: drk brn gy to brn blk, st | | | | 0009-1L |
| | | tr | Ca : lt gy to brn gy, argill, st | | | | 0009-2L |
| 3836.00 | | | | | | | 0010 |
| | 1.22 | 50 | Sh/Clst: drk brn gy to brn blk, st | | | | 0010-1L |
| | | 50 | Ca : lt gy to brn gy, argill, st | | | | 0010-2L |
| 3851.00 | | | | | | | 0011 |
| | 0.93 | 75 | Sh/Clst: drk gy to drk brn gy, st | | | | 0011-1L |
| | | 25 | Ca : lt gy to brn gy, argill, st | | | | 0011-2L |
| 3866.00 | | | | | | | 0012 |
| | 1.29 | 75 | Sh/Clst: drk gy to drk brn gy, st | | | | 0012-1L |
| | | 25 | Ca : lt gy to brn gy, argill, st | | | | 0012-2L |
| 3881.00 | | | | | | | 0013 |
| | 1.30 | 75 | Sh/Clst: drk gy to drk brn gy, st | | | | 0013-1L |
| | | 25 | Ca : lt gy to brn gy, argill, st | | | | 0013-2L |
| 3896.00 | | | | | | | 0014 |
| | 1.84 | 75 | Sh/Clst: drk gy to drk brn gy, st | | | | 0014-1L |
| | | 25 | Ca : lt gy to brn gy, argill, st | | | | 0014-2L |
| 3911.00 | | | | | | | 0015 |
| | 1.62 | 100 | Sh/Clst: drk gy to drk brn gy, st | | | | 0015-1L |

Table 3 : Lithology description for well NOCS 2/5-12 TYR

Depth unit of measure: m

| Depth | Type | | Grp | Frm | Age | Trb | Sample |
|---|---|---|---|---|---|---|---|
| Int Cvd | TOC% | % | Lithology description | | | | |
| 3926.00 | | | | | | | 0016 |
| | 2.68 | 95 | Sh/Clst: drk gy to drk brn gy, st | | | | 0016-1L |
| | | 5 | Ca : lt gy, m or brn, argill, st | | | | 0016-2L |
| 3941.00 | | | | | | | 0017 |
| | 2.26 | 65 | Sh/Clst: drk gy to drk brn gy, st | | | | 0017-1L |
| | | 35 | Ca : lt gy to gy w, argill, st | | | | 0017-2L |
| 3956.00 | | | | | | | 0018 |
| | 1.85 | 90 | Sh/Clst: drk gy to drk brn gy, st | | | | 0018-1L |
| | | 10 | Ca : lt gy to gy w, argill, st | | | | 0018-2L |
| 3971.00 | | | | | | | 0019 |
| | 3.02 | 100 | Sh/Clst: drk brn gy to brn blk, st | | | | 0019-1L |
| 3986.00 | | | | | | | 0020 |
| | 3.56 | 100 | Sh/Clst: drk brn gy to brn blk, st | | | | 0020-1L |
| 4001.00 | | | | | | | 0021 |
| | 1.22 | 60 | Sh/Clst: drk brn gy to brn blk, st | | | | 0021-1L |
| | | 40 | Ca : gy w to m gy, argill, st | | | | 0021-2L |
| 4016.00 | | | | | | | 0022 |
| | 1.83 | 55 | Sh/Clst: drk brn gy to brn blk, st | | | | 0022-1L |
| | | 45 | Ca : gy w to m gy, argill, st | | | | 0022-2L |
| 4031.00 | | | | | | | 0023 |
| | 2.30 | 95 | Sh/Clst: drk brn gy to brn blk, st | | | | 0023-1L |
| | | 5 | Ca : gy w to m gy, argill, st | | | | 0023-2L |

Table 3 : Lithology description for well NOCS 2/5-12 TYR

Depth unit of measure: m

| Depth | Type | | Grp | Frm | Age | Trb | Sample |
|---|---|---|---|---|---|---|---|
| Int Cvd | TOC% | % | Lithology description | | | | |
| 4046.00 | | | | | | | 0024 |
| | 2.66 | 95 | Sh/Clst: drk brn gy to brn blk, st | | | | 0024-1L |
| | | 5 | Ca : gy w to m gy, argill, st | | | | 0024-2L |
| 4061.00 | | | | | | | 0025 |
| | 2.89 | 100 | Sh/Clst: drk brn gy to brn blk, st | | | | 0025-1L |
| | | tr | Ca : gy w to m gy, argill, st | | | | 0025-2L |
| 4076.00 | | | | | | | 0026 |
| | 2.60 | 90 | Sh/Clst: drk brn gy to brn blk, st | | | | 0026-1L |
| | | 10 | Ca : gy w to m gy, argill, st | | | | 0026-2L |
| 4091.00 | | | | | | | 0027 |
| | 1.78 | 80 | Sh/Clst: drk brn gy to brn blk, st | | | | 0027-1L |
| | | 20 | Ca : gy w to m gy, argill, st | | | | 0027-2L |
| 4106.00 | | | | | | | 0028 |
| | 2.40 | 95 | Sh/Clst: drk brn gy to brn blk, st | | | | 0028-1L |
| | | 5 | Ca : gy w to m gy, argill, st | | | | 0028-2L |
| 4121.00 | | | | | | | 0029 |
| | 2.47 | 95 | Sh/Clst: drk brn gy to brn blk, st | | | | 0029-1L |
| | | 5 | Ca : gy w to m gy, argill, st | | | | 0029-2L |
| 4136.00 | | | | | | | 0030 |
| | 2.51 | 95 | Sh/Clst: drk brn gy to brn blk, st | | | | 0030-1L |
| | | 5 | Ca : gy w to m gy, argill, st | | | | 0030-2L |
| 4151.00 | | | | | | | 0032 |
| | 1.99 | 80 | Sh/Clst: drk brn gy to brn blk, st | | | | 0032-1L |
| | | 20 | Ca : gy w to m brn, s, argill, mic, glauc, st | | | | 0032-2L |

Table 4 Rock-Eval Pyrolysis Data for NOCS well 2/5-12 Amerada Hess Norge

| Upper depth (m) | Lower depth (m) | Sample type | Desc | %Lithology | S1 | S2 | S3 | TOC | Tmax | S2/S3 | HI | OI | PP | PI | Sample number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3713 | 3716 | cut | shale/claystone | 95 | 1.76 | 6.66 | 0.29 | 1.92 | 442 | 22.97 | 347 | 15 | 8.4 | 0.21 | W24/0002-2 |
| 3728 | 3730 | cut | shale/claystone | 100 | 2.73 | 6.26 | 0.31 | 2.04 | 442 | 20.19 | 307 | 15 | 9 | 0.3 | W24/0003-1 |
| 3743 | 3746 | cut | shale/claystone | 100 | 2.04 | 5.51 | 0.39 | 1.88 | 438 | 14.13 | 293 | 21 | 7.6 | 0.27 | W24/0004-1 |
| 3758 | 3761 | cut | shale/claystone | 100 | 2.52 | 4.88 | 0.36 | 1.7 | 439 | 13.56 | 287 | 21 | 7.4 | 0.34 | W24/0005-1 |
| 3773 | 3776 | cut | shale/claystone | 100 | 3.69 | 4.39 | 0.38 | 1.7 | 439 | 11.55 | 258 | 22 | 8.1 | 0.46 | W24/0006-1 |
| 3788 | 3791 | cut | bulk fraction | | 2.98 | 4.07 | 0.91 | 1.5 | 442 | 4.47 | 271 | 61 | 7.1 | 0.42 | W24/0007-0 |
| 3803 | 3806 | cut | shale/claystone | 100 | 2.31 | 3.15 | 0.93 | 1.23 | 441 | 3.39 | 256 | 76 | 5.5 | 0.42 | W24/0008-1 |
| 3818 | 3821 | cut | shale/claystone | 100 | 3.68 | 3.93 | 0.57 | 1.35 | 440 | 6.89 | 291 | 42 | 7.6 | 0.48 | W24/0009-1 |
| 3833 | 3836 | cut | shale/claystone | 50 | 3.18 | 3.13 | 0.78 | 1.22 | 442 | 4.01 | 257 | 64 | 6.3 | 0.5 | W24/0010-1 |
| 3848 | 3851 | cut | shale/claystone | 75 | 1.4 | 2.5 | 1.28 | 0.93 | 439 | 1.95 | 269 | 138 | 3.9 | 0.36 | W24/0011-1 |
| 3863 | 3866 | cut | shale/claystone | 75 | 4.05 | 3.19 | 0.59 | 1.29 | 439 | 5.41 | 247 | 46 | 7.2 | 0.56 | W24/0012-1 |
| 3878 | 3881 | cut | shale/claystone | 75 | 4.19 | 2.97 | 0.73 | 1.3 | 442 | 4.07 | 228 | 56 | 7.2 | 0.59 | W24/0013-1 |
| 3893 | 3896 | cut | shale/claystone | 75 | 6.85 | 4.26 | 0.62 | 1.84 | 441 | 6.87 | 232 | 34 | 11.1 | 0.62 | W24/0014-1 |
| 3908 | 3911 | cut | shale/claystone | 100 | 4.19 | 2.95 | 0.52 | 1.62 | 441 | 5.67 | 182 | 32 | 7.1 | 0.59 | W24/0015-1 |
| 3923 | 3926 | cut | shale/claystone | 95 | 11.43 | 8.09 | 0.61 | 2.68 | 443 | 13.26 | 302 | 23 | 19.5 | 0.59 | W24/0016-1 |
| 3938 | 3941 | cut | shale/claystone | 65 | 6.52 | 4.93 | 1.38 | 2.26 | 442 | 3.57 | 218 | 61 | 11.4 | 0.57 | W24/0017-1 |
| 3953 | 3956 | cut | shale/claystone | 90 | 3.15 | 4.22 | 1.49 | 1.85 | 439 | 2.83 | 228 | 81 | 7.4 | 0.43 | W24/0018-1 |
| 3968 | 3971 | cut | shale/claystone | 100 | 6 | 8.4 | 0.89 | 3.02 | 443 | 9.44 | 278 | 29 | 14.4 | 0.42 | W24/0019-1 |
| 3983 | 3986 | cut | shale/claystone | 100 | 10.12 | 10.09 | 0.58 | 3.56 | 442 | 17.4 | 283 | 16 | 20.2 | 0.5 | W24/0020-1 |
| 3998 | 4001 | cut | shale/claystone | 60 | 2.69 | 2.83 | 1.88 | 1.22 | 442 | 1.51 | 232 | 154 | 5.5 | 0.49 | W24/0021-1 |
| 4013 | 4016 | cut | shale/claystone | 55 | 5.34 | 3.13 | 2.01 | 1.83 | 444 | 1.56 | 171 | 110 | 8.5 | 0.63 | W24/0022-1 |
| 4028 | 4031 | cut | shale/claystone | 95 | 4.37 | 4.91 | 0.85 | 2.3 | 442 | 5.78 | 213 | 37 | 9.3 | 0.47 | W24/0023-1 |
| 4043 | 4046 | cut | shale/claystone | 95 | 3.48 | 4.21 | 0.67 | 2.66 | 443 | 6.28 | 158 | 25 | 7.7 | 0.45 | W24/0024-1 |
| 4058 | 4061 | cut | shale/claystone | 100 | 3.93 | 5.66 | 1.22 | 2.89 | 440 | 4.64 | 196 | 42 | 9.6 | 0.41 | W24/0025-1 |
| 4073 | 4076 | cut | shale/claystone | 90 | 4.12 | 3.25 | 0.94 | 2.6 | 442 | 3.46 | 125 | 36 | 7.4 | 0.56 | W24/0026-1 |
| 4088 | 4091 | cut | shale/claystone | 80 | 2.91 | 1.87 | 1.43 | 1.78 | 442 | 1.31 | 105 | 80 | 4.8 | 0.61 | W24/0027-1 |
| 4103 | 4106 | cut | shale/claystone | 95 | 5.03 | 3.48 | 0.95 | 2.4 | 441 | 3.66 | 145 | 40 | 8.5 | 0.59 | W24/0028-1 |
| 4118 | 4121 | cut | shale/claystone | 95 | 3.27 | 2.01 | 1.17 | 2.47 | 443 | 1.72 | 81 | 47 | 5.3 | 0.62 | W24/0029-1 |
| 4133 | 4136 | cut | shale/claystone | 95 | 2.73 | 2.24 | 1.04 | 2.51 | 444 | 2.15 | 89 | 41 | 5 | 0.55 | W24/0030-1 |
| 4148 | 4151 | cut | shale/claystone | 80 | 2.74 | 1.79 | 1.43 | 1.99 | 441 | 1.25 | 90 | 72 | 4.5 | 0.6 | W24/0032-1 |