



**Customer:** Ranger Oil Limited  
**Wellname:** <sup>North</sup> Fort Liard  
**Well Location:** P-66-A  
**Start Date:** 07-Jul-98  
**Formation:** TIGHT HOLE

**Job Number:** GP98-114 RANGER01.FAS  
**Supervisors:** M. Mueller, B. Metcalf  
**Customer Reps:** R. Elliot, W. Cassler  
**Test Unit:** 29  
**Test Type:** TIGHT HOLE

**Notes:** July 6, 1998 - Rig in equipment.  
RTR = Real Time Recorders

**MICROFILMED  
SUR MICROFILM:**

NATIONAL ENERGY BOARD  
ENGINEERING DIVISION  
SEP 28 1998

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Job Number: GP98-114 RANGER01.FAS  
Customer: RANGER OIL LIMITED  
Well Name: FORT LIARD  
Well Location: F-66-A  
Formation: TIGHT HOLE

## FieldNotes



### Gas Meter 1

Meter Type: Orifice  
Meter Run Size: 147.0200 mm  
Previous Gas Production: 0.000 10^3m3  
Tap Type: Flange  
Tap Location: Downstream

Gauge to Absolute Adjustment: 90.0

Gas Gravity: 0.73 decimal  
CO2: 15.64 %  
H2S: 0.85 %  
N2: 4.97 %  
Critical Temperature: 206.5 K  
Critical Pressure: 5010.0 kPa  
Condensate: No

### Water Meter 2

Meter Type: &Previous Water Production  
Measurement Type: Incremental  
Previous Fluid Production 1: 0.000 m3

### Gas Meter 2

Meter Type: Orifice  
Meter Run Size: 147.0200 mm  
Previous Gas Production: 0.000 10^3m3  
Tap Type: Flange  
Tap Location: Downstream

Gauge to Absolute Adjustment: 90.0

Gas Gravity: 0.65 decimal  
CO2: 0.00 %  
H2S: 0.00 %  
N2: 0.00 %  
Critical Temperature: 207.8 K  
Critical Pressure: 4625.7 kPa  
Condensate: No

### Water Meter 1

Meter Type: &Previous Water Production  
Measurement Type: Incremental  
Previous Fluid Production 1: 0.000 m3

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Well Name: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------|------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1   | 1998/07/06 | 08:00:00 | 0.00   |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 2   | 1998/07/07 | 02:00:00 | 18.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 3   |            | 04:00:00 | 20.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 4   |            | 11:00:00 | 27.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 5   |            | 19:00:00 | 35.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 6   |            | 23:00:00 | 39.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 7   | 1998/07/08 | 14:15:00 | 54.25  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 8   |            | 15:30:00 | 55.50  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 9   |            | 16:15:00 | 56.25  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 10  |            | 16:45:00 | 56.75  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 11  |            | 17:45:00 | 57.75  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 12  |            | 22:00:00 | 62.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 13  | 1998/07/09 | 00:00:00 | 64.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 14  |            | 00:48:00 | 64.80  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 15  |            | 00:48:00 | 64.80  | 2700  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 16  |            | 01:00:00 | 65.00  | 2950  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 17  |            | 01:30:00 | 65.50  | 3990  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 18  |            | 02:00:00 | 66.00  | 5310  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 19  |            | 02:01:00 | 66.02  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 20  |            | 02:30:00 | 66.50  | 6110  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 21  |            | 03:00:00 | 67.00  | 6990  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 22  |            | 03:30:00 | 67.50  | 8110  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 23  |            | 04:00:00 | 68.00  | 9030  | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 24  |            | 04:30:00 | 68.50  | 10000 | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 25  |            | 05:00:00 | 69.00  | 10930 | 0    |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 0.00    | 0.00   | 0.00     | 0.00    |    |          |
| 26  |            | 05:00:00 | 69.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 27  |            | 05:03:00 | 69.05  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 28  |            | 05:10:00 | 69.17  | 13650 | 730  |     | 16.0 | 11.110 |        |        |      |      |          |         |        |          |         |    |          |
| 29  |            | 05:13:00 | 69.22  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 30  |            | 05:15:00 | 69.25  | 13700 | 2000 |     | 16.0 | 12.700 |        |        |      |      |          |         |        |          |         |    |          |
| 31  |            | 05:30:00 | 69.50  | 18020 | 2200 |     | 20.0 | 12.700 | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 0.00    |        |          |         | 7  |          |
| 32  |            | 05:30:00 | 69.50  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 33  |            | 05:45:00 | 69.75  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 34  |            | 05:45:00 | 69.75  | 16800 | 2200 |     | 22.0 | 14.290 | 82.550 | 1200   | 45.0 | 22.0 | 335.28   | 3.49    |        |          |         |    |          |
| 35  | 1998/07/09 | 06:00:00 | 70.00  | 16430 | 2950 |     | 22.0 | 14.290 | 82.550 | 1150   | 50.0 | 22.0 | 346.61   | 7.04    | 10.40  | 249.60   | 10.40   | 7  | 51800    |
| 36  |            | 06:05:00 | 70.08  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 37  |            | 06:30:00 | 70.50  | 15480 | 3350 |     | 32.0 | 16.690 | 82.550 | 1450   | 53.0 | 26.0 | 395.61   | 14.78   |        |          |         |    |          |
| 38  |            | 06:45:00 | 70.75  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 39  |            | 07:00:00 | 71.00  | 15450 | 2600 |     | 36.0 | 16.690 | 82.550 | 1500   | 54.0 | 30.0 | 402.96   | 23.09   | 10.50  | 252.00   | 20.90   | 6  | 105000   |
| 40  |            | 07:00:00 | 71.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 41  |            | 07:00:00 | 71.00  |       |      |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 23.09   |        |          |         |    |          |
| 42  |            | 07:05:00 | 71.08  | 17950 | 2400 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 43  |            | 07:10:00 | 71.17  | 20100 | 1000 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 44  |            | 07:15:00 | 71.25  | 20270 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 45  |            | 07:30:00 | 71.50  | 20570 | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 46  |            | 07:45:00 | 71.75  | 20950 | 0    |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 47  |            | 08:00:00 | 72.00  | 21280 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 48  |            | 08:30:00 | 72.50  | 21300 | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 49  |            | 09:00:00 | 73.00  | 21500 | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 50  |            | 09:30:00 | 73.50  | 21670 | 225  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 51  |            | 10:00:00 | 74.00  | 21690 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 52  |            | 10:30:00 | 74.50  | 21690 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 53  |            | 11:00:00 | 75.00  | 21690 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 54  |            | 11:30:00 | 75.50  | 21660 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 55  |            | 12:00:00 | 76.00  | 21650 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 56  |            | 12:30:00 | 76.50  | 21640 | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 57  |            | 13:00:00 | 77.00  | 21620 | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |

# FieldNotes

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE



| Row | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------|------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 58  | 1998/07/09 | 13:30:00 | 77.50  | 21620 | 450  |     |      |        | 0.000  |        |      |      |          |         |        |          |         |    |          |
| 59  |            | 13:50:00 | 77.83  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 60  |            | 19:00:00 | 83.00  | 21570 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 61  |            | 19:30:00 | 83.50  | 21550 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 62  |            | 20:00:00 | 84.00  | 21550 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 63  |            | 20:30:00 | 84.50  | 21550 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 64  |            | 21:00:00 | 85.00  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 65  |            | 21:30:00 | 85.50  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 66  |            | 22:00:00 | 86.00  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 67  |            | 22:30:00 | 86.50  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 68  |            | 23:00:00 | 87.00  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 69  |            | 23:00:00 | 87.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 70  | 1998/07/10 | 04:00:00 | 92.00  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 71  |            | 04:00:00 | 92.00  | 21740 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 72  |            | 04:30:00 | 92.50  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 73  |            | 05:00:00 | 93.00  | 21530 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 74  |            | 05:30:00 | 93.50  | 21500 | 1400 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 75  | 1998/07/10 | 06:00:00 | 94.00  | 21500 | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 76  |            | 06:20:00 | 94.33  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 77  |            | 06:30:00 | 94.50  | 21500 | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 78  |            | 07:00:00 | 95.00  | 21500 | 900  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 79  |            | 07:30:00 | 95.50  | 21500 | 1050 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 80  |            | 07:50:00 | 95.83  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 81  |            | 09:30:00 | 97.50  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 82  |            | 10:30:00 | 98.50  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 83  |            | 10:30:00 | 98.50  | 21500 | 1600 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 84  |            | 11:00:00 | 99.00  | 21450 | 1600 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 85  | 1998/07/10 | 11:15:00 | 99.25  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 86  |            | 11:30:00 | 99.50  | 22430 | 1650 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 87  |            | 11:30:00 | 99.50  |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 88  |            | 12:00:00 | 100.00 | 21410 | 1700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 89  |            | 12:30:00 | 100.50 | 21410 | 1700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 90  |            | 12:32:00 | 100.53 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 91  |            | 13:20:00 | 101.33 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 92  |            | 13:32:00 | 101.53 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 93  |            | 13:32:00 | 101.53 | 21370 | 1800 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 94  |            | 13:40:00 | 101.67 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 95  | 1998/07/10 | 14:00:00 | 102.00 | 21380 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 96  |            | 14:30:00 | 102.50 | 20650 |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 97  |            | 14:40:00 | 102.67 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 98  |            | 15:00:00 | 103.00 | 21410 | 780  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 99  |            | 15:30:00 | 103.50 | 21410 | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 100 |            | 15:50:00 | 103.83 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 101 |            | 15:51:00 | 103.85 | 21200 | 800  |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 23.09   | 0.00   | 0.00     | 20.90   |    |          |
| 102 |            | 15:52:00 | 103.87 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 103 |            | 15:55:00 | 103.92 | 19850 | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 104 |            | 16:00:00 | 104.00 | 17280 | 800  |     | 17.0 |        |        |        |      |      |          |         |        |          |         |    |          |
| 105 |            | 16:08:00 | 104.13 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 106 |            | 16:15:00 | 104.25 | 17880 | 1000 |     | 18.0 | 16.670 | 82.550 | 700    | 55.0 | 20.0 | 291.20   | 27.95   |        |          |         |    |          |
| 107 |            | 16:19:00 | 104.32 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 108 |            | 16:30:00 | 104.50 | 15250 | 1400 |     | 18.0 | 16.670 | 82.550 | 700    | 58.0 | 14.0 | 302.51   | 31.04   |        |          |         | 7  | 123000   |
| 109 |            | 16:31:00 | 104.52 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 110 |            | 16:45:00 | 104.75 | 16110 | 2000 |     | 25.0 | 15.880 | 82.550 | 950    | 70.5 | 18.0 | 380.57   | 34.60   |        |          |         |    |          |
| 111 |            | 17:00:00 | 105.00 | 16040 | 1200 |     | 27.0 | 15.880 | 82.550 | 950    | 71.5 | 20.0 | 381.91   | 38.57   | 6.05   | 126.26   | 26.95   |    |          |
| 112 |            | 17:30:00 | 105.50 | 15790 | 2000 |     | 33.0 | 15.880 | 82.550 | 900    | 70.0 | 23.0 | 366.61   | 46.37   |        |          |         | 6  | 121000   |
| 113 |            | 18:00:00 | 106.00 | 15790 | 2000 |     | 38.0 | 15.880 | 82.550 | 950    | 70.0 | 26.0 | 373.72   | 54.08   | 10.25  | 246.00   | 37.20   | 6  | 123000   |
| 114 |            | 18:10:00 | 106.17 |       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |





# FieldNotes

Job Number: GP98-114 RANGER01.FAS  
 Custodian: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE



| Row | Date       | Clk TIm  | C Time | Pt    | Pc   | RTR   | WHT | Choke | Orlf  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------|------|-------|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa   | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 229 | 1998/07/12 | 12:00:00 | 148.00 | 21800 | 250  | 26196 |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 230 |            | 12:30:00 | 148.50 | 21900 | 350  | 26215 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 231 |            | 13:00:00 | 149.00 | 21890 | 450  | 26229 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 232 |            | 13:30:00 | 149.50 | 21890 | 600  | 26244 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 233 |            | 14:00:00 | 150.00 | 21880 | 700  | 26256 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 234 |            | 14:30:00 | 150.50 | 21880 | 750  | 26267 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 235 |            | 15:00:00 | 151.00 | 21870 | 800  | 26277 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 236 |            | 15:30:00 | 151.50 | 21870 | 800  | 26287 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 237 |            | 16:00:00 | 152.00 | 21870 | 875  | 26296 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 238 |            | 16:30:00 | 152.50 | 21850 | 925  | 26303 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 239 |            | 17:00:00 | 153.00 | 21850 | 1000 | 26311 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 240 |            | 17:30:00 | 153.50 | 21840 | 1000 | 26317 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 241 |            | 18:00:00 | 154.00 | 21840 | 1000 | 26323 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 242 |            | 18:30:00 | 154.50 | 21840 | 1050 | 26328 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 243 |            | 19:00:00 | 155.00 | 21840 | 1100 | 26333 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 244 |            | 19:30:00 | 155.50 | 21820 | 1150 | 26339 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 245 |            | 20:00:00 | 156.00 | 21830 | 1200 | 26344 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 246 |            | 20:30:00 | 156.50 | 21815 | 1200 | 26348 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 247 |            | 21:00:00 | 157.00 | 21805 | 1250 | 26352 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 248 |            | 21:30:00 | 157.50 | 21805 | 1250 | 26357 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 249 |            | 22:00:00 | 158.00 | 21805 | 1300 | 26361 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 250 |            | 22:30:00 | 158.50 | 21805 | 1350 | 26365 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 251 |            | 23:00:00 | 159.00 | 21805 | 1350 | 26369 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 252 |            | 23:30:00 | 159.50 | 21805 | 1380 | 26372 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 253 | 1998/07/13 | 00:00:00 | 160.00 | 21805 | 1400 | 26375 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 254 |            | 00:30:00 | 160.50 | 21800 | 1400 | 26379 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 255 |            | 01:00:00 | 161.00 | 21780 | 1450 | 26382 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 256 |            | 01:30:00 | 161.50 | 21780 | 1450 | 26385 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 257 |            | 02:00:00 | 162.00 | 21760 | 1500 | 26388 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 258 |            | 02:30:00 | 162.50 | 21760 | 1500 | 26390 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 259 |            | 03:00:00 | 163.00 | 21750 | 1550 | 26393 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 260 |            | 03:30:00 | 163.50 | 21750 | 1550 | 26395 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 261 |            | 04:00:00 | 164.00 | 21750 | 1600 | 26398 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 262 |            | 04:30:00 | 164.50 | 21740 | 1600 | 26401 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 263 |            | 05:00:00 | 165.00 | 21740 | 1600 | 26403 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 264 |            | 05:30:00 | 165.50 | 21740 | 1650 | 26405 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 265 | 1998/07/13 | 06:00:00 | 166.00 | 21730 | 1650 | 26408 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 266 |            | 06:30:00 | 166.50 | 21730 | 1650 | 26410 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 267 |            | 07:00:00 | 167.00 | 21720 | 1650 | 26412 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 268 |            | 07:30:00 | 167.50 | 21720 | 1650 | 26423 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 269 |            | 08:00:00 | 168.00 | 21725 | 1700 | 26441 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 270 |            | 08:30:00 | 168.50 | 21720 | 1700 | 26417 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 271 |            | 09:00:00 | 169.00 | 21710 | 1750 | 26419 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 272 |            | 09:30:00 | 169.50 | 21710 | 1750 | 26423 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 273 |            | 10:00:00 | 170.00 | 21720 | 1750 | 26421 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 274 |            | 10:30:00 | 170.50 | 21720 | 1750 | 26421 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 275 |            | 11:00:00 | 171.00 | 21720 | 1850 | 26421 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 276 |            | 11:30:00 | 171.50 | 21700 | 1900 | 26427 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 277 | 1998/07/13 | 12:00:00 | 172.00 | 21690 | 1800 | 26419 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 278 |            | 12:30:00 | 172.50 | 21680 | 1800 | 26430 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 279 |            | 13:00:00 | 173.00 | 21680 | 1800 | 26429 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 280 |            | 13:30:00 | 173.50 | 21680 | 1800 | 26433 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 281 |            | 14:00:00 | 174.00 | 21680 | 1850 | 26437 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 282 |            | 14:30:00 | 174.50 | 21680 | 1850 | 26435 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 283 |            | 15:00:00 | 175.00 | 21680 | 1875 | 26437 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 284 |            | 15:30:00 | 175.50 | 21670 | 1875 | 26439 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 285 |            | 16:00:00 | 176.00 | 21670 | 1875 | 26444 |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt                                                                         | Pc   | RTR   | WHT | Choke | Orlf  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|----------------------------------------------------------------------------|------|-------|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag                                                                       | kPag | kPa   | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 286 | 1998/07/13 | 16:30:00 | 176.50 | 21670                                                                      | 1900 | 26437 |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 287 |            | 17:00:00 | 177.00 | 21670                                                                      | 1900 | 26434 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 288 |            | 17:30:00 | 177.50 | 21660                                                                      | 1900 | 26443 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 289 | 1998/07/13 | 18:00:00 | 178.00 | 21660                                                                      | 1950 | 26444 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 290 |            | 18:30:00 | 178.50 | 21655                                                                      | 1950 | 26445 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 291 |            | 19:00:00 | 179.00 | 21650                                                                      | 1990 | 26446 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 292 |            | 19:30:00 | 179.50 | 21650                                                                      | 1990 | 26447 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 293 |            | 20:00:00 | 180.00 | 21650                                                                      | 1990 | 26448 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 294 |            | 20:30:00 | 180.50 | 21650                                                                      | 2000 | 26449 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 295 |            | 21:00:00 | 181.00 | 21645                                                                      | 2000 | 26450 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 296 |            | 21:30:00 | 181.50 | 21645                                                                      | 2000 | 26451 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 297 | 1998/07/13 | 22:00:00 | 182.00 | 21645                                                                      | 2000 | 26452 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 298 |            | 22:30:00 | 182.50 | 21645                                                                      | 2000 | 26453 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 299 |            | 23:00:00 | 183.00 | 21645                                                                      | 2000 | 26454 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 300 |            | 23:30:00 | 183.50 | 21645                                                                      | 2000 | 26455 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 301 | 1998/07/14 | 00:00:00 | 184.00 | 21645                                                                      | 2000 | 26455 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 302 |            | 00:30:00 | 184.50 | 21645                                                                      | 2000 | 26456 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 303 |            | 01:00:00 | 185.00 | 21640                                                                      | 2050 | 26457 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 304 |            | 01:30:00 | 185.50 | 21640                                                                      | 2050 | 26457 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 305 |            | 02:00:00 | 186.00 | 21640                                                                      | 2050 | 26458 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 306 |            | 02:30:00 | 186.50 | 21635                                                                      | 2050 | 26459 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 307 |            | 03:00:00 | 187.00 | 21635                                                                      | 2050 | 26460 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 308 |            | 03:30:00 | 187.50 | 21620                                                                      | 2050 | 26460 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 309 |            | 04:00:00 | 188.00 | 21620                                                                      | 2050 | 26461 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 310 |            | 04:30:00 | 188.50 | 21620                                                                      | 2100 | 26462 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 311 |            | 05:00:00 | 189.00 | 21620                                                                      | 2100 | 26462 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 312 |            | 05:30:00 | 189.50 | 21615                                                                      | 2100 | 26463 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 313 |            | 06:00:00 | 190.00 | 21615                                                                      | 2100 | 26464 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 314 |            | 06:30:00 | 190.50 | 21615                                                                      | 2100 | 26464 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 315 |            | 07:00:00 | 191.00 | 21615                                                                      | 2100 | 26465 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 316 |            | 07:30:00 | 191.50 | 21610                                                                      | 2100 | 26465 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 317 |            | 08:00:00 | 192.00 | 21610                                                                      | 2100 | 26466 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 318 |            | 08:30:00 | 192.50 | 21610                                                                      | 2100 | 26466 |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 319 |            | 08:30:00 | 192.50 | Run RTR to surface and rig up slick line to pull recorders.                |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 320 |            | 09:00:00 | 193.00 | 21610                                                                      | 2125 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 321 |            | 11:30:00 | 195.50 | 21610                                                                      | 2150 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 322 |            | 12:00:00 | 196.00 | 21610                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 323 |            | 12:30:00 | 196.50 | 21570                                                                      | 2150 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 324 |            | 13:30:00 | 197.50 | 21570                                                                      | 2150 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 325 |            | 14:00:00 | 198.00 | 21570                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 326 |            | 15:30:00 | 199.50 | 21560                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 327 |            | 16:00:00 | 200.00 | 21570                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 328 |            | 16:30:00 | 200.50 | 21570                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 329 |            | 17:00:00 | 201.00 | 21580                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 330 |            | 17:30:00 | 201.50 | 21575                                                                      | 2175 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 331 | 1998/07/14 | 18:00:00 | 202.00 | 21570                                                                      | 2200 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 332 |            | 18:00:00 | 202.00 | Bleed off casing pressure.                                                 |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 333 |            | 18:30:00 | 202.50 | 21565                                                                      | 2100 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 334 |            | 19:00:00 | 203.00 | 21570                                                                      | 1950 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 335 |            | 19:30:00 | 203.50 | 21570                                                                      | 1600 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 336 |            | 20:00:00 | 204.00 | 21570                                                                      | 1400 |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 337 |            | 20:05:00 | 204.08 | Genco out of hole. Shut in well and bleed off lubricator.                  |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 338 |            | 20:20:00 | 204.33 | Genco rigs off of wellhead.                                                |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 339 |            | 20:30:00 | 204.50 | Computalog gets ready to rig in.                                           |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 340 |            | 21:00:00 | 205.00 | Safety meeting held.                                                       |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 341 | 1998/07/14 | 21:30:00 | 205.50 | Start to pressure test BOP's.                                              |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 342 | 1998/07/15 | 02:30:00 | 210.50 | Dowell Schlumberger to pressure test Computalog's lubricator and flowline. |      |       |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt                                                                                            | Pc   | RTR | WHT | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-----------------------------------------------------------------------------------------------|------|-----|-----|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag                                                                                          | kPag | kPa | C   | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 343 | 1998/07/15 | 03:00:00 | 211.00 | Computalog starts to run in with perf's.                                                      |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 344 |            | 04:05:00 | 212.08 | Perf guns on bottom. Pressure up to choke and record opening pressure.                        |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 345 |            | 04:08:00 | 212.13 | 21540                                                                                         | 650  |     |     | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 522.46  | 0.00   | 0.00     | 201.15  |    |          |
| 346 |            | 04:10:00 | 212.17 | Open well to flow on a 21.03mm choke.                                                         |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 347 |            | 04:14:00 | 212.23 | Meter in service with a 82.55mm orifice plate.                                                |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 348 |            | 04:15:00 | 212.25 | 13000                                                                                         | 600  |     |     | 21.030 | 82.550 | 2600   | 86.0 | 0.0  | 712.20   | 525.92  |        |          |         |    |          |
| 349 |            | 04:20:00 | 212.33 | 12150                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 350 |            | 04:25:00 | 212.42 | 12750                                                                                         | 600  |     |     | 21.030 | 82.550 | 2100   | 69.0 | 0.0  | 571.43   | 530.38  | 1.77   | 149.93   | 202.92  |    |          |
| 351 |            | 04:28:00 | 212.47 | Shut in wing. Computalog waits for 15min before pulling out of well.                          |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 352 |            | 04:35:00 | 212.58 | 20080                                                                                         | 600  |     |     | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 530.38  |        |          |         |    |          |
| 353 |            | 04:40:00 | 212.67 | 20340                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 354 |            | 04:45:00 | 212.75 | 20540                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 355 |            | 05:00:00 | 213.00 | 20950                                                                                         | 575  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 356 |            | 05:15:00 | 213.25 | 21190                                                                                         | 575  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 357 |            | 05:30:00 | 213.50 | 21350                                                                                         | 550  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 358 | 1998/07/15 | 06:00:00 | 214.00 | 21590                                                                                         | 550  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 359 |            | 06:10:00 | 214.17 | Computalog out of hole. Shut in well and remove lubricator to set up second set of perf guns. |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 360 |            | 08:00:00 | 216.00 | 21595                                                                                         | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 361 |            | 08:30:00 | 216.50 | 21600                                                                                         | 100  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 362 |            | 09:00:00 | 217.00 | 21580                                                                                         | 450  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 363 |            | 09:24:00 | 217.40 | 21585                                                                                         | 500  |     |     |        |        |        |      |      |          |         | 0.00   | 0.00     | 202.92  |    |          |
| 364 |            | 09:24:00 | 217.40 | Computalog on bottom. Begin 15min flow bringing choke to 15.08mm.                             |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 365 |            | 09:29:00 | 217.48 | 18170                                                                                         | 500  |     |     | 11.0   | 15.080 |        |      |      |          |         |        |          |         |    |          |
| 366 |            | 09:34:00 | 217.57 | 18080                                                                                         | 550  |     |     | 23.0   | 15.080 |        |      |      |          |         |        |          |         |    |          |
| 367 |            | 09:39:00 | 217.65 | 18010                                                                                         | 600  |     |     | 26.0   | 15.080 |        |      |      |          |         | 0.30   | 28.80    | 203.22  |    |          |
| 368 |            | 09:39:00 | 217.65 | Perforate and shut in well. Wait on bottom for 15min then pull out of hole.                   |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 369 |            | 09:45:00 | 217.75 | 21480                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 370 |            | 09:50:00 | 217.83 | 21500                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 371 |            | 09:55:00 | 217.92 | 21510                                                                                         | 600  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 372 |            | 10:00:00 | 218.00 | 21520                                                                                         | 700  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 373 |            | 10:15:00 | 218.25 | 21540                                                                                         | 700  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 374 |            | 10:30:00 | 218.50 | 21560                                                                                         | 700  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 375 |            | 11:00:00 | 219.00 | 21580                                                                                         | 800  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 376 |            | 11:15:00 | 219.25 | Computalog at surface. Guns did not fire rig up new set.                                      |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 377 |            | 11:30:00 | 219.50 | 21575                                                                                         | 850  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 378 |            | 12:00:00 | 220.00 | 21565                                                                                         | 875  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 379 |            | 12:30:00 | 220.50 | 21580                                                                                         | 950  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 380 |            | 13:00:00 | 221.00 | 21580                                                                                         | 1000 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 381 |            | 13:30:00 | 221.50 | 21520                                                                                         | 1050 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 382 |            | 13:30:00 | 221.50 | Run in hole with new set of perf guns.                                                        |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 383 |            | 14:00:00 | 222.00 | 21470                                                                                         | 1150 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 384 |            | 14:30:00 | 222.50 | 21470                                                                                         | 1200 |     |     |        |        |        |      |      |          |         | 0.00   | 0.00     | 203.22  |    |          |
| 385 |            | 14:36:00 | 222.60 | Guns on bottom. Open well to flow on a 13.49mm choke.                                         |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 386 |            | 14:36:00 | 222.60 |                                                                                               |      |     |     | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 530.38  |        |          |         |    |          |
| 387 |            | 14:41:00 | 222.68 | 17740                                                                                         | 1200 |     |     | 24.0   | 13.490 |        |      |      |          |         |        |          |         |    |          |
| 388 |            | 14:46:00 | 222.77 | 17890                                                                                         | 1250 |     |     | 25.0   | 13.490 |        |      |      |          |         | 0.20   | 18.00    | 203.42  |    |          |
| 389 |            | 14:47:00 | 222.78 | Shut in well and perforate.                                                                   |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 390 |            | 14:52:00 | 222.87 | 21470                                                                                         | 1300 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 391 |            | 14:57:00 | 222.95 | 21510                                                                                         | 1300 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 392 |            | 15:02:00 | 223.03 | 21530                                                                                         | 1350 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 393 |            | 15:15:00 | 223.25 | 21560                                                                                         | 1350 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 394 |            | 15:30:00 | 223.50 | 21580                                                                                         | 1350 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 395 |            | 15:45:00 | 223.75 | 21585                                                                                         | 1400 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 396 |            | 16:00:00 | 224.00 | 21585                                                                                         | 1400 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 397 |            | 16:30:00 | 224.50 | Computalog at surface. Rig them off and rig on Genco.                                         |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 398 |            | 19:00:00 | 227.00 | Genco rigged onto wellhead and start to pressure test.                                        |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 399 |            | 20:05:00 | 228.08 | Genco run hole with recorders.                                                                |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |



# FieldNotes

Job Number: GP98-114 RANGER01.FAS  
Customer: RANGER OIL LIMITED  
Wellname: FORT LIARD  
Well Location: P-66-A  
Formation: TIGHT HOLE



| Row | Date       | Clk TIm  | C Time | Pt                                  | Pc   | RTR | WHT | Choke | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------------------------------------|------|-----|-----|-------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag                                | kPag | kPa | C   | mm    | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 457 | 1998/07/16 | 19:30:00 | 251.50 | 21870                               | 500  |     |     |       | 82.550 |        |      |      |          |         |        |          |         |    |          |
| 458 |            | 20:00:00 | 252.00 | 21870                               | 750  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 459 |            | 20:30:00 | 252.50 | 21870                               | 800  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 460 |            | 21:00:00 | 253.00 | 21870                               | 900  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 461 |            | 21:30:00 | 253.50 | 21870                               | 1000 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 462 |            | 22:00:00 | 254.00 | 21870                               | 1100 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 463 |            | 22:30:00 | 254.50 | 21870                               | 1200 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 464 |            | 23:00:00 | 255.00 | 21870                               | 1300 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 465 |            | 23:30:00 | 255.50 | 21870                               | 1400 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 466 | 1998/07/17 | 00:00:00 | 256.00 | 21830                               | 1400 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 467 |            | 00:30:00 | 256.50 | 21830                               | 1400 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 468 |            | 01:00:00 | 257.00 | 21830                               | 1500 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 469 |            | 01:30:00 | 257.50 | 21830                               | 1600 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 470 |            | 02:00:00 | 258.00 | 21830                               | 1600 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 471 |            | 02:30:00 | 258.50 | 21810                               | 1600 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 472 |            | 03:00:00 | 259.00 | 21800                               | 1700 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 473 |            | 03:30:00 | 259.50 | 21800                               | 1700 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 474 |            | 04:00:00 | 260.00 | 21800                               | 1750 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 475 |            | 04:30:00 | 260.50 | 21800                               | 1800 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 476 |            | 05:00:00 | 261.00 | 21800                               | 1800 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 477 |            | 05:25:00 | 261.42 | Open casing to bleed off slowly.    |      |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 478 |            | 05:30:00 | 261.50 | 21800                               | 1825 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 479 | 1998/07/17 | 06:00:00 | 262.00 | 21780                               | 1850 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 480 |            | 06:00:00 | 262.00 | H2S sample taken on casing H2S = 0% |      |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 481 |            | 06:30:00 | 262.50 | 21780                               | 1500 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 482 |            | 07:00:00 | 263.00 | 21780                               | 1550 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 483 |            | 07:30:00 | 263.50 | 21780                               | 1600 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 484 |            | 08:00:00 | 264.00 | 21780                               | 1650 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 485 |            | 08:30:00 | 264.50 | 21770                               | 1700 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 486 |            | 09:00:00 | 265.00 | 21770                               | 1750 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 487 |            | 09:30:00 | 265.50 | 21760                               | 1800 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 488 |            | 10:00:00 | 266.00 | 21740                               | 1850 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 489 |            | 10:30:00 | 266.50 | 21750                               | 1900 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 490 |            | 11:00:00 | 267.00 | 21750                               | 1900 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 491 |            | 11:30:00 | 267.50 | 21730                               | 1950 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 492 | 1998/07/17 | 12:00:00 | 268.00 | 21730                               | 1975 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 493 |            | 12:30:00 | 268.50 | 21730                               | 1975 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 494 |            | 12:31:00 | 268.52 | Bleed of casing.                    |      |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 495 |            | 13:00:00 | 269.00 | 21730                               | 1000 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 496 |            | 13:30:00 | 269.50 | 21730                               | 700  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 497 |            | 14:00:00 | 270.00 | 21730                               | 700  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 498 |            | 14:30:00 | 270.50 | 21730                               | 600  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 499 |            | 15:00:00 | 271.00 | 21720                               | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 500 |            | 15:30:00 | 271.50 | 21720                               | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 501 |            | 15:30:00 | 271.50 | Shut in casing.                     |      |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 502 |            | 16:00:00 | 272.00 | 21720                               | 600  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 503 |            | 16:30:00 | 272.50 | 21720                               | 800  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 504 |            | 17:00:00 | 273.00 | 21700                               | 900  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 505 |            | 17:30:00 | 273.50 | 21700                               | 1000 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 506 | 1998/07/17 | 18:00:00 | 274.00 | 21700                               | 1050 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 507 |            | 18:30:00 | 274.50 | 21690                               | 1200 |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 508 |            | 19:00:00 | 275.00 | 21690                               | 800  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 509 |            | 19:30:00 | 275.50 | 21690                               | 800  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 510 |            | 20:00:00 | 276.00 | 21680                               | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 511 |            | 20:30:00 | 276.50 | 21680                               | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 512 |            | 21:00:00 | 277.00 | 21680                               | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 513 |            | 21:30:00 | 277.50 | 21680                               | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |



Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT | Choke | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------|------|-----|-----|-------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C   | mm    | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 571 | 1998/07/19 | 10:30:00 | 314.50 | 21550 | 850  |     |     |       | 82.550 |        |      |      |          |         |        |          |         |    |          |
| 572 |            | 11:00:00 | 315.00 | 21550 | 900  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 573 |            | 11:30:00 | 315.50 | 21550 | 900  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 574 |            | 12:00:00 | 316.00 | 21540 | 950  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 575 |            | 12:30:00 | 316.50 | 21540 | 900  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 576 |            | 13:00:00 | 317.00 | 21540 | 850  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 577 |            | 13:30:00 | 317.50 | 21540 | 800  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 578 |            | 14:00:00 | 318.00 | 21540 | 750  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 579 |            | 14:30:00 | 318.50 | 21540 | 700  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 580 |            | 15:00:00 | 319.00 | 21530 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 581 |            | 15:30:00 | 319.50 | 21540 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 582 |            | 16:00:00 | 320.00 | 21530 | 550  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 583 |            | 16:30:00 | 320.50 | 21530 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 584 |            | 17:00:00 | 321.00 | 21530 | 600  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 585 |            | 17:30:00 | 321.50 | 21530 | 600  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 586 |            | 18:00:00 | 322.00 | 21530 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 587 |            | 18:30:00 | 322.50 | 21530 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 588 |            | 19:00:00 | 323.00 | 21510 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 589 |            | 19:30:00 | 323.50 | 21510 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 590 |            | 20:00:00 | 324.00 | 21510 | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 591 |            | 20:30:00 | 324.50 | 21510 | 400  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 592 |            | 21:00:00 | 325.00 | 21510 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 593 |            | 21:30:00 | 325.50 | 21500 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 594 | 1998/07/19 | 22:00:00 | 326.00 | 21490 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 595 |            | 22:30:00 | 326.50 | 21490 | 450  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 596 |            | 23:00:00 | 327.00 | 21480 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 597 |            | 23:30:00 | 327.50 | 21480 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 598 | 1998/07/20 | 00:00:00 | 328.00 | 21470 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 599 |            | 00:30:00 | 328.50 | 21470 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 600 |            | 01:00:00 | 329.00 | 21460 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 601 |            | 01:30:00 | 329.50 | 21460 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 602 |            | 02:00:00 | 330.00 | 21460 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 603 |            | 02:30:00 | 330.50 | 21460 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 604 |            | 03:00:00 | 331.00 | 21450 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 605 |            | 03:30:00 | 331.50 | 21450 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 606 |            | 04:00:00 | 332.00 | 21440 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 607 |            | 04:30:00 | 332.50 | 21440 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 608 |            | 05:00:00 | 333.00 | 21440 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 609 |            | 05:30:00 | 333.50 | 21440 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 610 | 1998/07/20 | 06:00:00 | 334.00 | 21440 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 611 |            | 06:30:00 | 334.50 | 21430 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 612 |            | 07:00:00 | 335.00 | 21430 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 613 |            | 07:30:00 | 335.50 | 21420 | 500  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 614 |            | 08:00:00 | 336.00 | 21420 | 525  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 615 |            | 08:30:00 | 336.50 | 21420 | 550  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 616 |            | 09:00:00 | 337.00 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 617 |            | 09:30:00 | 337.50 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 618 |            | 10:00:00 | 338.00 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 619 |            | 10:30:00 | 338.50 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 620 |            | 11:00:00 | 339.00 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 621 |            | 11:30:00 | 339.50 | 21420 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 622 | 1998/07/20 | 12:00:00 | 340.00 | 21415 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 623 |            | 12:30:00 | 340.50 | 21410 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 624 |            | 13:00:00 | 341.00 | 21410 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 625 |            | 13:30:00 | 341.50 | 21410 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 626 |            | 14:00:00 | 342.00 | 21410 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |
| 627 |            | 14:30:00 | 342.50 | 21400 | 575  |     |     |       |        |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT  | Choke | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-------|------|-----|------|-------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C    | mm    | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 628 | 1998/07/20 | 15:00:00 | 343.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 629 | 1998/07/20 | 18:00:00 | 346.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 630 |            | 19:35:00 | 347.58 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 631 |            | 20:10:00 | 348.17 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 632 |            | 22:20:00 | 350.33 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 633 |            | 22:30:00 | 350.50 | 21370 | 600  |     |      |       | 82.550 |        |      |      |          |         |        |          |         |    |          |
| 634 |            | 23:00:00 | 351.00 | 21370 | 600  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 635 |            | 23:30:00 | 351.50 | 21370 | 600  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 636 | 1998/07/21 | 00:00:00 | 352.00 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 637 |            | 00:30:00 | 352.50 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 638 |            | 01:00:00 | 353.00 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 639 |            | 01:30:00 | 353.50 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 640 |            | 02:00:00 | 354.00 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 641 |            | 02:30:00 | 354.50 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 642 |            | 03:00:00 | 355.00 | 21370 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 643 |            | 03:30:00 | 355.50 | 21385 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 644 |            | 04:00:00 | 356.00 | 21360 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 645 |            | 04:30:00 | 356.50 | 21360 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 646 |            | 05:00:00 | 357.00 | 21340 | 550  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 647 |            | 05:00:00 | 357.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 648 | 1998/07/21 | 06:00:00 | 358.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 649 |            | 06:00:00 | 358.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 650 |            | 06:30:00 | 358.50 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 651 |            | 07:00:00 | 359.00 | 21310 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 652 |            | 07:30:00 | 359.50 | 21330 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 653 |            | 08:00:00 | 360.00 | 21320 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 654 |            | 08:30:00 | 360.50 | 21330 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 655 |            | 09:00:00 | 361.00 | 21330 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 656 |            | 09:30:00 | 361.50 | 21330 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 657 |            | 10:00:00 | 362.00 | 21330 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 658 |            | 10:30:00 | 362.50 | 21320 | 500  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 659 |            | 11:00:00 | 363.00 | 21320 | 500  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 660 |            | 11:30:00 | 363.50 | 21320 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 661 | 1998/07/21 | 12:00:00 | 364.00 | 21320 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 662 |            | 12:30:00 | 364.50 | 21310 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 663 |            | 13:00:00 | 365.00 | 21310 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 664 |            | 13:00:00 | 365.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 665 |            | 15:00:00 | 367.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 666 |            | 15:00:00 | 367.00 | 21270 | 475  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 667 |            | 15:30:00 | 367.50 | 21270 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 668 |            | 16:00:00 | 368.00 | 21270 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 669 |            | 16:30:00 | 368.50 | 21310 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 670 |            | 17:00:00 | 369.00 | 21320 | 425  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 671 |            | 17:30:00 | 369.50 | 21320 | 425  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 672 |            | 18:00:00 | 370.00 | 21340 | 425  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 673 |            | 18:30:00 | 370.50 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 674 |            | 19:00:00 | 371.00 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 675 |            | 19:30:00 | 371.50 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 676 |            | 20:00:00 | 372.00 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 677 |            | 20:30:00 | 372.50 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 678 |            | 21:00:00 | 373.00 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 679 |            | 21:30:00 | 373.50 | 21340 | 450  |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 680 |            | 21:55:00 | 373.92 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 681 | 1998/07/21 | 22:00:00 | 374.00 | 21340 | 450  |     |      | 0.000 | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 877.11  | 0.00   | 0.00     | 319.97  |    |          |
| 682 |            | 22:00:00 | 374.00 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |
| 683 |            | 22:05:00 | 374.08 | 17400 | 450  |     | 20.0 |       |        |        |      |      |          |         |        |          |         |    |          |
| 684 |            | 22:07:00 | 374.12 |       |      |     |      |       |        |        |      |      |          |         |        |          |         |    |          |



Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk Tim  | C Time | Pt                                             | Pc   | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|------------------------------------------------|------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag                                           | kPag | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 742 | 1998/07/22 | 22:00:00 | 398.00 | 21600                                          | 800  |     |      |        | 0.000  |        |      |      |          |         |        |          |         |    |          |
| 743 |            | 22:30:00 | 398.50 | 21600                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 744 |            | 23:00:00 | 399.00 | 21600                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 745 |            | 23:30:00 | 399.50 | Safety meeting held.                           |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 746 |            | 23:30:00 | 399.50 | 21600                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 747 | 1998/07/23 | 00:00:00 | 400.00 | 21570                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 748 |            | 00:30:00 | 400.50 | 21570                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 749 |            | 01:00:00 | 401.00 | 21570                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 750 |            | 01:30:00 | 401.50 | 21570                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 751 |            | 02:00:00 | 402.00 | 21570                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 752 |            | 02:30:00 | 402.50 | 21530                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 753 |            | 03:00:00 | 403.00 | 21530                                          | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 754 |            | 03:30:00 | 403.50 | 21530                                          | 775  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 755 |            | 04:00:00 | 404.00 | 21530                                          | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 756 |            | 04:30:00 | 404.50 | 21530                                          | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 757 |            | 05:00:00 | 405.00 | 21530                                          | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 758 |            | 05:30:00 | 405.50 | 21500                                          | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 759 | 1998/07/23 | 06:00:00 | 406.00 | 21500                                          | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 760 |            | 06:01:00 | 406.02 | Pressure test lubricator.                      |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 761 |            | 08:00:00 | 408.00 | 21500                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 762 |            | 08:30:00 | 408.50 | 21500                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 763 |            | 09:00:00 | 409.00 | 21510                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 764 |            | 09:30:00 | 409.50 | 21520                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 765 |            | 10:00:00 | 410.00 | 21520                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 766 |            | 10:30:00 | 410.50 | 21520                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 767 |            | 11:00:00 | 411.00 | 21520                                          | 700  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 768 |            | 12:30:00 | 412.50 | Wireline retrieve tool.                        |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 769 |            | 15:25:00 | 415.42 | Obtain opening pressure on well.               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 770 |            | 15:25:00 | 415.42 | 21510                                          | 800  |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1009.37 | 0.00   | 0.00     | 358.76  |    |          |
| 771 |            | 15:30:00 | 415.50 | Pressure up to choke                           |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 772 |            | 15:33:00 | 415.55 | Increase choke to 12.70mm.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 773 |            | 15:35:00 | 415.58 | 21200                                          | 850  |     | 24.0 | 8.730  |        |        |      |      |          |         |        |          |         |    |          |
| 774 |            | 15:40:00 | 415.67 | 15500                                          | 850  |     | 24.0 | 8.730  |        |        |      |      |          |         |        |          |         |    |          |
| 775 |            | 15:41:00 | 415.68 | Increase choke to 17.46mm.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 776 |            | 15:45:00 | 415.75 | 14450                                          | 850  |     | 25.0 | 17.460 | 82.550 |        |      |      |          |         |        |          |         |    |          |
| 777 |            | 15:45:00 | 415.75 | Open choke to 25.40mm.                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 778 |            | 15:50:00 | 415.83 | Fluid to surface.                              |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 779 |            | 15:53:00 | 415.88 | Meter in service with a 82.55mm orifice plate. |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 780 |            | 16:00:00 | 416.00 | 11600                                          | 1250 |     | 34.0 | 25.400 | 82.550 | 4400   | 55.0 | 21.0 | 714.72   | 1026.74 | 4.40   | 181.03   | 363.16  | 6  | 140000   |
| 781 |            | 16:15:00 | 416.25 | 11500                                          | 1500 |     | 38.0 | 25.400 | 82.550 | 4300   | 55.6 | 25.0 | 703.40   | 1034.12 |        |          |         |    |          |
| 782 |            | 16:30:00 | 416.50 | 11100                                          | 1800 |     | 42.0 | 25.400 | 82.550 | 4100   | 55.0 | 30.0 | 674.72   | 1041.30 | 6.55   | 314.40   | 369.71  |    |          |
| 783 |            | 17:00:00 | 417.00 | 10950                                          | 2600 |     | 53.0 | 25.400 | 82.550 | 4000   | 53.0 | 43.0 | 636.54   | 1054.96 | 6.20   | 297.60   | 375.91  | 6  | 131000   |
| 784 |            | 17:30:00 | 417.50 | 10900                                          | 3500 |     | 60.0 | 25.400 | 82.550 | 4000   | 52.0 | 52.0 | 619.61   | 1068.04 | 7.00   | 336.00   | 382.91  |    |          |
| 785 | 1998/07/23 | 18:00:00 | 418.00 | 10710                                          | 4200 |     | 64.0 | 25.400 | 82.550 | 4000   | 52.0 | 58.0 | 612.75   | 1080.88 | 8.65   | 415.20   | 391.56  | 6  | 127000   |
| 786 |            | 18:30:00 | 418.50 | 10600                                          | 5200 |     | 69.0 | 25.400 | 82.550 | 4050   | 51.8 | 63.0 | 609.92   | 1093.62 |        |          |         |    |          |
| 787 |            | 19:00:00 | 419.00 | 10475                                          | 1550 |     | 68.0 | 25.400 | 82.550 | 3850   | 51.5 | 64.0 | 591.56   | 1106.13 | 11.27  | 270.48   | 402.83  | 6  | 135000   |
| 788 |            | 19:14:00 | 419.23 | Increase choke to 26.99mm.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 789 |            | 19:16:00 | 419.27 | Increase choke to 29.37mm.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 790 |            | 19:22:00 | 419.37 | Increase choke to 31.75mm.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 791 |            | 19:30:00 | 419.50 | 9545                                           | 1300 |     | 72.0 | 31.750 | 82.550 | 3900   | 52.5 | 68.0 | 597.03   | 1118.51 |        |          |         |    |          |
| 792 |            | 20:00:00 | 420.00 | 9520                                           | 1000 |     | 76.0 | 31.750 | 82.550 | 3975   | 53.5 | 72.0 | 604.40   | 1131.03 | 14.28  | 342.72   | 417.11  | 6  | 135000   |
| 793 |            | 20:30:00 | 420.50 | 9515                                           | 800  |     | 74.0 | 31.750 | 82.550 | 3975   | 53.5 | 74.0 | 602.34   | 1143.60 |        |          |         |    |          |
| 794 |            | 21:00:00 | 421.00 | 9535                                           | 600  |     | 79.0 | 31.750 | 82.550 | 4000   | 54.0 | 77.0 | 604.02   | 1156.17 | 12.55  | 301.20   | 429.66  | 6  | 137000   |
| 795 |            | 21:30:00 | 421.50 | 9545                                           | 500  |     | 78.0 | 31.750 | 82.550 | 4000   | 54.0 | 78.0 | 603.01   | 1168.74 |        |          |         |    |          |
| 796 |            | 22:00:00 | 422.00 | 9545                                           | 450  |     | 82.0 | 31.750 | 82.550 | 4025   | 54.0 | 84.0 | 598.96   | 1181.26 | 12.21  | 293.04   | 441.87  | 6  | 144000   |
| 797 |            | 22:30:00 | 422.50 | 9555                                           | 350  |     | 84.0 | 31.750 | 82.550 | 4025   | 54.0 | 82.0 | 600.92   | 1193.76 |        |          |         |    |          |
| 798 |            | 23:00:00 | 423.00 | 9570                                           | 250  |     | 83.0 | 31.750 | 82.550 | 4050   | 54.5 | 83.0 | 604.61   | 1206.32 | 10.00  | 240.00   | 451.87  | 6  | 140000   |





Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row | Date       | Clk TIm  | C Time | Pt                                            | Pc   | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|-----|------------|----------|--------|-----------------------------------------------|------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|     | yy/mm/dd   | clock    | hr     | kPag                                          | kPag | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 913 | 1998/07/25 | 00:15:00 | 448.25 | 12700                                         | 800  |     | 83.0 | 21.430 | 82.550 | 2725   | 67.2 | 74.0 | 558.82   | 1581.78 |        |          |         |    |          |
| 914 |            | 00:30:00 | 448.50 | 12720                                         | 850  |     | 83.0 | 21.430 | 82.550 | 2725   | 67.0 | 74.0 | 557.98   | 1587.59 | 3.82   | 183.36   | 549.74  | 6  | 152000   |
| 915 | 1998/07/25 | 00:30:00 | 448.50 | Shut in wing valve and record buildups.       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 916 |            | 00:35:00 | 448.58 | 20760                                         | 700  |     |      |        | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1587.59 | 0.00   | 0.00     | 549.74  |    |          |
| 917 |            | 00:40:00 | 448.67 | 21020                                         | 500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 918 |            | 00:45:00 | 448.75 | 21170                                         | 400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 919 |            | 01:00:00 | 449.00 | 21510                                         | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 920 |            | 01:15:00 | 449.25 | 21680                                         | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 921 |            | 01:30:00 | 449.50 | 21740                                         | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 922 |            | 02:00:00 | 450.00 | 21780                                         | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 923 |            | 02:30:00 | 450.50 | 21805                                         | 200  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 924 |            | 03:00:00 | 451.00 | 21815                                         | 400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 925 |            | 03:30:00 | 451.50 | 21815                                         | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 926 |            | 04:00:00 | 452.00 | 21820                                         | 1000 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 927 |            | 04:30:00 | 452.50 | 21890                                         | 1200 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 928 |            | 05:00:00 | 453.00 | 21890                                         | 1350 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 929 |            | 05:00:00 | 453.00 | Bleed off casing.                             |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 930 |            | 05:30:00 | 453.50 | 21890                                         | 975  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 931 | 1998/07/25 | 06:00:00 | 454.00 | 21880                                         | 850  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 932 |            | 06:30:00 | 454.50 | 21885                                         | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 933 |            | 07:00:00 | 455.00 | 21820                                         | 800  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 934 |            | 07:30:00 | 455.50 | Dowell rigging up to wellhead.                |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 935 |            | 14:10:00 | 462.17 | Dowell rigged up and ready to do acid pickle. |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 936 |            | 14:10:00 | 462.17 | Hold pre-job safety meeting.                  |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 937 |            | 14:35:00 | 462.58 | Pressure test surface lines.                  |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 938 |            | 15:28:00 | 463.43 | Returns to P. Tank.                           |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 939 |            | 15:45:00 | 463.75 | Drop gauge ball and pump it through coil.     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 940 |            | 16:10:00 | 464.17 | Rig off injector to check for ball            |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 941 |            | 16:25:00 | 464.42 | No ball                                       |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 942 |            | 16:40:00 | 464.67 | Stop pumping and check for ball               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 943 |            | 17:35:00 | 465.58 | Stop pumping and check for ball               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 944 |            | 18:00:00 | 466.00 |                                               |      |     |      |        | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1587.59 | 0.00   | 0.00     | 549.74  |    |          |
| 945 |            | 21:40:00 | 469.67 | Safety meeting held.                          |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 946 |            | 22:20:00 | 470.33 | CTU bled down to 24 MPa to open master valve. |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 947 |            | 22:30:00 | 470.50 | CTU run in hole.                              |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 948 |            | 23:00:00 | 471.00 | 21625                                         |      |     |      |        |        |        |      |      |          |         | 1.77   | 8.50     | 551.51  |    |          |
| 949 |            | 23:30:00 | 471.50 | 21670                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 950 | 1998/07/26 | 00:00:00 | 472.00 | 21680                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 951 |            | 00:30:00 | 472.50 | 21660                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 952 |            | 01:00:00 | 473.00 | 21645                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 953 |            | 01:30:00 | 473.50 | 21630                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 954 |            | 02:00:00 | 474.00 | 19560                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 955 |            | 02:30:00 | 474.50 | 18540                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 956 |            | 03:00:00 | 475.00 | 17180                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 957 |            | 03:30:00 | 475.50 | 19270                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 958 |            | 04:00:00 | 476.00 | 20010                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 959 |            | 04:30:00 | 476.50 | 20935                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 960 |            | 05:00:00 | 477.00 | 21330                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 961 |            | 05:30:00 | 477.50 | 21375                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 962 | 1998/07/26 | 06:00:00 | 478.00 | 21430                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 963 |            | 06:30:00 | 478.50 | 21490                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 964 |            | 07:00:00 | 479.00 | 21540                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 965 |            | 07:28:00 | 479.43 | Coil on surface.                              |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 966 |            | 07:30:00 | 479.50 | 21550                                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 967 |            | 07:35:00 | 479.58 | Bleed off injector stack.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 968 |            | 08:35:00 | 480.58 | Rig out injector head                         |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 969 |            | 08:50:00 | 480.83 | Hold safety meeting.                          |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 970  | 1998/07/26 | 09:10:00 | 481.17 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 971  |            | 10:12:00 | 482.20 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 972  |            | 10:30:00 | 482.50 | 21490 | 2500 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 973  |            | 11:00:00 | 483.00 | 21460 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 974  |            | 11:30:00 | 483.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 975  |            | 11:30:00 | 483.50 | 21550 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 976  |            | 12:00:00 | 484.00 | 21600 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 977  |            | 12:30:00 | 484.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 978  |            | 13:00:00 | 485.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 979  |            | 13:30:00 | 485.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 980  | 1998/07/26 | 14:00:00 | 486.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 981  |            | 14:30:00 | 486.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 982  |            | 15:00:00 | 487.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 983  |            | 15:30:00 | 487.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 984  |            | 16:00:00 | 488.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 985  |            | 16:30:00 | 488.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 986  |            | 17:00:00 | 489.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 987  |            | 17:30:00 | 489.50 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 988  | 1998/07/26 | 18:00:00 | 490.00 | 21610 | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 989  |            | 18:30:00 | 490.50 | 21610 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 990  |            | 19:00:00 | 491.00 | 21590 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 991  |            | 19:30:00 | 491.50 | 21590 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 992  |            | 20:00:00 | 492.00 | 21590 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 993  |            | 20:15:00 | 492.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 994  |            | 20:35:00 | 492.58 | 21590 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 995  |            | 20:40:00 | 492.67 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 996  |            | 20:50:00 | 492.83 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 997  |            | 21:00:00 | 493.00 | 21610 | 2250 |     |     |       | 0.000 | 0      | 0.0  | 0.0  | 0.00     | 1587.59 | 0.00   | 0.00     | 551.51  |    |          |
| 998  |            | 21:30:00 | 493.50 | 21610 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 999  |            | 22:00:00 | 494.00 | 21610 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1000 |            | 22:30:00 | 494.50 | 21610 | 2250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1001 |            | 22:35:00 | 494.58 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1002 |            | 23:00:00 | 495.00 | 21610 |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1003 |            | 23:30:00 | 495.50 | 21610 |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1004 |            | 23:30:00 | 495.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1005 | 1998/07/27 | 00:00:00 | 496.00 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1006 |            | 00:30:00 | 496.50 | 21620 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1007 |            | 01:00:00 | 497.00 | 21620 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1008 |            | 01:30:00 | 497.50 | 21620 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1009 |            | 02:00:00 | 498.00 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1010 |            | 02:30:00 | 498.50 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1011 |            | 03:00:00 | 499.00 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1012 |            | 03:30:00 | 499.50 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1013 |            | 04:00:00 | 500.00 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1014 |            | 04:30:00 | 500.50 | 21610 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1015 |            | 05:00:00 | 501.00 | 21580 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1016 |            | 05:30:00 | 501.50 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1017 | 1998/07/27 | 06:00:00 | 502.00 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1018 |            | 06:30:00 | 502.50 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1019 |            | 07:00:00 | 503.00 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1020 |            | 07:30:00 | 503.50 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1021 |            | 08:00:00 | 504.00 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1022 |            | 08:30:00 | 504.50 | 21570 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1023 |            | 09:00:00 | 505.00 | 21570 | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1024 |            | 09:30:00 | 505.50 | 21570 | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1025 | 1998/07/27 | 10:00:00 | 506.00 | 21570 | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1026 |            | 10:30:00 | 506.50 | 21570 | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                               | Pc    | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|------------------------------------------------------------------|-------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                             | kPag  | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1027 | 1998/07/27 | 11:00:00 | 507.00 | 21570                                                            | 1400  |     |      |        | 0.000  |        |      |      |          |         |        |          |         |    |          |
| 1028 |            | 11:30:00 | 507.50 | 21570                                                            | 1400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1029 |            | 12:00:00 | 508.00 | 21570                                                            | 1400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1030 |            | 12:11:00 | 508.18 | Open well to flow on a 32/64(12.7mm)                             |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1031 |            | 12:24:00 | 508.40 | Meter in service with a 3.250(82.55mm) orifice plate.            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1032 |            | 12:25:00 | 508.42 | 0                                                                | 0     | 0   | 0.0  | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1587.59 | 0.00   | 0.00     | 551.51  |    |          |
| 1033 |            | 12:30:00 | 508.50 | 20170                                                            | 2100  |     | 32.0 | 12.700 |        |        |      |      |          |         |        |          |         |    |          |
| 1034 |            | 13:00:00 | 509.00 | 20030                                                            | 3300  |     | 28.0 | 12.700 | 0.000  |        |      |      |          |         | 1.60   | 65.83    | 553.11  |    |          |
| 1035 |            | 13:01:00 | 509.02 | Shut in well.                                                    |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1036 |            | 13:30:00 | 509.50 | 21500                                                            | 3300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1037 | 1998/07/27 | 14:00:00 | 510.00 | 21600                                                            | 2650  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1038 |            | 14:10:00 | 510.17 | Pressure up to choke and open to flow on a 32/64(12.7mm)         |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1039 |            | 14:28:00 | 510.47 | Meter in service with a 3.250(82.55mm) orifice plate.            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1040 |            | 14:29:00 | 510.48 | 16700                                                            |       |     |      |        | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1587.59 | 0.00   | 0.00     | 553.11  |    |          |
| 1041 |            | 14:30:00 | 510.50 | 16700                                                            |       |     | 34.0 | 12.700 |        |        |      |      |          |         |        |          |         |    |          |
| 1042 |            | 15:00:00 | 511.00 | 17100                                                            |       |     | 36.0 | 12.700 | 82.550 | 1050   | 70.0 | -3.0 | 413.65   | 1596.50 | 2.30   | 106.84   | 555.41  |    |          |
| 1043 |            | 15:30:00 | 511.50 | 16640                                                            |       |     | 36.0 | 12.700 | 82.550 | 1125   | 68.0 | -2.0 | 420.12   | 1605.18 |        |          |         |    |          |
| 1044 |            | 15:45:00 | 511.75 | Shut in well.                                                    |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1045 |            | 16:00:00 | 512.00 | 21000                                                            |       |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1605.18 |        |          |         |    |          |
| 1046 |            | 16:30:00 | 512.50 | 21200                                                            | 13000 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1047 |            | 17:00:00 | 513.00 | 21400                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1048 |            | 17:05:00 | 513.08 | Pressure up to choke and open well to flow on a 40/64(15.875mm). |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1049 |            | 17:10:00 | 513.17 | Increase choke to 42/64.                                         |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1050 |            | 17:12:00 | 513.20 | Increase choke to 44/64(17.48mm).                                |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1051 |            | 17:12:00 | 513.20 | Meter in service with a 3.250(82.55mm) orifice plate.            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1052 |            | 17:29:00 | 513.48 | 14350                                                            | 13500 |     |      |        | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1605.18 | 0.00   | 0.00     | 555.41  |    |          |
| 1053 |            | 17:30:00 | 513.50 | 14350                                                            | 13500 |     | 40.0 | 17.460 | 82.550 | 1500   | 70.0 | 11.0 | 476.42   | 1605.51 |        |          |         |    |          |
| 1054 |            | 17:33:00 | 513.55 | Increase choke to 52/64(20.64mm).                                |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1055 | 1998/07/27 | 18:00:00 | 514.00 | 12100                                                            | 18400 |     | 45.0 | 20.640 | 82.550 | 1800   | 74.0 | 24.0 | 522.07   | 1615.92 | 5.30   | 246.19   | 560.71  |    |          |
| 1056 |            | 18:30:00 | 514.50 | 12100                                                            | 23100 |     | 50.0 | 20.640 | 82.550 | 1900   | 78.1 | 28.0 | 546.75   | 1627.05 |        |          |         |    |          |
| 1057 |            | 18:30:00 | 514.50 | Shut in wing.                                                    |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1058 |            | 19:00:00 | 515.00 | 21320                                                            | 15000 |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1627.05 |        |          |         |    |          |
| 1059 |            | 19:30:00 | 515.50 | 21580                                                            | 9100  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1060 |            | 20:00:00 | 516.00 | 21720                                                            | 5500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1061 |            | 20:05:00 | 516.08 | Safety meeting held.                                             |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1062 |            | 20:15:00 | 516.25 | Dowell started pumping diesel downhole.                          |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1063 |            | 20:30:00 | 516.50 | 21150                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1064 |            | 21:00:00 | 517.00 | 19320                                                            | 1500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1065 |            | 21:30:00 | 517.50 | 18000                                                            | 1500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1066 |            | 22:00:00 | 518.00 | 18030                                                            | 1500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1067 |            | 22:30:00 | 518.50 | 18325                                                            | 1250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1068 |            | 23:00:00 | 519.00 | 18520                                                            | 1250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1069 |            | 23:30:00 | 519.50 | 18800                                                            | 1000  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1070 | 1998/07/28 | 00:00:00 | 520.00 | 19010                                                            | 1000  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1071 |            | 00:15:00 | 520.25 | Computalog start to work line to try and free it.                |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1072 |            | 00:30:00 | 520.50 | 19270                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1073 |            | 01:00:00 | 521.00 | 19470                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1074 |            | 01:30:00 | 521.50 | 19620                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1075 |            | 02:00:00 | 522.00 | 19620                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1076 |            | 02:30:00 | 522.50 | 19660                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1077 |            | 03:00:00 | 523.00 | 19720                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1078 |            | 03:30:00 | 523.50 | 19750                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1079 |            | 04:00:00 | 524.00 | 19750                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1080 |            | 04:30:00 | 524.50 | 19760                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1081 |            | 05:00:00 | 525.00 | 19770                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1082 |            | 05:30:00 | 525.50 | 19780                                                            |       |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1083 | 1998/07/28 | 06:00:00 | 526.00 | 19790                                                            | 1000  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: PORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk TIm  | C Time | Pt    | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1084 | 1998/07/28 | 06:30:00 | 526.50 | 19800 |      |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1085 |            | 07:00:00 | 527.00 | 19800 |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1086 |            | 07:30:00 | 527.50 | 19820 | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1087 |            | 08:00:00 | 528.00 | 19840 | 1100 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1088 |            | 08:30:00 | 528.50 | 19860 | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1089 |            | 08:30:00 | 528.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1090 |            | 09:00:00 | 529.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1091 | 1998/07/28 | 10:00:00 | 530.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1092 |            | 10:00:00 | 530.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1093 |            | 10:15:00 | 530.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1094 |            | 10:30:00 | 530.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1095 |            | 10:45:00 | 530.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1096 |            | 11:00:00 | 531.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1097 |            | 11:15:00 | 531.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1098 |            | 11:30:00 | 531.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1099 |            | 11:45:00 | 531.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1100 |            | 12:00:00 | 532.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1101 |            | 12:00:00 | 532.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1102 |            | 12:15:00 | 532.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1103 |            | 12:40:00 | 532.67 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1104 |            | 13:00:00 | 533.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1105 |            | 13:15:00 | 533.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1106 |            | 13:30:00 | 533.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1107 |            | 13:30:00 | 533.50 | 0     | 700  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1108 |            | 14:00:00 | 534.00 | 1150  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1109 |            | 14:30:00 | 534.50 | 1500  | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1110 |            | 15:00:00 | 535.00 | 1800  | 1100 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1111 |            | 15:30:00 | 535.50 | 2100  | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1112 |            | 16:00:00 | 536.00 | 2550  | 1225 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1113 |            | 16:30:00 | 536.50 | 3050  | 1275 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1114 |            | 17:00:00 | 537.00 | 3620  | 1300 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1115 |            | 17:30:00 | 537.50 | 5100  | 1375 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1116 | 1998/07/28 | 18:00:00 | 538.00 | 4500  | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1117 |            | 18:30:00 | 538.50 | 4750  | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1118 |            | 19:00:00 | 539.00 | 4990  | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1119 |            | 19:30:00 | 539.50 | 5120  | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1120 |            | 19:30:00 | 539.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1121 |            | 20:00:00 | 540.00 | 5380  | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1122 |            | 20:30:00 | 540.50 | 5710  | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1123 |            | 21:00:00 | 541.00 | 6000  | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1124 |            | 21:20:00 | 541.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1125 |            | 22:00:00 | 542.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1126 |            | 22:00:00 | 542.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1127 | 1998/07/29 | 00:20:00 | 544.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1128 |            | 00:30:00 | 544.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1129 |            | 02:15:00 | 546.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1130 |            | 02:30:00 | 546.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1131 |            | 03:00:00 | 547.00 | 8950  | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1132 |            | 03:30:00 | 547.50 | 9600  | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1133 |            | 04:00:00 | 548.00 | 10300 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1134 |            | 04:30:00 | 548.50 | 10430 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1135 |            | 04:30:00 | 548.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1136 |            | 05:00:00 | 549.00 | 10450 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1137 |            | 05:30:00 | 549.50 | 10410 | 1550 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1138 | 1998/07/29 | 06:00:00 | 550.00 | 10390 | 1550 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1139 |            | 06:30:00 | 550.50 | 10250 | 1550 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1140 |            | 07:00:00 | 551.00 | 10700 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                             | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                           | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1141 | 1998/07/29 | 07:30:00 | 551.50 | 11400                                          | 1500 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1142 |            | 08:00:00 | 552.00 | 12880                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1143 |            | 08:30:00 | 552.50 | 14320                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1144 |            | 09:00:00 | 553.00 | 15920                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1145 |            | 09:30:00 | 553.50 | 16800                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1146 | 1998/07/29 | 10:00:00 | 554.00 | Coil to surface.                               |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1147 |            | 10:50:00 | 554.83 | Bleed off.                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1148 |            | 13:05:00 | 557.08 | Rig on wireline lubricator.                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1149 | 1998/07/29 | 14:25:00 | 558.42 | Pressure up to choke and bleed off lubricator. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1150 |            | 14:30:00 | 558.50 | 21460                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1151 |            | 15:00:00 | 559.00 | 21460                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1152 |            | 15:30:00 | 559.50 | 21460                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1153 |            | 16:00:00 | 560.00 | 21460                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1154 |            | 16:30:00 | 560.50 | 21460                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1155 |            | 17:00:00 | 561.00 | 21460                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1156 |            | 17:30:00 | 561.50 | 21460                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1157 | 1998/07/29 | 18:00:00 | 562.00 | 21460                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1158 |            | 18:30:00 | 562.50 | 21410                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1159 |            | 19:00:00 | 563.00 | 21410                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1160 |            | 19:30:00 | 563.50 | 21410                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1161 |            | 19:40:00 | 563.67 | Pressure test Dowell lines and BOP's.          |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1162 |            | 20:00:00 | 564.00 | Safety meeting held.                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1163 |            | 20:20:00 | 564.33 | Dowell begin to run in hole to do tubing wash. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1164 |            | 20:30:00 | 564.50 | 21070                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1165 |            | 21:00:00 | 565.00 | 13120                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1166 |            | 21:30:00 | 565.50 | 9385                                           | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1167 |            | 22:00:00 | 566.00 | 9150                                           | 1575 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1168 |            | 22:30:00 | 566.50 | 10600                                          | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1169 |            | 23:00:00 | 567.00 | 9850                                           | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1170 |            | 23:30:00 | 567.50 | 2210                                           | 950  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1171 | 1998/07/30 | 00:00:00 | 568.00 | 3210                                           | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1172 |            | 00:30:00 | 568.50 | 3140                                           | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1173 |            | 01:00:00 | 569.00 | 3020                                           | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1174 |            | 01:30:00 | 569.50 | 2900                                           | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1175 |            | 02:00:00 | 570.00 | 2900                                           | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1176 |            | 02:35:00 | 570.58 | Dowell on surface                              |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1177 |            | 03:00:00 | 571.00 | 8480                                           | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1178 |            | 03:30:00 | 571.50 | 9890                                           | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1179 |            | 04:00:00 | 572.00 | 10960                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1180 |            | 04:30:00 | 572.50 | 12310                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1181 |            | 05:00:00 | 573.00 | 13350                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1182 |            | 05:30:00 | 573.50 | 14560                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1183 | 1998/07/30 | 06:00:00 | 574.00 | 15560                                          | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1184 |            | 06:30:00 | 574.50 | 16600                                          | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1185 |            | 07:00:00 | 575.00 | 17600                                          | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1186 |            | 07:30:00 | 575.50 | 18500                                          | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1187 |            | 08:00:00 | 576.00 | 19400                                          | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1188 |            | 08:30:00 | 576.50 | 20300                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1189 |            | 09:00:00 | 577.00 | 20670                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1190 |            | 09:30:00 | 577.50 | 21300                                          | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1191 | 1998/07/30 | 10:00:00 | 578.00 | 21350                                          | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1192 |            | 10:30:00 | 578.50 | 21350                                          | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1193 |            | 11:00:00 | 579.00 | 21370                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1194 |            | 11:30:00 | 579.50 | 21370                                          | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1195 |            | 12:00:00 | 580.00 | 21380                                          | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1196 |            | 12:30:00 | 580.50 | 21380                                          | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1197 |            | 13:00:00 | 581.00 | 21390                                          | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |



Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                      | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|---------------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                    | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1255 | 1998/08/02 | 10:15:00 | 650.25 | Wireline to surface                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1256 |            | 10:25:00 | 650.42 | 12900                                                   |      |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1257 |            | 10:30:00 | 650.50 | Begin to bleed off tubing slowly.                       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1258 |            | 11:22:00 | 651.37 | Tubing T.S.T.M.                                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1259 |            | 11:35:00 | 651.58 | Begin to fill hole with fluid.                          |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1260 |            | 11:55:00 | 651.92 | Stop pumping.                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1261 |            | 12:00:00 | 652.00 | Shut in master and wing valves.                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1262 |            | 13:05:00 | 653.08 | Pressure test wireline.                                 |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1263 |            | 13:35:00 | 653.58 | Wireline run in the hole.                               |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1264 |            | 14:00:00 | 654.00 | 8500                                                    | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1265 |            | 14:30:00 | 654.50 | 9000                                                    | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1266 |            | 15:00:00 | 655.00 | 9350                                                    | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1267 |            | 15:30:00 | 655.50 | 9600                                                    | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1268 |            | 16:00:00 | 656.00 | 10000                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1269 |            | 16:30:00 | 656.50 | 10075                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1270 |            | 17:00:00 | 657.00 | 10100                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1271 |            | 17:30:00 | 657.50 | 10300                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1272 |            | 17:35:00 | 657.58 | Wireline at surface.                                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1273 | 1998/08/02 | 18:00:00 | 658.00 | 10330                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1274 |            | 18:30:00 | 658.50 | 10335                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1275 |            | 19:00:00 | 659.00 | 10340                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1276 |            | 19:20:00 | 659.33 | Bleed off tubing.                                       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1277 |            | 19:50:00 | 659.83 | Tubing at 0. Pressure test lubricator to retrieve plug. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1278 |            | 21:00:00 | 661.00 | 8820                                                    | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1279 |            | 21:05:00 | 661.08 | Pull prong.                                             |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1280 |            | 21:05:00 | 661.08 | 9200                                                    | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1281 |            | 21:25:00 | 661.42 | Prong at surface. Pressure test lubricator.             |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1282 |            | 21:50:00 | 661.83 | Run in to retrieve plug.                                |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1283 |            | 21:50:00 | 661.83 | 9470                                                    | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1284 |            | 22:00:00 | 662.00 | 9700                                                    | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1285 |            | 22:30:00 | 662.50 | 10210                                                   | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1286 |            | 22:45:00 | 662.75 | Plug at surface.                                        |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1287 |            | 22:45:00 | 662.75 | 11980                                                   | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1288 | 1998/08/03 | 01:00:00 | 665.00 | Run in with chemical cutter.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1289 |            | 01:00:00 | 665.00 | 12480                                                   | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1290 |            | 01:30:00 | 665.50 | 15930                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1291 |            | 02:00:00 | 666.00 | 16770                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1292 |            | 02:15:00 | 666.25 | Pump 2m3 of water into well.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1293 |            | 02:30:00 | 666.50 | 15140                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1294 |            | 03:00:00 | 667.00 | 15240                                                   | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1295 |            | 04:00:00 | 668.00 | 4300                                                    | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1296 |            | 04:30:00 | 668.50 | 3000                                                    | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1297 |            | 04:31:00 | 668.52 | Computalog on surface. Rig up Dowell.                   |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1298 | 1998/08/03 | 06:00:00 | 670.00 |                                                         | 300  |     |     |       |       |        |      |      |          |         | 0.00   | 0.00     | 560.71  |    |          |
| 1299 |            | 08:15:00 | 672.25 | Dowell rigged up                                        |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1300 |            | 08:25:00 | 672.42 | Begin to pressure test Dowell.                          |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1301 |            | 09:00:00 | 673.00 |                                                         | 550  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1302 |            | 09:02:00 | 673.03 | Bleed off to fix small leak.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1303 |            | 09:15:00 | 673.25 | Begin pressure test                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1304 | 1998/08/03 | 10:00:00 | 674.00 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1305 |            | 10:05:00 | 674.08 | Rig injector back on and re-pressure test.              |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1306 |            | 10:30:00 | 674.50 | Pressure test good start running in hole.               |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1307 |            | 10:30:00 | 674.50 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1308 |            | 11:00:00 | 675.00 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1309 |            | 11:30:00 | 675.50 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1310 |            | 12:00:00 | 676.00 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1311 |            | 13:00:00 | 677.00 |                                                         | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Custodian: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                             | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|----------------------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                           | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1312 | 1998/08/03 | 14:00:00 | 678.00 |                                                                | 600  |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1313 |            | 15:00:00 | 679.00 |                                                                | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1314 |            | 16:00:00 | 680.00 |                                                                | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1315 |            | 17:00:00 | 681.00 |                                                                | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1316 |            | 17:12:00 | 681.20 | Coil at surface.                                               |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1317 |            | 17:25:00 | 681.42 | Bleed off coil.                                                |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1318 | 1998/08/03 | 18:00:00 | 682.00 |                                                                | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1319 |            | 18:01:00 | 682.02 | B.O.P.s not holding. Pump water to kill well.                  |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1320 |            | 19:00:00 | 683.00 | 1930                                                           | 550  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1321 |            | 19:30:00 | 683.50 | 2100                                                           | 575  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1322 |            | 20:00:00 | 684.00 | 3430                                                           | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1323 |            | 20:30:00 | 684.50 | Chemical cutter retrieved.                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1324 |            | 21:30:00 | 685.50 | Rig on C.T.U. pressure test.                                   |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1325 |            | 22:00:00 | 686.00 | 800                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1326 |            | 22:30:00 | 686.50 | C.T.U. start to run in hole to push piece of tubing to bottom. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1327 |            | 22:30:00 | 686.50 | 10730                                                          | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1328 |            | 23:00:00 | 687.00 | 8430                                                           | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1329 | 1998/08/04 | 00:00:00 | 688.00 | 6750                                                           | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1330 |            | 00:30:00 | 688.50 | 5020                                                           | 850  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1331 |            | 01:00:00 | 689.00 | 7400                                                           | 850  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1332 |            | 01:30:00 | 689.50 | 4450                                                           | 850  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1333 |            | 02:00:00 | 690.00 | 2830                                                           | 850  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1334 |            | 02:30:00 | 690.50 | 5190                                                           | 850  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1335 |            | 02:35:00 | 690.58 | C.T.U. out of hole.                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1336 |            | 04:00:00 | 692.00 | Computalog running in hole with gauge ring.                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1337 |            | 04:00:00 | 692.00 | 9870                                                           | 900  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1338 |            | 04:30:00 | 692.50 | 11000                                                          | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1339 |            | 05:00:00 | 693.00 | 11710                                                          | 1050 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1340 |            | 05:30:00 | 693.50 | 12900                                                          | 1150 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1341 |            | 05:45:00 | 693.75 | Computalog at surface.                                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1342 | 1998/08/04 | 06:00:00 | 694.00 | 1150                                                           |      |     |     |       |       |        |      |      |          |         | 0.00   | 0.00     | 560.71  |    |          |
| 1343 |            | 06:30:00 | 694.50 | 1250                                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1344 |            | 07:00:00 | 695.00 | Open master and begin to monitor pressure.                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1345 |            | 07:00:00 | 695.00 | 15700                                                          | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1346 |            | 07:30:00 | 695.50 | 16700                                                          | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1347 |            | 08:00:00 | 696.00 | 17570                                                          | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1348 |            | 08:30:00 | 696.50 | 18400                                                          | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1349 |            | 09:00:00 | 697.00 | 19350                                                          | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1350 |            | 09:30:00 | 697.50 | 20100                                                          | 1300 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1351 | 1998/08/04 | 10:00:00 | 698.00 | 20870                                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1352 |            | 10:30:00 | 698.50 | 21400                                                          | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1353 |            | 10:30:00 | 698.50 | Shut in master valve and bleed off to rig in Dowell.           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1354 |            | 10:35:00 | 698.58 | Pump water down well to kill the well.                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1355 |            | 11:00:00 | 699.00 | 1400                                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1356 |            | 11:30:00 | 699.50 | 1400                                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1357 |            | 11:30:00 | 699.50 | Begin to bleed off casing.                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1358 |            | 12:00:00 | 700.00 | 500                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1359 |            | 12:30:00 | 700.50 | 400                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1360 |            | 12:45:00 | 700.75 | 350                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1361 |            | 12:45:00 | 700.75 | Shut in well to rig injector onto wellhead                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1362 |            | 13:00:00 | 701.00 | 400                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1363 |            | 13:00:00 | 701.00 | Pressure test Dowell.                                          |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1364 |            | 13:30:00 | 701.50 | 400                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1365 |            | 13:55:00 | 701.92 | Coil start in hole.                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1366 | 1998/08/04 | 14:00:00 | 702.00 | 425                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1367 |            | 15:00:00 | 703.00 | 600                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1368 |            | 16:00:00 | 704.00 | 625                                                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                                       | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|--------------------------------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                                     | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1369 | 1998/08/04 | 17:00:00 | 705.00 |                                                                          | 800  |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1370 | 1998/08/04 | 18:00:00 | 706.00 |                                                                          | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1371 |            | 19:00:00 | 707.00 |                                                                          | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1372 |            | 20:00:00 | 708.00 |                                                                          | 2200 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1373 |            | 21:00:00 | 709.00 |                                                                          | 2000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1374 |            | 21:15:00 | 709.25 | C.T.U on surface                                                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1375 |            | 22:00:00 | 710.00 |                                                                          | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1376 |            | 23:00:00 | 711.00 |                                                                          | 700  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1377 | 1998/08/05 | 00:00:00 | 712.00 |                                                                          | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1378 |            | 01:00:00 | 713.00 |                                                                          | 500  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1379 |            | 02:00:00 | 714.00 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1380 |            | 03:00:00 | 715.00 |                                                                          | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1381 |            | 04:00:00 | 716.00 |                                                                          | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1382 |            | 04:20:00 | 716.33 | Computalog at surface.                                                   |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1383 |            | 05:00:00 | 717.00 |                                                                          | 600  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1384 | 1998/08/05 | 06:00:00 | 718.00 |                                                                          | 800  |     |     |       |       |        |      |      |          |         | 0.00   | 0.00     | 560.71  |    |          |
| 1385 |            | 06:30:00 | 718.50 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1386 |            | 07:00:00 | 719.00 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1387 |            | 07:30:00 | 719.50 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1388 |            | 08:00:00 | 720.00 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1389 |            | 08:30:00 | 720.50 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1390 |            | 09:00:00 | 721.00 | 6950                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1391 |            | 09:30:00 | 721.50 | 7000                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1392 | 1998/08/05 | 10:00:00 | 722.00 | 7020                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1393 |            | 10:30:00 | 722.50 | 7100                                                                     | 375  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1394 |            | 11:00:00 | 723.00 | 7140                                                                     | 380  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1395 |            | 11:30:00 | 723.50 | 7220                                                                     | 380  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1396 |            | 12:00:00 | 724.00 | 7280                                                                     | 390  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1397 |            | 12:30:00 | 724.50 | 7400                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1398 |            | 13:00:00 | 725.00 | 7400                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1399 |            | 13:30:00 | 725.50 | 7490                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1400 | 1998/08/05 | 14:00:00 | 726.00 | 7520                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1401 |            | 14:30:00 | 726.50 | 7580                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1402 |            | 15:00:00 | 727.00 | 7690                                                                     | 425  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1403 |            | 15:30:00 | 727.50 | 7720                                                                     | 500  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1404 |            | 16:00:00 | 728.00 | 7790                                                                     | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1405 |            | 16:30:00 | 728.50 | 7840                                                                     | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1406 |            | 17:00:00 | 729.00 | 7900                                                                     | 350  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1407 |            | 17:10:00 | 729.17 | Shut in master valve and bleed off top of wellhead to rig in Computalog. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1408 |            | 17:25:00 | 729.42 | Pressure test lubricator.                                                |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1409 | 1998/08/05 | 18:05:00 | 730.08 | Bleed Dowell off and wireline start in hole.                             |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1410 |            | 18:30:00 | 730.50 | 8100                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1411 |            | 19:00:00 | 731.00 | 8300                                                                     | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1412 |            | 19:15:00 | 731.25 | Wireline at surface                                                      |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1413 |            | 19:30:00 | 731.50 |                                                                          | 575  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1414 |            | 20:00:00 | 732.00 |                                                                          | 500  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1415 |            | 20:30:00 | 732.50 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1416 |            | 21:00:00 | 733.00 |                                                                          | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1417 |            | 21:30:00 | 733.50 |                                                                          | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1418 | 1998/08/05 | 22:00:00 | 734.00 |                                                                          | 390  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1419 |            | 22:10:00 | 734.17 | Hold safety meeting.                                                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1420 |            | 22:25:00 | 734.42 | Begin to pressure test Dowell.                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1421 |            | 22:30:00 | 734.50 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1422 |            | 23:00:00 | 735.00 |                                                                          | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1423 | 1998/08/06 | 00:00:00 | 736.00 | 5750                                                                     | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1424 |            | 00:30:00 | 736.50 | 5000                                                                     | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1425 |            | 01:00:00 | 737.00 | 5050                                                                     | 450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |



Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt    | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag  | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1483 | 1998/08/07 | 21:15:00 | 781.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1484 |            | 21:30:00 | 781.50 |       |      |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1485 |            | 22:00:00 | 782.00 | 5150  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1486 |            | 22:30:00 | 782.50 | 2620  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1487 |            | 23:00:00 | 783.00 | 4370  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1488 |            | 23:30:00 | 783.50 | 4610  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1489 | 1998/08/08 | 00:00:00 | 784.00 | 4540  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1490 |            | 00:30:00 | 784.50 | 4150  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1491 |            | 01:00:00 | 785.00 | 3700  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1492 |            | 01:30:00 | 785.50 | 3950  | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1493 |            | 01:45:00 | 785.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1494 |            | 04:00:00 | 788.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1495 |            | 04:15:00 | 788.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1496 |            | 05:30:00 | 789.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1497 |            | 05:30:00 | 789.50 | 14440 | 950  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1498 | 1998/08/08 | 06:00:00 | 790.00 | 15480 | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1499 |            | 06:30:00 | 790.50 | 16710 | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1500 |            | 07:00:00 | 791.00 | 17730 | 1000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1501 |            | 07:30:00 | 791.50 | 18830 | 975  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1502 |            | 08:00:00 | 792.00 | 19680 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1503 |            | 08:30:00 | 792.50 | 20350 | 775  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1504 |            | 09:00:00 | 793.00 | 20850 | 750  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1505 |            | 09:30:00 | 793.50 | 21490 | 700  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1506 |            | 10:00:00 | 794.00 | 21710 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1507 |            | 10:30:00 | 794.50 | 21750 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1508 |            | 11:00:00 | 795.00 | 21750 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1509 |            | 11:30:00 | 795.50 | 21770 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1510 | 1998/08/08 | 12:00:00 | 796.00 | 21780 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1511 |            | 12:30:00 | 796.50 | 21780 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1512 |            | 13:00:00 | 797.00 | 21840 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1513 |            | 13:30:00 | 797.50 | 21790 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1514 |            | 14:00:00 | 798.00 | 21790 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1515 |            | 14:15:00 | 798.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1516 |            | 15:00:00 | 799.00 | 19000 | 800  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1517 |            | 17:00:00 | 801.00 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1518 |            | 17:30:00 | 801.50 | 5130  | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1519 | 1998/08/08 | 18:00:00 | 802.00 | 6470  | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1520 |            | 18:30:00 | 802.50 | 7620  | 350  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1521 |            | 19:00:00 | 803.00 | 9140  | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1522 |            | 19:30:00 | 803.50 | 10390 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1523 |            | 20:00:00 | 804.00 | 11830 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1524 |            | 20:30:00 | 804.50 | 12860 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1525 |            | 21:00:00 | 805.00 | 14110 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1526 |            | 21:30:00 | 805.50 | 15140 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1527 |            | 22:00:00 | 806.00 | 16230 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1528 |            | 22:30:00 | 806.50 | 17230 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1529 |            | 23:00:00 | 807.00 | 18160 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1530 |            | 23:30:00 | 807.50 | 19160 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1531 | 1998/08/09 | 00:00:00 | 808.00 | 19890 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1532 |            | 00:30:00 | 808.50 | 20640 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1533 |            | 01:00:00 | 809.00 | 21350 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1534 |            | 01:30:00 | 809.50 | 21760 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1535 |            | 02:00:00 | 810.00 | 21770 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1536 |            | 02:30:00 | 810.50 | 21780 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1537 |            | 03:00:00 | 811.00 | 21780 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1538 |            | 03:30:00 | 811.50 | 21780 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1539 |            | 04:00:00 | 812.00 | 21790 | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                             | Pc   | RTR | WHT | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|------------------------------------------------|------|-----|-----|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                           | kPag | kPa | C   | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1540 | 1998/08/09 | 04:30:00 | 812.50 | 21790                                          | 250  |     |     |        | 0.000  |        |      |      |          |         |        |          |         |    |          |
| 1541 |            | 05:00:00 | 813.00 | 21790                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1542 |            | 05:30:00 | 813.50 | 21780                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1543 | 1998/08/09 | 06:00:00 | 814.00 | 21800                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1544 |            | 06:30:00 | 814.50 | 21800                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1545 |            | 07:00:00 | 815.00 | 21810                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1546 |            | 07:30:00 | 815.50 | 21810                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1547 |            | 08:00:00 | 816.00 | 21820                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1548 |            | 08:20:00 | 816.33 | Shut master begin pressure testing.            |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1549 |            | 08:50:00 | 816.83 | Pump water to kill well.                       |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1550 |            | 08:50:00 | 816.83 | 21820                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1551 |            | 09:00:00 | 817.00 | 19000                                          | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1552 |            | 09:30:00 | 817.50 | 4700                                           | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1553 |            | 10:30:00 | 818.50 | 3900                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1554 |            | 11:00:00 | 819.00 | 4680                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1555 |            | 11:20:00 | 819.33 | Start running in hole with C.T.U.              |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1556 |            | 11:30:00 | 819.50 | 5910                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1557 | 1998/08/09 | 12:00:00 | 820.00 | 7290                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1558 |            | 12:30:00 | 820.50 | 8320                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1559 |            | 13:00:00 | 821.00 | 5960                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1560 |            | 13:30:00 | 821.50 | 4700                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1561 |            | 14:00:00 | 822.00 | 4070                                           | 200  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1562 |            | 14:30:00 | 822.50 | 4420                                           | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1563 |            | 15:00:00 | 823.00 | 4810                                           | 250  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1564 |            | 15:30:00 | 823.50 | 5850                                           | 375  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1565 |            | 16:00:00 | 824.00 | 6030                                           | 375  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1566 |            | 16:30:00 | 824.50 | 6450                                           | 375  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1567 |            | 17:00:00 | 825.00 | 6540                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1568 |            | 17:30:00 | 825.50 | 6640                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1569 | 1998/08/09 | 18:00:00 | 826.00 | 6790                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1570 |            | 19:00:00 | 827.00 | 6530                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1571 |            | 19:30:00 | 827.50 | 7710                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1572 |            | 20:00:00 | 828.00 | 9450                                           | 400  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1573 |            | 20:30:00 | 828.50 | Safety meeting held.                           |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1574 |            | 21:00:00 | 829.00 | 12150                                          | 650  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1575 |            | 21:30:00 | 829.50 | 13620                                          | 900  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1576 |            | 21:55:00 | 829.92 | Dowell started to pump acid.                   |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1577 |            | 22:00:00 | 830.00 | 14890                                          | 900  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1578 |            | 22:30:00 | 830.50 | 16010                                          | 950  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1579 |            | 23:00:00 | 831.00 | 17490                                          | 950  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1580 |            | 23:30:00 | 831.50 | 15500                                          | 950  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1581 | 1998/08/10 | 00:00:00 | 832.00 | 1610                                           | 950  |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1582 |            | 00:30:00 | 832.50 | 11810                                          | 1200 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1583 |            | 01:00:00 | 833.00 | 12510                                          | 1300 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1584 |            | 01:30:00 | 833.50 | Safety meeting held.                           |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1585 |            | 02:00:00 | 834.00 | Pressure up to choke.                          |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1586 |            | 02:00:00 | 834.00 | 14220                                          | 1400 |     |     | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1627.05 | 0.00   | 0.00     | 560.71  |    |          |
| 1587 |            | 02:05:00 | 834.08 | Open to flow on a 20/64 (7.94mm) choke.        |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1588 |            | 02:07:00 | 834.12 | Open choke to 10.32mm.                         |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1589 |            | 02:15:00 | 834.25 | 17660                                          | 1450 |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1590 |            | 02:15:00 | 834.25 | Open choke to 12.70mm.                         |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1591 |            | 02:16:00 | 834.27 | Fluid to surface.                              |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1592 |            | 02:17:00 | 834.28 | Meter in service with a 82.55mm orifice plate. |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1593 |            | 02:20:00 | 834.33 | 14000                                          | 1450 |     |     | 12.700 | 82.550 | 1600   | 19.0 | 5.0  | 258.03   | 1630.63 |        |          |         |    |          |
| 1594 |            | 02:26:00 | 834.43 | Increase choke to 15.08mm.                     |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |
| 1595 |            | 02:30:00 | 834.50 | 9120                                           | 1550 |     |     | 15.080 | 82.550 | 1000   | 16.0 | 7.0  | 188.06   | 1632.18 |        |          |         |    |          |
| 1596 |            | 02:32:00 | 834.53 | Increase choke to 18.25mm.                     |      |     |     |        |        |        |      |      |          |         |        |          |         |    |          |

# FieldNotes

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE



| Row  | Date       | Clk Tim  | C Time | Pt                                                 | Pc   | RTR | WHT  | Choke  | Orif   | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|----------------------------------------------------|------|-----|------|--------|--------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                               | kPag | kPa | C    | mm     | mm     | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1597 | 1998/08/10 | 02:35:00 | 834.58 | 5320                                               | 1600 |     |      | 18.250 | 82.550 | 350    | 8.0  | 11.0 | 83.28    | 1632.65 |        |          |         | 3  |          |
| 1598 |            | 02:45:00 | 834.75 | 5490                                               | 1800 |     |      | 18.250 | 82.550 | 1150   | 2.0  | 16.0 | 69.73    | 1633.18 |        |          |         | 3  |          |
| 1599 |            | 02:55:00 | 834.92 |                                                    |      |     |      |        |        |        |      |      |          |         |        |          |         | 5  | 56000    |
| 1600 |            | 03:00:00 | 835.00 | 6490                                               | 1950 |     | 17.0 | 18.250 | 82.550 | 1400   | 2.0  | 18.0 | 76.36    | 1633.95 | 12.32  | 295.68   | 573.03  | 4  | 46000    |
| 1601 |            | 03:05:00 | 835.08 |                                                    |      |     |      |        |        |        |      |      |          |         | 0.00   | 0.00     | 573.03  | 4  | 40000    |
| 1602 |            | 03:10:00 | 835.17 |                                                    |      |     |      |        |        |        |      |      |          |         |        |          |         | 5  | 32000    |
| 1603 |            | 03:15:00 | 835.25 | 7200                                               | 2250 |     | 20.0 | 18.250 | 82.550 | 2100   | 3.0  | 19.0 | 114.01   | 1634.94 |        |          |         | 5  | 28000    |
| 1604 |            | 03:16:00 | 835.27 | Decrease backpressure in unit.                     |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1605 |            | 03:30:00 | 835.50 | 7540                                               | 2550 |     | 21.0 | 18.250 | 82.550 | 1100   | 8.0  | 20.0 | 135.57   | 1636.24 |        |          |         | 5  | 30000    |
| 1606 |            | 03:35:00 | 835.58 |                                                    |      |     |      | 0.000  | 0.000  | 0      | 0.0  | 0.0  | 0.00     | 1636.24 | 12.76  | 612.48   | 585.79  | 5  | 30000    |
| 1607 |            | 03:38:00 | 835.60 | Shut in wing valve. CTU start to come out of hole. |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1608 |            | 03:40:00 | 835.67 | 13380                                              | 2550 |     |      |        |        |        |      |      |          |         | 0.00   | 0.00     | 585.79  |    |          |
| 1609 |            | 03:45:00 | 835.75 | 13800                                              | 2800 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1610 |            | 04:00:00 | 836.00 | 11870                                              | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1611 |            | 04:15:00 | 836.25 | 8200                                               | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1612 |            | 04:30:00 | 836.50 | 5630                                               | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1613 |            | 05:00:00 | 837.00 | 3450                                               | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1614 |            | 05:30:00 | 837.50 | 5530                                               | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1615 |            | 05:45:00 | 837.75 | Safety meeting held.                               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1616 | 1998/08/10 | 06:00:00 | 838.00 | 4630                                               | 2700 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1617 |            | 06:30:00 | 838.50 | 3260                                               | 2650 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1618 |            | 07:00:00 | 839.00 | 4330                                               | 2650 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1619 |            | 07:30:00 | 839.50 |                                                    | 1950 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1620 |            | 08:00:00 | 840.00 | 6410                                               | 1900 |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1621 |            | 08:00:00 | 840.00 | Tools at surface. Rig up packer.                   |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1622 |            | 08:30:00 | 840.50 |                                                    |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1623 |            | 09:00:00 | 841.00 |                                                    | 750  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1624 |            | 09:30:00 | 841.50 | 10010                                              | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1625 |            | 10:00:00 | 842.00 | 11050                                              | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1626 |            | 10:30:00 | 842.50 | 12500                                              | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1627 |            | 11:00:00 | 843.00 | 13170                                              | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1628 |            | 11:30:00 | 843.50 | 14110                                              | 550  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1629 | 1998/08/10 | 12:00:00 | 844.00 | 14850                                              | 500  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1630 |            | 12:30:00 | 844.50 | 15620                                              | 450  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1631 |            | 13:00:00 | 845.00 | 16230                                              | 400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1632 |            | 13:01:00 | 845.02 | Shut in master to check for leaking.               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1633 |            | 13:30:00 | 845.50 | 0                                                  | 400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1634 |            | 14:00:00 | 846.00 | 0                                                  | 400  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1635 |            | 14:30:00 | 846.50 | 0                                                  | 350  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1636 |            | 15:00:00 | 847.00 | 0                                                  | 350  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1637 |            | 15:30:00 | 847.50 | 18000                                              | 350  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1638 |            | 16:00:00 | 848.00 | 18330                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1639 |            | 16:30:00 | 848.50 | 18600                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1640 |            | 17:00:00 | 849.00 | 18810                                              | 250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1641 |            | 17:30:00 | 849.50 | 19100                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1642 | 1998/08/10 | 18:00:00 | 850.00 | 19380                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1643 |            | 18:30:00 | 850.50 | 19540                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1644 |            | 19:00:00 | 851.00 | 19920                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1645 |            | 19:30:00 | 851.50 | 20150                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1646 |            | 20:00:00 | 852.00 | 20410                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1647 |            | 20:30:00 | 852.50 | 20580                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1648 |            | 20:30:00 | 852.50 | Function tested ESD.                               |      |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1649 |            | 21:00:00 | 853.00 | 20910                                              | 300  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1650 |            | 21:30:00 | 853.50 | 21220                                              | 250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1651 | 1998/08/10 | 22:00:00 | 854.00 | 21440                                              | 250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1652 |            | 22:30:00 | 854.50 | 21530                                              | 250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |
| 1653 |            | 23:00:00 | 855.00 | 21540                                              | 250  |     |      |        |        |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                        | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-----------------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                      | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1654 | 1998/08/10 | 23:30:00 | 855.50 | 21540                                                     | 250  |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1655 | 1998/08/11 | 00:00:00 | 856.00 | 21540                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1656 |            | 00:30:00 | 856.50 | 21540                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1657 |            | 01:00:00 | 857.00 | 21550                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1658 |            | 01:30:00 | 857.50 | 21550                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1659 |            | 02:00:00 | 858.00 | 21550                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1660 |            | 02:30:00 | 858.50 | 21550                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1661 |            | 03:00:00 | 859.00 | 21550                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1662 |            | 03:30:00 | 859.50 | 21560                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1663 |            | 04:00:00 | 860.00 | 21560                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1664 |            | 04:30:00 | 860.50 | 21560                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1665 |            | 05:00:00 | 861.00 | 21560                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1666 |            | 05:30:00 | 861.50 | 21570                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1667 | 1998/08/11 | 06:00:00 | 862.00 | 21570                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1668 |            | 06:30:00 | 862.50 | 21570                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1669 |            | 07:00:00 | 863.00 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1670 |            | 07:10:00 | 863.17 | Bleed off well head to rig up Dowell.                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1671 |            | 07:30:00 | 863.50 | Wait for wind to die down.                                |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1672 |            | 07:30:00 | 863.50 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1673 |            | 08:00:00 | 864.00 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1674 |            | 08:30:00 | 864.50 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1675 |            | 09:00:00 | 865.00 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1676 |            | 09:30:00 | 865.50 |                                                           | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1677 |            | 10:00:00 | 866.00 | 21600                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1678 |            | 10:30:00 | 866.50 | 21590                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1679 |            | 11:00:00 | 867.00 | 21590                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1680 |            | 11:30:00 | 867.50 | 21590                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1681 | 1998/08/11 | 12:00:00 | 868.00 | 21590                                                     | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1682 |            | 12:30:00 | 868.50 | Pump water to kill well.                                  |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1683 |            | 13:30:00 | 869.50 | Rig up tools and injector.                                |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1684 |            | 15:00:00 | 871.00 | 3590                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1685 |            | 15:30:00 | 871.50 | Run in with coil.                                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1686 |            | 15:30:00 | 871.50 | 4600                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1687 |            | 16:00:00 | 872.00 | 3590                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1688 |            | 16:30:00 | 872.50 | 4450                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1689 |            | 17:00:00 | 873.00 | 4390                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1690 |            | 17:30:00 | 873.50 | 4030                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1691 | 1998/08/11 | 18:00:00 | 874.00 | 3300                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1692 |            | 18:30:00 | 874.50 | 3200                                                      | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1693 |            | 18:30:00 | 874.50 | Shut casing bleed off.                                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1694 |            | 19:00:00 | 875.00 | 3280                                                      | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1695 |            | 19:30:00 | 875.50 | 3480                                                      | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1696 |            | 20:00:00 | 876.00 | 3710                                                      | 200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1697 |            | 20:30:00 | 876.50 | 4000                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1698 |            | 21:00:00 | 877.00 | 4030                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1699 |            | 21:30:00 | 877.50 | 4050                                                      | 250  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1700 |            | 22:00:00 | 878.00 | 4120                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1701 |            | 22:30:00 | 878.50 | 4470                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1702 |            | 23:00:00 | 879.00 | 4500                                                      | 300  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1703 |            | 23:30:00 | 879.50 | 3940                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1704 | 1998/08/12 | 00:00:00 | 880.00 | 3450                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1705 |            | 00:30:00 | 880.50 | 3480                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1706 |            | 01:00:00 | 881.00 | 3470                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1707 |            | 01:30:00 | 881.50 | 3470                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1708 |            | 01:35:00 | 881.58 | Dowell to surface. Prepare to rig on wireline lubricator. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1709 |            | 02:00:00 | 882.00 | 4040                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1710 |            | 02:30:00 | 882.50 | 5250                                                      | 400  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                                                | Pc   | RTR                                                      | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-----------------------------------------------------------------------------------|------|----------------------------------------------------------|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                                              | kPag | kPa                                                      | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1711 | 1998/08/12 | 02:50:00 | 882.83 |                                                                                   |      | Shut in master to valve to take off wireline lubricator. |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1712 |            | 03:30:00 | 883.50 |                                                                                   |      | Opened master and continue buildups.                     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1713 |            | 03:30:00 | 883.50 | 6690                                                                              | 400  |                                                          |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1714 |            | 04:00:00 | 884.00 | 7770                                                                              | 400  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1715 |            | 04:30:00 | 884.50 | 8690                                                                              | 400  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1716 |            | 05:00:00 | 885.00 | 9520                                                                              | 400  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1717 |            | 05:30:00 | 885.50 | 10450                                                                             | 400  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1718 | 1998/08/12 | 06:00:00 | 886.00 | 10910                                                                             | 450  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1719 |            | 06:30:00 | 886.50 | 11710                                                                             | 450  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1720 |            | 07:00:00 | 887.00 | 12350                                                                             | 450  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1721 |            | 07:30:00 | 887.50 | 12840                                                                             | 475  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1722 |            | 08:00:00 | 888.00 | 13470                                                                             | 475  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1723 |            | 08:30:00 | 888.50 | 14020                                                                             | 450  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1724 |            | 09:00:00 | 889.00 | 14410                                                                             | 400  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1725 |            | 09:30:00 | 889.50 | 14850                                                                             | 350  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1726 |            | 10:00:00 | 890.00 | 15300                                                                             | 250  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1727 |            | 10:30:00 | 890.50 | 15720                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1728 |            | 11:00:00 | 891.00 | 16150                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1729 |            | 11:30:00 | 891.50 | 16530                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1730 | 1998/08/12 | 12:00:00 | 892.00 | 16920                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1731 |            | 12:30:00 | 892.50 | 17370                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1732 |            | 13:00:00 | 893.00 | 17550                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1733 |            | 13:30:00 | 893.50 | 18050                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1734 |            | 14:00:00 | 894.00 | 18370                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1735 |            | 14:00:00 | 894.00 | Hold safety meeting. Rams failed pressure test. Take BOPsoff wellhead to rebuild. |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1736 |            | 16:00:00 | 896.00 | 18610                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1737 |            | 16:30:00 | 896.50 | 19820                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1738 |            | 17:00:00 | 897.00 | 20140                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1739 |            | 17:30:00 | 897.50 | 20340                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1740 | 1998/08/12 | 18:00:00 | 898.00 | 20570                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1741 |            | 18:30:00 | 898.50 | 21020                                                                             | 150  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1742 |            | 19:00:00 | 899.00 | 21300                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1743 |            | 19:30:00 | 899.50 | 21580                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1744 |            | 20:00:00 | 900.00 | 21640                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1745 |            | 20:30:00 | 900.50 | 21650                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1746 |            | 21:00:00 | 901.00 | 21650                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1747 |            | 21:30:00 | 901.50 | 21660                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1748 |            | 22:00:00 | 902.00 | 21660                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1749 |            | 22:30:00 | 902.50 | 21660                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1750 |            | 23:00:00 | 903.00 | 21660                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1751 |            | 23:26:00 | 903.43 | Dowell start pumping to kill well.                                                |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1752 |            | 23:30:00 | 903.50 | 21660                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1753 | 1998/08/13 | 00:00:00 | 904.00 | 10000                                                                             | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1754 |            | 00:25:00 | 904.42 | Shut in Master. Rig in wireline to deploy dummy string.                           |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1755 |            | 01:15:00 | 905.25 | Rig in Dowell to run in hole with tools.                                          |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1756 |            | 02:05:00 | 906.08 | Dowell start to run in hole.                                                      |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1757 |            | 02:30:00 | 906.50 | 3010                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1758 |            | 03:00:00 | 907.00 | 2020                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1759 |            | 03:30:00 | 907.50 | 2130                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1760 |            | 04:00:00 | 908.00 | 1680                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1761 |            | 04:30:00 | 908.50 | 1550                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1762 |            | 05:00:00 | 909.00 | 1400                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1763 |            | 05:30:00 | 909.50 | 1400                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1764 | 1998/08/13 | 06:00:00 | 910.00 | 1050                                                                              | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1765 |            | 06:00:00 | 910.00 | Run coil to surface.                                                              |      |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1766 |            | 06:30:00 | 910.50 | 400                                                                               | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 1767 |            | 07:00:00 | 911.00 | 650                                                                               | 200  |                                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time | Pt                                                    | Pc   | RTR | WHT  | Choke  | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|--------|-------------------------------------------------------|------|-----|------|--------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr     | kPag                                                  | kPag | kPa | C    | mm     | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 1768 | 1998/08/13 | 07:30:00 | 911.50 | 400                                                   | 150  |     |      |        | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 1769 |            | 08:00:00 | 912.00 | 350                                                   | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1770 |            | 08:00:00 | 912.00 | Coil at surface.                                      |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1771 | 1998/08/13 | 10:00:00 | 914.00 | 860                                                   | 300  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1772 |            | 10:30:00 | 914.50 | 1600                                                  | 300  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1773 |            | 10:45:00 | 914.75 | Rig off Dowell and rig up Bonnett's.                  |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1774 |            | 14:20:00 | 918.33 | Pressure test Bonnett's B.O.P.'s.                     |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1775 |            | 15:00:00 | 919.00 | Bleed off pressure test.                              |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1776 |            | 15:10:00 | 919.17 | 9370                                                  | 250  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1777 |            | 15:30:00 | 919.50 | 9820                                                  | 250  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1778 |            | 16:00:00 | 920.00 | 10500                                                 | 225  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1779 |            | 16:30:00 | 920.50 | 11100                                                 | 225  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1780 |            | 17:00:00 | 921.00 | 11250                                                 | 225  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1781 |            | 17:30:00 | 921.50 | 12300                                                 | 225  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1782 | 1998/08/13 | 18:00:00 | 922.00 | 12870                                                 | 210  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1783 |            | 18:30:00 | 922.50 | 13470                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1784 |            | 19:00:00 | 923.00 | 13970                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1785 |            | 19:30:00 | 923.50 | 14560                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1786 |            | 20:00:00 | 924.00 | 15200                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1787 |            | 20:30:00 | 924.50 | Safety meeting held.                                  |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1788 |            | 20:45:00 | 924.75 | Pressure test wireline bop's and lubricator.          |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1789 |            | 21:15:00 | 925.25 | Open Master valve and start to run in with wireline.  |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1790 |            | 21:30:00 | 925.50 | 16490                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1791 |            | 22:00:00 | 926.00 | 16890                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1792 |            | 22:05:00 | 926.08 | Wireline out of hole.                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1793 |            | 22:15:00 | 926.25 | Wireline run in with recorders.                       |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1794 |            | 22:15:00 | 926.25 | 17140                                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1795 |            | 22:30:00 | 926.50 | 17320                                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1796 |            | 23:00:00 | 927.00 | 17690                                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1797 |            | 23:30:00 | 927.50 | 18080                                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1798 |            | 23:30:00 | 927.50 | Rig out wireline. Wait for daylight to begin to flow. |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1799 | 1998/08/14 | 01:15:00 | 929.25 | 19350                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1800 |            | 01:30:00 | 929.50 | 19470                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1801 |            | 02:00:00 | 930.00 | 19860                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1802 |            | 02:30:00 | 930.50 | 20040                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1803 |            | 03:00:00 | 931.00 | 20260                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1804 |            | 03:30:00 | 931.50 | 20890                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1805 |            | 04:00:00 | 932.00 | 21340                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1806 |            | 04:30:00 | 932.50 | 21380                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1807 |            | 05:00:00 | 933.00 | 21390                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1808 |            | 05:30:00 | 933.50 | 21400                                                 | 200  |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1809 | 1998/08/14 | 06:00:00 | 934.00 | 21400                                                 | 200  |     |      | 0.000  | 0.000 | 0      | 0.0  | 0.0  | 0.00     | 1636.24 | 0.00   | 0.00     | 585.79  |    |          |
| 1810 |            | 06:00:00 | 934.00 | Safety meeting held.                                  |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1811 |            | 06:13:00 | 934.22 | Pressure up to choke.                                 |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1812 |            | 06:15:00 | 934.25 | Open to flow on a 12.70mm choke.                      |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1813 |            | 06:18:00 | 934.30 | Increase choke to 15.08mm.                            |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1814 |            | 06:22:00 | 934.37 | Increase choke to 20.63mm.                            |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1815 |            | 06:25:00 | 934.42 | 3200                                                  | 200  |     | 5.0  |        |       |        |      |      |          |         |        |          |         |    |          |
| 1816 |            | 06:26:00 | 934.43 | Shut in well. Suspect hydrate.                        |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1817 |            | 06:30:00 | 934.50 | 8500                                                  | 200  |     |      | 0.000  | 0.000 | 0      | 0.0  | 0.0  | 0.00     | 1636.24 | 0.00   | 0.00     | 585.79  |    |          |
| 1818 |            | 06:33:00 | 934.55 | Open choke on a 9.52mm.                               |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1819 |            | 06:35:00 | 934.58 | 9100                                                  | 200  |     |      | 9.520  |       |        |      |      |          |         |        |          |         |    |          |
| 1820 |            | 06:36:00 | 934.60 | Fluid to surface.                                     |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1821 |            | 06:37:00 | 934.62 | Increase choke to 11.90mm.                            |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |
| 1822 |            | 06:40:00 | 934.67 | 9390                                                  | 200  |     | 12.0 | 11.900 |       |        |      |      |          |         |        |          |         |    |          |
| 1823 |            | 06:45:00 | 934.75 | 10860                                                 | 200  |     | 14.0 | 11.900 |       |        |      |      |          |         |        |          |         |    |          |
| 1824 |            | 06:55:00 | 934.92 | Meter in service with a 3.250(82.55mm) orifice plate. |      |     |      |        |       |        |      |      |          |         |        |          |         |    |          |

























Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk Tim  | C Time  | Pt    | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|---------|-------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr      | kPag  | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 2509 | 1998/08/26 | 09:00:00 | 1225.00 | 21570 | 1280 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 2510 |            | 09:30:00 | 1225.50 | 21550 | 1300 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2511 | 1998/08/26 | 10:00:00 | 1226.00 | 21550 | 1320 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2512 |            | 10:30:00 | 1226.50 | 21550 | 1340 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2513 |            | 11:00:00 | 1227.00 | 21540 | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2514 |            | 11:30:00 | 1227.50 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2515 |            | 12:00:00 | 1228.00 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2516 |            | 12:30:00 | 1228.50 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2517 |            | 13:00:00 | 1229.00 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2518 |            | 13:30:00 | 1229.50 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2519 | 1998/08/26 | 14:00:00 | 1230.00 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2520 |            | 14:30:00 | 1230.50 | 21540 | 1425 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2521 |            | 15:00:00 | 1231.00 | 21530 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2522 |            | 15:30:00 | 1231.50 | 21530 | 1500 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2523 |            | 16:00:00 | 1232.00 | 21530 | 1580 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2524 |            | 16:30:00 | 1232.50 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2525 |            | 17:00:00 | 1233.00 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2526 |            | 17:30:00 | 1233.50 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2527 | 1998/08/26 | 18:00:00 | 1234.00 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2528 |            | 18:30:00 | 1234.50 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2529 |            | 19:00:00 | 1235.00 | 21530 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2530 |            | 19:30:00 | 1235.50 | 21520 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2531 |            | 20:00:00 | 1236.00 | 21520 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2532 |            | 20:30:00 | 1236.50 | 21520 | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2533 |            | 21:00:00 | 1237.00 | 21520 | 1625 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2534 |            | 21:30:00 | 1237.50 | 21520 | 1625 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2535 |            | 22:00:00 | 1238.00 | 21520 | 1625 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2536 |            | 22:30:00 | 1238.50 | 21520 | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2537 |            | 23:00:00 | 1239.00 | 21520 | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2538 |            | 23:30:00 | 1239.50 | 21520 | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2539 | 1998/08/27 | 00:00:00 | 1240.00 | 21520 | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2540 |            | 00:30:00 | 1240.50 | 21520 | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2541 |            | 01:00:00 | 1241.00 | 21500 | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2542 |            | 01:30:00 | 1241.50 | 21500 | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2543 |            | 02:00:00 | 1242.00 | 21500 | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2544 |            | 02:30:00 | 1242.50 | 21500 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2545 |            | 03:00:00 | 1243.00 | 21500 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2546 |            | 03:30:00 | 1243.50 | 21500 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2547 |            | 04:00:00 | 1244.00 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2548 |            | 04:30:00 | 1244.50 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2549 |            | 05:00:00 | 1245.00 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2550 |            | 05:30:00 | 1245.50 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2551 | 1998/08/27 | 06:00:00 | 1246.00 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2552 |            | 06:30:00 | 1246.50 | 21490 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2553 |            | 07:00:00 | 1247.00 | 21480 | 1775 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2554 |            | 07:30:00 | 1247.50 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2555 |            | 08:00:00 | 1248.00 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2556 |            | 08:30:00 | 1248.50 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2557 |            | 09:00:00 | 1249.00 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2558 |            | 09:30:00 | 1249.50 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2559 |            | 10:00:00 | 1250.00 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2560 |            | 10:30:00 | 1250.50 | 21470 | 1790 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2561 |            | 11:00:00 | 1251.00 | 21470 | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2562 |            | 11:30:00 | 1251.50 | 21470 | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2563 | 1998/08/27 | 12:00:00 | 1252.00 | 21470 | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2564 |            | 12:30:00 | 1252.50 | 21470 | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2565 |            | 13:00:00 | 1253.00 | 21470 | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time  | Pt                                 | Pc   | RTR | WHT | Choke | Orlf  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH      | SALINITY |
|------|------------|----------|---------|------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|---------|----------|
|      | yy/mm/dd   | clock    | hr      | kPag                               | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |         | ppm      |
| 2566 | 1998/08/27 | 13:30:00 | 1253.50 | 21470                              | 1800 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |         |          |
| 2567 |            | 14:00:00 | 1254.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2568 |            | 14:30:00 | 1254.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2569 |            | 15:00:00 | 1255.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2570 |            | 15:30:00 | 1255.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2571 |            | 16:00:00 | 1256.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2572 |            | 16:30:00 | 1256.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2573 |            | 17:00:00 | 1257.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2574 |            | 17:30:00 | 1257.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2575 | 1998/08/27 | 18:00:00 | 1258.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2576 |            | 18:00:00 | 1258.00 | Begin blowing down coil unit.      |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2577 |            | 18:30:00 | 1258.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2578 |            | 18:45:00 | 1258.75 | Finished blowing down coil         |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2579 |            | 19:00:00 | 1259.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        | 1.45     | 0.71    | 1605.56 |          |
| 2580 |            | 19:30:00 | 1259.50 | 21470                              | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2581 |            | 19:35:00 | 1259.58 | Bleed off casing.                  |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2582 |            | 20:00:00 | 1260.00 | 21470                              | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2583 |            | 20:30:00 | 1260.50 | 21470                              | 1200 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2584 |            | 21:00:00 | 1261.00 | 21470                              | 1250 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2585 |            | 21:30:00 | 1261.50 | 21470                              | 1350 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2586 | 1998/08/27 | 22:00:00 | 1262.00 | 21470                              | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2587 |            | 22:30:00 | 1262.50 | 21470                              | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2588 |            | 23:00:00 | 1263.00 | 21470                              | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2589 |            | 23:30:00 | 1263.50 | 21470                              | 1450 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2590 | 1998/08/28 | 00:00:00 | 1264.00 | 21470                              | 1550 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2591 |            | 00:30:00 | 1264.50 | Checked 400 bbls for acid leakage. |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2592 |            | 01:00:00 | 1265.00 | 21470                              | 1550 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2593 |            | 01:30:00 | 1265.50 | 21470                              | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2594 |            | 02:00:00 | 1266.00 | 21470                              | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2595 | 1998/08/28 | 02:30:00 | 1266.50 | 21470                              | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2596 |            | 03:00:00 | 1267.00 | 21470                              | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2597 |            | 03:30:00 | 1267.50 | 21470                              | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2598 |            | 04:00:00 | 1268.00 | 21470                              | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2599 |            | 04:30:00 | 1268.50 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2600 |            | 05:00:00 | 1269.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2601 |            | 05:30:00 | 1269.50 | 21470                              | 1850 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2602 | 1998/08/28 | 06:00:00 | 1270.00 | 21470                              | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2603 |            | 06:30:00 | 1270.50 | Checked 400 bbls for acid leakage. |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2604 |            | 07:00:00 | 1271.00 | 21470                              | 1850 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2605 |            | 07:30:00 | 1271.50 | 21470                              | 1825 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2606 |            | 08:00:00 | 1272.00 | 21470                              | 1825 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2607 |            | 08:30:00 | 1272.50 | 21470                              | 1825 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2608 |            | 09:00:00 | 1273.00 | 21470                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2609 |            | 09:30:00 | 1273.50 | 21460                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2610 |            | 10:00:00 | 1274.00 | 21460                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2611 |            | 10:30:00 | 1274.50 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2612 |            | 11:00:00 | 1275.00 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2613 |            | 11:30:00 | 1275.50 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2614 | 1998/08/28 | 12:00:00 | 1276.00 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2615 |            | 12:30:00 | 1276.50 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2616 |            | 13:00:00 | 1277.00 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2617 |            | 13:30:00 | 1277.50 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2618 |            | 14:00:00 | 1278.00 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2619 |            | 14:30:00 | 1278.50 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2620 |            | 15:00:00 | 1279.00 | 21450                              | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2621 |            |          |         |                                    |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |
| 2622 |            |          |         |                                    |      |     |     |       |       |        |      |      |          |         |        |          |         |         |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time  | Pt    | Pc   | RTR                                                              | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|---------|-------|------|------------------------------------------------------------------|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr      | kPag  | kPag | kPa                                                              | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 2623 | 1998/08/28 | 15:30:00 | 1279.50 | 21440 | 1800 |                                                                  |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 2624 |            | 16:00:00 | 1280.00 | 21440 | 1800 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2625 |            | 16:30:00 | 1280.50 | 21440 | 1800 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2626 |            | 17:00:00 | 1281.00 | 21440 | 1800 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2627 |            | 17:30:00 | 1281.50 | 21440 | 1800 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2628 | 1998/08/28 | 18:00:00 | 1282.00 | 21440 | 1800 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2629 |            | 18:00:00 | 1282.00 | 21440 | 1850 | Checked 400 bbl tanks for acid leakage. Casing checked for sour. |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2630 |            | 18:30:00 | 1282.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2631 |            | 19:00:00 | 1283.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2632 |            | 19:30:00 | 1283.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2633 |            | 20:00:00 | 1284.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2634 |            | 20:30:00 | 1284.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2635 |            | 21:00:00 | 1285.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2636 |            | 21:30:00 | 1285.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2637 |            | 22:00:00 | 1286.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2638 |            | 22:30:00 | 1286.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2639 |            | 23:00:00 | 1287.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2640 |            | 23:30:00 | 1287.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2641 | 1998/08/29 | 00:00:00 | 1288.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2642 |            | 00:00:00 | 1288.00 | 21440 | 1850 | Checked 400 bbls for acid leakage.                               |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2643 |            | 00:30:00 | 1288.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2644 |            | 01:00:00 | 1289.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2645 |            | 01:30:00 | 1289.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2646 |            | 02:00:00 | 1290.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2647 |            | 02:30:00 | 1290.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2648 |            | 03:00:00 | 1291.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2649 |            | 03:30:00 | 1291.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2650 |            | 04:00:00 | 1292.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2651 |            | 04:30:00 | 1292.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2652 |            | 05:00:00 | 1293.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2653 |            | 05:30:00 | 1293.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2654 | 1998/08/29 | 06:00:00 | 1294.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2655 |            | 06:00:00 | 1294.00 | 21440 | 1850 | Checked 400 bbls for leakage. Checked casing for sour            |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2656 |            | 06:30:00 | 1294.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2657 |            | 07:00:00 | 1295.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2658 |            | 07:30:00 | 1295.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2659 |            | 08:00:00 | 1296.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2660 |            | 08:30:00 | 1296.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2661 |            | 09:00:00 | 1297.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2662 |            | 09:30:00 | 1297.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2663 |            | 10:00:00 | 1298.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2664 |            | 10:30:00 | 1298.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2665 |            | 11:00:00 | 1299.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2666 |            | 11:30:00 | 1299.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2667 |            | 12:00:00 | 1300.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2668 |            | 12:30:00 | 1300.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2669 |            | 13:00:00 | 1301.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2670 |            | 13:30:00 | 1301.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2671 |            | 14:00:00 | 1302.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2672 |            | 14:30:00 | 1302.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2673 |            | 15:00:00 | 1303.00 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2674 |            | 15:30:00 | 1303.50 | 21440 | 1850 |                                                                  |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2675 |            | 15:30:00 | 1303.50 | 21440 | 1850 | Shut in master valve                                             |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2676 |            | 17:40:00 | 1305.87 | 21440 | 1850 | Pressure test complete.                                          |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2677 | 1998/08/29 | 18:00:00 | 1306.00 | 21440 | 1850 | Hold safety meeting                                              |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2678 |            | 19:00:00 | 1307.00 | 21440 | 1850 | Wireline pulling out of hole                                     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2679 |            | 20:30:00 | 1308.50 | 21440 | 1850 | Open master valve and record buildups.                           |     |       |       |        |      |      |          |         |        |          |         |    |          |



Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time  | Pt                                                                                                                    | Pc    | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|---------|-----------------------------------------------------------------------------------------------------------------------|-------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr      | kPag                                                                                                                  | kPag  | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 2737 | 1998/08/31 | 02:30:00 | 1338.50 |                                                                                                                       | 1600  |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 2738 |            | 02:35:00 | 1338.58 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2739 |            | 02:40:00 | 1338.67 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2740 |            | 03:00:00 | 1339.00 |                                                                                                                       | 2450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2741 |            | 03:25:00 | 1339.42 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2742 |            | 03:45:00 | 1339.75 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2743 |            | 04:00:00 | 1340.00 |                                                                                                                       | 3650  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2744 |            | 04:10:00 | 1340.17 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2745 |            | 04:25:00 | 1340.42 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2746 |            | 04:30:00 | 1340.50 |                                                                                                                       | 4500  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2747 |            | 05:00:00 | 1341.00 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2748 |            | 05:08:00 | 1341.13 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2749 |            | 05:10:00 | 1341.17 |                                                                                                                       | 5970  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2750 |            | 05:30:00 | 1341.50 |                                                                                                                       | 6550  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2751 | 1998/08/31 | 06:00:00 | 1342.00 |                                                                                                                       | 7420  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2752 |            | 07:00:00 | 1343.00 |                                                                                                                       | 9990  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2753 |            | 07:00:00 | 1343.00 | Note: 1.1m3 of water was returned to the pressure tank in the last 24 hours due to pressure testing and bleeding off. |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2754 |            | 07:01:00 | 1343.02 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2755 |            | 07:25:00 | 1343.42 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2756 |            | 07:30:00 | 1343.50 |                                                                                                                       | 9970  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2757 |            | 08:00:00 | 1344.00 |                                                                                                                       | 10870 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2758 |            | 08:15:00 | 1344.25 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2759 |            | 08:27:00 | 1344.45 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2760 |            | 08:30:00 | 1344.50 |                                                                                                                       | 11470 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2761 |            | 08:55:00 | 1344.92 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2762 |            | 09:15:00 | 1345.25 |                                                                                                                       | 12380 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2763 | 1998/08/31 | 09:15:00 | 1345.25 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2764 |            | 09:30:00 | 1345.50 |                                                                                                                       | 12560 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2765 |            | 09:30:00 | 1345.50 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2766 |            | 09:45:00 | 1345.75 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2767 |            | 10:55:00 | 1346.92 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2768 |            | 10:55:00 | 1346.92 |                                                                                                                       | 4200  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2769 |            | 11:00:00 | 1347.00 |                                                                                                                       | 4370  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2770 |            | 11:00:00 | 1347.00 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2771 |            | 11:30:00 | 1347.50 |                                                                                                                       | 5450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2772 |            | 11:45:00 | 1347.75 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2773 |            | 11:50:00 | 1347.83 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2774 | 1998/08/31 | 12:30:00 | 1348.50 |                                                                                                                       | 7450  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2775 |            | 12:31:00 | 1348.52 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2776 |            | 12:40:00 | 1348.67 |                                                                                                                       | 7920  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2777 |            | 12:41:00 | 1348.68 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2778 |            | 13:00:00 | 1349.00 |                                                                                                                       | 8460  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2779 |            | 13:30:00 | 1349.50 |                                                                                                                       | 9260  |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2780 |            | 14:00:00 | 1350.00 |                                                                                                                       | 10060 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2781 |            | 14:07:00 | 1350.12 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2782 |            | 14:30:00 | 1350.50 |                                                                                                                       | 10900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2783 |            | 14:30:00 | 1350.50 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2784 |            | 14:51:00 | 1350.85 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2785 | 1998/08/31 | 15:00:00 | 1351.00 |                                                                                                                       | 12570 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2786 |            | 15:00:00 | 1351.00 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2787 |            | 15:15:00 | 1351.25 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2788 |            | 15:20:00 | 1351.33 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2789 |            | 15:30:00 | 1351.50 |                                                                                                                       | 12440 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2790 |            | 15:55:00 | 1351.92 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2791 |            | 16:00:00 | 1352.00 |                                                                                                                       | 13320 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2792 |            | 16:00:00 | 1352.00 |                                                                                                                       |       |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2793 |            | 16:30:00 | 1352.50 |                                                                                                                       | 13900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

# FieldNotes



| Row  | Date       | Clk TIm  | C Time  | Pt    | Pc   | RTR | WHT | Choke | Orlf  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|---------|-------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr      | kPag  | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 2794 | 1998/08/31 | 16:33:00 | 1352.55 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2795 |            | 16:45:00 | 1352.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2796 | 1998/08/31 | 18:15:00 | 1354.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2797 |            | 18:15:00 | 1354.25 | 650   | 1600 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 2798 |            | 18:30:00 | 1354.50 | 1020  | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2799 |            | 18:45:00 | 1354.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2800 |            | 18:55:00 | 1354.92 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2801 |            | 19:00:00 | 1355.00 | 1550  | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2802 |            | 19:30:00 | 1355.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2803 |            | 20:10:00 | 1356.17 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2804 |            | 20:15:00 | 1356.25 | 3780  | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2805 |            | 21:20:00 | 1357.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2806 |            | 21:30:00 | 1357.50 | 6280  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2807 |            | 21:45:00 | 1357.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2808 |            | 21:50:00 | 1357.83 | 6885  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2809 |            | 22:20:00 | 1358.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2810 |            | 22:25:00 | 1358.42 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2811 |            | 22:30:00 | 1358.50 | 7960  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2812 |            | 23:05:00 | 1359.08 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2813 |            | 23:20:00 | 1359.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2814 |            | 23:30:00 | 1359.50 | 9550  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2815 |            | 23:45:00 | 1359.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2816 | 1998/09/01 | 00:05:00 | 1360.08 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2817 |            | 00:10:00 | 1360.17 | 10760 | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2818 |            | 00:30:00 | 1360.50 | 11565 | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2819 |            | 01:00:00 | 1361.00 | 12200 | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2820 |            | 01:15:00 | 1361.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2821 |            | 01:35:00 | 1361.58 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2822 |            | 01:40:00 | 1361.67 | 13430 | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2823 |            | 01:55:00 | 1361.92 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2824 |            | 02:15:00 | 1362.25 | 13750 | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2825 |            | 02:25:00 | 1362.42 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2826 |            | 04:35:00 | 1364.58 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2827 |            | 04:35:00 | 1364.58 | 500   | 1650 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2828 |            | 04:35:00 | 1364.58 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2829 |            | 05:05:00 | 1365.08 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2830 |            | 05:15:00 | 1365.25 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2831 |            | 05:15:00 | 1365.25 | 1510  | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2832 |            | 05:30:00 | 1365.50 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2833 |            | 05:35:00 | 1365.58 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2834 |            | 05:35:00 | 1365.58 | 2250  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2835 |            | 05:45:00 | 1365.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2836 |            | 05:55:00 | 1365.92 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2837 |            | 05:55:00 | 1365.92 | 2845  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2838 |            | 06:10:00 | 1366.17 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2839 |            | 06:20:00 | 1366.33 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2840 | 1998/09/01 | 06:20:00 | 1366.33 | 3670  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2841 |            | 06:45:00 | 1366.75 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2842 |            | 06:55:00 | 1366.92 | 4860  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2843 |            | 06:57:00 | 1366.95 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2844 |            | 07:25:00 | 1367.42 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2845 |            | 07:30:00 | 1367.50 | 6100  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2846 |            | 07:52:00 | 1367.87 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2847 |            | 08:00:00 | 1368.00 | 6900  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2848 |            | 08:30:00 | 1368.50 | 7880  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2849 |            | 09:00:00 | 1369.00 | 8750  | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2850 |            | 09:05:00 | 1369.08 |       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

Job Number: GP98-114 RANGER01.FAS  
 Customer: RANGER OIL LIMITED  
 Wellname: FORT LIARD  
 Well Location: P-66-A  
 Formation: TIGHT HOLE

## FieldNotes



| Row  | Date       | Clk Tim  | C Time  | Pt                                                         | Pc   | RTR | WHT | Choke | Orif  | Static | Diff | Temp | Gas Rate | Cum Gas | H2O/hr | H2O Rate | Cum H2O | pH | SALINITY |
|------|------------|----------|---------|------------------------------------------------------------|------|-----|-----|-------|-------|--------|------|------|----------|---------|--------|----------|---------|----|----------|
|      | yy/mm/dd   | clock    | hr      | kPag                                                       | kPag | kPa | C   | mm    | mm    | kPag   | kPa  | C    | 10^3m3/d | 10^3m3  | m3     | m3/d     | m3      |    | ppm      |
| 2851 | 1998/09/01 | 10:20:00 | 1370.33 | 11080                                                      | 1850 |     |     |       | 0.000 |        |      |      |          |         |        |          |         |    |          |
| 2852 |            | 10:20:00 | 1370.33 | Wireline run in hole with pulling tool.                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2853 |            | 10:30:00 | 1370.50 | 11340                                                      | 1850 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2854 |            | 10:52:00 | 1370.87 | Wireline out of hole with wire grab                        |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2855 |            | 11:00:00 | 1371.00 | 12010                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2856 |            | 11:00:00 | 1371.00 | Wireline run in hole with wire grab.                       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2857 |            | 11:23:00 | 1371.38 | Wireline out of hole                                       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2858 |            | 11:30:00 | 1371.50 | 12820                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2859 |            | 11:30:00 | 1371.50 | Wireline run in hole with pulling tool.                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2860 |            | 12:00:00 | 1372.00 | 13320                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2861 |            | 12:15:00 | 1372.25 | Wireline out of hole with wire.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2862 | 1998/09/01 | 12:30:00 | 1372.50 | 13800                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2863 |            | 13:00:00 | 1373.00 | 14380                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2864 |            | 13:30:00 | 1373.50 | 14940                                                      | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2865 |            | 14:00:00 | 1374.00 | 15390                                                      | 1950 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2866 |            | 14:30:00 | 1374.50 | 15850                                                      | 1950 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2867 |            | 15:00:00 | 1375.00 | 16350                                                      | 1950 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2868 |            | 15:30:00 | 1375.50 | 16700                                                      | 1950 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2869 |            | 16:00:00 | 1376.00 | 17050                                                      | 1950 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2870 |            | 16:22:00 | 1376.37 | Wireline out of hole.                                      |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2871 |            | 16:30:00 | 1376.50 | Begin pumping 25m3 of filtered produced water down tubing. |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2872 | 1998/09/01 | 18:05:00 | 1378.08 | Finished pumping                                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2873 |            | 18:30:00 | 1378.50 | 300                                                        | 1750 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2874 |            | 19:45:00 | 1379.75 | Wireline out of hole with recorders.                       |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2875 |            | 20:10:00 | 1380.17 | Wireline run in hole to retrieve dart.                     |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2876 |            | 20:15:00 | 1380.25 | 3520                                                       | 1850 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2877 |            | 21:20:00 | 1381.33 | Wireline out of hole with dart.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2878 |            | 21:30:00 | 1381.50 | 5760                                                       | 1850 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2879 |            | 21:35:00 | 1381.58 | Begin pumping filtered produced water down hole.           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2880 |            | 22:00:00 | 1382.00 |                                                            | 1800 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2881 |            | 22:30:00 | 1382.50 |                                                            | 1700 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2882 |            | 23:00:00 | 1383.00 |                                                            | 1600 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2883 |            | 23:30:00 | 1383.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2884 | 1998/09/02 | 00:00:00 | 1384.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2885 |            | 00:30:00 | 1384.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2886 |            | 01:00:00 | 1385.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2887 |            | 01:30:00 | 1385.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2888 |            | 02:00:00 | 1386.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2889 |            | 02:30:00 | 1386.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2890 |            | 03:00:00 | 1387.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2891 |            | 03:30:00 | 1387.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2892 |            | 04:00:00 | 1388.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2893 |            | 04:30:00 | 1388.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2894 |            | 05:00:00 | 1389.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2895 |            | 05:30:00 | 1389.50 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2896 | 1998/09/02 | 06:00:00 | 1390.00 |                                                            | 1400 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2897 |            | 06:30:00 | 1390.50 |                                                            | 1350 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2898 |            | 07:00:00 | 1391.00 | 300                                                        | 1350 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2899 |            | 13:20:00 | 1397.33 | Finished pumping filtered produced water down hole.        |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2900 |            | 13:25:00 | 1397.42 | Rig on wireline and pressure test.                         |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2901 |            | 14:10:00 | 1398.17 | Pressure test complete.                                    |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2902 |            | 14:10:00 | 1398.17 |                                                            | 1900 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2903 |            | 15:20:00 | 1399.33 | Wireline out of hole.                                      |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2904 |            | 15:30:00 | 1399.50 | Wireline run in hole with plug.                            |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2905 |            | 15:30:00 | 1399.50 |                                                            | 2000 |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2906 |            | 17:20:00 | 1401.33 | Wireline out of hole.                                      |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |
| 2907 |            | 17:30:00 | 1401.50 | Wireline run in hole with prong.                           |      |     |     |       |       |        |      |      |          |         |        |          |         |    |          |

**Job Number:** GP98-114 RANGER01.FAS  
**Customer:** RANGER OIL LIMITED  
**Wellname:** FORT LIARD  
**Well Location:** P-66-A  
**Formation:** TIGHT HOLE

## FieldNotes

[illegible]

**AGAT** Laboratories**GAS ANALYSIS**

CONTAINER IDENTIFICATION

AGAT 21667

LABORATORY NUMBER

GF28775A

OPERATOR NAME

RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER

WELL NAME

NO. m

ELEVATION

GRD. m

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

LIARD

JH

AGAT

TEST TYPE

NO

TEST RECOVERY

p-066-A/

TEST INTERVAL OR PERFS

SAMPLING POINT

INLET

GAUGE PRESSURE MPa

TEMPERATURE °C

SEPARATOR

TREATER

REDERIVER

SOURCE

SAMPLED

RECEIVED

1250

1250

1240

56

56

21

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

98-07-11

98-07-18

98-08-11

VH

NCO

SAMPLED @ 6:00PM

| COMP.            | MOLE FRACTION        |                        | PETROLEUM LIQUID CONTENT mL = 100 g |
|------------------|----------------------|------------------------|-------------------------------------|
|                  | AIR FREE AS RECEIVED | AIR FREE ACID GAS FREE |                                     |
| H <sub>2</sub>   | 0.0006               | 0.0008                 |                                     |
| He               | 0.0011               | 0.0013                 |                                     |
| H <sub>2</sub>   | 0.0497               | 0.0595                 |                                     |
| CO <sub>2</sub>  | 0.1564               | 0.0000                 |                                     |
| H <sub>2</sub> S | 0.0085               | 0.0000                 |                                     |
| C <sub>1</sub>   | 0.7827               | 0.9372                 |                                     |
| C <sub>2</sub>   | 0.0010               | 0.0012                 |                                     |
| C <sub>3</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| iC <sub>4</sub>  | 0.0000               | 0.0000                 | 0.0                                 |
| nC <sub>4</sub>  | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>5</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| iC <sub>6</sub>  | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>6</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>7</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>8</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>9</sub>   | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>10</sub>  | 0.0000               | 0.0000                 | 0.0                                 |
| C <sub>10+</sub> | 0.0000               | 0.0000                 | 0.0                                 |
| TOTAL            | 1.0000               | 1.0000                 | 0.0                                 |

GROSS HEATING VALUE MJ/kg  
15°C AND 101.325 kPaMOISTURE AND  
ACID GAS FREE

35.49

AIR FREE  
AS RECEIVED

29.86

VAPOR PRESSURE  
PENTANES PLUS

0.0

MPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED

MEASURED

CALCULATED

0.731

MOISTURE AND ACID GAS FREE

MEASURED

CALCULATED

0.578

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED

P<sub>PC</sub> (bar)

5010

P<sub>TC</sub>

206.5

ACID GAS FREE

P<sub>PC</sub> (bar)

4525

P<sub>TC</sub>

186.5

RELATIVE MOLECULAR MASS

TOTAL GAS

21.1

C<sub>7+</sub>

0.0

H<sub>2</sub>S (g/mol)

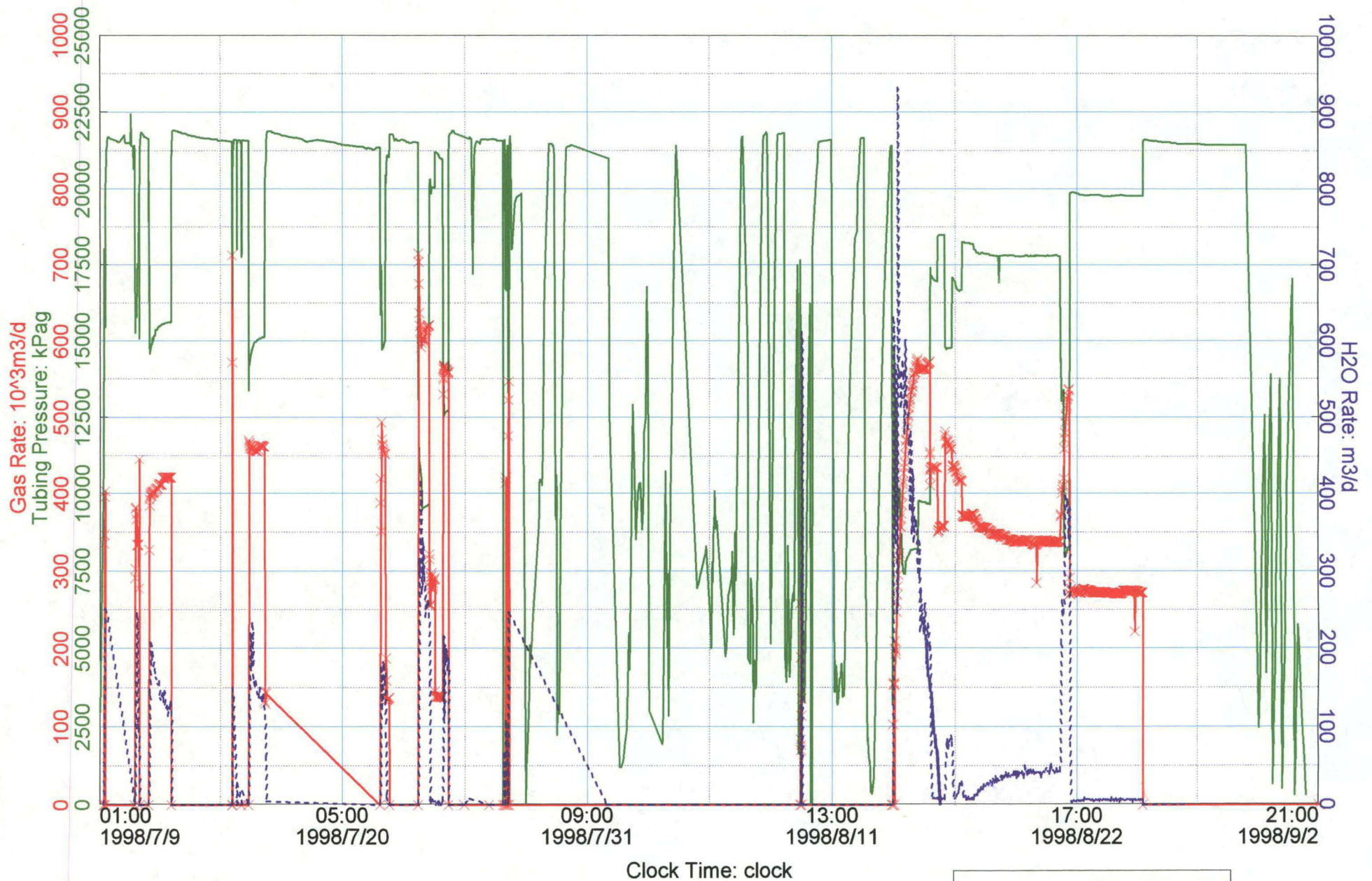
12.26

REMARKS:

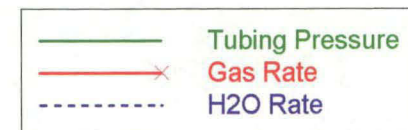
EXCEED NORMAL LIMITS : CO<sub>2</sub>FIELD H<sub>2</sub>S = 0.85%

FORM # 24-001

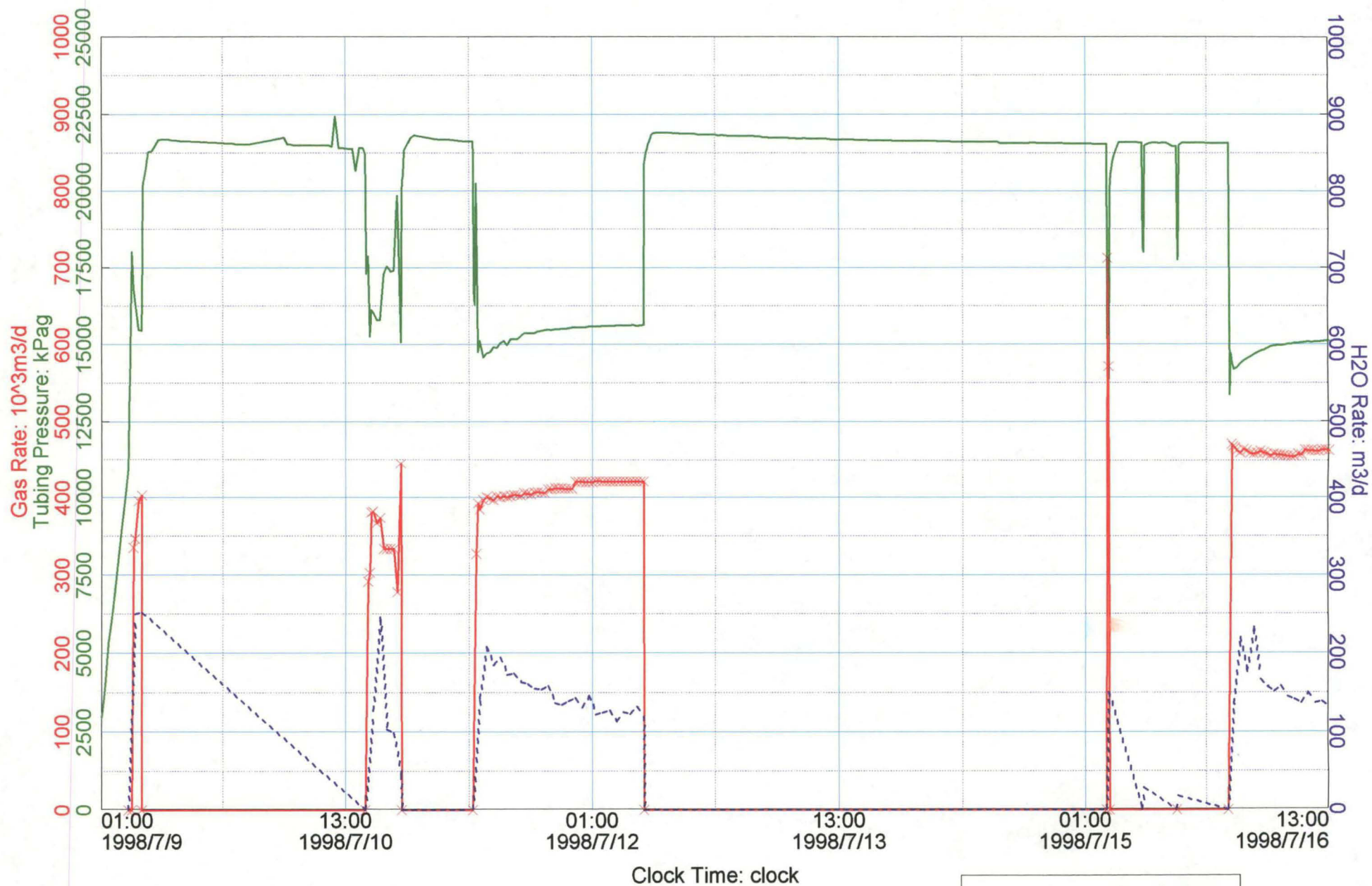
# Ranger Fort Liard P-66-A



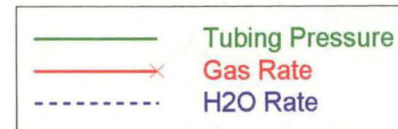
Ranger Oil Limited  
TIGHT HOLE  
July 9 - September 2, 1998



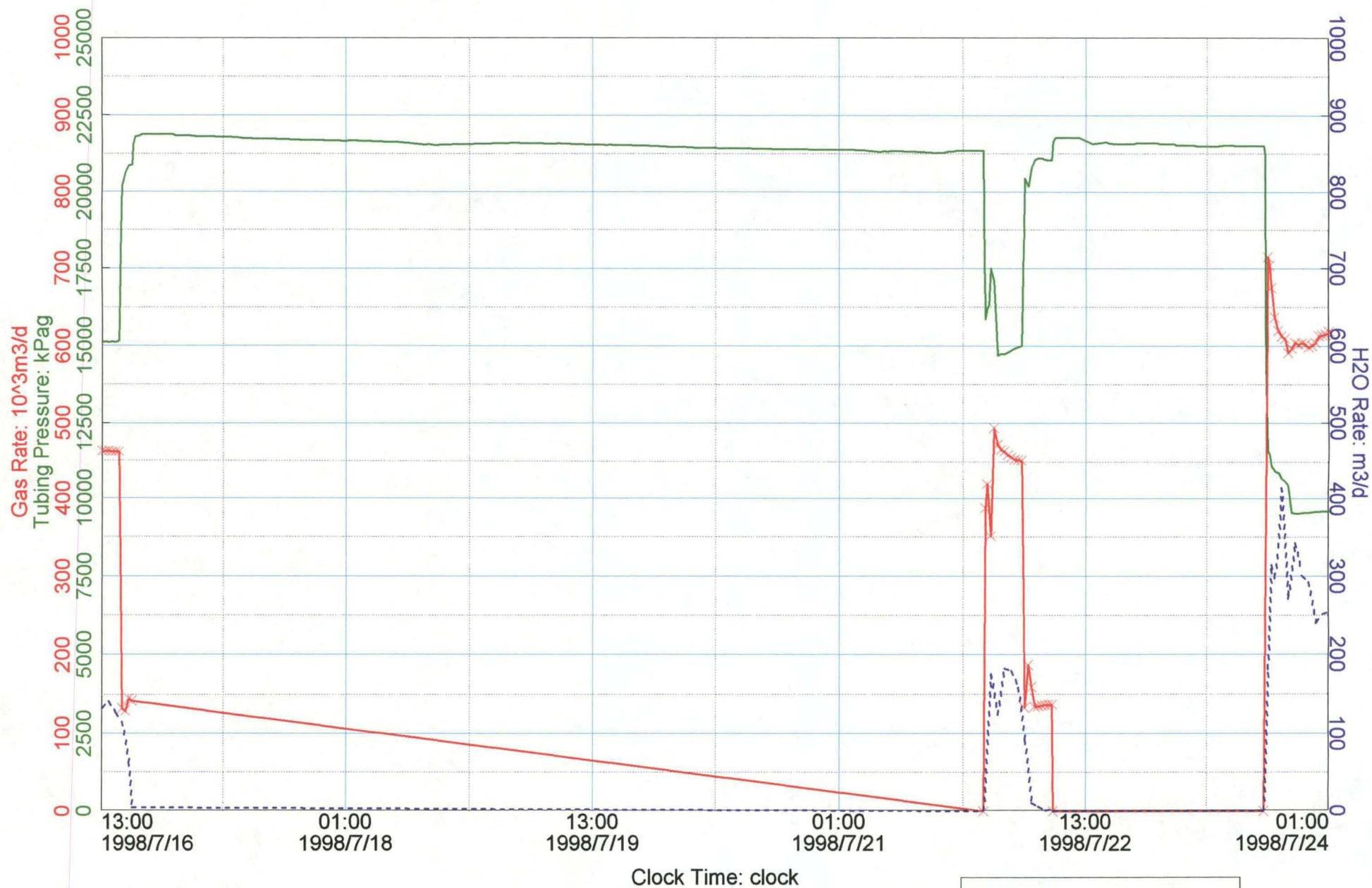
# Ranger Fort Liard P-66-A



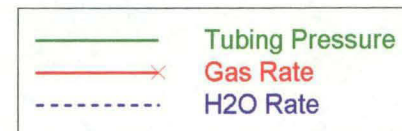
Ranger Oil Limited  
TIGHT HOLE  
July 9-16, 1998



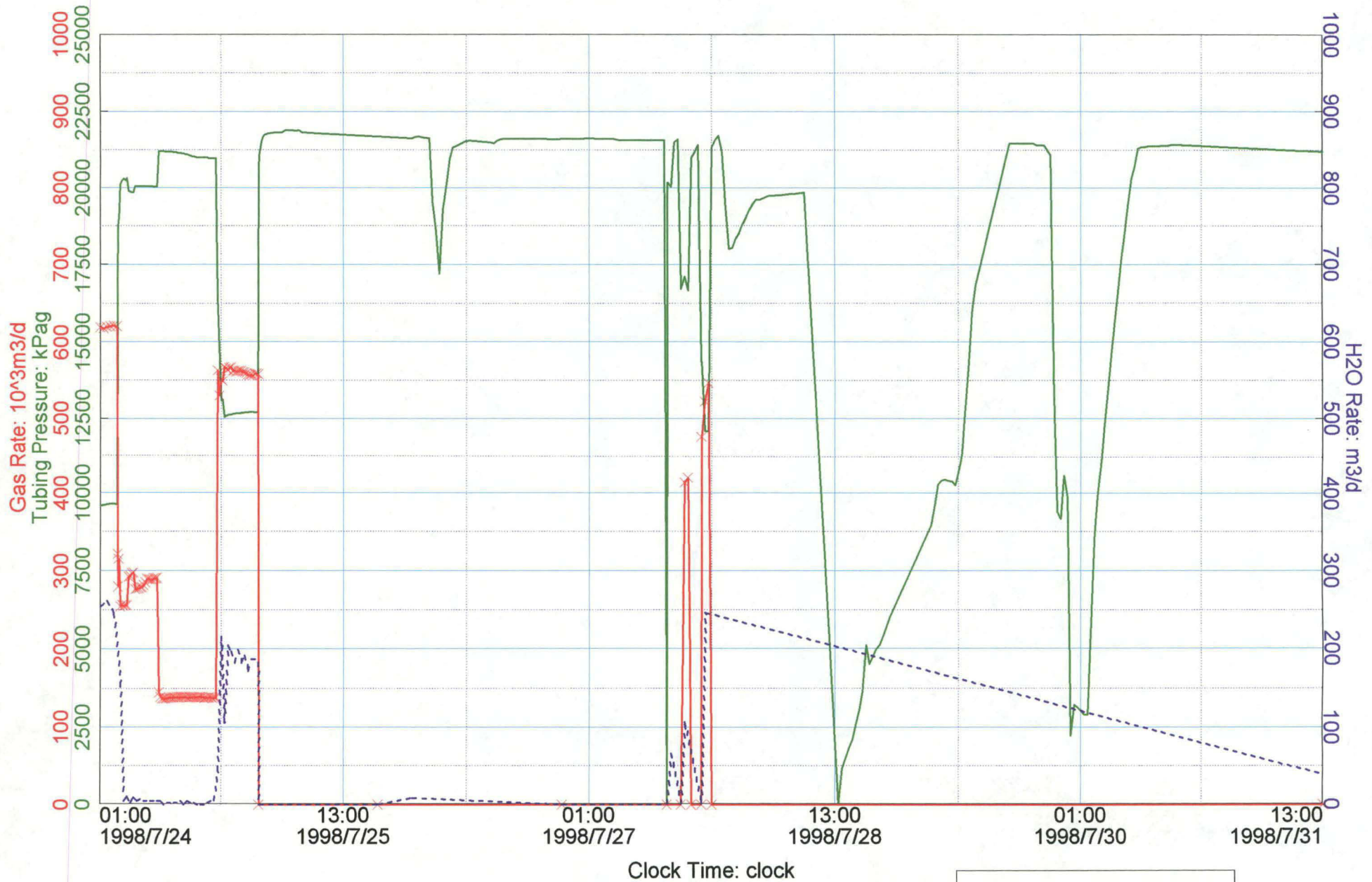
# Ranger Fort Liard P-66-A



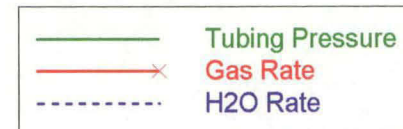
Ranger Oil Limited  
TIGHT HOLE  
July 16-24, 1998



# Ranger Fort Liard P-66-A

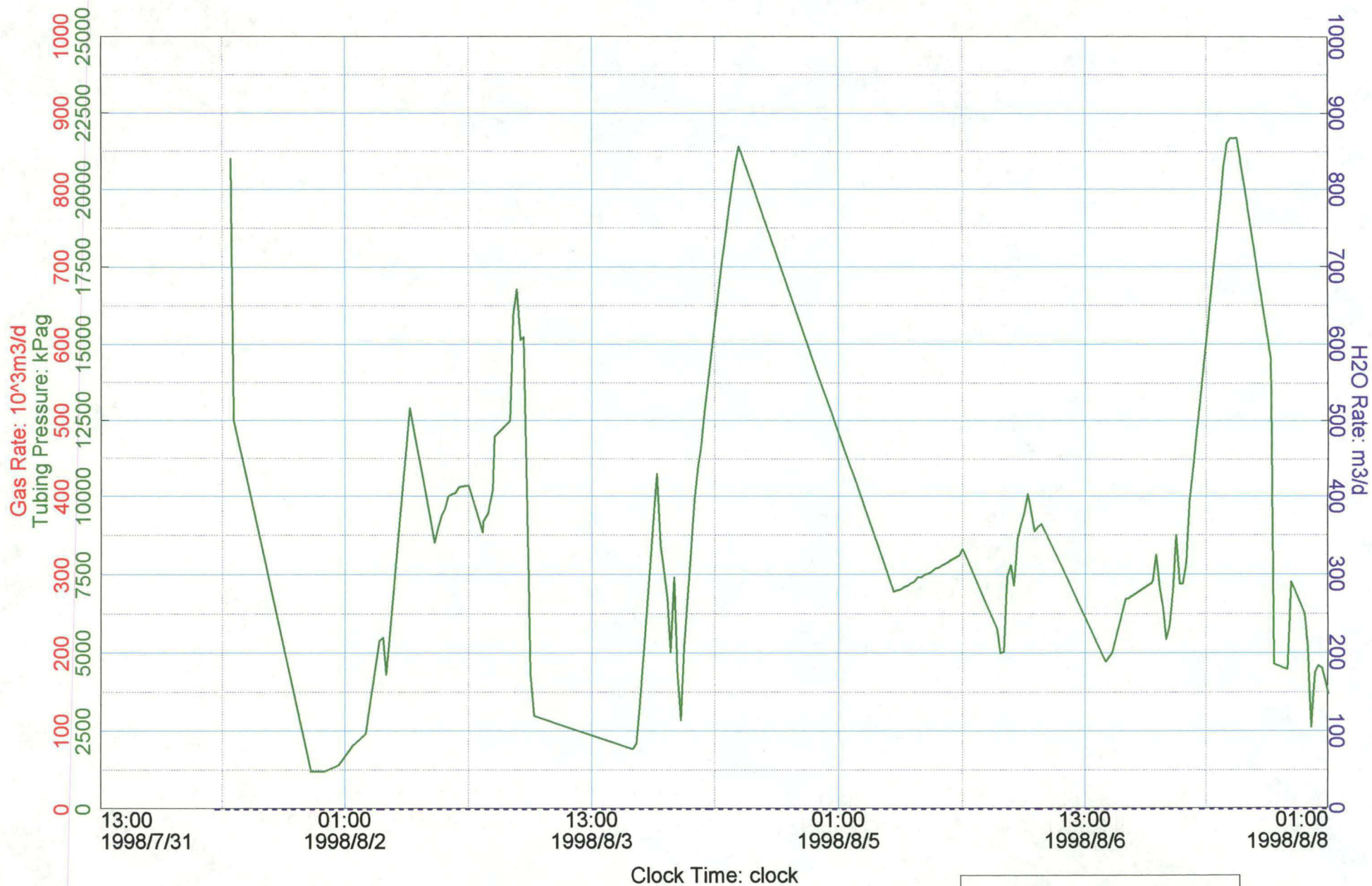


Ranger Oil Limited  
 TIGHT HOLE  
 July 24-31, 1998

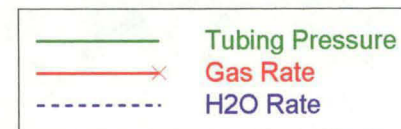


Fast

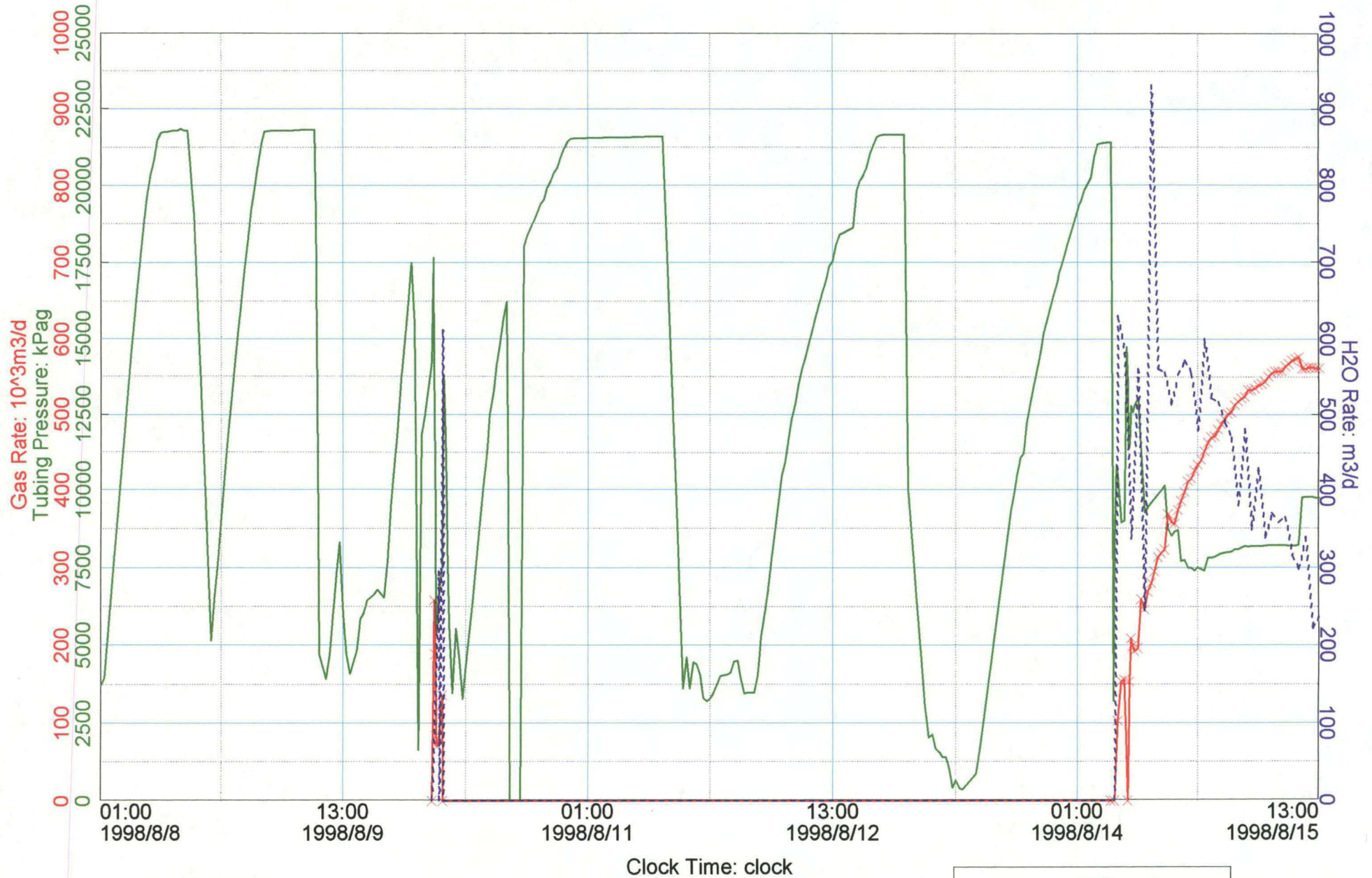
# Ranger Fort Liard P-66-A



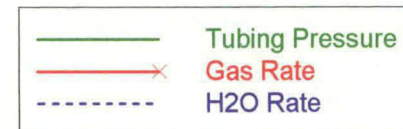
Ranger Oil Limited  
TIGHT HOLE  
July 31 - August 8, 1998



# Ranger Fort Liard P-66-A

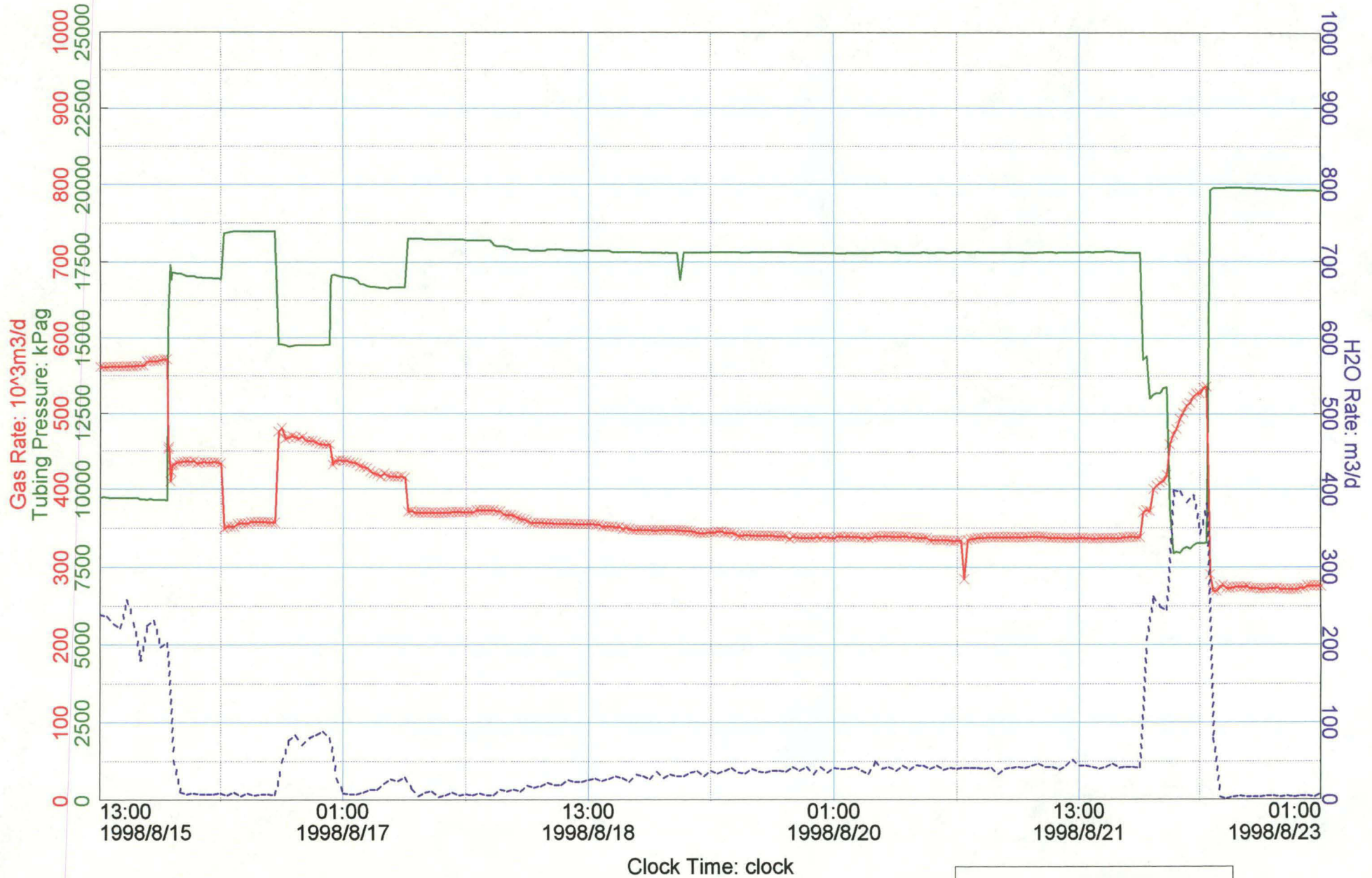


Ranger Oil Limited  
TIGHT HOLE  
August 8-15, 1998

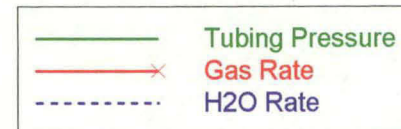


Fast

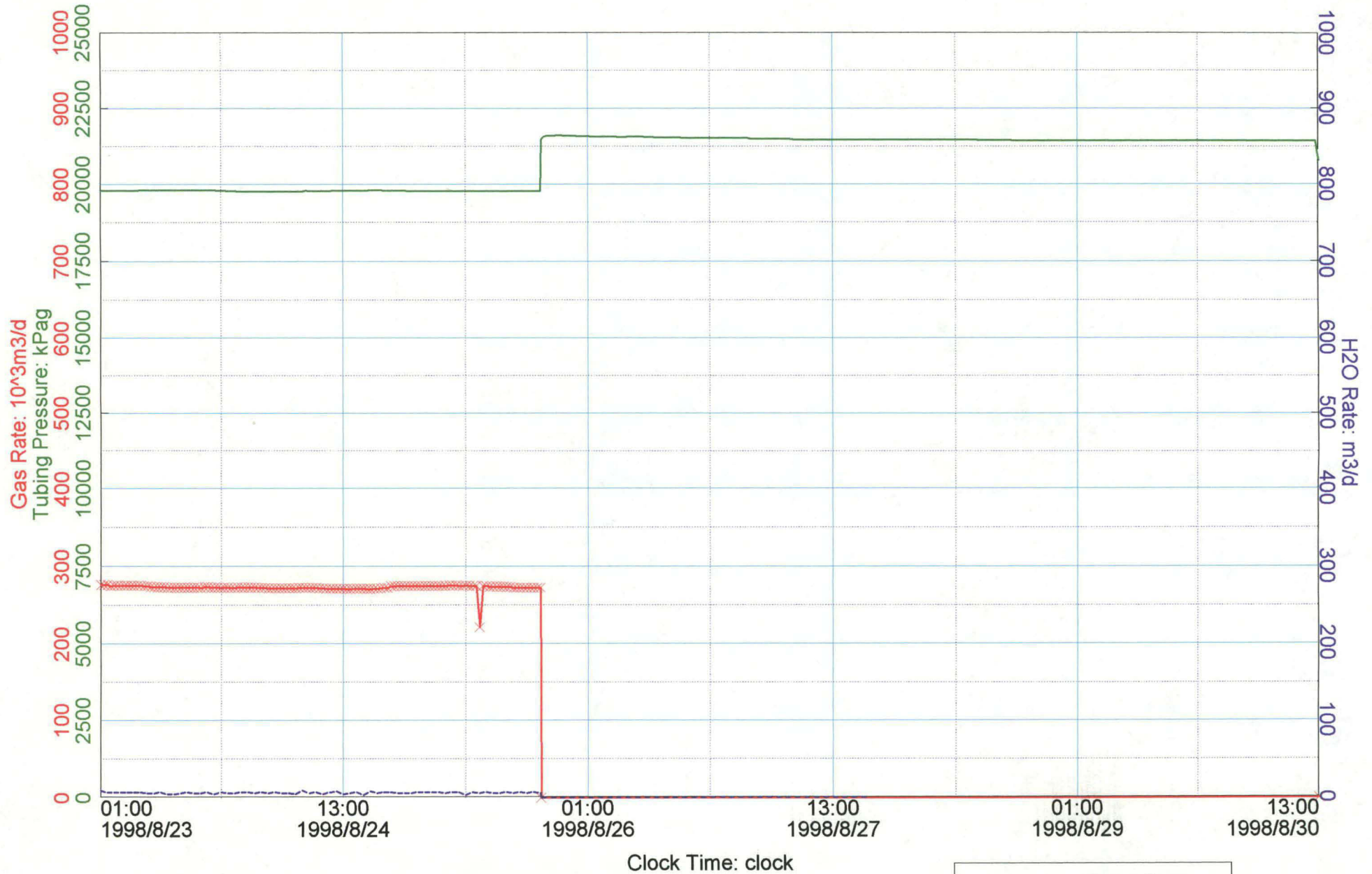
# Ranger Fort Liard P-66-A



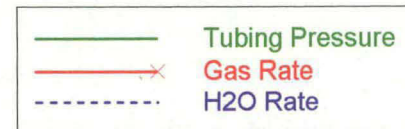
Ranger Oil Limited  
TIGHT HOLE  
August 15-23, 1998



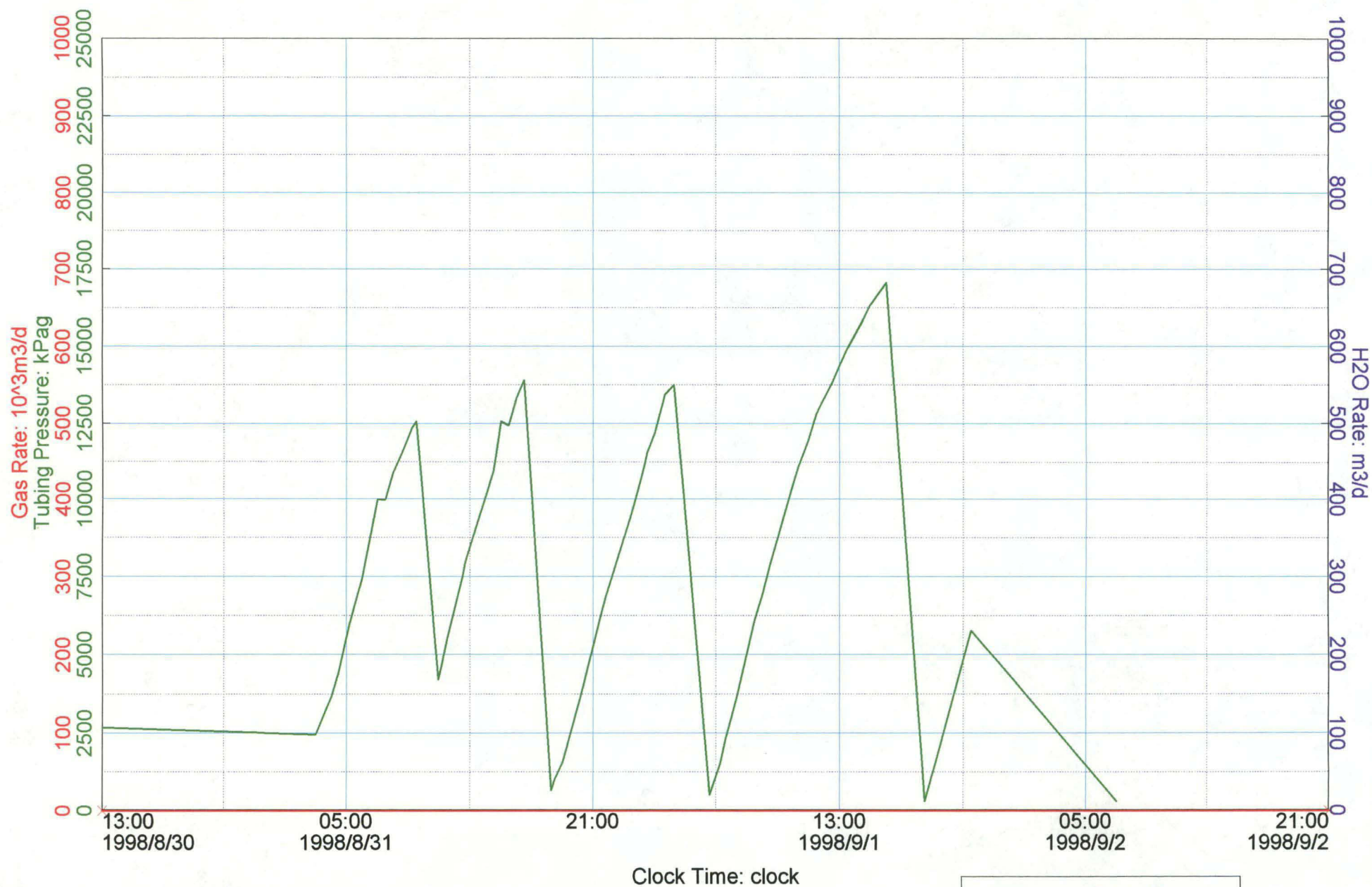
# Ranger Fort Liard P-66-A



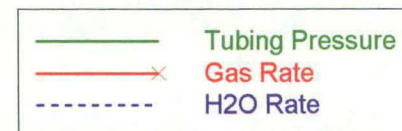
Ranger Oil Limited  
TIGHT HOLE  
August 23-30, 1998



# Ranger Fort Liard P-66-A



Ranger Oil Limited  
TIGHT HOLE  
August 30 - September 2, 1998



## FieldNotes

N.E.B. COPY



Job Number: 2720  
Customer: Ranger Oil Limited  
Wellname: Fort Liard  
Well Location: P - 66 - A  
Formation: Nahanni

Supervisors L. Kropf / C. Marshall  
Customer Rep: Wayne Casler  
Start Date: February 26, 1998  
Start Time: 20:00  
Test Unit: T.U. 10 ; P.S. 10 & 11 & 1010  
Operation: Completion

### Remarks:

A gas analysis may not have been available to us at the time of printing.  
Should you wish us to recalculate the gas rates with information you have or  
you require more copies please call Ann at 571-5171.  
Please give environmental considerations when ordering more copies.

Thank you for your valued business.

CENTRAL PRODUCTION TESTING LTD.

MICROFILMED  
SUR MICROFILM:

NATIONAL ENERGY BOARD  
ENGINEERING BRANCH  
MAY - 4 1998

Job Number: 2720  
Customer: Ranger Oil Limited  
Wellname: Fort Liard  
Well Location: P - 66 - A  
Formation: Nahanni

## FieldNotes



### Gas Meter 1

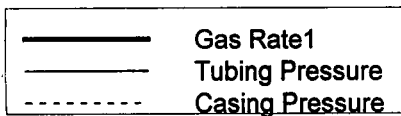
Meter Type: Orifice  
Meter Run Size: 154.0510 mm  
Previous Gas Production: 0.000 10^3m3  
Tap Type: Flange  
Tap Location: Downstream

Gauge to Absolute Adjustment: 90.0

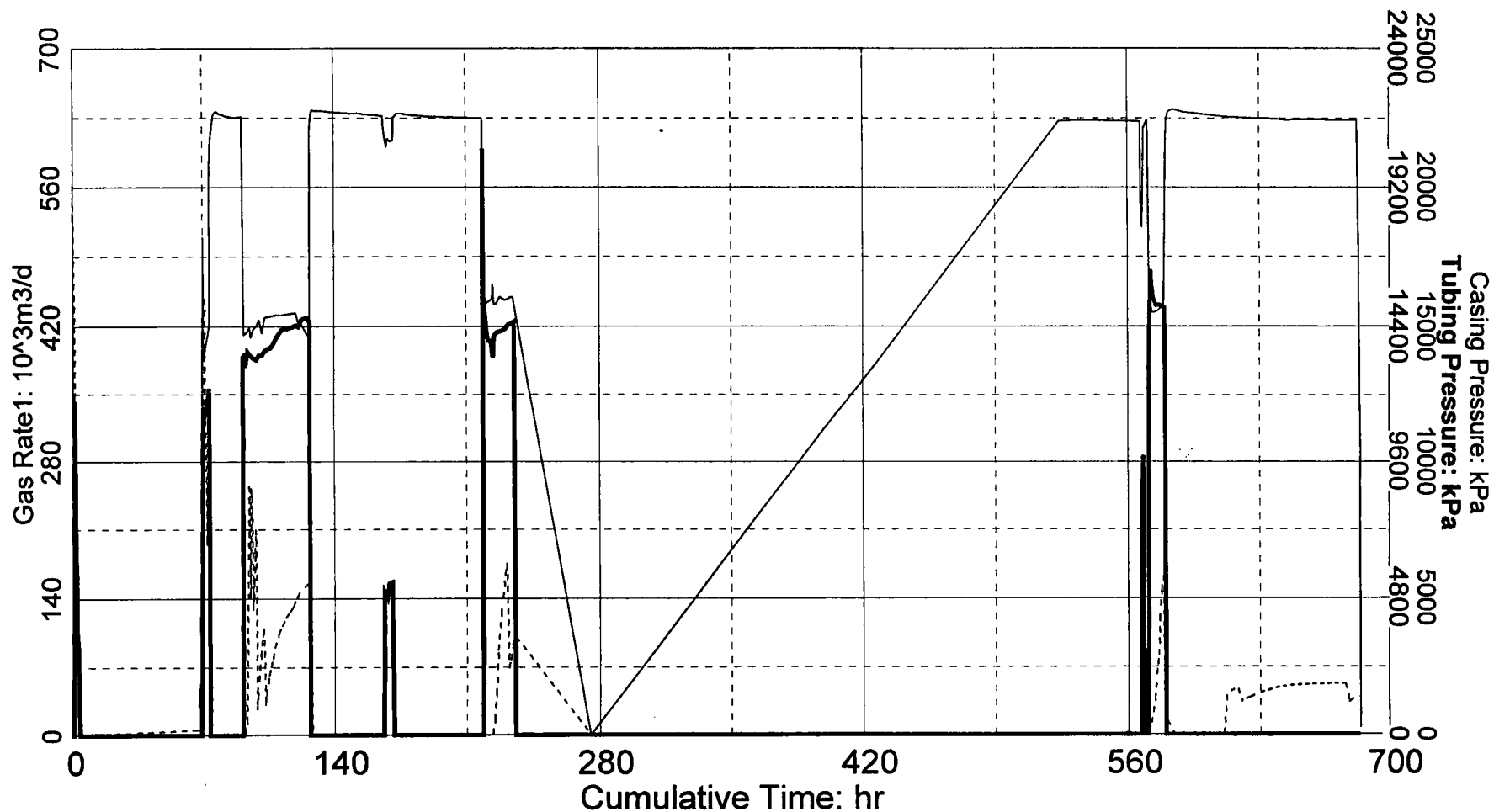
Gas Gravity: 0.77 decimal  
CO2: 19.40 %  
H2S: 1.50 %  
N2: 4.97 %  
Critical Temperature: 211.9 K  
Critical Pressure: 5145.0 kPa  
Condensate: No

### Oil Meter 1

Meter Type: Produced Volume  
Measurement Type: Cumulative  
Previous Oil Production: 0.000 m3  
Previous Water Production: 0.000 m3



# Ranger Fort Liard P - 66 - A















## FieldNotes



| Row | Date       | Clk Tim                                                                    | Tbg Pres                                                                                                                  | Tbg T | Csg Pres | Choke | Static1 | Diff1 | Temp1 | Orif1  | Gas Rate1 | Cum Gas1 | Fld Vol1 | BSW1  | Oil1 gain | Wat1 gain | Cum Oil1 | Cum Wat1 | Wat Rate1 | H2S | CO2 | SALINITY | pH |
|-----|------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------|----------|-------|---------|-------|-------|--------|-----------|----------|----------|-------|-----------|-----------|----------|----------|-----------|-----|-----|----------|----|
|     | yy/mm/dd   | clock                                                                      | kPa                                                                                                                       | C     | kPa      | mm    | kPa     | kPa   | C     | mm     | 10^3m3/d  | 10^3m3   | m3       | %     | m3        | m3        | m3       | m3       | m3/d      | %   | %   | ppm      |    |
| 277 | 1998/03/05 | 21:30:00                                                                   | 20785                                                                                                                     | 49    |          |       | 1800    | 5.10  | 24    | 88.900 | 155.141   | 705.752  |          |       |           |           |          |          |           |     |     |          |    |
| 278 |            | 22:00:00                                                                   | 20780                                                                                                                     | 50    | 0        | 7.14  | 1800    | 5.10  | 23    | 88.900 | 155.439   | 708.988  | 2.17     | 100.0 | 0.00      | 0.40      | 0.000    | 311.11   | 9.60      |     |     |          |    |
| 279 |            | 22:30:00                                                                   | 20810                                                                                                                     | 50    |          |       | 1810    | 5.10  | 23    |        | 155.867   | 712.230  |          |       |           |           |          |          |           |     |     |          |    |
| 280 |            | 23:00:00                                                                   | 20810                                                                                                                     | 50    | 0        | 7.14  | 1810    | 5.10  | 23    | 88.900 | 155.867   | 715.478  | 2.50     | 100.0 | 0.00      | 0.33      | 0.000    | 311.44   | 7.92      |     |     |          |    |
| 281 |            | 23:30:00                                                                   | 20810                                                                                                                     | 50    |          |       | 1810    | 5.10  | 23    |        | 155.867   | 718.725  |          |       |           |           |          |          |           |     |     |          |    |
| 282 |            | 23:35:00                                                                   | 20810                                                                                                                     | 50    | 0        | 7.14  | 1810    | 5.10  | 23    | 88.900 | 155.867   | 719.266  | 2.84     | 100.0 | 0.00      | 0.34      | 0.000    | 311.78   | 13.99     |     |     |          |    |
| 283 |            | 23:35:00                                                                   | Shut in well with wireline still logging.                                                                                 |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 284 |            | 23:35:01                                                                   | 20820                                                                                                                     |       | 0        | 0.00  | 0       | 0.00  | 23    | 88.900 | 0.000     | 719.266  | 2.84     | 0.0   | 0.00      | 0.00      | 0.000    | 311.78   | 0.00      |     |     |          |    |
| 285 |            | 23:40:00                                                                   | 21580                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 286 |            | 23:45:00                                                                   | 21600                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 287 |            | 23:50:00                                                                   | 21630                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 288 | 1998/03/06 | 00:05:00                                                                   | 21690                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 289 |            | 00:30:00                                                                   | 21740                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 290 |            | 01:00:00                                                                   | 21740                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 291 |            | 01:30:00                                                                   | 21740                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 292 |            | 02:00:00                                                                   | 21740                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 293 |            | 02:30:00                                                                   | 21740                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 294 |            | 03:00:00                                                                   | 21740                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 295 |            | 03:30:00                                                                   | 21740                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 296 |            | 04:00:00                                                                   | 21740                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 297 |            | 04:30:00                                                                   | 21740                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 298 |            | 04:35:00                                                                   | Wireline at surface. Rig off wireline and record build ups.                                                               |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 299 |            | 05:00:00                                                                   | 21705                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 300 |            | 05:30:00                                                                   | 21705                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 301 |            | 06:00:00                                                                   | 21705                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 302 |            | 06:30:00                                                                   | 21705                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 303 |            | 06:59:59                                                                   | 21705                                                                                                                     |       | 0        |       | 0       | 0.00  | 0     |        | 0.000     | 719.266  |          |       |           |           |          |          |           |     |     |          |    |
| 304 |            | Water Salinity = 150000 ppm w/ Ph of 5.5 (taken during flowing log survey) |                                                                                                                           |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 305 | 1998/03/06 | 07:00:00                                                                   | Water on location = 103.38 M3; Daily water shipped off location = 62.53 M3; Cuml. water shipped off location = 147.94 M3. |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 306 | 1998/03/06 | 07:30:00                                                                   | 21700                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 307 |            | 08:00:00                                                                   | 21690                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 308 |            | 08:30:00                                                                   | 21690                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 309 |            | 09:00:00                                                                   | 21680                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 310 |            | 09:30:00                                                                   | 21675                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 311 |            | 10:00:00                                                                   | 21675                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 312 |            | 10:30:00                                                                   | 21675                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 313 |            | 11:00:00                                                                   | 21670                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 314 |            | 11:30:00                                                                   | 21670                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 315 |            | 12:00:00                                                                   | 21665                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 316 |            | 12:30:00                                                                   | 21665                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 317 |            | 13:00:00                                                                   | 21660                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 318 |            | 13:30:00                                                                   | 21660                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 319 |            | 14:00:00                                                                   | 21655                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 320 |            | 14:30:00                                                                   | 21655                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 321 |            | 15:00:00                                                                   | 21655                                                                                                                     |       | 0        |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |
| 322 |            | 15:30:00                                                                   | 21650                                                                                                                     |       |          |       |         |       |       |        |           |          |          |       |           |           |          |          |           |     |     |          |    |

Job Number: 2720  
 Customer: Ranger Oil Limited  
 Wellname: Fort Liard  
 Well Location: P - 66 - A  
 Formation: Nahanni

## FieldNotes



| Row | Date       | Clk TIm  | Tbg Pres                                                                                                                                       | Tbg T | Csg Pres | Choke | Static1 | Diff1 | Temp1 | Orif1  | Gas Rate1 | Cum Gas1 | Fld Vol1 | BSW1 Oil1 gain | Wat1 gain | Cum Oil1 | Cum Wat1 | Wat Rate1 | H2S  | CO2 | SALINITY | pH |
|-----|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|-------|---------|-------|-------|--------|-----------|----------|----------|----------------|-----------|----------|----------|-----------|------|-----|----------|----|
|     | yy/mm/dd   | clock    | kPa                                                                                                                                            | C     | kPa      | mm    | kPa     | kPa   | C     | mm     | 10^3m3/d  | 10^3m3   | m3       | %              | m3        | m3       | m3       | m3/d      | %    | %   | ppm      |    |
| 323 | 1998/03/06 | 16:00:00 | 21650                                                                                                                                          |       | 0        |       |         |       |       | 88.900 |           |          |          |                |           |          |          |           |      |     |          |    |
| 324 |            | 16:30:00 | 21645                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 325 |            | 17:00:00 | 21645                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 326 |            | 17:30:00 | 21640                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 327 |            | 18:00:00 | 21640                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 328 |            | 18:30:00 | 21640                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 329 |            | 19:00:00 | 21635                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 330 |            | 19:30:00 | 21630                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 331 |            | 20:00:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 332 |            | 20:30:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 333 |            | 21:00:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 334 |            | 21:30:00 | 21630                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 335 |            | 22:00:00 | 21630                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 336 |            | 22:30:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 337 |            | 23:00:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 338 |            | 23:30:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 339 |            | 23:59:59 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 340 | 1998/03/07 | 00:30:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 341 |            | 01:00:00 | 21625                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 342 |            | 01:30:00 | 21620                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 343 |            | 02:00:00 | 21615                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 344 |            | 02:30:00 | 21615                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 345 |            | 03:00:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 346 |            | 03:15:00 | Wireline on location with perforating guns.                                                                                                    |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 347 |            | 03:30:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 348 |            | 04:00:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 349 |            | 04:30:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 350 |            | 05:00:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 351 |            | 05:30:00 | 21610                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 352 |            | 06:00:00 | 21615                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 353 |            | 06:30:00 | 21615                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 354 |            | 06:59:59 | 21615                                                                                                                                          |       | 0        |       | 0       | 0.00  | 0     |        | 0.000     | 719.266  |          |                |           |          |          |           |      |     |          |    |
| 355 |            |          | Cumulative Production of 160.5 Hrs. of flow (203 Hr. Report): Water = 311.78 M3 , Condensate = 000.00 M3                                       |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 356 |            |          | No samples taken in past 24 Hrs. Note: Adjusted previous cuml. water shipped off location after re-gauging tanks.                              |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 357 | 1998/03/07 | 07:00:00 | Fluid on location = 16.43 M3 , Fluid hauled off location past 24 Hrs.= 86.95 M3 , Cumulative fluid hauled off location (203 Hrs.) = 246.68 M3. |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 358 |            | 08:00:00 | 21605                                                                                                                                          |       | 0        |       | 0       | 0.00  | 0     |        | 0.000     | 719.266  | 2.84     |                | 0.00      | 0.00     | 0.000    | 311.78    | 0.00 |     |          |    |
| 359 |            | 09:00:00 | 21600                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 360 |            | 10:00:00 | 21595                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 361 |            | 11:00:00 | 21595                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 362 |            | 12:00:00 | 21595                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 363 |            | 13:00:00 | 21595                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 364 |            | 14:00:00 | 21590                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 365 |            | 15:00:00 | 21590                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 366 |            | 16:00:00 | 21585                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 367 |            | 17:00:00 | 21585                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 368 |            | 18:00:00 | 21585                                                                                                                                          |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |









Job Number: 2720  
 Customer: Ranger Oil Limited  
 Wellname: Fort Liard  
 Well Location: P - 66 - A  
 Formation: Nahanni

## FieldNotes



| Row | Date       | Clk Tim  | Tbg Pres                                                                                                                                                | Tbg T | Csg Pres | Choke | Static1 | Diff1 | Temp1 | Orif1  | Gas Rate1 | Cum Gas1 | Fid Vol1 | BSW1 Oil1 gain | Wat1 gain | Cum Oil1 | Cum Wat1 | Wat Rate1 | H2S  | CO2 | SALINITY | pH |
|-----|------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|-------|---------|-------|-------|--------|-----------|----------|----------|----------------|-----------|----------|----------|-----------|------|-----|----------|----|
|     | yy/mm/dd   | clock    | kPa                                                                                                                                                     | C     | kPa      | mm    | kPa     | kPa   | C     | mm     | 10^3m3/d  | 10^3m3   | m3       | %              | m3        | m3       | m3       | m3/d      | %    | %   | ppm      |    |
| 553 | 1998/03/24 | 04:30:00 | Shut in well, bled pressure into flowline (pressure test on flowline of 3500 Kpa) and remove faulty needle valve. Replace and reconnect deadweightline. |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 554 |            | 04:45:00 | Pressure test deadweight line with 20.0 Mpa baker pump.                                                                                                 |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 555 |            | 05:00:00 | Pressure test of 20.0 Mpa on deadweight line passed.                                                                                                    |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 556 |            | 05:15:00 | Shut in all valves and wait on day break to continue with pressure testing.                                                                             |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 557 |            | 06:15:00 | Check deadweight line pressure test. Pressure maintaining at 20.0 Mpa. Open wellhead to deadweight.                                                     |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 558 |            | 06:30:00 | 21645                                                                                                                                                   |       | 0        |       |         |       |       | 88.900 |           |          |          |                |           |          |          |           |      |     |          |    |
| 559 |            | 07:00:00 | 21645                                                                                                                                                   |       | 0        |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 560 |            | 08:00:00 | 21640                                                                                                                                                   |       | 1600     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 561 |            | 09:00:00 | 21640                                                                                                                                                   |       | 1600     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 562 |            | 10:00:00 | 21630                                                                                                                                                   |       | 1600     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 563 |            | 11:00:00 | 21630                                                                                                                                                   |       | 1625     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 564 |            | 12:00:00 | 21620                                                                                                                                                   |       | 1650     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 565 |            | 13:00:00 | 21620                                                                                                                                                   |       | 1650     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 566 |            | 14:00:00 | 21615                                                                                                                                                   |       | 1675     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 567 |            | 15:00:00 | 21615                                                                                                                                                   |       | 1700     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 568 |            | 15:05:00 | Bleed casing to 1000 kPa. Note: Sweet gas/air. No fluid present during bleed down.                                                                      |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 569 |            | 16:00:00 | 21610                                                                                                                                                   |       | 1200     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 570 |            | 17:00:00 | 21610                                                                                                                                                   |       | 1250     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 571 |            | 18:00:00 | 21600                                                                                                                                                   |       | 1300     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 572 |            | 19:00:00 | 21600                                                                                                                                                   |       | 1330     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 573 |            | 20:00:00 | 21595                                                                                                                                                   |       | 1350     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 574 |            | 21:00:00 | 21595                                                                                                                                                   |       | 1385     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 575 |            | 21:15:00 | High pressure injection pump repaired. Shut in wing valve to deadweight line and prepare to pressure test with diesel / cronox mixture.                 |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 576 |            | 21:45:00 | Pressure up deadweight line to 35.0 Mpa.                                                                                                                |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 577 |            | 23:30:00 | Deadweight line pressure still at 35.0 Mpa.                                                                                                             |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 578 |            | 23:45:00 | Open wing valve and resume monitoring wellhead pressures.                                                                                               |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 579 | 1998/03/25 | 00:00:00 | 21590                                                                                                                                                   |       | 1475     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 580 |            | 00:30:00 | 21585                                                                                                                                                   |       | 1500     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 581 |            | 01:00:00 | 21585                                                                                                                                                   |       | 1520     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 582 |            | 02:00:00 | 21585                                                                                                                                                   |       | 1540     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 583 |            | 03:00:00 | 21580                                                                                                                                                   |       | 1560     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 584 |            | 04:00:00 | 21580                                                                                                                                                   |       | 1580     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 585 |            | 05:00:00 | 21580                                                                                                                                                   |       | 1600     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 586 |            | 06:00:00 | 21580                                                                                                                                                   |       | 1620     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 587 |            | 07:00:00 | 21575                                                                                                                                                   |       | 1640     | 0.00  | 0       | 0.00  | 0     | 88.900 | 0.000     | 1201.354 | 65.53    | 0.0            | 0.00      | 0.00     | 0.000    | 467.87    | 0.00 |     |          |    |
| 588 |            | 08:00:00 | 21575                                                                                                                                                   |       | 1665     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 589 |            | 09:00:00 | 21575                                                                                                                                                   |       | 1675     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 590 |            | 10:00:00 | 21560                                                                                                                                                   |       | 1700     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 591 |            | 11:00:00 | 21560                                                                                                                                                   |       | 1725     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 592 |            | 12:00:00 | 21550                                                                                                                                                   |       | 1745     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 593 |            | 13:00:00 | 21550                                                                                                                                                   |       | 1765     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 594 |            | 14:00:00 | 21540                                                                                                                                                   |       | 1775     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 595 |            | 15:00:00 | 21540                                                                                                                                                   |       | 1775     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 596 |            | 16:00:00 | 21530                                                                                                                                                   |       | 1775     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 597 |            | 17:00:00 | 21530                                                                                                                                                   |       | 1800     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 598 |            | 18:00:00 | 21520                                                                                                                                                   |       | 1800     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |

Job Number: 2720  
 Customer: Ranger Oil Limited  
 Wellname: Fort Llard  
 Well Location: P - 66 - A  
 Formation: Nahanni

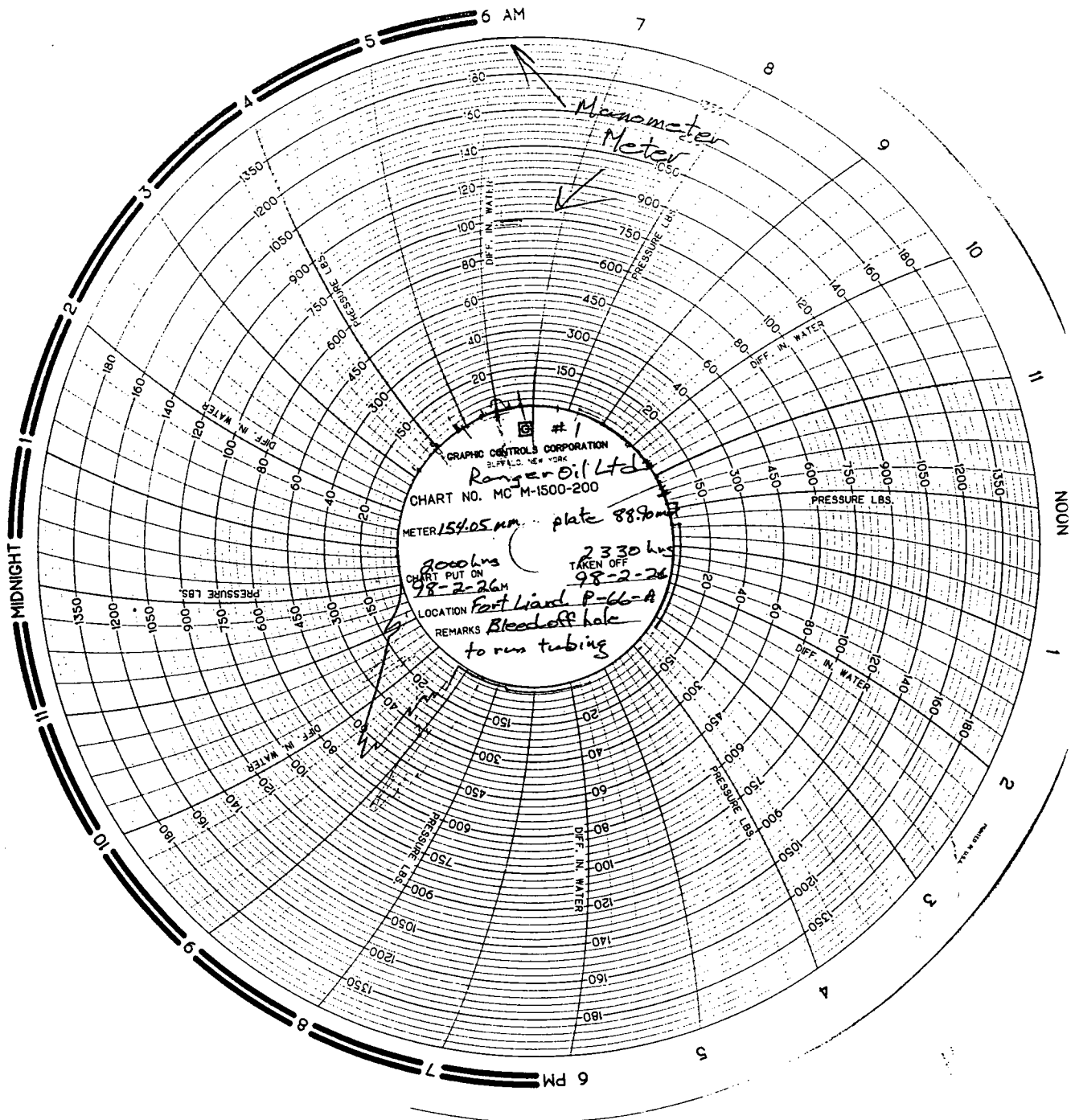
## FieldNotes



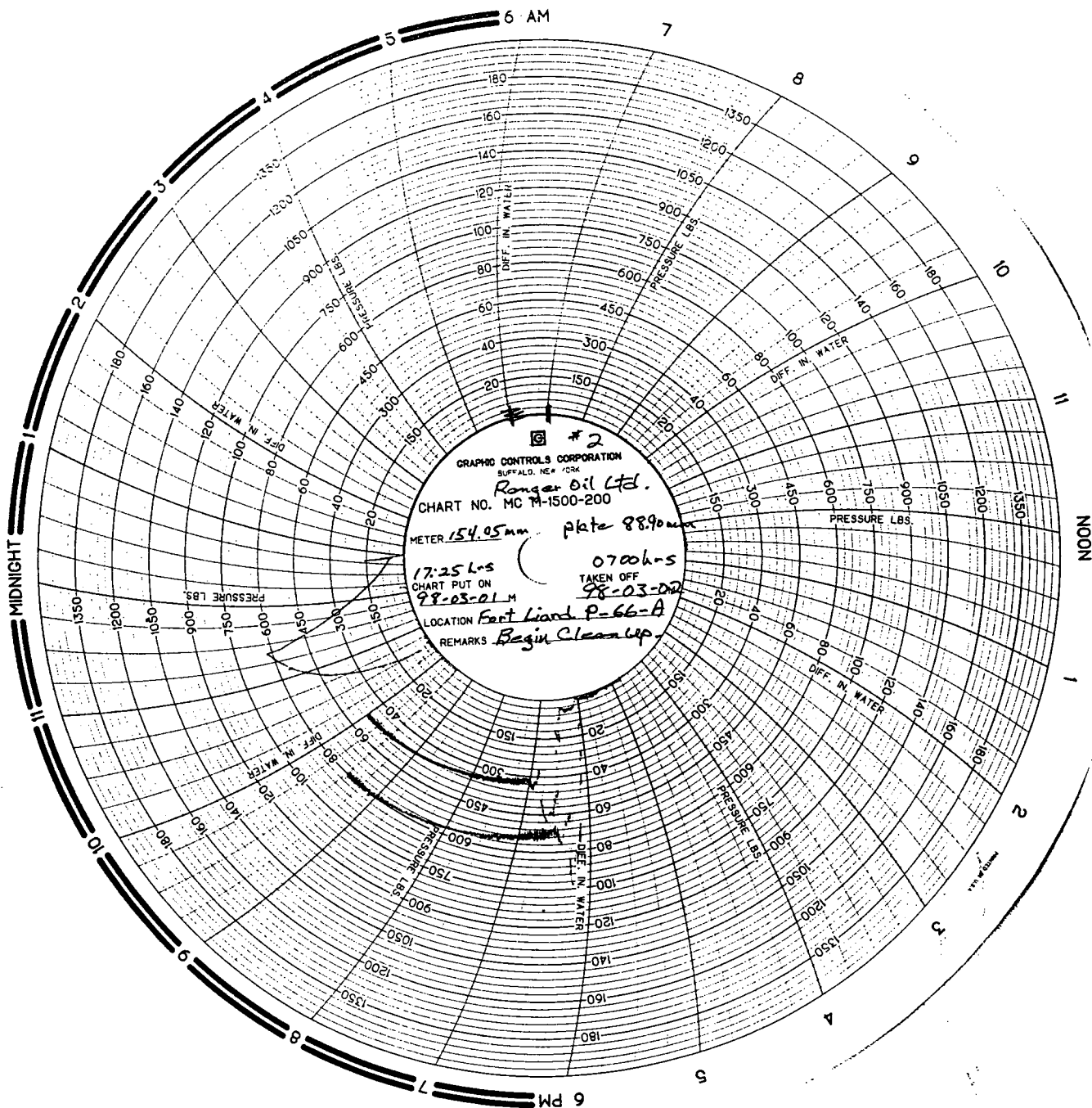
| Row | Date       | Clk Tim  | Tbg Pres                                                                                                                                 | Tbg T | Csg Pres | Choke | Static1 | Diff1 | Temp1 | Orif1  | Gas Rate1 | Cum Gas1 | Fld Vol1 | BSW1 Oil1 gain | Wat1 gain | Cum Oil1 | Cum Wat1 | Wat Rate1 | H2S  | CO2 | SALINITY | pH |
|-----|------------|----------|------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|-------|---------|-------|-------|--------|-----------|----------|----------|----------------|-----------|----------|----------|-----------|------|-----|----------|----|
|     | yy/mm/dd   | clock    | kPa                                                                                                                                      | C     | kPa      | mm    | kPa     | kPa   | C     | mm     | 10^3m3/d  | 10^3m3   | m3       | %              | m3        | m3       | m3       | m3/d      | %    | %   | ppm      |    |
| 599 | 1998/03/25 | 19:00:00 | 21550                                                                                                                                    |       | 1800     |       |         |       |       | 88.900 |           |          |          |                |           |          |          |           |      |     |          |    |
| 600 |            | 20:00:00 | 21540                                                                                                                                    |       | 1810     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 601 |            | 21:00:00 | 21540                                                                                                                                    |       | 1810     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 602 |            | 22:00:00 | 21540                                                                                                                                    |       | 1820     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 603 |            | 23:00:00 | 21540                                                                                                                                    |       | 1820     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 604 | 1998/03/26 | 00:00:00 | 21540                                                                                                                                    |       | 1830     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 605 |            | 01:00:00 | 21540                                                                                                                                    |       | 1830     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 606 |            | 02:00:00 | 21540                                                                                                                                    |       | 1830     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 607 |            | 03:00:00 | 21540                                                                                                                                    |       | 1840     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 608 |            | 04:00:00 | 21540                                                                                                                                    |       | 1840     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 609 |            | 05:00:00 | 21540                                                                                                                                    |       | 1840     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 610 |            | 06:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 611 |            | 07:00:00 | 21540                                                                                                                                    |       | 1850     | 0.00  | 0       | 0.00  | 10    | 88.900 | 0.000     | 1201.354 | 65.53    | 0.0            | 0.00      | 0.00     | 0.000    | 467.87    | 0.00 |     |          |    |
| 612 |            | 08:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 613 |            | 09:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 614 |            | 10:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 615 |            | 11:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 616 |            | 12:00:00 | 21540                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 617 |            | 13:00:00 | 21530                                                                                                                                    |       | 1850     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 618 |            | 14:00:00 | 21530                                                                                                                                    |       | 1860     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 619 |            | 15:00:00 | 21530                                                                                                                                    |       | 1860     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 620 |            | 16:00:00 | 21530                                                                                                                                    |       | 1870     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 621 |            | 17:00:00 | 21530                                                                                                                                    |       | 1870     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 622 |            | 18:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 623 |            | 19:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 624 |            | 20:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 625 |            | 21:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 626 |            | 22:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 627 |            | 23:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 628 | 1998/03/27 | 00:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 629 |            | 01:00:00 | 21520                                                                                                                                    |       | 1880     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 630 |            | 01:05:00 | Sample casing gas with Gas-Tech ; showed no H2S present. Bled casing down to 1000 Kpa. Check at end of bleed off for H2S ; None present. |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 631 |            | 02:00:00 | 21520                                                                                                                                    |       | 1190     |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 632 |            | 02:33:00 | Solid wireline on location.                                                                                                              |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 633 |            | 03:00:00 | Shut in master valves and bled off wellhead to flare stack. Close all valves on wellhead.                                                |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 634 |            | 04:00:00 | Hold safety meeting.                                                                                                                     |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 635 |            | 05:15:00 | Wireline running in hole with plug mandril.                                                                                              |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 636 |            | 06:00:00 | Wireline at surface. Bleed off wellhead to stack.                                                                                        |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 637 |            | 06:30:00 | Wireline preparing to run in well with prong.                                                                                            |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 638 |            | 06:35:00 | 21520                                                                                                                                    |       | 1450     | 0.00  | 0       | 0.00  | 10    | 88.900 | 0.000     | 1201.354 | 65.53    | 0.0            | 0.00      | 0.00     | 0.000    | 467.87    | 0.00 |     |          |    |
| 639 |            | 06:36:00 | Wireline running in well with prong.                                                                                                     |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 640 |            | 07:00:00 | 21500                                                                                                                                    |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 641 |            | 07:35:00 | Wireline out of hole and cap secured. Pressure up to choke to bleed down tubing. Pressure @ 21500 kPa.                                   |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 642 |            | 07:35:00 | Begin bleeding off tubing to flare at a slow rate.                                                                                       |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 643 |            | 08:00:00 | 9850                                                                                                                                     |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |
| 644 |            | 08:00:00 | 2 high pressure gas samples taken from meter run: AGAT: cyl # 5094 & #17806 at 750 kPa and 38 C.                                         |       |          |       |         |       |       |        |           |          |          |                |           |          |          |           |      |     |          |    |

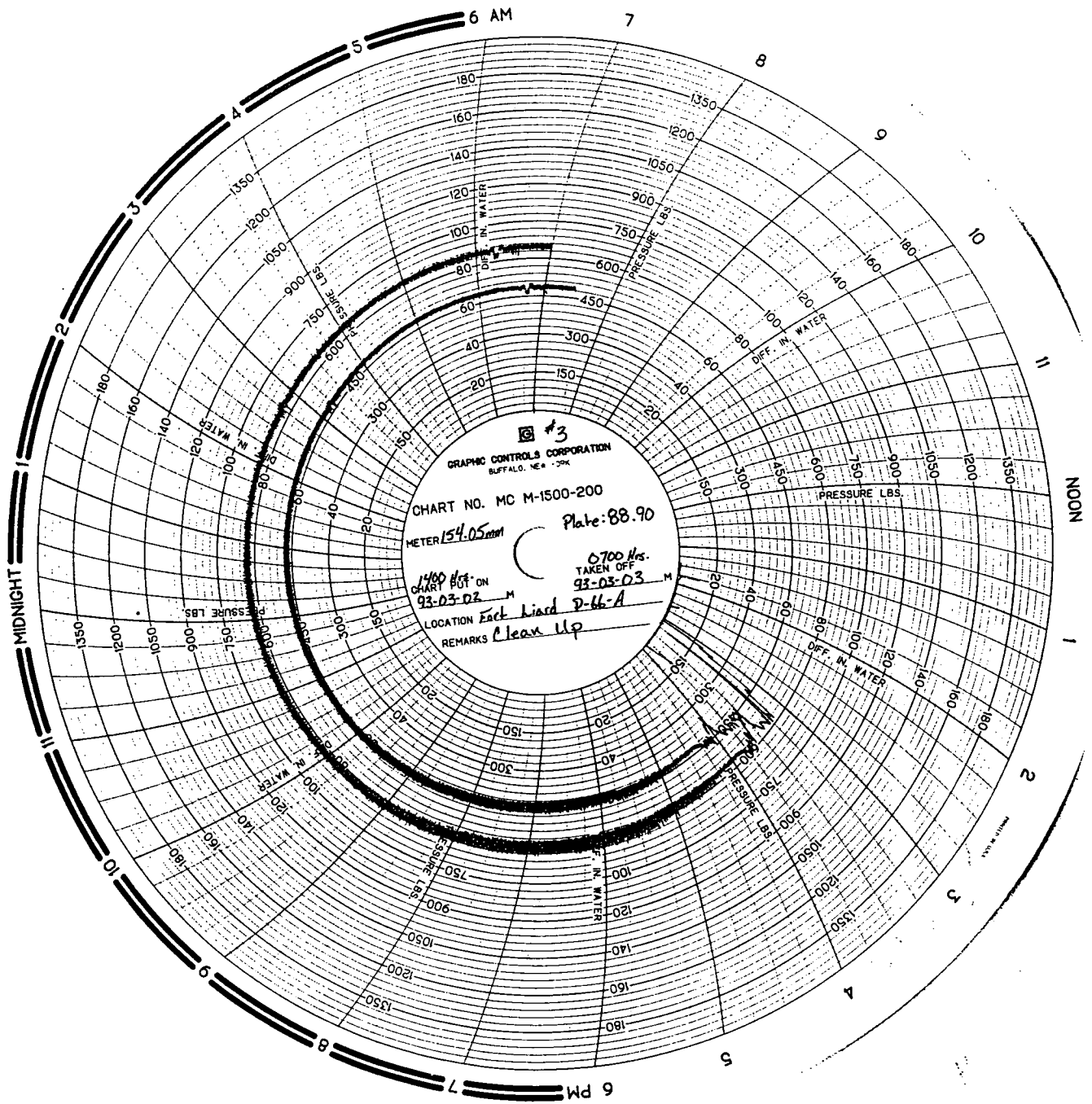
## FieldNotes

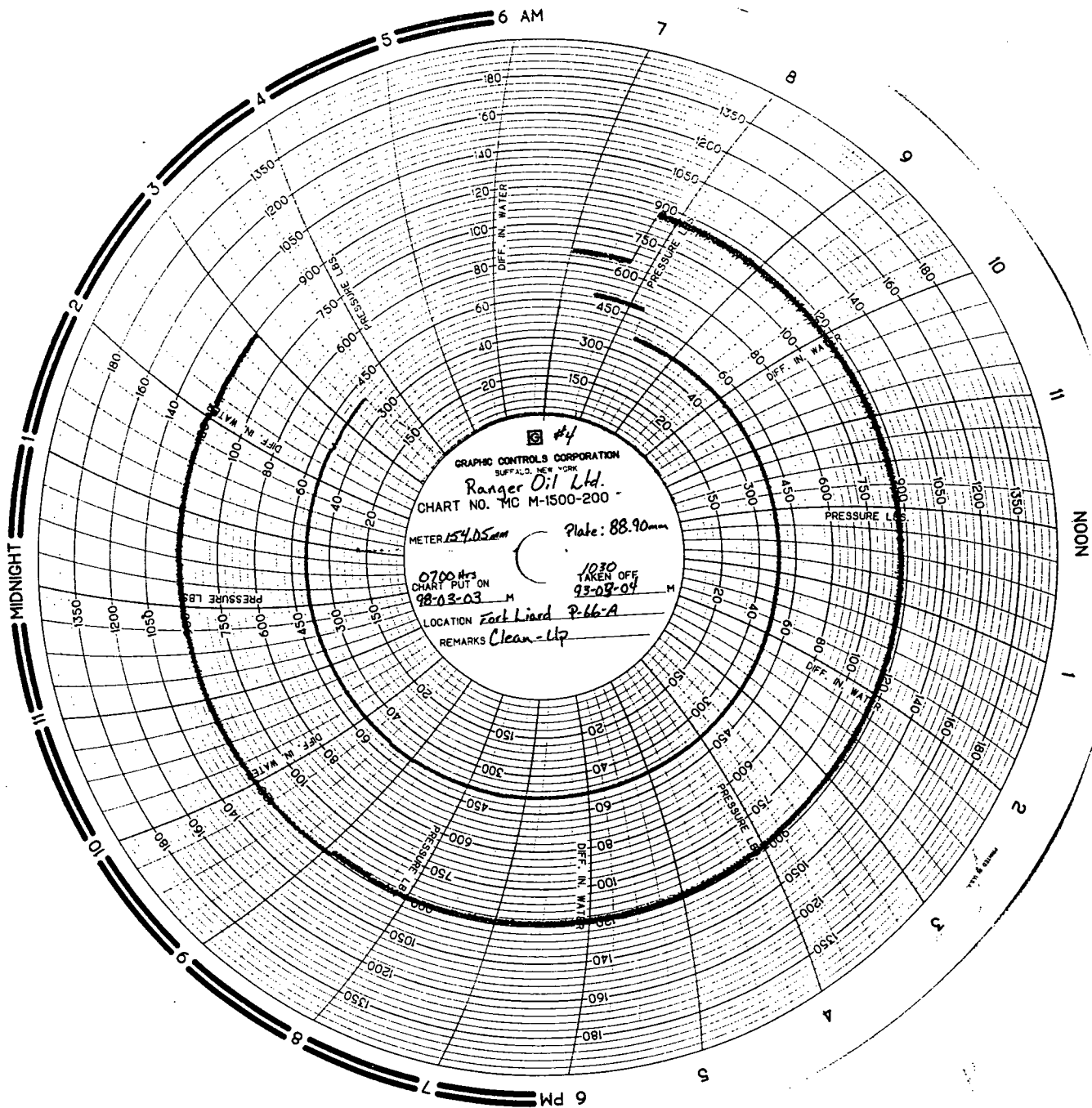
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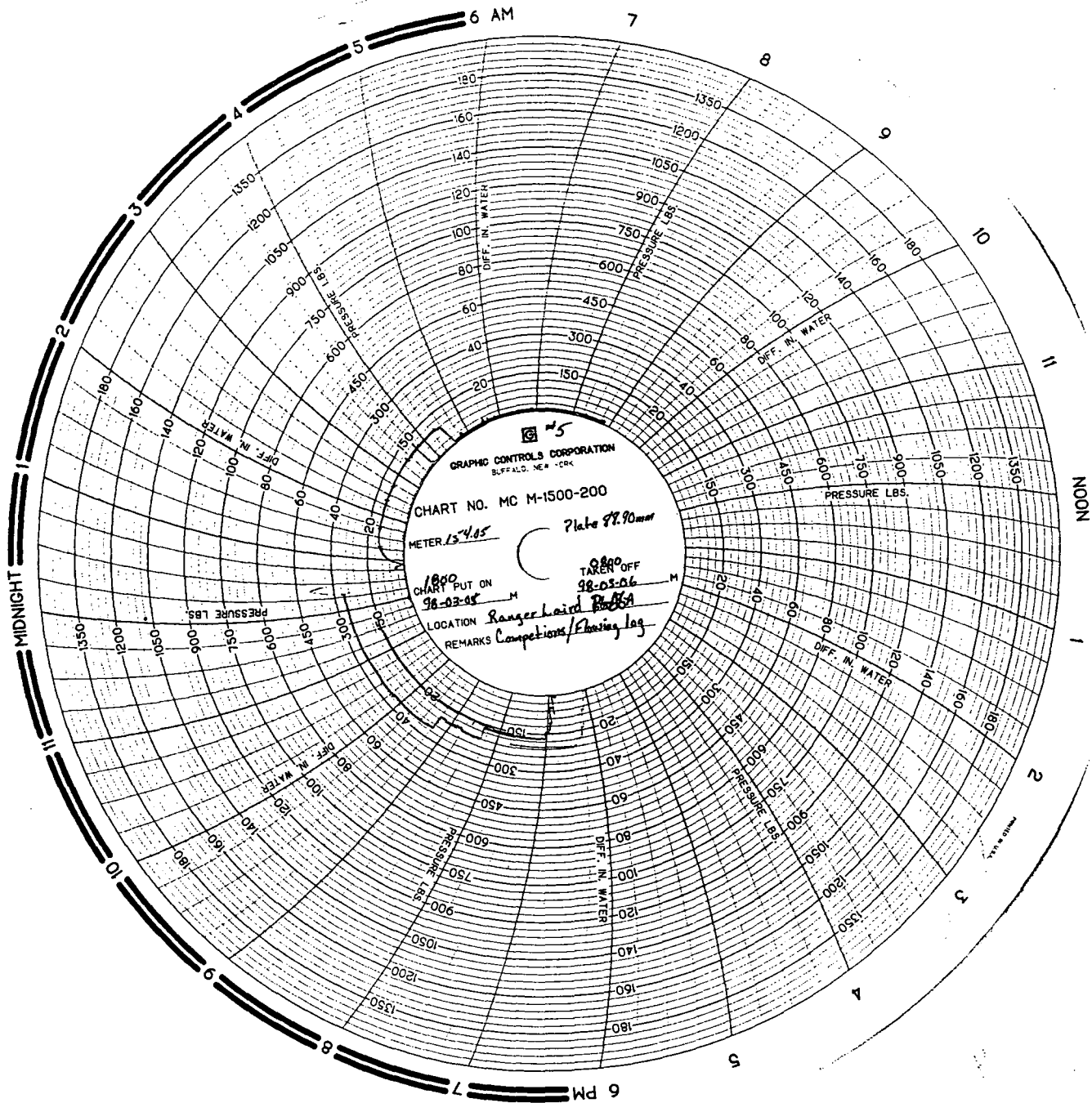


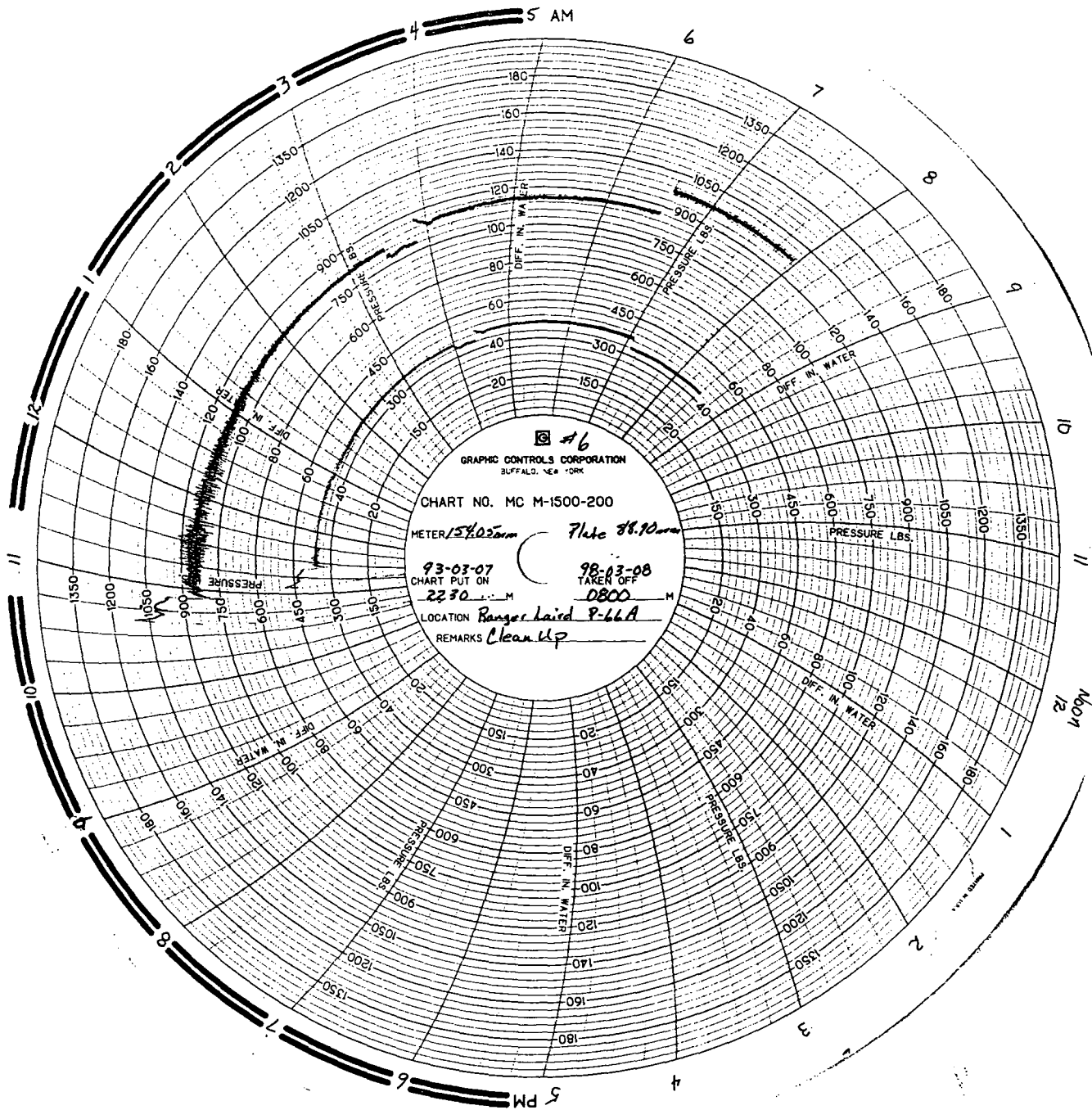
NATIONAL ENERGY BOARD  
ENGINEERING BRANCH  
MAY - 4 1998

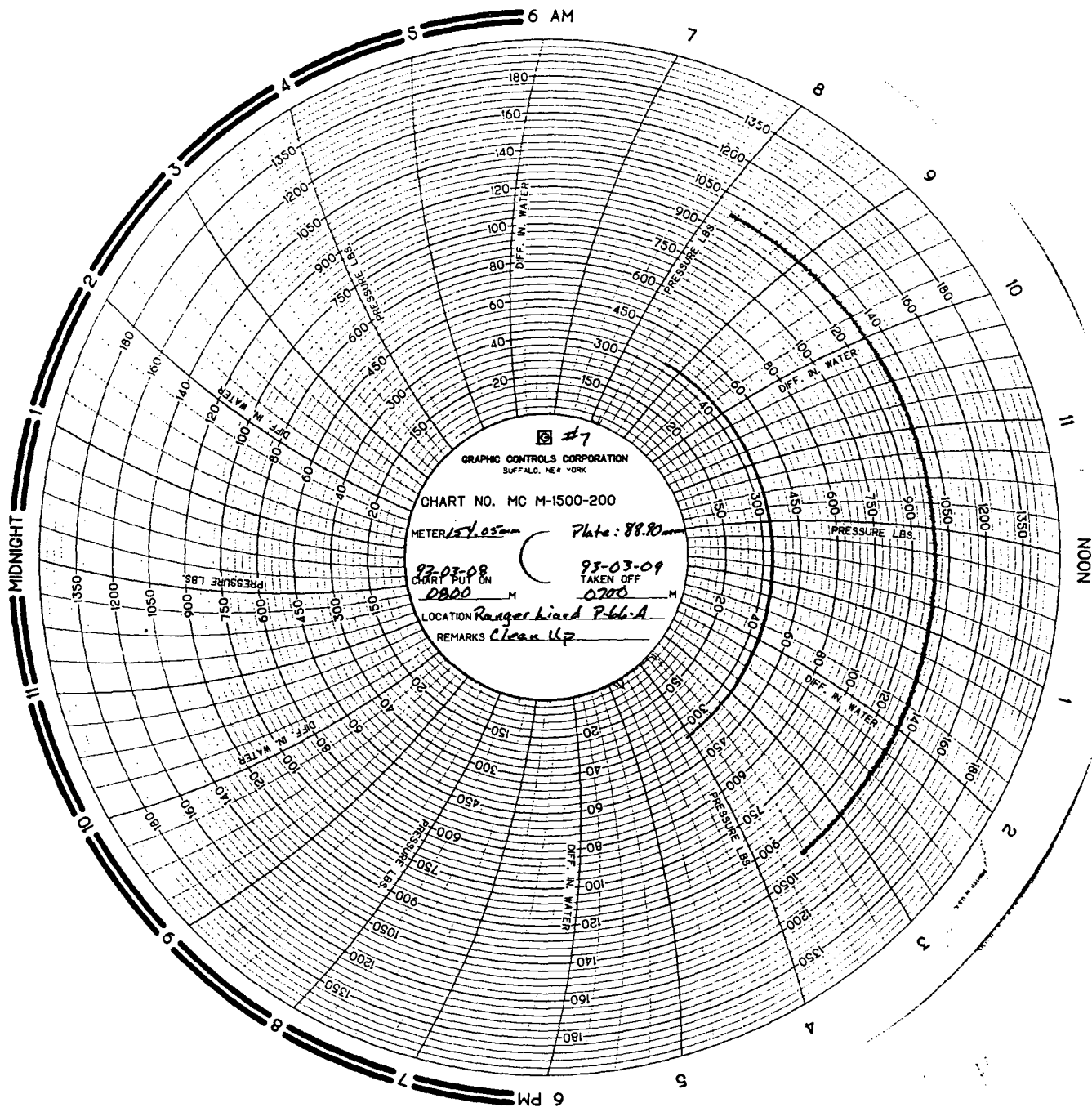


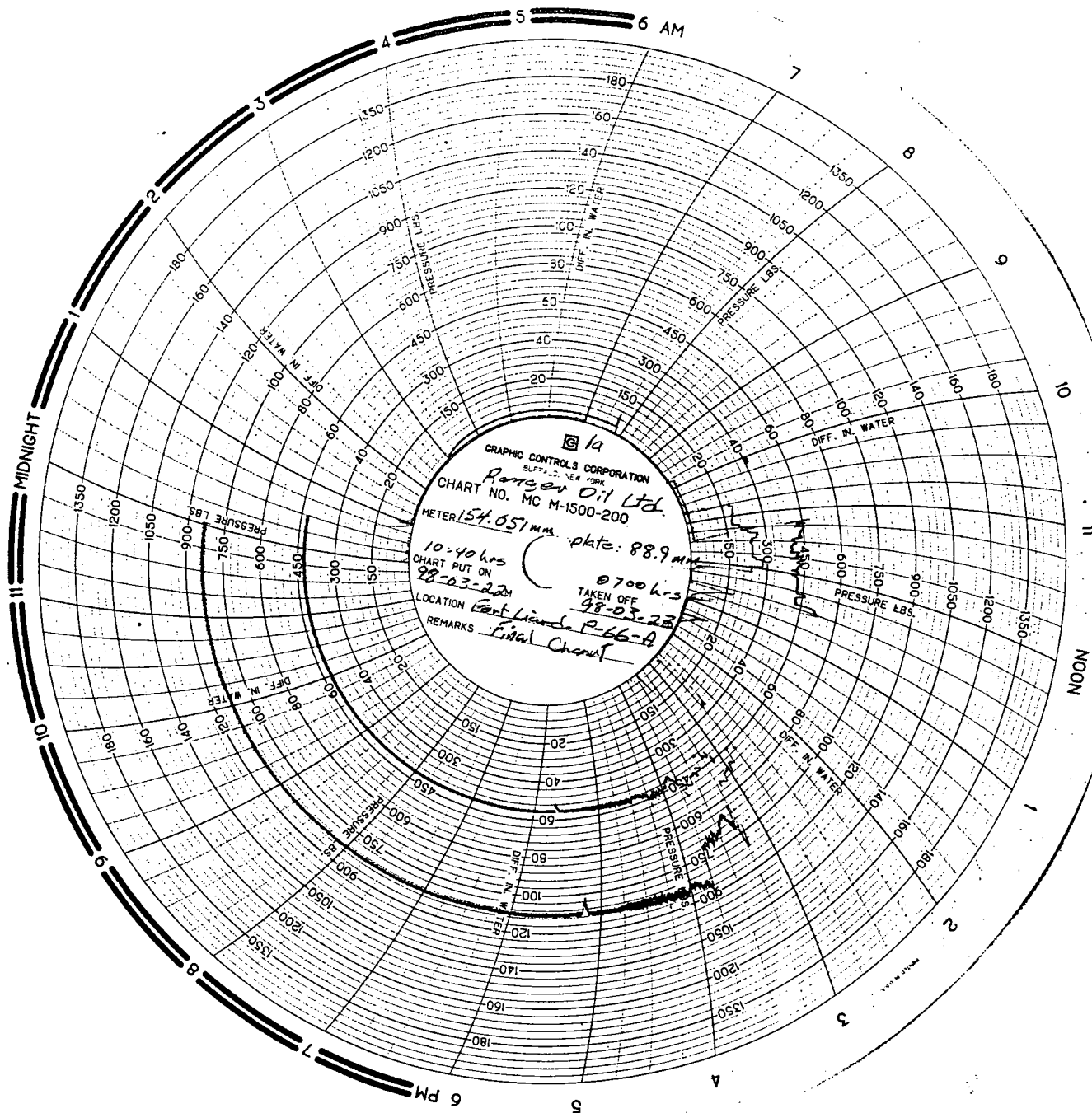












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WATER ANALYSIS

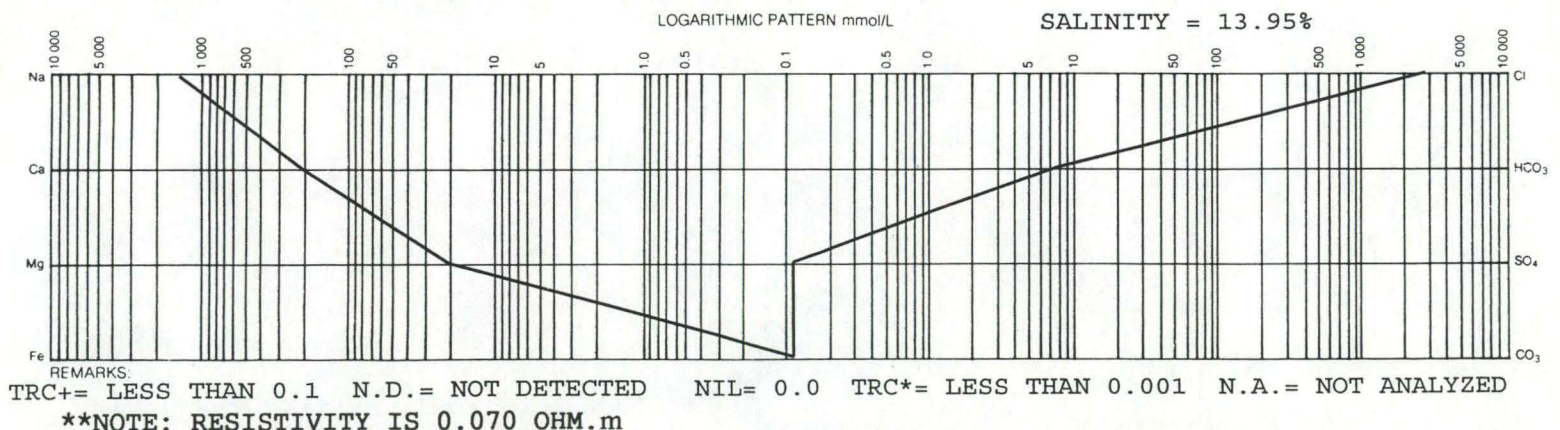
|                                                                                                                                            |  |                                               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------|--|
| CONTAINER IDENTIFICATION<br><b>PB 2B</b>                                                                                                   |  | LABORATORY NUMBER<br><b>WG24905B</b>          |  |
| OPERATOR NAME<br><b>RANGER OIL LIMITED</b>                                                                                                 |  |                                               |  |
| UNIQUE WELL IDENTIFIER<br><b>FORT LIARD</b>                                                                                                |  | WELL NAME<br><b>RANGER FORT LIARD p-066-A</b> |  |
| FIELD OR AREA<br><b>FORT LIARD</b>                                                                                                         |  | NAME OF SAMPLER<br><b>NAHANNI</b>             |  |
| TEST TYPE<br><b>NO</b>                                                                                                                     |  | TEST RECOVERY<br><b>CENTRAL PRODUCT</b>       |  |
| SAMPLING POINT<br><b>DUMP LINE</b>                                                                                                         |  | AMT & TYPE OF CUSHION<br><b>@ 25° C</b>       |  |
| TEST INTERVAL OR PERFS<br><b>TEST RECOVERY</b>                                                                                             |  | MUD RESISTIVITY/Ω m<br><b>@ 25° C</b>         |  |
| TYPE OF PRODUCTION<br><b>PUMPING</b> <b>FLOWING</b> <b>GAS LIFT</b> <b>SWAB</b>                                                            |  |                                               |  |
| PRODUCTION RATES<br><b>WATER</b> <b>m<sup>3</sup>/d</b> <b>OIL</b> <b>m<sup>3</sup>/d</b> <b>GAS</b> <b>10<sup>3</sup> m<sup>3</sup>/d</b> |  |                                               |  |
| SEPARATOR <b>GAUGE PRESSURE kPa</b> <b>TEMPERATURE °C</b>                                                                                  |  |                                               |  |
| TREATER <b>RESEVOIR</b> <b>SOURCE</b> <b>SAMPLED</b> <b>RECEIVED</b>                                                                       |  |                                               |  |
| DATE SAMPLED (Y-M-D)<br><b>98-03-03</b>                                                                                                    |  | DATE RECEIVED (Y-M-D)<br><b>98-04-01</b>      |  |
| DATE REPORTED (Y-M-D)<br><b>98-04-02</b>                                                                                                   |  | ANALYST<br><b>LN NCO</b>                      |  |
| OTHER INFORMATION<br><b>1800 HR</b>                                                                                                        |  |                                               |  |

| ION | mg/L    | MASS FRACTION | mmol/L |
|-----|---------|---------------|--------|
| Na  | 36000.0 | 0.267         | 1570.0 |
| K   | 4300.0  | 0.032         | 110.0  |
| Ca  | 9180.0  | 0.068         | 229.0  |
| Mg  | 582.0   | 0.004         | 23.9   |
| Ba  | N.A.    | N.A.          | N.A.   |
| Sr  | N.A.    | N.A.          | N.A.   |
| Fe  | 1.2     | TRC*          | TRC+   |

| ION              | mg/L    | MASS FRACTION | mmol/L |
|------------------|---------|---------------|--------|
| Cl               | 84000.0 | 0.624         | 2370.0 |
| Br               | N.A.    | N.A.          | N.A.   |
| I                | N.A.    | N.A.          | N.A.   |
| HCO <sub>3</sub> | 425.0   | 0.003         | 7.0    |
| SO <sub>4</sub>  | 12.1    | TRC*          | 0.1    |
| CO <sub>3</sub>  | NIL     | NIL           | NIL    |
| OH               | NIL     | NIL           | NIL    |
| H <sub>2</sub> S | 119.0   | 0.001         | 3.5    |

DISSOLVED

|                      |                      |
|----------------------|----------------------|
| TOTAL SOLIDS mg/L    |                      |
| EVAPORATED AT 110° C | EVAPORATED AT 180° C |
| AT IGNITION          | CALCULATED           |
|                      | <b>135000.0</b>      |
| RELATIVE DENSITY     |                      |
| <b>1.087 @ 25° C</b> | REFRACTIVE INDEX     |
|                      | <b>N.A. @ 25° C</b>  |
| OBSERVED pH          |                      |
| <b>6.49 @ 25° C</b>  | RESISTIVITY/OHM *m   |
|                      | <b>0.07 @ 25° C</b>  |



APR 21 1998



## WATER ANALYSIS

|                                                                                                                                                                                                                                   |                                               |                                          |                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------|-----------------------------------------------|
| CONTAINER IDENTIFICATION<br><b>PB 3C</b>                                                                                                                                                                                          |                                               | LABORATORY NUMBER<br><b>WG24905C</b>     |                                               |
| OPERATOR NAME<br><b>RANGER OIL LIMITED</b>                                                                                                                                                                                        |                                               |                                          |                                               |
| UNIQUE WELL IDENTIFIER<br><b>FORT LIARD</b>                                                                                                                                                                                       | WELL NAME<br><b>RANGER FORT LIARD p-066-A</b> | KB m<br><b></b>                          | ELEVATIONS GRD m<br><b></b>                   |
| FIELD OR AREA<br><b>FORT LIARD</b>                                                                                                                                                                                                | POOL OR ZONE<br><b>NAHANNI</b>                | NAME OF SAMPLER<br><b></b>               | COMPANY<br><b>CENTRAL PRODUCT</b>             |
| TEST TYPE<br><b></b>                                                                                                                                                                                                              | NO<br><b></b>                                 | TEST RECOVERY<br><b></b>                 |                                               |
| SAMPLING POINT<br><b>DUMP LINE</b>                                                                                                                                                                                                |                                               | AMT & TYPE OF CUSHION<br><b></b>         | MUD RESISTIVITY: $\Omega$ m<br><b>@ 25° C</b> |
| TYPE OF PRODUCTION<br><div style="display: flex; justify-content: space-around;"> <span>PUMPING</span> <span>FLOWING</span> <span>GAS LIFT</span> <span>SWAB</span> </div>                                                        |                                               |                                          |                                               |
| PRODUCTION RATES<br><div style="display: flex; justify-content: space-around;"> <span>WATER <math>m^3/d</math> <b></b></span> <span>OIL <math>m^3/d</math> <b></b></span> <span>GAS <math>10^3 m^3/d</math> <b></b></span> </div> |                                               |                                          |                                               |
| GAUGE PRESSURE kPa<br><b></b>                                                                                                                                                                                                     |                                               | SEPARATOR<br><b></b>                     | TREATER<br><b></b>                            |
| TEMPERATURE °C<br><b></b>                                                                                                                                                                                                         |                                               | RESERVOIR<br><b></b>                     | SOURCE<br><b></b>                             |
|                                                                                                                                                                                                                                   |                                               | SAMPLED<br><b></b>                       | RECEIVED<br><b></b>                           |
| DATE SAMPLED (Y-M-D)<br><b>98-03-08</b>                                                                                                                                                                                           | DATE RECEIVED (Y-M-D)<br><b>98-04-01</b>      | DATE REPORTED (Y-M-D)<br><b>98-04-02</b> | ANALYST<br><b>LN NCO</b>                      |
|                                                                                                                                                                                                                                   |                                               | OTHER INFORMATION<br><b>1200 HR</b>      |                                               |

| ION | mg/L    | MASS FRACTION | mmol/L |
|-----|---------|---------------|--------|
| Na  | 40100.0 | 0.282         | 1750.0 |
| K   | 5020.0  | 0.035         | 128.0  |
| Ca  | 10100.0 | 0.071         | 251.0  |
| Mg  | 649.0   | 0.005         | 26.7   |
| Ba  | N.A.    | N.A.          | N.A.   |
| Sr  | N.A.    | N.A.          | N.A.   |
| Fe  | 1.3     | TRC*          | TRC+   |

| ION              | mg/L    | MASS FRACTION | mmol/L |
|------------------|---------|---------------|--------|
| Cl               | 86000.0 | 0.604         | 2430.0 |
| Br               | N.A.    | N.A.          | N.A.   |
| I                | N.A.    | N.A.          | N.A.   |
| HCO <sub>3</sub> | 450.0   | 0.003         | 7.4    |
| SO <sub>4</sub>  | 6.7     | TRC*          | 0.1    |
| CO <sub>3</sub>  | NIL     | NIL           | NIL    |
| OH               | NIL     | NIL           | NIL    |
| H <sub>2</sub> S | 17.0    | TRC*          | 0.5    |

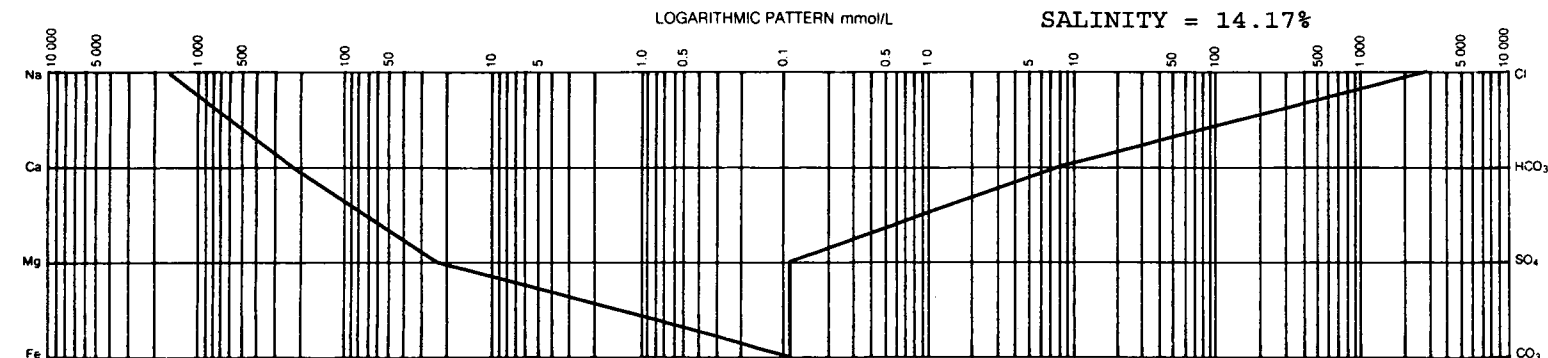
### DISSOLVED

TOTAL SOLIDS mg/L

|                                 |                                 |
|---------------------------------|---------------------------------|
| EVAPORATED AT 110° C<br><b></b> | EVAPORATED AT 180° C<br><b></b> |
| AT IGNITION<br><b></b>          | CALCULATED<br><b>142000.0</b>   |

|                                          |                                         |
|------------------------------------------|-----------------------------------------|
| RELATIVE DENSITY<br><b>1.095 @ 25° C</b> | REFRACTIVE INDEX<br><b>N.A. @ 25° C</b> |
|------------------------------------------|-----------------------------------------|

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| OBSERVED pH<br><b>6.44 @ 25° C</b> | RESISTIVITY/OHM *m<br><b>0.06 @ 25° C</b> |
|------------------------------------|-------------------------------------------|



REMARKS: TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC\*= LESS THAN 0.001 N.A.= NOT ANALYZED

**\*\*NOTE: RESISTIVITY IS 0.065 OHM.m**

NATIONAL FISH BOARD  
E... CH  
APR 21 1998



## GAS ANALYSIS

CONTAINER IDENTIFICATION

AGAT 17806

LABORATORY NUMBER

GG24905A

OPERATOR NAME

RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER

WELL NAME

ELEVATIONS  
KB m GRD m

RANGER FORT LIARD p-066-A

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

B.C.

NAHANNI

CENTRAL PRODUCT

TEST TYPE

NO

TEST RECOVERY

TEST INTERVAL OR PERFS

SAMPLING POINT

SEPARATOR METER RUN

|                    | SEPARATOR | TREATER | RESERVOIR | SOURCE | SAMPLED | RECEIVED |
|--------------------|-----------|---------|-----------|--------|---------|----------|
| GAUGE PRESSURE kPa | 750       |         |           | 750    |         | 740      |
| TEMPERATURE °C     | 38        |         |           | 38     |         | 21       |

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

98-03-27

98-04-01

98-04-02

BD

NCO

| COMP.             | MOLE FRACTION           |                           | PETROLEUM LIQUID CONTENT<br>mL • m <sup>-3</sup> |
|-------------------|-------------------------|---------------------------|--------------------------------------------------|
|                   | AIR FREE<br>AS RECEIVED | AIR FREE<br>ACID GAS FREE |                                                  |
| H <sub>2</sub>    | 0.0001                  | 0.0001                    |                                                  |
| He                | 0.0010                  | 0.0013                    |                                                  |
| N <sub>2</sub>    | 0.0497                  | 0.0628                    |                                                  |
| CO <sub>2</sub>   | 0.1940                  | 0.0000                    |                                                  |
| H <sub>2</sub> S  | 0.0150                  | 0.0000                    |                                                  |
| C <sub>1</sub>    | 0.7402                  | 0.9358                    |                                                  |
| C <sub>2</sub>    | TRACE                   | TRACE                     |                                                  |
| C <sub>3</sub>    | 0.0000                  | 0.0000                    | 0.0                                              |
| IC <sub>4</sub>   | 0.0000                  | 0.0000                    | 0.0                                              |
| NC <sub>4</sub>   | 0.0000                  | 0.0000                    | 0.0                                              |
| IC <sub>5</sub>   | 0.0000                  | 0.0000                    | 0.0                                              |
| NC <sub>5</sub>   | 0.0000                  | 0.0000                    | 0.0                                              |
| C <sub>6</sub>    | 0.0000                  | 0.0000                    | 0.0                                              |
| C <sub>7</sub> +  | 0.0000                  | 0.0000                    | 0.0                                              |
| C <sub>8</sub>    |                         |                           |                                                  |
| C <sub>9</sub>    |                         |                           |                                                  |
| C <sub>10</sub> + |                         |                           |                                                  |
| TOTAL             | 1.0000                  | 1.0000                    | 0.0                                              |

GROSS HEATING VALUE MJm<sup>-3</sup>  
15° C AND 101.325 kPa

MOISTURE AND  
ACID GAS FREE

35.35

AIR FREE  
AS RECEIVED

28.34

VAPOUR PRESSURE  
PENTANES PLUS

0.0

kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED

MOISTURE AND ACID GAS FREE

MEASURED

CALCULATED

0.771

MEASURED

CALCULATED

0.579

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED

ACID GAS FREE

pPc (abs)

5145 kPa

pTc

211.9 K

pPc (abs)

4523 kPa

pTc

186.2 K

RELATIVE MOLECULAR MASS

TOTAL GAS

22.3

C<sub>7</sub> +

0.0

H<sub>2</sub>S g/m<sup>3</sup>

21.54

REMARKS:

EXCEED NORMAL LIMITS : CO<sub>2</sub>  
FIELD H<sub>2</sub>S = 1.5%/LAB = ND

NATIONAL ENERGY BOARD  
ENGINEERING  
APR 21 1998

**AGAT** Laboratories

**WATER ANALYSIS**

CONTAINER IDENTIFICATION: **PE 1A** LABORATORY NUMBER: **WF23608A**

RANGER OIL LIMITED OPERATOR NAME: \_\_\_\_\_

UNIQUE WELL IDENTIFIER: \_\_\_\_\_ WELL NAME: **RANGER FORT LIARD 5-086-A7** KB: \_\_\_\_\_ ELEVATION: \_\_\_\_\_

FIELD OR AREA: **FORT LIARD** POOL OR ZONE: \_\_\_\_\_ NAME OF SAMPLER: \_\_\_\_\_ COMPANY: **CENTRAL PRODUCT**

TEST TYPE: ☐ NO ☐ TEST RECOVERY: \_\_\_\_\_

SAMPLING POINT: **SEPARATOR** AMT & TYPE OF CUSHION: \_\_\_\_\_ MUD RESISTIVITY: \_\_\_\_\_ @ 25°C

TEST INTERVAL OR PERFS: \_\_\_\_\_

TYPE OF PRODUCTION: ☐ PUMPING ☐ FLOWING ☐ GAS LIFT ☐ SWAB

PRODUCTION RATES: WATER: \_\_\_\_\_ m³/d OIL: \_\_\_\_\_ m³/d GAS: \_\_\_\_\_ 10³ m³/d

SEPARATOR TREATER RESERVOIR SOURCE SAMPLED RECEIVED

GAUGE PRESSURE: \_\_\_\_\_ kPa TEMPERATURE: \_\_\_\_\_ °C

DATE SAMPLED (Y-M-D): **98-03-01** DATE RECEIVED (Y-M-D): **98-03-04** DATE REPORTED (Y-M-D): **98-03-09** ANALYST: **LN NCO** OTHER INFORMATION: \_\_\_\_\_

| ION              | mg/L    | MASS FRACTION | mmol/L |
|------------------|---------|---------------|--------|
| Na               | 22100.0 | 0.281         | 959.0  |
| K                | 2560.0  | 0.032         | 65.5   |
| Ca               | 5250.0  | 0.067         | 132.0  |
| Mg               | 350.0   | 0.004         | 14.4   |
| Ba               | N.A.    | N.A.          | N.A.   |
| Br               | N.A.    | N.A.          | N.A.   |
| Fe               | 1.0     | TRC*          | TRC+   |
| Cl               | 47500.0 | 0.603         | 1340.0 |
| Cr               | N.A.    | N.A.          | N.A.   |
| I                | N.A.    | N.A.          | N.A.   |
| HCO <sub>3</sub> | 610.0   | 0.008         | 10.0   |
| SO <sub>4</sub>  | 226.0   | 0.003         | 2.3    |
| CO <sub>3</sub>  | NIL     | NIL           | NIL    |
| OH               | NIL     | NIL           | NIL    |
| H <sub>2</sub> S | 145.0   | 0.002         | 4.3    |

**DISSOLVED**

TOTAL SOLIDS: \_\_\_\_\_ mg/L

EVAPORATED AT 110°C: \_\_\_\_\_

EVAPORATED AT 180°C: \_\_\_\_\_

AT IGNITION: \_\_\_\_\_ CALCULATED: **78800.0**

RELATIVE DENSITY: **1.049** @ 25°C

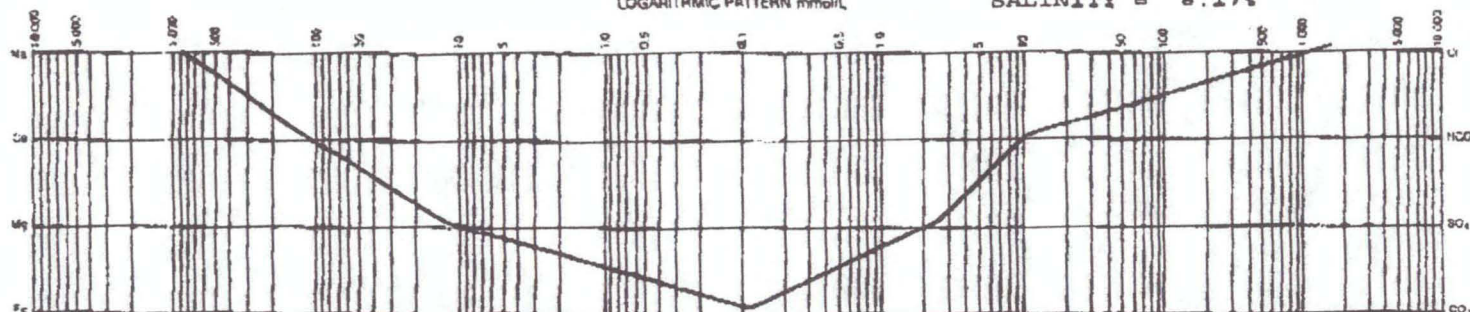
REFRACTIVE INDEX: **N.A.** @ 25°C

OBSERVED pH: **6.48** @ 25°C

RESISTIVITY/CMH: **0.10** @ 25°C

LOGARITHMIC PATTERN mmol/L

SALINITY = 8.17‰



REMARKS: TRC+ = LESS THAN 0.1 N.D. = NOT DETECTED NIL = 0.0 TRC\* = LESS THAN 0.001 N.A. = NOT ANALYZED

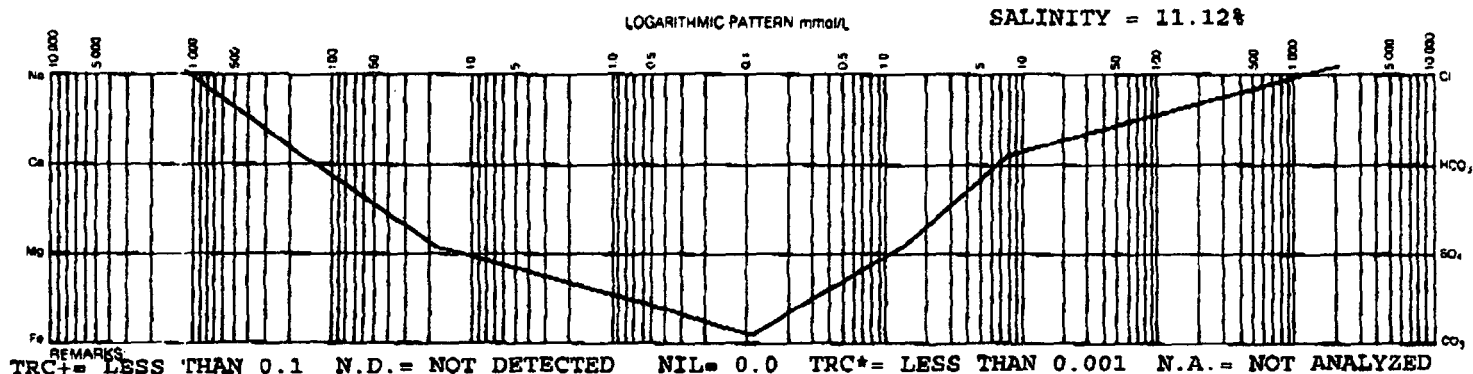
**AGAT** Laboratories**WATER ANALYSIS**

|                                                                                                                                                                                                         |                                               |                                                                                                                                                 |                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| CONTAINER IDENTIFICATION<br><b>PB 1A</b>                                                                                                                                                                |                                               | LABORATORY NUMBER<br><b>W24064A</b>                                                                                                             |                                        |
| OPERATOR NAME<br><b>RANGER OIL LIMITED</b>                                                                                                                                                              |                                               |                                                                                                                                                 |                                        |
| UNIQUE WELL IDENTIFIER<br><b>PORT LIARD</b>                                                                                                                                                             | WELL NAME<br><b>RANGER FORT LIARD P-066-A</b> | NB m<br><b></b>                                                                                                                                 | ELEVATIONB GRD m<br><b></b>            |
| FIELD OR AREA<br><b>PORT LIARD</b>                                                                                                                                                                      | POOL OR ZONE<br><b></b>                       | NAME OF SAMPLER<br><b></b>                                                                                                                      | COMPANY<br><b>SAME</b>                 |
| TEST TYPE<br><b>NO</b>                                                                                                                                                                                  | TEST RECOVERY<br><b></b>                      |                                                                                                                                                 |                                        |
| SAMPLING POINT<br><b></b>                                                                                                                                                                               |                                               | AMT & TYPE OF CUSHION<br><b></b>                                                                                                                | MUD RESISTIVITY/Ω m<br><b></b> @ 25° C |
| TEST INTERVAL OR PERFS<br><b></b>                                                                                                                                                                       |                                               |                                                                                                                                                 |                                        |
| TYPE OF PRODUCTION<br><input type="checkbox"/> PUMPING <input type="checkbox"/> FLOWING <input type="checkbox"/> GAS LIFT <input type="checkbox"/> SWAB                                                 |                                               |                                                                                                                                                 |                                        |
| PRODUCTION RATES<br>WATER <input type="text"/> m <sup>3</sup> /d    OIL <input type="text"/> m <sup>3</sup> /d    GAS <input type="text"/> 10 <sup>3</sup> m <sup>3</sup> /d                            |                                               |                                                                                                                                                 |                                        |
| GAUGE PRESSURE kPa<br>SEPARATOR <input type="text"/> TREATER <input type="text"/> RESERVOIR <input type="text"/> SOURCE <input type="text"/> SAMPLED <input type="text"/> RECEIVED <input type="text"/> |                                               | TEMPERATURE °C<br><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |                                        |
| DATE SAMPLED (Y-M-D)<br><b>98-03-02</b>                                                                                                                                                                 | DATE RECEIVED (Y-M-D)<br><b>98-03-12</b>      | DATE REPORTED (Y-M-D)<br><b>98-03-12</b>                                                                                                        | ANALYST<br><b>LN NCO</b>               |
|                                                                                                                                                                                                         |                                               | OTHER INFORMATION<br><b>TIME: 23:59 HRS</b>                                                                                                     |                                        |

| ION | mg/L    | MASS FRACTION | mmol/L | ION              | mg/L    | MASS FRACTION | mmol/L |
|-----|---------|---------------|--------|------------------|---------|---------------|--------|
| Na  | 29000.0 | 0.273         | 1260.0 | Cl               | 66000.0 | 0.621         | 1860.0 |
| K   | 3380.0  | 0.032         | 86.4   | Br               | N.A.    | N.A.          | N.A.   |
| Ca  | 6750.0  | 0.064         | 168.0  | I                | N.A.    | N.A.          | N.A.   |
| Mg  | 492.0   | 0.005         | 20.2   | HCO <sub>3</sub> | 442.0   | 0.004         | 7.2    |
| Ba  | N.A.    | N.A.          | N.A.   | SO <sub>4</sub>  | 123.0   | 0.001         | 1.3    |
| Si  | N.A.    | N.A.          | N.A.   | CO <sub>3</sub>  | NIL     | NIL           | NIL    |
| Pb  | 2.2     | TRC*          | TRC*   | OH               | NIL     | NIL           | NIL    |
|     |         |               |        | H <sub>2</sub> S | 34.1    | TRC*          | 1.0    |

**DISSOLVED**

|                                              |                                              |
|----------------------------------------------|----------------------------------------------|
| TOTAL SOLIDS mg/L                            |                                              |
| EVAPORATED AT 110° C<br><input type="text"/> | EVAPORATED AT 180° C<br><input type="text"/> |
| AT IGNITION<br><input type="text"/>          | CALCULATED<br><b>106000.0</b>                |
| RELATIVE DENSITY<br><b>1.071</b> @ 25° C     | REFRACTIVE INDEX<br><b>N.A.</b> @ 25° C      |
| OBSERVED pH<br><b>6.58</b> @ 25° C           | RESISTIVITY OHM·m<br><b>0.08</b> @ 25° C     |



\*\*NOTE: RESISTIVITY IS 0.080 OHM.m

# AGAT<sup>®</sup> Laboratories

## WATER ANALYSIS

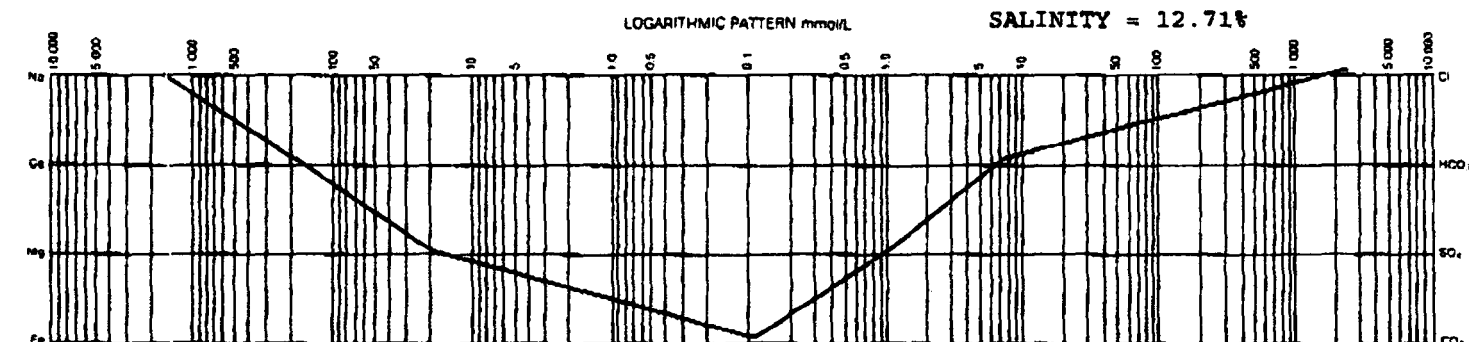
|                                              |  |                                                                                                                                |  |
|----------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------|--|
| CONTAINER IDENTIFICATION<br><b>PB 2B</b>     |  | LABORATORY NUMBER<br><b>W24064B</b>                                                                                            |  |
| OPERATOR NAME<br><b>RANGER OIL LIMITED</b>   |  |                                                                                                                                |  |
| UPRIQUE WELL IDENTIFIER<br><b>FORT LIARD</b> |  | WELL NAME<br><b>RANGER FORT LIARD P-066-A</b>                                                                                  |  |
| FIELD OR AREA<br><b>FORT LIARD</b>           |  | NAME OF SAMPLER<br><b>SAME</b>                                                                                                 |  |
| TEST TYPE<br><b>NO</b>                       |  | TEST RECOVERY<br><b>NO</b>                                                                                                     |  |
| SAMPLING POINT<br><b>NO</b>                  |  | MUD RESISTIVITY $\Omega$ m<br><b>25 °C</b>                                                                                     |  |
| TEST INTERVAL OR PERFS<br><b>NO</b>          |  | TYPE OF PRODUCTION<br><b>PUMPING</b>                                                                                           |  |
|                                              |  | PRODUCTION RATES<br><b>WATER</b> m <sup>3</sup> /d <b>OIL</b> m <sup>3</sup> /d <b>GAS</b> (10 <sup>3</sup> m <sup>3</sup> /d) |  |
|                                              |  | SEPARATOR <b>NO</b> TREATER <b>NO</b> RESERVOIR <b>NO</b> SOURCE <b>NO</b> SAMPLED <b>NO</b> RECEIVED <b>NO</b>                |  |
| DATE SAMPLED (Y-M-D)<br><b>98-03-02</b>      |  | DATE RECEIVED (Y-M-D)<br><b>98-03-12</b>                                                                                       |  |
| DATE REPORTED (Y-M-D)<br><b>98-03-12</b>     |  | ANALYST<br><b>LN NCO</b>                                                                                                       |  |
|                                              |  | OTHER INFORMATION<br><b>TIME: 06:00 HRS</b>                                                                                    |  |

| ION | mg/L    | MASS FRACTION | mmol/L |
|-----|---------|---------------|--------|
| Na  | 41200.0 | 0.319         | 1790.0 |
| K   | 3420.0  | 0.026         | 87.5   |
| Ca  | 7540.0  | 0.058         | 188.0  |
| Mg  | 545.0   | 0.004         | 22.4   |
| Ba  | N.A.    | N.A.          | N.A.   |
| Br  | N.A.    | N.A.          | N.A.   |
| Fe  | 2.5     | TRC*          | TRC+   |

| ION              | mg/L    | MASS FRACTION | mmol/L |
|------------------|---------|---------------|--------|
| Cl               | 76000.0 | 0.588         | 2140.0 |
| B                | N.A.    | N.A.          | N.A.   |
| I                | N.A.    | N.A.          | N.A.   |
| HCO <sub>3</sub> | 412.0   | 0.003         | 6.7    |
| SO <sub>4</sub>  | 93.0    | 0.001         | 1.0    |
| CO <sub>3</sub>  | NIL     | NIL           | NIL    |
| OH               | NIL     | NIL           | NIL    |
| H <sub>2</sub> S | TRC+    | TRC*          | TRC+   |

### DISSOLVED

|                      |                      |
|----------------------|----------------------|
| TOTAL SOLIDS mg/L    |                      |
| EVAPORATED AT 110 °C | EVAPORATED AT 180 °C |
| AT IGNITION          | CALCULATED           |
|                      | <b>129000.0</b>      |
| RELATIVE DENSITY     |                      |
| <b>1.079</b> @ 25 °C | REFRACTIVE INDEX     |
|                      | <b>N.A.</b> @ 25 °C  |
| OBSERVED pH          |                      |
| <b>6.76</b> @ 25 °C  | RESISTIVITY/OHM *m   |
|                      | <b>0.08</b> @ 25 °C  |



REMARKS: TRC+ = LESS THAN 0.1 N.D. = NOT DETECTED NIL = 0.0 TRC\* = LESS THAN 0.001 N.A. = NOT ANALYZED

\*\*NOTE: RESISTIVITY IS 0.076 OHM.m

# AGAT<sup>®</sup> Laboratories



CONTAINER IDENTIFICATION

AGAT 19267

## GAS ANALYSIS

LABORATORY NUMBER

GP23608A

OPERATOR NAME

RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER

WELL NAME

KB m ELEVATIONS ORD m

RANGER FORT LIARD P-066-A/

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

FORT LIARD

CENTRAL PRODUCT

TEST TYPE

NO

TEST RECOVERY

TEST INTERVAL OR PERFS

SAMPLING POINT

### METER RUN

GAUGE PRESSURE kPa

TEMPERATURE °C

SEPARATOR

TREATER

RESERVOIR

SOURCE

SAMPLED

RECEIVED

2620

2620

760

45

45

21

DATE SAMPLED (Y-M-D)

DATE RECEIVED (Y-M-D)

DATE REPORTED (Y-M-D)

ANALYST

OTHER INFORMATION

98-03-01

98-03-04

98-03-09

LQ

NCO

| COMP              | MOLE FRACTION        |                        | PETROLEUM LIQUID CONTENT mL/m <sup>3</sup> |
|-------------------|----------------------|------------------------|--------------------------------------------|
|                   | AIR FREE AS RECEIVED | AIR FREE ACID GAS FREE |                                            |
| H <sub>2</sub>    | 0.0002               | 0.0003                 |                                            |
| He                | 0.0011               | 0.0013                 |                                            |
| N <sub>2</sub>    | 0.0490               | 0.0581                 |                                            |
| CO <sub>2</sub>   | 0.1492               | 0.0000                 |                                            |
| H <sub>2</sub> S  | 0.0080               | 0.0000                 |                                            |
| C <sub>1</sub>    | 0.7925               | 0.9403                 |                                            |
| C <sub>2</sub>    | 0.0000               | 0.0000                 |                                            |
| C <sub>3</sub>    | 0.0000               | 0.0000                 | 0.0                                        |
| iC <sub>4</sub>   | 0.0000               | 0.0000                 | 0.0                                        |
| nC <sub>4</sub>   | 0.0000               | 0.0000                 | 0.0                                        |
| iC <sub>5</sub>   | 0.0000               | 0.0000                 | 0.0                                        |
| nC <sub>5</sub>   | 0.0000               | 0.0000                 | 0.0                                        |
| C <sub>6</sub>    | 0.0000               | 0.0000                 | 0.0                                        |
| C <sub>7</sub> +  | 0.0000               | 0.0000                 | 0.0                                        |
| C <sub>8</sub>    |                      |                        |                                            |
| C <sub>9</sub>    |                      |                        |                                            |
| C <sub>10</sub> + |                      |                        |                                            |
| TOTAL             | 1.0000               | 1.0000                 | 0.0                                        |

GROSS HEATING VALUE MJ/m<sup>3</sup>  
15°C AND 101.325 kPa

MOISTURE AND ACID GAS FREE

35.52

AIR FREE AS RECEIVED

30.15

VAPOR PRESSURE PENTANES PLUS

0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED

MEASURED

CALCULATED

0.723

MOISTURE AND ACID GAS FREE

MEASURED

CALCULATED

0.577

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED

pPc (atm)

4989 kPa

pTc

205.6 K

ACID GAS FREE

pPa (atm)

4528 kPa

pTa

186.5 K

RELATIVE MOLECULAR MASS

TOTAL GAS

20.9

Cr+

0.0

H<sub>2</sub>S g/m<sup>3</sup>

11.43

REMARKS:

EXCEED NORMAL LIMITS : CO<sub>2</sub>

FIELD H<sub>2</sub>S = 0.70%/LAB = 0.80%