

FALL - OFF TEST REPORT

**HOME SRO S. PIERSON PROV. 06-16-02-29W1M
SPEARFISH (1019.76 - 1025.76 mKB)
TEST DATE: JANUARY 19 - 27, 1998**

Prepared for:
ANDERSON EXPLORATION LTD

Prepared by:
PETRO MANAGEMENT GROUP LTD.

NOVEMBER 1999

November 9, 1999

ANDERSON EXPLORATION LTD

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**HOME SRO S. PIERSON PROV. 06-16-02-29W1M
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As requested, a Fall-Off test analysis was performed on the subject well. A summary of the test data and the analysis results is attached. The report marked ORIGINAL contains the test data on a diskette. Three copies of the report are attached.

Should you have any questions, please feel free to contact me at (403) 216-5104.

Yours truly,
Petro Management Group Ltd.



Erwine Springer
Sr. Reservoir Analyst

TEST DATA AND RESULTS SUMMARY - FALL-OFF TEST

WELL: HOME SRO S. PIERSON PROV.

LOCATION: 06-16-02-29W1M

FIELD: S. PIERSON

POOL: SPEARFISH

DELIVERABILITY

METRIC

FIELD

| | | | | | |
|-----------------------------|------------------|-------|-------------------|------|------|
| INJECTION RATE | | 4.3 | m ³ /d | 27 | B/d |
| INJECTION PRESSURE | P _{inj} | 16073 | kPa | 2331 | psia |
| TOTAL WATER INJECTED (TEST) | | 81 | m ³ | 510 | Bbl |

PRESSURE TRANSIENT ANALYSIS

DRAWDOWN

BUILDUP

| | | | | | |
|----------------------------|------------------|---|------|------|------|
| AVERAGE RESERVOIR PRESSURE | \bar{P}_R | - | kPaa | 7649 | kPa |
| EFFECTIVE PERMEABILITY | k | - | mD | 0.6 | mD |
| FORMATION FLOW CAPACITY | kh | - | mD.m | 1.9 | mD.m |
| APPARENT SKIN FACTOR | s' | - | | -5.3 | |
| FRACTURE FACE SKIN FACTOR | s _f | - | | - | |
| TRUE DARCY SKIN | s | - | | - | |
| FRACTURE HALF LENGTH | x _f | - | m | 28.1 | m |
| FRACTURE CONDUCTIVITY | k _f W | - | mD.m | - | mD.m |
| DISTANCE TO BOUNDARY | X _w | - | m | - | m |
| RADIUS OF INVESTIGATION | r _{INV} | - | m | - | m |
| TIME TO STABILIZATION | t _s | - | hrs | - | hrs |

RESERVOIR PARAMETERS

| | | | |
|---------------------------|----------------|------|------------------------------------|
| FORMATION THICKNESS | h | 3.2 | m |
| AVERAGE POROSITY | φ | 13.6 | % |
| WELLBORE RADIUS | r _w | 0.07 | m |
| AVERAGE WATER SATURATION | S _w | 75 | % |
| AVERAGE OIL SATURATION | S _g | 25 | % |
| FORMATION TEMPERATURE | T | 42 | °C |
| FORMATION COMPRESSIBILITY | c _f | 6.21 | 10 ⁻⁷ kPa ⁻¹ |
| TOTAL COMPRESSIBILITY | c _t | 4.01 | 10 ⁻⁶ kPa ⁻¹ |

FLUID PROPERTIES

| | | | |
|-------------------------------|----------------|------|------------------------------------|
| WATER COMPRESSIBILITY | c _w | 4.29 | 10 ⁻⁷ kPa ⁻¹ |
| WATER FORMATION VOLUME FACTOR | B _w | 1.00 | |
| WATER VISCOSITY | μ _w | 0.63 | mPa.s |
| WATER RELATIVE DENSITY | G | 1.00 | |

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TEST DATA QUALITY

PRESSURE TRANSIENT ANALYSIS

PRESSURE HISTORY MATCH

FIELD DATA

SUBSURFACE PRESSURES

APPENDICES

- 1. Equations and Nomenclature**
- 2. Units Conversion**

**SUMMARY OF
RESULTS**

SUMMARY OF RESULTS

1. The average reservoir pressure (P_R) is 7649 kPa.
2. The effective permeability to water of the Spearfish formation is 0.6 mD.
3. The apparent skin factor is -5.3 indicating a stimulated wellbore.
4. The fracture half length is 28 m.
5. The injection pressure prior to the fall-off test was 16 MPa. The Fracture Initiation pressure is 30 MPa and the minimum Fracture Propagation pressure is 19 MPa.

TEST ANALYSIS

DISCUSSION

1. Test Overview:

The well Home SRO S. Pierson Prov. 06-16-02-29W1M is completed in the Spearfish formation at 1019.76 - 1025.76 mKB and is equipped with a 60.3 mm tubing (landed at 1007.67 mKB).

The well was on injection from 1994. The well was shut in and pressure recorders run on January 19, 1998. After 1.1 hours of shut in, injection commenced for approximately 26 hours. The well was then shut in for a fall-off period of 155 hours. No static gradient survey was conducted.

The Fracture Initiation pressure is 30 MPa with a Fracture Initiation gradient of 29.5 kPa/m. The minimum Fracture Propagation pressure is 19 MPa with a minimum Fracture Propagation gradient of 18.7 kPa/m (Table 1).

2. Data Validation:

During the fall-off test, tandem electronic pressure recorders were set at 999.5 and 1001.0 mCF. The pressure and temperature profiles of the two recorders tracked closely throughout the test, as shown on the Raw Data plot (Figure 1), in the section "Test Data Quality". The pressure difference plot is shown on Figure 2.

The primary pressure derivative (PPD) plot was constructed for the bottom recorder (Figure 3). No major anomalies were exhibited by the PPD plot indicating good data quality. The PPD plot should be monotonically decreasing with time for valid buildup data.

A correction of +93 kPa was made to convert pressure data from gauge to absolute. Depth correction was made to adjust the recorded pressures from the recorder run depth to the MPP depth, using a gradient of 10 kPa/m.

TEST INTERPRETATION

1. Pressure Fall-Off Analysis:

A pressure fall-off analysis was performed on the final shut-in period. The reservoir parameters were provided by Anderson Exploration Ltd, as shown in the "Test Data and Results Summary". The final injection pressure prior to shutting in the well was 16073 kPa. The injection rate used in the analysis was 4.3 m³/d.

Both the Horner Fall-Off Plot and Derivative Analysis were used in the analysis, as discussed below, and results were later fine tuned using the pressure history match techniques of the test pressure data.

Wellbore storage regime was identified by the unit slope of the pressure derivative curve. Bilinear flow, was identified by the one-quarter slope, as shown in the Diagnostic Derivative Analysis (Figure 5) in the section "Pressure Transient Analysis". Radial flow was not reached during the test. Also, no faults/boundaries were detected.

Bilinear and Radial flow analysis was performed to determine the reservoir parameters, as shown in the Horner plot (Figure 6) and the Bilinear plot (Figure 6a). The extrapolation of the radial flow data points yielded a P^* of 7228 kPa and an average reservoir pressure of 8559 kPa. The best estimate of average reservoir pressure of 7649 kPa was obtained from the History Match. The pre-injection pressure was measured at 13827 kPa. The final post-injection pressure was measured at 12444 kPa (Figure 4)

A summary of results of the Horner plot analysis is below:

| | <u>Horner Plot</u> |
|---------------------------------|--------------------|
| Effective Permeability, mD | 0.72 |
| Average Reservoir Pressure, kPa | 8559 |
| Apparent Skin Factor | -4.9 |

2. Pressure History Match:

The preliminary results from the Bilinear and Radial Flow analysis were used as starting parameters for pressure history matching of the test data. The best match of the test data was obtained, using the Finite Conductivity Fracture Model. The overlay of simulated analysis results on the real test data is presented in the cartesian, semi-log and log-log plots (Figures 7, 8 and 9), in the section "Pressure History Match". The parameters used to achieve the history match are as follows:

| | <u>History Match</u> |
|-----------------------------------|-----------------------|
| Average Reservoir Pressure, P_R | 7649 kPa |
| Effective Permeability, k | 0.6 mD |
| Apparent skin, s' | -5.3 |
| Stabilize Injection Rate | 4.2 m ³ /d |

3. Nodal Analysis:

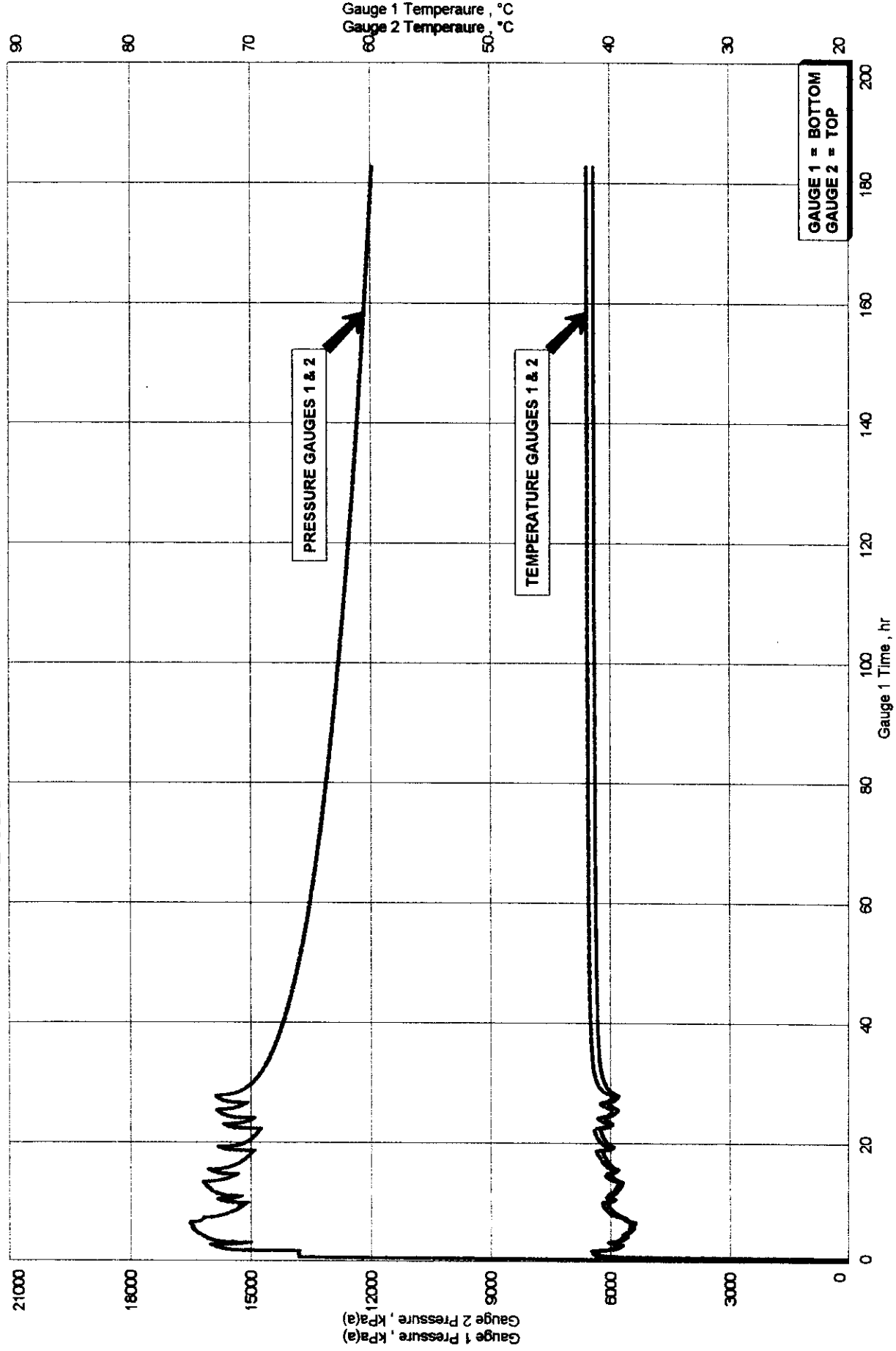
A Nodal analysis was performed on this well to confirm the test analysis and determine the sensitivity of injection pressure and permeability. The analysis shows that the results are not very sensitive to injection pressures. The wellhead injection pressure during the test was 3300 kPa. Permeabilities from 0.6 to 1.0 was used in the sensitivity analysis. The permeability of 0.8 mD is consistent with the injection rate of 4.3 m³/d (Figure 10). This agrees with the permeability of 0.6 mD from the pressure transient analysis.

TEST DATA
QUALITY

HOME SRO S. PIERSON PROV.
100/06-16-002-29W1/0

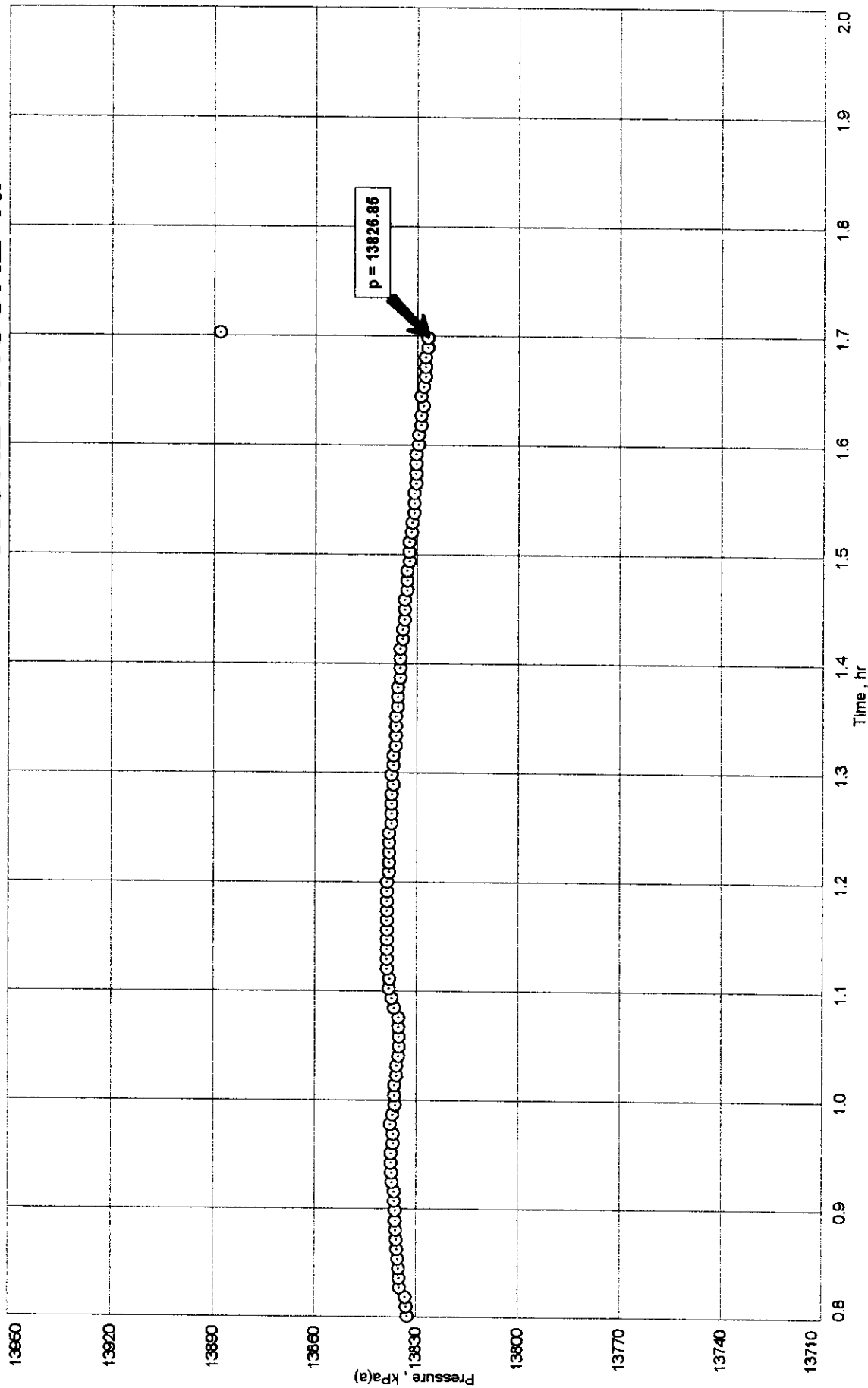
Formation: SPEARFISH

RAW DATA - FIGURE 1



HOME SRO S. PIERSON PROV. 06-16-02-29W1M
SPEARFISH (1019.76 - 1025.76 mKB)
FALL-OFF TEST
JANUARY 19 - 27, 1998

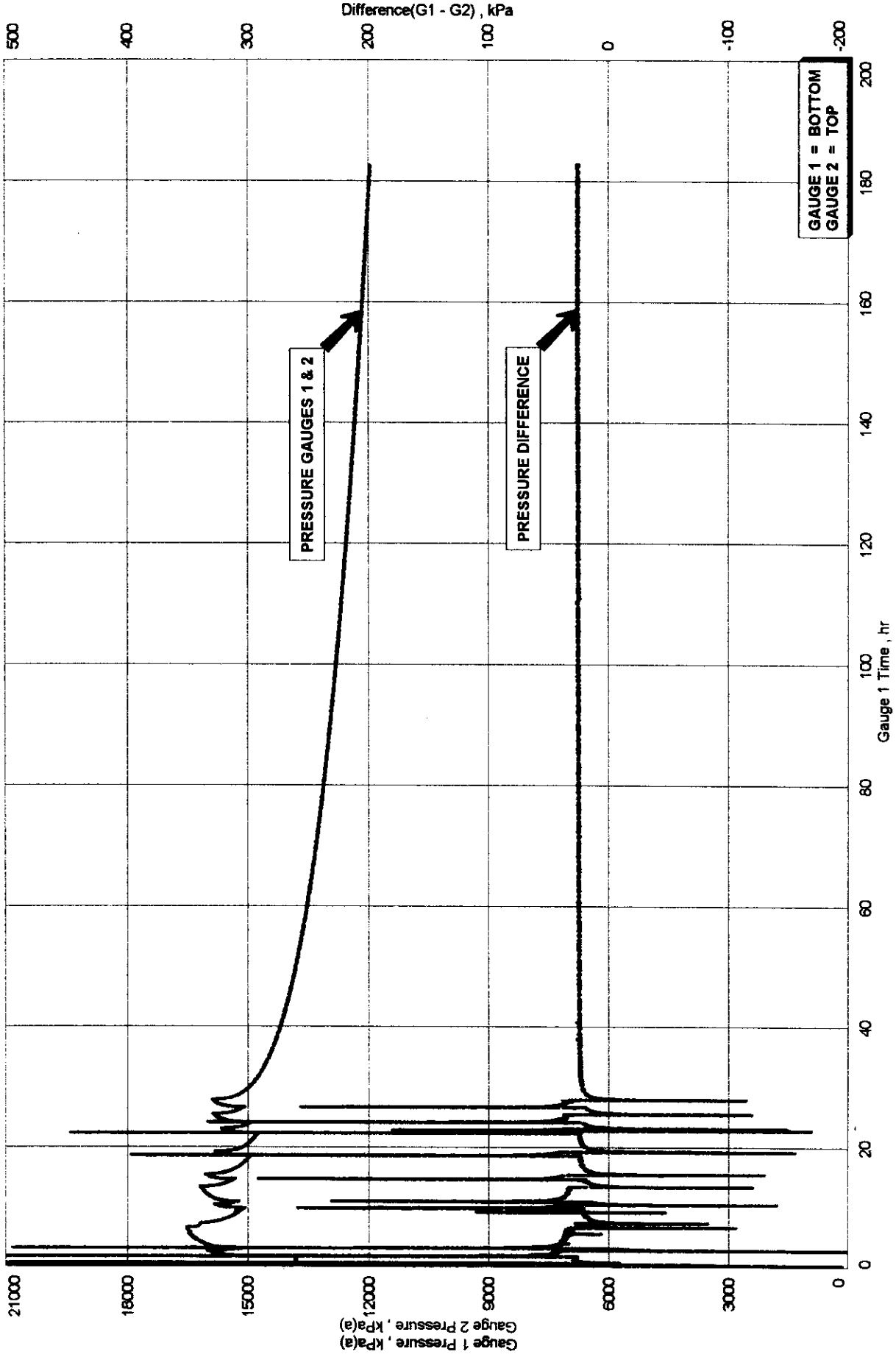
PRE INJECTION RATE PRESSURE - FIGURE 1a



HOME SRO S. PIERSON PROV.
100/06-16-002-29W1/0

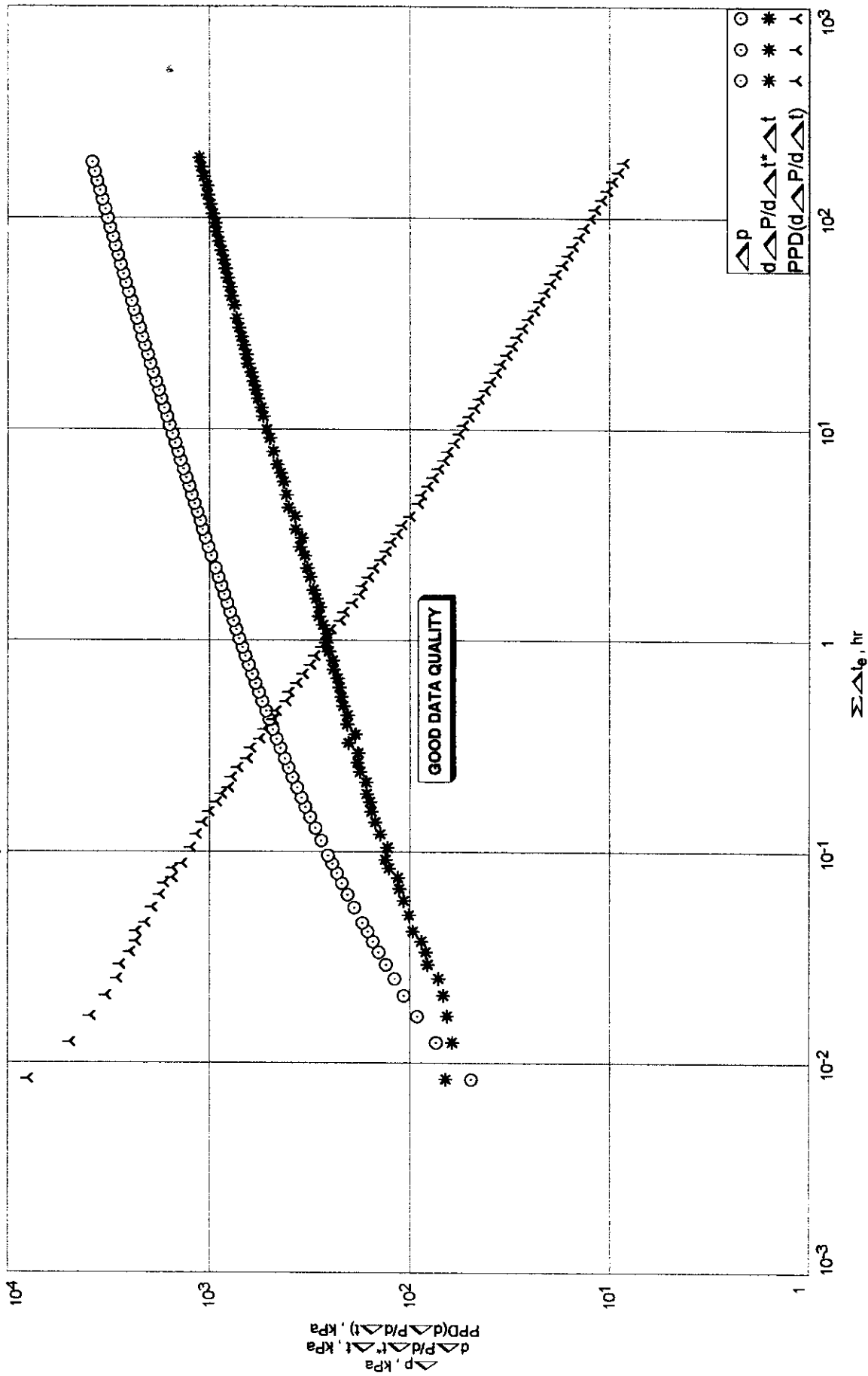
PRESSURE DIFFERENCE - FIGURE 2

Formation: SPEARFISH



HOME SRO S. PIERSON PROV. 06-16-02-29W1M
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DATA QUALITY - PPD - FIGURE 3



HOME SRO S. PIERSON PROV. 06-16-02-29W1M
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| | Time hr | Cum Time hr | Pressure kPa(a) | Gas Rate 10 ³ m ³ /d | Oil Rate m ³ /d | Water Rate m ³ /d |
|----|------------|----------------|--------------------|---|-------------------------------|---------------------------------|
| 1 | 8000.0000 | 8000.0000 | 16174.60 | 0.000 | 0.000 | -5.000 |
| 2 | 0.6292 | 8000.6292 | 13961.19 | 0.000 | 0.000 | 0.000 |
| 3 | 0.6936 | 8000.6936 | 13987.07 | | | |
| 4 | 0.7625 | 8000.7625 | 14002.70 | | | |
| 5 | 0.8381 | 8000.8381 | 14009.05 | | | |
| 6 | 0.9203 | 8000.9203 | 14011.13 | | | |
| 7 | 1.0114 | 8001.0114 | 14010.97 | | | |
| 8 | 1.1114 | 8001.1114 | 14012.60 | | | |
| 9 | 1.2203 | 8001.2203 | 14012.75 | | | |
| 10 | 1.3403 | 8001.3403 | 14010.80 | | | |
| 11 | 1.4714 | 8001.4714 | 14007.44 | | | |
| 12 | 1.6158 | 8001.6158 | 14003.47 | | | |
| 13 | 1.6981 | 8001.6981 | 14001.45 | | | |
| 14 | 2.2003 | 8002.2003 | 15992.67 | 0.000 | 0.000 | -4.300 |
| 15 | 3.2025 | 8003.2025 | 15890.59 | | | |
| 16 | 4.2047 | 8004.2047 | 16386.59 | | | |
| 17 | 5.2047 | 8005.2047 | 16610.68 | | | |
| 18 | 6.2047 | 8006.2047 | 16683.98 | | | |
| 19 | 7.2047 | 8007.2047 | 16354.99 | | | |
| 20 | 8.2047 | 8008.2047 | 15668.72 | | | |
| 21 | 9.2047 | 8009.2047 | 15401.94 | | | |
| 22 | 10.2047 | 8010.2047 | 15951.96 | | | |
| 23 | 11.2047 | 8011.2047 | 15962.85 | | | |
| 24 | 12.2047 | 8012.2047 | 16233.73 | | | |
| 25 | 13.2047 | 8013.2047 | 16363.50 | | | |
| 26 | 14.2047 | 8014.2047 | 15635.97 | | | |
| 27 | 15.2047 | 8015.2047 | 16195.54 | | | |
| 28 | 16.2047 | 8016.2047 | 15558.70 | | | |
| 29 | 17.2047 | 8017.2047 | 15327.51 | | | |
| 30 | 18.2047 | 8018.2047 | 15171.64 | | | |
| 31 | 19.2047 | 8019.2047 | 15987.01 | | | |
| 32 | 20.2047 | 8020.2047 | 15252.12 | | | |
| 33 | 21.2047 | 8021.2047 | 15077.46 | | | |
| 34 | 22.2047 | 8022.2047 | 14958.56 | | | |
| 35 | 23.2047 | 8023.2047 | 15467.63 | | | |
| 36 | 24.2047 | 8024.2047 | 15581.08 | | | |
| 37 | 25.2086 | 8025.2086 | 16006.83 | | | |
| 38 | 26.2086 | 8026.2086 | 15385.55 | | | |
| 39 | 27.2086 | 8027.2086 | 15954.46 | | | |
| 40 | 27.8419 | 8027.8419 | 16072.73 | 0.000 | 0.000 | -4.300 |
| 41 | 27.8503 | 8027.8503 | 16023.58 | 0.000 | 0.000 | 0.000 |

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| | Time hr | Cum Time hr | Pressure kPa(a) | Gas Rate 10 ³ m ³ /d | Oil Rate m ³ /d | Water Rate m ³ /d |
|----|------------|----------------|--------------------|---|-------------------------------|---------------------------------|
| 42 | 27.8586 | 8027.8586 | 15981.11 | | | |
| 43 | 27.8669 | 8027.8669 | 15953.43 | | | |
| 44 | 27.8753 | 8027.8753 | 15929.89 | | | |
| 45 | 27.8836 | 8027.8836 | 15910.35 | | | |
| 46 | 27.8919 | 8027.8919 | 15892.82 | | | |
| 47 | 27.9003 | 8027.9003 | 15876.65 | | | |
| 48 | 27.9086 | 8027.9086 | 15861.82 | | | |
| 49 | 27.9169 | 8027.9169 | 15847.67 | | | |
| 50 | 27.9253 | 8027.9253 | 15834.86 | | | |
| 51 | 27.9336 | 8027.9336 | 15823.40 | | | |
| 52 | 27.9461 | 8027.9461 | 15805.88 | | | |
| 53 | 27.9628 | 8027.9628 | 15785.66 | | | |
| 54 | 27.9794 | 8027.9794 | 15766.79 | | | |
| 55 | 27.9961 | 8027.9961 | 15749.32 | | | |
| 56 | 28.0128 | 8028.0128 | 15733.15 | | | |
| 57 | 28.0294 | 8028.0294 | 15718.38 | | | |
| 58 | 28.0544 | 8028.0544 | 15698.16 | | | |
| 59 | 28.0794 | 8028.0794 | 15678.67 | | | |
| 60 | 28.1044 | 8028.1044 | 15660.47 | | | |
| 61 | 28.1336 | 8028.1336 | 15641.66 | | | |
| 62 | 28.1669 | 8028.1669 | 15620.82 | | | |
| 63 | 28.2003 | 8028.2003 | 15601.95 | | | |
| 64 | 28.2419 | 8028.2419 | 15579.77 | | | |
| 65 | 28.2836 | 8028.2836 | 15559.61 | | | |
| 66 | 28.3294 | 8028.3294 | 15538.16 | | | |
| 67 | 28.3794 | 8028.3794 | 15517.33 | | | |
| 68 | 28.4378 | 8028.4378 | 15493.85 | | | |
| 69 | 28.5003 | 8028.5003 | 15470.95 | | | |
| 70 | 28.5669 | 8028.5669 | 15448.15 | | | |
| 71 | 28.6419 | 8028.6419 | 15424.62 | | | |
| 72 | 28.7253 | 8028.7253 | 15399.75 | | | |
| 73 | 28.8128 | 8028.8128 | 15375.67 | | | |
| 74 | 28.9086 | 8028.9086 | 15350.80 | | | |
| 75 | 29.0169 | 8029.0169 | 15323.85 | | | |
| 76 | 29.1336 | 8029.1336 | 15297.75 | | | |
| 77 | 29.2628 | 8029.2628 | 15270.13 | | | |
| 78 | 29.4044 | 8029.4044 | 15242.69 | | | |
| 79 | 29.5586 | 8029.5586 | 15215.13 | | | |
| 80 | 29.7294 | 8029.7294 | 15185.49 | | | |
| 81 | 29.9169 | 8029.9169 | 15155.29 | | | |
| 82 | 30.1211 | 8030.1211 | 15124.37 | | | |

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HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
 FALL-OFF TEST
 JANUARY 19 - 27, 1998

| | Time hr | Cum Time hr | Pressure kPa(a) | Gas Rate 10 ³ m ³ /d | Oil Rate m ³ /d | Water Rate m ³ /d |
|-----|------------|----------------|--------------------|---|-------------------------------|---------------------------------|
| 83 | 30.3419 | 8030.3419 | 15093.51 | | | |
| 84 | 30.5878 | 8030.5878 | 15061.24 | | | |
| 85 | 30.8586 | 8030.8586 | 15027.56 | | | |
| 86 | 31.1544 | 8031.1544 | 14993.33 | | | |
| 87 | 31.4794 | 8031.4794 | 14957.70 | | | |
| 88 | 31.8378 | 8031.8378 | 14922.06 | | | |
| 89 | 32.2294 | 8032.2294 | 14883.74 | | | |
| 90 | 32.6544 | 8032.6544 | 14846.09 | | | |
| 91 | 33.1211 | 8033.1211 | 14807.09 | | | |
| 92 | 33.6336 | 8033.6336 | 14766.69 | | | |
| 93 | 34.1961 | 8034.1961 | 14725.00 | | | |
| 94 | 34.8128 | 8034.8128 | 14681.29 | | | |
| 95 | 35.4878 | 8035.4878 | 14636.85 | | | |
| 96 | 36.2294 | 8036.2294 | 14591.06 | | | |
| 97 | 37.0419 | 8037.0419 | 14543.32 | | | |
| 98 | 37.9336 | 8037.9336 | 14493.55 | | | |
| 99 | 38.9128 | 8038.9128 | 14443.05 | | | |
| 100 | 39.9878 | 8039.9878 | 14390.60 | | | |
| 101 | 41.1628 | 8041.1628 | 14336.74 | | | |
| 102 | 42.4503 | 8042.4503 | 14280.86 | | | |
| 103 | 43.8669 | 8043.8669 | 14223.02 | | | |
| 104 | 45.4169 | 8045.4169 | 14163.10 | | | |
| 105 | 47.1169 | 8047.1169 | 14102.51 | | | |
| 106 | 48.9794 | 8048.9794 | 14039.30 | | | |
| 107 | 51.0253 | 8051.0253 | 13974.00 | | | |
| 108 | 53.2669 | 8053.2669 | 13907.35 | | | |
| 109 | 55.7253 | 8055.7253 | 13838.76 | | | |
| 110 | 58.4211 | 8058.4211 | 13767.40 | | | |
| 111 | 61.3753 | 8061.3753 | 13694.70 | | | |
| 112 | 64.6169 | 8064.6169 | 13620.06 | | | |
| 113 | 68.1669 | 8068.1669 | 13542.65 | | | |
| 114 | 72.0628 | 8072.0628 | 13463.90 | | | |
| 115 | 76.3336 | 8076.3336 | 13382.45 | | | |
| 116 | 81.0169 | 8081.0169 | 13299.07 | | | |
| 117 | 86.1503 | 8086.1503 | 13213.59 | | | |
| 118 | 91.7794 | 8091.7794 | 13125.43 | | | |
| 119 | 97.9544 | 8097.9544 | 13034.57 | | | |
| 120 | 104.7211 | 8104.7211 | 12941.11 | | | |
| 121 | 112.1419 | 8112.1419 | 12845.55 | | | |
| 122 | 120.2794 | 8120.2794 | 12747.29 | | | |
| 123 | 129.2003 | 8129.2003 | 12646.35 | | | |

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HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
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 JANUARY 19 - 27, 1998

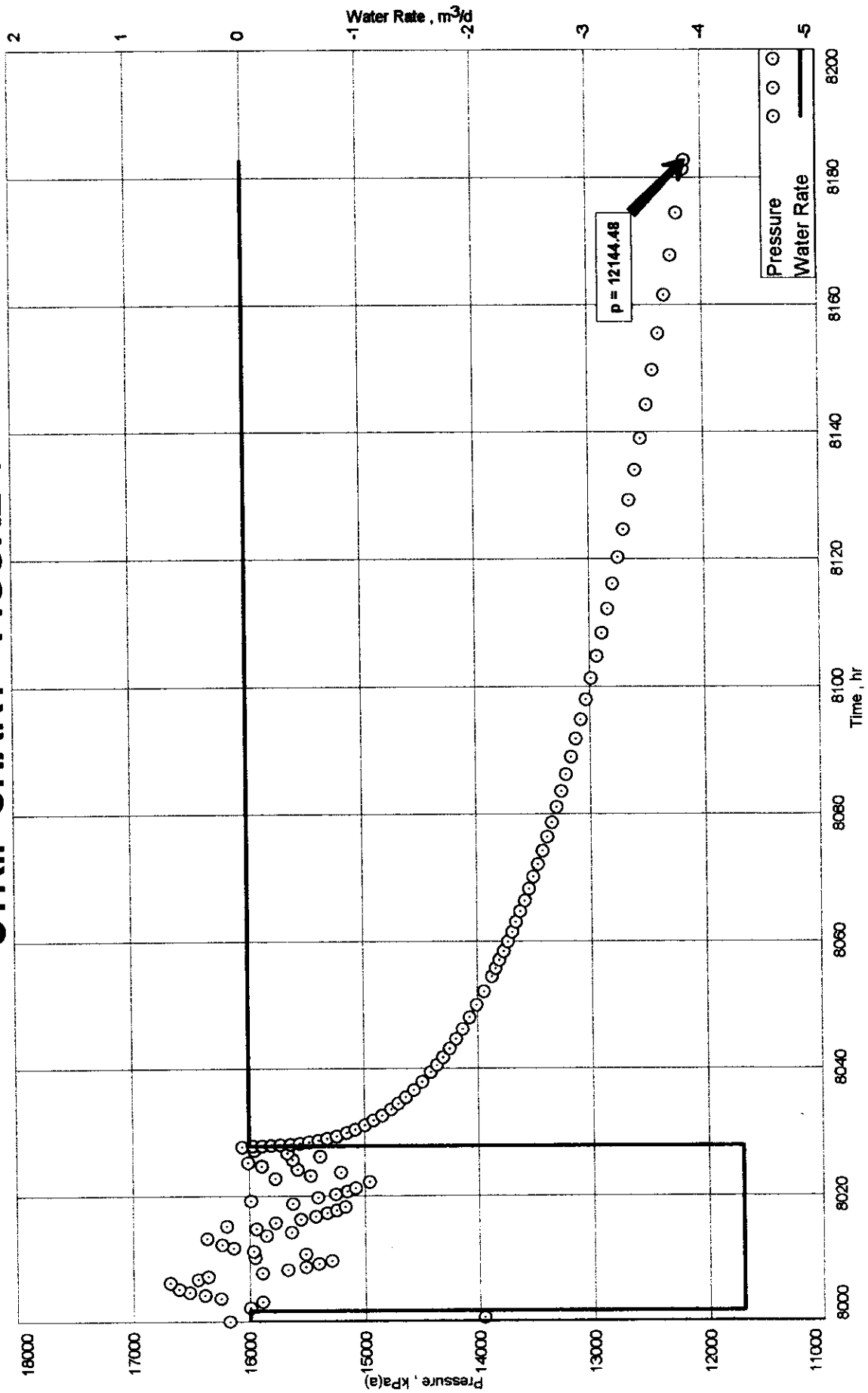
| | Time hr | Cum Time hr | Pressure kPa(a) | Gas Rate $10^3 \text{m}^3/\text{d}$ | Oil Rate m^3/d | Water Rate m^3/d |
|-----|------------|----------------|--------------------|--|-----------------------------------|-------------------------------------|
| 124 | 138.9836 | 8138.9836 | 12542.05 | | | |
| 125 | 149.7128 | 8149.7128 | 12436.50 | | | |
| 126 | 161.4753 | 8161.4753 | 12326.82 | | | |
| 127 | 174.3711 | 8174.3711 | 12213.78 | | | |
| 128 | 182.7253 | 8182.7253 | 12144.48 | | | |
| 129 | 182.7294 | 8182.7294 | 12144.48 | | | |

Print Filter Used: Nth Line = 2.000

**PRESSURE
TRANSIENT
ANALYSIS**

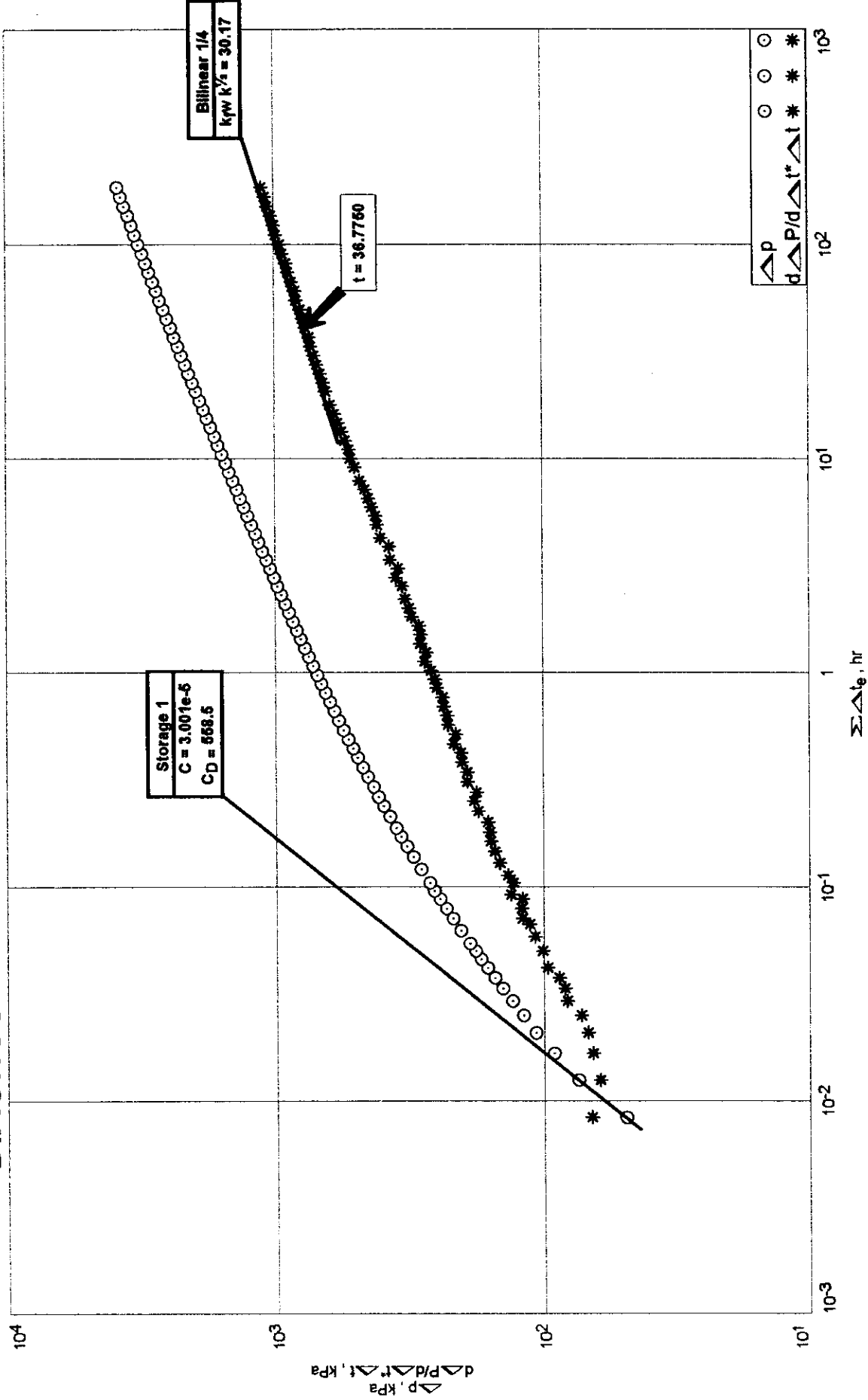
HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
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STRIP CHART - FIGURE 4



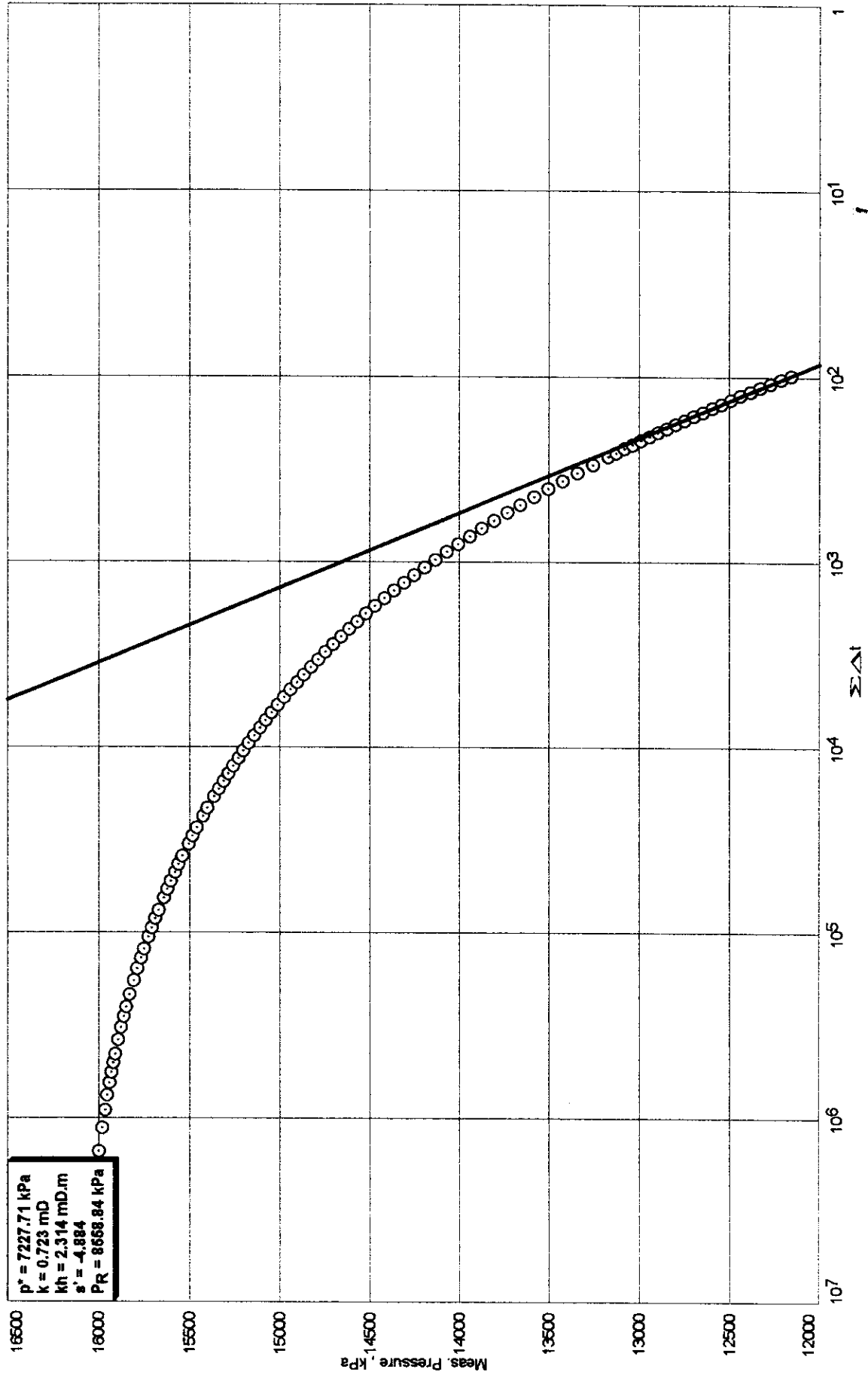
HOME SRO S. PIERSON PROV. 06-16-02-29W1M
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DIAGNOSTIC DERIVATIVE FALL-OFF ANALYSIS - FIGURE 5



HOME SRO S. PIERSON PROV. 06-16-02-29W1M
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 FALL-OFF TEST
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HORNER FALL-OFF PLOT - FIGURE 6



Water Well Test - Falloff

Radial Flow Analysis



HOME SRO S. PIERSON PROV. 06-16-02-29W1M

FALL-OFF TEST

SPEARFISH (1019.76 - 1025.76 mKB)

JANUARY 19 - 27, 1998

Analysis Results

| | | | |
|---|--------------------------|--|---------|
| Total Sandface Rate (q_{tB1}) | -4.300 m ³ /d | Apparent Skin (s') | -4.884 |
| Semilog Slope (m) | 2475.16 | Skin - Damage | -4.884 |
| Gas Permeability (k_g) | mD | Skin - Inclination | 0.000 |
| Oil Permeability (k_o) | mD | Skin - Partial Penetration | |
| Water Permeability (k_w) | 0.723 mD | Pressure Drop Due to Skin (Δp_s) | kPa |
| Flow Capacity (kh) | 2.314 mD.m | Damage Ratio (DR) | -0.047 |
| Total Mobility (k/μ_{L-L}) | 1.15 mD/mPa.s | Flow Efficiency (FE) | -21.372 |
| Total Transmissivity (kh/μ_{L-L}) | 3.68 mDm/mPa.s | | |

Reservoir Parameters

| | |
|-------------------------------------|----------------------------|
| Net Pay (h) | 3.20 m |
| Total Porosity (ϕ) | 13.60 % |
| Water Saturation (S_w) | 75.00 % |
| Oil Saturation (S_o) | 25.00 % |
| Gas Saturation (S_g) | 0.00 % |
| Wellbore Radius (r_w) | 0.070 m |
| Formation Temperature (T) | 42.0 °C |
| Formation Compressibility (c_f) | 6.207e-7 kPa ⁻¹ |
| Total Compressibility (c_t) | 4.011e-6 kPa ⁻¹ |

Pressures

| | |
|--------------------------------------|--------------|
| Initial Pressure (p_i) | 16542.34 kPa |
| Extrapolated Pressure (p^*) | 7227.71 kPa |
| Ave. Reservoir Press | 8558.84 kPa |
| Final Flowing Pressure (p_{wf0}) | 16072.73 kPa |

Production and Times

| | |
|-------------------------------|--------------------------|
| Corrected Flow Time (t_c) | 9328.4672 hr |
| Cumulative Water Production | -1671.350 m ³ |
| Final Water Rate | -4.300 m ³ /d |

Fluid Properties

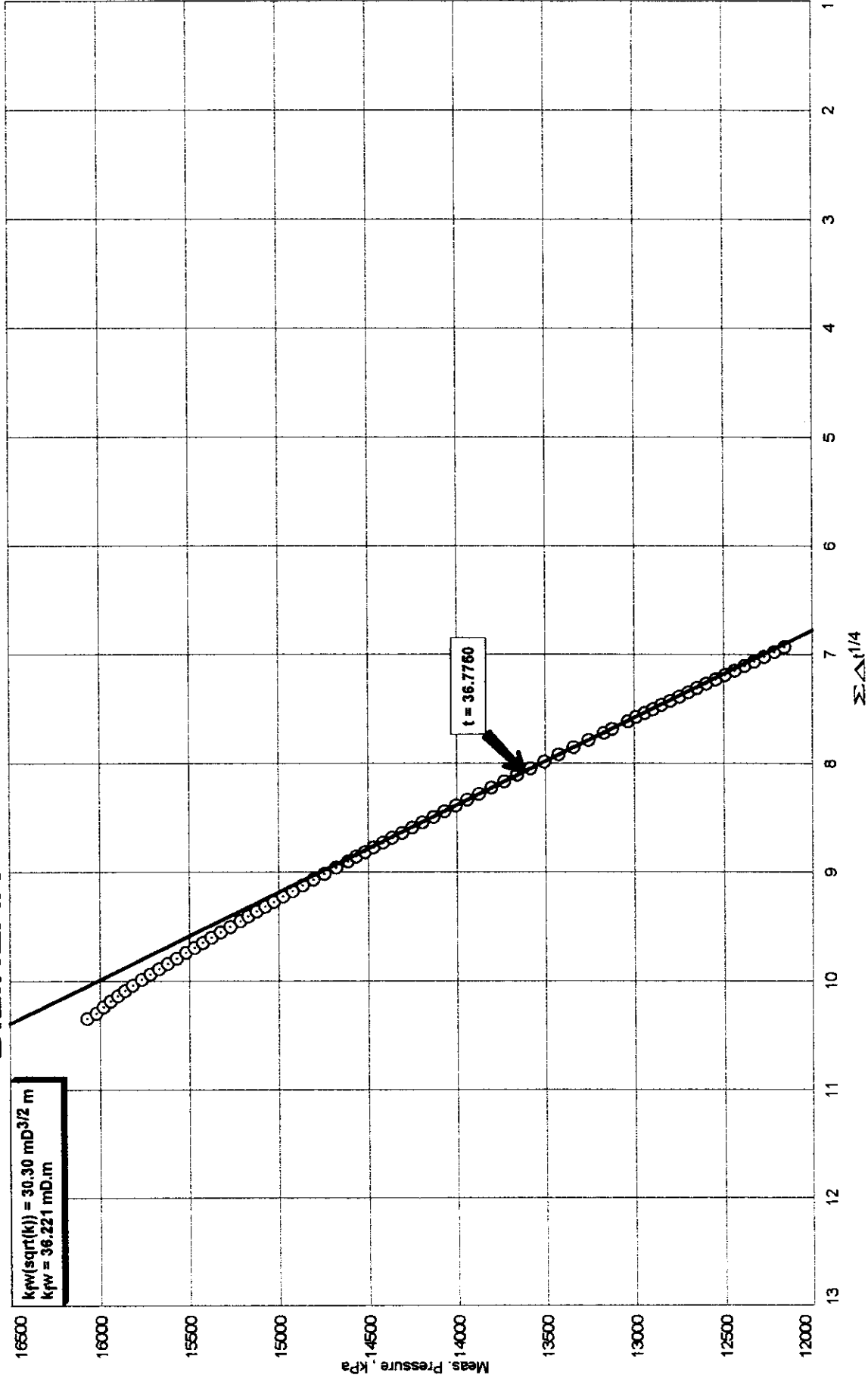
| | |
|---|----------------------------------|
| Water Compressibility (c_w) | 4.28572e-7 kPa ⁻¹ |
| Water Formation Volume Factor (B_w) | 1.000 |
| Water Viscosity (μ_w) | 0.628 mPa.s |
| Solution Gas Ratio (R_{sw}) | 0 m ³ /m ³ |
| Specific Gravity (G) | 1.000 |
| Gas Gravity (G) | 0.650 |
| PVT Reference Pressure (p_{pVT}) | 16542.34 kPa |

Extended Rates Calculations

| | |
|--------------------------------|-------------------------------|
| Specified Flowing Pressure | 16072.73 kPa |
| Specified Reservoir Pressure | 8558.84 kPa |
| Drainage Area | 64.7 ha |
| 3 - Month Constant Rate | -4.944 m ³ /d |
| 6 - Month Constant Rate | -4.435 m ³ /d |
| Stabilized Rate @ Current Skin | -3.987 m ³ /d |
| Stabilized Rate @ Skin of 0 | m ³ /d |
| Stabilized Rate @ Skin of -4 | m ³ /d |
| PI / II (Total Actual) | 5.72e-4 m ³ /d/kPa |
| PI / II (Total Ideal) | m ³ /d/kPa |
| Stab. PI / II (Total Actual) | 5.31e-4 m ³ /d/kPa |
| Stab. PI / II (Total Ideal) | m ³ /d/kPa |

HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
 FALL-OFF TEST
 JANUARY 19 - 27, 1998

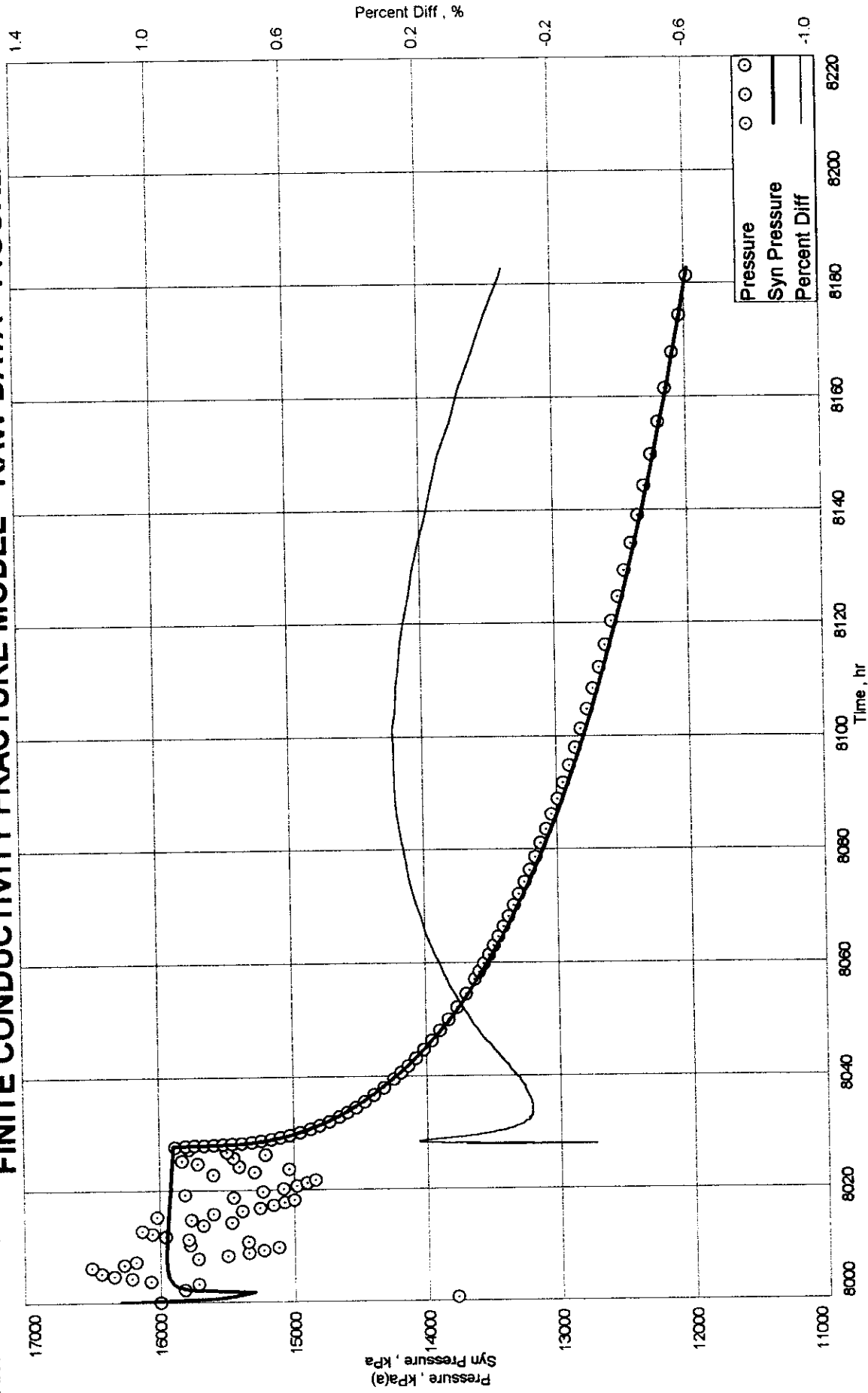
BILINEAR FALL-OFF PLOT - FIGURE 6a



PRESSURE
HISTORY
MATCHING

HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
 FALL-OFF TEST
 JANUARY 19 - 27, 1998

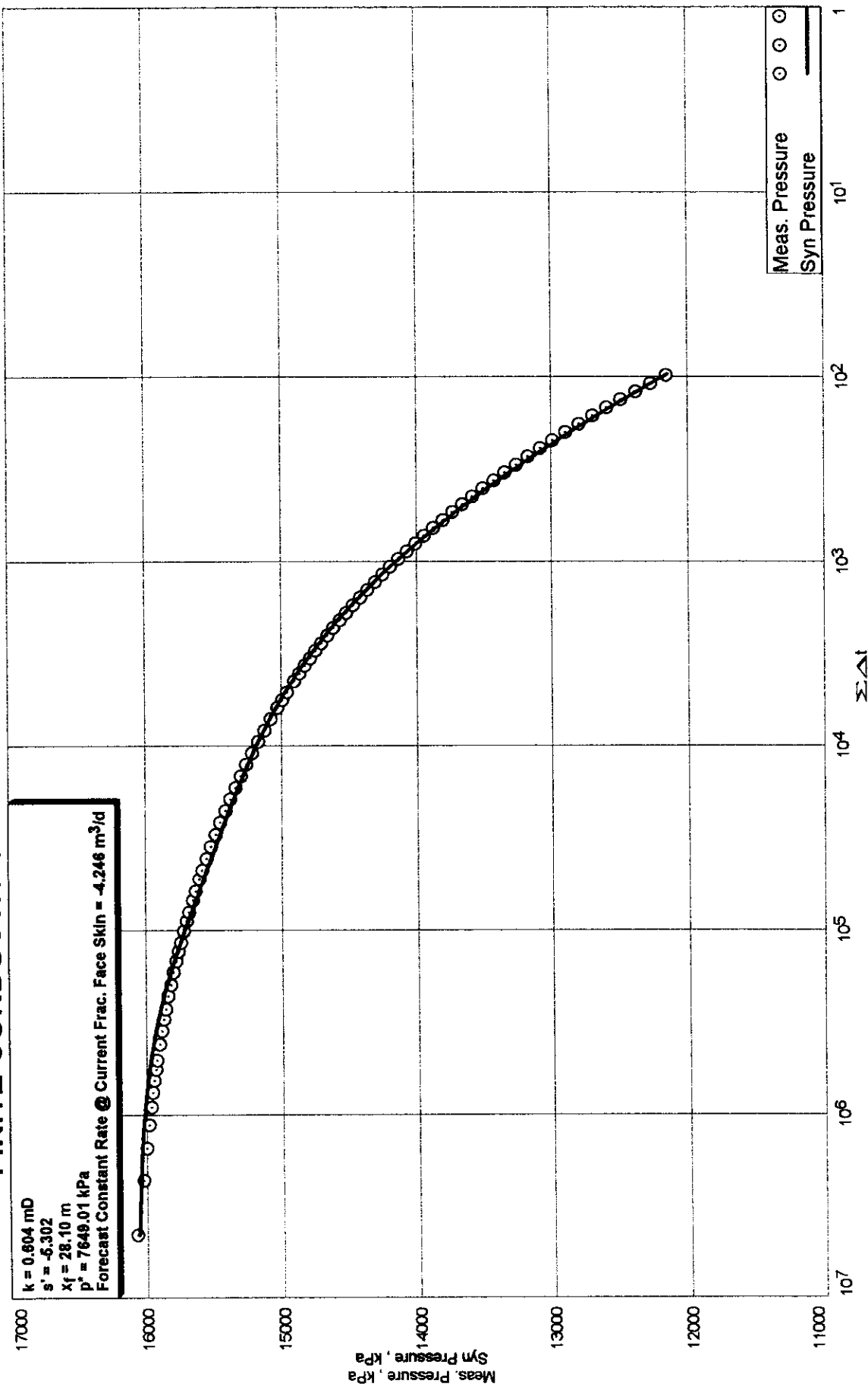
FINITE CONDUCTIVITY FRACTURE MODEL - RAW DATA - FIGURE 7



P_MG

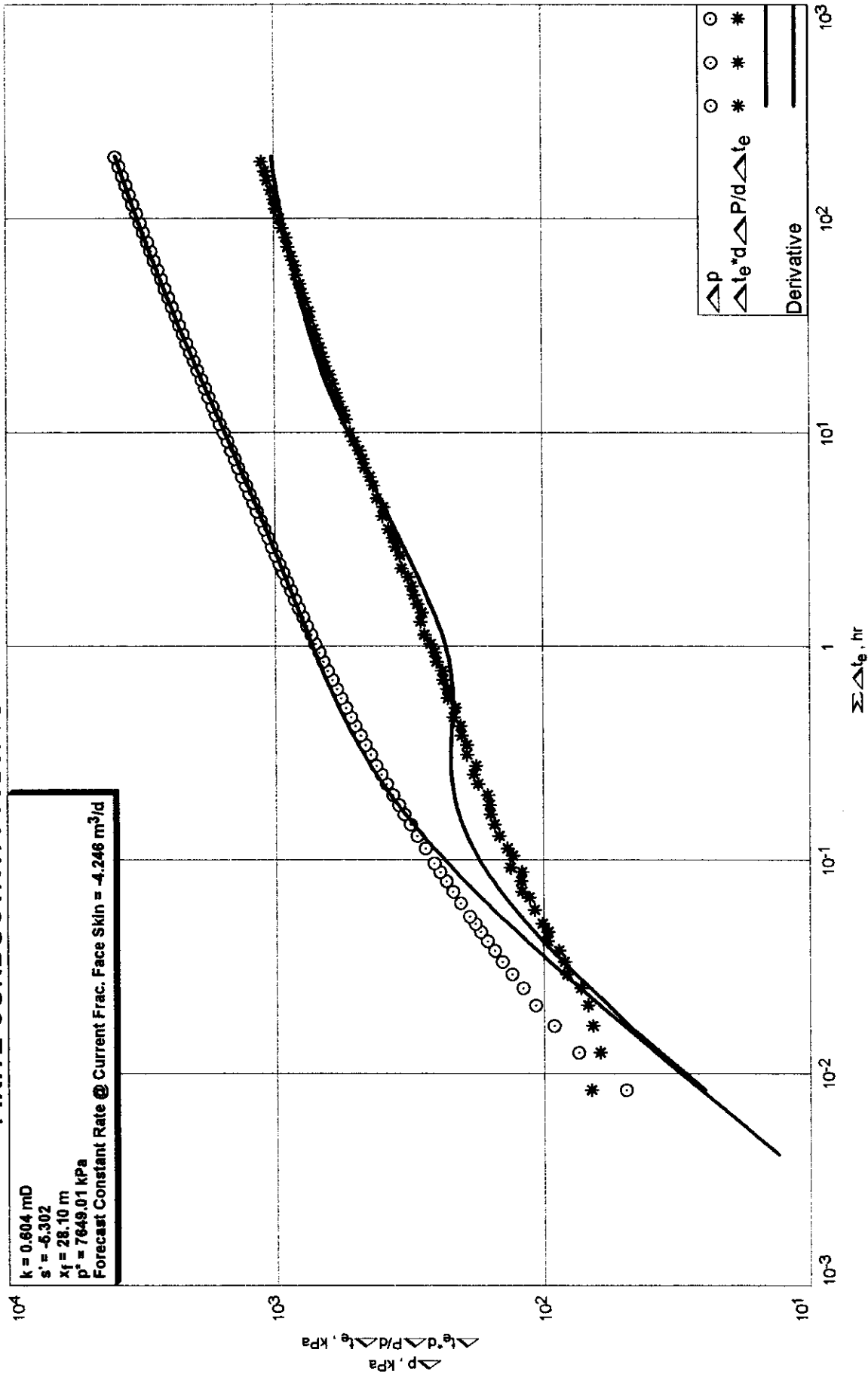
HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
 FALL-OFF TEST
 JANUARY 19 - 27, 1998

FINITE CONDUCTIVITY FRACTURE MODEL - HORNER PLOT - FIGURE 8



HOME SRO S. PIERSON PROV. 06-16-02-29W1M
 SPEARFISH (1019.76 - 1025.76 mKB)
 FALL-OFF TEST
 JANUARY 19 - 27, 1998

FINITE CONDUCTIVITY FRACTURE MODEL - DERIVATIVE PLOT - FIGURE 9



Finite Conductivity Fracture Water Well Model

Case Name : Finite Conductivity Fracture #1

HOME SRO S. PIERSON PROV. 06-16-02-29W1M

SPEARFISH (1019.76 - 1025.76 mKB)

FALL-OFF TEST

JANUARY 19 - 27, 1998

Model Parameters

| | | | |
|--|----------------|-------------------------------------|-----------------|
| Water Permeability (k_w) | 0.604 mD | Fracture Half Length (x_f) | 28.10 m |
| Total Mobility (k/μ) _i | 0.96 mD/mPa.s | Fracture Flow Capacity (k_{fw}) | 234976.769 mD.m |
| Total Transmissivity (kh/μ) _i | 3.08 mDm/mPa.s | Fracture Face Skin (s_f) | 0.105 |
| Wellbore Storage Constant Dim. (C_D) | 339.92 | Skin Equivalent to X_f | -5.302 |
| | | Exterior Radius (r_e) | 1289.15 m |

Formation Parameters

| | |
|-------------------------------------|----------------------------|
| Net Pay (h) | 3.20 m |
| Total Porosity (ϕ_t) | 13.60 % |
| Water Saturation (S_w) | 75.00 % |
| Oil Saturation (S_o) | 25.00 % |
| Gas Saturation (S_g) | 0.00 % |
| Wellbore Radius (r_w) | 0.070 m |
| Formation Temperature (T) | 42.0 °C |
| Formation Compressibility (c_f) | 6.207e-7 kPa ⁻¹ |
| Total Compressibility (c_t) | 4.011e-6 kPa ⁻¹ |

Production and Pressure

| | |
|-------------------------------------|---|
| $Q_i B_i$ | -4.300 m ³ /d |
| Final Water Rate | -4.300 m ³ /d |
| Final Gas Rate | 0.000 10 ³ m ³ /d |
| Final Flowing Pressure (p_{wf}) | 16072.73 kPa |
| Final Measured Pressure | 12144.48 kPa |
| Initial Pressure (p_i) | 16542.34 kPa |

Synthesis Results

| | |
|--|-------------|
| Average Error | 0.03 % |
| Synthetic Initial Pressure (p_i) | 6685.07 kPa |
| Extrapolated Pressure at Specified Time | 7649.01 kPa |
| Pressure Drop Due To Skin (Δp_s) | 414.70 kPa |
| Flow Efficiency (FE) | 0.951 |
| Damage Ratio (DR) | 1.052 |

Fluid Properties

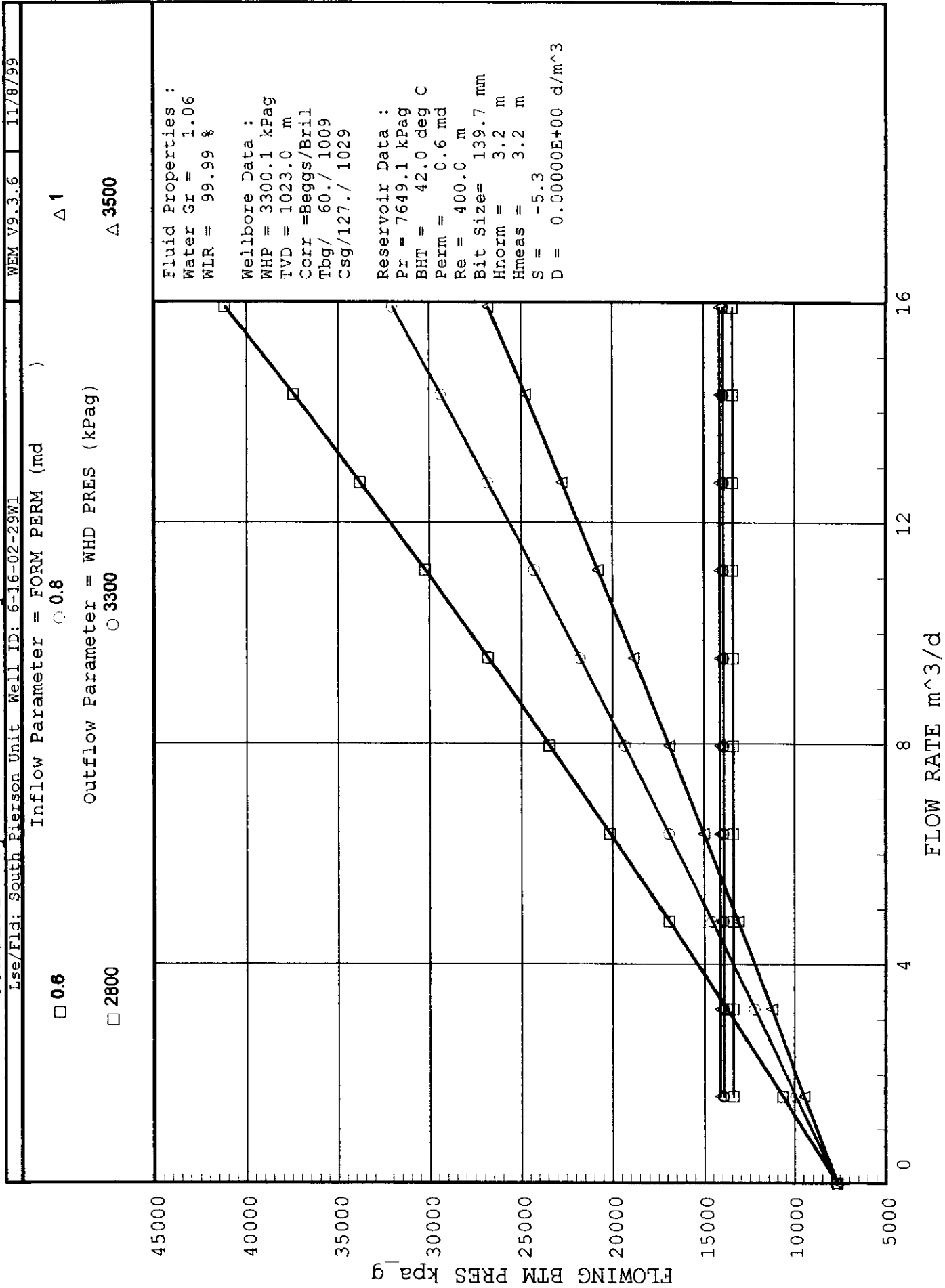
| | |
|---|----------------------------------|
| Water Compressibility (c_w) | 4.28572e-7 kPa ⁻¹ |
| Oil Compressibility (c_o) | 1.22750e-5 kPa ⁻¹ |
| Gas Compressibility (c_g) | 5.95150e-5 kPa ⁻¹ |
| Water Formation Volume Factor (B_w) | 1.000 |
| Water Viscosity (μ_w) | 0.628 mPa.s |
| Gas Viscosity (μ_g) | 18.047 μ Pa.s |
| Solution Gas Ratio (R_{sw}) | 0 m ³ /m ³ |
| Specific Gravity (G) | 1.000 |
| PVT Reference Pressure (p_{pVT}) | 16542.34 kPa |

Forecasts

| | |
|--|-------------------------------|
| Specified Flowing Pressure (p_{wfs}) | 16072.73 kPa |
| 3 - Month Constant Rate | -5.338 m ³ /d |
| 6 - Month Constant Rate | -4.732 m ³ /d |
| Specified Forecast Time | 12.00 month |
| Forecast Constant Rate @ Current Skin | -4.246 m ³ /d |
| PI / II (Actual) | 5.62e-4 m ³ /d/kPa |
| Forecast Constant Rate @ Skin=0 | -4.463 m ³ /d |
| PI / II (Ideal) | 5.95e-4 m ³ /d/kPa |

Sensitivity of Permeability & WHIP

Figure 10



FIELD DATA

Group: South Pierson Unit

Well: 00/06-16-002-29W1/0

Name: HOME S. PIERSON UNIT NO1 6-16-2-29

Primary: OTHER Status:

Last On: Mar-1999

Field: S PIERSON SOUTH PIERSON

Pool: M0000000 UNDEFINED

Unit: M0735A00SOUTH PIERSON UNIT NO. 1

Oper:

Source Date: Apr-1999

| Calendar Time | Monthly Oil Production [bbl/mth] | Operating Daily Oil Production [bbl/oDay] | Cumulative Oil Production [Mbbbl] | Cumulative Gas Production [MMcft] | Cumulative Water Production [Mbbbl] | Gas Oil Ratio [scf/stb] | Monthly Water Injection [bbl/mth] | Cumulative Water Injection [Mbbbl] | Hours |
|---------------|----------------------------------|---|-----------------------------------|-----------------------------------|-------------------------------------|-------------------------|-----------------------------------|------------------------------------|-------|
| CTD | 0.0 | 0.0 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0 |
| 1990 | 904.8 | 33.7 | 11 | 0 | 0 | 0.0 | 0.0 | 0.0 | 480 |
| 1991 | 823.2 | 30.5 | 21 | 0 | 0 | 0.0 | 0.0 | 0.0 | 666 |
| 1992 | 669.6 | 22.0 | 29 | 0 | 0 | 0.0 | 0.0 | 0.0 | 730 |
| 1993 | 480.1 | 15.9 | 35 | 0 | 0 | 0.0 | 0.0 | 0.0 | 726 |
| 1994 | 241.5 | 8.7 | 37 | 0 | 0 | 0.0 | 313.1 | 3.76 | 440 |
| 1995 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 1,171.5 | 17.82 | 0 |
| 1996 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 891.0 | 28.51 | 0 |
| 1997 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 825.4 | 38.41 | 0 |
| 1998/01 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 503.4 | 38.92 | 0 |
| 1998/02 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 396.5 | 39.31 | 0 |
| 1998/03 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 648.2 | 39.96 | 0 |
| 1998/04 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 528.6 | 40.49 | 0 |
| 1998/05 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 509.7 | 41.00 | 0 |
| 1998/06 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 679.6 | 41.68 | 0 |
| 1998/07 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 862.1 | 42.54 | 0 |
| 1998/08 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 673.3 | 43.21 | 0 |
| 1998/09 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 465.7 | 43.68 | 0 |
| 1998/10 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 616.7 | 44.30 | 0 |
| 1998/11 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 610.4 | 44.91 | 0 |
| 1998/12 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 736.3 | 45.64 | 0 |
| 1998 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 602.5 | 45.64 | 0 |
| 1999/01 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 755.1 | 46.40 | 0 |
| 1999/02 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 566.4 | 46.96 | 0 |
| 1999/03 | 0.0 | 0.0 | 37 | 0 | 0 | 0.0 | 377.6 | 47.34 | 0 |

Table 1

South Pierson Unit Water Injectors - Sand Frac Data

| | Fracture Initiation Pressure | Fracture Initiation Gradient | | Minimum Fracture Propagation Pressure | Minimum Fracture Propagation Gradient |
|----------------|---|---|--|--|--|
| | MPa | kPa/m | | MPa | kPa/m |
| 10-4 | 19 | 18.7 | | 17.2 | 16.9 |
| 12-4 | 16 | 15.4 | | 15.6 | 15.1 |
| 16-4 | 26 | 25.7 | | 17 | 16.6 |
| 2-8 | 22 | 21.4 | | 17 | 16.5 |
| 8-8 | 19.5 | | | | |
| 10-8 | 21.2 | 20.7 | | 16.2 | 15.8 |
| 12-8 | 24 | 23.3 | | 17.8 | 17.3 |
| 14-8 | 23.5 | 23 | | 18.5 | 18.1 |
| 4-9 | 21 | | | | |
| 6-9 | 26 | 25.4 | | 18.2 | 17.8 |
| 8-9 | 24 | 23.5 | | 17.7 | 17.4 |
| 10-9 | 23.7 | 23.2 | | 17.9 | 17.5 |
| 4-16 | 19 | 18.7 | | 17.2 | 16.9 |
| 6-16 | 30 | 29.5 | | 19 | 18.7 |
| 8-16 | 19.1 | 18.7 | | 17.9 | 17.6 |
| 10-16 | 18.4 | 18.3 | | 15.6 | 15.5 |
| 2-17 | 24.5 | 23.8 | | 18.5 | 18 |
| 4-17 | 24.5 | 23.9 | | 18.5 | 18.1 |
| 8-17 | 25 | 24.4 | | 16.7 | 16.3 |
| 10-17 | 24 | 23.4 | | 18 | 17.6 |
| Average | 22.9 | 22.7 | | 17.4 | 17.1 |

SUBSURFACE
PRESSURES

Home SRO S.Pierson Prov. 06-16

06-16-002-29W1

Spearfish Zone

Wireline

Injection and Fall-off Test

Jan 19, 98 - Feb 11, 98



SUBSURFACE PRESSURE MEASUREMENTS

1. BASIC DATA JOB 4432

PAGE 1 OF 1

| | | | |
|--|---|-------------------------------|---|
| COMPANY | Anderson Exploration Ltd. | WELL NAME | Home SRO S.Pierson Prov. 06-16 |
| ADDRESS | 1600, 324-8th Avenue SW | UNIQUE WELL ID | 06-16-002-29W1 |
| FIELD | Pierson | STATUS | Injection |
| POOL and FORMATION | Spearfish | SUBSURFACE LOCATION | |
| PRODUCING THROUGH | 60.30 mm TUBING <input checked="" type="checkbox"/> | 139.70 mm CASING | <input type="checkbox"/> |
| PERFS INTERVAL (CF) | 1015.46-1016.46, 1017.86-1021.46 | m PERF | <input checked="" type="checkbox"/> OH <input type="checkbox"/> |
| MID POINT OF PRODUCING (MPP) INTERVAL (CF) | 1,018.46 m | TUBING DEPTH | 1003.37 m CF |
| POOL DATUM (SUBSEA) | | CASING DEPTH | 1042.86 m CF |
| ELEVATION (CF) | 474.48 m (KB) | DATUM DEPTH OF WELL (FROM CF) | m |
| | | (KB) to (CF) | 4.30 m |

2. SUBSURFACE TEST

| | | | | | | | |
|------------------------------------|----------------------------------|--|--------------------|----------------------|------------------|-----------|---------|
| PRESSURE (GAUGE) TUBING | 2600 kPa | GAUGE <input type="checkbox"/> DWG <input checked="" type="checkbox"/> | SHUT IN DATE | 98/01/20 | DURATION @ | 522:7500 | h |
| CASING | 0 kPa | GAUGE <input type="checkbox"/> DWG <input checked="" type="checkbox"/> | SHUT IN TIME | 16:18 | | | h |
| SECONDARY (GAUGE) TUBING PRESSURE: | | kPa | DATE ON BOTTOM | 98/01/19 | @ | | 13:05 h |
| RUN DEPTH (FROM CF) | 1,001.00 m | | DATE OFF BOTTOM | 98/02/11 | @ | | 11:03 h |
| B.H. TEMP. | 42.00 °C | SURFACE TEMP. | °C | MPP PRESSURE (GAUGE) | | | kPa |
| RUN DEPTH PRESSURE (GAUGE) | 11,877.55 kPa | DATUM DEPTH PRESSURE (GAUGE) | | | | | kPa |
| RUN DEPTH GRADIENT: | | kPa/m | LIQUID LEVEL: | | | | m |
| RUN DEPTH GRADIENT ASSUMED? | No | | ELEMENT SERIAL NO. | 80-469 | | | |
| RECORDER TYPE | McCallister Electronic Recorders | | RANGE (GAUGE) | | | 34,474.00 | kPa |
| TEST TYPE: | Injection & Fall-off | | CLOCK RANGE | h | LAST CALIBRATION | | |

3. TEST COMMENTS

Recorders stopped @ 03:06:17 on January 27, 1998; memory full.
Static Gradient was conducted on the way out but recorders were not on; memory full.

4. OTHER OPERATIONS

COMMENTS:

Remarks:

SURVEY COMPANY Opsco '92 Industries Ltd.

TEST BY Dale M

COMPUTED BY Keith A

CHECKED BY Rick D

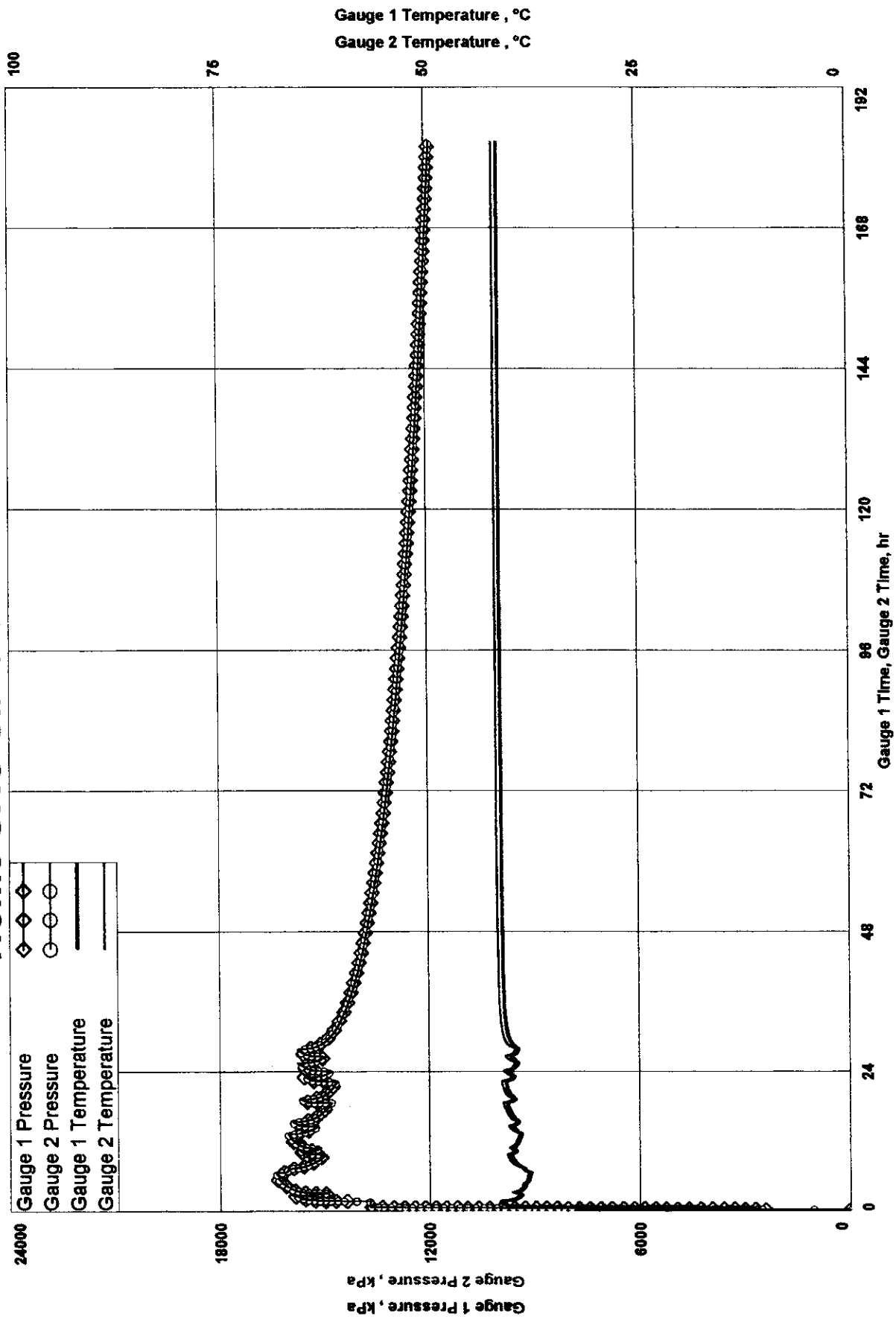
O-12-81-08

Opsco '92

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

Home SRO S.Pierson Prov. 06-16



| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 1 | 1998/01/19 | 12:37:26 | 0.2072 | | 50.21 | 25.66 | 39.31 | 21.86 |
| 2 | 1998/01/19 | 12:38:22 | 0.2228 | | 253.50 | 25.10 | 105.28 | 20.39 |
| 3 | 1998/01/19 | 12:38:30 | 0.2250 | | 2397.42 | 24.98 | 1011.37 | 20.16 |
| 4 | 1998/01/19 | 12:38:38 | 0.2272 | | 2567.44 | 24.87 | 2485.08 | 19.98 |
| 5 | 1998/01/19 | 12:38:46 | 0.2294 | | 2618.29 | 24.79 | 2567.44 | 19.75 |
| 6 | 1998/01/19 | 12:39:02 | 0.2339 | | 2676.82 | 24.53 | 2624.94 | 19.38 |
| 7 | 1998/01/19 | 12:39:42 | 0.2450 | | 2731.43 | 23.81 | 2685.38 | 18.40 |
| 8 | 1998/01/19 | 12:41:02 | 0.2672 | | 2782.53 | 22.01 | 2714.28 | 16.60 |
| 9 | 1998/01/19 | 12:42:06 | 0.2850 | | 2854.37 | 20.28 | 2754.91 | 15.33 |
| 10 | 1998/01/19 | 12:42:30 | 0.2917 | | 2923.25 | 19.68 | 2820.92 | 14.91 |
| 11 | 1998/01/19 | 12:42:46 | 0.2961 | | 2975.64 | 19.26 | 2873.72 | 14.62 |
| 12 | 1998/01/19 | 12:43:02 | 0.3006 | | 3026.48 | 18.81 | 2923.76 | 14.35 |
| 13 | 1998/01/19 | 12:43:18 | 0.3050 | | 3083.84 | 18.44 | 2978.65 | 14.09 |
| 14 | 1998/01/19 | 12:43:34 | 0.3094 | | 3145.06 | 18.02 | 3042.58 | 13.83 |
| 15 | 1998/01/19 | 12:43:50 | 0.3139 | | 3205.84 | 17.65 | 3104.42 | 13.61 |
| 16 | 1998/01/19 | 12:44:06 | 0.3183 | | 3264.60 | 17.27 | 3164.87 | 13.42 |
| 17 | 1998/01/19 | 12:44:22 | 0.3228 | | 3323.58 | 16.94 | 3224.65 | 13.20 |
| 18 | 1998/01/19 | 12:44:38 | 0.3272 | | 3381.69 | 16.56 | 3284.43 | 13.01 |
| 19 | 1998/01/19 | 12:44:54 | 0.3317 | | 3439.35 | 16.23 | 3343.55 | 12.78 |
| 20 | 1998/01/19 | 12:45:10 | 0.3361 | | 3505.81 | 15.89 | 3403.34 | 12.60 |
| 21 | 1998/01/19 | 12:45:26 | 0.3406 | | 3569.78 | 15.63 | 3464.35 | 12.45 |
| 22 | 1998/01/19 | 12:45:42 | 0.3450 | | 3634.23 | 15.33 | 3530.25 | 12.26 |
| 23 | 1998/01/19 | 12:45:58 | 0.3494 | | 3797.97 | 14.99 | 3689.58 | 12.15 |
| 24 | 1998/01/19 | 12:46:06 | 0.3517 | | 3858.28 | 14.88 | 3748.63 | 12.07 |
| 25 | 1998/01/19 | 12:46:14 | 0.3539 | | 3921.78 | 14.73 | 3812.55 | 12.00 |
| 26 | 1998/01/19 | 12:46:22 | 0.3561 | | 3983.45 | 14.62 | 3875.12 | 11.89 |
| 27 | 1998/01/19 | 12:46:30 | 0.3583 | | 4045.80 | 14.50 | 3938.35 | 11.81 |
| 28 | 1998/01/19 | 12:46:38 | 0.3606 | | 4107.97 | 14.35 | 4001.56 | 11.78 |
| 29 | 1998/01/19 | 12:46:46 | 0.3628 | | 4172.84 | 14.20 | 4064.80 | 11.70 |
| 30 | 1998/01/19 | 12:46:54 | 0.3650 | | 4258.91 | 14.09 | 4138.46 | 11.63 |
| 31 | 1998/01/19 | 12:47:02 | 0.3672 | | 4347.03 | 13.98 | 4228.06 | 11.59 |
| 32 | 1998/01/19 | 12:47:10 | 0.3694 | | 4431.76 | 13.87 | 4316.31 | 11.52 |
| 33 | 1998/01/19 | 12:47:18 | 0.3717 | | 4515.15 | 13.76 | 4402.45 | 11.48 |
| 34 | 1998/01/19 | 12:47:26 | 0.3739 | | 4599.41 | 13.68 | 4485.90 | 11.37 |
| 35 | 1998/01/19 | 12:47:34 | 0.3761 | | 4683.49 | 13.57 | 4572.05 | 11.33 |
| 36 | 1998/01/19 | 12:47:42 | 0.3783 | | 4763.52 | 13.46 | 4655.37 | 11.33 |
| 37 | 1998/01/19 | 12:47:50 | 0.3805 | | 4844.22 | 13.34 | 4736.77 | 11.22 |
| 38 | 1998/01/19 | 12:47:58 | 0.3828 | | 4924.26 | 13.23 | 4818.71 | 11.22 |
| 39 | 1998/01/19 | 12:48:06 | 0.3850 | | 5004.50 | 13.16 | 4900.02 | 11.18 |
| 40 | 1998/01/19 | 12:48:14 | 0.3872 | | 5084.06 | 13.08 | 4981.33 | 11.14 |
| 41 | 1998/01/19 | 12:48:22 | 0.3894 | | 5164.30 | 13.01 | 5062.65 | 11.10 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 42 | 1998/01/19 | 12:48:30 | 0.3917 | | 5243.88 | 12.93 | 5143.27 | 11.07 |
| 43 | 1998/01/19 | 12:48:38 | 0.3939 | | 5323.27 | 12.82 | 5223.85 | 11.07 |
| 44 | 1998/01/19 | 12:48:46 | 0.3961 | | 5401.50 | 12.75 | 5304.54 | 10.99 |
| 45 | 1998/01/19 | 12:48:54 | 0.3983 | | 5479.74 | 12.67 | 5384.37 | 11.03 |
| 46 | 1998/01/19 | 12:49:02 | 0.4006 | | 5558.16 | 12.63 | 5463.62 | 10.99 |
| 47 | 1998/01/19 | 12:49:10 | 0.4028 | | 5637.27 | 12.60 | 5543.51 | 10.99 |
| 48 | 1998/01/19 | 12:49:18 | 0.4050 | | 5714.84 | 12.52 | 5623.46 | 10.96 |
| 49 | 1998/01/19 | 12:49:26 | 0.4072 | | 5791.92 | 12.49 | 5702.67 | 10.96 |
| 50 | 1998/01/19 | 12:49:34 | 0.4094 | | 5869.00 | 12.45 | 5780.48 | 10.96 |
| 51 | 1998/01/19 | 12:49:42 | 0.4117 | | 5946.09 | 12.41 | 5858.30 | 10.96 |
| 52 | 1998/01/19 | 12:49:50 | 0.4139 | | 6022.50 | 12.37 | 5936.81 | 10.96 |
| 53 | 1998/01/19 | 12:49:58 | 0.4161 | | 6099.59 | 12.34 | 6015.96 | 10.99 |
| 54 | 1998/01/19 | 12:50:06 | 0.4183 | | 6177.37 | 12.30 | 6094.54 | 10.96 |
| 55 | 1998/01/19 | 12:50:14 | 0.4206 | | 6257.36 | 12.30 | 6175.15 | 10.96 |
| 56 | 1998/01/19 | 12:50:22 | 0.4228 | | 6334.46 | 12.26 | 6254.23 | 11.03 |
| 57 | 1998/01/19 | 12:50:30 | 0.4250 | | 6413.60 | 12.22 | 6334.77 | 11.07 |
| 58 | 1998/01/19 | 12:50:38 | 0.4272 | | 6491.74 | 12.26 | 6414.68 | 11.07 |
| 59 | 1998/01/19 | 12:50:46 | 0.4294 | | 6571.73 | 12.26 | 6495.22 | 11.10 |
| 60 | 1998/01/19 | 12:50:54 | 0.4317 | | 6649.53 | 12.22 | 6574.37 | 11.14 |
| 61 | 1998/01/19 | 12:51:02 | 0.4339 | | 6729.02 | 12.26 | 6654.91 | 11.18 |
| 62 | 1998/01/19 | 12:51:10 | 0.4361 | | 6809.70 | 12.26 | 6736.15 | 11.22 |
| 63 | 1998/01/19 | 12:51:18 | 0.4383 | | 6889.87 | 12.30 | 6818.01 | 11.29 |
| 64 | 1998/01/19 | 12:51:26 | 0.4406 | | 6968.52 | 12.30 | 6898.62 | 11.29 |
| 65 | 1998/01/19 | 12:51:34 | 0.4428 | | 7046.98 | 12.34 | 6978.31 | 11.40 |
| 66 | 1998/01/19 | 12:51:42 | 0.4450 | | 7124.12 | 12.37 | 7058.16 | 11.44 |
| 67 | 1998/01/19 | 12:51:50 | 0.4472 | | 7201.58 | 12.41 | 7137.23 | 11.52 |
| 68 | 1998/01/19 | 12:51:58 | 0.4494 | | 7279.72 | 12.45 | 7216.30 | 11.59 |
| 69 | 1998/01/19 | 12:52:06 | 0.4517 | | 7359.22 | 12.49 | 7296.75 | 11.66 |
| 70 | 1998/01/19 | 12:52:14 | 0.4539 | | 7438.04 | 12.52 | 7377.29 | 11.70 |
| 71 | 1998/01/19 | 12:52:22 | 0.4561 | | 7516.18 | 12.56 | 7456.97 | 11.81 |
| 72 | 1998/01/19 | 12:52:30 | 0.4583 | | 7594.48 | 12.63 | 7536.03 | 11.89 |
| 73 | 1998/01/19 | 12:52:38 | 0.4606 | | 7673.30 | 12.67 | 7615.70 | 12.00 |
| 74 | 1998/01/19 | 12:52:46 | 0.4628 | | 7751.08 | 12.78 | 7695.45 | 12.07 |
| 75 | 1998/01/19 | 12:52:54 | 0.4650 | | 7828.02 | 12.86 | 7774.51 | 12.15 |
| 76 | 1998/01/19 | 12:53:02 | 0.4672 | | 7904.28 | 12.93 | 7852.08 | 12.26 |
| 77 | 1998/01/19 | 12:53:10 | 0.4694 | | 7981.21 | 13.01 | 7930.35 | 12.37 |
| 78 | 1998/01/19 | 12:53:18 | 0.4717 | | 8059.50 | 13.08 | 8009.31 | 12.49 |
| 79 | 1998/01/19 | 12:53:26 | 0.4739 | | 8136.59 | 13.20 | 8088.27 | 12.60 |
| 80 | 1998/01/19 | 12:53:34 | 0.4761 | | 8213.68 | 13.31 | 8165.13 | 12.71 |
| 81 | 1998/01/19 | 12:53:42 | 0.4783 | | 8291.28 | 13.38 | 8245.47 | 12.82 |
| 82 | 1998/01/19 | 12:53:50 | 0.4806 | | 8368.36 | 13.49 | 8323.72 | 12.93 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 83 | 1998/01/19 | 12:53:58 | 0.4828 | | 8444.76 | 13.61 | 8401.87 | 13.08 |
| 84 | 1998/01/19 | 12:54:06 | 0.4850 | | 8520.33 | 13.68 | 8478.63 | 13.23 |
| 85 | 1998/01/19 | 12:54:14 | 0.4872 | | 8596.19 | 13.83 | 8556.17 | 13.34 |
| 86 | 1998/01/19 | 12:54:22 | 0.4894 | | 8671.90 | 13.94 | 8632.22 | 13.49 |
| 87 | 1998/01/19 | 12:54:30 | 0.4917 | | 8747.61 | 14.05 | 8709.66 | 13.64 |
| 88 | 1998/01/19 | 12:54:38 | 0.4939 | | 8822.10 | 14.20 | 8785.70 | 13.79 |
| 89 | 1998/01/19 | 12:54:46 | 0.4961 | | 8897.95 | 14.35 | 8861.73 | 13.94 |
| 90 | 1998/01/19 | 12:54:54 | 0.4983 | | 8973.11 | 14.50 | 8937.76 | 14.09 |
| 91 | 1998/01/19 | 12:55:02 | 0.5006 | | 9049.48 | 14.62 | 9015.18 | 14.24 |
| 92 | 1998/01/19 | 12:55:10 | 0.5028 | | 9126.67 | 14.77 | 9092.59 | 14.39 |
| 93 | 1998/01/19 | 12:55:18 | 0.5050 | | 9201.82 | 14.91 | 9169.89 | 14.58 |
| 94 | 1998/01/19 | 12:55:26 | 0.5072 | | 9276.28 | 15.06 | 9245.90 | 14.73 |
| 95 | 1998/01/19 | 12:55:34 | 0.5094 | | 9351.56 | 15.25 | 9322.49 | 14.91 |
| 96 | 1998/01/19 | 12:55:42 | 0.5117 | | 9425.34 | 15.40 | 9397.68 | 15.10 |
| 97 | 1998/01/19 | 12:55:50 | 0.5139 | | 9500.47 | 15.55 | 9472.98 | 15.25 |
| 98 | 1998/01/19 | 12:55:58 | 0.5161 | | 9574.37 | 15.74 | 9548.16 | 15.44 |
| 99 | 1998/01/19 | 12:56:06 | 0.5183 | | 9647.60 | 15.93 | 9622.64 | 15.63 |
| 100 | 1998/01/19 | 12:56:14 | 0.5206 | | 9720.67 | 16.08 | 9697.81 | 15.81 |
| 101 | 1998/01/19 | 12:56:22 | 0.5228 | | 9793.20 | 16.26 | 9770.88 | 16.00 |
| 102 | 1998/01/19 | 12:56:30 | 0.5250 | | 9866.41 | 16.45 | 9844.54 | 16.23 |
| 103 | 1998/01/19 | 12:56:38 | 0.5272 | | 9938.92 | 16.64 | 9918.29 | 16.41 |
| 104 | 1998/01/19 | 12:56:46 | 0.5294 | | 10010.75 | 16.82 | 9992.04 | 16.60 |
| 105 | 1998/01/19 | 12:56:54 | 0.5317 | | 10082.58 | 17.01 | 10064.28 | 16.82 |
| 106 | 1998/01/19 | 12:57:02 | 0.5339 | | 10155.21 | 17.24 | 10137.32 | 17.01 |
| 107 | 1998/01/19 | 12:57:10 | 0.5361 | | 10229.05 | 17.42 | 10210.93 | 17.24 |
| 108 | 1998/01/19 | 12:57:18 | 0.5383 | | 10302.89 | 17.61 | 10286.62 | 17.46 |
| 109 | 1998/01/19 | 12:57:26 | 0.5406 | | 10379.43 | 17.80 | 10361.60 | 17.69 |
| 110 | 1998/01/19 | 12:57:34 | 0.5428 | | 10456.90 | 18.06 | 10440.73 | 17.91 |
| 111 | 1998/01/19 | 12:57:42 | 0.5450 | | 10533.42 | 18.25 | 10517.08 | 18.14 |
| 112 | 1998/01/19 | 12:57:50 | 0.5472 | | 10608.71 | 18.47 | 10594.12 | 18.36 |
| 113 | 1998/01/19 | 12:57:58 | 0.5494 | | 10683.99 | 18.70 | 10670.45 | 18.59 |
| 114 | 1998/01/19 | 12:58:06 | 0.5517 | | 10760.61 | 18.92 | 10746.77 | 18.81 |
| 115 | 1998/01/19 | 12:58:14 | 0.5539 | | 10839.26 | 19.15 | 10823.77 | 19.04 |
| 116 | 1998/01/19 | 12:58:22 | 0.5561 | | 10916.54 | 19.38 | 10903.42 | 19.30 |
| 117 | 1998/01/19 | 12:58:30 | 0.5583 | | 10993.14 | 19.60 | 10981.10 | 19.53 |
| 118 | 1998/01/19 | 12:58:38 | 0.5606 | | 11070.40 | 19.83 | 11058.07 | 19.75 |
| 119 | 1998/01/19 | 12:58:46 | 0.5628 | | 11147.66 | 20.05 | 11135.61 | 20.01 |
| 120 | 1998/01/19 | 12:58:54 | 0.5650 | | 11223.67 | 20.31 | 11212.56 | 20.24 |
| 121 | 1998/01/19 | 12:59:02 | 0.5672 | | 11299.55 | 20.54 | 11288.68 | 20.50 |
| 122 | 1998/01/19 | 12:59:10 | 0.5694 | | 11376.77 | 20.77 | 11366.18 | 20.77 |
| 123 | 1998/01/19 | 12:59:18 | 0.5717 | | 11452.75 | 21.03 | 11443.10 | 20.99 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|--|-------------------------|------------------------|-------------------------|------------------------|
| 124 | 1998/01/19 | 12:59:26 | 0.5739 | | 11528.71 | 21.29 | 11519.18 | 21.25 |
| 125 | 1998/01/19 | 12:59:34 | 0.5761 | | 11604.55 | 21.52 | 11595.39 | 21.48 |
| 126 | 1998/01/19 | 12:59:42 | 0.5783 | | 11679.81 | 21.78 | 11670.76 | 21.74 |
| 127 | 1998/01/19 | 12:59:50 | 0.5806 | | 11754.17 | 21.97 | 11746.25 | 21.97 |
| 128 | 1998/01/19 | 12:59:58 | 0.5828 | | 11829.41 | 22.23 | 11820.90 | 22.23 |
| 129 | 1998/01/19 | 13:00:06 | 0.5850 | | 11905.32 | 22.50 | 11896.37 | 22.46 |
| 130 | 1998/01/19 | 13:00:14 | 0.5872 | | 11979.08 | 22.72 | 11971.00 | 22.72 |
| 131 | 1998/01/19 | 13:00:22 | 0.5894 | | 12052.82 | 22.95 | 12044.23 | 22.98 |
| 132 | 1998/01/19 | 13:00:30 | 0.5917 | | 12126.56 | 23.17 | 12118.97 | 23.21 |
| 133 | 1998/01/19 | 13:00:38 | 0.5939 | | 12201.75 | 23.44 | 12192.87 | 23.47 |
| 134 | 1998/01/19 | 13:00:46 | 0.5961 | | 12275.47 | 23.66 | 12266.90 | 23.70 |
| 135 | 1998/01/19 | 13:00:54 | 0.5983 | | 12348.50 | 23.89 | 12340.77 | 23.96 |
| 136 | 1998/01/19 | 13:01:02 | 0.6006 | | 12422.97 | 24.15 | 12414.09 | 24.19 |
| 137 | 1998/01/19 | 13:01:10 | 0.6028 | | 12496.66 | 24.38 | 12488.63 | 24.45 |
| 138 | 1998/01/19 | 13:01:18 | 0.6050 | | 12571.79 | 24.64 | 12562.62 | 24.68 |
| 139 | 1998/01/19 | 13:01:26 | 0.6072 | | 12646.81 | 24.87 | 12637.14 | 24.94 |
| 140 | 1998/01/19 | 13:01:34 | 0.6094 | | 12723.85 | 25.10 | 12713.18 | 25.17 |
| 141 | 1998/01/19 | 13:01:42 | 0.6117 | | 12801.55 | 25.32 | 12791.14 | 25.44 |
| 142 | 1998/01/19 | 13:01:50 | 0.6139 | | 12880.69 | 25.59 | 12869.24 | 25.66 |
| 143 | 1998/01/19 | 13:01:58 | 0.6161 | | 12959.05 | 25.81 | 12948.01 | 25.89 |
| 144 | 1998/01/19 | 13:02:06 | 0.6183 | | 13036.14 | 26.08 | 13026.78 | 26.11 |
| 145 | 1998/01/19 | 13:02:14 | 0.6206 | | 13109.75 | 26.30 | 13102.61 | 26.38 |
| 146 | 1998/01/19 | 13:03:26 | 0.6406 | | 13204.81 | 28.42 | 13200.68 | 28.53 |
| 147 | 1998/01/19 | 13:03:34 | 0.6428 | | 13259.41 | 28.65 | 13257.76 | 28.80 |
| 148 | 1998/01/19 | 13:03:42 | 0.6450 | | 13313.25 | 28.84 | 13311.66 | 28.99 |
| 149 | 1998/01/19 | 13:03:50 | 0.6472 | | 13367.25 | 29.10 | 13364.57 | 29.25 |
| 150 | 1998/01/19 | 13:03:58 | 0.6494 | | 13420.48 | 29.33 | 13418.30 | 29.48 |
| 151 | 1998/01/19 | 13:04:06 | 0.6517 | | 13473.02 | 29.55 | 13470.81 | 29.67 |
| 152 | 1998/01/19 | 13:04:14 | 0.6539 | | 13525.48 | 29.74 | 13523.15 | 29.90 |
| 153 | 1998/01/19 | 13:04:22 | 0.6561 | | 13576.66 | 29.97 | 13574.79 | 30.12 |
| 154 | 1998/01/19 | 13:04:30 | 0.6583 | | 13629.10 | 30.16 | 13625.73 | 30.35 |
| 155 | 1998/01/19 | 13:04:38 | 0.6606 | | 13681.61 | 30.39 | 13677.35 | 30.58 |
| 156 | 1998/01/19 | 13:04:46 | 0.6628 | | 13693.59 | 30.62 | 13716.14 | 30.73 |
| 157 | | | | Set recorders @ 1001.0 m, CF; Tbg = 2600 kPag, Csg = 0 kPag. | | | | |
| 158 | 1998/01/19 | 13:04:54 | 0.6650 | | 13692.66 | 30.80 | 13713.12 | 30.96 |
| 159 | 1998/01/19 | 13:11:50 | 0.7806 | | 13732.17 | 37.80 | 13721.70 | 38.06 |
| 160 | 1998/01/19 | 14:09:02 | 1.7339 | | 13733.85 | 41.08 | 13705.82 | 41.58 |
| 161 | | | | Begin Injection Test | | | | |
| 162 | 1998/01/19 | 14:09:10 | 1.7361 | | 13795.12 | 41.08 | 13705.82 | 41.58 |
| 163 | 1998/01/19 | 14:09:18 | 1.7383 | | 14386.28 | 41.08 | 14109.47 | 41.58 |
| 164 | 1998/01/19 | 14:09:26 | 1.7406 | | 14547.89 | 41.08 | 14462.89 | 41.58 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 165 | 1998/01/19 | 14:09:34 | 1.7428 | | 14643.51 | 41.08 | 14575.88 | 41.58 |
| 166 | 1998/01/19 | 14:09:42 | 1.7450 | | 14710.18 | 41.08 | 14653.74 | 41.58 |
| 167 | 1998/01/19 | 14:09:50 | 1.7472 | | 14764.05 | 41.08 | 14712.30 | 41.58 |
| 168 | 1998/01/19 | 14:10:06 | 1.7517 | | 14845.54 | 41.08 | 14801.88 | 41.58 |
| 169 | 1998/01/19 | 14:10:22 | 1.7561 | | 14908.85 | 41.08 | 14867.34 | 41.58 |
| 170 | 1998/01/19 | 14:10:46 | 1.7628 | | 14982.31 | 41.12 | 14943.14 | 41.58 |
| 171 | 1998/01/19 | 14:11:10 | 1.7694 | | 15038.88 | 41.12 | 15002.40 | 41.58 |
| 172 | 1998/01/19 | 14:11:42 | 1.7783 | | 15098.82 | 41.12 | 15063.73 | 41.58 |
| 173 | 1998/01/19 | 14:12:22 | 1.7894 | | 15157.42 | 41.12 | 15124.37 | 41.58 |
| 174 | 1998/01/19 | 14:13:10 | 1.8028 | | 15217.31 | 41.08 | 15183.81 | 41.54 |
| 175 | 1998/01/19 | 14:14:06 | 1.8183 | | 15272.48 | 41.04 | 15239.81 | 41.50 |
| 176 | 1998/01/19 | 14:15:10 | 1.8361 | | 15324.29 | 41.00 | 15291.35 | 41.39 |
| 177 | 1998/01/19 | 14:16:22 | 1.8561 | | 15374.65 | 40.89 | 15340.83 | 41.27 |
| 178 | 1998/01/19 | 14:17:58 | 1.8828 | | 15429.00 | 40.74 | 15394.63 | 41.12 |
| 179 | 1998/01/19 | 14:20:14 | 1.9206 | | 15481.23 | 40.51 | 15447.60 | 40.85 |
| 180 | 1998/01/19 | 14:23:10 | 1.9694 | | 15532.69 | 40.20 | 15499.39 | 40.54 |
| 181 | 1998/01/19 | 14:26:54 | 2.0317 | | 15583.54 | 39.93 | 15551.19 | 40.24 |
| 182 | 1998/01/19 | 14:30:14 | 2.0872 | | 15634.50 | 39.74 | 15602.45 | 40.05 |
| 183 | 1998/01/19 | 14:34:46 | 2.1628 | | 15685.46 | 39.55 | 15653.54 | 39.90 |
| 184 | 1998/01/19 | 14:40:22 | 2.2561 | | 15735.81 | 39.40 | 15704.62 | 39.74 |
| 185 | 1998/01/19 | 14:47:02 | 2.3672 | | 15786.88 | 39.28 | 15756.41 | 39.59 |
| 186 | 1998/01/19 | 14:54:46 | 2.4961 | | 15837.96 | 39.17 | 15807.33 | 39.48 |
| 187 | 1998/01/19 | 15:01:42 | 2.6117 | | 15888.42 | 39.09 | 15858.06 | 39.40 |
| 188 | 1998/01/19 | 15:08:54 | 2.7317 | | 15793.22 | 38.98 | 15782.55 | 39.32 |
| 189 | 1998/01/19 | 15:09:10 | 2.7361 | | 15738.62 | 38.98 | 15719.27 | 39.28 |
| 190 | 1998/01/19 | 15:09:34 | 2.7428 | | 15686.67 | 38.94 | 15663.21 | 39.32 |
| 191 | 1998/01/19 | 15:10:06 | 2.7517 | | 15632.80 | 38.98 | 15608.90 | 39.28 |
| 192 | 1998/01/19 | 15:10:46 | 2.7628 | | 15578.20 | 38.98 | 15553.02 | 39.28 |
| 193 | 1998/01/19 | 15:11:34 | 2.7761 | | 15522.87 | 38.94 | 15497.15 | 39.28 |
| 194 | 1998/01/19 | 15:12:30 | 2.7917 | | 15468.33 | 38.98 | 15441.28 | 39.28 |
| 195 | 1998/01/19 | 15:13:34 | 2.8094 | | 15413.73 | 38.98 | 15387.30 | 39.32 |
| 196 | 1998/01/19 | 15:14:46 | 2.8294 | | 15361.16 | 38.98 | 15334.00 | 39.36 |
| 197 | 1998/01/19 | 15:16:06 | 2.8517 | | 15309.94 | 38.98 | 15282.10 | 39.40 |
| 198 | 1998/01/19 | 15:17:34 | 2.8761 | | 15259.50 | 39.06 | 15232.95 | 39.44 |
| 199 | 1998/01/19 | 15:19:18 | 2.9050 | | 15207.61 | 39.06 | 15180.86 | 39.51 |
| 200 | 1998/01/19 | 15:21:18 | 2.9383 | | 15153.81 | 39.13 | 15128.10 | 39.59 |
| 201 | 1998/01/19 | 15:23:34 | 2.9761 | | 15101.36 | 39.21 | 15074.47 | 39.70 |
| 202 | 1998/01/19 | 15:26:06 | 3.0183 | | 15049.58 | 39.28 | 15022.22 | 39.82 |
| 203 | 1998/01/19 | 15:28:54 | 3.0650 | | 14998.43 | 39.32 | 14971.53 | 39.90 |
| 204 | 1998/01/19 | 15:32:06 | 3.1183 | | 14946.72 | 39.44 | 14919.98 | 40.01 |
| 205 | 1998/01/19 | 15:33:10 | 3.1361 | | 15108.50 | 39.48 | 15048.74 | 40.05 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 206 | 1998/01/19 | 15:33:18 | 3.1383 | | 15166.45 | 39.48 | 15114.93 | 40.05 |
| 207 | 1998/01/19 | 15:33:34 | 3.1428 | | 15239.17 | 39.44 | 15196.98 | 40.05 |
| 208 | 1998/01/19 | 15:33:50 | 3.1472 | | 15292.46 | 39.48 | 15253.53 | 40.05 |
| 209 | 1998/01/19 | 15:34:14 | 3.1539 | | 15345.70 | 39.48 | 15309.89 | 40.09 |
| 210 | 1998/01/19 | 15:34:46 | 3.1628 | | 15400.34 | 39.51 | 15367.12 | 40.09 |
| 211 | 1998/01/19 | 15:35:26 | 3.1739 | | 15454.25 | 39.51 | 15422.10 | 40.12 |
| 212 | 1998/01/19 | 15:36:14 | 3.1872 | | 15504.90 | 39.59 | 15474.51 | 40.12 |
| 213 | 1998/01/19 | 15:37:18 | 3.2050 | | 15555.50 | 39.63 | 15525.54 | 40.12 |
| 214 | 1998/01/19 | 15:38:38 | 3.2272 | | 15606.76 | 39.67 | 15575.69 | 40.16 |
| 215 | 1998/01/19 | 15:40:22 | 3.2561 | | 15657.36 | 39.70 | 15627.60 | 40.12 |
| 216 | 1998/01/19 | 15:42:38 | 3.2939 | | 15710.55 | 39.67 | 15679.69 | 40.05 |
| 217 | 1998/01/19 | 15:45:34 | 3.3428 | | 15762.96 | 39.55 | 15731.28 | 39.93 |
| 218 | 1998/01/19 | 15:49:18 | 3.4050 | | 15813.99 | 39.40 | 15781.87 | 39.74 |
| 219 | 1998/01/19 | 15:53:58 | 3.4828 | | 15864.30 | 39.21 | 15832.47 | 39.55 |
| 220 | 1998/01/19 | 16:00:30 | 3.5917 | | 15915.28 | 39.02 | 15883.77 | 39.36 |
| 221 | 1998/01/19 | 16:07:02 | 3.7006 | | 15966.42 | 38.94 | 15935.39 | 39.25 |
| 222 | 1998/01/19 | 16:15:18 | 3.8383 | | 16016.84 | 38.83 | 15986.32 | 39.13 |
| 223 | 1998/01/19 | 16:25:02 | 4.0006 | | 16057.15 | 38.71 | 16026.22 | 39.02 |
| 224 | 1998/01/19 | 16:27:34 | 4.0428 | | 16067.22 | 38.67 | 16036.57 | 39.02 |
| 225 | 1998/01/19 | 16:39:02 | 4.2339 | | 16117.64 | 38.56 | 16087.32 | 38.94 |
| 226 | 1998/01/19 | 16:48:38 | 4.3939 | | 16167.67 | 38.67 | 16138.19 | 38.98 |
| 227 | 1998/01/19 | 17:00:06 | 4.5850 | | 16218.82 | 38.60 | 16188.26 | 38.90 |
| 228 | 1998/01/19 | 17:14:14 | 4.8206 | | 16269.22 | 38.45 | 16238.02 | 38.75 |
| 229 | 1998/01/19 | 17:31:42 | 5.1117 | | 16319.53 | 38.22 | 16288.68 | 38.56 |
| 230 | 1998/01/19 | 17:50:06 | 5.4183 | | 16369.93 | 38.06 | 16339.84 | 38.41 |
| 231 | 1998/01/19 | 18:40:22 | 6.2561 | | 16420.38 | 37.95 | 16390.12 | 38.29 |
| 232 | 1998/01/19 | 19:00:54 | 6.5983 | | 16367.06 | 37.91 | 16347.03 | 38.22 |
| 233 | 1998/01/19 | 19:01:18 | 6.6050 | | 16311.71 | 37.87 | 16286.97 | 38.22 |
| 234 | 1998/01/19 | 19:02:30 | 6.6250 | | 16258.47 | 37.91 | 16231.06 | 38.22 |
| 235 | 1998/01/19 | 19:05:34 | 6.6761 | | 16207.89 | 37.91 | 16179.10 | 38.25 |
| 236 | 1998/01/19 | 19:13:18 | 6.8050 | | 16157.68 | 38.22 | 16128.57 | 38.56 |
| 237 | 1998/01/19 | 19:29:26 | 7.0739 | | 16107.48 | 38.52 | 16078.04 | 38.87 |
| 238 | 1998/01/19 | 19:44:06 | 7.3183 | | 16040.87 | 38.64 | 16016.75 | 38.98 |
| 239 | 1998/01/19 | 19:45:10 | 7.3361 | | 15986.99 | 38.67 | 15959.48 | 38.98 |
| 240 | 1998/01/19 | 19:46:54 | 7.3650 | | 15934.40 | 38.67 | 15906.35 | 38.98 |
| 241 | 1998/01/19 | 19:49:10 | 7.4028 | | 15882.54 | 38.71 | 15854.23 | 39.06 |
| 242 | 1998/01/19 | 19:51:58 | 7.4494 | | 15830.68 | 38.75 | 15802.80 | 39.13 |
| 243 | 1998/01/19 | 19:55:18 | 7.5050 | | 15779.54 | 38.83 | 15751.19 | 39.25 |
| 244 | 1998/01/19 | 19:59:10 | 7.5694 | | 15728.46 | 38.94 | 15700.96 | 39.36 |
| 245 | 1998/01/19 | 20:03:42 | 7.6450 | | 15676.66 | 39.02 | 15648.67 | 39.48 |
| 246 | 1998/01/19 | 20:08:46 | 7.7294 | | 15626.26 | 39.13 | 15598.27 | 39.63 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 247 | 1998/01/19 | 20:14:22 | 7.8228 | | 15575.81 | 39.21 | 15548.06 | 39.74 |
| 248 | 1998/01/19 | 20:20:46 | 7.9294 | | 15525.37 | 39.28 | 15496.48 | 39.86 |
| 249 | 1998/01/19 | 20:25:02 | 8.0006 | | 15493.85 | 39.40 | 15465.77 | 39.93 |
| 250 | 1998/01/19 | 20:27:50 | 8.0472 | | 15474.36 | 39.44 | 15446.28 | 39.97 |
| 251 | 1998/01/19 | 20:35:34 | 8.1761 | | 15423.93 | 39.51 | 15396.08 | 40.09 |
| 252 | 1998/01/19 | 20:44:06 | 8.3183 | | 15373.55 | 39.63 | 15345.38 | 40.16 |
| 253 | 1998/01/19 | 20:53:26 | 8.4739 | | 15323.17 | 39.74 | 15295.20 | 40.28 |
| 254 | 1998/01/19 | 21:03:34 | 8.6428 | | 15272.75 | 39.82 | 15245.20 | 40.35 |
| 255 | 1998/01/19 | 21:14:46 | 8.8294 | | 15221.65 | 39.90 | 15194.51 | 40.43 |
| 256 | 1998/01/19 | 21:26:46 | 9.0294 | | 15171.23 | 39.97 | 15143.14 | 40.51 |
| 257 | 1998/01/19 | 21:34:38 | 9.1605 | | 15229.96 | 40.05 | 15188.97 | 40.58 |
| 258 | 1998/01/19 | 21:36:02 | 9.1672 | | 15174.65 | 40.01 | 15148.98 | 40.58 |
| 259 | 1998/01/19 | 21:41:26 | 9.2739 | | 15124.24 | 40.09 | 15096.59 | 40.58 |
| 260 | 1998/01/19 | 21:54:30 | 9.4917 | | 15073.83 | 40.16 | 15045.23 | 40.66 |
| 261 | 1998/01/19 | 22:09:18 | 9.7383 | | 15023.41 | 40.24 | 14995.93 | 40.74 |
| 262 | 1998/01/19 | 22:13:50 | 9.8139 | | 15074.00 | 40.28 | 15037.11 | 40.77 |
| 263 | 1998/01/19 | 22:14:14 | 9.8205 | | 15133.95 | 40.28 | 15097.77 | 40.77 |
| 264 | 1998/01/19 | 22:14:46 | 9.8294 | | 15194.53 | 40.24 | 15161.37 | 40.74 |
| 265 | 1998/01/19 | 22:15:26 | 9.8406 | | 15255.89 | 40.28 | 15223.23 | 40.77 |
| 266 | 1998/01/19 | 22:16:14 | 9.8539 | | 15313.16 | 40.28 | 15282.01 | 40.74 |
| 267 | 1998/01/19 | 22:17:10 | 9.8694 | | 15363.69 | 40.28 | 15333.02 | 40.74 |
| 268 | 1998/01/19 | 22:18:22 | 9.8894 | | 15415.51 | 40.24 | 15384.91 | 40.70 |
| 269 | 1998/01/19 | 22:20:06 | 9.9183 | | 15466.77 | 40.28 | 15436.10 | 40.66 |
| 270 | 1998/01/19 | 22:22:22 | 9.9561 | | 15517.25 | 40.24 | 15486.61 | 40.62 |
| 271 | 1998/01/19 | 22:26:46 | 10.0294 | | 15568.25 | 40.09 | 15537.86 | 40.43 |
| 272 | 1998/01/19 | 22:31:18 | 10.1050 | | 15619.30 | 39.97 | 15588.93 | 40.28 |
| 273 | 1998/01/19 | 22:37:18 | 10.2050 | | 15669.64 | 39.82 | 15639.32 | 40.12 |
| 274 | 1998/01/19 | 22:44:30 | 10.3250 | | 15719.98 | 39.67 | 15689.53 | 40.01 |
| 275 | 1998/01/19 | 22:49:34 | 10.4094 | | 15667.37 | 39.63 | 15643.69 | 39.93 |
| 276 | 1998/01/19 | 22:50:22 | 10.4228 | | 15610.08 | 39.63 | 15583.01 | 39.93 |
| 277 | 1998/01/19 | 22:51:26 | 10.4406 | | 15558.81 | 39.59 | 15531.28 | 39.93 |
| 278 | 1998/01/19 | 22:52:54 | 10.4650 | | 15506.20 | 39.55 | 15478.87 | 39.93 |
| 279 | 1998/01/19 | 22:54:46 | 10.4961 | | 15455.71 | 39.59 | 15427.84 | 39.93 |
| 280 | 1998/01/19 | 22:57:10 | 10.5361 | | 15404.55 | 39.63 | 15376.63 | 39.97 |
| 281 | 1998/01/19 | 23:00:14 | 10.5872 | | 15353.39 | 39.67 | 15326.62 | 40.05 |
| 282 | 1998/01/19 | 23:04:14 | 10.6539 | | 15301.56 | 39.70 | 15273.67 | 40.16 |
| 283 | 1998/01/19 | 23:09:10 | 10.7361 | | 15250.51 | 39.82 | 15223.67 | 40.24 |
| 284 | 1998/01/19 | 23:15:18 | 10.8383 | | 15200.09 | 39.90 | 15172.11 | 40.35 |
| 285 | 1998/01/19 | 23:21:02 | 10.9339 | | 15264.15 | 39.93 | 15228.98 | 40.43 |
| 286 | 1998/01/19 | 23:21:34 | 10.9428 | | 15318.06 | 39.93 | 15284.82 | 40.43 |
| 287 | 1998/01/19 | 23:22:22 | 10.9561 | | 15376.73 | 39.97 | 15344.81 | 40.43 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 288 | 1998/01/19 | 23:23:18 | 10.9717 | | 15427.94 | 39.97 | 15397.21 | 40.43 |
| 289 | 1998/01/19 | 23:24:38 | 10.9939 | | 15479.87 | 40.01 | 15450.11 | 40.47 |
| 290 | 1998/01/19 | 23:26:46 | 11.0294 | | 15533.16 | 40.05 | 15503.20 | 40.47 |
| 291 | 1998/01/19 | 23:29:34 | 11.0761 | | 15585.71 | 40.05 | 15555.97 | 40.39 |
| 292 | 1998/01/19 | 23:33:26 | 11.1406 | | 15636.82 | 39.97 | 15606.68 | 40.32 |
| 293 | 1998/01/19 | 23:38:22 | 11.2228 | | 15687.21 | 39.86 | 15657.76 | 40.16 |
| 294 | 1998/01/19 | 23:44:38 | 11.3272 | | 15737.60 | 39.74 | 15707.97 | 40.05 |
| 295 | 1998/01/19 | 23:52:46 | 11.4628 | | 15788.62 | 39.59 | 15758.18 | 39.93 |
| 296 | 1998/01/20 | 00:03:02 | 11.6339 | | 15839.02 | 39.48 | 15809.09 | 39.82 |
| 297 | 1998/01/20 | 00:15:10 | 11.8361 | | 15889.48 | 39.40 | 15860.00 | 39.70 |
| 298 | 1998/01/20 | 00:25:02 | 12.0006 | | 15923.13 | 39.36 | 15893.30 | 39.67 |
| 299 | 1998/01/20 | 00:29:58 | 12.0828 | | 15939.93 | 39.32 | 15910.04 | 39.63 |
| 300 | 1998/01/20 | 00:48:22 | 12.3894 | | 15990.30 | 39.17 | 15960.09 | 39.55 |
| 301 | 1998/01/20 | 01:10:14 | 12.7539 | | 16040.76 | 39.09 | 16011.21 | 39.40 |
| 302 | 1998/01/20 | 01:36:22 | 13.1894 | | 16091.23 | 39.02 | 16061.26 | 39.32 |
| 303 | 1998/01/20 | 01:45:58 | 13.3494 | | 16036.53 | 38.94 | 16013.16 | 39.28 |
| 304 | 1998/01/20 | 01:46:46 | 13.3628 | | 15985.34 | 38.98 | 15968.66 | 39.28 |
| 305 | 1998/01/20 | 01:47:58 | 13.3828 | | 15934.78 | 38.98 | 15907.60 | 39.28 |
| 306 | 1998/01/20 | 01:49:34 | 13.4094 | | 15882.83 | 38.94 | 15855.86 | 39.28 |
| 307 | 1998/01/20 | 01:51:34 | 13.4428 | | 15832.37 | 39.02 | 15804.44 | 39.36 |
| 308 | 1998/01/20 | 01:54:06 | 13.4850 | | 15781.19 | 39.06 | 15753.02 | 39.44 |
| 309 | 1998/01/20 | 01:57:10 | 13.5361 | | 15730.01 | 39.09 | 15702.29 | 39.51 |
| 310 | 1998/01/20 | 02:00:46 | 13.5961 | | 15679.61 | 39.21 | 15651.38 | 39.63 |
| 311 | 1998/01/20 | 02:05:02 | 13.6672 | | 15628.49 | 39.28 | 15600.29 | 39.78 |
| 312 | 1998/01/20 | 02:09:58 | 13.7494 | | 15577.42 | 39.40 | 15550.09 | 39.90 |
| 313 | 1998/01/20 | 02:15:42 | 13.8450 | | 15526.98 | 39.48 | 15499.19 | 40.01 |
| 314 | 1998/01/20 | 02:22:22 | 13.9561 | | 15475.92 | 39.59 | 15448.49 | 40.09 |
| 315 | 1998/01/20 | 02:29:42 | 14.0783 | | 15425.49 | 39.67 | 15398.48 | 40.16 |
| 316 | 1998/01/20 | 02:38:06 | 14.2183 | | 15375.11 | 39.78 | 15347.60 | 40.28 |
| 317 | 1998/01/20 | 02:47:34 | 14.3761 | | 15324.68 | 39.86 | 15296.04 | 40.39 |
| 318 | 1998/01/20 | 02:57:58 | 14.5494 | | 15274.32 | 39.97 | 15246.55 | 40.51 |
| 319 | 1998/01/20 | 03:03:42 | 14.6450 | | 15340.40 | 40.01 | 15300.83 | 40.54 |
| 320 | 1998/01/20 | 03:03:58 | 14.6494 | | 15391.61 | 40.01 | 15354.61 | 40.54 |
| 321 | 1998/01/20 | 03:04:22 | 14.6561 | | 15443.49 | 40.01 | 15410.45 | 40.54 |
| 322 | 1998/01/20 | 03:04:54 | 14.6650 | | 15494.02 | 40.01 | 15461.29 | 40.58 |
| 323 | 1998/01/20 | 03:05:42 | 14.6783 | | 15547.93 | 40.01 | 15518.01 | 40.54 |
| 324 | 1998/01/20 | 03:06:54 | 14.6983 | | 15599.87 | 40.05 | 15570.41 | 40.54 |
| 325 | 1998/01/20 | 03:08:30 | 14.7250 | | 15650.35 | 40.01 | 15620.92 | 40.51 |
| 326 | 1998/01/20 | 03:10:46 | 14.7628 | | 15701.56 | 40.01 | 15672.13 | 40.47 |
| 327 | 1998/01/20 | 03:15:02 | 14.8339 | | 15752.00 | 39.93 | 15721.84 | 40.32 |
| 328 | 1998/01/20 | 03:19:58 | 14.9161 | | 15802.97 | 39.74 | 15772.42 | 40.12 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 329 | 1998/01/20 | 03:26:14 | 15.0206 | | 15853.32 | 39.59 | 15823.01 | 39.93 |
| 330 | 1998/01/20 | 03:34:30 | 15.1583 | | 15903.73 | 39.48 | 15873.23 | 39.82 |
| 331 | 1998/01/20 | 03:44:54 | 15.3317 | | 15954.18 | 39.40 | 15924.15 | 39.70 |
| 332 | 1998/01/20 | 03:51:02 | 15.4339 | | 15895.45 | 39.32 | 15870.54 | 39.67 |
| 333 | 1998/01/20 | 03:51:50 | 15.4472 | | 15844.22 | 39.32 | 15818.12 | 39.67 |
| 334 | 1998/01/20 | 03:53:02 | 15.4672 | | 15792.27 | 39.28 | 15766.38 | 39.67 |
| 335 | 1998/01/20 | 03:54:38 | 15.4839 | | 15741.10 | 39.32 | 15714.65 | 39.67 |
| 336 | 1998/01/20 | 03:56:38 | 15.5272 | | 15680.55 | 39.32 | 15664.12 | 39.70 |
| 337 | 1998/01/20 | 03:59:10 | 15.5694 | | 15640.05 | 39.36 | 15613.77 | 39.70 |
| 338 | 1998/01/20 | 04:02:22 | 15.6228 | | 15587.53 | 39.40 | 15561.67 | 39.78 |
| 339 | 1998/01/20 | 04:06:22 | 15.6894 | | 15536.42 | 39.48 | 15508.71 | 39.90 |
| 340 | 1998/01/20 | 04:11:10 | 15.7694 | | 15486.03 | 39.59 | 15458.51 | 40.01 |
| 341 | 1998/01/20 | 04:16:46 | 15.8628 | | 15436.60 | 39.67 | 15408.13 | 40.16 |
| 342 | 1998/01/20 | 04:23:34 | 15.9761 | | 15385.22 | 39.78 | 15357.25 | 40.28 |
| 343 | 1998/01/20 | 04:25:02 | 16.0006 | | 15375.06 | 39.74 | 15348.29 | 40.28 |
| 344 | 1998/01/20 | 04:31:34 | 16.1094 | | 15334.74 | 39.82 | 15306.56 | 40.35 |
| 345 | 1998/01/20 | 04:40:38 | 16.2606 | | 15284.37 | 39.93 | 15257.25 | 40.43 |
| 346 | 1998/01/20 | 04:51:10 | 16.4361 | | 15233.95 | 40.01 | 15205.69 | 40.54 |
| 347 | 1998/01/20 | 05:03:10 | 16.6361 | | 15183.47 | 40.05 | 15155.88 | 40.58 |
| 348 | 1998/01/20 | 05:16:38 | 16.8606 | | 15133.11 | 40.16 | 15105.71 | 40.70 |
| 349 | 1998/01/20 | 05:31:50 | 17.1139 | | 15082.76 | 40.28 | 15055.04 | 40.77 |
| 350 | 1998/01/20 | 05:48:30 | 17.3917 | | 15032.35 | 40.35 | 15005.05 | 40.85 |
| 351 | 1998/01/20 | 06:07:02 | 17.7006 | | 14982.00 | 40.47 | 14954.39 | 40.93 |
| 352 | 1998/01/20 | 06:27:34 | 18.0428 | | 14930.92 | 40.54 | 14904.24 | 41.04 |
| 353 | 1998/01/20 | 06:49:50 | 18.4139 | | 14880.52 | 40.62 | 14853.40 | 41.16 |
| 354 | 1998/01/20 | 07:05:02 | 18.6672 | | 14833.85 | 40.70 | 14868.39 | 41.19 |
| 355 | 1998/01/20 | 07:05:10 | 18.6694 | | 14991.10 | 40.70 | 14946.27 | 41.19 |
| 356 | 1998/01/20 | 07:05:26 | 18.6739 | | 15063.85 | 40.70 | 15025.52 | 41.19 |
| 357 | 1998/01/20 | 07:05:50 | 18.6806 | | 15129.86 | 40.70 | 15095.13 | 41.19 |
| 358 | 1998/01/20 | 07:06:14 | 18.6872 | | 15181.73 | 40.70 | 15148.20 | 41.19 |
| 359 | 1998/01/20 | 07:06:54 | 18.6983 | | 15238.93 | 40.66 | 15207.48 | 41.19 |
| 360 | 1998/01/20 | 07:07:42 | 18.7117 | | 15290.85 | 40.70 | 15260.04 | 41.16 |
| 361 | 1998/01/20 | 07:08:46 | 18.7294 | | 15343.34 | 40.66 | 15313.11 | 41.16 |
| 362 | 1998/01/20 | 07:10:38 | 18.7606 | | 15395.88 | 40.66 | 15365.17 | 41.08 |
| 363 | 1998/01/20 | 07:12:54 | 18.7983 | | 15447.65 | 40.58 | 15417.41 | 40.96 |
| 364 | 1998/01/20 | 07:15:42 | 18.8450 | | 15498.02 | 40.47 | 15466.90 | 40.85 |
| 365 | 1998/01/20 | 07:19:18 | 18.9050 | | 15548.97 | 40.28 | 15517.64 | 40.62 |
| 366 | 1998/01/20 | 07:23:50 | 18.9606 | | 15599.92 | 40.09 | 15568.89 | 40.43 |
| 367 | 1998/01/20 | 07:29:26 | 19.0739 | | 15650.25 | 39.93 | 15620.15 | 40.24 |
| 368 | 1998/01/20 | 07:36:22 | 19.1894 | | 15700.54 | 39.74 | 15671.04 | 40.12 |
| 369 | 1998/01/20 | 07:41:42 | 19.2783 | | 15649.27 | 39.70 | 15626.59 | 40.05 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m
Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 370 | 1998/01/20 | 07:42:22 | 19.2894 | | 15592.72 | 39.74 | 15567.10 | 40.09 |
| 371 | 1998/01/20 | 07:43:18 | 19.3050 | | 15540.77 | 39.70 | 15513.49 | 40.05 |
| 372 | 1998/01/20 | 07:44:38 | 19.3272 | | 15485.57 | 39.74 | 15468.14 | 40.09 |
| 373 | 1998/01/20 | 07:46:22 | 19.3561 | | 15431.66 | 39.74 | 15403.67 | 40.09 |
| 374 | 1998/01/20 | 07:48:30 | 19.3917 | | 15379.72 | 39.70 | 15351.95 | 40.09 |
| 375 | 1998/01/20 | 07:51:10 | 19.4361 | | 15329.24 | 39.74 | 15301.25 | 40.16 |
| 376 | 1998/01/20 | 07:54:38 | 19.4839 | | 15277.46 | 39.82 | 15249.87 | 40.24 |
| 377 | 1998/01/20 | 07:58:54 | 19.5650 | | 15227.04 | 39.90 | 15199.18 | 40.32 |
| 378 | 1998/01/20 | 08:04:22 | 19.6561 | | 15176.62 | 39.97 | 15148.32 | 40.43 |
| 379 | 1998/01/20 | 08:11:02 | 19.7672 | | 15126.20 | 40.05 | 15098.66 | 40.58 |
| 380 | 1998/01/20 | 08:19:26 | 19.9072 | | 15075.17 | 40.16 | 15047.63 | 40.74 |
| 381 | 1998/01/20 | 08:25:02 | 20.0006 | | 15046.26 | 40.20 | 15019.19 | 40.77 |
| 382 | 1998/01/20 | 08:29:34 | 20.0761 | | 15024.82 | 40.28 | 14997.47 | 40.85 |
| 383 | 1998/01/20 | 08:41:58 | 20.2828 | | 14974.47 | 40.39 | 14947.49 | 40.93 |
| 384 | 1998/01/20 | 08:56:30 | 20.5250 | | 14924.07 | 40.47 | 14896.14 | 41.00 |
| 385 | 1998/01/20 | 09:13:26 | 20.8072 | | 14873.67 | 40.54 | 14846.86 | 41.08 |
| 386 | 1998/01/20 | 09:33:18 | 21.1383 | | 14823.33 | 40.66 | 14796.21 | 41.16 |
| 387 | 1998/01/20 | 09:56:14 | 21.5206 | | 14772.94 | 40.74 | 14745.38 | 41.27 |
| 388 | 1998/01/20 | 10:21:42 | 21.9450 | | 14722.55 | 40.81 | 14695.59 | 41.31 |
| 389 | 1998/01/20 | 10:46:38 | 22.3606 | | 14798.04 | 40.85 | 14736.77 | 41.35 |
| 390 | 1998/01/20 | 10:46:46 | 22.3628 | | 14860.61 | 40.81 | 14815.15 | 41.39 |
| 391 | 1998/01/20 | 10:47:02 | 22.3672 | | 14836.11 | 40.85 | 14899.39 | 41.35 |
| 392 | 1998/01/20 | 10:47:18 | 22.3717 | | 14887.97 | 40.85 | 14952.28 | 41.39 |
| 393 | 1998/01/20 | 10:47:42 | 22.3783 | | 15046.57 | 40.85 | 15013.61 | 41.39 |
| 394 | 1998/01/20 | 10:48:14 | 22.3872 | | 15098.43 | 40.85 | 15068.23 | 41.35 |
| 395 | 1998/01/20 | 10:49:02 | 22.4006 | | 15150.24 | 40.81 | 15120.61 | 41.35 |
| 396 | 1998/01/20 | 10:49:58 | 22.4161 | | 15202.10 | 40.81 | 15172.48 | 41.31 |
| 397 | 1998/01/20 | 10:51:10 | 22.4361 | | 15253.97 | 40.81 | 15224.35 | 41.27 |
| 398 | 1998/01/20 | 10:52:46 | 22.4628 | | 15304.49 | 40.81 | 15274.15 | 41.23 |
| 399 | 1998/01/20 | 10:54:54 | 22.4983 | | 15356.19 | 40.70 | 15325.70 | 41.12 |
| 400 | 1998/01/20 | 10:57:34 | 22.5428 | | 15407.23 | 40.58 | 15376.74 | 40.96 |
| 401 | 1998/01/20 | 11:03:58 | 22.6494 | | 15457.34 | 40.28 | 15427.32 | 40.62 |
| 402 | 1998/01/20 | 11:09:42 | 22.7450 | | 15507.61 | 40.09 | 15477.88 | 40.43 |
| 403 | 1998/01/20 | 11:11:50 | 22.7806 | | 15454.27 | 40.01 | 15433.42 | 40.35 |
| 404 | 1998/01/20 | 11:12:22 | 22.7894 | | 15393.63 | 40.01 | 15367.92 | 40.35 |
| 405 | 1998/01/20 | 11:13:10 | 22.8028 | | 15340.35 | 39.97 | 15312.07 | 40.35 |
| 406 | 1998/01/20 | 11:14:30 | 22.8250 | | 15398.97 | 39.97 | 15367.41 | 40.32 |
| 407 | 1998/01/20 | 11:15:42 | 22.8450 | | 15452.20 | 39.97 | 15421.88 | 40.32 |
| 408 | 1998/01/20 | 11:18:14 | 22.8872 | | 15503.41 | 39.97 | 15473.78 | 40.28 |
| 409 | 1998/01/20 | 11:23:02 | 22.9672 | | 15553.89 | 39.93 | 15524.30 | 40.24 |
| 410 | 1998/01/20 | 11:30:06 | 23.0850 | | 15498.53 | 39.86 | 15473.64 | 40.16 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 411 | 1998/01/20 | 11:30:54 | 23.0983 | | 15441.88 | 39.82 | 15415.72 | 40.16 |
| 412 | 1998/01/20 | 11:31:58 | 23.1161 | | 15388.59 | 39.78 | 15361.93 | 40.16 |
| 413 | 1998/01/20 | 11:33:26 | 23.1406 | | 15334.68 | 39.78 | 15307.46 | 40.16 |
| 414 | 1998/01/20 | 11:35:18 | 23.1717 | | 15280.78 | 39.78 | 15253.68 | 40.16 |
| 415 | 1998/01/20 | 11:37:42 | 23.2117 | | 15228.95 | 39.82 | 15201.10 | 40.20 |
| 416 | 1998/01/20 | 11:40:38 | 23.2606 | | 15178.47 | 39.86 | 15151.28 | 40.24 |
| 417 | 1998/01/20 | 11:44:30 | 23.3250 | | 15127.38 | 39.93 | 15099.72 | 40.35 |
| 418 | 1998/01/20 | 11:49:18 | 23.4050 | | 15076.91 | 39.97 | 15049.73 | 40.43 |
| 419 | 1998/01/20 | 11:55:18 | 23.5050 | | 15026.55 | 40.09 | 15000.08 | 40.58 |
| 420 | 1998/01/20 | 12:03:02 | 23.6339 | | 14975.47 | 40.16 | 14948.37 | 40.74 |
| 421 | 1998/01/20 | 12:12:30 | 23.7917 | | 14925.06 | 40.24 | 14898.22 | 40.85 |
| 422 | 1998/01/20 | 12:24:06 | 23.9850 | | 14874.72 | 40.35 | 14848.07 | 40.96 |
| 423 | 1998/01/20 | 12:25:02 | 24.0006 | | 14871.41 | 40.39 | 14843.76 | 41.00 |
| 424 | 1998/01/20 | 12:33:50 | 24.1472 | | 14846.91 | 40.43 | 14804.93 | 41.04 |
| 425 | 1998/01/20 | 12:34:06 | 24.1517 | | 15012.93 | 40.43 | 14976.61 | 41.04 |
| 426 | 1998/01/20 | 12:34:30 | 24.1583 | | 15070.92 | 40.47 | 15038.46 | 41.08 |
| 427 | 1998/01/20 | 12:35:02 | 24.1672 | | 15124.13 | 40.47 | 15092.91 | 41.08 |
| 428 | 1998/01/20 | 12:35:42 | 24.1783 | | 15176.68 | 40.47 | 15146.85 | 41.04 |
| 429 | 1998/01/20 | 12:36:46 | 24.1961 | | 15229.22 | 40.47 | 15200.61 | 41.04 |
| 430 | 1998/01/20 | 12:38:14 | 24.2206 | | 15283.17 | 40.51 | 15254.55 | 41.00 |
| 431 | 1998/01/20 | 12:40:06 | 24.2517 | | 15333.69 | 40.51 | 15305.05 | 40.96 |
| 432 | 1998/01/20 | 12:42:46 | 24.2961 | | 15385.46 | 40.43 | 15355.73 | 40.89 |
| 433 | 1998/01/20 | 12:46:14 | 24.3539 | | 15435.83 | 40.32 | 15406.10 | 40.74 |
| 434 | 1998/01/20 | 12:50:46 | 24.4294 | | 15486.88 | 40.20 | 15456.64 | 40.54 |
| 435 | 1998/01/20 | 12:56:38 | 24.5272 | | 15537.77 | 39.97 | 15507.20 | 40.35 |
| 436 | 1998/01/20 | 13:03:50 | 24.6472 | | 15588.15 | 39.86 | 15558.27 | 40.20 |
| 437 | 1998/01/20 | 13:12:06 | 24.7850 | | 15638.54 | 39.74 | 15609.16 | 40.09 |
| 438 | 1998/01/20 | 13:24:30 | 24.9917 | | 15688.93 | 39.63 | 15659.37 | 39.97 |
| 439 | 1998/01/20 | 13:39:17 | 25.2381 | | 15739.23 | 39.44 | 15718.05 | 39.82 |
| 440 | 1998/01/20 | 13:54:02 | 25.4839 | | 15789.68 | 39.36 | 15623.93 | 39.74 |
| 441 | 1998/01/20 | 13:55:02 | 25.5006 | | 15723.62 | 39.36 | 15579.79 | 39.74 |
| 442 | 1998/01/20 | 13:55:47 | 25.5131 | | 15668.36 | 39.36 | 15552.89 | 39.74 |
| 443 | 1998/01/20 | 13:57:02 | 25.5339 | | 15609.72 | 39.36 | 15514.96 | 39.74 |
| 444 | 1998/01/20 | 13:58:32 | 25.5589 | | 15558.50 | 39.36 | 15476.84 | 39.78 |
| 445 | 1998/01/20 | 14:00:32 | 25.5922 | | 15505.26 | 39.36 | 15434.59 | 39.82 |
| 446 | 1998/01/20 | 14:03:02 | 25.6339 | | 15454.09 | 39.40 | 15390.78 | 39.90 |
| 447 | 1998/01/20 | 14:06:02 | 25.6839 | | 15403.55 | 39.40 | 15346.98 | 39.97 |
| 448 | 1998/01/20 | 14:09:47 | 25.7464 | | 15352.49 | 39.51 | 15301.61 | 40.09 |
| 449 | 1998/01/20 | 14:14:32 | 25.8256 | | 15300.04 | 39.59 | 15252.81 | 40.20 |
| 450 | 1998/01/20 | 14:20:02 | 25.9172 | | 15248.94 | 39.67 | 15205.39 | 40.32 |
| 451 | 1998/01/20 | 14:26:47 | 26.0297 | | 15197.23 | 39.78 | 15156.41 | 40.47 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|---|-------------------------|------------------------|-------------------------|------------------------|
| 452 | 1998/01/20 | 14:34:32 | 26.1589 | | 15146.75 | 39.82 | 15108.31 | 40.58 |
| 453 | 1998/01/20 | 14:43:47 | 26.3131 | | 15095.77 | 39.97 | 15058.84 | 40.70 |
| 454 | 1998/01/20 | 14:54:17 | 26.4881 | | 15045.41 | 40.09 | 15010.06 | 40.81 |
| 455 | 1998/01/20 | 15:04:32 | 26.6589 | | 15133.84 | 40.20 | 15279.40 | 40.85 |
| 456 | 1998/01/20 | 15:05:02 | 26.6672 | | 15192.45 | 40.20 | 15303.53 | 40.85 |
| 457 | 1998/01/20 | 15:05:47 | 26.6797 | | 15255.73 | 40.16 | 15329.90 | 40.81 |
| 458 | 1998/01/20 | 15:06:47 | 26.6964 | | 15315.74 | 40.20 | 15368.85 | 40.81 |
| 459 | 1998/01/20 | 15:08:17 | 26.7214 | | 15369.02 | 40.24 | 15394.88 | 40.77 |
| 460 | 1998/01/20 | 15:10:17 | 26.7547 | | 15420.23 | 40.24 | 15433.85 | 40.70 |
| 461 | 1998/01/20 | 15:13:02 | 26.8006 | | 15470.65 | 40.16 | 15471.45 | 40.62 |
| 462 | 1998/01/20 | 15:16:47 | 26.8631 | | 15521.08 | 40.09 | 15515.11 | 40.43 |
| 463 | 1998/01/20 | 15:21:47 | 26.9464 | | 15571.41 | 39.93 | 15560.66 | 40.28 |
| 464 | 1998/01/20 | 15:28:17 | 27.0547 | | 15621.74 | 39.78 | 15606.22 | 40.12 |
| 465 | 1998/01/20 | 15:36:47 | 27.1964 | | 15672.08 | 39.63 | 15655.23 | 39.97 |
| 466 | 1998/01/20 | 15:48:02 | 27.3839 | | 15723.83 | 39.51 | 15704.07 | 39.86 |
| 467 | 1998/01/20 | 16:05:32 | 27.6756 | | 15774.22 | 39.40 | 15756.17 | 39.78 |
| 468 | 1998/01/20 | 16:17:47 | 27.8797 | | 15805.18 | 39.36 | 15622.55 | 39.74 |
| 469 | | | | Shut injectors off and shut-in well to record fall-off. | | | | |
| 470 | 1998/01/20 | 16:18:02 | 27.8839 | | 15755.98 | 39.36 | 15612.89 | 39.74 |
| 471 | 1998/01/20 | 16:18:32 | 27.8922 | | 15713.51 | 39.36 | 15594.96 | 39.74 |
| 472 | 1998/01/20 | 16:19:32 | 27.9089 | | 15662.29 | 39.36 | 15564.61 | 39.74 |
| 473 | 1998/01/20 | 16:21:02 | 27.9339 | | 15609.05 | 39.36 | 15525.99 | 39.74 |
| 474 | 1998/01/20 | 16:23:02 | 27.9672 | | 15555.80 | 39.36 | 15485.12 | 39.78 |
| 475 | 1998/01/20 | 16:25:02 | 28.0006 | | 15513.35 | 39.36 | 15449.76 | 39.82 |
| 476 | 1998/01/20 | 16:25:32 | 28.0089 | | 15503.24 | 39.36 | 15441.49 | 39.82 |
| 477 | 1998/01/20 | 16:28:47 | 28.0631 | | 15450.78 | 39.44 | 15395.43 | 39.93 |
| 478 | 1998/01/20 | 16:32:47 | 28.1297 | | 15398.94 | 39.48 | 15348.68 | 40.05 |
| 479 | 1998/01/20 | 16:37:32 | 28.2089 | | 15347.83 | 39.55 | 15301.94 | 40.16 |
| 480 | 1998/01/20 | 16:43:17 | 28.3047 | | 15297.46 | 39.67 | 15254.52 | 40.28 |
| 481 | 1998/01/20 | 16:50:17 | 28.4214 | | 15245.68 | 39.74 | 15205.54 | 40.43 |
| 482 | 1998/01/20 | 16:58:32 | 28.5589 | | 15194.64 | 39.86 | 15155.88 | 40.58 |
| 483 | 1998/01/20 | 17:08:02 | 28.7172 | | 15144.22 | 39.93 | 15107.09 | 40.70 |
| 484 | 1998/01/20 | 17:19:02 | 28.9006 | | 15093.92 | 40.09 | 15058.48 | 40.77 |
| 485 | 1998/01/20 | 17:31:32 | 29.1089 | | 15043.57 | 40.20 | 15009.19 | 40.85 |
| 486 | 1998/01/20 | 17:45:47 | 29.3464 | | 14993.16 | 40.28 | 14959.73 | 40.96 |
| 487 | 1998/01/20 | 18:02:02 | 29.6172 | | 14942.81 | 40.39 | 14910.44 | 41.04 |
| 488 | 1998/01/20 | 18:20:17 | 29.9214 | | 14891.74 | 40.47 | 14860.47 | 41.12 |
| 489 | 1998/01/20 | 18:40:47 | 30.2631 | | 14841.34 | 40.54 | 14810.68 | 41.16 |
| 490 | 1998/01/20 | 19:03:32 | 30.6422 | | 14790.94 | 40.62 | 14760.71 | 41.23 |
| 491 | 1998/01/20 | 19:28:32 | 31.0589 | | 14740.55 | 40.70 | 14710.24 | 41.27 |
| 492 | 1998/01/20 | 19:55:47 | 31.5131 | | 14690.10 | 40.74 | 14660.97 | 41.35 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 493 | 1998/01/20 | 20:25:17 | 32.0047 | | 14640.99 | 40.77 | 14611.18 | 41.39 |
| 494 | 1998/01/20 | 20:26:02 | 32.0172 | | 14639.65 | 40.77 | 14610.50 | 41.39 |
| 495 | 1998/01/20 | 20:59:02 | 32.5672 | | 14589.26 | 40.85 | 14560.03 | 41.42 |
| 496 | 1998/01/20 | 21:34:47 | 33.1631 | | 14538.82 | 40.89 | 14510.25 | 41.46 |
| 497 | 1998/01/20 | 22:13:32 | 33.8089 | | 14488.38 | 40.93 | 14459.78 | 41.50 |
| 498 | 1998/01/20 | 22:54:47 | 34.4964 | | 14437.87 | 40.93 | 14410.01 | 41.54 |
| 499 | 1998/01/20 | 23:39:32 | 35.2422 | | 14387.43 | 40.96 | 14359.71 | 41.54 |
| 500 | 1998/01/21 | 00:25:17 | 36.0047 | | 14338.95 | 40.96 | 14311.32 | 41.58 |
| 501 | 1998/01/21 | 00:27:02 | 36.0339 | | 14336.93 | 40.96 | 14309.94 | 41.58 |
| 502 | 1998/01/21 | 01:18:17 | 36.8881 | | 14286.49 | 41.00 | 14258.96 | 41.58 |
| 503 | 1998/01/21 | 02:12:17 | 37.7881 | | 14236.05 | 41.04 | 14208.51 | 41.61 |
| 504 | 1998/01/21 | 03:09:32 | 38.7422 | | 14185.55 | 41.04 | 14158.91 | 41.61 |
| 505 | 1998/01/21 | 04:10:32 | 39.7589 | | 14135.06 | 41.04 | 14108.46 | 41.65 |
| 506 | 1998/01/21 | 04:25:17 | 40.0047 | | 14123.68 | 41.08 | 14096.75 | 41.65 |
| 507 | 1998/01/21 | 05:15:17 | 40.8381 | | 14084.63 | 41.08 | 14058.17 | 41.65 |
| 508 | 1998/01/21 | 06:23:32 | 41.9756 | | 14034.13 | 41.08 | 14007.72 | 41.69 |
| 509 | 1998/01/21 | 07:36:17 | 43.1881 | | 13983.63 | 41.08 | 13957.44 | 41.69 |
| 510 | 1998/01/21 | 08:25:17 | 44.0047 | | 13951.38 | 41.12 | 13925.07 | 41.69 |
| 511 | 1998/01/21 | 08:52:32 | 44.4589 | | 13933.21 | 41.12 | 13907.00 | 41.73 |
| 512 | 1998/01/21 | 10:13:02 | 45.8006 | | 13882.71 | 41.12 | 13856.71 | 41.73 |
| 513 | 1998/01/21 | 11:38:02 | 47.2172 | | 13832.22 | 41.12 | 13805.75 | 41.73 |
| 514 | 1998/01/21 | 12:25:17 | 48.0047 | | 13805.36 | 41.16 | 13778.88 | 41.73 |
| 515 | 1998/01/21 | 13:07:02 | 48.7006 | | 13781.80 | 41.16 | 13756.00 | 41.77 |
| 516 | 1998/01/21 | 14:40:32 | 50.2589 | | 13731.30 | 41.16 | 13705.03 | 41.77 |
| 517 | 1998/01/21 | 16:18:32 | 51.8922 | | 13680.81 | 41.16 | 13654.75 | 41.77 |
| 518 | 1998/01/21 | 16:25:17 | 52.0047 | | 13677.45 | 41.16 | 13651.31 | 41.77 |
| 519 | 1998/01/21 | 18:01:17 | 53.6047 | | 13630.32 | 41.16 | 13604.47 | 41.77 |
| 520 | 1998/01/21 | 19:48:47 | 55.3964 | | 13579.83 | 41.16 | 13554.20 | 41.77 |
| 521 | 1998/01/21 | 20:25:17 | 56.0047 | | 13563.75 | 41.19 | 13538.36 | 41.77 |
| 522 | 1998/01/21 | 21:42:47 | 57.2964 | | 13529.42 | 41.19 | 13503.77 | 41.81 |
| 523 | 1998/01/21 | 23:41:17 | 59.2714 | | 13478.93 | 41.19 | 13452.81 | 41.81 |
| 524 | 1998/01/22 | 00:25:17 | 60.0047 | | 13460.76 | 41.19 | 13435.59 | 41.81 |
| 525 | 1998/01/22 | 01:45:17 | 61.3381 | | 13428.45 | 41.19 | 13403.22 | 41.81 |
| 526 | 1998/01/22 | 03:55:02 | 63.5006 | | 13378.04 | 41.23 | 13352.26 | 41.81 |
| 527 | 1998/01/22 | 04:25:17 | 64.0047 | | 13367.27 | 41.23 | 13341.25 | 41.81 |
| 528 | 1998/01/22 | 06:10:32 | 65.7589 | | 13327.55 | 41.23 | 13301.99 | 41.81 |
| 529 | 1998/01/22 | 08:25:32 | 68.0089 | | 13279.09 | 41.23 | 13253.10 | 41.81 |
| 530 | 1998/01/22 | 08:31:32 | 68.1089 | | 13277.07 | 41.23 | 13251.72 | 41.81 |
| 531 | 1998/01/22 | 10:58:17 | 70.5547 | | 13226.59 | 41.23 | 13201.30 | 41.84 |
| 532 | 1998/01/22 | 12:25:32 | 72.0089 | | 13197.64 | 41.23 | 13172.38 | 41.84 |
| 533 | 1998/01/22 | 13:31:32 | 73.1089 | | 13176.10 | 41.23 | 13151.04 | 41.84 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

Company: Anderson Exploration Ltd.
Well Location: 06-16-002-29W1
Test Date: 1998/01/19

Well Name: Home SRO S.Pierson Prov. 06-16
Formation: Spearfish
Test End Date: 1998/02/11

| | Gauge 1 Date yy/mm/dd | Gauge 1 Clk Time hh:mm:ss | Gauge 1 Time hr | Ga Co | Gauge 1 Pres. kPa | Gauge 1 Temp. °C | Gauge 2 Pres. kPa | Gauge 2 Temp. °C |
|-----|-----------------------------|---------------------------------|-----------------------|----------|-------------------------|------------------------|-------------------------|------------------------|
| 534 | 1998/01/22 | 16:11:17 | 75.7714 | | 13125.62 | 41.23 | 13100.08 | 41.84 |
| 535 | 1998/01/22 | 16:25:32 | 76.0089 | | 13121.58 | 41.23 | 13095.95 | 41.84 |
| 536 | 1998/01/22 | 18:56:32 | 78.5256 | | 13075.14 | 41.23 | 13049.81 | 41.84 |
| 537 | 1998/01/22 | 20:25:32 | 80.0089 | | 13049.64 | 41.27 | 13023.65 | 41.84 |
| 538 | 1998/01/22 | 21:49:02 | 81.4006 | | 13024.74 | 41.27 | 13000.24 | 41.84 |
| 539 | 1998/01/23 | 00:25:32 | 84.0089 | | 12981.67 | 41.27 | 12955.48 | 41.84 |
| 540 | 1998/01/23 | 00:49:47 | 84.4131 | | 12974.26 | 41.27 | 12949.29 | 41.84 |
| 541 | 1998/01/23 | 03:57:17 | 87.5381 | | 12923.78 | 41.27 | 12898.33 | 41.84 |
| 542 | 1998/01/23 | 04:25:32 | 88.0089 | | 12917.05 | 41.27 | 12890.76 | 41.84 |
| 543 | 1998/01/23 | 07:12:02 | 90.7839 | | 12873.31 | 41.27 | 12848.07 | 41.84 |
| 544 | 1998/01/23 | 08:25:32 | 92.0089 | | 12855.13 | 41.27 | 12828.79 | 41.84 |
| 545 | 1998/01/23 | 10:32:47 | 94.1297 | | 12822.83 | 41.27 | 12797.67 | 41.88 |
| 546 | 1998/01/23 | 12:25:32 | 96.0089 | | 12795.91 | 41.27 | 12770.27 | 41.84 |
| 547 | 1998/01/23 | 14:00:32 | 97.5922 | | 12772.35 | 41.27 | 12747.41 | 41.88 |
| 548 | 1998/01/23 | 16:25:32 | 100.0089 | | 12738.70 | 41.27 | 12712.98 | 41.88 |
| 549 | 1998/01/23 | 17:36:17 | 101.1881 | | 12721.96 | 41.31 | 12696.46 | 41.88 |
| 550 | 1998/01/23 | 20:25:32 | 104.0089 | | 12683.60 | 41.31 | 12657.90 | 41.88 |
| 551 | 1998/01/23 | 21:17:47 | 104.8797 | | 12671.49 | 41.31 | 12646.20 | 41.88 |
| 552 | 1998/01/24 | 00:25:32 | 108.0089 | | 12631.11 | 41.31 | 12605.58 | 41.88 |
| 553 | 1998/01/24 | 01:10:17 | 108.7547 | | 12621.02 | 41.31 | 12595.94 | 41.88 |
| 554 | 1998/01/24 | 04:25:32 | 112.0089 | | 12579.96 | 41.31 | 12554.64 | 41.88 |
| 555 | 1998/01/24 | 05:11:02 | 112.7672 | | 12570.54 | 41.31 | 12545.00 | 41.88 |
| 556 | 1998/01/24 | 08:25:32 | 116.0089 | | 12530.84 | 41.31 | 12505.07 | 41.88 |
| 557 | 1998/01/24 | 09:16:47 | 116.8631 | | 12520.07 | 41.31 | 12495.43 | 41.88 |
| 558 | 1998/01/24 | 12:25:32 | 120.0089 | | 12483.06 | 41.31 | 12457.57 | 41.88 |
| 559 | 1998/01/24 | 13:32:47 | 121.1297 | | 12469.60 | 41.31 | 12444.49 | 41.88 |
| 560 | 1998/01/24 | 16:25:32 | 124.0089 | | 12436.63 | 41.31 | 12411.44 | 41.88 |
| 561 | 1998/01/24 | 17:57:32 | 125.5422 | | 12419.13 | 41.31 | 12394.23 | 41.88 |
| 562 | 1998/01/24 | 20:25:32 | 128.0089 | | 12391.54 | 41.31 | 12366.01 | 41.88 |
| 563 | 1998/01/24 | 22:28:47 | 130.0631 | | 12368.66 | 41.31 | 12343.29 | 41.88 |
| 564 | 1998/01/25 | 00:25:32 | 132.0089 | | 12347.80 | 41.31 | 12322.64 | 41.88 |
| 565 | 1998/01/25 | 03:13:17 | 134.8047 | | 12318.28 | 41.35 | 12293.04 | 41.88 |
| 566 | 1998/01/25 | 04:25:32 | 136.0089 | | 12306.17 | 41.35 | 12280.51 | 41.92 |
| 567 | 1998/01/25 | 08:04:47 | 139.6631 | | 12267.81 | 41.35 | 12242.79 | 41.88 |
| 568 | 1998/01/25 | 08:25:32 | 140.0089 | | 12265.12 | 41.35 | 12239.21 | 41.92 |
| 569 | 1998/01/25 | 12:25:32 | 144.0089 | | 12224.75 | 41.35 | 12198.59 | 41.92 |
| 570 | 1998/01/25 | 13:07:17 | 144.7047 | | 12217.35 | 41.35 | 12192.40 | 41.92 |
| 571 | 1998/01/25 | 16:25:32 | 148.0089 | | 12185.05 | 41.35 | 12160.18 | 41.88 |
| 572 | 1998/01/25 | 18:18:17 | 149.8881 | | 12166.88 | 41.35 | 12141.46 | 41.92 |
| 573 | 1998/01/25 | 20:25:32 | 152.0089 | | 12146.69 | 41.35 | 12121.50 | 41.92 |
| 574 | 1998/01/25 | 23:35:17 | 155.1714 | | 12116.41 | 41.35 | 12091.21 | 41.92 |

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

[illegible]

Gauge 1 (80-469) Start Date 1998/01/19 12:25:00 Run Depth = 1001.00 m

Gauge 2 (80-414) Start Date 1998/01/19 12:25:00 Run Depth = 999.50 m

Print Filter: Press = 50.00 kPa, Time = 4.0000 hr

APPENDICES

EQUATIONS
and
NOMENCLATURE
(METRIC UNITS)

BASIC TIME FUNCTIONS

Flow Time

$$t$$

Shut-In Time

$$\Delta t$$

Horner Time

$$\frac{t + \Delta t}{\Delta t}$$

Superposition Time

$$t_n = \sum_{j=1}^n \frac{q_j - q_{j-1}}{q_n} \log(t - t_{j-1})$$

$$\Delta t_n = \sum_{j=1}^n \frac{q_j}{q_n} \log \frac{t_n + \Delta t - t_{j-1}}{t_n + \Delta t - t_j}$$

Equivalent Time

$$\Delta t_e = \frac{t \cdot \Delta t}{t + \Delta t}$$

Root Time

$$\sqrt{t}$$

$$\sqrt{\Delta t}$$

Tandem Root Time

$$\sqrt{t + \Delta t} - \sqrt{\Delta t}$$

BASIC TIME FUNCTIONS (cont'd)

Quad Root Time

$$\sqrt[4]{t}$$

$$\sqrt[4]{\Delta t}$$

Tandem Quad Root Time

$$\sqrt[4]{t+\Delta t} - \sqrt[4]{\Delta t}$$

TYPE CURVES - DIMENSIONLESS VARIABLES

$$\Delta p_D = \frac{(kh/\mu)_r \Delta p}{141.2 q_r B_r}$$

$$t_D = \frac{2.637E-4 (k/\mu)_r t}{\phi c r_w^2}$$

$$\frac{t_D}{C_D} = 0.000295 \left(\frac{kh}{\mu} \right)_r \frac{t}{C}$$

$$C_D e^{2s} = \frac{0.8936 C e^{2s}}{\phi c h r_w^2}$$

$$t_{DA} = \frac{2.637E-4 (k/\mu)_r t}{\phi c A}$$

$$t_{Dxf} = \frac{2.637E-4 (k/\mu)_r t}{\phi c x_f^2}$$

$$(k_f w)_D = \frac{k_f w}{k x_f}$$

McKINLEY ANALYSIS

Wellbore Capacity

$$F = \left(\frac{\Delta p}{qB} \right) \left(\frac{qB}{\Delta p} \right)$$

Alpha

$$\alpha = \frac{F}{5.615}$$

Note: Alpha is the same as C

Wellbore Storage Constant
Compressible Fluid

$$C = c_{ws} V_{ws}$$

Wellbore Storage Constant
Changing Liquid Level

$$C = \frac{\text{cross-sectional area}}{5.615 \text{ liquid gradient}}$$

Transmissivity

$$\frac{kh}{\mu} = \left(\frac{T}{F} \right) F$$

Pressure Drop Skin

$$\Delta p_s = \left[1 - \frac{kh_{(wellbore)}}{kh_{(formation)}} \right] \Delta p_{(departure)}$$

Flow Efficiency

$$FE = \frac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$$

SEMILOG ANALYSIS

Transmissivity $\left(\frac{kh}{\mu}\right)_t = \frac{162.6 q_t B_t}{m}$

Permeability $k = \frac{162.6 q_o B_o \mu_o}{mh}$

Skin Factor $s' = 1.151 \left[\frac{p_{ws} - p_{wfo}}{m} - \log \frac{t \Delta t}{t + \Delta t} - \log \left(\frac{(k/\mu)_t}{\phi_c r_w^2} \right) + 3.23 \right]$

Pressure Drop due to Skin $\Delta p_s = 0.869 ms'$

Flow Efficiency $FE = \frac{\bar{p}_R - p_{wfo} - 0.869 ms'}{\bar{p}_R - p_{wfo}}$

Damage Ratio $DR = \frac{1}{FE}$

Radius of Investigation $r_{inv} = \sqrt{\frac{(k/\mu)_t t}{948 \phi_c}}$

Time to Stabilization $t_s = \frac{\phi c A}{2.637E-4 (k/\mu)_t} (t_{DA})_{ps}$

SEMILOG ANALYSIS (cont'd)

Stabilized Rate

$$q_s = \frac{p_i - p_{wfo}}{\frac{162.6 B_o}{(k/\mu)_o h} \left(\log\left(\frac{4A}{1.781 r_w^2 C_A}\right) + \frac{4\pi(t_{DA})_{psr}}{2.303} + \frac{2s'}{2.303} \right)}$$

Productivity Index

$$PI = \frac{q}{\bar{p}_R - p_{wfo}}$$

MBH Average Pressure

$$\bar{p}_R = p^* - \frac{m}{2.303} \text{ (MBH function)}$$

DIETZ Average Pressure

$$(\Delta t)_{\bar{p}_R} = \frac{\phi c_f A}{2.637E-4 C_A (k/\mu)_f}$$

LINEAR ANALYSIS

Fracture half-length

$$x_f = \frac{4.064 q_f B_f}{mh(\phi ck/\mu)_f^{1/2}}$$

Channel width

$$W = \frac{8.128 q_f B_f}{mh(\phi ck/\mu)_f^{1/2}}$$

Skin Factor

$$s = \ln \frac{2 r_w}{x_f}$$

BI-LINEAR ANALYSIS

Fracture Conductivity

$$k_{fw} = \left[\frac{44.1 q B \mu}{mh(\phi \mu ck)^{1/4}} \right]^2$$

PMG

NOMENCLATURE

| <u>Symbol</u> | <u>Description</u> | <u>Metric (SI)</u> | <u>Field</u> |
|----------------------|---|-----------------------------------|----------------------|
| a | LIT flow equation coefficient | - | - |
| A | drainage area | m ² | ft ² |
| AOF | absolute open flow potential (gas) | 10 ³ m ³ /d | MMcfd |
| b | LIT flow equation coefficient | - | - |
| B | formation volume factor | - | - |
| c | compressibility | kpa ⁻¹ | psi ⁻¹ |
| c _{ws} | compressibility of wellbore fluids | kpa ⁻¹ | psi ⁻¹ |
| C | wellbore storage/unloading constant | m ³ /kPa | bbl/psi |
| C | simplified flow equation coefficient | - | - |
| C _A | shape factor | - | - |
| C _{ad} | apparent wellbore storage constant | - | - |
| C _D | dimensionless wellbore storage constant | - | - |
| C _{pD} | storage pressure parameter | - | - |
| DR | damage ratio | - | - |
| F | wellbore capacity (McKinley) | m ³ /kPa | ft ³ /psi |
| FE | flow efficiency | - | - |
| G | relative density (gas) | - | - |
| GOR | gas-oil ratio | m ³ /m ³ | ft ³ /bbl |
| h | net pay | m | ft |
| k | permeability | mD | md |
| k _(x,y,z) | permeability in the x,y,z direction | mD | md |
| k _f | fracture permeability | mD | md |
| k _f w | fracture conductivity | mD.m | md.ft |
| kh | flow capacity | mD.m | md.ft |
| k/μ | mobility | - | - |
| kh/μ | transmissivity | - | - |

PMG

| <u>Symbol</u> | <u>Description</u> | <u>Metric (SI)</u> | <u>Field</u> |
|---------------|--------------------------------------|--------------------|----------------------|
| L | length of horizontal well | m | ft |
| L_e | effective length of horizontal well | m | ft |
| m | slope of transient plots | - | - |
| n | simplified flow equation coefficient | - | - |
| p | pressure | kPa | psia |
| p_{bp} | bubble point pressure | kPa | psia |
| p_c | gas pseudo-critical pressure | kPa | psia |
| p_i | initial pressure | kPa | psia |
| p_R | average reservoir pressure | kPa | psia |
| p_{tf} | flowing wellhead pressure | kPa | psia |
| p_{ts} | shut-in wellhead pressure | kPa | psia |
| p_{wf} | flowing sandface pressure | kPa | psia |
| P_{wfo} | final flowing pressure | kPa | psia |
| p_{ws} | shut-in sandface pressure | kPa | psia |
| p^* | extrapolated pressure | kPa | psia |
| Δp_D | dimensionless pressure | - | - |
| Δp | pressure drop | kPa | psi |
| PI | productivity index | $m^3/d/kPa$ | bbl/d/psi |
| q | flow rate - gas | $10^3 m^3/d$ | MMcf/d |
| | - liquid | m^3/d | bbl/d |
| q_j | j^{th} flow rate | m^3/d | bbl/d |
| q_n | n^{th} flow rate | m^3/d | bbl/d |
| q_s | stabilized rate - gas | $10^3 m^3/d$ | MMcf/d |
| | - liquid | m^3/d | bbl/d |
| r_o | external radius | m | ft |
| r_{inv} | radius of investigation | m | ft |
| r_w | wellbore radius | m | ft |
| R_s | solution gas ratio | m^3/m^3 | ft ³ /bbl |

| <u>Symbol</u> | <u>Description</u> | <u>Metric (SI)</u> | <u>Field</u> |
|------------------|--|--------------------|---------------|
| s | skin factor | - | - |
| s' | apparent skin factor | - | - |
| S | saturation (oil, gas, water) | - | - |
| t | time | hr | hr |
| t_D | dimensionless time | hr | hr |
| t_a | pseudo-time | hr | hr |
| t_{DA} | dimensionless time (based on drainage area) | hr | hr |
| t_{Dxf} | dimensionless time (based on fracture 1/2 length) | hr | hr |
| t_n | n^{th} flow period, or superposition time | - | - |
| Δt | shut-in time | hr | hr |
| Δt_a | shut-in pseudo-time | hr | hr |
| Δt_e | equivalent time | hr | hr |
| $(t_{DA})_{pss}$ | dimensionless time at pseudo-steady state | - | - |
| t_s | time to stabilization | hr | hr |
| T | temperature | K | °R |
| T_c | gas pseudo-critical temperature | K | °R |
| V_{ws} | wellbore volume - gas - liquid | m^3 m^3 | ft^3 bbl |
| W | channel width | m | ft |
| w | fracture width | m | ft |
| x_e | length of reservoir | m | ft |
| x_f | fracture half-length | m | ft |
| x_o | x -location of observation well | m | ft |
| x_w | x- location of centre of active well | m | ft |
| y_e | width of reservoir | m | ft |
| y_o | y- location of observation well | m | ft |
| y_w | y- location of centre of active well | m | ft |
| Z | gas compressibility factor | - | - |
| z_w | z-location of centre of active well | m | ft |

| <u>Symbol</u> | <u>Description</u> | <u>Metric (SI)</u> | <u>Field</u> |
|---------------|-------------------------------------|------------------------------------|---------------------------|
| α | wellbore storage/unloading constant | m^3/kPa | bbl/psi |
| μ | viscosity - gas - liquid | $\mu\text{Pa.s}$ mPa.s | cp cp |
| λ | inter-porosity flow coefficient | - | - |
| T | transmissivity (McKinley) | $\text{mD.m}/\text{mPa.s}$ | md.ft/cp |
| ϕ | porosity | - | - |
| ψ | pseudo-pressure | $\text{kPa}^2/\mu\text{Pa.s}$ | psia^2/cp |
| ω | storativity ratio | - | - |

Subscripts

| | |
|-----|--|
| D | dimensionless |
| DA | dimensionless based on area |
| Dxf | dimensionless based on fracture half -length |
| f | formation or flowing |
| g | gas |
| i | initial |
| o | oil |
| R | reservoir |
| s | shut-in, skin, stabilized or storage |
| t | total, transient, or wellhead (tubing head) |
| w | water or wellbore (sandface) |
| ref | evaluated at reference pressure |

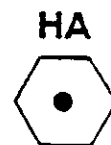
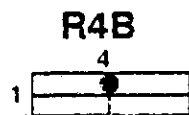
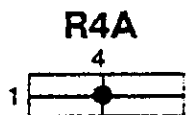
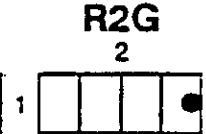
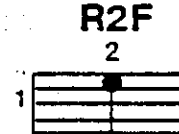
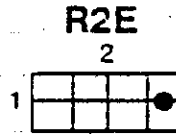
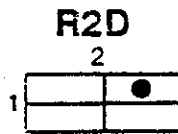
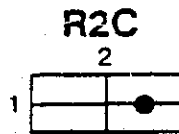
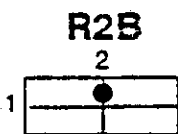
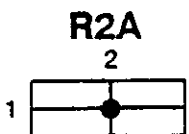
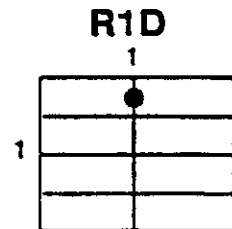
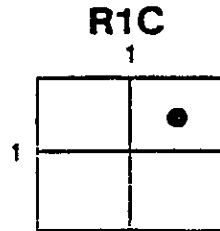
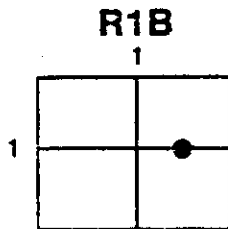
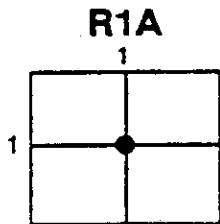
Superscripts

| | |
|---|---------|
| - | average |
|---|---------|

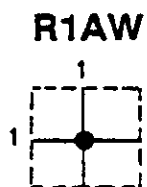
DIETZ SHAPE CODES


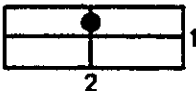



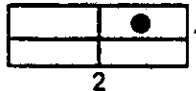

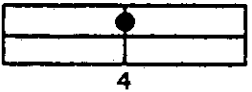

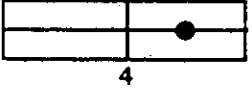

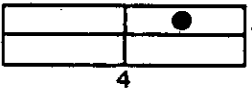
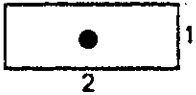
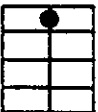


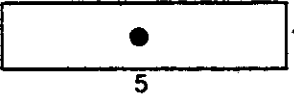
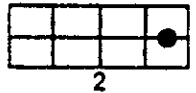

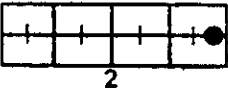




AVERAGE RESERVOIR PRESSURE - MBH CORRECTIONS

NO FLOW OUTER BOUNDARY



CONSTANT PRESSURE OUTER BOUNDARY



| | $\ln C_A$ | C_A | STABILIZED CONDITIONS FOR $t_{DA} >$ | | $\ln C_A$ | C_A | STABILIZED CONDITIONS FOR $t_{DA} >$ |
|---|-----------|-------|--|--|-----------|-------|--|
| IN BOUNDED RESERVOIRS | | | | | | | |
|  | 3.45 | 31.6 | 0.1 |  | 2.38 | 10.8 | 0.3 |
|  | 3.43 | 30.9 | 0.1 |  | 1.58 | 4.86 | 1.0 |
|  | 3.45 | 31.6 | 0.1 |  | 0.73 | 2.07 | 0.8 |
|  | 3.32 | 27.6 | 0.2 |  | 1.00 | 2.72 | 0.8 |
|  | 3.30 | 27.1 | 0.2 |  | -1.46 | 0.232 | 2.5 |
|  | 3.09 | 21.9 | 0.4 |  | -2.16 | 0.115 | 3.0 |
|  | 3.12 | 22.6 | 0.2 |  | 1.22 | 3.39 | 0.6 |
|  | 1.68 | 5.38 | 0.7 |  | 1.14 | 3.13 | 0.3 |
|  | 0.86 | 2.36 | 0.7 |  | -0.50 | 0.607 | 1.0 |
|  | 2.56 | 12.9 | 0.6 |  | -2.20 | 0.111 | 1.2 |
|  | 1.52 | 4.57 | 0.5 |  | -2.32 | 0.098 | 0.9 |
| | | | | IN WATER DRIVE RESERVOIRS | | | |
| | | | |  | 2.95 | 19.1 | 0.1 |
| | | | | IN RESERVOIRS OF UNKNOWN PRODUCTION CHARACTER | | | |
| | | | |  | 3.22 | 25 | 0.1 |

PSEUDO-STEADY STATE SHAPE FACTORS FOR VARIOUS RESERVOIRS

FROM DIETZ (1965)

PMG

UNITS CONVERSION AND PREFIXES

| <u>METRIC (SI) UNIT</u> | <u>FIELD UNIT</u> | <u>DIVIDED BY</u> |
|-----------------------------|---------------------------------|----------------------------------|
| $10^3\text{m}^3/\text{d}$ | MMcfd | 2.817 399 E+01 |
| kPa | psia | 6.894 757 E+00 |
| mD | md | 9.869 233 E-01 |
| mD.m | md.ft | 3.008 142 E-01 |
| m | ft | 3.048 E-01 |
| m^3 | bbl (35 Imp gal) (42 US gal) | 1.589 873 E-01 |
| Pa.s | cp | 1.0 E+03 |
| $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $(^{\circ}\text{F}-32)/5/9$ E+00 |
| K | $^{\circ}\text{R}$ | 5/9 E+00 |
| m^2 | section (640 acres) | 2.589 988 E+06 |
| ha | section (640 acres) | 2.589 988 E+02 |
| m^3 | gallon (Imp) | 4.546 09 E-03 |
| m^3 | gallon (US) | 3.785 412 E-03 |
| $\text{m}^3/10^3\text{m}^3$ | bbl/MMcf | 5.643 052 E-03 |

Standard conditions: Metric (SI) 15°C, 101.325 kPa
Field 60°F, 14.65 psia