

TRILOBITE TESTING, L.L.C.

P.O. Box 362 • Hays, Kansas 67601

Drill-Stem Test Data

Well Name KOEHN #1-19 Test No. 1 Date 3/25/95
Company ENSIGN OPERATING COMPANY Zone SWOPE
Address BOX 2161, LIBERAL, KS 67905-2161 Elevation 2828
Co. Rep./Geo. DUANE MOREDOCK Cont. DUKE #6 Est. Ft. of Pay _____
Location: Sec. 19 Twp. 30S Rge. 30W Co. MEADE State KS

Interval Tested 4750-4798 Drill Pipe Size 4.5" XH
Anchor Length 48 Wt. Pipe I.D. - 2.7 Ft. Run _____
Top Packer Depth 4745 Drill Collar - 2.25 Ft. Run _____
Bottom Packer Depth 4750 Mud Wt. 8.8 lb/Gal.
Total Depth 4998 Viscosity 47 Filtrate 10.8

Tool Open @ 12:10pm Initial Blow STRONG BLOW - BOTTOM OF BUCKET IN 1 MINUTE.
ISI: BLED OFF BLOW - WEAK BLOW BUILT TO 4 INCHES.
Final Blow STRONG BLOW - BOTTOM OF BUCKET IN 2 MINUTES.
FSI: BLED OFF BLOW - FAIR BLOW THROUGHOUT.

Recovery - Total Feet 2575 Flush Tool? NO

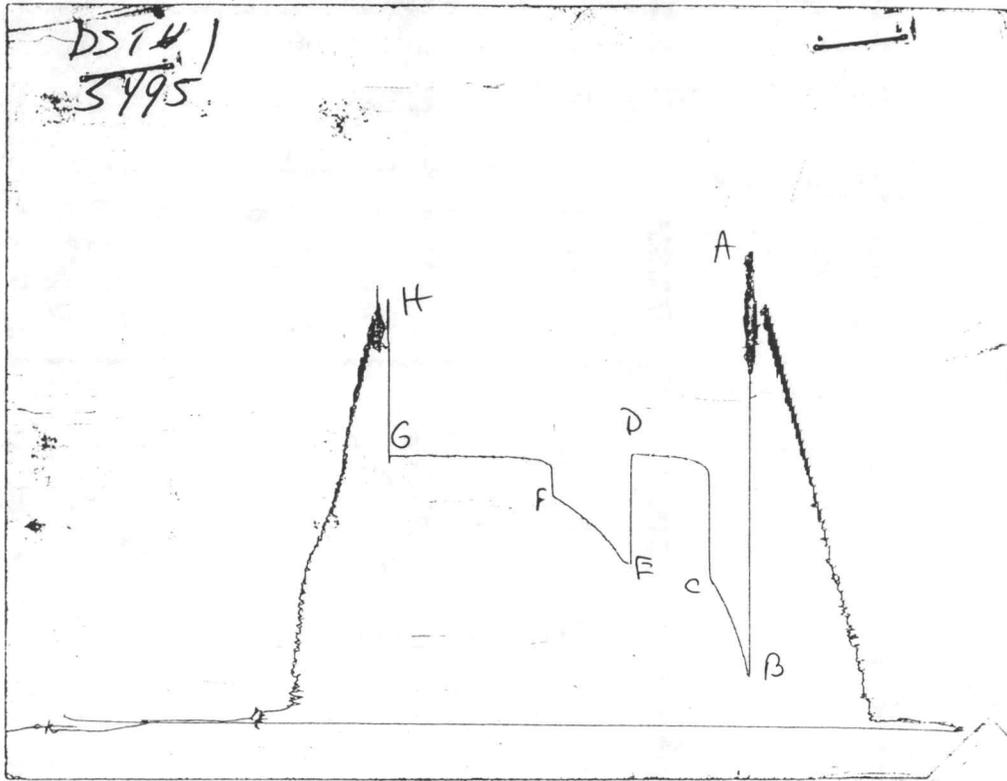
Rec. 1260 Feet of GAS IN PIPE
Rec. 93 Feet of OIL & MUDDY CUT WTR. 5%GAS; 2%OIL; 60%WTR; 33%MUD.
Rec. 2482 Feet of GASSY SALT WATER.
Rec. _____ Feet of _____
Rec. _____ Feet of _____

BHT 120 °F Gravity _____ °API @ _____ °F Corrected Gravity _____ °API
RW 0.084 @ 70 °F Chlorides 94000 ppm Recovery Chlorides 2800 ppm System

(A) Initial Hydrostatic Mud 2330.25 PSI AK1 Recorder No. 2342 Range 6000
(B) First Initial Flow Pressure 219.38 PSI @ (depth) 4760 w / Clock No. ELECTR
(C) First Final Flow Pressure 798.82 PSI AK1 Recorder No. 5495 Range 4200
(D) Initial Shut-in Pressure 1482.16 PSI @ (depth) 4764 w / Clock No. 25813
(E) Second Initial Flow Pressure 848.17 PSI AK1 Recorder No. 13615 Range 4575
(F) Second Final Flow Pressure 1277.29 PSI @ (depth) 4795 w / Clock No. 3942
(G) Final Shut-in Pressure 1434.15 PSI Initial Opening 30 Final Flow 60
(H) Final Hydrostatic Mud 2167.26 PSI Initial Shut-in 60 Final Shut-in 120

Our Representative TOM HORACEK

CHART PAGE



This is an actual photograph of an AK1 recorder chart

| | AK1 READING | ALPINE READING |
|----------------------------------|----------------|-------------------|
| (A) INITIAL HYDROSTATIC MUD | 2399.2 | 2330.25 |
| (B) FIRST INITIAL FLOW PRESSURE | 253.5 | 219.38 |
| (C) FIRST FINAL FLOW PRESSURE | 796.9 | 798.82 |
| (D) INITIAL CLOSED-IN PRESSURE | 1480.7 | 1482.16 |
| (E) SECOND INITIAL FLOW PRESSURE | 874.1 | 848.17 |
| (F) SECOND FINAL FLOW PRESSURE | 1254.6 | 1277.29 |
| (G) FINAL CLOSED-IN PRESSURE | 1468 | 1434.15 |
| (H) FINAL HYDROSTATIC MUD | 2232.3 | 2167.26 |

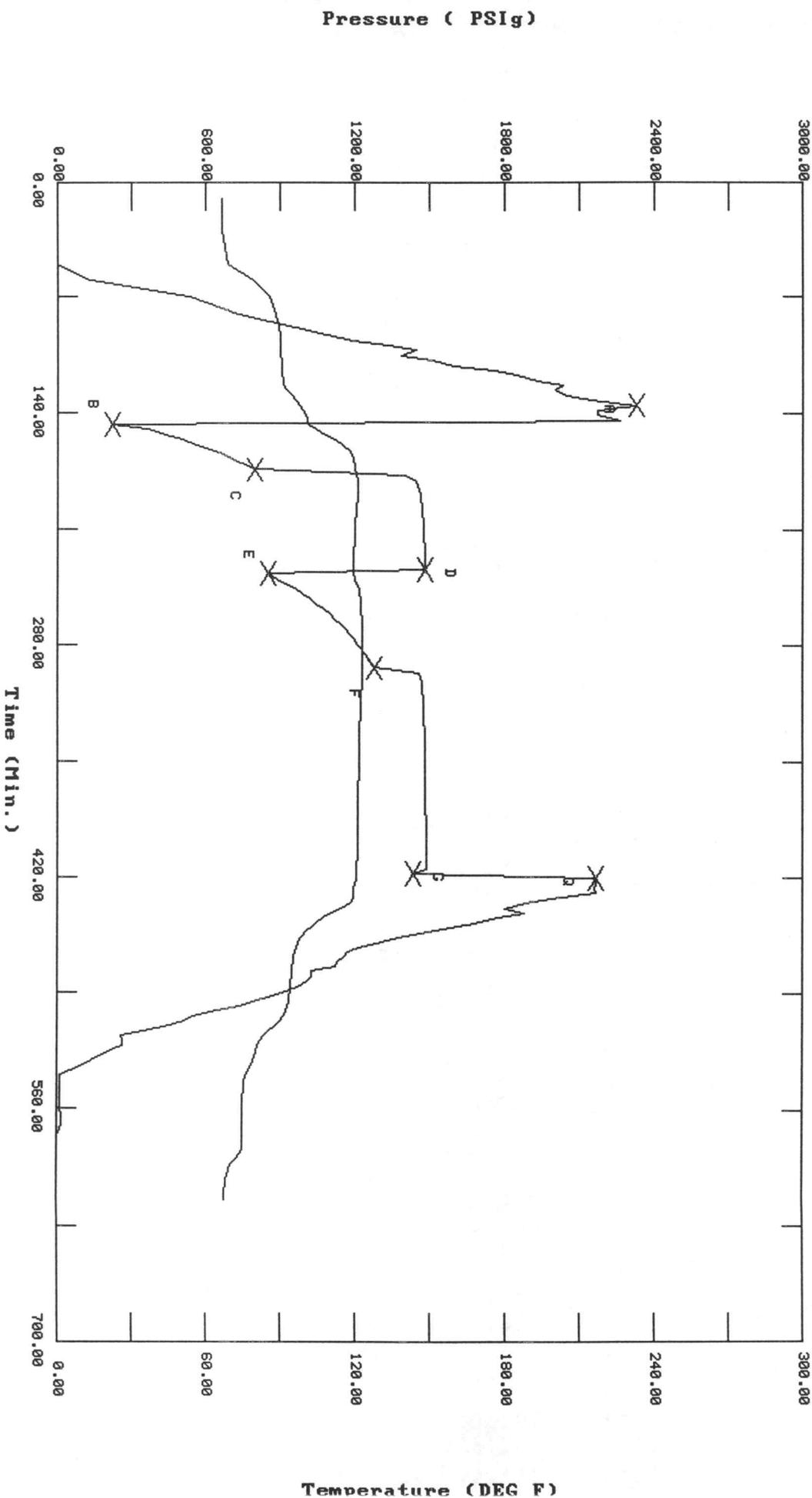
TEST HISTORY

Ensign Operating Co. Koehn # 1-19

DST #1

Flag Points

| Flag Points | t (Min.) | P (PSig) |
|-------------|----------|----------|
| R1 | 0.00 | 2330.25 |
| B1 | 0.00 | 219.38 |
| C1 | 27.00 | 798.82 |
| D1 | 60.00 | 1482.16 |
| E1 | 0.00 | 848.17 |
| F1 | 57.00 | 1277.29 |
| G1 | 123.00 | 1434.15 |
| Q1 | 0.00 | 2167.26 |



Temperature (DEG F)

Pressure (PSIg)

Time (Min.)

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: Ensign Operating Co. Koehn # 1-19 DST #1
 DATE: 03/25/95 TIME: 09:44:56

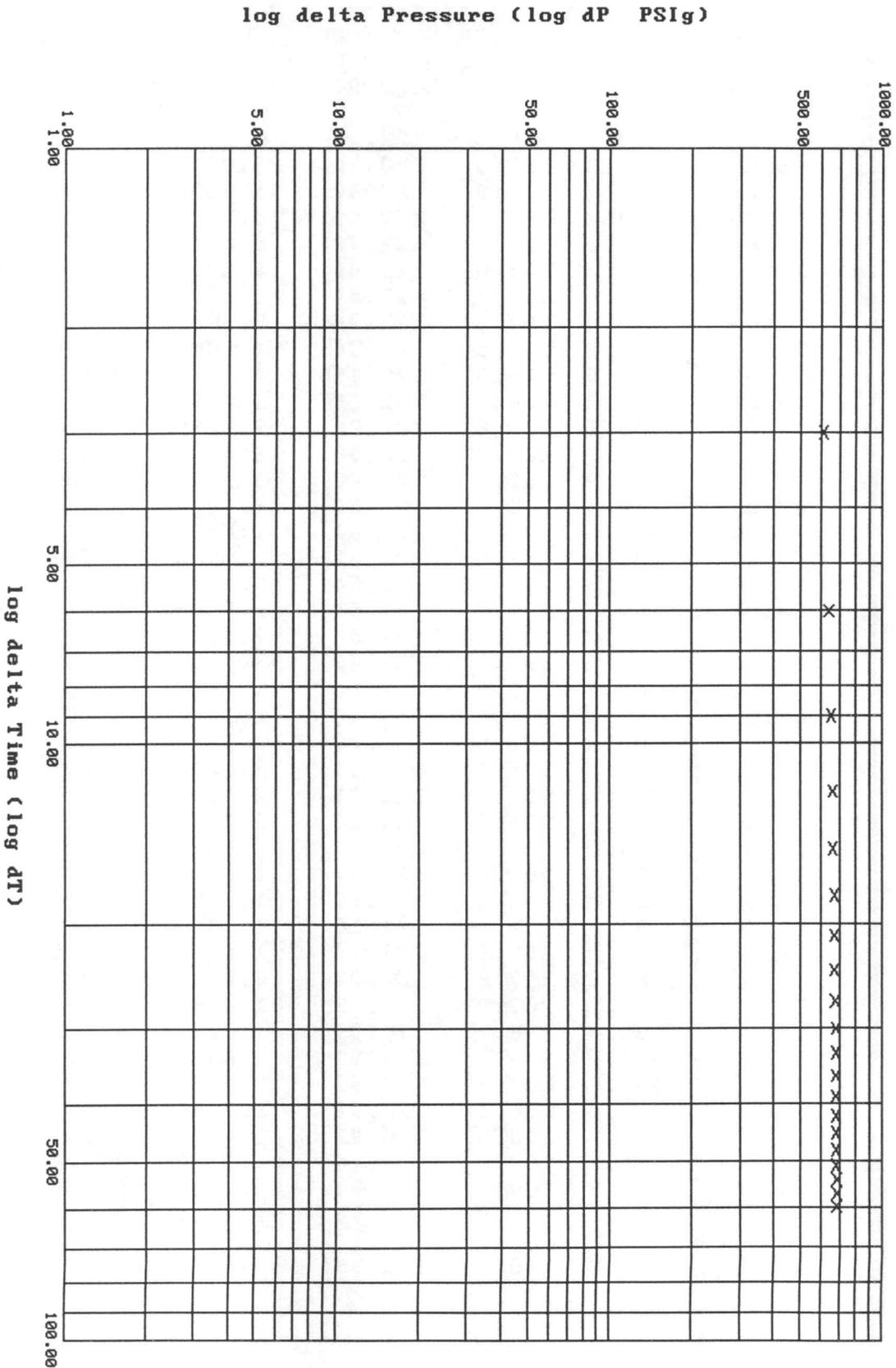
| | Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|----------------------|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| ***** Initial Hydro. | 135.00 | 2330.2 | 0.0 | 97.52 | | |
| ***** Start Flow 1 | 0.00 | 219.4 | 0.0 | 101.12 | | |
| | 3.00 | 366.3 | 146.9 | 104.54 | | |
| | 6.00 | 438.3 | 218.9 | 107.78 | | |
| | 9.00 | 504.1 | 284.7 | 111.92 | | |
| | 12.00 | 562.8 | 343.4 | 115.16 | | |
| | 15.00 | 618.5 | 399.1 | 117.32 | | |
| | 18.00 | 669.2 | 449.9 | 118.58 | | |
| | 21.00 | 715.3 | 495.9 | 119.12 | | |
| | 24.00 | 758.5 | 539.2 | 119.66 | | |
| ***** End Flow 1 | 27.00 | 798.8 | 579.4 | 120.20 | | |
| ***** Start Shutin 1 | 0.00 | 798.8 | 0.0 | 120.20 | 0.0000 | 0.638 |
| | 3.00 | 1406.2 | 607.4 | 120.56 | 10.0000 | 1.977 |
| | 6.00 | 1438.0 | 639.2 | 121.10 | 5.5000 | 2.068 |
| | 9.00 | 1449.5 | 650.7 | 121.28 | 4.0000 | 2.101 |
| | 12.00 | 1456.5 | 657.7 | 121.28 | 3.2500 | 2.121 |
| | 15.00 | 1461.3 | 662.5 | 121.10 | 2.8000 | 2.136 |
| | 18.00 | 1464.9 | 666.1 | 120.92 | 2.5000 | 2.146 |
| | 21.00 | 1467.6 | 668.8 | 120.74 | 2.2857 | 2.154 |
| | 24.00 | 1470.0 | 671.2 | 120.56 | 2.1250 | 2.161 |
| | 27.00 | 1471.8 | 673.0 | 120.38 | 2.0000 | 2.166 |
| | 30.00 | 1473.3 | 674.5 | 120.20 | 1.9000 | 2.171 |
| | 33.00 | 1474.8 | 676.0 | 120.02 | 1.8182 | 2.175 |
| | 36.00 | 1476.0 | 677.2 | 120.02 | 1.7500 | 2.179 |
| | 39.00 | 1477.1 | 678.3 | 119.84 | 1.6923 | 2.182 |
| | 42.00 | 1478.0 | 679.2 | 119.84 | 1.6429 | 2.185 |
| | 45.00 | 1479.0 | 680.2 | 119.66 | 1.6000 | 2.187 |
| | 48.00 | 1479.7 | 680.9 | 119.48 | 1.5625 | 2.190 |
| | 51.00 | 1480.5 | 681.7 | 119.48 | 1.5294 | 2.192 |
| | 54.00 | 1481.1 | 682.2 | 119.48 | 1.5000 | 2.194 |
| | 57.00 | 1481.6 | 682.8 | 119.30 | 1.4737 | 2.195 |
| ***** End Shut-in 1 | 60.00 | 1482.2 | 683.3 | 119.30 | 1.4500 | 2.197 |
| ***** Start Flow 2 | 0.00 | 848.2 | 0.0 | 119.12 | | |
| | 3.00 | 887.4 | 39.2 | 119.84 | | |
| | 6.00 | 923.5 | 75.4 | 120.74 | | |
| | 9.00 | 957.5 | 109.4 | 121.46 | | |
| | 12.00 | 989.3 | 141.2 | 121.82 | | |
| | 15.00 | 1018.6 | 170.5 | 122.18 | | |
| | 18.00 | 1046.0 | 197.8 | 122.36 | | |
| | 21.00 | 1071.1 | 222.9 | 122.54 | | |
| | 24.00 | 1094.7 | 246.6 | 122.54 | | |
| | 27.00 | 1116.6 | 268.4 | 122.72 | | |
| | 30.00 | 1137.4 | 289.2 | 122.72 | | |
| | 33.00 | 1156.5 | 308.4 | 122.72 | | |
| | 36.00 | 1174.6 | 326.5 | 122.72 | | |
| | 39.00 | 1191.7 | 343.5 | 122.72 | | |
| | 42.00 | 1208.0 | 359.8 | 122.90 | | |
| | 45.00 | 1223.5 | 375.3 | 122.90 | | |
| | 48.00 | 1238.2 | 390.0 | 122.90 | | |
| | 51.00 | 1251.9 | 403.8 | 122.90 | | |
| | 54.00 | 1265.2 | 417.0 | 122.90 | | |

 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: Ensign Operating Co. Koehn # 1-19 DST #1
 DATE: 03/25/95 TIME: 09:44:56

| | Time | Pressure PSIg | delta P PSIg | Temp. DEG F | (T+dT)/dT | P ² /10 ⁶ |
|----------------------|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| ***** End Flow 2 | 57.00 | 1277.3 | 429.1 | 122.90 | | |
| ***** Start Shutin 2 | 0.00 | 1277.3 | 0.0 | 122.90 | 0.0000 | 1.631 |
| | 3.00 | 1459.3 | 182.0 | 122.90 | 29.0000 | 2.130 |
| | 6.00 | 1465.1 | 187.8 | 122.90 | 15.0000 | 2.147 |
| | 9.00 | 1468.4 | 191.1 | 122.90 | 10.3333 | 2.156 |
| | 12.00 | 1470.6 | 193.3 | 122.72 | 8.0000 | 2.163 |
| | 15.00 | 1472.3 | 195.0 | 122.54 | 6.6000 | 2.168 |
| | 18.00 | 1473.7 | 196.4 | 122.54 | 5.6667 | 2.172 |
| | 21.00 | 1474.8 | 197.5 | 122.36 | 5.0000 | 2.175 |
| | 24.00 | 1475.8 | 198.5 | 122.36 | 4.5000 | 2.178 |
| | 27.00 | 1476.6 | 199.3 | 122.18 | 4.1111 | 2.180 |
| | 30.00 | 1477.4 | 200.1 | 122.18 | 3.8000 | 2.183 |
| | 33.00 | 1478.1 | 200.8 | 122.00 | 3.5455 | 2.185 |
| | 36.00 | 1478.7 | 201.4 | 122.00 | 3.3333 | 2.187 |
| | 39.00 | 1479.3 | 202.0 | 122.00 | 3.1538 | 2.188 |
| | 42.00 | 1479.8 | 202.5 | 121.82 | 3.0000 | 2.190 |
| | 45.00 | 1480.4 | 203.1 | 121.82 | 2.8667 | 2.192 |
| | 48.00 | 1480.8 | 203.5 | 121.82 | 2.7500 | 2.193 |
| | 51.00 | 1481.3 | 204.0 | 121.64 | 2.6471 | 2.194 |
| | 54.00 | 1481.7 | 204.4 | 121.64 | 2.5556 | 2.195 |
| | 57.00 | 1482.0 | 204.7 | 121.64 | 2.4737 | 2.196 |
| | 60.00 | 1482.3 | 205.0 | 121.46 | 2.4000 | 2.197 |
| | 63.00 | 1482.7 | 205.4 | 121.46 | 2.3333 | 2.198 |
| | 66.00 | 1482.9 | 205.6 | 121.46 | 2.2727 | 2.199 |
| | 69.00 | 1483.2 | 205.9 | 121.28 | 2.2174 | 2.200 |
| | 72.00 | 1483.4 | 206.1 | 121.28 | 2.1667 | 2.201 |
| | 75.00 | 1483.8 | 206.5 | 121.28 | 2.1200 | 2.202 |
| | 78.00 | 1483.9 | 206.6 | 121.28 | 2.0769 | 2.202 |
| | 81.00 | 1484.2 | 206.9 | 121.10 | 2.0370 | 2.203 |
| | 84.00 | 1484.3 | 207.0 | 121.10 | 2.0000 | 2.203 |
| | 87.00 | 1484.4 | 207.1 | 121.10 | 1.9655 | 2.204 |
| | 90.00 | 1484.7 | 207.4 | 121.10 | 1.9333 | 2.204 |
| | 93.00 | 1484.9 | 207.6 | 121.10 | 1.9032 | 2.205 |
| | 96.00 | 1485.1 | 207.8 | 120.92 | 1.8750 | 2.206 |
| | 99.00 | 1485.2 | 207.9 | 120.92 | 1.8485 | 2.206 |
| | 102.00 | 1485.4 | 208.1 | 120.92 | 1.8235 | 2.207 |
| | 105.00 | 1485.6 | 208.3 | 120.92 | 1.8000 | 2.207 |
| | 108.00 | 1485.8 | 208.5 | 120.92 | 1.7778 | 2.207 |
| | 111.00 | 1485.8 | 208.6 | 120.92 | 1.7568 | 2.208 |
| | 114.00 | 1486.0 | 208.7 | 120.92 | 1.7368 | 2.208 |
| | 117.00 | 1486.3 | 209.0 | 120.74 | 1.7179 | 2.209 |
| | 120.00 | 1486.3 | 209.0 | 120.74 | 1.7000 | 2.209 |
| ***** End Shut-in 2 | 123.00 | 1434.2 | 156.9 | 120.74 | 1.6829 | 2.057 |
| ***** Final Hydro. | 420.00 | 2167.3 | 0.0 | 120.38 | | |

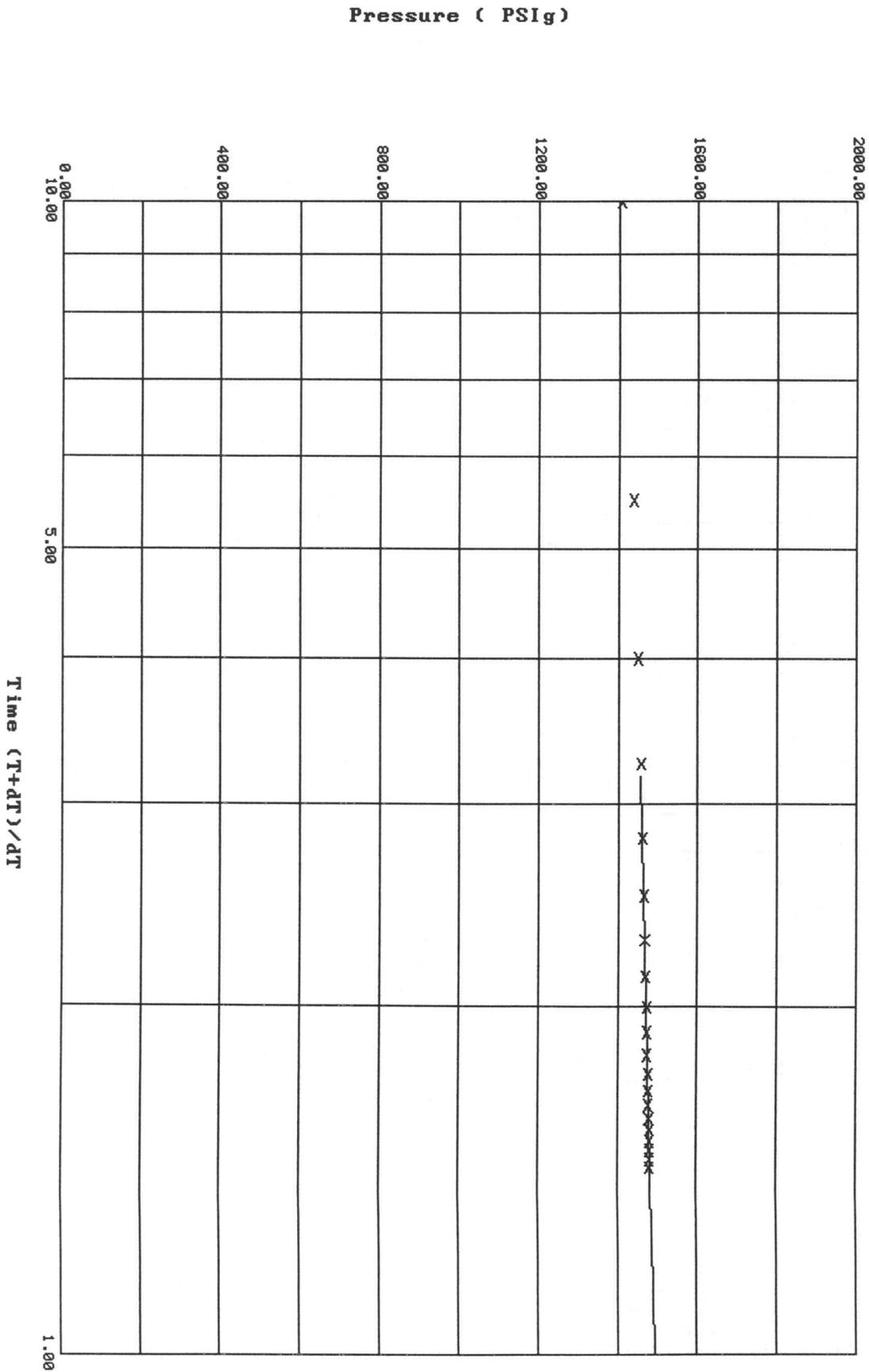
Ramey Plot: Shut-in #1
Ensign Operating Co. Koehn # 1-19 DST #1



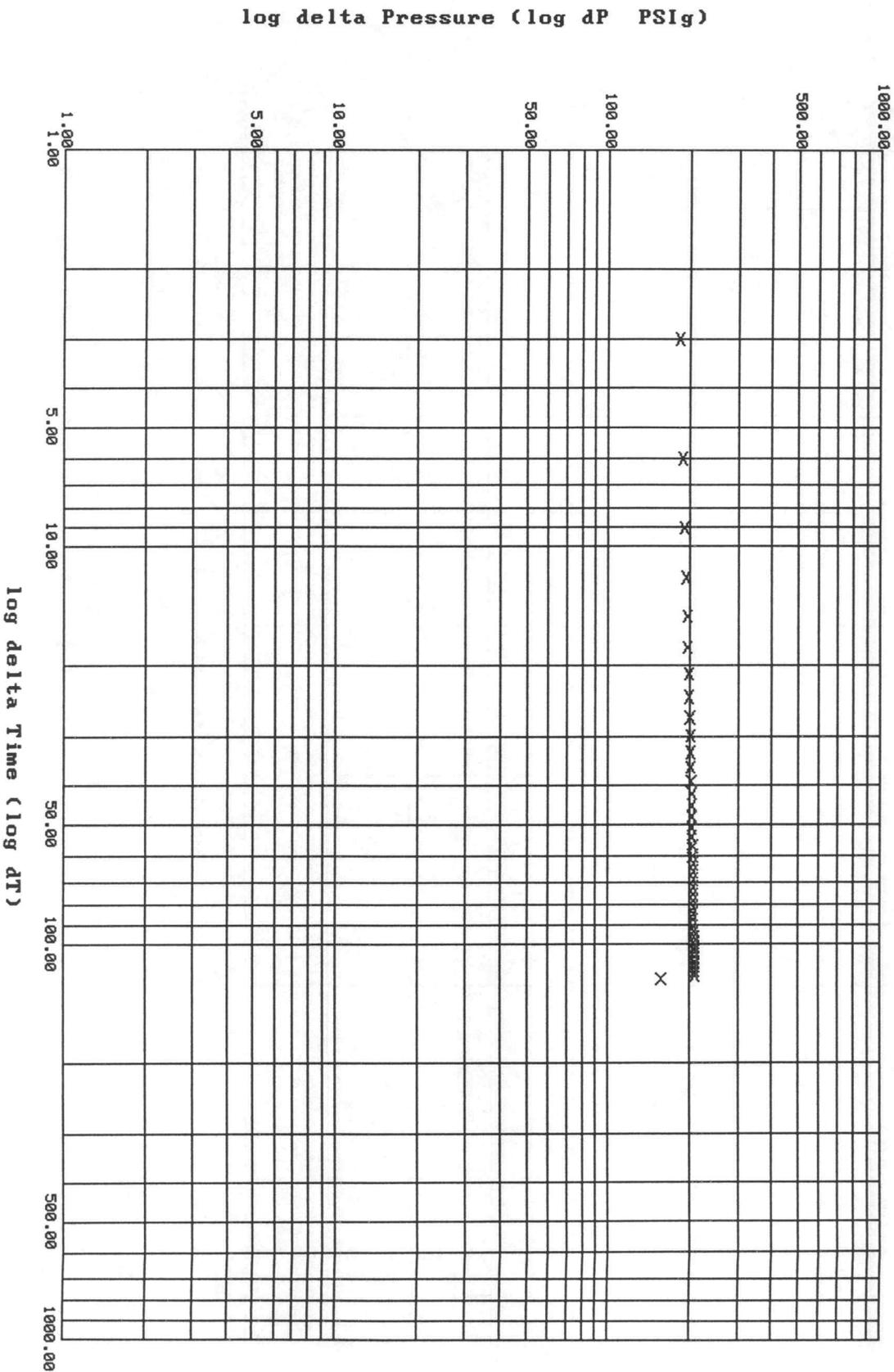
Horner Plot: Shut-in #1

Ensign Operating Co. Koehn # 1-19 DST #1

Slope: 73.5235 PSig/cycle
Ext. Pressure: 1493.9608 PSig



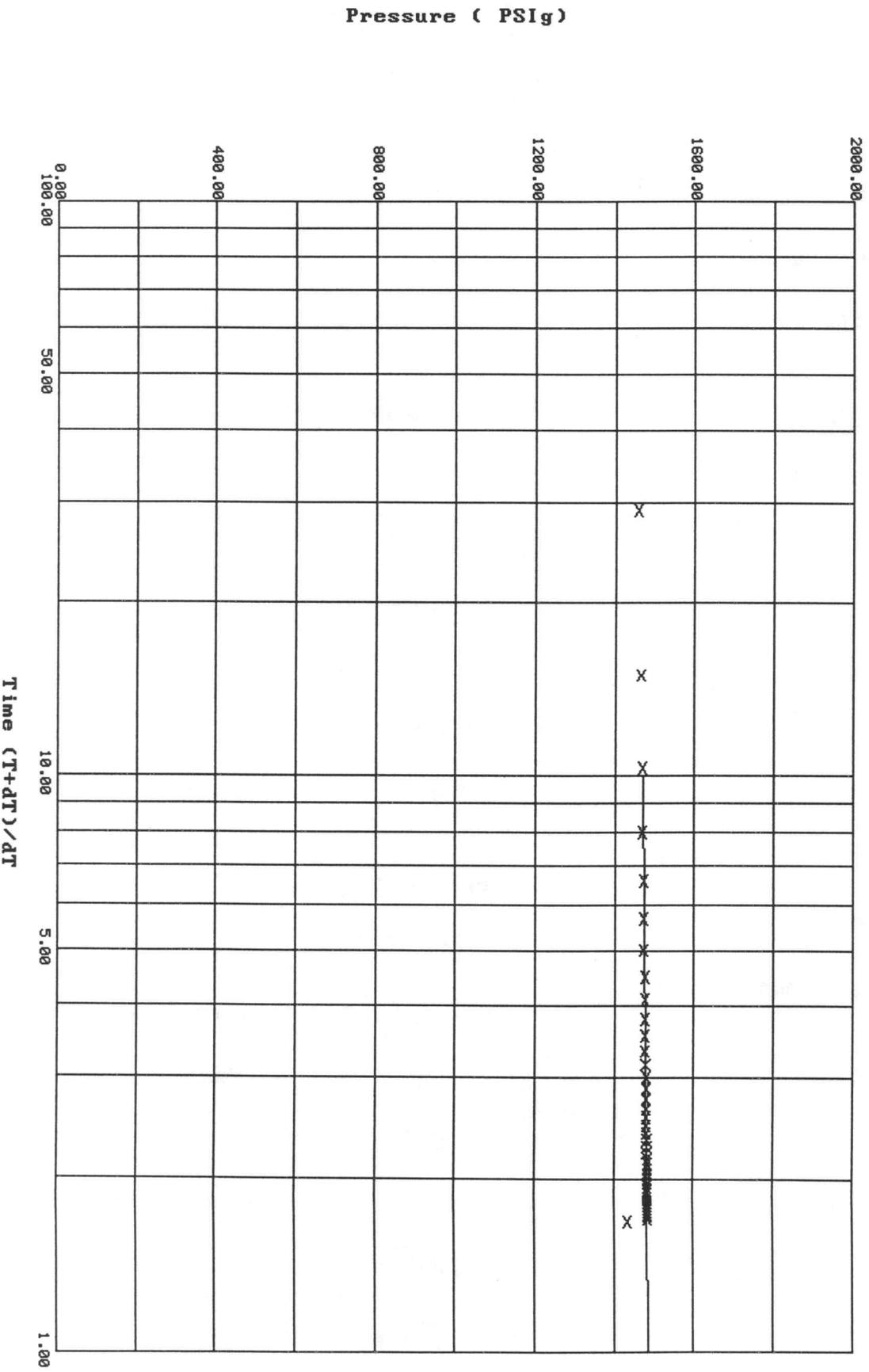
Ramey Plot: shut-in #2
Ensign Operating Co. Koehn # 1-19 DST #1



Horner Plot: Shut-in #2

Ensign Operating Co. Koehn # 1-19 DST #1

Slope: 17.4774 PSig/cycle
Ext. Pressure: 1487.4375 PSig



FLUID SAMPLER DATA

Ticket No.: 7854

Date: 3/25/95

Company: ENSIGN OPERATING COMPANY

Lease: KOEHN #1-19

Test No.: 1

County: MEADE

Sec.: 19

Twps.: 30S

Rng.: 30W

SAMPLER RECOVERY

| | | |
|----------|-----------|-----|
| Gas | 7.3 CU FT | ML |
| Oil | 50 | ML |
| Mud | 450 | ML |
| Water | 3500 | ML |
| Other | | ML |
| Pressure | 810 | PSI |
| TOTAL | 4000 | ML |

SAMPLER ANALYSIS

| | | | |
|-------------|-------------|----------------|---|
| Resistivity | 0.084 ohms@ | 70 | F |
| Chlorides | 94000 | ppm. | |
| Gravity | | corrected @60F | |

PIT MUD ANALYSIS

| | | | |
|------------|------|-------|---|
| Chlorides | 2800 | | |
| Resistivit | | ohms@ | F |
| Viscosity | 47 | | |
| Mud Wt. | 8.8 | | |
| Filtrate | 10.8 | | |
| Other | | | |

PIPE RECOVERY

TOP

| | | | |
|------------|-------------|------|---|
| Resistivit | 0.106 ohms@ | 68 | F |
| Chlorides | 78000 | ppm. | |

MIDDLE

| | | | |
|------------|-------------|------|---|
| Resistivit | 0.106 ohms@ | 70 | F |
| Chlorides | 78000 | ppm. | |

BOTTOM

| | | | |
|------------|-------------|------|---|
| Resistivit | 0.084 ohms@ | 70 | F |
| Chlorides | 94000 | ppm. | |