

Computer Inventoried

**WELL NAME:** Liberal #2-25  
**COMPANY:** Ensign Operating Co.  
**LOCATION:** Sec. 25 Twp. 34S Rge. 34W  
Seward County Kansas  
**DATE:** 02/25/97

TRILOBITE TESTING L.L.C.

OPERATOR : Ensign Operating Co. DATE 2/18/97  
 WELL NAME: Liberal #2-25 KB 2892.00 ft TICKET NO: 8585 DST #1  
 LOCATION : 25-34s-34w GR 2883.00 ft FORMATION: Morrow  
 INTERVAL: 6138.00 To 6220.00 ft TD 6220.00 ft TEST TYPE: CONV.

RECORDER DATA

| Mins              | Field  | 1      | 2      | 3   | 4   | TIME DATA              |
|-------------------|--------|--------|--------|-----|-----|------------------------|
| PF 30 Rec.        | 11038  | 11038  | 2351   |     |     | PF Fr. 0715 to 0745 hr |
| SI 60 Range (Psi) | 5075.0 | 5075.0 | 4995.0 | 0.0 | 0.0 | IS Fr. 0745 to 0845 hr |
| SF 45 Clock (hrs) | 12 hr  | 12 hr  | Elec.  |     |     | SF Fr. 0845 to 0930 hr |
| FS 135 Depth (ft) | 6217.0 | 6217.0 | 6146.0 | 0.0 | 0.0 | FS Fr. 0930 to 1145 hr |

|                | Field  | 1      | 2      | 3   | 4   |                   |
|----------------|--------|--------|--------|-----|-----|-------------------|
| A. Init Hydro  | 2992.0 | 3165.0 | 3025.0 | 0.0 | 0.0 | T STARTED 0400 hr |
| B. First Flow  | 520.0  | 565.0  | 525.0  | 0.0 | 0.0 | T ON BOTM 0713 hr |
| B1. Final Flow | 572.0  | 658.0  | 665.0  | 0.0 | 0.0 | T OPEN 0715 hr    |
| C. In Shut-in  | 970.0  | 987.0  | 994.0  | 0.0 | 0.0 | T PULLED 1145 hr  |
| D. Init Flow   | 650.0  | 676.0  | 644.0  | 0.0 | 0.0 | T OUT 1450 hr     |
| E. Final Flow  | 650.0  | 675.0  | 655.0  | 0.0 | 0.0 |                   |
| F. Fl Shut-in  | 970.0  | 987.0  | 988.0  | 0.0 | 0.0 |                   |
| G. Final Hydro | 2915.0 | 2927.0 | 2894.0 | 0.0 | 0.0 |                   |
| Inside/Outside | 0      | 0      | I      |     |     |                   |

RECOVERY

Tot Fluid 0.00 ft of 0.00 ft in DC and 0.00 ft in DP  
 0.00 ft of None  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of  
 0.00 ft of

SALINITY 0.00 P.P.M. A.P.I. Gravity 0.00

BLOW DESCRIPTION

Initial Flow:  
 Strong blow, bottom of bucket in 15sec  
 Gas to Surface in 2 min

Initial Shut In:

Final Flow:  
 Bottom of bucket as tool opened

Final Shut In:

SAMPLES: Yes  
 SENT TO: Caraway

Test Successful: Y

TOOL DATA

Tool Wt. 2200.00 lbs  
 Wt Set On Packer 25000.00 lbs  
 Wt Pulled Loose 100000.00 lbs  
 Initial Str Wt 90000.00 lbs  
 Unseated Str Wt 95000.00 lbs  
 Bot Choke 0.75 in  
 Hole Size 7.88 in  
 D Col. ID 2.25 in  
 D. Pipe ID 3.80 in  
 D.C. Length 500.00 ft  
 D.P. Length 5620.00 ft

MUD DATA

Mud Type Chemical  
 Weight 9.00 lb/c  
 Vis. 53.00 S/L  
 W.L. 8.60 in<sup>3</sup>  
 F.C. 0.00 in  
 Mud Drop Y 10.0 ft  
 Amt. of fill 0.00 ft  
 Btm. H. Temp. 139.00 F  
 Hole Condition Good  
 % Porosity 0.00  
 Packer Size 6.75 in  
 No. of Packers 2  
 Cushion Amt. 0.00  
 Cushion Type  
 Reversed Out N  
 Tool Chased N  
 Tester TOM HORACEK  
 Co. Rep. DUANE MOREDOCK  
 Contr. Murfin Drlg.  
 Rig # 20  
 Unit #  
 Pump T.

\*\*\* TOOL DIAGRAM \*\*\* CONV.

WELL NAME: Liberal #2-25  
 LOCATION : 25-34s-34w  
 TICKET No. 8585 D.S.T. No. 1 DATE 2/18/97  
 TOTAL TOOL TO BOTTOM OF TOP PACKERS ..... 30 ft.  
 INTERVAL TOOL .....  
 BOTTOM PACKERS AND ANCHOR ..... 23 ft.  
 TOTAL TOOL ..... 53 ft.  
 DRILL COLLAR ANCHOR IN INTERVAL .....  
 D.C. ANCHOR STND.Stands1 Single Total 59 ft.  
 D.P. ANCHOR STND.Stands Single Total  
 TOTAL ASSEMBLY ..... 59 ft.  
 D.C. ABOVE TOOLS.Stands8 Single Total 500 ft.  
 D.P. ABOVE TOOLS.Stands90 Single Total 5620 ft.  
 TOTAL DRILL COLLARS DRILL PIPE & TOOLS .. 6232 ft.  
 TOTAL DEPTH ..... 6220 ft.  
 TOTAL DRILL PIPE ABOVE K.B. .... 12 ft.

REMARKS:  
 SAMPLER

20.7 cubic ft. gas  
 850 PSI

|                          |      |
|--------------------------|------|
| P.O. SUB                 |      |
| C.O. SUB                 | 6108 |
| S.I. TOOL                | 6114 |
| Sampler                  | 6117 |
| HMV Hyd. Tool            | 6122 |
| JARS                     | 6127 |
| SAFETY JOINT             | 6129 |
| PACKER Top 5 ft.         | 6133 |
| PACKER Bottom 5 ft.      | 6138 |
| DEPTH 6138               |      |
| STUBB 1 ft.              | 6139 |
| ANCHOR Perf 1 ft.        | 6140 |
| Perf 5 ft.               | 6145 |
| Alpine Rec. @ 6146       |      |
| Perf 5 ft.               | 6150 |
| T.C.                     |      |
| DEPTH                    |      |
| Perf 4 ft.               | 6154 |
| C.O. 1 ft.               | 6155 |
| D.C. 59 ft.              | 6214 |
| C.O. 1 ft.               | 6215 |
| AK-1 Rec. @ 6217         |      |
| BULLNOSE Bull Plug 5 ft. | 6220 |
| T.D.                     | 6220 |

GAS RECOVERY

COMPANY: Ensign Operating Co.  
WELL NAME: Liberal #2-25  
WELL LOCATION: 25-34s-34w  
INTERVAL Fr.: 6138.00 To 6220.00 T.D.: 6220.00

DATE: 2/18/97  
KB Elev: 2892.00 ft TICKET #8585 DST #1  
GR Elev: 2883.00 ft FORMATION: Morrow  
TEST TYPE: CONV.

GAS RECOVERY MEASURED WITH Merla

\*\*\*\*\* GAS RATES FOR FLOW #1

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|------------|--------------|----------------|----------|-------------|
| 10         | 1.50         | 38             | 0        | 3036000.0   |
| 15         | 1.50         | 45             | 0        | 3454000.0   |
| 20         | 1.50         | 47             | 0        | 3573000.0   |
| 25         | 1.50         | 50             | 0        | 3752000.0   |
| 30         | 1.50         | 50             | 0        | 3752000.0   |

\*\*\*\*\* GAS RATES FOR FLOW #2

| Time (min) | Orifice (in) | Pressure (Psi) | H2O (in) | Rate (cf/d) |
|------------|--------------|----------------|----------|-------------|
| 5          | 1.50         | 38             | 0        | 3036000.0   |
| 10         | 1.50         | 40             | 0        | 3155000.0   |
| 15         | 1.50         | 55             | 0        | 4051000.0   |
| 20         | 1.50         | 58             | 0        | 4230000.0   |
| 25         | 1.50         | 58             | 0        | 4230000.0   |
| 30         | 1.50         | 58             | 0        | 4230000.0   |
| 35         | 1.50         | 58             | 0        | 4230000.0   |
| 40         | 1.50         | 58             | 0        | 4230000.0   |
| 45         | 1.50         | 58             | 0        | 4230000.0   |

NATURAL GAS ANALYSIS REPORT

Sampled by:  
 Trilobite Testing, L.L.C.  
 Hays, Kansas  
 Scott City, Kansas  
 Phone: 800-728-5369  
 Fax: 913-625-5620

Analyzed by:  
 Caraway Analytical, L.L.C.  
 P. O. Box 2137  
 Liberal, Kansas 67905  
 Phone: 316-624-5389  
 Fax: 316-626-7108

Lab Number: 970100  
 Sample From: Liberal 2-25 DST 1  
 Producer: Ensign Operating  
 Date:  
 Time:  
 Sampler:  
 Source:

Analyzed: 02/18/97  
 Pressure:  
 Temperature:  
 Location: 25-34S-34W  
 County: Seward  
 State: Kansas  
 Formation: Morrow

|                | Mole %              | GPM   |
|----------------|---------------------|-------|
| Helium         | He: 0.168           | 0.000 |
| Oxygen         | O2: 0.000           | 0.000 |
| Nitrogen       | N2: 3.525           | 0.000 |
| Carbon Dioxide | CO2: 0.323          | 0.000 |
| Methane        | C1: 85.088          | 0.000 |
| Ethane         | C2: 5.266           | 1.408 |
| Propane        | C3: 3.173           | 0.874 |
| Iso Butane     | iC4: 0.457          | 0.150 |
| Normal Butane  | nC4: 0.990          | 0.312 |
| Iso Pentane    | iC5: 0.263          | 0.096 |
| Normal Pentane | nC5: 0.285          | 0.103 |
| Hexanes Plus   | C6+: 0.462          | 0.202 |
| TOTAL:         | 100.000             | 3.145 |
| Z Fact:        | 0.9973              |       |
| SP.GR.:        | 0.6729              |       |
| BTU (SAT):     | 1111.2 @ 14.73 psia |       |
| BTU (DRY):     | 1130.9 @ 14.73 psia |       |
| OCTANE RATING: | 120.9               |       |

COMMENTS:

0.000

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 ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING  
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TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97 TIME: 01:31:02  
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|                      | Time   | Pressure<br>PSig | delta P<br>PSig | Temp.<br>DEG F | (T+dT)/dT | P <sup>2</sup> /10 <sup>6</sup> |
|----------------------|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| ***** Initial Hydro. | 209.00 | 3024.6           | 0.0             | 117.13         |           |                                 |
| ***** Start Flow 1   | 0.00   | 525.8            | 0.0             | 117.61         |           |                                 |
|                      | 1.00   | 543.7            | 17.9            | 118.59         |           |                                 |
|                      | 2.00   | 568.8            | 43.0            | 119.57         |           |                                 |
|                      | 3.00   | 579.8            | 54.0            | 120.34         |           |                                 |
|                      | 4.00   | 615.8            | 90.0            | 120.95         |           |                                 |
|                      | 5.00   | 619.5            | 93.7            | 121.56         |           |                                 |
|                      | 6.00   | 628.9            | 103.1           | 122.18         |           |                                 |
|                      | 7.00   | 636.2            | 110.4           | 122.81         |           |                                 |
|                      | 8.00   | 642.2            | 116.4           | 123.43         |           |                                 |
|                      | 9.00   | 644.6            | 118.8           | 124.06         |           |                                 |
|                      | 10.00  | 654.0            | 128.2           | 124.67         |           |                                 |
|                      | 11.00  | 650.4            | 124.6           | 125.28         |           |                                 |
|                      | 12.00  | 648.7            | 122.9           | 125.92         |           |                                 |
|                      | 13.00  | 649.3            | 123.5           | 126.56         |           |                                 |
|                      | 14.00  | 649.9            | 124.1           | 127.18         |           |                                 |
|                      | 15.00  | 654.0            | 128.2           | 127.76         |           |                                 |
|                      | 16.00  | 654.2            | 128.4           | 128.27         |           |                                 |
|                      | 17.00  | 659.5            | 133.7           | 128.76         |           |                                 |
|                      | 18.00  | 659.5            | 133.7           | 129.19         |           |                                 |
|                      | 19.00  | 660.8            | 135.0           | 129.60         |           |                                 |
|                      | 20.00  | 658.8            | 133.0           | 129.98         |           |                                 |
|                      | 21.00  | 660.2            | 134.4           | 130.32         |           |                                 |
|                      | 22.00  | 660.8            | 135.0           | 130.64         |           |                                 |
|                      | 23.00  | 661.4            | 135.6           | 130.94         |           |                                 |
|                      | 24.00  | 660.3            | 134.5           | 131.22         |           |                                 |
|                      | 25.00  | 662.0            | 136.2           | 131.48         |           |                                 |
|                      | 26.00  | 661.5            | 135.7           | 131.73         |           |                                 |
|                      | 27.00  | 661.9            | 136.1           | 131.95         |           |                                 |
|                      | 28.00  | 663.9            | 138.1           | 132.16         |           |                                 |
| ***** End Flow 1     | 29.00  | 665.4            | 139.6           | 132.33         |           |                                 |
| ***** Start Shutin 1 | 0.00   | 665.4            | 0.0             | 132.33         | 0.0000    | 0.443                           |
|                      | 1.00   | 913.5            | 248.2           | 132.53         | 30.0000   | 0.835                           |
|                      | 2.00   | 936.4            | 271.0           | 133.15         | 15.5000   | 0.877                           |
|                      | 3.00   | 945.9            | 280.5           | 134.01         | 10.6667   | 0.895                           |
|                      | 4.00   | 952.3            | 286.9           | 134.76         | 8.2500    | 0.907                           |
|                      | 5.00   | 957.0            | 291.6           | 135.29         | 6.8000    | 0.916                           |
|                      | 6.00   | 960.7            | 295.3           | 135.65         | 5.8333    | 0.923                           |
|                      | 7.00   | 963.7            | 298.3           | 135.86         | 5.1429    | 0.929                           |
|                      | 8.00   | 966.3            | 300.9           | 136.01         | 4.6250    | 0.934                           |
|                      | 9.00   | 968.4            | 303.1           | 136.10         | 4.2222    | 0.938                           |
|                      | 10.00  | 970.3            | 304.9           | 136.16         | 3.9000    | 0.941                           |
|                      | 11.00  | 972.0            | 306.6           | 136.20         | 3.6364    | 0.945                           |
|                      | 12.00  | 973.5            | 308.1           | 136.22         | 3.4167    | 0.948                           |
|                      | 13.00  | 974.9            | 309.5           | 136.24         | 3.2308    | 0.950                           |
|                      | 14.00  | 976.1            | 310.7           | 136.24         | 3.0714    | 0.953                           |
|                      | 15.00  | 977.2            | 311.9           | 136.26         | 2.9333    | 0.955                           |
|                      | 16.00  | 978.3            | 312.9           | 136.25         | 2.8125    | 0.957                           |
|                      | 17.00  | 979.3            | 313.9           | 136.25         | 2.7059    | 0.959                           |
|                      | 18.00  | 979.8            | 314.5           | 136.25         | 2.6111    | 0.960                           |
|                      | 19.00  | 980.7            | 315.3           | 136.25         | 2.5263    | 0.962                           |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97

TIME: 01:31:02

| Time  | Pressure<br>PSig | delta P<br>PSig | Temp.<br>DEG F | (T+dT)/dT | P <sup>2</sup> /10 <sup>6</sup> |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 20.00 | 981.4            | 316.1           | 136.23         | 2.4500    | 0.963                           |
| 21.00 | 982.1            | 316.7           | 136.23         | 2.3810    | 0.965                           |
| 22.00 | 982.7            | 317.3           | 136.23         | 2.3182    | 0.966                           |
| 23.00 | 983.4            | 318.0           | 136.22         | 2.2609    | 0.967                           |
| 24.00 | 984.0            | 318.6           | 136.22         | 2.2083    | 0.968                           |
| 25.00 | 984.5            | 319.1           | 136.22         | 2.1600    | 0.969                           |
| 26.00 | 985.0            | 319.6           | 136.21         | 2.1154    | 0.970                           |
| 27.00 | 985.6            | 320.2           | 136.20         | 2.0741    | 0.971                           |
| 28.00 | 986.0            | 320.6           | 136.19         | 2.0357    | 0.972                           |
| 29.00 | 986.4            | 321.0           | 136.19         | 2.0000    | 0.973                           |
| 30.00 | 986.8            | 321.4           | 136.19         | 1.9667    | 0.974                           |
| 31.00 | 987.2            | 321.9           | 136.18         | 1.9355    | 0.975                           |
| 32.00 | 987.6            | 322.2           | 136.18         | 1.9062    | 0.975                           |
| 33.00 | 988.0            | 322.6           | 136.18         | 1.8788    | 0.976                           |
| 34.00 | 988.2            | 322.9           | 136.17         | 1.8529    | 0.977                           |
| 35.00 | 988.6            | 323.2           | 136.17         | 1.8286    | 0.977                           |
| 36.00 | 988.9            | 323.5           | 136.17         | 1.8056    | 0.978                           |
| 37.00 | 989.2            | 323.9           | 136.17         | 1.7838    | 0.979                           |
| 38.00 | 989.6            | 324.2           | 136.17         | 1.7632    | 0.979                           |
| 39.00 | 989.8            | 324.4           | 136.18         | 1.7436    | 0.980                           |
| 40.00 | 990.1            | 324.7           | 136.19         | 1.7250    | 0.980                           |
| 41.00 | 990.3            | 324.9           | 136.19         | 1.7073    | 0.981                           |
| 42.00 | 990.7            | 325.3           | 136.20         | 1.6905    | 0.981                           |
| 43.00 | 990.8            | 325.5           | 136.21         | 1.6744    | 0.982                           |
| 44.00 | 991.1            | 325.7           | 136.22         | 1.6591    | 0.982                           |
| 45.00 | 991.3            | 326.0           | 136.22         | 1.6444    | 0.983                           |
| 46.00 | 991.6            | 326.2           | 136.24         | 1.6304    | 0.983                           |
| 47.00 | 991.8            | 326.4           | 136.25         | 1.6170    | 0.984                           |
| 48.00 | 992.0            | 326.6           | 136.26         | 1.6042    | 0.984                           |
| 49.00 | 992.2            | 326.8           | 136.27         | 1.5918    | 0.984                           |
| 50.00 | 992.4            | 327.0           | 136.29         | 1.5800    | 0.985                           |
| 51.00 | 992.7            | 327.3           | 136.30         | 1.5686    | 0.985                           |
| 52.00 | 992.9            | 327.5           | 136.32         | 1.5577    | 0.986                           |
| 53.00 | 992.9            | 327.6           | 136.34         | 1.5472    | 0.986                           |
| 54.00 | 993.2            | 327.8           | 136.36         | 1.5370    | 0.986                           |
| 55.00 | 993.4            | 328.1           | 136.37         | 1.5273    | 0.987                           |
| 56.00 | 993.6            | 328.2           | 136.39         | 1.5179    | 0.987                           |
| 57.00 | 993.6            | 328.2           | 136.40         | 1.5088    | 0.987                           |
| 58.00 | 993.8            | 328.4           | 136.42         | 1.5000    | 0.988                           |
| 59.00 | 993.9            | 328.5           | 136.43         | 1.4915    | 0.988                           |
| 60.00 | 994.1            | 328.7           | 136.46         | 1.4833    | 0.988                           |
| 61.00 | 994.2            | 328.8           | 136.47         | 1.4754    | 0.988                           |
| 62.00 | 994.5            | 329.2           | 136.48         | 1.4677    | 0.989                           |

\*\*\*\*\* End Shut-in 1

\*\*\*\*\* Start Flow 2

|      |       |      |        |
|------|-------|------|--------|
| 0.00 | 644.5 | 0.0  | 136.44 |
| 1.00 | 649.1 | 4.6  | 136.10 |
| 2.00 | 655.8 | 11.3 | 135.62 |
| 3.00 | 657.6 | 13.1 | 135.15 |
| 4.00 | 660.0 | 15.5 | 134.73 |
| 5.00 | 661.2 | 16.7 | 134.42 |
| 6.00 | 662.0 | 17.5 | 134.21 |
| 7.00 | 666.1 | 21.7 | 134.08 |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97

TIME: 01:31:02

|                      | Time  | Pressure<br>PSig | delta-P<br>PSig | Temp.<br>DEG F | (T+dT)/dT | P^2/10^6 |
|----------------------|-------|------------------|-----------------|----------------|-----------|----------|
|                      | 8.00  | 666.0            | 21.6            | 134.02         |           |          |
|                      | 9.00  | 664.5            | 20.1            | 134.00         |           |          |
|                      | 10.00 | 665.9            | 21.4            | 134.02         |           |          |
|                      | 11.00 | 665.7            | 21.2            | 134.06         |           |          |
|                      | 12.00 | 665.5            | 21.1            | 134.13         |           |          |
|                      | 13.00 | 665.8            | 21.3            | 134.19         |           |          |
|                      | 14.00 | 663.8            | 19.3            | 134.27         |           |          |
|                      | 15.00 | 663.4            | 18.9            | 134.34         |           |          |
|                      | 16.00 | 662.9            | 18.4            | 134.41         |           |          |
|                      | 17.00 | 661.9            | 17.5            | 134.48         |           |          |
|                      | 18.00 | 661.9            | 17.5            | 134.55         |           |          |
|                      | 19.00 | 661.0            | 16.5            | 134.61         |           |          |
|                      | 20.00 | 661.0            | 16.5            | 134.67         |           |          |
|                      | 21.00 | 660.0            | 15.5            | 134.72         |           |          |
|                      | 22.00 | 659.9            | 15.4            | 134.76         |           |          |
|                      | 23.00 | 658.7            | 14.2            | 134.81         |           |          |
|                      | 24.00 | 658.7            | 14.2            | 134.86         |           |          |
|                      | 25.00 | 657.6            | 13.1            | 134.89         |           |          |
|                      | 26.00 | 657.7            | 13.3            | 134.93         |           |          |
|                      | 27.00 | 658.0            | 13.5            | 134.97         |           |          |
|                      | 28.00 | 657.5            | 13.0            | 135.00         |           |          |
|                      | 29.00 | 657.5            | 13.0            | 135.04         |           |          |
|                      | 30.00 | 657.1            | 12.6            | 135.07         |           |          |
|                      | 31.00 | 657.1            | 12.6            | 135.10         |           |          |
|                      | 32.00 | 656.3            | 11.8            | 135.13         |           |          |
|                      | 33.00 | 656.7            | 12.3            | 135.15         |           |          |
|                      | 34.00 | 656.1            | 11.7            | 135.18         |           |          |
|                      | 35.00 | 657.1            | 12.7            | 135.21         |           |          |
|                      | 36.00 | 656.1            | 11.7            | 135.23         |           |          |
|                      | 37.00 | 656.0            | 11.5            | 135.25         |           |          |
|                      | 38.00 | 655.0            | 10.6            | 135.27         |           |          |
|                      | 39.00 | 654.7            | 10.2            | 135.29         |           |          |
|                      | 40.00 | 654.4            | 9.9             | 135.32         |           |          |
|                      | 41.00 | 654.8            | 10.3            | 135.34         |           |          |
| ***** End Flow 2     | 42.00 | 655.2            | 10.7            | 135.35         |           |          |
| ***** Start Shutin 2 | 0.00  | 655.2            | 0.0             | 135.35         | 0.0000    | 0.429    |
|                      | 1.00  | 884.3            | 229.1           | 135.39         | 72.0000   | 0.782    |
|                      | 2.00  | 911.3            | 256.1           | 135.89         | 36.5000   | 0.830    |
|                      | 3.00  | 921.9            | 266.6           | 136.70         | 24.6667   | 0.850    |
|                      | 4.00  | 929.3            | 274.1           | 137.41         | 18.7500   | 0.864    |
|                      | 5.00  | 934.8            | 279.6           | 137.90         | 15.2000   | 0.874    |
|                      | 6.00  | 938.9            | 283.7           | 138.24         | 12.8333   | 0.882    |
|                      | 7.00  | 942.2            | 287.0           | 138.42         | 11.1429   | 0.888    |
|                      | 8.00  | 945.0            | 289.8           | 138.56         | 9.8750    | 0.893    |
|                      | 9.00  | 947.6            | 292.4           | 138.64         | 8.8889    | 0.898    |
|                      | 10.00 | 949.9            | 294.7           | 138.70         | 8.1000    | 0.902    |
|                      | 11.00 | 951.7            | 296.5           | 138.73         | 7.4545    | 0.906    |
|                      | 12.00 | 953.7            | 298.4           | 138.76         | 6.9167    | 0.909    |
|                      | 13.00 | 955.3            | 300.1           | 138.77         | 6.4615    | 0.913    |
|                      | 14.00 | 956.8            | 301.6           | 138.78         | 6.0714    | 0.915    |
|                      | 15.00 | 958.1            | 302.9           | 138.78         | 5.7333    | 0.918    |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97

TIME: 01:31:02

| Time  | Pressure<br>PSIg | delta P<br>PSIg | Temp.<br>DEG F | (T+dT)/dT | P <sup>2</sup> /10 <sup>6</sup> |
|-------|------------------|-----------------|----------------|-----------|---------------------------------|
| 16.00 | 959.5            | 304.2           | 138.80         | 5.4375    | 0.921                           |
| 17.00 | 960.5            | 305.3           | 138.81         | 5.1765    | 0.923                           |
| 18.00 | 961.6            | 306.4           | 138.80         | 4.9444    | 0.925                           |
| 19.00 | 962.7            | 307.5           | 138.80         | 4.7368    | 0.927                           |
| 20.00 | 963.7            | 308.5           | 138.81         | 4.5500    | 0.929                           |
| 21.00 | 964.5            | 309.3           | 138.81         | 4.3810    | 0.930                           |
| 22.00 | 965.3            | 310.1           | 138.80         | 4.2273    | 0.932                           |
| 23.00 | 966.1            | 310.9           | 138.81         | 4.0870    | 0.933                           |
| 24.00 | 966.8            | 311.6           | 138.81         | 3.9583    | 0.935                           |
| 25.00 | 967.6            | 312.4           | 138.81         | 3.8400    | 0.936                           |
| 26.00 | 968.3            | 313.1           | 138.82         | 3.7308    | 0.938                           |
| 27.00 | 968.9            | 313.6           | 138.82         | 3.6296    | 0.939                           |
| 28.00 | 969.5            | 314.3           | 138.83         | 3.5357    | 0.940                           |
| 29.00 | 970.1            | 314.9           | 138.84         | 3.4483    | 0.941                           |
| 30.00 | 970.5            | 315.3           | 138.84         | 3.3667    | 0.942                           |
| 31.00 | 971.1            | 315.9           | 138.85         | 3.2903    | 0.943                           |
| 32.00 | 971.6            | 316.4           | 138.86         | 3.2188    | 0.944                           |
| 33.00 | 972.1            | 316.9           | 138.90         | 3.1515    | 0.945                           |
| 34.00 | 972.7            | 317.5           | 138.85         | 3.0882    | 0.946                           |
| 35.00 | 973.1            | 317.8           | 138.86         | 3.0286    | 0.947                           |
| 36.00 | 973.6            | 318.3           | 138.87         | 2.9722    | 0.948                           |
| 37.00 | 973.9            | 318.7           | 138.89         | 2.9189    | 0.948                           |
| 38.00 | 974.3            | 319.1           | 138.90         | 2.8684    | 0.949                           |
| 39.00 | 974.7            | 319.5           | 138.91         | 2.8205    | 0.950                           |
| 40.00 | 975.1            | 319.8           | 138.92         | 2.7750    | 0.951                           |
| 41.00 | 975.5            | 320.3           | 138.94         | 2.7317    | 0.952                           |
| 42.00 | 975.8            | 320.6           | 138.95         | 2.6905    | 0.952                           |
| 43.00 | 976.2            | 320.9           | 138.97         | 2.6512    | 0.953                           |
| 44.00 | 976.5            | 321.3           | 138.98         | 2.6136    | 0.954                           |
| 45.00 | 976.8            | 321.6           | 139.00         | 2.5778    | 0.954                           |
| 46.00 | 977.1            | 321.9           | 139.01         | 2.5435    | 0.955                           |
| 47.00 | 977.4            | 322.2           | 139.02         | 2.5106    | 0.955                           |
| 48.00 | 977.7            | 322.5           | 139.04         | 2.4792    | 0.956                           |
| 49.00 | 977.9            | 322.7           | 139.05         | 2.4490    | 0.956                           |
| 50.00 | 978.2            | 323.0           | 139.08         | 2.4200    | 0.957                           |
| 51.00 | 978.5            | 323.3           | 139.09         | 2.3922    | 0.957                           |
| 52.00 | 978.7            | 323.5           | 139.11         | 2.3654    | 0.958                           |
| 53.00 | 979.0            | 323.8           | 139.12         | 2.3396    | 0.958                           |
| 54.00 | 979.1            | 323.9           | 139.15         | 2.3148    | 0.959                           |
| 55.00 | 979.3            | 324.1           | 139.16         | 2.2909    | 0.959                           |
| 56.00 | 979.6            | 324.4           | 139.18         | 2.2679    | 0.960                           |
| 57.00 | 979.8            | 324.6           | 139.19         | 2.2456    | 0.960                           |
| 58.00 | 980.1            | 324.9           | 139.21         | 2.2241    | 0.961                           |
| 59.00 | 980.3            | 325.1           | 139.23         | 2.2034    | 0.961                           |
| 60.00 | 980.5            | 325.3           | 139.24         | 2.1833    | 0.961                           |
| 61.00 | 980.7            | 325.5           | 139.26         | 2.1639    | 0.962                           |
| 62.00 | 980.9            | 325.7           | 139.28         | 2.1452    | 0.962                           |
| 63.00 | 981.1            | 325.9           | 139.29         | 2.1270    | 0.963                           |
| 64.00 | 981.4            | 326.1           | 139.31         | 2.1094    | 0.963                           |
| 65.00 | 981.5            | 326.3           | 139.34         | 2.0923    | 0.963                           |
| 66.00 | 981.7            | 326.5           | 139.36         | 2.0758    | 0.964                           |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97

TIME: 01:31:02

| Time   | Pressure<br>PSig | delta P<br>PSig | Temp.<br>DEG F | (T+dT)/dT | P <sup>2</sup> /10 <sup>6</sup> |
|--------|------------------|-----------------|----------------|-----------|---------------------------------|
| 67.00  | 981.9            | 326.6           | 139.37         | 2.0597    | 0.964                           |
| 68.00  | 982.0            | 326.8           | 139.39         | 2.0441    | 0.964                           |
| 69.00  | 982.3            | 327.1           | 139.40         | 2.0290    | 0.965                           |
| 70.00  | 982.5            | 327.2           | 139.43         | 2.0143    | 0.965                           |
| 71.00  | 982.5            | 327.2           | 139.45         | 2.0000    | 0.965                           |
| 72.00  | 982.6            | 327.4           | 139.47         | 1.9861    | 0.966                           |
| 73.00  | 982.9            | 327.7           | 139.49         | 1.9726    | 0.966                           |
| 74.00  | 983.0            | 327.8           | 139.52         | 1.9595    | 0.966                           |
| 75.00  | 983.2            | 328.0           | 139.52         | 1.9467    | 0.967                           |
| 76.00  | 983.3            | 328.1           | 139.53         | 1.9342    | 0.967                           |
| 77.00  | 983.5            | 328.2           | 139.56         | 1.9221    | 0.967                           |
| 78.00  | 983.6            | 328.4           | 139.57         | 1.9103    | 0.968                           |
| 79.00  | 983.7            | 328.5           | 139.60         | 1.8987    | 0.968                           |
| 80.00  | 983.9            | 328.7           | 139.61         | 1.8875    | 0.968                           |
| 81.00  | 984.0            | 328.7           | 139.62         | 1.8765    | 0.968                           |
| 82.00  | 984.1            | 328.9           | 139.64         | 1.8659    | 0.969                           |
| 83.00  | 984.2            | 329.0           | 139.66         | 1.8554    | 0.969                           |
| 84.00  | 984.4            | 329.2           | 139.67         | 1.8452    | 0.969                           |
| 85.00  | 984.5            | 329.2           | 139.69         | 1.8353    | 0.969                           |
| 86.00  | 984.6            | 329.4           | 139.71         | 1.8256    | 0.970                           |
| 87.00  | 984.8            | 329.6           | 139.72         | 1.8161    | 0.970                           |
| 88.00  | 984.9            | 329.7           | 139.74         | 1.8068    | 0.970                           |
| 89.00  | 985.1            | 329.8           | 139.76         | 1.7978    | 0.970                           |
| 90.00  | 985.1            | 329.9           | 139.78         | 1.7889    | 0.970                           |
| 91.00  | 985.2            | 330.0           | 139.79         | 1.7802    | 0.971                           |
| 92.00  | 985.3            | 330.1           | 139.81         | 1.7717    | 0.971                           |
| 93.00  | 985.5            | 330.3           | 139.82         | 1.7634    | 0.971                           |
| 94.00  | 985.5            | 330.3           | 139.83         | 1.7553    | 0.971                           |
| 95.00  | 985.6            | 330.4           | 139.84         | 1.7474    | 0.971                           |
| 96.00  | 985.6            | 330.4           | 139.86         | 1.7396    | 0.971                           |
| 97.00  | 985.7            | 330.5           | 139.88         | 1.7320    | 0.972                           |
| 98.00  | 985.8            | 330.6           | 139.90         | 1.7245    | 0.972                           |
| 99.00  | 985.9            | 330.7           | 139.91         | 1.7172    | 0.972                           |
| 100.00 | 986.0            | 330.8           | 139.94         | 1.7100    | 0.972                           |
| 101.00 | 986.1            | 330.8           | 139.95         | 1.7030    | 0.972                           |
| 102.00 | 986.2            | 331.0           | 139.96         | 1.6961    | 0.973                           |
| 103.00 | 986.2            | 331.0           | 139.98         | 1.6893    | 0.973                           |
| 104.00 | 986.3            | 331.1           | 140.00         | 1.6827    | 0.973                           |
| 105.00 | 986.3            | 331.1           | 140.01         | 1.6762    | 0.973                           |
| 106.00 | 986.4            | 331.2           | 140.02         | 1.6698    | 0.973                           |
| 107.00 | 986.6            | 331.3           | 140.04         | 1.6636    | 0.973                           |
| 108.00 | 986.6            | 331.4           | 140.06         | 1.6574    | 0.973                           |
| 109.00 | 986.8            | 331.6           | 140.07         | 1.6514    | 0.974                           |
| 110.00 | 986.8            | 331.6           | 140.09         | 1.6455    | 0.974                           |
| 111.00 | 986.9            | 331.7           | 140.11         | 1.6396    | 0.974                           |
| 112.00 | 987.0            | 331.8           | 140.12         | 1.6339    | 0.974                           |
| 113.00 | 987.1            | 331.9           | 140.12         | 1.6283    | 0.974                           |
| 114.00 | 987.2            | 332.0           | 140.14         | 1.6228    | 0.974                           |
| 115.00 | 987.2            | 332.0           | 140.16         | 1.6174    | 0.974                           |
| 116.00 | 987.3            | 332.0           | 140.18         | 1.6121    | 0.975                           |
| 117.00 | 987.3            | 332.1           | 140.19         | 1.6068    | 0.975                           |

ALPINE SUBSURFACE ELECTRONICS PROBE INCREMENTS LISTING

TEST: 8585 DST #1 Liberal #2-25 Ensign Operating Co.

DATE: 02/18/97 TIME: 01:31:02

|                     | Time   | Pressure<br>PSig | delta P<br>PSig | Temp.<br>DEG F | (T+dT)/dT | P <sup>2</sup> /10 <sup>6</sup> |
|---------------------|--------|------------------|-----------------|----------------|-----------|---------------------------------|
|                     | 118.00 | 987.4            | 332.2           | 140.21         | 1.6017    | 0.975                           |
|                     | 119.00 | 987.5            | 332.3           | 140.23         | 1.5966    | 0.975                           |
|                     | 120.00 | 987.6            | 332.4           | 140.24         | 1.5917    | 0.975                           |
|                     | 121.00 | 987.6            | 332.4           | 140.25         | 1.5868    | 0.975                           |
|                     | 122.00 | 987.7            | 332.5           | 140.28         | 1.5820    | 0.976                           |
|                     | 123.00 | 987.8            | 332.6           | 140.30         | 1.5772    | 0.976                           |
|                     | 124.00 | 987.9            | 332.7           | 140.32         | 1.5726    | 0.976                           |
|                     | 125.00 | 988.0            | 332.8           | 140.33         | 1.5680    | 0.976                           |
|                     | 126.00 | 988.0            | 332.8           | 140.35         | 1.5635    | 0.976                           |
|                     | 127.00 | 988.0            | 332.8           | 140.36         | 1.5591    | 0.976                           |
|                     | 128.00 | 988.1            | 332.9           | 140.38         | 1.5547    | 0.976                           |
|                     | 129.00 | 988.1            | 332.9           | 140.39         | 1.5504    | 0.976                           |
|                     | 130.00 | 988.1            | 332.9           | 140.41         | 1.5462    | 0.976                           |
|                     | 131.00 | 988.3            | 333.0           | 140.42         | 1.5420    | 0.977                           |
|                     | 132.00 | 988.3            | 333.1           | 140.43         | 1.5379    | 0.977                           |
|                     | 133.00 | 988.3            | 333.1           | 140.44         | 1.5338    | 0.977                           |
|                     | 134.00 | 988.3            | 333.1           | 140.46         | 1.5299    | 0.977                           |
|                     | 135.00 | 988.4            | 333.2           | 140.48         | 1.5259    | 0.977                           |
| ***** End Shut-in 2 | 136.00 | 988.5            | 333.3           | 140.49         | 1.5221    | 0.977                           |
| ***** Final Hydro.  | 482.00 | 2894.1           | 0.0             | 140.17         |           |                                 |

# TEST HISTORY

8585 DST #1 Liberal #2-25 Ensign Operating Co.

## Flag Points

←(Min.) PC PSig

|    |        |         |
|----|--------|---------|
| R: | 0.00   | 3024.58 |
| B: | 0.00   | 525.00  |
| C: | 29.00  | 665.37  |
| D: | 62.00  | 994.54  |
| E: | 0.00   | 644.47  |
| F: | 42.00  | 635.22  |
| G: | 136.00 | 988.49  |
| Q: | 0.00   | 2894.07 |

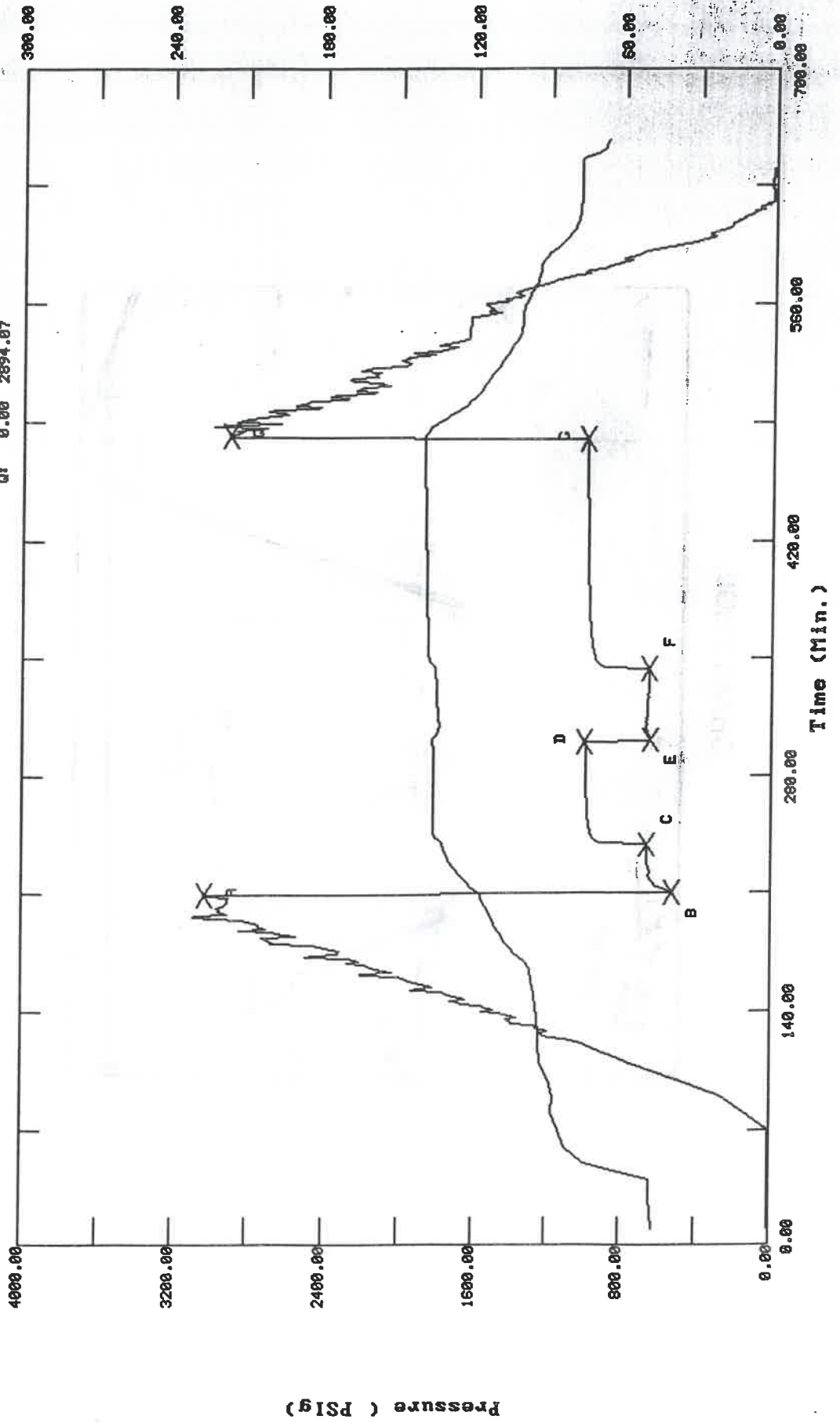
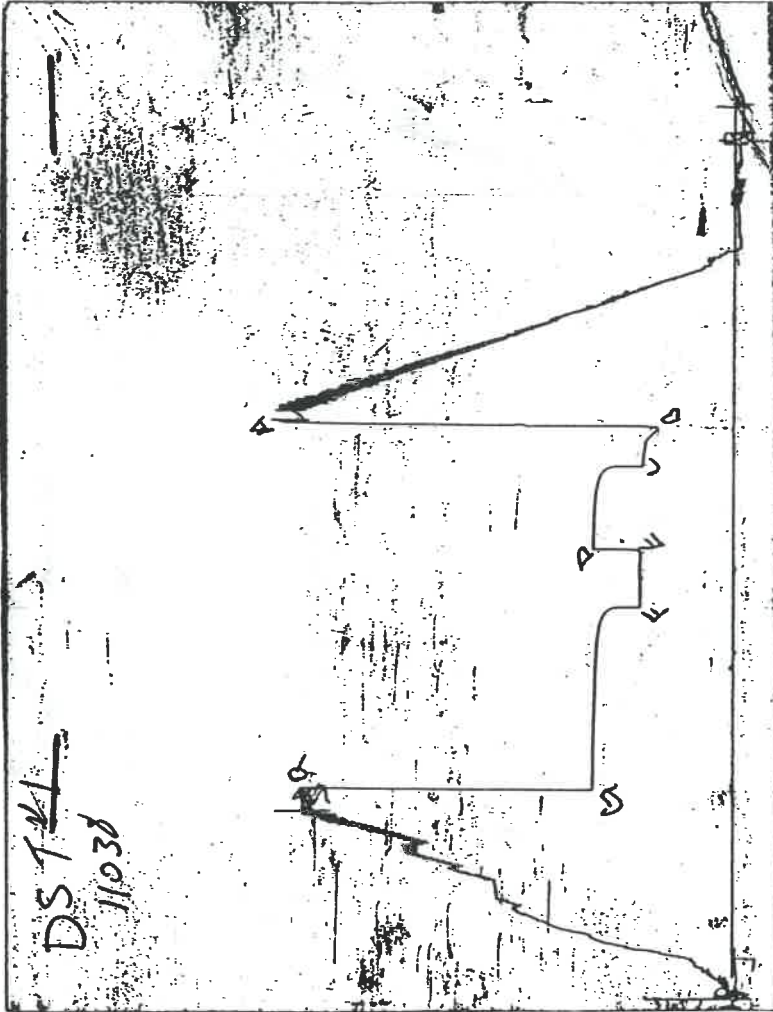


CHART PAGE



This is a photocopy of the actual AK-1 recorder chart