| LEASE NAME | WELL NO. | TEST NO. | TESTED INTERVAL | LEASE OWNER/COMPANY NAME |
|---|---|---|---|---|
| MEIER J | 1 | 1 | 3735.' - 3831.' | DONALD C. SLAWSON |

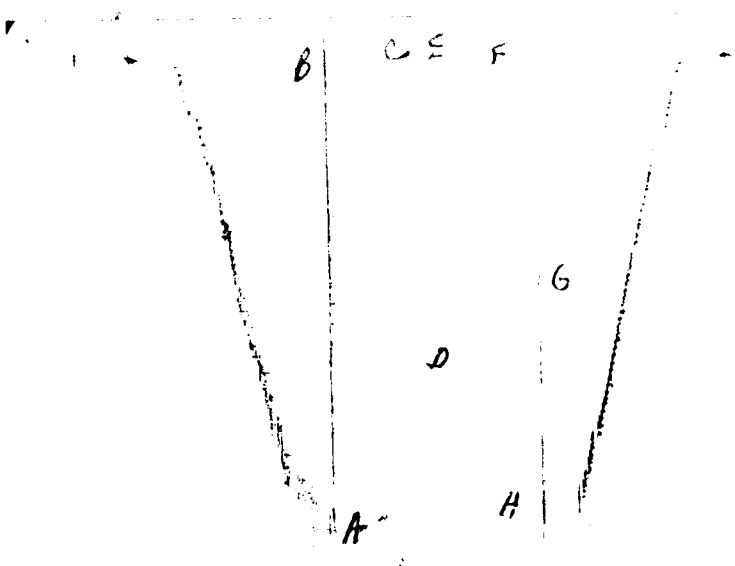
| LEGAL LOCATION SEC. - TWP. - RNG. | FIELD AREA | COUNTY | STATE |
|---|---|---|---|
| 6-15-26 | | GOVE | KANSAS OR/VF |

15S-26W

HALLIBURTON
SERVICES

TICKET NO. 43934000
22-NOV-82
NESS CITY

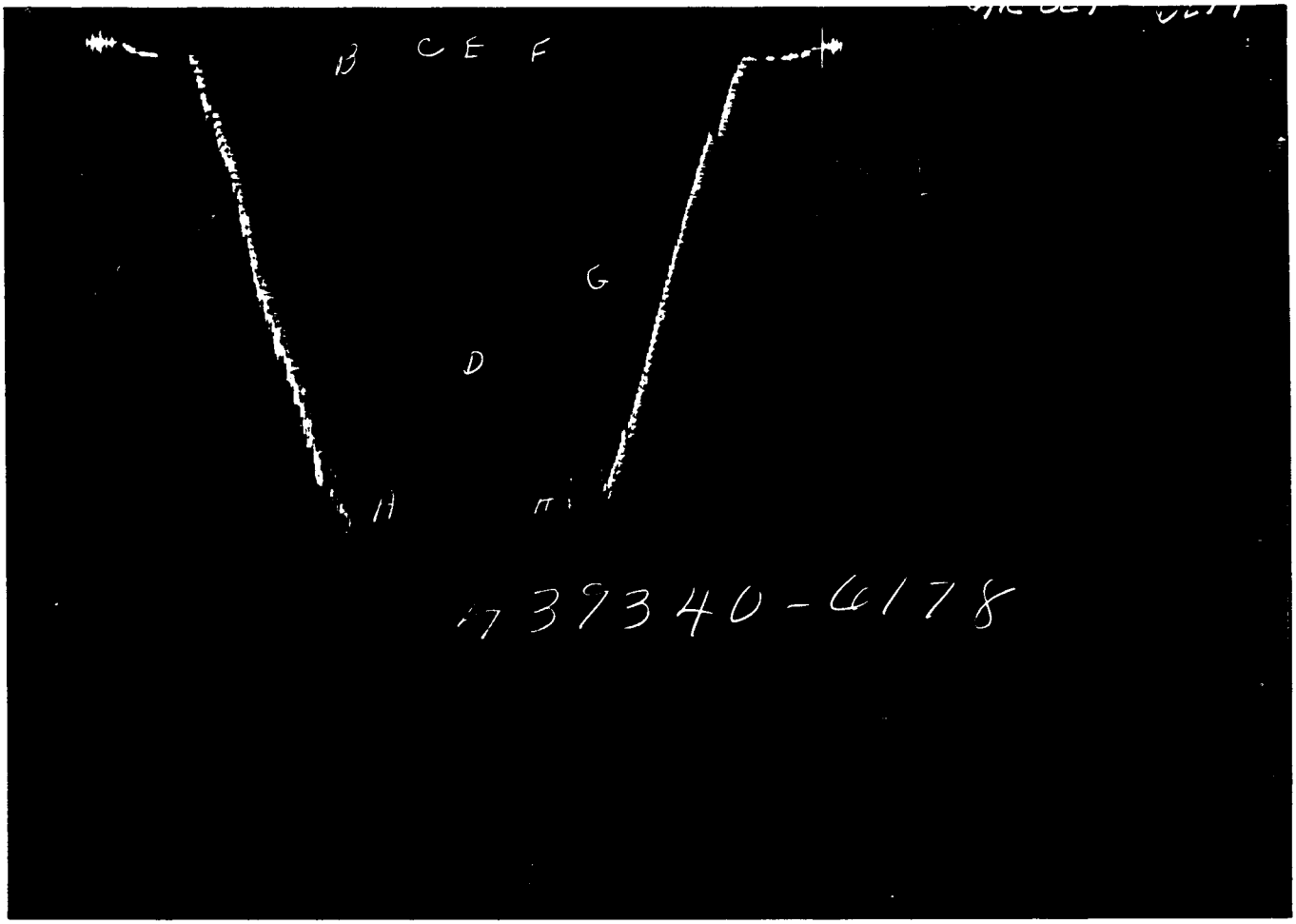
# FORMATION TESTING SERVICE REPORT




439340-6177

GAUGE NO: 6177 DEPTH: 3729.0 BLANKED OFF: NO HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | 2179 | 1799.1 | | | |
| B | INITIAL FIRST FLOW | 21 | 18.3 | 30.0 | 32.0 | F |
| C | FINAL FIRST FLOW | 32 | 31.6 | | | |
| C | INITIAL FIRST CLOSED-IN | 32 | 31.6 | 30.0 | 30.1 | C |
| D | FINAL FIRST CLOSED-IN | 1109 | 1107.4 | | | |
| E | INITIAL SECOND FLOW | 42 | 49.4 | 30.0 | 31.0 | F |
| F | FINAL SECOND FLOW | 42 | 47.4 | | | |
| F | INITIAL SECOND CLOSED-IN | 42 | 47.4 | 30.0 | 28.9 | C |
| G | FINAL SECOND CLOSED-IN | 881 | 906.8 | | | |
| H | FINAL HYDROSTATIC | 2053 | 1850.8 | | | |




GAUGE NO: 6178 DEPTH: 3828.0 BLANKED OFF: YES HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | | 1846.4 | | | |
| B | INITIAL FIRST FLOW | | 65.3 | 30.0 | 32.0 | F |
| C | FINAL FIRST FLOW | | 81.8 | | | |
| C | INITIAL FIRST CLOSED-IN | | 81.8 | 30.0 | 30.1 | C |
| D | FINAL FIRST CLOSED-IN | | 1160.5 | | | |
| E | INITIAL SECOND FLOW | | 91.5 | 30.0 | 31.0 | F |
| F | FINAL SECOND FLOW | | 95.7 | | | |
| F | INITIAL SECOND CLOSED-IN | | 95.7 | 30.0 | 28.9 | C |
| G | FINAL SECOND CLOSED-IN | | 962.2 | | | |
| H | FINAL HYDROSTATIC | | 1850.8 | | | |

## EQUIPMENT & HOLE DATA

FORMATION TESTED: KANSAS CITY
NET PAY (ft): 15.0
GROSS TESTED FOOTAGE: 96.0
ALL DEPTHS MEASURED FROM:
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2342
TOTAL DEPTH (ft): 3831.0
PACKER DEPTH(S) (ft): 3735
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.50
MUD VISCOSITY (sec): 42
ESTIMATED HOLE TEMP. (°F): 108
ACTUAL HOLE TEMP. (°F): 108 @ 3826.0 ft

TICKET NUMBER: 43934000

DATE: 11-13-82 TEST NO: 1

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: D. DAHARSH

WITNESS: RICH ROBBA

DRILLING CONTRACTOR: DONALD C. SLAWSON

## FLUID PROPERTIES FOR RECOVERED MUD & WATER

| SOURCE | RESISTIVITY | | CHLORIDES |
|---|---|---|---|
| MUD PITS | @ °F | | 13000 ppm |
| RECOVERY | @ °F | | 11000 ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |

## SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

## HYDROCARBON PROPERTIES

OIL GRAVITY (°API): @ °F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

## CUSHION DATA

| TYPE | AMOUNT | WEIGHT |
|---|---|---|
| | | |
| | | |

## RECOVERED:

60' OF DRILLING MUD

MEASURED FROM TESTER VALVE

## REMARKS:

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43934000

| TIME | CHOKE SIZE | SURFACE PRESSURE PSI | GAS RATE MCF | LIQUID RATE BPD | REMARKS |
|---|---|---|---|---|---|
| 11-12-82 | | | | | |
| 2130 | | | | | CALLED OUT. |
| 2315 | | | | | ON LOCATION. |
| 11-13-82 | | | | | |
| 0235 | | | | | PICKED UP AND MADE UP TOOL. |
| 0300 | | | | | TOOL IN TABLE. |
| 0315 | | | | | STARTED TOOL TO BOTTOM. |
| 0456 | | | | | TOOL ON BOTTOM. |
| 0500 | | | | | TOOL OPENED. |
| 0530 | | | | | TOOL CLOSED. |
| 0600 | | | | | TOOL OPENED. |
| 0630 | | | | | TOOL CLOSED. |
| 0700 | | | | | TOOL OFF BOTTOM. |
| 0825 | | | | | TOOL IN TABLE. |
| 0915 | | | | | TOOL BROKE AND LAID DOWN. |
| 1045 | | | | | JOB COMPLETED. |
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| TICKET NO: 43934000 | GAUGE NO: 6177 |
|---|---|
| CLOCK NO: 3930 HOUR: 12 | DEPTH: 3729.0 |

HALLIBURTON SERVICES

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 18.3 | | | |
| | 2 | 5.0 | 20.6 | 2.3 | | |
| | 3 | 10.0 | 23.6 | 2.9 | | |
| | 4 | 15.0 | 26.6 | 3.0 | | |
| | 5 | 20.0 | 29.7 | 3.0 | | |
| | 6 | 25.0 | 31.1 | 1.5 | | |
| | 7 | 30.0 | 32.6 | 1.5 | | |
| C | 8 | 32.0 | 31.6 | -1.0 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 31.6 | | | |
| | 2 | 2.0 | 53.2 | 21.7 | 1.9 | 1.229 |
| | 3 | 4.0 | 93.9 | 62.4 | 3.5 | 0.956 |
| | 4 | 6.0 | 193.5 | 161.9 | 5.1 | 0.799 |
| | 5 | 8.0 | 387.8 | 356.3 | 6.4 | 0.699 |
| | 6 | 10.0 | 550.6 | 519.1 | 7.6 | 0.624 |
| | 7 | 12.0 | 695.7 | 664.2 | 8.7 | 0.563 |
| | 8 | 14.0 | 796.8 | 765.2 | 9.7 | 0.516 |
| | 9 | 16.0 | 876.4 | 844.9 | 10.7 | 0.477 |
| | 10 | 18.0 | 932.3 | 900.7 | 11.5 | 0.443 |
| | 11 | 20.0 | 980.7 | 949.2 | 12.3 | 0.414 |
| | 12 | 22.0 | 1015.0 | 983.5 | 13.0 | 0.390 |
| | 13 | 24.0 | 1047.8 | 1016.3 | 13.7 | 0.367 |
| | 14 | 26.0 | 1072.3 | 1040.8 | 14.3 | 0.348 |
| | 15 | 28.0 | 1094.3 | 1062.7 | 14.9 | 0.331 |
| D | 16 | 30.1 | 1107.4 | 1075.9 | 15.5 | 0.314 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 49.4 | | | |
| | 2 | 5.0 | 42.0 | -7.3 | | |
| | 3 | 10.0 | 42.0 | 0.0 | | |
| | 4 | 15.0 | 44.4 | 2.4 | | |
| | 5 | 20.0 | 44.4 | 0.0 | | |
| | 6 | 25.0 | 46.8 | 2.3 | | |
| F | 7 | 31.0 | 47.4 | 0.6 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 47.4 | | | |
| | 2 | 3.0 | 60.1 | 12.7 | 2.9 | 1.336 |
| | 3 | 6.0 | 81.9 | 34.5 | 5.5 | 1.061 |
| | 4 | 9.0 | 118.8 | 71.4 | 7.9 | 0.904 |
| | 5 | 12.0 | 189.1 | 141.7 | 10.1 | 0.796 |
| | 6 | 15.0 | 315.9 | 268.6 | 12.1 | 0.716 |
| | 7 | 18.0 | 499.1 | 451.7 | 14.0 | 0.653 |
| | 8 | 21.0 | 652.3 | 604.9 | 15.8 | 0.602 |
| | 9 | 24.0 | 776.6 | 729.2 | 17.4 | 0.559 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 10 | 27.0 | 868.0 | 820.6 | 18.9 | 0.523 |
| G | 11 | 28.9 | 906.8 | 859.4 | 19.8 | 0.502 |

REMARKS:

| TICKET NO: 43934000 | GAUGE NO: 6178 |
|---|---|
| CLOCK NO: 13855 HOUR: 12 | DEPTH: 3828.0 |

HALLIBURTON SERVICES

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | **FIRST FLOW** | | | | |
| B | 1 | 0.0 | 65.3 | | | |
| | 2 | 5.0 | 71.1 | 5.8 | | |
| | 3 | 10.0 | 74.3 | 3.2 | | |
| | 4 | 15.0 | 77.1 | 2.7 | | |
| | 5 | 20.0 | 78.4 | 1.3 | | |
| | 6 | 25.0 | 80.1 | 1.7 | | |
| | 7 | 30.0 | 82.0 | 1.9 | | |
| C | 8 | 32.0 | 81.8 | -0.2 | | |
| | | **FIRST CLOSED-IN** | | | | |
| C | 1 | 0.0 | 81.8 | | | |
| | 2 | 2.0 | 102.4 | 20.6 | 1.8 | 1.240 |
| | 3 | 4.0 | 156.3 | 74.4 | 3.6 | 0.951 |
| | 4 | 6.0 | 262.0 | 180.1 | 5.0 | 0.803 |
| | 5 | 8.0 | 445.5 | 363.7 | 6.4 | 0.698 |
| | 6 | 10.0 | 615.9 | 534.0 | 7.6 | 0.623 |
| | 7 | 12.0 | 751.8 | 670.0 | 8.7 | 0.564 |
| | 8 | 14.0 | 845.0 | 763.1 | 9.7 | 0.517 |
| | 9 | 16.0 | 923.5 | 841.7 | 10.7 | 0.476 |
| | 10 | 18.0 | 983.0 | 901.2 | 11.5 | 0.444 |
| | 11 | 20.0 | 1029.6 | 947.8 | 12.3 | 0.415 |
| | 12 | 22.0 | 1066.4 | 984.6 | 13.0 | 0.390 |
| | 13 | 24.0 | 1096.6 | 1014.7 | 13.7 | 0.367 |
| | 14 | 26.0 | 1122.8 | 1040.9 | 14.3 | 0.348 |
| | 15 | 28.0 | 1144.2 | 1062.3 | 14.9 | 0.330 |
| D | 16 | 30.1 | 1160.5 | 1078.6 | 15.5 | 0.314 |
| | | **SECOND FLOW** | | | | |
| E | 1 | 0.0 | 91.5 | | | |
| | 2 | 5.0 | 88.8 | -2.6 | | |
| | 3 | 10.0 | 90.7 | 1.8 | | |
| | 4 | 15.0 | 92.2 | 1.5 | | |
| | 5 | 20.0 | 93.2 | 1.0 | | |
| | 6 | 25.0 | 94.2 | 1.0 | | |
| F | 7 | 31.0 | 95.7 | 1.5 | | |
| | | **SECOND CLOSED-IN** | | | | |
| F | 1 | 0.0 | 95.7 | | | |
| | 2 | 3.0 | 114.1 | 18.4 | 2.9 | 1.339 |
| | 3 | 6.0 | 141.3 | 45.5 | 5.5 | 1.059 |
| | 4 | 9.0 | 186.6 | 90.9 | 7.9 | 0.903 |
| | 5 | 12.0 | 269.8 | 174.0 | 10.1 | 0.796 |
| | 6 | 15.0 | 402.0 | 306.3 | 12.1 | 0.716 |
| | 7 | 18.0 | 575.1 | 479.3 | 14.0 | 0.653 |
| | 8 | 21.0 | 728.0 | 632.2 | 15.8 | 0.601 |
| | 9 | 24.0 | 838.2 | 742.5 | 17.4 | 0.559 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | SECOND CLOSED-IN - CONTINUED | | | | |
| | 10 | 27.0 | 924.7 | 829.0 | 18.9 | 0.522 |
| G | 11 | 28.9 | 962.2 | 866.4 | 19.8 | 0.502 |

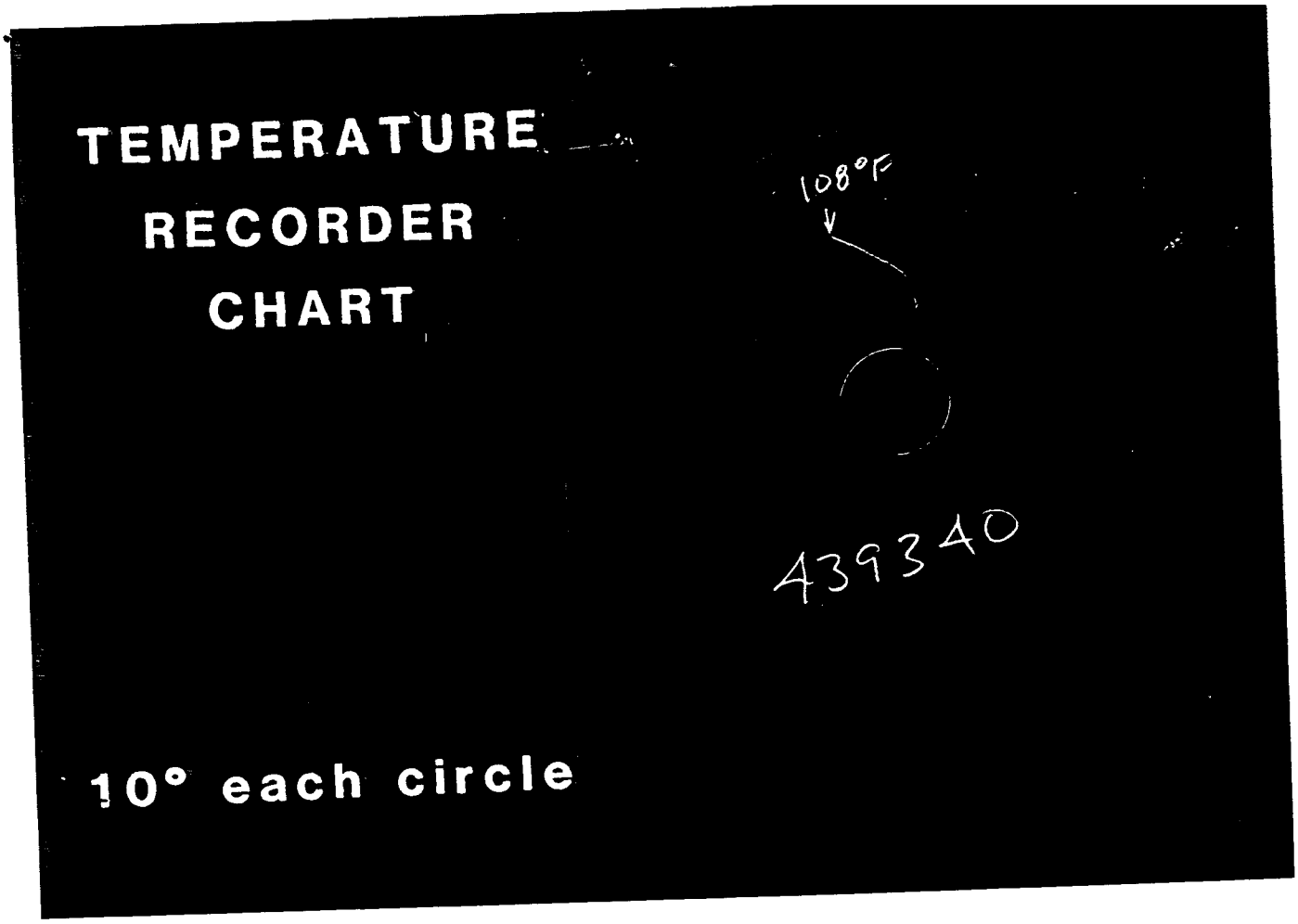
REMARKS:

TICKET NO. 43934000

| | | O.D. | I.D. | LENGTH | DEPTH |
|---|---|---|---|---|---|
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 3952.0 | |
| 50 | IMPACT REVERSING SUB..... | 5.000 | 3.000 | 1.0 | 3592.0 |
| 1 | DRILL PIPE..... | 4.500 | 3.820 | 124.0 | |
| 12 | DUAL CIP VALVE..... | 5.000 | 0.870 | 6.0 | |
| 60 | HYDROSPRING TESTER..... | 5.000 | 0.750 | 5.0 | 3727.0 |
| 80 | AP RUNNING CASE..... | 5.000 | 3.000 | 4.0 | 3729.0 |
| 16 | VR SAFETY JOINT..... | 5.000 | 1.000 | 3.0 | |
| 70 | OPEN HOLE PACKER..... | 6.750 | 1.530 | 6.0 | 3735.0 |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 1 | DRILL PIPE..... | 4.500 | 3.820 | 62.0 | |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 20 | FLUSH JOINT ANCHOR..... | 5.000 | 3.000 | 25.0 | |
| 83 | HT-500 TEMPERATURE CASE..... | 5.000 | | 1.0 | 3826.0 |
| 81 | BLANKED-OFF RUNNING CASE..... | 5.000 | 3.000 | 4.0 | 3828.0 |

TOTAL DEPTH 3831.0

# EQUIPMENT DATA




| | | |
|---|---|---|
| Indicated Flow Capacity | $kh = \frac{1637\ Q_g\ T}{m}$ | md-ft |
| Average Effective Permeability | $k = \frac{kh}{h}$ | md |
| Skin Factor | $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{kt}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$ | — |
| Damage Ratio | $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\ mS}$ | — |
| Indicated Flow Rate (Maximum) | $AOF_1 = \frac{Q_g\ m(P^*)}{m(P^*) - m(P_f)}$ | MCFD |
| Indicated Flow Rate (Minimum) | $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$ | MCFD |
| Approx. Radius of Investigation | $r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$ | ft |

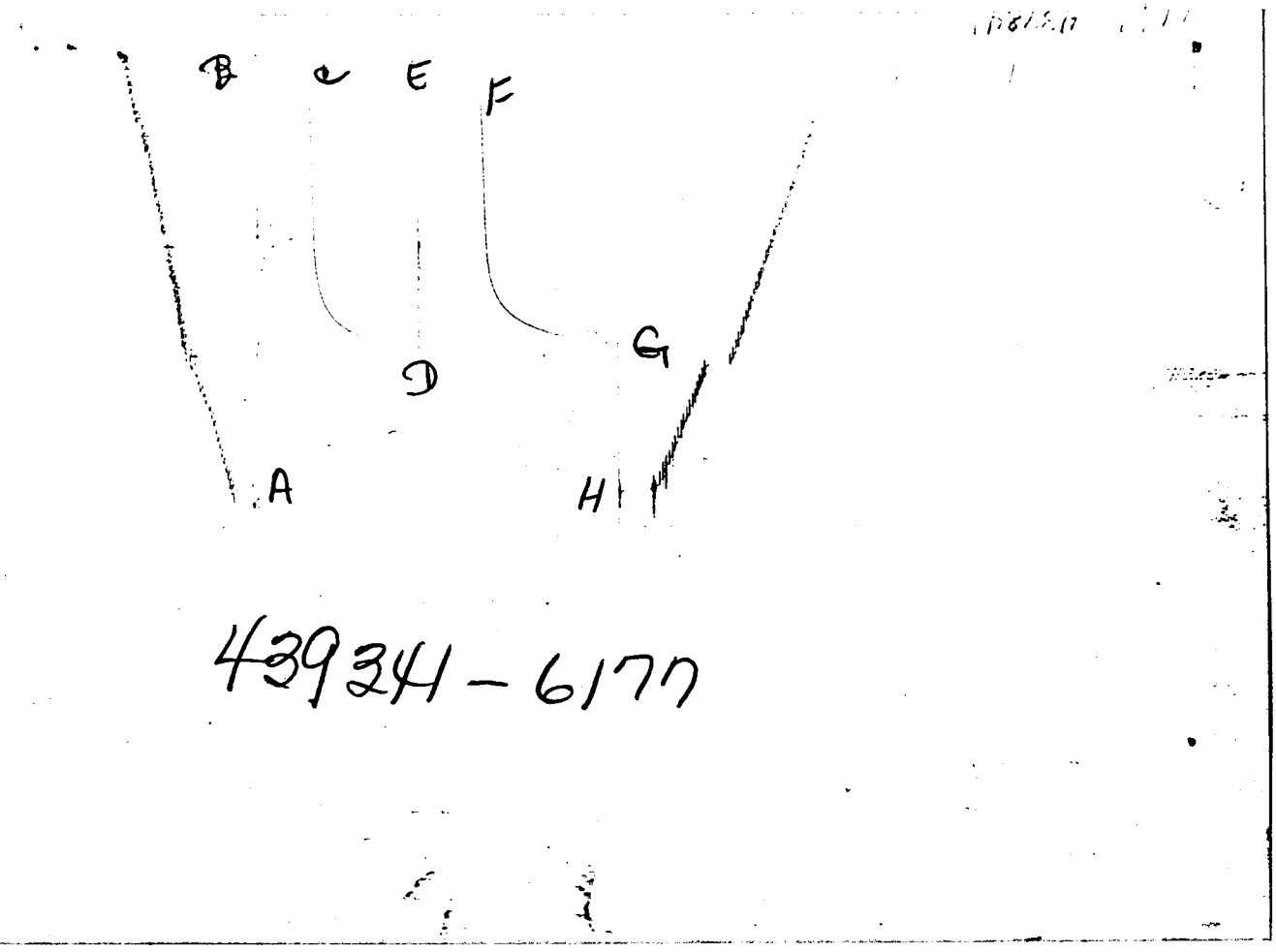
| LEASE NAME | WELL NO. | TEST NO. | TESTED INTERVAL | | |
|---|---|---|---|---|---|
| MEIER J | 1 | 2 | 3822.' - 3858.' | | DONALD C. SLAWSON |
| LEGAL LOCATION SEC. - TWP. - RNG. | | FIELD AREA | COUNTY | STATE | LEASE OWNER/COMPANY NAME |
| 6 15 26 | | | GOVE | KANSAS | |

155-26W

HALLIBURTON
SERVICES

TICKET NO. 43934100
22-NOV-82
NESS CITY

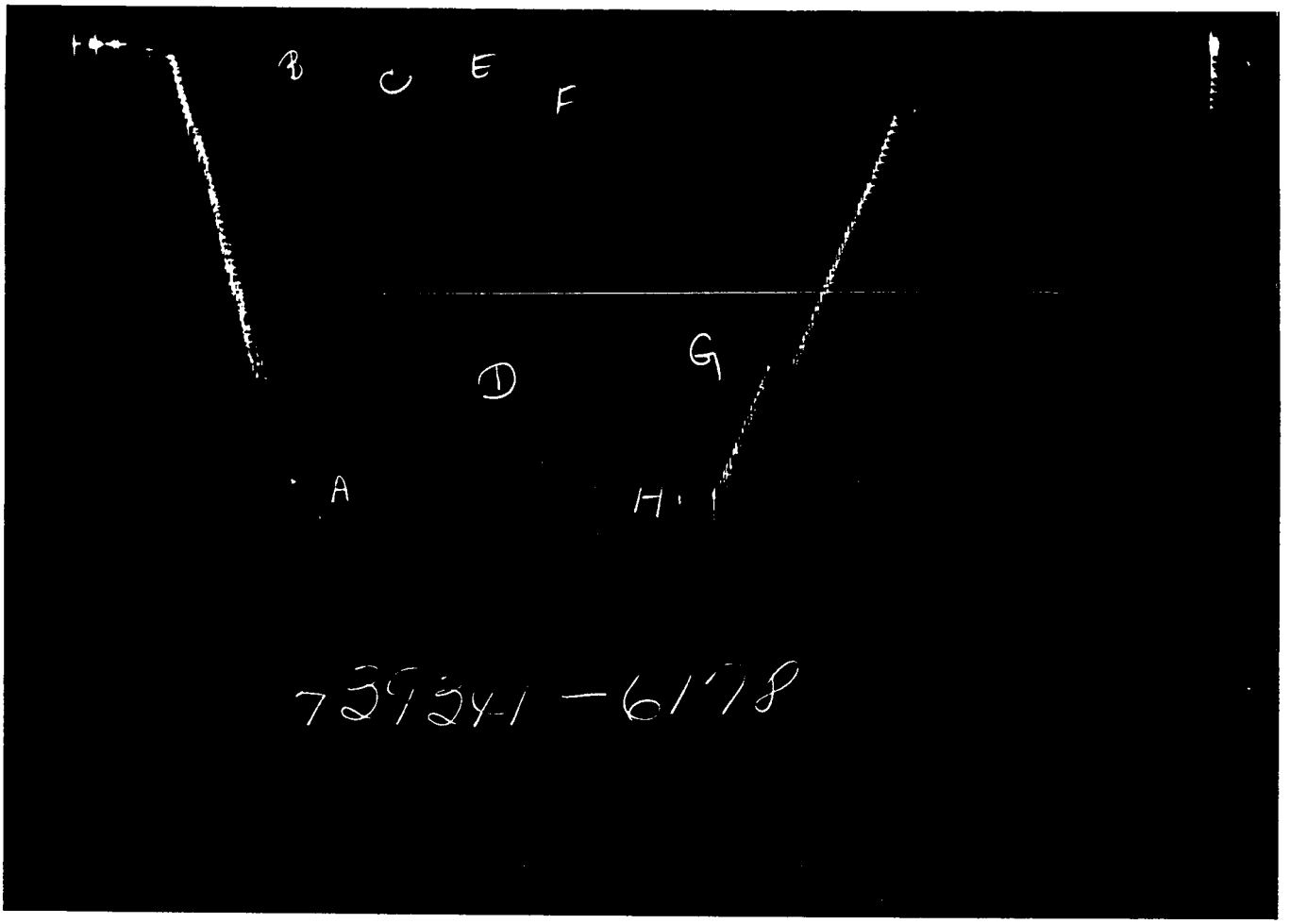
# FORMATION TESTING SERVICE REPORT




43934-6177

GAUGE NO: 6177 DEPTH: 3816.0 BLANKED OFF: NO HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | 1885 | 1824.7 | | | |
| B | INITIAL FIRST FLOW | 21 | 26.5 | 30.0 | 31.1 | F |
| C | FINAL FIRST FLOW | 105 | 123.6 | | | |
| C | INITIAL FIRST CLOSED-IN | 105 | 123.6 | 60.0 | 65.6 | C |
| D | FINAL FIRST CLOSED-IN | 1226 | 1233.9 | | | |
| E | INITIAL SECOND FLOW | 136 | 143.9 | 45.0 | 38.3 | F |
| F | FINAL SECOND FLOW | 210 | 220.3 | | | |
| F | INITIAL SECOND CLOSED-IN | 210 | 220.3 | 75.0 | 80.5 | C |
| G | FINAL SECOND CLOSED-IN | 1194 | 1213.6 | | | |
| H | FINAL HYDROSTATIC | 1843 | 1837.3 | | | |




GAUGE NO: 6178 DEPTH: 3855.0 BLANKED OFF: YES HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | | 1841.9 | | | |
| B | INITIAL FIRST FLOW | | 45.8 | 30.0 | 31.1 | F |
| C | FINAL FIRST FLOW | | 143.2 | | | |
| C | INITIAL FIRST CLOSED-IN | | 143.2 | 60.0 | 65.6 | C |
| D | FINAL FIRST CLOSED-IN | | 1250.8 | | | |
| E | INITIAL SECOND FLOW | | 153.9 | 45.0 | 38.3 | F |
| F | FINAL SECOND FLOW | | 236.4 | | | |
| F | INITIAL SECOND CLOSED-IN | | 236.4 | 75.0 | 80.5 | C |
| G | FINAL SECOND CLOSED-IN | | 1229.7 | | | |
| H | FINAL HYDROSTATIC | | 1854.3 | | | |

## EQUIPMENT & HOLE DATA

FORMATION TESTED: KANSAS CITY
NET PAY (ft): 7.0
GROSS TESTED FOOTAGE: 36.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2342
TOTAL DEPTH (ft): 3858.0
PACKER DEPTH(S) (ft): 3822
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.20
MUD VISCOSITY (sec): 42
ESTIMATED HOLE TEMP. (°F): 108
ACTUAL HOLE TEMP. (°F): 109 @ 3854.0 ft

TICKET NUMBER: 43934100
DATE: 11-13-82 TEST NO: 2
TYPE DST: OPEN HOLE
HALLIBURTON CAMP: NESS CITY
TESTER: D. DAHARSH
WITNESS: RICH ROBBA
DRILLING CONTRACTOR: DONALD C. SLAWSON DRILLING

## FLUID PROPERTIES FOR RECOVERED MUD & WATER

| SOURCE | RESISTIVITY | | CHLORIDES |
|---|---|---|---|
| MUD PIT | | @ °F | 17000 ppm |
| RECOVERY | | @ °F | 16000 ppm |
| | | @ °F | ppm |
| | | @ °F | ppm |
| | | @ °F | ppm |
| | | @ °F | ppm |

## SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

## HYDROCARBON PROPERTIES

OIL GRAVITY (°API): 38.0 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

## CUSHION DATA

| TYPE | AMOUNT | WEIGHT |
|---|---|---|
| | | |
| | | |

## RECOVERED:

550 FEET OF TOTAL FLUID. 310' OF CLEAN GASSY OIL, 60' OF OIL CUT MUD (46% OIL - 54% MUD), 60' OF OIL CUT MUD (40% OIL - 60% MUD), 60' OIL CUT MUD (20% OIL - 10% WATER - 70% MUD), 60' OIL CUT MUD (10% OIL AND 90% MUD).

MEASURED FROM TESTER VALVE

## REMARKS:

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43934100

| TIME | CHOKE SIZE | SURFACE PRESSURE PSI | GAS RATE MCF | LIQUID RATE BPD | REMARKS |
|---|---|---|---|---|---|
| 11-13-82 | | | | | |
| 1430 | | | | | CALLED OUT. |
| 1630 | | | | | ON LOCATION. |
| 1700 | | | | | PICKED UP AND MADE UP TOOL. |
| 1730 | | | | | TOOL IN TABLE. |
| 1740 | | | | | STARTED TOOL TO BOTTOM. |
| 1912 | | | | | TOOL ON BOTTOM. |
| 1915 | | | | | TOOL OPENED WITH A STRONG |
| | | | | | BLOW BUILDING TO 12" IN 10 |
| | | | | | MINUTES. |
| 1945 | | | | | TOOL CLOSED. |
| 2045 | | | | | TOOL OPENED WITH A STRONG BLOW |
| | | | | | BUILDING TO 12" IN 10 MINUTES. |
| | | | | | GAS TO SURFACE AFTER 35 MINUTES. |
| 2130 | | | | | TOOL CLOSED. |
| 2245 | | | | | TOOL OFF BOTTOM. |
| 11-14-82 | | | | | |
| 0825 | | | | | TOOL IN TABLE. |
| 0905 | | | | | TOOL BROKE AND LAID DOWN. |
| 1030 | | | | | JOB COMPLETED. |
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| TICKET NO: 43934100 | GAUGE NO: 6177 |
|---|---|
| CLOCK NO: 3930 HOUR: 12 | DEPTH: 3816.0 |

HALLIBURTON SERVICES

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 26.5 | | | |
| | 2 | 5.0 | 53.4 | 26.8 | | |
| | 3 | 10.0 | 75.5 | 22.1 | | |
| | 4 | 15.0 | 87.9 | 12.5 | | |
| | 5 | 20.0 | 97.8 | 9.9 | | |
| | 6 | 25.0 | 109.4 | 11.6 | | |
| C | 7 | 31.1 | 123.6 | 14.2 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 123.6 | | | |
| | 2 | 4.0 | 905.1 | 781.6 | 3.6 | 0.942 |
| | 3 | 8.0 | 1033.8 | 910.2 | 6.4 | 0.689 |
| | 4 | 12.0 | 1088.1 | 964.5 | 8.7 | 0.556 |
| | 5 | 16.0 | 1118.7 | 995.1 | 10.6 | 0.470 |
| | 6 | 20.0 | 1142.4 | 1018.8 | 12.2 | 0.408 |
| | 7 | 24.0 | 1159.7 | 1036.1 | 13.6 | 0.361 |
| | 8 | 28.0 | 1173.7 | 1050.1 | 14.8 | 0.325 |
| | 9 | 32.0 | 1185.3 | 1061.7 | 15.8 | 0.295 |
| | 10 | 36.0 | 1195.3 | 1071.7 | 16.7 | 0.271 |
| | 11 | 40.0 | 1203.3 | 1079.8 | 17.5 | 0.250 |
| | 12 | 44.0 | 1209.7 | 1086.1 | 18.2 | 0.233 |
| | 13 | 48.0 | 1215.3 | 1091.8 | 18.9 | 0.217 |
| | 14 | 52.0 | 1220.7 | 1097.1 | 19.5 | 0.204 |
| | 15 | 56.0 | 1225.3 | 1101.7 | 20.0 | 0.192 |
| | 16 | 60.0 | 1228.7 | 1105.1 | 20.5 | 0.182 |
| D | 17 | 65.6 | 1233.9 | 1110.3 | 21.1 | 0.169 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 143.9 | | | |
| | 2 | 7.0 | 148.7 | 4.8 | | |
| | 3 | 14.0 | 165.6 | 16.9 | | |
| | 4 | 21.0 | 183.3 | 17.7 | | |
| | 5 | 28.0 | 198.8 | 15.5 | | |
| | 6 | 35.0 | 213.6 | 14.8 | | |
| F | 7 | 38.3 | 220.3 | 6.7 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 220.3 | | | |
| | 2 | 5.0 | 948.0 | 727.7 | 4.7 | 1.174 |
| | 3 | 10.0 | 1035.5 | 815.2 | 8.7 | 0.901 |
| | 4 | 15.0 | 1079.2 | 858.9 | 12.3 | 0.751 |
| | 5 | 20.0 | 1107.0 | 886.7 | 15.5 | 0.651 |
| | 6 | 25.0 | 1128.3 | 908.0 | 18.4 | 0.578 |
| | 7 | 30.0 | 1143.4 | 923.1 | 20.9 | 0.521 |
| | 8 | 35.0 | 1157.7 | 937.4 | 23.3 | 0.475 |
| | 9 | 40.0 | 1168.4 | 948.0 | 25.4 | 0.438 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **SECOND CLOSED-IN - CONTINUED** | | | |
| | 10 | 45.0 | 1177.1 | 956.8 | 27.3 | 0.406 |
| | 11 | 50.0 | 1184.7 | 964.3 | 29.1 | 0.378 |
| | 12 | 55.0 | 1191.2 | 970.9 | 30.7 | 0.355 |
| | 13 | 60.0 | 1196.5 | 976.1 | 32.2 | 0.334 |
| | 14 | 65.0 | 1201.6 | 981.2 | 33.6 | 0.316 |
| | 15 | 70.0 | 1206.1 | 985.7 | 34.9 | 0.299 |
| | 16 | 75.0 | 1209.8 | 989.5 | 36.1 | 0.285 |
| G | 17 | 80.5 | 1213.6 | 993.2 | 37.3 | 0.270 |

REMARKS:

| TICKET NO: 43934100 | | GAUGE NO: 6178 |
|---|---|---|
| CLOCK NO: 13855 HOUR: 12 | HALLIBURTON SERVICES | DEPTH: 3855.0 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 45.8 | | | |
| | 2 | 5.0 | 74.0 | 28.2 | | |
| | 3 | 10.0 | 95.0 | 21.0 | | |
| | 4 | 15.0 | 107.2 | 12.2 | | |
| | 5 | 20.0 | 116.4 | 9.2 | | |
| | 6 | 25.0 | 127.5 | 11.1 | | |
| C | 7 | 31.1 | 143.2 | 15.7 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 143.2 | | | |
| | 2 | 4.0 | 890.1 | 746.9 | 3.5 | 0.946 |
| | 3 | 8.0 | 1047.6 | 904.4 | 6.4 | 0.690 |
| | 4 | 12.0 | 1105.5 | 962.3 | 8.7 | 0.554 |
| | 5 | 16.0 | 1137.8 | 994.6 | 10.6 | 0.470 |
| | 6 | 20.0 | 1161.7 | 1018.5 | 12.2 | 0.408 |
| | 7 | 24.0 | 1179.1 | 1035.9 | 13.6 | 0.361 |
| | 8 | 28.0 | 1192.6 | 1049.4 | 14.7 | 0.325 |
| | 9 | 32.0 | 1203.7 | 1060.5 | 15.8 | 0.295 |
| | 10 | 36.0 | 1213.2 | 1070.0 | 16.7 | 0.271 |
| | 11 | 40.0 | 1220.7 | 1077.5 | 17.5 | 0.250 |
| | 12 | 44.0 | 1227.0 | 1083.8 | 18.2 | 0.233 |
| | 13 | 48.0 | 1232.8 | 1089.6 | 18.9 | 0.217 |
| | 14 | 52.0 | 1237.6 | 1094.4 | 19.5 | 0.204 |
| | 15 | 56.0 | 1242.5 | 1099.3 | 20.0 | 0.192 |
| | 16 | 60.0 | 1246.7 | 1103.5 | 20.5 | 0.182 |
| D | 17 | 65.6 | 1250.8 | 1107.6 | 21.1 | 0.169 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 153.9 | | | |
| | 2 | 7.0 | 164.9 | 11.1 | | |
| | 3 | 14.0 | 184.3 | 19.4 | | |
| | 4 | 21.0 | 201.3 | 17.0 | | |
| | 5 | 28.0 | 215.9 | 14.6 | | |
| | 6 | 35.0 | 230.3 | 14.4 | | |
| F | 7 | 38.3 | 236.4 | 6.1 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 236.4 | | | |
| | 2 | 5.0 | 961.9 | 725.5 | 4.7 | 1.172 |
| | 3 | 10.0 | 1052.6 | 816.2 | 8.8 | 0.899 |
| | 4 | 15.0 | 1098.0 | 861.6 | 12.3 | 0.750 |
| | 5 | 20.0 | 1125.6 | 889.2 | 15.5 | 0.650 |
| | 6 | 25.0 | 1146.3 | 909.9 | 18.4 | 0.577 |
| | 7 | 30.0 | 1162.1 | 925.7 | 21.0 | 0.520 |
| | 8 | 35.0 | 1174.8 | 938.4 | 23.3 | 0.475 |
| | 9 | 40.0 | 1184.9 | 948.5 | 25.4 | 0.437 |

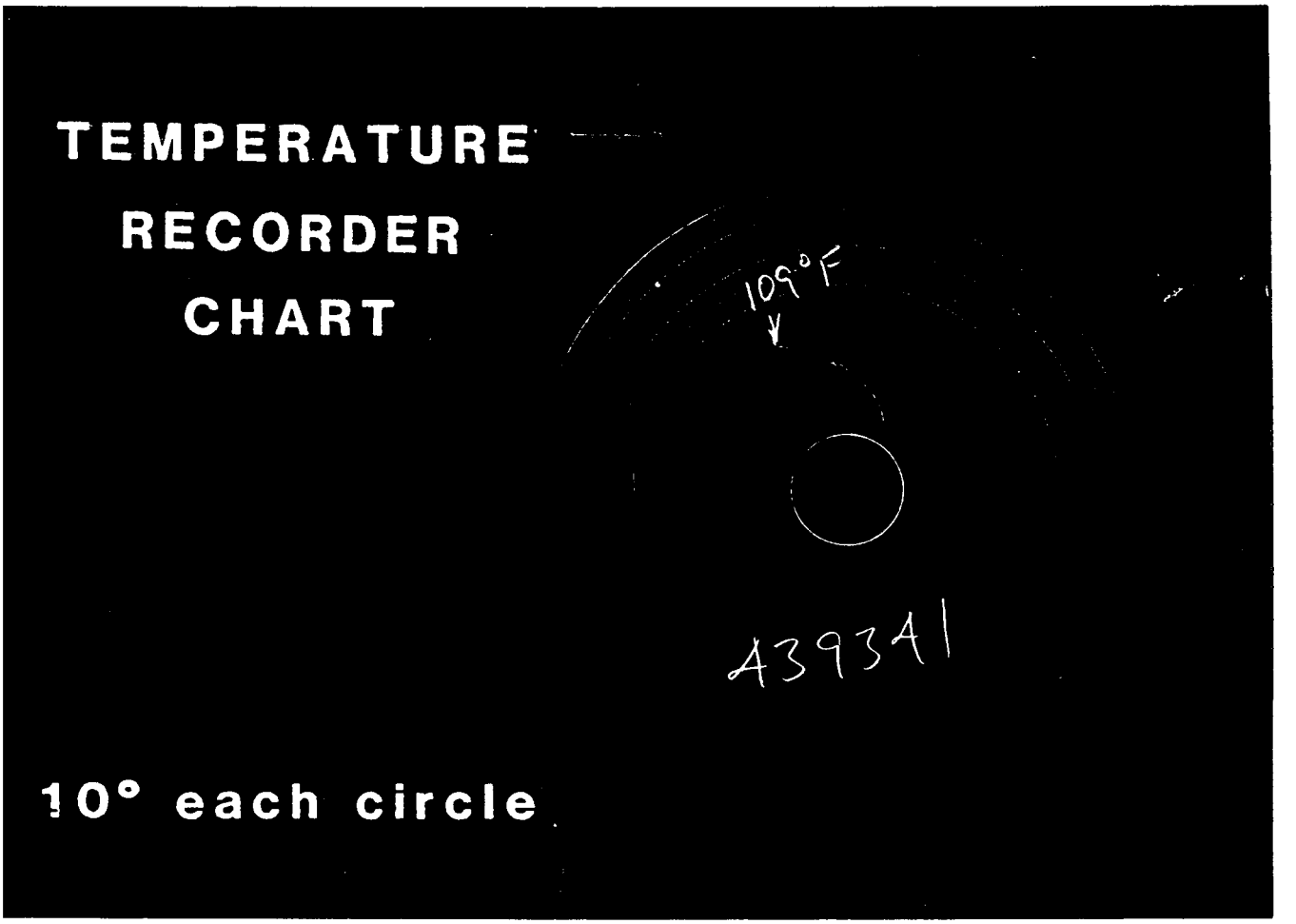
| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 10 | 45.0 | 1193.0 | 956.6 | 27.3 | 0.406 |
| | 11 | 50.0 | 1200.9 | 964.5 | 29.1 | 0.378 |
| | 12 | 55.0 | 1207.4 | 970.9 | 30.7 | 0.355 |
| | 13 | 60.0 | 1212.9 | 976.5 | 32.2 | 0.334 |
| | 14 | 65.0 | 1218.0 | 981.6 | 33.6 | 0.316 |
| | 15 | 70.0 | 1222.1 | 985.7 | 34.9 | 0.299 |
| | 16 | 75.0 | 1226.5 | 990.1 | 36.1 | 0.285 |
| G | 17 | 80.5 | 1229.7 | 993.3 | 37.3 | 0.270 |

REMARKS:

TICKET NO. 43934100

| | | O.D. | I.D. | LENGTH | DEPTH |
|---|---|---|---|---|---|
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 3679.0 | |
| 50 | IMPACT REVERSING SUB..... | 5.000 | 3.000 | 1.0 | 3679.0 |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 124.0 | |
| 12 | DUAL CIP VALVE..... | 5.000 | 0.870 | 6.0 | |
| 60 | HYDROSPRING TESTER..... | 5.000 | 0.750 | 5.0 | 3814.0 |
| 80 | AP RUNNING CASE..... | 5.000 | 3.000 | 4.0 | 3816.0 |
| 16 | VR SAFETY JOINT..... | 5.000 | 1.000 | 3.0 | |
| 70 | OPEN HOLE PACKER..... | 6.750 | 1.530 | 6.0 | 3822.0 |
| 20 | FLUSH JOINT ANCHOR..... | 5.000 | 3.000 | 29.0 | |
| 83 | HT-500 TEMPERATURE CASE..... | 5.000 | 3.000 | 1.0 | 3854.0 |
| 81 | BLANKED-OFF RUNNING CASE..... | 5.000 | 3.000 | 4.0 | 3855.0 |
| | TOTAL DEPTH | | | | 3858.0 |

# EQUIPMENT DATA




| | | |
|---|---|---|
| Indicated Flow Capacity | $kh = \frac{1637\ Q_g\ T}{m}$ | md-ft |
| Average Effective Permeability | $k = \frac{kh}{h}$ | md |
| Skin Factor | $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{kt}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$ | — |
| Damage Ratio | $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\ mS}$ | — |
| Indicated Flow Rate (Maximum) | $AOF_1 = \frac{Q_g\ m(P^*)}{m(P^*) - m(P_f)}$ | MCFD |
| Indicated Flow Rate (Minimum) | $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$ | MCFD |
| Approx. Radius of Investigation | $r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$ | ft |

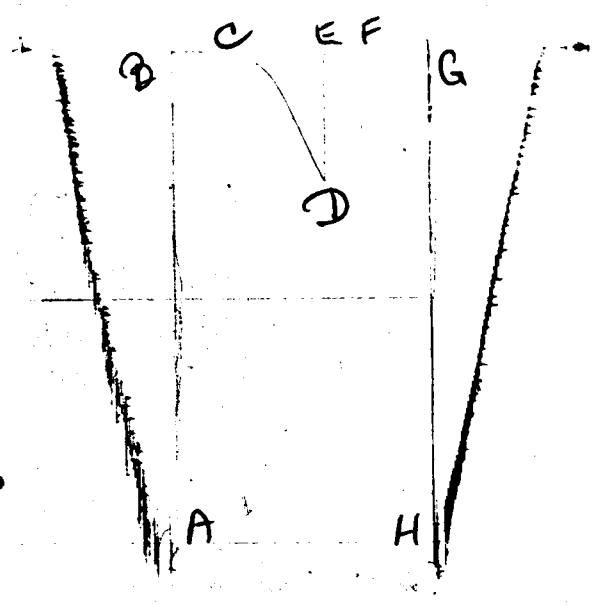
HALLIBURTON
SERVICES

TICKET NO. 43540500
22-NOV-82
NESS CITY

# FORMATION TESTING SERVICE REPORT

| LEASE NAME | WELL NO. | TEST NO. | TESTED INTERVAL | LEASE OWNER/COMPANY NAME |
|---|---|---|---|---|
| MEIER | J-1 | 3 | 4052.' - 4109.' | DONALD C. SLAWSON |

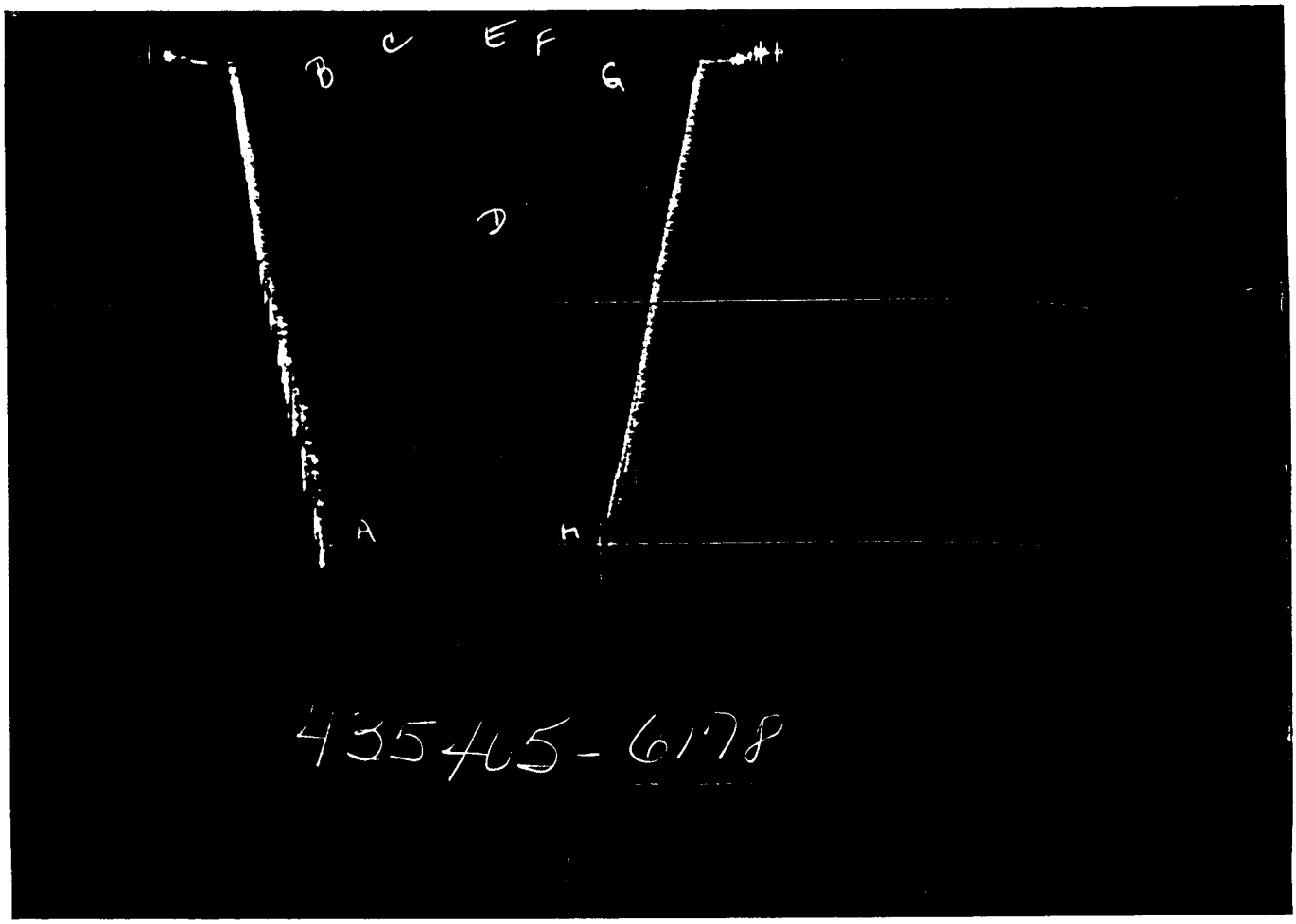
| LEGAL LOCATION SEC. - TWP. - RNG. | FIELD AREA | COUNTY | STATE |
|---|---|---|---|
| 6 15S 26W | | GOVE | KANSAS |




435405-6177

GAUGE NO: 6177 DEPTH: 4042.0 BLANKED OFF: NO HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | 1937 | 1938.9 | | | |
| B | INITIAL FIRST FLOW | 11 | 10.9 | 30.0 | 30.0 | F |
| C | FINAL FIRST FLOW | 11 | 12.4 | | | |
| C | INITIAL FIRST CLOSED-IN | 11 | 12.4 | 60.0 | 60.0 | C |
| D | FINAL FIRST CLOSED-IN | 524 | 521.4 | | | |
| E | INITIAL SECOND FLOW | 21 | 19.5 | 30.0 | 30.0 | F |
| F | FINAL SECOND FLOW | 21 | 19.0 | | | |
| F | INITIAL SECOND CLOSED-IN | 21 | 19.0 | 30.0 | 30.0 | C |
| G | FINAL SECOND CLOSED-IN | 42 | 42.7 | | | |
| H | FINAL HYDROSTATIC | 1937 | 1944.9 | | | |




GAUGE NO: 6178 DEPTH: 4106.0 BLANKED OFF: YES HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | | 1968.0 | | | |
| B | INITIAL FIRST FLOW | | 43.6 | 30.0 | 30.0 | F |
| C | FINAL FIRST FLOW | | 44.3 | | | |
| C | INITIAL FIRST CLOSED-IN | | 44.3 | 60.0 | 60.0 | C |
| D | FINAL FIRST CLOSED-IN | | 557.0 | | | |
| E | INITIAL SECOND FLOW | | 49.1 | 30.0 | 30.0 | F |
| F | FINAL SECOND FLOW | | 49.1 | | | |
| F | INITIAL SECOND CLOSED-IN | | 49.1 | 30.0 | 30.0 | C |
| G | FINAL SECOND CLOSED-IN | | 73.8 | | | |
| H | FINAL HYDROSTATIC | | 1972.4 | | | |

## EQUIPMENT & HOLE DATA

FORMATION TESTED: FT. SCOTT
NET PAY (ft): 3.0
GROSS TESTED FOOTAGE: 57.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2342
TOTAL DEPTH (ft): 4109.0
PACKER DEPTH(S) (ft): 4052
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.30
MUD VISCOSITY (sec): 58
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 125 @ 4104.0 ft

TICKET NUMBER: 43540500

DATE: 11-15-82 TEST NO: 3

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: B. CROSSWHITE

WITNESS: R. ROBBA

DRILLING CONTRACTOR: SLAWSON DRILLING #5

## FLUID PROPERTIES FOR RECOVERED MUD & WATER

| SOURCE | RESISTIVITY | | CHLORIDES |
|---|---|---|---|
| RECOVERY | @ °F | | 15000 ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |

## SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

## HYDROCARBON PROPERTIES

OIL GRAVITY (°API): @ °F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

## CUSHION DATA

| TYPE | AMOUNT | WEIGHT |
|---|---|---|
| | | |
| | | |

## RECOVERED:

5 FEET OF DRILLING MUD WITH NO SHOW OF OIL.

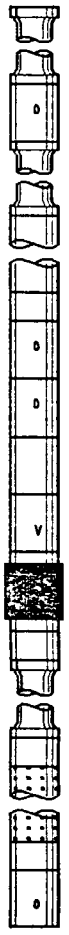
MEASURED FROM TESTER VALVE

## REMARKS:

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43540500

| TIME | CHOKE SIZE | SURFACE PRESSURE PSI | GAS RATE MCF | LIQUID RATE BPD | REMARKS |
|---|---|---|---|---|---|
| 11-15-82 | | | | | |
| 0425 | | | | | CALLED OUT. |
| 0545 | | | | | ON LOCATION, RIG PULLING DRILL |
| | | | | | PIPE. |
| 0730 | | | | | PICKED UP AND MADE UP TOOL. |
| 0810 | | | | | SET TOOL IN TABLE. |
| 0825 | | | | | STARTED TOOL TO BOTTOM. |
| 0936 | | | | | TOOL ON BOTTOM. |
| 0939 | | | | | OPENED TOOL WITH A WEAK BLOW- |
| | | | | | 1/2" DECREASING TO 1/4" IN |
| | | | | | BUCKET. |
| 1009 | | | | | CLOSED TOOL. |
| 1109 | | | | | OPENED TOOL WITH A WEAK SURFACE |
| | | | | | BLOW WHICH DIED IN 8 MINUTES. |
| 1139 | | | | | CLOSED TOOL. |
| 1209 | | | | | TOOL OFF BOTTOM. |
| 1325 | | | | | TOOL IN TABLE. |
| 1400 | | | | | TOOL BROKE AND LAID DOWN. |
| 1415 | | | | | JOB COMPLETED. |
| | | | | | |
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TICKET NO. 43540500



| | | O.D. | I.D. | LENGTH | DEPTH |
|---|---|---|---|---|---|
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 3904.0 | |
| 50 | IMPACT REVERSING SUB..... | 5.000 | 3.000 | 1.0 | 3904.0 |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 93.0 | |
| 3 | DRILL COLLARS..... | 6.250 | 2.250 | 31.0 | |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 12 | DUAL CIP VALVE..... | 5.000 | 0.870 | 6.0 | |
| 60 | HYDROSPRING TESTER..... | 5.000 | 0.750 | 5.0 | 4040.0 |
| 80 | AP RUNNING CASE..... | 5.000 | 3.060 | 4.0 | 4042.0 |
| 16 | VR SAFETY JOINT..... | 5.000 | 1.000 | 3.0 | |
| 70 | OPEN HOLE PACKER..... | 6.750 | 1.530 | 6.0 | 4052.0 |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 31.0 | |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 20 | FLUSH JOINT ANCHOR..... | 5.000 | 3.820 | 17.0 | |
| 83 | HT-500 TEMPERATURE CASE..... | 5.000 | | 1.0 | 4104.0 |
| 81 | BLANKED-OFF RUNNING CASE..... | 5.000 | | 4.0 | 4106.0 |
| | TOTAL DEPTH | | | | 4109.0 |

# EQUIPMENT DATA

# TEMPERATURE RECORDER CHART




10° each circle

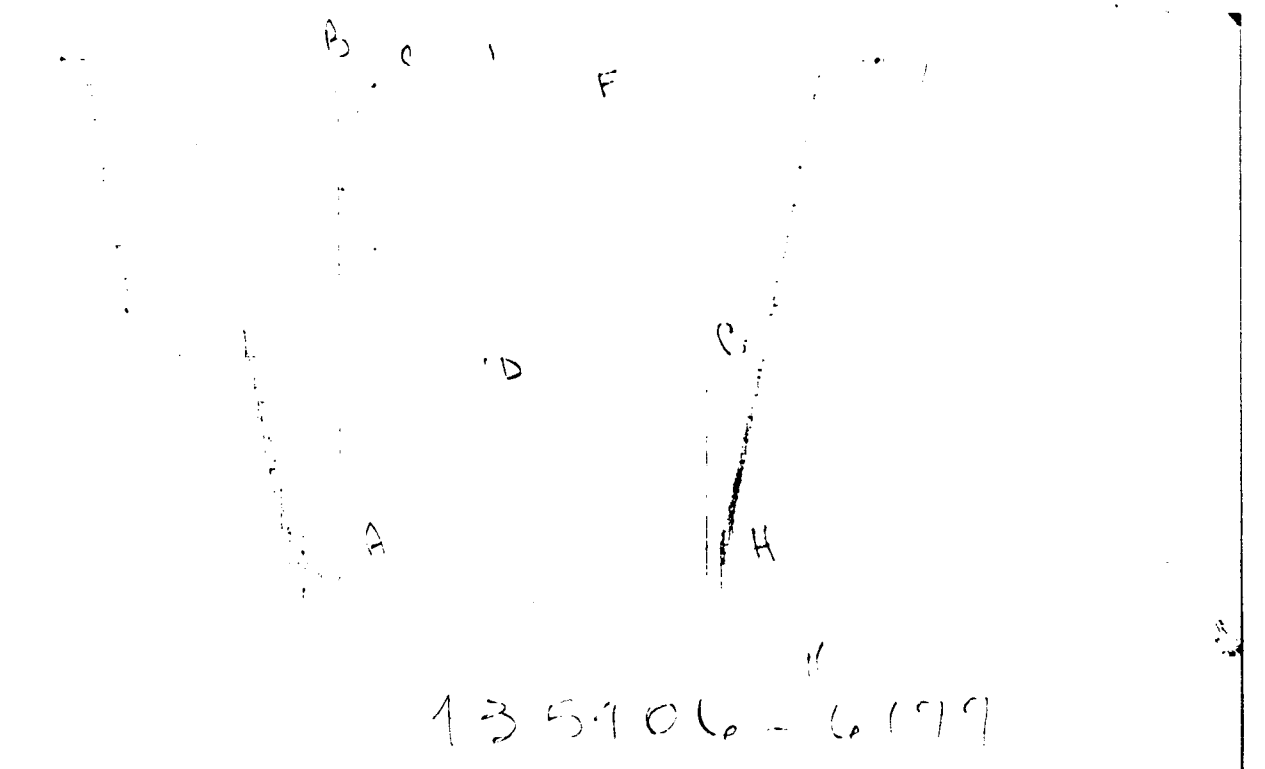
| | | |
|---|---|---|
| Indicated Flow Capacity | $kh = \frac{1637\ Q_g\ T}{m}$ | md-ft |
| Average Effective Permeability | $k = \frac{kh}{h}$ | md |
| Skin Factor | $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{kt}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$ | — |
| Damage Ratio | $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\ mS}$ | — |
| Indicated Flow Rate (Maximum) | $AOF_1 = \frac{Q_g\ m(P^*)}{m(P^*) - m(P_f)}$ | MCFD |
| Indicated Flow Rate (Minimum) | $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$ | MCFD |
| Approx. Radius of Investigation | $r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$ | ft |

HALLIBURTON
SERVICES

TICKET NO. 43540600
22-NOV-82
NESS CITY

# FORMATION TESTING SERVICE REPORT

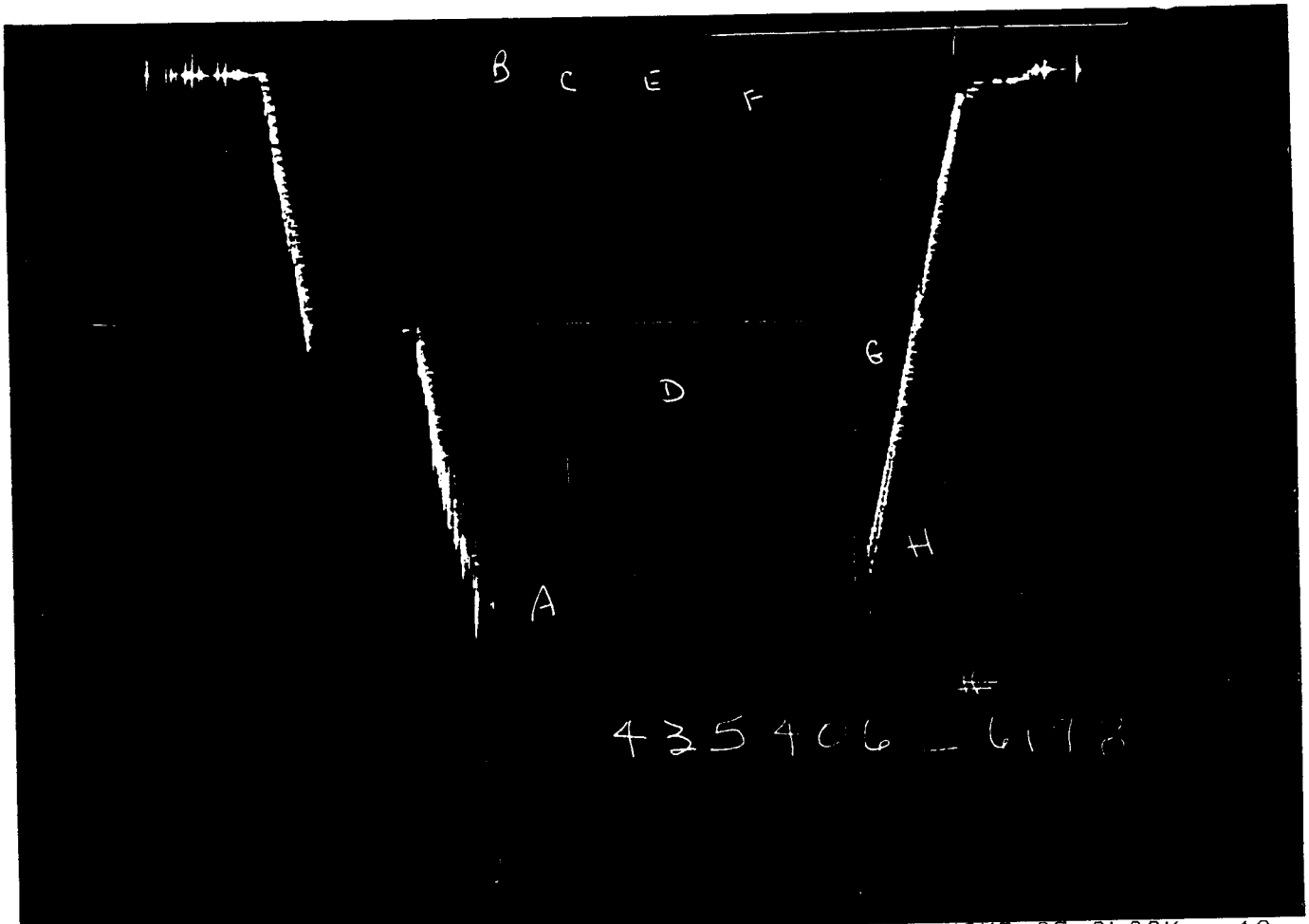
| | | | | | |
|---|---|---|---|---|---|
| MEIER | J-1 | 4 | 4106.' - 4194.' | | DONALD C. SLAWSON |
| LEASE NAME | WELL NO. | TEST NO. | TESTED INTERVAL | | LEASE OWNER/COMPANY NAME |
| LEGAL LOCATION SEC. - TWP. - RNG. 6-15S-26W | | FIELD AREA | | COUNTY GOVE | STATE KANSAS NM/NM |




1351061 - 6177

GAUGE NO: 6177 DEPTH: 4096.0 BLANKED OFF: NO HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | 1968 | 1973.0 | | | |
| B | INITIAL FIRST FLOW | 21 | 23.6 | 30.0 | 34.8 | F |
| C | FINAL FIRST FLOW | 42 | 45.6 | | | |
| C | INITIAL FIRST CLOSED-IN | 42 | 45.6 | 60.0 | 55.9 | C |
| D | FINAL FIRST CLOSED-IN | 1121 | 1124.6 | | | |
| E | INITIAL SECOND FLOW | 52 | 60.8 | 45.0 | 45.0 | F |
| F | FINAL SECOND FLOW | 73 | 79.8 | | | |
| F | INITIAL SECOND CLOSED-IN | 73 | 79.8 | 75.0 | 74.2 | C |
| G | FINAL SECOND CLOSED-IN | 1100 | 1098.1 | | | |
| H | FINAL HYDROSTATIC | 1168 | 1973.4 | | | |




GAUGE NO: 6178 DEPTH: 4191.0 BLANKED OFF: YES HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | | 2013.3 | | | |
| B | INITIAL FIRST FLOW | | 64.2 | 30.0 | 34.8 | F |
| C | FINAL FIRST FLOW | | 93.7 | | | |
| C | INITIAL FIRST CLOSED-IN | | 93.7 | 60.0 | 55.9 | C |
| D | FINAL FIRST CLOSED-IN | | 1169.2 | | | |
| E | INITIAL SECOND FLOW | | 106.1 | 45.0 | 45.0 | F |
| F | FINAL SECOND FLOW | | 126.6 | | | |
| F | INITIAL SECOND CLOSED-IN | | 126.6 | 75.0 | 74.2 | C |
| G | FINAL SECOND CLOSED-IN | | 1144.9 | | | |
| H | FINAL HYDROSTATIC | | 2017.2 | | | |

# EQUIPMENT & HOLE DATA

FORMATION TESTED: MISSISSIPPI
NET PAY (ft): 4.0
GROSS TESTED FOOTAGE: 88.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2342
TOTAL DEPTH (ft): 4194.0
PACKER DEPTH(S) (ft): 4106
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.40
MUD VISCOSITY (sec): 60
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 132 @ 4189.0 ft

TICKET NUMBER: 43540600

DATE: 11-16-82 TEST NO: 4

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: B. CROSSWHITE

WITNESS: R. ROBBA

DRILLING CONTRACTOR: SLAWSON # 5

# FLUID PROPERTIES FOR RECOVERED MUD & WATER

| SOURCE | RESISTIVITY | CHLORIDES |
|---|---|---|
| RECOVERY | @ °F | 14000 ppm |
| | @ °F | ppm |
| | @ °F | ppm |
| | @ °F | ppm |
| | @ °F | ppm |
| | @ °F | ppm |

# SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

# HYDROCARBON PROPERTIES

OIL GRAVITY (°API): 40.0 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

# CUSHION DATA

| TYPE | AMOUNT | WEIGHT |
|---|---|---|
| | | |
| | | |

# RECOVERED:

210 FEET OF GAS IN THE PIPE
15 FEET OF CLEAN OIL
135 FEET OF OIL CUT MUD
(10% OIL, 10% WATER AND 80% MUD)

MEASURED FROM TESTER VALVE

# REMARKS:

| TYPE & SIZE MEASURING DEVICE: _____ | | | | | TICKET NO: 43540600 |
|---|---|---|---|---|---|
| TIME | CHOKE SIZE | SURFACE PRESSURE PSI | GAS RATE MCF | LIQUID RATE BPD | REMARKS |
| 11-16-82 | | | | | |
| 0010 | | | | | CALLED OUT. |
| 0140 | | | | | ON LOCATION; RIG PULLING DRILL |
| | | | | | PIPE. |
| 0235 | | | | | PICKED UP AND MADE UP TOOL. |
| 0320 | | | | | SET TOOL IN THE TABLE. |
| 0330 | | | | | STARTED TOOL TO BOTTOM |
| 0600 | | | | | TOOL ON BOTTOM. |
| 0603 | | | | | OPENED TOOL - WEAK BLOW IN- |
| | | | | | CREASING TO 1 1/2" IN THE |
| | | | | | BUCKET. |
| 0633 | | | | | CLOSED TOOL. |
| 0733 | | | | | OPENED TOOL WITH A WEAK BLOW |
| | | | | | WHICH WAS INCREASING TO 1 1/2" |
| | | | | | IN THE BUCKET. |
| 0818 | | | | | CLOSED TOOL. |
| 0933 | | | | | TOOL OFF BOTTOM. |
| 1055 | | | | | TOOL IN THE TABLE. |
| 1135 | | | | | TOOL BROKE AND LAID DOWN. |
| 1200 | | | | | JOB COMPLETE. |
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| TICKET NO: 43540600 | GAUGE NO: 6177 |
|---|---|
| CLOCK NO: 13855 HOUR: 12 | DEPTH: 4096.0 |

HALLIBURTON SERVICES

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 23.6 | | | |
| | 2 | 5.0 | 21.1 | -2.5 | | |
| | 3 | 10.0 | 24.4 | 3.4 | | |
| | 4 | 15.0 | 29.4 | 4.9 | | |
| | 5 | 20.0 | 33.4 | 4.1 | | |
| | 6 | 25.0 | 37.1 | 3.7 | | |
| | 7 | 30.0 | 41.2 | 4.1 | | |
| C | 8 | 34.8 | 45.6 | 4.4 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 45.6 | | | |
| | 2 | 4.0 | 569.6 | 524.0 | 3.6 | 0.984 |
| | 3 | 8.0 | 842.6 | 797.0 | 6.5 | 0.731 |
| | 4 | 12.0 | 932.3 | 886.7 | 8.9 | 0.593 |
| | 5 | 16.0 | 978.7 | 933.1 | 10.9 | 0.503 |
| | 6 | 20.0 | 1013.4 | 967.8 | 12.7 | 0.438 |
| | 7 | 24.0 | 1037.5 | 991.9 | 14.2 | 0.390 |
| | 8 | 28.0 | 1056.8 | 1011.2 | 15.5 | 0.351 |
| | 9 | 32.0 | 1072.7 | 1027.1 | 16.7 | 0.320 |
| | 10 | 36.0 | 1085.3 | 1039.7 | 17.7 | 0.294 |
| | 11 | 40.0 | 1096.1 | 1050.5 | 18.6 | 0.272 |
| | 12 | 44.0 | 1105.1 | 1059.5 | 19.4 | 0.254 |
| | 13 | 48.0 | 1112.7 | 1067.1 | 20.2 | 0.237 |
| | 14 | 52.0 | 1119.5 | 1073.9 | 20.9 | 0.223 |
| D | 15 | 55.9 | 1124.6 | 1079.0 | 21.5 | 0.210 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 60.8 | | | |
| | 2 | 5.0 | 56.2 | -4.6 | | |
| | 3 | 10.0 | 59.3 | 3.1 | | |
| | 4 | 15.0 | 62.8 | 3.5 | | |
| | 5 | 20.0 | 66.6 | 3.8 | | |
| | 6 | 25.0 | 69.7 | 3.1 | | |
| | 7 | 30.0 | 72.1 | 2.4 | | |
| | 8 | 35.0 | 74.4 | 2.3 | | |
| | 9 | 40.0 | 76.6 | 2.2 | | |
| F | 10 | 45.0 | 79.8 | 3.1 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 79.8 | | | |
| | 2 | 5.0 | 652.4 | 572.6 | 4.7 | 1.229 |
| | 3 | 10.0 | 844.2 | 764.5 | 8.9 | 0.955 |
| | 4 | 15.0 | 911.7 | 832.0 | 12.6 | 0.801 |
| | 5 | 20.0 | 951.3 | 871.5 | 16.0 | 0.699 |
| | 6 | 25.0 | 979.9 | 900.1 | 19.0 | 0.623 |
| | 7 | 30.0 | 1001.8 | 922.0 | 21.8 | 0.563 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 8 | 35.0 | 1020.5 | 940.7 | 24.3 | 0.516 |
| | 9 | 40.0 | 1034.9 | 955.1 | 26.7 | 0.476 |
| | 10 | 45.0 | 1048.0 | 968.2 | 28.8 | 0.443 |
| | 11 | 50.0 | 1059.5 | 979.7 | 30.7 | 0.415 |
| | 12 | 55.0 | 1068.9 | 989.1 | 32.6 | 0.390 |
| | 13 | 60.0 | 1078.7 | 998.9 | 34.3 | 0.367 |
| | 14 | 65.0 | 1086.4 | 1006.7 | 35.8 | 0.348 |
| | 15 | 70.0 | 1093.9 | 1014.2 | 37.3 | 0.330 |
| G | 16 | 74.2 | 1098.1 | 1018.4 | 38.5 | 0.317 |

REMARKS:

| TICKET NO: 43540600 | | GAUGE NO: 6178 |
|---|---|---|
| CLOCK NO: 3930 HOUR: 12 | HALLIBURTON SERVICES | DEPTH: 4191.0 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 64.2 | | | |
| | 2 | 5.0 | 65.7 | 1.5 | | |
| | 3 | 10.0 | 71.8 | 6.1 | | |
| | 4 | 15.0 | 76.6 | 4.8 | | |
| | 5 | 20.0 | 81.6 | 5.1 | | |
| | 6 | 25.0 | 85.8 | 4.2 | | |
| | 7 | 30.0 | 90.9 | 5.1 | | |
| C | 8 | 34.8 | 93.7 | 2.8 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 93.7 | | | |
| | 2 | 4.0 | 621.5 | 527.8 | 3.6 | 0.989 |
| | 3 | 8.0 | 898.2 | 804.5 | 6.5 | 0.729 |
| | 4 | 12.0 | 983.0 | 889.3 | 8.9 | 0.592 |
| | 5 | 16.0 | 1029.1 | 935.4 | 10.9 | 0.503 |
| | 6 | 20.0 | 1061.7 | 968.0 | 12.7 | 0.439 |
| | 7 | 24.0 | 1085.8 | 992.1 | 14.2 | 0.390 |
| | 8 | 28.0 | 1104.8 | 1011.1 | 15.5 | 0.351 |
| | 9 | 32.0 | 1120.6 | 1026.9 | 16.7 | 0.320 |
| | 10 | 36.0 | 1132.9 | 1039.2 | 17.7 | 0.294 |
| | 11 | 40.0 | 1142.7 | 1049.0 | 18.6 | 0.272 |
| | 12 | 44.0 | 1151.7 | 1058.0 | 19.5 | 0.253 |
| | 13 | 48.0 | 1159.1 | 1065.4 | 20.2 | 0.237 |
| | 14 | 52.0 | 1165.2 | 1071.5 | 20.9 | 0.223 |
| D | 15 | 55.9 | 1169.2 | 1075.4 | 21.5 | 0.210 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 106.1 | | | |
| | 2 | 5.0 | 102.2 | -3.9 | | |
| | 3 | 10.0 | 105.5 | 3.2 | | |
| | 4 | 15.0 | 109.7 | 4.3 | | |
| | 5 | 20.0 | 114.3 | 4.6 | | |
| | 6 | 25.0 | 116.8 | 2.5 | | |
| | 7 | 30.0 | 119.5 | 2.6 | | |
| | 8 | 35.0 | 122.4 | 2.9 | | |
| | 9 | 40.0 | 124.5 | 2.1 | | |
| F | 10 | 45.0 | 126.6 | 2.0 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 126.6 | | | |
| | 2 | 5.0 | 704.0 | 577.5 | 4.7 | 1.229 |
| | 3 | 10.0 | 897.2 | 770.6 | 8.9 | 0.954 |
| | 4 | 15.0 | 962.8 | 836.2 | 12.7 | 0.800 |
| | 5 | 20.0 | 1002.9 | 876.4 | 16.0 | 0.698 |
| | 6 | 25.0 | 1029.5 | 903.0 | 19.0 | 0.622 |
| | 7 | 30.0 | 1051.8 | 925.2 | 21.8 | 0.564 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 8 | 35.0 | 1068.0 | 941.5 | 24.3 | 0.516 |
| | 9 | 40.0 | 1082.9 | 956.3 | 26.7 | 0.476 |
| | 10 | 45.0 | 1095.6 | 969.0 | 28.8 | 0.443 |
| | 11 | 50.0 | 1106.5 | 979.9 | 30.7 | 0.415 |
| | 12 | 55.0 | 1116.0 | 989.5 | 32.6 | 0.389 |
| | 13 | 60.0 | 1124.9 | 998.3 | 34.3 | 0.367 |
| | 14 | 65.0 | 1132.4 | 1005.8 | 35.8 | 0.348 |
| | 15 | 70.0 | 1139.5 | 1012.9 | 37.3 | 0.331 |
| G | 16 | 74.2 | 1144.9 | 1018.3 | 38.5 | 0.317 |

REMARKS:

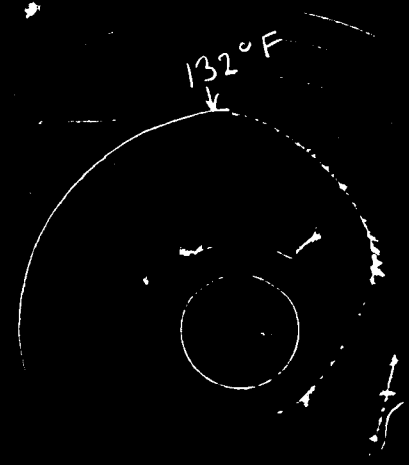
TICKET NO. 43540600

| | | O.D. | I.D. | LENGTH | DEPTH |
|---|---|---|---|---|---|
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 3959.0 | |
| 50 | IMPACT REVERSING SUB..... | 5.000 | 3.000 | 1.0 | 3959.0 |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 124.0 | |
| 12 | DUAL CIP VALVE..... | 5.000 | 0.870 | 6.0 | |
| 60 | HYDROSPRING TESTER..... | 5.000 | 0.750 | 5.0 | 4094.0 |
| 80 | AP RUNNING CASE..... | 5.000 | 3.060 | 4.0 | 4096.0 |
| 16 | VR SAFETY JOINT..... | 5.000 | 1.000 | 3.0 | |
| 70 | OPEN HOLE PACKER..... | 6.750 | 1.530 | 6.0 | 4106.0 |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 62.0 | |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 20 | FLUSH JOINT ANCHOR..... | 5.000 | 3.820 | 17.0 | |
| 83 | HT-500 TEMPERATURE CASE..... | 5.000 | | 1.0 | 4189.0 |
| 81 | BLANKED-OFF RUNNING CASE..... | 5.000 | | 4.0 | 4191.0 |

TOTAL DEPTH 4194.0

# EQUIPMENT DATA

# TEMPERATURE RECORDER CHART




435406

10° each circle

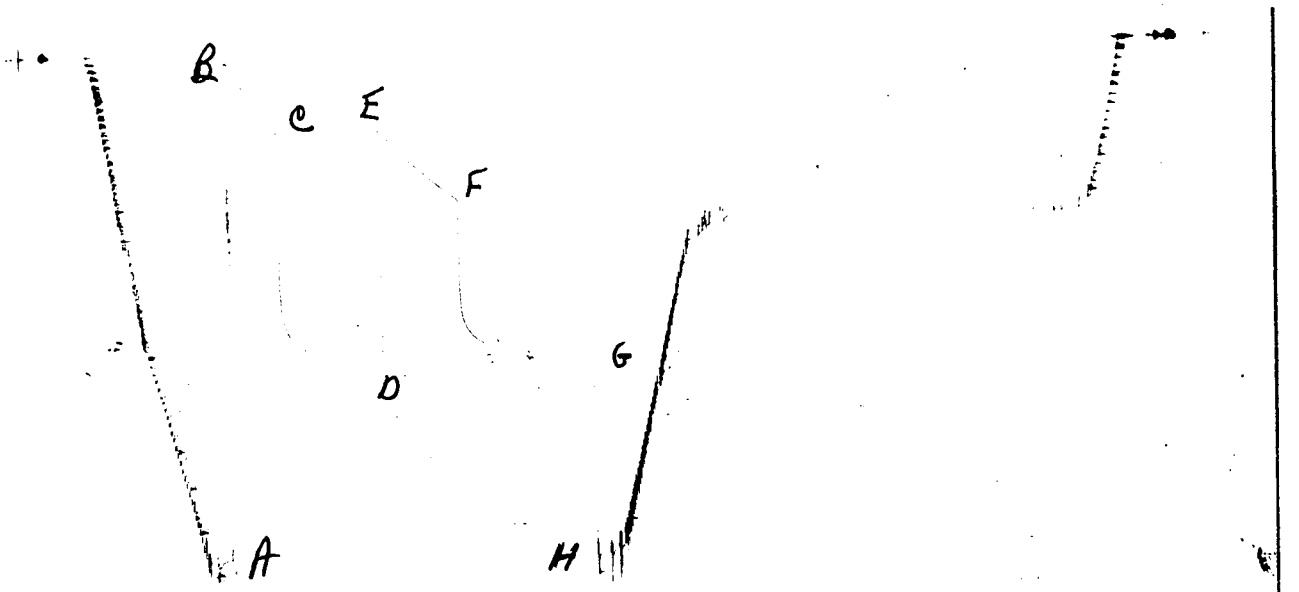
| | | |
|---|---|---|
| Indicated Flow Capacity | $kh = \frac{1637\ Q_g\ T}{m}$ | md-ft |
| Average Effective Permeability | $k = \frac{kh}{h}$ | md |
| Skin Factor | $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{kt}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$ | — |
| Damage Ratio | $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\ mS}$ | — |
| Indicated Flow Rate (Maximum) | $AOF_1 = \frac{Q_g\ m(P^*)}{m(P^*) - m(P_f)}$ | MCFD |
| Indicated Flow Rate (Minimum) | $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$ | MCFD |
| Approx. Radius of Investigation | $r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$ | ft |

HALLIBURTON
SERVICES

TICKET NO. 43540700
22-NOV-82
NESS CITY

# FORMATION TESTING SERVICE REPORT

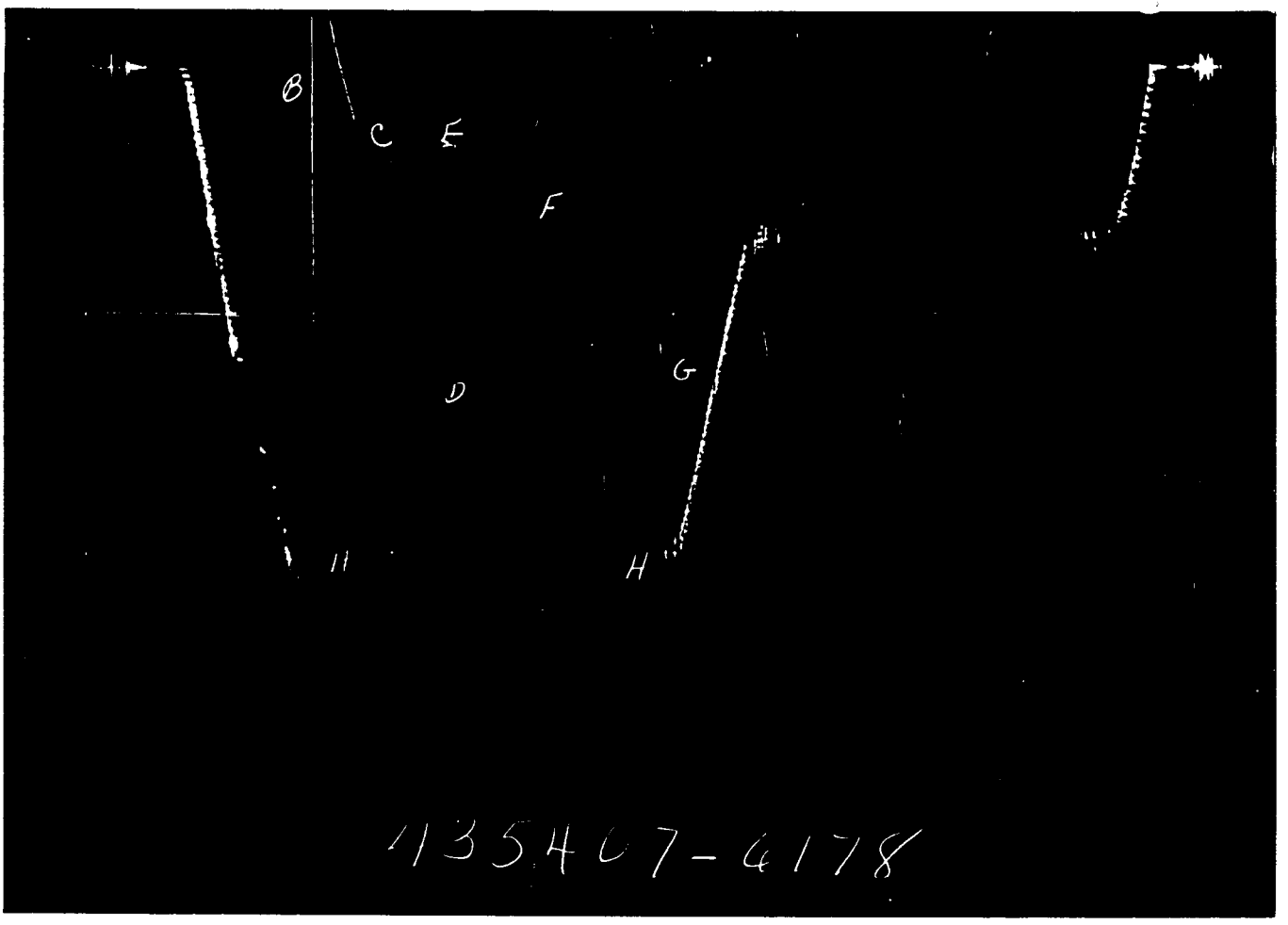
| | | | | | |
|---|---|---|---|---|---|
| MEIER | J-1 | 5 | 4194.' - 4202.' | | DONALD C. SLAWSON |
| LEASE NAME | WELL NO. | TEST NO. | TESTED INTERVAL | | LEASE OWNER/COMPANY NAME |
| LEGAL LOCATION SEC. - TWP. - RNG. 6 - 15S - 26W | | FIELD AREA | COUNTY GOVE | STATE KANSAS | OR/PW |




435407-6177

GAUGE NO: 6177 DEPTH: 4184.0 BLANKED OFF: NO HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | 2010 | 2020.8 | | | |
| B | INITIAL FIRST FLOW | 42 | 37.1 | 30.0 | 29.9 | F |
| C | FINAL FIRST FLOW | 293 | 289.7 | | | |
| C | INITIAL FIRST CLOSED-IN | 293 | 289.7 | 60.0 | 59.1 | C |
| D | FINAL FIRST CLOSED-IN | 1215 | 1229.0 | | | |
| E | INITIAL SECOND FLOW | 304 | 305.9 | 45.0 | 45.5 | F |
| F | FINAL SECOND FLOW | 576 | 585.0 | | | |
| F | INITIAL SECOND CLOSED-IN | 576 | 585.0 | 75.0 | 75.5 | C |
| G | FINAL SECOND CLOSED-IN | 1204 | 1220.4 | | | |
| H | FINAL HYDROSTATIC | 2000 | 2018.9 | | | |




GAUGE NO: 6178 DEPTH: 4199.0 BLANKED OFF: YES HOUR OF CLOCK: 12

| ID | DESCRIPTION | PRESSURE | | TIME | | TYPE |
|---|---|---|---|---|---|---|
| | | REPORTED | CALCULATED | REPORTED | CALCULATED | |
| A | INITIAL HYDROSTATIC | | 2018.7 | | | |
| B | INITIAL FIRST FLOW | | 53.9 | 30.0 | 29.9 | F |
| C | FINAL FIRST FLOW | | 299.7 | | | |
| C | INITIAL FIRST CLOSED-IN | | 299.7 | 60.0 | 59.1 | C |
| D | FINAL FIRST CLOSED-IN | | 1229.4 | | | |
| E | INITIAL SECOND FLOW | | 311.5 | 45.0 | 45.5 | F |
| F | FINAL SECOND FLOW | | 590.2 | | | |
| F | INITIAL SECOND CLOSED-IN | | 590.2 | 75.0 | 75.5 | C |
| G | FINAL SECOND CLOSED-IN | | 1222.1 | | | |
| H | FINAL HYDROSTATIC | | 2016.3 | | | |

# EQUIPMENT & HOLE DATA

FORMATION TESTED: MISSISSIPPI
NET PAY (ft): 5.0
GROSS TESTED FOOTAGE: 8.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2342
TOTAL DEPTH (ft): 4202.0
PACKER DEPTH(S) (ft): 4194
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.30
MUD VISCOSITY (sec): 51
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 141 @ 4197.0 ft

TICKET NUMBER: 43540700

DATE: 11-16-82 TEST NO: 5

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: B. CROSSWHITE

WITNESS: R. ROBBA

DRILLING CONTRACTOR: SLAWSON #5

# FLUID PROPERTIES FOR RECOVERED MUD & WATER

| SOURCE | RESISTIVITY | | CHLORIDES |
|---|---|---|---|
| RECOVERY | @ °F | | 21000 ppm |
| PIT | @ °F | | 12000 ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |
| | @ °F | | ppm |

# SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

# HYDROCARBON PROPERTIES

OIL GRAVITY (°API): 39.5 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

# CUSHION DATA

| TYPE | AMOUNT | WEIGHT |
|---|---|---|
| | | |
| | | |

# RECOVERED:

435 FEET OF GAS IN PIPE
337 FEET OF CLEAN GASSY OIL
956 FEET OF SALTWATER
1293 FEET OF TOTAL FLUID

MEASURED FROM TESTER VALVE

# REMARKS:

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43540700

| TIME | CHOKE SIZE | SURFACE PRESSURE PSI | GAS RATE MCF | LIQUID RATE BPD | REMARKS |
|---|---|---|---|---|---|
| 11-16-82 | | | | | |
| 1730 | | | | | CALLED OUT |
| 1935 | | | | | ON LOCATION; RIG PULLING |
| | | | | | DRILL PIPE. |
| 2110 | | | | | PICKED-UP AND MADE-UP TOOL. |
| 2120 | | | | | SET TOOL IN TABLE. |
| 2140 | | | | | STARTED TOOL TO BOTTOM. |
| 2302 | | | | | TOOL ON BOTTOM. |
| 2305 | | | | | OPENED TOOL WITH A WEAK BLOW |
| | | | | | INCREASING TO A STRONG BLOW |
| | | | | | ON BOTTOM OF BUCKET IN 11 |
| | | | | | MINUTES. |
| 2335 | | | | | CLOSED TOOL. |
| 11-17-82 | | | | | |
| 0035 | | | | | REOPENED TOOL WITH A WEAK BLOW |
| | | | | | INCREASING TO A STRONG BLOW ON |
| | | | | | BOTTOM OF BUCKET IN 5 MINUTES. |
| 0120 | | | | | CLOSED TOOL |
| 0235 | | | | | TOOL OFF BOTTOM |
| 0400 | | | | | HANG TEST - WAITED ON WATER |
| | | | | | TRUCK. |
| 0645 | | | | | REVERSED FLUID |
| 0715 | | | | | PULLED DRILL PIPE |
| 0800 | | | | | TOOL IN TABLE |
| 0830 | | | | | TOOL BROKE AND LAID DOWN |
| 0930 | | | | | JOB COMPLETED |
| | | | | | |
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| TICKET NO: 43540700 | GAUGE NO: 6177 |
|---|---|
| CLOCK NO: 13855 HOUR: 12 | DEPTH: 4184.0 |

HALLIBURTON SERVICES

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 37.1 | | | |
| | 2 | 5.0 | 89.6 | 52.5 | | |
| | 3 | 10.0 | 134.4 | 44.8 | | |
| | 4 | 15.0 | 177.1 | 42.8 | | |
| | 5 | 20.0 | 215.8 | 38.7 | | |
| | 6 | 25.0 | 255.3 | 39.5 | | |
| C | 7 | 29.9 | 289.7 | 34.4 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 289.7 | | | |
| | 2 | 4.0 | 1105.4 | 815.7 | 3.5 | 0.930 |
| | 3 | 8.0 | 1144.3 | 854.5 | 6.3 | 0.674 |
| | 4 | 12.0 | 1165.9 | 876.1 | 8.6 | 0.542 |
| | 5 | 16.0 | 1180.6 | 890.9 | 10.4 | 0.458 |
| | 6 | 20.0 | 1191.0 | 901.3 | 12.0 | 0.396 |
| | 7 | 24.0 | 1198.5 | 908.8 | 13.3 | 0.351 |
| | 8 | 28.0 | 1205.3 | 915.6 | 14.4 | 0.315 |
| | 9 | 32.0 | 1209.9 | 920.2 | 15.5 | 0.286 |
| | 10 | 36.0 | 1213.7 | 923.9 | 16.3 | 0.262 |
| | 11 | 40.0 | 1217.3 | 927.6 | 17.1 | 0.242 |
| | 12 | 44.0 | 1219.8 | 930.1 | 17.8 | 0.225 |
| | 13 | 48.0 | 1222.4 | 932.7 | 18.4 | 0.210 |
| | 14 | 52.0 | 1224.8 | 935.1 | 19.0 | 0.197 |
| | 15 | 56.0 | 1226.6 | 936.9 | 19.5 | 0.186 |
| D | 16 | 59.1 | 1229.0 | 939.3 | 19.8 | 0.178 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 305.9 | | | |
| | 2 | 9.0 | 367.3 | 61.4 | | |
| | 3 | 18.0 | 427.3 | 60.0 | | |
| | 4 | 27.0 | 485.1 | 57.9 | | |
| | 5 | 36.0 | 534.7 | 49.6 | | |
| F | 6 | 45.5 | 585.0 | 50.3 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 585.0 | | | |
| | 2 | 5.0 | 1108.9 | 523.9 | 4.7 | 1.206 |
| | 3 | 10.0 | 1142.9 | 557.9 | 8.8 | 0.931 |
| | 4 | 15.0 | 1160.6 | 575.6 | 12.5 | 0.780 |
| | 5 | 20.0 | 1173.6 | 588.6 | 15.8 | 0.678 |
| | 6 | 25.0 | 1182.6 | 597.6 | 18.8 | 0.603 |
| | 7 | 30.0 | 1190.3 | 605.3 | 21.5 | 0.545 |
| | 8 | 35.0 | 1195.5 | 610.5 | 23.9 | 0.499 |
| | 9 | 40.0 | 1200.4 | 615.4 | 26.1 | 0.460 |
| | 10 | 45.0 | 1203.8 | 618.7 | 28.2 | 0.428 |
| | 11 | 50.0 | 1208.2 | 623.2 | 30.1 | 0.399 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 12 | 55.0 | 1211.3 | 626.3 | 31.8 | 0.375 |
| | 13 | 60.0 | 1213.4 | 628.4 | 33.4 | 0.353 |
| | 14 | 65.0 | 1216.3 | 631.3 | 34.9 | 0.334 |
| | 15 | 70.0 | 1218.2 | 633.2 | 36.3 | 0.317 |
| G | 16 | 75.5 | 1220.4 | 635.3 | 37.7 | 0.301 |

REMARKS:

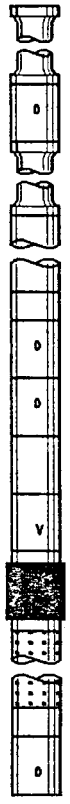
| TICKET NO: 43540700 | | GAUGE NO: 6178 |
|---|---|---|
| CLOCK NO: 3930 HOUR: 12 | HALLIBURTON SERVICES | DEPTH: 4199.0 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | **FIRST FLOW** | | | |
| B | 1 | 0.0 | 53.9 | | | |
| | 2 | 5.0 | 97.3 | 43.4 | | |
| | 3 | 10.0 | 141.6 | 44.3 | | |
| | 4 | 15.0 | 186.6 | 45.0 | | |
| | 5 | 20.0 | 227.9 | 41.3 | | |
| | 6 | 25.0 | 265.4 | 37.5 | | |
| C | 7 | 29.9 | 299.7 | 34.3 | | |
| | | | **FIRST CLOSED-IN** | | | |
| C | 1 | 0.0 | 299.7 | | | |
| | 2 | 4.0 | 1109.9 | 810.2 | 3.6 | 0.923 |
| | 3 | 8.0 | 1148.5 | 848.8 | 6.3 | 0.676 |
| | 4 | 12.0 | 1170.3 | 870.6 | 8.5 | 0.543 |
| | 5 | 16.0 | 1184.3 | 884.6 | 10.4 | 0.457 |
| | 6 | 20.0 | 1193.9 | 894.2 | 12.0 | 0.397 |
| | 7 | 24.0 | 1201.0 | 901.3 | 13.3 | 0.351 |
| | 8 | 28.0 | 1206.8 | 907.1 | 14.4 | 0.315 |
| | 9 | 32.0 | 1211.7 | 912.0 | 15.4 | 0.286 |
| | 10 | 36.0 | 1215.3 | 915.6 | 16.3 | 0.262 |
| | 11 | 40.0 | 1218.9 | 919.2 | 17.1 | 0.242 |
| | 12 | 44.0 | 1222.4 | 922.7 | 17.8 | 0.225 |
| | 13 | 48.0 | 1224.9 | 925.2 | 18.4 | 0.210 |
| | 14 | 52.0 | 1226.7 | 927.0 | 19.0 | 0.197 |
| | 15 | 56.0 | 1228.1 | 928.4 | 19.5 | 0.186 |
| D | 16 | 59.1 | 1229.4 | 929.7 | 19.8 | 0.178 |
| | | | **SECOND FLOW** | | | |
| E | 1 | 0.0 | 311.5 | | | |
| | 2 | 9.0 | 377.5 | 66.0 | | |
| | 3 | 18.0 | 438.8 | 61.4 | | |
| | 4 | 27.0 | 495.4 | 56.6 | | |
| | 5 | 36.0 | 546.2 | 50.7 | | |
| F | 6 | 45.5 | 590.2 | 44.1 | | |
| | | | **SECOND CLOSED-IN** | | | |
| F | 1 | 0.0 | 590.2 | | | |
| | 2 | 5.0 | 1116.2 | 526.0 | 4.7 | 1.204 |
| | 3 | 10.0 | 1150.3 | 560.1 | 8.8 | 0.931 |
| | 4 | 15.0 | 1166.0 | 575.8 | 12.5 | 0.779 |
| | 5 | 20.0 | 1178.6 | 588.4 | 15.8 | 0.678 |
| | 6 | 25.0 | 1187.0 | 596.8 | 18.8 | 0.604 |
| | 7 | 30.0 | 1193.5 | 603.3 | 21.5 | 0.546 |
| | 8 | 35.0 | 1199.3 | 609.1 | 23.9 | 0.499 |
| | 9 | 40.0 | 1203.6 | 613.4 | 26.1 | 0.460 |
| | 10 | 45.0 | 1206.8 | 616.5 | 28.2 | 0.427 |
| | 11 | 50.0 | 1210.2 | 619.9 | 30.1 | 0.399 |

| REF | | MINUTES | PRESSURE | ΔP | $\frac{t \times \Delta t}{t+\Delta t}$ | $\log \frac{t+\Delta t}{\Delta t}$ |
|---|---|---|---|---|---|---|
| | | | SECOND CLOSED-IN - CONTINUED | | | |
| | 12 | 55.0 | 1213.1 | 622.9 | 31.8 | 0.375 |
| | 13 | 60.0 | 1215.6 | 625.4 | 33.4 | 0.354 |
| | 14 | 65.0 | 1217.8 | 627.6 | 34.9 | 0.335 |
| | 15 | 70.0 | 1219.8 | 629.5 | 36.3 | 0.318 |
| G | 16 | 75.5 | 1222.1 | 631.8 | 37.7 | 0.301 |

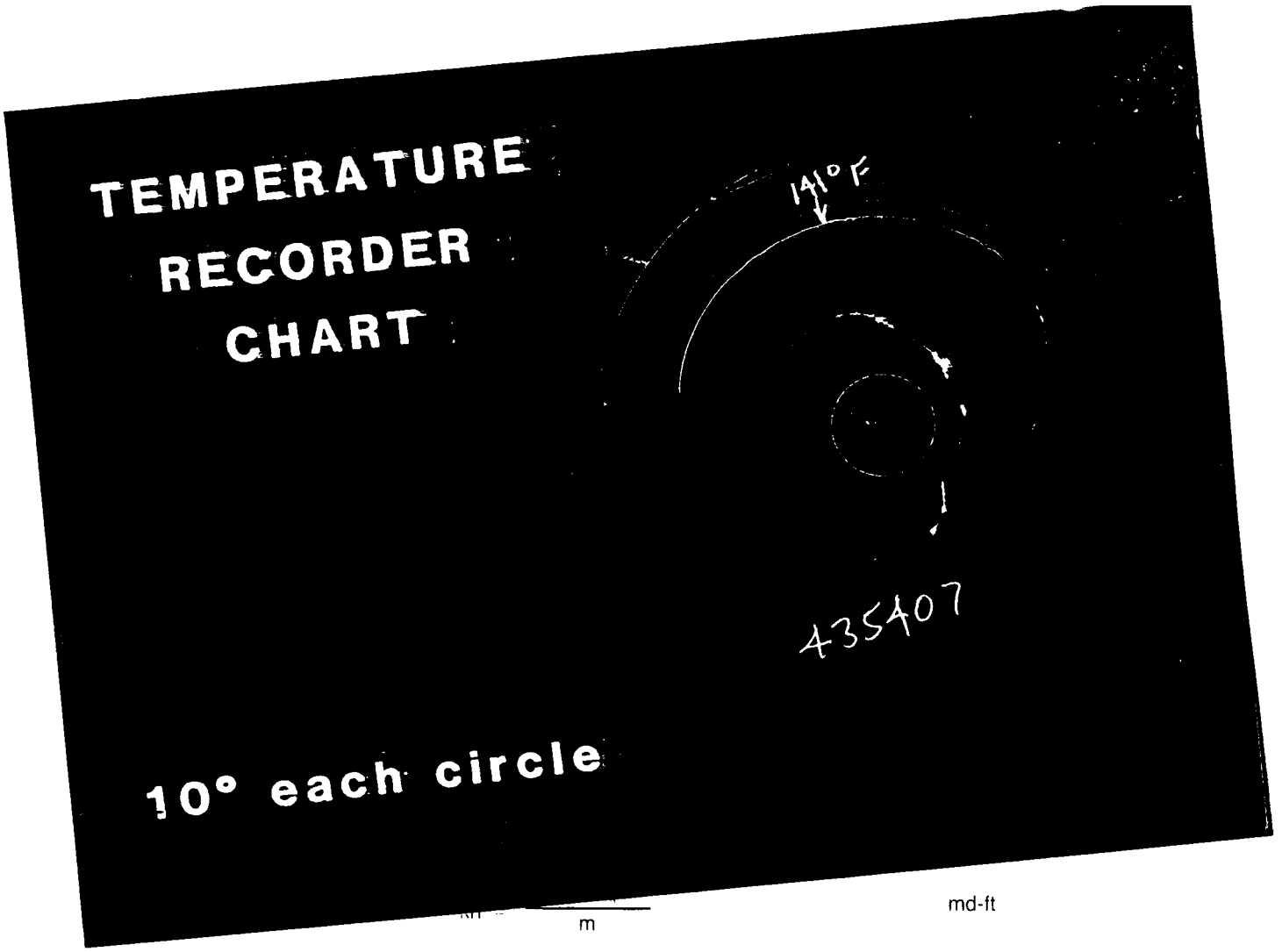
REMARKS:

TICKET NO. 43540700



| | | O.D. | I.D. | LENGTH | DEPTH |
|---|---|---|---|---|---|
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 4047.0 | |
| 50 | IMPACT REVERSING SUB..... | 5.000 | 3.000 | 1.0 | 4047.0 |
| 1 | DRILL PIPE..... | 4.500 | 3.826 | 93.0 | |
| 3 | DRILL COLLARS..... | 6.250 | 2.250 | 30.0 | |
| 5 | CROSSOVER..... | 5.000 | 3.000 | 1.0 | |
| 12 | DUAL CIP VALVE..... | 5.000 | 0.870 | 6.0 | |
| 60 | HYDROSPRING TESTER..... | 5.000 | 0.750 | 5.0 | 4182.0 |
| 80 | AP RUNNING CASE..... | 5.000 | 3.060 | 4.0 | 4184.0 |
| 16 | VR SAFETY JOINT..... | 5.000 | 1.000 | 3.0 | |
| 70 | OPEN HOLE PACKER..... | 6.750 | 1.530 | 6.0 | 4194.0 |
| 20 | FLUSH JOINT ANCHOR..... | 5.000 | 3.820 | 1.0 | |
| 83 | HT-500 TEMPERATURE CASE..... | 5.000 | | 1.0 | 4197.0 |
| 81 | BLANKED-OFF RUNNING CASE..... | 5.000 | | 4.0 | 4199.0 |
| | TOTAL DEPTH | | | | 4202.0 |

# EQUIPMENT DATA




| | | |
|---|---|---|
| | $\frac{}{m}$ | md-ft |
| Average Effective Permeability | $k = \frac{kh}{h}$ | md |
| Skin Factor | $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{kt}{\phi \mu c_t r_w^2} + 3.23 \right]$ | — |
| Damage Ratio | $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\, mS}$ | — |
| Indicated Flow Rate (Maximum) | $AOF_1 = \frac{Q_g\, m(P^*)}{m(P^*) - m(P_f)}$ | MCFD |
| Indicated Flow Rate (Minimum) | $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$ | MCFD |
| Approx. Radius of Investigation | $r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$ | ft |