

# SUPERIOR TESTERS

RR #1, Box 295B, Great Bend, Kansas

Date 9 13 84 Location CW12-SE-SE 2-19-17 Elevation 2090 6h County Rush  
 Company Thunderbird Drilling, Inc Number of Copies 5  
 Address P.O. Box 18407 Wichita, Ks 67218  
 Charts Mailed to P.O. Box 18407 Wichita, Ks 67218  
 Invoice Mailed to P.O. Box 18407 Wichita, Ks 67218  
 Lease Bizek Well No. 1 Formation Tested Arb Test No. 1  
 Depth 3865 Tested from 3815 to 3865 Packer Size 6 3/4 Anchor Length 50'  
 Top Packer Depth 3810 ft. Bottom Packer Depth 3815 ft. Dual Packers yes  
 Tool Joint Size 4 1/2 XH Tool Size 5 1/2 OD Hole Size 7 3/8 Did Packer Hold yes  
 Drilling Contractor T Bird Drilling Rig #1  
 Length Drill Pipe 3219 I.D. Drill Pipe 3.80 Tool Joint Size 4 1/2 FH  
 Length Weight Pipe 567 I.D. Weight Pipe 2.75 Tool Joint Size 4 1/2 XH  
 Length Drill Collars — I.D. Drill Collars — Tool Joint Size —

Tool Open I.F.P. from 4:30 Am to 5:00 Am 30 min  
 Tool Closed I.C.I.P. from 5:00 Am to 5:45 Am 45 min  
 Tool Open F.F.P. from 5:45 Am to 6:45 Am 60 min  
 Tool Closed F.C.I.P. from 6:45 Am to 7:30 Am 45 min

|                     |                          |        |
|---------------------|--------------------------|--------|
| from [B] <u>83</u>  | P.S.I. to [C] <u>119</u> | P.S.I. |
| [D] <u>1198</u>     |                          | P.S.I. |
| from [E] <u>175</u> | P.S.I. to [F] <u>285</u> | P.S.I. |
| [G] <u>1180</u>     |                          | P.S.I. |

Initial Hydrostatic Pressure [A] 2021 P.S.I. Final Hydrostatic Pressure [H] 2003 P.S.I. Maximum Temp 121 °F  
 Initial Blow WEAK Building 8" into WATER  
 Final Blow WEAK Building 8 1/2" into WATER  
 Gas to Surface — Min. Oil to Surface — Min. Mut Weight 10.2 Viscosity 49  
 Gas Guaged —

Recovery 550" WATery mvd w/ show of oil in Tool

Remarks —

Extra Equipment-Jars — Safety Joint — Extra Packer — Straddle — Hook Wall —  
 Top Recorder No. 5463 Clock no. 23913 Depth 3859 Clr. Sub — Sampler —  
 Bottom Recorder No. 13561 Clock No. 9096 Depth 3862 Chlorides - pits 59,000 D.S.T. 68,000  
 Price of Job \$600.00  
 Tool Operator PAT STEVENSON  
 Approved By Robert B. Thompson

SUPERIOR TESTERS, INC. SHALL NOT BE LIABLE FOR DAMAGE OF ANY KIND TO THE PROPERTY OR PERSONEL OF THE ONE FOR WHOM A TEST IS MADE, OF FOR ANY LOSS SUFFERED OR SUSTAINED, DIRECTLY OR INDIRECTLY, THROUGH THE USE OF ITS EQUIPMENT, OR ITS STATEMENTS OR OPINION CONCERNING THE RESULTS OF ANY TEST. TOOLS LOST OR DAMAGED IN THE HOLE SHALL BE PAID FOR AT COST BY THE PARTY FOR WHOM THE TEST IS MADE.

Ticket NO 0025

# SUPERIOR TESTERS ENTERPRISES INC.

## SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
 DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17  
 DEPTH : 3859.0 SERIAL NO. : 5463

| COMMENTS           | TIME<br>min | DEFL<br>in | PRESSURE PSIG |       |           |
|--------------------|-------------|------------|---------------|-------|-----------|
|                    |             |            | CALC          | CORR  | CORRECTED |
| TEST NO.: 1        |             |            |               |       |           |
| - 5:11             | 11.0        | 1.251      | 1151.04       | -2.52 | 1148.52   |
| - 5:14             | 14.0        | 1.262      | 1161.19       | -2.51 | 1158.67   |
| - 5:17             | 17.0        | 1.270      | 1168.56       | -2.51 | 1166.05   |
| - 5:20             | 20.0        | 1.277      | 1175.02       | -2.51 | 1172.51   |
| - 5:23             | 23.0        | 1.283      | 1180.55       | -2.51 | 1178.04   |
| - 5:25             | 25.0        | 1.288      | 1185.16       | -2.50 | 1182.66   |
| - 5:28             | 28.0        | 1.292      | 1188.85       | -2.50 | 1186.35   |
| - 5:31             | 31.0        | 1.298      | 1194.38       | -2.50 | 1191.88   |
| - 5:34             | 34.0        | 1.301      | 1197.15       | -2.50 | 1194.65   |
| - 5:37             | 37.0        | 1.304      | 1199.91       | -2.50 | 1197.42   |
| - 5:40             | 40.0        | 1.308      | 1203.60       | -2.49 | 1201.11   |
| - 5:43             | 43.0        | 1.314      | 1209.13       | -2.49 | 1206.64   |
| -05:43 1ST SHUT-IN | 0.0         | 1.314      | 1209.13       | -2.49 | 1206.64   |
| -05:43 2ND FLOW    | 0.0         | .200       | 181.95        | 1.54  | 183.49    |
| - 5:47             | 4.0         | .194       | 176.42        | 1.57  | 177.98    |
| - 5:52             | 9.0         | .195       | 177.34        | 1.56  | 178.90    |
| - 5:56             | 13.0        | .200       | 181.95        | 1.54  | 183.49    |
| - 6:00             | 17.0        | .207       | 188.40        | 1.51  | 189.91    |
| - 6:04             | 21.0        | .216       | 196.70        | 1.46  | 198.17    |
| - 6:08             | 25.0        | .226       | 205.92        | 1.42  | 207.34    |
| - 6:13             | 30.0        | .238       | 216.99        | 1.36  | 218.35    |
| - 6:17             | 34.0        | .250       | 228.05        | 1.31  | 229.36    |
| - 6:21             | 38.0        | .259       | 236.35        | 1.27  | 237.61    |
| - 6:26             | 43.0        | .272       | 248.34        | 1.20  | 249.54    |
| - 6:30             | 47.0        | .284       | 259.40        | 1.15  | 260.55    |
| - 6:34             | 51.0        | .293       | 267.70        | 1.11  | 268.81    |
| - 6:38             | 55.0        | .304       | 277.84        | 1.06  | 278.90    |
| - 6:42             | 59.0        | .313       | 286.14        | 1.01  | 287.16    |
| -06:42 END FLOW    | 0.0         | .313       | 286.14        | 1.01  | 287.16    |
| - 6:44             | 2.0         | 1.094      | 1006.28       | -2.59 | 1003.69   |
| - 6:46             | 4.0         | 1.155      | 1062.52       | -2.56 | 1059.96   |
| - 6:48             | 6.0         | 1.185      | 1090.19       | -2.55 | 1087.64   |
| - 6:51             | 9.0         | 1.203      | 1106.78       | -2.54 | 1104.24   |
| - 6:53             | 11.0        | 1.216      | 1118.77       | -2.53 | 1116.24   |
| - 6:56             | 14.0        | 1.229      | 1130.76       | -2.53 | 1128.23   |
| - 6:59             | 17.0        | 1.240      | 1140.90       | -2.52 | 1138.38   |
| - 7:02             | 20.0        | 1.246      | 1146.43       | -2.52 | 1143.91   |
| - 7:05             | 23.0        | 1.252      | 1151.97       | -2.52 | 1149.45   |
| - 7:07             | 25.0        | 1.257      | 1156.58       | -2.52 | 1154.06   |
| - 7:10             | 28.0        | 1.263      | 1162.11       | -2.51 | 1159.59   |

# SUPERIOR TESTERS ENTERPRISES INC.

## SUBSURFACE PRESSURE MEASUREMENTS

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
 DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17  
 DEPTH : 3859.0 SERIAL NO. : 5463

| COMMENTS           | TIME<br>min | DEFL<br>in | -----<br>CALC | -----<br>PRESSURE PSIG<br>CORR | -----<br>CORRECTED |
|--------------------|-------------|------------|---------------|--------------------------------|--------------------|
| TEST NO.: 1        |             |            |               |                                |                    |
| - 7:13             | 31.0        | 1.269      | 1167.64       | -2.51                          | 1165.13            |
| - 7:16             | 34.0        | 1.273      | 1171.33       | -2.51                          | 1168.82            |
| - 7:19             | 37.0        | 1.277      | 1175.02       | -2.51                          | 1172.51            |
| - 7:22             | 40.0        | 1.281      | 1178.71       | -2.51                          | 1176.20            |
| - 7:25             | 43.0        | 1.284      | 1181.47       | -2.50                          | 1178.97            |
| - 7:27             | 45.0        | 1.289      | 1186.08       | -2.50                          | 1183.58            |
| - 7:29             | 47.0        | 1.292      | 1188.85       | -2.50                          | 1186.35            |
| -07:29 2ND SHUT-IN | 0.0         | 1.292      | 1188.85       | -2.50                          | 1186.35            |
| 2ND HYDROSTATIC    | 0.0         | 2.296      | 2114.61       | -1.64                          | 2112.96            |

# SUPERIOR TESTERS ENTERPRISES INC.

## DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17

### RECOVERY INFORMATION

#### LIQUID RECOVERY

Total Fluid Recovered : 550

Recovered 550 feet of WATERY MUD WITH A SHOW OF OIL IN THE TOOL

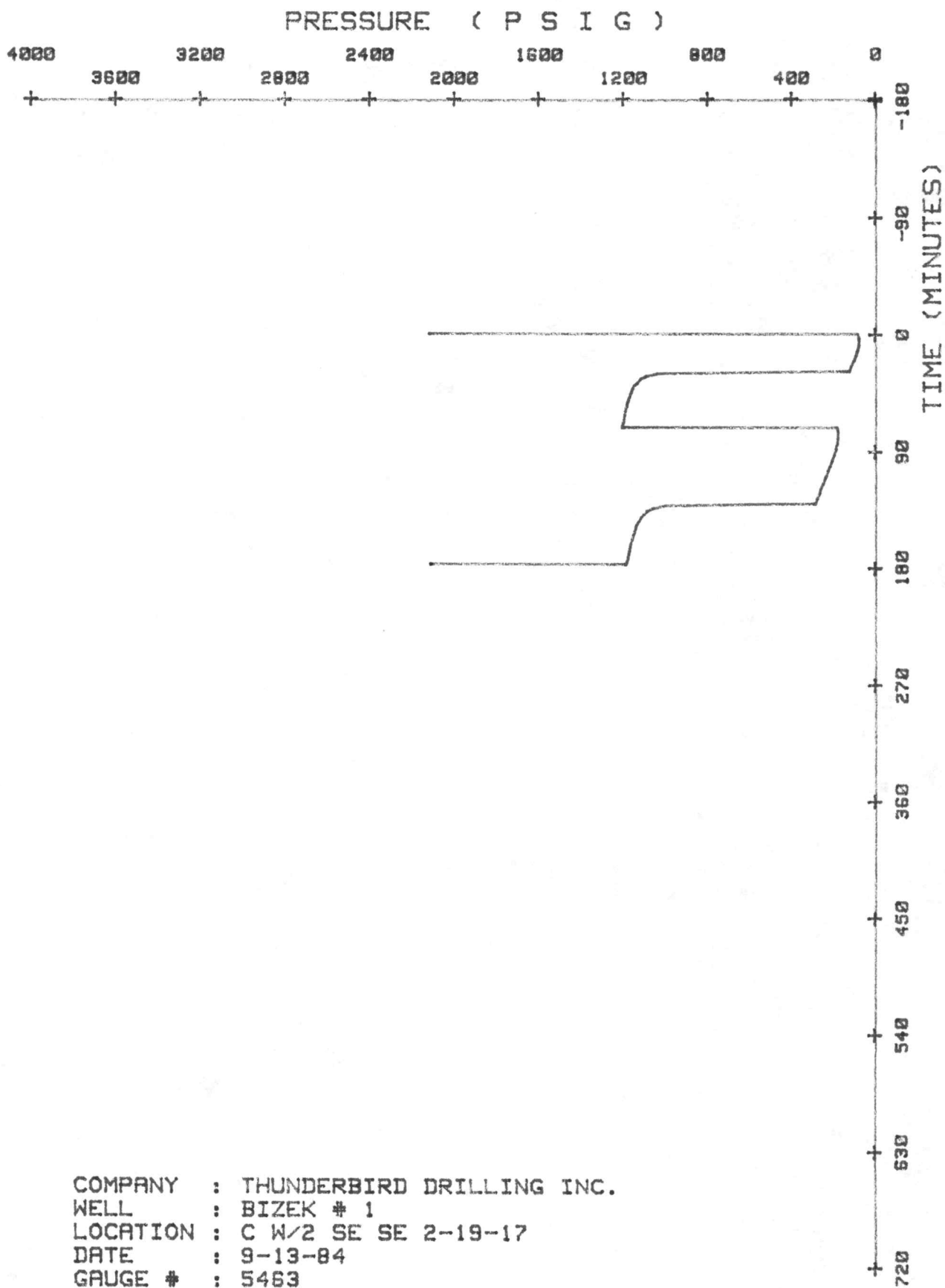
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| GAS RECOVERY | Measured With : | Riser :             |                |
|--------------|-----------------|---------------------|----------------|
| Time (min.)  | Reading (psig)  | Surface Choke (in.) | Cubic feet/day |

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### FLUID PROPERTIES

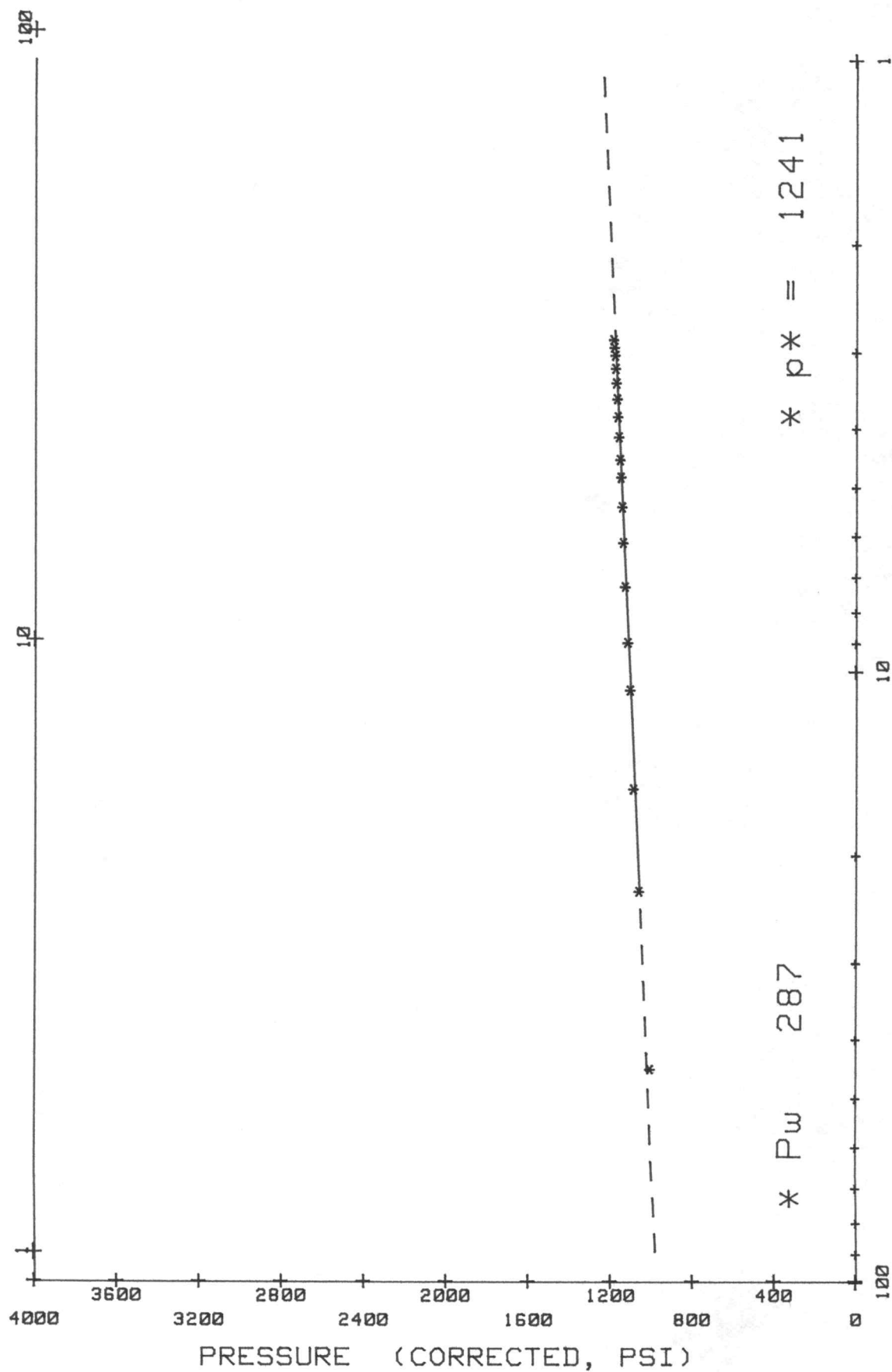
|       | Viscosity (cp) | Compressibility (psi-1) | Pore Space Saturation |
|-------|----------------|-------------------------|-----------------------|
| Oil   |                |                         |                       |
| Gas   |                |                         |                       |
| Water |                |                         |                       |



GAUGE # : 5463

DATE : 9-13-84

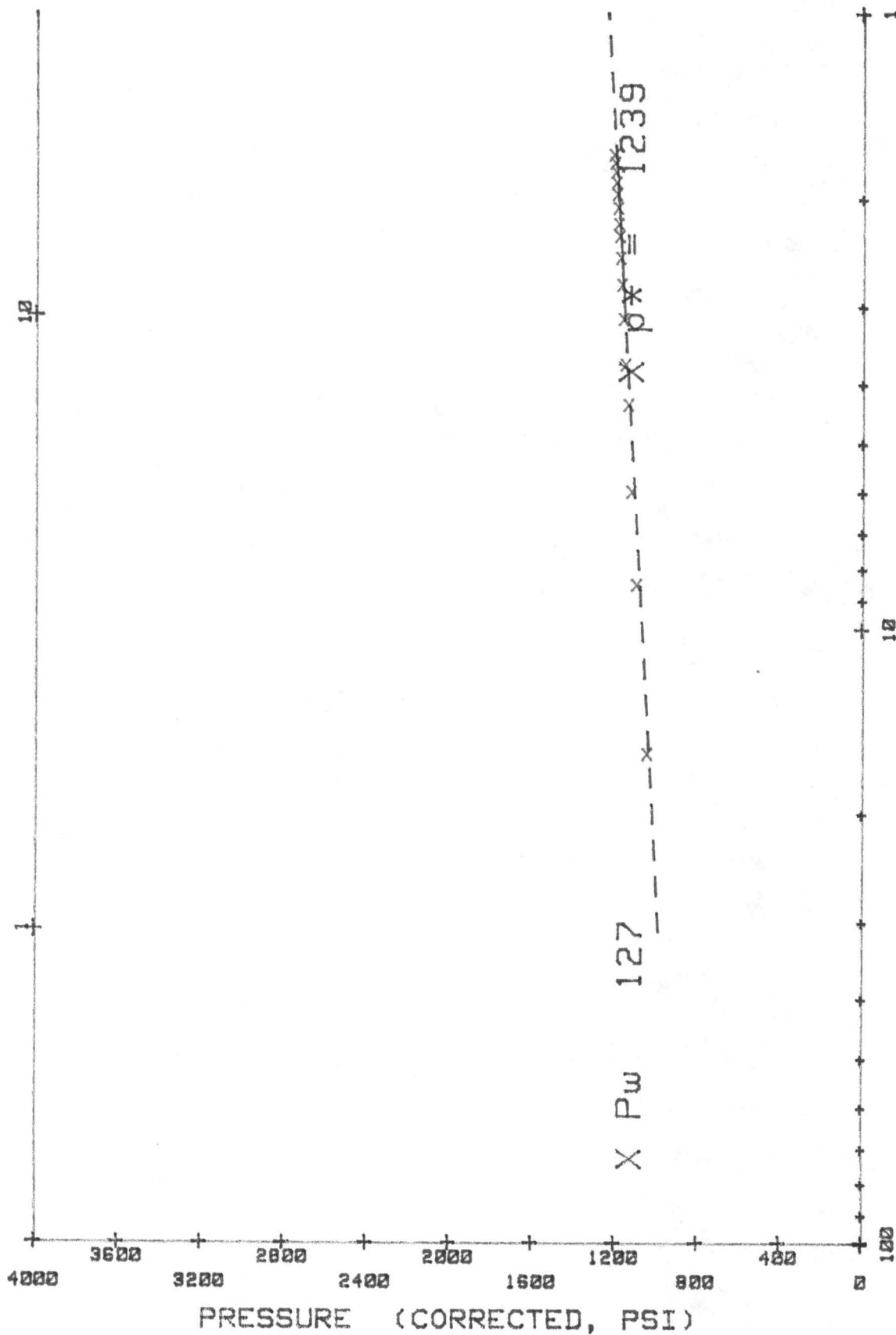
LOCATION : C W/2 SE SE 2-19-17



GAUGE # : 5463

DATE : 9-13-84

LOCATION : C W/2 SE SE 2-19-17



TIME (MINUTES) : (T+dt)/dt - (Semilog scale)

# SUPERIOR TESTERS ENTERPRISES INC.

## DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17  
DST. NO : 1 SHUT-IN PERIOD : 1

### INTERPRETIVE DATA (OIL)

|                                                |         |
|------------------------------------------------|---------|
| EXTRAPOLATED RESERVOIR PRESSURE (psi): .....   | 1239.00 |
| Slope of Build-up Curve (psi/log cycle): ..... | 167.82  |
| Effective Producing Time (min): .....          | 30.00   |

WITNESSED BY : ROBERT B. THOMPSON

TOOL OPERATOR : PAT STEVENSON

INTERPRETATION BY : SUPERIOR TESTERS INC.

# SUPERIOR TESTERS ENTERPRISES INC.

## HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING INC.  
 WELL NAME : BIZEK # 1  
 LOCATION : C W/2 SE SE 2-19-17  
 STATE & COUNTY : KANSAS, RUSH  
 DATE OF TEST : 9-13-84  
 TEST INT. KB : 3815 to 3865  
 TOTAL INTERVAL (ft) K.B. : 50.00  
 ELEV. (GR) : (KB) : 2090  
 FIELD :

ELEMENT SERIAL NO. : 5463  
 LATEST CALIBRATION :

| COMMENTS                    | TIME<br>min | (T+dt)/dt<br>min | -----<br>PRESSURES<br>CORR PSIG |
|-----------------------------|-------------|------------------|---------------------------------|
| Refer. depth : 3859.0 ft-kb |             |                  |                                 |
| -05:00 END FLOW             | 0.00        | 0.00             | 126.61                          |
|                             | 2.00        | 16.00            | 1040.37                         |
|                             | 4.00        | 8.50             | 1092.66                         |
|                             | 6.00        | 6.00             | 1117.43                         |
|                             | 9.00        | 4.33             | 1133.03                         |
|                             | 11.00       | 3.73             | 1147.71                         |
|                             | 14.00       | 3.14             | 1157.80                         |
|                             | 17.00       | 2.76             | 1165.14                         |
|                             | 20.00       | 2.50             | 1171.56                         |
|                             | 23.00       | 2.30             | 1177.06                         |
|                             | 25.00       | 2.20             | 1181.65                         |
|                             | 28.00       | 2.07             | 1185.32                         |
|                             | 31.00       | 1.97             | 1190.83                         |
|                             | 34.00       | 1.88             | 1193.58                         |
|                             | 37.00       | 1.81             | 1196.33                         |
|                             | 40.00       | 1.75             | 1200.00                         |
|                             | 43.00       | 1.70             | 1205.50                         |
| -05:43 1ST SHUT-IN          | 0.00        | 0.00             | 1205.50                         |

WITNESSED BY : ROBERT B. THOMPSON

TOOL OPERATOR : PAT STEVENSON

INTERPRETATION BY : SUPERIOR TESTERS INC.

# SUPERIOR TESTERS ENTERPRISES INC.

## DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17  
DST. NO : 1 SHUT-IN PERIOD : 2

## INTERPRETIVE DATA (OIL)

|                                                |         |
|------------------------------------------------|---------|
| EXTRAPOLATED RESERVOIR PRESSURE (psi): .....   | 1241.00 |
| Slope of Build-up Curve (psi/log cycle): ..... | 132.57  |
| Effective Producing Time (min): .....          | 88.00   |

WITNESSED BY : ROBERT B. THOMPSON

TOOL OPERATOR : PAT STEVENSON

INTERPRETATION BY : SUPERIOR TESTERS INC.

# SUPERIOR TESTERS ENTERPRISES INC.

## HORNER ANALYSIS

COMPANY : THUNDERBIRD DRILLING INC.  
 WELL NAME : BIZEK # 1  
 LOCATION : C W/2 SE SE 2-19-17  
 STATE & COUNTY : KANSAS, RUSH  
 DATE OF TEST : 9-13-84  
 TEST INT. KB : 3815 to 3865  
 TOTAL INTERVAL (ft) K.B. : 50.00  
 ELEV. (GR) : (KB) : 2090  
 FIELD :

ELEMENT SERIAL NO. : 5463  
 LATEST CALIBRATION :

| COMMENTS                    | TIME<br>min | (T+dt)/dt<br>min | -----<br>PRESSURES<br>CORR PSIG | ----- |
|-----------------------------|-------------|------------------|---------------------------------|-------|
| Refer. depth : 3859.0 ft-kb |             |                  |                                 |       |
| -06:42 END FLOW             | 0.00        | 0.00             | 287.16                          |       |
|                             | 2.00        | 45.50            | 1003.67                         |       |
|                             | 4.00        | 23.25            | 1059.63                         |       |
|                             | 6.00        | 15.83            | 1087.16                         |       |
|                             | 9.00        | 10.89            | 1103.67                         |       |
|                             | 11.00       | 9.09             | 1115.60                         |       |
|                             | 14.00       | 7.36             | 1127.52                         |       |
|                             | 17.00       | 6.24             | 1137.61                         |       |
|                             | 20.00       | 5.45             | 1143.12                         |       |
|                             | 23.00       | 4.87             | 1148.62                         |       |
|                             | 25.00       | 4.56             | 1153.21                         |       |
|                             | 28.00       | 4.18             | 1158.72                         |       |
|                             | 31.00       | 3.87             | 1164.22                         |       |
|                             | 34.00       | 3.62             | 1167.89                         |       |
|                             | 37.00       | 3.41             | 1171.56                         |       |
|                             | 40.00       | 3.23             | 1175.23                         |       |
|                             | 43.00       | 3.07             | 1177.98                         |       |
|                             | 45.00       | 2.98             | 1182.57                         |       |
|                             | 47.00       | 2.89             | 1185.32                         |       |
| -07:29 2ND SHUT-IN          | 0.00        | 0.00             | 1185.32                         |       |

WITNESSED BY : ROBERT B. THOMPSON

TOOL OPERATOR : PAT STEVENSON

# SUPERIOR TESTERS ENTERPRISES INC.

## DATA SUMMARY

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
 DATE OF TEST : 9-13-84 LOCATION : C W/2 SE SE 2-19-17  
 DST. NO : 1 SHUT-IN PERIOD : 2

### INTERPRETIVE DATA (OIL)

#### TRANSMISSIBILITY

Oil (md.ft/cp): ..... 0.00  
 Gas (md.ft/cp): ..... 0.00

#### EFFECTIVE PERMEABILITY

Oil (md): ..... 0.00  
 Gas (md): ..... 0.00

TOTAL MOBILITY (md/cp): ..... 0.00

TOTAL COMPRESSIBILITY (psi<sup>-1</sup>): ..... 0.00E+00

ESTIMATED DAMAGE RATIO: ..... 1.57

CALCULATED DAMAGE RATIO: ..... 0.00

Reservoir Temperature (F): ..... 121.00

Formation Porosity : ..... 0.00

Formation Thickness (ft): ..... 50.00

Wellbore Radius (in): ..... 3.95

Reservoir Compressibility (psi<sup>-1</sup>): ..... 0.00E+00

Calculated Skin Factor : ..... 0.00

PRODUCTION WITH DAMAGE REMOVED (bbl/D): ..... 0.00

PRODUCTIVITY INDEX (bbl/psi): ..... 0.00

Final Flow Pressure (psi): ..... 287.00

APPROXIMATE RADIUS OF INVESTIGATION (ft): ..... 0.00

Total Flowing Time (min): ..... 88.00

EXTRAPOLATED RESERVOIR PRESSURE (psi): ..... 1241.00

Slope of Build-up Curve (psi/log cycle): ..... 132.57

Effective Producing Time (min): ..... 88.00

WITNESSED BY : ROBERT B. THOMPSON

TOOL OPERATOR : PAT STEVENSON

# SUPERIOR TESTERS ENTERPRISES INC.

## WELL IDENTIFICATION DATA

COMPANY : THUNDERBIRD DRILLING INC. WELL NAME : BIZEK # 1  
 ADDRESS : P.O. BOX 18407 WICHITA LOCATION : C W/2 SE SE 2-19-17  
 STATE & COUNTY : KANSAS, RUSH FIELD :  
 TEST INT. KB : 3815 to 3865 TEST DATE : 9-13-84  
 ELEV.(GR) : (KB) : 2090 TOTAL INTERVAL (ft) K.B. : 50.00

## EQUIPMENT AND HOLE DATA

|                                    |                                 |
|------------------------------------|---------------------------------|
| TYPE OF TEST : CONV.               | DRILL PIPE LENGTH (ft) : 3219   |
| TOTAL DEPTH (ft-kb) : 3865         | DRILL PIPE I.D. (in) : 3.80     |
| MAIN HOLE/CASING SIZE (in) : 7 7/8 | DRILL COLLAR LENGTH (ft) :      |
| RAT HOLE/LINER SIZE (in) :         | DRILL COLLAR I.D. (in) :        |
| FORMATION TESTED : ARBUCKLE        | TOP PACKER DEPTH (kb) : 3810    |
| PACKER SIZE (in) : 6 3/4           | BOTTOM PACKER DEPTH (kb) : 3815 |
| DUAL PACKERS : YES                 | PACKER HOLD : YES               |
| TOOL SIZE : 5 1/2 O.D.             | TOOL JOINT SIZE : 4 1/2 F.H.    |
| MUD VISCOSITY : 49                 | MUD WEIGHT : 10.2               |
| WEIGHT PIPE LENGTH(FT) : 567       | WEIGHT PIPE ID : 2.75           |
| EXTRA EQUIPMENT : NONE             | ANCHOR LENGTH(FT) : 50          |
| SURFACE CHOKE : 3/4                | BOTTOM CHOKE : 3/4              |
| REVERSED OUT : NO                  |                                 |

## SUBSURFACE PRESSURE MEASUREMENTS

ELEMENT SERIAL NO. : 5463  
 RANGE : 0 - 3650 CLOCK RANGE : 12 HOURS  
 CAL. EQU. : 922.07 \* Defl. - 2.47

| COMMENTS             | TIME<br>min | DEFL<br>in | -----<br>CALC | PRESSURE PSIG<br>CORR | -----<br>CORRECTED |
|----------------------|-------------|------------|---------------|-----------------------|--------------------|
| TEST NO.: 1          |             |            |               |                       |                    |
| Depth : 3859.0 ft-kb |             |            |               |                       |                    |
| 1ST HYDROSTATIC      | 0.0         | 2.306      | 2123.83       | -1.60                 | 2122.22            |
| 04:30 1ST FLOW       | 0.0         | .095       | 85.13         | 2.03                  | 87.16              |
| - 0:04               | 4.0         | .086       | 76.83         | 2.07                  | 78.90              |
| - 0:09               | 9.0         | .088       | 78.68         | 2.06                  | 80.73              |
| - 0:13               | 13.0        | .094       | 84.21         | 2.03                  | 86.24              |
| - 0:17               | 17.0        | .104       | 93.43         | 1.98                  | 95.41              |
| - 0:21               | 21.0        | .115       | 103.57        | 1.93                  | 105.50             |
| - 0:25               | 25.0        | .128       | 115.56        | 1.87                  | 117.43             |
| - 0:29               | 29.0        | .138       | 124.78        | 1.83                  | 126.61             |
| -05:00 END FLOW      | 0.0         | .138       | 124.78        | 1.83                  | 126.61             |
| - 5:02               | 2.0         | 1.134      | 1043.16       | -2.57                 | 1040.59            |
| - 5:04               | 4.0         | 1.191      | 1095.72       | -2.55                 | 1093.17            |
| - 5:06               | 6.0         | 1.218      | 1120.61       | -2.53                 | 1118.08            |
| - 5:09               | 9.0         | 1.235      | 1136.29       | -2.53                 | 1133.76            |

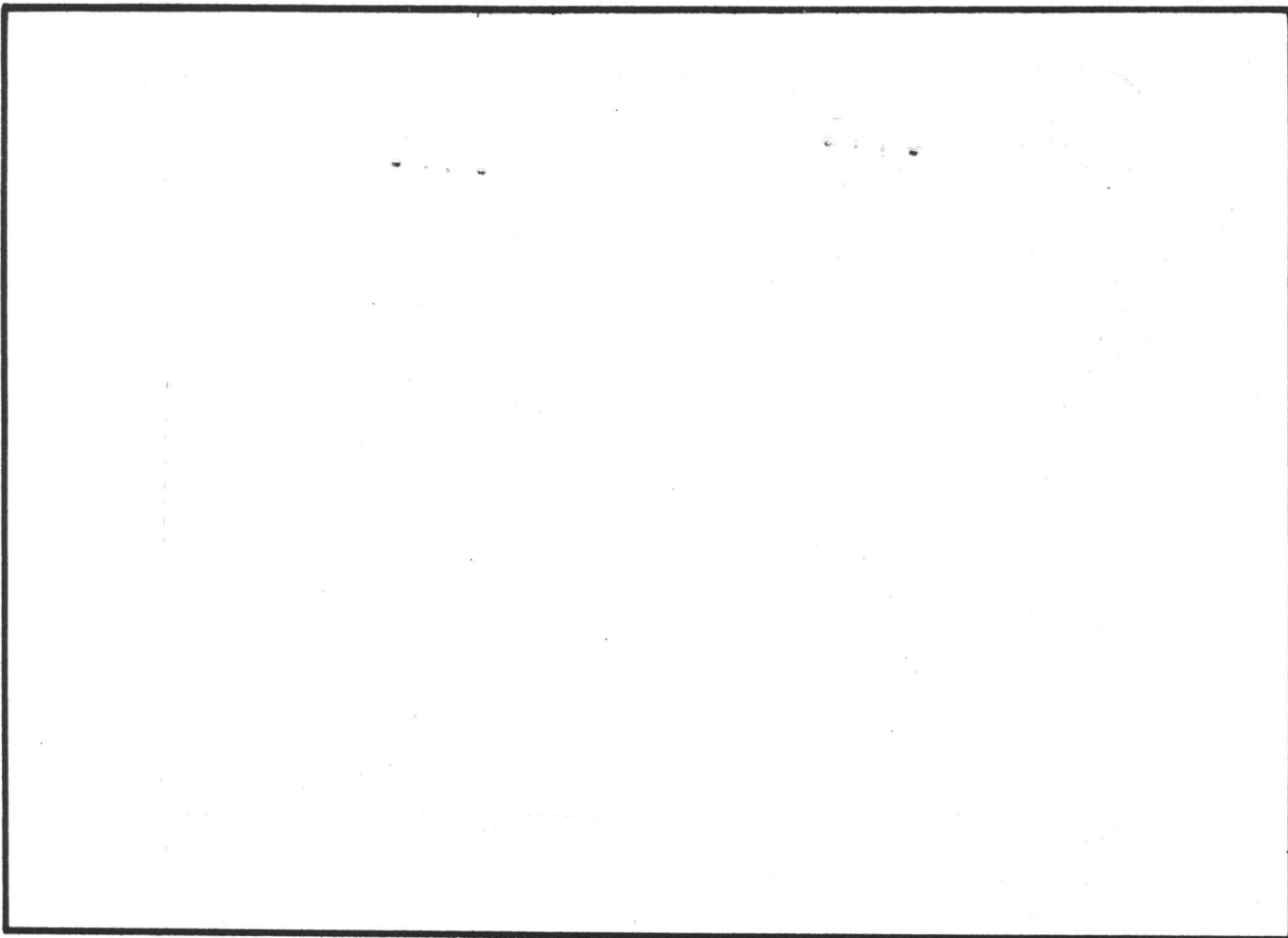
REMARKS :

1ST BLOW:WEAK BUILDING TO 8 INCHES INTO THE WATER  
 2ND BLOW:WEAK BUILDING TO 8 1/2 INCHES INTO THE WATER

WITNESSED BY : ROBERT B. THOMPSON  
 SON

TOOL OPERATOR : PAT STEVEN

INTERPRETATION BY : SUPERIOR TESTERS INC.



This is actual recorder chart.

| POINT                                  | PRESSURE         |                   |        |
|----------------------------------------|------------------|-------------------|--------|
|                                        | FIELD<br>READING | OFFICE<br>READING |        |
| (A) Initial Hydrostatic Mud .....      | 2021             | 2122              | P.S.I. |
| (B) First Initial Flow Pressure .....  | 83               | 87                | P.S.I. |
| (C) First Final Flow Pressure .....    | 119              | 126               | P.S.I. |
| (D) Initial Closed-in Pressure .....   | 1198             | 1206              | P.S.I. |
| (E) Second Initial Flow Pressure ..... | 175              | 183               | P.S.I. |
| (F) Second Final Flow Pressure .....   | 295              | 287               | P.S.I. |
| (G) Final Closed-in Pressure .....     | 1180             | 1186              | P.S.I. |
| (H) Final Hydrostatic Mud .....        | 2003             | 2112              | P.S.I. |

