TIGHT HOLE

Home Office: Great Bend, Kansas
P. O. Box 793 (316) 793-7903

Company Abercrombie Drilling Inc. Lease & Well No. Hagen #2

Elevation 1963 Derrick Floor Formation Kansas City Effective Pay Ft. Ticket No. 15919

Date 3-8-72 Sec. 20 Twp. 11S Range 19W County Ellis State Kansas

Test Approved by Jack K. Wharton Western Representative Kenneth Cheney

Formation Test No. 1 O.K. X Misrun Interval Tested From 3378' to 3415' Total Depth 3415'

Size Main Hole 6 1/4" Rat Hole Conv. X B.T. Damaged Yes X No Conv. X B.T. Damaged Yes X No

Packer Depth 3373 Ft. Size 5 1/2" Packer Depth 3378 Ft. Size 5 1/2"

Straddle Yes No X Conv. B.T. Damaged Yes No

Packer Depth Ft. Size

Tool Size 4 1/2" O.D. Tool Jt. Size 3 1/2" I.F. Anchor Length 37 Ft. Size 4 1/2" O.D.

RECORDERS Depth 3407 Ft. Clock No. 9727 Depth 3409 Ft. Clock No. 6893

Top Make Kuster Cap 4150 No. 2604 Inside ==Outside= Bottom Make Kuster Cap 4150 No. 1567 =Inside= Outside

Below Straddle: Depth Clock No. Inside Outside Depth Ft. Clock No. Inside Outside

Top Make Cap No. Inside Outside Bottom Make Cap No. Inside Outside

Time Set Packer 3:18 P. M

Tool Open I.F.P. From 3:20 M. to 3:35P. M. Hr. 15 Min. From (B) 42 P.S.I. To (C) 25 P.S.I.

Tool Closed I.C.I.P. From 3:35 M. to 4:05P. M. Hr. 30 Min. (D) 211 P.S.I.

Tool Open F.F.P. From 4:05 M. to 4:35P. M. Hr. 30 Min. From (E) 27 P.S.I. To (F) 20 P.S.I.

Tool Closed F.C.I.P. From 4:35 M. to 5:05P. M. Hr. 30 Min. (G) 31 P.S.I.

Initial Hydrostatic Pressure (A) 1773 P.S.I. Final Hydrostatic Pressure (H) 1720 P.S.I.

| SURFACE INFORMATION | Size Choke 3/8 In. | Max. Press. P.S.I. | Time | Description of Flow |
|---|---|---|---|---|
| | | | M. | |
| | | | M. | |
| | | | M. | |

BLOW Weak for 15 min. Bottom Choke Size 1/2 In.

Did Well Flow Yes X No Recovery Total Ft. 10 feet mud

Reversed Out Yes X No Mud Type Starch Viscosity 39 Weight 9.9 Water Loss 12.0 cc. Maximum Temp. 113 °F

Type Circ. Sub. Plug Safety Joint No Jars: Size Make Ser. No.

EXTRA EQUIPMENT: Dual Packers Yes Did Packer Hold? Yes Did Tool Plug? No Where?

Length Drill Pipe 3358 ft. I.D. Drill Pipe 2.7 in. Length Weight Pipe ft. I.D. Weight Pipe in. Length Drill Collars ft.

I.D. Drill Collars in. Length D.S.T. Tool 57 ft.

Remarks

FORM WTC 3

# WESTERN TESTING CO., INC.
## Pressure Data

Date 3-8-72 Test Ticket No. 15919

Recorder No. 2604 Capacity 4150 Location 3407 Ft.

Clock No. 9727 Elevation 1963 Derrick Floor Well Temperature 113 °F

| Point | | Pressure | | Time Given | Time Computed |
|---|---|---|---|---|---|
| A | Initial Hydrostatic Mud | 1773 P.S.I. | Open Tool | 3:18 P. M | |
| B | First Initial Flow Pressure | 42 P.S.I. | First Flow Pressure | 15 Mins. | 15 Mins. |
| C | First Final Flow Pressure | 25 P.S.I. | Initial Closed-in Pressure | 30 Mins. | 30 Mins. |
| D | Initial Closed-in Pressure | 211 P.S.I. | Second Flow Pressure | 30 Mins. | 30 Mins. |
| E | Second Initial Flow Pressure | 27 P.S.I. | Final Closed-in Pressure | 30 Mins. | 30 Mins. |
| F | Second Final Flow Pressure | 20 P.S.I. | | | |
| G | Final Closed-in Pressure | 31 P.S.I. | | | |
| H | Final Hydrostatic Mud | 1720 P.S.I. | | | |

## PRESSURE BREAKDOWN

**First Flow Pressure**
Breakdown: 3 Inc. of 5 mins. and a final inc. of ____ Min.

**Initial Shut-In**
Breakdown: 10 Inc. of 3 mins. and a final inc. of ____ Min.

**Second Flow Pressure**
Breakdown: 6 Inc. of 5 mins. and a final inc. of ____ Min.

**Final Shut-In**
Breakdown: 10 Inc. of 3 mins. and a final inc. of ____ Min.

| Point | First Flow Pressure Point Mins. | First Flow Pressure Press. | Initial Shut-In Point Minutes | Initial Shut-In Press. | Second Flow Pressure Point Minutes | Second Flow Pressure Press. | Final Shut-In Point Minutes | Final Shut-In Press. |
|---|---|---|---|---|---|---|---|---|
| P 1 | 0 | 42 | 0 | 25 | 0 | 27 | 0 | 20 |
| P 2 | 5 | 29 | 3 | 26 | 5 | 23 | 3 | 21 |
| P 3 | 10 | 25 | 6 | 29 | 10 | 20 | 6 | 21 |
| P 4 | 15 | 25 | 9 | 40 | 15 | 20 | 9 | 22 |
| P 5 | | | 12 | 55 | 20 | 20 | 12 | 23 |
| P 6 | | | 15 | 72 | 25 | 20 | 15 | 24 |
| P 7 | | | 18 | 95 | 30 | 20 | 18 | 25 |
| P 8 | | | 21 | 123 | | | 21 | 26 |
| P 9 | | | 24 | 155 | | | 24 | 27 |
| P10 | | | 27 | 187 | | | 27 | 29 |
| P11 | | | 30 | 211 | | | 30 | 31 |
| P12 | | | | | | | | |
| P13 | | | | | | | | |
| P14 | | | | | | | | |
| P15 | | | | | | | | |
| P16 | | | | | | | | |
| P17 | | | | | | | | |
| P18 | | | | | | | | |
| P19 | | | | | | | | |
| P20 | | | | | | | | |

WESTERN TESTERS

Home Office: Great Bend, Kansas
P. O. Box 793 (316) 793-7903

Company Abercrombie Drilling Inc. Lease & Well No. Hagen #2

Elevation 1963 Derrick Floor Formation Arbuckle Effective Pay 5 Ft. Ticket No. 15920

Date 3-9-72 Sec. 20 Twp. 11S Range 19W County Ellis State Kansas

Test Approved by Jack K. Wharton Western Representative Kenneth Cheney

Formation Test No. 2 O.K. X Misrun Interval Tested From 3521' to 3535' Total Depth 3535'

Size Main Hole 6 1/4 Rat Hole Conv. X B.T. Damaged Yes X No Conv. X B.T. Damaged Yes X No

Packer Depth 3516 Ft. Size 5 1/2" Packer Depth 3521 Ft. Size 5 1/2"

Straddle Yes No X Conv. B.T. Damaged Yes No

Packer Depth Ft. Size

Tool Size 4 1/2" O.D. Tool Jt. Size 3 1/2" I.F. Anchor Length 14 Ft. Size 4 1/2" O.D.

| RECORDERS | Depth | Ft. | Clock No. | | Depth | Ft. | Clock No. | |
|---|---|---|---|---|---|---|---|---|
| Top Make | Kuster | Cap | 4150 | No. 2604 Inside ~~Outside~~ | Bottom Make | Kuster | Cap | 4150 | No. 1567 ~~Inside~~ Outside |
| Below Straddle: | Depth | | Clock No. | Inside Outside | Depth | | Ft. | Clock No. | Inside Outside |
| | Top Make | | Cap | No. Inside Outside | Bottom Make | | Cap | No. | Inside Outside |

Time Set Packer 7:28 P. M

Tool Open I.F.P. From 7:30 M. to 7:50P M. Hr. 20 Min. From (B) 68 P.S.I. To (C) 66 P.S.I.

Tool Closed I.C.I.P. From 7:50 M. to 8:20P M. Hr. 30 Min. (D) 688 P.S.I.

Tool Open F.F.P. From 8:20 M. to 10:20P M. 2 Hr. Min. From (E) 76 P.S.I. To (F) 89 P.S.I.

Tool Closed F.C.I.P. From 10:20 M. to 11:05P M. Hr. 45 Min. (G) 520 P.S.I.

Initial Hydrostatic Pressure (A) 1926 P.S.I. Final Hydrostatic Pressure (H) 1890 P.S.I.

| SURFACE INFORMATION | Size Choke 3/8 In. | Max. Press. P.S.I. | Time | Description of Flow |
|---|---|---|---|---|
| | | | M. | |
| | | | M. | |
| | | | M. | |

BLOW Fair to weak died in 1 hr and 20 min. Bottom Choke Size 1/2 In.

Did Well Flow Yes X No Recovery Total Ft. 120 feet oil

Reversed Out Yes X No Mud Type Starch Viscosity 51 Weight 10.1 Water Loss 16.2 cc. Maximum Temp. 121 °F

Type Circ. Sub. Plug Safety Joint No Jars: Size Make Ser. No.

EXTRA EQUIPMENT: Dual Packers Yes Did Packer Hold? Yes Did Tool Plug? No Where?

Length Drill Pipe 3501 ft. I.D. Drill Pipe 2.7 in. Length Weight Pipe ft. I.D. Weight Pipe in. Length Drill Collars ft.

I.D. Drill Collars in. Length D.S.T. Tool 34 ft.

Remarks 15 gravity

FORM WTC 3

# WESTERN TESTING CO., INC.
## Pressure Data

Date 3-9-72 Test Ticket No. 15920

Recorder No. 2604 Capacity 4150 Location 3527 Ft.

Clock No. 9727 Elevation 1963 Derrick Floor Well Temperature 121 °F

| Point | Pressure | | Time Given | Time Computed |
|---|---|---|---|---|
| A Initial Hydrostatic Mud | 1926 P.S.I. | Open Tool | 7:28 P.M. | |
| B First Initial Flow Pressure | 68 P.S.I. | First Flow Pressure | 20 Mins. | 20 Mins. |
| C First Final Flow Pressure | 66 P.S.I. | Initial Closed-in Pressure | 30 Mins. | 30 Mins. |
| D Initial Closed-in Pressure | 688 P.S.I. | Second Flow Pressure | 120 Mins. | 116 Mins. |
| E Second Initial Flow Pressure | 76 P.S.I. | Final Closed-in Pressure | 45 Mins. | 45 Mins. |
| F Second Final Flow Pressure | 89 P.S.I. | | | |
| G Final Closed-in Pressure | 520 P.S.I. | | | |
| H Final Hydrostatic Mud | 1890 P.S.I. | | | |

## PRESSURE BREAKDOWN

**First Flow Pressure**
Breakdown: 4 Inc. of 5 mins. and a final inc. of ____ Min.

| Point Mins. | Press. |
|---|---|
| P 1 0 | 68 |
| P 2 5 | 61 |
| P 3 10 | 63 |
| P 4 15 | 63 |
| P 5 20 | 66 |
| P 6 | |
| P 7 | |
| P 8 | |
| P 9 | |
| P10 | |
| P11 | |
| P12 | |
| P13 | |
| P14 | |
| P15 | |
| P16 | |
| P17 | |
| P18 | |
| P19 | |
| P20 | |

**Initial Shut-In**
Breakdown: 10 Inc. of 3 mins. and a final inc. of ____ Min.

| Point Minutes | Press. |
|---|---|
| 0 | 66 |
| 3 | 217 |
| 6 | 395 |
| 9 | 467 |
| 12 | 520 |
| 15 | 562 |
| 18 | 594 |
| 21 | 623 |
| 24 | 652 |
| 27 | 673 |
| 30 | 688 |

**Second Flow Pressure**
Breakdown: 23 Inc. of 5 mins. and a final inc. of 1 Min.

| Point Minutes | Press. |
|---|---|
| 0 | 76 |
| 5 | 76 |
| 10 | 76 |
| 15 | 76 |
| 20 | 76 |
| 25 | 77 |
| 30 | 77 |
| 35 | 77 |
| 40 | 78 |
| 45 | 78 |
| 50 | 79 |
| 55 | 79 |
| 60 | 80 |
| 65 | 81 |
| 70 | 82 |
| 75 | 83 |
| 80 | 83 |
| 85 | 84 |
| 90 | 85 |
| 95 | 86 |
| 100 | 87 |
| 105 | 88 |
| 110 | 88 |
| 115 | 89 |
| 116 | 89 |

**Final Shut-In**
Breakdown: 15 Inc. of 3 mins. and a final inc. of ____ Min.

| Point Minutes | Press. |
|---|---|
| 0 | 89 |
| 3 | 129 |
| 6 | 208 |
| 9 | 266 |
| 12 | 307 |
| 15 | 335 |
| 18 | 365 |
| 21 | 393 |
| 24 | 412 |
| 27 | 433 |
| 30 | 450 |
| 33 | 470 |
| 36 | 485 |
| 39 | 497 |
| 42 | 512 |
| 45 | 520 |

20-115-1963

Home Office: Great Bend, Kansas
P. O. Box 793 (316) 793-7903

Company Abercrombie Drilling Inc. Lease & Well No. Hagen #2

Elevation 1963 Derrick Floor Formation Arbuckle Effective Pay 5 Ft. Ticket No. 15921

Date 3-10-72 Sec. 20 Twp. 11S Range 19W County Ellis State Kansas

Test Approved by Jack K. Wharton Western Representative Kenneth Cheney

Formation Test No. 3 O.K. X Misrun Interval Tested From 3536' to 3541' Total Depth 3541'

Size Main Hole 6 1/8 Rat Hole Conv. X B.T. Damaged Yes X No Conv. X B.T. Damaged Yes X No

Packer Depth 3531 Ft. Size 5 1/2" Packer Depth 3536 Ft. Size 5 1/2"

Straddle Yes No X Conv. B.T. Damaged Yes No

Packer Depth Ft. Size

Tool Size 4 1/2" O.D. Tool Jt. Size 3 1/2" I.F Anchor Length 5 Ft. Size 4 1/2" O.D.

RECORDERS Depth 3526 Ft. Clock No. 9727 Depth 3537 Ft. Clock No. 6893

Top Make Kuster Cap 4150 No. 2604 Inside ~~Outside~~ Bottom Make Kuster Cap 4150 No. 1567 ~~Inside~~ Outside

Below Straddle: Depth Clock No. Inside Outside Depth Ft. Clock No. Inside Outside

Top Make Cap No. Inside Outside Bottom Make Cap No. Inside Outside

Time Set Packer 6:18 A. M

Tool Open I.F.P. From 6:20 M. to 6:40A M. Hr. 20 Min. From (B) 19 P.S.I. To (C) 16 P.S.I.

Tool Closed I.C.I.P. From 6:40 M. to 7:25A. M. Hr. 45 Min. (D) 1016 P.S.I.

Tool Open F.F.P. From &;25 M. to 8:25A. M. 1 Hr. Min. From (E) 27 P.S.I. To (F) 21 P.S.I.

Tool Closed F.C.I.P. From 8;25 M. to 9:25A. M. 1 Hr. Min. (G) 913 P.S.I.

Initial Hydrostatic Pressure (A) 1955 P.S.I. Final Hydrostatic Pressure (H) 1869 P.S.I.

| SURFACE INFORMATION | Size Choke 3/8 In. | Max. Press. P.S.I. | Time | Description of Flow |
|---|---|---|---|---|
| | | | M. | |
| | | | M. | |
| | | | M. | |

BLOW Weak thru out test Bottom Choke Size 1/2 In.

Did Well Flow Yes X No Recovery Total Ft. 30 feet muddy water

30 feet oil (40% water, 10% oil 50% mud)

Reversed Out Yes X No Mud Type Starch Viscosity 51 Weight 10.0 Water Loss 16.2 cc. Maximum Temp. 123 °F

Type Circ. Sub. Plug Safety Joint No Jars: Size Make Ser. No.

EXTRA EQUIPMENT: Dual Packers Yes Did Packer Hold? Yes Did Tool Plug? No Where?

Length Drill Pipe 3511 ft. I.D. Drill Pipe 2.7 in. Length Weight Pipe ft. I.D. Weight Pipe in. Length Drill Collars ft.

I.D. Drill Collars in. Length D.S.T. Tool 30 ft.

Remarks

FORM WTC 3

# WESTERN TESTING CO., INC.
## Pressure Data

Date 3-10-72 Test Ticket No. 15921

Recorder No. 2604 Capacity 4150 Location 3426 Ft.

Clock No. 9727 Elevation 1963 Derrick Floor Well Temperature 123 °F

| Point | | Pressure | | | Time Given | Time Computed |
|---|---|---|---|---|---|---|
| A | Initial Hydrostatic Mud | 1955 P.S.I. | | Open Tool | 6:18 A. M | |
| B | First Initial Flow Pressure | 19 P.S.I. | | First Flow Pressure | 20 Mins. | 20 Mins. |
| C | First Final Flow Pressure | 10 P.S.I. | | Initial Closed-in Pressure | 45 Mins. | 45 Mins. |
| D | Initial Closed-in Pressure | 1016 P.S.I. | | Second Flow Pressure | 60 Mins. | 60 Mins. |
| E | Second Initial Flow Pressure | 27 P.S.I. | | Final Closed-in Pressure | 60 Mins. | 60 Mins. |
| F | Second Final Flow Pressure | 21 P.S.I. | | | | |
| G | Final Closed-in Pressure | 913 P.S.I. | | | | |
| H | Final Hydrostatic Mud | 1869 P.S.I. | | | | |

## PRESSURE BREAKDOWN

**First Flow Pressure**
Breakdown: 4 Inc.
of 5 mins. and a
final inc. of ____ Min.

| Point | Mins. | Press. |
|---|---|---|
| P 1 | 0 | 19 |
| P 2 | 5 | 10 |
| P 3 | 10 | 10 |
| P 4 | 15 | 10 |
| P 5 | 20 | 10 |
| P 6 | | |
| P 7 | | |
| P 8 | | |
| P 9 | | |
| P10 | | |
| P11 | | |
| P12 | | |
| P13 | | |
| P14 | | |
| P15 | | |
| P16 | | |
| P17 | | |
| P18 | | |
| P19 | | |
| P20 | | |

**Initial Shut-In**
Breakdown: 15 Inc.
of 3 mins. and a
final inc. of ____ Min.

| Point Minutes | Press. |
|---|---|
| 0 | 10 |
| 3 | 442 |
| 6 | 759 |
| 9 | 832 |
| 12 | 874 |
| 15 | 903 |
| 18 | 924 |
| 21 | 943 |
| 24 | 962 |
| 27 | 976 |
| 30 | 987 |
| 33 | 993 |
| 36 | 1002 |
| 39 | 1008 |
| 42 | 1012 |
| 45 | 1016 |

**Second Flow Pressure**
Breakdown: 12 Inc.
of 5 mins. and a
final inc. of ____ Min.

| Point Minutes | Press. |
|---|---|
| 0 | 27 |
| 5 | 19 |
| 10 | 14 |
| 15 | 14 |
| 20 | 14 |
| 25 | 14 |
| 30 | 14 |
| 35 | 17 |
| 40 | 17 |
| 45 | 19 |
| 50 | 21 |
| 55 | 21 |
| 60 | 21 |

**Final Shut-In**
Breakdown: 20 Inc.
of 3 mins. and a
final inc. of ____ Min.

| Point Minutes | Press. |
|---|---|
| 0 | 21 |
| 3 | 313 |
| 6 | 589 |
| 9 | 675 |
| 12 | 723 |
| 15 | 752 |
| 18 | 777 |
| 21 | 796 |
| 24 | 811 |
| 27 | 828 |
| 30 | 838 |
| 33 | 851 |
| 36 | 859 |
| 39 | 869 |
| 42 | 878 |
| 45 | 884 |
| 48 | 890 |
| 51 | 897 |
| 54 | 905 |
| 57 | 909 |
| 60 | 913 |