



## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.19 @ 11:15:37

End Date: 2007.07.19 @ 20:32:52

Job Ticket #: 27963                      DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27963

**DST#: 1**

Test Start: 2007.07.19 @ 11:15:37

### GENERAL INFORMATION:

Formation: **Lansing B**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:37:37

Time Test Ended: 20:32:52

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Interval: **3681.00 ft (KB) To 3710.00 ft (KB) (TVD)**

Total Depth: 3710.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition:

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: 88.36 psig @ 3682.00 ft (KB)

Start Date: 2007.07.19

End Date: 2007.07.19

Capacity: 7000.00 psig

Last Calib.: 2007.07.19

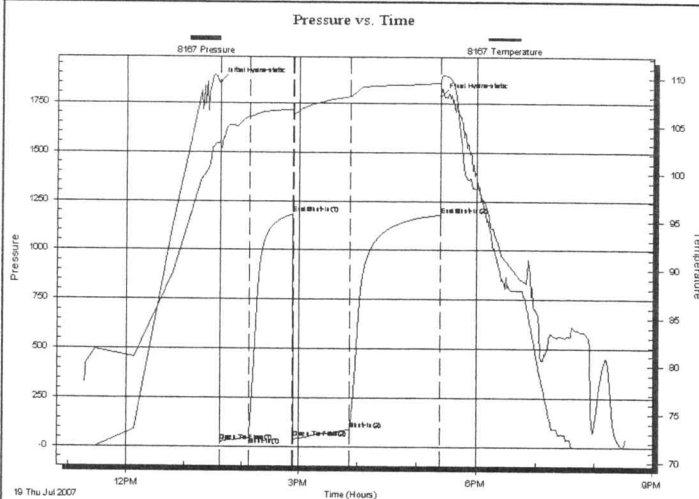
Start Time: 11:15:42

End Time: 20:32:52

Time On Btm: 2007.07.19 @ 13:37:22

Time Off Btm: 2007.07.19 @ 17:24:06

**TEST COMMENT:** IF Strong blow BOB in 6 mins.  
ISI No blow  
FF Strong blow BOB in 2 secs. GTS in 35 mins.(see gas flow report)  
FSI Weak blow 1/2 - 1 1/2 "



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1855.01         | 103.26       | Initial Hydro-static |
| 1           | 23.90           | 102.72       | Open To Flow (1)     |
| 31          | 48.50           | 105.99       | Shut-In(1)           |
| 76          | 1181.95         | 106.73       | End Shut-In(1)       |
| 77          | 43.76           | 106.33       | Open To Flow (2)     |
| 135         | 88.36           | 108.09       | Shut-In(2)           |
| 227         | 1179.42         | 109.49       | End Shut-In(2)       |
| 227         | 1784.35         | 109.72       | Final Hydro-static   |

### Recovery

| Length (ft) | Description             | Volume (bbl) |
|-------------|-------------------------|--------------|
| 125.00      | GOCM 38%G 30%O 32%M     | 0.66         |
| 80.00       | SOCGM 4%O 22%G 74%M     | 1.12         |
| 0.00        | Clean Oil @ top of tool | 0.00         |
|             |                         |              |
|             |                         |              |
|             |                         |              |

### Gas Rates

|                | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|----------------|-----------------|------------------|
| First Gas Rate | 0.13           | 1.00            | 5.76             |
| Last Gas Rate  | 0.13           | 2.50            | 6.33             |
| Max. Gas Rate  | 0.13           | 2.50            | 6.33             |



**TRILOBITE**  
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## DRILL STEM TEST REPORT

TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27963

**DST#: 1**

ATTN: Jeff Burk

Test Start: 2007.07.19 @ 11:15:37

### Tool Information

|                           |                    |                       |                   |                        |             |
|---------------------------|--------------------|-----------------------|-------------------|------------------------|-------------|
| Drill Pipe:               | Length: 3546.00 ft | Diameter: 3.80 inches | Volume: 49.74 bbl | Tool Weight:           | 2100.00 lb  |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl  | Weight set on Packer:  | 25000.00 lb |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches | Volume: 0.59 bbl  | Weight to Pull Loose:  | 66000.00 lb |
|                           |                    | Total Volume:         | 50.33 bbl         | Tool Chased            | 0.00 ft     |
| Drill Pipe Above KB:      | 5.00 ft            |                       |                   | String Weight: Initial | 48000.00 lb |
| Depth to Top Packer:      | 3681.00 ft         |                       |                   | Final                  | 49500.00 lb |
| Depth to Bottom Packer:   | ft                 |                       |                   |                        |             |
| Interval between Packers: | 29.00 ft           |                       |                   |                        |             |
| Tool Length:              | 49.00 ft           |                       |                   |                        |             |
| Number of Packers:        | 2                  | Diameter:             | 6.75 inches       |                        |             |

### Tool Comments:

Hit bridge @ approx. 500 ft. Hit bridge @ approx. 3490 ft. Both took total string weight and several tries to get through

| Tool Description   | Length (ft) | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|--------------------|-------------|------------|----------|------------|-------------------------------|
| Change Over Sub    | 1.00        |            |          | 3662.00    |                               |
| Shut In Tool       | 5.00        |            |          | 3667.00    |                               |
| Hydraulic tool     | 5.00        |            |          | 3672.00    |                               |
| Packer             | 4.00        |            |          | 3676.00    | 20.00 Bottom Of Top Packer    |
| Packer             | 5.00        |            |          | 3681.00    |                               |
| Stubb              | 1.00        |            |          | 3682.00    |                               |
| Recorder           | 0.00        | 8167       | Inside   | 3682.00    |                               |
| Perforations       | 23.00       |            |          | 3705.00    |                               |
| Recorder           | 0.00        | 11019      | Outside  | 3705.00    |                               |
| Bullnose           | 5.00        |            |          | 3710.00    | 29.00 Bottom Packers & Anchor |
| Total Tool Length: |             | 49.00      |          |            |                               |



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## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27963

**DST#: 1**

ATTN: Jeff Burk

Test Start: 2007.07.19 @ 11:15:37

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

9000 ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbf

Water Loss: 11.76 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 9000.00 ppm

Filter Cake: 0.20 inches

### Recovery Information

Recovery Table

| Length<br>ft | Description             | Volume<br>bbf |
|--------------|-------------------------|---------------|
| 125.00       | GOCM 38%G 30%O 32%M     | 0.660         |
| 80.00        | SOCGM 4%O 22%G 74%M     | 1.122         |
| 0.00         | Clean Oil @ top of tool | 0.000         |

Total Length: 205.00 ft

Total Volume: 1.782 bbf

Num Fluid Samples: 0

Num Gas Bombs: 1

Serial #: gp-1

Laboratory Name: Caraway

Laboratory Location: Liberal, KS

Recovery Comments:





**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**GAS RATES**

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27963

**DST#: 1**

ATTN: Jeff Burk

Test Start: 2007.07.19 @ 11:15:37

### Gas Rates Information

Temperature: 59 deg C  
Relative Density: 0.65  
Z Factor: 0.8

Gas Rates Table

| Flow Period | Elapsed Time | Choke<br>(mm) | Pressure<br>(kPaa) | Gas Rate<br>(m <sup>3</sup> /d) |
|-------------|--------------|---------------|--------------------|---------------------------------|
| 2           | 40           | 0.13          | 1.00               | 5.76                            |
| 2           | 40           | 0.13          | 1.00               | 5.76                            |
| 2           | 50           | 0.13          | 2.50               | 6.33                            |

Serial #: 8167

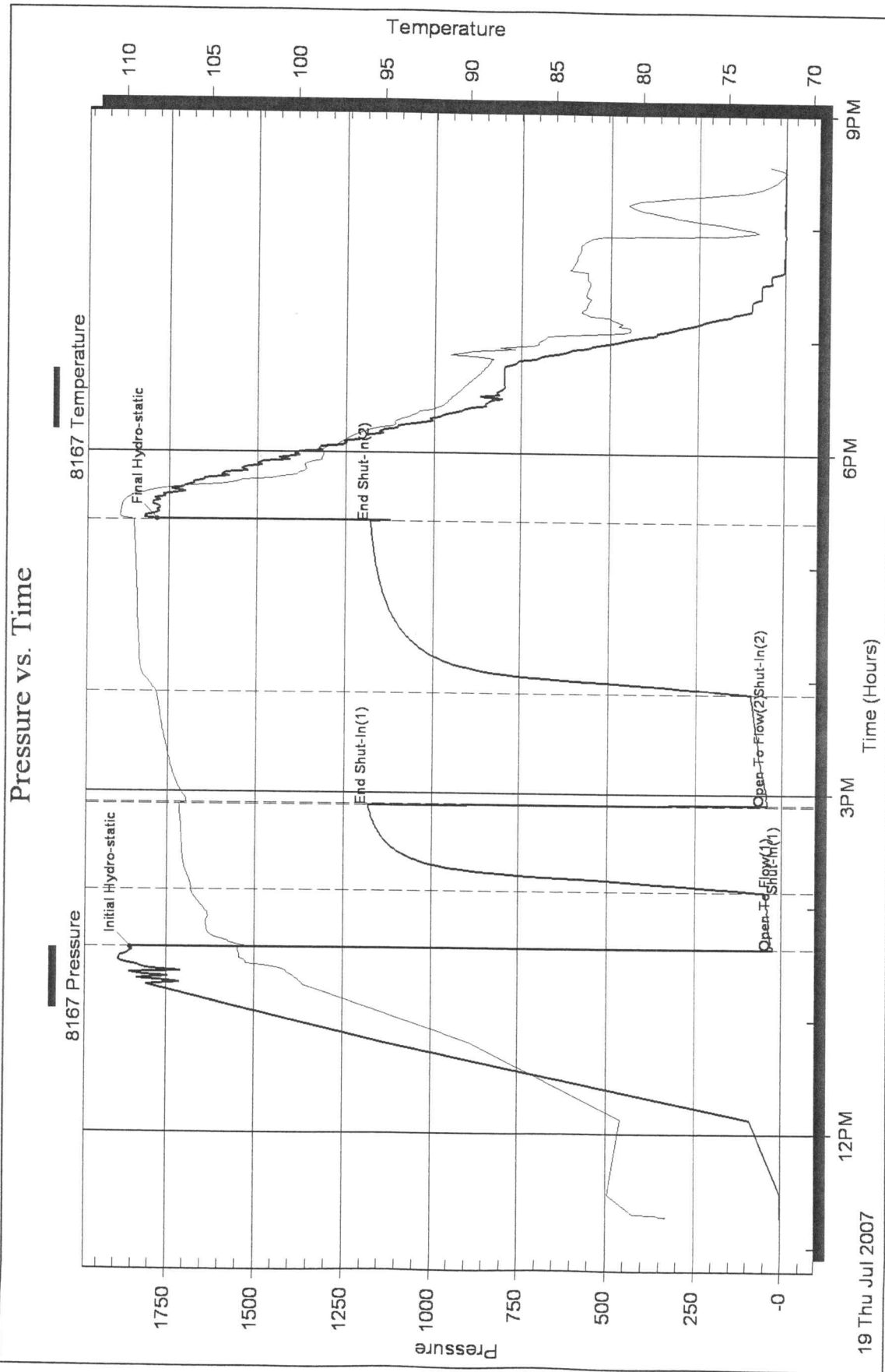
Inside

Gra Ex LLC

6 25 13 Stafford KS

DST Test Number: 1

# Pressure vs. Time





## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.20 @ 07:51:39

End Date: 2007.07.20 @ 15:59:54

Job Ticket #: 27964                      DST #: 2

Trilobite Testing, Inc

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ph: 785-625-4778 fax: 785-625-5620



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## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27964

**DST#: 2**

Test Start: 2007.07.20 @ 07:51:39

### GENERAL INFORMATION:

Formation: **Lansing E - F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:36:24

Time Test Ended: 15:59:54

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Interval: **3712.00 ft (KB) To 3756.00 ft (KB) (TVD)**

Total Depth: 3756.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: 63.73 psig @ 3713.00 ft (KB)

Start Date: 2007.07.20

End Date:

2007.07.20

Start Time: 07:51:44

End Time:

15:59:53

Capacity: 7000.00 psig

Last Calib.: 2007.07.20

Time On Btm: 2007.07.20 @ 10:35:54

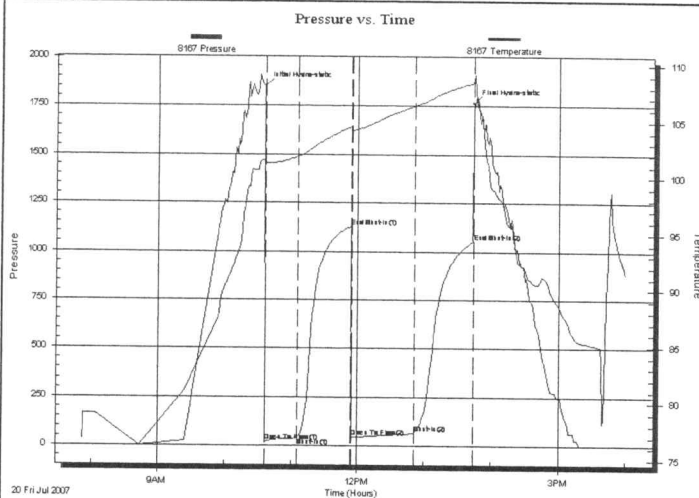
Time Off Btm: 2007.07.20 @ 13:44:08

TEST COMMENT: IF Weak blow 1 - 1 1/2 "

ISI No blow

FF Weak blow 1/2 - 1 1/2 "

FSI No blow



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1851.88         | 101.57       | Initial Hydro-static |
| 1           | 22.33           | 101.18       | Open To Flow (1)     |
| 30          | 38.69           | 101.92       | Shut-In (1)          |
| 78          | 1129.03         | 104.60       | End Shut-In (1)      |
| 79          | 43.54           | 104.32       | Open To Flow (2)     |
| 136         | 63.73           | 106.41       | Shut-In (2)          |
| 188         | 1052.55         | 108.47       | End Shut-In (2)      |
| 189         | 1765.47         | 108.75       | Final Hydro-static   |

### Recovery

| Length (ft) | Description                | Volume (bbl) |
|-------------|----------------------------|--------------|
| 80.00       | SOCM 3%O 97%M Trace of GIP | 0.39         |
|             |                            |              |
|             |                            |              |
|             |                            |              |
|             |                            |              |
|             |                            |              |

### Gas Rates

|  | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|--|----------------|-----------------|------------------|
|--|----------------|-----------------|------------------|



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27964

**DST#: 2**

ATTN: Jeff Burk

Test Start: 2007.07.20 @ 07:51:39

### Tool Information

|                           |                    |                         |                   |                                    |
|---------------------------|--------------------|-------------------------|-------------------|------------------------------------|
| Drill Pipe:               | Length: 3579.00 ft | Diameter: 3.80 inches   | Volume: 50.20 bbl | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches   | Volume: 0.00 bbl  | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches   | Volume: 0.59 bbl  | Weight to Pull Loose: 70000.00 lb  |
|                           |                    | Total Volume: 50.79 bbl |                   | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 7.00 ft            |                         |                   | String Weight: Initial 50000.00 lb |
| Depth to Top Packer:      | 3712.00 ft         |                         |                   | Final 51000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                         |                   |                                    |
| Interval between Packers: | 44.00 ft           |                         |                   |                                    |
| Tool Length:              | 64.00 ft           |                         |                   |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches   |                   |                                    |
| Tool Comments:            |                    |                         |                   |                                    |

### Tool Description

| Tool Description          | Length (ft)  | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|---------------------------|--------------|------------|----------|------------|-------------------------------|
| Change Over Sub           | 1.00         |            |          | 3693.00    |                               |
| Shut In Tool              | 5.00         |            |          | 3698.00    |                               |
| Hydraulic tool            | 5.00         |            |          | 3703.00    |                               |
| Packer                    | 4.00         |            |          | 3707.00    | 20.00 Bottom Of Top Packer    |
| Packer                    | 5.00         |            |          | 3712.00    |                               |
| Stubb                     | 1.00         |            |          | 3713.00    |                               |
| Recorder                  | 0.00         | 8167       | Inside   | 3713.00    |                               |
| Perforations              | 38.00        |            |          | 3751.00    |                               |
| Recorder                  | 0.00         | 11019      | Outside  | 3751.00    |                               |
| Bullnose                  | 5.00         |            |          | 3756.00    | 44.00 Bottom Packers & Anchor |
| <b>Total Tool Length:</b> | <b>64.00</b> |            |          |            |                               |



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## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27964

**DST#: 2**

ATTN: Jeff Burk

Test Start: 2007.07.20 @ 07:51:39

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 53.00 sec/qt

Water Loss: 10.77 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 9000.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

deg API

Water Salinity:

9000 ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description                | Volume<br>bbl |
|--------------|----------------------------|---------------|
| 80.00        | SOCM 3%O 97%M Trace of GIP | 0.393         |

Total Length: 80.00 ft

Total Volume: 0.393 bbl

Num Fluid Samples: 0

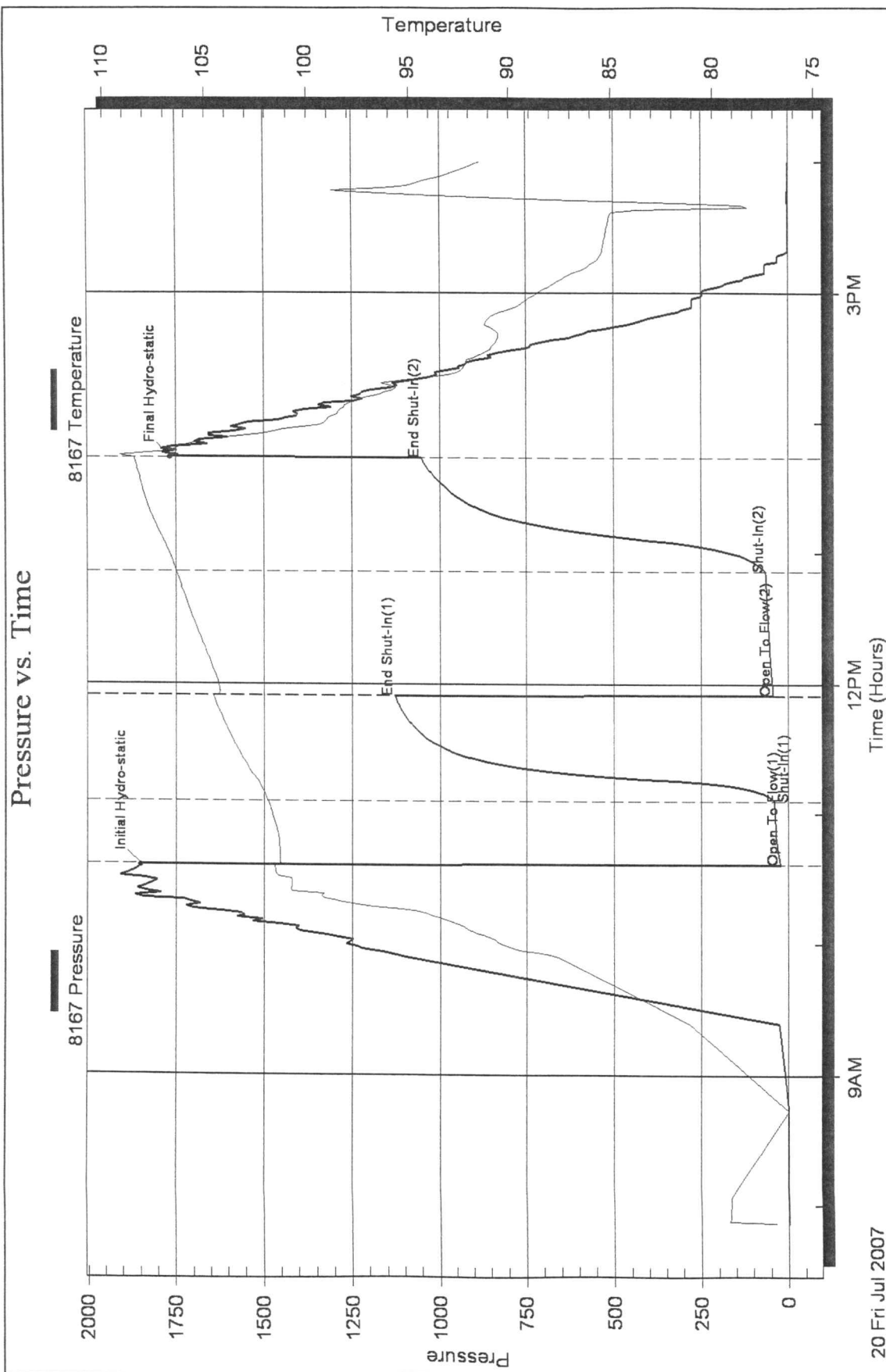
Num Gas Bombs: 0

Serial #: none

Laboratory Name:

Laboratory Location:

Recovery Comments:





## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.21 @ 15:38:59

End Date: 2007.07.22 @ 00:23:44

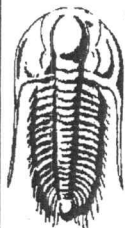
Job Ticket #: 27965                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620





**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27965

**DST#: 3**

Test Start: 2007.07.21 @ 15:38:59

### GENERAL INFORMATION:

Formation: **Lansing H**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:09:59

Time Test Ended: 00:23:44

Interval: **3802.00 ft (KB) To 3825.00 ft (KB) (TVD)**

Total Depth: 3825.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: 52.71 psig @ 3803.00 ft (KB)

Start Date: 2007.07.21

End Date:

2007.07.22

Start Time: 15:39:04

End Time:

00:23:44

Capacity: 7000.00 psig

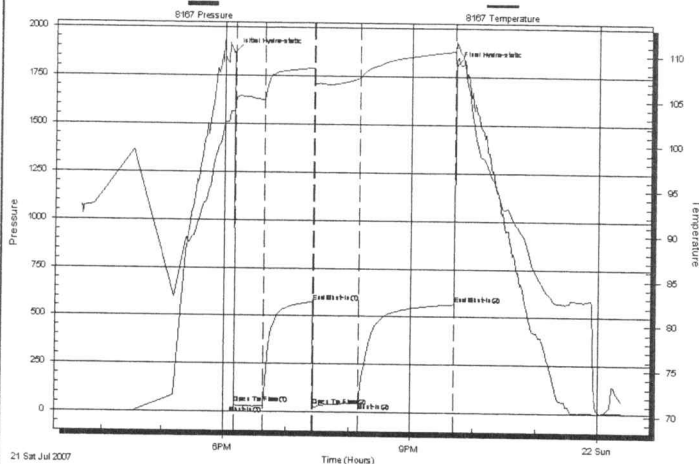
Last Calib.: 2007.07.22

Time On Btm: 2007.07.21 @ 18:08:59

Time Off Btm: 2007.07.21 @ 21:42:13

TEST COMMENT: IF Strong blow BOB in 1 1/2 mins.  
ISI Weak blow 1/2 - 1 "  
FF Strong blow GTS in 3 mins. (see gas flow report)  
FSI Weak blow 1/2 - 1 "

Pressure vs. Time



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1870.92         | 103.58       | Initial Hydro-static |
| 1           | 39.59           | 104.67       | Open To Flow (1)     |
| 29          | 30.39           | 104.98       | Shut-In(1)           |
| 77          | 572.95          | 108.53       | End Shut-In(1)       |
| 78          | 30.46           | 106.79       | Open To Flow (2)     |
| 121         | 52.71           | 107.46       | Shut-In(2)           |
| 213         | 565.62          | 110.42       | End Shut-In(2)       |
| 214         | 1810.79         | 111.07       | Final Hydro-static   |

### Recovery

| Length (ft) | Description         | Volume (bbl) |
|-------------|---------------------|--------------|
| 50.00       | CGO 15%G 85%O       | 0.25         |
| 100.00      | GMCO 26%G 44%O 30%M | 0.77         |
|             |                     |              |
|             |                     |              |
|             |                     |              |
|             |                     |              |

### Gas Rates

|                | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|----------------|-----------------|------------------|
| First Gas Rate | 0.25           | 1.50            | 25.22            |
| Last Gas Rate  | 0.25           | 1.50            | 25.22            |
| Max. Gas Rate  | 0.25           | 1.50            | 25.22            |



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27965

**DST#:3**

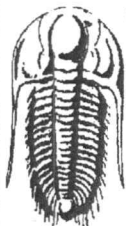
ATTN: Jeff Burk

Test Start: 2007.07.21 @ 15:38:59

### Tool Information

|                           |                    |                       |                   |                                    |
|---------------------------|--------------------|-----------------------|-------------------|------------------------------------|
| Drill Pipe:               | Length: 3672.00 ft | Diameter: 3.80 inches | Volume: 51.51 bbl | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl  | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches | Volume: 0.59 bbl  | Weight to Pull Loose: 71000.00 lb  |
|                           |                    | Total Volume:         | 52.10 bbl         | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 10.00 ft           |                       |                   | String Weight: Initial 52000.00 lb |
| Depth to Top Packer:      | 3802.00 ft         |                       |                   | Final 52000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                   |                                    |
| Interval between Packers: | 23.00 ft           |                       |                   |                                    |
| Tool Length:              | 43.00 ft           |                       |                   |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                   |                                    |
| Tool Comments:            |                    |                       |                   |                                    |

| Tool Description          | Length (ft)  | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|---------------------------|--------------|------------|----------|------------|-------------------------------|
| Change Over Sub           | 1.00         |            |          | 3783.00    |                               |
| Shut In Tool              | 5.00         |            |          | 3788.00    |                               |
| Hydraulic tool            | 5.00         |            |          | 3793.00    |                               |
| Packer                    | 4.00         |            |          | 3797.00    | 20.00 Bottom Of Top Packer    |
| Packer                    | 5.00         |            |          | 3802.00    |                               |
| Stubb                     | 1.00         |            |          | 3803.00    |                               |
| Recorder                  | 0.00         | 8167       | Inside   | 3803.00    |                               |
| Perforations              | 17.00        |            |          | 3820.00    |                               |
| Recorder                  | 0.00         | 11019      | Outside  | 3820.00    |                               |
| Bullnose                  | 5.00         |            |          | 3825.00    | 23.00 Bottom Packers & Anchor |
| <b>Total Tool Length:</b> | <b>43.00</b> |            |          |            |                               |



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27965

**DST#: 3**

ATTN: Jeff Burk

Test Start: 2007.07.21 @ 15:38:59

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 54.00 sec/qt

Water Loss: 11.97 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 12000.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

37.3 deg API

Water Salinity:

12000 ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description         | Volume<br>bbl |
|--------------|---------------------|---------------|
| 50.00        | CGO 15%G 85%O       | 0.246         |
| 100.00       | GMCO 26%G 44%O 30%M | 0.765         |

Total Length: 150.00 ft

Total Volume: 1.011 bbl

Num Fluid Samples: 0

Num Gas Bombs: 1

Serial #: gp-3

Laboratory Name: Caraway

Laboratory Location: Liberal, KS

Recovery Comments:



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**GAS RATES**

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27965

**DST#: 3**

ATTN: Jeff Burk

Test Start: 2007.07.21 @ 15:38:59

### Gas Rates Information

Temperature: 59 deg C  
Relative Density: 0.65  
Z Factor: 0.8

Gas Rates Table

| Flow Period | Elapsed Time | Choke<br>(mm) | Pressure<br>(kPaa) | Gas Rate<br>(m <sup>3</sup> /d) |
|-------------|--------------|---------------|--------------------|---------------------------------|
| 2           | 10           | 0.25          | 1.50               | 25.22                           |
| 2           | 20           | 0.25          | 1.50               | 25.22                           |
| 2           | 30           | 0.25          | 1.50               | 25.22                           |
| 2           | 45           | 0.25          | 1.50               | 25.22                           |

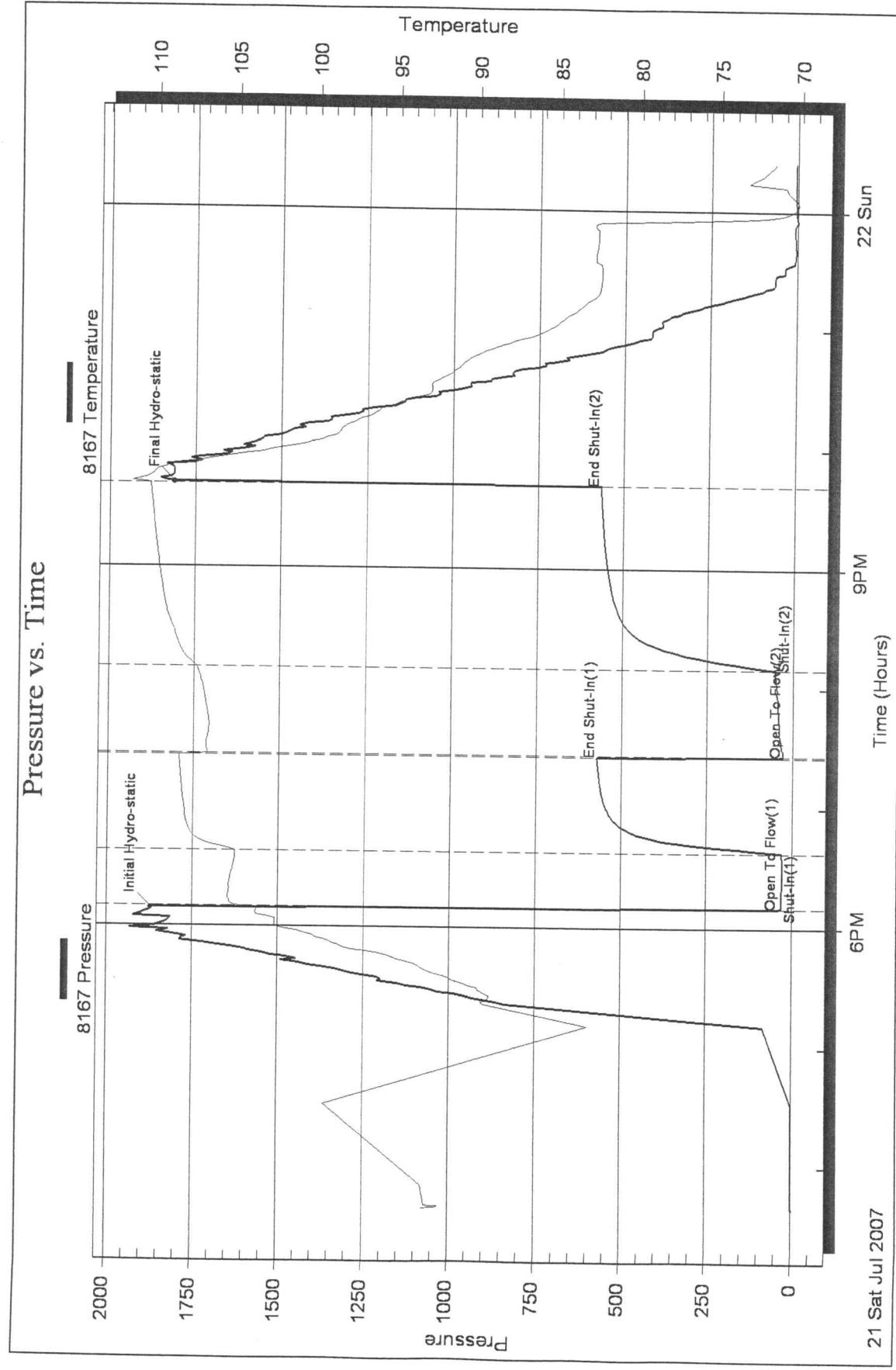
Serial #: 8167

Inside

Gra Ex LLC

6 25 13 Stafford KS

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.22 @ 10:17:58

End Date: 2007.07.22 @ 19:21:28

Job Ticket #: 29766      DST #: 4

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 29766

**DST#: 4**

Test Start: 2007.07.22 @ 10:17:58

### GENERAL INFORMATION:

Formation: **Lansing I - J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:20:13

Time Test Ended: 19:21:28

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Interval: **3823.00 ft (KB) To 3866.00 ft (KB) (TVD)**

Total Depth: 3866.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: 226.23 psig @ 3824.00 ft (KB)

Start Date: 2007.07.22

End Date: 2007.07.22

Capacity: 7000.00 psig

Last Calib.: 2007.07.22

Start Time: 10:18:03

End Time: 19:21:28

Time On Btm: 2007.07.22 @ 12:19:28

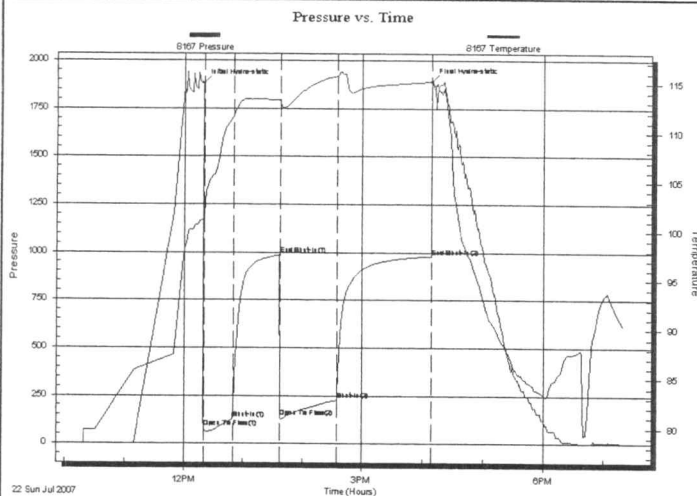
Time Off Btm: 2007.07.22 @ 16:08:42

TEST COMMENT: IF Strong blow BOB in 1 min. GTS in 12 mins. (see gas flow report)

ISI Weak blow 1/2 - 1 "

FF Strong blow (see gas flow report)

FSI Weak to fair blow 1 - 10 "



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1879.68         | 101.27       | Initial Hydro-static |
| 1           | 79.71           | 101.01       | Open To Flow (1)     |
| 31          | 125.88          | 111.63       | Shut-In (1)          |
| 78          | 985.54          | 113.33       | End Shut-In (1)      |
| 79          | 138.15          | 113.05       | Open To Flow (2)     |
| 135         | 226.23          | 115.77       | Shut-In (2)          |
| 229         | 979.83          | 115.17       | End Shut-In (2)      |
| 230         | 1886.88         | 115.52       | Final Hydro-static   |

### Recovery

| Length (ft) | Description                        | Volume (bbl) |
|-------------|------------------------------------|--------------|
| 60.00       | OCW 14%O 86%W /w tr salty to taste | 0.30         |
| 195.00      | G&WCO 21%G 24%W 55%O               | 2.19         |
| 248.00      | GM&WCO 26%G 10%M 19%W 45%O         | 3.48         |
| 112.00      | GM&WCO 20%G 23%W 15%M 42%O         | 1.57         |
|             |                                    |              |
|             |                                    |              |

### Gas Rates

|                | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|----------------|-----------------|------------------|
| First Gas Rate | 0.25           | 6.00            | 32.36            |
| Last Gas Rate  | 0.25           | 12.00           | 41.88            |
| Max. Gas Rate  | 0.25           | 14.00           | 45.05            |



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

### TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 29766

**DST#: 4**

ATTN: Jeff Burk

Test Start: 2007.07.22 @ 10:17:58

### Tool Information

|                           |                    |                         |                   |                                    |
|---------------------------|--------------------|-------------------------|-------------------|------------------------------------|
| Drill Pipe:               | Length: 3704.00 ft | Diameter: 3.80 inches   | Volume: 51.96 bbl | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches   | Volume: 0.00 bbl  | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches   | Volume: 0.59 bbl  | Weight to Pull Loose: 73000.00 lb  |
|                           |                    | Total Volume: 52.55 bbl |                   | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 21.00 ft           |                         |                   | String Weight: Initial 52000.00 lb |
| Depth to Top Packer:      | 3823.00 ft         |                         |                   | Final 54000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                         |                   |                                    |
| Interval between Packers: | 43.00 ft           |                         |                   |                                    |
| Tool Length:              | 63.00 ft           |                         |                   |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches   |                   |                                    |

Tool Comments:

### Tool Description

| Tool Description          | Length (ft)  | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|---------------------------|--------------|------------|----------|------------|-------------------------------|
| Change Over Sub           | 1.00         |            |          | 3804.00    |                               |
| Shut In Tool              | 5.00         |            |          | 3809.00    |                               |
| Hydraulic tool            | 5.00         |            |          | 3814.00    |                               |
| Packer                    | 4.00         |            |          | 3818.00    | 20.00 Bottom Of Top Packer    |
| Packer                    | 5.00         |            |          | 3823.00    |                               |
| Stubb                     | 1.00         |            |          | 3824.00    |                               |
| Recorder                  | 0.00         | 8167       | Inside   | 3824.00    |                               |
| Perforations              | 37.00        |            |          | 3861.00    |                               |
| Recorder                  | 0.00         | 11019      | Outside  | 3861.00    |                               |
| Bullnose                  | 5.00         |            |          | 3866.00    | 43.00 Bottom Packers & Anchor |
| <b>Total Tool Length:</b> | <b>63.00</b> |            |          |            |                               |





**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 29766

**DST#: 4**

ATTN: Jeff Burk

Test Start: 2007.07.22 @ 10:17:58

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 43.00 sec/qt

Water Loss: 16.97 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 12000.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description                        | Volume<br>bbl |
|--------------|------------------------------------|---------------|
| 60.00        | OCW 14%O 86%W /w tr salty to taste | 0.295         |
| 195.00       | G&WCO 21%G 24%W 55%O               | 2.189         |
| 248.00       | GM&WCO 26%G 10%M 19%W 45%O         | 3.479         |
| 112.00       | GM&WCO 20%G 23%W 15%M 42%O         | 1.571         |

Total Length: 615.00 ft

Total Volume: 7.534 bbl

Num Fluid Samples: 0

Num Gas Bombs: 1

Serial #: gp-4

Laboratory Name: Caraway

Laboratory Location: Liberal, KS

Recovery Comments:



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**GAS RATES**

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 29766

**DST#: 4**

ATTN: Jeff Burk

Test Start: 2007.07.22 @ 10:17:58

### Gas Rates Information

Temperature: 59 deg C

Relative Density: 0.65

Z Factor: 0.8

Gas Rates Table

| Flow Period | Elapsed Time | Choke<br>(mm) | Pressure<br>(kPaa) | Gas Rate<br>(m <sup>3</sup> /d) |
|-------------|--------------|---------------|--------------------|---------------------------------|
| 1           | 20           | 0.25          | 6.00               | 32.36                           |
| 1           | 30           | 0.25          | 8.00               | 35.54                           |
| 2           | 10           | 0.25          | 11.00              | 40.30                           |
| 2           | 20           | 0.25          | 13.00              | 43.47                           |
| 2           | 30           | 0.25          | 14.00              | 45.05                           |
| 2           | 40           | 0.25          | 14.00              | 45.05                           |
| 2           | 50           | 0.25          | 13.00              | 43.47                           |
| 2           | 60           | 0.25          | 12.00              | 41.88                           |

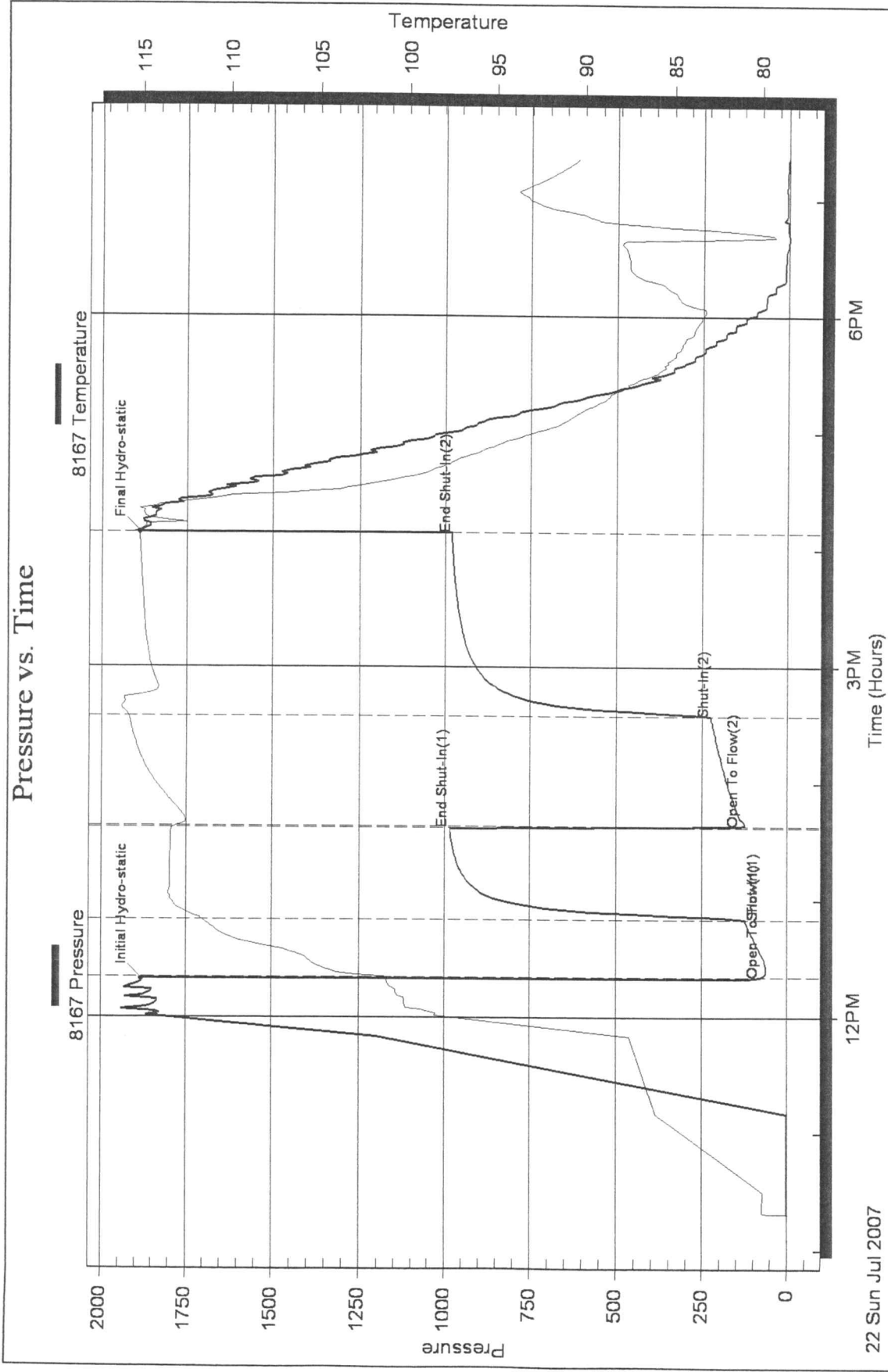
Serial #: 8167

Inside

Gra Ex LLC

6 25 13 Stafford KS

DST Test Number: 4





## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.23 @ 12:27:43

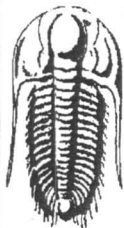
End Date: 2007.07.23 @ 16:28:13

Job Ticket #: 27967      DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27967

**DST#: 5**

Test Start: 2007.07.23 @ 12:27:43

### GENERAL INFORMATION:

Formation: **Lansing K - L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:00:00

Time Test Ended: 16:28:13

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Interval: **3870.00 ft (KB) To 3926.00 ft (KB) (TVD)**

Total Depth: 3926.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition:

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: psig @ 3871.00 ft (KB)

Start Date: 2007.07.23

End Date:

2007.07.23

Capacity: 7000.00 psig

Last Calib.: 2007.07.23

Start Time: 12:27:48

End Time:

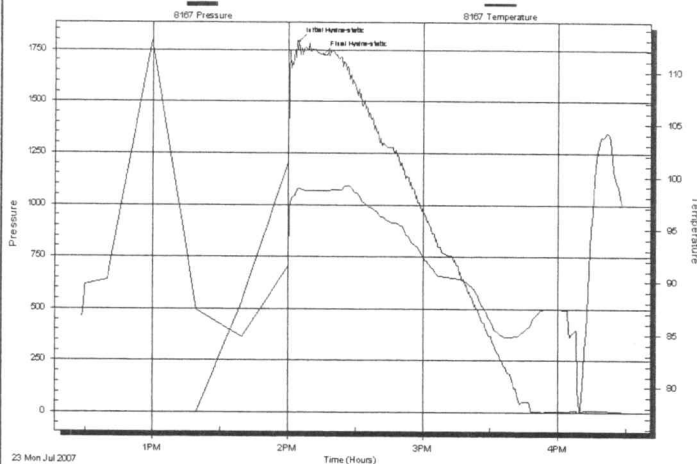
16:28:13

Time On Btm: 2007.07.23 @ 14:04:43

Time Off Btm: 2007.07.23 @ 14:15:13

**TEST COMMENT:** Hit bridge approx. 250 ft. from btm. Hit bridge hard several times using total string weight Could not get tool through MISRUN

Pressure vs. Time



### PRESSURE SUMMARY

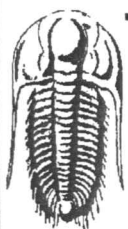
| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1789.12         | 98.88        | Initial Hydro-static |
| 11          | 1726.94         | 98.65        | Final Hydro-static   |

### Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|-------------|--------------|
| 0.00        |             | 0.00         |
|             |             |              |
|             |             |              |
|             |             |              |
|             |             |              |
|             |             |              |

### Gas Rates

|  | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|--|----------------|-----------------|------------------|
|--|----------------|-----------------|------------------|



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

### TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27967

**DST#: 5**

ATTN: Jeff Burk

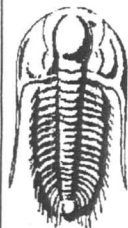
Test Start: 2007.07.23 @ 12:27:43

### Tool Information

|                           |                    |                       |                         |                                    |
|---------------------------|--------------------|-----------------------|-------------------------|------------------------------------|
| Drill Pipe:               | Length: 3733.00 ft | Diameter: 3.80 inches | Volume: 52.36 bbl       | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl        | Weight set on Packer: 51000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches | Volume: 0.59 bbl        | Weight to Pull Loose: 66000.00 lb  |
|                           |                    |                       | Total Volume: 52.95 bbl | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 3.00 ft            |                       |                         | String Weight: Initial 51000.00 lb |
| Depth to Top Packer:      | 3870.00 ft         |                       |                         | Final 51000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                         |                                    |
| Interval between Packers: | 56.00 ft           |                       |                         |                                    |
| Tool Length:              | 76.00 ft           |                       |                         |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                         |                                    |

Tool Comments:

| Tool Description   | Length (ft) | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|--------------------|-------------|------------|----------|------------|-------------------------------|
| Change Over Sub    | 1.00        |            |          | 3851.00    |                               |
| Shut In Tool       | 5.00        |            |          | 3856.00    |                               |
| Hydraulic tool     | 5.00        |            |          | 3861.00    |                               |
| Packer             | 4.00        |            |          | 3865.00    | 20.00 Bottom Of Top Packer    |
| Packer             | 5.00        |            |          | 3870.00    |                               |
| Stubb              | 1.00        |            |          | 3871.00    |                               |
| Recorder           | 0.00        | 8167       | Inside   | 3871.00    |                               |
| Perforations       | 17.00       |            |          | 3888.00    |                               |
| Change Over Sub    | 1.00        |            |          | 3889.00    |                               |
| Blank Spacing      | 31.00       |            |          | 3920.00    |                               |
| Change Over Sub    | 1.00        |            |          | 3921.00    |                               |
| Recorder           | 0.00        | 11019      | Outside  | 3921.00    |                               |
| Bullnose           | 5.00        |            |          | 3926.00    | 56.00 Bottom Packers & Anchor |
| Total Tool Length: |             | 76.00      |          |            |                               |



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27967

**DST#: 5**

ATTN: Jeff Burk

Test Start: 2007.07.23 @ 12:27:43

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 45.00 sec/qt

Water Loss: 15.98 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 13000.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description | Volume<br>bbl |
|--------------|-------------|---------------|
| 0.00         |             | 0.000         |

Total Length:

ft

Total Volume:

bbl

Num Fluid Samples: 0

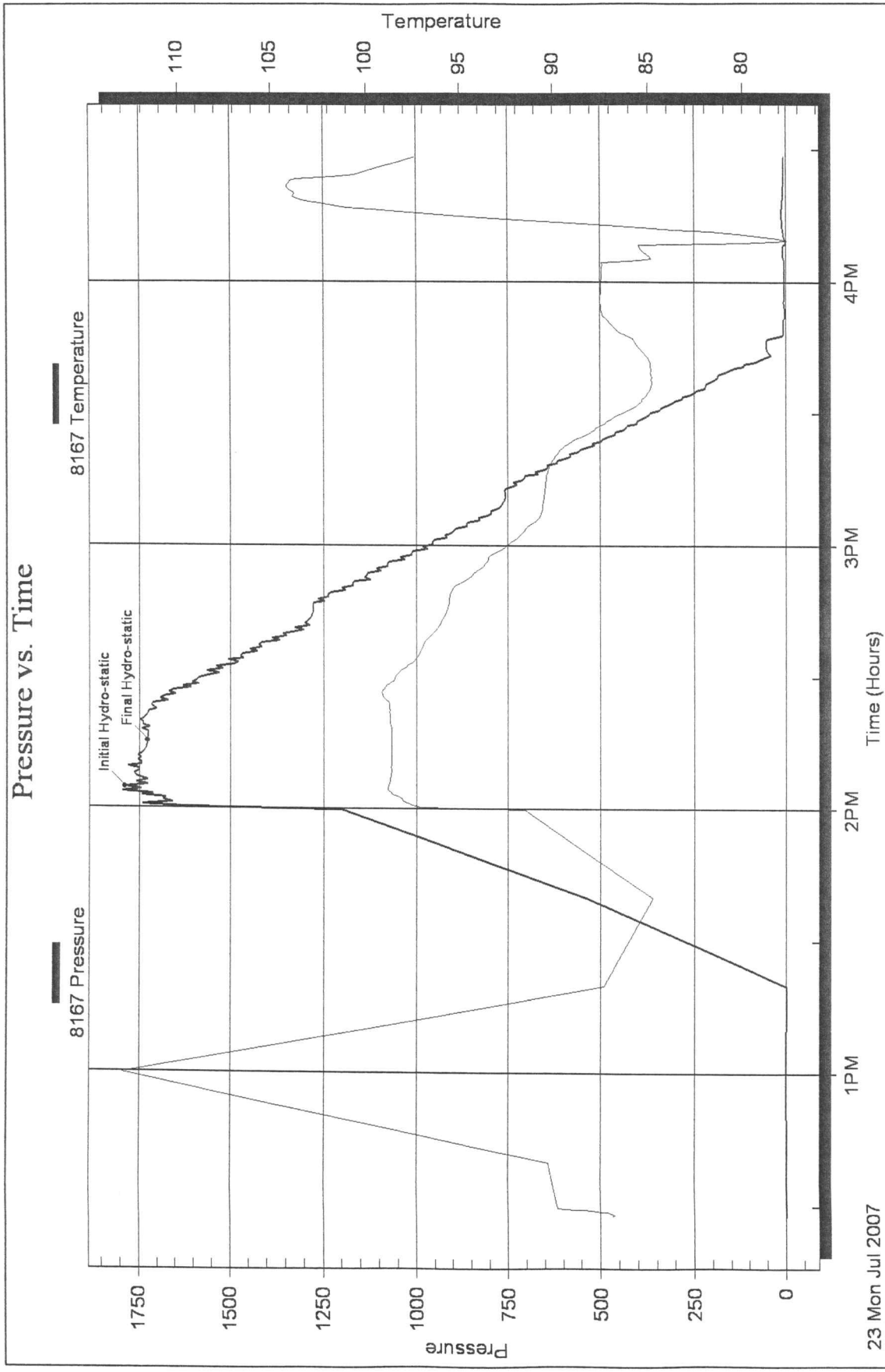
Num Gas Bombs: 0

Serial #: none

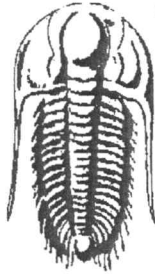
Laboratory Name:

Laboratory Location:

Recovery Comments:







**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.24 @ 03:16:55

End Date: 2007.07.24 @ 12:16:55

Job Ticket #: 27968      DST #: 6

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27968

**DST#: 6**

Test Start: 2007.07.24 @ 03:16:55

### GENERAL INFORMATION:

Formation: **Lansing K & L**

Deviated: **No** Whipstock: **ft (KB)**

Time Tool Opened: 05:59:25

Time Test Ended: 12:16:55

Test Type: **Conventional Bottom Hole**

Tester: **Gary Pevoteaux**

Unit No: **39**

Interval: **3870.00 ft (KB) To 3926.00 ft (KB) (TVD)**

Total Depth: **3926.00 ft (KB) (TVD)**

Hole Diameter: **7.88 inches** Hole Condition: **Poor**

Reference Elevations: **1964.00 ft (KB)**

**1956.00 ft (CF)**

KB to GR/CF: **8.00 ft**

**Serial #: 8167**

**Inside**

Press@RunDepth: **107.04 psig @ 3871.00 ft (KB)**

Start Date: **2007.07.24**

End Date:

**2007.07.24**

Start Time: **03:17:00**

End Time:

**12:16:55**

Capacity: **7000.00 psig**

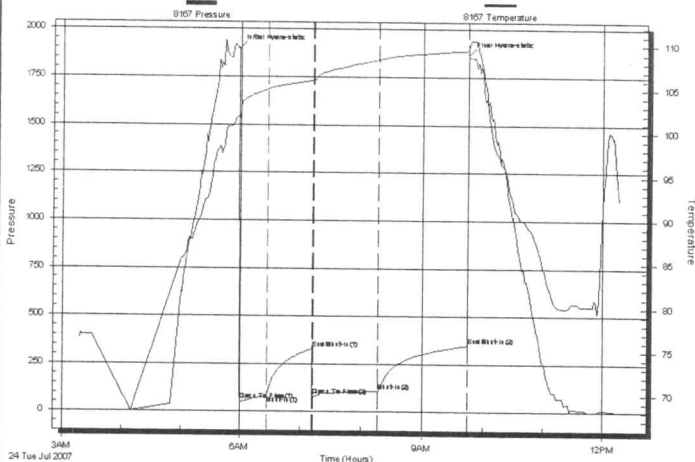
Last Calib.: **2007.07.24**

Time On Btm: **2007.07.24 @ 05:57:55**

Time Off Btm: **2007.07.24 @ 09:45:09**

TEST COMMENT: IF Strong blow BOB in 70 secs.  
ISI Weak blow 1 - 1 1/2 "  
FF Strong blow BOB in 1 min. GTS 55 mins. in to FFP  
FSI Weak blow 1/2 - 1 "

Pressure vs. Time



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1896.70         | 101.98       | Initial Hydro-static |
| 2           | 56.43           | 102.64       | Open To Flow (1)     |
| 29          | 80.35           | 104.98       | Shut-In (1)          |
| 74          | 329.05          | 106.01       | End Shut-In (1)      |
| 75          | 81.45           | 105.97       | Open To Flow (2)     |
| 139         | 107.04          | 108.40       | Shut-In (2)          |
| 227         | 347.66          | 109.47       | End Shut-In (2)      |
| 228         | 1867.88         | 110.12       | Final Hydro-static   |

### Recovery

| Length (ft) | Description         | Volume (bbl) |
|-------------|---------------------|--------------|
| 120.00      | GOCM 19%G 26%O 55%M | 0.59         |
| 95.00       | GOCM 16%G 14%O 70%M | 1.33         |
|             |                     |              |
|             |                     |              |
|             |                     |              |
|             |                     |              |

### Gas Rates

| Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|-----------------|------------------|
|----------------|-----------------|------------------|



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27968

**DST#: 6**

ATTN: Jeff Burk

Test Start: 2007.07.24 @ 03:16:55

### Tool Information

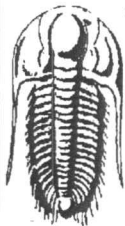
|                           |                    |                       |                                |                                    |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe:               | Length: 3730.00 ft | Diameter: 3.80 inches | Volume: 52.32 bbl              | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl               | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches | Volume: 0.59 bbl               | Weight to Pull Loose: 92000.00 lb  |
|                           |                    |                       | <u>Total Volume: 52.91 bbl</u> | Tool Chased 2.00 ft                |
| Drill Pipe Above KB:      | 8.00 ft            |                       |                                | String Weight: Initial 50000.00 lb |
| Depth to Top Packer:      | 3870.00 ft         |                       |                                | Final 52000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                                |                                    |
| Interval between Packers: | 56.00 ft           |                       |                                |                                    |
| Tool Length:              | 84.00 ft           |                       |                                |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                                |                                    |

Tool Comments:

### Tool Description

| Tool Description | Length (ft) | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|------------------|-------------|------------|----------|------------|-------------------------------|
| Change Over Sub  | 1.00        |            |          | 3843.00    |                               |
| Shut In Tool     | 5.00        |            |          | 3848.00    |                               |
| Hydraulic tool   | 5.00        |            |          | 3853.00    |                               |
| Jars             | 5.00        |            |          | 3858.00    |                               |
| Safety Joint     | 3.00        |            |          | 3861.00    |                               |
| Packer           | 4.00        |            |          | 3865.00    | 28.00 Bottom Of Top Packer    |
| Packer           | 5.00        |            |          | 3870.00    |                               |
| Stubb            | 1.00        |            |          | 3871.00    |                               |
| Recorder         | 0.00        | 8167       | Inside   | 3871.00    |                               |
| Perforations     | 17.00       |            |          | 3888.00    |                               |
| Change Over Sub  | 1.00        |            |          | 3889.00    |                               |
| Blank Spacing    | 31.00       |            |          | 3920.00    |                               |
| Change Over Sub  | 1.00        |            |          | 3921.00    |                               |
| Recorder         | 0.00        | 11019      | Outside  | 3921.00    |                               |
| Bullnose         | 5.00        |            |          | 3926.00    | 56.00 Bottom Packers & Anchor |

**Total Tool Length: 84.00**



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27968

**DST#: 6**

ATTN: Jeff Burk

Test Start: 2007.07.24 @ 03:16:55

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 45.00 sec/qt

Water Loss: 15.98 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 13000.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

deg API

Water Salinity:

13000 ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description         | Volume<br>bbl |
|--------------|---------------------|---------------|
| 120.00       | GOCM 19%G 26%O 55%M | 0.590         |
| 95.00        | GOCM 16%G 14%O 70%M | 1.333         |

Total Length: 215.00 ft

Total Volume: 1.923 bbl

Num Fluid Samples: 0

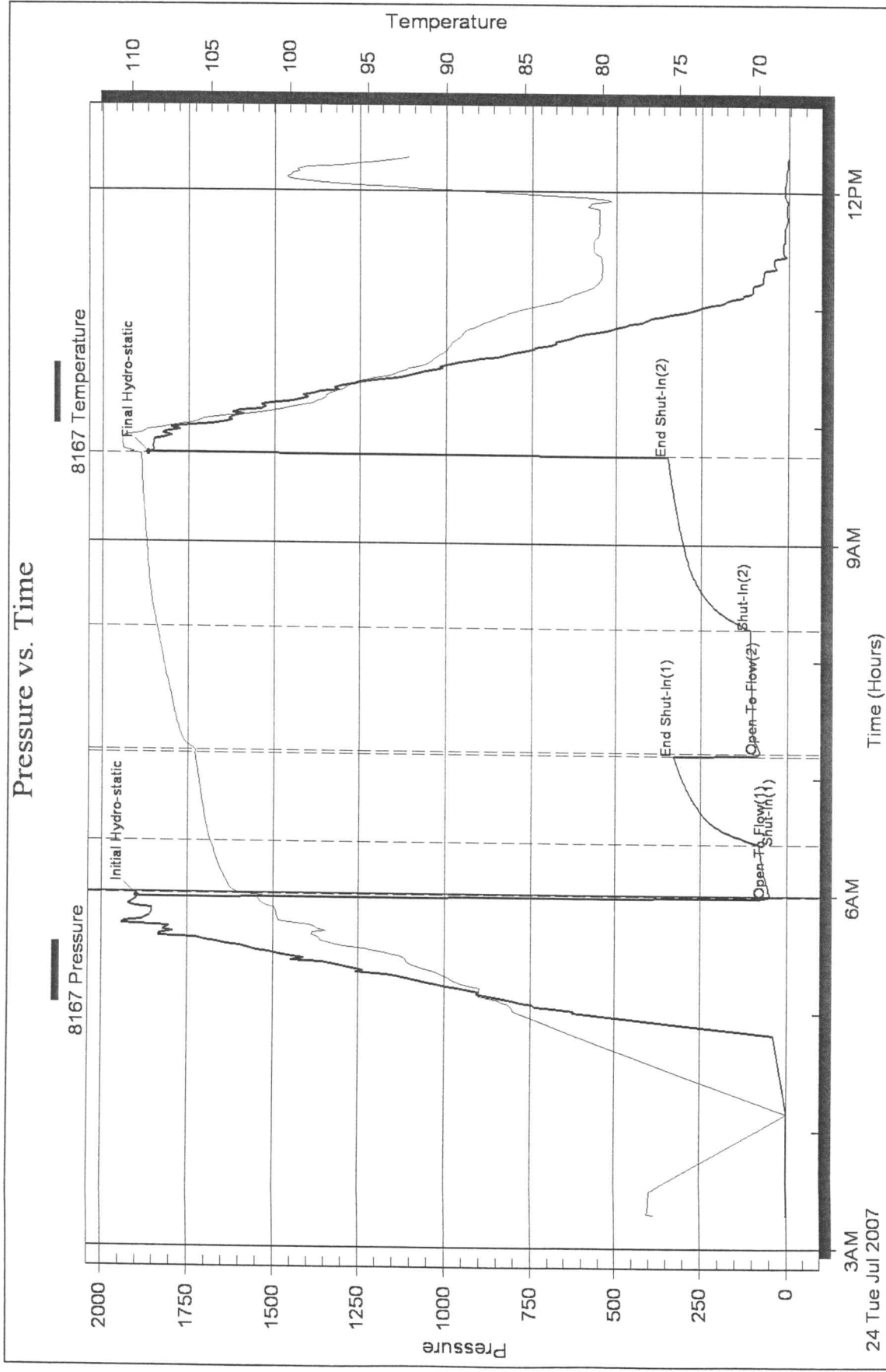
Num Gas Bombs: 0

Serial #: none

Laboratory Name:

Laboratory Location:

Recovery Comments:





## DRILL STEM TEST REPORT

Prepared For: **Gra Ex LLC**

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**6 25 13 Stafford KS**

**Astle #1**

Start Date: 2007.07.25 @ 07:09:11

End Date: 2007.07.25 @ 15:45:11

Job Ticket #: 27969      DST #: 7

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

Gra Ex LLC

PO Box 32 1603 N Walnut  
Kingman KS 67068

ATTN: Jeff Burk

**Astle #1**

**6 25 13 Stafford KS**

Job Ticket: 27969

**DST#: 7**

Test Start: 2007.07.25 @ 07:09:11

### GENERAL INFORMATION:

Formation: **Miss.**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:38:11

Time Test Ended: 15:45:11

Interval: **4011.00 ft (KB) To 4060.00 ft (KB) (TVD)**

Total Depth: 4060.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Poor

Test Type: Conventional Bottom Hole

Tester: Gary Pevoteaux

Unit No: 39

Reference Elevations: 1964.00 ft (KB)

1956.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8167**

**Inside**

Press@RunDepth: 48.87 psig @ 4012.00 ft (KB)

Start Date: 2007.07.25

End Date:

2007.07.25

Start Time: 07:09:16

End Time:

15:45:11

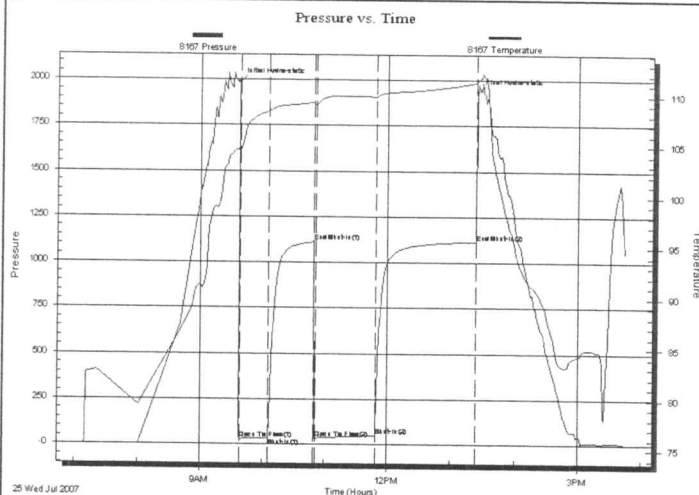
Capacity: 7000.00 psig

Last Calib.: 2007.07.25

Time On Btm: 2007.07.25 @ 09:37:26

Time Off Btm: 2007.07.25 @ 13:24:10

TEST COMMENT: IF Strong blow BOB in 75 secs. GTS in 28 mins.  
ISI No blow  
FF Strong blow (see gas flow report)  
FSI No blow



### PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1987.11         | 104.75       | Initial Hydro-static |
| 1           | 29.75           | 104.61       | Open To Flow (1)     |
| 29          | 33.25           | 108.47       | Shut-In (1)          |
| 73          | 1110.99         | 109.35       | End Shut-In (1)      |
| 74          | 33.76           | 109.11       | Open To Flow (2)     |
| 132         | 48.87           | 109.92       | Shut-In (2)          |
| 227         | 1114.38         | 111.34       | End Shut-In (2)      |
| 227         | 1933.66         | 111.57       | Final Hydro-static   |

### Recovery

| Length (ft) | Description   | Volume (bbl) |
|-------------|---------------|--------------|
| 80.00       | GCM 11%G 89%M | 0.39         |
|             |               |              |
|             |               |              |
|             |               |              |
|             |               |              |
|             |               |              |

### Gas Rates

|                | Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|----------------|-----------------|------------------|
| First Gas Rate | 0.25           | 9.00            | 37.12            |
| Last Gas Rate  | 0.25           | 14.00           | 45.05            |
| Max. Gas Rate  | 0.25           | 14.00           | 45.05            |



**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

TOOL DIAGRAM

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27969

**DST#: 7**

ATTN: Jeff Burk

Test Start: 2007.07.25 @ 07:09:11

### Tool Information

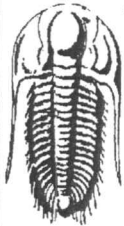
|                           |                    |                       |                                |                                    |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe:               | Length: 3888.00 ft | Diameter: 3.80 inches | Volume: 54.54 bbl              | Tool Weight: 2100.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl               | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 120.00 ft  | Diameter: 2.25 inches | Volume: 0.59 bbl               | Weight to Pull Loose: 72000.00 lb  |
|                           |                    |                       | <u>Total Volume: 55.13 bbl</u> | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 25.00 ft           |                       |                                | String Weight: Initial 54000.00 lb |
| Depth to Top Packer:      | 4011.00 ft         |                       |                                | Final 54000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                                |                                    |
| Interval between Packers: | 49.00 ft           |                       |                                |                                    |
| Tool Length:              | 77.00 ft           |                       |                                |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                                |                                    |
| Tool Comments:            |                    |                       |                                |                                    |

### Tool Description

| Tool Description | Length (ft) | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|------------------|-------------|------------|----------|------------|-------------------------------|
| Change Over Sub  | 1.00        |            |          | 3984.00    |                               |
| Shut In Tool     | 5.00        |            |          | 3989.00    |                               |
| Hydraulic tool   | 5.00        |            |          | 3994.00    |                               |
| Jars             | 5.00        |            |          | 3999.00    |                               |
| Safety Joint     | 3.00        |            |          | 4002.00    |                               |
| Packer           | 4.00        |            |          | 4006.00    | 28.00 Bottom Of Top Packer    |
| Packer           | 5.00        |            |          | 4011.00    |                               |
| Stubb            | 1.00        |            |          | 4012.00    |                               |
| Recorder         | 0.00        | 8167       | Inside   | 4012.00    |                               |
| Perforations     | 10.00       |            |          | 4022.00    |                               |
| Change Over Sub  | 1.00        |            |          | 4023.00    |                               |
| Blank Spacing    | 31.00       |            |          | 4054.00    |                               |
| Change Over Sub  | 1.00        |            |          | 4055.00    |                               |
| Recorder         | 0.00        | 11019      | Outside  | 4055.00    |                               |
| Bullnose         | 5.00        |            |          | 4060.00    | 49.00 Bottom Packers & Anchor |

**Total Tool Length: 77.00**





**TRILOBITE**  
**TESTING, INC**

## DRILL STEM TEST REPORT

### FLUID SUMMARY

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27969

**DST#: 7**

ATTN: Jeff Burk

Test Start: 2007.07.25 @ 07:09:11

### Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 63.00 sec/qt

Water Loss: 14.39 in<sup>3</sup>

Resistivity: 0.00 ohm.m

Salinity: 12300.00 ppm

Filter Cake: 0.20 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

12300 ppm

### Recovery Information

Recovery Table

| Length<br>ft | Description   | Volume<br>bbl |
|--------------|---------------|---------------|
| 80.00        | GCM 11%G 89%M | 0.393         |

Total Length: 80.00 ft

Total Volume: 0.393 bbl

Num Fluid Samples: 0

Num Gas Bombs: 1

Serial #: gp-7

Laboratory Name: Caraway

Laboratory Location: Liberal, KS

Recovery Comments:



**TRILOBITE**  
**TESTING, INC.**

## DRILL STEM TEST REPORT

**GAS RATES**

Gra Ex LLC

**Astle #1**

PO Box 32 1603 N Walnut  
Kingman KS 67068

**6 25 13 Stafford KS**

Job Ticket: 27969

**DST#: 7**

ATTN: Jeff Burk

Test Start: 2007.07.25 @ 07:09:11

### Gas Rates Information

Temperature: 59 deg C

Relative Density: 0.65

Z Factor: 0.8

Gas Rates Table

| Flow Period | Elapsed Time | Choke (mm) | Pressure (kPaa) | Gas Rate (m <sup>3</sup> /d) |
|-------------|--------------|------------|-----------------|------------------------------|
| 2           | 10           | 0.25       | 9.00            | 37.12                        |
| 2           | 20           | 0.25       | 11.00           | 40.30                        |
| 2           | 30           | 0.25       | 12.00           | 41.88                        |
| 2           | 40           | 0.25       | 13.00           | 43.47                        |
| 2           | 50           | 0.25       | 14.00           | 45.05                        |
| 2           | 60           | 0.25       | 14.00           | 45.05                        |

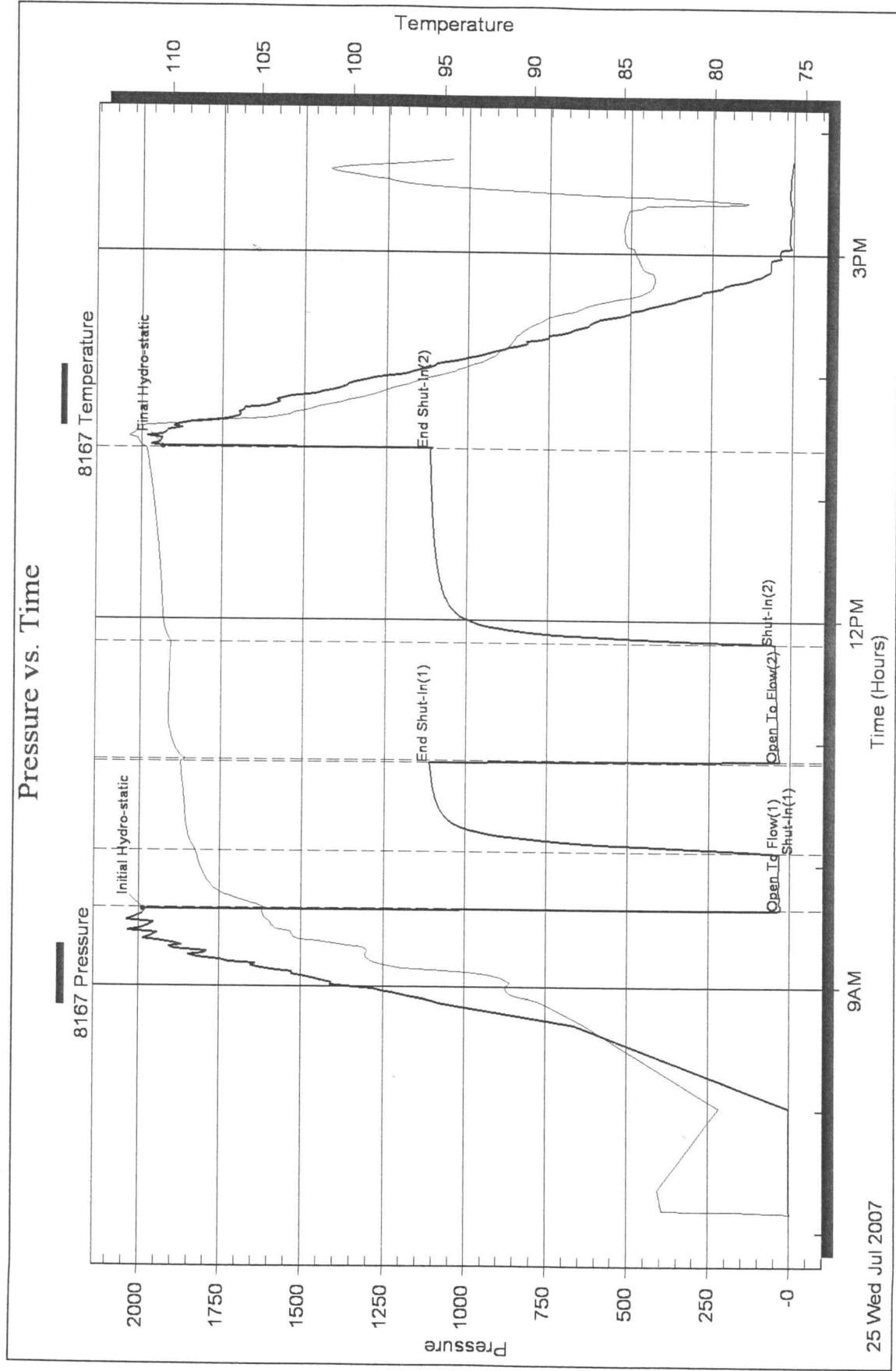
Serial #: 8167

Inside

Gra Ex LLC

6 25 13 Stafford KS

DST Test Number: 7



# KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

- ☒ Open Flow  
☐ Deliverability

(See Instructions on Reverse Side)

Test Date:

API No. 15

08/27/07

185-23,466-0000

|                                                                              |                                             |                                                          |                          |                                                                  |                                |
|------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------|--------------------------|------------------------------------------------------------------|--------------------------------|
| Company<br><u>Gra Ex, LLC.</u>                                               |                                             | Lease<br><u>Ast/c</u>                                    |                          | Well Number<br><u>#1</u>                                         |                                |
| County<br><u>Stafford</u>                                                    | Location<br><u>1650' FSL &amp; 480' FEL</u> | Section<br><u>06</u>                                     | TWP<br><u>25S</u>        | RNG (EW)<br><u>13W</u>                                           | Acres Attributed<br><u>160</u> |
| Field<br><u>Spevers</u>                                                      |                                             | Reservoir<br><u>Mississippi</u>                          |                          | Gas Gathering Connection<br><u>ONEOK</u>                         |                                |
| Completion Date<br><u>08/24/07</u>                                           |                                             | Plug Back Total Depth<br><u>4297'</u>                    |                          | Packer Set at<br><u>NONE IN HOLE</u>                             |                                |
| Casing Size<br><u>5 1/2"</u>                                                 | Weight<br><u>15.5"</u>                      | Internal Diameter<br><u>4.95"</u>                        | Set at<br><u>4314'</u>   | Perforations<br><u>4012'</u>                                     | To<br><u>4030'</u>             |
| Tubing Size<br><u>2 3/8</u>                                                  | Weight<br><u>4.7"</u>                       | Internal Diameter<br><u>1.995"</u>                       | Set at<br><u>4007.37</u> | Perforations<br><u>4012'</u>                                     | To<br><u>4030'</u>             |
| Type Completion (Describe)<br><u>PERFORATION (Acid then FRAK)</u>            |                                             | Type Fluid Production<br><u>OIL/WTR</u>                  |                          | Pump Unit or Travelling Plunger? Yes / No<br><u>NO - Flowing</u> |                                |
| Producing Thru (Annulus / Tubing)<br><u>TUBING</u>                           |                                             | % Carbon Dioxide<br><u>0.000</u>                         |                          | % Nitrogen<br><u>16.026</u>                                      |                                |
| Vertical Depth (ft)<br><u>4007.37' (KB)</u>                                  |                                             | Pressure Taps<br><u>N/A</u>                              |                          | Gas Gravity - G <sub>g</sub><br><u>0.6892</u>                    |                                |
|                                                                              |                                             |                                                          |                          | (Meter Run) (Prover) Size<br><u>2" Prover</u>                    |                                |
| Pressure Buildup: Shut in <u>08/24</u> 20 <u>07</u> at <u>9:00</u> (AM) (PM) |                                             | Taken <u>08/27</u> 20 <u>07</u> at <u>9:35</u> (AM) (PM) |                          |                                                                  |                                |
| Well on Line: Started _____ 20 _____ at _____ (AM) (PM)                      |                                             | Taken _____ 20 _____ at _____ (AM) (PM)                  |                          |                                                                  |                                |

## OBSERVED SURFACE DATA

Duration of Shut-In \_\_\_\_\_ Hours

| Static / Dynamic Property | Orifice Size (Inches) | Circle one: Meter Prover Pressure psig (Pm) | Pressure Differential in Inches H <sub>2</sub> O | Flowing Temperature t | Well Head Temperature t | Casing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>i</sub> ) or (P <sub>c</sub> ) psig | Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>i</sub> ) or (P <sub>c</sub> ) psia | Duration (Hours) | Liquid Produced (Barrels) |
|---------------------------|-----------------------|---------------------------------------------|--------------------------------------------------|-----------------------|-------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|------------------|---------------------------|
| Shut-In                   |                       |                                             |                                                  |                       |                         |                                                                                           |                                                                                           |                  |                           |
| Flow                      |                       |                                             |                                                  |                       |                         |                                                                                           |                                                                                           |                  |                           |

## FLOW STREAM ATTRIBUTES

| Plate Coefficient (F <sub>s</sub> ) (F <sub>p</sub> ) Mcfd | Circle one: Meter or Prover Pressure psia | Press Extension $\sqrt{P_w \times h}$ | Gravity Factor F <sub>g</sub> | Flowing Temperature Factor F <sub>t</sub> | Deviation Factor F <sub>gv</sub> | Metered Flow R (Mcfd) | GOR (Cubic Feet/ Barrel) | Flowing Fluid Gravity G <sub>m</sub> |
|------------------------------------------------------------|-------------------------------------------|---------------------------------------|-------------------------------|-------------------------------------------|----------------------------------|-----------------------|--------------------------|--------------------------------------|
|                                                            |                                           |                                       |                               |                                           |                                  |                       |                          |                                      |

## (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>w</sub>)<sup>2</sup> = \_\_\_\_\_ : (P<sub>w</sub>)<sup>2</sup> = \_\_\_\_\_ : P<sub>d</sub> = \_\_\_\_\_ % (P<sub>w</sub> - 14.4) + 14.4 = \_\_\_\_\_ : (P<sub>w</sub>)<sup>2</sup> = 0.207  
(P<sub>d</sub>)<sup>2</sup> = \_\_\_\_\_

|                                                                                                                                          |                                                                 |                                                                                                                                                                                                                                 |                                                                                 |                                                           |         |         |                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------|---------|---------|----------------------------------------------------|
| (P <sub>w</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup><br>or<br>(P <sub>w</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup> | (P <sub>w</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup> | Choose formula 1 or 2:<br>1. P <sub>w</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup><br>2. P <sub>w</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup><br>divided by: P <sub>w</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup> | LOG of formula 1, or 2, and divide by:<br>$\frac{P_w^2 - P_d^2}{P_w^2 - P_d^2}$ | Backpressure Curve Slope = "n" or Assigned Standard Slope | n x LOG | Antilog | Open Flow Deliverability Equals R x Antilog (Mcfd) |
|                                                                                                                                          |                                                                 |                                                                                                                                                                                                                                 |                                                                                 |                                                           |         |         |                                                    |

Open Flow

Mcfd @ 14.65 psia

Deliverability

Mcfd @ 14.65 psia

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct. Executed this the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_\_.

Witness (if any)

For Company

For Commission

Checked by