



DRILL STEM TEST REPORT

Prepared For: **Cimarex Energy Co.**

348 Rd. DD
Santana Ks, 67870

ATTN: Kevin Martin

Hammer #19-6

19/30s/31w/Haskell

Start Date: 2013.09.16 @ 20:35:00

End Date: 2013.09.17 @ 08:07:00

Job Ticket #: 18494 DST #: 1

Superior Testers Enterprises LLC
PO Box 138 Great Bend KS 67530
1-800-792-6902

Printed: 2013.09.16 @ 08:30:18



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Job Ticket: 18494

DST#: 1

ATTN: Kevin Martin

Test Start: 2013.09.16 @ 20:35:00

GENERAL INFORMATION:

Formation: **swope limestone**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 00:58:00
 Time Test Ended: 08:07:00
 Interval: **4655.00 ft (KB) To 4698.00 ft (KB) (TVD)**
 Total Depth: 4698.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Shane Konem
 Unit No: 3330/388/Great Bend
 Reference Elevations: 2859.00 ft (KB)
 2850.00 ft (CF)
 KB to GR/CF: 9.00 ft

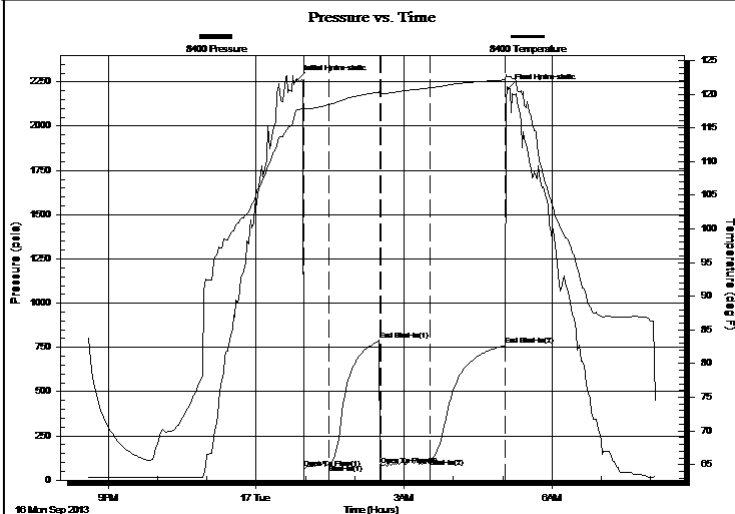
Serial #: 8400

Inside

Press @ RunDepth: 120.74 psia @ 4694.00 ft (KB) Capacity: 5000.00 psia
 Start Date: 2013.09.16 End Date: 2013.09.17 Last Calib.: 2013.09.16
 Start Time: 20:35:00 End Time: 08:07:00 Time On Btm: 2013.09.17 @ 00:50:30
 Time Off Btm: 2013.09.17 @ 05:07:00

TEST COMMENT: 1st Open/ 30 Minutes. Weak blow built to 1/4 inch in bucket of water.
 1st Shut In/ 60 Minutes. No blow back.
 2nd Open/ 60 Minutes. No blow. Did not flush tool per K. Martin.
 2nd Shut In/ 90 Minutes. No blow back.

PRESSURE SUMMARY



| Time (Min.) | Pressure (psia) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2261.12 | 117.71 | Initial Hydro-static |
| 8 | 66.17 | 117.68 | Open To Flow (1) |
| 38 | 86.77 | 118.44 | Shut-In(1) |
| 100 | 790.43 | 120.33 | End Shut-In(1) |
| 101 | 84.92 | 120.08 | Open To Flow (2) |
| 161 | 120.74 | 120.94 | Shut-In(2) |
| 253 | 761.50 | 122.11 | End Shut-In(2) |
| 257 | 2212.12 | 122.66 | Final Hydro-static |

Recovery

| Length (ft) | Description | Volume (bbl) |
|-------------|-------------|--------------|
| 0.00 | No gas | 0.00 |
| 59.00 | 100% mud | 0.29 |
| | | |
| | | |
| | | |

Gas Rates

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



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Job Ticket: 18494

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 Tester: Shane Konem
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 2850.00 ft (CF)
 KB to GR/CF: 9.00 ft

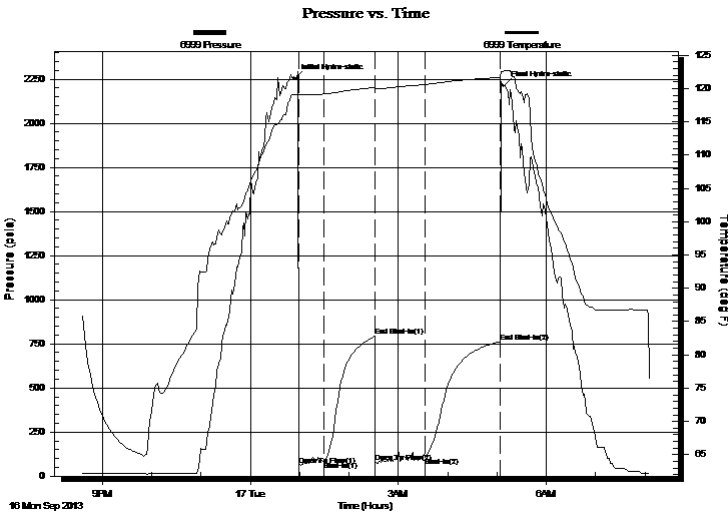
Serial #: 6999

Outside

Press @ RunDepth: 762.46 psia @ 4695.00 ft (KB) Capacity: 5000.00 psia
 Start Date: 2013.09.16 End Date: 2013.09.17 Last Calib.: 2013.09.16
 Start Time: 20:35:00 End Time: 08:06:30 Time On Btm: 2013.09.17 @ 00:53:30
 Time Off Btm: 2013.09.17 @ 05:08:00

TEST COMMENT: 1st Open/ 30 Minutes. Weak blow built to 1/4 inch in bucket of water.
 1st Shut In/ 60 Minutes. No blow back.
 2nd Open/ 60 Minutes. No blow. Did not flush tool per K. Martin.
 2nd Shut In/ 90 Minutes. No blow back.

PRESSURE SUMMARY



| Time (Min.) | Pressure (psia) | Temp (deg F) | Annotation |
|-------------|-----------------|--------------|----------------------|
| 0 | 2253.49 | 119.10 | Initial Hydro-static |
| 6 | 60.98 | 119.14 | Open To Flow (1) |
| 36 | 86.33 | 119.19 | Shut-In(1) |
| 98 | 792.55 | 120.17 | End Shut-In(1) |
| 99 | 78.81 | 120.02 | Open To Flow (2) |
| 159 | 108.43 | 120.63 | Shut-In(2) |
| 251 | 762.46 | 121.69 | End Shut-In(2) |
| 255 | 2212.67 | 122.66 | Final Hydro-static |

Recovery

Gas Rates

| Length (ft) | Description | Volume (bbl) |
|-------------|-------------|--------------|
| 0.00 | No gas | 0.00 |
| 59.00 | 100% mud | 0.29 |
| | | |
| | | |
| | | |

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



DRILL STEM TEST REPORT

TOOL DIAGRAM

Cimarex Energy Co.

19/30s/31w/Haskell

348 Rd. DD
Santana Ks, 67870

Hammer #19-6

Job Ticket: 18494

DST#: 1

ATTN: Kevin Martin

Test Start: 2013.09.16 @ 20:35:00

Tool Information

| | | | | |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe: | Length: 4403.00 ft | Diameter: 3.80 inches | Volume: 61.76 bbl | Tool Weight: 2000.00 lb |
| Heavy Wt. Pipe: | Length: 0.00 ft | Diameter: 0.00 inches | Volume: 0.00 bbl | Weight set on Packer: 20000.00 lb |
| Drill Collar: | Length: 244.00 ft | Diameter: 2.25 inches | Volume: 1.20 bbl | Weight to Pull Loose: 76000.00 lb |
| | | | <u>Total Volume: 62.96 bbl</u> | Tool Chased 0.00 ft |
| Drill Pipe Above KB: | 21.00 ft | | | String Weight: Initial 67000.00 lb |
| Depth to Top Packer: | 4655.00 ft | | | Final 67000.00 lb |
| Depth to Bottom Packer: | ft | | | |
| Interval between Packers: | 43.00 ft | | | |
| Tool Length: | 72.00 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 | | | 4627.00 | |
| Shut-In Tool | 5.00 | | | 4632.00 | |
| Hydroic Tool | 5.00 | | | 4637.00 | |
| Jars | 6.00 | | | 4643.00 | |
| Safety Joint | 2.00 | | | 4645.00 | |
| Packer | 5.00 | | | 4650.00 | 29.00 Bottom Of Top Packer |
| Packer | 5.00 | | | 4655.00 | |
| Perforations | 38.00 | | | 4693.00 | |
| Recorder | 1.00 | 8400 | Inside | 4694.00 | |
| Recorder | 1.00 | 6999 | Outside | 4695.00 | |
| Bullnose | 3.00 | | | 4698.00 | 43.00 Bottom Packers & Anchor |

Total Tool Length: 72.00



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FLUID SUMMARY

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DST#: 1

ATTN: Kevin Martin

Test Start: 2013.09.16 @ 20:35:00

Mud and Cushion Information

Mud Type: Gel Chem
Mud Weight: 9.00 lb/gal
Viscosity: 47.00 sec/qt
Water Loss: 8.00 in³
Resistivity: ohm.m
Salinity: 1500.00 ppm
Filter Cake: 1.00 inches

Cushion Type:
Cushion Length: ft
Cushion Volume: bbl
Gas Cushion Type:
Gas Cushion Pressure: psia

Oil API: deg API
Water Salinity: ppm

Recovery Information

Recovery Table

| Length ft | Description | Volume bbl |
|--------------|-------------|---------------|
| 0.00 | No gas | 0.000 |
| 59.00 | 100% mud | 0.290 |

Total Length: 59.00 ft Total Volume: 0.290 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

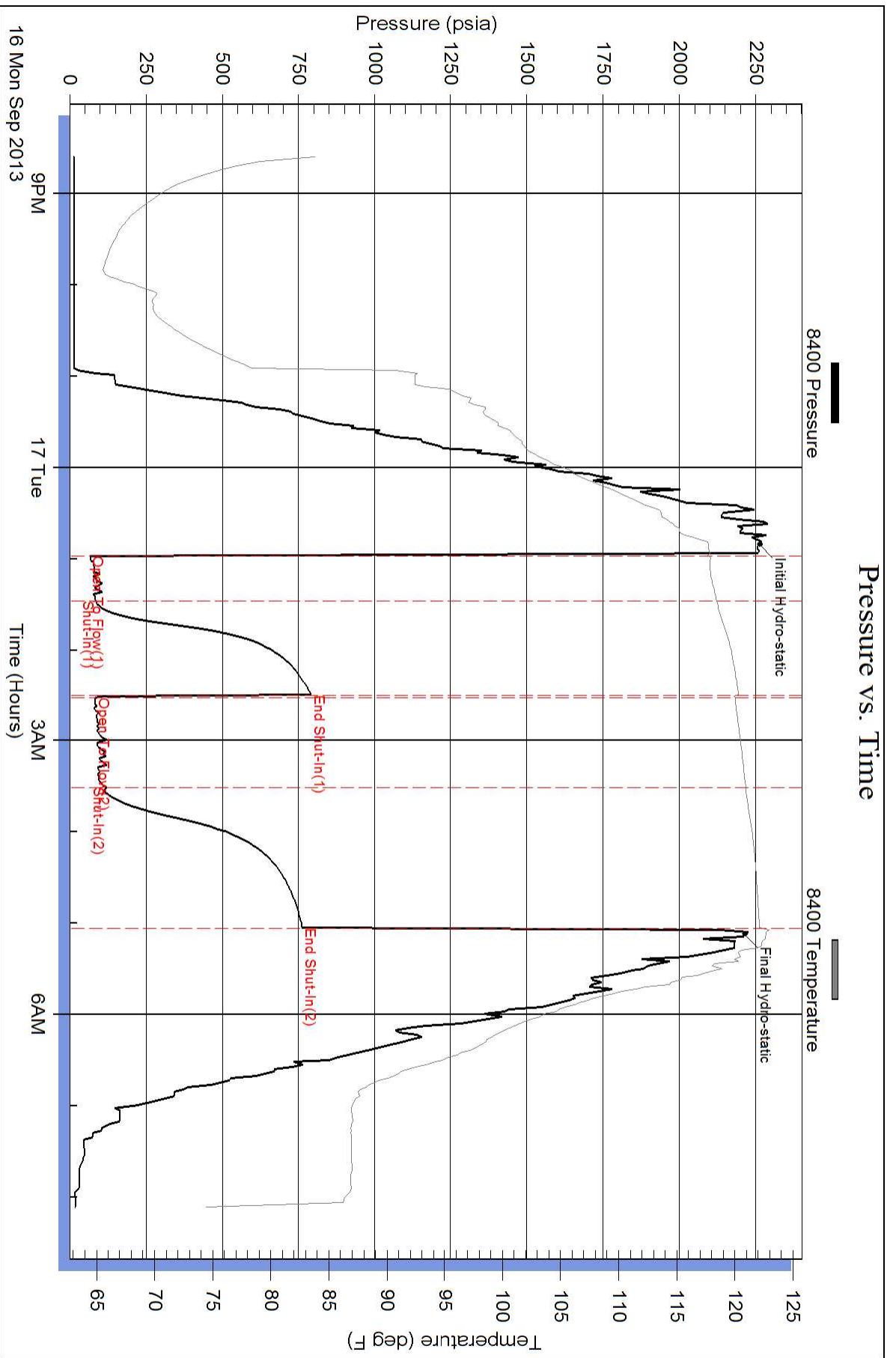
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Pressure vs. Time



Pressure vs. Time

