

**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Murfin Drilling Co Inc  
 250 N Water Ste 300  
 Wichita, Ks  
 67202  
 ATTN: Paul Gunzelman

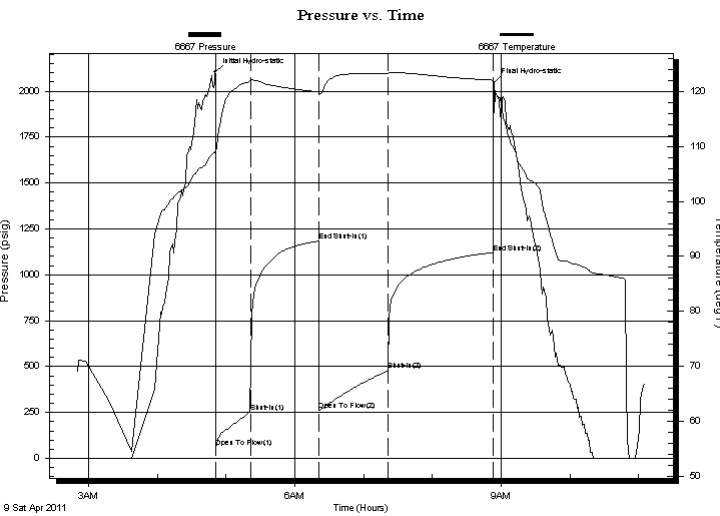
**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
 Job Ticket: 042188 **DST#: 1**  
 Test Start: 2011.04.09 @ 02:50:36

## GENERAL INFORMATION:

Formation: **Toronto, A**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:51:21  
 Time Test Ended: 11:25:06  
 Interval: **4113.00 ft (KB) To 4170.00 ft (KB) (TVD)**  
 Total Depth: 4170.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole  
 Tester: Shane McBride  
 Unit No: 55  
 Reference Elevations: 3238.00 ft (KB)  
 3233.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 6667 Inside**  
 Press @ Run Depth: 479.16 psig @ 4114.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2011.04.09 End Date: 2011.04.09 Last Calib.: 2011.04.09  
 Start Time: 02:50:36 End Time: 11:05:06 Time On Btm: 2011.04.09 @ 04:50:36  
 Time Off Btm: 2011.04.09 @ 08:53:51

**TEST COMMENT:** B.O.B. in 9 min.  
 No return  
 B.O.B. in 12 min  
 No return



## PRESSURE SUMMARY

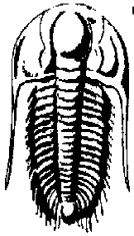
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2101.89	109.10	Initial Hydro-static
1	58.71	108.84	Open To Flow (1)
31	254.19	122.01	Shut-In(1)
91	1183.28	120.01	End Shut-In(1)
91	264.89	119.69	Open To Flow (2)
151	479.16	123.40	Shut-In(2)
243	1121.77	122.14	End Shut-In(2)
244	2048.33	121.22	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
420.00	water w/oil scum 100%w	4.27
360.00	s m c w w/heavy oil scum 10% m 90%	5.05
185.00	v s o c m w 3% o 40% m 57% w	2.60

## Gas Rates

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



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**20-10-34 Thomas, Ks**  
Job Ticket: 042188      **DST#: 1**  
Test Start: 2011.04.09 @ 02:50:36

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 42000 ppm
Viscosity: 65.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.20 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 5100.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
420.00	water w/oil scum 100%w	4.270
360.00	s m c w w/heavy oil scum 10%m 90%w	5.050
185.00	v s o c m w 3%o 40%m 57%w	2.595

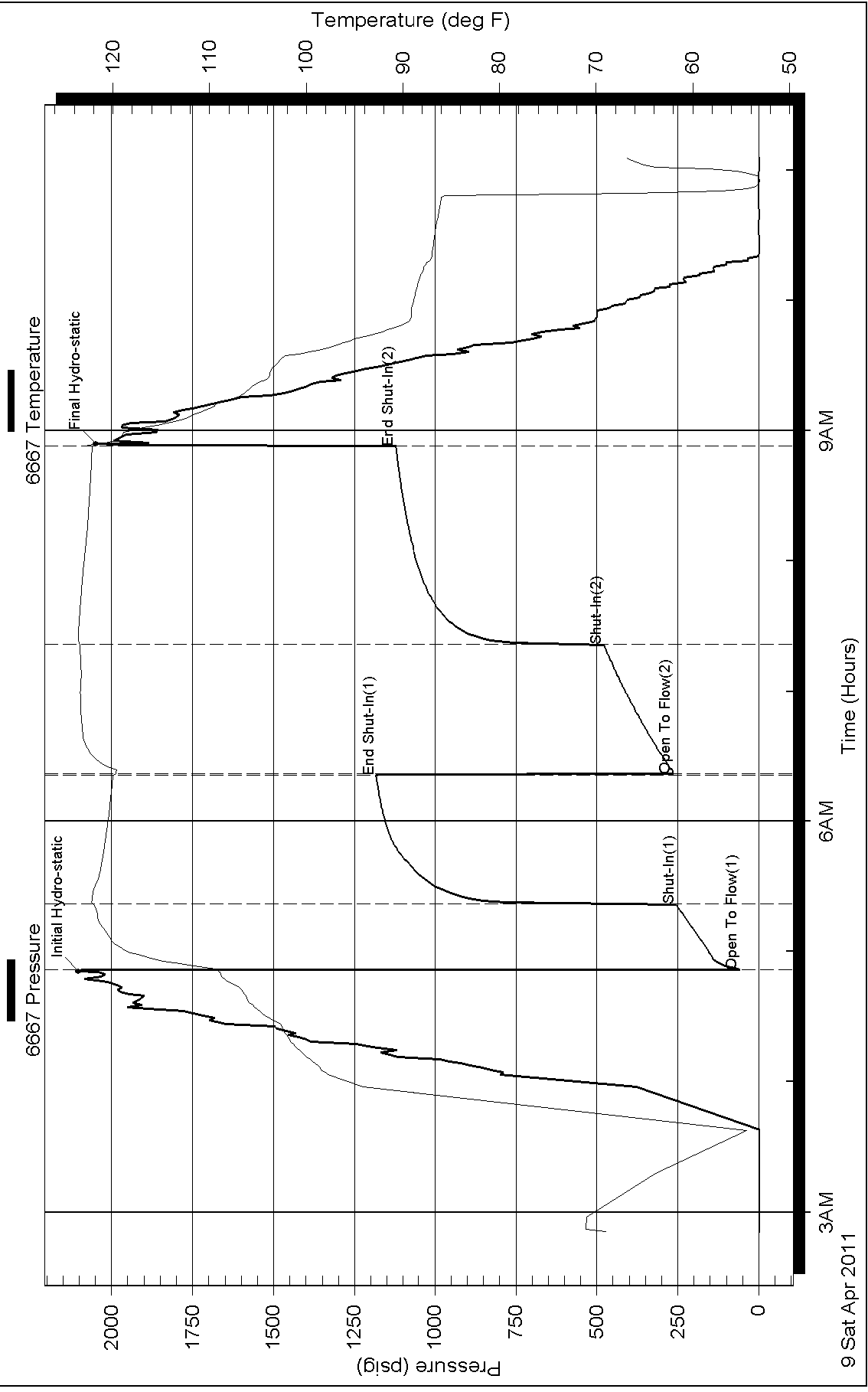
Total Length: 965.00 ft      Total Volume: 11.915 bbl

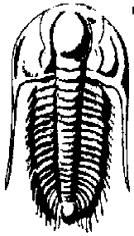
Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: rw .148 @ 80\*f = 42,000 chlor

### Pressure vs. Time





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ATTN: Paul Gunzelman

**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042189 **DST#: 2**  
Test Start: 2011.04.09 @ 18:50:21

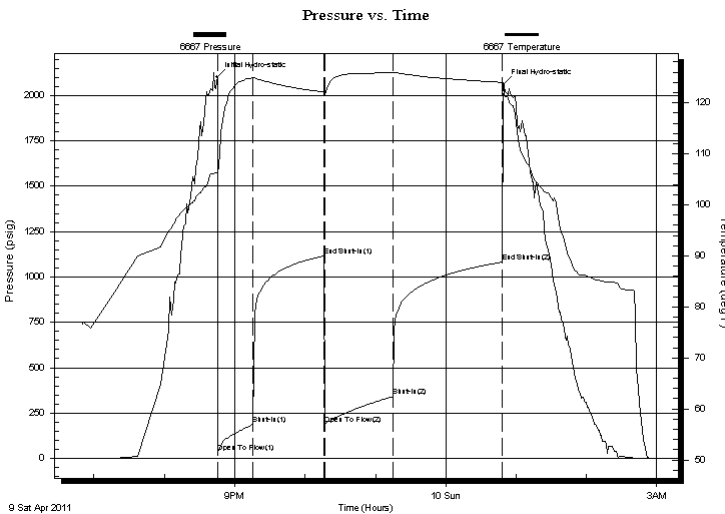
## GENERAL INFORMATION:

Formation: **B**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 20:45:36  
Time Test Ended: 03:10:06  
Interval: **4170.00 ft (KB) To 4200.00 ft (KB) (TVD)**  
Total Depth: 4200.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Test Type: Conventional Bottom Hole  
Tester: Shane McBride  
Unit No: 55  
Reference Elevations: 3238.00 ft (KB)  
3233.00 ft (CF)  
KB to GR/CF: 5.00 ft

**Serial #: 6667 Inside**  
Press @ Run Depth: 342.00 psig @ 4171.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2011.04.09 End Date: 2011.04.10 Last Calib.: 2011.04.10  
Start Time: 18:50:21 End Time: 02:54:06 Time On Btm: 2011.04.09 @ 20:45:21  
Time Off Btm: 2011.04.10 @ 00:49:21

**TEST COMMENT:** B.O.B. in 12 min.  
No return  
B.O.B. in 25 min.  
No return

## PRESSURE SUMMARY



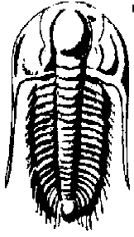
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2103.58	106.45	Initial Hydro-static
1	32.22	106.01	Open To Flow (1)
31	188.09	124.90	Shut-In(1)
91	1115.95	122.11	End Shut-In(1)
92	191.75	121.85	Open To Flow (2)
150	342.00	125.84	Shut-In(2)
243	1081.95	124.02	End Shut-In(2)
244	2063.43	121.88	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
240.00	water w/oil spots	1.75
180.00	s m c w trace of oil 10%m 90%w	2.52
180.00	v s o c m w 2%o 25%m 73%w	2.52
90.00	s o c m w 5%o 30%m 65%	1.26
0.00	6" in free oil on top 100%	0.00

## Gas Rates

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



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**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042189      **DST#: 2**  
Test Start: 2011.04.09 @ 18:50:21

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 38000 ppm
Viscosity: 64.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.80 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 5100.00 ppm		
Filter Cake: 2.00 inches		

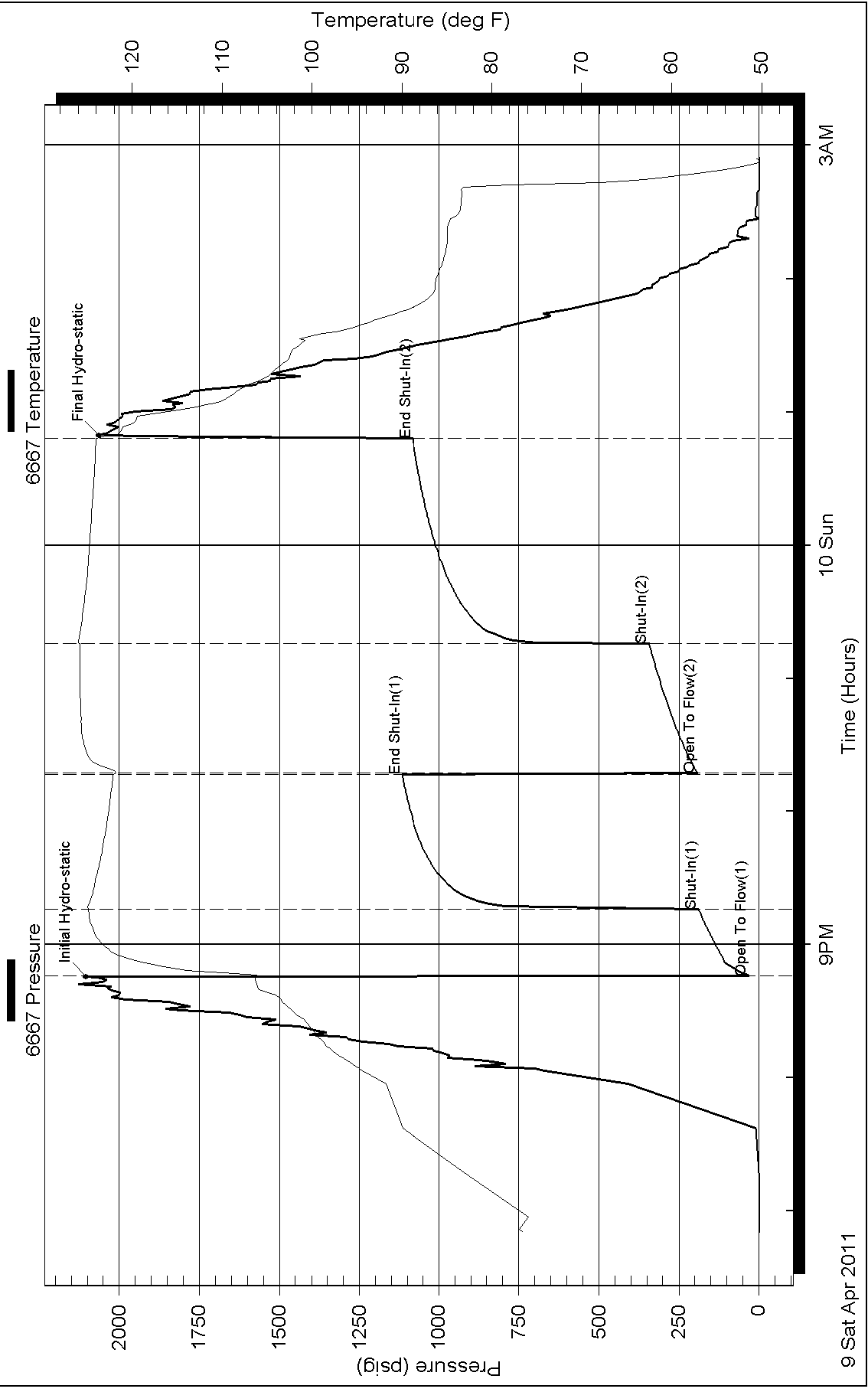
## Recovery Information

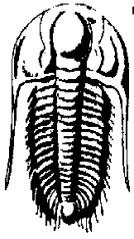
Recovery Table

Length ft	Description	Volume bbl
240.00	water w/oil spots	1.745
180.00	s m c w trace of oil 10%m 90%w	2.525
180.00	v s o c m w 2%o 25%m 73%w	2.525
90.00	s o c m w 5%o 30%m 65%	1.262
0.00	6" in free oil on top 100%o	0.000

Total Length: 690.00 ft      Total Volume: 8.057 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments: rw .239 @ 55\*f = 38,000 chlor

### Pressure vs. Time





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ATTN: Paul Gunzelman

**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042190 **DST#: 3**  
Test Start: 2011.04.10 @ 12:21:13

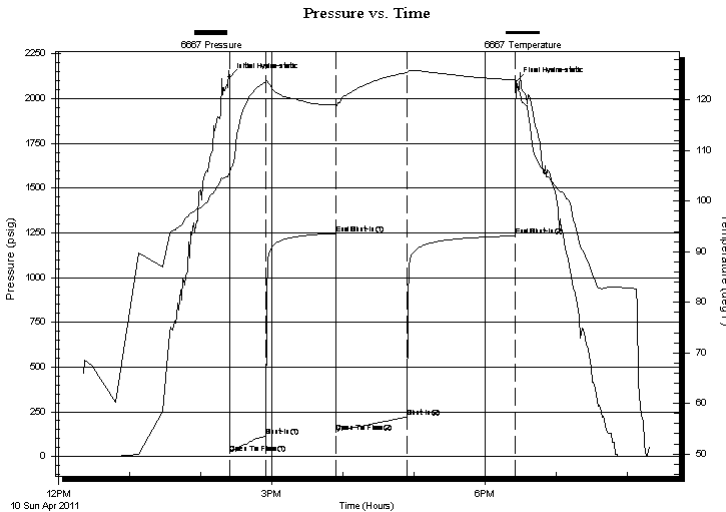
## GENERAL INFORMATION:

Formation: **E-F**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 14:24:28  
Time Test Ended: 20:35:43  
Interval: **4232.00 ft (KB) To 4254.00 ft (KB) (TVD)**  
Total Depth: 4254.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Fair  
Reference Elevations: 3238.00 ft (KB)  
3233.00 ft (CF)  
KB to GR/CF: 5.00 ft  
Test Type: Conventional Bottom Hole  
Tester: Shane McBride  
Unit No: 55

**Serial #: 6667 Inside**  
Press @ Run Depth: 221.86 psig @ 4233.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2011.04.10 End Date: 2011.04.10 Last Calib.: 2011.04.10  
Start Time: 12:21:13 End Time: 20:19:43 Time On Btm: 2011.04.10 @ 14:24:13  
Time Off Btm: 2011.04.10 @ 18:26:13

**TEST COMMENT:** 8 1/2" in blow  
No return  
B.O.B. in 52 min.  
No return

## PRESSURE SUMMARY



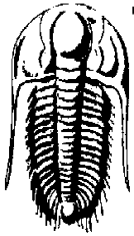
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2120.89	105.70	Initial Hydro-static
1	18.17	105.41	Open To Flow (1)
31	112.07	123.53	Shut-In(1)
90	1246.57	118.97	End Shut-In(1)
91	135.77	118.53	Open To Flow (2)
150	221.86	125.37	Shut-In(2)
242	1233.32	123.96	End Shut-In(2)
242	2097.84	123.27	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
240.00	water 100%w	1.75
60.00	s m c w w/oil spots 10%m 90%w	0.84
90.00	m c w w/oil spots 30%m 70%w	1.26
0.00	show of oil in tool	0.00

## Gas Rates

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



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**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042190      **DST#: 3**  
Test Start: 2011.04.10 @ 12:21:13

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 0 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 57500 ppm
Viscosity: 65.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.40 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 6000.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
240.00	water 100%w	1.745
60.00	s m c w w/oil spots 10%m 90%w	0.842
90.00	m c w w/oil spots 30%m 70%w	1.262
0.00	show of oil in tool	0.000

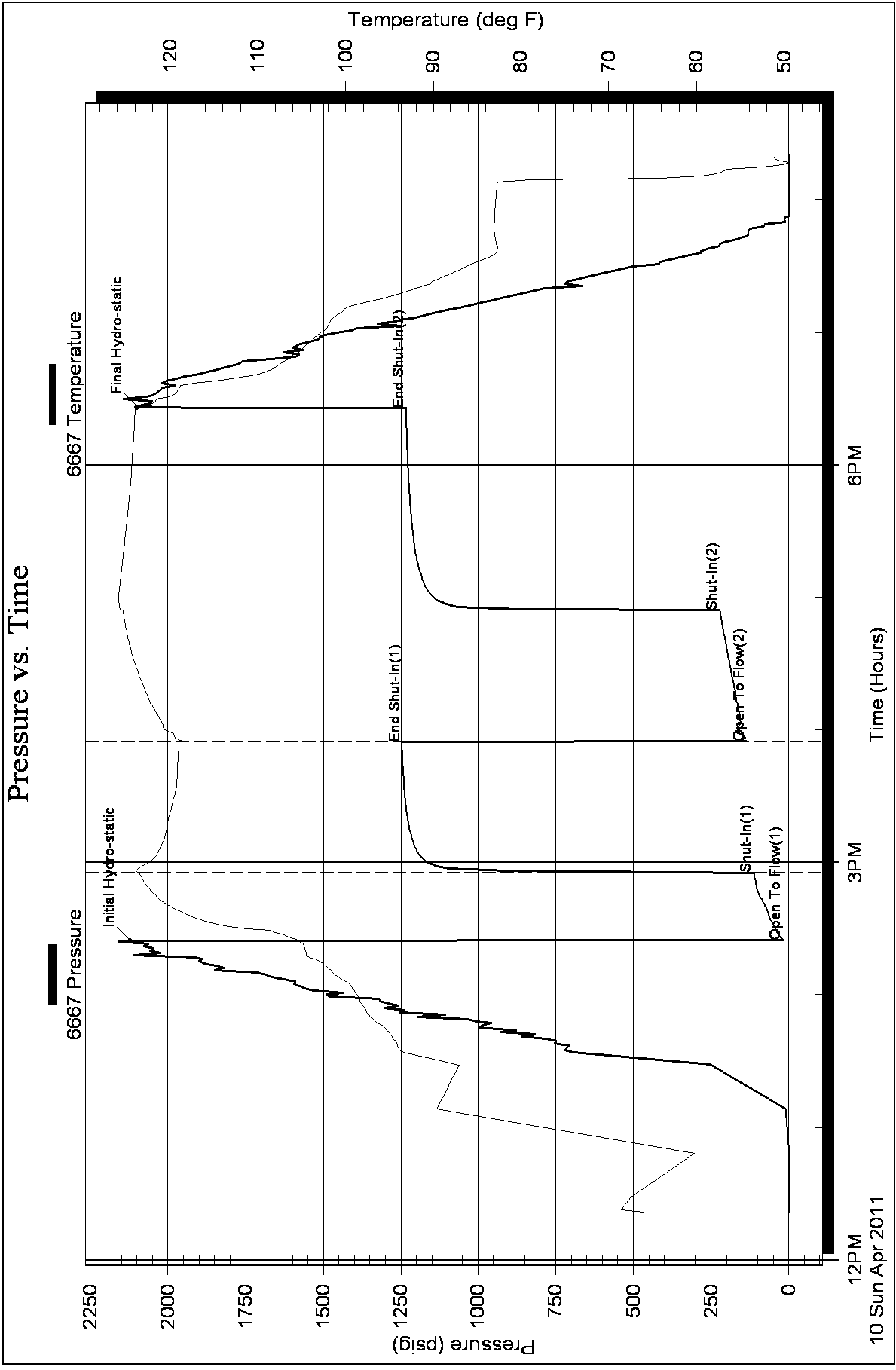
Total Length: 390.00 ft      Total Volume: 3.849 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: rw .170 @ 55\*f =57,500 chlor







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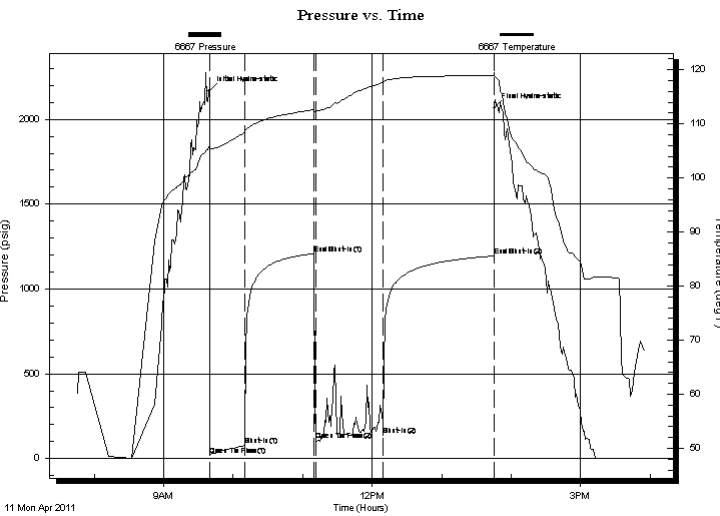
**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
 Job Ticket: 042191 **DST#: 4**  
 Test Start: 2011.04.11 @ 07:45:46

## GENERAL INFORMATION:

Formation: **H**  
 Deviated: **No** Whipstock: **ft (KB)** Test Type: **Conventional Bottom Hole**  
 Time Tool Opened: **09:39:46** Tester: **Shane McBride**  
 Time Test Ended: **16:15:46** Unit No: **55**  
**Interval: 4292.00 ft (KB) To 4326.00 ft (KB) (TVD)** Reference Elevations: **3238.00 ft (KB)**  
 Total Depth: **4326.00 ft (KB) (TVD)** **3233.00 ft (CF)**  
 Hole Diameter: **7.88 inches** Hole Condition: **Fair** KB to GR/CF: **5.00 ft**

**Serial #: 6667** **Inside**  
 Press @ Run Depth: **136.11 psig @ 4293.00 ft (KB)** Capacity: **8000.00 psig**  
 Start Date: **2011.04.11** End Date: **2011.04.11** Last Calib.: **2011.04.11**  
 Start Time: **07:45:46** End Time: **15:55:46** Time On Btm: **2011.04.11 @ 09:39:31**  
 Time Off Btm: **2011.04.11 @ 13:45:31**

TEST COMMENT: 5 1/2" in blow  
 No return  
 4 1/2" in blow  
 No return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2169.47	105.75	Initial Hydro-static
1	20.31	105.33	Open To Flow (1)
31	76.05	108.37	Shut-In(1)
91	1208.91	112.63	End Shut-In(1)
92	109.57	112.34	Open To Flow (2)
150	136.11	117.62	Shut-In(2)
246	1194.43	119.02	End Shut-In(2)
246	2068.63	119.13	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
230.00	s g w & o c m 3%g 12%w 40%o 45%m	1.60
15.00	free oil 100%o	0.21

## Gas Rates

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



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**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042191 **DST#: 4**  
Test Start: 2011.04.11 @ 07:45:46

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 20 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 0 ppm
Viscosity: 59.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.80 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 7500.00 ppm		
Filter Cake: 2.00 inches		

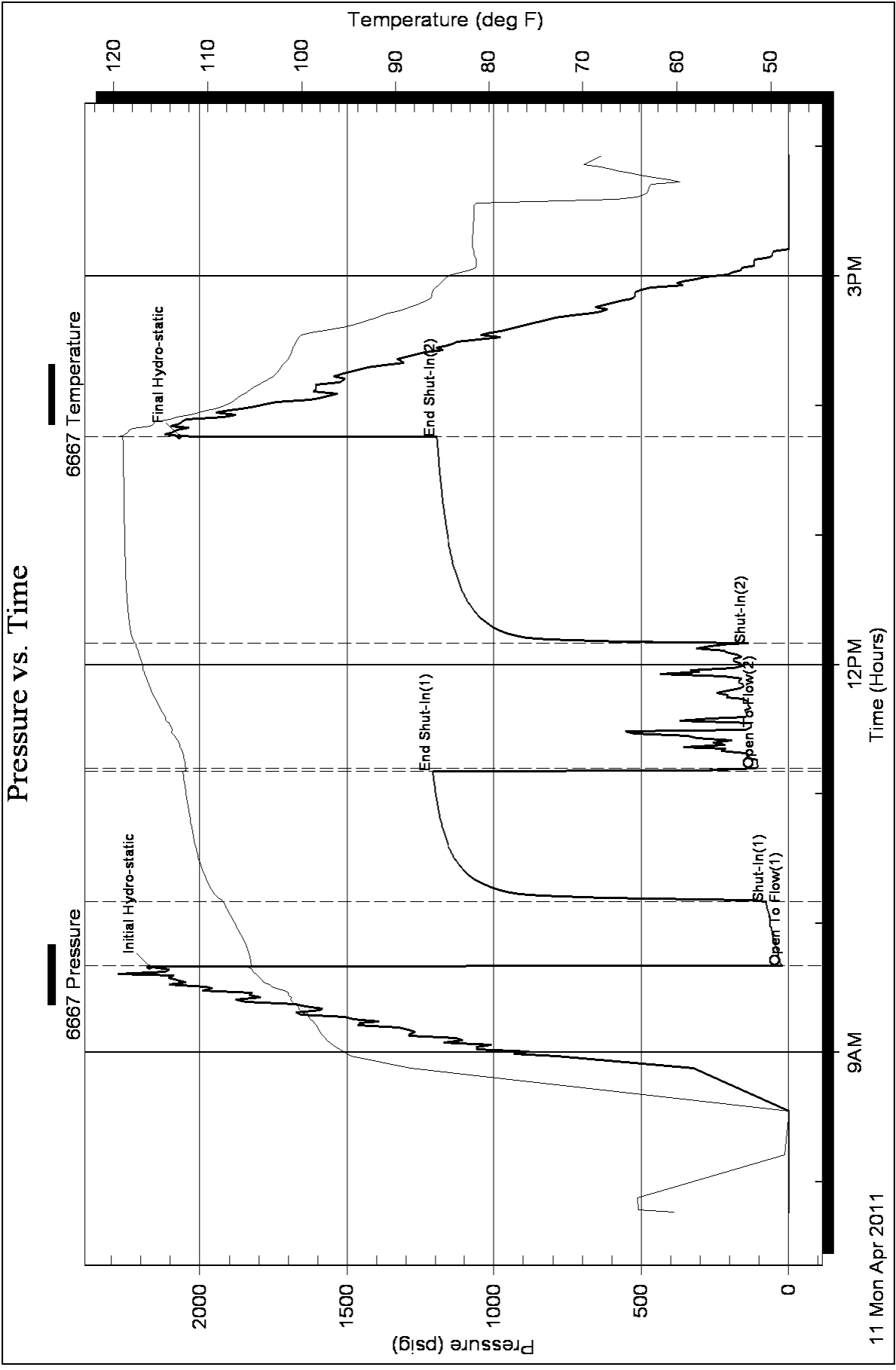
## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
230.00	s g w & o c m 3%g 12%w 40%o 45%m	1.605
15.00	free oil 100%o	0.210

Total Length: 245.00 ft      Total Volume: 1.815 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

### Pressure vs. Time





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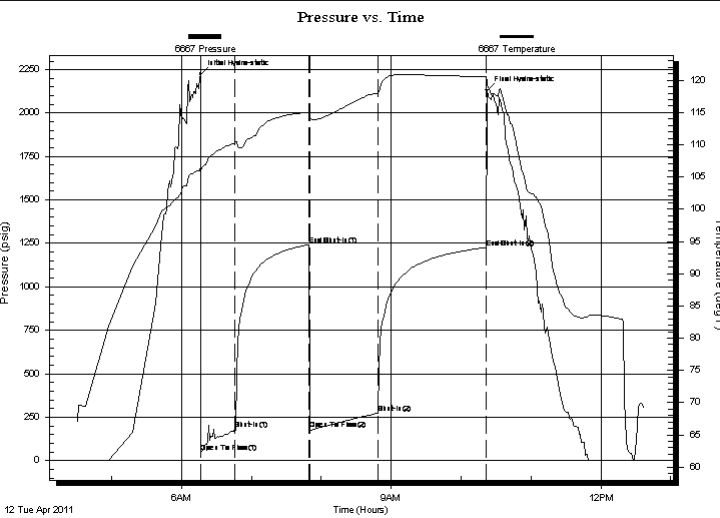
**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
 Job Ticket: 042192 **DST#: 5**  
 Test Start: 2011.04.12 @ 04:30:57

## GENERAL INFORMATION:

Formation: **I-J-K**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 06:16:42  
 Time Test Ended: 12:55:12  
 Interval: **4328.00 ft (KB) To 4408.00 ft (KB) (TVD)**  
 Total Depth: 4408.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole  
 Tester: Shane McBride  
 Unit No: 55  
 Reference Elevations: 3238.00 ft (KB)  
 3233.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 6667 Inside**  
 Press @ Run Depth: 273.24 psig @ 4329.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2011.04.12 End Date: 2011.04.12 Last Calib.: 2011.04.12  
 Start Time: 04:30:57 End Time: 12:38:12 Time On Btm: 2011.04.12 @ 06:16:27  
 Time Off Btm: 2011.04.12 @ 10:22:12

**TEST COMMENT:** B.O.B. in 15 min.  
 No return  
 B.O.B. in 22 min.  
 No return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2222.92	106.70	Initial Hydro-static
1	46.60	105.86	Open To Flow (1)
30	180.26	110.32	Shut-In(1)
93	1243.07	115.05	End Shut-In(1)
94	177.42	114.48	Open To Flow (2)
153	273.24	117.99	Shut-In(2)
245	1226.17	120.64	End Shut-In(2)
246	2130.70	119.89	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
255.00	s o & m c w 5%o 15%m 80%w	1.96
180.00	s o c m w 5%o 40%m 55%w	2.52
60.00	c s g o 3%g 97%o	0.84

Gas Rates			
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)



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**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042192      **DST#: 5**  
Test Start: 2011.04.12 @ 04:30:57

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 34 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 34500 ppm
Viscosity: 50.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.60 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 7900.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
255.00	s o & m c w 5%o 15%m 80%w	1.955
180.00	s o c m w 5%o 40%m 55%w	2.525
60.00	c s g o 3%g 97%o	0.842

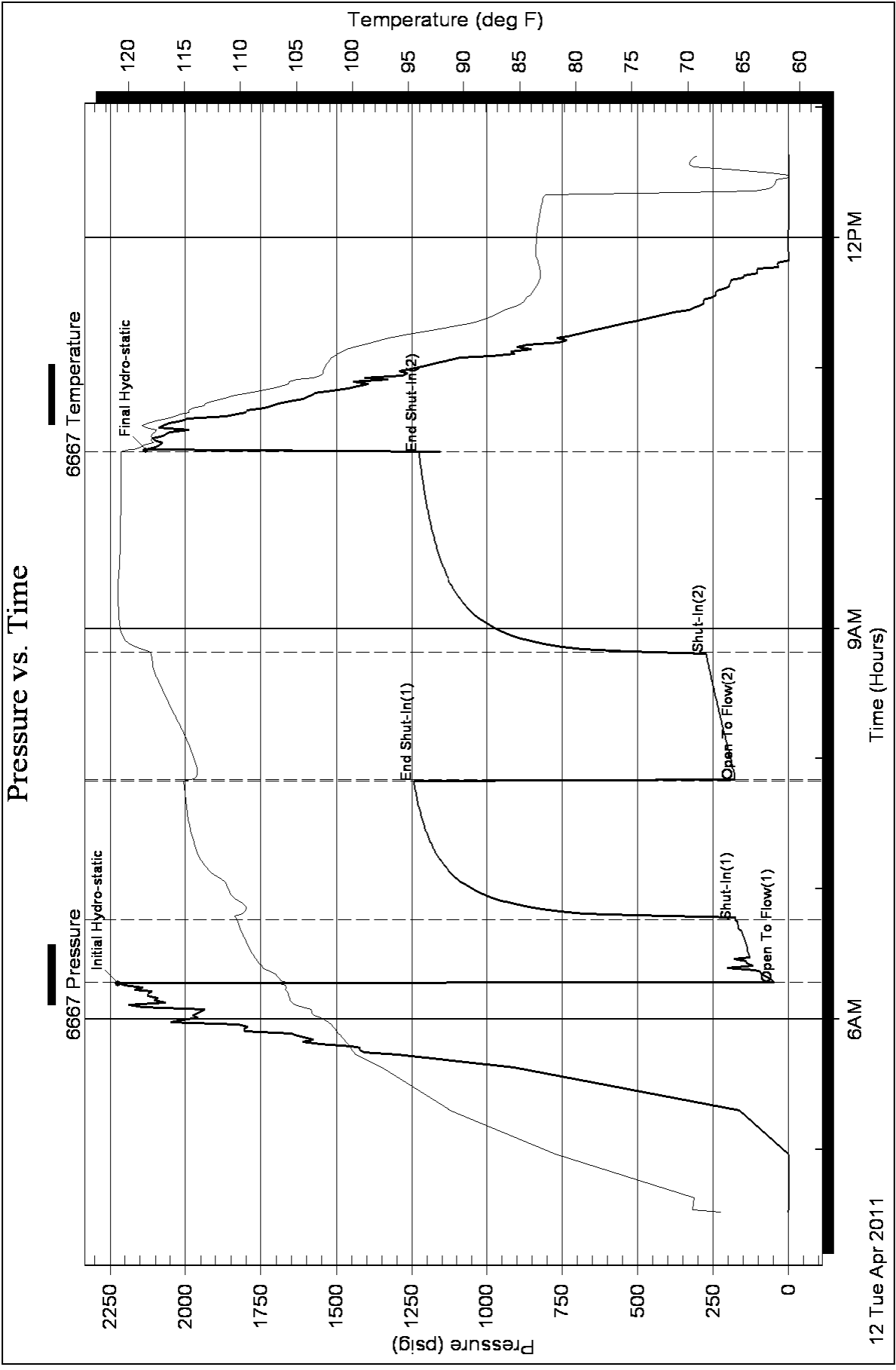
Total Length: 495.00 ft      Total Volume: 5.322 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments: rw .182 @ 78\*f = 34,500 chlor

### Pressure vs. Time





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**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
 Job Ticket: 042193 **DST#: 6**  
 Test Start: 2011.04.13 @ 17:01:04

## GENERAL INFORMATION:

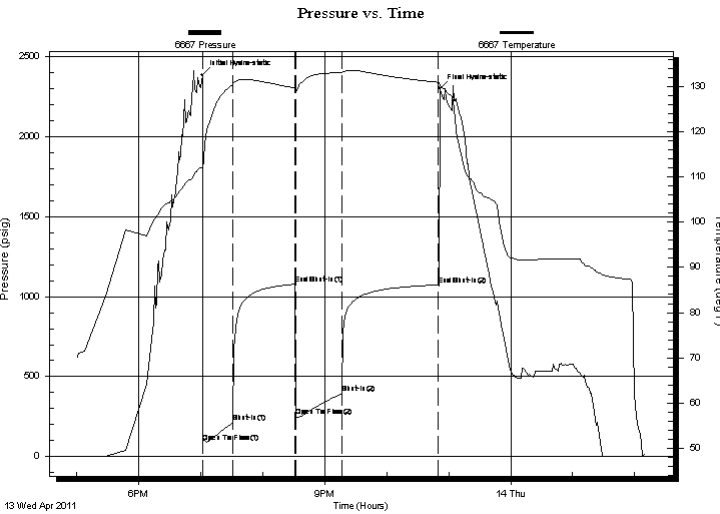
Formation: **L.Pawnee-Ft Scott**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:01:49  
 Time Test Ended: 02:25:49  
 Interval: **4594.00 ft (KB) To 4648.00 ft (KB) (TVD)**  
 Total Depth: 4648.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole  
 Tester: Shane McBride  
 Unit No: 55  
 Reference Elevations: 3238.00 ft (KB)  
 3233.00 ft (CF)  
 KB to GR/CF: 5.00 ft

## Serial #: 6667

Inside

Press @ Run Depth: 394.42 psig @ 4595.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2011.04.13 End Date: 2011.04.14 Last Calib.: 2011.04.14  
 Start Time: 17:01:05 End Time: 02:09:50 Time On Btm: 2011.04.13 @ 19:01:35  
 Time Off Btm: 2011.04.13 @ 22:51:35

TEST COMMENT: B.O.B. in 2 1/2 min.  
 Bled off for 30 min. 6" in return blow  
 B.O.B. in 2 1/2 min.  
 G.T.S. 10 min. into shutin, bled off throughout



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2386.81	111.95	Initial Hydro-static
1	86.57	111.52	Open To Flow (1)
30	211.93	130.43	Shut-In(1)
90	1078.32	129.60	End Shut-In(1)
91	250.78	128.92	Open To Flow (2)
135	394.42	133.05	Shut-In(2)
229	1073.25	130.89	End Shut-In(2)
230	2302.87	130.39	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
120.00	g m c o 30%g 30%m 40%o under circ	0.59
780.00	c g o reversed out 35%g 65%o	10.41
120.00	c g o 35%g 65%o	1.68

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co Inc  
250 N Water Ste 300  
Wichita, Ks  
67202  
ATTN: Paul Gunzelman

**Steele A #1-20**  
**20-10-34 Thomas, Ks**  
Job Ticket: 042193      **DST#: 6**  
Test Start: 2011.04.13 @ 17:01:04

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 33 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 0 ppm
Viscosity: 57.00 sec/qt	Cushion Volume: bbl	
Water Loss: 6.80 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: 0.00 ohm.m	Gas Cushion Pressure: psig	
Salinity: 8000.00 ppm		
Filter Cake: 2.00 inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	g m c o 30%g 30%m 40%o under circ sub	0.590
780.00	c g o reversed out 35%g 65%o	10.413
120.00	c g o 35%g 65%o	1.683

Total Length: 1020.00 ft      Total Volume: 12.686 bbl

Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:

Laboratory Name:      Laboratory Location:

Recovery Comments:

