



## DRILL STEM TEST REPORT

Prepared For: **Petroleum Development Co.**

401 S Boston Ave Ste 1850  
Tulsa, OK 74103

ATTN: Ken LeBlanc

**21-22-35w Kearney,KS**

**Cross Bell Farms #1-21**

Start Date: 2019.07.24 @ 12:21:00

End Date: 2019.07.24 @ 23:00:15

Job Ticket #: 64368                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2019.07.29 @ 14:44:50



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Petroleum Development Co.  
401 S Boston Ave Ste 1850  
Tulsa, OK 74103  
ATTN: Ken LeBlanc

**Cross Bell Farms #1-21**  
**21-22-35w Kearney, KS**  
Job Ticket: 64368 **DST#: 1**  
Test Start: 2019.07.24 @ 12:21:00

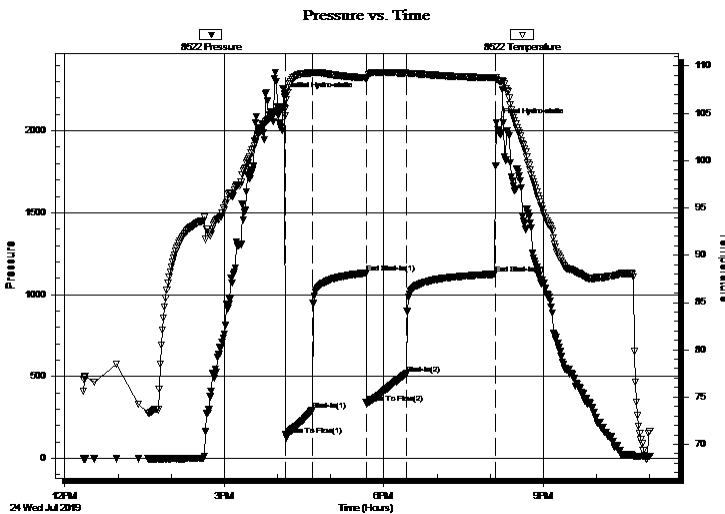
## GENERAL INFORMATION:

Formation: **Marmaton**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 16:09:00  
Time Test Ended: 23:00:15  
Interval: **4366.00 ft (KB) To 4390.00 ft (KB) (TVD)**  
Total Depth: 4390.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Initial)  
Tester: Bradley Walter  
Unit No: 78  
Reference Elevations: 3084.00 ft (KB)  
3073.00 ft (CF)  
KB to GR/CF: 11.00 ft

**Serial #: 8522 Inside**  
Press@RunDepth: 516.75 psig @ 4367.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2019.07.24 End Date: 2019.07.24 Last Calib.: 2019.07.24  
Start Time: 12:21:05 End Time: 23:00:15 Time On Btm: 2019.07.24 @ 16:08:00  
Time Off Btm: 2019.07.24 @ 20:07:15

**TEST COMMENT:** 30- IF:BOB @ 3 min, built to 89".  
60- IS: BOB @ 9 min, built to 42".  
45- FF: BOB @ 6 min, built to 96".  
90- FSI: BOB @ 10 min. Built to 36".

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2210.19	105.59	Initial Hydro-static
1	144.70	105.47	Open To Flow (1)
31	292.27	109.28	Shut-In(1)
92	1131.74	108.74	End Shut-In(1)
93	339.36	108.65	Open To Flow (2)
138	516.75	109.24	Shut-In(2)
238	1124.88	108.75	End Shut-In(2)
240	2048.22	108.56	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
770.00	smcw 2m 98w W/oil spots	8.30
150.00	gw mco 30g 20w 20m 30o	2.10
280.00	go 40g 60o	3.93
0.00	700' GIP	0.00

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Petroleum Development Co.

**Cross Bell Farms #1-21**

401 S Boston Ave Ste 1850  
Tulsa, OK 74103

**21-22-35w Kearney,KS**

ATTN: Ken LeBlanc

Job Ticket: 64368

**DST#: 1**

Test Start: 2019.07.24 @ 12:21:00

## Tool Information

Drill Pipe:	Length: 4076.00 ft	Diameter: 3.80 inches	Volume: 57.18 bbl	Tool Weight: 2500.00 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: 275.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 90000.00 lb
			<u>Total Volume: 58.53 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 75000.00 lb
Depth to Top Packer:	4366.00 ft			Final 77000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	24.00 ft			
Tool Length:	51.00 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			4340.00	
Shut In Tool	5.00		Fluid	4345.00	
Hydraulic tool	5.00			4350.00	
Jars	5.00			4355.00	
Safety Joint	2.00			4357.00	
Packer	5.00		Inside	4362.00	27.00 Bottom Of Top Packer
Packer	4.00			4366.00	
Stubb	1.00			4367.00	
Recorder	0.00	8522	Inside	4367.00	
Recorder	0.00	8319	Outside	4367.00	
Perforations	20.00			4387.00	
Bullnose	3.00			4390.00	24.00 Bottom Packers & Anchor

**Total Tool Length: 51.00**



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# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Petroleum Development Co.

**Cross Bell Farms #1-21**

401 S Boston Ave Ste 1850  
Tulsa, OK 74103

**21-22-35w Kearney,KS**

Job Ticket: 64368

**DST#: 1**

ATTN: Ken LeBlanc

Test Start: 2019.07.24 @ 12:21:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

37 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

80000 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 3800.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
770.00	smcw 2m 98w W/oil spots	8.296
150.00	gw mco 30g 20w 20m 30o	2.104
280.00	go 40g 60o	3.928
0.00	700' GIP	0.000

Total Length: 1200.00 ft      Total Volume: 14.328 bbl

Num Fluid Samples: 0

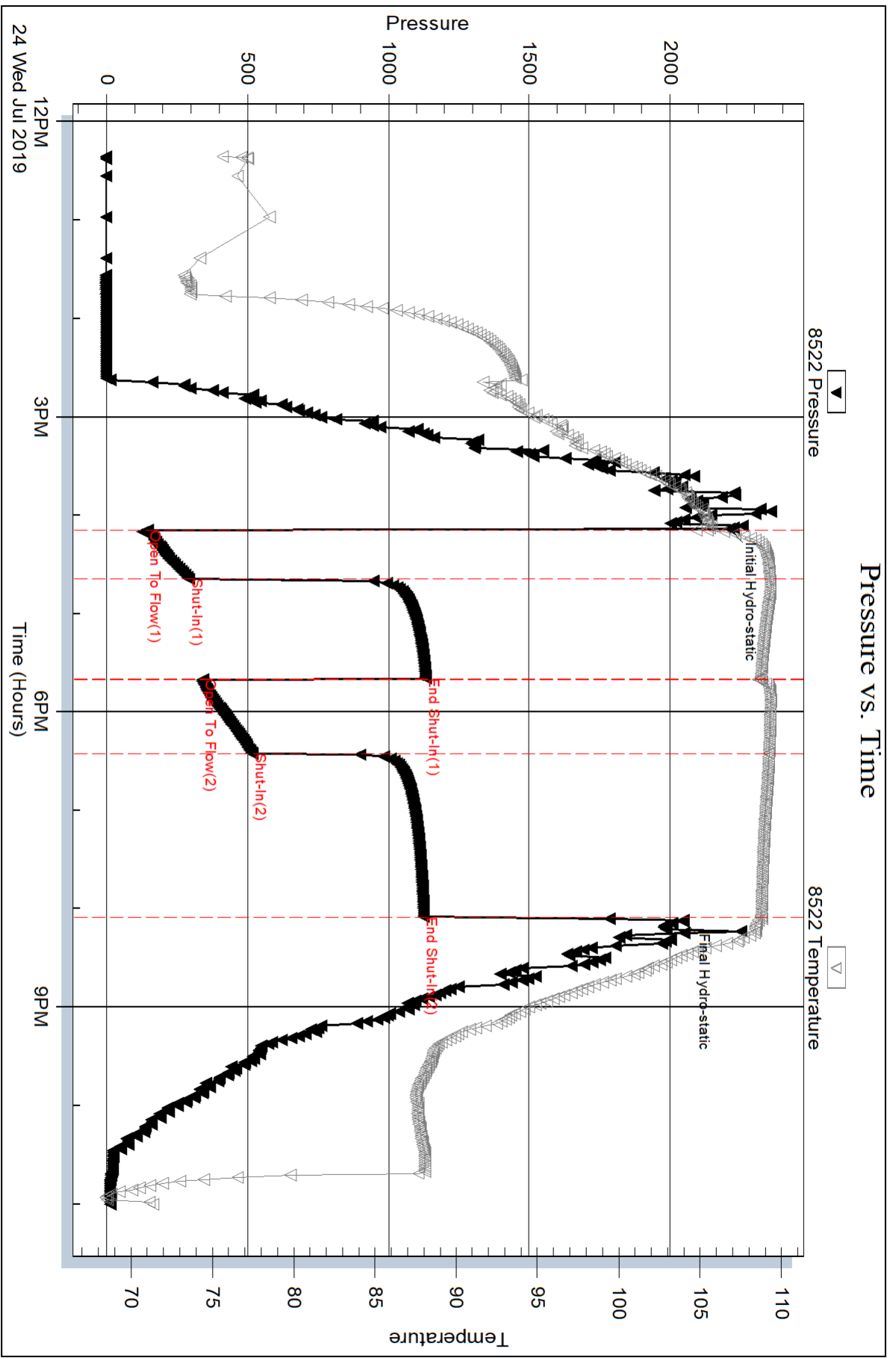
Num Gas Bombs: 0

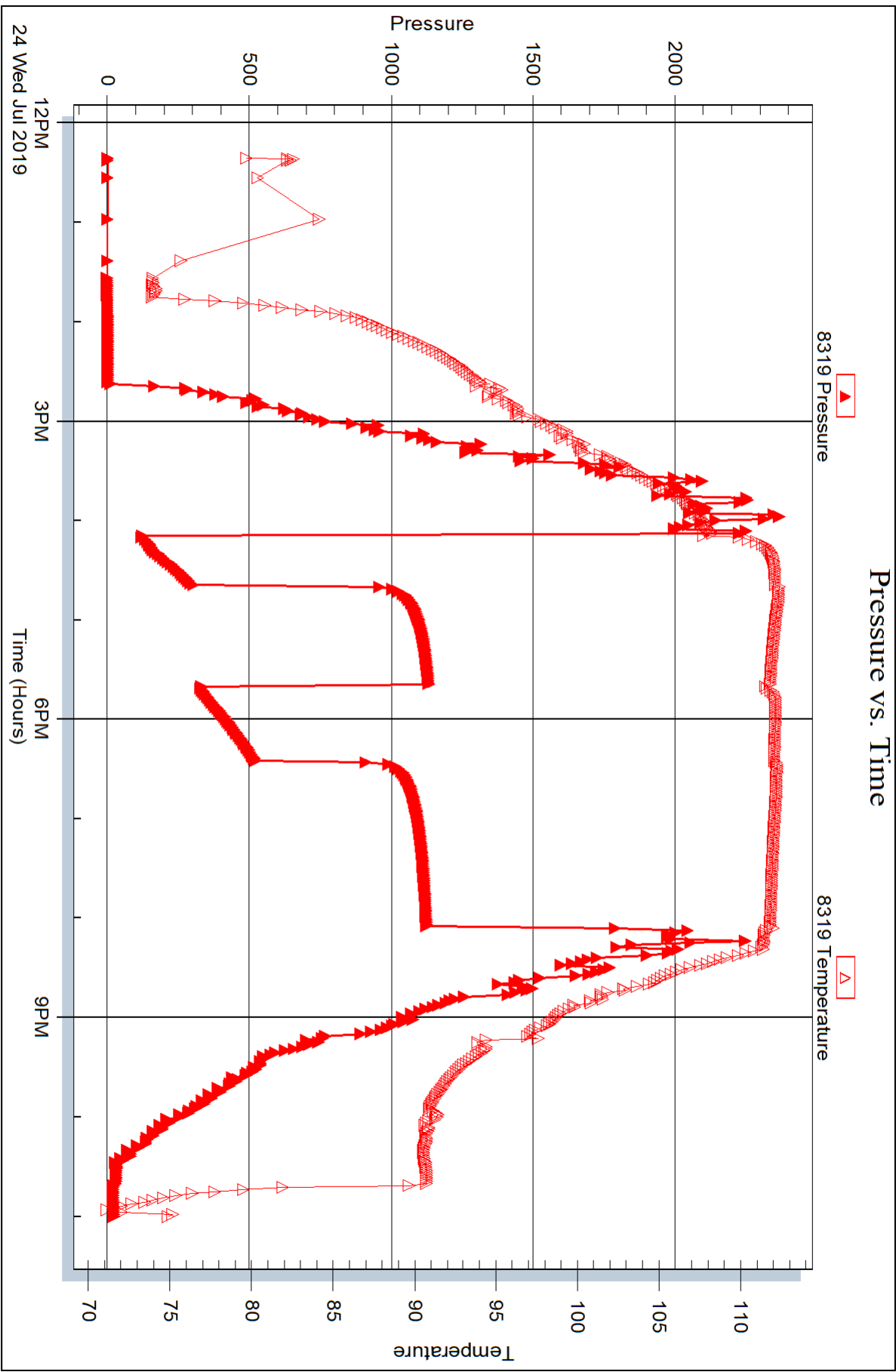
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .095 @ 72f = 80,000 ppm







## DRILL STEM TEST REPORT

Prepared For: **Petroleum Development Co.**

401 S Boston Ave Ste 1850  
Tulsa, OK 74103

ATTN: Ken LeBlanc

**21-22-35w Kearney,KS**

**Cross Bell Farms #1-21**

Start Date: 2019.07.25 @ 12:27:00

End Date: 2019.07.25 @ 20:27:30

Job Ticket #: 64369                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2019.07.29 @ 14:41:33

Petroleum Development Co.

Cross Bell Farms #1-21

21-22-35w Kearney,KS

DST # 2

Ft. Scott

2019.07.25





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Petroleum Development Co.  
 401 S Boston Ave Ste 1850  
 Tulsa, OK 74103  
 ATTN: Ken LeBlanc

**Cross Bell Farms #1-21**  
**21-22-35w Kearney, KS**  
 Job Ticket: 64369 **DST#: 2**  
 Test Start: 2019.07.25 @ 12:27:00

## GENERAL INFORMATION:

Formation: **Ft. Scott**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 14:06:45  
 Time Test Ended: 20:27:30  
 Interval: **4462.00 ft (KB) To 4477.00 ft (KB) (TVD)**  
 Total Depth: 4477.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Bradley Walter  
 Unit No: 78  
 Reference Elevations: 3084.00 ft (KB)  
 3073.00 ft (CF)  
 KB to GR/CF: 11.00 ft

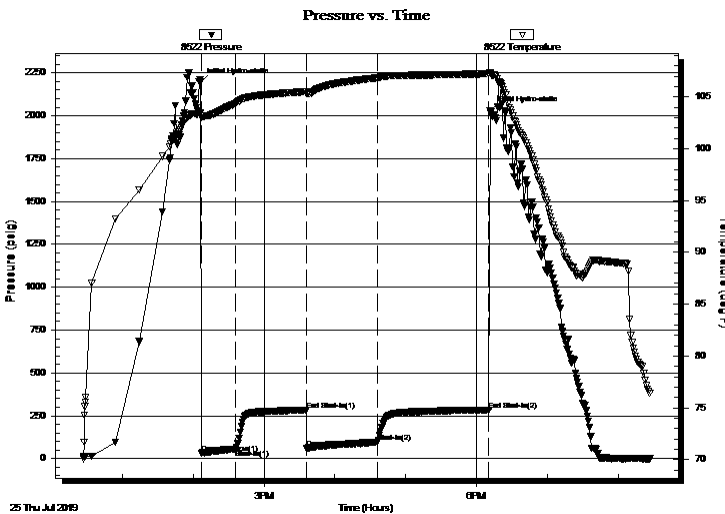
## Serial #: 8522

Inside

Press@RunDepth: 96.62 psig @ 4463.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2019.07.25 End Date: 2019.07.25 Last Calib.: 2019.07.25  
 Start Time: 12:27:05 End Time: 20:27:29 Time On Btm: 2019.07.25 @ 14:06:15  
 Time Off Btm: 2019.07.25 @ 18:11:30

TEST COMMENT: 30- IF: BOB @ 27 min. 11.5" blow .  
 60- IS: No return.  
 60- FF: BOB @ 10 min, 34" blow .  
 90- FSI: 3/4" return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2196.00	103.44	Initial Hydro-static
1	32.12	102.98	Open To Flow (1)
30	57.05	104.38	Shut-In(1)
90	283.28	105.51	End Shut-In(1)
90	61.79	105.32	Open To Flow (2)
150	96.62	106.82	Shut-In(2)
245	284.13	107.23	End Shut-In(2)
246	2029.11	107.36	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
150.00	gmocw 20g 10m 20o 50w	0.74
80.00	go 40g 60o	0.39
0.00	400' GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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





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TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Petroleum Development Co.

**Cross Bell Farms #1-21**

401 S Boston Ave Ste 1850  
Tulsa, OK 74103

**21-22-35w Kearney,KS**

ATTN: Ken LeBlanc

Job Ticket: 64369

**DST#: 2**

Test Start: 2019.07.25 @ 12:27:00

## Tool Information

Drill Pipe:	Length: 4172.00 ft	Diameter: 3.80 inches	Volume: 58.52 bbl	Tool Weight: 2500.00 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: 275.00 ft	Diameter: 2.25 inches	Volume: 1.35 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 59.87 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 73000.00 lb
Depth to Top Packer:	4462.00 ft			Final 74000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	15.00 ft			
Tool Length:	42.00 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			4436.00	
Shut In Tool	5.00		Fluid	4441.00	
Hydraulic tool	5.00			4446.00	
Jars	5.00			4451.00	
Safety Joint	2.00			4453.00	
Packer	5.00		Inside	4458.00	27.00 Bottom Of Top Packer
Packer	4.00			4462.00	
Stubb	1.00			4463.00	
Recorder	0.00	8522	Inside	4463.00	
Recorder	0.00	8319	Outside	4463.00	
Perforations	11.00			4474.00	
Bullnose	3.00			4477.00	15.00 Bottom Packers & Anchor

**Total Tool Length: 42.00**



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**21-22-35w Kearney,KS**

Job Ticket: 64369

**DST#: 2**

ATTN: Ken LeBlanc

Test Start: 2019.07.25 @ 12:27:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

36 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

16000 ppm

Viscosity: 74.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
150.00	gmocw 20g 10m 20o 50w	0.738
80.00	go 40g 60o	0.393
0.00	400' GIP	0.000

Total Length: 230.00 ft      Total Volume: 1.131 bbl

Num Fluid Samples: 0

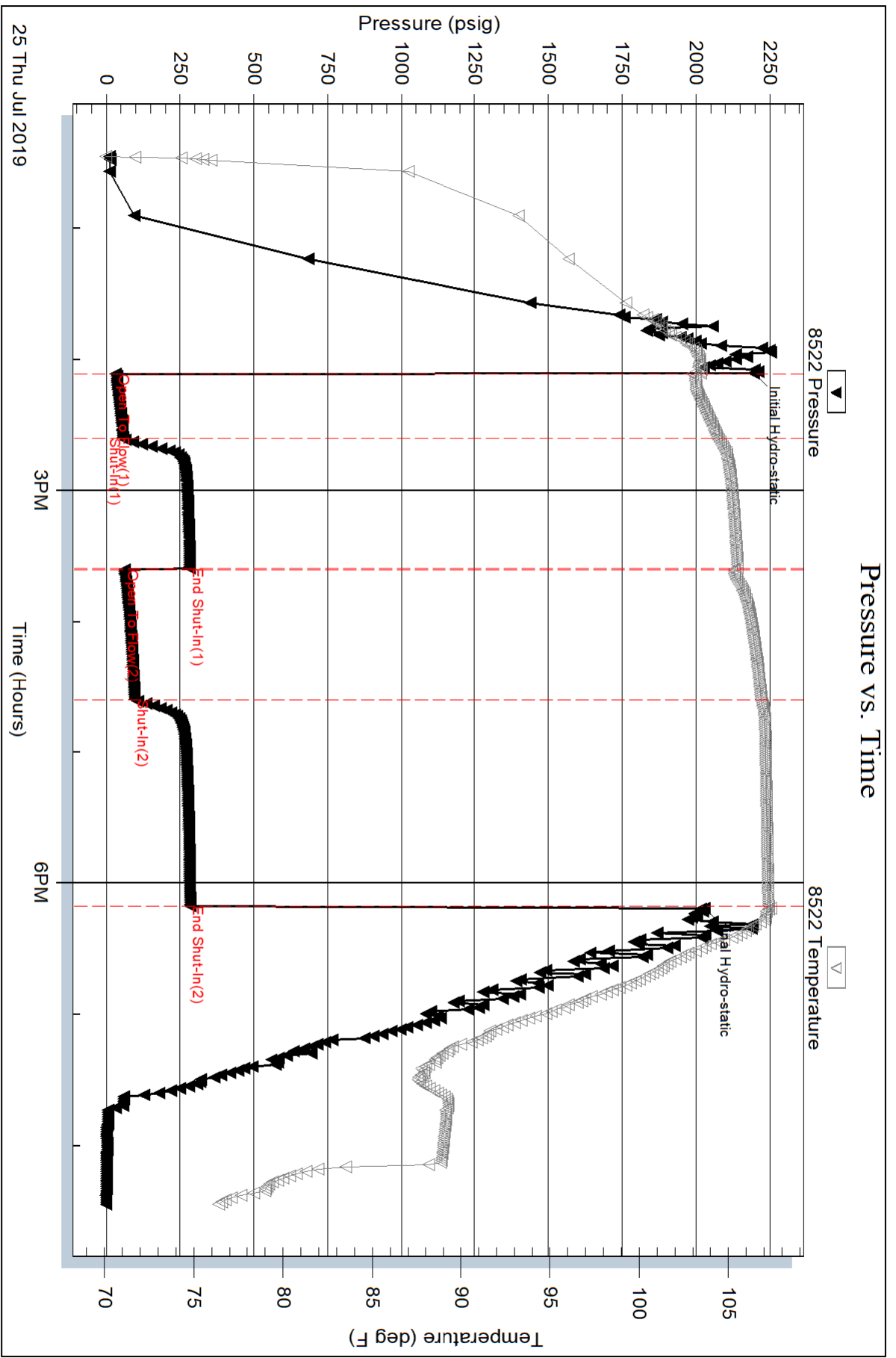
Num Gas Bombs: 0

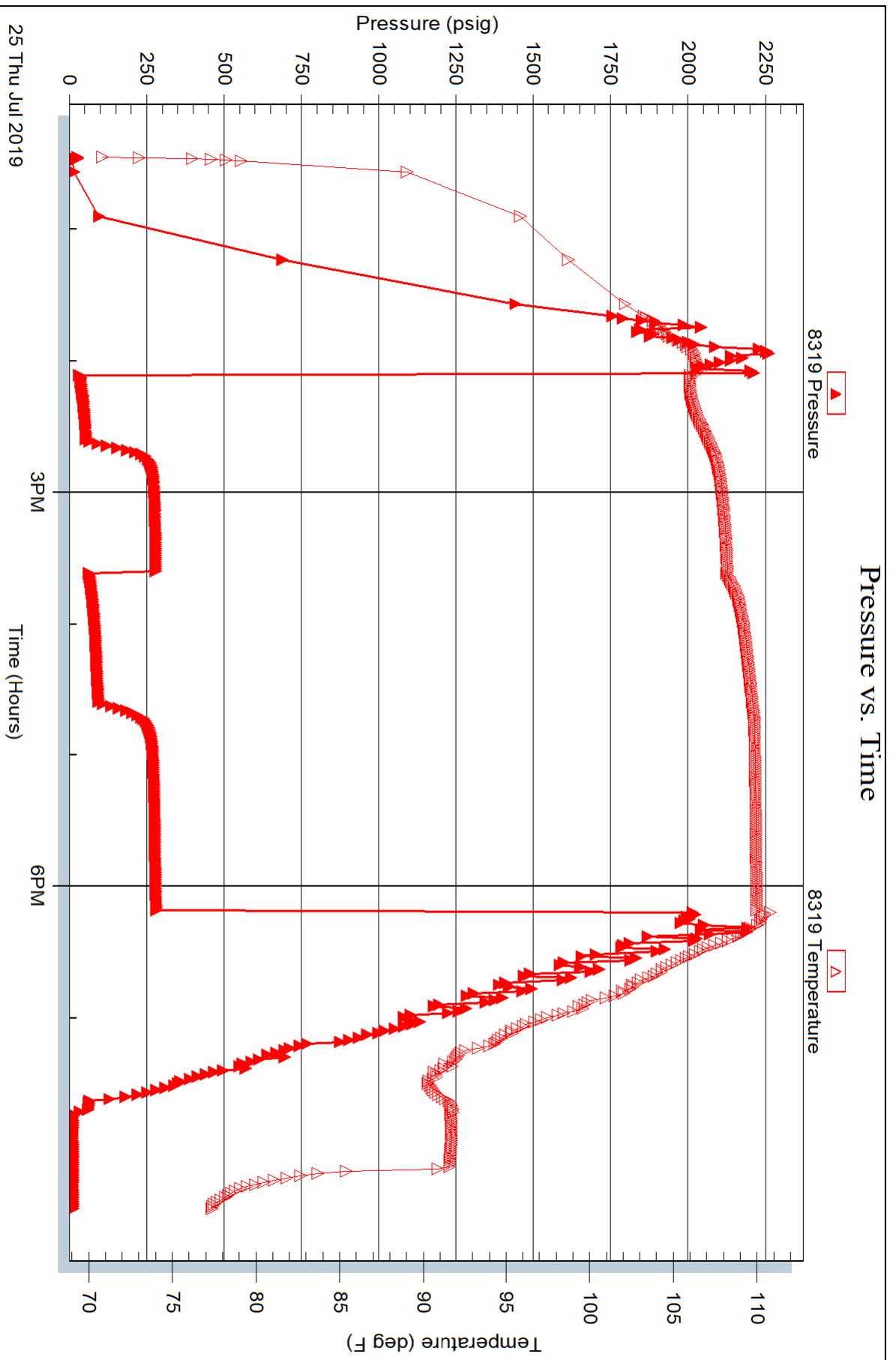
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw is .458 @ 76 = 16000ppm







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **64368**

Well Name & No. Cross Bell Farms #1-21 Test No. 1 Date 7/24/2019  
 Company Petroleum Development Co. Elevation 3084 KB 3073 GL  
 Address 401 S Boston Ave Ste 1850 Tulsa, Ok 74103  
 Co. Rep / Geo. Ken LeBlond Rig Martin 21  
 Location: Sec. 21 Twp. 22S Rge. 35W Co. Kearney State KS

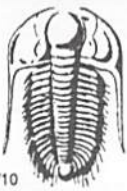
Interval Tested 4366-4390 Zone Tested Marmaton  
 Anchor Length 24' Drill Pipe Run 4076 Mud Wt. 9.1  
 Top Packer Depth 4361 Drill Collars Run 275 Vis 58  
 Bottom Packer Depth 4366 Wt. Pipe Run 0 WL 8.0  
 Total Depth 4390 Chlorides 3800 ppm System LCM 16#  
 Blow Description IF BOB@ 3min built to 89"  
ISI BOB@ 9min built to 42"  
FF BOB@ 6min Built to 96"  
FSI BOB@ 10min built to 36"

Rec	Feet of	%gas	%oil	%water	%mud
<u>280</u>	<u>60</u>	<u>40</u>	<u>60</u>		
<u>150</u>	<u>GWACO</u>	<u>30</u>	<u>30</u>	<u>20</u>	<u>20</u>
<u>770</u>	<u>SMCW</u>			<u>98</u>	<u>2</u>
	<u>700' GIP</u>				

Rec Total 1200 BHT 109 Gravity 37 API RW .095 @ 72 °F Chlorides 80,000 ppm

(A) Initial Hydrostatic <u>2210</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>1030</u>
(B) First Initial Flow <u>145</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1221</u>
(C) First Final Flow <u>292</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1609</u>
(D) Initial Shut-In <u>1132</u>	<input checked="" type="checkbox"/> Circ Sub <u>50</u>	T-Pulled <u>1954</u>
(E) Second Initial Flow <u>339</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>2300</u>
(F) Second Final Flow <u>517</u>	<input checked="" type="checkbox"/> Mileage <u>94RT</u> <u>44</u>	Comments
(G) Final Shut-In <u>1225</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2048</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow <u>45</u>	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>90</u>	<input type="checkbox"/> Day Standby	Total <u>1719</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1719</u>	

Approved By \_\_\_\_\_ Our Representative [Signature]  
 TriLOBITE TESTING Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **64369**

Well Name & No. Cross Bell Farms #1-21 Test No. 2 Date 7/25/2019  
 Company Petroleum Development Co Elevation 3084 KB 3073 GL  
 Address 401 S Boston Ave Ste 1850 Tulsa, OK 74103  
 Co. Rep / Geo. Ken LeBlond Rig MoAn 21  
 Location: Sec. 21 Twp. 22s Rge. 35w Co. Kearney State KS

Interval Tested 4462-4477 Zone Tested Ft Scott  
 Anchor Length 15' Drill Pipe Run 4172 Mud Wt. 9.2  
 Top Packer Depth 4457 Drill Collars Run 275 Vis 74  
 Bottom Packer Depth 4462 Wt. Pipe Run Ø WL 8.0  
 Total Depth 4477 Chlorides 4,000 ppm System LCM 14<sup>th</sup>  
 Blow Description IF 11 1/2" blow  
ISI No return.  
FF BOB @ 10 min built to 34'  
FSI 34' return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>80</u>	<u>60</u>	<u>40</u>	<u>60</u>		
<u>150</u>	<u>6mocw</u>	<u>20</u>	<u>20</u>	<u>50</u>	<u>10</u>
	<u>400' GID</u>				

Rec Total 230 BHT 107 Gravity 36 API RW 1458 @ 76° F Chlorides 16,000 ppm

(A) Initial Hydrostatic <u>2196</u>	<input checked="" type="checkbox"/> Test <u>1300</u>	T-On Location <u>1200</u>
(B) First Initial Flow <u>32</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>1227</u>
(C) First Final Flow <u>57</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>1407</u>
(D) Initial Shut-In <u>283</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>1807</u>
(E) Second Initial Flow <u>62</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>2027</u>
(F) Second Final Flow <u>97</u>	<input type="checkbox"/> Mileage	Comments
(G) Final Shut-In <u>284</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>2029</u>	<input type="checkbox"/> Straddle	
	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Shale Packer
	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Ruined Packer
Initial Open <u>30</u>	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Extra Copies
Initial Shut-In <u>60</u>	<input type="checkbox"/> Day Standby	Sub Total <u>0</u>
Final Flow <u>60</u>	<input type="checkbox"/> Accessibility	Total <u>1625</u>
Final Shut-In <u>90</u>	Sub Total <u>1625</u>	MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative [Signature]  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.