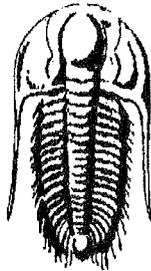


15-163-23792

9-7s-20w

KCS ✓



**TRILOBITE  
TESTING, INC.**

### DRILL STEM TEST REPORT

Prepared For: **Black Diamond**

PO Box 641  
Hays, KS 67601

ATTN: Tony R

**9-7-20 Rooks KS**

**Lesage #1**

Start Date: 2009.01.19 @ 10:10:48

End Date: 2009.01.19 @ 17:22:18

Job Ticket #: 34971                      DST #: 1

Black Diamond

Lesage #1

9-7-20 Rooks KS

DST # 1

Tor-A

2009.01.19

Trilobite Testing, Inc  
PO Box 1733 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

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**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 34971

**DST#: 1**

ATTN: Tony R

Test Start: 2009.01.19 @ 10:10:48

## GENERAL INFORMATION:

Formation: **Tor-A**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:29:48

Time Test Ended: 17:22:18

Test Type: Conventional Bottom Hole

Tester: Kyle Kinderknecht

Unit No: 47

**Interval: 3365.00 ft (KB) To 3425.00 ft (KB) (TVD)**

Reference Elevations: 2182.00 ft (KB)

Total Depth: 3425.00 ft (KB) (TVD)

2177.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8319 Inside**

Press@RunDepth: 124.94 psig @ 3368.00 ft (KB)

Capacity: 7000.00 psig

Start Date: 2009.01.19

End Date: 2009.01.19

Last Calib.: 2009.01.19

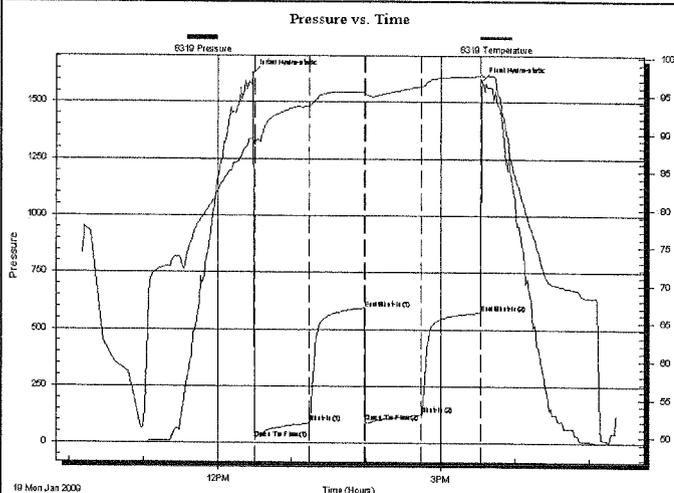
Start Time: 10:10:53

End Time: 17:22:17

Time On Btm: 2009.01.19 @ 12:28:48

Time Off Btm: 2009.01.19 @ 15:33:18

TEST COMMENT: IF BOB 22 min  
ISI Surface  
FF BOB 22 min  
FSI Surface



## PRESSURE SUMMARY

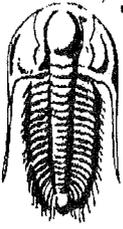
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1625.07	89.31	Initial Hydro-static
1	15.34	88.59	Open To Flow (1)
46	88.90	93.67	Shut-In(1)
90	592.94	95.49	End Shut-In(1)
91	92.67	95.27	Open To Flow (2)
136	124.94	96.22	Shut-In(2)
184	573.28	97.62	End Shut-In(2)
185	1594.60	97.73	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
100.00	Free Oil	0.49
180.00	HOCM 50%O 50%M	2.35

## Gas Rates

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



**TRILOBITE**  
TESTING, INC

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 34971

**DST#: 1**

ATTN: Tony R

Test Start: 2009.01.19 @ 10:10:48

### Tool Information

Drill Pipe:	Length: 3223.00 ft	Diameter: 3.82 inches	Volume: 45.69 bbl	Tool Weight: 1500.00 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: 122.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 44000.00 lb
		Total Volume: 46.29 bbl		Tool Chased 0.00 ft
Drill Pipe Above KB:	0.00 ft			String Weight: Initial 42000.00 lb
Depth to Top Packer:	3365.00 ft			Final 43000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	60.00 ft			
Tool Length:	80.00 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			3346.00	
Shut In Tool	5.00			3351.00	
Hydraulic tool	5.00			3356.00	
Packer	4.00			3360.00	20.00 Bottom Of Top Packer
Packer	5.00			3365.00	
Stubb	1.00			3366.00	
Perforations	1.00			3367.00	
Change Over Sub	1.00			3368.00	
Recorder	0.00	8319	Inside	3368.00	
Recorder	0.00	8369	Inside	3368.00	
Blank Spacing	31.00			3399.00	
Change Over Sub	1.00			3400.00	
Perforations	22.00			3422.00	
Bullnose	3.00			3425.00	60.00 Bottom Packers & Anchor

**Total Tool Length: 80.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 34971

**DST#: 1**

ATTN: Tony R

Test Start: 2009.01.19 @ 10:10:48

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

32 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.97 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
100.00	Free Oil	0.492
180.00	HOCM 50%O 50%M	2.348

Total Length: 280.00 ft

Total Volume: 2.840 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

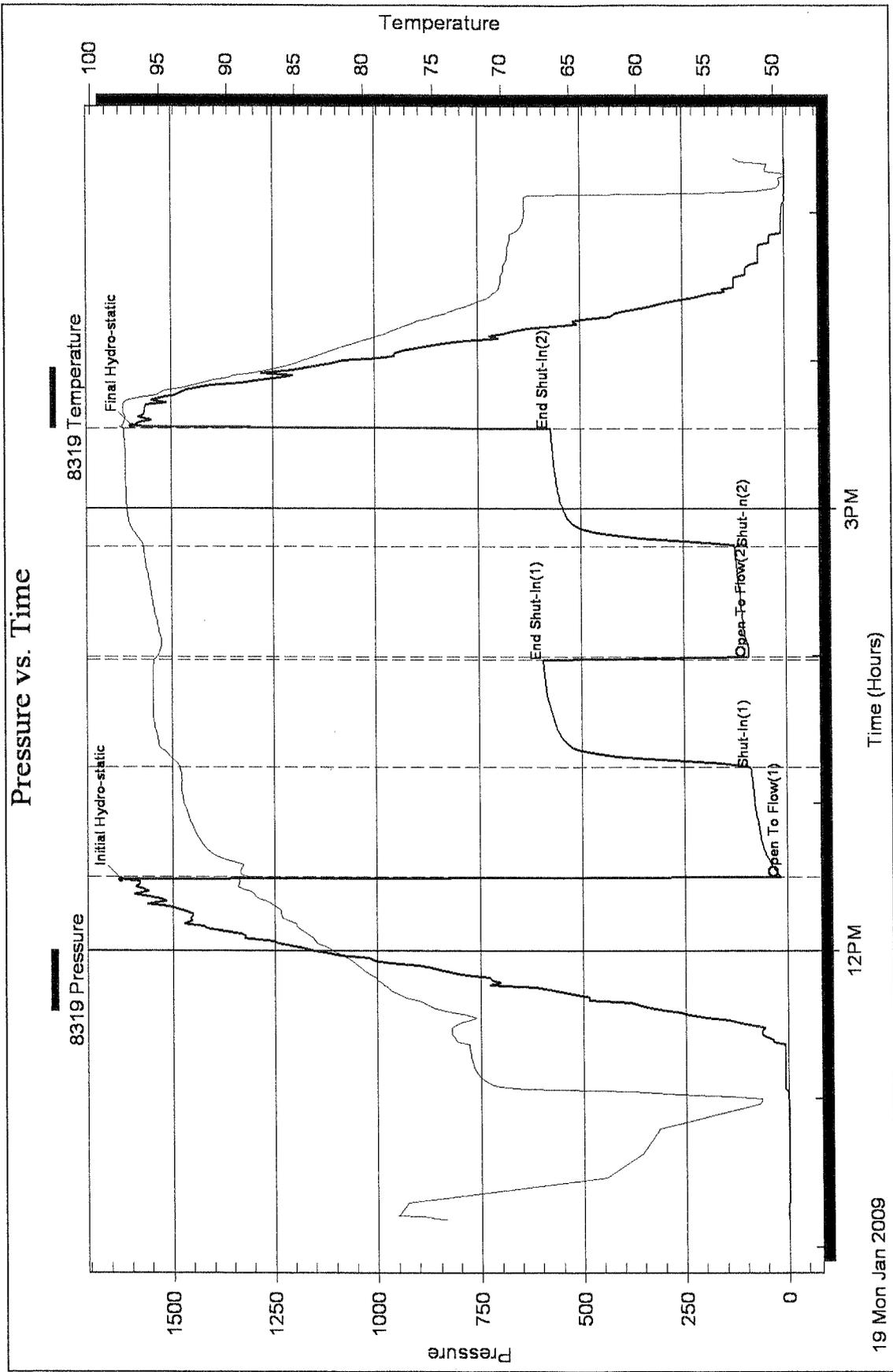
Serial #:

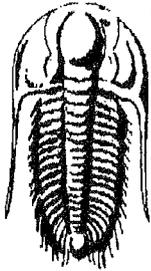
Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time





**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Prepared For: **Black Diamond**

PO Box 641  
Hays, KS 67601

ATTN: Tony R

**9-7-20 Rooks KS**

**Lesage #1**

Start Date: 2009.01.20 @ 00:55:43

End Date: 2009.01.20 @ 07:44:13

Job Ticket #: 35184                      DST #: 2

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

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Black Diamond

Lesage #1

9-7-20 Rooks KS

DST # 2

LKC "C,D,E"

2009.01.20



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 35184

**DST#: 2**

ATTN: Tony R

Test Start: 2009.01.20 @ 00:55:43

## GENERAL INFORMATION:

Formation: **LKC" C,D,E'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:02:43

Time Test Ended: 07:44:13

Test Type: Conventional Bottom Hole

Tester: Brett Dickinson

Unit No: 47

**Interval: 3422.00 ft (KB) To 3484.00 ft (KB) (TVD)**

Total Depth: 3484.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2182.00 ft (KB)

2177.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8369**

Inside

Press@RunDepth: 66.22 psig @ 3425.00 ft (KB)

Start Date: 2009.01.20

End Date:

2009.01.20

Start Time: 00:55:48

End Time:

07:44:12

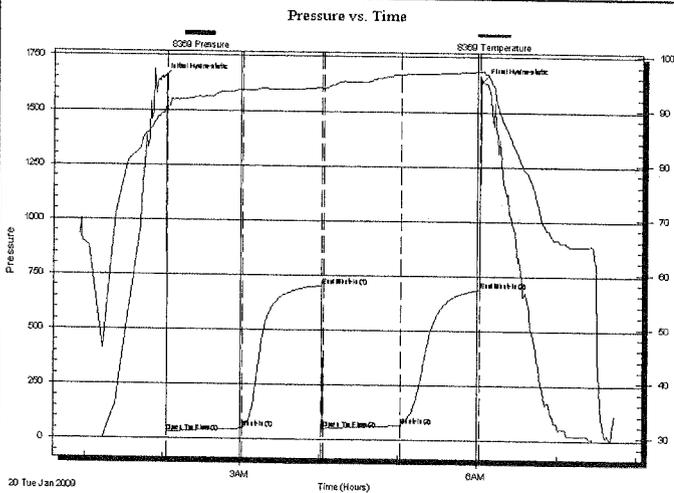
Capacity: 7000.00 psig

Last Calib.: 2009.01.20

Time On Btm: 2009.01.20 @ 01:59:43

Time Off Btm: 2009.01.20 @ 06:03:43

TEST COMMENT: IF-1.75in blow  
ISI-No blow  
FF-Very weak surface blow throughout  
FSI-No blow



## PRESSURE SUMMARY

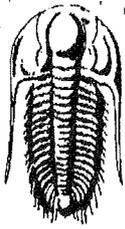
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1647.59	89.19	Initial Hydro-static
3	29.19	90.12	Open To Flow (1)
62	47.80	93.60	Shut-In(1)
122	701.29	94.07	End Shut-In(1)
123	49.67	93.89	Open To Flow (2)
183	66.22	96.48	Shut-In(2)
242	686.93	97.18	End Shut-In(2)
244	1638.57	97.22	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	VSMCO 5%M 95%O	0.02
65.00	OCM 20%O 80%M	0.32

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 35184

**DST#: 2**

ATTN: Tony R

Test Start: 2009.01.20 @ 00:55:43

### Tool Information

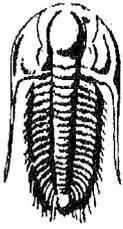
Drill Pipe:	Length: 3297.00 ft	Diameter: 3.82 inches	Volume: 46.74 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 122.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose: 50000.00 lb
		<b>Total Volume:</b>	<b>47.34 bbl</b>	Tool Chased ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 44000.00 lb
Depth to Top Packer:	3422.00 ft			Final 44000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	82.00 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			3403.00	
Shut In Tool	5.00			3408.00	
Hydraulic tool	5.00			3413.00	
Packer	4.00			3417.00	20.00 Bottom Of Top Packer
Packer	5.00			3422.00	
Stubb	1.00			3423.00	
Perforations	1.00			3424.00	
Change Over Sub	1.00			3425.00	
Recorder	0.00	8319	Inside	3425.00	
Recorder	0.00	8369	Inside	3425.00	
Blank Spacing	31.00			3456.00	
Change Over Sub	1.00			3457.00	
Perforations	24.00			3481.00	
Bullnose	3.00			3484.00	62.00 Bottom Packers & Anchor

**Total Tool Length: 82.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 35184

**DST#: 2**

ATTN: Tony R

Test Start: 2009.01.20 @ 00:55:43

## 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:

ppm

Viscosity: 56.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.96 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	VSMCO 5%M 95%O	0.025
65.00	OCM 20%O 80%M	0.320

Total Length: 70.00 ft      Total Volume: 0.345 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

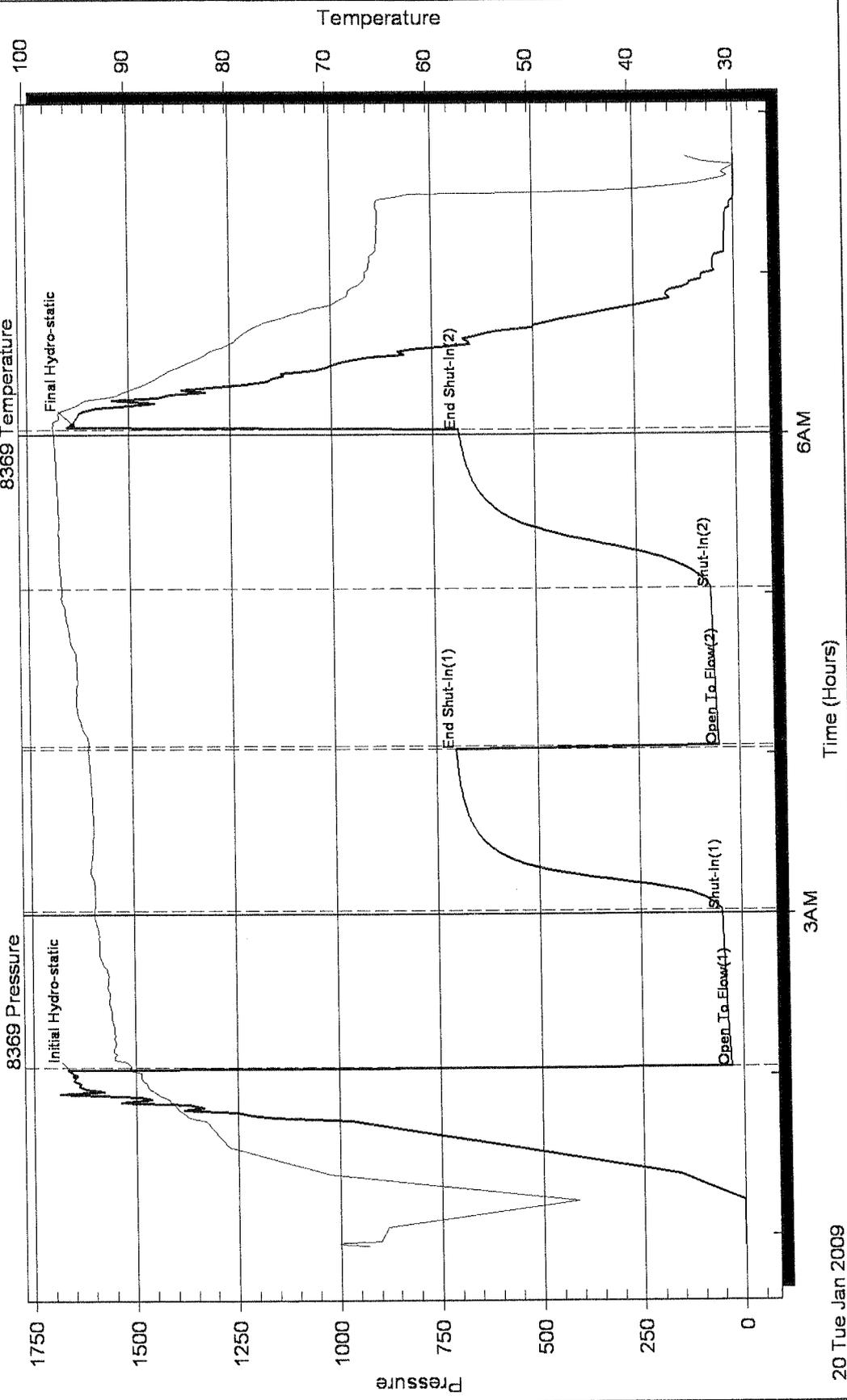
Serial #:

Laboratory Name:

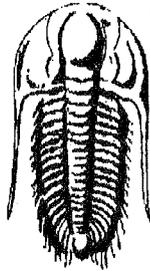
Laboratory Location:

Recovery Comments:

# Pressure vs. Time



20 Tue Jan 2009



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

## DRILL STEM TEST REPORT

Prepared For: **Black Diamond**

PO Box 641  
Hays, KS 67601

ATTN: Tony R

**9-7-20 Rooks KS**

**Lesage #1**

Start Date: 2009.01.20 @ 17:20:07

End Date: 2009.01.20 @ 23:12:07

Job Ticket #: 35185                      DST #: 3

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PO Box 1733 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

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Black Diamond

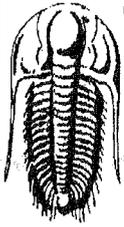
Lesage #1

9-7-20 Rooks KS

DST # 3

LKC "I,J"

2009.01.20



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

ATTN: Tony R

Job Ticket: 35185

**DST#: 3**

Test Start: 2009.01.20 @ 17:20:07

## GENERAL INFORMATION:

Formation: **LKC "I,J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:32:37

Time Test Ended: 23:12:07

Test Type: Conventional Bottom Hole

Tester: Brett Dickinson

Unit No: 47

Interval: **3543.00 ft (KB) To 3582.00 ft (KB) (TVD)**

Total Depth: 3582.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2182.00 ft (KB)

2177.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8369**

**Inside**

Press@RunDepth: 219.83 psig @ 3546.00 ft (KB)

Start Date: 2009.01.20

End Date: 2009.01.20

Capacity: 7000.00 psig

Last Calib.: 2009.01.20

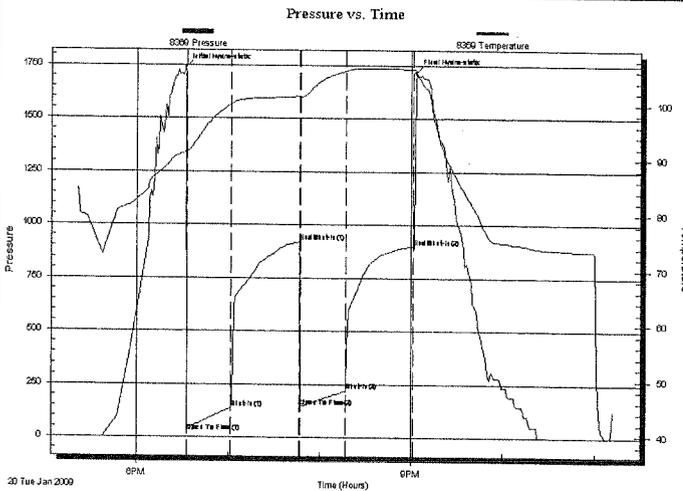
Start Time: 17:20:12

End Time: 23:12:06

Time On Btm: 2009.01.20 @ 18:31:37

Time Off Btm: 2009.01.20 @ 21:03:07

**TEST COMMENT:** IF- BOB in 4min  
IS- BOB in 13min  
FF- BOB in 10min  
FSI- 7.5in blow



## PRESSURE SUMMARY

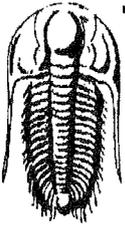
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1735.83	91.36	Initial Hydro-static
1	25.25	91.01	Open To Flow (1)
30	137.71	100.02	Shut-In(1)
75	919.36	101.45	End Shut-In(1)
76	147.02	101.26	Open To Flow(2)
106	219.83	106.08	Shut-In(2)
150	899.03	106.41	End Shut-In(2)
152	1716.09	106.24	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	VSGMCO 10%G 70%O 20%M	0.30
60.00	VSGOCM 10%G 30%O 60%M	0.30
120.00	VGO 45%G 55%O	1.68
320.00	Free Oil 20%G 80%O	4.54

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

**DRILL STEM TEST REPORT**

**TOOL DIAGRAM**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 35185

**DST#: 3**

ATTN: Tony R

Test Start: 2009.01.20 @ 17:20:07

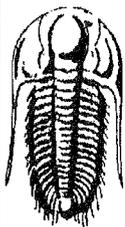
**Tool Information**

Drill Pipe:	Length: 3423.00 ft	Diameter: 3.82 inches	Volume: 48.52 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: 122.00 ft	Diameter: 2.25 inches	Volume: 0.60 bbl	Weight to Pull Loose:	50000.00 lb
		<u>Total Volume:</u>	<u>49.12 bbl</u>	Tool Chased	ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial	44000.00 lb
Depth to Top Packer:	3543.00 ft			Final	47000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	40.00 ft				
Tool Length:	60.00 ft				
Number of Packers:	2	Diameter:	6.75 inches		
Tool Comments:					

<b>Tool Description</b>	<b>Length (ft)</b>	<b>Serial No.</b>	<b>Position</b>	<b>Depth (ft)</b>	<b>Accum. Lengths</b>
-------------------------	--------------------	-------------------	-----------------	-------------------	-----------------------

Change Over Sub	1.00			3524.00	
Shut In Tool	5.00			3529.00	
Hydraulic tool	5.00			3534.00	
Packer	4.00			3538.00	20.00 Bottom Of Top Packer
Packer	5.00			3543.00	
Stubb	1.00			3544.00	
Perforations	1.00			3545.00	
Change Over Sub	1.00			3546.00	
Recorder	0.00	8319	Inside	3546.00	
Recorder	0.00	8369	Inside	3546.00	
Blank Spacing	32.00			3578.00	
Change Over Sub	1.00			3579.00	
Perforations	1.00			3580.00	
Bullnose	3.00			3583.00	40.00 Bottom Packers & Anchor

**Total Tool Length: 60.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Black Diamond

**Lesage #1**

PO Box 641  
Hays, KS 67601

**9-7-20 Rooks KS**

Job Ticket: 35185                      **DST#: 3**

ATTN: Tony R

Test Start: 2009.01.20 @ 17:20:07

## Mud and Cushion Information

Mud Type: Gel Chem	Cushion Type:	Oil API: 38 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: ppm
Viscosity: 54.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.97 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 1000.00 ppm		
Filter Cake: inches		

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	VSGMCO 10%G 70%O 20%M	0.295
60.00	VSGOCM 10%G 30%O 60%M	0.295
120.00	VGO 45%G 55%O	1.683
320.00	Free Oil 20%G 80%O	4.536

Total Length: 560.00 ft      Total Volume: 6.809 bbl

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

Laboratory Name:      Laboratory Location:

Recovery Comments:

