Confidentiality Requested:
☐ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1086998

Form ACO-1
August 2013
Form must be Typed
Form must be Signed
All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 8914
Name: H & C Oil Operating Inc.
Address 1: PO BOX 86
Address 2:
City: PLAINVILLE State: KS Zip: 67663 + 0086
Contact Person: Charles R. Ramsay
Phone: (785) 434-7434
CONTRACTOR: License # 33493
Name: American Eagle Drilling LLC
Wellsite Geologist: Marc Downing
Purchaser: Coffeyville Resources LLC

Designate Type of Completion:

☑ New Well ☐ Re-Entry ☐ Workover

☑ Oil ☐ WSW ☐ SWD ☐ SIOW
☐ Gas ☐ D&A ☐ ENHR ☐ SIGW
☐ OG ☐ GSW ☐ Temp. Abd.
☐ CM *(Coal Bed Methane)*
☐ Cathodic ☐ Other *(Core, Expl., etc.)*:

If Workover/Re-entry: Old Well Info as follows:

Operator:
Well Name:
Original Comp. Date: Original Total Depth:

☐ Deepening ☐ Re-perf. ☐ Conv. to ENHR ☐ Conv. to SWD
☐ Plug Back ☐ Conv. to GSW ☐ Conv. to Producer

☐ Commingled Permit #:
☐ Dual Completion Permit #:
☐ SWD Permit #:
☐ ENHR Permit #:
☐ GSW Permit #:

5/29/2012	6/5/2012	7/3/2012
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-065-23834-00-00
Spot Description:
S2 - SW - NW - SE Sec. 21 Twp. 6 S. R. 23 ☐ East ☑ West
1450 Feet from ☐ North / ☑ South Line of Section
2310 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Graham
Lease Name: Doris Well #: 21-1
Field Name:
Producing Formation: Lansing Kansas City
Elevation: Ground: 2386 Kelly Bushing: 2391
Total Vertical Depth: 3853 Plug Back Total Depth: 3827
Amount of Surface Pipe Set and Cemented at: 222 Feet
Multiple Stage Cementing Collar Used? ☐ Yes ☑ No
If yes, show depth set: Feet
If Alternate II completion, cement circulated from: 3853
feet depth to: 0 w/ 520 sx cmt.

Drilling Fluid Management Plan
(Data must be collected from the Reserve Pit)

Chloride content: 12800 ppm Fluid volume: 60 bbls
Dewatering method used: Evaporated

Location of fluid disposal if hauled offsite:

Operator Name:
Lease Name: License #:
Quarter Sec. Twp. S. R. ☐ East ☐ West
County: Permit #:

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

☑ **Confidentiality Requested**
Date: 07/16/2012
☑ **Confidential Release Date:** 07/16/2014
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 07/16/2012

[redacted] 1086998

Operator Name: H & C Oil Operating Inc. Lease Name: Doris Well #: 21-1

Sec. 21 Twp. 6 S. R. 23 ☐ East ☑ West County: Graham

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken ☑ Yes ☐ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☑ Yes ☐ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☑ Yes ☐ No

List All E. Logs Run:
Attached

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Anhydrite	2046	+345
Topeka	3370	-979
Heebner	3582	-1191
Toronto	3607	-1216
Lansing	3623	-1232
Base Kansas City	3812	-1421

CASING RECORD ☑ New ☐ Used
Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Surface	12.25	8.625	20	222	common	150	3% c.c. & 2% gel
Production	7.8750	5.50	14	3847	QMDC	520	1/4# floseal

ADDITIONAL CEMENTING / SQUEEZE RECORD

Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
___ Perforate ___ Protect Casing ___ Plug Back TD ___ Plug Off Zone	-			
	-			

Did you perform a hydraulic fracturing treatment on this well? ☐ Yes ☐ No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☐ Yes ☐ No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☐ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth
4	3790' - 3795'	2000 gallons acid	3795'
4	3772' - 3777'	2000 gallons acid	3777'

TUBING RECORD: Size: 2 3/8" Set At: 3820' Packer At: none

Liner Run: ☐ Yes ☑ No

Date of First, Resumed Production, SWD or ENHR. 7/11/2012

Producing Method: ☐ Flowing ☑ Pumping ☐ Gas Lift ☐ Other *(Explain)* _____

Estimated Production Per 24 Hours	Oil	Bbls.	Gas	Mcf	Water	Bbls.	Gas-Oil Ratio	Gravity
	80				2			38

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)* _____

PRODUCTION INTERVAL:
3772' - 3795'

Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	H & C Oil Operating Inc.
Well Name	Doris 21-1
Doc ID	1086998

All Electric Logs Run

Microresistivity Log
Dual Induction Log
Dual Compensated Porosity Log
Sonic Cement Bond Log

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802

Kansas
Corporation Commission

Phone: 316-337-6200
Fax: 316-337-6211
http://kcc.ks.gov/

July 16, 2012

Charles R. Ramsay
H & C Oil Operating Inc.
PO BOX 86
PLAINVILLE, KS 67663-0086

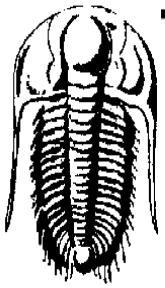
Re: ACO1
API 15-065-23834-00-00
Doris 21-1
SE/4 Sec.21-06S-23W
Graham County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
Charles R. Ramsay



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Doris #21-1

21-6s-23w Graham KS

Start Date: 2012.06.02 @ 17:50:05
End Date: 2012.06.03 @ 00:43:29
Job Ticket #: 48101 DST #: 1

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

Printed: 2012.06.08 @ 14:45:22

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48101 **DST#: 1**

Test Start: 2012.06.02 @ 17:50:05

GENERAL INFORMATION:

Formation: **LKC "A"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:46:30
Time Test Ended: 00:43:29

Test Type: Conventional Bottom Hole (Initial)
Tester: James Winder
Unit No: 57

Interval: 3612.00 ft (KB) To 3635.00 ft (KB) (TVD)
Total Depth: 3635.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

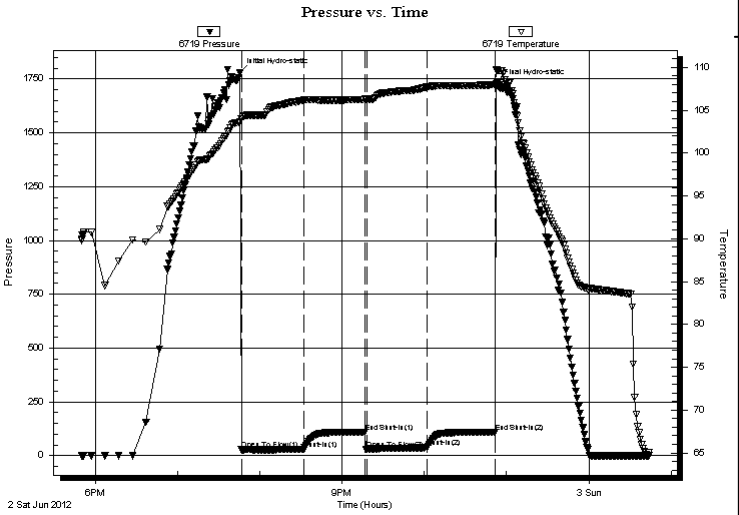
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6719 **Inside**

Press@RunDepth: 37.32 psig @ 3613.00 ft (KB)
Start Date: 2012.06.02 End Date: 2012.06.03
Start Time: 17:50:05 End Time: 00:43:29

Capacity: 8000.00 psig
Last Calib.: 2012.06.03
Time On Btm: 2012.06.02 @ 19:45:30
Time Off Btm: 2012.06.02 @ 22:52:59

TEST COMMENT: 45 - IF: 2" surge blow at open, built to BOB (11") at 32 min.
45 - ISI: Bled off, No blow back
45 - FF: Blow built to BOB at 32 min.
45 - FSI: Bled off, Surface blow back for 4 min., then occasional blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1777.48	103.60	Initial Hydro-static
1	27.87	104.00	Open To Flow (1)
47	30.88	106.17	Shut-In(1)
91	107.94	106.28	End Shut-In(1)
93	29.47	106.25	Open To Flow (2)
137	37.32	107.71	Shut-In(2)
186	107.82	107.97	End Shut-In(2)
188	1730.83	109.67	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GOCM 80%m, 11%g, 9%o	0.88
0.00	GIP = 310'	0.00

Gas Rates

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

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48101 **DST#: 1**

Test Start: 2012.06.02 @ 17:50:05

GENERAL INFORMATION:

Formation: **LKC "A"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 19:46:30
Time Test Ended: 00:43:29

Test Type: Conventional Bottom Hole (Initial)
Tester: James Winder
Unit No: 57

Interval: 3612.00 ft (KB) To 3635.00 ft (KB) (TVD)
Total Depth: 3635.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

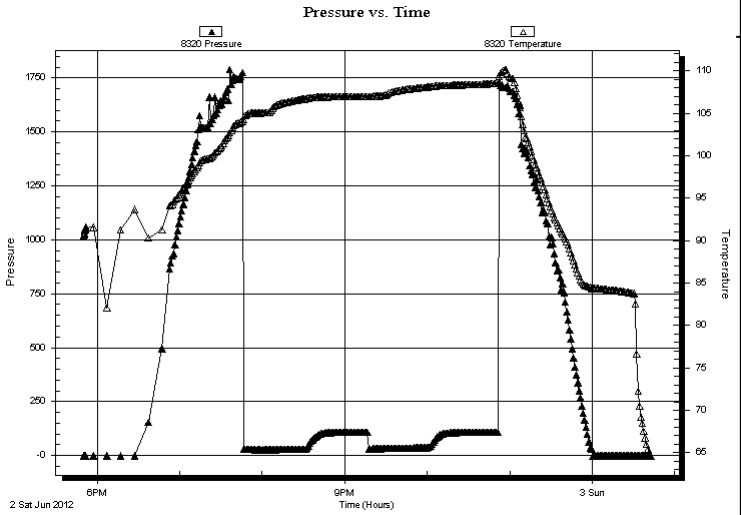
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8320 **Outside**

Press@RunDepth: psig @ 3613.00 ft (KB)
Start Date: 2012.06.02 End Date: 2012.06.03
Start Time: 17:50:05 End Time: 00:42:59

Capacity: 8000.00 psig
Last Calib.: 2012.06.03
Time On Btm:
Time Off Btm:

TEST COMMENT: 45 - IF: 2" surge blow at open, built to BOB (11") at 32 min.
45 - ISI: Bled off, No blow back
45 - FF: Blow built to BOB at 32 min.
45 - FSI: Bled off, Surface blow back for 4 min., then occasional blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GOCM 80%m, 11%g, 9%o	0.88
0.00	GIP = 310'	0.00

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48101 **DST#: 1**

Test Start: 2012.06.02 @ 17:50:05

Tool Information

Drill Pipe:	Length:	3617.00 ft	Diameter:	3.80 inches	Volume:	50.74 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	
					Total Volume:	50.74 bbl	

Drill Pipe Above KB:	25.00 ft
Depth to Top Packer:	3612.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	23.00 ft
Tool Length:	43.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		60000.00 lb
Tool Chased		5.00 ft
String Weight:	Initial	44000.00 lb
	Final	48000.00 lb

Tool Comments: Tool slid 2' before opening - Chased 5' to bottom at open
Mud dow n about 10' - 2" surge blow at open

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			3597.00		
Hydraulic tool	5.00			3602.00		
Packer	5.00			3607.00	20.00	Bottom Of Top Packer
Packer	5.00			3612.00		
Stubb	1.00			3613.00		
Recorder	0.00	6719	Inside	3613.00		
Recorder	0.00	8320	Outside	3613.00		
Perforations	19.00			3632.00		
Bullnose	3.00			3635.00	23.00	Bottom Packers & Anchor
Total Tool Length:	**43.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48101 **DST#: 1**

Test Start: 2012.06.02 @ 17:50:05

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:	7.94 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	800.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

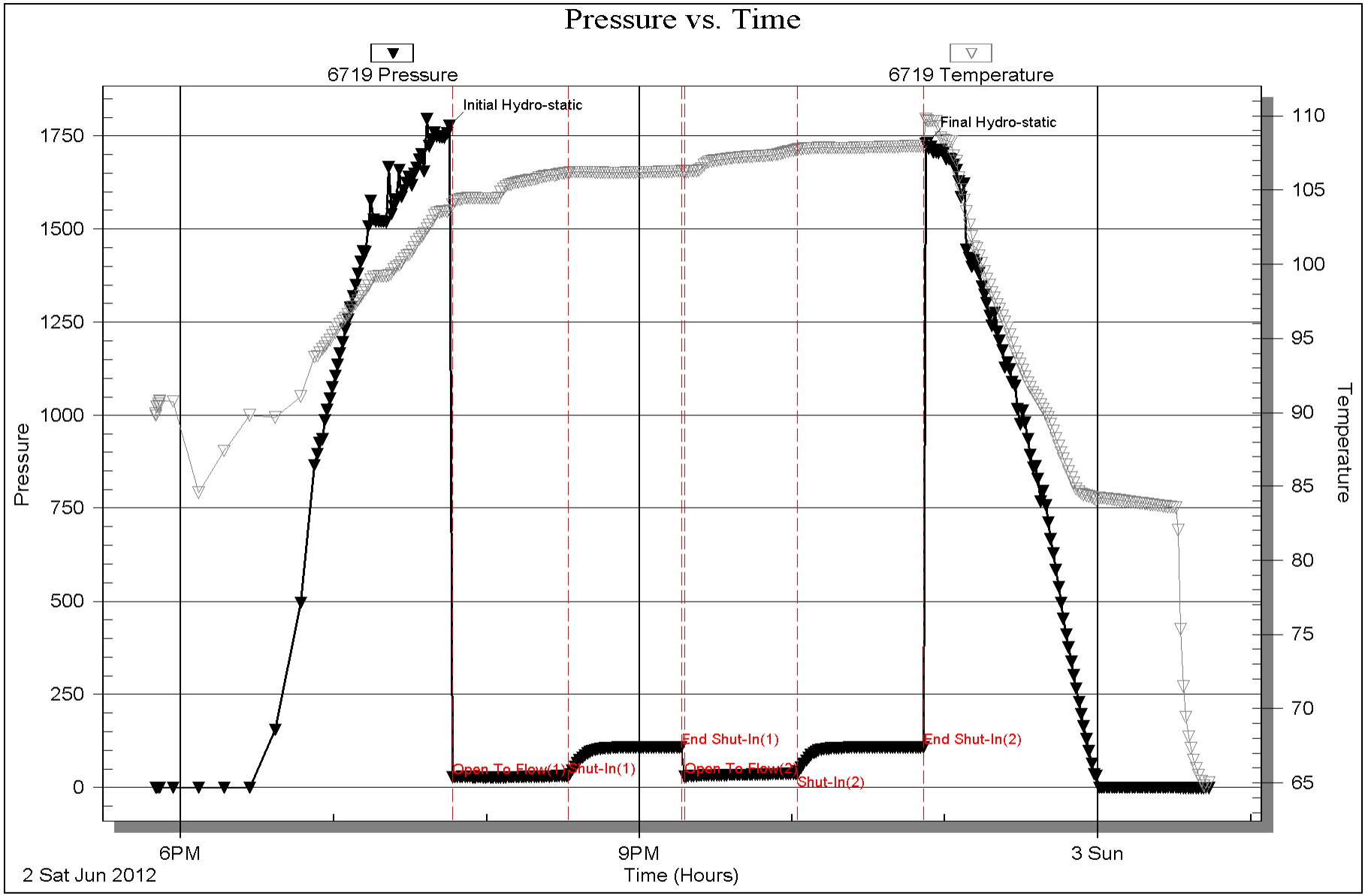
Recovery Table

Length ft	Description	Volume bbl
63.00	GOCM 80%m, 11%g, 9%o	0.884
0.00	GIP = 310'	0.000

Total Length: 63.00 ft Total Volume: 0.884 bbl

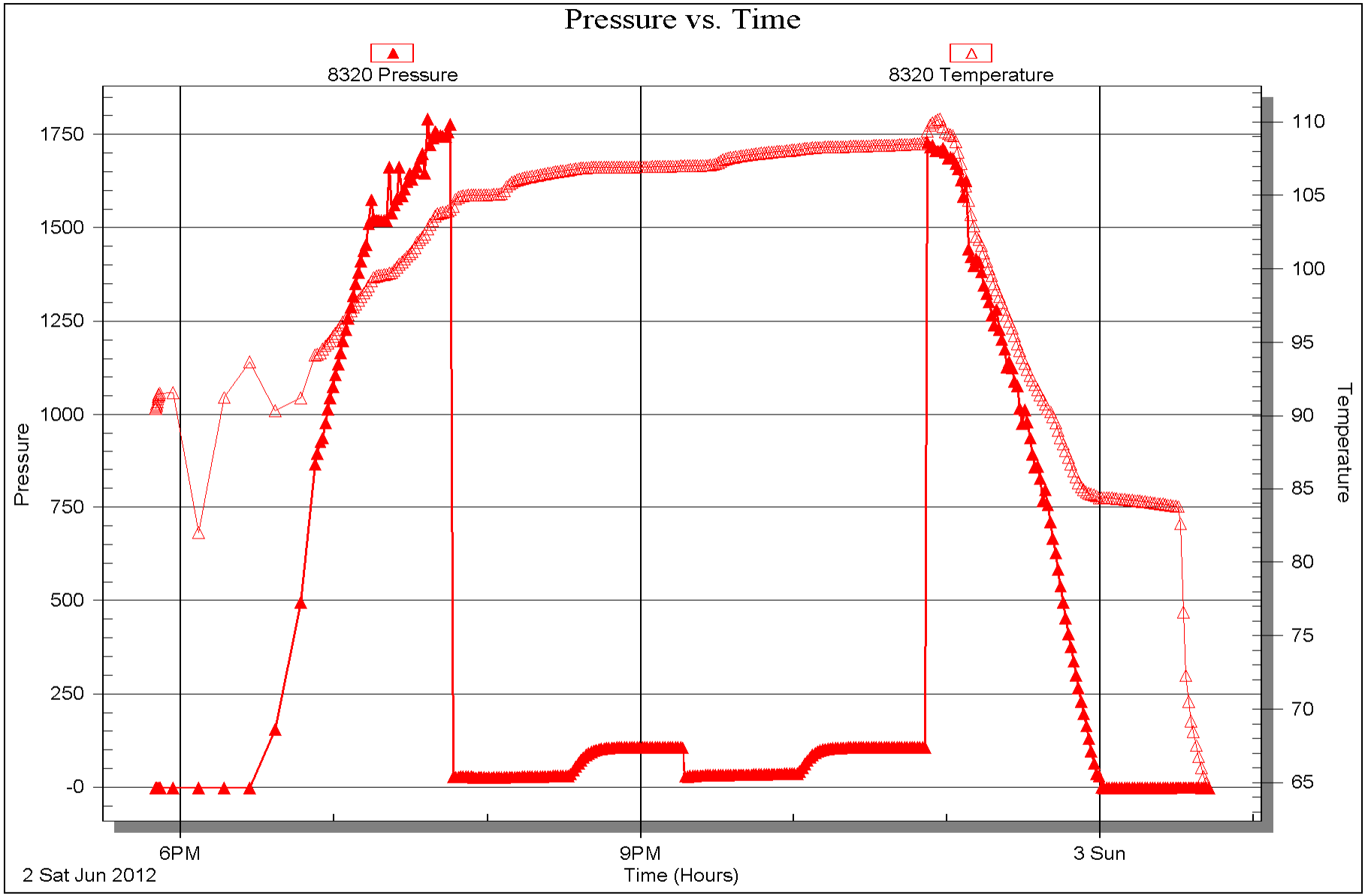
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 6719 **Inside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 48101 Printed: 2012.06.08 @ 14:45:25

Serial #: 8320 **Outside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 1



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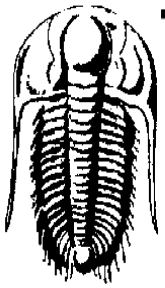


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Doris #21-1

21-6s-23w Graham KS

Start Date: 2012.06.03 @ 10:21:00
End Date: 2012.06.03 @ 17:08:30
Job Ticket #: 48102 DST #: 2

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

Printed: 2012.06.08 @ 14:44:21

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48102 **DST#: 2**

Test Start: 2012.06.03 @ 10:21:00

GENERAL INFORMATION:

Formation: **LKC "E - F"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:26:30
Time Test Ended: 17:08:30

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3672.00 ft (KB) To 3693.00 ft (KB) (TVD)
Total Depth: 3693.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

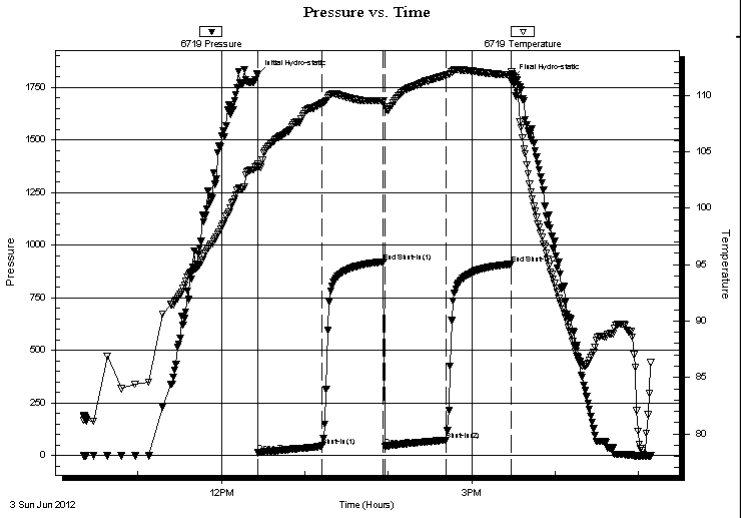
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6719 **Inside**

Press@RunDepth: 73.55 psig @ 3673.00 ft (KB)
Start Date: 2012.06.03 End Date: 2012.06.03
Start Time: 10:21:05 End Time: 17:08:29

Capacity: 8000.00 psig
Last Calib.: 2012.06.03
Time On Btm: 2012.06.03 @ 12:26:00
Time Off Btm: 2012.06.03 @ 15:29:00

TEST COMMENT: 45 - IF: Blow built to BOB (11") at 22 1/2 min.
45 - ISI: Bled off, Blow back built to 3/8"
45 - FF: Blow built to BOB at 17 3/4 min.
45 - FSI: Bled off, Blow back built to 1/2"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1811.01	103.88	Initial Hydro-static
1	13.76	103.58	Open To Flow (1)
46	44.67	109.28	Shut-In(1)
91	921.31	109.53	End Shut-In(1)
92	44.18	109.01	Open To Flow (2)
136	73.55	111.80	Shut-In(2)
182	909.59	111.82	End Shut-In(2)
183	1791.18	111.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
55.00	GOCM 60%m, 24%o, 16%g	0.77
105.00	CGO 83%o, 14%g, 3%m	1.47
0.00	GIP = 410'	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48102 **DST#: 2**

Test Start: 2012.06.03 @ 10:21:00

GENERAL INFORMATION:

Formation: **LKC "E - F"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 12:26:30
Time Test Ended: 17:08:30

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3672.00 ft (KB) To 3693.00 ft (KB) (TVD)
Total Depth: 3693.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

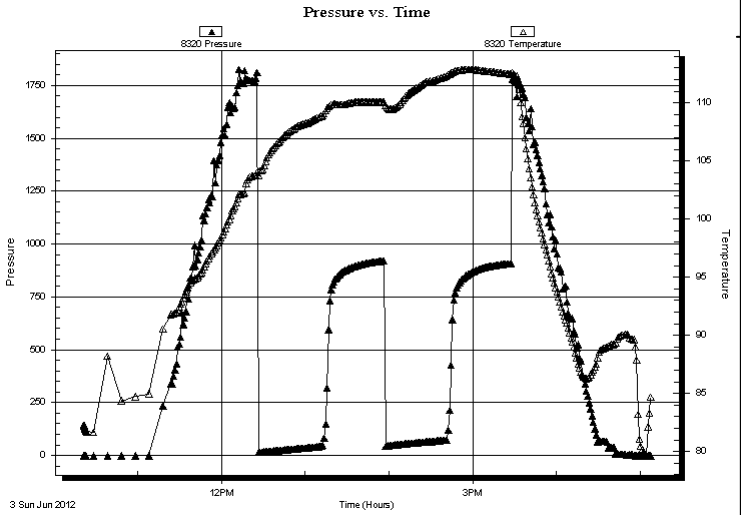
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8320 **Outside**

Press@RunDepth: psig @ 3673.00 ft (KB)
Start Date: 2012.06.03 End Date: 2012.06.03
Start Time: 10:21:05 End Time: 17:07:59

Capacity: 8000.00 psig
Last Calib.: 2012.06.03
Time On Btm:
Time Off Btm:

TEST COMMENT: 45 - IF: Blow built to BOB (11") at 22 1/2 min.
45 - ISI: Bled off, Blow back built to 3/8"
45 - FF: Blow built to BOB at 17 3/4 min.
45 - FSI: Bled off, Blow back built to 1/2"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
55.00	GOCM 60%m, 24%o, 16%g	0.77
105.00	CGO 83%o, 14%g, 3%m	1.47
0.00	GIP = 410'	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48102 **DST#: 2**

Test Start: 2012.06.03 @ 10:21:00

Tool Information

Drill Pipe:	Length:	3680.00 ft	Diameter:	3.80 inches	Volume:	51.62 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:		25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:		48000.00 lb
					Total Volume:	51.62 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		28.00 ft					String Weight:	Initial	46000.00 lb
Depth to Top Packer:		3672.00 ft						Final	48000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		21.00 ft							
Tool Length:		41.00 ft							
Number of Packers:		2	Diameter:	6.75 inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			3657.00		
Hydraulic tool	5.00			3662.00		
Packer	5.00			3667.00	20.00	Bottom Of Top Packer
Packer	5.00			3672.00		
Stubb	1.00			3673.00		
Recorder	0.00	6719	Inside	3673.00		
Recorder	0.00	8320	Outside	3673.00		
Perforations	17.00			3690.00		
Bullnose	3.00			3693.00	21.00	Bottom Packers & Anchor
Total Tool Length:	**41.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48102 **DST#: 2**

Test Start: 2012.06.03 @ 10:21:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	35.2 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	63.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.96 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1000.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
55.00	GOCM 60%m, 24%o, 16%g	0.772
105.00	CGO 83%o, 14%g, 3%m	1.473
0.00	GIP = 410'	0.000

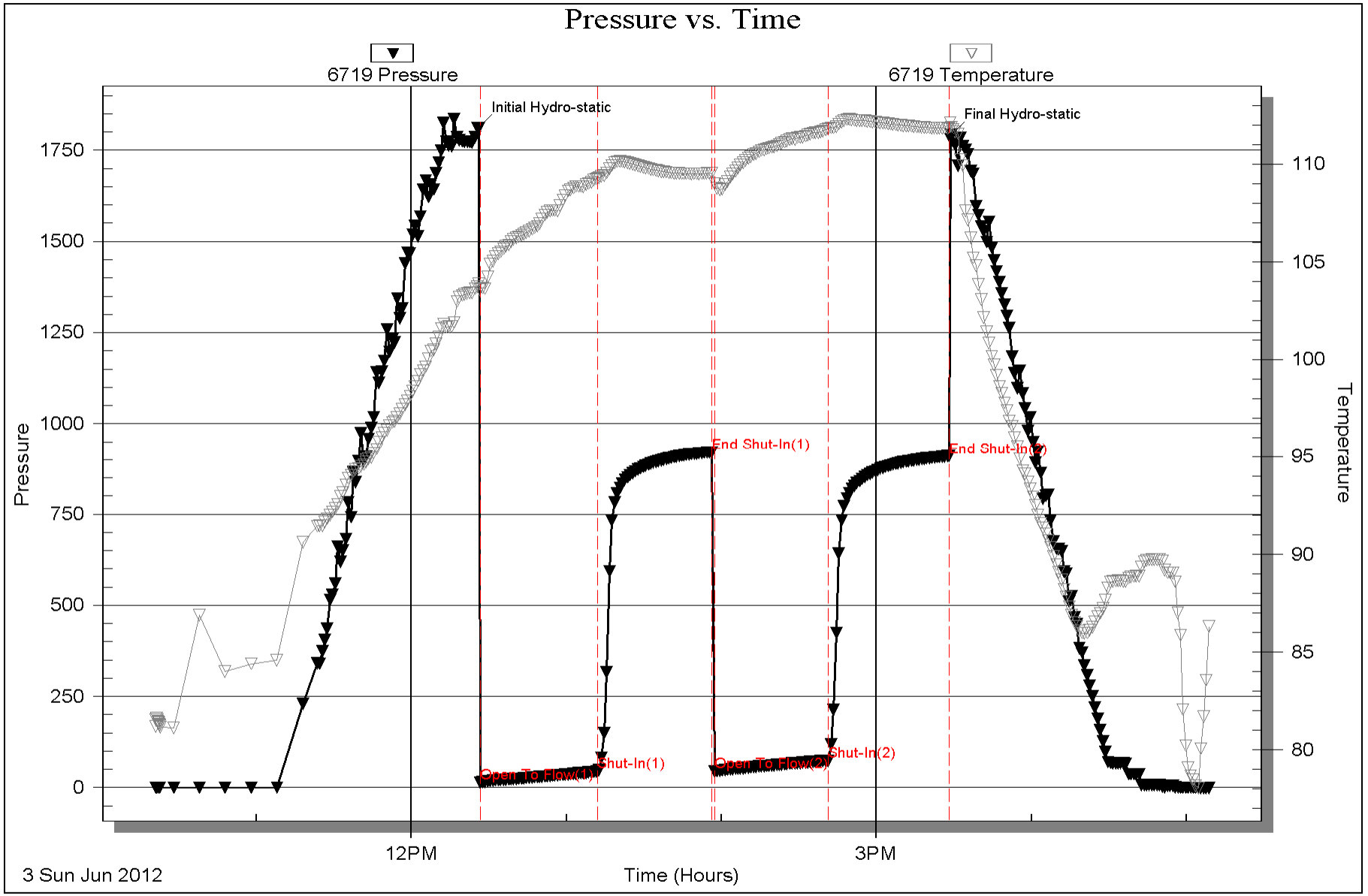
Total Length: 160.00 ft Total Volume: 2.245 bbl

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

Laboratory Name: Laboratory Location:

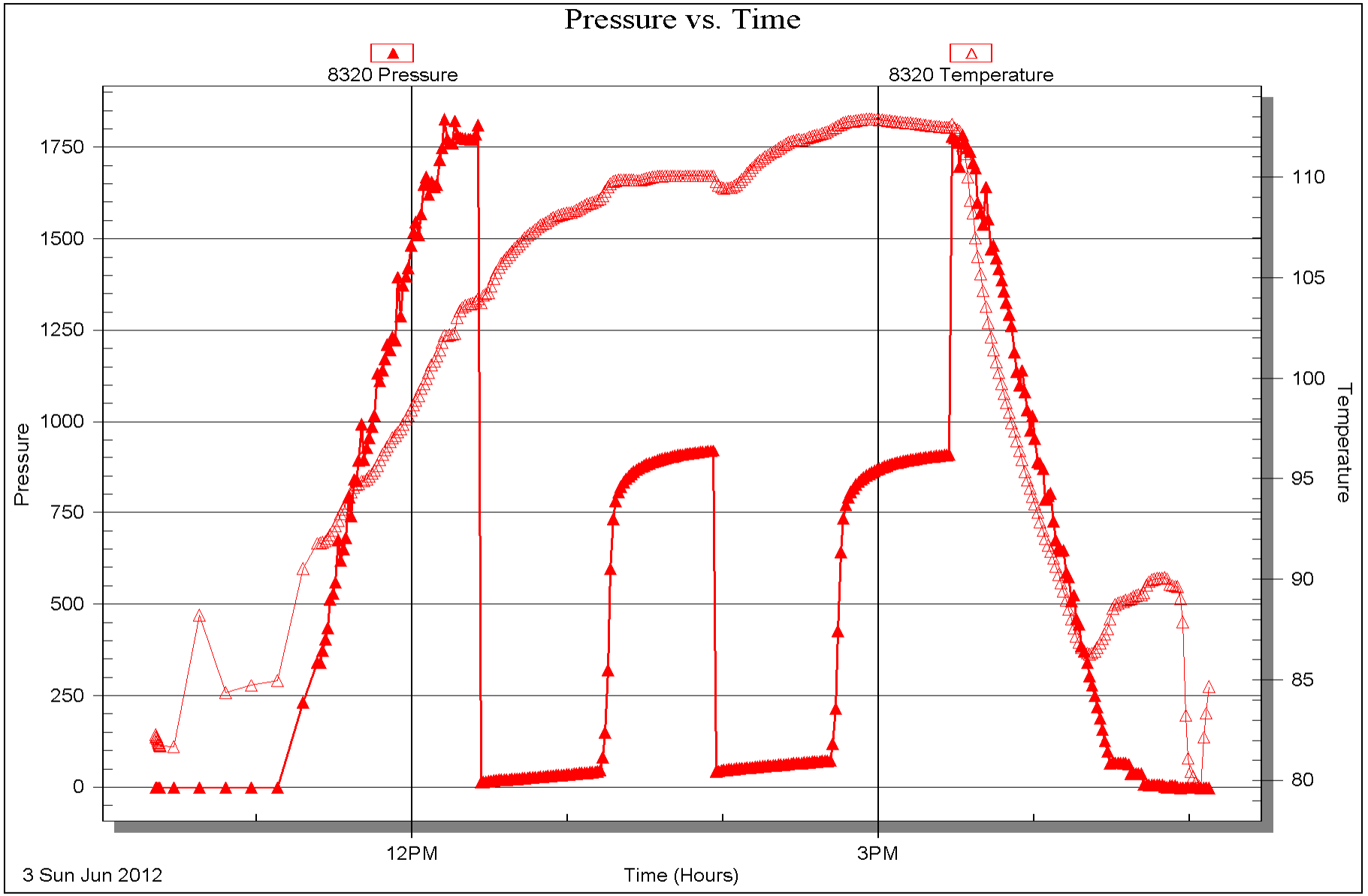
Recovery Comments: Gravity = 39.4 api @ 102 deg F
Corrected Gravity = 35.2 api

Serial #: 6719 **Inside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 48102 Printed: 2012.06.08 @ 14:44:23

Serial #: 8320 **Outside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 2



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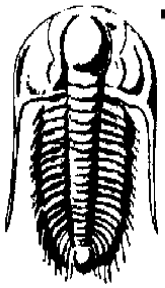


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Doris #21-1

21-6s-23w Graham KS

Start Date: 2012.06.04 @ 02:40:00
End Date: 2012.06.04 @ 09:31:30
Job Ticket #: 48103 DST #: 3

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

Printed: 2012.06.08 @ 14:43:37

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48103 **DST#: 3**

Test Start: 2012.06.04 @ 02:40:00

GENERAL INFORMATION:

Formation: **LKC "H"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:46:30
Time Test Ended: 09:31:30

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3721.00 ft (KB) To 3753.00 ft (KB) (TVD)
Total Depth: 3753.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

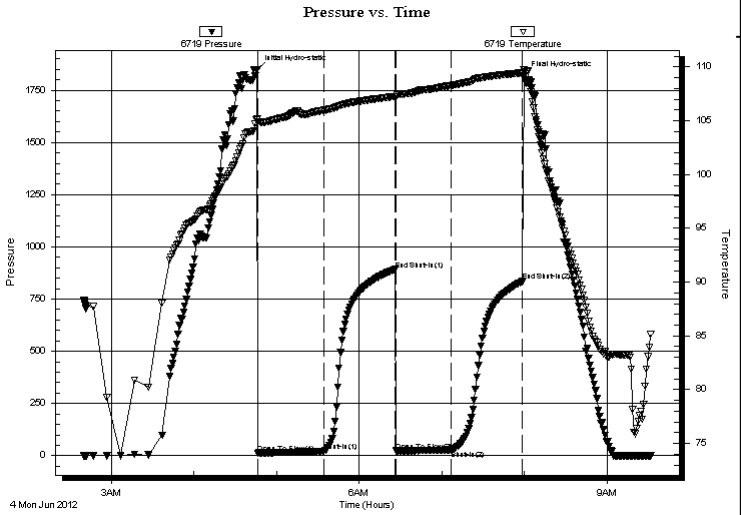
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6719 **Inside**

Press@RunDepth: 27.98 psig @ 3722.00 ft (KB)
Start Date: 2012.06.04 End Date: 2012.06.04
Start Time: 02:40:05 End Time: 09:31:29

Capacity: 8000.00 psig
Last Calib.: 2012.06.04
Time On Btm: 2012.06.04 @ 04:46:00
Time Off Btm: 2012.06.04 @ 07:59:30

TEST COMMENT: 45 - IF: Blow built to 2 1/4" (found head w as loose w hen w e w ent to close in)
45 - ISI: Bled off, No blow back
45 - FF: Blow started at 6 min., built to 1/2"
45 - FSI: Bled off, No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1849.85	105.19	Initial Hydro-static
1	12.06	104.92	Open To Flow (1)
49	20.75	105.98	Shut-In(1)
100	891.83	107.27	End Shut-In(1)
101	23.37	107.19	Open To Flow (2)
141	27.98	108.29	Shut-In(2)
193	834.68	109.46	End Shut-In(2)
194	1818.34	109.78	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
35.00	OCM 83%m, 15%o, 2%g	0.49

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48103 **DST#: 3**

Test Start: 2012.06.04 @ 02:40:00

GENERAL INFORMATION:

Formation: **LKC "H"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:46:30
Time Test Ended: 09:31:30

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3721.00 ft (KB) To 3753.00 ft (KB) (TVD)
Total Depth: 3753.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

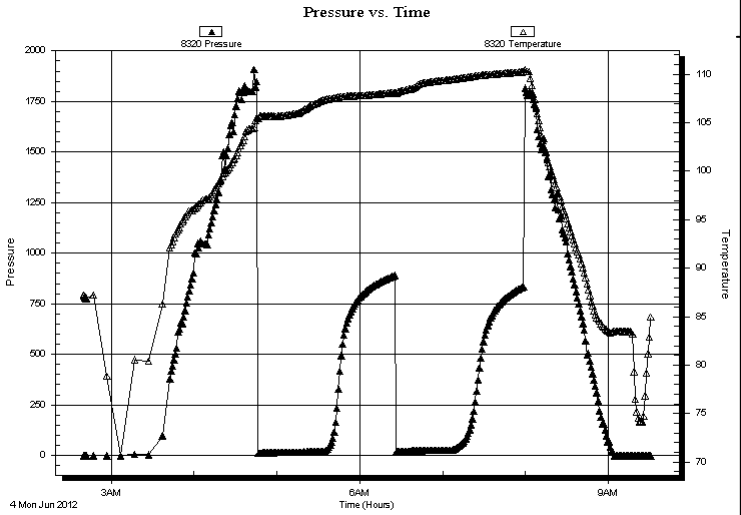
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8320 **Outside**

Press@RunDepth: psig @ 3722.00 ft (KB)
Start Date: 2012.06.04 End Date: 2012.06.04
Start Time: 02:40:05 End Time: 09:30:29

Capacity: 8000.00 psig
Last Calib.: 2012.06.04
Time On Btm:
Time Off Btm:

TEST COMMENT: 45 - IF: Blow built to 2 1/4" (found head w as loose w hen w e w ent to close in)
45 - ISI: Bled off, No blow back
45 - FF: Blow started at 6 min., built to 1/2"
45 - FSI: Bled off, No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
35.00	OCM 83%m, 15%o, 2%g	0.49

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48103 **DST#: 3**

Test Start: 2012.06.04 @ 02:40:00

Tool Information

Drill Pipe:	Length:	3711.00 ft	Diameter:	3.80 inches	Volume:	52.06 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:		25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	Weight to Pull Loose:		50000.00 lb
					Total Volume:	52.06 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		10.00 ft					String Weight:	Initial	48000.00 lb
Depth to Top Packer:		3721.00 ft						Final	48000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		32.00 ft							
Tool Length:		52.00 ft							
Number of Packers:		2	Diameter:	6.75 inches					

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			3706.00		
Hydraulic tool	5.00			3711.00		
Packer	5.00			3716.00	20.00	Bottom Of Top Packer
Packer	5.00			3721.00		
Stubb	1.00			3722.00		
Recorder	0.00	6719	Inside	3722.00		
Recorder	0.00	8320	Outside	3722.00		
Perforations	28.00			3750.00		
Bullnose	3.00			3753.00	32.00	Bottom Packers & Anchor
Total Tool Length:	**52.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48103 **DST#: 3**

Test Start: 2012.06.04 @ 02:40:00

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:	63.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.97 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1000.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

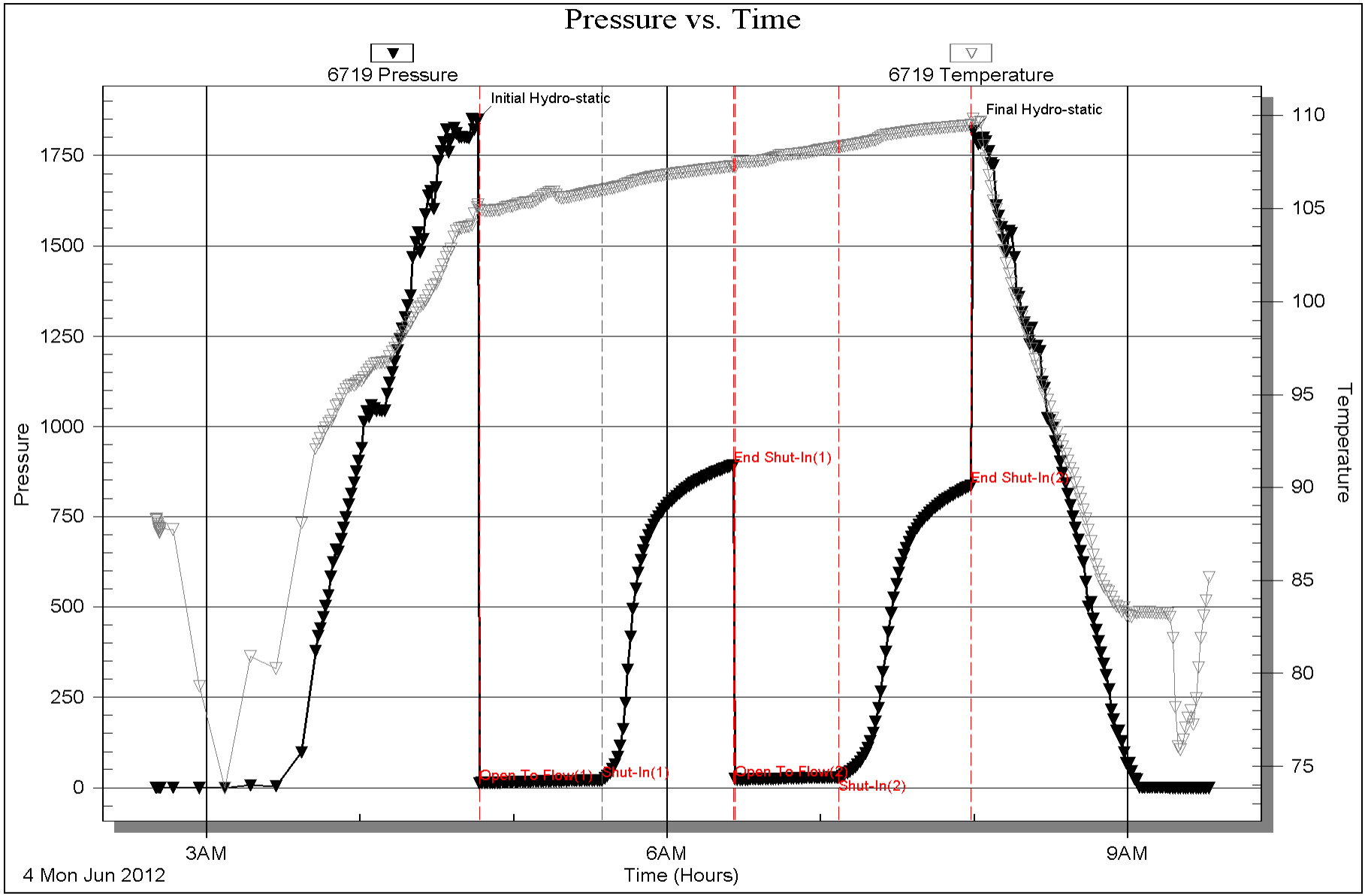
Recovery Table

Length ft	Description	Volume bbl
35.00	OCM 83%m, 15%o, 2%g	0.491

Total Length: 35.00 ft Total Volume: 0.491 bbl

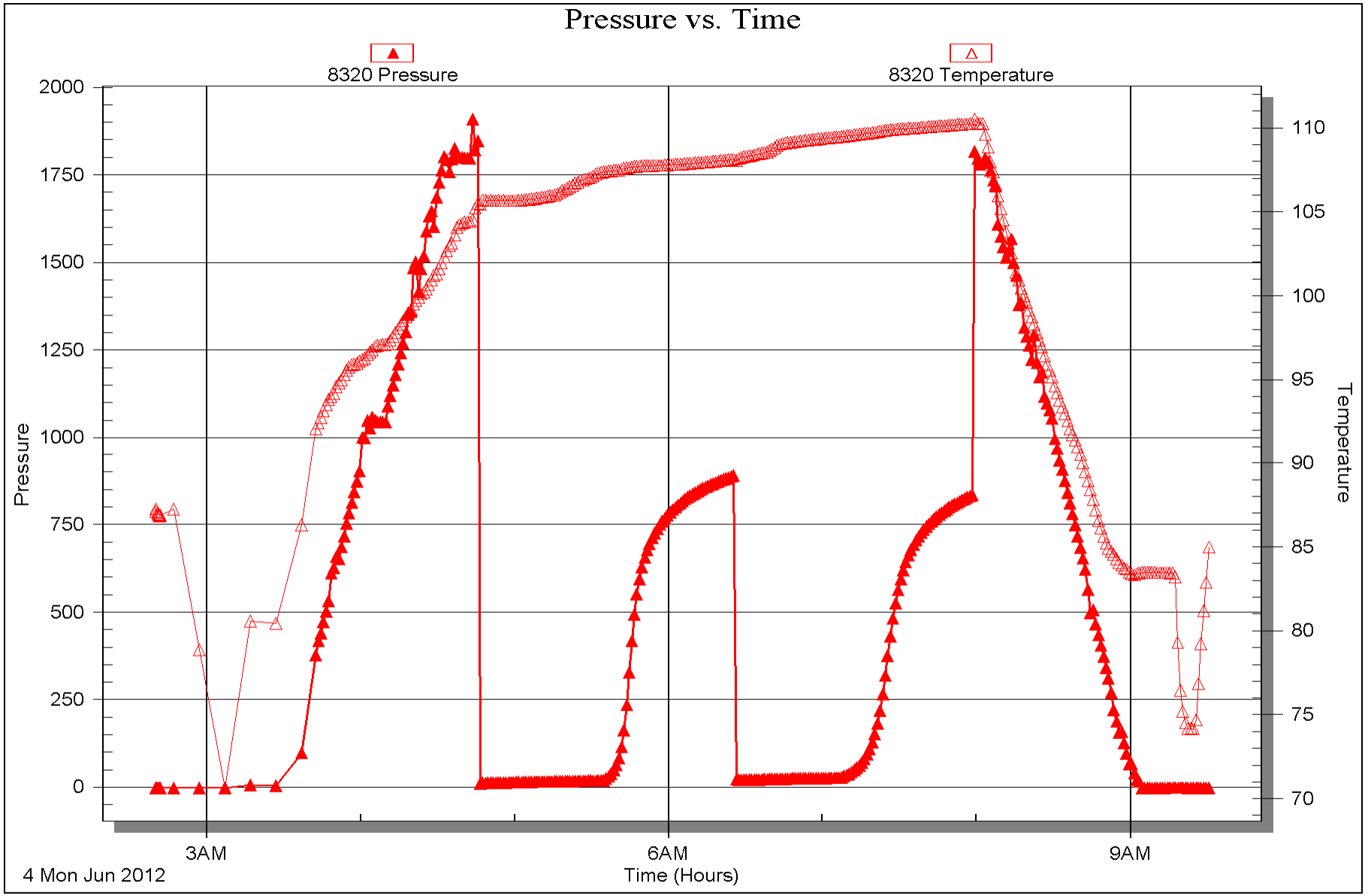
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 6719 **Inside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 48103 Printed: 2012.06.08 @ 14:43:40

Serial #: 8320 **Outside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 3



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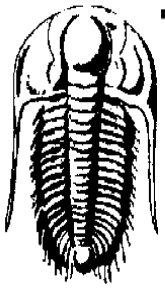


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86
Plainville, KS 67663

ATTN: Marc Downing

Doris #21-1

21-6s-23w Graham KS

Start Date: 2012.06.04 @ 17:20:00
End Date: 2012.06.04 @ 23:46:00
Job Ticket #: 48104 DST #: 4

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

Printed: 2012.06.08 @ 14:43:01

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48104 **DST#: 4**

Test Start: 2012.06.04 @ 17:20:00

GENERAL INFORMATION:

Formation: **LKC "J"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 18:58:00
Time Test Ended: 23:46:00

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3748.00 ft (KB) To 3778.00 ft (KB) (TVD)
Total Depth: 3778.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

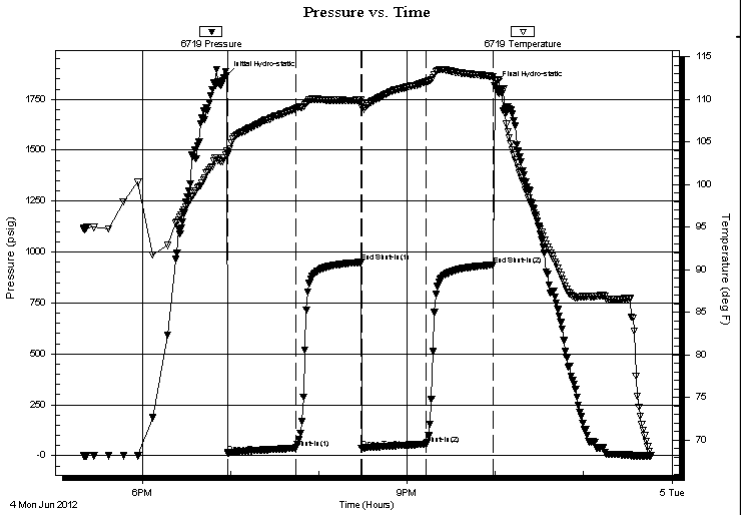
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 6719 **Inside**

Press@RunDepth: 57.59 psig @ 3749.00 ft (KB)
Start Date: 2012.06.04 End Date: 2012.06.04
Start Time: 17:20:05 End Time: 23:45:59

Capacity: 8000.00 psig
Last Calib.: 2012.06.05
Time On Btm: 2012.06.04 @ 18:57:30
Time Off Btm: 2012.06.04 @ 21:59:30

TEST COMMENT: 45 - IF: Blow built to BOB (11") at 26 3/4 min.
45 - ISI: Bled off, No blow back
45 - FF: Blow built to BOB at 20 min.
45 - FSI: Bled off, Surface blow back for a few min., then dead



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1864.84	103.98	Initial Hydro-static
1	12.81	103.69	Open To Flow (1)
47	36.79	108.88	Shut-In(1)
91	949.76	109.92	End Shut-In(1)
92	35.68	109.52	Open To Flow (2)
136	57.59	112.04	Shut-In(2)
181	936.74	112.68	End Shut-In(2)
182	1819.07	112.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
75.00	GOM 54%m, 33%o, 13%g	1.05
50.00	CO 94%o, 5%g, 1%m	0.70
0.00	GIP = 315'	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48104 **DST#: 4**

Test Start: 2012.06.04 @ 17:20:00

GENERAL INFORMATION:

Formation: **LKC "J"**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 18:58:00
Time Test Ended: 23:46:00

Test Type: Conventional Bottom Hole (Reset)
Tester: James Winder
Unit No: 57

Interval: 3748.00 ft (KB) To 3778.00 ft (KB) (TVD)
Total Depth: 3778.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

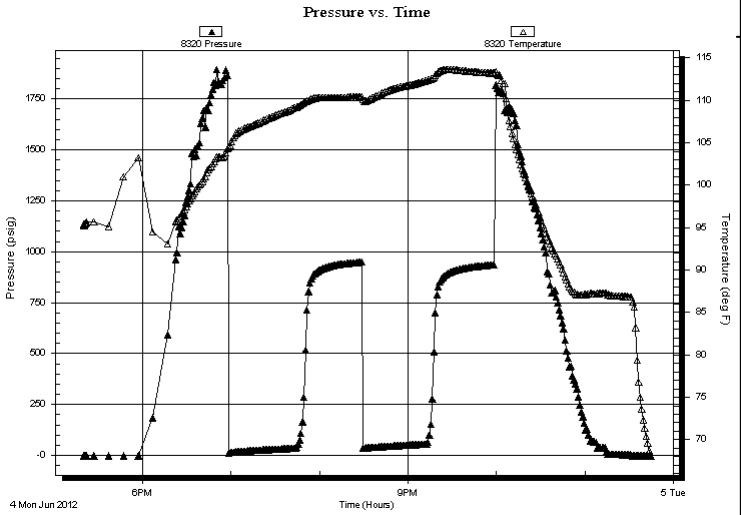
Reference Elevations: 2386.00 ft (KB)
2381.00 ft (CF)
KB to GR/CF: 5.00 ft

Serial #: 8320 **Outside**

Press@RunDepth: psig @ 3749.00 ft (KB)
Start Date: 2012.06.04 End Date: 2012.06.04
Start Time: 17:20:05 End Time: 23:44:59

Capacity: 8000.00 psig
Last Calib.: 2012.06.05
Time On Btm:
Time Off Btm:

TEST COMMENT: 45 - IF: Blow built to BOB (11") at 26 3/4 min.
45 - ISI: Bled off, No blow back
45 - FF: Blow built to BOB at 20 min.
45 - FSI: Bled off, Surface blow back for a few min., then dead



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery

Length (ft)	Description	Volume (bbl)
75.00	GOM 54%m, 33%o, 13%g	1.05
50.00	CO 94%o, 5%g, 1%m	0.70
0.00	GIP = 315'	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48104 **DST#: 4**

Test Start: 2012.06.04 @ 17:20:00

Tool Information

Drill Pipe:	Length:	3741.00 ft	Diameter:	3.80	inches	Volume:	52.48	bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00	inches	Volume:	0.00	bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25	inches	Volume:	0.00	bbl	
						Total Volume:	52.48	bbl	

Drill Pipe Above KB:	13.00 ft
Depth to Top Packer:	3748.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	30.00 ft
Tool Length:	50.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2000.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		58000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	47000.00 lb
	Final	49000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Shut In Tool	5.00			3733.00		
Hydraulic tool	5.00			3738.00		
Packer	5.00			3743.00	20.00	Bottom Of Top Packer
Packer	5.00			3748.00		
Stubb	1.00			3749.00		
Recorder	0.00	6719	Inside	3749.00		
Recorder	0.00	8320	Outside	3749.00		
Perforations	26.00			3775.00		
Bullnose	3.00			3778.00	30.00	Bottom Packers & Anchor
Total Tool Length:	**50.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating, Inc.

PO Box 86
Plainville, KS 67663

ATTN: Marc Dow ning

21-6s-23w Graham KS

Doris #21-1

Job Ticket: 48104 **DST#: 4**

Test Start: 2012.06.04 @ 17:20:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	38.6 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	87.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	8.77 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	1500.00 ppm				
Filter Cake:	1.00 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
75.00	GOM 54%m, 33%o, 13%g	1.052
50.00	CO 94%o, 5%g, 1%m	0.701
0.00	GIP = 315'	0.000

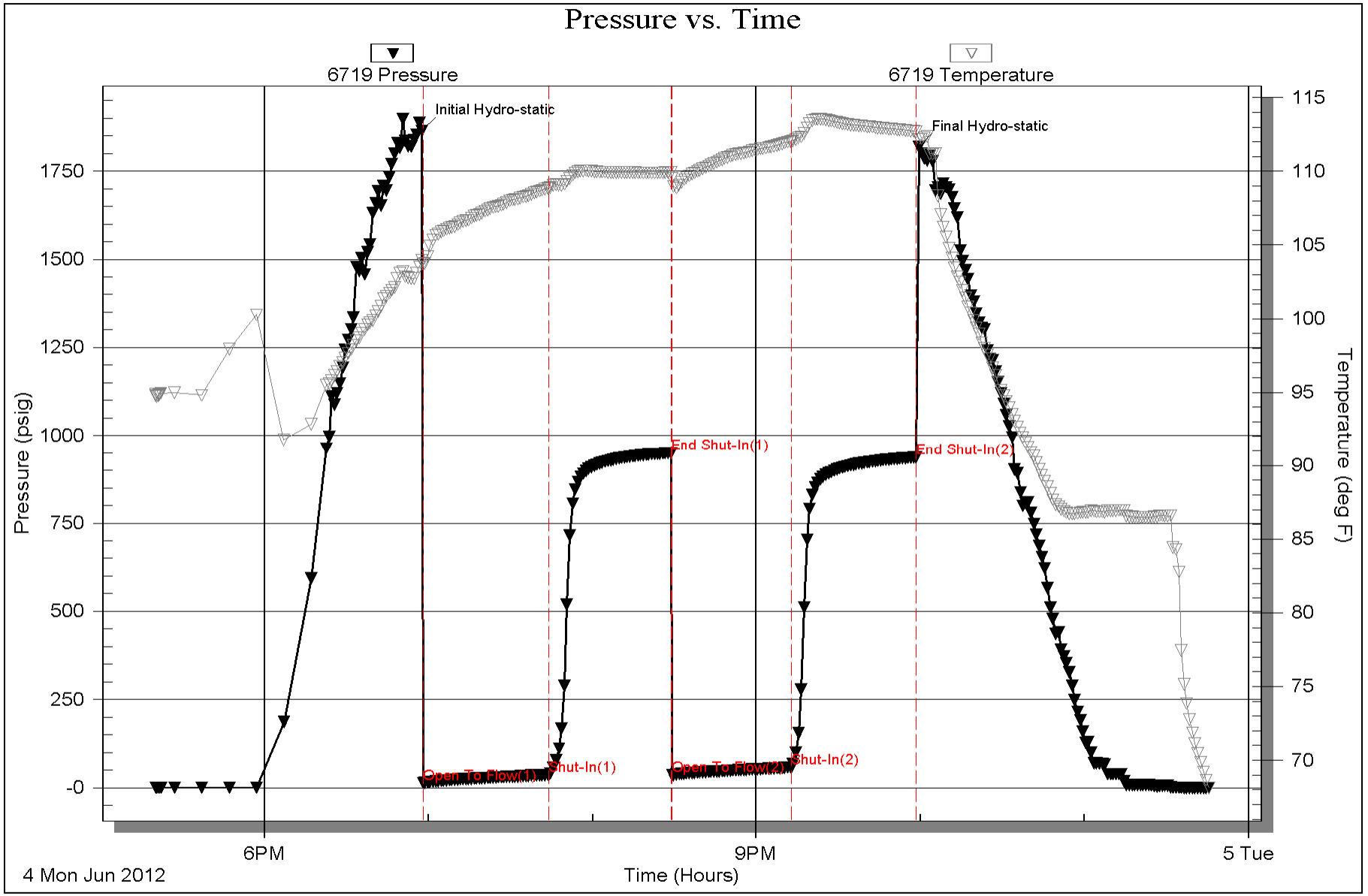
Total Length: 125.00 ft Total Volume: 1.753 bbl

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

Laboratory Name: Laboratory Location:

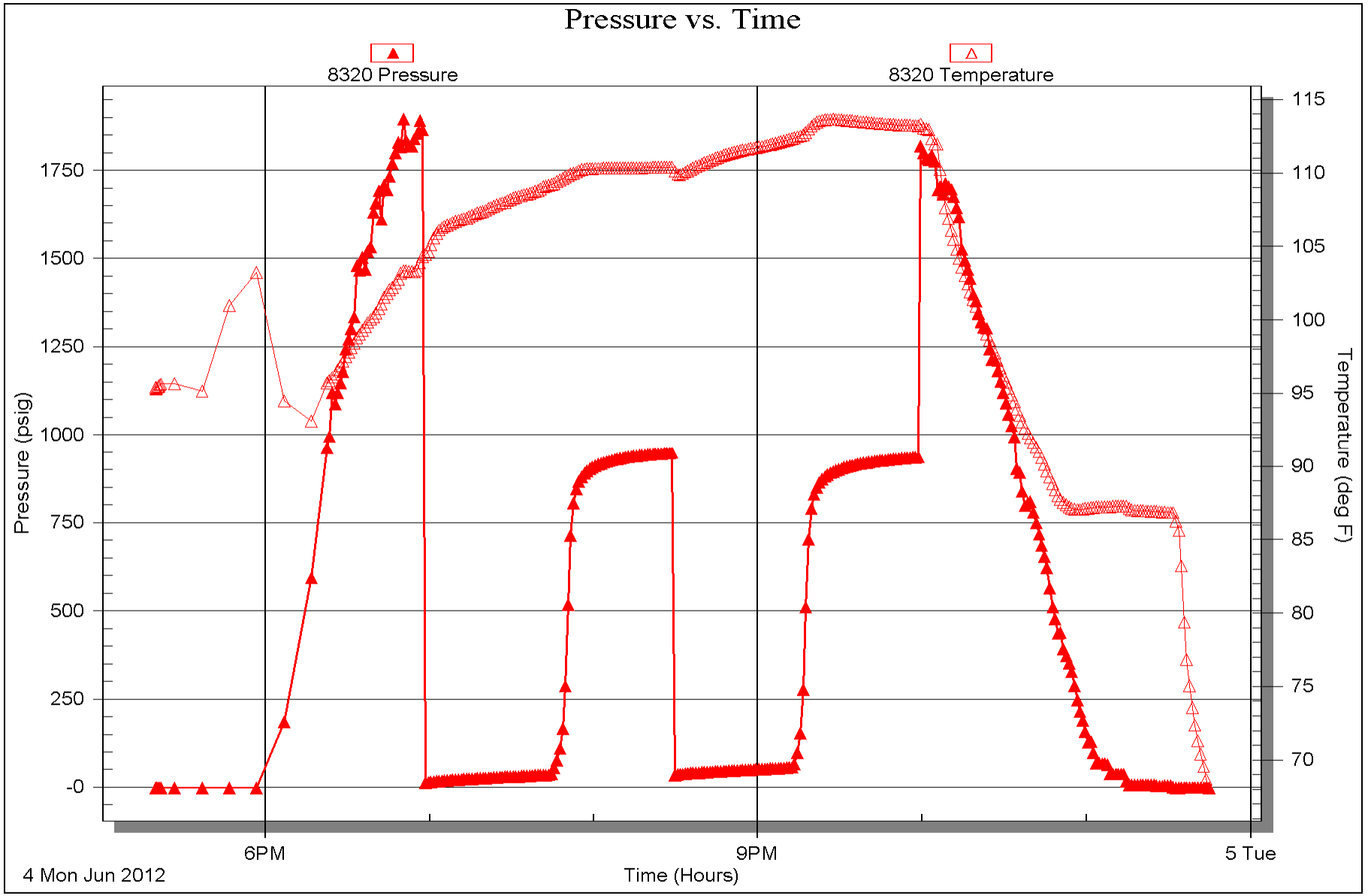
Recovery Comments: Gravity = 39.6 api @ 68 deg F
Corrected Gravity = 38.6 api

Serial #: 6719 **Inside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 48104 Printed: 2012.06.08 @ 14:43:03

Serial #: 8320 **Outside** H&C Oil Operating, Inc. Doris #21-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 48104 Printed: 2012.06.08 @ 14:43:04

TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

4/10

Test Ticket

NO. 48101

Well Name & No. Doris #21-1 Test No. 1 Date 6-2-12

Company H & C Oil Operating Inc. Elevation 2386 KB 2381 GL

Address PO Box 86 Plainville, KS 67663

Co. Rep / Geo. Marc Downing Rig American Eagle #3

Location: Sec. 21 Twp. 6s Rge. 23w Co. Graham State KS

Interval Tested 3612 - 3635 Zone Tested LKC "A"

Anchor Length 23 Drill Pipe Run 3617 Mud Wt. 9.0

Top Packer Depth 3607 Drill Collars Run - Vis 56

Bottom Packer Depth 3612 Wt. Pipe Run - WL 8.0

Total Depth 3635 Chlorides 800 ppm System LCM 2

Blow Description IF: 2" Blow at open, built to BOB (11") at 32 min.

ISI: Bled off, No blowback

FF: Blow built to BOB at 32 min,

FSI: Bled off, surface blowback for 4min, then occasional blow

Rec 63	Feet of 60cm	11 %gas	9 %oil	- %water	80 %mud
Rec	Feet of GIP = 310'	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 63 Fluid 310 gas BHT 108 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1777	☐ Test ★ 1150	T-On Location 16~~7~~:55
(B) First Initial Flow 28	☑ Jars	T-Started 17:50
(C) First Final Flow 31	☑ Safety Joint	T-Open 19:46
(D) Initial Shut-In 108	☑ Circ Sub ★ NA	T-Pulled 22:51
(E) Second Initial Flow 29	☑ Hourly Standby	T-Out 00:35
(F) Second Final Flow 37	☐ Mileage 126 RT 195.30	Comments Tool slid 2' before open - chased 5' at open lost 10' mud - 2" surge blow
(G) Final Shut-In 108	☑ Sampler	
(H) Final Hydrostatic 1731	☑ Straddle	☑ Ruined Shale Packer
	☑ Shale Packer	☑ Ruined Packer
Initial Open 45	☑ Extra Packer	☑ Extra Copies
Initial Shut-In 45	☑ Extra Recorder	Sub Total 0
Final Flow 45	☑ Day Standby	Total 1345.30
Final Shut-In 45	☑ Accessibility	MP/DST Disc't
	Sub Total 1345.30	

Approved By _____ Our Representative James Winter

TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

4/10

Test Ticket

NO. 48102

Well Name & No. Doris #21-1 Test No. 2 Date 6-3-12

Company H+C Oil Operating, Inc. Elevation 2386 KB 2381 GL

Address PO Box 86 Plainville, KS 67663

Co. Rep / Geo. Marc Downing Rig American Eagle #3

Location: Sec. 21 Twp. 6s Rge. 23w Co. Graham State KS

Interval Tested 3672-3693 Zone Tested LKC "E-F"

Anchor Length 21 Drill Pipe Run 3680 Mud Wt. 9.0

Top Packer Depth 3667 Drill Collars Run - Vis 63

Bottom Packer Depth 3672 Wt. Pipe Run - WL 8.0

Total Depth 3693 Chlorides 1000 ppm System LCM 1 1/2

Blow Description IF: Blow built to BOB (11") at 22 1/2 min.

ISI: Bled off, Blowback built to 3/8"

FF: Blow built to BOB at 17 3/4 min.

FSI: Bled off, Blowback built to 1/2"

Rec 105	Feet of CGO	14 %gas	83 %oil	- %water	3 %mud
Rec 55	Feet of GOCM	16 %gas	24 %oil	- %water	60 %mud
Rec	Feet of GIP=410'	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 160 Fluid 410 GAS BHT 112 Gravity 35.2 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1811	☐ Test ★ 1150	T-On Location 9:35
(B) First Initial Flow 14	☑ Jars	T-Started 10:21
(C) First Final Flow 45	☑ Safety Joint	T-Open 12:26
(D) Initial Shut-In 921	☑ Circ Sub ★	T-Pulled 15:28
(E) Second Initial Flow 44	☑ Hourly Standby	T-Out 17:05
(F) Second Final Flow 74	☐ Mileage 126 RT 195.30	Comments
(G) Final Shut-In 910	☑ Sampler	
(H) Final Hydrostatic 1791	☑ Straddle	☑ Ruined Shale Packer
	☑ Shale Packer	☑ Ruined Packer
Initial Open 45	☑ Extra Packer	☑ Extra Copies
Initial Shut-In 45	☑ Extra Recorder	Sub Total 0
Final Flow 45	☑ Day Standby	Total 1345.30
Final Shut-In 45	☑ Accessibility	MP/DST Disc't
	Sub Total 1345.30	

Approved By Our Representative James Winn

TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

4/10

Test Ticket

NO. 48103

Well Name & No. Doris #21-1 Test No. 3 Date 6-4-12

Company H+C Oil Operating Inc. Elevation 2386 KB 2381 GL

Address PO Box 86 Plainville, KS 67663

Co. Rep / Geo. Marc Downing Rig American Eagle #3

Location: Sec. 21 Twp. 6s Rge. 23w Co. Graham State KS

Interval Tested 3721 - 3753 Zone Tested LKC "H"

Anchor Length 32 Drill Pipe Run 3711 Mud Wt. 9.0

Top Packer Depth 3716 Drill Collars Run - Vis 63

Bottom Packer Depth 3721 Wt. Pipe Run - WL 8.0

Total Depth 3753 Chlorides 1000 ppm System LCM 1½

Blow Description IF: Blow built to 2¼"

ISI: Bled off, No blowback

FF: Blow started at 6 min., built to ½"

FSI: Bled off, No blowback

Rec 35	Feet of OCM	2 %gas	15 %oil	- %water	83 %mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 35 BHT 109 ~ Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1850	☐ Test ★ 1150	T-On Location 2:00	
(B) First Initial Flow 12	☑ Jars	T-Started 2:40	
(C) First Final Flow 21	☑ Safety Joint	T-Open 4:46	
(D) Initial Shut-In 892	☑ Circ Sub ★NA	T-Pulled 7:58	
(E) Second Initial Flow 23	☑ Hourly Standby	T-Out 9:25	
(F) Second Final Flow 28	☐ Mileage 126 RT 195.30	Comments	
(G) Final Shut-In 835	☑ Sampler		
(H) Final Hydrostatic 1818	☑ Straddle	☑ Ruined Shale Packer	
	☑ Shale Packer	☑ Ruined Packer	
Initial Open 45	☑ Extra Packer	☑ Extra Copies	
Initial Shut-In 45	☑ Extra Recorder	Sub Total 0	
Final Flow 45	☑ Day Standby	Total 1345.30	
Final Shut-In 45	☑ Accessibility	MP/DST Disc't	
	Sub Total 1345.30		

Approved By Our Representative James Winter

TRILOBITE TESTING INC.

P.O. Box 1733 • Hays, Kansas 67601

4/10

Test Ticket

NO. 48104

Well Name & No. Doris #21-1 Test No. 4 Date 6-4-12

Company H+C Oil Operating, Inc. Elevation 2386 KB 2381 GL

Address PO Box 86 Plainville, KS 67663

Co. Rep / Geo. Marc Downing Rig American Eagle #3

Location: Sec. 21 Twp. 6s Rge. 23w Co. Graham State KS

Interval Tested 3748-3778 Zone Tested LKC "J"

Anchor Length 30 Drill Pipe Run 3741 Mud Wt. 9.1

Top Packer Depth 3743 Drill Collars Run - Vis 87

Bottom Packer Depth 3748 Wt. Pipe Run - WL 8.8

Total Depth 3778 Chlorides 1500 ppm System LCM 1½

Blow Description IF: Blow built to BOB (11") at 26 ¾ min.

ISI: Bled off, No blowback

FF: Blow built to BOB at 20 min.

FSI: Bled off, Surface blowback for a few minutes, then dead

Rec 50	Feet of CO	5 %gas	94 %oil	- %water	1 %mud		
Rec 75	Feet of GOM	13 %gas	33 %oil	- %water	54 %mud		
Rec	Feet of GIP = 315'	%gas	%oil	%water	%mud		
Rec	Feet of	%gas	%oil	%water	%mud		
Rec	Feet of	%gas	%oil	%water	%mud		

Rec Total 125 Fluid 315 GAS BHT 113 Gravity 38.8 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 1865	☐ Test ★ 1150	T-On Location 16:30	
(B) First Initial Flow 13	☑ Jars	T-Started 17:20	
(C) First Final Flow 37	☑ Safety Joint	T-Open 18:58	
(D) Initial Shut-In 950	☑ Circ Sub ★	T-Pulled 21:58	
(E) Second Initial Flow 36	☑ Hourly Standby	T-Out 23:40	
(F) Second Final Flow 58	☐ Mileage 126 RTX2 390.60	Comments	
(G) Final Shut-In 937	☑ Sampler		
(H) Final Hydrostatic 1819	☑ Straddle	☑ Ruined Shale Packer	
	☑ Shale Packer	☑ Ruined Packer	
Initial Open 45	☑ Extra Packer	☑ Extra Copies	
Initial Shut-In 45	☑ Extra Recorder	Sub Total 0	
Final Flow 45	☑ Day Standby	Total 1540.60	
Final Shut-In 45	☑ Accessibility	MP/DST Disc't	
	Sub Total 1540.60		

Approved By _____ Our Representative James Winder

Marc Downing
Consulting Petroleum Geologist
1411 Washington Circle
Hays, Ks 67601
Phone: 620-428-1356 (cell) 785-621-2286

GEOLOGIC REPORT LOG

COMPANY HtC Oil Operating, Inc.
WELL Davis #21-1
FIELD Wildcat
LOCATION 1450' FSL & 2310' FEL
SEC. 21 TWP. 6s RGE. 23w
COUNTY Graham
STATE Kansas
OPERATOR HtC Oil Operating, Inc.
CONTRACTOR American Eagle, Rig #3
COMM: 5-29-12 COMP: 6-6-12

6s 23w 21

PRODUCTION LKC
ELEVATION KB 2391 DF GL 2386

Drilling Measured From: KB
Samples Saved From: 3350 To: TD
Drilling Time From: 3250 To: TD
Samples Examined From: 3350 To: TD
Geological Supervision From 3350 To Total Depth
Wellsite Geologist Marc Downing
Electrical Surveys Log-Tech
CNL/CDL
DIL
MEL

CASING RECORD
SURF: 8 5/8" @ 222' PROD: 5 1/2" @ 3855'
TOTAL DEPTH DRILLERS: 3853'
TOTAL DEPTH LOG 3856

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION
Top Anhydrite	2043	2046	+345	-8
Base Anhydrite	2075	2078	+313	-5
Topeka	3368	3370	-979	+3
Heebner	3580	3582	-1191	FL
Toronto	3604	3607	-1216	+1
LKC	3621	3623	-1232	+2
BKC	3810	3812	-1421	+1

REFERENCE WELL FOR STRUCTURE: HtC Oil Operating, Inc. Ringneck #21-1 1650' FSL & 2970' FEL Sec. 21-6s-23w

DAILY PENETRATION / BIT RECORD

DATE	DEPTH	NO	SIZE	MAKE	TYPE	DEPTH OUT	FEET	HOURS

FORMATION	INTERVAL	DESCRIPTION OF SHOW	LOG ANALYSIS Ø	S.W.

DRILL STEM TESTS

No.	Interval	IFP/Time	ISIP/Time	FFP/Time	FSIP/Time	HH-FHH	RECOVERY

REMARKS AND RECOMMENDATIONS: Due to structural position, DST recovery, & log evaluation, it was decided to set 5 1/2" production casing for completion.

Perforations:
LKC "K": 3790-95
LKC "J": 3772-77
LKC "H": 3741-45
LKC "F": 3695-98
LKC "E": 3685-87
LKC "D": 3669-71 (Before Abandonment)
LKC "A": 3624-28

7515

LEGEND
Anhydrite, Salt, Sandstone, Shale, Carb sh, Limestone, Ool.Lime, Chert, Dolomite

LOG 7710

DRILLING TIME IN MINUTES PER FOOT (Rate of Penetration Decreases) 5" 10" 15" 20" 25"	DEPTH	LITHOLOGY	SAMPLE DESCRIPTIONS	OIL SHOWS	REMARKS
	3250				
	3300				
	50				
Topeka 3368(-977)			Sh: gry		
			LS: tan, fn-mdxln, scat foss, dns.		
			Sh: gry		
			LS: tan-wht, fn-mdxln, foss, prφ + dns.		
	3400		Sh: gry		
			LS: Mostly AIA, sub xln in prt.		
			LS: wht, fn xln, chlky. Few foss, dns.		
			Sh: drk gry		
			LS: tan-wht, fn xln, sub xln. chlky, scat fr intxlnφ, NS.		
	50		LS: Few ex AIA w/ titeprφ, foss in prt.		
			LS: wht, fn-mdxln, suc in prt. gd intxlnφ, chlky in prt, All NS.		
			LS: Trng vfn-mic xln, wht chts.		
			Sh: Black Carb		
			Sh: gry - drk gry w/ same brn.		
	3500		LS: wht, fn sucxln, gd int xlnφ, scat foss. Trng dns + prφ w/ depth, All NS.		
			Sh: gry		
			LS: tan-wht, fn-md xln, mostly prφ + tite. All NS.		
			Sh: Black Carb		
			LS: wht, fn suc xln w/ fr amt foss. gd intxlnφ w/ scat vugs. Rx chlky in prt. All NS.		
	50		Sh: drk gry		
			LS: wht, fn suc xln, gd-fr intxlnφ, More chlky ex.		
			LS: Same AA, sub xln mostly. Trng prφ + tite. All NS.		Vis: 56 Wt: 9.0
Heebner 3580(-1189)			Sh: Black Carb		DST #1 3612-3635 45-45-45-45 I.F.- BOB 32 min F.F.- BOB 32 min/Surf SIB IFP: 28-31 FFP: 29-37 SIP: 109-109 HP: 1777-1731 Rec: 310' GIP 63' GOCM 11%g, 9%o BHT: 109°
Toronto 3604(-1213)	3600		Sh: brn red w/ gry. Washes red.		
LKC 3621(-1230)		DST #1	LS: wht, fn-md xln, sml foss, prφ, tite. Scat wht chts.		
			Sh: gry		
CFS ⊙			LS: wht, fn-md xln, foss. 4-5 rx w/ fr vugφ, friable, poss frac. Fr stn w/ fr SFO when broken. Many barren ex, vfnt-No Od.	•	Strap: 0.08' Short
			Sh: gry w/ brn		DST #2 3672-3693 45-45-45-45 I.F.- BOB 22 1/2 min/3/8" SIB F.F.- BOB 17 3/4 min/1/2" SIB IFP: 14-45 FFP: 44-74 SIP: 921-910 HP: 1911-1791 Rec: 410' GIP 105' CGO 83%o 55' GOCM 16%g, 24%o BHT: 112° G=35
	50		LS: wht-tan, fn xln, dolom in prt. Scat fr vugs w/ fr stn + SFO. Fr amt chlky ex, abut tan shp chts, No Od.	•	
			Sh: gry		
		DST #2	LS: wht-tan, mostly subxln, 2-3 rx w/ fr-gd intxlnφ, gd sat stn, fr SFO, No Od. Trng tite.	•	
			Sh: gry		
			LS: tan-lt tan, md xln, sltly dolom w/ foss. Fr intxlnφ in 2-3 rx, gd stn, fr SFO. Rx sltly tite, No Od.	•	
CFS ⊙			LS: tan-brn, some wht, md-crs xln, tot foss. Fr-gd vugφ w/ gd brn sat stn, fr-gd SFO, fnt-lt Od.	•	
	3700		LS: tan-wht, foss, sltly dolom. Scat fr vugφ, fr amt sub xln chlky ex. Fr sat stn w/ fr SFO, No Od.	•	Vis: 63 Wt: 9.0
			LS: wht-lt gry, fn-vfn xln. No visφ + dns, NS.		DST #3 3721-3753 45-45-45-45 I.F.- 2 1/4" blow F.F.- 1/2" blow IFP: 12-21 FFP: 23-29 SIP: 892-935 HP: 1450-1419 Rec: 35' OCM 2%g, 15%o BHT: 109°
		DST #3	Sh: Black Carb		
			Sh: gry		
			LS: tan-wht, fn-md xln, fr-gd int xlnφ, Few vugs, rx subxln-chlky in prt. Fr brn stn w/ sptd SFO, Fnt Od.	•	
CFS ⊙	50		Sh: gry w/ brn. Scat dns wht LS.		DST #4 3748-3778 45-45-45-45 I.F.- BOB 26 3/4 min./No SIB F.F.- BOB 20 min/Surf SIB IFP: 13-37 FFP: 36-58 SIP: 950-937 HP: 1865-1819 Rec: 315' GIP 50' CO 94%o 76' GOM 13%g, 33%o BHT: 113° G=39
		DST #4	LS: wht-tan, md xln, fr amt foss, dolom in prt. Scat gd int xln + vugφ, many subxln ex. Fr sat stn w/ scat fr-gd SFO, lt-fr Od, Free oil on cup.	•	
CFS ⊙			LS: wht-lt tan, md xln, tot foss. Fr-gd int fossφ w/ fr vugs, scat sub xln-chlky ex. Fr-gd sat stn, fr SFO, fnt-lt Od.	:	
	3800		LS: wht, fn-md xln, scat foss. All prφ w/ NS.		
BKC 3810(-1419)			Sh: brn w/ gry. Washes red.		
			LS: wht, md xln, sltly mtld.		
			Sh: brn-red.		
RTD: 3853(-1462)	50 CTCH ⊙				

Marc Downing (signature)

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025 Home Office P.O. Box 32 Russell, KS 67665 No. 680

Cell 785-324-1041

	Sec.	Twp.	Range	County	State	On Location	Finish
Date 6-6-12	21	6	23	Graham	KS		2:45 A.m.

Lease Dorn's Well No. 21-1 Location Hill City 1 WRD 2w 2N 1/2w Vinto

Contractor American Eagle #3

Type Job Production String

Hole Size 7 7/8 T.D. 3853

Csg. 5 1/2 Depth 3847

Tbg. Size Depth

Tool Depth

Cement Left in Csg. 20.60 Shoe Joint 20.60

Meas Line Displace 93 1/4 BL

Owner

To Quality Oilwell Cementing, Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Charge To H+C

Street

City State

The above was done to satisfaction and supervision of owner agent or contractor.

Cement Amount Ordered 550 QMDC 1/4# FL10 500gal mud clear

EQUIPMENT

Pumptrk 5	No.	Cementer Helper	Craig
Bulktrk 13	No.	Driver Driver	Brett
Bulktrk 14	No.	Driver Driver	Doug Brian

JOB SERVICES & REMARKS

Remarks:

Rat Hole 30SK

Mouse Hole

Centralizers

Baskets

D/V or Port Collar

5 1/2 set 3847 Insert @ 3826.40. Est. Circulation. Pump 500gal mud clear - Plug Rathole. Cement 5 1/2 Clear lines & Displace Plug. Cement Circulated. Plug landed @ 1800# Release & Held.

Common 550 QMDC

Poz. Mix

Gel.

Calcium

Hulls

Salt

Flowseal 137#

Kol-Seal

Mud CLR 48 500

CFL-117 or CD110 CAF 38

Sand

Handling

Mileage

FLOAT EQUIPMENT

Guide Shoe 5 1/2

Centralizer 9 Turbolizers

Baskets 6

AFU Inserts

Float Shoe 1

Latch Down 1

Pumptrk Charge prod long String

Mileage 42

Tax

Discount

Total Charge

X Signature

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025 Home Office P.O. Box 32 Russell, KS 67665 No. 5404

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
5-30-12	21	6	23	GRAHAM	KANSAS		2:15 AM

Lease DORIS Well No. #21-1 Location HILL CITY, NTO YRD - 3W - 2N - ½W - N INTO

Contractor AMERICAN EAGLE #3

Type Job SURFACE

Hole Size 12¼" T.D. 236'

Csg. 8⅝" Depth 236'

Tbg. Size Depth

Tool Depth

Cement Left in Csg. Shoe Joint 15'

Meas Line Displace 14 BLS

Owner H & C OIL

To Quality Oilwell Cementing, Inc.
You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.

Charge To H & C OIL

Street P.O Box 86

City PLAINVILLE State KS, 67663

The above was done to satisfaction and supervision of owner agent or contractor.

Cement Amount Ordered 150 SKS Com 3% cc - 2% gel

EQUIPMENT

Pumptrk #5 No. Cementer Helper BRETT

Bulktrk #10 No. Driver Driver BRIAN

Bulktrk P/U No. Driver Driver CISCO

JOB SERVICES & REMARKS

Remarks:

Rat Hole

Mouse Hole

Centralizers

Baskets

D/V or Port Collar

CEMENT DID CIRCULATE

THANK YOU

Common	150
Poz. Mix	
Gel.	3
Calcium	5
Hulls	
Salt	
Flowseal	
Kol-Seal	
Mud CLR 48	
CFL-117 or CD110 CAF 38	
Sand	
Handling	158
Mileage	

FLOAT EQUIPMENT

Guide Shoe	
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	

Pumptrk Charge	Surface
Mileage	42
Tax	
Discount	
Total Charge	

X Signature Brent Ruhnke