Confidentiality Requested:
☐ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1159376

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 Ramsay
Phone: (785) 434-7434
CONTRACTOR: License # 31548
Name: Discovery Drilling
Wellsite Geologist: Marc Downing
Purchaser: Coffeyville Purchasing

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 #:

08/10/2013	08/16/2013	09/20/2013
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-065-23965-00-00
Spot Description:
W2 NW SW SW Sec. 2 Twp. 8 S. R. 22 ☐ East ☑ West
990 Feet from ☐ North / ☑ South Line of Section
100 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: Griffith Unit Well #: 2-1
Field Name:
Producing Formation: Lansing Kansas City
Elevation: Ground: 2139 Kelly Bushing: 2147
Total Vertical Depth: 3770 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 222 Feet
Multiple Stage Cementing Collar Used? ☑ Yes ☐ No
If yes, show depth set: 1747 Feet
If Alternate II completion, cement circulated from: 1747
feet depth to: 0 w/ 355 sx cmt.

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

Chloride content: 13000 ppm Fluid volume: 180 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: 09/23/2013
☑ **Confidential Release Date:** 09/23/2015
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☐ I ☑ II ☐ III **Approved by:** NAOMI JAMES **Date:** 09/25/2013

1159376

Operator Name: H & C Oil Operating Inc. Lease Name: Griffith Unit Well #: 2-1

Sec. 2 Twp. 8 S. R. 22 ☐ 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
Attached	Attached	Attached

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	23	222	common	150	3%cc, 2% gel
production	7.875	5.5	14	3766	Q Pro C	180	10% salt, 5% gilsonite

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	0-1747	QMDC	355	1/4# floseal
	-			

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
Attached	Attached	Attached	Attached

TUBING RECORD: Size: 2.375 Set At: 3676 Packer At:

Liner Run: ☐ Yes ☑ No

Date of First, Resumed Production, SWD or ENHR. 09/20/2013

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

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity
	80		5		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:
3368-3546

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	Griffith Unit 2-1
Doc ID	1159376

All Electric Logs Run

Microresistivity log
Dual induction log
Dual compensated porosity log
Sonic cement bond log

Form	ACO1 - Well Completion
Operator	H & C Oil Operating Inc.
Well Name	Griffith Unit 2-1
Doc ID	1159376

Tops

Name	Top	Datum
Top Anhdyrite	1739	+408
Base Anhydrite	1770	+377
Topeka	3126	-979
Heebner	3331	-1184
Toronto	3352	-1205
LKC	3368	-1221
BKC	3566	-1419
Marmaton	3646	-1499
Arbuckle	3718	-1571

Form	ACO1 - Well Completion
Operator	H & C Oil Operating Inc.
Well Name	Griffith Unit 2-1
Doc ID	1159376

Perforations

Shots Per Foot	Perforation Record	Material Record	Depth
4	3718-3720'		
	3715	CIBP	3715
4	3701-3703'	300 Gal. 15%	3703
	3680	CIBP	3680'
4	3546-3550'	2000 gal NE	3550'
4	3528-3530'		
4	3518-3520'		
4	3497-3499'		
4	3368-3374'	2000 gal.	3374'

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025 **Home Office P.O. Box 32 Russell, KS 67665** **No.** 7442

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
8-10-13	2	8	22	Graham	ks		3:30 P.M.

Location Boug 18 & 24, w to 320, ¼ N, E n 2

Lease Griffith Unit	Well No. 2-1	Owner
Contractor Discovery 1		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.
Type Job Surface		
Hole Size 12¼	T.D. 222	Charge To H&C Oil
Csg. 8⅝	Depth 222	Street
Tbg. Size	Depth	City State
Tool	Depth	The above was done to satisfaction and supervision of owner agent or contractor.
Cement Left in Csg. 20	Shoe Joint 20	Cement Amount Ordered 150 com 3% cc 2% gel
Meas Line	Displace 13bbl	

EQUIPMENT

Pumptrk 5	No.	Cementer / Helper Matt	
Bulktrk 12	No.	Driver / Driver Chad	
Bulktrk PU	No.	Driver / Driver Travis	

JOB SERVICES & REMARKS

Remarks: cement did circulate

Rat Hole

Mouse Hole

Centralizers

Baskets

D/V or Port Collar

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 Cliff Mansell

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025 **Home Office P.O. Box 32 Russell, KS 67665** **No.** 7290

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
8-17-13	2	8	22	Graham	KS		1:45 AM

Location Bogue + 24 W to 320 Rd ¼ N E into

Lease Griffith Unit	Well No. 2-1	Owner	
Contractor Discovery #1		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.	
Type Job Top Stage			
Hole Size 7 7/8	T.D. 3771'	Charge To H+C	
Csg. 5 ½	Depth ~~3771~~ 1751'	Street	
Tbg. Size	Depth	City State	
Tool	Depth	The above was done to satisfaction and supervision of owner agent or contractor.	
Cement Left in Csg.	Shoe Joint	Cement Amount Ordered 400 QMDC	
Meas Line	Displace 42 3/4 bbl		

EQUIPMENT

Pumptrk 15	No.	Cementer Helper Mick	
Bulktrk 12	No.	Driver Driver David	
Bulktrk PU	No.	Driver Driver Brett	Travis

JOB SERVICES & REMARKS

Remarks:

Rat Hole 30 sx

Mouse Hole 15 sx

Centralizers

Baskets

D/V or ~~Port Collar~~ 1751'

Dropped dart
Opened Tool
Circulate 1 hr
Plug Rat w/ 30 sx & Mouse w/ 15 sx
Hook to 5 ½ Mix 400 sx QMDC
Displaced 42 3/4 bbl
Cement circulated
Landed Plug @ 1500 lbs & held

Lift @ 700 lbs

Common	
Poz. Mix	
Gel.	
Calcium	
Hulls	
Salt	
Flowseal	
Kol-Seal	
Mud CLR 48	
CFL-117 or CD110 CAF 38	
Sand	
Handling	
Mileage	
FLOAT EQUIPMENT	
Guide Shoe	
Centralizer	
Baskets	
AFU Inserts	
Float Shoe	
Latch Down	
Pumptrk Charge	
Mileage	
Tax	
Discount	
Total Charge	

X Signature Cliff Mayfield

QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025 **Home Office P.O. Box 32 · Russell, KS 67665** **No.** 7289

Cell 785-324-1041

Date	Sec.	Twp.	Range	County	State	On Location	Finish
8-16-13	2	9	22	Graham	KS		11:30 PM

Location Bogue 0 24 W to 320 Rd 1/4 N E Into

Lease Griffith Unit Well No. 2-1

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.

Contractor Discovery #1

Type Job Bottom Stage

Hole Size 7 7/8 T.D. 3771'

Csg. 5 1/2 Depth 3778'

Charge To H & C

Street

Tbg. Size Depth

City State

Tool Depth

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

Cement Left in Csg: 22.19' Shoe Joint 22.19'

Cement Amount Ordered 180 10% Salt 5% Gilsonite

Meas Line Displace 91 1/2

0-Pro-C 1/4# Flo Seal

EQUIPMENT

Pumptrk 15	No.	Cementer Helper	Nick
Bulktrk 1	No.	Driver Driver	Lonnie M.
Bulktrk PU	No.	Driver Driver	Brett Travis

JOB SERVICES & REMARKS

Remarks:

Rat Hole

Mouse Hole

Centralizers - 2, 5, 6, 7, 8, 9, 10, 12, 48, 55 & 65

Baskets - 2, 49, 56 & 66

D/V or ~~Port Collar~~ - Top of #49 @ 1751'

Pipe on bottom
Brake circulation
Pumped 500 gal Mud Flush
10 bbl behide w/ Fresh H_2O
Mixed 180 0-Pro-C, Washed line
Displaced 91 1/2 bbl Close
~~Washed line~~

Lift @ 700 lb
Landed @ 1500 lbs and held

Common	
Poz. Mix	
Gel.	
Calcium	
Hulls	
Salt	
Flowseal	
Kol-Seal	
Mud CLR 48	500 gal
CFL-117 or CD110 CAF 38	
Sand	
Handling	
Mileage	
5 1/2 **FLOAT EQUIPMENT**	
~~Guide Shoe~~ Scratchers - 30	
Centralizer Turbos - 12	
Baskets - 4	
AFU Inserts	
Float Shoe - 1 w/ ball	
Latch Down - 1	
DV Tool - 1	
Rubber Plug - 1	
Pumptrk Charge	
Mileage	
Tax	
Discount	
Total Charge	

X Signature

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/

September 23, 2013

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

Re: ACO1
API 15-065-23965-00-00
Griffith Unit 2-1
SW/4 Sec.02-08S-22W
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 Ramsay

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

GEOLOGIC REPORT LOG

COMPANY H+C Oil Operating, Inc.
WELL Griffith Unit # 2-1
FIELD Wildcat
LOCATION 900' FSL & 100' FWL
SEC. 2 TWP. 8s RGE. 22w
COUNTY Graham
STATE Kansas

PRODUCTION LKC
Location plat: 8s, 22w, Sec. 2

ELEVATION KB 2147 DF GL 2139
Drilling Measured From: KB
Samples Saved From 3100 To: TD
Drilling Time From 3000 To: TD
Samples Examined From: 3100 To: TD
Geological Supervision From 3100 To Total Depth
Wellsite Geologist Marc Downing
Electrical Surveys Pioneer
CNL/CDL — DIL
MEL — Sonic

OPERATOR H+C Oil Operating, Inc.
CONTRACTOR Discovery Drilling, Rig #1
COMM: 8-11-13 COMP: 8-16-13

CASING RECORD
SURF: 8⅝" @ 222' PROD: 5½" @ 3765'
TOTAL DEPTH DRILLERS: 3770'
TOTAL DEPTH LOG: 3771'

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE TOP	ELECTRIC LOG TOP	SUB-SEA DATUM	STRUCTURAL POSITION
Top Anhydrite	1740	1739	+408	+19
Base Anhydrite	1772	1770	+377	NA
Topeka	3128	3126	-979	NA
HEEBNER	3332	3331	-1184	+10
Toronto	3352	3352	-1205	+13
LKC	3369	3368	-1221	+12
BKC	3567	3566	-1419	+16
Marmaton	3647	3646	-1499	NA
Arbuckle	3719	3718	-1571	+18

REFERENCE WELL FOR STRUCTURE Landmark Oil Exploration
Sayers # 1-10 NE-NW-NE Sec. 10-8s-22w

DRILL STEM TESTS

No.	Interval	IFP/Time	ISIP/Time	FFP/Time	FSIP/Time	IHP-FHP	RECOVERY

REMARKS AND RECOMMENDATIONS Due to structural position, DST recovery, & log evaluation, it was decided to set 5½" production casing for completion.

Perforate:
Arbuckle: 3701-03, 3718-20
LKC K: 3546-50
I: 3518-20
H: 3497-99
A: 3368-73
E: 3435-37
F: 3441-43 (Before Abandonment)

[signature]

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

DRILLING TIME IN MINUTES PER FOOT — Rate of Penetration Decreases — 5" 10" 15"
DEPTH | LITHOLOGY | SAMPLE DESCRIPTIONS | OIL SHOWS | REMARKS

3000
50
3100
Sh: gry
Topeka 3128(-981)
LS: wht & tan-brn, fn-md xln, scat Fass. pr∅, All NS. Scat chlky rx w/ gry Sh intbds.
50
Sh: drk gry
LS: wht-lt tan, md xln, gd intxln∅, many v chlky rx, NS.
Sh: gry
LS: wht, fn xln, many chlky rx, All NS. Fr amt gd pp∅ w/ scat vugs. wht chrt.
3200
Sh: gry
LS: wht, fn-md xln, Same rx A1A, chlky. Trng pr∅ & dns, All NS.
Sh: Black Carb
Sh: lt gry w/ brn.
LS: wht, fn xln, suc in prt. gd pp∅, chlky in prt. Scat wht chrt.
50
Sh: gry
Sh: Black Carb
Sh: gry
LS: wht, ool. gd int ool∅, fr-gd blk sat w/ fr-gd hvy SFO, fnt od. tan chrt. :
3300
LS: wht, scat ool w/ fass. gd vugs∅ w/ tan fass chrt. Scat chlky rx, All NS. Trng v chlky in base.
HEEBNER 3332(-1185)
Sh: Black Carb
50
Toronto 3352(-1205)
Sh: gry
LS: wht, fn xln, sltly chlky, NS
LKC 3369(-1222)
Sh: brn
LS: wht, tot ool. Fr-gd int ool∅, gd lt brn sat w/ fr-gd SFO, lt od. Trng pr∅ & dns, fn xln. :
CFS ⊙
Sh: gry
3400
LS: wht, md xln, scat Fass. Fr-gd vugs∅ w/ gd lt brn sat & fr SFO, gd od. Scat chlky rx. :
CFS ⊙
Sh: brn
LS: wht, fn xln, sltly suc. Fr int xln∅, mostly sub xln. chlky. All NS, No Od.
CFS ⊙
Sh: gry
LS: tan, md xln, sltly dolom w/ frag fass, gd vugs∅ w/ gd sat & gd SFO, fr-gd od. :
LS: wht, fn-md xln, scat ool. gd int ool∅ w/ fr vugs. Scat gd sat w/ fr SFO, many chlky rx, fr amt barren. gd od. .
CFS ⊙ 50
LS: wht, 2-3 rx fass, fr vugs∅, spttd SFO. Mostly chlky & barren. Trng pr∅ & dns. .
LS: wht, fn xln, pr∅. All NS & No Od.
DST #1 (3360-3388), DST #2 (3388-3412), DST #3 (3425-3450), DST #4 (3475-3552)
Sh: Black Carb
Sh: gry w/ brn
LS: tan-wht, fass, sltly mttld, 2-3 rx w/ fr vugs∅, pr-fr stn, pr SFO, sltly hvy. Trng pr∅, No Od. .
3500
Sh: brn w/ gry
LS: tan, md xln, Fass. pr∅, tite, 1-2 rx w/ pr stn, NSFO. Scat chlky rx w/ tan chrt. No Od. .
Sh: brn
LS: tan, fn xln, pr-fr int xln∅, sltly tite. Fr sat stn, spttd SFO, lt-fr od. Rx trng tite. .
CFS ⊙
Sh: brn-red, washes red
LS: tan-wht, md xln, dolom in prt w/ ool & fass. Fr-gd int ool∅, fr vugs. gd sat w/ gd SFO, lt-fr od. :
CFS ⊙ 50
Sh: gry
LS: tan-wht, md xln, scat fass. pr∅ & dns, NS.
BKC 3567(-1420)
Sh: brn-red, washes red. Arg
LS: tan, md xln, pr∅ & dns.
3600
Sh: red-brn, v arg, washes red.
LS: tan, md xln. 1-2 w/ hvy SFO in vugs, No Od.
Sh: brn-red
LS: tan, md xln w/ sndy wht LS.
Sh: brn
LS: wht, md xln, sndy, arg chrt
Sh: red
Marmaton 3647(-1500)
50
LS: wht, fn xln, sndy in prt, sltly sub xln. 1-2 w/ pr edge stn, NSFO, No Od.
Sh: brn-red, sltly arg, washes red.
Reworked Arbuckle 3696(-1549)
3700
Dolo: tan-brn, fn-md rhom xln, sltly tite, trng gd intxln & vugs. Some total sat w/ gd SFO, hvy. lt-fr od, fr amt. :
Dolo: Same A1A, trng fr-gd vugs. Fr-gd sat, fr-gd SFO. Fr amt Tawng Sh, lt Od. :
Arbuckle 3719(-1572) CFS ⊙
Dolo: tan, md rhom xln, pr vugs, Fr sat stn, fr SFO, hvy. Rx trng gd ∅ w/ gd sat, many chlky rx. Scat tawny Sh .
Dolo: wht, md xln, fr-gd vugs∅, many barren rx, Scat gilsonite, No Od.
50
Dolo: wht, md rhom xln, many chlky rx. Rare SFO, mostly barren, scat dead blk stn, gilsonite, No Od.
RTD: 3770(-1623)
LTD: 3771(-1624)

REMARKS:

Vis: 58 Wt: 9.0

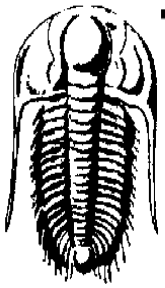
DST #1
3360 - 3388
30-45 - 30-45
I.F.- BOB 1 min 10 sec / BOB 9½ min SIB
F.F.- BOB 2 min / 4" SIB
IFP: 73-307
FFP: 315-494
SIP: 1161-981
HP: 1630-1536
Rec:
945' GIP
1340' CGO 85%o
63' MCO 80%o
BHT: 111° G=36

DST #2
3388 - 3412
45-45-45-45
I.F.- BOB 18 min
F.F.- BOB 25 min
IFP: 14-97
FFP: 97-169
SIP: 678-670
HP: 1639-1545
Rec:
2' CO
328' MW 95%w
BHT: 110° G=29 Chlor: 92K

DST #3
3425 - 3450
30-45-30-45
I.F.- BOB 6 min / 3¼" SIB
F.F.- BOB 8½ min / 4" SIB
IFP: 25-143
FFP: 149-249
SIP: 758-755
HP: 1659-1695
Rec:
235' GIP
110' CO
95' OWCM 15%o, 15%w
315' MW w/ oil show. 90%w
BHT: 110° G=33 Chlor: 76K

DST #4
3475 - 3552
30-45-45-60
I.F.- BOB 9 min / 1¼" SIB
F.F.- BOB 7 min / 5½" SIB
IFP: 27-109
FFP: 116-201
SIP: 1170-1143
HP: 1714-1691
Rec:
505' GIP
132' CO
252' GMO 10%g, 55%o
63' GOCM 10%g, 10%g
BHT: 108° G=30

[signature]



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Downing

Griffith #2-1

2-8s-22w Graham,KS

Start Date: 2013.08.13 @ 12:32:00
End Date: 2013.08.13 @ 19:30:00
Job Ticket #: 50455 DST #: 1

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

Printed: 2013.08.16 @ 16:42:03

DRILL STEM TEST REPORT

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50455 **DST#: 1**

Test Start: 2013.08.13 @ 12:32:00

GENERAL INFORMATION:

Formation: **LKC " A "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:24:15
Time Test Ended: 19:30:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Jim Svaty
Unit No: 54

Interval: 3360.00 ft (KB) To 3388.00 ft (KB) (TVD)
Total Depth: 3388.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

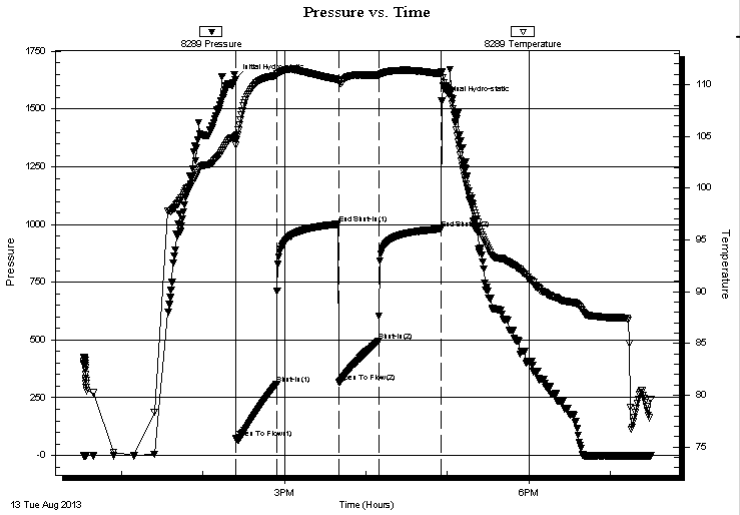
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8289 **Outside**

Press@RunDepth: 494.79 psig @ 3361.00 ft (KB)
Start Date: 2013.08.13 End Date: 2013.08.13
Start Time: 12:32:02 End Time: 19:29:45

Capacity: 8000.00 psig
Last Calib.: 2013.08.13
Time On Btm: 2013.08.13 @ 14:24:00
Time Off Btm: 2013.08.13 @ 16:55:45

TEST COMMENT: 30-IFP- BOB in 1 min. 10 sec.
45-ISIP- BOB in 9 min. 30 sec.
30-FFP- BOB in 2 min.
45-FSIP- Surface Blow Building to 4" in 16 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1630.18	105.05	Initial Hydro-static
1	73.38	104.15	Open To Flow (1)
30	307.49	110.86	Shut-In(1)
76	1001.72	110.49	End Shut-In(1)
77	315.97	110.23	Open To Flow (2)
106	494.79	110.90	Shut-In(2)
152	981.44	111.02	End Shut-In(2)
152	1536.45	111.28	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	MCO 20%m 80%o	0.88
1340.00	GCO 15%g 85%o	18.80
0.00	945' GIP	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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50455 **DST#: 1**

Test Start: 2013.08.13 @ 12:32:00

GENERAL INFORMATION:

Formation: **LKC " A "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 14:24:15
Time Test Ended: 19:30:00

Test Type: Conventional Bottom Hole (Initial)
Tester: Jim Svaty
Unit No: 54

Interval: 3360.00 ft (KB) To 3388.00 ft (KB) (TVD)
Total Depth: 3388.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

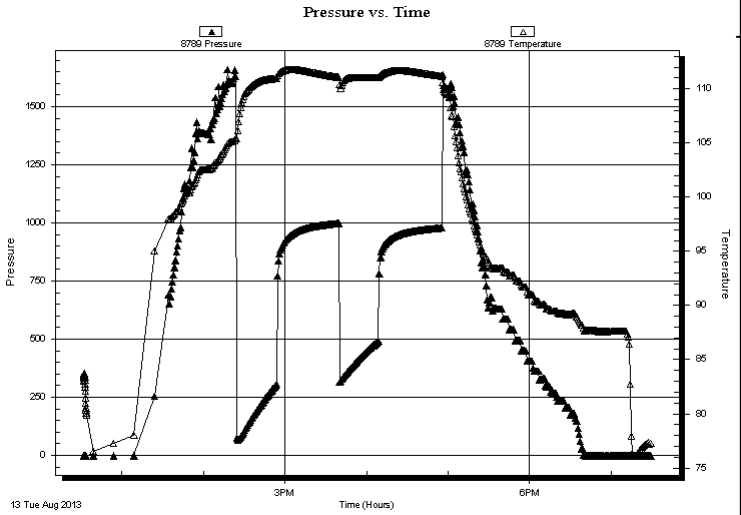
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8789 **Inside**

Press@RunDepth: psig @ 3361.00 ft (KB)
Start Date: 2013.08.13 End Date: 2013.08.13
Start Time: 12:32:02 End Time: 19:29:30

Capacity: 8000.00 psig
Last Calib.: 2013.08.13
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 1 min. 10 sec.
45-ISIP- BOB in 9 min. 30 sec.
30-FFP- BOB in 2 min.
45-FSIP- Surface Blow Building to 4" in 16 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
63.00	MCO 20%m 80%o	0.88
1340.00	GCO 15%g 85%o	18.80
0.00	945' GIP	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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50455 **DST#: 1**

Test Start: 2013.08.13 @ 12:32:00

Tool Information

Drill Pipe:	Length:	3343.00 ft	Diameter:	3.80 inches	Volume:	46.89 bbl	Tool Weight:		2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 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:		58000.00 lb
					Total Volume:	46.89 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		4.00 ft					String Weight:	Initial	40000.00 lb
Depth to Top Packer:		3360.00 ft						Final	46000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		28.00 ft							
Tool Length:		49.00 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			3340.00		
Shut In Tool	5.00			3345.00		
Hydraulic tool	5.00			3350.00		
Packer	5.00			3355.00	21.00	Bottom Of Top Packer
Packer	5.00			3360.00		
Stubb	1.00			3361.00		
Recorder	0.00	8789	Inside	3361.00		
Recorder	0.00	8289	Outside	3361.00		
Perforations	24.00			3385.00		
Bullnose	3.00			3388.00	28.00	Bottom Packers & Anchor
Total Tool Length:	**49.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50455 **DST#: 1**

Test Start: 2013.08.13 @ 12:32:00

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:	ppm
Viscosity:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.94 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	400.00 ppm				
Filter Cake:	1.50 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
63.00	MCO 20%m 80%o	0.884
1340.00	GCO 15%g 85%o	18.797
0.00	945' GIP	0.000

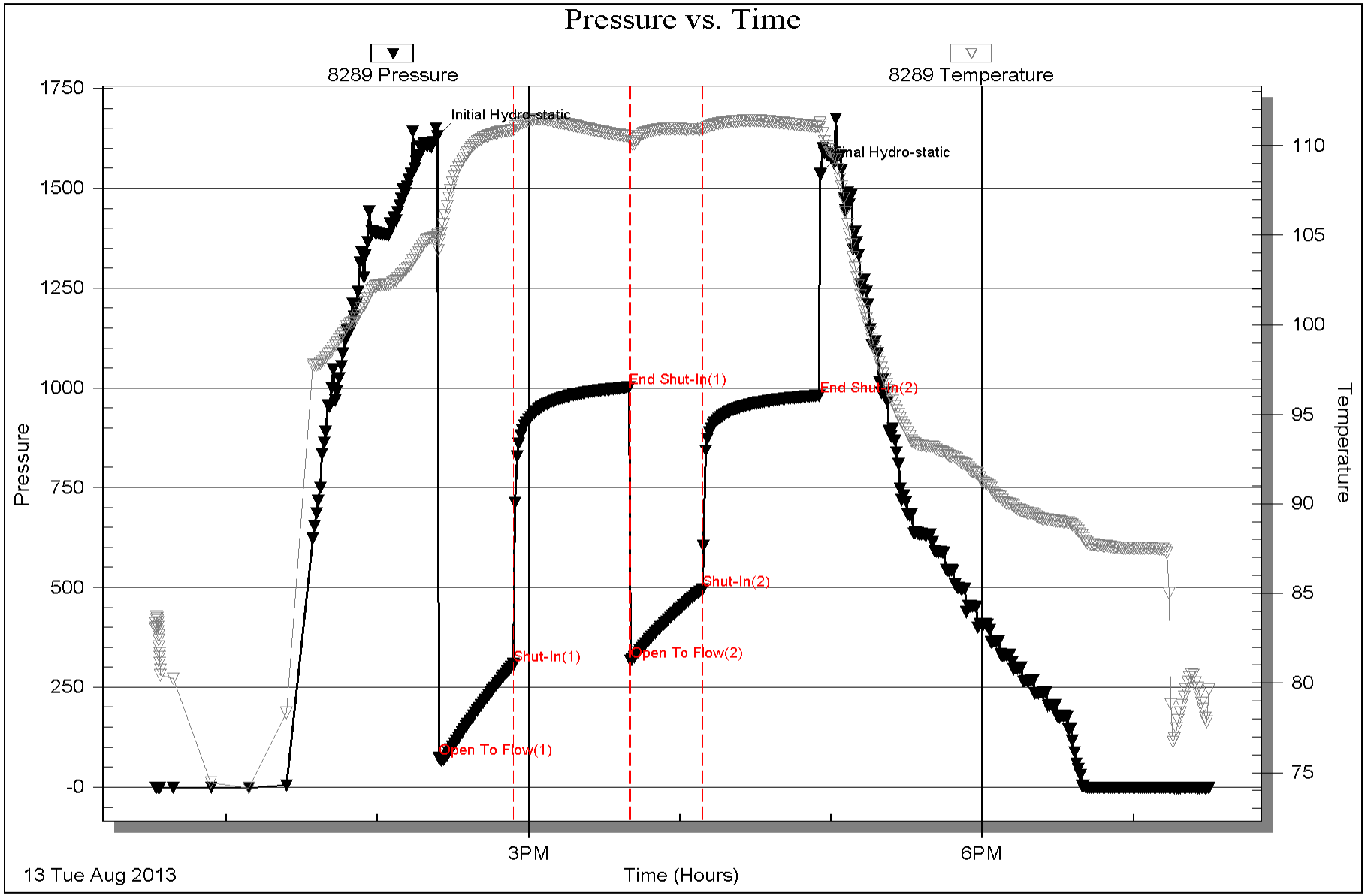
Total Length: 1403.00 ft Total Volume: 19.681 bbl

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

Laboratory Name: Laboratory Location:

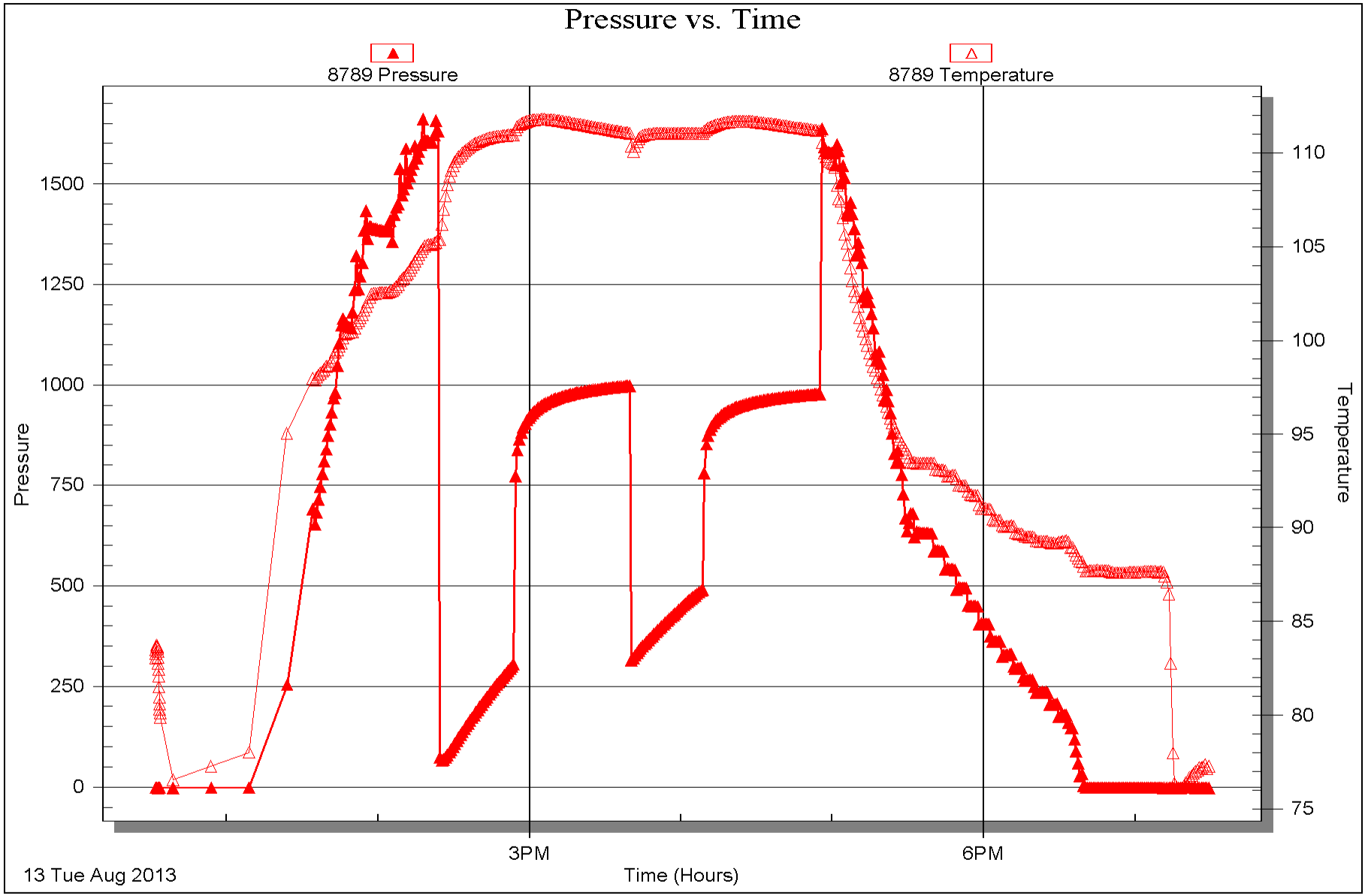
Recovery Comments:

Serial #: 8289 **Outside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 1



Trilobite Testing, Inc Ref. No: 50455 Printed: 2013.08.16 @ 16:42:06

Serial #: 8789 **Inside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 1



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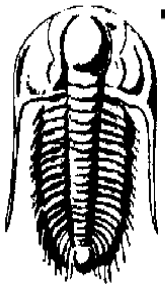


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Downing

Griffith #2-1

2-8s-22w Graham,KS

Start Date: 2013.08.14 @ 02:10:00
End Date: 2013.08.14 @ 09:04:00
Job Ticket #: 50456 DST #: 2

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

Printed: 2013.08.16 @ 16:41:29

DRILL STEM TEST REPORT

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50456 **DST#: 2**

Test Start: 2013.08.14 @ 02:10:00

GENERAL INFORMATION:

Formation: **LKC " C "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:03:30
Time Test Ended: 09:04:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3388.00 ft (KB) To 3412.00 ft (KB) (TVD)
Total Depth: 3412.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

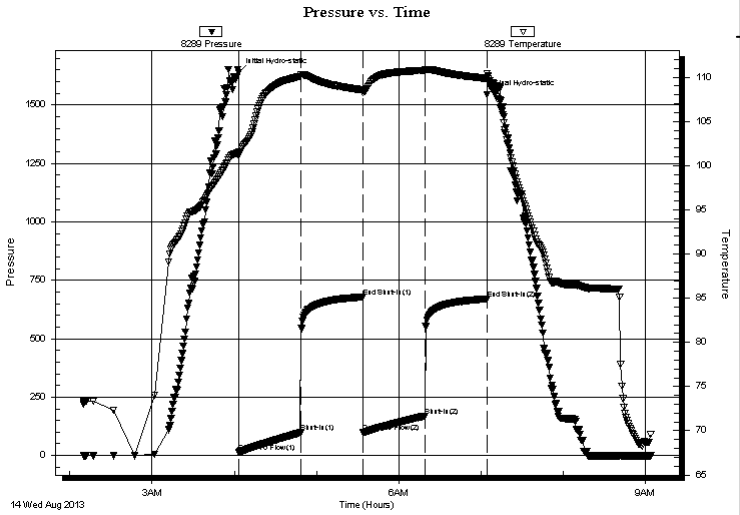
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8289 **Outside**

Press@RunDepth: 169.27 psig @ 3389.00 ft (KB)
Start Date: 2013.08.14 End Date: 2013.08.14
Start Time: 02:10:02 End Time: 09:04:00

Capacity: 8000.00 psig
Last Calib.: 2013.08.14
Time On Btm: 2013.08.14 @ 04:03:15
Time Off Btm: 2013.08.14 @ 07:04:45

TEST COMMENT: 45-IFP- BOB in 18 min.
45-ISIP- No Blow
45-FFP- BOB in 25 min.
45-FSIP- No Blow



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1639.30	101.56	Initial Hydro-static
1	14.14	101.10	Open To Flow (1)
45	97.35	110.10	Shut-In(1)
91	678.83	108.56	End Shut-In(1)
91	97.82	108.27	Open To Flow (2)
136	169.27	110.76	Shut-In(2)
182	670.72	109.86	End Shut-In(2)
182	1545.74	110.42	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
315.00	MCW 5%m 95%w	4.42
13.00	MCW 40%m 60%w	0.18
2.00	CO 100%	0.03

* 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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50456 **DST#: 2**

Test Start: 2013.08.14 @ 02:10:00

GENERAL INFORMATION:

Formation: **LKC " C "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 04:03:30
Time Test Ended: 09:04:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3388.00 ft (KB) To 3412.00 ft (KB) (TVD)
Total Depth: 3412.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

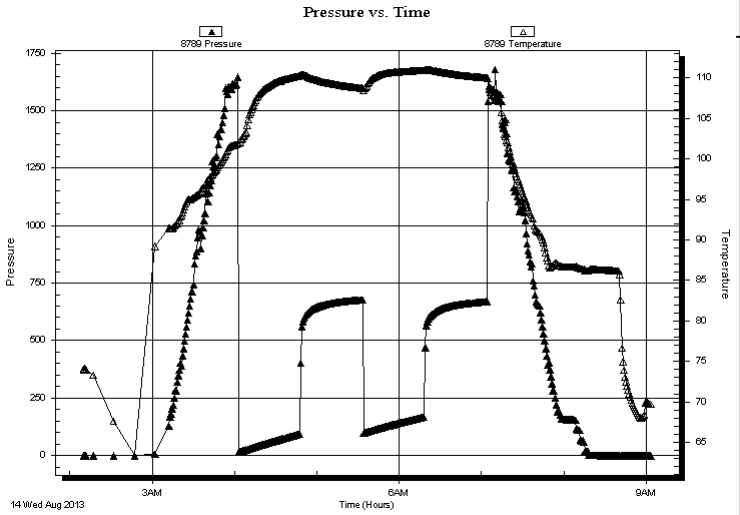
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8789 **Inside**

Press@RunDepth: psig @ 3389.00 ft (KB)
Start Date: 2013.08.14 End Date: 2013.08.14
Start Time: 02:10:02 End Time: 09:03:30

Capacity: 8000.00 psig
Last Calib.: 2013.08.14
Time On Btm:
Time Off Btm:

TEST COMMENT: 45-IFP- BOB in 18 min.
45-ISIP- No Blow
45-FFP- BOB in 25 min.
45-FSIP- No Blow



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
315.00	MCW 5%m 95%w	4.42
13.00	MCW 40%m 60%w	0.18
2.00	CO 100%	0.03

* 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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50456 **DST#: 2**

Test Start: 2013.08.14 @ 02:10:00

Tool Information

Drill Pipe:	Length:	3375.00 ft	Diameter:	3.80 inches	Volume:	47.34 bbl	
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 inches	Volume:	0.00 bbl	
Drill Collar:	Length:	0.00 ft	Diameter:	2.25 inches	Volume:	0.00 bbl	
					Total Volume:	47.34 bbl	

Drill Pipe Above KB:	8.00 ft
Depth to Top Packer:	3388.00 ft
Depth to Bottom Packer:	ft
Interval betw een Packers:	24.00 ft
Tool Length:	45.00 ft
Number of Packers:	2 Diameter: 6.75 inches

Tool Weight:		2500.00 lb
Weight set on Packer:		25000.00 lb
Weight to Pull Loose:		46000.00 lb
Tool Chased		0.00 ft
String Weight:	Initial	40000.00 lb
	Final	42000.00 lb

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths	
Change Over Sub	1.00			3368.00		
Shut In Tool	5.00			3373.00		
Hydraulic tool	5.00			3378.00		
Packer	5.00			3383.00	21.00	Bottom Of Top Packer
Packer	5.00			3388.00		
Stubb	1.00			3389.00		
Recorder	0.00	8789	Inside	3389.00		
Recorder	0.00	8289	Outside	3389.00		
Perforations	20.00			3409.00		
Bullnose	3.00			3412.00	24.00	Bottom Packers & Anchor
Total Tool Length:	**45.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50456 **DST#: 2**

Test Start: 2013.08.14 @ 02:10:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	29 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	92000 ppm
Viscosity:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.93 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	400.00 ppm				
Filter Cake:	1.50 inches				

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
315.00	MCW 5%m 95%w	4.419
13.00	MCW 40%m 60%w	0.182
2.00	CO 100%	0.028

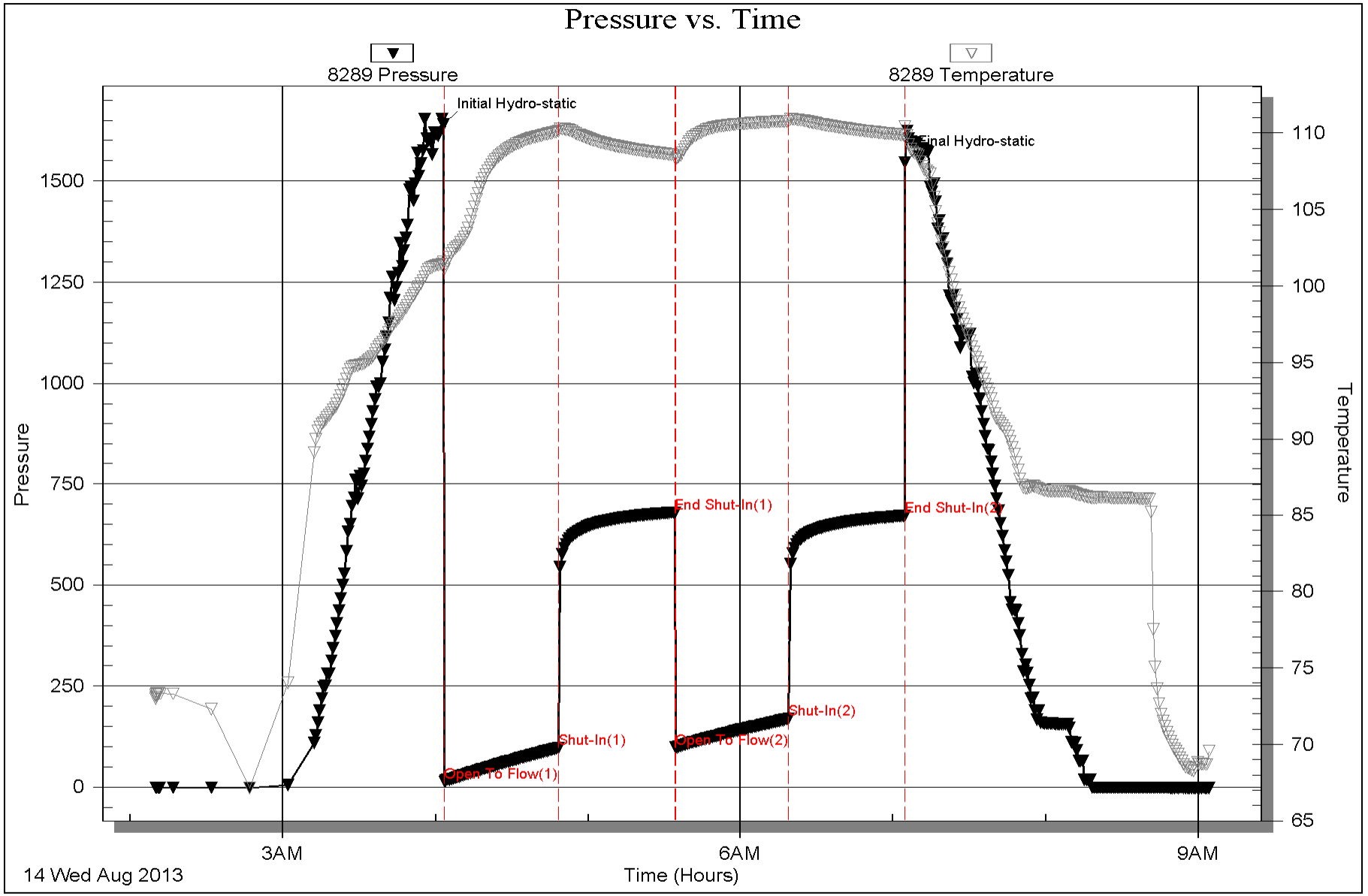
Total Length: 330.00 ft Total Volume: 4.629 bbl

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

Laboratory Name: Laboratory Location:

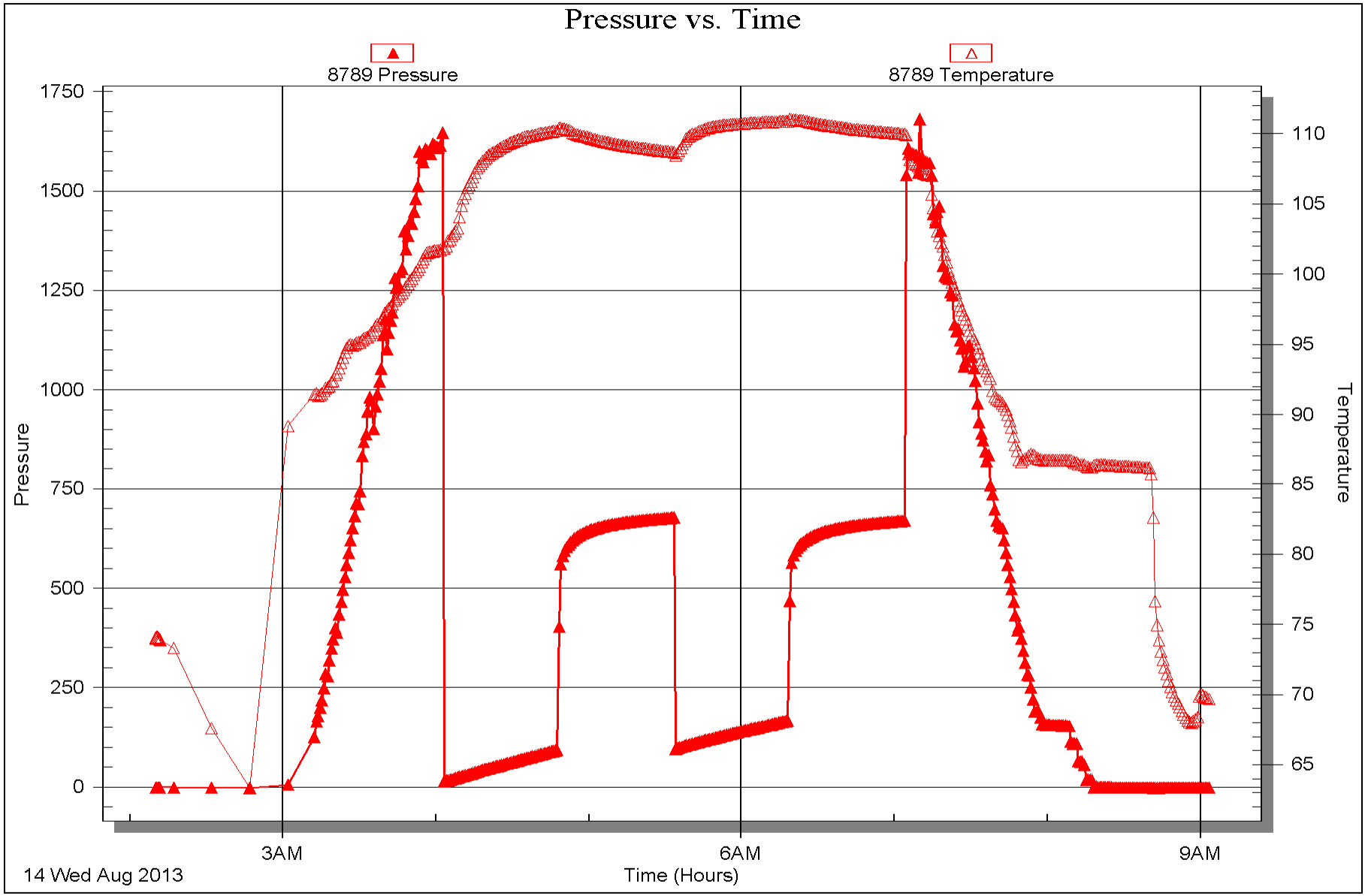
Recovery Comments: .100 @ 62

Serial #: 8289 **Outside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 2



Trilobite Testing, Inc Ref. No: 50456 Printed: 2013.08.16 @ 16:41:32

Serial #: 8789 **Inside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 2



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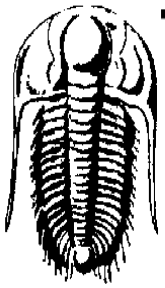


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Downing

Griffith #2-1

2-8s-22w Graham,KS

Start Date: 2013.08.14 @ 15:00:00
End Date: 2013.08.14 @ 22:25:00
Job Ticket #: 50457 DST #: 3

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

Printed: 2013.08.16 @ 16:40:51

DRILL STEM TEST REPORT

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50457 **DST#: 3**

Test Start: 2013.08.14 @ 15:00:00

GENERAL INFORMATION:

Formation: **LKC " E & F "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:17:00
Time Test Ended: 22:25:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3425.00 ft (KB) To 3450.00 ft (KB) (TVD)
Total Depth: 3450.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

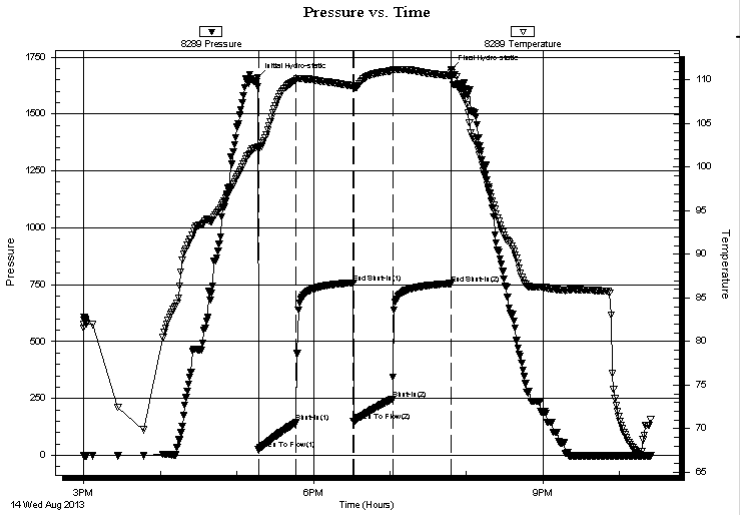
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8289 **Outside**

Press@RunDepth: 248.01 psig @ 3426.00 ft (KB)
Start Date: 2013.08.14 End Date: 2013.08.14
Start Time: 15:00:02 End Time: 22:25:00

Capacity: 8000.00 psig
Last Calib.: 2013.08.14
Time On Btm: 2013.08.14 @ 17:16:30
Time Off Btm: 2013.08.14 @ 19:48:15

TEST COMMENT: 30-IFP- BOB in 6 min.
45-ISIP- Surface Blow Building to 3 1/4"
30-FFP- BOB in 8 1/2 min.
45-FSIP- Surface Blow to 4"



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1659.64	102.35	Initial Hydro-static
1	25.07	102.00	Open To Flow (1)
30	143.77	109.99	Shut-In(1)
75	758.94	109.36	End Shut-In(1)
75	149.43	109.05	Open To Flow (2)
106	248.01	111.07	Shut-In(2)
152	755.14	110.49	End Shut-In(2)
152	1695.91	110.80	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
315.00	MCW 10%m 90%w Show of Oil	4.42
95.00	OWCM 15%o 15%w 70%m	1.33
110.00	CO 100%	1.54
0.00	235' GIP	0.00

* Recovery from multiple tests

Gas Rates

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

DRILL STEM TEST REPORT

TRILOBITE TESTING, INC.

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50457 **DST#: 3**

Test Start: 2013.08.14 @ 15:00:00

GENERAL INFORMATION:

Formation: **LKC " E & F "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 17:17:00
Time Test Ended: 22:25:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3425.00 ft (KB) To 3450.00 ft (KB) (TVD)
Total Depth: 3450.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

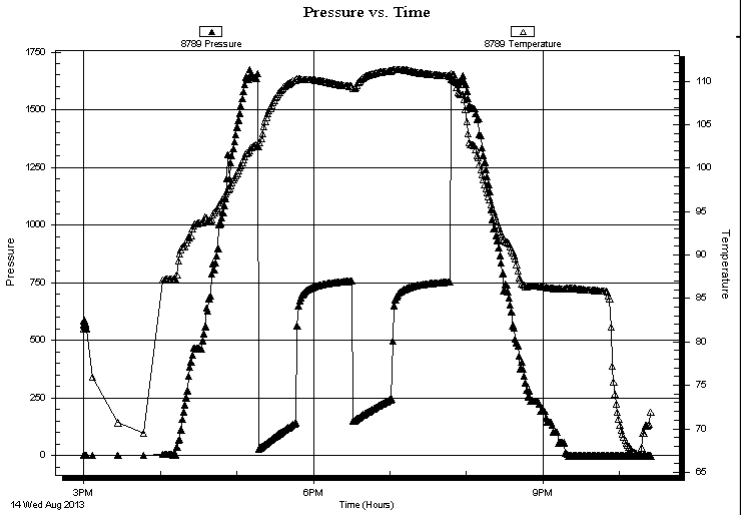
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8789 **Inside**

Press@RunDepth: psig @ 3426.00 ft (KB)
Start Date: 2013.08.14 End Date: 2013.08.14
Start Time: 15:00:02 End Time: 22:24:45

Capacity: 8000.00 psig
Last Calib.: 2013.08.14
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 6 min.
45-ISIP- Surface Blow Building to 3 1/4"
30-FFP- BOB in 8 1/2 min.
45-FSIP- Surface Blow to 4"



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
315.00	MCW 10%m 90%w Show of Oil	4.42
95.00	OWCM 15%o 15%w 70%m	1.33
110.00	CO 100%	1.54
0.00	235' GIP	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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50457 **DST#: 3**

Test Start: 2013.08.14 @ 15:00:00

Tool Information

Drill Pipe:	Length:	3438.00 ft	Diameter:	3.80 inches	Volume:	48.23 bbl	Tool Weight:		2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 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:	48.23 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		34.00 ft					String Weight:	Initial	42000.00 lb
Depth to Top Packer:		3425.00 ft						Final	44000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		25.00 ft							
Tool Length:		46.00 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			3405.00		
Shut In Tool	5.00			3410.00		
Hydraulic tool	5.00			3415.00		
Packer	5.00			3420.00	21.00	Bottom Of Top Packer
Packer	5.00			3425.00		
Stubb	1.00			3426.00		
Recorder	0.00	8789	Inside	3426.00		
Recorder	0.00	8289	Outside	3426.00		
Perforations	21.00			3447.00		
Bullnose	3.00			3450.00	25.00	Bottom Packers & Anchor
Total Tool Length:	**46.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50457 **DST#: 3**

Test Start: 2013.08.14 @ 15:00:00

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:	76000 ppm
Viscosity:	58.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.59 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	500.00 ppm				
Filter Cake:	1.50 inches				

Recovery Information

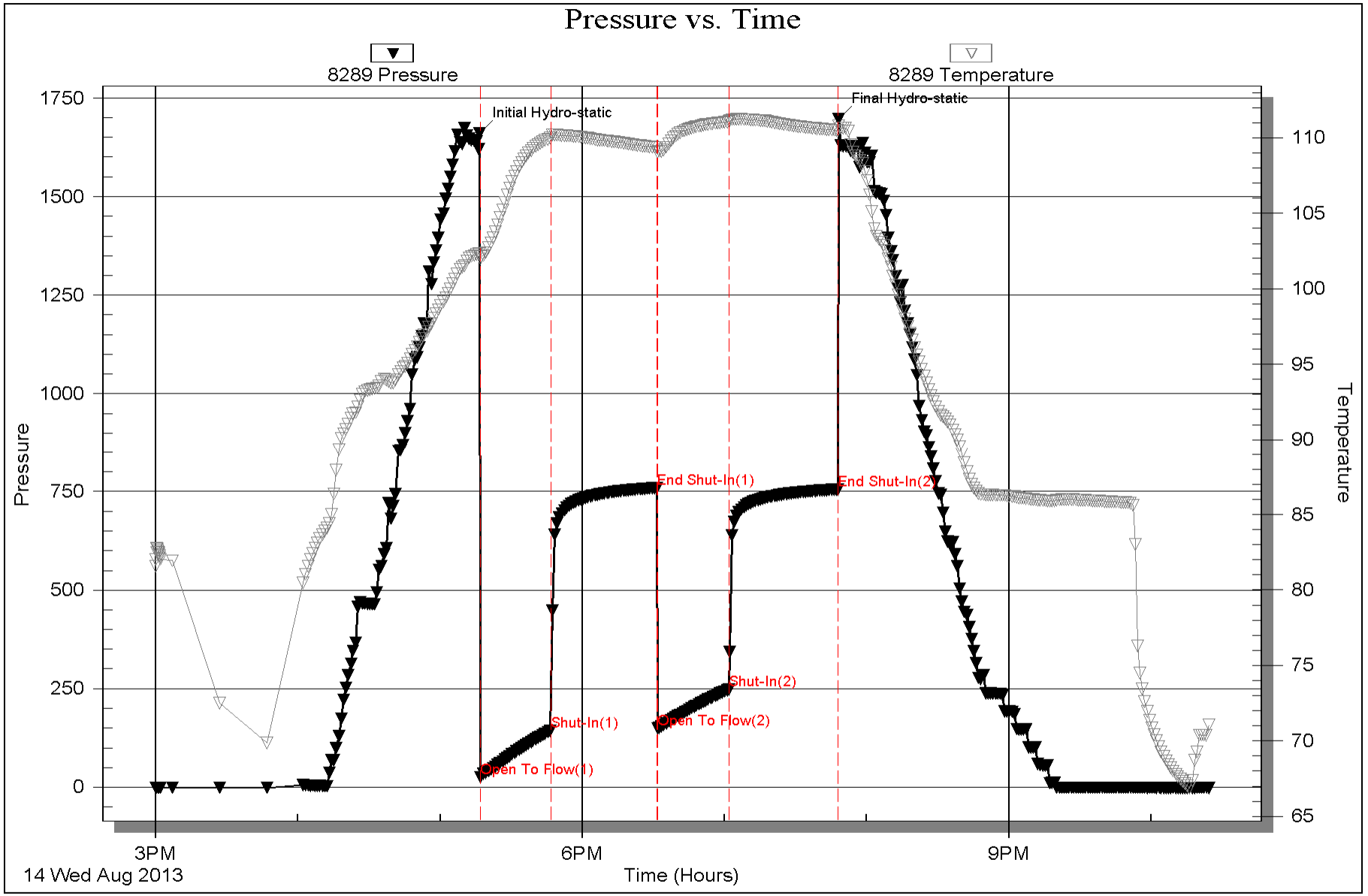
Recovery Table

Length ft	Description	Volume bbl
315.00	MCW 10%m 90%w Show of Oil	4.419
95.00	OWCM 15%o 15%w 70%m	1.333
110.00	CO 100%	1.543
0.00	235' GIP	0.000

Total Length: 520.00 ft Total Volume: 7.295 bbl

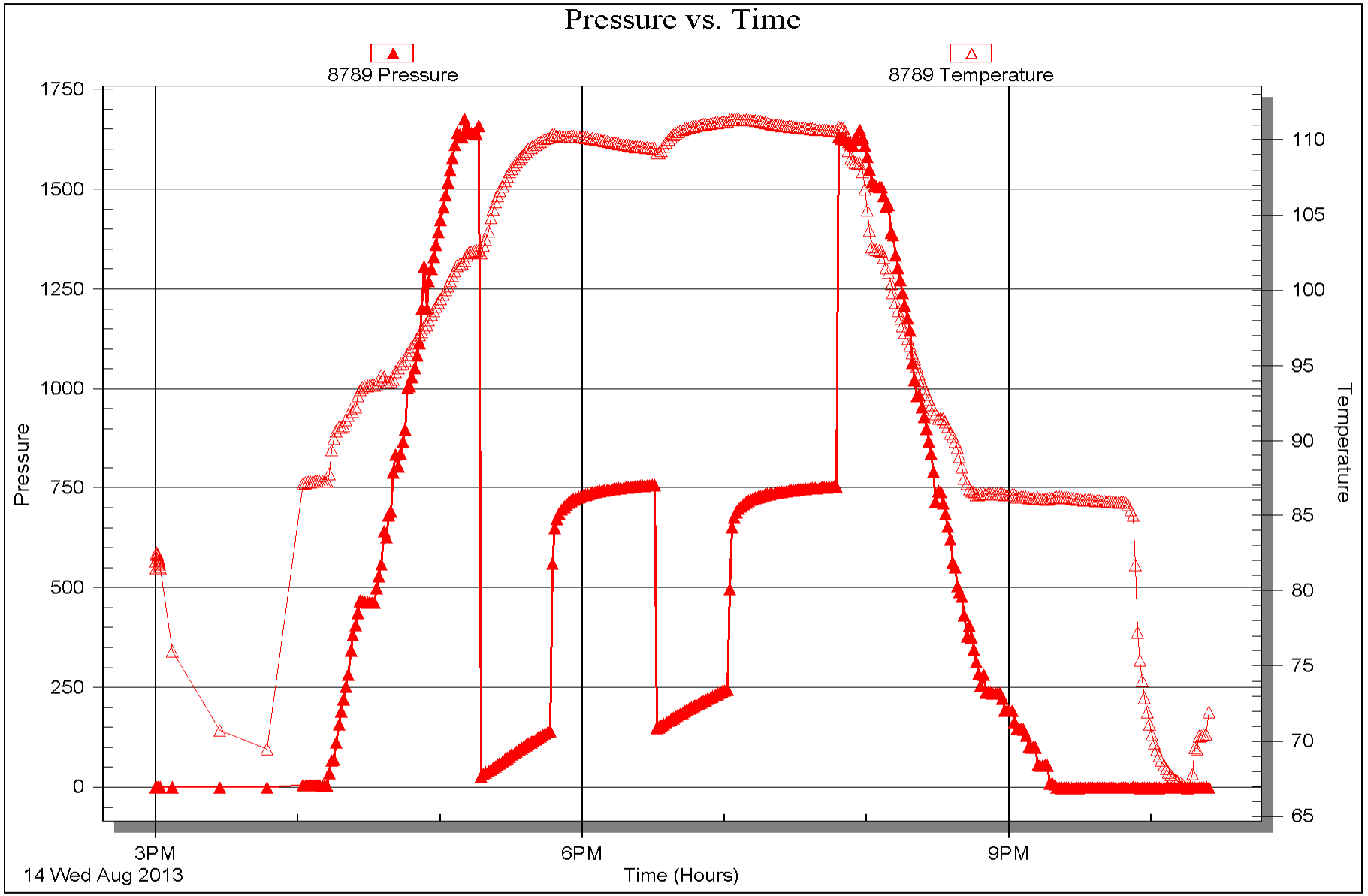
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments: .113 @ 66

Serial #: 8289 **Outside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 3



Trilobite Testing, Inc Ref. No: 50457 Printed: 2013.08.16 @ 16:40:53

Serial #: 8789 **Inside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 3



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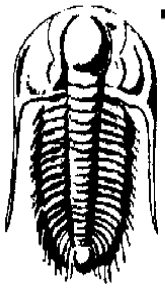


TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

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

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Downing

Griffith #2-1

2-8s-22w Graham,KS

Start Date: 2013.08.15 @ 10:07:00
End Date: 2013.08.15 @ 17:05:00
Job Ticket #: 50458 DST #: 4

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

Printed: 2013.08.16 @ 16:36:12

DRILL STEM TEST REPORT

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50458 **DST#: 4**

Test Start: 2013.08.15 @ 10:07:00

GENERAL INFORMATION:

Formation: **LKC " H - K "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:32:15
Time Test Ended: 17:05:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3475.00 ft (KB) To 3552.00 ft (KB) (TVD)
Total Depth: 3552.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

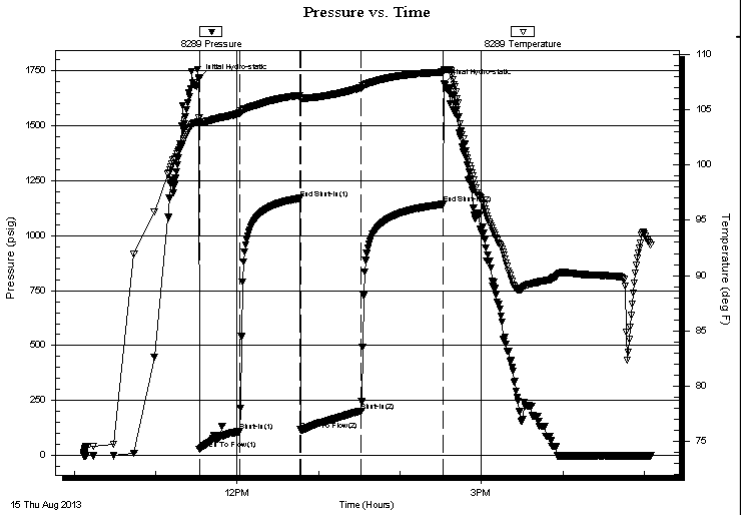
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8289 **Outside**

Press@RunDepth: 201.86 psig @ 3484.00 ft (KB)
Start Date: 2013.08.15 End Date: 2013.08.15
Start Time: 10:07:02 End Time: 17:05:00

Capacity: 8000.00 psig
Last Calib.: 2013.08.15
Time On Btm: 2013.08.15 @ 11:32:00
Time Off Btm: 2013.08.15 @ 14:32:30

TEST COMMENT: 30-IFP- BOB in 9 min.
45-ISIP- Surface Blow Building to 1 1/4" in 5 min.
45-FFP-BOB in 7 min.
60-FSIP- Surface Blow Building to 5 1/2" in 25 min.



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1714.49	104.30	Initial Hydro-static
1	27.77	103.65	Open To Flow (1)
30	109.63	104.67	Shut-In(1)
75	1170.10	106.28	End Shut-In(1)
75	116.36	105.89	Open To Flow (2)
120	201.86	106.98	Shut-In(2)
180	1143.32	108.39	End Shut-In(2)
181	1691.00	108.64	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GOCM 10%g 10%o 80%m	0.88
126.00	GMCO 10%g 40%m 50%o	1.77
126.00	GMCO 10%g 30%m 60%o	1.77
132.00	CO 100%	1.85
0.00	505' GIP	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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50458 **DST#: 4**

Test Start: 2013.08.15 @ 10:07:00

GENERAL INFORMATION:

Formation: **LKC " H - K "**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 11:32:15
Time Test Ended: 17:05:00

Test Type: Conventional Bottom Hole (Reset)
Tester: Jim Svaty
Unit No: 54

Interval: 3475.00 ft (KB) To 3552.00 ft (KB) (TVD)
Total Depth: 3552.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Fair

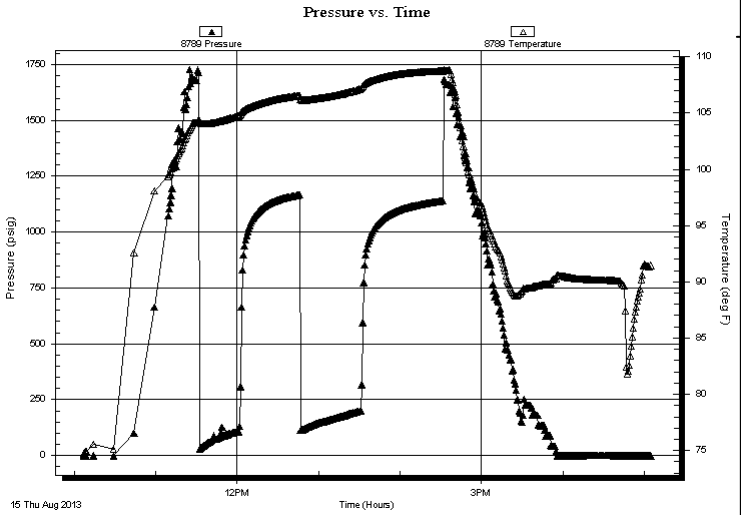
Reference Elevations: 2146.00 ft (KB)
2139.00 ft (CF)
KB to GR/CF: 7.00 ft

Serial #: 8789 **Inside**

Press@RunDepth: psig @ 3484.00 ft (KB)
Start Date: 2013.08.15 End Date: 2013.08.15
Start Time: 10:07:02 End Time: 17:04:45

Capacity: 8000.00 psig
Last Calib.: 2013.08.15
Time On Btm:
Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 9 min.
45-ISIP- Surface Blow Building to 1 1/4" in 5 min.
45-FFP-BOB in 7 min.
60-FSIP- Surface Blow Building to 5 1/2" in 25 min.



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
63.00	GOCM 10%g 10%o 80%m	0.88
126.00	GMCO 10%g 40%m 50%o	1.77
126.00	GMCO 10%g 30%m 60%o	1.77
132.00	CO 100%	1.85
0.00	505' GIP	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 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50458 **DST#: 4**

Test Start: 2013.08.15 @ 10:07:00

Tool Information

Drill Pipe:	Length:	3471.00 ft	Diameter:	3.80 inches	Volume:	48.69 bbl	Tool Weight:		2500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	2.75 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:	48.69 bbl	Tool Chased		0.00 ft
Drill Pipe Above KB:		17.00 ft					String Weight:	Initial	44000.00 lb
Depth to Top Packer:		3475.00 ft						Final	47000.00 lb
Depth to Bottom Packer:		ft							
Interval betw een Packers:		77.00 ft							
Tool Length:		98.00 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			3455.00		
Shut In Tool	5.00			3460.00		
Hydraulic tool	5.00			3465.00		
Packer	5.00			3470.00	21.00	Bottom Of Top Packer
Packer	5.00			3475.00		
Stubb	1.00			3476.00		
Perforations	8.00			3484.00		
Recorder	0.00	8789	Inside	3484.00		
Recorder	0.00	8289	Outside	3484.00		
Change Over Sub	1.00			3485.00		
Blank Spacing	63.00			3548.00		
Change Over Sub	1.00			3549.00		
Bullnose	3.00			3552.00	77.00	Bottom Packers & Anchor
Total Tool Length:	**98.00**					

DRILL STEM TEST REPORT

FLUID SUMMARY

H&C Oil Operating Inc

PO Box 86
Plainville KS 67663-0086

ATTN: Marc Dow ning

2-8s-22w Graham,KS

Griffith #2-1

Job Ticket: 50458 **DST#: 4**

Test Start: 2013.08.15 @ 10:07:00

Mud and Cushion Information

Mud Type:	Gel Chem	Cushion Type:		Oil API:	30 deg API
Mud Weight:	9.00 lb/gal	Cushion Length:	ft	Water Salinity:	ppm
Viscosity:	54.00 sec/qt	Cushion Volume:	bbl		
Water Loss:	7.59 in³	Gas Cushion Type:			
Resistivity:	ohm.m	Gas Cushion Pressure:	psig		
Salinity:	800.00 ppm				
Filter Cake:	1.50 inches				

Recovery Information

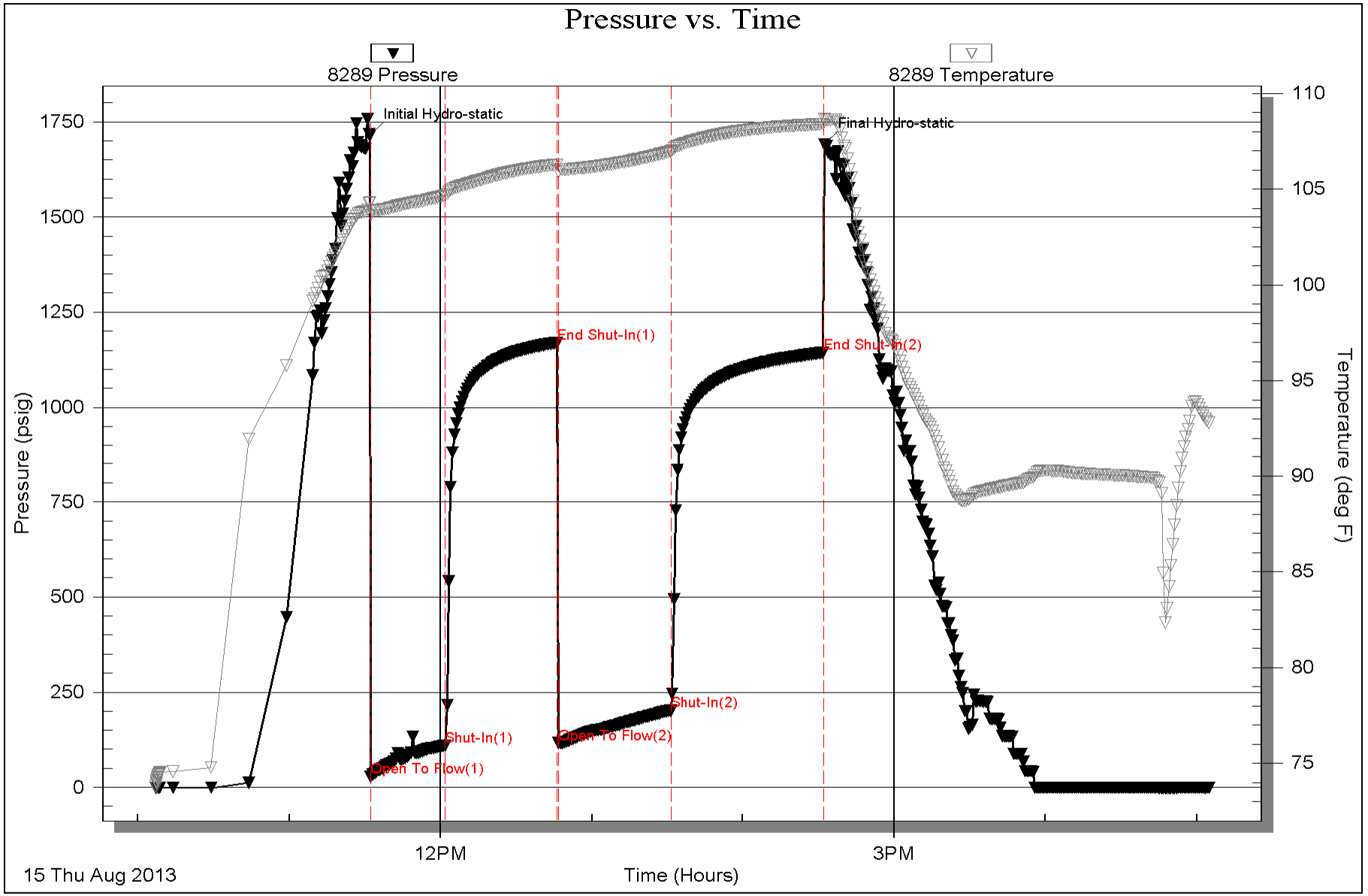
Recovery Table

Length ft	Description	Volume bbl
63.00	GOCM 10%g 10%o 80%m	0.884
126.00	GMCO 10%g 40%m 50%o	1.767
126.00	GMCO 10%g 30%m 60%o	1.767
132.00	CO 100%	1.852
0.00	505' GIP	0.000

Total Length: 447.00 ft Total Volume: 6.270 bbl

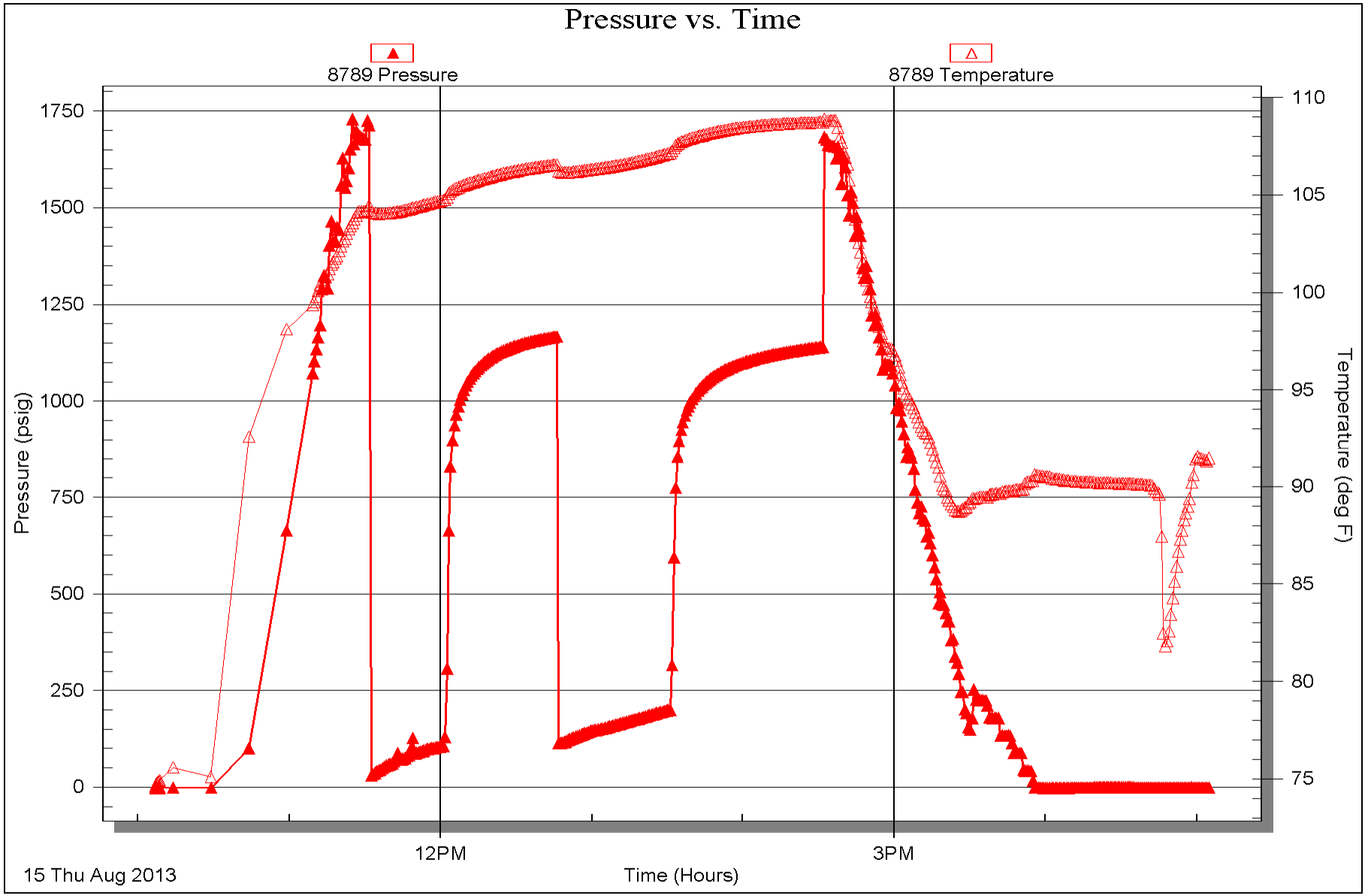
Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:
Laboratory Name: Laboratory Location:
Recovery Comments:

Serial #: 8289 **Outside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 50458 Printed: 2013.08.16 @ 16:36:15

Serial #: 8789 **Inside** H&C Oil Operating Inc Griffith #2-1 DST Test Number: 4



Trilobite Testing, Inc Ref. No: 50458 Printed: 2013.08.16 @ 16:36:15

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 50455

Well Name & No. Griffith Unit 2-1 Test No. 1 Date 8-13-13

Company H&C Oil Operating Inc. Elevation 2146 KB 2139 GL

Address P.O. Box 86 Plainville KS. 67663-0086

Co. Rep / Geo. Marc Downing Rig Discovery #1

Location: Sec. 2 Twp. 8S Rge. 22W Co. Graham State KS

Interval Tested 3360-3388 Zone Tested LKC "A"

Anchor Length 28 Drill Pipe Run 3343 Mud Wt. 9.0

Top Packer Depth 3355 Drill Collars Run 0 Vis 58

Bottom Packer Depth 3360 Wt. Pipe Run 0 WL 8

Total Depth 3388 Chlorides 400 ppm System LCM 1.5

Blow Description IFP- B.O.B. in 1min 10sec.
ISIP- B.O.B. in 9min 30sec.
FFP- B.O.B in 2min
FSIP- Surface Building to 4in. In 16min.

Rec 63	Feet of MCO	%gas	80 %oil	%water	20 %mud	
Rec 1340	Feet of Gassy CO	15 %gas	85 %oil	%water	%mud	
Rec	Feet of 945 GIP	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	
Rec	Feet of	%gas	%oil	%water	%mud	

Rec Total 1403. BHT 111 Gravity 36 API RW @ °F Chlorides ppm

(A) Initial Hydrostatic 1630	☒ Test 1150	T-On Location 11:30	
(B) First Initial Flow 73	☐ Jars	T-Started 12:32	
(C) First Final Flow 307	☐ Safety Joint	T-Open 14:25	
(D) Initial Shut-In 1001	☒ Circ Sub 50	T-Pulled 16:55	
(E) Second Initial Flow 315	☐ Hourly Standby	T-Out 19:30	
(F) Second Final Flow 494	☒ Mileage 114 RT 176.70	Comments	
(G) Final Shut-In 981	☐ Sampler		
(H) Final Hydrostatic 1536	☐ Straddle	☐ Ruined Shale Packer	
	☐ Shale Packer	☐ Ruined Packer	
Initial Open 30	☐ Extra Packer	☐ Extra Copies	
Initial Shut-In 45	☐ Extra Recorder	Sub Total 0	
Final Flow 30	☐ Day Standby	Total 1376.70	
Final Shut-In 45	☐ Accessibility	MP/DST Disc't 785639 5864	
	Sub Total 1376.70		

Thank You!

Approved By Our Representative

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 50456

Well Name & No. Griffith Unit #2-1 Test No. 2 Date 8-14-13

Company H & C Oil Operating Inc. Elevation 2146 KB 2139 GL

Address P.O. Box 86 Plainville KS 67663-0086

Co. Rep / Geo. Marc Downing Rig Discovery #1

Location: Sec. 2 Twp. 8S Rge. 22W Co. Graham State KS

Interval Tested 3388-3412 Zone Tested LKC "C"

Anchor Length 24 Drill Pipe Run 3375 Mud Wt. 9.0

Top Packer Depth 3383 Drill Collars Run 0 Vis 58

Bottom Packer Depth 3388 Wt. Pipe Run 0 WL 8.0

Total Depth 3412 Chlorides 400 ppm System LCM 1.5

Blow Description IFP- BOB in 18min.
ISIP- No Blow
FFP- BOB in 25min
FSIP- No Blow

Rec	315	Feet of	MCW	%gas	%oil	95	%water	5 %mud
Rec	13	Feet of	MCW	%gas	%oil	60	%water	40 %mud
Rec	2	Feet of	CO	%gas	100 %oil		%water	%mud
Rec		Feet of		%gas	%oil		%water	%mud
Rec		Feet of		%gas	%oil		%water	%mud

Rec Total 330 BHT 110 Gravity 29 API RW .100 @ 62 °F Chlorides 92000 ppm

(A) Initial Hydrostatic	1639	☑ Test	1150	T-On Location	01:52
(B) First Initial Flow	14	☐ Jars		T-Started	02:10
(C) First Final Flow	97	☐ Safety Joint		T-Open	04:04
(D) Initial Shut-In	678	☐ Circ Sub		T-Pulled	07:04
(E) Second Initial Flow	97	☐ Hourly Standby		T-Out	09:04
(F) Second Final Flow	169	☑ Mileage	176.70	Comments	
(G) Final Shut-In	670	☐ Sampler			
(H) Final Hydrostatic	1545	☐ 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	1326.70
Final Shut-In	45	☐ Accessibility		MP/DST Disc't	
		Sub Total	1326.70		

Approved By _____ Our Representative _____

TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

4/10

Test Ticket

NO. 50457

Well Name & No. Griffith Unit #2-1 Test No. 3 Date 8-14-13

Company H+C Oil Operating Inc. Elevation 2146 KB 2139 GL

Address P.O. Box 86 Plainville KS. 67663-0086

Co. Rep / Geo. Marc Downing Rig Discovery #1

Location: Sec. 2 Twp. 8 S Rge. 22 W Co. Graham State KS

Interval Tested 3425-3450 Zone Tested LKC "E&F"

Anchor Length 25 Drill Pipe Run 3438 Mud Wt. 9

Top Packer Depth 3420 Drill Collars Run 0 Vis 58

Bottom Packer Depth 3425 Wt. Pipe Run 0 WL 7.6

Total Depth 3450 Chlorides 500 ppm System LCM 1.5

Blow Description IFP - BOB in 6min.
ISIP - Surface Blow Building to 3 1/4in. in 32min.
FFP - BOB in 8 1/2min.
FSIP - Surface Blow Building to 4in.

Rec 315	Feet of MCW show of Oil	%gas	%oil	90	%water	10	%mud
Rec 95	Feet of OWCM	%gas	15	%oil	15	%water	70 %mud
Rec 110	Feet of CO	%gas	100	%oil	%water		%mud
Rec	Feet of 235 GIP	%gas	%oil		%water		%mud
Rec	Feet of	%gas	%oil		%water		%mud

Rec Total 520 BHT 110 Gravity 33 API RW .113 @ 66 °F Chlorides 76000 ppm

(A) Initial Hydrostatic	1659	☒ Test	1150	T-On Location	14:57
(B) First Initial Flow	25	☐ Jars		T-Started	15:00
(C) First Final Flow	143	☐ Safety Joint		T-Open	17:17
(D) Initial Shut-In	758	☐ Circ Sub		T-Pulled	19:47
(E) Second Initial Flow	149	☐ Hourly Standby		T-Out	22:25
(F) Second Final Flow	248	☒ Mileage	176.70	Comments	
(G) Final Shut-In	755	☐ Sampler			
(H) Final Hydrostatic	1695	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	30	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	45	☐ Extra Recorder		Sub Total	0
Final Flow	30	☐ Day Standby		Total	1326.70
Final Shut-In	45	☐ Accessibility		MP/DST Disc't	
		Sub Total	1326.70		

Approved By _____ Our Representative _____

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

4/10

Test Ticket

NO. 50458

Well Name & No. Griffith Unit #2-1 Test No. 4 Date 8-15-13

Company H4C Oil Operating Inc. Elevation 2146 KB 2139 GL

Address P.O. Box 86 Plainville KS 67663-0086

Co. Rep / Geo. Marc Downing Rig Discovery #1

Location: Sec. 2 Twp. 8S Rge. 22W Co. Graham State KS

Interval Tested 3475-3552 Zone Tested LKC "H-K"

Anchor Length 77 Drill Pipe Run 3471 Mud Wt. 9.3

Top Packer Depth 3470 Drill Collars Run 0 Vis 54

Bottom Packer Depth 3475 Wt. Pipe Run 0 WL 7.6

Total Depth 3552 Chlorides 800 ppm System LCM 1.5

Blow Description IFP- BOB in 9min.
ISIP- Surface Blow Building to 1¼in. in 5min.
FFP- BOB in 7min
FSIP- Surface Blow Building to 5½in in 25min

Rec	63	Feet of	OCM		10 %gas	10 %oil	%water	80 %mud
Rec	126	Feet of	GMCO		10 %gas	50 %oil	%water	40 %mud
Rec	126	Feet of	GMCO		10 %gas	60 %oil	%water	30 %mud
Rec	132	Feet of	CO		%gas	100 %oil	%water	%mud
Rec		Feet of	SOS SIP		%gas	%oil	%water	%mud

Rec Total 447 BHT 108 Gravity 30 API RW ____ @ ____ °F Chlorides ____ ppm

(A) Initial Hydrostatic	1714	☒ Test	1150	T-On Location	09:40
(B) First Initial Flow	27	☐ Jars		T-Started	10:07
(C) First Final Flow	109	☐ Safety Joint		T-Open	11:32
(D) Initial Shut-In	1170	☐ Circ Sub		T-Pulled	14:32
(E) Second Initial Flow	116	☐ Hourly Standby		T-Out	17:05
(F) Second Final Flow	201	☒ Mileage	353.40	Comments	
(G) Final Shut-In	1143	☐ Sampler		loaded 8/16 14:00	
(H) Final Hydrostatic	1691	☐ Straddle		☐ Ruined Shale Packer	
		☐ Shale Packer		☐ Ruined Packer	
Initial Open	30	☐ Extra Packer		☐ Extra Copies	
Initial Shut-In	45	☐ Extra Recorder		Sub Total	0
Final Flow	45	☐ Day Standby		Total	1503.40
Final Shut-In	60	☐ Accessibility		MP/DST Disc't	
		Sub Total	1503.40		

Approved By ____ Our Representative ____

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.