

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1230026  
OIL & GAS CONSERVATION DIVISION

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 # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

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 #: \_\_\_\_\_

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE       NW       SE       SW

GPS Location: Lat: \_\_\_\_\_, Long: \_\_\_\_\_  
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum:  NAD27       NAD83       WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

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: \_\_\_\_\_
- Confidential Release Date: \_\_\_\_\_
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

1230026

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**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 <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
Cores Taken	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Electric Log Run	<input type="checkbox"/> Yes <input type="checkbox"/> No			
List All E. Logs Run:				

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> 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

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate				
<input type="checkbox"/> Protect Casing				
<input type="checkbox"/> Plug Back TD				
<input type="checkbox"/> 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 <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD: Size: \_\_\_\_\_ Set At: \_\_\_\_\_ Packer At: \_\_\_\_\_ Liner Run:  Yes  No

Date of First, Resumed Production, SWD or ENHR: \_\_\_\_\_ Producing Method:  Flowing  Pumping  Gas Lift  Other *(Explain)* \_\_\_\_\_

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

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	Baird Oil Company LLC
Well Name	Esther Worcester 5-13
Doc ID	1230026

Tops

Name	Top	Datum
Anhydrite	1786	+373
Base Anhydrite	1817	+342
Topeka	3143	-984
Heebner	3352	-1193
Toronto	3374	-1215
Lansing	3390	-1231
Base Kansas City	3577	-1418
Arbuckle	3654	-1495
Total Depth	3758	-1599



Global Cementing LLC

18048 I-70 Road  
Russell, KS 67665

# Invoice

Date	Invoice #
9/18/2014	1480

Bill To
BAIRD OIL COMPANY LLC PO BOX 428 LOGAN,KS 67646

P.O. No.	Terms	Project
ESTHER WORCH...	Net 30	

Quantity	Description	Rate	Amount
160	COMMON	16.75	2,680.00
6	CALCIUM	59.00	354.00
3	GEL	23.50	70.50
169	HANDLING	2.10	354.90
	BULK MILEAGE	566.15	566.15
1	TRI-PLEX PUMP CHARGE FOR SURFACE	1,250.00	1,250.00
67	PUMP TRUCK MILEAGE	6.50	435.50
67	PICKUP	2.50	167.50
	DEDUCT 15% FROM TOTAL IF PAID WITHIN 30 DAYS OF INVOICE GRAHAM CO	7.15%	0.00
	<p><i>R 9/24/2014</i> <i>P 9/24/2014</i> <i>E Worces 190402 5878.55</i> <i>Esther Worcester 5-13 - Pump charge cement</i> <i>+ other misc. used to cement surface casing</i></p>		

Thank you for your business.

Phone #	Fax #	E-mail
785-324-2658	785-445-3526	

<b>Total</b>	<b>\$5,878.55</b>
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# GLOBAL CEMENTING, L.L.C.

1480

REMIT TO 18048 170RD  
RUSSELL, KS 67665

SERVICE POINT: Russell KS

DATE <u>9-15-14</u>	SEC. <u>Surge B</u>	TWP. <u>7S</u>	RANGE <u>22W</u>	CALLED OUT	ON LOCATION	JOB START	JOB FINISH <u>8:15 PM</u>
LEASE <u>Excheq Wbns</u>	WELL #. <u>5-13</u>	LOCATION			COUNTY <u>Garden Co</u>	STATE <u>KS</u>	
OLD OR NEW (CIRCLE ONE)							

CONTRACTOR W.W. Dullag Rig #72  
 TYPE OF JOB Surface  
 HOLE SIZE 12 3/4 T.D. 221  
 CASING SIZE 4 3/4 DEPTH  
 TUBING SIZE DEPTH  
 DRILL PIPE DEPTH  
 TOOL DEPTH  
 PRES. MAX MINIMUM  
 MEAS. LINE SHOE JOINT  
 CEMENT LEFT IN CSG.  
 PERFS  
 DISPLACEMENT

OWNER  
 CEMENT AMOUNT ORDERED 160 sks con 30cc 2/991

COMMON \_\_\_\_\_ @ \_\_\_\_\_  
 POZMIX \_\_\_\_\_ @ \_\_\_\_\_  
 GEL \_\_\_\_\_ @ \_\_\_\_\_  
 CHLORIDE \_\_\_\_\_ @ \_\_\_\_\_  
 ASC \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 HANDLING \_\_\_\_\_ @ \_\_\_\_\_  
 MILEAGE \_\_\_\_\_ @ \_\_\_\_\_

EQUIPMENT  
 PUMP TRUCK CEMENTER Cody  
 # P1 HELPER Brud  
 BULK TRUCK  
 # B3 DRIVER Mark  
 BULK TRUCK  
 # DRIVER

REMARKS:  
Run 5 joints of 9 3/4 casing + landing joint Esc  
Circulation Holed up pumped 160 sks con  
Circulated cement displaced 12 bbls H2O shu-in  
2ccpsi

CHARGE TO: Baird Oil Co LLC  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

Global Cementing, L.L.C.,  
 You are hereby requested to rent cementing equipment and furnish cementer and helper(s) to assist owner or contractor to do work as is listed. The above work was done to satisfaction and supervision of owner agent or contractor. I have read and understand the "GENERAL TERMS AND CONDITIONS" listed on the reverse side.

PRINTED NAME Cody Dullag  
 SIGNATURE Cody Dullag

TOTAL \_\_\_\_\_  
 SERVICE  
 DEPTH OF JOB \_\_\_\_\_  
 PUMP TRUCK CHARGE \_\_\_\_\_  
 EXTRA FOOTAGE \_\_\_\_\_ @ \_\_\_\_\_  
 MILEAGE \_\_\_\_\_ @ \_\_\_\_\_  
 MANIFOLD \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 TOTAL \_\_\_\_\_

PLUG & FLOAT EQUIPMENT  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 \_\_\_\_\_ @ \_\_\_\_\_  
 TOTAL \_\_\_\_\_

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES \_\_\_\_\_  
 DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS

# SWIFT



P. O. Box 466  
Ness City, KS 67560  
Off: 785-798-2300



## Invoice

DATE	INVOICE #
9/25/2014	26879

BILL TO
Baird Oil Company LLC PO Box 428 Logan, KS 67646

- Acidizing
- Cement
- Tool Rental

TERMS	Well No.	Lease	County	Contractor	Well Type	Well Category	Job Purpose	Operator
Net 30	#5-13	Eshter-Worce...	Graham	WW Drilling	Oil	Development	Cement LongStri...	Don

PRICE REF.	DESCRIPTION	QTY	UM	UNIT PRICE	AMOUNT
575D	Mileage - 1 Way	70	Miles	6.00	420.00
578D-L	Pump Charge - Long String - 3755 Feet	1	Job	1,500.00	1,500.00
221	Liquid KCL (Clayfix)	2	Gallon(s)	25.00	50.00T
280	Flocheck 21	500	Gallon(s)	3.00	1,500.00T
290	D-Air	3	Gallon(s)	42.00	126.00T
402-5	5 1/2" Centralizer	11	Each	70.00	770.00T
403-5	5 1/2" Cement Basket	1	Each	300.00	300.00T
404-5	5 1/2" Port Collar	1	Each	2,900.00	2,900.00T
406-5	5 1/2" Latch Down Plug & Baffle	1	Each	275.00	275.00T
407-5	5 1/2" Insert Float Shoe With Auto Fill	1	Each	375.00	375.00T
411-5	5 1/2" Recipo Scratcher	28	Each	50.00	1,400.00T
326	60/40 Pozmix (2% Gel)	40	Sacks	11.50	460.00T
277	Gilsonite (Coal Seal)	480	Lb(s)	0.75	360.00T
325	Standard Cement	200	Sacks	14.50	2,900.00T
276	Flocele	50	Lb(s)	2.50	125.00T
283	Salt	1,560	Lb(s)	0.20	312.00T
285	CFR-1	94	Lb(s)	4.50	423.00T
581D	Service Charge Cement	240	Sacks	2.00	480.00
583D	Drayage	849.8	Ton Miles	1.00	849.80
	Subtotal				15,525.80
	Sales Tax Graham County			7.15%	877.73

R 10/01/14  
P 9/30/14  
E Worces 190402 16403.53  
Esther Worcester 5-13- pump  
Charge, cement, + misc used  
to cement production casing

**We Appreciate Your Business!**

**Total**

\$16,403.53



CHARGE TO: Brined Oil Co. Inc.  
 ADDRESS: \_\_\_\_\_  
 CITY, STATE, ZIP CODE: \_\_\_\_\_

TICKET 26875  
 PAGE 1 OF 2

SERVICE LOCATIONS  
 1. Hays, KS WEL/PROJECT NO. 5-13 LEASE Esther & Brester COUNTY/PARISH Graham STATE KS CITY \_\_\_\_\_ DATE 9-25-14 OWNER \_\_\_\_\_  
 2. Ness City, KS WEL/PROJECT NO. \_\_\_\_\_ CONTRACTOR \_\_\_\_\_ RIG NAME/NO. #12 SHIPPED VIA N/Bogue, KS ORDER NO. \_\_\_\_\_  
 3. \_\_\_\_\_ WEL TYPE Dil WEL CATEGORY infield JOB PURPOSE Cement Longstring WEL PERMIT/NO. \_\_\_\_\_ WEL LOCATION \_\_\_\_\_  
 4. \_\_\_\_\_ INVOICE INSTRUCTIONS \_\_\_\_\_

PRICE REFERENCE	SECONDARY REFERENCE/PART NUMBER	LOC	ACCT	DF	DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
575		1			MILEAGE # 113	70	mi			600	4200
578		1			Pump Charge - CWT Longstring	1 ea		3755	ft.	1500	1500
221		1			Liquid KCL	2	gal			2500	5000
280		1			Flackcheck 21	50	gal			300	15000
290		1			D-Air	3	gal			4200	12600
102		1			Centrainers	11	ea	5 1/2	in	7000	77000
423		1			Cement Basket	1	ea	5 1/2	in	30000	30000
424		1			Port Collar	1	ea	5 1/2	in	29000	29000
416		1			Latex Drive Plug & Bolt	1	ea	5 1/2	in	27500	27500
417		1			Insert Floater w/ Auto Fill	1	ea	5 1/2	in	37500	37500
411		1			Recipe Scratchers	28	ea	5 1/2	in	5000	140000

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY provisions.  
 MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

DATE SIGNED 9-25-14 TIME SIGNED 1700  A.M.  P.M.

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY  
 OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?  
 WE UNDERSTOOD AND MET YOUR NEEDS?  
 OUR SERVICE WAS PERFORMED WITHOUT DELAY?  
 WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?  
 ARE YOU SATISFIED WITH OUR SERVICE?  
 CUSTOMER DID NOT WISH TO RESPOND

Sub total 1552518  
 P.1 PAGE TOTAL 96160  
 P.2 PAGE TOTAL 590918  
 TOTAL 16,403

Graham TAX 7.15% 877

APPROVAL Richard Bell Thank You





Switzer, Inc.

PO Box 466

Ness City, KS 67560

Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 26879

CUSTOMER Baird Oil Co. Inc.

WELL 5-13 Esterline

DATE 9-25-14 PAGE 2 OF 2

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	WELL		UNIT PRICE	AMOUNT		
		LOC	ACCT	DF			QTY.	UM			QTY.	UM
326		2				60/40 Bzmix (296 Sel)	40	SKS	3896	lbs	1150	46000
279		2				Gilsonite	482	lbs			75	36000
325		2				Standard Cement	200	SKS	18200	lbs	1450	290000
276		2				Elsco 1/4" SKS	50	lbs			250	12500
283		2				Salt 18%	1560	lbs			20	31200
285		2				CER-1 1/2%	94	lbs			450	42300
581		2				Cement	248	SKS			200	48000
583		2					70		819.8		100	81980
						MILEAGE CHARGE						
						TOTAL WEIGHT						
						LOADED MILES						
						CUBIC FEET						
						TON MILES						
						CONTINUATION TOTAL						5909.88

JOB LOG

SWIFT Services, Inc.

DATE 9-25-14 PAGE NO. 1

CUSTOMER Baird Oil Co. Inc. WELL NO. 5-13 LEASE Estcer Worcester JOB TYPE Cement Longstring TICKET NO. 26879

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	1330					14#/ft. 5 1/2"		TD 3758' On location - Float Equip. - Rig L.D.D.P Put on Recipio Scratcher (28 each) 5 1/2"
	1715							Start 5 1/2" - 14#/ft. casing to 3755' ? Insert float shoe w/ Auto-fill L.D. Baffle - 55 - 20 1/2" = 3734 1/2" = (91 BBL) Cent - 1 thru 10 x #45' Cmt Basket #46 Pin end Port Collar #46 @ 1822' Drop fill-up ball
	1900							Fin casing - Tag - Lay It Down 8' off Bottom
	1915							start circ / Recipitate - Desco and Fin circ Plug RH 30 SRS 60/40 Pbz
			8					
		5	10					
		5	12			200		Pump 10 BBL KCL flush
		5	10			200		Pump 500 gal Flock-21
						200		Pump 10 BBL KCL flush
			10			200		Start 60/40 Pbz scavenger
						100		Start 200 Class A, 18% Salt, 1/2% CFI
						100		and 1/4 #1/8 floccs
			43			100		Fin cmt. Wash out pump & lines Drop L.D. Plug
		8				250		Start Disp 1
		7				350		Caught lift press - slow rate
		6/5				500 600		slow rate
			90			1000		Press - last circ
	2100		91			1500		Plug Down - Held - Release & Held
								Thanks Alan - Jon - Craig & Steve Wash up & Rakeup

# SWIFT



P. O. Box 466  
Ness City, KS 67560  
Off: 785-798-2300



## Invoice

DATE	INVOICE #
9/30/2014	26806

BILL TO
Baird Oil Company LLC PO Box 428 Logan, KS 67646

- Acidizing
- Cement
- Tool Rental

TERMS	Well No.	Lease	County	Contractor	Well Type	Well Category	Job Purpose	Operator
Net 30	#5-13	Esther-Worce...	Graham	Ace Well Service	Oil	Development	Port Collar	Nick
PRICE REF.	DESCRIPTION				QTY	UM	UNIT PRICE	AMOUNT
575D	Mileage - 1 Way				70	Miles	6.00	420.00
576D-D	Pump Charge - Port Collar - 1810 Feet				1	Job	1,500.00	1,500.00
290	D-Air				2	Gallon(s)	42.00	84.00T
105	Port Collar Tool Rental With Man				1	Each	350.00	350.00T
107	Stripper Head Rental Per Day				1	Each	250.00	250.00T
330	Swift Multi-Density Standard (MIDCON II)				200	Sacks	18.50	3,700.00T
276	Flocele				50	Lb(s)	2.50	125.00T
581D	Service Charge Cement				200	Sacks	2.00	400.00
583D	Drayage				684.5	Ton Miles	1.00	684.50
	Subtotal							7,513.50
	Sales Tax Graham County						7.15%	322.39
	<p style="text-align: center;">R10/7/2014 P9/30/2014</p> <p>E worces 190402 7460.86</p> <p>Esther worcester 5-13- Pump charge, cement tother misc. expenses used to cement port collar</p> <p>E worces 190402 375.03</p> <p>Esther worcester 5-13- Rental of port collar + man when cementing port collar</p>							

**We Appreciate Your Business!**

**Total**

\$7,835.89



CHARGE TO: Baird Oil Co.  
 ADDRESS:  
 CITY, STATE, ZIP CODE:

TICKET 26806

PAGE 1 OF 1

SERVICE LOCATIONS  
 1. Hays, KS  
Ness City, KS

WELL/PROJECT NO. #5-13 LEASE Ester-Master COUNTY/PARISH Graham STATE KS DATE 9-30-14 OWNER same

TICKET TYPE  SERVICE  SALES CONTRACTOR Acc Well Service RIG NAME/NO. CT location ORDER NO.

WELL TYPE oil WELL CATEGORY Development JOB PURPOSE Part Collar WELL PERMIT NO. WELL LOCATION

INVOICE INSTRUCTIONS

PRICE REFERENCE	SECONDARY REFERENCE/PART NUMBER	LOC	ACCT	DF	DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
575		1			MILEAGE #110	20	mi			20.00	420.00
576 D		1			Paup Charge (Part Collar)	1	eq	1870		1500.00	1500.00
290		1			D-Air	2	gal			42.00	84.00
105		1			Part Collar Tool Rental/plymer	1	ea			350.00	350.00
107		2			Stripper Head Rental	1	ea			250.00	250.00
330		2			SMD Cement	200	sk5			18.50	3700.00
276		2			Fleecels	50	#			2.50	125.00
581		2			Cement Service Charge	200	sk5			2.00	400.00
583		2			Drayage	684.5	VM1			1.00	684.50

LEGAL TERMS: Customer hereby acknowledges and agrees to the terms and conditions on the reverse side hereof which include, but are not limited to, PAYMENT, RELEASE, INDEMNITY, and LIMITED WARRANTY provisions.

REMIT PAYMENT TO:  
 SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

MUST BE SIGNED BY CUSTOMER OR CUSTOMER'S AGENT PRIOR TO START OF WORK OR DELIVERY OF GOODS

DATE SIGNED 9-30-14 TIME SIGNED 1230  AM  PM

SWIFT SERVICES, INC.  
 P.O. BOX 466  
 NESS CITY, KS 67560  
 785-798-2300

SURVEY

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?

WE UNDERSTOOD AND MET YOUR NEEDS?

OUR SERVICE WAS PERFORMED WITHOUT DELAY?

WE OPERATED THE EQUIPMENT AND PERFORMED JOB CALCULATIONS SATISFACTORILY?

ARE YOU SATISFIED WITH OUR SERVICE?  YES  NO

CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL 7513 5

Graham TAX 7.15%

TOTAL 7835.8

CUSTOMER ACCEPTANCE OF MATERIALS AND SERVICES The customer hereby acknowledges receipt of the materials and services listed on this ticket.

SWIFT OPERATOR Gibb APPROVAL Gibb

Thank You

JOB LOG

SWIFT Services, Inc.

DATE 9-30-14 PAGE NO. 1

CUSTOMER Baird Oil Co WELL NO. #5-13 LEASE Ester Waaster JOB TYPE Part Cellar TICKET NO. 20806

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0900							on loc w/ Tool
								2 3/8" x 5 1/2"
								P.C. 1810'
								TIH w/ Tool
								Locate P.C.
								Test Csg Nipple leaking
								swap out Heads
	1050					1000		Test Csg to 1000 Psi
								Open P.C.
	1100	4	3			350		Take rate & check blow
	1105	5	0			400		start 80 bbl mud
	1120	5	80/0			400		start wtr
	1124	5	5/0			400		Start Cement
	1136	5	95			400		Raise weight/circ cement
	1137	5	100/0			400		End Cement / Start Displacement
	1138		6					Cement Displaced
								Close PC
	1145							Test Csg to 1000 Psi
								Run 5jts
	1200	3	0			200		Reverse out
	1205		15					Hold Clean
								200 sks SMD
								circ 20 sks to pit

APT # 15-065-24064-00-00

**GEOLOGICAL REPORT**  
 DRILLING TIME AND SAMPLE LOG

COMPANY Baird Oil Company, LLC.  
 LEASE Esther Worcester #5-13  
 FIELD Worcester East  
 LOCATION 2270' FSL + 620' FEL  
 SEC 13 TWSP 75 RGE 22W  
 COUNTY Graham STATE Kansas

ELEVATION  
 KB 2159'  
 DF 2157'  
 GL 2151'  
 Depths Measured From  
 Log KB Drilling KB

CONTRACTOR W.W. Drilling Rig #12  
 SPUD 9-19-14 COMP 9-25-14  
 SAMPLES SAVED FROM 3100' TO R.T.D

CASING  
 Surface 852' @ 214'  
 Production 52'

ELECTRIC LOGS  
Nabors

FORMATION TOPS AND STRUCTURAL POSITION

FORMATION	SAMPLE	E. LOG	DATE #/log	A	B	C	D
Anhydrite	1789	1786 +	373	+ 373	+ 381		
Base Anhydrite	1821	1817 +	342	+ 342	+ 350		
Topeka	3146	3143 -	984	- 985	- 983		
Heebner	3356	3352 -	1193	- 1193	- 1193		
Taranto	3378	3374 -	1215	- 1219	- 1214		
Lansing	3394	3390 -	1231	- 1230	- 1230		
Base Kansas City	3583	3577 -	1418	- 1420	- 1420		
Arbuckle	3660	3654 -	1495	- 1507	- 1506		
Total Depth	3764	3758 -	1599	- 1539	- 1574		

REFERENCE WELLS

A Baird Oil Co. LLC. Esther Worcester #1-13, 2150' FSL + 880' FEL Sec 18-75-22W  
 B  
 C  
 D Post Collar @ 1818'

REMARKS

The favorable structural position along with encouraging results on DST's warranted the cementing of production casing to further test this well. The intervals from 3668'-3676' and 3654'-3665' should be tested.

Richard B. Hall  
9-26-14

7502

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" 20" 25"



DEPTH  
1780  
1800

LITHOLOGY

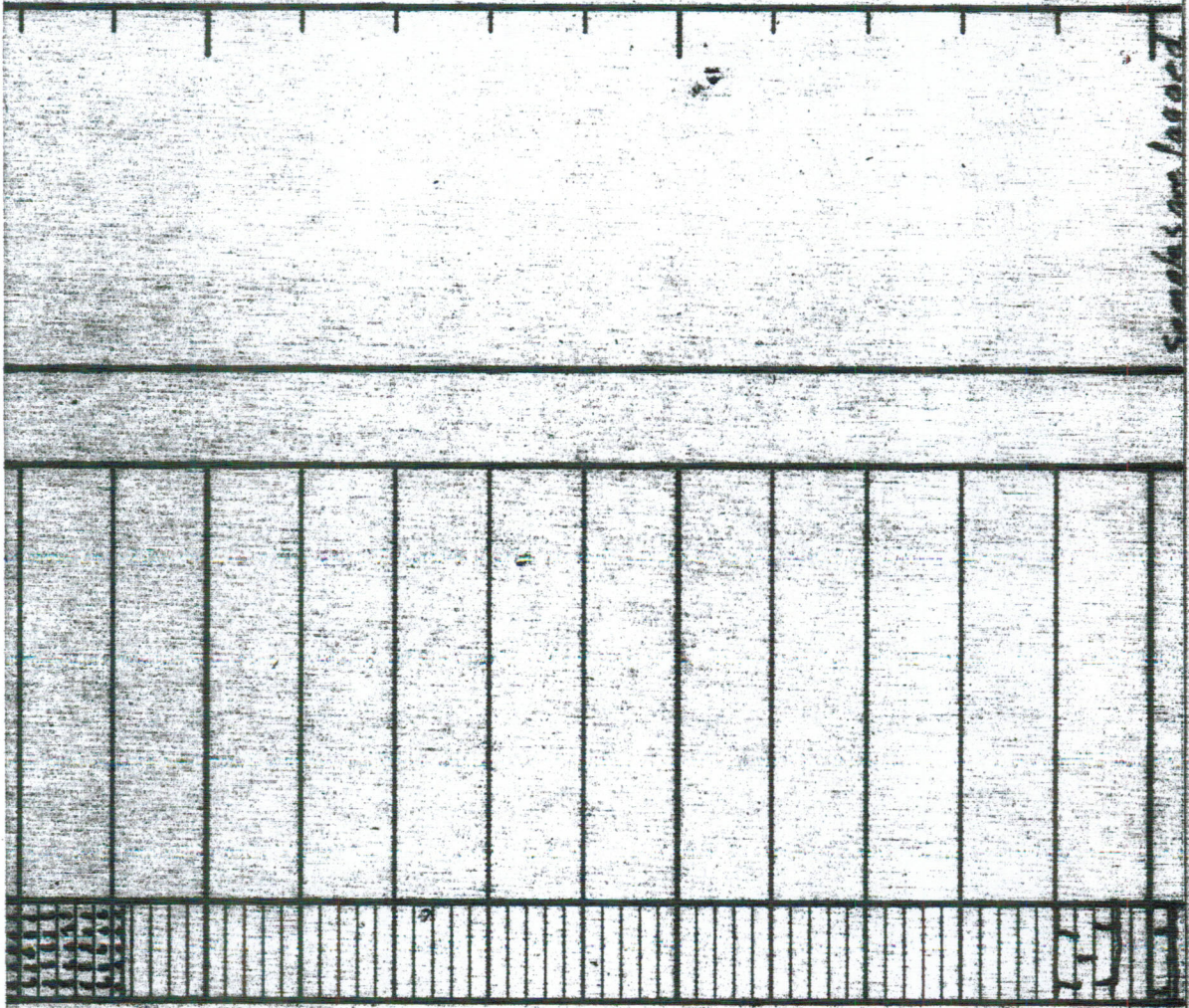
SAMPLE DESCRIPTIONS

OIL SHOWS

REMARKS

LOG 7710

Smithsonian Institution

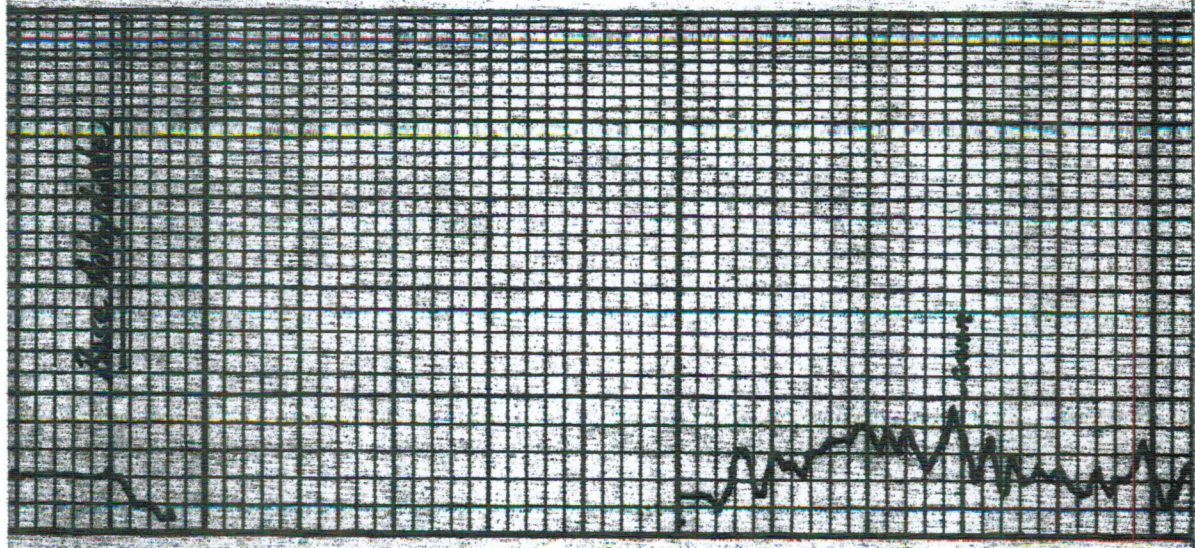


1820

3000

20

40





good samples

15ft - gray silt + b. d. v. d. s.
15 in sh: gray + b. m.
sh: gray
15: gray silt d. m.
15: sh - gray silt d. m.
sh: gray silt + b. m.
sh: gray silty
15: sh - gray silt d. m. sh: b. m. silty
15: sh - gray silt d. m.
15: sh - gray silt d. m. sh: b. m. silty
sh: gray
15: sh - gray silt d. m.

60

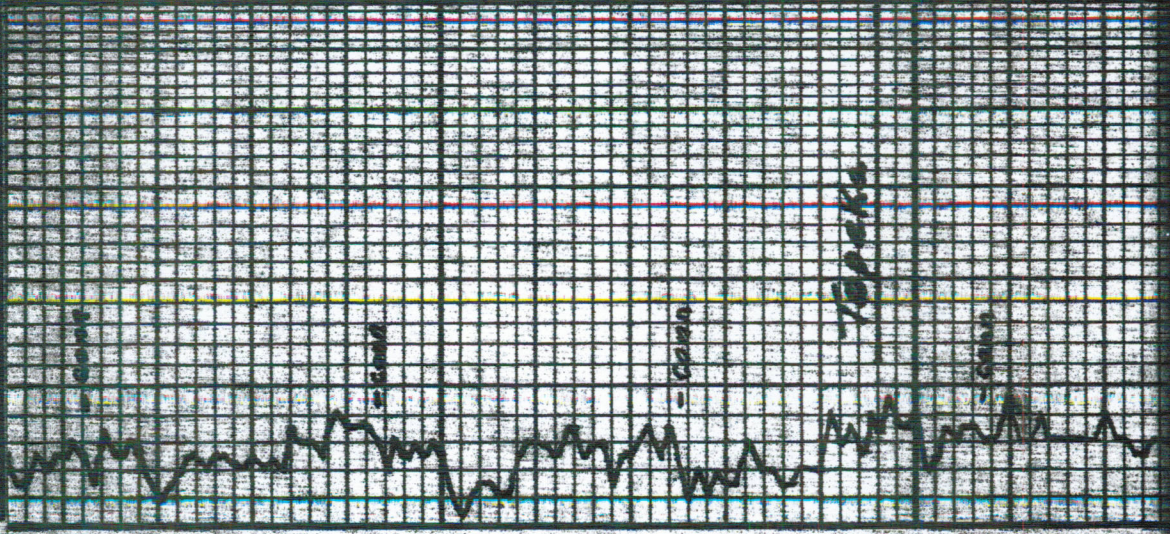
80

3100

20

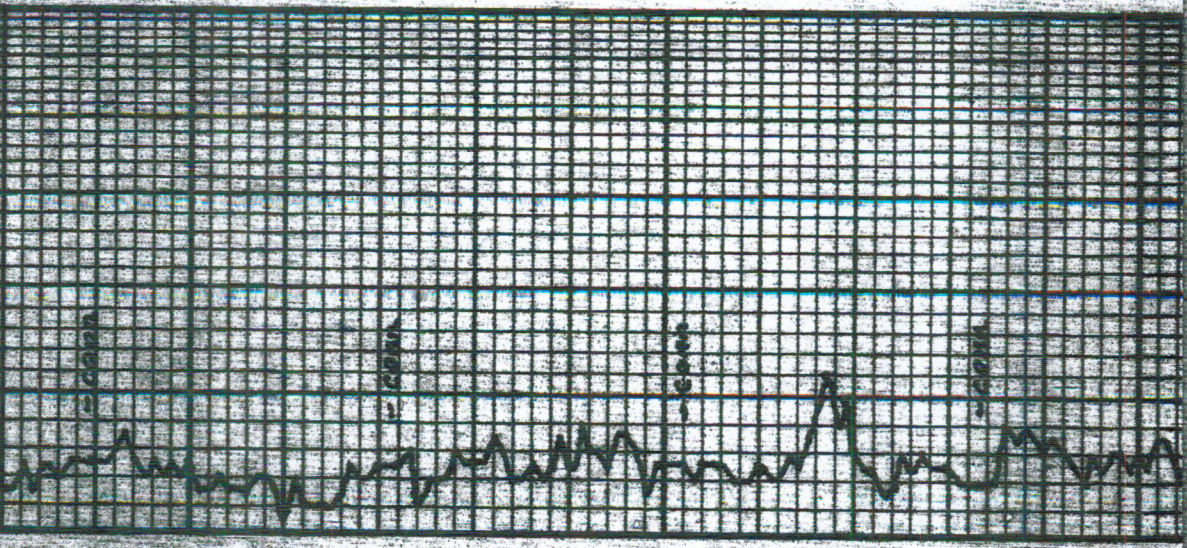
40

60



15: in fela. sh. sl. sil w/ feld. incl. pp & N.S.O.	sh: yn silty & gryshy	15: in ch. fela. fela. fely sil pp & N.S.O.	15: in ch. sh. ch. - fela. sil w/ feld. incl. pp & N.S.O. sh: yn silty & gryshy	15: in ch. fela. sh. sl. sil dos	sh: blk carb 15: in ch. sh. fela. dos	sh: brn, gry & grn 15: in ch. sh. fela. dos ingm. N.S.O.	sh: brn silty	15: in ch. fela. dos & sh	15: in ch. sh. fela. dos
--	-----------------------	--	---	-------------------------------------	--	--	---------------	---------------------------	--------------------------

3200  
20  
40  
60  
80  
3300



Board 3442.08  
 Stop 3441.57  
 Diff. .51  
 Inclined 3432' 34'

Trilobite Testing  
 25701 3418' 3482'  
 46-45 -45-45  
 25' with blue incl. to 1 1/4"  
 FF: not blue incl. to 2 1/4"

50' alk carb.

15' wh. to ch. ch. fish ppd -  
 sh. grey 616' 2 sps  
 N.E.O. no other

15' wh. to grey ch. fish  
 dns. n.s.o.

15' tan & dk. grey fish  
 sh. blk carb  
 15' to fish dns

sh. grey + ben

15' wh. to sh. ch. fish  
 dns & sh. ben n.s.o.

sh. ben

15' wh. to sh. ch. fish  
 sh. grey - 500' 2 sps  
 ppd n.s.o. 4' 2 wh

15' wh. to sh. ch. fish dns  
 sh. & th

15' grey mtl 15' dns  
 sh. ben & grey

15' wh. to ch. fish Trilob

20

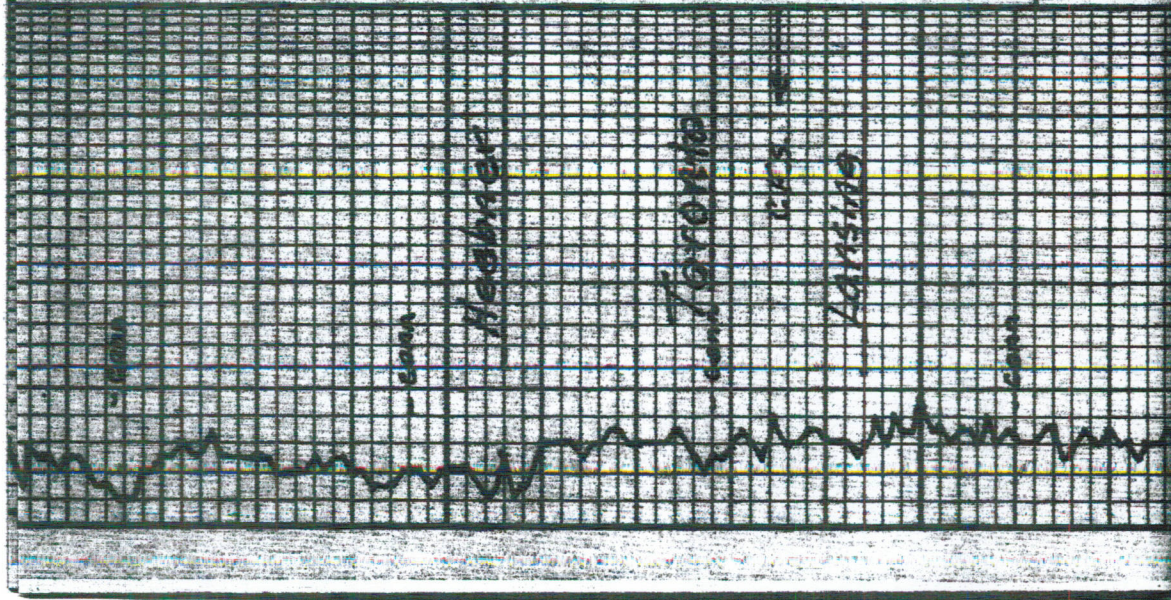
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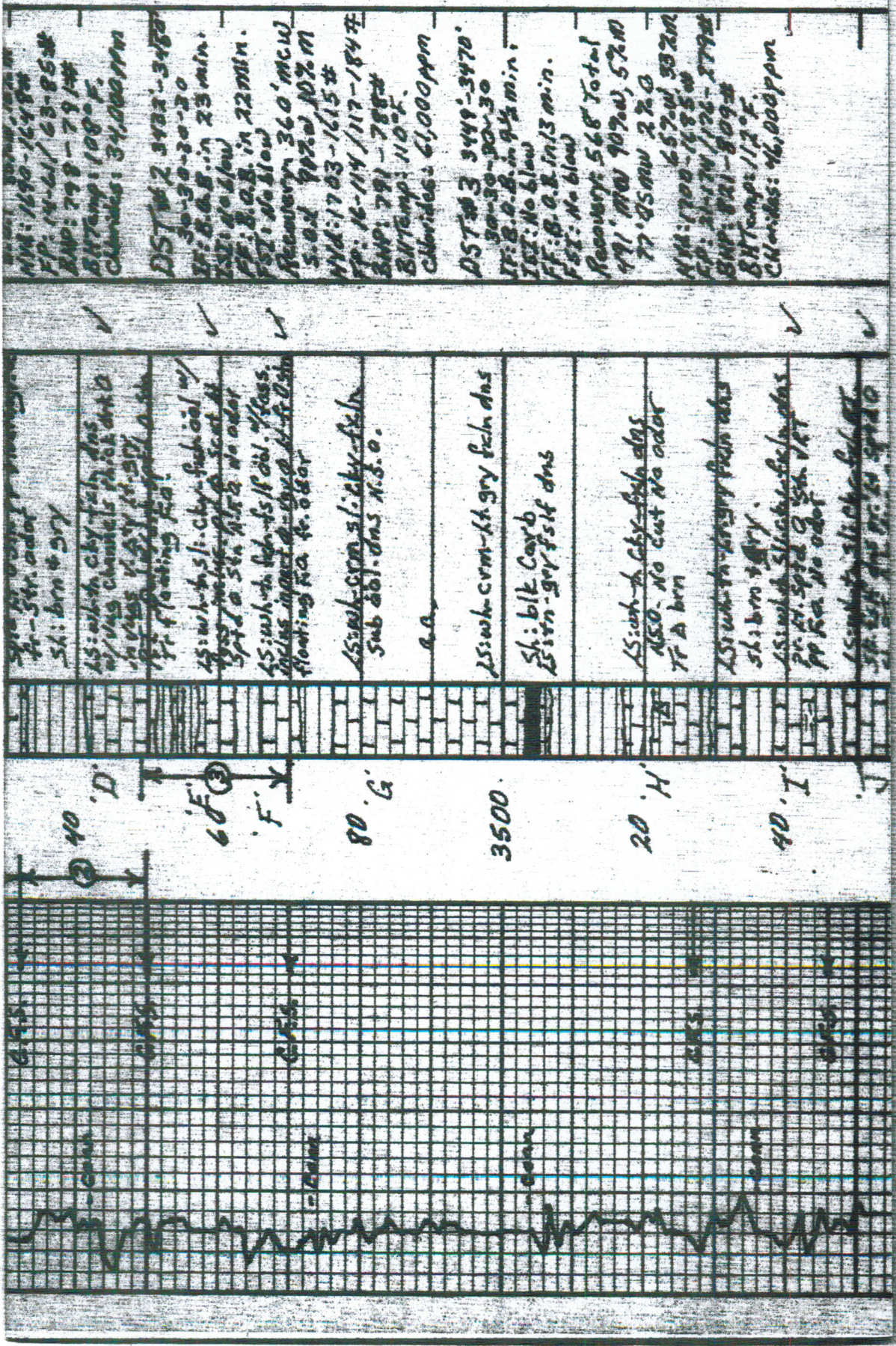
60

80

3400' A

20





40  
 sh. brn & gry  
 ls. wh. ch. ch. fish dms  
 w/ins channels pink dms  
 in vms. v. gry. v. gry.  
 pr. floating fa.

60  
 ls. wh. sl. ch. fish oil w/  
 ins. impact dms. float. fa.  
 5 ft d. 5 in. w. 2. No odor

80  
 ls. wh. crm. sl. ch. fish  
 sub dol. dms. n.s.o.

3500  
 ls. wh. crm. lt. gry fish dms  
 sh. blk carb  
 ls. crm. gry fish dms

20  
 ls. wh. ch. ch. fish dms  
 n.s.o. No cut No odor  
 Fr A brn

40  
 ls. wh. crm. sl. ch. fish dms  
 sh. brn & gry.  
 ls. wh. ch. ch. fish dms  
 pr. fr. spid. 3 in. v. fr.  
 pr. fr. No odor

ls. wh. crm. sl. ch. fish dms  
 pr. fr. spid. 3 in. v. fr.  
 pr. fr. No odor

118: 1490-1648#  
 FP: 14-11/63-85#  
 BNP: 799-791#  
 BHTemp: 108°F  
 Chlorides: 34,000ppm

DST#2 3422-3480  
 30-30-20-20  
 FF: B.O.B. in 23 min.  
 FF: No blow  
 FF: B.O.B. in 22 min.  
 FF: No blow  
 Recovery: 360' MCW  
 5.0d 99%w 10% m  
 Hyd: 1703-1615#

114: 1114/117-184#  
 FP: 791-788#  
 BHTemp: 110°F  
 Chlorides: 6,000ppm

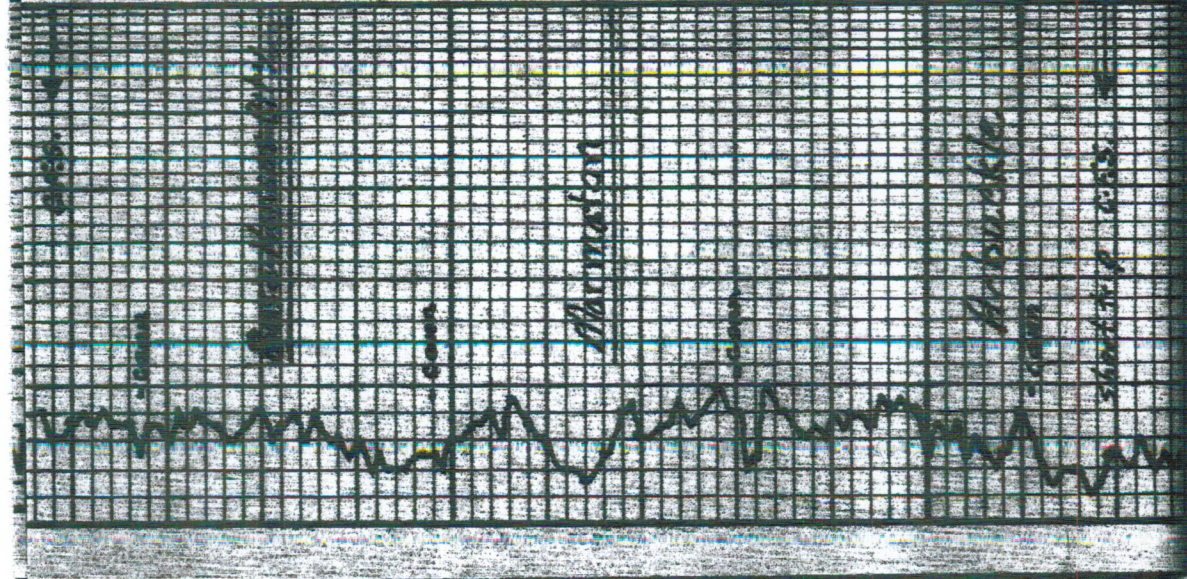
DST#3 3449-3470  
 30-30-30-30  
 FF: B.O.B. in 9 1/2 min.  
 FF: No blow  
 FF: B.O.B. in 13 min.  
 FF: No blow  
 Recovery: 568' Total  
 191' MCW 90%w, 5% m  
 77' 85mw 2% o  
 Hyd: 1700-1685#

117: 1170/126-179#  
 BNP: 821-809#  
 BHTemp: 112°F  
 Chlorides: 46,000ppm

118: 1180-1685#  
 FP: 821-809#  
 BHTemp: 112°F  
 Chlorides: 46,000ppm

119: 1190-1685#  
 FP: 821-809#  
 BHTemp: 112°F  
 Chlorides: 46,000ppm

120: 1200-1685#  
 FP: 821-809#  
 BHTemp: 112°F  
 Chlorides: 46,000ppm



60 'K  
 90 L  
 3600  
 20  
 40  
 60

Sh: brn + gry	LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn s/ky	LS: w/ sh. ch. - f. ch. ds. n.s.o.
LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn + gry	LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn + gry
LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.
Sh: brn	LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn	LS: w/ sh. ch. - f. ch. ds. n.s.o.
LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn + gry	LS: w/ sh. ch. - f. ch. ds. n.s.o.	Sh: brn + gry
LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.
LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.
LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.
LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.	LS: w/ sh. ch. - f. ch. ds. n.s.o.

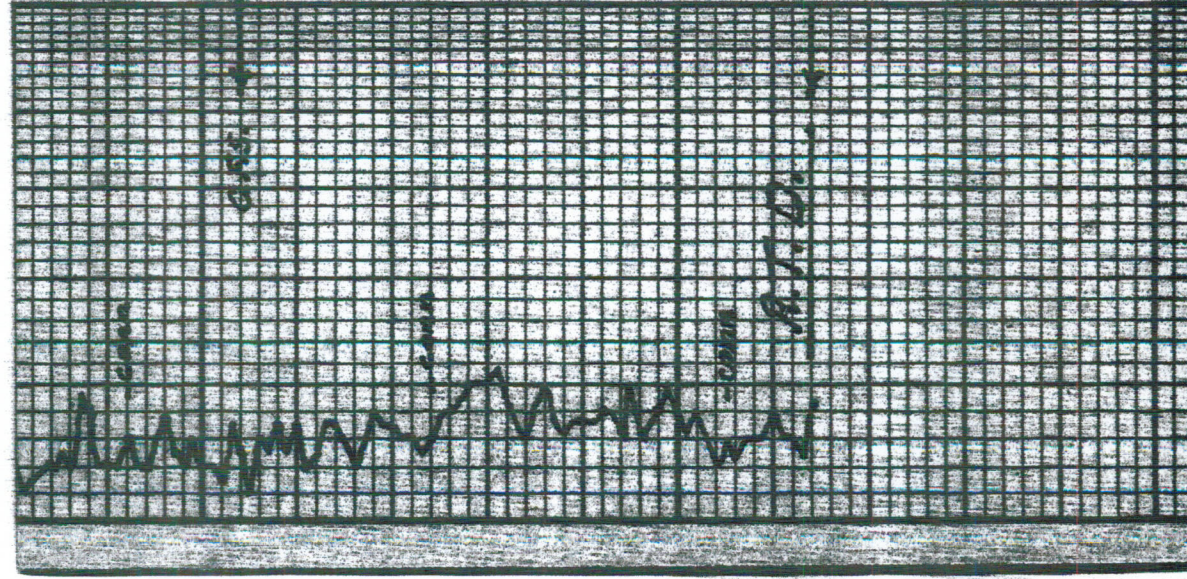
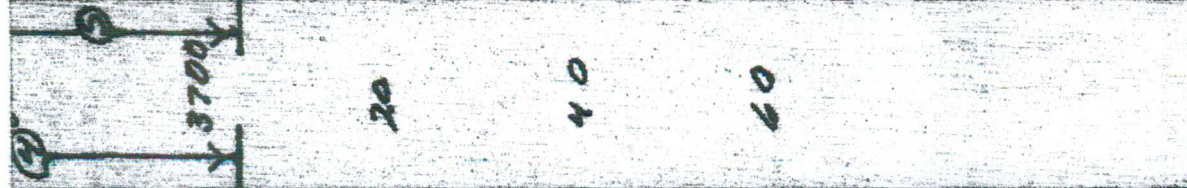
Sh: brn + gry  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn s/ky  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn + gry  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn + gry  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn + gry  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.  
 Sh: brn + gry  
 LS: w/ sh. ch. - f. ch. ds. n.s.o.

DST #4 3660'-3704'  
 Meter - ran  
 Packer Failed

DST #5 3672'-3704'  
 15-16-45-45  
 15-16-45-45  
 15-16-45-45  
 15-16-45-45  
 15-16-45-45  
 15-16-45-45

367. Tab. I fluid  
 243 mo 1570, 362M  
 124, CA  
 MW: 1837-1763#  
 FP: 12-10/12-153#  
 SWP: 243-238#  
 EXT: 1137  
 Gravity: 28° A.P.I.

no. odor	
Pol: 4 5th ac fr. glauc spks odor ac lot of floating R.O. v310	
Pol: in ph-bls-mch fr. v310 fr. oil sub incr barren dol.	
ac. decr 5th	
Pol: white fish-mch dns	
Pol: white fish-mch in v310 glauc spks fr 5th 0.5th odor 5th 5th embedded	
Pol: in ph-yel fish-mch dns N.S.G.	



A.T.D.



## DRILL STEM TEST REPORT

Prepared For: **Baird Oil Company LLC**

113 W Main Box 428  
Logan KS 67646

ATTN: Richard Bell

**13-7s-22w Graham,KS**

**Esther Worcester #5-13**

Start Date: 2014.09.22 @ 04:19:00

End Date: 2014.09.22 @ 11:25:00

Job Ticket #: 56141                      DST #: 1

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

Printed: 2014.09.29 @ 14:59:32



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56141

**DST#: 1**

Test Start: 2014.09.22 @ 04:19:00

## GENERAL INFORMATION:

Formation: **LKC " C "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:26:45

Time Test Ended: 11:25:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

**Interval: 3412.00 ft (KB) To 3432.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3432.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8289 Outside**

Press@RunDepth: 85.70 psig @ 3414.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.22

End Date:

2014.09.22

Last Calib.:

2014.09.22

Start Time: 04:19:02

End Time:

11:25:15

Time On Btm:

2014.09.22 @ 06:26:30

Time Off Btm:

2014.09.22 @ 09:26:30

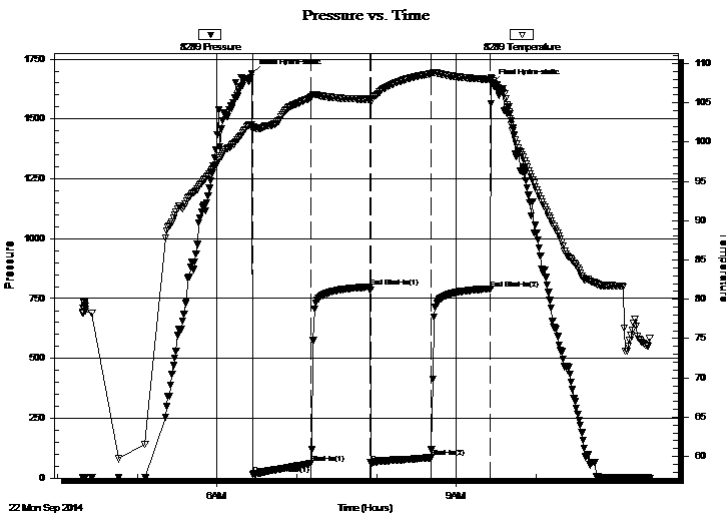
**TEST COMMENT:** 45-IFP- Surface Blow Building to 1 1/4" In 14 min. Died Back in 40 min.

45-ISIP- No Blow

45-FFP- Surface Blow in 2 min. Building to 2 1/4"

45-FSIP- No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1690.69	102.23	Initial Hydro-static
1	14.53	101.61	Open To Flow (1)
45	61.51	105.73	Shut-In(1)
89	798.35	105.45	End Shut-In(1)
89	63.77	105.07	Open To Flow (2)
135	85.70	108.70	Shut-In(2)
180	791.28	107.95	End Shut-In(2)
180	1648.17	108.11	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
140.00	MCW 15% m 85% w Show of Oil	0.88

## Gas Rates

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





TRILOBITE  
TESTING, INC.

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56141 **DST#: 1**

ATTN: Richard Bell

Test Start: 2014.09.22 @ 04:19:00

## GENERAL INFORMATION:

Formation: **LKC " C "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:26:45

Time Test Ended: 11:25:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Jim Svaty

Unit No: 76

Interval: **3412.00 ft (KB) To 3432.00 ft (KB) (TVD)**

Total Depth: 3432.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2159.00 ft (KB)

2152.00 ft (CF)

KB to GR/CF: 7.00 ft

**Serial #: 8789**

Inside

Press@RunDepth: psig @ 3414.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.22 End Date: 2014.09.22

Last Calib.: 2014.09.22

Start Time: 04:19:02 End Time: 11:25:00

Time On Btm:

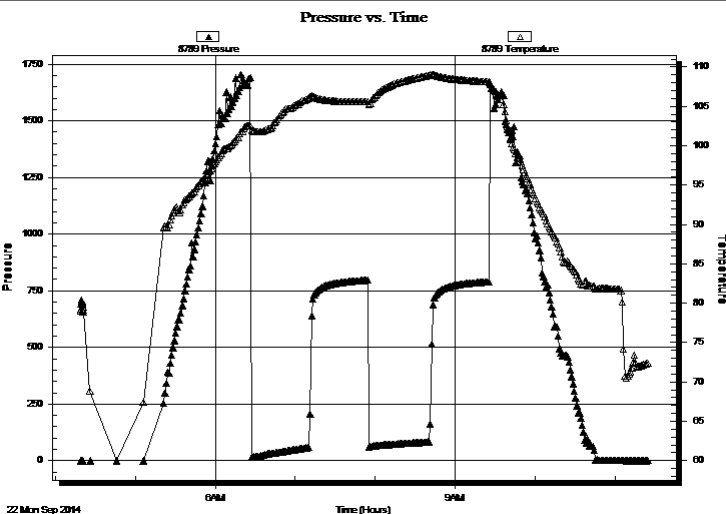
Time Off Btm:

TEST COMMENT: 45-IFP- Surface Blow Building to 1 1/4" In 14 min. Died Back in 40 min.

45-ISIP- No Blow

45-FFP- Surface Blow in 2 min. Building to 2 1/4"

45-FSIP- No Blow



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
140.00	MCW 15% m 85% w Show of Oil	0.88

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56141

**DST#: 1**

Test Start: 2014.09.22 @ 04:19:00

## Tool Information

Drill Pipe:	Length: 3294.00 ft	Diameter: 3.80 inches	Volume: 46.21 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 46.80 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3412.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	41.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3392.00	
Shut In Tool	5.00			3397.00	
Hydraulic tool	5.00			3402.00	
Packer	5.00			3407.00	21.00 Bottom Of Top Packer
Packer	5.00			3412.00	
Stubb	1.00			3413.00	
Perforations	1.00			3414.00	
Recorder	0.00	8789	Inside	3414.00	
Recorder	0.00	8289	Outside	3414.00	
Blank Spacing	15.00			3429.00	
Bullnose	3.00			3432.00	20.00 Bottom Packers & Anchor

**Total Tool Length: 41.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56141

**DST#: 1**

ATTN: Richard Bell

Test Start: 2014.09.22 @ 04:19:00

### 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:

34000 ppm

Viscosity: 62.00 sec/qt

Cushion Volume:

bbf

Water Loss: 6.75 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1000.00 ppm

Filter Cake: inches

### Recovery Information

#### Recovery Table

Length ft	Description	Volume bbf
140.00	MCW 15% m 85% w Show of Oil	0.880

Total Length: 140.00 ft      Total Volume: 0.880 bbf

Num Fluid Samples: 0

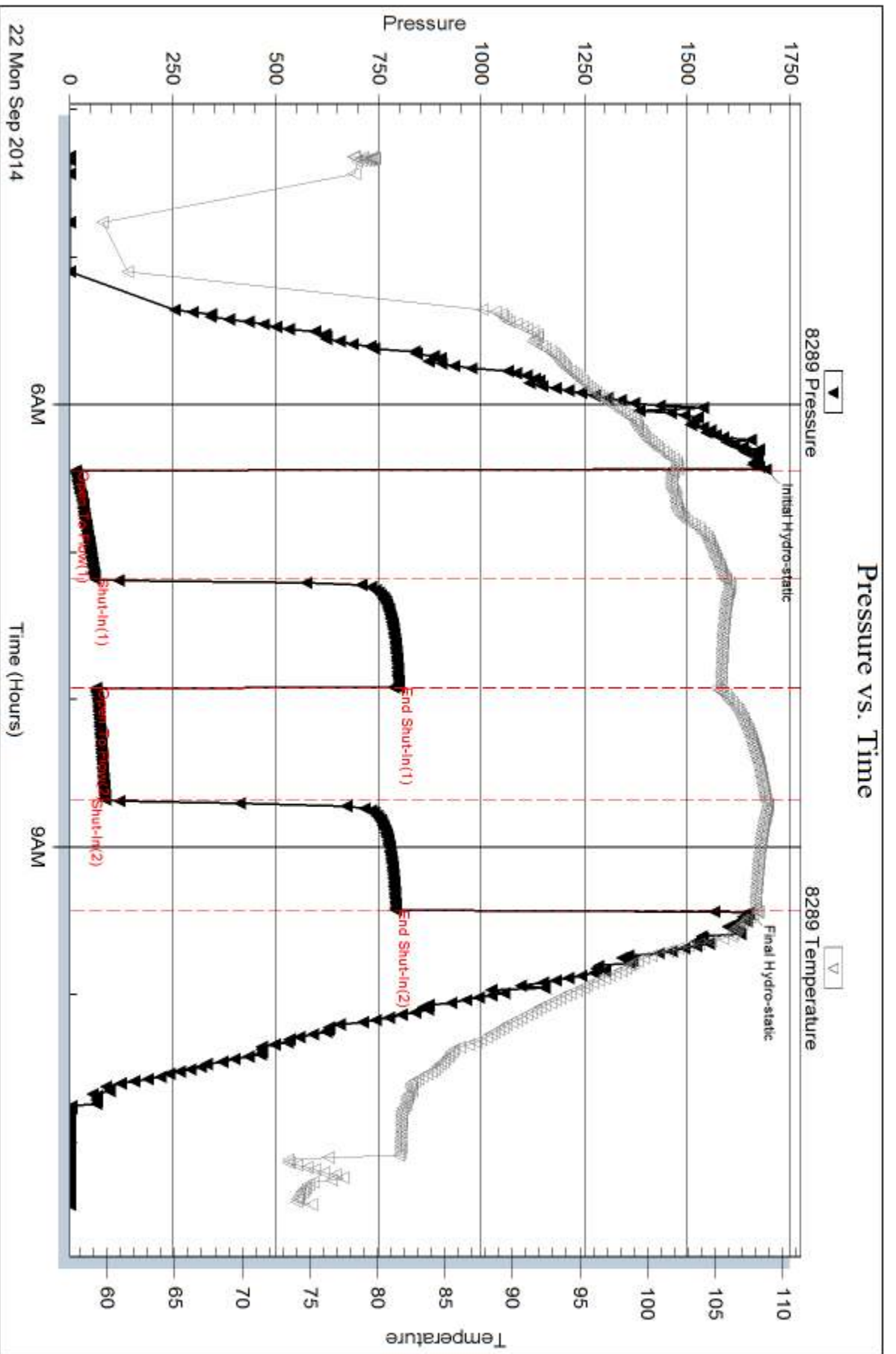
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .200 @ 73



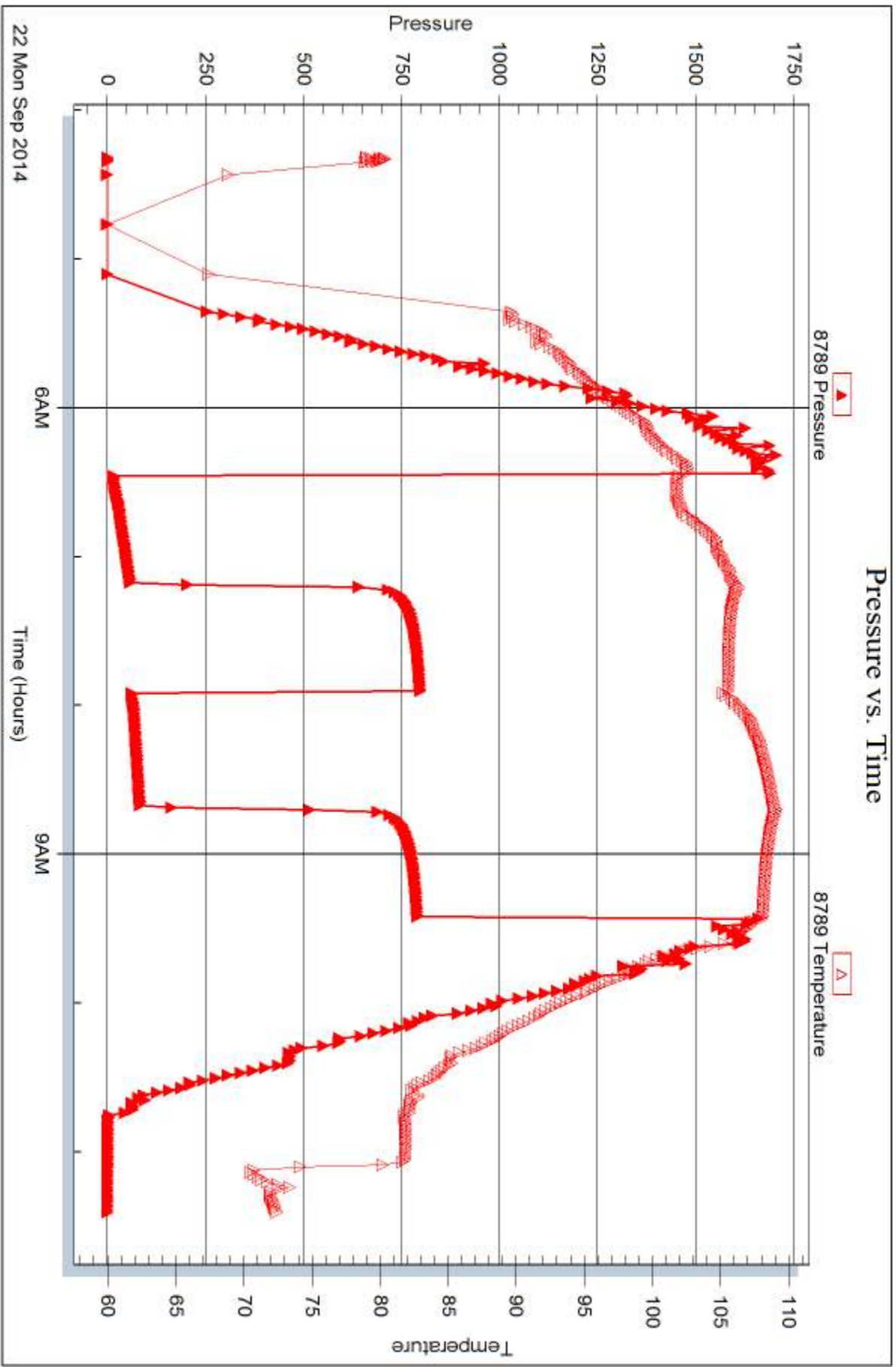
Serial #: 8789

Inside

Baird Oil Company LLC

13-7s-22w Graham,KS

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 56141

Printed: 2014.09.29 @ 14:59:33



## DRILL STEM TEST REPORT

Prepared For: **Baird Oil Company LLC**

113 W Main Box 428  
Logan KS 67646

ATTN: Richard Bell

**13-7s-22w Graham,KS**

**Esther Worcester #5-13**

Start Date: 2014.09.22 @ 17:24:00

End Date: 2014.09.22 @ 23:56:00

Job Ticket #: 56142                      DST #: 2

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

Printed: 2014.09.29 @ 14:59:05

Baird Oil Company LLC

Esther Worcester #5-13

13-7s-22w Graham,KS

DST # 2

LKC " D "

2014.09.22



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56142

**DST#: 2**

Test Start: 2014.09.22 @ 17:24:00

## GENERAL INFORMATION:

Formation: **LKC " D "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:40:30

Time Test Ended: 23:56:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3432.00 ft (KB) To 3450.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8289 Outside**

Press@RunDepth: 184.35 psig @ 3434.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.22

End Date:

2014.09.22

Last Calib.:

2014.09.22

Start Time: 17:24:02

End Time:

23:56:00

Time On Btm:

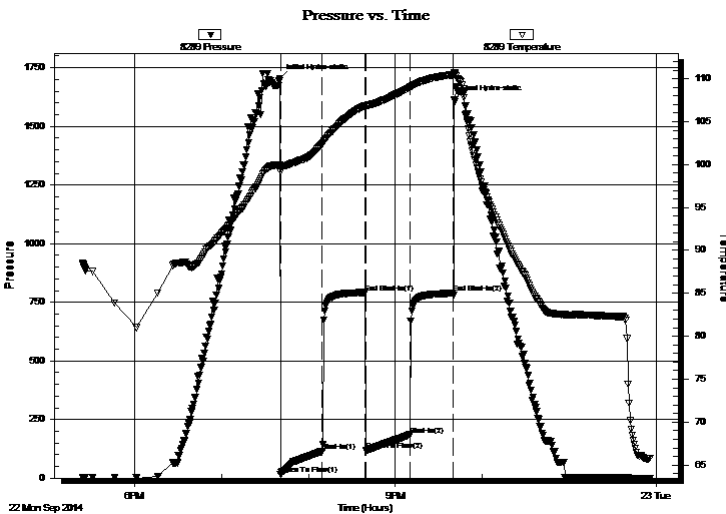
2014.09.22 @ 19:40:15

Time Off Btm:

2014.09.22 @ 21:40:45

**TEST COMMENT:** 30-IFP- BOB in 23 min.  
30-ISIP- No Blow  
30-FFP- BOB in 22 min.  
30-FSIP- No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1703.02	99.98	Initial Hydro-static
1	16.87	99.15	Open To Flow (1)
30	114.99	102.40	Shut-In(1)
59	791.84	106.88	End Shut-In(1)
60	117.76	106.70	Open To Flow (2)
90	184.35	108.93	Shut-In(2)
120	788.43	110.45	End Shut-In(2)
121	1615.53	110.74	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
360.00	MCW 10% m 90% w	3.97

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56142

**DST#: 2**

ATTN: Richard Bell

Test Start: 2014.09.22 @ 17:24:00

### GENERAL INFORMATION:

Formation: **LKC " D "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 19:40:30

Time Test Ended: 23:56:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3432.00 ft (KB) To 3450.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3450.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

### Serial #: 8789

Inside

Press@RunDepth: psig @ 3434.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.22

End Date:

2014.09.22

Last Calib.:

2014.09.22

Start Time: 17:24:02

End Time:

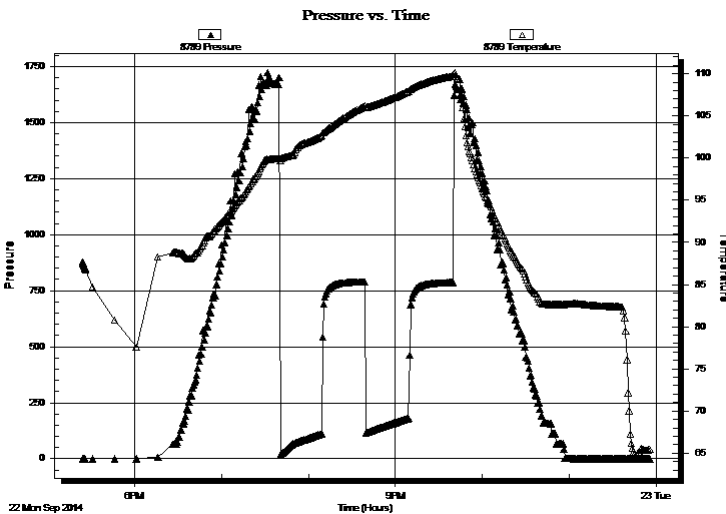
23:55:45

Time On Btm:

Time Off Btm:

TEST COMMENT: 30-IFP- BOB in 23 min.  
30-ISIP- No Blow  
30-FFP- BOB in 22 min.  
30-FSIP- No Blow

### PRESSURE SUMMARY



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

### Recovery

Length (ft)	Description	Volume (bbl)
360.00	MCW 10% m 90% w	3.97

### Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56142

**DST#: 2**

Test Start: 2014.09.22 @ 17:24:00

## Tool Information

Drill Pipe:	Length: 3326.00 ft	Diameter: 3.80 inches	Volume: 46.66 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose:	60000.00 lb
			<u>Total Volume: 47.25 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	34.00 ft			String Weight: Initial	58000.00 lb
Depth to Top Packer:	3432.00 ft			Final	59000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	18.00 ft				
Tool Length:	39.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3412.00	
Shut In Tool	5.00			3417.00	
Hydraulic tool	5.00			3422.00	
Packer	5.00			3427.00	21.00 Bottom Of Top Packer
Packer	5.00			3432.00	
Stubb	1.00			3433.00	
Perforations	1.00			3434.00	
Recorder	0.00	8789	Inside	3434.00	
Recorder	0.00	8289	Outside	3434.00	
Blank Spacing	13.00			3447.00	
Bullnose	3.00			3450.00	18.00 Bottom Packers & Anchor

**Total Tool Length: 39.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56142

**DST#: 2**

ATTN: Richard Bell

Test Start: 2014.09.22 @ 17:24:00

### 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:

61000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
360.00	MCW 10%m 90%w	3.966

Total Length: 360.00 ft      Total Volume: 3.966 bbl

Num Fluid Samples: 0

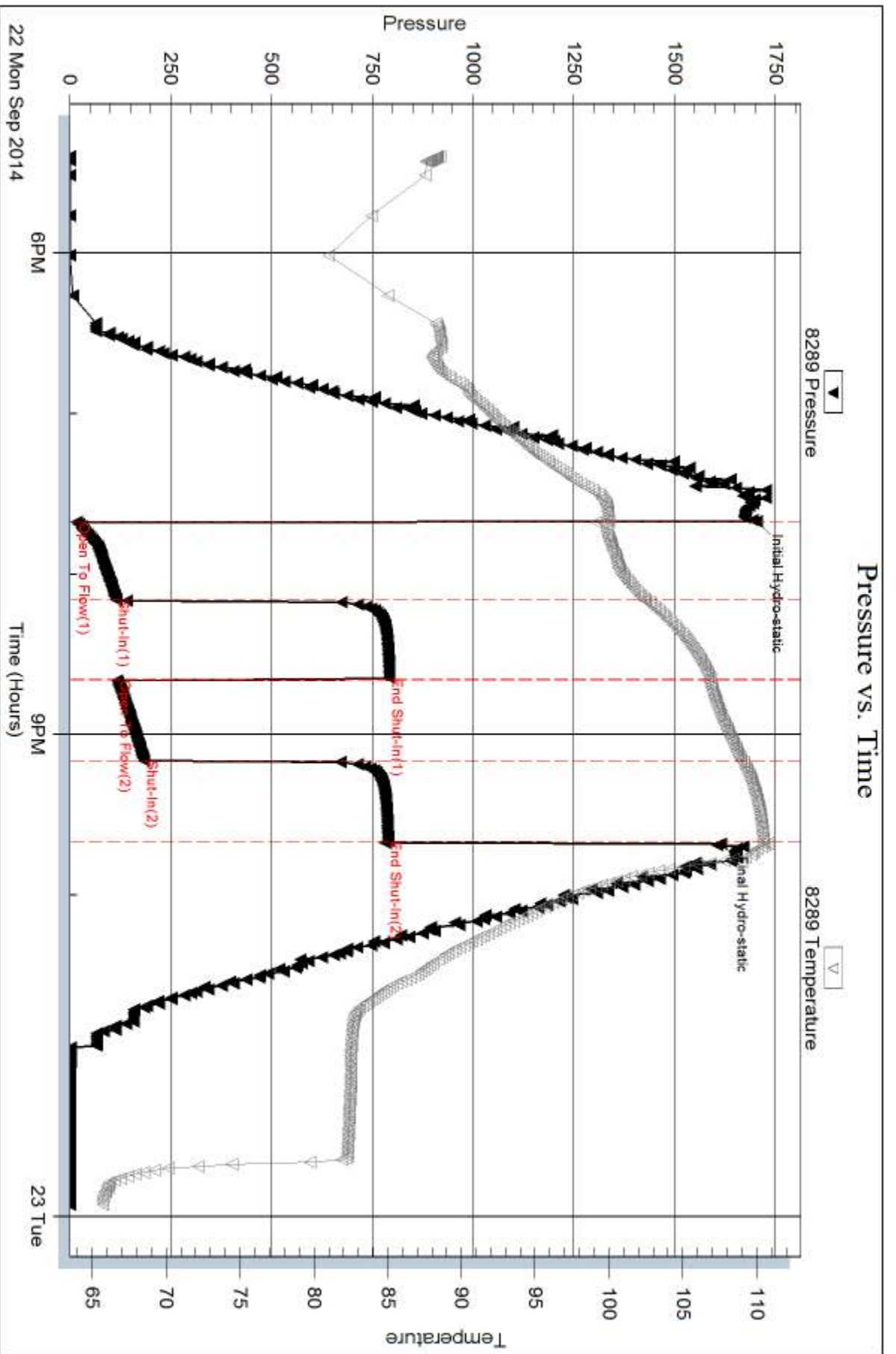
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .136 @ 66



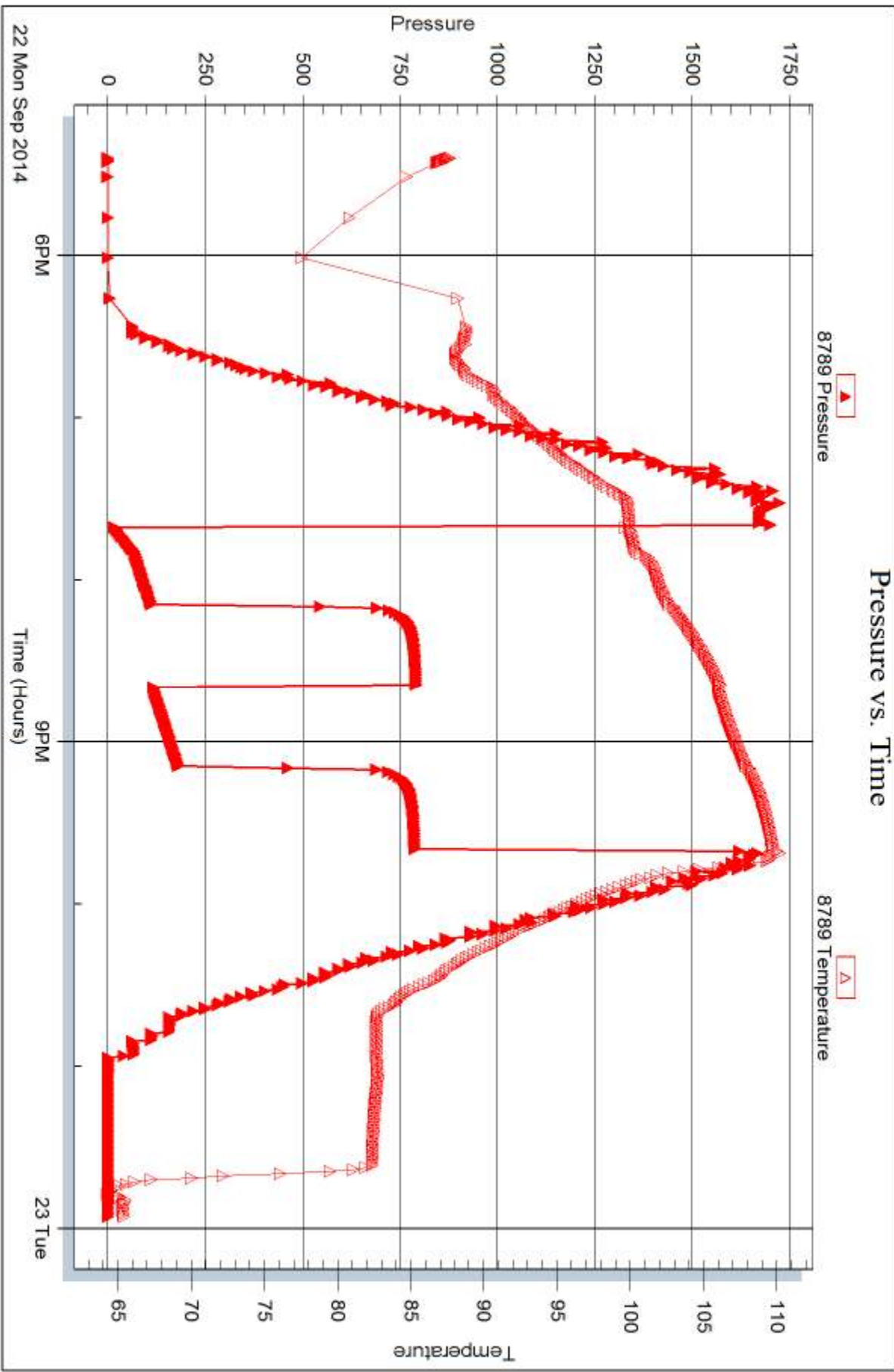
Serial #: 8789

Inside

Baird Oil Company LLC

13-7s-22w Graham,KS

DST Test Number: 2





## DRILL STEM TEST REPORT

Prepared For: **Baird Oil Company LLC**

113 W Main Box 428  
Logan KS 67646

ATTN: Richard Bell

**13-7s-22w Graham,KS**

**Esther Worcester #5-13**

Start Date: 2014.09.23 @ 06:31:00

End Date: 2014.09.23 @ 12:28:00

Job Ticket #: 56143                      DST #: 3

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

Printed: 2014.09.29 @ 14:58:41

Baird Oil Company LLC  
Esther Worcester #5-13  
13-7s-22w Graham,KS  
DST # 3  
LKC " E & F "  
2014.09.23



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56143

**DST#: 3**

Test Start: 2014.09.23 @ 06:31:00

## GENERAL INFORMATION:

Formation: **LKC " E & F "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:17:15

Time Test Ended: 12:28:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3449.00 ft (KB) To 3470.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3470.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8289 Outside**

Press@RunDepth: 279.58 psig @ 3452.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.23

End Date:

2014.09.23

Last Calib.:

2014.09.23

Start Time: 06:31:02

End Time:

12:28:00

Time On Btm:

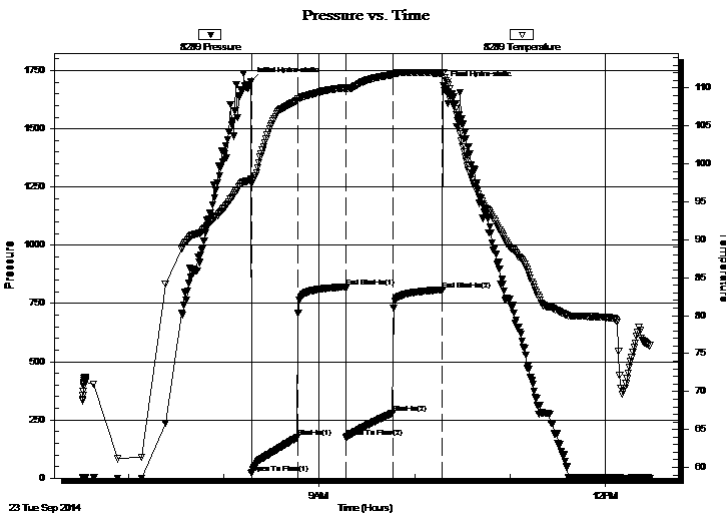
2014.09.23 @ 08:17:00

Time Off Btm:

2014.09.23 @ 10:18:15

**TEST COMMENT:** 30-IFP- BOB in 9 1/2 min.  
30-ISIP- No Blow  
30-FFP- BOB in 13 min.  
30-FSIP- No Blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1700.99	97.96	Initial Hydro-static
1	21.16	97.40	Open To Flow (1)
30	174.20	108.38	Shut-In(1)
60	821.51	110.03	End Shut-In(1)
60	176.23	109.83	Open To Flow (2)
90	279.58	111.76	Shut-In(2)
121	809.15	111.91	End Shut-In(2)
122	1685.33	112.05	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
491.00	MCW 5% m 95% w	5.80
77.00	OSMCW 2% o 33% m 65% w	1.08

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56143

**DST#: 3**

Test Start: 2014.09.23 @ 06:31:00

## GENERAL INFORMATION:

Formation: **LKC " E & F "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:17:15

Time Test Ended: 12:28:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3449.00 ft (KB) To 3470.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3470.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8789**

**Inside**

Press@RunDepth: psig @ 3452.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.23

End Date:

2014.09.23

Last Calib.:

2014.09.23

Start Time: 06:31:02

End Time:

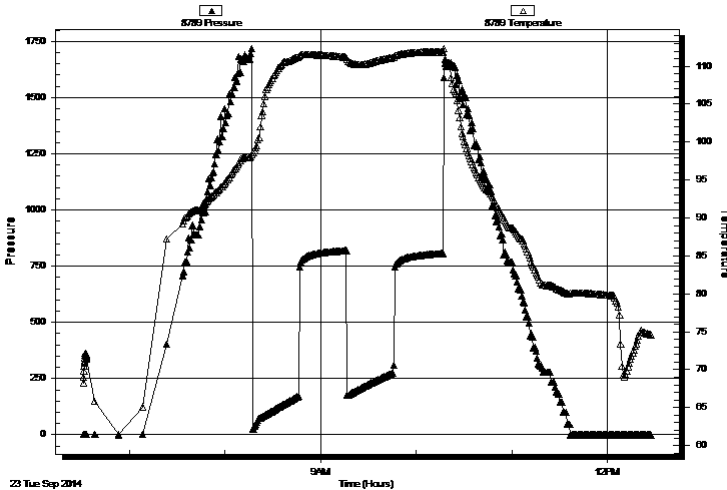
12:27:45

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 30-IFP- BOB in 9 1/2 min.  
30-ISIP- No Blow  
30-FFP- BOB in 13 min.  
30-FSIP- No Blow

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
491.00	MCW 5% m 95% w	5.80
77.00	OSMCW 2% o 33% m 65% w	1.08

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56143

**DST#: 3**

Test Start: 2014.09.23 @ 06:31:00

## Tool Information

Drill Pipe:	Length: 3323.00 ft	Diameter: 3.80 inches	Volume: 46.61 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 47.20 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3449.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	21.00 ft			
Tool Length:	42.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3429.00	
Shut In Tool	5.00			3434.00	
Hydraulic tool	5.00			3439.00	
Packer	5.00			3444.00	21.00 Bottom Of Top Packer
Packer	5.00			3449.00	
Stubb	1.00			3450.00	
Perforations	2.00			3452.00	
Recorder	0.00	8789	Inside	3452.00	
Recorder	0.00	8289	Outside	3452.00	
Blank Spacing	15.00			3467.00	
Bullnose	3.00			3470.00	21.00 Bottom Packers & Anchor

**Total Tool Length: 42.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56143

**DST#: 3**

ATTN: Richard Bell

Test Start: 2014.09.23 @ 06:31:00

### 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:

46000 ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
491.00	MCW 5% <sub>m</sub> 95% <sub>w</sub>	5.803
77.00	OSMCW 2% <sub>o</sub> 33% <sub>m</sub> 65% <sub>w</sub>	1.080

Total Length: 568.00 ft

Total Volume: 6.883 bbl

Num Fluid Samples: 0

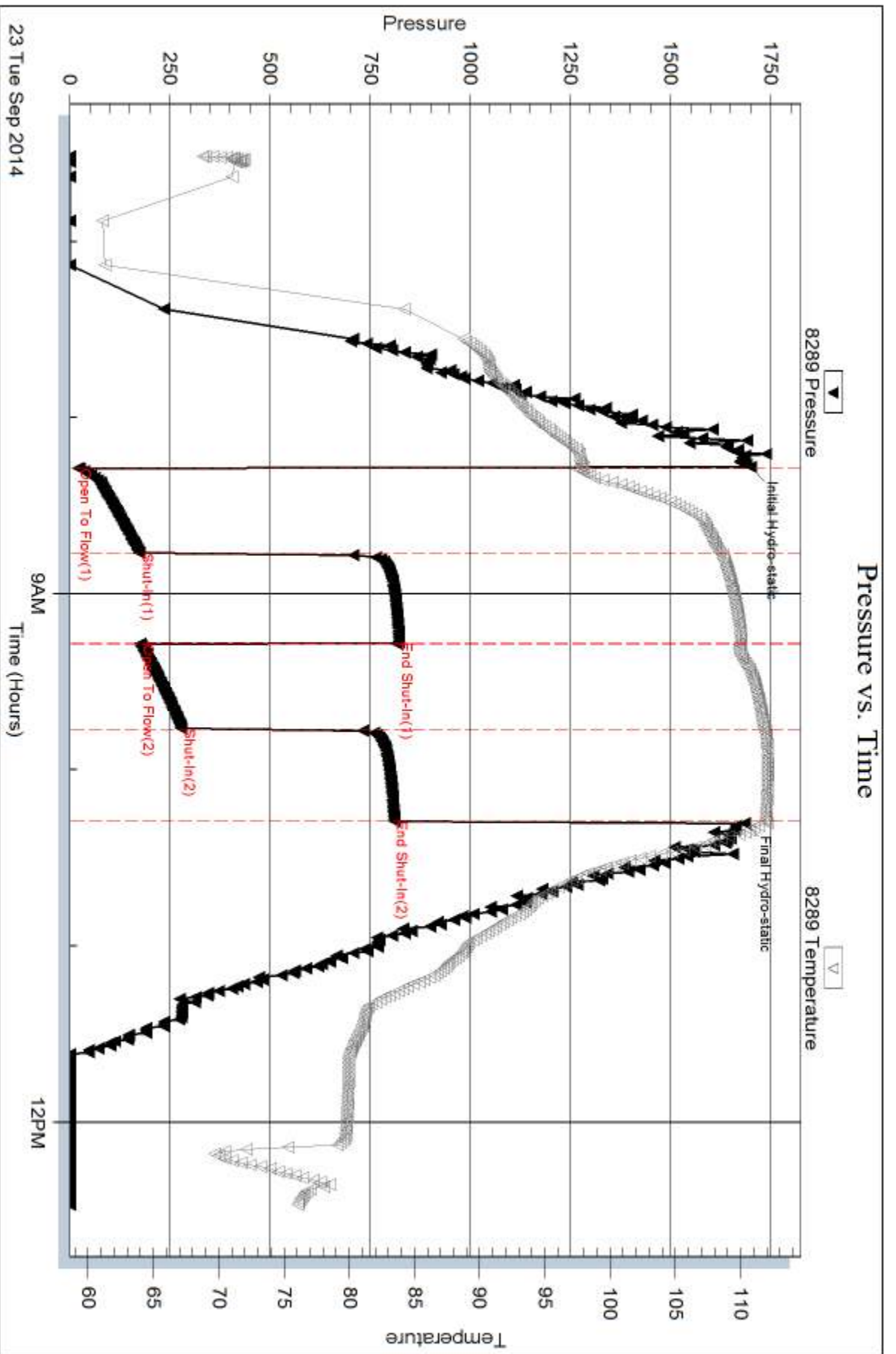
Num Gas Bombs: 0

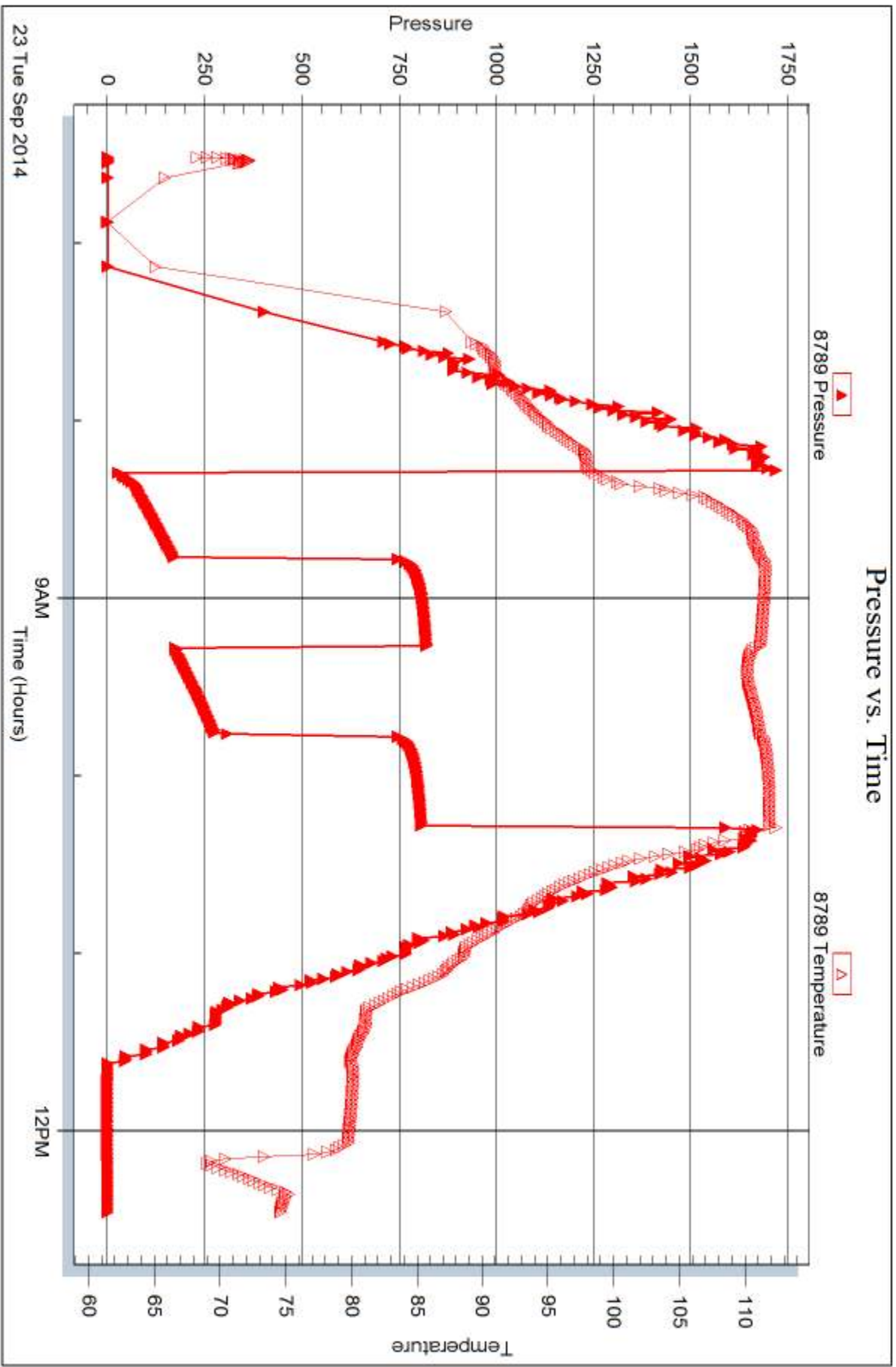
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .160 @ 71







## DRILL STEM TEST REPORT

Prepared For: **Baird Oil Company LLC**

113 W Main Box 428  
Logan KS 67646

ATTN: Richard Bell

**13-7s-22w Graham,KS**

**Esther Worcester #5-13**

Start Date: 2014.09.24 @ 09:33:00

End Date: 2014.09.24 @ 14:19:00

Job Ticket #: 56144                      DST #: 4

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

Printed: 2014.09.29 @ 14:57:48

Baird Oil Company LLC

Esther Worcester #5-13

13-7s-22w Graham,KS

DST # 4

Arbuckle

2014.09.24



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56144

**DST#: 4**

Test Start: 2014.09.24 @ 09:33:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:35:00

Time Test Ended: 14:19:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3660.00 ft (KB) To 3704.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8289 Outside**

Press@RunDepth: psig @ 3669.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.24

End Date:

2014.09.24

Last Calib.: 2014.09.24

Start Time: 09:33:02

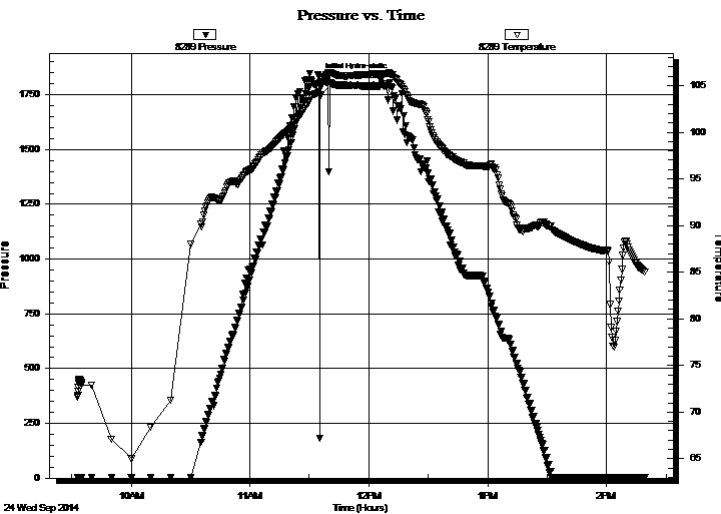
End Time:

14:19:15

Time On Btm: 2014.09.24 @ 11:34:45

Time Off Btm: 2014.09.24 @ 11:35:30

TEST COMMENT: Miss-run Packers failed



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1830.33	104.33	Initial Hydro-static
1	1744.15	105.17	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
181.00	Mud 100%	1.45

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56144

**DST#: 4**

Test Start: 2014.09.24 @ 09:33:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:35:00

Time Test Ended: 14:19:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3660.00 ft (KB) To 3704.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8789 Inside**

Press@RunDepth: psig @ 3669.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.24

End Date:

2014.09.24

Last Calib.:

2014.09.24

Start Time: 09:33:02

End Time:

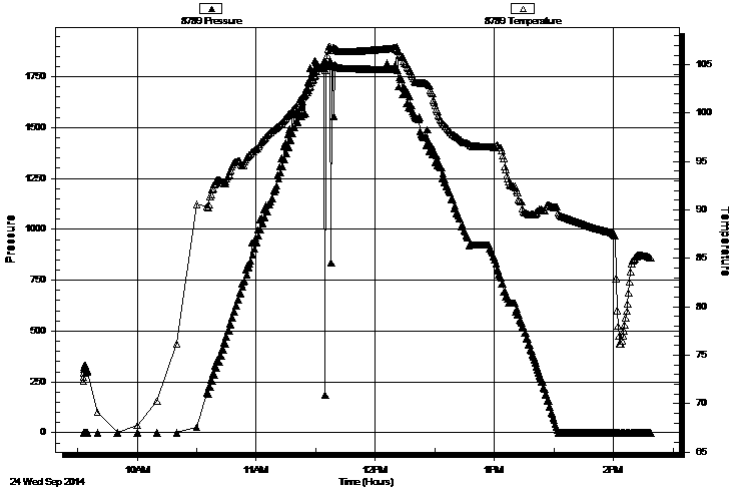
14:18:45

Time On Btm:

Time Off Btm:

TEST COMMENT: Miss-run Packers failed

Pressure vs. Time



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
181.00	Mud 100%	1.45

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56144

**DST#: 4**

Test Start: 2014.09.24 @ 09:33:00

## Tool Information

Drill Pipe:	Length: 3546.00 ft	Diameter: 3.80 inches	Volume: 49.74 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 50.33 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 60000.00 lb
Depth to Top Packer:	3660.00 ft			Final 60000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	44.00 ft			
Tool Length:	65.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3640.00	
Shut In Tool	5.00			3645.00	
Hydraulic tool	5.00			3650.00	
Packer	5.00			3655.00	21.00 Bottom Of Top Packer
Packer	5.00			3660.00	
Stubb	1.00			3661.00	
Perforations	7.00			3668.00	
Change Over Sub	1.00			3669.00	
Recorder	0.00	8789	Inside	3669.00	
Recorder	0.00	8289	Outside	3669.00	
Blank Spacing	31.00			3700.00	
Change Over Sub	1.00			3701.00	
Bullnose	3.00			3704.00	44.00 Bottom Packers & Anchor

**Total Tool Length: 65.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56144

**DST#: 4**

ATTN: Richard Bell

Test Start: 2014.09.24 @ 09:33:00

### 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: 46.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
181.00	Mud 100%	1.455

Total Length: 181.00 ft      Total Volume: 1.455 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

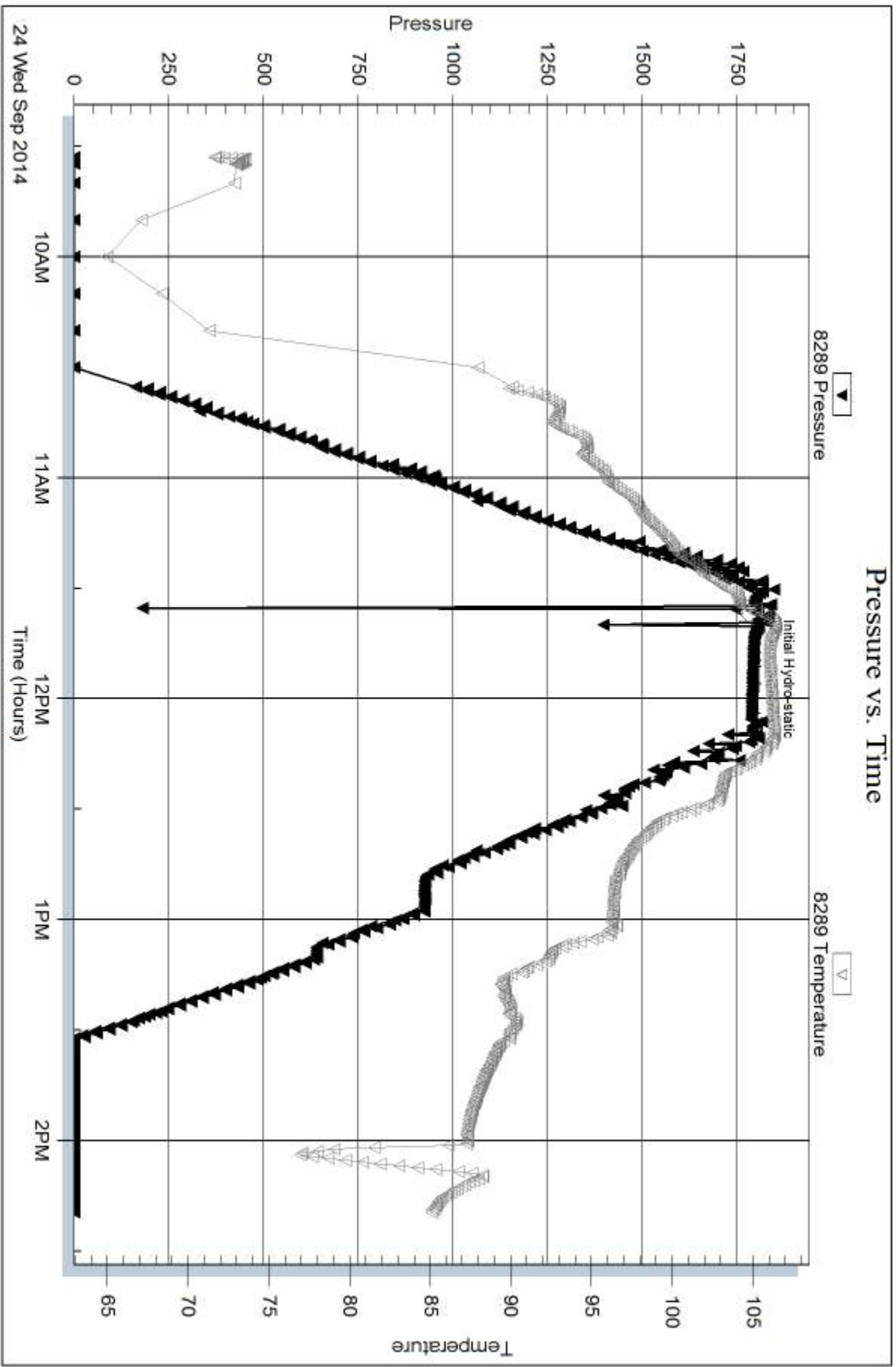
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





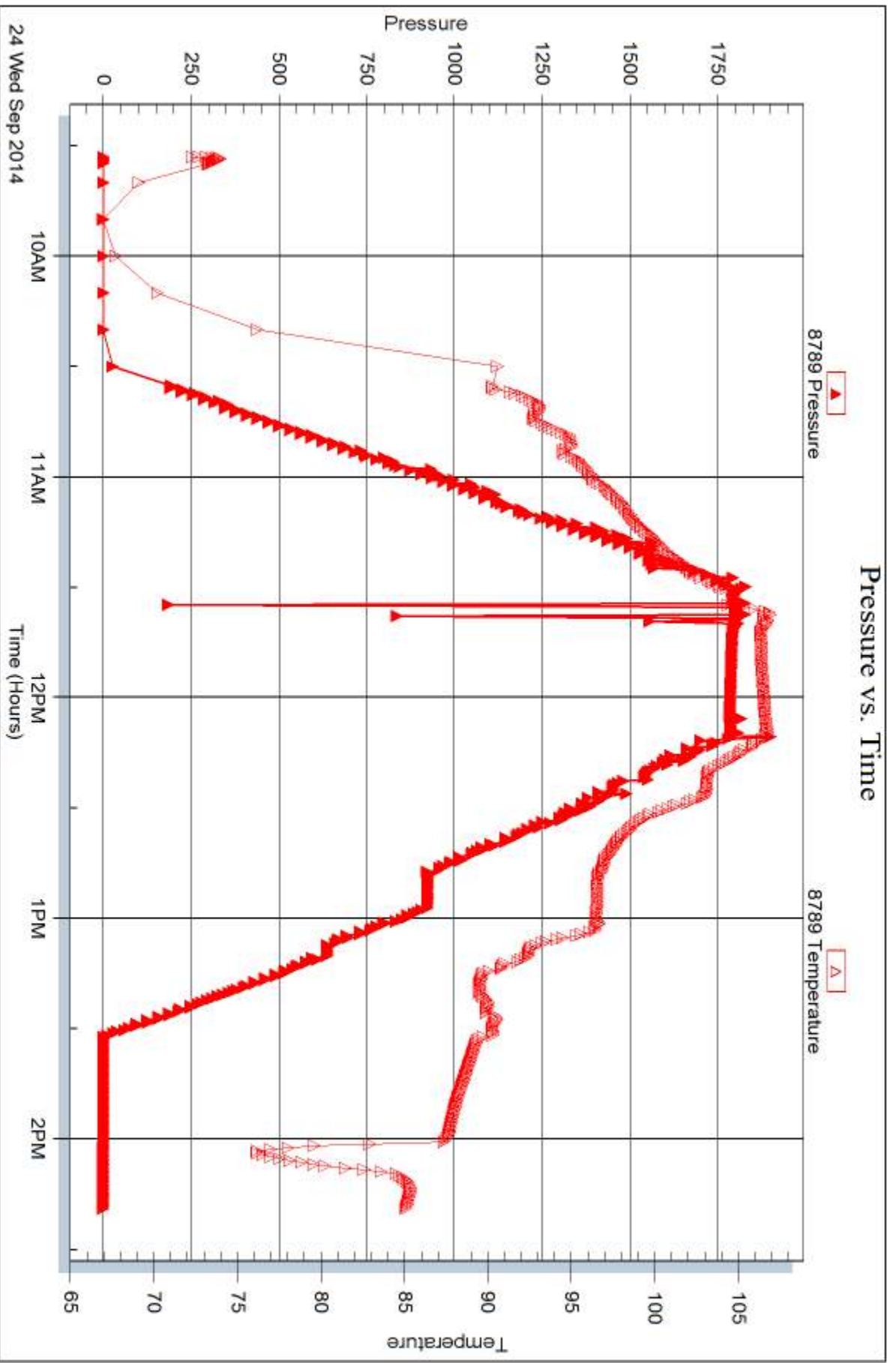
Serial #: 8789

Inside

Baird Oil Company LLC

13-7s-22w Graham,KS

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 56144

Printed: 2014.09.29 @ 14:57:49



## DRILL STEM TEST REPORT

Prepared For: **Baird Oil Company LLC**

113 W Main Box 428  
Logan KS 67646

ATTN: Richard Bell

**13-7s-22w Graham,KS**

**Esther Worcester #5-13**

Start Date: 2014.09.24 @ 14:46:00

End Date: 2014.09.24 @ 21:26:00

Job Ticket #: 56145                      DST #: 5

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

Printed: 2014.09.29 @ 14:57:32

Baird Oil Company LLC

Esther Worcester #5-13

13-7s-22w Graham,KS

DST # 5

Arbuckle

2014.09.24



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56145

**DST#: 5**

Test Start: 2014.09.24 @ 14:46:00

## GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:31:15

Time Test Ended: 21:26:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3672.00 ft (KB) To 3704.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8289 Outside**

Press@RunDepth: 153.58 psig @ 3678.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.24

End Date: 2014.09.24

Last Calib.: 2014.09.24

Start Time: 14:46:02

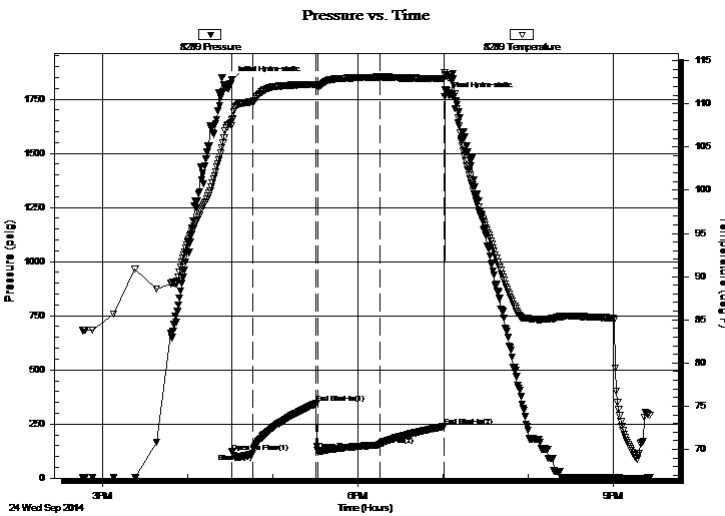
End Time: 21:26:15

Time On Btm: 2014.09.24 @ 16:31:00

Time Off Btm: 2014.09.24 @ 19:01:15

**TEST COMMENT:** 15-IFP- BOB in 2 min.  
45-ISIP- Surface Blow Building to 4 1/4" In 25 min.  
45-FFP- BOB in 15 1/2 min.  
45-FSIP- Surface Blow in 2 min. Building to 1/2" In 11 min.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1837.98	108.12	Initial Hydro-static
1	121.16	107.44	Open To Flow (1)
15	113.52	110.25	Shut-In(1)
60	345.51	112.24	End Shut-In(1)
61	126.91	112.15	Open To Flow (2)
105	153.58	113.08	Shut-In(2)
150	238.96	112.95	End Shut-In(2)
151	1763.09	113.64	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
243.00	MCO 35% m 65% o	2.32
124.00	CO 100%	1.74
0.00	248 GIP	0.00

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE TESTING, INC**

## DRILL STEM TEST REPORT

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56145 **DST#: 5**

Test Start: 2014.09.24 @ 14:46:00

### GENERAL INFORMATION:

Formation: **Arbuckle**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:31:15

Time Test Ended: 21:26:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Jim Svaty

Unit No: 76

**Interval: 3672.00 ft (KB) To 3704.00 ft (KB) (TVD)**

Reference Elevations: 2159.00 ft (KB)

Total Depth: 3704.00 ft (KB) (TVD)

2152.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8789** **Inside**

Press@RunDepth: psig @ 3678.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.09.24 End Date: 2014.09.24

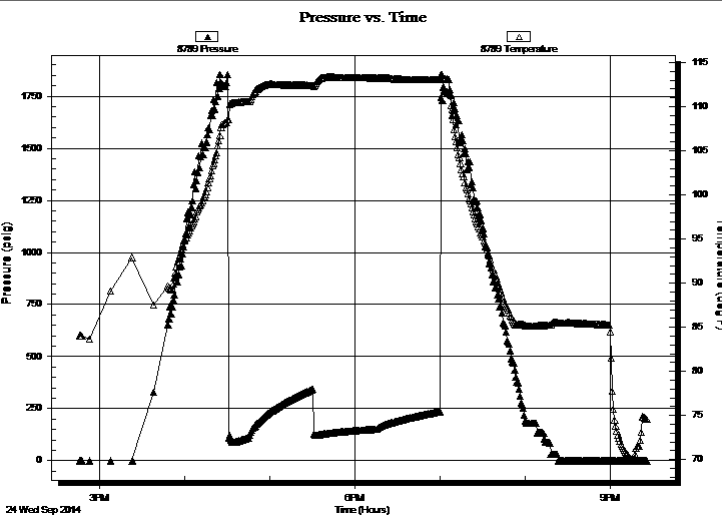
Last Calib.: 2014.09.24

Start Time: 14:46:02 End Time: 21:25:45

Time On Btm:

Time Off Btm:

**TEST COMMENT:** 15-IFP- BOB in 2 min.  
45-ISIP- Surface Blow Building to 4 1/4" In 25 min.  
45-FFP- BOB in 15 1/2 min.  
45-FSIP- Surface Blow in 2 min. Building to 1/2" In 11 min.



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
243.00	MCO 35% m 65% o	2.32
124.00	CO 100%	1.74
0.00	248 GIP	0.00

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

ATTN: Richard Bell

Job Ticket: 56145

**DST#: 5**

Test Start: 2014.09.24 @ 14:46:00

## Tool Information

Drill Pipe:	Length: 3544.00 ft	Diameter: 3.80 inches	Volume: 49.71 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: 119.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 62000.00 lb
			<u>Total Volume: 50.30 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3672.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	32.00 ft			
Tool Length:	53.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3652.00	
Shut In Tool	5.00			3657.00	
Hydraulic tool	5.00			3662.00	
Packer	5.00			3667.00	21.00 Bottom Of Top Packer
Packer	5.00			3672.00	
Stubb	1.00			3673.00	
Perforations	5.00			3678.00	
Recorder	0.00	8789	Inside	3678.00	
Recorder	0.00	8289	Outside	3678.00	
Perforations	23.00			3701.00	
Bullnose	3.00			3704.00	32.00 Bottom Packers & Anchor

**Total Tool Length: 53.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Baird Oil Company LLC

**Esther Worcester #5-13**

113 W Main Box 428  
Logan KS 67646

**13-7s-22w Graham,KS**

Job Ticket: 56145

**DST#: 5**

ATTN: Richard Bell

Test Start: 2014.09.24 @ 14:46:00

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 54.00 sec/qt  
Water Loss: 6.79 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 1500.00 ppm  
Filter Cake: 3.00 inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 28 deg API  
Water Salinity: ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
243.00	MCO 35% m 65% o	2.325
124.00	CO 100%	1.739
0.00	248 GIP	0.000

Total Length: 367.00 ft      Total Volume: 4.064 bbl

Num Fluid Samples: 0

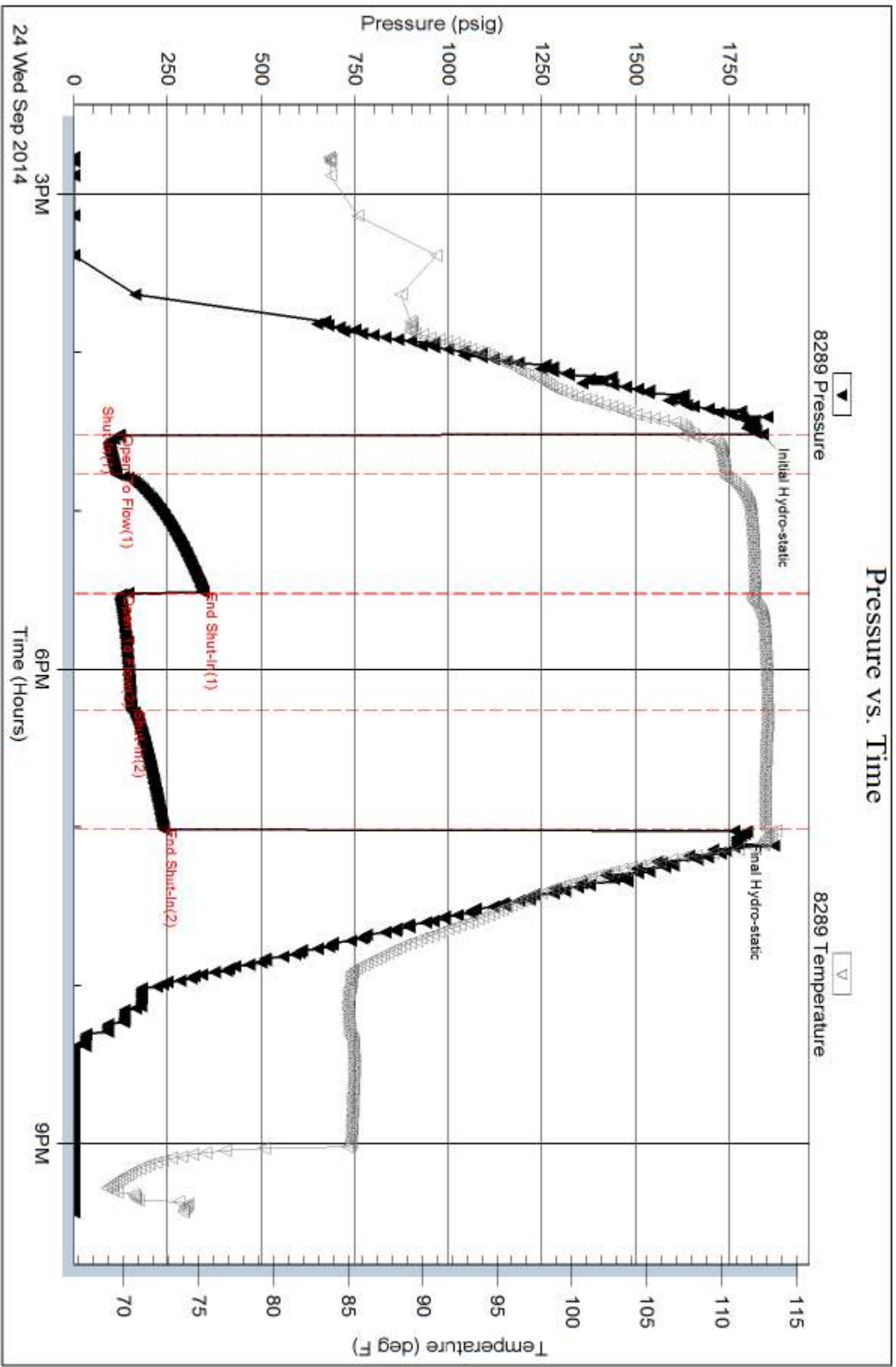
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





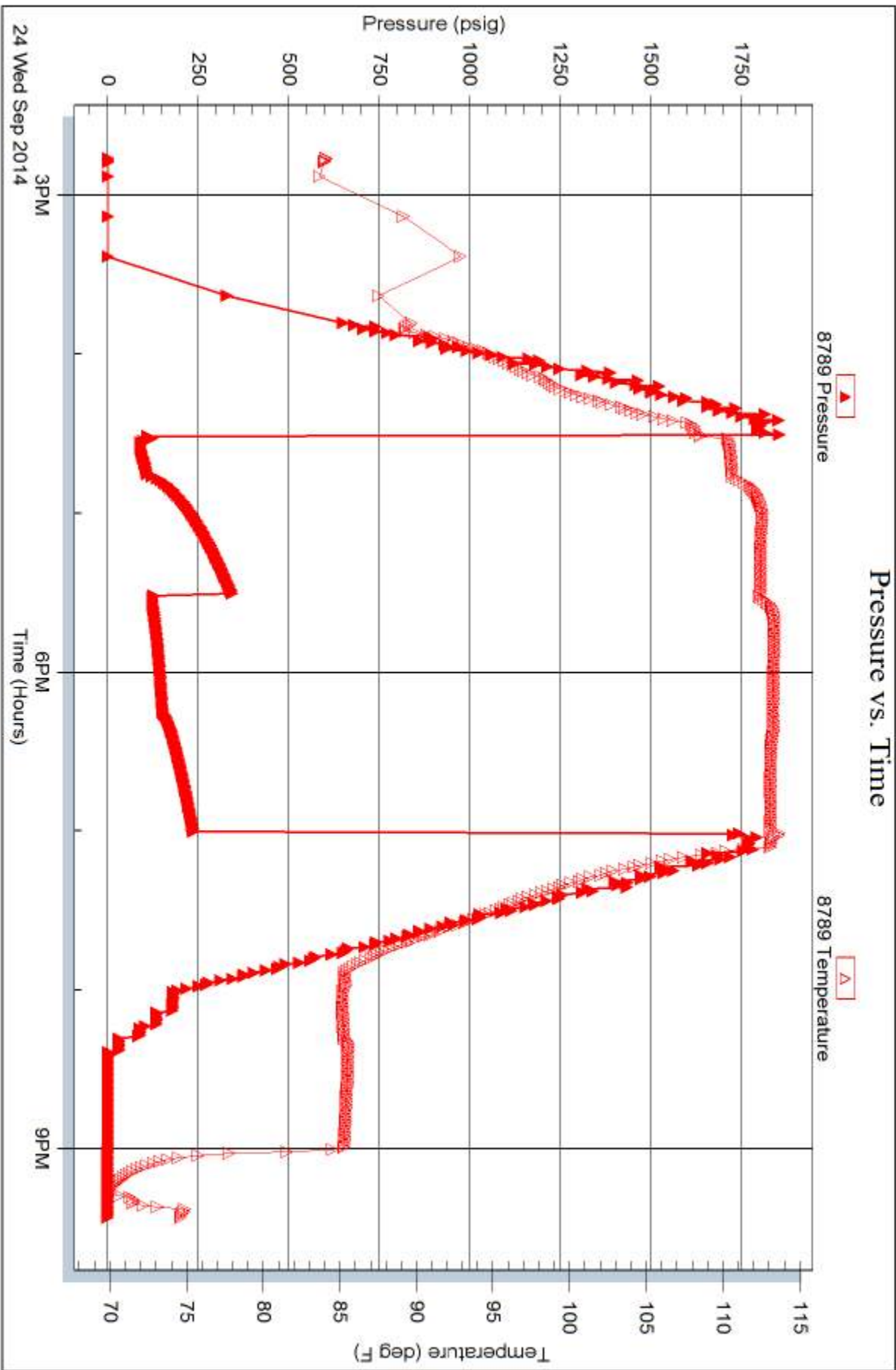
Serial #: 8789

Inside

Baird Oil Company LLC

13-7s-22w Graham,KS

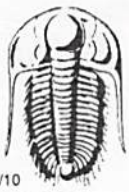
DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 56145

Printed: 2014.09.29 @ 14:57:34



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56141

Well Name & No. Esther Worcester #5-13 Test No. 1 Date 9-22-14  
 Company Baird Oil Company LLC Elevation 2159 KB 2152 GL  
 Address 113 W. Main Box 428 Logan KS 67646  
 Co. Rep / Geo. Richard Bell Rig WW 12  
 Location: Sec. 13 Twp. 7S Rge. 22W Co. Graham State KS

Interval Tested 3412-3432 Zone Tested LKC "C"  
 Anchor Length 20 Drill Pipe Run 3294 Mud Wt. 9.0  
 Top Packer Depth 3407 Drill Collars Run 119 Vis 62  
 Bottom Packer Depth 3412 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3432 Chlorides 1000 ppm System LCM TR

Blow Description I FP - Surface Blow Building to 1/4 in. 14 min. Died Back in 40 min.  
ISIP - No Blow  
FFP - Surface Blow in 2 min. Building to 2 1/4 in.  
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>140</u>	<u>mcw</u>		<u>85</u>	<u>15</u>	
	<u>Show of Oil</u>				

Rec Total 140 BHT 108 Gravity \_\_\_\_\_ API RW 200 @ 73 °F Chlorides 34000 ppm  
 Test 1150 T-On Location 3:17  
 Jars \_\_\_\_\_ T-Started 4:19  
 Safety Joint \_\_\_\_\_ T-Open 6:26  
 Circ Sub \_\_\_\_\_ T-Pulled 9:26  
 Hourly Standby \_\_\_\_\_ T-Out 11:25  
 Mileage 120 RT 186 Comments \_\_\_\_\_  
 Sampler \_\_\_\_\_  
 Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 45  
 Initial Shut-In 45  
 Final Flow 45  
 Final Shut-In 45

Sub Total 0  
 Total 1336.00  
 MP/DST Disc't \_\_\_\_\_  
 Sub Total 1336

Approved By \_\_\_\_\_ Our Representative [Signature]

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



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56142

Well Name & No. Esther Worchester #5-13 Test No. 2 Date 9-22-14  
 Company Baird Oil Company LLC Elevation 2159 KB 2152 GL  
 Address 113 W. MAIN BOX 428 Logan KS 67646  
 Co. Rep / Geo. Rich Bell Rig WW12  
 Location: Sec. 13 Twp. 75 Rge. 22W Co. Graham State KS

Interval Tested 3432 - 3450 Zone Tested LRC "D"  
 Anchor Length 18 Drill Pipe Run 3326 Mud Wt. 9.2  
 Top Packer Depth 3427 Drill Collars Run 119 Vis 52  
 Bottom Packer Depth 3432 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3450 Chlorides 1400 ppm System LCM TR

Blow Description IFP - BOB in 23min.  
FSIP - No Blow  
FFP - BOB in 22min  
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>360</u>	<u>MCW</u>		<u>90</u>	<u>10</u>	
	<u>Show of Oil</u>				

Rec Total 360 BHT 110 Gravity \_\_\_\_\_ API RW .136 @ 66 °F Chlorides 61000 ppm  
 (A) Initial Hydrostatic 1703  Test 1150 T-On Location 16:53  
 (B) First Initial Flow 16  Jars \_\_\_\_\_ T-Started 17:24  
 (C) First Final Flow 114  Safety Joint \_\_\_\_\_ T-Open 19:40  
 (D) Initial Shut-In 791  Circ Sub \_\_\_\_\_ T-Pulled 21:40  
 (E) Second Initial Flow 117  Hourly Standby \_\_\_\_\_ T-Out 23:56  
 (F) Second Final Flow 184  Mileage 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 788  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1615  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Initial Shut-In 30  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 30  Day Standby \_\_\_\_\_ Total 1336.00  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1336.00

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56143

Well Name & No. Esther Worcester #5-13 Test No. 3 Date 9-23-14  
 Company Baird Oil Company LLC Elevation 2159 KB 2152 GL  
 Address 113 W. MAIN Box 428 Logan KS 67646  
 Co. Rep / Geo. Rich Bell Rig WW 12  
 Location: Sec. 13 Twp. 7<sup>s</sup> Rge. 22<sup>w</sup> Co. Graham State KS

Interval Tested 3449-3470 Zone Tested LKC "E & F"  
 Anchor Length 21 Drill Pipe Run 3323 Mud Wt. 9.2  
 Top Packer Depth 3444 Drill Collars Run 119 Vis 52  
 Bottom Packer Depth 3449 Wt. Pipe Run 0 WL 68  
 Total Depth 3470 Chlorides 1400 ppm System LCM TR

Blow Description FFP - BOB. 9 1/2 min.  
ISIP - No Blow  
FFP - BOB in 13 min.  
FSIP - No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>491</u>	<u>mcw</u>		<u>95</u>	<u>5</u>	
<u>77</u>	<u>OSMCW</u>		<u>2</u>	<u>65</u>	<u>33</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 568 BHT 112 Gravity \_\_\_\_\_ API RW 160 @ 71 °F Chlorides 46000 ppm

(A) Initial Hydrostatic 1700  Test 1150 T-On Location 5:45  
 (B) First Initial Flow 21  Jars \_\_\_\_\_ T-Started 6:31  
 (C) First Final Flow 174  Safety Joint \_\_\_\_\_ T-Open 8:17  
 (D) Initial Shut-In 821  Circ Sub \_\_\_\_\_ T-Pulled 10:17  
 (E) Second Initial Flow 176  Hourly Standby \_\_\_\_\_ T-Out 12:28  
 (F) Second Final Flow 279  Mileage 186 Comments \_\_\_\_\_  
 (G) Final Shut-In 809  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1685  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_

Initial Open 30  Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Initial Shut-In 30  Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 30  Day Standby \_\_\_\_\_ Total 1336.00  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1336.00

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56144

Well Name & No. Esther Worcester 5-13 Test No. 4 Date 9-24-14  
 Company Baird Oil Company LLC Elevation 2159 KB 2152 GL  
 Address 113 W. MAIN Box #28 Logan KS 67646  
 Co. Rep / Geo. Richard Bell Rig WW 12  
 Location: Sec. 13 Twp. 7<sup>s</sup> Rge. 22<sup>w</sup> Co. Graham State KS

Interval Tested 3660-3704 Zone Tested Arbuckle  
 Anchor Length 44 Drill Pipe Run 3546 Mud Wt. 9.2  
 Top Packer Depth 3655 Drill Collars Run 119 Vis 46  
 Bottom Packer Depth 3660 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3704 Chlorides 1400 ppm System LCM TR

Blow Description Miss-Run Packer Failed

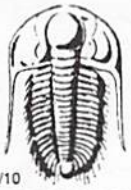
Rec	Feet of	%gas	%oil	%water	%mud
<u>181</u>	<u>mud</u>			<u>100</u>	

Rec Total 181 BHT 105 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1830  Test 950 T-On Location 8:50  
 (B) First Initial Flow \_\_\_\_\_  Jars \_\_\_\_\_ T-Started 9:33  
 (C) First Final Flow \_\_\_\_\_  Safety Joint \_\_\_\_\_ T-Open 11:35  
 (D) Initial Shut-In \_\_\_\_\_  Circ Sub \_\_\_\_\_ T-Pulled 11:41  
 (E) Second Initial Flow \_\_\_\_\_  Hourly Standby \_\_\_\_\_ T-Out 14:19  
 (F) Second Final Flow \_\_\_\_\_  Mileage 186 Comments \_\_\_\_\_  
 (G) Final Shut-In \_\_\_\_\_  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1744  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open \_\_\_\_\_  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In \_\_\_\_\_  Day Standby \_\_\_\_\_ Total 1136.00  
 Final Flow \_\_\_\_\_  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In \_\_\_\_\_ Sub Total 1136

Approved By \_\_\_\_\_ Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56145

Well Name & No. Esther Worcester 5-13 Test No. 5 Date 9-24-14  
 Company Baird Oil Company LLC Elevation 2159 KB 2152 GL  
 Address 113 W. Main Box 428 Logan KS 67646  
 Co. Rep / Geo. Rich Bell Rig WW 12  
 Location: Sec. 13 Twp. 7<sup>s</sup> Rge. 22<sup>w</sup> Co. Graham State KS

Interval Tested 3672 - 3704 Zone Tested Arbuckle  
 Anchor Length 32 Drill Pipe Run 3544 Mud Wt. 9.3  
 Top Packer Depth 3667 Drill Collars Run 119 Vis 54  
 Bottom Packer Depth 3672 Wt. Pipe Run 0 WL 6.8  
 Total Depth 3704 Chlorides 1500 ppm System LCM 3

Blow Description FFP - BOB in 2min.  
ISIP - Surface Blow Building to 4 1/4 in. 25min.  
FFP - BOB in 15 1/2 min.  
FSIP - Surface Blow in 2min Building to 1/2 in in 11min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>243</u>	<u>MCO</u>	<u>065</u>	<u>0</u>	<u>35</u>	
<u>124</u>	<u>CO</u>	<u>100</u>			
	<u>248 BIP</u>				

Rec Total 367 BHT 113 Gravity 28 API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1837  Test 1150 T-On Location 8:50  
 (B) First Initial Flow 121  Jars \_\_\_\_\_ T-Started 14:46  
 (C) First Final Flow 113  Safety Joint \_\_\_\_\_ T-Open 16:31  
 (D) Initial Shut-In 345  Circ Sub \_\_\_\_\_ T-Pulled 19:01  
 (E) Second Initial Flow 126  Hourly Standby \_\_\_\_\_ T-Out 21:26  
 (F) Second Final Flow 153  Mileage \_\_\_\_\_  
 (G) Final Shut-In 238  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1763  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Sub Total 1150

Comments \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Sub Total 0  
 Total 1186.00  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative [Signature]

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