

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION 1251340
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: _____

1251340

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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No 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: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
--	---

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: <input type="checkbox"/> Yes <input type="checkbox"/> No
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Date of First, Resumed Production, SWD or ENHR.	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____
---	--

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <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> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Murfin Drilling Co., Inc.
Well Name	Patti 3-10
Doc ID	1251340

All Electric Logs Run

DIL
DUCP
MEL
BHCS



*acct
Prod-MG*

INVOICE

PO Box 93999
Southlake, TX 76092

Invoice Number: 148693
Invoice Date: Feb 25, 2015
Page: 1

Voice: (817) 546-7282
Fax: (817) 246-3361

Federal Tax I.D.#: 20-8651475

Bill To:
Murfin Drlg. Co., Inc. 250 N. Water STE #300 Wichita, KS 67202

Customer ID	Field Ticket #	Payment Terms	
Murfin	64689	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Oakley	Feb 25, 2015	3/27/15

Quantity	Item	Description	Unit Price	Amount
1.00	WELL NAME	Patti #3-10		
240.00	CEMENT MATERIALS	Class A Common	17.90	4,296.00
676.80	CEMENT MATERIALS	Chloride	1.10	744.48
252.00	CEMENT SERVICE	Cubic Feet Charge	2.48	624.96
1,161.00	CEMENT SERVICE	Ton Mileage Charge	2.75	3,192.75
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
100.00	CEMENT SERVICE	Pump Truck Mileage	7.70	770.00
1.00	CEMENT SERVICE	Manifold Rental	275.00	275.00
100.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	440.00
1.00	CEMENT SUPERVISOR	Andrew Forslund		
1.00	EQUIPMENT OPERATOR	Darren Racette		
1.00	OPERATOR ASSISTANT	Wayne Messalle		

ALL PRICES ARE NET, PAYABLE
30 DAYS FOLLOWING DATE OF
INVOICE. 1 1/2% CHARGED
THEREAFTER. IF ACCOUNT IS
CURRENT, TAKE DISCOUNT OF

\$ 5,334.94 ✓

ONLY IF PAID ON OR BEFORE
Mar 27, 2015

Subtotal	11,855.44
Sales Tax	410.80
Total Invoice Amount	12,266.24
Payment/Credit Applied	
TOTAL	12,266.24

- 5334.94
6931.30

OK RR



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



Invoice

DATE	INVOICE #
3/5/2015	28238

BILL TO
Murfin Drilling Co Inc PO Box 661 Colby, KS 67701-0661

- Acidizing
- Cement
- Tool Rental

TERMS	Well No.	Lease	County	Contractor	Well Type	Well Category	Job Purpose	Operator
Net 30	#3-10	Patti	Rawlins	Company Tools	Oil	Development	Cement LongStri...	Blaine

PRICE REF.	DESCRIPTION	QTY	UM	UNIT PRICE	AMOUNT
575D	Mileage - 1 Way	150	Miles	5.00	750.00
579D	Pump Charge - Top To Bottom LongString	1	Job	1,700.00	1,700.00
403-5	5 1/2" Cement Basket	3	Each	250.00	750.00T
406-5	5 1/2" Latch Down Plug & Baffle	1	Each	225.00	225.00T
407-5	5 1/2" Insert Float Shoe With Auto Fill	1	Each	300.00	300.00T
409-5	5 1/2" Turbolizer	15	Each	75.00	1,125.00T
330	Swift Multi-Density Standard (MIDCON II)	300	Sacks	15.75	4,725.00T
325	Standard Cement	200	Sacks	12.25	2,450.00T
284	Calseal	10	Sack(s)	30.00	300.00T
283	Salt	1,000	Lb(s)	0.20	200.00T
285	CFR-1	100	Lb(s)	4.50	450.00T
276	Flocele	125	Lb(s)	2.25	281.25T
281	Mud Flush	500	Gallon(s)	1.25	625.00T
221	Liquid KCL (Clayfix)	4	Gallon(s)	25.00	100.00T
290	D-Air	5	Gallon(s)	42.00	210.00T
581D	Service Charge Cement	500	Sacks	1.50	750.00
583D	Drayage	3,810.23	Ton Miles	0.75	2,857.67
	Subtotal				17,798.92
	Sales Tax Rawlins County			7.90%	927.56

USED FOR IC 103
APPROVED AK JT

We Appreciate Your Business!	Total	\$18,726.48
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Services, Inc.

CHARGE TO: MURFIN Drilling

TICKET 28238

ADDRESS

CITY, STATE, ZIP CODE

PAGE 1 OF 2

1. SERVICE LOCATION: <u>Murphy KS</u>	WELL/PROJECT NO. <u>3-10</u>	LEASE <u>Part 1</u>	COUNTY/PARISH <u>Rawlins</u>	STATE <u>KS</u>	CITY <u>McDonald</u>	DATE <u>5 Mar 15</u>	OWNER
2. TICKET TYPE: <input type="checkbox"/> SERVICE <input type="checkbox"/> SALES	CONTRACTOR	RIG NAME NO. <u>2</u>	SHIPPED <u>W/CT</u>	DELIVERED TO <u>location</u>	WELL PERMIT NO.	ORDER NO.	
3. WELL TYPE: <u>2-1</u>	WELL CATEGORY: <u>Landmark</u>	JOB PURPOSE: <u>concrete long string</u>					
4. REFERRAL LOCATION	INVOICE INSTRUCTIONS						

PRICE REFERENCE	SECONDARY REFERENCE/ PART NUMBER	ACCOUNTING			DESCRIPTION	QTY.	UM	QTY.	UM	UNIT PRICE	AMOUNT
		LOC	ACCT	DF							
575					MILEAGE	150	mi			5.00	750.00
579					Rump Charge	1	ea			1700.00	1700.00
403					Concret Basket	5 1/2	in	3 ea		250.00	750.00
406					Latex down plug baggie	5 1/2	in	1 ea		225.00	225.00
407					1/2 set Flat shoe w/ AUTO FILL	5 1/2	in	1 ea		300.00	300.00
409					Turbolizer	5 1/2	in	15 ea		75.00	1125.00

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: March 15, 2015 TIME SIGNED: AM PM

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

SURVEY

OUR EQUIPMENT PERFORMED WITHOUT BREAKDOWN?	AGREE	UN-DECIDED	DIS-AGREE
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?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	

CUSTOMER DID NOT WISH TO RESPOND

PAGE TOTAL: 2 TOTAL: 18,726.48

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

SWIFT OPERATOR: Ray M APPROVAL: Thank You!



PO Box 466
Ness City, KS 67560
Off: 785-798-2300

TICKET CONTINUATION

TICKET No. 28238

WIREM DRILLING

DATE: 5 MAR 15

PAGE 2 OF 2

PRICE REFERENCE	SECONDARY REFERENCE / PART NUMBER	ACCOUNTING			TIME	DESCRIPTION	QUANTITY				UNIT PRICE	AMOUNT				
		LOC	ACCT	DR			QTY	U/M	QTY	U/M						
33D						SMD CONST	300	SK			15	75	4725	600		
325						Standard Const (For 34-2)	300	SK			12	25	2450	00		
284						Cal Seal	1000	LB		10	SK	30	00	3000	00	
283						Suclt	1000	LB				0	20	2000	00	
285						CFR-1	3/4	96		100	LB	4	50	450	00	
276						Flecele	125	LB				2	85	281	25	
281						Mudflush	500	921				1	25	625	00	
221						KCK Liquid	4	921				25	00	100	00	
290						D-AIR	5	921				42	00	210	00	
581						SERVICE CHARGE						1	50	750	00	
583						MILEAGE CHARGE						0	75	2857	67	
TOTAL WEIGHT							50803	LOADED MILES		150	CUBIC FEET		3810.23	CONTINUATION TOTAL		12448.92

JOB LOG

SWIFT Services, Inc.

DATE 5 MAR 15 PAGE NO.

CUSTOMER MURKIN Drilling

WELL NO. 3-10

LEASE Patti

JOB TYPE cement long string

TICKET NO. 28238

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
								300sk SMD w/ 4# floccle 200sk SA-2 cement w/ 1/2 # floccle 5 1/2 x 15.5 # casing 114 jts slgt 21' total pipe 4752' TD = 4760' Centralizers 1-9, 12, 13, 14, 15, 37, 61 Basket 16, 38, 62
	0245							on loc 4RK114
	0255							start 5 1/2 x 15.5 # casing in well
MAR 15	0013							circulate well for 20 min jt 67
	0130							Drop ball - circulate
	0240	4	12				200	Pump 500 gal mid flush
		4	20				200	Pump 20 bbl KC2 flush
	0258		7					Plug RH-MH 30sk - 20sk
	0257	4	120				200	mix SMD cement 20sk @ 11.8
		4	47				200	mix SA-2 cement 200sk @ 16.3 ppg
								Drop latch down plug wash out pump & line
	0412	6					400	Displace plug
		5 1/2	80				1000	cement to surface } 30 to put
		5					1400	
	0430	5					2000	Land plug
								Release pressure to truck - dried up
	0436							wash truck
								Back up
	0530							job complete Flank Flat, Blake, SACED & John

MDCI
Patti #3-10
660' FSL 660' FWL
Sec. 10-T1S-R37W
3233' KB

Formation	Sample top	Datum	Ref	Log Top	Datum	Ref
Anhydrite	3180	53	-1	3173	+60	+6
B/Anhydrite	3218	15	-9	3208	+25	+1
Neva	3630	-397	+1	3628	-395	+3
Red Eagle	3694	-461	+1	3693	-460	+2
Foraker	3744	-511	-3	3739	-506	+2
Topeka	3968	-735	-2	3963	-730	+3
Oread	4096	-863	-1	4094	-861	+1
Lansing	4179	-946	-1	4176	-943	+2
Stark	4398	-1165	-4	4391	-1158	+3
BKC	4449	-1216	+2	4446	-1213	+5
Pawnee	4568	-1335	-1	4565	-1332	+2
Cherokee	4659	-1426	-3	4653	-1420	+3
RTD	4760	-1527				
LTD				4758	-1525	



DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co, Inc.**

250 N Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Patti #3-10

10-1Ss-37w Cheyenne,KS

Start Date: 2015.02.28 @ 21:24:00

End Date: 2015.03.01 @ 04:47:00

Job Ticket #: 62201 DST #: 1

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

Printed: 2015.03.06 @ 14:00:59



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 62201

DST#: 1

ATTN: Robert Hendrix

Test Start: 2015.02.28 @ 21:24:00

GENERAL INFORMATION:

Formation: **Oread**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:58:45

Time Test Ended: 04:47:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Donovan Baumann

Unit No: 54

Interval: 4052.00 ft (KB) To 4112.00 ft (KB) (TVD)

Reference Elevations: 3233.00 ft (KB)

Total Depth: 4112.00 ft (KB) (TVD)

3222.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6753 Outside

Press@RunDepth: 47.09 psig @ 4053.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.02.28

End Date:

2015.03.01

Last Calib.: 2015.03.01

Start Time: 21:24:05

End Time:

04:46:59

Time On Btm: 2015.02.28 @ 23:58:30

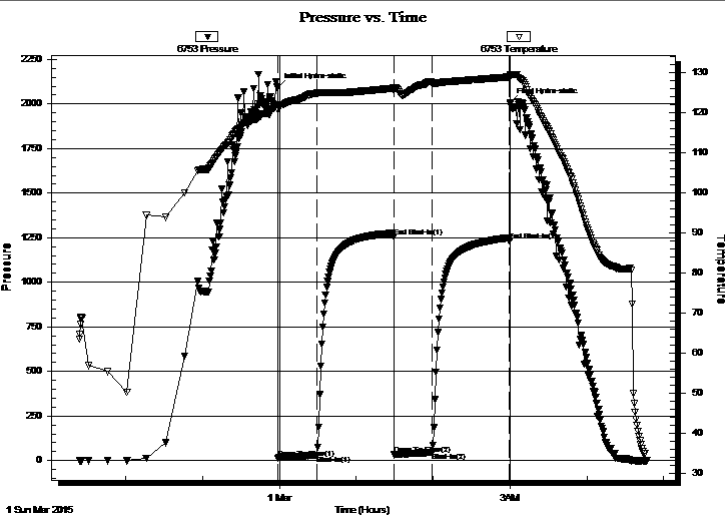
Time Off Btm: 2015.03.01 @ 03:00:15

TEST COMMENT: 30 - IF - Weak surface blow built to 1 3/4" in 30 min. (In Diesel)

60 - ISI - No return

30 - FF - No surface blow

60 - FSI - No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2091.02	122.05	Initial Hydro-static
1	14.42	120.63	Open To Flow (1)
31	30.37	124.81	Shut-In(1)
91	1252.96	126.06	End Shut-In(1)
91	33.39	125.44	Open To Flow (2)
121	47.09	127.50	Shut-In(2)
181	1230.53	128.87	End Shut-In(2)
182	2008.67	129.28	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	OSM - 100M - Oil Spots	0.30

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 62201

DST#: 1

ATTN: Robert Hendrix

Test Start: 2015.02.28 @ 21:24:00

Tool Information

Drill Pipe:	Length: 3819.84 ft	Diameter: 3.80 inches	Volume: 53.58 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 209.66 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose:	62000.00 lb
			<u>Total Volume: 54.61 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	4.50 ft			String Weight: Initial	62000.00 lb
Depth to Top Packer:	4052.00 ft			Final	62000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	60.00 ft				
Tool Length:	87.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			4030.00	
Hydraulic tool	5.00			4035.00	
Jars	5.00			4040.00	
Safety Joint	3.00			4043.00	
Packer	4.00			4047.00	27.00 Bottom Of Top Packer
Packer	5.00			4052.00	
Stubb	1.00			4053.00	
Recorder	0.00	8368	Inside	4053.00	
Recorder	0.00	6753	Outside	4053.00	
Perforations	22.00			4075.00	
Change Over Sub	1.00			4076.00	
Drill Pipe	31.00			4107.00	
Change Over Sub	1.00			4108.00	
Bullnose	4.00			4112.00	60.00 Bottom Packers & Anchor

Total Tool Length: 87.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 62201

DST#: 1

ATTN: Robert Hendrix

Test Start: 2015.02.28 @ 21:24:00

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:

ppm

Viscosity: 64.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	OSM - 100M - Oil Spots	0.295

Total Length: 60.00 ft Total Volume: 0.295 bbl

Num Fluid Samples: 0

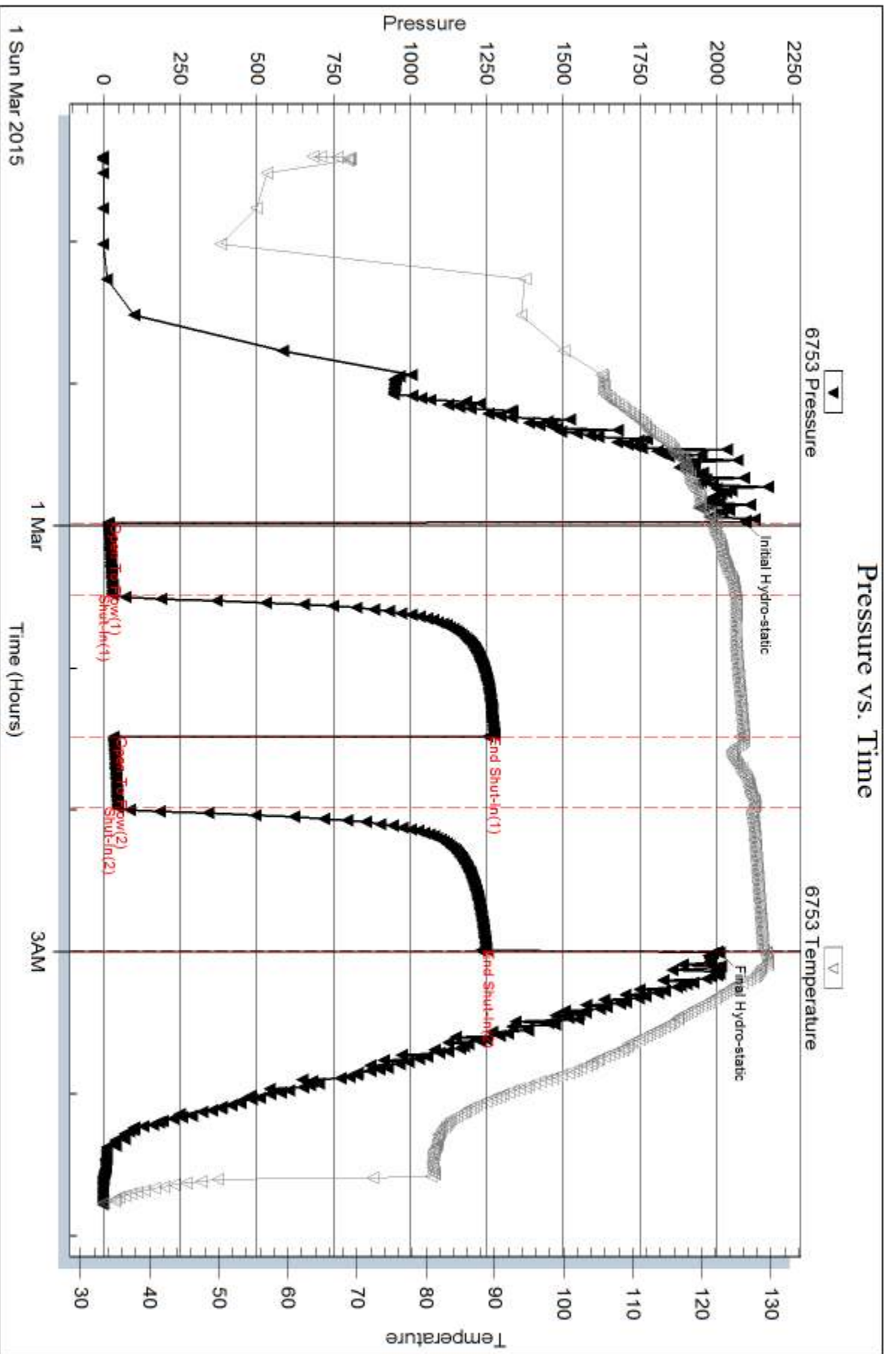
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co, Inc.**

250 N Water STE 300
Wichita, KS 67202

ATTN: Robert Hendrix

Patti #3-10

10-1Ss-37w Cheyenne,KS

Start Date: 2015.03.01 @ 20:23:00

End Date: 2015.03.02 @ 04:08:00

Job Ticket #: 61099 DST #: 2

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

Printed: 2015.03.06 @ 13:59:37



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 61099

DST#: 2

ATTN: Robert Hendrix

Test Start: 2015.03.01 @ 20:23:00

GENERAL INFORMATION:

Formation: **LKC 'D'**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:00:30

Time Test Ended: 04:08:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Royal Fisher

Unit No: 54

Interval: 4180.00 ft (KB) To 4254.00 ft (KB) (TVD)

Reference Elevations: 3233.00 ft (KB)

Total Depth: 4254.00 ft (KB) (TVD)

3222.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

Serial #: 6753 Outside

Press@RunDepth: 161.58 psig @ 4181.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2015.03.01

End Date:

2015.03.02

Last Calib.:

2015.03.02

Start Time: 20:23:05

End Time:

04:07:59

Time On Btm:

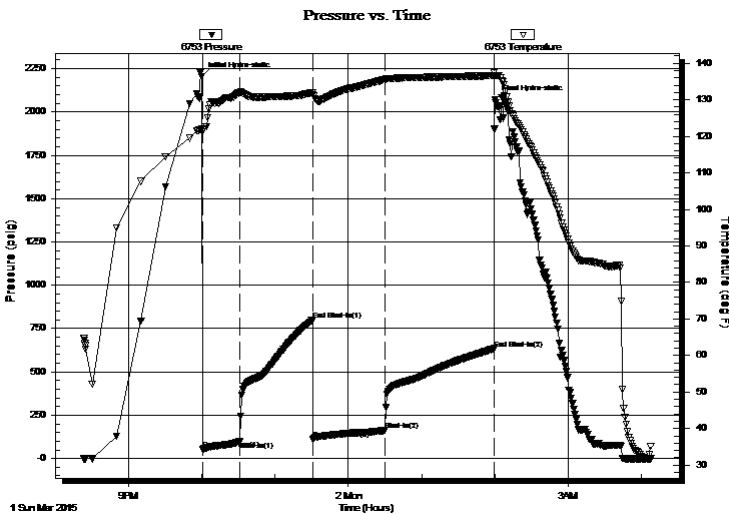
2015.03.01 @ 22:00:00

Time Off Btm:

2015.03.02 @ 02:00:15

TEST COMMENT: 30 - IF - Surface blow built up to 8"
60 - ISI - No Return
60 - FF - Surface blow started 3 mins. in and built up to 5 3/4"
90 - FSI - No Return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2202.50	122.07	Initial Hydro-static
1	51.68	121.33	Open To Flow (1)
31	97.62	132.03	Shut-In(1)
91	799.68	131.88	End Shut-In(1)
91	109.64	131.37	Open To Flow (2)
150	161.58	135.58	Shut-In(2)
240	634.54	136.63	End Shut-In(2)
241	2070.83	136.60	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
126.00	OSMW - 25M - 75W - Oil Spots	0.62
63.00	OSMW - 45M - 55W - Oil Spots	0.31
129.00	OCM - 95M - 5o	1.62
2.00	Free Oil - 100o	0.03

Gas Rates

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



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

TOOL DIAGRAM

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 61099

DST#: 2

ATTN: Robert Hendrix

Test Start: 2015.03.01 @ 20:23:00

Tool Information

Drill Pipe:	Length: 3971.55 ft	Diameter: 3.80 inches	Volume: 55.71 bbl	Tool Weight:	2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 209.66 ft	Diameter: 2.25 inches	Volume: 1.03 bbl	Weight to Pull Loose:	66000.00 lb
			<u>Total Volume: 56.74 bbl</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	28.21 ft			String Weight: Initial	62000.00 lb
Depth to Top Packer:	4180.00 ft			Final	62000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	74.00 ft				
Tool Length:	101.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			4158.00	
Hydraulic tool	5.00			4163.00	
Jars	5.00			4168.00	
Safety Joint	3.00			4171.00	
Packer	4.00			4175.00	27.00 Bottom Of Top Packer
Packer	5.00			4180.00	
Stubb	1.00			4181.00	
Recorder	0.00	8368	Inside	4181.00	
Recorder	0.00	6753	Outside	4181.00	
Perforations	36.00			4217.00	
Change Over Sub	1.00			4218.00	
Drill Pipe	31.00			4249.00	
Change Over Sub	1.00			4250.00	
Bullnose	4.00			4254.00	74.00 Bottom Packers & Anchor

Total Tool Length: 101.00



**TRILOBITE
TESTING, INC**

DRILL STEM TEST REPORT

FLUID SUMMARY

Murfin Drilling Co, Inc.

10-1Ss-37w Cheyenne,KS

250 N Water STE 300
Wichita, KS 67202

Patti #3-10

Job Ticket: 61099

DST#: 2

ATTN: Robert Hendrix

Test Start: 2015.03.01 @ 20:23:00

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:

55000 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 700.00 ppm

Filter Cake: 2.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
126.00	OSMW - 25M - 75W - Oil Spots	0.620
63.00	OSMW - 45M - 55W - Oil Spots	0.310
129.00	OCM - 95M - 5o	1.621
2.00	Free Oil - 100o	0.028

Total Length: 320.00 ft

Total Volume: 2.579 bbl

Num Fluid Samples: 0

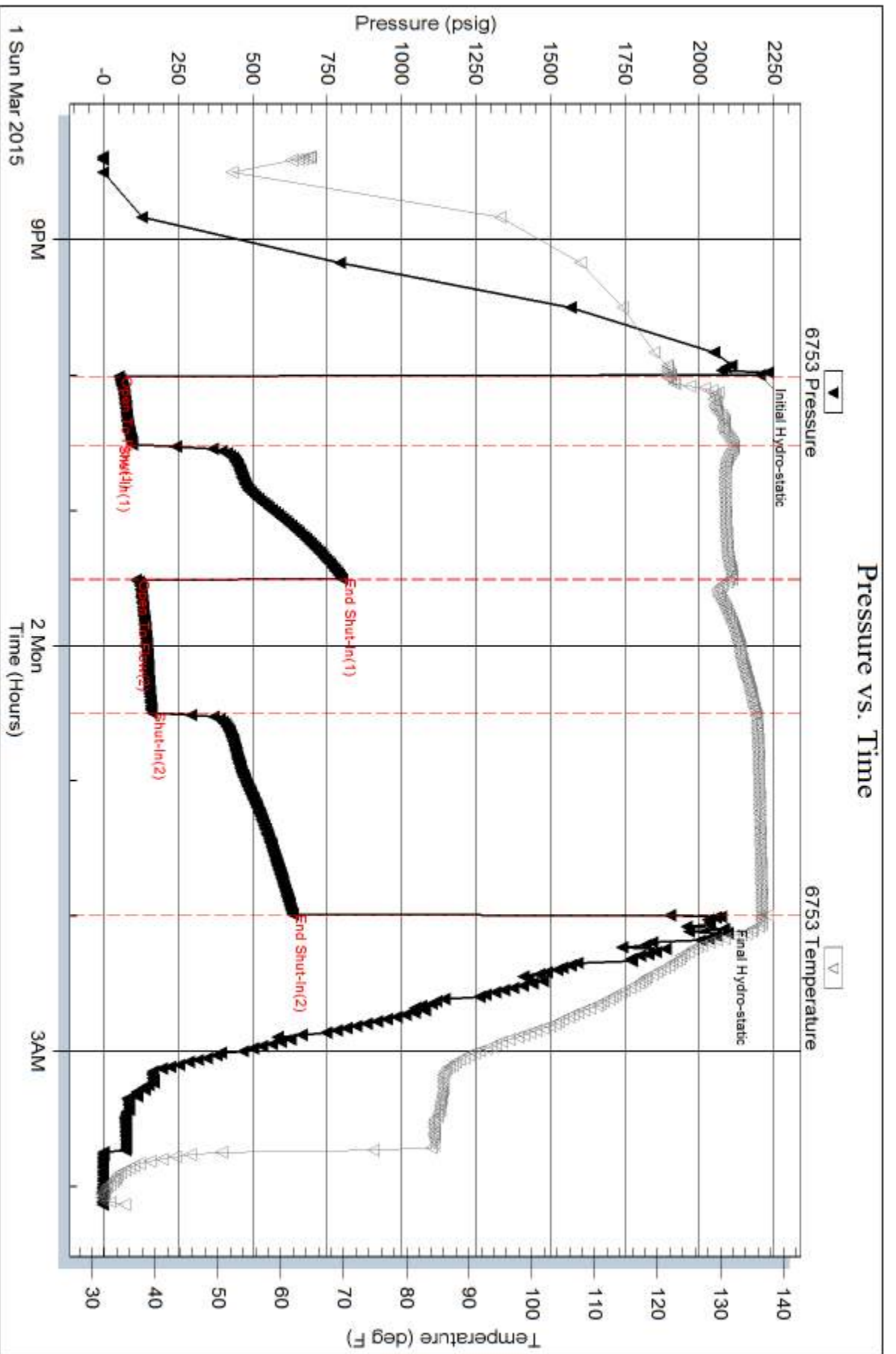
Num Gas Bombs: 0

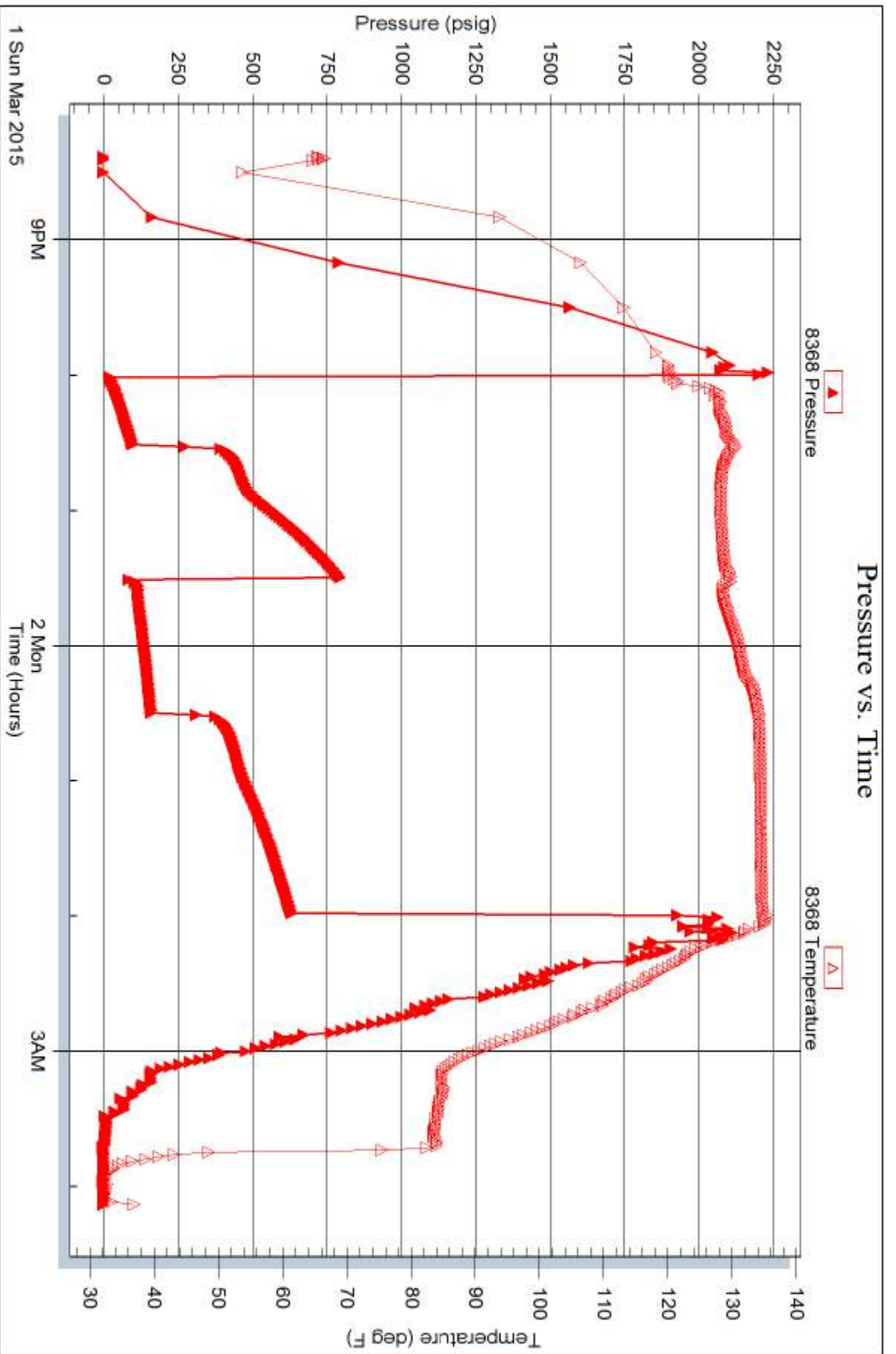
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 62201

Well Name & No. Patti # 3-10 Test No. 1 Date 2-28-15
 Company Murfin Drilling Co., Inc. Elevation 3233 KB 3222 GL
 Address 250 N water STE 300, Wichita, KS, 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2
 Location: Sec. 10 Twp. 1s Rge. 37w Co. Cheyenne State KS

Interval Tested 4052' - 4112' Zone Tested oread
 Anchor Length 60' Drill Pipe Run 3819.84 Mud Wt. 9.0
 Top Packer Depth 4047' Drill Collars Run 209.66 Vis 64
 Bottom Packer Depth 4052' Wt. Pipe Run 0 WL 6.8
 Total Depth 4112' Chlorides 700 ppm System LCM #8
 Blow Description IF- weak surface blow built to 1 3/4 in. in 30 min. (IN Diesel)
ISI- NO return
FF- NO surface blow
FSI- NO return

Rec	Feet of	%gas	spots	%oil	%water	%mud
<u>60</u>	<u>OSM</u>				<u>100</u>	
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud
Rec	Feet of	%gas		%oil	%water	%mud

Rec Total 60 BHT 129 Gravity - API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic 2091 Test 1150 T-On Location 7:08pm
 (B) First Initial Flow 14 Jars 250 T-Started 9:24pm
 (C) First Final Flow 30 Safety Joint 75 T-Open 11:59pm
 (D) Initial Shut-In 1253 Circ Sub N/C T-Pulled 2:59am 3-
 (E) Second Initial Flow 33 Hourly Standby _____ T-Out 4:47am
 (F) Second Final Flow 47 Mileage 148 Comments _____
 (G) Final Shut-In 1231 Sampler _____
 (H) Final Hydrostatic 2009 Straddle _____
 Shale Packer _____
 Extra Packer _____
 Extra Recorder _____
 Day Standby _____
 Accessibility _____
 Sub Total 1623

Initial Open 30
 Initial Shut-In 60
 Final Flow 30
 Final Shut-In 60

Sub Total 1623
 Total 1623
 MP/DST Disc't _____

Approved By _____ Our Representative General Baumgartner

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. 61099

Well Name & No. Patti #3-10 Test No. 2 Date 3-1-15
 Company Murfin Drilling Co., Inc. Elevation 3233 KB 3222 GL
 Address 250 N. Water, Ste 300 Wichita Ks 67202
 Co. Rep / Geo. Robert Hendrix Rig Murfin #2
 Location: Sec. 10 Twp. 1S Rge. 37W Co. Cheyenne State Ks

Interval Tested 4180'-4254' Zone Tested Lans. - D'
 Anchor Length 74' Drill Pipe Run 3971.55' Mud Wt. 9.3
 Top Packer Depth 4175' Drill Collars Run 209.66' Vis 53
 Bottom Packer Depth 4180' Wt. Pipe Run 0 WL 7.2
 Total Depth 4254' Chlorides 700 ppm System LCM 6#

Blow Description IF - Surface blow built up to 8"
ISI - No Return
FF - Surface blow started 3 mins in and built up to 5 3/4"
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>2'</u>	<u>Free Oil</u>	<u>100</u>			
<u>129'</u>	<u>OCM</u>	<u>5</u>		<u>95</u>	
<u>63'</u>	<u>OSMW</u>	<u>Spots</u>	<u>55</u>	<u>45</u>	
<u>126'</u>	<u>OSMW</u>	<u>Spots</u>	<u>75</u>	<u>25</u>	

Rec Total 320' BHT 136°F Gravity 1150 API RW .268 @ 37 °F Chlorides 55,000 ppm

(A) Initial Hydrostatic 2202 Test T-On Location 7:50 pm
 (B) First Initial Flow 57 Jars 250 T-Started 8:23 pm
 (C) First Final Flow 97 Safety Joint 75 T-Open 10:01 pm
 (D) Initial Shut-In 799 Circ Sub N/C T-Pulled 2:01 am
 (E) Second Initial Flow 109 Hourly Standby T-Out 4:09 am
 (F) Second Final Flow 161 Mileage 148 R/T 148+148 Comments picked up tool 3/3/15
 (G) Final Shut-In 634 Sampler on location @ 9:50 am left
 (H) Final Hydrostatic 2070 Straddle @ 11:30 am rig stuck @ 4362
 Shale Packer
 Ruined Shale Packer
 Extra Packer
 Ruined Packer
 Extra Recorder
 Extra Copies
 Day Standby
 Accessability

Initial Open 30 Sub Total 0
 Initial Shut-In 60 Total 1771
 Final Flow 60 MP/DST Disc't
 Final Shut-In 90 Sub Total 1771

Approved By _____ Our Representative [Signature]

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Robert D. Hendrix

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY **Murfin Drilling Co. Inc.**

LEASE **Patti #3-10**

FIELD **James Cannon Southeast**

LOCATION **6601st & 6601st**

SEC **10** TWP **1S** RGE **37W**

COUNTY **Cheyenne** STATE **Kansas**

CONTRACTOR **Murfin Drilling Co. Inc. Rig #2**

SPUD **2/25/2015** COMP **3/5/2015**

RTD **4/7/60'** LTD **4/7/38'**

MUD UP **3/5/55'** TYPE MUD **Chemical**

SAMPLES SAVED FROM **3530'** TO **TD**

DRILLING TIME KEPT FROM **3530'** TO **TD**

SAMPLES EXAMINED FROM **3530'** TO **TD**

GEOLOGICAL SUPERVISION FROM **3640'**

GEOLOGIST ON WELL **Robert D. Hendrix**

FORMATION TOPS

ELECTRIC LOG

SAMPLE

Neva

Topoka

Stark

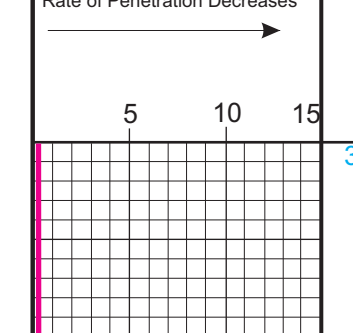
BKC

Lansing

Foraker

Red Eagle

FORMATION TOPS	ELECTRIC LOG	SAMPLE
Anhydrite	3123 (-60)	3180 (-53)
Neva	3628 (-89)	3680 (-97)
Topoka	3962 (-72)	3968 (-73)
Stark	4094 (-60)	4096 (-60)
BKC	4126 (-54)	4179 (-46)
Lansing	4388 (-13)	4388 (-16)
Foraker	4446 (-13)	4449 (-12)
Red Eagle	4564 (-33)	4568 (-33)
	4553 (-42)	4659 (-42)



REMARKS:

ELEVATIONS

KB **3233'**

DF

GL **3222'**

Measurements Are All From **Kelly Bushing**

CASING

CONDUCTOR

SURFACE **5.129' @ 229'**

PRODUCTION **5.129' @ 4738'**

ELECTRICAL SURVEYS

Done by **Industrious/Murfin/Stone**

Reviewed **Wendell Services**

Checked **Wendell Services**

Checked **Wendell Services**

Checked **Wendell Services**

Checked **Wendell Services**

Checked **Wendell Services**

Checked **Wendell Services**

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LEGEND



DEPTH	LITHOLOGY	SAMPLE DESCRIPTION	REMARKS
3150	Anhydrite		Anhydrite 3180 (+53)
3200	Anhydrite		Base Anhydrite 3218 (+15)
3250	Sandstone	Shale: red, v-sandy Sandstone: white/tan, vfn gr, well sorted, rnd, semi-frangible, calcareous, no vis por	bit trip at 3507' strap 0.86' long to board
3550	Shale	Shale: red, gray, green, brown, silty	
3600	Shale	Shale: red, gray, silty, v-sandy	
3650	Shale	Shale: red, gray, green, brown, silty, sandy	
3700	Shale	Shale: red, gray, silty, v-sandy	
3750	Shale	Shale: red, gray, green, brown, silty, sandy	
3800	Shale	Shale: red, gray, silty, v-sandy	
3850	Shale	Shale: red, gray, green, brown, silty, sandy	
3900	Shale	Shale: red, gray, silty, v-sandy	
3950	Shale	Shale: red, brown, silty, sandy	
4000	Sandstone	Sandstone: gray to green, hard, biotitic, fngm, submd, mod sorted, calcareous, no vis por	
4050	Shale	Shale: red, brown, silty, sandy	
4100	Limestone	Limestone: white to tan, fxdn, cherty (orange), fossiliferous, no vis por, ns	Neva 3630 (-397) Geologist on location 3640' at 5:45 pm 2/27/2015
4150	Shale	Shale: red, brown, gray, silty	
4200	Shale	Shale: red, brown, gray, silty	
4250	Shale	Shale: red, brown, gray, silty	
4300	Shale	Shale: red, brown, gray, silty	
4350	Shale	Shale: red, brown, gray, silty	
4400	Shale	Shale: red, brown, gray, silty	
4450	Shale	Shale: red, brown, gray, silty	
4500	Shale	Shale: red, brown, gray, silty	
4550	Shale	Shale: red, brown, gray, silty	
4600	Shale	Shale: red, brown, gray, silty	
4650	Shale	Shale: red, brown, gray, silty	
4700	Shale	Shale: red, brown, gray, silty	
4750	Shale	Shale: red, brown, gray, silty	
4800	Shale	Shale: red, brown, gray, silty	
4850	Shale	Shale: red, brown, gray, silty	
4900	Shale	Shale: red, brown, gray, silty	
4950	Shale	Shale: red, brown, gray, silty	
5000	Shale	Shale: red, brown, gray, silty	
5050	Shale	Shale: red, brown, gray, silty	
5100	Shale	Shale: red, brown, gray, silty	
5150	Shale	Shale: red, brown, gray, silty	
5200	Shale	Shale: red, brown, gray, silty	
5250	Shale	Shale: red, brown, gray, silty	
5300	Shale	Shale: red, brown, gray, silty	
5350	Shale	Shale: red, brown, gray, silty	
5400	Shale	Shale: red, brown, gray, silty	
5450	Shale	Shale: red, brown, gray, silty	
5500	Shale	Shale: red, brown, gray, silty	
5550	Shale	Shale: red, brown, gray, silty	
5600	Shale	Shale: red, brown, gray, silty	
5650	Shale	Shale: red, brown, gray, silty	
5700	Shale	Shale: red, brown, gray, silty	
5750	Shale	Shale: red, brown, gray, silty	
5800	Shale	Shale: red, brown, gray, silty	
5850	Shale	Shale: red, brown, gray, silty	
5900	Shale	Shale: red, brown, gray, silty	
5950	Shale	Shale: red, brown, gray, silty	
6000	Shale	Shale: red, brown, gray, silty	
6050	Shale	Shale: red, brown, gray, silty	
6100	Shale	Shale: red, brown, gray, silty	
6150	Shale	Shale: red, brown, gray, silty	
6200	Shale	Shale: red, brown, gray, silty	
6250	Shale	Shale: red, brown, gray, silty	
6300	Shale	Shale: red, brown, gray, silty	
6350	Shale	Shale: red, brown, gray, silty	
6400	Shale	Shale: red, brown, gray, silty	
6450	Shale	Shale: red, brown, gray, silty	
6500	Shale	Shale: red, brown, gray, silty	
6550	Shale	Shale: red, brown, gray, silty	
6600	Shale	Shale: red, brown, gray, silty	
6650	Shale	Shale: red, brown, gray, silty	
6700	Shale	Shale: red, brown, gray, silty	
6750	Shale	Shale: red, brown, gray, silty	
6800	Shale	Shale: red, brown, gray, silty	
6850	Shale	Shale: red, brown, gray, silty	
6900	Shale	Shale: red, brown, gray, silty	
6950	Shale	Shale: red, brown, gray, silty	
7000	Shale	Shale: red, brown, gray, silty	
7050	Shale	Shale: red, brown, gray, silty	
7100	Shale	Shale: red, brown, gray, silty	
7150	Shale	Shale: red, brown, gray, silty	
7200	Shale	Shale: red, brown, gray, silty	
7250	Shale	Shale: red, brown, gray, silty	
7300	Shale	Shale: red, brown, gray, silty	
7350	Shale	Shale: red, brown, gray, silty	
7400	Shale	Shale: red, brown, gray, silty	
7450	Shale	Shale: red, brown, gray, silty	
7500	Shale	Shale: red, brown, gray, silty	
7550	Shale	Shale: red, brown, gray, silty	
7600	Shale	Shale: red, brown, gray, silty	
7650	Shale	Shale: red, brown, gray, silty	
7700	Shale	Shale: red, brown, gray, silty	
7750	Shale	Shale: red, brown, gray, silty	
7800	Shale	Shale: red, brown, gray, silty	
7850	Shale	Shale: red, brown, gray, silty	
7900	Shale	Shale: red, brown, gray, silty	
7950	Shale	Shale: red, brown, gray, silty	
8000	Shale	Shale: red, brown, gray, silty	
8050	Shale	Shale: red, brown, gray, silty	
8100	Shale	Shale: red, brown, gray, silty	
8150	Shale	Shale: red, brown, gray, silty	
8200	Shale	Shale: red, brown, gray, silty	
8250	Shale	Shale: red, brown, gray, silty	
8300	Shale	Shale: red, brown, gray, silty	
8350	Shale	Shale: red, brown, gray, silty	
8400	Shale	Shale: red, brown, gray, silty	
8450	Shale	Shale: red, brown, gray, silty	
8500	Shale	Shale: red, brown, gray, silty	
8550	Shale	Shale: red, brown, gray, silty	
8600	Shale	Shale: red, brown, gray, silty	
8650	Shale	Shale: red, brown, gray, silty	
8700	Shale	Shale: red, brown, gray, silty	
8750	Shale	Shale: red, brown, gray, silty	
8800	Shale	Shale: red, brown, gray, silty	
8850	Shale	Shale: red, brown, gray, silty	
8900	Shale	Shale: red, brown, gray, silty	
8950	Shale	Shale: red, brown, gray, silty	
9000	Shale	Shale: red, brown, gray, silty	
9050	Shale	Shale: red, brown, gray, silty	
9100	Shale	Shale: red, brown, gray, silty	
9150	Shale	Shale: red, brown, gray, silty	
9200	Shale	Shale: red, brown, gray, silty	
9250	Shale	Shale: red, brown, gray, silty	
9300	Shale	Shale: red, brown, gray, silty	
9350	Shale	Shale: red, brown, gray, silty	
9400	Shale	Shale: red, brown, gray, silty	
9450	Shale	Shale: red, brown, gray, silty	
9500	Shale	Shale: red, brown, gray, silty	
9550	Shale	Shale: red, brown, gray, silty	
9600	Shale	Shale: red, brown, gray, silty	
9650	Shale	Shale: red, brown, gray, silty	
9700	Shale	Shale: red, brown, gray, silty	
9750	Shale	Shale: red, brown, gray, silty	
9800	Shale	Shale: red, brown, gray, silty	
9850	Shale	Shale: red, brown, gray, silty	
9900	Shale	Shale: red, brown, gray, silty	
9950	Shale	Shale: red, brown, gray, silty	
10000	Shale	Shale: red, brown, gray, silty	
10050	Shale	Shale: red, brown, gray, silty	
10100	Shale	Shale: red, brown, gray, silty	
10150	Shale	Shale: red, brown, gray, silty	
10200	Shale	Shale: red, brown, gray, silty	
10250	Shale	Shale: red, brown, gray, silty	
10300	Shale	Shale: red, brown, gray, silty	
10350	Shale	Shale: red, brown, gray, silty	
10400	Shale	Shale: red, brown, gray, silty	
10450	Shale	Shale: red, brown, gray, silty	
10500	Shale	Shale: red, brown, gray, silty	
10550	Shale	Shale: red, brown, gray, silty	
10600	Shale	Shale: red, brown, gray, silty	
10650	Shale	Shale: red, brown, gray, silty	
10700	Shale	Shale: red, brown, gray, silty	
10750	Shale	Shale: red, brown, gray, silty	
10800	Shale	Shale: red, brown, gray, silty	
10850	Shale	Shale: red, brown, gray, silty	
10900	Shale	Shale: red, brown, gray, silty	
10950	Shale	Shale: red, brown, gray, silty	
11000	Shale	Shale: red, brown, gray, silty	
11050	Shale	Shale: red, brown, gray, silty	
11100	Shale	Shale: red, brown, gray, silty	
11150	Shale	Shale: red, brown, gray, silty	
11200	Shale	Shale: red, brown, gray, silty	
11250	Shale	Shale: red, brown, gray, silty	
11300	Shale	Shale: red, brown, gray, silty	
11350	Shale	Shale: red, brown, gray, silty	
11400	Shale	Shale: red, brown, gray, silty	
11450	Shale	Shale: red, brown, gray, silty	
11500	Shale	Shale: red, brown, gray, silty	
11550	Shale	Shale: red, brown, gray, silty	
11600	Shale	Shale: red, brown, gray, silty	
11650	Shale	Shale: red, brown, gray, silty	
11700	Shale	Shale: red, brown, gray, silty	
11750	Shale	Shale: red, brown, gray, silty	
11800	Shale	Shale: red, brown, gray, silty	
11850	Shale	Shale: red, brown, gray, silty	
11900	Shale	Shale: red, brown, gray, silty	
11950	Shale	Shale: red, brown, gray, silty	
12000	Shale	Shale: red, brown, gray, silty	
12050	Shale	Shale: red, brown, gray, silty	
12100	Shale	Shale: red, brown, gray, silty	
12150	Shale	Shale: red, brown, gray, silty	
12200	Shale	Shale: red, brown, gray, silty	
12250	Shale	Shale: red, brown, gray, silty	
12300	Shale	Shale: red, brown, gray, silty	
12350	Shale	Shale: red, brown, gray, silty	
12400	Shale	Shale: red, brown, gray, silty	
12450	Shale	Shale: red, brown, gray, silty	
12500	Shale	Shale: red, brown, gray, silty	
12550	Shale	Shale: red, brown, gray, silty	
12600	Shale	Shale: red, brown, gray, silty	
12650	Shale	Shale: red, brown, gray, silty	
12700	Shale	Shale: red, brown, gray, silty	
12750	Shale	Shale: red, brown, gray, silty	
12800	Shale	Shale: red, brown, gray, silty	
12850	Shale	Shale: red, brown, gray, silty</	