



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
- Conv. to GSW
- Plug Back: _____ Plug Back Total Depth _____
- Commingled Permit #: _____
- Dual Completion Permit #: _____
- SWD Permit #: _____
- ENHR Permit #: _____
- GSW Permit #: _____

Spud Date or Recompletion Date Date Reached TD Completion Date or Recompletion Date

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

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total 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

- Letter of Confidentiality Received
Date: _____
- Confidential Release Date: _____
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT I II III Approved by: _____ Date: _____



1119844

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops and base 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. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

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 Electric Log Submitted Electronically <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(If no, Submit Copy)</i> List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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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
_____ Perforate _____ Protect Casing _____ Plug Back TD _____ Plug Off Zone				

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
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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> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Pickrell Drilling Company, Inc.
Well Name	Coykendall 10
Doc ID	1119844

Tops

Name	Top	Datum
Heebner	3047	-1578
Douglas	3075	-1607
Lansing	3271	-1803
Kansas City	3549	-2081
Stark	3691	-2223
B/KC	3790	-2322
Mississippi	4080	-2612
Mississippi Lm	4092	-2624

ALLIED OIL & GAS SERVICES, LLC 059278

Federal Tax I.D.# 20-5975804

REMIT TO P.O. BOX 93999
SOUTHLAKE, TEXAS 76092

SERVICE POINT:
Medicine Lodge, KS

Coulter d 11

DATE 1-25-13	SEC. 36	TWP. 295	RANGE 7W	CALLED OUT 3:30 AM	ON LOCATION 06:00 AM	JOB START 7:07 AM	JOB FINISH 7:40 AM
LEASE Caberhall	WELL # 10	Kingman South to 5 th St 42.3 East, 14 North		LOCATION Into location	COUNTY Kingman	STATE KS	
OLD OR NEW (Circle one)							

CONTRACTOR Pickrell 1
 TYPE OF JOB Surface Casing
 HOLE SIZE 12 1/4" T.D. 225ft
 CASING SIZE 8 3/8" 23rd DEPTH 211.03
 TUBING SIZE _____ DEPTH _____
 DRILL PIPE _____ DEPTH _____
 TOOL _____ DEPTH _____
 PRES. MAX _____ MINIMUM _____
 MEAS. LINE _____ SHOE JOINT 20ft
 CEMENT LEFT IN CSG. 20ft, 1.27 bbl, 5.3 sy
 PERFS. _____
 DISPLACEMENT Fresh Water

OWNER Pickrell Drilling Company, Inc.

CEMENT AMOUNT ORDERED 225 sy A + 39 cc + 29 gal

COMMON	225 sy @ 17.90	4087.50
POZMIX	@	
GEL	5 sy @ 23.40	117.00
CHLORIDE	8 sy @ 14.00	112.00
ASC	@	

EQUIPMENT
 PUMP TRUCK CEMENTER Charles E. King
 # 471-502 HELPER Don Gilley
 BULK TRUCK
 # 356-290 DRIVER Justin Bower
 BULK TRUCK
 DRIVER

HANDLING	243.81 x 2.48	@	603.36
MILEAGE	11.10 hrs x 35 x 2.10		1010.10
		TOTAL	6269.96

REMARKS:

Pump 5 bbls Fresh Water
Pump 54 bbls Cement 27.5 sy
Displace with 12 bbls Fresh Water
Circulate 12 bbls, 50 sy of Cement to Surface

388.5

SERVICE

DEPTH OF JOB	225		
PUMP TRUCK CHARGE		@	1512.25
EXTRA FOOTAGE		@	
MILEAGE	35	@	7.70 269.50
MANIFOLD		@	
LV	35	@	4.40 154.00

TOTAL 1935.75

CHARGE TO: Pickrell Drilling Company, Inc.
 STREET _____
 CITY _____ STATE _____ ZIP _____

PLUG & FLOAT EQUIPMENT

	@	
	@	
<u>None</u>	@	
	@	

TOTAL _____

SALES TAX (If Any) 328.25

TOTAL CHARGES 8205.71

PRINTED NAME Mike Kern DISCOUNT 20% 1641.15 IF PAID IN 30 DAYS

SIGNATURE Mike Kern

NET + 6564.56



TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Co
 100 S Main Ste 505
 Wichita, KS 67202
 ATTN: Bob Stolzle

36-29S-7W Kingman
Coykendall 10
 Job Ticket: 50885 **DST#: 2**
 Test Start: 2013.01.31 @ 22:28:10

GENERAL INFORMATION:

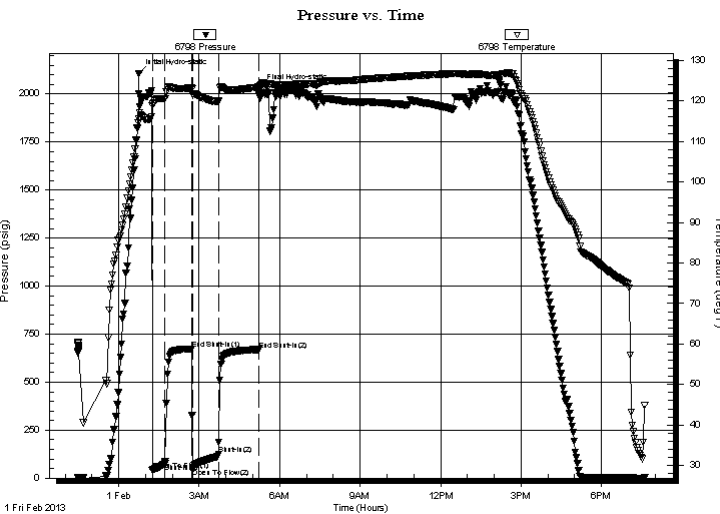
Formation: **Mississippi**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 01:15:10
 Time Test Ended: 19:37:40
 Interval: **4081.00 ft (KB) To 4101.00 ft (KB) (TVD)**
 Total Depth: 4218.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Straddle (Reset)
 Tester: Leal Cason
 Unit No: 45
 Reference Elevations: 1469.00 ft (KB)
 1459.00 ft (CF)
 KB to GR/CF: 10.00 ft

Serial #: 6798

Inside

Press @ Run Depth: 124.32 psig @ 4082.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.01.31 End Date: 2013.02.01 Last Calib.: 2013.02.01
 Start Time: 22:28:11 End Time: 19:37:39 Time On Btm: 2013.02.01 @ 00:45:10
 Time Off Btm: 2013.02.01 @ 05:16:10

TEST COMMENT: IF: Strong Blow , BOB in 2 minutes
 IS: GTS While Bleeding Off, Weak Surface Blow Back
 FF: Strong Blow , BOB & GTS Immediate, Gauged Gas & Caught Sample
 FS: 1/2 inch Blow Back



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2107.84	115.72	Initial Hydro-static
30	39.26	118.75	Open To Flow (1)
59	74.59	120.61	Shut-In(1)
119	673.21	123.25	End Shut-In(1)
120	51.07	121.44	Open To Flow (2)
179	124.32	119.79	Shut-In(2)
268	669.37	123.43	End Shut-In(2)
271	2027.05	123.82	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)

* Recovery from multiple tests

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
First Gas Rate	0.25	18.00	51.40
Last Gas Rate	0.25	58.00	114.86
Max. Gas Rate	0.25	58.00	114.86



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Co

36-29S-7W Kingman

100 S Main Ste 505
Wichita, KS 67202

Coykendall 10

Job Ticket: 50885

DST#: 2

ATTN: Bob Stolzle

Test Start: 2013.01.31 @ 22:28:10

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: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.78 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl

Total Length: ft Total Volume: bbl

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

Laboratory Name: Laboratory Location:

Recovery Comments:



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

GAS RATES

Pickrell Drilling Co

36-29S-7W Kingman

100 S Main Ste 505
Wichita, KS 67202

Coykendall 10

Job Ticket: 50885

DST#: 2

ATTN: Bob Stolzle

Test Start: 2013.01.31 @ 22:28:10

Gas Rates Information

Temperature: 59 (deg F)
Relative Density: 0.65
Z Factor: 0.8

Gas Rates Table

Flow Period	Elapsed Time	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
2	10	0.25	18.00	51.40
2	20	0.25	26.00	64.09
2	30	0.25	31.00	72.02
2	40	0.25	38.00	83.13
2	50	0.25	46.00	95.82
2	60	0.25	58.00	114.86

Serial #: 6798

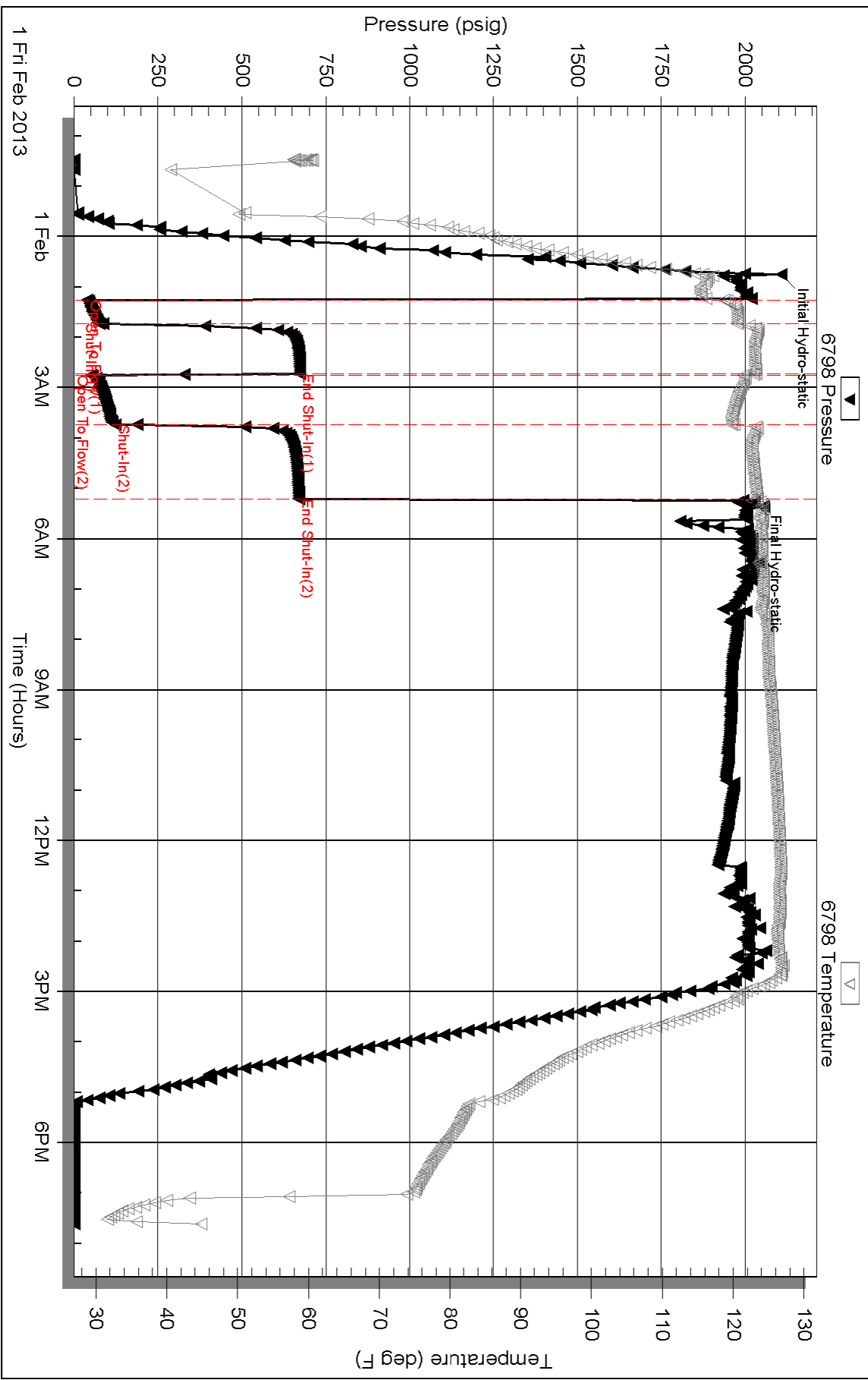
Inside

Pickell Drilling Co

Coykendall 10

DST Test Number: 2

Pressure vs. Time



Triobite Testing, Inc

Ref. No: 50885

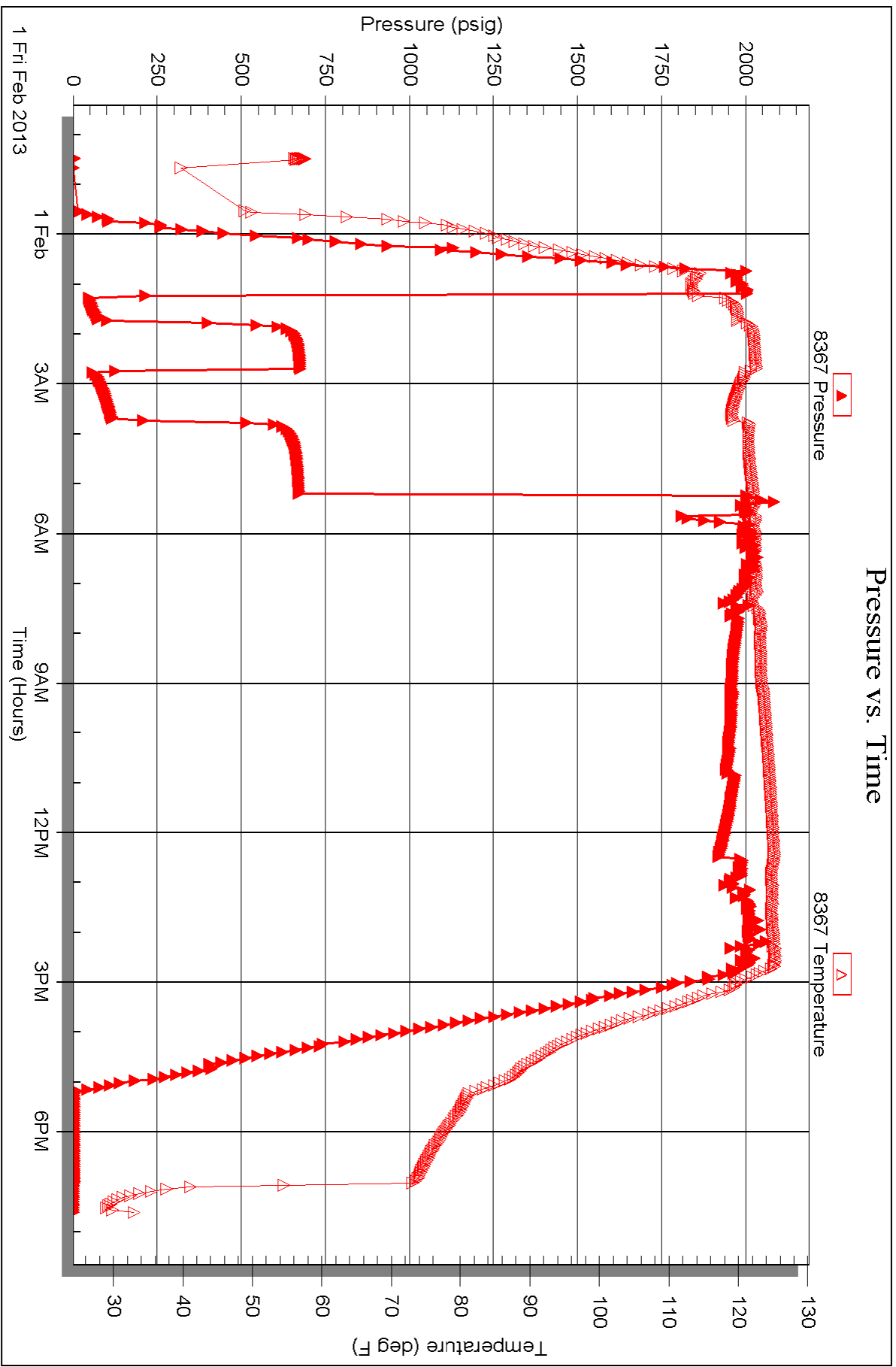
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Serial #: 8367

Outside Pckrell Drilling Co

Coykendall 10

DST Test Number: 2

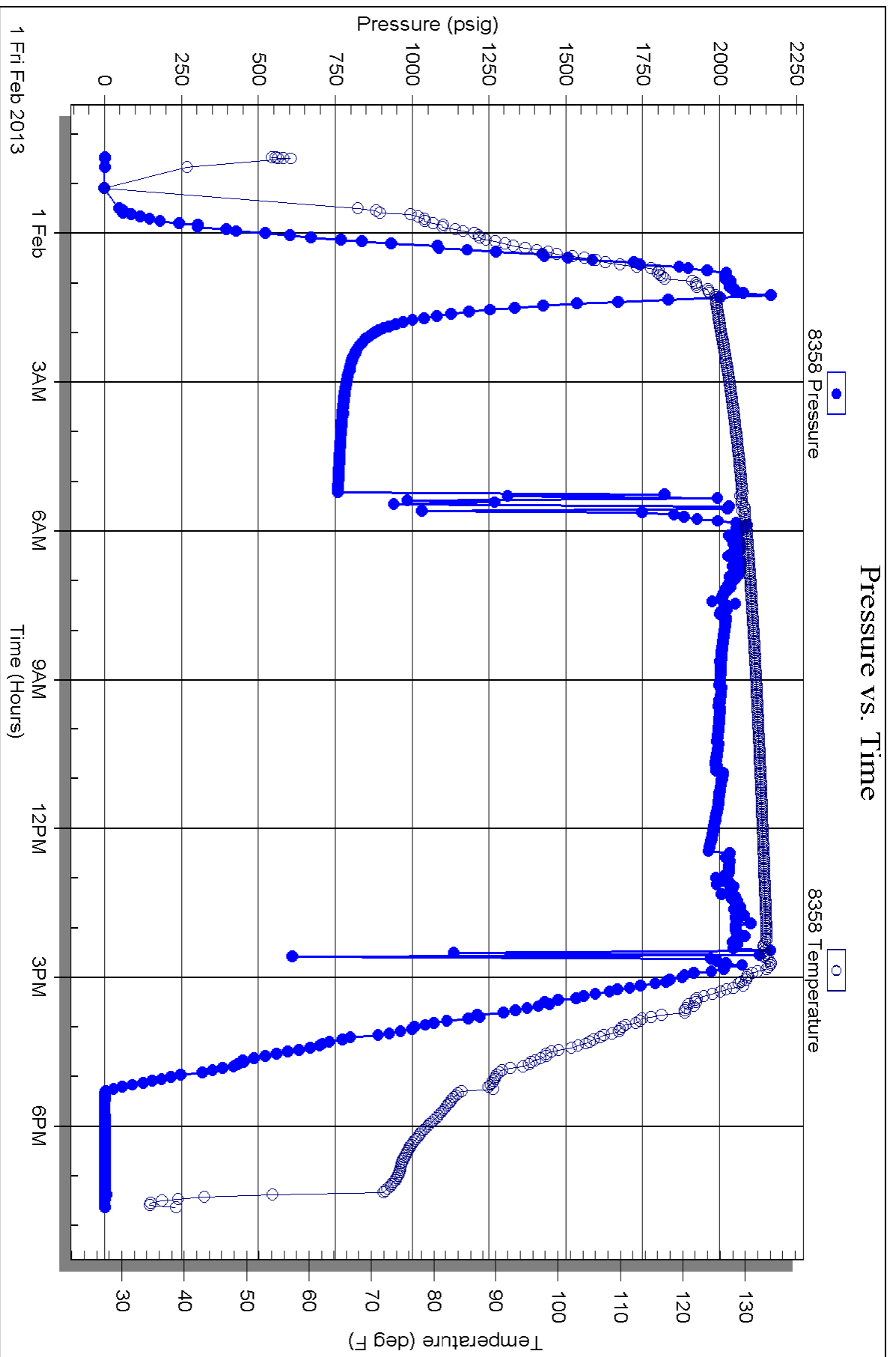


Serial #: 8358

Below (Stratton) Drilling Co

Coykendall 10

DST Test Number: 2





TRILOBITE TESTING, INC.

DRILL STEM TEST REPORT

Pickrell Drilling Co
 100 S Main Ste 505
 Wichita, KS 67202
 ATTN: Bob Stolzle

36-29S-7W Kingman
Coykendall 10
 Job Ticket: 50884 **DST#: 1**
 Test Start: 2013.01.30 @ 20:36:07

GENERAL INFORMATION:

Formation: **Osage**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 23:32:37
 Time Test Ended: 06:21:52
 Interval: **4106.00 ft (KB) To 4155.00 ft (KB) (TVD)**
 Total Depth: 4155.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Good
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Leal Cason
 Unit No: 45
 Reference Elevations: 1469.00 ft (KB)
 1459.00 ft (CF)
 KB to GR/CF: 10.00 ft

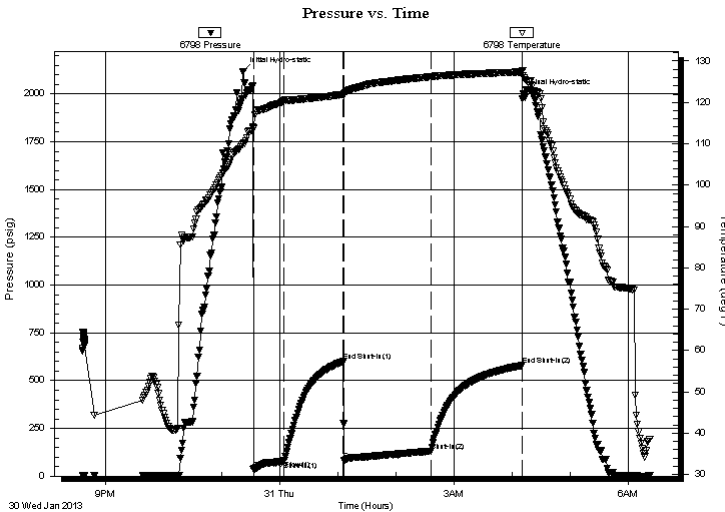
Serial #: 6798

Inside

Press @ Run Depth: 130.26 psig @ 4107.00 ft (KB) Capacity: 8000.00 psig
 Start Date: 2013.01.30 End Date: 2013.01.31 Last Calib.: 2013.01.31
 Start Time: 20:36:08 End Time: 06:21:52 Time On Btm: 2013.01.30 @ 23:21:52
 Time Off Btm: 2013.01.31 @ 04:11:07

TEST COMMENT: IF: Strong Blow , BOB in 6 minutes
 IS: No Blow Back
 FF: Strong Blow , BOB in 3 minutes
 FS: No Blow Back

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2118.44	109.90	Initial Hydro-static
11	37.03	113.57	Open To Flow (1)
42	78.68	120.37	Shut-In(1)
104	599.89	121.91	End Shut-In(1)
105	80.71	122.05	Open To Flow (2)
194	130.26	126.19	Shut-In(2)
289	579.45	127.37	End Shut-In(2)
290	2001.91	126.55	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
0.00	160 GIP	0.00
119.00	Water	0.59
120.00	OWCM 2%O 48%W 50%M	1.68
25.00	OCM 5%O 95%M	0.35

Gas Rates

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



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

FLUID SUMMARY

Pickrell Drilling Co

36-29S-7W Kingman

100 S Main Ste 505
Wichita, KS 67202

Coykendall 10

Job Ticket: 50884

DST#: 1

ATTN: Bob Stolzle

Test Start: 2013.01.30 @ 20:36:07

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:

126000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in³

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 0.02 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
0.00	160 GIP	0.000
119.00	Water	0.585
120.00	OWCM 2%O 48%W 50%M	1.683
25.00	OCM 5%O 95%M	0.351

Total Length: 264.00 ft Total Volume: 2.619 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW w as .13 @ 38 degrees

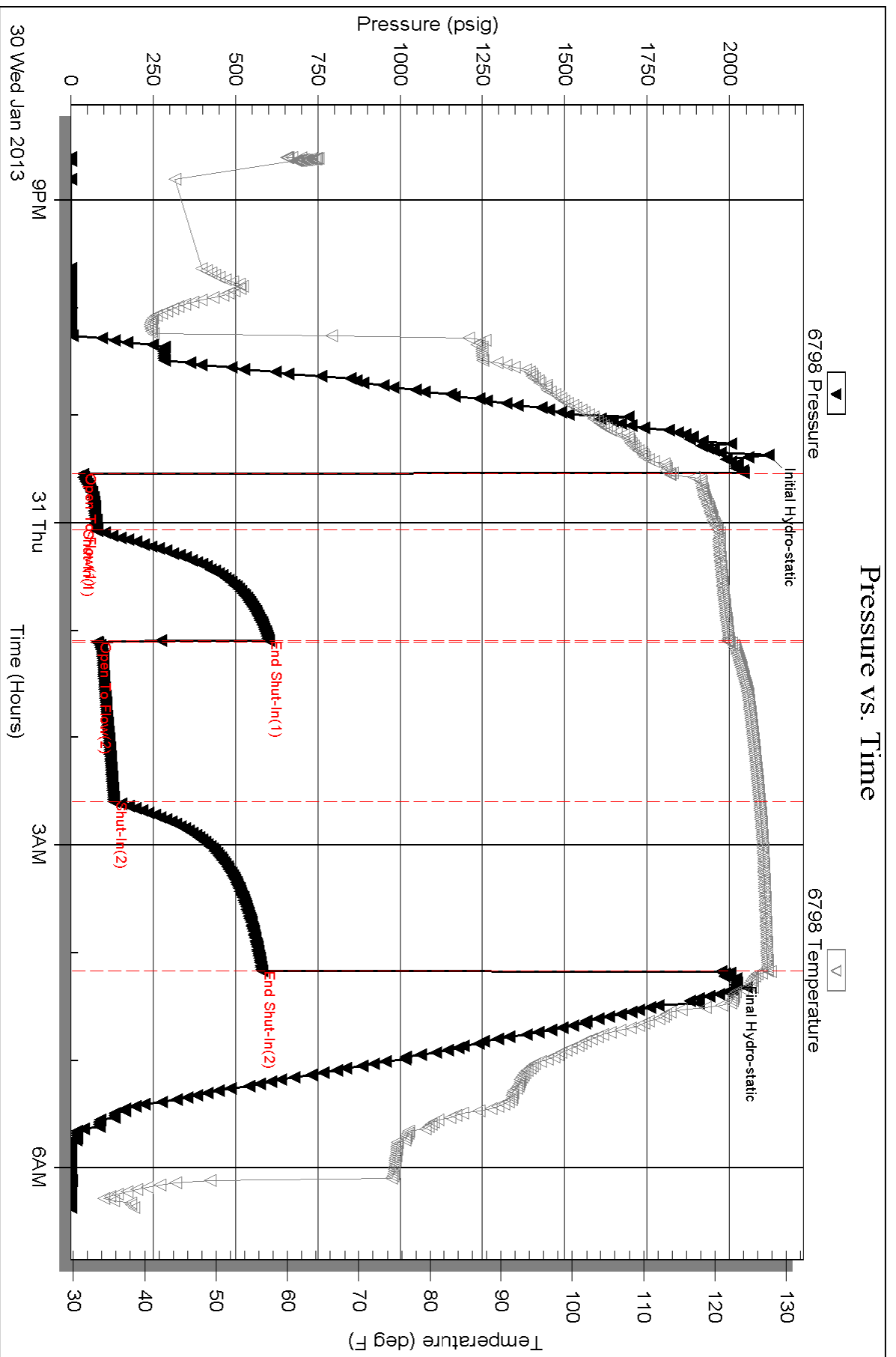
Serial #: 6798

Inside

Pickrell Drilling Co

Coykendall 10

DST Test Number: 1



ROBERT STOLZLE

CONSULTING PETROLEUM GEOLOGIST

2211 G. 201st ST.W. Goddard, MO 67052 - 0249 (910) 704 - 2400

DRILLING TIME AND SAMPLE LOG

OPERATOR: Pickrell Drilling Co., Inc.
 LEASE: Coykendall WELL NO.: 10
 FIELD: Spirity-Grabs-Basil
 LOCATION: 1980'ESL, 760'F&K(100'W of NESSE)
 SEC.: 36 TWP: 29S RANGE: 7W
 COUNTY: Kingman STATE: KS
 API NO.: 15-095-22267-00-00

CONTRACTOR: Pickrell Drilling Co., Rig #1
 COMMENCED: January 24, 2013 COMPLETED: 2/11/13
 ROTARY TOTAL DEPTH: 4220' LOG TOTAL DEPTH: 4218'
 GEOLOGICAL SUPERVISION FROM: 2900' to: T.D
 MUD-UP DEPTH: 3170' MUD TYPE: Chemical Polymer

FORMATION	SWATH		LOG		STRUCTURAL CORRELATION
	TOP	SESSA	TOP	SESSA	
Hebner Shale	3047 (-1578')	3044 (-1575')	3076 (-1607')	3076 (-1607')	+1'
Douglas Shale	3080 (-1611')	3076 (-1607')	3272 (-1803')	3272 (-1803')	+5'
Kansung Group	3270 (-1801')	3272 (-1803')	3548 (-2079')	3548 (-2079')	-3'
K.S. City Group	3548 (-2079')	3548 (-2079')	3691 (-2222')	3691 (-2222')	+3'
Starbuck Shale	3696 (-2227')	3691 (-2222')	3790 (-2321')	3790 (-2321')	+9'
Base KS City Grp.	3794 (-2325')	3790 (-2321')	3842 (-2373')	3842 (-2373')	+7'
Altamont L.S.	3846 (-2377')	3842 (-2373')	3904 (-2435')	3904 (-2435')	+10'
Rawlwood L.S.	3908 (-2439')	3904 (-2435')	4080 (-2611')	4080 (-2611')	+5'
Miss. Osage Fm.	* 4100 (-2631')	4080 (-2611')			+31'
Total Depth	4220'	4218'			

* Note: No chert was observed in the samples above 4100' due to excessive shale galling.

Reference Well for Structural Comparison: Pickrell #5 Coykendall (NW SE Sec. 36)
 Comments and Recommendations: Excessive Douglas Shale cavings throughout hole.

ELEVATIONS

KB 1469'
 GL 1459'

Measurements are all from KB

CASING RECORD

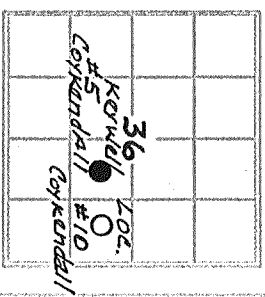
SURFACE: New 24#
 8 5/8" @ 223' w/ 2255X

PRODUCTION: New 4 1/2" 10.5# @ 4189'
 w/ 1255X Allied

WIRELINE SURVEYS

Tucker Energy Services: Microlog Based Induction and Compensated Density/Neutron
Full logs were run.

LOCATION MAP



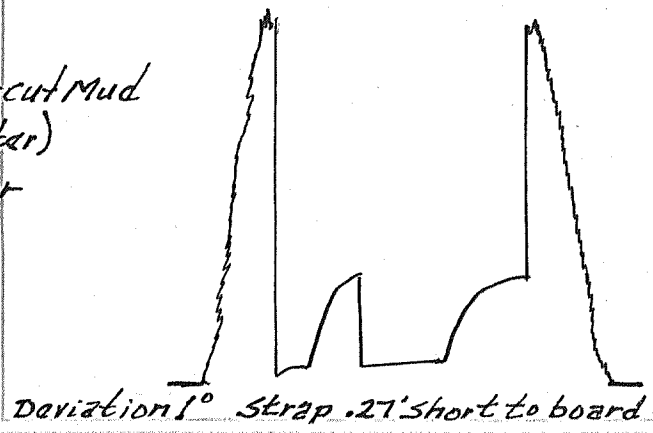
DST # 1 ZONE: Mississippian Osage Fm.
 INTERVAL: 4106'-4155'

DST # 1
 Interval: 4106-55'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		2118 psi	160' Gas in Pipe
2. Initial Flow: Start	0	37 psi	25' Oil cut Mud
3. Initial Flow: End	30	79 psi	(10% Oil)
4. Initial Shut-in: End	60	600 psi	120' Oil + Water cut Mud
5. Final Flow: Start	0	81 psi	(2% Oil, 48% Water)
6. Final Flow: End	90	130 psi	119' Salt Water
7. Final Shut-in: End	90	579 psi	Blow Desc:
8. Final Hydrostatic		2002 psi	I.F. - BOB 6 Min.

T.S.I. - No Blow
 F.F. - BOB 3 Min.
 F.S.I. - No Blow

BHT: 127°F
 Rv: .13 @ 38°F
chl. 126,000 ppm.



DST # 2 ZONE: Miss. Osage Fm.
 INTERVAL: 4081'-4101'

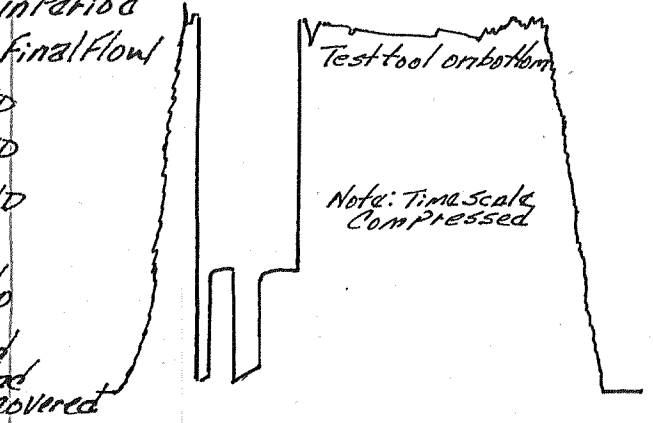
DST # 2
 Interval: 4081-4101'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic			
2. Initial Flow: Start			
3. Initial Flow: End			
4. Initial Shut-in: End			
5. Final Flow: Start			
6. Final Flow: End			
7. Final Shut-in: End			
8. Final Hydrostatic			

6798 Chart
 Depth: 4082'

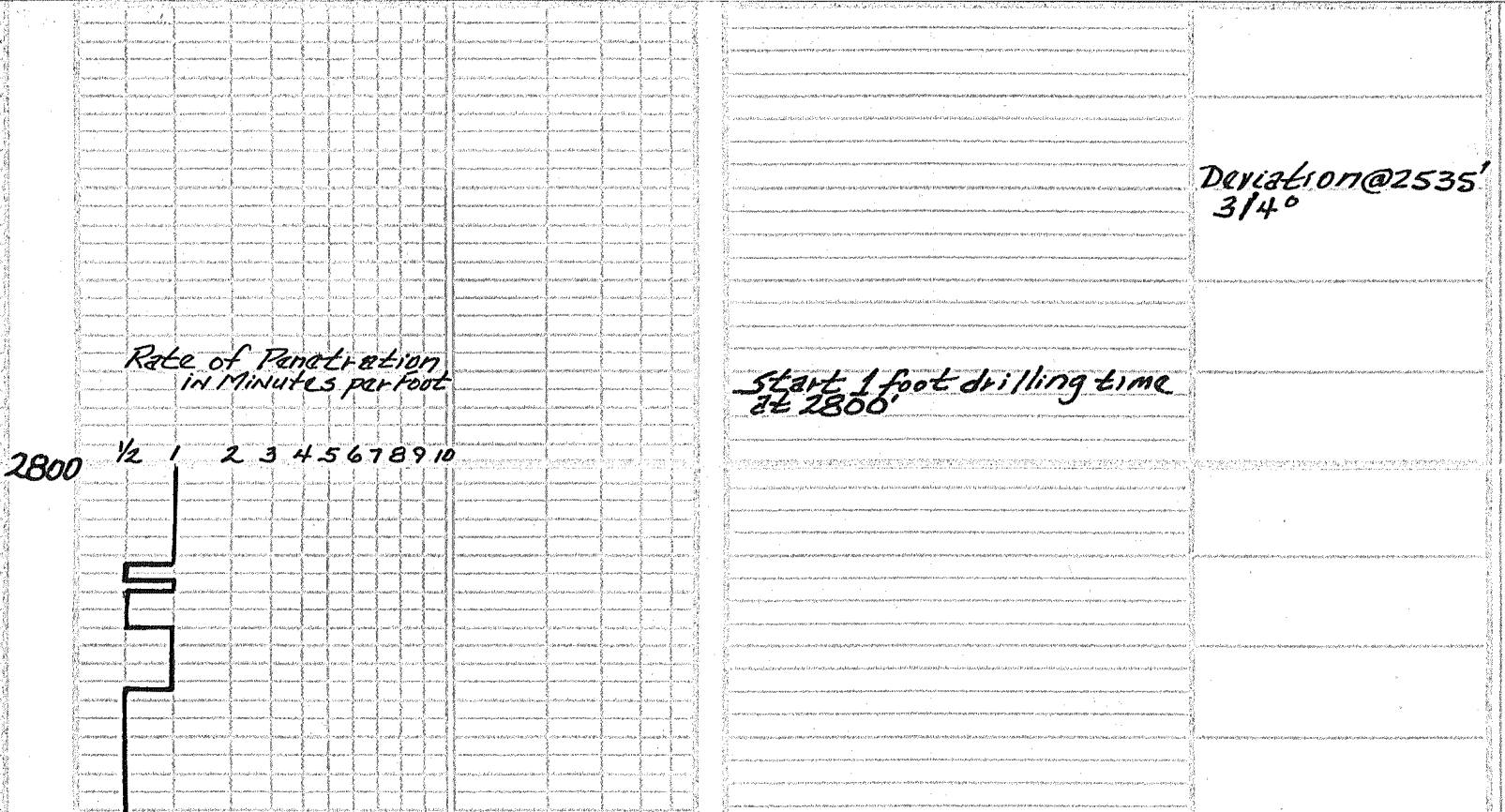
1. Initial Hydrostatic	2108	psi	Gasto Surface at start
2. Initial Flow: Start	0	39	psi of Initial shut-in Period
3. Initial Flow: End	30	75	psi Gauged during final flow
4. Initial Shut-in: End	60	673	psi 20 min - 64 MCFID
5. Final Flow: Start	0	51	psi 40 min - 83 MCFID
6. Final Flow: End	60	124	psi 60 min - 115 MCFID
7. Final Shut-in: End	90	669	psi
8. Final Hydrostatic	2027	psi	Jammed 4 times to get tool loose & 3rd tool parted at top of tool and lost any liquid recovered during test.

BHT: 124°F
Rw: _____



ABBREVIATIONS USED

ROCK TYPES:	FABRIC:	MODIFIERS:	
Lo - Limestone	Fn.grn - Finegrained	gd - Good	
Sh - Shale	VFG - Very fine grained	fr - Fair	
Sa - Sandstone	Med - Medium	pr - Poor	
Slt - Siltstone	Crs - Coarse	ex - excellent	
Co - Conglomerate	Det - Detrital	v - very	
Ch - Chert	Coss - Fossiliferous	w - well	
Qtz - Quartzite	Cr - Crystalline	tr - trace	
Grn - Granite	Mxn - Microcrystalline	acc - occasional	
Dol - Dolomite	Ool - Oolitic	vis - visible	
Chk - Chalky	Oom - Oolitic	N - no	
	Mat - Matrix	grn - granular	
COLOR:	OTHER TERMS:	intgrn - intergranular	
Vh - White	fl - Fluorescence (of oil)	gp - pinpoint	
Cr - Cream	min fl - mineral fluorescence	gd - good	
Clr - Clear	pyr - pyritic	goy - goony	
Rd - Red	oleu - oleuconitic		OIL SHOWS
Grn - Green	carb - carbonaceous		○ Weak Oil Show
Gry - Grey	str - stain (of oil)		⊙ Fair Oil Show
Blk - Black	cut - oil cut		⊕ Good Oil Show
Mot - Mottled	AA - on above		⊗ Excellent Oil Show
	g - porosity		
HARDNESS:	NSFOC - no stain, fluorescence, odor, or cut (of oil)	TEXTURE:	
Sft - Soft	empl - sample	Dns - Dense	
M.Sft - Moderately soft	perm - permeability	Cl - Clayey	
Hrd - Hard	F.O. - free oil	Fri - Friable	
V.Hrd - Very hard	vug - vugular	Earth - Earthy	
	tr - trace	Hack - Hackle	
	w/ - with	Fiss - Fissile	
		Vit - Vitreous	
		Vug - Vugular	
		Mic - Micritic	



2850

2900

2950

3000

3050

start 10' wet and dry samples at 2900'

sh: lt-dk gry, 1 sft - m sft, stly earthy
Ls: crm-wh, hrd: sft, fn-VFG, xln. V. FN. grnd. smpl. NSFOC

Very Fine grained samples
Ls: wh-crm, m sft, dns, occ. foss. VFG xln. NSFOC
sh: lt-dk gry, m sft - sft, dns, occ. stly, earthy
Ls: wh-crm, sft - m sft, dns, fn-VFG, xln, tr. qd. qom. NSFOC
Very Fine grained samples
Ls: A.A. NSFOC
sh: A.A.
Abund. rd. sh. cavings?
sh: lt-dk gry, m sft, dns, earthy
tr. ss. cl. x wh, m sft, fn-VFG, mod-w. rhd. unkn. NSFOC

sh: lt-dk gry, m sft, dns, tr carb. stly, earthy
Ls: crm-wh, m sft - m hrd, fn-VFG, xln, foss. NSFOC
sh: lt-dk gry, m sft - sft, dns, earthy
Ls: crm-wh, m sft - m hrd, VFG xln, tr. foss. NSFOC
sh: A.A., Abund. rd. sh. cavings
tr. Ls: A.A. NSFOC

sh: lt-dk gry, m sft - sft, dns, occ. stly, earthy, abund. cavings
Ls: crm-wh, hrd - m sft, dns, VFG-xln, mic. NSFOC
tr. Ls: A.A. NSFOC
sh: lt-dk gry, sft, stly, earthy
Abund. rd. sh. cavings.
Very fine grained sample

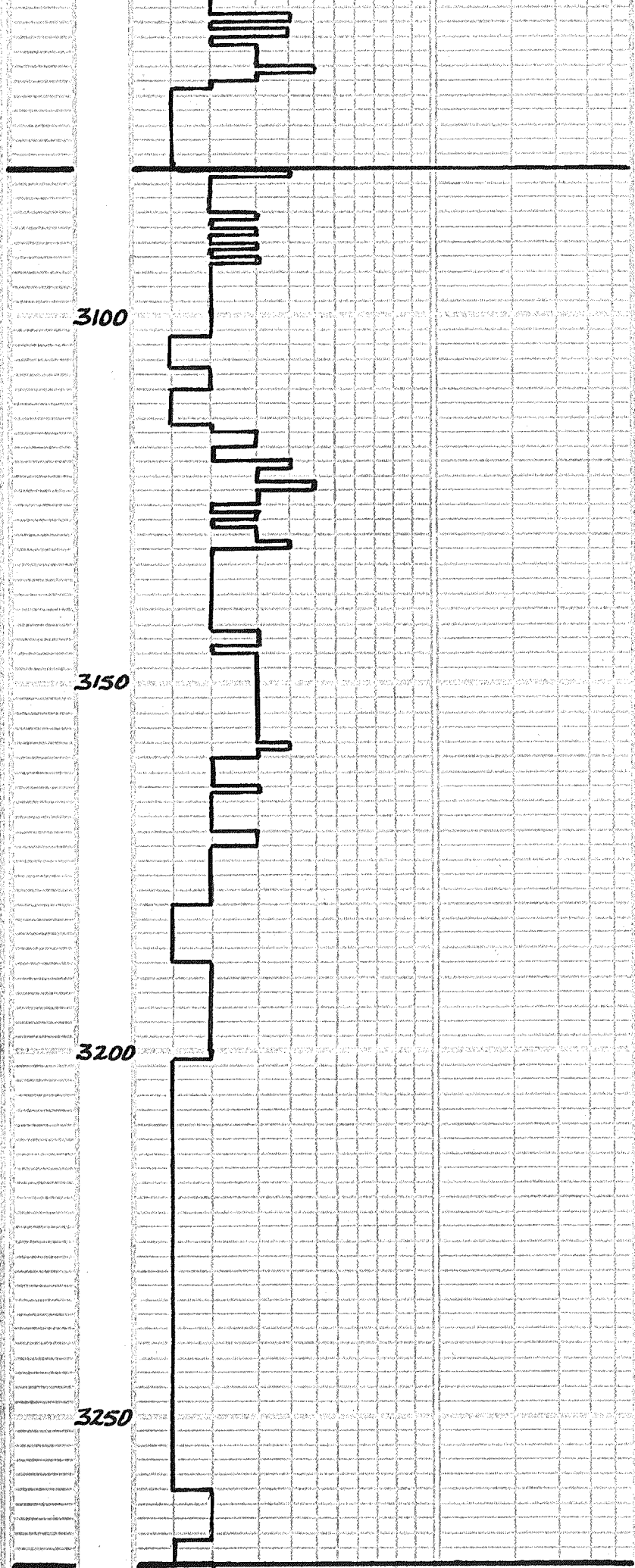
Abund. rd. sh. cavings.
sh: lt-dk gry, 1 sft - m sft, dns, occ. stly, mica, earthy
sh: A.A.
Ls: crm, m sft, dns, VFG. NSFOC
tr. ss. crm, m sft, fn-VFG, pr. s. rd. ? cmtd. NSFOC
ss: A.A., mod-w. gmtd., tr. pr. ANG. sub. rhd. NSFOC
sh: A.A.

sh: gry-dk gry, m sft, dns, tr. stly, earthy
Abund. rd. sh. cavings.

tr. Ls: wh-crm, m sft - m hrd, dns VFG-xln, mic. NSFOC
sh: lt. gry - tr. dk, m sft, dns, earthy, tr. carb.

sh: lt. dk gry - tr. bk, carb. sft - m sft, earthy
tr. Ls: A.A. NSFOC

Heebner shale (1578')



Sh: A.A.

Ls: crm, hrd - m. sft, dns, fn -
 Vfg. foss? NQ NSFOC
 Sh: lt - dk. gry, sft, sandy, slty.
 tr. ss: wh, m. sft, dns, vfg.
 mod. sft. ? Q NSFOC

tr. ss: wh, sft, vfg, frag, mod
 sft, ipr - mod. cmid. ? Q NSFOC
 Sh: lt - dk. gry, m. sft, dns,
 earthy, tr. slty.

Douglas Sh.
 (-1611')

Sh: gry - dk. gry, m. sft, dns,
 occ. slty, earthy

Sh: A.A. tr. tan?, more slty
 Abun. rd. sh. carings.

Sh: lt - dk. gry, m. sft, dns,
 tr. slty - sandy, earthy.

Sh: lt - dk. gry, m. sft, dns, tr.
 slty, earthy
 tr. ss: wh, hrd, dns, w. cmid,
 cherty, vfg. NQ NSFOC
 Sh: A.A. Abun. loose sd. grns.
 tn - med. grnd, sub rmd.

Sd: abun. loose sd. grn, med -
 tn. grnd, occ. cks, sft, rmd.
 Sh: gry, dk. gry, m. sft, dns,
 slty, earthy
 Sd: loose grns. A.A.

Sh: gry - dk. gry, m. sft, dns,
 occ. slty, earthy
 Sh: A.A. occ. sl. hrd. + hackly
 Sd: loose grns. A.A.

Sh: lt - dk. gry, m. sft - m. hrd,
 dns, tr. sandy, earth - hack
 Sd: loose grns, sh. more tn.
 grnd.

Complete
 Displacing Mud
 System at
 3170'

Sh: lt - dk. gry, m. sft - m. hrd,
 dns, slty - sandy, earthy -
 hackly
 Sh: A.A.
 tr. Ls: ? tan, hrd, dns, vfg -
 mx in mic, tr. foss. NQ NSFOC

Sh: gry - dk. gry, sft - m. sft,
 dns, occ. slty, earthy
 Sd: loose grns, med - tn, sub
 rmd - sft. Ang.
 Sh: lt - dk. gry, sft - m. sft, occ.
 slty - sandy, earthy - hackly
 occ. slt stn.

Sh: lt - dk. gry, sft - m. sft, dns,
 occ. slty, slts, earthy -
 hackly, tr. pyr, tr. mica.

Sh: lt - dk. gry, m. sft, dns,
 earthy - hackly, tr. slty,
 tr. mica.

Sh: gry, m. sft, dns, occ. slty.
 earthy - hackly

Sh: gry, m. sft - sft, occ. slty -
 sandy, tr. mic, earthy -
 hackly.

Sh: gry, m. sft, dns, tr. slty,
 tr. ss: vfg, hrd, dns, w. cmid.
 NQ NSFOC

Sh: A.A.

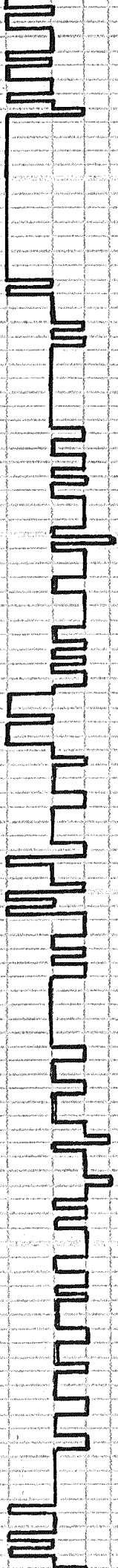
Lansing

3300

3350

3400

3450



th. Ls. brn., hrd. dns., VFG-MXN GROUP (-1801)

mic. occ. foss. NO NSFOC
Ls. crm-brn., hrd. dns., VFG-MXN
mic. tr. foss. & pr. NO NSFOC
predom. sh. gry. sft., dns., shty

Ls. crm-tan, hrd.-sft. & chiky.,
VFG-MXN, foss. 1 pr.
NO NSFOC

abun. Douglas shale R.P.
Ls. crm. hrd.-sft. & chiky., VFG
-MXN, occ. foss. 1 tr. pr.
Vug. moldic ϕ NSFOC
Abun. Dg. sh. cavings

Deviation @ 3292'
1 1/4°

Ls. crm-tan, hrd.-m. sft., dns.
VFG-MXN, tr. mic. tr. chiky
occ. foss. 1 tr. sh. std. NO NSFOC
Ls. crm., m. hrd., dns., VFG-MXN,
foss. w/ go. vug. moldic ϕ
tr. sh. std. NSFOC

Ls. crm. hrd.-m. hrd. dns. fn.-
VFG-MXN, occ. foss. w/ occ.
go. vug. ϕ some moldic tr.
sh. std. NSFOC

Ls. crm., hrd. dns., fn-MXN, foss.
tr. sh. std. NO NSFOC

Ls. crm., hrd. dns, occ. sft. &
chiky, fn-MXN-MXN, foss.
NO NSFOC

sh. gry.-blk., m. hrd., dns., hack.
sh. A.A.

Ls. crm-tan, hrd., dns., fn-MXN-
-MXN, tr. chiky, foss. & ool.
w/ pr. moldic ϕ NSFOC

Ls. crm-tan, hrd.-sft. & chiky.
fn-MXN-MXN, foss., tr. ool.
tr. pr. vug. moldic ϕ NSFOC

sh. gry.-blk., m. sft., dns., hack.
sh. A.A.

Ls. crm., hrd. dns., fn-VFG-MXN.
foss. & ool. w/ tr. v. pr. ool.
 ϕ NSFOC

Ls. crm-brn., hrd., dns., fn-VFG
-MXN, foss., ool.-gnstn, tr. v.
pr. ool. ϕ NSFOC

abun. gry. sh. cavings?
Ls. crm., hrd., dns., VFG-MXN,
foss. & ool.-gnstn.-pack. sh.
NO NSFOC

abun. sh. cavings
Ls. A.A., occ. tan-brn. 1 pr.
tr. v. lzd. NO NSFOC

gry. sh. cavings?

Ls. crm-tan, hrd., dns., VFG-MXN.
occ. chiky, occ. foss. & ool.
tr. pr.-v. pr. ool. ϕ NSFOC

Ls. A.A. tr. med. xln. NO NSFOC
sh. gry.-dk. gry., m. hrd., dns.
hack/ly

Ls. crm-brn., hrd., dns., fn-MXN-
-MXN, tr. mic. tr. chiky, foss.-
v. foss., sh. std. NO NSFOC

Ls. A.A. tr. pr. moldic ϕ , tr.
gry. Ls. NSFOC

Ls. crm-tan, hrd., dns., VFG-
-MXN, mic. occ. foss. 1 tr.
sh. std. 1 pr. NO NSFOC

sh. gry. gn-dk. gry., m. hrd., hack
sh. A.A., occ. sndy.

Ls. A.A., tr. sft. & chiky, tr.
v. pr. moldic vug. ϕ NSFOC
sh. A.A.

Ls. crm-brn., hrd., dns., VFG-
-MXN, mic., foss. & ool., tr.
chiky. NO NSFOC

Ls. A.A. NO NSFOC
sh. gry. gn-dk. gry., m. sft. 1

Ls. A.A., tr. sft. & chiky, tr.
v. pr. moldic vug. ϕ NSFOC
sh. A.A.

Ls. crm-brn., hrd., dns., VFG-
-MXN, mic., foss. & ool., tr.
chiky. NO NSFOC

Ls. A.A. NO NSFOC
sh. gry. gn-dk. gry., m. sft. 1

3500

m. hrd., tr. pyr., hackly
Sh: gry. - blk., m. sft. - m. hrd.,
dns., hack.
Ls: crm. - brn., hrd., dns., VFG -
mxln., mic., foss. NΦ NSFOC
Ls: A.A. NΦ NSFOC

Sh: gry. - blk., m. hrd., dns., hack.
occ. sandy
Sh: gry. - blk. A.A., tr. shly. ss.

Ls: crm. - brn. - dk. gry., hrd., dns.,
VFG - mxln., foss. NΦ NSFOC
Ls: A.A. VFG smpl. NΦ NSFOC

Sh: lt. - dk. gry., m. hrd., dns.,
hackly

Sh: gry. - blk., m. hrd., dns.,
hack., tr. carb., tr. pyr.
Ls: tan - brn., hrd., dns., VFG -
mxln., occ. foss. NΦ NSFOC

3550

**Kansas City
Group (-2079')**

Sh: A.A.
Ls: crm. - brn., hrd. - sft. + chik.,
VFG - mxln., tr. mic., tr. foss.
NΦ NSFOC

Ls: crm., sft., VFG - mxln., chik.,
occ. dns., mic., tr. foss.
tr.ool. w/ pr.oom. φ
Abun. sh. cavings

Ls: crm. - tan, hrd., dns. - tr. sft. +
chik., tr. foss. + ool., tr.
sh. sand. NΦ NSFOC

Ls: crm. - brn., hrd., dns., VFG - mxln.,
mic., tr.ool.
Sh: dk. gry. - blk., m. hrd., dns.,
hack.

Abun. sh: A.A.
Ls: crm., hrd. - m. sft. + chik., occ.
ool. + foss. w/ tr. v. pr.oom. φ
NSFOC

3600

Ls: crm., m. hrd., dns., VFG - mxln.,
occ. v. foss. + ool. w/ tr. tr.
pr.oom. φ NSFOC
Sh: dk. gry., m. hrd., dns., hack.

Ls: crm., m. sft., VFG - mxln., occ.
foss. + ool., tr. A. No vis. φ
Abun. sh. cavings NSFOC

Mudcheck @ 3620'
M.W. 9.2 lb./gal
Vis. 53 sec./qt.
W.L. 8.8 ml./30 min.
Solids 6.2%
LCM 0 lbs./bbl.

Ls: crm. - tan., m. sft., VFG - mxln.,
tr. chik., occ. foss. + ool., tr. A.
No vis. φ NSFOC

Ls: crm., hrd. - m. sft., dns., tan. chik.,
- mxln., occ. ool., tr. chik.
Abun. sh. cavings NΦ NSFOC

Ls: crm. - tan, hrd. - m. sft., dns.,
VFG - mxln., tr. mic., tr. foss.
NΦ NSFOC

3650

Abun. sh. cavings
Ls: crm., hrd. - m. sft., dns., tan.
- mxln., tr. mic., occ. foss.
tr. sh. sand. NΦ NSFOC

Ls: crm., hrd. - sft., dns., VFG -
mxln., occ. chik., tr. mic.
occ. foss. + ool. NΦ NSFOC
Abun. sh. cavings

Ls: crm., sft. + chik. - hrd., dns.
- mxln. - mxln., tr. foss.
NΦ NSFOC

sample ± 80% shale
Ls: crm., sft. - hrd., dns., VFG -
mxln., mic., occ. foss. + ool.
w/ tr. pr.oom. φ NSFOC
Abun. sh. cavings
Ls: A.A. NΦ NSFOC

3700

CFS

**Stark Shale
(-2227')**

Sh: dk. gry. - blk., m. sft., carb.
earthy - hackly
Ls: crm., hrd., VFG - mxln., ool.
w/ ad. ex.oom. φ, tr. sft. +
chik. NSFOC

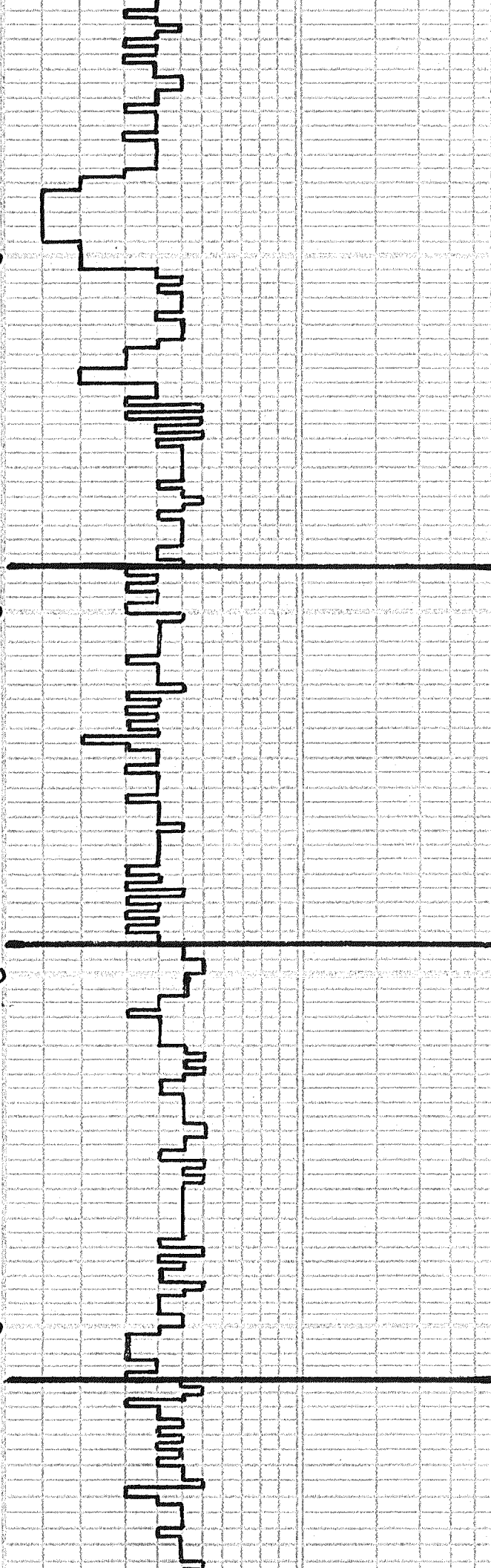
Ls: crm. - tan, hrd., dns., tan. chik.,
- mxln., occ. ool. w/ pr.oom. φ

3750

3800

3850

3900



NSFOC
 Abun. sh. CAVIAGS

Ls. crm. - tan, hrd., dns., VFG -
 mxln., tr. mic., ool. w/ tr.
 oom. ϕ NSFOC
 sh. bik., m. sft., g. carb. 1 earthy
 Ls. crm., hrd., dns., VFG, xln.
 tr. ool. & foss. N ϕ NSFOC

Ls. crm. m., hrd., dns., VFG xln.
 ool. w/ qd. - ex. oom. ϕ
 NSFOC

Ls. crm. - tan, hrd. - m. sft., VFG -
 mxln., mic., tr. chiky., tr.
 sh. stnd. 1 ool. w/ qd., oom. ϕ
 NSFOC

Ls. crm. - tan, hrd., dns., VFG -
 mxln., mic., ool. w/ tr. - pr.
 oom. ϕ , tr. sh. stnd. NSFOC

sh. dk. gry., m. hrd., dns., hack.
 Ls. crm. - brn. gry., hrd. - sft.
 VFG - mxln., mic., tr. chiky.
 tr. sh. stnd. & foss. N ϕ NSFOC
 sh. dk. gry., m. hrd., dns., hack.

Ls. crm. - tan, hrd., dns., VFG -
 mxln., mic., pebb. surf. N ϕ NSFOC
 Ls. A. A. tr. foss. N ϕ NSFOC

sh. dk. gry., tr. rd. brn. m. sft. -
 m. hrd., earthy - hackly

sh. lt. dk. gry., tr. rd. brn. 1 occ.
 sft. & sly., 1 m. sft. - m. hrd.
 earthy - hackly

sh. sft. - m. hrd., dns., gry. - bik.,
 pyr. earthy - hackly

sh. A. A.
 Ls. crm. - dk. gry., hrd., dns., 1 occ.
 foss. & sh. stnd., tr. pebb.
 surf. N ϕ NSFOC
 tr. Ls. A. A. more sh. stnd. N ϕ NSFOC

sh. A. A. w/ sh. gry. grn. m. hrd.
 dns., sft. - sandy, w. carb.
 pr. stnd., VFG N ϕ NSFOC
 sh. A. A., occ. v. sandy. A. A.

Ls. crm. - tan, hrd., dns., VFG -
 mxln., mic., rare foss. N ϕ NSFOC
 Ls. A. A. N ϕ NSFOC

sh. dk. gry. - bik., m. hrd., m. sft.
 dns., 1 occ. carb., earthy - hack.
 Ls. crm. - tan, hrd., dns., VFG - mxln.
 mic., tr. foss. N ϕ NSFOC
 sh. blu. grn. sandy - dk. gry., m. hrd.
 dns., hackly

sh. A. A., less blu. grn.
 Ls. - tan, hrd., dns., VFG - mxln.
 occ. foss. & sh. stnd.
 N ϕ NSFOC

sh. dk. gry., m. hrd., dns., hack.
 Ls. crm. - dk. gry., hrd., dns., VFG -
 mxln., mic., tr. foss., 1 occ. sandy,
 tr. pebbles, sh. stnd. N ϕ NSFOC

sh. A. A.
 Ls. - tan - bik., hrd., dns., VFG - mxln.
 mic., sandy, occ. v. foss. tr.
 pebb. surf. N ϕ NSFOC

sh. lt. gry. - bik., m. hrd., dns., 1 occ.
 carb., earthy - hackly

Ls. crm. - tan, hrd., dns., VFG - mxln.
 rare foss., tr. pebb. N ϕ NSFOC

sh. A. A.

Ls. crm. - tan, hrd., dns., VFG - mxln.
 mic., occ. sandy, occ. foss. N ϕ NSFOC
 Abun. sh. - CAVIAGS?

Ls. crm. - brn. hrd., dns., VFG - mxln.
 mic., occ. foss. & sh. stnd., tr.
 pebb. surf. N ϕ NSFOC
 sh. A. A. - CAVIAGS?

ALBANY Ls. (-2325')

ALBANY Ls. (-2377')

PAWNEE Ls. (-2439')

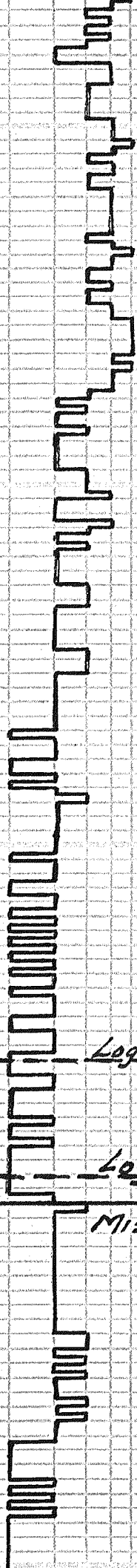
3950

4000

4050

4100

4150



Log Top Miss. Dsage

Log Top Miss. Ls.

Miss. Drlg. Time + Samples

Ls: A.A., less. foss. NΦ NSFOC

Sh. dk. gry. - blk., m. hrd., dns., hack
Ls: brn - blk., hrd., dns., mxln.
mic., foss., sh. stnd. NΦ NSFOC

Sh. A.A.
Ls: crm. - tan, hrd., dns., mxln.
mic., tr. foss. NΦ NSFOC

Sh. gry. - dk. gry., m. hrd., dns., hack.

Ls: gry., hrd., dns., VFG - mxln, mic.
rare foss., sh. stnd. NΦ NSFOC

Sh. dk. gry. - blk., m. hrd., dns., carb.
hack - earthy

Ls: crm. - gry., hrd., dns., VFG - mxln
mic., pyr., tr. foss. NΦ NSFOC

Ls: A.A. NΦ NSFOC

Sh. dk. gry. - blk., hrd. - m. hrd., dns.
earthy - hackly

Ls: crm. - dk. gry., hrd., dns., VFG - mxln.
occ. mic., occ. foss., sh. stnd. NΦ NSFOC

Sh. dk. gry. - blk., m. hrd., dns., hack.
Sh: A.A.

Ls: crm. - tan - gry., hrd., dns., VFG
- mxln, tr. foss., occ. sndy NΦ NSFOC

Ls: A.A. NΦ NSFOC

Sh. gry. grt. - dk. gry., m. hrd., dns.,
hack - earthy

Ls: crm. - tan - gry., hrd., dns., VFG -
mxln, tr. foss., NΦ NSFOC

Sh. lt. - dk. gry., m. hrd., dns.,
hackly

Ls: crm. - tan, hrd., dns., VFG - mxln.
tr. foss., tr. sh. stnd. NΦ NSFOC

Sh. dk. - lt. gry., m. hrd., dns., tr.
sndy., hackly - earthy

Sh: A.A., tr. carb.

Ls: crm. - tan, hrd., dns., VFG - mxln.
mic., tr. foss., sh. stnd. NΦ NSFOC

Ls: crm. - tan - gry., hrd., dns., VFG
- mxln, mic., tr. foss. NΦ NSFOC

Sh. lt. - dk. gry., rd. brn. - mar.,
m. sft. - m. hrd., earthy - hack.

tr. Ls: A.A. NΦ NSFOC

Sh: A.A., tr. mar. - rd. brn., tr.
sndy.

Sh. gry. - dk. gry. - rd. brn., tr.
Ls: ch. pebb., tr. ss. body
hrd., dns., tan - VFG, w/cmtr.

pr. stnd. NΦ NSFOC

tr. ss. A.A. NΦ NSFOC

Sh. lt. - dk. gry., m. hrd., dns.,
occ. rd. brn. - mar., hackly

Sh: A.A.
2-3 pc. wh. cht. + wh. Ls. m. hrd.
dns., VFG, tr. 1 pc. v. th. brn. sh.

w/ wk. cut + fl. x.v. wk. show

cht. wh., m. hrd. - hrd., devit. - trip.
tr. pr. pp. φ, lt. brn. unit, sft.

mod. stn. tr. - gd. cut + fl. tr.
wk. odor, No F.O., ?perm.

cht. wh. - tan, hrd., dns., devit.
sli. trip., tr. fr. - pr. Vug φ

sat. - mod. stn., wk. - gd.
cut + fl., No F.O., weak odor

cht. A.A., tr. wh. Ls., shows A.A.
abun. sh. cavinas

cht. A.A., tr. calc., tr. sli. trip.
brn. unit - mod. stn., wk. odor

cht. tr. Ls. A.A. 1 pc. big. ool., some NO
barren., wk. odor, wk. cut + fl.

cht. wh., hrd., dns., tr. trip. w/ VFG
pp. φ, gd. pr. stn. tr. cut + fl., no fo.

cht. wh., hrd. - m. sft., dns., devit.
tr. w/ pr. - tr. Vug φ, dk. brn. - blk.
stn., wk. cut + fl., wk. odor, no fo.

Mud Check @ 4012'

M.W. 9.5t
Vis. 48
W.L. 9.8
chl. 4,000
solids 8.3
L.C.M. 0

Short Trip @ 4049'

D.S.T. #1 4106'-55'
R.C. 160' GIP
145' D+WCM
119' SW.
30-60-90-90
Dev. 1°
strap .27' short

Mississippian
Dsage Fin,
(-2631')
Fair Show

Fair Show

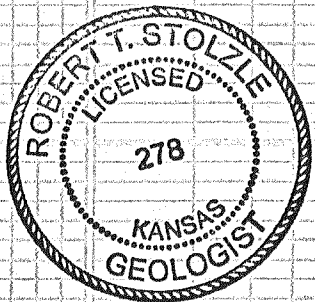
Weak Show

Weak Show

Weak Show

4200

Dip 10°



Fair Show
 Ch. wh., hrd., stl., tr., wh. Ls. tr.
 ft. - pr. Vug. ϕ , 1-2 pc. bldg. oil.
 Ch. P. A. tr. 1 ft. brn. d. 0.1 stn.
 wk. cut. fl., v. wk. odor. v. wk. show
 Ch. - erm - wh., hrd. - p. stl., occ.
 calc., tr. de vit., tr. vit. var
 1 ft. brn. stn. v. wk. cut. fl., v. wk.
 show, No odor., Abun. Cavings
 Ls. erm., hrd., dns., v. Flg. M. tr.
 Ch. tr. v. Flg. P. ϕ w/lt. brn. stn.
 tr., F.O., v. wk. odor. v. perm
 Abun. Cavings. Fr. cut. & fl.
 Ls. erm., hrd., dns., v. Flg. - mxN., tr.
 Ch. 1, occ. v. Flg. pp. Vug. ϕ w/brn.
 stn., 1-2 pc. bldg. oil, wk. cut. fl.
 ? perm., Abun. Cavings. \pm 90%
 Ls. erm., hrd., dns., v. Flg. - mxN.,
 occ. sndy, rare P. ϕ , 1 pc.
 bldg. oil., v. wk. cut. fl., No odor
 Abun. Cavings. v. weak show
 Ls. wh - lt. gr., hrd., dns., v. Flg.
 mxN., tr. wh. vit. Ch. No odor
 No stn., tr. v. pr. P. ϕ
 NSFDC
 Ls. wh - erm., hrd., dns., v. Flg. - mxN.
 mic., tr. wh. ent., tr. sndy.
 \pm 90% shale Cavings
 NSFDC
 Weak Show
 Weak Show
 Mud Check @ 4220'
 M.W. 9.2
 Vis. 53 LCM 2"
 W.L. 9.0
 Chl. 4,000 PPM
 Solids 6.2%
 D.T.D. 4220'
 L.T.D. 4218'
 Robert Stolze
 2/1/13