



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1214366  
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<br>Recompletion Date | Date Reached TD | Completion Date or<br>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

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: \_\_\_\_\_

1214366

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<br><i>(Attach Additional Sheets)</i><br><br>Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No<br><br>Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No<br><br>List All E. Logs Run: _____ | <input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample<br><br>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<br><input type="checkbox"/> Protect Casing<br><input type="checkbox"/> Plug Back TD<br><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<br>Specify Footage of Each Interval Perforated | Acid, Fracture, Shot, Cement Squeeze Record<br><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 |
|----------------|-------|---------|------------|---|

|   |  |         |             |               |         |
|---|--|---------|-------------|---------------|---------|
| Date of First, Resumed Production, SWD or ENHR. | Producing Method:<br><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 |

|  |   |   |
|--|---|---|
| <b>DISPOSITION OF GAS:</b><br><input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease<br><i>(If vented, Submit ACO-18.)</i> | <b>METHOD OF COMPLETION:</b><br><input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled<br><i>(Submit ACO-5)</i><br><input type="checkbox"/> Other <i>(Specify)</i> _____ | <b>PRODUCTION INTERVAL:</b><br>_____<br>_____ |
|--|---|---|

|           |                                |
|-----------|--------------------------------|
| Form      | ACO1 - Well Completion         |
| Operator  | Woolsey Operating Company, LLC |
| Well Name | GOTTSCHE 1                     |
| Doc ID    | 1214366                        |

Perforations

| Shots Per Foot | Perforation Record | Material Record  | Depth     |
|----------------|--------------------|--|-----------|
| 4              | 5226-5241          | 950 GAL 10% HCL  |           |
|                |                    | 34,188<br>GALPROFRAC LG<br>2500 &                        |           |
|                |                    | 13,500 # 16/30 SD  | 5226-5241 |
|                |                    | CIBP 5200  |           |
| 3              | 4845-4892          | 2550 GAL 10% HCL   | 4845-4892 |
|                |                    | 1,396,000 GAL SLICK<br>WTR,                              |           |
|                |                    | 101,550# 16/30 SD &<br>195,000# 16/30<br>RESIN COATED SD | 4845-4892 |





# ALLIED OIL & GAS SERVICES, LLC 062739

Federal Tax I.D. # 20-8651475

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

SERVICE POINT:  
MedicineLodge KS

|                                |                |                 |                  |   |                           |                               |                            |
|--------------------------------|----------------|-----------------|------------------|---|---------------------------|-------------------------------|----------------------------|
| DATE <u>03/17/14</u>           | SEC. <u>14</u> | TWP. <u>35s</u> | RANGE <u>12w</u> | CALLED OUT  | ON LOCATION <u>1000PM</u> | JOB START <u>1200midnight</u> | JOB FINISH <u>12:30 AM</u> |
| LEASE <u>Gottsch</u>           |                | WELL# <u>1</u>  |                  | LOCATION <u>281 + Kiowa jct, West to Roundup Rd, South to State line Rd, 1/2 East, North into</u> |                           | COUNTY <u>Barber</u>          | STATE <u>KS</u>            |
| OLD OR <u>NEW</u> (Circle one) |                |                 |                  |   |                           |                               |                            |

CONTRACTOR Fossil  
 TYPE OF JOB Surface  
 HOLE SIZE 17 1/2 T.D. 220  
 CASING SIZE 12 3/8 DEPTH 208  
 TUBING SIZE DEPTH  
 DRILL PIPE DEPTH  
 TOOL DEPTH  
 PRES. MAX 200 MINIMUM  
 MEAS. LINE SHOE JOINT  
 CEMENT LEFT IN CSG. 20ft  
 PERFS.  
 DISPLACEMENT 30 1/2 BBLs Fresh H<sub>2</sub>O

OWNER Woolsey  
 CEMENT  
 AMOUNT ORDERED 300 Class A + 3% cwt  
2% Gel

**EQUIPMENT**

PUMP TRUCK CEMENTER Jason Thimerd  
 # 558/555 HELPER Scott Priddy  
 BULK TRUCK  
 # 364 DRIVER James Bowen  
 BULK TRUCK  
 # DRIVER

|                             |   |              |                |
|-----------------------------|---|--------------|----------------|
| COMMON <u>Class A 300sx</u> | @ | <u>17.90</u> | <u>5370.00</u> |
| POZMIX                      | @ |              |                |
| GEL <u>6.5x</u>             | @ | <u>23.40</u> | <u>140.10</u>  |
| CHLORIDE <u>11.5x</u>       | @ | <u>64.00</u> | <u>704.00</u>  |
| ASC                         | @ |              |                |
|                             | @ |              |                |
|                             | @ |              |                |
|                             | @ |              |                |
|                             | @ |              |                |
|                             | @ |              |                |
| HANDLING <u>324.4 cwt</u>   | @ | <u>2.48</u>  | <u>804.51</u>  |
| MILEAGE <u>14.8 tax 22</u>  | x | <u>2.60</u>  | <u>829.40</u>  |
| TOTAL                       |   |              | <u>7848.31</u> |

**REMARKS:**

Did circ cement

## WELL FILE

Regulatory Correspondence  
Drill Comp Workovers  
 Tests / Meters Operations

**SERVICE**

|                                  |   |                    |
|----------------------------------|---|--------------------|
| DEPTH OF JOB <u>208</u>          |   |                    |
| PUMP TRUCK CHARGE <u>1512 12</u> |   |                    |
| EXTRA FOOTAGE                    | @ |                    |
| MILEAGE <u>22 mi</u>             | @ | <u>7.70 169.40</u> |
| MANIFOLD                         | @ |                    |
| <u>LK 22 mi</u>                  | @ | <u>4.40 96.80</u>  |
|                                  | @ |                    |

TOTAL 1778.95

CHARGE TO: Woolsey  
 STREET \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

**PLUG & FLOAT EQUIPMENT**

NA

|  |   |  |
|--|---|--|
|  | @ |  |
|  | @ |  |
|  | @ |  |
|  | @ |  |
|  | @ |  |

TOTAL \_\_\_\_\_

To: Allied Oil & Gas Services, LLC.  
 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.

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES 9627.26  
 DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS

PRINTED NAME MIKE THARP  
 SIGNATURE [Signature]

NET 7701.80

# ALLIED OIL & GAS SERVICES, LLC 062752

Federal Tax I.D. # 20-8651475

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

SERVICE POINT:  
Medicine Lodge, KS

|                           |                |   |   |            |                           |                          |                           |
|---------------------------|----------------|---|---|------------|---------------------------|--------------------------|---------------------------|
| DATE <u>3-28-14</u>       | SEC. <u>14</u> | TWP. <u>35S</u>                         | RANGE <u>12W</u>                        | CALLED OUT | ON LOCATION <u>7:00 A</u> | JOB START <u>11:30 A</u> | JOB FINISH <u>12:30 P</u> |
| LEASE <u>Gottsch</u>      |                | WELL # <u>1</u>                         | LOCATION <u>281 + Known Jet West to</u> |            |                           | COUNTY <u>Barber</u>     | STATE <u>KS</u>           |
| OLD OR (NEW) (Circle one) |                | Roundup Rd S to State line Rd Yewu into |   |            |                           |                          |                           |

CONTRACTOR Fossil Drilling  
 TYPE OF JOB Production  
 HOLE SIZE 7 7/8 T.D.  
 CASING SIZE 5 1/2 DEPTH 5327  
 TUBING SIZE DEPTH  
 DRILL PIPE DEPTH  
 TOOL DEPTH  
 PRES. MAX MINIMUM  
 MEAS. LINE SHOE JOINT 45.15  
 CEMENT LEFT IN CSG. 45.15  
 PERFS.  
 DISPLACEMENT 125 3/4 bbl  
 EQUIPMENT  
 PUMP TRUCK CEMENTER Jake Heard  
 # 548/545 HELPER Justin Bower  
 BULK TRUCK  
 # 421/250 DRIVER Robert Johnson  
 BULK TRUCK  
 # DRIVER

OWNER Woolsey Operating  
 CEMENT  
 AMOUNT ORDERED 90 sx 60:40:4% Gel  
125 sx Class H + 10% Gyr + 10% SALT  
6# Kalseal + 8% FI-160 + 1/4# Floseal  
 COMMON # 54 sx @ 17.90 966.60  
 POZMIX 36 sx @ 9.35 336.60  
 GEL 3.09 sx @ 23.40 72.36  
 CHLORIDE @  
 ASC @  
 FI-160 94 # @ 18.90 1776.60  
 Floseal 31 # @ 2.97 92.07  
 Gypseal 23.5 sx @ 37.60 883.60  
 Kalseal 750 # @ .98 735.00  
 SALT 13.5 sx @ 26.35 355.73  
 @  
 Class H cmt 125 sx @ 21.20 2650.00  
 KCL 14 Gal @ 34.40 481.60  
 HANDLING 262.6 @ 2.48 651.24  
 MILEAGE 16.26/21/2.60 614.79  
 TOTAL 9616.14

REMARKS:

Pipe on Bottom / Break Circ / Rig up /  
Safety meeting / Pressure test / pump  
Spacer / pump Rat + Mouse cmt / start  
Down hole / stop / wash pump + lines /  
Stop / Displace / Pump plug / Release  
pressure / Float held / Swap to  
Wash up pump

SERVICE

DEPTH OF JOB 5327  
 PUMP TRUCK CHARGE 3099.28  
 EXTRA FOOTAGE @  
 MILEAGE 21 @ 7.70 161.70  
 MANIFOLD @ 275.00  
 L.V. Mileage 21 @ 4.40 92.40  
 @

TOTAL 3628.35

CHARGE TO: Woolsey

## WELL FILE

Regulatory Correspondence CITY STATE ZIP  
 Drig Comp Workovers  
 Tests / Meters Operations 5 1/2

To: Allied Oil & Gas Services, LLC.  
 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.

PLUG & FLOAT EQUIPMENT

Weatherford Float shoe @ 545 545.00  
Weatherford Latch Down plug @ 160.00 160.00  
Weatherford Turbolizer 10 @ 95.00 950.00  
Weatherford Rec. Spooler 20 @ 89.00 1780.00  
 @

TOTAL 3935.00

SALES TAX (If Any) \_\_\_\_\_  
 TOTAL CHARGES 17,179.49  
 DISCOUNT \_\_\_\_\_ IF PAID IN 30 DAYS

PRINTED NAME X MIKE THARP

SIGNATURE X Mike Tharp

Net 14,530.59

APR 14 2014



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Woolsey Operating  
 125 N Market Ste 1000  
 Wichita, KS 67202  
 ATTN: Joel Gearhart

**14-35N-12W-Barber, KS**  
**Gottsch #1**  
 Job Ticket: 57508      **DST#: 1**  
 Test Start: 2014.03.24 @ 13:57:17

## GENERAL INFORMATION:

Formation: **Mississippi**  
 Deviated: No      Whipstock:      ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 16:05:32      Tester: Tate Lang/Phillip Ga  
 Time Test Ended: 23:16:32      Unit No: 74  
 Interval: **4750.00 ft (KB) To 4902.00 ft (KB) (TVD)**      Reference Elevations: 1381.00 ft (KB)  
 Total Depth: 4902.00 ft (KB) (TVD)      1369.00 ft (CF)  
 Hole Diameter: 7.88 inches      Hole Condition: Fair      KB to GR/CF: 12.00 ft

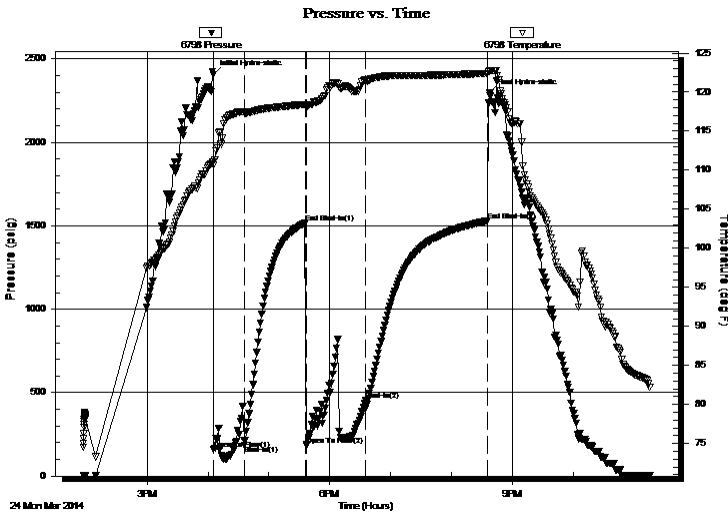
## Serial #: 6798

Inside

Press @ Run Depth: 456.36 psig @ 4754.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.03.24      End Date: 2014.03.24      Last Calib.: 2014.03.24  
 Start Time: 13:57:18      End Time: 23:16:32      Time On Btm: 2014.03.24 @ 16:05:17  
 Time Off Btm: 2014.03.24 @ 20:37:47

**TEST COMMENT:** 30-IF-BOB in 2 mins.  
 60-ISI-Built to 1 1/4 " in 10mins, died in 50 mins.  
 60-FF-BOB in 30 secs, Gas to surface in 40 mins.  
 120-FSI-Built to 3 1/2", died in 60 mins.

## PRESSURE SUMMARY



| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 2408.65         | 111.12       | Initial Hydro-static |
| 1           | 159.64          | 110.65       | Open To Flow (1)     |
| 31          | 184.28          | 117.32       | Shut-In(1)           |
| 91          | 1518.06         | 118.44       | End Shut-In(1)       |
| 92          | 183.90          | 118.14       | Open To Flow (2)     |
| 150         | 456.36          | 121.61       | Shut-In(2)           |
| 271         | 1530.86         | 122.40       | End Shut-In(2)       |
| 273         | 2295.80         | 122.68       | Final Hydro-static   |

## Recovery

| Length (ft) | Description    | Volume (bbl) |
|-------------|----------------|--------------|
| 360.00      | 10%G 20%O 70%M | 3.43         |
| 110.00      | 10%G 90%M      | 1.54         |
| 0.00        | Gas to surface | 0.00         |
|             |                |              |
|             |                |              |

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Woolsey Operating

**14-35N-12W-Barber, KS**

125 N Market Ste 1000  
Wichita, KS 67202

**Gottsch #1**

Job Ticket: 57508

**DST#: 1**

ATTN: Joel Gearhart

Test Start: 2014.03.24 @ 13:57:17

## 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: 66.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

| Length<br>ft | Description    | Volume<br>bbbl |
|--------------|----------------|----------------|
| 360.00       | 10%G 20%O 70%M | 3.428          |
| 110.00       | 10%G 90%M      | 1.543          |
| 0.00         | Gas to surface | 0.000          |

Total Length: 470.00 ft      Total Volume: 4.971 bbl

Num Fluid Samples: 0

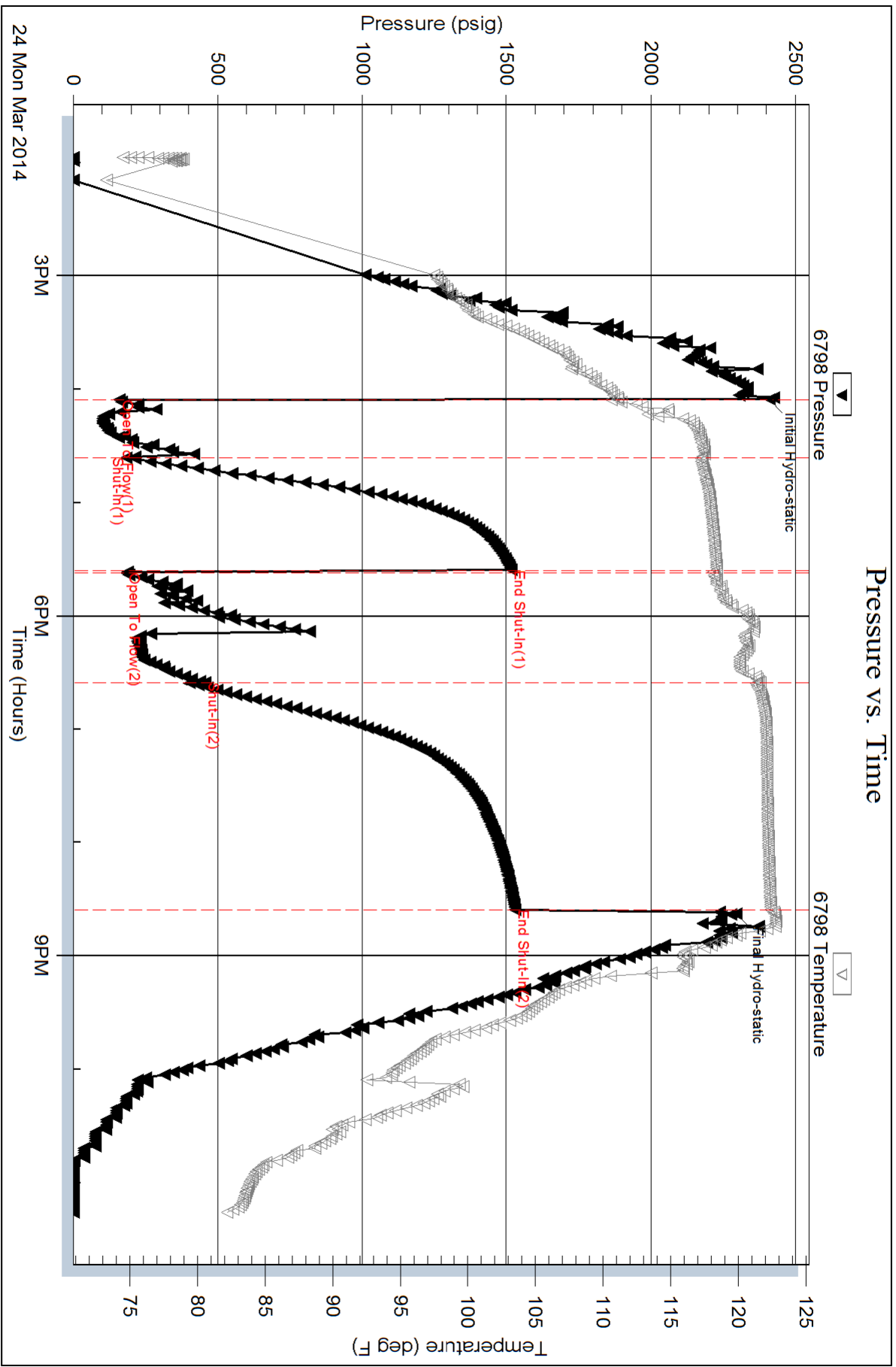
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:





## Woolsey Operating Company, LLC

Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: Gottsch #1  
Location: Section: 14 Township: 35S Range: 12W  
License Number: 15-007-24129-0000  
Spud Date: 03/17/14  
Surface Coordinates: Irregular Section  
1270' FNL, 1560' FEL  
Bottom Hole Vertical Hole  
Coordinates:  
Ground Elevation (ft): 1369 K.B. Elevation (ft): 1381  
Logged Interval (ft): 4350 To: 5505 Total Depth (ft): 5505  
Formation: Brown Limestone ---> Simpson  
Type of Drilling Fluid: Chemical Mud

Region: Barber Co., Kansas  
Drilling Completed: 3/27/2014

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

### OPERATOR

Company: Woolsey Operating Company, LLC  
Address: 125 N. Market, Suite 1000  
Wichita, KS 67202

### GEOLOGIST

Name: Joel Gearhart  
Company: Woolsey Operating Co. LLC  
Address: 125 N. Market, Wichita Kansas, 67202

### COMMENTS

Surface Casing: Set 5 jts 13 3/8" x 48#/ft new surface casing at 223' (tally 223') w/ 300 sx Class A, 2% gel, 3% cc (by Allied). Plug down at 12:30 am on 03/19/14. Cmt did circ.

Production Casing:

Deviation Surveys: 3/4-220', 1-1016', 3/4-1554', 3/4-1999', 3/4-2507', 1-3013', 3/4-3521', 1 1/2-4090', 7 (Missrun)-4279', 7 (Missrun)-4311', 1 1/2-4324', 1-4357', 3/4-4500', 3/4-4902', 1/4-5505'

Pipe Strap @ 4902', Board: 4912.26', Strap: 4912.34', Strap is 0.08' long to the Board. No corrections were made to the Board.

Contractor Bit Record: Fossil Drilling Rig #3

- 1.) 17 1/4" Varel RR, in 0' out 788', 2 hrs.
- 2.) 7 7/8" Varel HE-21, in 788' out 4902', 113 hrs.
- 3.) 7 7/8" Varel HE-29, in 4902' out 5505', 49 1/4 hrs.

Gas Detector: Woolsey Operating Company LLC., Gas Trailer #2

Mud System: Mud-Co., Brad Bortz, Engineer

DSTs: Trilobite Testing, Tate Lang

E-Logs: Nabors Completion and Production Services, Dual Induction Laterlog w/ SP, CNL\_FDC w/ PE, Gamma and Caliper

## DSTs


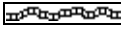
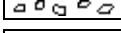









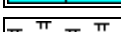

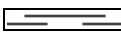









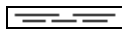







**DST #1 Mississippi 4750-4902**

30-60-60-120, IF: BOB in 2 mins, ISI: Built to 1 1/4" in 10 mins, died in 50 mins, FF: BOB in 30 secs GTS/40", FSI: Built to 3 1/2" in 5 mins, died in 60 mins, REC: 360' GOCM (10%G 20%O 70%M), 110' GM (10%G 90%M), IHP: 2409, FHP: 2299, ISIP: 1518, FSIP: 1531, FP: 160-184/184-456, BHT: 122














































































## CREWS

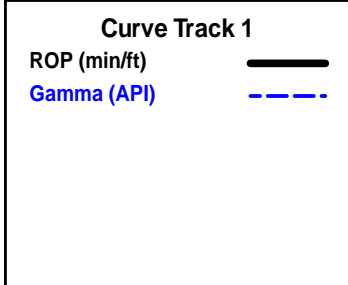
**Fossil Drilling Rig #3**  
 Jim Wenrick, Toolpusher  
 Chris Staats, Morning  
 Daniel Orrantia, Daylight  
 Ron Burns, Evening  
 Jesse Reynolds, Relief

## ROCK TYPES

|  |   |   |   |
|--|---|---|---|
|  Anhy<br> Bent<br> Brec<br> Cht<br> Clyst<br> Coal<br> Congl<br> Sdy dolo |  Shy dolo<br> Dol<br> Gyp<br> Sdy lmst<br> Lmst<br> Mrlst<br> Salt<br> Shale |  Sltst<br> Ss<br> Black sh<br> Gry sh<br> Shale<br> Shysltst<br> Sltysh<br> Ss 2 |  Shale 3<br> Silty dol<br> Dol lmst<br> Dol 2<br> Granite wash<br> Lmst<br> Calc dol<br> Shale 3 |
|--|---|---|---|

## ACCESSORIES

|  |   |   |  |
|--|---|---|--|
| <b>MINERAL</b><br> Anhy<br> Arg<br> Bent<br> Bit<br> Brecfrag<br> Calc<br> Carb<br> Chtdk<br> Chtlt<br> Dol<br> Ferrpel<br> Ferr<br> Glau<br> Gyp<br> Marl<br> Nodule<br> Phos<br> Pyr<br> Salt<br> Sandy<br> Silt |  Chlorite<br> Dol<br> Sand<br> Sltst<br><br><b>FOSSIL</b><br> Algae<br> Amph<br> Belm<br> Bioclst<br> Brach<br> Bryozoa<br> Cephal<br> Coral<br> Crin<br> Echin<br> Fish<br> Foram<br> Fossil<br> Gastro<br> Oolite<br> Ostra |  Pelec<br> Pellet<br> Pisolite<br> Plant<br> Strom<br> Fuss<br> Oomoldic<br><br><b>STRINGER</b><br> Anhy<br> Arg<br> Bent<br> Coal<br> Dol<br> Gyp<br> Ls<br> Mrst<br> Sltst stringer<br> Ss stringer<br> Carbsh<br> Clystn<br> Dol |  Grysh<br> Gryslt<br> Lms<br> Sandylms<br> Sh<br> Sltstn<br><br><b>TEXTURE</b><br> Boundst<br> Chalky<br> Cryxln<br> Earthy<br> Finexln<br> Grainst<br> Lithogr<br> Microxln<br> Mudst<br> Packst<br> Wackest |
|--|---|---|--|

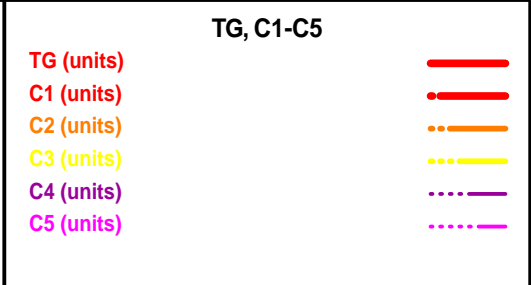


Depth

Lithology

Oil Shows

Geological Descriptions

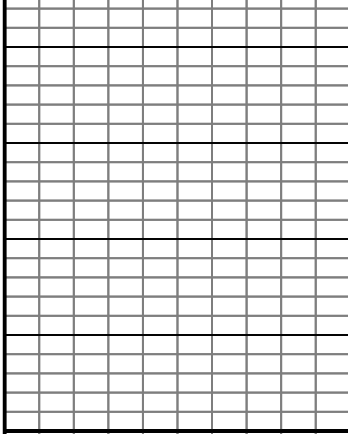


ROP (min/ft) 10  
Gamma (API) 150

40

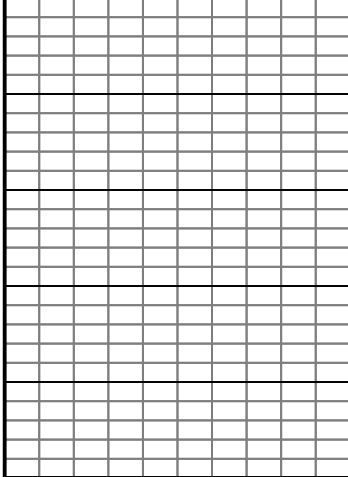
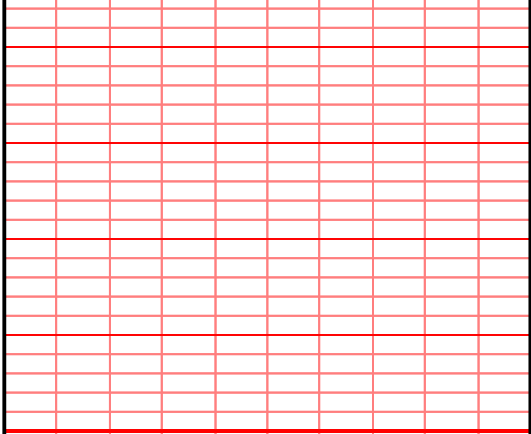
7 a.m. Progress

TG 100



4050

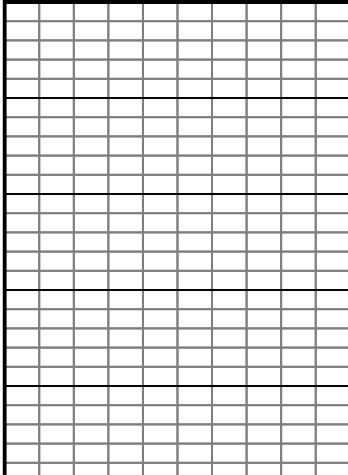
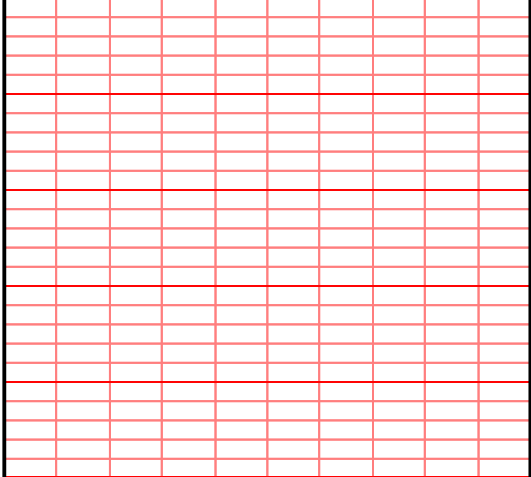
March 17- SPUD  
 March 18- 220'  
 March 19- 1750'  
 March 20- 2665'  
 March 21- 3520'  
 March 22- 4244'  
 March 23- 4600'  
 March 24- 4870', DST  
 March 25- 4949'  
 March 26- 5011'  
 March 27- 5478', TD



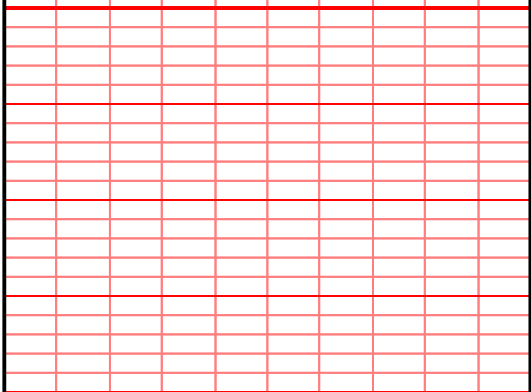
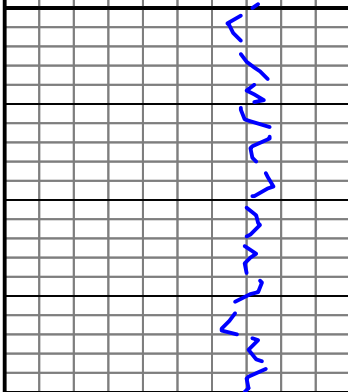
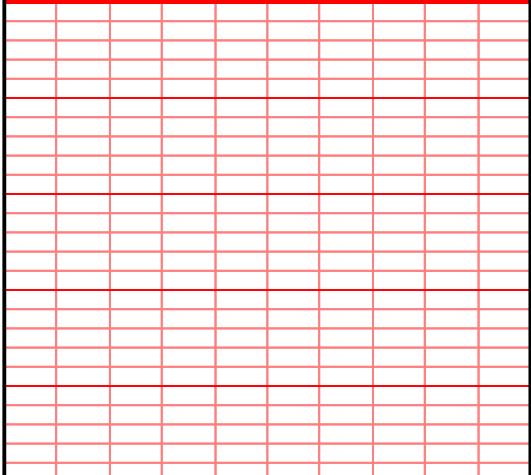
4100

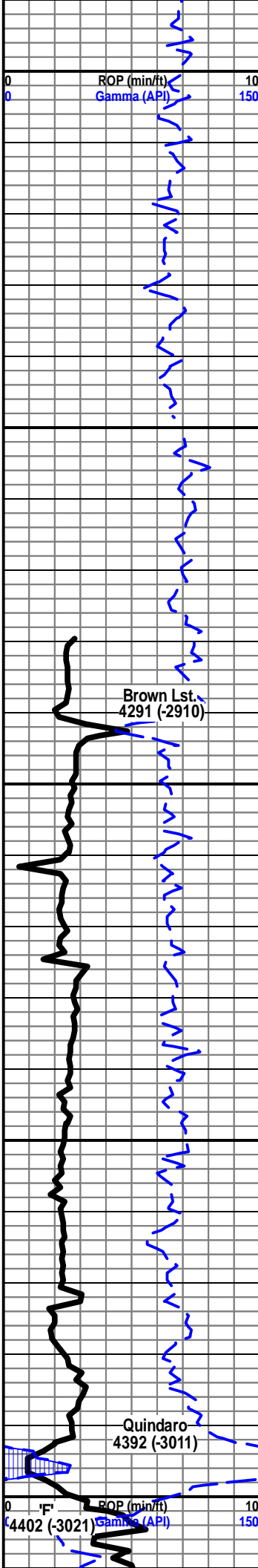
**E-Log Tops**

Herington- 1899' (-518)  
 Onaga- 2776' (-1395)  
 Wabunsee- 2832' (-1451)  
 LeCompton- 3607' (-2226)  
 Kanwaka- 3632' (-2251)  
 Elgin Sd Middle- 3688' (-2307)  
 Elgin Sd Lower- 3779' (-2398)  
 Heebner- 3843' (-2462)  
 Toronto- 3853' (-2472)  
 Douglas Grp- 3883' (-2502)  
 Douglas Shl- 3948' (-2567)  
 Quindaro- 4388' (-3007)  
 Iola- 4419' (-3038)  
 Drum- 4472' (-3091)  
 Dennis- 4505' (-3124)  
 Stark- 4543' (-3162)  
 Swope- 4557' (-3176)  
 Hushpuckney- 4574' (-3193)  
 Hertha- 4593' (-3212)  
 Base KC- 4624' (-3243)  
 Pawnee- 4733' (-3352)  
 Cherokee Grp- 4779' (-3398)  
 Cowley C2A- 4845' (-3464)  
 Cowley C2- 4896' (-3515)  
 Osage- 5068' (-3687)  
 Northview- 5079' (-3698)  
 Compton- 5084' (-3703)  
 Kinderhook- 5098' (-3717)  
 Misner Sd- 5195' (-3814)  
 Viola- 5226' (-3845)  
 Simpson Grp- 5357' (-3976)  
 Simpson Sd- 5362' (-3981)  
 Wilcox- 5383' (-4002)  
 McLish- 5458' (-4077)

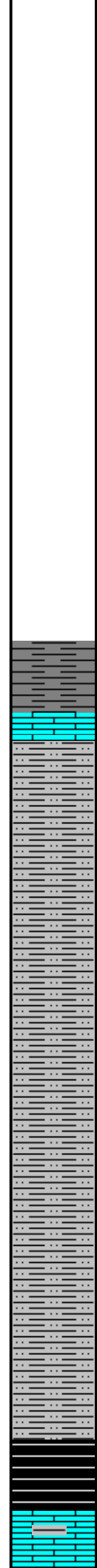


4150





4200  
4250  
4300  
4350  
4400



gry slty shl, pyritic, sub ang, soft  
drk gry shl, lttl sily, blk shl clasts, pyritic,  
brittle, tabular

gry slty shl, pyritic, sub ang, soft  
drk gry shl, lttl sily, blk shl clasts, pyritic,  
brittle, tabular

gry shl, slty, pyritic, sub ang, soft, drk gry shl,  
sily, brittle, tabular, pyritic

gry shl, slty, pyritic, sub ang, soft, drk gry shl,  
sily, brittle, tabular, pyritic, increase in silt w/  
depth

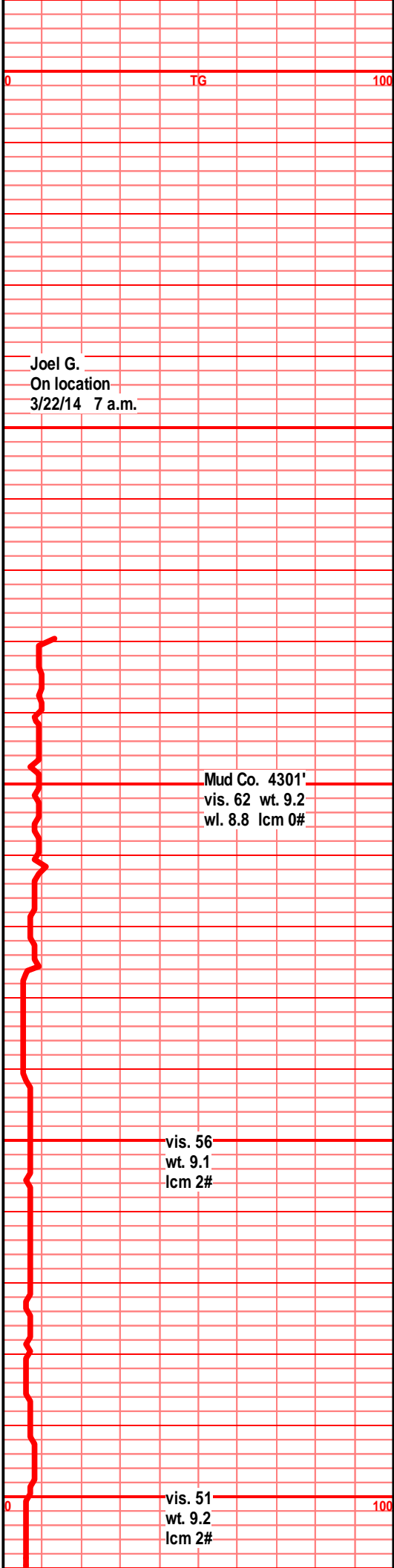
gry shl, slty, pyritic, sub ang, soft, drk gry shl,  
sily, brittle, tabular, pyritic, increase in silt w/  
depth

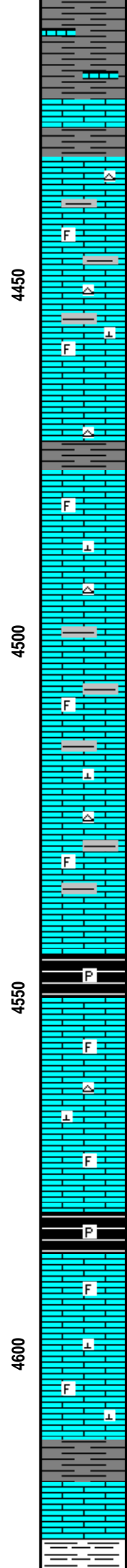
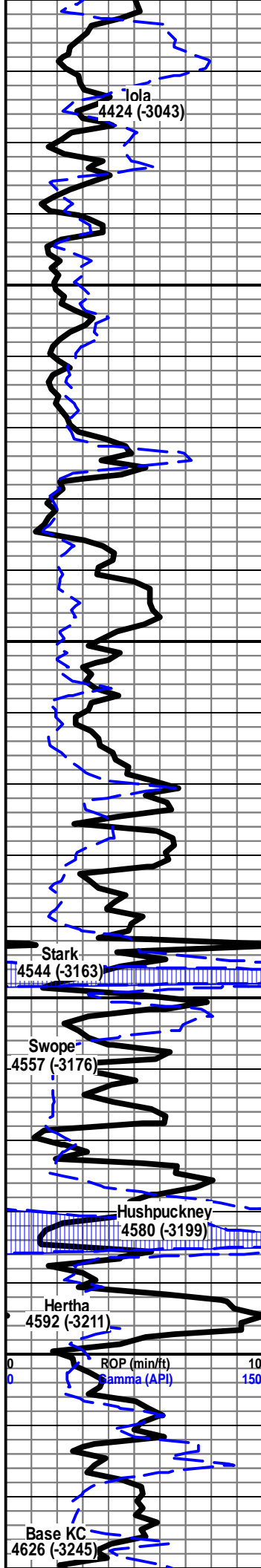
gry shl, slty, pyritic, sub ang, soft, drk gry shl,  
sily, brittle, tabular, pyritic, increase in silt w/  
depth

gry shl, slty, pyritic, sub ang, soft, drk gry shl,  
sily, tabular, brittle, pyritic, blk shl, carb, lttl  
silty, occasional gas bub on brk, sub ang, soft

blk shl, carb, lttl sily, pyritic, tabular, hrd, gas  
bubs on brk

lt tan-off wt lst, xln, chrt/chlky, sub ang, clay  
clasts, hrd, wt chrt, brn eds, sub ang, rigid





text, hrd, wt brk  
 gry shl, calc in part, xln, hrd, sub ang, lt tan  
 lst stringers, drk brn shly lst, xln, sub ang,  
 hrd

lt off wt- gry lst, chrty/chlky eds, gritty text,  
 clay clasts, hrd, sub ang, gry-drk gry shl, slty  
 gritty text, tabular, hrd, pyritic

lt tan lst, chrty, xln-vxln, trc foss, foss mold  
 por, sub ang, hrd, off wt chrt, xln, brt wt brk,  
 sub ang, hrd, gry-drk gry shl, tabular, brittle,  
 pyritic

lt tan-tan lst, chrty/chlky, xln, trc foss, foss  
 frags, sub ang, hrd, off wt chrt, xln, brt wt brk,  
 sub ang, hrd, gry-drk gry shl, tabular, brittle,  
 pyritic

lt tan- off wt lst, xln, calc fill, chrty/chlky, foss  
 frags, trc foss, sub ang, hrd

gry-drk gry shl, lttl slty, tabular, pyritic, soft, lt  
 gry tan lst, xln, chrty, chlky eds, trc foss,  
 foss frags, foss mold por, sub ang, hrd

gry-drk gry shl, lttl slty, tabular, pyritic, soft, lt  
 gry tan lst, xln, chrty, chlky eds, trc foss,  
 foss frags, foss mold por, sub ang, hrd

tan lst, xln, chrty/chlky, trc foss, calc fill, sub  
 ang, hrd, wt chrt, xln, shrp, frsh, sub ang, hrd

tan-gry tan lst, xln, chlky, lttl chrty, foss frags,  
 clay clasts, sub ang, hrd

tan lst, xln, chlky eds, xln wt chrt clasts,  
 foss frags, sub ang, hrd, drk gry shl, tabular,  
 brittle

tan lst, xln, foss frags, trc foss, calc fill, chlky  
 look, sub ang, hrd, gry-drk gry shl, tabular,  
 pyritic, brittle

drk brn lst, vxln, foss frags, clay clasts, sub  
 ang, hrd

drk brn lst, vxln, foss frags, clay clasts, sub  
 ang, hrd, gry shl, sub ang, waxy brk

blk shl, carb, pyritic, sub ang, soft,  
 occasional gas bub on brk

tan-brn tan lst, xln-vxln, foss frags, chlky  
 eds, sub ang, hrd

tan-brn tan lst, vxln, foss frags, trc foss, calc  
 fill, chlky eds, sub ang, hrd

blk shl, carb, pyritic, blk, sub ang, hrd,  
 occasional gas bub on brk

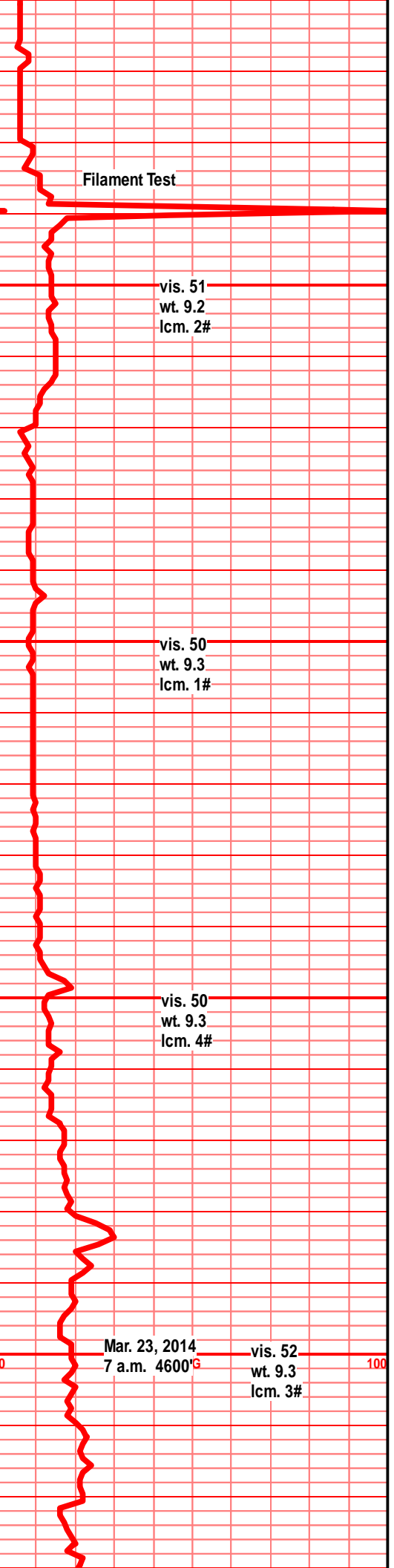
tan-gry tan lst, xln, foss frags, trc foss calc  
 xln fill, chlky chrty eds, sub ang, hrd, gry  
 shl, tabular, hrd

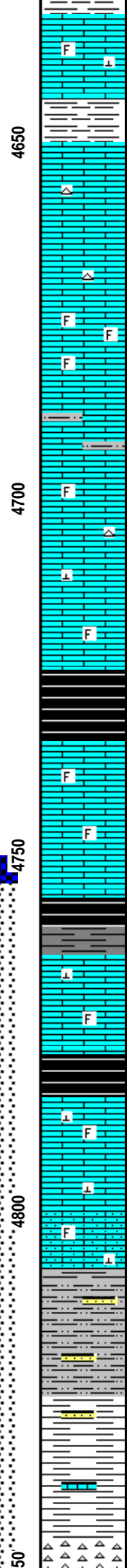
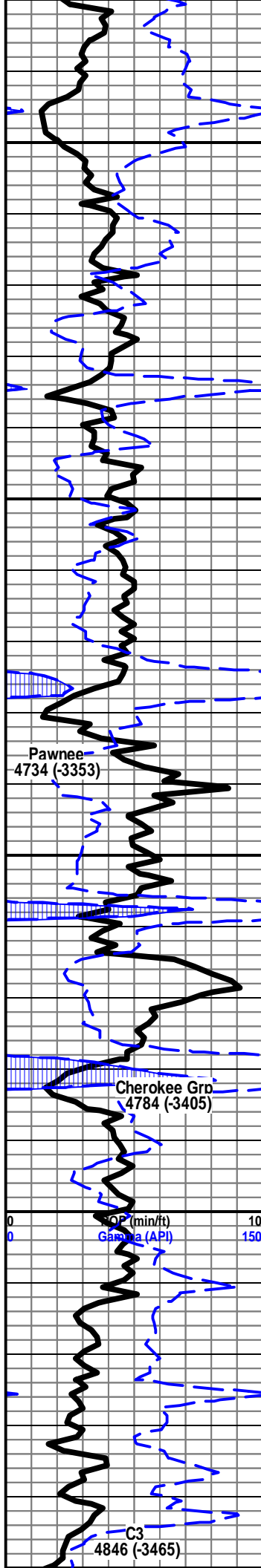
tan gry-gry lst, fxln, lttl chlky chrt, foss frags,  
 trc foss calc fill, sub ang, hrd

tan gry-gry lst, fxln, lttl chlky chrt, foss frags,  
 trc foss calc fill, sub ang, hrd, gry-drk gry shl,  
 lttl slty, sub ang, brittle, waxy brk

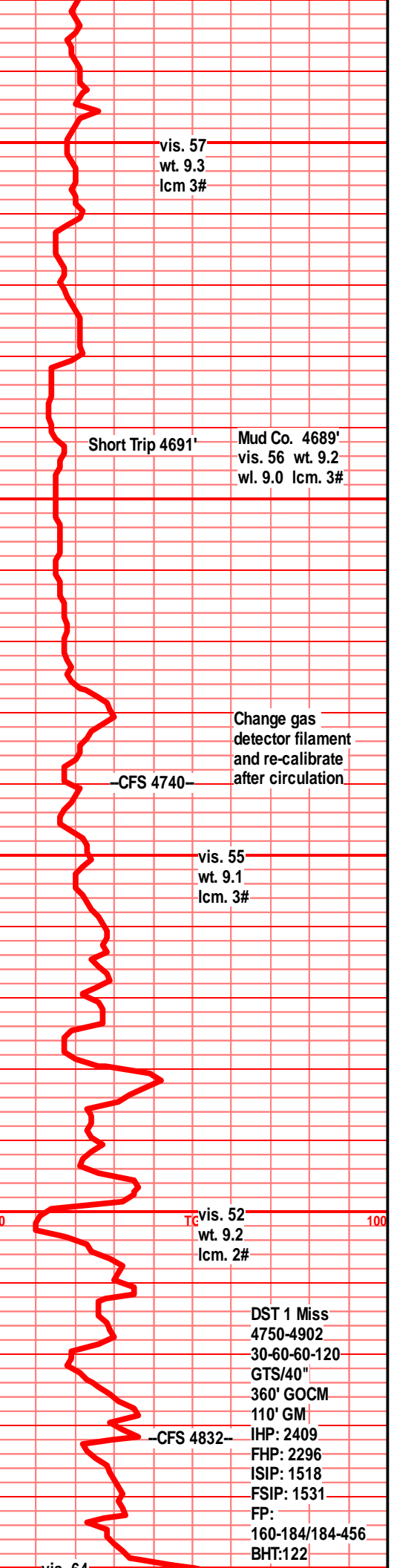
off wt-tan gry lst, xln, chlky chrt, calc fill, lttl  
 mottled txt, sub ang

drk gry grn shl, sub ang, soft, mushy, lams of





drk gry-blk shl  
 It gry tan-tan brn lst, xln, lttl chlky egds, lttl wt chrt, foss frags, calc fill, sub ang, hrd  
 drk gry-grn shl, silty, pyritic, sub ang, soft, teal grn shl, gritty, sub ang, waxy brk  
 gry grn lst, silty, clay content, sub ang, brittle, off wt-lt grn chrt, shrp, chlky eds, sub ang, tabular, hrd  
 gry grn lst, silty, clay content, sub ang, brittle, off wt-lt grn chrt, shrp, chlky eds, sub ang, tabular, hrd  
 tan lst, fxln, heavy foss frags, green clay clasts, sub ang, hrd  
 tan lst, fxln, heavy foss frags, green clay clasts, sub ang, hrd, gry shl, brn silt inclus, pyritic, tabular, hrd  
 tan-gry tan lst, fxln, chlky, few foss frags, sub ang, hrd, brn opaque chrt, shrp, ang, hrd  
 tan-gry tan lst, xln, trc foss, lttl chrt, calc fill, foss frags, sub ang, hrd, iron precipitates on edges  
 tan-gry tan lst, xln, trc foss, lttl chrt, calc fill, foss frags, sub ang, hrd, iron precipitates on edges  
 blk shl, carb, pyritic, tabular, hrd, gas bubs on brk, nso, no odor  
 tan lst, fxln-xln, chlky, wt chrt, few foss frags, sub ang, hrd  
 tan-lt gry tan lst, xln, foss frags, lttl wt chrt w/ brn eds, sub ang, hrd  
 gry shl, blk shl lams, tabular, soft, drk gry-blk shl, carb, pyritic, tabular, hrd  
 tan lst, xln, trc foss, calc fill, foss frags, chlky eds, sub ang, hrd  
 blk shl, carb, pyritic, tabular, hrd, gas bubs on brk, nso, no odor  
 tan lst, xln, foss frags, calc xln fill, sub ang, hrd  
 brn-drk brn lst, xln, vfn snd grn inclusions, foss frags, calc xln fill, sub ang, brittle  
 gry-lt grn gry sltstn, vfn snd inclus, blk shl clasts, sub ang, soft, gas bubs on brk, nso, no odor  
 gry-lt grn gry sltstn, vfn snd inclus, blk shl clasts, sub ang, soft, gas bubs on brk, nso, no odor  
 teal grn shl, sft, vfn snd inclus, waxy brk, yellow-grn yellow shl, sub ang, mushy  
 teal grn shl, sft, waxy, soft, yellow-grn yellow shl, sub ang, mushy, red-red brn shl, lime inclus, sub ang, soft  
 wt chrt, xln, some wthrd eds, few foss frags,



vis. 57  
 wt. 9.3  
 lcm 3#

Short Trip 4691'

Mud Co. 4689'  
 vis. 56 wt. 9.2  
 wl. 9.0 lcm. 3#

Change gas detector filament and re-calibrate after circulation

-CFS 4740-

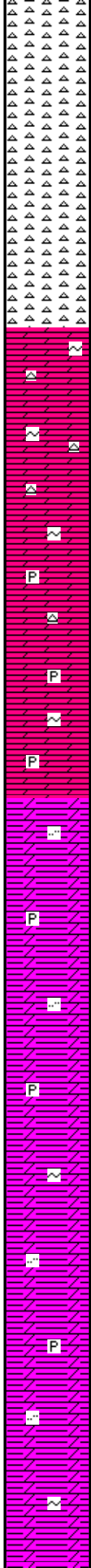
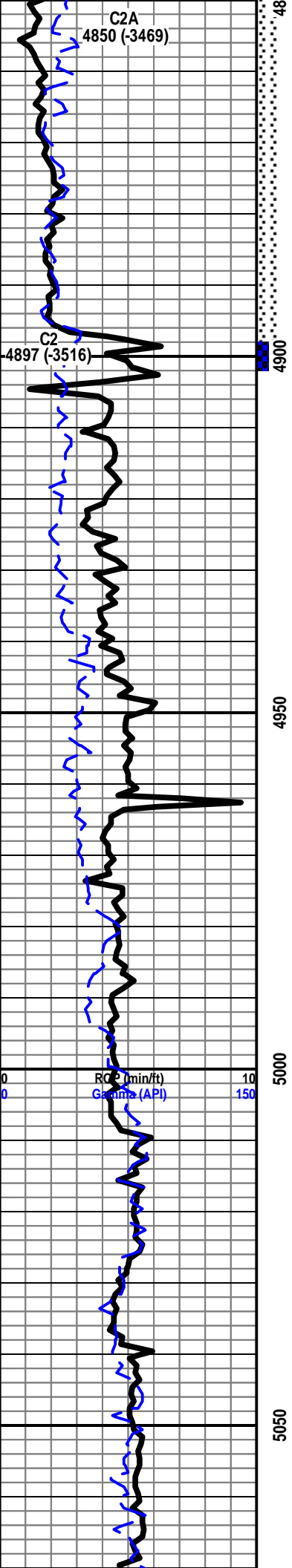
vis. 55  
 wt. 9.1  
 lcm. 3#

vis. 52  
 wt. 9.2  
 lcm. 2#

DST 1 Miss  
 4750-4902  
 30-60-60-120  
 GTS/40"  
 360' GOCM  
 110' GM  
 IHP: 2409  
 FHP: 2296  
 ISIP: 1518  
 FSIP: 1531  
 FP:  
 160-184/184-456  
 BHT:122

vis. 64





ang, hrd, drk blk tar stain, filmy so, nsg, no odor

brt wt chrt, lttl blu hue, mottled wthrd, glauc. pinpoint por, sub ang, brn-drk brn stain, little odor, sfo, abundant gas bubs on brk, even dull flour

brt wt chrt, lttl blu hue, mottled wthrd, pinpoint por, sub ang, brn-drk brn stain, good odor, sfo, abundant gas bubs on brk, even dull flour, better show w/ depth

brt wt chrt, lttl blu hue, mottled wthrd, pinpoint por, sub ang, drk brn-blk stain, good odor, sfo, abundant gas bubs on brk, even dull flour

-Bad sample

tan-tan gry dol, fn-vfn xln, gritty, vfn snd content, glauc, sub ang, hrd, brt chrt, xln, shrp, ang, lt brn-drk brn stain along contact, ssfo, gas bubs on brk, no odor

tan-tan gry dol, fn-vfn xln, gritty, vfn snd content, glauc, sub ang, hrd, brt chrt, xln, shrp, ang, lt brn stain along contact, ssfo, gas bubs on brk, slight odor

tan-tan grn dol, fn xln, gritty, pyritic, sub ang, hrd, brt wt chrt, xln, shrp, ang

tan-tan grn dol, fn xln, gritty, pyritic, iron precipitates, sub ang, hrd, brt wt chrt, xln, shrp, ang

tan-tan grn dol, fn xln, gritty, pyritic, iron precipitates, sub ang, hrd, brt wt chrt, xln, shrp, ang

tan-tan gry dol, gritty, vfn snd content, chrt, glauc, pyritic, sub ang, hrd, brt wt chrt

gry-drk gry dol, fxln, vfn snd inclus, gritty, lttl silt content, pyritic, sub ang, hrd

gry-drk gry dol, fxln, vfn snd inclus, gritty, lttl silt content, pyritic, sub ang, hrd

gry-drk gry dol, fxln, gritty, silty, increase silt w/ depth, pyritic, sub ang, hrd

gry-drk gry dol, fxln, silty, vfn snd inclus, gritty, lttl silt content, pyritic, sub ang, hrd

drk gry dol, shly, lttl silt, vfn snd inclus, pyritic, glauc, gritty, sub ang, hrd waxy shl brk

drk gry dol, shly, lttl silt, pyritic, glauc, gritty, sub ang, hrd waxy shl brk, increase shl w/ depth

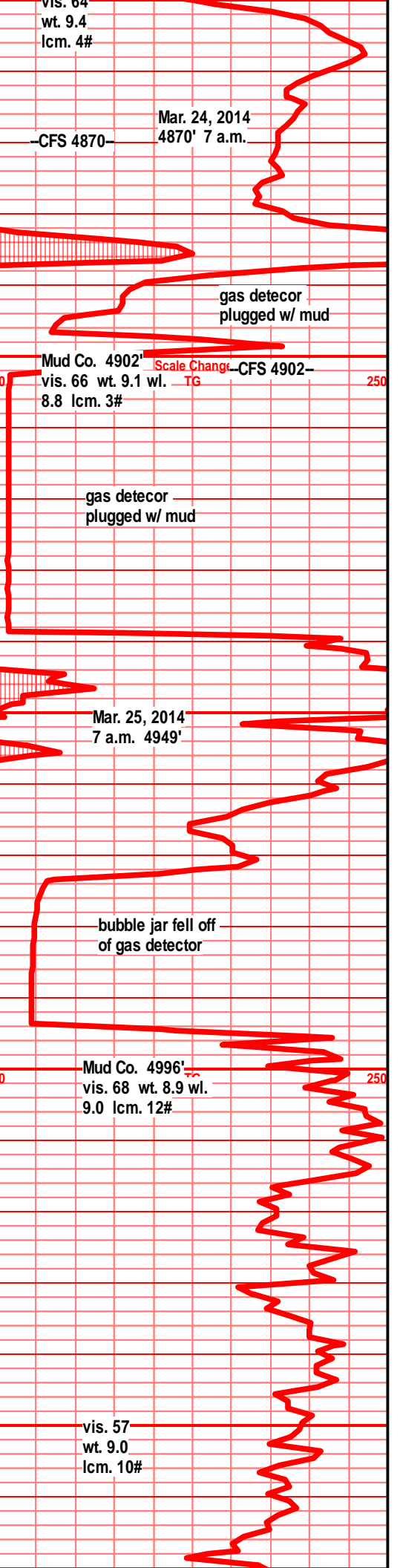
drk gry dol, shly, lttl silt, pyritic, glauc, gritty, trc wt chrt, sub ang, hrd waxy shl brk

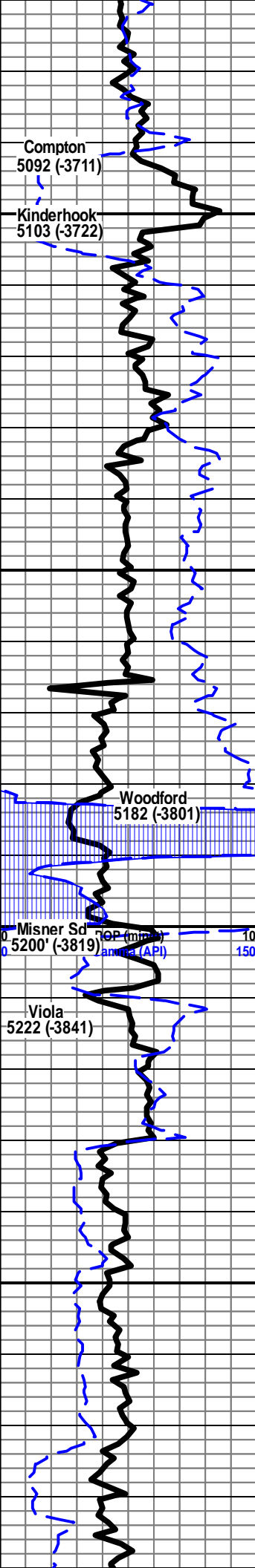
drk gry dol, shly, lttl silt, pyritic, glauc, gritty, trc wt chrt, drk clay clasts, sub ang, hrd waxy shl brk

drk gry dol, shly, lttl silt, pyritic, gritty, trc chrt, drk clay clasts, sub ang, hrd waxy shl brk

drk gry dol, shly, lttl silt, pyritic, gritty, trc chrt, drk clay clasts, sub ang, hrd waxy shl brk

drk gry dol, shly, lttl silt, pyritic, gritty, trc





chrt, drk clay clasts, sub ang, brittle

drk gry dol, shly, lttl silt, pyritic, gritty, trc chrt, drk clay clasts, sub ang, brittle

drk gry dol, shly, slty, lttl pyritic, gritty, drk clay clasts, sub ang, waxy brk

lt gry tan lst, vfxln, foss frags, calc fill, drk clay content, sub ang, hrd

drk gry shl, gritty, vfn snd inclus, blk shl clasts, tabular, hrd, brittle, occasional gas bub on brk, nsfo, no odor

drk gry shl, gritty, vfn snd inclus, blk shl clasts, tabular, hrd, brittle, occasional gas bub on brk, nsfo, no odor

gry-drk gry shl, gritty, blk shl lams, tabular, hrd, occasional gas bub on brk

drk gry shl, silty, calc inclus, brown hue, sub ang, soft, occasional gas bub on brk

drk gry shl, silty, calc inclus, brown hue, sub ang, brittle

gry-drk gry shl, gritty, blk shl lams, tabular, hrd

gry- drk gry shl, silty, pyritic, blk shl lams, brown hue, sub ang, brittle

blk shl, carb, silty, red hue, gas bubs on brk, nso, no odor

gry-drk gry dol, silty, pyritic, few drk clay clasts, sub ang, hrd waxy brk

clear sst, fn-med fn grn, sub-well rounded grns, poor sorted, blk clay clasts, friable, ng, nso

lt gry shl, silty, vfn snd inclus, waxy, pyritic, sub ang

red brn shly dol, silty, pyritic, gritty txt, sub ang, soft, gas bubs on brk

red brn shly dol, silty, pyritic, gritty txt, sub ang, soft

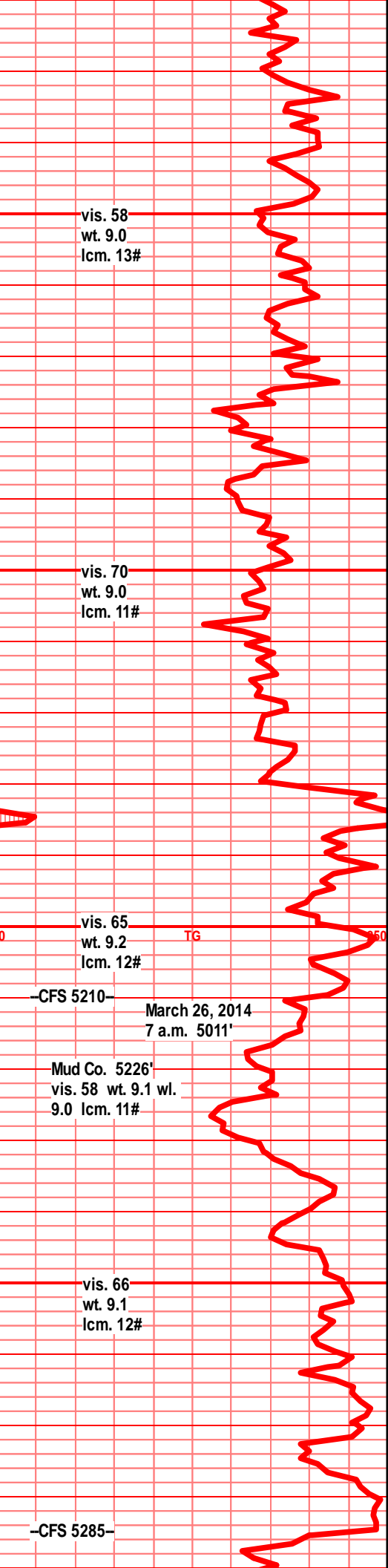
red brn dol, silty, pyritic, gritty, vfn sand inclus, silt and shl increase w/ depth, sub ang, soft, gas bubs on brk

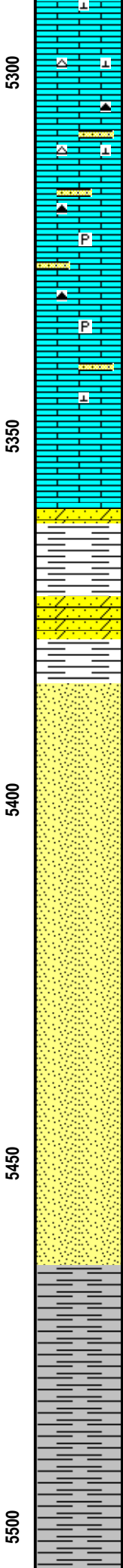
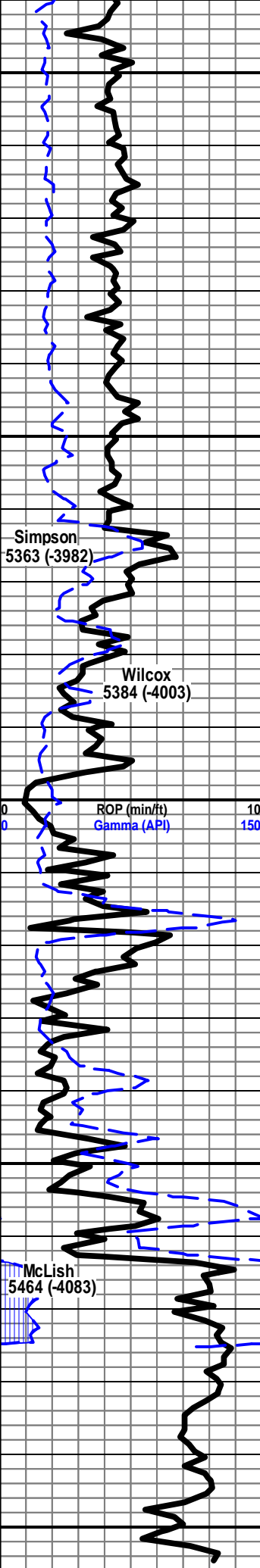
red brn dol, very shly/silty, lttl pyritic, sub ang, gas bubs on brk, nso, no odor

red brn dol, very shly/silty, lttl pyritic, sub ang, gas bubs on brk, nso, no odor, soft, tan lst, xln, lttl chrt on eds, wt mottled chrt, foss frags, calc fill, chlky brk, pyritic, drk gry clay clasts, sub ang

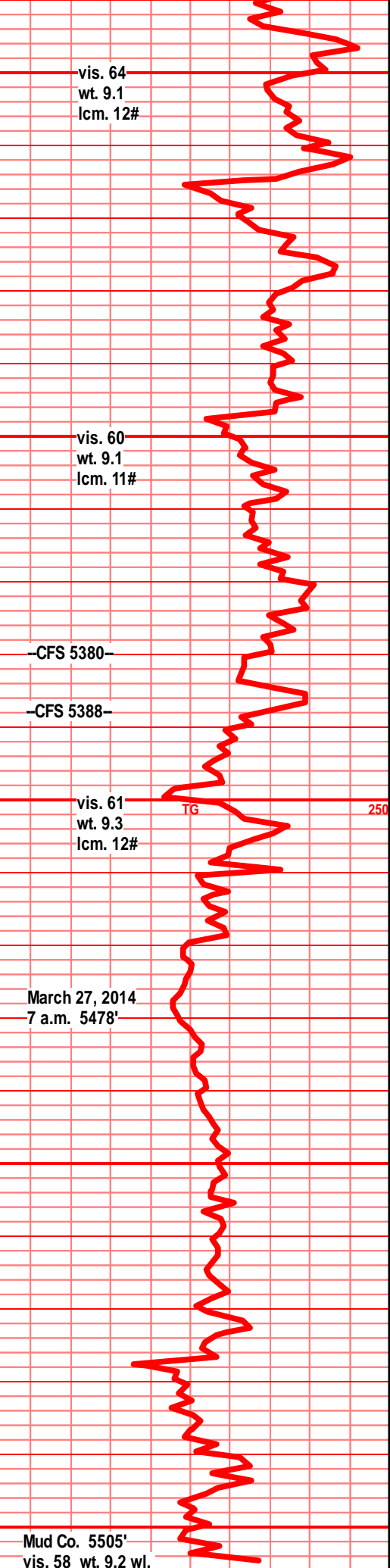
tan lst, vxln, vxln calc fill, wt chlky chrt eds, foss frags, trc pyritic, trc clay clasts, sub ang, hrd

tan lst, vxln, vxln calc fill, wt chlky chrt eds,





foss frags, trc pyritic, trc clay clasts, sub ang, hrd  
tan lst, vxln, vxln calc fill, wt chlky chrt edges, foss frags, trc pyritic, trc clay clasts, sub ang, hrd  
tan lst, xln, vfn snd inclus, gritty, lttl dolomitic, drk clay clasts, pyritic, sub ang, hrd, chlky brk, brn-drk brn chrt, translus, pyritic, drk clay clasts, shrp, ang, hrd  
tan lst, xln, vfn snd inclus, gritty, lttl dolomitic, drk clay clasts, pyritic, sub ang, hrd, chlky brk, brn-drk brn chrt, translus, pyritic, drk clay clasts, shrp, ang, hrd  
tan lst, f-mxln, dolomitic, vfn snd inclus, drk clay clasts, pyritic, chlky brk, sub ang, brittle, drk brn chrt, dirty, clay clasts, shrp, ang  
tan lst, f-mxln, dolomitic, vfn snd inclus, drk clay clasts, pyritic, chlky brk, sub ang, brittle, drk brn chrt, xln calc inclus, dirty, clay clasts, shrp, ang  
drk brn sndy dol, poor srtd, sub rnd grns, p-w cmntd, sub friable, clay clasts, pyritic, no show, teal-pale grn sndy shl, vfn snd grns, pyritic, waxy, soft  
lt grn-brn sst, poor srtd, sub rnd grns, well cmntd, sub friable, sg, sfo, light brn so drps, drk brn oil smears, no odor  
clear-cloudy wt sst, p-f srtd, sub rnd grns, dnse sub ang clusters, poor cmntd, friable, drk clay clasts, no show  
clear-cloudy wt sst, p-f srtd, sub rnd grns, dnse sub ang clusters, poor cmntd, friable, drk clay clasts, no show  
cloudy wt sst, poor srtd, sub rnd grns, fair cmntd, sub friable, dnse sub ang clusters, drk clay clasts, no show  
cloudy wt sst, poor srtd, sub rnd grns, fair cmntd, sub friable, dnse sub ang clusters, drk clay clasts, no show  
cloudy wt sst, poor srtd, sub rnd grns, well cmntd, dnse sub ang clusters, hrd, drk clay clasts, no show  
wt-off wt sst, poor srtd, sub rnd grns, well cmntd, dnse sub ang clusters, hrd, drk clay clasts, no show  
wt-off wt sst, poor srtd, sub rnd grns, well cmntd, dnse sub ang clusters, hrd, drk clay clasts, no show  
wt-off wt sst, poor srtd, sub rnd grns, well cmntd, dnse sub ang clusters, hrd, drk clay clasts, no show, gry grn shl, silty, pyritic, tabular blks, hrd  
gry grn shl, silty, pyritic, tabular blks, hrd  
shl drk gry-gry grn, silty, fn snd inclus, pyritic, tabular, hrd, lttl waxy look  
shl grn, pyritic, slick waxy txt, drk clay clasts, tabular blks, hrd, lt gry-lt gry grn shl, pyritic, waxy, vfn snd inclus, blk, hrd  
shl grn, pyritic, slick waxy txt, drk clay clasts, tabular blks, hrd, lt gry-lt gry grn shl, pyritic, waxy, vfn snd inclus, blk, hrd



-CFS 5380-

-CFS 5388-

March 27, 2014  
7 a.m. 5478'

TD 5505

