Confidentiality Requested:
☑ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1190202

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 # 34805
Name: Seneca Resources Corporation
Address 1: 1201 LOUISIANA ST
Address 2:
City: HOUSTON State: TX Zip: 77002 + __ __ __ __
Contact Person: Josh McLaughlin
Phone: (412) 548-2500
CONTRACTOR: License # 34740
Name: Horizontal Well Drillers, LLC
Wellsite Geologist: Empirica Mudlogging
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 #:

1/18/2014	2/5/2014	2/22/2014
Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date

API No. 15 - 15-151-22428-01-00
Spot Description:
SE - SE - SE - SE Sec. 3 Twp. 26 S. R. 11 ☐ East ☑ West
278 Feet from ☐ North / ☑ South Line of Section
153 Feet from ☑ East / ☐ West Line of Section

Footages Calculated from Nearest Outside Section Corner:
☐ NE ☐ NW ☑ SE ☐ SW

GPS Location: Lat: *(e.g. xx.xxxxx)* , Long: *(e.g. -xxx.xxxxx)*
Datum: ☐ NAD27 ☐ NAD83 ☐ WGS84
County: Pratt
Lease Name: Bock Well #: 3-1H
Field Name:
Producing Formation: Mississippian
Elevation: Ground: 1839 Kelly Bushing: 1854
Total Vertical Depth: 8860 Plug Back Total Depth:
Amount of Surface Pipe Set and Cemented at: 343 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: 3815 ppm Fluid volume: 4120 bbls
Dewatering method used: Haul Off Pit

Location of fluid disposal if hauled offsite:

Operator Name: JB Oilfield Services
Lease Name: LoJo Disposal Pit License #: 00000
Quarter SE Sec. 9 Twp. 26 S. R. 1 ☐ East ☑ West
County: Woods, OK Permit #: 563714

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: 04/28/2014
☑ **Confidential Release Date:** 04/27/2016
☑ **Wireline Log Received**
☑ **Geologist Report Received**
☐ **UIC Distribution**
ALT ☑ **I** ☐ **II** ☐ **III** **Approved by:** NAOMI JAMES **Date:** 04/30/2014

[redacted] 1190202

Operator Name: Seneca Resources Corporation Lease Name: Bock Well #: 3-1H

Sec. 3 Twp. 26 S. R. 11 ☐ East ☑ West County: Pratt

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken ☐ Yes ☑ No
(Attach Additional Sheets)

Samples Sent to Geological Survey ☐ Yes ☑ No

Cores Taken ☐ Yes ☑ No

Electric Log Run ☐ Yes ☑ No

List All E. Logs Run:

☑ Log Formation (Top), Depth and Datum ☐ Sample

Name	Top	Datum
Mississippian	4447' MD / 4041' TVD	-2187'

CASING RECORD ☑ New ☐ Used
Report all strings set-conductor, surface, intermediate, production, etc.

Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
Attached	Attached	Attached	Attached	Attached	Attached	Attached	Attached

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	-			
	-			

Did you perform a hydraulic fracturing treatment on this well? ☑ Yes ☐ No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? ☑ Yes ☐ No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? ☑ Yes ☐ No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record *(Amount and Kind of Material Used)*	Depth

TUBING RECORD: Size: Set At: Packer At: Liner Run: ☑ Yes ☐ No

Date of First, Resumed Production, SWD or ENHR. 3/1/2014

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

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

DISPOSITION OF GAS:
☐ Vented ☐ Sold ☐ Used on Lease
(If vented, Submit ACO-18.)

METHOD OF COMPLETION:
☐ Open Hole ☑ Perf. ☐ Dually Comp. *(Submit ACO-5)* ☐ Commingled *(Submit ACO-4)*
☐ Other *(Specify)* _____

PRODUCTION INTERVAL:
_____
_____

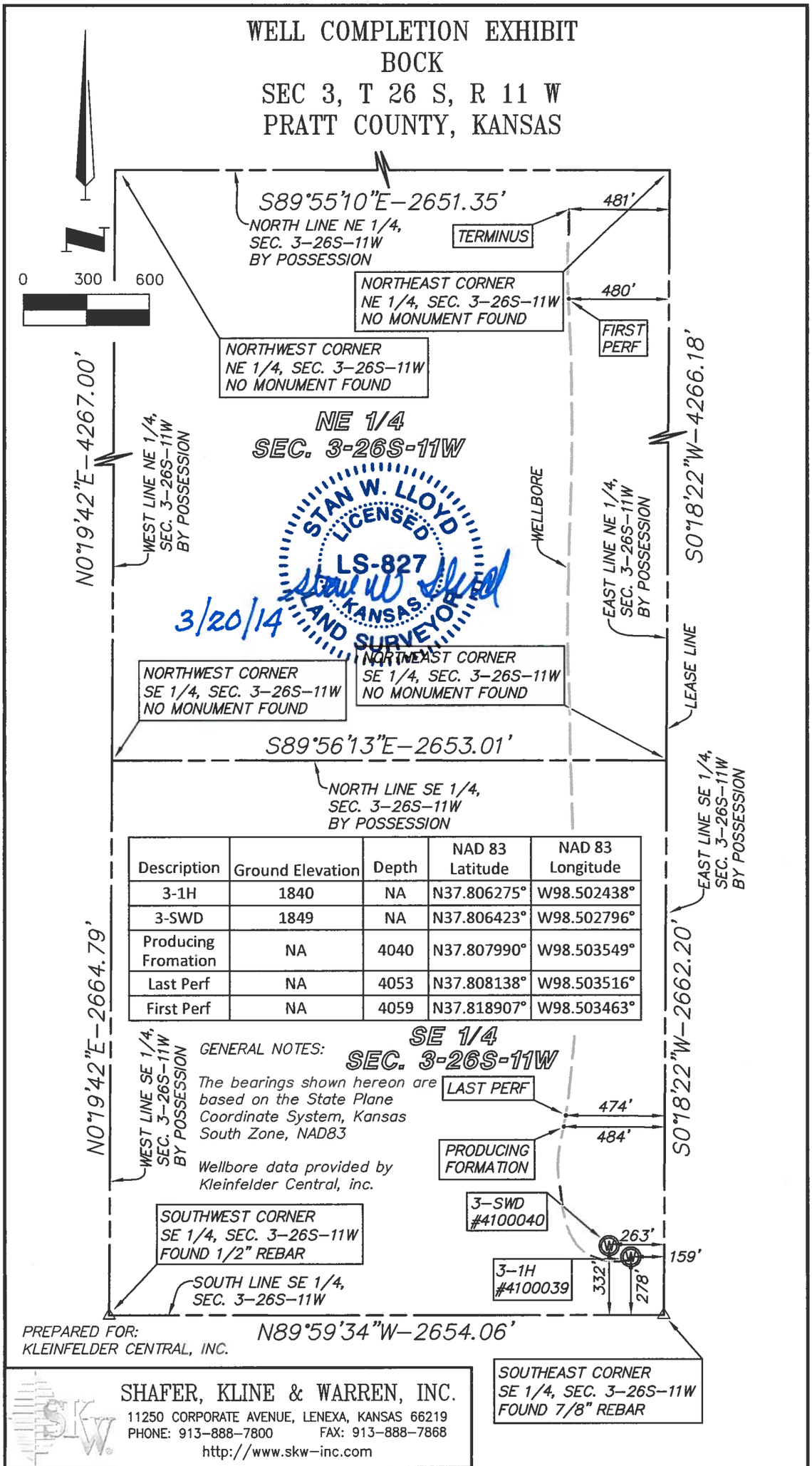
Mail to: KCC - Conservation Division, 130 S. Market - Room 2078, Wichita, Kansas 67202

Form	ACO1 - Well Completion
Operator	Seneca Resources Corporation
Well Name	Bock 3-1H
Doc ID	1190202

Casing

Purpose Of String	Size Hole Drilled	Size Casing Set	Weight	Setting Depth	Type Of Cement	Number of Sacks Used	Type and Percent Additives
Surface	17.5	13.375	48	343	*See Attached*	400	*See Attached*
Intermediate	12.25	9.675	36	1912	*See Attached*	700	*See Attached*
Protective	8.75	7	26	4490	*See Attached*	340	*See Attached*
Production Liner	6.125	4.5	13.5	8545	*See Attached*	72	*See Attached*

WELL COMPLETION EXHIBIT
BOCK
SEC 3, T 26 S, R 11 W
PRATT COUNTY, KANSAS



Description	Ground Elevation	Depth	NAD 83 Latitude	NAD 83 Longitude
3-1H	1840	NA	N37.806275°	W98.502438°
3-SWD	1849	NA	N37.806423°	W98.502796°
Producing Fromation	NA	4040	N37.807990°	W98.503549°
Last Perf	NA	4053	N37.808138°	W98.503516°
First Perf	NA	4059	N37.818907°	W98.503463°

GENERAL NOTES:

The bearings shown hereon are based on the State Plane Coordinate System, Kansas South Zone, NAD83

Wellbore data provided by Kleinfelder Central, inc.

PREPARED FOR:
KLEINFELDER CENTRAL, INC.

SHAFER, KLINE & WARREN, INC.
11250 CORPORATE AVENUE, LENEXA, KANSAS 66219
PHONE: 913–888–7800 FAX: 913–888–7868
http://www.skw–inc.com

PROJECT NO. 130384–010	DATE 3–20–14	BY SAC

Seneca Resources - MC

Pratt County, Kansas
Bock
Bock 3-1H

Curve & Lateral

Design: Curve & Lateral

DDC Survey Report

06 February, 2014

The DIRECTIONAL DRILLING COMPANY

Company:	Seneca Resources - MC	**Local Co-ordinate Reference:**	Well Bock 3-1H
Project:	Pratt County, Kansas	**TVD Reference:**	WELL @ 1854.0usft
Site:	Bock	**MD Reference:**	WELL @ 1854.0usft
Well:	Bock 3-1H	**North Reference:**	Grid
Wellbore:	Curve & Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Curve & Lateral	**Database:**	EDM 5000.1 Single User Db

Project Pratt County, Kansas

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Kansas Southern Zone		

Site Bock

Site Position:		**Northing:**	1,727,289.78 usft	**Latitude:**	37° 48' 22.591 N
From:	Map	**Easting:**	1,311,635.46 usft	**Longitude:**	98° 30' 8.696 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.00 °

Well Bock 3-1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,727,289.78 usft	**Latitude:**	37° 48' 22.591 N
	+E/-W	0.0 usft	**Easting:**	1,311,635.46 usft	**Longitude:**	98° 30' 8.696 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,839.0 usft

Wellbore Curve & Lateral

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/21/2014	4.69	65.71	52,027

Design Curve & Lateral

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	2,850.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	356.92

Survey Program **Date** 2/6/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	2,850.0	GYRO (Pilot Hole)	Good_gyro	Good Gyro
2,948.0	8,860.0	MWD (Curve & Lateral)	MWD default	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.48	142.98	100.0	-0.3	0.3	-0.3	0.48	0.48	0.00
200.0	0.33	107.20	200.0	-0.8	0.8	-0.8	0.29	-0.15	-35.78
300.0	0.77	173.38	300.0	-1.5	1.1	-1.6	0.70	0.44	66.18
400.0	0.90	186.07	400.0	-3.0	1.1	-3.0	0.23	0.13	12.69
500.0	0.71	152.49	500.0	-4.3	1.3	-4.4	0.50	-0.19	-33.58
600.0	1.08	178.63	600.0	-5.8	1.6	-5.9	0.54	0.37	26.14
700.0	0.52	138.68	700.0	-7.1	2.0	-7.2	0.76	-0.56	-39.95
800.0	0.59	182.66	799.9	-7.9	2.2	-8.0	0.42	0.07	43.98
900.0	0.76	176.61	899.9	-9.1	2.3	-9.2	0.18	0.17	-6.05

Company:	Seneca Resources - MC	**Local Co-ordinate Reference:**	Well Bock 3-1H
Project:	Pratt County, Kansas	**TVD Reference:**	WELL @ 1854.0usft
Site:	Bock	**MD Reference:**	WELL @ 1854.0usft
Well:	Bock 3-1H	**North Reference:**	Grid
Wellbore:	Curve & Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Curve & Lateral	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,000.0	0.36	132.22	999.9	-10.0	2.5	-10.1	0.56	-0.40	-44.39
1,100.0	0.41	204.24	1,099.9	-10.5	2.6	-10.6	0.45	0.05	72.02
1,200.0	0.72	192.46	1,199.9	-11.4	2.3	-11.6	0.33	0.31	-11.78
1,300.0	0.09	216.03	1,299.9	-12.1	2.1	-12.2	0.64	-0.63	23.57
1,400.0	0.41	214.77	1,399.9	-12.5	1.9	-12.6	0.32	0.32	-1.26
1,500.0	0.77	183.01	1,499.9	-13.4	1.7	-13.5	0.47	0.36	-31.76
1,600.0	0.15	175.48	1,599.9	-14.2	1.6	-14.3	0.62	-0.62	-7.53
1,700.0	0.28	262.97	1,699.9	-14.4	1.4	-14.5	0.31	0.13	87.49
1,800.0	0.20	164.59	1,799.9	-14.6	1.2	-14.6	0.37	-0.08	-98.38
1,900.0	0.32	160.35	1,899.9	-15.0	1.3	-15.1	0.12	0.12	-4.24
2,000.0	0.23	200.46	1,999.9	-15.5	1.4	-15.5	0.21	-0.09	40.11
2,100.0	0.11	272.32	2,099.9	-15.7	1.2	-15.7	0.22	-0.12	71.86
2,200.0	0.08	290.77	2,199.9	-15.6	1.0	-15.7	0.04	-0.03	18.45
2,300.0	0.41	223.04	2,299.9	-15.9	0.7	-15.9	0.39	0.33	-67.73
2,400.0	0.58	272.77	2,399.9	-16.1	0.0	-16.1	0.44	0.17	49.73
2,500.0	0.48	349.22	2,499.9	-15.7	-0.6	-15.6	0.66	-0.10	76.45
2,600.0	0.49	328.92	2,599.9	-14.9	-0.9	-14.8	0.17	0.01	-20.30
2,700.0	0.13	50.44	2,699.9	-14.5	-1.0	-14.4	0.49	-0.36	81.52
2,800.0	0.44	128.00	2,799.9	-14.6	-0.6	-14.6	0.43	0.31	77.56
TIE INTO PH @ 2850' MD / 2850' TVD									
2,850.0	0.61	94.19	2,849.9	-14.8	-0.2	-14.7	0.69	0.34	-67.62
2,948.0	0.30	128.80	2,947.9	-15.0	0.5	-15.0	0.41	-0.32	35.32
3,035.0	0.10	222.60	3,034.9	-15.2	0.6	-15.2	0.37	-0.23	107.82
3,077.0	0.10	307.10	3,076.9	-15.2	0.6	-15.2	0.32	0.00	201.19
3,122.0	3.10	255.60	3,121.9	-15.4	-0.6	-15.4	6.75	6.67	-114.44
3,163.0	8.10	259.40	3,162.7	-16.3	-4.6	-16.0	12.22	12.20	9.27
3,205.0	12.40	264.10	3,204.0	-17.3	-12.0	-16.6	10.42	10.24	11.19
3,247.0	16.10	264.10	3,244.7	-18.3	-22.2	-17.1	8.81	8.81	0.00
3,289.0	20.00	263.10	3,284.6	-19.8	-35.2	-17.9	9.31	9.29	-2.38
3,331.0	23.80	264.00	3,323.6	-21.5	-50.7	-18.8	9.08	9.05	2.14
3,373.0	27.40	269.10	3,361.4	-22.6	-68.8	-18.8	10.04	8.57	12.14
3,414.0	29.70	276.00	3,397.5	-21.7	-88.4	-16.9	9.80	5.61	16.83
3,457.0	32.60	280.10	3,434.3	-18.5	-110.4	-12.6	8.35	6.74	9.53
3,499.0	33.90	281.90	3,469.4	-14.1	-133.0	-6.9	3.89	3.10	4.29
3,540.0	35.90	286.80	3,503.0	-8.3	-155.7	0.1	8.40	4.88	11.95
3,583.0	37.00	293.20	3,537.6	0.5	-179.7	10.1	9.20	2.56	14.88
3,624.0	36.80	299.80	3,570.4	11.4	-201.7	22.3	9.67	-0.49	16.10
3,667.0	38.20	307.30	3,604.6	25.9	-223.4	37.9	11.10	3.26	17.44
3,710.0	40.00	315.30	3,637.9	43.8	-243.7	56.8	12.45	4.19	18.60
3,753.0	41.70	322.80	3,670.5	65.0	-262.1	79.0	12.07	3.95	17.44
3,795.0	43.20	328.90	3,701.5	88.5	-278.0	103.3	10.43	3.57	14.52
3,838.0	43.90	336.00	3,732.7	114.7	-291.7	130.2	11.49	1.63	16.51
3,880.0	45.30	340.00	3,762.6	142.0	-302.7	158.1	7.47	3.33	9.52

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Wellbore:	Curve & Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Curve & Lateral	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,922.0	47.80	343.80	3,791.5	171.0	-312.2	187.5	8.86	5.95	9.05
3,965.0	51.20	346.90	3,819.4	202.6	-320.4	219.6	9.62	7.91	7.21
4,007.0	55.30	350.00	3,844.5	235.6	-327.1	252.8	11.41	9.76	7.38
4,050.0	59.40	352.50	3,867.7	271.4	-332.6	288.9	10.72	9.53	5.81
4,092.0	60.80	353.90	3,888.7	307.5	-336.9	325.2	4.41	3.33	3.33
4,136.0	60.90	353.50	3,910.1	345.7	-341.1	363.6	0.83	0.23	-0.91
4,179.0	60.80	354.20	3,931.0	383.1	-345.1	401.1	1.44	-0.23	1.63
4,221.0	61.60	357.80	3,951.3	419.8	-347.7	437.9	7.75	1.90	8.57
4,264.0	63.60	2.40	3,971.1	457.9	-347.6	476.0	10.57	4.65	10.70
4,307.0	65.30	6.80	3,989.6	496.6	-344.5	514.4	10.04	3.95	10.23
4,348.0	66.40	10.20	4,006.4	533.6	-339.0	551.0	8.03	2.68	8.29
4,391.0	68.90	11.30	4,022.8	572.6	-331.6	589.6	6.28	5.81	2.56
4,433.0	72.60	11.30	4,036.6	611.5	-323.8	628.0	8.81	8.81	0.00
4,474.0	76.80	10.80	4,047.4	650.3	-316.2	666.4	10.31	10.24	-1.22
4,552.0	82.90	8.30	4,061.2	726.0	-303.5	741.3	8.43	7.82	-3.21
4,595.0	87.40	6.80	4,064.8	768.5	-297.9	783.4	11.03	10.47	-3.49
4,637.0	91.30	5.90	4,065.3	810.2	-293.2	824.8	9.53	9.29	-2.14
4,680.0	90.60	6.00	4,064.6	853.0	-288.8	867.2	1.64	-1.63	0.23
4,725.0	87.50	5.20	4,065.3	897.7	-284.4	911.7	7.11	-6.89	-1.78
4,810.0	86.80	5.50	4,069.5	982.3	-276.5	995.7	0.90	-0.82	0.35
4,898.0	90.00	5.10	4,072.0	1,069.8	-268.3	1,082.7	3.66	3.64	-0.45
4,982.0	90.20	3.50	4,071.8	1,153.6	-262.0	1,166.0	1.92	0.24	-1.90
5,066.0	90.80	2.40	4,071.1	1,237.5	-257.7	1,249.5	1.49	0.71	-1.31
5,152.0	92.10	359.40	4,068.9	1,323.4	-256.4	1,335.3	3.80	1.51	-3.49
5,237.0	89.60	0.40	4,067.7	1,408.4	-256.5	1,420.2	3.17	-2.94	1.18
5,307.0	90.00	0.20	4,067.9	1,478.4	-256.1	1,490.0	0.64	0.57	-0.29
5,392.0	90.00	358.20	4,067.9	1,563.4	-257.3	1,575.0	2.35	0.00	-2.35
5,477.0	90.20	356.30	4,067.8	1,648.3	-261.4	1,660.0	2.25	0.24	-2.24
5,562.0	89.20	357.90	4,068.2	1,733.2	-265.7	1,745.0	2.22	-1.18	1.88
5,646.0	88.60	356.10	4,069.8	1,817.1	-270.1	1,828.9	2.26	-0.71	-2.14
5,731.0	89.30	358.00	4,071.4	1,901.9	-274.5	1,913.9	2.38	0.82	2.24
5,814.0	91.40	359.20	4,070.9	1,984.9	-276.5	1,996.9	2.91	2.53	1.45
5,899.0	92.50	358.90	4,068.0	2,069.8	-277.9	2,081.8	1.34	1.29	-0.35
5,987.0	90.30	358.50	4,065.8	2,157.8	-279.9	2,169.7	2.54	-2.50	-0.45
6,075.0	88.60	359.20	4,066.7	2,245.7	-281.7	2,257.6	2.09	-1.93	0.80
6,160.0	88.70	357.00	4,068.7	2,330.7	-284.5	2,342.6	2.59	0.12	-2.59
6,246.0	88.80	358.30	4,070.6	2,416.6	-288.0	2,428.6	1.52	0.12	1.51
6,333.0	90.20	0.20	4,071.3	2,503.6	-289.2	2,515.5	2.71	1.61	2.18
6,421.0	91.30	359.60	4,070.2	2,591.5	-289.3	2,603.4	1.42	1.25	-0.68
6,509.0	91.10	358.40	4,068.3	2,679.5	-290.8	2,691.3	1.38	-0.23	-1.36
6,593.0	91.20	357.10	4,066.6	2,763.4	-294.1	2,775.2	1.55	0.12	-1.55
6,680.0	90.00	358.50	4,065.7	2,850.4	-297.5	2,862.2	2.12	-1.38	1.61
6,765.0	90.60	359.90	4,065.3	2,935.3	-298.7	2,947.2	1.79	0.71	1.65

Company:	Seneca Resources - MC	**Local Co-ordinate Reference:**	Well Bock 3-1H
Project:	Pratt County, Kansas	**TVD Reference:**	WELL @ 1854.0usft
Site:	Bock	**MD Reference:**	WELL @ 1854.0usft
Well:	Bock 3-1H	**North Reference:**	Grid
Wellbore:	Curve & Lateral	**Survey Calculation Method:**	Minimum Curvature
Design:	Curve & Lateral	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,853.0	90.50	359.10	4,064.4	3,023.3	-299.4	3,035.1	0.92	-0.11	-0.91
6,942.0	91.20	0.70	4,063.1	3,112.3	-299.6	3,123.9	1.96	0.79	1.80
7,028.0	89.50	2.20	4,062.6	3,198.3	-297.4	3,209.7	2.64	-1.98	1.74
7,111.0	89.70	1.10	4,063.2	3,281.3	-295.0	3,292.4	1.35	0.24	-1.33
7,201.0	89.70	0.30	4,063.6	3,371.2	-293.9	3,382.2	0.89	0.00	-0.89
7,289.0	89.50	2.50	4,064.3	3,459.2	-291.8	3,469.9	2.51	-0.23	2.50
7,376.0	90.50	2.40	4,064.3	3,546.1	-288.1	3,556.5	1.16	1.15	-0.11
7,463.0	90.60	1.40	4,063.4	3,633.1	-285.2	3,643.2	1.16	0.11	-1.15
7,553.0	90.40	1.70	4,062.6	3,723.0	-282.7	3,732.9	0.40	-0.22	0.33
7,638.0	90.00	0.20	4,062.3	3,808.0	-281.3	3,817.6	1.83	-0.47	-1.76
7,725.0	89.60	0.30	4,062.6	3,895.0	-281.0	3,904.5	0.47	-0.46	0.11
7,809.0	90.50	0.01	4,062.6	3,979.0	-280.7	3,988.4	1.13	1.07	-0.35
7,892.0	91.80	359.90	4,060.9	4,062.0	-280.8	4,071.2	1.57	1.57	-0.13
7,980.0	90.60	359.20	4,059.1	4,150.0	-281.5	4,159.1	1.58	-1.36	-0.80
8,064.0	90.10	358.90	4,058.5	4,234.0	-282.9	4,243.0	0.69	-0.60	-0.36
8,148.0	89.90	358.90	4,058.5	4,318.0	-284.5	4,327.0	0.24	-0.24	0.00
8,232.0	90.00	357.60	4,058.6	4,401.9	-287.1	4,411.0	1.55	0.12	-1.55
8,315.0	89.50	356.80	4,059.0	4,484.8	-291.1	4,494.0	1.14	-0.60	-0.96
8,405.0	90.30	357.80	4,059.1	4,574.7	-295.4	4,584.0	1.42	0.89	1.11
8,493.0	90.60	358.40	4,058.4	4,662.7	-298.3	4,671.9	0.76	0.34	0.68
8,581.0	90.40	359.90	4,057.7	4,750.6	-299.6	4,759.9	1.72	-0.23	1.70
8,666.0	89.60	2.00	4,057.7	4,835.6	-298.2	4,844.7	2.64	-0.94	2.47
8,754.0	91.10	0.20	4,057.1	4,923.6	-296.5	4,932.4	2.66	1.70	-2.05
8,804.0	92.40	0.60	4,055.6	4,973.6	-296.1	4,982.3	2.72	2.60	0.80
TD @ 8860' MD / 4053' TVD									
8,860.0	92.40	0.60	4,053.3	5,029.5	-295.5	5,038.1	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,850.0	2,849.9	-14.8	-0.2	TIE INTO PH @ 2850' MD / 2850' TVD
8,860.0	4,053.3	5,029.5	-295.5	TD @ 8860' MD / 4053' TVD

Checked By: _____ Approved By: _____ Date: _____

Scale: 5" / 100'
Measured Depth Log

Well Name	BOCK 3-1H HORZ		
Location	Sec 3, T26S, R11W		
State	Kansas	**County**	Pratt
Country	United States	**Rig Number**	HWD # 14
API Number	15-151-22428-01-00	**AFE #**	131891
Spud Date	1/17/2014	**Drilling Completed**	TBD
Surface Coordinates	278' from South Line & 153' from East Line		
Ground Elevation	1839	**K.B. Elevation**	1854
Logged Interval	1920 **To** TBD	**Total Depth**	TBD
Formation	Mississippian Chat		
Type of Drilling Fluid	Water Based		

Company	Seneca Resources C
Address	McCandless Corpora 5800 Corporate Drive Pittsburgh, PA 15237

Name	Paul Campbell/ Ed K
Company	ALS Empirica
Address	609 Westland Drive Edmond, Ok 73013

Product Description	Regu Logg Relea
Equiptment	MLog
Calibration	Stand Total

Operator

Corp.

ate Center
e, Suite 300
7

Geologist

night

Other

ular 2 Man Logging Services
ing Began: 1-20-2014
ased: TBD

gger: # 364

dard Calibration for Redbox
Gas & Chromatigraph

Rock Types

Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHOIPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA
- FOSSIL
- GASTROPOD
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

- ANHYDRITIC
- ARGILLACEOUS
- ARGILLITE GRAIN
- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CALCAREOUS
- CARBONACEOUS FLAKES
- CHTDK
- CHTLT
- COAL - THIN BEDS
- DOLOMITIC
- FELDSPAR
- FERRUGINOUS PELLET
- FERRUGINOUS
- GLAUCONITE
- GYPSIFEROUS
- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY
- TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (CALC) STRG
- MARLSTONE (DOL) STRG
- SANDSTONE STRINGER
- SHALE STRINGER
- SILTSTONE STRINGER

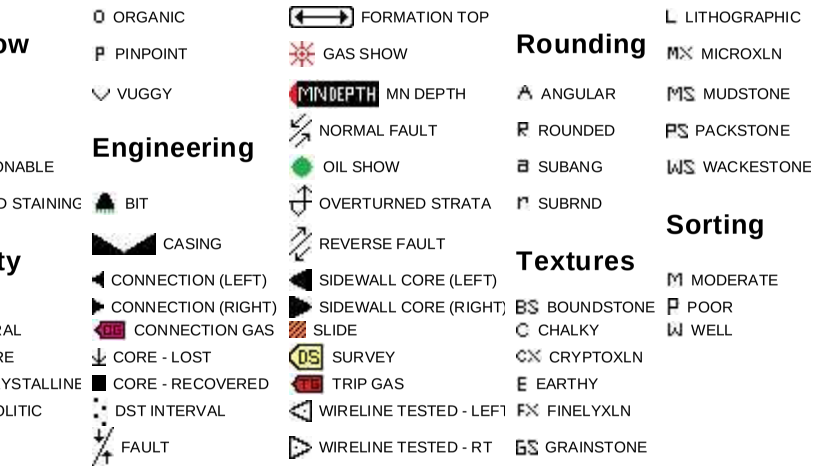
Oil Sho

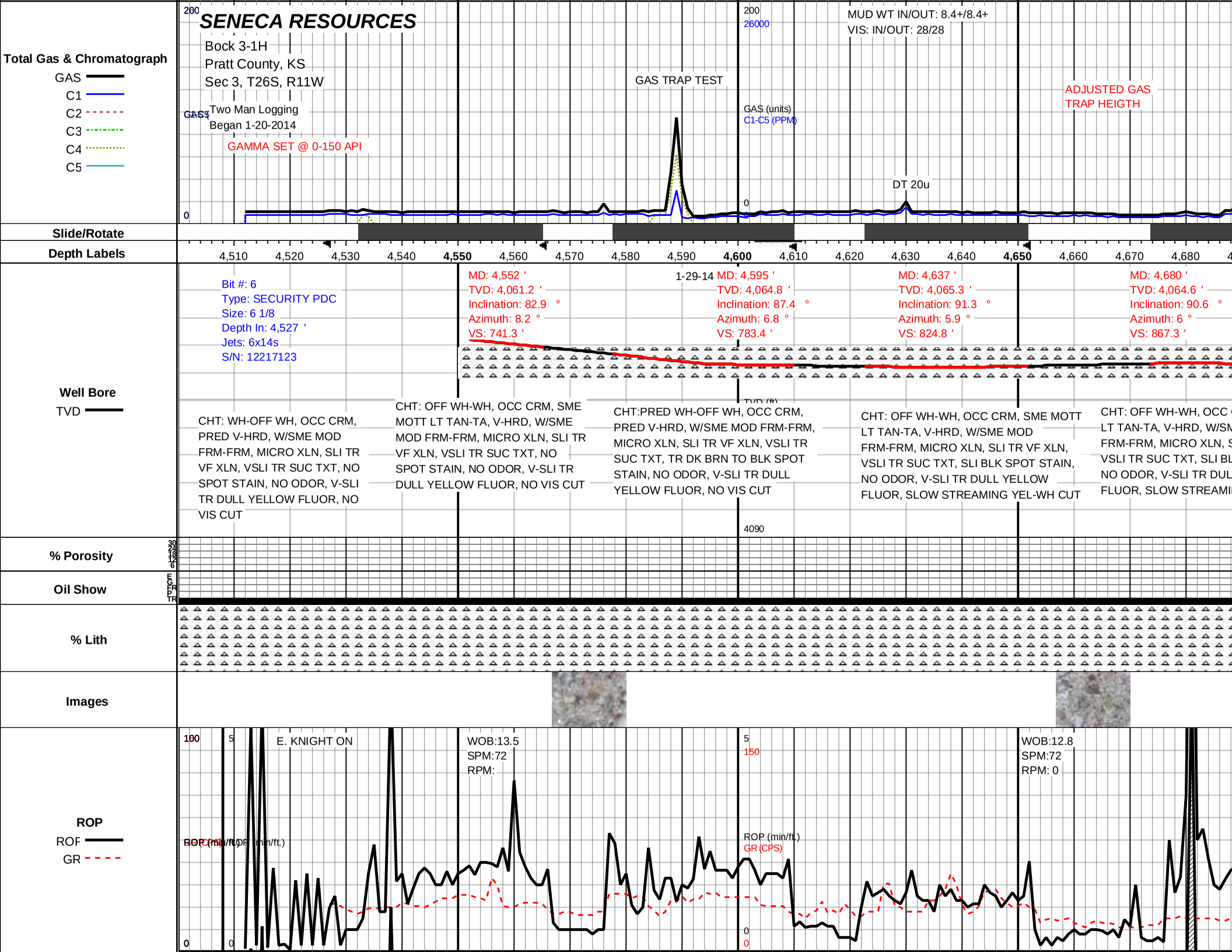
- DEAD
- EVEN
- QUESTIC
- SPOTTE

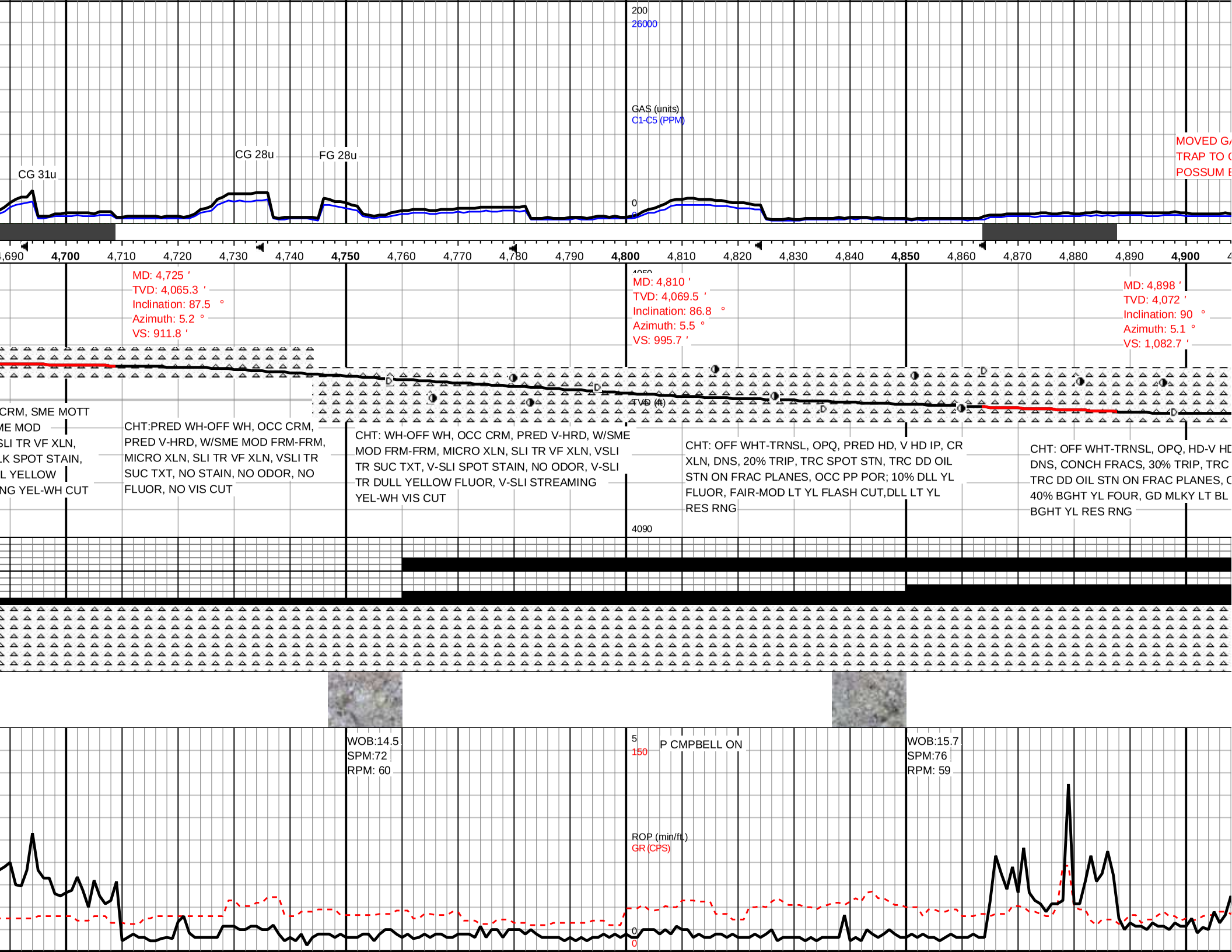
Porosit

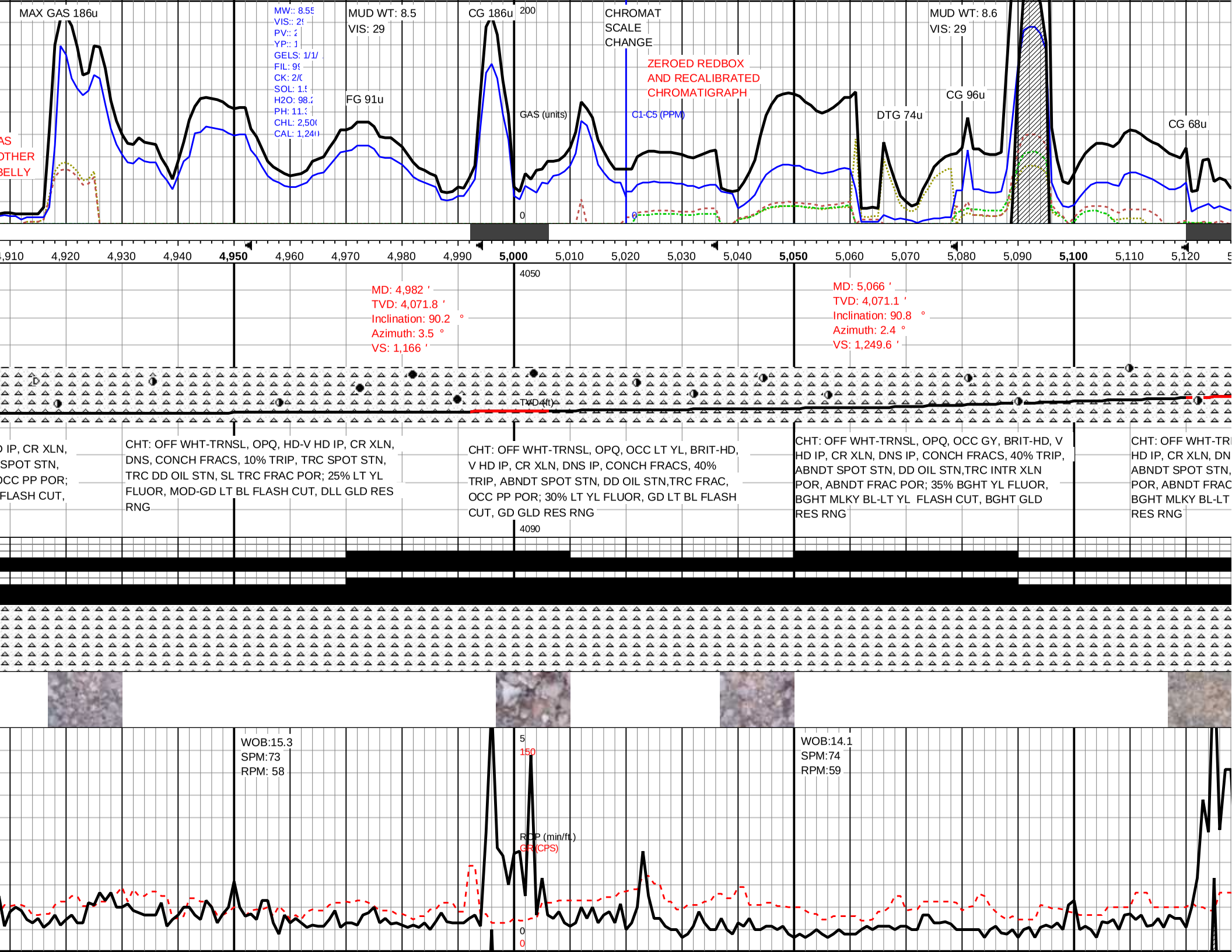
- EARTHY
- FENESTR
- FRACTUR
- INTERCR
- INTEROO
- MOLDIC

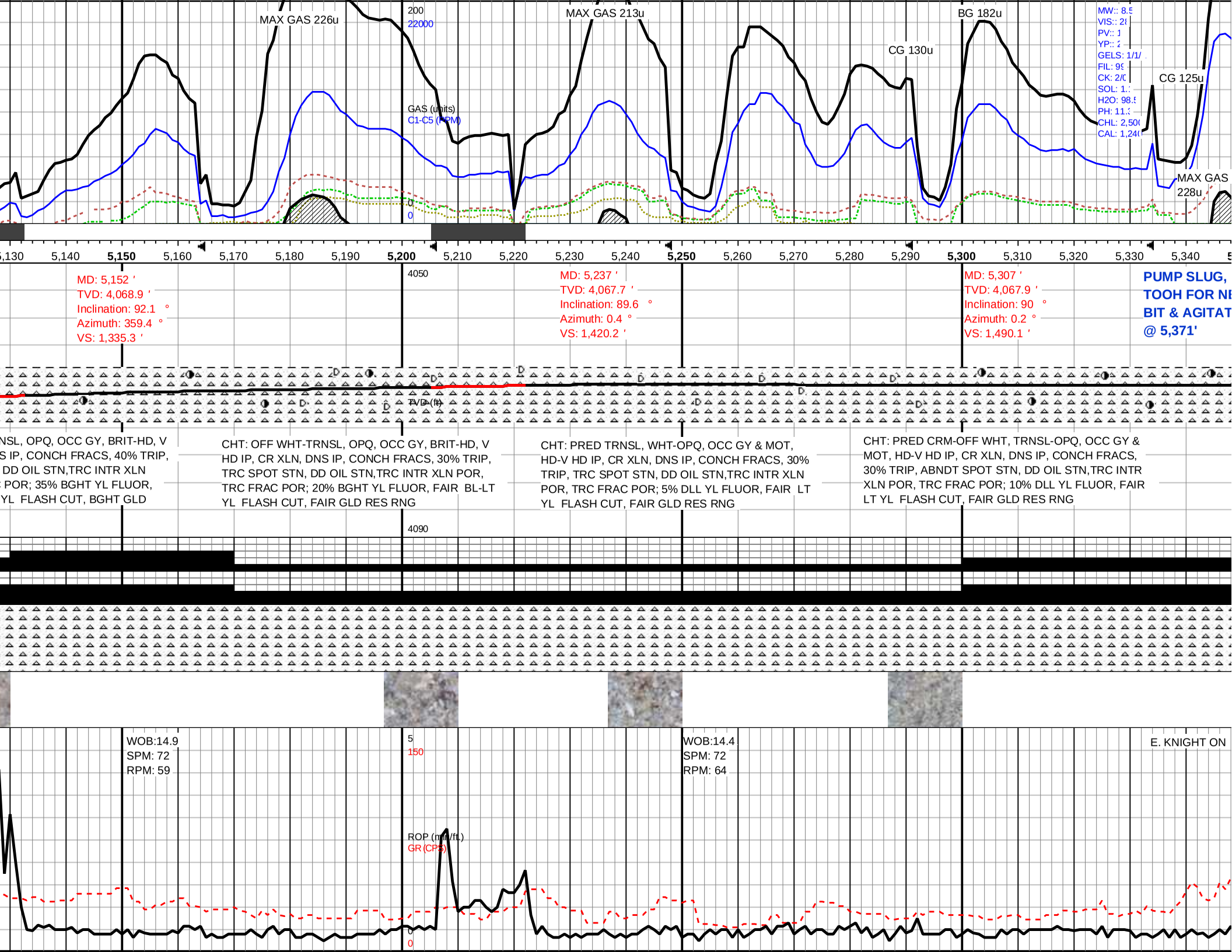
Other Symbols

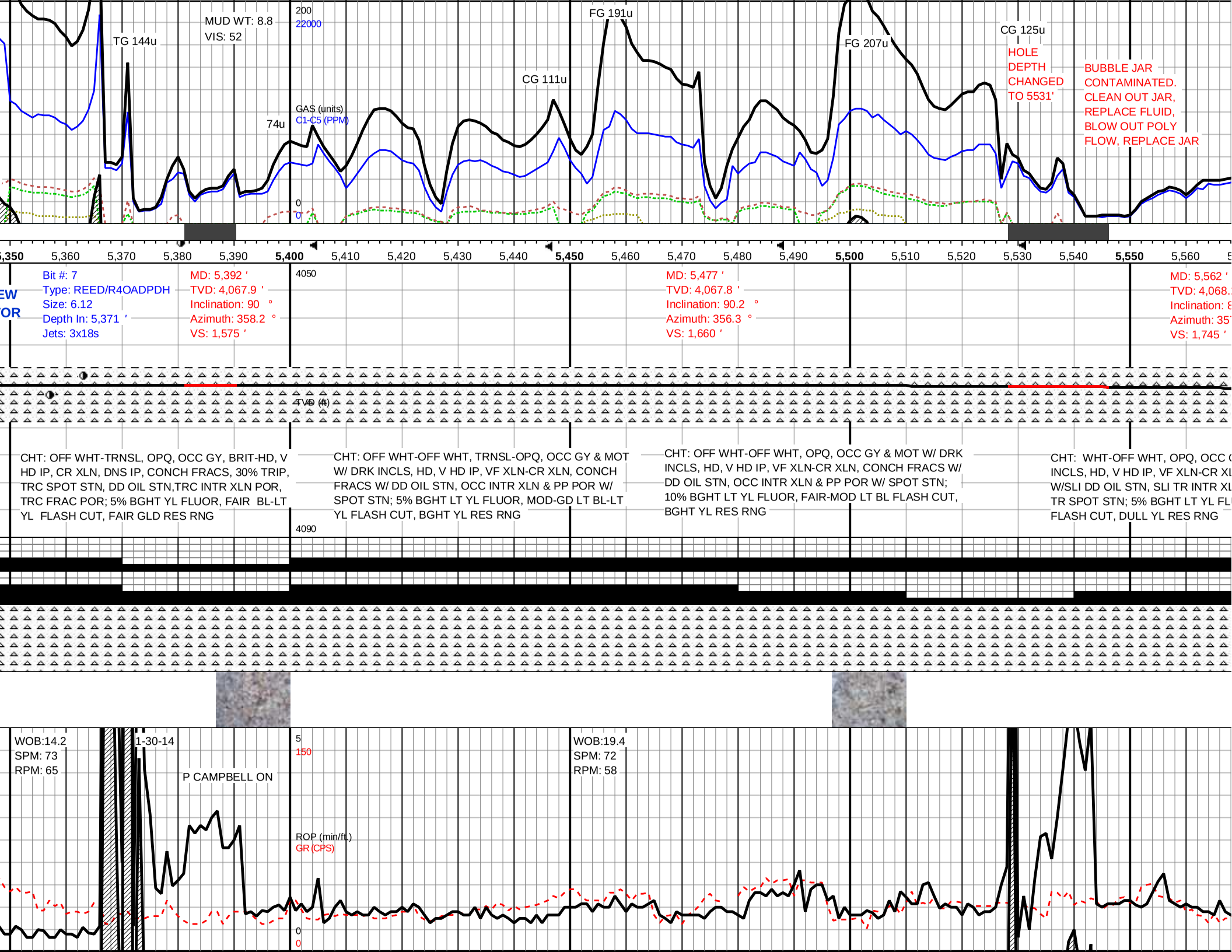


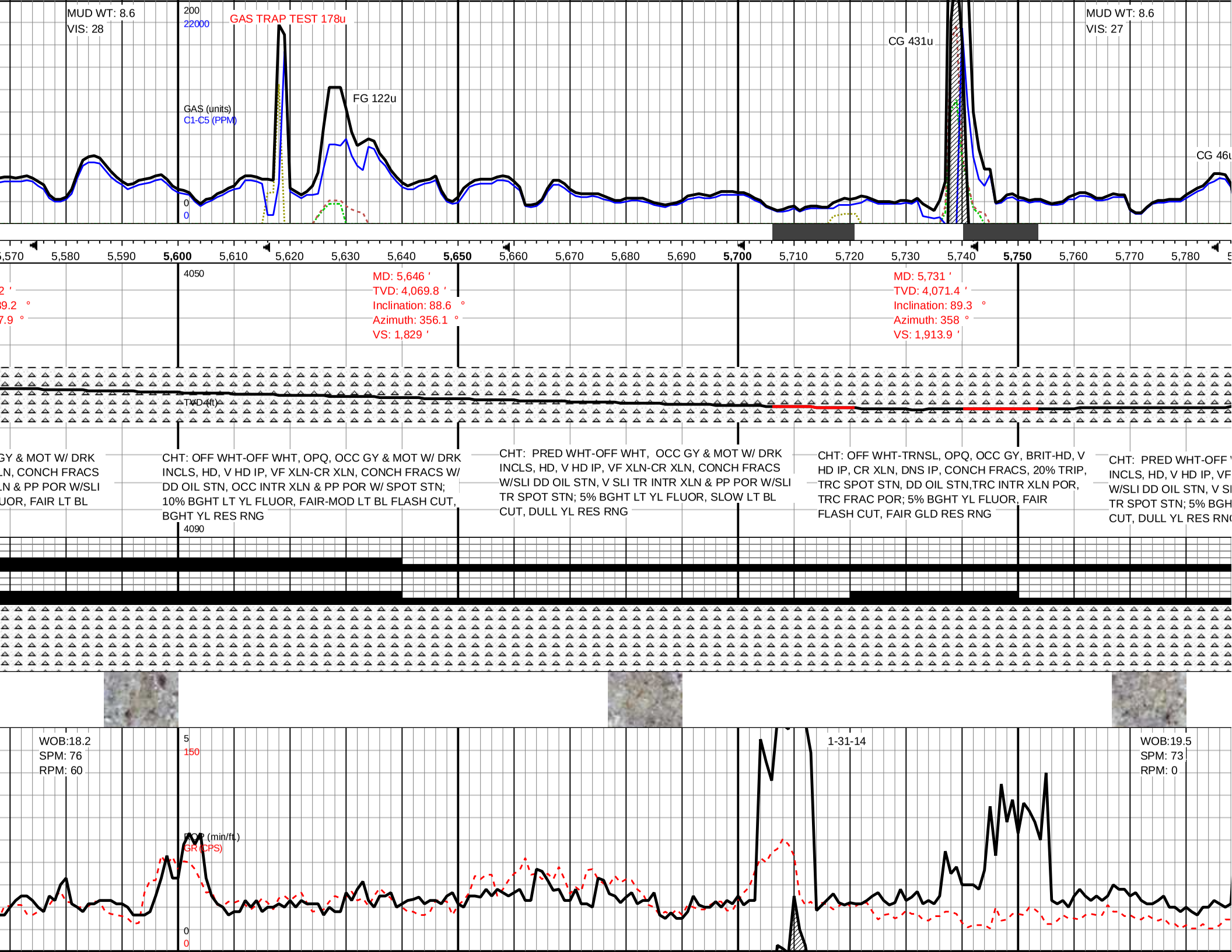

SENECA RESOURCES
Bock 3-1H
Pratt County, KS
Sec 3, T26S, R11W
Two Man Logging
Began 1-20-2014
GAMMA SET @ 0-150 API
GAS TRAP TEST
ADJUSTED GAS TRAP HEIGTH
DT 20u
MUD WT IN/OUT: 8.4+/8.4+
VIS: IN/OUT: 28/28
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
C5
GAS (units)
C1-C5 (PPM)
Slide/Rotate
Depth Labels
Bit #: 6
Type: SECURITY PDC
Size: 6 1/8
Depth In: 4,527 '
Jets: 6x14s
S/N: 12217123
MD: 4,552 '
TVD: 4,061.2 '
Inclination: 82.9 °
Azimuth: 8.2 °
VS: 741.3 '
1-29-14
MD: 4,595 '
TVD: 4,064.8 '
Inclination: 87.4 °
Azimuth: 6.8 °
VS: 783.4 '
MD: 4,637 '
TVD: 4,065.3 '
Inclination: 91.3 °
Azimuth: 5.9 °
VS: 824.8 '
MD: 4,680 '
TVD: 4,064.6 '
Inclination: 90.6 °
Azimuth: 6 °
VS: 867.3 '
Well Bore
TVD
CHT: WH-OFF WH, OCC CRM, PRED V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, NO SPOT STAIN, NO ODOR, V-SLI TR DULL YELLOW FLUOR, NO VIS CUT
CHT: OFF WH-WH, OCC CRM, SME MOTT LT TAN-TA, V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, NO SPOT STAIN, NO ODOR, V-SLI TR DULL YELLOW FLUOR, NO VIS CUT
CHT:PRED WH-OFF WH, OCC CRM, PRED V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, TR DK BRN TO BLK SPOT STAIN, NO ODOR, V-SLI TR DULL YELLOW FLUOR, NO VIS CUT
CHT: OFF WH-WH, OCC CRM, SME MOTT LT TAN-TA, V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, SLI BLK SPOT STAIN, NO ODOR, V-SLI TR DULL YELLOW FLUOR, SLOW STREAMING YEL-WH CUT
CHT: OFF WH-WH, OCC
LT TAN-TA, V-HRD, W/SM
FRM-FRM, MICRO XLN, S
VSLI TR SUC TXT, SLI BL
NO ODOR, V-SLI TR DUL
FLUOR, SLOW STREAMI
TVD (ft)
4090
% Porosity
Oil Show
% Lith
Images
ROP
ROP
GR
E. KNIGHT ON
WOB:13.5
SPM:72
RPM:
WOB:12.8
SPM:72
RPM: 0
ROP (min/ft.)
GR (CPS)

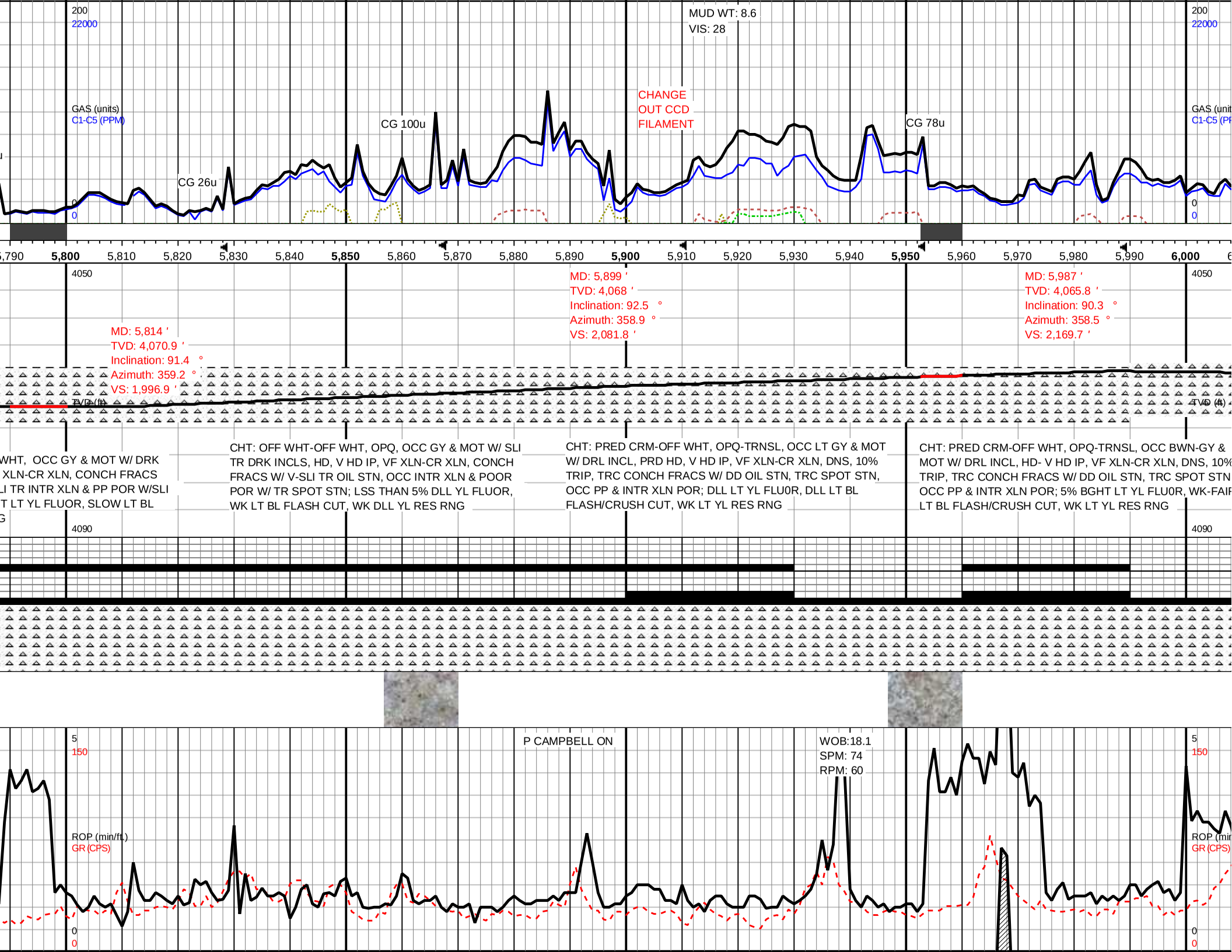

200
26000
GAS (units)
C1-C5 (PPM)
0
CG 31u
CG 28u
FG 28u
MOVED GA
TRAP TO C
POSSUM E
4,690
4,700
4,710
4,720
4,730
4,740
4,750
4,760
4,770
4,780
4,790
4,800
4,810
4,820
4,830
4,840
4,850
4,860
4,870
4,880
4,890
4,900
MD: 4,725 '
TVD: 4,065.3 '
Inclination: 87.5 °
Azimuth: 5.2 °
VS: 911.8 '
MD: 4,810 '
TVD: 4,069.5 '
Inclination: 86.8 °
Azimuth: 5.5 °
VS: 995.7 '
MD: 4,898 '
TVD: 4,072 '
Inclination: 90 °
Azimuth: 5.1 °
VS: 1,082.7 '
TVD (ft)
CRM, SME MOTT
ME MOD
SLI TR VF XLN,
LK SPOT STAIN,
L YELLOW
NG YEL-WH CUT
CHT:PRED WH-OFF WH, OCC CRM, PRED V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, NO STAIN, NO ODOR, NO FLUOR, NO VIS CUT
CHT: WH-OFF WH, OCC CRM, PRED V-HRD, W/SME MOD FRM-FRM, MICRO XLN, SLI TR VF XLN, VSLI TR SUC TXT, V-SLI SPOT STAIN, NO ODOR, V-SLI TR DULL YELLOW FLUOR, V-SLI STREAMING YEL-WH VIS CUT
CHT: OFF WHT-TRNSL, OPQ, PRED HD, V HD IP, CR XLN, DNS, 20% TRIP, TRC SPOT STN, TRC DD OIL STN ON FRAC PLANES, OCC PP POR; 10% DLL YL FLUOR, FAIR-MOD LT YL FLASH CUT,DLL LT YL RES RNG
CHT: OFF WHT-TRNSL, OPQ, HD-V HD
DNS, CONCH FRACS, 30% TRIP, TRC
TRC DD OIL STN ON FRAC PLANES, C
40% BGHT YL FOUR, GD MLKY LT BL
BGHT YL RES RNG
4090
WOB:14.5
SPM:72
RPM: 60
5
150
P CMPBELL ON
WOB:15.7
SPM:76
RPM: 59
ROP (min/ft)
GR (CPS)
0
0

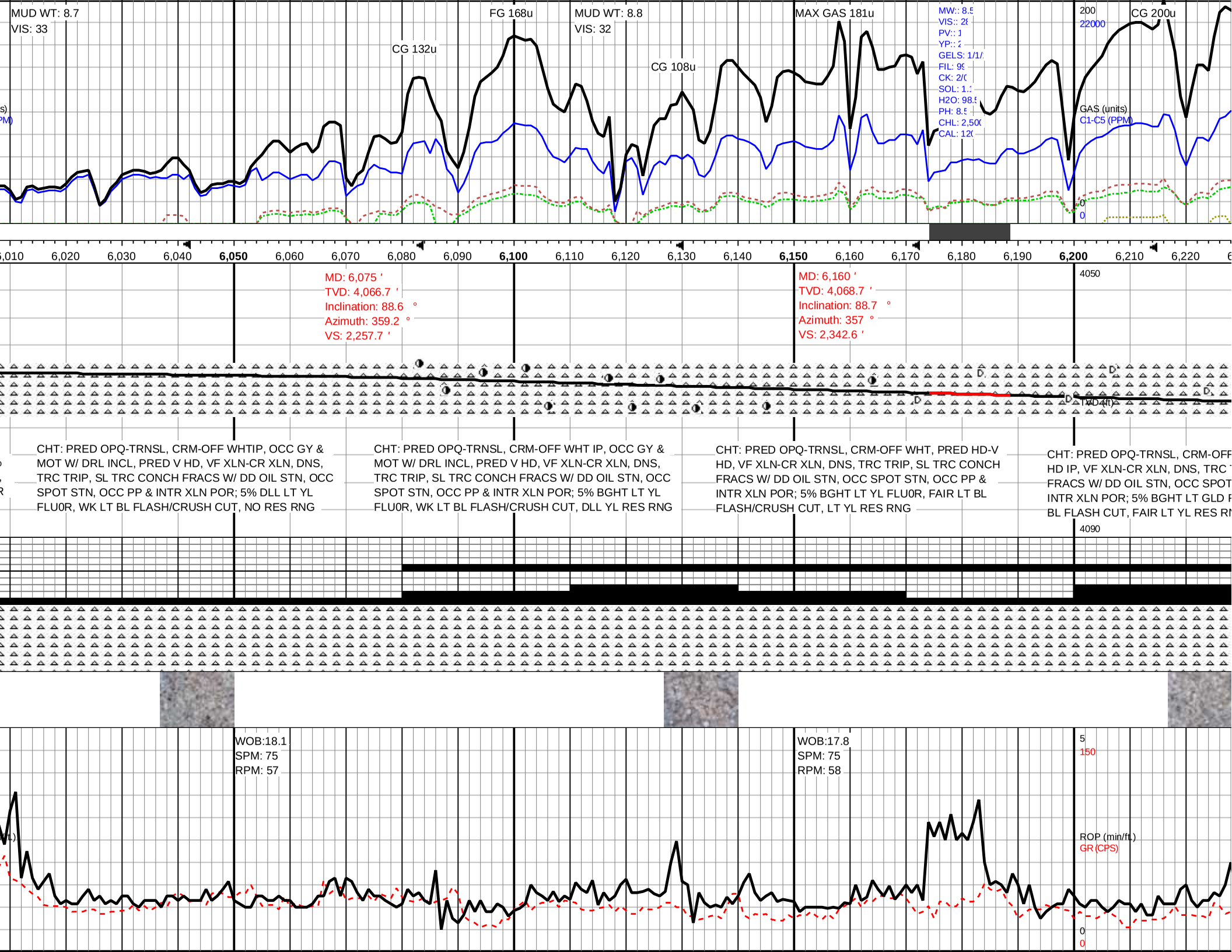

MAX GAS 186u
MW:: 8.5
VIS:: 2
PV:: 2
YP:: 1
GELS: 1/1/
FIL: 9
CK: 2/
SOL: 1.
H2O: 98.
PH: 11.
CHL: 2,50
CAL: 1,24
MUD WT: 8.5
VIS: 29
CG 186u
200
CHROMAT
SCALE
CHANGE
ZEROED REDBOX
AND RECALIBRATED
CHROMATIGRAPH
MUD WT: 8.6
VIS: 29
FG 91u
GAS (units)
C1-C5 (PPM)
DTG 74u
CG 96u
CG 68u
AS
OTHER
BELLY
0
4,910
4,920
4,930
4,940
4,950
4,960
4,970
4,980
4,990
5,000
5,010
5,020
5,030
5,040
5,050
5,060
5,070
5,080
5,090
5,100
5,110
5,120
4050
MD: 4,982 '
TVD: 4,071.8 '
Inclination: 90.2 °
Azimuth: 3.5 °
VS: 1,166 '
MD: 5,066 '
TVD: 4,071.1 '
Inclination: 90.8 °
Azimuth: 2.4 °
VS: 1,249.6 '
TVD (ft)
IP, CR XLN,
SPOT STN,
OCC PP POR;
FLASH CUT,
CHT: OFF WHT-TRNSL, OPQ, HD-V HD IP, CR XLN, DNS, CONCH FRACS, 10% TRIP, TRC SPOT STN, TRC DD OIL STN, SL TRC FRAC POR; 25% LT YL FLUOR, MOD-GD LT BL FLASH CUT, DLL GLD RES RNG
CHT: OFF WHT-TRNSL, OPQ, OCC LT YL, BRIT-HD, V HD IP, CR XLN, DNS IP, CONCH FRACS, 40% TRIP, ABNDT SPOT STN, DD OIL STN,TRC FRAC, OCC PP POR; 30% LT YL FLUOR, GD LT BL FLASH CUT, GD GLD RES RNG
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V HD IP, CR XLN, DNS IP, CONCH FRACS, 40% TRIP, ABNDT SPOT STN, DD OIL STN,TRC INTR XLN POR, ABNDT FRAC POR; 35% BGHT YL FLUOR, BGHT MLKY BL-LT YL FLASH CUT, BGHT GLD RES RNG
CHT: OFF WHT-TR
HD IP, CR XLN, DN
ABNDT SPOT STN,
POR, ABNDT FRAC
BGHT MLKY BL-LT
RES RNG
4090
WOB:15.3
SPM:73
RPM: 58
5
150
ROP (min/ft)
GR(CPS)
0
0
WOB:14.1
SPM:74
RPM:59

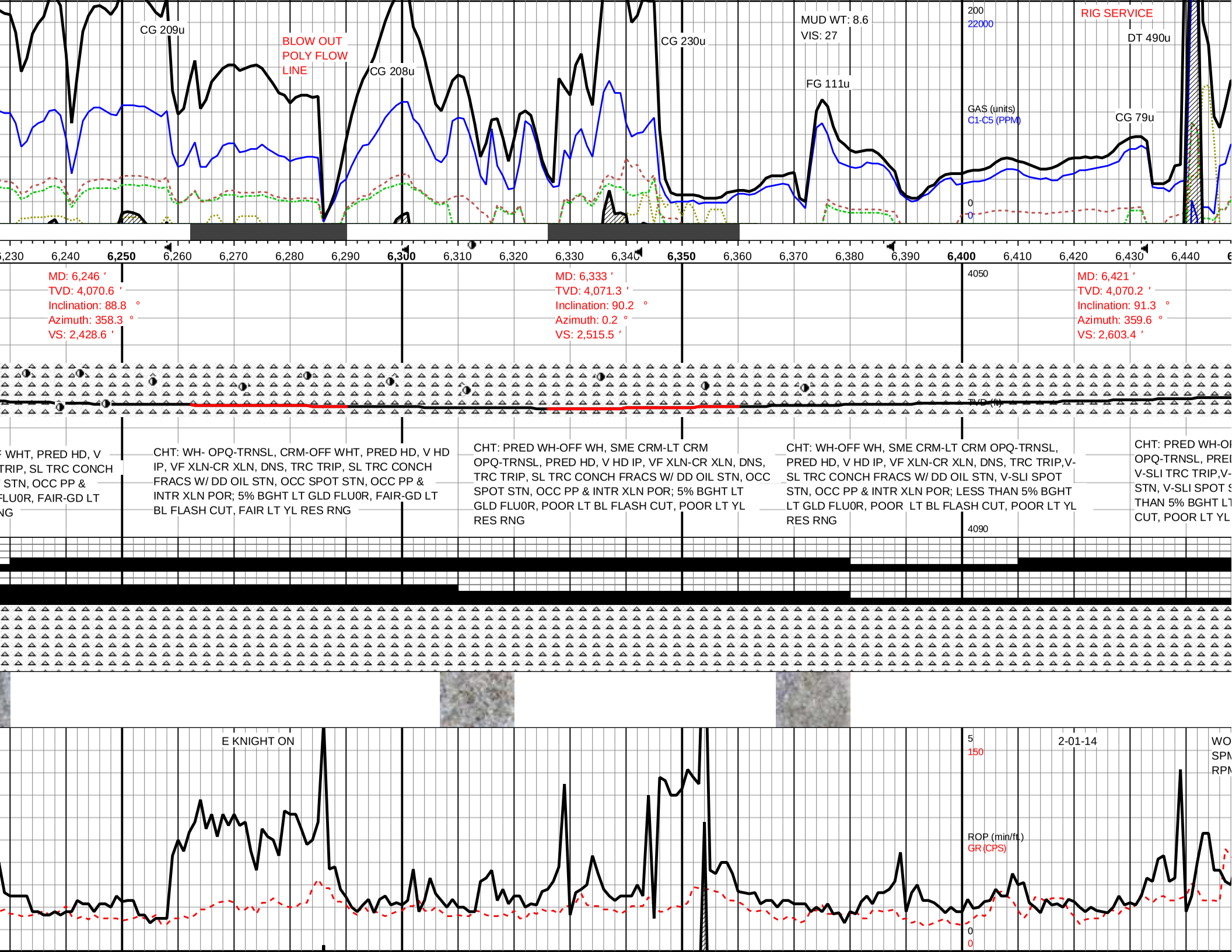

MAX GAS 226u
MAX GAS 213u
BG 182u
CG 130u
CG 125u
MAX GAS 228u
200
22000
GAS (units)
C1-C5 (PPM)
0
0
MW:: 8.5
VIS:: 2
PV:: 1
YP:: 2
GELS: 1/1/
FIL: 9
CK: 2/
SOL: 1.
H2O: 98.
PH: 11.
CHL: 2,50
CAL: 1,24
5,130 5,140 5,150 5,160 5,170 5,180 5,190 5,200 5,210 5,220 5,230 5,240 5,250 5,260 5,270 5,280 5,290 5,300 5,310 5,320 5,330 5,340
4050
MD: 5,152 '
TVD: 4,068.9 '
Inclination: 92.1 °
Azimuth: 359.4 °
VS: 1,335.3 '
MD: 5,237 '
TVD: 4,067.7 '
Inclination: 89.6 °
Azimuth: 0.4 °
VS: 1,420.2 '
MD: 5,307 '
TVD: 4,067.9 '
Inclination: 90 °
Azimuth: 0.2 °
VS: 1,490.1 '
PUMP SLUG,
TOOH FOR NE
BIT & AGITAT
@ 5,371'
TVD (ft)
NSL, OPQ, OCC GY, BRIT-HD, V
S IP, CONCH FRACS, 40% TRIP,
DD OIL STN,TRC INTR XLN
POR; 35% BGHT YL FLUOR,
YL FLASH CUT, BGHT GLD
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V HD IP, CR XLN, DNS IP, CONCH FRACS, 30% TRIP, TRC SPOT STN, DD OIL STN,TRC INTR XLN POR, TRC FRAC POR; 20% BGHT YL FLUOR, FAIR BL-LT YL FLASH CUT, FAIR GLD RES RNG
CHT: PRED TRNSL, WHT-OPQ, OCC GY & MOT, HD-V HD IP, CR XLN, DNS IP, CONCH FRACS, 30% TRIP, TRC SPOT STN, DD OIL STN,TRC INTR XLN POR, TRC FRAC POR; 5% DLL YL FLUOR, FAIR LT YL FLASH CUT, FAIR GLD RES RNG
CHT: PRED CRM-OFF WHT, TRNSL-OPQ, OCC GY & MOT, HD-V HD IP, CR XLN, DNS IP, CONCH FRACS, 30% TRIP, ABNDT SPOT STN, DD OIL STN,TRC INTR XLN POR, TRC FRAC POR; 10% DLL YL FLUOR, FAIR LT YL FLASH CUT, FAIR GLD RES RNG
4090
WOB:14.9
SPM: 72
RPM: 59
WOB:14.4
SPM: 72
RPM: 64
E. KNIGHT ON
5
150
ROP (min/ft)
GR (CPS)
0
0

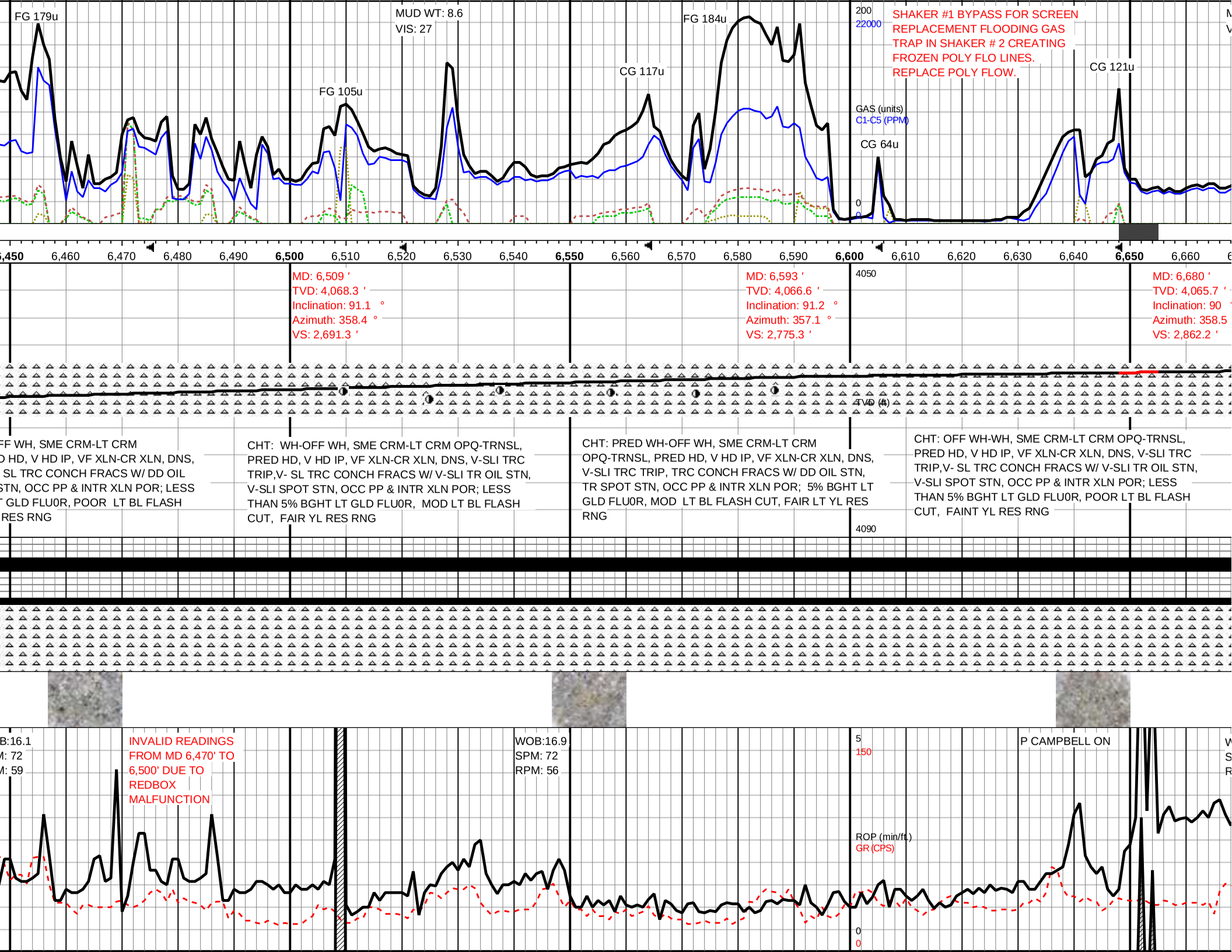

MUD WT: 8.8
VIS: 52
TG 144u
74u
CG 111u
FG 191u
FG 207u
CG 125u
HOLE DEPTH CHANGED TO 5531'
BUBBLE JAR CONTAMINATED. CLEAN OUT JAR, REPLACE FLUID, BLOW OUT POLY FLOW, REPLACE JAR
200
22000
GAS (units)
C1-C5 (PPM)
0
0
5,350
5,360
5,370
5,380
5,390
5,400
5,410
5,420
5,430
5,440
5,450
5,460
5,470
5,480
5,490
5,500
5,510
5,520
5,530
5,540
5,550
5,560
Bit #: 7
Type: REED/R4OADPDH
Size: 6.12
Depth In: 5,371 '
Jets: 3x18s
MD: 5,392 '
TVD: 4,067.9 '
Inclination: 90 °
Azimuth: 358.2 °
VS: 1,575 '
MD: 5,477 '
TVD: 4,067.8 '
Inclination: 90.2 °
Azimuth: 356.3 °
VS: 1,660 '
MD: 5,562 '
TVD: 4,068.
Inclination: 8
Azimuth: 35
VS: 1,745 '
4050
TVD (ft)
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V HD IP, CR XLN, DNS IP, CONCH FRACS, 30% TRIP, TRC SPOT STN, DD OIL STN,TRC INTR XLN POR, TRC FRAC POR; 5% BGHT YL FLUOR, FAIR BL-LT YL FLASH CUT, FAIR GLD RES RNG
CHT: OFF WHT-OFF WHT, TRNSL-OPQ, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ DD OIL STN, OCC INTR XLN & PP POR W/ SPOT STN; 5% BGHT LT YL FLUOR, MOD-GD LT BL-LT YL FLASH CUT, BGHT YL RES RNG
CHT: OFF WHT-OFF WHT, OPQ, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ DD OIL STN, OCC INTR XLN & PP POR W/ SPOT STN; 10% BGHT LT YL FLUOR, FAIR-MOD LT BL FLASH CUT, BGHT YL RES RNG
CHT: WHT-OFF WHT, OPQ, OCC
INCLS, HD, V HD IP, VF XLN-CR XL
W/SLI DD OIL STN, SLI TR INTR XL
TR SPOT STN; 5% BGHT LT YL FL
FLASH CUT, DULL YL RES RNG
4090
WOB:14.2
SPM: 73
RPM: 65
1-30-14
P CAMPBELL ON
5
150
ROP (min/ft)
GR (CPS)
0
0
WOB:19.4
SPM: 72
RPM: 58

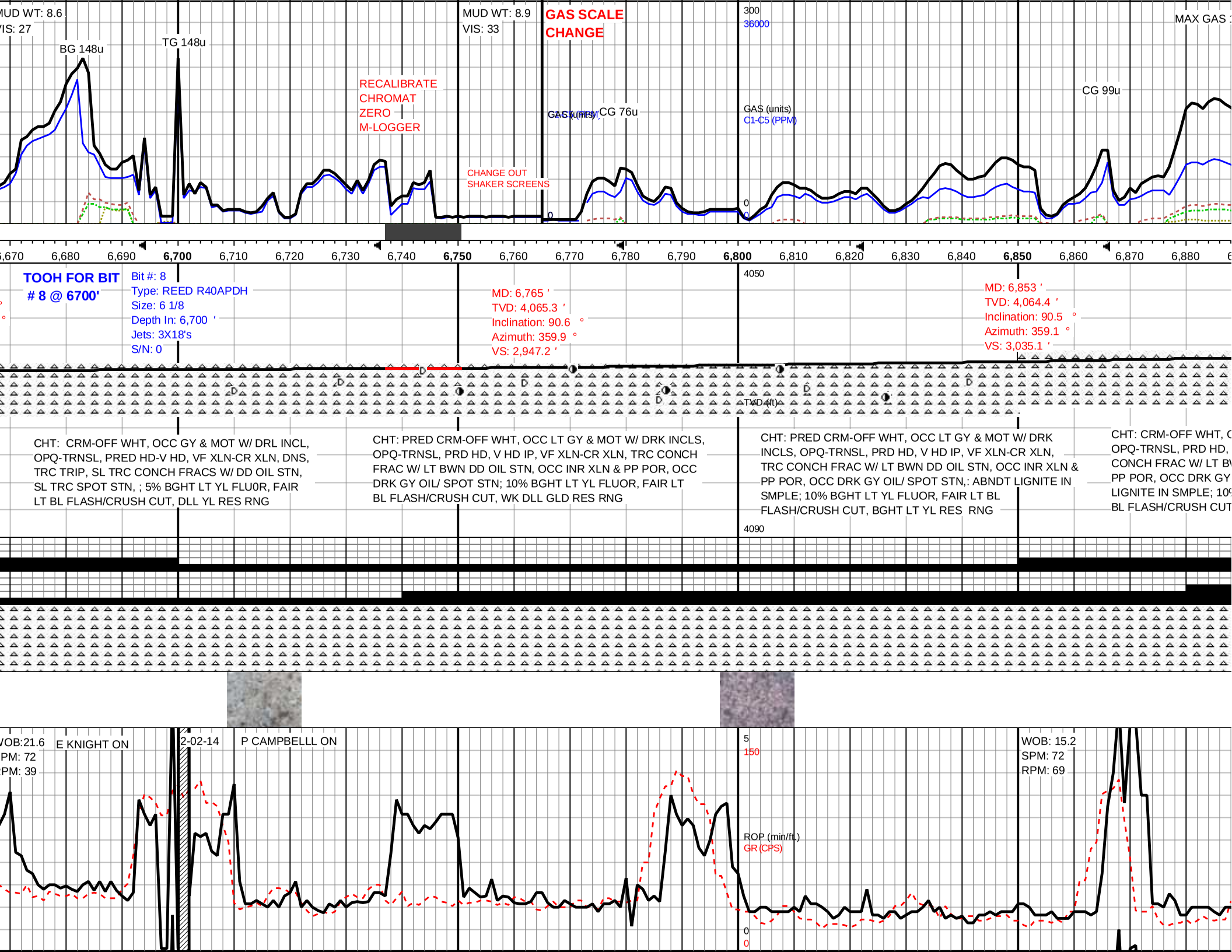

MUD WT: 8.6
VIS: 28
200
22000
GAS TRAP TEST 178u
GAS (units)
C1-C5 (PPM)
FG 122u
0
0
CG 431u
MUD WT: 8.6
VIS: 27
CG 46u
5,570
5,580
5,590
5,600
5,610
5,620
5,630
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
5,740
5,750
5,760
5,770
5,780
4050
MD: 5,646 '
TVD: 4,069.8 '
Inclination: 88.6 °
Azimuth: 356.1 °
VS: 1,829 '
MD: 5,731 '
TVD: 4,071.4 '
Inclination: 89.3 °
Azimuth: 358 °
VS: 1,913.9 '
TVD (ft)
GY & MOT W/ DRK
LN, CONCH FRACS
LN & PP POR W/SLI
UOR, FAIR LT BL
CHT: OFF WHT-OFF WHT, OPQ, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ DD OIL STN, OCC INTR XLN & PP POR W/ SPOT STN; 10% BGHT LT YL FLUOR, FAIR-MOD LT BL FLASH CUT, BGHT YL RES RNG
CHT: PRED WHT-OFF WHT, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/SLI DD OIL STN, V SLI TR INTR XLN & PP POR W/SLI TR SPOT STN; 5% BGHT LT YL FLUOR, SLOW LT BL CUT, DULL YL RES RNG
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V HD IP, CR XLN, DNS IP, CONCH FRACS, 20% TRIP, TRC SPOT STN, DD OIL STN,TRC INTR XLN POR, TRC FRAC POR; 5% BGHT YL FLUOR, FAIR FLASH CUT, FAIR GLD RES RNG
CHT: PRED WHT-OFF
INCLS, HD, V HD IP, VF
W/SLI DD OIL STN, V SL
TR SPOT STN; 5% BGH
CUT, DULL YL RES RN
4090
WOB:18.2
SPM: 76
RPM: 60
5
150
ROP (min/ft)
GR (CPS)
0
0
1-31-14
WOB:19.5
SPM: 73
RPM: 0

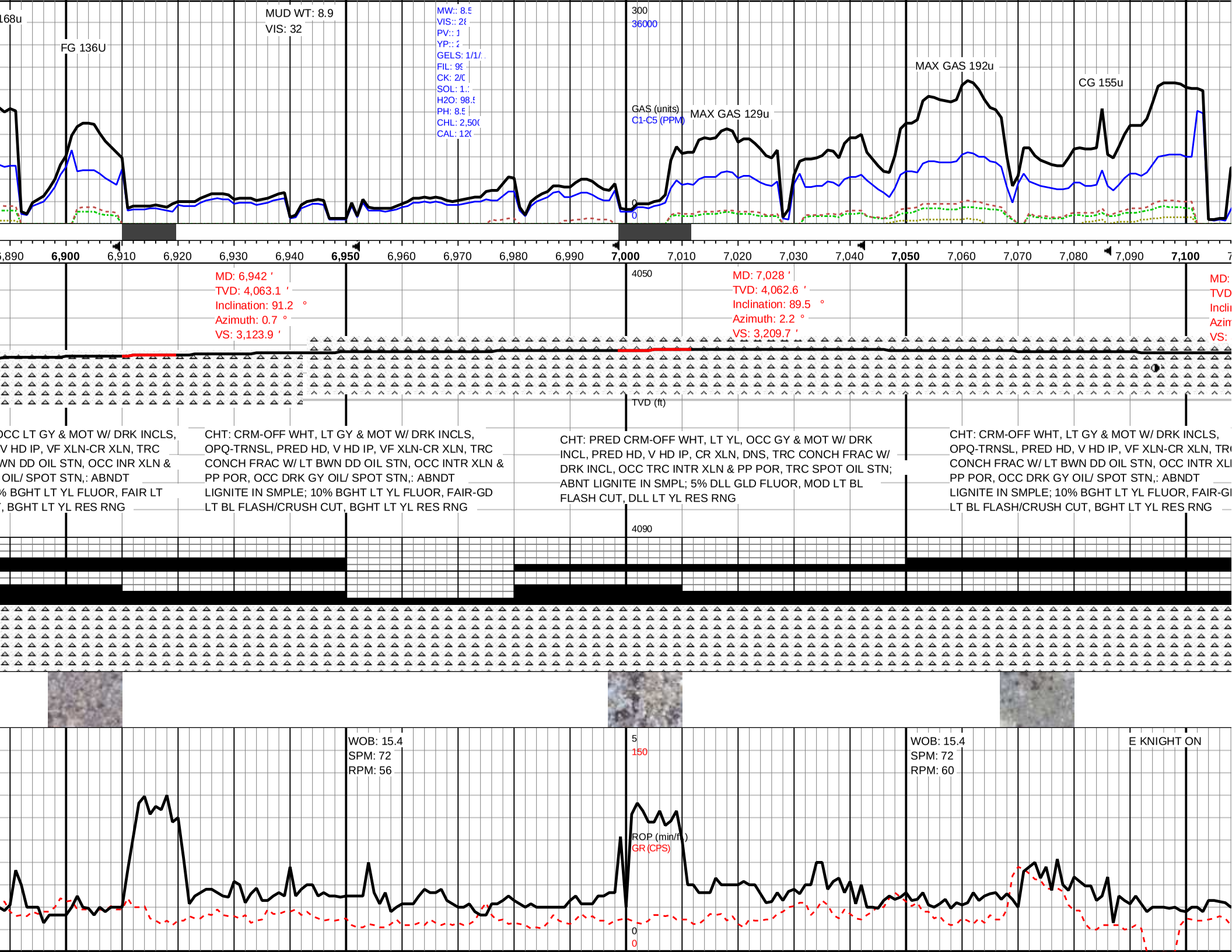

MUD WT: 8.6
VIS: 28
CHANGE
OUT CCD
FILAMENT
CG 26u
CG 100u
CG 78u
GAS (units)
C1-C5 (PPM)
200
22000
0
5,790
5,800
5,810
5,820
5,830
5,840
5,850
5,860
5,870
5,880
5,890
5,900
5,910
5,920
5,930
5,940
5,950
5,960
5,970
5,980
5,990
6,000
4050
4090
TVD (ft)
MD: 5,814 '
TVD: 4,070.9 '
Inclination: 91.4 °
Azimuth: 359.2 °
VS: 1,996.9 '
MD: 5,899 '
TVD: 4,068 '
Inclination: 92.5 °
Azimuth: 358.9 °
VS: 2,081.8 '
MD: 5,987 '
TVD: 4,065.8 '
Inclination: 90.3 °
Azimuth: 358.5 °
VS: 2,169.7 '
WHT, OCC GY & MOT W/ DRK
XLN-CR XLN, CONCH FRACS
LI TR INTR XLN & PP POR W/SLI
T LT YL FLUOR, SLOW LT BL
G
CHT: OFF WHT-OFF WHT, OPQ, OCC GY & MOT W/ SLI TR DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ V-SLI TR OIL STN, OCC INTR XLN & POOR POR W/ TR SPOT STN; LSS THAN 5% DLL YL FLUOR, WK LT BL FLASH CUT, WK DLL YL RES RNG
CHT: PRED CRM-OFF WHT, OPQ-TRNSL, OCC LT GY & MOT W/ DRL INCL, PRD HD, V HD IP, VF XLN-CR XLN, DNS, 10% TRIP, TRC CONCH FRACS W/ DD OIL STN, TRC SPOT STN, OCC PP & INTR XLN POR; DLL LT YL FLU0R, DLL LT BL FLASH/CRUSH CUT, WK LT YL RES RNG
CHT: PRED CRM-OFF WHT, OPQ-TRNSL, OCC BWN-GY & MOT W/ DRL INCL, HD- V HD IP, VF XLN-CR XLN, DNS, 10% TRIP, TRC CONCH FRACS W/ DD OIL STN, TRC SPOT STN OCC PP & INTR XLN POR; 5% BGHT LT YL FLU0R, WK-FAIR LT BL FLASH/CRUSH CUT, WK LT YL RES RNG
P CAMPBELL ON
WOB:18.1
SPM: 74
RPM: 60
ROP (min/ft)
GR (CPS)
5
150
0

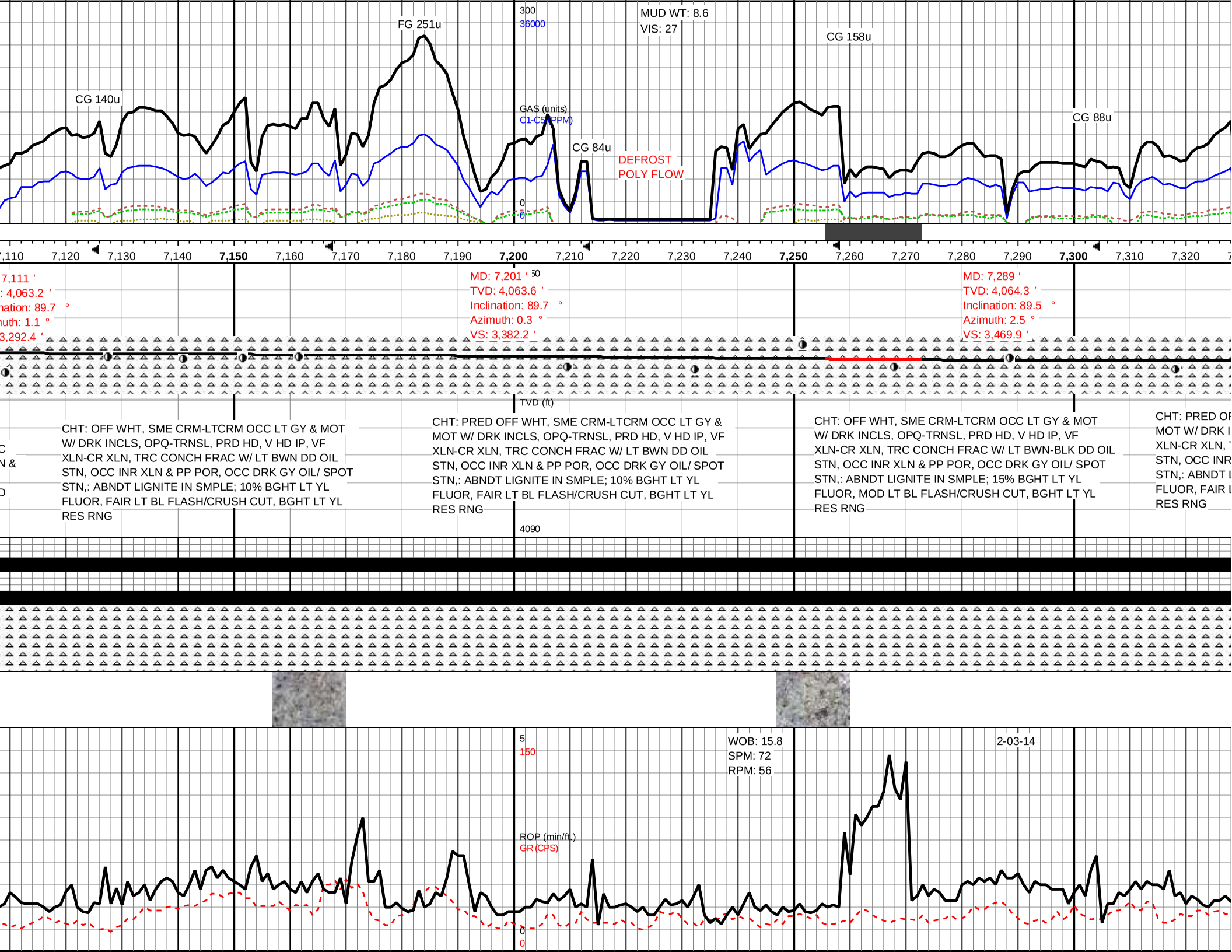

MUD WT: 8.7
VIS: 33
FG 168u
MUD WT: 8.8
VIS: 32
MAX GAS 181u
CG 132u
CG 108u
CG 200u
200
22000
GAS (units)
C1-C5 (PPM)
0
0
6,010
6,020
6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
6,180
6,190
6,200
6,210
6,220
MD: 6,075 '
TVD: 4,066.7 '
Inclination: 88.6 °
Azimuth: 359.2 °
VS: 2,257.7 '
MD: 6,160 '
TVD: 4,068.7 '
Inclination: 88.7 °
Azimuth: 357 °
VS: 2,342.6 '
4050
TVD (ft)
CHT: PRED OPQ-TRNSL, CRM-OFF WHTIP, OCC GY & MOT W/ DRL INCL, PRED V HD, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP & INTR XLN POR; 5% DLL LT YL FLU0R, WK LT BL FLASH/CRUSH CUT, NO RES RNG
CHT: PRED OPQ-TRNSL, CRM-OFF WHT IP, OCC GY & MOT W/ DRL INCL, PRED V HD, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP & INTR XLN POR; 5% BGHT LT YL FLU0R, WK LT BL FLASH/CRUSH CUT, DLL YL RES RNG
CHT: PRED OPQ-TRNSL, CRM-OFF WHT, PRED HD-V HD, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP & INTR XLN POR; 5% BGHT LT YL FLU0R, FAIR LT BL FLASH/CRUSH CUT, LT YL RES RNG
CHT: PRED OPQ-TRNSL, CRM-OFF
HD IP, VF XLN-CR XLN, DNS, TRC
FRACS W/ DD OIL STN, OCC SPOT
INTR XLN POR; 5% BGHT LT GLD
BL FLASH CUT, FAIR LT YL RES
4090
WOB:18.1
SPM: 75
RPM: 57
WOB:17.8
SPM: 75
RPM: 58
5
150
ROP (min/ft)
GR (CPS)
0
0

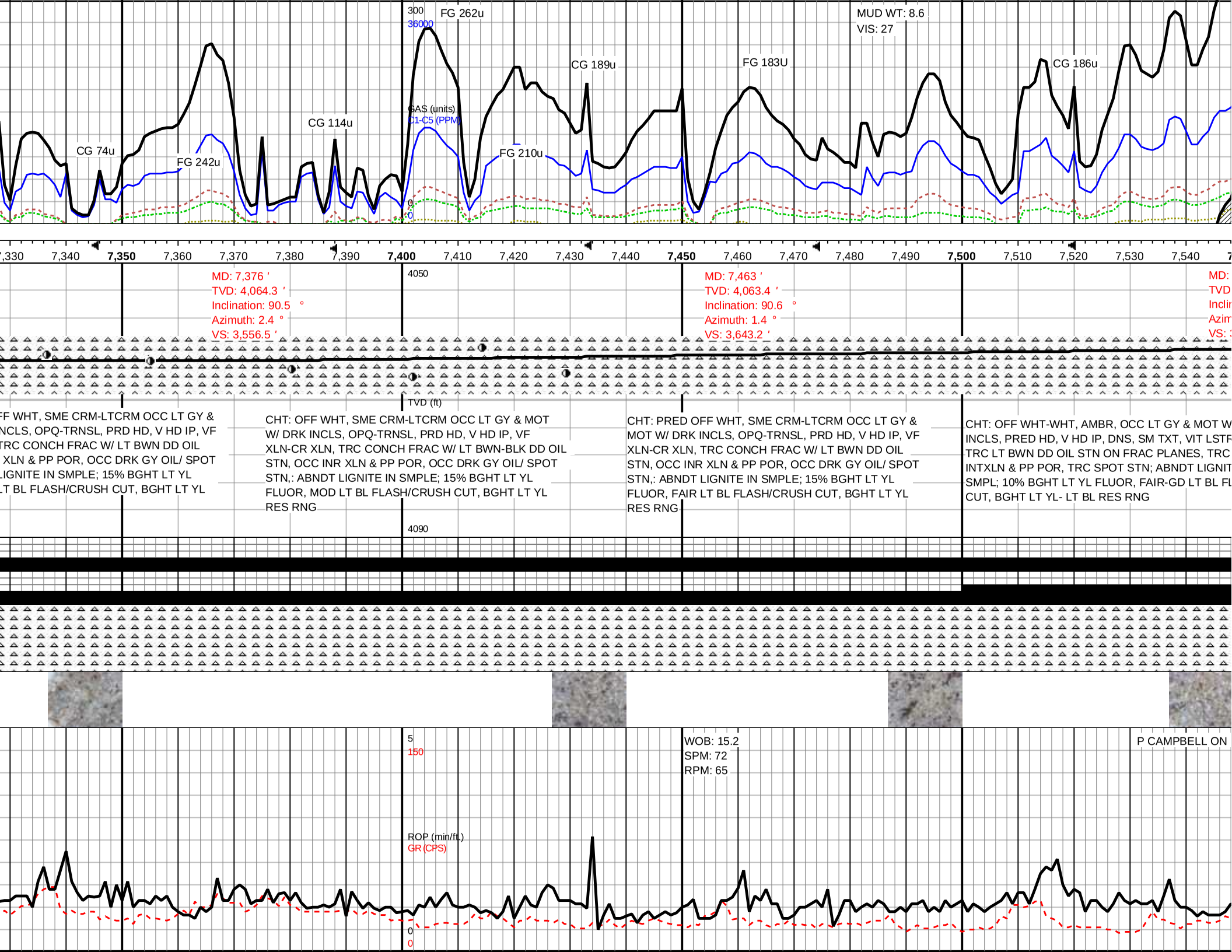

CG 209u
BLOW OUT
POLY FLOW
LINE
CG 208u
CG 230u
MUD WT: 8.6
VIS: 27
FG 111u
200
22000
RIG SERVICE
DT 490u
GAS (units)
C1-C5 (PPM)
CG 79u
0
0
6,230
6,240
6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
6,400
6,410
6,420
6,430
6,440
MD: 6,246 '
TVD: 4,070.6 '
Inclination: 88.8 °
Azimuth: 358.3 °
VS: 2,428.6 '
MD: 6,333 '
TVD: 4,071.3 '
Inclination: 90.2 °
Azimuth: 0.2 °
VS: 2,515.5 '
MD: 6,421 '
TVD: 4,070.2 '
Inclination: 91.3 °
Azimuth: 359.6 °
VS: 2,603.4 '
4050
TVD (ft)
F WHT, PRED HD, V
TRIP, SL TRC CONCH
STN, OCC PP &
FLU0R, FAIR-GD LT
NG
CHT: WH- OPQ-TRNSL, CRM-OFF WHT, PRED HD, V HD IP, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP & INTR XLN POR; 5% BGHT LT GLD FLU0R, FAIR-GD LT BL FLASH CUT, FAIR LT YL RES RNG
CHT: PRED WH-OFF WH, SME CRM-LT CRM OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP & INTR XLN POR; 5% BGHT LT GLD FLU0R, POOR LT BL FLASH CUT, POOR LT YL RES RNG
CHT: WH-OFF WH, SME CRM-LT CRM OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, DNS, TRC TRIP,V-SL TRC CONCH FRACS W/ DD OIL STN, V-SLI SPOT STN, OCC PP & INTR XLN POR; LESS THAN 5% BGHT LT GLD FLU0R, POOR LT BL FLASH CUT, POOR LT YL RES RNG
4090
CHT: PRED WH-OF
OPQ-TRNSL, PRE
V-SLI TRC TRIP,V-
STN, V-SLI SPOT
THAN 5% BGHT LT
CUT, POOR LT YL
E KNIGHT ON
5
150
2-01-14
WO
SPM
RPM
ROP (min/ft)
GR (CPS)
0
0

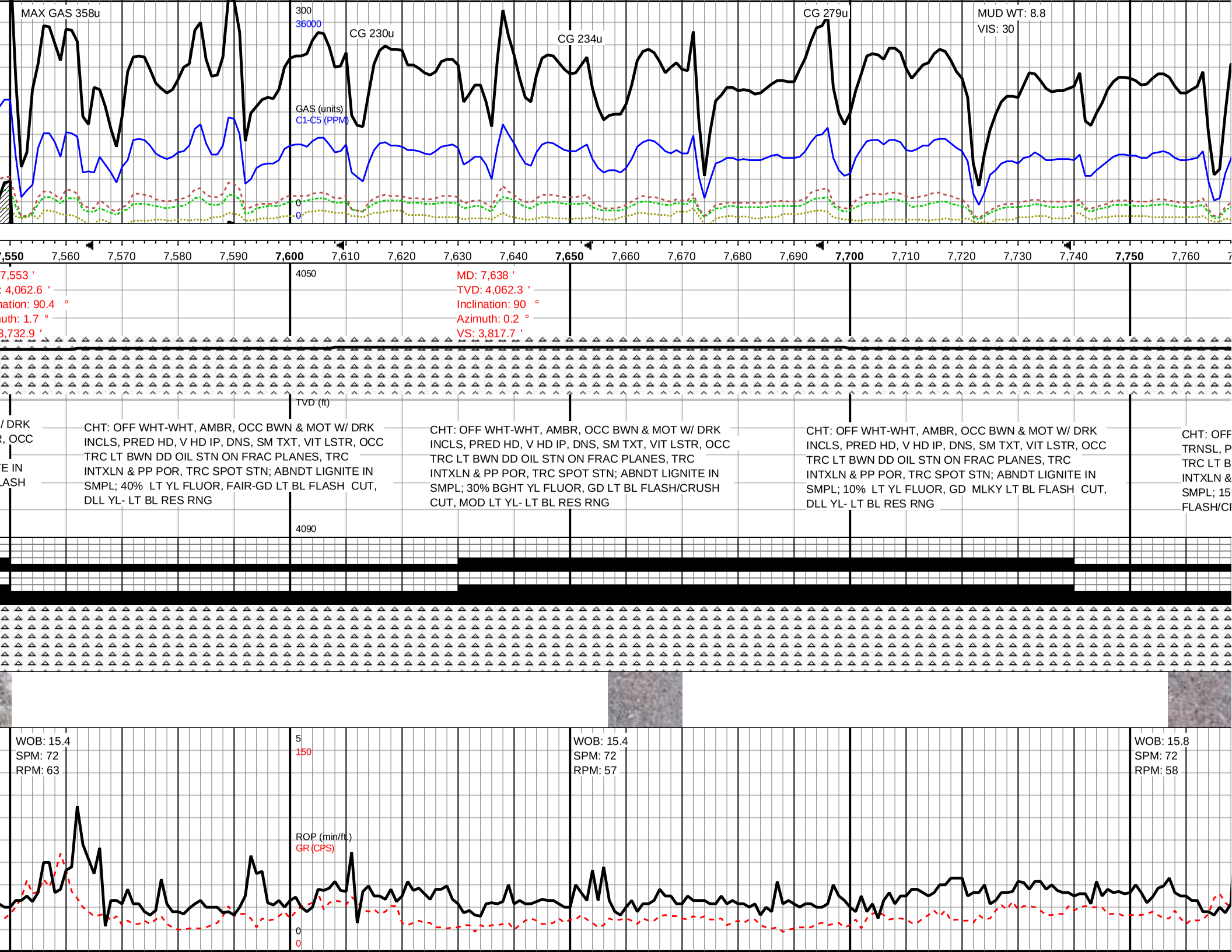

FG 179u
MUD WT: 8.6
VIS: 27
FG 105u
CG 117u
FG 184u
SHAKER #1 BYPASS FOR SCREEN REPLACEMENT FLOODING GAS TRAP IN SHAKER # 2 CREATING FROZEN POLY FLO LINES. REPLACE POLY FLOW.
CG 121u
CG 64u
200
22000
GAS (units)
C1-C5 (PPM)
0
0
6,450
6,460
6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
6,620
6,630
6,640
6,650
6,660
MD: 6,509 '
TVD: 4,068.3 '
Inclination: 91.1 °
Azimuth: 358.4 °
VS: 2,691.3 '
MD: 6,593 '
TVD: 4,066.6 '
Inclination: 91.2 °
Azimuth: 357.1 °
VS: 2,775.3 '
MD: 6,680 '
TVD: 4,065.7 '
Inclination: 90
Azimuth: 358.5
VS: 2,862.2 '
4050
TVD (ft)
FF WH, SME CRM-LT CRM
D HD, V HD IP, VF XLN-CR XLN, DNS,
SL TRC CONCH FRACS W/ DD OIL
STN, OCC PP & INTR XLN POR; LESS
T GLD FLU0R, POOR LT BL FLASH
RES RNG
CHT: WH-OFF WH, SME CRM-LT CRM OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, DNS, V-SLI TRC TRIP,V- SL TRC CONCH FRACS W/ V-SLI TR OIL STN, V-SLI SPOT STN, OCC PP & INTR XLN POR; LESS THAN 5% BGHT LT GLD FLU0R, MOD LT BL FLASH CUT, FAIR YL RES RNG
CHT: PRED WH-OFF WH, SME CRM-LT CRM OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, DNS, V-SLI TRC TRIP, TRC CONCH FRACS W/ DD OIL STN, TR SPOT STN, OCC PP & INTR XLN POR; 5% BGHT LT GLD FLU0R, MOD LT BL FLASH CUT, FAIR LT YL RES RNG
4090
CHT: OFF WH-WH, SME CRM-LT CRM OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, DNS, V-SLI TRC TRIP,V- SL TRC CONCH FRACS W/ V-SLI TR OIL STN, V-SLI SPOT STN, OCC PP & INTR XLN POR; LESS THAN 5% BGHT LT GLD FLU0R, POOR LT BL FLASH CUT, FAINT YL RES RNG
B:16.1
M: 72
M: 59
INVALID READINGS FROM MD 6,470' TO 6,500' DUE TO REDBOX MALFUNCTION
WOB:16.9
SPM: 72
RPM: 56
5
150
P CAMPBELL ON
ROP (min/ft)
GR (CPS)
0
0

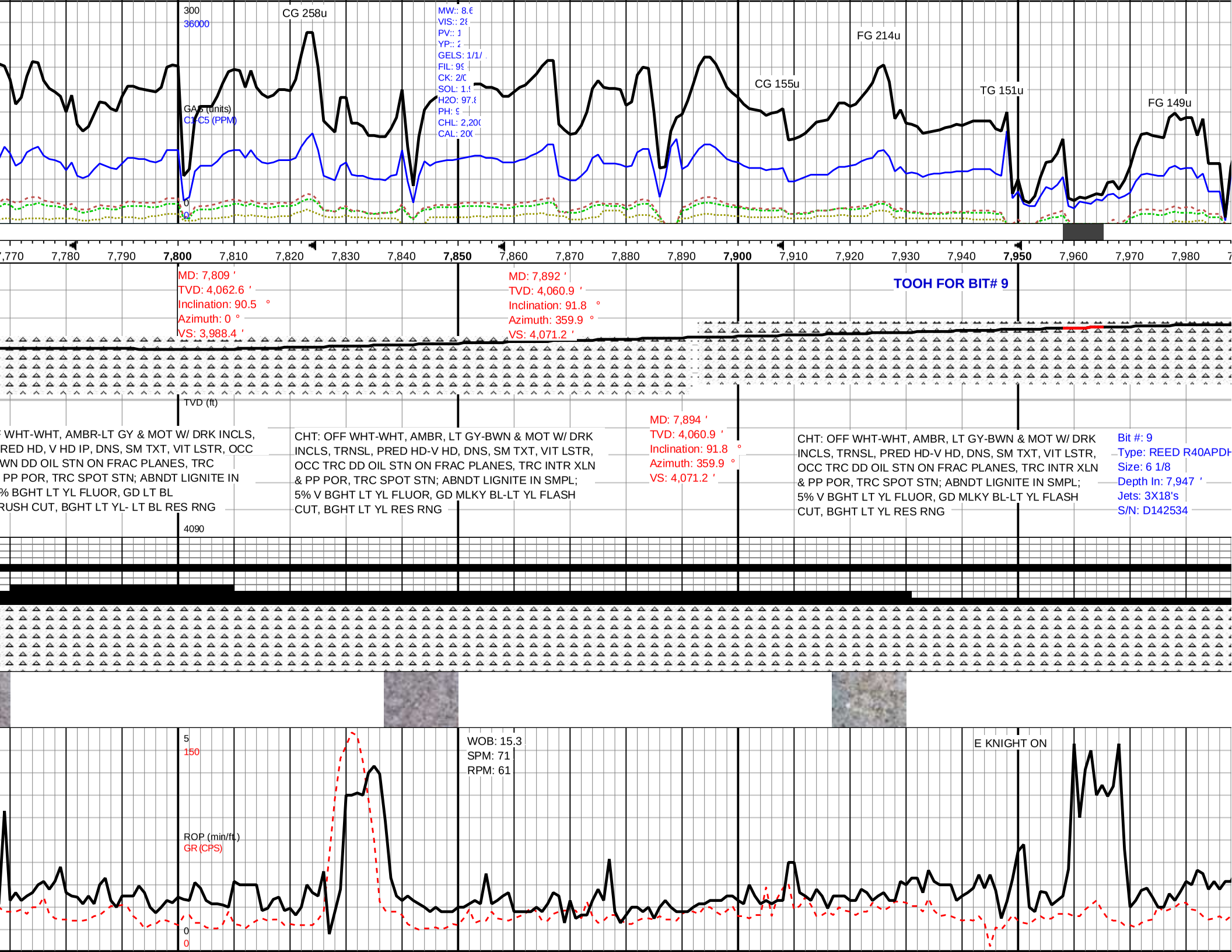

MUD WT: 8.6
VIS: 27
BG 148u
TG 148u
RECALIBRATE
CHROMAT
ZERO
M-LOGGER
MUD WT: 8.9
VIS: 33
GAS SCALE
CHANGE
CG 76u
CHANGE OUT
SHAKER SCREENS
300
36000
GAS (units)
C1-C5 (PPM)
CG 99u
MAX GAS
0
6,670
6,680
6,690
6,700
6,710
6,720
6,730
6,740
6,750
6,760
6,770
6,780
6,790
6,800
6,810
6,820
6,830
6,840
6,850
6,860
6,870
6,880
TOOH FOR BIT
8 @ 6700'
Bit #: 8
Type: REED R40APDH
Size: 6 1/8
Depth In: 6,700 '
Jets: 3X18's
S/N: 0
MD: 6,765 '
TVD: 4,065.3 '
Inclination: 90.6 °
Azimuth: 359.9 °
VS: 2,947.2 '
MD: 6,853 '
TVD: 4,064.4 '
Inclination: 90.5 °
Azimuth: 359.1 °
VS: 3,035.1 '
4050
TVD (ft)
CHT: CRM-OFF WHT, OCC GY & MOT W/ DRL INCL, OPQ-TRNSL, PRED HD-V HD, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, SL TRC SPOT STN, ; 5% BGHT LT YL FLU0R, FAIR LT BL FLASH/CRUSH CUT, DLL YL RES RNG
CHT: PRED CRM-OFF WHT, OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT STN; 10% BGHT LT YL FLUOR, FAIR LT BL FLASH/CRUSH CUT, WK DLL GLD RES RNG
CHT: PRED CRM-OFF WHT, OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 10% BGHT LT YL FLUOR, FAIR LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
CHT: CRM-OFF WHT, C
OPQ-TRNSL, PRD HD,
CONCH FRAC W/ LT BW
PP POR, OCC DRK GY
LIGNITE IN SMPLE; 10%
BL FLASH/CRUSH CUT
4090
WOB:21.6
PM: 72
PM: 39
E KNIGHT ON
2-02-14
P CAMPBELLL ON
5
150
ROP (min/ft)
GR (CPS)
0
0
WOB: 15.2
SPM: 72
RPM: 69

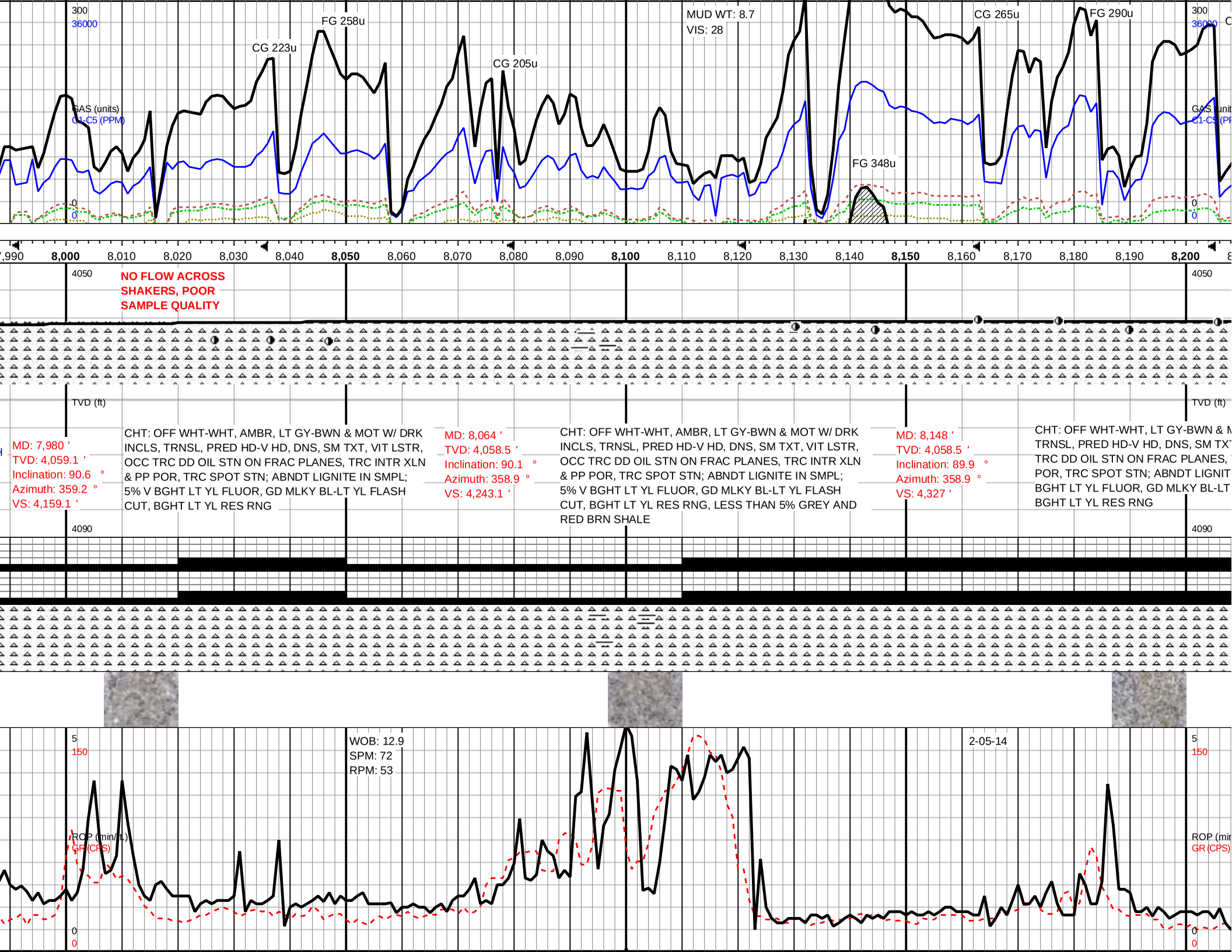

168u
FG 136U
MUD WT: 8.9
VIS: 32
MW:: 8.5
VIS:: 28
PV:: 1
YP:: 2
GELS: 1/1/
FIL: 9
CK: 2/
SOL: 1.
H2O: 98.
PH: 8.
CHL: 2,50
CAL: 12
300
36000
GAS (units)
C1-C5 (PPM)
MAX GAS 129u
MAX GAS 192u
CG 155u
0
0
6,890
6,900
6,910
6,920
6,930
6,940
6,950
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
7,060
7,070
7,080
7,090
7,100
MD: 6,942 '
TVD: 4,063.1 '
Inclination: 91.2 °
Azimuth: 0.7 °
VS: 3,123.9 '
4050
MD: 7,028 '
TVD: 4,062.6 '
Inclination: 89.5 °
Azimuth: 2.2 °
VS: 3,209.7 '
MD:
TVD
Incli
Azim
VS:
TVD (ft)
OCC LT GY & MOT W/ DRK INCLS, V HD IP, VF XLN-CR XLN, TRC WN DD OIL STN, OCC INR XLN & OIL/ SPOT STN,: ABNDT % BGHT LT YL FLUOR, FAIR LT , BGHT LT YL RES RNG
CHT: CRM-OFF WHT, LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 10% BGHT LT YL FLUOR, FAIR-GD LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
CHT: PRED CRM-OFF WHT, LT YL, OCC GY & MOT W/ DRK INCL, PRED HD, V HD IP, CR XLN, DNS, TRC CONCH FRAC W/ DRK INCL, OCC TRC INTR XLN & PP POR, TRC SPOT OIL STN; ABNT LIGNITE IN SMPL; 5% DLL GLD FLUOR, MOD LT BL FLASH CUT, DLL LT YL RES RNG
4090
CHT: CRM-OFF WHT, LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, TR CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XL PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 10% BGHT LT YL FLUOR, FAIR-G LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
WOB: 15.4
SPM: 72
RPM: 56
5
150
ROP (min/ft)
GR (CPS)
0
0
WOB: 15.4
SPM: 72
RPM: 60
E KNIGHT ON

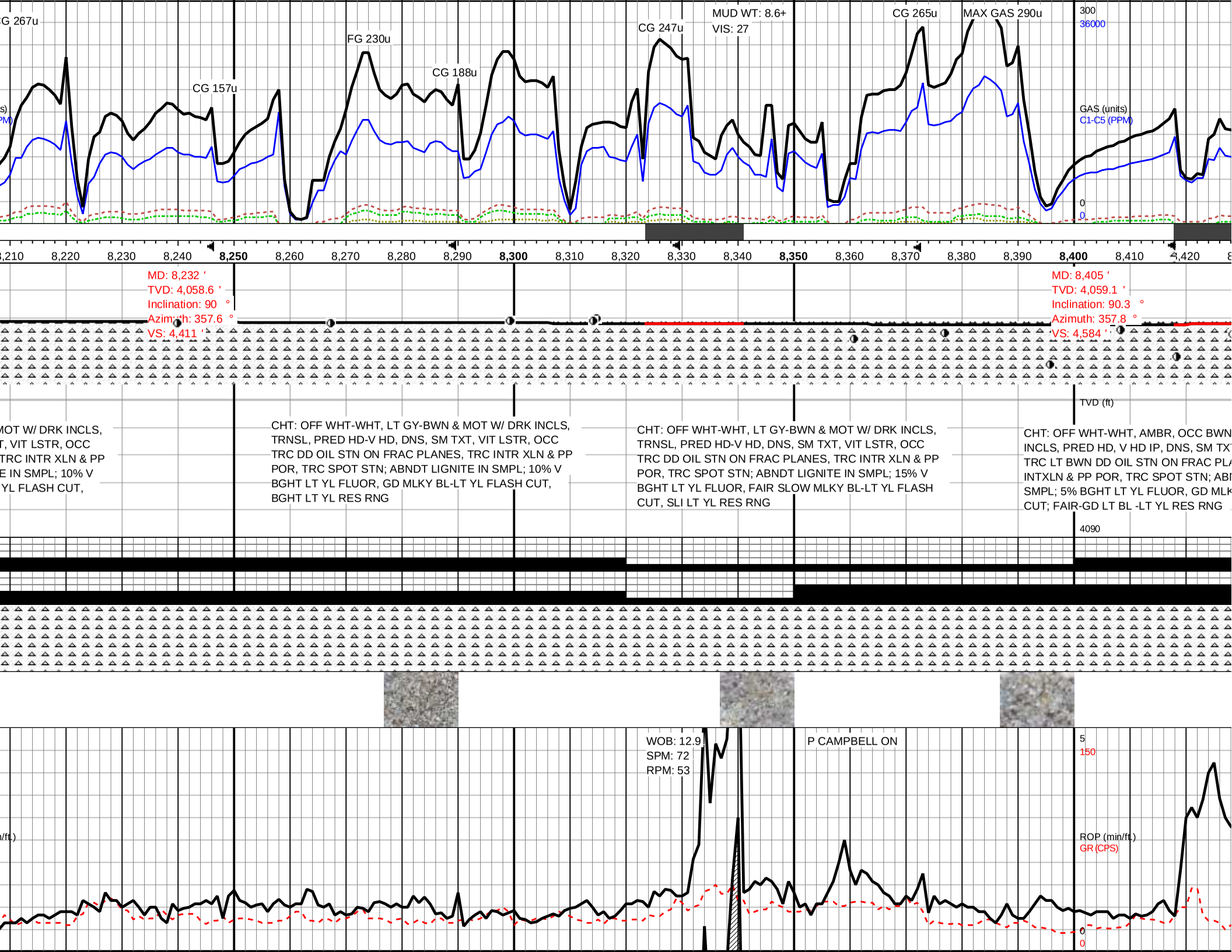

FG 251u
300
36000
MUD WT: 8.6
VIS: 27
CG 158u
CG 140u
GAS (units)
C1-C5 (PPM)
CG 84u
DEFROST
POLY FLOW
CG 88u
0
0
7,110
7,120
7,130
7,140
7,150
7,160
7,170
7,180
7,190
7,200
7,210
7,220
7,230
7,240
7,250
7,260
7,270
7,280
7,290
7,300
7,310
7,320
7,111 '
: 4,063.2 '
nation: 89.7 °
nuth: 1.1 °
3,292.4 '
MD: 7,201 '
TVD: 4,063.6 '
Inclination: 89.7 °
Azimuth: 0.3 °
VS: 3,382.2 '
MD: 7,289 '
TVD: 4,064.3 '
Inclination: 89.5 °
Azimuth: 2.5 °
VS: 3,469.9 '
TVD (ft)
C
N &
D
CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 10% BGHT LT YL FLUOR, FAIR LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
CHT: PRED OFF WHT, SME CRM-LTCRM OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 10% BGHT LT YL FLUOR, FAIR LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, TRC CONCH FRAC W/ LT BWN-BLK DD OIL STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 15% BGHT LT YL FLUOR, MOD LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG
CHT: PRED OF
MOT W/ DRK I
XLN-CR XLN, T
STN, OCC INR
STN,: ABNDT L
FLUOR, FAIR L
RES RNG
4090
5
150
WOB: 15.8
SPM: 72
RPM: 56
2-03-14
ROP (min/ft)
GR (CPS)
0
0

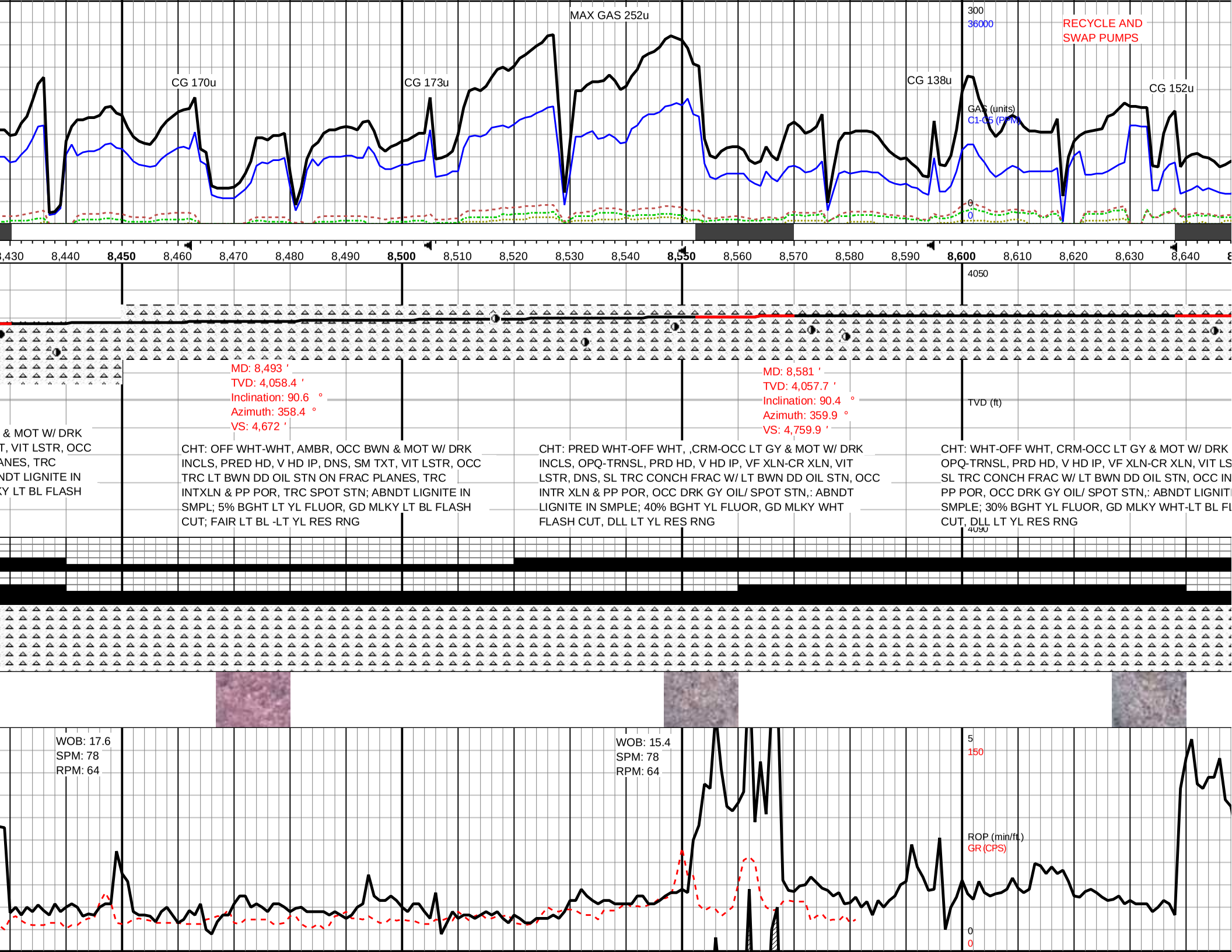

300
36000
FG 262u
MUD WT: 8.6
VIS: 27
CG 189u
FG 183U
CG 186u
GAS (units)
C1-C5 (PPM)
CG 114u
CG 74u
FG 242u
FG 210u
0
0
7,330
7,340
7,350
7,360
7,370
7,380
7,390
7,400
7,410
7,420
7,430
7,440
7,450
7,460
7,470
7,480
7,490
7,500
7,510
7,520
7,530
7,540
MD: 7,376 '
TVD: 4,064.3 '
Inclination: 90.5 °
Azimuth: 2.4 °
VS: 3,556.5 '
4050
MD: 7,463 '
TVD: 4,063.4 '
Inclination: 90.6 °
Azimuth: 1.4 °
VS: 3,643.2 '
MD:
TVD
Incli
Azim
VS:
TVD (ft)
FF WHT, SME CRM-LTCRM OCC LT GY &
NCLS, OPQ-TRNSL, PRD HD, V HD IP, VF
TRC CONCH FRAC W/ LT BWN DD OIL
XLN & PP POR, OCC DRK GY OIL/ SPOT
LIGNITE IN SMPLE; 15% BGHT LT YL
LT BL FLASH/CRUSH CUT, BGHT LT YL
CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT
W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF
XLN-CR XLN, TRC CONCH FRAC W/ LT BWN-BLK DD OIL
STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT
STN,: ABNDT LIGNITE IN SMPLE; 15% BGHT LT YL
FLUOR, MOD LT BL FLASH/CRUSH CUT, BGHT LT YL
RES RNG
4090
CHT: PRED OFF WHT, SME CRM-LTCRM OCC LT GY &
MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF
XLN-CR XLN, TRC CONCH FRAC W/ LT BWN DD OIL
STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT
STN,: ABNDT LIGNITE IN SMPLE; 15% BGHT LT YL
FLUOR, FAIR LT BL FLASH/CRUSH CUT, BGHT LT YL
RES RNG
CHT: OFF WHT-WHT, AMBR, OCC LT GY & MOT W
INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTR
TRC LT BWN DD OIL STN ON FRAC PLANES, TRC
INTXLN & PP POR, TRC SPOT STN; ABNDT LIGNIT
SMPL; 10% BGHT LT YL FLUOR, FAIR-GD LT BL FL
CUT, BGHT LT YL- LT BL RES RNG
5
150
WOB: 15.2
SPM: 72
RPM: 65
P CAMPBELL ON
ROP (min/ft)
GR (CPS)
0
0

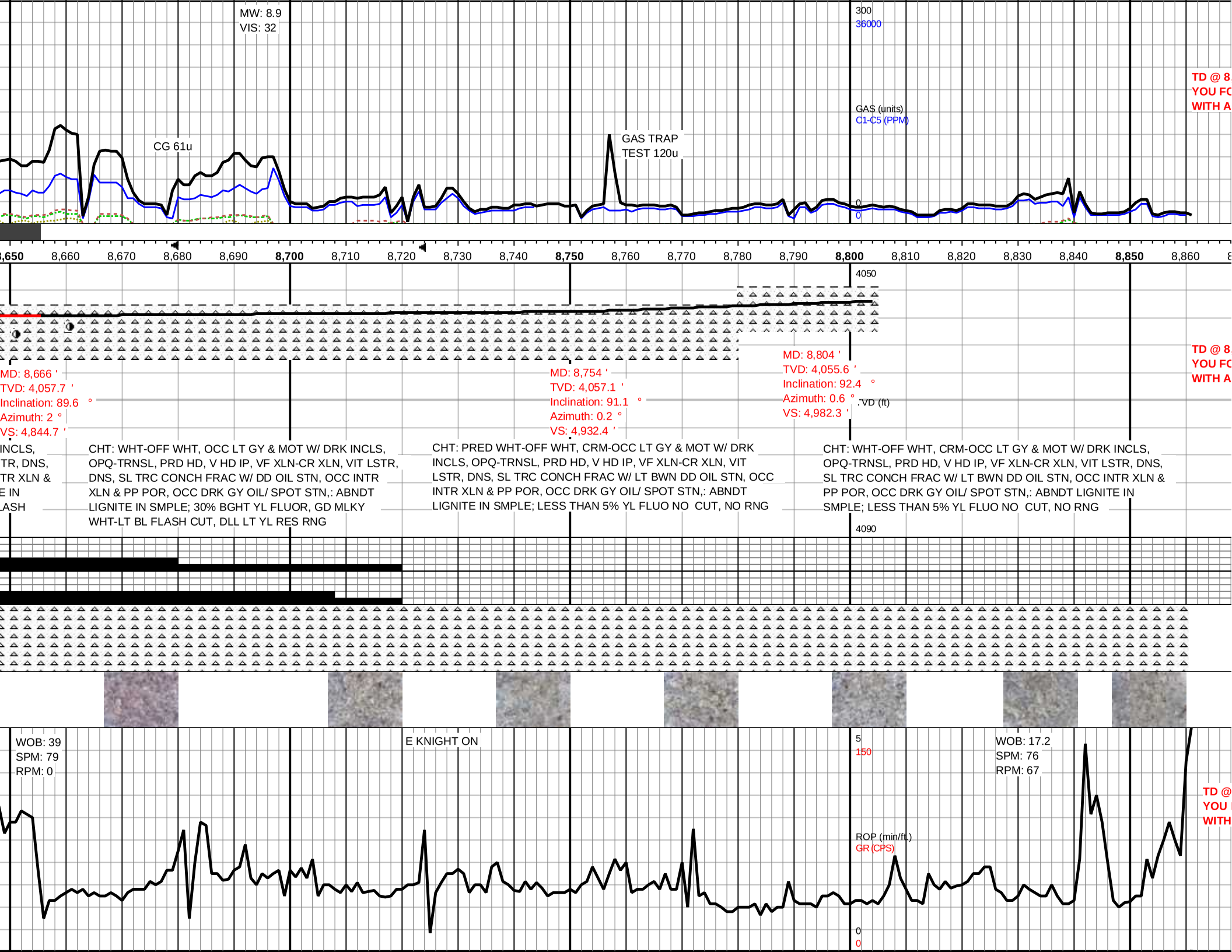

MAX GAS 358u
300
36000
CG 230u
CG 234u
CG 279u
MUD WT: 8.8
VIS: 30
GAS (units)
C1-C5 (PPM)
0
0
7,550
7,560
7,570
7,580
7,590
7,600
7,610
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
7,720
7,730
7,740
7,750
7,760
7,553 '
4,062.6 '
nation: 90.4 °
uth: 1.7 °
3,732.9 '
4050
MD: 7,638 '
TVD: 4,062.3 '
Inclination: 90 °
Azimuth: 0.2 °
VS: 3,817.7 '
TVD (ft)
/ DRK
, OCC
E IN
LASH
CHT: OFF WHT-WHT, AMBR, OCC BWN & MOT W/ DRK INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC TRC LT BWN DD OIL STN ON FRAC PLANES, TRC INTXLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 40% LT YL FLUOR, FAIR-GD LT BL FLASH CUT, DLL YL- LT BL RES RNG
CHT: OFF WHT-WHT, AMBR, OCC BWN & MOT W/ DRK INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC TRC LT BWN DD OIL STN ON FRAC PLANES, TRC INTXLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 30% BGHT YL FLUOR, GD LT BL FLASH/CRUSH CUT, MOD LT YL- LT BL RES RNG
CHT: OFF WHT-WHT, AMBR, OCC BWN & MOT W/ DRK INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC TRC LT BWN DD OIL STN ON FRAC PLANES, TRC INTXLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 10% LT YL FLUOR, GD MLKY LT BL FLASH CUT, DLL YL- LT BL RES RNG
CHT: OFF
TRNSL, P
TRC LT B
INTXLN &
SMPL; 15
FLASH/CL
4090
WOB: 15.4
SPM: 72
RPM: 63
5
150
WOB: 15.4
SPM: 72
RPM: 57
WOB: 15.8
SPM: 72
RPM: 58
ROP (min/ft)
GR (CPS)
0
0

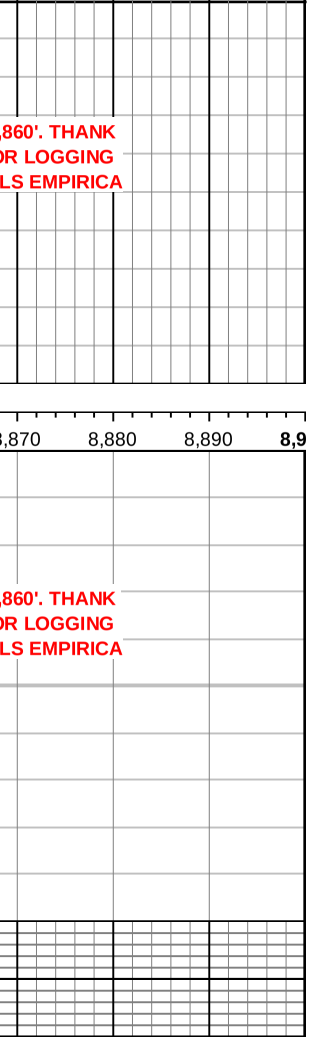

300
36000
CG 258u
MW:: 8.6
VIS:: 28
PV:: 1
YP:: 2
GELS: 1/1/
FIL: 9
CK: 2/0
SOL: 1.
H2O: 97.8
PH: 9
CHL: 2,20
CAL: 20
FG 214u
CG 155u
TG 151u
FG 149u
GAS (units)
C1/C5 (PPM)
0
0
7,770
7,780
7,790
7,800
7,810
7,820
7,830
7,840
7,850
7,860
7,870
7,880
7,890
7,900
7,910
7,920
7,930
7,940
7,950
7,960
7,970
7,980
MD: 7,809 '
TVD: 4,062.6 '
Inclination: 90.5 °
Azimuth: 0 °
VS: 3,988.4 '
MD: 7,892 '
TVD: 4,060.9 '
Inclination: 91.8 °
Azimuth: 359.9 °
VS: 4,071.2 '
TOOH FOR BIT# 9
TVD (ft)
F WHT-WHT, AMBR-LT GY & MOT W/ DRK INCLS,
RED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC
WN DD OIL STN ON FRAC PLANES, TRC
PP POR, TRC SPOT STN; ABNDT LIGNITE IN
% BGHT LT YL FLUOR, GD LT BL
RUSH CUT, BGHT LT YL- LT BL RES RNG
CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 5% V BGHT LT YL FLUOR, GD MLKY BL-LT YL FLASH CUT, BGHT LT YL RES RNG
MD: 7,894 '
TVD: 4,060.9 '
Inclination: 91.8 °
Azimuth: 359.9 °
VS: 4,071.2 '
CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 5% V BGHT LT YL FLUOR, GD MLKY BL-LT YL FLASH CUT, BGHT LT YL RES RNG
Bit #: 9
Type: REED R40APDH
Size: 6 1/8
Depth In: 7,947 '
Jets: 3X18's
S/N: D142534
4090
5
150
ROP (min/ft)
GR (CPS)
0
0
WOB: 15.3
SPM: 71
RPM: 61
E KNIGHT ON


300
36000
CG 223u
FG 258u
CG 205u
MUD WT: 8.7
VIS: 28
CG 265u
FG 290u
FG 348u
GAS (units)
C1-C5 (PPM)
0
0
8,000
8,050
8,100
8,150
8,200
4050
NO FLOW ACROSS SHAKERS, POOR SAMPLE QUALITY
TVD (ft)
MD: 7,980 '
TVD: 4,059.1 '
Inclination: 90.6 °
Azimuth: 359.2 °
VS: 4,159.1 '
CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 5% V BGHT LT YL FLUOR, GD MLKY BL-LT YL FLASH CUT, BGHT LT YL RES RNG
MD: 8,064 '
TVD: 4,058.5 '
Inclination: 90.1 °
Azimuth: 358.9 °
VS: 4,243.1 '
CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 5% V BGHT LT YL FLUOR, GD MLKY BL-LT YL FLASH CUT, BGHT LT YL RES RNG, LESS THAN 5% GREY AND RED BRN SHALE
MD: 8,148 '
TVD: 4,058.5 '
Inclination: 89.9 °
Azimuth: 358.9 °
VS: 4,327 '
4090
WOB: 12.9
SPM: 72
RPM: 53
2-05-14
5
150
ROP (min/ft)
GR (CPS)
0
0


CG 267u
CG 157u
FG 230u
CG 188u
CG 247u
MUD WT: 8.6+
VIS: 27
CG 265u
MAX GAS 290u
300
36000
GAS (units)
C1-C5 (PPM)
0
0
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
8,380
8,390
8,400
8,410
8,420
MD: 8,232 '
TVD: 4,058.6 '
Inclination: 90 °
Azimuth: 357.6 °
VS: 4,411 '
MD: 8,405 '
TVD: 4,059.1 '
Inclination: 90.3 °
Azimuth: 357.8 °
VS: 4,584 '
TVD (ft)
MOT W/ DRK INCLS,
T, VIT LSTR, OCC
TRC INTR XLN & PP
E IN SMPL; 10% V
YL FLASH CUT,
CHT: OFF WHT-WHT, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 10% V BGHT LT YL FLUOR, GD MLKY BL-LT YL FLASH CUT, BGHT LT YL RES RNG
CHT: OFF WHT-WHT, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 15% V BGHT LT YL FLUOR, FAIR SLOW MLKY BL-LT YL FLASH CUT, SLI LT YL RES RNG
CHT: OFF WHT-WHT, AMBR, OCC BWN
INCLS, PRED HD, V HD IP, DNS, SM TX
TRC LT BWN DD OIL STN ON FRAC PLA
INTXLN & PP POR, TRC SPOT STN; ABI
SMPL; 5% BGHT LT YL FLUOR, GD MLK
CUT; FAIR-GD LT BL -LT YL RES RNG
4090
WOB: 12.9
SPM: 72
RPM: 53
P CAMPBELL ON
5
150
/ft)
ROP (min/ft)
GR (CPS)
0
0


MAX GAS 252u
CG 170u
CG 173u
CG 138u
CG 152u
300
36000
RECYCLE AND
SWAP PUMPS
GAS (units)
C1-C5 (PPM)
0
0
8,430
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510
8,520
8,530
8,540
8,550
8,560
8,570
8,580
8,590
8,600
8,610
8,620
8,630
8,640
4050
MD: 8,493 '
TVD: 4,058.4 '
Inclination: 90.6 °
Azimuth: 358.4 °
VS: 4,672 '
MD: 8,581 '
TVD: 4,057.7 '
Inclination: 90.4 °
Azimuth: 359.9 °
VS: 4,759.9 '
TVD (ft)
& MOT W/ DRK
T, VIT LSTR, OCC
ANES, TRC
NDT LIGNITE IN
Y LT BL FLASH
CHT: OFF WHT-WHT, AMBR, OCC BWN & MOT W/ DRK INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC TRC LT BWN DD OIL STN ON FRAC PLANES, TRC INTXLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMPL; 5% BGHT LT YL FLUOR, GD MLKY LT BL FLASH CUT; FAIR LT BL -LT YL RES RNG
CHT: PRED WHT-OFF WHT, ,CRM-OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LSTR, DNS, SL TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 40% BGHT YL FLUOR, GD MLKY WHT FLASH CUT, DLL LT YL RES RNG
CHT: WHT-OFF WHT, CRM-OCC LT GY & MOT W/ DRK OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LS SL TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC IN PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNIT SMPLE; 30% BGHT YL FLUOR, GD MLKY WHT-LT BL FL CUT, DLL LT YL RES RNG
4090
WOB: 17.6
SPM: 78
RPM: 64
WOB: 15.4
SPM: 78
RPM: 64
5
150
ROP (min/ft)
GR (CPS)
0
0


MW: 8.9
VIS: 32
300
36000
GAS (units)
C1-C5 (PPM)
0
0
CG 61u
GAS TRAP
TEST 120u
TD @ 8
YOU FO
WITH A
8,650
8,660
8,670
8,680
8,690
8,700
8,710
8,720
8,730
8,740
8,750
8,760
8,770
8,780
8,790
8,800
8,810
8,820
8,830
8,840
8,850
8,860
4050
MD: 8,666 '
TVD: 4,057.7 '
Inclination: 89.6 °
Azimuth: 2 °
VS: 4,844.7 '
MD: 8,754 '
TVD: 4,057.1 '
Inclination: 91.1 °
Azimuth: 0.2 °
VS: 4,932.4 '
MD: 8,804 '
TVD: 4,055.6 '
Inclination: 92.4 °
Azimuth: 0.6 °
VS: 4,982.3 '
TVD (ft)
TD @ 8
YOU FO
WITH A
INCLS,
TR, DNS,
TR XLN &
E IN
LASH
CHT: WHT-OFF WHT, OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LSTR, DNS, SL TRC CONCH FRAC W/ DD OIL STN, OCC INTR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; 30% BGHT YL FLUOR, GD MLKY WHT-LT BL FLASH CUT, DLL LT YL RES RNG
CHT: PRED WHT-OFF WHT, CRM-OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LSTR, DNS, SL TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; LESS THAN 5% YL FLUO NO CUT, NO RNG
CHT: WHT-OFF WHT, CRM-OCC LT GY & MOT W/ DRK INCLS, OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LSTR, DNS, SL TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XLN & PP POR, OCC DRK GY OIL/ SPOT STN,: ABNDT LIGNITE IN SMPLE; LESS THAN 5% YL FLUO NO CUT, NO RNG
4090
WOB: 39
SPM: 79
RPM: 0
E KNIGHT ON
5
150
WOB: 17.2
SPM: 76
RPM: 67
TD @
YOU
WITH
ROP (min/ft)
GR (CPS)
0
0


,860'. THANK
OR LOGGING
LS EMPIRICA

,870
8,880
8,890
8,9
,860'. THANK
OR LOGGING
LS EMPIRICA


8,860'. THANK
FOR LOGGING
ALS EMPIRICA

Scale: 5" / 100'
Measured Depth Log

Well Name	Bock 3-1H		
Location	Sec 3, T26S, R11W		
State	Kansas	**County**	Pratt
Country	United States	**Rig Number**	HWD #14
API Number	15-151-22428-01-00	**AFE #**	131891
Spud Date	1/17/2014	**Drilling Completed**	2/5/5014
Surface Coordinates	278' from South Line & 153' from East Line		
Ground Elevation	1839	**K.B. Elevation**	1854
Logged Interval	1920 **To** 8860'	**Total Depth**	8860'
Formation	Mississippi Chat		
Type of Drilling Fluid	Water Based		

Operator

Company Seneca Resources Corp.

Address McCandless Corporate Center
5800 Corporate Drive, Suite 300
Pittsburgh, PA 15237

Geologist

Name Paul Campbell/ Ed Knight

Company ALS Empirica

Address 609 Westland Drive
Edmond, Ok 73013

Other

Product Description	Regular 2 Man Logging Services Logging Began: 1-20-2014 Released: 2-6-2014
Equiptment	MLogger: # 364
Calibration	Standard Calibration for Redbox Total Gas & Chromatigraph

Rock Types

- UNKNOWN
- ANHYDRITE
- GYPSUM
- SALT
- SIDERITE or LIMONITE
- LIMESTONE
- DOLOMITE
- CHERT
- COAL
- MARLSTONE
- CLAYSTONE
- SHALE
- SHALE GRAY
- SHALE COLORED
- SILTSTONE
- SANDSTONE
- CONGLOMERATE
- BRECCIA
- TILL
- BENTONITE
- TUFF
- IGNEOUS
- METAMORPHIC
- CEMENT

Accessories

Fossils

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHOIPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA
- FOSSIL
- GASTROPOD
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

- ANHYDRITIC
- ARGILLACEOUS
- ARGILLITE GRAIN
- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CALCAREOUS
- CARBONACEOUS FLAKES
- CHTDK
- CHTLT
- COAL - THIN BEDS
- DOLOMITIC
- FELDSPAR
- FERRUGINOUS PELLET
- FERRUGINOUS
- GLAUCONITE
- GYPSIFEROUS
- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS
- SILTY
- TUFFACEOUS

Stringer

- ANHYDRITE STRINGER
- BENTONITE STRINGER
- COAL STRINGER
- DOLOMITE STRINGER
- GYPSUM STRINGER
- LIMESTONE STRINGER
- MARLSTONE (CALC) STRG
- MARLSTONE (DOL) STRG
- SANDSTONE STRINGER
- SHALE STRINGER
- SILTSTONE STRINGER

Other Symbols

Oil Show

- DEAD
- ORGANIC
- PINPOINT
- VUGGY
- FORMATION TOP
- GAS SHOW
- MN DEPTH

Rounding

- ANGULAR
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE

EVEN

QUESTIONABLE

SPOTTED STAINING

Porosity

E EARTHY

FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

Engineering

BIT


CASING

CONNECTION (LEFT)

CONNECTION (RIGHT)

CONNECTION GAS

CORE - LOST

CORE - RECOVERED

DST INTERVAL


FAULT

NORMAL FAULT

OIL SHOW

OVERTURNED STRATA


REVERSE FAULT

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

TRIP GAS

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

R ROUNDED

SUBANG

SUBRND

Textures

BS BOUNDSTONE

C CHALKY

CX CRYPTOXLN

E EARTHY

FX FINELYXLN

GS GRAINSTONE

PS PACKSTONE

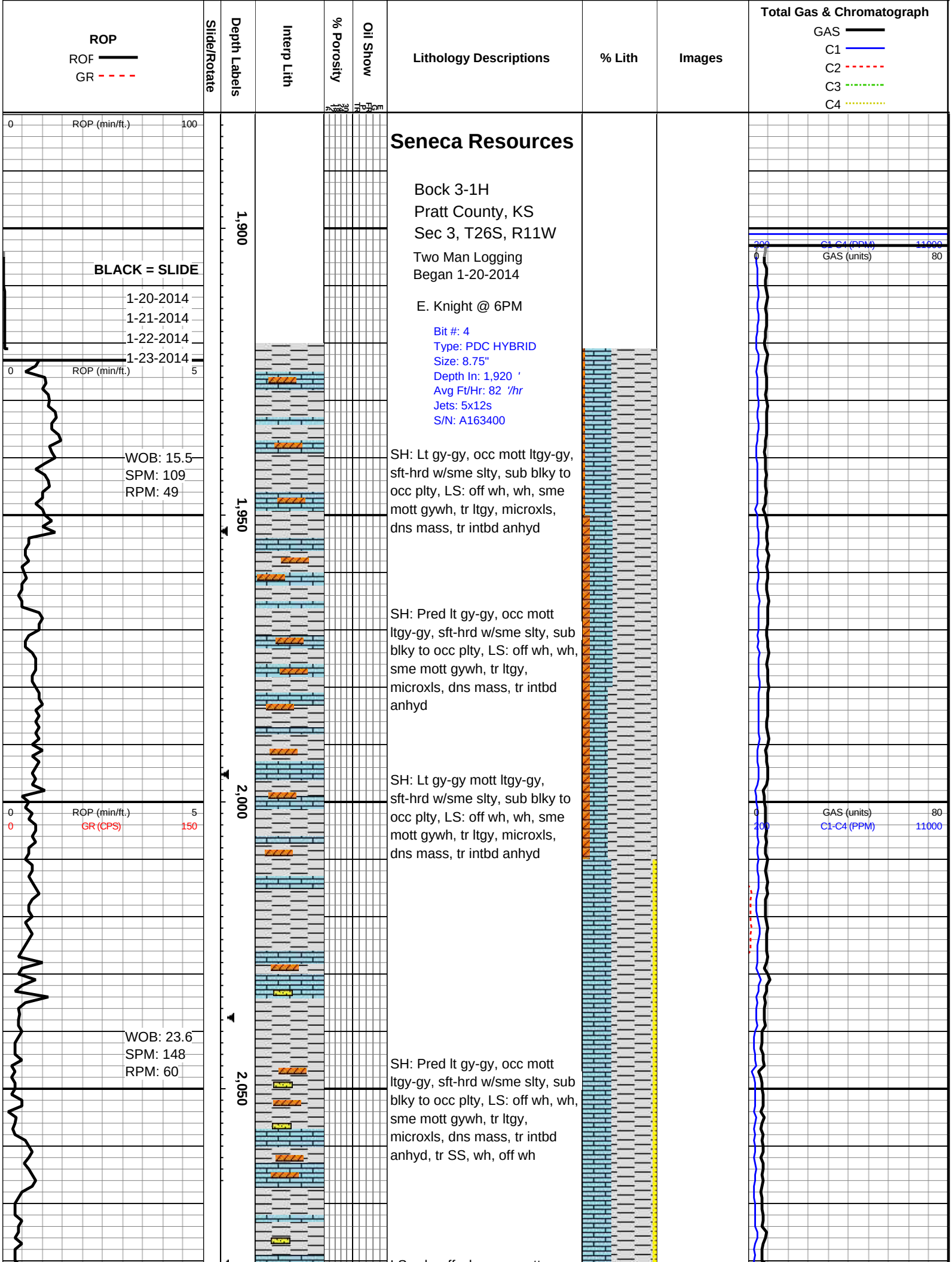
WS WACKESTONE

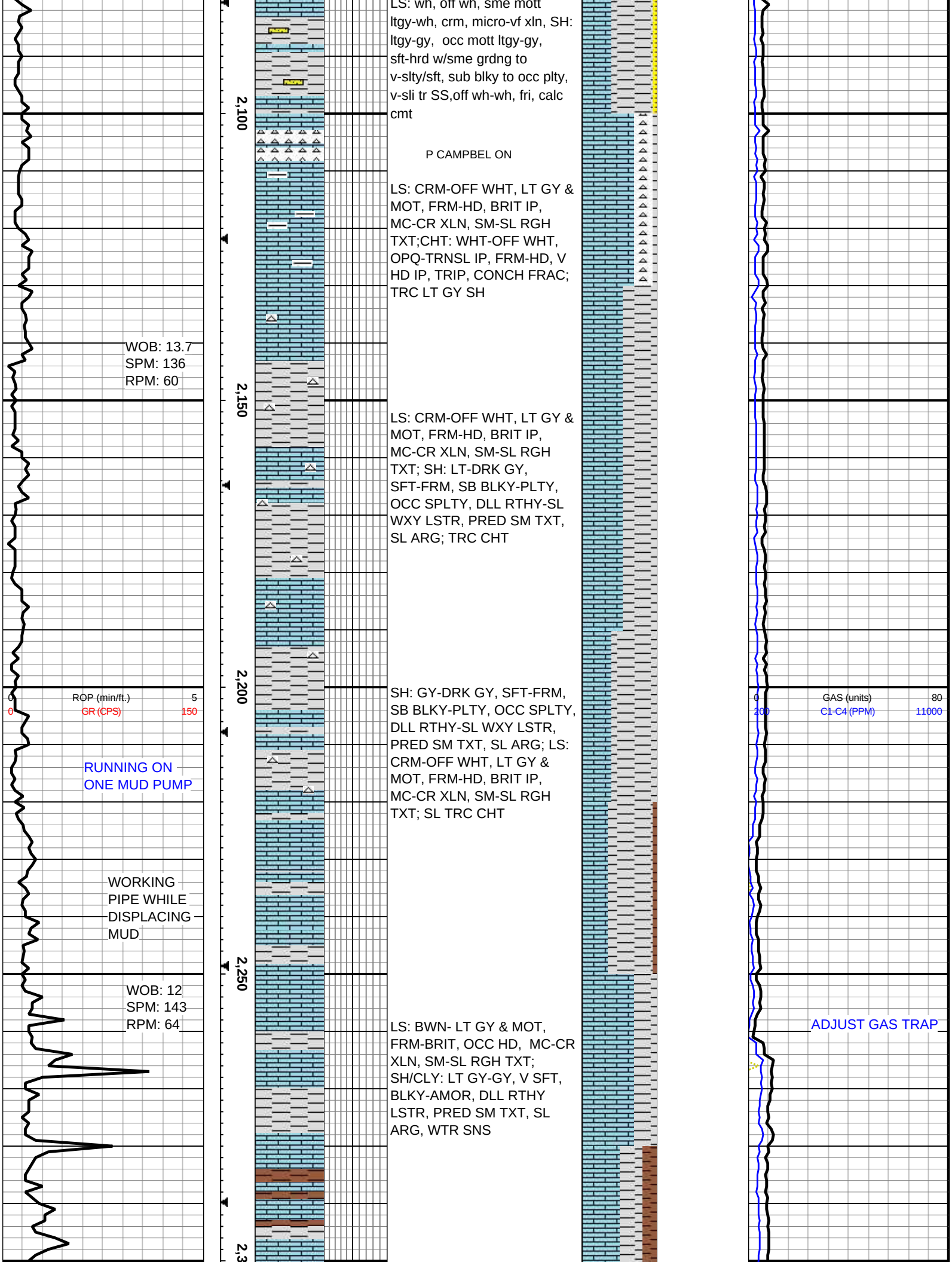
Sorting

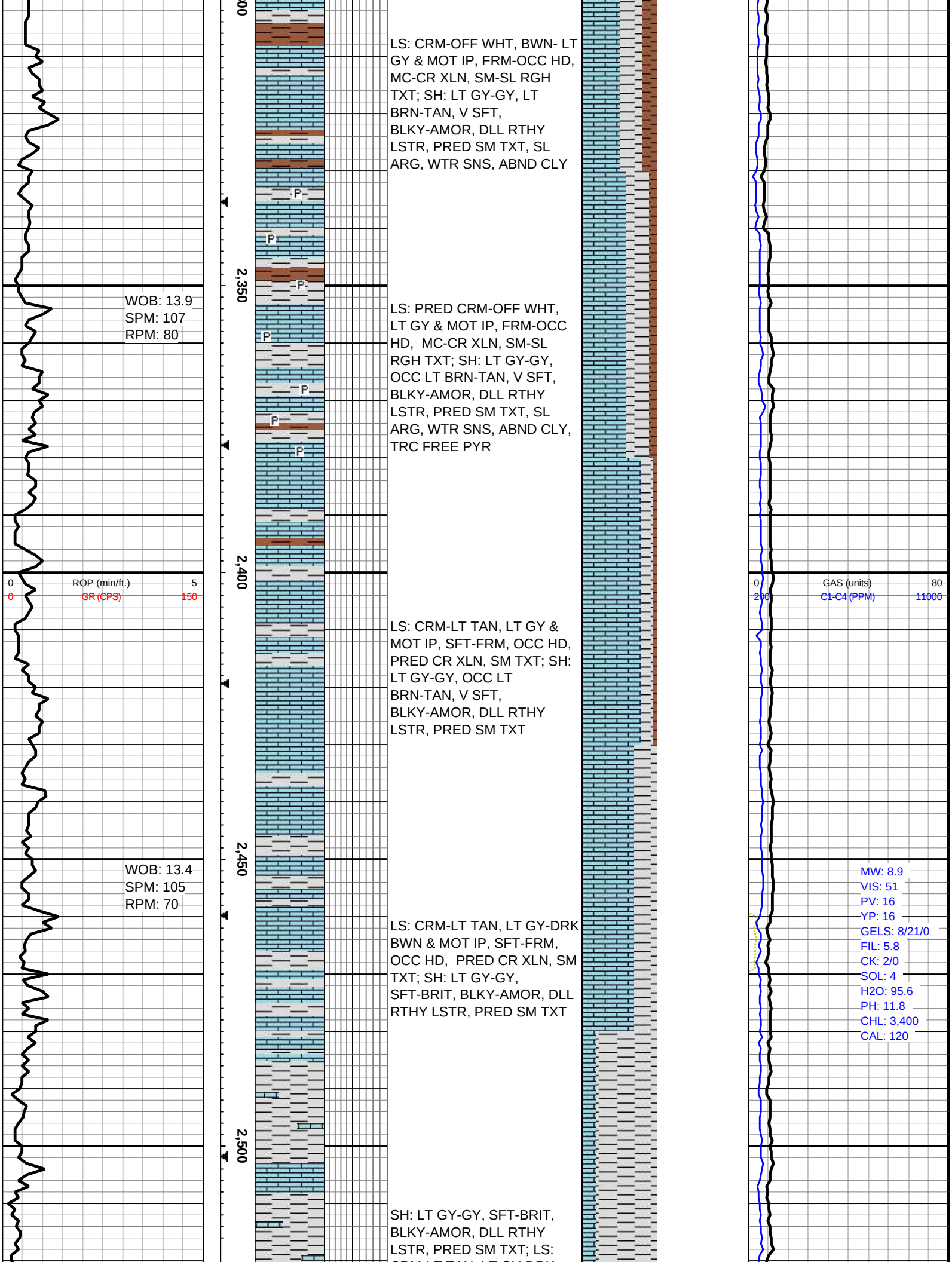
M MODERATE

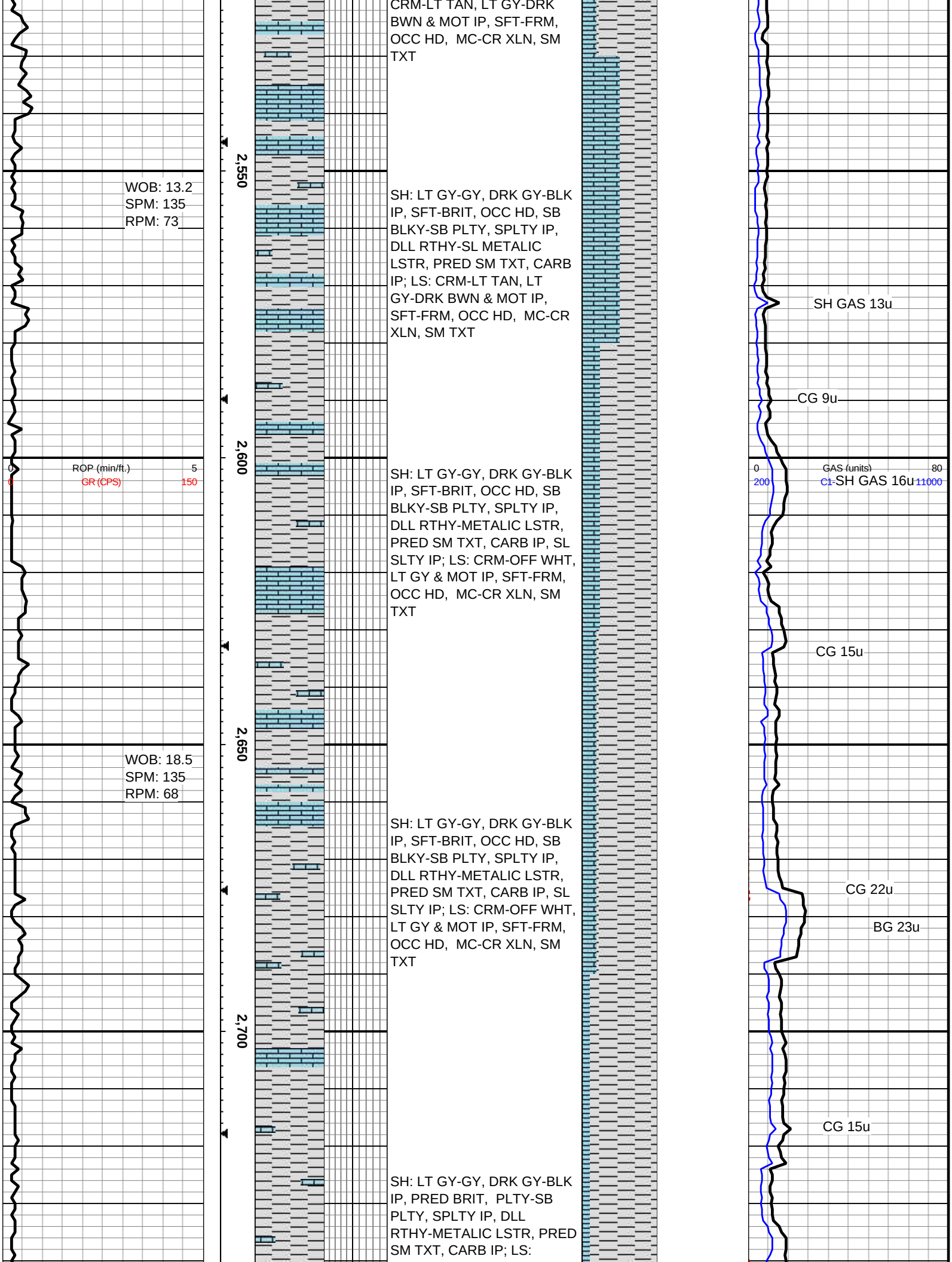
P POOR

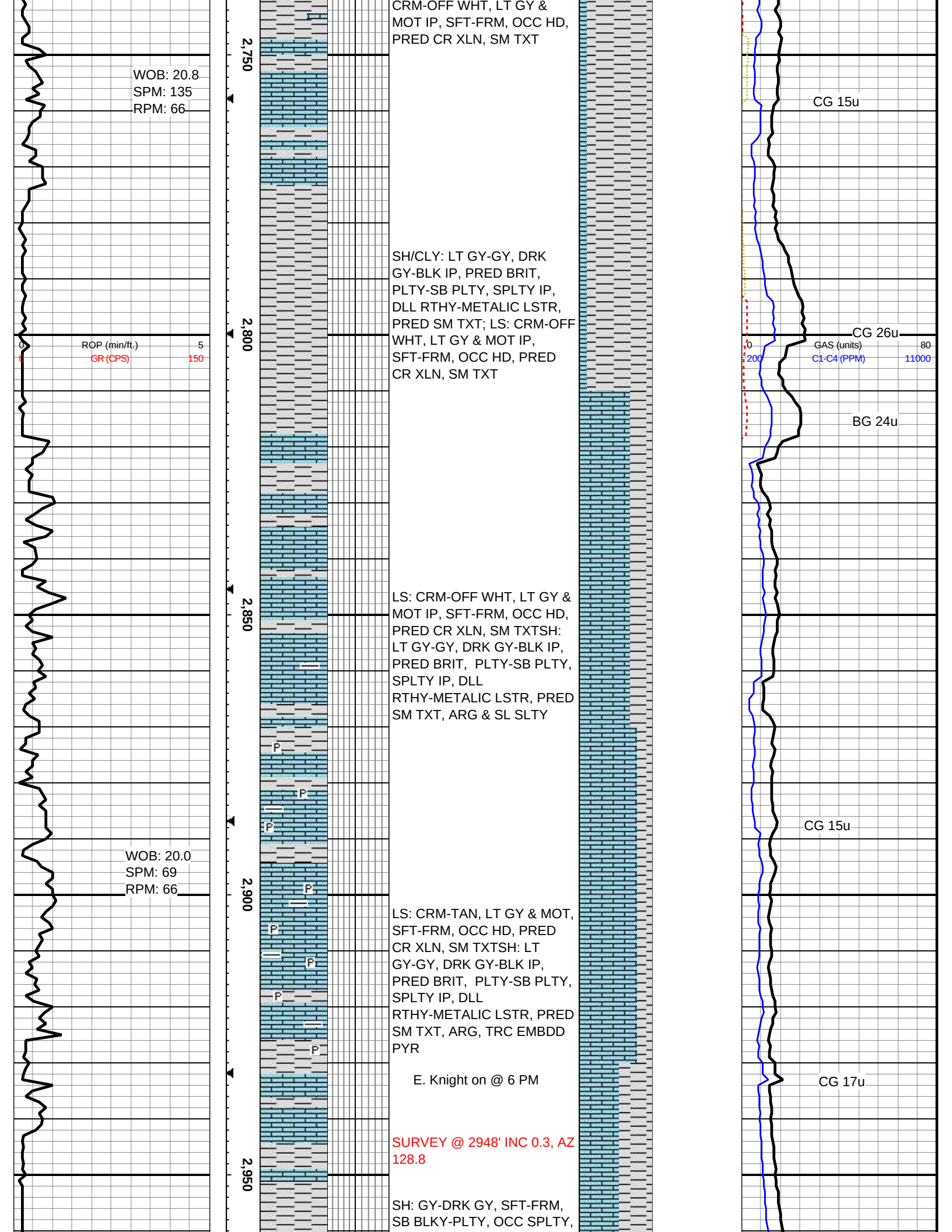
W WELL

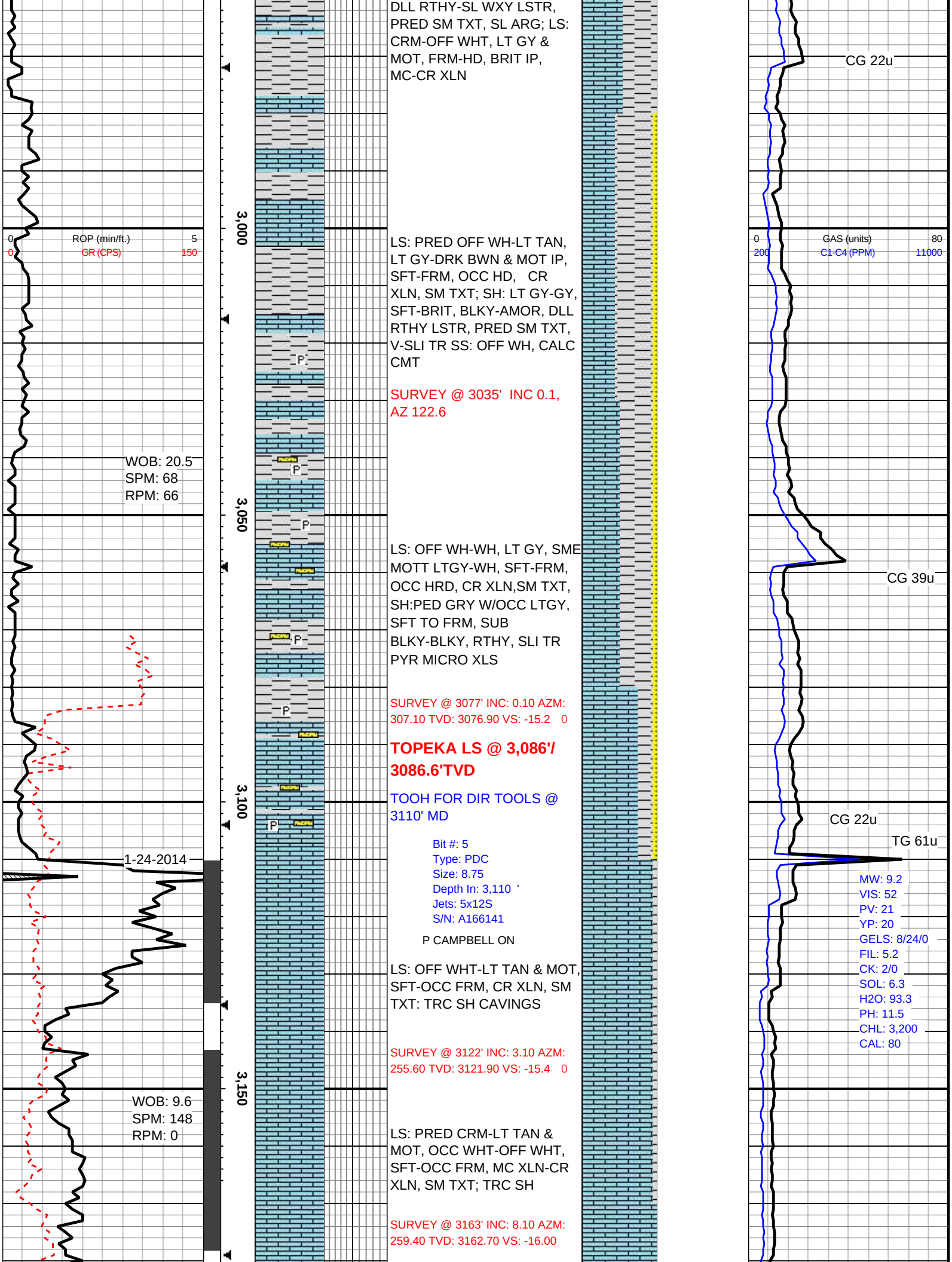

ROP
ROP
GR
Slide/Rotate
Depth Labels
Interp Lith
% Porosity
Oil Show
Lithology Descriptions
% Lith
Images
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
0
ROP (min/ft.)
100
BLACK = SLIDE
1-20-2014
1-21-2014
1-22-2014
1-23-2014
0
ROP (min/ft.)
5
WOB: 15.5
SPM: 109
RPM: 49
1,900
1,950
2,000
2,050
0
ROP (min/ft.)
5
0
GR (CPS)
150
WOB: 23.6
SPM: 148
RPM: 60
Seneca Resources
Bock 3-1H
Pratt County, KS
Sec 3, T26S, R11W
Two Man Logging
Began 1-20-2014
E. Knight @ 6PM
Bit #: 4
Type: PDC HYBRID
Size: 8.75"
Depth In: 1,920 '
Avg Ft/Hr: 82 '/hr
Jets: 5x12s
S/N: A163400
SH: Lt gy-gy, occ mott ltgy-gy, sft-hrd w/sme slty, sub blky to occ plty, LS: off wh, wh, sme mott gywh, tr ltgy, microxls, dns mass, tr intbd anhyd
SH: Pred lt gy-gy, occ mott ltgy-gy, sft-hrd w/sme slty, sub blky to occ plty, LS: off wh, wh, sme mott gywh, tr ltgy, microxls, dns mass, tr intbd anhyd
SH: Lt gy-gy mott ltgy-gy, sft-hrd w/sme slty, sub blky to occ plty, LS: off wh, wh, sme mott gywh, tr ltgy, microxls, dns mass, tr intbd anhyd
SH: Pred lt gy-gy, occ mott ltgy-gy, sft-hrd w/sme slty, sub blky to occ plty, LS: off wh, wh, sme mott gywh, tr ltgy, microxls, dns mass, tr intbd anhyd, tr SS, wh, off wh
200
C1-C4 (PPM)
11000
0
GAS (units)
80
0
GAS (units)
80
200
C1-C4 (PPM)
11000

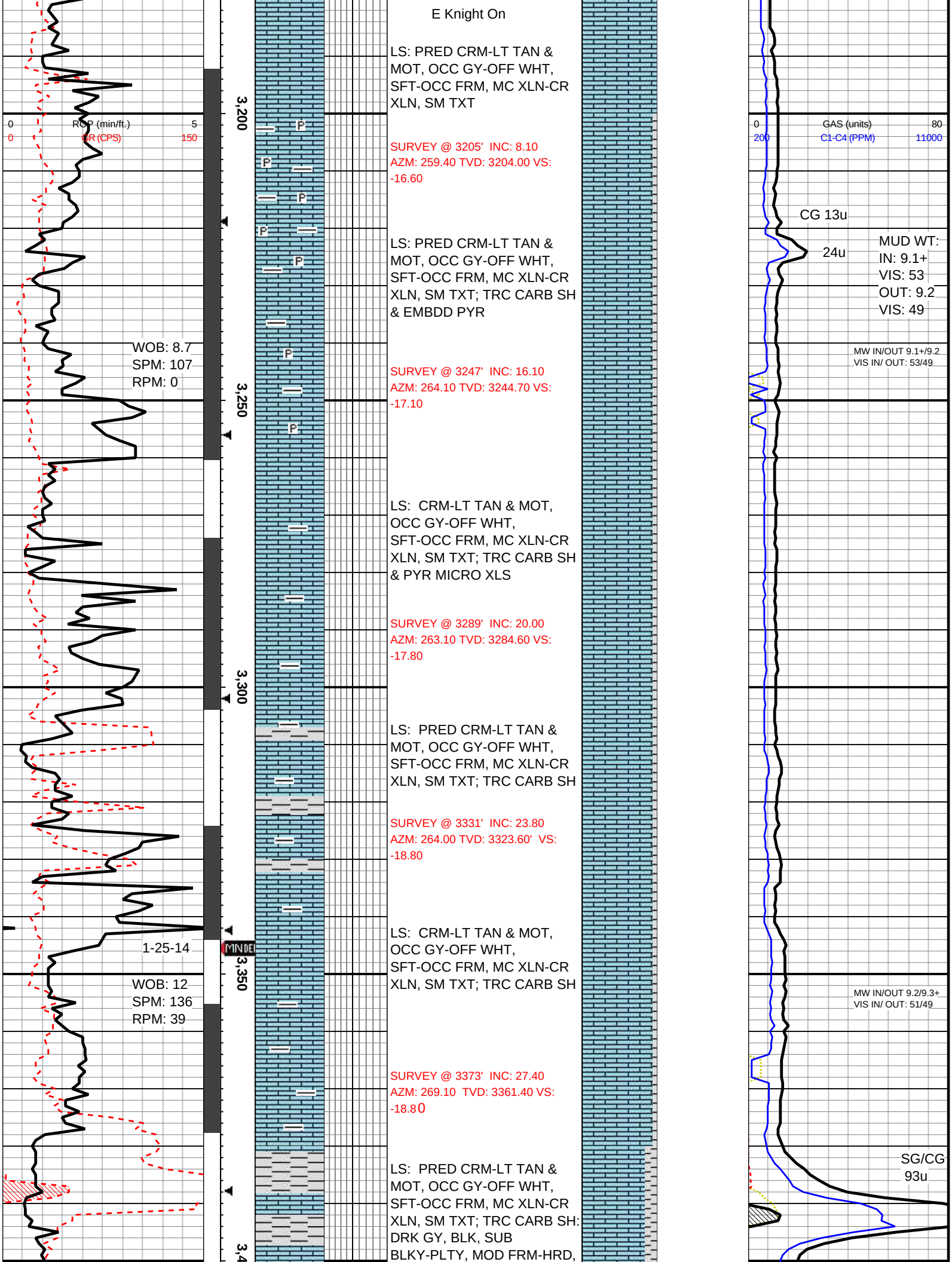

LS: wh, off wh, sme mott ltgy-wh, crm, micro-vf xln, SH: ltgy-gy, occ mott ltgy-gy, sft-hrd w/sme grdng to v-slty/sft, sub blky to occ plty, v-sli tr SS,off wh-wh, fri, calc cmt
P CAMPBEL ON
LS: CRM-OFF WHT, LT GY & MOT, FRM-HD, BRIT IP, MC-CR XLN, SM-SL RGH TXT;CHT: WHT-OFF WHT, OPQ-TRNSL IP, FRM-HD, V HD IP, TRIP, CONCH FRAC; TRC LT GY SH
WOB: 13.7
SPM: 136
RPM: 60
2,100
2,150
LS: CRM-OFF WHT, LT GY & MOT, FRM-HD, BRIT IP, MC-CR XLN, SM-SL RGH TXT; SH: LT-DRK GY, SFT-FRM, SB BLKY-PLTY, OCC SPLTY, DLL RTHY-SL WXY LSTR, PRED SM TXT, SL ARG; TRC CHT
2,200
0
ROP (min/ft.)
5
0
GR (CPS)
150
0
GAS (units)
80
200
C1-C4 (PPM)
11000
SH: GY-DRK GY, SFT-FRM, SB BLKY-PLTY, OCC SPLTY, DLL RTHY-SL WXY LSTR, PRED SM TXT, SL ARG; LS: CRM-OFF WHT, LT GY & MOT, FRM-HD, BRIT IP, MC-CR XLN, SM-SL RGH TXT; SL TRC CHT
RUNNING ON ONE MUD PUMP
WORKING PIPE WHILE DISPLACING MUD
2,250
WOB: 12
SPM: 143
RPM: 64
LS: BWN- LT GY & MOT, FRM-BRIT, OCC HD, MC-CR XLN, SM-SL RGH TXT; SH/CLY: LT GY-GY, V SFT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT, SL ARG, WTR SNS
ADJUST GAS TRAP
2,3

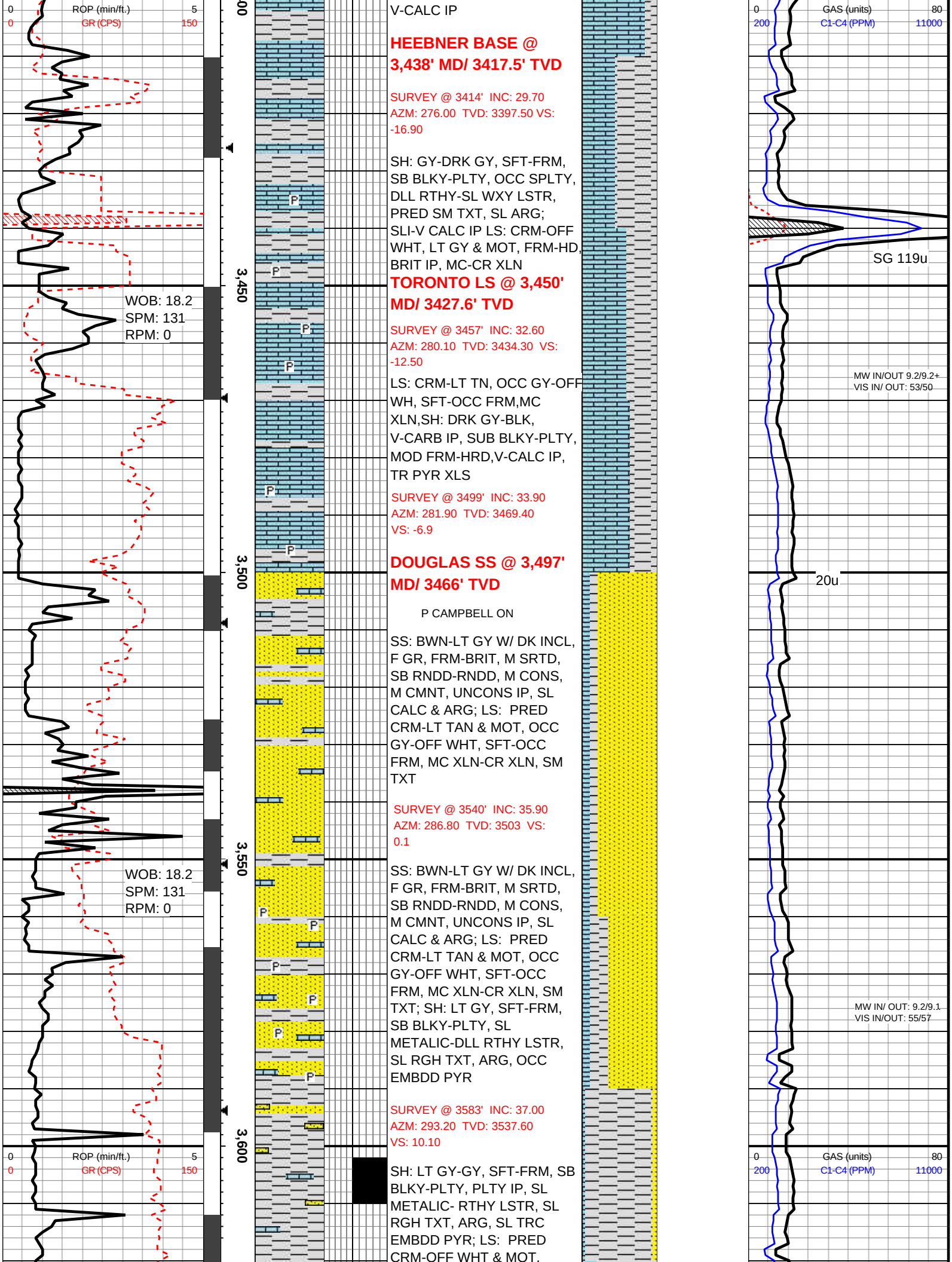

0
ROP (min/ft.)
5
0
GR (CPS)
150
WOB: 13.9
SPM: 107
RPM: 80
WOB: 13.4
SPM: 105
RPM: 70
2,350
2,400
2,450
2,500
LS: CRM-OFF WHT, BWN- LT GY & MOT IP, FRM-OCC HD, MC-CR XLN, SM-SL RGH TXT; SH: LT GY-GY, LT BRN-TAN, V SFT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT, SL ARG, WTR SNS, ABND CLY
LS: PRED CRM-OFF WHT, LT GY & MOT IP, FRM-OCC HD, MC-CR XLN, SM-SL RGH TXT; SH: LT GY-GY, OCC LT BRN-TAN, V SFT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT, SL ARG, WTR SNS, ABND CLY, TRC FREE PYR
LS: CRM-LT TAN, LT GY & MOT IP, SFT-FRM, OCC HD, PRED CR XLN, SM TXT; SH: LT GY-GY, OCC LT BRN-TAN, V SFT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT
LS: CRM-LT TAN, LT GY-DRK BWN & MOT IP, SFT-FRM, OCC HD, PRED CR XLN, SM TXT; SH: LT GY-GY, SFT-BRIT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT
SH: LT GY-GY, SFT-BRIT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT; LS:
0
GAS (units)
80
200
C1-C4 (PPM)
11000
MW: 8.9
VIS: 51
PV: 16
YP: 16
GELS: 8/21/0
FIL: 5.8
CK: 2/0
SOL: 4
H2O: 95.6
PH: 11.8
CHL: 3,400
CAL: 120

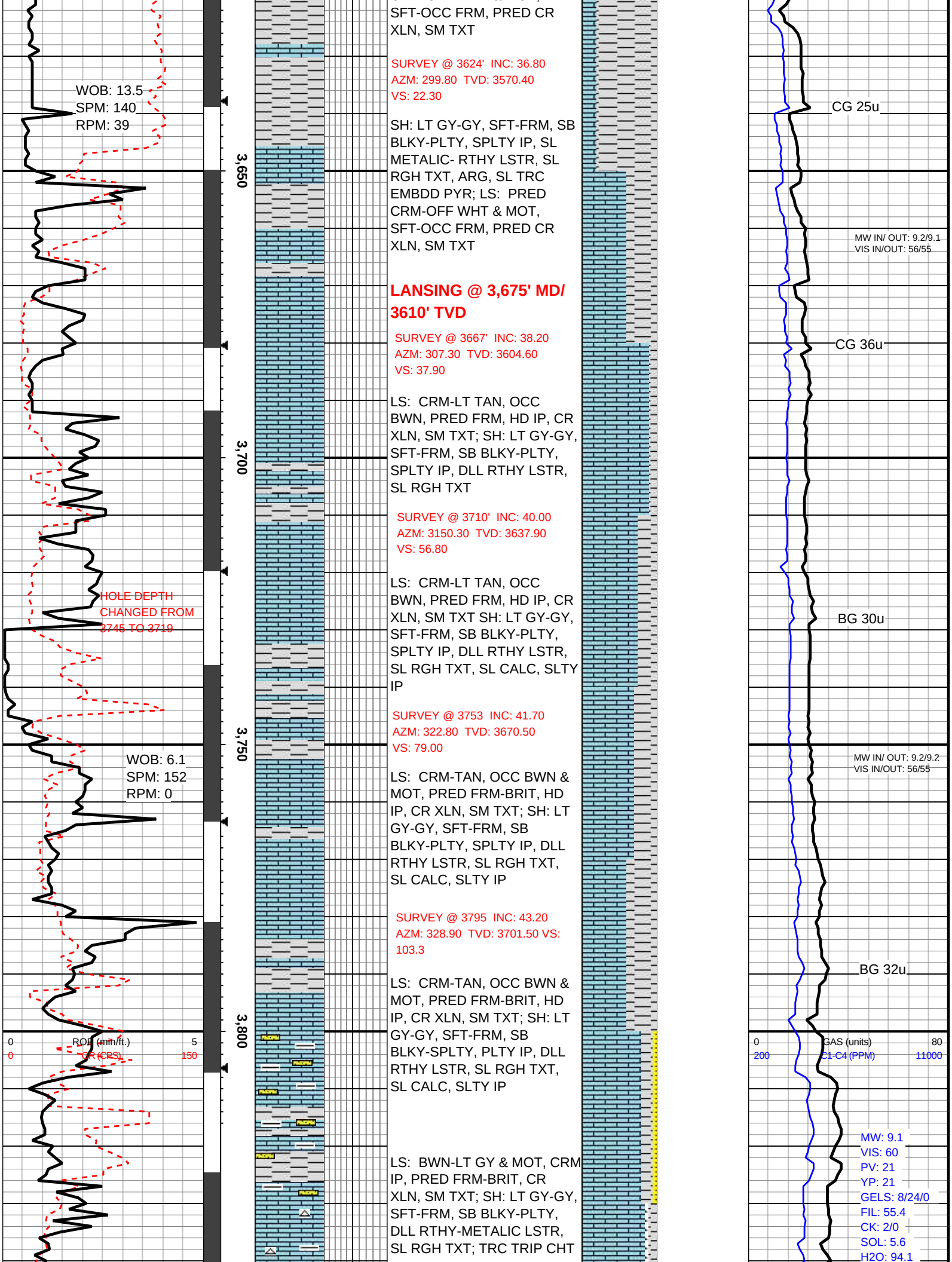

CRM-LT TAN, LT GY-DRK BWN & MOT IP, SFT-FRM, OCC HD, MC-CR XLN, SM TXT
2,550
WOB: 13.2
SPM: 135
RPM: 73
SH: LT GY-GY, DRK GY-BLK IP, SFT-BRIT, OCC HD, SB BLKY-SB PLTY, SPLTY IP, DLL RTHY-SL METALIC LSTR, PRED SM TXT, CARB IP; LS: CRM-LT TAN, LT GY-DRK BWN & MOT IP, SFT-FRM, OCC HD, MC-CR XLN, SM TXT
SH GAS 13u
CG 9u
2,600
0
ROP (min/ft.)
5
0
GR (CPS)
150
SH: LT GY-GY, DRK GY-BLK IP, SFT-BRIT, OCC HD, SB BLKY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT, CARB IP, SL SLTY IP; LS: CRM-OFF WHT, LT GY & MOT IP, SFT-FRM, OCC HD, MC-CR XLN, SM TXT
0
GAS (units)
80
200
C1
SH GAS 16u
11000
CG 15u
2,650
WOB: 18.5
SPM: 135
RPM: 68
SH: LT GY-GY, DRK GY-BLK IP, SFT-BRIT, OCC HD, SB BLKY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT, CARB IP, SL SLTY IP; LS: CRM-OFF WHT, LT GY & MOT IP, SFT-FRM, OCC HD, MC-CR XLN, SM TXT
CG 22u
BG 23u
2,700
CG 15u
SH: LT GY-GY, DRK GY-BLK IP, PRED BRIT, PLTY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT, CARB IP; LS:

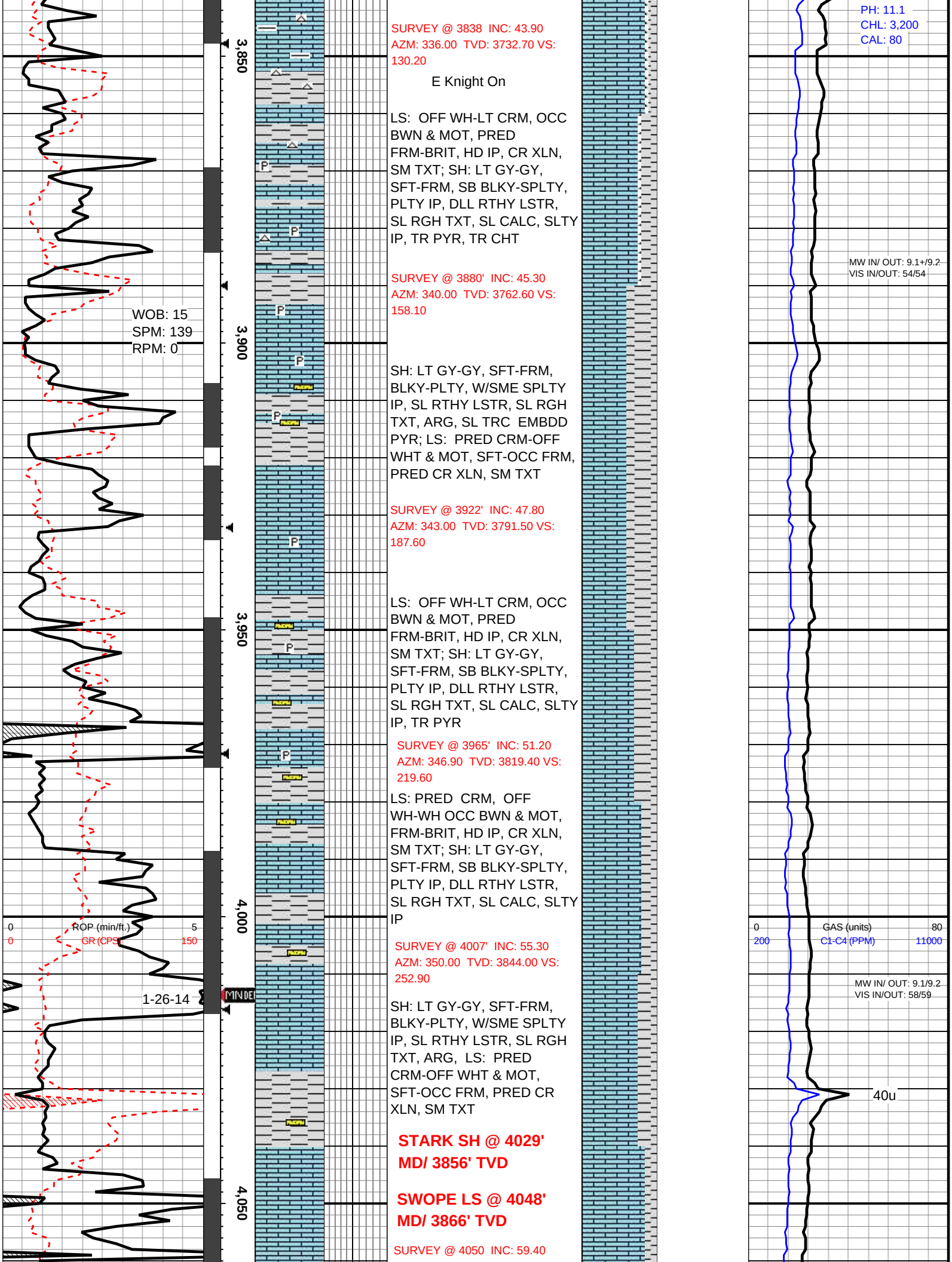

CRM-OFF WHT, LT GY & MOT IP, SFT-FRM, OCC HD, PRED CR XLN, SM TXT
WOB: 20.8
SPM: 135
RPM: 66
2,750
CG 15u
SH/CLY: LT GY-GY, DRK GY-BLK IP, PRED BRIT, PLTY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT; LS: CRM-OFF WHT, LT GY & MOT IP, SFT-FRM, OCC HD, PRED CR XLN, SM TXT
2,800
CG 26u
0
ROP (min/ft.)
5
0
GR (CPS)
150
0
GAS (units)
80
200
C1-C4 (PPM)
11000
BG 24u
LS: CRM-OFF WHT, LT GY & MOT IP, SFT-FRM, OCC HD, PRED CR XLN, SM TXTSH: LT GY-GY, DRK GY-BLK IP, PRED BRIT, PLTY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT, ARG & SL SLTY
2,850
CG 15u
WOB: 20.0
SPM: 69
RPM: 66
2,900
LS: CRM-TAN, LT GY & MOT, SFT-FRM, OCC HD, PRED CR XLN, SM TXTSH: LT GY-GY, DRK GY-BLK IP, PRED BRIT, PLTY-SB PLTY, SPLTY IP, DLL RTHY-METALIC LSTR, PRED SM TXT, ARG, TRC EMBDD PYR
E. Knight on @ 6 PM
CG 17u
SURVEY @ 2948' INC 0.3, AZ 128.8
2,950
SH: GY-DRK GY, SFT-FRM, SB BLKY-PLTY, OCC SPLTY,

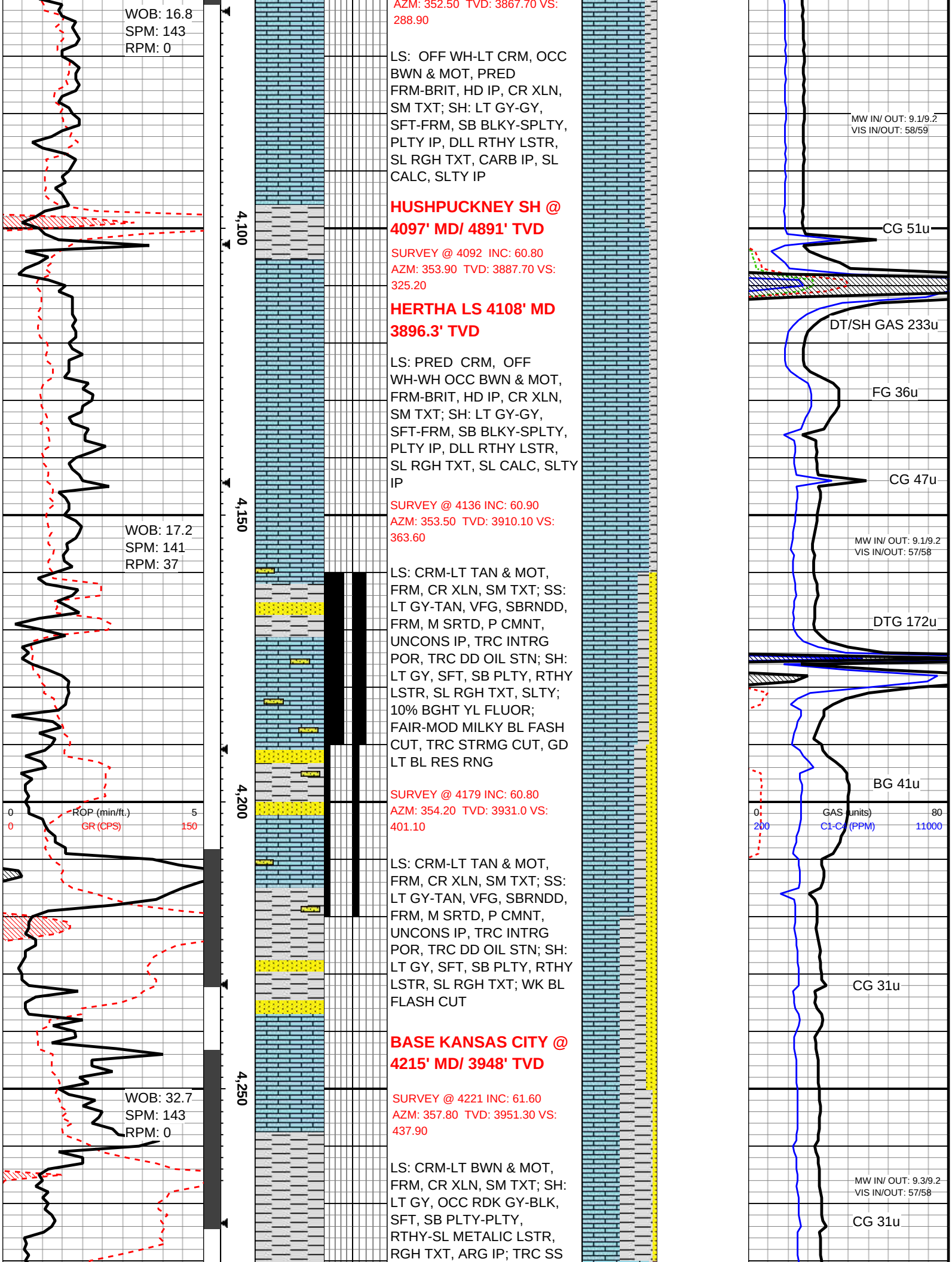

DLL RTHY-SL WXY LSTR, PRED SM TXT, SL ARG; LS: CRM-OFF WHT, LT GY & MOT, FRM-HD, BRIT IP, MC-CR XLN
0
ROP (min/ft.)
5
0
GR (CPS)
150
3,000
LS: PRED OFF WH-LT TAN, LT GY-DRK BWN & MOT IP, SFT-FRM, OCC HD, CR XLN, SM TXT; SH: LT GY-GY, SFT-BRIT, BLKY-AMOR, DLL RTHY LSTR, PRED SM TXT, V-SLI TR SS: OFF WH, CALC CMT
SURVEY @ 3035' INC 0.1, AZ 122.6
WOB: 20.5
SPM: 68
RPM: 66
3,050
LS: OFF WH-WH, LT GY, SME MOTT LTGY-WH, SFT-FRM, OCC HRD, CR XLN,SM TXT, SH:PED GRY W/OCC LTGY, SFT TO FRM, SUB BLKY-BLKY, RTHY, SLI TR PYR MICRO XLS
SURVEY @ 3077' INC: 0.10 AZM: 307.10 TVD: 3076.90 VS: -15.2 0
TOPEKA LS @ 3,086'/ 3086.6'TVD
TOOH FOR DIR TOOLS @ 3110' MD
Bit #: 5
Type: PDC
Size: 8.75
Depth In: 3,110 '
Jets: 5x12S
S/N: A166141
P CAMPBELL ON
3,100
1-24-2014
LS: OFF WHT-LT TAN & MOT, SFT-OCC FRM, CR XLN, SM TXT: TRC SH CAVINGS
SURVEY @ 3122' INC: 3.10 AZM: 255.60 TVD: 3121.90 VS: -15.4 0
WOB: 9.6
SPM: 148
RPM: 0
3,150
LS: PRED CRM-LT TAN & MOT, OCC WHT-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC SH
SURVEY @ 3163' INC: 8.10 AZM: 259.40 TVD: 3162.70 VS: -16.00
CG 22u
0
GAS (units)
80
200
C1-C4 (PPM)
11000
CG 39u
CG 22u
TG 61u
MW: 9.2
VIS: 52
PV: 21
YP: 20
GELS: 8/24/0
FIL: 5.2
CK: 2/0
SOL: 6.3
H2O: 93.3
PH: 11.5
CHL: 3,200
CAL: 80

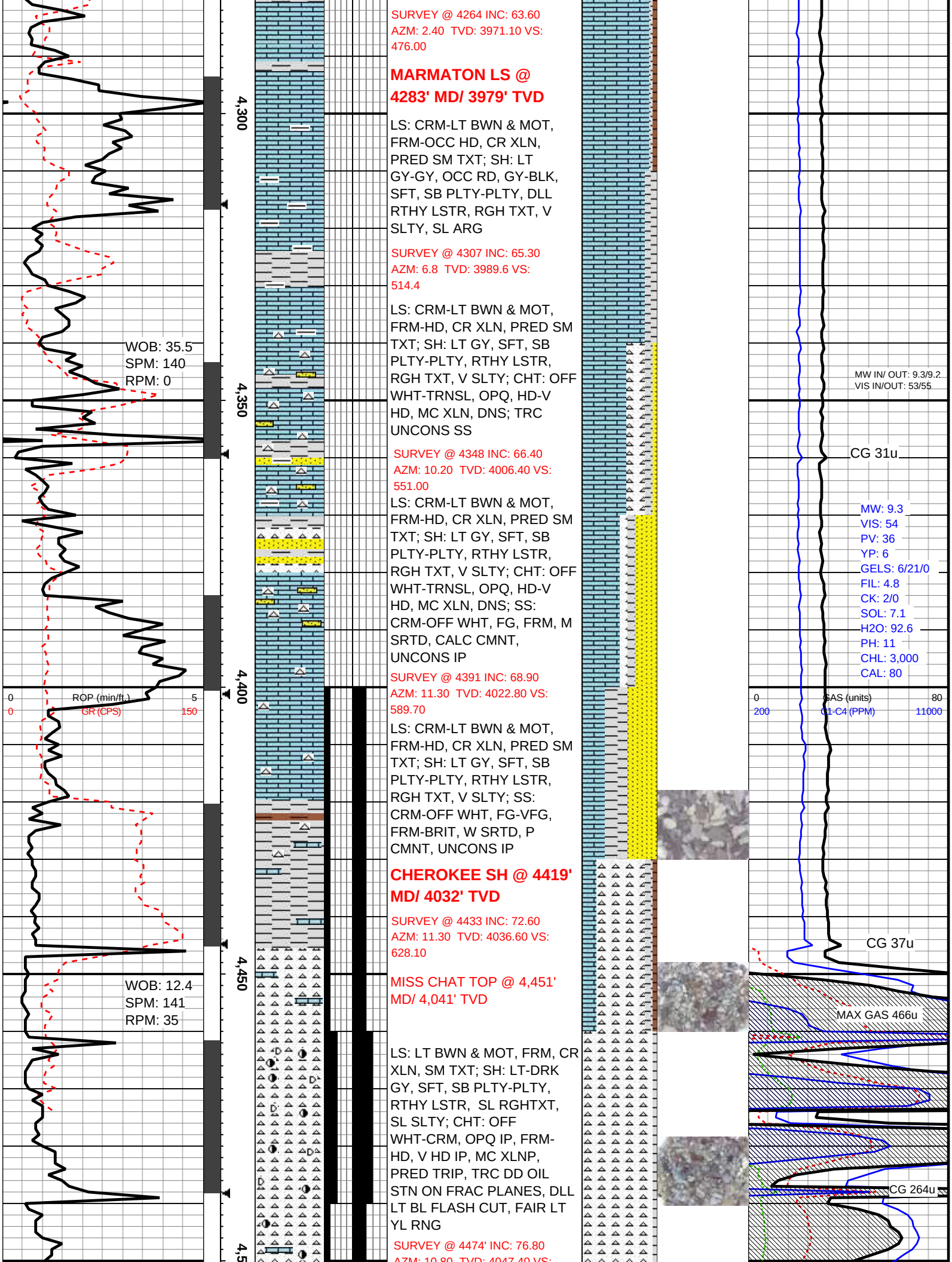

0
ROP (min/ft.)
5
0
GR (CPS)
150
3,200
3,250
3,300
3,350
WOB: 8.7
SPM: 107
RPM: 0
1-25-14
WOB: 12
SPM: 136
RPM: 39
MINDEN
E Knight On
LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT
SURVEY @ 3205' INC: 8.10 AZM: 259.40 TVD: 3204.00 VS: -16.60
LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC CARB SH & EMBDD PYR
SURVEY @ 3247' INC: 16.10 AZM: 264.10 TVD: 3244.70 VS: -17.10
LS: CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC CARB SH & PYR MICRO XLS
SURVEY @ 3289' INC: 20.00 AZM: 263.10 TVD: 3284.60 VS: -17.80
LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC CARB SH
SURVEY @ 3331' INC: 23.80 AZM: 264.00 TVD: 3323.60' VS: -18.80
LS: CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC CARB SH
SURVEY @ 3373' INC: 27.40 AZM: 269.10 TVD: 3361.40 VS: -18.80
LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; TRC CARB SH: DRK GY, BLK, SUB BLKY-PLTY, MOD FRM-HRD,
0
GAS (units)
80
200
C1-C4 (PPM)
11000
CG 13u
24u
MUD WT:
IN: 9.1+
VIS: 53
OUT: 9.2
VIS: 49
MW IN/OUT 9.1+/9.2
VIS IN/ OUT: 53/49
MW IN/OUT 9.2/9.3+
VIS IN/ OUT: 51/49
SG/CG
93u


0
ROP (min/ft.)
5
0
GR (CPS)
150
WOB: 18.2
SPM: 131
RPM: 0
3,450
WOB: 18.2
SPM: 131
RPM: 0
3,500
3,550
3,600
0
ROP (min/ft.)
5
0
GR (CPS)
150
V-CALC IP
HEEBNER BASE @ 3,438' MD/ 3417.5' TVD
SURVEY @ 3414' INC: 29.70 AZM: 276.00 TVD: 3397.50 VS: -16.90
SH: GY-DRK GY, SFT-FRM, SB BLKY-PLTY, OCC SPLTY, DLL RTHY-SL WXY LSTR, PRED SM TXT, SL ARG; SLI-V CALC IP LS: CRM-OFF WHT, LT GY & MOT, FRM-HD, BRIT IP, MC-CR XLN
TORONTO LS @ 3,450' MD/ 3427.6' TVD
SURVEY @ 3457' INC: 32.60 AZM: 280.10 TVD: 3434.30 VS: -12.50
LS: CRM-LT TN, OCC GY-OFF WH, SFT-OCC FRM,MC XLN,SH: DRK GY-BLK, V-CARB IP, SUB BLKY-PLTY, MOD FRM-HRD,V-CALC IP, TR PYR XLS
SURVEY @ 3499' INC: 33.90 AZM: 281.90 TVD: 3469.40 VS: -6.9
DOUGLAS SS @ 3,497' MD/ 3466' TVD
P CAMPBELL ON
SS: BWN-LT GY W/ DK INCL, F GR, FRM-BRIT, M SRTD, SB RNDD-RNDD, M CONS, M CMNT, UNCONS IP, SL CALC & ARG; LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT
SURVEY @ 3540' INC: 35.90 AZM: 286.80 TVD: 3503 VS: 0.1
SS: BWN-LT GY W/ DK INCL, F GR, FRM-BRIT, M SRTD, SB RNDD-RNDD, M CONS, M CMNT, UNCONS IP, SL CALC & ARG; LS: PRED CRM-LT TAN & MOT, OCC GY-OFF WHT, SFT-OCC FRM, MC XLN-CR XLN, SM TXT; SH: LT GY, SFT-FRM, SB BLKY-PLTY, SL METALIC-DLL RTHY LSTR, SL RGH TXT, ARG, OCC EMBDD PYR
SURVEY @ 3583' INC: 37.00 AZM: 293.20 TVD: 3537.60 VS: 10.10
SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, PLTY IP, SL METALIC- RTHY LSTR, SL RGH TXT, ARG, SL TRC EMBDD PYR; LS: PRED CRM-OFF WHT & MOT,
0
GAS (units)
80
200
C1-C4 (PPM)
11000
SG 119u
MW IN/OUT 9.2/9.2+
VIS IN/ OUT: 53/50
20u
MW IN/ OUT: 9.2/9.1
VIS IN/OUT: 55/57
0
GAS (units)
80
200
C1-C4 (PPM)
11000


WOB: 13.5
SPM: 140
RPM: 39
HOLE DEPTH CHANGED FROM 3745 TO 3719
WOB: 6.1
SPM: 152
RPM: 0
0
ROP (min/ft.)
5
0
GR (CPS)
150
3,650
3,700
3,750
3,800
SFT-OCC FRM, PRED CR XLN, SM TXT
SURVEY @ 3624' INC: 36.80 AZM: 299.80 TVD: 3570.40 VS: 22.30
SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, SPLTY IP, SL METALIC- RTHY LSTR, SL RGH TXT, ARG, SL TRC EMBDD PYR; LS: PRED CRM-OFF WHT & MOT, SFT-OCC FRM, PRED CR XLN, SM TXT
LANSING @ 3,675' MD/ 3610' TVD
SURVEY @ 3667' INC: 38.20 AZM: 307.30 TVD: 3604.60 VS: 37.90
LS: CRM-LT TAN, OCC BWN, PRED FRM, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, SPLTY IP, DLL RTHY LSTR, SL RGH TXT
SURVEY @ 3710' INC: 40.00 AZM: 3150.30 TVD: 3637.90 VS: 56.80
LS: CRM-LT TAN, OCC BWN, PRED FRM, HD IP, CR XLN, SM TXT SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, SPLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP
SURVEY @ 3753 INC: 41.70 AZM: 322.80 TVD: 3670.50 VS: 79.00
LS: CRM-TAN, OCC BWN & MOT, PRED FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, SPLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP
SURVEY @ 3795 INC: 43.20 AZM: 328.90 TVD: 3701.50 VS: 103.3
LS: CRM-TAN, OCC BWN & MOT, PRED FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP
LS: BWN-LT GY & MOT, CRM IP, PRED FRM-BRIT, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-PLTY, DLL RTHY-METALIC LSTR, SL RGH TXT; TRC TRIP CHT
CG 25u
MW IN/ OUT: 9.2/9.1
VIS IN/OUT: 56/55
CG 36u
BG 30u
MW IN/ OUT: 9.2/9.2
VIS IN/OUT: 56/55
BG 32u
0
GAS (units)
80
200
C1-C4 (PPM)
11000
MW: 9.1
VIS: 60
PV: 21
YP: 21
GELS: 8/24/0
FIL: 55.4
CK: 2/0
SOL: 5.6
H2O: 94.1


3,850
3,900
3,950
4,000
4,050
WOB: 15
SPM: 139
RPM: 0
0
ROP (min/ft.)
5
0
GR (CPS)
150
1-26-14
MINDEN
SURVEY @ 3838 INC: 43.90 AZM: 336.00 TVD: 3732.70 VS: 130.20
E Knight On
LS: OFF WH-LT CRM, OCC BWN & MOT, PRED FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP, TR PYR, TR CHT
SURVEY @ 3880' INC: 45.30 AZM: 340.00 TVD: 3762.60 VS: 158.10
SH: LT GY-GY, SFT-FRM, BLKY-PLTY, W/SME SPLTY IP, SL RTHY LSTR, SL RGH TXT, ARG, SL TRC EMBDD PYR; LS: PRED CRM-OFF WHT & MOT, SFT-OCC FRM, PRED CR XLN, SM TXT
SURVEY @ 3922' INC: 47.80 AZM: 343.00 TVD: 3791.50 VS: 187.60
LS: OFF WH-LT CRM, OCC BWN & MOT, PRED FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP, TR PYR
SURVEY @ 3965' INC: 51.20 AZM: 346.90 TVD: 3819.40 VS: 219.60
LS: PRED CRM, OFF WH-WH OCC BWN & MOT, FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP
SURVEY @ 4007' INC: 55.30 AZM: 350.00 TVD: 3844.00 VS: 252.90
SH: LT GY-GY, SFT-FRM, BLKY-PLTY, W/SME SPLTY IP, SL RTHY LSTR, SL RGH TXT, ARG, LS: PRED CRM-OFF WHT & MOT, SFT-OCC FRM, PRED CR XLN, SM TXT
STARK SH @ 4029' MD/ 3856' TVD
SWOPE LS @ 4048' MD/ 3866' TVD
SURVEY @ 4050 INC: 59.40
PH: 11.1
CHL: 3,200
CAL: 80
MW IN/ OUT: 9.1+/9.2
VIS IN/OUT: 54/54
0
GAS (units)
80
200
C1-C4 (PPM)
11000
MW IN/ OUT: 9.1/9.2
VIS IN/OUT: 58/59
40u


WOB: 16.8
SPM: 143
RPM: 0
WOB: 17.2
SPM: 141
RPM: 37
WOB: 32.7
SPM: 143
RPM: 0
0
ROP (min/ft.)
5
0
GR (CPS)
150
4,100
4,150
4,200
4,250
AZM: 352.50 TVD: 3867.70 VS: 288.90
LS: OFF WH-LT CRM, OCC BWN & MOT, PRED FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, CARB IP, SL CALC, SLTY IP
HUSHPUCKNEY SH @ 4097' MD/ 4891' TVD
SURVEY @ 4092 INC: 60.80 AZM: 353.90 TVD: 3887.70 VS: 325.20
HERTHA LS 4108' MD 3896.3' TVD
LS: PRED CRM, OFF WH-WH OCC BWN & MOT, FRM-BRIT, HD IP, CR XLN, SM TXT; SH: LT GY-GY, SFT-FRM, SB BLKY-SPLTY, PLTY IP, DLL RTHY LSTR, SL RGH TXT, SL CALC, SLTY IP
SURVEY @ 4136 INC: 60.90 AZM: 353.50 TVD: 3910.10 VS: 363.60
LS: CRM-LT TAN & MOT, FRM, CR XLN, SM TXT; SS: LT GY-TAN, VFG, SBRNDD, FRM, M SRTD, P CMNT, UNCONS IP, TRC INTRG POR, TRC DD OIL STN; SH: LT GY, SFT, SB PLTY, RTHY LSTR, SL RGH TXT, SLTY; 10% BGHT YL FLUOR; FAIR-MOD MILKY BL FASH CUT, TRC STRMG CUT, GD LT BL RES RNG
SURVEY @ 4179 INC: 60.80 AZM: 354.20 TVD: 3931.0 VS: 401.10
LS: CRM-LT TAN & MOT, FRM, CR XLN, SM TXT; SS: LT GY-TAN, VFG, SBRNDD, FRM, M SRTD, P CMNT, UNCONS IP, TRC INTRG POR, TRC DD OIL STN; SH: LT GY, SFT, SB PLTY, RTHY LSTR, SL RGH TXT; WK BL FLASH CUT
BASE KANSAS CITY @ 4215' MD/ 3948' TVD
SURVEY @ 4221 INC: 61.60 AZM: 357.80 TVD: 3951.30 VS: 437.90
LS: CRM-LT BWN & MOT, FRM, CR XLN, SM TXT; SH: LT GY, OCC RDK GY-BLK, SFT, SB PLTY-PLTY, RTHY-SL METALIC LSTR, RGH TXT, ARG IP; TRC SS
MW IN/ OUT: 9.1/9.2
VIS IN/OUT: 58/59
CG 51u
DT/SH GAS 233u
FG 36u
CG 47u
MW IN/ OUT: 9.1/9.2
VIS IN/OUT: 57/58
DTG 172u
BG 41u
0
GAS (units)
80
200
C1-C4 (PPM)
11000
CG 31u
MW IN/ OUT: 9.3/9.2
VIS IN/OUT: 57/58
CG 31u


WOB: 35.5
SPM: 140
RPM: 0
WOB: 12.4
SPM: 141
RPM: 35
0
ROP (min/ft.)
5
0
GR (CPS)
150
4,300
4,350
4,400
4,450
SURVEY @ 4264 INC: 63.60 AZM: 2.40 TVD: 3971.10 VS: 476.00
MARMATON LS @ 4283' MD/ 3979' TVD
LS: CRM-LT BWN & MOT, FRM-OCC HD, CR XLN, PRED SM TXT; SH: LT GY-GY, OCC RD, GY-BLK, SFT, SB PLTY-PLTY, DLL RTHY LSTR, RGH TXT, V SLTY, SL ARG
SURVEY @ 4307 INC: 65.30 AZM: 6.8 TVD: 3989.6 VS: 514.4
LS: CRM-LT BWN & MOT, FRM-HD, CR XLN, PRED SM TXT; SH: LT GY, SFT, SB PLTY-PLTY, RTHY LSTR, RGH TXT, V SLTY; CHT: OFF WHT-TRNSL, OPQ, HD-V HD, MC XLN, DNS; TRC UNCONS SS
SURVEY @ 4348 INC: 66.40 AZM: 10.20 TVD: 4006.40 VS: 551.00
LS: CRM-LT BWN & MOT, FRM-HD, CR XLN, PRED SM TXT; SH: LT GY, SFT, SB PLTY-PLTY, RTHY LSTR, RGH TXT, V SLTY; CHT: OFF WHT-TRNSL, OPQ, HD-V HD, MC XLN, DNS; SS: CRM-OFF WHT, FG, FRM, M SRTD, CALC CMNT, UNCONS IP
SURVEY @ 4391 INC: 68.90 AZM: 11.30 TVD: 4022.80 VS: 589.70
LS: CRM-LT BWN & MOT, FRM-HD, CR XLN, PRED SM TXT; SH: LT GY, SFT, SB PLTY-PLTY, RTHY LSTR, RGH TXT, V SLTY; SS: CRM-OFF WHT, FG-VFG, FRM-BRIT, W SRTD, P CMNT, UNCONS IP
CHEROKEE SH @ 4419' MD/ 4032' TVD
SURVEY @ 4433 INC: 72.60 AZM: 11.30 TVD: 4036.60 VS: 628.10
MISS CHAT TOP @ 4,451' MD/ 4,041' TVD
LS: LT BWN & MOT, FRM, CR XLN, SM TXT; SH: LT-DRK GY, SFT, SB PLTY-PLTY, RTHY LSTR, SL RGHTXT, SL SLTY; CHT: OFF WHT-CRM, OPQ IP, FRM-HD, V HD IP, MC XLNP, PRED TRIP, TRC DD OIL STN ON FRAC PLANES, DLL LT BL FLASH CUT, FAIR LT YL RNG
SURVEY @ 4474' INC: 76.80
MW IN/ OUT: 9.3/9.2
VIS IN/OUT: 53/55
CG 31u
MW: 9.3
VIS: 54
PV: 36
YP: 6
GELS: 6/21/0
FIL: 4.8
CK: 2/0
SOL: 7.1
H2O: 92.6
PH: 11
CHL: 3,000
CAL: 80
0
GAS (units)
80
200
C1-C4 (PPM)
11000
CG 37u
MAX GAS 466u
CG 264u

AZM: 10.80° TVD: 4047.40 VS: 666.40

CHT: OFF WHT-CRM, OPQ IP, FRM- HD, V HD IP, MC XLNP, PRED TRIP, TRC DD OIL STN ON FRAC PLANES, DLL LT BL FLASH CUT, FAIR LT YL RNG, TR SH, DK GY-BLK, MOD FRM-HRD, PRED SUB BLKY, SLI CARB, SL TR LS, V-SLI TR SS

PUMP SWEEP, CIRC BU, TOOH FOR BIT/CASING @ 4,527' MD/4,041' TVD

TD ON 1-27-2014, THANK YOU FOR USING ALS EMPIRICA. PLEASE SEE HORIZONTAL FILE FOR CONTINUED LOGGING

MW IN/ OUT: 9.2/9.2
VIS IN/OUT: 50/48

1-27-14

4,550

Perforation Record and frac fluid information - Bock 3-1H

Stage 1	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	263424	0	No plug
			8,212.00	8,214.00					
		Float collar	8,266.00	8,268.00					
			8,320.00	8,322.00					
			8,374.00	8,376.00					
			8,428.00	8,430.00					
Stage 2	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	205380	0	8189
		Flow through plug -	7,962.00	7,964.00					
		Halliburton Obsidian	8,020.00	8,022.00					
			8,062.00	8,064.00					
			8,130.00	8,132.00					
			8,162.00	8,164.00					
Stage 3	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	204414	0	7937
		Flow through plug -	7,712.00	7,714.00					
		Halliburton Obsidian	7,762.00	7,764.00					
			7,812.00	7,814.00					
			7,862.00	7,864.00					
			7,912.00	7,914.00					
Stage 4	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	205842	0	7687
		Flow through plug -	7,462.00	7,464.00					
		Halliburton Obsidian	7,512.00	7,514.00					
			7,570.00	7,572.00					
			7,612.00	7,614.00					
			7,662.00	7,664.00					
Stage 5	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	202104	0	7437
		Flow through plug -	7,212.00	7,214.00					
		Halliburton Obsidian	7,262.00	7,264.00					
			7,312.00	7,314.00					
			7,362.00	7,364.00					
			7,412.00	7,414.00					
Stage 6	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	201936	0	7187
		Flow through plug -	6,962.00	6,964.00					

		Halliburton Obsidian	7,015.00	7,017.00					
			7,062.00	7,064.00					
			7,112.00	7,114.00					
			7,162.00	7,164.00					
Stage 7	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	3000	40	203406	0	6937
		Flow through plug -	6,712.00	6,714.00					
		Halliburton Obsidian	6,759.00	6,761.00					
			6,812.00	6,814.00					
			6,850.00	6,852.00					
			6,912.00	6,914.00					
Stage 8	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	2980	40	204918	0	6690
		Flow through plug -	6,462.00	6,464.00					
		Halliburton Obsidian	6,512.00	6,514.00					
			6,565.00	6,567.00					
			6,612.00	6,614.00					
			6,662.00	6,664.00					
Stage 9	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	2980	40	202650	0	6432
		Flow through plug -	6,212.00	6,214.00					
		Halliburton Obsidian	6,262.00	6,264.00					
			6,312.00	6,314.00					
			6,360.00	6,362.00					
			6,412.00	6,414.00					
Stage 10	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	2980	40	201306	0	6187
		Flow through plug -	5,956.00	5,958.00					
		Halliburton Obsidian	6,020.00	6,022.00					
			6,062.00	6,064.00					
			6,112.00	6,114.00					
			6,155.00	6,157.00					
Stage 11	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	2980	40	203448	0	5937
		Flow through plug -	5,712.00	5,714.00					
		Halliburton Obsidian	5,765.00	5,767.00					
			5,812.00	5,814.00					
			5,862.00	5,864.00					
			5,912.00	5,914.00					
Stage 12	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6		Top (ftKB)	Btm (ftKB)	2980	40	201936	0	5687

		Flow through plug - Halliburton Obsidian	5,462.00	5,464.00					
			5,512.00	5,514.00					
			5,562.00	5,564.00					
			5,612.00	5,614.00					
			5,662.00	5,664.00					
Stage 13	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6	Flow through plug - Halliburton Obsidian	Top (ftKB)	Btm (ftKB)	2980	40	198450	0	5437
			5,212.00	5,214.00					
			5,262.00	5,264.00					
			5,308.00	5,310.00					
			5,362.00	5,364.00					
			5,412.00	5,414.00					
Stage 14	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6	Flow through plug - Halliburton Obsidian	Top (ftKB)	Btm (ftKB)	2985	40	199500	0	5187
			4,962.00	4,964.00					
			5,012.00	5,014.00					
			5,062.00	5,064.00					
			5,112.00	5,114.00					
			5,162.00	5,164.00					
Stage 15	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6	Flow through plug - Halliburton Obsidian	Top (ftKB)	Btm (ftKB)	3121	40	200046	0	4937
			4,712.00	4,714.00					
			4,762.00	4,764.00					
			4,812.00	4,814.00					
			4,860.00	4,862.00					
			4,915.00	4,917.00					
Stage 16	*Shots per foot*	*Plug and type*	*Perforation Interval*		*Acid (15%) gals*	*Shot #*	*Slickwater - gals.*	*Linear gel - gals.*	*Plug depth*
	6	Flow through plug - Halliburton Obsidian	Top (ftKB)	Btm (ftKB)	3121	40	191982	0	4697
			4,503.00	4,505.00					
			4,546.00	4,548.00					
			4,591.00	4,593.00					
			4,637.00	4,639.00					
			4,682.00	4,684.00					

Well Completion Form
Casing Record Supplemental Data

Seneca Resources
Bock 3-1H
15-151-22428-01
Sec. 3-26S-11W
Pratt County, Kansas

Purpose of String	Hole Size	Casing Size	Weight	Depth	Cement Type	Sacks Used	Type/Percent Additives
Surface	17-1/2"	13-3/8"	48 lb/ft	343'	65/35 Poz	200 sx	3% CaCl, 1/4 lb celloflake
					Common	200 sx	2% gel, 1/4 lb celloflake
Intermediate	12-1/4"	9-5/8"	36 lb/ft	1,912'	Common	350 sx	3% CaCl, 1/4 lb celloflake
					Common	350 sx	2% CaCl, 1/4 lb celloflake
Protective	8-3/4"	7"	26 lb/ft	4,490'	Class H	340 sx	10% CaCl, 0.25% defoam, 0.5% CFR, 5 lb/sk gilsonite
Production Liner	6-1/8"	4-1/2"	13.5 lb/ft	3,909' - 8,545'	Premium	72 sx	0.25% defoam, 10% salt, 0.75% CFR, 0.1% WCA

BASiC energy services, L.P.

TREATMENT REPORT

Customer SENECA Resources	Lease No.	Date 01-18-14
Lease BOCK 3	Well # 1-H Pilot	

Field Order # 9782	Station PRATT KS	Casing 13 3/8	Depth 348	County BRAG TIKS	State KS

Type Job CNW 13 3/8 CONDUCTOR	Formation	Legal Description 3-26-11

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size 13 3/8	Tubing Size	Shots/Ft		Acid		RATE / PRESS	ISIP
Depth 348'	Depth	From	To	Pre Pad	Max		5 Min.
Volume 50	Volume	From	To	Pad	Min		10 Min.
Max Press 500	Max Press	From	To	Frac	Avg		15 Min.
Well Connection SWAGE	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth 338	Packer Depth	From	To	Flush	Gas Volume		Total Load

Customer Representative	Station Manager DAVE SCOTT	Treater Robert Sullivan

Service Units	27700	33708	20920	20959	19918
Driver Names	Sullivan	Graves	Phye		

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
11:00					on loc Safty mtg
					Run 13 3/8 csg.
12:40					CASING ON BOTTOM
1250					Hook Up circ csg.
1:40			58	4.5	St mixing 200 sk A serv. lite 6% gel 3% cc
					1/4 sk cellflake. #/sk 1.64 cuft/sk 8.24 13 ppg
			42		mix Tail 200 sk Common cmt 2% cc 1/4 cF
					#/sk 1.20 cuft/sk 5.23 15.5 ppg
				4	cmt mixed START Disp
2:30	300		52		Plug down
					circ 25 BBL cmt Pit
					JOB - Complete
					THANK you

10244 NE Hiway 61 • P.O. Box 8613 • Pratt, KS 67124-8613 • (620) 672-1201 • Fax (620) 672-5383

BASiC energy services, L.P.

TREATMENT REPORT

Customer: Seneca Resources Corp.	Lease No.		Date: 1-21-14
Lease: Bock 2	Well #: 3-1H Pilot		
Field Order #: 9845	Station: Pratt, Kansas	Casing: 9 5/8" 36Lb.	Depth	County: Pratt	State: Kansas
Type Job: C.N.W. - Surface		Formation	Legal Description: 3-26S-11W

PIPE DATA		PERFORATING DATA		FLUID USED: Cement	TREATMENT RESUME		
Casing Size: 9 5/8 36Lb./Ft.	Tubing Size	Shots/Ft: 350 sacks A-Con with 3% Calcium Chloride, .25 Lb./sk. cellflake		Acid	RATE	PRESS	ISIP
Depth	Depth	From	To: 11.6 Lb. 6.1 Gal., 16.75 Gal./sk., 2.77 Cu.Ft./sk.	Pre Pad	Max		5 Min.
Volume	Volume	From	To	Pad	Min		10 Min.
Max Press	Max Press	From: 350 sacks Common cement with 2% Calcium Chloride, .25 Lb./sk. cellflake		Frac	Avg		15 Min.
Well Connection: Plug Container	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth	Packer Depth	From	To	Flush: 145 Bbl. Fresh Water	Gas Volume		Total Load

Customer Representative: Kevin Gordley	Station Manager: Kevin Gordley	Treater: Clarence R. Messick	

Service Units	37,216	77,686	19,905	19,826	73,768	19,959	19,960	19,901		
Driver Names	Messick	McGraw		Young		Eggers		KG		

Time A.M.	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
10:45					Trucks on location and hold safety meeting.
					Casing in well and circulate for 30 minutes.
1:20	2000				Shut in well. Pressure Test. Open well.
					Start Fresh water Pre-Flush.
1:25	250		173	7	Start mixing 350 sacks A-Con Blend cement
	200		74	6 1/2	Start mixing 350 sacks Common cement.
			247		Stop pumping. Shut in Well. Release Top
					Rubber Plug. Open well.
	0		0	6 1/2	Start Fresh water Displacement.
2:45	1000		145	4	Plug down.
					Pressure up.
					Release pressure. Float Shoe HELD
					Wash up pump truck.
					Job Complete.
					Thank You.
					Clarence, Mike, Steve, Pat, KEVIN
					CIRCULATE 40 bbl. CEMENT
					TO PIT
3:30					JOB COMPLETE - KEVIN.

BASIC energy services, L.P.

TREATMENT REPORT

Customer Seneca Resources Corp	Lease No.	Date	1-28-14
Lease Bock	Well # 3-1H PILOT		
Field Order # 4902	Station Piatt	Casing 7 Depth 4490	County Piatt State KS
Type Job CNW 7" LS	Formation	Legal Description 3-26-11	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME		
Casing Size 7	Tubing Size	Shots/Ft		Acid	RATE	PRESS	ISIP
Depth 4490	Depth	From	To	Pre Pad	Max		5 Min.
Volume 111.97	Volume	From	To	Pad	Min		10 Min.
Max Press 1500	Max Press	From	To	Frac	Avg		15 Min.
Well Connection P.C.	Annulus Vol.	From	To		HHP Used		Annulus Pressure
Plug Depth 4419.32	Packer Depth	From	To	Flush 170.5	Gas Volume		Total Load

Customer Representative Rod Mills | Station Manager Kevin Goodley | Treater Mike Mattai

Service Units	37586		27463		19831	19862					
Driver Names	Mattai		Kurtis		Pierson						

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
9:20 PM					On location / Safety Meeting
10:10					~~Rig up~~ Csng on bottom
10:40					Hook up to csg w swd. Break circ w/ rig
12:30					Hook up to csg w Head + manifold
1:03	200		3	4	Pump 3 bbl H2O
1:04	300		12	4	Pump 12 bbl mud flush
1:07	200		5	4	Pump 5 bbl H2O
1:09	400		82	5.5	Mix 82 bbl AA2 cmt (340 sacks)
1:24	—		—	—	Release plug
1:30	150		—	5	Start displacement
1:45	400		70	5	Last returns
2:05	1150		150	3	Slow rate
2:12	1350		170		Plug down, release + held
					Circ Thru Job
					Job complete
					Thank you
					Mike Mattai

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BASiC energy services, L.P. PAGE 1

TREATMENT REPORT

Customer: SENECA RESOURCES	Lease No: CORP		Date: 2-10-14
Lease: BOCK	Well #: 3-1H		
Field Order #: 9882	Station: PRATT, KS	Casing: 4 1/2	Depth: 8545
County: PRATT	State: KS		
Type Job: CNW - LINER	Formation: TD-8860'	Legal Description: 3-26-11	

PIPE DATA		PERFORATING DATA		FLUID USED	TREATMENT RESUME			
Casing Size	Tubing Size	Shots/Ft		Acid		RATE	PRESS	ISIP
Depth	Depth	From	To	Pre Pad	Max			5 Min.
Volume	Volume	From	To	Pad	Min			10 Min.
Max Press	Max Press	From	To	Frac	Avg			15 Min.
Well Connection	Annulus Vol	From	To		HHP Used			Annulus Pressure
Plug Depth	Packer Depth	From	To	Flush	Gas Volume			Total Load

Customer Representative: ROD — Station Manager: KEVIN — Treater: CORDLEY

Service Units	19907	78982-78983		19826-19860	
Driver Names	KG - JESSIE	JA		PAT - HARMBY	

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
1400					ON LOCATION 2/9/14
1800					LINER WONT GO - RELEASED
2300					ON LOCATION 2/9/14
					LINER SHOE - 8545' - 4636' 4 1/2 13.5#
					LINER HANGER - 3909'
					3299' - 4" D.P. 616' - 4" D.COLLAR
					BREAK CIRC w/ H2O
0030	300		0	4	DROP BALL - PUMP DOWN
0100	3600		120	1	SEAT BALL - 3600 PSI OREWELL
					SET LINER TOOLS - BAKER
0130	500		12	5	PUMP 12 bbl MUDFLUSH
	500		5	5	PUMP 5 bbl H2O SPACER
0205	300		88	5	PUMP 400SK 'H' 10% SALT,
					3/4% CFR, 1/4% DEFOAM, 1/10% WCA-1
					STOP - WASH LINE - DROP PLUG
	0		0	5	START DISP w/ 2% KCL & SUGAR
	600		30	3	SLOW RATE
	1000		40	5	SPEED UP RATE
	1200		100	3	SLOW RATE
0230	2000		108	3	PLUG DOWN - HELD
					SET PACKER & PULL OFF LINER
0300			150	5	CIRCULATE WELL CLEAN