

Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name BOCK 3-1H HORZ

Location Sec 3, T26S, R11W

State Kansas

Country United States

API Number 15-151-22428-01-00

Spud Date 1/17/2014

Surface Coordinates 278' from South Line & 153' from East Line

Ground Elevation 1839

Logged Interval 1920

Formation Mississippian Chat

Type of Drilling Fluid Water Based

County Pratt

Rig Number HWD # 14

AFE # 131891

Drilling Completed TBD

K.B. Elevation 1854

Total Depth TBD

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

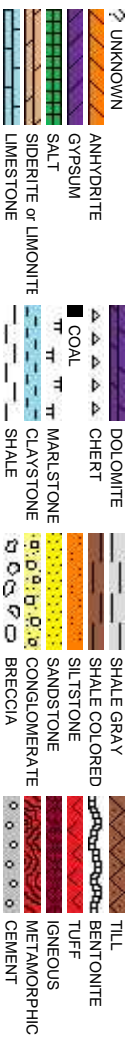
Product Description Regu
Equipment Logg
Calibration Rele
MLog MLog
Stann Stann
Total Total

Operator

Corp.

Center
Suite 300

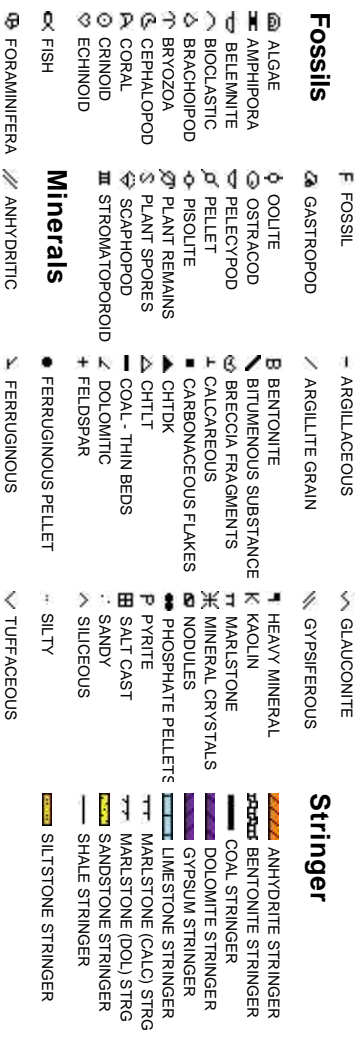
Rock Types



Geologist

night

Accessories



Other

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

gger: # 364

ard Calibration for Redbox
Gas & Chromatigraph

Oil Sha

- DEAD
- EVEN
- QUESTIC
- SPOTTEL
- Porositi
- E EARTHY
- F FENESTR
- F FRACTUR
- X INTERCOR
- φ INTERRO
- MOLDIC

Other Symbols

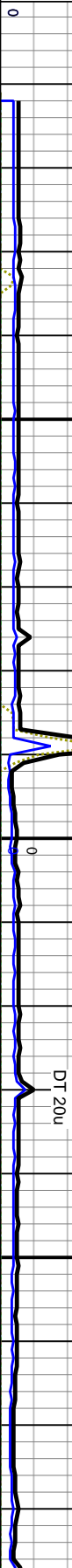
	ORGANIC		FORMATION TOP		L LITHOGRAPHIC
	PINPOINT		GAS SHOW		MX MICROXLN
	VUGGY		MINDEPTH MN DEPTH		A ANGULAR
Engineering			NORMAL FAULT		R ROUNDED
	OIL SHOW		OVERTURNED STRATA		S SUBANG
	BIT		REVERSE FAULT		F SUBREND
	CASING		SIDE WALL CORE (LEFT)	Textures	
	CONNECTION (LEFT)		SIDE WALL CORE (RIGHT)		B BOUNDSTONE
	CONNECTION (RIGHT)		SLIDE		C CHALKY
	CONNECTION GAS		SURVEY		CX CRYPTOXLN
	CORE - LOST		TRIP GAS		E EARTHY
	CORE - RECOVERED		WIRELINE TESTED - LEFT		FX FINELYXLN
	DST INTERVAL		WIRELINE TESTED - RT		GS GRAINSTONE
	FAULT				
				Sorting	
					M MODERATE
					P POOR
					W WELL

SENECA RESOURCES

Book 3-1H
Pratt County, KS
Sec 3, T26S, R11W

- Total Gas & Chromatograph**
- GAS
 - C1
 - C2
 - C3
 - C4
 - C5

Two Man Logging
Began 1-20-2014
GAMMA SET @ 0-150 API



Slide/Rotate

Depth Labels

Bit #: 6
Type: SECURITY PDC
Size: 6 1/8
Depth In: 4,527'
Jct: 6x14s
SN: 12217123

MD: 4,552'
TVD: 4,061.2'
Inclination: 82.9°
Azimuth: 8.2°
VS: 741.3'

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'

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

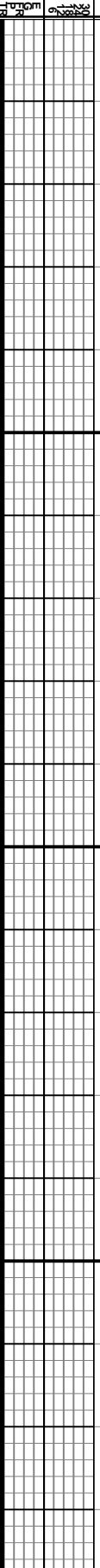
CHT: OFF WH-WH, OCC CRM, SME
MOTT LT TAN-TA, V-HRD, W/SME
MOD FRM-FRM, MICRO XLN, SLI TR
VF XLN, VSLI TR SUC TXT, NO
SPOT STAIN, NO ODOR, V-SLI TR
DULL YELLOW FLUOR, NO VIS CUT

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/SME
FRM-FRM, MICRO XLN, S
VSLI TR SUC TXT, SLI BLK
NO ODOR, V-SLI TR DUL
FLUOR, SLOW STREAMING

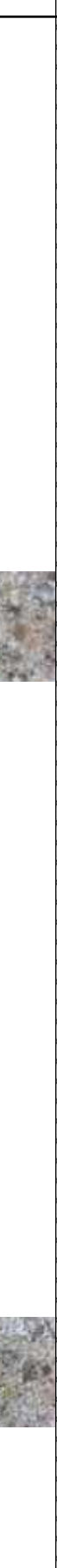
Well Bore
TVD



% Porosity



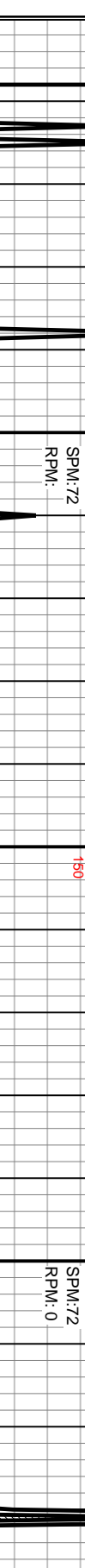
Oil Show



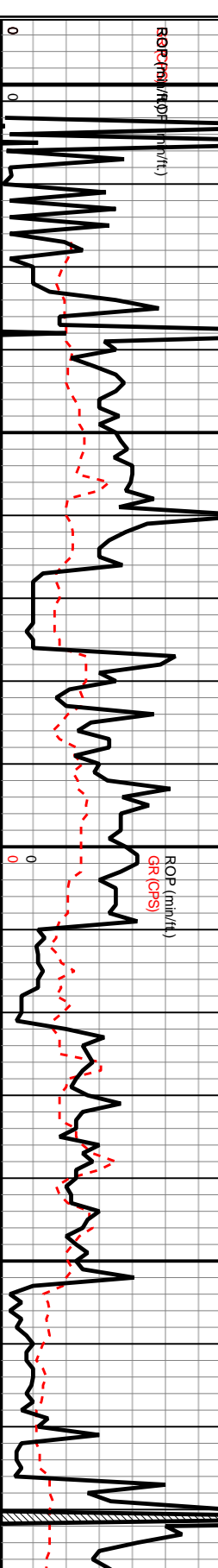
% Lith

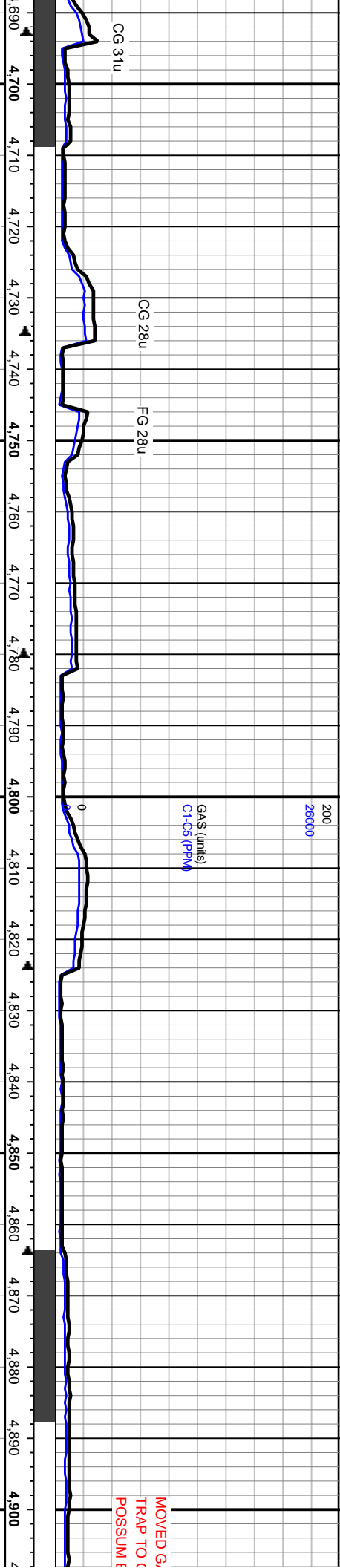


Images



ROP
ROF
GR





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'

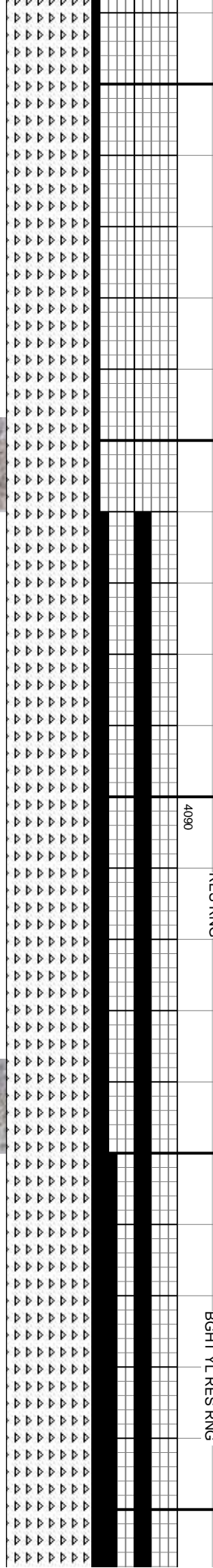
CRM, SME MOTT
IE MOD
SLI TR VF XLN,
L YELLOW
FLUOR, NO VIS CUT

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, 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

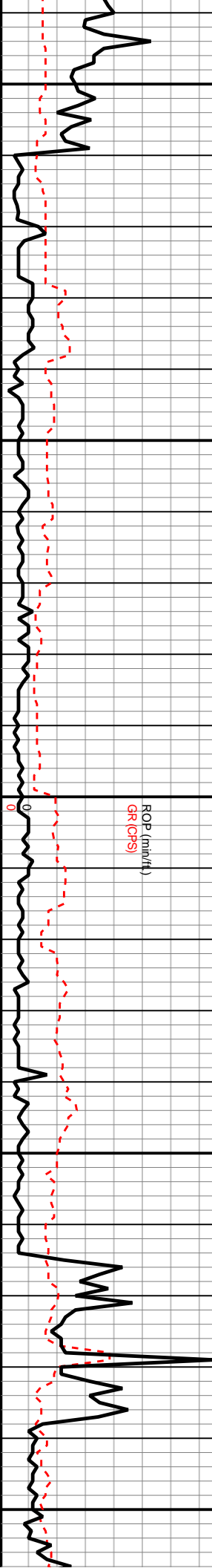
CHT: OFF WHT-TRNSL, OPQ, HD-V HE
DNS, CONCH FRACS, 30% TRIP, TRC
TRC DD OIL STN ON FRAC PLANES, C
40% BGT YL FOUR, GD MLKY LT BL
BGT YL RES RNG

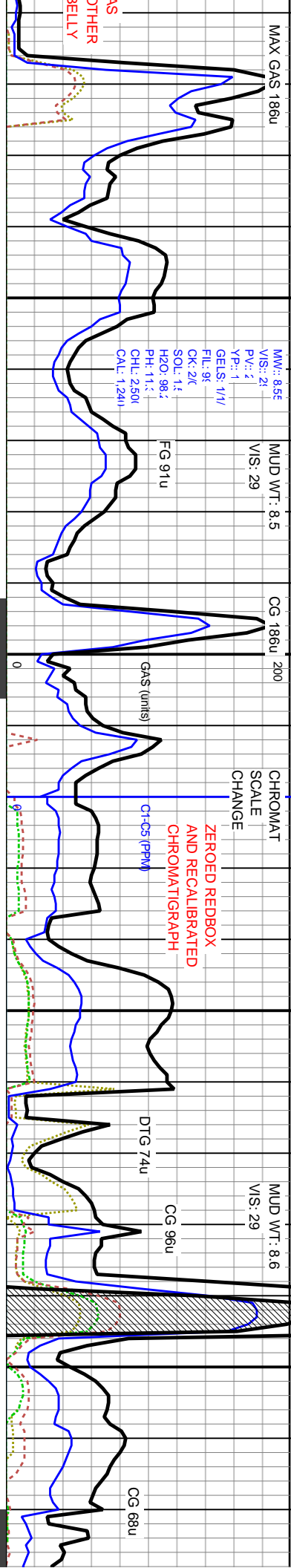


WOB: 14.5
SPM: 72
RPM: 60

WOB: 15.7
SPM: 76
RPM: 59

5 P CAMPBELL ON
ROP (min/ft)
GR (GPS)





MW: 8.5E
 PV: 2
 YP: 1
 GELS: 1/1
 FL: 9E
 CK: 2/C
 SOL: 1.1
 H2O: 98.2
 PH: 11.1
 CHL: 2.50
 CAL: 1.241

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'

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

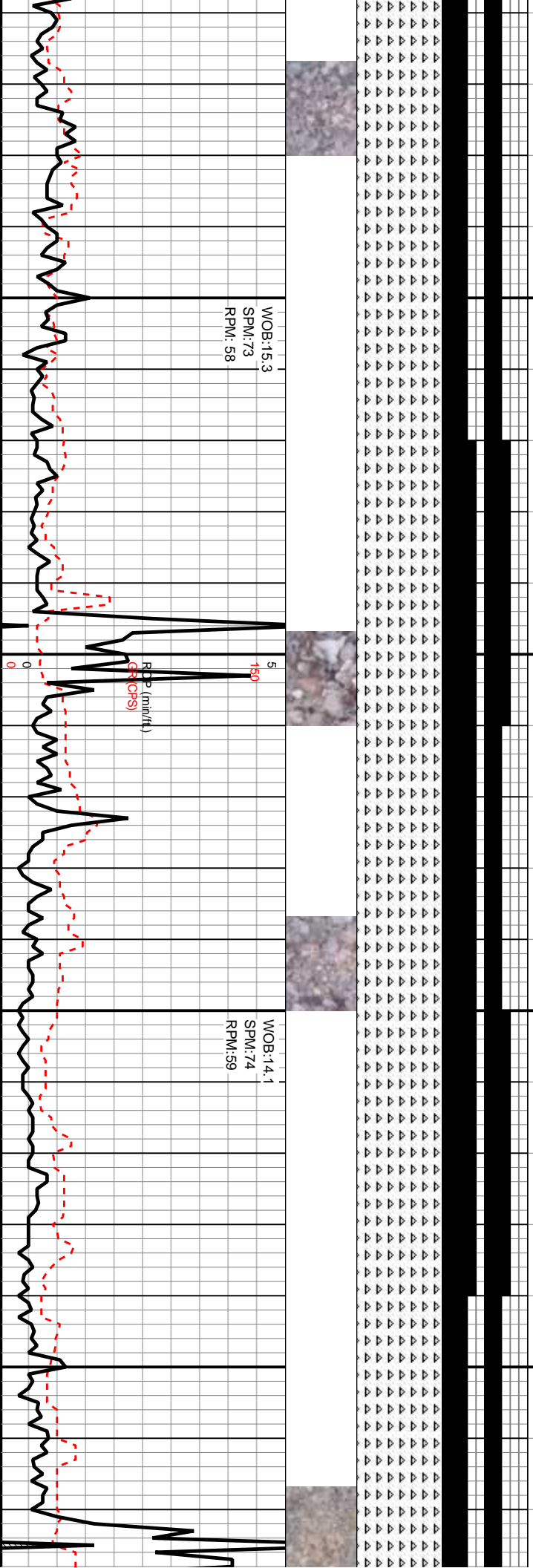
CHT: OFF WHT-TRNSL, OPQ, OCC LT YL, BRIT-HD,
 V HD IP, CR XLN, DNS IP, CONCH FRACS, 40%
 TRIP, ABNDT SPOT STN, DD OIL STN, TRC FRAC,
 OCC PP POR: 30% LT YL FLUOR, GD LT BL FLASH
 CUT, GD GLD RES RNG

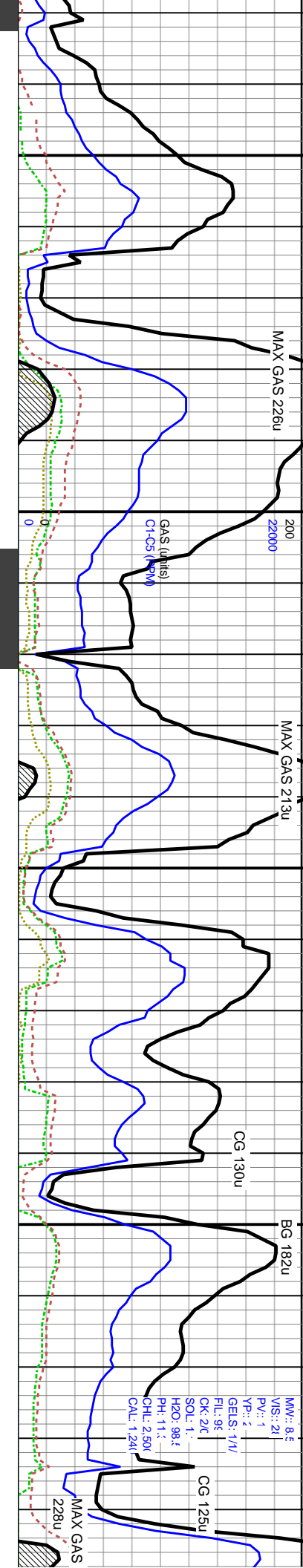
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V
 HD IP, CR XLN, DNS IP, CONCH FRACS, 40% TRIP,
 ABNDT SPOT STN, DD OIL STN, TRC INTR XLN
 POR, ABNDT FRAC POR: 35% Bght YL FLUOR,
 Bght MLKY BL-LT YL FLASH CUT, Bght GLD
 RES RNG

CHT: OFF WHT-TR
 HD IP, CR XLN, DN
 ABNDT SPOT STN,
 POR, ABNDT FRAC
 Bght MLKY BL-LT
 RES RNG

WOB: 15.3
 SPM: 73
 RPM: 58

WOB: 14.1
 SPM: 74
 RPM: 59





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 '

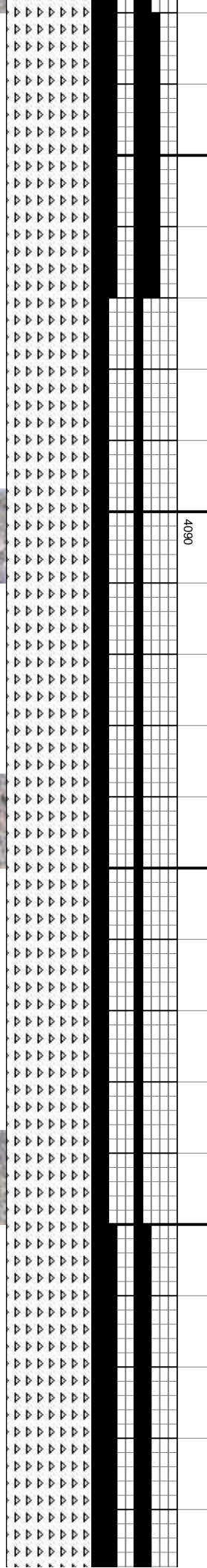
**PUMP SLUG,
TOOH FOR NI
BIT & AGITAT
@ 5.371'**

NSL, OPQ, OCC GY, BRIT-HD, V
S IP, CONCH FRACS, 40% TRIP,
DD OIL STN, TRC INTR XLN
POR, 35% BGT YL FLUOR,
YL FLASH CUT, BGT GLD

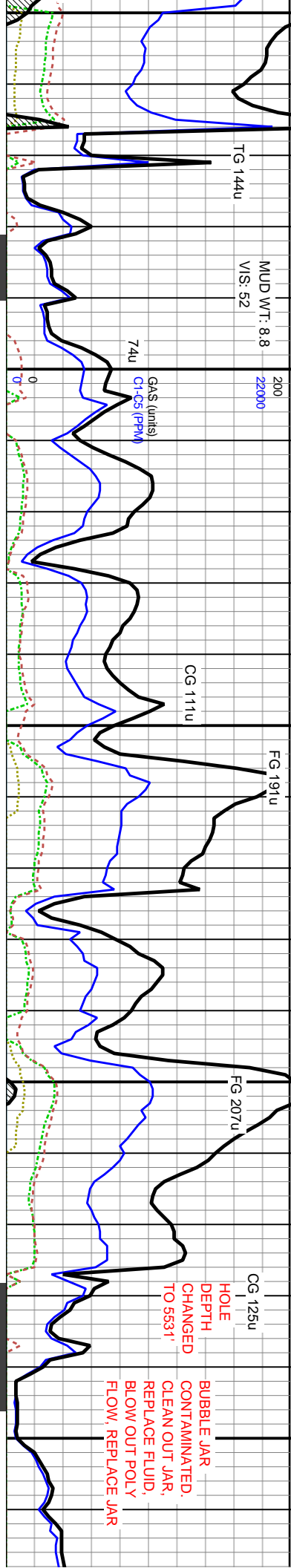
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V
HD IP, CR XLN, DNS IP, CONCH FRACS, 30% TRIP,
TRC SPOT STN, DD OIL STN, TRC INTR XLN POR,
TRC FRAC POR, 20% BGT YL FLUOR, FAIR BL-LT
YL FLASH CUT, FAIR GLD RES RNG

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



Bit #: 7
 Type: REED/R4OADPPH
 Size: 6.12
 Depth In: 5.371'
 Jets: 3x18s
 MD: 5.392'
 TVD: 4.067.9'
 Inclination: 90.0°
 Azimuth: 358.2°
 VS: 1.575'

MD: 5.477'
 TVD: 4.067.8'
 Inclination: 90.2°
 Azimuth: 356.3°
 VS: 1.660'

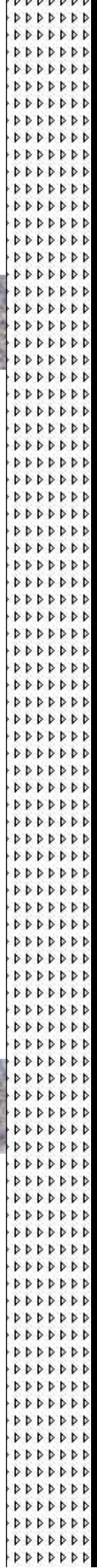
MD: 5.562'
 TVD: 4.068.3'
 Inclination: 8.0°
 Azimuth: 35.0°
 VS: 1.745'

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

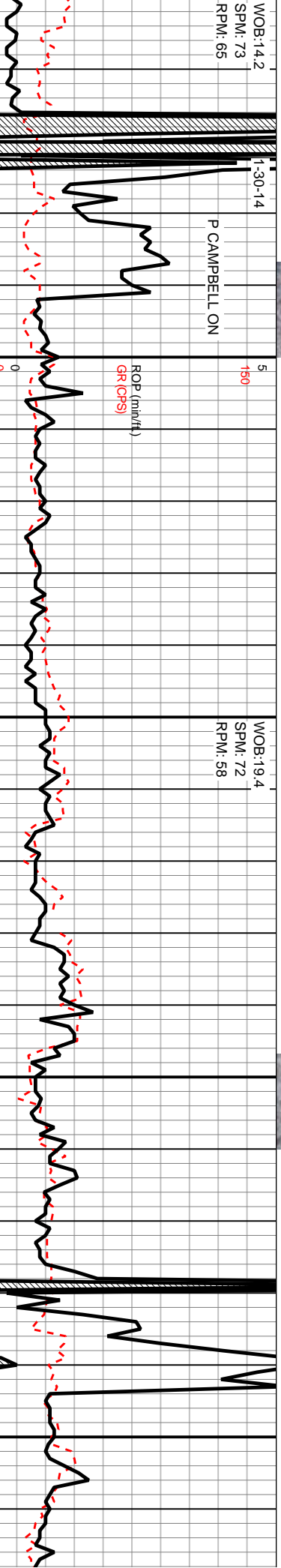
CHT: OFF WHT-OFF WHT, OPQ, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ DD OIL STN, OCC INTR XLN & PP POR W/ SPOT STN, 10% BGHT LT YL FLUOR, FAIR-MOD LT BL FLASH CUT, BGHT YL RES RNG

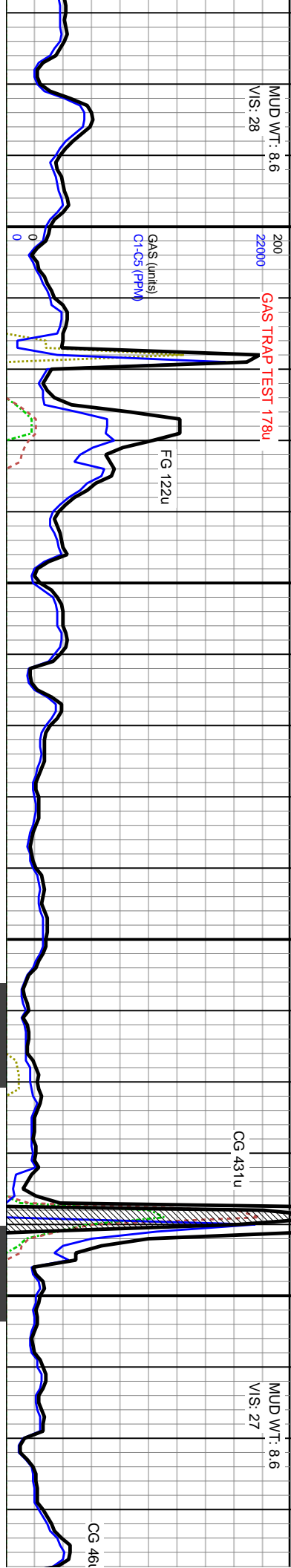
CHT: WHT-OFF WHT, OPQ, OCC GY & MOT W/ DRK INCLS, HD, V HD IP, VF XLN-CR XLN, CONCH FRACS W/ W/SLI DD OIL STN, SU TR INTR XLN POR, TR SPOT STN, 5% BGHT LT YL FLUOR, FAIR-MOD LT BL FLASH CUT, DULL YL RES RNG



WOB: 14.2
 SPM: 73
 RPM: 65

WOB: 19.4
 SPM: 72
 RPM: 58





570	MUD WT: 8.6	VIS: 28	200	GAS TRAP TEST 178u
580			22000	
590				
600				
610				
620				
630				
640				
650				
660				
670				
680				
690				
700				
710				
720				
730				
740				
750				
760				
770				
780				

MD: 5.646'
 TVD: 4.069.8'
 Inclination: 88.6°
 Azimuth: 356.1°
 VS: 1.829'

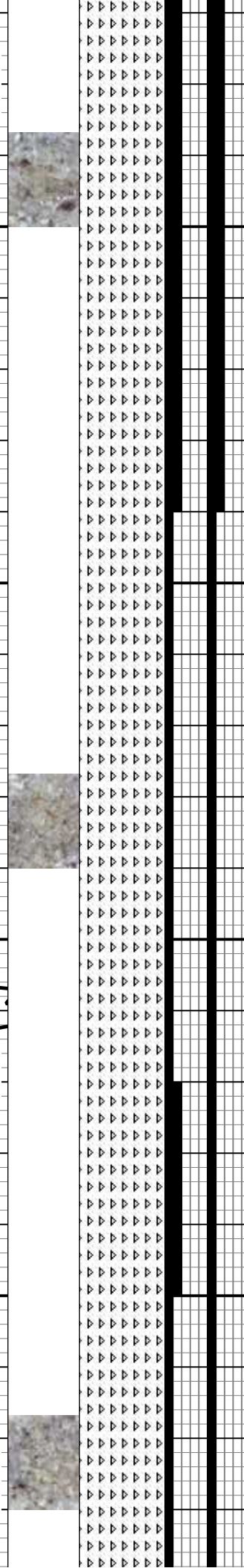
MD: 5.731'
 TVD: 4.071.4'
 Inclination: 89.3°
 Azimuth: 358°
 VS: 1.913.9'

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/ SPT STN;
 10% BGHT LT YL FLUOR, FAIR-MOD LT BL FLASH CUT,
 BGHT YL RES RNG
 4090

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

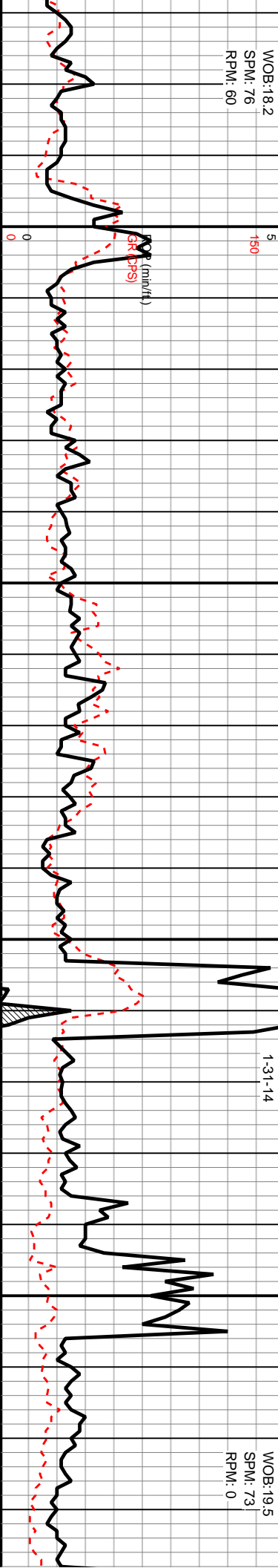
CHT: OFF WHT-TRNSL, OPQ, OCC GY, BRIT-HD, V
 HD IP, CR XLN, DNS IP, CONCH FRACS, 20% TRIP,
 TRC SPOT STN, DD OIL STN, TRC INTR XLN POR,
 TRC FRAC POR; 5% BGHT YL FLUOR, FAIR
 FLASH CUT, FAIR GLD RES RNG

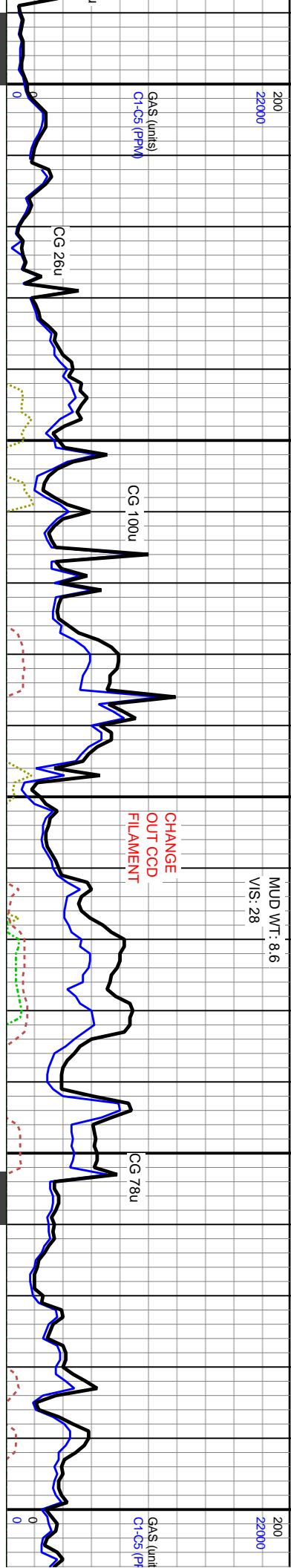
CHT: PRED WHT-OFF
 INCLS, HD, V HD IP, VF
 W/SLI DD OIL STN, V SLI
 TR SPOT STN; 5% BGH
 CUT, DULL YL RES RNM



WOB: 18.2
 SPM: 76
 RPM: 60

WOB: 19.5
 SPM: 73
 RPM: 0





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'

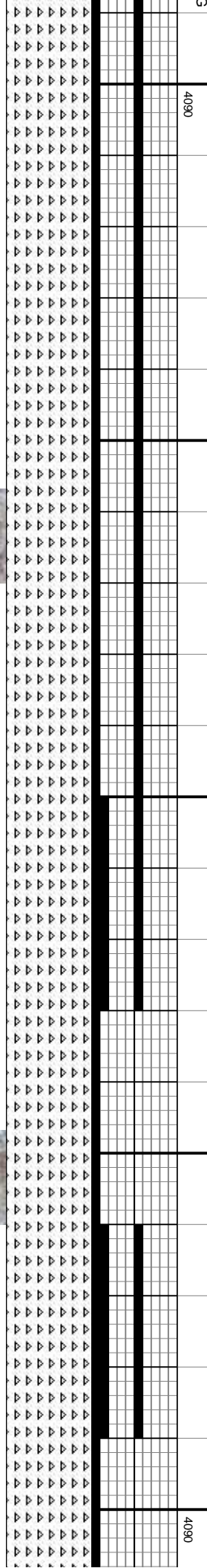
MD: 5.987' TVD: 4.065.8' Inclination: 90.3° Azimuth: 358.5° VS: 2.169.7'

WHT, OCC GY & MOT W/ DRK
 XLN-CR XLN, CONCH FRACS
 J TR INTR XLN & PP POR W/SLI
 T LT YL FLUOR, SLOW LT BL

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 FLUOR, DLL LT BL
 FLASH/CRUSH CUT, WK LT YL RES RNG

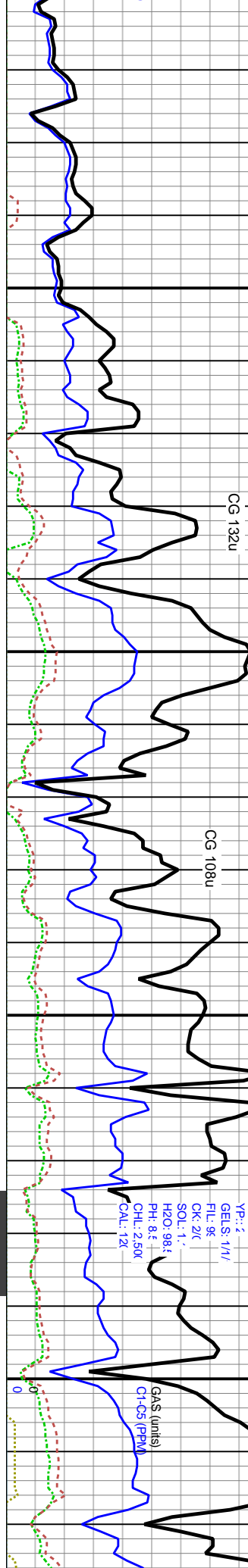
CHT: PRED CRM-OFF WHT, OPQ-TRNSL, OCC BWN-GY &
 MOT W/ DRL INCL, HD, V HD IP, VF XLN-CR XLN, DNS, 10%
 TRIP, TRC CONCH FRACS W/ DD OIL STN, TRC SPOT STN
 OCC PP & INTR XLN POR: 5% BGHT LT YL FLUOR, WK-FAH
 LT BL FLASH/CRUSH CUT, WK LT YL RES RNG



WOB: 18.1 SPM: 74 RPM: 60

P CAMPBELL ON

MUD WT: 8.7
 V/S: 33
 CG 132u
 FG 168u
 MUD WT: 8.8
 V/S: 32
 CG 108u
 MAX GAS 181u
 MW: 8.6
 V/S: 2f
 P.V.: 1
 Y.P.: 2
 GELS: 1/1/
 FIL: 9f
 CK: 2f
 SOL: 1.7
 H2O: 98.4
 PH: 8.5
 CHL: 2.50f
 CAL: 12x
 200
 22000
 CG 200u



MD: 6.075'
 TVD: 4.066.7'
 Inclination: 88.6°
 Azimuth: 359.2°
 VS: 2.257.7'

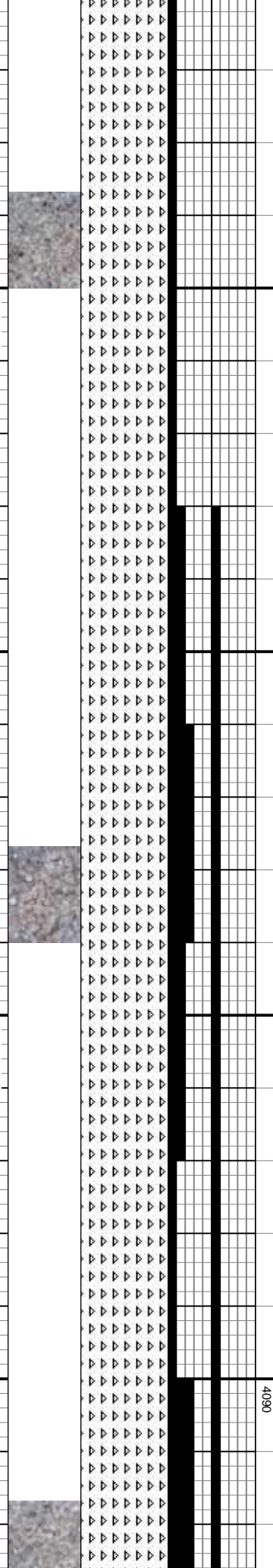
MD: 6.160'
 TVD: 4.068.7'
 Inclination: 88.7°
 Azimuth: 357°
 VS: 2.342.6'

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
 FLUOR, 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
 FLUOR, 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 FLUOR, FAIR LT BL
 FLASH/CRUSH CUT, LT YL RES RNG

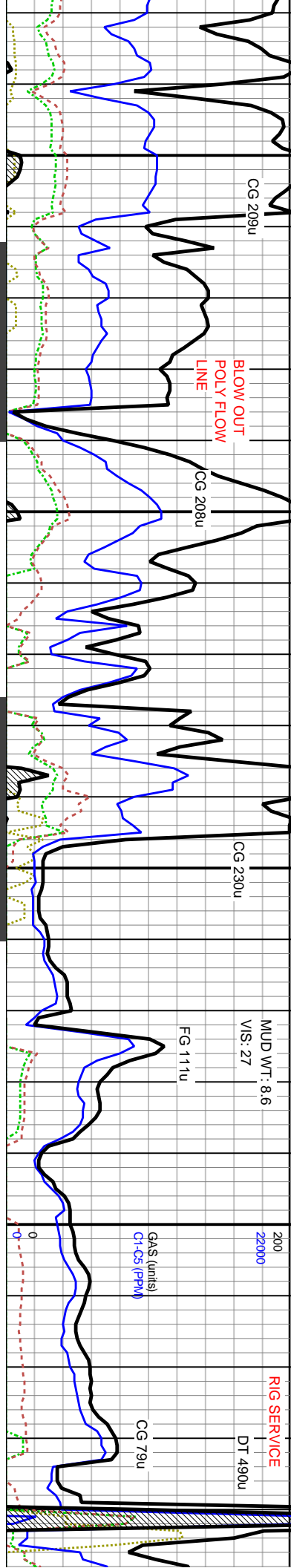
CHT: PRED OPQ-TRNSL, CRM-OFF
 HD IP, VF XLN-CR XLN, DNS, TRC
 FRACS W/ DD OIL STN, OCC SPOT
 INTR XLN POR: 5% BGHT LT GLD F
 BL FLASH CUT, FAIR LT YL RES R



WOB: 18.1
 SPM: 75
 RPM: 57

WOB: 17.8
 SPM: 75
 RPM: 58

ROP (min/ft)
 GR (OPS)



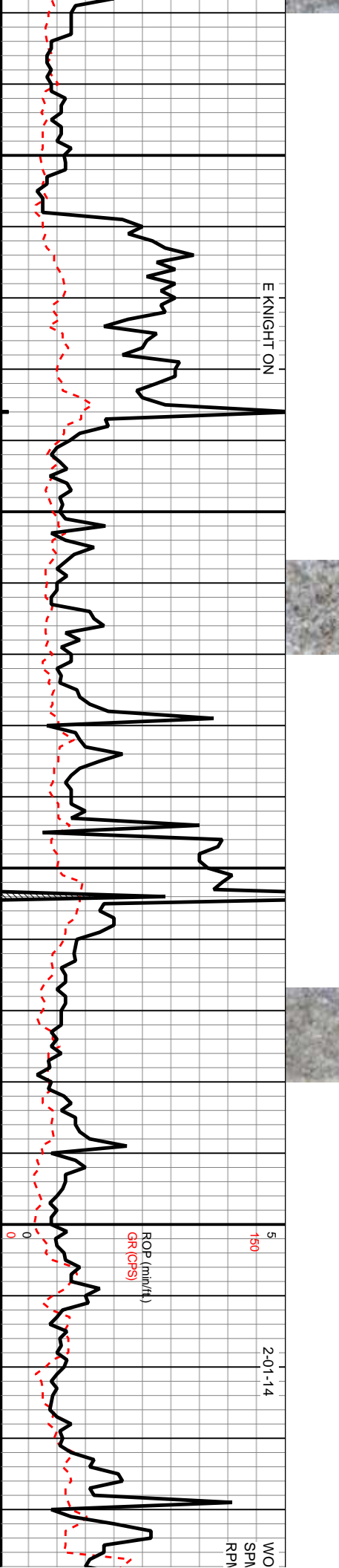
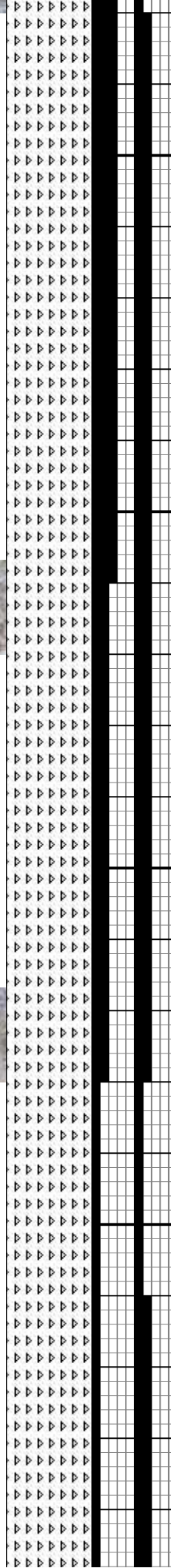
WHT, PRED HD, V
 OPO-TRNSL, PREI
 STN, OCC PP &
 FLUOR, FAIR-GD LT
 RING

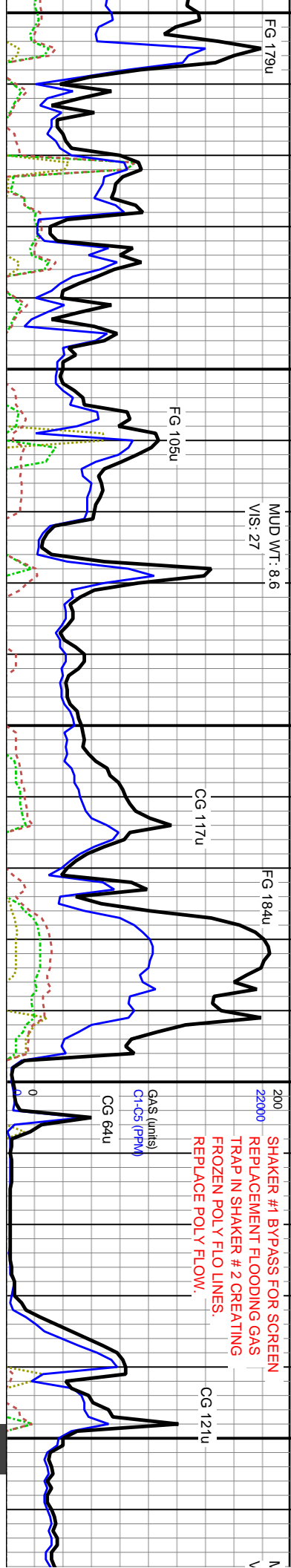
CHT: WH-OPO-TRNSL, CRM-OFF WHT, PRED HD, V HD
 IP, VF XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH
 FRACS W/ DD OIL STN, OCC SPOT STN, OCC PP &
 INTR XLN POR, 5% BIGHT LT GLD FLUOR, FAIR-GD LT
 BL FLASH CUT, FAIR LT YL RES RING

CHT: PRED WH-OFF WH, SME CRM-LT CRM
 OPO-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% BIGHT LT
 GLD FLUOR, POOR LT BL FLASH CUT, POOR LT YL
 RES RING

CHT: WH-OFF WH, SME CRM-LT CRM OPO-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% BIGHT
 LT GLD FLUOR, POOR LT BL FLASH CUT, POOR LT YL
 RES RING

CHT: PRED WH-OI
 OPO-TRNSL, PREI
 V-SLI TRC TRIP V-
 STN, V-SLI SPOT
 THAN 5% BIGHT LT
 CUT, POOR LT YL





MD: 6.509 '
 TVD: 4.068.3 '
 Inclination: 91.1 °
 Azimuth: 358.4 °
 VS: 2.691.3 '

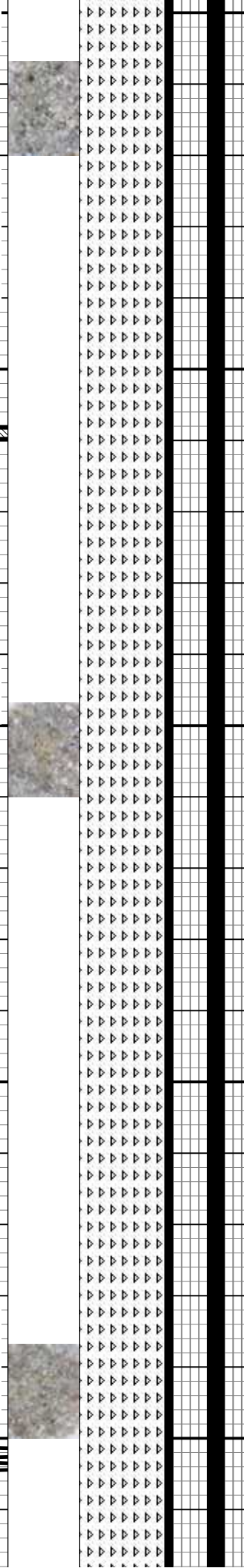
MD: 6.593 '
 TVD: 4.066.6 '
 Inclination: 91.2 °
 Azimuth: 357.1 °
 VS: 2.775.3 '

MD: 6.680 '
 TVD: 4.065.7 '
 Inclination: 90 °
 Azimuth: 358.5 °
 VS: 2.882.2 '

WH, SME CRM-LT CRM
 HD, V HD IP, VF XLN-CR XLN, DNS, V-SLI TRC CONCH FRACS W/ DD OIL, TRIP V-SL TRC CONCH FRACS W/ DD OIL STN, V-SLI SPOT STN, OCC PP & INTR XLN POR: LESS THAN 5% BHT LT GLD FLUOR, POOR LT BL FLASH CUT, FAIR YL RES RNG

WH-OFF WH, SME CRM-LT CRM OPO-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% BHT LT GLD FLUOR, MOD LT BL FLASH CUT, FAIR YL RES RNG

OFF WH-WH, SME CRM-LT CRM OPO-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% BHT LT GLD FLUOR, POOR LT BL FLASH CUT, FAINT YL RES RNG

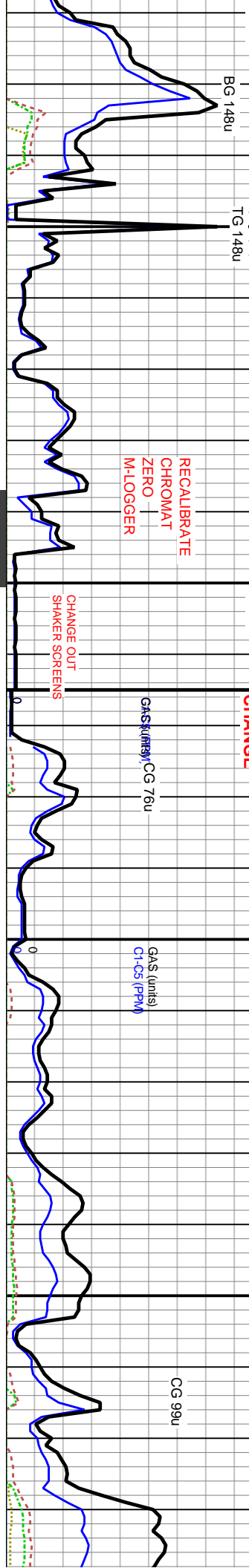


INVALID READINGS FROM MD 6,470' TO 6,500' DUE TO REDBOX MALFUNCTION

WOB: 16.9
 SPM: 72
 RPM: 56

P CAMPBELL ON

V S R



TOOH FOR BIT # 8 @ 6700'

Bit #: 8
Type: REED R40APDH
Size: 6 1/8
Depth In: 6,700'
Jets: 3X18s
S/N: 0

MD: 6.765'
TVD: 4,065.3'
Inclination: 90.6°
Azimuth: 359.9°
VS: 2.9472'

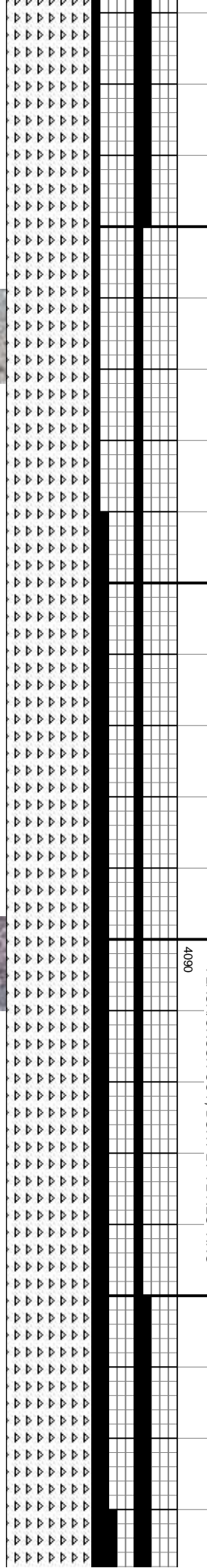
MD: 6.853'
TVD: 4,064.4'
Inclination: 90.5°
Azimuth: 359.1°
VS: 3.0351'

CHT: CRM-OFF WHT, OCC GY & MOT W/ DRL INCL, OPO-TRNSL, PRD HD, V HD, V/ XLN-CR XLN, DNS, TRC TRIP, SL TRC CONCH FRACS W/ DD OIL STN, SL TRC SPOT STN, 5% Bght LT YL FLUOR, FAIR LT BL FLASH/CRUSH CUT, DLL YL RES RNG

CHT: PRED CRM-OFF WHT, OCC LT GY & MOT W/ DRK INCL, OPO-TRNSL, PRD HD, V HD, V/ 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 INCL, OPO-TRNSL, PRD HD, V HD, V/ 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, OPO-TRNSL, PRD HD, CONCH FRAC W/ LT BL PP POR, OCC DRK GY LIGNITE IN SMPLE, 10% BL FLASH/CRUSH CUT

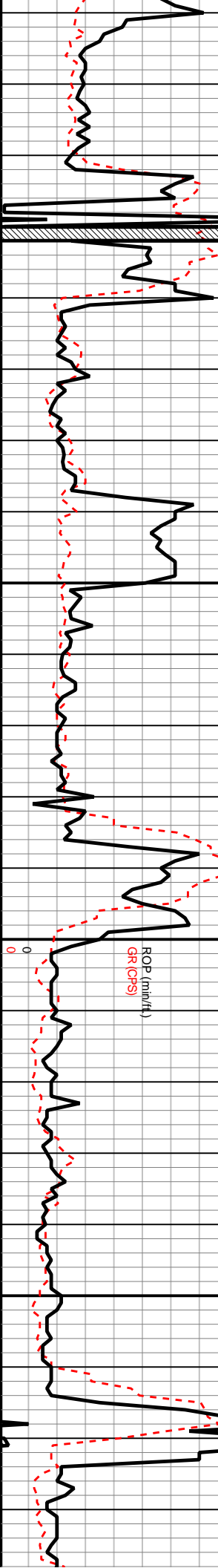


JOB: 21.6 E KNIGHT ON
PM: 72
P.M.: 39

2-02-14 P CAMPBELL ON

5
150

WOB: 15.2
S.P.M.: 72
R.P.M.: 69



FG 136U

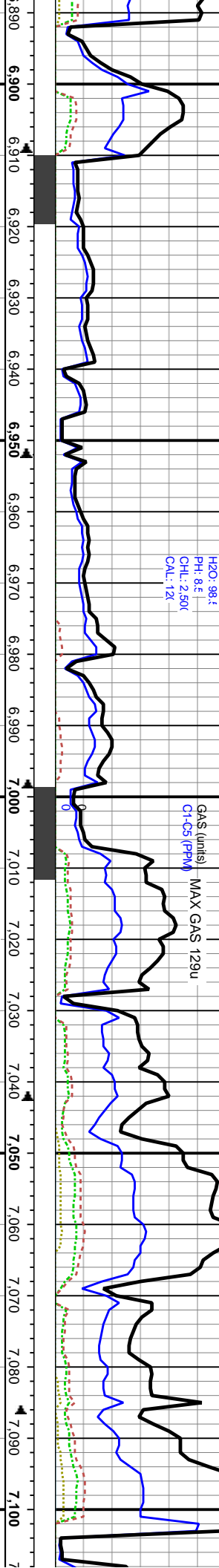
MUD WT: 8.9
VIS: 32

MW: 8.5
VIS: 28
PV: 1
YP: 1
GELS: 1/1/
FL: 96
CK: 2/C
SQL: 1/
H2O: 98.4
PH: 8.5
CHL: 2.50K
CAL: 12X

300
36000
GAS (units)
C1-C5 (PPM)
MAX GAS 129U

MAX GAS 192U

CG 155U



MD: 6.942'
TVD: 4.063.1'
Inclination: 91.2°
Azimuth: 0.7°
VS: 3.123.9'

MD: 7.028'
TVD: 4.062.6'
Inclination: 89.5°
Azimuth: 2.2°
VS: 3.209.7'

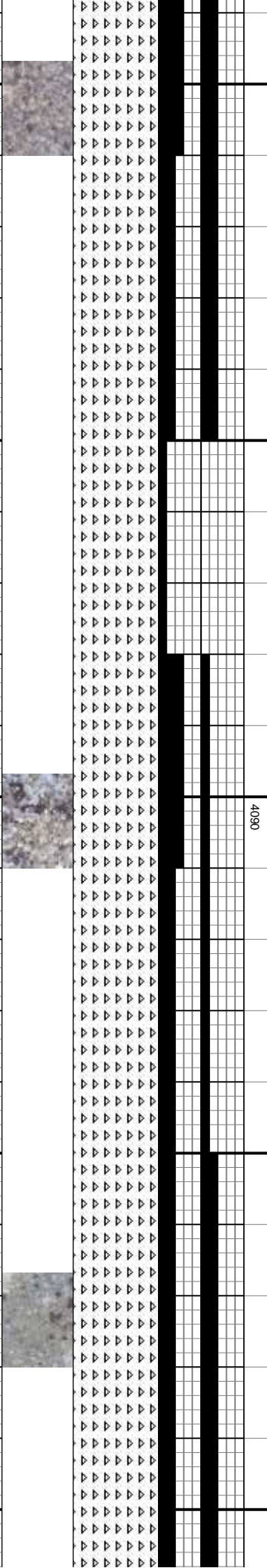
MD: TVD
Incl
Azim
VS:

OCC LT GY & MOT W/ DRK INCLS,
V HD IP, VF XLN-CR XLN, TRC
W/ 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 SMPLE: 5% DLL GLD FLUOR, MOD LT BL
FLASH CUT, DLL LT YL RES RNG

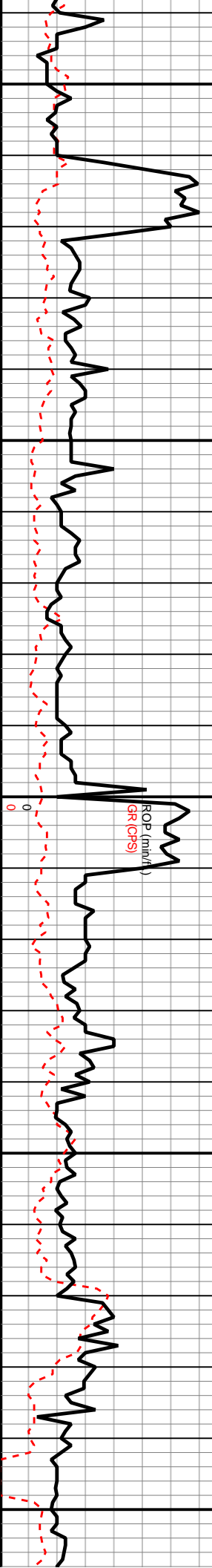
CHT: CRM-OFF WHT, LT GY & MOT W/ DRK INCLS,
OPQ-TRNSL, PRED HD, V HD IP, VF XLN-CR XLN, TRC
CONCH FRAC W/ LT BWN DD OIL STN, OCC INTR XLN
PP POR, OCC DRK GY OIL/ SPOT STN.: ABNDT
LIGNITE IN SMPLE: 10% BGHT LT YL FLUOR, FAIR-GI
LT BL FLASH/CRUSH CUT, BGHT LT YL RES RNG



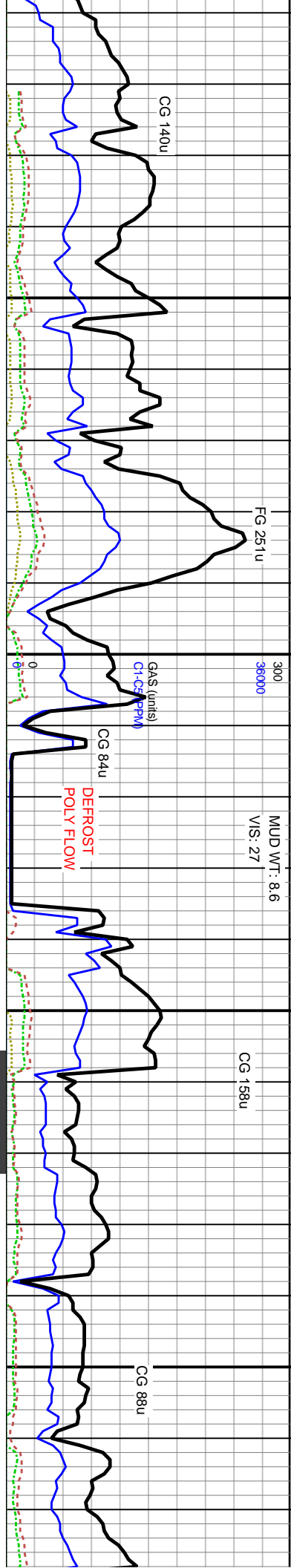
WOB: 15.4
SPM: 72
RPM: 56

WOB: 15.4
SPM: 72
RPM: 60

E KNIGHT ON



ROP (min/ft)
GR (GPS)



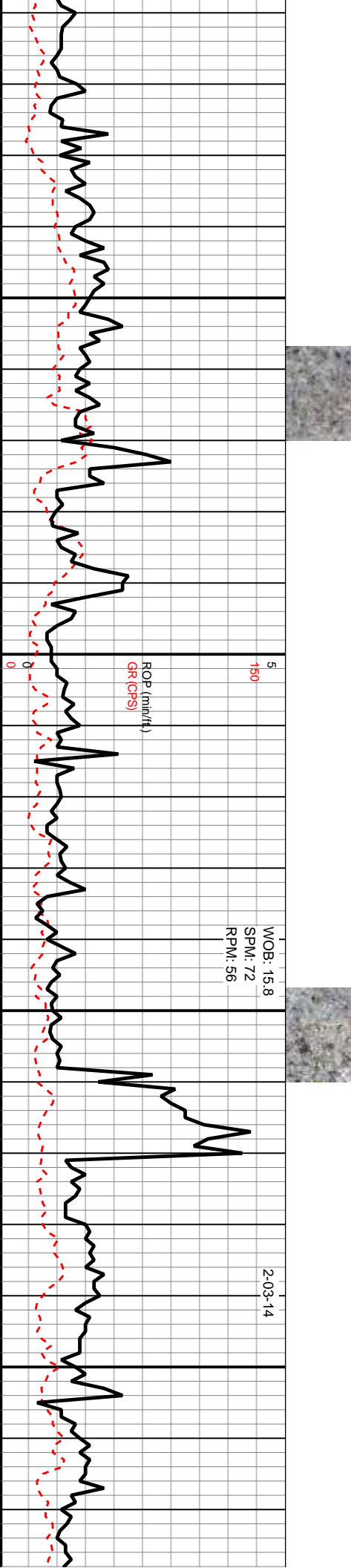
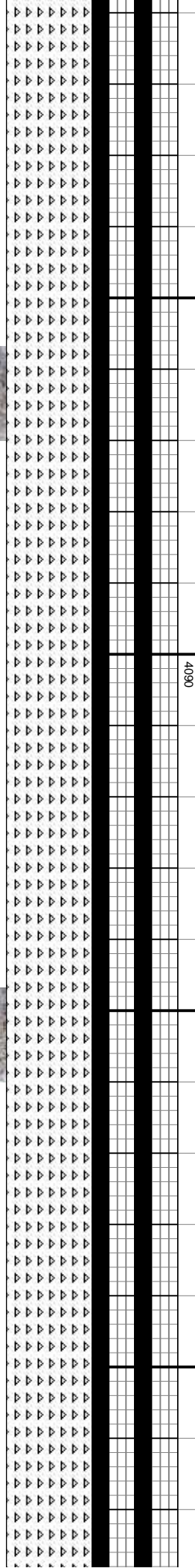
7.111' : 4.063.2' : 4.063.2' : 4.063.2'
 Inclin: 89.7° Inclin: 89.7° Inclin: 89.7°
 Azimuth: 1.1° Azimuth: 0.3° Azimuth: 2.5°
 VS: 3.292.4' VS: 3.382.2' VS: 3.469.9'

CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT
 W/ DRK INCLS, OPO-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, OPO-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

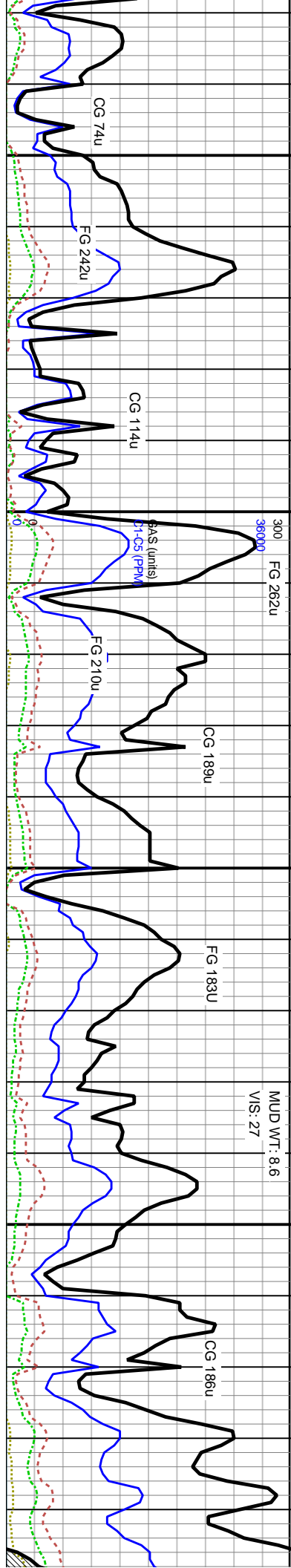
CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT
 W/ DRK INCLS, OPO-TRNSL, PRD HD, V HD IP, VF
 XLN-CR XLN, TRC CONCH FRAC W/ LT BWN-BLK DD OIL
 STN, OCC INR XLN & PP POR, OCC DRK GY OIL/ SPOT
 STN.: ABNDT LIGNITE IN SMPLE: 15% BGHT LT YL
 FLUOR, MOD LT BL FLASH/CRUSH CUT, BGHT LT YL
 RES RNG

CHT: PRED OFF
 MOT W/ DRK IN
 XLN-CR XLN,
 STN, OCC INR
 STN.: ABNDT L
 FLUOR, FAIR L
 RES RNG



WOB: 15.8
 SPM: 72
 RPM: 56

2-03-14



MD: 7.376'
 TVD: 4,064.3'
 Inclination: 90.5°
 Azimuth: 2.4°
 VS: 3.5565'

MD: 7.463'
 TVD: 4,063.4'
 Inclination: 90.6°
 Azimuth: 1.4°
 VS: 3.6432'

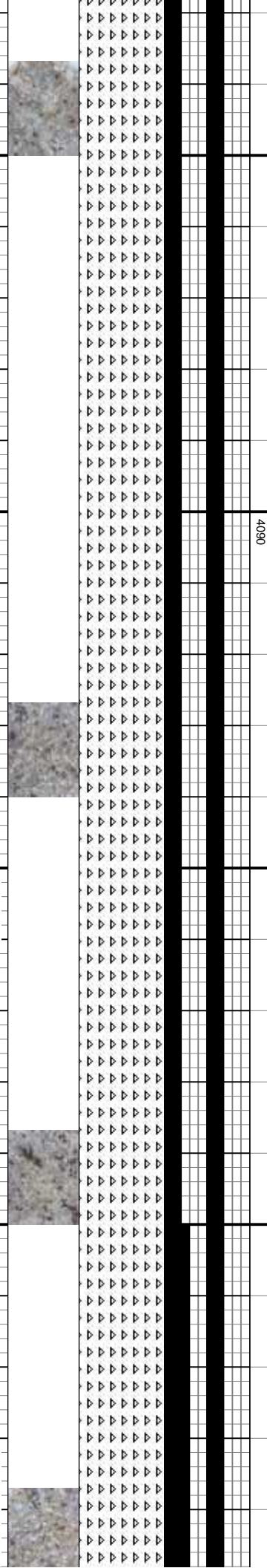
MD: TVD:
 Incl: Azir:
 VS: :

WHT, SME CRM-LTCRM OCC LT GY &
 INCLS, OPO-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
 FLUOR, MOD LT BL FLASH/CRUSH CUT, BGHT LT YL
 RES RNG

CHT: OFF WHT, SME CRM-LTCRM OCC LT GY & MOT
 W/ DRK INCLS, OPO-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 OFF WHT, SME CRM-LTCRM OCC LT GY &
 MOT W/ DRK INCLS, OPO-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

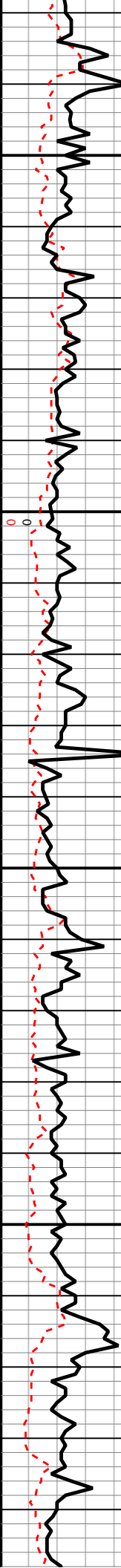
CHT: OFF WHT-WHT, AMBR, OCC LT GY & MOT W
 INCLS, PRED HD, V HD IP, DNS, SM TXT, VIT LSTF
 TRC LT BWN DD OIL, STN ON FRAC PLANES, TRC
 INTXNLN & PP POR, TRC SPOT STN, ABNDT LIGNIT
 SMPLE, 10% BGHT LT YL FLUOR, FAIR-GD LT BL FL
 CUT, BGHT LT YL- LT BL RES RNG

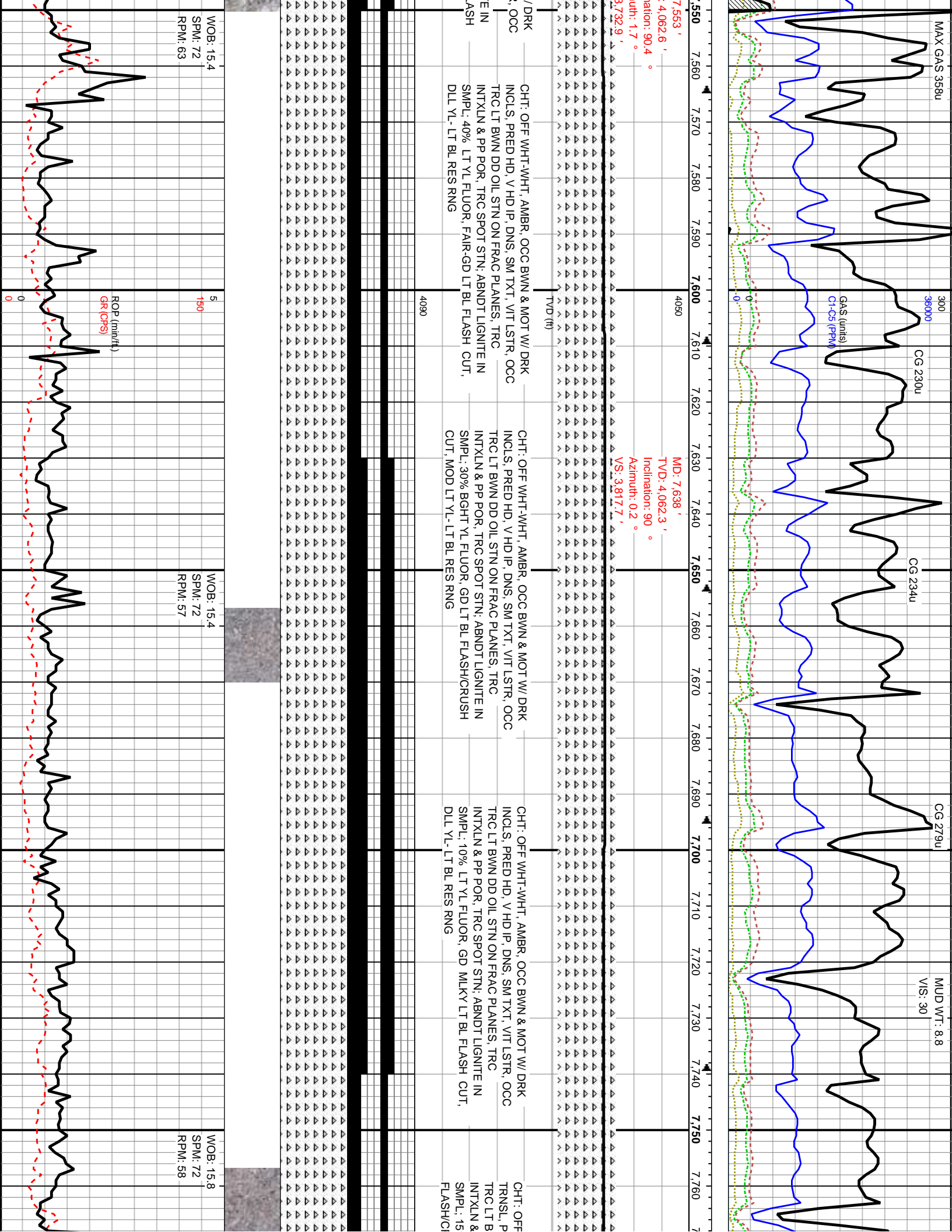


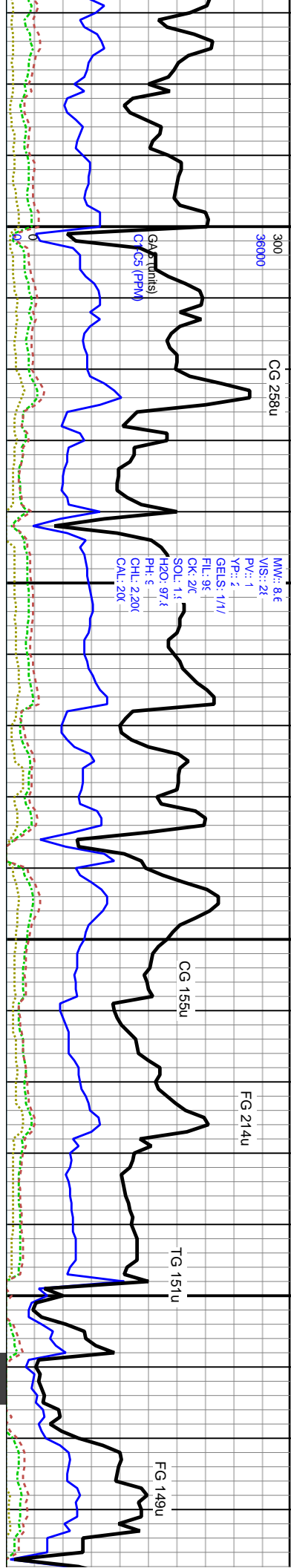
ROP (min/hr)
 GR (CPS)

WOB: 15.2
 SPM: 72
 RPM: 65

P CAMPBELL ON







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

4090

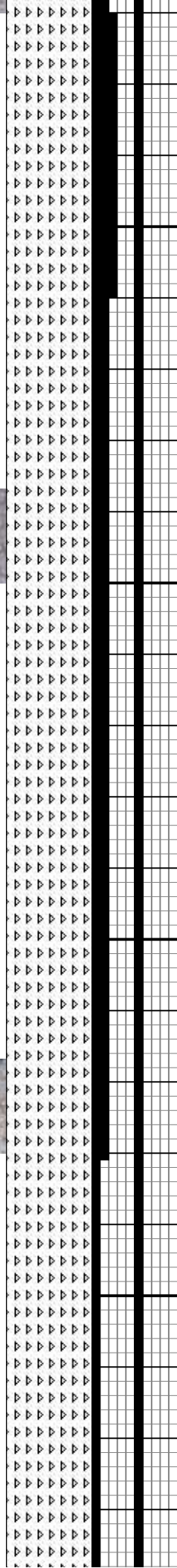
MD: 7.894 '
 TVD: 4.060.9 '
 Inclination: 91.8 °
 Azimuth: 359.9 °
 VS: 4.071.2 '

Bit #: 9
 Type: REED R40APDH
 Size: 6 1/8
 Depth In: 7.947 '
 Jets: 3X18S
 S/N: D142534

WHT-WHT, AMBR-LT GY & MOT W/ DRK INCLS,
 RED HD, V HD IP, DNS, SM TXT, VIT LSTR, OCC
 WND DD OIL STN ON FRAC PLANES, TRC
 & PP POR, TRC SPOT STN: ABNDT LIGNITE IN
 5% V Bght LT YL FLUOR, GD LT BL
 CUT, Bght LT YL 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 SMP.L,
 5% V Bght LT YL FLUOR, GD MLKY BL-LT YL FLASH
 CUT, Bght LT YL RES RNG

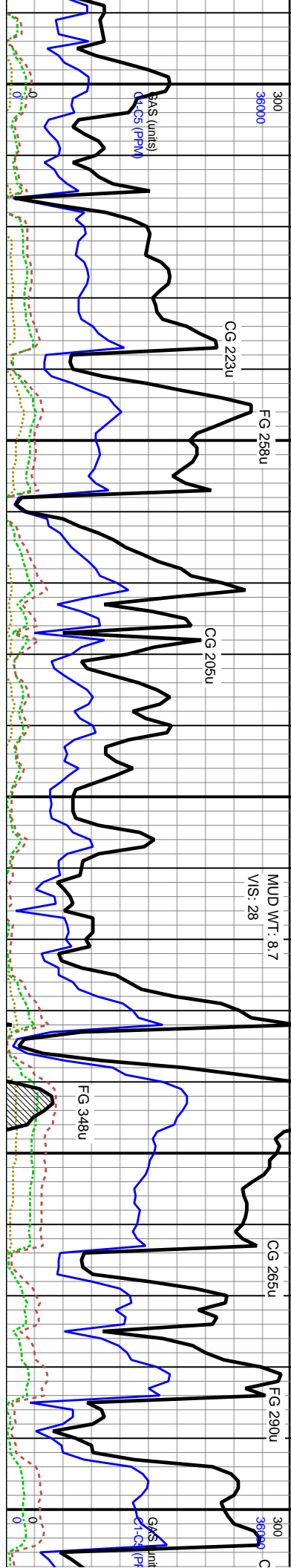
CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK
 INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR,
 OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN
 & PP POR, TRC SPOT STN: ABNDT LIGNITE IN SMP.L,
 5% V Bght LT YL FLUOR, GD MLKY BL-LT YL FLASH
 CUT, Bght LT YL RES RNG



5
150

WOB: 15.3
 SPM: 71
 RPM: 61

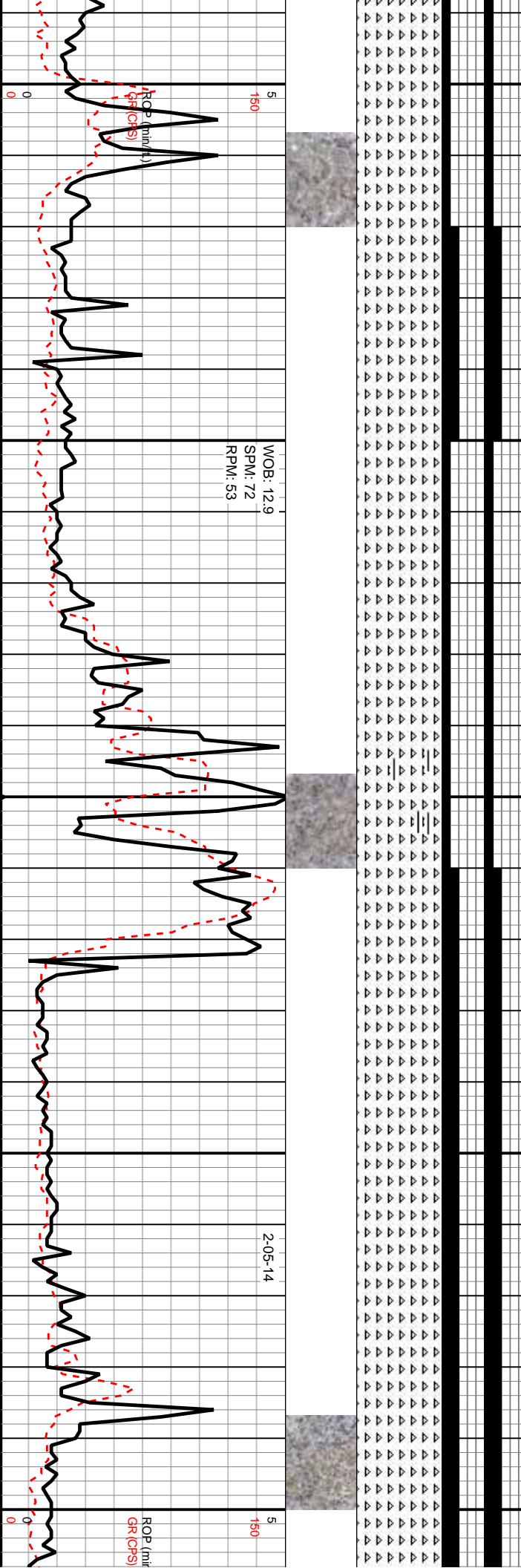
E KNIGHT ON

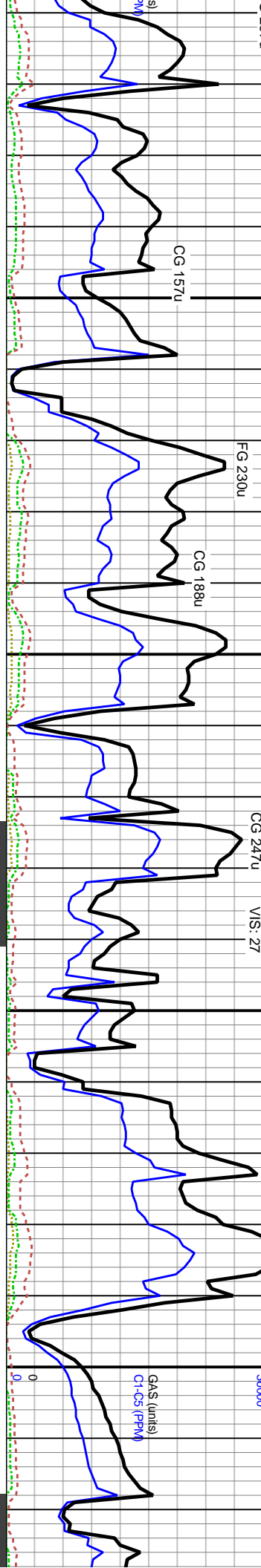


MD: 7,980' TVD: 4,059.1' Inclination: 90.6° Azimuth: 359.2° VS: 4,159.1' CUT, BGHT LT YL RES RNG
 CHT: OFF WHT-WHT, AMBR, LT GY-BWN & MOT W/ DRK INCLS, TRNSL, PRED HD-V HD, DNS, SM TXT, VIT LSTR, OCC TRC DD OIL STN ON FRAC PLANES, TRC INTR XLN & PP POR, TRC SPOT STN; ABNDT LIGNITE IN SMP; 5% V BGHT LT 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' 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' BGHT LT YL FLUOR, GD MLKY BL-LT YL RES RNG





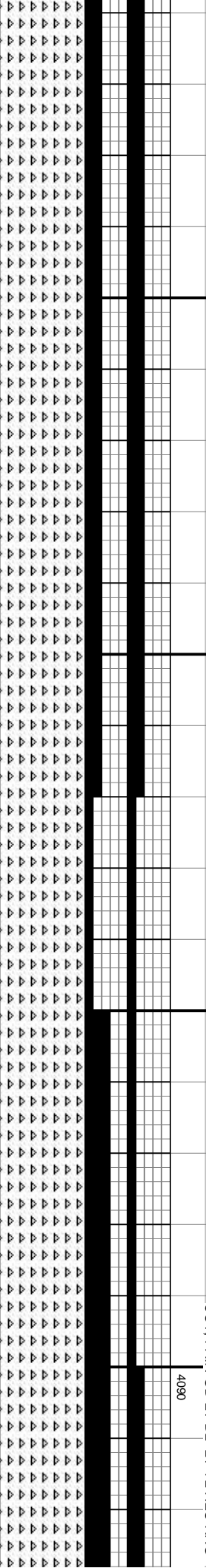
MD: 8.232 '
 TVD: 4.058.6 '
 Inclination: 90 °
 Azimuth: 357.6 °

MD: 8.405 '
 TVD: 4.059.1 '
 Inclination: 90.3 °
 Azimuth: 357.8 °

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 SMP.L: 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 SMP.L: 15% V
 BGHT LT YL FLUOR, FAIR SLOW MLKY BL-LT YL FLASH
 CUT, SLL LT YL RES RNG

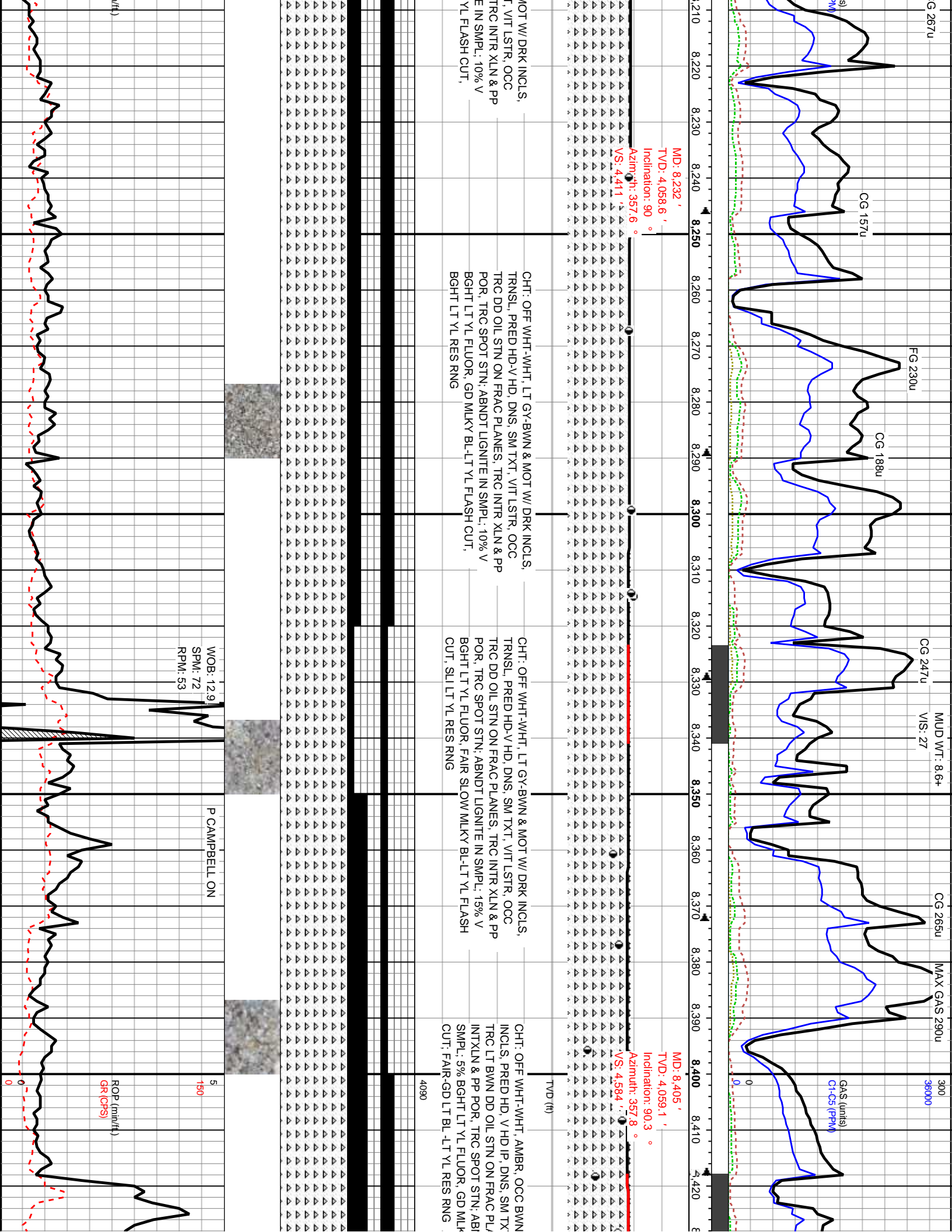
CHT: OFF WHT-WHT, AMBR, OCC BWN
 INCLS, PRED HD, V HD IP, DNS, SM TX
 TRC LT BWN DD OIL STN ON FRAC PL
 INTXLN & PP POR, TRC SPOT STN; ABI
 SMP.L: 5% BGHT LT YL FLUOR, GD MLK
 CUT; FAIR-GD LT BL -LT YL RES RNG

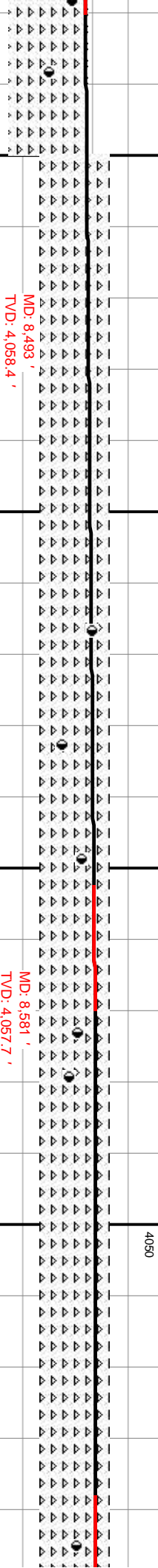
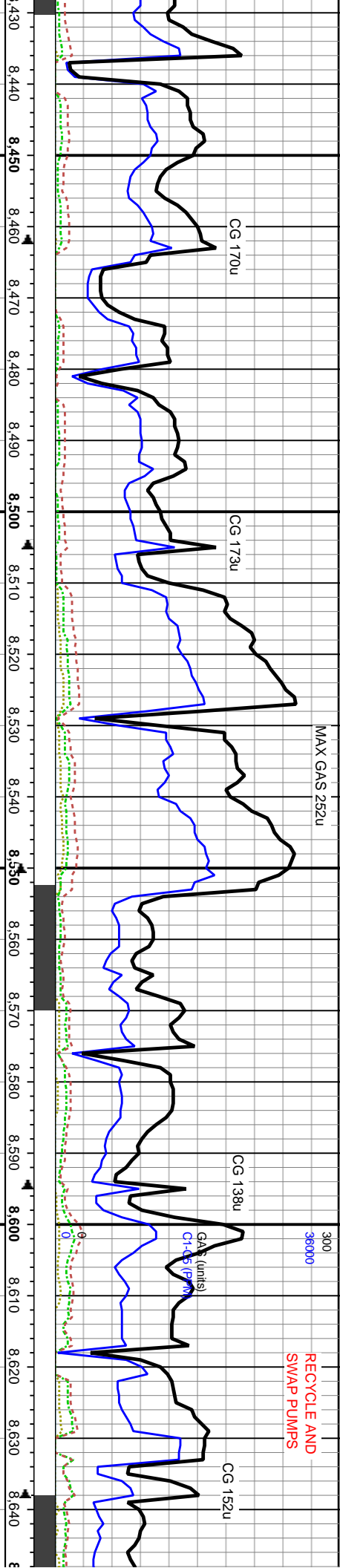


WOB: 12.9
 SPM: 72
 RPM: 53

P CAMPBELL ON

ROP (m/hr)
 GR (OPS)





MD: 8,493'
 TVD: 4,058.4'
 Inclination: 90.6°
 Azimuth: 358.4°
 VS: 4.672'

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
 INT XLN & PP POR, TRC SPOT STN, ABNDT LIGNITE IN
 SMPLE, 5% BGHT LT YL FLUOR, GD MLKY LT BL FLASH
 CUT, FAIR LT BL -LT YL RES RNG

MD: 8,581'
 TVD: 4,057.7'
 Inclination: 90.4°
 Azimuth: 359.9°
 VS: 4.759.9'

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

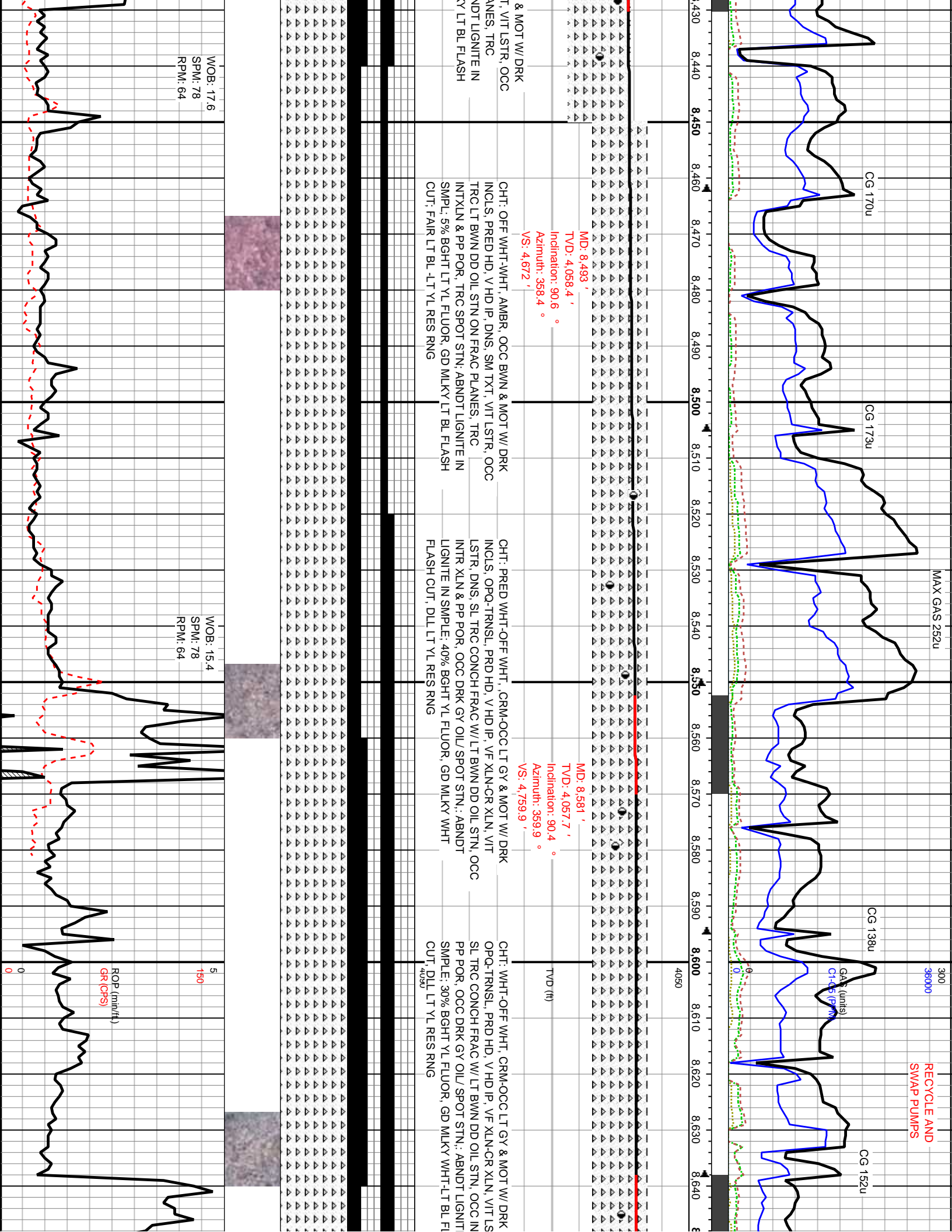
MD: 8,493'
 TVD: 4,058.4'
 Inclination: 90.6°
 Azimuth: 358.4°
 VS: 4.672'

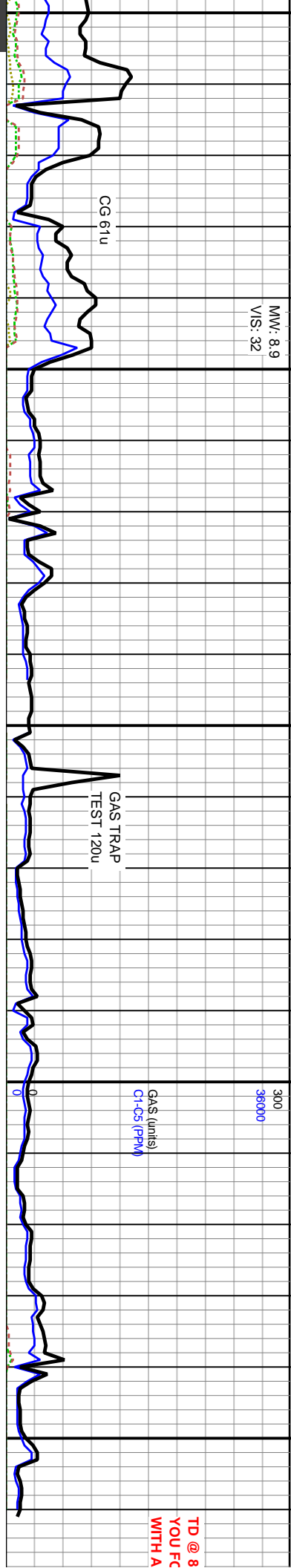
CHT: WHT-OFF WHT, CRM-OCC LT GY & MOT W/ DRK
 OPQ-TRNSL, PRD HD, V HD IP, VF XLN-CR XLN, VIT LS
 SL TRC CONCH FRAC W/ LT BWN DD OIL STN, OCC IN
 PP POR, OCC DRK GY OIL SPOT STN, ABNDT LIGNITE IN
 SMPLE, 30% BGHT YL FLUOR, GD MLKY WHT-LT BL FLASH
 CUT, DLL LT YL RES RNG

WOB: 17.6
 SPM: 78
 RPM: 64

WOB: 15.4
 SPM: 78
 RPM: 64

ROP (min/ft)
 GR(CPS)





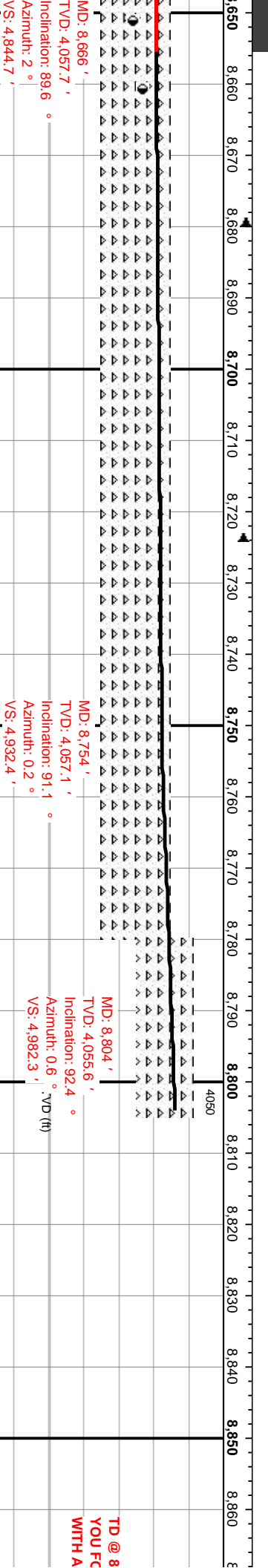
MW: 8.9
V/S: 32

CG 61u

GAS TRAP TEST 120u

GAS (units)
C1-C5 (PPM)

TD @ 8
YOU FC
WITH A



MD: 8.666'
TVD: 4.057.7'
Inclination: 89.6 °
Azimuth: 2 °

MD: 8.754'
TVD: 4.057.1'
Inclination: 91.1 °
Azimuth: 0.2 °

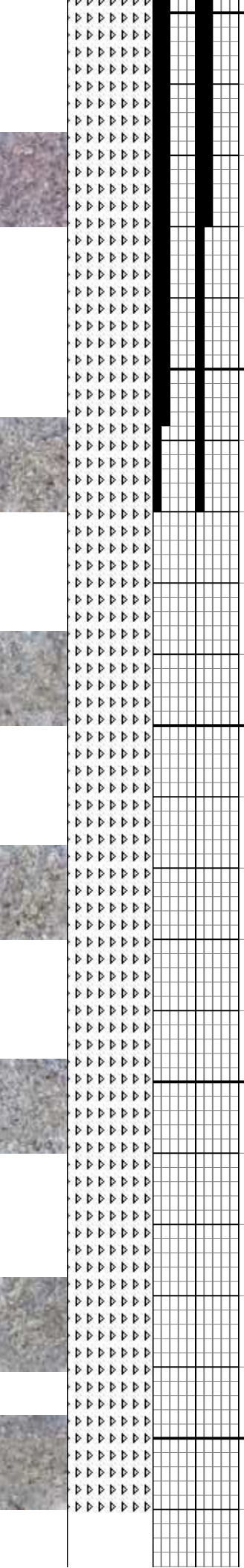
MD: 8.804'
TVD: 4.055.6'
Inclination: 92.4 °
Azimuth: 0.6 °

TD @ 8
YOU FC
WITH A

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% BQHT YL FLUOR, GD MILKY WHT-LT BL FLASH CUT, DLL LT YL RES RNG

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.: 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 PP POR, OCC DRK GY OIL/ SPOT STN.: ABNDT LIGNITE IN SMPLE.: LESS THAN 5% YL FLUO NO CUT, NO RNG



WOB: 39
SPM: 79
RPM: 0

E KNIGHT ON

5
150

WOB: 17.2
SPM: 76
RPM: 67

ROP (min/ft)
GR (CPS)

TD @ 8
YOU FC
WITH A

