



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Bock 3-SWD

Location Sec 3, T26S, R11W

State Kansas

County Pratt

Country United States

Rig Number HWD # 14

API Number 15-151-22425

AFE # 131881

Spud Date 12/31/2013

Drilling Completed 1/12/2014

Ground Elevation 1839

K.B. Elevation 1854'

Logged Interval 350 To 5156

Total Depth 5156

Formation Permian through Mississippian

Type of Drilling Fluid Water Based

Operator

Company Seneca Resources Corp.

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

Geologist

Name Paul Campbell/Steve Ziverk

Company ALS Oil and Gas

Address 609 Westland Drive
Edmond, Ok 73013

Other

Product Description Regular 2 Man Logging Services
Logging Began: 12-31-2013
Released: 1-13-2014

Equiptmen MLogger: # 364

Calibration Standard Calibration for Redbox
Total Gas & Chromatigraph

Core Information

Contractor COREPRO

Formation CHEROKEE THROUGH MISSISSIPPIAN

Core Intervals

From	To	Cut	Recovered
4036.0	4042.0	6.0	4.1
4042.0	4092.0	50.0	48.6

Bit Type PDC COREPRO SN# 3232 & PDC COREPRO SN#2980

Size 8.5"

Coring Time 1/06/2012 @ 22:47 TO 10:12 1/08/2014

Rock Types

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

Accessories

Fossils

F FOSSIL

GASTROPOD

ARGILLACEOUS

ARGILLITE GRAIN

GLAUCONITE

GYPSIFEROUS

Stringer

- ALGAE
- AMPHIPORA
- BELEMNITE
- BIOCLASTIC
- BRACHIOPOD
- BRYOZOA
- CEPHALOPOD
- CORAL
- CRINOID
- ECHINOID
- FISH
- FORAMINIFERA

- OSTRACOD
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

- ANHYDRITIC

- BENTONITE
- BITUMENOUS SUBSTANCE
- BRECCIA FRAGMENTS
- CALCAREOUS
- CARBONACEOUS FLAKES
- CHTDK
- CHTLT
- COAL - THIN BEDS
- DOLOMITIC
- FELDSPAR

- FERRUGINOUS PELLET
- FERRUGINOUS

- HEAVY MINERAL
- KAOLIN
- MARLSTONE
- MINERAL CRYSTALS
- NODULES
- PHOSPHATE PELLETS
- PYRITE
- SALT CAST
- SANDY
- SILICEOUS

- SILTY
- TUFFACEOUS

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

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- EARTHY
- FENESTRAL
- FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC
- MOLDIC

- ORGANIC
- PINPOINT
- VUGGY

Engineering

- BIT
- CASING
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL
- FAULT

Other Symbols

- FORMATION TOP
- GAS SHOW
- MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS
- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT

Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE

- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL

ROP
 ROF ———
 GAMMA - - - -
 HGR ———

Slide/Rotate

Depth Labels

Interp Lith

% Porosity

Oil Show

Lithology Descriptions

% Lith

Images

Total Gas & Chromatograph

GAS ———

C1 ———

C2 - - - -

C3 - - - -

C4 ······

Seneca Resources

Bock 3 SWD
 Pratt County, KS
 Sec 3, T26S, R11W

Two Man Logging Began 12-31-2013
 Released: 1-13-2014

Bit #: 2
 Type: FX 65
 Size: 12.25
 Depth In: 381 '
 Jets: 6x12
 S/N: 11742142

P CAMPBELL ON TOUR

SH: RED-TAN, SFT-FRM,
 BLKY-AMOR, OCC SL PLTY, DLL
 RTHY LSTR, PRED RGH TXT, SL
 SLTY IP; TRC ANHY

SH: RED-TAN, SFT-FRM,
 BLKY-AMOR, OCC SL PLTY, DLL
 RTHY LSTR, PRED RGH TXT, SL
 SLTY IP; TRC ANHY

DRILLING UP TO 500' PER HOUR,
 CATCHING SAMPLES WHEN
 POSSIBLE

SH: RED-TAN, OCC LT GY,
 SFT-FRM, BLKY-AMOR, OCC SL
 PLTY, DLL RTHY LSTR, PRED
 RGH TXT, SL SLTY IP; TRC ANHY

Black = Cored

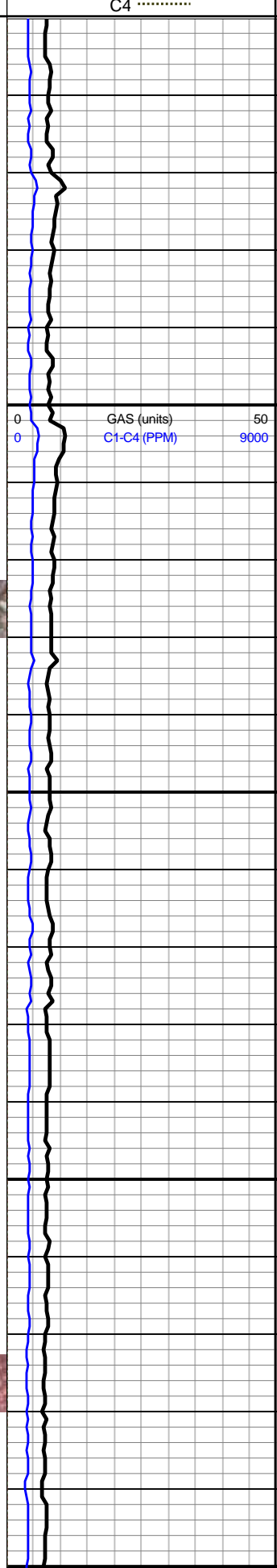
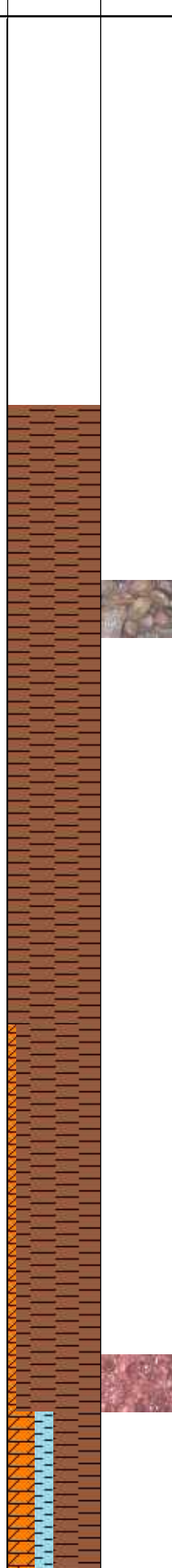
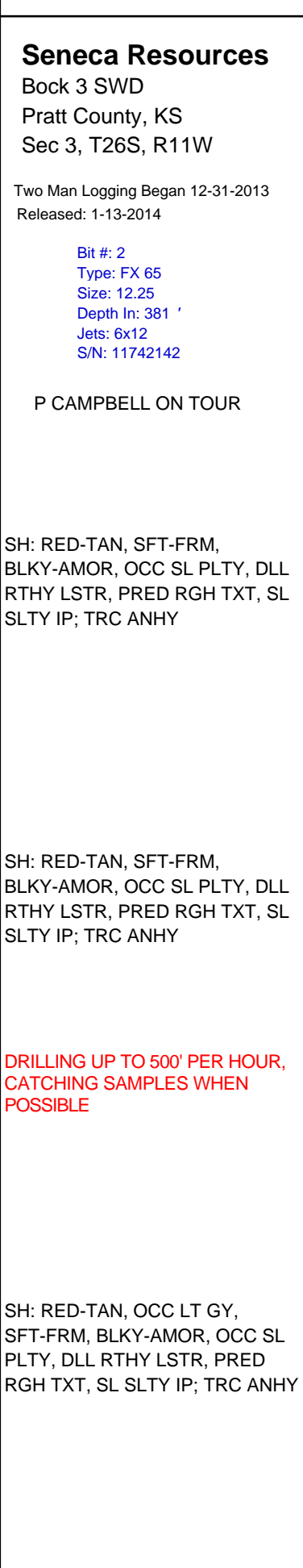
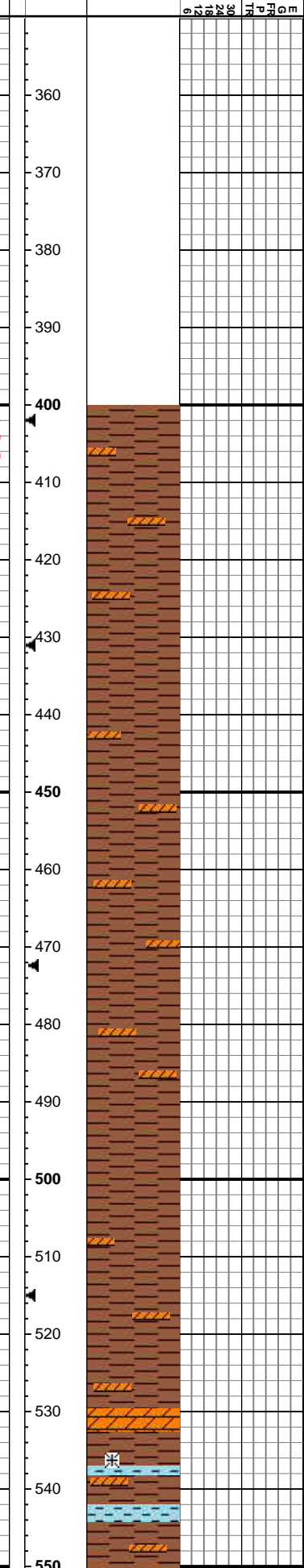
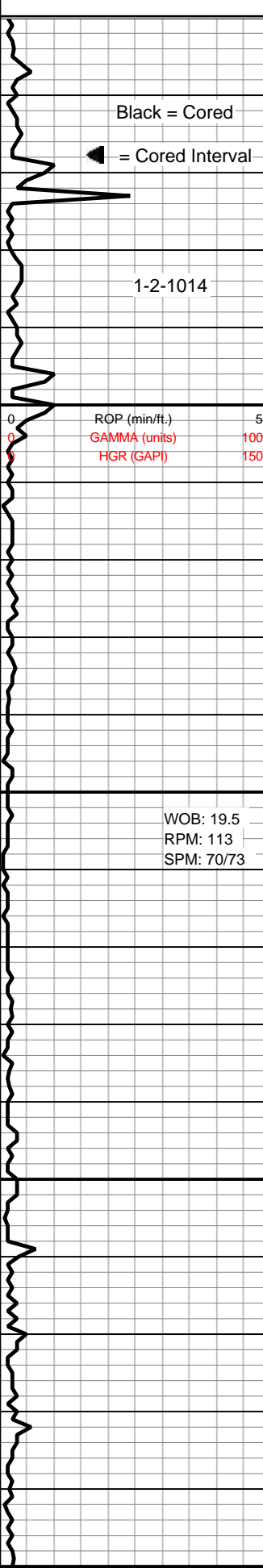
◀ = Cored Interval

1-2-1014

ROP (min/ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

WOB: 19.5
 RPM: 113
 SPM: 70/73

GAS (units) 50
 C1-C4 (PPM) 9000



WOB: 17.4
RPM: 110
SPM: 107

STONE CORRAL @ 564' MD

SH: RED-TAN, OCC LT GY,
SFT-FRM, BLKY-AMOR, OCC SL
PLTY, DLL RTHY LSTR, PRED
RGH TXT, SL SLTY IP; ANHY: OFF
WHT-TRNSP, SFT-FRM, HD IP,
TRC ELONG XLS; CLY: LT GY-GY,
OCC GRNSH BL, SFT, SL WTR
SNS; TRC CHT NODULES, SL
TRC UNCONS SS

ROP (min/ft.) 5
GAMMA (units) 100
HGR (GAPI) 150

GAS (units) 50
C1-C4 (PPM) 9000

LOSING RETURNS
BYPASSING SHAKERS
NO SAMPLES

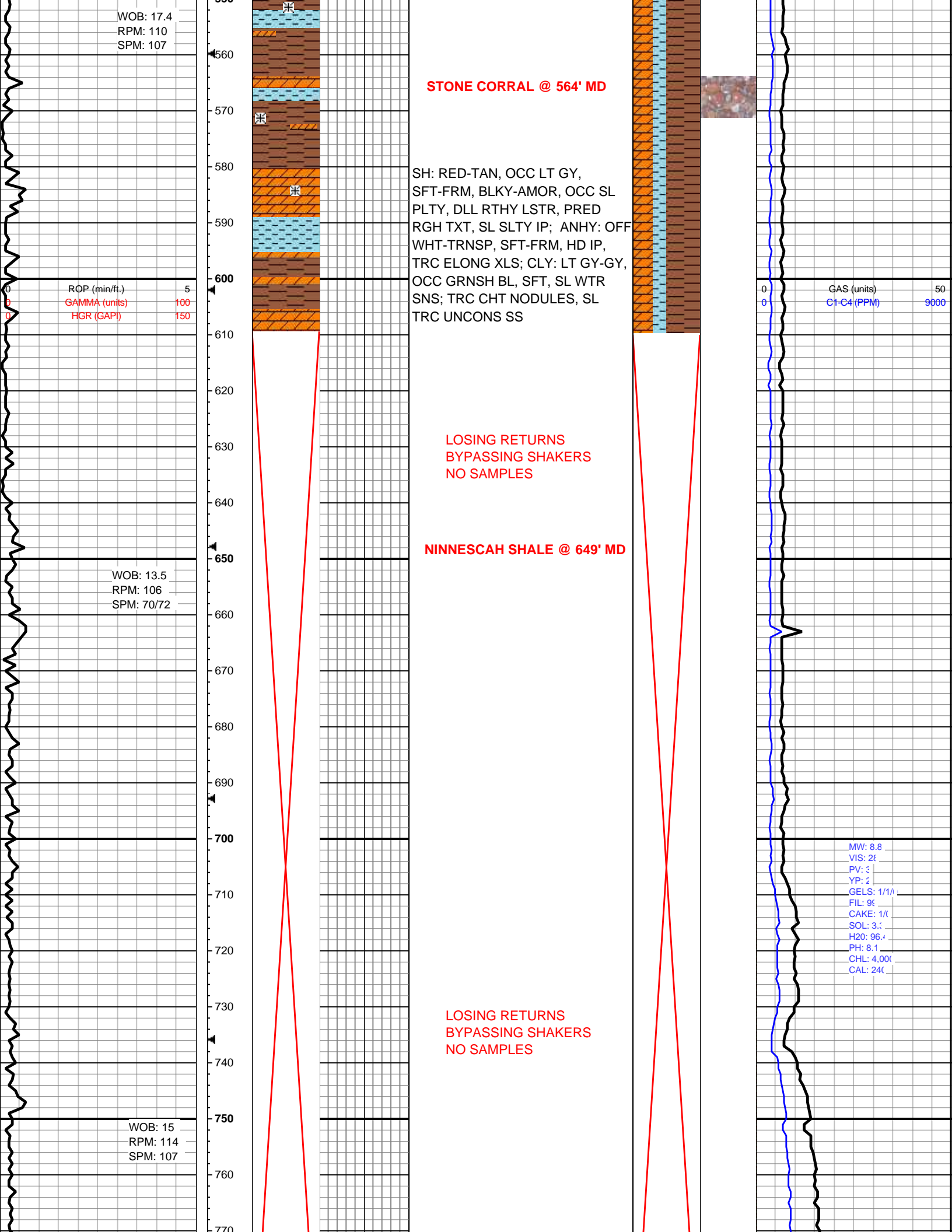
NINNESCAH SHALE @ 649' MD

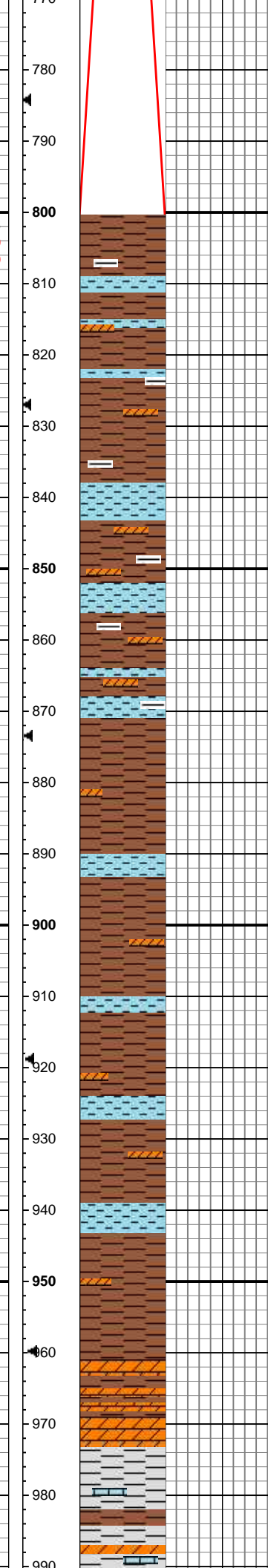
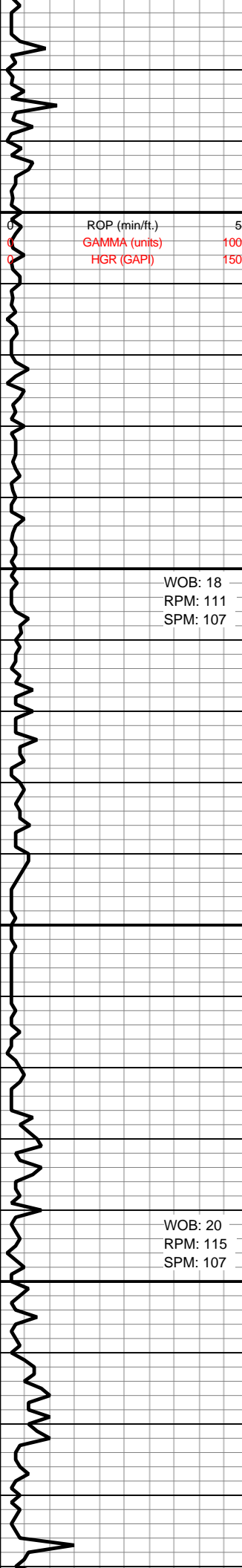
WOB: 13.5
RPM: 106
SPM: 70/72

MW: 8.8
VIS: 28
PV: 3
YP: 2
GELS: 1/10
FIL: 96
CAKE: 10
SOL: 3.5
H2O: 96.4
PH: 8.1
CHL: 4.00
CAL: 240

LOSING RETURNS
BYPASSING SHAKERS
NO SAMPLES

WOB: 15
RPM: 114
SPM: 107



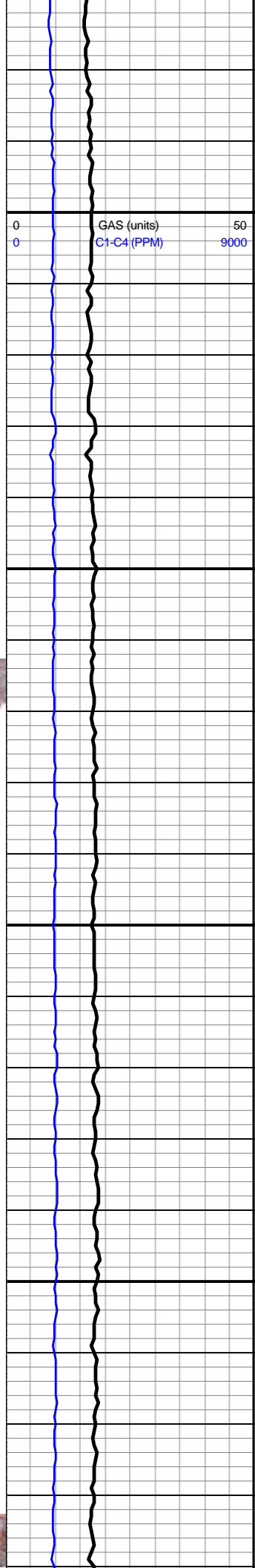


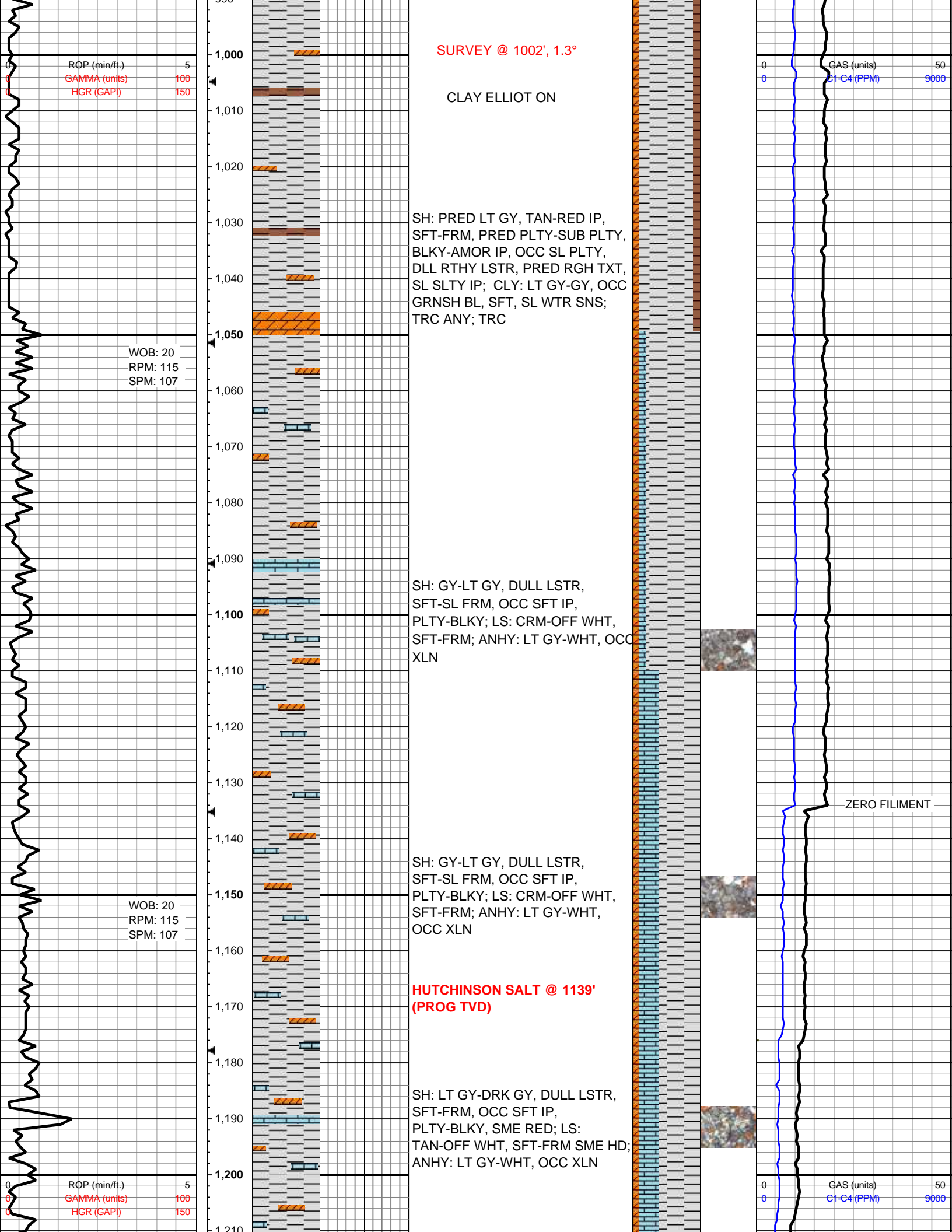
SH: RED-TAN, GY, SFT-FRM,
 BLKY-AMOR, OCC SL PLTY, DLL
 RTHY LSTR, PRED RGH TXT, SL
 SLTY IP; CLY: LT GY-GY, OCC
 GRNSH BL, SFT, SL WTR SNS;
 TRC ANY & UNCONS SS

SH: RED-TAN, GY, SFT-FRM,
 BLKY-AMOR, OCC SL PLTY, DLL
 RTHY LSTR, PRED RGH TXT, SL
 SLTY IP; CLY: LT GY-GY, OCC
 GRNSH BL, SFT, SL WTR SNS;
 TRC ANY & UNCONS SS

UPPER WELLINGTON @ 972'

SH: GY, TAN-RED IP, SFT-FRM,
 PRED PLTY-SUB PLTY,
 BLKY-AMOR IP, OCC SL PLTY,
 DLL RTHY LSTR, PRED RGH TXT,
 SL SLTY IP; CLY: LT GY-GY, OCC
 GRNSH BL, SFT, SL WTR SNS;
 TRC ANY; TRC LS





SURVEY @ 1002', 1.3°

CLAY ELLIOT ON

SH: PRED LT GY, TAN-RED IP, SFT-FRM, PRED PLTY-SUB PLTY, BLKY-AMOR IP, OCC SL PLTY, DLL RTHY LSTR, PRED RGH TXT, SL SLTY IP; CLY: LT GY-GY, OCC GRNSH BL, SFT, SL WTR SNS; TRC ANY; TRC

SH: GY-LT GY, DULL LSTR, SFT-SL FRM, OCC SFT IP, PLTY-BLKY; LS: CRM-OFF WHT, SFT-FRM; ANHY: LT GY-WHT, OCC XLN

SH: GY-LT GY, DULL LSTR, SFT-SL FRM, OCC SFT IP, PLTY-BLKY; LS: CRM-OFF WHT, SFT-FRM; ANHY: LT GY-WHT, OCC XLN

HUTCHINSON SALT @ 1139' (PROG TVD)

SH: LT GY-DRK GY, DULL LSTR, SFT-FRM, OCC SFT IP, PLTY-BLKY, SME RED; LS: TAN-OFF WHT, SFT-FRM SME HD; ANHY: LT GY-WHT, OCC XLN

ROP (min/ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

WOB: 20
 RPM: 115
 SPM: 107

WOB: 20
 RPM: 115
 SPM: 107

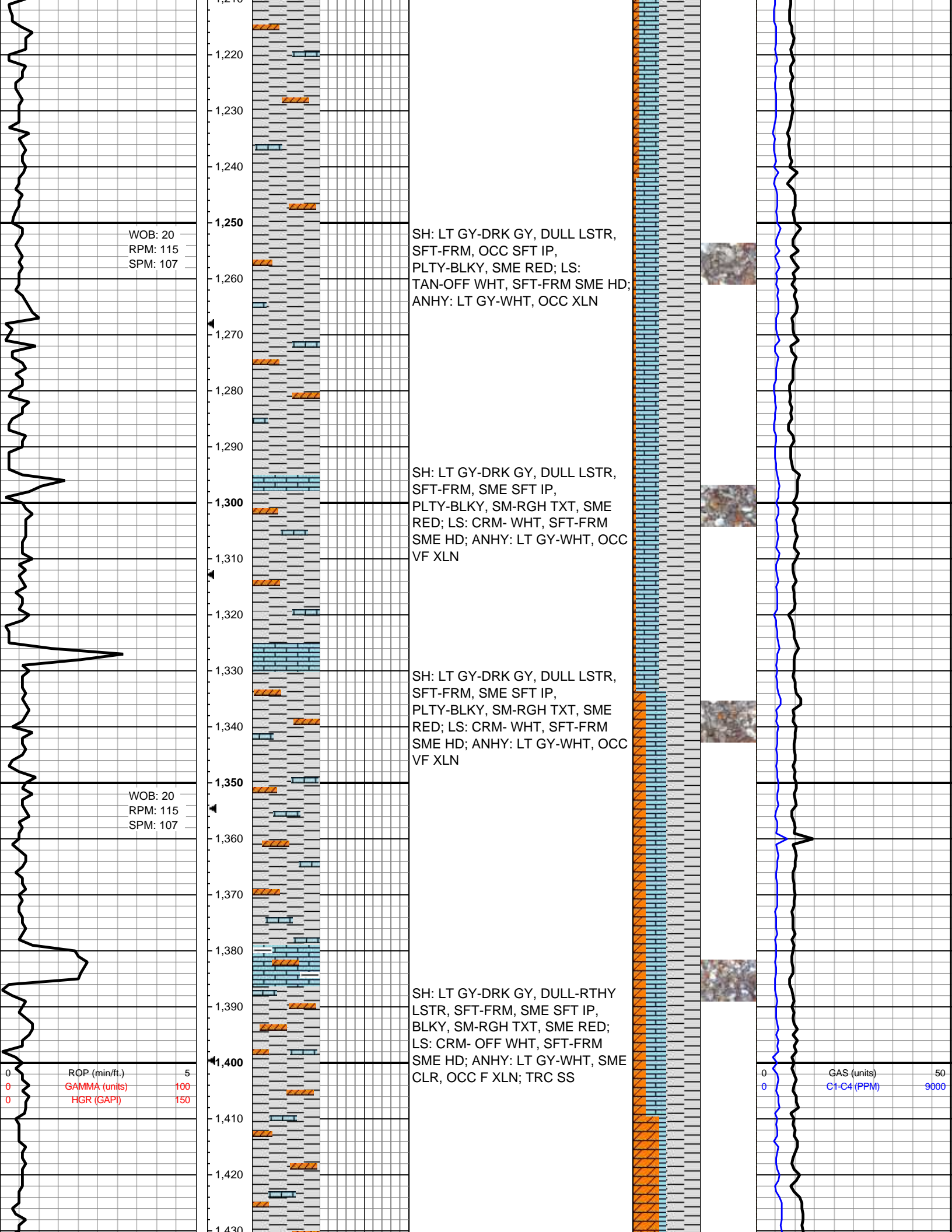
ROP (min/ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

GAS (units) 50
 C1-C4 (PPM) 9000

GAS (units) 50
 C1-C4 (PPM) 9000

ZERO FILIMENT





WOB: 20
RPM: 115
SPM: 107

SH: LT GY-DRK GY, DULL LSTR,
SFT-FRM, OCC SFT IP,
PLTY-BLKY, SME RED; LS:
TAN-OFF WHT, SFT-FRM SME HD;
ANHY: LT GY-WHT, OCC XLN

SH: LT GY-DRK GY, DULL LSTR,
SFT-FRM, SME SFT IP,
PLTY-BLKY, SM-RGH TXT, SME
RED; LS: CRM- WHT, SFT-FRM
SME HD; ANHY: LT GY-WHT, OCC
VF XLN

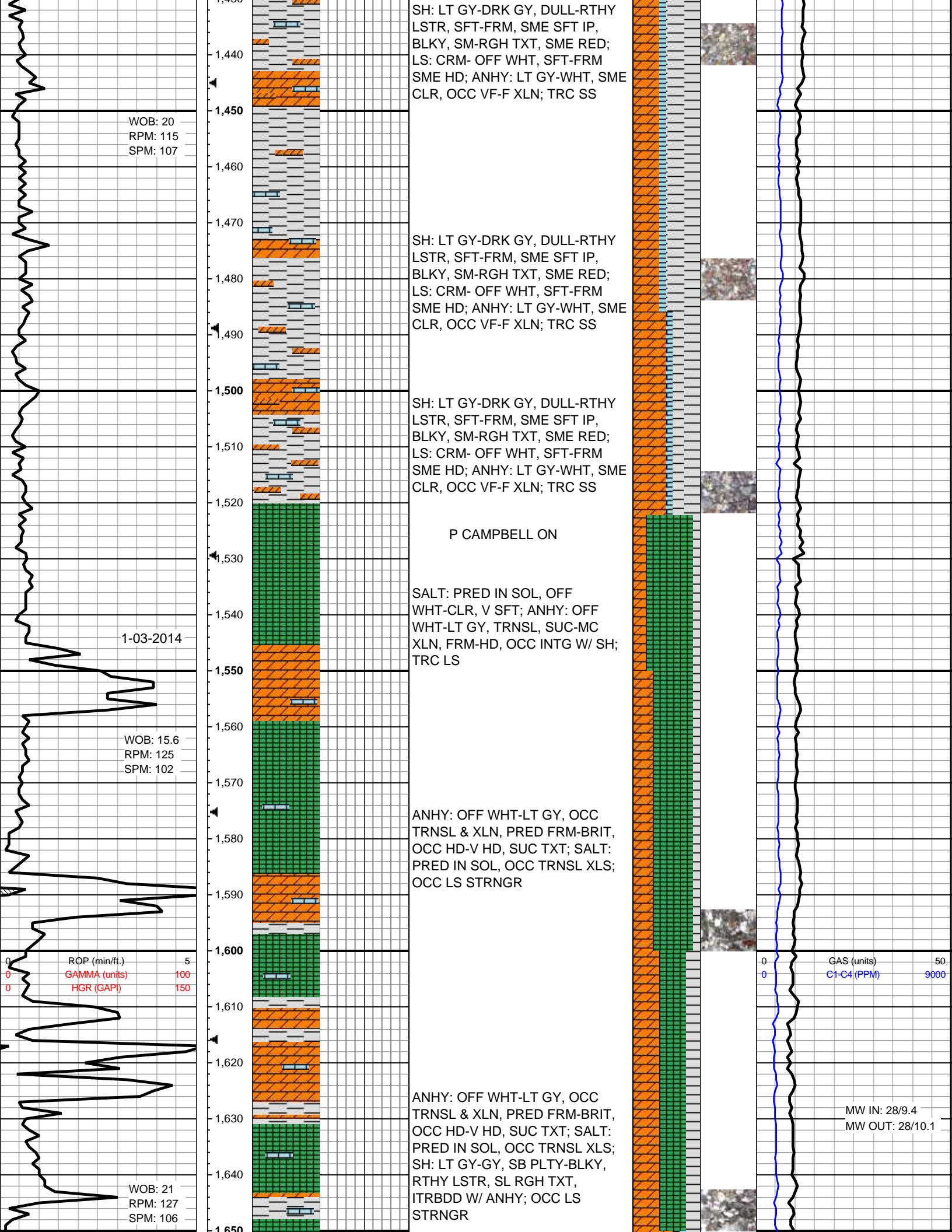
SH: LT GY-DRK GY, DULL LSTR,
SFT-FRM, SME SFT IP,
PLTY-BLKY, SM-RGH TXT, SME
RED; LS: CRM- WHT, SFT-FRM
SME HD; ANHY: LT GY-WHT, OCC
VF XLN

WOB: 20
RPM: 115
SPM: 107

SH: LT GY-DRK GY, DULL-RTHY
LSTR, SFT-FRM, SME SFT IP,
BLKY, SM-RGH TXT, SME RED;
LS: CRM- OFF WHT, SFT-FRM
SME HD; ANHY: LT GY-WHT, SME
CLR, OCC F XLN; TRC SS

ROP (min/ft.) 5
GAMMA (units) 100
HGR (GAPI) 150

GAS (units) 50
C1-C4 (PPM) 9000



WOB: 20
RPM: 115
SPM: 107

SH: LT GY-DRK GY, DULL-RTHY LSTR, SFT-FRM, SME SFT IP, BLKY, SM-RGH TXT, SME RED; LS: CRM- OFF WHT, SFT-FRM SME HD; ANHY: LT GY-WHT, SME CLR, OCC VF-F XLN; TRC SS

SH: LT GY-DRK GY, DULL-RTHY LSTR, SFT-FRM, SME SFT IP, BLKY, SM-RGH TXT, SME RED; LS: CRM- OFF WHT, SFT-FRM SME HD; ANHY: LT GY-WHT, SME CLR, OCC VF-F XLN; TRC SS

SH: LT GY-DRK GY, DULL-RTHY LSTR, SFT-FRM, SME SFT IP, BLKY, SM-RGH TXT, SME RED; LS: CRM- OFF WHT, SFT-FRM SME HD; ANHY: LT GY-WHT, SME CLR, OCC VF-F XLN; TRC SS

P CAMPBELL ON

1-03-2014

SALT: PRED IN SOL, OFF WHT-CLR, V SFT; ANHY: OFF WHT-LT GY, TRNSL, SUC-MC XLN, FRM-HD, OCC INTG W/ SH; TRC LS

WOB: 15.6
RPM: 125
SPM: 102

ANHY: OFF WHT-LT GY, OCC TRNSL & XLN, PRED FRM-BRIT, OCC HD-V HD, SUC TXT; SALT: PRED IN SOL, OCC TRNSL XLS; OCC LS STRNGR

ROP (min/ft.) 5
GAMMA (units) 100
HGR (GAPI) 150

GAS (units) 50
C1-C4 (PPM) 9000

ANHY: OFF WHT-LT GY, OCC TRNSL & XLN, PRED FRM-BRIT, OCC HD-V HD, SUC TXT; SALT: PRED IN SOL, OCC TRNSL XLS; SH: LT GY-GY, SB PLTY-BLKY, RTHY LSTR, SL RGH TXT, ITRBDD W/ ANHY; OCC LS STRNGR

WOB: 21
RPM: 127
SPM: 106

MW IN: 28/9.4
MW OUT: 28/10.1

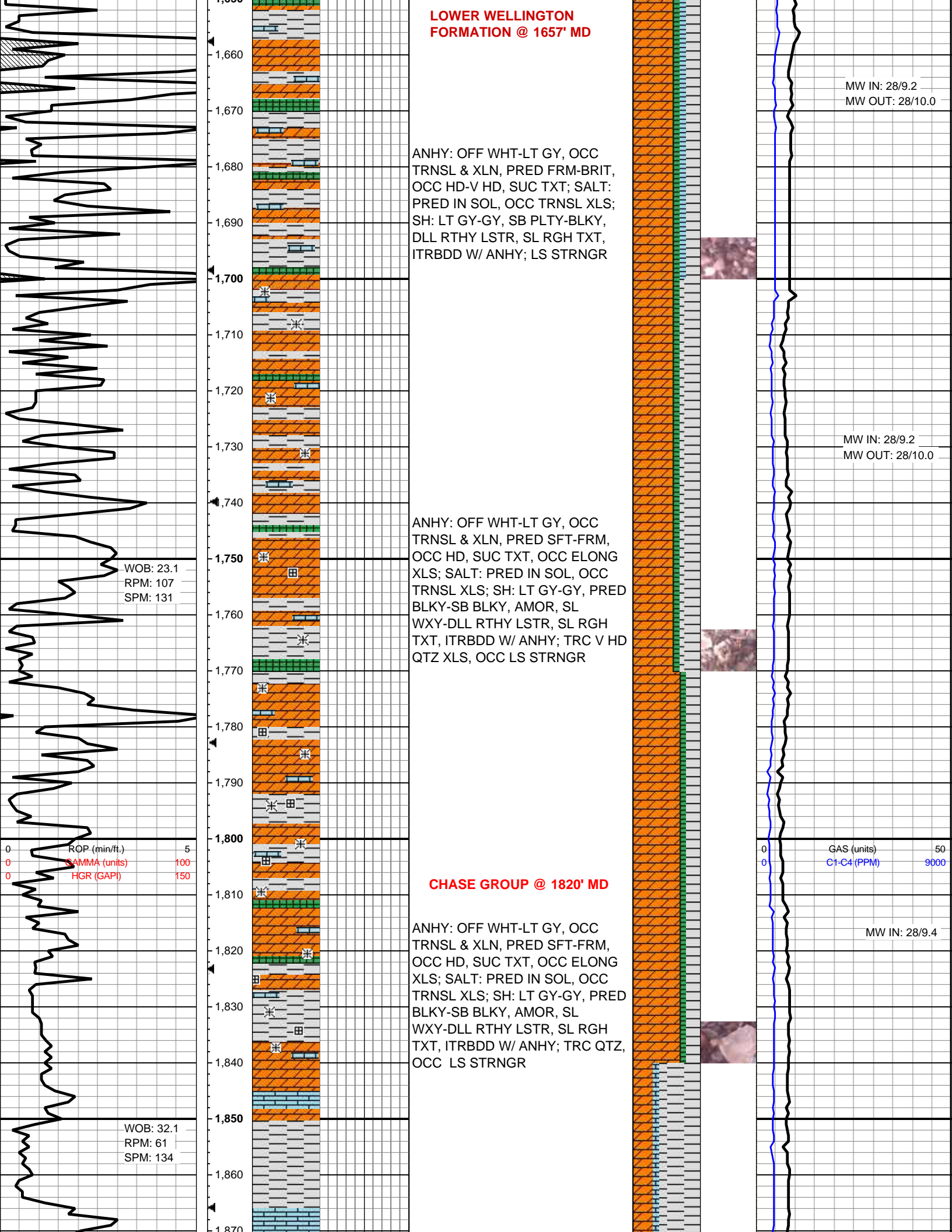
LOWER WELLINGTON FORMATION @ 1657' MD

ANHY: OFF WHT-LT GY, OCC TRNSL & XLN, PRED FRM-BRIT, OCC HD-V HD, SUC TXT; SALT: PRED IN SOL, OCC TRNSL XLS; SH: LT GY-GY, SB PLTY-BLKY, DLL RTHY LSTR, SL RGH TXT, ITRBDD W/ ANHY; LS STRNGR

ANHY: OFF WHT-LT GY, OCC TRNSL & XLN, PRED SFT-FRM, OCC HD, SUC TXT, OCC ELONG XLS; SALT: PRED IN SOL, OCC TRNSL XLS; SH: LT GY-GY, PRED BLKY-SB BLKY, AMOR, SL WXY-DLL RTHY LSTR, SL RGH TXT, ITRBDD W/ ANHY; TRC V HD QTZ XLS, OCC LS STRNGR

CHASE GROUP @ 1820' MD

ANHY: OFF WHT-LT GY, OCC TRNSL & XLN, PRED SFT-FRM, OCC HD, SUC TXT, OCC ELONG XLS; SALT: PRED IN SOL, OCC TRNSL XLS; SH: LT GY-GY, PRED BLKY-SB BLKY, AMOR, SL WXY-DLL RTHY LSTR, SL RGH TXT, ITRBDD W/ ANHY; TRC QTZ, OCC LS STRNGR



WOB: 23.1
RPM: 107
SPM: 131

ROP (min/ft.) 5
SAMMA (units) 100
HGR (GAPI) 150

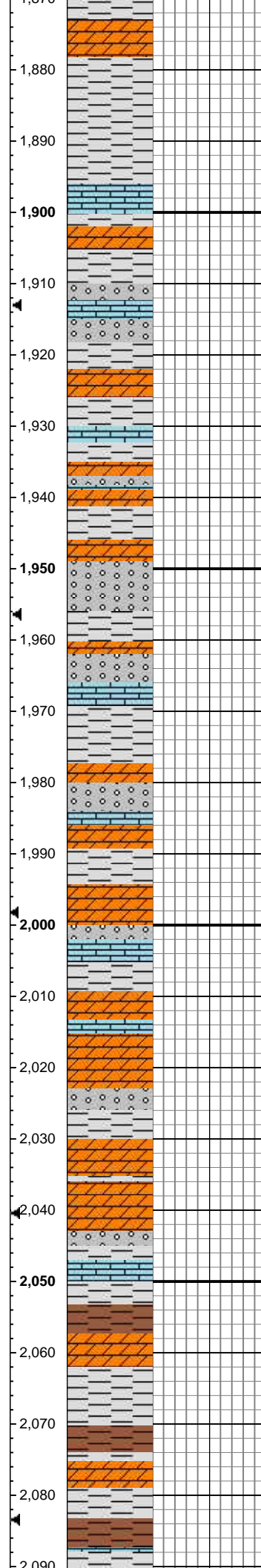
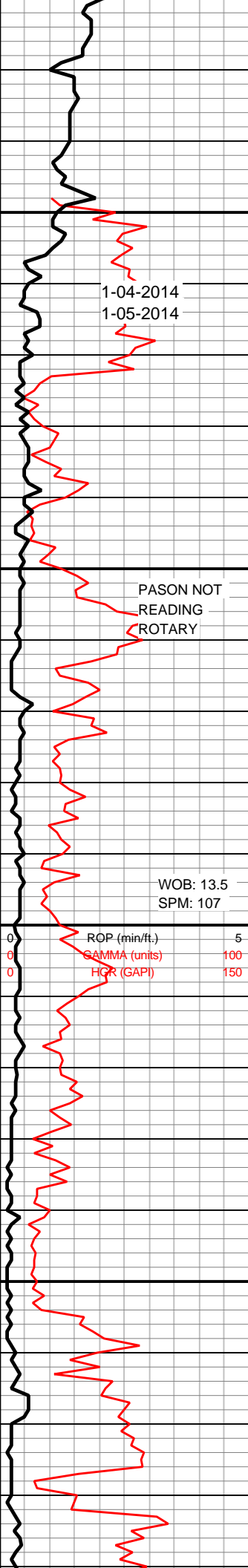
WOB: 32.1
RPM: 61
SPM: 134

MW IN: 28/9.2
MW OUT: 28/10.0

MW IN: 28/9.2
MW OUT: 28/10.0

GAS (units) 50
C1-C4 (PPM) 9000

MW IN: 28/9.4



SH: LT GY-GY, PRED BLKY-SB
 BLKY, AMOR, SL WXY-DLL RTHY
 LSTR, SL RGH TXT, ITRBDD W/
 ANHY; ANHY: OFF WHT-LT GY,
 OCC TRNSL & XLN, PRED
 SFT-FRM, OCC HD, SUC TXT,
 OCC ELONG XLS; LS: LT GY-OFF
 WHT, SFT FRM, CR XLN, PRED
 SM TXT

PUMP HIGH VIS SWEEP, CIRC,
 TOOH FOR CASING @ 1911' MD

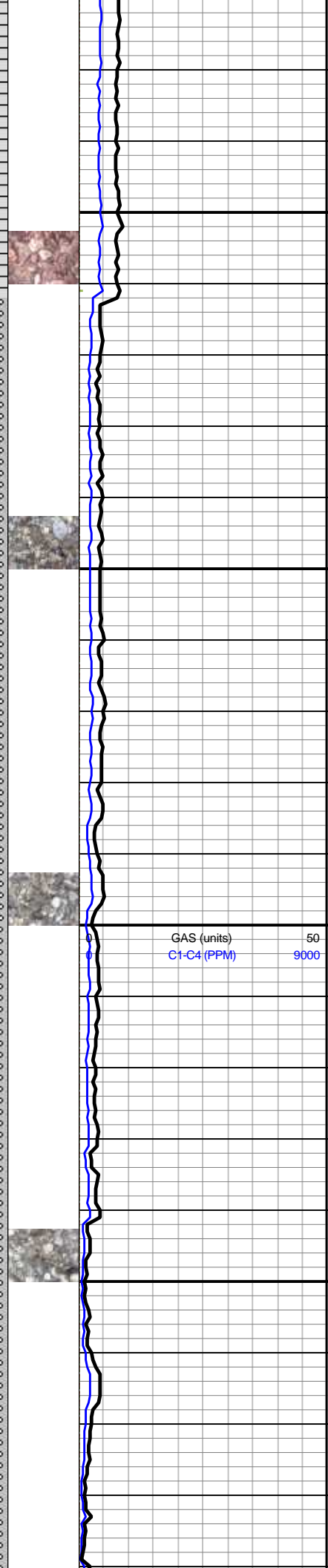
Bit #: 3
 Type: SEC FX55M
 Size: 8.75
 Depth In: 1,911 '
 Jets: 5x20s
 S/N: 11996294

S. ZIVERK ON

SH: LT MED GY FRM SLI HD SUB
 BLKY CHNKY SLTY SME ANHYD
 SH SCAT ANHYD: WH OFF WH LT
 DK GY FRM SLI HD SCAT LS: OFF
 WH LT GY MICROXLN DNS MASS
 SME INTBD ANHYD 25% CMT

SH: LT MED GY FRM SLI HD SUB
 BLKY CHNKY SLTY SME ANHYD
 SH SCAT ANHYD: WH OFF WH LT
 DK GY FRM SLI HD SCAT LS: OFF
 WH LT GY MICROXLN DNS MASS
 SME INTBD ANHYD 25% CMT

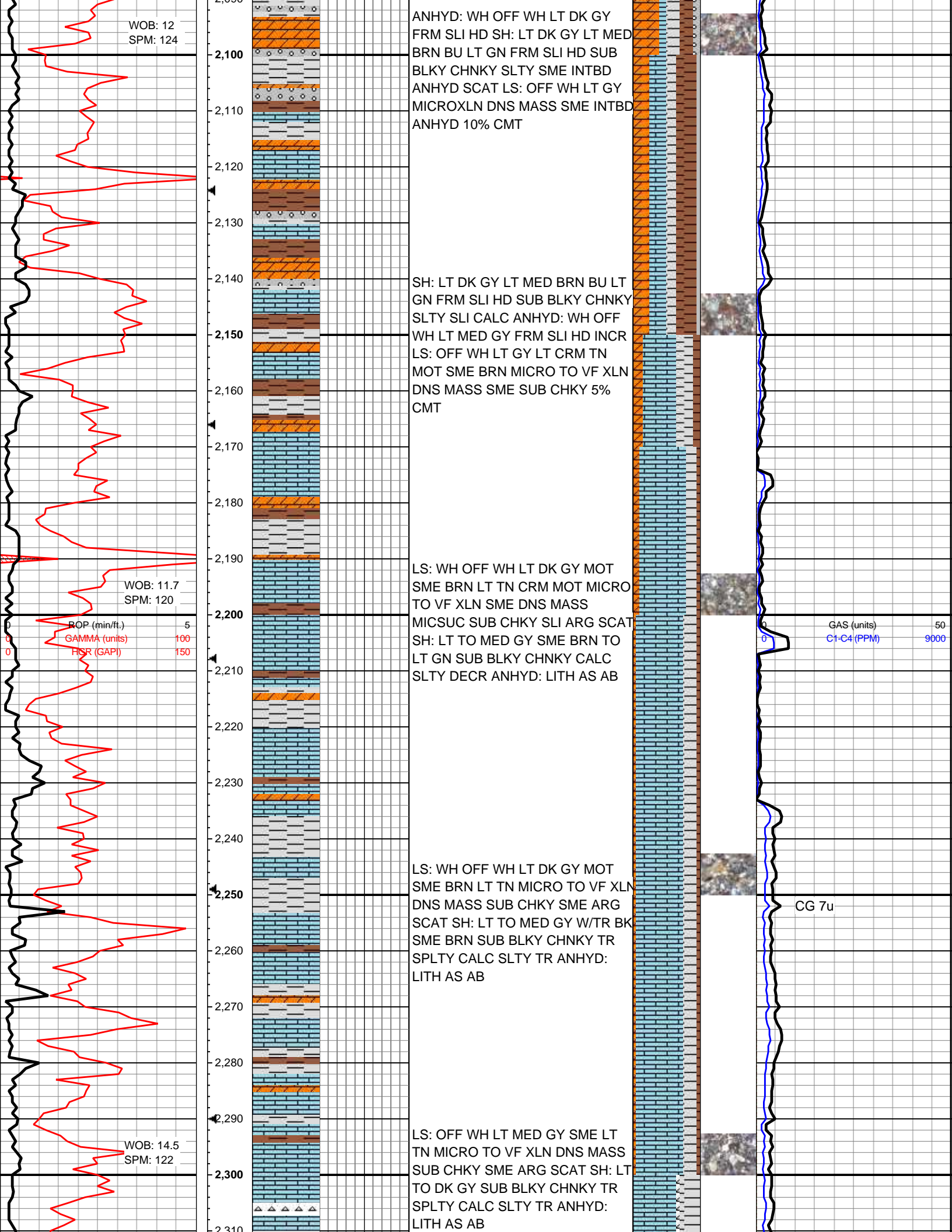
ANHYD: WH OFF WH LT DK GY
 FRM SLI HD DECR SH: LT DK GY
 FRM SLI HD SUB BLKY CHNKY
 SLTY SLI CALC INTBD ANHYD
 DECR LS: OFF WH LT GY
 MICROXLN DNS MASS SME INTBD
 ANHYD 20% CMT



WOB: 13.5
 SPM: 107

ROP (min/ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

GAS (units) 50
 C1-C4 (PPM) 9000



WOB: 12
SPM: 124

ANHYD: WH OFF WH LT DK GY
FRM SLI HD SH: LT DK GY LT MED
BRN BU LT GN FRM SLI HD SUB
BLKY CHNKY SLTY SME INTBD
ANHYD SCAT LS: OFF WH LT GY
MICROXLN DNS MASS SME INTBD
ANHYD 10% CMT

SH: LT DK GY LT MED BRN BU LT
GN FRM SLI HD SUB BLKY CHNKY
SLTY SLI CALC ANHYD: WH OFF
WH LT MED GY FRM SLI HD INCR
LS: OFF WH LT GY LT CRM TN
MOT SME BRN MICRO TO VF XLN
DNS MASS SME SUB CHKY 5%
CMT

LS: WH OFF WH LT DK GY MOT
SME BRN LT TN CRM MOT MICRO
TO VF XLN SME DNS MASS
MICSUC SUB CHKY SLI ARG SCAT
SH: LT TO MED GY SME BRN TO
LT GN SUB BLKY CHNKY CALC
SLTY DECR ANHYD: LITH AS AB

LS: WH OFF WH LT DK GY MOT
SME BRN LT TN MICRO TO VF XLN
DNS MASS SUB CHKY SME ARG
SCAT SH: LT TO MED GY W/TR BK
SME BRN SUB BLKY CHNKY TR
SPLTY CALC SLTY TR ANHYD:
LITH AS AB

LS: OFF WH LT MED GY SME LT
TN MICRO TO VF XLN DNS MASS
SUB CHKY SME ARG SCAT SH: LT
TO DK GY SUB BLKY CHNKY TR
SPLTY CALC SLTY TR ANHYD:
LITH AS AB

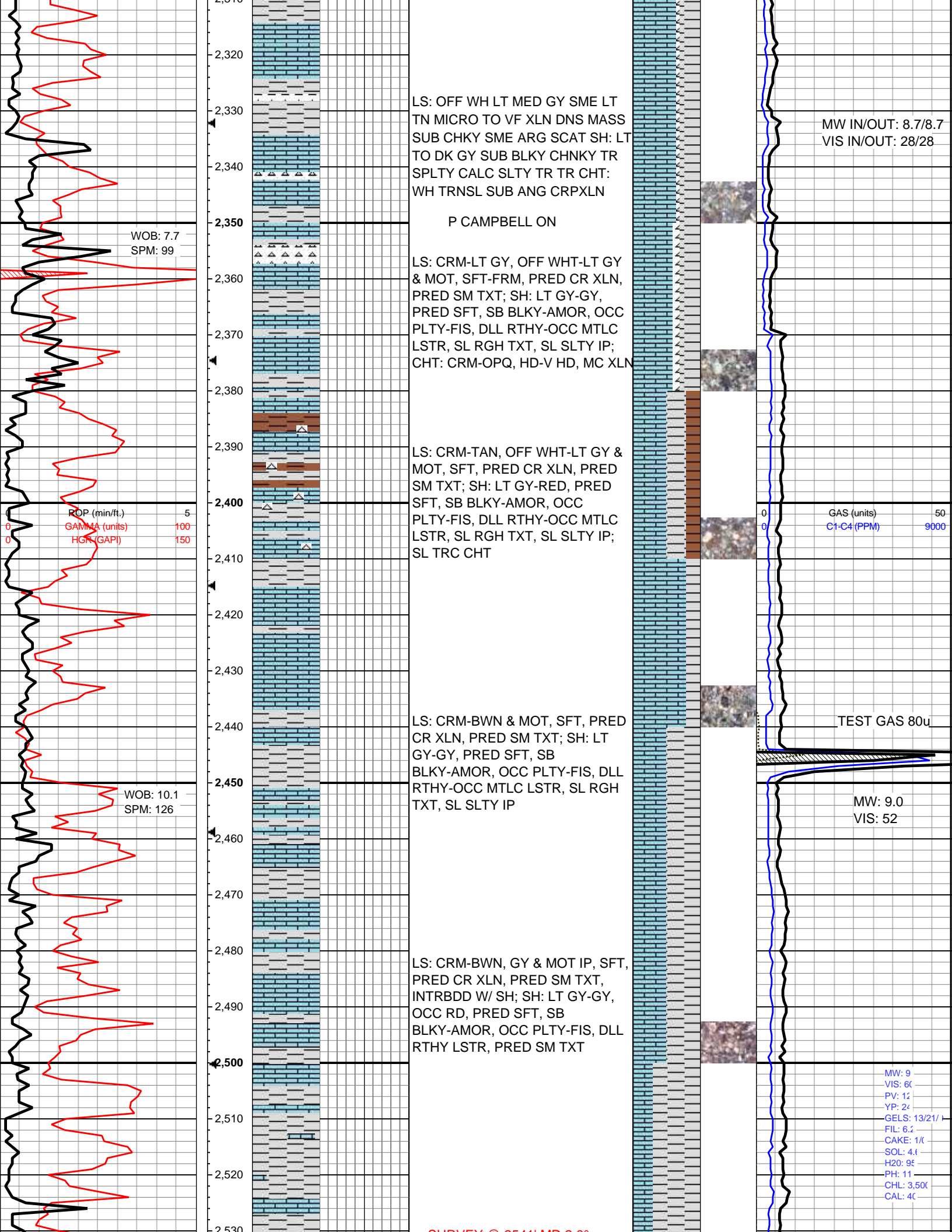
WOB: 11.7
SPM: 120

ROP (min/ft.) 5
GAMMA (units) 100
HSR (GAPI) 150

GAS (units) 50
C1-C4 (PPM) 9000

CG 7u

WOB: 14.5
SPM: 122



2,310
2,320
2,330
2,340
2,350
2,360
2,370
2,380
2,390
2,400
2,410
2,420
2,430
2,440
2,450
2,460
2,470
2,480
2,490
2,500
2,510
2,520
2,530

LS: OFF WH LT MED GY SME LT
TN MICRO TO VF XLN DNS MASS
SUB CHKY SME ARG SCAT SH: LT
TO DK GY SUB BLKY CHNKY TR
SPLTY CALC SLTY TR TR CHT:
WH TRNSL SUB ANG CRPXLN

P CAMPBELL ON

LS: CRM-LT GY, OFF WHT-LT GY &
MOT, SFT-FRM, PRED CR XLN,
PRED SM TXT; SH: LT GY-GY,
PRED SFT, SB BLKY-AMOR, OCC
PLTY-FIS, DLL RTHY-OCC MTLN
LSTR, SL RGH TXT, SL SLTY IP;
CHT: CRM-OPQ, HD-V HD, MC XLN

LS: CRM-TAN, OFF WHT-LT GY &
MOT, SFT, PRED CR XLN, PRED
SM TXT; SH: LT GY-RED, PRED
SFT, SB BLKY-AMOR, OCC
PLTY-FIS, DLL RTHY-OCC MTLN
LSTR, SL RGH TXT, SL SLTY IP;
SL TRC CHT

LS: CRM-BWN & MOT, SFT, PRED
CR XLN, PRED SM TXT; SH: LT
GY-GY, PRED SFT, SB
BLKY-AMOR, OCC PLTY-FIS, DLL
RTHY-OCC MTLN LSTR, SL RGH
TXT, SL SLTY IP

LS: CRM-BWN, GY & MOT IP, SFT,
PRED CR XLN, PRED SM TXT,
INTRBDD W/ SH; SH: LT GY-GY,
OCC RD, PRED SFT, SB
BLKY-AMOR, OCC PLTY-FIS, DLL
RTHY LSTR, PRED SM TXT

MW IN/OUT: 8.7/8.7
VIS IN/OUT: 28/28

WOB: 7.7
SPM: 99

ROP (min/ft.) 5
GAMMA (units) 100
HGR (GAPI) 150

WOB: 10.1
SPM: 126

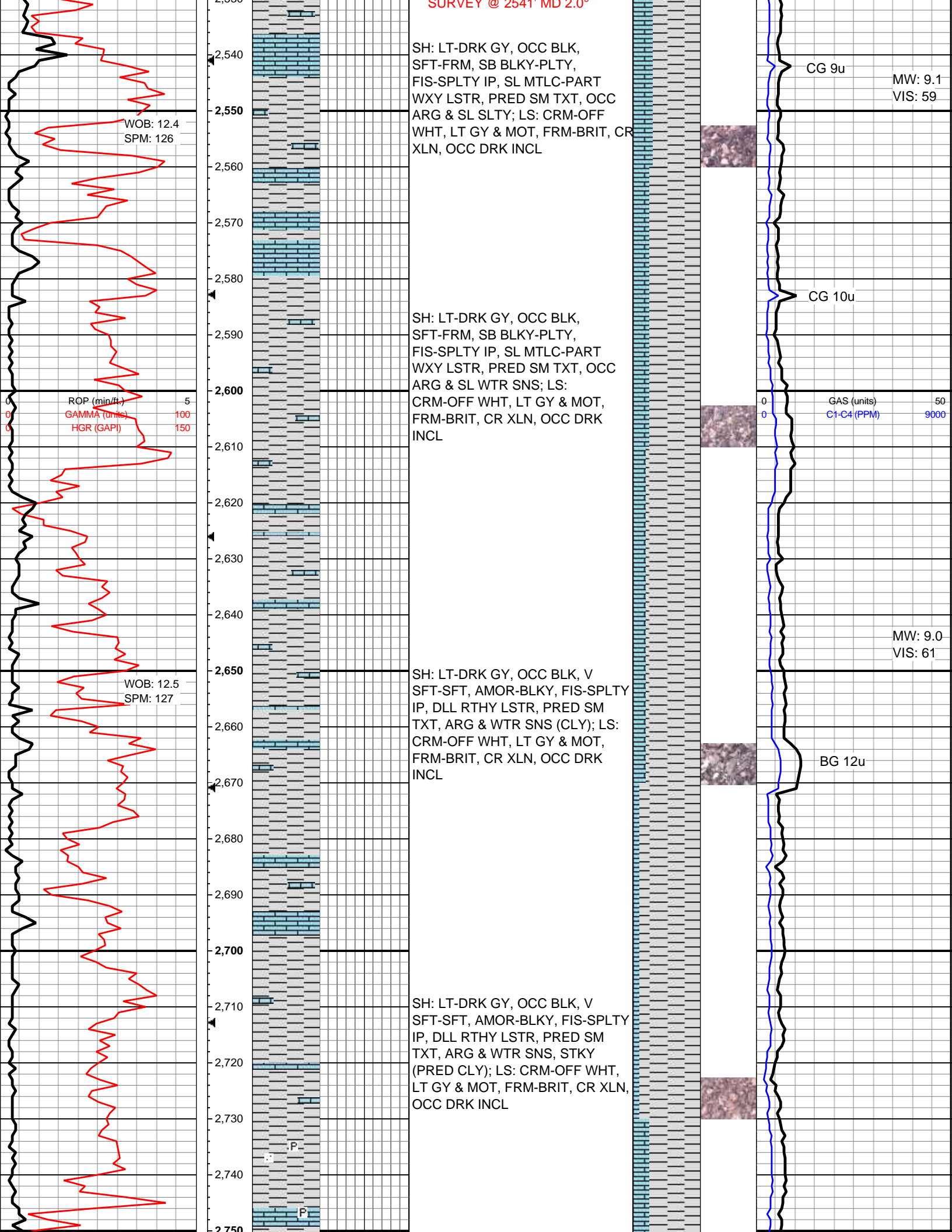
GAS (units) 50
C1-C4 (PPM) 9000

TEST GAS 80u

MW: 9.0
VIS: 52

MW: 9
VIS: 60
PV: 12
YP: 24
GELS: 13/21/1
FIL: 6.2
CAKE: 1/0
SOL: 4.0
H2O: 95
PH: 11
CHL: 3.50
CAL: 40

SURVEY @ 2541' MD 2.0'



WOB: 12.4
SPM: 126

ROP (min/ft) 5
GAMMA (units) 100
HGR (GAPI) 150

WOB: 12.5
SPM: 127

SH: LT-DRK GY, OCC BLK,
SFT-FRM, SB BLKY-PLTY,
FIS-SPLTY IP, SL MTLT-PART
WXY LSTR, PRED SM TXT, OCC
ARG & SL SLTY; LS: CRM-OFF
WHT, LT GY & MOT, FRM-BRIT, CR
XLN, OCC DRK INCL

SH: LT-DRK GY, OCC BLK,
SFT-FRM, SB BLKY-PLTY,
FIS-SPLTY IP, SL MTLT-PART
WXY LSTR, PRED SM TXT, OCC
ARG & SL WTR SNS; LS:
CRM-OFF WHT, LT GY & MOT,
FRM-BRIT, CR XLN, OCC DRK
INCL

SH: LT-DRK GY, OCC BLK, V
SFT-SFT, AMOR-BLKY, FIS-SPLTY
IP, DLL RTHY LSTR, PRED SM
TXT, ARG & WTR SNS (CLY); LS:
CRM-OFF WHT, LT GY & MOT,
FRM-BRIT, CR XLN, OCC DRK
INCL

SH: LT-DRK GY, OCC BLK, V
SFT-SFT, AMOR-BLKY, FIS-SPLTY
IP, DLL RTHY LSTR, PRED SM
TXT, ARG & WTR SNS, STKY
(PRED CLY); LS: CRM-OFF WHT,
LT GY & MOT, FRM-BRIT, CR XLN,
OCC DRK INCL

CG 9u MW: 9.1
VIS: 59

CG 10u

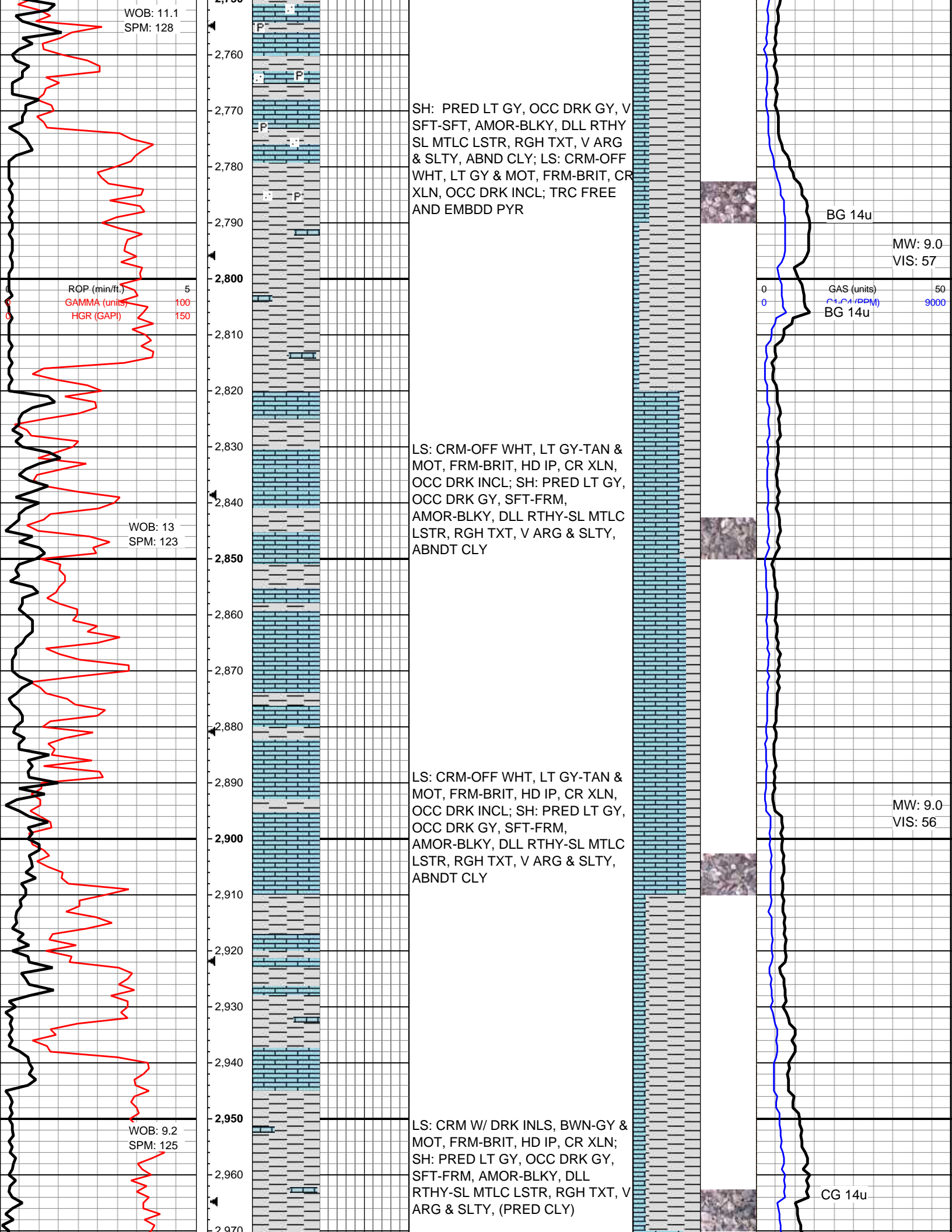
GAS (units) 50
C1-C4 (PPM) 9000

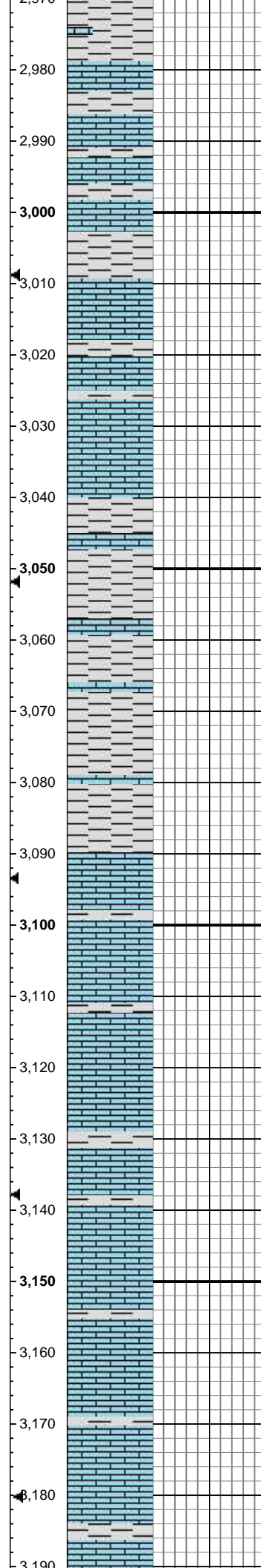
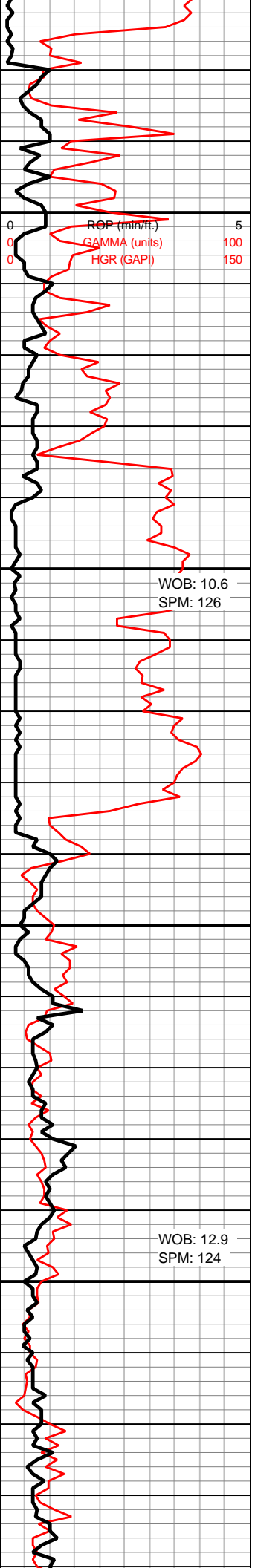
MW: 9.0
VIS: 61

BG 12u

P

P





LS: CRM-LT TAN, LT GY & MOT IP,
 FRM-BRIT, HD IP, CR XLN; SH:
 PRED LT GY-GY, OCC DRK GY,
 SFT-FRM, AMOR-BLKY, DLL
 RTHY-SL MTLT LSTR, RGH TXT,
 ARG, SL SLTY IP; NFSOC

SH: PRED LT GY-GY, SFT-FRM,
 AMOR-BLKY, DLL RTHY-SL MTLT
 LSTR, RGH TXT, ARG, SL SLTY IP;
 LS: CRM-LT TAN, LT GY & MOT IP,
 FRM-BRIT, HD IP, CR XLN;
 NFSOC

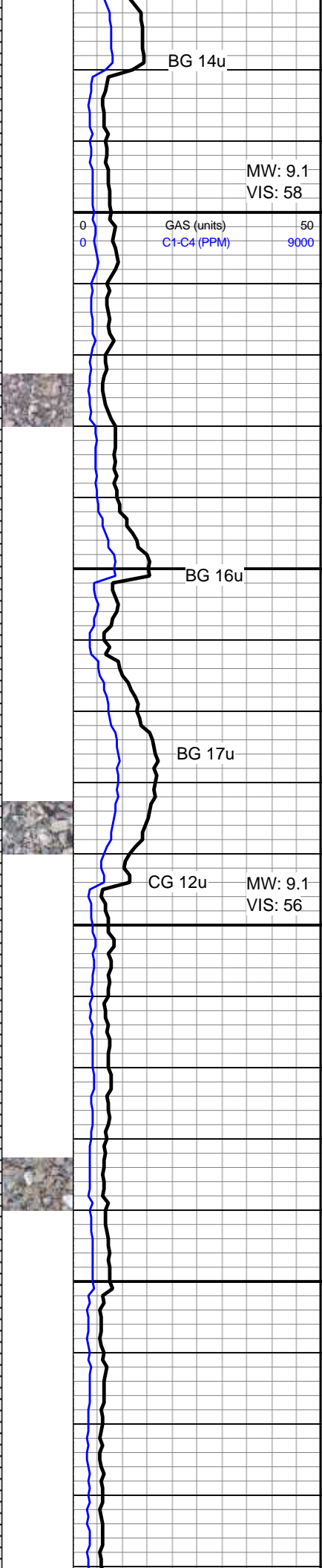
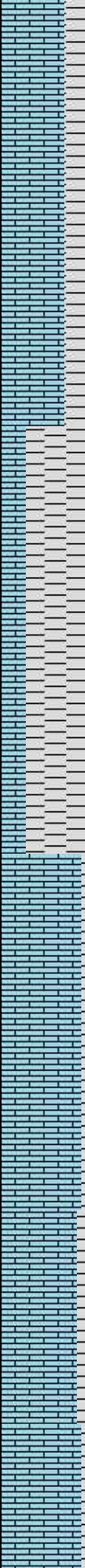
TOPEKA LS @ 3087' MD

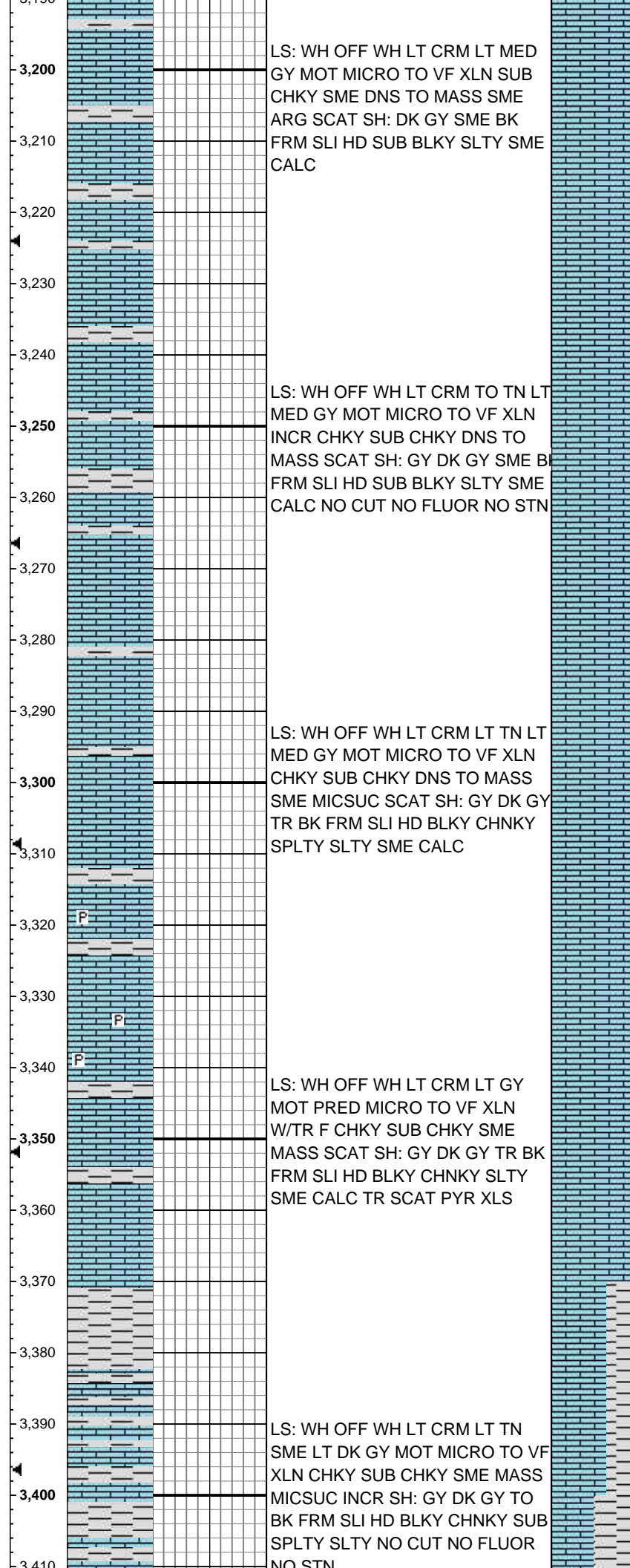
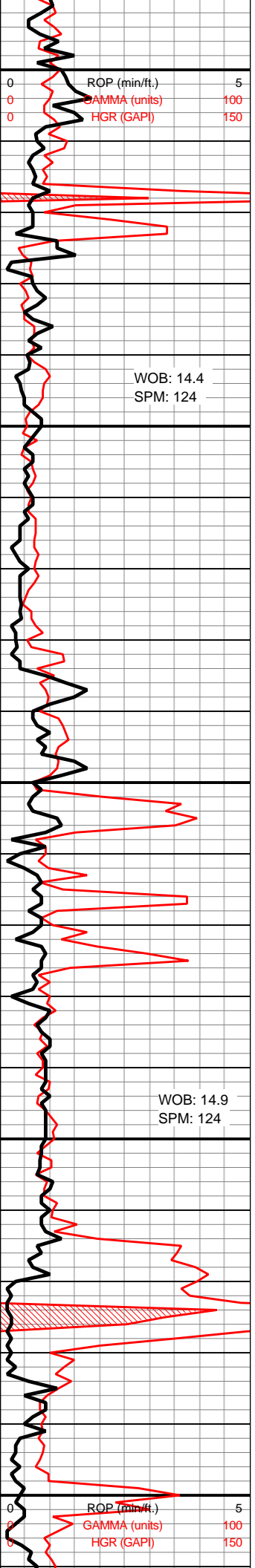
SURVEY @ 3094' MD 1.6°

LS: CRM-TAN & MOT, LT BWN,
 FRM-BRIT, CR XLN, SUC IP,
 PRED SM TXT; TRC SH; NFSOC

S. ZIVERK ON

LS: WH OFF WH LT CRM LT MOT
 GY MICRO TO VF XLN PRED SUB
 CHKY SME DNS TO MASS SME
 ARG SCAT TR SH: DK GY SME BK
 FRM SLI HD SUB BLKY SLTY SME
 CALC





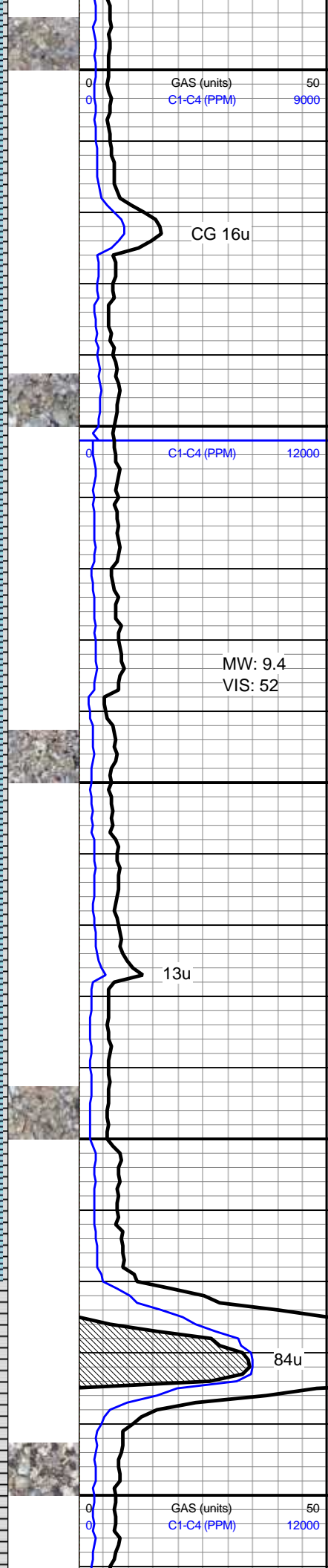
LS: WH OFF WH LT CRM LT MED
 GY MOT MICRO TO VF XLN SUB
 CHKY SME DNS TO MASS SME
 ARG SCAT SH: DK GY SME BK
 FRM SLI HD SUB BLKY SLTY SME
 CALC

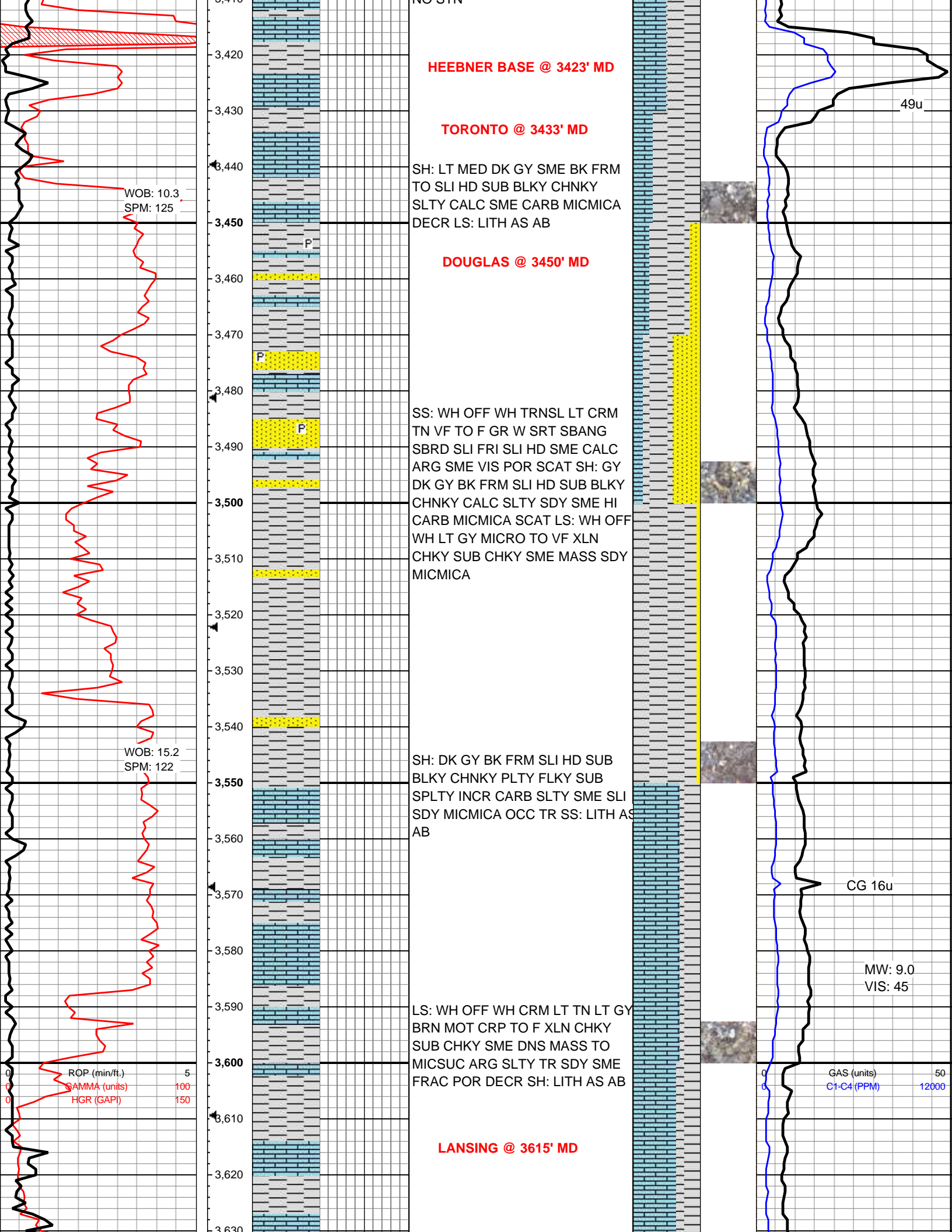
LS: WH OFF WH LT CRM TO TN LT
 MED GY MOT MICRO TO VF XLN
 INCR CHKY SUB CHKY DNS TO
 MASS SCAT SH: GY DK GY SME BK
 FRM SLI HD SUB BLKY SLTY SME
 CALC NO CUT NO FLUOR NO STN

LS: WH OFF WH LT CRM LT TN LT
 MED GY MOT MICRO TO VF XLN
 CHKY SUB CHKY DNS TO MASS
 SME MICSUC SCAT SH: GY DK GY
 TR BK FRM SLI HD BLKY CHNKY
 SPLTY SLTY SME CALC

LS: WH OFF WH LT CRM LT GY
 MOT PRED MICRO TO VF XLN
 W/TR F CHKY SUB CHKY SME
 MASS SCAT SH: GY DK GY TR BK
 FRM SLI HD BLKY CHNKY SLTY
 SME CALC TR SCAT PYR XLS

LS: WH OFF WH LT CRM LT TN
 SME LT DK GY MOT MICRO TO VF
 XLN CHKY SUB CHKY SME MASS
 MICSUC INCR SH: GY DK GY TO
 BK FRM SLI HD BLKY CHNKY SUB
 SPLTY SLTY NO CUT NO FLUOR
 NO STN





HEEBNER BASE @ 3423' MD

TORONTO @ 3433' MD

SH: LT MED DK GY SME BK FRM
 TO SLI HD SUB BLKY CHNKY
 SLTY CALC SME CARB MICMICA
 DECR LS: LITH AS AB

DOUGLAS @ 3450' MD

SS: WH OFF WH TRNSL LT CRM
 TN VF TO F GR W SRT SBANG
 SBRD SLI FRI SLI HD SME CALC
 ARG SME VIS POR SCAT SH: GY
 DK GY BK FRM SLI HD SUB BLKY
 CHNKY CALC SLTY SDY SME HI
 CARB MICMICA SCAT LS: WH OFF
 WH LT GY MICRO TO VF XLN
 CHKY SUB CHKY SME MASS SDY
 MICMICA

SH: DK GY BK FRM SLI HD SUB
 BLKY CHNKY PLTY FLKY SUB
 SPLTY INCR CARB SLTY SME SLI
 SDY MICMICA OCC TR SS: LITH AS
 AB

LS: WH OFF WH CRM LT TN LT GY
 BRN MOT CRP TO F XLN CHKY
 SUB CHKY SME DNS MASS TO
 MICSUC ARG SLTY TR SDY SME
 FRAC POR DECR SH: LITH AS AB

LANSING @ 3615' MD

WOB: 10.3
 SPM: 125

WOB: 15.2
 SPM: 122

ROP (min/ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

GAS (units) 50
 C1-C4 (PPM) 12000

49u

CG 16u

MW: 9.0
 VIS: 45

1-06-2014

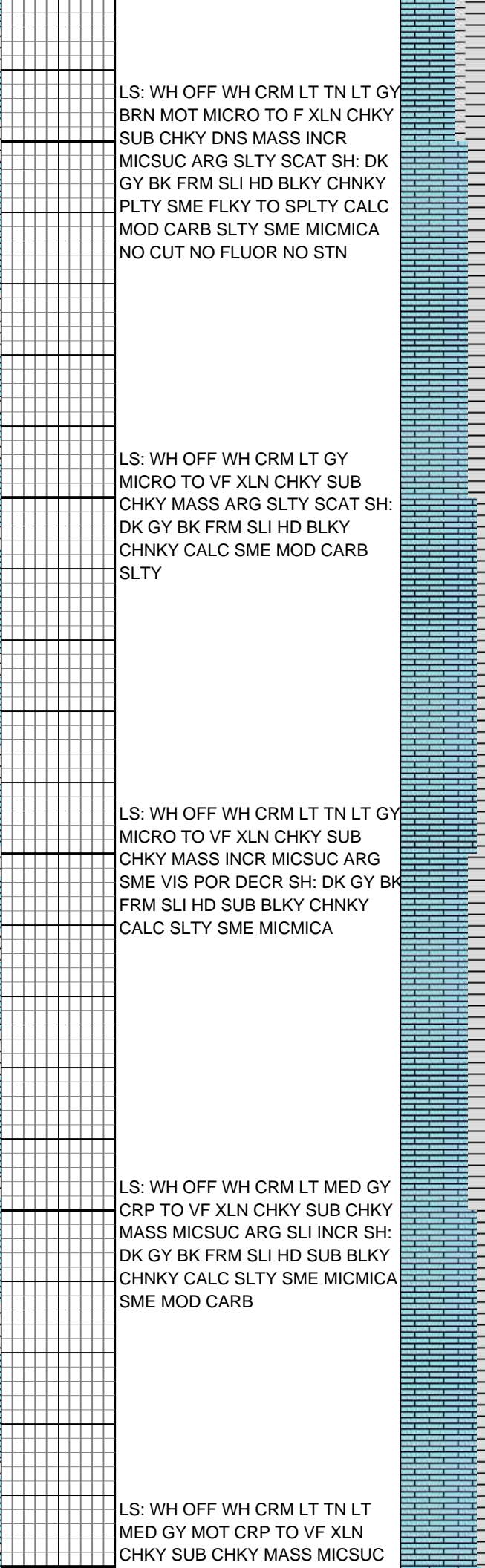
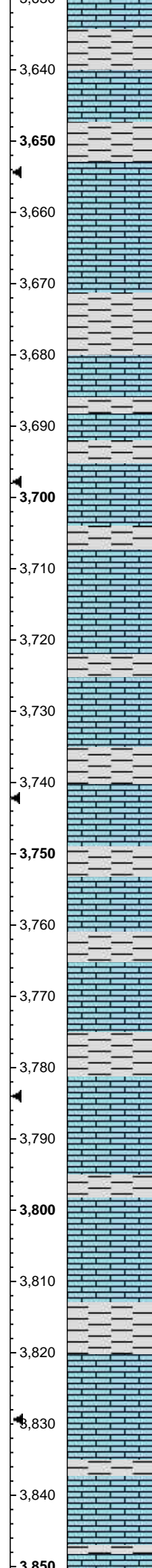
WOB: 17.1
SPM: 123

WOB: 18
SPM: 126

WOB: 17.7
SPM: 125

0	ROP (min/ft.)	5
0	GAMMA (units)	100
0	HGR (GAPI)	150

0	GAS (units)	50
0	C1-C4 (PPM)	12000



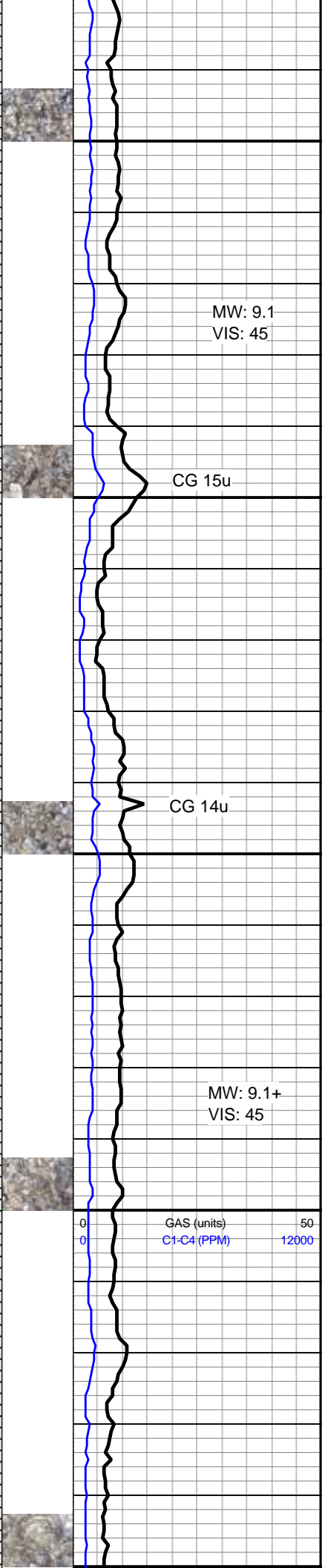
LS: WH OFF WH CRM LT TN LT GY
 BRN MOT MICRO TO F XLN CHKY
 SUB CHKY DNS MASS INCR
 MICSUC ARG SLTY SCAT SH: DK
 GY BK FRM SLI HD BLKY CHNKY
 PLTY SME FLKY TO SPLTY CALC
 MOD CARB SLTY SME MICMICA
 NO CUT NO FLUOR NO STN

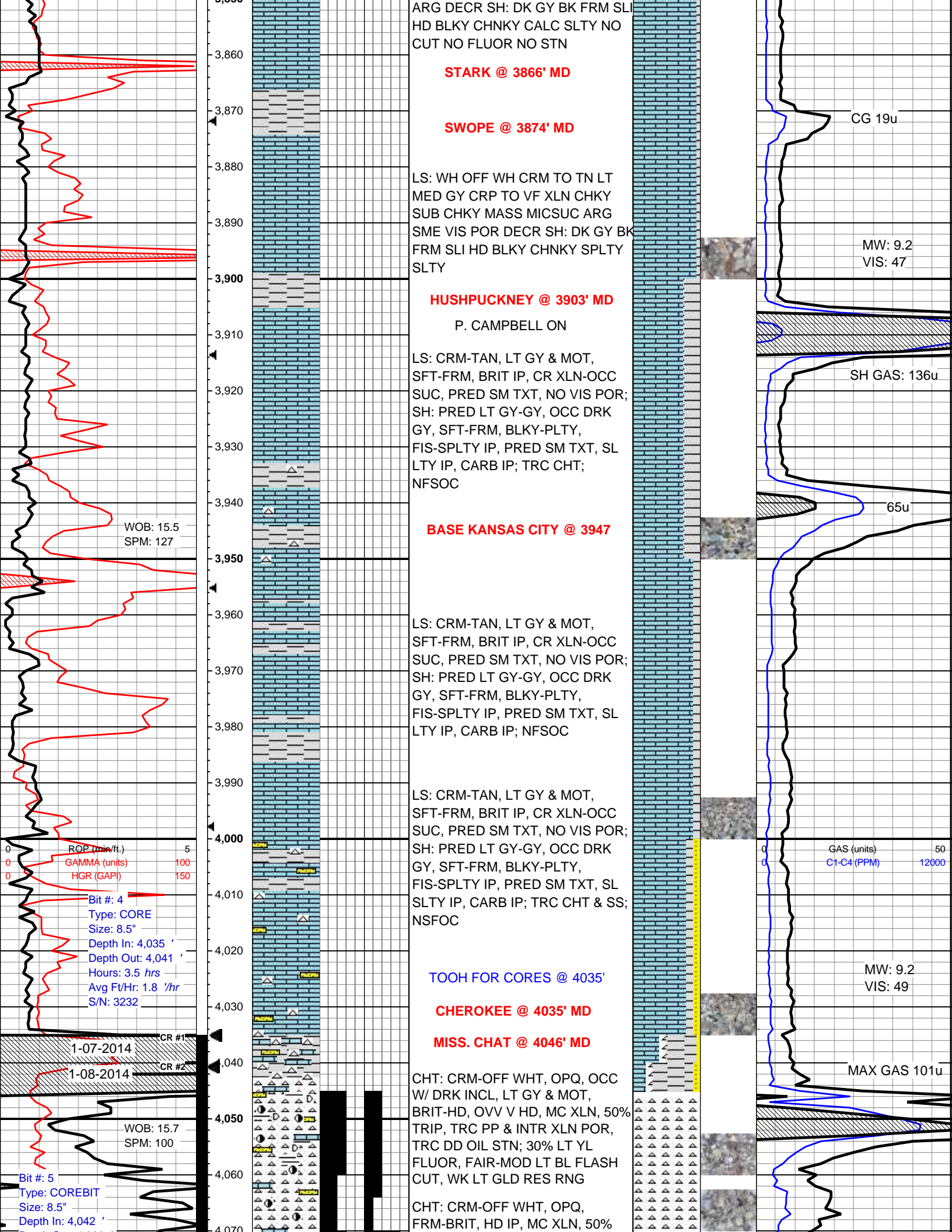
LS: WH OFF WH CRM LT GY
 MICRO TO VF XLN CHKY SUB
 CHKY MASS ARG SLTY SCAT SH:
 DK GY BK FRM SLI HD BLKY
 CHNKY CALC SME MOD CARB
 SLTY

LS: WH OFF WH CRM LT TN LT GY
 MICRO TO VF XLN CHKY SUB
 CHKY MASS INCR MICSUC ARG
 SME VIS POR DECR SH: DK GY BK
 FRM SLI HD SUB BLKY CHNKY
 CALC SLTY SME MICMICA

LS: WH OFF WH CRM LT MED GY
 CRP TO VF XLN CHKY SUB CHKY
 MASS MICSUC ARG SLI INCR SH:
 DK GY BK FRM SLI HD SUB BLKY
 CHNKY CALC SLTY SME MICMICA
 SME MOD CARB

LS: WH OFF WH CRM LT TN LT
 MED GY MOT CRP TO VF XLN
 CHKY SUB CHKY MASS MICSUC





ARG SH: DK GY BK FRM SLI
 HD BLKY CHNKY CALC SLTY NO
 CUT NO FLUOR NO STN

STARK @ 3866' MD

SWOPE @ 3874' MD

LS: WH OFF WH CRM TO TN LT
 MED GY CRP TO VF XLN CHKY
 SUB CHKY MASS MICSUC ARG
 SME VIS POR DECR SH: DK GY BK
 FRM SLI HD BLKY CHNKY SPLTY
 SLTY

HUSHPUCKNEY @ 3903' MD

P. CAMPBELL ON

LS: CRM-TAN, LT GY & MOT,
 SFT-FRM, BRIT IP, CR XLN-OCC
 SUC, PRED SM TXT, NO VIS POR;
 SH: PRED LT GY-GY, OCC DRK
 GY, SFT-FRM, BLKY-PLTY,
 FIS-SPLTY IP, PRED SM TXT, SL
 LTY IP, CARB IP; TRC CHT;
 NFSOC

BASE KANSAS CITY @ 3947

LS: CRM-TAN, LT GY & MOT,
 SFT-FRM, BRIT IP, CR XLN-OCC
 SUC, PRED SM TXT, NO VIS POR;
 SH: PRED LT GY-GY, OCC DRK
 GY, SFT-FRM, BLKY-PLTY,
 FIS-SPLTY IP, PRED SM TXT, SL
 LTY IP, CARB IP; NFSOC

LS: CRM-TAN, LT GY & MOT,
 SFT-FRM, BRIT IP, CR XLN-OCC
 SUC, PRED SM TXT, NO VIS POR;
 SH: PRED LT GY-GY, OCC DRK
 GY, SFT-FRM, BLKY-PLTY,
 FIS-SPLTY IP, PRED SM TXT, SL
 SLTY IP, CARB IP; TRC CHT & SS;
 NSFOC

TOOH FOR CORES @ 4035'

CHEROKEE @ 4035' MD

MISS. CHAT @ 4046' MD

CHT: CRM-OFF WHT, OPQ, OCC
 W/ DRK INCL, LT GY & MOT,
 BRIT-HD, OVV V HD, MC XLN, 50%
 TRIP, TRC PP & INTR XLN POR,
 TRC DD OIL STN; 30% LT YL
 FLUOR, FAIR-MOD LT BL FLASH
 CUT, WK LT GLD RES RNG

CHT: CRM-OFF WHT, OPQ,
 FRM-BRIT, HD IP, MC XLN, 50%

WOB: 15.5
 SPM: 127

ROP (min./ft.) 5
 GAMMA (units) 100
 HGR (GAPI) 150

Bit #: 4
 Type: CORE
 Size: 8.5"
 Depth In: 4,035 '
 Depth Out: 4,041 '
 Hours: 3.5 hrs
 Avg Ft/Hr: 1.8 '/hr
 S/N: 3232

CR #1
 1-07-2014
 CR #2
 1-08-2014

WOB: 15.7
 SPM: 100

Bit #: 5
 Type: COREBIT
 Size: 8.5"
 Depth In: 4,042 '

CG 19u

MW: 9.2
 VIS: 47

SH GAS: 136u

65u

GAS (units) 50
 C1-C4 (PPM) 12000

MW: 9.2
 VIS: 49

MAX GAS 101u

Depth Out: 4,092'
Hours: 7.5 hrs
Avg Ft/Hr: 6.67 /hr
S/N: 2980

1-09-2014

WOB: 10.4
SPM: 107

ROP (min/ft.)	5
GAMMA (units)	100
HGR (GAPI)	150

WOB: 10.1
SPM: 107

TRIP, TRC & INTR XLN POR W/
DD OIL STN; 40% LT YL FLUOR,
GD LT BL FLASH CUT, BGHT LT
YL RES RNG

TOOH W/CORES @ 4092'

S. ZIVERK ON

MISS. LIMESTONE @ 4103' MD

Bit #: 6
Type: FX55M
Size: 8.75"
Depth In: 4,096'
Jets: 5x20s
S/N: 11996294

LS: WH OFF WH LT CRM TN LT
MED BRN GY MOT MICRO TO VF
XLN MASS MICSUC CHKY SUB
CHKY SME SCAT CHT: WH ANG
SBANG TRIP MICROXLN VRY SLI
TR SH: MED DK GY FRM SLI HD
SUB BLKY CHNKY SLTY MICMICA
NO CUT NO FLUOR NO STN

KINDERHOOK SH. @ 4137' MD

SH: GY DK GY FRM SLI HD SUB
BLKY CHNKY SUB PLTY SUB
SPLTY SLTY SME SLI SDY
MICMICA DECR LS: OFF WH CRM
LT TN MICROXLN MASS MICSUC
SUB CHKY OCC SCAT CHT: LITH
AS AB W/ SLI TR INTBD NOD PYR

SH: GY DK GY FRM SLI HD SUB
BLKY CHNKY PLTY SLTY MICMICA
SCAT LS: OFF WH CRM LT TN
MICROXLN MASS CHKY SUB
CHKY OCC SCAT CHT: WH ANG
SBANG TRIP MICROXLN OCC
FREE PYR XLS

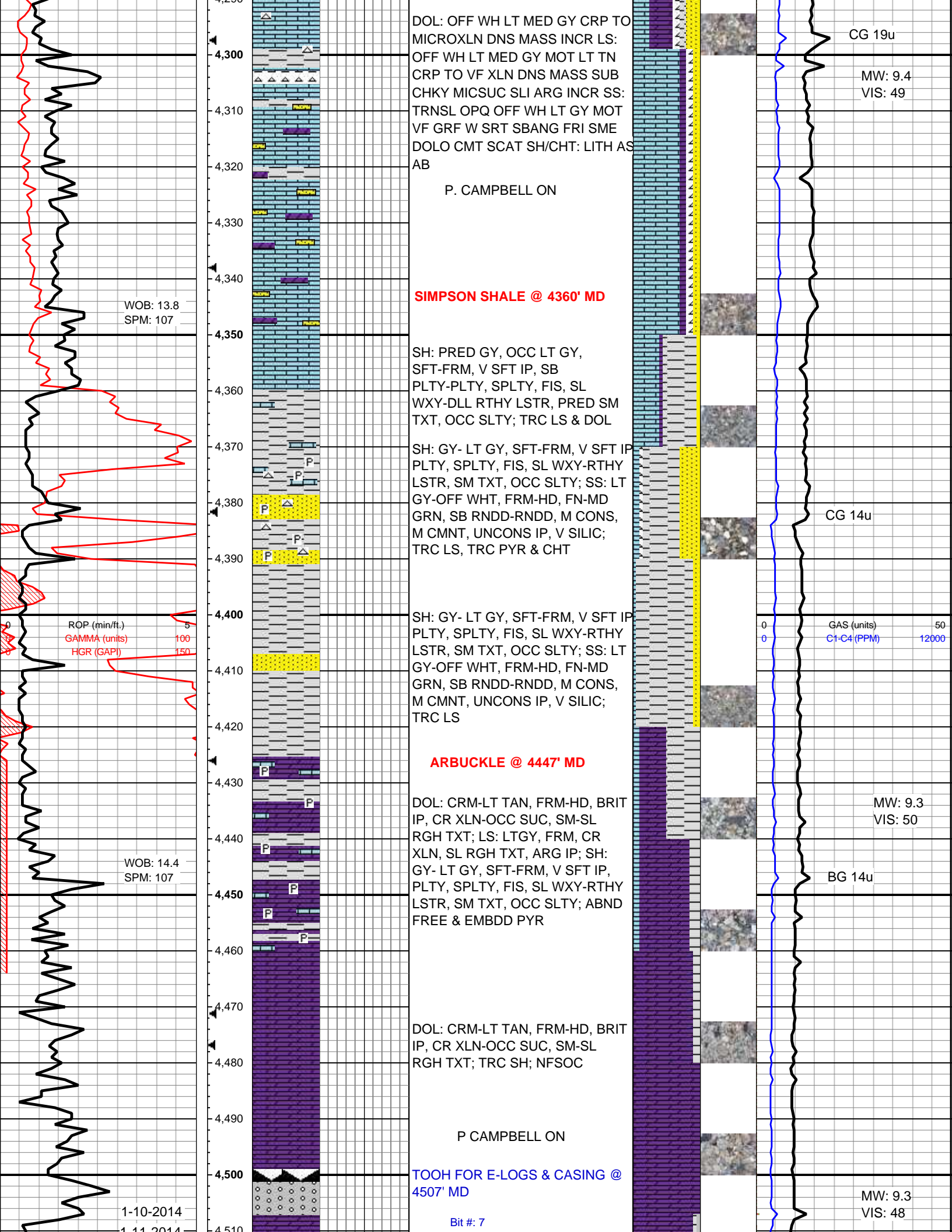
SH: MED GY DK GY FRM SLI HD
SUB BLKY CHNKY PLTY SLTY
SME SLI CALC OCC LS: LT TO
MED GY MOT MICRO TO VF XLN
MASS SME MICSUC SME SCAT
CHT: WH ANG TRIP MICROXLN
W/OCC FREE & INTBD PYR NO
CUT NO FLUOR NO STN

VIOLA LIMESTONE @ 4272' MD

MW: 9.4
VIS: 49

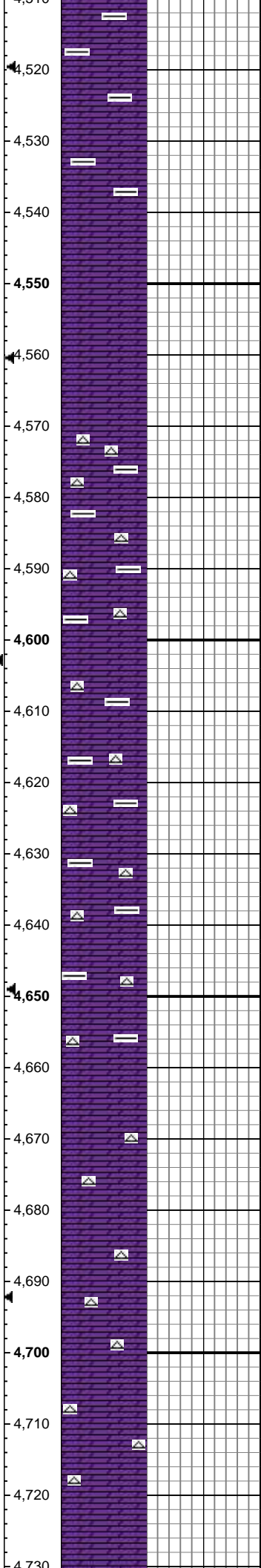
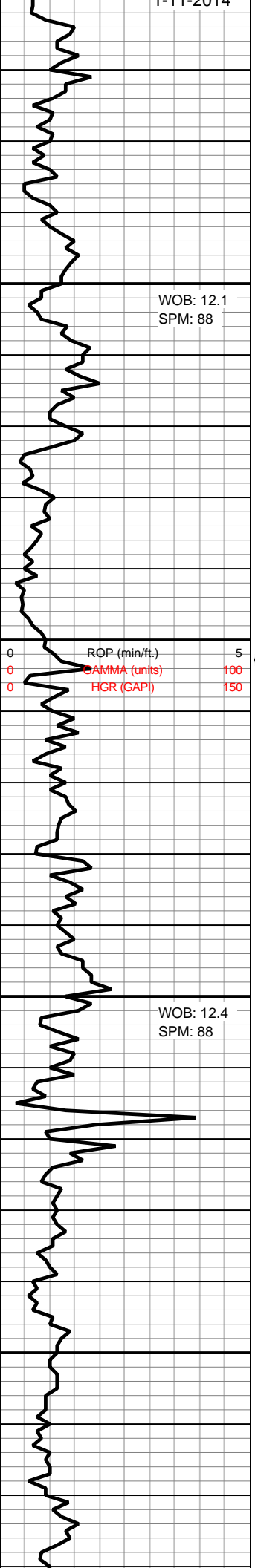
GAS (units)	50
C1-C4 (PPM)	12000

BG 17u



1-11-2014

Type: MM64DI
Size: 6.125"
Depth In: 4,507 '
Jets: 6x14s
S/N: 12082304



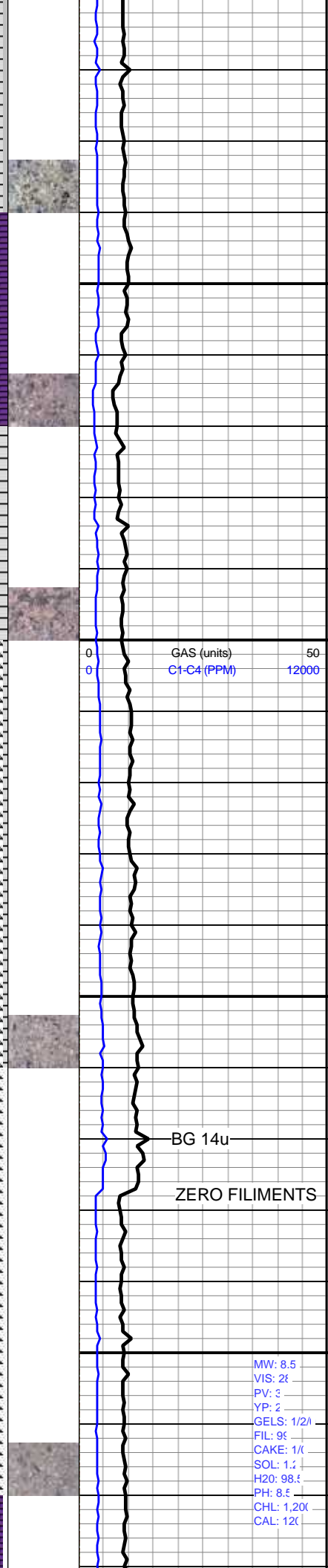
DOL: CRM-LT TAN, OCC
OPQ-TRNSP XLS, FRM-HD, BRIT
IP, CR XLN-OCC SUC, SM-SL
RGH TXT; TRC SH & CMNT;
NFSOC

DOL: CRM-LT TAN, FRM-HD, BRIT
IP, CR XLN-OCC SUC, SM-SL
RGH TXT; TRC SH; NFSOC

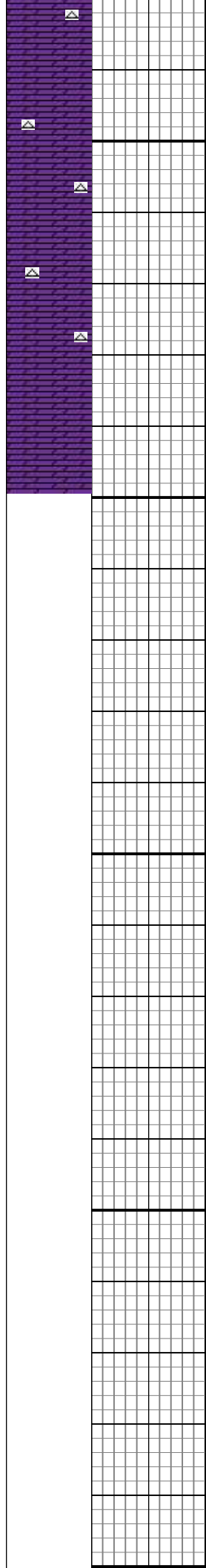
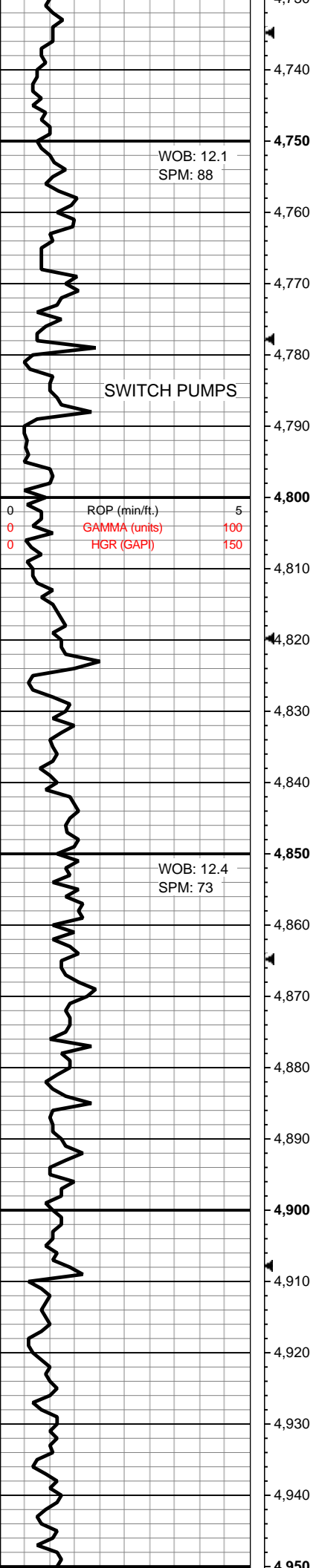
DOL: CRM-LT TAN, FRM-HD, BRIT
IP, CR XLN-OCC SUC, SM-SL
RGH TXT; SH: LT GY-GY,
SFT-FRM, BLKY-SB PLTY, V ARG,
SL SLTY IP; TRC OPQ CHT/QTS
XLS

DOL: CRM-LT TAN, FRM-HD, BRIT
IP, CR XLN-OCC SUC, SM-SL
RGH TXT; SH: LT GY-GY,
SFT-FRM, BLKY-SB PLTY, V ARG,
SL SLTY IP; TRC CHT/QTS XLS:
OPQ-TRNSL, OCC LT YL, HD-V
HD, PRED AMOR

DOL: CRM-LT TAN, FRM-HD, BRIT
IP, CR XLN-OCC SUC, SM-SL
RGH TXT; TRC CHT/QTS XLS:
OPQ-TRNSL, OCC LT YL, HD-V
HD, PRED AMOR; NFSOC



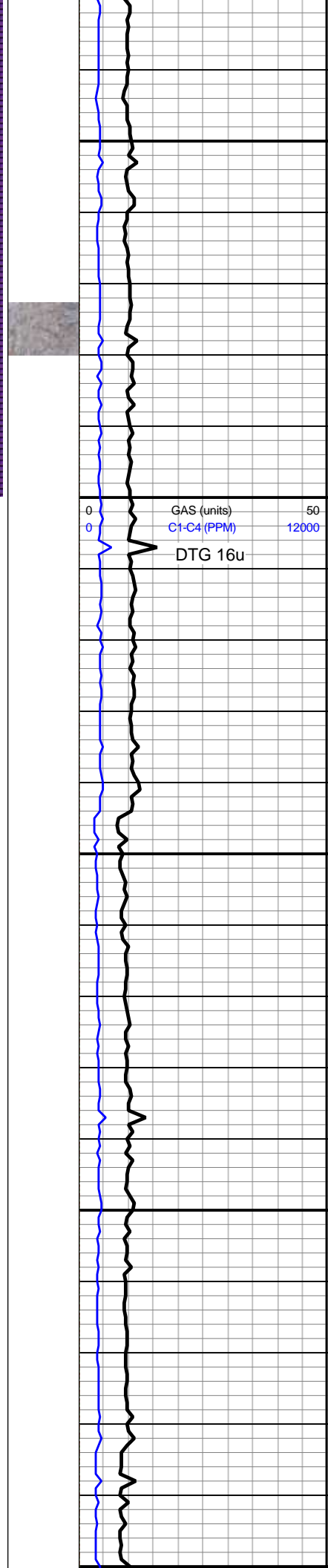
MW: 8.5
VIS: 2k
PV: 3
YP: 2
GELS: 1/2/
FIL: 9
CAKE: 1/
SOL: 1.2
H2O: 98.5
PH: 8.5
CHL: 1.20
CAL: 12



DOL: CRM-LT TAN, FRM-HD, BRIT IP, CR XLN-OCC SUC, SM-SL RGH TXT; TRC CHT/QTS XLS: OPQ-TRNSL, OCC LT YL, HD-V HD, PRED AMOR; NFSOC

LOST CIRCULATION @ 4800' MD

NO CIRCULATION



WOB: 12.3
SPM: 71

ROP (min/ft.) 5
GAMMA (units) 100
HGR (GAPI) 150

WOB: 11.7
SPM: 71

WOB: 13.1
SPM: 71

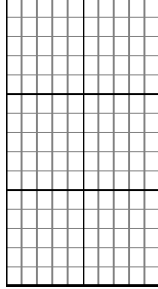
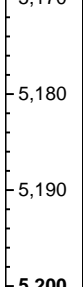
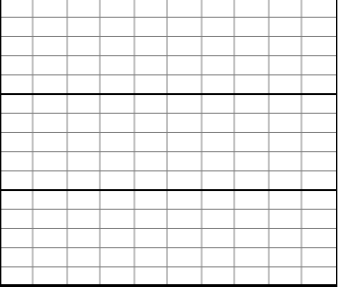
NO CIRCULATION

NO CIRCULATION

THE BOCK 3 SWD
REACHED T.D @ 5156' ON
1/12/2014 @ 22:30 HRS
SAMPLE BOXES: 7

GAS (units) 50
C1-C4 (PPM) 12000

CG 9u



LOGGERS RELEASED 1/13/2014

THANK YOU FOR USING
ALS EMPIRICA

