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fax 866.534.4559

WWW.HZMUD.COM

Customer Information

Operator: Noble Energy Inc
1625 Broadway
Suite 2200
Denver, Colorado 80202

Geologist: Holly Duncan
Noble Energy Inc.

Mud Logging Details

Logger: Andrew Christiano &
Marina Lee

Log Interval: 2500' MD to 6750' MD

Start Date: June 19, 2013

Release Date: June 25, 2013

Well Information

Well Name: Wells Ranch USX
AA23-68-1HN

Location: 24-6N-63W
894' FSL, 89' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 343

Total Depth: 11057' MD

TD Date: June 25, 2013

Formation: Niobrara B Chalk

KB Elevation: 4817'

GR Elevation: 4793'

API Number: 05-123-37170

ROCK TYPES

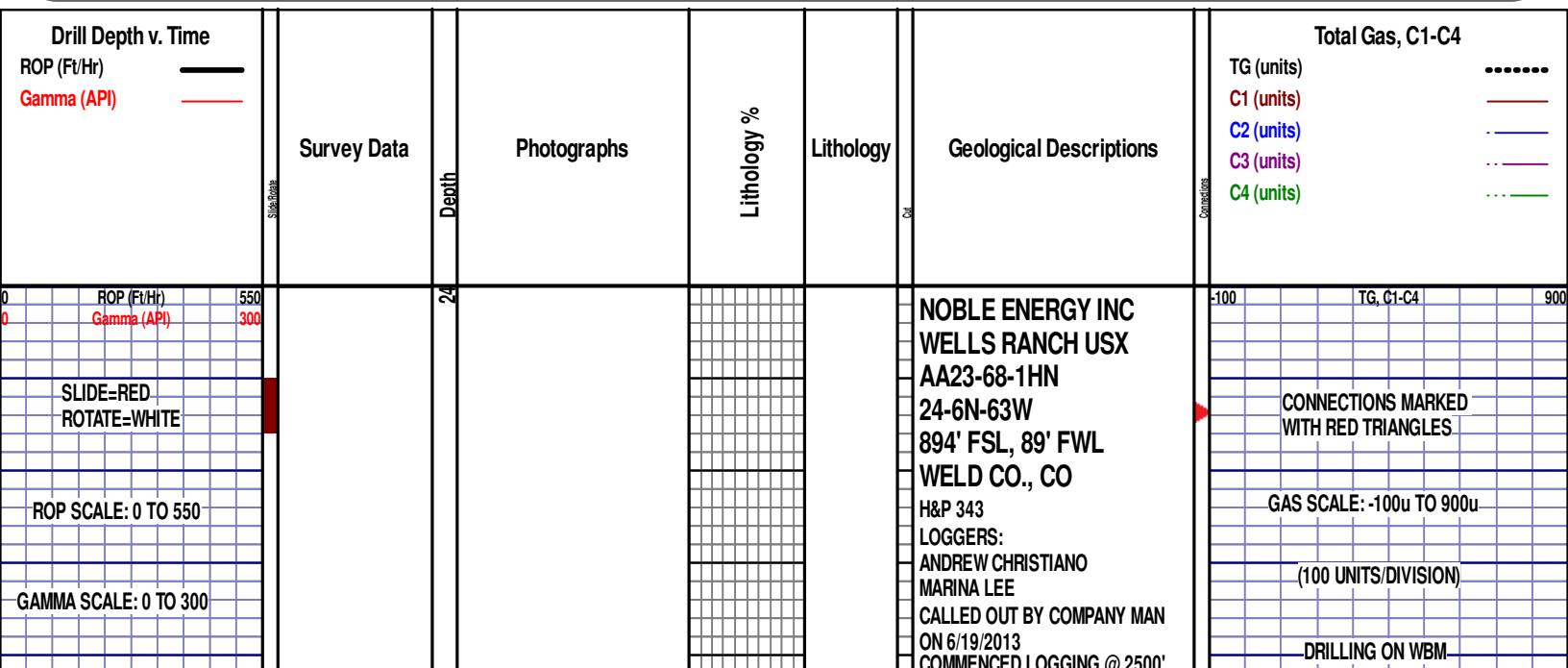
Anhy
Bent
Brec
Cht
Clyst
Coal
Congl

Dol
Gyp
Igne
Chk
Lmst
Meta
Mrlst

Salt
Shale
Shcol
Siltysh
Siltst
Ss
Till

gw
lmywash
ogw
olmywash
oshly gw
shly gw
sdygw

hvyrcrbsh
nosmpl
Lsdetrst
sltst
sdy sh
Cement



12:01 AM
6/20/2013

WOB 1.8K
PP 3234
RPM 85
SPM 66/65

ROP (Ft/Hr)
Gamma (API)

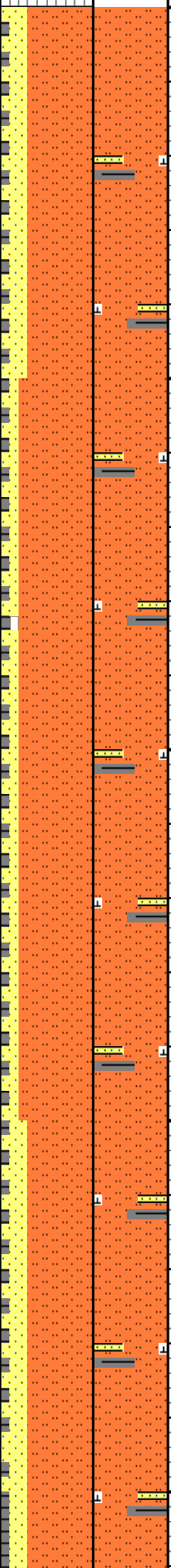
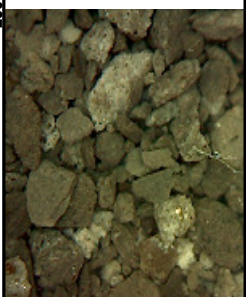
550
300

MD 2505 TVD 2497.9
INC 11.13 AZ 285.38
VS 97.5

MD 2600 TVD 2590.91
INC 12.35 AZ 288.52
VS 116.05

MD 2695 TVD 2683.72
INC 12.29 AZ 283.47
VS 135.6

2500
2550
2600
2650
2700



PIERRE

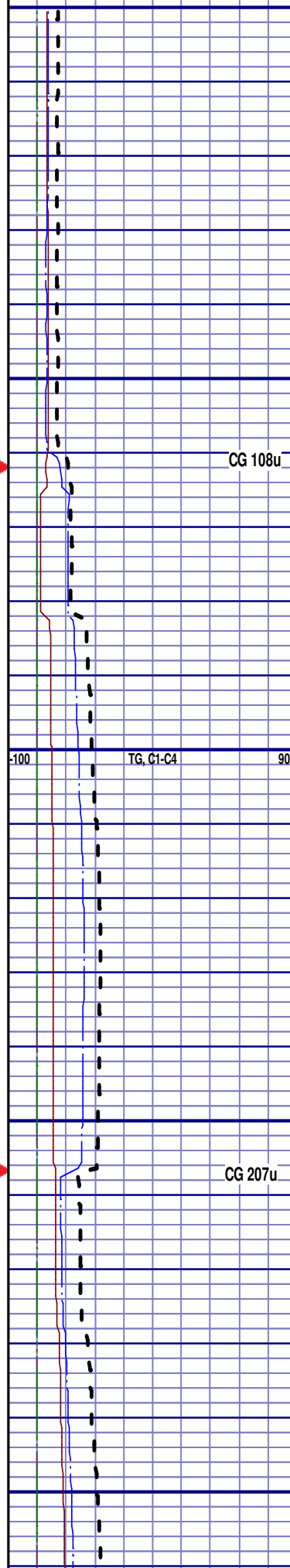
CAME IN BEFORE LOGGING
DEPTH

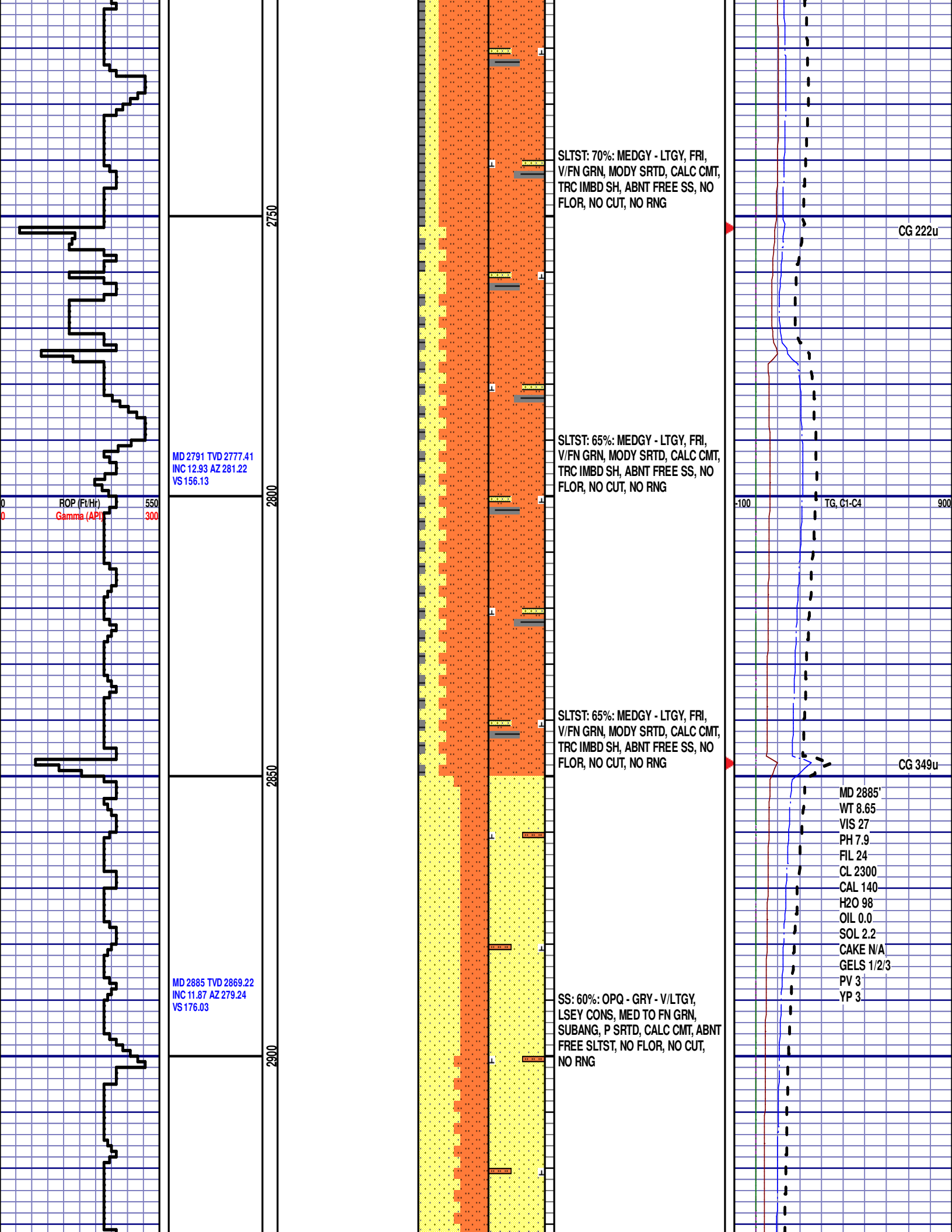
SLTST: 70%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

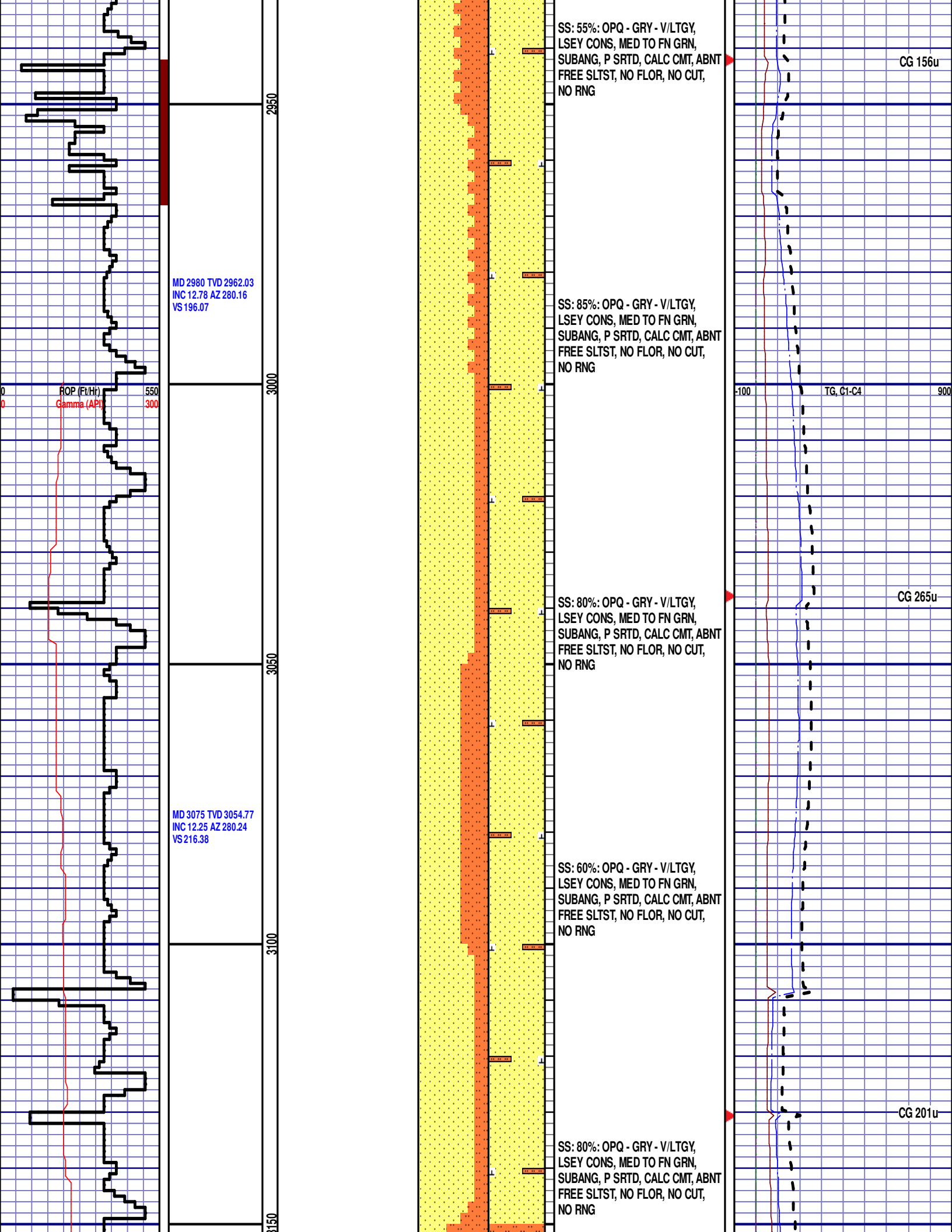
SLTST: 80%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

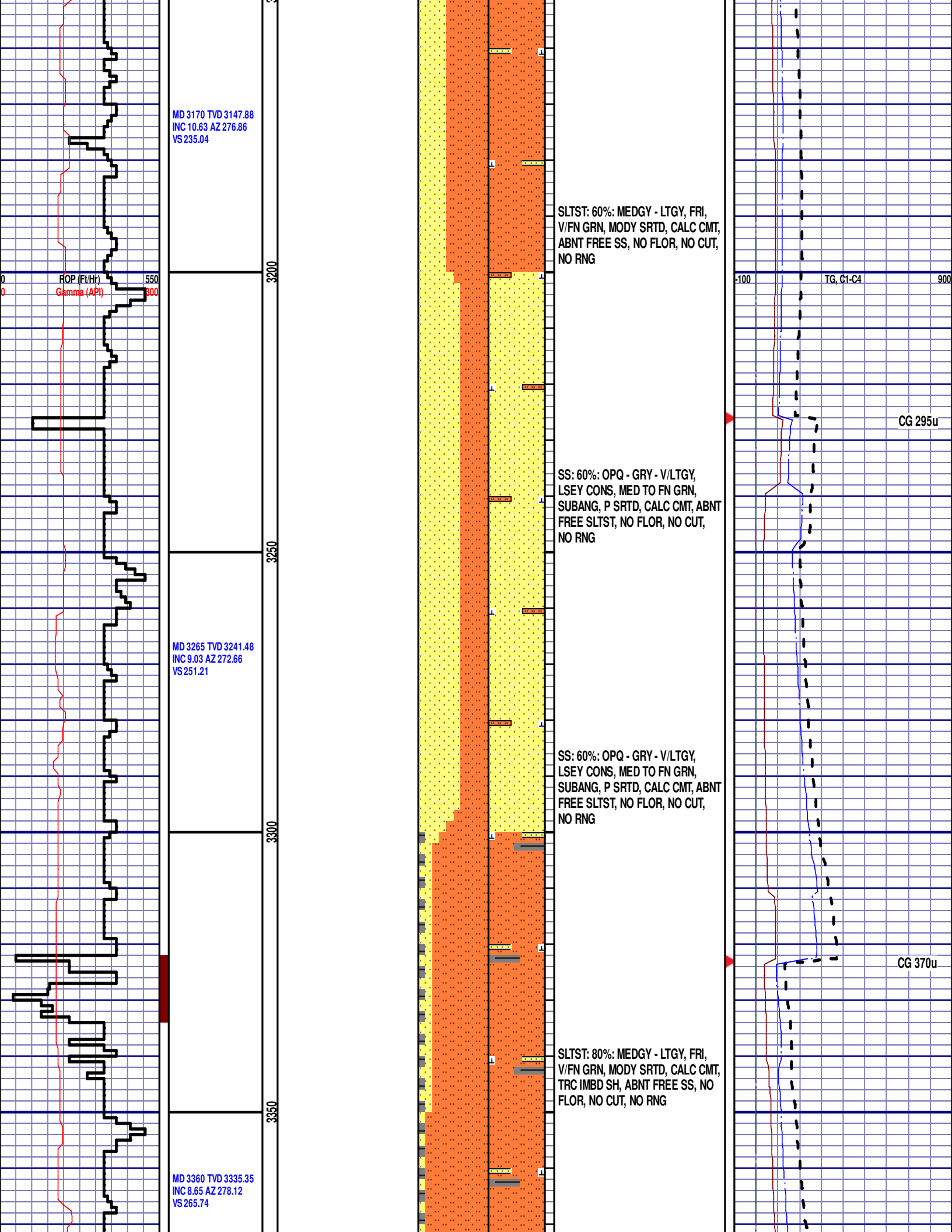
SLTST: 80%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

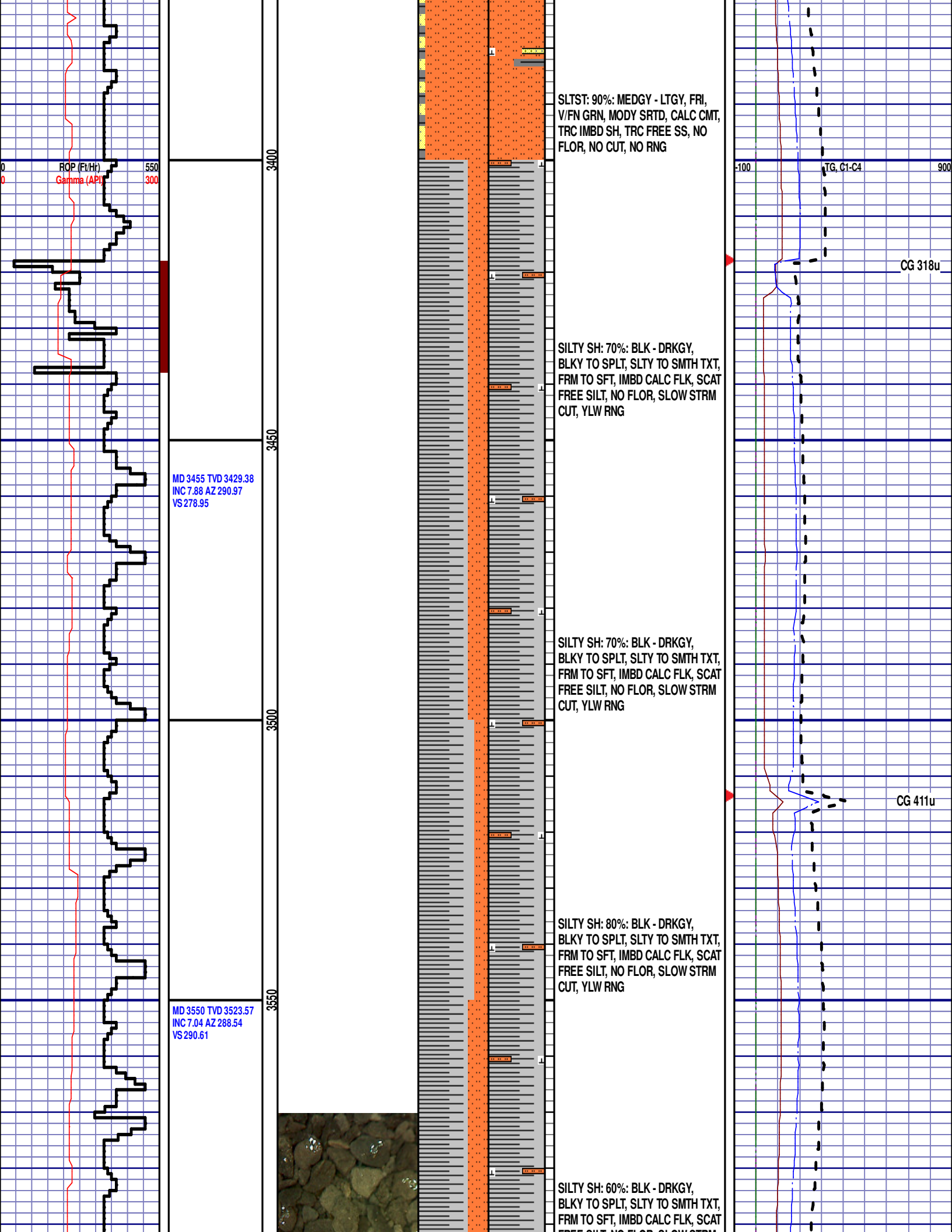
SLTST: 70%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

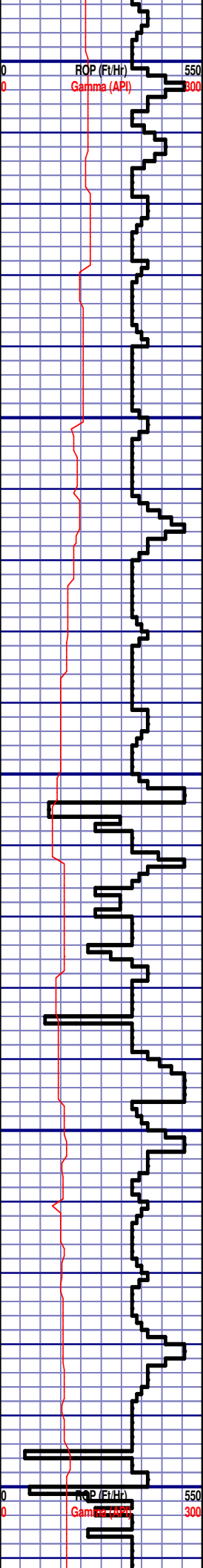






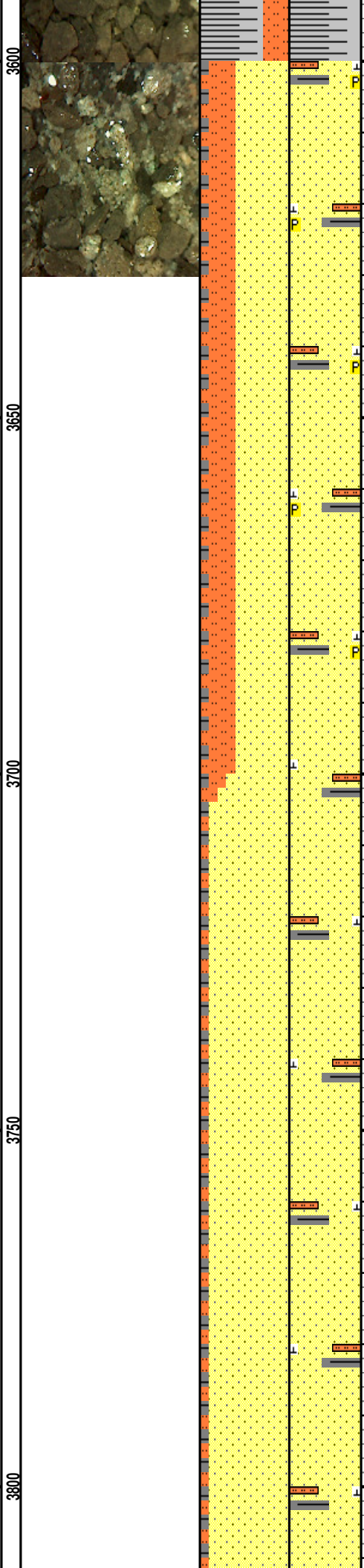






MD 3644 TVD 3616.97
INC 5.96 AZ 290.9
VS 300.67

MD 3739 TVD 3711.6
INC 4.05 AZ 293.96
VS 308.39



FREE SILT, NO FLOR, SLOW STRM CUT, YLW RNG

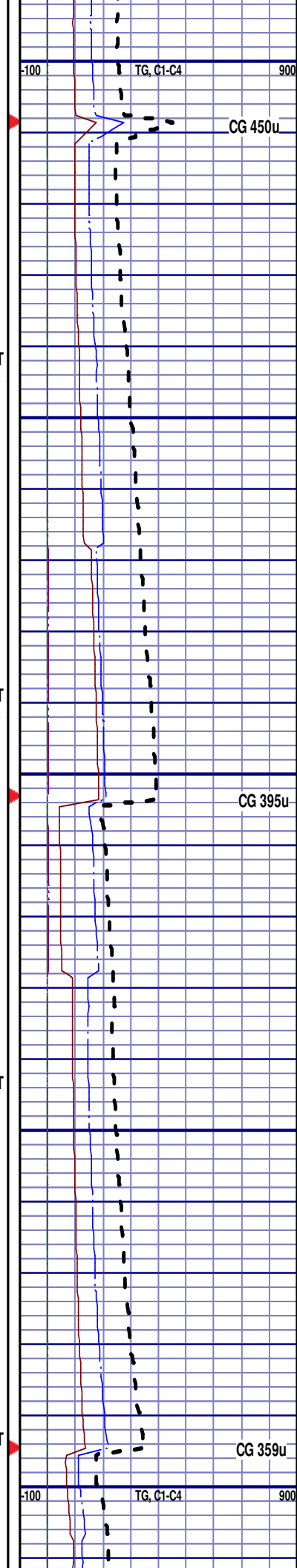
PARKMAN
3600' MD 3572' TVD

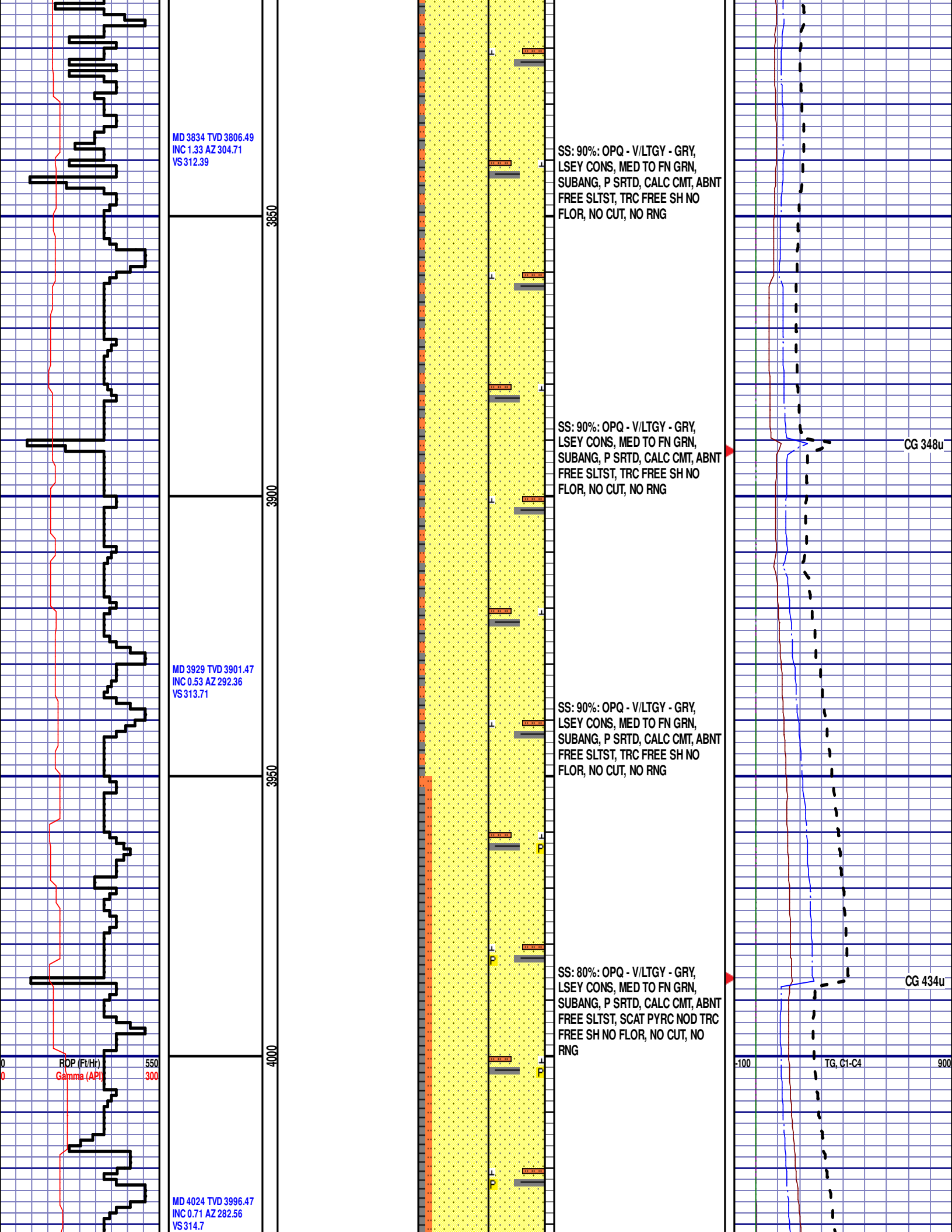
SS: 60%: OPQ - GRY - V/LTGY, LSEY CONS, MED TO FN GRN, SUBANG, P SRTD, CALC CMT, ABNT FREE SLTST, SCAT PYRC NOD TRC FREE SH NO FLOR, NO CUT, NO RNG

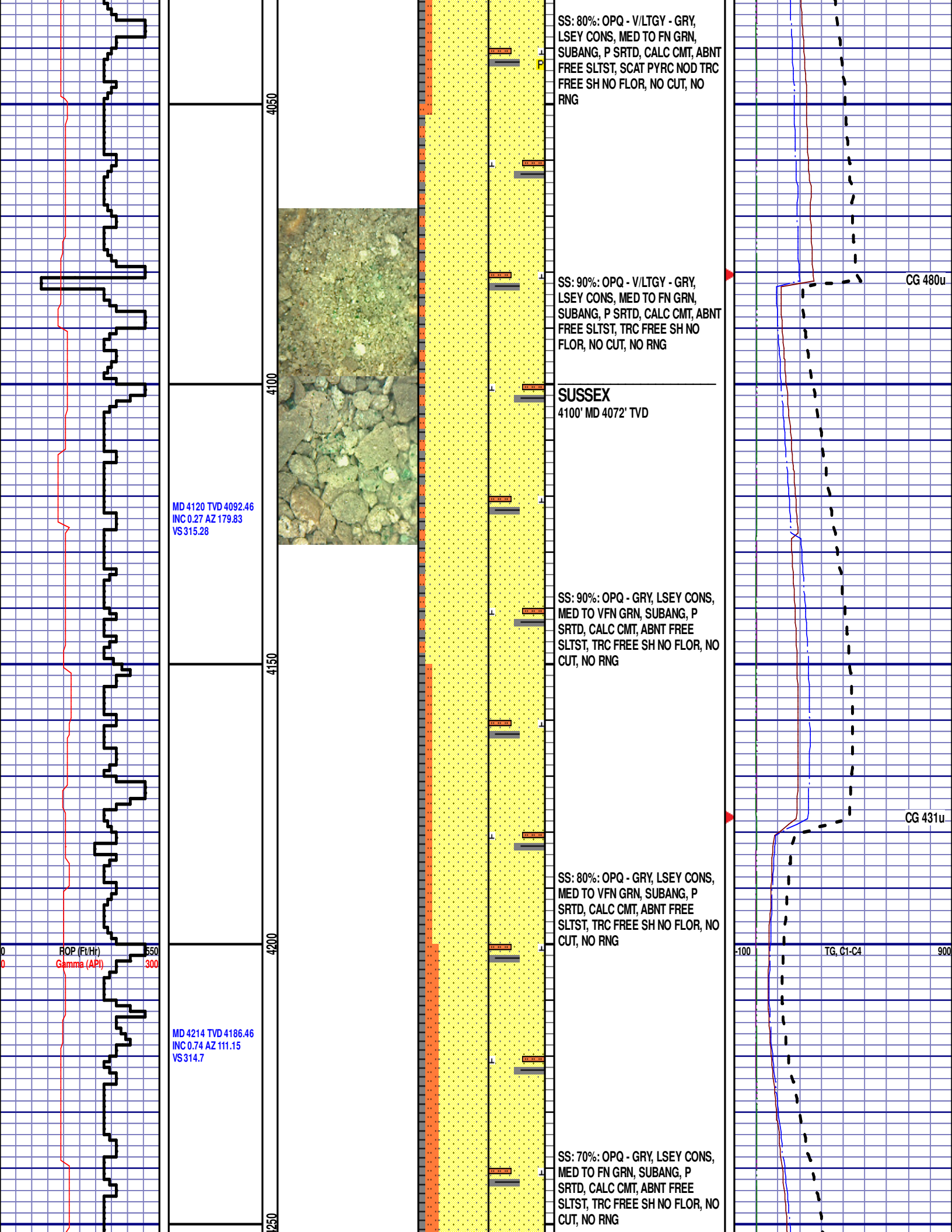
SS: 60%: OPQ - GRY - V/LTGY, LSEY CONS, MED TO FN GRN, SUBANG, P SRTD, CALC CMT, ABNT FREE SLTST, SCAT PYRC NOD TRC FREE SH NO FLOR, NO CUT, NO RNG

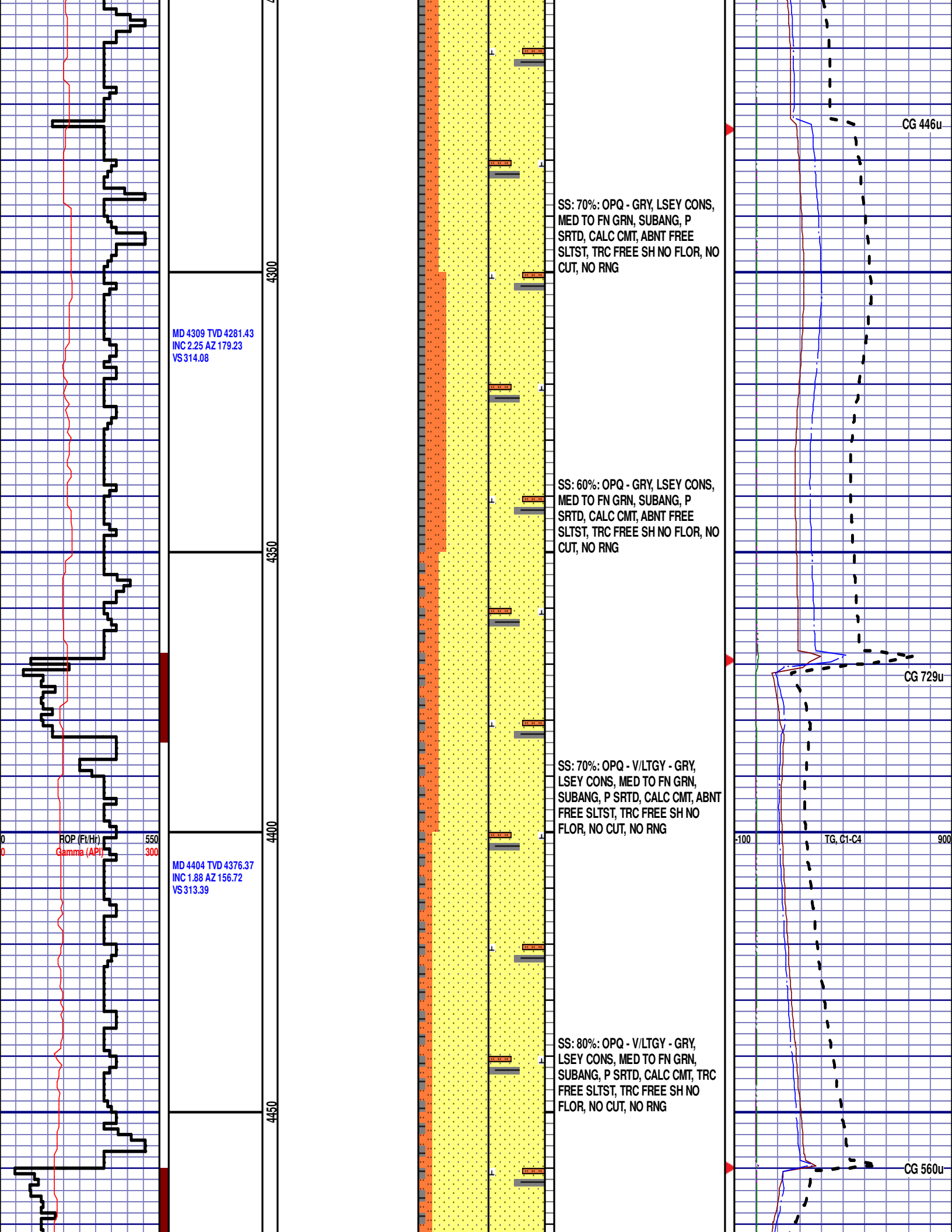
SS: 90%: OPQ - V/LTGY - GRY, LSEY CONS, MED TO FN GRN, SUBANG, P SRTD, CALC CMT, ABNT FREE SLTST, TRC FREE SH NO FLOR, NO CUT, NO RNG

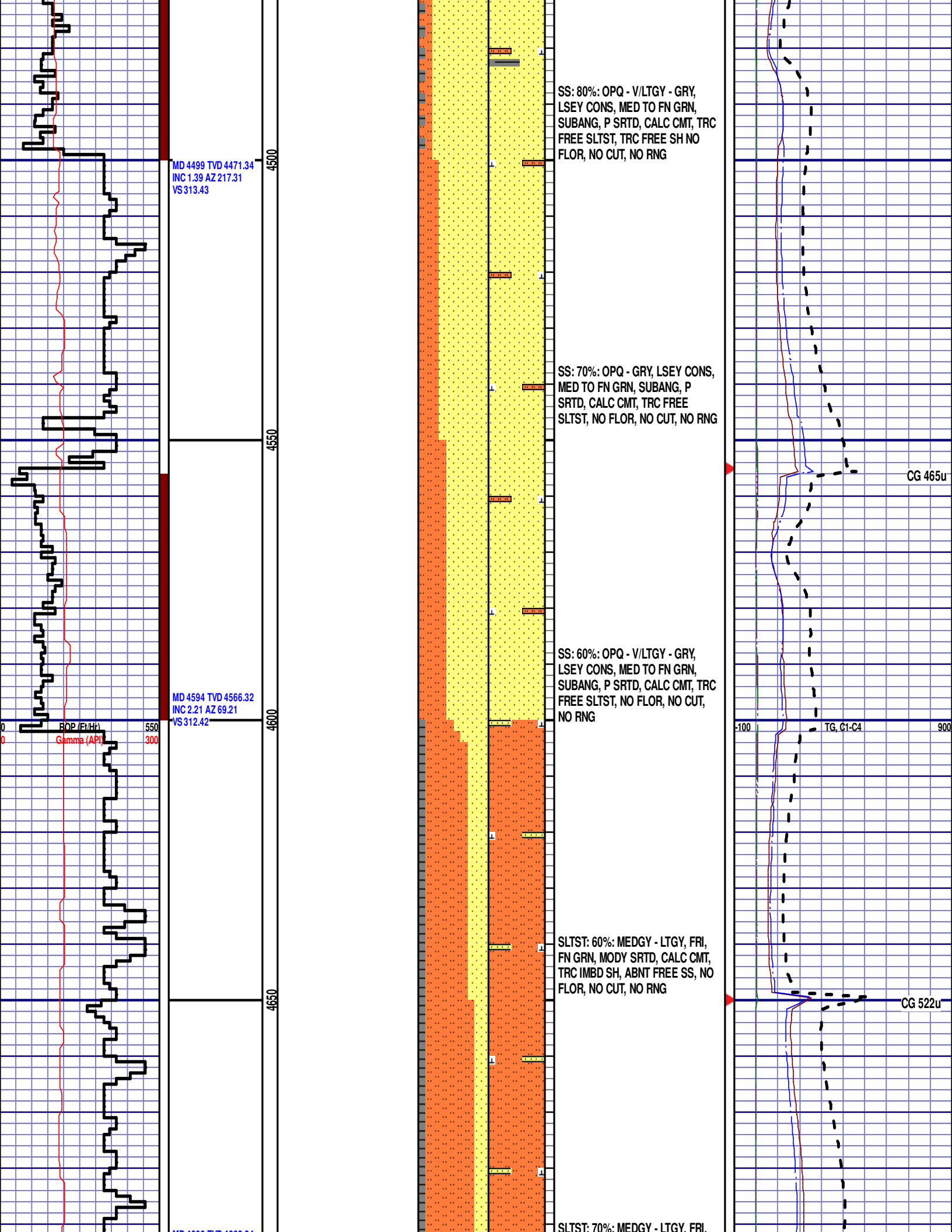
SS: 90%: OPQ - V/LTGY - GRY, LSEY CONS, MED TO FN GRN, SUBANG, P SRTD, CALC CMT, ABNT FREE SLTST, TRC FREE SH NO FLOR, NO CUT, NO RNG

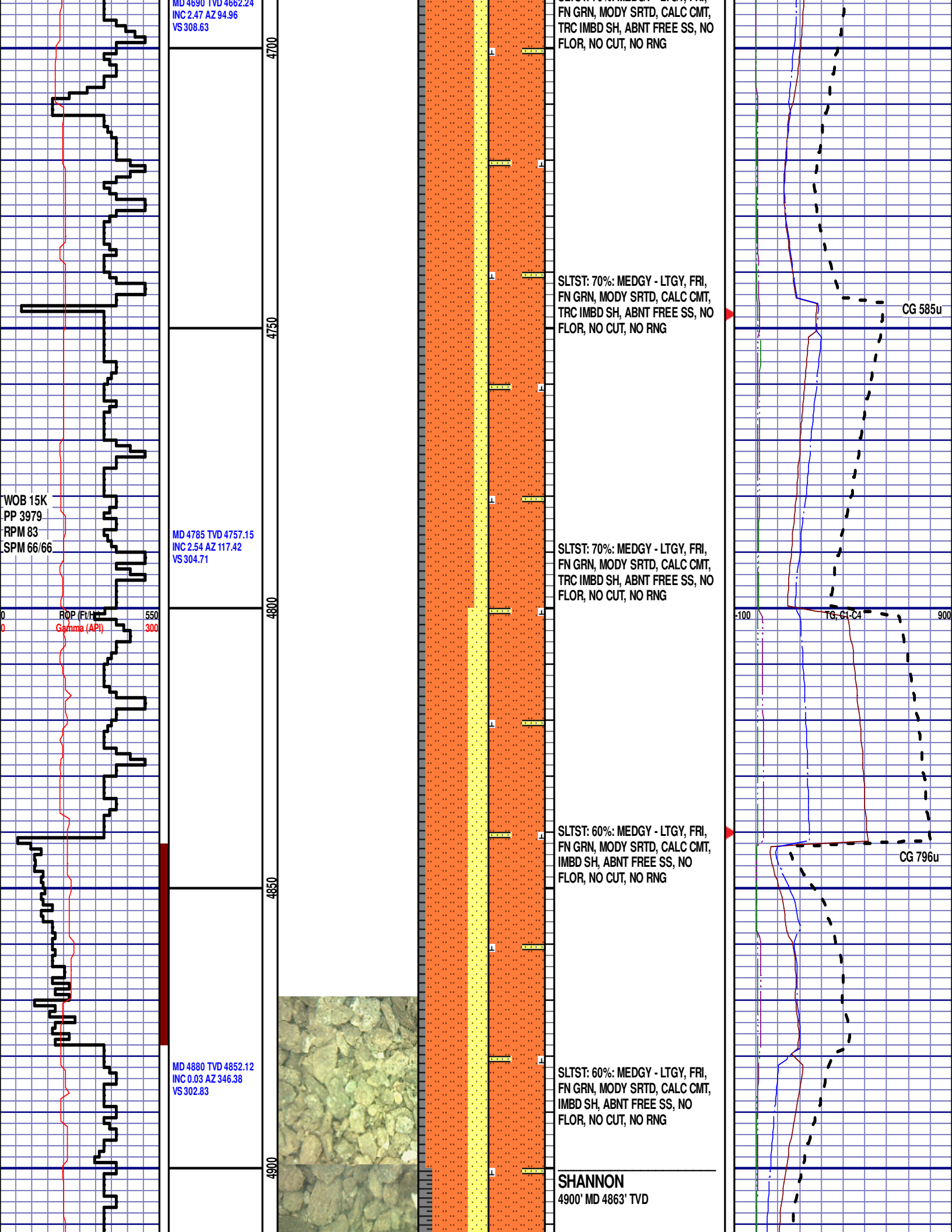


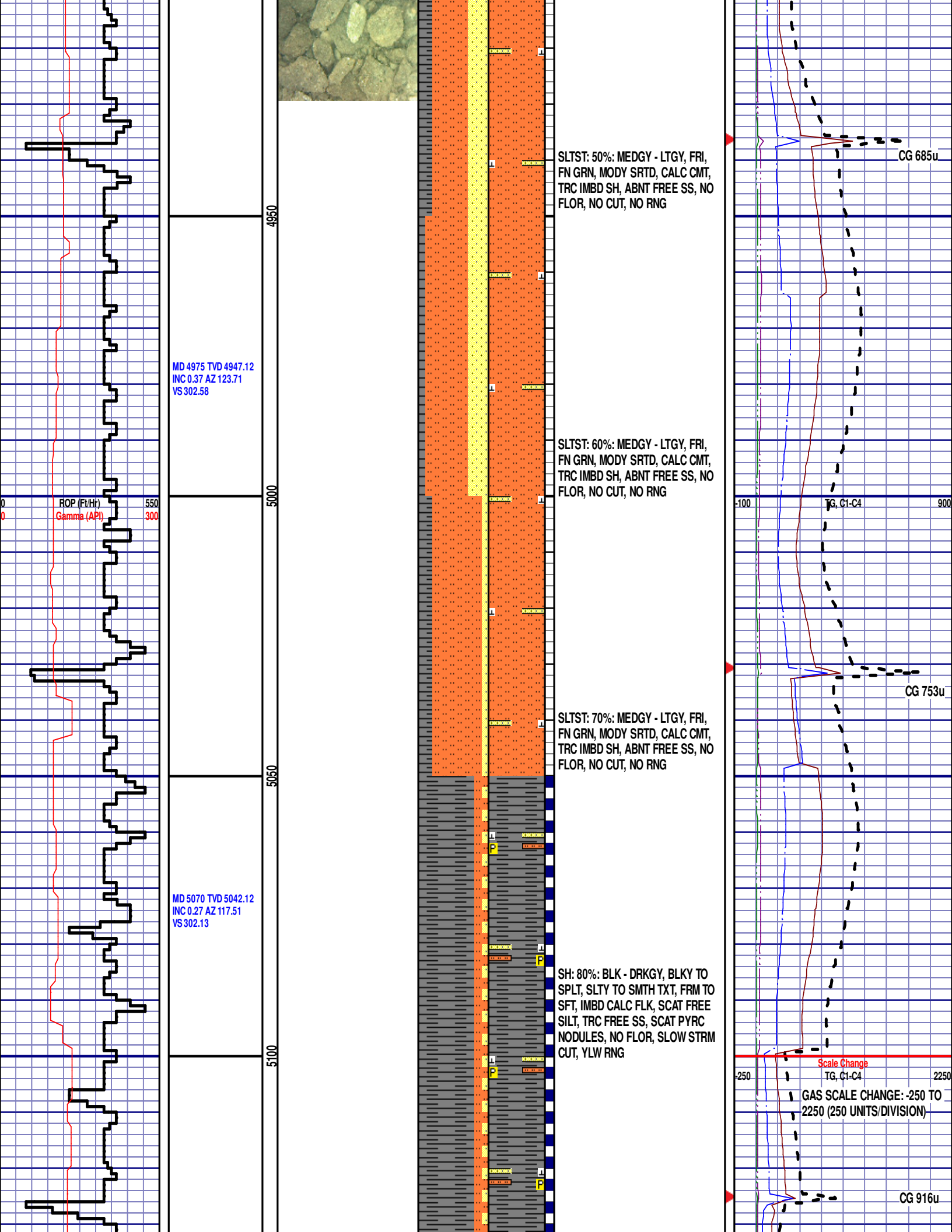


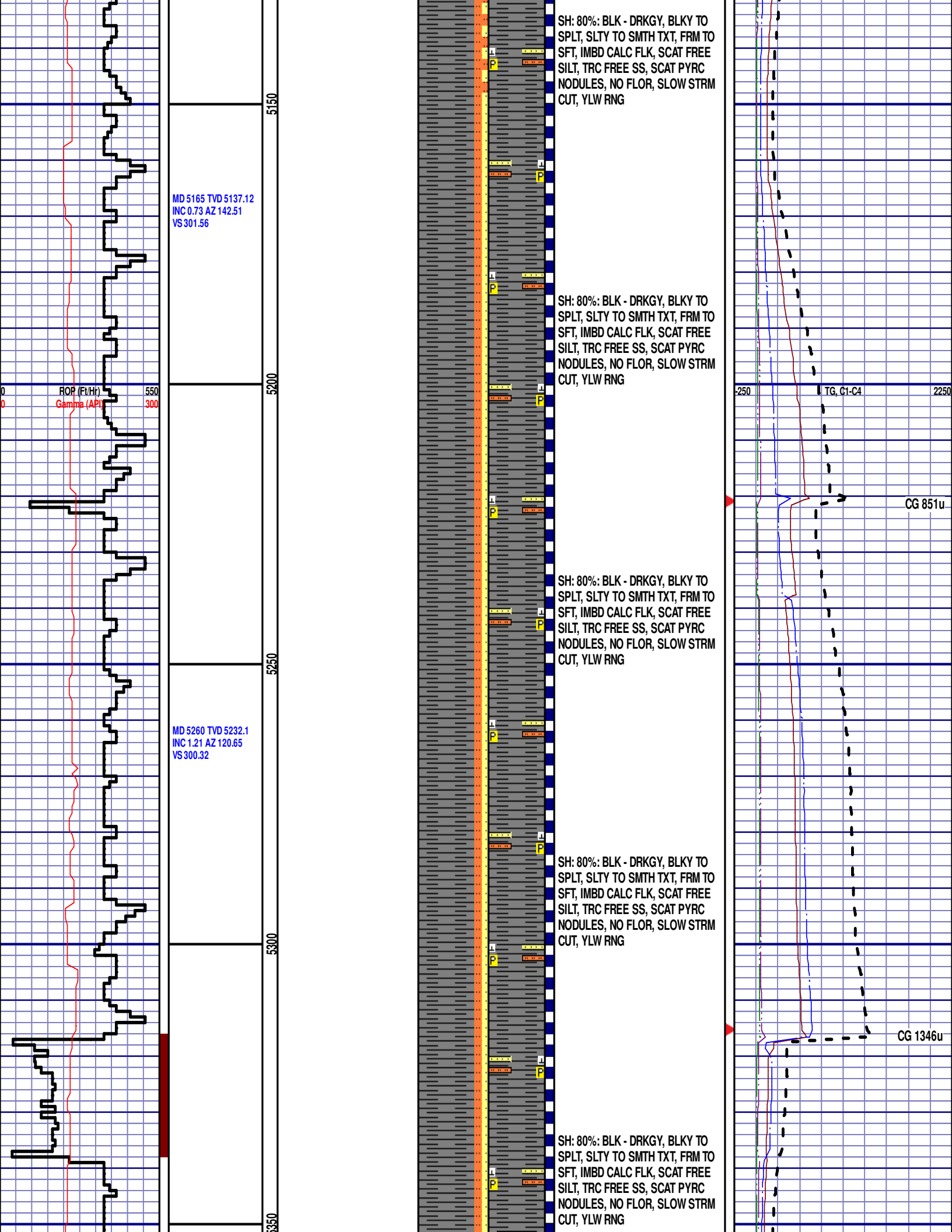


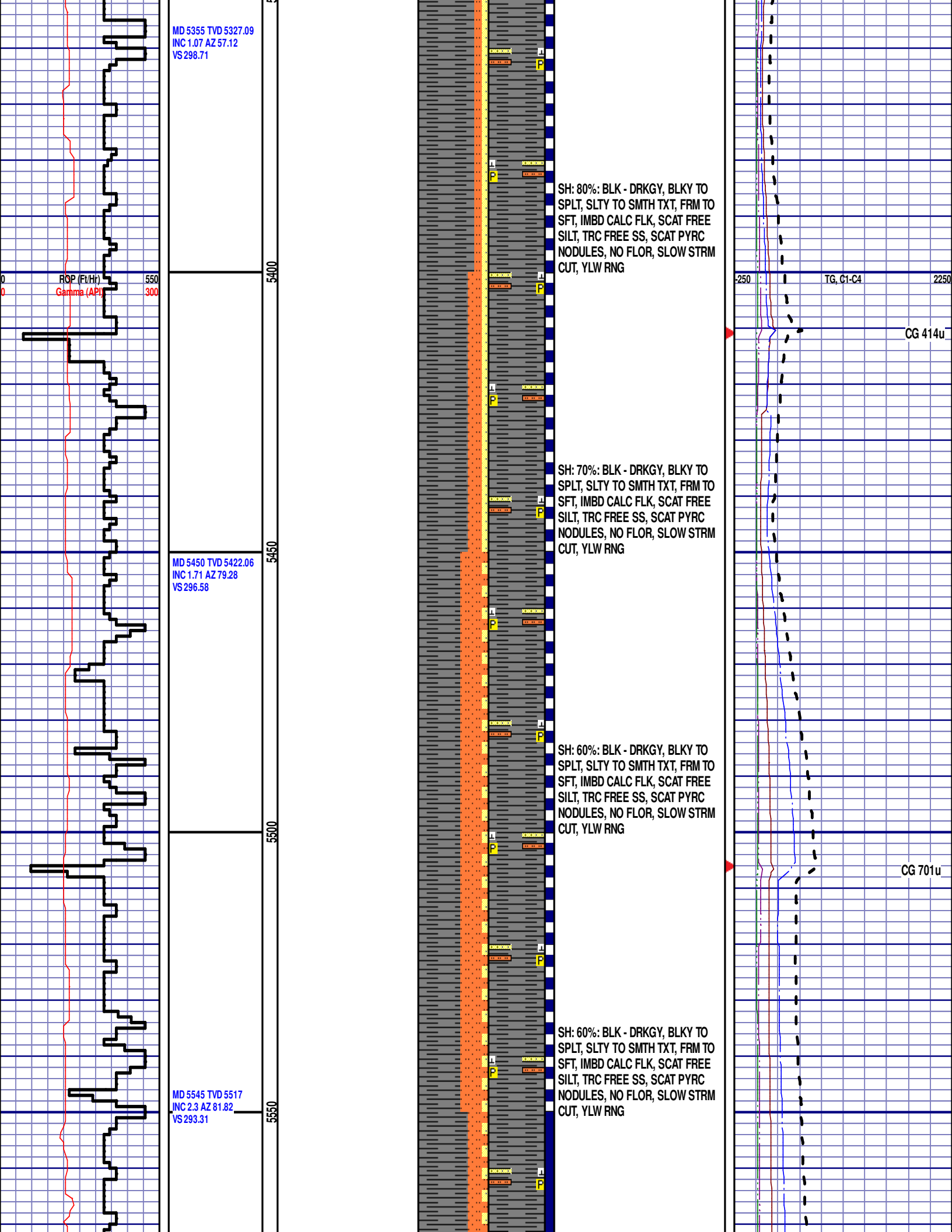


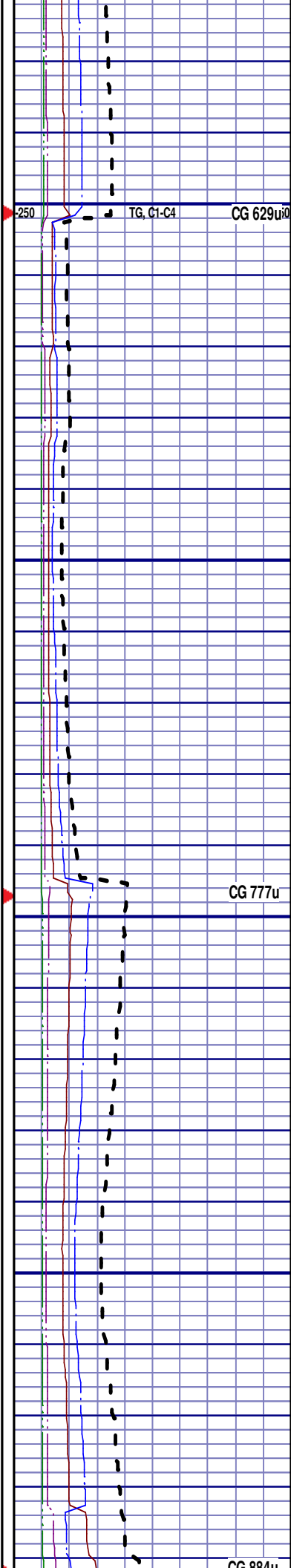
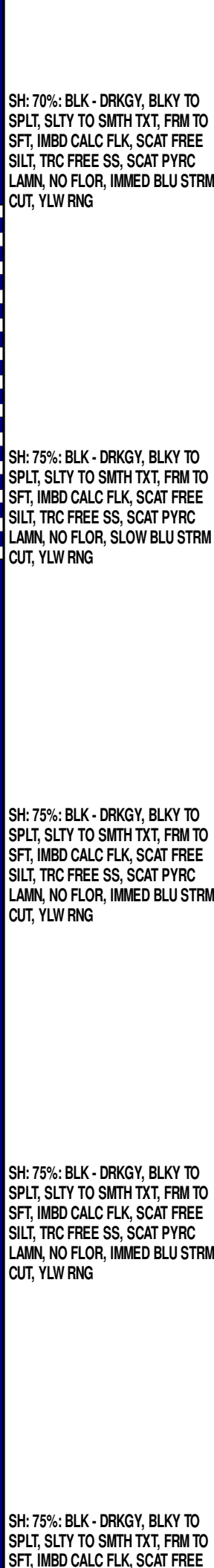
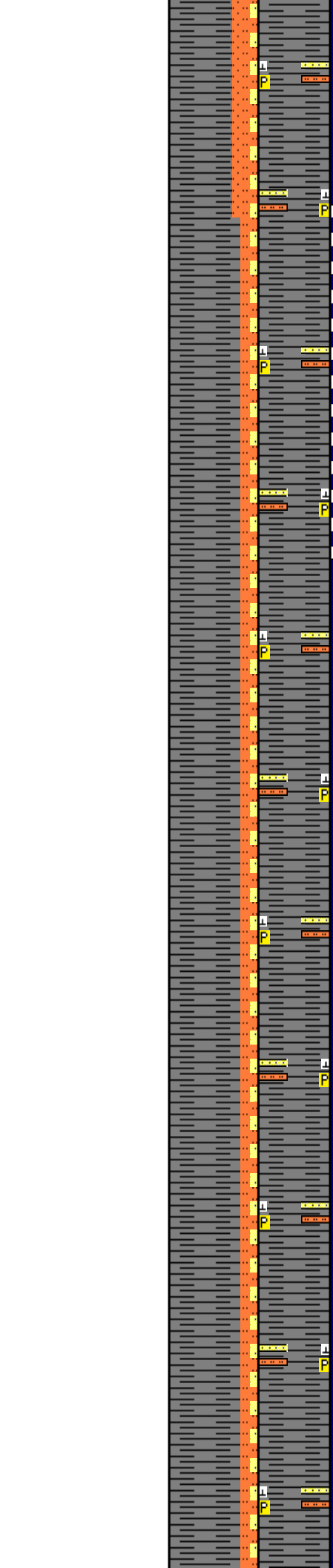
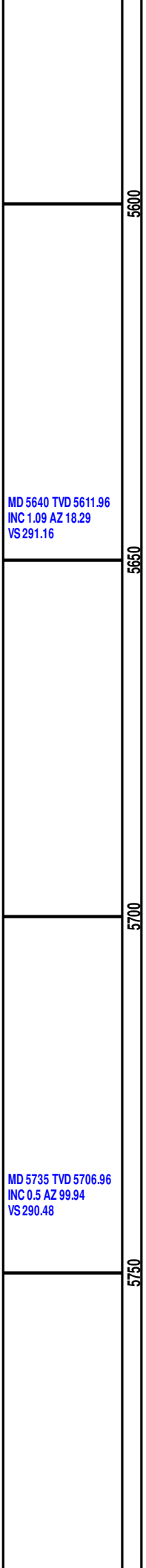
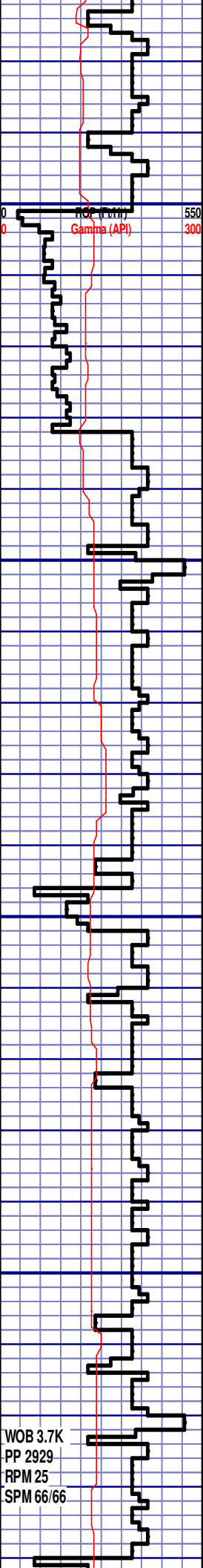


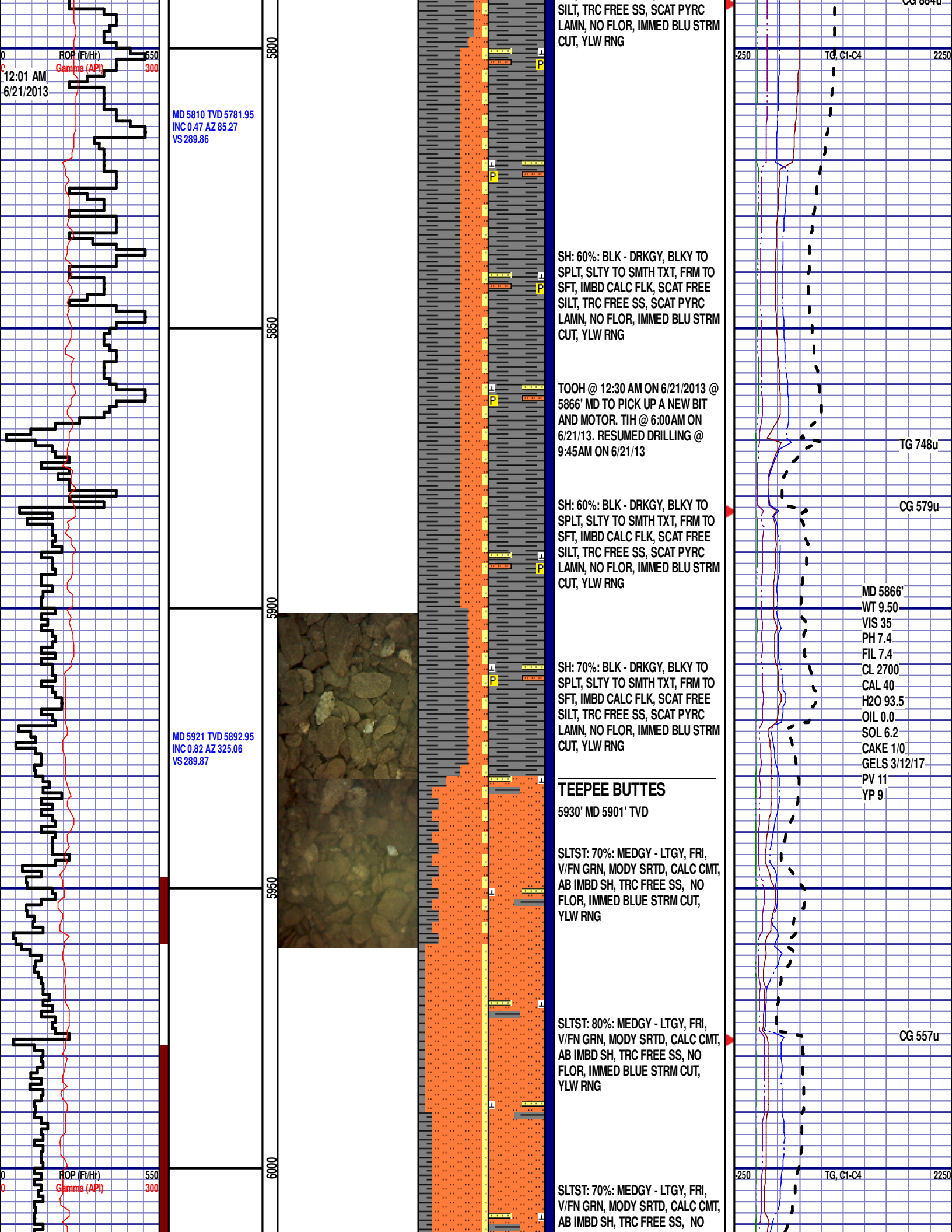


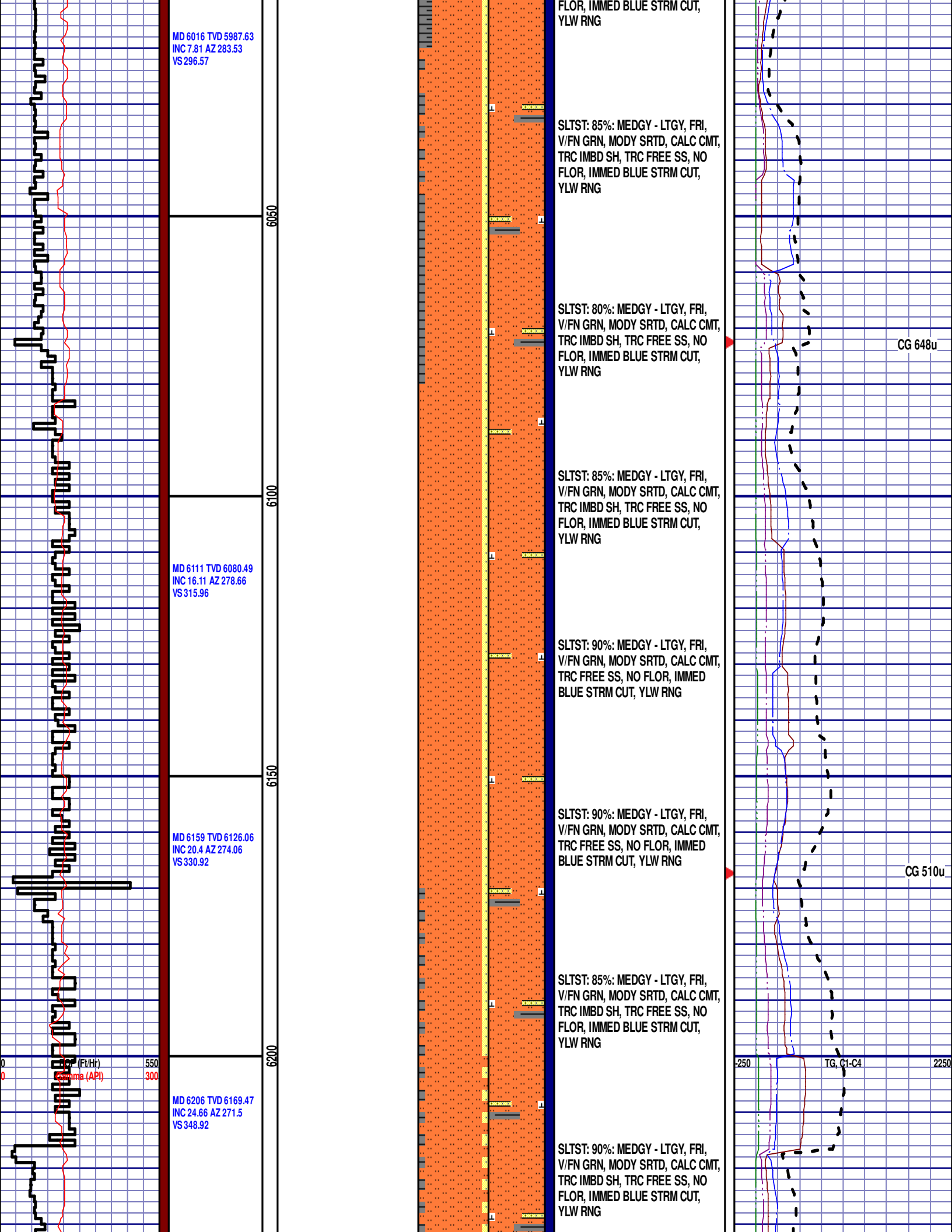


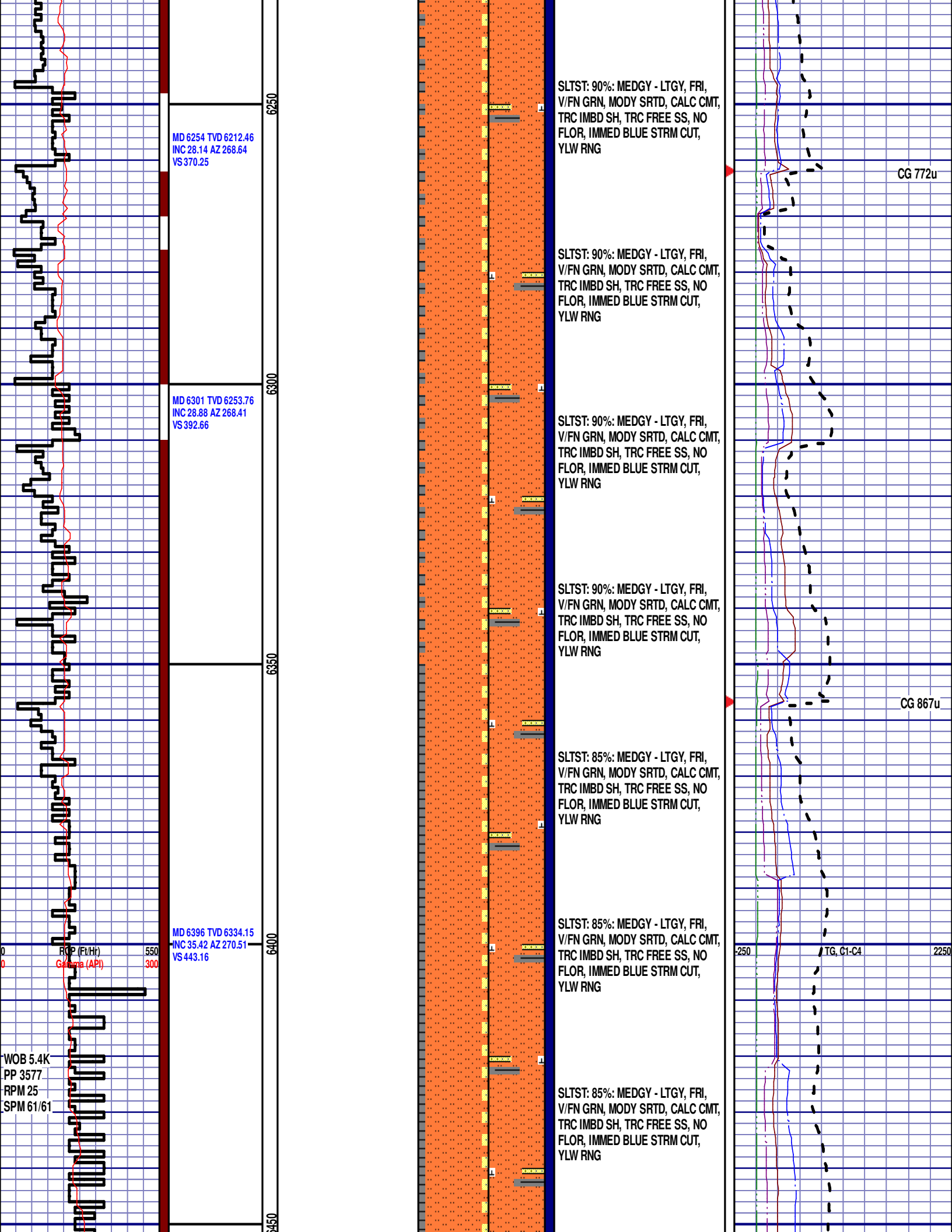












MD 6254 TVD 6212.46
INC 28.14 AZ 268.64
VS 370.25

MD 6301 TVD 6253.76
INC 28.88 AZ 268.41
VS 392.66

MD 6396 TVD 6334.15
INC 35.42 AZ 270.51
VS 443.16

SLTST: 90%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 90%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 90%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 90%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 85%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

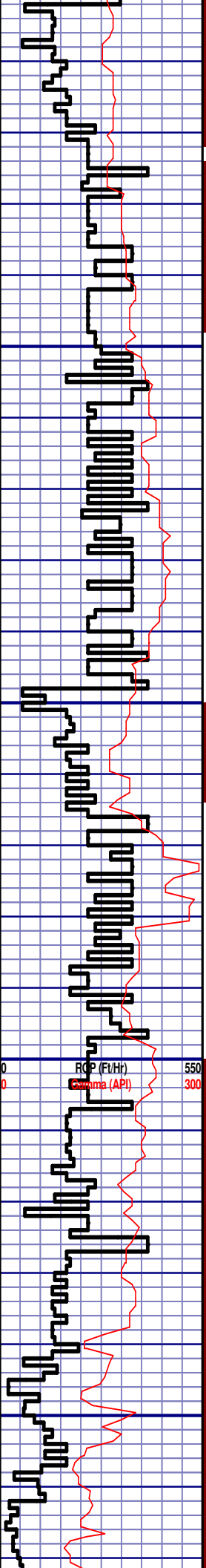
SLTST: 85%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 85%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

CG 772u

CG 867u

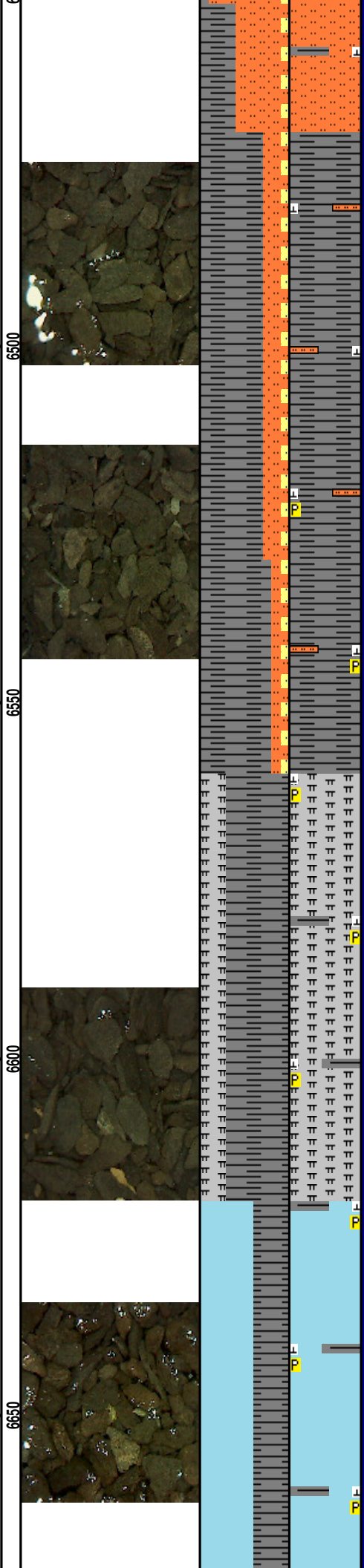
-250 TG, C1-C4 2250



MD 6491 TVD 6407.12
INC 44.09 AZ 270.31
VS 503.85

MD 6586 TVD 6469.36
INC 53.93 AZ 268.4
VS 575.44

MD 6634 TVD 6496.39
INC 57.53 AZ 266.65
VS 615.03



SLTST: 60%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SH: 70%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, IMBD PYRC LAMN, 5% YLW
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SHARON SPRINGS
6512' MD 6422' TVD

SH: 80%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, IMBD PYRC LAMN, 5% YLW
FLOR, IMMED BLUE STRM CUT,
YLW RNG

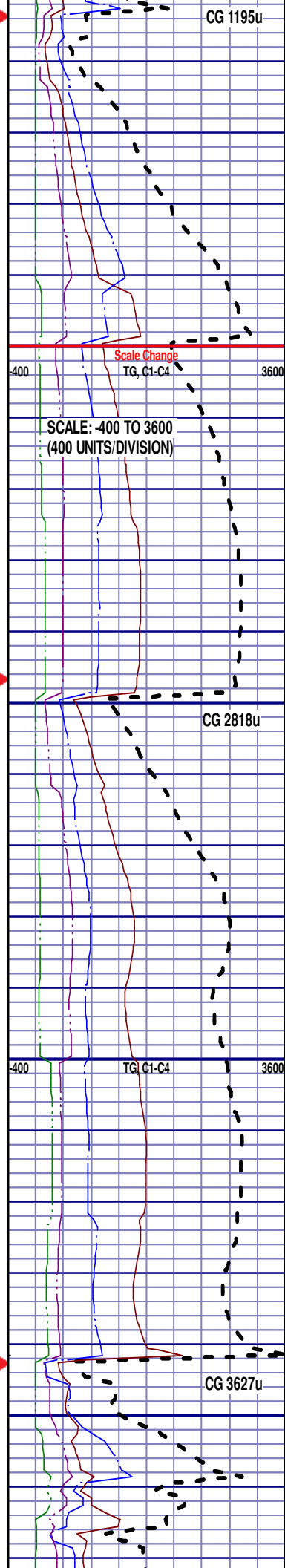
MRL: 35%: GRY TO DK GRY, SOFT
TO BRITTLE, NO VIS FRACT, MINOR
CALC, POOR INTRXLN POR, 5%
YLW FLUOR, IMMED BLU STRM
CUT, YLW RING CUT, NO ODOR

MRL: 35%: GRY TO DK GRY, SOFT
TO BRITTLE, NO VIS FRACT, MINOR
CALC, POOR INTRXLN POR, 5%
YLW FLUOR, IMMED BLU STRM
CUT, YLW RING CUT, NO ODOR

NIOBRARA A CHALK
6624' MD 6491' TVD

CHLK: 65%: LTGY - V/LTGY, BLKY,
V/FXLN TO FXLN, SFT, PYR
INCLUS, IMBD SH INCLUS, NO STN,
5% YLW FLOR, IMMED BLU STRMG
CUT, YLW RING CUT

CHLK: 60%: LTGY - V/LTGY, BLKY,
V/FXLN TO FXLN, SFT, PYR



CG 1195u

Scale Change
TG, C1-C4

SCALE: -400 TO 3600
(400 UNITS/DIVISION)

CG 2818u

TG, C1-C4

CG 3627u

	MD 6681 TVD 6520.69 INC 60.2 AZ 269.15 VS 655.22			INCLUS, IMBD SH INCLUS, NO STN, 5% YLW FLOR, IMMED BLU STRMG CUT, YLW RNG CUT	
	MD 6729 TVD 6543.81 INC 62.2 AZ 270.03 VS 697.27			CHLK: 60%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, PYR INCLUS, IMBD SH INCLUS, NO STN, 5% YLW FLOR, IMMED BLU STRMG CUT, YLW RNG CUT	
				NIOBRARA A MARL 6706' MD 6533" TVD	
				MRL: 42%: GRY TO DK GRY, SOFT TO BRITTLE, NO VIS FRACT, MINOR CALC, PYR INCLUS, POOR INTRXLN POR, 5% YLW FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO ODOR	
				END OF VERTICAL LOG @ 6750' MD ON 6/21/2013, CONTINUED ON HORIZONTAL LOG	