



7136 South Yale Avenue, Suite 414

Tulsa, Oklahoma 74136-6378

phone 918.925.9739

fax 866.534.4559

WWW.HZMUD.COM

Customer Information

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

Geologist: Cassidy Miller
Noble Energy Inc.

Mud Logging Details

Logger: Alec Walker &
Marina Lee
Log Interval: 2500' MD to 6800' MD
Start Date: June 11, 2013
Release Date: June 17, 2013

Well Information

Well Name: Wells Ranch PC USX
AA23-69-1HN

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

County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 10962' MD
TD Date: June 17, 2013
Formation: Niobrara B Chalk
KB Elevation: 4816'
GR Elevation: 4792'
API Number: 05-123-37169

ROCK TYPES

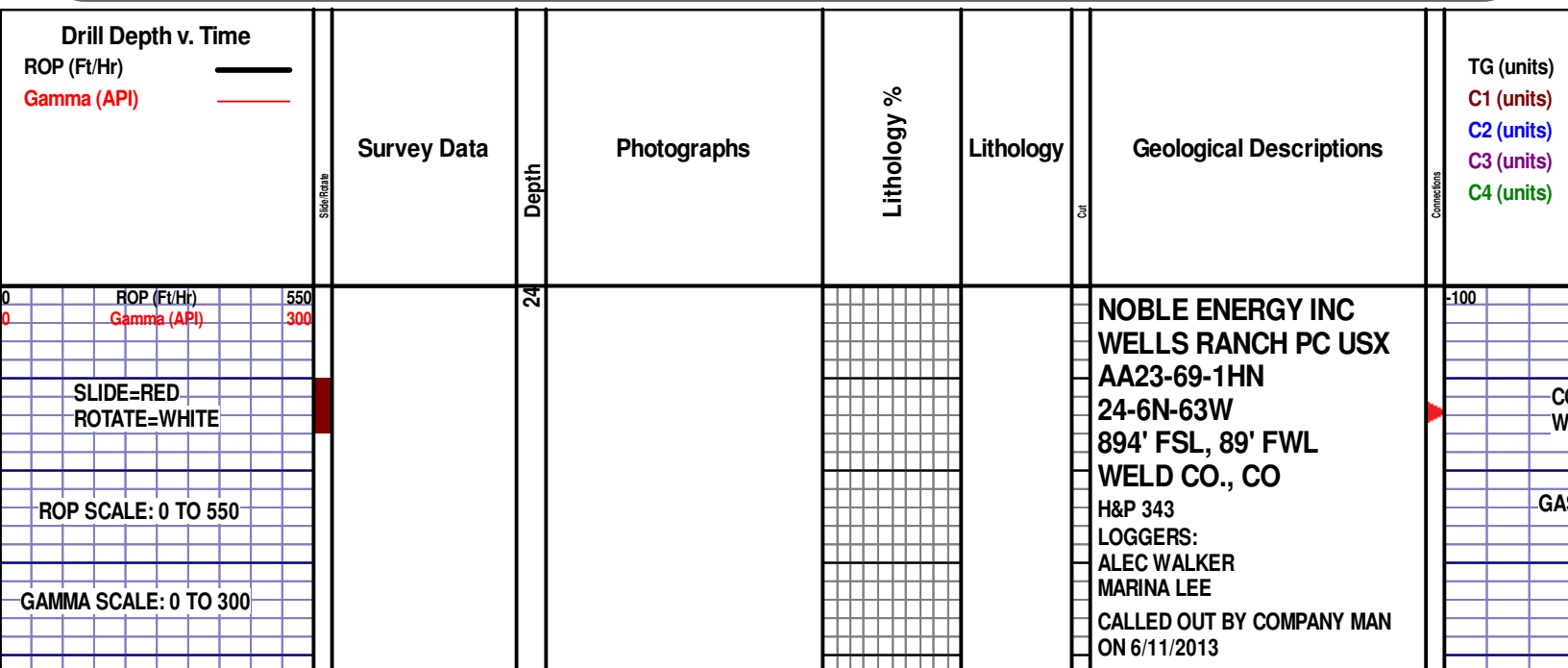
Anhy
 Bent
 Brec
 Cht
 Clyst
 Coal
 Congl

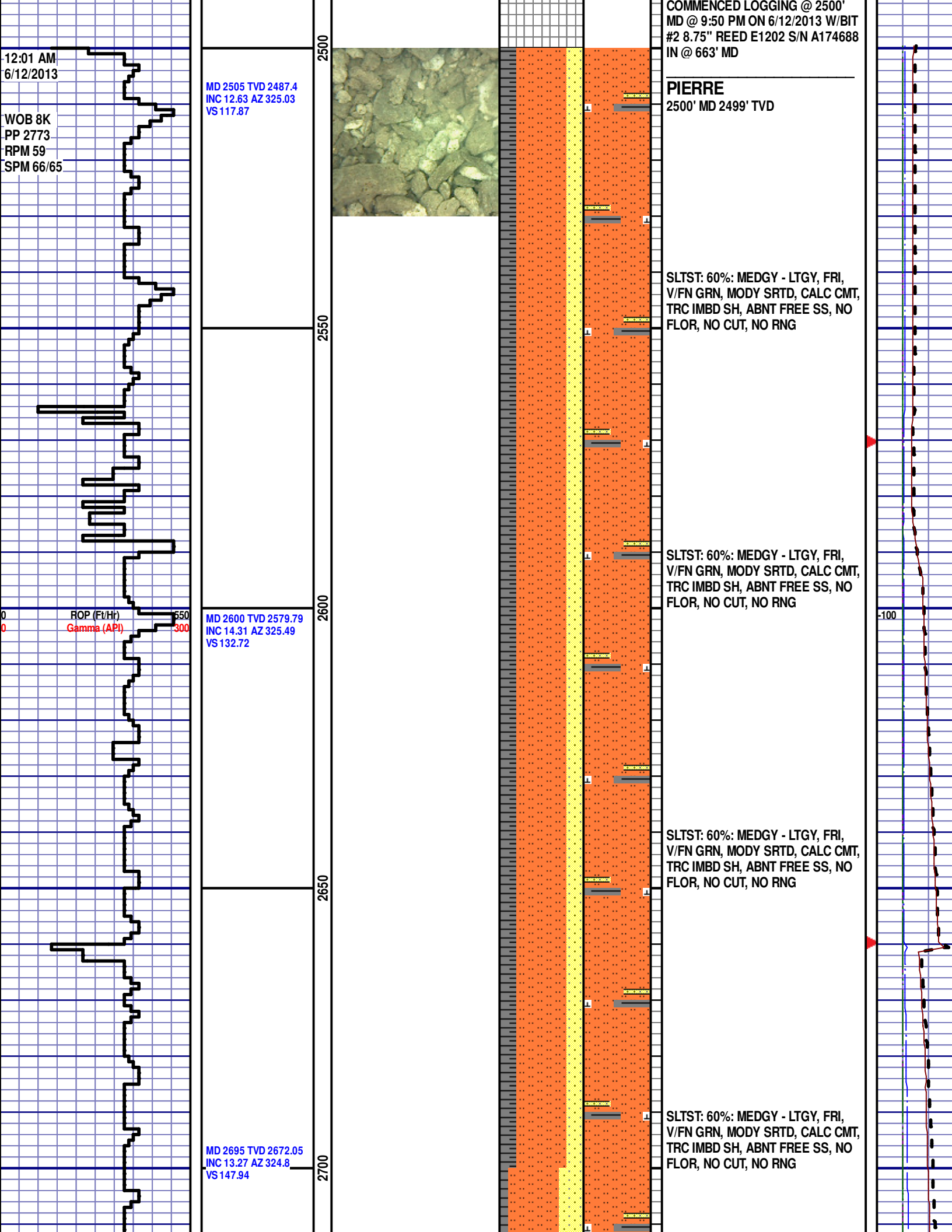
Dol
 Gyp
 Igne
 Chk
 Lmst
 Meta
 Mrlst

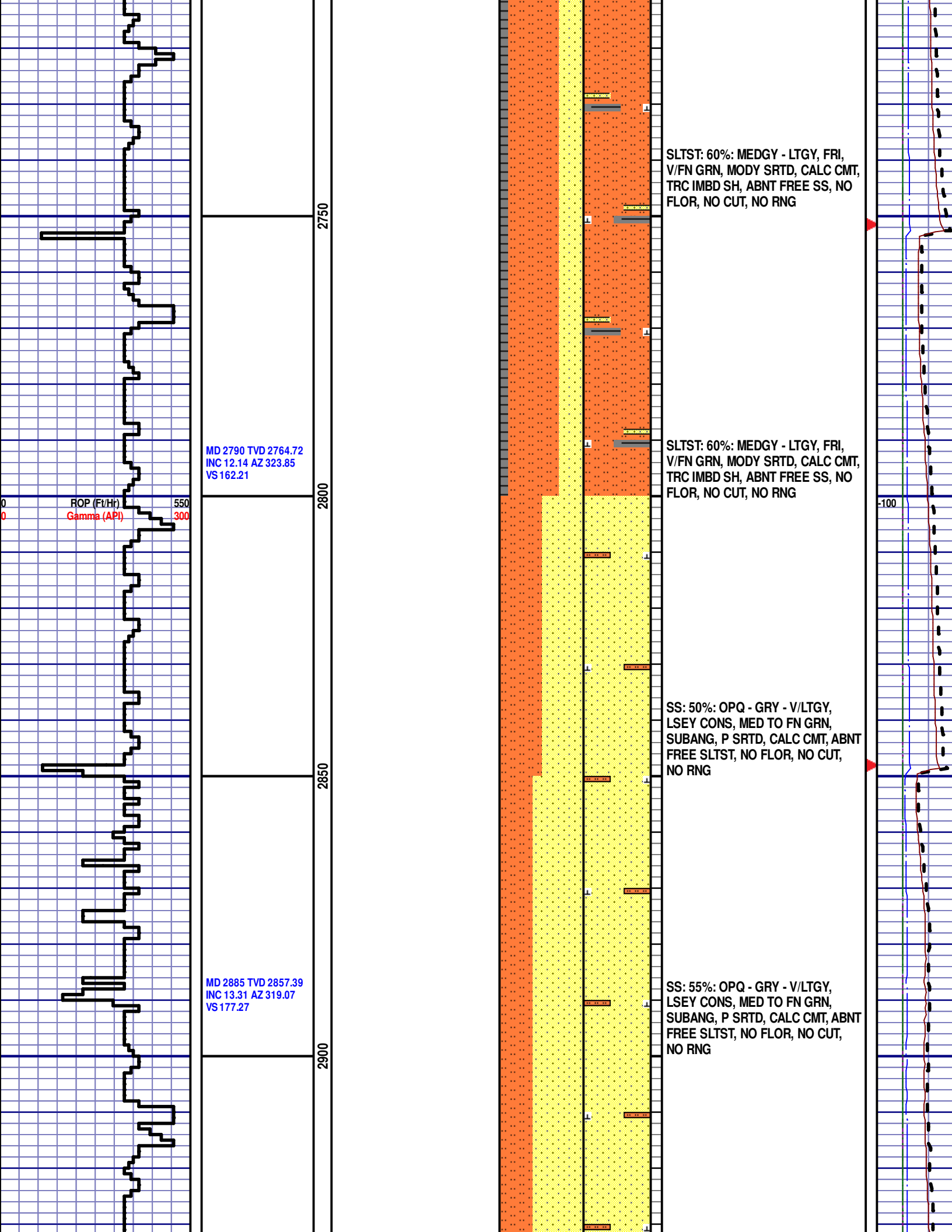
Salt
 Shale
 Shcol
 Siltysh
 Sltst
 Ss
 Till

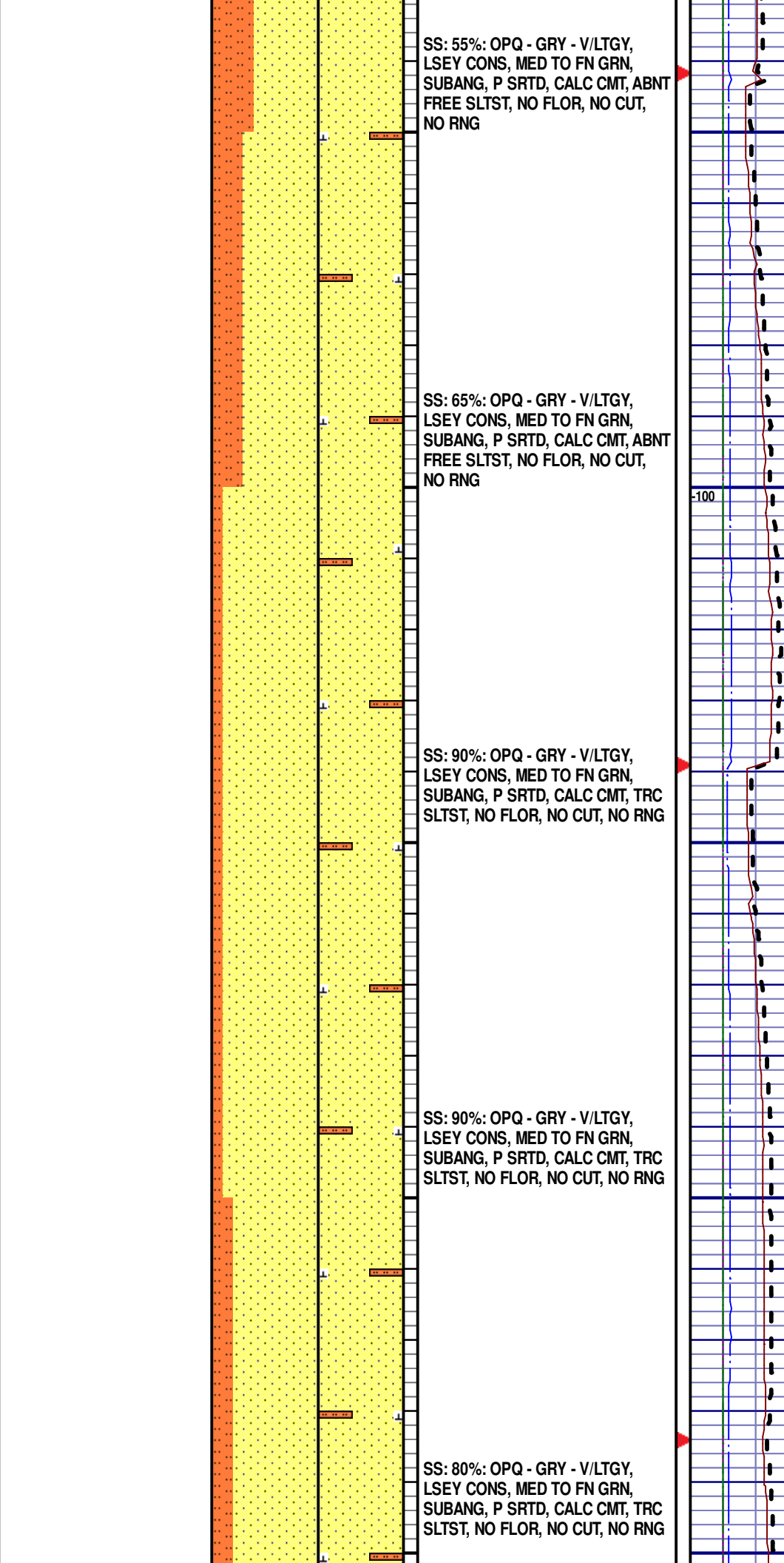
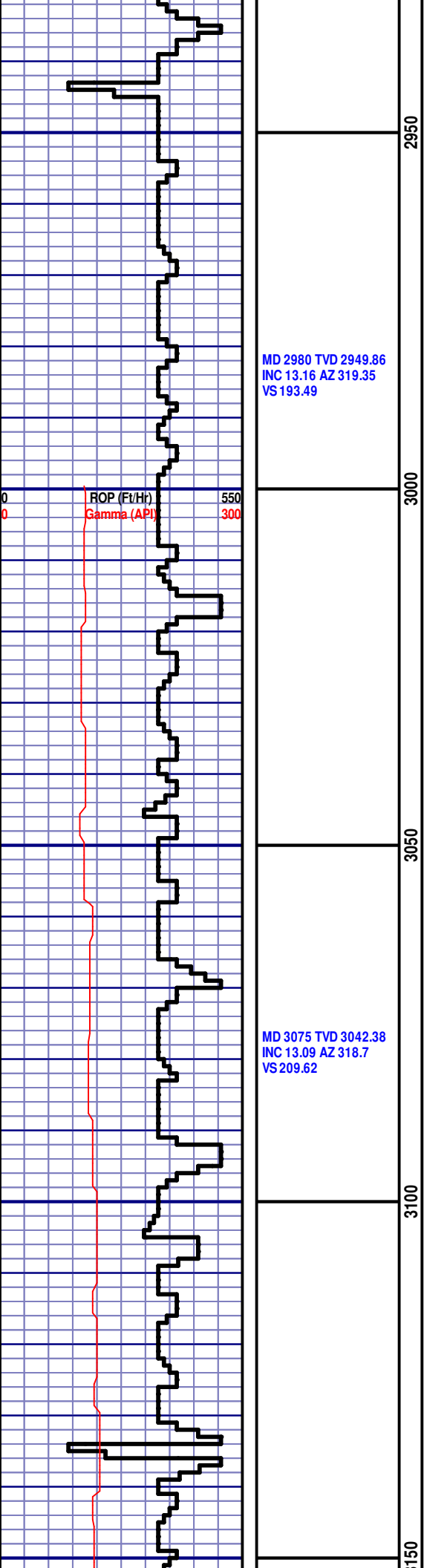
gw
 lmywash
 ogw
 olmywash
 oshly gw
 shly gw
 sdygw

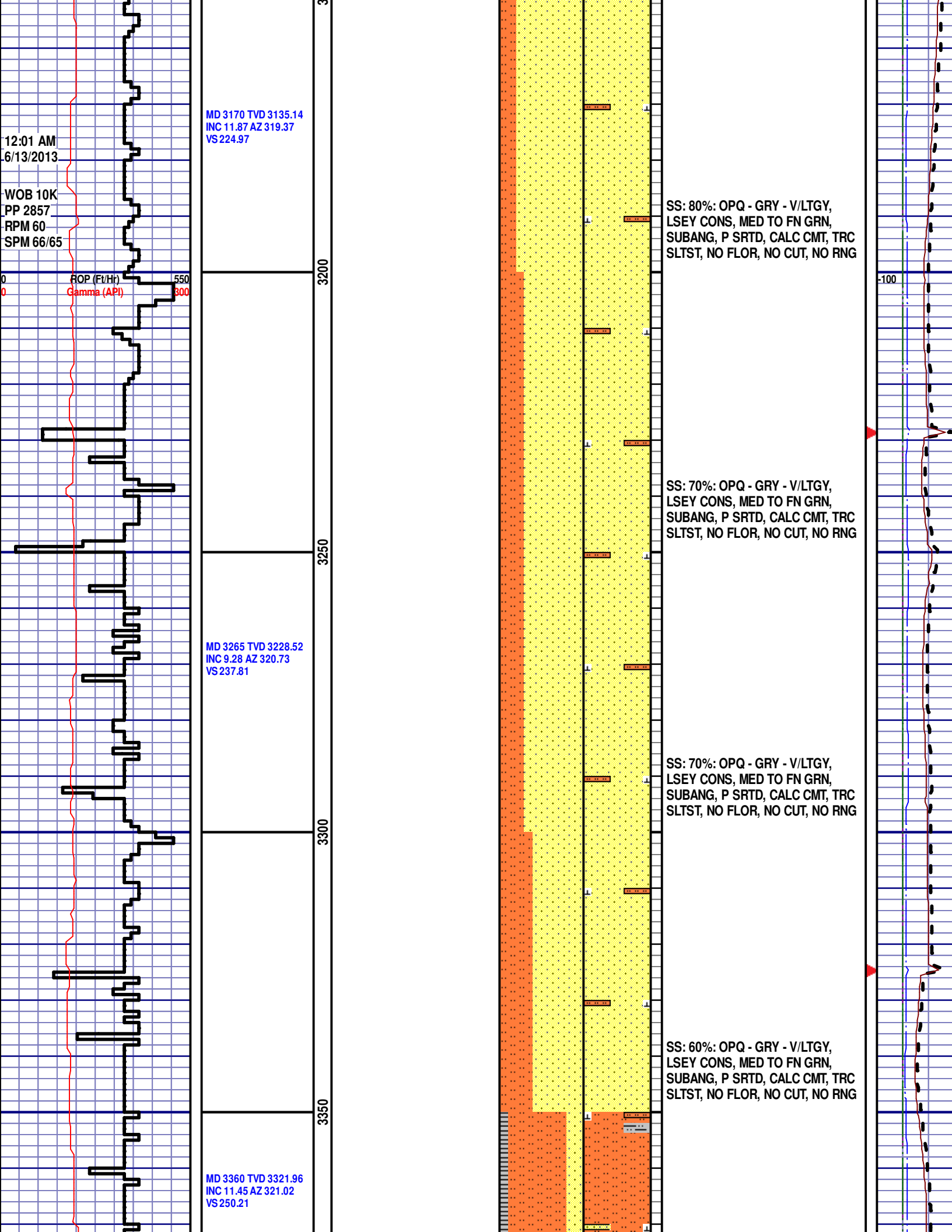
hvycrbsh
 NO SMPL
 Lsdetrst
 sltst
 sdy sh
 Cement

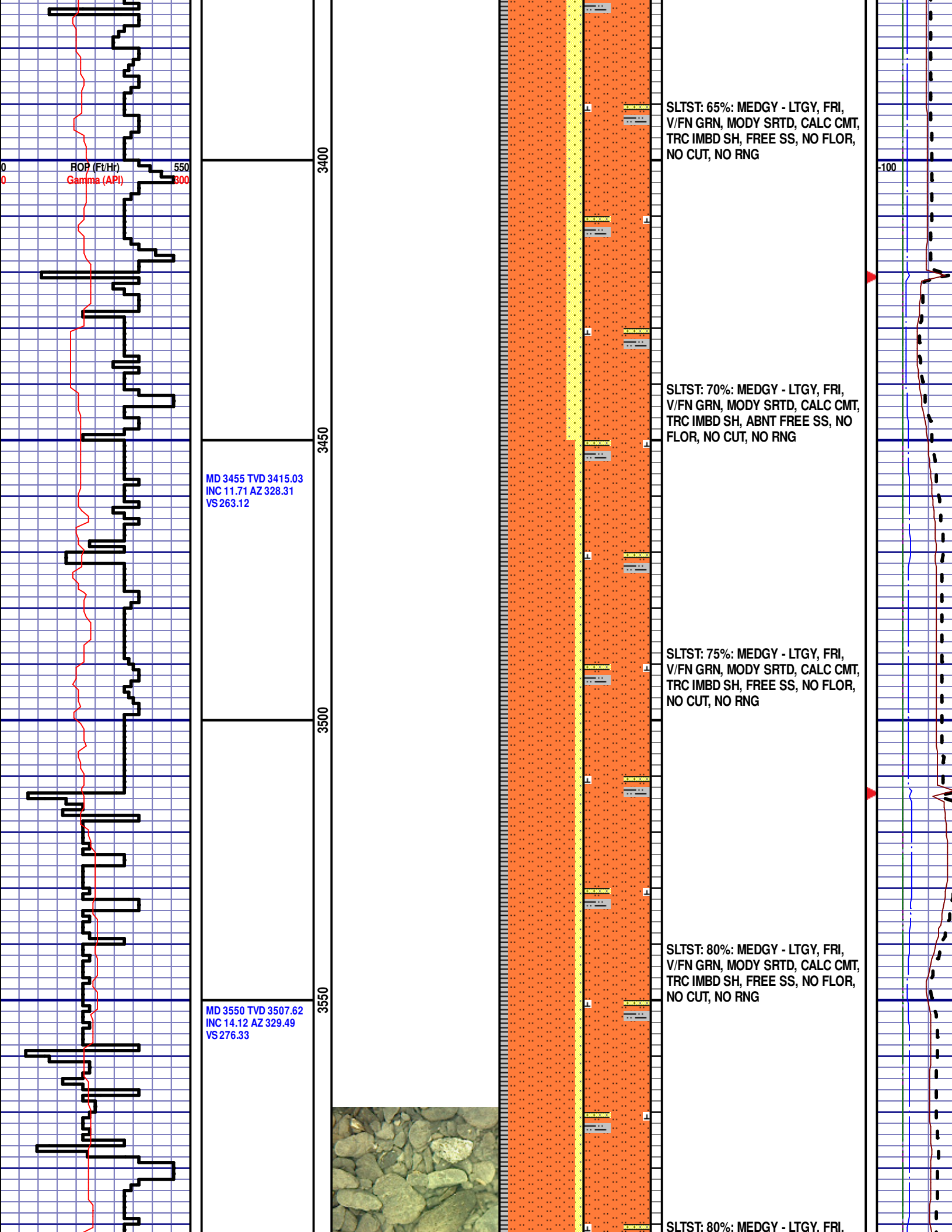


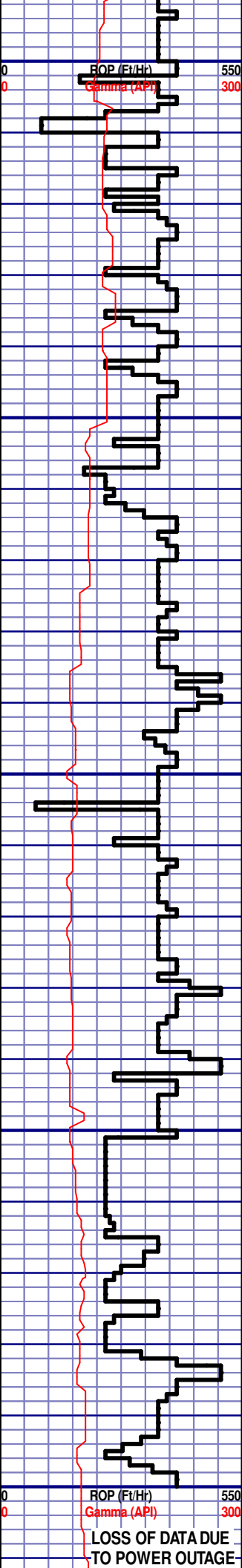








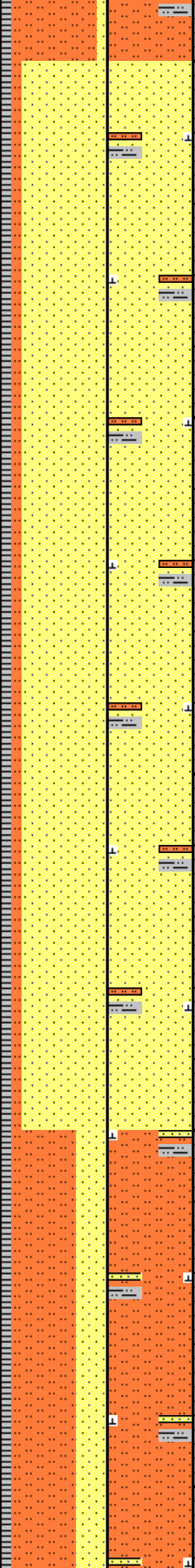
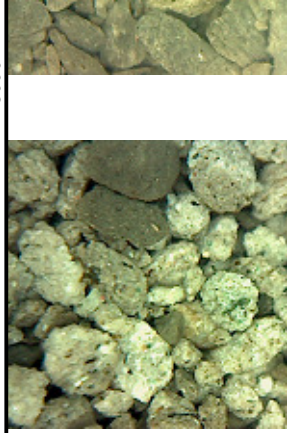




MD 3645 TVD 3599.61
INC 14.82 AZ 328.5
VS 291.08

MD 3740 TVD 3691.57
INC 14.21 AZ 330.89
VS 305.66

3600
3650
3700
3750
3800



V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, FREE SS, NO FLOR,
NO CUT, NO RNG

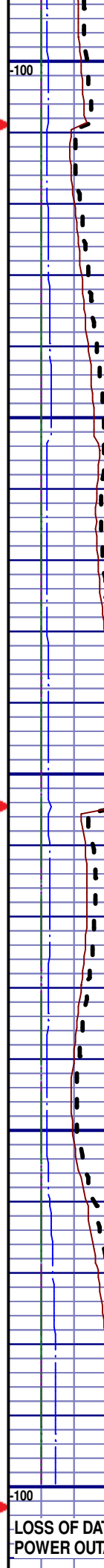
PARKMAN
3605' MD 3540' TVD

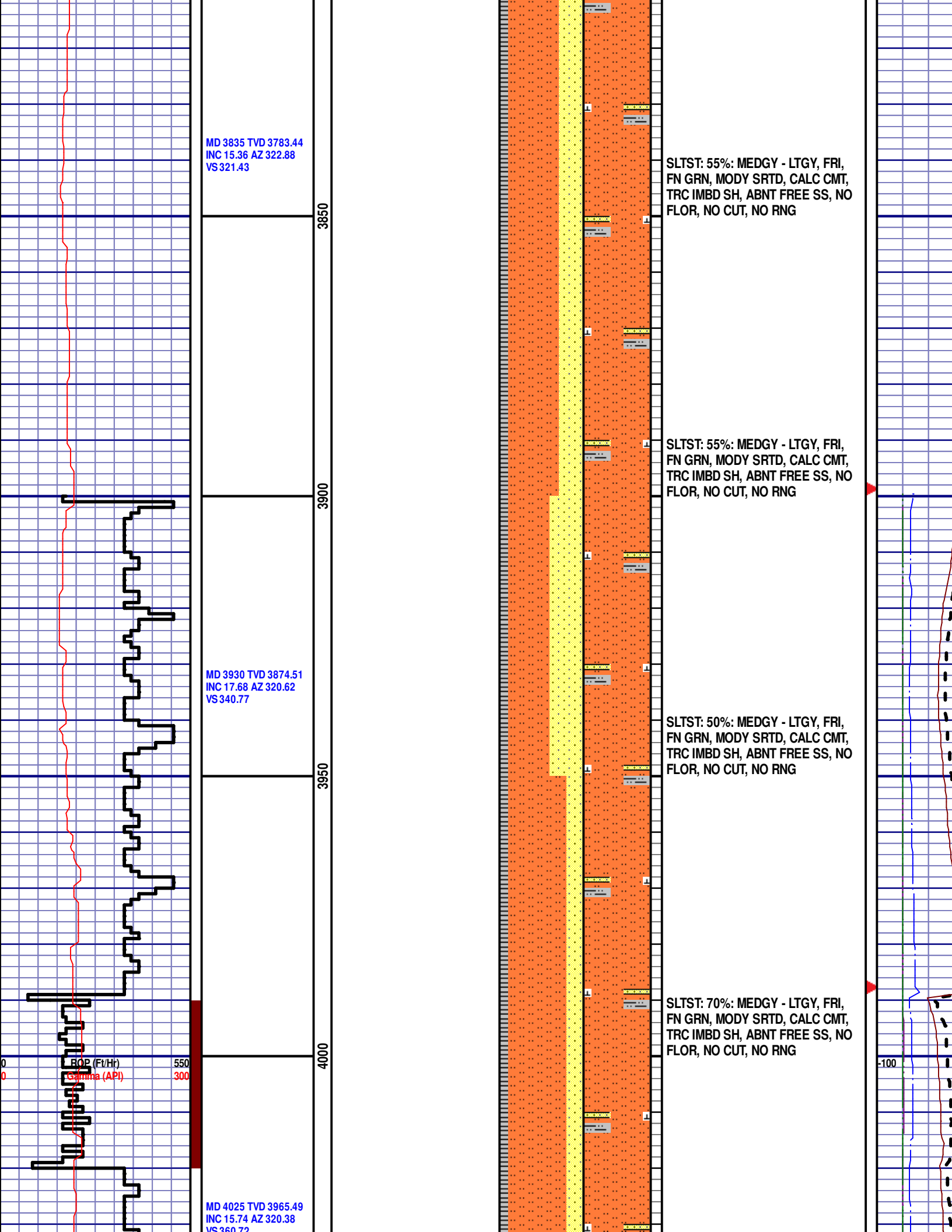
SS: 80%: OPQ - WH - V/LTGY, LSEY
CONS, MED TO FN GRN, SUBANG,
P SRTD, CALC CMT, TR IMBD SH,
ABNT FREE SLTST, NO FLOR, NO
CUT, NO RNG

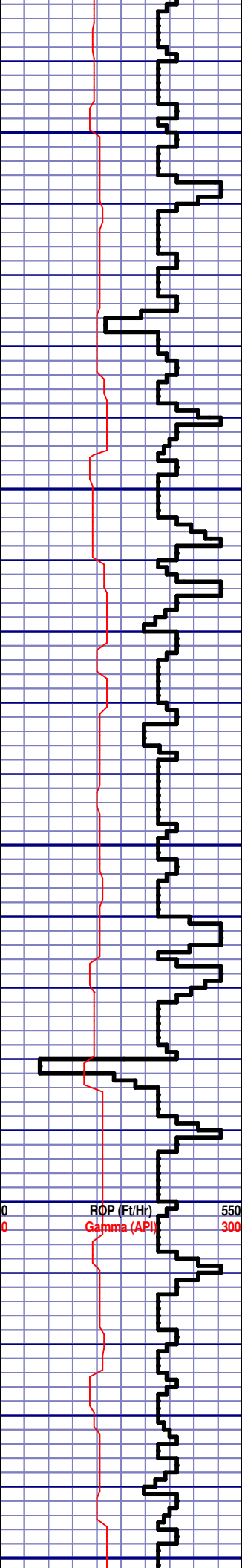
SS: 80%: OPQ - WH - V/LTGY, LSEY
CONS, MED TO FN GRN, SUBANG,
P SRTD, CALC CMT, TR IMBD SH,
ABNT FREE SLTST, NO FLOR, NO
CUT, NO RNG

SS: 80%: OPQ - WH - V/LTGY, LSEY
CONS, MED TO FN GRN, SUBANG,
P SRTD, CALC CMT, TR IMBD SH,
FREE SLTST, NO FLOR, NO CUT,
NO RNG

SLTST: 60%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
ABNT FREE SS, NO FLOR, NO CUT,
NO RNG







VS 300.72

4050

4100

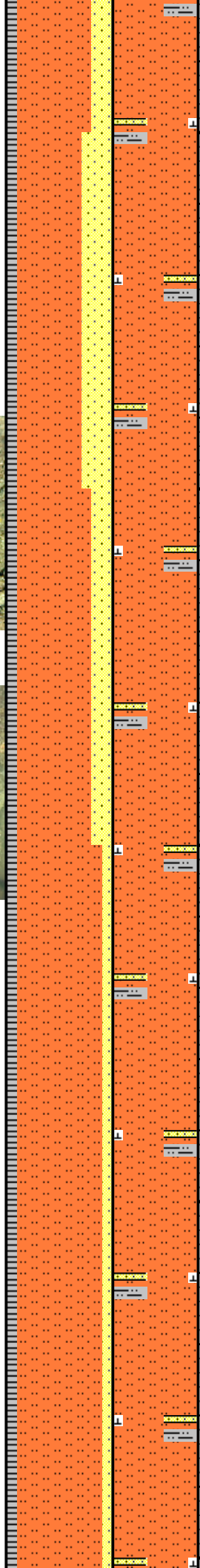
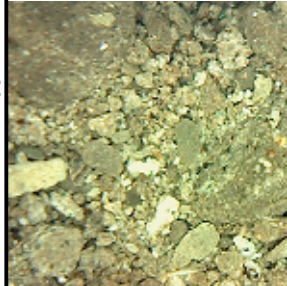
MD 4120 TVD 4057.09
INC 15 AZ 318.38
VS 379.44

4150

4200

MD 4215 TVD 4149.36
INC 12.51 AZ 317.03
VS 396.65

250



SLTST: 65%: MEDGY - LTGY, FRI,
FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 55%: MEDGY - LTGY, FRI,
FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

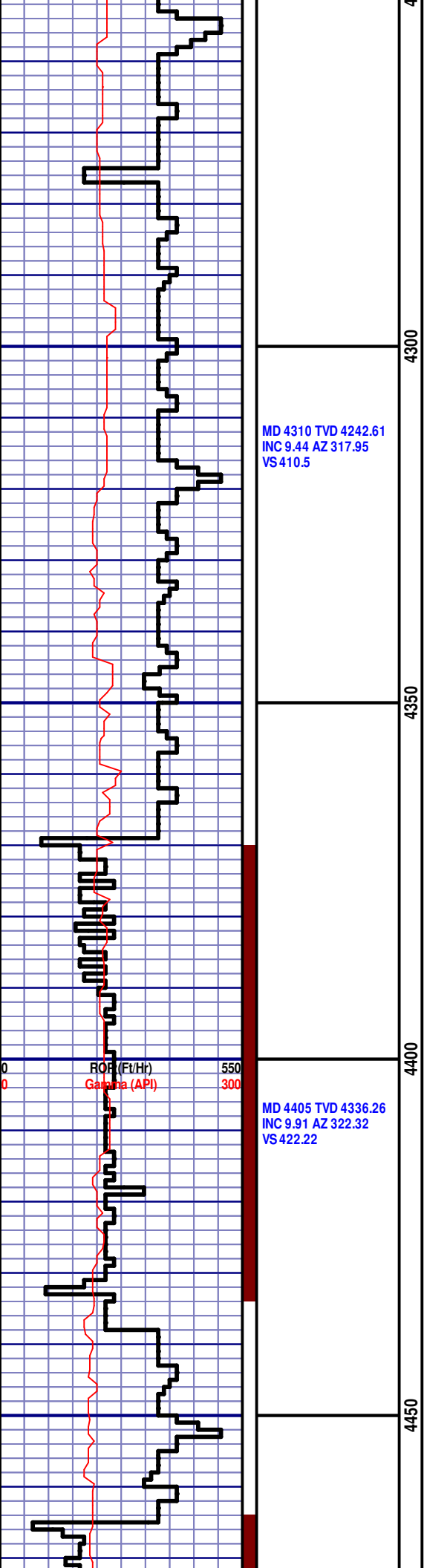
SUSSEX

4125' MD 4060' TVD

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

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG



MD 4310 TVD 4242.61
INC 9.44 AZ 317.95
VS 410.5

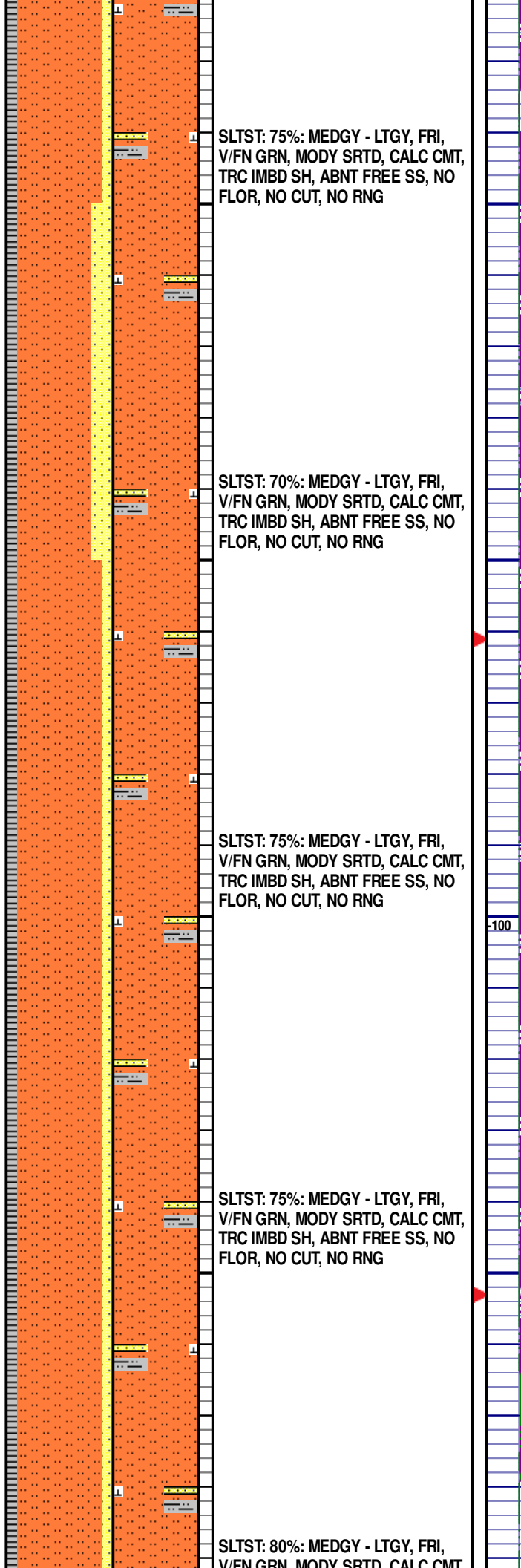
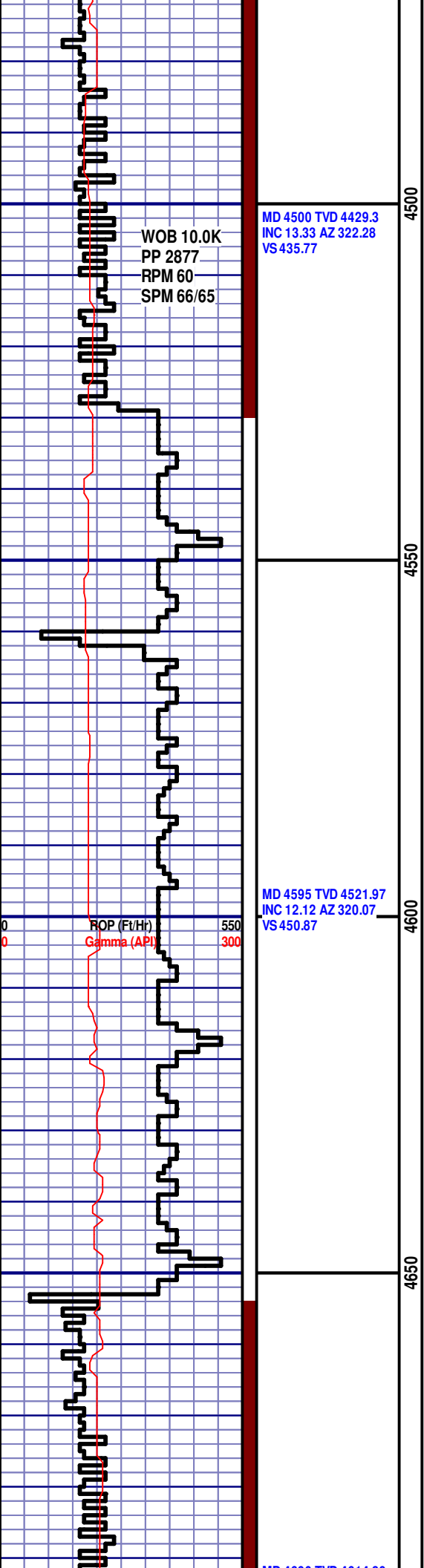
MD 4405 TVD 4336.26
INC 9.91 AZ 322.32
VS 422.22

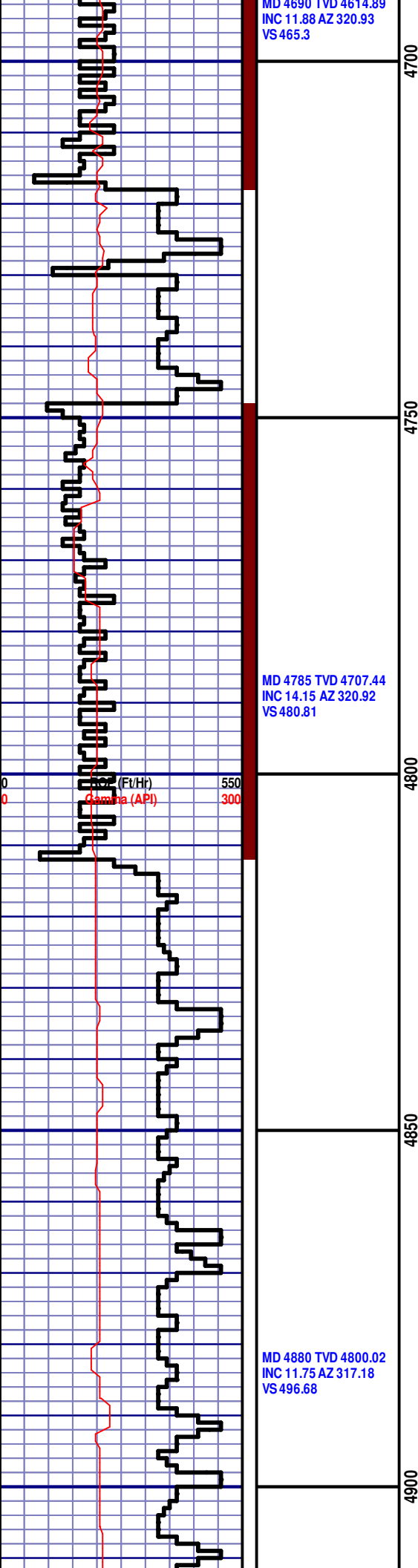
SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG





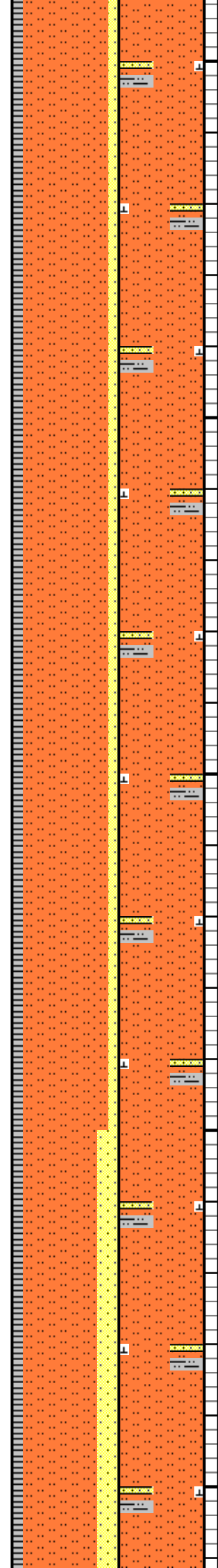
4700

4750

4800

4850

4900



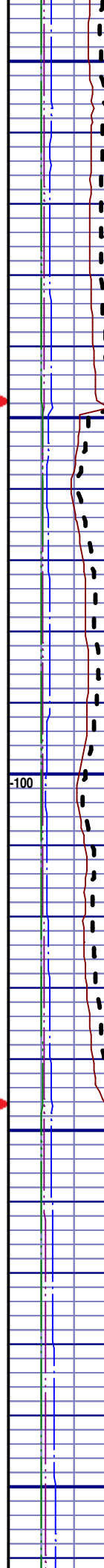
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

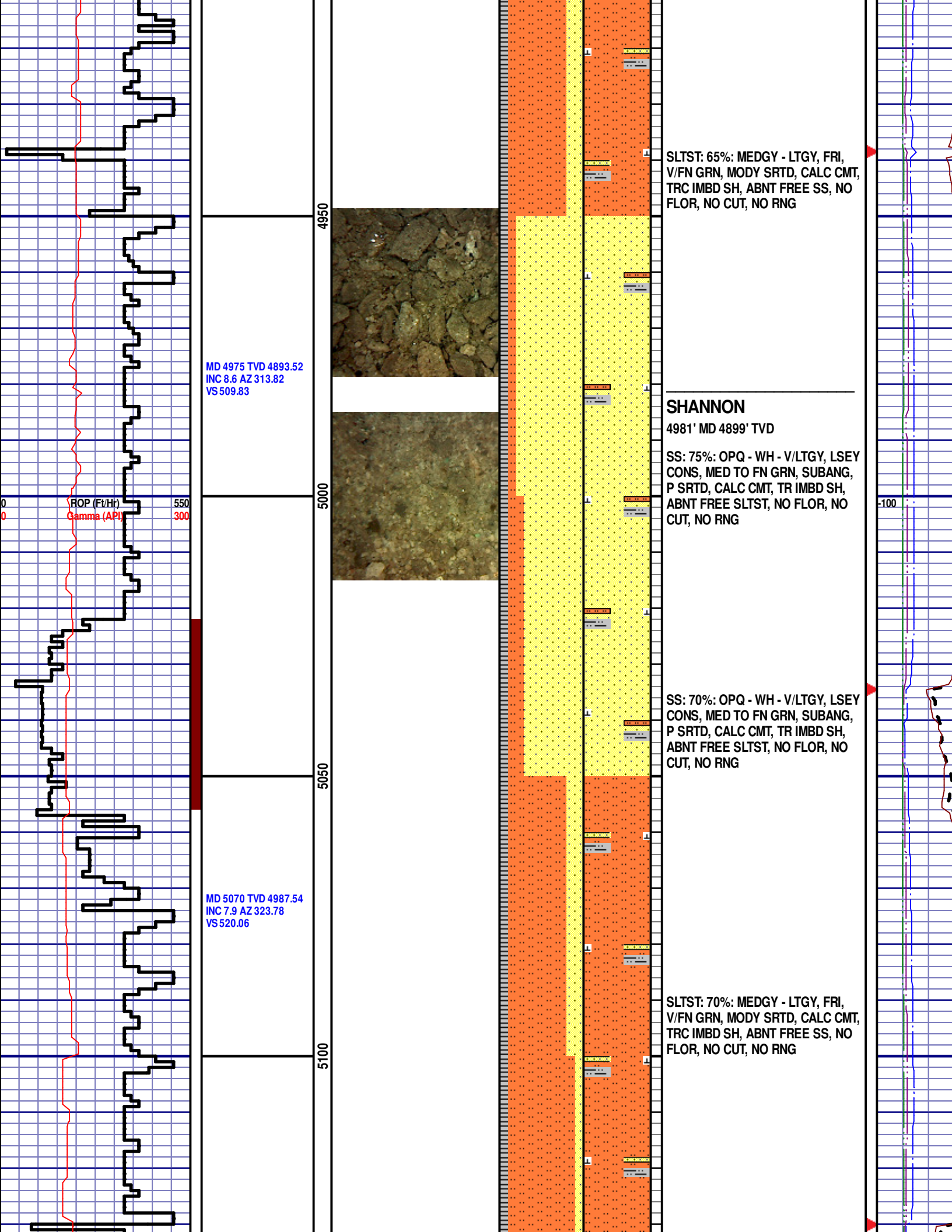
SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

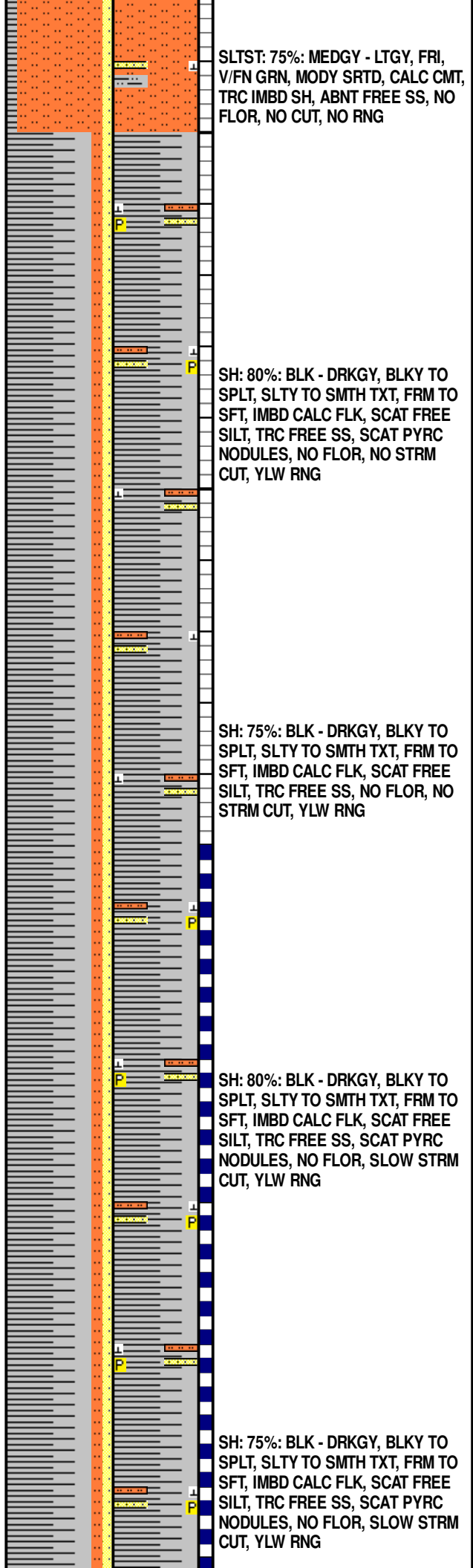
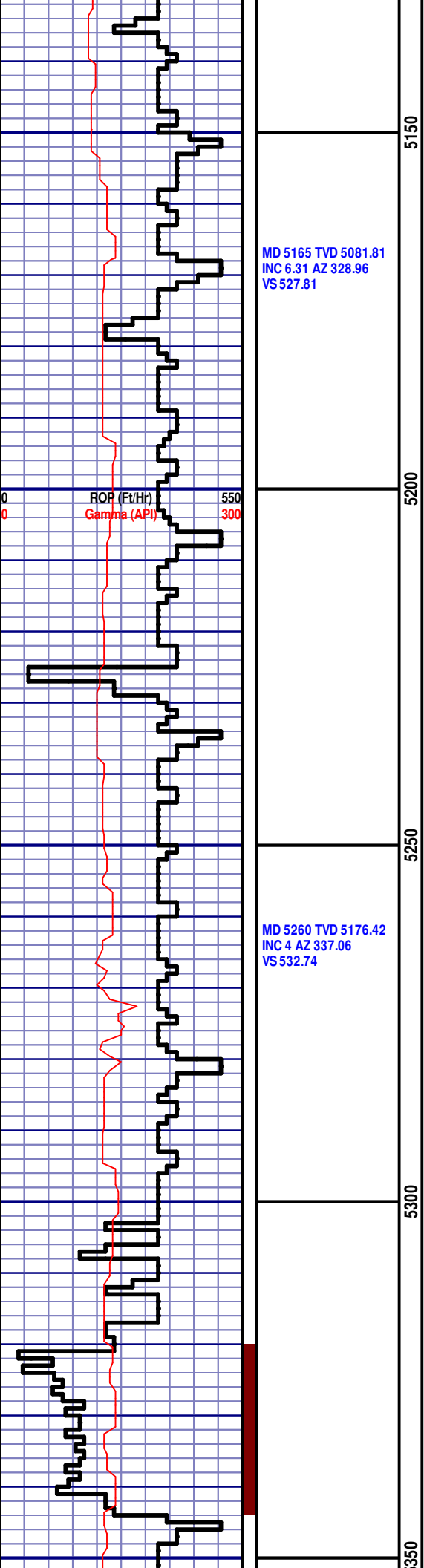
SLTST: 75%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
TRC IMBD SH, ABNT FREE SS, NO
FLOR, NO CUT, NO RNG

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



-100





MD 5355 TVD 5271.25
INC 2.71 AZ 335.69
VS 535.6

ROP (Ft/Hr)
Gamma (API)

550
300

5400

MD 5450 TVD 5366.2
INC 1.08 AZ 356.88
VS 536.94

5450

5500

MD 5545 TVD 5461.18
INC 1.16 AZ 48.4
VS 536.47

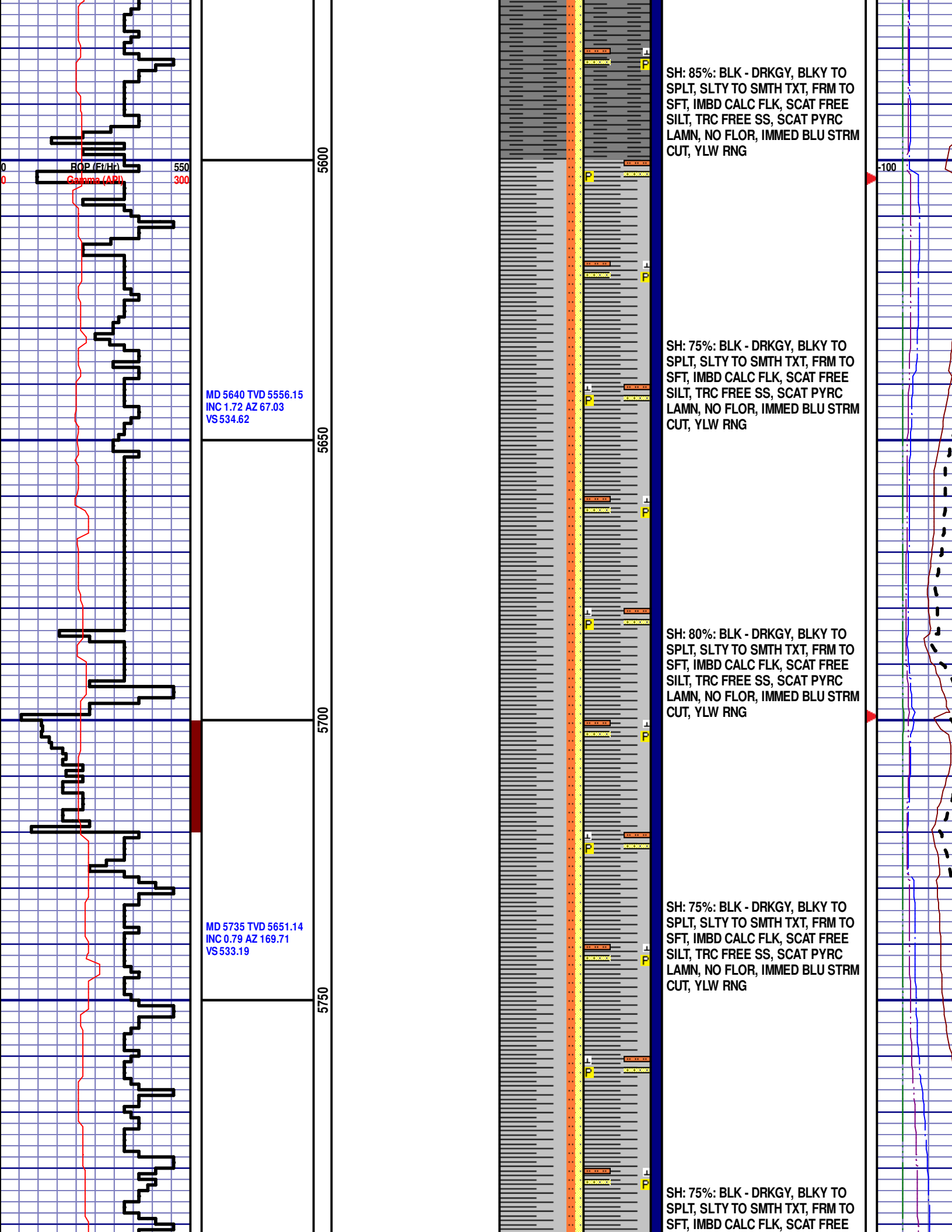
5550

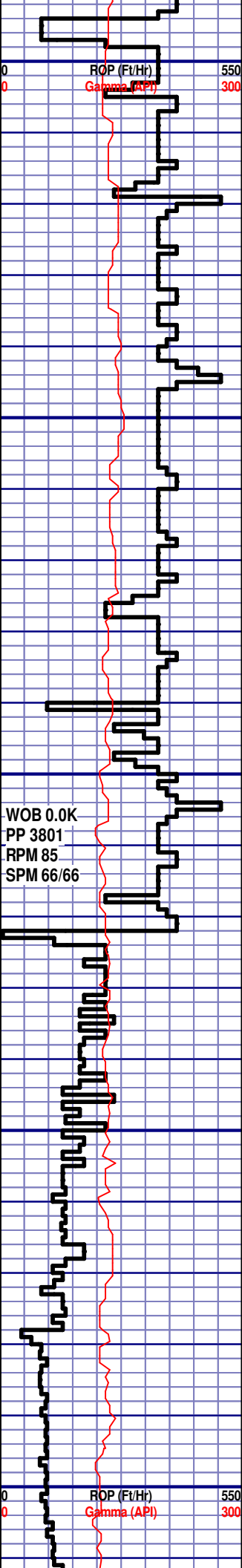
SH: 75%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
NODULES, NO FLOR, SLOW STRM
CUT, YLW RNG

SH: 80%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
NODULES, NO FLOR, SLOW STRM
CUT, YLW RNG

SH: 75%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
NODULES, NO FLOR, SLOW STRM
CUT, YLW RNG

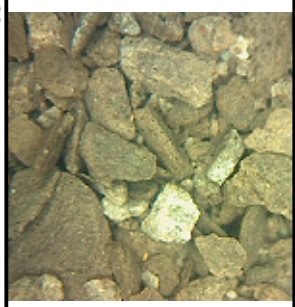
SH: 80%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
NODULES, NO FLOR, SLOW STRM
CUT, YLW RNG





MD 5861 TVD 5777.1
INC 1.88 AZ 123.3
VS 531.07

MD 5922 TVD 5838.07
INC 2.09 AZ 122.51
VS 529.16



SILT, TRC FREE SS, SCAT PYRC
LAMN, NO FLOR, IMMED BLU STRM
CUT, YLW RNG

SH: 80%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
NODULES, NO FLOR, IMMED BLU
STRM CUT, YLW RNG

SH: 80%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
LAMN, NO FLOR, IMMED BLU STRM
CUT, YLW RNG

SH: 60%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
LAMN, NO FLOR, IMMED BLU STRM
CUT, YLW RNG

TOOH @ 11:15 AM ON 6/13/2013 @
5921' MD TO PICK UP A NEW BIT
AND MOTOR. TIH @ 6:00 PM ON
6/13/2013. RESUMED DRILLING @
10:45 PM ON 6/13/2013 W/ BIT #3
8.75" HDBS FXD55M (S/N)
11962802 IN @ 5921' MD.

TEEPEE BUTTES

5950' MD 5853' TVD

SH: 50%: BLK - DRKGY, BLKY TO
SPLT, SLTY TO SMTH TXT, FRM TO
SFT, IMBD CALC FLK, SCAT FREE
SILT, TRC FREE SS, SCAT PYRC
LAMN, NO FLOR, IMMED BLU STRM
CUT, YLW RNG

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

12:01 AM
6/14/2013

WOB 10K
PP 3741
RPM 0
SPM 65/66

MD 6017 TVD 5933.03
INC 2.73 AZ 249.81
VS 529.6

MD 6065 TVD 5980.8
INC 8.06 AZ 259.55
VS 533.82

MD 6112 TVD 6027.14
INC 11.09 AZ 258.21
VS 541.22

MD 6162 TVD 6075.94
INC 14.03 AZ 264.63
VS 551.68

MD 6207 TVD 6119.3
INC 17.01 AZ 271.33
VS 563.54

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

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

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

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

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

SLTST: 65%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
AB IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 65%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,
AB IMBD SH, TRC FREE SS, NO
FLOR, IMMED BLUE STRM CUT,
YLW RNG

SLTST: 65%: MEDGY - LTGY, FRI,
V/FN GRN, MODY SRTD, CALC CMT,

ROP (Ft/Hr)
Gamma (API)

550
300

6050

6100

6150

6200

-100

