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Customer Information

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

Geologist: Holly Sell
Noble Energy Inc.

Mud Logging Details

Logger: Nikki Graber
Cory Shorette

Log Interval: 2500' MD to 6734' MD

Start Date: March 7, 2013

Release Date: March 14, 2013

Well Information

Well Name: Wells Ranch State PC USX
AA16-62-1HNL

Location: 14-6N-63W
703' FSL, 247' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 343

Total Depth: 12782' MD

TD Date: March 13, 2013

Formation: Niobrara B Chalk

KB Elevation: 4768'

GR Elevation: 4744'

API Number: 05-123-36157

ROCK TYPES

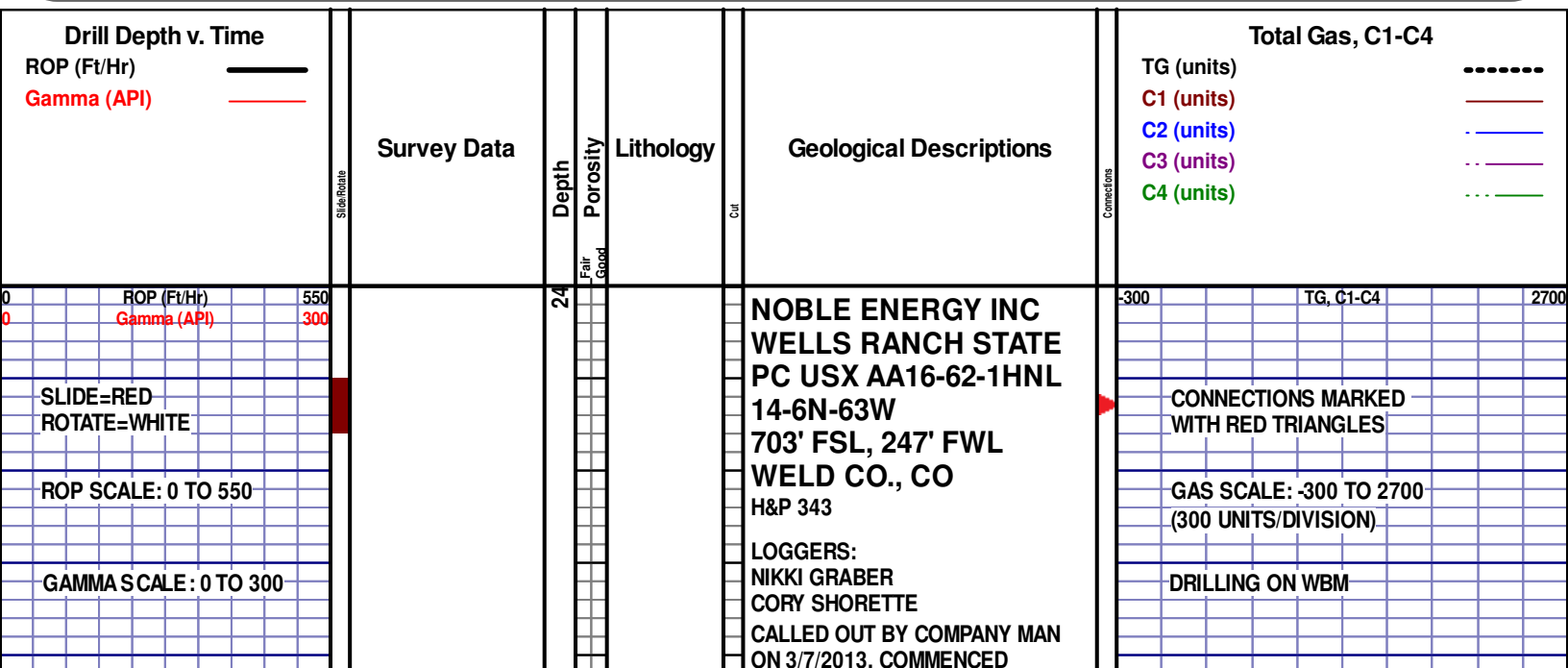
Anhy
 Bent
 Brec
 Cht
 Clyst
 Coal
 Congl

Dol
 Gyp
 Igne
 Chk
 Lmst
 Meta
 Mrlst

Salt
 Shale
 Shcol
 Shgy
 Sltst
 Ss
 Till

gw
 lmywash
 ogw
 olmywash
 oshly gw
 shly gw
 sdygw

hvycrbsh
 nosmpl
 Lsdetrst
 sltst
 sdy sh
 Cement



WOB 5.6K
PP 2927
RPM 65
SPM 66/66

MD 2509 TVD 2498.4
INC 15.08 AZ 220.6
VS 91.83

MD 2604 TVD 2590.39
INC 13.82 AZ 219.19
VS 107.77

MD 2699 TVD 2682.59
INC 14.05 AZ 217.83
VS 122.72

LOGGING @ 2500' @ 8:30 AMON
3/8/2013 W/ BIT #2 8.75"
SCHLUMBERGER/SMITH MDi516
S/N JG4638 IN @ 683' MD

SILTSTN; 80%; GRY TO LT GRY,
VFGR, SUB-ANG, OPA, BRITTLE,
P/CONSOL, P/SORT, CALC CMNT,
SANDY, SH INCLUS, NO FLUOR, NO
STRM CUT, NO CUT AFTER CRUSH

SILTSTN; 70%; GRY TO LT GRY,
VFGR, SUB-ANG, OPA, BRITTLE,
P/CONSOL, P/SORT, CALC CMNT,
SANDY, SH INCLUS, NO FLUOR, NO
STRM CUT, NO CUT AFTER CRUSH

SILTSTN; 80%; GRY TO LT GRY,
VFGR, SUB-ANG, OPA, BRITTLE,
P/CONSOL, P/SORT, CALC CMNT,
SANDY, SH INCLUS, NO FLUOR, NO
STRM CUT, NO CUT AFTER CRUSH

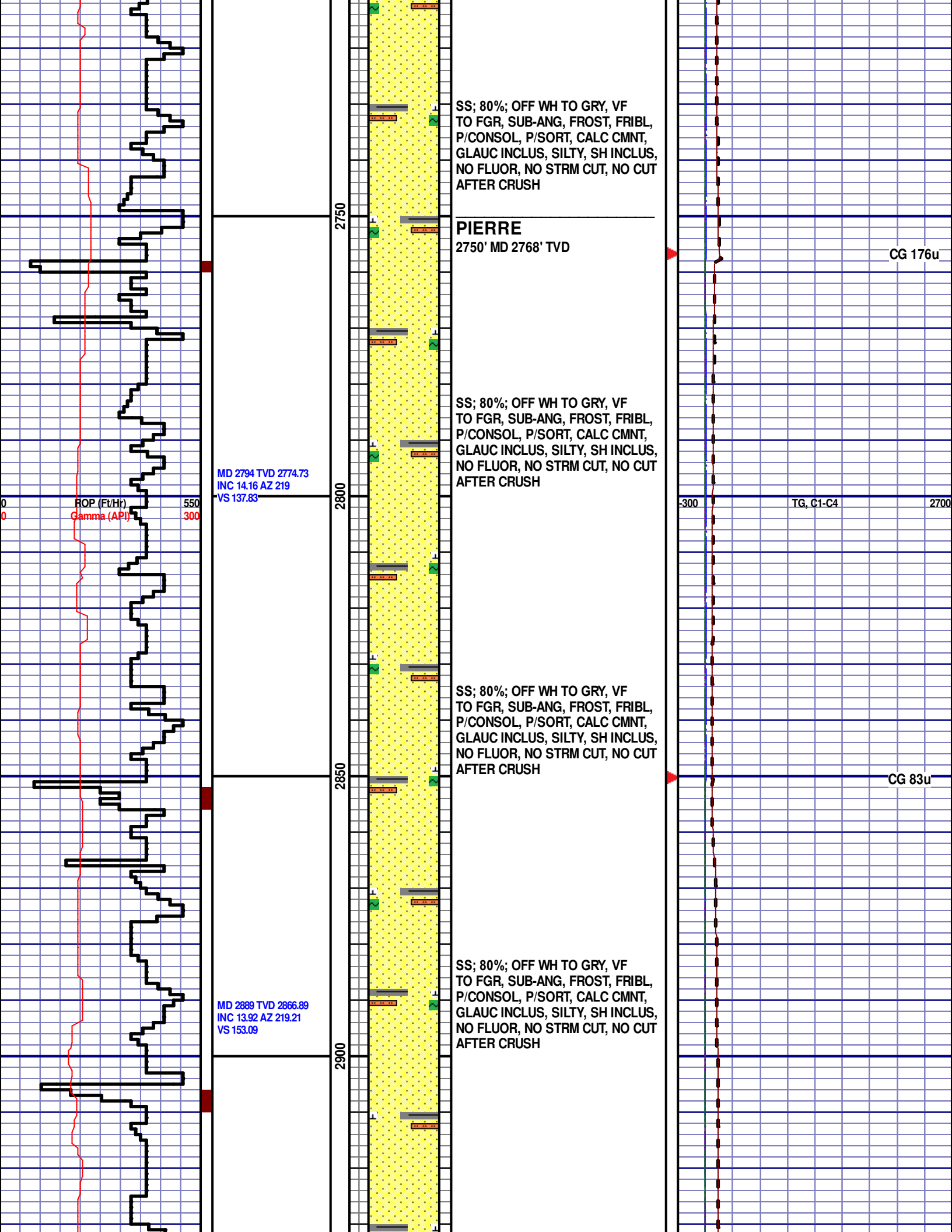
SILTSTN; 80%; GRY TO LT GRY,
VFGR, SUB-ANG, OPA, BRITTLE,
P/CONSOL, P/SORT, CALC CMNT,
SANDY, SH INCLUS, NO FLUOR, NO
STRM CUT, NO CUT AFTER CRUSH

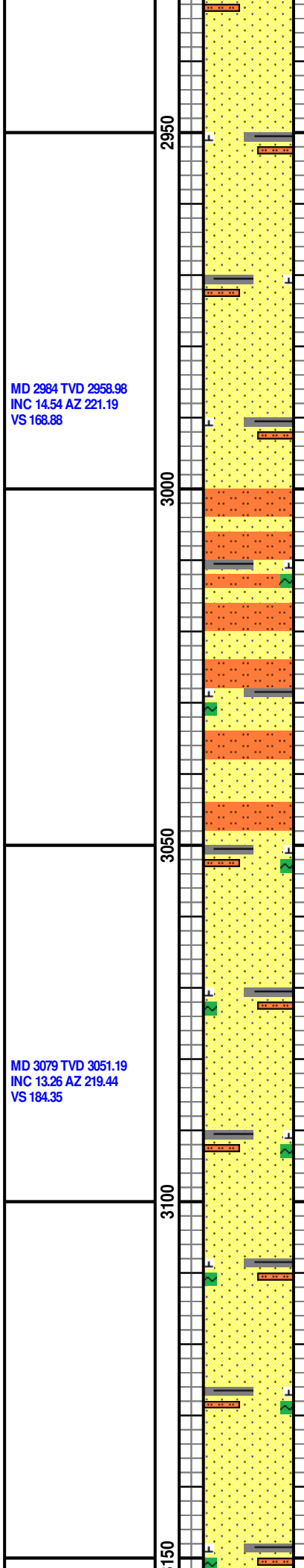
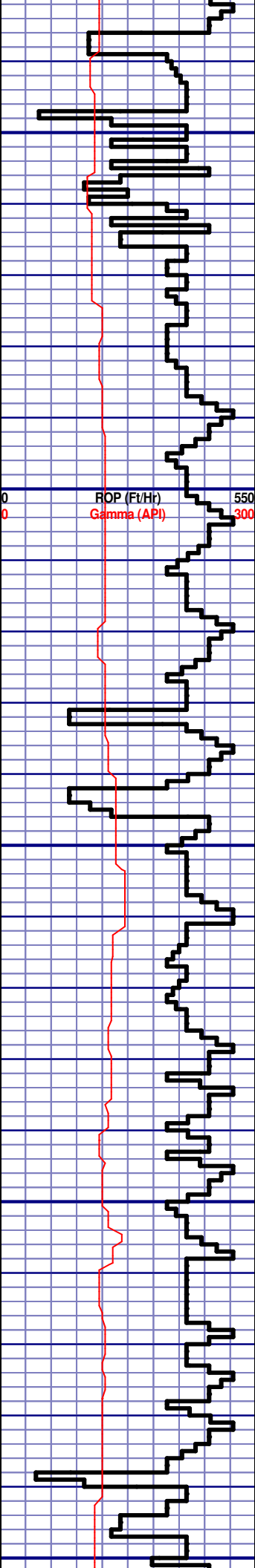
MD 1145'
WT 8.7
VIS 30
PV 5
YP 4
GEL1/2/3
FIL 27
SOL 2.2
H2O 97
PH 9.9
CL 1900
CAL 100
OIL 0.5

CG 163u

TG, C1-C4

CG 156u





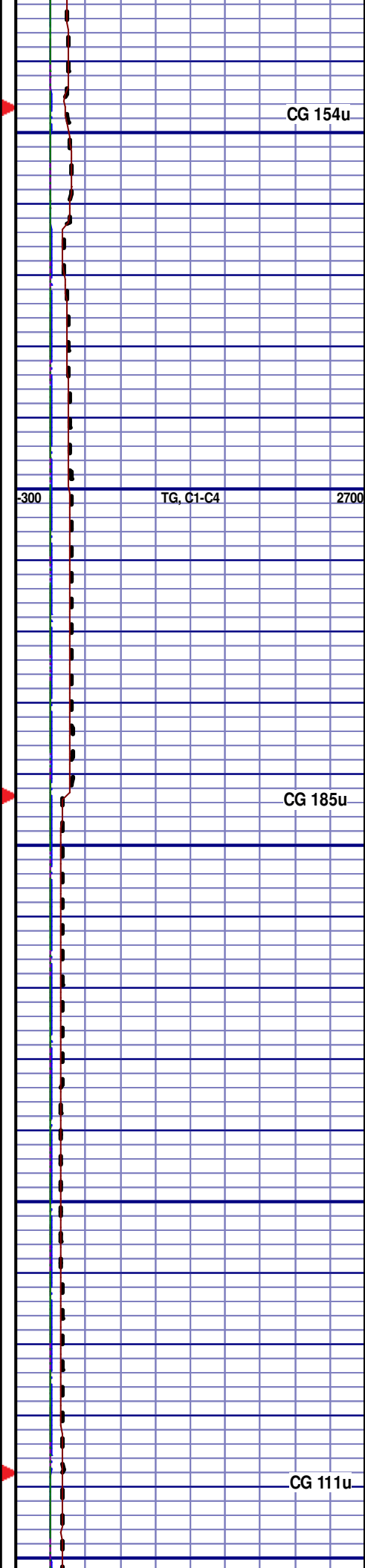
SS; 75%; OFF WH TO GRY, VF TO FGR, SUB-ANG, FROST, FRIBL, P/CONSOL, P/SORT, CALC CMNT, GLAUC INCLUS, SILTY, SH INCLUS, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH

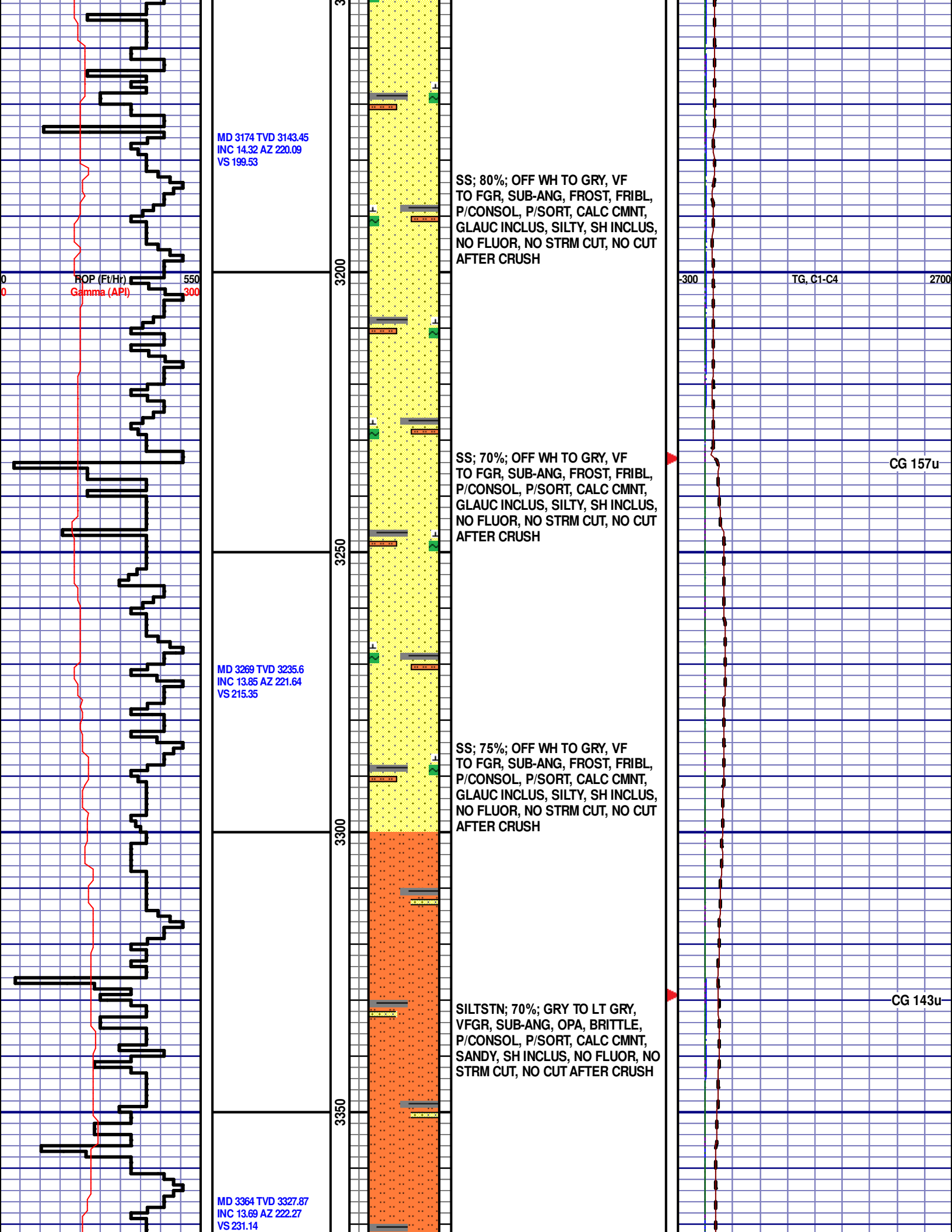
SS; 75%; OFF WH TO GRY, VF TO FGR, SUB-ANG, FROST, FRIBL, P/CONSOL, P/SORT, CALC CMNT, GLAUC INCLUS, SILTY, SH INCLUS, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH

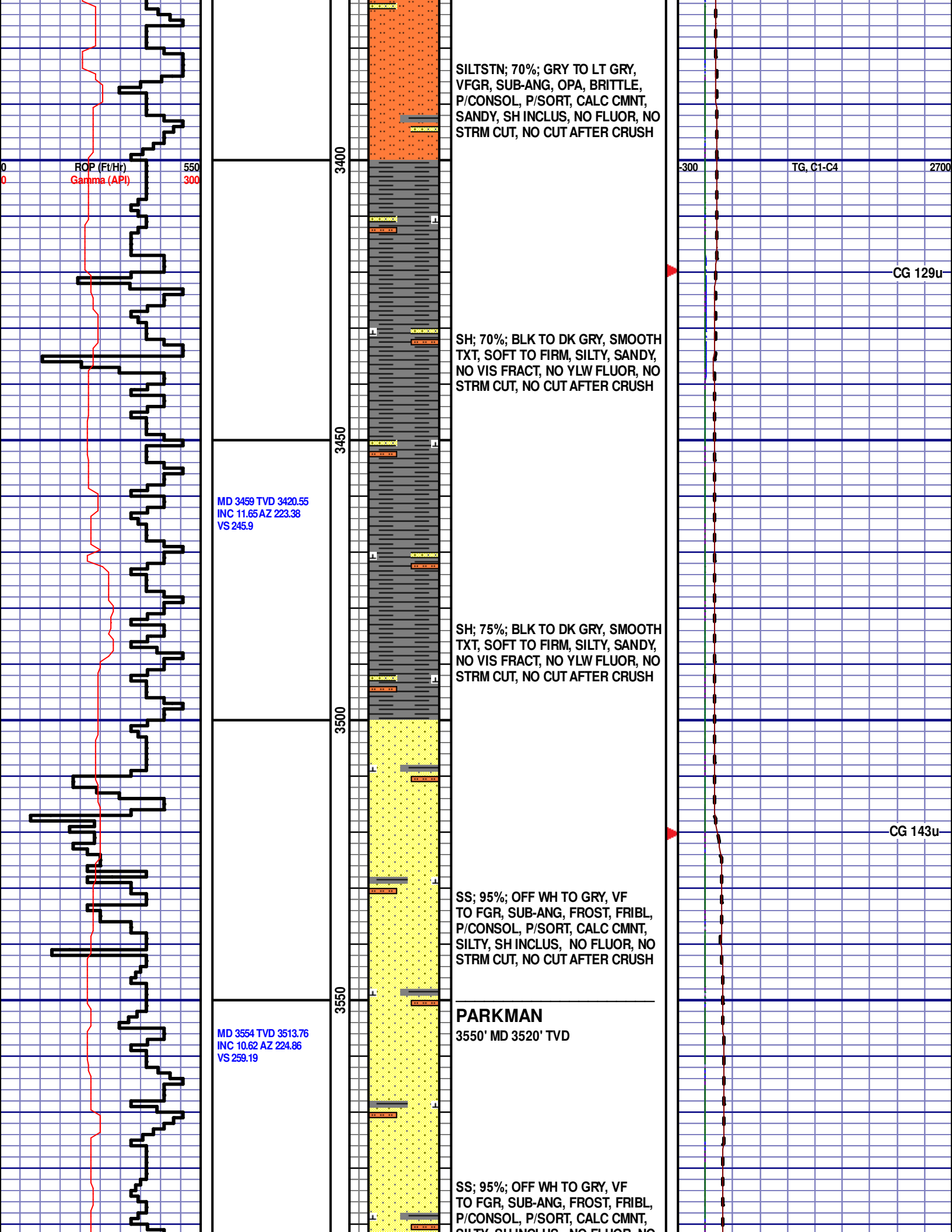
SILTSTN; 60%; GRY TO LT GRY, VFGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, SANDY, SH INCLUS, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH

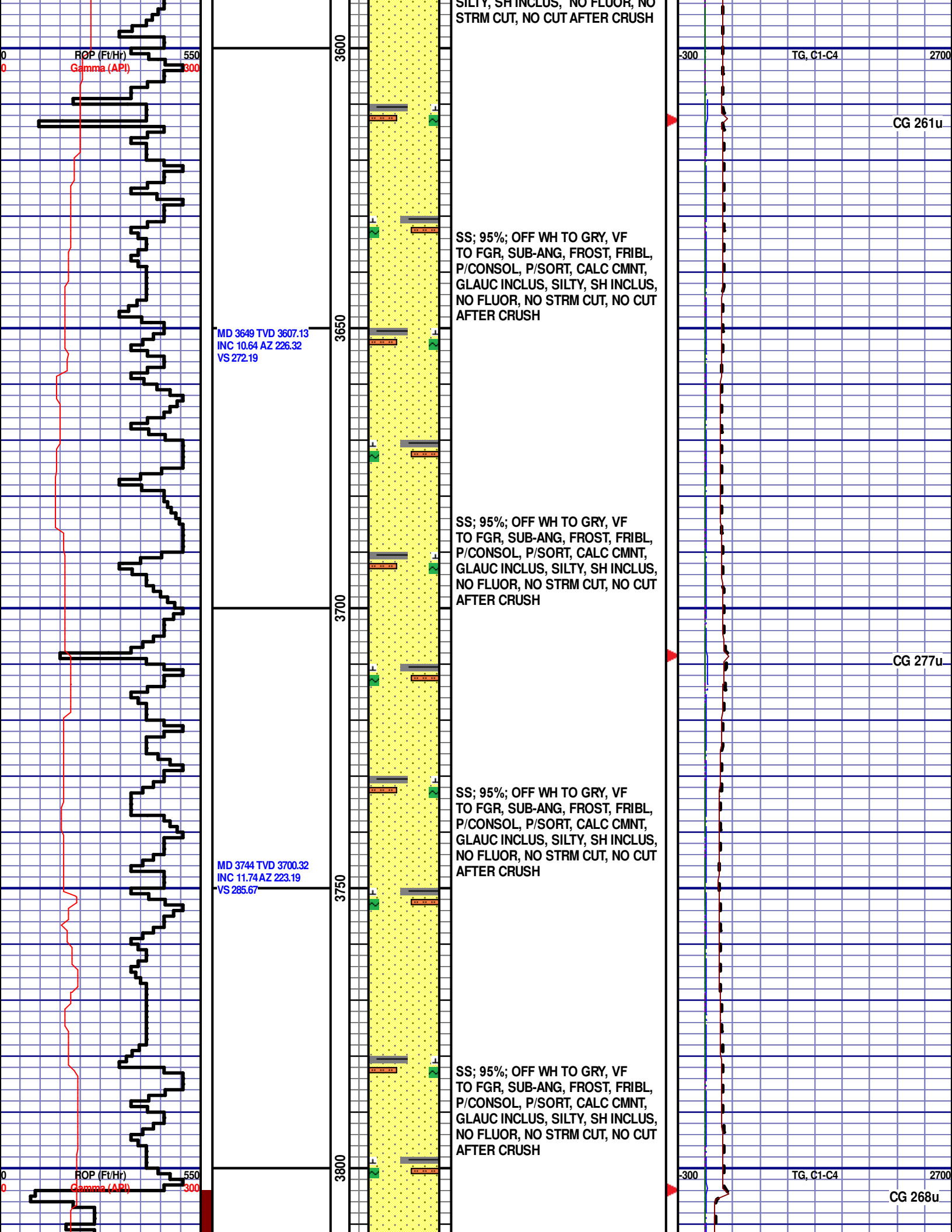
SS; 75%; OFF WH TO GRY, VF TO FGR, SUB-ANG, FROST, FRIBL, P/CONSOL, P/SORT, CALC CMNT, GLAUC INCLUS, SILTY, SH INCLUS, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH

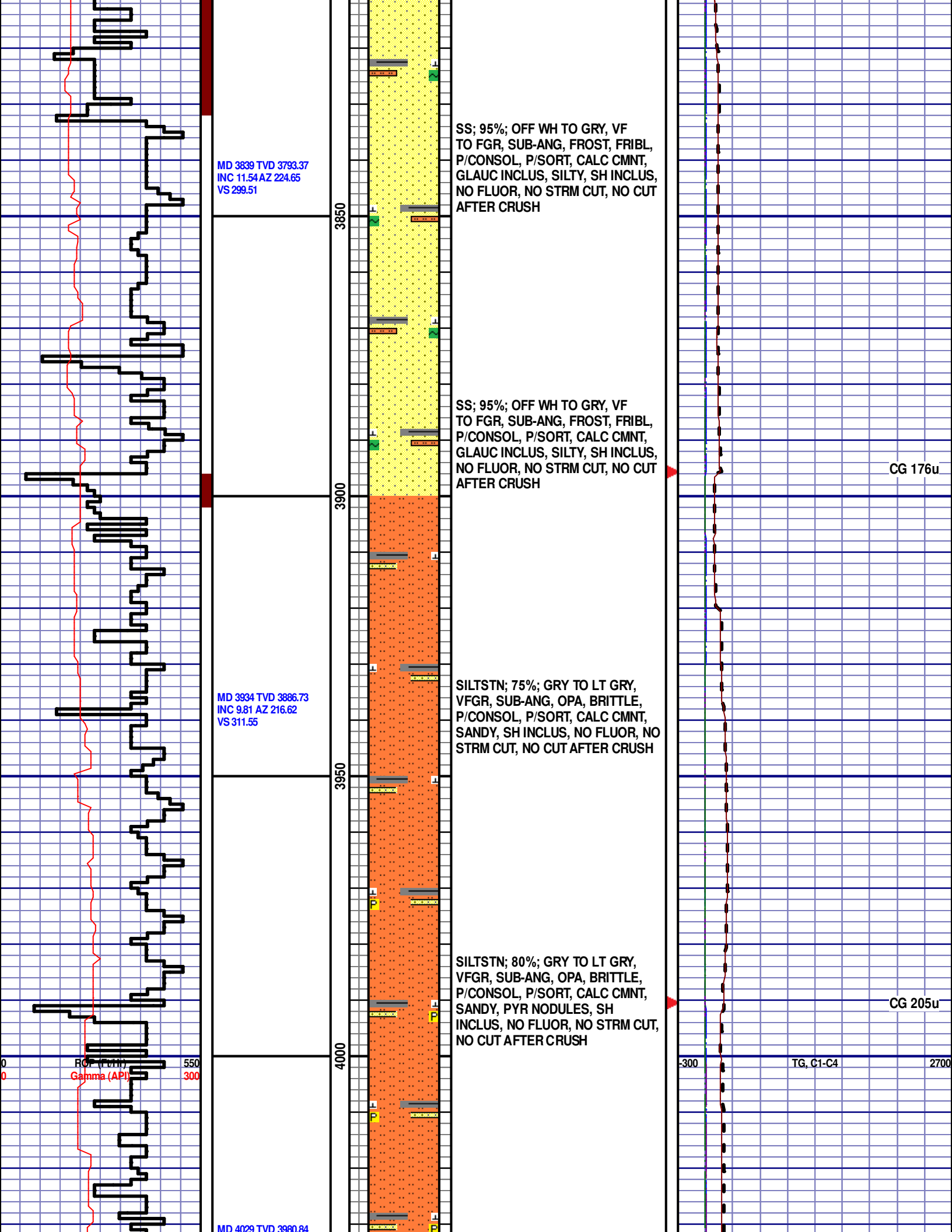
SS; 80%; OFF WH TO GRY, VF TO FGR, SUB-ANG, FROST, FRIBL, P/CONSOL, P/SORT, CALC CMNT, GLAUC INCLUS, SILTY, SH INCLUS, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH

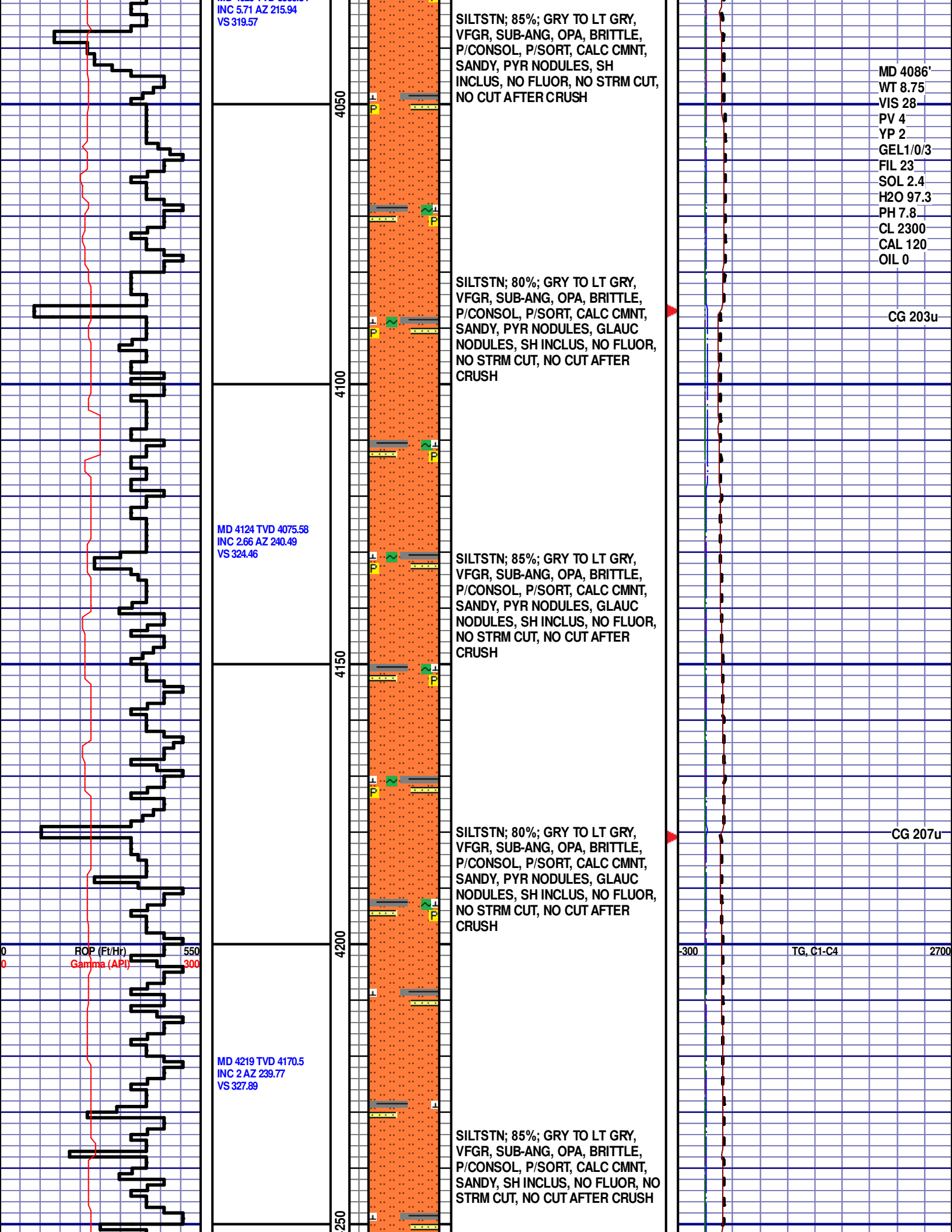


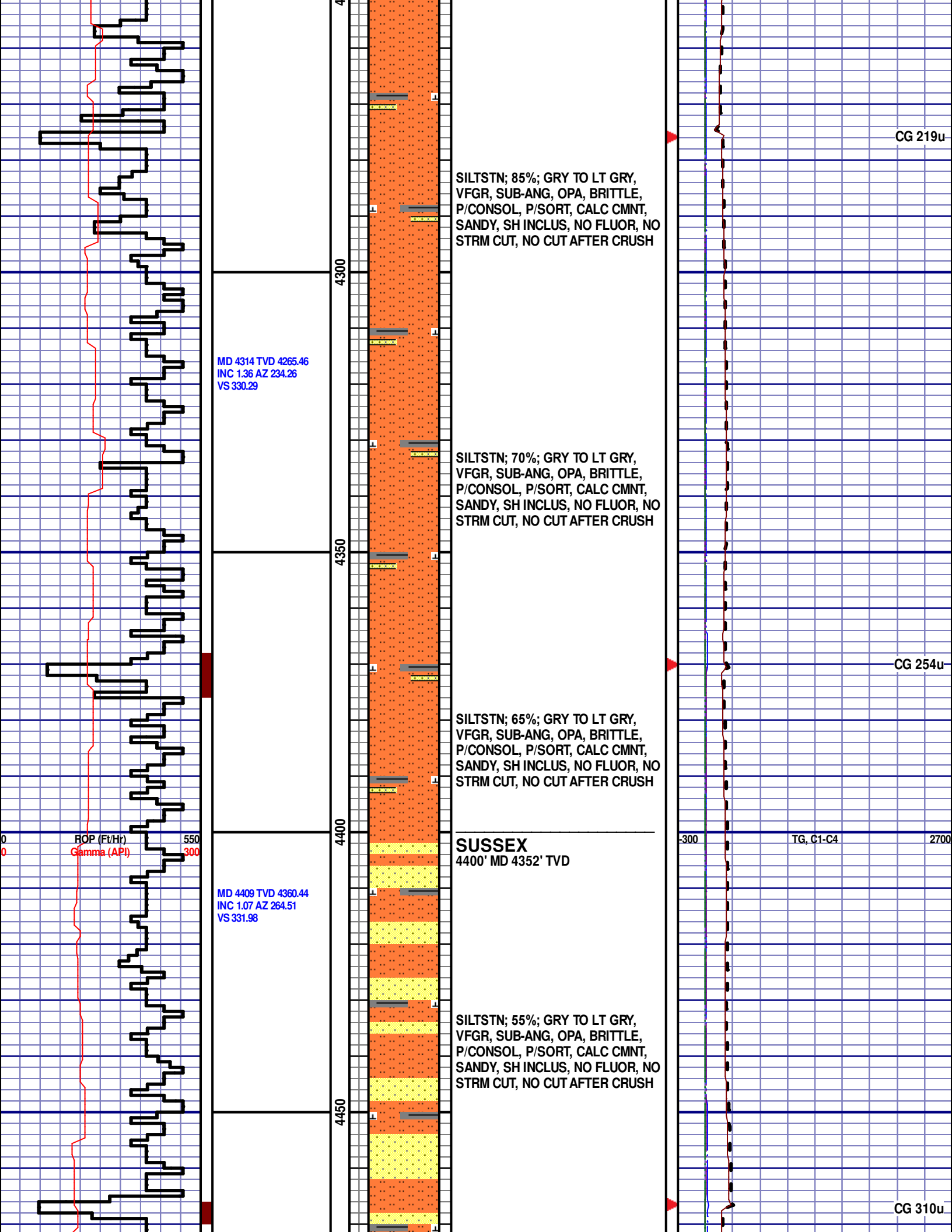


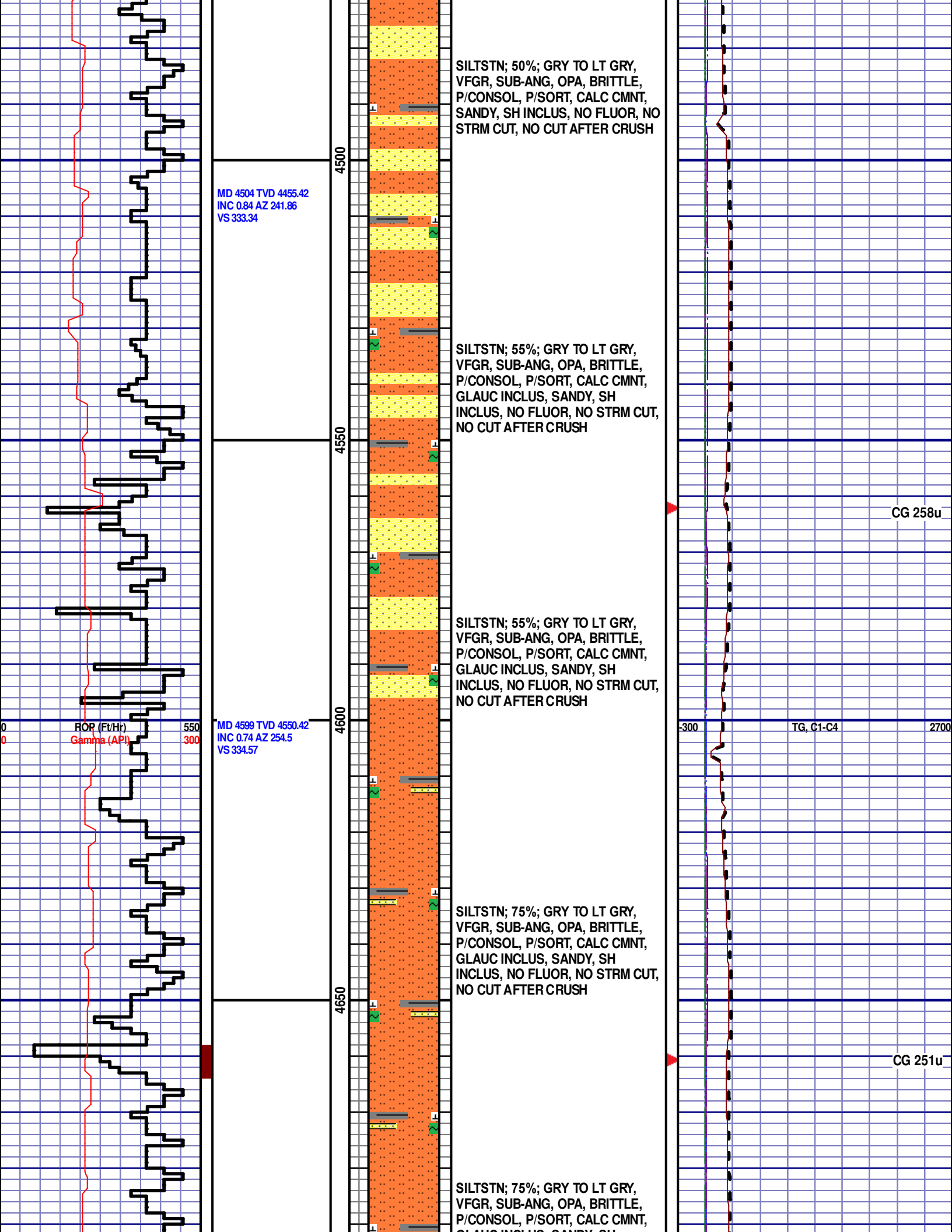


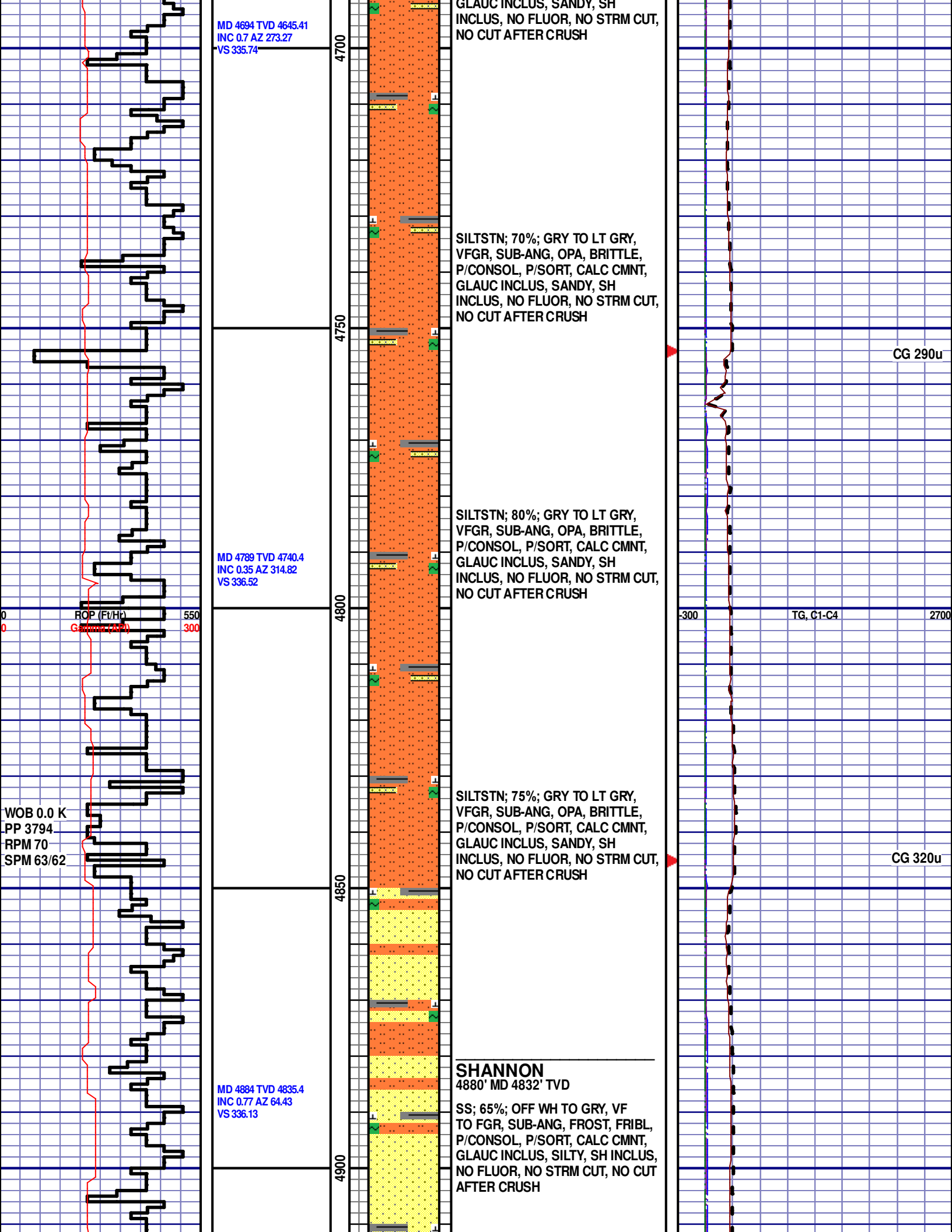


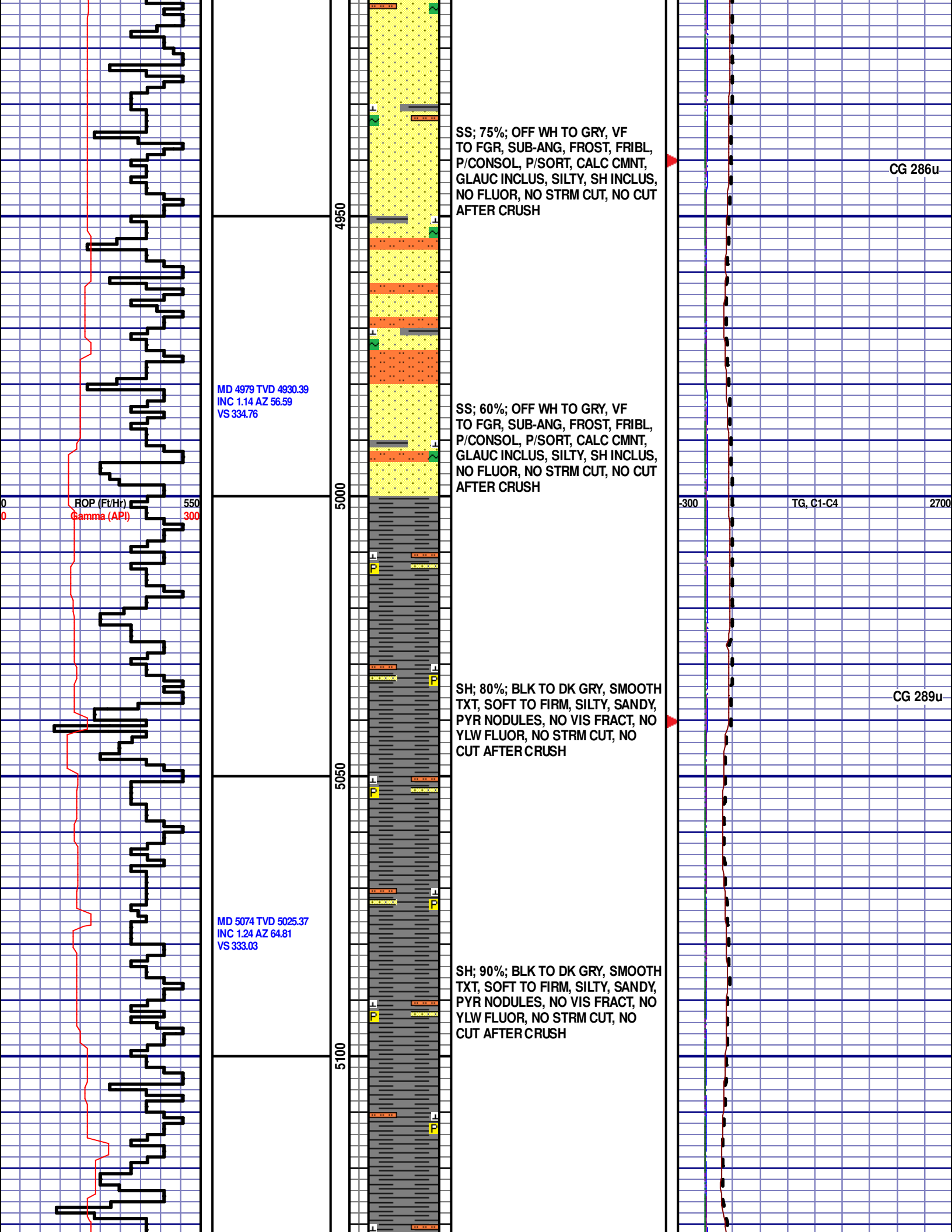


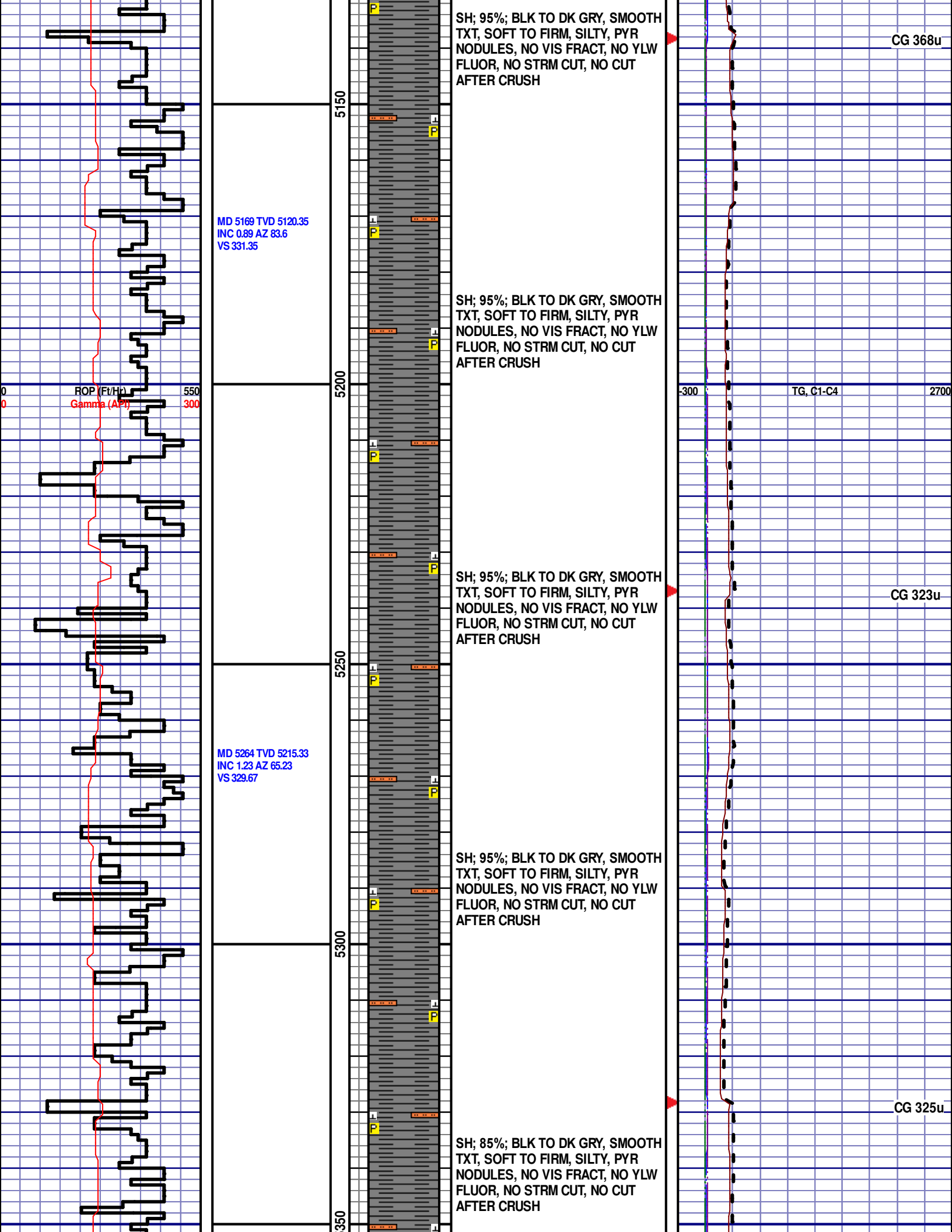


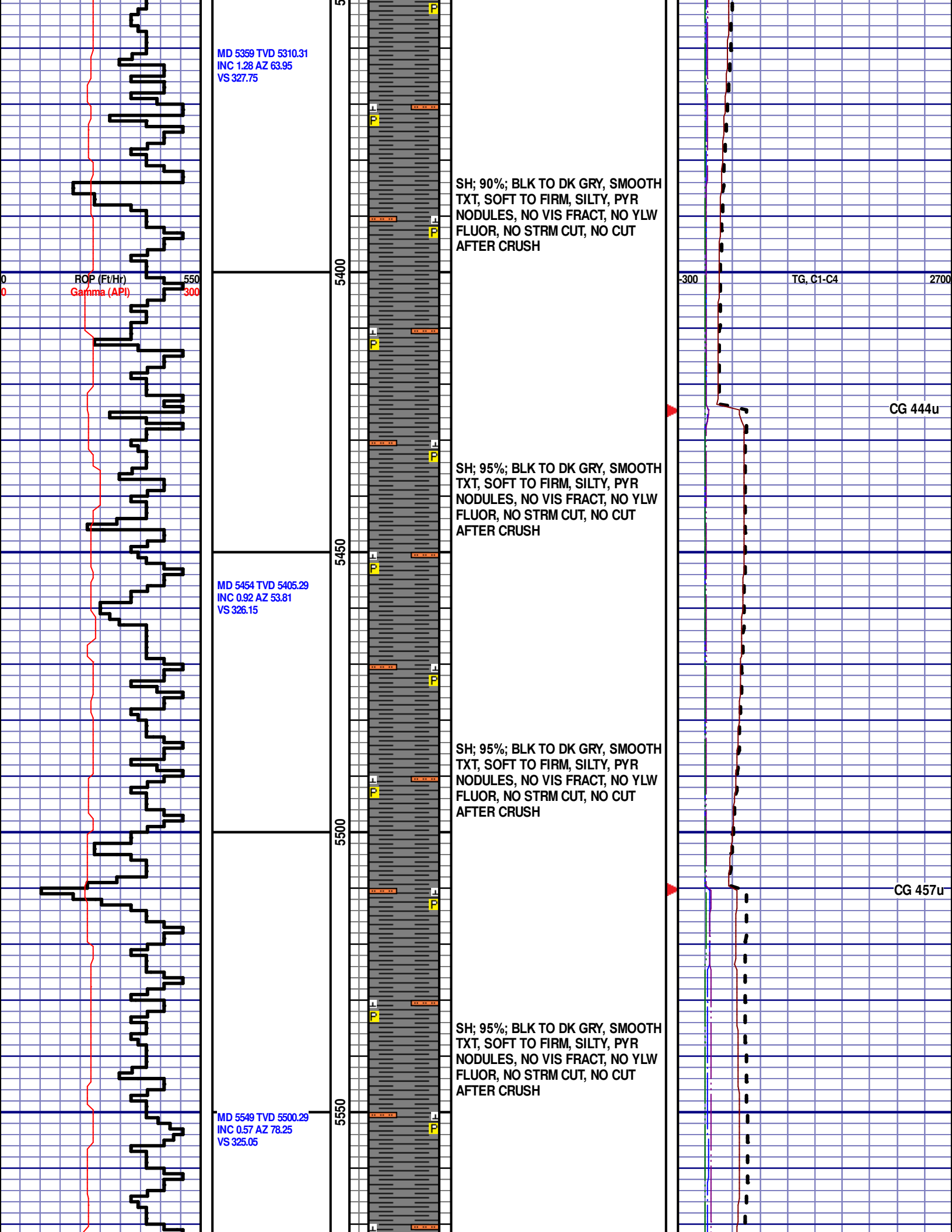












MD 5359 TVD 5310.31
INC 1.28 AZ 63.95
VS 327.75

ROP (Ft/Hr)
Gamma (API)

SH; 90%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, NO STRM CUT, NO CUT
AFTER CRUSH

-300 TG, C1-C4 2700

CG 444u

SH; 95%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, NO STRM CUT, NO CUT
AFTER CRUSH

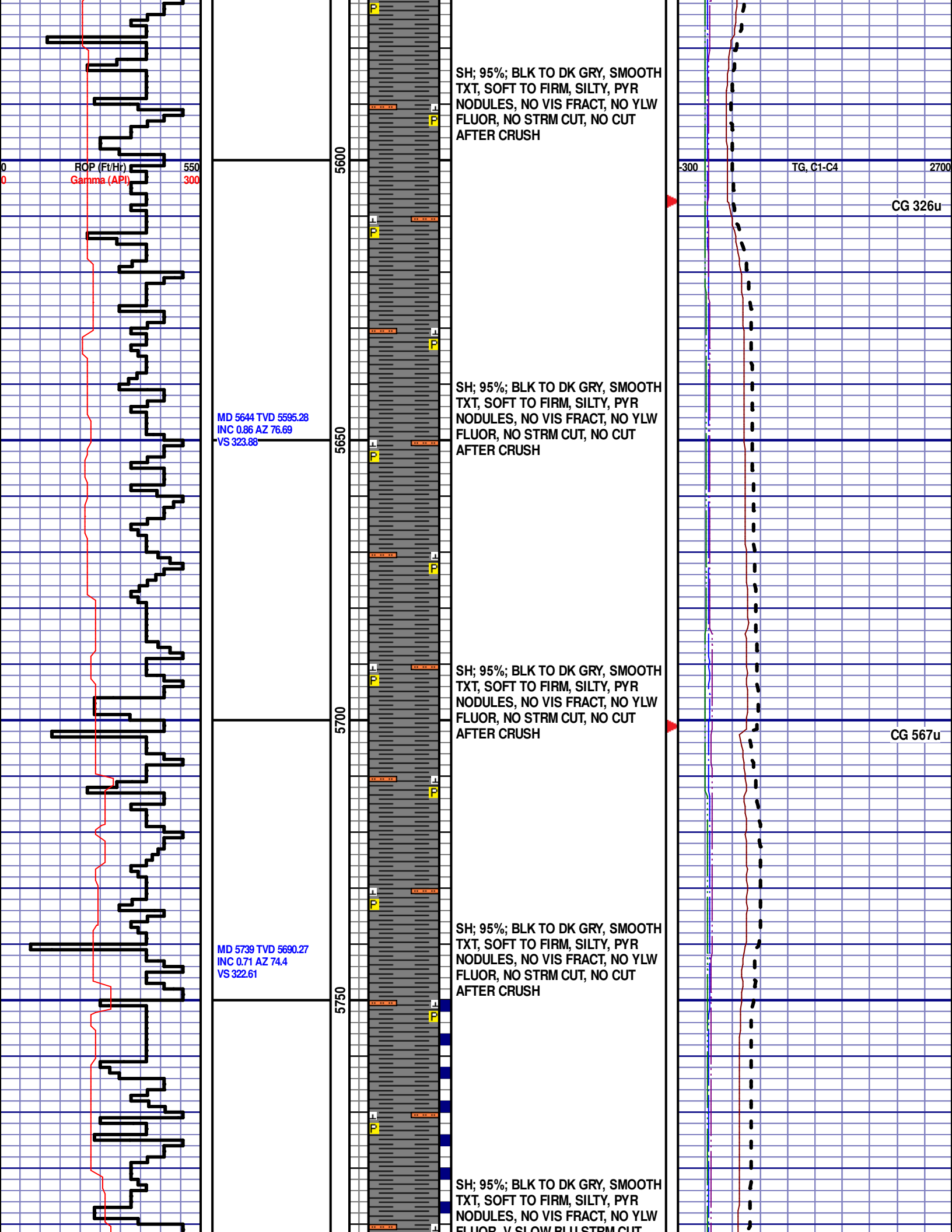
MD 5454 TVD 5405.29
INC 0.92 AZ 53.81
VS 326.15

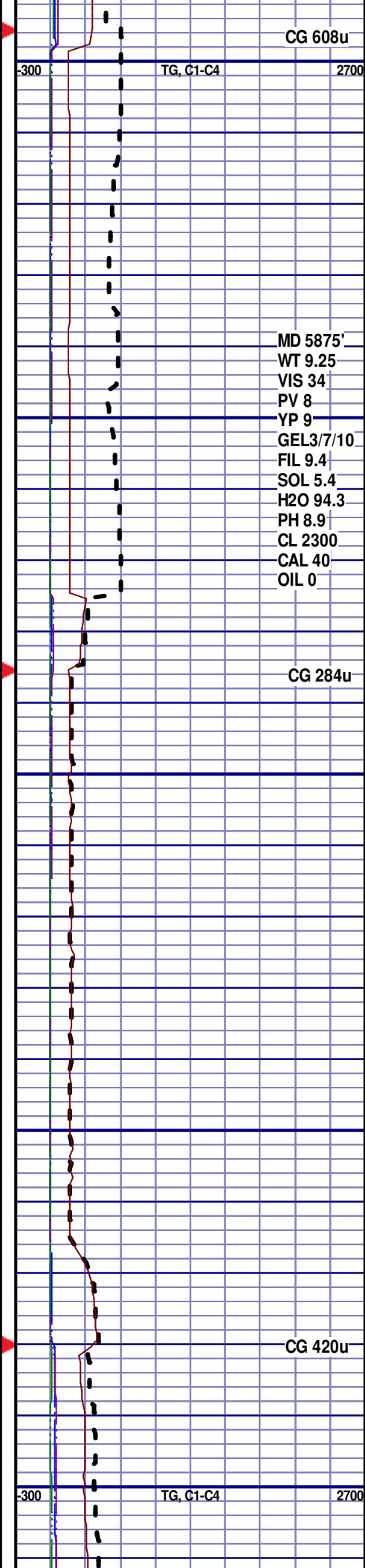
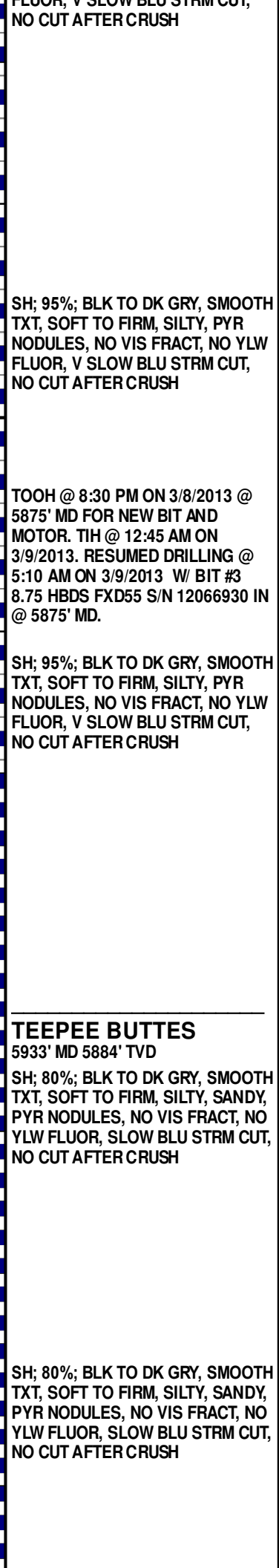
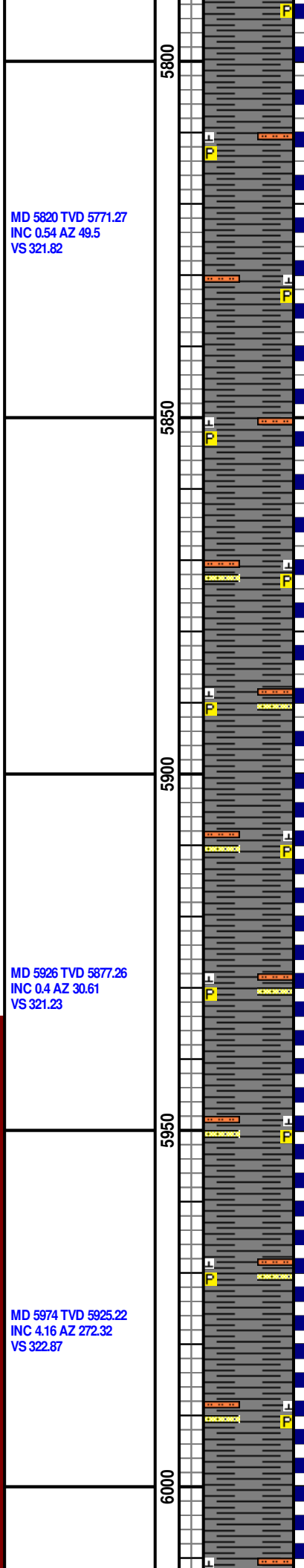
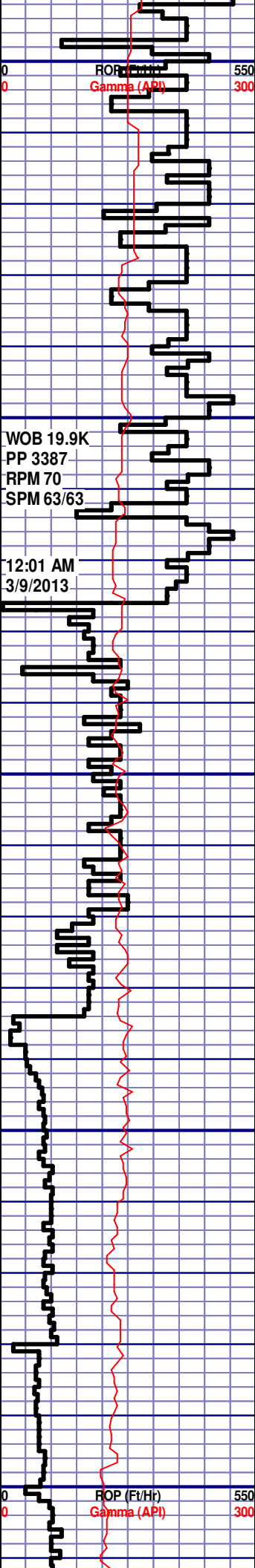
SH; 95%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, NO STRM CUT, NO CUT
AFTER CRUSH

CG 457u

SH; 95%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, NO STRM CUT, NO CUT
AFTER CRUSH

MD 5549 TVD 5500.29
INC 0.57 AZ 78.25
VS 325.05





MD 5820 TVD 5771.27
INC 0.54 AZ 49.5
VS 321.82

WOB 19.9K
PP 3387
RPM 70
SPM 63/63

12:01 AM
3/9/2013

MD 5926 TVD 5877.26
INC 0.4 AZ 30.61
VS 321.23

MD 5974 TVD 5925.22
INC 4.16 AZ 272.32
VS 322.87

SH; 95%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, V SLOW BLU STRM CUT,
NO CUT AFTER CRUSH

TOOH @ 8:30 PM ON 3/8/2013 @
5875' MD FOR NEW BIT AND
MOTOR. TIH @ 12:45 AM ON
3/9/2013. RESUMED DRILLING @
5:10 AM ON 3/9/2013 W/ BIT #3
8.75 HBDS FXD55 S/N 12066930 IN
@ 5875' MD.

SH; 95%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, NO YLW
FLUOR, V SLOW BLU STRM CUT,
NO CUT AFTER CRUSH

TEEPEE BUTTES
5933' MD 5884' TVD
SH; 80%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, SANDY,
PYR NODULES, NO VIS FRACT, NO
YLW FLUOR, SLOW BLU STRM CUT,
NO CUT AFTER CRUSH

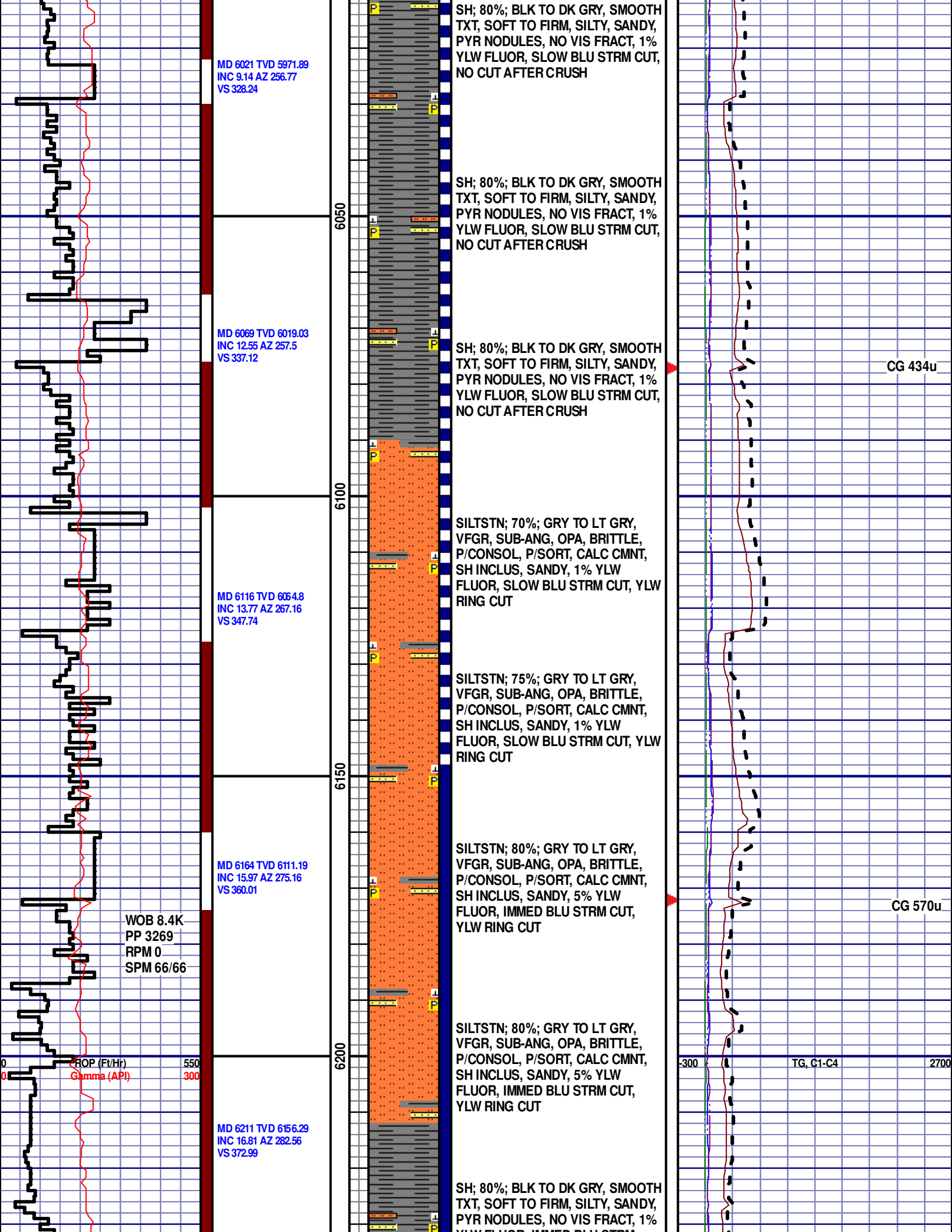
SH; 80%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, SANDY,
PYR NODULES, NO VIS FRACT, NO
YLW FLUOR, SLOW BLU STRM CUT,
NO CUT AFTER CRUSH

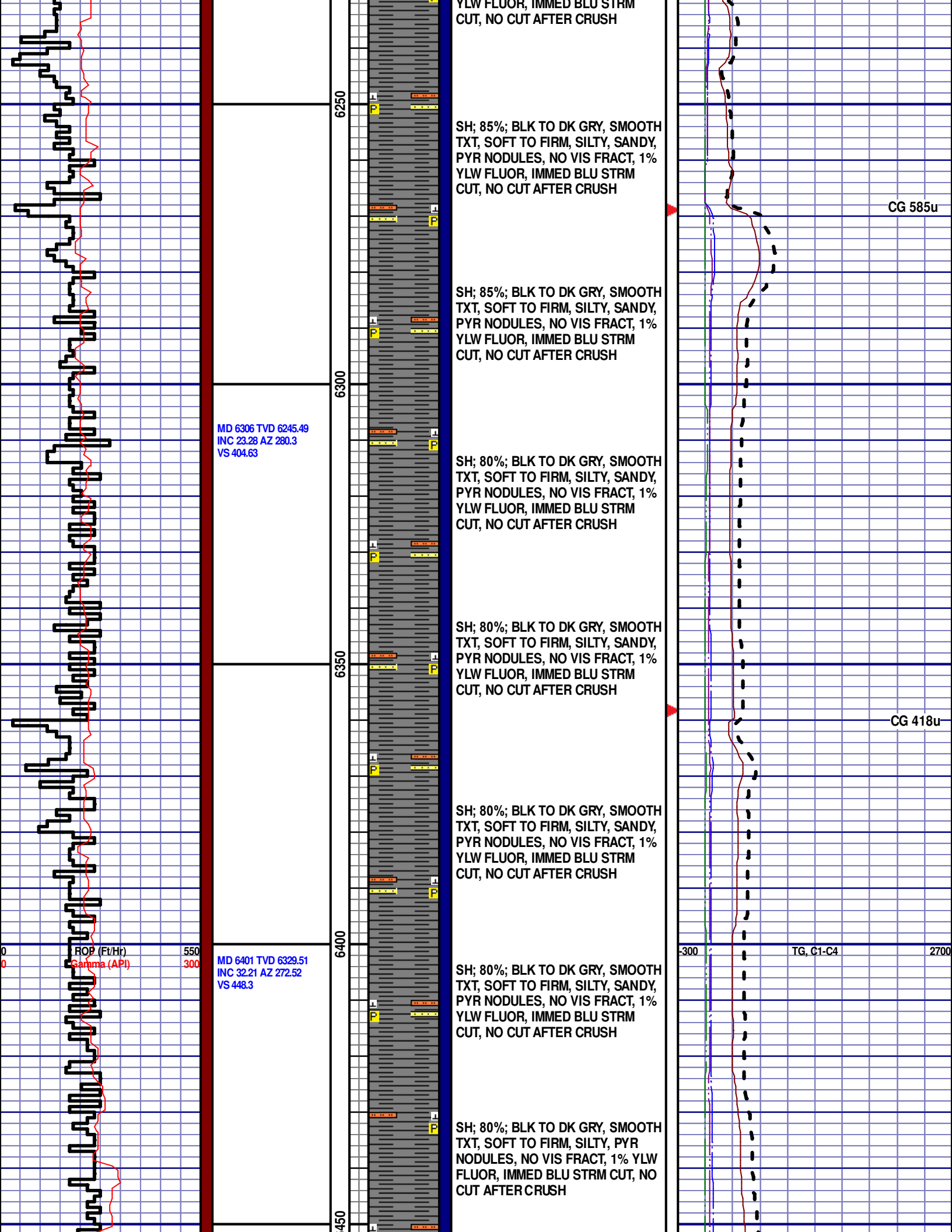
CG 608u

MD 5875'
WT 9.25
VIS 34
PV 8
YP 9
GEL3/7/10
FIL 9.4
SOL 5.4
H2O 94.3
PH 8.9
CL 2300
CAL 40
OIL 0

CG 284u

CG 420u





CG 1442u

SH; 80%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, 1% YLW
FLUOR, IMMED BLU STRM CUT, NO
CUT AFTER CRUSH

6527' MD 6425' TVD

SH; 80%; BLK TO DK GRY, SMOOTH
TXT, SOFT TO FIRM, SILTY, PYR
NODULES, NO VIS FRACT, 1% YLW
FLUOR, IMMED BLU STRM CUT, NO
CUT AFTER CRUSH

6575' MD 6457' TVD

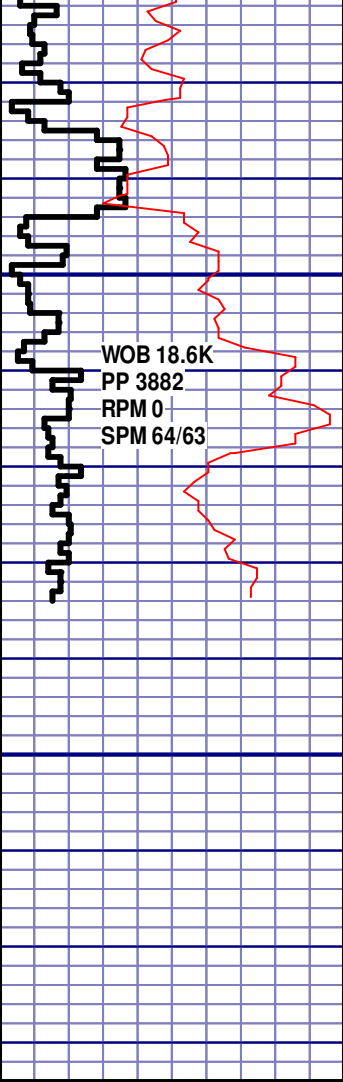
NIOBRARA A CHALK

6608' MD 6476' TVD

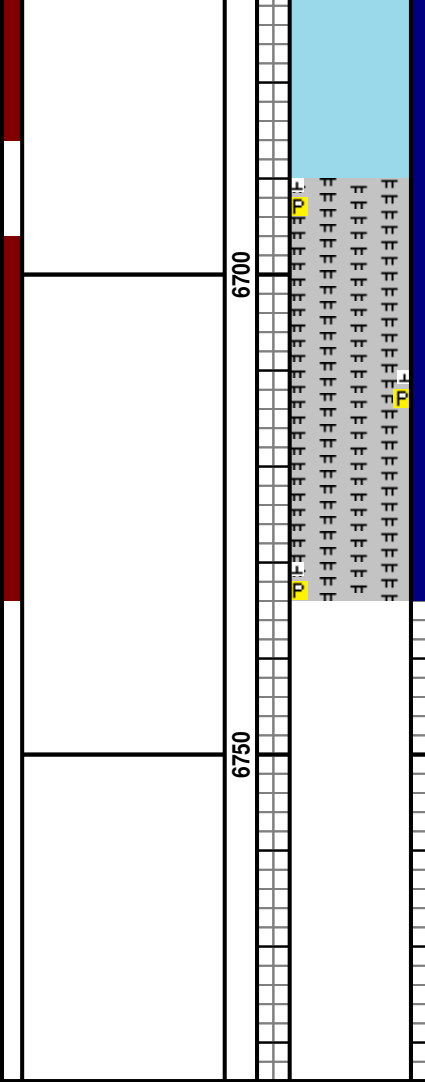
CHK; 52%; LT GRY TO GRY, SOFT,
MINOR CALC, NO VIS FRACT,
POOR INTRXLN POR, SH INCLUS,
5% YLW FLUOR, IMMED BLU STRM
CUT, YLW RING CUT, NO VIS STAIN,
FNT OIL ODOR

MD 6652'
WT 10.10
VIS 38
PV 12
YP 16
GEL 6/18/26
FIL 9.0
SOL 9.7
H2O 90.0
PH 8.6
CL 2200
CAL 60
OIL 0

CG 2108u



WOB 18.6K
PP 3882
RPM 0
SPM 64/63



6700

6750

CHK; 62%; LT GRY TO GRY, SOFT,
MINOR CALC, NO VIS FRACT,
POOR INTRXLN POR, SH INCLUS,
1% YLW FLUOR, IMMED BLU STRM
CUT, YLW RING CUT, NO VIS STAIN,
FNT OIL ODOR

NIOBRARA A MARL
TOP CALL TBD

MRL; 49%; GRY TO DK GRY, SOFT
TO BRITTLE, SH INCLUS, PYR
INCLUS, NO VIS FRACT, MINOR
CALC, POOR INTRXLN POR, 10%
YLW FLUOR, IMMED BLU STRM
CUT, YLW RING CUT

END OF VERTICAL LOG @ 6734'
MD ON 3/9/2013, CONTINUED ON
HORIZONTAL LOG.

