

MD 3157 TVD 3140.54  
INC 11.32 AZ 356.66  
VS 23.21

ROP (FTH)  
Gamma (API)

1500  
350

3200

3250

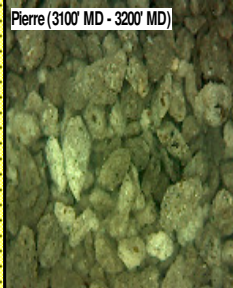
3300

3350

MD 3252 TVD 3233.9  
INC 9.97 AZ 354  
VS 26.35

MD 3346 TVD 3326.48  
INC 10.03 AZ 354.65  
VS 29.58

Pierre (3100' MD - 3200' MD)



3100'- 3200': SS: 55%: PRED GY -  
LTKGY - OPQ, MOD CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, SILTY, TRC IMBD  
PYR, IMBD GLAUC, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

3200'- 3300': SLTST: 60% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, SANDY, OCC  
IMBD PYR, IMBD GLAUC, IMBD SS  
LAMN, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

30

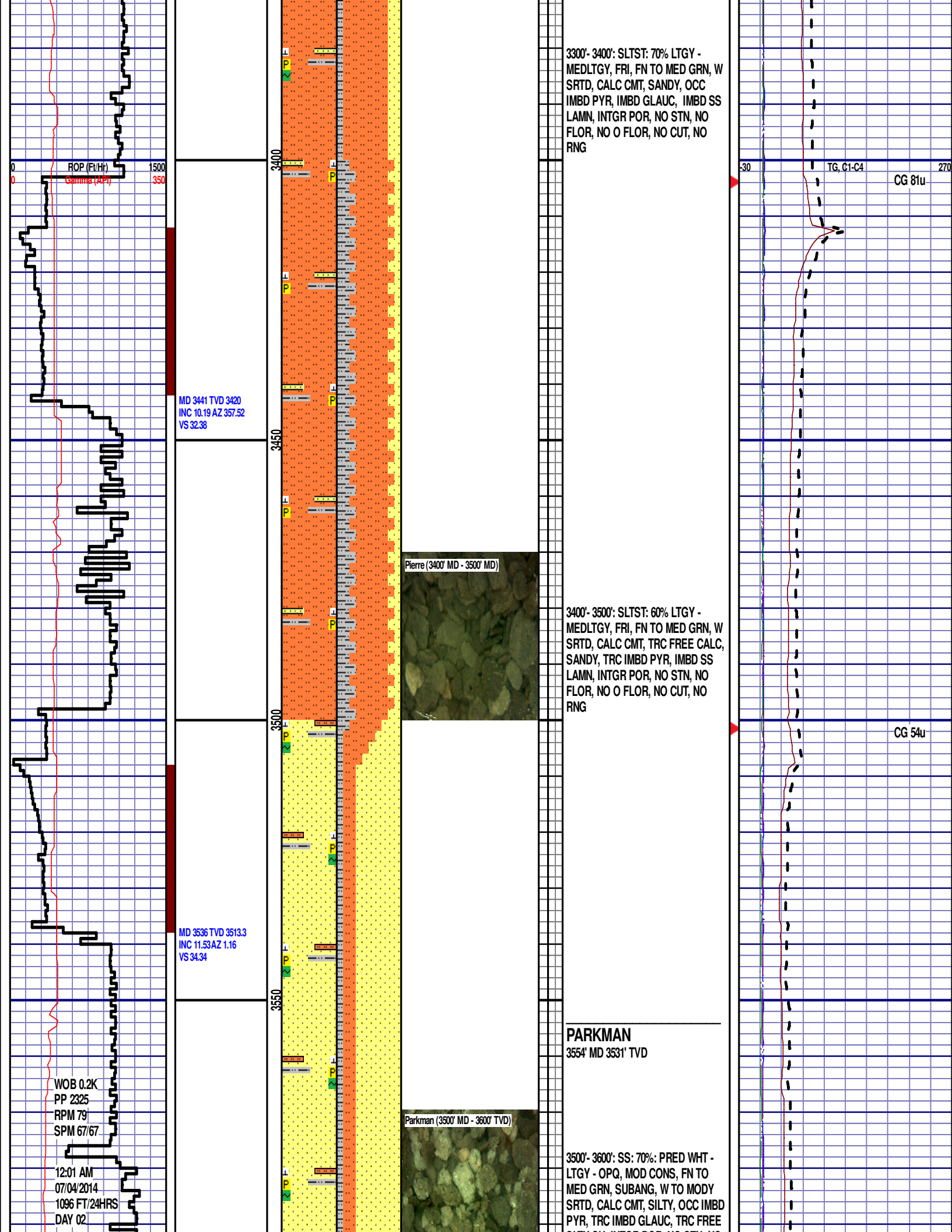
TG, C1-C4

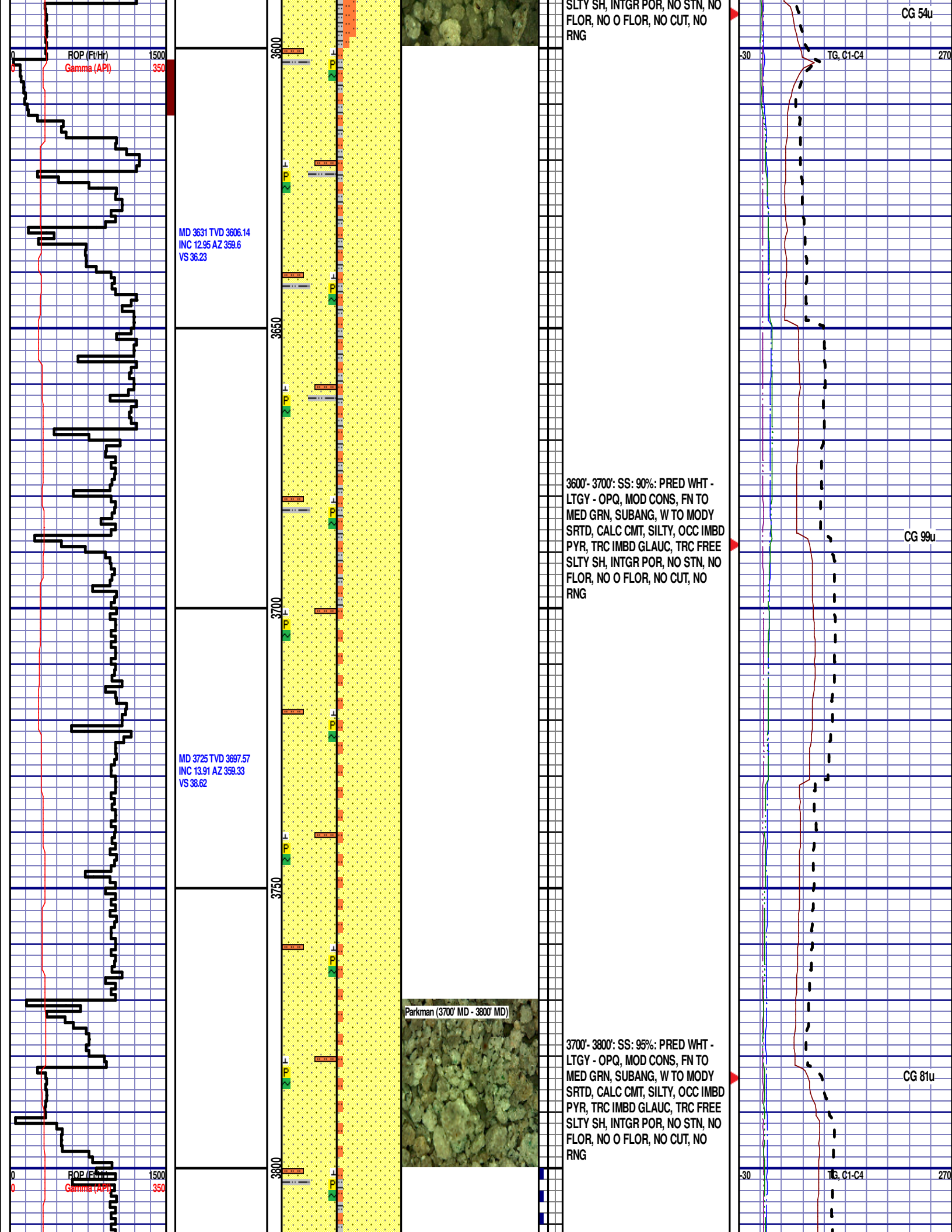
270

CG 123u

CG 104u







ROP (Fe/Hr)  
Gamma (API)

1500  
350

MD 3631 TVD 3606.14  
INC 12.95 AZ 359.6  
VS 36.23

MD 3725 TVD 3697.57  
INC 13.91 AZ 359.33  
VS 38.62

ROP (Fe/Hr)  
Gamma (API)

1500  
350

Parkman (3700' MD - 3800' MD)

3600' - 3700': SS: 90%: PRED WHT -  
LTGY - OPQ, MOD CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, SILTY, OCC IMBD  
PYR, TRC IMBD GLAUC, TRC FREE  
SLTY SH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

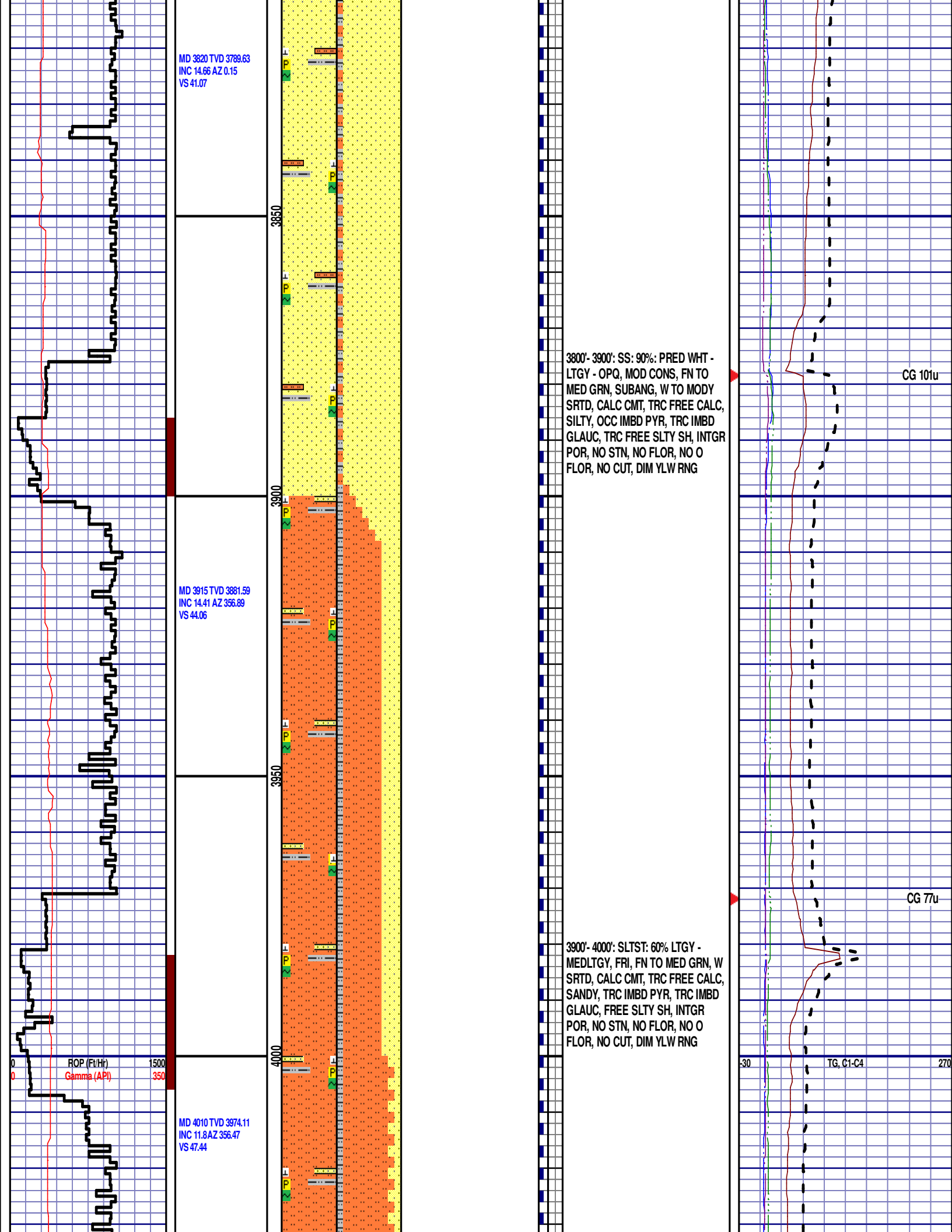
3700' - 3800': SS: 95%: PRED WHT -  
LTGY - OPQ, MOD CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, SILTY, OCC IMBD  
PYR, TRC IMBD GLAUC, TRC FREE  
SLTY SH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

CG 54u

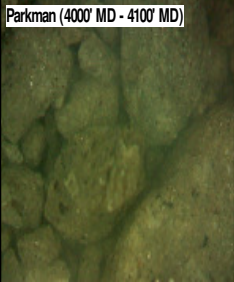
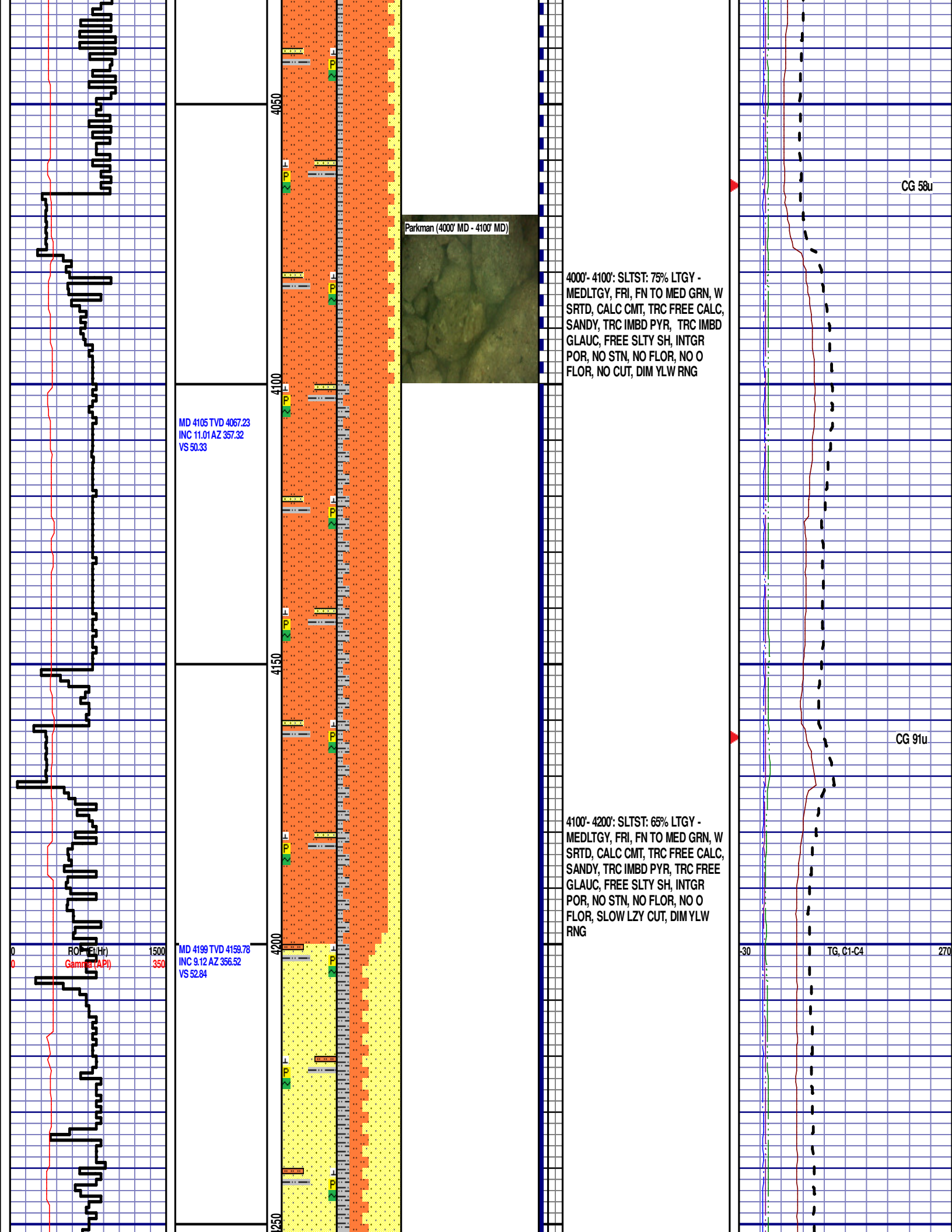
TG, C1-C4

CG 99u

CG 81u







4000'- 4100': SLTST: 75% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
SANDY, TRC IMBD PYR, TRC IMBD  
GLAUC, FREE SLTY SH, INTGR  
POR, NO STN, NO FLOR, NO O  
FLOR, NO CUT, DIM YLW RNG

CG 58u

MD 4105 TVD 4067.23  
INC 11.01 AZ 357.32  
VS 50.33

CG 91u

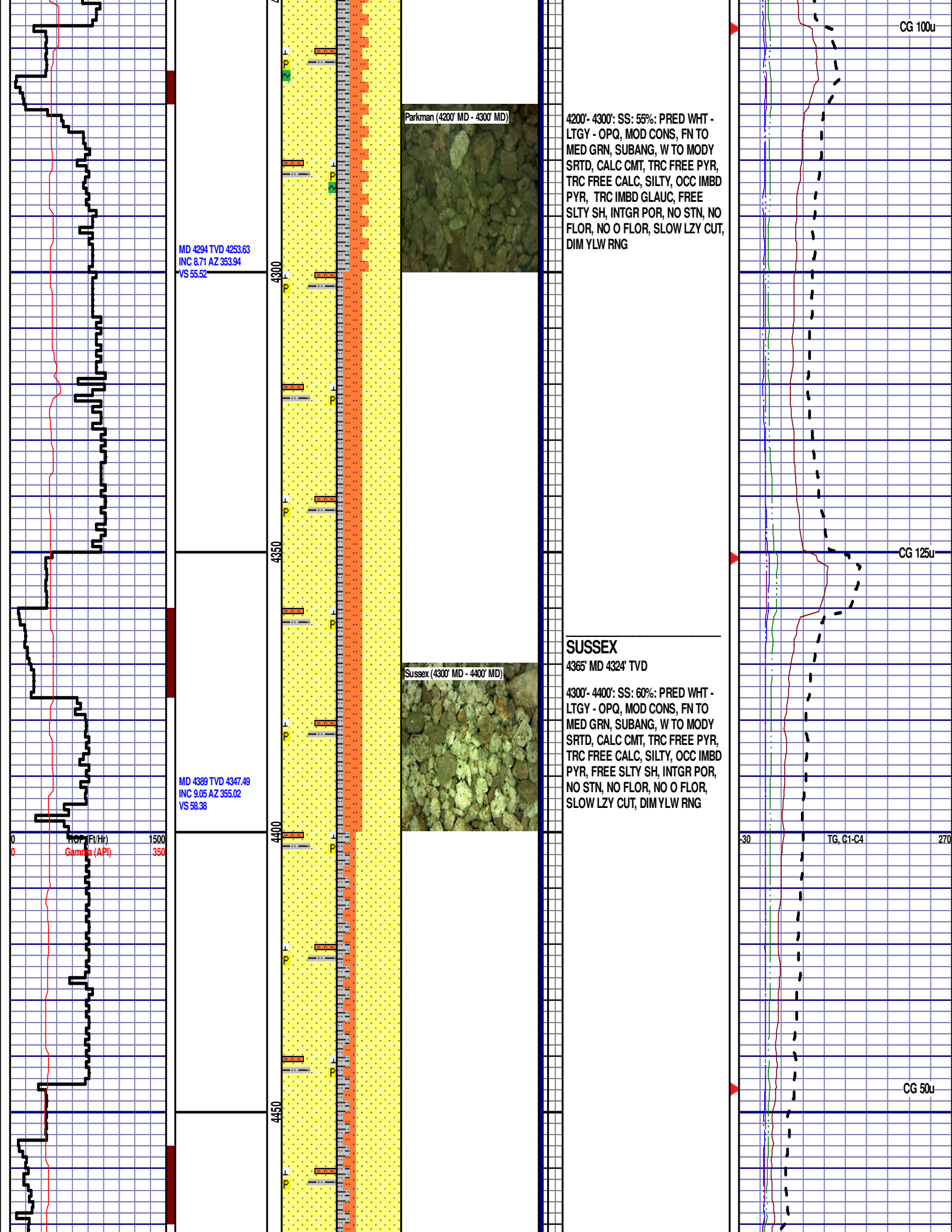
4100'- 4200': SLTST: 65% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
SANDY, TRC IMBD PYR, TRC FREE  
GLAUC, FREE SLTY SH, INTGR  
POR, NO STN, NO FLOR, NO O  
FLOR, SLOW LZY CUT, DIM YLW  
RNG

MD 4199 TVD 4159.78  
INC 9.12 AZ 356.52  
VS 52.84

ROP (ft/hr)  
Gamma (API)

1500  
350

30 TG, C1-C4 270



MD 4484 TVD 4441.28  
INC 9.29 AZ 353.63  
VS 61.38

MD 4579 TVD 4534.92  
INC 10.11 AZ 355.55  
VS 64.46

MD 4674 TVD 4628.48  
INC 9.88 AZ 357.7  
VS 67.08

4400'-4500': SS: 70%: PRED WHT -  
LTGY - OPQ, MOD CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, TRC FREE PYR,  
TRC FREE CALC, SILTY, OCC IMBD  
PYR, FREE SLTY SH, INTGR POR,  
NO STN, NO FLOR, NO O FLOR,  
SLOW LZY CUT, DIM YLW RNG

4500'-4600': SLTST: 75% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
SANDY, TRC IMBD PYR, FREE SLTY  
SH, FREE SS, INTGR POR, NO STN,  
NO FLOR, NO O FLOR, SLOW LZY  
CUT, DIM YLW RNG

4600'-4700': SLTST: 80% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
SANDY, TRC IMBD PYR, FREE SLTY  
SH, FREE SS, INTGR POR, NO STN,  
NO FLOR, NO O FLOR, SLOW LZY  
CUT, DIM YLW RNG

Sussex (4600' MD - 4700' MD)

CG 59u

CG 90u

MD 4635'  
WT 8.8  
VIS 32.0  
PH 9.1  
FIL 16.1  
CL 1600  
CAL 40.0  
H2O 96.6  
OIL 0.0  
SOL 3.1  
CAKE 1/0  
GELS 27/11  
PV 4.0  
YP 4.0

TG, C1-C4

ROP (ft/Hr)  
Gamma (API)

1500  
350

-30

270



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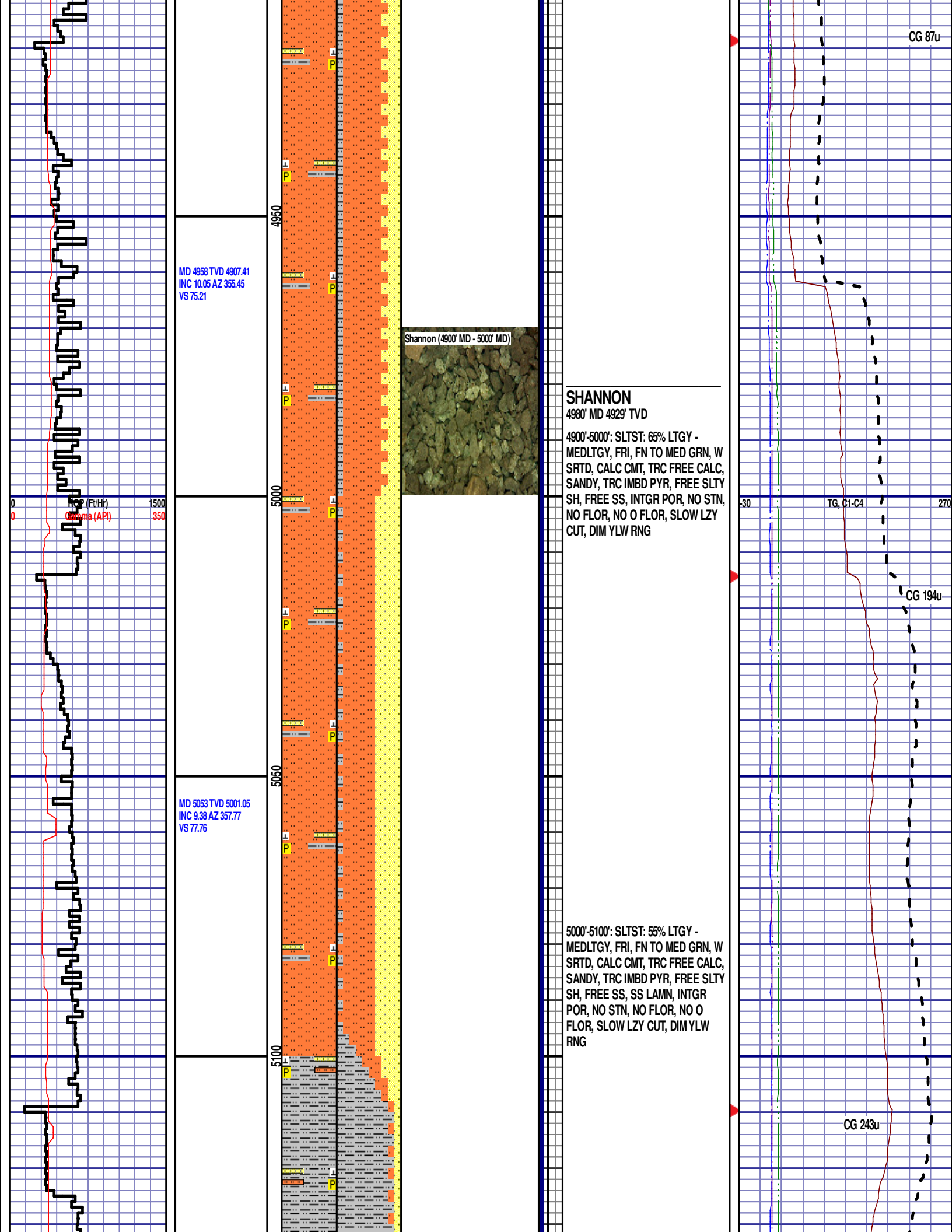
MD 4769 TVD 4721.96  
INC 10.61 AZ 357.43  
VS 69.48

MD 4863 TVD 4814.15  
INC 11.91 AZ 356.9  
VS 72.22

WOB 5.6K  
PP 3500  
RPM 80  
SPM 67/67

Flow (Ft/Hr)	1500
Gamma (API)	350

18





MD 5148 TVD 5094.94  
INC 8.13 AZ 358.36  
VS 79.7

ROP (Ft/Hr)  
Gamma (API)

1500  
350

MD 5243 TVD 5189.02  
INC 7.79 AZ 359.7  
VS 81.24

MD 5338 TVD 5283.23  
INC 6.97 AZ 358.84  
VS 82.61

5150

5200

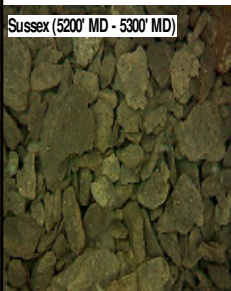
5250

5300

5350

5100'- 5200': SILTY SH: 85%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
IMBD PYR, SILTY, SANDY, INTGR  
POR, NO STN, NO FLOR, NO O  
FLOR, SLOW LZY CUT, DIMYLV  
RNG

Sussex (5200' MD - 5300' MD)



5200'- 5300': SILTY SH: 90%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE CALC,  
IMBD PYR, SILTY, SANDY, INTGR  
POR, NO STN, NO FLOR, NO O  
FLOR, SLOW LZY CUT, DIMYLV  
RNG

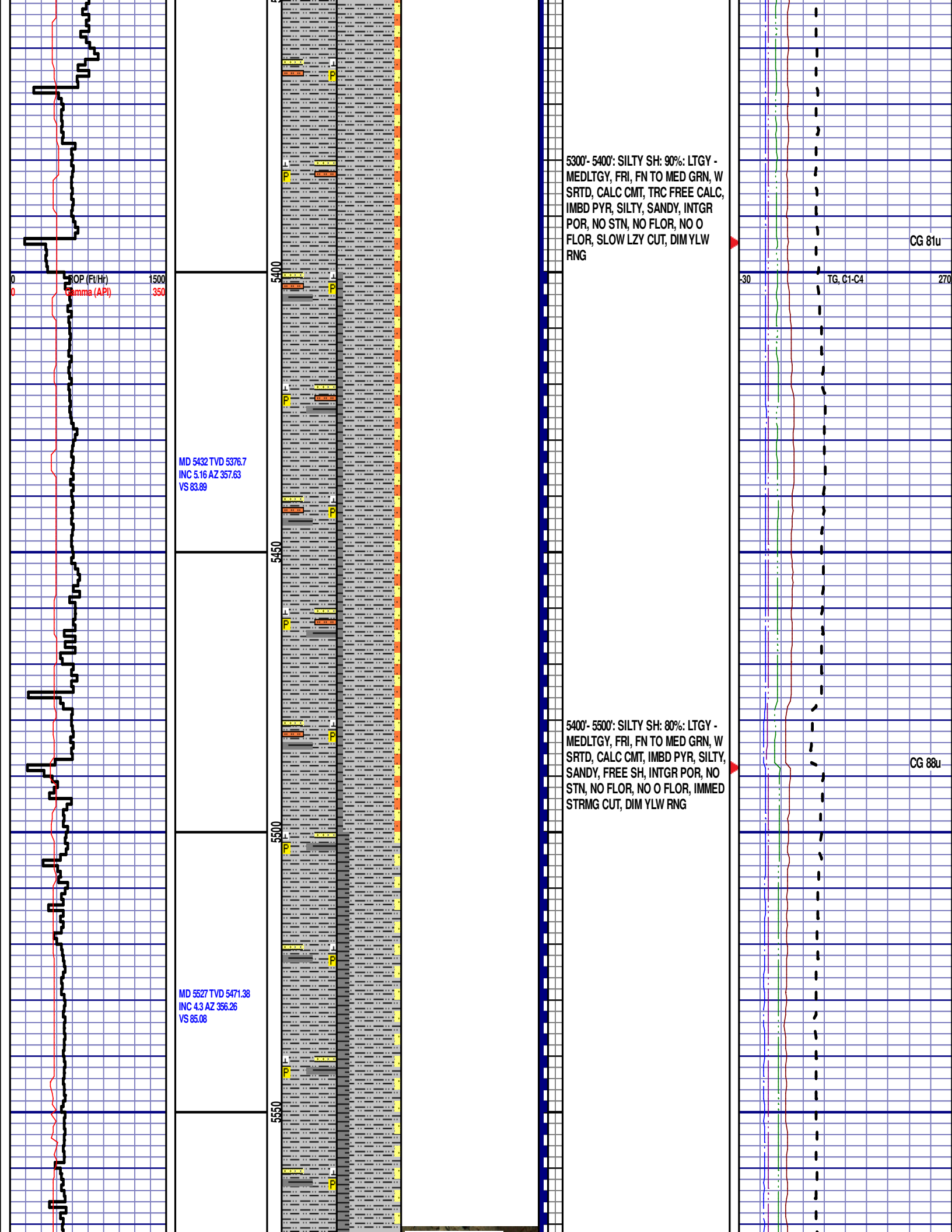
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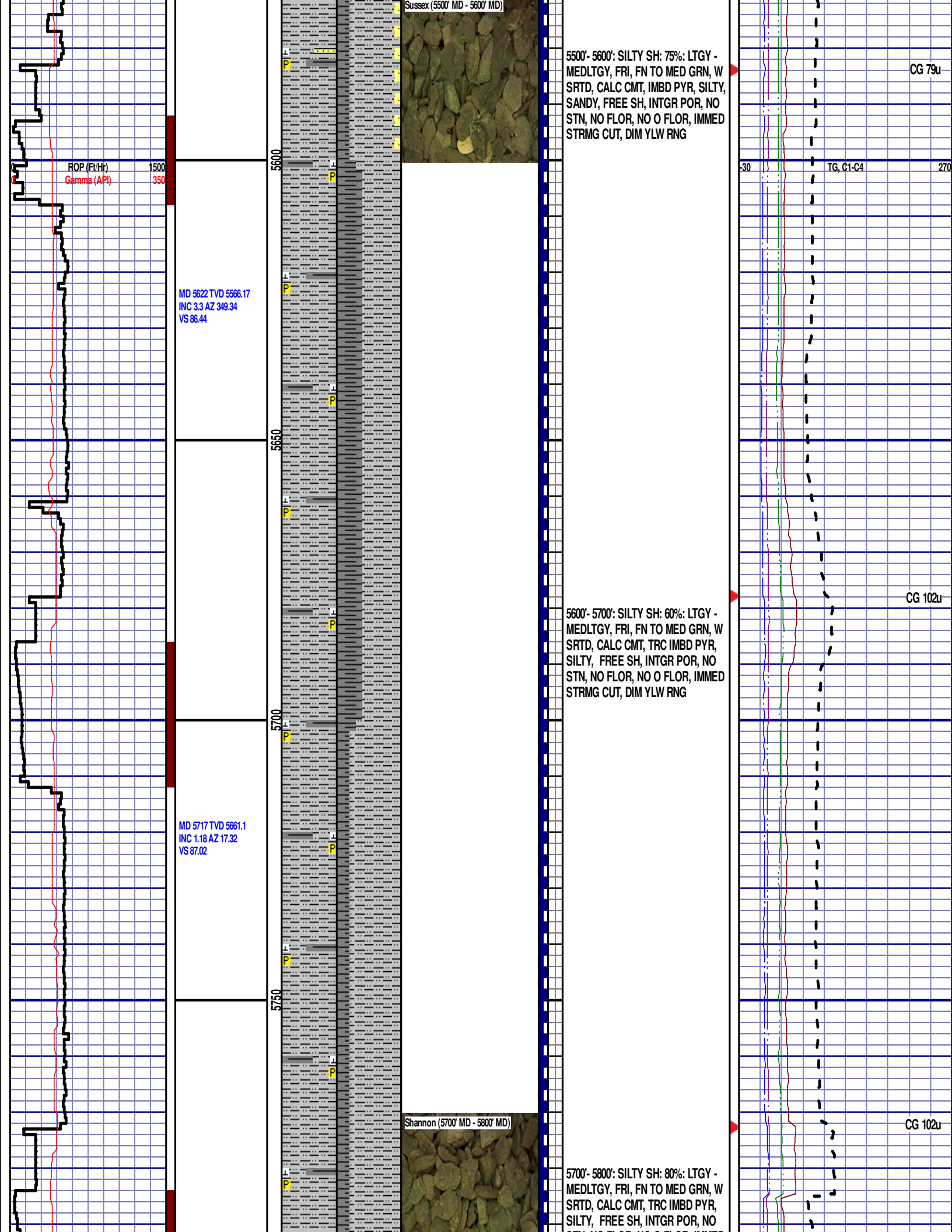
TG, C1-C4

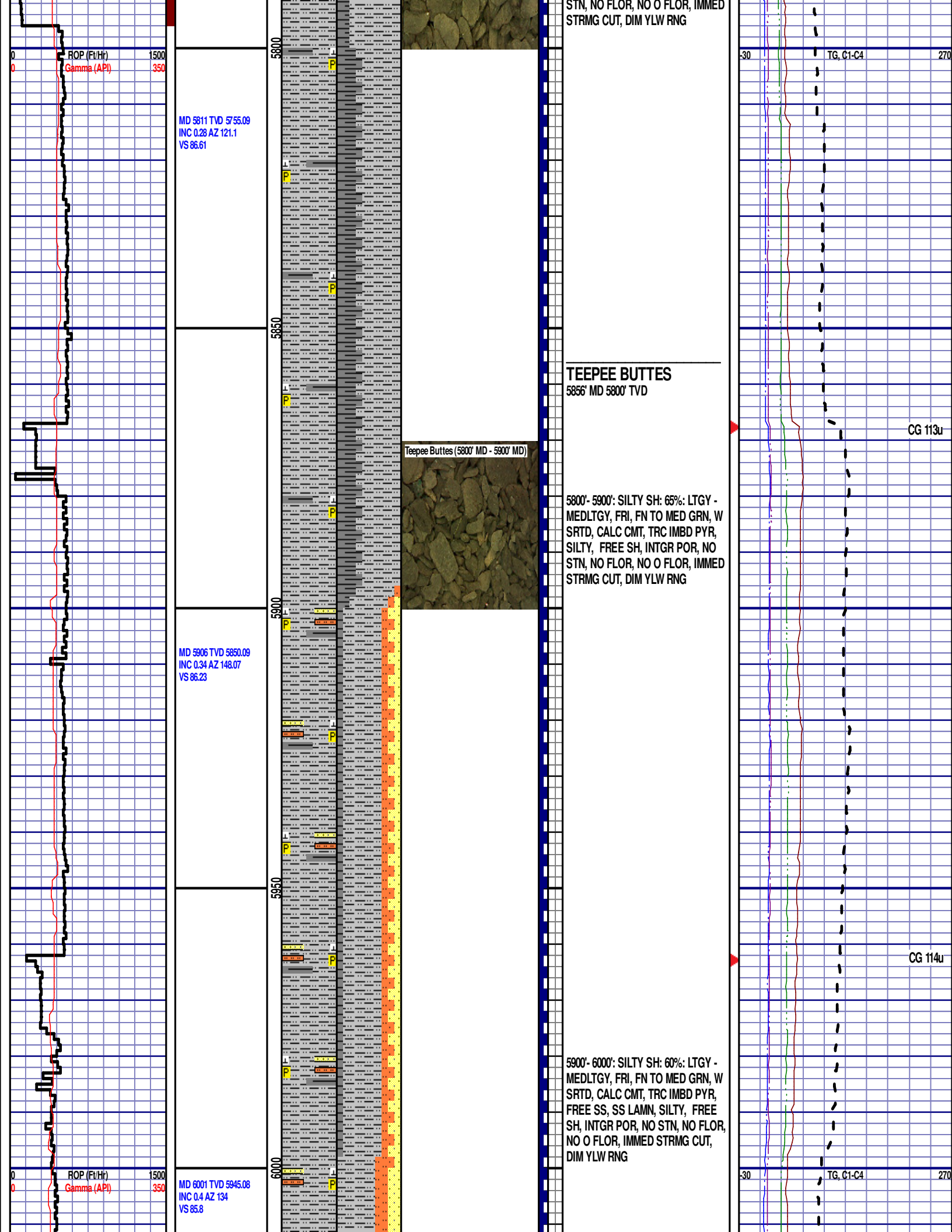
270

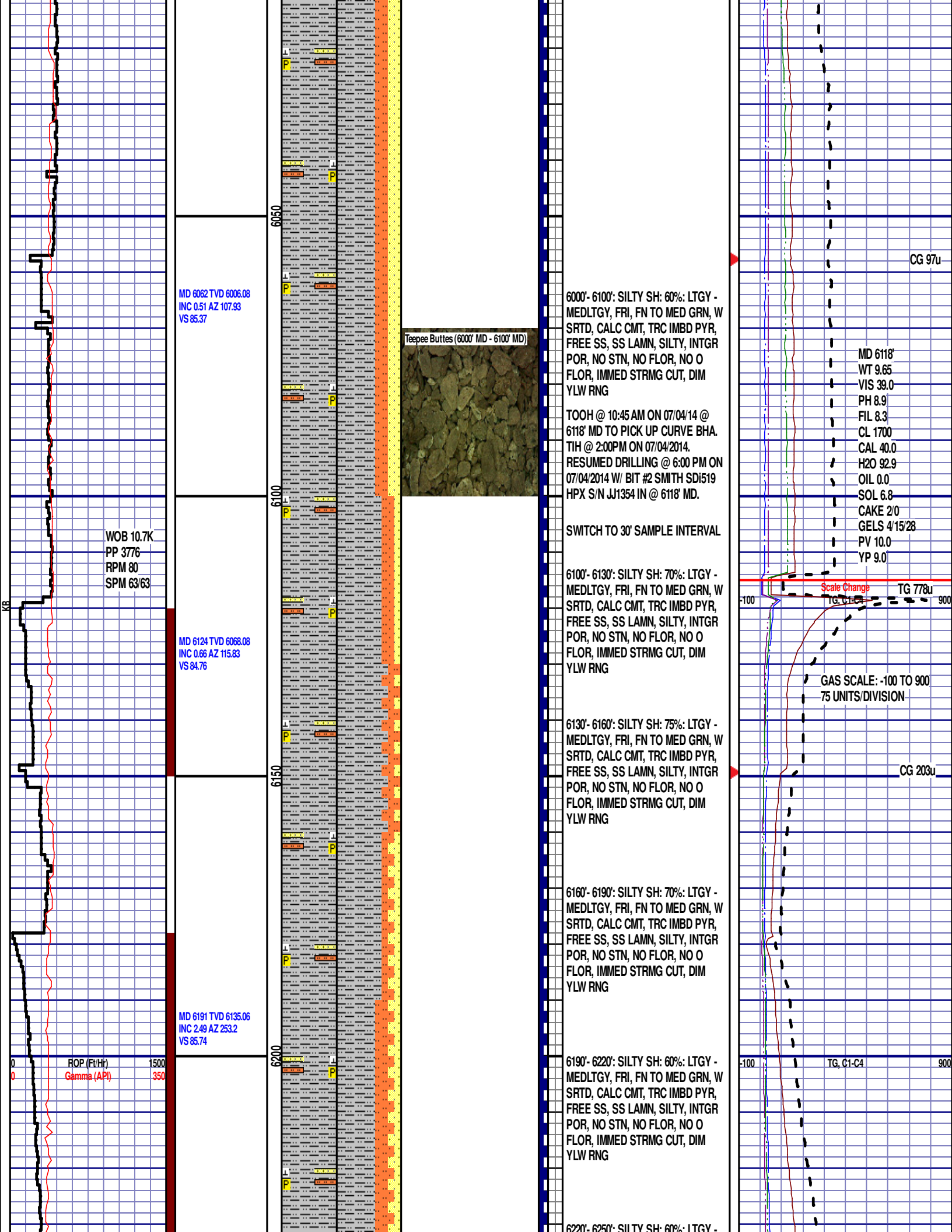
CG 159u

CG 64u

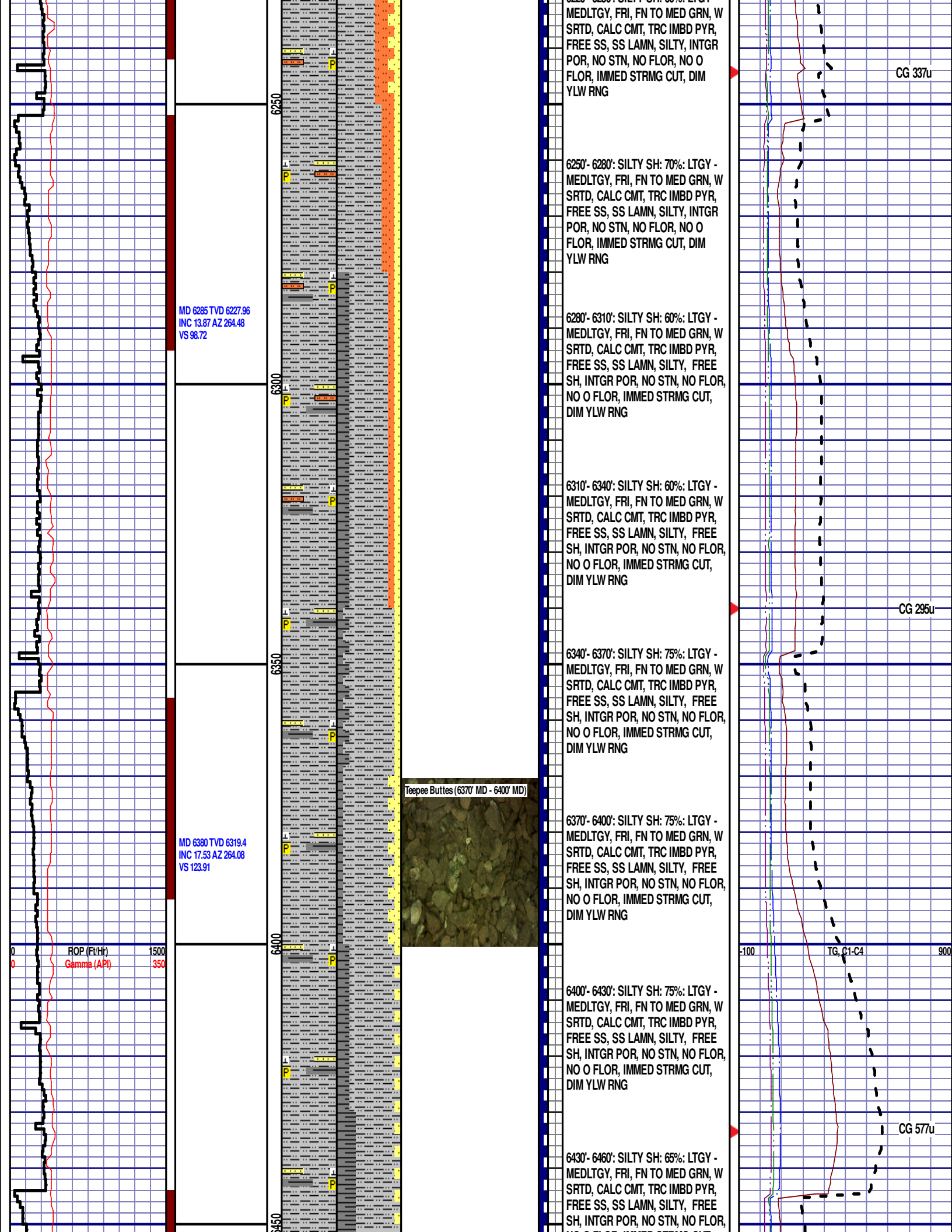












MD 6475 TVD 6408.3  
INC 23.62 AZ 266.42  
VS 156.73

MD 6569 TVD 6488.87  
INC 37.89 AZ 268.9  
VS 204.22

MD 6664 TVD 6557.1  
INC 50.08 AZ 269.76  
VS 269.67

ROP (Ft/Hr)  
Gamma (API)

1500  
350

6500

6550

6600

6650

Teepee Buttes (6580' MD - 6610' MD)

Sharon Springs (6610' MD - 6640' MD)

Sharon Springs (6640' MD - 6670' MD)

Niobrara A Chalk (6670' MD - 6700' MD)

6460'- 6490': SILTY SH: 60%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC IMBD PYR,  
FREE SS, SS LAMN, SILTY, FREE  
SH, INTGR POR, NO STN, NO FLOR,  
NO O FLOR, IMMED STRMG CUT,  
DIM YLW RNG

6490'- 6520': SH: 60%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE BENT,  
IMBD PYR, , SILTY, FREE SLTY SH,  
INTGR POR, NO STN, 5% FLOR, NO  
O FLOR, IMMED STRMG CUT, BRIYL  
RNG

6520'- 6550': SH: 70%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE BENT,  
IMBD PYR, , SILTY, FREE SLTY SH,  
INTGR POR, NO STN, 5% FLOR, NO  
O FLOR, IMMED STRMG CUT, BRIYL  
RNG

6550'- 6580': SH: 75%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TRC FREE BENT,  
IMBD PYR, , SILTY, FREE SLTY SH,  
INTGR POR, NO STN, 5% FLOR, NO  
O FLOR, IMMED STRMG CUT, BRIYL  
RNG

6580'- 6610': SH: 80%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, FREE BENT,  
IMBD PYR, , SILTY, FREE SLTY SH,  
INTGR POR, NO STN, 15% FLOR,  
NO O FLOR, IMMED STRMG CUT,  
BRIYL RNG

### SHARON SPRINGS

6620' MD 6525' TVD

6610'- 6640': SH: 60%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, FREE BENT,  
IMBD PYR, , SILTY, FREE SLTY SH,  
INTGR POR, NO STN, 10% FLOR,  
NO O FLOR, IMMED STRMG CUT,  
BRIYL RNG

6640'- 6670': MRST: 70% MEDDRKGY -  
MEDLTGY, BLKY TO SUBBLKY,  
GRTY TO SLTY TXT, FRM TO BRIT,  
FREE BENT, IMBD CALC, IMBD  
PYR, 30% FREE SH, NO STN, 5%  
FLOR, NO O FLOR, IMMED STRMG  
CUT, BRIYL RNG

NIORRARA A CHALK

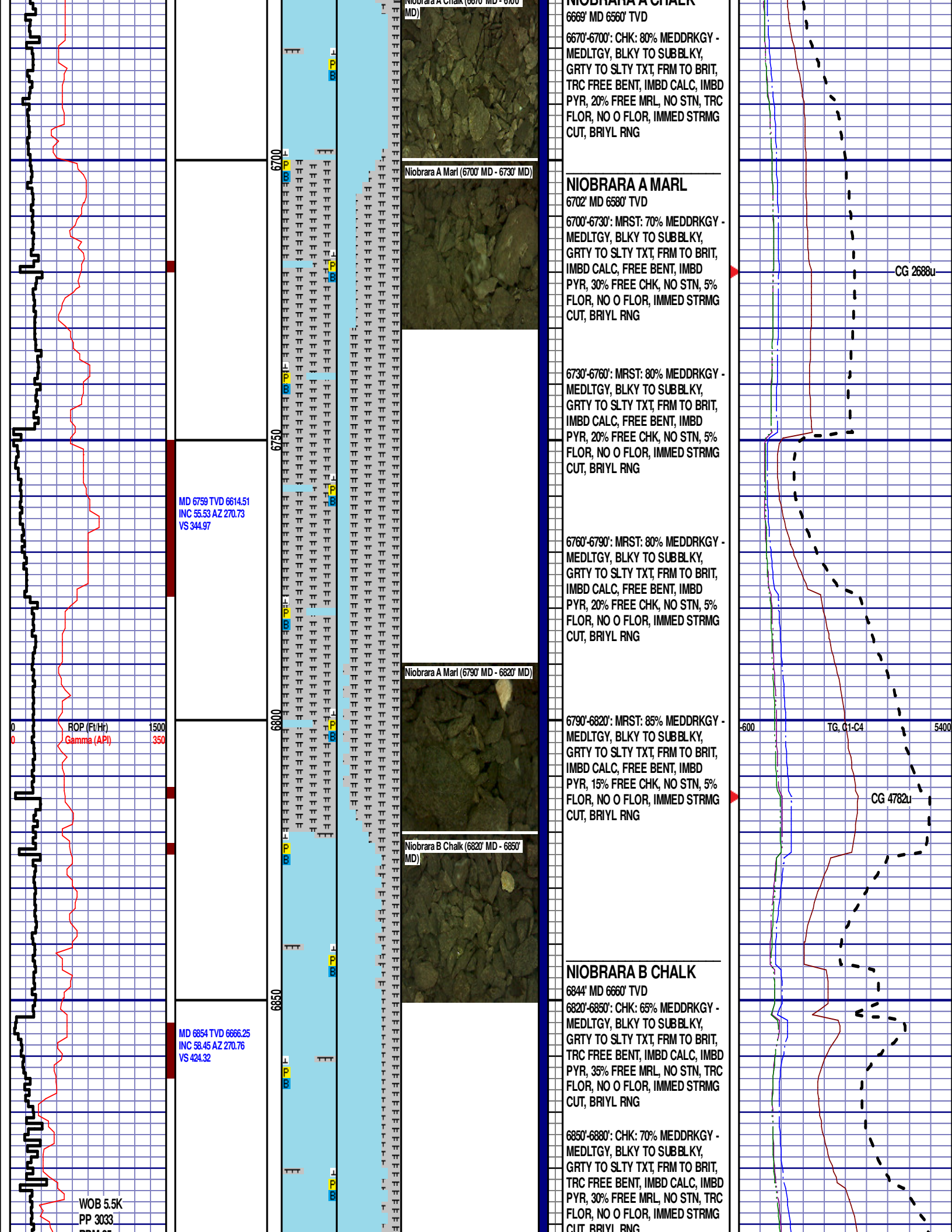
Scale Change  
TG, C1-C4

GAS SCALE: -600 TO 5400  
600 UNITS/DIVISION

CG 785u

TG, C1-C4

CG 1287u



HPM 25  
SPM 60/59

12:01 AM  
07/05/2014  
3313 FT/24HRS  
DAY 03

MD 6901 TVD 6690.07  
INC 61.51 AZ 296.63  
VS 464.08

6900

6950

6880'-6910': CHK: 75% MEDDRKGY -  
MEDLTGY, BLKY TO SUBBLKY,  
GRTY TO SLTY TXT, FRM TO BRIT,  
TRC FREE BENT, IMBD CALC, IMBD  
PYR, 25% FREE MRL, NO STN, TRC  
FLOR, NO O FLOR, IMMED STRMG  
CUT, BRIYL RNG

END OF VERTICAL LOG @ 6910' MD  
ON 7/05/14. CONTINUED ON  
HORIZONTAL LOG.

CG 5246u