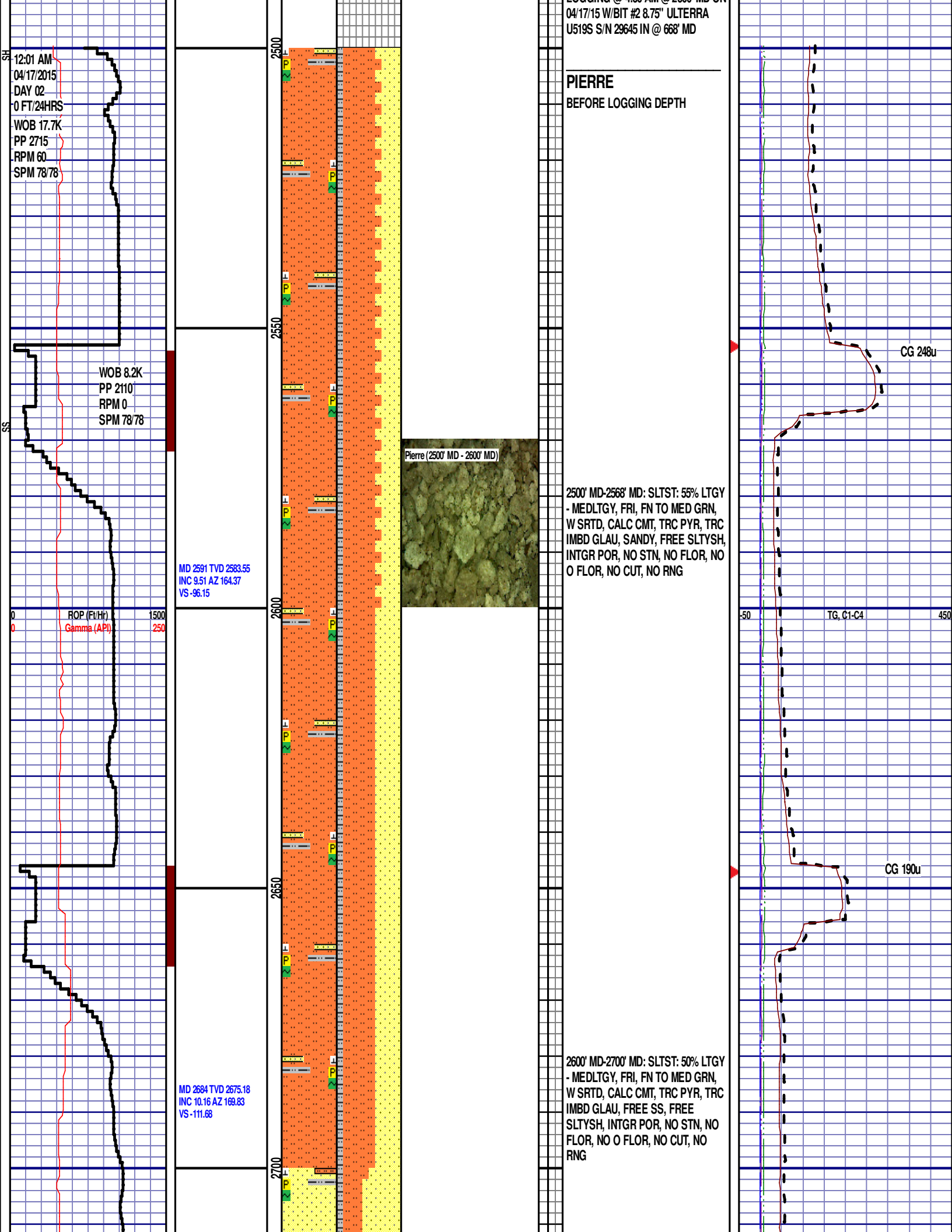
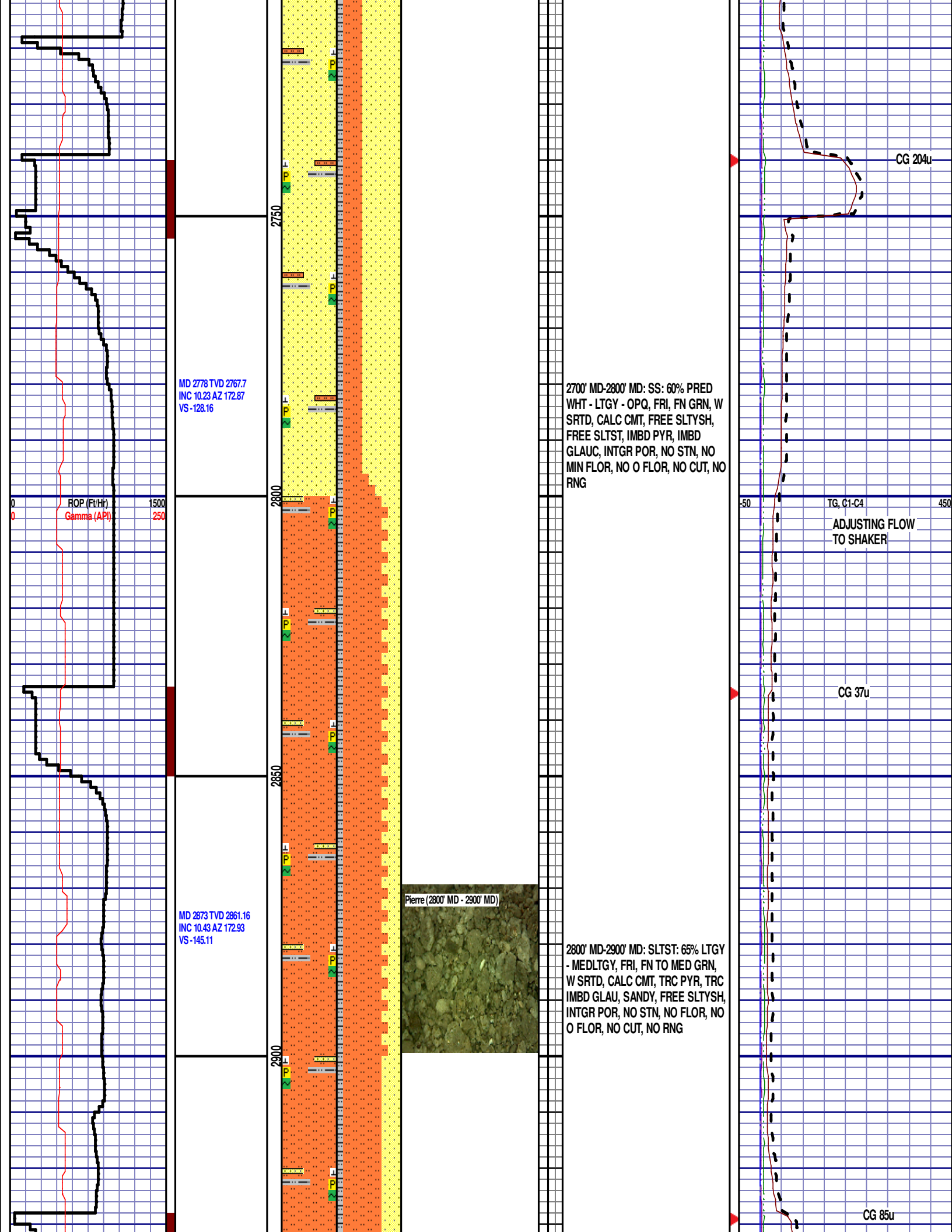


Logger On Shift		ROP (Ft/Hr) Gamma (API)	Drill Depth v. Time	Survey Data	Depth	Lithology	Lithology Percentages	Sample Photographs	Porosity	Geological Description	TG (1-8) C1 (units) C2 (units) C3 (units) C4 (units)	Total Gas, C1-C4
0	ROP (Ft/Hr) Gamma (API)	1500 250			24							
			SLIDE=RED ROTATE=WHITE									
			ROP SCALE: 0 TO 1500 (FT/HR)									
			GAMMA SCALE: 0 TO 250 (GAMMA DATA AS RECEIVED)									





MD 2968 TVD 2954.63
INC 10.14 AZ 171.78
VS -161.96

ROP (ft/hr)
Gamma (API)

1500
250

2950

3000

3050

3100

3150

2900' MD-3000' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAU, SANDY, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

3000' MD-3100' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAU, SANDY, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

TG, C1-C4

CG 74u

FLOW RESTORED
TO SHAKER

CG 172u

MD 3157 TVD 3140.96
INC 9.08 AZ 166.74
VS -193.19

MD 3252 TVD 3234.73
INC 9.39 AZ 171.05
VS -208.19

MD 3347 TVD 3328.42
INC 9.66 AZ 181.39
VS -223.83

Pierre (3100' MD - 3200' MD)

Parkman (3200' MD - 3300' MD)

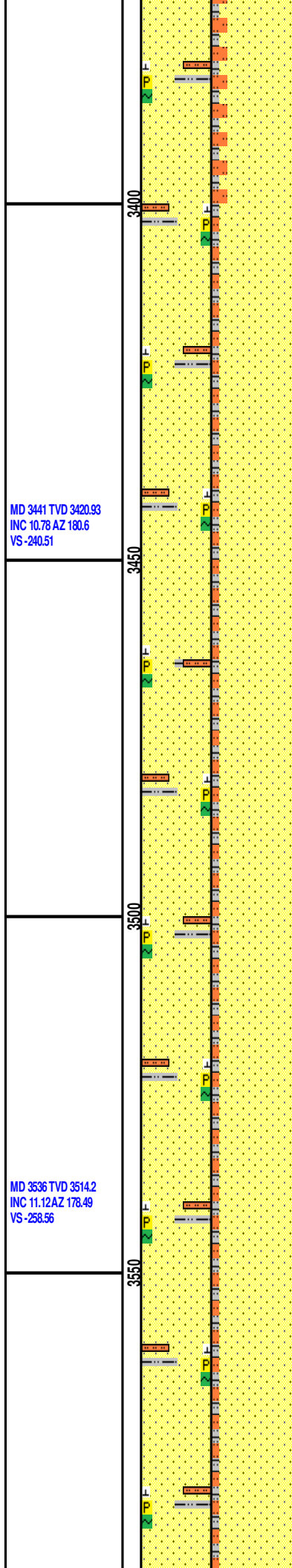
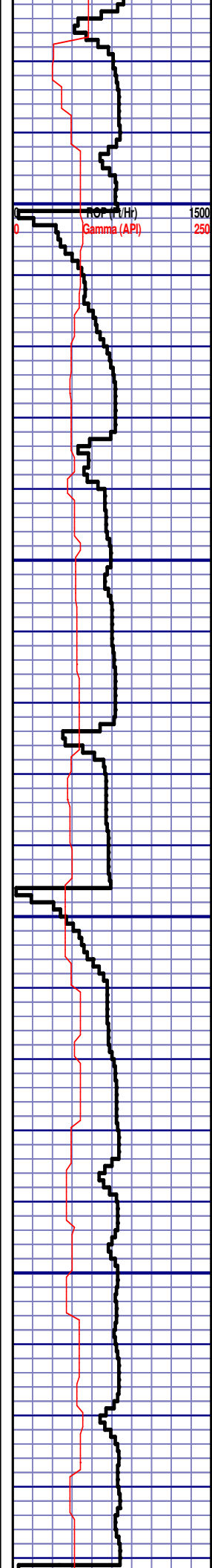
3100' MD-3200' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAU, SANDY, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

3200' MD-3300' MD: SS: 80% PRED
WHT - LTGY - OPQ, FRI, FN GRN, W
SRTD, CALC CMT, FREE SLTYSH,
FREE SLTST, IMBD PYR, IMBD
GLAUC, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO

PARKMAN
3300' MD 3283' TVD

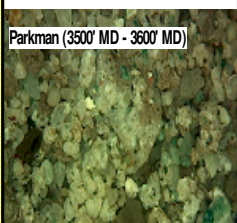
CG 253u

CG 254u



MD 3441 TVD 3420.93
INC 10.78 AZ 180.6
VS -240.51

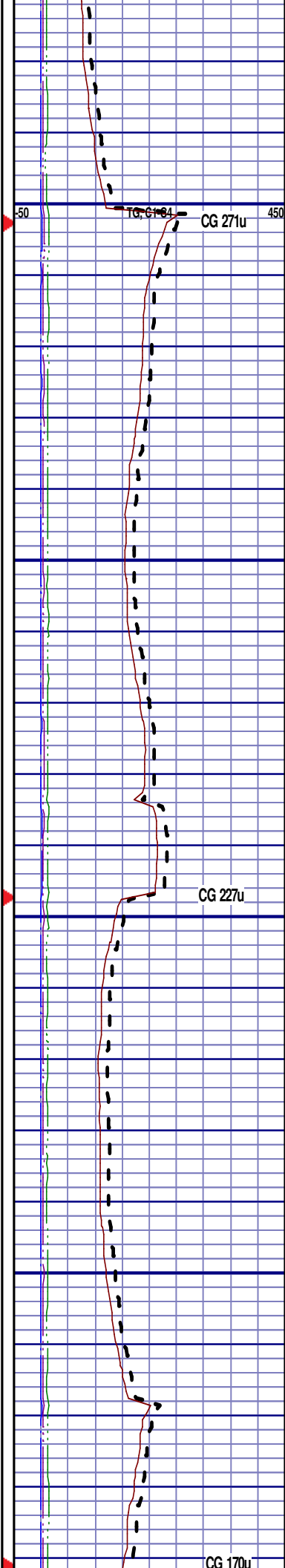
MD 3536 TVD 3514.2
INC 11.12 AZ 178.49
VS -258.56



3300' MD-3400' MD: SS: 85% PRED
WHT - LTGY - OPQ, FRI, FN GRN, W
SRTD, CALC CMT, FREE SLTYSH,
FREE SLTST, IMBD PYR, IMBD
GLAUC, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

3400' MD-3500' MD: SS: 90% PRED
WHT - LTGY - OPQ, FRI, FN GRN, W
SRTD, CALC CMT, FREE SLTYSH,
FREE SLTST, IMBD PYR, IMBD
GLAUC, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

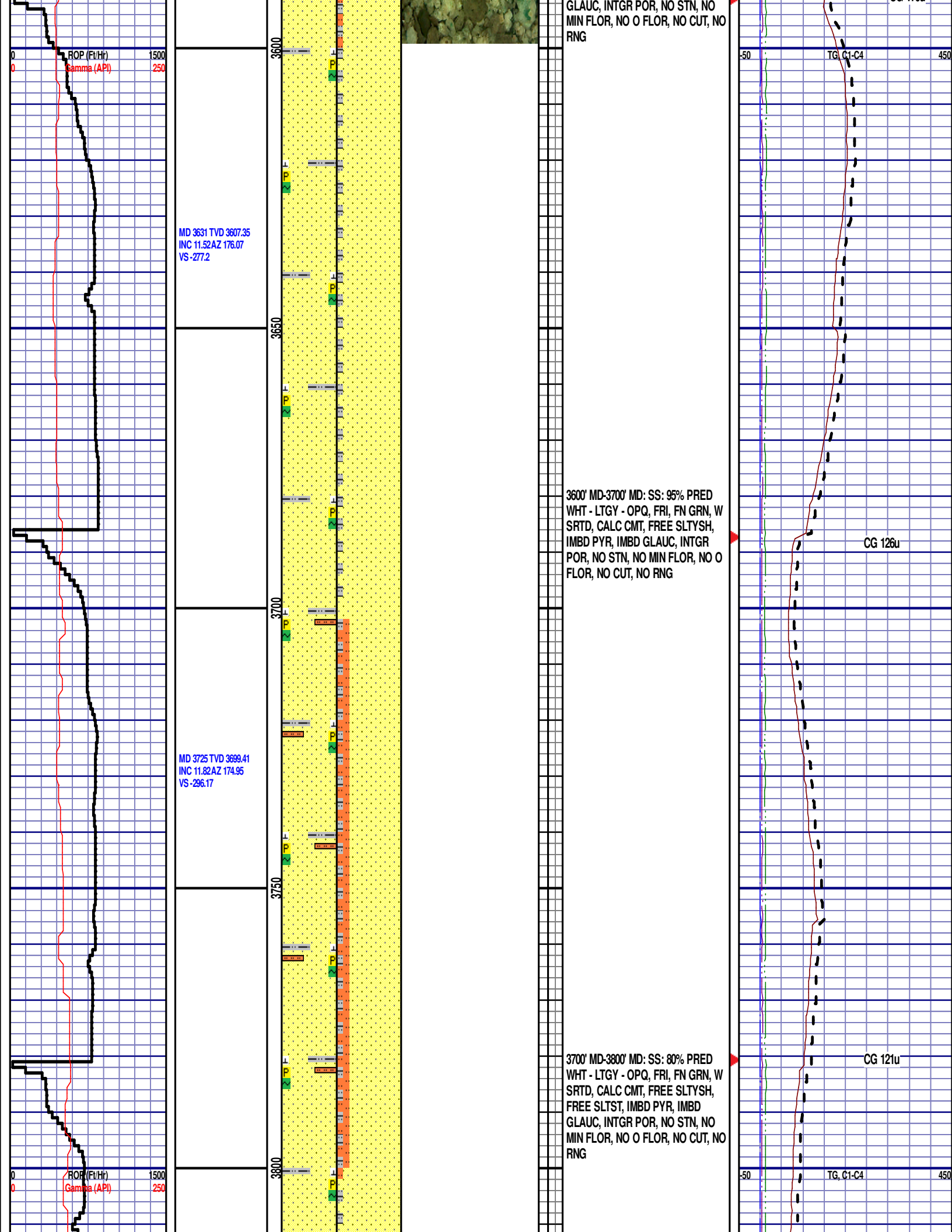
3500' MD-3600' MD: SS: 90% PRED
WHT - LTGY - OPQ, FRI, FN GRN, W
SRTD, CALC CMT, FREE SLTYSH,
FREE SLTST, IMBD PYR, IMBD



CG 271u

CG 227u

CG 170u



MD 3820 TVD 3792.41
INC 11.74 AZ 172.74
VS -315.48

WOB 5.6K
PP 3092
RPM 60
SPM 78/78

MD 3914 TVD 3884.78
INC 9.55 AZ 169.63
VS -332.68

MD 4009 TVD 3978.81
INC 6.81 AZ 168.35
VS -345.99

ROP (Ft/Hr)
Gamma (API)

1500
250

Parkman (3800' MD - 3900' MD)

3800' MD-3900' MD: SS: 95% PRED
WHT - LTGY - OPQ, FRI, FN GRN, W
SRTD, CALC CMT, FREE SLTYSH,
IMBD PYR, IMBD GLAUC, INTGR
POR, NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

3900' MD-4000' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAU, SANDY, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

CG 142u

CG 116u

TG, C1-C4

SUSSEX

4035' MD 4004' TVD

Sussex (4000' MD - 4100' MD)



4000' MD-4100' MD: SLTST 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAU, SANDY, FREE SLTYSH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

MD 4104 TVD 4073.3
INC 5.02 AZ 172.77
VS -365.65

MD 4198 TVD 4167.05
INC 3.37 AZ 174.27
VS -362.49

ROP (Ft/Hr)
Gamma (API)

1500
250

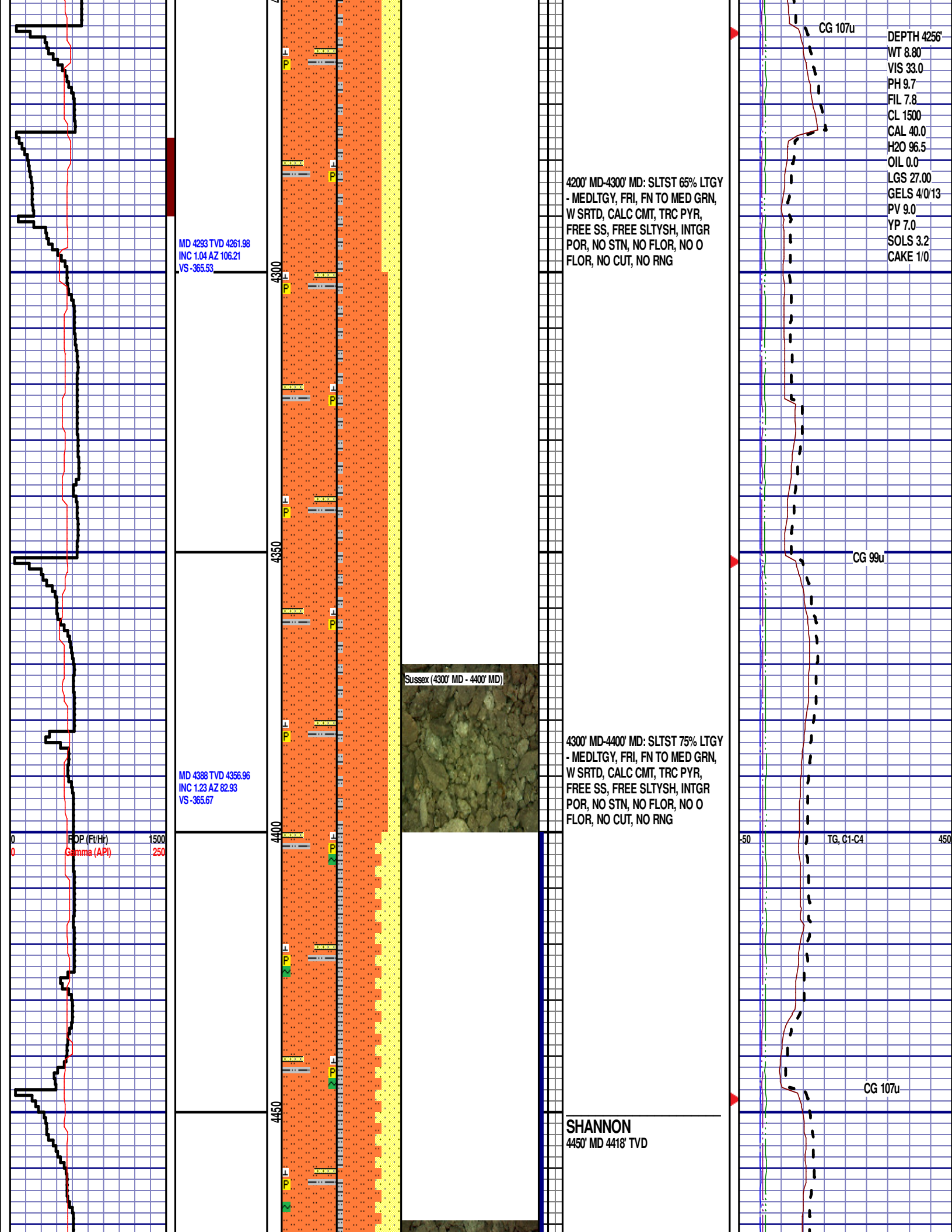
4100' MD-4200' MD: SLTST 70% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR, NO
CUT, NO RNG

CG 118u

CG 132u

TG, C1-C4

450

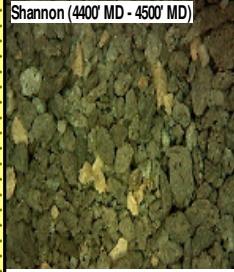


MD 4483 TVD 4451.95
INC 0.85 AZ 75.7
VS -365.4

MD 4578 TVD 4546.93
INC 1.26 AZ 77.74
VS -365.03

MD 4672 TVD 4640.92
INC 0.35 AZ 158.86
VS -365.1

Shannon (4400' MD - 4500' MD)



4400' MD-4500' MD: SLTST 55% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAUC, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, SLOW LZY CUT,
DIM YLW RNG

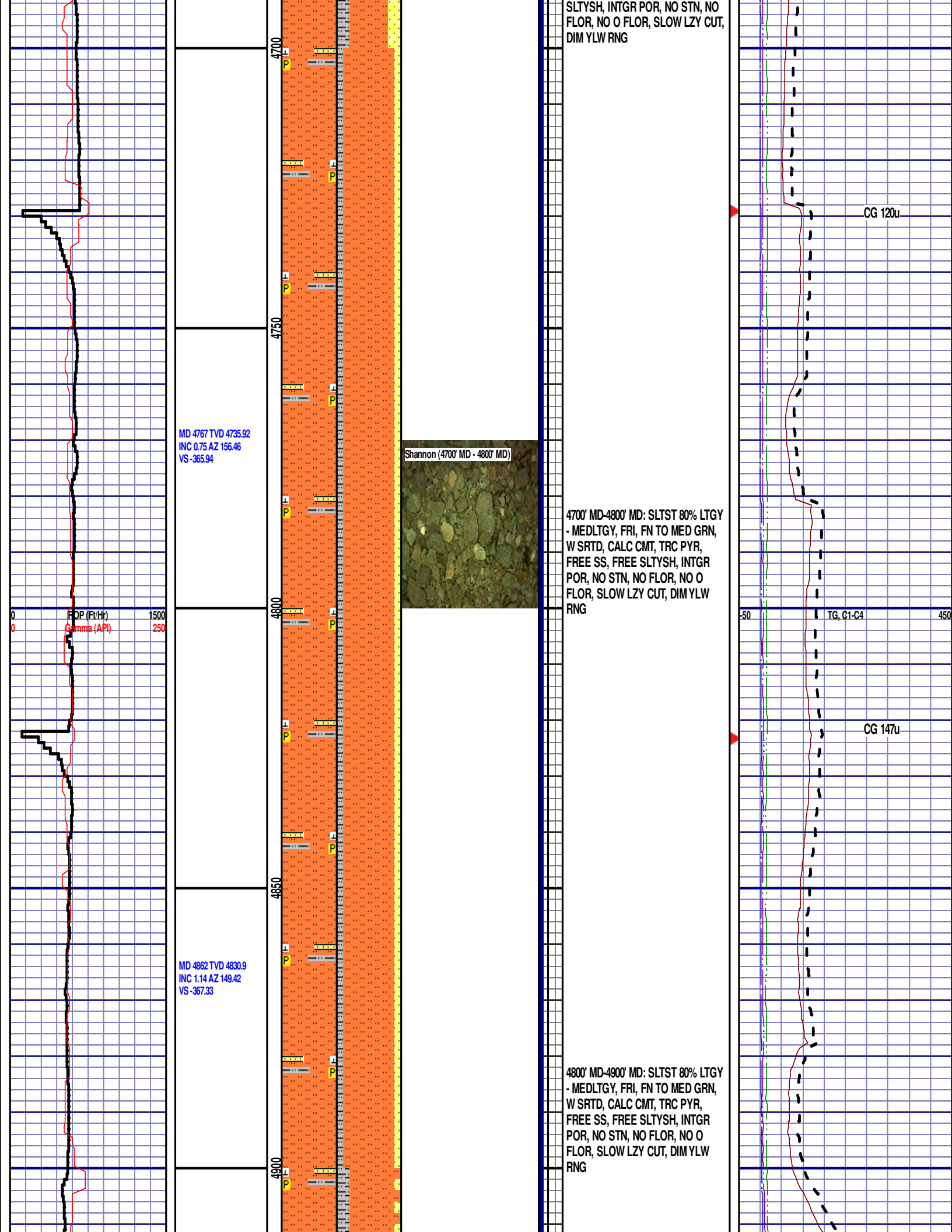
4500' MD-4600' MD: SLTST 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAUC, FREE SS, FREE
SLTYSH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, SLOW LZY CUT,
DIM YLW RNG

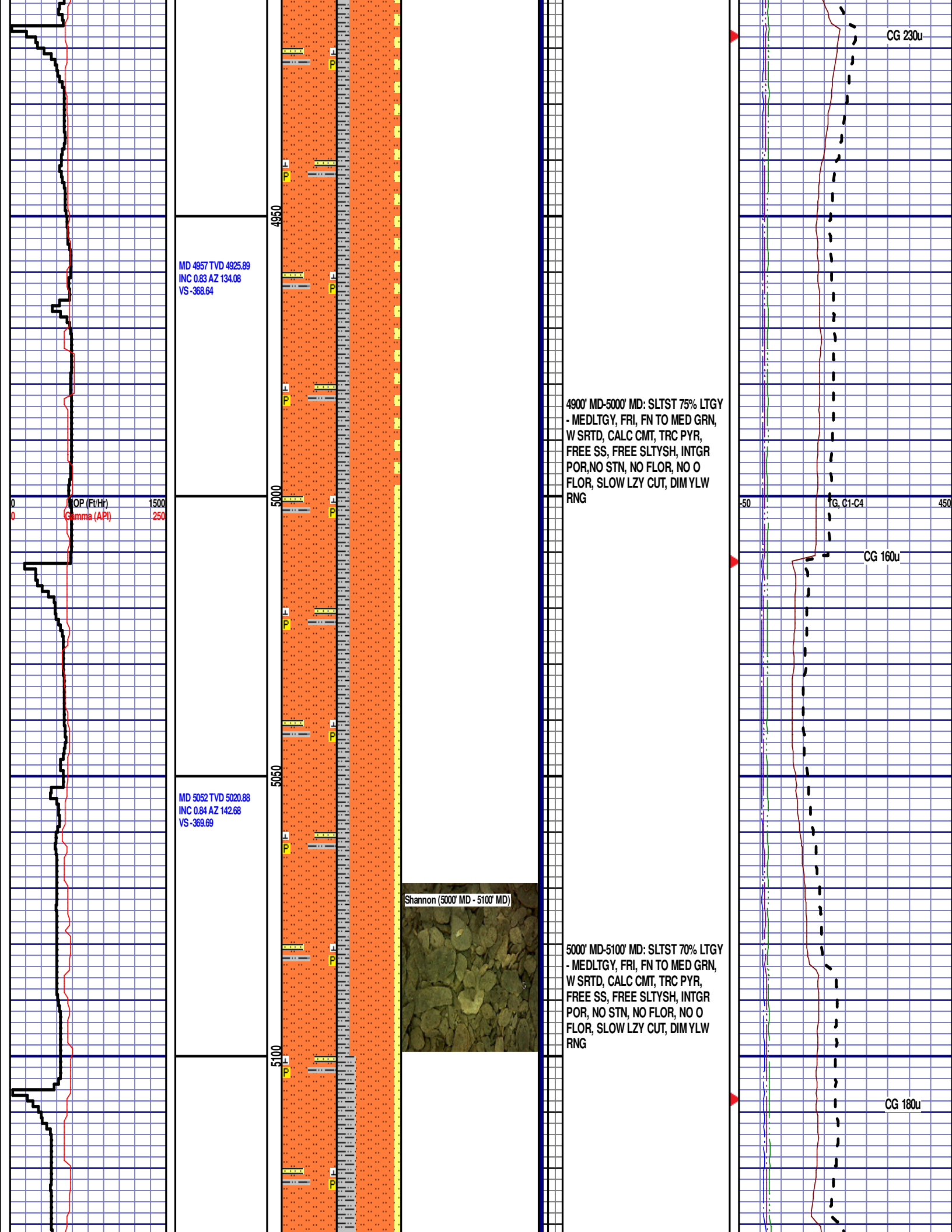
4600' MD-4700' MD: SLTST 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR, TRC
IMBD GLAUC, FREE SS, FREE

CG 138u

TG, C1-C4

CG 164u





MD 5146 TVD 5114.87
INC 0.8 AZ 132.02
VS -370.69

ROP (Ft/Hr) 1500
Gamma (API) 250

MD 5241 TVD 5209.86
INC 0.59 AZ 160.43
VS -371.61

MD 5336 TVD 5304.86
INC 0.51 AZ 99.57
VS -372.15

ROP SCALE
CHANGE: 0
TO 600

Scale Change

5150

5200

5250

5300

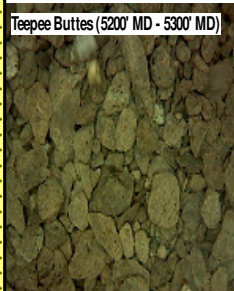
5350

5100' MD-5200' MD: SLTST 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
FREE SS, FREE SLTYSH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, SLOW LZ CUT, DIMYWL
RNG

TEEPEE BUTTES

5240' MD 5209' TVD

Teepee Buttes (5200' MD - 5300' MD)



5200' MD-5300' MD: SLTST: 55% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZ CUT, LT BRIYL RNG

5300' MD-5360' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR

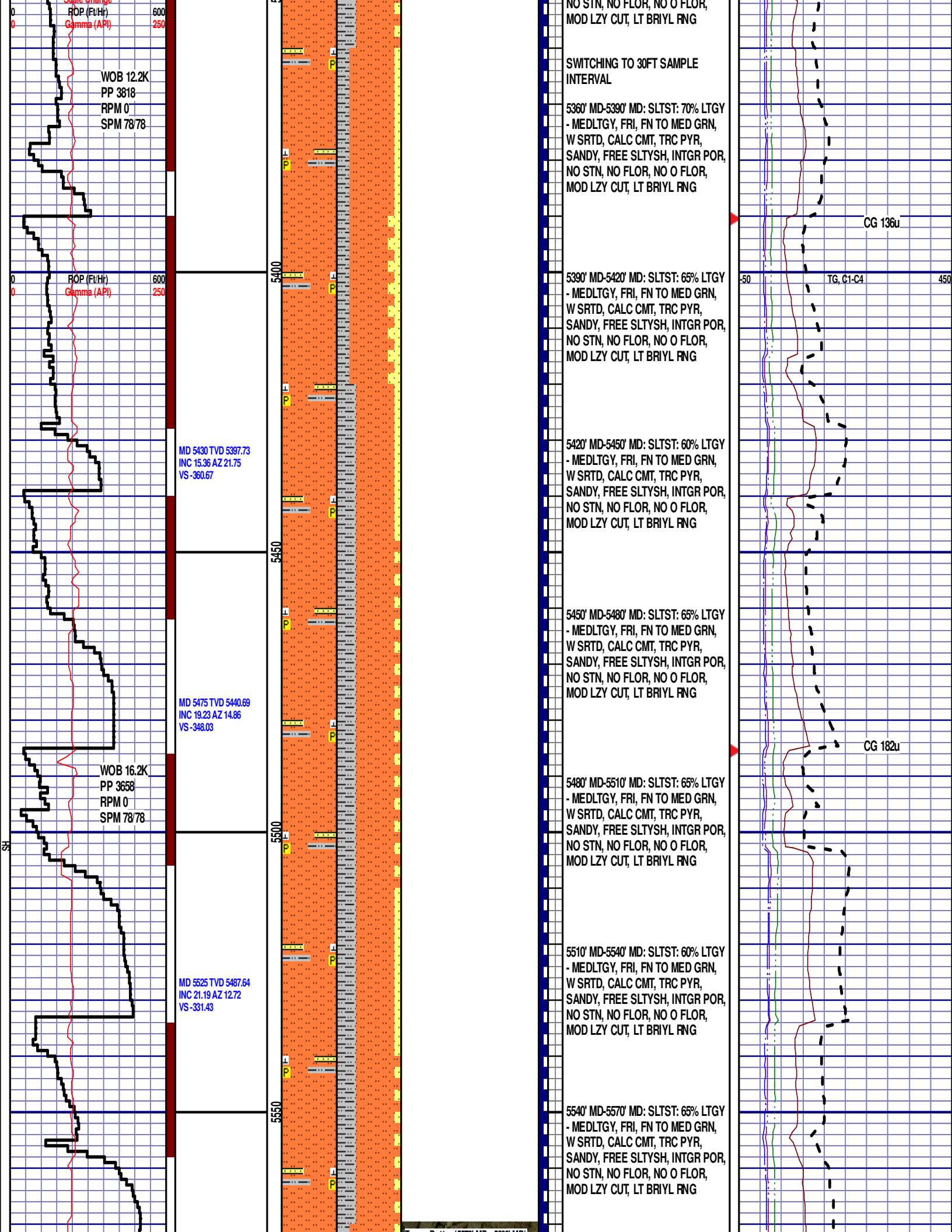
-50

TG, C1-C4

CG 200u

450

CG 214u



WOB 12.2K
PP 3818
RPM 0
SPM 78/78

ROP (Ft/Hr)
Gamma (API)

MD 5430 TVD 5397.73
INC 15.36 AZ 21.75
VS -360.67

MD 5475 TVD 5440.69
INC 19.23 AZ 14.86
VS -348.03

WOB 16.2K
PP 3658
RPM 0
SPM 78/78

MD 5525 TVD 5487.64
INC 21.19 AZ 12.72
VS -331.43

SWITCHING TO 30FT SAMPLE
INTERVAL

5360' MD-5390' MD: SLTST: 70% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

5390' MD-5420' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

5420' MD-5450' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

5450' MD-5480' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

5480' MD-5510' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

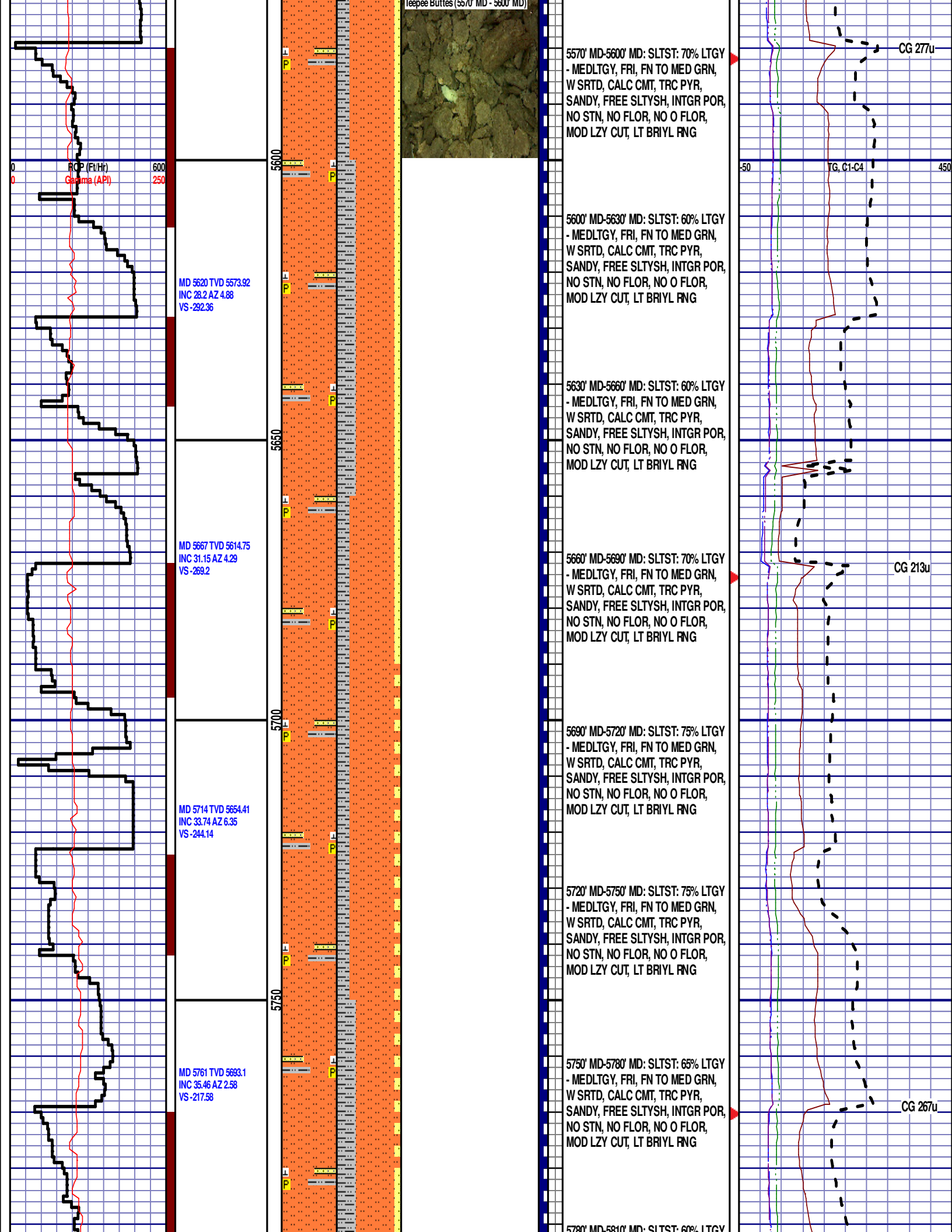
5510' MD-5540' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

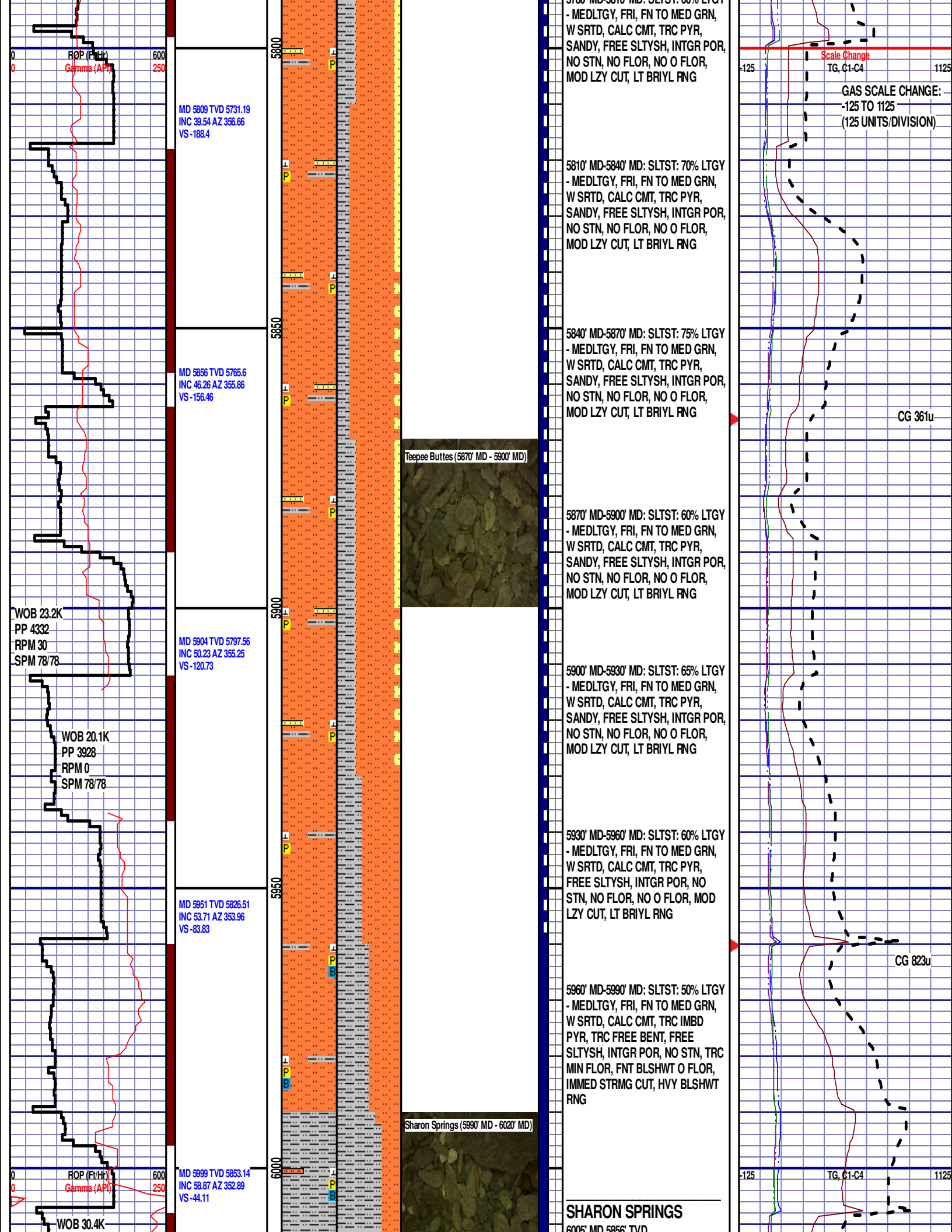
5540' MD-5570' MD: SLTST: 65% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, TRC PYR,
SANDY, FREE SLTYSH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
MOD LZY CUT, LT BRIYL RNG

CG 136u

TG, C1-C4

CG 182u





PP 4232
RPM 0
SPM 78/78

0000 MD-6000 TVD

5990' MD-6020' MD: SLTYSH: 70% SUBBLKY
TO SUBSPLT, SLTY TO F TXT, FREE CALC,
IMBD PYR, FREE BENT, FREE SLTST, NO STN,
TRC MIN FLOR, FNT BLSHWT O FLOR,
IMMED STRMG CUT, HVY BLSHWT RNG

END OF VERTICAL LOG @ 6020' MD
ON 04/17/2015, CONTINUED ON
HORIZONTAL LOG

6050