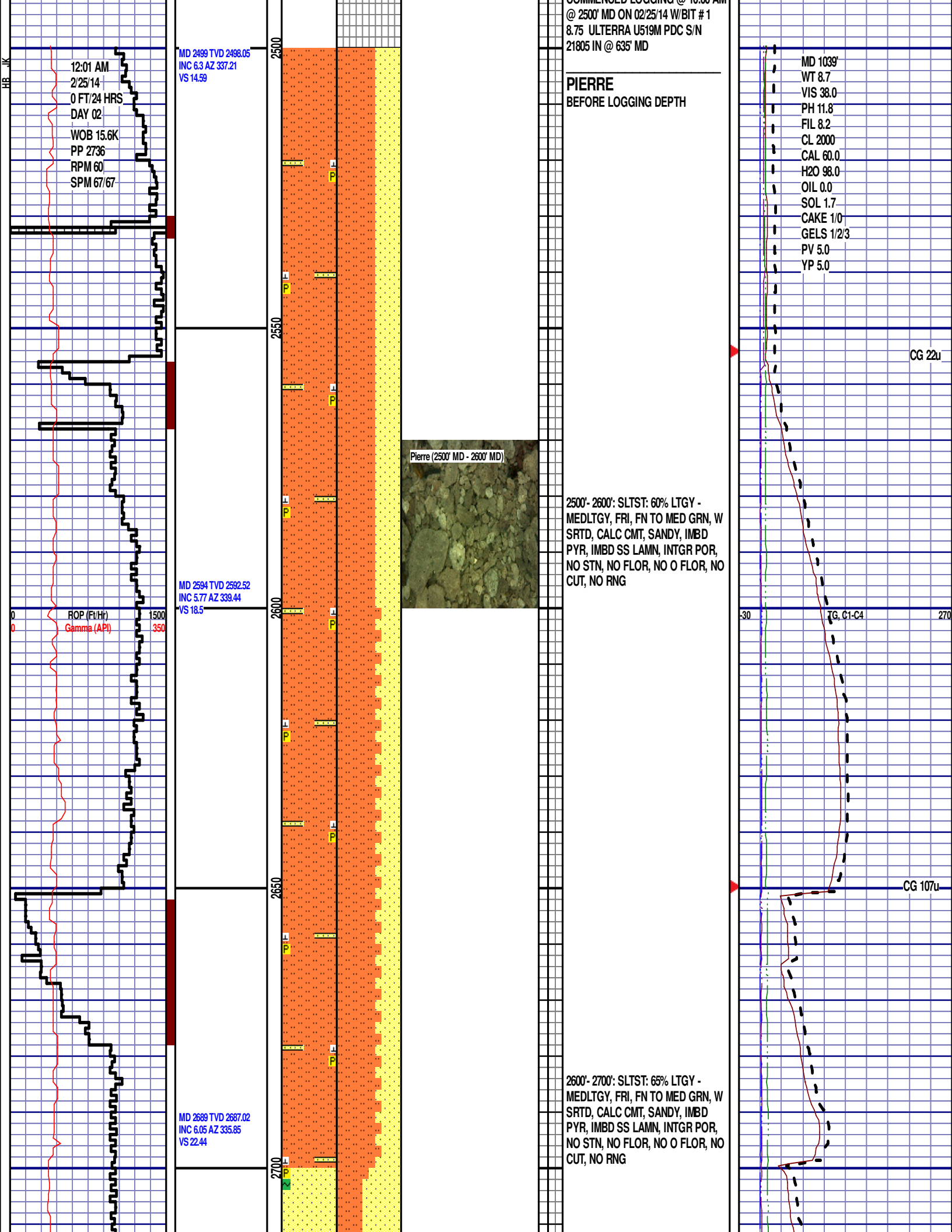
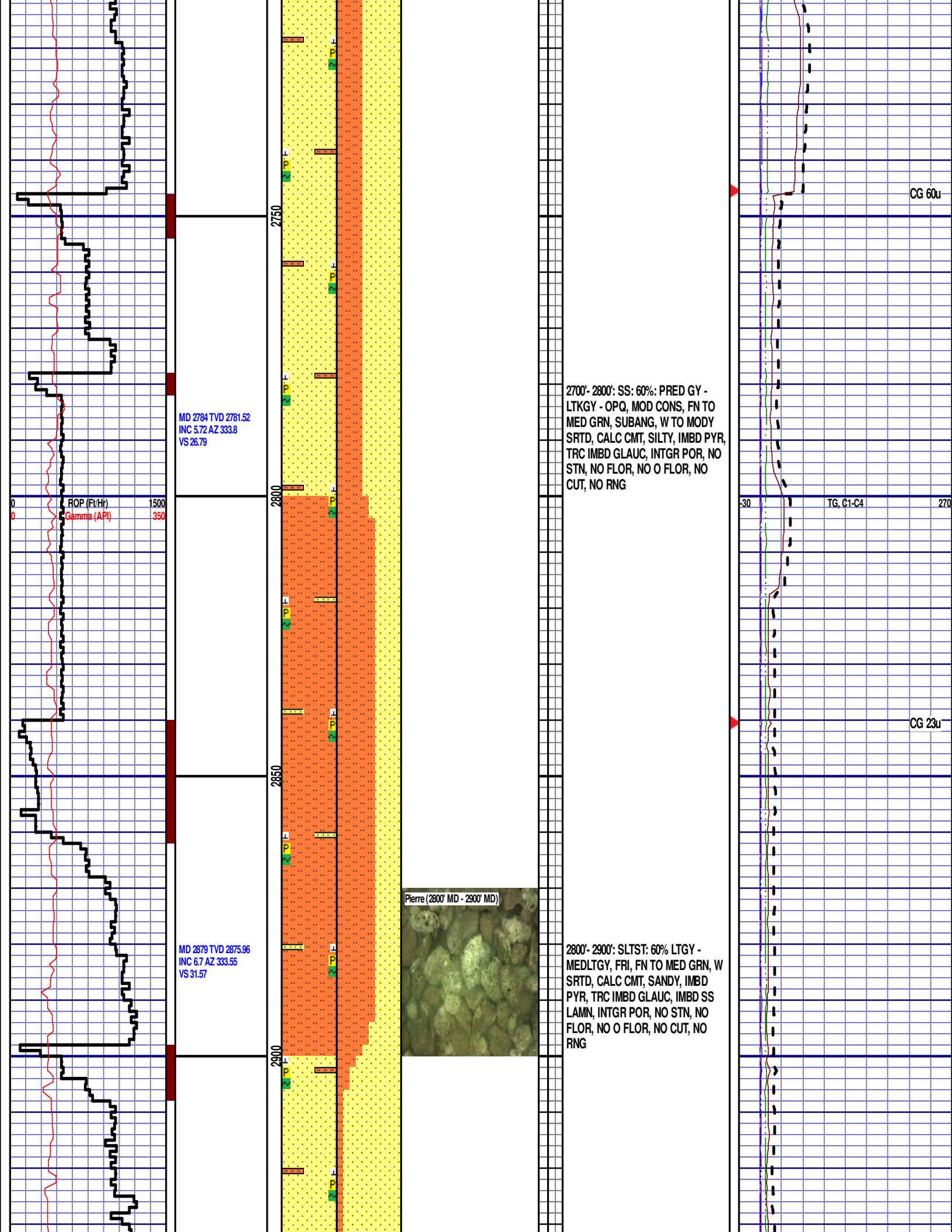
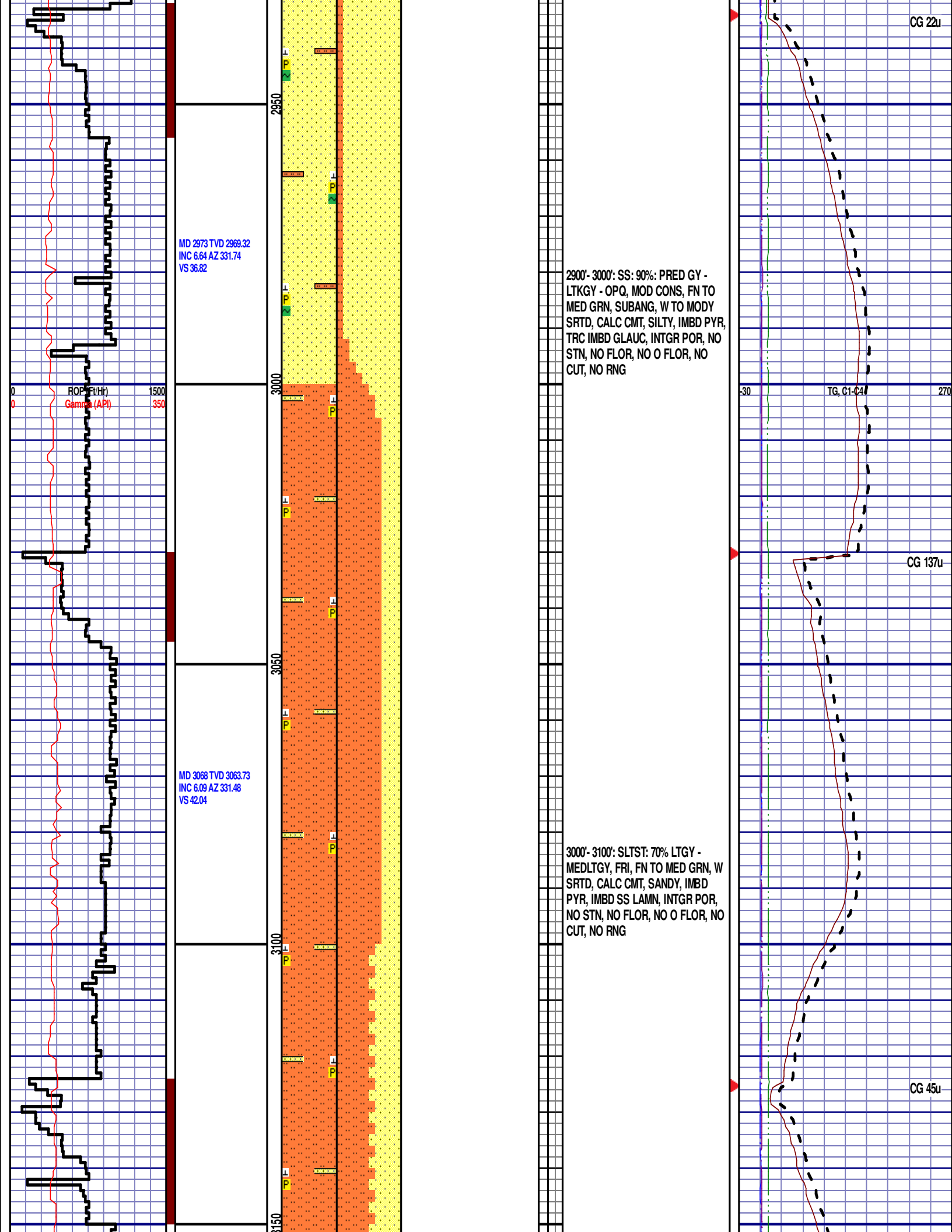




ROP (Ft/Hr) Gamma (API)		Drill Depth v. Time		Survey Data		Depth		Lithology		Lithology Percentages		Sample Photographs		Geological Description		TG (1-8) C1 (units) C2 (units) C3 (units) C4 (units)		Total Gas, C1-C4			
—		—														.....					
0		1500				24								NOBLE ENERGY WELLS RANCH AA35-69-1BHNC 36-T6N-R63W 643' FNL, 164' FWL WELD COUNTY, CO H&P 321 LOGGERS: HANNAH BLATCHFORD JOSEPH KLUMPSTRA CALLED OUT BY COMPANY MAN 2/24/14 COMMENCED LOGGING @ 10:00 AM		-30		TG, C1-C4		270	
0		350		SLIDE=RED ROTATE=WHITE												CONNECTIONS ARE MARKED WITH RED TRIANGLES					
				ROP SCALE: 0 TO 1500 (FT/HR)														GAS SCALE: -30 TO 270 30 UNITS/DIVISION			
				(GAMMA DATA AS RECEIVED)														DRILLING ON WATER-BASED MUD			







MD 3163 TVD 3158.24  
INC 5.64 AZ 332.07  
VS 46.84

MD 3258 TVD 3252.72  
INC 6.33 AZ 330.88  
VS 51.78

MD 3353 TVD 3347.25  
INC 5 AZ 327.62  
VS 56.74



3100'- 3200': SLTST: 55% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, SANDY, IMBD  
PYR, IMBD SS LAMN, INTGR POR,  
NO STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

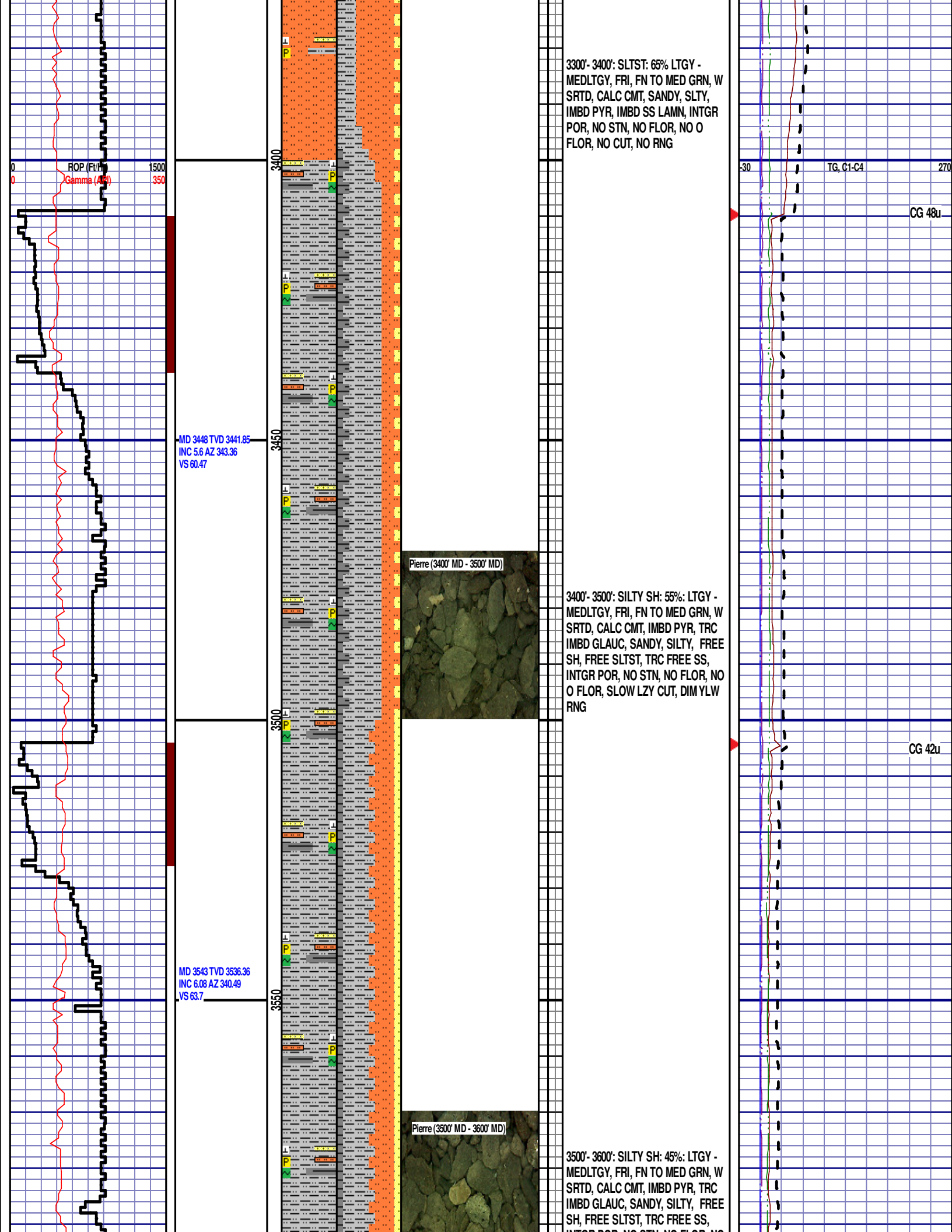
3200'- 3300': SLTST: 70% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, SANDY, IMBD  
PYR, IMBD SS LAMN, INTGR POR,  
NO STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

CG 144u

MD 3235'  
WT 8.95  
VIS 38.0  
PH 9.4  
FIL 7.2  
CL 2100  
CAL 80.0  
H2O 95.8  
OIL 0.0  
SOL 3.9  
CAKE 1/0  
GELS 1/6/7  
PV 7.0  
YP 5.0

CG 111u





3300'- 3400': SLTST: 65% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, SANDY, SLTY,  
IMBD PYR, IMBD SS LAMN, INTGR  
POR, NO STN, NO FLOR, NO O  
FLOR, NO CUT, NO RNG

MD 3448 TVD 3441.85  
INC 5.6 AZ 343.36  
VS 60.47

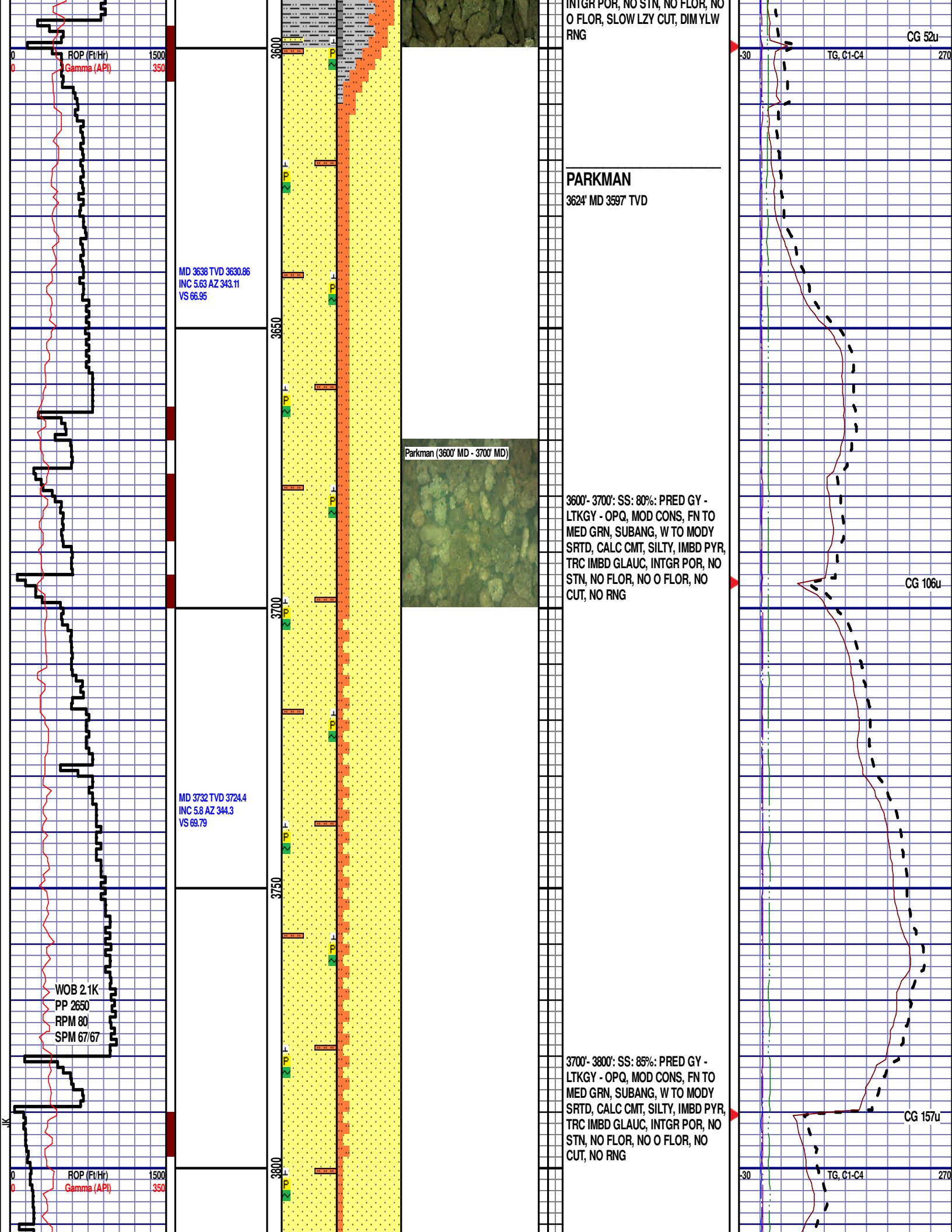


3400'- 3500': SILTY SH: 55%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, IMBD PYR, TRC  
IMBD GLAUC, SANDY, SILTY, FREE  
SH, FREE SLTST, TRC FREE SS,  
INTGR POR, NO STN, NO FLOR, NO  
O FLOR, SLOW LZY CUT, DIM YLW  
RNG

MD 3543 TVD 3536.36  
INC 6.08 AZ 340.49  
VS 63.7



3500'- 3600': SILTY SH: 45%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, IMBD PYR, TRC  
IMBD GLAUC, SANDY, SILTY, FREE  
SH, FREE SLTST, TRC FREE SS,  
INTGR POR, NO STN, NO FLOR, NO  
O FLOR, SLOW LZY CUT, DIM YLW  
RNG



MD 3828 TVD 3819.99  
INC 4.66 AZ 345.21  
VS 72.3

MD 3923 TVD 3914.8  
INC 2.64 AZ 337.54  
VS 74.26

MD 4017 TVD 4008.75  
INC 1.11 AZ 262.15  
VS 76.03

ROP (Ft/Hr)  
Gamma (API)

1500  
350

3850

3900

3950

4000

Parkman (3900' MD - 4000' MD)

3800'- 3900': SS: 90%: PRED GY -  
LTKGY - OPQ, MOD CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, SILTY, IMBD PYR,  
TRC IMBD GLAUC, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

CG 147u

3900'- 4000': SLTST: 80% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, FREE SLTY SH,  
SANDY, IMBD PYR, IMBD GLAUC,  
TRC FREE CALC, IMBD SS LAMN,  
INTGR POR, NO STN, NO FLOR, NO  
O FLOR, NO CUT, NO RNG

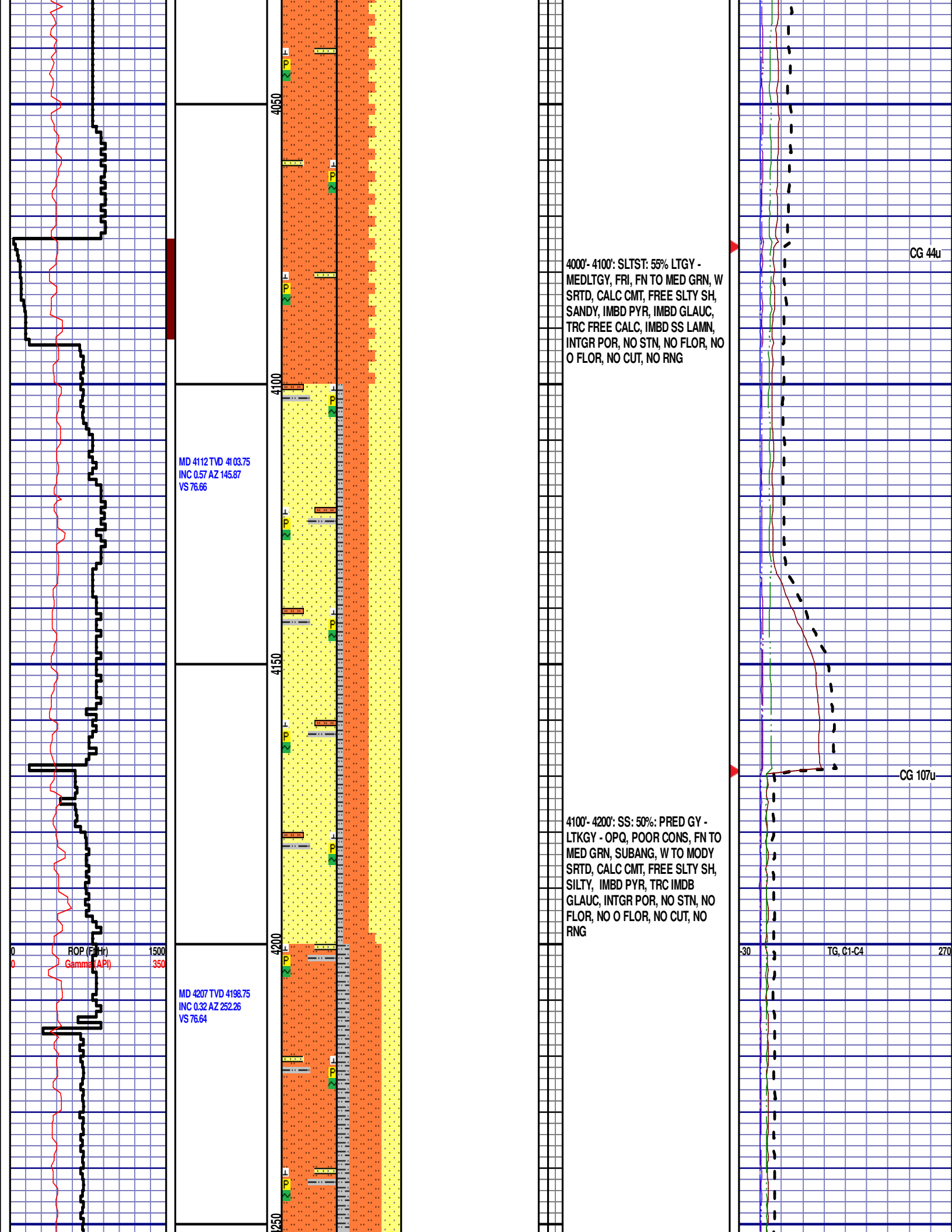
CG 64u

30

TG, C1-C4

270





12:01 AM  
2/26/14  
1766 FT/24  
HRS  
DAY 03  
  
WOB 23.3K  
PP 3880  
RPM 80  
SPM 65/65

MD 4301 TVD 4292.74  
INC 0.84 AZ 316.19  
VS 77.38

MD 4396 TVD 4387.71  
INC 2.07 AZ 323.48  
VS 78.93

ROP (ft/Hr)  
Gamma (API)

1500  
350

Parkman (4200' MD - 4300' MD)

Sussex (4300' MD - 4400' MD)

4200'- 4300': SLTST: 50% LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, FREE SLTY SH,  
SANDY, IMBD PYR, IMBD GLAUC,  
IMBD SS LAMN, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

SUSSEX  
4342' MD 4325' TVD

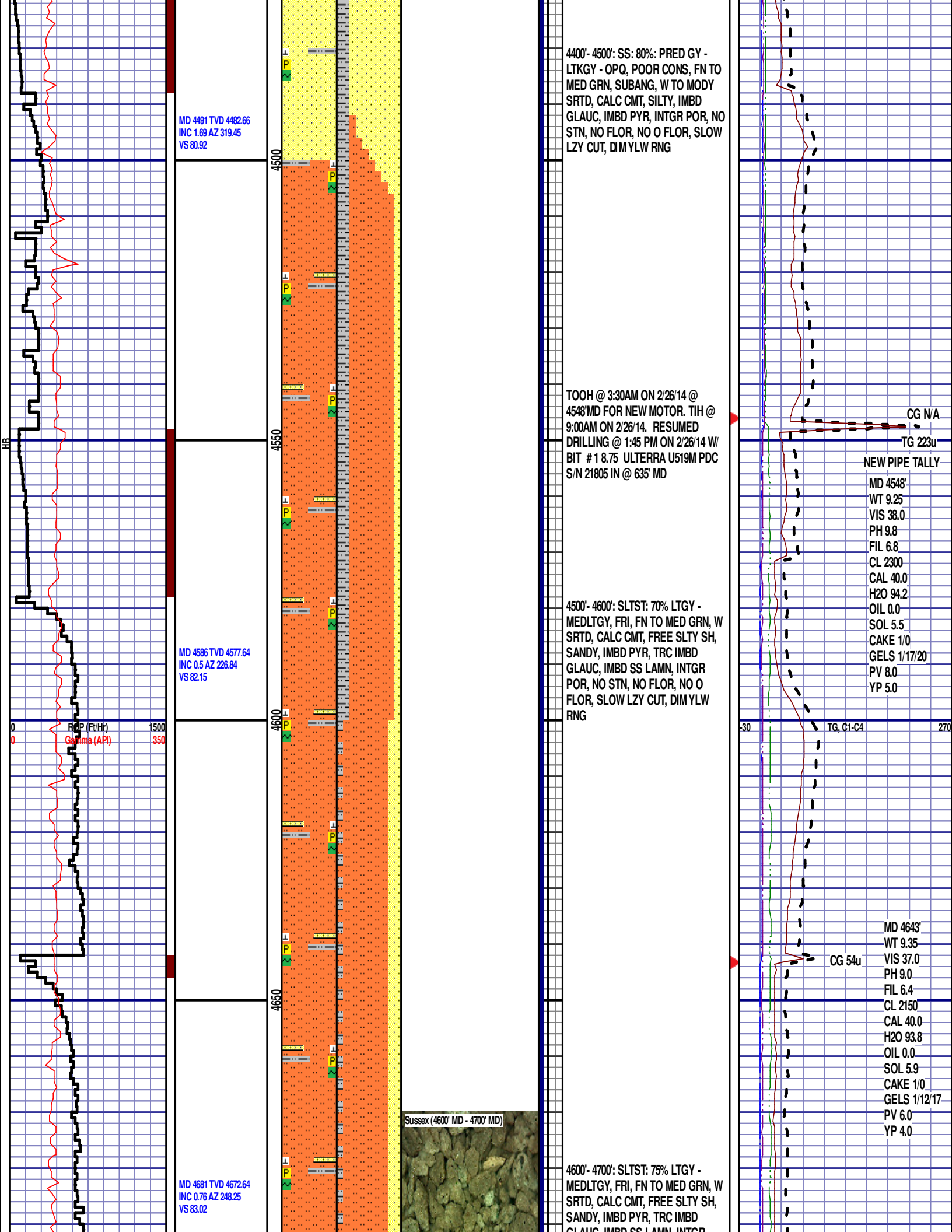
4300'- 4400': SS: 60%: PRED GY -  
LTKGY - OPQ, POOR CONS, FN TO  
MED GRN, SUBANG, W TO MODY  
SRTD, CALC CMT, SILTY, IMBD  
GLAUC, IMBD PYR, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, SLOW  
LZY CUT, DIM YLW RNG

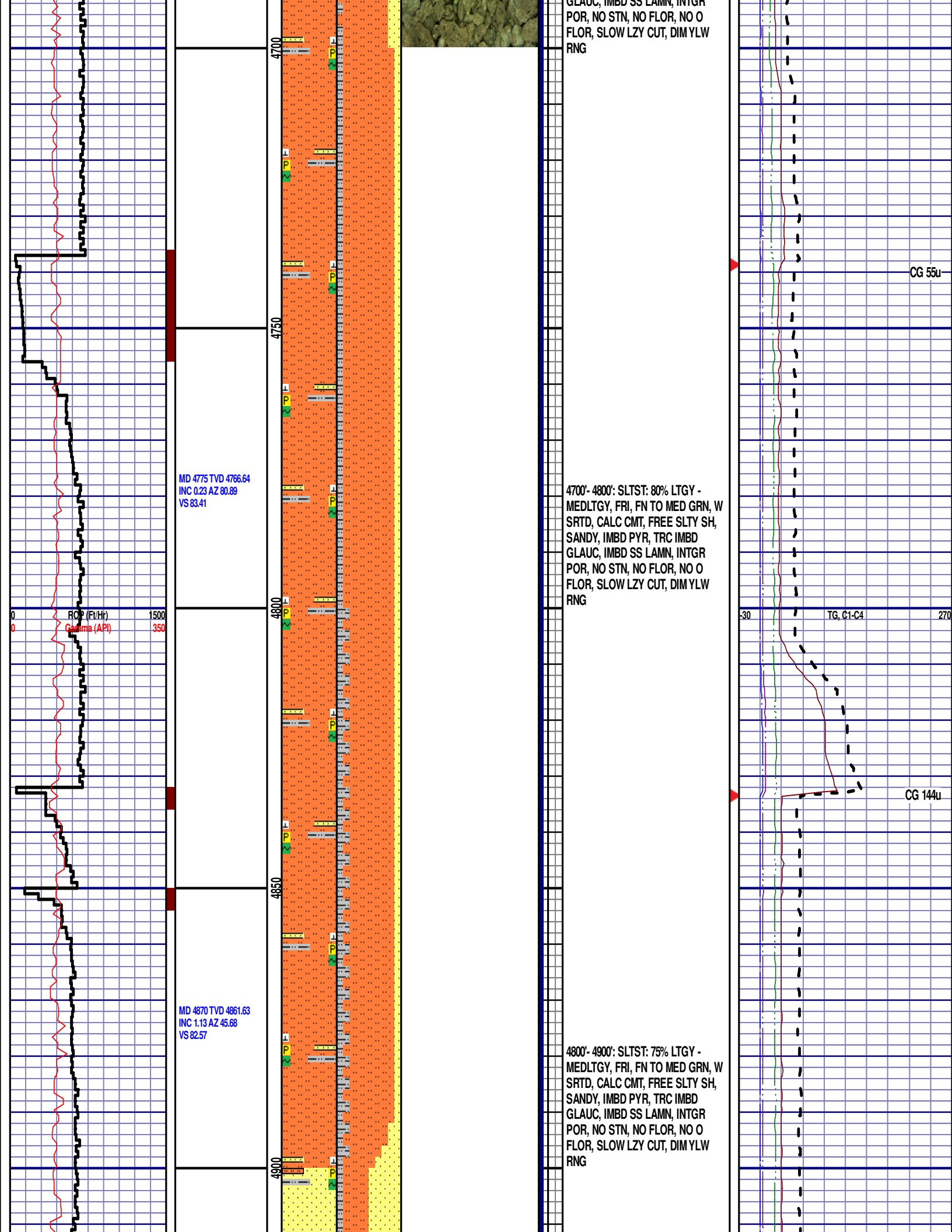
CG 25u

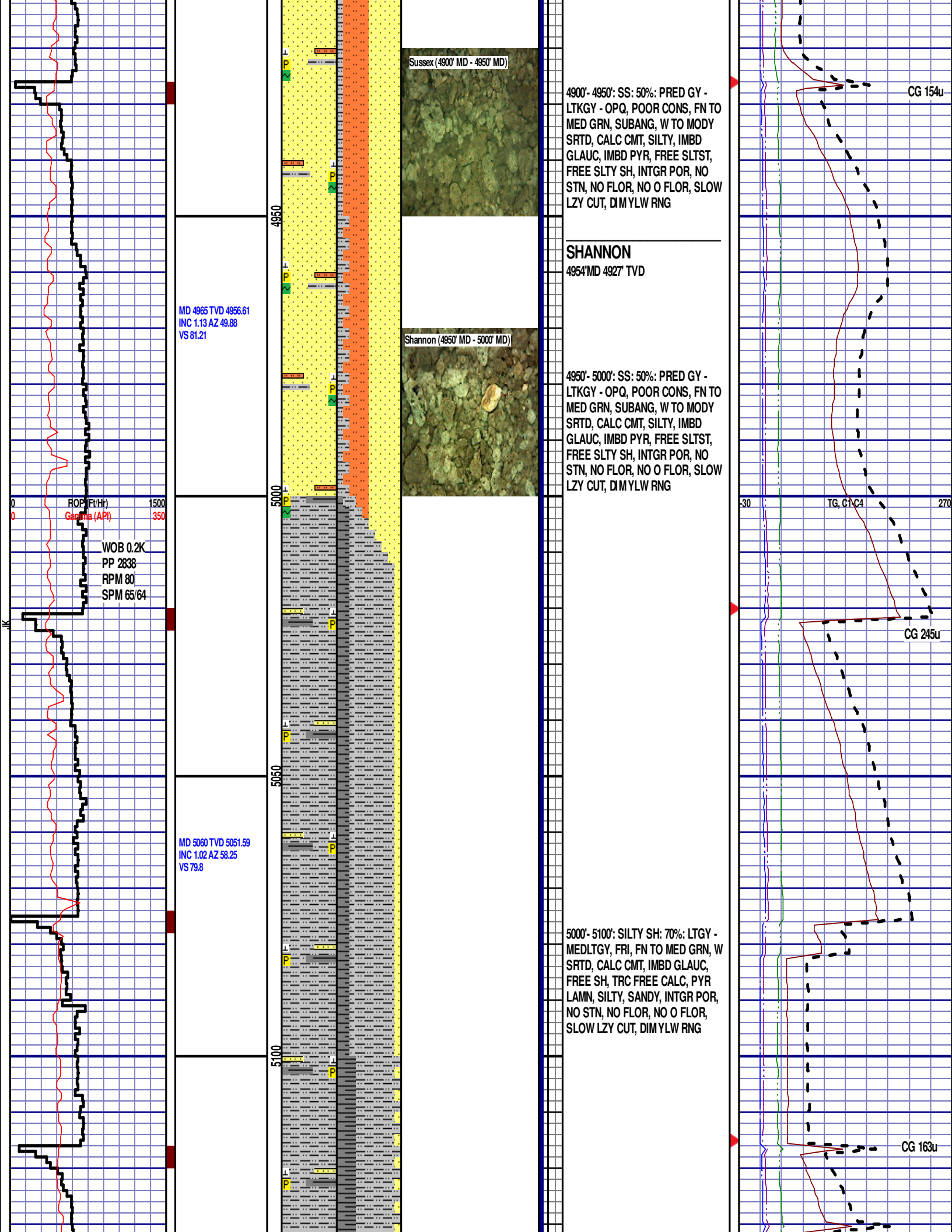
CG 74u

TG, C1-C4

CG 89u









MD 5155 TVD 5146.58  
INC 0.98 AZ 87.43  
VS 78.28

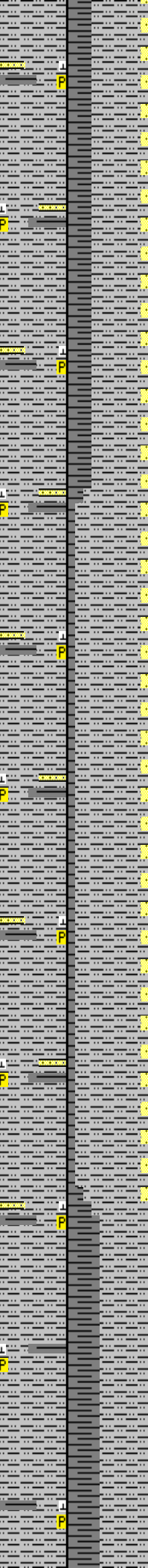
ROP (ft/Hr)  
Gamma (API)

1500  
350

MD 5250 TVD 5241.56  
INC 1.39 AZ 99.79  
VS 76.33

MD 5344 TVD 5335.54  
INC 1.15 AZ 102.6  
VS 74.28

5150  
5200  
5250  
5300  
5350



Shannon (5200' MD - 5300' MD)



5100'- 5200': SILTY SH: 65%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, IMBD GLAUC,  
FREE SH, TRC FREE CALC, PYR  
LAMN, SILTY, SANDY, INTGR POR,  
NO STN, NO FLOR, NO O FLOR,  
SLOW LZY CUT, DIM YLW RNG

5200'- 5300': SILTY SH: 85%: LTGY -  
MEDLTGY, FRI, FN TO MED GRN, W  
SRTD, CALC CMT, IMBD GLAUC,  
FREE SH, TRC FREE CALC, PYR  
LAMN, SILTY, SANDY, INTGR POR,  
NO STN, NO FLOR, NO O FLOR,  
SLOW LZY CUT, DIM YLW RNG

Scale Change  
TG, C1-C4

GAS SCALE: -200 TO 1800  
(200 UNITS/DIVISION)

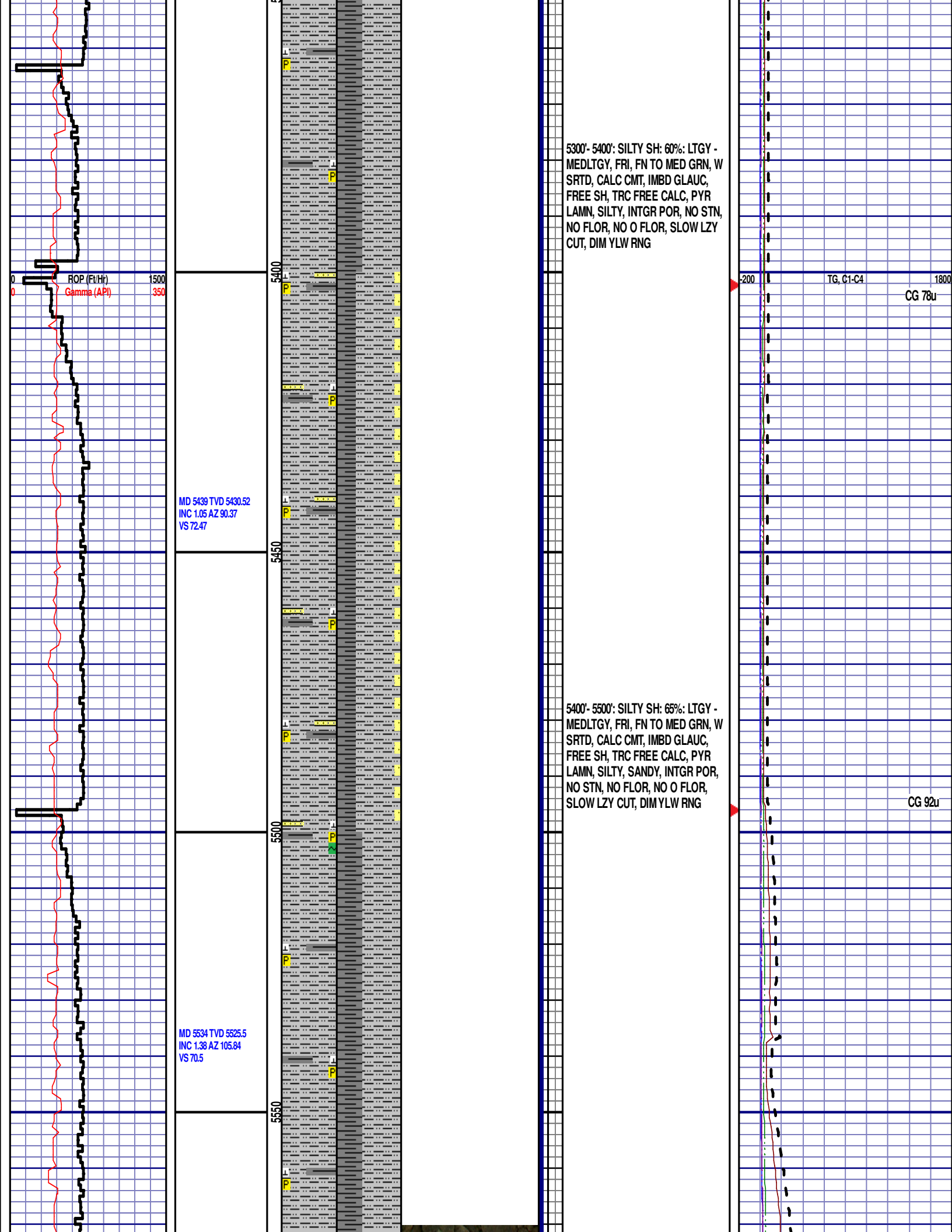
-200 1800

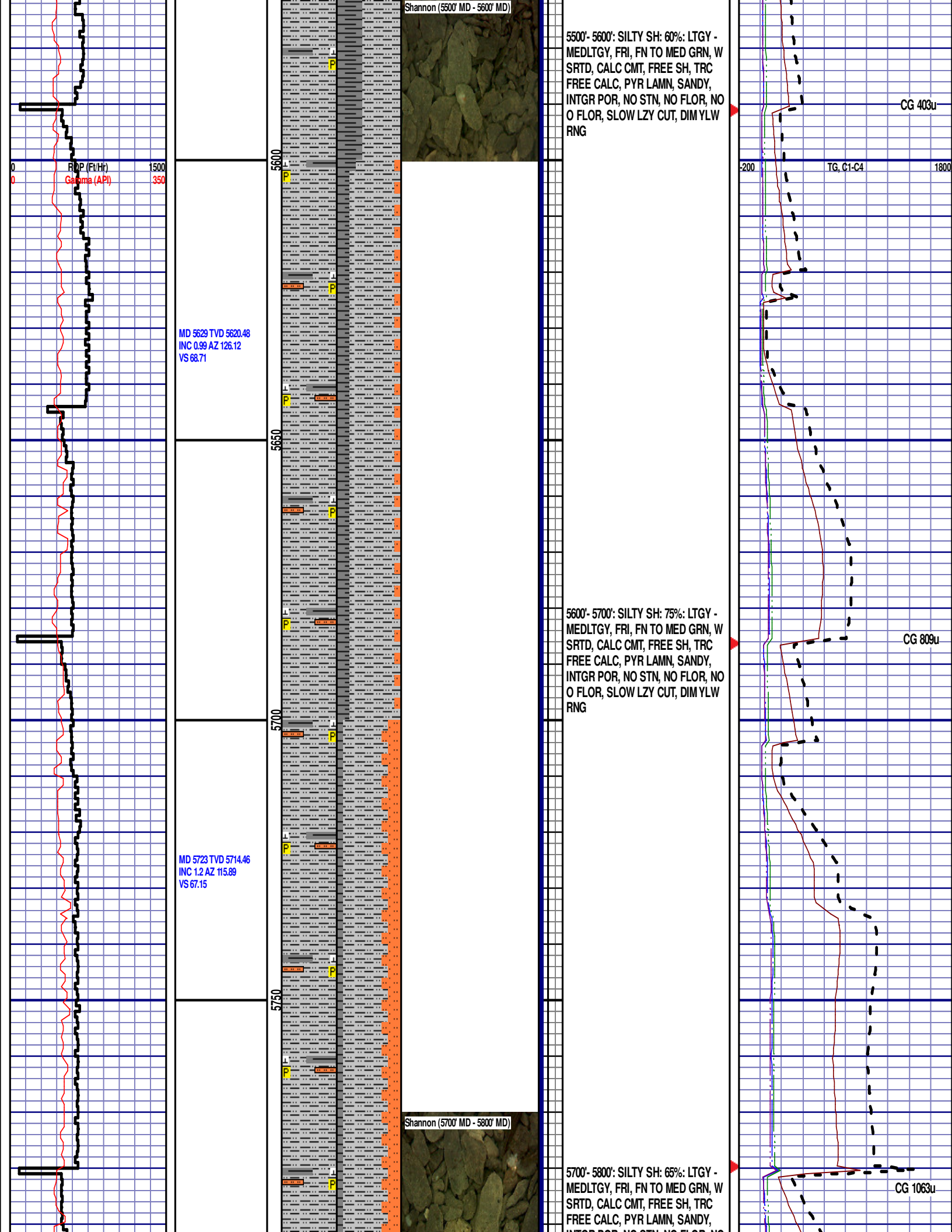
-200 1800

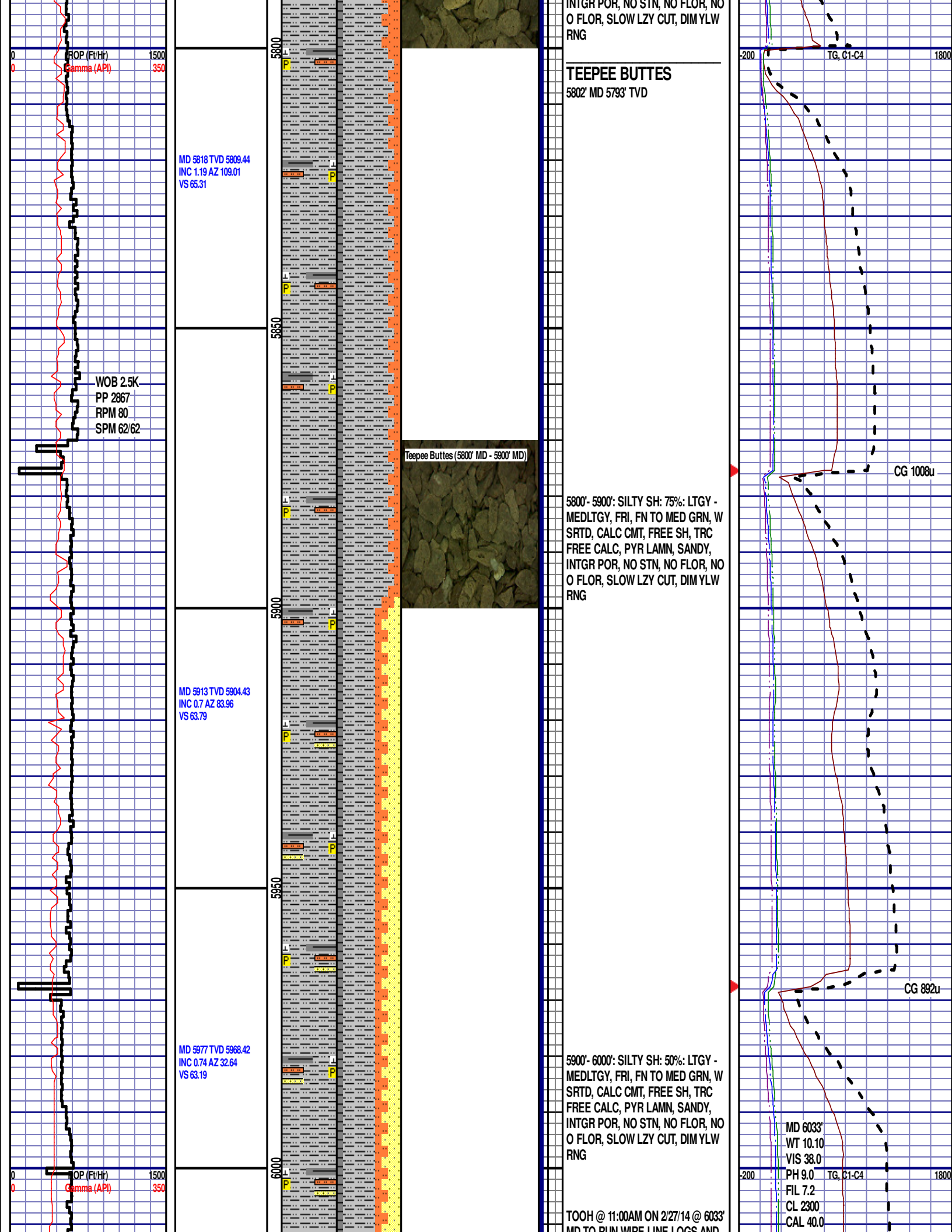
TG, C1-C4

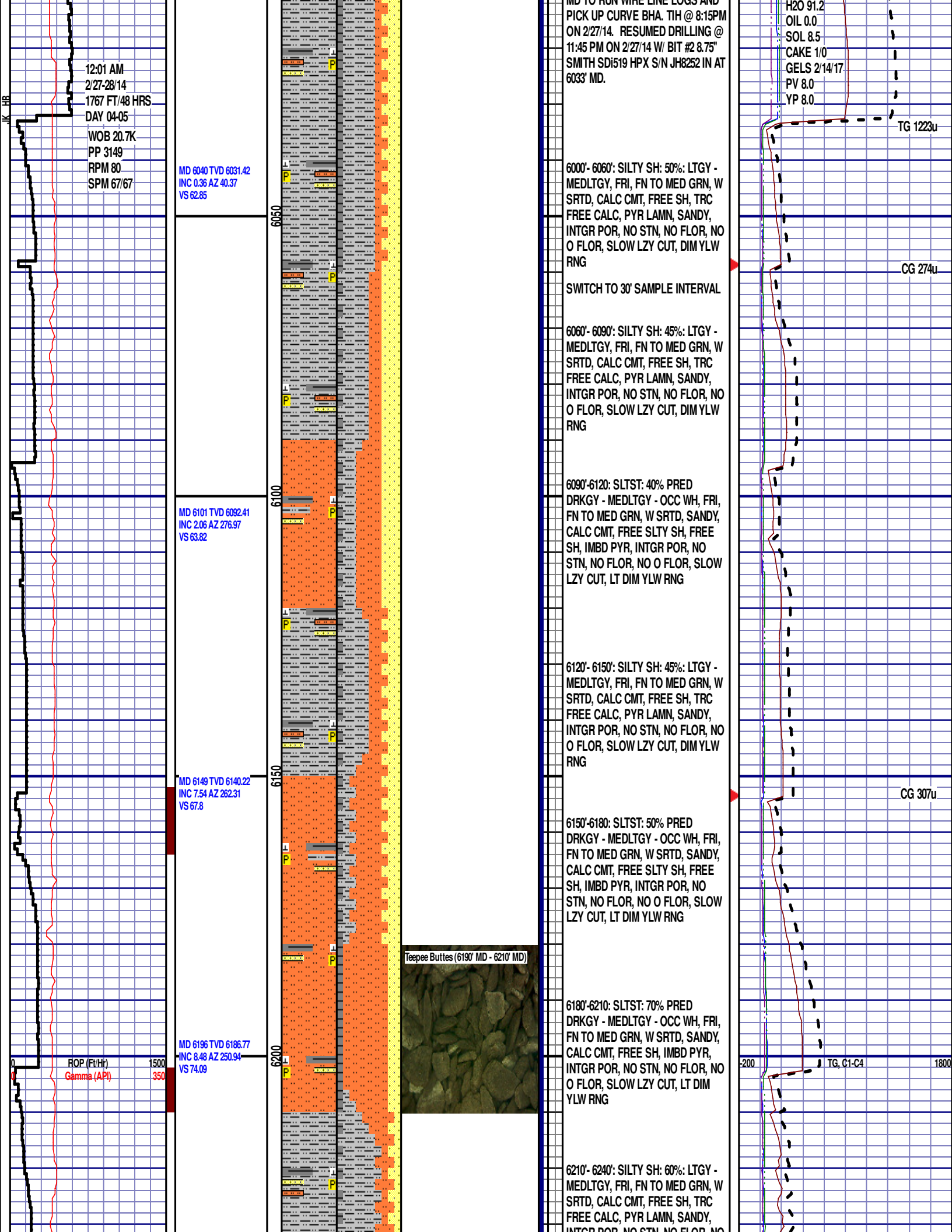
CG 103u

CG 186u

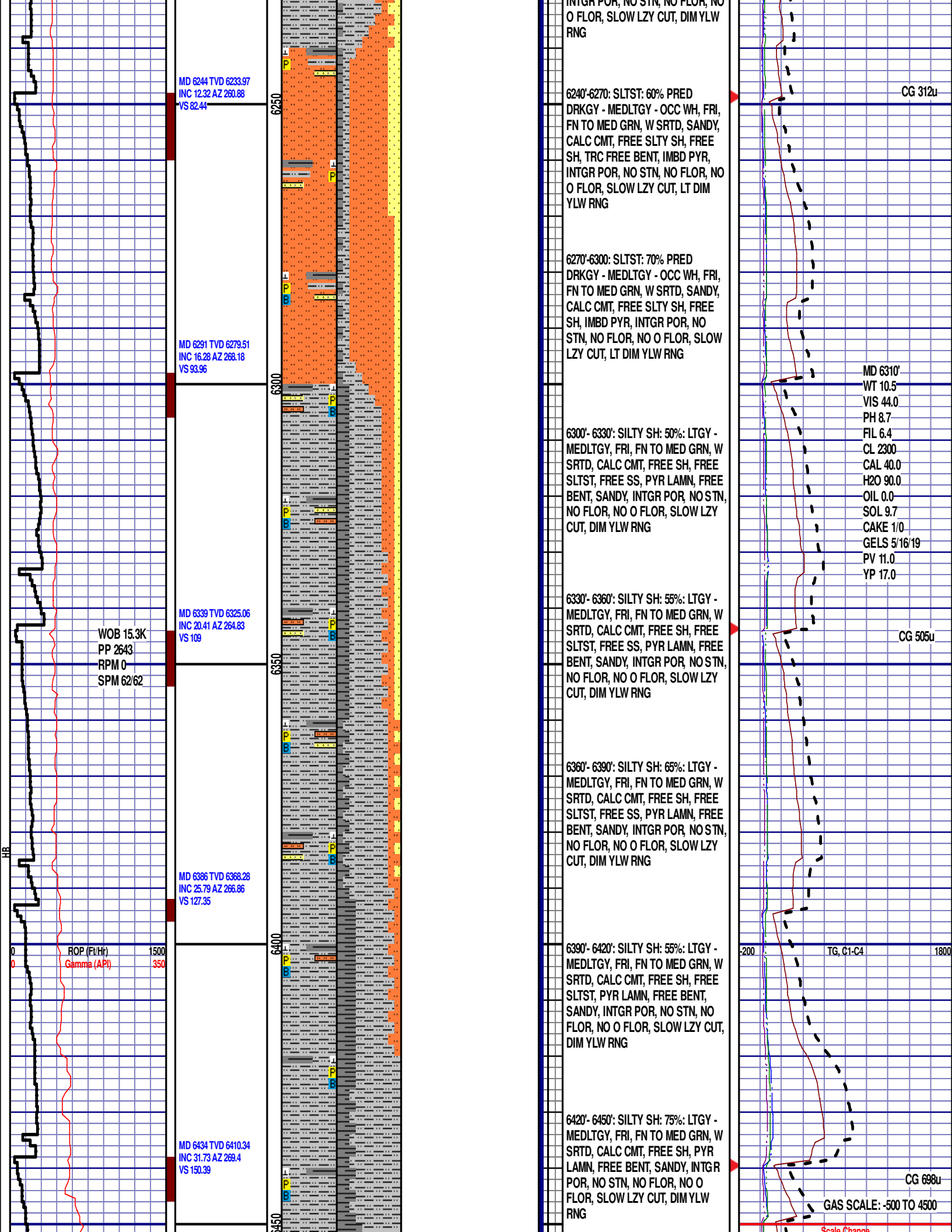


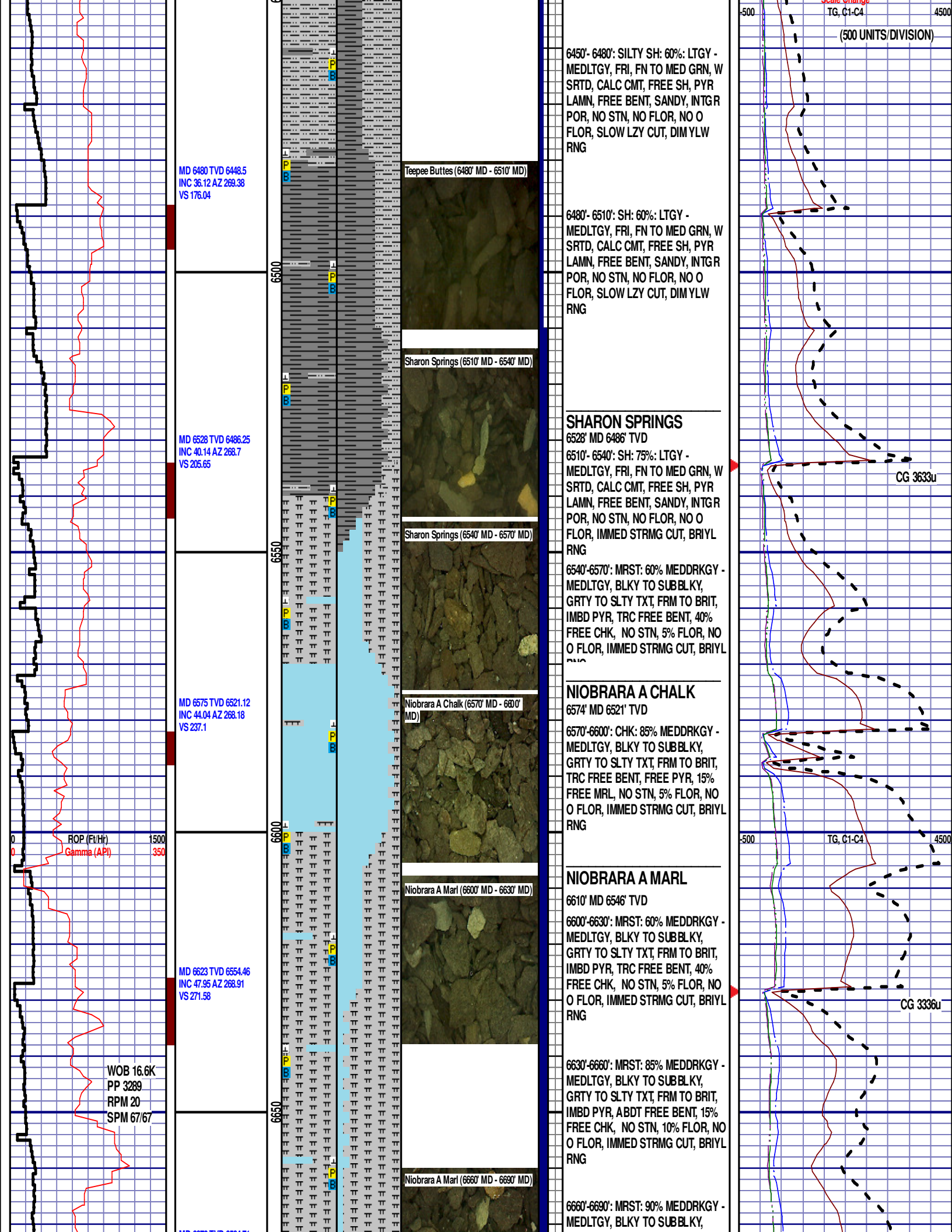












6450'- 6480': SILTY SH: 60%: LTGY - MEDLTGY, FRI, FN TO MED GRN, W SRTD, CALC CMT, FREE SH, PYR LAMN, FREE BENT, SANDY, INTGR POR, NO STN, NO FLOR, NO O FLOR, SLOW LZY CUT, DIMYWL RNG

Teepee Buttes (6480' MD - 6510' MD)



Sharon Springs (6510' MD - 6540' MD)



Sharon Springs (6540' MD - 6570' MD)



Niobrara A Chalk (6570' MD - 6600' MD)



Niobrara A Marl (6600' MD - 6630' MD)



Niobrara A Marl (6660' MD - 6690' MD)



6480'- 6510': SH: 60%: LTGY - MEDLTGY, FRI, FN TO MED GRN, W SRTD, CALC CMT, FREE SH, PYR LAMN, FREE BENT, SANDY, INTGR POR, NO STN, NO FLOR, NO O FLOR, SLOW LZY CUT, DIMYWL RNG

### SHARON SPRINGS

6528' MD 6486' TVD

6510'- 6540': SH: 75%: LTGY - MEDLTGY, FRI, FN TO MED GRN, W SRTD, CALC CMT, FREE SH, PYR LAMN, FREE BENT, SANDY, INTGR POR, NO STN, NO FLOR, NO O FLOR, IMMED STRMG CUT, BRIYL RNG

6540'-6570': MRST: 60% MEDDRKGY - MEDLTGY, BLKY TO SUBBLKY, GRTY TO SLTY TXT, FRM TO BRIT, IMBD PYR, TRC FREE BENT, 40% FREE CHK, NO STN, 5% FLOR, NO O FLOR, IMMED STRMG CUT, BRIYL RNG

### NIOBRARA A CHALK

6574' MD 6521' TVD

6570'-6600': CHK: 85% MEDDRKGY - MEDLTGY, BLKY TO SUBBLKY, GRTY TO SLTY TXT, FRM TO BRIT, TRC FREE BENT, FREE PYR, 15% FREE MRL, NO STN, 5% FLOR, NO O FLOR, IMMED STRMG CUT, BRIYL RNG

### NIOBRARA A MARL

6610' MD 6546' TVD

6600'-6630': MRST: 60% MEDDRKGY - MEDLTGY, BLKY TO SUBBLKY, GRTY TO SLTY TXT, FRM TO BRIT, IMBD PYR, TRC FREE BENT, 40% FREE CHK, NO STN, 5% FLOR, NO O FLOR, IMMED STRMG CUT, BRIYL RNG

6630'-6660': MRST: 85% MEDDRKGY - MEDLTGY, BLKY TO SUBBLKY, GRTY TO SLTY TXT, FRM TO BRIT, IMBD PYR, ABDT FREE BENT, 15% FREE CHK, NO STN, 10% FLOR, NO O FLOR, IMMED STRMG CUT, BRIYL RNG

6660'-6690': MRST: 90% MEDDRKGY - MEDLTGY, BLKY TO SUBBLKY,

MD 6670 TVD 6684.71  
INC 51.91 AZ 271.06  
VS 307.53

MD 6718 TVD 6612.6  
INC 57.02 AZ 270.37  
VS 346.57

MD 6764 TVD 6636.31  
INC 60.91 AZ 269.22  
VS 385.96

WOB 33.7K  
PP 3345  
RPM 8  
SPM 67/67

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

6700

6750

6800

Niobrara B Chalk (6690' MD - 6720'  
MD)

Niobrara B Chalk (6750' MD - 6780'  
MD)

## NIORARA B CHALK

6696' MD 6601' TVD

6690'-6720': CHK: 65% MEDDRKGY -  
MEDLTGY, BLKY TO SUBBLKY,  
GRTY TO SLTY TXT, FRM TO BRIT,  
TRC FREE BENT, TRC FREE CALC,  
IMBD CALC, IMBD PYR, 35% FREE  
MRL, NO STN, 5% FLOR, NO O  
FLOR, IMMED STRMG CUT, BRIYL  
RNG

6720'-6750': CHK: 85% MEDDRKGY -  
MEDLTGY, BLKY TO SUBBLKY,  
GRTY TO SLTY TXT, FRM TO BRIT,  
TRC FREE BENT, TRC FREE CALC,  
IMBD CALC, IMBD PYR, 15% FREE  
MRL, NO STN, 5% FLOR, NO O  
FLOR, IMMED STRMG CUT, BRIYL  
RNG

6750'-6780': CHK: 70% MEDDRKGY -  
MEDLTGY, BLKY TO SUBBLKY,  
GRTY TO SLTY TXT, FRM TO BRIT,  
TRC FREE BENT, TRC FREE CALC,  
IMBD CALC, IMBD PYR, 30% FREE  
MRL, NO STN, 5% FLOR, NO O  
FLOR, IMMED STRMG CUT, BRIYL  
RNG

END OF VERTICAL LOG @ 6780' MD  
ON 2/28/14. CONTINUED ON  
HORIZONTAL LOG.

CG 3884u

500 TG, C1-C4 4500