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Customer Information	Well Information
<p><b>Operator:</b> Noble Energy Inc. 1625 Broadway Suite 2200 Denver, Colorado 80202</p> <p><b>Geologist:</b> Renee Clackler Noble Energy Inc.</p>	<p><b>Well Name:</b> Wells Ranch State A36-625</p> <p><b>Location:</b> 31-T6N-R63W 1574' FSL, 390' FEL</p> <p><b>County:</b> Weld <b>State:</b> Colorado</p>
Mud Logging Details	
<p><b>Logger:</b> Sam Stelzer &amp; Scott Haney</p> <p><b>Log Interval:</b> 2500' MD to 6800' MD</p> <p><b>Start Date:</b> June 26, 2015</p> <p><b>Release Date:</b> July 4, 2015</p>	<p><b>Drilling Rig:</b> H&amp;P 321</p> <p><b>Total Depth:</b> 16964' MD</p> <p><b>TD Date:</b> July 4, 2015</p> <p><b>Formation:</b> Niobrara C Chalk</p> <p><b>KB Elevation:</b> 4689'</p> <p><b>GR Elevation:</b> 4659'</p> <p><b>API Number:</b> 05-123-41507-0000</p>

### ROCK TYPES

Siltysh  
 Anhy  
 Bent  
 Brec  
 Cht  
 Clyst  
 Coal

Congl  
 Dol  
 Gyp  
 Igne  
 Lmst  
 Meta  
 Chk

Mrlst  
 Salt  
 Shale  
 Shcol  
 Shgy  
 Sltst  
 Ss

Till  
 gw  
 lmywash  
 ogw  
 olmywash  
 oshly gw  
 shly gw

sdygw  
 hvycrbsh  
 NO SMPL  
 Lsdetrst  
 sltst  
 sdy sh

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
ROP (Ft/Hr) Gamma (API)	Drill Depth v. Time						NOBLE ENERGY INC. WELLS RANCH STATE A36-625 31-T6N-R63W 1574' FSL, 390' FEL WELD CO., CO H&P 321 LOGGERS: SAM STELZER SCOTT HANEY CALLED OUT BY COMPANY MAN @ 5:30 PM ON 06/26/15. COMMENCED LOGGING @ 10:45 AM @ 2500' MD	TG (1-8) C1 (units) C2 (units) C3 (units) C4 (units)	Total Gas, C1-C4
ROP (Ft/Hr) Gamma (API)	Drill Depth v. Time		24					TG, C1-C4	Total Gas, C1-C4
SLIDE=RED ROTATE=WHITE								CONNECTIONS ARE MARKED WITH RED TRIANGLES	
ROP SCALE: 0 TO 1500								GAS SCALE: -30u TO 270u (30 UNITS/DIVISION)	
GAMMA SCALE: 0 TO 250 (GAMMA DATA AS RECEIVED)								DRILLING ON WATER-BASED MUD	

Logging @ 10:45 AM @ 2500 MD  
ON 06/27/15 W/BIT #2 8.75" HDBS  
SF56 PDC S/N 12694334 IN @ 821' MD

**PIERRE**  
BEFORE LOGGING DEPTH

WOB 19.9K  
PP 2571  
RPM 60  
SPM 79/79

12:01 AM  
06/27/2015  
DAY 02  
OFT/24HRS

MD 2588 TVD 2587.94  
INC 0.47 AZ 185.07  
VS 6.4

MD 2680 TVD 2679.93  
INC 0.4 AZ 187.54  
VS 6.53



2500' MD-2600' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAU, FREE SS, INTGR POR,  
NO STN, NO FLOR, NO O FLOR, NO  
CUT, NO RNG

2600' MD-2700' MD: SS: 60% PRED  
WHT - LTGY - OPQ, FRI, FN GRN, W  
SRTD, CALC CMT, FREE SLTST, TR  
IMBD PYR, IMBD GLAUC, INTGR  
POR, NO STN, NO MIN FLOR, NO O  
FLOR, NO CUT, NO RNG

LOW FLOW TO  
SHAKER FOR  
MAINTENANCE

FLOW RESTORED

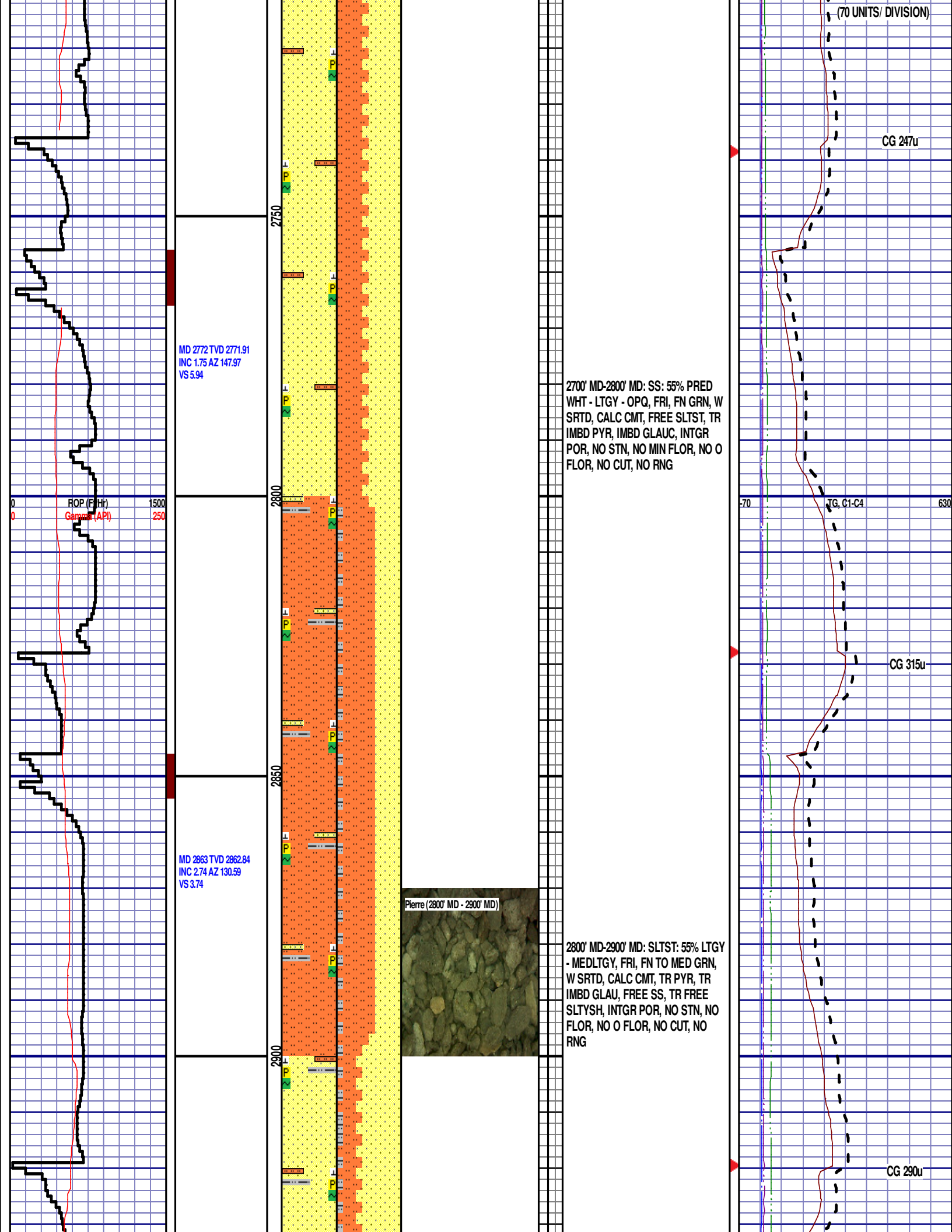
CG 146u

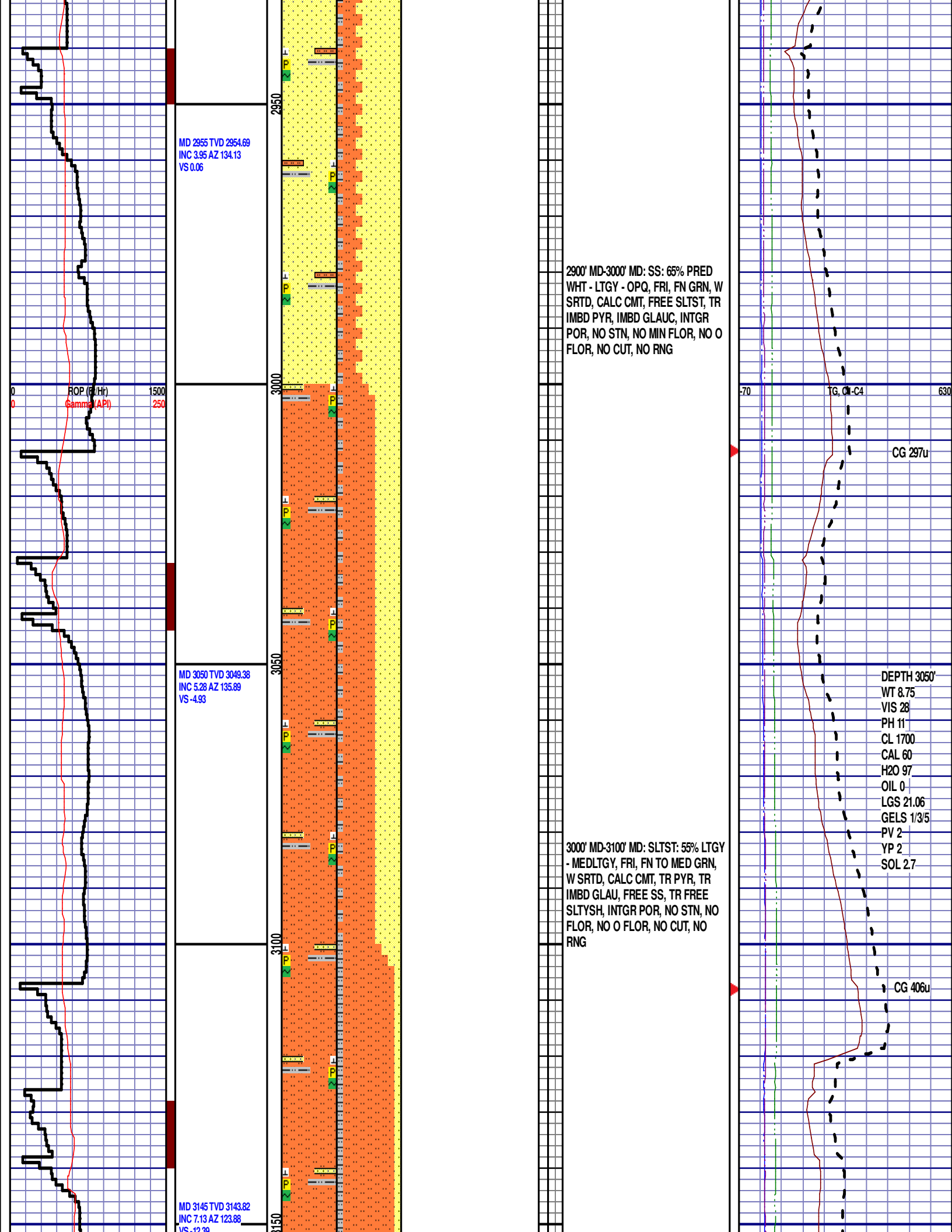
TG, C1-C4

CG 188u

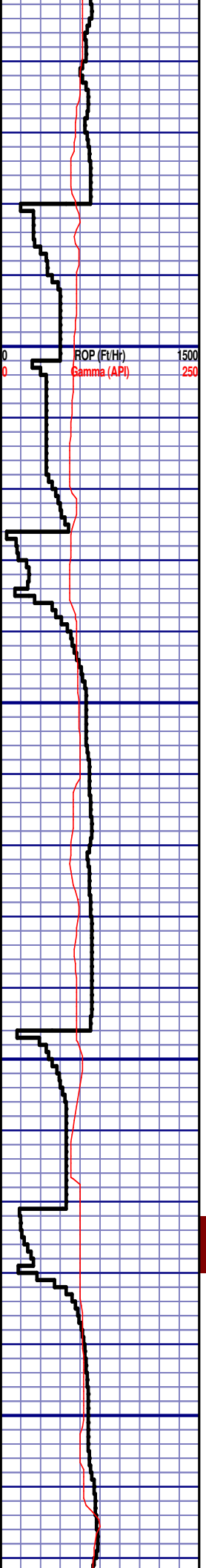
Scale Change  
TG, C1-C4

GAS SCALE CHANGE:  
-70u TO 630u



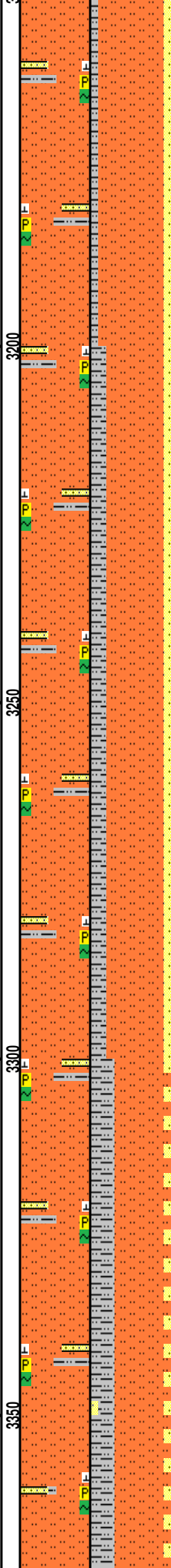


VS-12.33



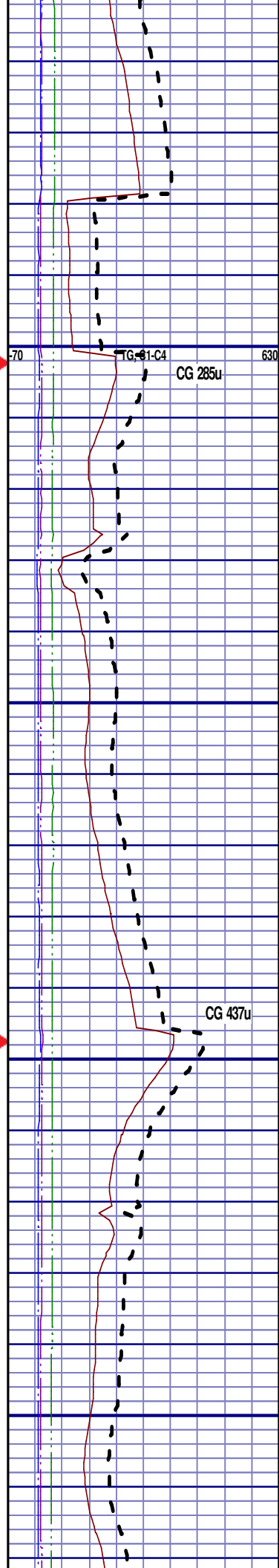
MD 3240 TVD 3238.03  
INC 7.65 AZ 118.82  
VS -22.35

MD 3334 TVD 3331.12  
INC 8.27 AZ 119.46  
VS -33.24



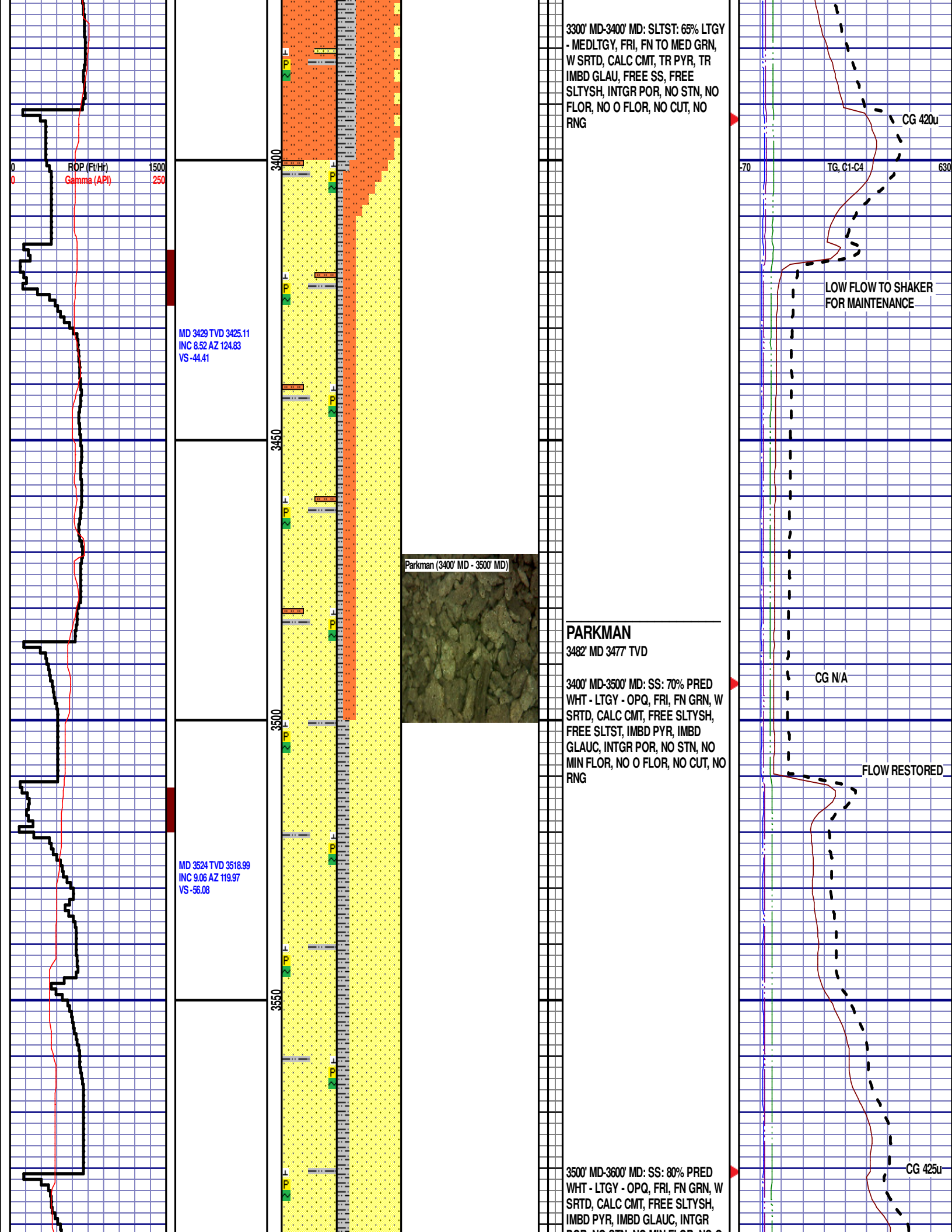
3100' MD-3200' MD: SLTST: 80% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAU, FREE SS, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

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



70 630  
TG-61-C4  
CG 285u

CG 437u



3300' MD-3400' MD: SLTST: 65% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAU, FREE SS, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

CG 420u

LOW FLOW TO SHAKER  
FOR MAINTENANCE

MD 3429 TVD 3425.11  
INC 8.52 AZ 124.83  
VS -44.41

Parkman (3400' MD - 3500' MD)

## PARKMAN

3482' MD 3477' TVD

3400' MD-3500' MD: SS: 70% 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

CG N/A

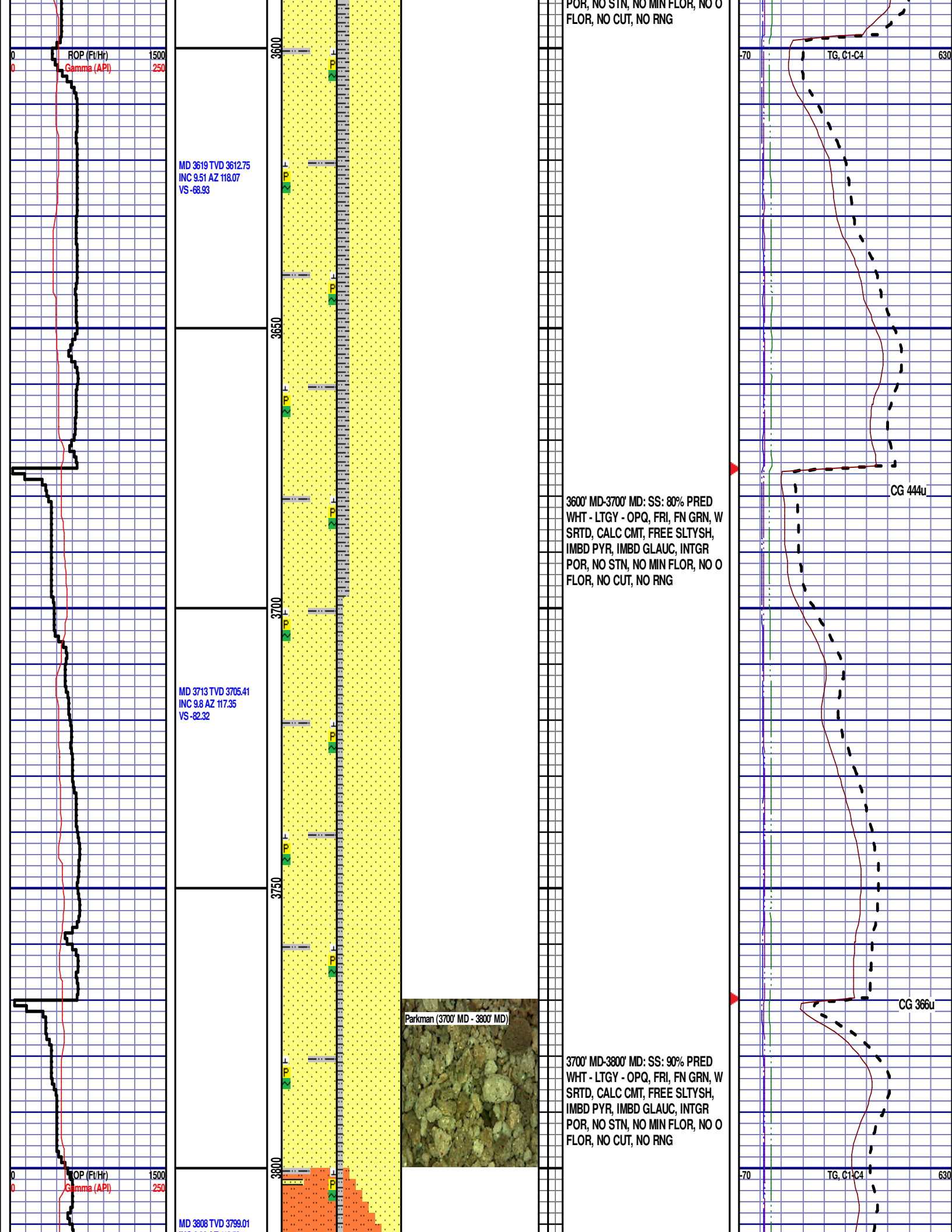
FLOW RESTORED

MD 3524 TVD 3518.99  
INC 9.06 AZ 119.97  
VS -56.08

3500' MD-3600' MD: SS: 80% PRED  
WHT - LTGY - OPQ, FRI, FN GRN, W  
SRTD, CALC CMT, FREE SLTYSH,  
IMBD PYR, IMBD GLAUC, INTGR  
POR, NO STN, NO FLOR, NO O FLOR,  
NO CUT, NO RNG

CG 425u





INC 9.96 AZ 116.53  
VS -96.28

MD 3903 TVD 3892.81  
INC 8.21 AZ 114.62  
VS -109.29

MD 3998 TVD 3986.92  
INC 7.5 AZ 114.14  
VS -120.7

ROP (Ft/Hr)  
Gamma (API)

1500  
250

3850

3900

3950

4000

3800' MD-3900' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAUC, FREE SS, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

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

CG 479u

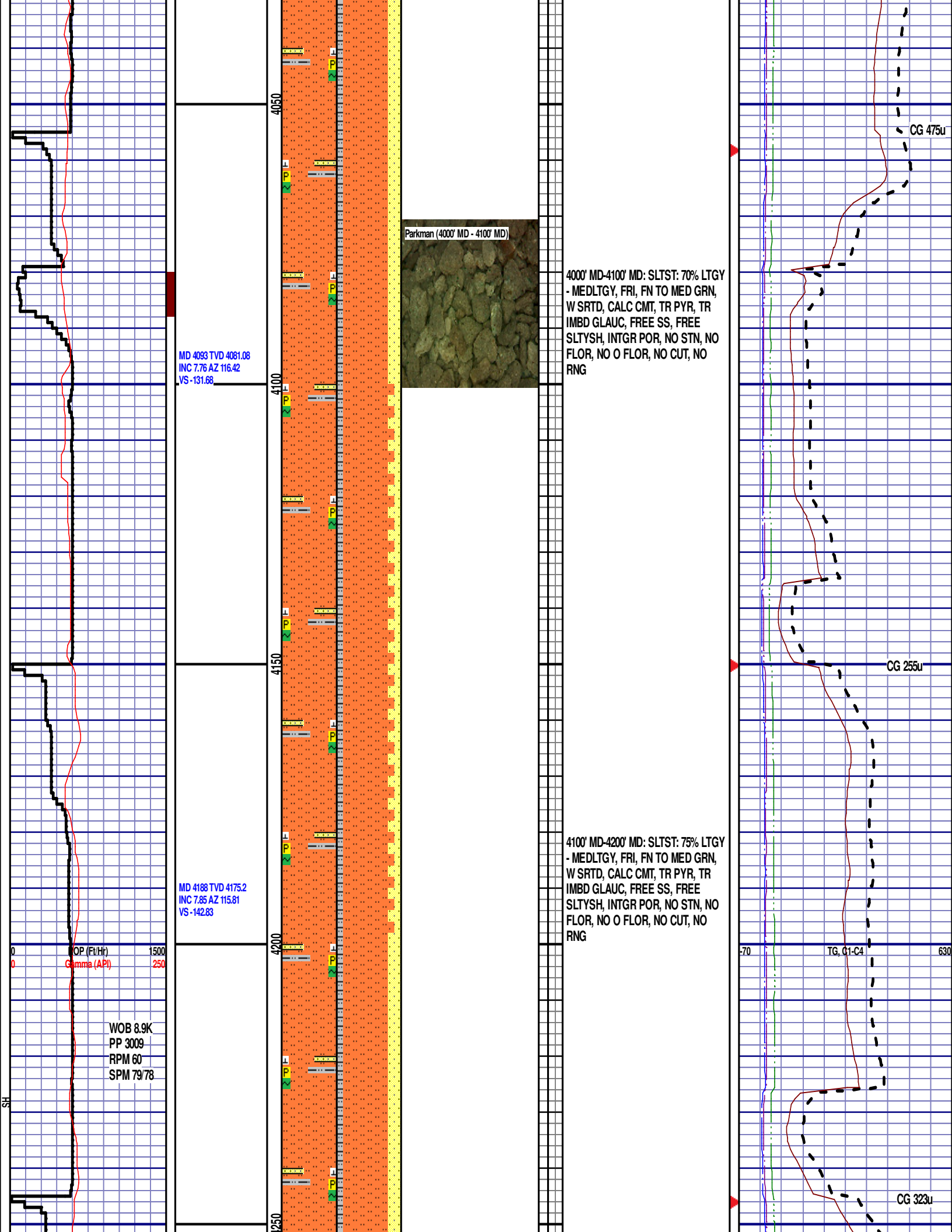
CG 348u

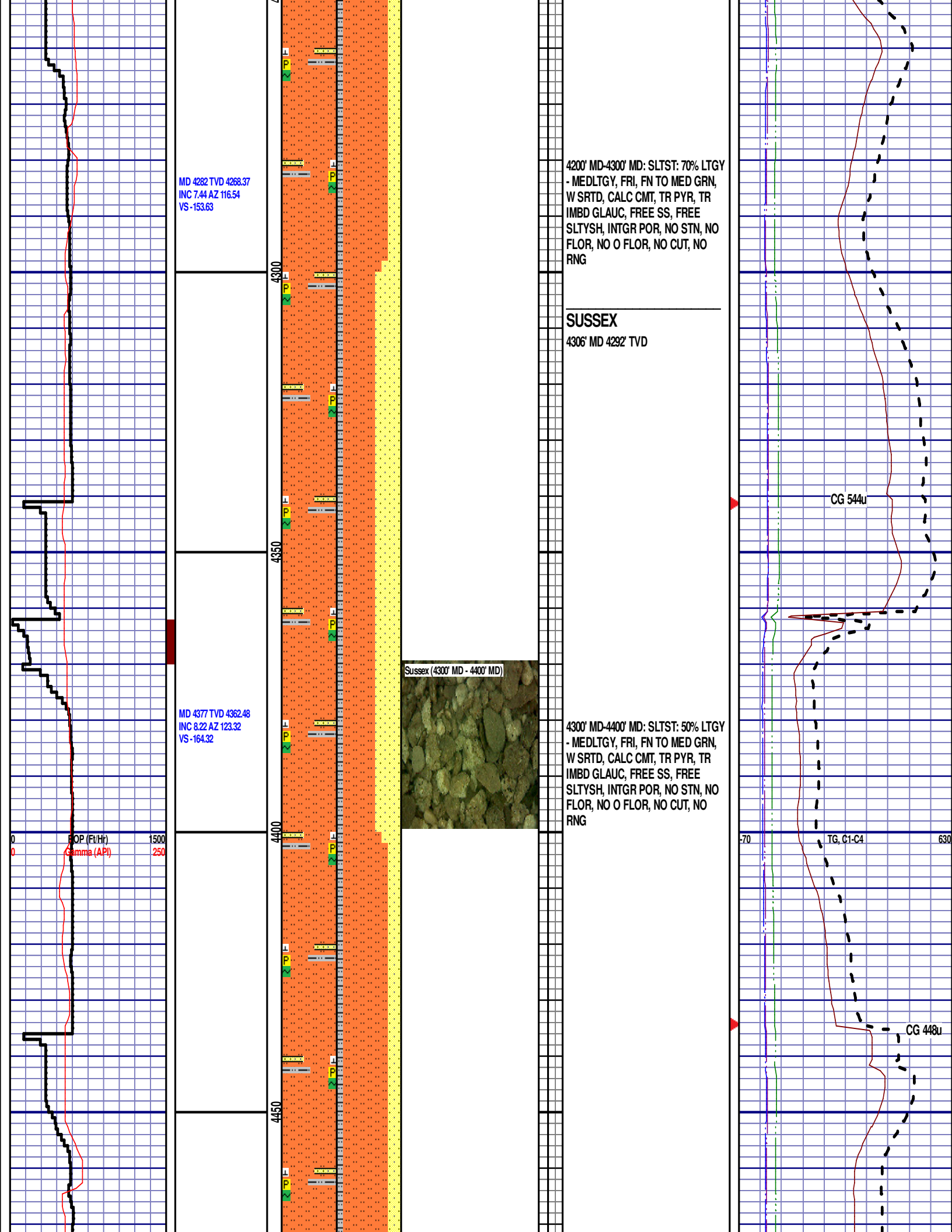
70

TG, C1-C4

630







MD 4472 TVD 4456.53  
INC 7.99 AZ 124.23  
VS -174.89

MD 4567 TVD 4550.66  
INC 7.55 AZ 125.34  
VS -184.89

MD 4661 TVD 4643.9  
INC 7.03 AZ 126.92  
VS -194

4400' MD-4500' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAUC, FREE SS, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, NO CUT, NO  
RNG

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

4600' MD-4700' MD: SLTST: 80% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAUC, FREE SS, FREE

Sussex (4600' MD - 4700' MD)

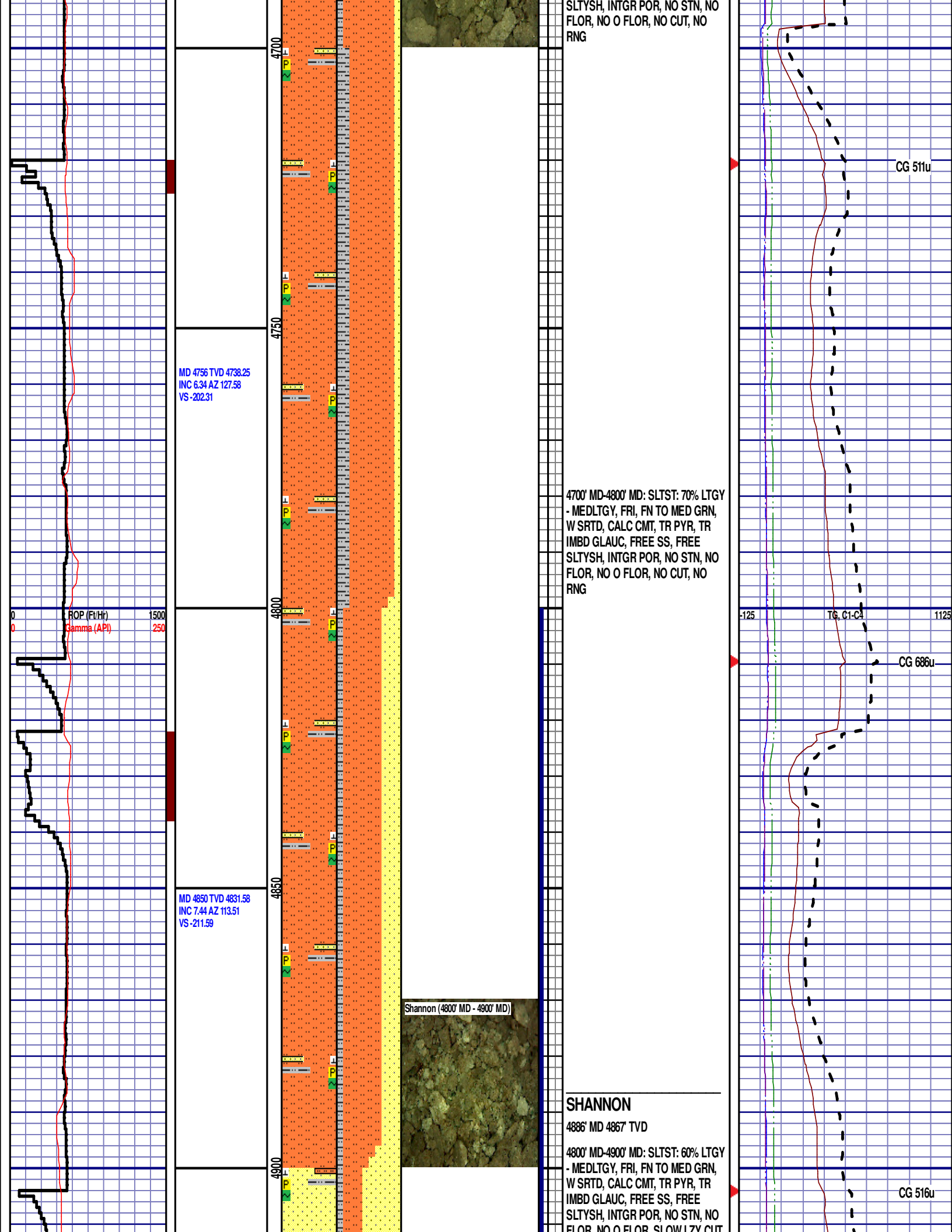
CG 513u

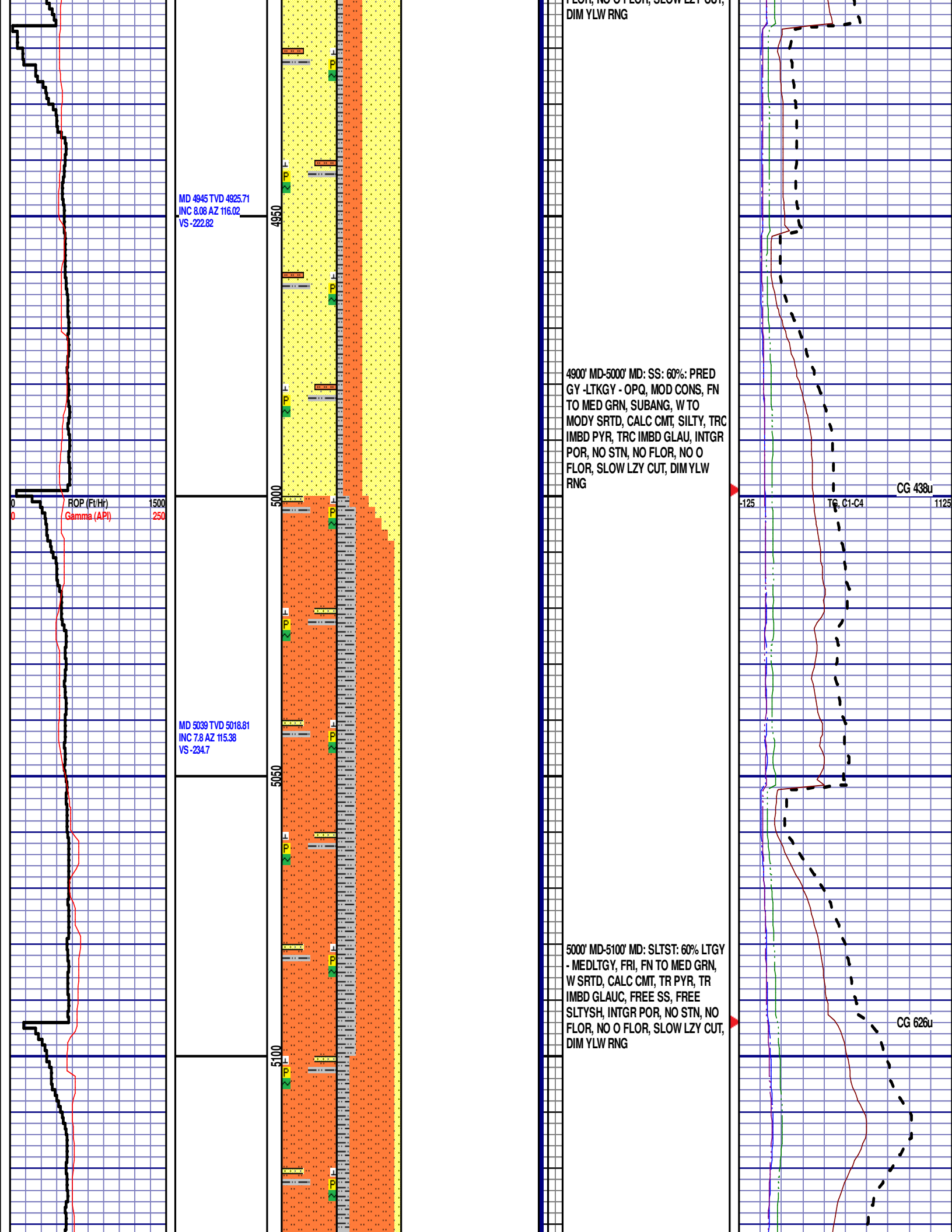
Scale Change  
TG, C1-C4

GAS SCALE CHANGE:  
-125u TO 1125u

(125 UNITS/  
DIVISION)

CG 477u





MD 5134 TVD 5113.02  
INC 6.97 AZ 115.25  
VS -245.34

MD 5228 TVD 5206.18  
INC 8.32 AZ 114.9  
VS -256.26

MD 5323 TVD 5300.29  
INC 7.35 AZ 111.31  
VS -267.76

ROP (Ft/Hr)  
Gamma (API)

1500  
250

5150

5200

5250

5300

5350

Shannon (5100' MD - 5200' MD)



5100' MD-5200' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, TR  
IMBD GLAUC, FREE SS, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, SLOW LZY CUT,  
DIM YLW RNG

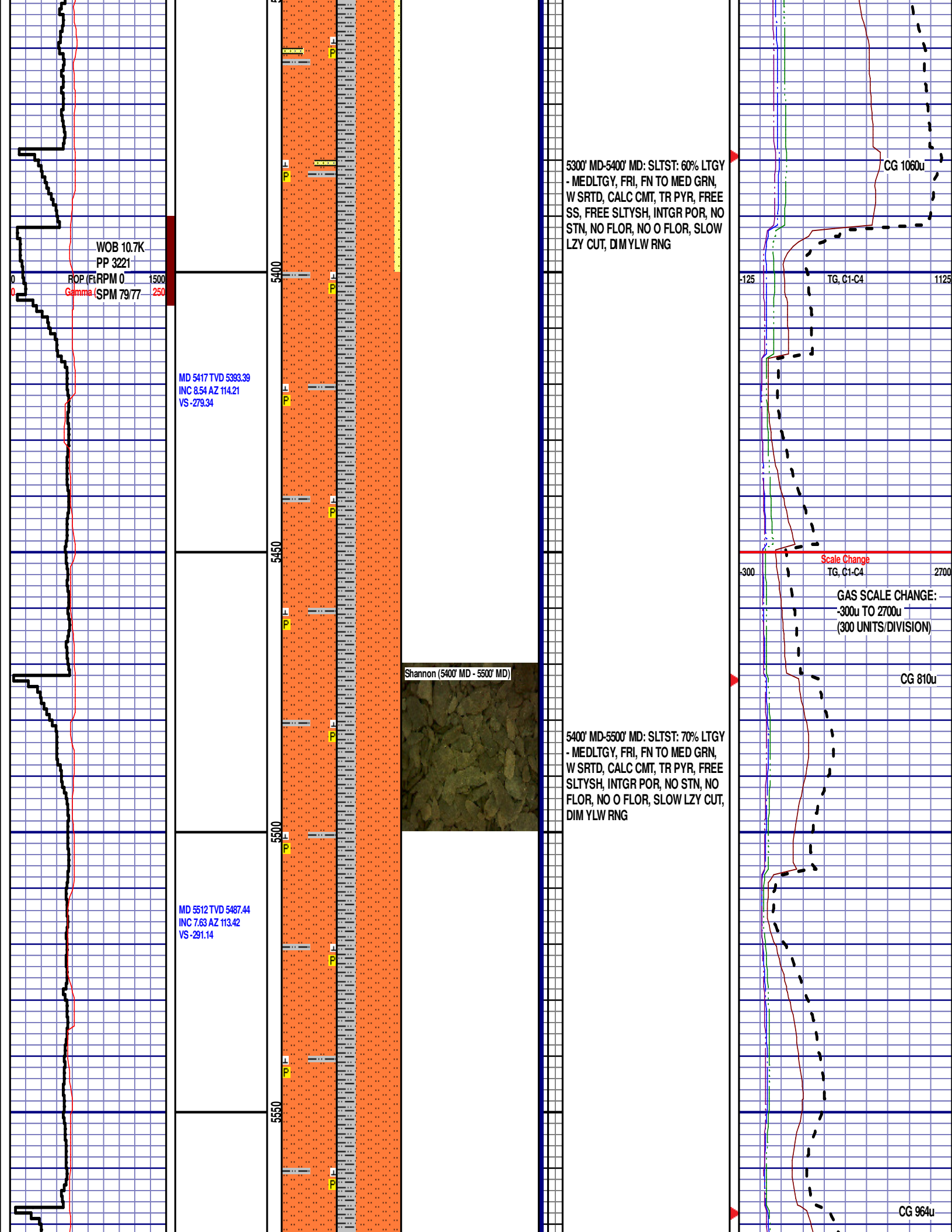
5200' MD-5300' MD: SLTST: 75% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, SLOW  
LZY CUT, DIM YLW RNG

CG 688u

TG C1-C4

CG 780u





WOB 10.7K  
PP 3221

ROP (FLRPM) 0  
Gamma SPM 79/77  
250

MD 5417 TVD 5393.39  
INC 8.54 AZ 114.21  
VS -279.34

Shannon (5400' MD - 5500' MD)

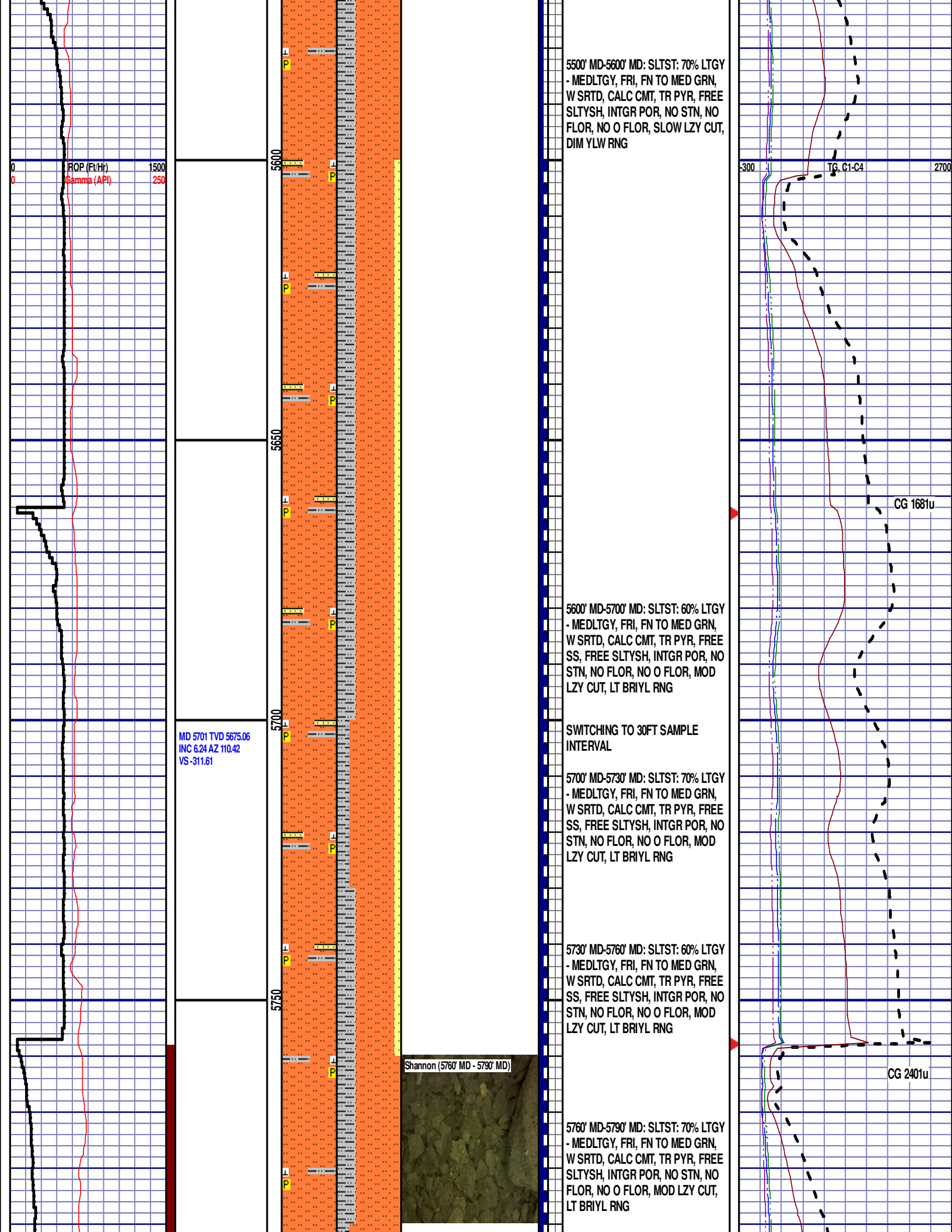
MD 5512 TVD 5487.44  
INC 7.63 AZ 113.42  
VS -291.14

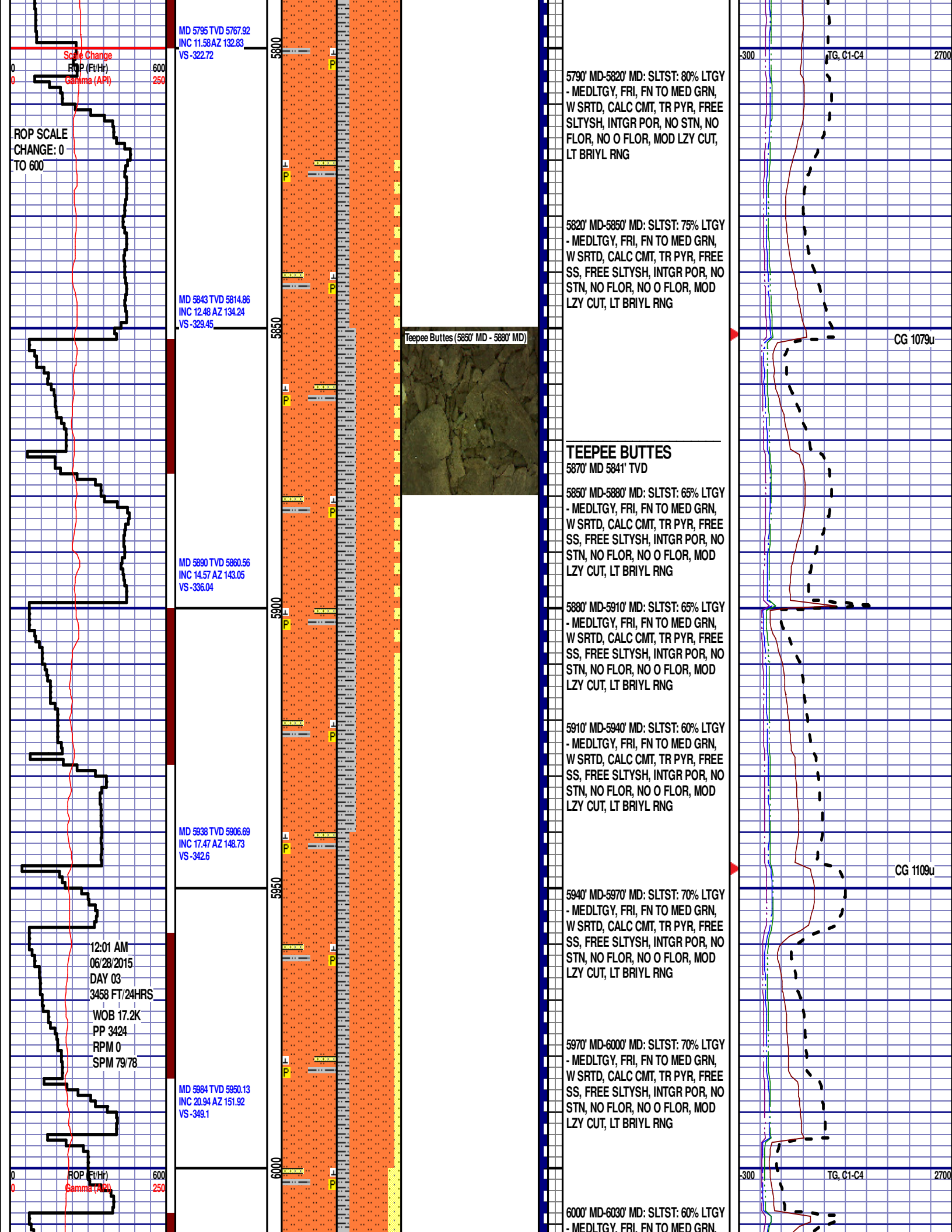
5300' MD-5400' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, SLOW  
LZY CUT, DIM YLW RNG

5400' MD-5500' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, SLOW LZY CUT,  
DIM YLW RNG

Scale Change  
TG, C1-C4

GAS SCALE CHANGE:  
-300u TO 2700u  
(300 UNITS/DIVISION)





MD 5795 TVD 5767.92  
INC 11.58 AZ 132.83  
VS -322.72

Scale Change  
ROP (Fe/Hr)  
Gamma (API)

ROP SCALE  
CHANGE: 0  
TO 600

MD 5843 TVD 5814.86  
INC 12.48 AZ 134.24  
VS -329.45

MD 5890 TVD 5860.56  
INC 14.57 AZ 143.05  
VS -336.04

MD 5938 TVD 5906.69  
INC 17.47 AZ 148.73  
VS -342.6

MD 5984 TVD 5950.13  
INC 20.94 AZ 151.92  
VS -349.1

12:01 AM  
06/28/2015  
DAY 03  
3458 FT/24HRS  
WOB 17.2K  
PP 3424  
RPM 0  
SPM 79/78

ROP (Fe/Hr)  
Gamma (API)

Tepee Buttes (5850' MD - 5880' MD)



5790' MD-5820' MD: SLTST: 80% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, MOD LZ CUT,  
LT BRIYL RNG

5820' MD-5850' MD: SLTST: 75% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

### TEEPEE BUTTES

5870' MD 5841' TVD

5850' MD-5880' MD: SLTST: 65% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

5880' MD-5910' MD: SLTST: 65% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

5910' MD-5940' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

5940' MD-5970' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

5970' MD-6000' MD: SLTST: 70% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SS, FREE SLTYSH, INTGR POR, NO  
STN, NO FLOR, NO O FLOR, MOD  
LZY CUT, LT BRIYL RNG

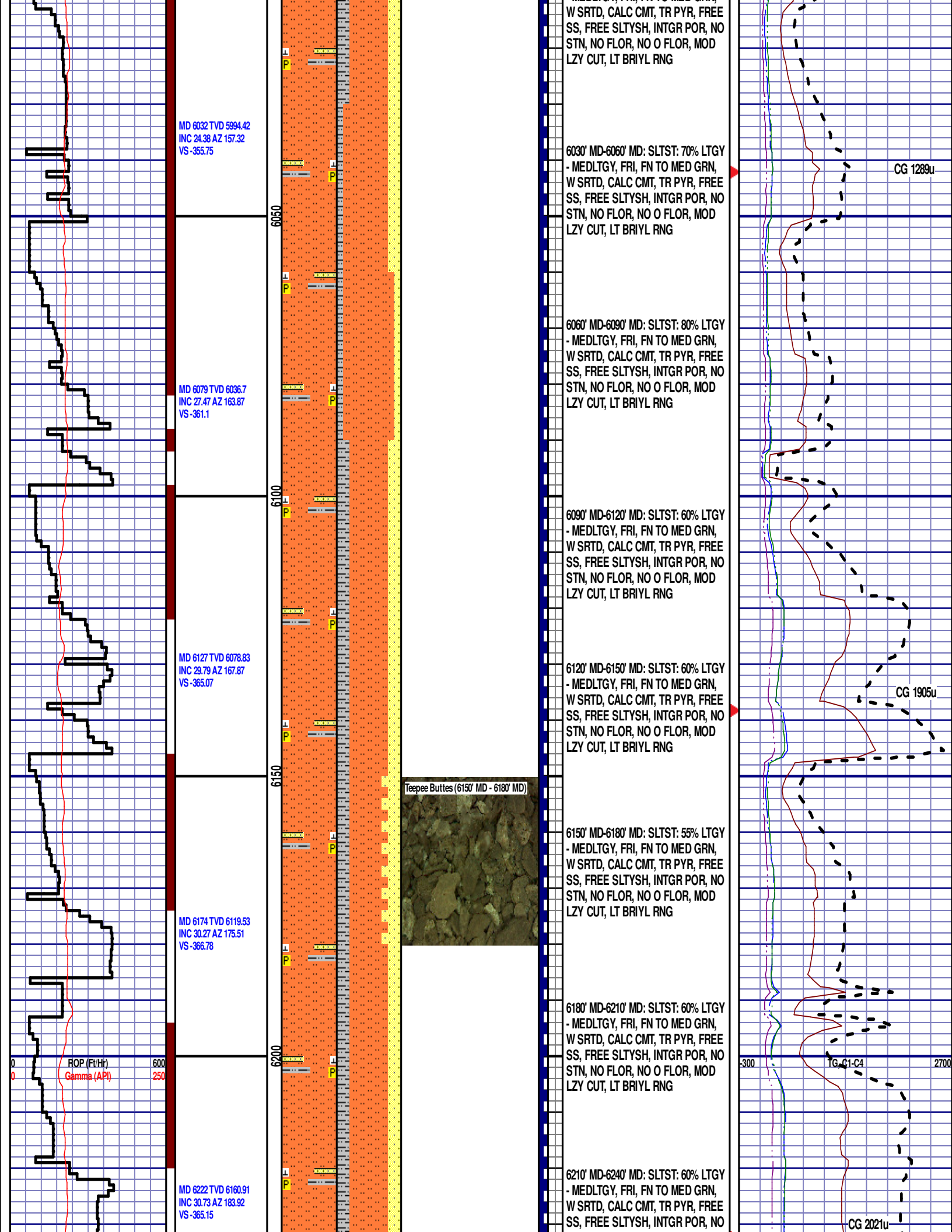
6000' MD-6030' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,

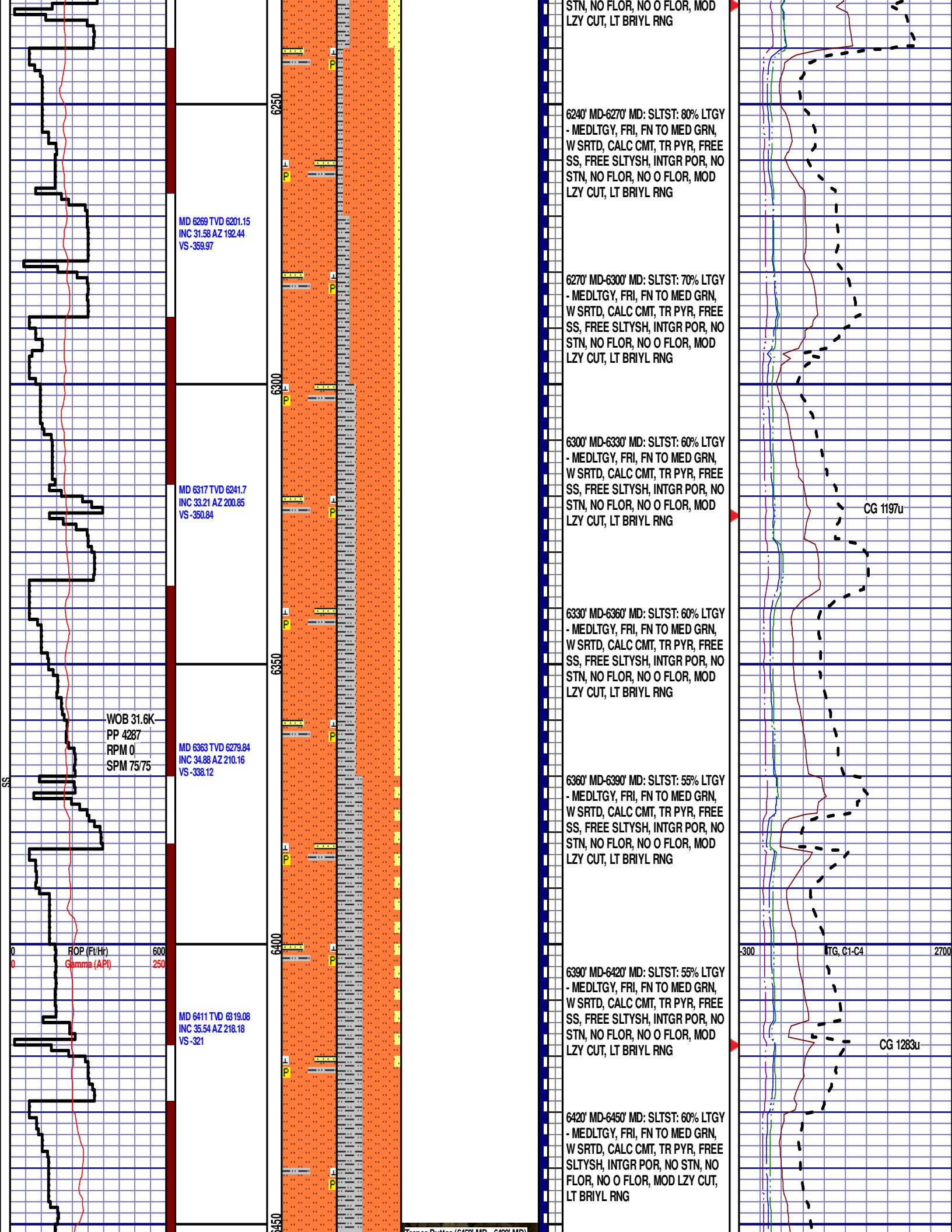
TG, C1-C4

CG 1079u

CG 1109u

TG, C1-C4







MD 6458 TVD 6357.25  
INC 35.94 AZ 226.19  
VS -301.18

MD 6506 TVD 6395.96  
INC 36.67 AZ 234.84  
VS -278.05

MD 6553 TVD 6433.09  
INC 38.97 AZ 239.07  
VS -252.84

ROP (Ft/Hr)  
Gamma (API)

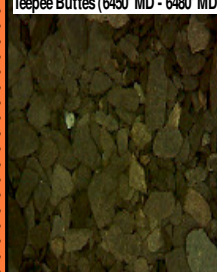
600  
250

6500

6550

6600

6650



6450' MD-6480' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SLTYSH, INTGR POR, NO STN, NO  
FLOR, NO O FLOR, MOD LZY CUT,  
LT BRIYL RNG

6480' MD-6510' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SLTYSH, TR FREE BENT, INTGR  
POR, NO STN, TR MIN FLOR, NO O  
FLOR, MOD LZY CUT, LT BRIYL RNG

6510' MD-6540' MD: SLTST: 60% LTGY  
- MEDLTGY, FRI, FN TO MED GRN,  
W SRTD, CALC CMT, TR PYR, FREE  
SLTYSH, TR FREE BENT, INTGR  
POR, NO STN, TR MIN FLOR, NO O  
FLOR, MOD LZY CUT, LT BRIYL RNG

6540' MD-6570' MD: SLTYSH: 60%  
SUBBLKY TO SUBSPLT, SLTY TO F  
TXT, FREE CALC, TR IMBD PYR,  
FREE BENT, FREE SLTST, NO STN,  
TR MIN FLOR, FNT BLSHWT O  
FLOR, MOD LZY CUT, LT BRIYL RNG

Sharon Springs (6570' MD - 6600' MD)



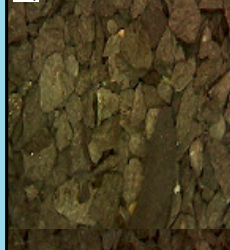
### SHARON SPRINGS

6582' MD 6455' TVD

6570' MD-6600' MD: SLTYSH: 80% SUBBLKY  
TO SUBSPLT, SLTY TO F TXT, FREE CALC,  
IMBD PYR, FREE BENT, FREE SLTST, NO STN,  
TR MIN FLOR, FNT BLSHWT O FLOR, IMMED  
STRMG CUT, HVY BLSHWT RNG

6600' MD-6630' MD: SLTYSH: 60%  
SUBBLKY TO SUBSPLT, SLTY TO F  
TXT, FREE CALC, IMBD PYR, 40%  
FREE MRST, FREE SLTST, NO STN,  
TR MIN FLOR, FNT BLSHWT O  
FLOR, IMMED STRMG CUT, HVY  
BLSHWT RNG

Niobrara A Chalk (6630' MD - 6660'  
MD)

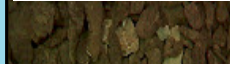


### NIOBRARA A CHALK

6636' MD 6495' TVD

6630' MD-6660' MD: CHK: 70% MOTT LTGY -  
MEDDRKGY, BLKY TO SUBBLKY, GRITY TO  
SLTY TXT, FRM TO BRIT, TR FREE BENT, TR  
IMBD CALC, TRC IMBD PYR, 30% FREE MRL,  
NO STN, TR MIN FLOR, FNT BLSHWT O  
FLOR, IMMED STRMG CUT, HVY BLSHWT  
RNG

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



CG 2422u

GAS SCALE CHANGE: -500u  
TO 4500u  
(500 UNITS/DIVISION)

TG, C1-C4

CG 1866u



