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Customer Information	Well Information
<p>Operator: Noble Energy Inc 1625 Broadway Suite 2200 Denver, Colorado 80202</p> <p>Geologist: Holly Duncan Noble Energy Inc.</p>	<p>Well Name: Wells Ranch AE30-62-1AHNA</p> <p>Location: 29-T6N-R62W 267' FSL, 65' FWL</p> <p>County: Weld State: Colorado</p>
Mud Logging Details	
<p>Logger: Tom Wacholz & Sam Stelzer</p> <p>Log Interval: 2500' MD to 6500' MD</p> <p>Start Date: May 12, 2014</p> <p>Release Date: May 21, 2014</p>	<p>Drilling Rig: H&P 343</p> <p>Total Depth: 16219' MD</p> <p>TD Date: May 21, 2014</p> <p>Formation: Niobrara A Marl</p> <p>KB Elevation: 4771'</p> <p>GR Elevation: 4747'</p> <p>API Number: 05-123-38683-0000</p>

ROCK TYPES

shale	Congl	Salt	gw	hvyrcrbsh
Anhy	Dol	Shale	lmywash	nosmpl
Bent	Gyp	Shcol	ogw	Lsdetrst
Brec	Igne	Shgy	olmywash	sltst
Cht	Lmst	Sltst	oshly gw	sdys sh
Clyst	Meta	Ss	shly gw	
Coal	Mrlst	Till	sdygw	

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
12:01AM 5/21/2014			24				NOBLE ENERGY INC WELLS RANCH AE30-62-1AHNA 29-T6N-R62W 267' FSL, 65' FWL WELD CO., CO H&P 343 LOGGERS: TOM WACHOLZ SAM STELZER CALLED OUT BY COMPANY MAN ON 5/12/2014 COMMENCED LOGGING @ 2500' MD		

5/13-14/2014
DAY 02-03
0' FT/48HRS

WOB 22.6K
PP 2698
RPM 80
SPM 66/66

MD 2591 TVD 2586.07
INC 7.8 AZ 336.98
VS 17.3

ROP (Ft/Hr)
Gamma (API)

COMMENCED LOGGING @ 2500' MD
@ 3:20 AM ON 5/14/2014 W/BIT # 2,
8.75", SMITH, MDi519 (S/N) JJ2225 IN
@ 642' MD

PIERRE
CAME IN BEFORE LOGGING
DEPTH



2500' MD-2600' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, SANDY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

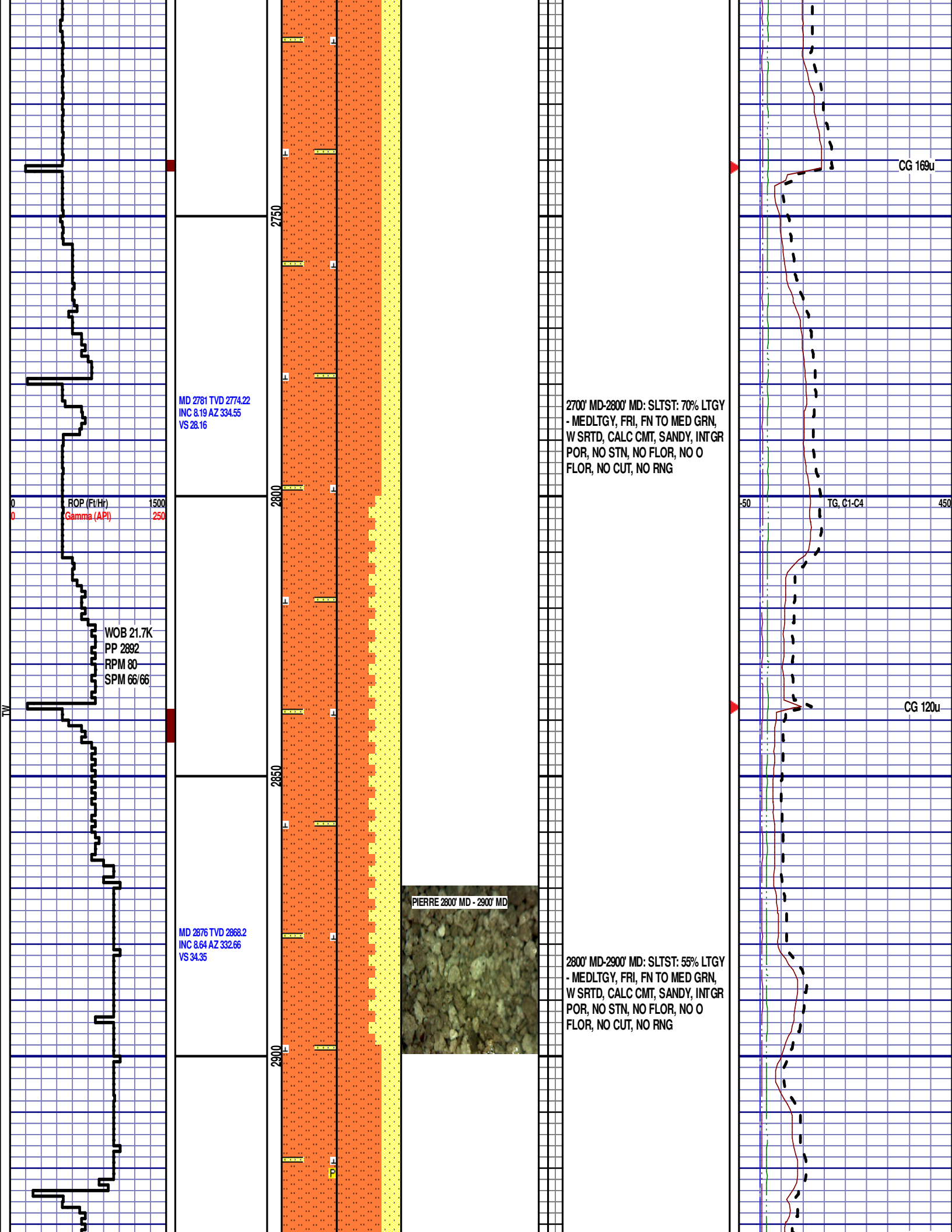
2600' MD-2700' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, SANDY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

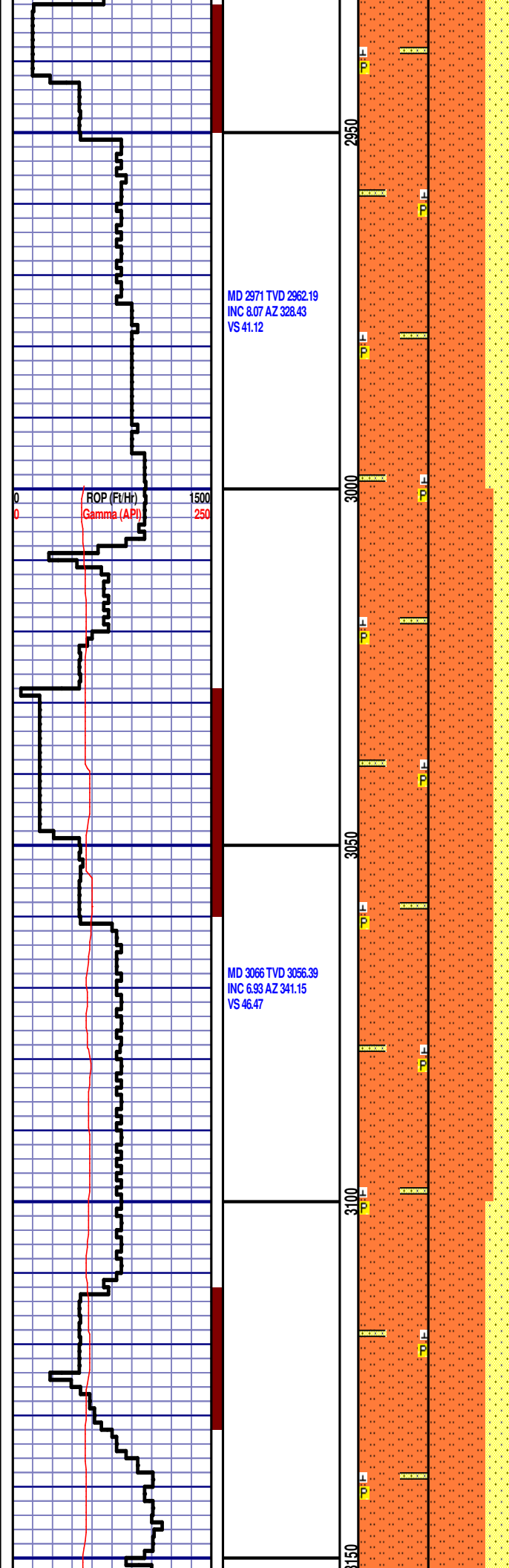
DEPTH 2350'
WT 8.70
VIS 26
PH 8.9
FIL 46.0
CL 1400
CAL 60
H2O 97.8
OIL 0.0
LGS 11.0
GEL 1/2/2
PV 1
YP 2
CK 1/0
SOL 2.0

CG 193u

TG, C1-C4

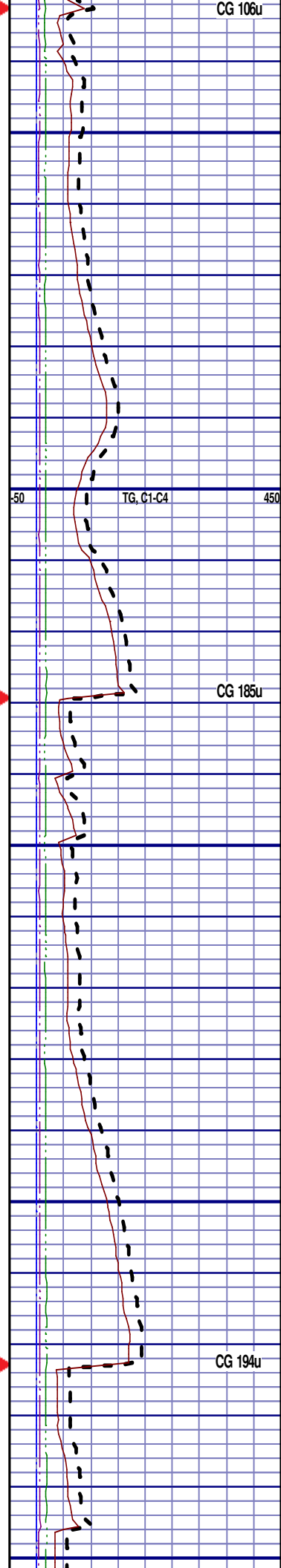
CG 205u





2900' MD-3000' MD: SLTST: 70% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
SANDY, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

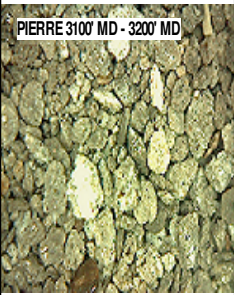
3000' MD-3100' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
SANDY, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG



MD 3160 TVD 3149.71
INC 6.85 AZ 344.61
VS 49.79

MD 3255 TVD 3244.03
INC 6.87 AZ 339.91
VS 53.24

MD 3350 TVD 3338.47
INC 5.89 AZ 334
VS 56.96



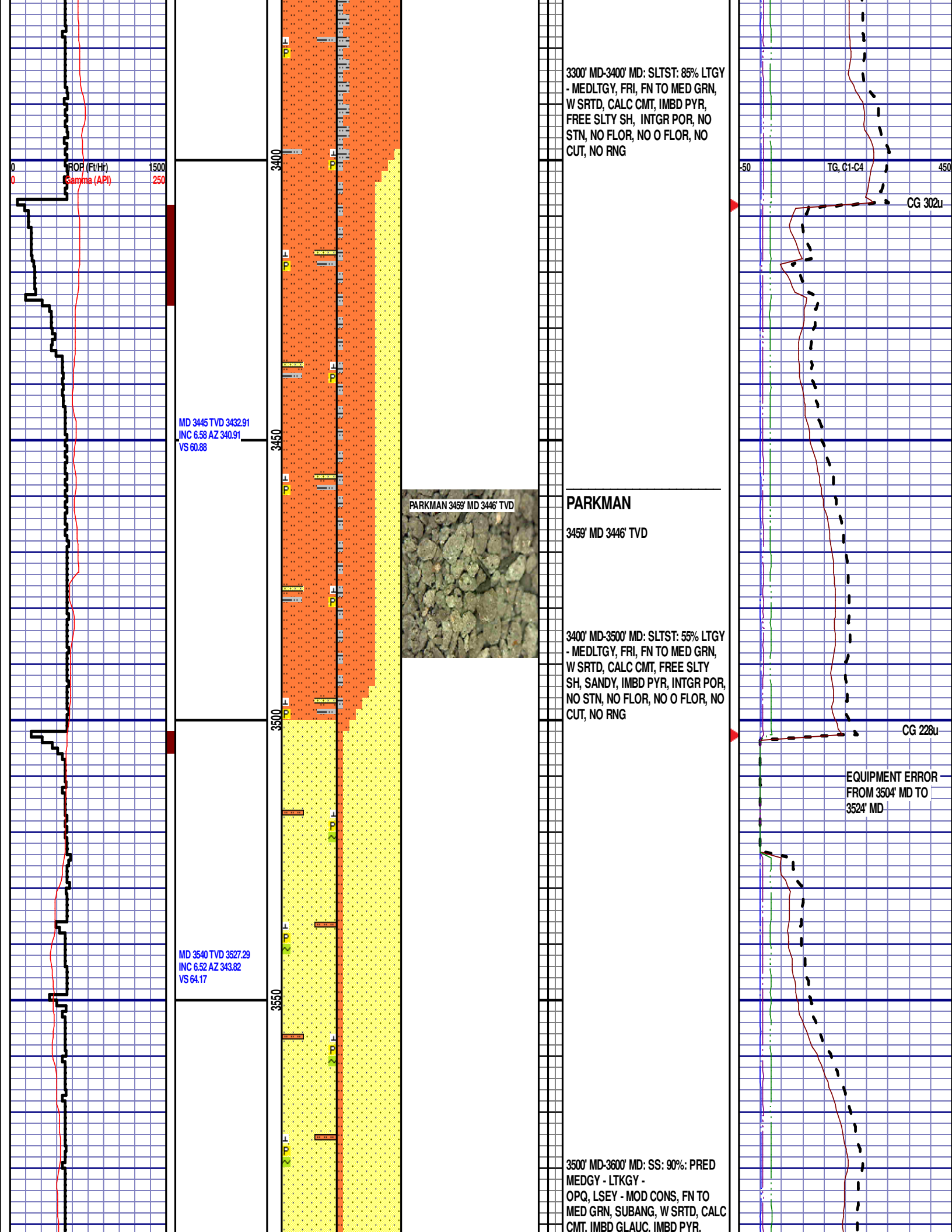
3100' MD-3200' MD: SLTST: 70% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
SANDY, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

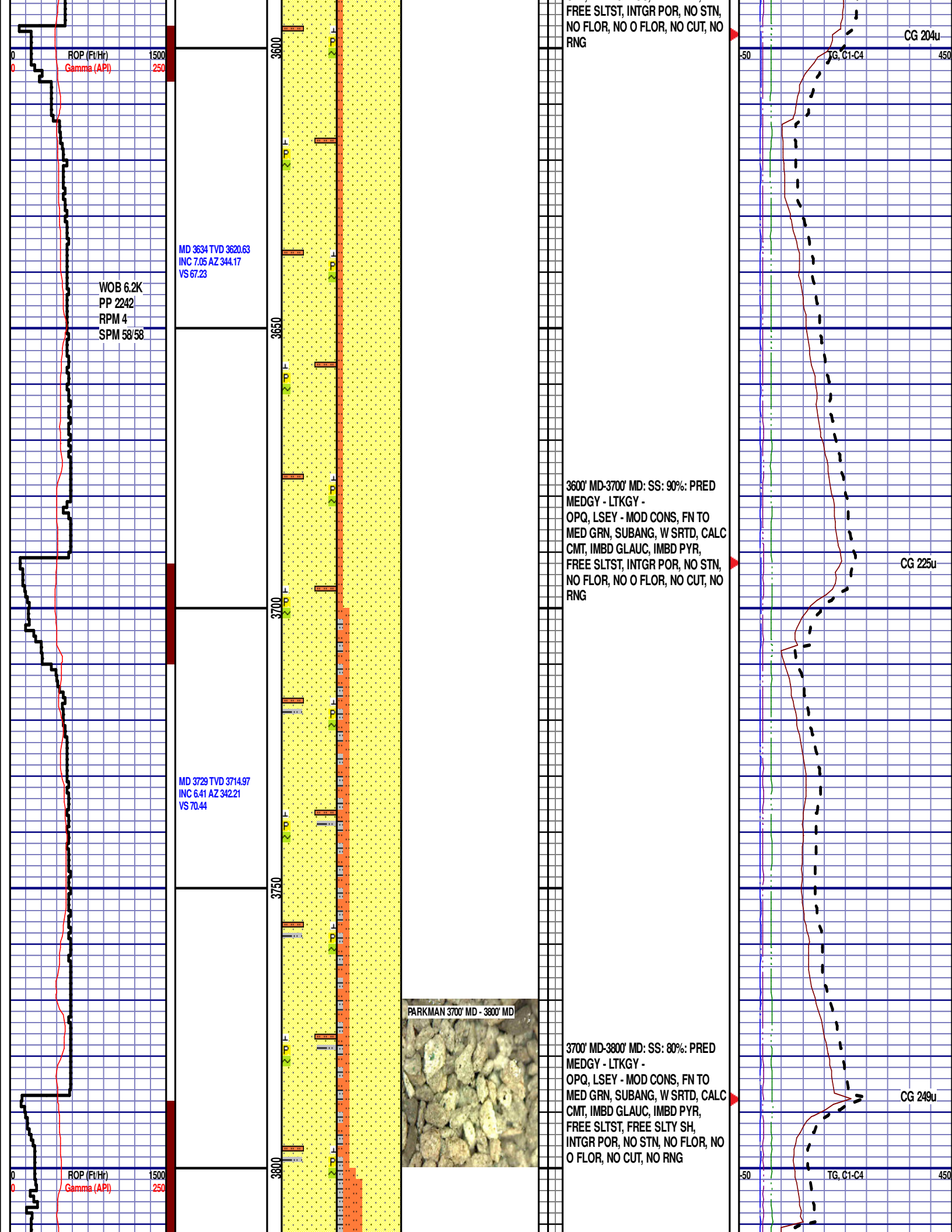
3200' MD-3300' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
FREE SLTY SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, NO
CUT, NO RNG

-50 TG, C1-C4 450

CG 176u

CG 192u





MD 3824 TVD 3809.45
INC 5.59 AZ 335.5
VS 73.98

MD 3919 TVD 3904.15
INC 3.49 AZ 317.26
VS 77.87

MD 4014 TVD 3999.08
INC 0.99 AZ 287.28
VS 80.61

ROP (Ft/Hr)
Gamma (API)

1500
250

3850

3900

3950

4000

3800' MD-3900' MD: SS: 60%: PRED
MEDGY - LTKGY -
OPQ, LSEY - MOD CONS, FN TO
MED GRN, SUBANG, W SRTD, CALC
CMT, IMBD GLAUC, IMBD PYR,
FREE SLTST, FREE SLTY SH,
INTGR POR, NO STN, NO FLOR, NO
O FLOR, NO CUT, NO RNG

CG 125u

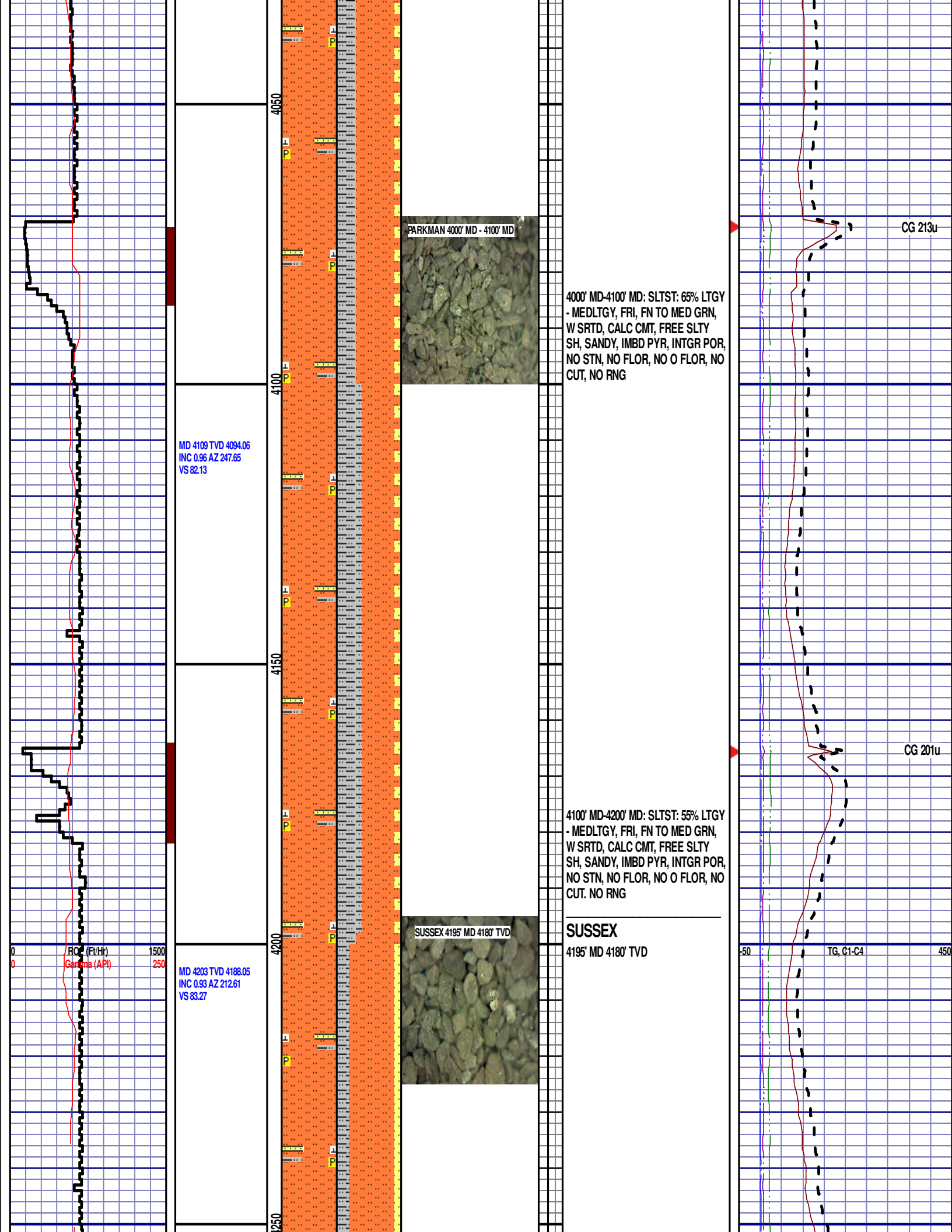
CG 233u

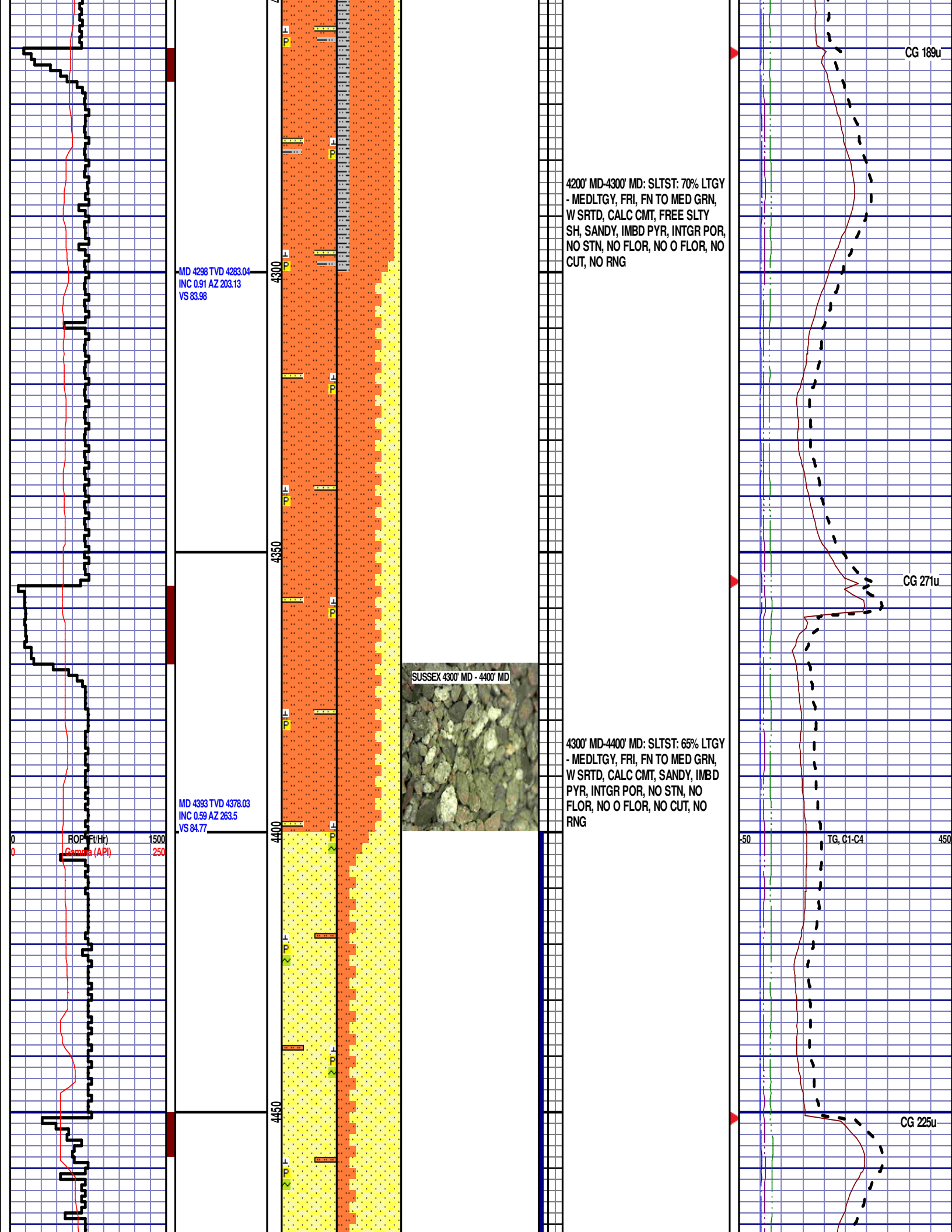
3900' MD-4000' MD: SLTST: 90% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, SANDY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

-50

TG, C1-C4

450





MD 4488 TVD 4473.03
INC 0.62 AZ 269.72
VS 85.77

MD 4582 TVD 4567.02
INC 0.5 AZ 260.29
VS 86.68

MD 4677 TVD 4662.02
INC 0.5 AZ 205.19
VS 87.26

4400' MD-4500' MD: SS: 75%: PRED
MEDGY - LTKGY -
OPQ, LSEY - MOD CONS, FN TO
MED GRN, SUBANG, W SRTD, CALC
CMT, IMBD GLAUC, IMBD PYR,
FREE SLTST, INTGR POR, NO STN,
NO FLOR, NO O FLOR, WEAK LZY
CUT, LT BLSHWT RNG

4500' MD-4600' MD: SLTST: 75% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, FREE SLTY
SH, SANDY, IMBD PYR, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
WEAK LZY CUT, LT BLSHWT RNG

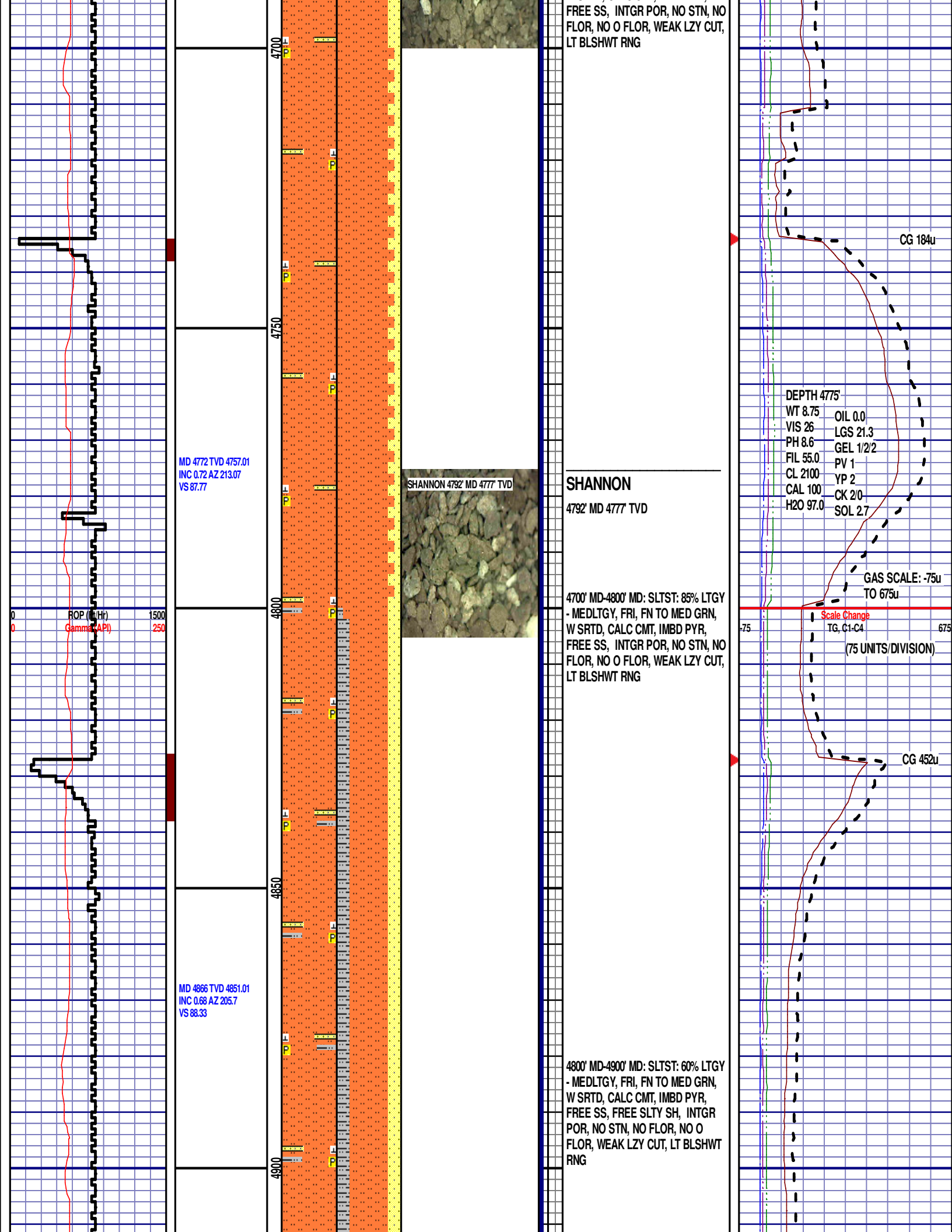
SUSSEX 4600' MD - 4700' MD

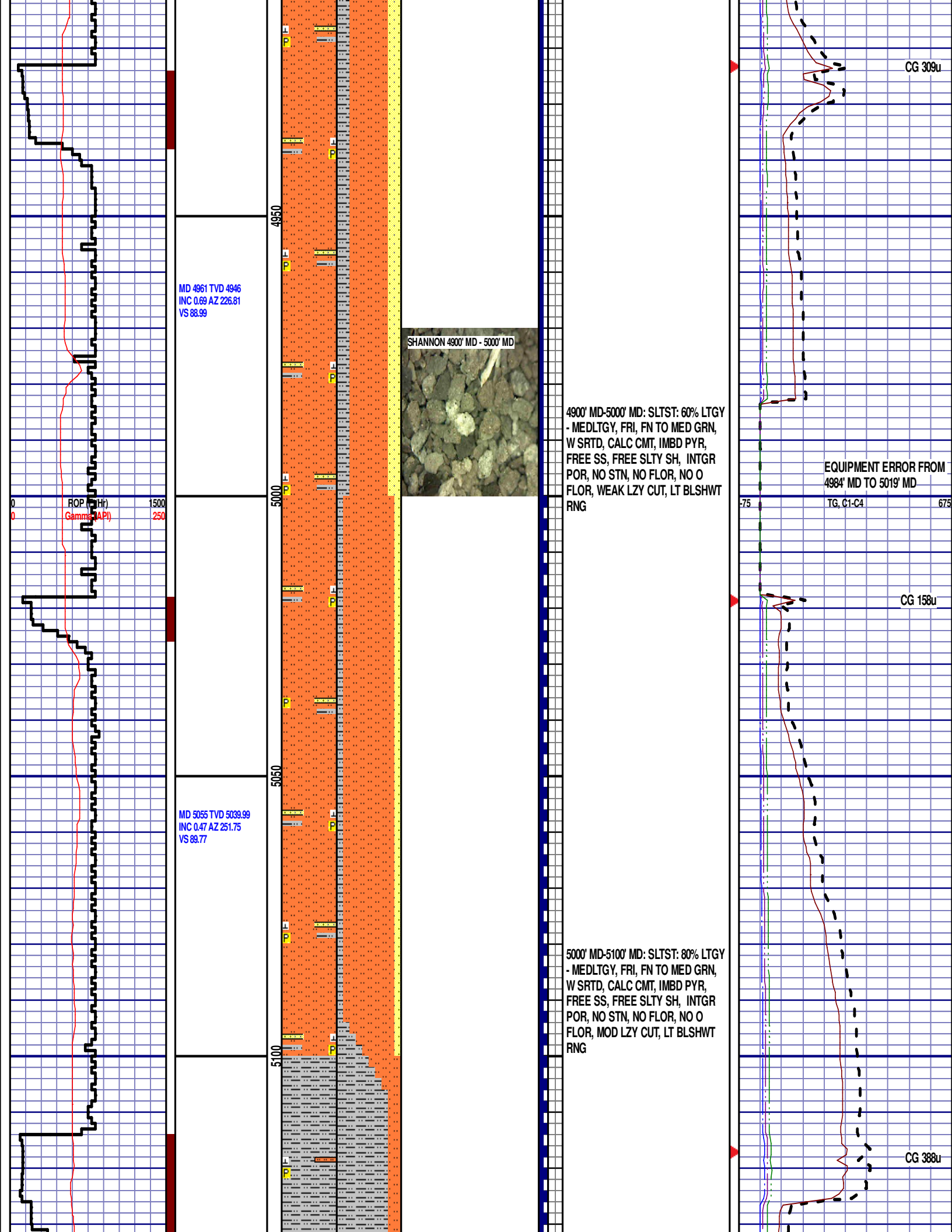
4600' MD-4700' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,

CG 276u

TG, C1-C4

CG 338u





MD 4961 TVD 4946
INC 0.69 AZ 226.81
VS 88.99

SHANNON 4900' MD - 5000' MD

4900' MD-5000' MD: SLTST: 60% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
FREE SS, FREE SLTY SH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, WEAK LZY CUT, LT BLSHW T
RNG

EQUIPMENT ERROR FROM
4984' MD TO 5019' MD

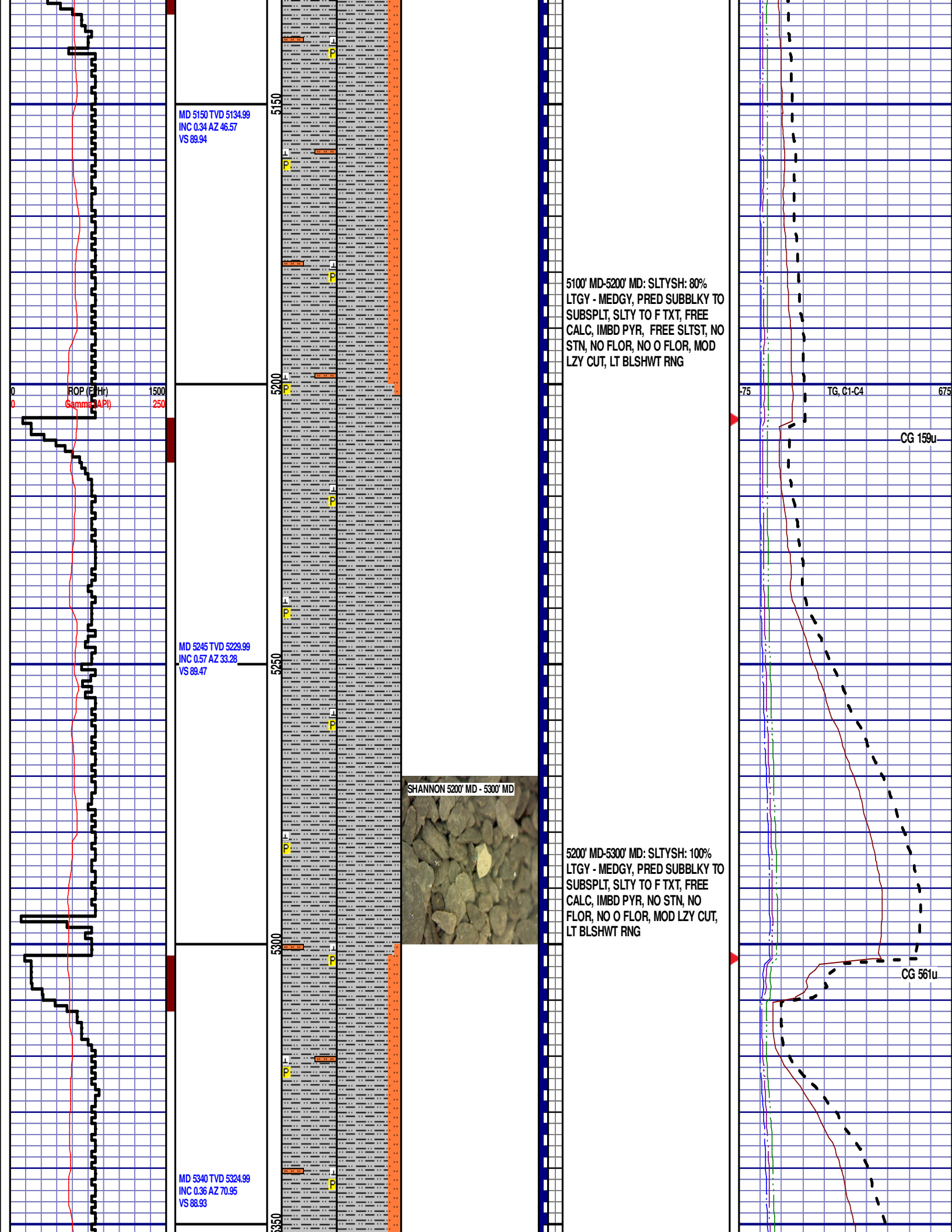
MD 5055 TVD 5039.99
INC 0.47 AZ 251.75
VS 89.77

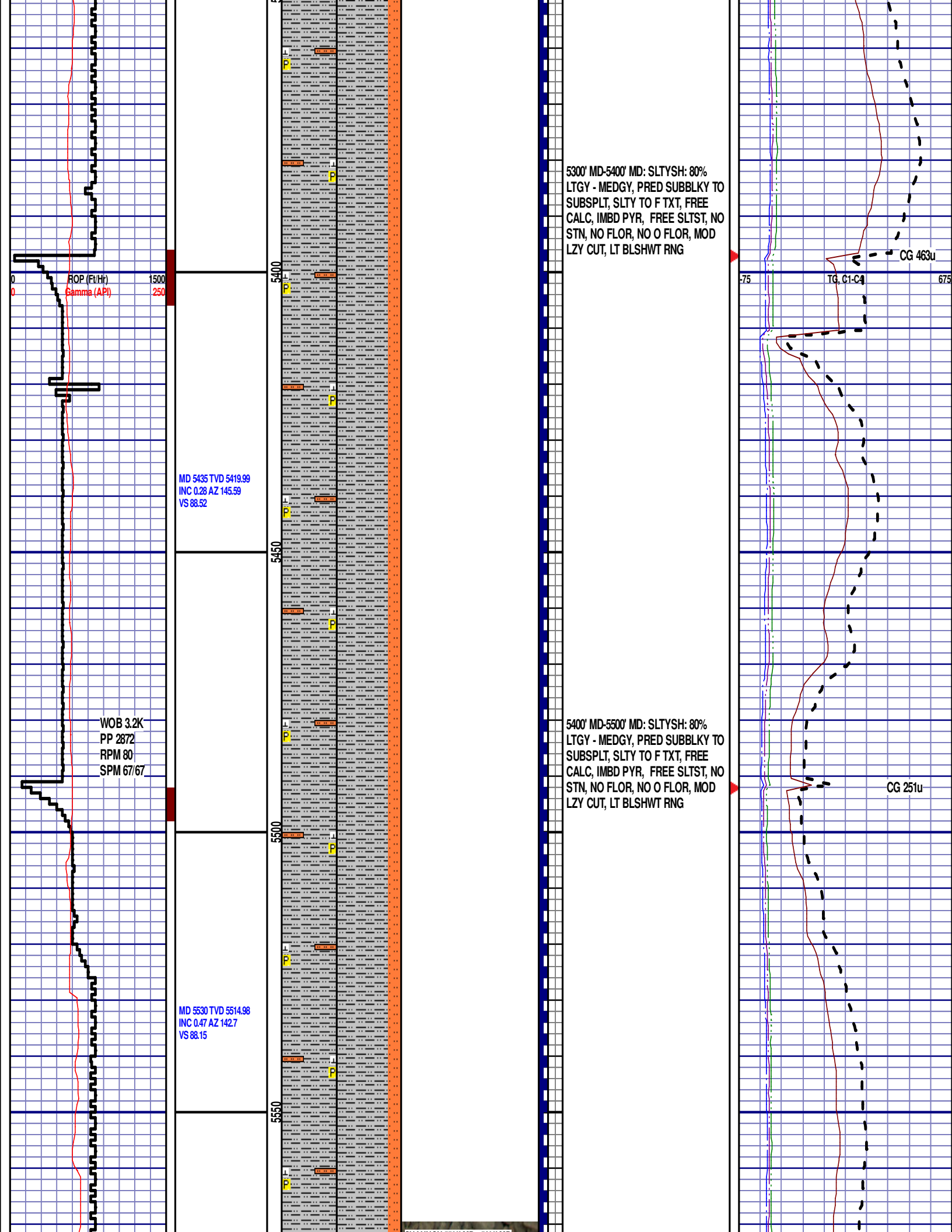
5000' MD-5100' MD: SLTST: 80% LTGY
- MEDLTGY, FRI, FN TO MED GRN,
W SRTD, CALC CMT, IMBD PYR,
FREE SS, FREE SLTY SH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, MOD LZY CUT, LT BLSHW T
RNG

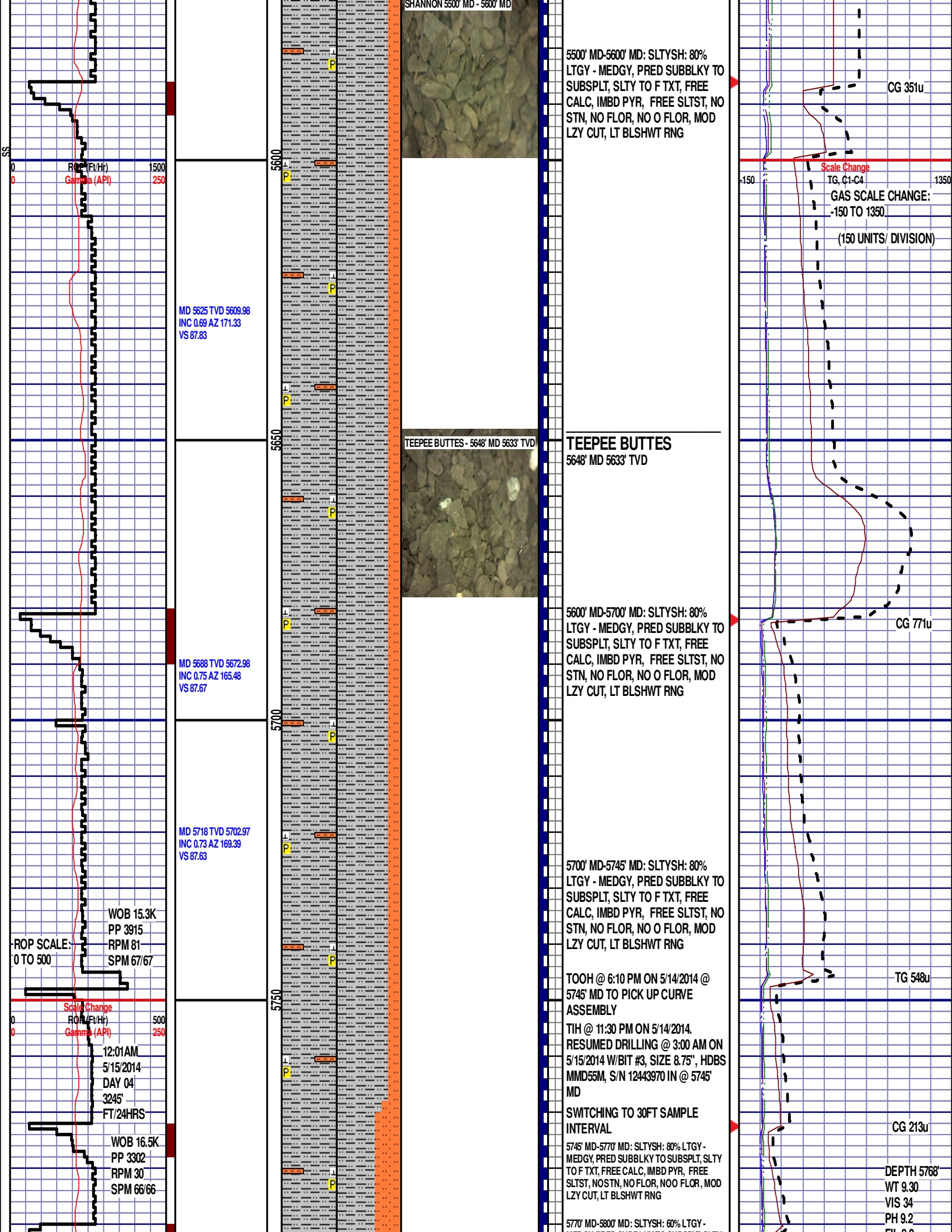
CG 309u

CG 158u

CG 388u







5500' MD-5600' MD: SLTYSH: 80% LTGY - MEDGY, PRED SUBBLKY TO SUBSPLT, SLTY TO F TXT, FREE CALC, IMBD PYR, FREE SLTST, NO STN, NO FLOR, NO O FLOR, MOD LZ Y CUT, LT BLSHWT RING

TEEPEE BUTTES - 5648' MD 5633' TVD

TEEPEE BUTTES
5648' MD 5633' TVD

5600' MD-5700' MD: SLTYSH: 80% LTGY - MEDGY, PRED SUBBLKY TO SUBSPLT, SLTY TO F TXT, FREE CALC, IMBD PYR, FREE SLTST, NO STN, NO FLOR, NO O FLOR, MOD LZ Y CUT, LT BLSHWT RING

5700' MD-5745' MD: SLTYSH: 80% LTGY - MEDGY, PRED SUBBLKY TO SUBSPLT, SLTY TO F TXT, FREE CALC, IMBD PYR, FREE SLTST, NO STN, NO FLOR, NO O FLOR, MOD LZ Y CUT, LT BLSHWT RING

TOOH @ 6:10 PM ON 5/14/2014 @ 5745' MD TO PICK UP CURVE ASSEMBLY
TIH @ 11:30 PM ON 5/14/2014.
RESUMED DRILLING @ 3:00 AM ON 5/15/2014 W/BIT #3, SIZE 8.75", HDBS MMD55M, S/N 12443970 IN @ 5745' MD

SWITCHING TO 30FT SAMPLE INTERVAL

5745' MD-5770' MD: SLTYSH: 80% LTGY - MEDGY, PRED SUBBLKY TO SUBSPLT, SLTY TO F TXT, FREE CALC, IMBD PYR, FREE SLTST, NOSTN, NO FLOR, NOO FLOR, MOD LZ Y CUT, LT BLSHWT RING

5770' MD-5800' MD: SLTYSH: 60% LTGY -

CG 351u

Scale Change
TG, C1-C4

GAS SCALE CHANGE:
-150 TO 1350

(150 UNITS/ DIVISION)

CG 771u

TG 548u

CG 213u

DEPTH 5768'

WT 9.30

VIS 34

PH 9.2

FW 2.2

MD 5625 TVD 5609.98
INC 0.69 AZ 171.33
VS 87.83

MD 5688 TVD 5672.98
INC 0.75 AZ 165.48
VS 87.67

MD 5718 TVD 5702.97
INC 0.73 AZ 169.39
VS 87.63

WOB 15.3K
PP 3915
RPM 81
SPM 67/67

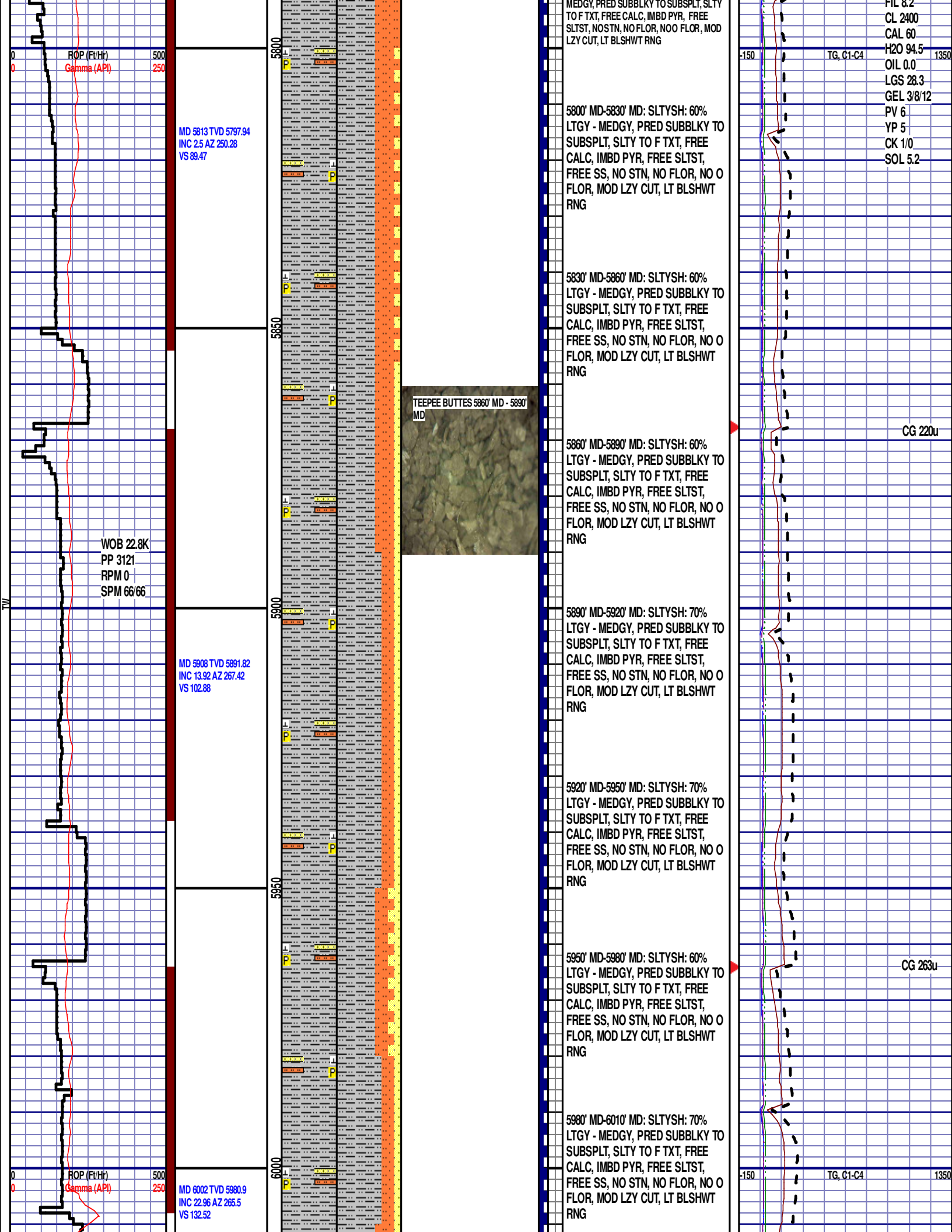
12:01AM
5/15/2014
DAY 04
3245'
FT/24HRS

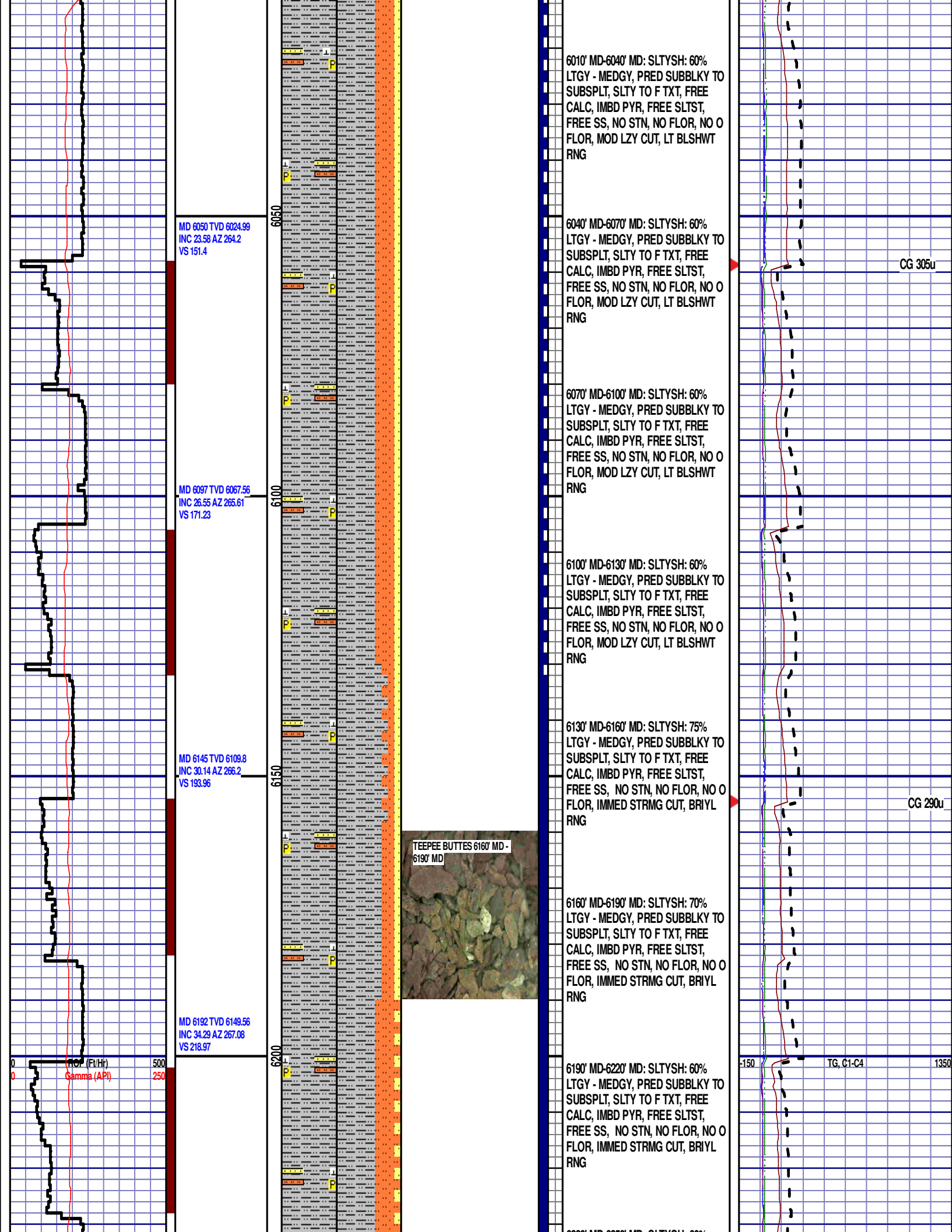
WOB 16.5K
PP 3302
RPM 30
SPM 66/66

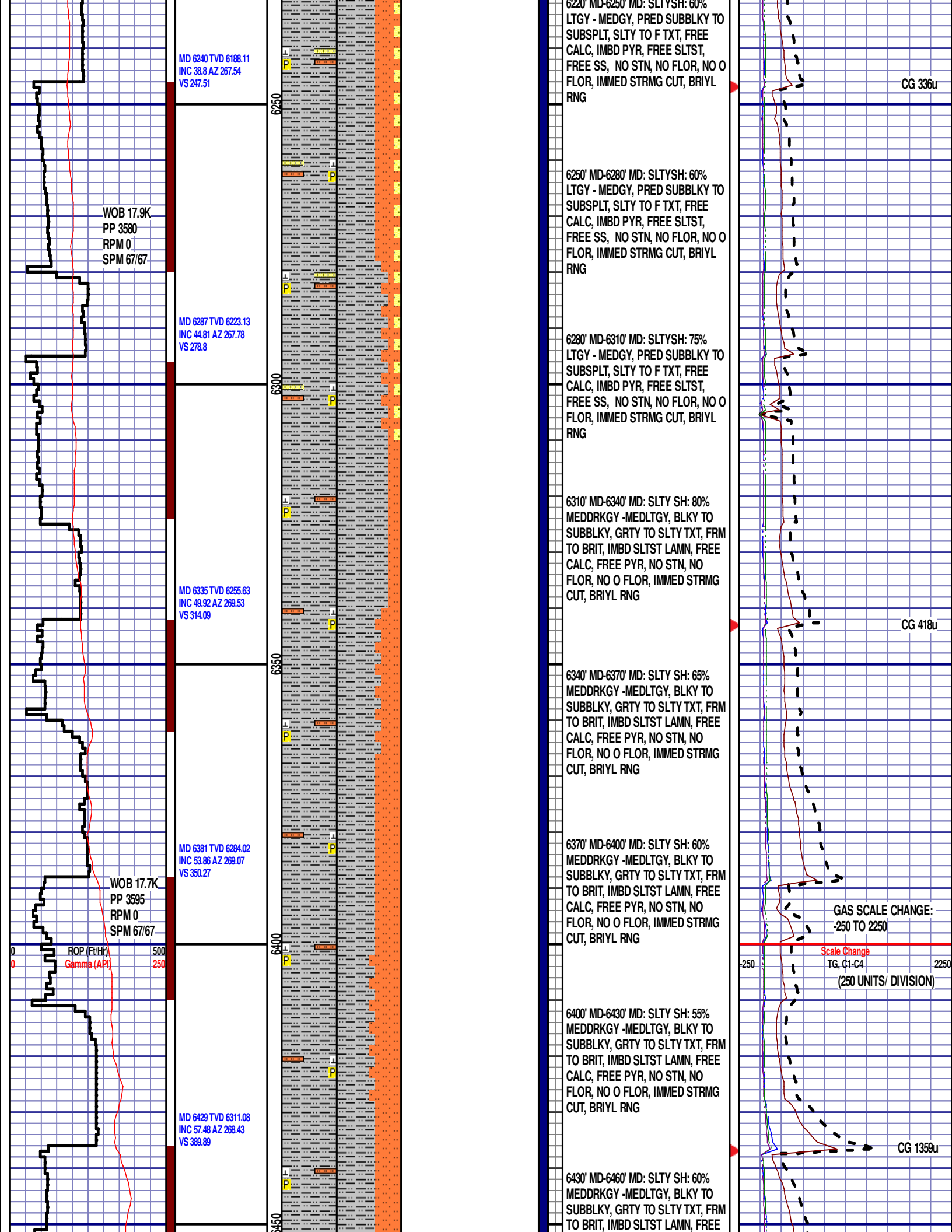
ROP SCALE:
0 TO 500

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

ROP (Feet/Hr)
Gamma (API)







MD 6476 TVD 6335.41
INC 60.16 AZ 268.14
VS 430.08

WOB 6.3K
PP 3746
RPM 0
SPM 67/67

TEEPEE BUTTES 6460' MD -
6490' MD

CALC, FREE PYR, NO STN, NO
FLOR, NO O FLOR, IMMED STRMG
CUT, BRIYL RNG

6460' MD-6490' MD: SLTST: 70%
MEDDKGY- MEDLTGY, FRI, FN TO
MED GRN, W SRTD, CALC CMT,
FREE PYR, FREE SLTYSH, INTGR
POR, ABDT FREE BENT, 15% MIN
FLOR, FNT BLSHWT O FLOR,
IMMED STRMG CUT, HVY BLSHWT
RNG

6490' MD-6500' MD: SLTST: 80% MEDDKGY-
MEDLTGY, FRI, FN TO MED GRN, W SRTD,
CALC CMT, FREE PYR, FREE SLTYSH, INTGR
POR, ABDT FREE BENT, 10% MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY
BLSHWT RNG

END OF VERTICAL LOG @ 6500' MD
ON 5/15/2014, CONTINUED ON
HORIZONTAL LOG