




| Logger On Shift | | ROP (Ft/Hr) Gamma (API) | | Drill Depth v. Time | | Survey Data | | Depth | | Lithology | | Lithology Percentages | | Sample Photographs | | Porosity | | Geological Description | | Connections | | TG (1-8) C1 (units) C2 (units) C3 (units) C4 (units) | | Total Gas, C1-C4 | |
|---------------------------------------------------|--|----------------------------|--|-------------------------------------------------------------------------------------|--|-------------|--|-------|--|-----------|--|-----------------------|--|--------------------|--|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|------------------------------------------------------------------|--|------------------|--|
| | | | |  | | | | 24 | | | | | | | |  | | | |  | | | | | |
| 0 0 | | ROP (Ft/Hr) Gamma (API) | | 1500 350 | | | | | | | | | | | | | | NOBLE ENERGY WELLS RANCH AE30-65-1BHNB 29-T6N-R62W 1940' FSL, 65' FWL WELD COUNTY, CO H&P 321 LOGGERS: HANNAH BLATCHFORD JOE KLUMPSTRA CALLED OUT BY COMPANY MAN 04/03/14 COMMENCED LOGGING @ 6:00 PM | | -30 TG, C1-C4 270 | | | | | |
| 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 SCALE: 0 TO 350 (GAMMA DATA AS RECEIVED) | | | | | | | | | | | | | | | | | | DRILLING ON WATER-BASED MUD | | | | | | | |

COMMENCED LOGGING @ 6:00 PM
@ 2500' MD ON 04/03/14 W/BIT # 1
8.75 SMITH SDI519 HUPX PDC S/N
JJ1342 IN @ 636' MD

PIERRE
BEFORE LOGGING DEPTH

MD 1502'
WT 8.65
VIS 31.0
PH 10.7
FIL 32.0
CL 1600
CAL 100.0
H2O 97.6
OIL 0.0
SOL 2.1
CAKE 1/0
GELS 2 3/4
PV 4.0
YP 4.0

CG 52u

Pierre (2500' MD - 2600' MD)

2500'- 2600': SS: 60%: PRED GY -
LTKGY - OPQ, MOD CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, TRC IMBD
PYR, TRC IMBD GLAUC, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

-30 TG, C1-C4 270

CG 63u

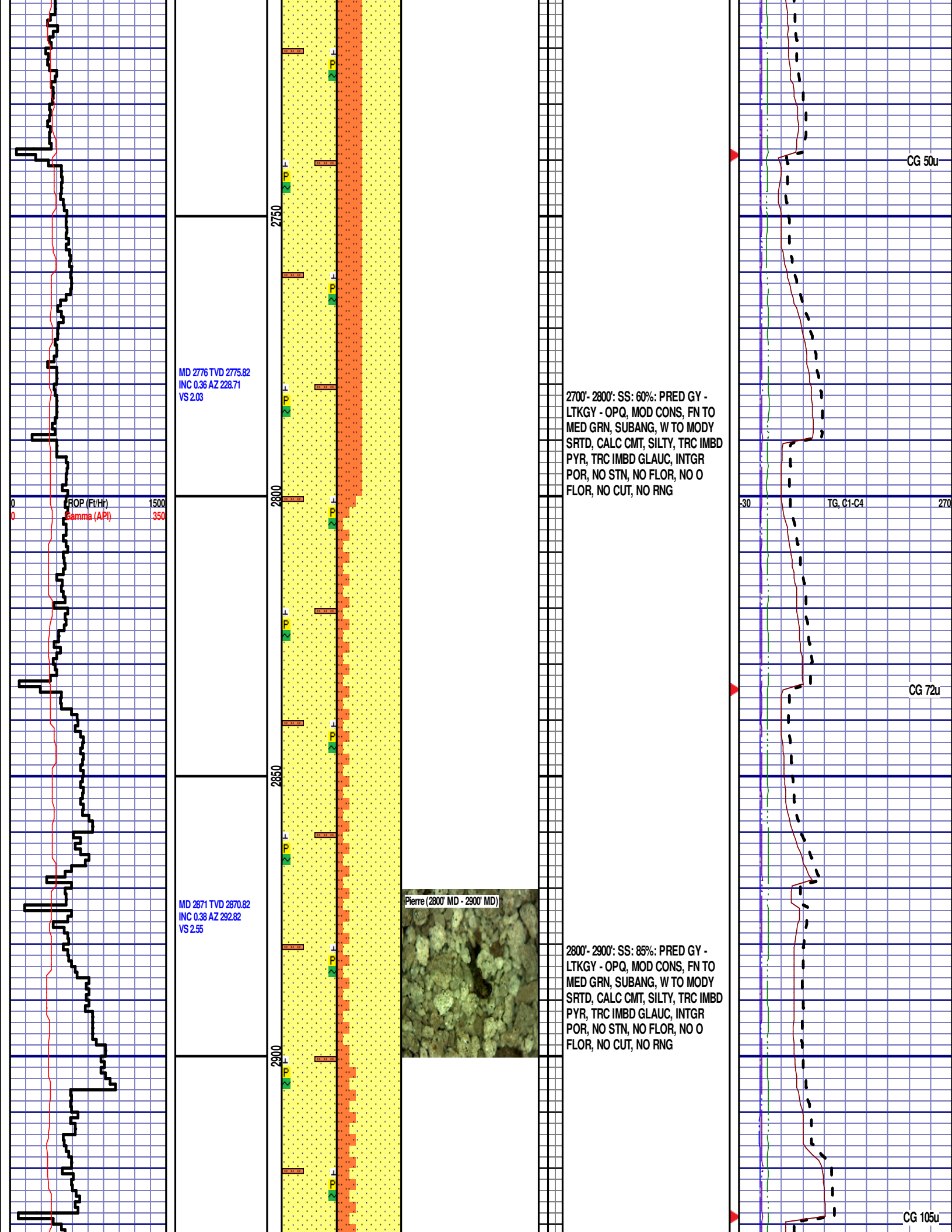
2600'- 2700': SS: 55%: PRED GY -
LTKGY - OPQ, MOD CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, TRC IMBD
PYR, TRC IMBD GLAUC, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

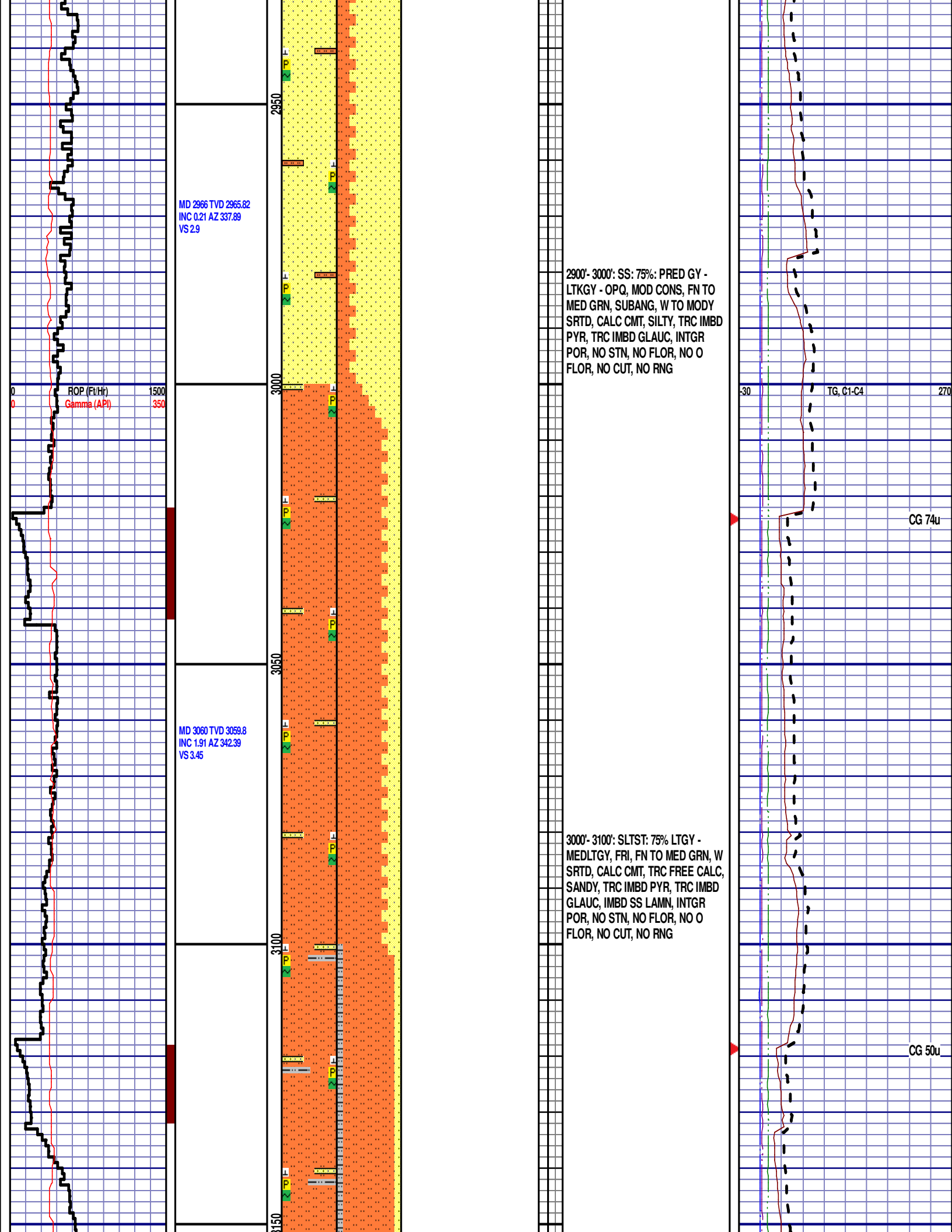
WOB 28.0K
PP 3157
RPM 80
SPM 67/65

MD 2587 TVD 2586.83
INC 0.48 AZ 167.9
VS 2.03

ROP (Ft/Hr)
Gamma (API)

MD 2681 TVD 2680.82
INC 0.53 AZ 171.2
VS 1.88





MD 2966 TVD 2965.82
INC 0.21 AZ 337.89
VS 2.9

MD 3060 TVD 3059.8
INC 1.91 AZ 342.39
VS 3.45

2900'- 3000': SS: 75%: PRED GY -
LTKGY - OPQ, MOD CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, TRC IMBD
PYR, TRC IMBD GLAUC, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

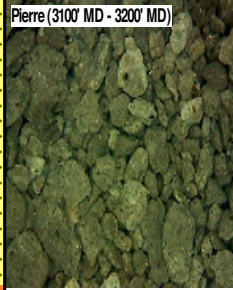
3000'- 3100': SLTST: 75% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
SANDY, TRC IMBD PYR, TRC IMBD
GLAUC, IMBD SS LAMN, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

MD 3155 TVD 3154.7
INC 3.14 AZ 347.11
VS 4.54

ROP (Ft/Hr)
Gamma (API)

1500
350

Pierre (3100' MD - 3200' MD)



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

MD 3250 TVD 3249.51
INC 4.18 AZ 340.91
VS 6.28

3200'- 3300': SLTST: 55% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
SANDY, TRC IMBD PYR, IMBD SS
LAMN, INTGR POR, NO STN, NO
FLOR, NO O FLOR, NO CUT, NO
RNG

MD 3345 TVD 3344.17
INC 5.53 AZ 336.52
VS 9.29

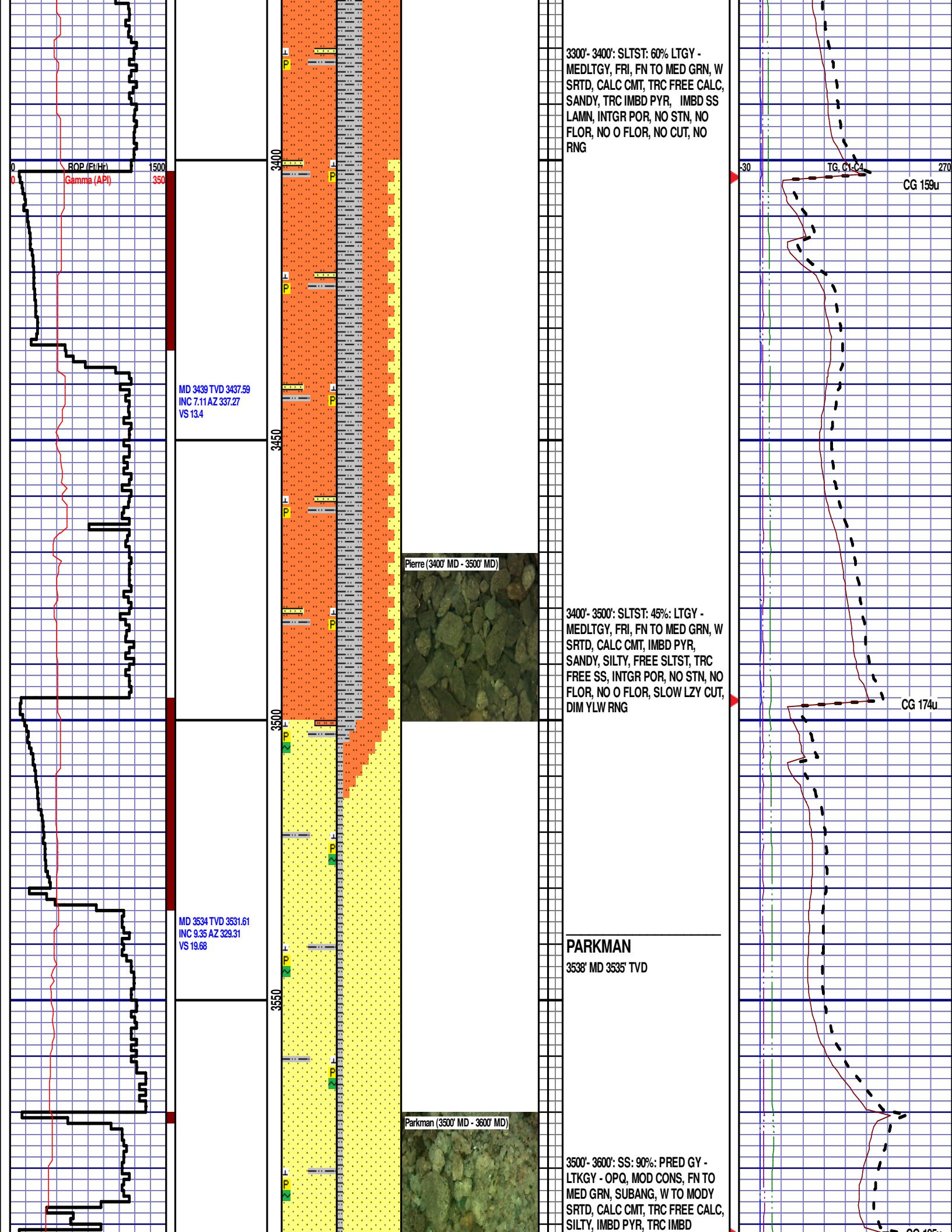
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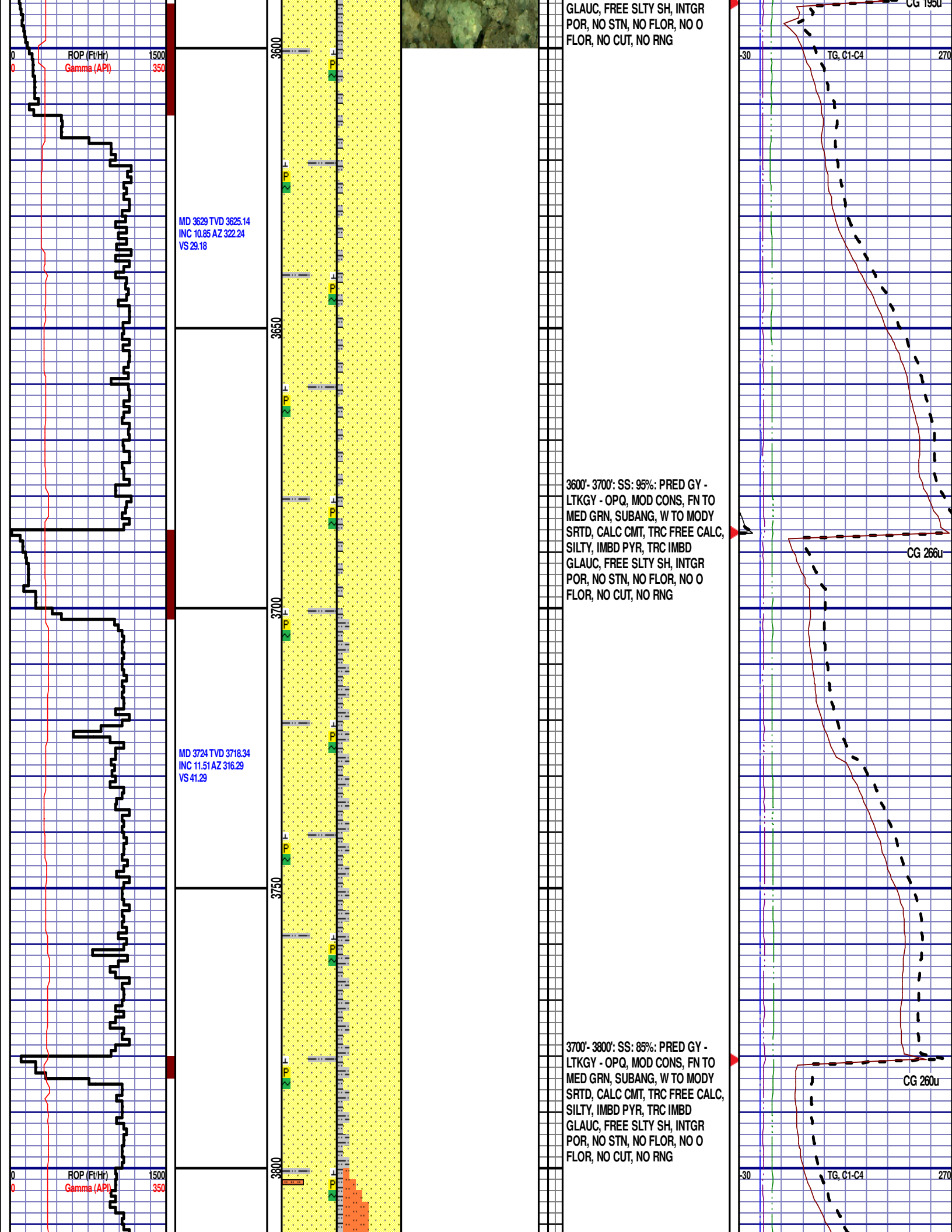
TG, C1-C4

270

CG 123u

CG 103u





MD 3817 TVD 3809.38
INC 12.05 AZ 316.14
VS 54.51

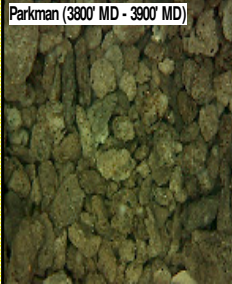
12:01 AM
4/4/14
1340 FT/24
HRS
DAY 02

WOB 18.0K
PP 3699
RPM 81
SPM 67/67

MD 3912 TVD 3902.66
INC 9.74 AZ 317.54
VS 66.89

ROP (Ft/Hr)
Gamma (API)

MD 4007 TVD 3996.44
INC 8.65 AZ 323.1
VS 76.67



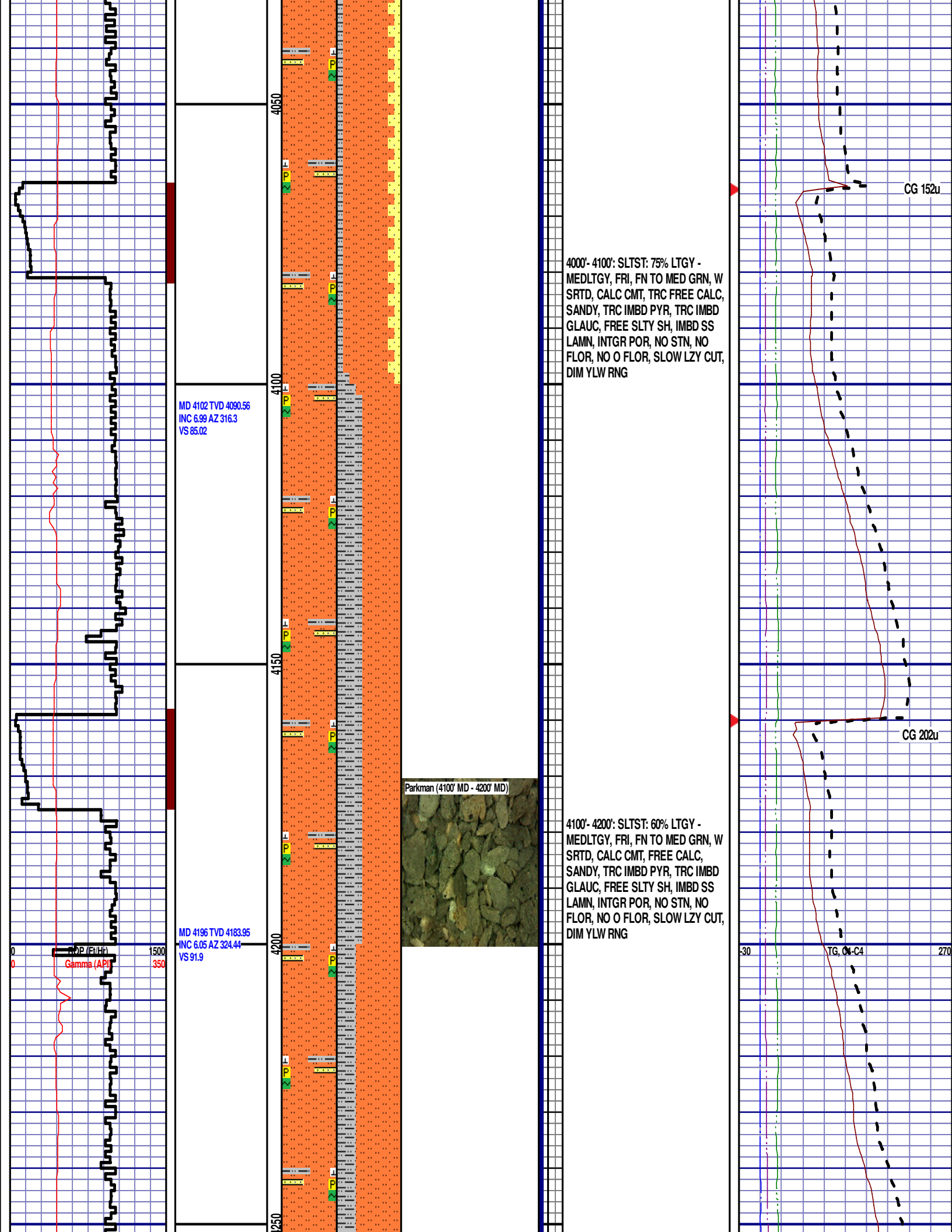
3800'- 3900': SS: 50%: PRED GY -
LTKGY - OPQ, MOD CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, TRC FREE CALC,
SILTY, IMBD PYR, TRC IMBD
GLAUC, FREE SLTY SH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

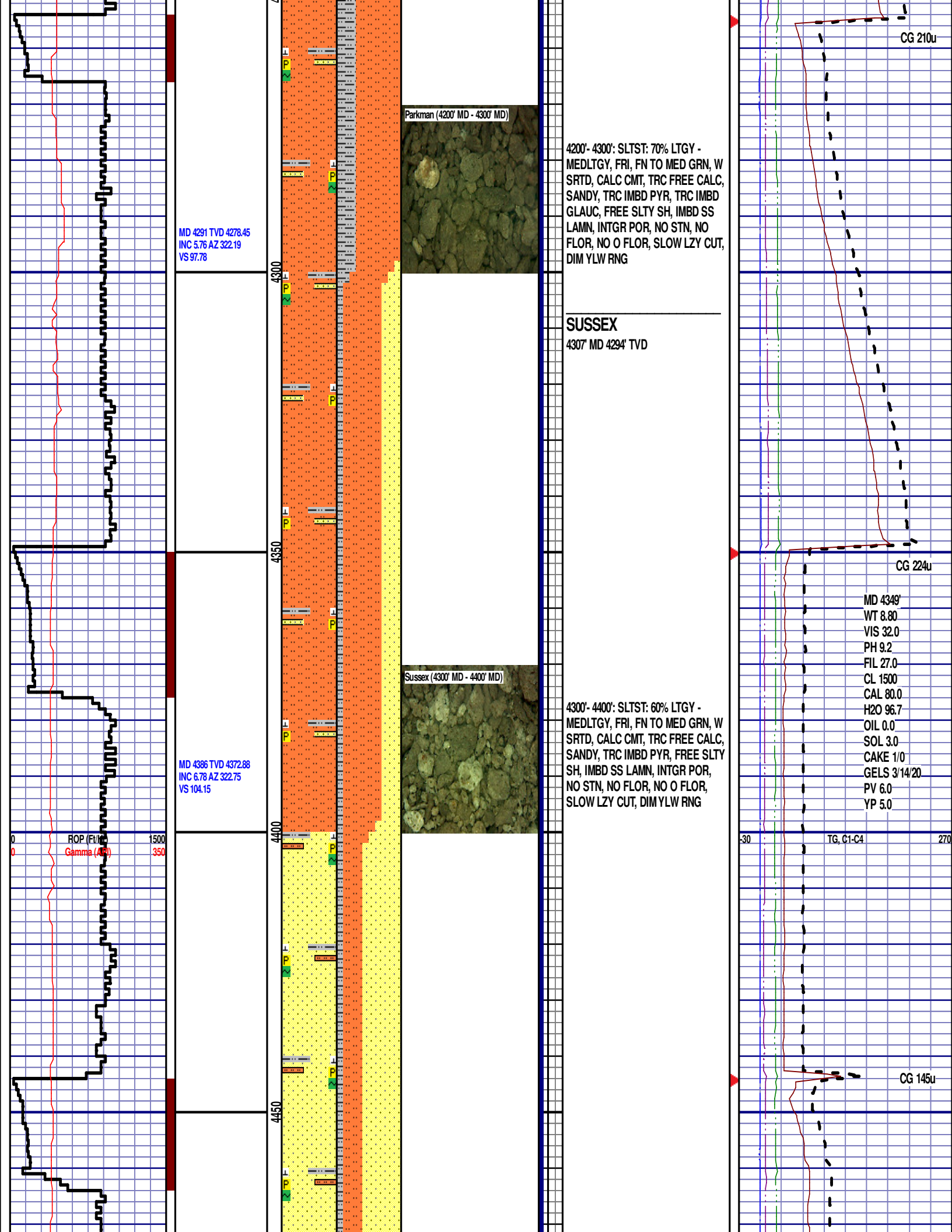
3900'- 4000': SLTST: 80% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
SANDY, TRC IMBD PYR, FREE SLTY
SH, IMBD SS LAMN, INTGR POR,
NO STN, NO FLOR, NO O FLOR, NO
CUT, NO RNG

CG 209u

CG 193u

30 TG, C1-C4 270





MD 4481 TVD 4467.25
INC 6.43 AZ 330.16
VS 110.25

MD 4575 TVD 4560.52
INC 7.85 AZ 326.06
VS 116.51

MD 4670 TVD 4654.72
INC 7.01 AZ 321.28
VS 123.82

4400'- 4500': SS: 60%: PRED GY -
LTKGY - OPQ, MOD CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, TRC IMBD
PYR, TRC IMBD GLAUC, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, SLOW LZY CUT, DIM YLW
RNG

4500'- 4600': SLTST: 90% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
TRC IMBD PYR, IMBD SS LAMN,
INTGR POR, NO STN, NO FLOR,
SLOW LZY CUT, NO CUT, DIM YLW
RNG

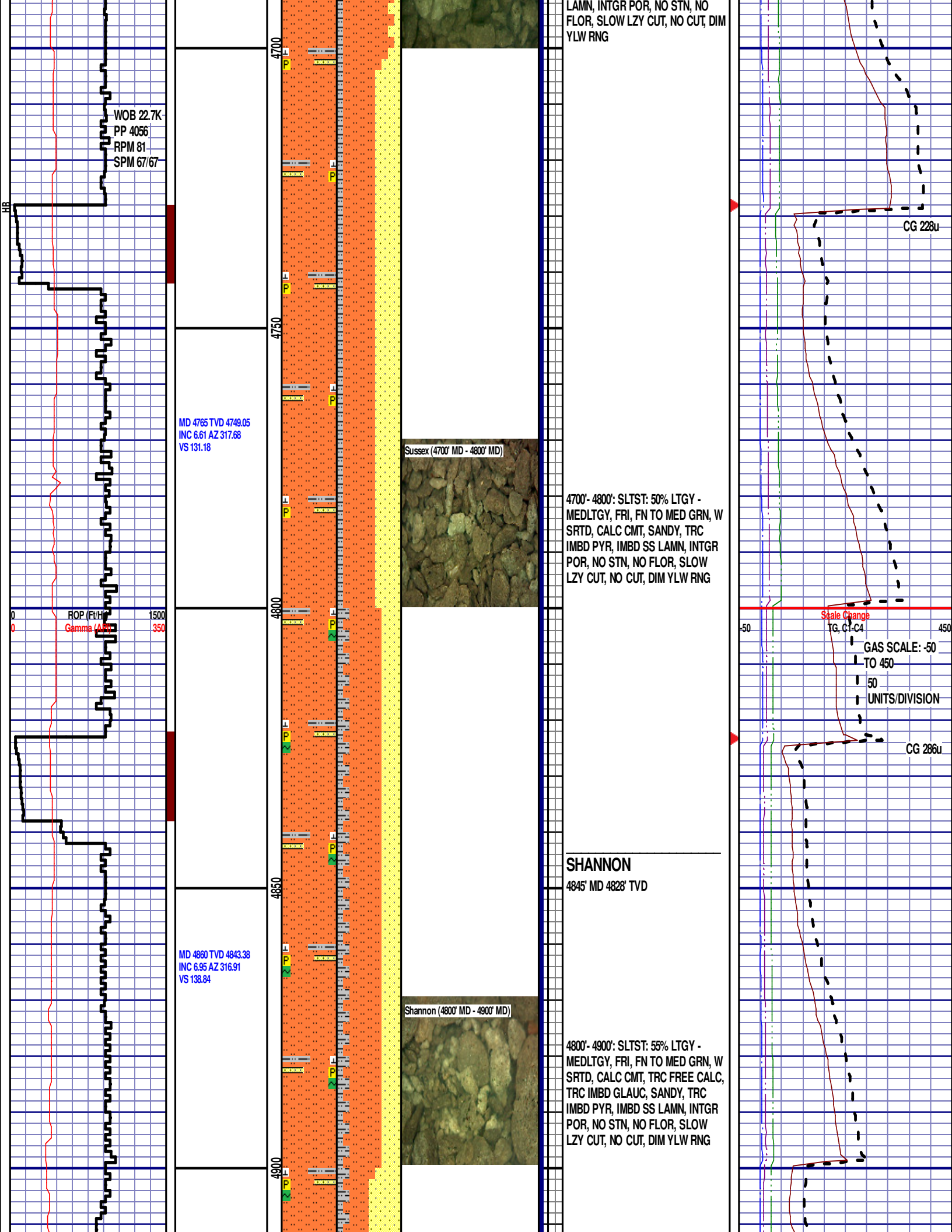
4600'- 4700': SLTST: 75% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
SANDY, TRC IMBD PYR, IMBD SS

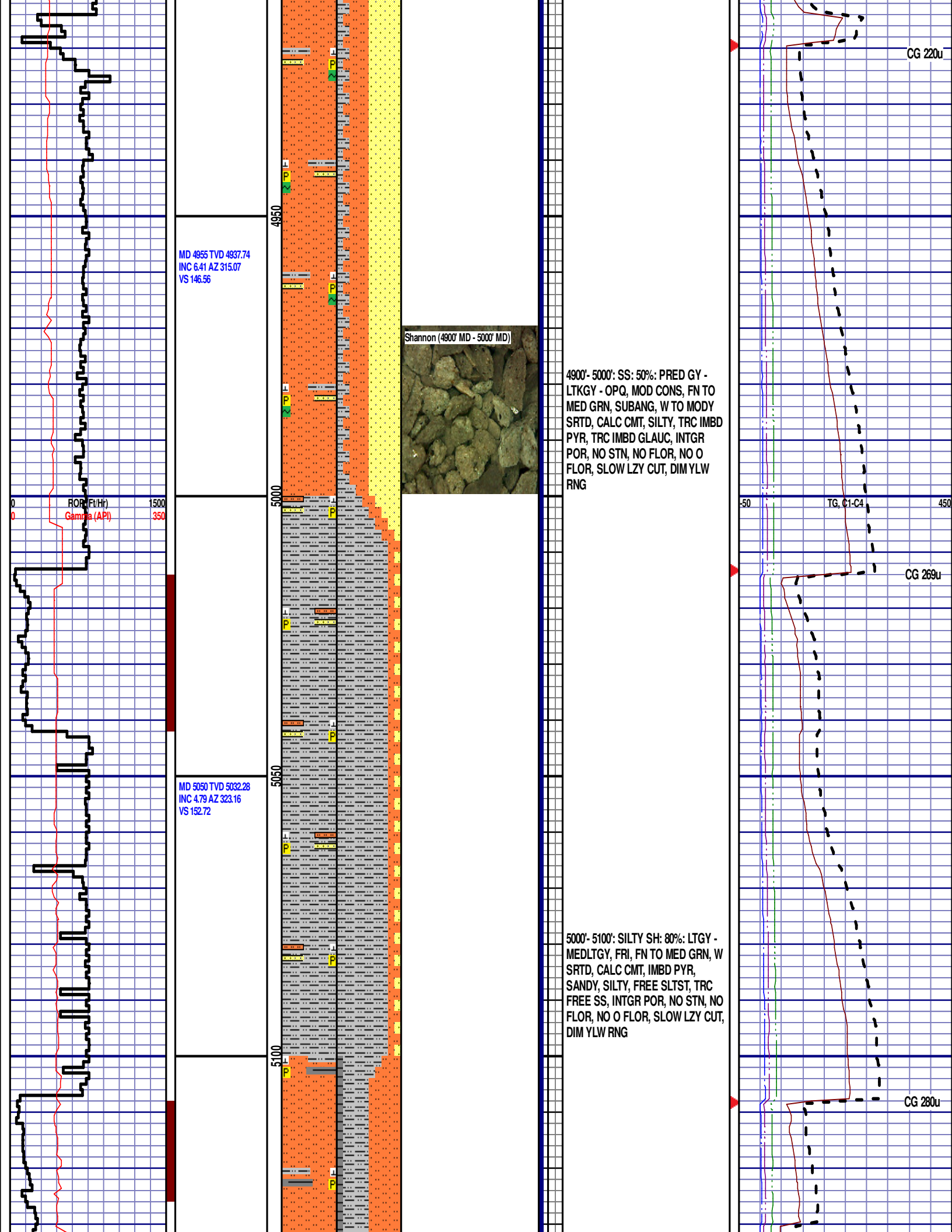
Sussex (4600' MD - 4700' MD)

CG 213u

TG, C1-C4

CG 235u





MD 5144 TVD 5126.05
INC 3.27 AZ 307.26
VS 157.24

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

MD 5239 TVD 5220.95
INC 2.16 AZ 292.47
VS 161.06

MD 5334 TVD 5315.91
INC 1.15 AZ 328.8
VS 163.22

5150

5200

5250

5300

5350

5100'- 5200': SLTST: 50% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, TRC FREE CALC,
TRC IMBD PYR, IMBD SS LAMN,
INTGR POR, NO STN, NO FLOR,
SLOW LZY CUT, NO CUT, DIM YLW
RNG

Shannon (5200' MD - 5300' MD)



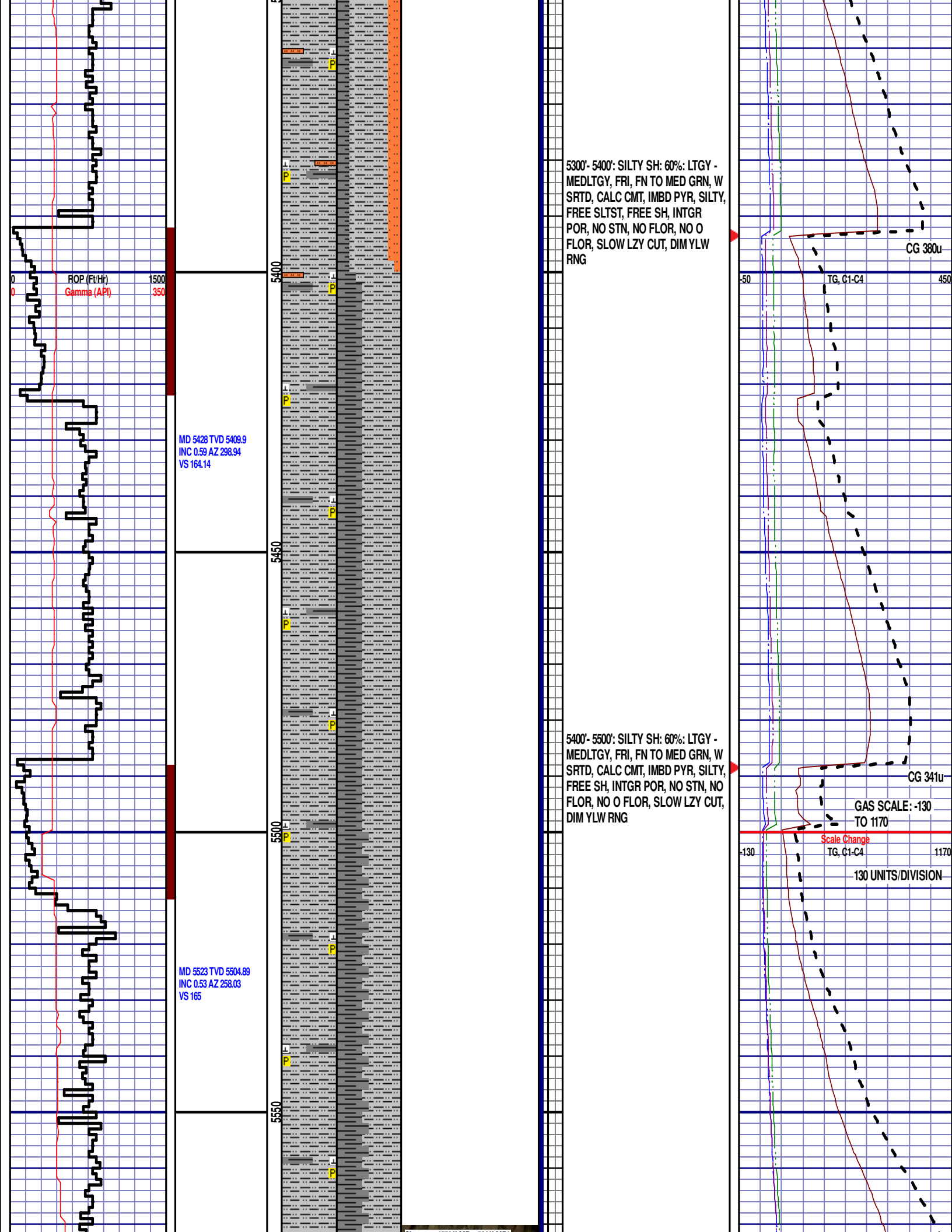
5200'- 5300': SILTY SH: 50%:
LTGY - MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
FREE SLTST, TRC FREE SH, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, SLOW LZY CUT, DIM YLW
RNG

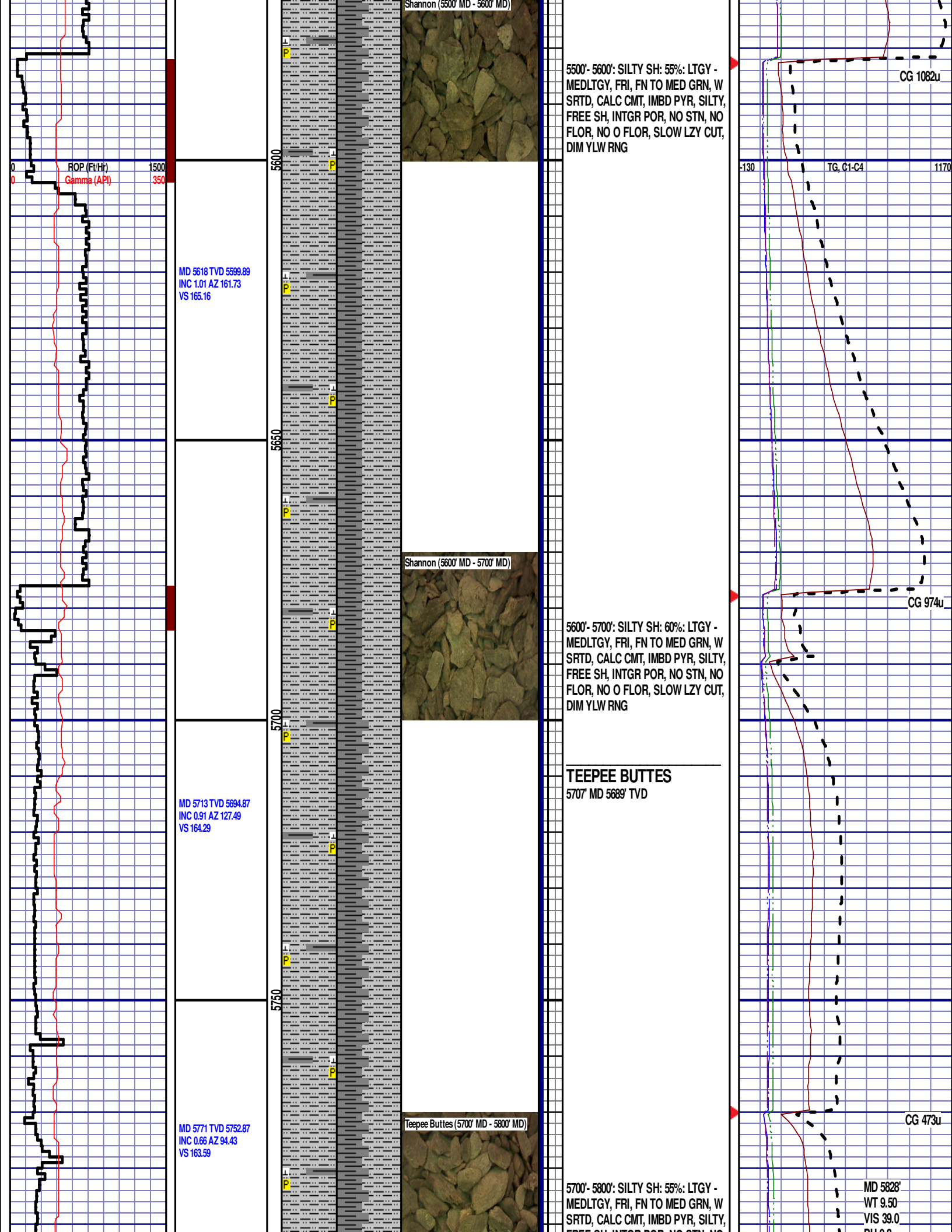
-50

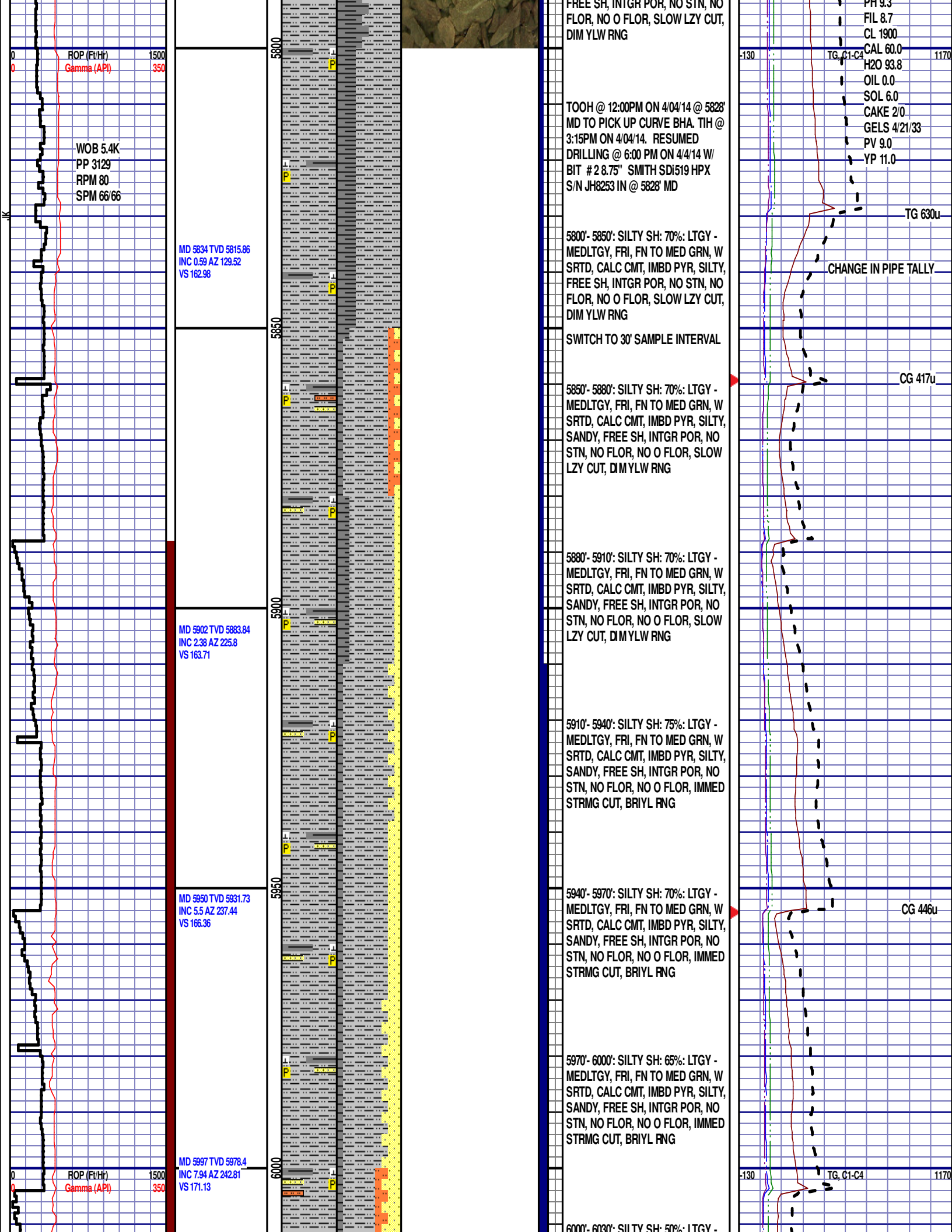
TG, C1-C4

CG 199u

CG 246u







ROP (Ft/Hr)
Gamma (API)

WOB 5.4K
PP 3129
RPM 80
SPM 66/66

MD 5834 TVD 5815.86
INC 0.59 AZ 129.52
VS 162.98

MD 5902 TVD 5883.84
INC 2.38 AZ 225.8
VS 163.71

MD 5950 TVD 5931.73
INC 5.5 AZ 237.44
VS 166.36

ROP (Ft/Hr)
Gamma (API)

MD 5997 TVD 5978.4
INC 7.94 AZ 242.81
VS 171.13

TOOH @ 12:00PM ON 4/04/14 @ 5828'
MD TO PICK UP CURVE BHA. TIH @
3:15PM ON 4/04/14. RESUMED
DRILLING @ 6:00 PM ON 4/4/14 W/
BIT # 2 8.75" SMITH SDI519 HPX
S/N JH8253 IN @ 5828' MD

5800'- 5850': SILTY SH: 70%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
FREE SH, INTGR POR, NO STN, NO
FLOR, NO O FLOR, SLOW LZ CUT,
DIM YLW RNG

SWITCH TO 30' SAMPLE INTERVAL

5850'- 5880': SILTY SH: 70%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
SANDY, FREE SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

5880'- 5910': SILTY SH: 70%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
SANDY, FREE SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

5910'- 5940': SILTY SH: 75%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
SANDY, FREE SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, IMMED
STRMG CUT, BRIYL RNG

5940'- 5970': SILTY SH: 70%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
SANDY, FREE SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, IMMED
STRMG CUT, BRIYL RNG

5970'- 6000': SILTY SH: 65%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, IMBD PYR, SILTY,
SANDY, FREE SH, INTGR POR, NO
STN, NO FLOR, NO O FLOR, IMMED
STRMG CUT, BRIYL RNG

6000'- 6030': SILTY SH: 50%: LTGY -

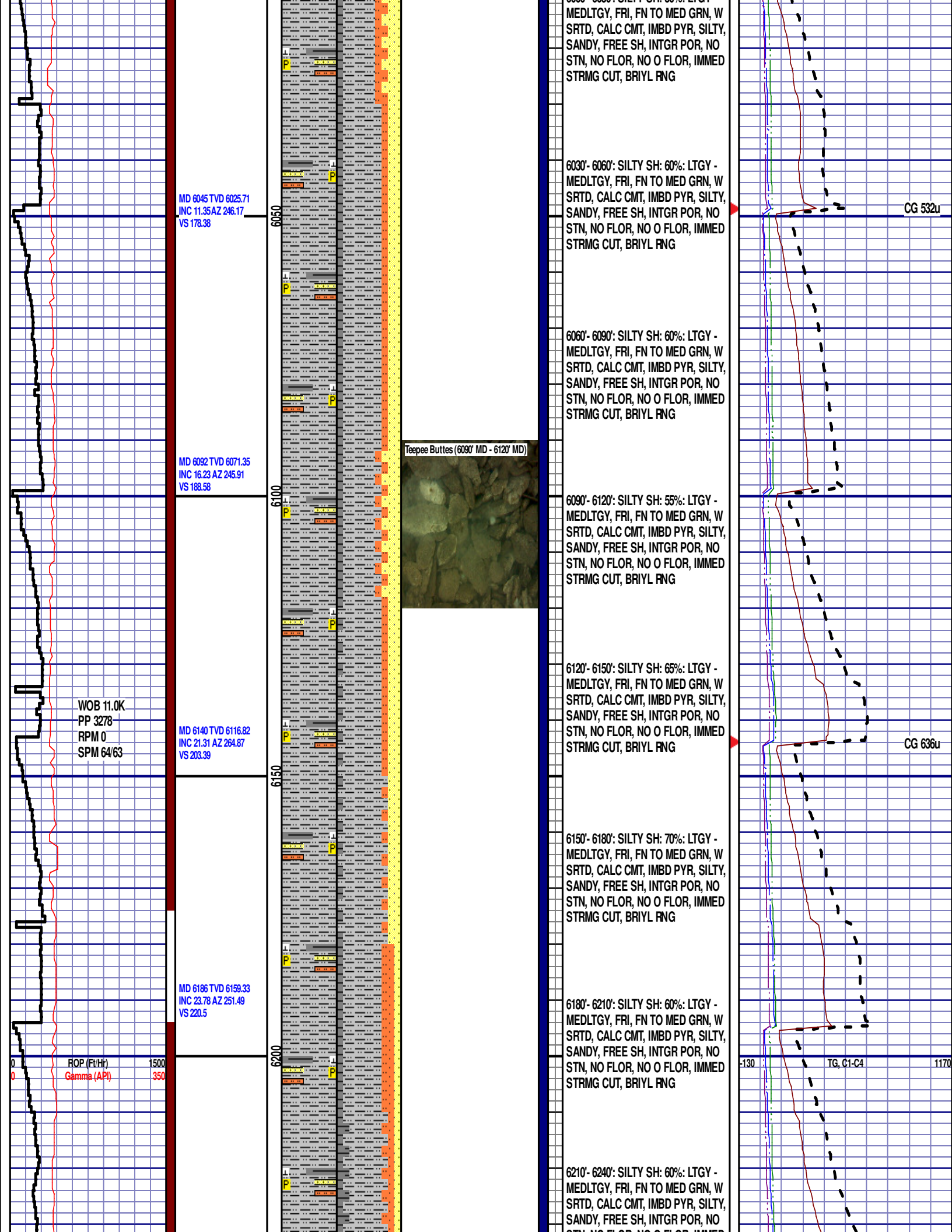
CHANGE IN PIPE TALLY

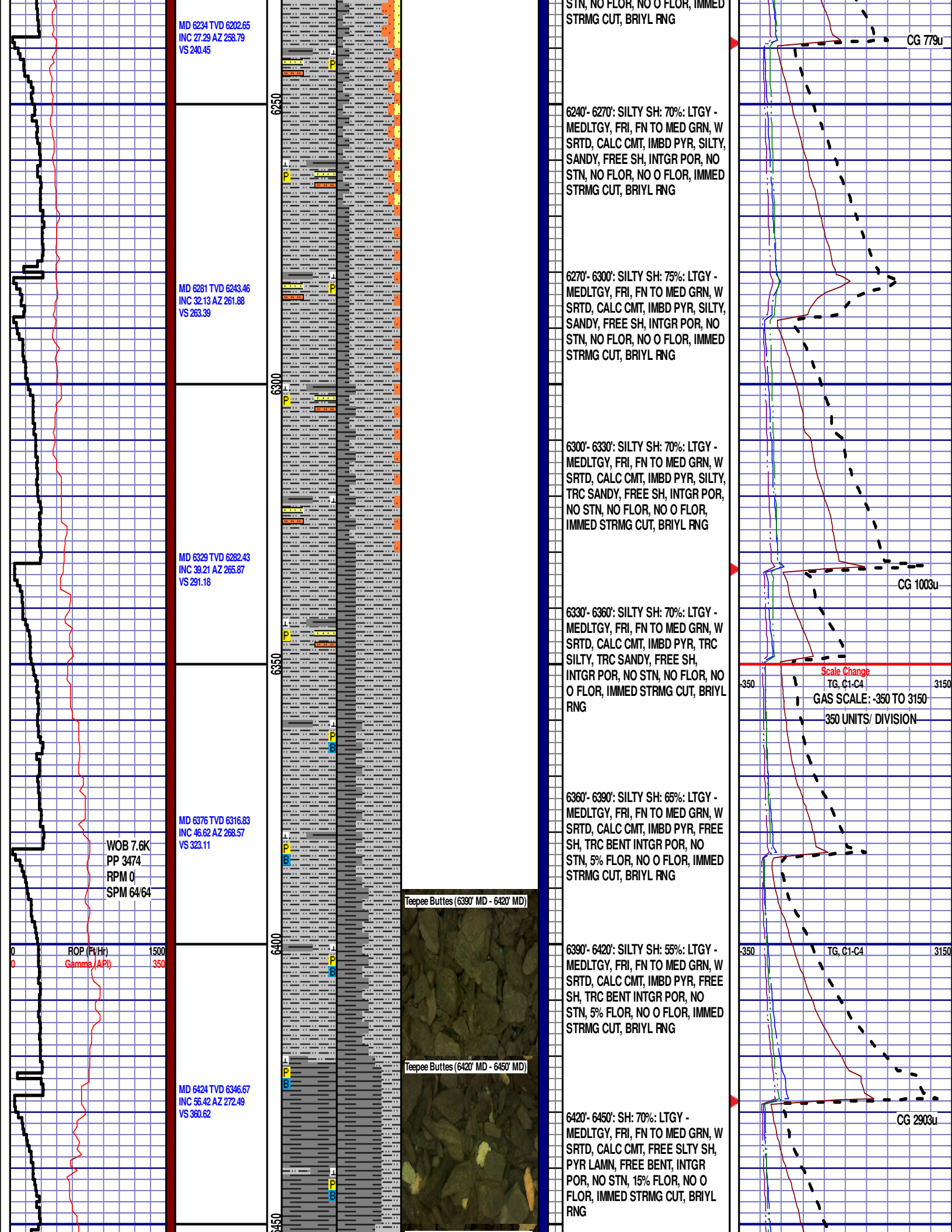
TG 630u

CG 417u

CG 446u

TG, C1-C4





WOB 8.1K
PP 3338
RPM 20
SPM 64/64

MD 6470 TVD 6370.34
INC 61.63 AZ 275.44
VS 399.96

6500

P
B



SHARON SPRINGS

6463' MD 6368' TVD
6450' - 6480': SH: 60%: LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, FREE SLTY SH,
PYR LAMN, FREE BENT, INTGR
POR, NO STN, 5% FLOR, NO O
FLOR, IMMED STRMG CUT, BRIYL
RNG

END OF VERTICAL LOG @ 6480' MD
ON 4/4/14. CONTINUED ON
HORIZONTAL LOG.

