



7136 South Yale Avenue, Suite 414

Tulsa, Oklahoma 74136-6378

phone 918.925.9739

fax 866.534.4559

WWW.HZMUD.COM/25

Customer Information

Operator: Noble Energy Inc
1625 Broadway
Suite 2200
Denver, Colorado 80202

Geologist: Renee Clackler
Noble Energy Inc.

Mud Logging Details

Logger: Ross Apodaca &
Scott Haney

Log Interval: 2500' MD to 5680' MD

Start Date: September 3, 2014

Release Date: September 9, 2014

Well Information

Well Name: Rohn State LD03-64HN

Location: 3-9N-58W
2027' FSL, 330' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 277

Total Depth: 10220' MD

TD Date: September 9, 2014

Formation: Niobrara A Marl

KB Elevation: 4725'

GR Elevation: 4701'

API Number: 05-123-37457-0000

ROCK TYPES

Anhy
 Bent
 Cht
 Clyst
 Coal
 Congl
 Dol

Gyp
 Igne
 Lmst
 Meta
 Mrlst
 Salt
 Shale

Shcol
 Chalk
 Slst
 Ss
 Till
 gw
 lmywash

ogw
 olmywash
 oshly gw
 shly gw
 sdygw
 hvycrbsh
 nosmpl

Lsdetrit
 sltst
 sdy sh

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
	ROP (Ft/Hr) Gamma (API)	2000 300		24					NOBLE ENERGY INC ROHN STATE LD03-64HN 3-9N-58W 2027' FSL, 330' FEL WELD CO., CO H&P 277 LOGGERS: ROSS APODACA SCOTT HANEY CALLED OUT BY COMPANY MAN ON 9/3/2014 @ 8:30 AM COMMENCED LOGGING @ 7:35PM		TG, C1-C4	1125
											CONNECTIONS ARE MARKED WITH RED TRIANGLES	
											GAS SCALE: -125 TO 1125 125 UNITS/DIVISION	
											DRILLING ON WATER BASED MUD	

ON 9/3/2014 @ 2500' MD W/BIT #2,
8.75", SMITH MDI519, (S/N) JJ1345 IN
@ 1236' MD

PIERRE

BEFORE LOGGING DEPTH

DEPTH 1550'
CG 36u
WT 9.10
VIS 44
PH 12.0
FIL 16.6
CL 1000
CAL 60
H2O 96.6
OIL 0.0
LGS 4.65
GELS 5/7/9
PV 13
YP 7
CK 1/0
SOL 3.1

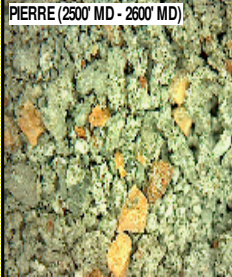
WOB 28.5K
PP 3544
RPM 71
SPM 78/78

MD 2545 TVD 2543.08
INC 5.56 AZ 79.31
VS 50.9

ROP (Ft/Hr) 2000
Gamma (API) 300

MD 2639 TVD 2636.62
INC 5.79 AZ 79.59
VS 60.07

WOB 33.2K
PP 3605
RPM 71
SPM 78/78



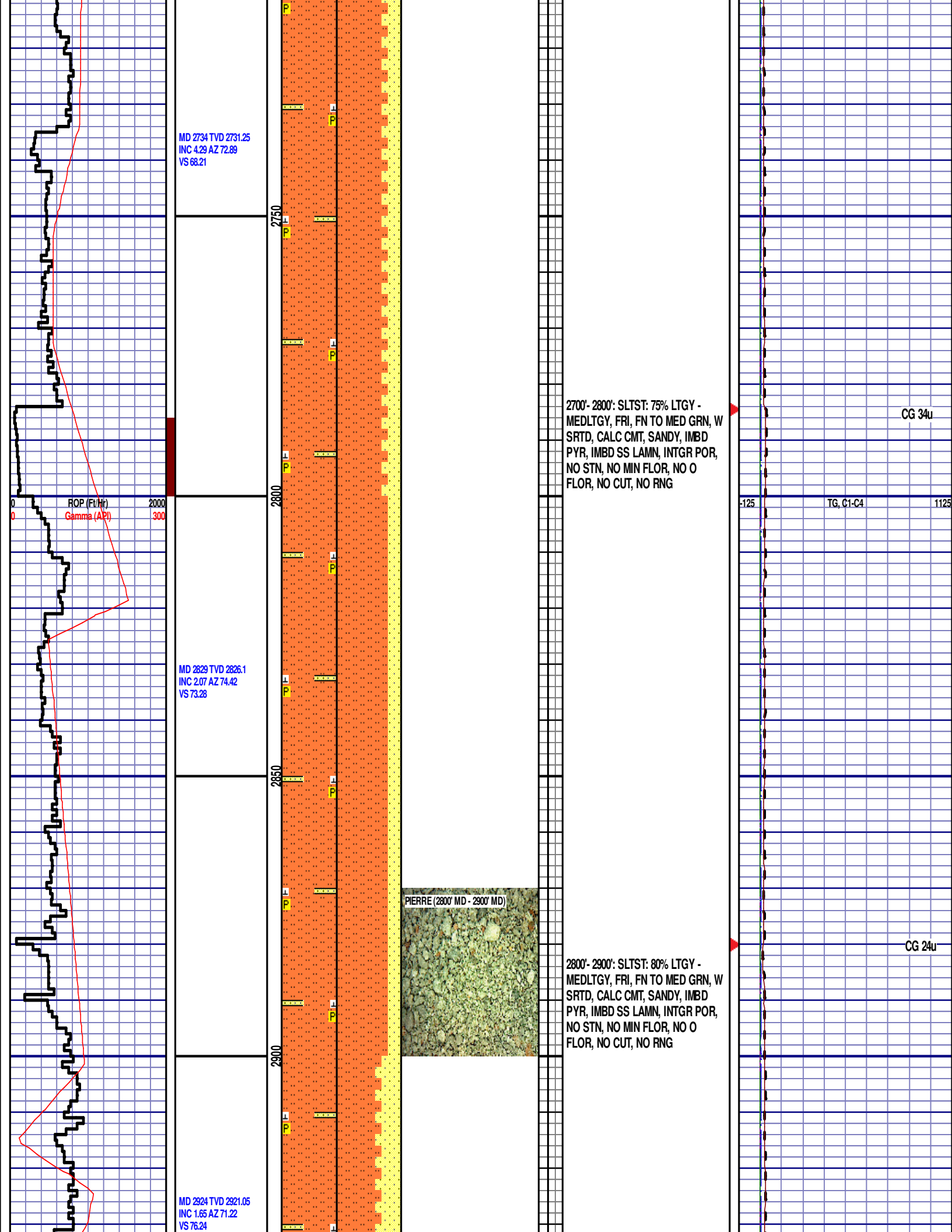
2500'- 2600': SLTST: 60% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, SANDY, IMBD
PYR, IMBD SS LAMN, INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

CG 44u

TG, C1-C4

2600'- 2700': SLTST: 55% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, SANDY, IMBD
PYR, IMBD SS LAMN, INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

CG 33u



MD 2734 TVD 2731.25
INC 4.29 AZ 72.89
VS 68.21

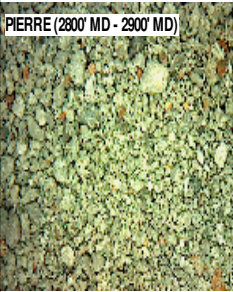
ROP (Ft/Hr)
Gamma (API)

MD 2829 TVD 2826.1
INC 2.07 AZ 74.42
VS 73.28

MD 2924 TVD 2921.05
INC 1.65 AZ 71.22
VS 76.24

2700'- 2800': SLTST: 75% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, SANDY, IMBD
PYR, IMBD SS LAMN, INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

PIERRE (2800' MD - 2900' MD)

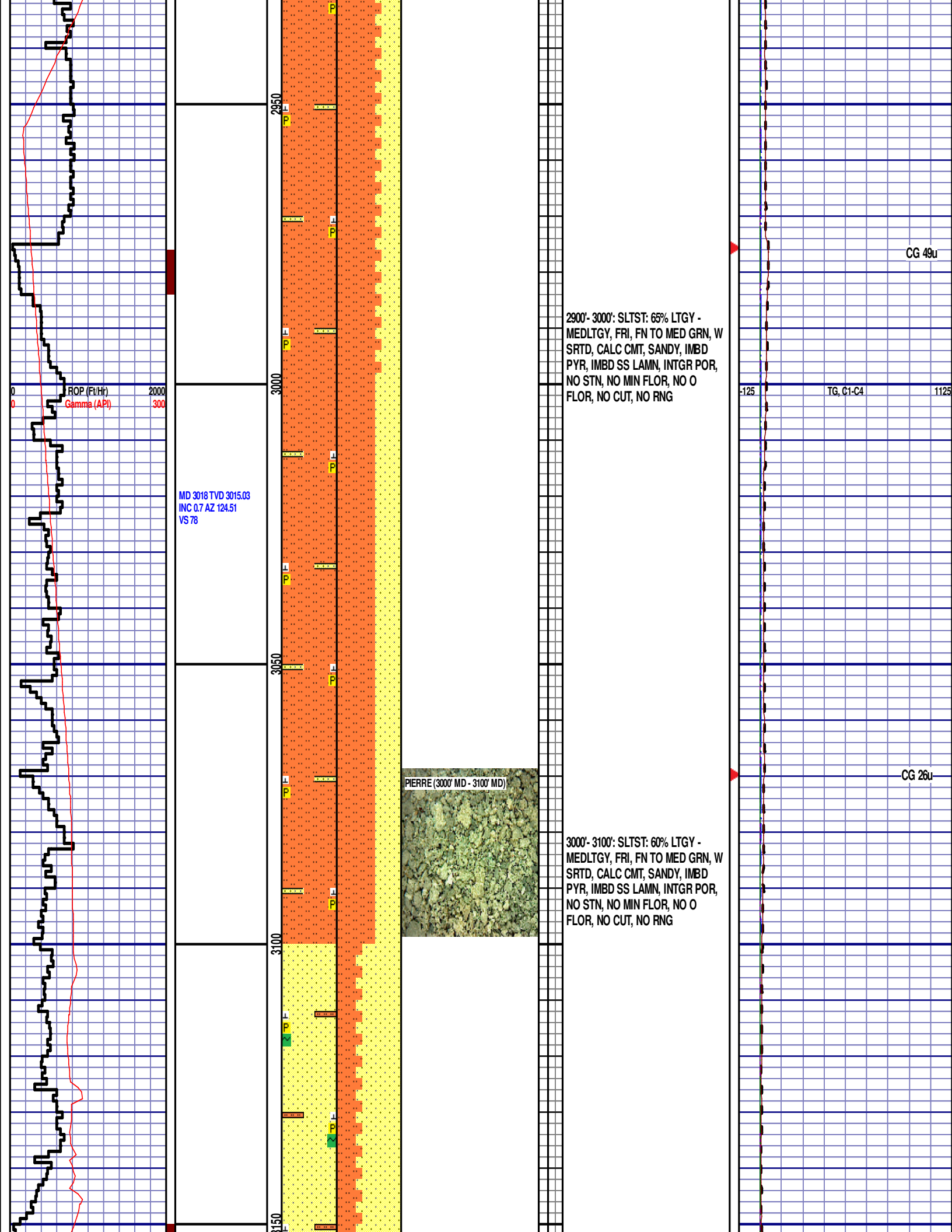


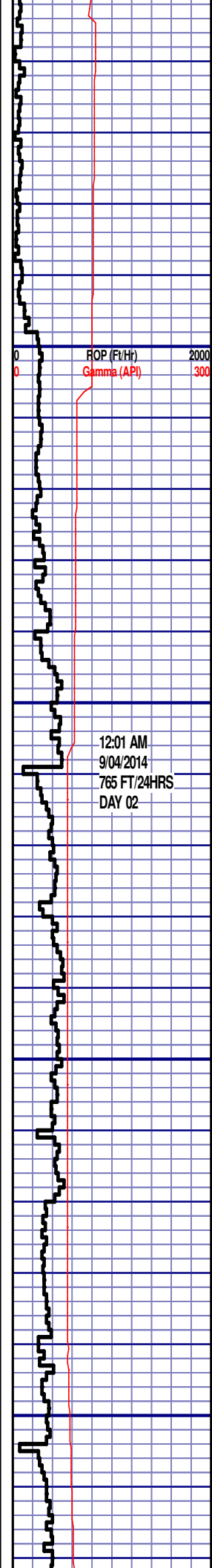
2800'- 2900': SLTST: 80% LTGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, SANDY, IMBD
PYR, IMBD SS LAMN, INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

CG 34u

TG, C1-C4

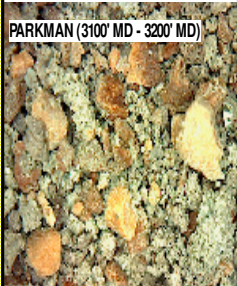
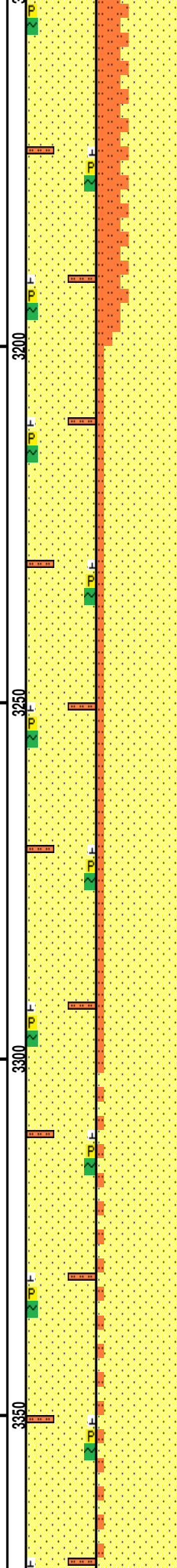
CG 24u





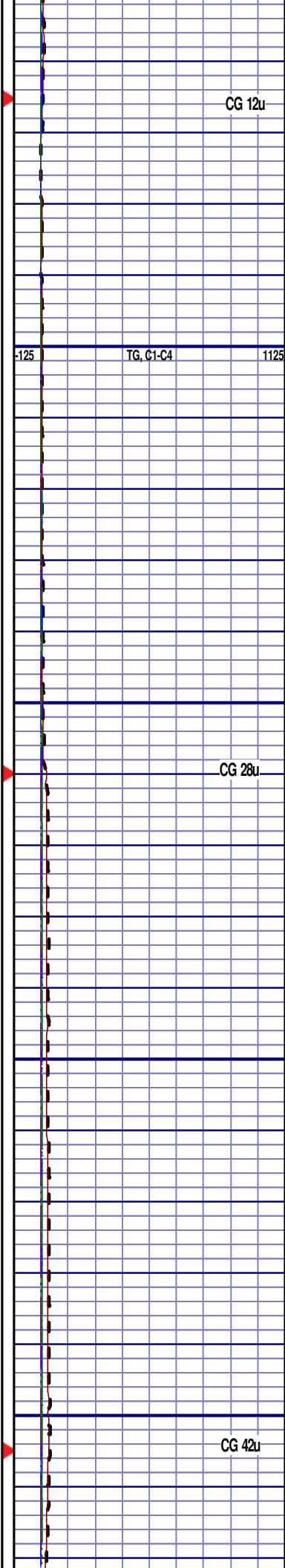
MD 3208 TVD 3205.02
INC 0.55 AZ 136.46
VS 79.57

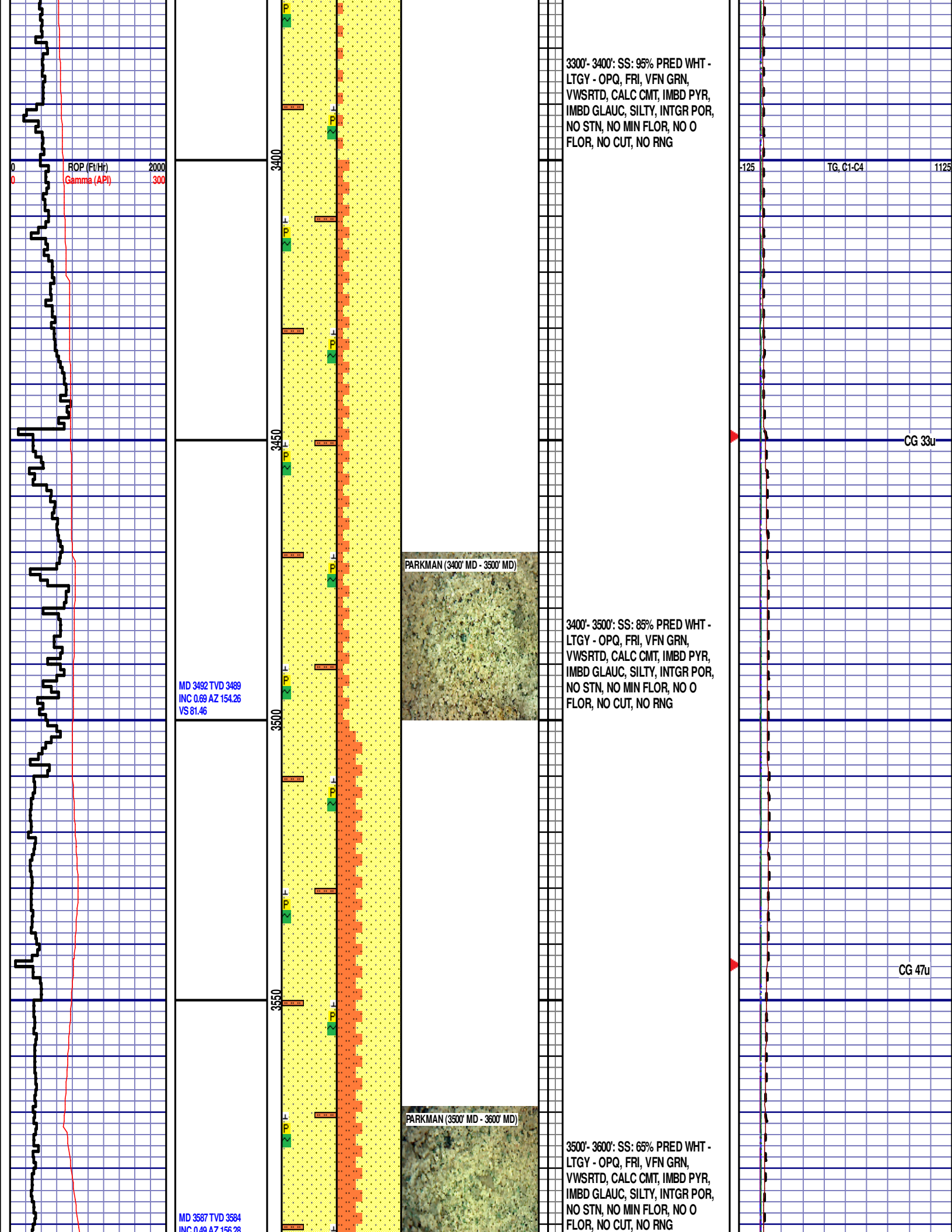
MD 3303 TVD 3300.02
INC 0.58 AZ 129.71
VS 80.25

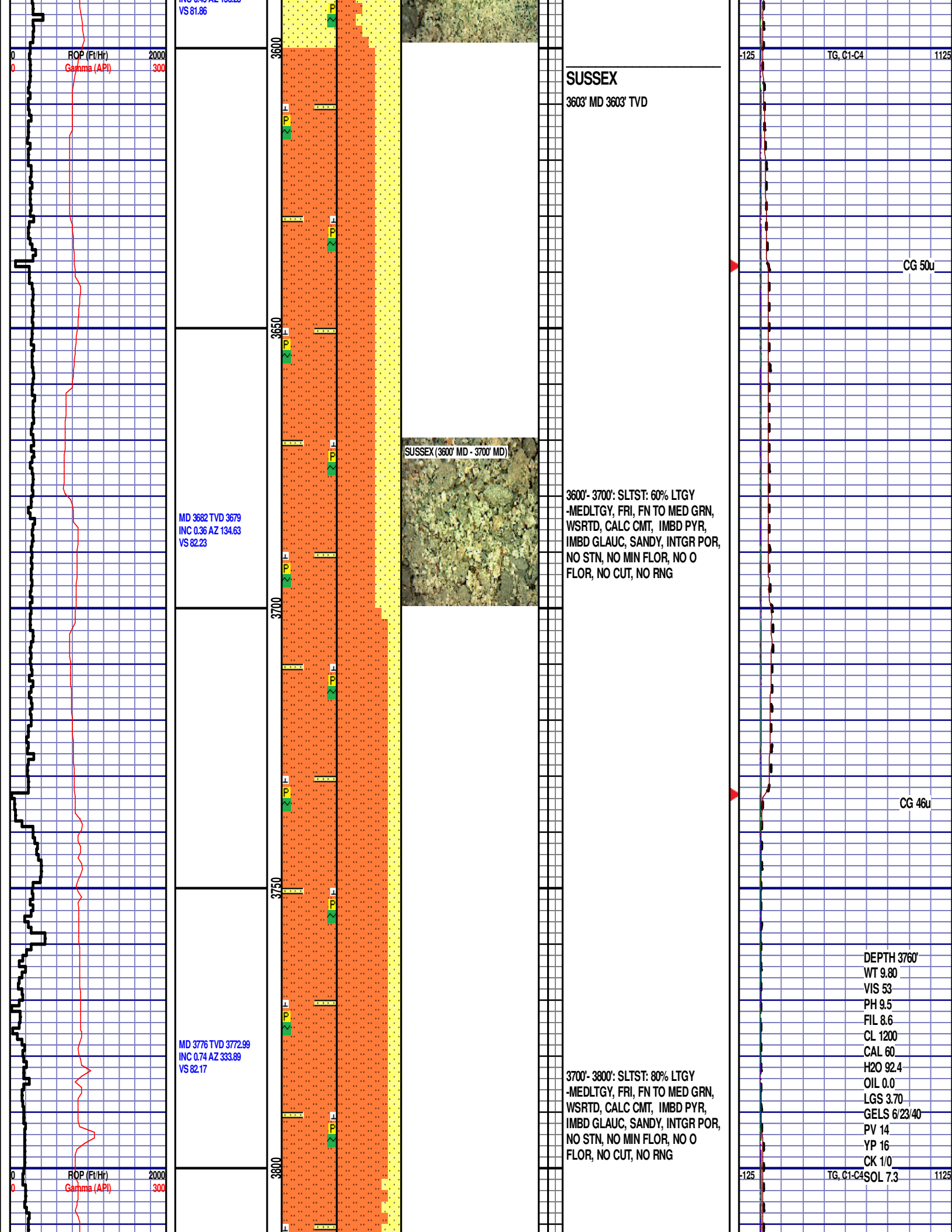


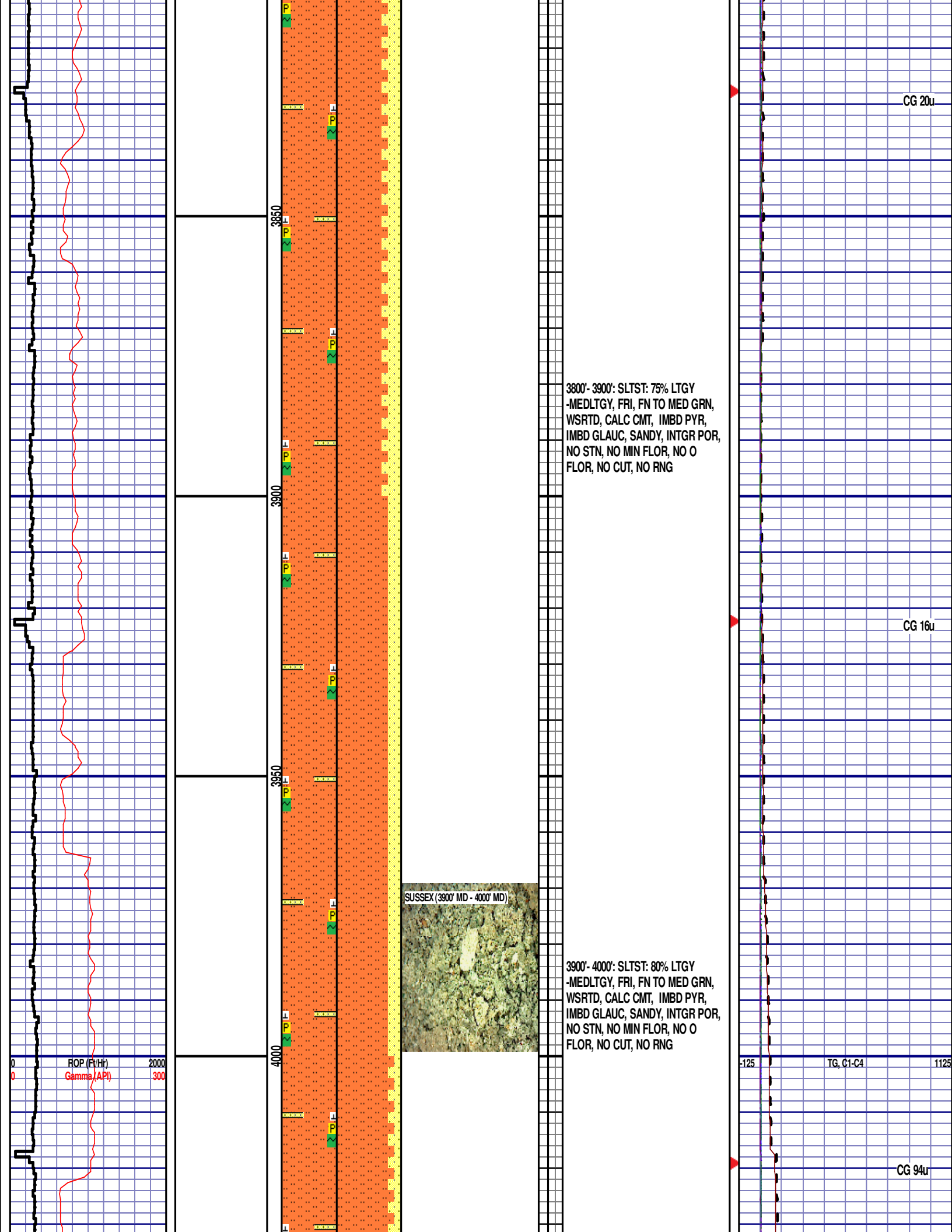
PARKMAN
3175' MD 3173' TVD
3100'- 3200': SS: 65% PRED WHT -
LTGY - OPQ, FRI, FN GRN, WSRD,
CALC CMT, IMBD PYR, IMBD
GLAUC, SILTY, INTGR POR, NO
STN, NO MIN FLOR, NO O FLOR,
NO CUT, NO RNG

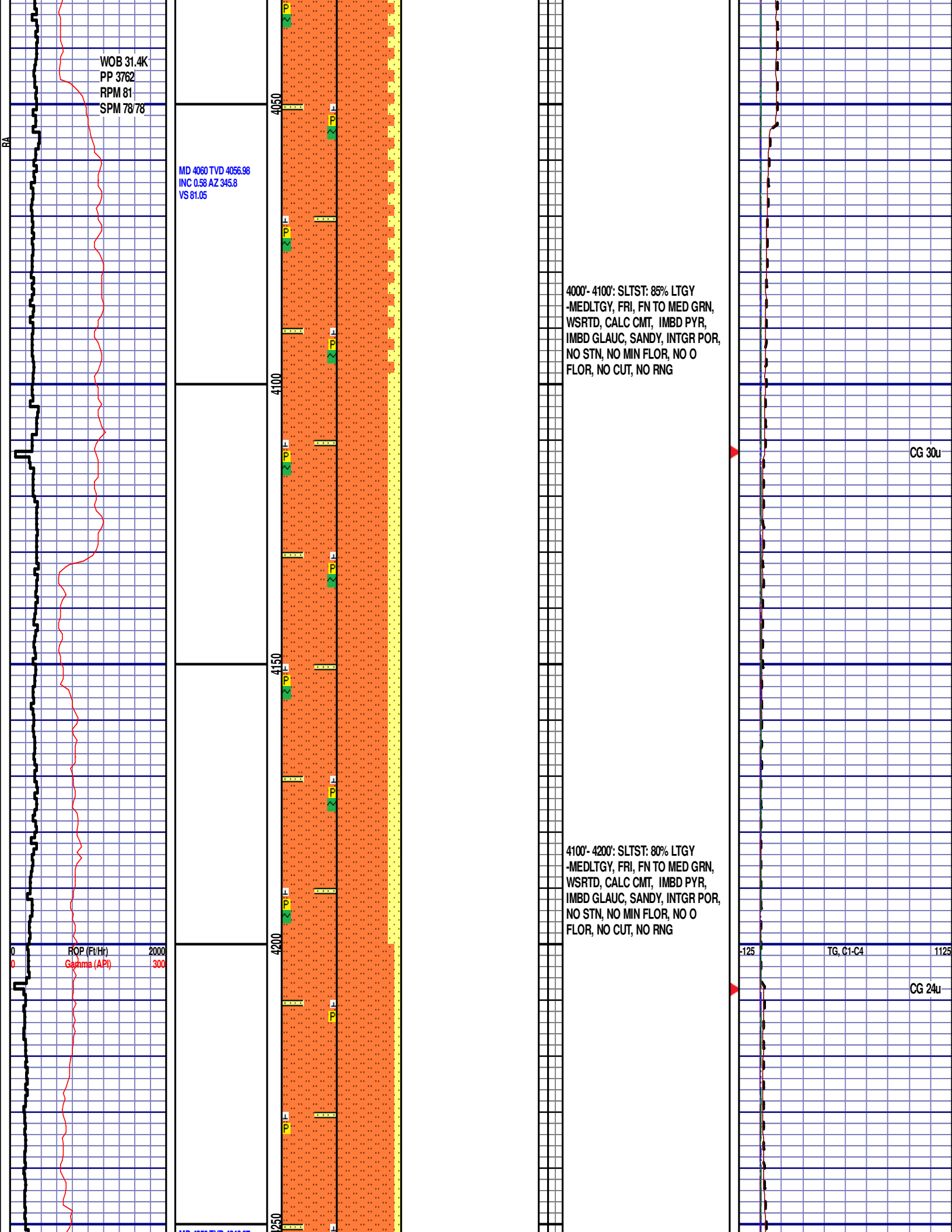
3200'- 3300': SS: 90% PRED WHT -
LTGY - OPQ, FRI, VFN GRN,
VWSRDT, CALC CMT, IMBD PYR,
IMBD GLAUC, SILTY, INTGR POR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG











MD 4250 TVD 4246.97
INC 0.54 AZ 321.11
VS 80.28

MD 4439 TVD 4435.95
INC 1.09 AZ 336.37
VS 79.03

ROP (Ft/Hr)
Gamma (API)

2000
300

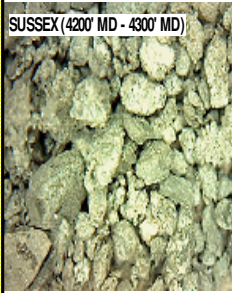
4300

4350

4400

4450

SUSSEX (4200' MD - 4300' MD)



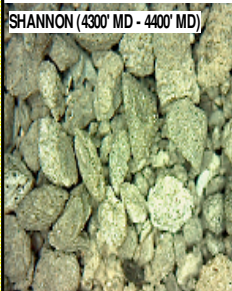
4200'- 4300': SLTST: 90% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

SHANNON

4301' MD 4298' TVD

CG 17u

SHANNON (4300' MD - 4400' MD)



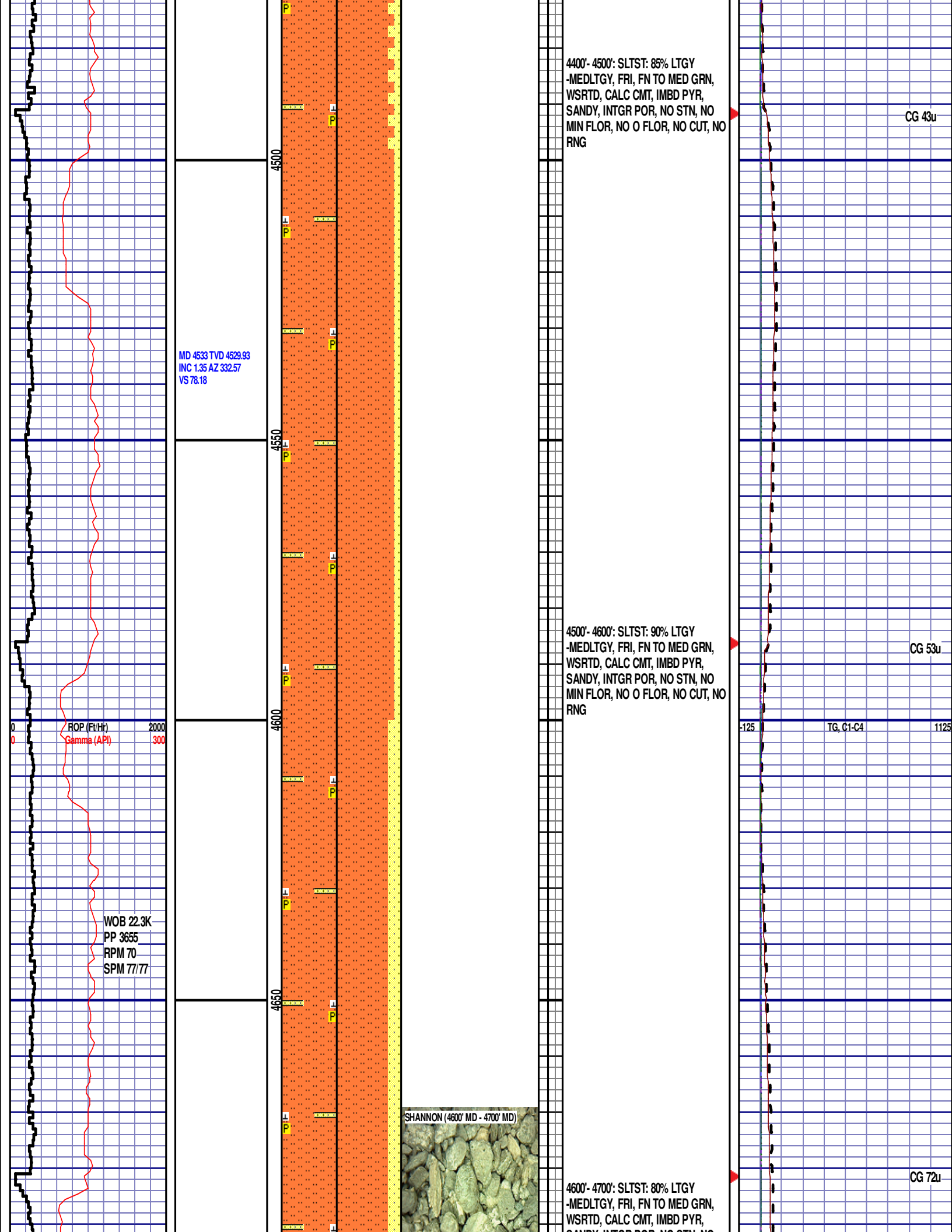
4300'- 4400': SLTST: 75% PRED LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

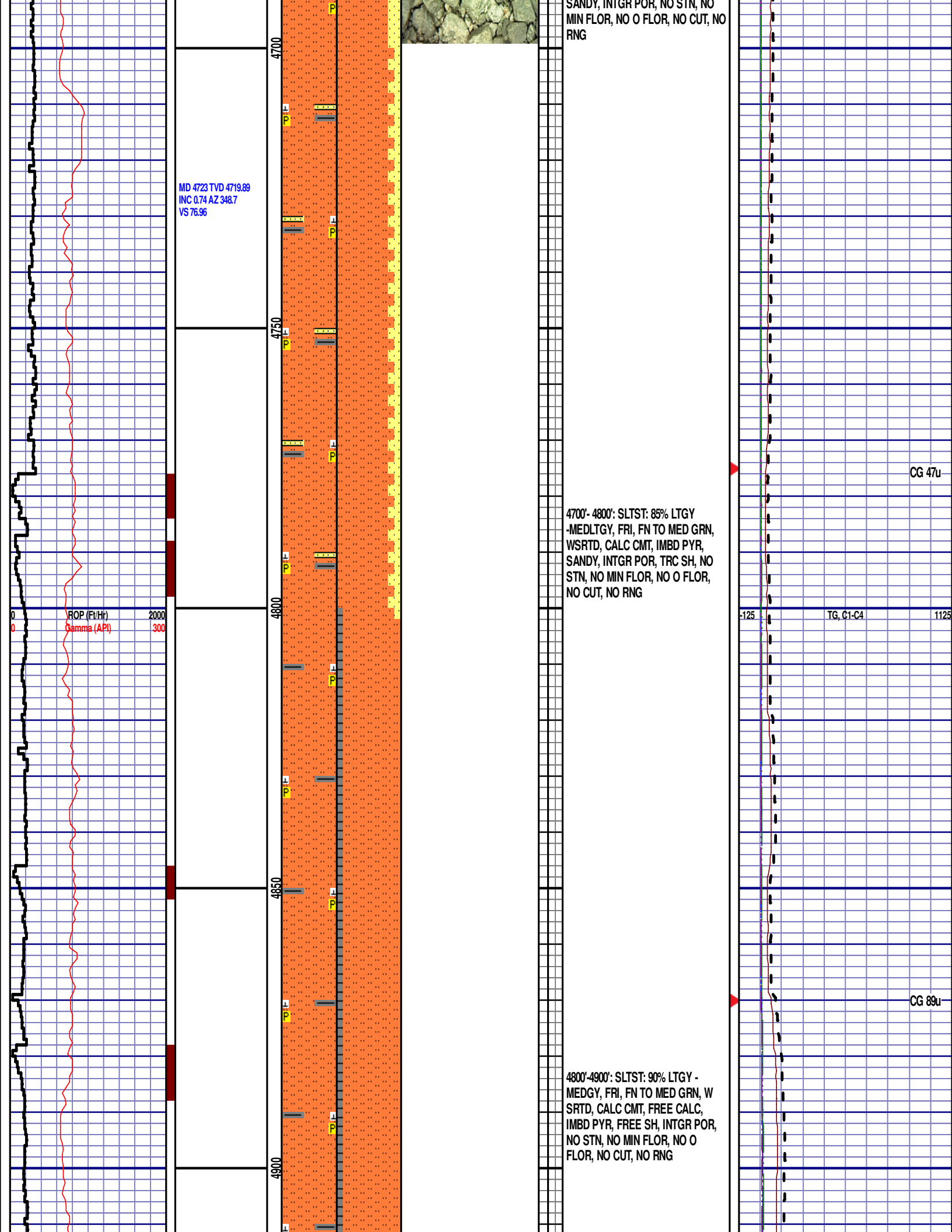
CG 11u

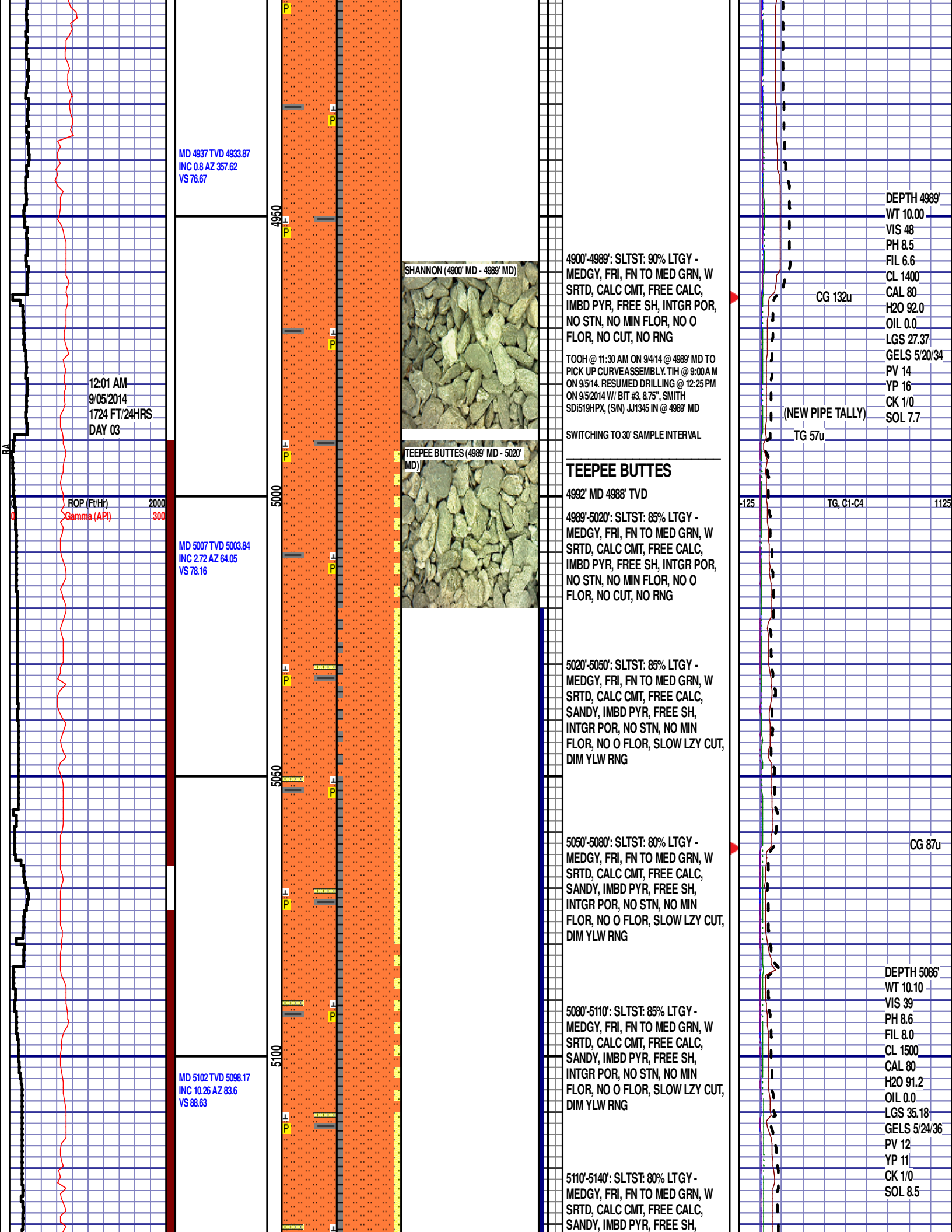
-125

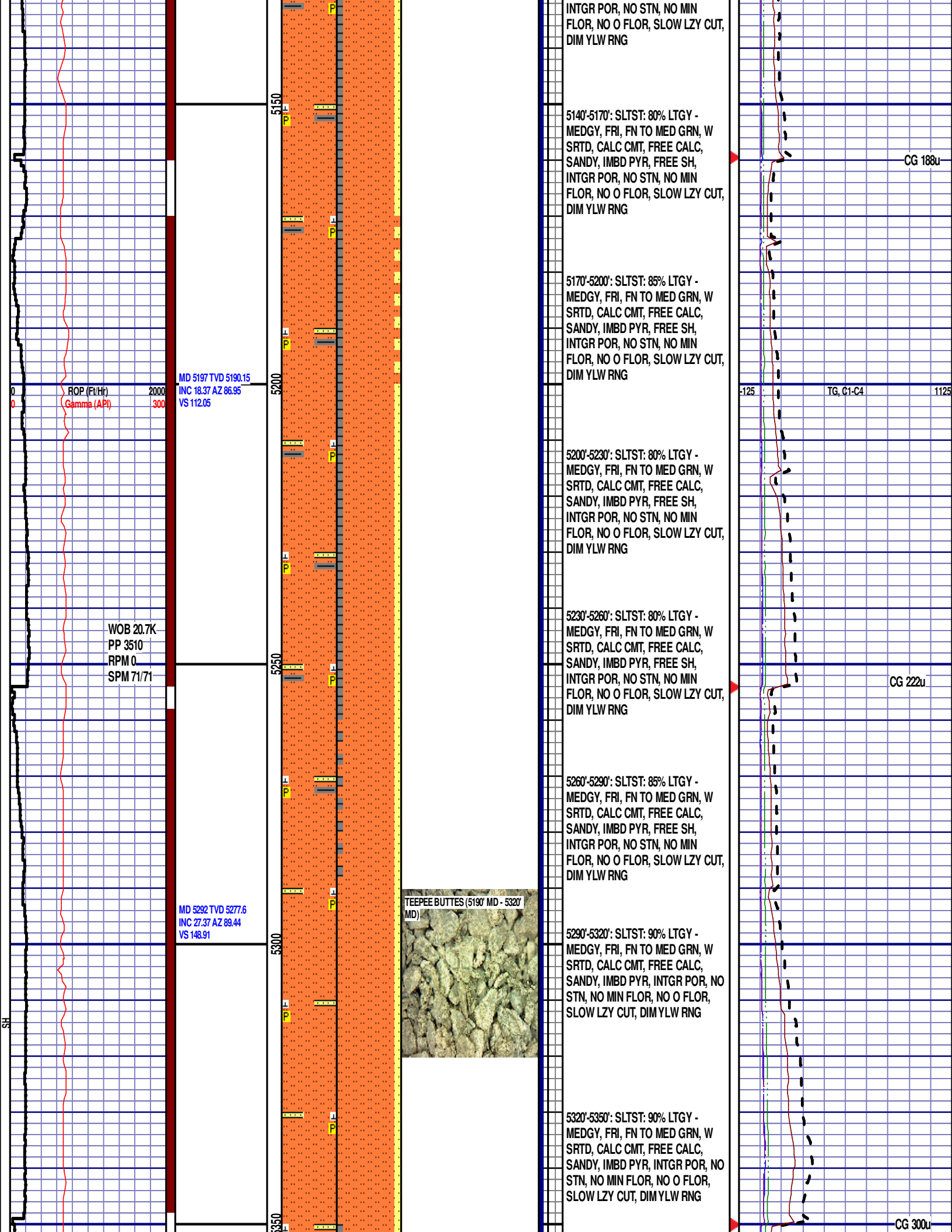
TG, C1-C4

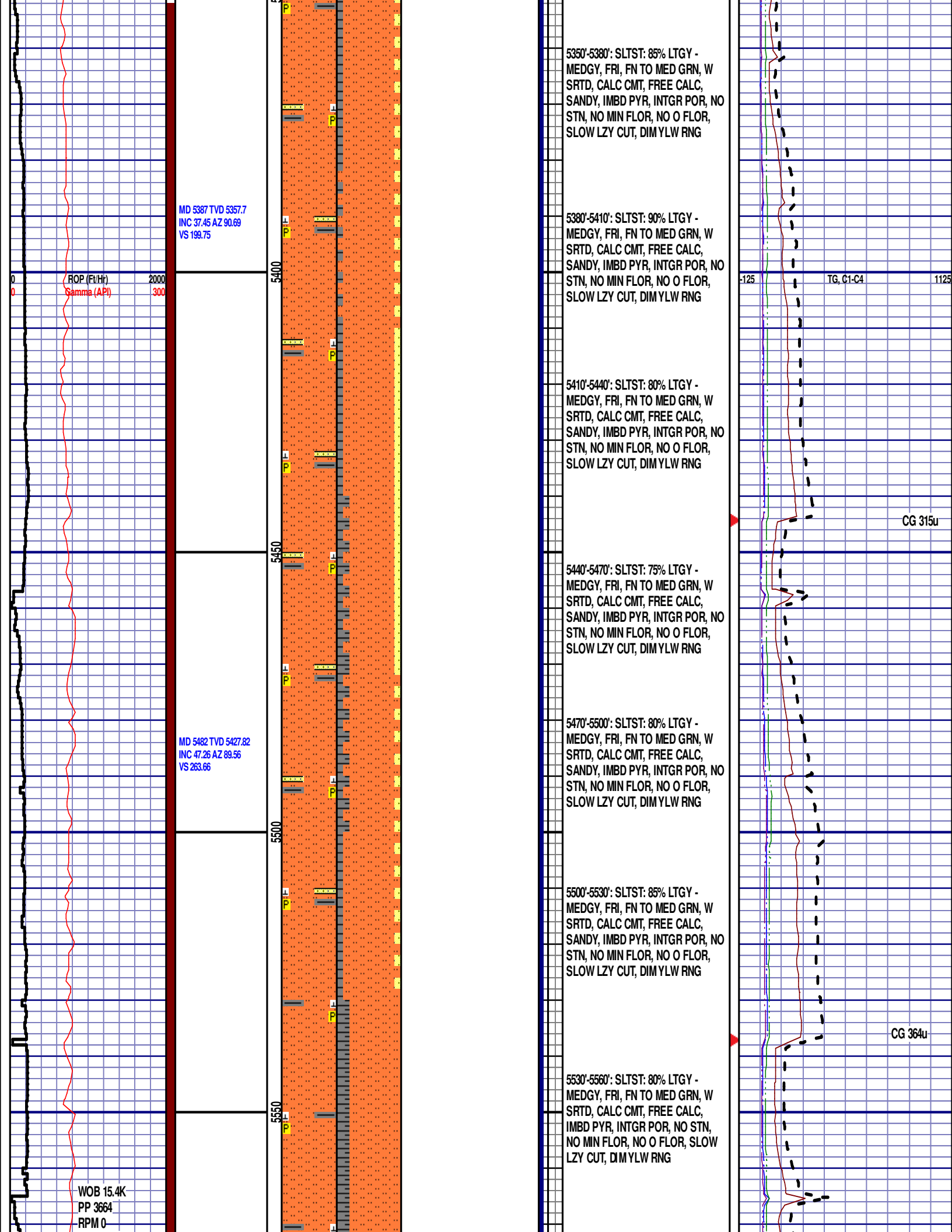
1125











SPM 71/71

MD 5576 TVD 5485.6
INC 56.78 AZ 88.82
VS 337.67

ROP (Ft/Hr)
Gamma (API)

2000
300

5600

5650

5700

TEEPEE BUTTES (5590' MD - 5620'
MD)



5560'-5590': SLTST: 80% LTGY -
MEDGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, FREE CALC,
IMBD PYR, INTGR POR, NO STN,
NO MIN FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

5590'-5620': SLTST: 75% LTGY -
MEDGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, FREE CALC,
IMBD PYR, INTGR POR, NO STN,
NO MIN FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

5620'-5650': SLTST: 80% LTGY -
MEDGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, FREE CALC,
IMBD PYR, INTGR POR, NO STN,
NO MIN FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

5650'-5680': SLTST: 75% LTGY -
MEDGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, FREE CALC,
IMBD PYR, INTGR POR, NO STN,
NO MIN FLOR, NO O FLOR, SLOW
LZY CUT, DIM YLW RNG

END OF VERTICAL LOG @ 5680' MD
ON 9/5/2014, CONTINUED ON
HORIZONTAL LOG.

-125

TG, C1-C4

1125

CG 695u