



7136 South Yale Avenue, Suite 414

Tulsa, Oklahoma 74136-6378

phone 918.925.9739

fax 866.534.4559

WWW.HZMUD.COM

## Customer Information

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

Geologist: Renee Clackler  
Noble Energy Inc.

## Mud Logging Details

Logger: Sam Stelzer &  
Adam Tross

Log Interval: 2500' MD to 7100' MD

Start Date: December 11, 2015

Release Date: December 14, 2015

## Well Information

Well Name: Moser H22-735

Location: Sec 15,22-T3N-R65W

County: Weld  
State: Colorado

Drilling Rig: H&P 321

Total Depth: 14162

TD Date: December 14, 2015

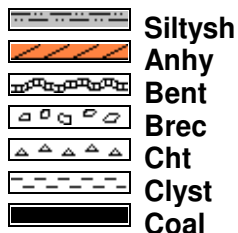
Formation: Niobrara B Marl

KB Elevation: 4841'

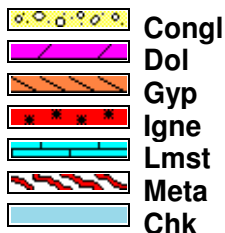
GR Elevation: 4811'

API Number: 05-123-40884-0000

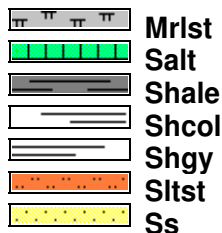
## ROCK TYPES



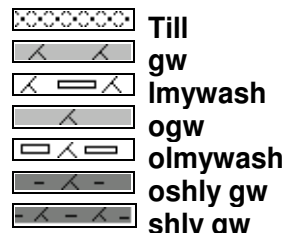
Siltysh  
Anhy  
Bent  
Brec  
Cht  
Clyst  
Coal



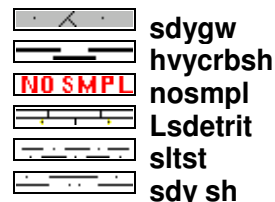
Congl  
Dol  
Gyp  
Igne  
Lmst  
Meta  
Chk



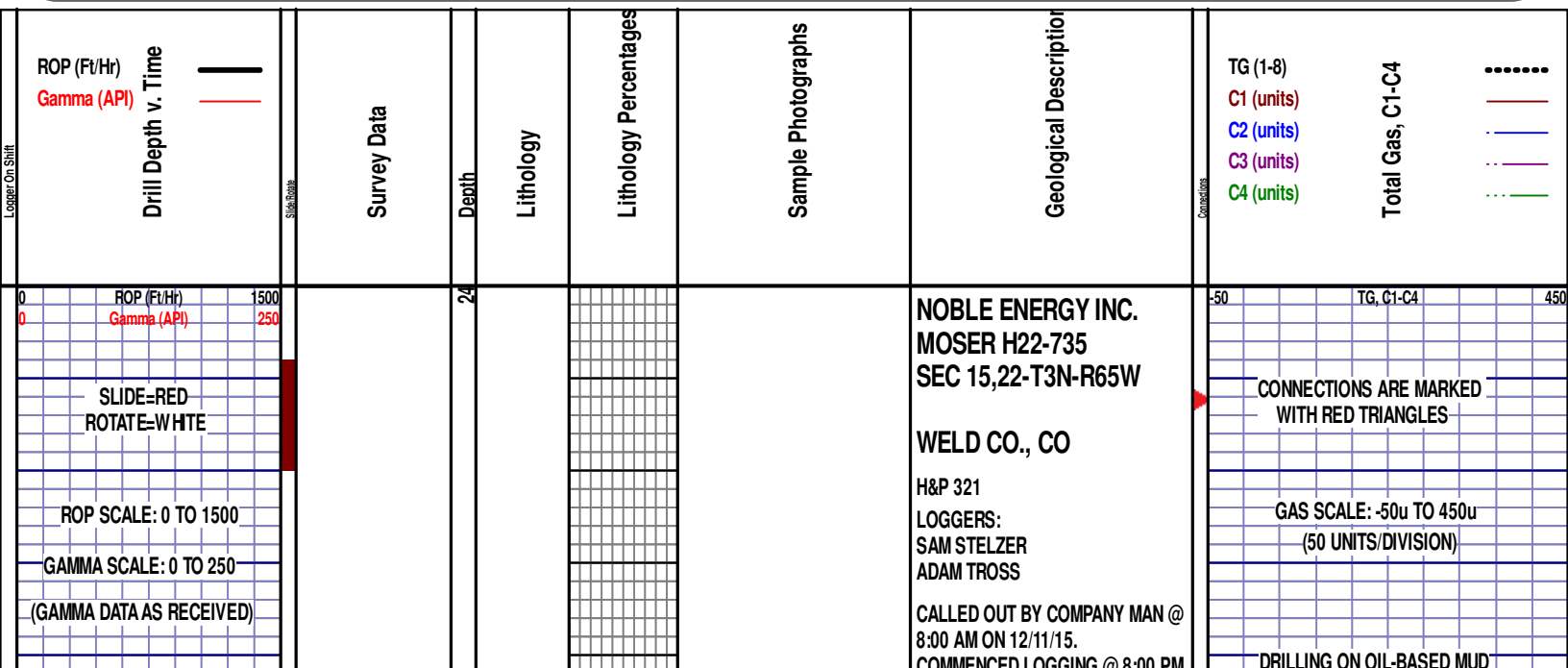
Mrlst  
Salt  
Shale  
Shcol  
Shgy  
Sltst  
Ss

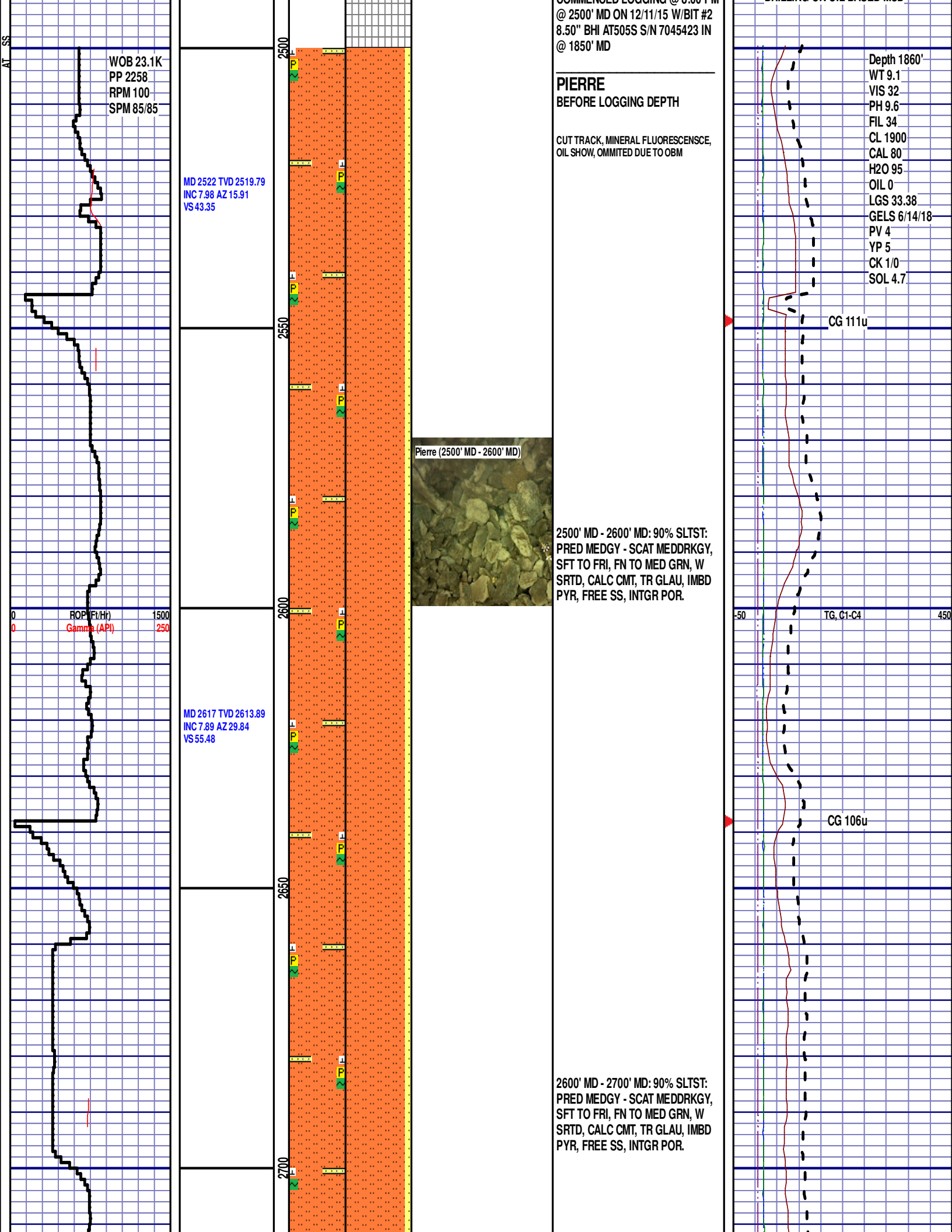


Till  
gw  
lmywash  
ogw  
olmywash  
oshly gw  
shly gw



sdycgw  
hvycrbsh  
nosmpl  
Lsdetrst  
sltst  
sdy sh





MD 2711 TVD 2706.9  
INC 8.76 AZ 34.16  
VS 67.19

MD 2806 TVD 2800.84  
INC 8.45 AZ 27.87  
VS 79.54

MD 2900 TVD 2893.87  
INC 8.03 AZ 22.32  
VS 91.86

ROP (Ft/Hr)  
Gamma (API)

1500  
250

2750

2800

2850

2900

Pierre (2800' MD - 2900' MD)

2700' MD - 2800' MD: 90% SLTST:  
PRED MEDGY - SCAT MEDDRKGY,  
SFT TO FRI, FN TO MED GRN, W  
SRTD, CALC CMT, TR GLAU, FREE  
SS, INTGR POR.

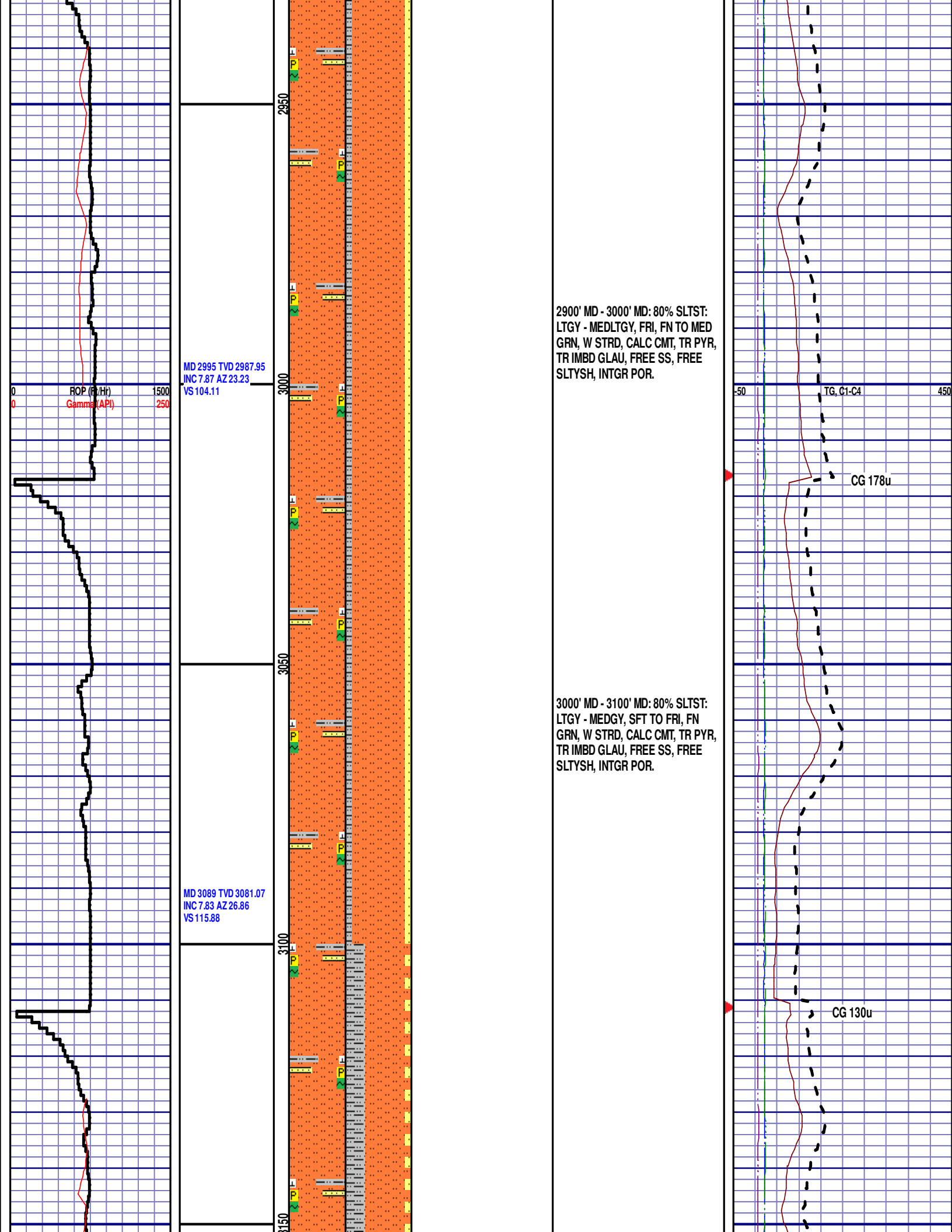
2800' MD - 2900' MD: 80% SLTST:  
LTGY - MEDLTGY, FRI, FN TO MED  
GRN, W STRD, CALC CMT, TR PYR,  
TR IMBD GLAU, FREE SS, INTGR  
POR.

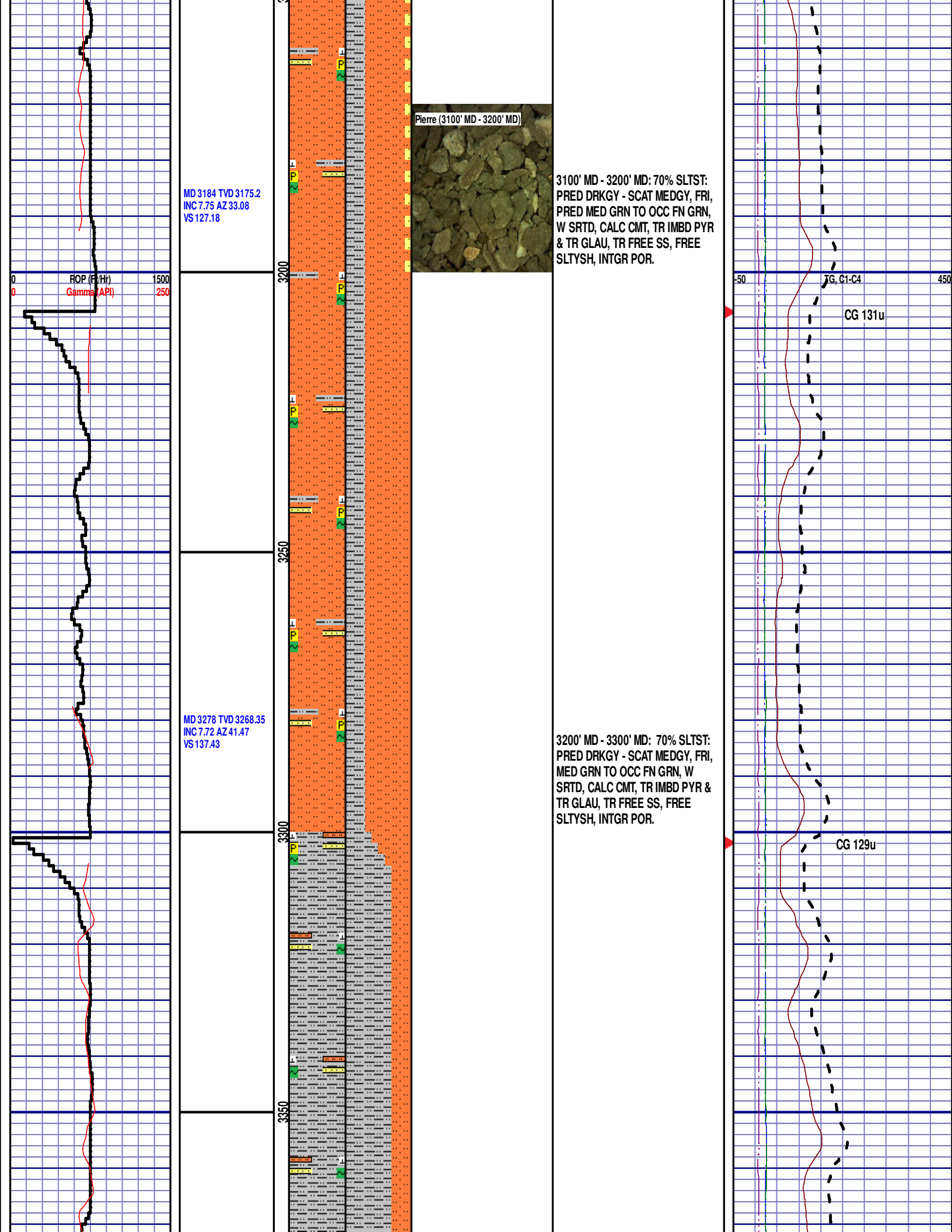
CG 141u

TG, C1-C4

CG 144u

CG 142u





MD 3184 TVD 3175.2  
INC 7.75 AZ 33.08  
VS 127.18

ROP (F/Hr)  
Gamma (API)

MD 3278 TVD 3268.35  
INC 7.72 AZ 41.47  
VS 137.43

Pierre (3100' MD - 3200' MD)

3100' MD - 3200' MD: 70% SLTST:  
PRED DRKG - SCAT MEDGY, FRI,  
PRED MED GRN TO OCC FN GRN,  
W SRTD, CALC CMT, TR IMBD PYR  
& TR GLAU, TR FREE SS, FREE  
SLTYSH, INTGR POR.

3200' MD - 3300' MD: 70% SLTST:  
PRED DRKG - SCAT MEDGY, FRI,  
MED GRN TO OCC FN GRN, W  
SRTD, CALC CMT, TR IMBD PYR &  
TR GLAU, TR FREE SS, FREE  
SLTYSH, INTGR POR.

JG, C1-C4

CG 131u

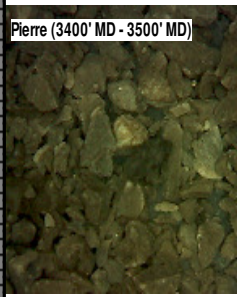
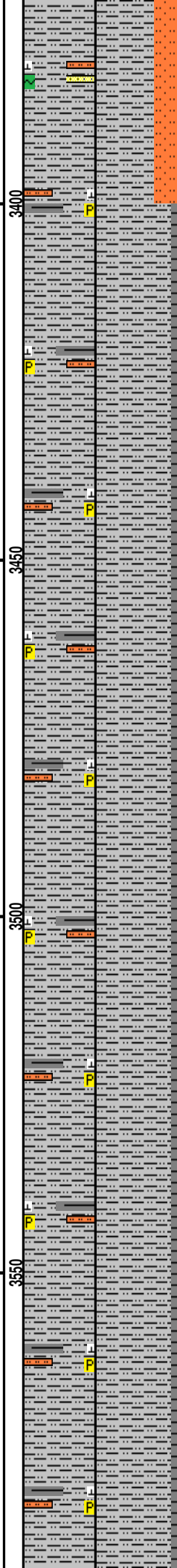
CG 129u

MD 3373 TVD 3362.49  
INC 7.67 AZ 51.08  
VS 146.43

ROP (Ft/Hr) 1500  
Gamma (API) 250

MD 3468 TVD 3456.59  
INC 8.22 AZ 58.88  
VS 154.21

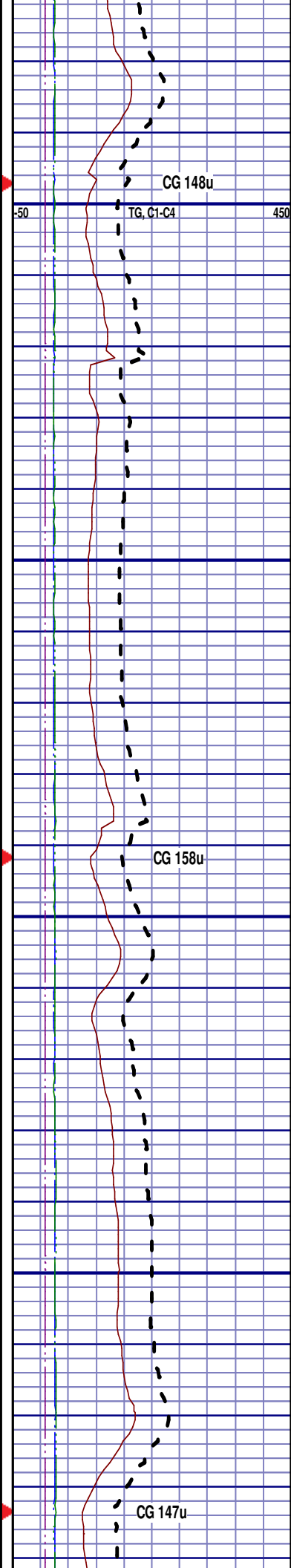
MD 3562 TVD 3549.66  
INC 7.89 AZ 57.26  
VS 161.47



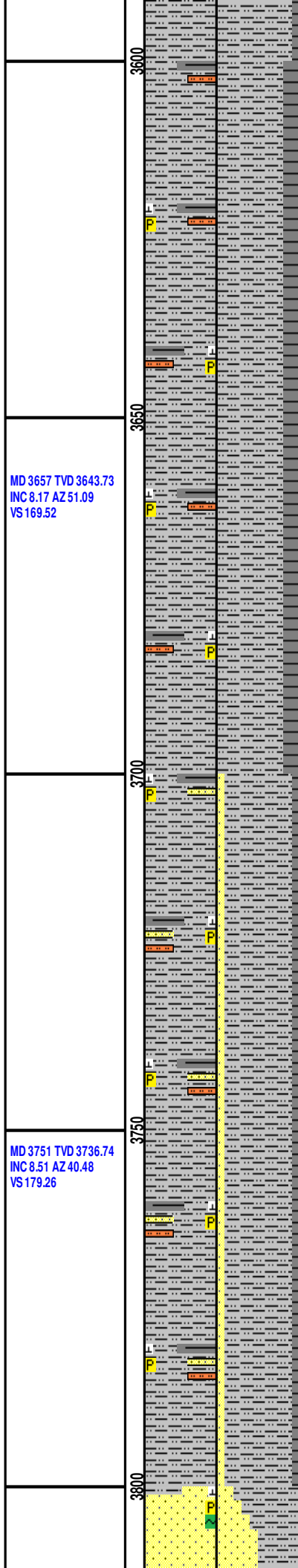
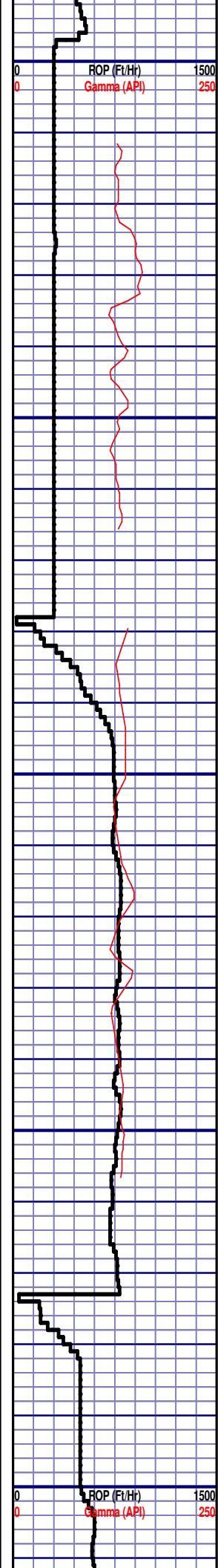
3300' MD - 3400' MD: 70% SILTY  
SH: PRED MEDDRKGY - SCAT  
MEDGY, SUBBLKY, PRED SLTY TO  
SCAT MED TXT, FRI, CALC CMT, TR  
GLAU, FREE SLTST, TR FREE SS,  
INTGR POR.

3400' MD - 3500' MD: 90% SILTY  
SH: PRED MEDDRKGY - SCAT  
MEDGY, SUBBLKY, PRED SLTY TO  
F TXT, FRI TO SFT, CALC CMT, TR  
IMBD PYRC SPEC, FREE SH, TR  
FREE SLTST, INTGR POR..

3500' MD - 3600' MD: 90% SILTY  
SH: PRED MEDDRKGY - SCAT



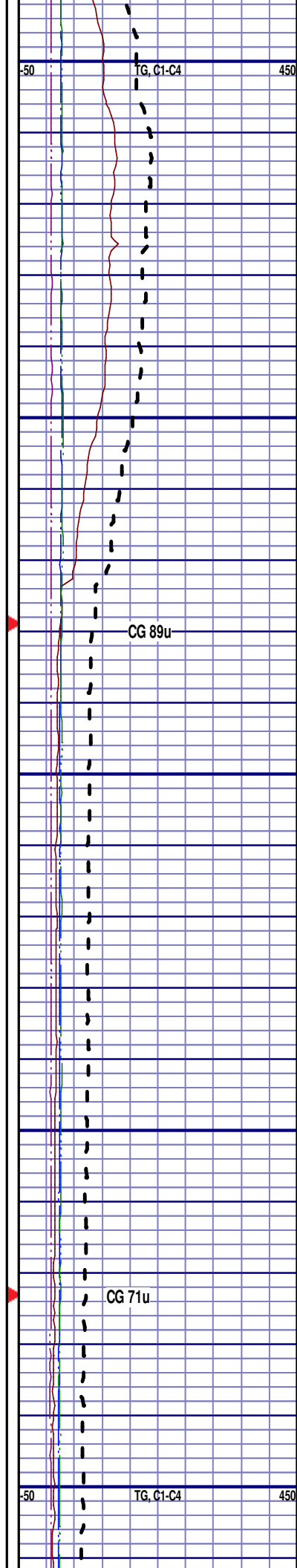




MEDGY, SUBBLKY, PRED SLTY TO  
F TXT, FRI, CALC CMT, TR IMBD  
PYRC SPEC, FREE SH, TR FREE  
SLTST, INTGR POR.

3600' MD - 3700' MD: 80% SILTY  
SH: PRED MEDDRKGY - MEDGY -  
OCC MEDGY, SUBBLKY TO BLKY,  
PRED SLTY TXT, SFT TO FRI, CALC  
CMT, TR IMBD PYRC SPEC, FREE  
SLTST, INTGR POR.

3700' MD - 3800' MD: 70% SILTY  
SH: MEDGY - SCAT MEDDKGY,  
SUBBLKY TO BLKY, PRED SLTY TO  
F TXT, FRI, CALC CMT, TR IMBD  
PYRC SPEC, FREE SH, TR FREE  
SLTST, FREE SS, INTGR POR.



MD 3846 TVD 3830.74  
INC 8.11 AZ 36.98  
VS 190.19

MD 3941 TVD 3924.81  
INC 7.97 AZ 34.82  
VS 201.15

Parkman (3800' MD - 3900' MD)



### PARKMAN

3900' MD (3884' TVD)

3800' MD - 3900' MD: 50% SS:  
PRED GY - LTGY - OPQ, MOD  
CONS, OCC FN TO MED GRN,  
SUBBLKY TO SUBANG, W TO  
MODY SRTD, CALC CMT, SILTY,  
IMBD PYR, TR IMBD GLAU, FREE  
SLTYSH, INTGR POR.

3900' MD - 4000' MD: 60% SS:  
PRED MEDGY - LTGY - OCC OPQ,  
MOD CONS, FN TO MED GRN,  
SUBBLKY, W TO MODY SRTD,  
CALC CMT, SILTY, IMBD PYR, TR  
IMBD GLAU, FREE SLTYSH, INTGR  
POR.

CG 140u

CG 223u

TG, C1-C4



MD 4036 TVD 4018.88  
INC 8.12 AZ 28.29  
VS 212.65

MD 4130 TVD 4111.93  
INC 8.12 AZ 28.92  
VS 224.47

12:01 AM  
12/12/15  
FT/24HRS  
1652'  
DAY 2

WOB 28.7K  
PP 2446  
RPM 150  
SPM 85/86

R/P (Ft/Hr)  
Gamma (API)

MD 4225 TVD 4205.97  
INC 8.22 AZ 35.93  
VS 236.03

4000' MD - 4100' MD: 70% SLTST:  
LTGY - MEDGY, FRI, FN GRN, W  
SRTD, CALC CMT, IMBD PYR, TR  
IMBD GLAU, FREE SS, INTGR POR.

Parkman  
(4100' MD - 4200' MD)

4100' MD - 4200' MD: 80% SLTST:  
LTGY - MEDLTGY, SFT TO FRI, FN  
GRN, W SRTD, CALC CMT, IMBD  
PYR SPEC, FREE SS, FREE  
SLTYSH.

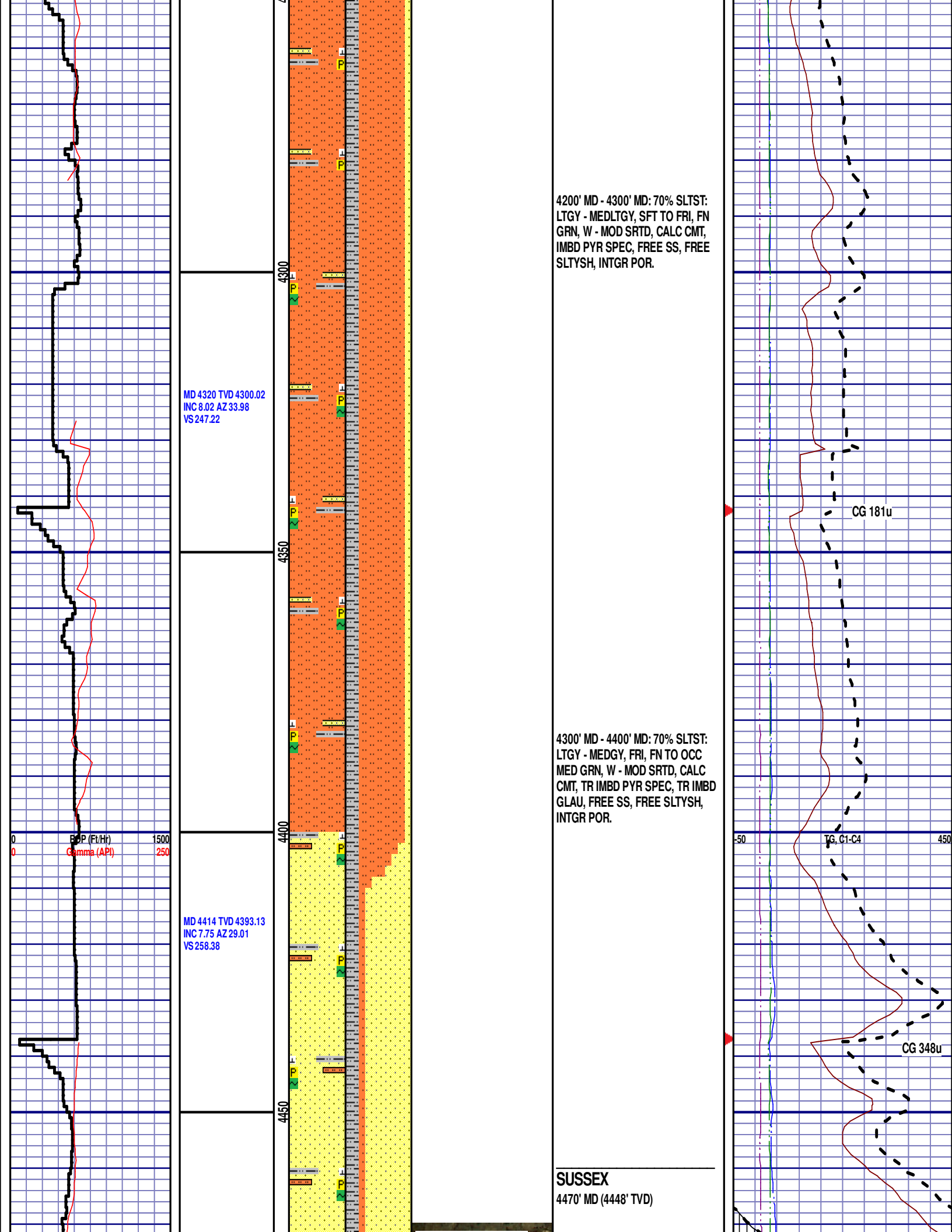
CG 274u

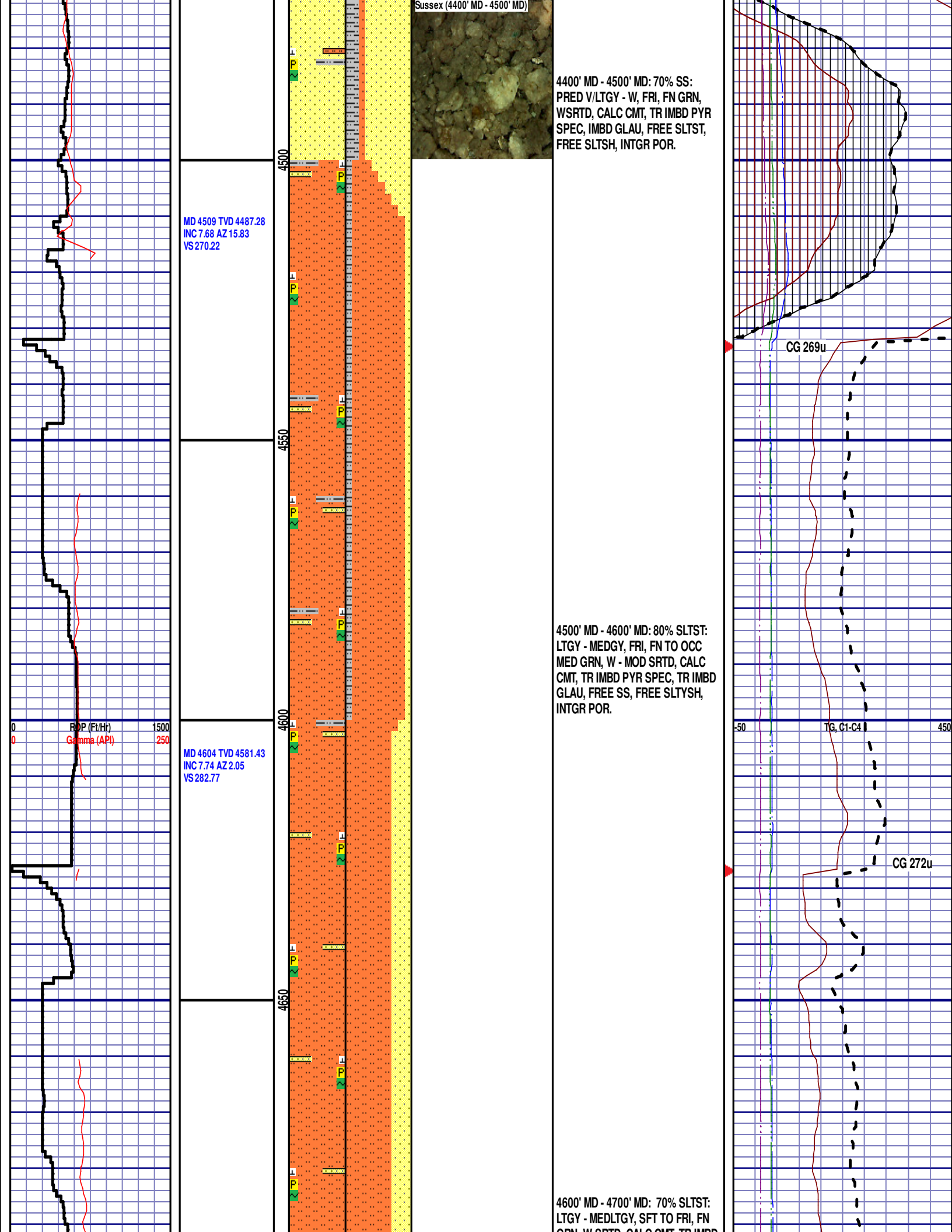
CG 257u

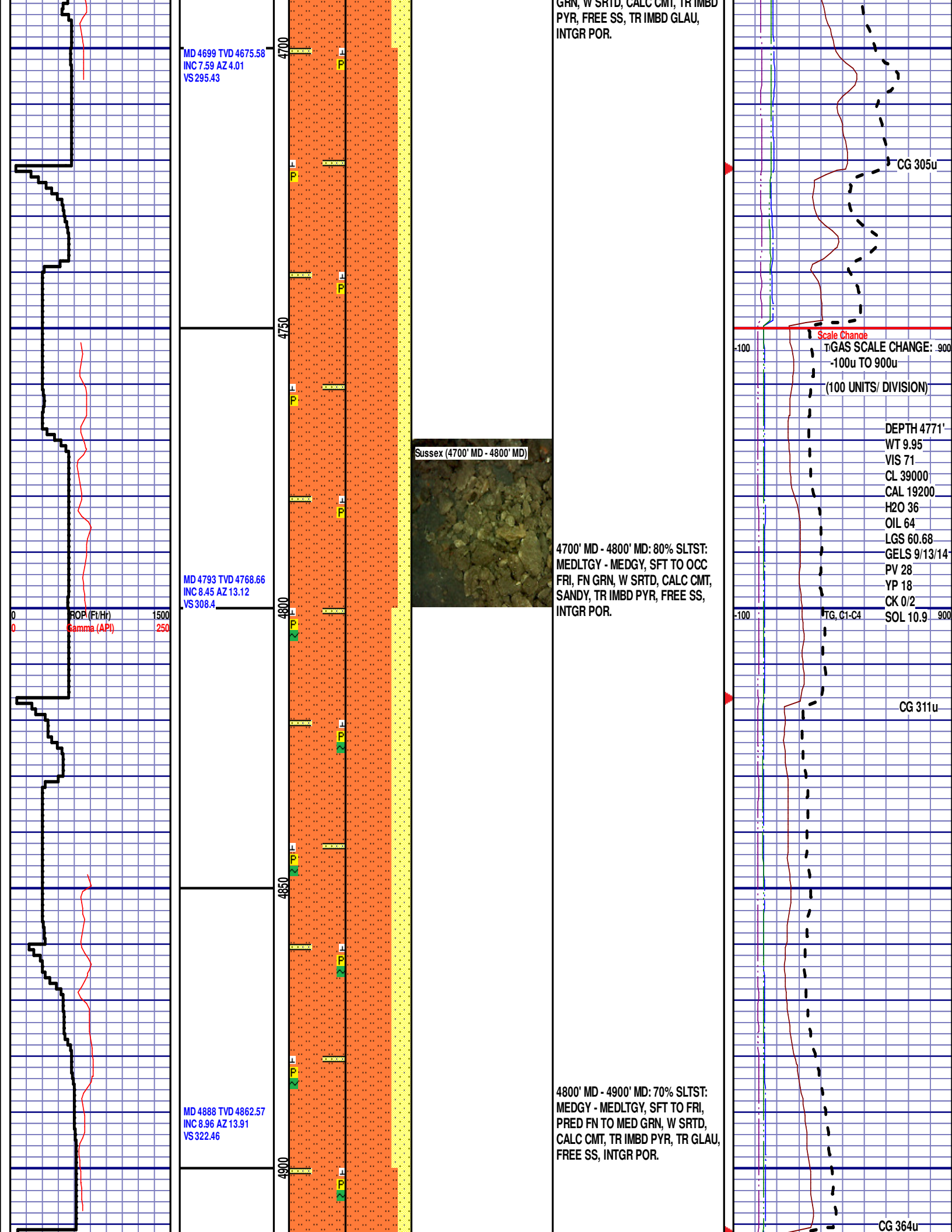
RIG SERVICE

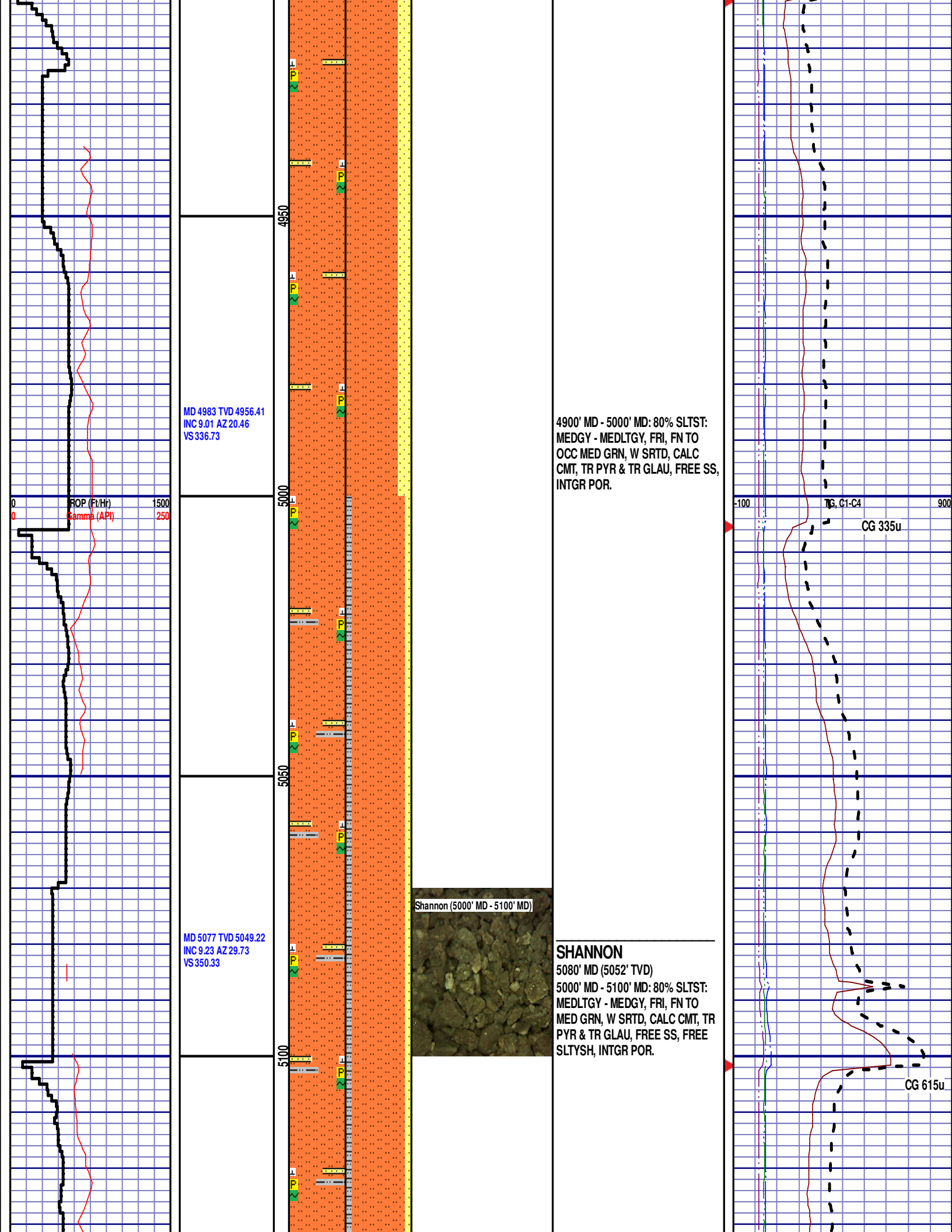
TG, C1-C4

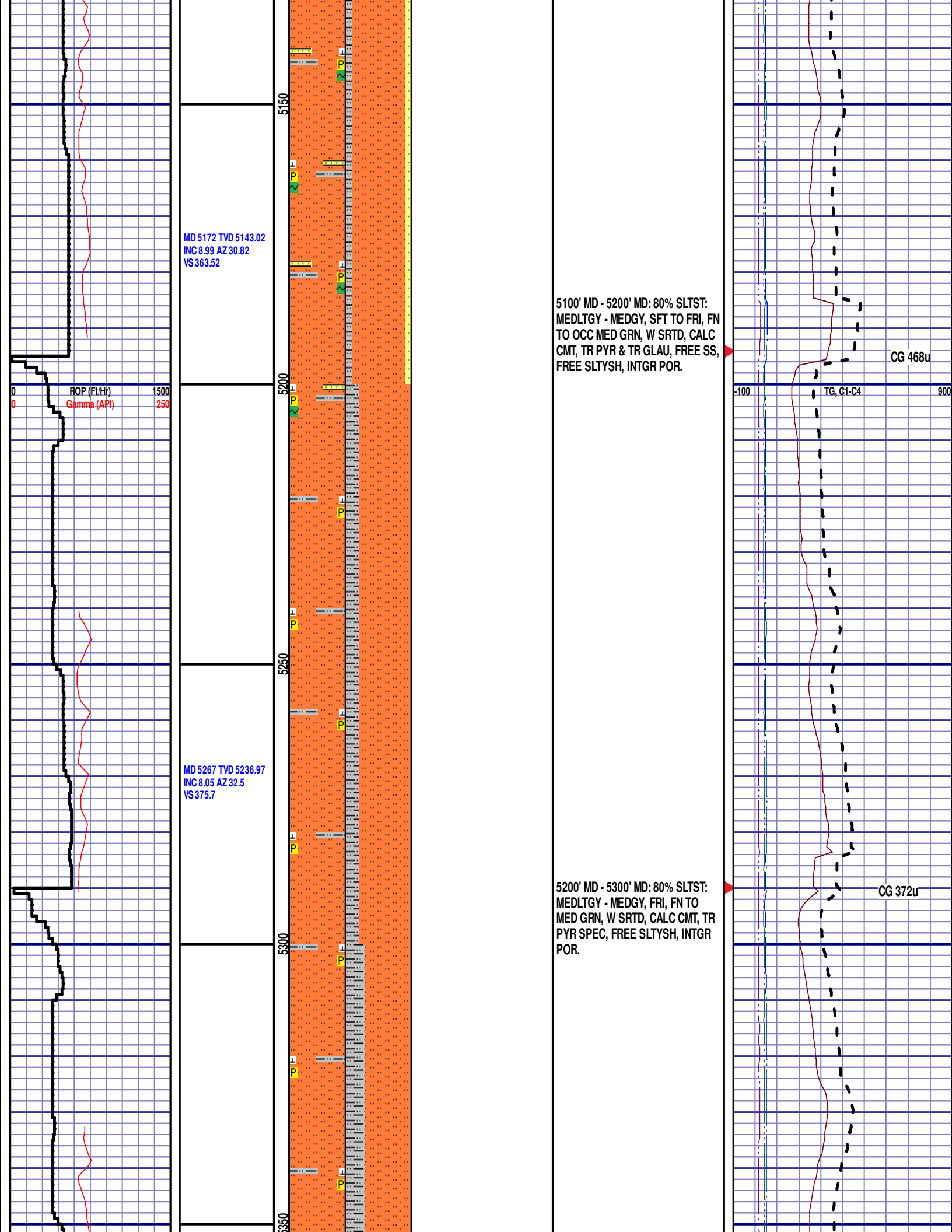
CG 206u





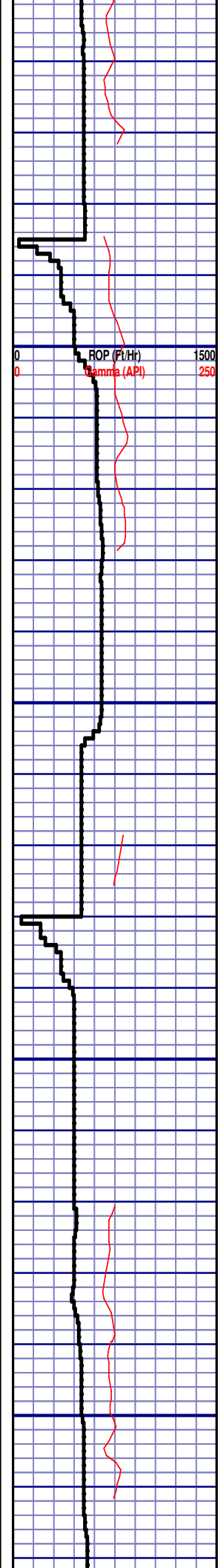




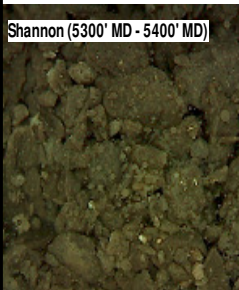




MD 5361 TVD 5330.08  
INC 7.75 AZ 36.39  
VS 386.54

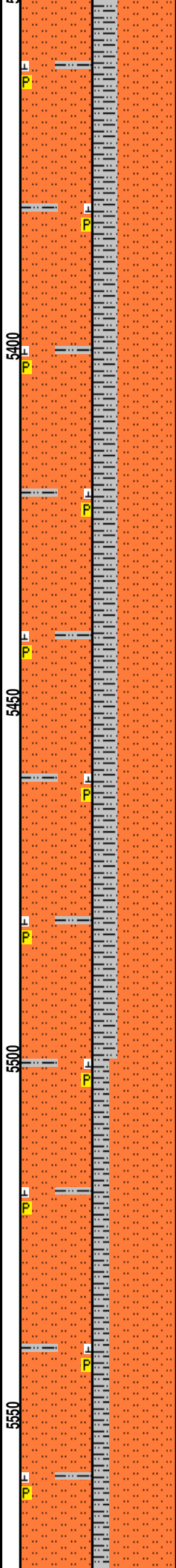


Shannon (5300' MD - 5400' MD)



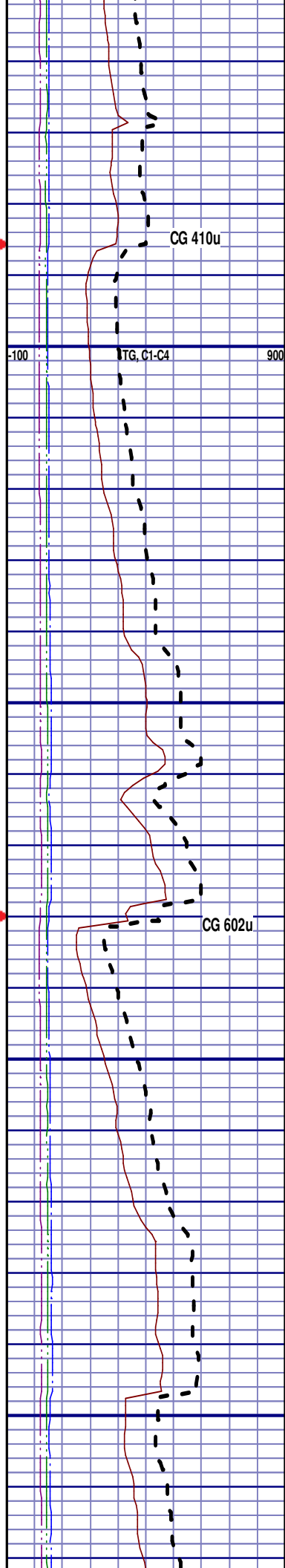
5300' MD - 5400' MD: 70% SLTST:  
MEDGY - OCC MEDLTGY, SFT TO  
FRI, FN GRN, W SRTD, CALC CMT,  
TR PYR SPEC, FREE SLTYSH,  
INTGR POR.

MD 5456 TVD 5424.19  
INC 8.12 AZ 54.92  
VS 395.8



5400' MD - 5500' MD: 70% SLTST:  
MEDGY - OCC MEDDRKGY, FRI, FN  
TO OCC MED GRN, W SRTD, CALC  
CMT, TR PYR SPEC, FREE SLTYSH,  
INTGR POR.

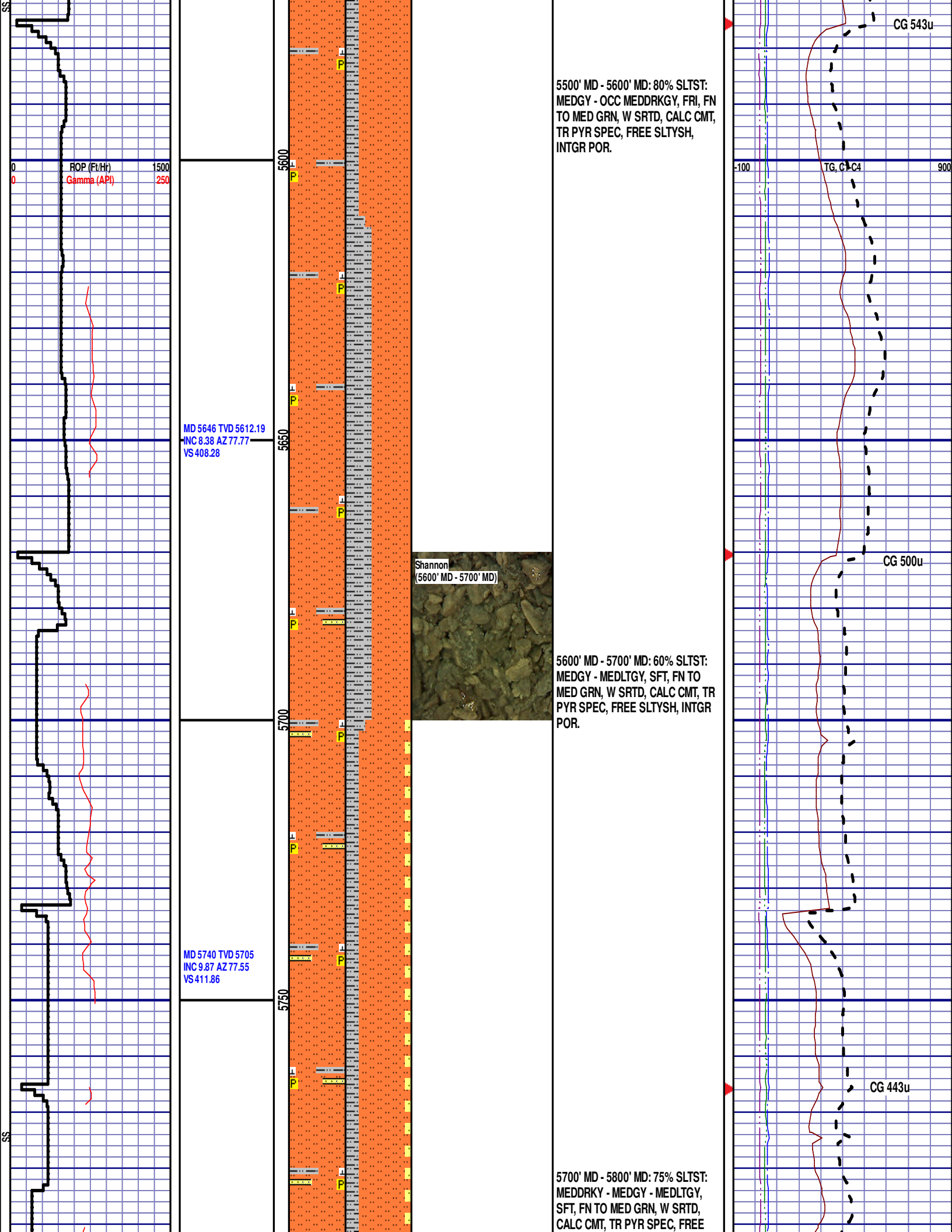
MD 5551 TVD 5518.2  
INC 8.45 AZ 62.23  
VS 403.22

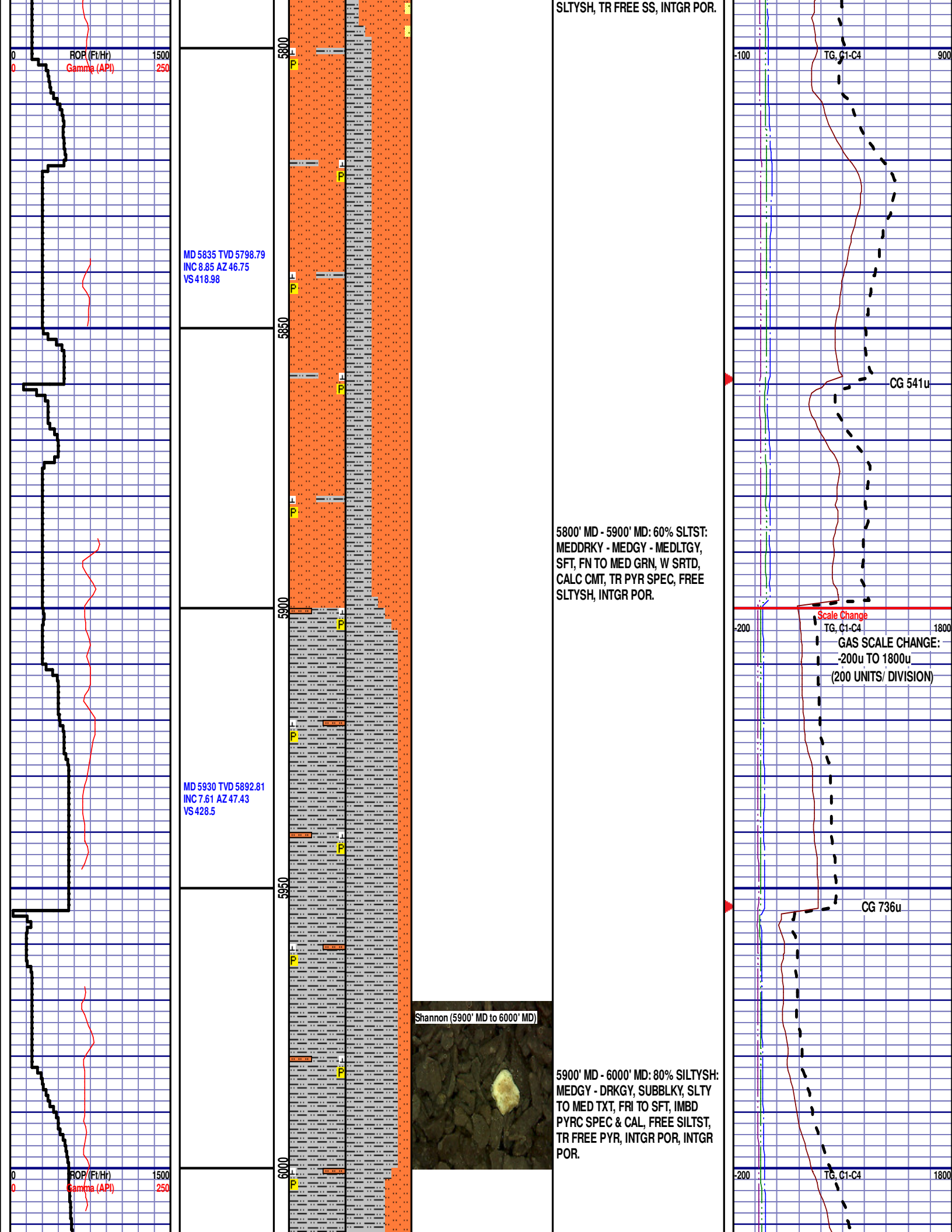


CG 410u

TG, C1-C4

CG 602u



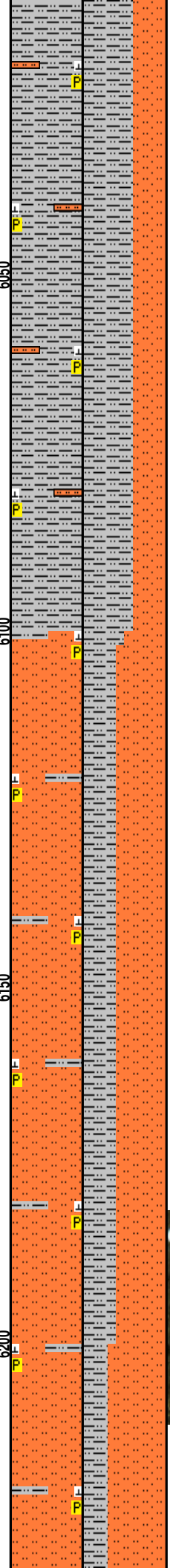


MD 6024 TVD 5986.23  
INC 5.09 AZ 29.07  
VS 436.53

MD 6119 TVD 6081  
INC 4.19 AZ 313.43  
VS 442.59

MD 6214 TVD 6175.86  
INC 1.96 AZ 285.58  
VS 445.3

6050  
6100  
6150  
6200



Teepee Buttes 6100' MD to 6200' MD

6000' MD - 6100' MD: 60% SILTYSH:  
MEDDRKGY - MEDGY, SUBBLKY,  
SLTY TO MED TXT, FRI TO SFT,  
IMBD PYRC SPEC & CAL, FREE  
SILTST, TR FREE PYR, INTGR POR,  
INTGR POR.

6100' MD - 6200' MD: 60% SLTST:  
MEDGY - MEDDRKGY, FRI, FN TO  
MED GRN, W - MOD SRTD, CALC  
CMT, TR IMBD PYR, FREE SLTYSH,  
INTGR POR.

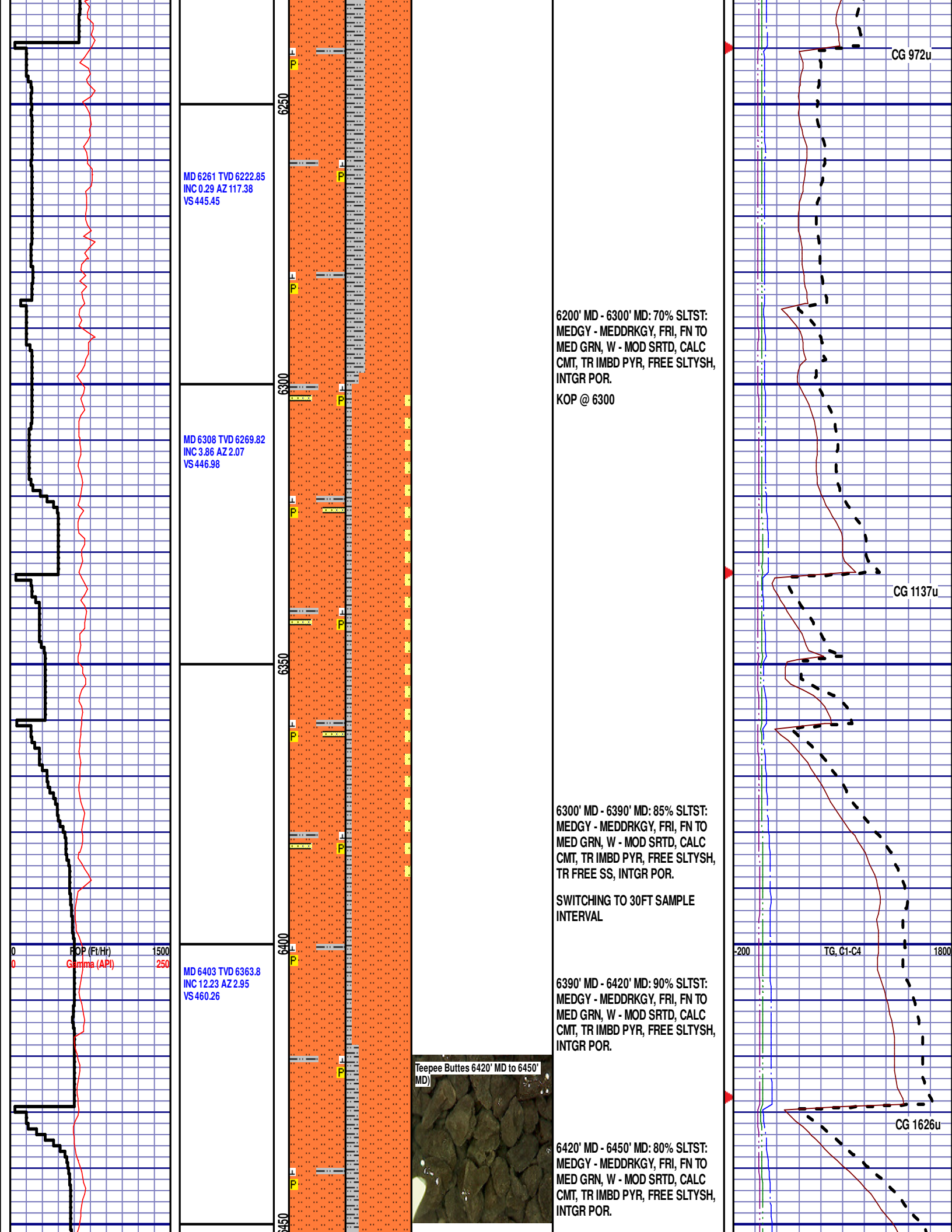
### TEEPEE BUTTES

6190' MD 6152' TVD

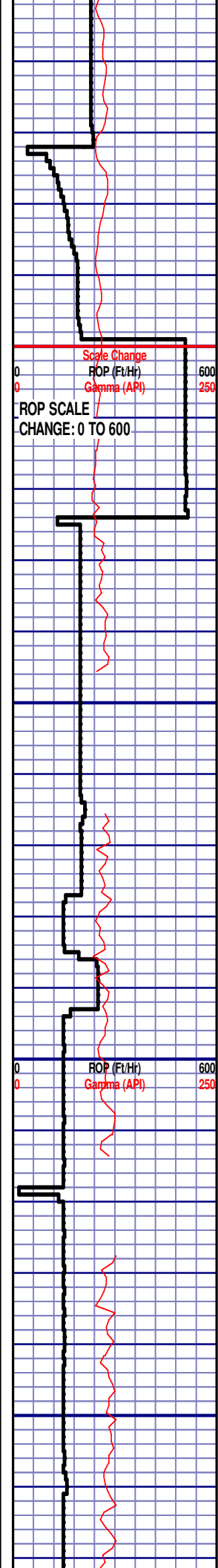
CG 1141u

CG 1446u

-200 TG, 1-C4 1800

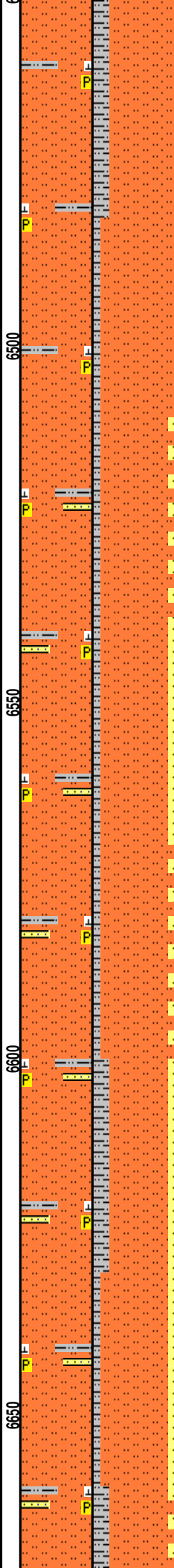






MD 6497 TVD 6454.97  
INC 15.9 AZ 359.69  
VS 483.09

MD 6592 TVD 6544.56  
INC 22.78 AZ 354.04  
VS 514.37



6450' MD - 6480' MD: 80% SLTST:  
MEDGY - MEDDRKGY, FRI, FN TO  
MED GRN, W - MOD SRTD, CALC  
CMT, TR IMBD PYR, FREE SLTYSH,  
INTGR POR.

6480' MD - 6510' MD: 90% SLTST:  
MEDGY - MEDDRKGY, FRI, FN TO  
MED GRN, W - MOD SRTD, CALC  
CMT, TR IMBD PYR, FREE SLTYSH,  
INTGR POR.

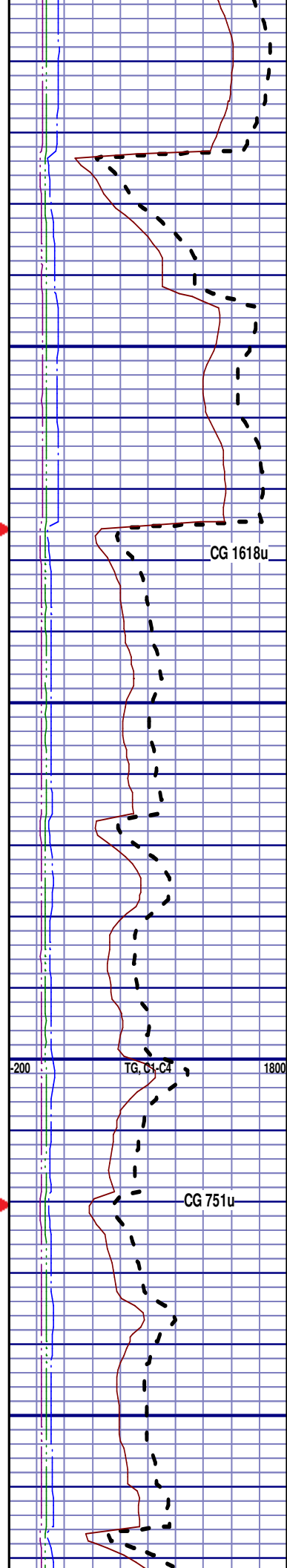
6510' MD - 6540' MD: 85% SLTST:  
MEDGY - DRKGY, FRI, FN TO MED  
GRN, W - MOD SRTD, CALC CMT,  
TR IMBD PYR, FREE SLTYSH, FREE  
SS, INTGR POR.

6540' MD - 6570' MD: 80% SLTST:  
LTGY - MEDDRKGY - DRKGY, FRI,  
FN TO MED GRN, W - MOD SRTD,  
CALC CMT, TR IMBD PYR, FREE  
SLTYSH, FREE SS, INTGR POR.

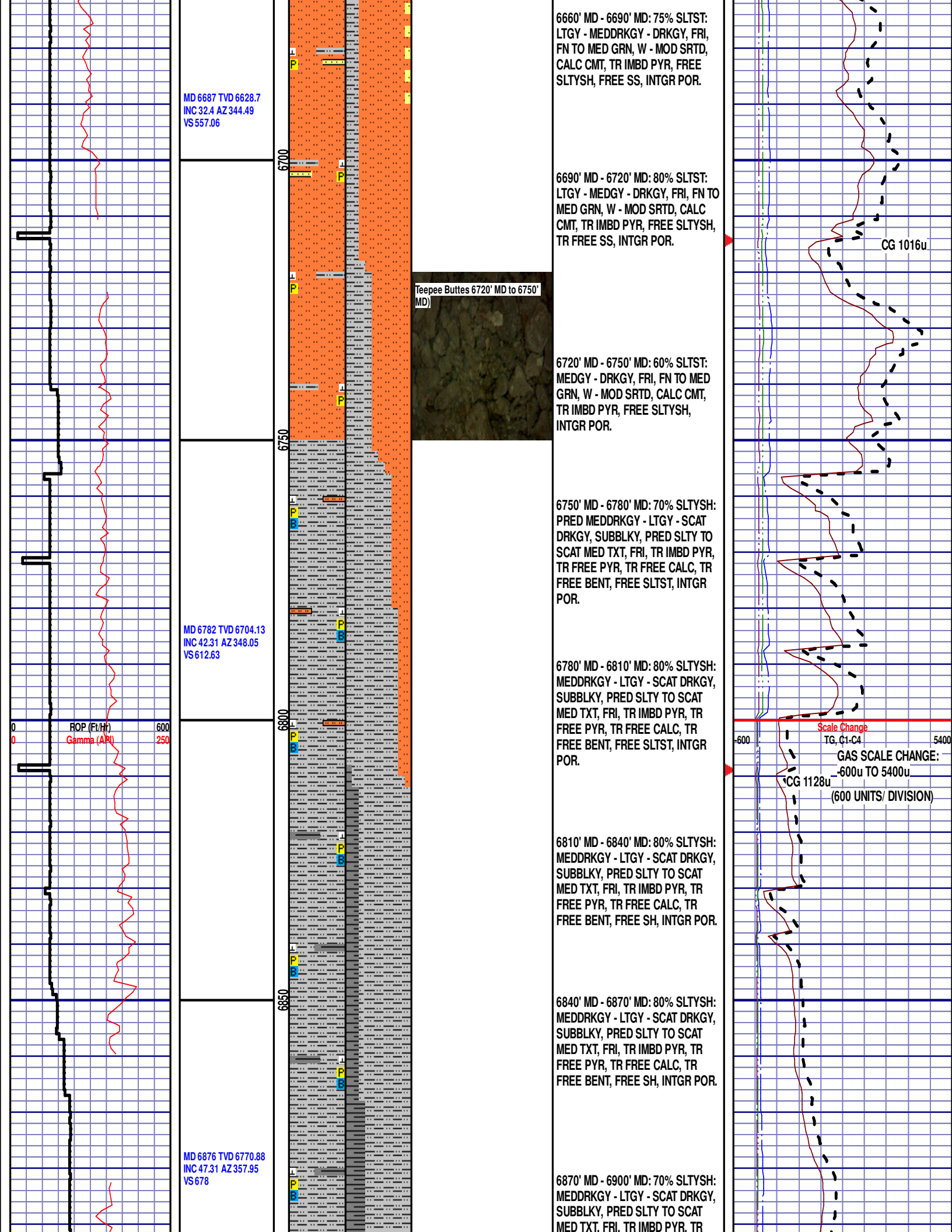
6570' MD - 6600' MD: 85% SLTST:  
LTGY - MEDDRKGY - DRKGY, FRI,  
FN TO MED GRN, W - MOD SRTD,  
CALC CMT, TR IMBD PYR, FREE  
SLTYSH, FREE SS, INTGR POR.

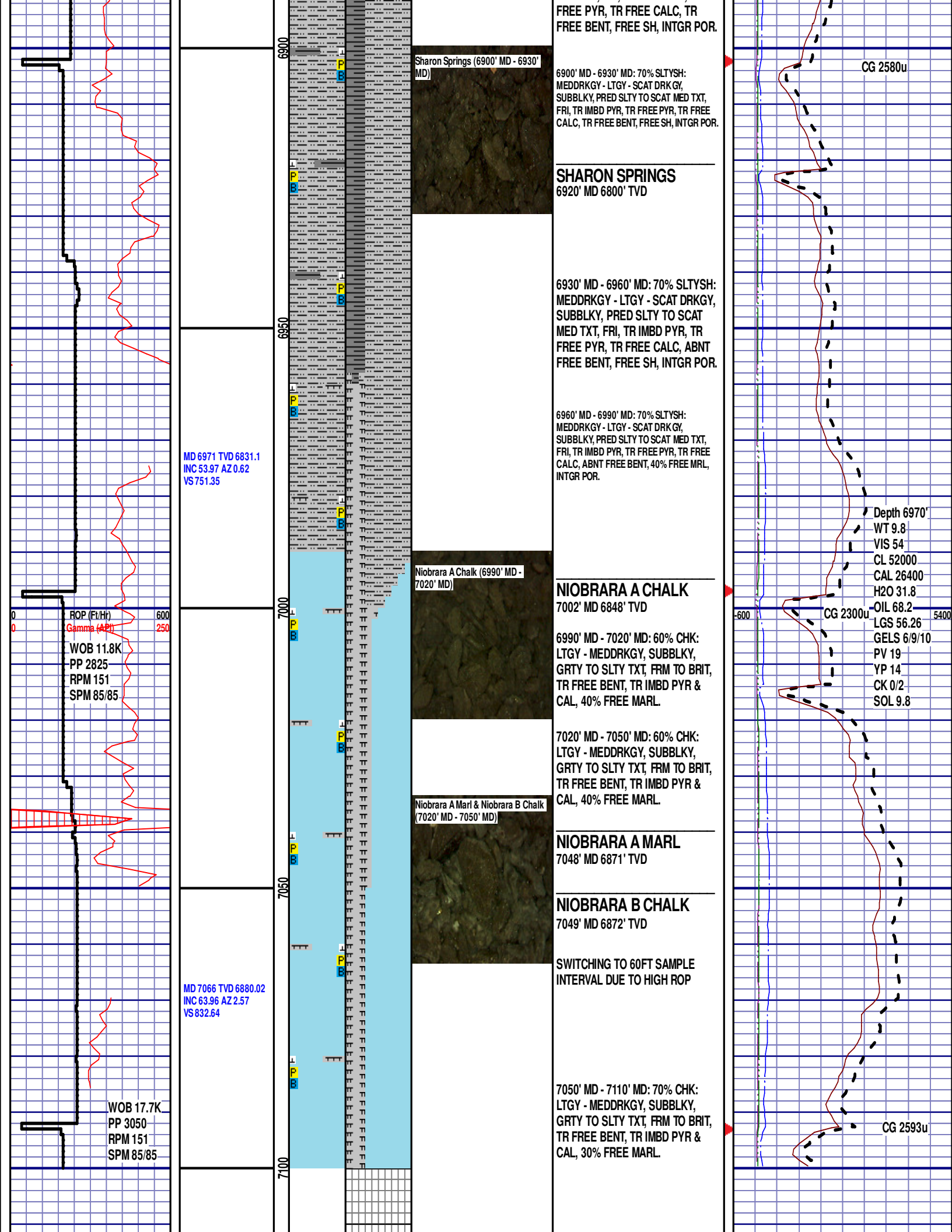
6600' MD - 6630' MD: 70% SLTST:  
LTGY - MEDDRKGY - DRKGY, FRI,  
FN TO MED GRN, W - MOD SRTD,  
CALC CMT, TR IMBD PYR, TR FREE  
PYR, FREE SLTYSH, FREE SS,  
INTGR POR.

6630' MD - 6660' MD: 80% SLTST:  
LTGY - MEDDRKGY - DRKGY, FRI,  
FN TO MED GRN, W - MOD SRTD,  
CALC CMT, TR IMBD PYR, TR FREE  
PYR, FREE SLTYSH, FREE SS,  
INTGR POR.









[illegible]