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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 &
Dan King

Log Interval: 2500' MD to 6550' MD

Start Date: March 27, 2014

Release Date: April 04, 2014

Well Information

Well Name: Wells Ranch
AA35-63-1BHNA

Location: 35-6N-63W
718' FSL, 179' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 277

Total Depth: 11078' MD

TD Date: April 04, 2014

Formation: Niobrara A Chalk

KB Elevation: 4765'

GR Elevation: 4741'

API Number: 05-123-38669-0000

ROCK TYPES

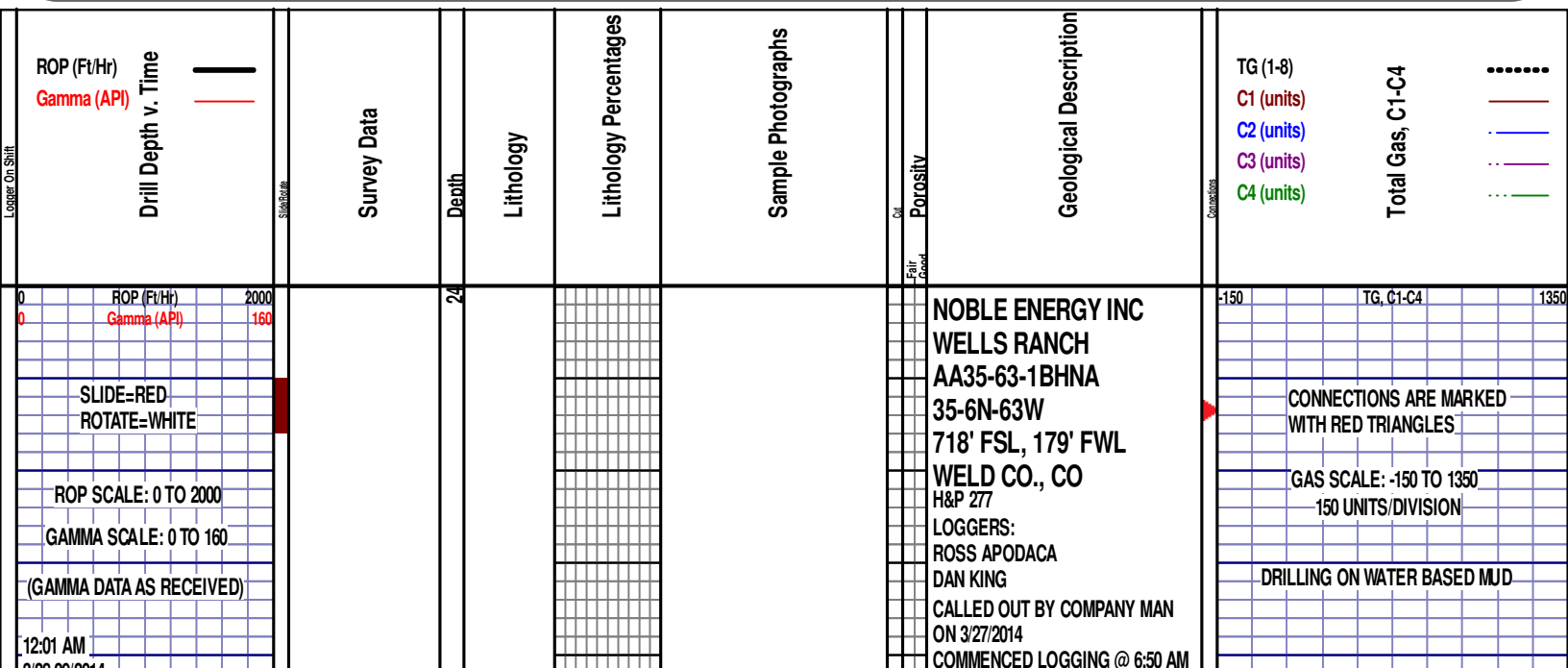
Anhy
Bent
Cht
Clyst
Coal
Congl
Dol

Gyp
Igne
Lmst
Meta
Mrlst
Salt
Shale

Shcol
Chalk
Slst
Ss
Till
gw
Imywash

ogw
olmywash
oshly gw
shly gw
sdygw
hvyrcbsh
nosmpl

Lsdetrit
sltst
sdy sh



3/26/2014
FT/48 HRS 0
DAY 01-02

WOB 7.4K
PP 2049
RPM 70
SPM 55/55

MD 2538 TVD 2526.71
INC 7.8 AZ 315.8
VS 123.09

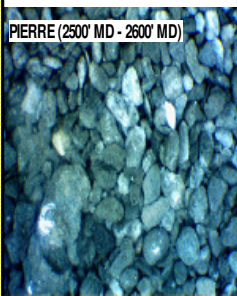
MD 2632 TVD 2619.89
INC 7.3 AZ 315.3
VS 131.86

ROP (Ft/Hr) 2000
Gamma (API) 160

ON 3/29/2014 @ 2500' MD W/BIT #2,
8.75", SMITH MDI516, (S/N) JH1761 IN
@ 597' MD

PIERRE
1026' MD 1026' TVD
(BEFORE LOGGING DEPTH)

DEPTH 1330'
WT 8.70
VIS 29
PH 10.8
FIL 54.0
CL 1600
CAL 240
H2O 98.6
OIL 0.0
LGS 6.40
GELS 1/2/2
PV 2
YP 4
CK 3/0
SOL 1.7



2500'- 2600': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGRPOR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

CG 95u

TG, C1-C4

2600'- 2700': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGRPOR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

CG 100u

MD 2727 TVD 2714.1
INC 7.6 AZ 331.1
VS 139.23

MD 2822 TVD 2808.54
INC 4.8 AZ 338.3
VS 143.8

MD 2916 TVD 2902.31
INC 3.2 AZ 350.6
VS 145.75

ROP (Ft/Hr)
Gamma (API)

2000
160

2750

2800

2850

2900

2700'- 2800': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGRPOR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

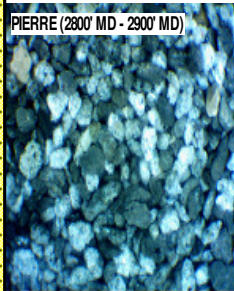
CG 81u

-150

TG, C1-C4

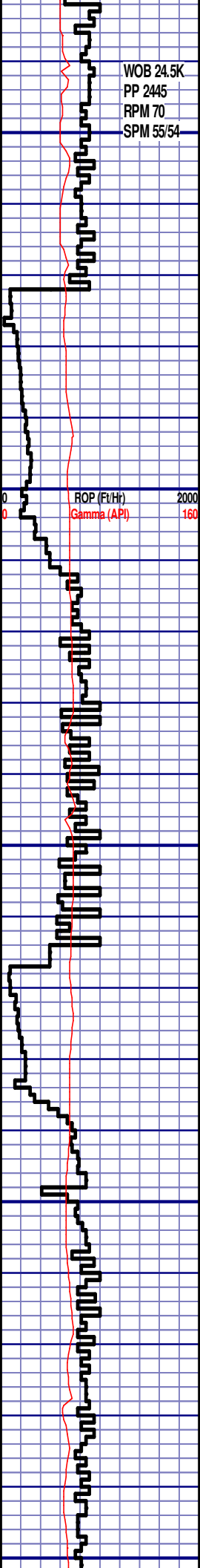
1350

PIERRE (2800' MD - 2900' MD)



2800'- 2900': SS: 60% LTGY -MEDGY,
FRI, FN TO MED GRN, WSRTD,
CALC CMT, IMBD PYR, SILTY,
INTGR POR, NO STN, NO MIN
FLOR, NO O FLOR, NO CUT, NO
RNG

CG 86u



WOB 24.5K
PP 2445
RPM 70
SPM 55/54

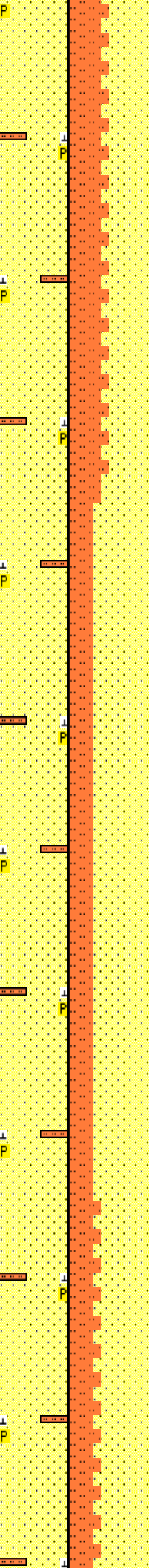
ROP (Ft/Hr)
Gamma (API)

2000
160

MD 3011 TVD 2997.25
INC 0.9 AZ 349.5
VS 146.36

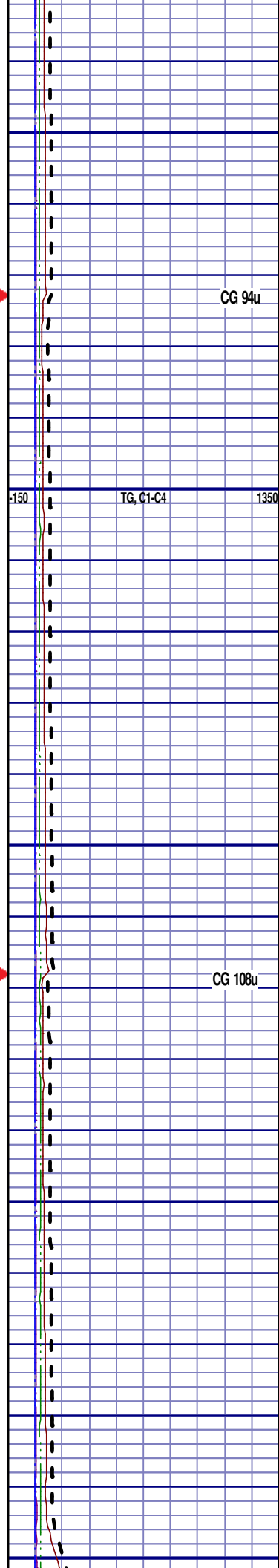
MD 3106 TVD 3092.24
INC 0.1 AZ 154.4
VS 146.47

2950
3000
3050
3100
3150



2900'- 3000': SS: 55% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SILTY, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

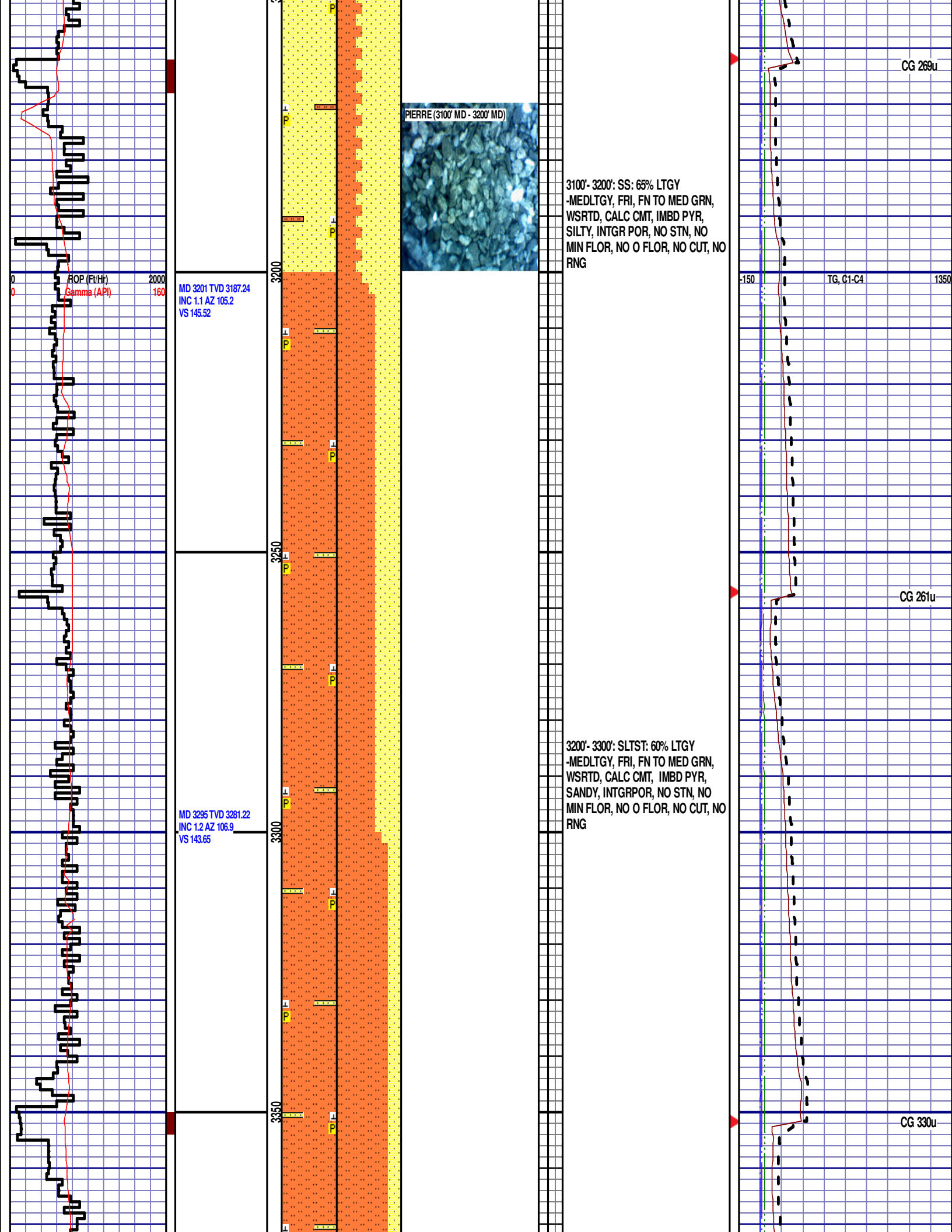
3000'- 3100': SS: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SILTY, INTGR POR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

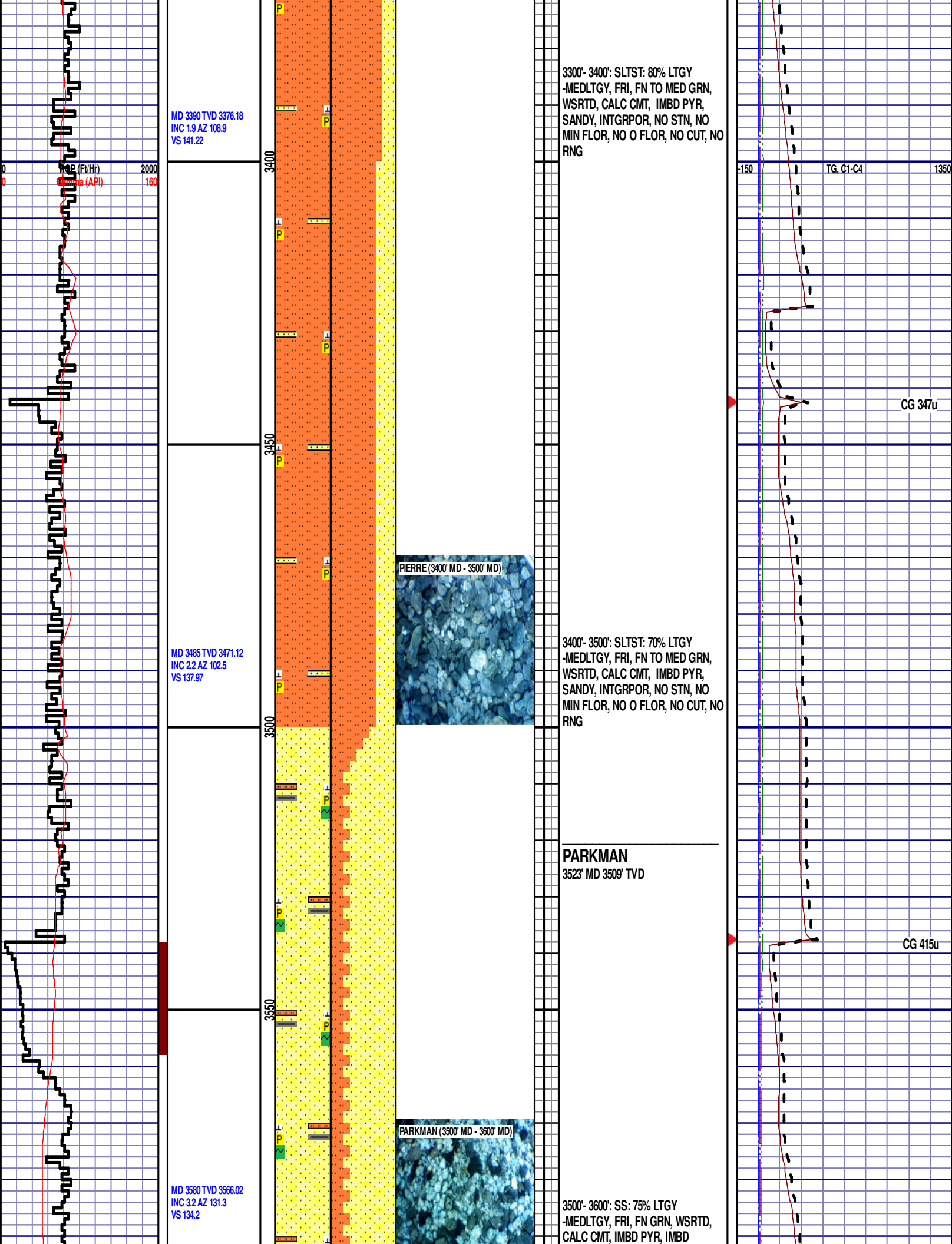


CG 94u

TG, C1-C4

CG 108u





MD 3390 TVD 3376.18
INC 1.9 AZ 108.9
VS 141.22

MD 3485 TVD 3471.12
INC 2.2 AZ 102.5
VS 137.97

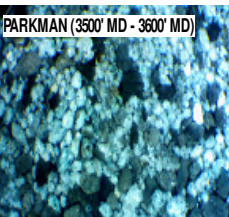
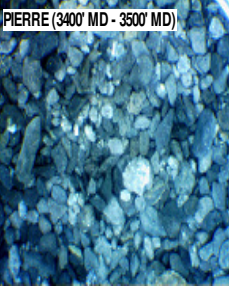
MD 3580 TVD 3566.02
INC 3.2 AZ 131.3
VS 134.2

3300'- 3400': SLTST: 80% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGRPOR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

3400'- 3500': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
SANDY, INTGRPOR, NO STN, NO
MIN FLOR, NO O FLOR, NO CUT, NO
RNG

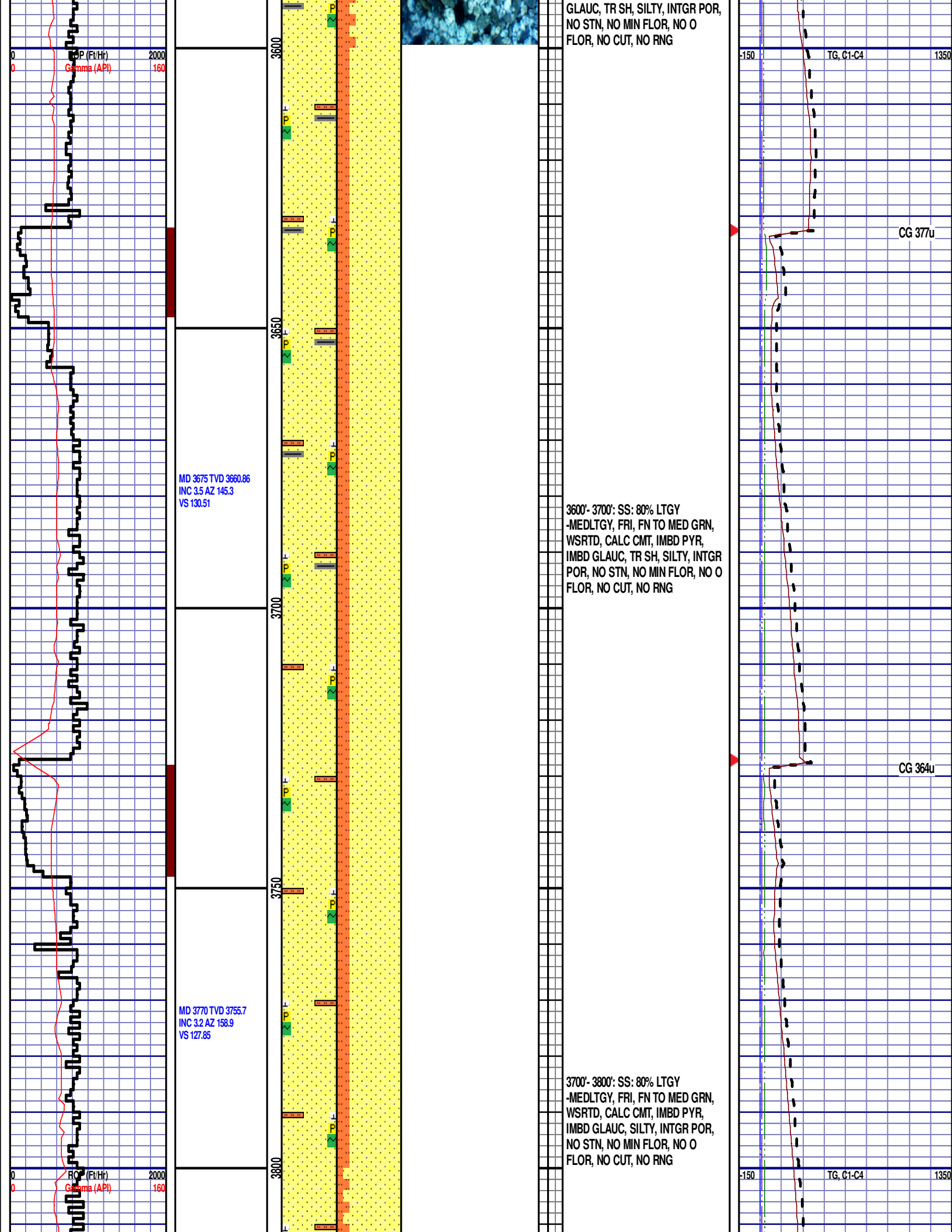
PARKMAN
3523' MD 3509' TVD

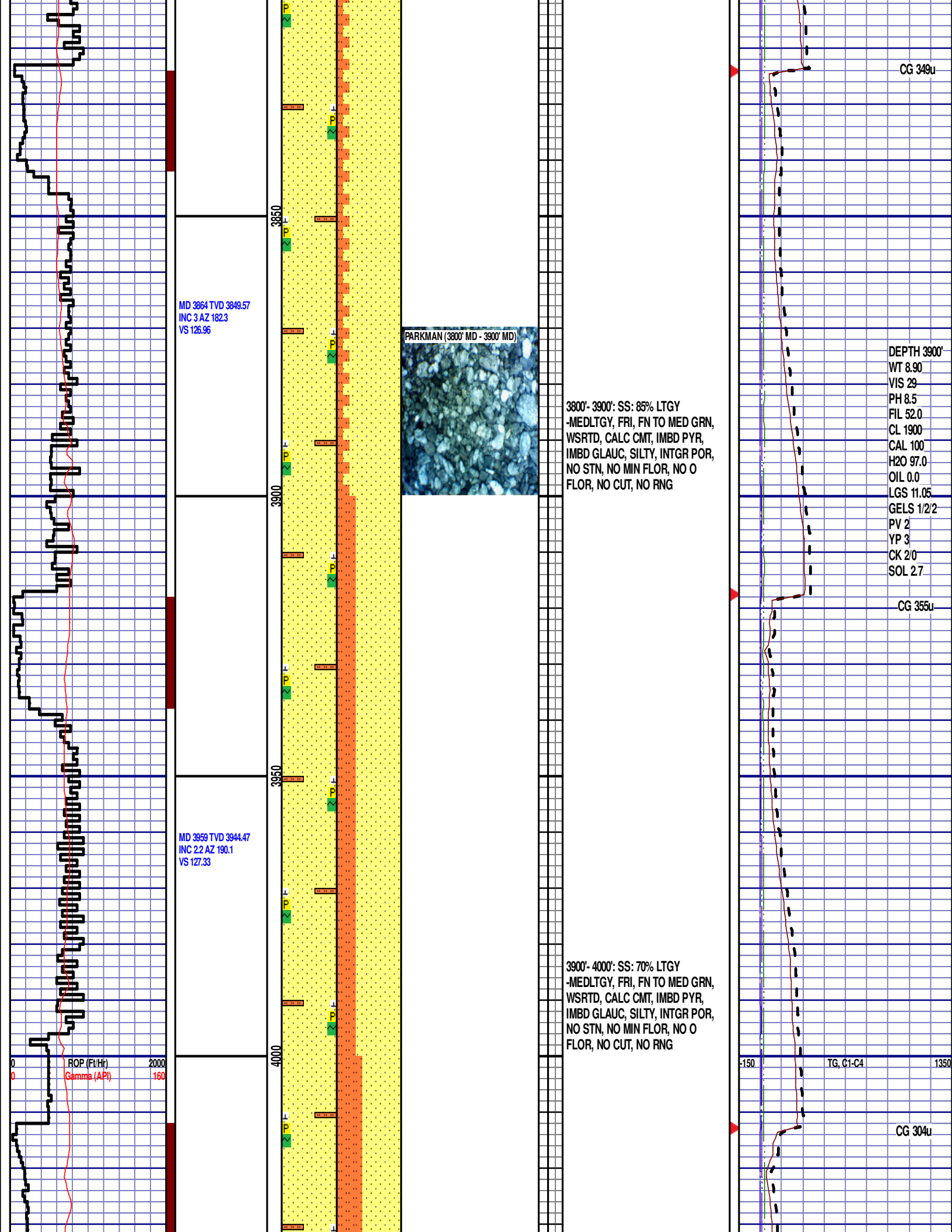
3500'- 3600': SS: 75% LTGY
-MEDLTGY, FRI, FN GRN, WSRTD,
CALC CMT, IMBD PYR, IMBD

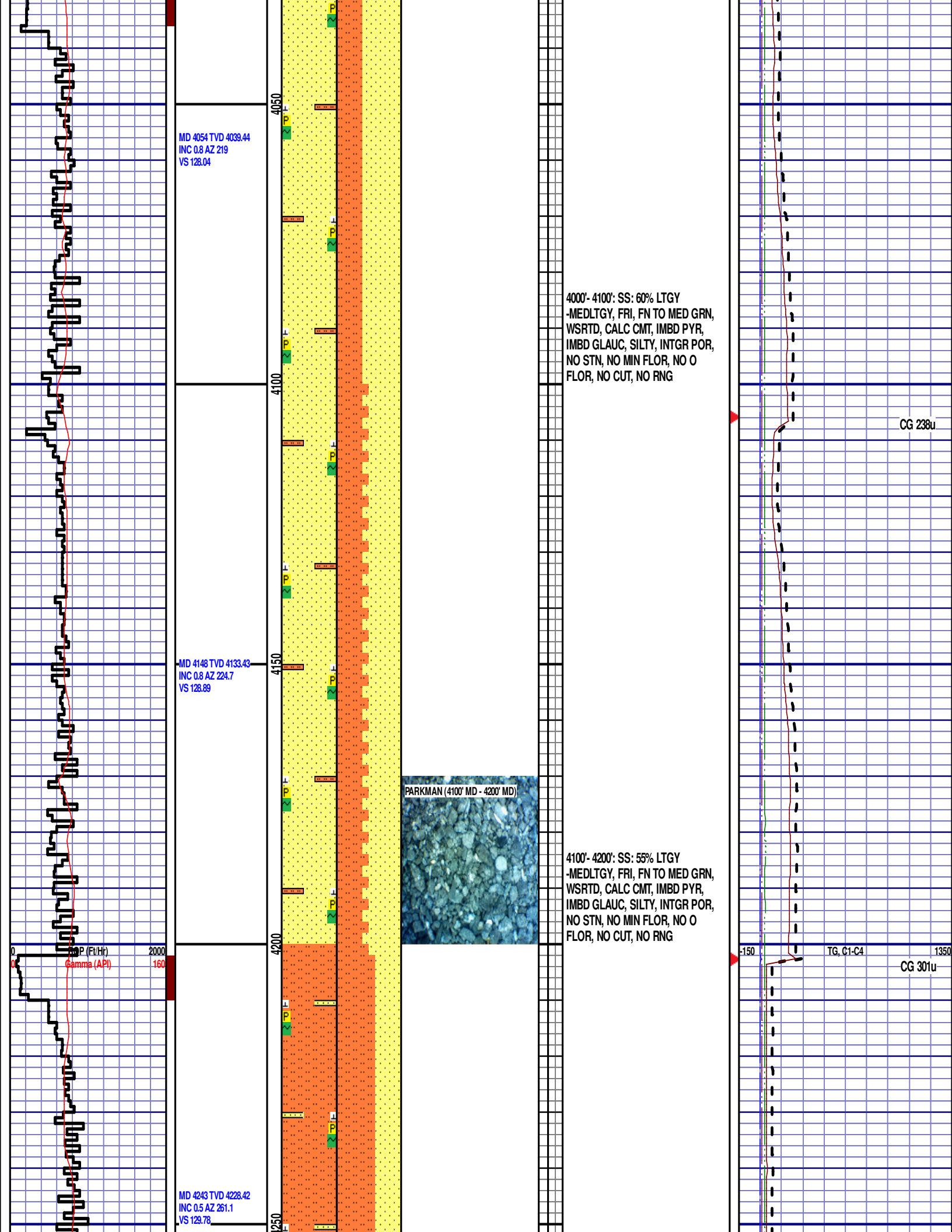


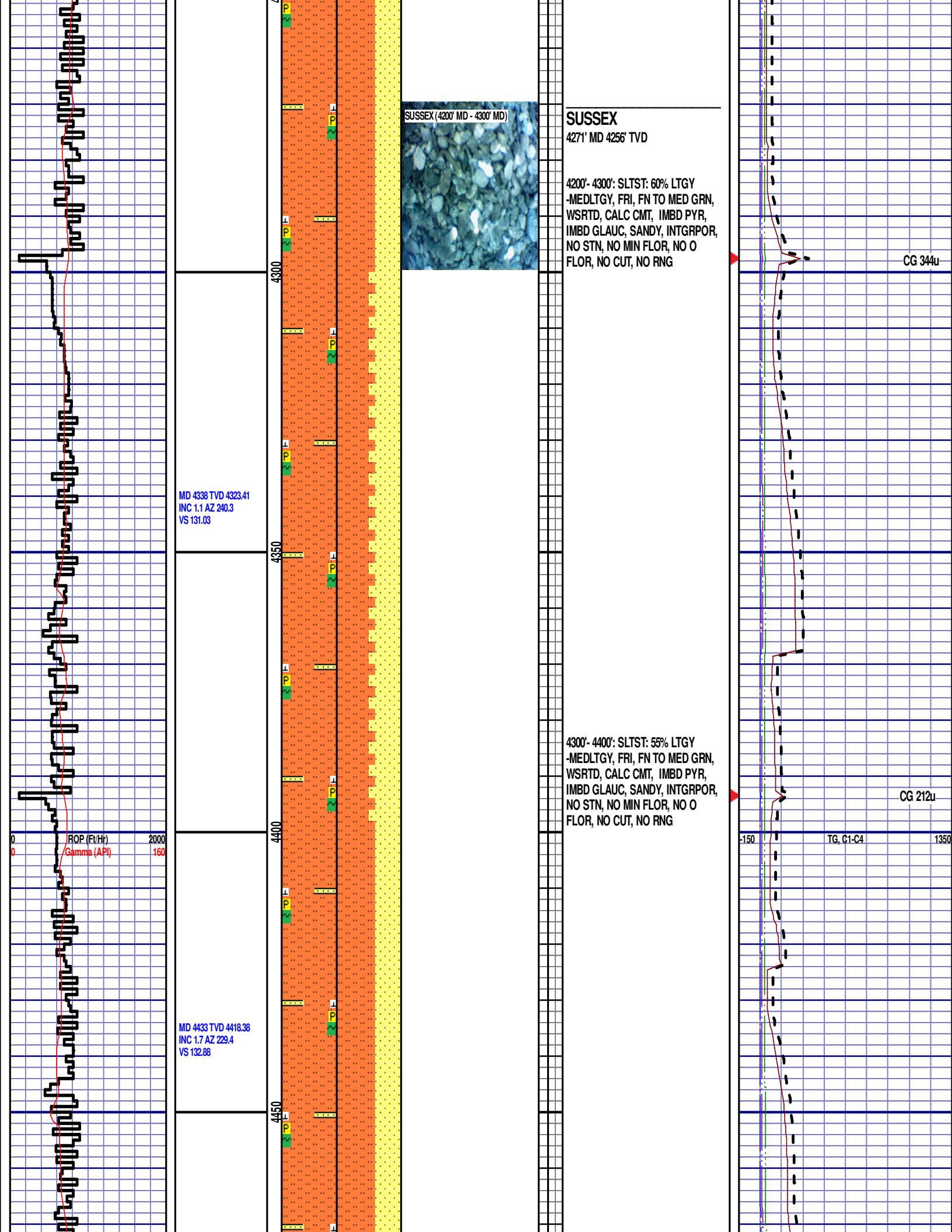
CG 347u

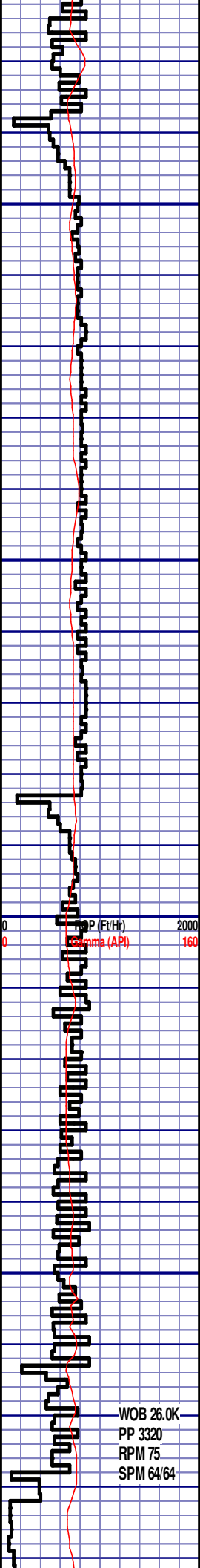
CG 415u







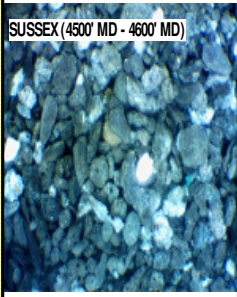
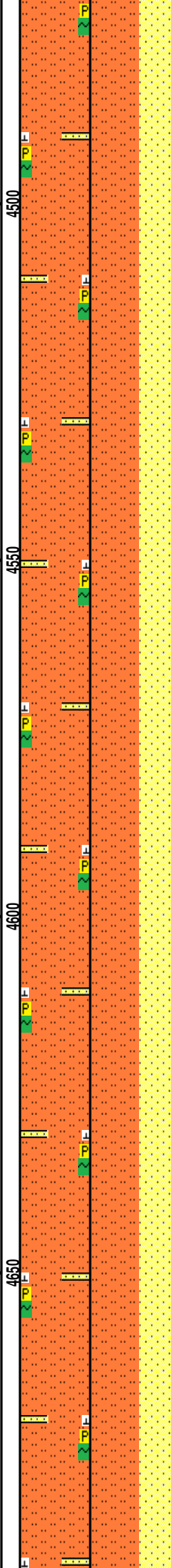




MD 4528 TVD 4513.36
INC 1 AZ 211.4
VS 134.33

MD 4623 TVD 4608.35
INC 0.8 AZ 196.3
VS 134.92

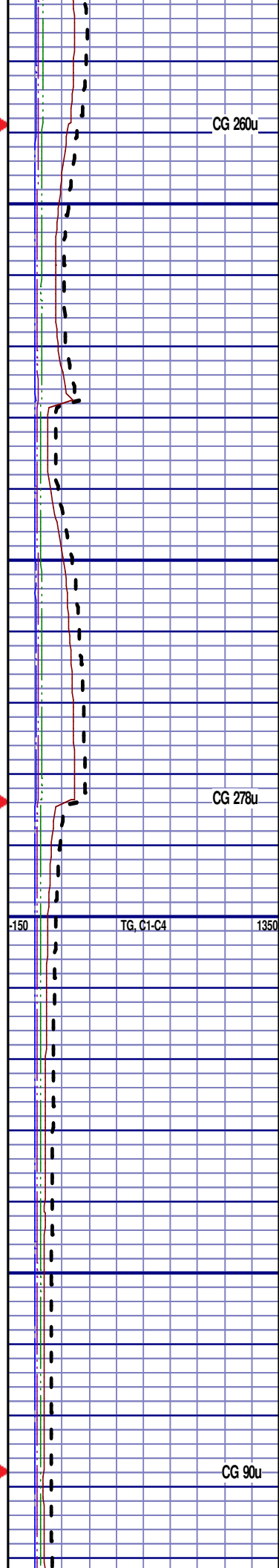
WOB 26.0K
PP 3320
RPM 75
SPM 64/64



4400'- 4500': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
IMBD GLAUC, SANDY, INTGRPOR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

4500'- 4600': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
IMBD GLAUC, SANDY, INTGRPOR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

4600'- 4700': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
IMBD GLAUC, SANDY, INTGRPOR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

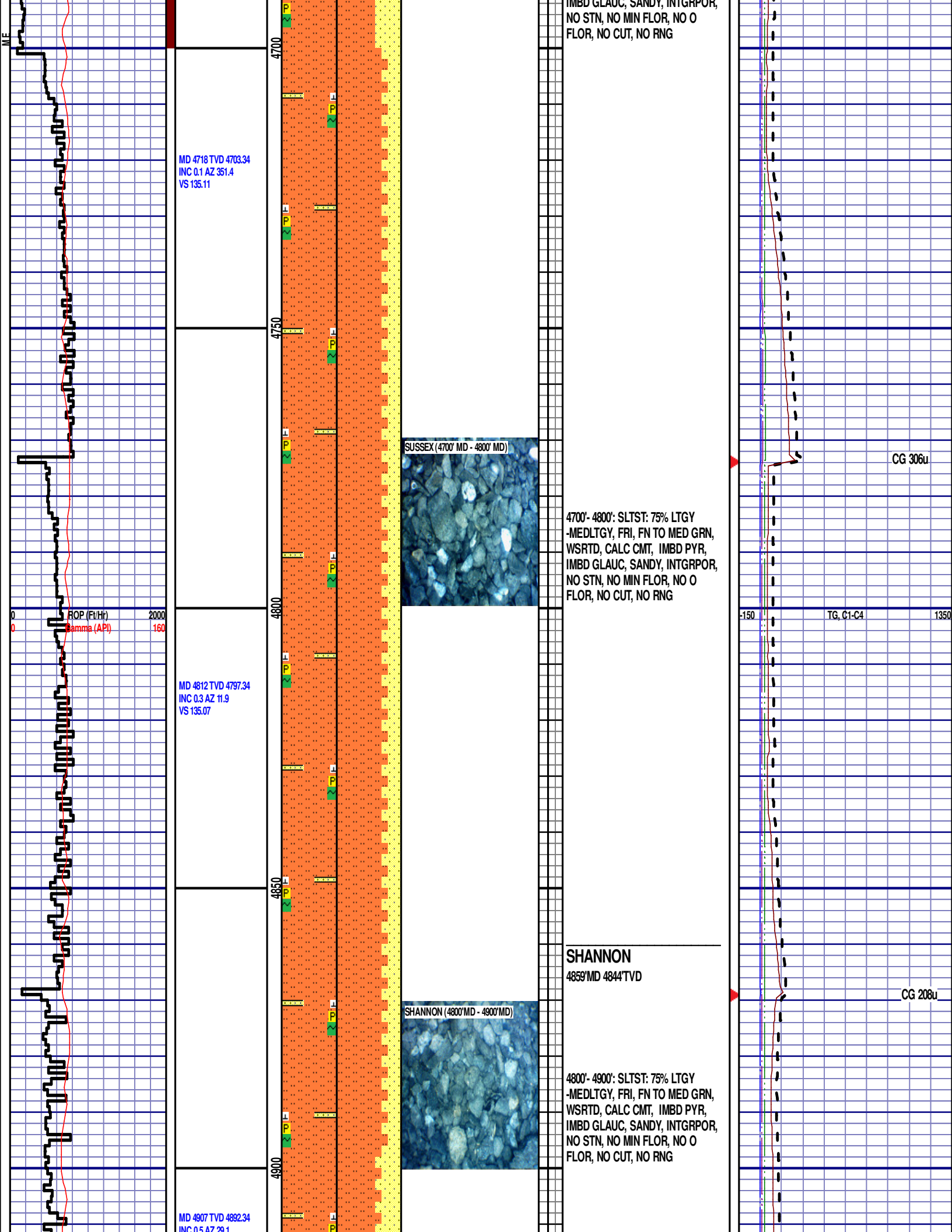


CG 260u

CG 278u

TG, C1-C4

CG 90u



VS 134.8

MD 5002 TVD 4987.34
INC 0.5 AZ 7.3
VS 134.54

MD 5097 TVD 5082.33
INC 0.7 AZ 23
VS 134.27

4950

5000

5050

5100

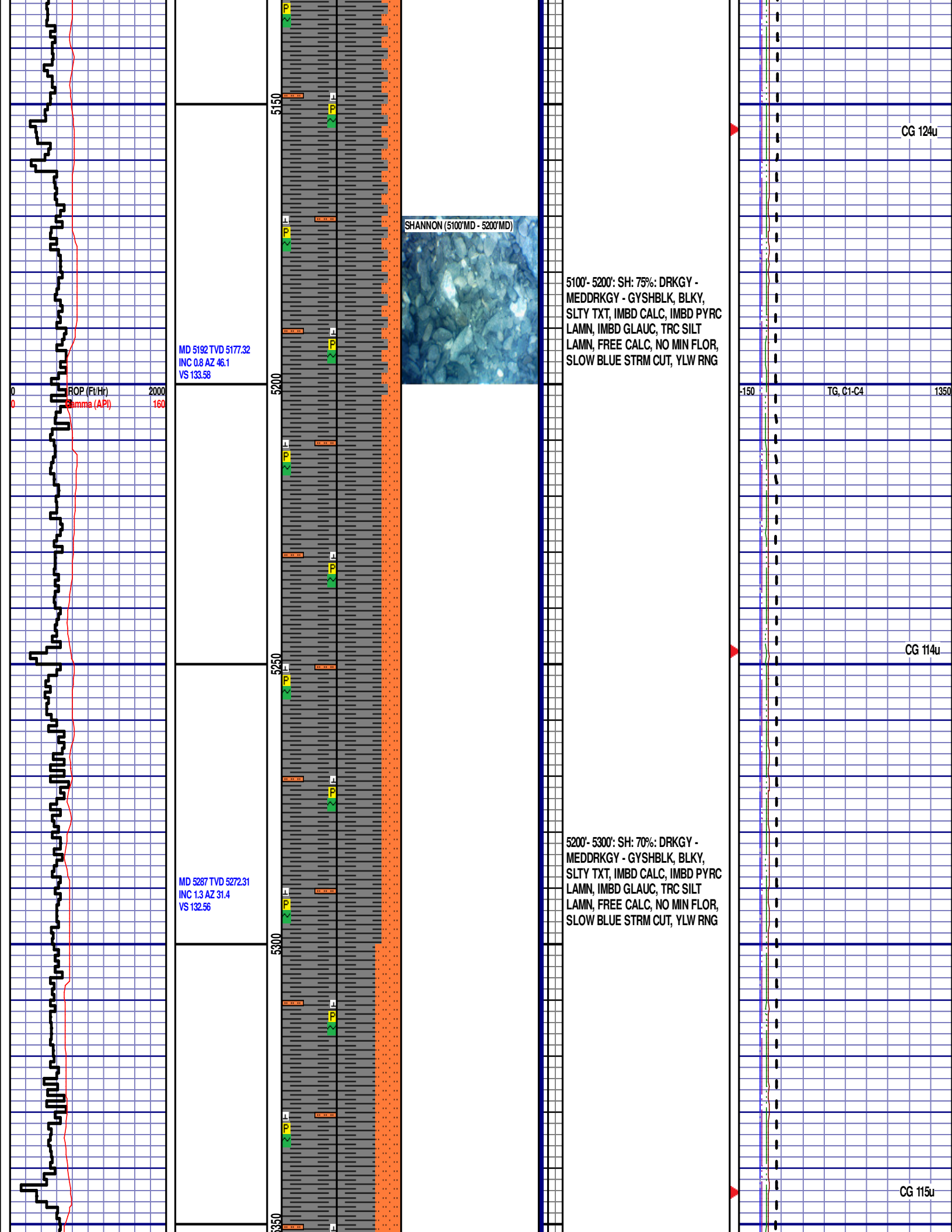
4900'- 5000': SLTST: 65% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
IMBD GLAUC, SANDY, INTGRPOR,
NO STN, NO MIN FLOR, NO O
FLOR, NO CUT, NO RNG

5000'- 5100': SH: 65%: DRKGY -
MEDDRKGY - GYSHBLK, BLKY,
SLTY TXT, IMBD CALC, IMBD PYRC
LAMN, IMBD GLAUC, TRC SILT
LAMN, FREE CALC, FREE SS, NO
MIN FLOR, SLOW BLUE STRM CUT,
YLW RNG

CG 186u

TG, C1-C4

CG 125u



MD 5381 TVD 5366.28
INC 1.1 AZ 42.2
VS 131.38

ROP (Ft/Hr) 2000
Gamma (API) 160

5400

5450

5500

5550

5300'- 5400': SH: 60%: DRKGY -
MEDDRKGY - GYSHBLK, BLKY,
SLTY TXT, IMBD CALC, IMBD PYRC
LAMN, IMBD GLAUC, TRC SILT
LAMN, FREE CALC, NO MIN FLOR,
SLOW BLUE STRM CUT, YLW RNG

-150 TG, C1-C4 1350

CG 106u

SHANNON (5400'MD - 5500'MD)



5400'- 5500': SH: 80%: DRKGY -
MEDDRKGY - GYSHBLK, BLKY,
SLTY TXT, IMBD CALC, IMBD PYRC
LAMN, IMBD GLAUC, TRC SILT
LAMN, FREE CALC, NO MIN FLOR,
SLOW BLUE STRM CUT, YLW RNG

CG 110u

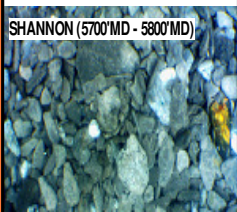
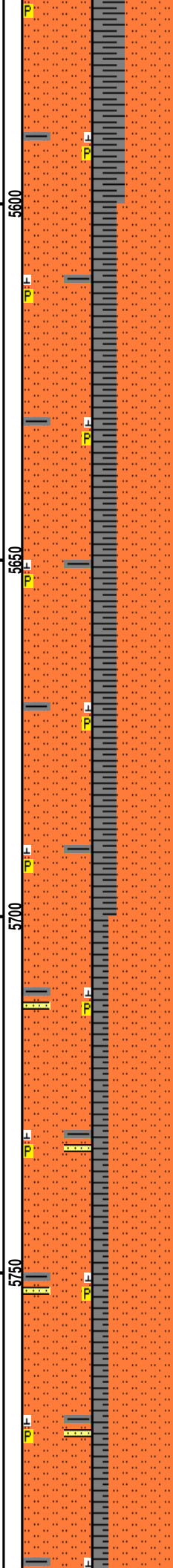
MD 5571 TVD 5556.25
INC 0.9 AZ 47.1
VS 128.76

ROP (Ft/Hr)
Gamma (API)

MD 5666 TVD 5651.24
INC 1.1 AZ 51.6
VS 127.5

MD 5760 TVD 5745.22
INC 1.2 AZ 53.8
VS 125.97

WOB 26.0K



SHANNON (5700'MD - 5800'MD)

5500'- 5600': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, TR
SH, INTG POR, NO STN, NO MIN
FLOR, SLOW BLUE STRM CUT, YLW
RNG

5600'- 5700': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, TR
SH, INTG POR, NO STN, NO MIN
FLOR, SLOW BLUE STRM CUT, YLW
RNG

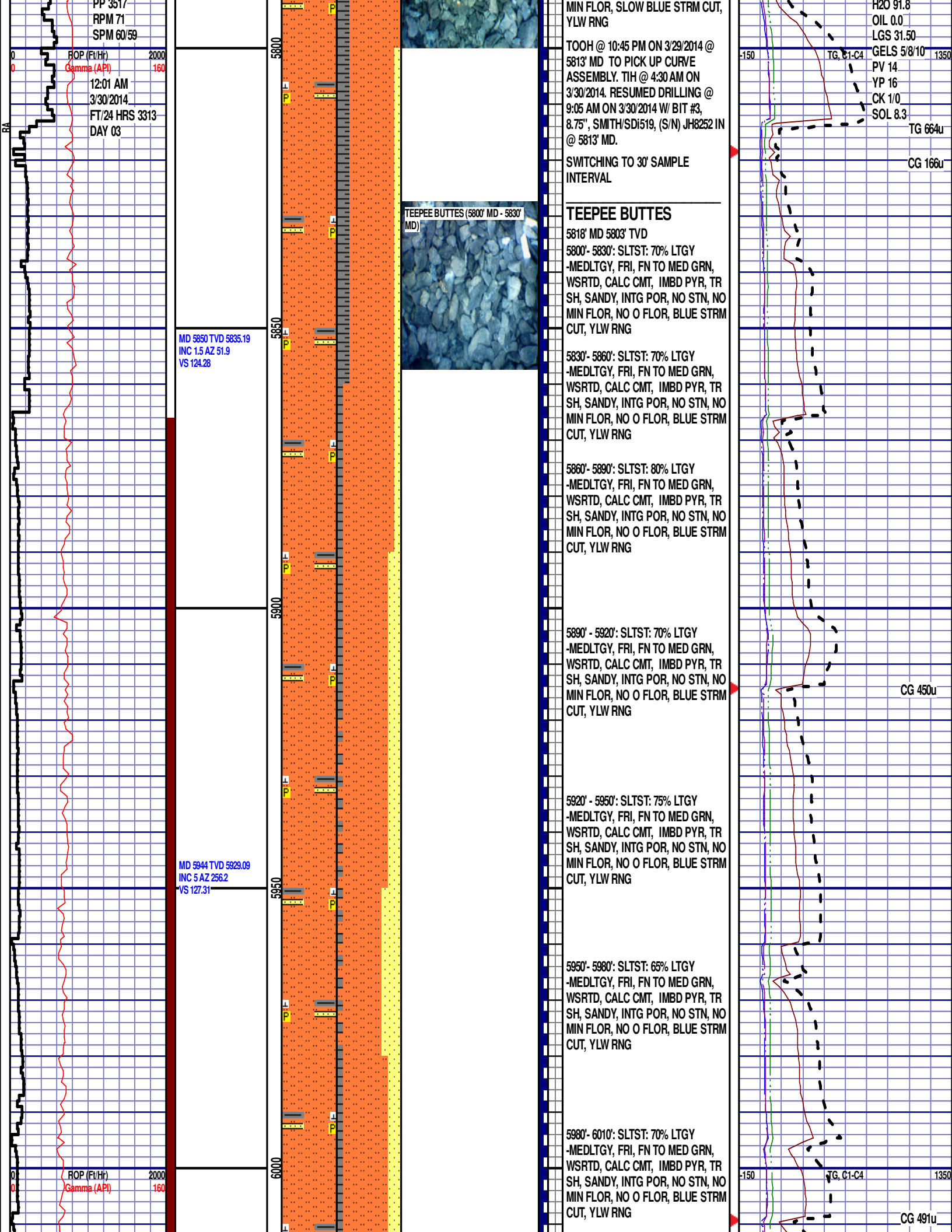
5700'- 5800': SLTST: 80% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, TR
SH, TR SS, INTG POR, NO STN, NO

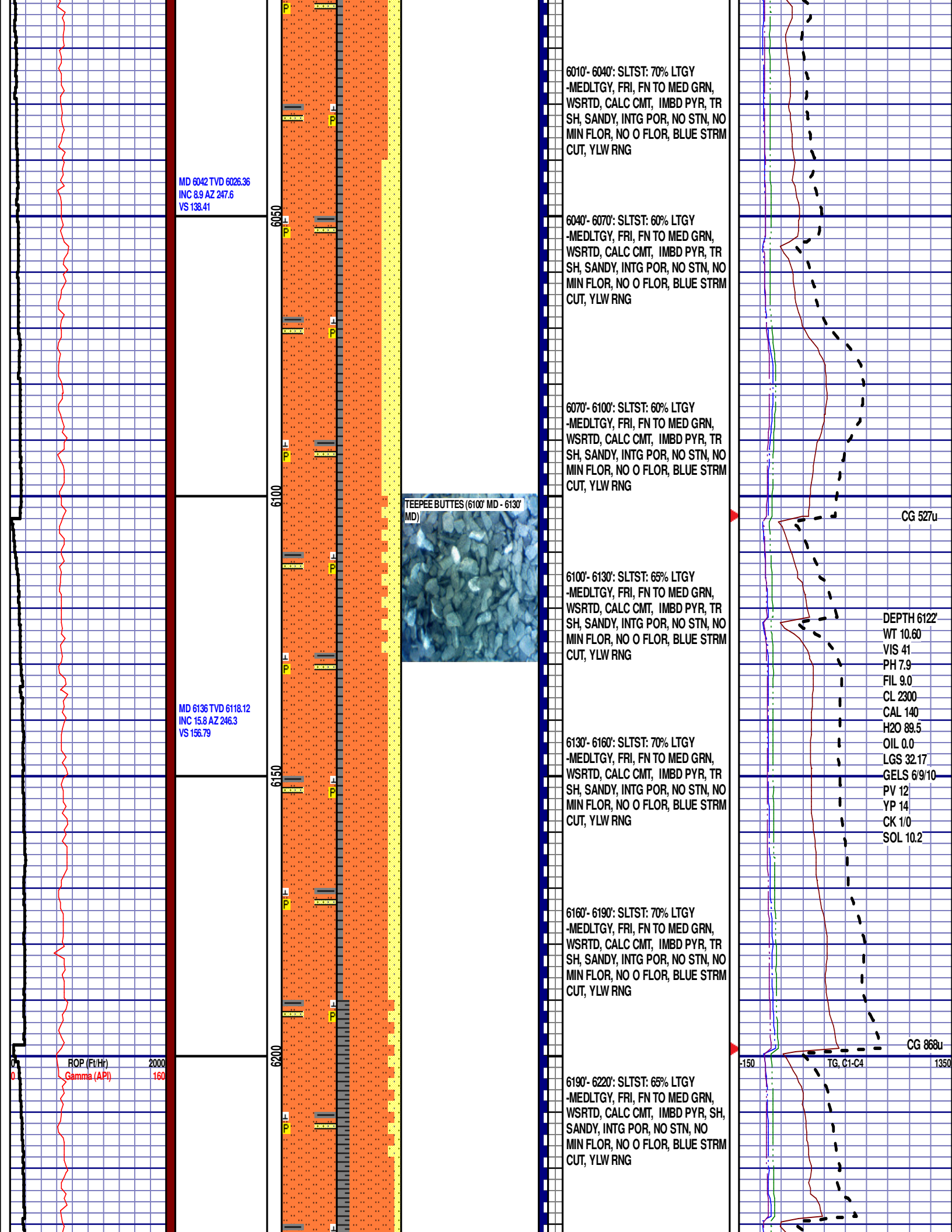
TG, C1-C4

CG 108u

CG 180u

DEPTH 5813'
WT 10.10
VIS 29
PH 8.3
FIL 6.8
CL 2100
CAL 140





MD 6231 TVD 6207.18
INC 24.6 AZ 244.8
VS 186.47

MD 6326 TVD 6288.81
INC 36.6 AZ 240.7
VS 228.97

MD 6421 TVD 6355.67
INC 53.5 AZ 243.6
VS 287.97

WOB 44.5K
PP 3400
RPM 40
SPM 54/54

ROP (Ft/Hr)
Gamma (API)

2000
160

6250

6300

6350

6400

6450

6220'- 6250': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
SANDY, INTG POR, NO STN, NO
MIN FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6250'- 6280': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
SANDY, INTG POR, NO STN, NO
MIN FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6280'- 6310': SLTST: 65% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
SANDY, INTG POR, NO STN, NO
MIN FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6310'- 6340': SLTST: 65% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
SANDY, INTG POR, NO STN, NO
MIN FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6340'- 6370': SLTST: 70% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
TR SS, INTG POR, NO STN, NO MIN
FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6370'- 6400': SLTST: 65% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
TR SS, INTG POR, NO STN, NO MIN
FLOR, NO O FLOR, BLUE STRM
CUT, YLW RNG

6400'- 6430': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,
INTG POR, NO STN, NO MIN FLOR,
NO O FLOR, BLUE STRM CUT, YLW
RNG

6430'- 6460': SLTST: 55% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR, SH,

CG 847u

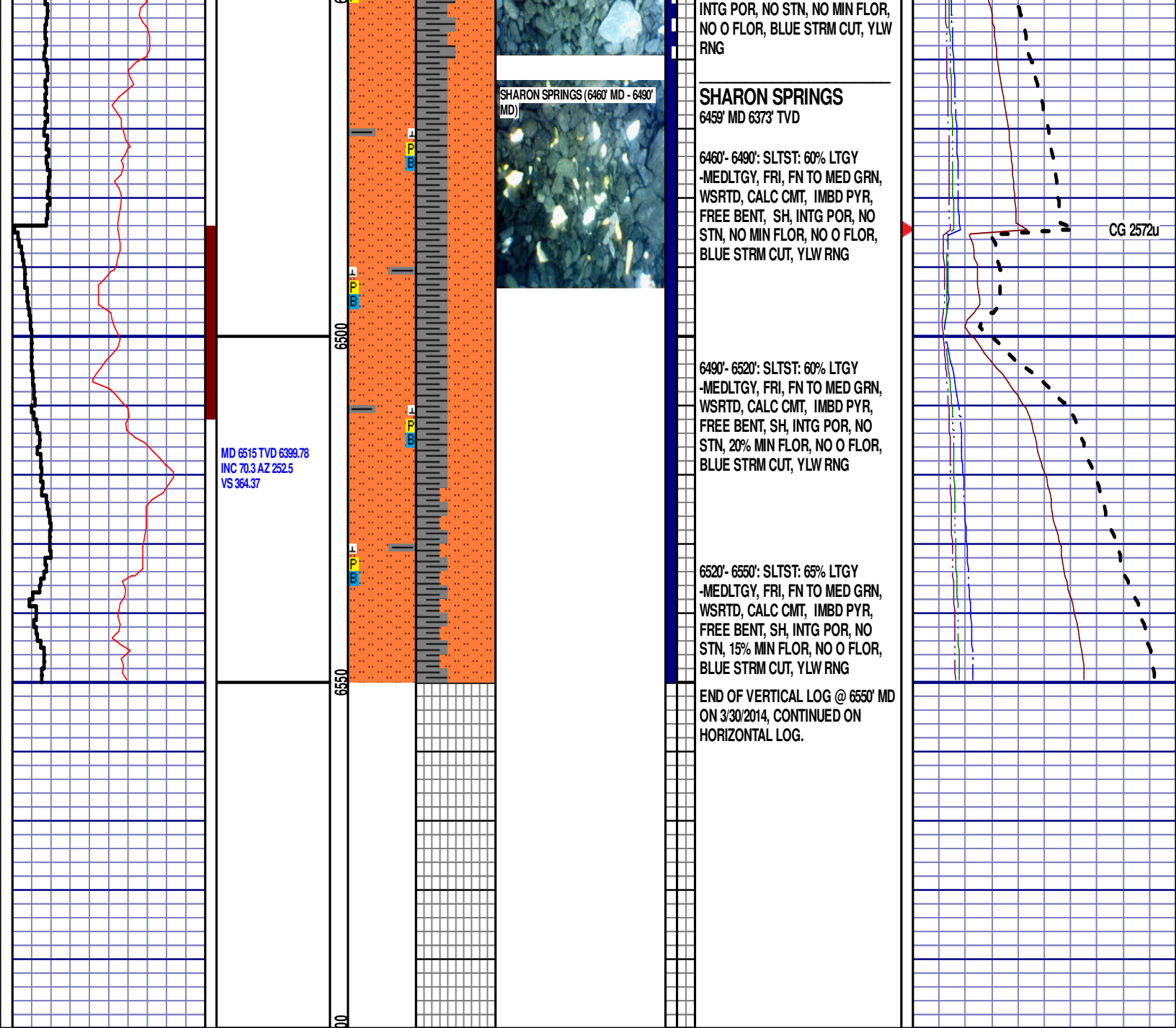
CG 1087u

-150 TG, C1-C4 1350

Scale Change
TG, C1-C4 GAS SCALE: -500'
TO 4500
(500 UNITS/ DIVISION)

TEEPEE BUTTES (6430' MD - 6460'
MD)





MD 6515 TVD 6399.78
INC 70.3 AZ 252.5
VS 364.37

INTG POR, NO STN, NO MIN FLOR,
NO O FLOR, BLUE STRM CUT, YLW
RNG

SHARON SPRINGS

6459' MD 6373' TVD

6460'- 6490': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
FREE BENT, SH, INTG POR, NO
STN, NO MIN FLOR, NO O FLOR,
BLUE STRM CUT, YLW RNG

6490'- 6520': SLTST: 60% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
FREE BENT, SH, INTG POR, NO
STN, 20% MIN FLOR, NO O FLOR,
BLUE STRM CUT, YLW RNG

6520'- 6550': SLTST: 65% LTGY
-MEDLTGY, FRI, FN TO MED GRN,
WSRTD, CALC CMT, IMBD PYR,
FREE BENT, SH, INTG POR, NO
STN, 15% MIN FLOR, NO O FLOR,
BLUE STRM CUT, YLW RNG

END OF VERTICAL LOG @ 6550' MD
ON 3/30/2014, CONTINUED ON
HORIZONTAL LOG.

CG 2572u