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Customer Information

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

Geologist: Holly Duncan
Noble Energy Inc.

Mud Logging Details

Logger: Casey Sensecqua & Alfredo Sanchez
Log Interval: 2500' MD to 6700' MD
Start Date: August 9, 2013
Release Date: August 14, 2013

Well Information

Well Name: Wells Ranch USX
AA13-65-1HN

Location: 18-6N-62W
888' FNL, 750' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 11560' MD
TD Date: August 14, 2013
Formation: Niobrara B Chalk
KB Elevation: 4855'
GR Elevation: 4831'
API Number: 05-123-36827-0000

ROCK TYPES

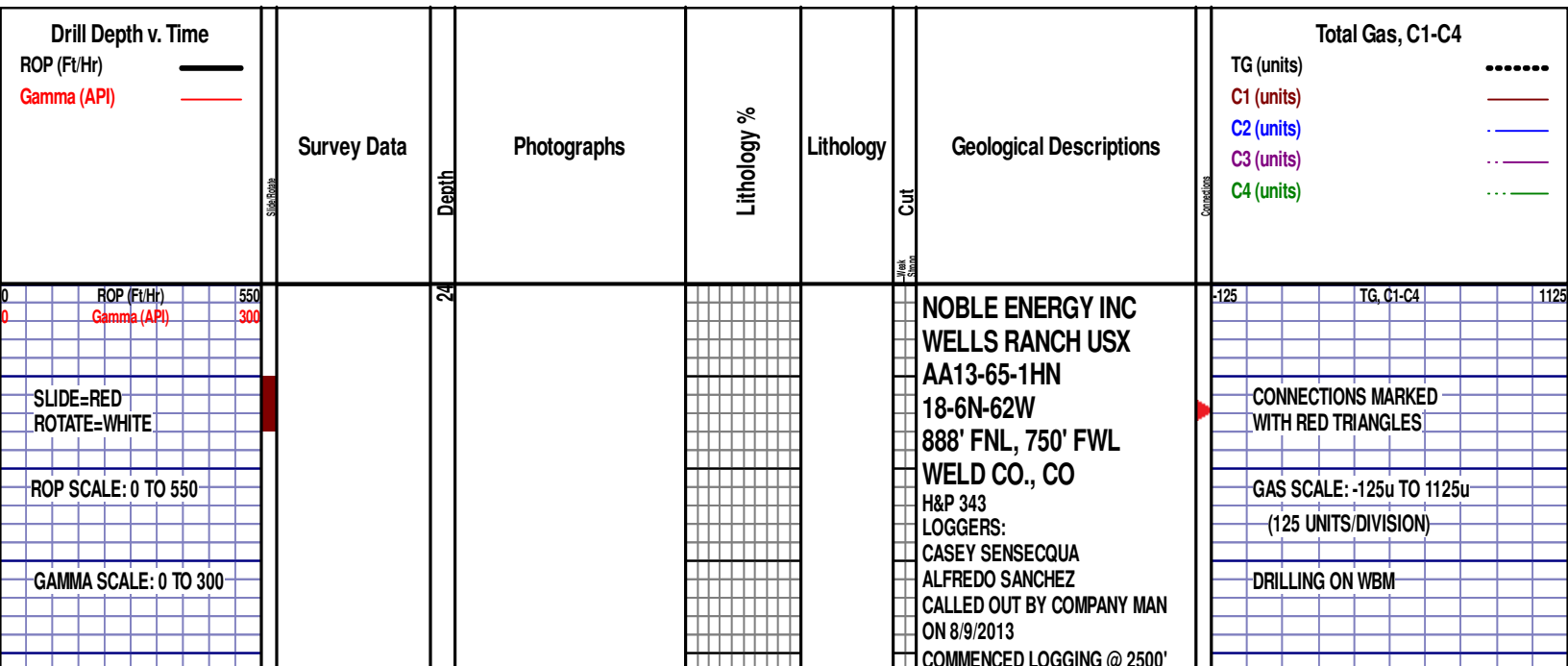
Anhy
Bent
Brec
Cht
Clyst
Coal
Congl

Dol
Gyp
Igne
Chk
Lmst
Meta
Mrlist

Salt
Shale
Shcol
Siltysh
Siltst
Ss
Till

gw
lmywash
ogw
olmywash
oshly gw
shly gw
sdygw

hvyrcrbsh
nosmpl
Lsdetrst
sltst
sdy sh
Cement



WOB 3.5K
PP 2330
RPM 25
SPM 64/64

NO GAMMA DATA

ROP (Ft/Hr)
Gamma (API)

NO GAMMA DATA

MD 2582 TVD 2568.69
INC 8.73 AZ 344.36
VS 70.02

MD 2677 TVD 2662.47
INC 9.69 AZ 342.34
VS 76.51

2500

2550

2600

2650

2700



MD @ 3:00 PM ON 8/9/2013 W/BIT
#2 8.75" SMITH MDI516 S/N JH0413
IN @ 641' MD

PIERRE

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

SLTST: 60% 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

SS: 50%: PRED MEDGY - LTKGY -
OPQ, MOD CONS, FN TO MED GRN,
SUBANG, W TO MODY SRTD, CALC
CMT, SILTY, INTGR POR, NO STN,
NO FLOR, NO O FLOR, NO CUT, NO
RNG

SS: 50%: PRED MEDGY - LTKGY -
OPQ, MOD CONS, FN TO MED GRN,
SUBANG, W TO MODY SRTD, CALC
CMT, SILTY, INTGR POR, NO STN,
NO FLOR, NO O FLOR, NO CUT, NO
RNG

MD 2351'
WT 8.9
VIS 26
PH 13.1
FIL 42
CL 1600
CAL 100
H2O 96.0
OIL 0.0
SOL 3.7
CAKE 3/0
GELS 2/3/3
PV 4
YP 2

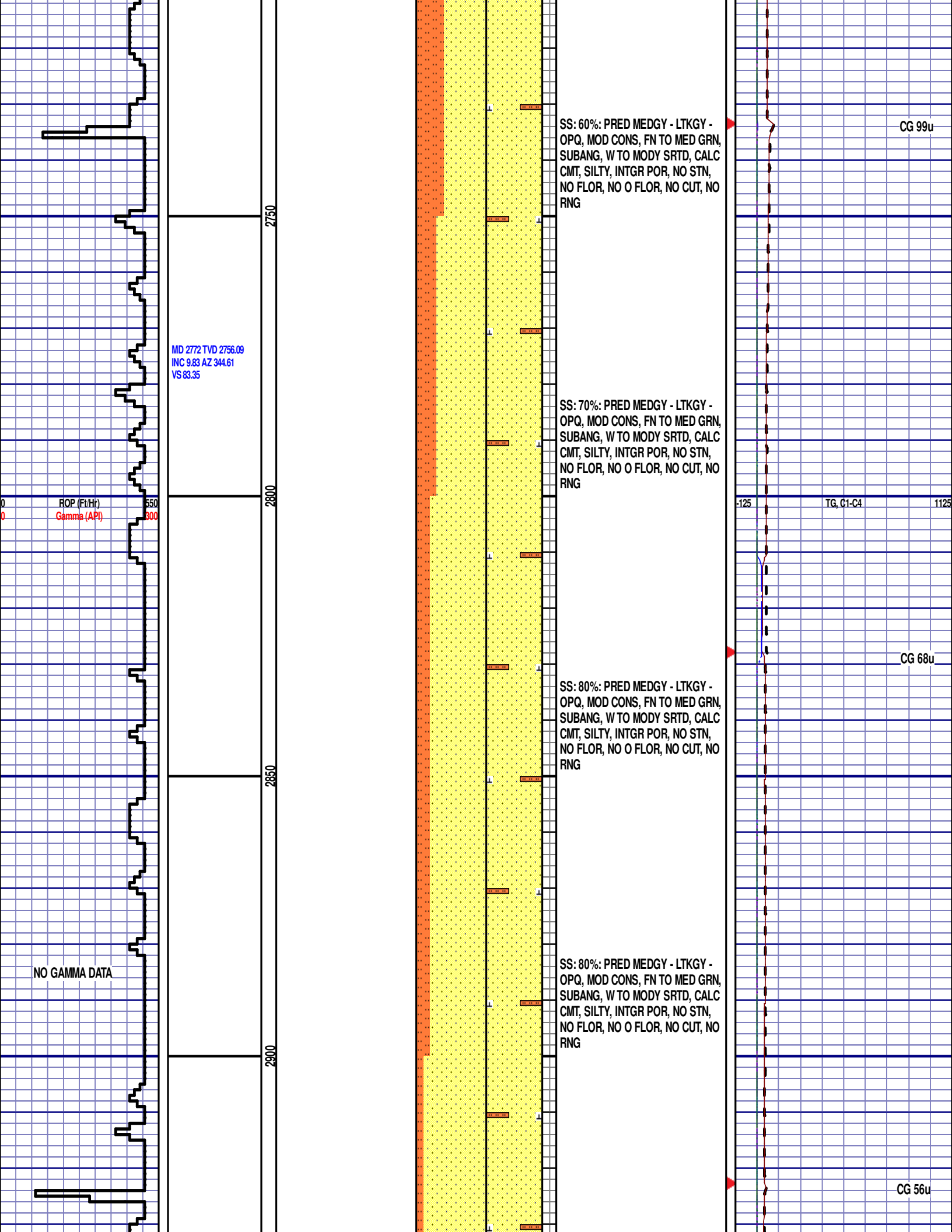
CG 168u

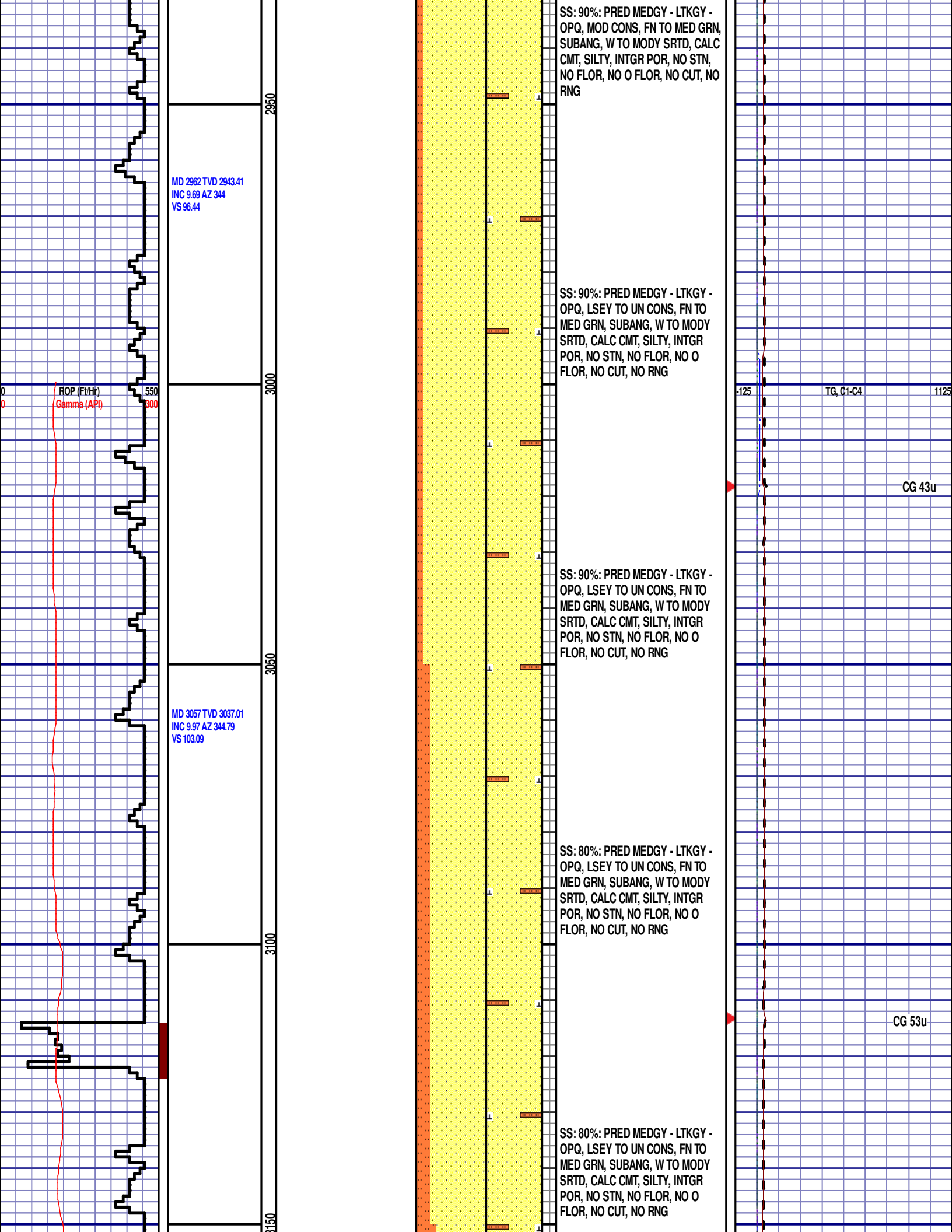
-125

TG, C1-C4

1125

CG 179u





MD 2962 TVD 2943.41
INC 9.69 AZ 344
VS 96.44

MD 3057 TVD 3037.01
INC 9.97 AZ 344.79
VS 103.09

SS: 90%: PRED MEDGY - LTKGY -
OPQ, MOD CONS, FN TO MED GRN,
SUBANG, W TO MODY SRTD, CALC
CMT, SILTY, INTGR POR, NO STN,
NO FLOR, NO O FLOR, NO CUT, NO
RNG

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

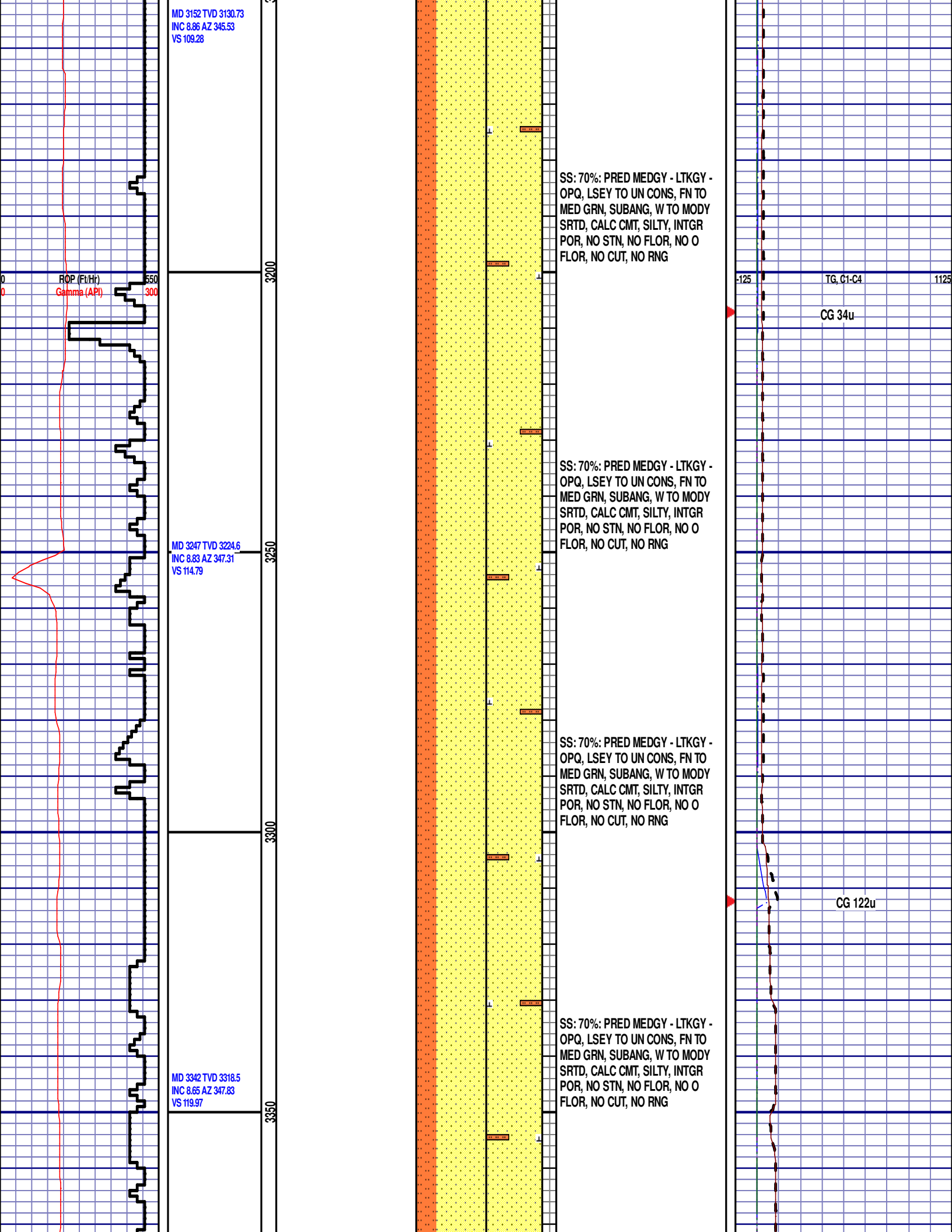
SS: 80%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

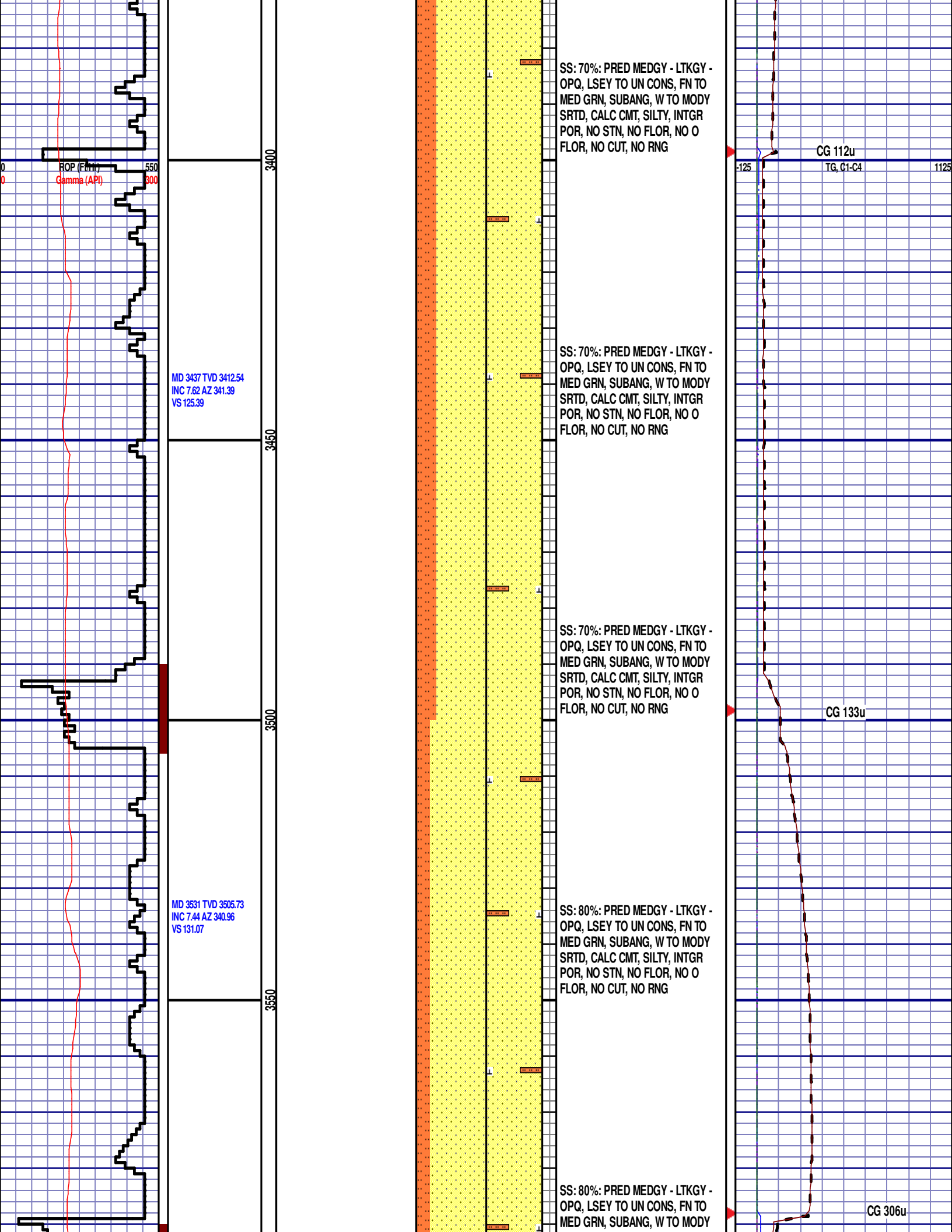
SS: 80%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

TG, C1-C4

CG 43u

CG 53u





ROP (Feet)
Gamma (API)

MD 3437 TVD 3412.54
INC 7.62 AZ 341.39
VS 125.39

MD 3531 TVD 3505.73
INC 7.44 AZ 340.96
VS 131.07

SS: 70%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 70%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 70%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

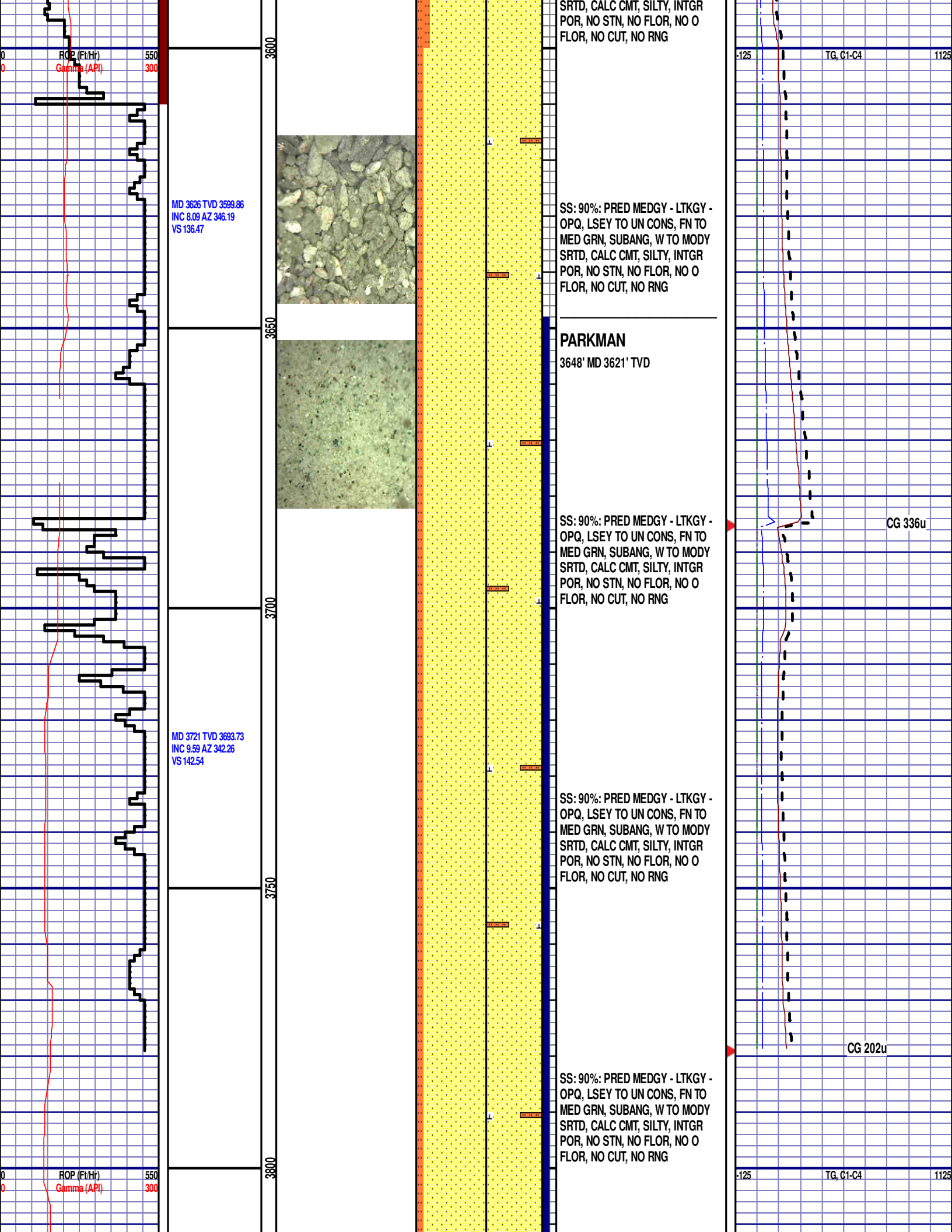
SS: 80%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 80%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY

CG 112u
TG, C1-C4

CG 133u

CG 306u



MD 3816 TVD 3787.24
INC 10.71 AZ 344.47
VS 149.66

EQUIPMENT ERROR
FROM 3778' MD TO
3800' MD

3850

3900

MD 3911 TVD 3880.47
INC 11.42 AZ 345.8
VS 156.92

3950

4000

MD 4006 TVD 3973.51
INC 11.93 AZ 346.17
VS 164.31

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

SS: 90%: PRED MEDGY - LTKGY -
OPQ, LSEY TO UN CONS, FN TO
MED GRN, SUBANG, W TO MODY
SRTD, CALC CMT, SILTY, INTGR
POR, NO STN, NO FLOR, NO O
FLOR, NO CUT, NO RNG

EQUIPMENT ERROR FROM
3778' MD TO 3800' MD

CG N/A

CG 534u

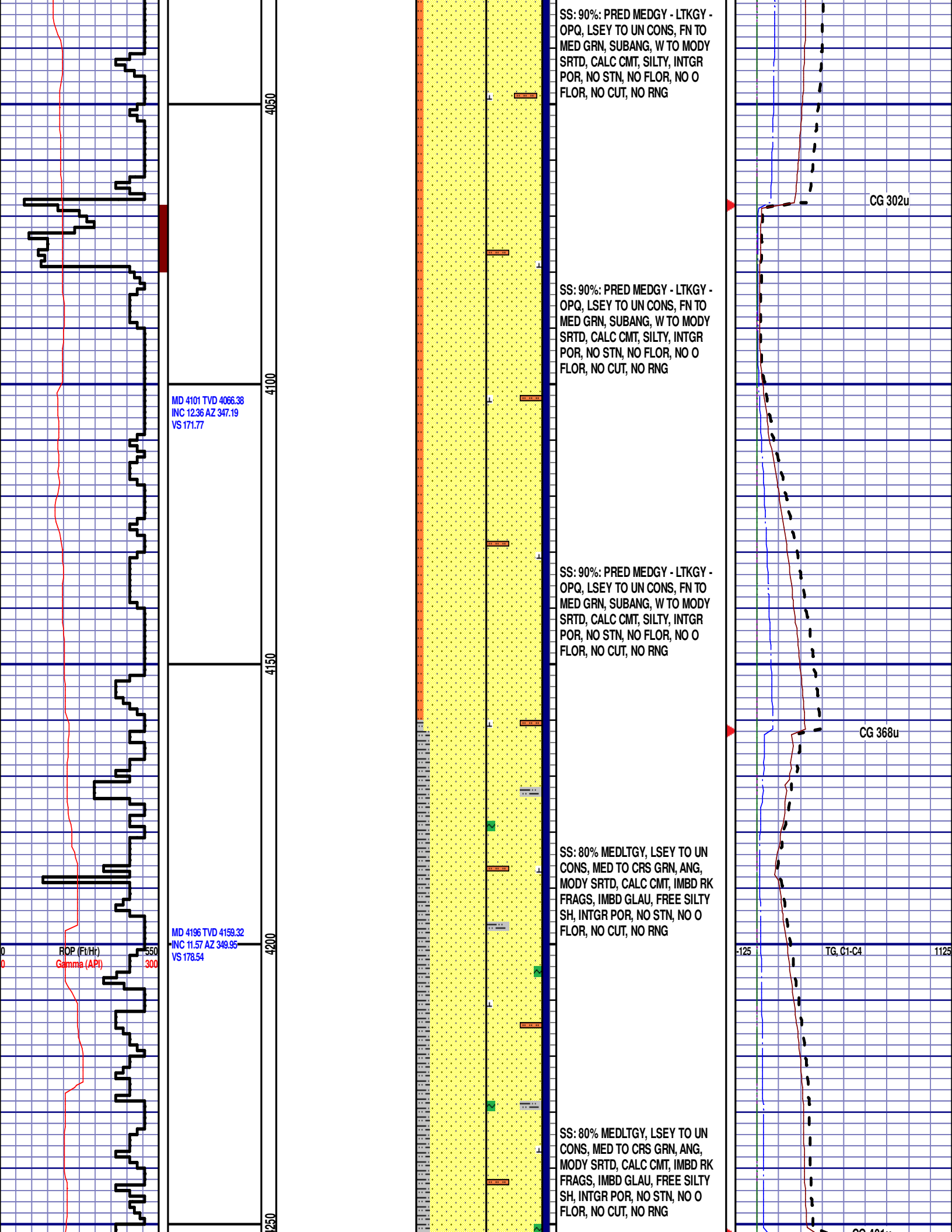
ROP (Ft/Hr)
Gamma (API)

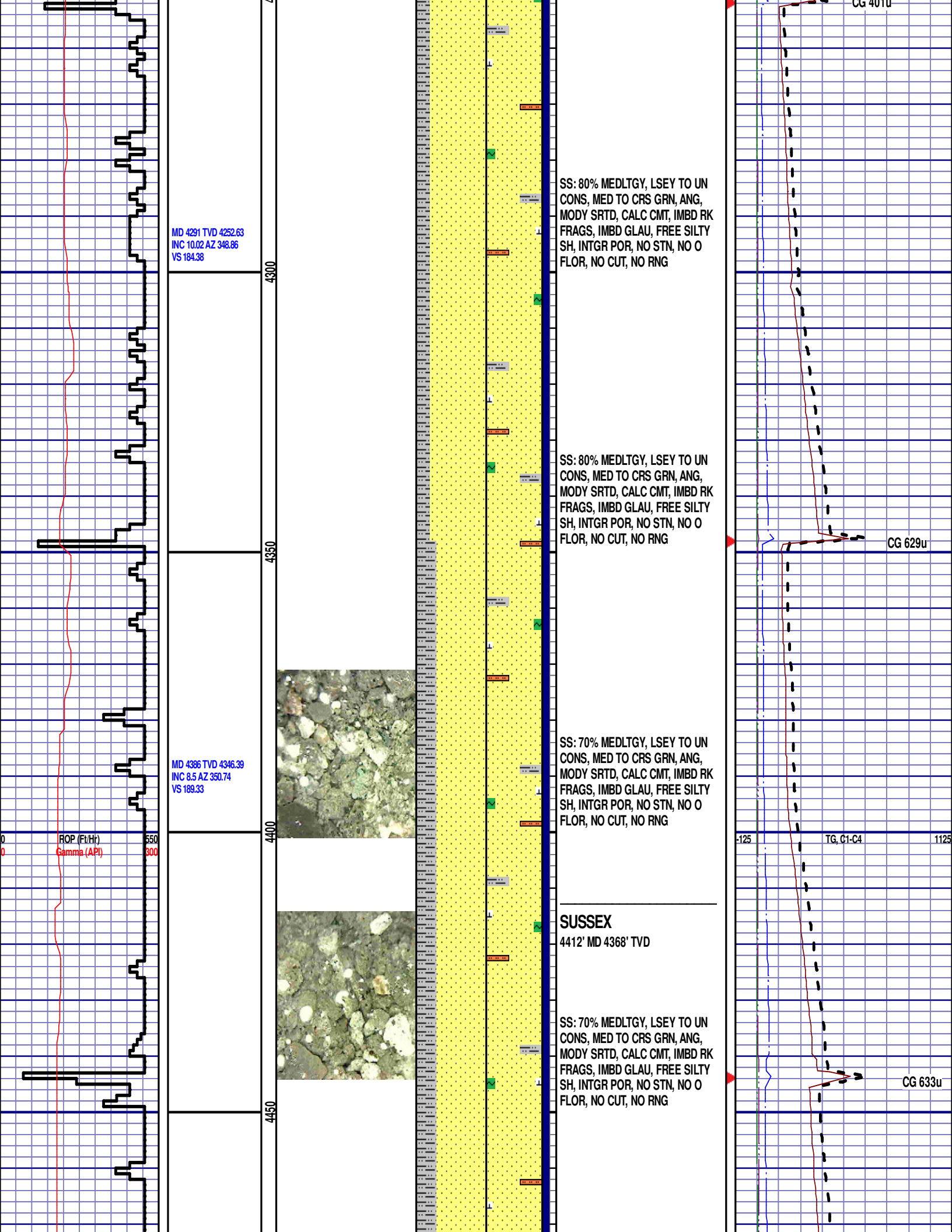
550
300

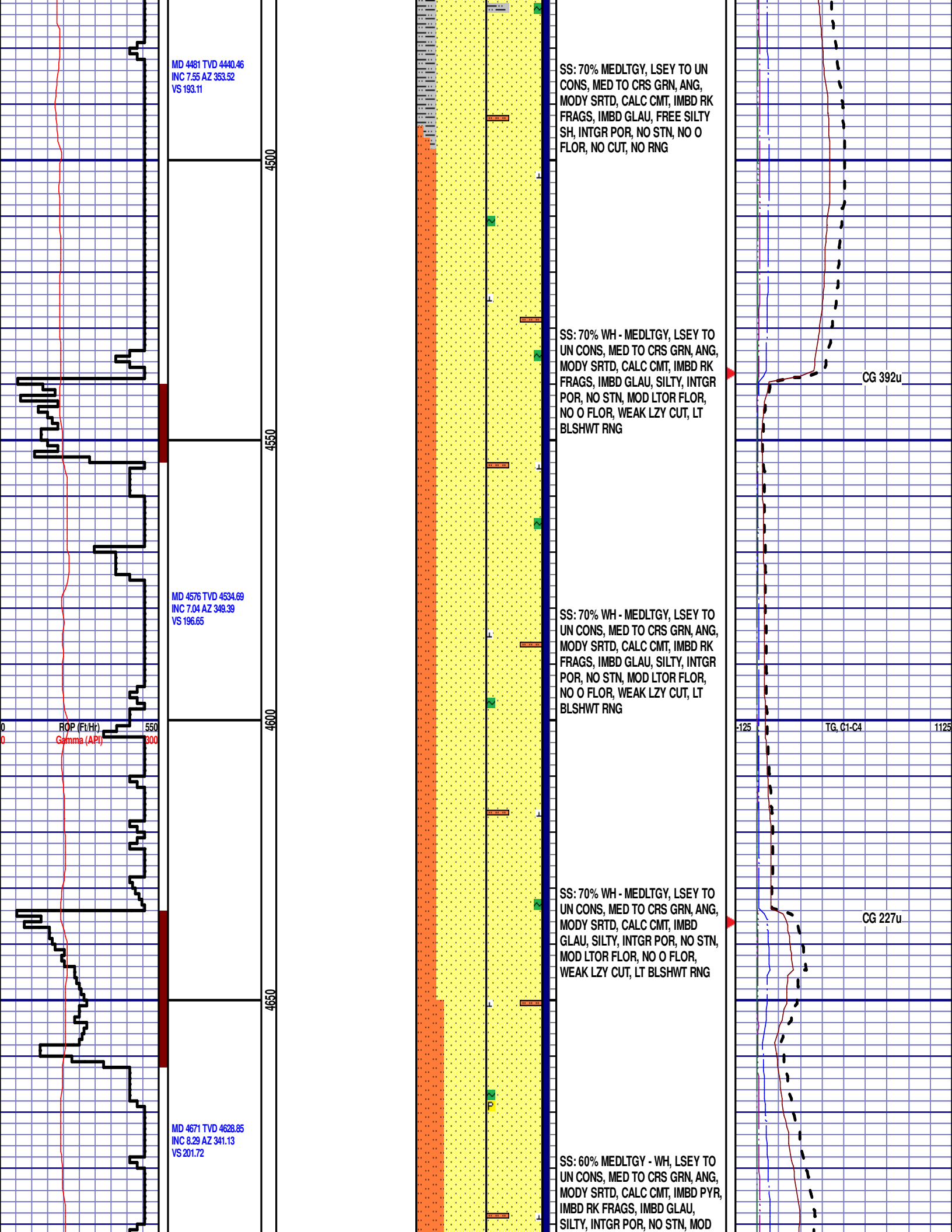
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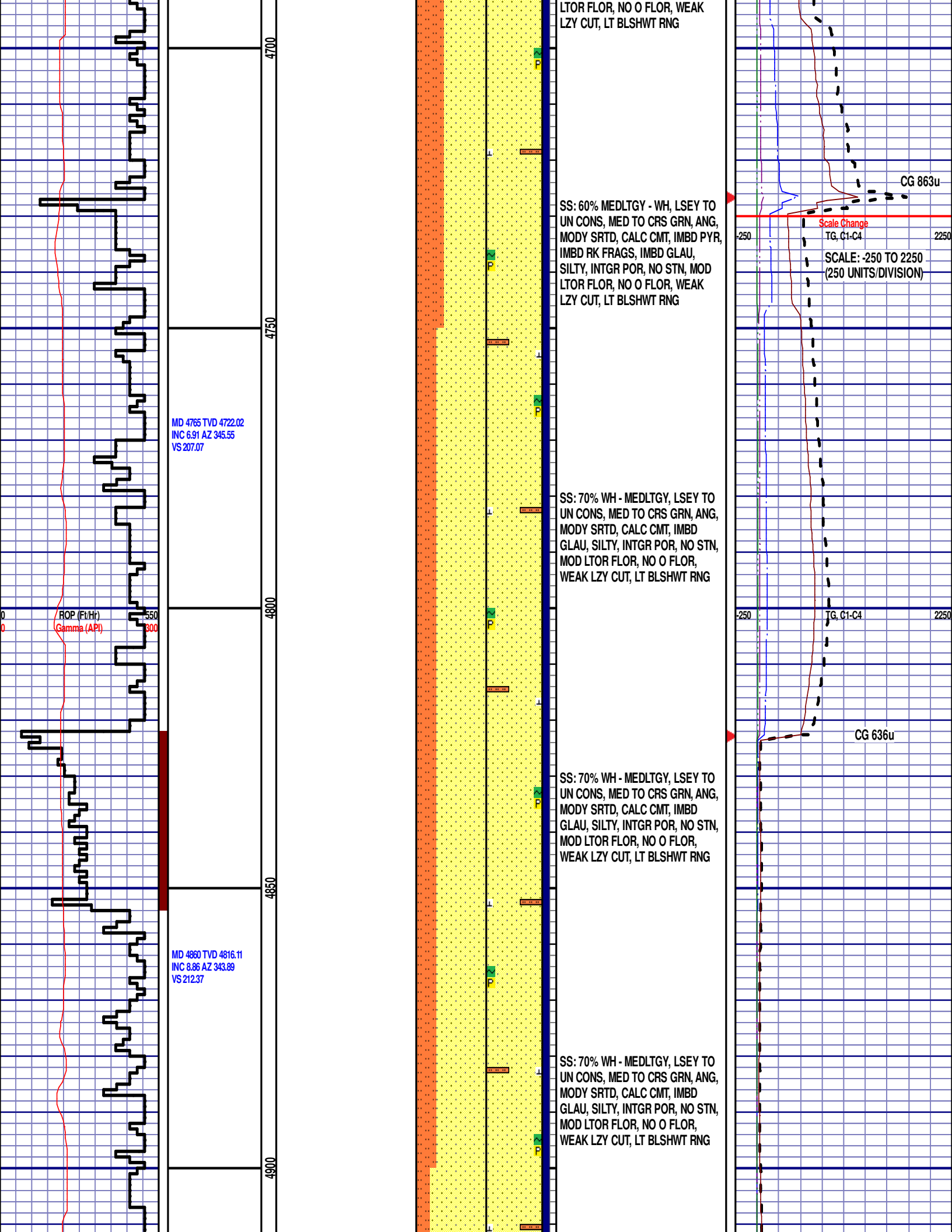
TG, C1-C4

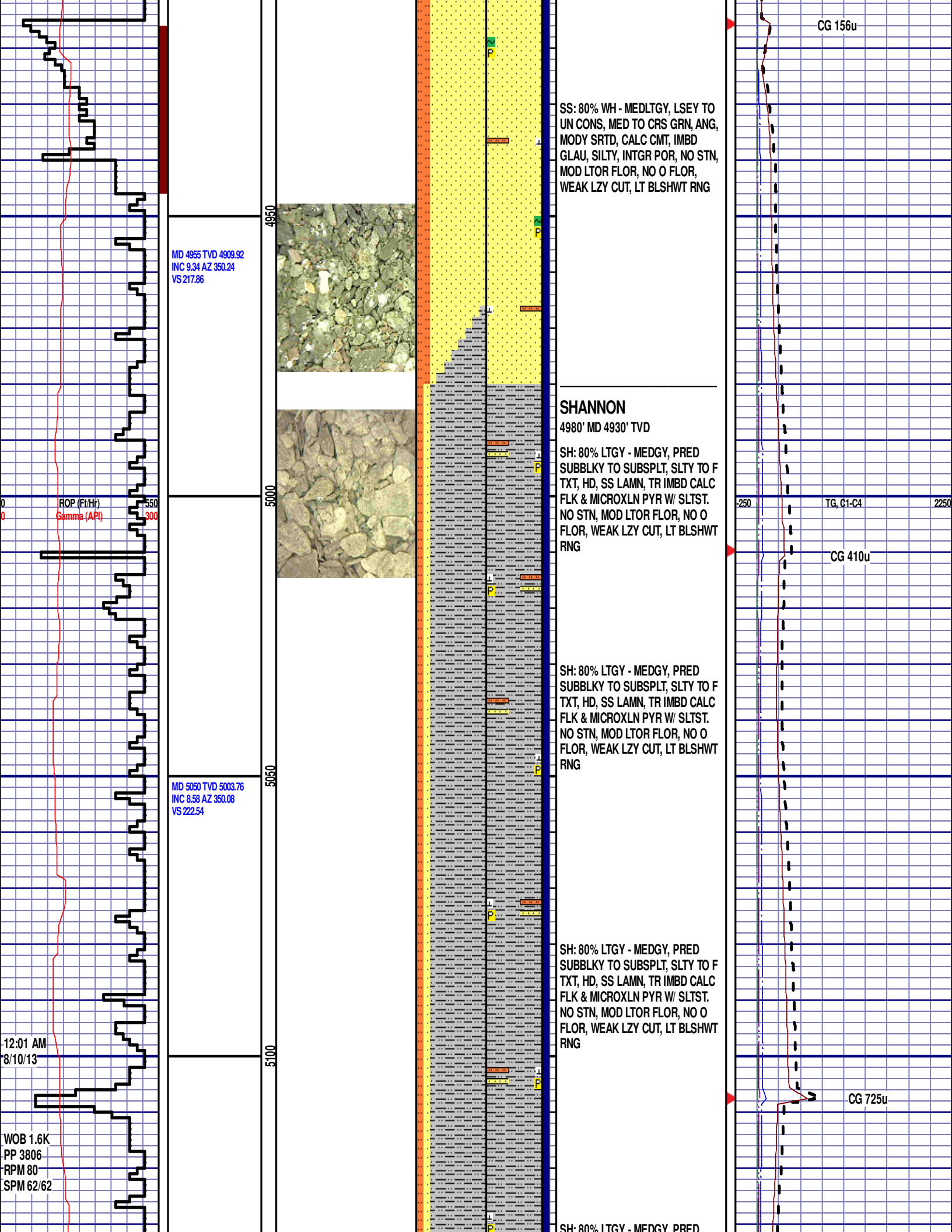
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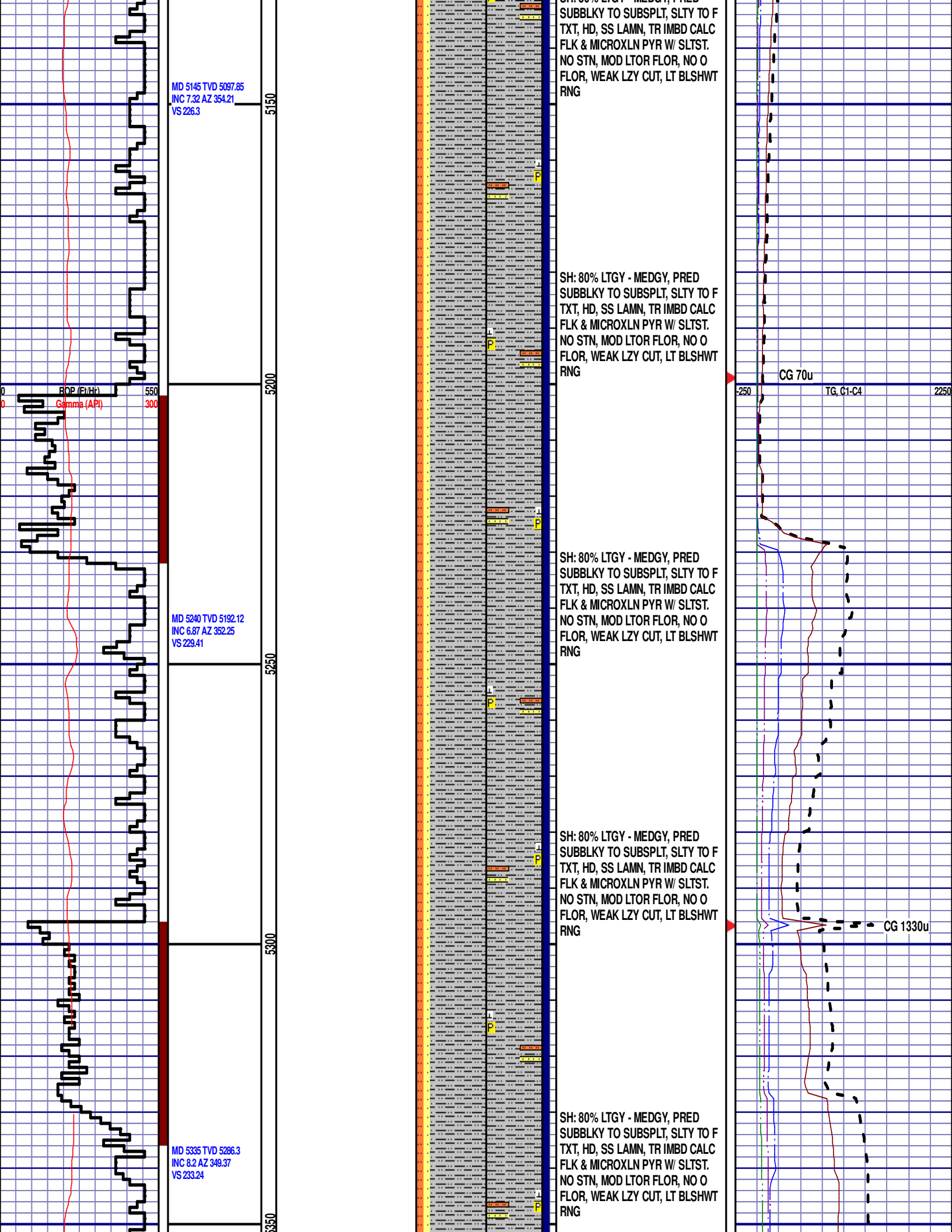


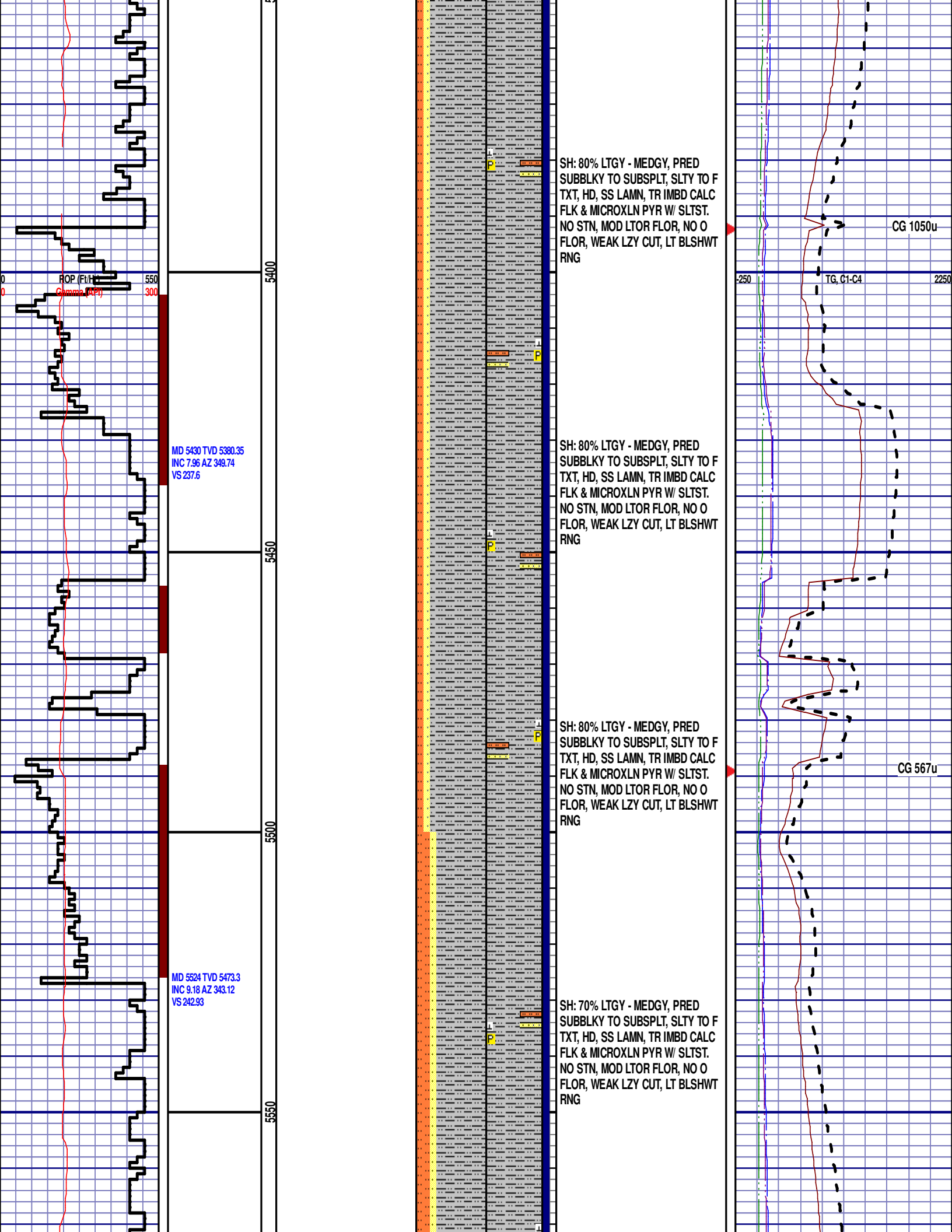


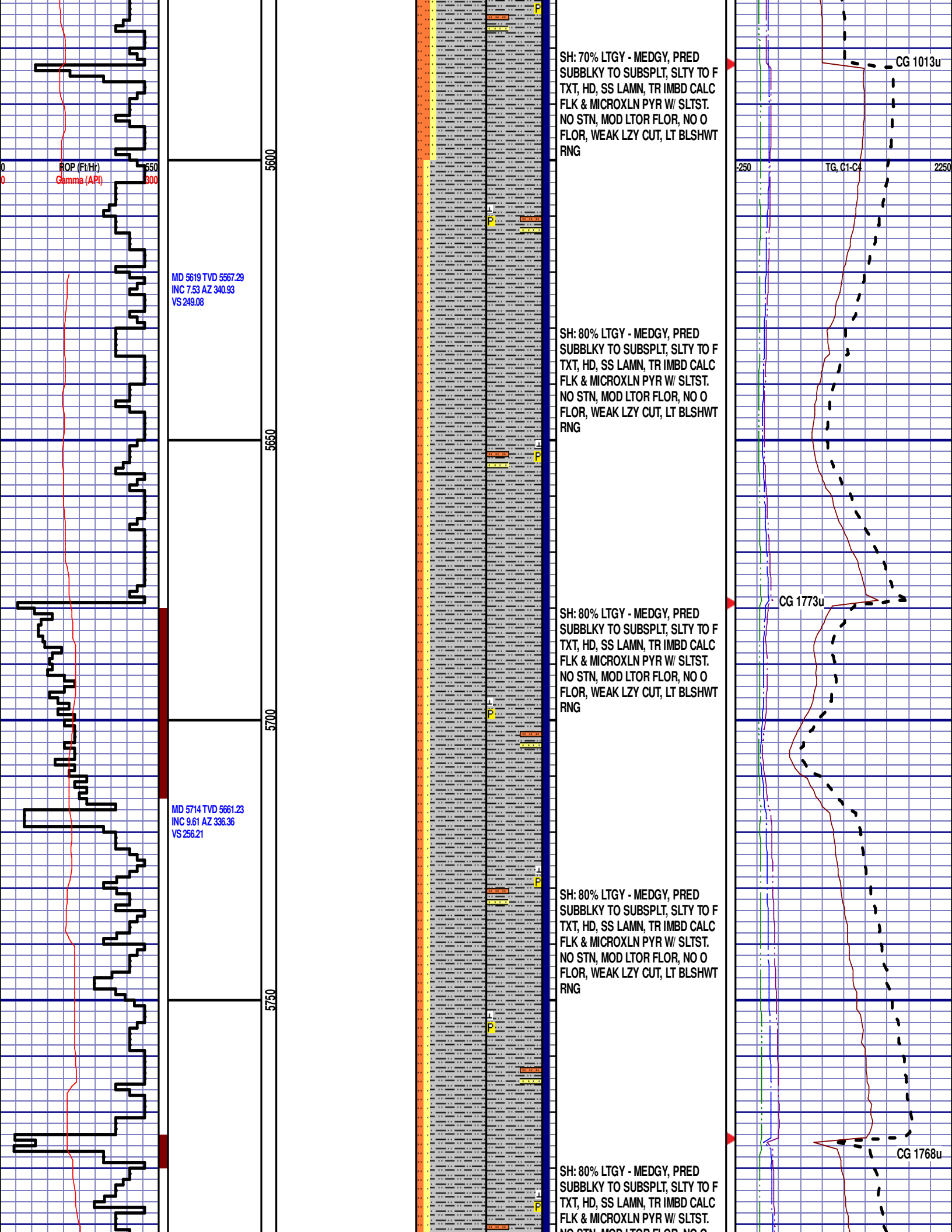


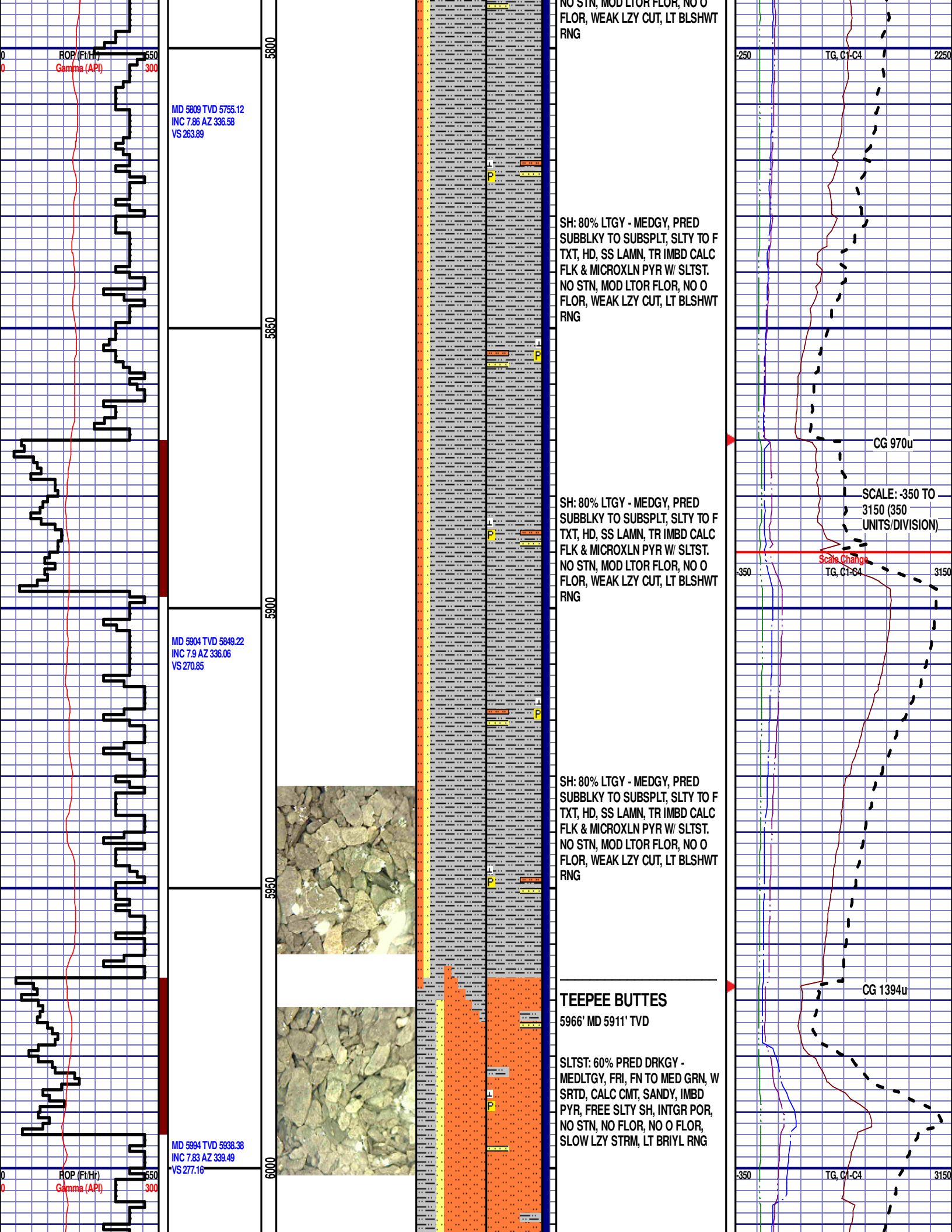


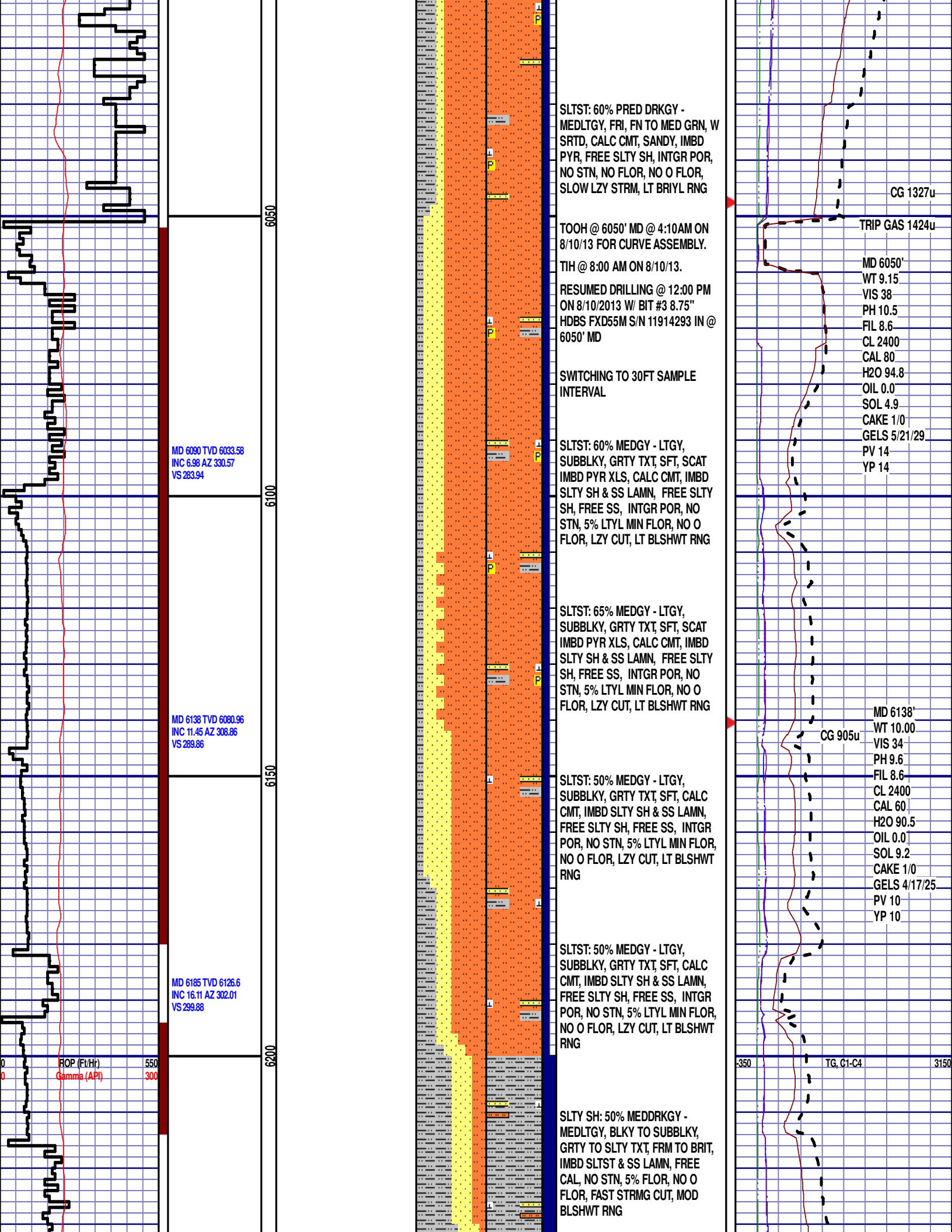












SLTST: 60% PRED DRKGY -
MEDLTGY, FRI, FN TO MED GRN, W
SRTD, CALC CMT, SANDY, IMBD
PYR, FREE SLTY SH, INTGR POR,
NO STN, NO FLOR, NO O FLOR,
SLOW LZ Y STRM, LT BRIYL RNG

TOOH @ 6050' MD @ 4:10AM ON
8/10/13 FOR CURVE ASSEMBLY.
TIH @ 8:00 AM ON 8/10/13.
RESUMED DRILLING @ 12:00 PM
ON 8/10/2013 W/ BIT #3 8.75"
HDBS FXD55M S/N 11914293 IN @
6050' MD

SWITCHING TO 30FT SAMPLE
INTERVAL

SLTST: 60% MEDGY - LTGY,
SUBBLKY, GR TY TXT, SFT, SCAT
IMBD PYR XLS, CALC CMT, IMBD
SLTY SH & SS LAMN, FREE SLTY
SH, FREE SS, INTGR POR, NO
STN, 5% LTYL MIN FLOR, NO O
FLOR, LZ Y CUT, LT BL SHWT RNG

SLTST: 65% MEDGY - LTGY,
SUBBLKY, GR TY TXT, SFT, SCAT
IMBD PYR XLS, CALC CMT, IMBD
SLTY SH & SS LAMN, FREE SLTY
SH, FREE SS, INTGR POR, NO
STN, 5% LTYL MIN FLOR, NO O
FLOR, LZ Y CUT, LT BL SHWT RNG

SLTST: 50% MEDGY - LTGY,
SUBBLKY, GR TY TXT, SFT, CALC
CMT, IMBD SLTY SH & SS LAMN,
FREE SLTY SH, FREE SS, INTGR
POR, NO STN, 5% LTYL MIN FLOR,
NO O FLOR, LZ Y CUT, LT BL SHWT
RNG

SLTST: 50% MEDGY - LTGY,
SUBBLKY, GR TY TXT, SFT, CALC
CMT, IMBD SLTY SH & SS LAMN,
FREE SLTY SH, FREE SS, INTGR
POR, NO STN, 5% LTYL MIN FLOR,
NO O FLOR, LZ Y CUT, LT BL SHWT
RNG

SLTY SH: 50% MEDDRKGY -
MEDLTGY, BLKY TO SUBBLKY,
GR TY TO SLTY TXT, FRM TO BRIT,
IMBD SLTST & SS LAMN, FREE
CAL, NO STN, 5% FLOR, NO O
FLOR, FAST STRMG CUT, MOD
BL SHWT RNG

CG 1327u

TRIP GAS 1424u

MD 6050'
WT 9.15
VIS 38
PH 10.5
FIL 8.6
CL 2400
CAL 80
H2O 94.8
OIL 0.0
SOL 4.9
CAKE 1/0
GELS 5/21/29
PV 14
YP 14

CG 905u

MD 6138'
WT 10.00
VIS 34
PH 9.6
FIL 8.6
CL 2400
CAL 60
H2O 90.5
OIL 0.0
SOL 9.2
CAKE 1/0
GELS 4/17/25
PV 10
YP 10

TG, C1-C4

