



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: Holly Sell
Noble Energy Inc.

Mud Logging Details

Logger: Andrew Christiano & Nikki Graber

Log Interval: 2500' MD to 6650' MD
Start Date: May 8, 2012
Release Date: May 17, 2012

Well Information

Well Name: SLW STATE PC BB18-65HN

Location: 18-5N-63W
1732' FNL, 632' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 10986' MD
TD Date: May 16, 2012
Formation: Niobrara
KB Elevation: 4614'
GR Elevation: 4590'
API Number: 05-123-34679

ROCK TYPES

	Anhy		Dol		Salt		gw		hvycrbsh
	Bent		Gyp		Shale		lmywash		NO SMPL
	Brec		Igne		Shcol		ogw		Lsdetrit
	Cht		Chk		Shgy		olmywash		sltst
	Clyst		Lmst		Sltst		oshly gw		sdy sh
	Coal		Meta		Ss		shly gw		Cement
	Congl		Mrlst		Till		sdygw		

Drill Depth v. Time		Survey Data	Depth Porosity	Lithology	Geological Descriptions	Total Gas, C1-C4				
ROP (Min/Ft)	Gamma (API)					TG (units)	C1 (units)	C2 (units)	C3 (units)	C4 (units)
0	0		24		NOBLE ENERGY INC SLW STATE PC BB18-65HN 18-5N-63W 1732' FNL, 632' FWL WELD CO., CO H&P 343 LOGGERS: ANDREW CHRISTIANO NIKKI GRABER CALLED OUT BY COMPANY MAN ON 5/8/2012. COMMENCED LOGGING @ 2500' @ 2:30 AM ON	-50				450
SLIDE=RED ROTATE=WHITE						CONNECTIONS MARKED WITH RED TRIANGLES				
ROP SCALE: 0 TO 2						GAS SCALE: -50 TO 450 (50 UNITS/DIVISION)				
GAMMA SCALE: 0 TO 300						DRILLING ON WATER BASED MUD				

LOGGING @ 2500 @ 2:30 AM ON
5/10/12 W/ BIT #2 8.75" SECURITY
TYPE FDX55M IN @ 595' MD.

WOB 5.1K
PP 2114
RPM 74
SPM 66/66

MD 2506 TVD 2474.46
Az 217.38° Inc 16.73°
VS -11458

SS; LT GRY TO GRY, F TO MGR,
SUB-ANG, FROST, BRITTLE,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT, NO
CUT AFTER CRUSH, DIM YLW RING
CUT

SS; LT GRY TO GRY, F TO MGR,
SUB-ANG, FROST, BRITTLE,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT,
NO CUT AFTER CRUSH, DIM WH
RING CUT

SS; TAN TO GRY, F TO MGR,
SUB-ANG, FROST, FRIBL,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT,
NO CUT AFTER CRUSH, DIM WH
RING CUT

SS; TAN TO GRY, F TO MGR,
SUB-ANG, FROST, FRIBL,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT,
NO CUT AFTER CRUSH, DIM YLW
RING CUT

MD 2601 TVD 2565.53
Az 215.26° Inc 16.34°
VS -126.08

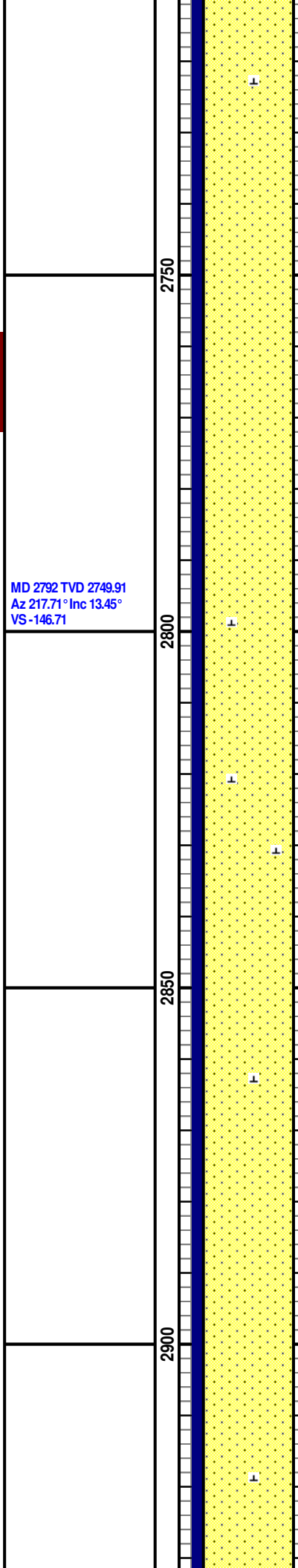
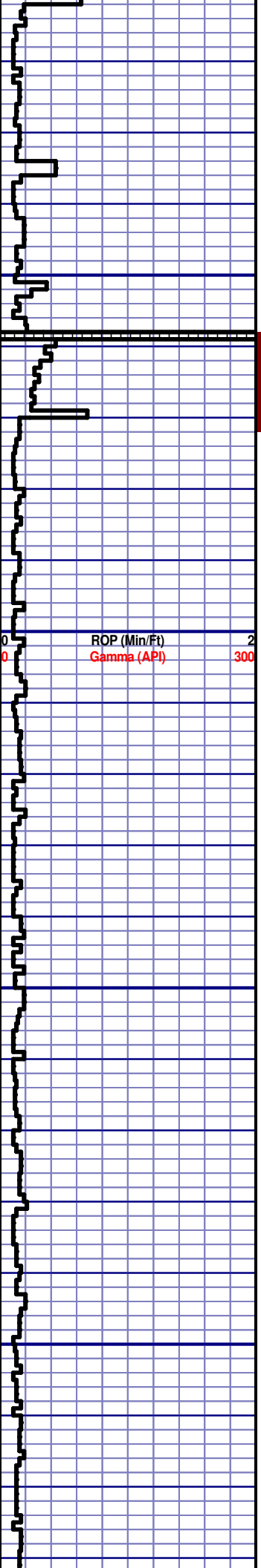
MD 2697 TVD 2657.89
Az 214.96° Inc 15.3°
VS -136.71

ROP (Min/Ft) 2
Gamma (API) 300

CG 177u

-50 TG, C1-C4 450

CG 181u



SS; TAN TO GRY, F TO MGR,
 SUB-ANG, FROST, FRIBL,
 M/CONSOL, M/SORT, CALC CMNT,
 INTRGRAN POR, NO STRM CUT,
 NO CUT AFTER CRUSH, DIM YLW
 RING CUT

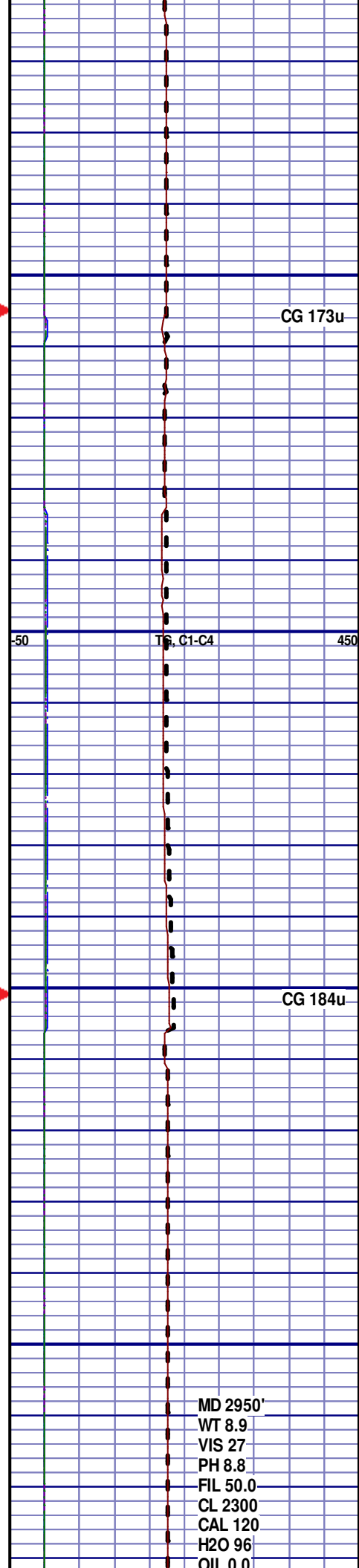
SS; TAN TO GRY, F TO MGR,
 SUB-ANG, FROST, FRIBL,
 M/CONSOL, M/SORT, CALC CMNT,
 INTRGRAN POR, NO STRM CUT,
 NO CUT AFTER CRUSH, DIM YLW
 RING CUT

SS; LT GRY TO GRY, F TO MGR,
 SUB-ANG, FROST, BRITTLE,
 M/CONSOL, M/SORT, CALC CMNT,
 INTRGRAN POR, NO STRM CUT,
 NO CUT AFTER CRUSH, DIM YLW
 RING CUT

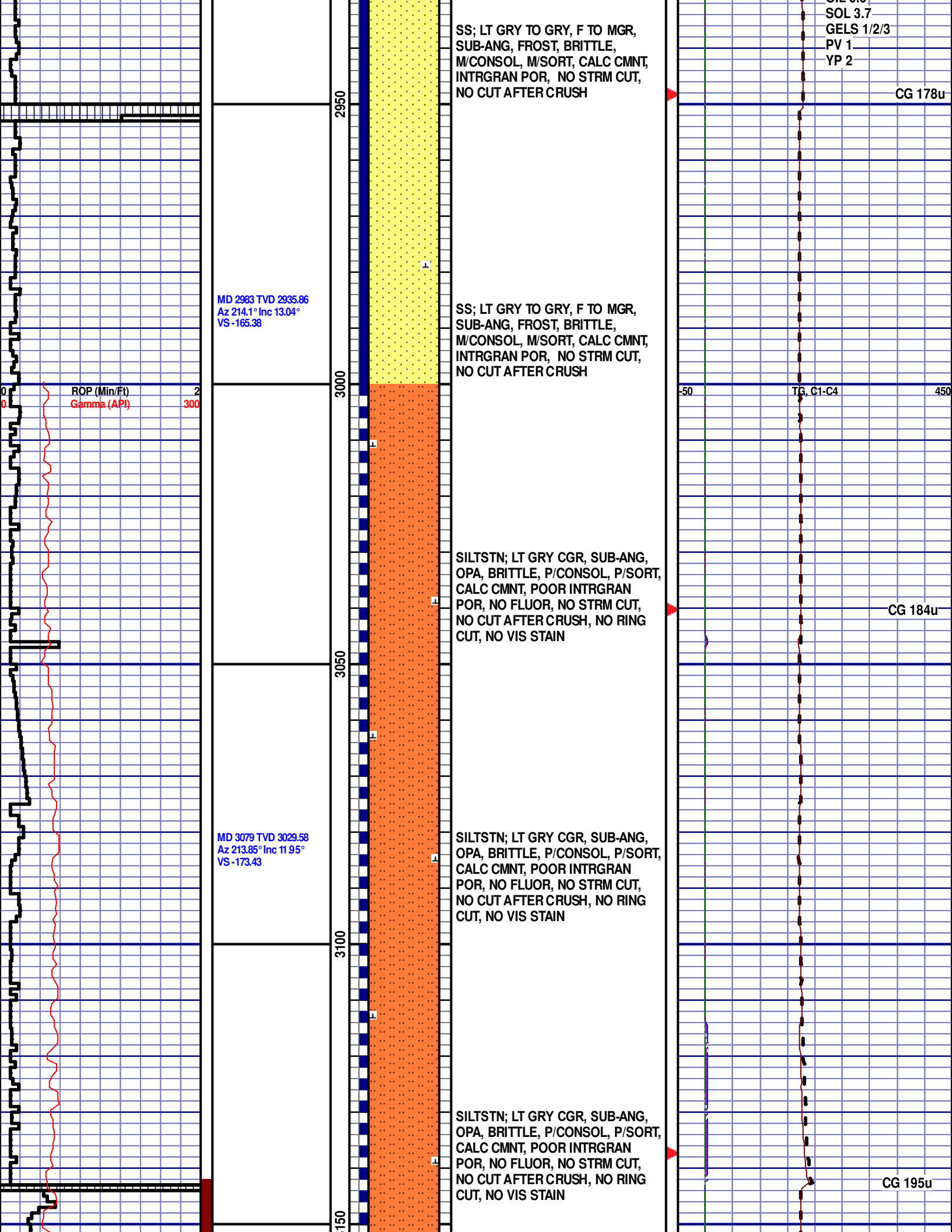
SS; LT GRY TO GRY, F TO MGR,
 SUB-ANG, FROST, BRITTLE,
 M/CONSOL, M/SORT, CALC CMNT,
 INTRGRAN POR, NO STRM CUT,
 NO CUT AFTER CRUSH, DIM YLW
 RING CUT

MD 2792 TVD 2749.91
 Az 217.71° Inc 13.45°
 VS -146.71

ROP (Min/Ft) 2
 Gamma (API) 300



MD 2950'
 WT 8.9
 VIS 27
 PH 8.8
 FIL 50.0
 CL 2300
 CAL 120
 H2O 96
 OIL 0.0



SOL 3.7
GELS 1/2/3
PV 1
YP 2

SS; LT GRY TO GRY, F TO MGR,
SUB-ANG, FROST, BRITTLE,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT,
NO CUT AFTER CRUSH

CG 178u

MD 2983 TVD 2935.86
Az 214.1° Inc 13.04°
VS -165.38

SS; LT GRY TO GRY, F TO MGR,
SUB-ANG, FROST, BRITTLE,
M/CONSOL, M/SORT, CALC CMNT,
INTRGRAN POR, NO STRM CUT,
NO CUT AFTER CRUSH

ROP (Min/Ft) 2
Gamma (API) 300

TG, C1-C4

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN

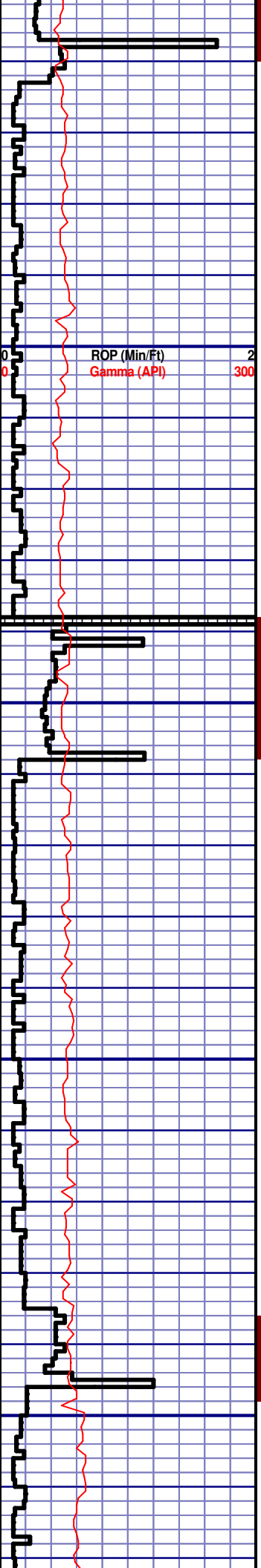
CG 184u

MD 3079 TVD 3029.58
Az 213.85° Inc 11.95°
VS -173.43

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN

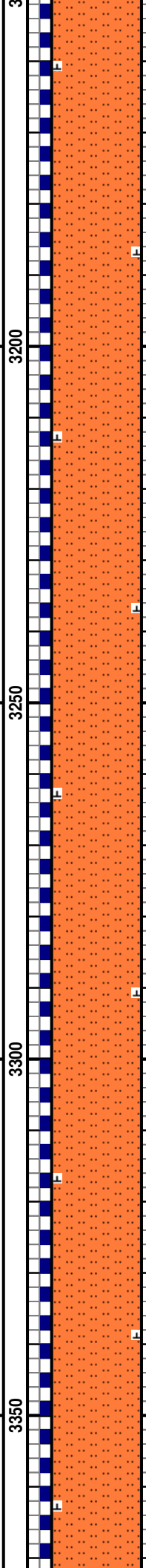
SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN

CG 195u



MD 3174 TVD 3122.33
 Az 216.03° Inc 13.05°
 VS -181.74

ROP (Min/Ft) 2
 Gamma (API) 300



SILTSTN; LT GRY CGR, SUB-ANG,
 OPA, BRITTLE, P/CONSOL, P/SORT,
 CALC CMNT, POOR INTRGRAN
 POR, NO FLUOR, NO STRM CUT,
 NO CUT AFTER CRUSH, NO RING
 CUT, NO VIS STAIN

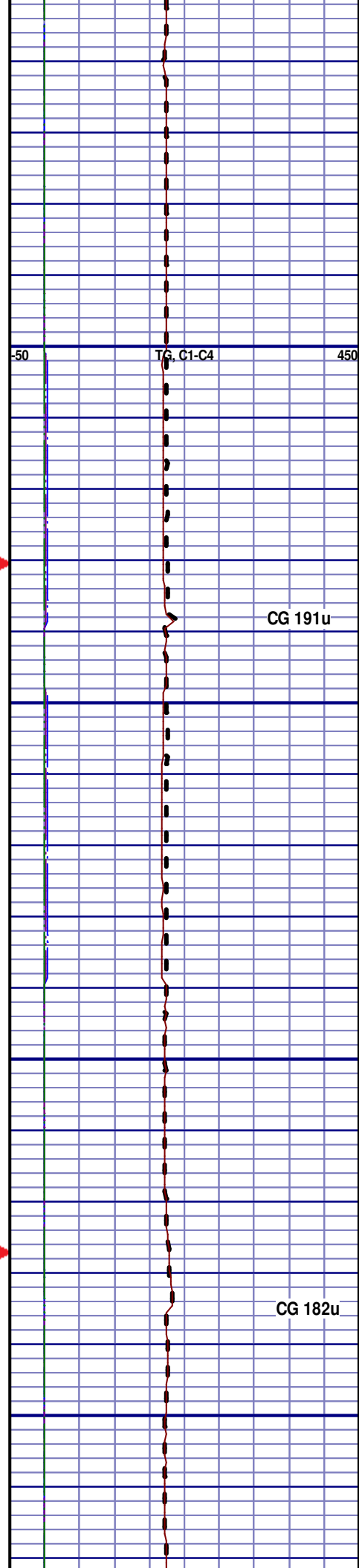
SILTSTN; LT GRY CGR, SUB-ANG,
 OPA, BRITTLE, P/CONSOL, P/SORT,
 CALC CMNT, POOR INTRGRAN
 POR, NO FLUOR, NO STRM CUT,
 NO CUT AFTER CRUSH, NO RING
 CUT, NO VIS STAIN

SILTSTN; LT GRY CGR, SUB-ANG,
 OPA, BRITTLE, P/CONSOL, P/SORT,
 CALC CMNT, POOR INTRGRAN
 POR, NO FLUOR, NO STRM CUT,
 NO CUT AFTER CRUSH, NO RING
 CUT, NO VIS STAIN

SILTSTN; LT GRY CGR, SUB-ANG,
 OPA, BRITTLE, P/CONSOL, P/SORT,
 CALC CMNT, POOR INTRGRAN
 POR, NO FLUOR, NO STRM CUT,
 NO CUT AFTER CRUSH, NO RING
 CUT, NO VIS STAIN

MD 3269 TVD 3214.9
 Az 219.62° Inc 12.92°
 VS -191.32

MD 3365 TVD 3308.16
 Az 221.61° Inc 14.55°
 VS -200.70

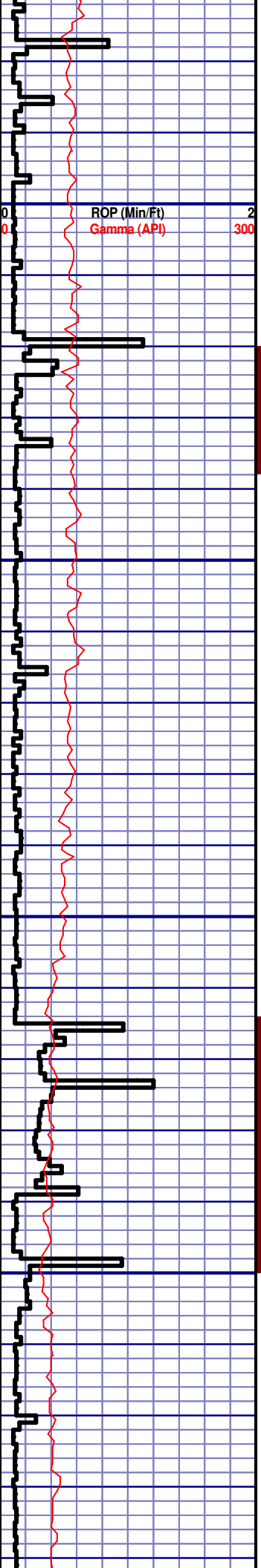


TG, C1-C4 450

CG 191u

CG 182u

VS-202.73



MD 3460 TVD 3400.26
Az 221.59° Inc 13.83°
VS-214.70

3400

3450

3500

3550

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN

PARKMAN
3472' MD 3416' TVD
SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, MILK CUT AFTER CRUSH, DIM YLW RING CUT, NO VIS STAIN, SME SS

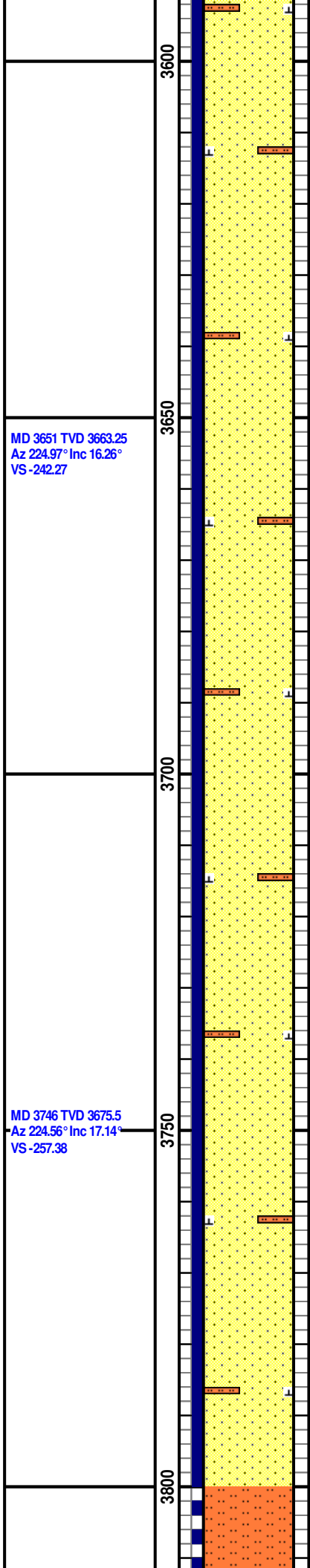
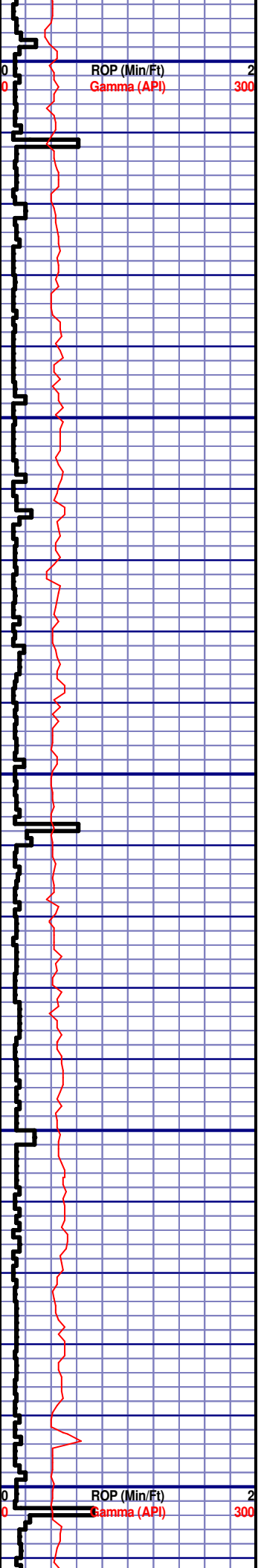
SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO

-50 TG, C1-C4 450

CG 199u

CG 194u



FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

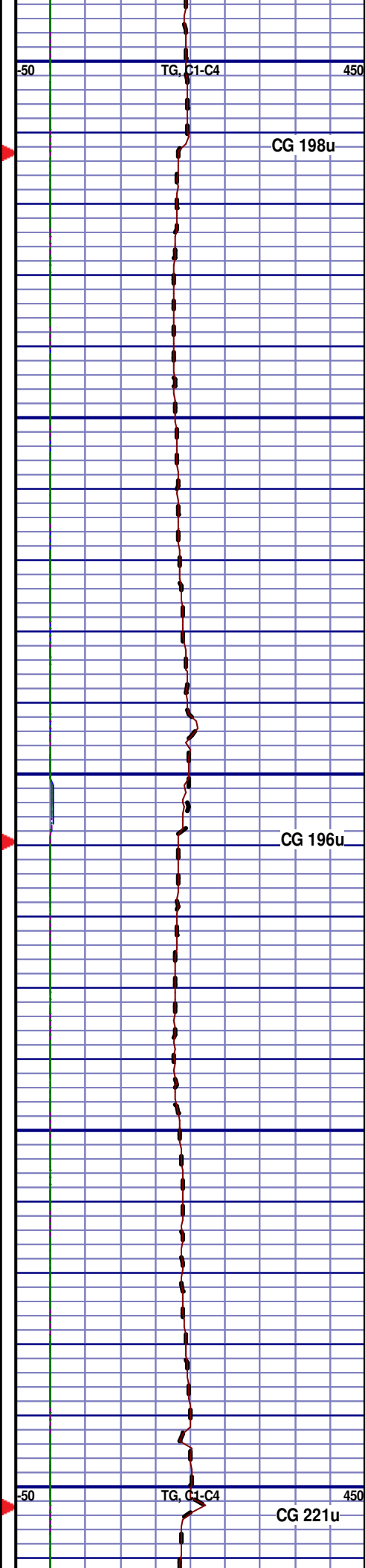
SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

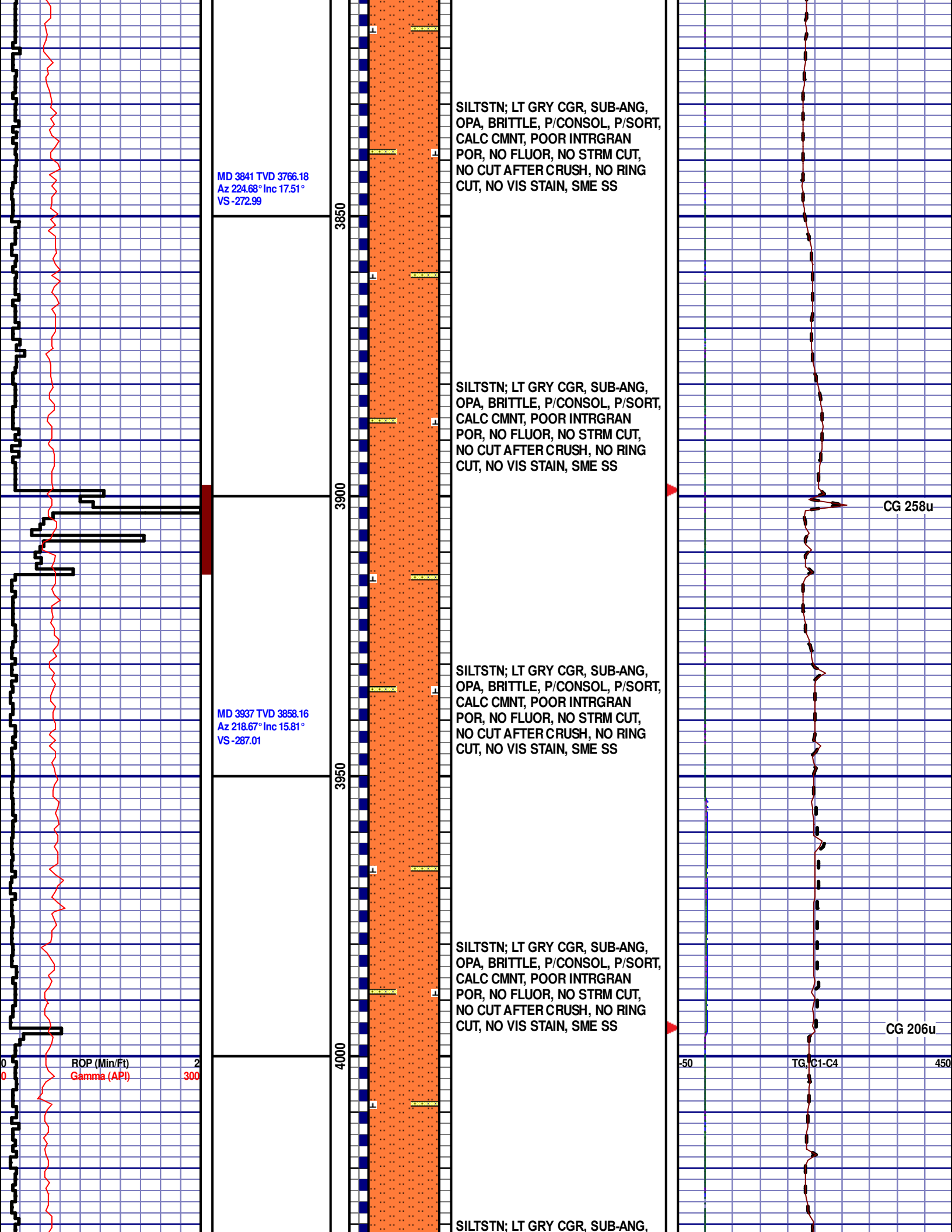
SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

MD 3651 TVD 3663.25
Az 224.97° Inc 16.26°
VS -242.27

MD 3746 TVD 3675.5
Az 224.56° Inc 17.14°
VS -257.38





MD 3841 TVD 3766.18
Az 224.68° Inc 17.51°
VS -272.99

MD 3937 TVD 3858.16
Az 218.67° Inc 15.81°
VS -287.01

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG,

ROP (Min/Ft) 2
Gamma (API) 300

CG 258u

CG 206u

TG, C1-C4 450

MD 4032 TVD 3949.58
Az 217.62° Inc 15.72°
VS -298.73

OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

4050

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

CG 200u

4100

MD 4127 TVD 4041.21
Az 220.44° Inc 14.89°
VS -310.44

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

4150

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

CG 249u

4200

ROP (Min/Ft) 2
Gamma (API) 300

MD 4223 TVD 4134.09
Az 219.72° Inc 14.38°
VS -322.18

SILTSTN; LT GRY CGR, SUB-ANG,
OPA, BRITTLE, P/CONSOL, P/SORT,
CALC CMNT, POOR INTRGRAN
POR, NO FLUOR, NO STRM CUT,
NO CUT AFTER CRUSH, NO RING
CUT, NO VIS STAIN, SME SS

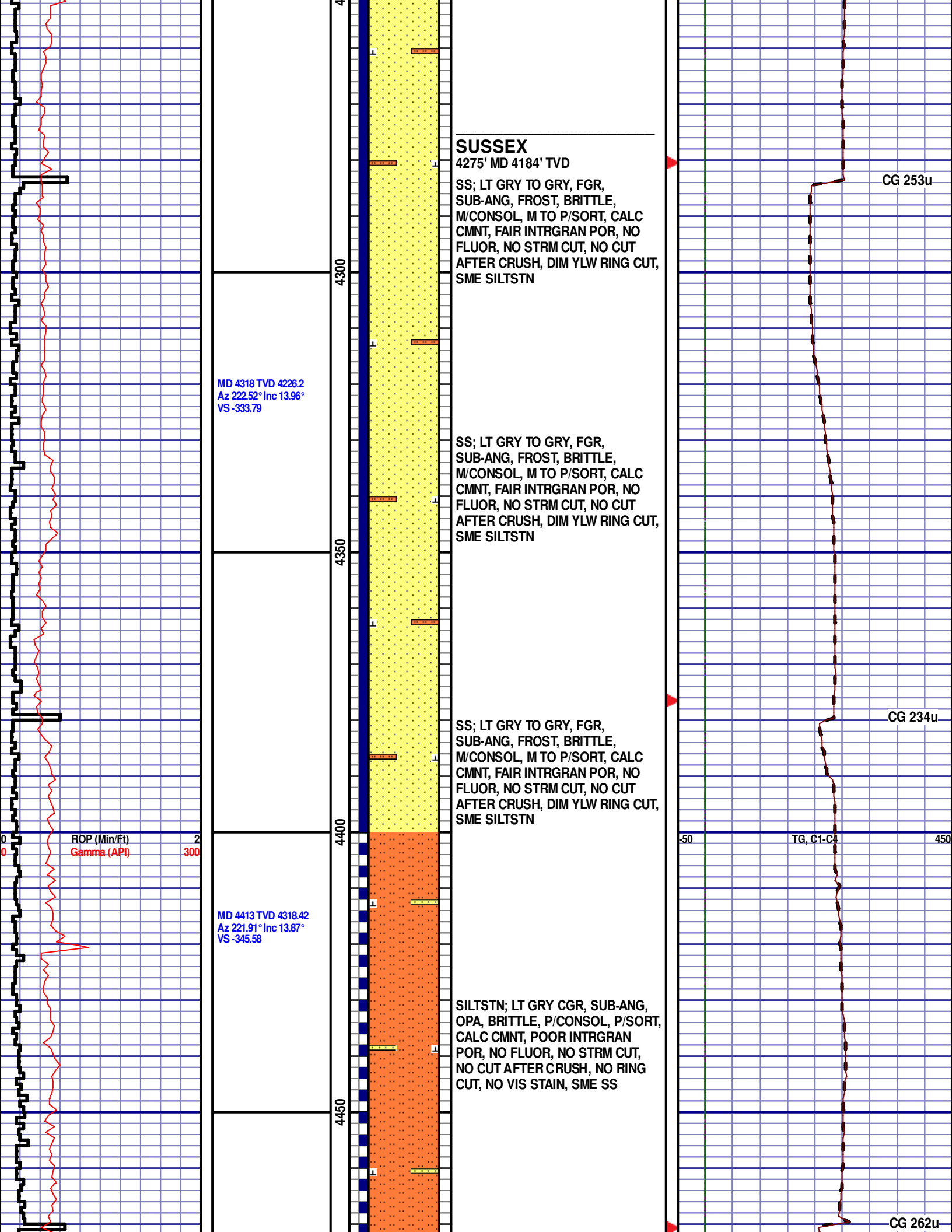
4250

TG, C1-Q4

0

-50

450



SUSSEX

4275' MD 4184' TVD

SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

CG 253u

MD 4318 TVD 4226.2
Az 222.52° Inc 13.96°
VS -333.79

SS; LT GRY TO GRY, FGR, SUB-ANG, FROST, BRITTLE, M/CONSOL, M TO P/SORT, CALC CMNT, FAIR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, DIM YLW RING CUT, SME SILTSTN

CG 234u

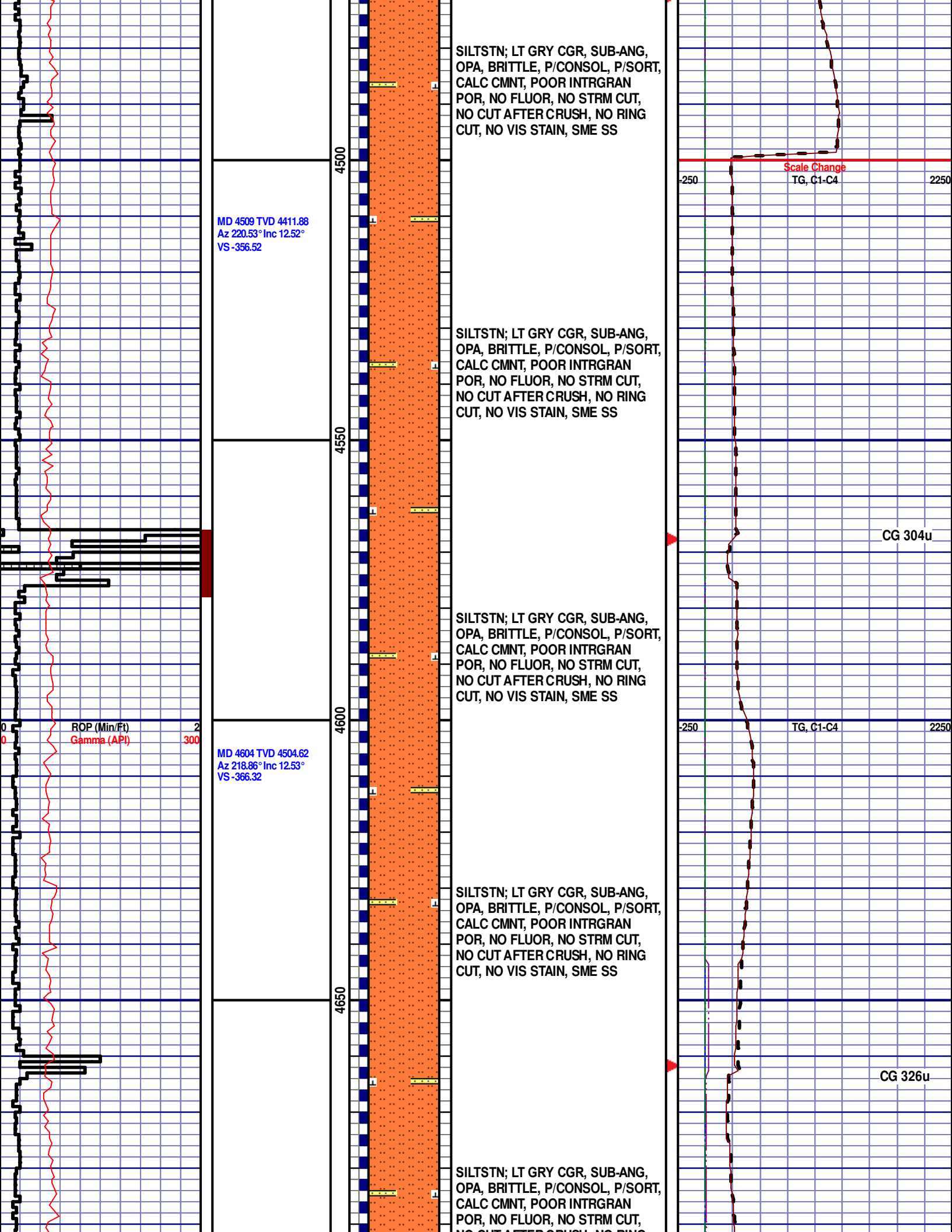
ROP (Min/Ft) 2
Gamma (API) 300

MD 4413 TVD 4318.42
Az 221.91° Inc 13.87°
VS -345.58

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

TG, C1-C4 450

CG 262u



SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

SILTSTN; LT GRY CGR, SUB-ANG, OPA, BRITTLE, P/CONSOL, P/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, NO STRM CUT, NO CUT AFTER CRUSH, NO RING CUT, NO VIS STAIN, SME SS

MD 4509 TVD 4411.88
Az 220.53° Inc 12.52°
VS -356.52

MD 4604 TVD 4504.62
Az 218.86° Inc 12.53°
VS -366.32

ROP (Min/Ft) 2
Gamma (API) 300

Scale Change
TG, C1-C4

CG 304u

CG 326u

4500

4550

4600

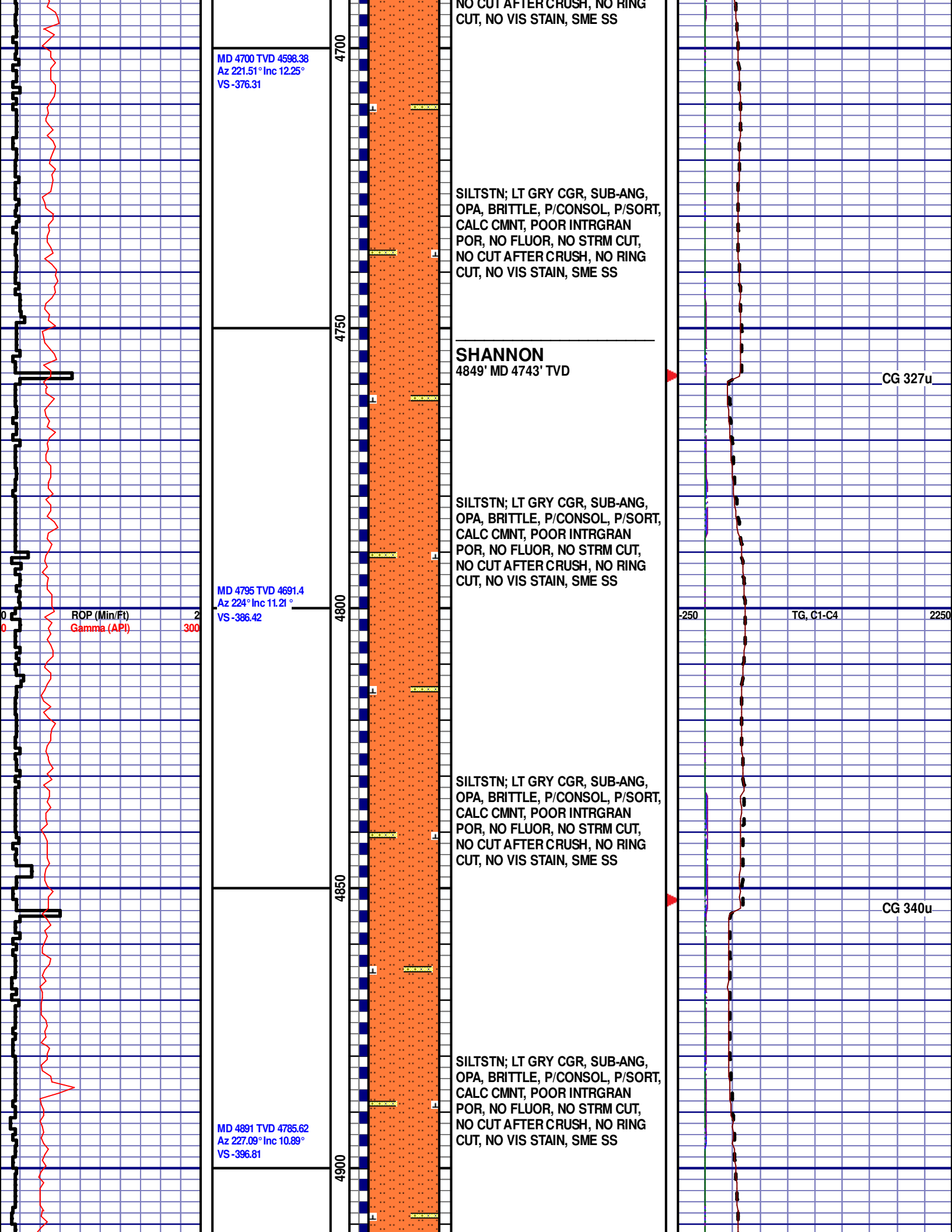
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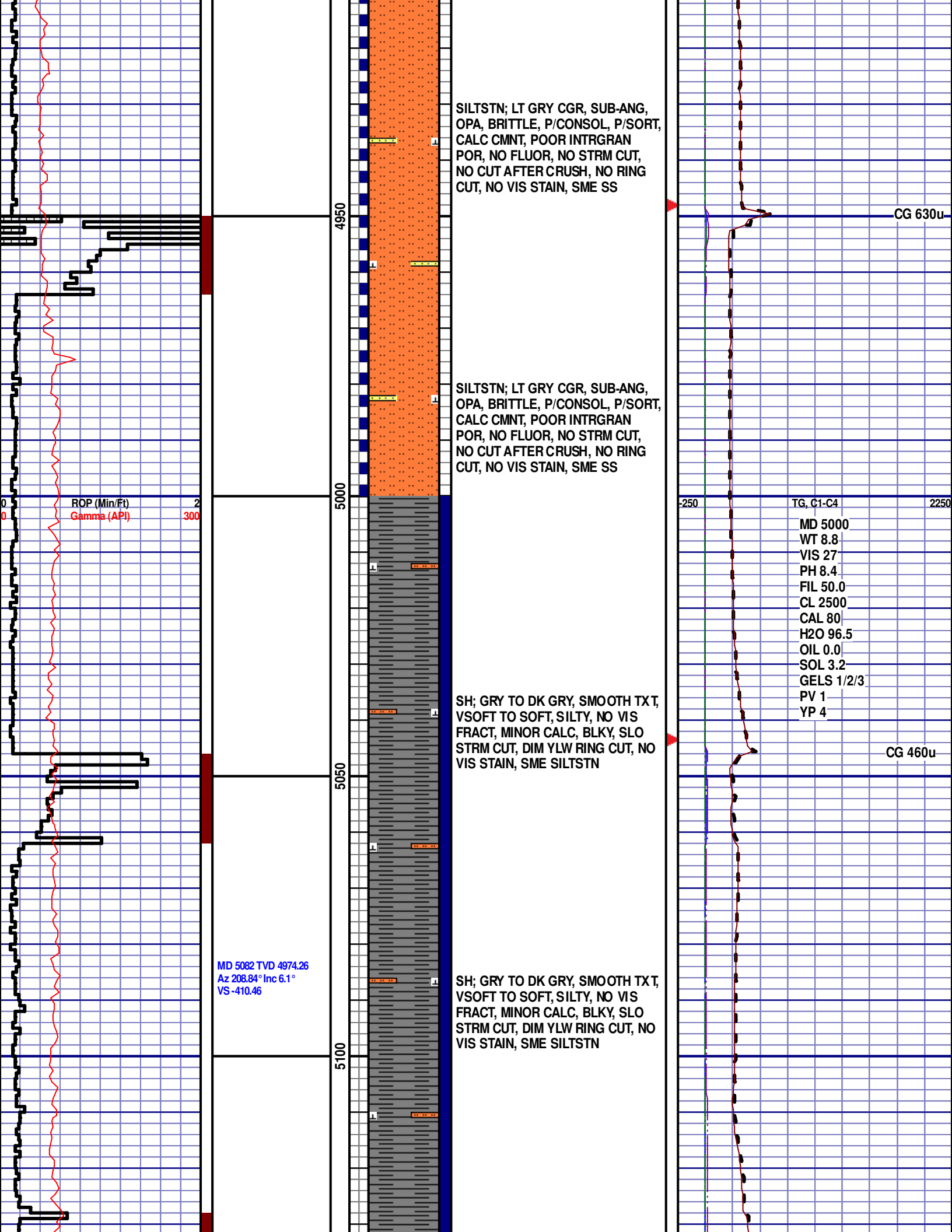
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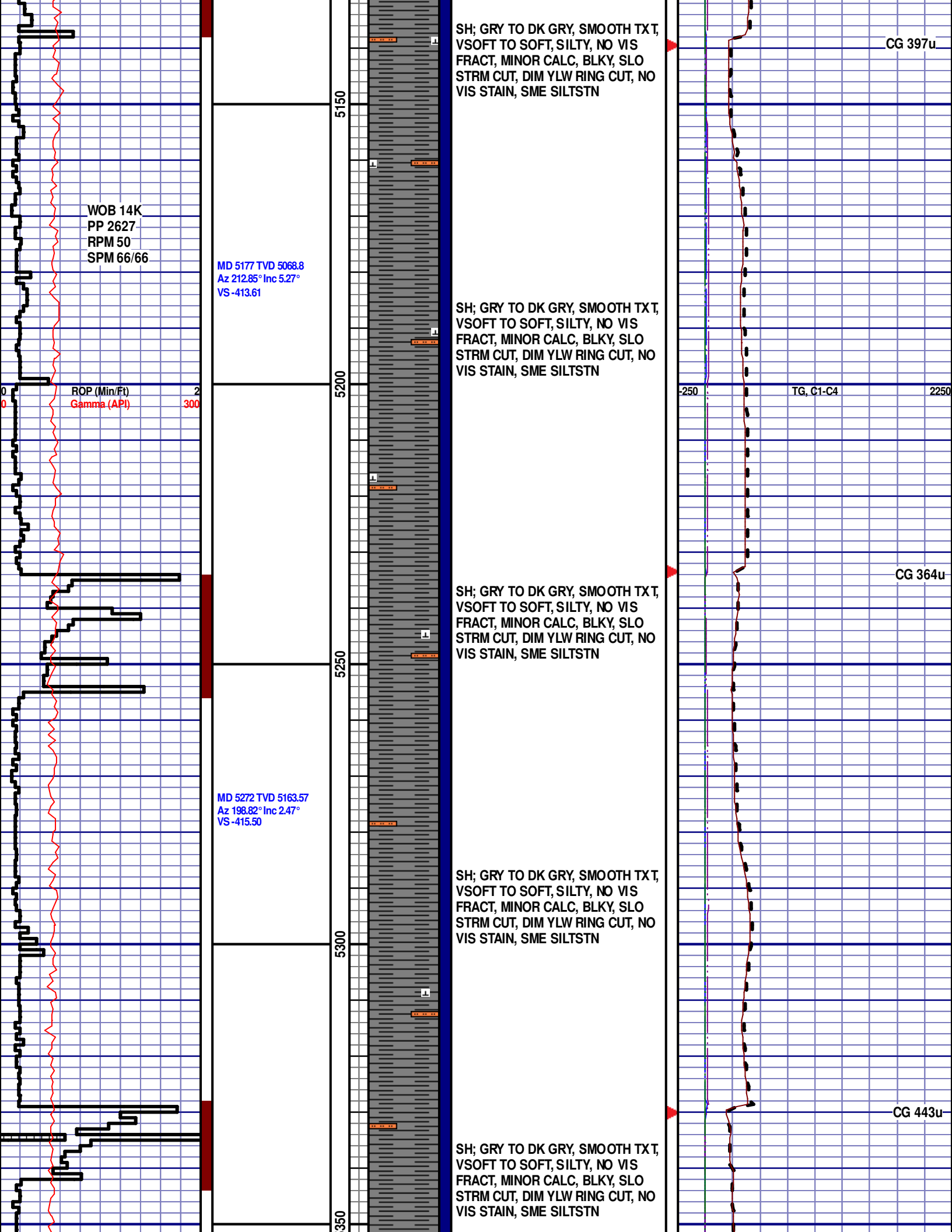
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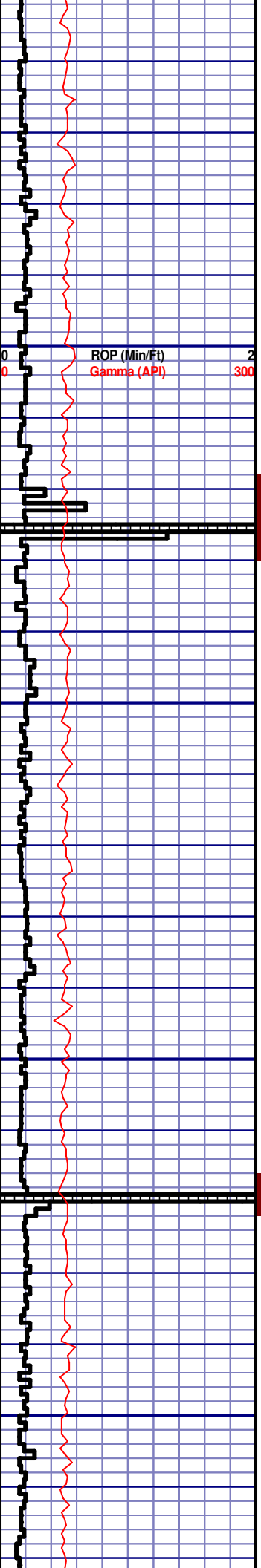
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2250







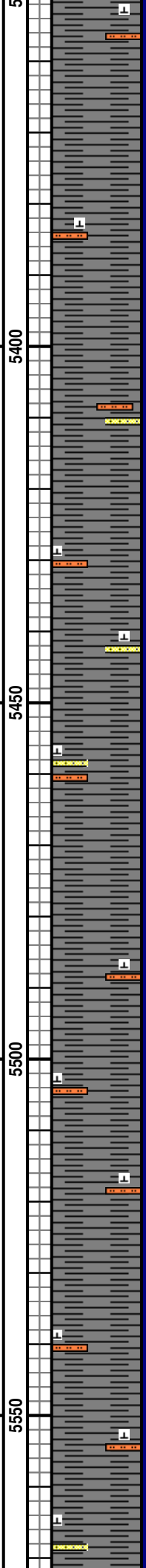


MD 5367 TVD 5258.57
 Az 179.41° Inc 0.73°
 VS -415.65

ROP (Min/Ft) 2
 Gamma (API) 300

MD 5463 TVD 5354.52
 Az 148.75° Inc 0.81°
 VS -415.06

MD 5559 TVD 5450.51
 Az 148.64° Inc 0.62°
 VS -414.25

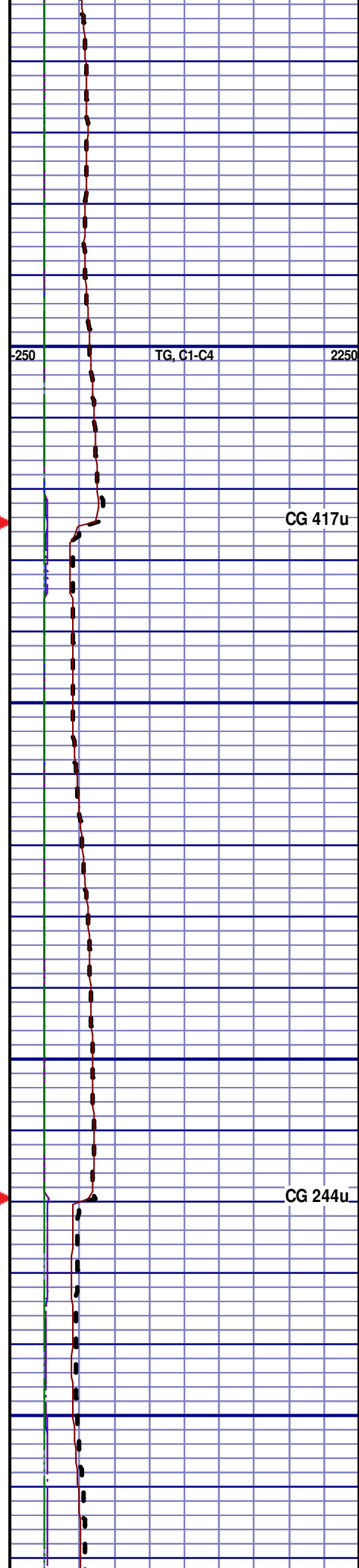


SH; GRY TO DK GRY, SMOOTH TXT,
 VSFTO TO SOFT, SILTY, NO VIS
 FRACT, MINOR CALC, BLKY, SLO
 STRM CUT, DIM YLW RING CUT, NO
 VIS STAIN, SME SILTSTN

SH; GRY TO DK GRY, SMOOTH TXT,
 VSFTO TO SOFT, SILTY, NO VIS
 FRACT, MINOR CALC, BLKY, SLO
 STRM CUT, DIM YLW RING CUT, NO
 VIS STAIN, SME SILTSTN, SME SS

SH; GRY TO DK GRY, SMOOTH TXT,
 VSFTO TO SOFT, SILTY, NO VIS
 FRACT, MINOR CALC, BLKY, SLO
 STRM CUT, DIM YLW RING CUT, NO
 VIS STAIN, SME SILTSTN, SME SS

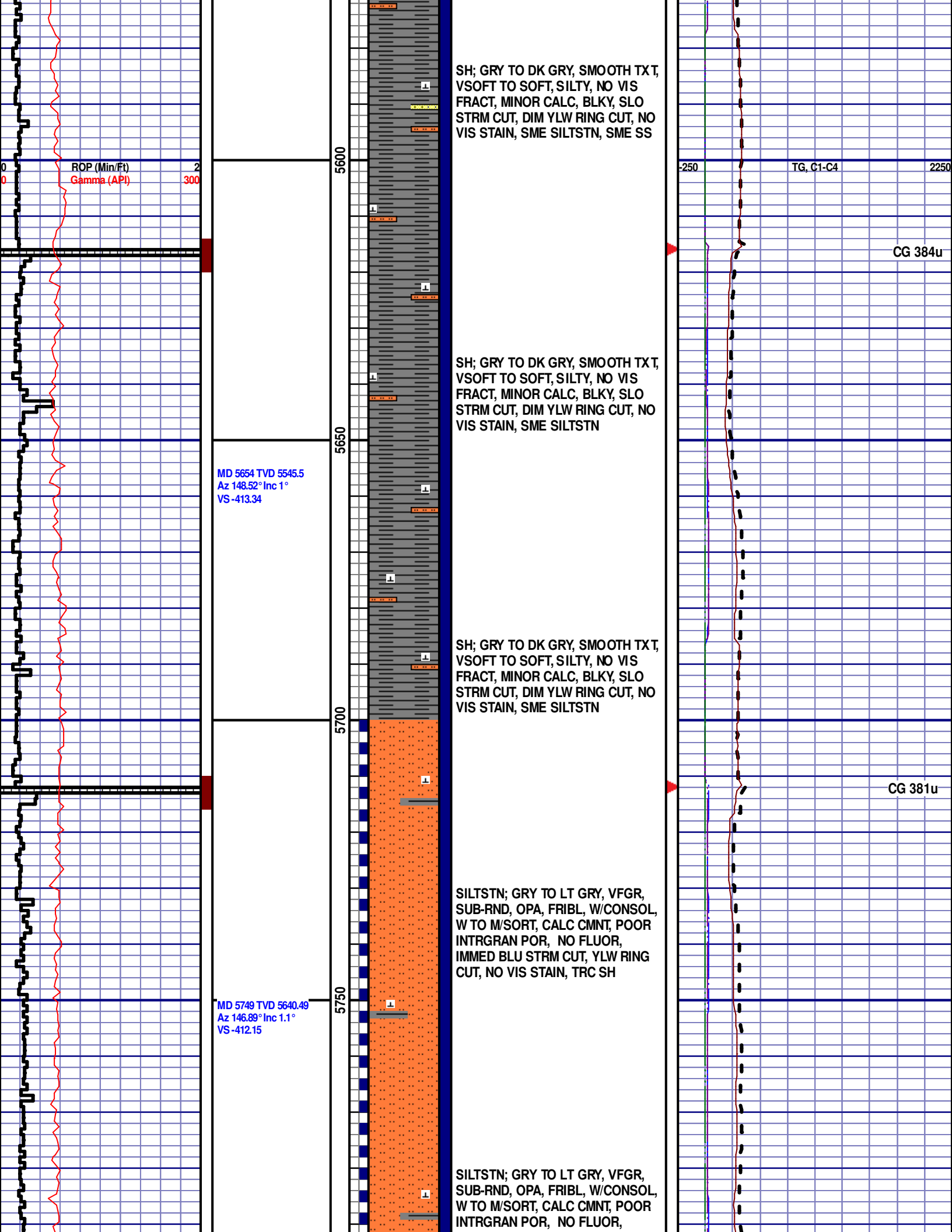
SH; GRY TO DK GRY, SMOOTH TXT,
 VSFTO TO SOFT, SILTY, NO VIS
 FRACT, MINOR CALC, BLKY, SLO
 STRM CUT, DIM YLW RING CUT, NO
 VIS STAIN, SME SILTSTN



TG, C1-C4

CG 417u

CG 244u



ROP (Min/Ft) 2
Gamma (API) 300

MD 5654 TVD 5545.5
Az 148.52° Inc 1°
VS -413.34

MD 5749 TVD 5640.49
Az 146.89° Inc 1.1°
VS -412.15

SH; GRY TO DK GRY, SMOOTH TXT,
VSOFT TO SOFT, SILTY, NO VIS
FRACT, MINOR CALC, BLKY, SLO
STRM CUT, DIM YLW RING CUT, NO
VIS STAIN, SME SILTSTN, SME SS

SH; GRY TO DK GRY, SMOOTH TXT,
VSOFT TO SOFT, SILTY, NO VIS
FRACT, MINOR CALC, BLKY, SLO
STRM CUT, DIM YLW RING CUT, NO
VIS STAIN, SME SILTSTN

SH; GRY TO DK GRY, SMOOTH TXT,
VSOFT TO SOFT, SILTY, NO VIS
FRACT, MINOR CALC, BLKY, SLO
STRM CUT, DIM YLW RING CUT, NO
VIS STAIN, SME SILTSTN

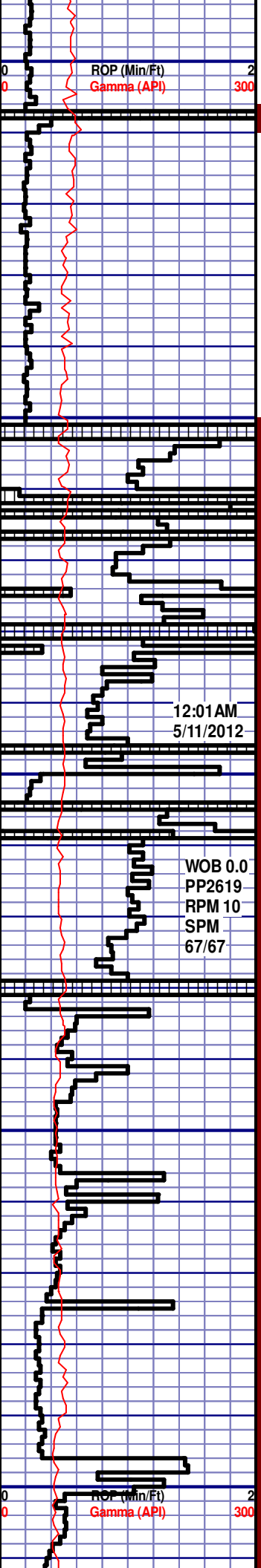
SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,

-250 TG, C1-C4 2250

CG 384u

CG 381u



MD 5794 TVD 5685.48
Az 142.13° Inc 1.15°
VS -411.50

MD 5846 TVD 5737.47
Az 118.79° Inc 1.54°
VS -410.44

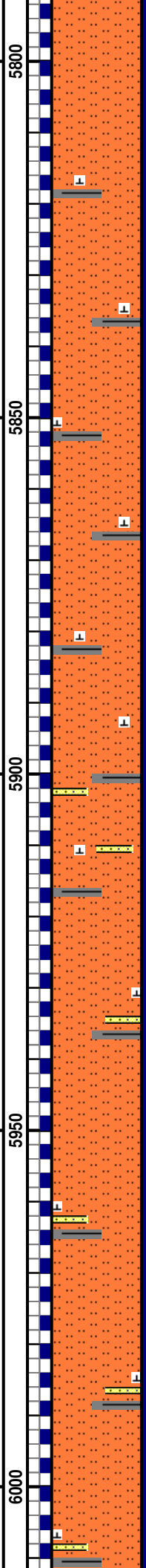
MD 5893 TVD 5784.43
Az 101.93° Inc 3.1°
VS -408.57

MD 5941 TVD 5832.24
Az 85.69° Inc 6.72°
VS -404.56

MD 5989 TVD 5879.78
Az 82.55° Inc 9.25°
VS -398.2

12:01 AM
5/11/2012

WOB 0.0
PP2619
RPM 10
SPM 67/67



IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH

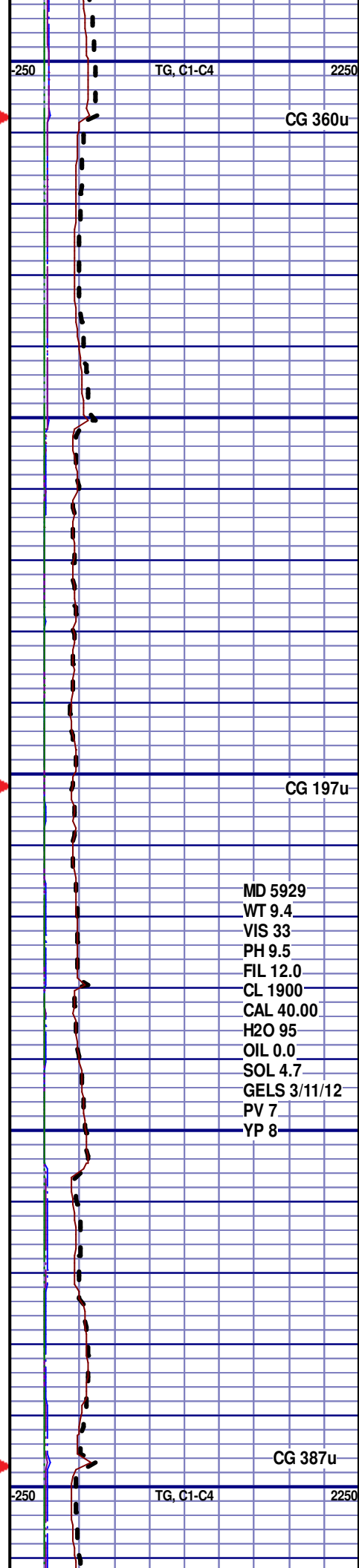
SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH, TRC SS

TOOH AT 1:30 AM ON 5/11/2012 AT 5929' TO PICK UP A NEW BHA. TIH @ 7:15 AM ON 5/11/12. RESUMED DRILLING @ 11:30 AM ON 5/11/12 W/ BIT #3 SECURITY TYPE FXD55M IN @ 5929' MD.

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH, TRC SS

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH, TRC SS

SILTSTN; GRY TO LT GRY, VFGR, SUB-RND, OPA, FRIBL, W/CONSOL, W TO M/SORT, CALC CMNT, POOR INTRGRAN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN, TRC SH, TRC SS



-250 TG, C1-C4 2250

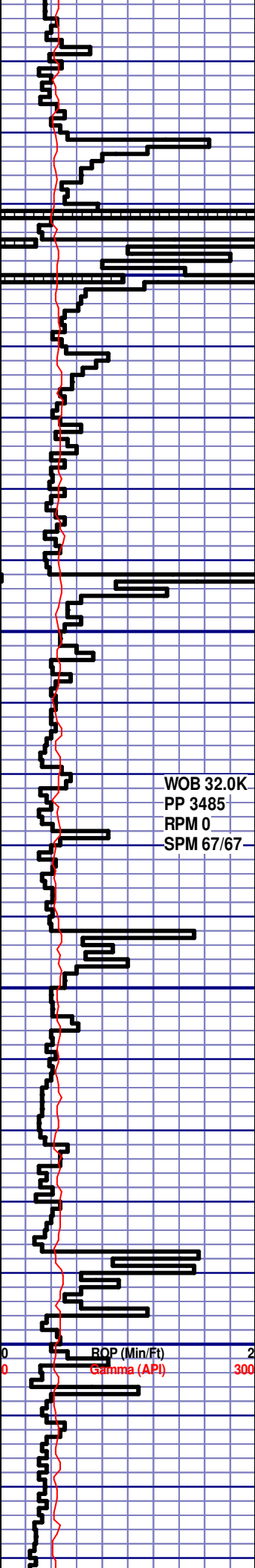
CG 360u

CG 197u

MD 5929
WT 9.4
VIS 33
PH 9.5
FIL 12.0
CL 1900
CAL 40.00
H2O 95
OIL 0.0
SOL 4.7
GELS 3/11/12
PV 7
YP 8

-250 TG, C1-C4 2250

CG 387u



MD 6036 TVD 5926.02
Az 92.47° Inc 11.35°
VS -390.04

MD 6084 TVD 5927.82
Az 98.15° Inc 14.33°
VS -379.44

WOB 32.0K
PP 3485
RPM 0
SPM 67/67

MD 6132 TVD 6018.91
Az 97.3° Inc 18.01°
VS -366.10

MD 6180 TVD 6064.11
Az 96.98° Inc 21.26°
VS -350.02

MD 6228 TVD 6108.35

6050
6100
6150
6200

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,

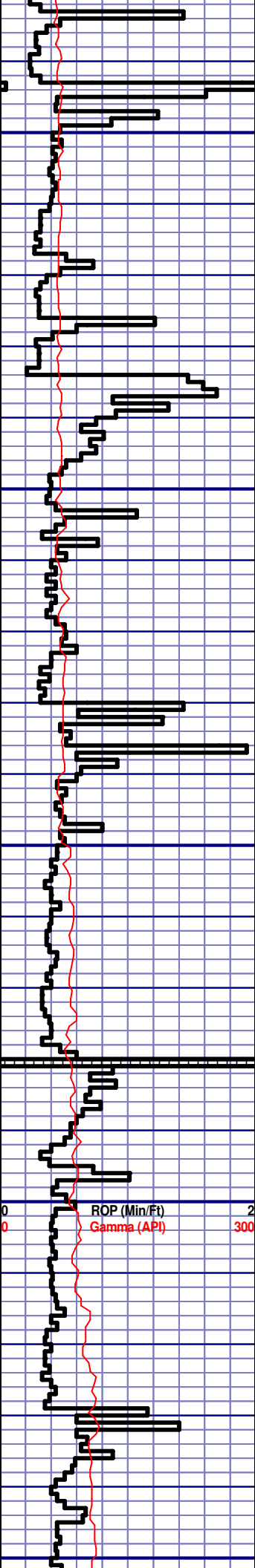
MD 6053
WT 9.8
VIS 32
PH 9.5
FIL 12.0
CL 2400
CAL 40.00
H2O 93.5
OIL 0.0
SOL 6.2
GELS 5/11/13
PV 7
YP 8

CG 375u

CG 438u

-250 TG, C1-C4 2250

BOP (Min/Ft) 2
Gamma (API) 300



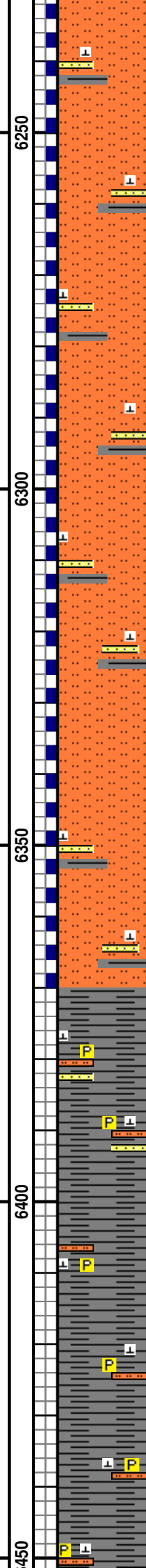
Az 95.32° Inc 24.42°
VS -331.46

MD 6276 TVD 6151.42
Az 92.54° Inc 27.91°
VS -310.48

MD 6323 TVD 6192.28
Az 93.12° Inc 31.29°
VS -287.51

MD 6371 TVD 6232.3
Az 94.09° Inc 35.7°
VS -261.25

MD 6418 TVD 6269.32
Az 95.34° Inc 40.33°
VS -232.50



SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

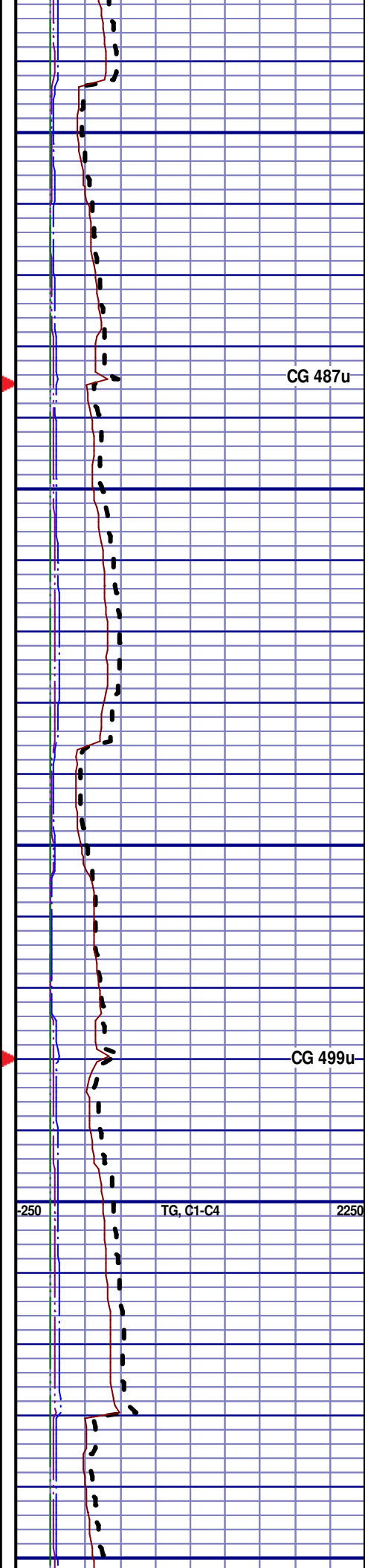
SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SILTSTN; GRY TO LT GRY, VFGR,
SUB-RND, OPA, FRIBL, W/CONSOL,
W TO M/SORT, CALC CMNT, POOR
INTRGRAN POR, NO FLUOR,
IMMED BLU STRM CUT, YLW RING
CUT, NO VIS STAIN, TRC SH, TRC
SS

SH; GRY EARTHY TXT, FIRM, SILTY,
NO VIS FRACT, MINOR CALC,
PLATY, SLOW BLU STRM CUT, YLW
RING CUT, NO VIS STAIN, SME
SILTSTN, SME SS

SH; GRY EARTHY TXT, FIRM, SILTY,
NO VIS FRACT, MINOR CALC, PYR
INCLUS, PLATY, SLOW BLU STRM
CUT, YLW RING CUT, NO VIS STAIN,
SME SILTSTN

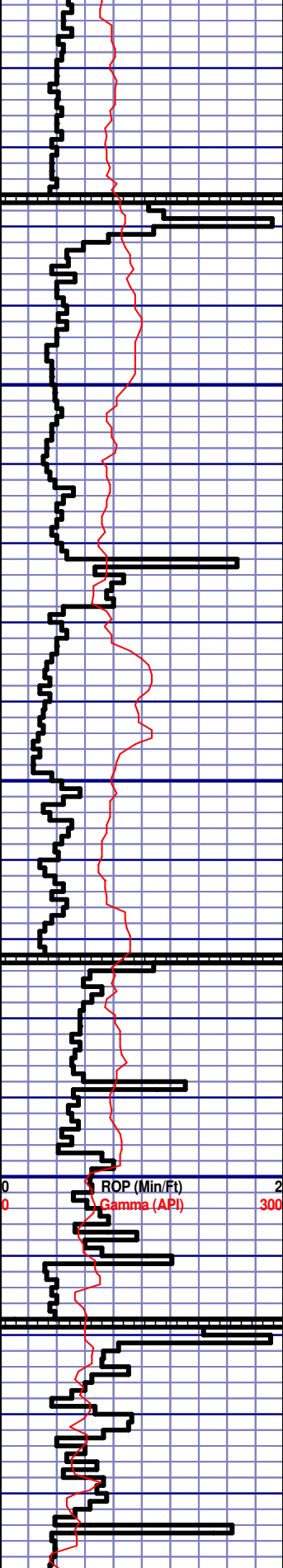
SH; GRY EARTHY TXT, FIRM, SILTY,
NO VIS FRACT, MINOR CALC, PYR



CG 487u

CG 499u

TG, C1-C4



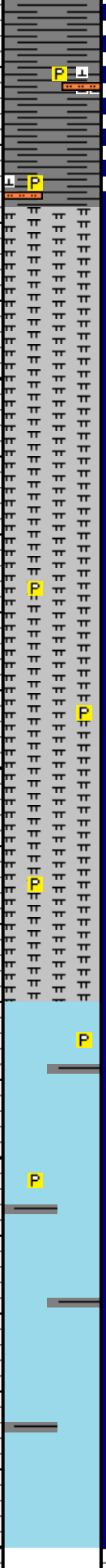
MD 6466 TVD 6304.56
Az 94.23° Inc 45.16°
VS -200.13

MD 6514 TVD 6336.63
Az 93.12° Inc 50.94°
VS -164.75

MD 6562 TVD 6365.04
Az 93.04° Inc 56.45°
VS -126.47

MD 6609 TVD 6389.46
Az 90.05° Inc 60.95°
VS -86.89

6
6500
6550
6600
6650



INCLUS, PLATY, SLOW BLU STRM CUT, YLW RING CUT, NO VIS STAIN, SME SILTSTN

SH; GRY EARTHY TXT, FIRM, SILTY, NO VIS FRACT, MINOR CALC, PYR INCLUS, PLATY, SLOW BLU STRM CUT, YLW RING CUT, NO VIS STAIN, SME SILTSTN

MRL; 40%; GRY TO LT GRY, SOFT TO BRITTLE, NO VIS FRACT, POOR INTRXLN POR, NO FLUOR, IMMED BLU STRM CUT, BLU RING CUT, NO VIS STAIN

SHARON SPRINGS
6537' MD 6351' TVD

MRL; 40%; GRY TO LT GRY, SOFT TO BRITTLE, NO VIS FRACT, POOR INTRXLN POR, NO FLUOR, IMMED BLU STRM CUT, BLU RING CUT, NO VIS STAIN

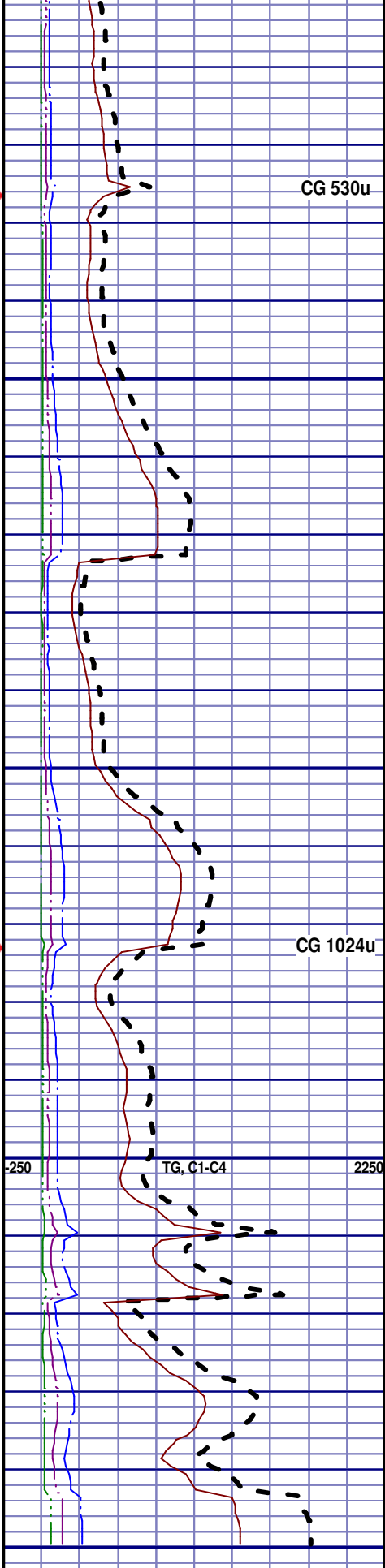
NIOBRARA
6567' MD 6366' TVD

MRL; 45%; GRY TO LT GRY, SOFT TO BRITTLE, PYR INCLUS, NO VIS FRACT, POOR INTRXLN POR, NO FLUOR, IMMED BLU STRM CUT, BLU RING CUT, NO VIS STAIN

CHK; 60%; LT GRY TO OFF WH, SOFT, SH INCLUS, PYR INCLUS, NO VIS FRACT, POOR INTRXLN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN

NIOBRARA A CHALK
6607' MD 6388' TVD

CHK; 60%; LT GRY TO OFF WH, SOFT, SH INCLUS, NO VIS FRACT, POOR INTRXLN POR, NO FLUOR, IMMED BLU STRM CUT, YLW RING CUT, NO VIS STAIN



CG 530u

CG 1024u

-250 TG, C1-C4 2250

END OF VERTICAL LOG AT 6650'

END OF VERTICAL LOG AT 0030
MD ON 5/11/2012, CONTINUED ON
HORIZONTAL LOG

00