



866-463-5600 ★ Many, LA
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(318)-590-9755
FAX (318)590-9754

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COMPANY: SANDRIDGE ENERGY INC.
WELL: HEBRON 0780 4-7H
FIELD: NORTH PARK COUNTY: JACKSON STATE: COLORADO
LOCATION: 37' FNL & 554' FEL OF SECTION 17, T7N, R80W

Interval Logged: 3000' To: 12084' G.L.: 8149' K.B: 8165'
Date Logged: 4/6/16 To: 4/15/16 Spud Date: 04-02-2016
Rig: EXTREME Unit No.: 20
Loggers: BRUCE BUSH/JEFF BARBER
Api No.: _____
Filename: hebron_4-7h.mlw
Geologist: SCOTT CHERRY

Created By MainLog

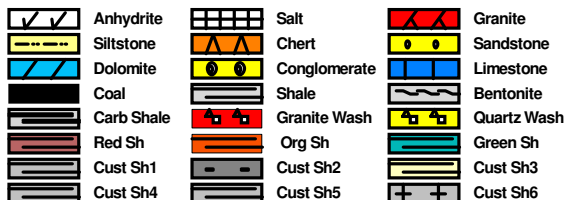
Abbreviations:

NB...New Bit
CO...Circ Out
NR...No Returns
TG...Trip Gas
WOB...Wt on Bit
RPM...Rev/Min
SG...Survey Gas
DST...Drill Stem Test
DS...Directional Survey
CG...Connection gas
LAT...Logged After Trip
PP...Pump Pressure
SPM...Strokes/Min
DTG...Down Time Gas

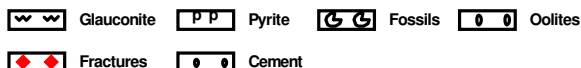
Mud Data

WT...Weight
PH...Acidity
CHL...Chlorides
V...Viscosity
F...Filtrate
SC...Solids Content

Lithology Symbols:



Accessories



Gas Chromatograph Analysis:

HW
C1
C2
C3
IC4
NC4
IC5

Drilling Rate
FT/HR

Vis
Por

Tr /
p
f
g

Lithology

%
Oil
Flu
Tr /
p f g

Cut
Tr /
p f g

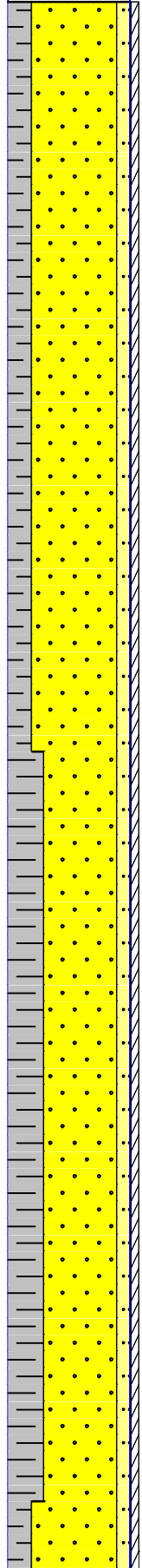
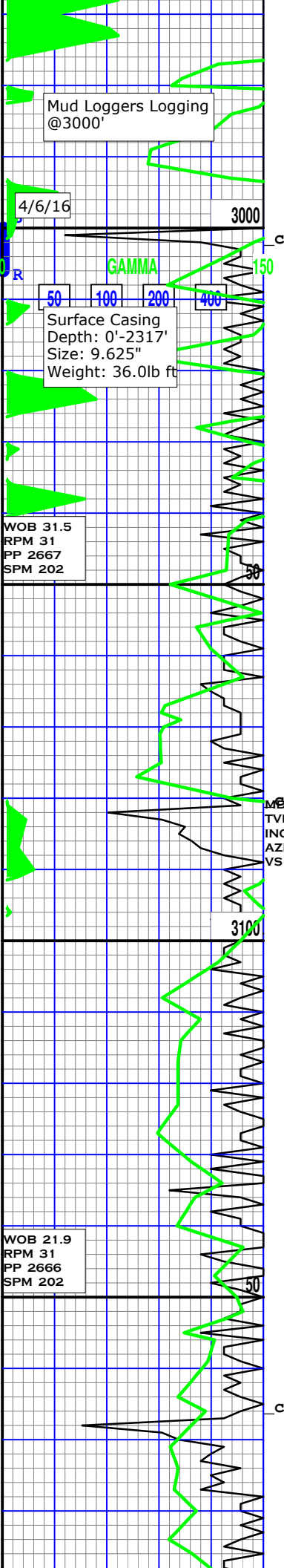
Descriptions/Remarks

Total Gas/Chromatograph

HI EFF-HCL

200 400

250 500 750 1k 1.25k 1.5k 1.75k



SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE QTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH:BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM

3000-100' FAIR FLUOR.
NO CUT

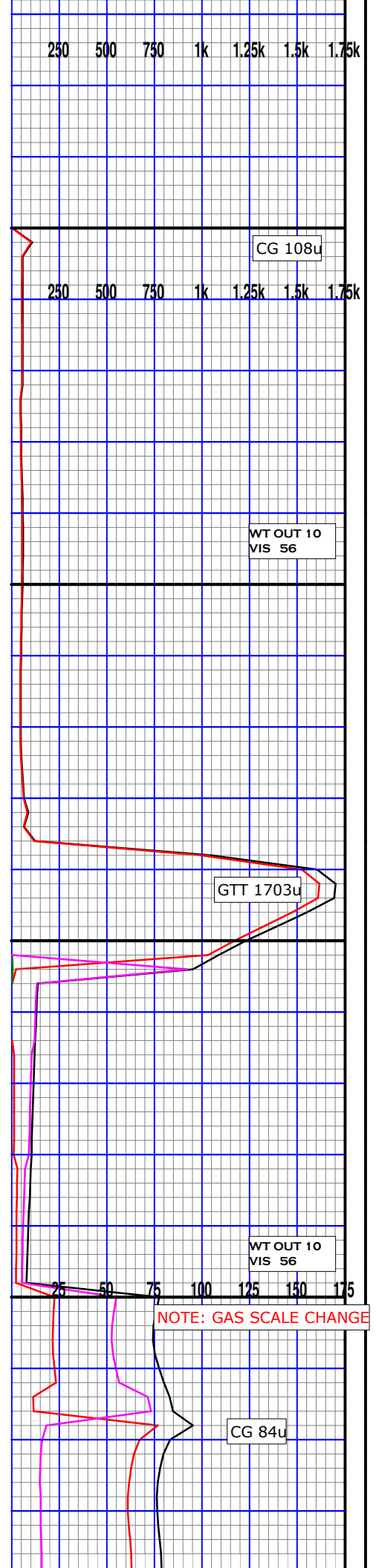
FLUORESCENCE POSSIBLY
CAUSED BY OBM

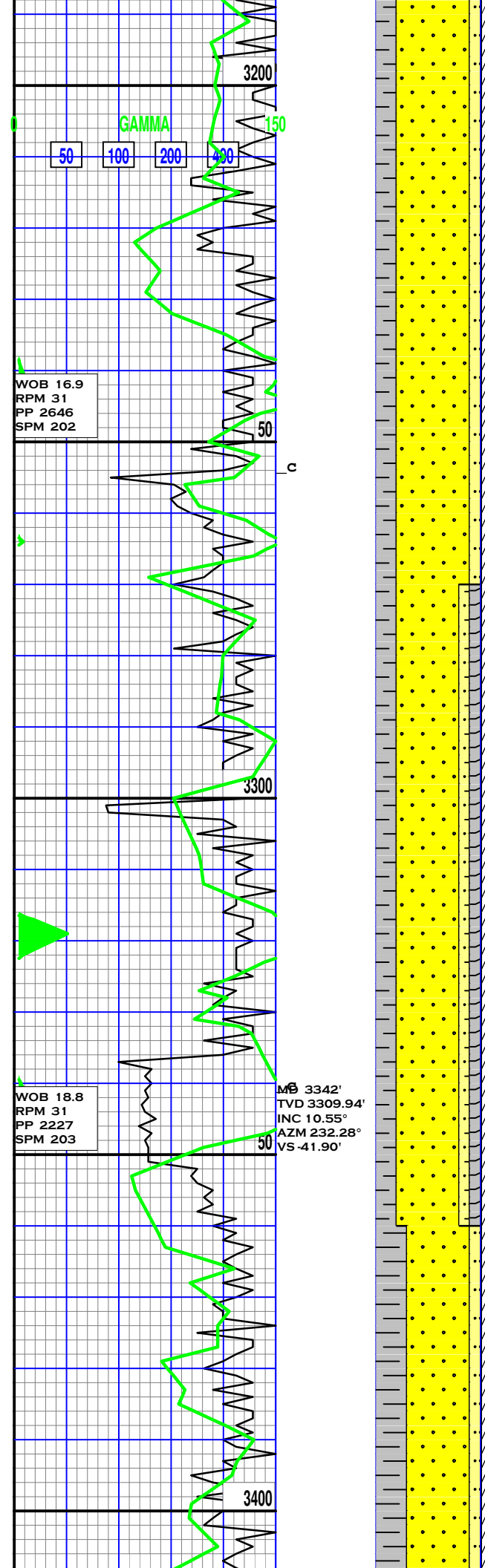
SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE QTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH:BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM

3100-200' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE QTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,





ARG, COM SNDY, ARG MTX
SH: BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM

3200-300' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

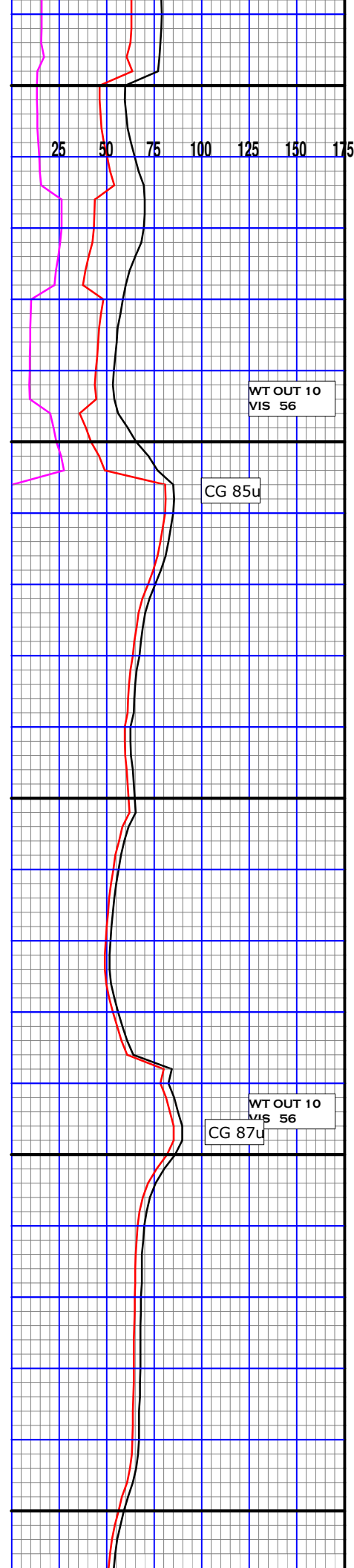
SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH: BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM

3300-400' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH: BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM BE: LT GRY,
PLTY, WXY TEX, SLI FRM-
FRM

3400-500' FAIR FLUOR
NO CUT



WOB 14.1
RPM 31
PP 2135
SPM 202

WOB 20.7
RPM 31
PP 2657
SPM 202

150
C ID 3606'
TVD 3565.82'
INC 14.60°
AZM 248.05°
VS -60.55'

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH: BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM TR COAL

FLUORESCENCE POSSIBLY
CAUSED BY OBM

3500-600' FAIR FLUOR.
NO CUT

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH: BRN-BLK, BLKY-PLTY,
SL FRM, ARG MTX, OCC FN
SLTY LAM TR COAL

FLUORESCENCE POSSIBLY
CAUSED BY OBM

3600-700' FAIR FLUOR.
NO CUT

CG 71u

WT OUT 10
VIS 56

CG 72u

WT OUT 10
VIS 56

CG 73u

25 50 75 100 125 150 175

WOB 30.2
RPM 31
PP 2991
SPM 202

Fox Hills

50

3700

CORRECTED FILE DEPTH

WOB 36.9
RPM 31
PP 2821
SPM 201

50

3800

50

100

200

400

150

WOB 31.5
RPM 30
PP 2850
SPM 202

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY
BLKY-PLTY, SL FRM-SFT
ARG, COM SNDY, ARG MTX
SH:BRN-BLK, BLKY-PLTY
SL FRM, ARG MTX, OCC FN
SLTY LAM TR BE

FLUORESCENCE POSSIBLY
CAUSED BY OBM

3700'-800' FAIR FLOUR.
NO CUT

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY
BLKY-PLTY, SL FRM-SFT
ARG, COM SNDY, ARG MTX
SH:BRN-BLK, BLKY-PLTY
SL FRM, ARG MTX, OCC FN
SLTY LAM TR BE

FLUORESCENCE POSSIBLY
CAUSED BY OBM

3800-900' FAIR FLUOR.
NO CUT

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE OTZ GRNS,
ARG SLT: GRY-LT GRY
BLKY-PLTY, SL FRM-SFT
ARG, COM SNDY, ARG MTX
SH:BRN-BLK, BLKY-PLTY
SL FRM, ARG MTX, OCC FN
SLTY LAM TR BE

WT OUT 10
VIS 56

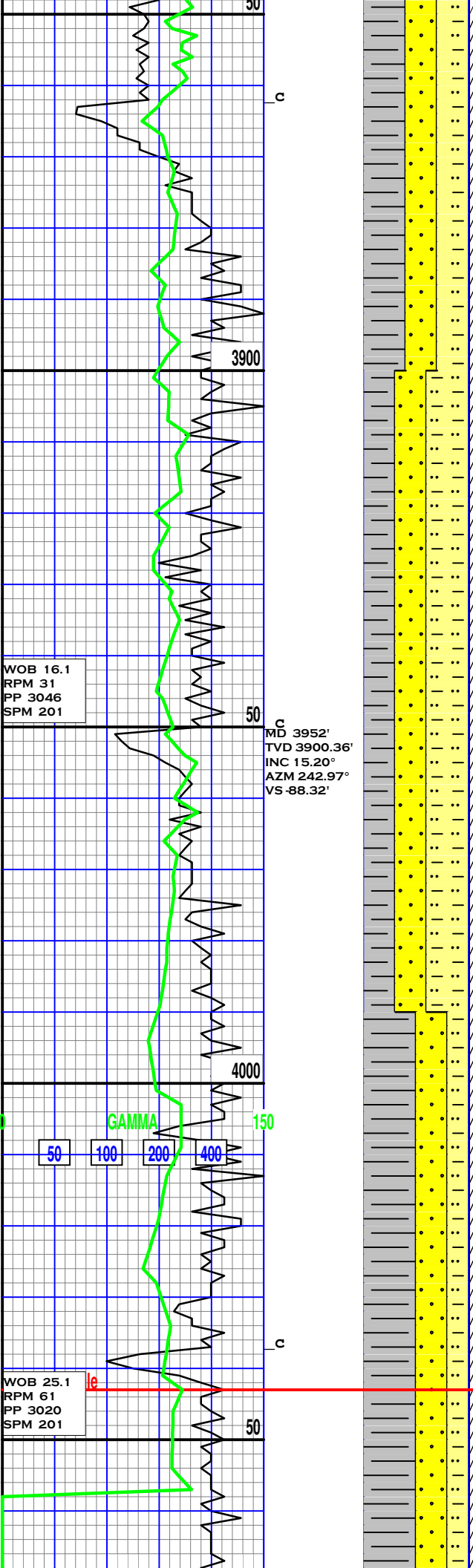
CG 101u

WT OUT 10
VIS 56

CG 114u

25 50 75 100 125 150 175

WT OUT 10
VIS 52



FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: FN-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE QTZ GRNS,
ARG SLT: GRY-LT GRY,
BLKY-PLTY, SL FRM-SFT,
ARG, COM SNDY, ARG MTX
SH:BRN-BLK-GY, BLKY-
PLTY, SL FRM, ARG MTX,
OCC FNSLTY LAM TR BE

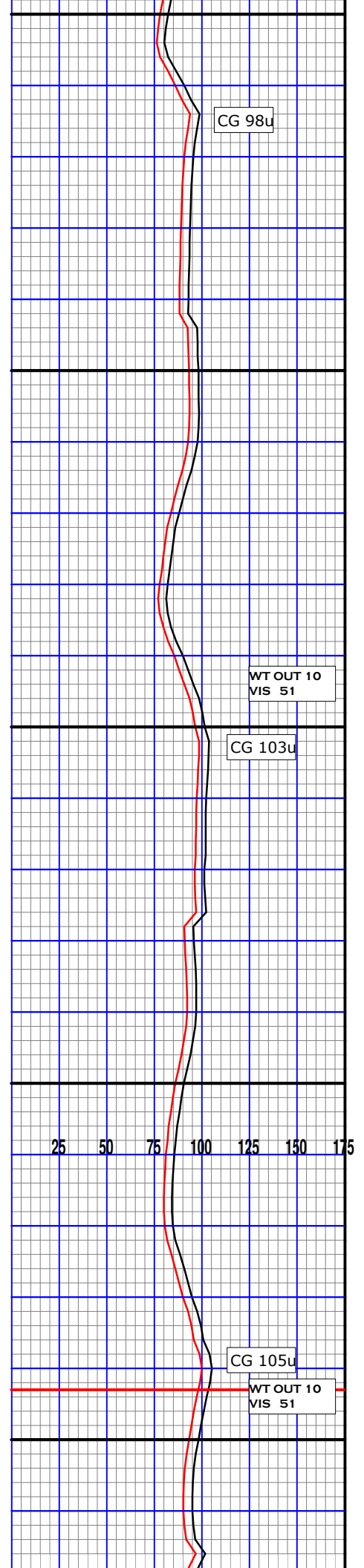
3900-4000' FAIR FLUOR.
NO CUT

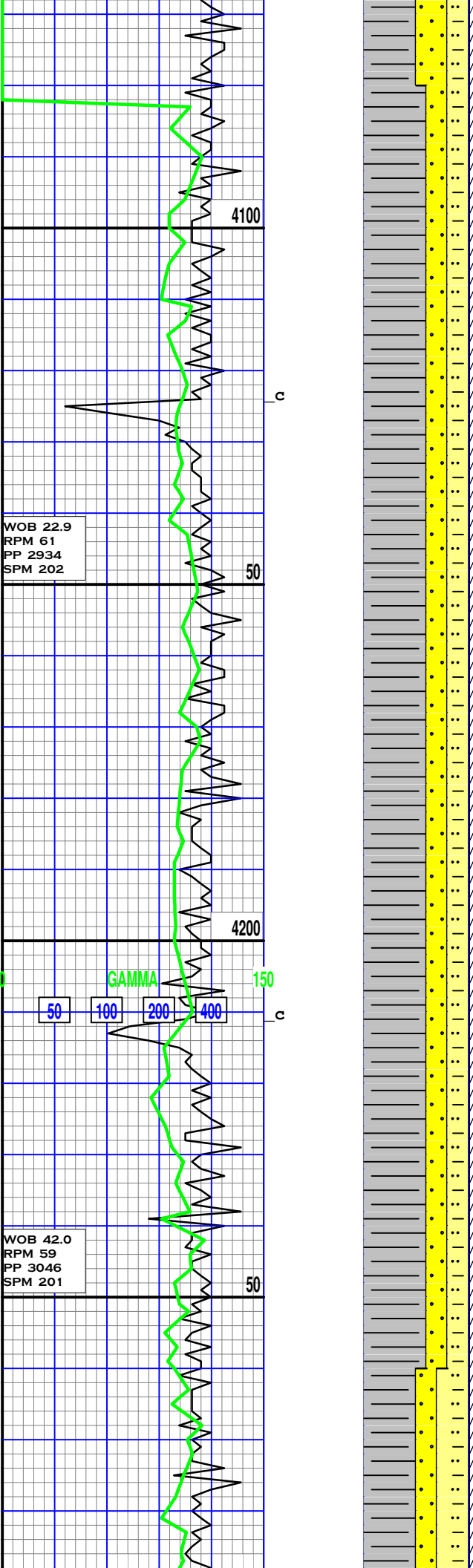
FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: F-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-SL FRM, FREE QTZ
GRNS, ARG SLT: GRY-LT
GRY, BLKY-SUBLKY, SL
FRM-SFT, ARG, COM SNDY,
ARG MTXSH:BRN-BLK-GY,
BLKY-PLTY, SL FRM, ARG
MTX, OCC FNSLTY LAM TR
BE

4000-100' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM





SS: F-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-SL FRM, FREE QTZ
GRNS, ARG SLT: GRY-LT
GRY, BLKY-SUBLKY, SL
FRM-SFT, ARG, COM SNDY,
ARG MTXSH:BRN-BLK-GY,
BLKY-PLTY, SL FRM, ARG
MTX, OCC FNSLTY LAM

4100-200' FAIR FLUOR.
NO CUT

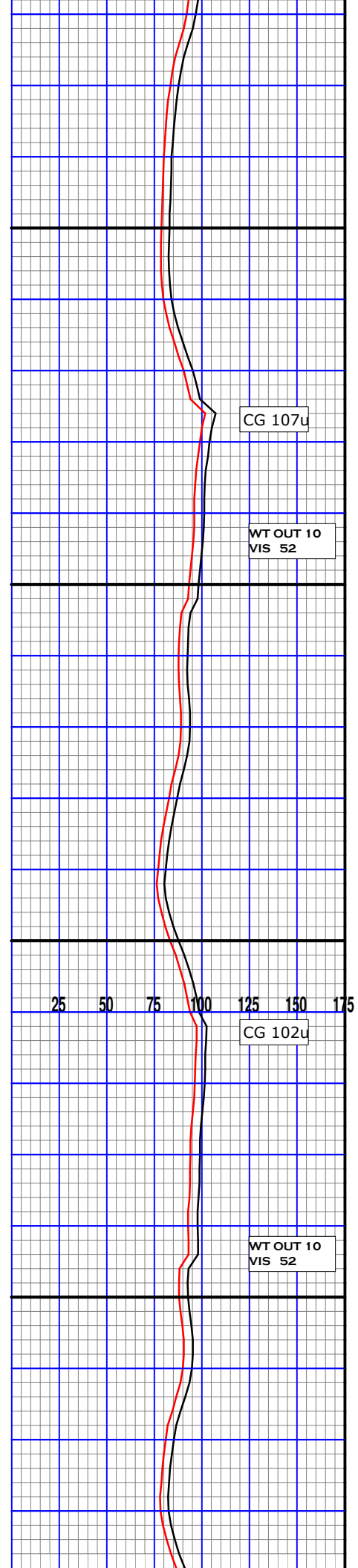
FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: VF-MED GRN, CLR-WHT
COM OCC LT GRY, MOD
FRM-FRM, FREE CRSE QTZ
GRNS, ARG SLT: GRY-LT
GRY, BLKY-SUBLKY-PLTY,
SL FRM-SFT, ARG, COM
SNDY, ARG MTXSH:BRN-
BLK-GY, BLKY-PLTY, SL
FRM, ARG MTX, OCC FNSLTY
LAM, TR BE

4200-300' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: VF-MED GRN, CLR-WH
COM LT GRY, SL FRM-V
FRM, FREE CRSE QTZ
GRNS, ARG SLT: GRY-LT
GRY, BLKY-PLTY, SL FRM-
SFT, ARG, COM SNDY, ARG
MTXSH:BRN-BLK-GY,
BLKY-PLTY-OCC SUBLKY, SL
FRM, ARG MTX, OCC FNSLTY
LAM, TR BE

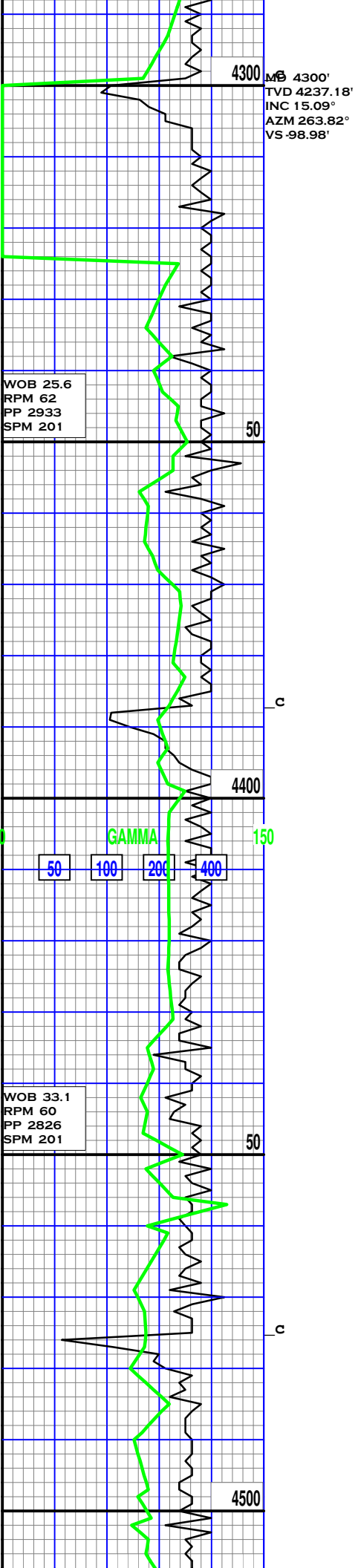


CG 107u

WT OUT 10
VIS 52

CG 102u

WT OUT 10
VIS 52



4300-400' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: FN-MED GRN, CLR-WHT
COM LT GRY, SL FRM-V
FRM, FREE CRSE QTZ
GRNS, ARG SLT: GRY-LT
GRY, BLKY-PLTY, SL FRM-
SFT, ARG, COM SNDY, ARG
MTX SH: BRN-BLK-GY,
BLKY-PLTY-OCC SUBLKY, SL
FRM, ARG MTX, OCC FNSLTY
LAM

4400-500' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FRM QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM, OCC BE

FLUORESCENCE POSSIBLY
CAUSED BY OBM

4500-600' FAIR FLUOR.
NO CUT

CG 97u

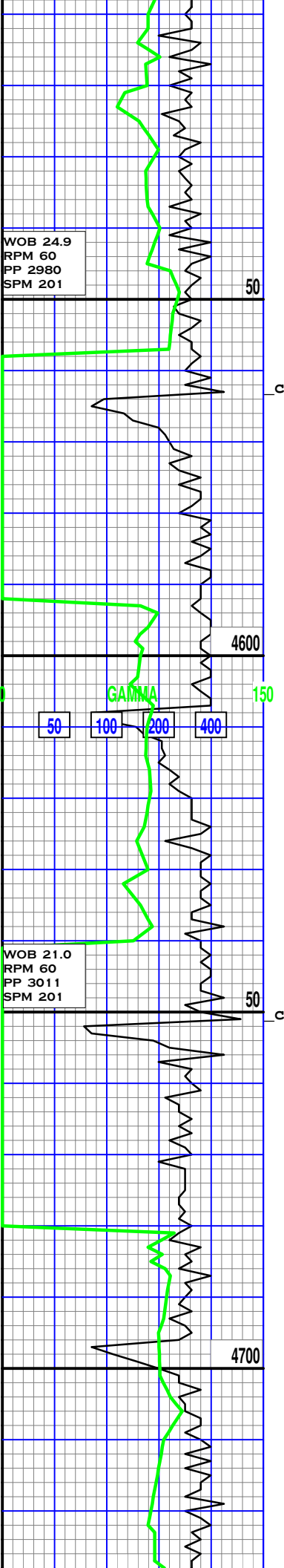
WT OUT 10
VIS 52

CG 107u

25 50 75 100 125 150 175

WT OUT 10
VIS 52

CG 108u



SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FRM QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM, OCC BE

FLUORESCENCE POSSIBLY
CAUSED BY OBM

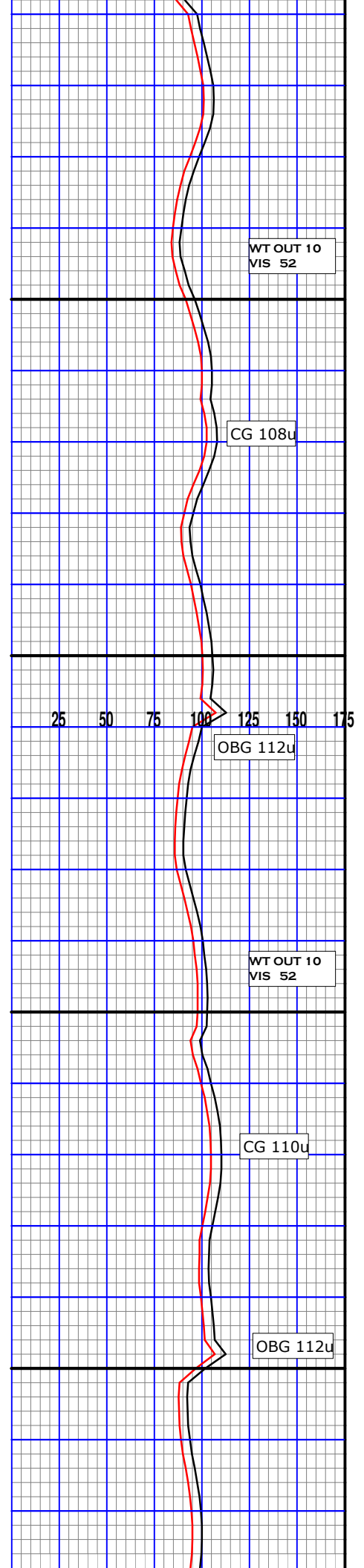
4600-700' FAIR FLUOR.
NO CUT

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM

FLUORESCENCE POSSIBLY
CAUSED BY OBM

4700-800' FAIR FLUOR.
NO CUT

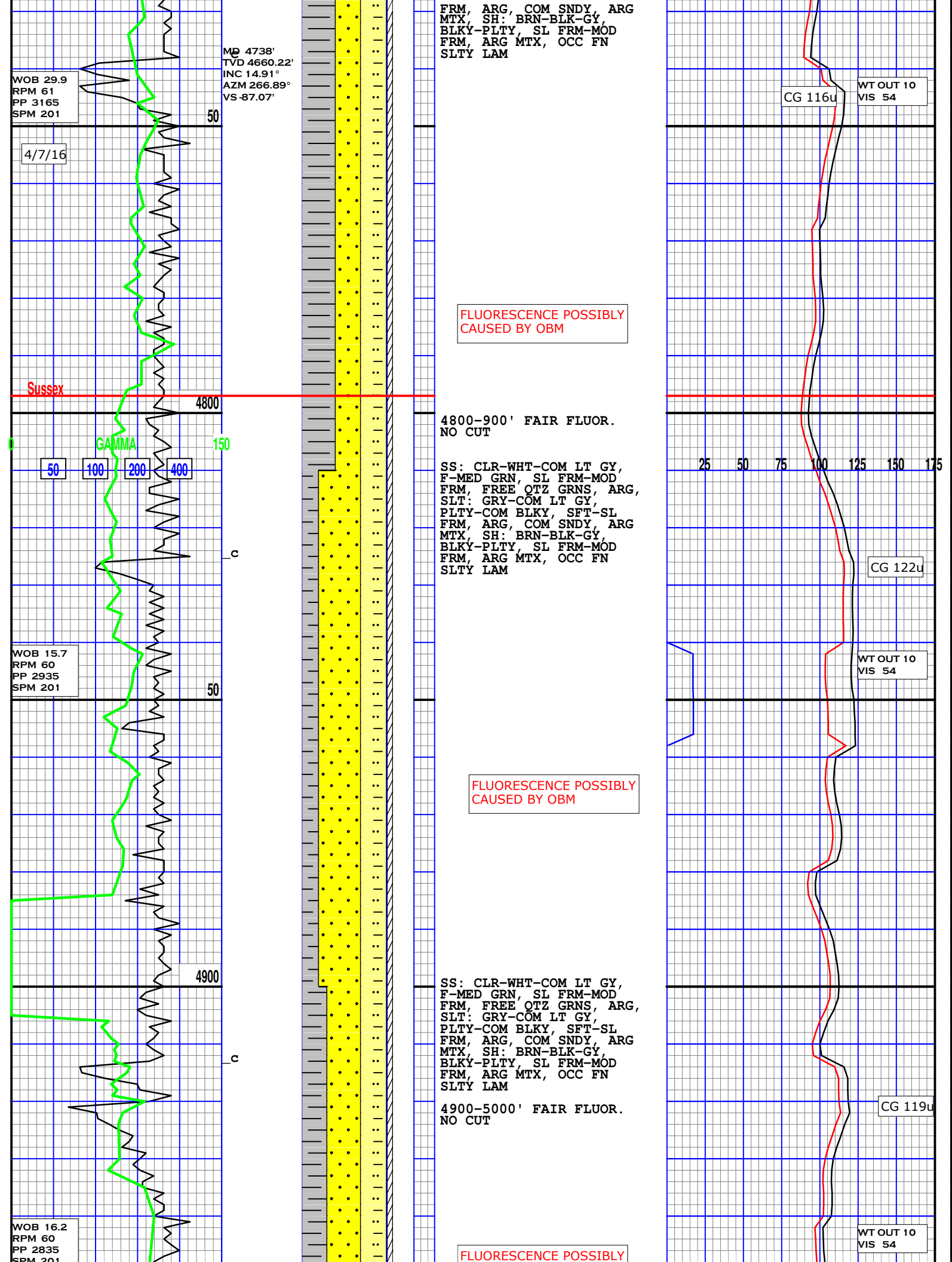
SS: CLR-WHT-COM LT GY
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY. SFT-SL

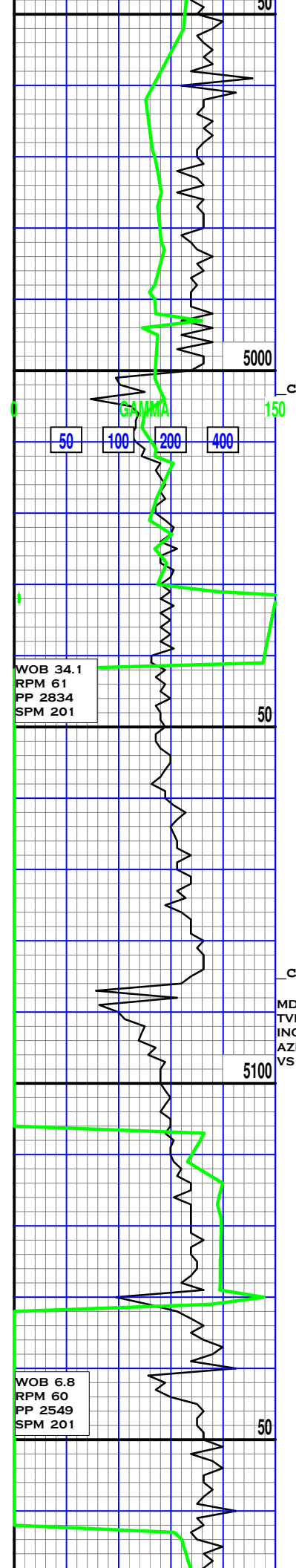


FLUORESCENCE POSSIBLY

FLUORESCENCE POSSIBLY
CAUSED BY OBM

FLUORESCENCE POSSIBLY
CAUSED BY OBM





SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM

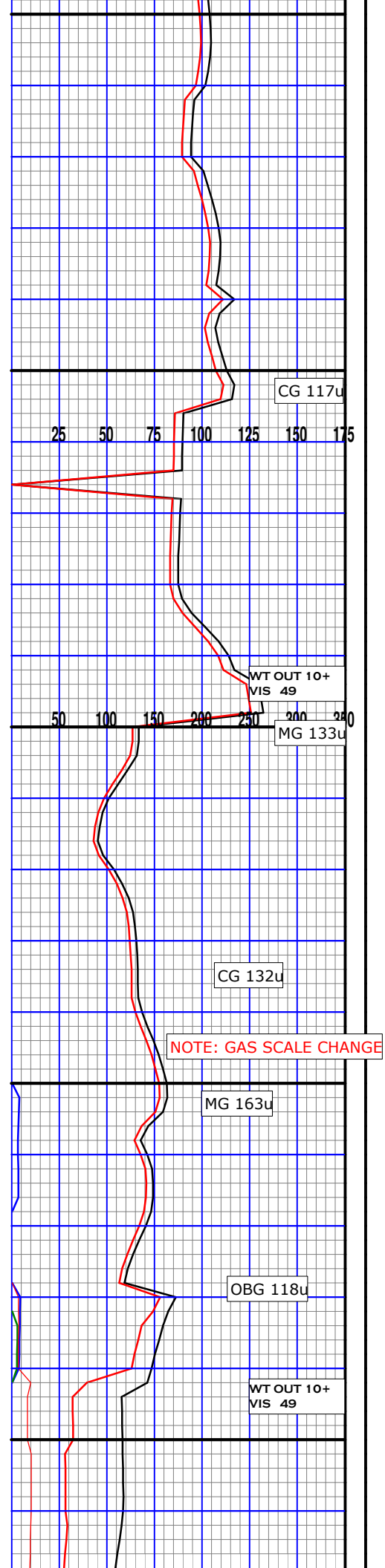
5000-100' FAIR FLUOR.
NO CUT

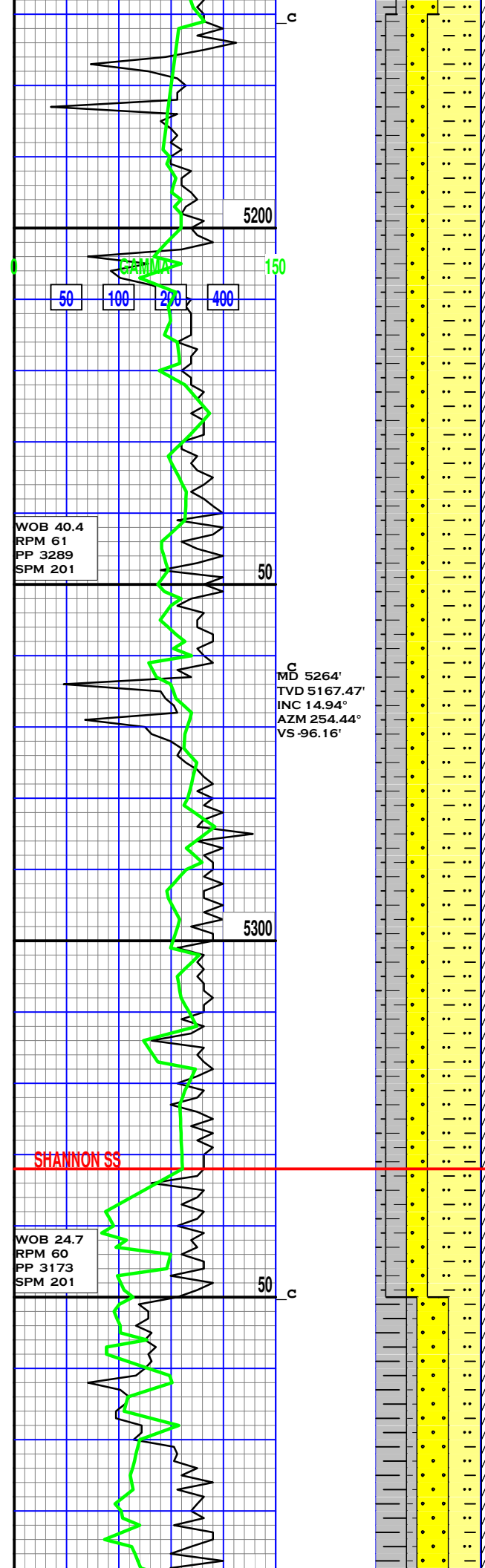
FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM

5100-200' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM





SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX

5200-300' FAIR FLUOR.
NO CUT

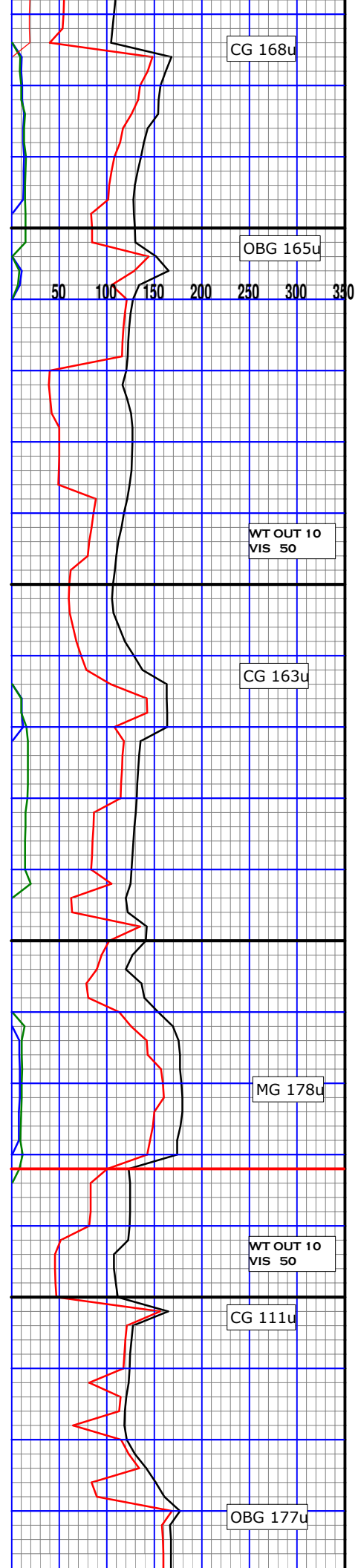
FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX

5300-400' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX



CG 168u

OBG 165u

WT OUT 10
VIS 50

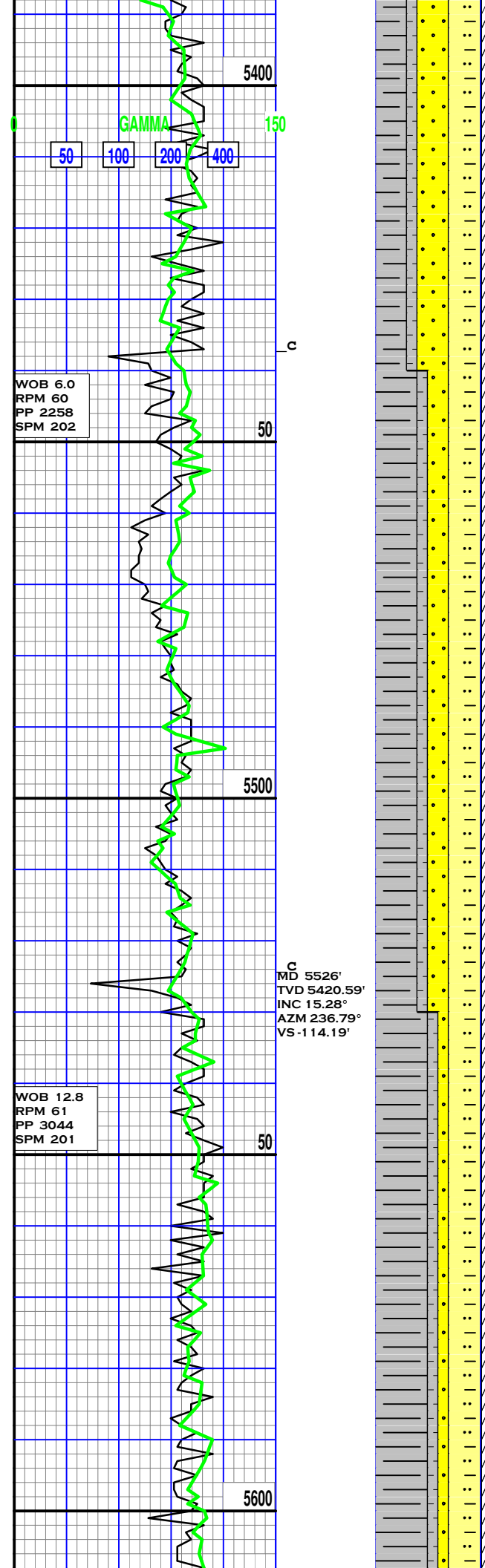
CG 163u

MG 178u

WT OUT 10
VIS 50

CG 111u

OBG 177u



FLUORESCENCE POSSIBLY
CAUSED BY OBM

5400-500' FAIR FLUOR.
NO CUT

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, OCC FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX

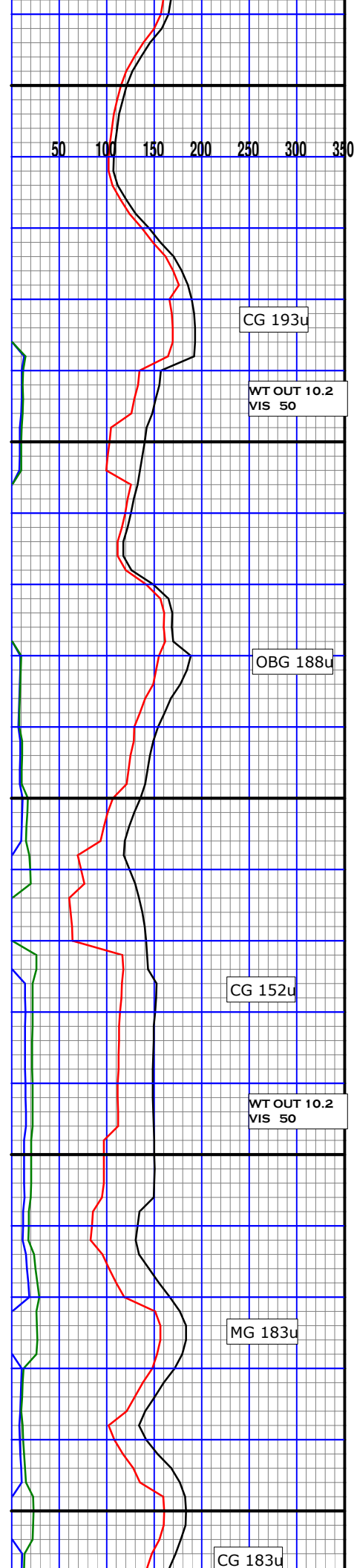
FLUORESCENCE POSSIBLY
CAUSED BY OBM

5500-600' FAIR FLUOR.
NO CUT

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX

FLUORESCENCE POSSIBLY
CAUSED BY OBM

5600-700' FAIR FLUOR.
NO CUT



WOB 34.1
RPM 61
PP 3209
SPM 201

50

5700

Reset well depth due to WITS failure

WOB 16.9
RPM 61
PP 2991
SPM 201

50

C MD 5788'
TVD 5674.32'
INC 15.38°
AZM 261.18°
VS-117.72'

5800

50 100 200 400

150

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH: BRN-BLK-GY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM CLYST:LT GRY-DK
GRY, V SFT, MAS, SLTY
MTX

FLUORESCENCE POSSIBLY
CAUSED BY OBM

5700-800' FAIR FLUOR.
NO CUT

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM CLYST:LT GRY-
GRY, V SFT, MAS, SLTY
MTX

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM CLYST:LT GRY-LT
GRY, V SFT, MAS, SLTY
MTX

5800-900' FAIR FLUOR.
NO CUT

WT OUT 10.2
VIS 45

MG 188u

CG 175u

WT OUT 10.2
VIS 45

OBG 178u

CG 154u

50 100 150 200 250 300 350

WOB 21.9
RPM 61
PP 2772
SPM 202

50

c

5900

WOB 35.5
RPM 61
PP 3099
SPM 201

50

MS 5964'
TVD 5844.10'
INC 15.32°
AZM 229.17°
VS-131.78'

6000

GAMMA

150

50

100

200

400

WOB 33.2
RPM 61
PP 3165
SPM 201

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM CLYST:LT GRY-LT
GRY, V SFT, MAS, SLTY
MTX

5900-6000' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE QTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM

6000-100' FAIR FLUOR.
NO CUT

FLUORESCENCE POSSIBLY
CAUSED BY OBM

WT OUT 10.2
VIS 45

CG 165u

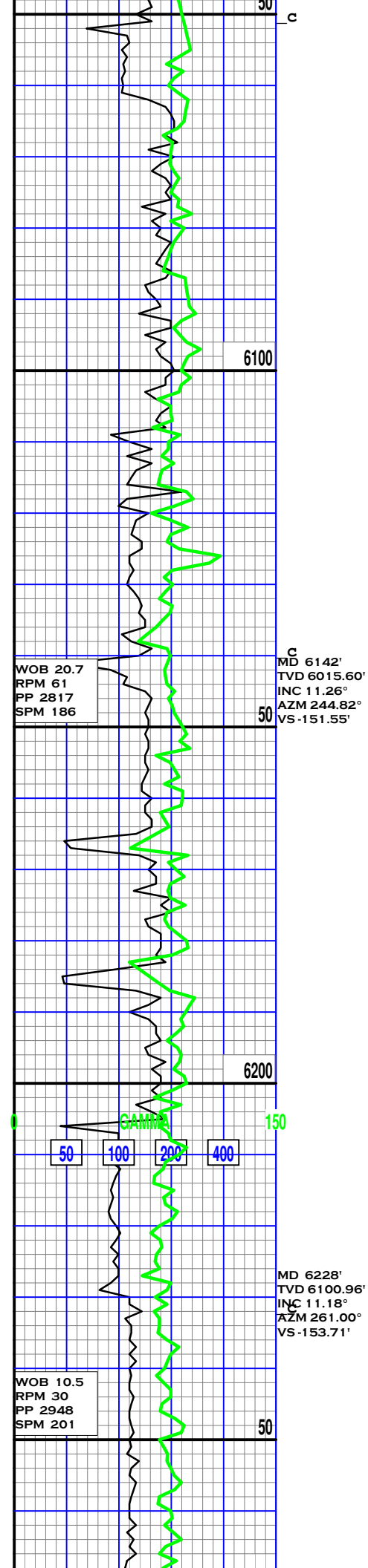
MG 145u

WT OUT 10.2
VIS 45

CG 157u

MG 167u

WT OUT 10.5
VIS 45



SS: CLR-WHT-COM LT GY,
F-MED GRN, SL FRM-MOD
FRM, FREE OTZ GRNS, ARG,
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM

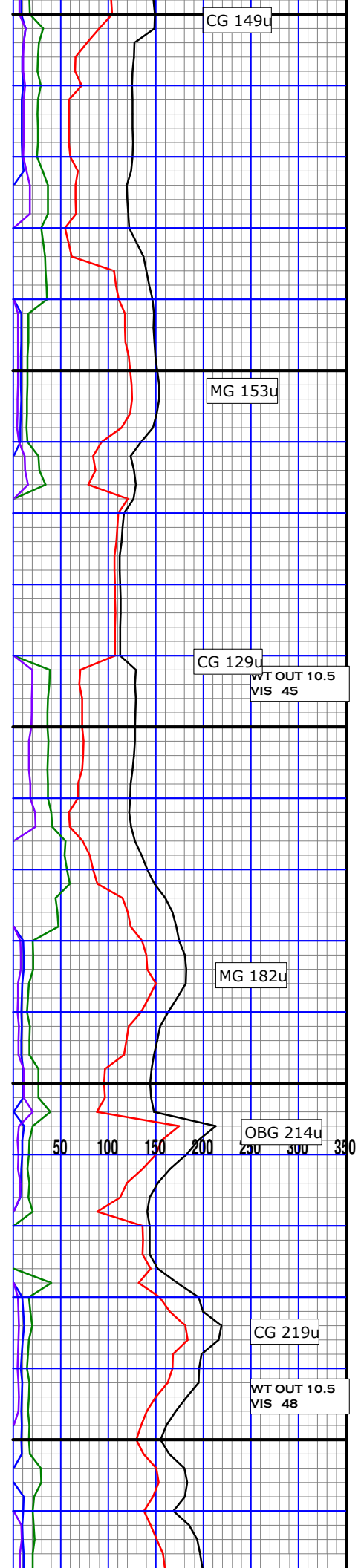
FLUORESCENCE POSSIBLY
CAUSED BY OBM

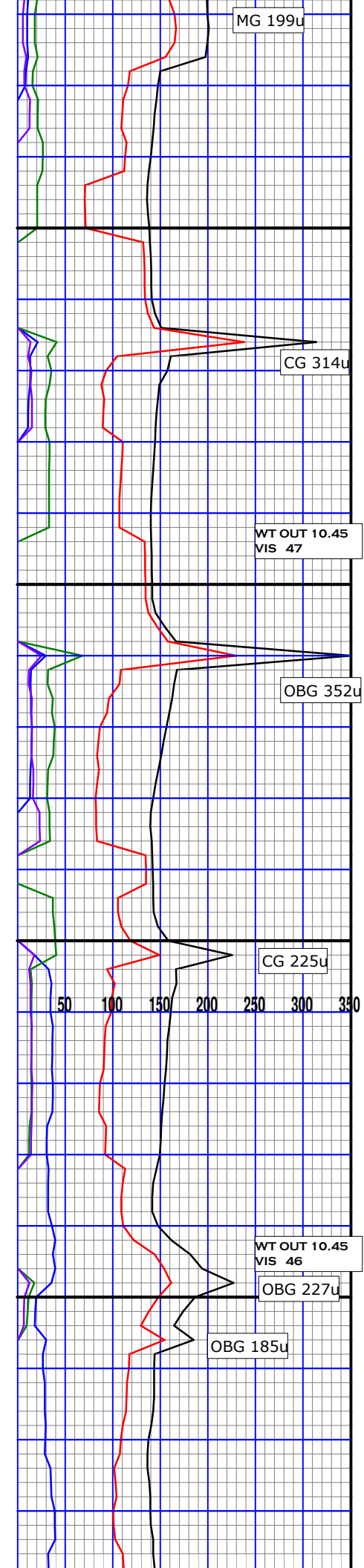
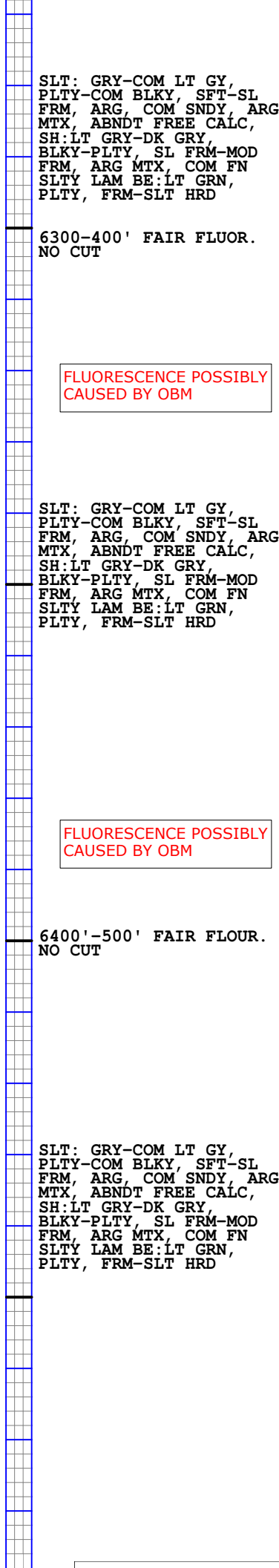
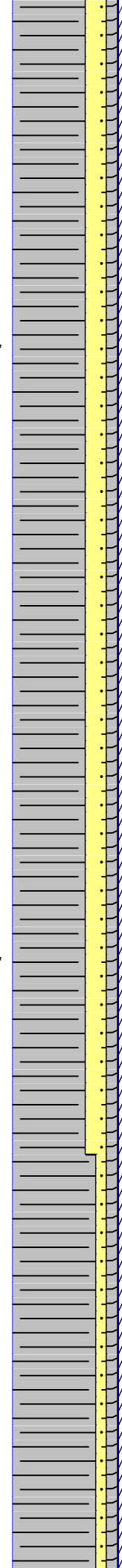
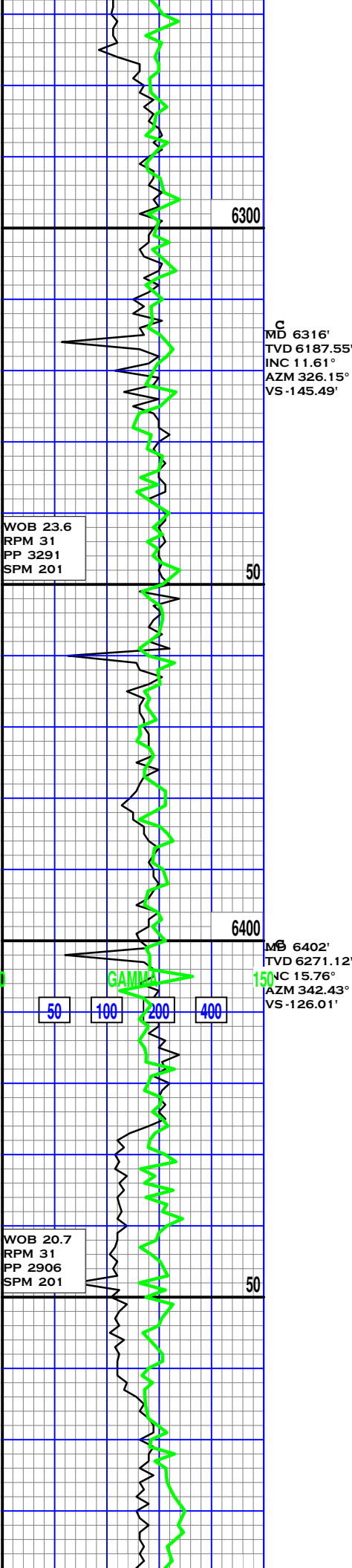
SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM

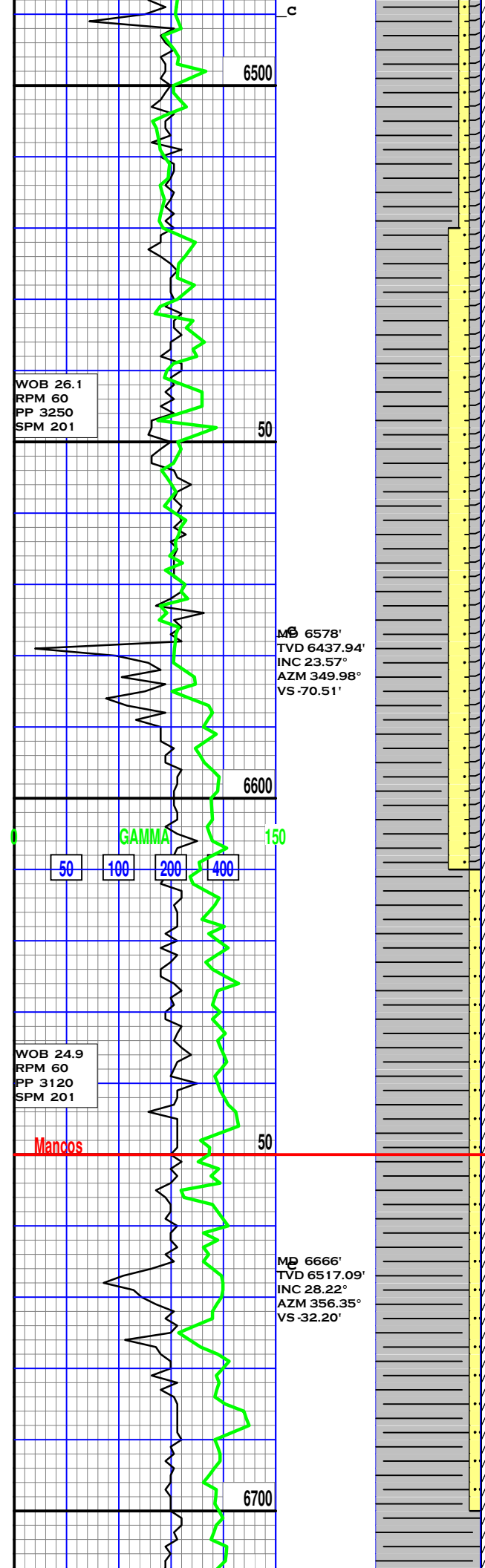
FLUORESCENCE POSSIBLY
CAUSED BY OBM

6200-300' FAIR FLUOR.
NO CUT

SLT: GRY-COM LT GY,
PLTY-COM BLKY, SFT-SL
FRM, ARG, COM SNDY, ARG
MTX, SH:LT GRY-DK GRY,
BLKY-PLTY, SL FRM-MOD
FRM, ARG MTX, COM FN
SLTY LAM







FLUORESCENCE POSSIBLY
CAUSED BY OBM

6500'-600' FAIR FLOUR.
NO CUT

SH: LT GRY-DK GRY,
BLKY-PLTY-OCC SUBLKY, SL
FRM-MOD FRM, ARG MTX,
COM FN SLTY LAM, SLT:
GRY-COM LT GY, PLTY-COM
BLKY, SFT-SL FRM, ARG,
COM SNDY, ARG MTX, ABNDT
FREE CALC, BE:LT GRN,
PLTY, FRM-SLT HRD, TR
UNCONS SS, TR QTZ GRNS

FLUORESCENCE POSSIBLY
CAUSED BY OBM

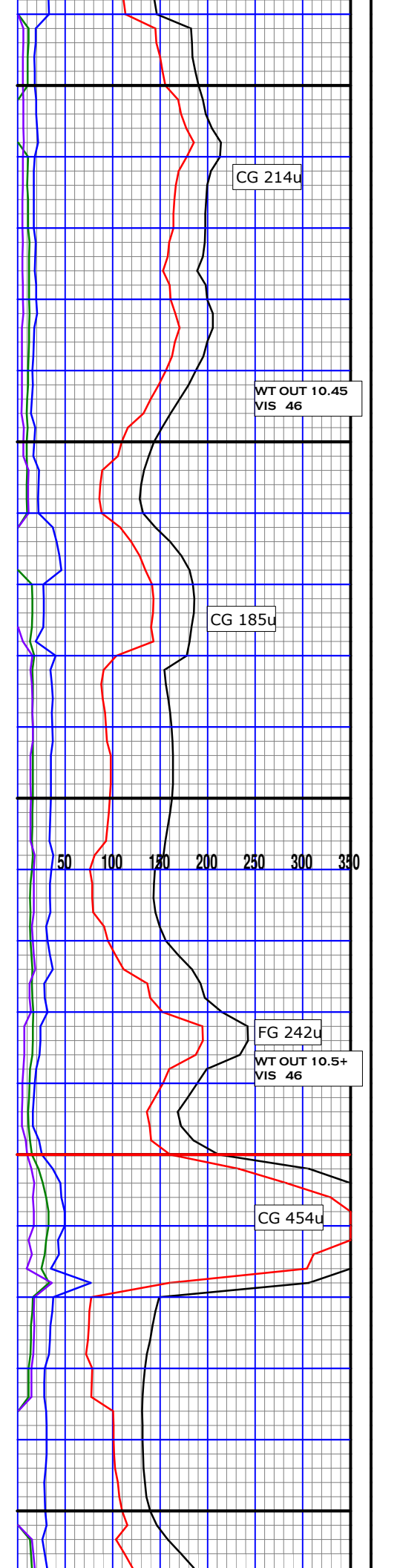
6600'-700' FAIR FLOUR.
NO CUT

SH: LT GRY-DK GRY,
BLKY-PLTY-OCC SUBLKY, SL
FRM-V FRM, ARG MTX,
COM FN SLTY LAM, SLT:
GRY-COM LT GY, PLTY-COM
BLKY, SFT, ARG, COM
SNDY, ARG MTX, ABNDT
FREE CALC, BE:LT GRN,
PLTY, FRM-SLT HRD

FLUORESCENCE POSSIBLY
CAUSED BY OBM

6700'-800' FAIR FLOUR.
NO CUT

SH: LT GRY-DK GRY,
BLKY-PLTY-OCC SUBLKY, SL
FRM-V FRM, ARG MTX,
COM FN SLTY LAM, SLT:
GRY-COM LT GY, PLTY-COM



WOB 30.1
RPM 60
PP 3250
SPM 201

MD 6754'
TVD 6593.20'
INC 29.75°
AZM 1.09°
VS 9.47'

50 100 200 400

WOB 22.7
RPM 61
PP 3260
SPM 201

MD 6840'
TVD 6669.01'
INC 29.03°
AZM 0.72°
VS 51.43'

BLKY, SFT, ARG, COM
SNDY, ARG, MTX, ABNDT
FREE, CALC

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SH: LT GRY-DK GRY,
PLTY-BLKY, SL FRM-V FRM,
ARG MTX, COM FN SLTY
LAM, TR FREE CALCITE, TR
BENT, SLI EFF-HCL

6800'-6880' FAIR FLOUR.
NO CUT.

FLUORESCENCE POSSIBLY
CAUSED BY OBM

SH: LT GRY-DK GRY,
BLKY-PLTY, SL FRM-V FRM,
ARG MTX, COM FN SLTY
LAM, TR FREE CALC, BE:LT
BLU-OCC WH, PLTY, FRM-
SLT HRD, ARG WI SILC
MTX, SLI-MOD EFF-HCL

6880'-6970' FAIR FLOUR.
FAIR MLKY CUT

FG 285u

CG 337u

WT OUT 10.4
VIS 48

FG 362u

CG 385u

WT OUT 10.5
VIS 49

*NOTE GAS SCALE CHANGE 0-1750u

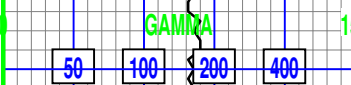
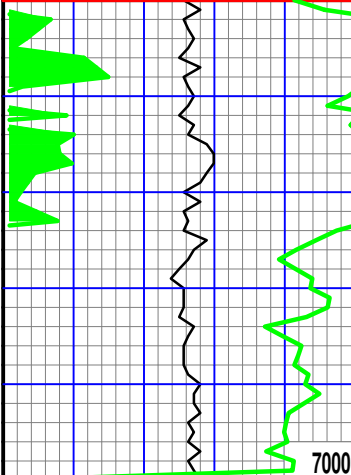
MG 393u

WOB 25.5
RPM 91
PP 3348
SPM 201

MD 6930'
TVD 6743.80'
INC 36.52°
AZM 355.02°
VS 99.14'

Niobrara Shale

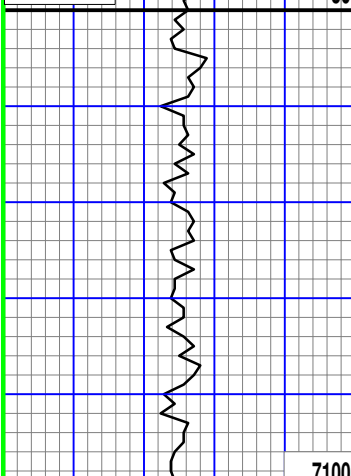
50



MD 7016'
TVD 6810.09'
INC 42.59°
AZM 359.62°
VS 153.42'

WOB 32.2
RPM 91
PP 3268
SPM 201

50



MD 7104'
TVD 6872.04'
INC 47.93°
AZM 5.05°
VS 214.46'

4/8/16

WOB 21.5
RPM 90
PP 2940
SPM 199

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, MOD
FRM, PLTY-BLKY-SUBLKY,
COM FN SLTY LAM, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, LS: GY-
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY-OCC PLTY,
HI-V HI EFF-HCL

6970'-7060' FAIR FLOUR.
FAIR MLKY CUT

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, MOD
FRM, PLTY-BLKY, COM FN
SLTY LAM, OCC DSSM PYR,
MRLST: LT GY, V SFT-SFT,
MAS, LS: GY-LT GY, SL
FRM-MOD FRM, BLKY-
SUBLKY-OCC PLTY, TR FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

7060'-7150' FAIR FLOUR
FAIR MLKY CUT.

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

7150'-7240' FAIR FLOUR.
FAIR MLKY CUT

CG 566u

WT OUT 10.55
VIS 47

MG/FG 831

250 500 750 1k 1.25k 1.5k 1.75k

CG 1094u

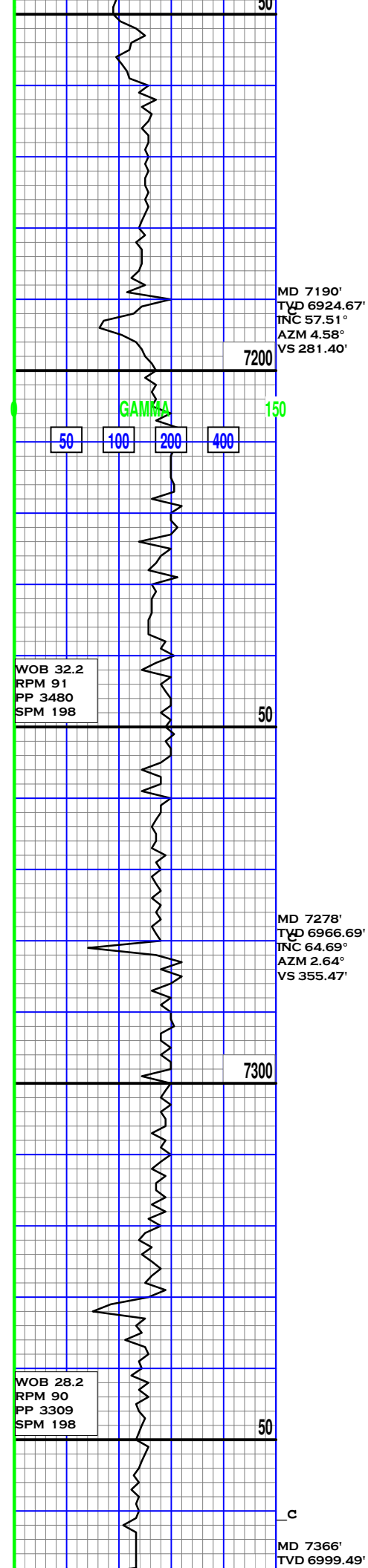
WT OUT 10.5
VIS 48

MG 961u

CG 950u

DTG 711u

WT OUT 10.5
VIS 48



SH: LT GY-DK GY, MOD
FRM, PLTY-BLKY, COM FN
SLTY LAM, OCC DSSM PYR,
MRLST: LT GY, V SFT-SFT,
MAS, LS: GY-LT GY, SL
FRM-MOD FRM, BLKY-
SUBLKY-OCC PLTY, TR FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

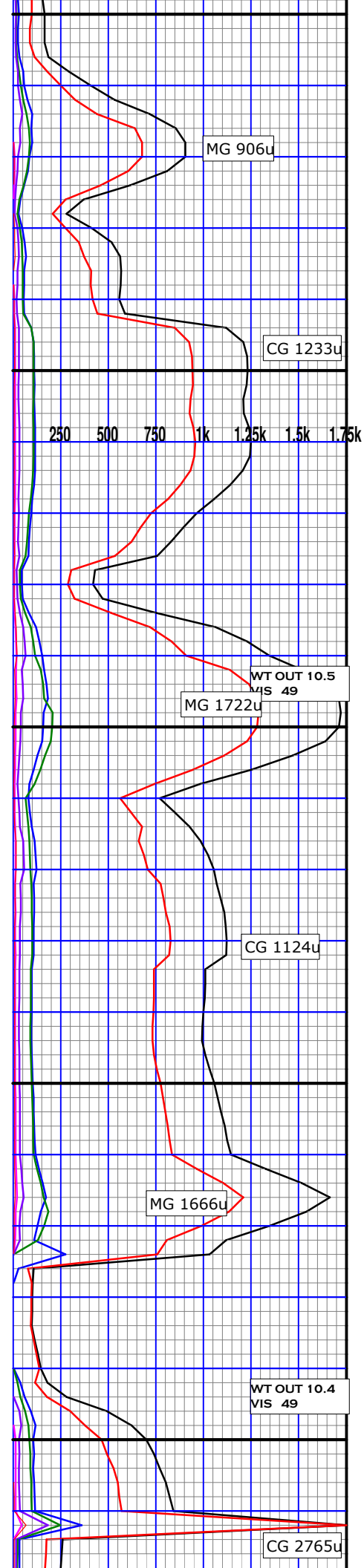
SH: LT GY-DK GY, MOD
FRM-V FRM, PLTY-BLKY,
COM FN SLTY LAM, OCC
DSSM PYR, TR EMBD
CALCITE, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, TR FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

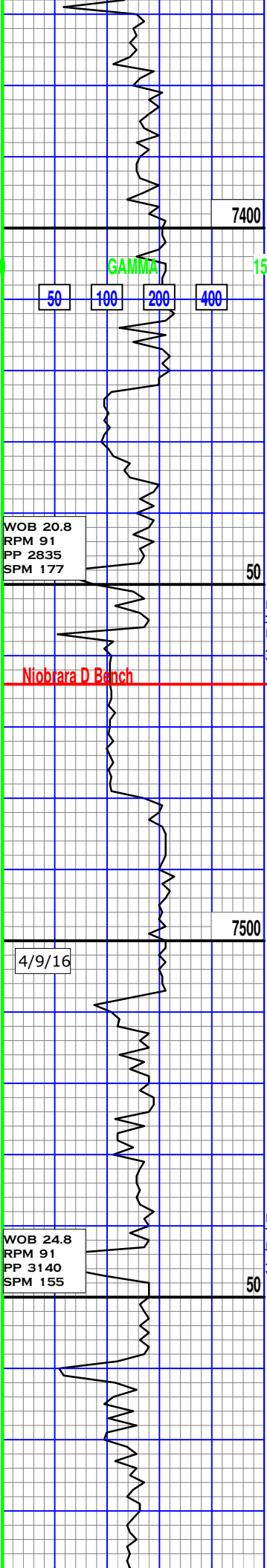
7240'-7330' FAIR FLOUR.
WEAK MLKY CUT

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY-TR BLK,
SL FRM-MOD FRM-OCC V
FRM, PLTY-BLKY COM FN
SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR
MRLST: LT GY, V SFT-SFT,
MAS, MOT, LS: GY-LT GY,
SL FRM-MOD FRM, BLKY-
SUBLKY, TR FREE CALCITE,
TR BENT, HI-V HI EFF-HCL

7330'-7420' FAIR FLOUR.
WEAK MLKY CUT.





FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY-TR
BLK, SL FRM-MOD FRM-OCC
V FRM, PLTY-BLKY COM FN
SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR
MRLST: LT GY, V SFT-SFT,
MAS, MOT, LS: GY-LT GY,
SL FRM-MOD FRM, BLKY-
SUBLKY, TR FREE CALCITE,
TR BENT, HI-V HI EFF-HCL

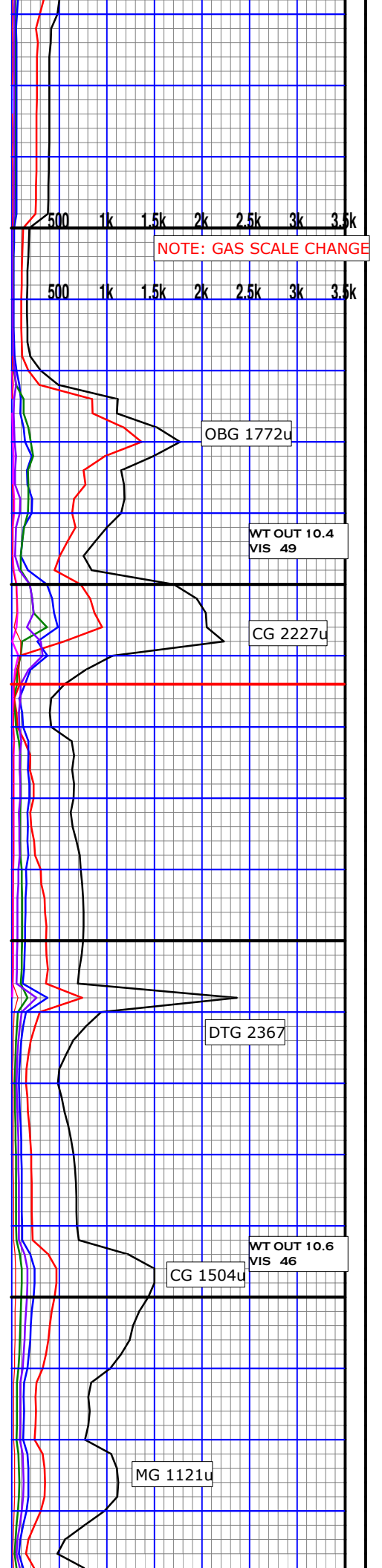
7420'-7510' FAIR FLOUR.
NO CUT.

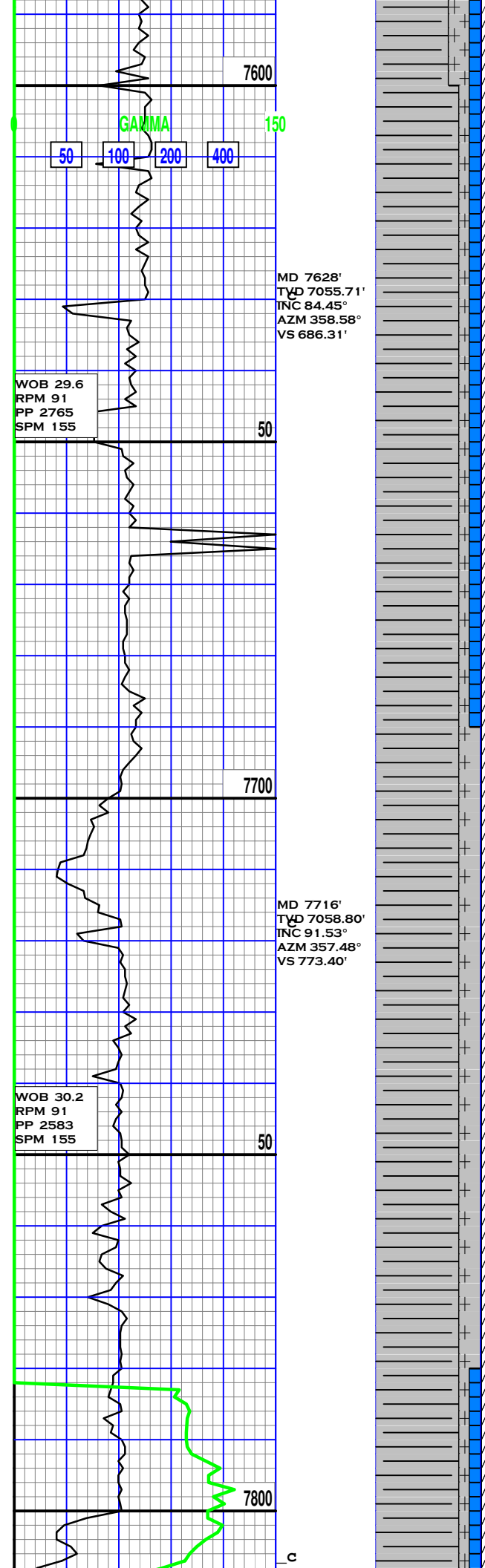
FLUORESCENCE POSSIBLY
CAUSED BY OBM

SH: LT GY-DK GY-TR BLK,
SL FRM-MOD FRM-OCC V
FRM, PLTY-BLKY COM FN
SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR
MRLST: LT GY, V SFT-SFT,
MAS, MOT, LS: GY-LT GY,
SL FRM-MOD FRM, BLKY-
SUBLKY, TR FREE CALCITE,
TR BENT, HI-V HI EFF-HCL

7510'-7600' FAIR FLOUR.
FAIR MLKY CUT.

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM





SH: LT GY-DK GY, SL FRM-V FRM, PLTY-BLKY-SUBLKY, COM FN SLTY LAM, TR EMBD CALCITE, OCC DSSM PYR, MRLST: LT GY, V SFT-SFT, MAS, MOT, LS: GY-LT GY, SL FRM-MOD FRM, BLKY, ABNT FREE CALCITE, TR BENT, HI-V HI EFF-HCL

7600'-7690' FAIR FLOUR. FAIR MLKY CUT.

FLUORESCENCE AND CUT POSSIBLY CAUSED BY OBM

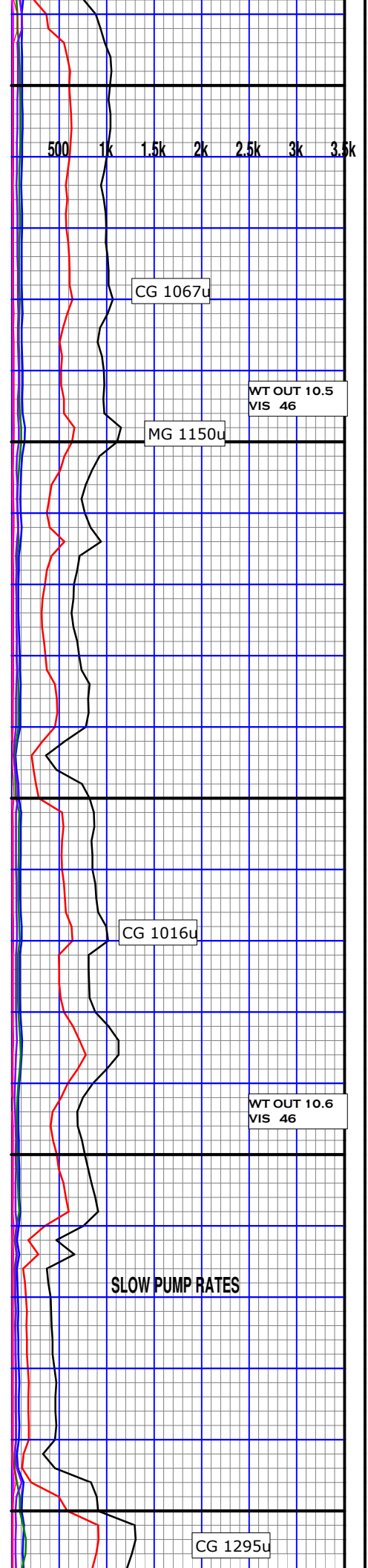
SH: LT GY-DK GY, SL FRM-V FRM, PLTY-BLKY-SUBLKY, COM FN SLTY LAM, TR EMBD CALCITE, OCC DSSM PYR, MRLST: LT GY, V SFT-SFT, MAS, MOT, LS: GY-LT GY, SL FRM-MOD FRM, BLKY, ABNT FREE CALCITE, TR BENT, HI-V HI EFF-HCL

7700-800' FAIR FLUOR. FAIR MILKY CUT

FLUORESCENCE AND CUT POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL FRM-MOD FRM, BLKY-PLTY, COM FN SLTY LAM, EMBD CALCITE, OCC DSSM PYR, MRLST: LT GY, V SFT-SFT, MAS, MOT, TR LS, SME FREE CALCITE, TR BENT, HI-V HI EFF-HCL

7800-900' FAIR FLUOR WEAK MILKY CUT



CG 1067u

WT OUT 10.5
VIS 46

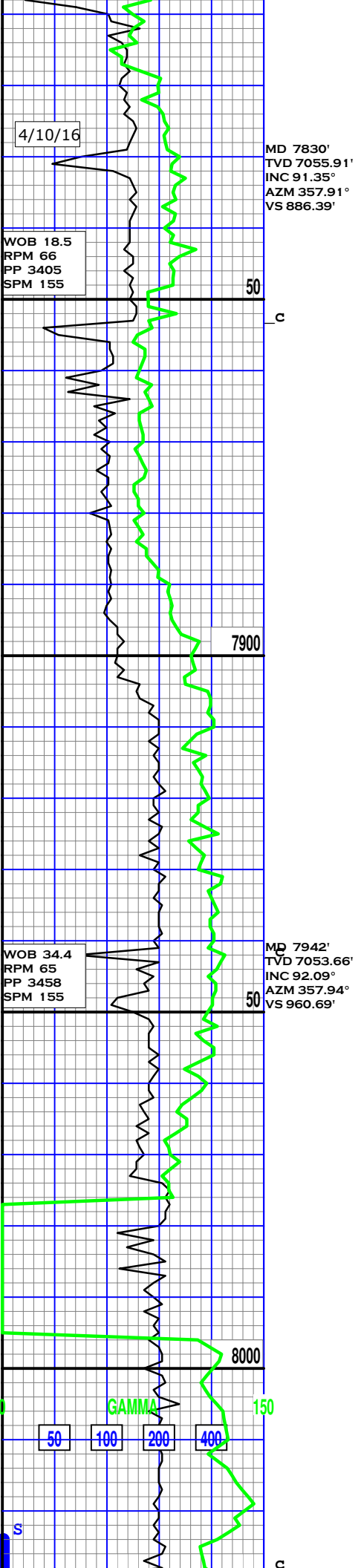
MG 1150u

CG 1016u

WT OUT 10.6
VIS 46

SLOW PUMP RATES

CG 1295u



FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
TR EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, ABNT FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

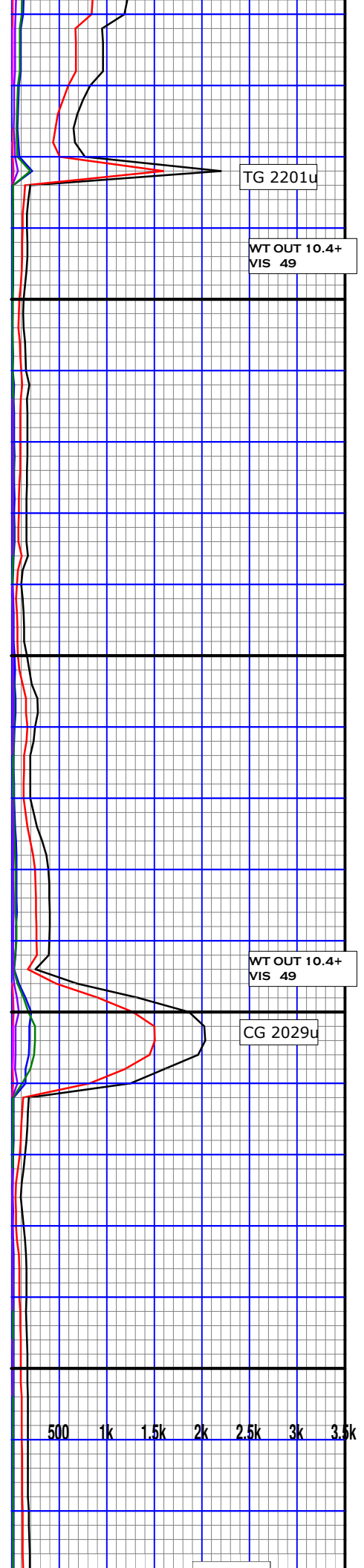
7900-8000' FAIR FLUOR.
WEAK MILKY CUT

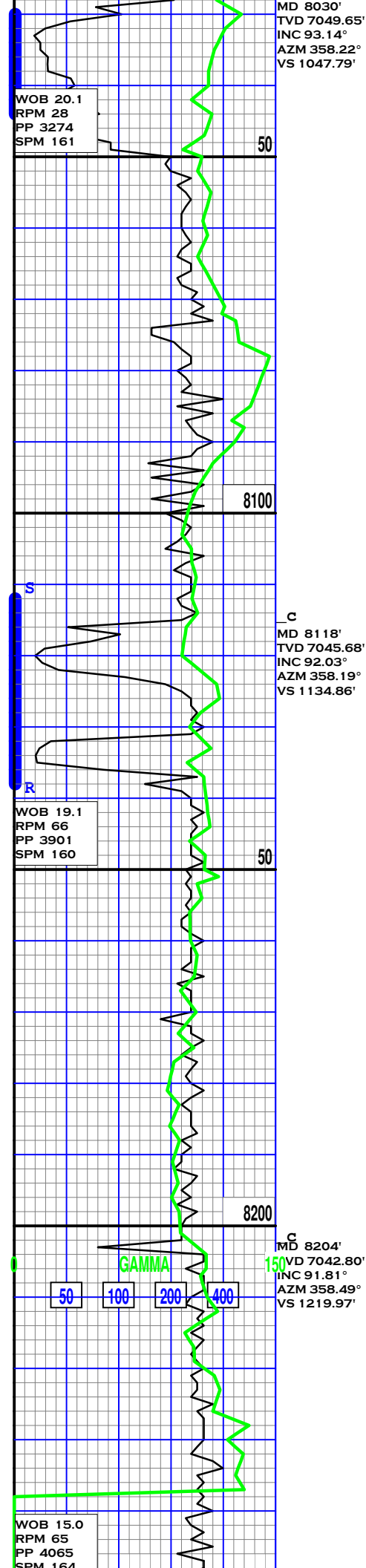
FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL-
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
TR EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, ABNT FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

8000-100' FAIR FLUOR.
NO CUT

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM





SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC DSSM
PYR, LS: GY-LT GY, SL
FRM-MOD FRM, BLKY, ABNT
FREE CALCITE, TR BENT,
HI-V HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

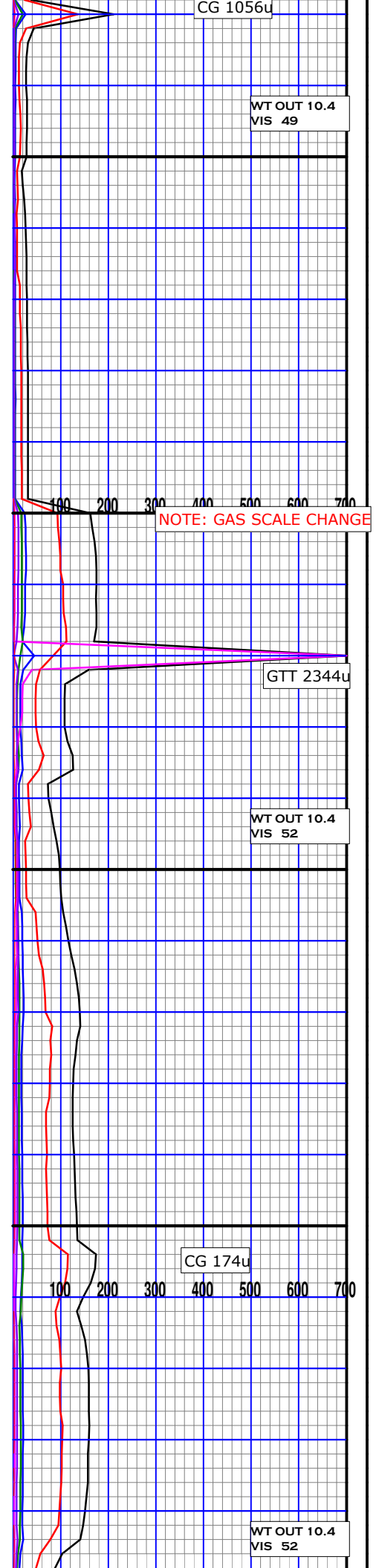
8100-200' FAIR FLUOR.
NO CUT

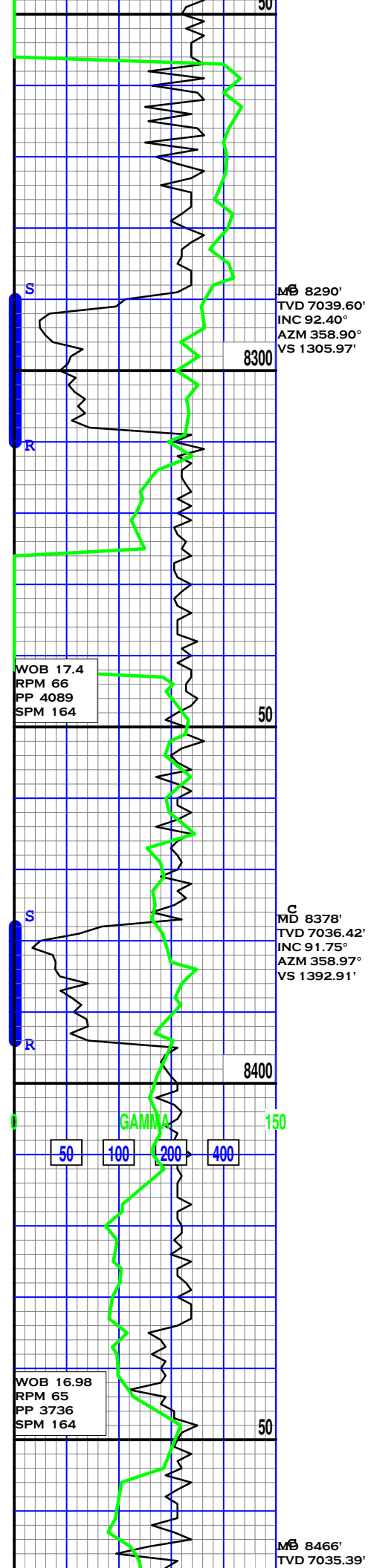
SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC DSSM
PYR, LS: GY-LT GY, SL
FRM-MOD FRM, BLKY, ABNT
FREE CALCITE, TR BENT,
HI-V HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

8200-300' FAIR FLUOR.
NO CUT

SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, ABNT FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL





FLUORESCENCE
POSSIBLY CAUSED BY OBM

8300'-400' FAIR FLUOR.
NO CUT

SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, ABNT FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

8400'-500' FAIR FLOUR.
NO CUT

SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC
DSSM PYR, LS: GY-LT GY,
SL FRM-MOD FRM, BLKY,
ABNT FREE CALCITE, TR
BENT, HI-V HI EFF-HCL

CG 123u

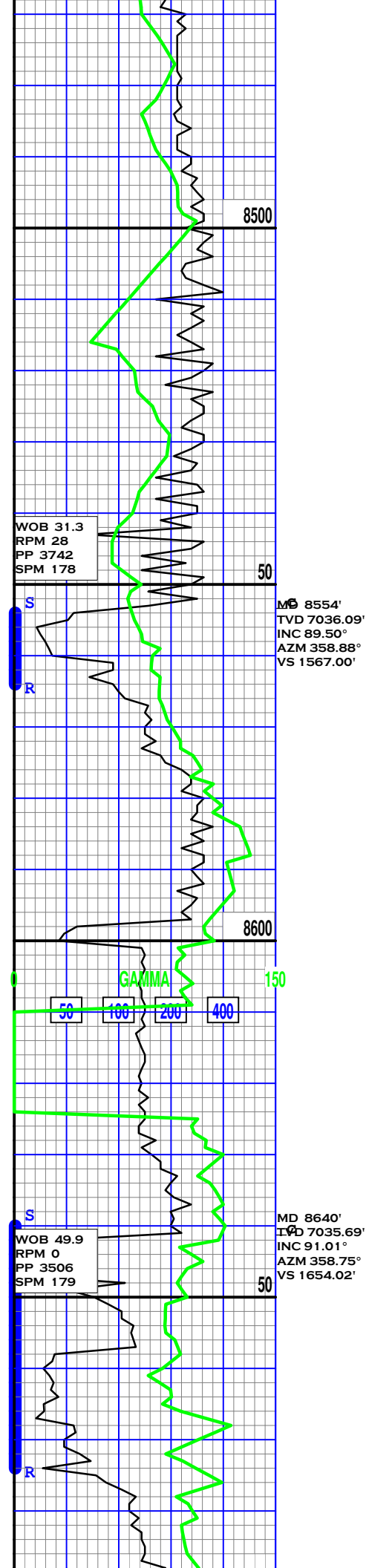
WT OUT 10.3
VIS 53

CG 148u

100 200 300 400 500 600 700

WT OUT 10.3
VIS 53

CG 149u



SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC
DSSM PYR, LS: GY-LT GY,
SL FRM-MOD FRM, BLKY,
ABNT FREE CALCITE, TR
BENT, HI-V HI EFF-HCL

8500'-600' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

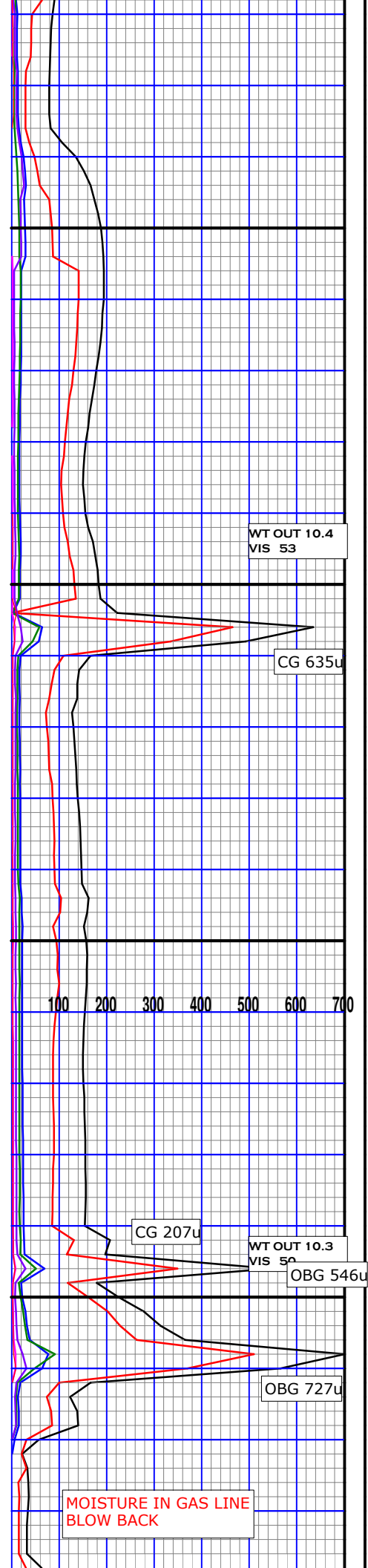
SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY-
SUBLKY, COM FN SLTY LAM,
FREE CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT,
LS: GY-LT GY, SL FRM-MOD
FRM, BLKY, ABNT FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

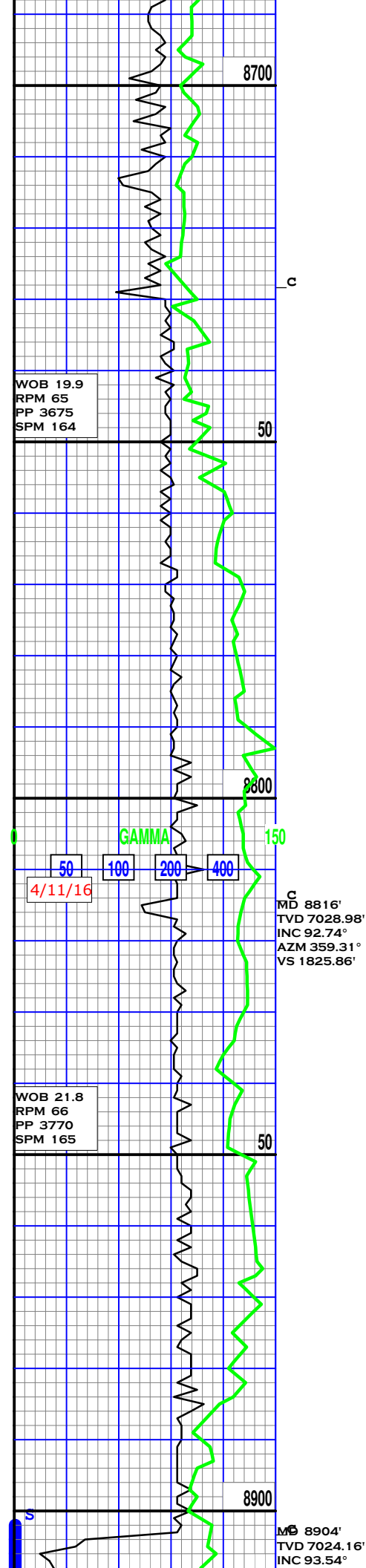
8600'-700' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY,
COM FN SLTY LAM, SME
FREE CALCITE, OCC DSSM
PYR, MRLST: LT GY, V

MOISTURE IN GAS LINE
BLOW BACK





SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, SME FREE
CALCITE, OCC BENT, HI-V
HI EFF-HCL

8700'-800' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

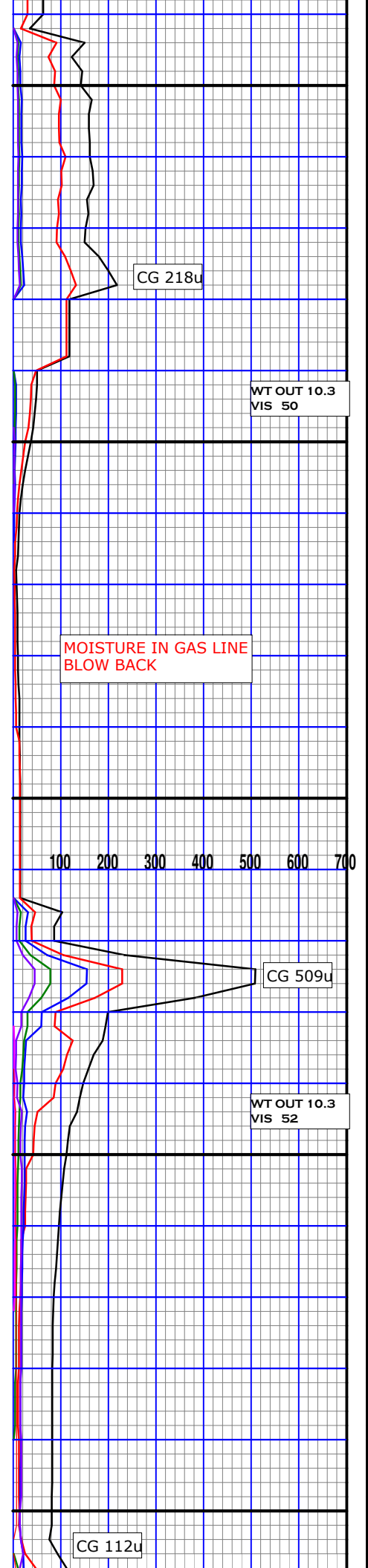
SH: LT GY-DK GY, SL
FRM-V FRM, PLTY-BLKY,
COM FN SLTY LAM, SME
FREE CALCITE, OCC DSSM
PYR, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
GY-LT GY, SL FRM-MOD
FRM, BLKY, SME FREE
CALCITE, OCC BENT, HI-V
HI EFF-HCL

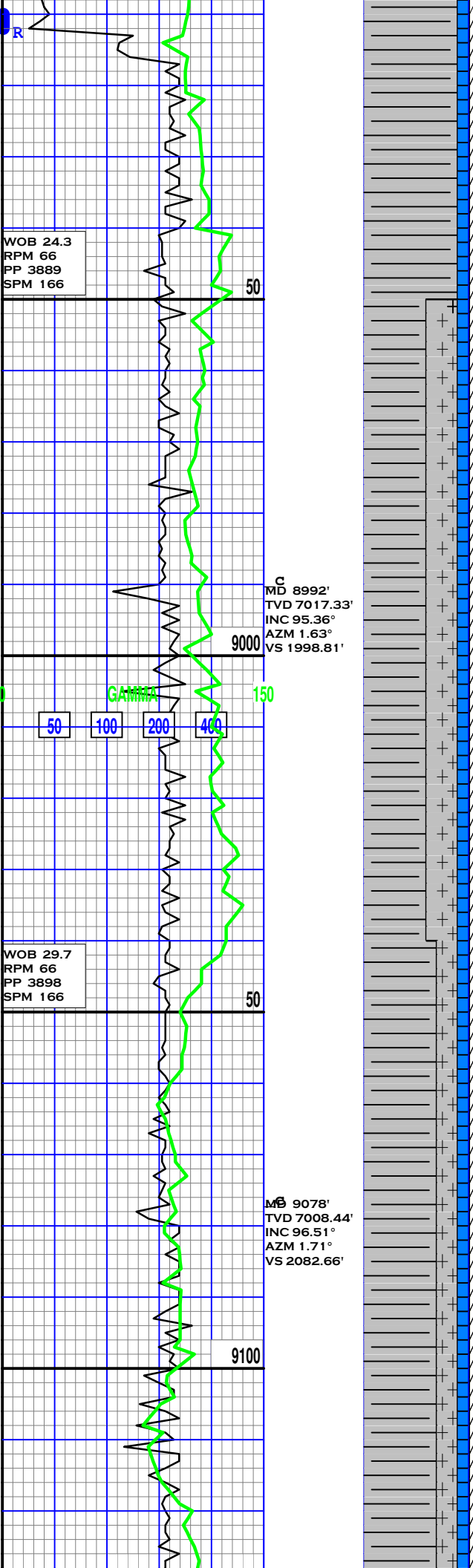
8800'-900' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, MOD
FRM-V FRM, PLTY-BLKY-OCC
SUBLKY, COM FN SLTY LAM,
SME FREE CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT,
LS: GY-LT GY, SL FRM-MOD
FRM, BLKY, SME FREE
CALCITE, BENT, HI-V
HI EFF-HCL

8900'-9000' FAIR FLOUR.
NO CUT





FLUORESCENCE
POSSIBLY CAUSED BY OBM

FLUORESCENCE
POSSIBLY CAUSED BY OBM

OBG 142u

WT OUT 10.3
VIS 52

CG 171u

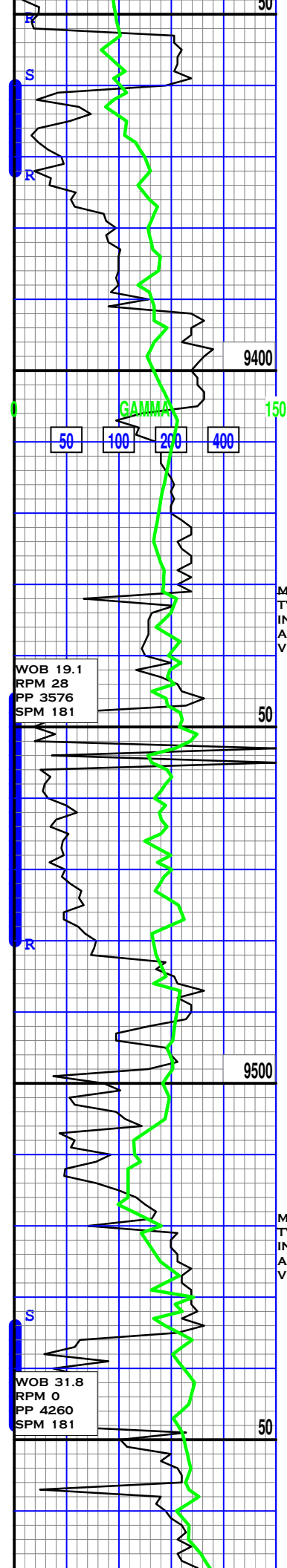
100 200 300 400 500 600 700

WT OUT 10.3
VIS 50

CG 239u

FLUORESCENCE
POSSIBLY CAUSED BY OBM

MG 183u



POSSIBLY CAUSED BY OBM

FLUORESCENCE
POSSIBLY CAUSED BY OBM

9400'-500' FAIR FLOUR.
NO CUT

SH: LT GY-DK GY, SL
FRM-MOD FRM, PLTY-BLKY,
COM FN SLTY LAM, EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, SFT, MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY-SUBLKY, TR
FREE CALCITE, OCC BENT,
HI-V HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL
FRM-MOD FRM, PLTY-BLKY,
COM FN SLTY LAM, EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, SFT, MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY-SUBLKY, TR
FREE CALCITE, OCC BENT,
HI-V HI EFF-HCL

9500'-600' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

OBG 245u

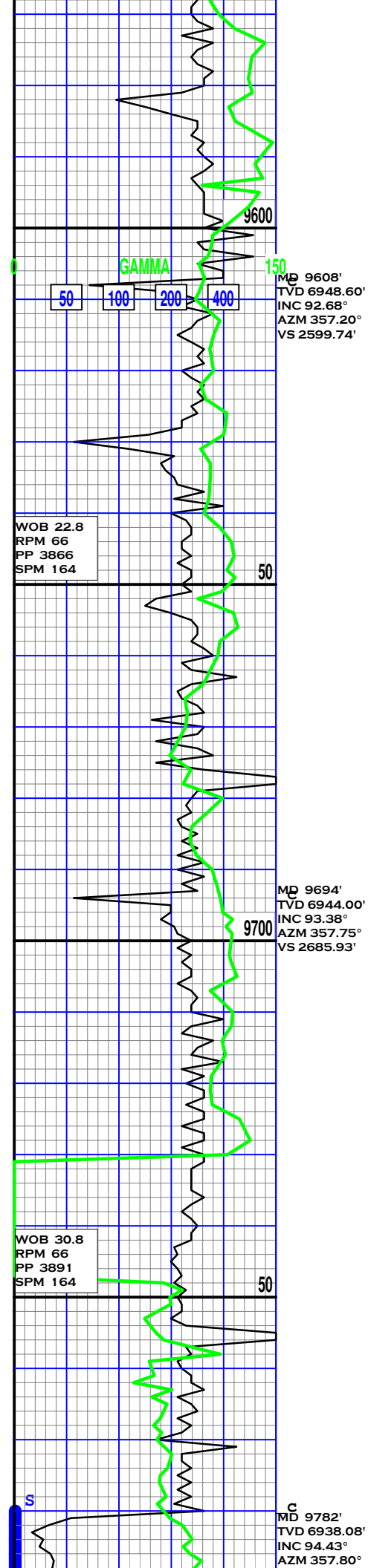
OBG 260u

CG 194u

WT OUT 10.2
VIS 52

CG 128u

WT OUT 10.2
VIS 52



SH: LT GY-DK GY, SL
FRM-MOD FRM, PLTY-BLKY,
COM FN SLTY LAM, EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, SFT, MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY-SUBLKY, TR
FREE CALCITE, OCC BENT,
HI-V HI EFF-HCL

9600'-700' FAIR FLOUR.
NO CUT

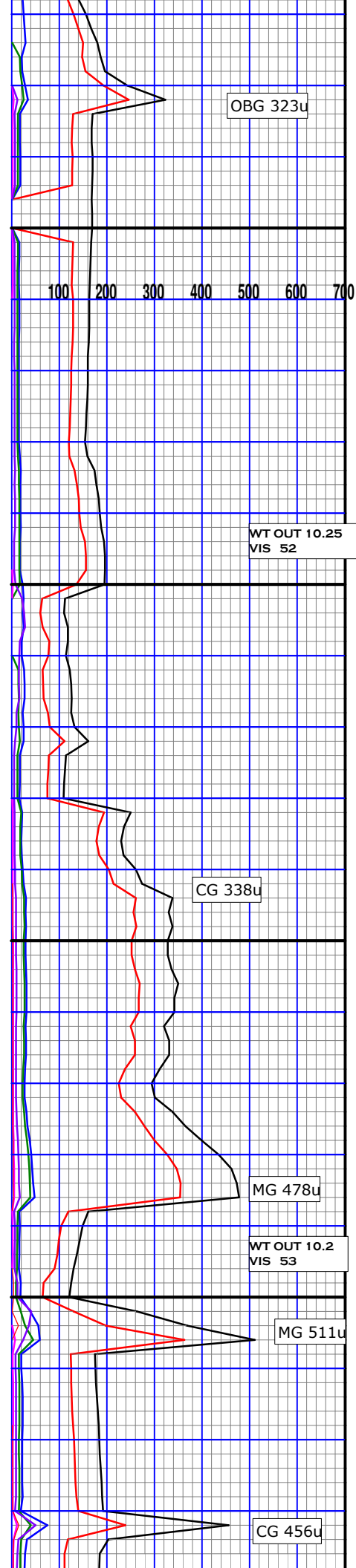
FLUORESCENCE
POSSIBLY CAUSED BY OBM

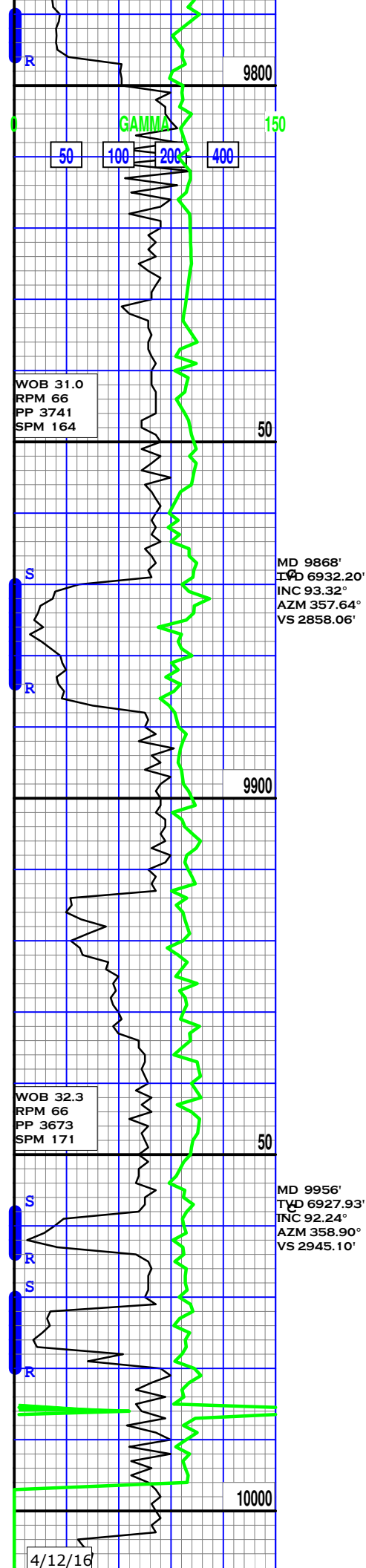
SH: LT GY-DK GY, SL
FRM-MOD FRM, PLTY-BLKY,
COM FN SLTY LAM, EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, SFT, MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY-SUBLKY, TR
FREE CALCITE, OCC BENT,
HI-V HI EFF-HCL

9700'-800' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-DK GY, SL
FRM-MOD FRM, PLTY-BLKY,
COM FN SLTY LAM, EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, SFT, MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY-SUBLKY, TR
FREE CALCITE, OCC BENT,
HI-V HI EFF-HCL





9800'-900' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-OCC DK GY,
SL FRM-MOD FRM, BLKY-
SUBLKY-PLTY, COM FN SLTY
LAM, EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
LT GY-GY, SL FRM-MOD
FRM, BLKY-SUBLKY, TR
FREE CALCITE, TR BENT,
HI-V HI EFF-HCL

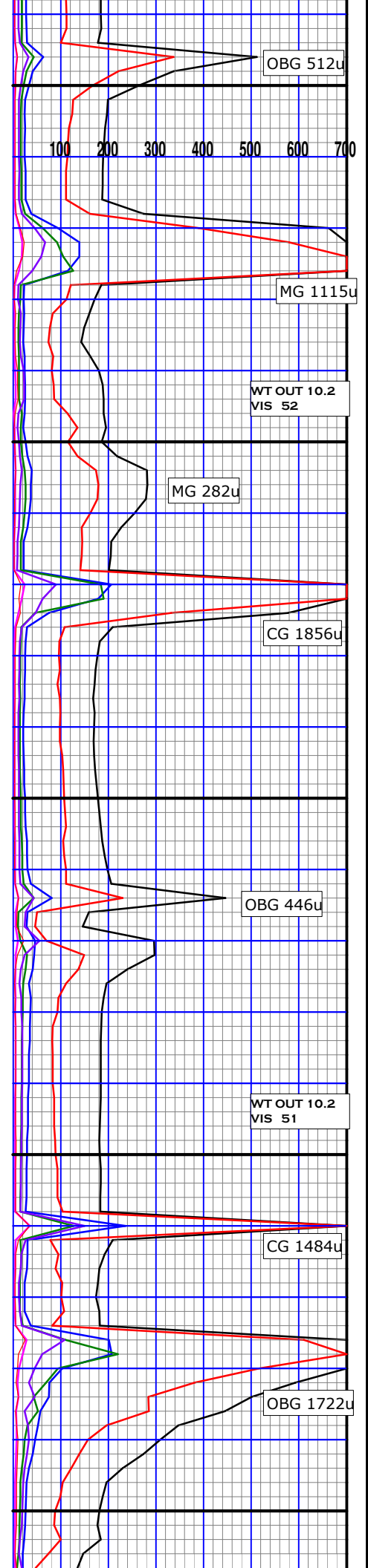
9900'-10000' FAIR FLOUR
NO CUT

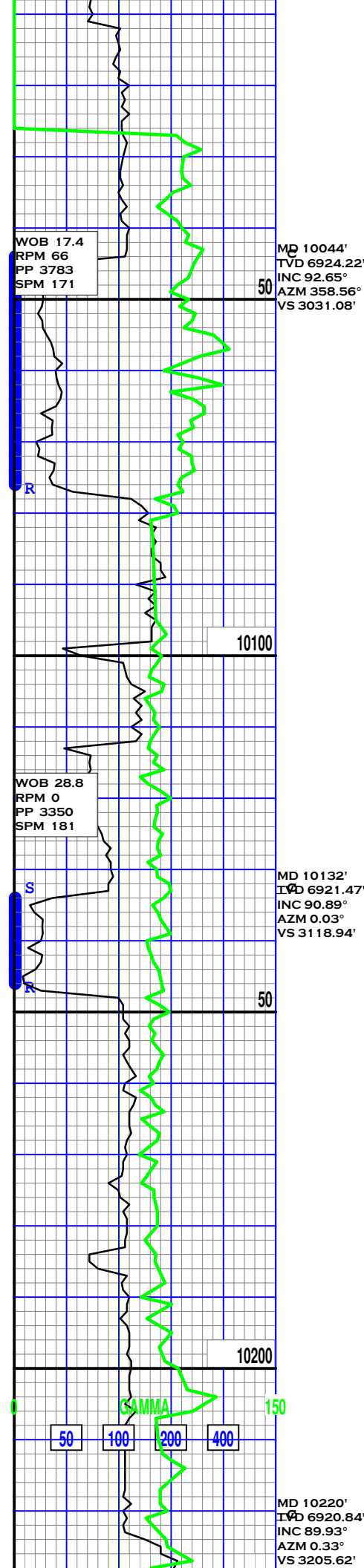
FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH:LT GY-GY-OCC DK GY
SL FRM-MOD FRM, BLKY-
SUBLKY-PLTY, COM FN SLTY
LAM, EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
LT GY-GY, SL FRM-MOD
FRM, BLKY-SUBLKY, TR
FREE CALCITE, TR BENT,
HI-V HI EFF-HCL

10000'-100' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM





SH: LT GY-GY-OCC DK GY,
SL FRM-V FRM, BLKY-PLTY,
COM FN SLTY LAM, SME
EMBD CALCITE, OCC DSSM
PYR, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
LT GY-GY, SL FRM-MOD
FRM, BLKY-SUBLKY, TR
FREE CALCITE, TR BENT,
HI-V HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

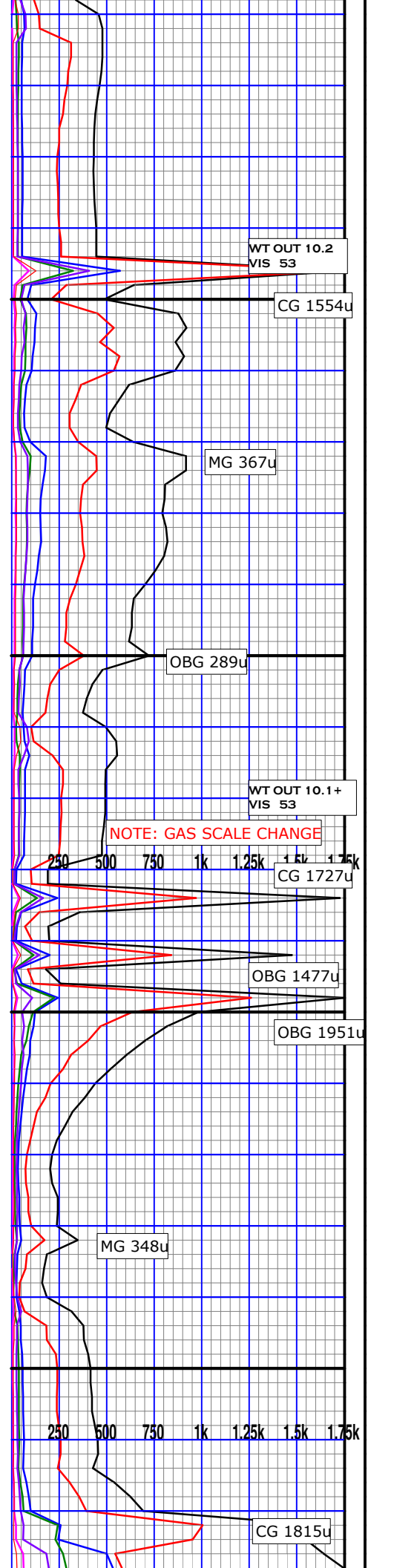
10100'-200' FAIR FLOUR.
NO CUT.

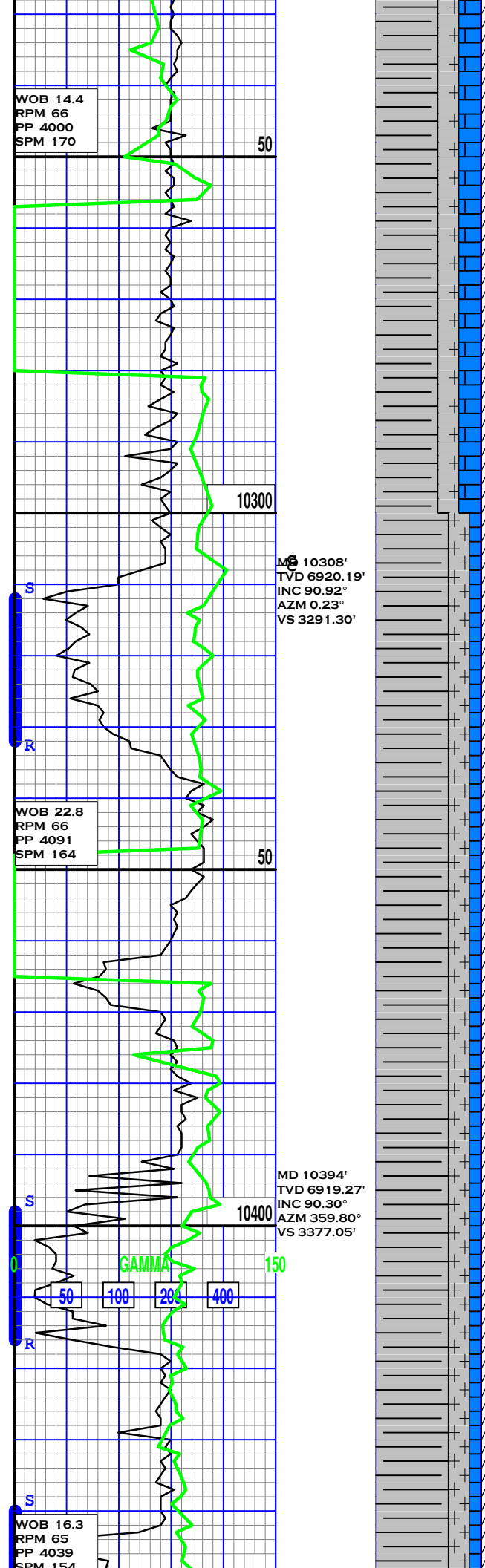
SH: LT GY-OCC DK GY,
SFT-MOD FRM, BLKY-PLTY-
SUBLKY, COM FN SLTY LAM,
SME EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
VSFT-SFT, MAS, MOT, LS:
LT GY-GY, SLI FRM,
BLKY-SUBLKY, TR FREE
CALCITE, TR BENT, HI-V
HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

10200'-300' FAIR FLOUR.
NO CUT

SH:LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY SUBLKY, TR
FREE CALCITE, TR BENT.





HI-V HI EFF-HCL

FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

10300'-400' FAIR FLOUR.
NO CUT

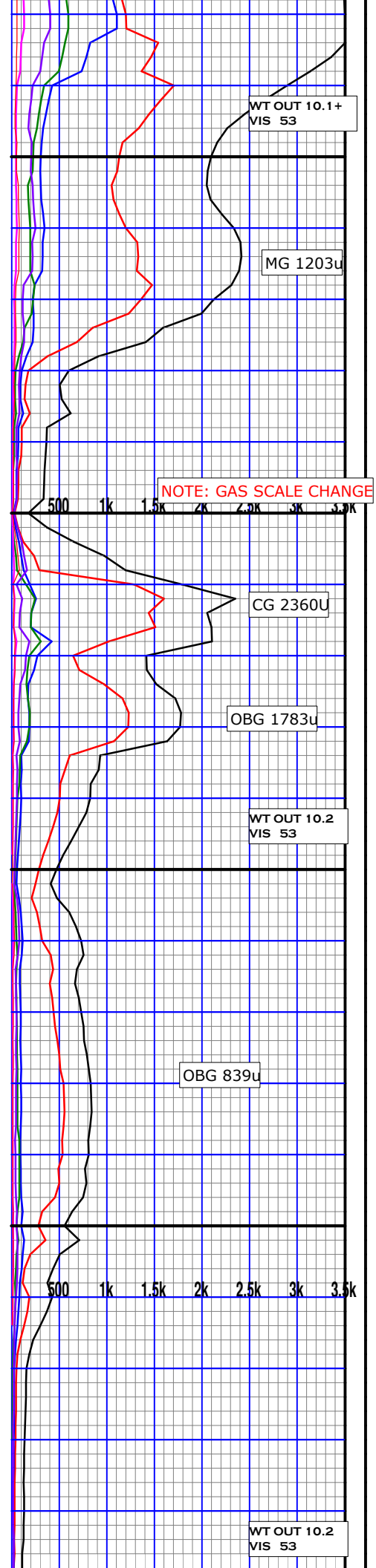
SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY SUBLKY, TR
FREE CALCITE, TR BENT,
HI EFF-HCL

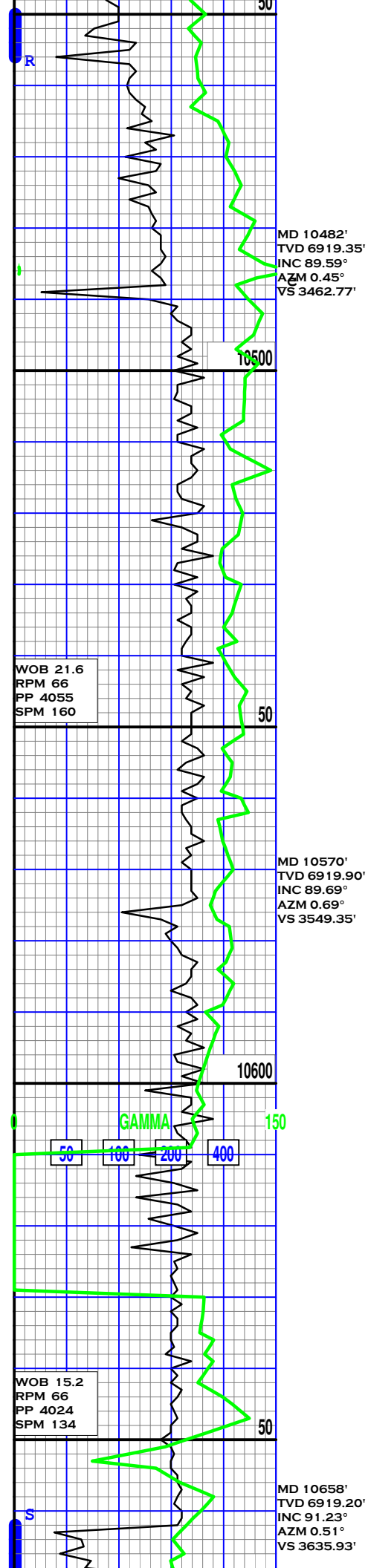
FLUORESCENCE AND CUT
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY SUBLKY, TR
FREE CALCITE, HI EFF-HCL

10400'-500' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM





SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY SUBLKY, TR
FREE CALCITE, HI EFF-HCL

10500'-600' FAIR FLOUR.
NO CUT.

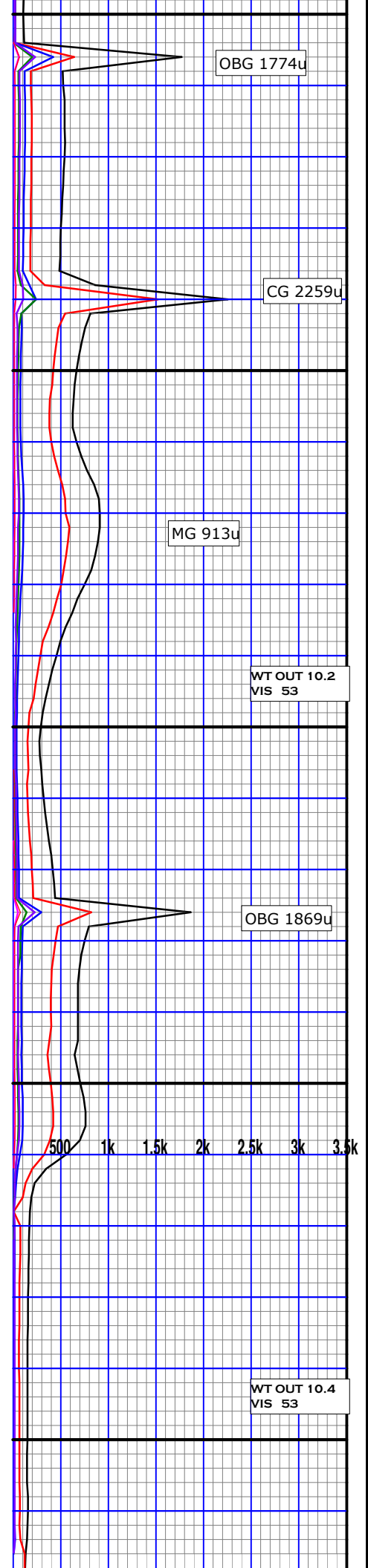
FLUORESCENCE
POSSIBLY CAUSED BY OBM

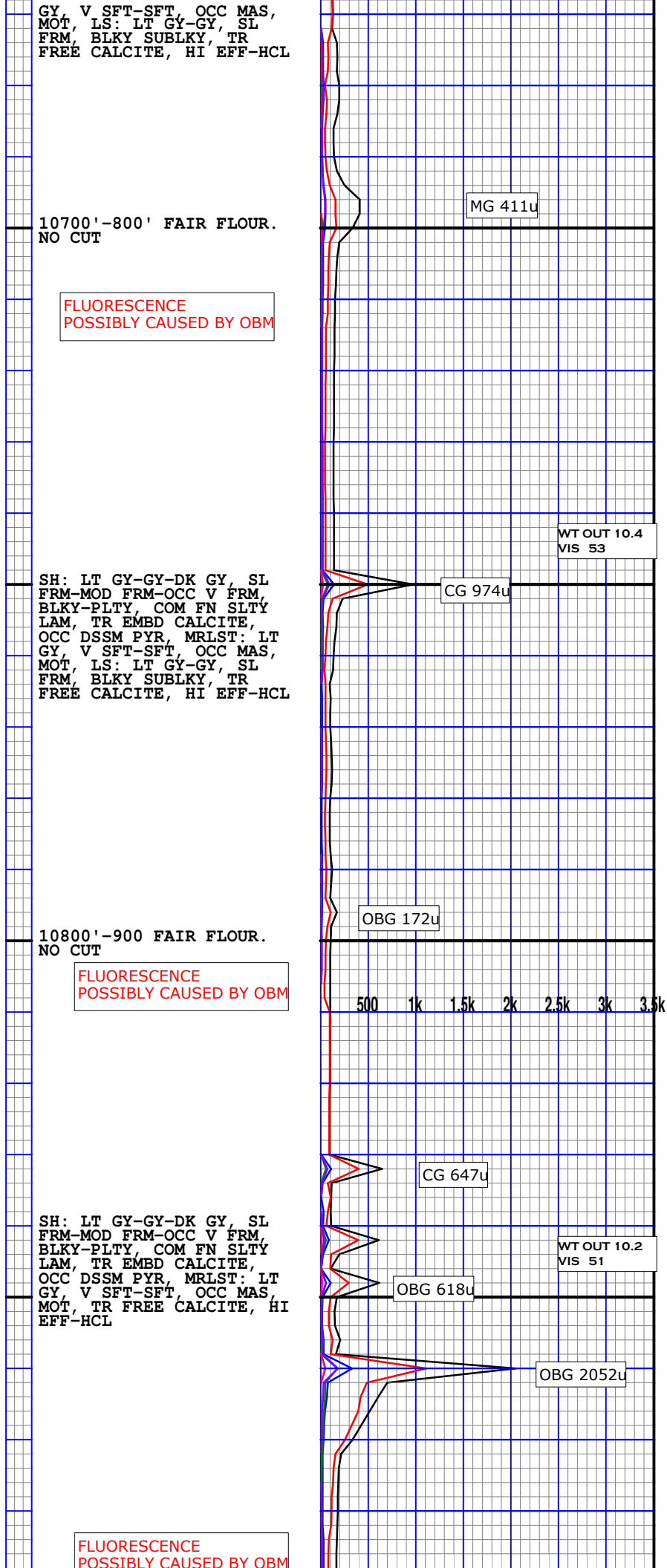
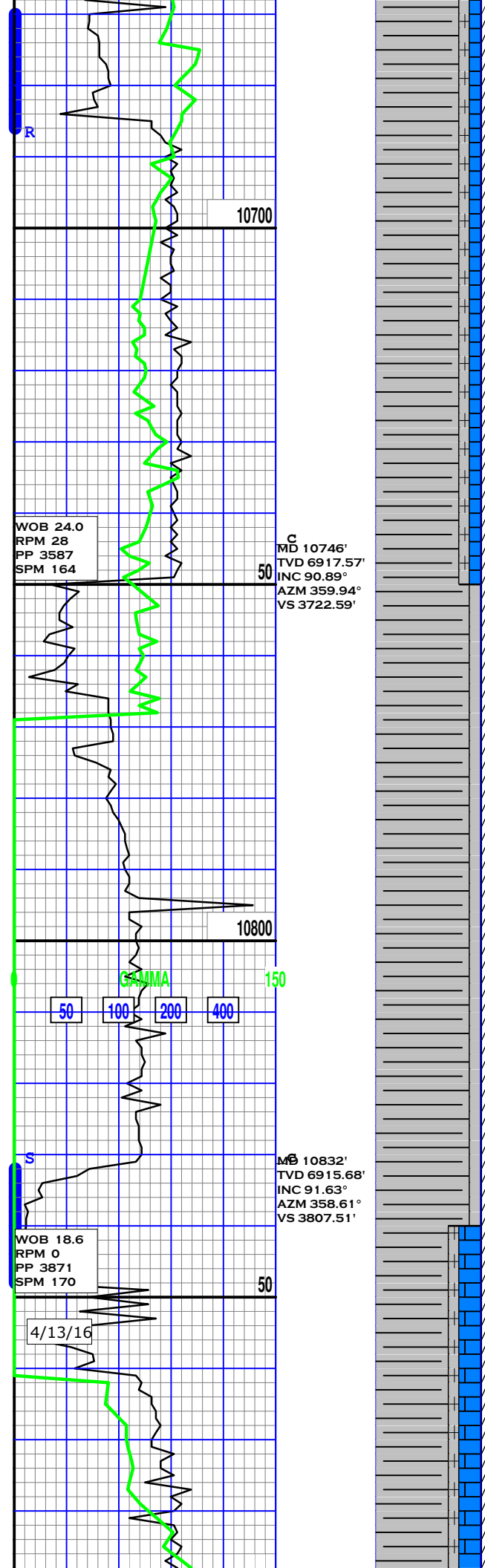
SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, LS: LT GY-GY, SL
FRM, BLKY SUBLKY, TR
FREE CALCITE, HI EFF-HCL

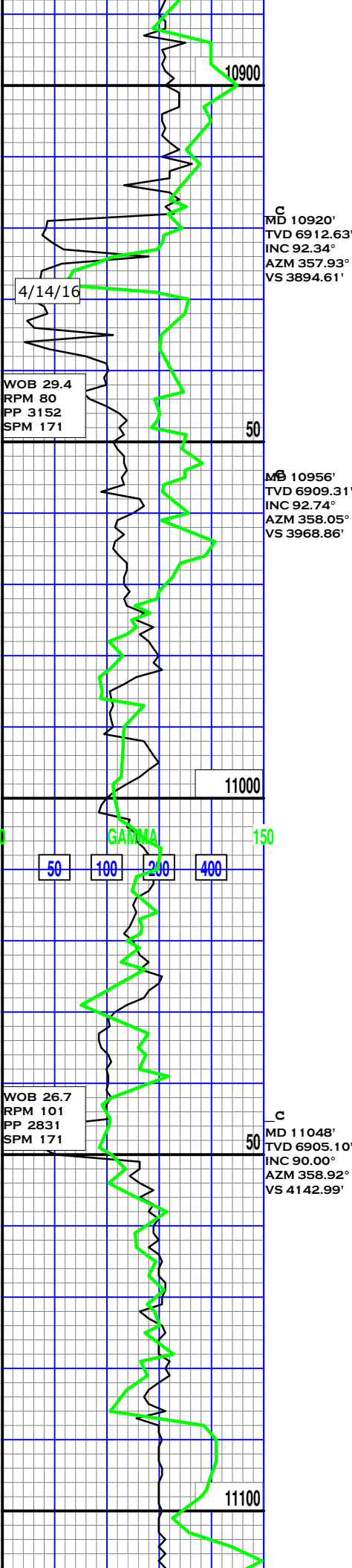
10600'-700' FAIR FLOUR.
NO CUT.

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR. MRLST: LT







10900-11000 FAIR FLOUR.
NO CUT

SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, TR FREE CALCITE, HI
EFF-HCL

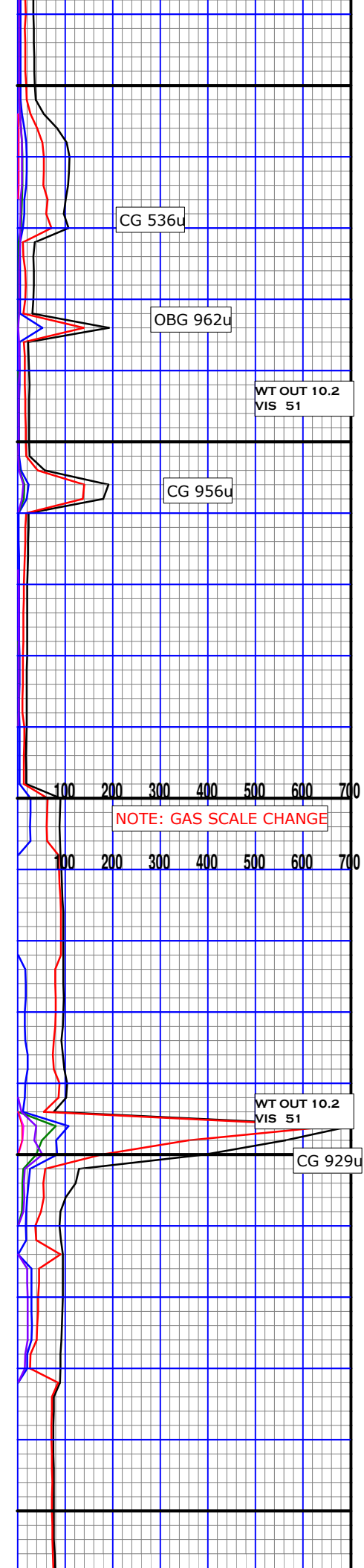
FLUORESCENCE
POSSIBLY CAUSED BY OBM

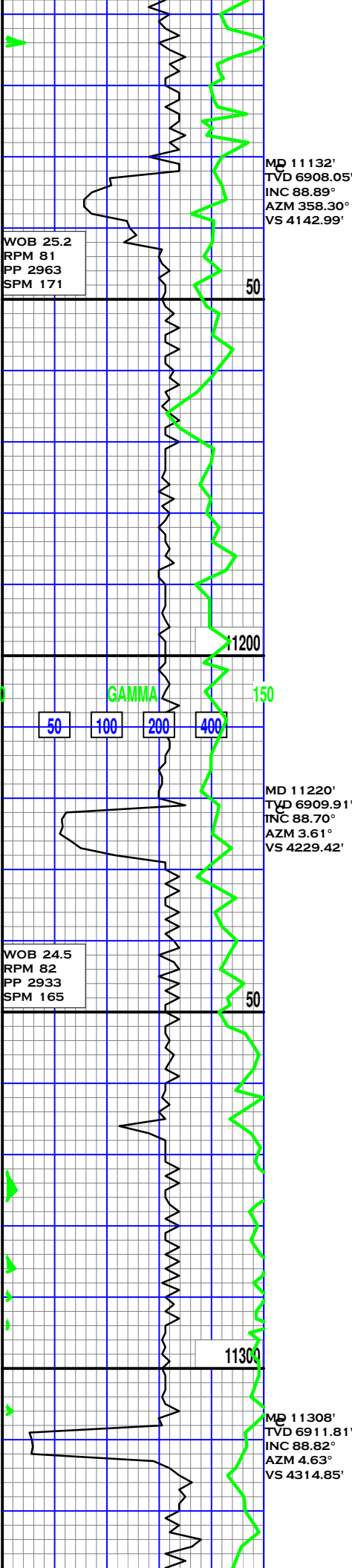
11000'-1100' FAIR FLOUR.
NO CUT

SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, TR FREE CALCITE, HI
EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

11100'-1200' FAIR FLOUR.
NO CUT





SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, TR FREE CALCITE, HI
EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

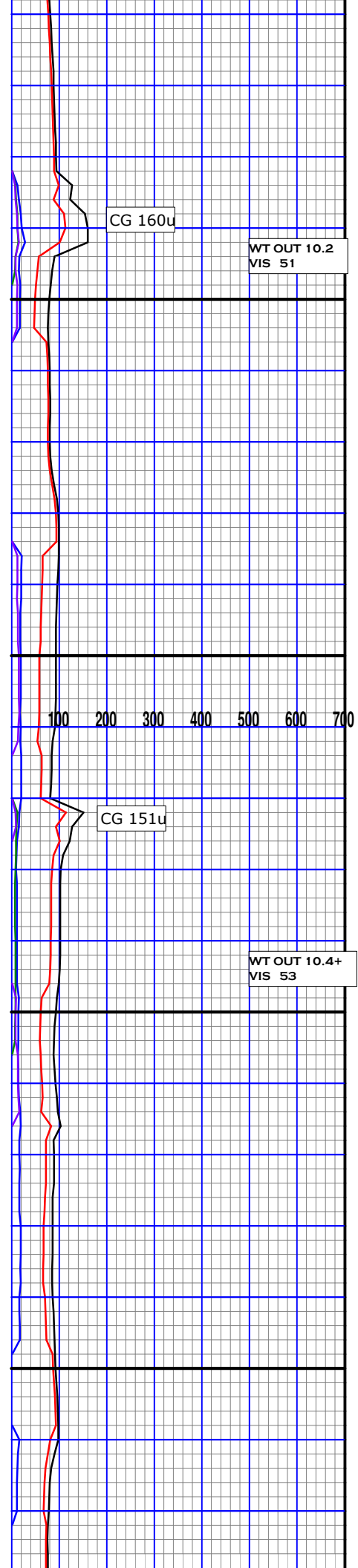
SH: LT GY-GY-DK GY, SL
FRM-MOD FRM-OCC V FRM,
BLKY-PLTY, COM FN SLTY
LAM, TR EMBD CALCITE,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, OCC MAS,
MOT, TR FREE CALCITE, HI
EFF-HCL

11200'-300' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-DK GY, SL
FRM-MOD FRM, BLKY-PLTY,
COM FN SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, V SFT-SFT,
OCC MAS, MOT, LS: LT
GY-GY, SL FRM, BLKY-
SUBLKY, TR FREE CALCITE,
HI EFF-HCL

11300'-400' FAIR FLOUR.
NO CUT



WOB 29.9
RPM 82
PP 3043
SPM 165

50

MD 11396'
TVD 6913.67'
INC 88.73°
AZM 1.34°
VS 4399.69'

1400

GAMMA

50

100

200

400

150

WOB 30.8
RPM 82
PP 3052
SPM 165

50

MD 11484'
TVD 6915.64'
INC 88.70°
AZM 359.27°
VS 4486.33'

1500

WOB 22.3
RPM 83
PP 2980
SPM 165

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-SME DK GY,
SL FRM-MOD FRM, PLTY-OCC
BLKY, COM FN SLTY LAM,
TR EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY, TR FREE
CALCITE, HI-V HI EFF-HCL

11400'-500 FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-SME DK
GY, SL FRM-MOD FRM,
PLTY-OCC BLKY, COM FN
SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, V SFT-SFT,
MAS, MOT, TR FREE
CALCITE, HI-V HI EFF-HCL

11500'-600' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

WT OUT 10.3+
VIS 52

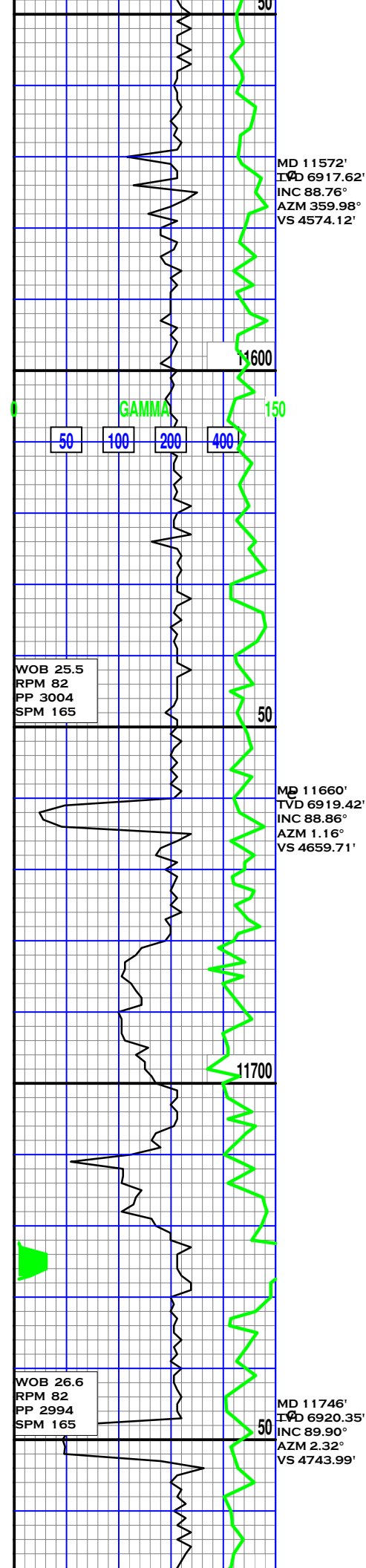
CG 189u

100 200 300 400 500 600 700

WT OUT 10.3+
VIS 52

CG 166u

WT OUT 10.3+
VIS 52



SH: LT GY-GY-SME DK GY,
SL FRM-MOD FRM, PLTY-OCC
BLKY, COM FN SLTY LAM,
TR EMBD CALCITE, OCC
DSSM PYR, MRLST: LT GY,
V SFT-SFT, MAS, MOT, LS:
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY, TR FREE
CALCITE, HI-V HI EFF-HCL

11600'-700' FAIR FLOUR.
NO CUT

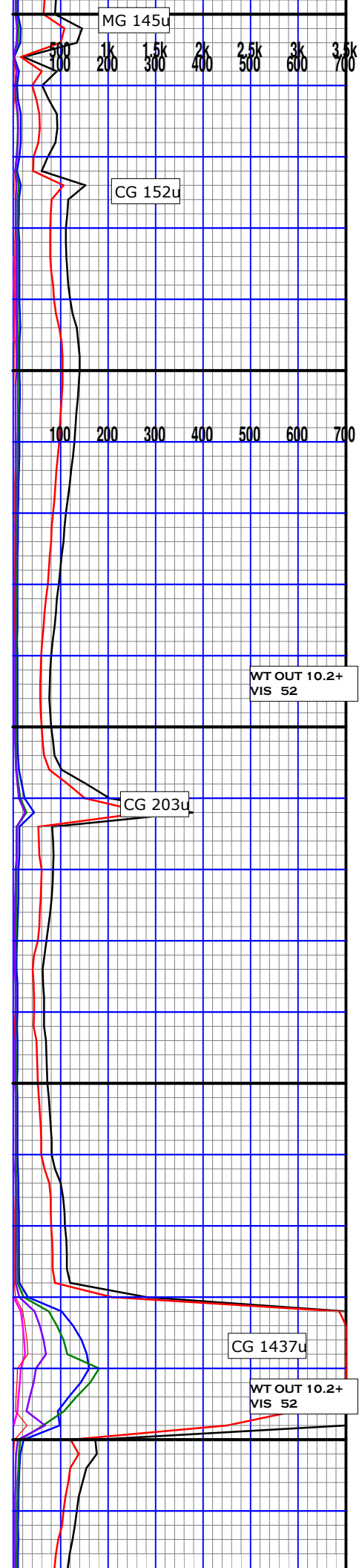
FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY-SME DK
GY, SL FRM-MOD FRM,
PLTY- BLKY-SUBLKY, COM
FN SLTY LAM, TR EMBD
CALCITE, OCC DSSM PYR,
MRLST: LT GY, V SFT-SFT,
MAS, MOT, LS: LT GY, SL
FRM-MOD FRM, BLKY-
SUBLKY, OCC FREE
CALCITE, HI-V HI EFF-HCL

11700'-800' FAIR FLOUR.
NO CUT

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY, SL FRM-
MOD FRM, PLTY- BLKY-
SUBLKY, COM FN SLTY LAM,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, MAS, MOT,
LS: LT GY, SL FRM-MOD
FRM, BLKY-SUBLKY, TR
FREE CALCITE, HI-V HI
EFF-HCL



4/15/16

11800

GAMMA

150

50

100

200

400

c

WOB 25.4
RPM 82
PP 2882
SPM 165

50

11900

MD 11920'
INC 6920.73'
INC 89.87°
AZM 356.91°
VS 4916.24'

WOB 24.7
RPM 82
PP 3010
SPM 165

50

FLUORESCENCE
POSSIBLY CAUSED BY OBM

11800'-900' FAIR FLOUR.
NO CUT

SH: LT GY-GY, SL FRM-
MOD FRM, PLTY- BLKY-
SUBLKY, COM FN SLTY LAM,
OCC DSSM PYR, MRLST: LT
GY, V SFT-SFT, MAS, MOT,
LS: LT GY, SL FRM-MOD
FRM, BLKY-SUBLKY, TR
FREE CALCITE, HI-V HI
EFF-HCL

CG 172u

WT OUT 10.2
VIS 52

FLUORESCENCE
POSSIBLY CAUSED BY OBM

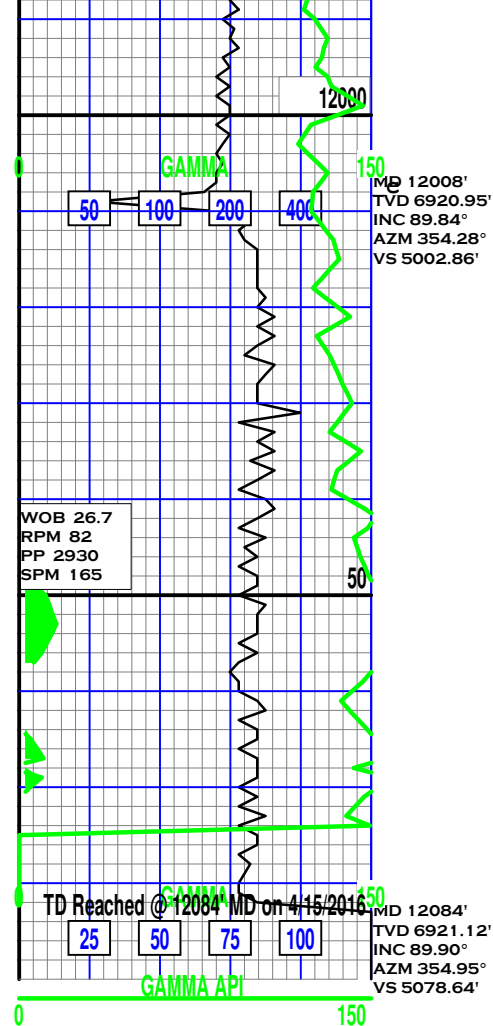
11900'-12000' FAIR
FLOUR.NO CUT

SH: LT GY-GY, SL FRM-
MOD FRM, PLTY-BLKY, COM
FN SLTY LAM, OCC DSSM
PYR, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY, TR FREE
CALCITE, HI-V HI EFF-HCL

CG 275u

WT OUT 10.2+
VIS 52

FLUORESCENCE
POSSIBLY CAUSED BY OBM



12000'-12084' FAIR FLOUR
NO CUT

SH: LT GY-GY, SL FRM-
MOD FRM, PLTY-BLKY, COM
FN SLTY LAM, OCC DSSM
PYR, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY, TR FREE
CALCITE, HI-V HI EFF-HCL

FLUORESCENCE
POSSIBLY CAUSED BY OBM

SH: LT GY-GY, SL FRM-
MOD FRM, PLTY-BLKY, COM
FN SLTY LAM, OCC DSSM
PYR, MRLST: LT GY, V
SFT-SFT, MAS, MOT, LS:
LT GY, SL FRM-MOD FRM,
BLKY-SUBLKY, TR FREE
CALCITE, HI-V HI EFF-HCL

