



Weatherford®

Tooke Rockies, Inc.
(A Weatherford Company)

884 Implement Dr.
Dickinson, ND 58601
701-227-4408

717 West Platte
PO BOX 435
Casper, WY 82601
307-265-2124

Surface Logging Systems

Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Tebo4-1H (Pilot Hole)
Location: SW/SW, Sec 4,T5S-R64W. Arapahoe County, CO.
License Number: API#05-005-07210-00(Pilot Hole) Region: DJ Basin
Spud Date: 12/27/2013 Drilling Completed: 1/9/2014
Surface Coordinates: 900' FSL & 250' FWL of SW/SW, Sec. 4, T5S-R64W,
Arapahoe County, CO.
Bottom Hole Proposed Lateral= 660' FSL & 480' FEL of SE/SE Sec. 4, T5S-R64W Arapahoe
Coordinates: County, CO.
Ground Elevation (ft): 5884' K.B. Elevation (ft): 5908'
Logged Interval (ft): 6000' To: 9800' Total Depth (ft): 9800'
Formation: Niobrara/Lyons
Type of Drilling Fluid: INVERT/OBM/WATER BASE
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Conoco/Phillips
Address: Attn: Abby Tomkiewicz
Three Westlake Park, Rm 14013
550 Westlake Park Blvd

GEOLOGIST

Name: Todd Thiesse, Gabriel Genitempo
Company: Tooke Rockies/ Weatherford SLS
Address: PO Box 435
Casper, WY. 82602
307.265.2124




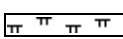
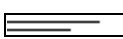
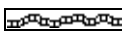




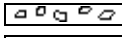


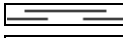

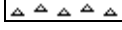


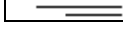

Supervision

Project Geologist:
Drilling Engineer: Gary Hamilton, Ben Tolman, John Benge- Conoco/Phillips
Drilling Sup: Bob Strickler- Conoco/Phillips
Company Rep: Richard Perez, Wes Evans, Mike Johnson, Wayne Morgan(Day Leads)
Company Rep: Frank Holubec, Clint Goins, Clint Valentine, (Night Leads)
Well Site Safety: Rainey Schexnider, Jeff
Contact Geologist: Abby Tomkiewicz- Conoco/Phillips
Drilling & Comp. Mgr: Derly Gonzalez-Conoco/Phillips

Comments

Drilling Co.--H & P, Rig #280
Toolpusher- , Mike Stevens, Josh Coleman
Dir./MWD Co.- Sperry
Mud Co.- Baroid/Haliburton, Dave Howell, Chase Putnam

ROCK TYPES

	Anhy		Clyst		Gyp		Mrlst		Shgy
	Bent		Coal		Igne		Salt		Sltst
	Brec		Congl		Lmst		Shale		Ss
	Cht		Dol		Meta		Shcol		Till

ACCESSORIES

MINERAL

Anhy
Arggrn
Arg
Bent
Bit
Brecfrag
Calc
Carb
Chtdk
Chtlt
Dol
Feldspar
Ferrpel
Ferr
Glau



Gyp
Hvymin
Kaol
Marl
Minxl
Nodule
Phos
Pyr
Salt
Sandy
Silt
Sil
Sulphur
Tuff

FOSSIL

Algae
Amph
Belm
Bioclst
Brach
Bryozoa
Cephal
Coral
Crin
Echin
Fish
Foram
Fossil
Gastro
Oolite



Ostra
Pelec
Pellet
Pisolite
Plant
Strom

STRINGER

Anhy
Arg
Bent
Coal
Dol
Gyp
Ls
Mrst

Sltstrg
Ssstrg

TEXTURE

Boundst
Chalky
Cryxln
Earthy
Finexln
Grainst
Lithogr
Microxln
Mudst
Packst
Wackest

OTHER SYMBOLS

INTERVALS

Core
Dst

EVENTS

Rft
Sidewall

POROSITY TYPE

Earthy
Fenest
Fracture
Inter
Moldic
Organic

Pinpoint
Vuggy

SORTING

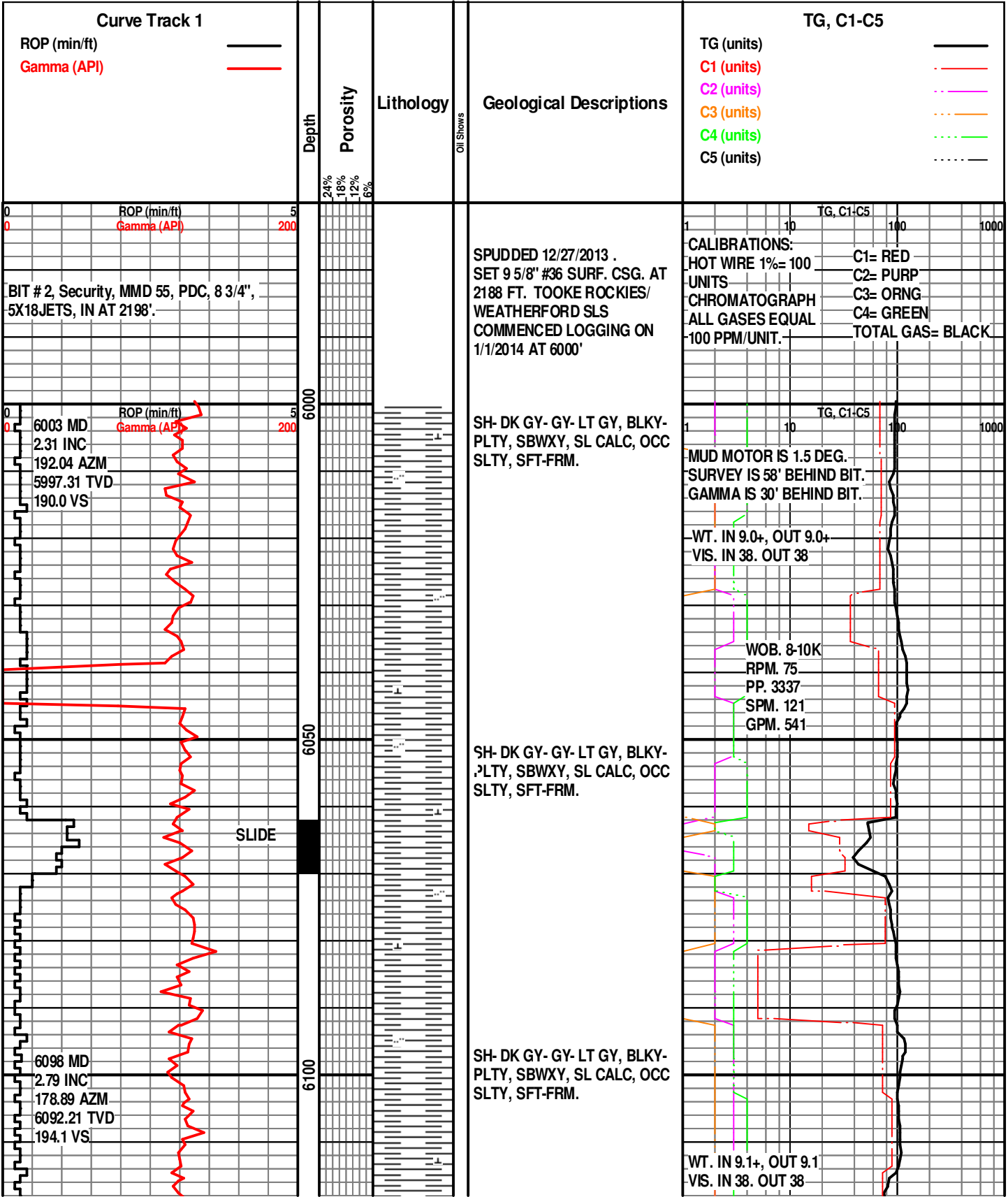
Well
Moderate
Poor

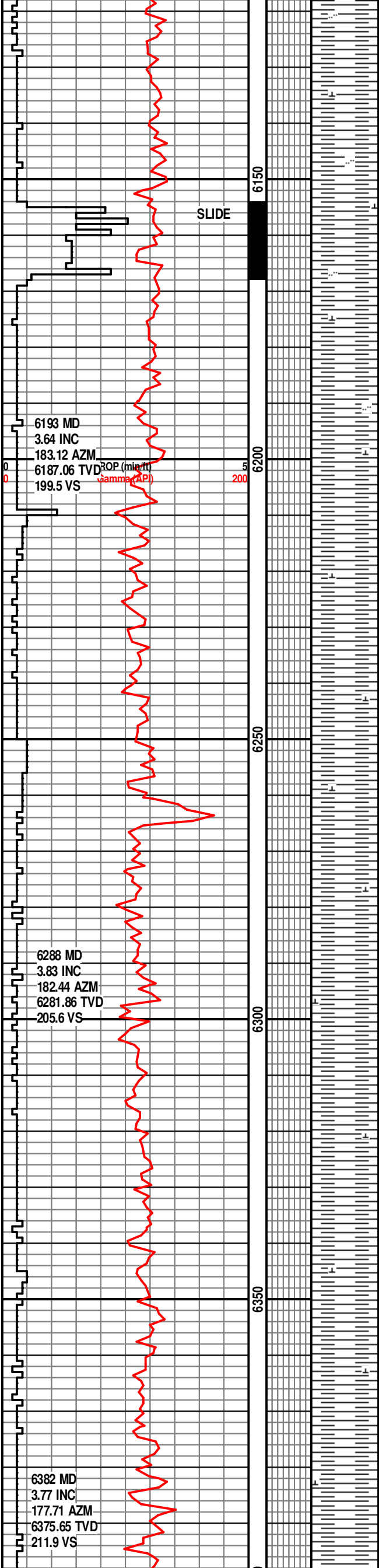
ROUNDING

Rounded
Subrnd
Subang
Angular

OIL SHOWS

Even
Spotted
Ques
Dead





SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC, OCC
SLTY, SFT-FRM.

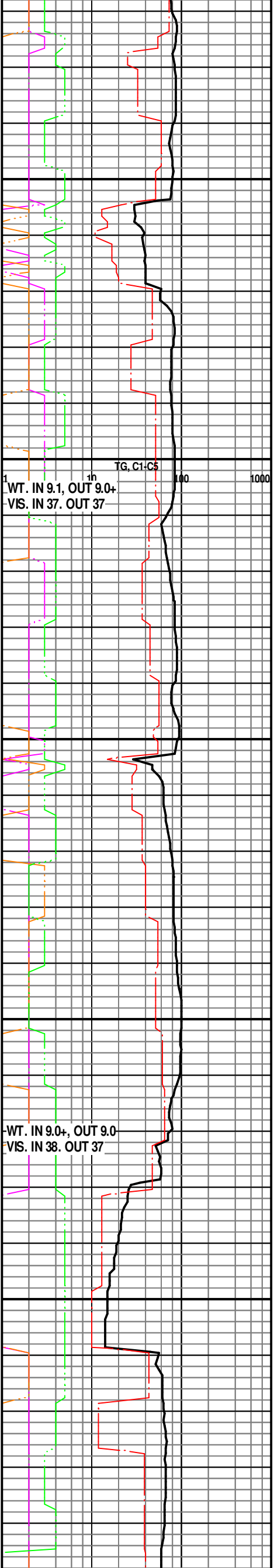
1/2/2014

SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC, OCC
SLTY, SFT-FRM.

SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.

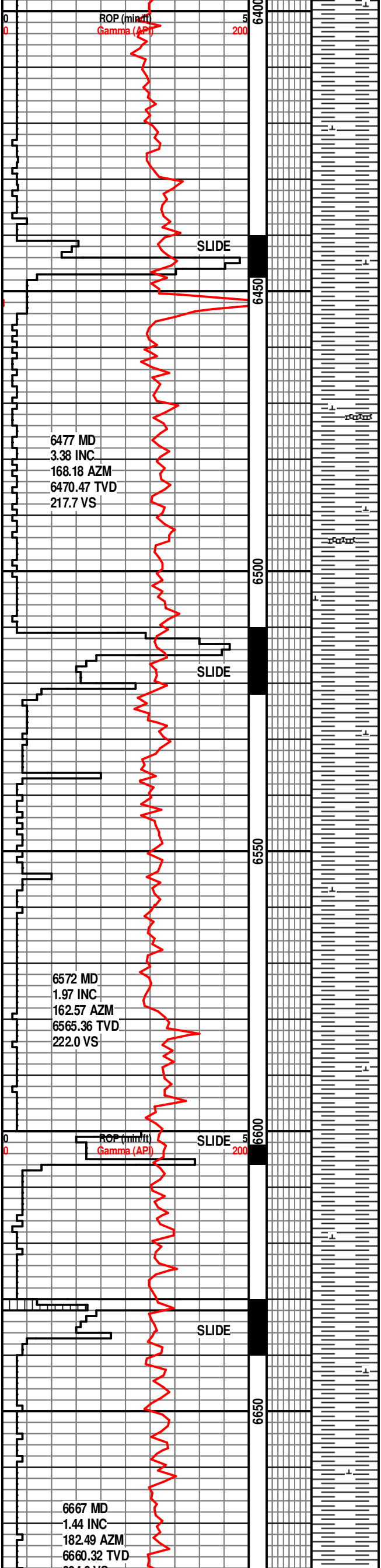
SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.

SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.



TG, C1-C5
WT. IN 9.1, OUT 9.0+
VIS. IN 37. OUT 37

WT. IN 9.0+, OUT 9.0
VIS. IN 38. OUT 37



SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.

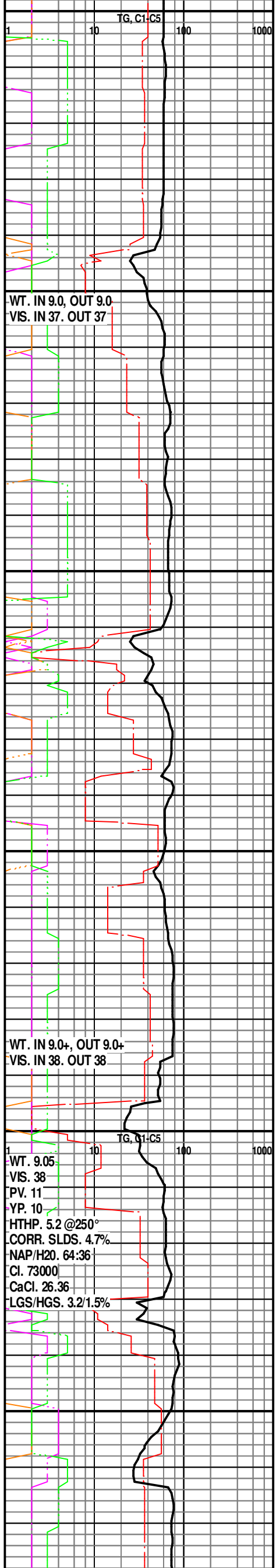
SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.

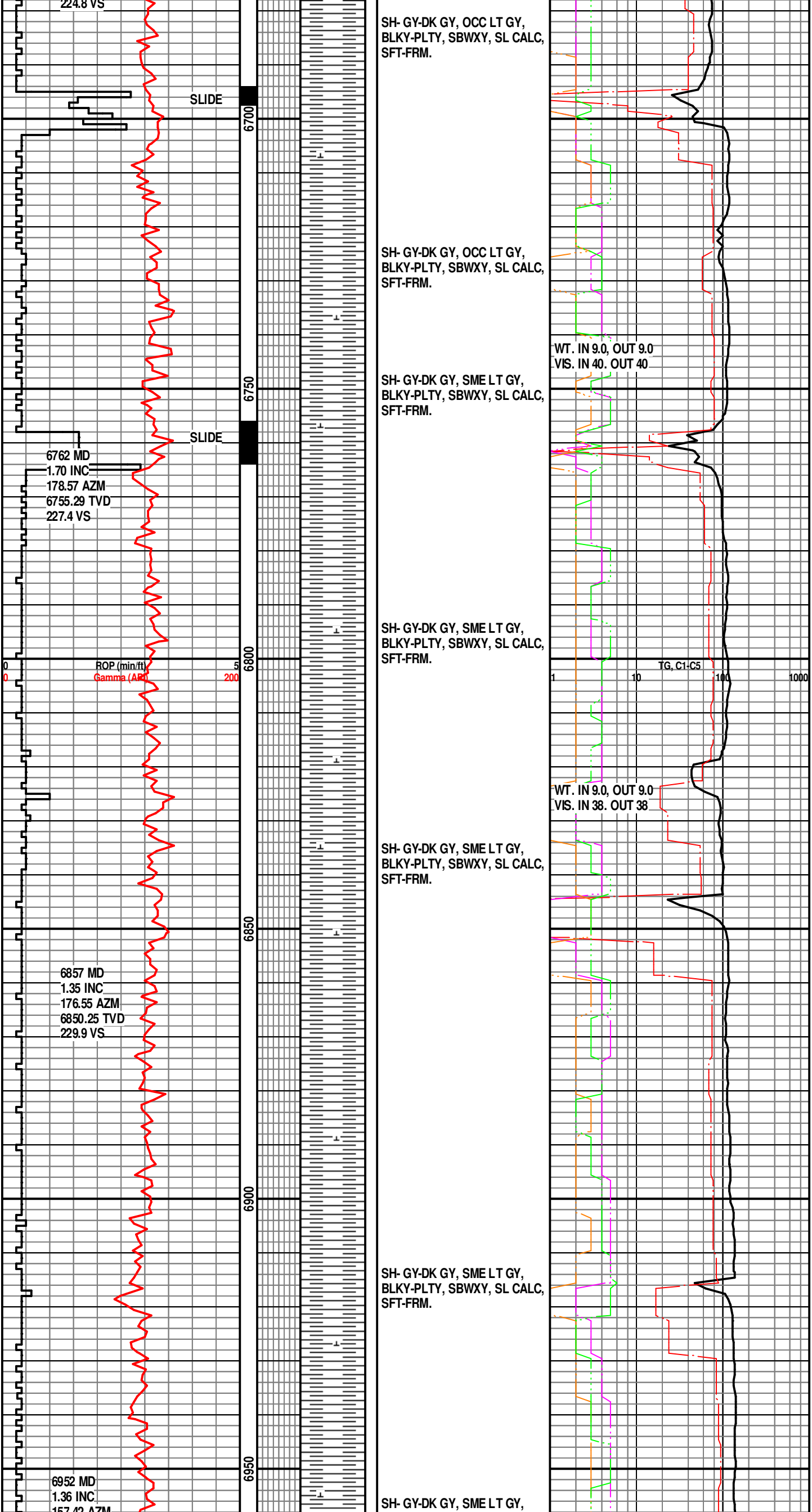
SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM, TR BENT.

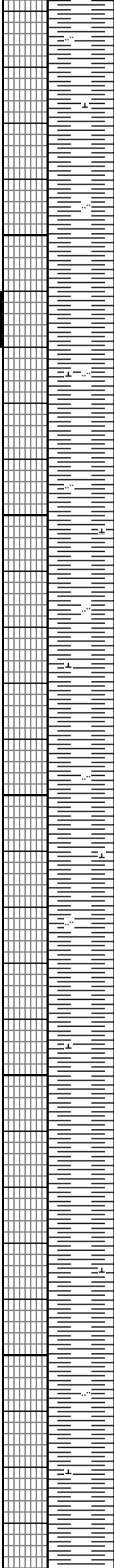
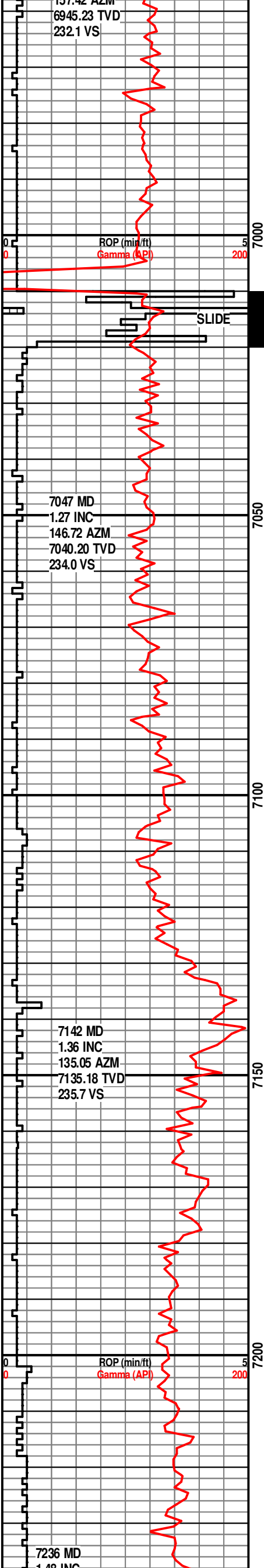
SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM, TR BENT.

SH- DK GY- GY- LT GY, BLKY-
PLTY, SBWXY, SL CALC,
SFT-FRM.

SH- DK GY- GY- LT GY, SM GY
BRN, BLKY- PLTY, SBWXY, SL
CALC, SFT-FRM.







BLKY-PLTY, SBWXY, SL CALC, SFT-FRM.

SH- GY-DK GY, LT GY, OCC LT BRN, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.

SH- DK GY-GY, DK BRN-BRN, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.

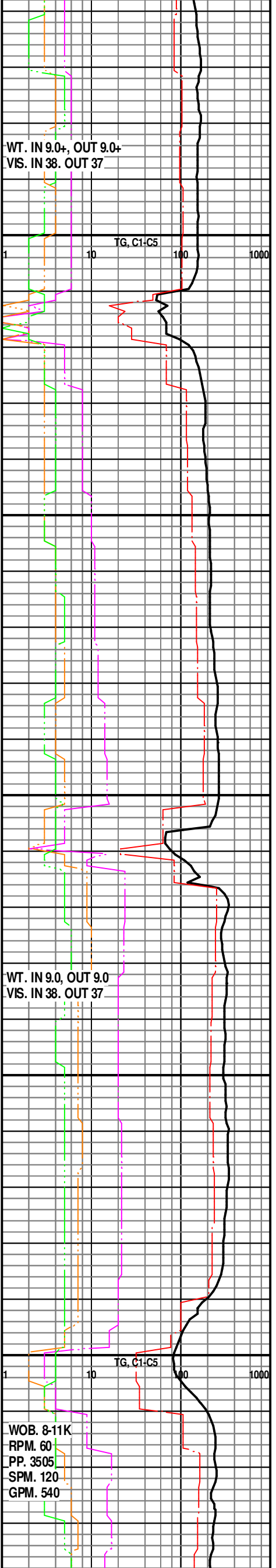
SH- GY-DK GY, LT GY, OCC LT BRN, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.

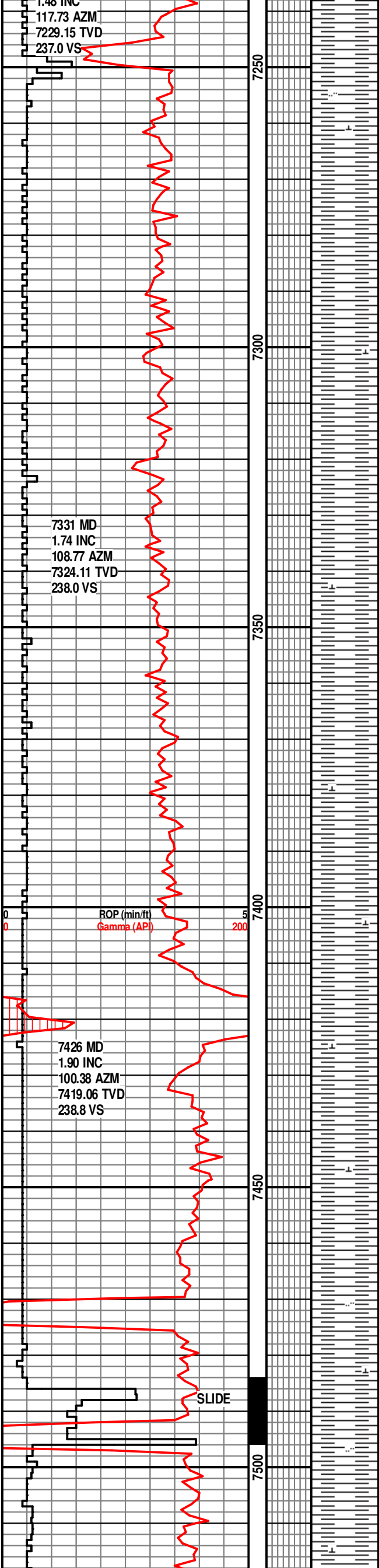
SH- DK GY-GY, DK BRN-BRN, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.

SH- DK GY-GY, DK BRN-BRN, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.

SH- DK GY- GY- LT GY, BLKY-PLTY, SBWXY, SL CALC, SFT-FRM.

SH- DK GY-DK BRN, GY, SME LT GY, BLKY-PLTY, SBWXY, SL SLTY IN PT, CALC, SFT-FRM.





SH- DK GY-DK BRN, GY, SME
LT GY, BLKY-PLTY, SBWXY,
SL SLTY IN PT, CALC,
SFT-FRM.

SH- DK GY-GY, SME DK BRN,
LT GY, BLKY-PLTY, SBWXY,
SL CALC-CALC, SFT-FRM.

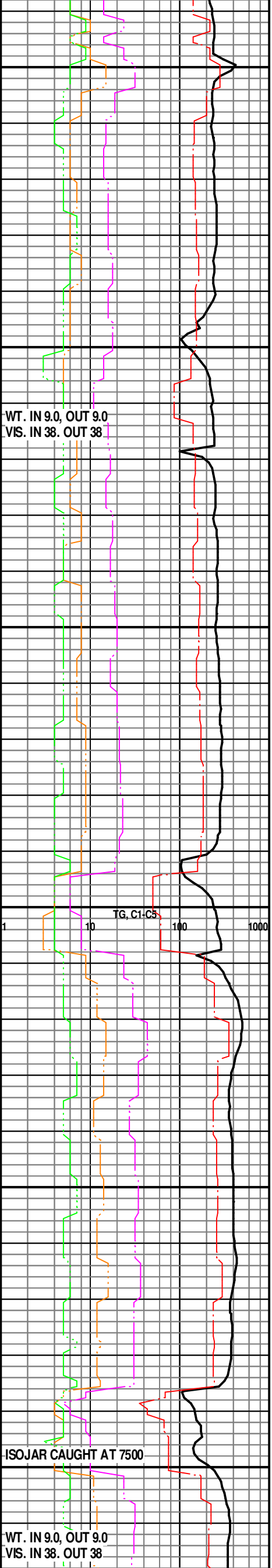
SH- DK GY-GY, SME DK BRN,
LT GY, BLKY-PLTY, SBWXY,
SL CALC-CALC, SFT-FRM.

SH- DK GY-GY, SME DK BRN,
LT GY, BLKY-PLTY, SBWXY,
SL CALC-CALC, SFT-FRM.

SH- DK GY-GY, SME DK BRN,
LT GY, BLKY-PLTY, SBWXY,
SL CALC-CALC, SFT-FRM.

SH- DK GY-DK BRN, GY, SME
LT GY, BLKY-PLTY, SBWXY,
SL SLTY IN PT, CALC,
SFT-FRM.

SH- DK GY, SME DK BRN, GY,
BLKY-PLTY, SBWXY, SL CALC,

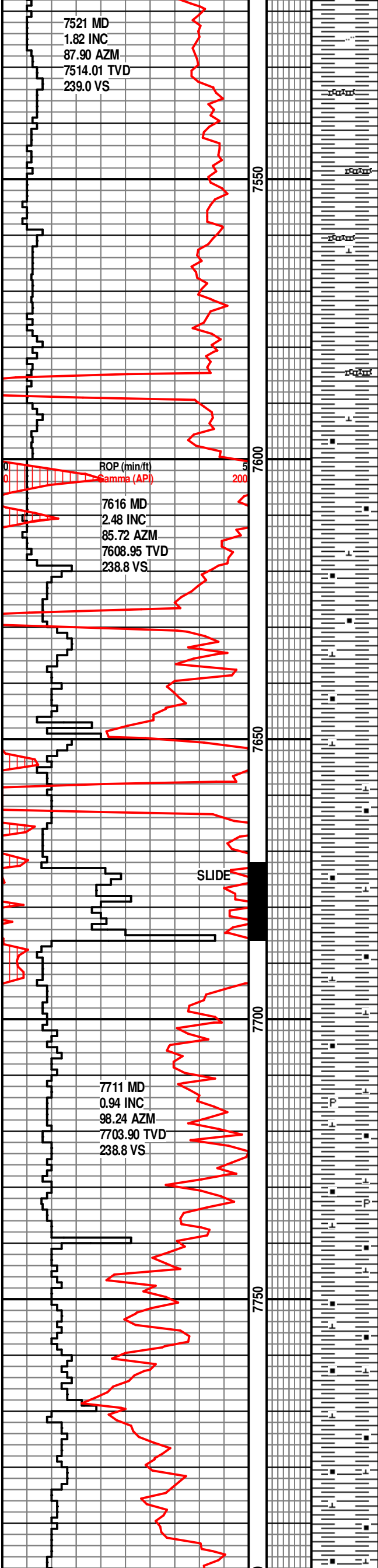


WT. IN 9.0, OUT 9.0
VIS. IN 38. OUT 38

TG, C1, C5

ISOJAR CAUGHT AT 7500

WT. IN 9.0, OUT 9.0
VIS. IN 38. OUT 38



SFT-FRM.

SAMPLE TOP OF
SHARON SPGS. AT
7532'.

SH- DK GY, SME DK BRN, GY,
BLKY-PLTY, SBWXY, SL CALC,
SFT-FRM. W/ TR BENT- LT
GY-AQUA.

SH- DK GY- GY, BLK, LT GY,
BLKY- PLTY, SBWXY, V
CALC-LMY, CARB, SFT-FRM,

SHARON SPGS TOP AT 7595'
TVD.

TG, C1-C5

SAMPLE TOP OF
NIOBRARA AT 7632'.

NIOBRARA TOP AT 7620' TVD.

ISOTUBE 355 U

SH- DK GY-BLK, GY,
BLKY-PLTY, SBWXY, CARB, V
CALC-LMY, SFT-FRM.

SH- DK GY-BLK, GY,
BLKY-PLTY, SBWXY, CARB, V
CALC-LMY, SFT-FRM.

ISOTUBE 244 U

B CHALK TOP AT 7687' TVD.

SH- DK GY-BLK, GY,
BLKY-PLTY, SBWXY, CARB, V
CALC-LMY, SFT-FRM.

WT. IN 9.0+, OUT 9.0
VIS. IN 38. OUT 37

ISOTUBE 368 U

SH- DK GY-BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SFT- FRM, TR PYR.

C CHALK TOP AT 7738' TVD.

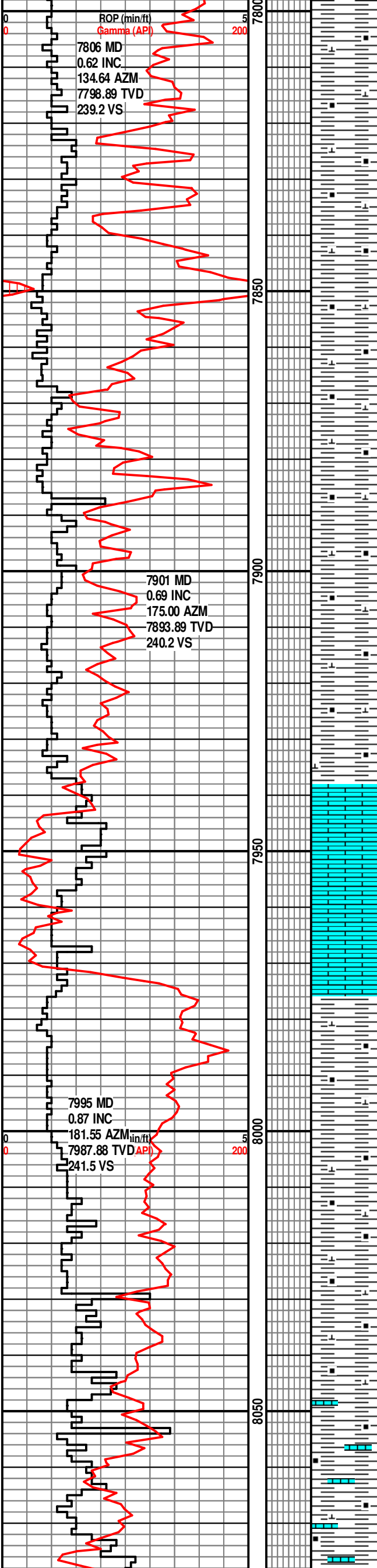
WT. IN 9.1, OUT 9.1
VIS. IN 38. OUT 37

ISOTUBE 518 U

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SM CALC FL FRAC, SFT-
FRM.

ISOTUBE 184 U

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SM CALC FL FRAC, SFT-
FRM.



SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SM CALC FL FRAC, SFT-
FRM.

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SFT- FRM.

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SFT- FRM.

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SFT- FRM.

SH- DK GY- BLK, GY, BLKY-
PLTY, SBWXY, CARB, V CALC-
LMY, SFT- FRM.

**SAMPLE TOP FORT
HAYS AT 7937.**

LS- LT GY- CRM- WH, MICXLN,
ARG, HD, TT.

1/3/2014

LS- LT GY- CRM- WH, MICXLN,
ARG, HD, TT.

**SAMPLE TOP
CARLISLE AT 7976.**

SH- BLK- DKGY- GY, BLKY-
PLTY, SBWXY, CALC, CARB
LAM, SFT- FRM, TR LS.

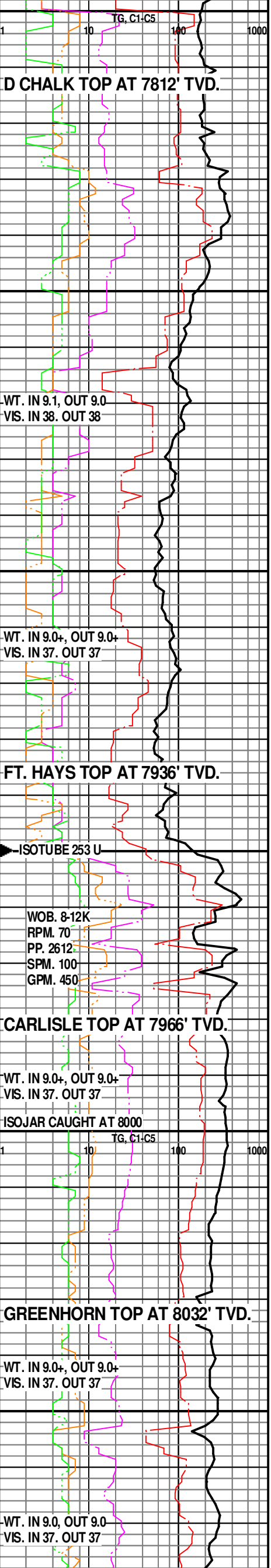
SH- BLK- DKGY- GY, BLKY-
PLTY, SBWXY, CALC, CARB
LAM, SFT- FRM.

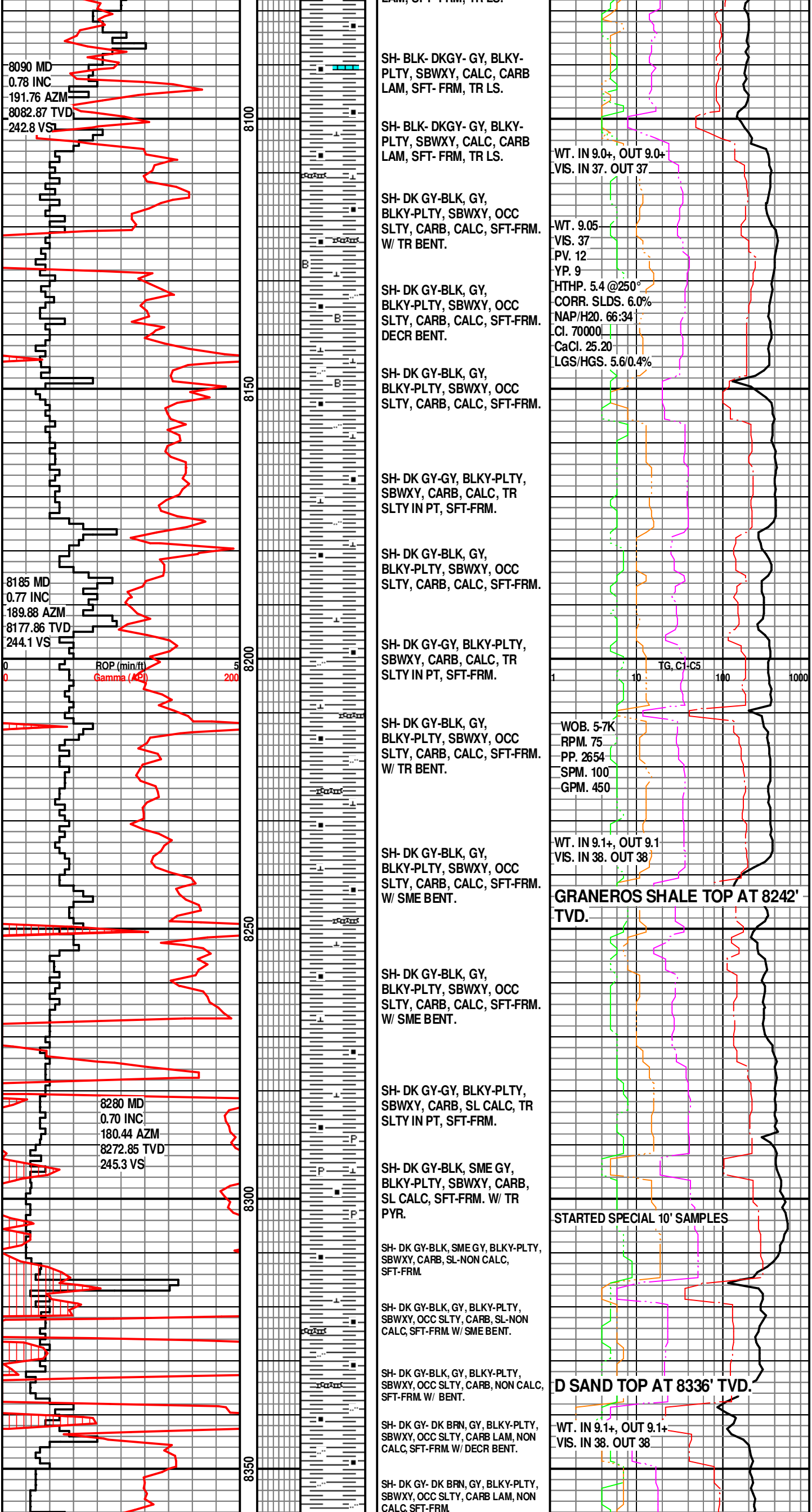
SH- BLK- DKGY- GY, BLKY-
PLTY, SBWXY, CALC, CARB
LAM, SFT- FRM.

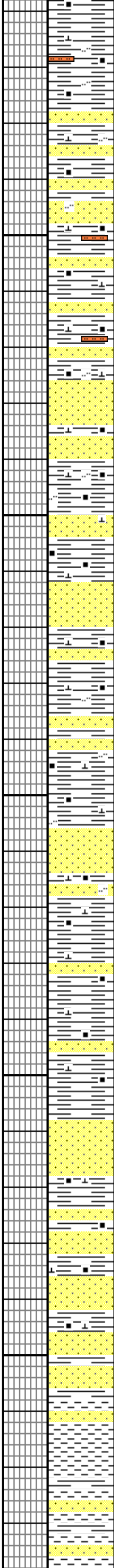
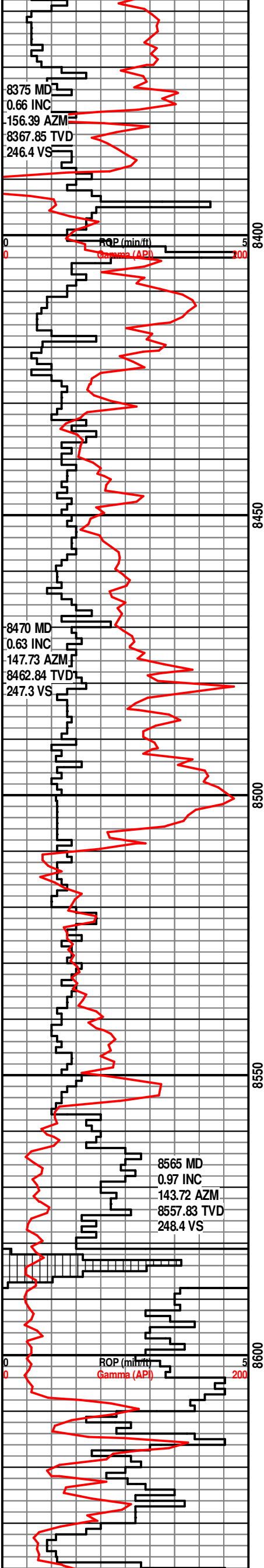
**SAMPLE TOP
GREENHORN AT
8046.**

SH- BLK- DKGY- GY, BLKY-
PLTY, SBWXY, CALC, CARB
LAM, SFT- FRM, TR LS.

SH- BLK- DKGY- GY, BLKY-
PLTY, SBWXY, CALC, CARB
LAM, SFT- FRM, TR LS.







SH- DK GY- DK BRN, GY, BLKY-PLTY, SBWXY, SLTY IN PT, CARB LAM, SL-NON CALC, SFT-FRM

SH- DK BRN-DK GY, BLKY-PLTY, SBWXY-RTHY, INCR SLTY, CARB LAM, SL-NON CALC, SFT-FRM W/ TR SLTST- LT GY, SPEC, ARG, NON CALC, V FRI, NSFOC.

SS- GY-LT GY, SPEC, VF GR, SBANG-SBRD, MOD SRTD, ARG, CLY FL, SL CALC, FRI-FRM, TT, NSFOC. W/ SH-AA.

SS- WH-LT GY, LT BRN, S&P, VF GR, SBANG-SBRD, MOD SRTD, ARG-CLY FL, SL CALC, FRI, TT, SL DUL YEL FLOR, NO CUT.

SH- DK GY-BRN, BLKY-PLTY, SBWXY, SLTY, CARB LAM, SL CALC, SFT-FRM. W/ SS-AA

SH- DK GY-BRN, BLKY-PLTY, SBWXY, SLTY, CARB LAM, SL CALC, SFT-FRM. W/ SS-GY-BRN, VF GR, SBANG-SBRD, MOD-PSRTD, V ARG, CLY FL, CALC, FRI-FRM

SH- DK GY-GY, DK BRN, BLKY-PLTY, SBWXY, V SLTY-SLTST, CARB, SL CALC, SFT-FRM

SS- WH, CLR, F-M GR, OCC CLR C UNCONS QTZ GR, SBANG, W SRTD, SL SLTY, NON CALC-SL CALC, FRI-FRM, TT-FR POR, NSFOC. W/ SH-AA.

SH- DK GY-DK BRN, SME GY, BLKY-PLTY, SBWXY, SLTY, CARB, SL CALC, SFT-FRM W/ SS-AA.

SH- DK GY-DK BRN, SME GY, BLKY-PLTY, SBWXY, SLTY, CARB, SL CALC, SFT-FRM W/ DECR SS-AA.

SS- CLR-LT GY, WH, F-M GR, SME CLR UNCONS QTZ GR, SBANG-SBRD, W SRTD, CLY FL, ARG, SL CALC, FRI-FRM, TT-FR POR, NSFOC. W/ SH-AA.

SH- GY-DK GY, BLKY-PLTY, SBWXY, SLTY, SL CALC, CARB, SFT-FRM. W/ SME SS-AA.

SS- WH, CLR, TAN, S&P, VF-F GR, OCC M GR, SBANG-RD, W SRTD, SL CALC, CLY FL, FRI-FRM, FR POR, DUL YEL FLOR, NO CUT.

SH- GY-DK GY, BLKY-PLTY, SBWXY, SLTY, SL CALC, CARB, SFT-FRM. W/ SME SS-AA.

SS- WH, CLR, TAN, S&P, VF-F GR, OCC M GR, OCC CLR C GR, SBANG-RD, W SRTD, SL CALC, CLY FL, FRI-FRM, FR POR, DUL YEL FLOR, NO CUT.

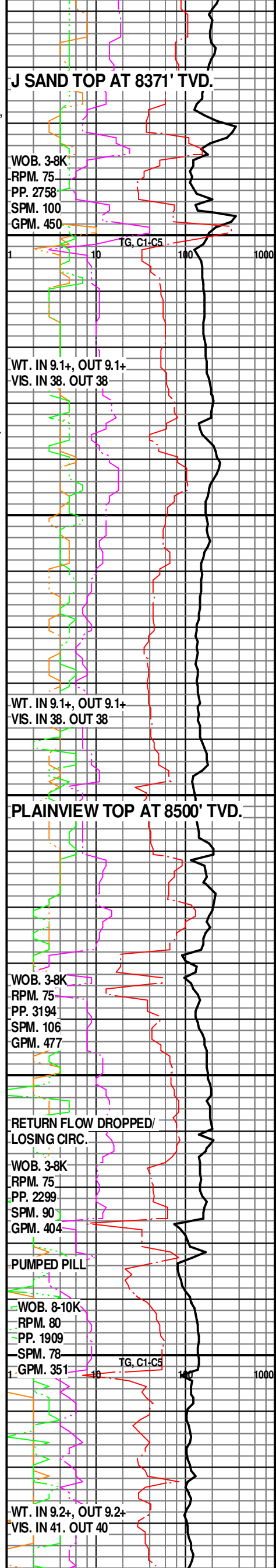
SH- GY-DK GY, BRN, BLKY-PLTY, SBWXY, SLTY, SL CALC, CARB, SFT-FRM.

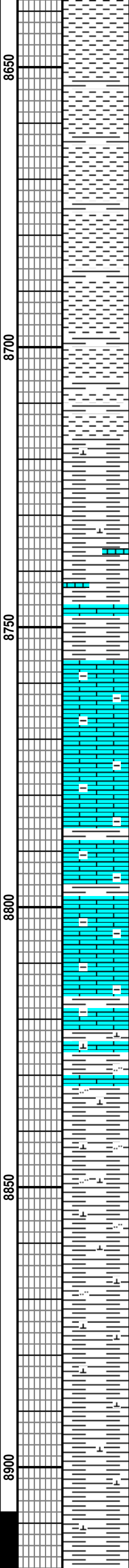
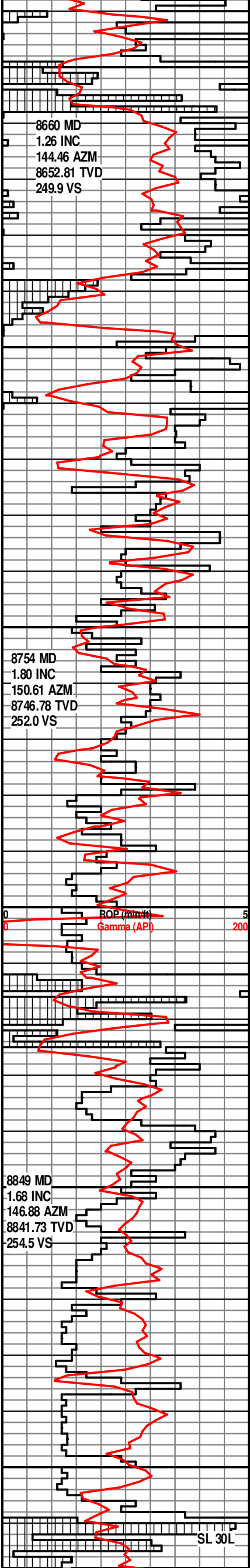
SS- WH-TAN, CLR, VF-F GR, SME M GR, SBANG-RD, W SRTD, SL CALC, CLY FL, FRI, FR POR, SME DUL YEL FLOR, NO CUT.

CLYST- GY- LTGY- WH, BLKY, SFT, SDY INCL, SL CALC, TR PYR.

1/4/2014

CLYST- GY- LTGY- WH, SM GY & GN, BLKY, SFT, SDY INCL, SL CALC, TR PYR, INTBD SS-WH- CLR, FG- MG. ANG- SANG.





FRI, CLY FL, TR GY SH.

CLYST- GY- GY GN- LTGY, SM
WH, BLKY, SFT, SDY INCL, SL
CALC, TR GY SH.

CLYST- GY- GY GN- LTGY, SM
WH, BLKY, SFT, SDY INCL, SL
CALC, TR GY SH.

SH- LT GN-GY, AQUA, LT GY,
BLKY, WXY-SBWXY, CALC,
SFT. W/ ABNDT LCM MAT.

SH- LT GY-LT GN, AQUA,
BLKY, WXY-SBWXY, INCR
CALC GRDG TO LS, SFT.

LS- WH-TAN, CRPXL-MICXL,
DENSE, ARG, TT, INTXL POR,
SFT, NSFOC.

LS- WH-TAN, CRPXL-MICXL,
DENSE, ARG, TT, INTXL POR,
SFT, NSFOC.

SH- GN-GY, BLKY, WXY, CALC,
GLAU, V CALC/LMY, SFT.

LS- WH-TAN, CRPXL-MICXL,
DENSE, ARG, TT, INTXL POR,
SFT, NSFOC.

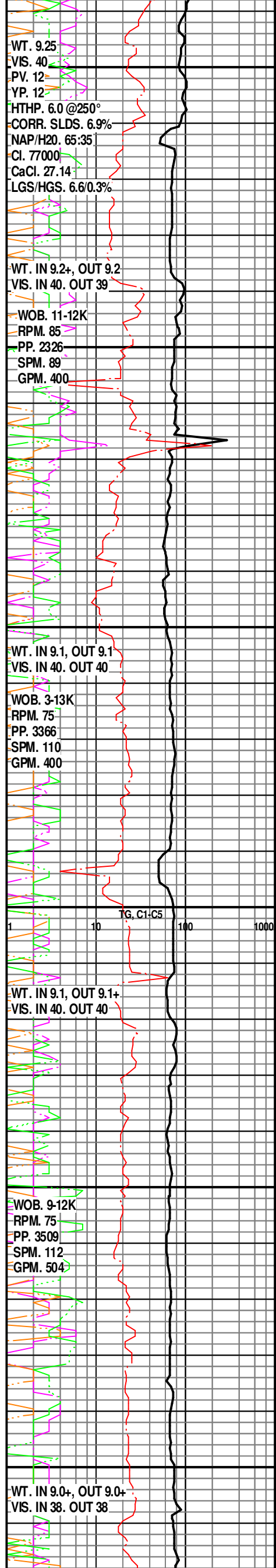
**SAMPLE TOP
MORRISON AT 8832'.**

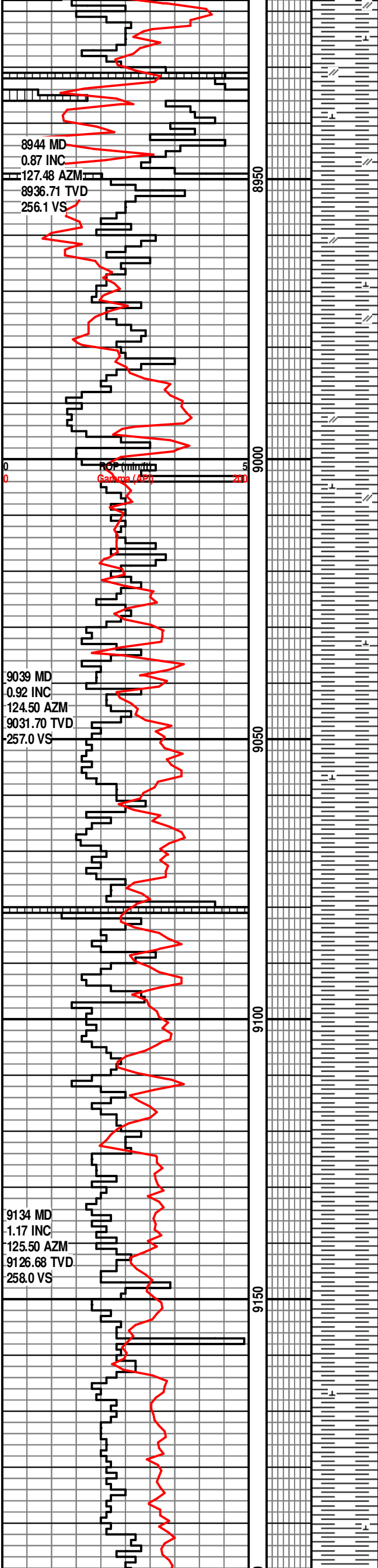
SH- RED, MAR, BLKY,
RTHY-SBWXY, SL SLTY, CALC,
SFT. W/ WALNUT HULLS.

SH- GY-LT GY, SME RED,
BLKY, RTHY-SBWXY, SL SLTY,
V CALC, SFT. W/ ABNDT LCM
MAT.

SH- LT GY-GY, BLKY,
RTHY-SBWXY, INCR SLTY, V
CALC, SFT-FRM. W/ LCM.

SH- LT GY-GY, BLKY,
RTHY-SBWXY, INCR SLTY, V
CALC, SFT-FRM. W/ LCM.





SH- GY-GY GN- LTGY , BLKY,
RTHY-SBWXY, CALC,
SFT-FRM, TR ANHY, W/ LCM.

SH-RED BRN- BRN, SM GY,
BLKY, RTHY- WXY, ANHY, SL
CALC, SM SLTY, SFT - FRM.

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, ANHY, SL
CALC, SM SLTY, SFT - FRM.

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, SL CALC,
SM SLTY, SFT - FRM.

1/5/2014

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, SL CALC,
SM SLTY, SFT - FRM, LRG AMT
LCM.

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, N CALC,
SM SLTY, SFT - FRM.

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, N CALC,
SFT - FRM

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, N CALC,
SFT - FRM

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, N CALC,
SFT - FRM

SH-RED BRN- BRN, SM GY GN,
BLKY, RTHY- WXY, N CALC,
SFT - FRM

WT. IN 9.0+, OUT 9.0
VIS. IN 38. OUT 37

WT. IN 9.0, OUT 9.0
VIS. IN 38. OUT 37

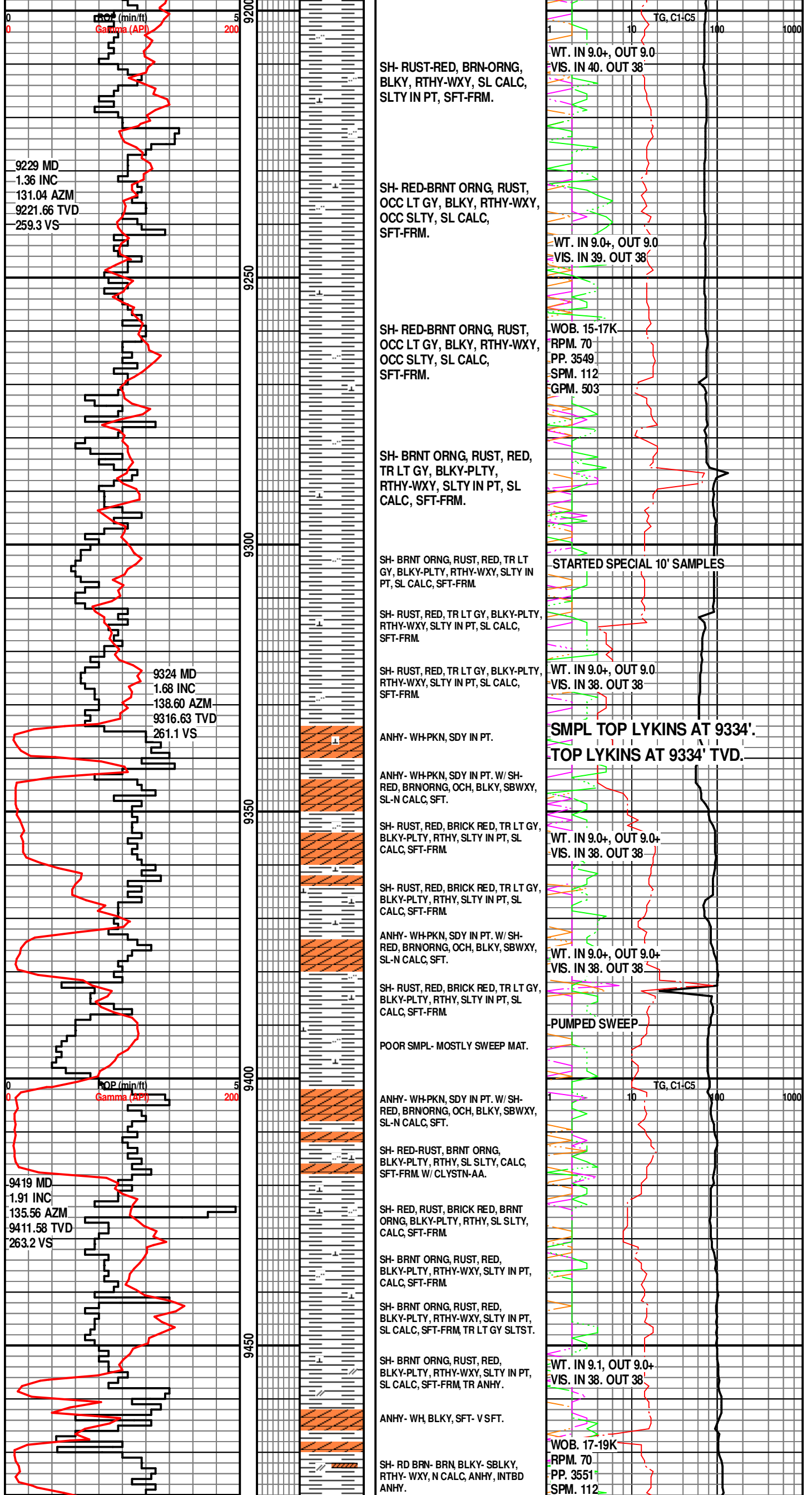
TG, C1-C5
10 100 1000

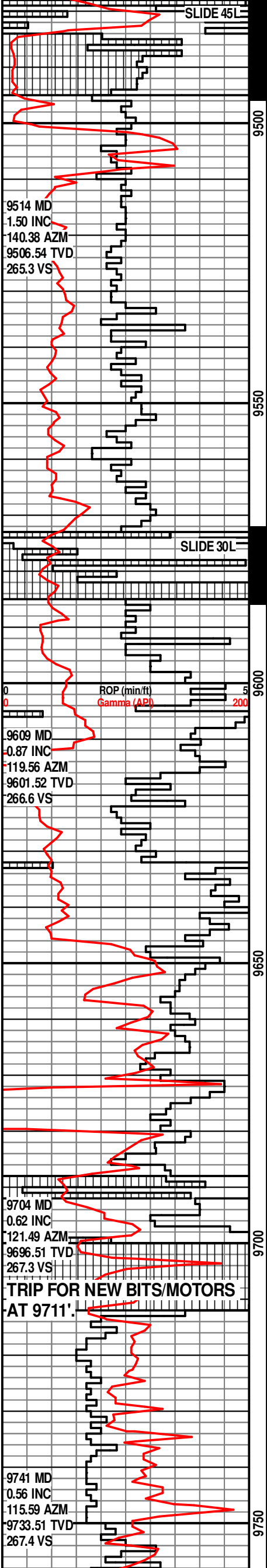
WOB. 16-17K
RPM. 75
PP. 3433
SPM. 112
GPM. 504

WT. IN 9.0, OUT 9.0
VIS. IN 39. OUT 39

WT. IN 9.0, OUT 9.0
VIS. IN 39. OUT 37

WT. 9.00
VIS. 38
PV. 11
YP. 10
HTHP. 5.8 @250°
CORR. SLDS. 5.1%
NAP/H2O. 65:35
Cl. 79000
CaCl. 24.04
LGS/HGS. 4.6/0.5%





ANHY- WH, BLKY, SFT- VSFT.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, INTBD
ANHY.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, INTBD
ANHY.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, SLTY- SDY
INCL, INTBD ANHY.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, SLTY- SDY
INCL, LRG AMT LCM.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, SLTY- SDY
INCL, LRG AMT LCM.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, SLTY- SDY
INCL- GRDG- SLTST, LRG AMT LCM.

SH- RD BRN- BRN BLKY- SBLKY,
RTHY- WXY, N CALC, ANHY, SLTY- SDY
INCL- GRDG- SLTST, LRG AMT LCM.

SH- RD BRN- BRNLT BRN, BLKY-
SBLKY, RTHY- WXY, N CALC, ANHY,
SLTY- SDY INCL, LRG AMT LCM.

1/6/2014

PUMPED 30 BBL SWEEP
VERY POOR SPL ALL LCM

SH- RD BRN- BRNLT BRN, BLKY-
SBLKY, RTHY- WXY, N CALC, ANHY,
SLTY- SDY, SS- LT BRN-RED BRN,
VFG-FG, ANG, FRI- HD, LRG AMT LCM.

SS- LT BRN- RD BRN, VFG-FG SM MG,
ANG FRI- HD, INTBD SH, LRG AMT
LCM.

SH- RD BRN- BRNLT BRN, BLKY-
SBLKY, RTHY- WXY, N CALC, ANHY,
SLTY- SDY, SS- LT BRN-RED BRN,
VFG-FG, ANG, FRI- HD, LRG AMT LCM.

SS- LT BRN- RD BRN, VFG-FG SM MG,
ANG, FRI- HD, INTBD SH, LRG AMT
LCM.

SS- LT BRN- PNK, RD BRN, VFG-FG SM
MG, ANG, FRI- HD, INTBD SH, LRG AMT
LCM.

SH- LT RED-PNK, RED, BLKY, RTHY, SL
CALC, SFT.

SS- ROSE-PNK, CLR, F-M GR,
SBANG-RD, MOD-W SRTD, SME
UNCONS CLR CGR, N CALC, ARK, FRI,
FR POR, NSFOC. W/ ABNDT LCM MAT.

SLTST- RED-BRNT ORNG, RED/BRN,
QTZ, ARG-SDY, N CALC, FRI. W/
SS-RED, SBANG-RD, W SRTD, N CALC,
FR POR, FRI. W/ LCM MAT.

SH- RED-ORNG, OCH, BLKY, SBWXY,
SLTY, N-SL CALC, SFT. W/ TR
ANHY-WH-PNK.

SLTST- RED-PKN, DK ORNG,
ARG-SDY, N CALC, FRI. W/ SS-AA

SH- DK ORNG-BRICK RED, OCH, BLKY,
SBWXY-RTHY, SLTY IN PT, N-SL CALC,
SFT.

SLTST- RED-BRNT ORNG, RED/BRN,
QTZ, ARG-SDY, N CALC, FRM-HD.

SS- WH-LT GY, PNK, CLR, VF-F GR,
SBANG-RD, W SRTD, ARG, N CALC, TT
POR, HD,

1/7-9/2014

WASH/REAM TO BTM FROM 9350 TO
9711'.

SLTST- RED-DK ORNG, BRN, QTZ,
ARG, N CALC, FRM

SS- RED-PNK, SME WH-CLR, VF-F GR,
SBANG-RD, W SRTD, ARG, N CALC, TT
POR, FRM-HD.

SLTST- RED-DK ORNG, BRN, QTZ,
ARG, N CALC, FRM

SH- DK ORNG-BRICK RED, OCH, BLKY,
SBWXY-RTHY, SLTY-SDY, N-SL CALC,
SFT.

SS- RED-PNK, SME WH-CLR, VF-F GR,
SBANG-RD, W SRTD, ARG, N CALC, TT
POR, FRM-HD.

