



Scale: 5" / 100'
Measured Depth Log

Well Name 05123363940000_Brotemarkle_3C_13HZ_MUD

Location SESW: SEC: 13 TWP: 3N 6W 6 PM

State COLORADO County WELD

Country U.S.A. Rig Number XTREME 6

API Number 05123363940000 AFE # 2075126.DRL

Region D-J BASIN Field WATTENBERG

Spud Date 4/8/2014 Drilling Completed 4/13/2014

Surface Coordinates 300' FSL, 2072' FWL

Bottom Hole Coordinates 460' FNL, 2270' FWL

Ground Elevation 5,034' K.B. Elevation 5,054'

Logged Interval 6,900' To 11,927' Total Depth 11,927

Formation CODELL

Type of Drilling Fluid LSND / PHPA

Operator

Company Anadarko

Address Granite Tower
1099 18th St. #1800
Denver, CO 80202
(JG)

Geologist

Name ISAAC SMITH & ADAM HARRIS

Company COLUMBINE LOGGING INC.

Address 2385 S. Lipan Street
Denver, CO 80223
Phone: 303-289-7764

Zone Color Coding

Oil
Note
Error

Condensate
Core
Water

G
Pl
S

Rock Types

UNKNOWN	COAL	MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILTY SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSUM	SALT-PEPPER SAND	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

Accessories

GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	
INOCERAMUS	B BENTONITE	K KAOLIN	
ALGAE	BITUMENOUS SUBSTANCE	M MARCASITE	ANHYDRITE STRINGER
AMPHIPORA	BRECCIA FRAGMENTS	M MARLSTONE	BENTONITE STRINGER
BELEMNITE	PELCOYPD	M MICACEOUS	COAL STRINGER
BIOCLASTIC	PELLET	MINERAL CRYSTALS	DOLOMITE STRINGER
BRACHIOPOD	PISOLITE	N NODULES	GYPSUM STRINGER
BRYOZOA	PLANT REMAINS	PHOSPHATE PELLETS	LIMESTONE STRINGER
CEPHALOPOD	PLANT SPORES	COAL - THIN BEDS	MARLSTONE (CALC) STRG
CORAL	SCAPHOPOD	D DOLOMITIC	MARLSTONE (DOL) STRG
CRINOID	STROMATOPOROID	F FELDSPAR	SANDSTONE STRINGER
ECHINOID		S SIDERITE	SHALE STRINGER
FISH		F FERRUGINOUS PELLET	
FORAMINIFERA	ANHYDRITIC	F FERRUGINOUS	SILTY
F FOSSIL	ARGILLACEOUS	G GLAUCOUS	SILTY
		G GYPSIFEROUS	TUFFACEOUS

Oil Show

P PINPOINT
V VUGGY





































Engineering

D DEAD
E EVEN
Q QUESTIONABLE
B BIT
S SPOTTED STAINING
C CONNECTION (UP)

Porosity

C CONNECTION (DOWN)
E EARTHY
F FENESTRAL
T TRIP GAS
F FRACTURE
T TRIP GAS (LEFT)
I INTERCRYSTALLINE
D DOWN TIME GAS
I INTEROOLITIC
D DOWN TIME GAS
M MOLDIC
C CORE - LOST
O ORGANIC
C CORE - RECOVER

Other Symbols

	DST INTERVAL		WIRELINE TESTED - LEFT		E EARTHY
	FAULT		WIRELINE TESTED - RT		FX FINELYXLN
	FORMATION TOP		DRILL STEM TEST		GS GRAINSTONE
	GAS SHOW		MINDEPTH MN DEPTH		L LITHOGRAPHIC
	OIL SHOW				MX MICROXLN
	MINDEPTH MN DEPTH UP	Rounding			
	MINDEPTH MN DEPTH (DOWN)		A ANGULAR		PS PACKSTONE
	NORMAL FAULT		R ROUNDED		WS WACKSTONE
	OVERTURNED STRATA		B SUBANG		
	REVERSE FAULT		N SUBRND	Sorting	
	CASING				M MODERATE
Textures					
	SIDEWALL CORE (LEFT)				P POOR
	SIDEWALL CORE (RIGHT)		BS BOUNDSTONE		W WELL
	SLIDE		C CHALKY		
	SURVEY		CX CRYPTOXLN		

Slide/Rotate

ROP
ROF
GAMMA

BEGIN BROTEMARKLE 3C-13HZ AT 6900 MD.
DRILLING 8.75" HOLE. BIT #1, SMITH, SD1611.
DEPTH IN: 1310' MD. KOP: 6911' MD.

ROP & GAS DATA PROVIDED BY IBALL/
BLOODHOUND - GAMMA & SURVEY DATA
PROVIDED BY BAKER HUGHES

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Depth Labels

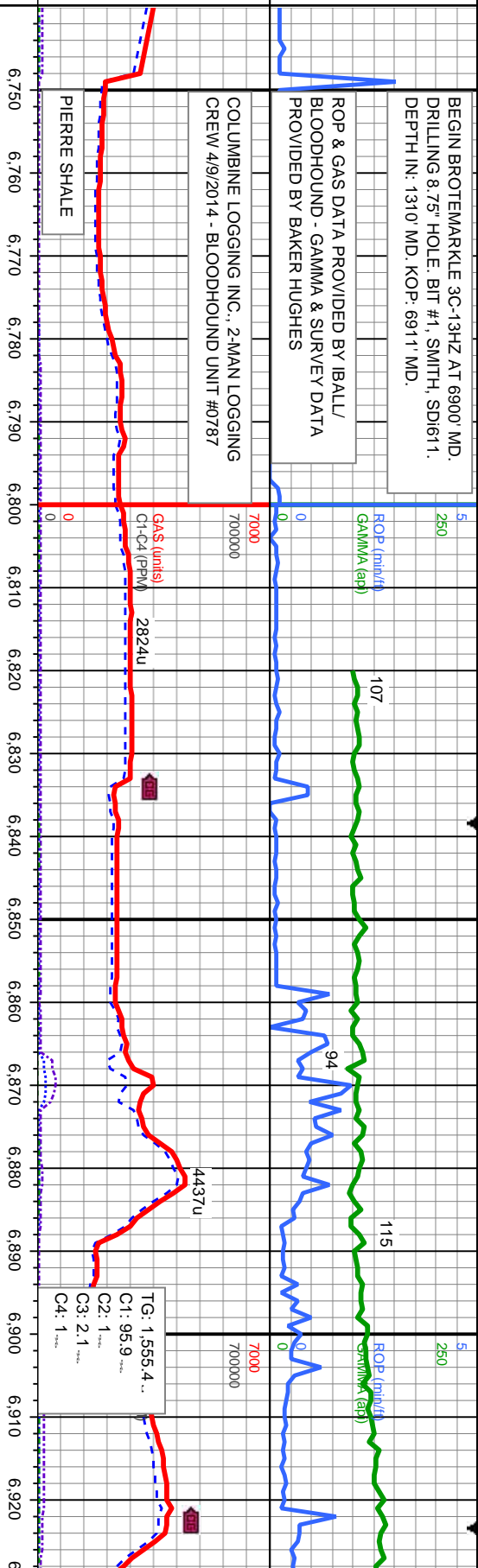
% Lith

Well Bore
TVD

Oil Show

E
G
M
F
T
ST

Images



THE INTERPRETATION OF THE WELLBORE
LITHOLOGY IS NOT TO SCALE

XTREME 6 HAS BROUGHT ONLINE A
SCAVENGER TANK. FOUR TOTAL
SHAKERS ONLINE. COLUMBINE
EQUIPMENT RIGGED-UP TO THE
SCAVENGER TANK POSSUM BELLY.

ACETONE WAS USED AS THE CUTTING
AGENT WITH THE DIMPLE FILLED TO THE
RIM. THE RATINGS ARE BASED ON 7
DESCRIPTORS: NONE, SLIGHT TRACE,
TRACE, FAIR, MODERATE, GOOD, AND
EXCELLENT. THE DESCRIPTOR USED IS
BASED ON THE LOGGERS OBSERVATIONS
AND BEST JUDGMENT OF BRILLIANCE,
COLOR AND LONGEVITY OF THE CUT.

6000
WT IN 10/ OUT 10
VIS IN 44/ OUT 41

MD: 6.833.
TVD: 6.807.58.
Inc.: 0.44.
Azim.: 255.99 -
VS: -234.76.

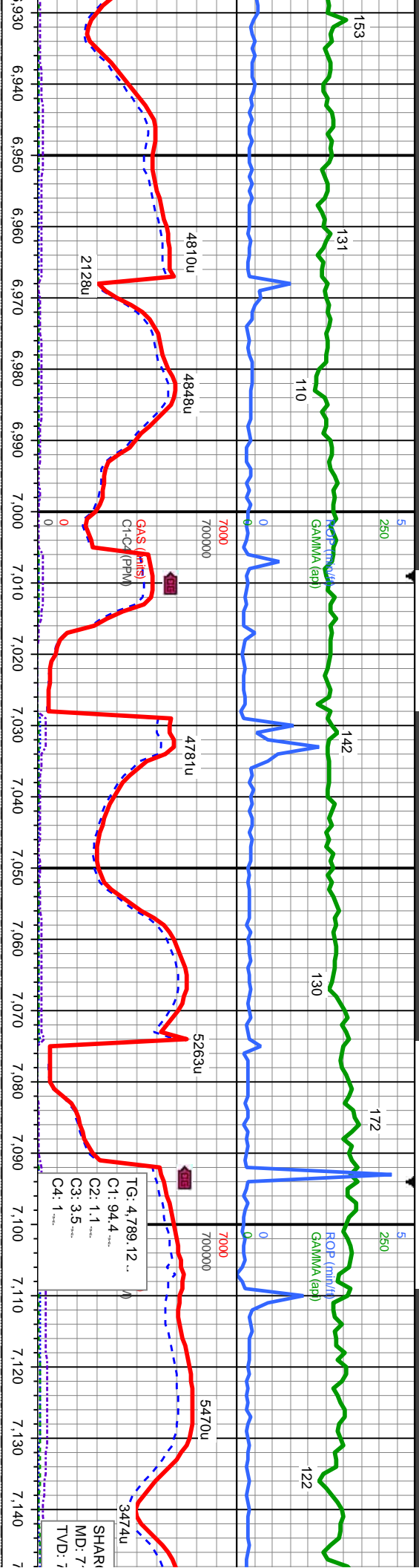
MD: 6.876.
TVD: 6.850.57.
Inc.: 1.
Azim.: 275.73 -
VS: -234.76.

MD: 6.918.
TVD: 6.892.55.
Inc.: 3.55 -
Azim.: 15.48 -
VS: -233.47.

SLTY SH: med-dk gy-blk, sb blk-sb ply - ply, frm- mod frm,
sl fri, slty, sl gt; difse string dull bl cut, thn dull bl resdl ring

SLTY SH: med-dk
sl fri, slty, sl gt; dfr





MD: 6.961
TVD: 6.935.23
Inc.: 9.84
Azim.: 11.91
VS: -228.59

TVD SCALE CHANGE

MD: 7.004
TVD: 6.977.15
Inc.: 15.7
Azim.: 9.43
VS: -219.25

WT IN 10/ OUT 10
VIS IN 43/ OUT 43

MD: 7.046
TVD: 7.017.19
Inc.: 19.42
Azim.: 5.43
VS: -206.69

MUD DATA
WT: 10.0
FV: 41
PV: 14
YP: 12
CK: 11
Sol: 6
pH: 9.4 @ 110F
Chl: 2.700

MD: 7.089
TVD: 7.057.28
Inc.: 22.96
Azim.: 1.85
VS: -191.19

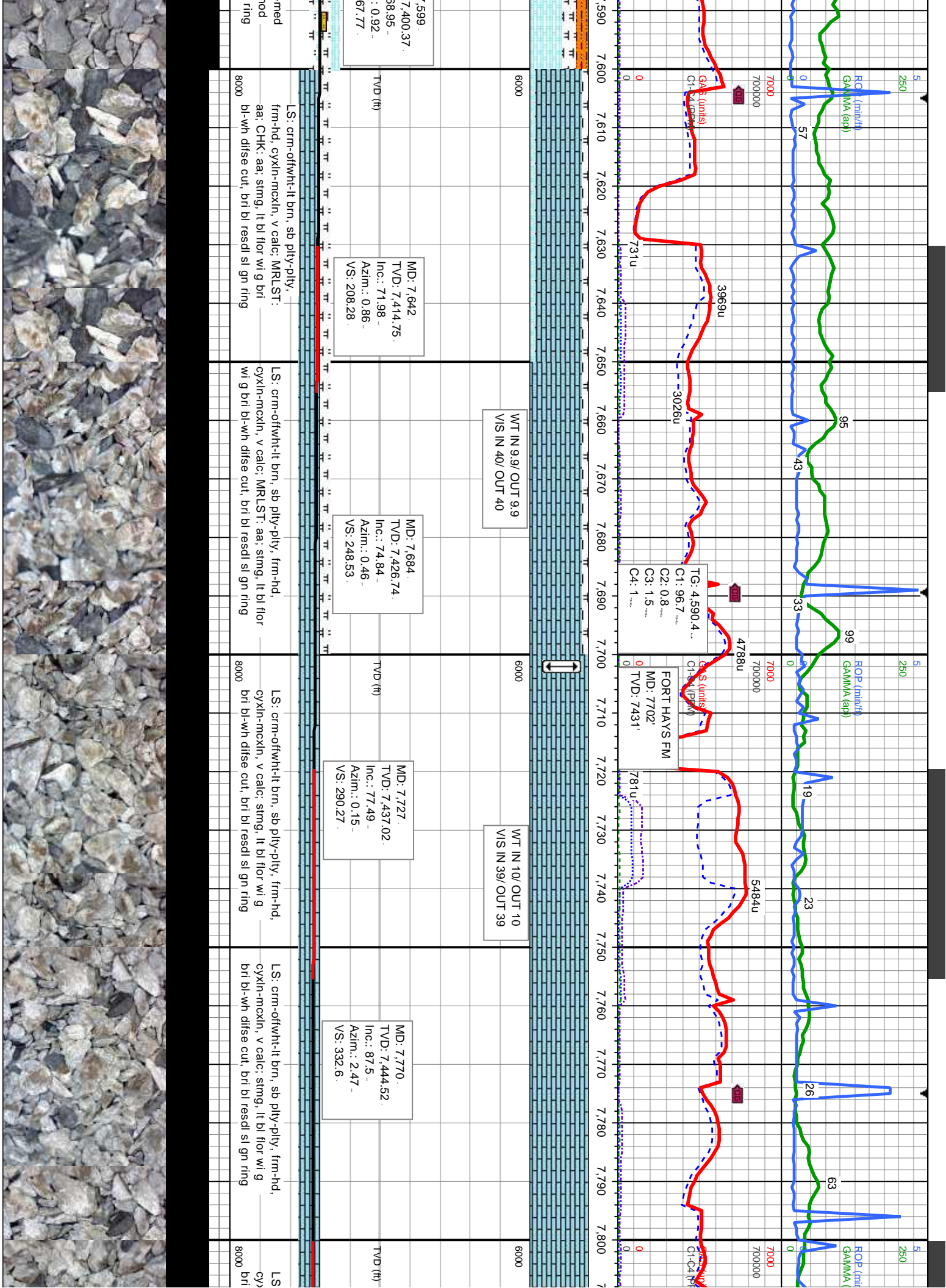
MD: 7.131
TVD: 7.095.34
Inc.: 26.97
Azim.: 0.41
VS: -173.47

gy-blk, sb blk-ly-sb ply - ply, frm- mod frm, se sting dull bl cut, thn dull bl resd ring

SLTY SH: med-dk gy-blk, sb blk-ly-sb ply - ply, frm- mod frm, sl fri, silty, sl gt; difse sting dull bl cut, thn dull bl resd ring

SLTY SH: med-dk gy-blk, sb blk-ly-sb ply - ply, frm- mod frm, sl fri, silty, MRLST: med-dk gy, sb blk-ly-sb ply, frm, arg- sl silty, v calc, occ bent, difse sting dull bl cut, thn dull bl resd ring





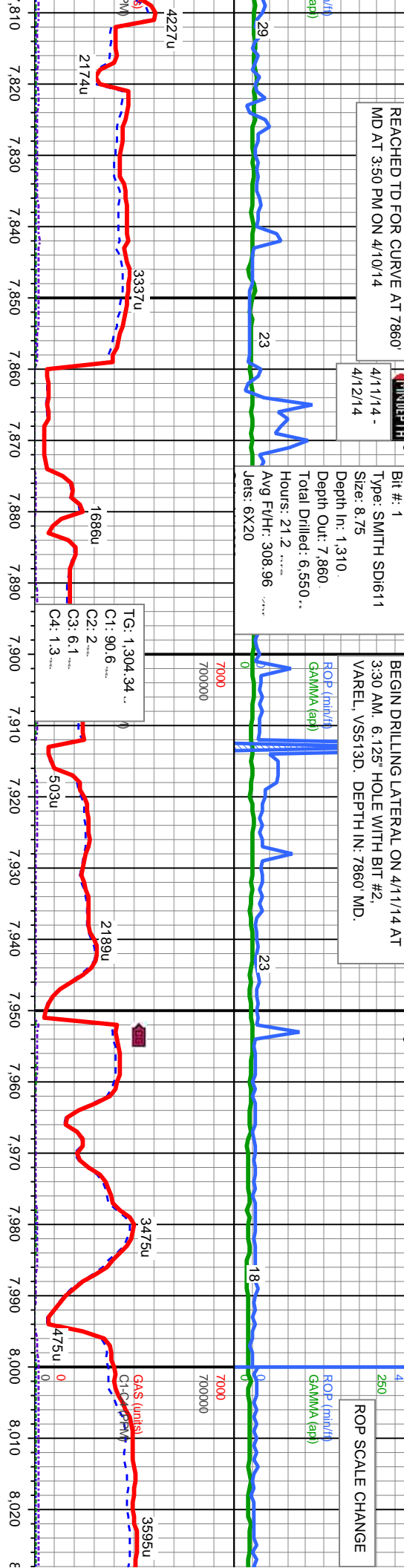
REACHED TD FOR CURVE AT 7860'
MD AT 3:50 PM ON 4/10/14

4/11/14 -
4/12/14

Bit #: 1
Type: SMITH SD1611
Size: 8.75
Depth In: 1,310
Depth Out: 7,860
Total Drilled: 6,550
Hours: 21.2
Avg Ft/Hr: 308.96
Jets: 6X20

BEGIN DRILLING LATERAL ON 4/11/14 AT
3:30 AM. 6.125" HOLE WITH BIT #2.
VAREL, VS513D. DEPTH IN: 7860' MD.

ROP SCALE CHANGE



MUD DATA

WT: 10.1
FV: 41
PV: 14
YP: 13
CK: 1
Sol: 9
pH: 9.2 @ 92f
Chl: 2,600

WT IN 9.2/ OUT 9.2
VIS IN 42/ OUT 42

MD: 7,812
TVD: 7,448.82
Inc.: 88.67
Azim.: 0
VS: 374.37

MD: 7,860
TVD: 7,451.02
Inc.: 89.23
Azim.: 359.85
VS: 422.32

MD: 7,903
TVD: 7,450.38
Inc.: 90.09
Azim.: 358.16
VS: 465.32

MD: 7,988
TVD: 7,451.4
Inc.: 90.24
Azim.: 357.2
VS: 550.31

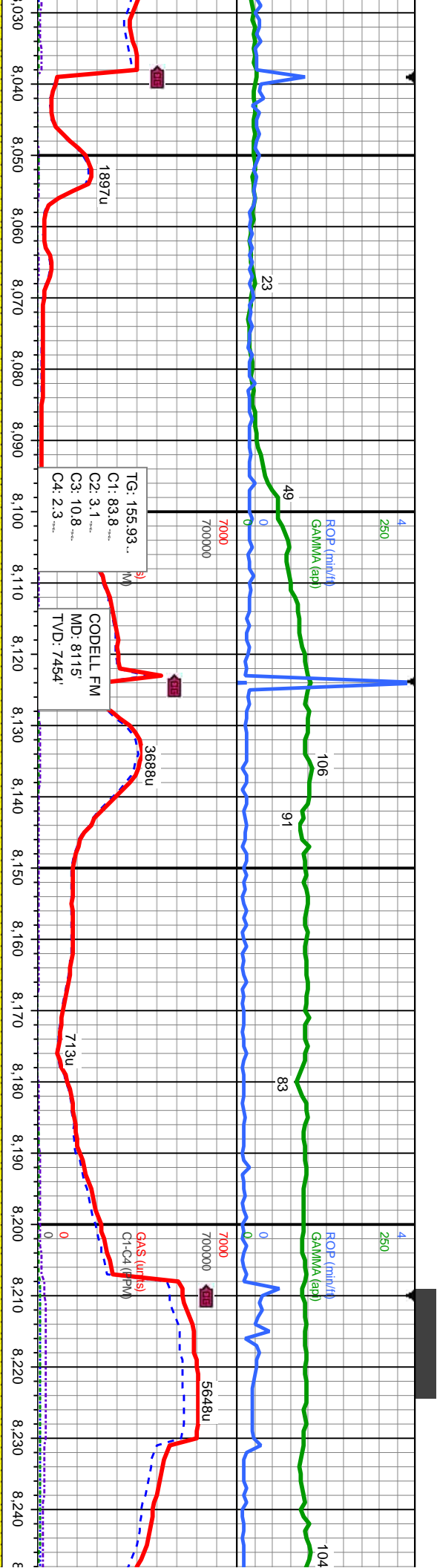
TVD (ft)

crm-offwht-lt brn, sb ply-pty, frm-hd,
ltn-mckln, v calc; stmg, lt bl flr wi g
bl-wh dfse cut, bri bl resd sl gn ring

LS: crm-offwht-lt brn, sb ply-pty, frm-hd,
cyxln-mckln, v calc; stmg, lt bl flr wi g bri bl-wh
dfse cut, bri bl resd sl gn ring

LS: crm-offwht-lt brn, sb ply-pty, frm-hd, cyxln-mckln, v calc;
stmg, lt bl flr wi g bri bl-wh dfse cut, bri bl resd sl gn ring

LS: crm-offwht-lt b
gry-med-gry, mot,
mod calc cnt; stm



MD: 8,073
TVD: 7,453.43
Inc.: 89.96
Azim.: 357.8
VS: 635.29

TG: 155.93
C1: 83.8
C2: 3.1
C3: 10.8
C4: 2.3

CODELL FM
MD: 8115'
TVD: 7454'

MUD DATA
WT: 9.2
FV: 40
PV: 13
YP: 13
CK: 1/1
Sol: 6.0
pH: 9.8 @ 98F
Chl: 2,600

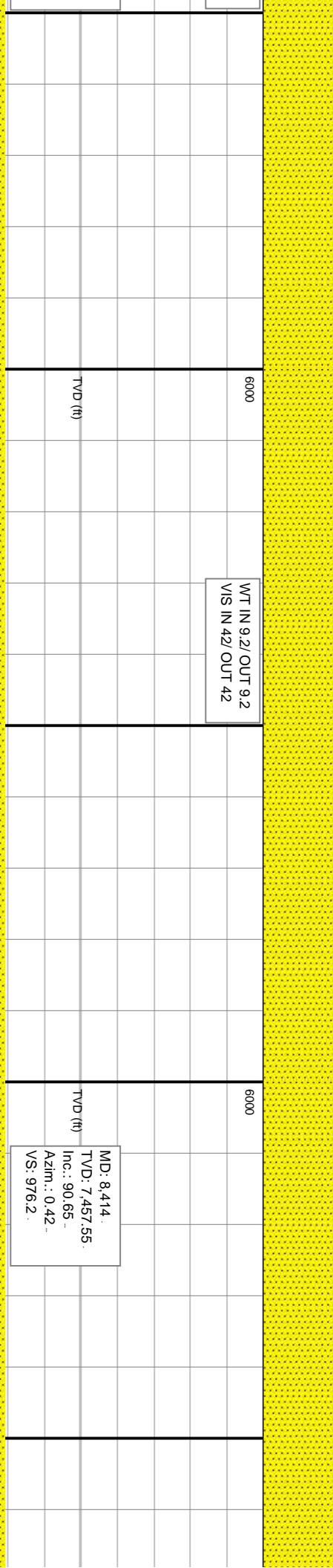
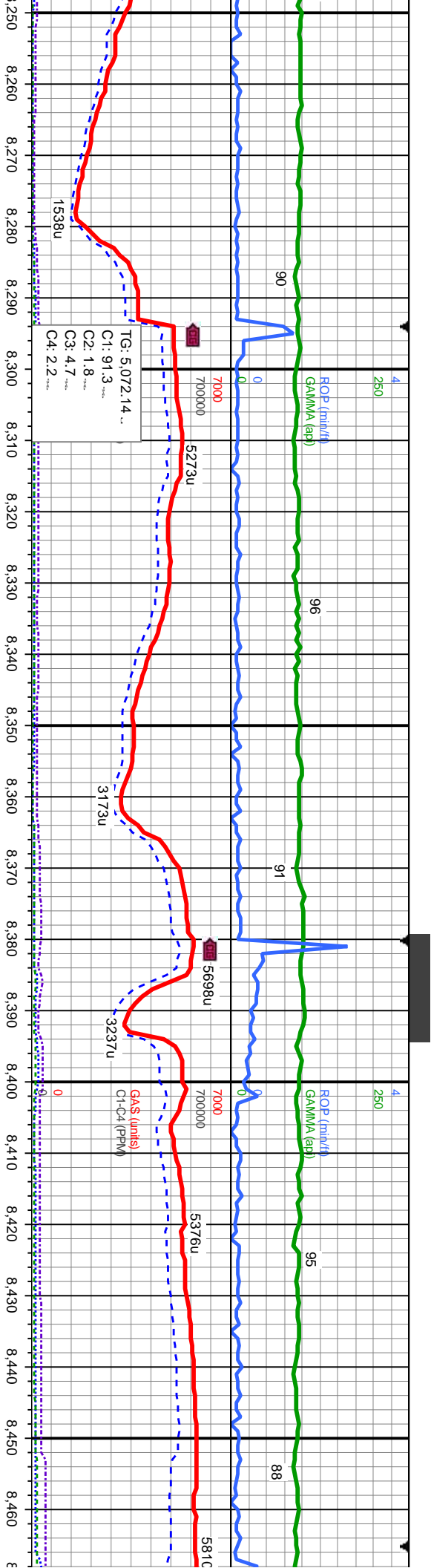
WT IN 9.2/ OUT 9.2
VIS IN 43/ OUT 43

MD: 8,244
TVD: 7,456.9
Inc.: 89.69
Azim.: 359.95
VS: 806.23

frn, sb pily-plty, frm-hd, cyxn-mckln, v calc; SS: lt-med brn,lt
med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons,
g, lt bl flr wl g brl bl-wh dfse cut, brl bl resdl sl gn ring

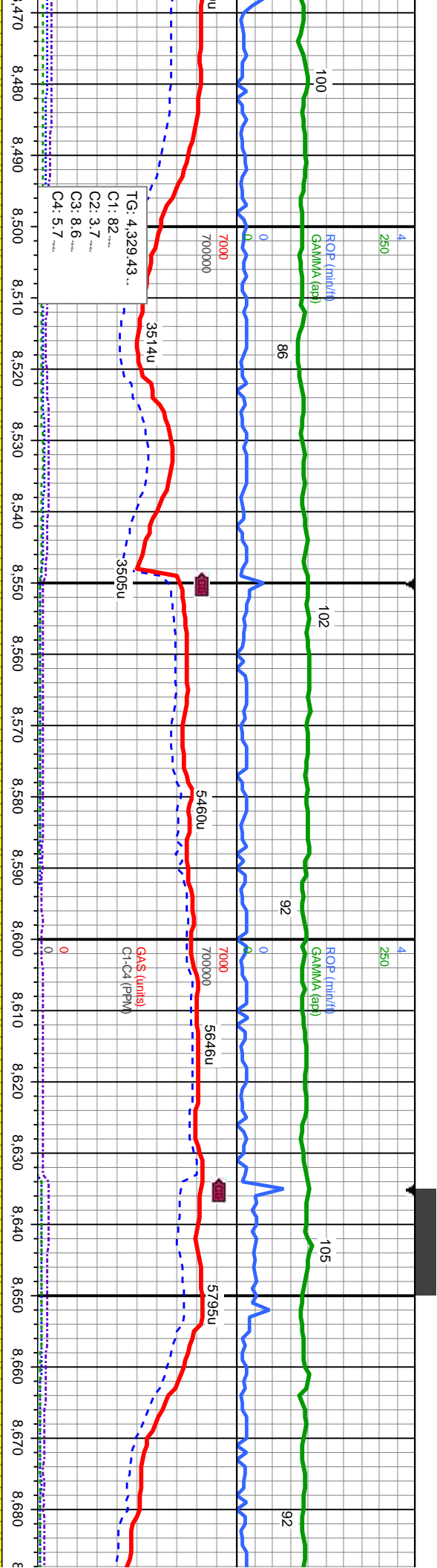
SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w
strd, mod cons, mod calc cnt;S: cm-offwht-lt brn, sb pily-plty, frm-hd,
cyxn-mckln, v calc; stmg, lt bl flr wl g brl bl-wh dfse cut, brl bl resdl sl gn ring

SS: lt-med brn,lt gry-med-gry, mot, med
mod cons, mod calc cnt; lt bl flr wl brl



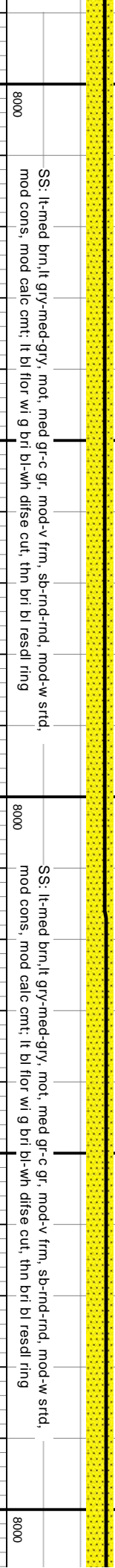
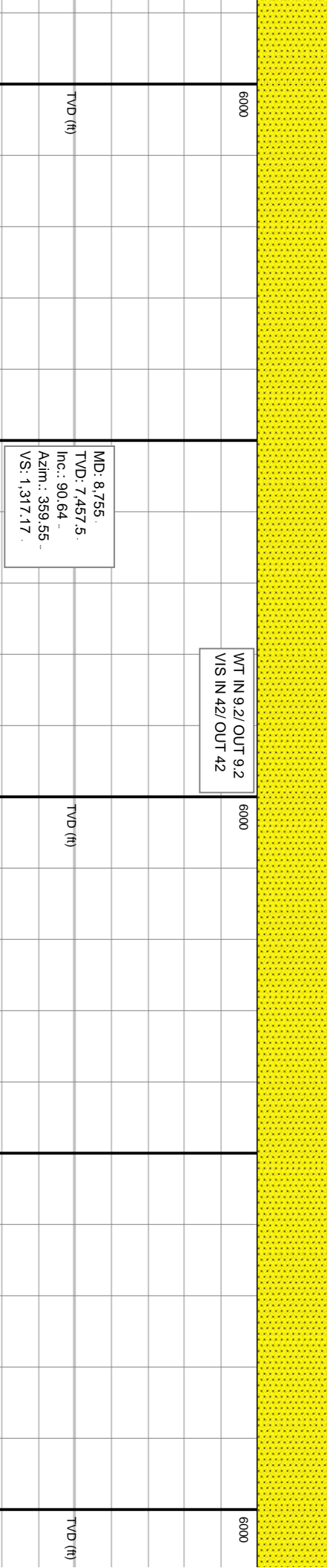
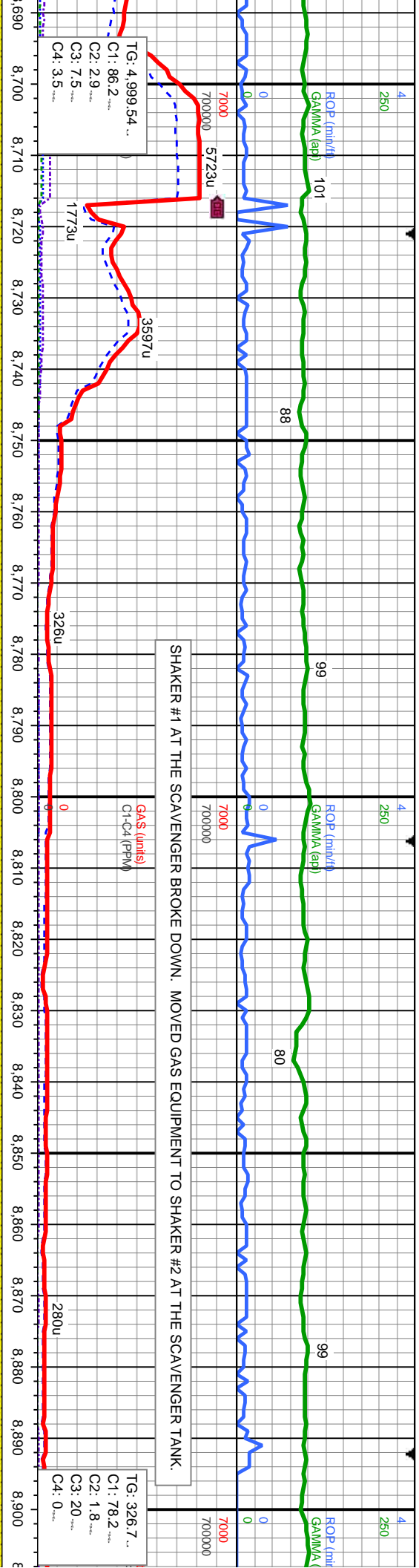
gr-c gr, mod-v frm, sb-rnd-rnd, mod-w srd, bl-wh difse cut, thn bri bl resdl ring	8000	SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w srd, mod cons, mod calc cnt; lt bl flor wl sl bri bl-wh difse cut, thn bri bl resdl ring	8000
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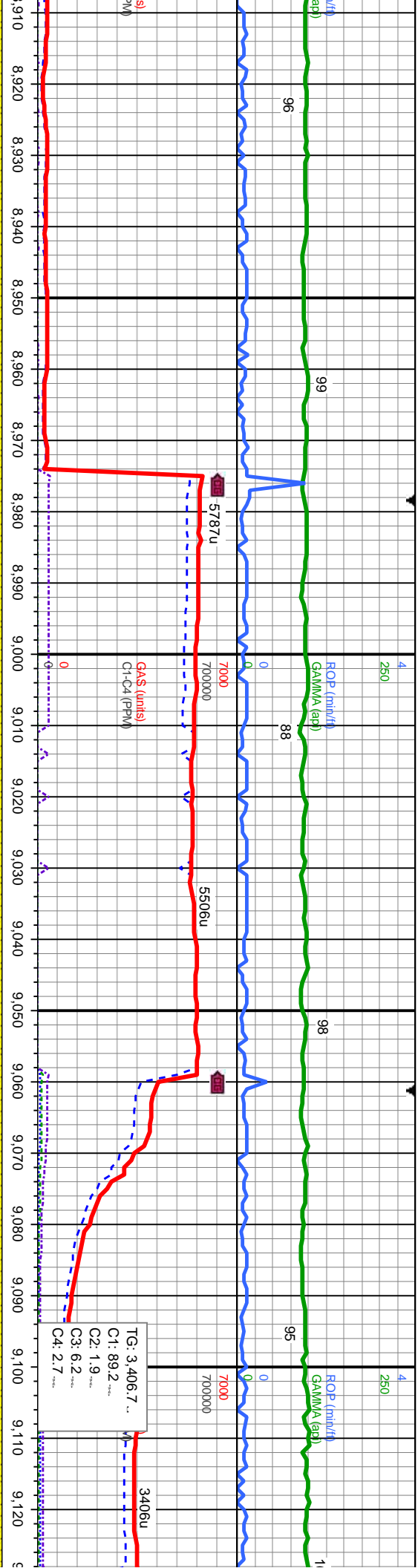




b-rnd-rnd, mod-w strd, mod l resdl ring		8000
SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cmt; lt bl flwr wl g brl bl-wh difse cut; thn brl bl resdl ring		8000
b-rnd-rnd, mod-w strd, mod l resdl ring		8000
SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cmt; lt bl flwr wl g brl bl-wh difse cut; thn brl bl resdl ring		8000







MUD DATA

WT: 9.2
FV: 42
PV: 14
YP: 14
CK: 1/
Sol: 5
pH: 9.4 @ 110F
Chl: 2,500

MD: 8,926
TVD: 7,456.19
Inc.: 90.24
Azim.: 359.39
VS: 1,488.17

SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cnt; lt bl flr wl g bri bl-wh dlse cut, thn bri bl resdl ring

SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cnt; lt bl flr wl g bri bl-wh dlse cut, thn bri bl resdl ring

SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cnt; lt bl flr wl g bri bl-wh dlse cut, thn bri bl resdl ring

SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w strd, mod cons, mod calc cnt; lt bl flr wl g bri bl-wh dlse cut, thn bri bl resdl ring

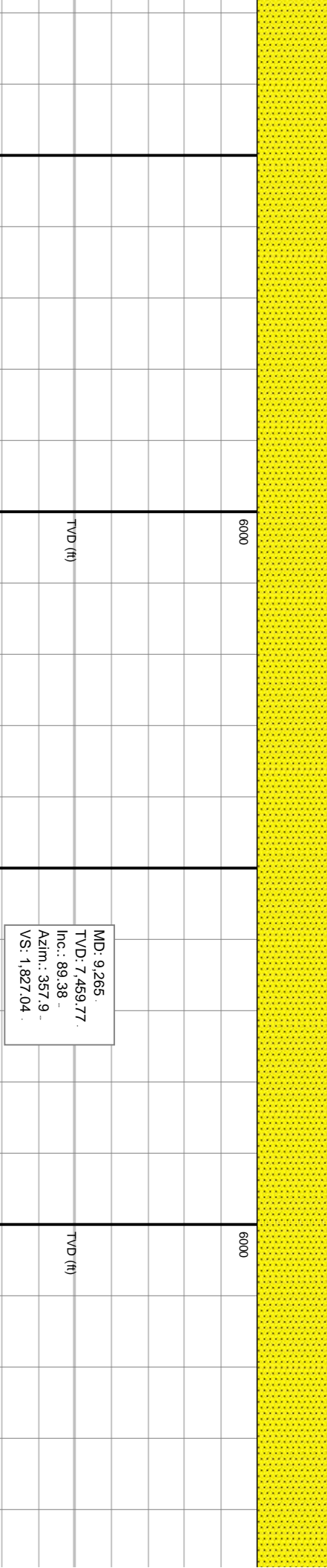
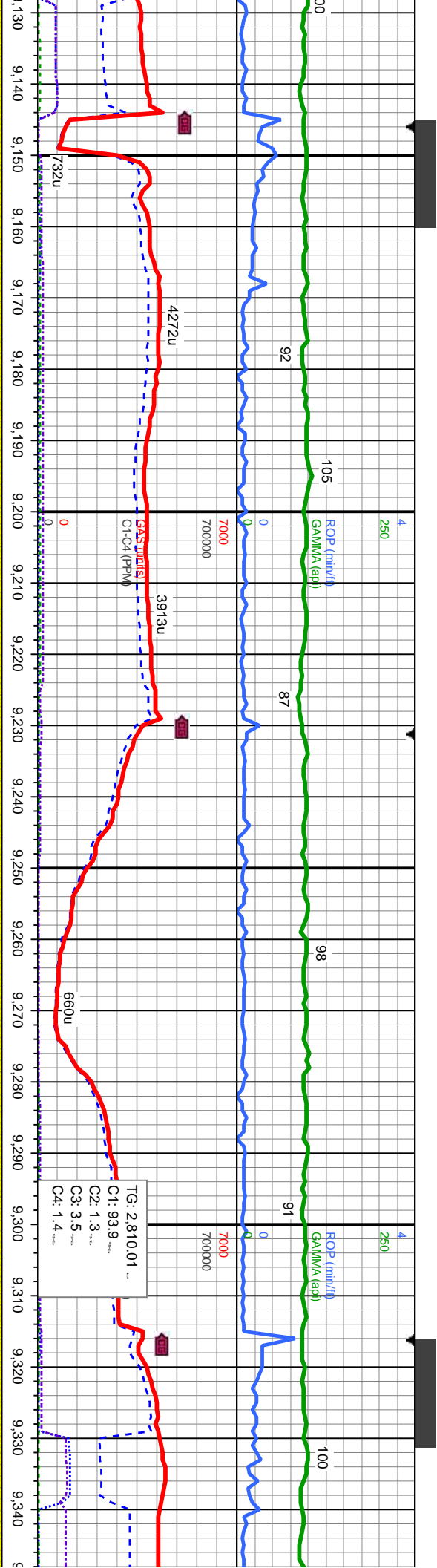
MUD DATA

WT: 9.3
FV: 42
PV: 14
YP: 14
CK: 1/
Sol: 5
pH: 9.4 @ 110F
Chl: 2,500

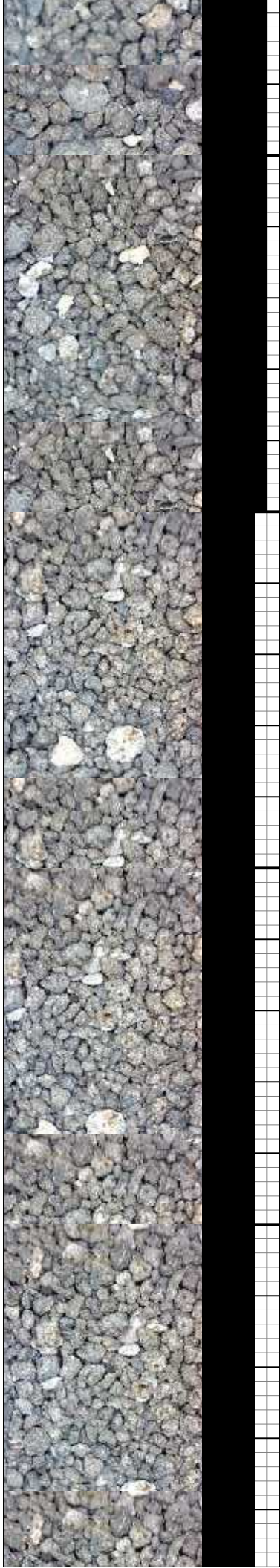
MD: 9,095
TVD: 7,457.34
Inc.: 88.98
Azim.: 358.37
VS: 1,657.13

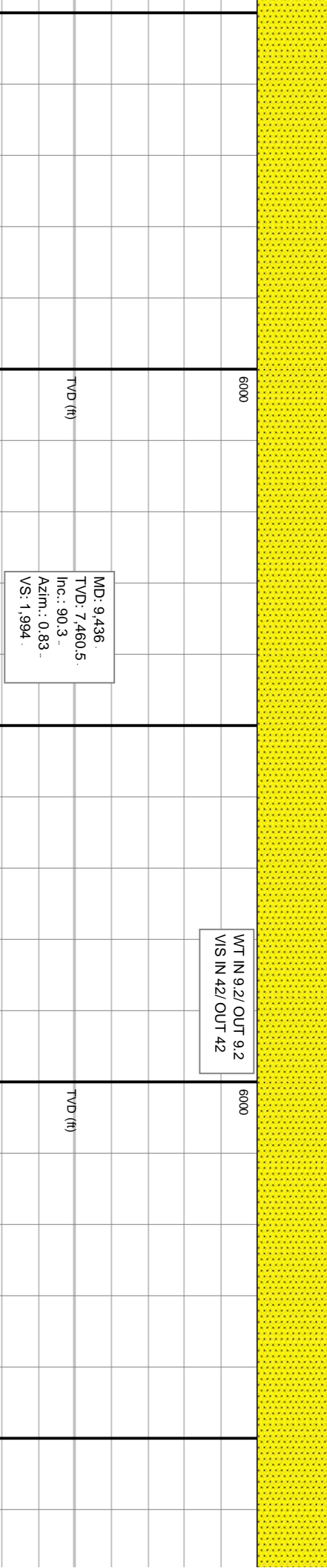
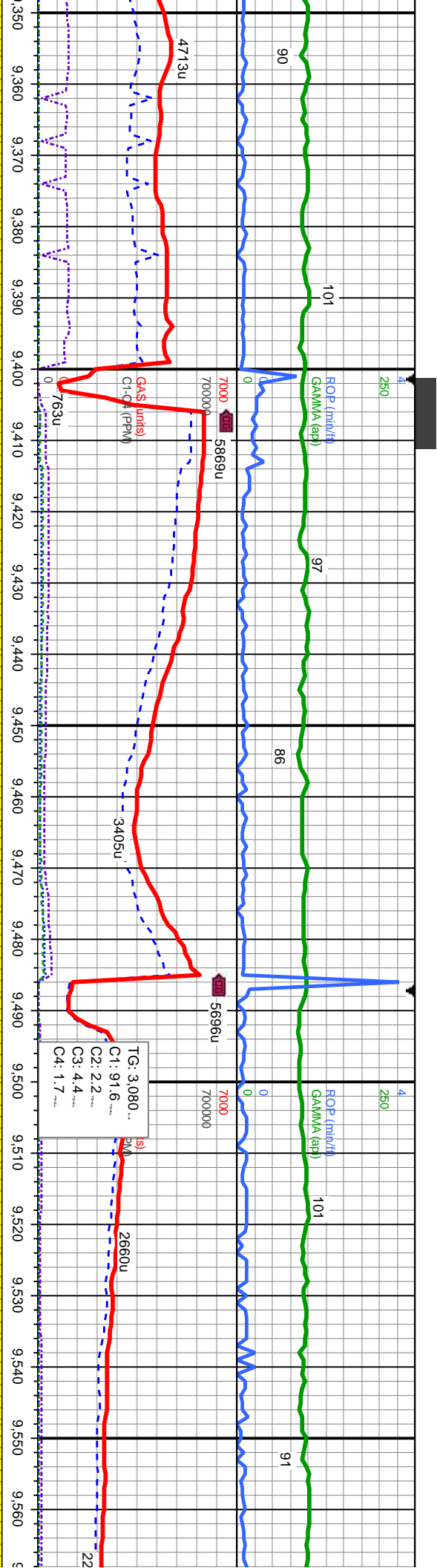
TG: 3,406.7
C1: 89.2
C2: 1.9
C3: 6.2
C4: 2.7





SS: lt-med brn,lt gry-med-gry, mot, med gr-c gr, mod-v frm, sb-rnd-rnd, mod-w srted, mod cons, mod calc cnt; lt bl flr wi bl-wh disse cut, thn bri bl resd ring



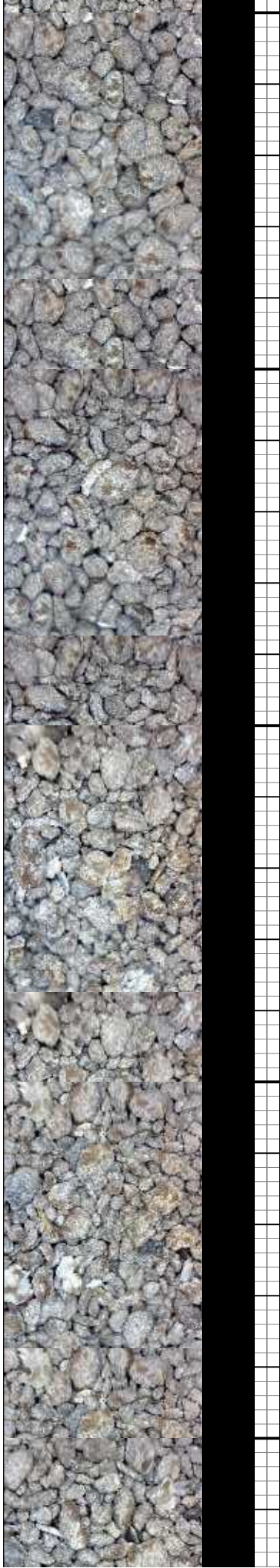


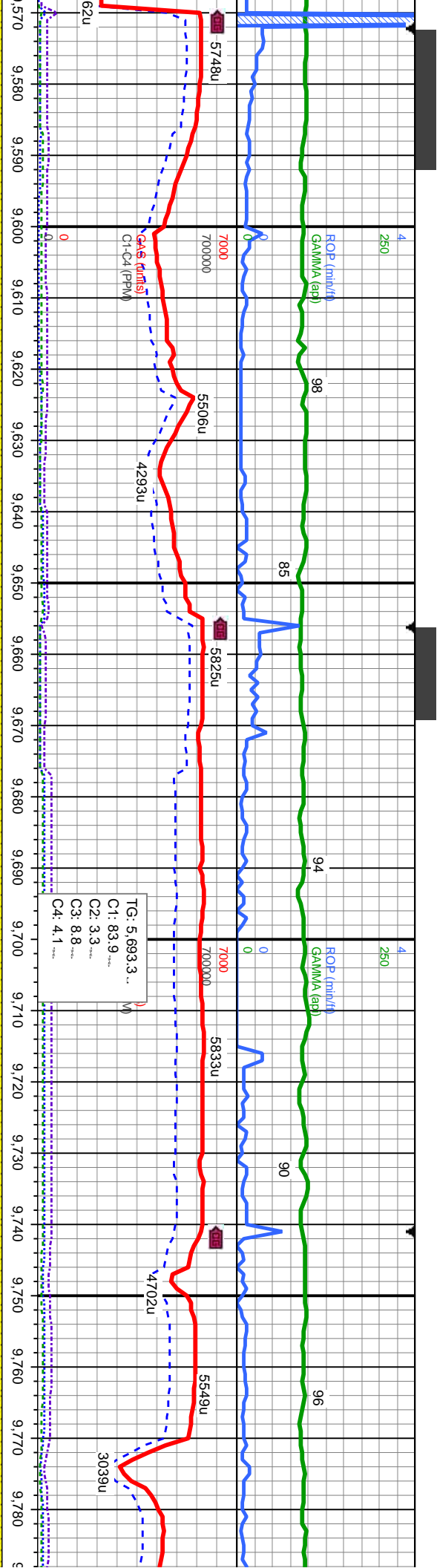
MD: 9.436.
TVD: 7.460.5
Inc.: 90.3
Azim.: 0.83
VS: 1.994

WT IN 9.2/ OUT 9.2
VIS IN 42/ OUT 42

mod-gr-c gr, mod-v frm, sb-rnd-rnd, mod-w
mod-w srt, mod cons, mod calc cmt; lt bl flr wl bl-wh dfse cut, thn bri bl resd ring

SS: lt-med brn,lt gry-med-gry, mot, occ clt-fmsl grns, med gr-c gr, mod-v frm, sb-rnd-rnd,
mod-w srt, mod cons, mod calc cmt; lt bl flr wl bl-wh dfse cut





WT IN 9.2/ OUT 9.2
VIS IN 42/ OUT 42

MD: 9.606
TVD: 7.459.42
Inc.: 90.43
Azim.: 2.73
VS: 2.163.89

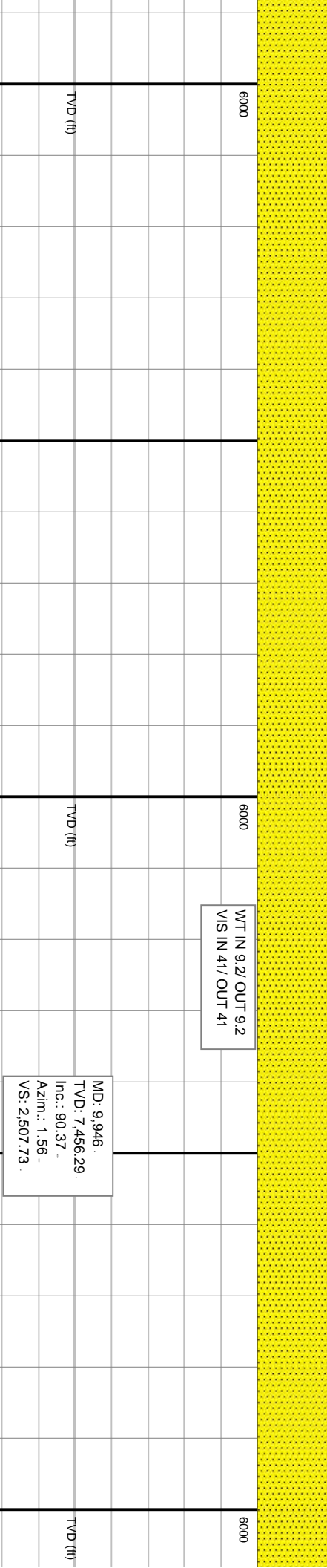
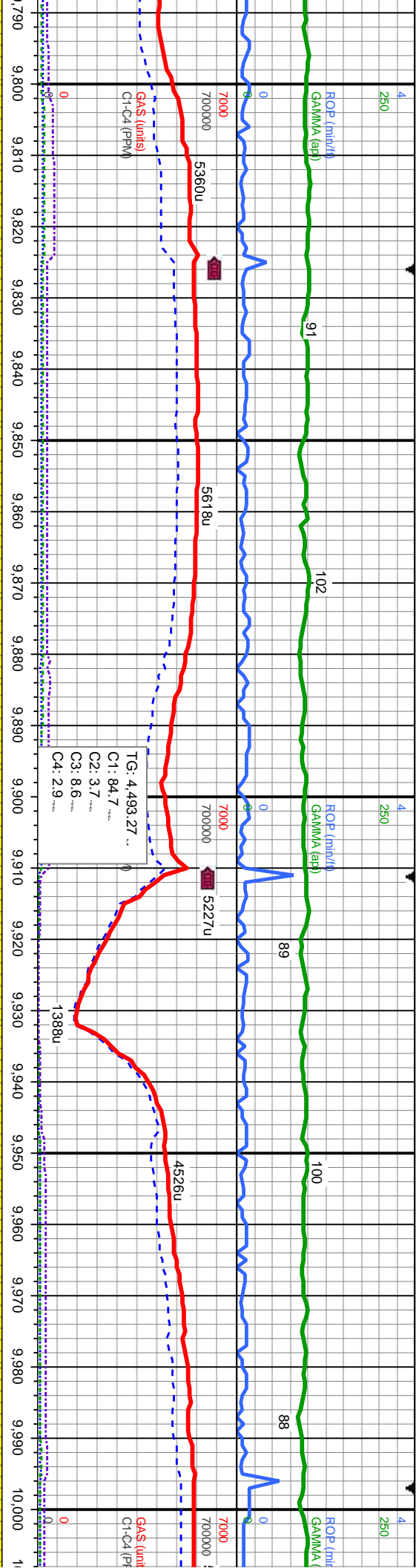
TVD (ft)

MD: 9.776
TVD: 7.457.83
Inc.: 90.64
Azim.: 0.99
VS: 2.333.77

f, mod frm-firm, sb rnd-rnd, thn brl resdl ring

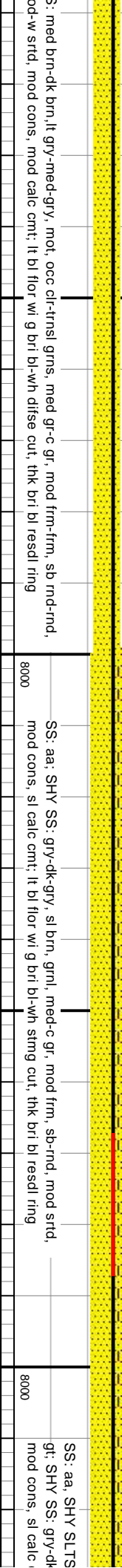
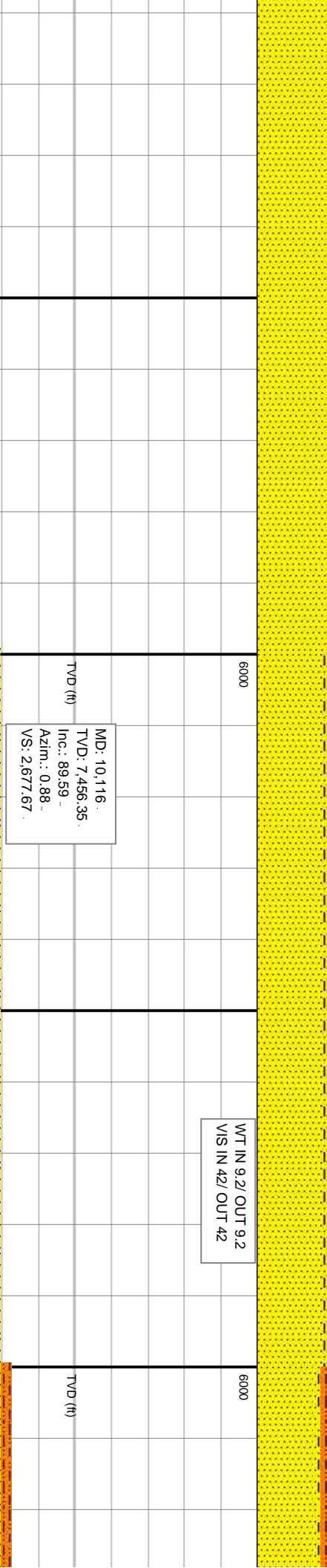
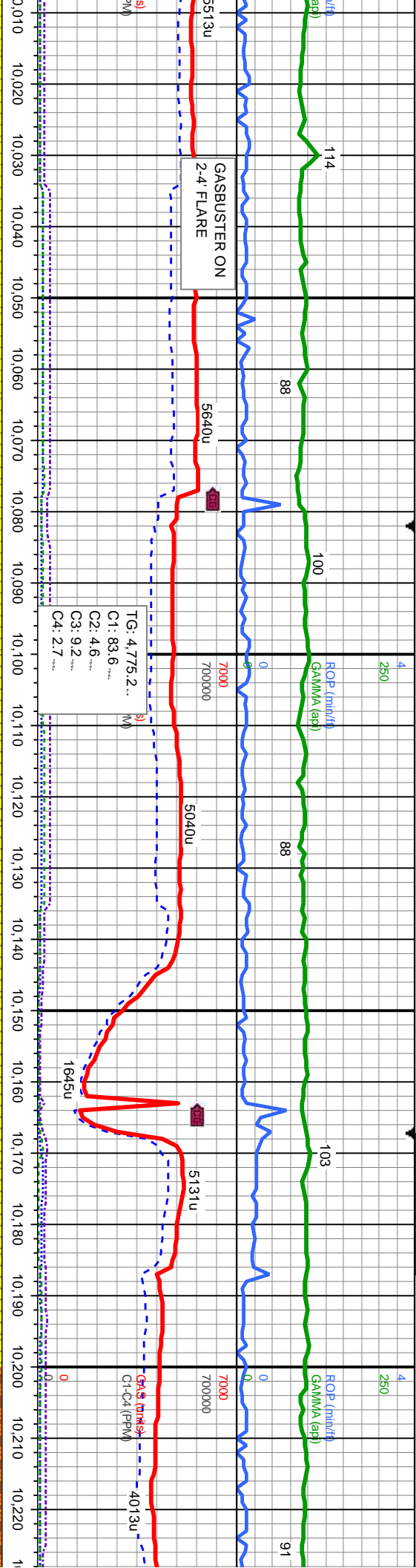
SS: lt-med brn,lt gry-med-gry, mot, occ clt-trnsl grns, med gr-c-gr, mod frm-firm, sb rnd-rnd, mod-w strtd, mod cons, mod calc cmt; lt bl flwr wr g brl bl-wh dfse cut, thk brl bl resdl ring



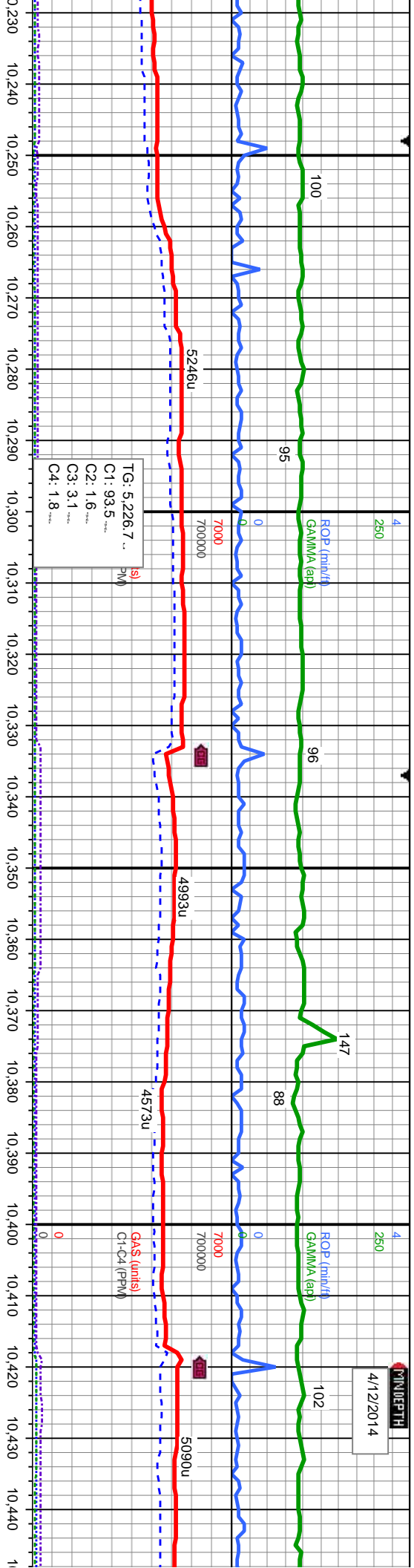


SS: lt-med brn,lt gry-med-gry, mot, occ cl-trnsl grns, med gr-c gr, mod frm-fm, sb rnd-rnd, mod-w strd, mod cons, mod calc cmt; lt bl flr w/ g brl bl-wh diffse cut, thk brl bl resdl ring





MINDEPTH
4/12/2014



MD: 10,287
TVD: 7,455.95
Inc.: 89.53
Azim.: 2.41
VS: 2,848.66

TVD (ft)

WT IN 9.2/ OUT 9.2
VIS IN 41/ OUT 41

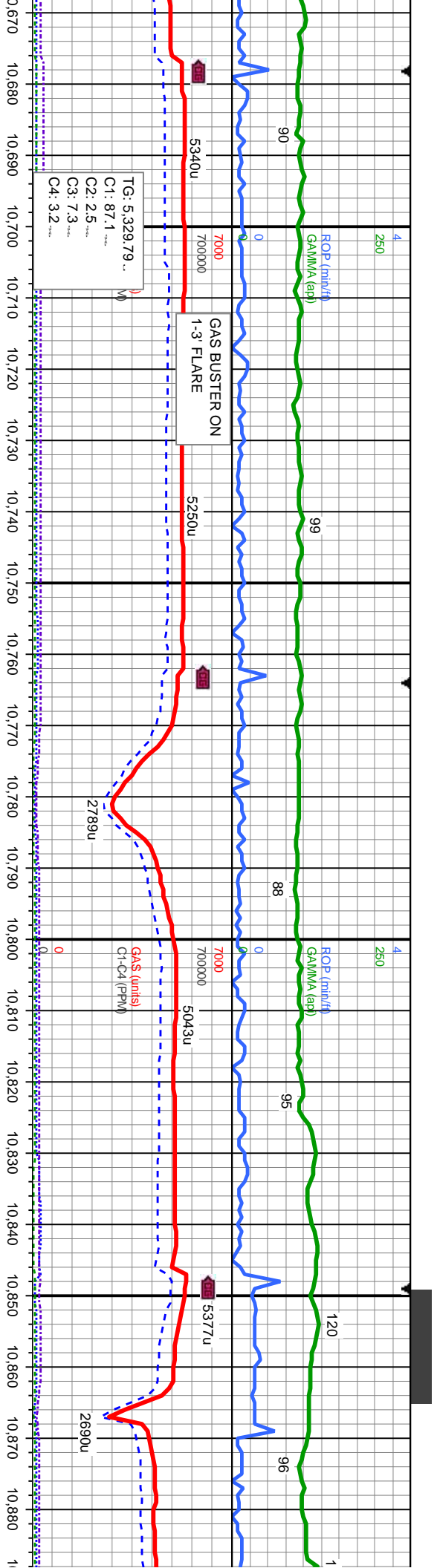
TVD (ft)

T: lt gy-med gy, sb-bkly-sb-ply, sft to mod-fm, sdy ip, occ
-gy, sl brn, grnl, med-c gr, mod frm, sb-rnd, mod strd,
cmt: lt bl flwr w/ g bri bl-wh dfse cut, thk bri bl resdl ring

SS: aa, SHY SLTST: lt gy-med gy, sb-bkly-sb-ply, sft to mod-fm, sdy ip, occ
gt: SHY SS: gry-dk-gry, sl brn, grnl, med-c gr, mod frm, sb-rnd, mod strd, mod
cons, sl calc cmt: lt bl flwr w/ g bri bl-wh dfse cut, thn bri bl resdl ring

SS: aa, SHY SLTST: lt gy-med gy, sb-bkly-sb-ply, sft to mod-fm, sdy ip, occ
sdv ip, occ gt: lt bl flwr w/ g bri bl-wh dfse cut, thn bri bl resdl ring





WT IN 9.2/OUT 9.2
VIS IN 43/OUT 43

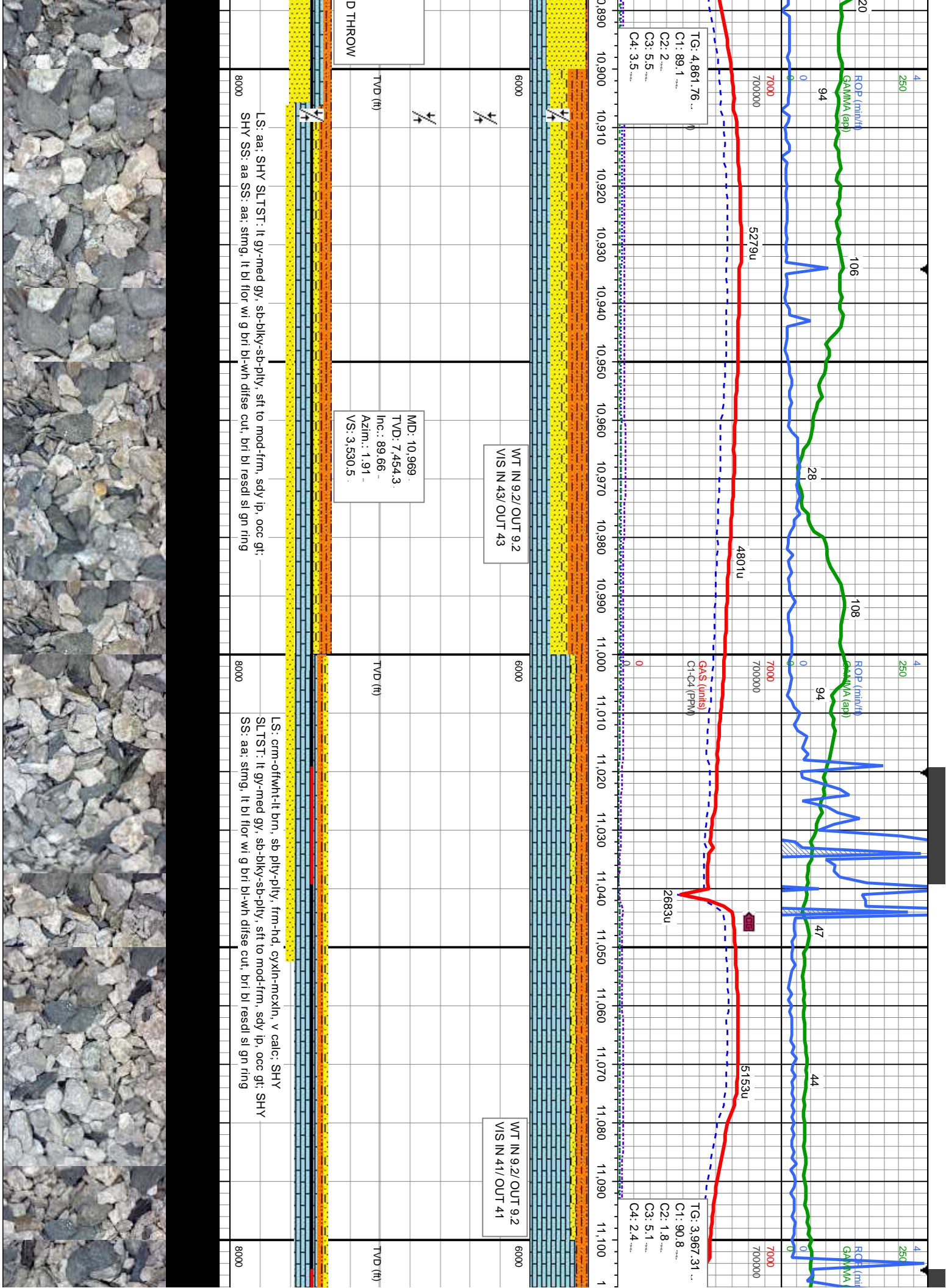
MD: 10,798 .
TVD: 7,455.3 .
Inc.: 89.75 -
Azim.: 2.13 -
VS: 3,359.53 .

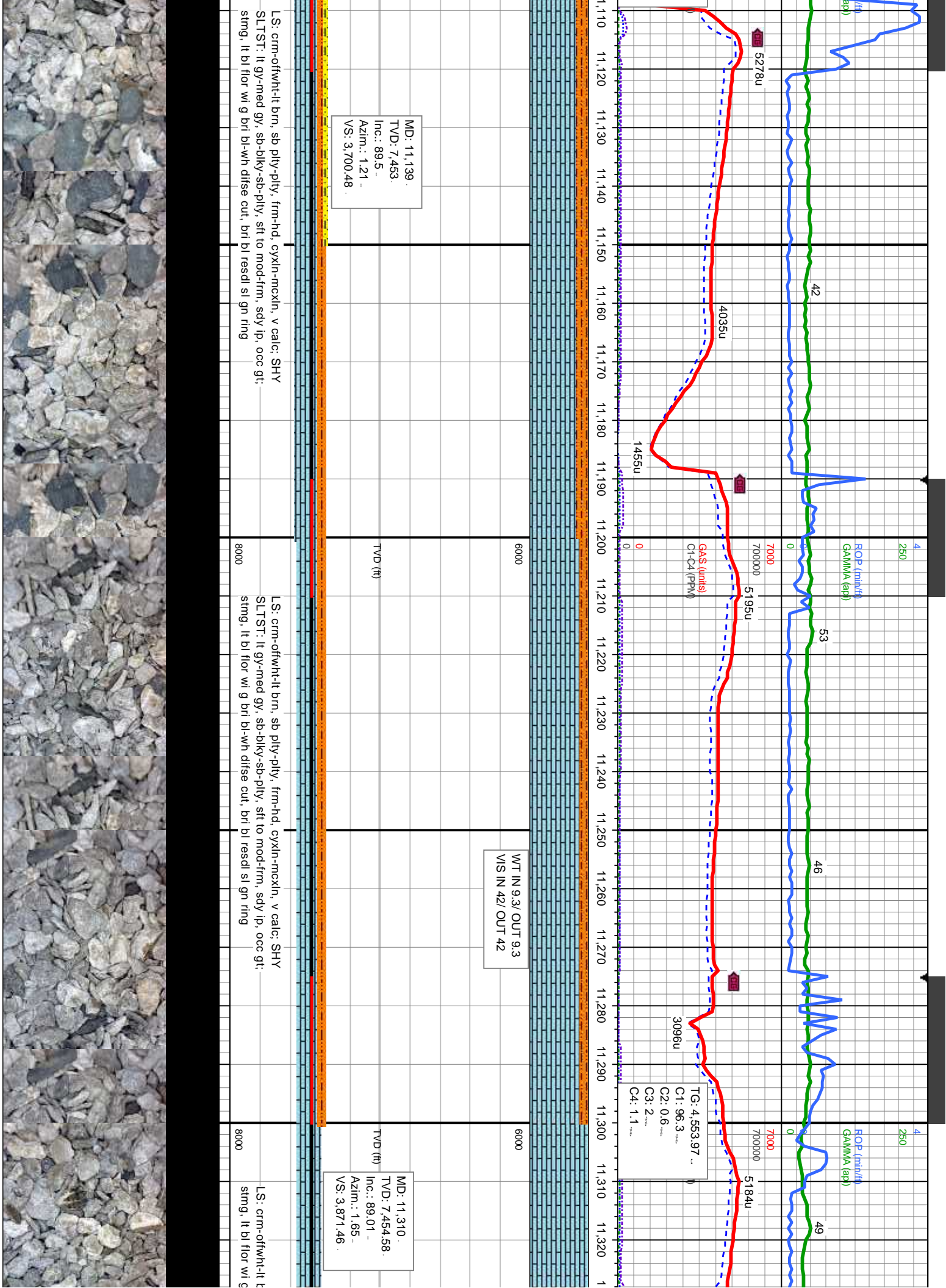
FAULT 1 OF 1:
MD: 10,907'
TVD: 7,455'
VS: 3469'
40' DOWN/WR

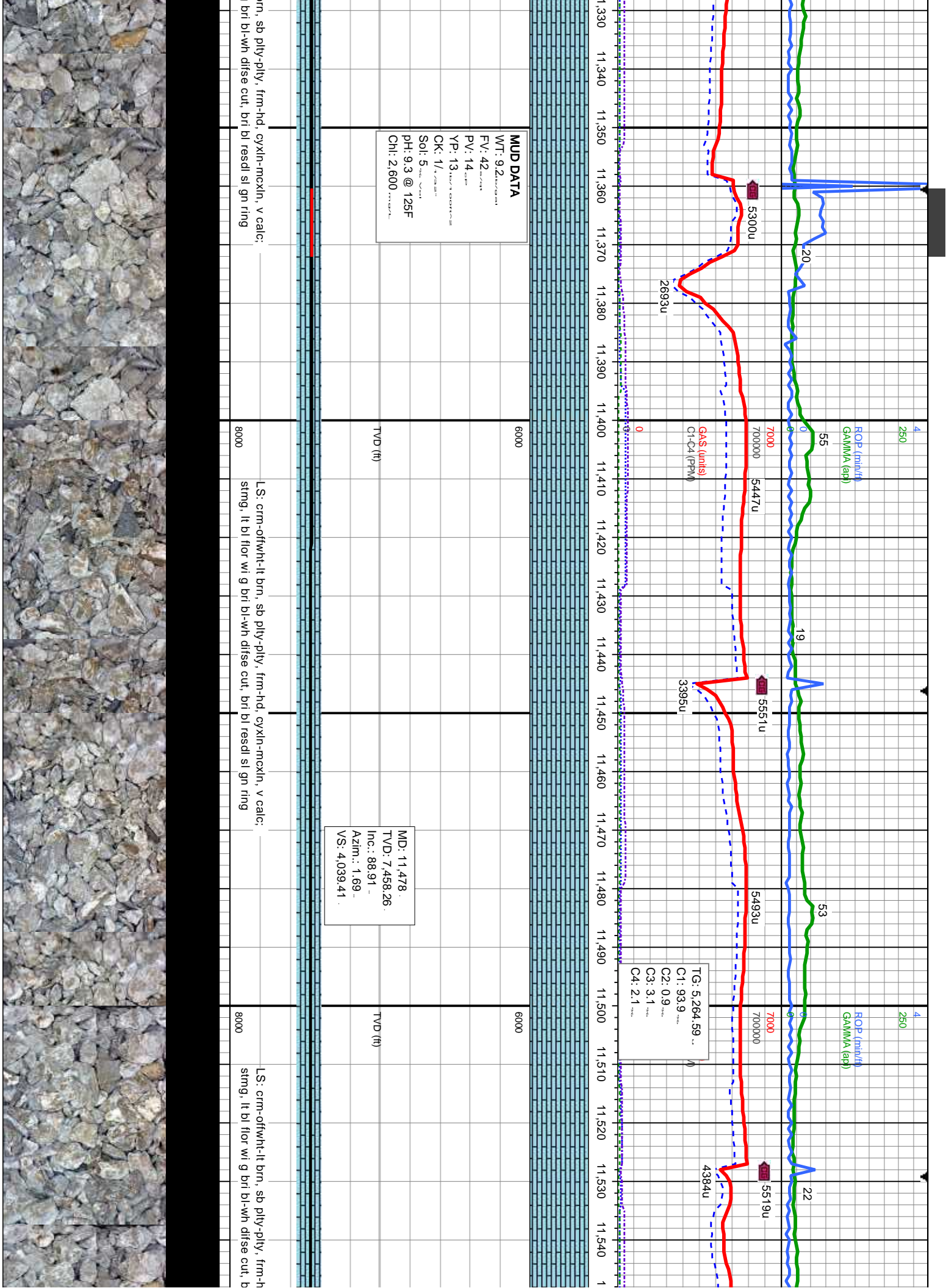
...r-c gr, mod frm-frm, sb
y-med gy, sb-blky-sb-plty,
...thn bri bl resdl ring

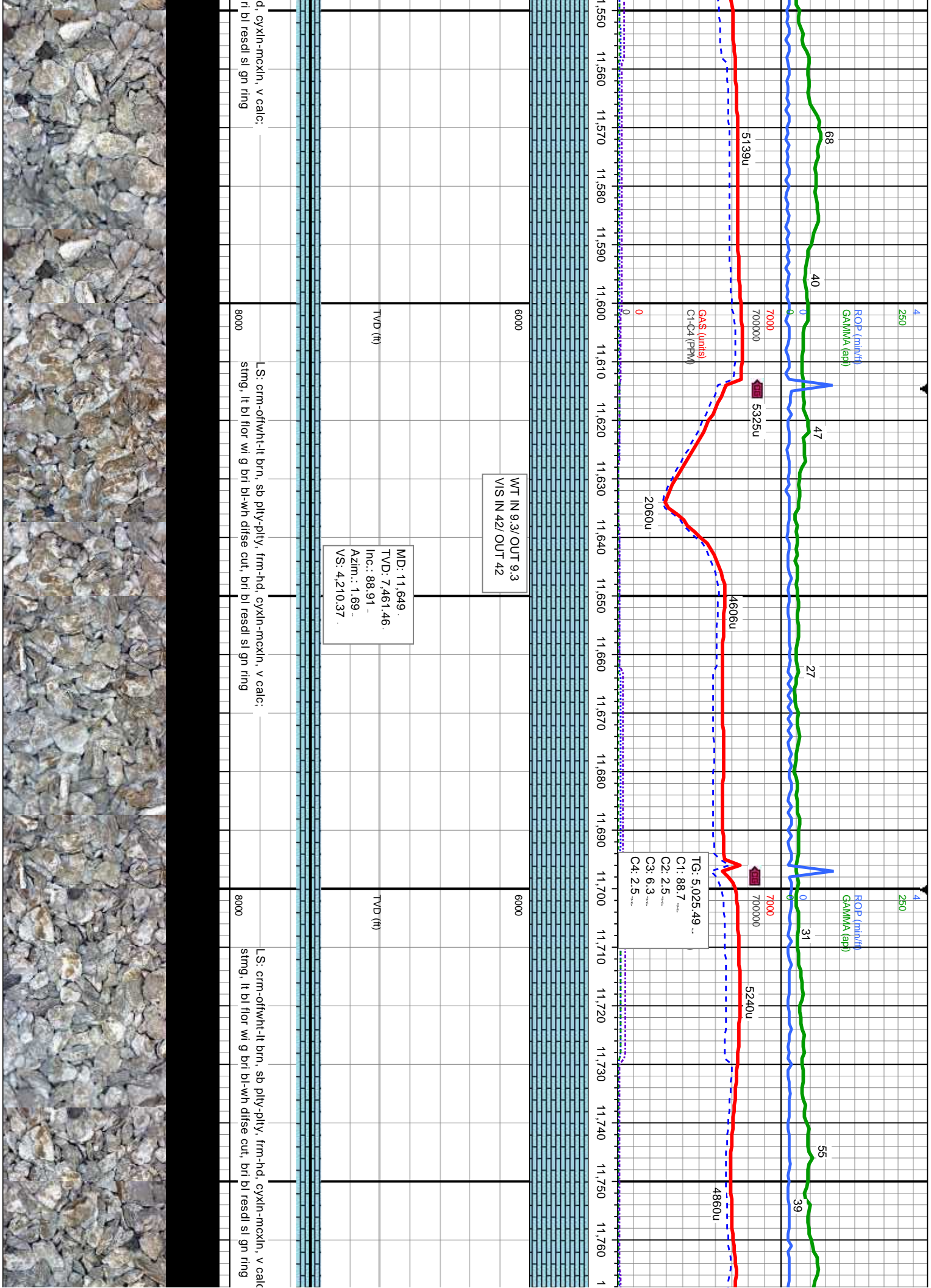
SHY SLTST: lt-gy-med gy, sb-bkly-sb-ply, stt to mod-frm, sdy ip, occ gt; SHY SS: gyy-dk-gryy, sl brn, grnl, med-c-gr, mod frm, sb-rnd, mod strd, mod cons, sl calc cmt; SS: aa, lt bl flwr wi mod bl-wh difse cut, thn bri bl resd ring,

LS: cirm-*off-writ* brn, sb *ply-pty*, frm-hd, *cyxln-mcxln*, v calc; SHY SLT ST: it *gy-med gy*, sb-*blyx-sb-pty*, sft to mod-frm, sdy ip, occ gt; SS: aa, strng, it *bl flor wi g bri bl-wñ* disse cut, *bri bl* readl sl gn ring









Bit #: 2
Type: VAREL VS513D
Size: 6.12
Depth In: 7.860
Depth Out: 11.927
Total Drilled: 4.067
Hours: 18.7
Avg Ft/Hr: 217.48
Jets: 3X14 2X16

REACHED TD FOR LATERAL AT
11,927 MD AT 12:48 PM ON 4/13/14

THANK YOU FOR USING
COLUMBINE LOGGING INC.!

MUD DATA
WT: 9.3
FV: 43
PV: 14
YP: 13
CK: 1/4
Sol: 6
pH: 9.2 @120F
Chl: 2,500

PROJECTION TO BIT

MD: 11.927
TVD: 7,457.72
Inc.: 91.29
Azim.: 0.52
VS: 4,488.31

LS: crm-offwht-lt brn, sb pily-pily, frm-hd, cyxln-mexln, v calc: stng, lt bl flwr wl g brl bl-wh dfse cut, brl bl resdl sl gn ring

WT IN 9.3/ OUT 9.3
VIS IN 43/ OUT 43

MD: 11.876
TVD: 7,458.87
Inc.: 91.29
Azim.: 0.52
VS: 4,437.32

LS: crm-offwht-lt brn, sb pily-pily, frm-hd, cyxln-mexln, v calc: stng, lt bl flwr wl g brl bl-wh dfse cut, brl bl resdl sl gn ring

MD: 11.819
TVD: 7,460.14
Inc.: 91.27
Azim.: 0.74
VS: 4,380.34

