



Scale: 5" / 100'
Measured Depth Log

Well Name Ziemer 35C-5HZ

Location SWSE SEC 32, T3N, R66W

State CO

County WELD

Country USA

Rig Number ENSIGN 138

API Number 05-123-3782800

Region DJ BASIN

Field WATTENBERG

Spud Date 10/12/2013

Surface Coordinates 372' FNL & 2459' FWL

Bottom Hole Coordinates 460' FSL & 2010' FWL

Ground Elevation 4944

K.B. Elevation 4957

Logged Interval 6723 To 11408

Total Depth 11408

Formation Codell Sandstone

Type of Drilling Fluid LSND

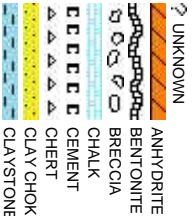
Company Anadarko

Address Granite Tower
1099 18th St. #
Denver, CO 802

Name Zach Uber & Je

Company Columbine Logg

Address 2385 S. Lipan S
Denver, CO 802



Operator

1800
202

Geologist

remy Loftness

ging, Inc.

223

Rock Types

CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLOMITE	METAMORPHIC	SHALY SILTSTONE
DOLOMITIC LIMESTONE	NO SAMPLE	SILTY SHALE
GRANITE	SALT	SILTSTONE
GYPSUM	SANDSTONE	TILL
IGNEOUS	SALT-PEPPER SAN	SHALE
SIDERITE or LIMONITE	SHALE	SHALE COLORED
LIMESTONE	SHALE GRAY	WELDED TUFF

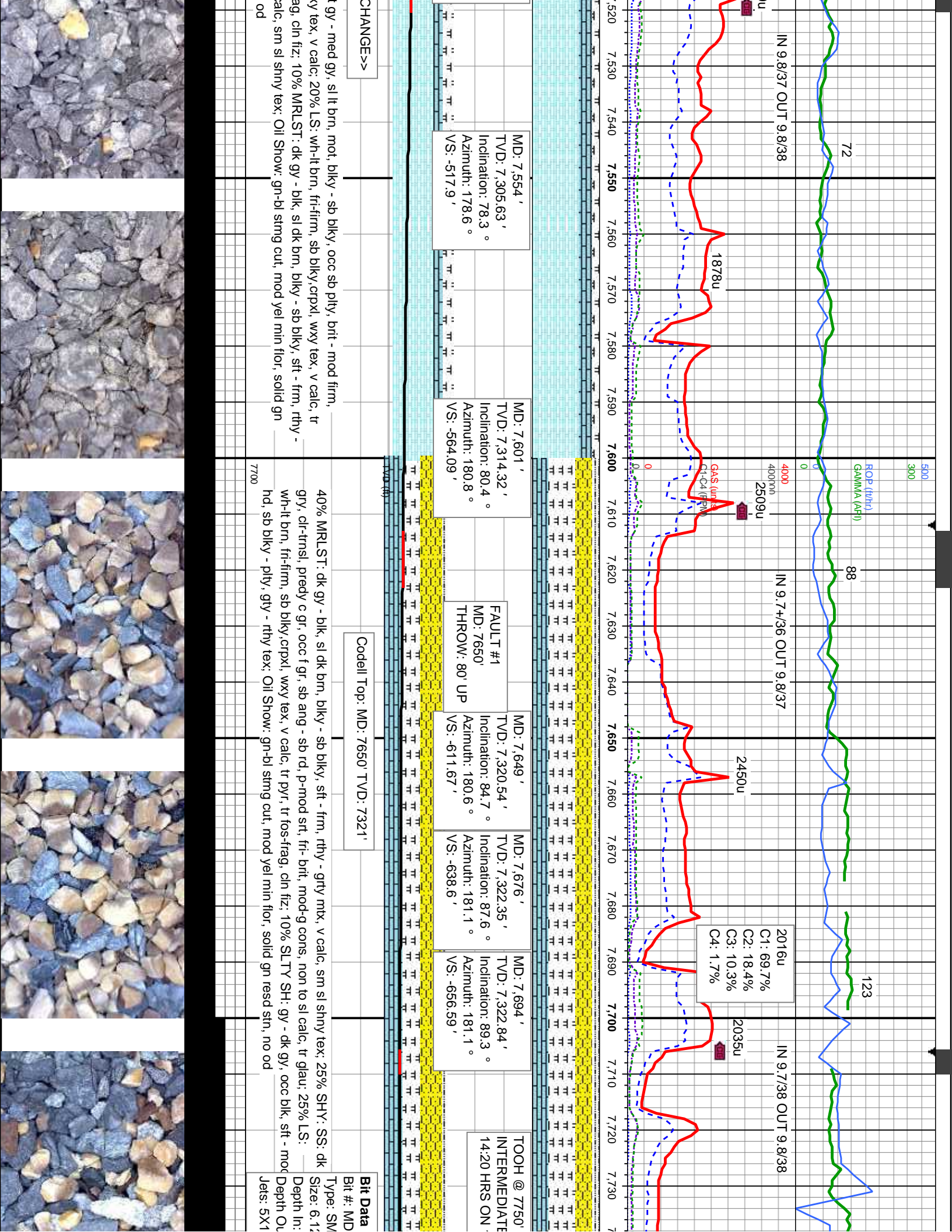
Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BITUMINOUS SUBSTANCE	BENTONITE STRINGER
AMPHIPORA	O OSTRACOD	BRECCIA FRAGMENTS	COIL STRINGER
BELEMNITE	P PELECYPOD	C CALCAREOUS	DOLOMITE STRINGER
BIOCLASTIC	P PELLET	CARBONACEOUS FLAKES	GYPSUM STRINGER
BRACHIOPOD	P PISOLITE	C CHTL	LIMESTONE STRINGER
BRYOZOA	P PLANT REMAINS	COAL - THIN BEDS	MARLSTONE (CALC) STRG
CEPHALOPOD	C CEPHALOPOD	D DOLOMITIC	MARLSTONE (DOL) STRG
CORAL	S SCAPHOPOD	F FELDSPAR	SANDSTONE STRINGER
CRINOID	S STROMATOPOROID	F FERRUGINOUS PELLET	S SILTY
ECHINOID			SILTSTONE STRINGER
Minerals	F FISH	F FERRUGINOUS	T TUFFACEOUS
FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	Stringer

Other Symbols

Oil Show	P PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	E EARTHY
	V VUGGY	F FAULT	WIRELINE TESTED - RT	Fx FINELY XLN
Engineering	D DEAD	FORMATION TOP	DRILL STEM TEST	GS GRAINSTONE
	E EVEN	GAS SHOW	MN DEPTH	L LITHOGRAPHIC
	Q QUESTIONABLE	OIL SHOW	MN DEPTH	Mx MICROXLN
	BIT			Rounding
SPOTTED STAINING	CONNECTION (UP)	MN DEPTH UP		MS MUDSTONE
Porosity	CONNECTION (DOWN)	MN DEPTH (DOWN)	A ANGULAR	PS PACKSTONE
	CONNECTION GAS	NORMAL FAULT	R ROUNDED	WS WACKESTONE
E EARTHY	CONNECTION GAS (LEFT)	OVERTURNED STRATA	B SUBANG	
F FENESTRAL	TRIP GAS	REVERSE FAULT	P SUBUND	Sorting
	TRIP GAS (LEFT)	CASING		M MODERATE
Textures	INTERCRYSTALLINE	DOWN TIME GAS	SIDEWALL CORE (LEFT)	P POOR
	INTERCRYSTALLINE	DOWN TIME GAS (LEFT)	SLIDE	W WELL
MOLDIC	CORE - LOST	SIDEWALL CORE (RIGHT)	C CHALKY	
ORGANIC	CORE - RECOVERED	SURVEY	CX CRYPTOXLN	

Slide/Rotate	
<div>ROP</div> <div>ROF</div> <div>GAMMA</div>	<div>Gamma Limit 50 - 300 API</div> <div>ROP Limit 0 - 500 ft/hr</div>
<div>Total Gas & Chromatograph</div> <div>GAS</div> <div>C1</div> <div>C2</div> <div>C3</div> <div>C4</div>	<div>Total Gas Limit 0 - 4000 units</div>
Depth Labels	6,680 6,690 6,700 6,710 6,720 6,730 6,740 6,750 6,760 6,770 6,780 6,790 6,800 6,810 6,820 6,830 6,840 6,850
% Lith	<div>KOP 6723 MD</div> <div>Bit Data</div> <div>MD: 6.796'</div> <div>TVD: 6.764.3'</div> <div>Inclination: 5 °</div> <div>Azimuth: 190.4 °</div> <div>VS: -79.04'</div>
Well Bore	<div>Well Bore</div> <div>TVD</div> <div>COLUMBINE LOGGING</div> <div>RIGGED UP ON 10/12/2013</div> <div>MANNED 2-PERSON LOGGING</div> <div>WITH BLOODHOUND GAS</div> <div>CHROMATOGRAPH UNIT #0051</div> <div>HZ BEGAN ON 10/16/2013 @ 22:16 MST</div>
Oil Show	<div>E</div> <div>G</div> <div>M</div> <div>F</div> <div>T</div> <div>S</div>
Images	<div>100% SLTY SH: gy - dk gy, occ blk, sft - mod hd, sb plty - blk, gty - rthy tex, arg - slty, non calc;</div> <div>100% SLTY SH: gy - dk gy, occ blk, sft - mod h non calc;</div>



IN 9.8/37 OUT 9.8/38

72

ROP (ft/hr)
GAMMA (API)

88

IN 9.7+/36 OUT 9.8/37

123

IN 9.7/38 OUT 9.8/38

2016u
C1: 69.7%
C2: 18.4%
C3: 10.3%
C4: 1.7%

2035u

4000
4000m
2509u

2450u

1878u

Gas (mcf/stb)
C1-C4 (ppm)

MD: 7,554 '
TVD: 7,305.63 '
Inclination: 78.3 °
Azimuth: 178.6 °
VS: -517.9 '

MD: 7,601 '
TVD: 7,314.32 '
Inclination: 80.4 °
Azimuth: 180.8 °
VS: -564.09 '

FAULT #1
MD: 7650'
THROW: 80' UP

MD: 7,649 '
TVD: 7,320.54 '
Inclination: 84.7 °
Azimuth: 180.6 °
VS: -611.67 '

MD: 7,676 '
TVD: 7,322.35 '
Inclination: 87.6 °
Azimuth: 181.1 °
VS: -638.6 '

MD: 7,694 '
TVD: 7,322.84 '
Inclination: 89.3 °
Azimuth: 181.1 °
VS: -656.59 '

TOOH @ 7750'
INTERMEDIATE
14:20 HRS ON

Codell Top: MD: 7650' TVD: 7321'

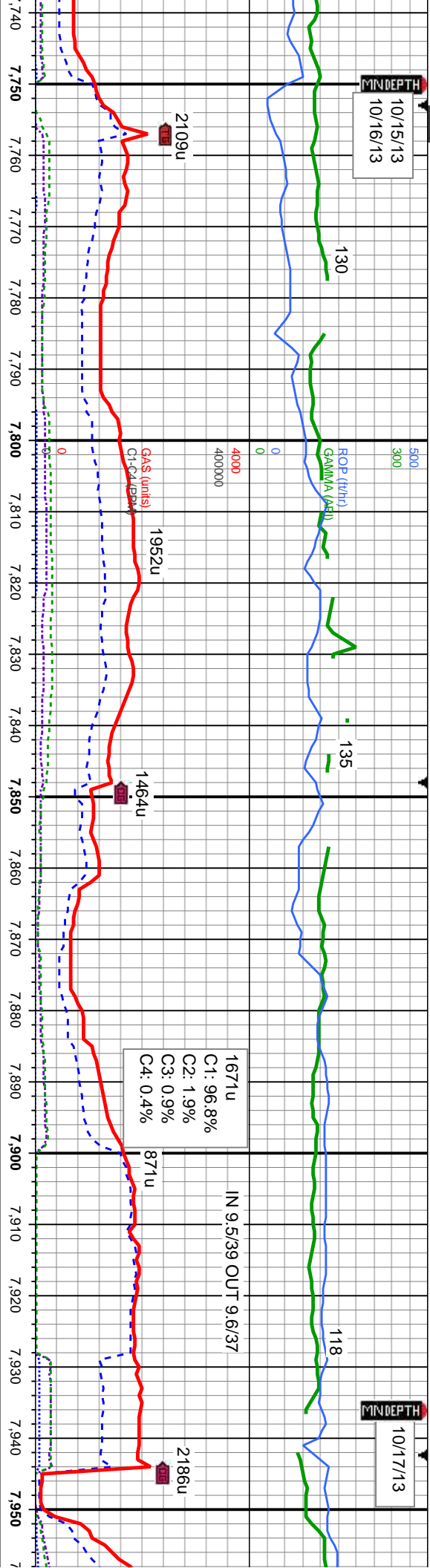
Bit Data
Bit #: MD

40% MRLST: dk gy - blk, sl dk brn, blk - sb blk, sft - frm, rthy - grty mtk, v calc, sm sl shny tex; 25% SHY: SS: dk gy, cl-trns, pedy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau; 25% LS: wh-it brn, fri-frm, sb blk, crpxl, wxy tex, v calc, tr pyr, tr fos-frag, cln fty; 10% SLTY SH: gy - dk gy, occ blk, sft - mod calc, sm sl shny tex; Oil Show: gn-bl stmg cut, mod yel min flr, solid gn resd sh, no od

CHANGE>>

10/15/13
10/16/13

10/17/13



PROJECTION TO BIT

MD: 7,750 '
TVD: 7,322.7 '
Inclination: 90.9 °
Azimuth: 181.1 °

MD: 7,791 '
TVD: 7,322.17 '
Inclination: 91.5 °
Azimuth: 180.8 °
VS: -751.99 '

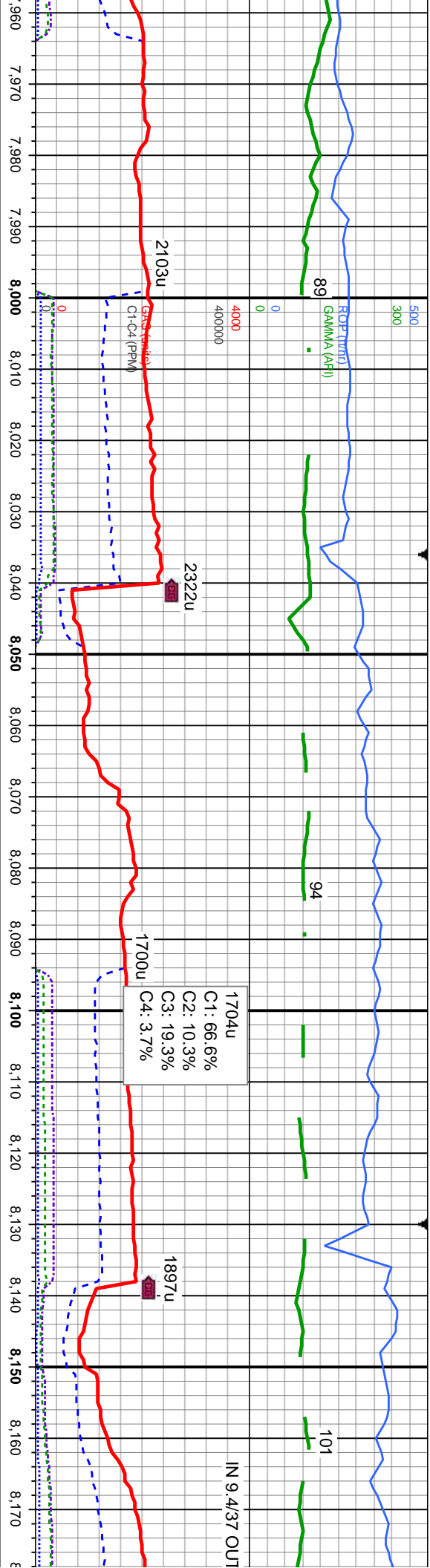
MD: 7,886 '
TVD: 7,320.1 '
Inclination: 91 °
Azimuth: 180.5 °
VS: -846.96 '

60% SHY: SS: dk gry, clr-trnsl, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri-brit, mod-g cons, non to sl calc, tr glau; 40% SLTY SH: gy - dk gy, occ blk, sft - mod hd, sb blk - plty, gty - rthy tex; Oil Show: gn-bl string cut, mod yel min flr, solid gn resd stn, no od

70% SHY: SS: dk gry, clr-trnsl, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri-brit, mod-g cons, non to sl calc, tr glau; 30% SLTY SH: gy - dk gy, occ blk, sft - mod hd, sb blk - plty, gty - rthy tex; Oil Show: yel-gn mod string cut, tr yel min flr, mod yel-gn resd stn

70% SHY: SS: dk gry, clr-trnsl, predy c gr, occ f gr, sb blk - plty, gty - rthy tex; Oil Show: yel-gn mod yel-gn resd stn





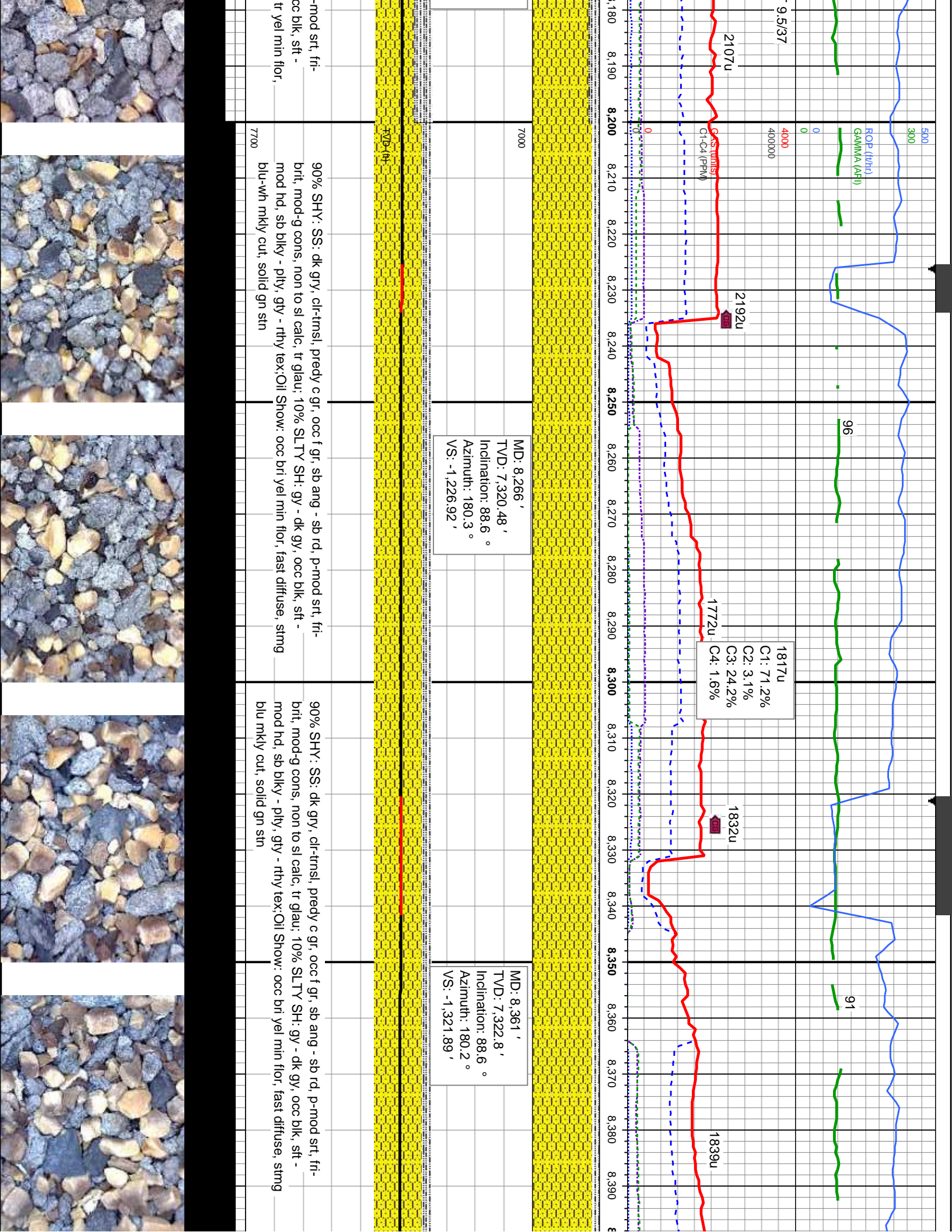
MD: 7,979 '
TVD: 7,318.88 '
Inclination: 90.5 °
Azimuth: 180.4 °
VS: -939.95 '

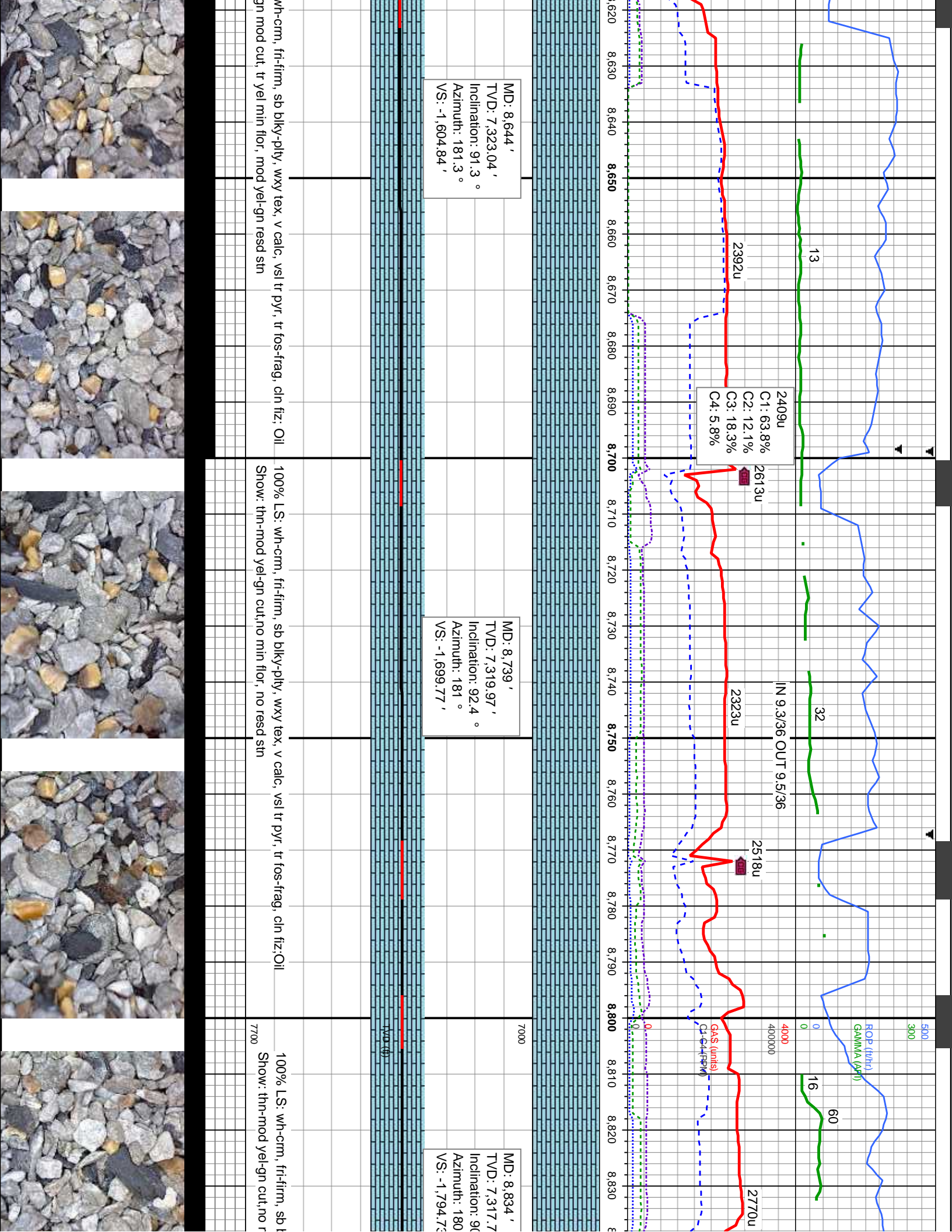
MD: 8,074 '
TVD: 7,318.46 '
Inclination: 90 °
Azimuth: 180.6 °
VS: -1,036.94 '

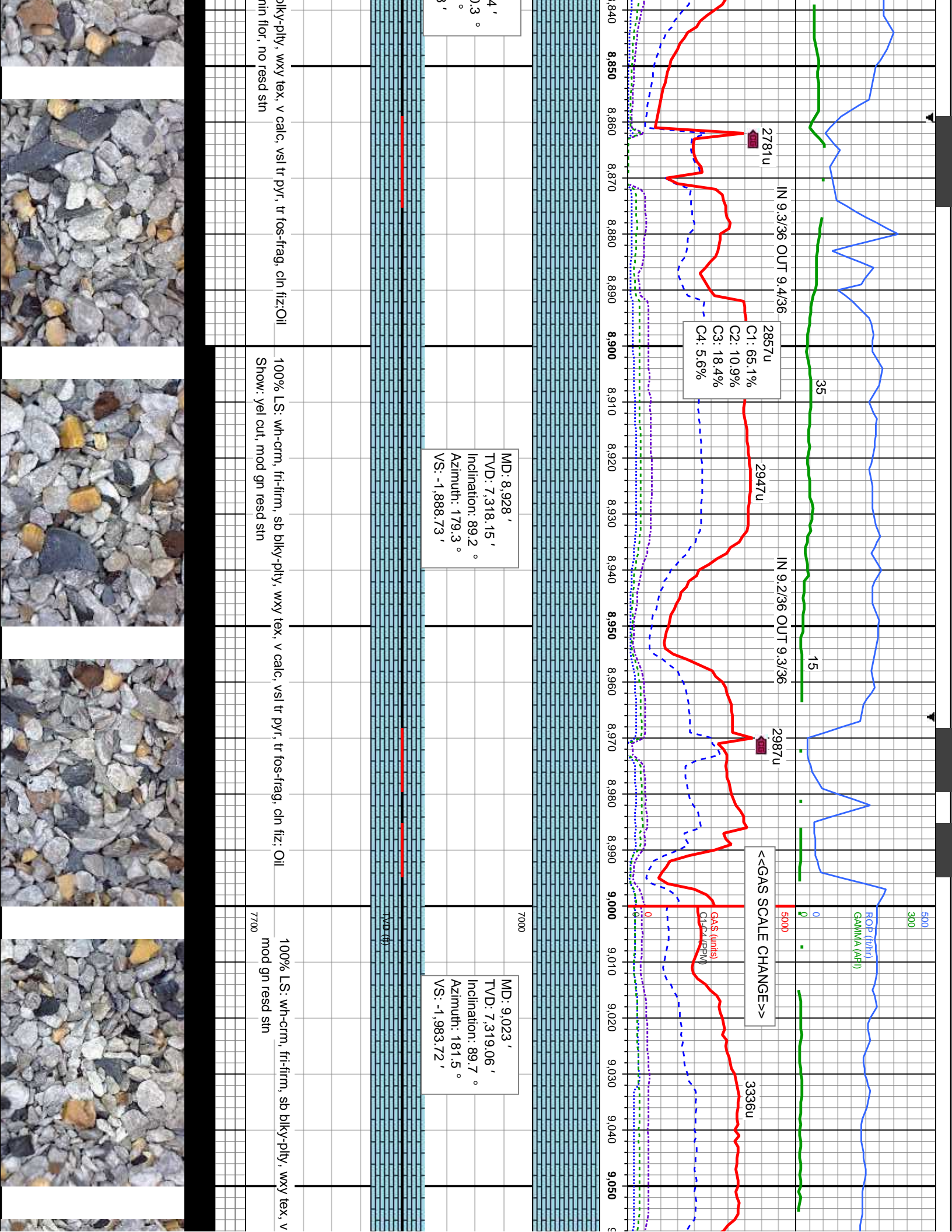
MD: 8,170 '
TVD: 7,318.88 '
Inclination: 89.5 °
Azimuth: 180.4 °
VS: -1,130.94 '

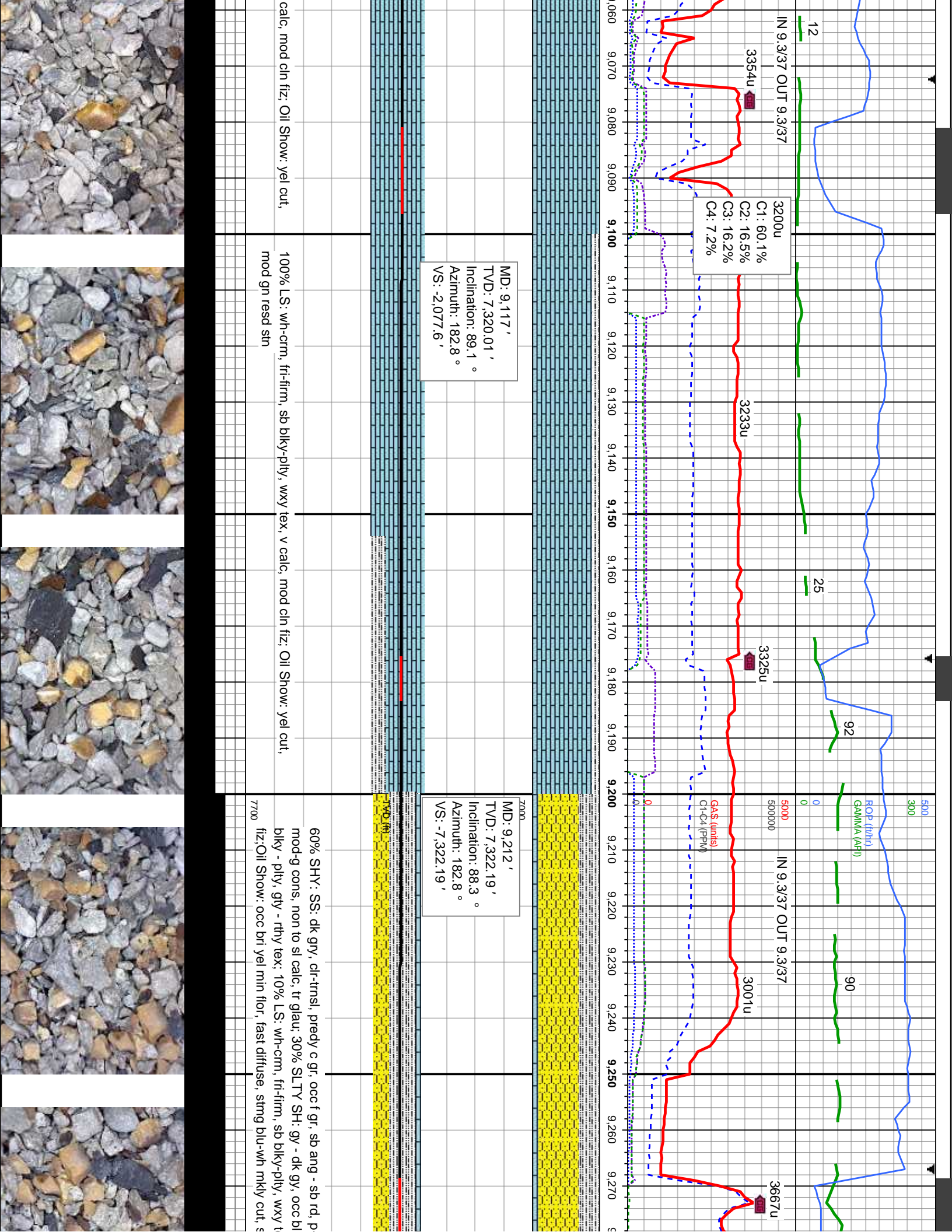
o ang - sb rd, p-mod srt, fri-		TVD (#)	7700
t: gy - dk gy, occ blk, sft -			
mod string cut, tr yel min flor,			
80% SHY: SS: dk gry, clr-trnsl, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri-		TVD (#)	7700
brit, mod-g cons, non to sl calc, tr glau; 20% SLTY SH: gy - dk gy, occ blk, sft -			
mod hd, sb blkly - plty, gry - rthy tex; Oil Show: gn-bl string cut, mod yel min flor,			
mod gn resd stn			
85% SHY: SS: dk gry, clr-trnsl, predy c gr, occ f gr, sb ang - sb rd, p		TVD (#)	
brit, mod-g cons, non to sl calc, tr glau; 15% SLTY SH: gy - dk gy, o			
mod hd, sb blkly - plty, gry - rthy tex; Oil Show: yel-gn mod string cut,			
mod yel-gn resd stn			

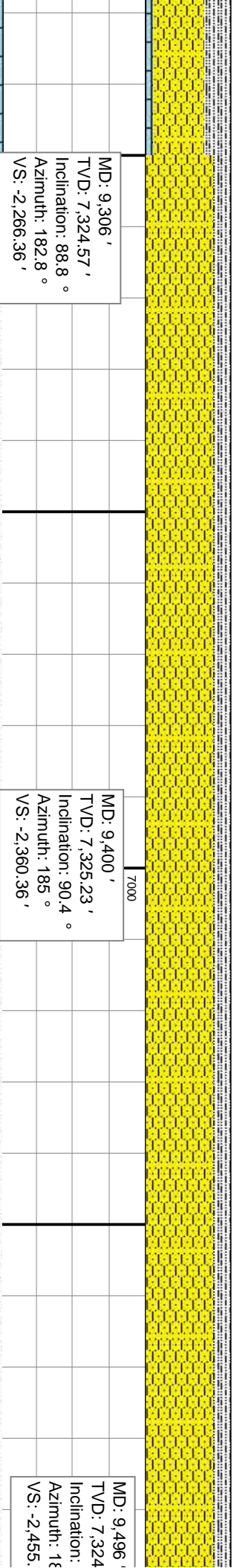








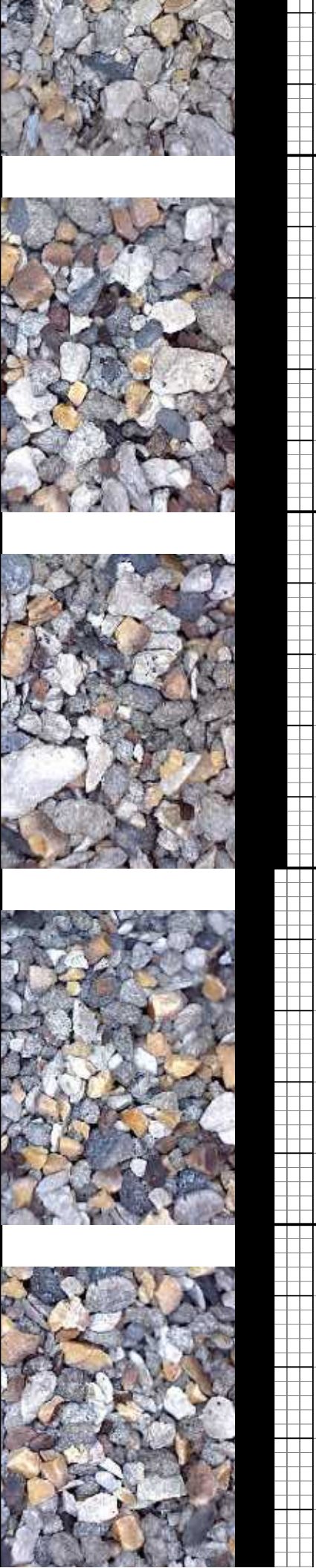


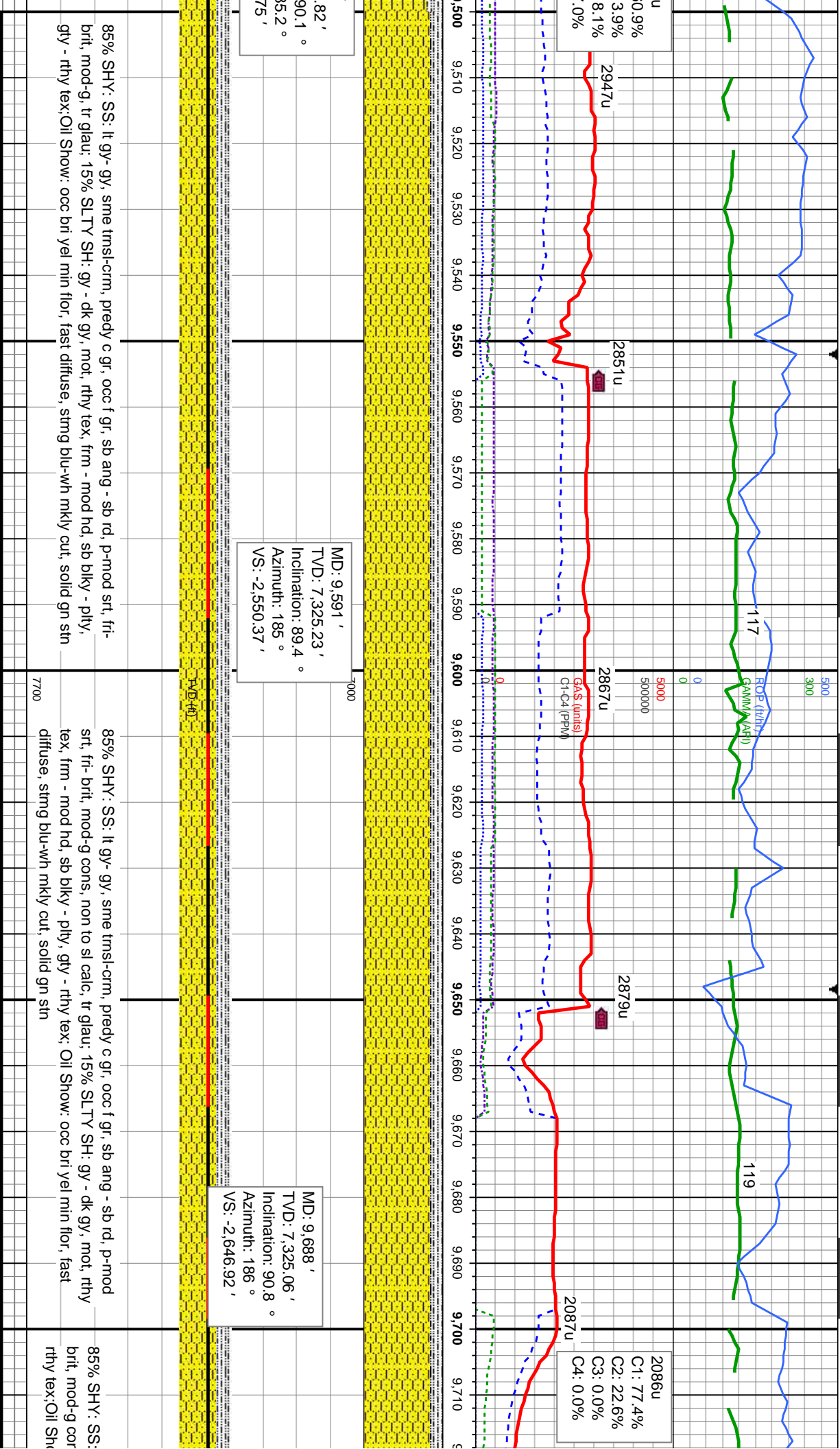


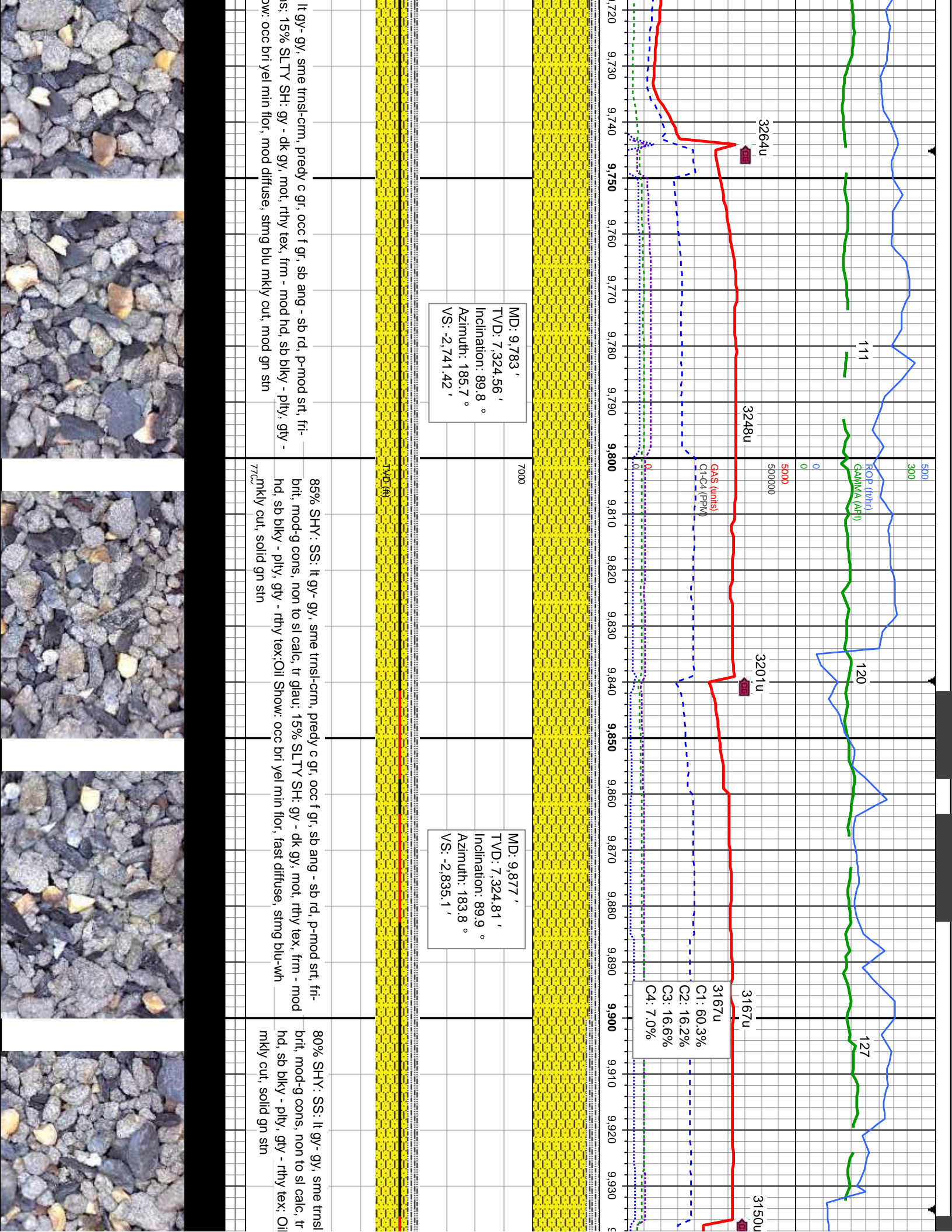
MD: 9,400 '
TV D: 7,325.23 '
Inclination: 90.4
Azimuth: 185 °
VS: -2,360.36 '

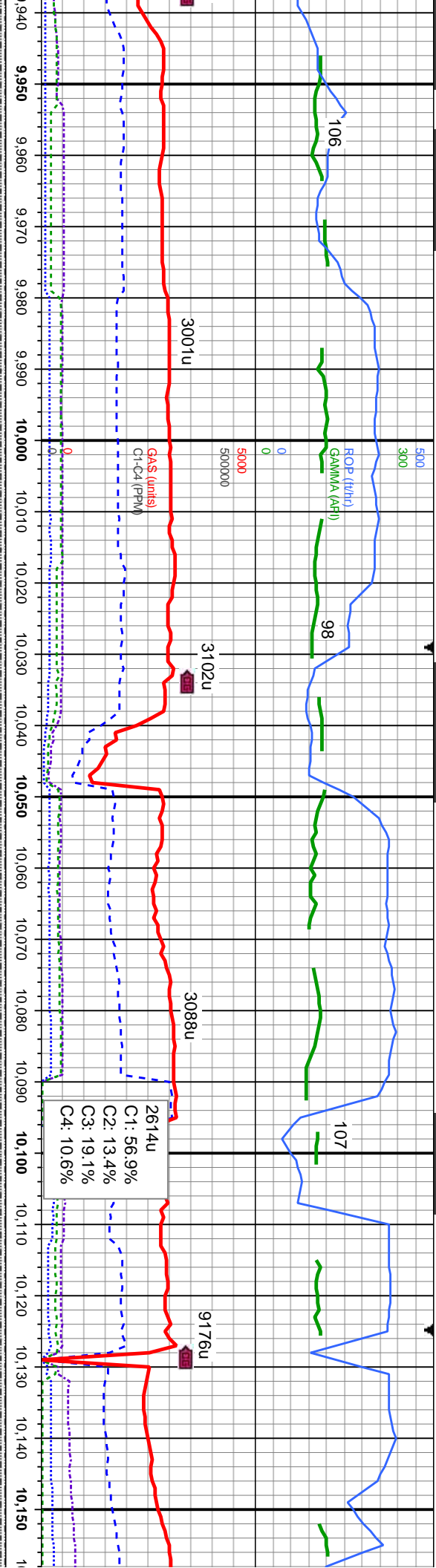
80% SHY : SS : lt gy- gy, sme trnsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau, 20% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blkly - ply, gly - rthy tex; Oil Show: occ bri yel min flor, fast diffuse, string blu-wh mcky cut, solid gn strn	7700	80% SHY : SS : lt gy- gy, sme trnsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau; 20% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blkly - ply, gly - rthy tex; Oil Show: gn-bl string cut, mod yel min flor, mod gn read strn
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80% SHY: SS: lt gy- gy, sme trnsi-cm, predy c gr, occ f gr, sb ang - sb rd, p-mod
srt, fri- brit, mod-g cons, non to sl calc, tr glau; 20% SLTY SH: gy - dk gy, mot, rthy
tex, frm - mod hd, sb blkly - plty, gty - rthy tex: Oil Show: gn-bl stmg cut, mod yel
min flur, mod gn resd sin









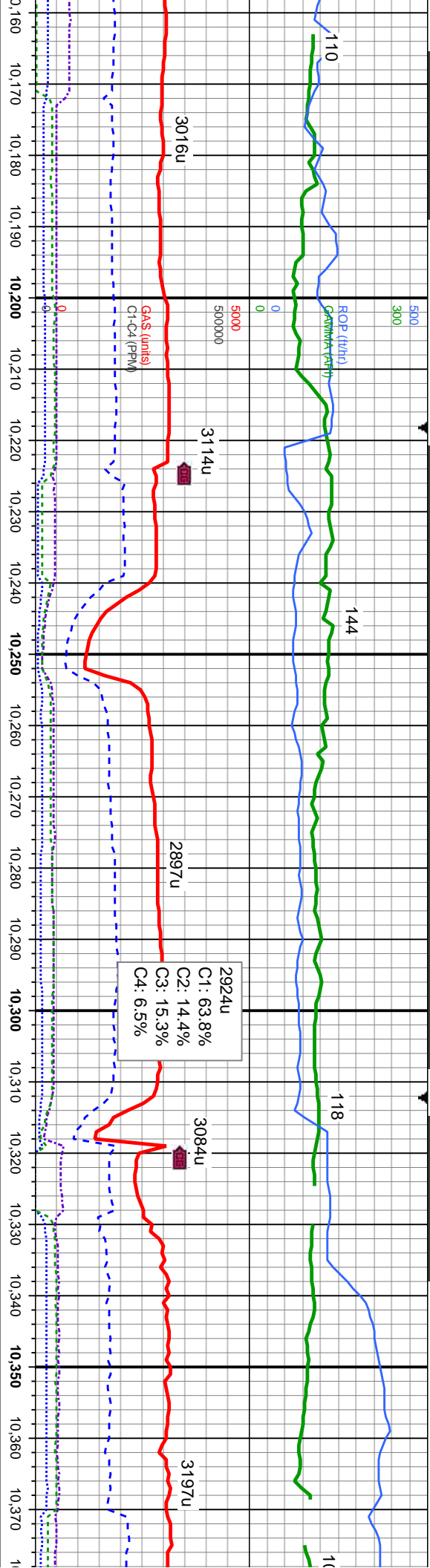
MD: 9972.0' '
TVD: 7,324.98' '
Inclination: 89.9 °
Azimuth: 183.5 °
VS: -2,929.9'

MD: 10,066' '
TVD: 7,324.16' '
Inclination: 91.1 °
Azimuth: 182.7 °
VS: -3,023.76'

2614u
C1: 56.9%
C2: 13.4%
C3: 19.1%
C4: 10.6%

cm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri- glau: 20% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod Show: occ bri yel min flir, fast diffuse, stimg blu-wh	80% SHY: SS: lt gy- gy, sme trnsf-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau: 20% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blkly - ply, gty - rthy tex:Oil Show: occ bri yel min flir, fast diffuse, stimg blu-wh mky cut, solid gn sin	75% SHY: SS: lt gy- gy, sme trnsf-crm, predy c gr, oc brit, mod-g cons, non to sl calc, tr glau: 25% SLTY SH: gy - dk gy, mot, rthy hd, sb blkly - ply, gty - rthy tex:Oil Show: occ bri yel r
7700		





0,161 '
MD: 7,321.59 '
Inclination: 92 °
Azimuth: 183.2 °
VS: 118.6 '

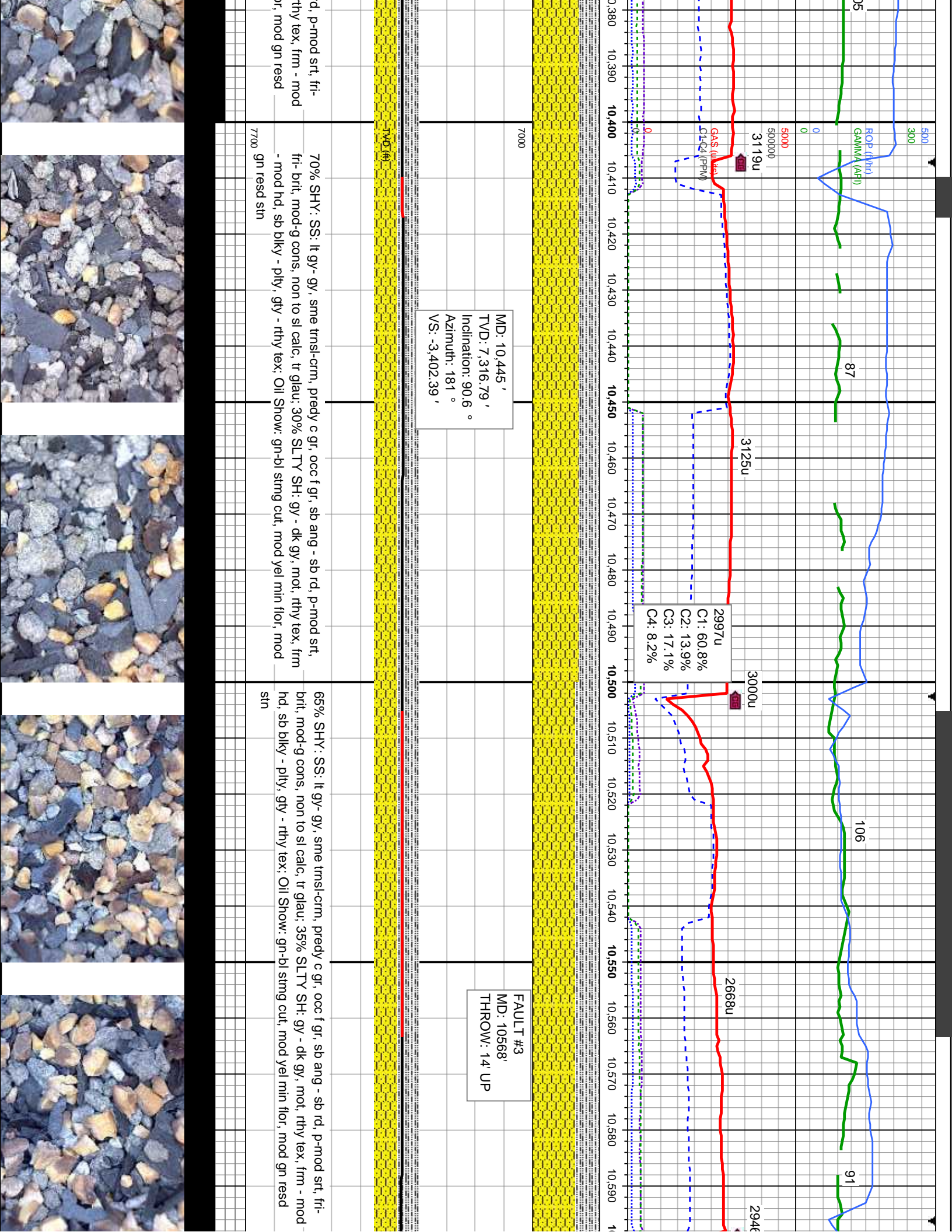
FAULT #2
MD: 10185 '
THROW: 3' UP

MD: 10,256 '
TVD: 7,319.43 '
Inclination: 90.6 °
Azimuth: 182 °
VS: -3,213.47 '

MD: 10,350 '
TVD: 7,318.12 '
Inclination: 91 °
Azimuth: 181.4 °
VS: -3,307.42 '

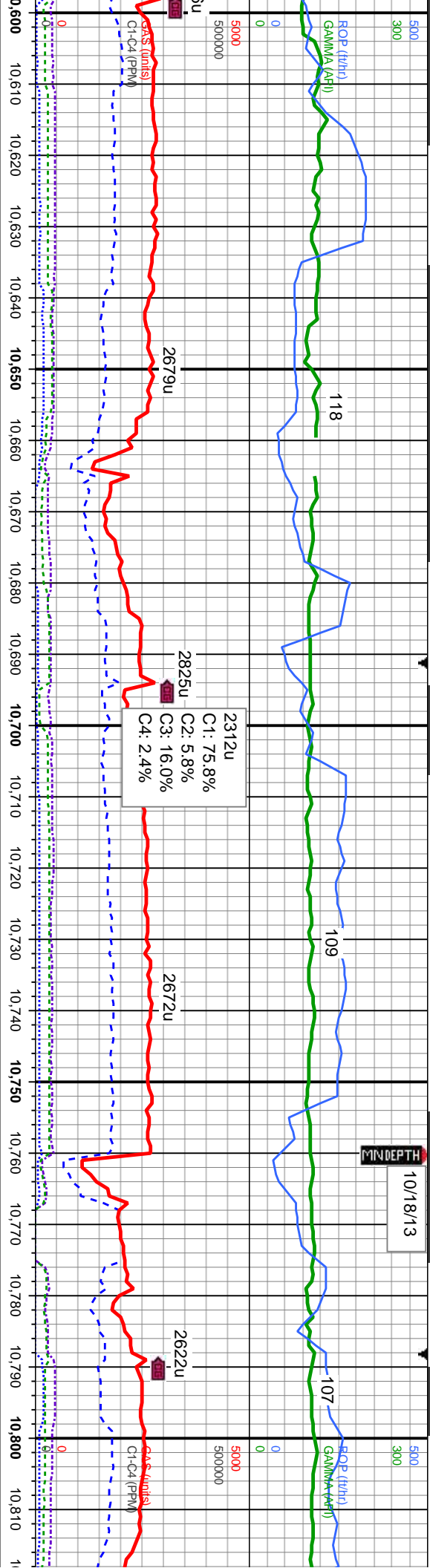
occ f gr, sb ang - sb rd, p-mod srl, fri- -t- gy - dk gy, mot, rthy tex, frm - mod flor, fast diffuse, stmg blu-wh	65% SHY: SS: lt gy- gy, sme tmsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srl, fri- brit, mod-g cons, non to sl calc, tr glau: 35% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blkY - plty, gty - rthy tex: Oil Show: gn-bl stmg cut, mod yel min flor, mod gn resd 770c stn	70% SHY: SS: lt gy- gy, sme tmsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srl, fri- brit, mod-g cons, non to sl calc, tr glau: 30% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blkY - plty, gty - rthy tex: Oil Show: gn-bl stmg cut, mod yel min flor, mod gn resd 770c stn
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10/18/13

MINDEPTH



MD: 10,635 '
TVD: 7,320.94 '
Inclination: 86.9 °
Azimuth: 180.8 °
VS: -3,592.29 '

MD: 10,731 '
TVD: 7,324.2 '
Inclination: 89.2 °
Azimuth: 180.5 °
VS: -3,688.22 '

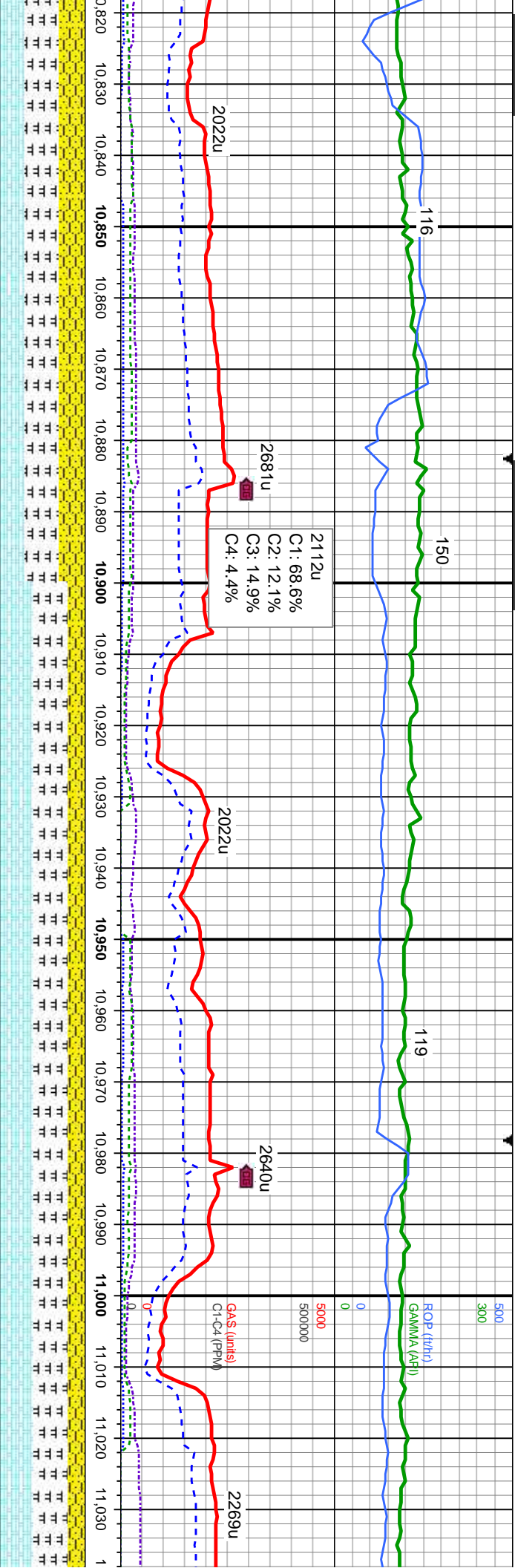
MC
TV
Inc
Az
VS

65% SHY: SS: lt gy- gy, sme trnsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri-
brit, mod-g cons, non to sl calc, tr glau; 35% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod
hd, sb blkly - plty, gty - rthy tex;

75% SHY: SS: lt gy- gy, sme trnsl-crm, predy c gr, occ f gr, sb ang - sb rd, p-mod srt, fri-
brit, mod-g cons, non to sl calc, tr glau; 25% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod
hd, sb blkly - plty, gty - rthy tex;

40% MRL
sl shyn te
srt, fri- bri
mot, blkly
gn-bl strn





MD: 10,825 '
D: 7,324.61 '
Inclination: 90.3 °
Azimuth: 180.9 °
VS: -3,782.21 '

MD: 10,921 '
TVD: 7,324.28 '
Inclination: 90.1 °
Azimuth: 180.6 °
VS: -3,878.2 '

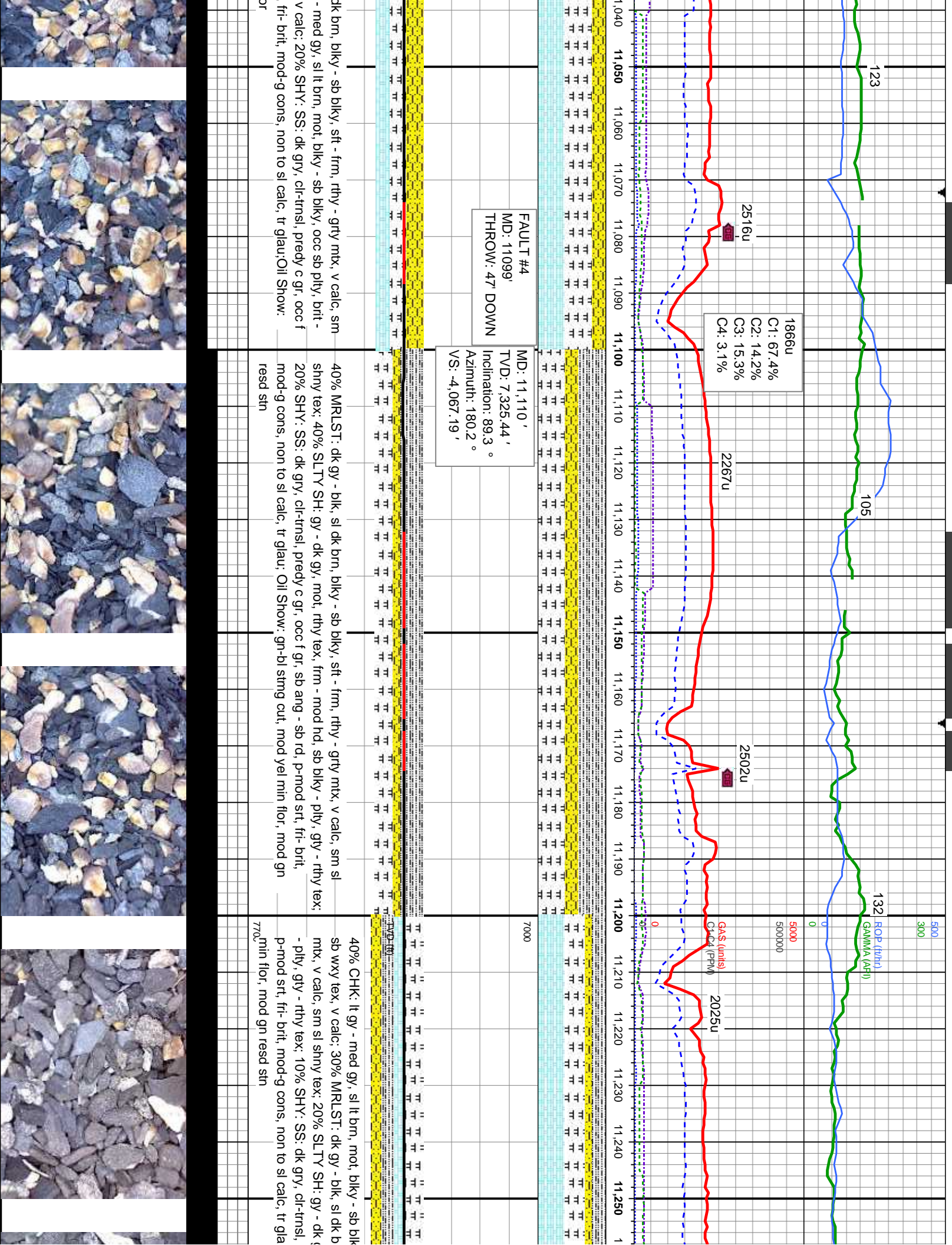
MD: 11,015 '
TVD: 7,324.52 '
Inclination: 89.6 °
Azimuth: 180 °
VS: -3,972.2 '

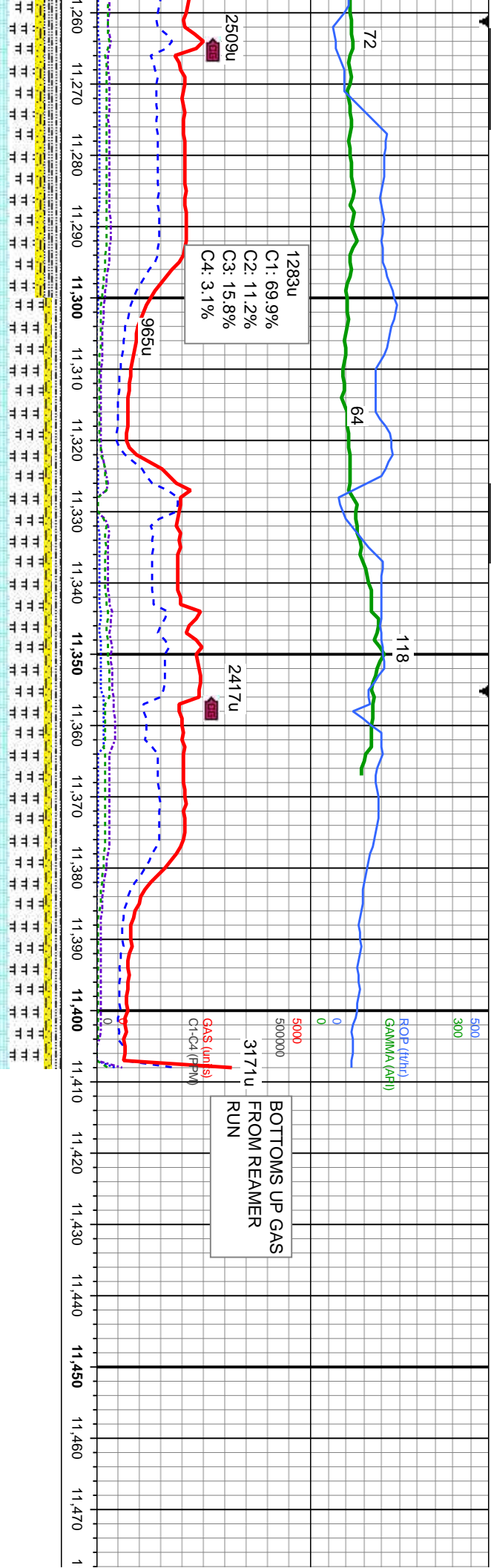
SST: dk gy - blk, sl dk brn, blk - sb blk, sft - frm, rthy - grty mtx, v calc, sm
x: 30% SHY: SS: dk gry, cl-trns, predy c gr, occ f gr, sb ang - sb rd, p-mod
t, mod-g cons, non to sl calc, tr glau: 30% CHK: lt gy - med gy, sl lt brn,
- sb blk, occ sb ply, brit - mod frm, chky - sb wxy tex, v calc: Oil Show:
g cut, mod yel min flr, mod gn resd sin

40% MRLST: dk gy - blk, sl dk brn, blk - sb blk, sft - frm, rthy - grty mtx, v calc, sm sl shny
tex: 40% CHK: lt gy - med gy, sl lt brn, mot, blk - sb blk, occ sb ply, brit - mod frm, chky
- sb wxy tex, v calc: 20% SHY: SS: dk gry, cl-trns, predy c gr, occ f gr, sb ang - sb rd,
p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau: Oil Show: thn-mod yel-gn cut, no min
flr, no resd sin

40% MRLST: dk gy - blk, sl
sl shny tex: 40% CHK: lt gy
mod frm, chky - sb wxy tex,
gr, sb ang - sb rd, p-mod srt,
thn-mod yel-gn cut, no min flr







MD: 11,299 '
TVD: 7,323.79 '
Inclination: 91.7 °
Azimuth: 182.2 °
VS: -4,256.12 '

MD: 11,353 '
TVD: 7,322.66 '
Inclination: 90.7 °
Azimuth: 181.9 °
VS: -4,310.07 '

MD: 11,408 '
TVD: 7,322 '
Inclination: 90.7 °
Azimuth: 181.9 °
VS: -4,366.66 '

PROJECTION TO BIT

Ziemer 35C-5HZ Wellbore TD @ 11408' MD @ 08:00 hrs on 10/18/2013

Thank you for using Columbine Logging, Inc.

y, occ sb pty, brit - mod firm, chky -
m, blk - sb blk, sft - frm, rthy - grty
y, mot, rthy tex, frm - mod hd, sb blk
piedy c gr, occ f gr, sb ang - sb rd,
u; Oil Show: gn-bl string cut, mod yel

40% CHK: lt gy - med gy, sl lt brn, mot, blk - sb blk, occ sb pty, brit - mod firm, chky -
sb wxy tex, v calc: 40% MRLST: dk gy - blk, sl dk brn, blk - sb blk, sft - frm, rthy - grty
mtx, v calc, sm sl shny tex: 10% SLTY SH: gy - dk gy, mot, rthy tex, frm - mod hd, sb blk
- pty, gty - rthy tex: 10% SHY: SS: dk gy, cl-trns, piedy c gr, occ f gr, sb ang - sb rd,
p-mod srt, fri- brit, mod-g cons, non to sl calc, tr glau; Oil Show: gn-bl string cut, mod yel
min floor, mod gn resd sin

7700



