



Scale: 5" / 100'
Measured Depth Log

Well Name Morning Fresh 3N-15HZ

Location NENW SEC 22 T3N R66W

State COLORADO County WELD

Country USA Rig Number ENSIGN 132

API Number 051233690900 AFE # 2074485

Region DJ BASIN Field WATTENBERG

Spud Date 6/24/2014 Drilling Completed 6/30/2014

Surface Coordinates 456' FNL & 1851' FWL
40.228429 104.942864

Bottom Hole Coordinates 460' FNL & 1431' FWL
40.226805 104.9795

Ground Elevation 4885' K.B. Elevation 4898'

Logged Interval 7050' To 12318 Total Depth 12318'

Formation NIOBRARA

Type of Drilling Fluid FSNL

Operator

Company ANADARKO PETROLEUM INC

Address 1099 18th St, Suite 1800
Denver , CO 80202

Geologist

Name SHANA SWIRIN AND CHRISTIAN VENTURINO

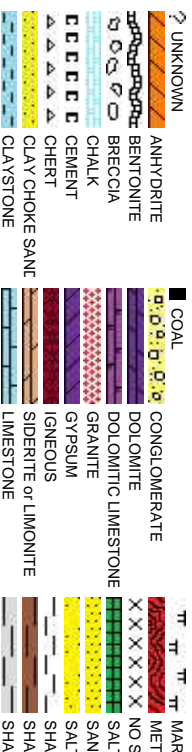
Company COLUMBINE LOGGING INC

Address 2385 S. Lipan St.
Denver, CO 80223

Zone Color Coding



Rock Types



Accessories

Fossils

	GASTROPOD
	INOCERAMUS
	OOOLITE
	AMPHIPORA
	OSTRACOD
	BELEMNITE
	BIOCLASTIC
	BRACHIOPOD
	BRYOZOA
	CEPHALOPOD
	CORAL
	CRINOID
	ECHINOID
	FISH
	FORAMINIFERA
	F FOSSIL

Minerals

	ARGILLITE GRAIN
	B BENTONITE
	H HEAVY MINERAL
	K KAOLIN
	M MARCASITE
	BRECCIA FRAGMENTS
	C CALCAREOUS
	CARBONACEOUS FLAKES
	CHERT
	COAL - THIN BEDS
	D DOLOMITIC
	F FELDSPAR
	FERRUGINOUS PELLET
	F FERRUGINOUS
	G GLAUCONITE
	G GYPSIFEROUS

Stringer

	ANHYDRITE STRINGER
	BENTONITE STRINGER
	COAL STRINGER
	DOLOMITE STRINGER
	GYPSUM STRINGER
	L Limestone stringer
	MARLSTONE (CALC) STRG
	MARLSTONE (DOL) STRG
	SANDSTONE STRINGER
	SHALE STRINGER
	SILTSTONE STRINGER

Other Symbols

Oil Show

	P PINPOINT
	V VUGGY
	D DEAD
	E EVEN
	Q QUESTIONABLE
	BIT
	SPOTTED STAINING
	CONNECTION (UP)

Engineering

	DST INTERVAL
	FAULT
	FORMATION TOP
	GAS SHOW
	OIL SHOW
	MN DEPTH UP
	CONNECTION (DOWN)
	MN DEPTH (DOWN)
	A ANGULAR
	CONNECTION GAS
	CONNECTION GAS (LEFT)
	TRIP GAS
	TRIP GAS (LEFT)
	F FRACTURE
	INTERCRYSTALLINE
	INTEROOLITIC
	M MOLDIC
	O ORGANIC
	DOWN TIME GAS
	DOWN TIME GAS (LEFT)
	CORE - LOST
	CORE - RECOVERED
	SURVEY

	WIRELINE TESTED - LEFT
	WIRELINE TESTED - RT
	DRILL STEM TEST
	MN DEPTH
	G GRAINSTONE
	L LITHOGRAPHIC
	MX MICROXLN
	M MUDSTONE

Rounding

Porosity

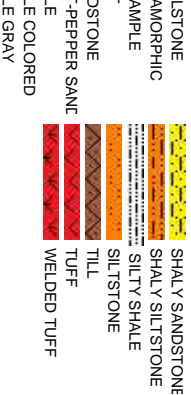
	NORMAL FAULT
	OVERTURED STRATA
	REVERSE FAULT
	CASING
	SIDEWALL CORE (LEFT)
	SIDEWALL CORE (RIGHT)
	SLIDE
	SURVEY

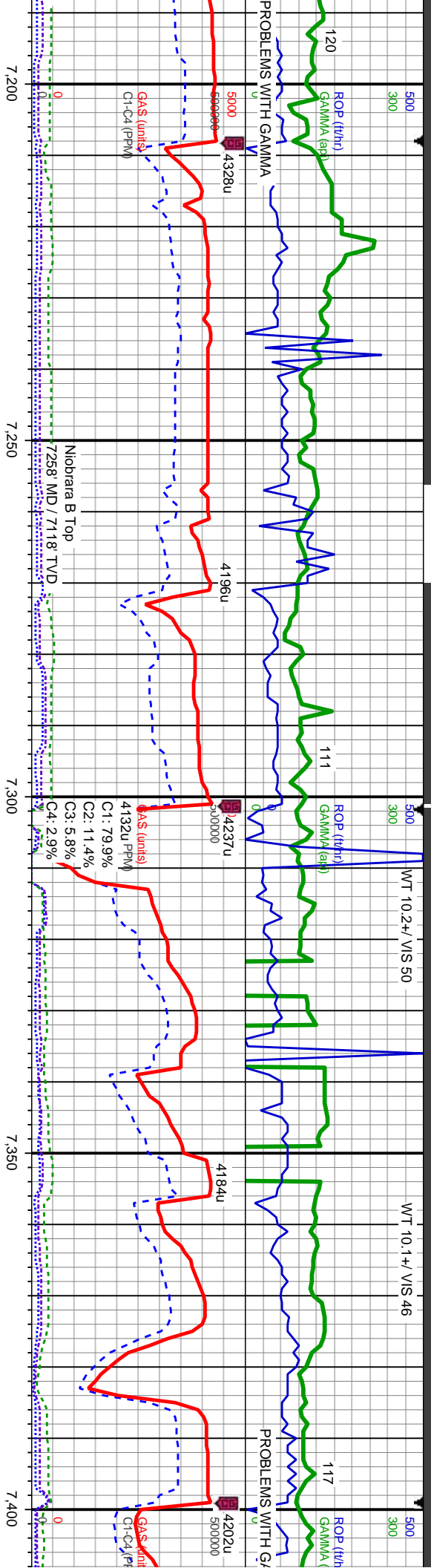
Textures

	P POOR
	W WELL
	CRYPTOXLN

Sorting

	M MODERATE
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MD: 7.214
TVD: 7.094.2
Inclination: 55.91
Azimuth: 358.2
VS: 138.68

MD: 7.261
TVD: 7.119.08
Inclination: 60.15
Azimuth: 358.53
VS: 178.52

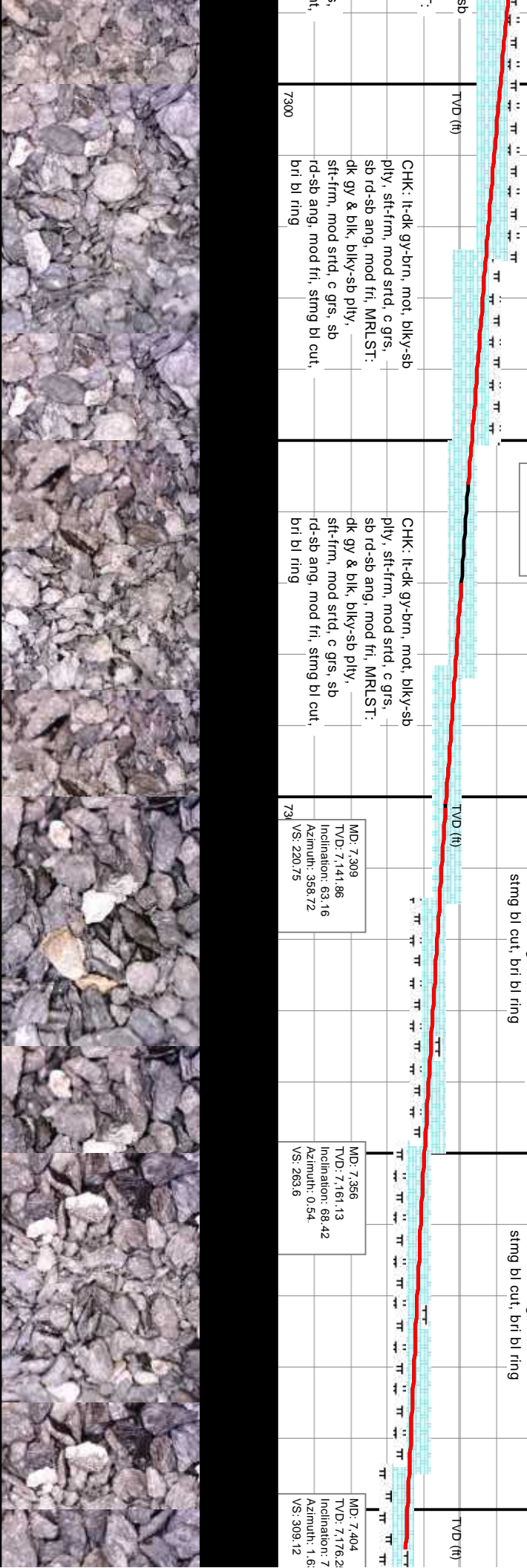
CHK: lt-dk gy-brn, mot, blk-y-sb
ply, sft-frn, mod strd, c grs,
sb rd-sb ang, mod fri, MRLST:
dk gy & blk, blk-y-sb ply,
sft-frn, mod strd, c grs, sb
rd-sb ang, mod fri, sting bl cut,
bri bl ring

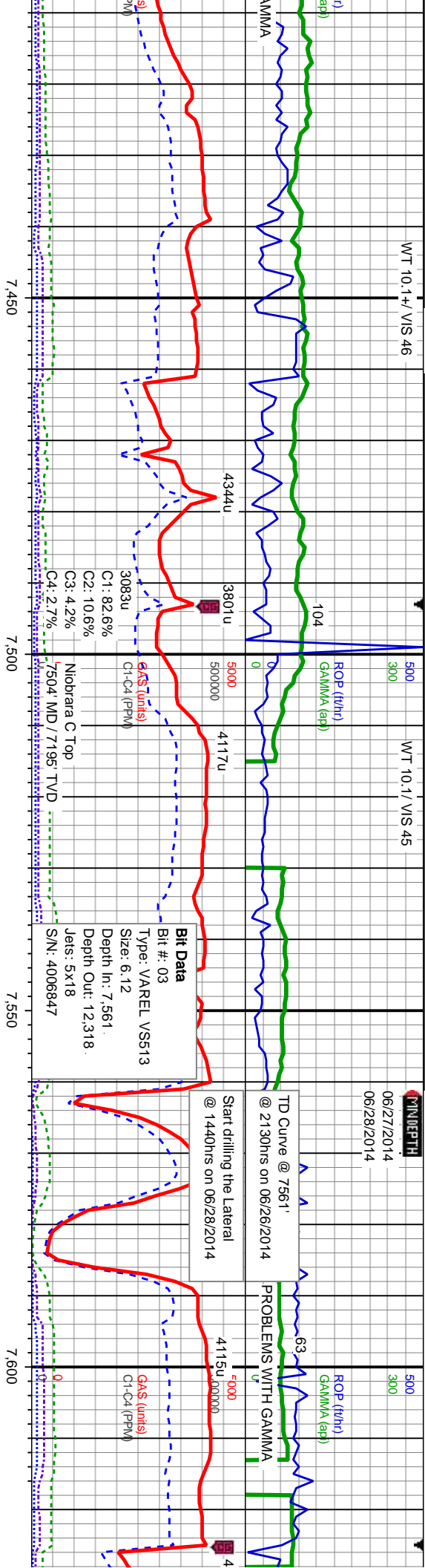
CHK: lt-dk gy-brn, mot, blk-y-sb
ply, sft-frn, mod strd, c grs,
sb rd-sb ang, mod fri, MRLST:
dk gy & blk, blk-y-sb ply,
sft-frn, mod strd, c grs, sb
rd-sb ang, mod fri, sting bl cut,
bri bl ring

MD: 7.309
TVD: 7.141.86
Inclination: 63.16
Azimuth: 358.72
VS: 220.75

MD: 7.356
TVD: 7.161.13
Inclination: 68.42
Azimuth: 0.54
VS: 263.6

MD: 7.404
TVD: 7.176.21
Inclination: 7
Azimuth: 1.6
VS: 309.12



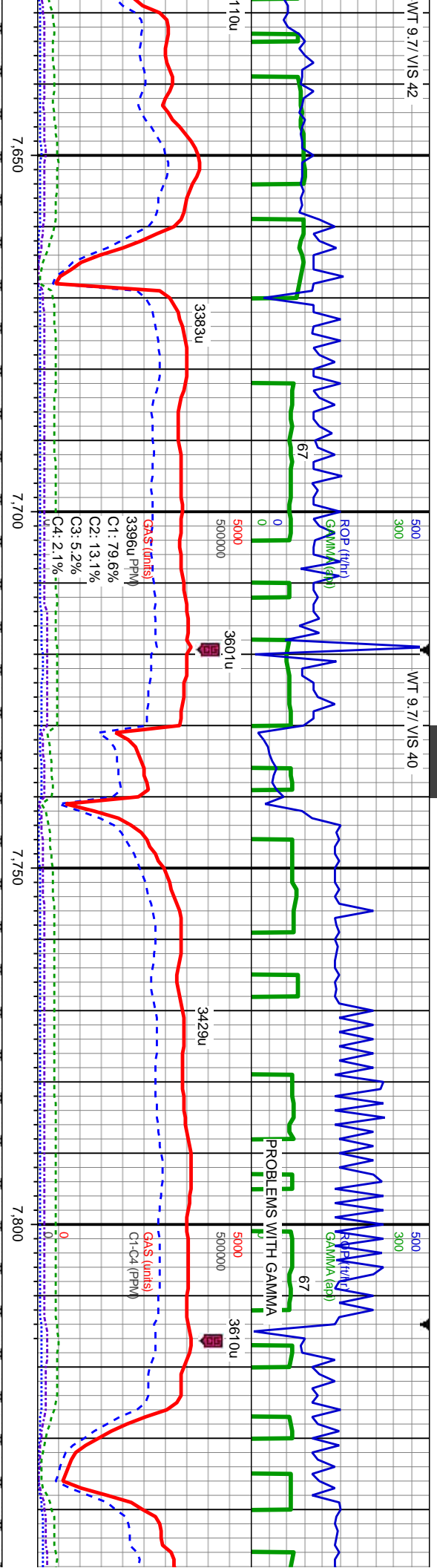


CHK: It-dk gy-brn, mot, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, MRLST: dk gy & blk, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, occ bent, string bl cut, bri bl ring		CHK: It-med gy-brn, mot, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, MRLST: dk gy & blk, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, string bl cut, bri bl ring		CHK: It gy-brn, mot, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, tr MRLST: dk gy & blk, blk-ly-sb ply, sft-frm, mod strd, c grs, sb rd-sb ang, mod fri, string bl cut, dul bl ring		CHK: It gy brn, sl mot, sb blk-ly-sb ply, sft-mod frm, mod fri, mod strd, med grs, MRLST: dk gy-blk, sb blk-ly-sb ply, sft-mod frm, mod fri, mod strd, med grs, tr pyr, tr fos frags, string bl cut, dul bl ring	
MD: 7.452 TVD: 7.187/21 Inclination: 78.78 Azimuth: 2.78 VS: 355.81		MD: 7.515 TVD: 7.196/06 Inclination: 85.07 Azimuth: 1.23 VS: 418.11		MD: 7.586 TVD: 7.198.9 Inclination: 90.34 Azimuth: 359.93 VS: 489.02			



WT 9.7/ VIS 42

WT 9.7/ VIS 40



CHK: lt gy brn, sl mot, sb
blky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb blky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr fos frags, sting bl
cut, bri bl ring

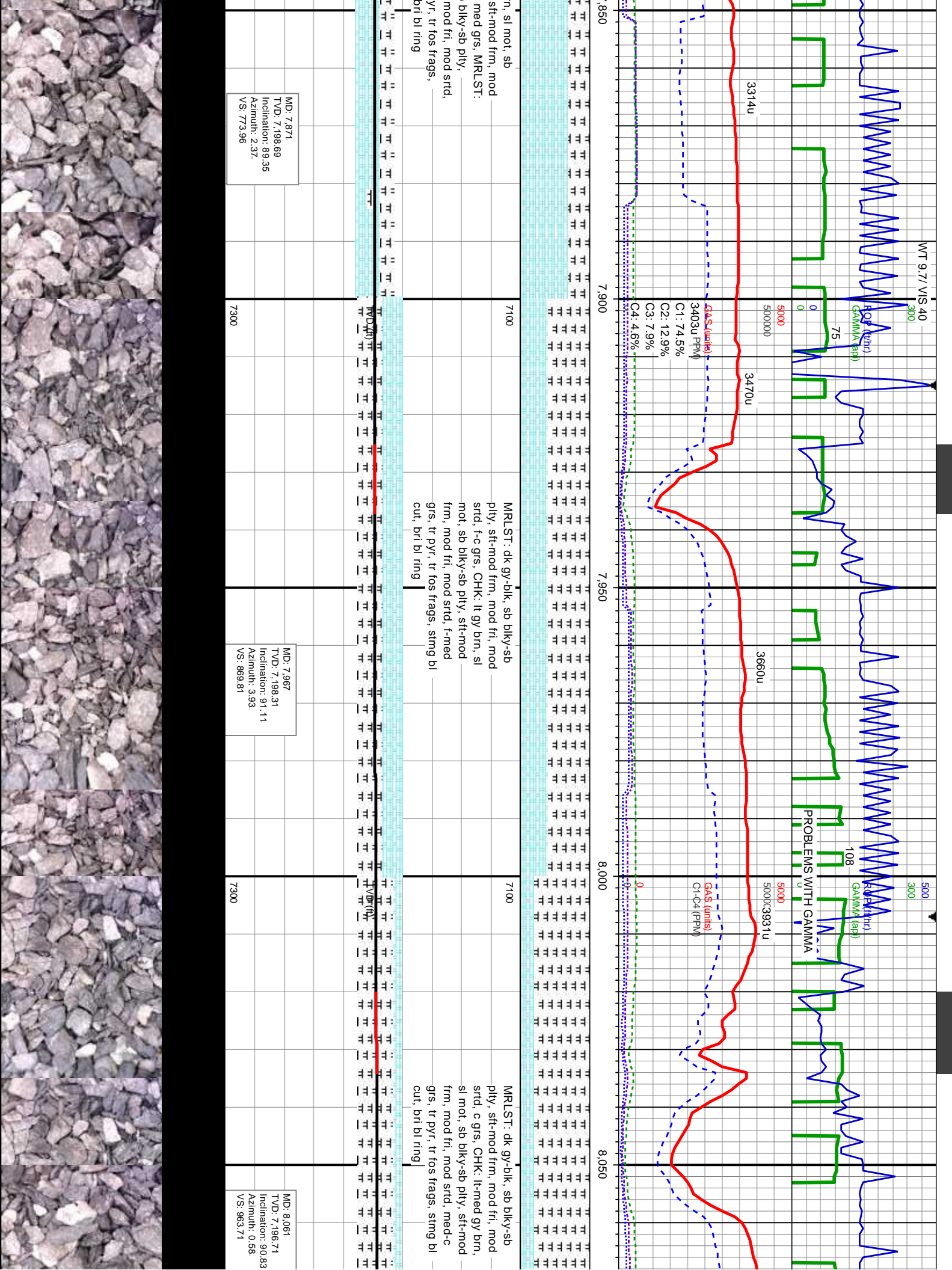
CHK: lt gy brn, sl mot, sb
blky-sb pily, sft-mod frm, mod
fri, mod strd, f-c grs, MRLST:
dk gy-blk, sb blky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr pyr, tr fos frags,
sting bl cut, bri bl ring

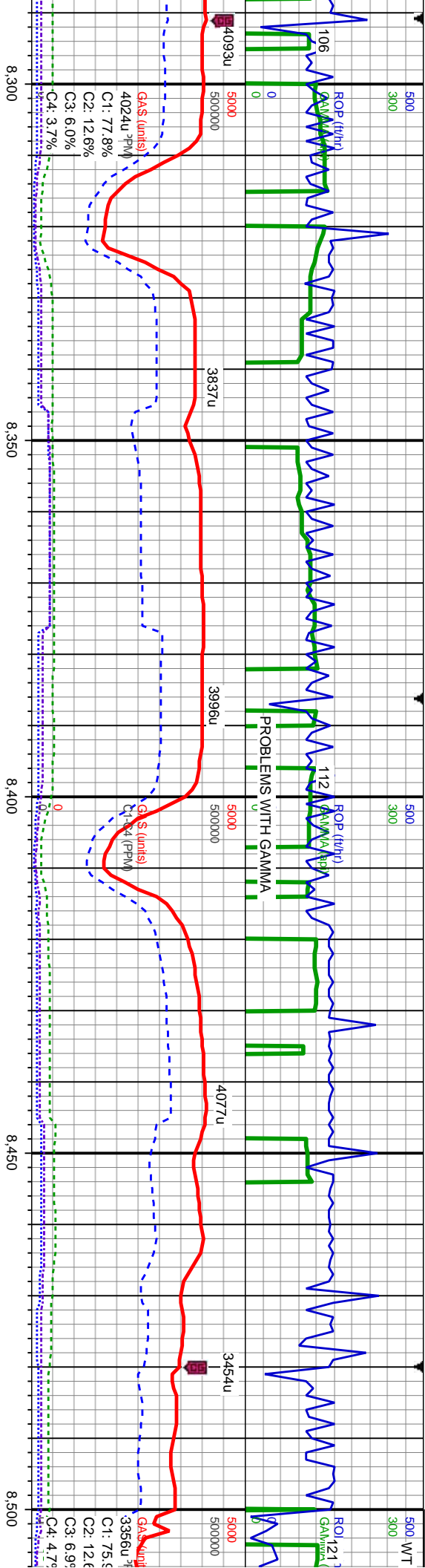
CHK: lt gy brn, sl mot, sb
blky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb blky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr fos frags, sting bl
cut, bri bl ring

MD: 7.681
TVD: 7.198.31
Inclination: 90.37
Azimuth: 358.84
VS: 584.02

MD: 7.776
TVD: 7.198.08
Inclination: 89.91
Azimuth: 1.2
VS: 679.01





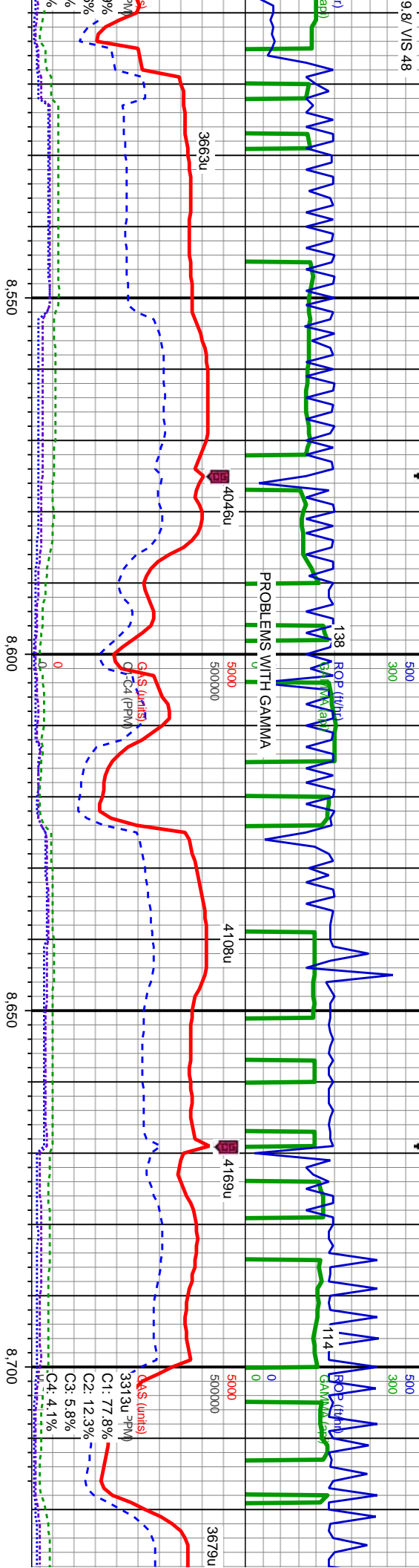


7100 MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
strd, c grs, rr CHK: dk gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod strd, c grs, r
pyr, occ bent, sting bl cut, bri
bl ring

7100 MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
strd, c grs, tr CHK: med-dk gy
brn, sl mot, sb blk-y-sb ply,
sft-mod frm, mod fri, mod strd,
c grs, rr pyr, occ bent, sting bl
cut, bri bl ring

MD: 8.346 TVD: 7.195.83 Inclination: 89.23 Azimuth: 357.66 VS: 1.248.64	MD: 8.441 TVD: 7.197.36 Inclination: 88.92 Azimuth: 357.74 VS: 1.343.55
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MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
strd, c grs, tr CHK: dk gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod strd, c grs, r
pyr, occ bent, sting bl cut, bri
bl ring

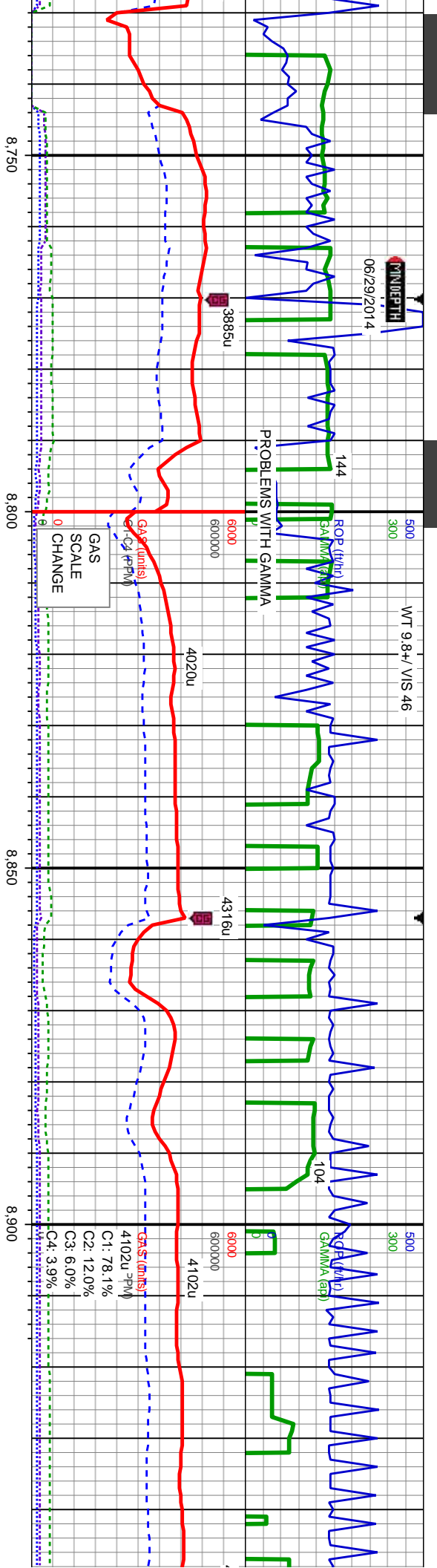
MD: 8.537
TVD: 7,198.81
Inclination: 89.35
Azimuth: 359.34
VS: 1.439.61

MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
strd, c grs, tr CHK: dk gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod strd, c grs,
occ pyr, occ bent, sting bl cut,
bri bl ring

MD: 8.632
TVD: 7,200.09
Inclination: 89.11
Azimuth: 358.97
VS: 1.534.49

MD: 8.727
TVD: 7,202.
Inclination:
Azimuth: 35
VS: 1.629.4





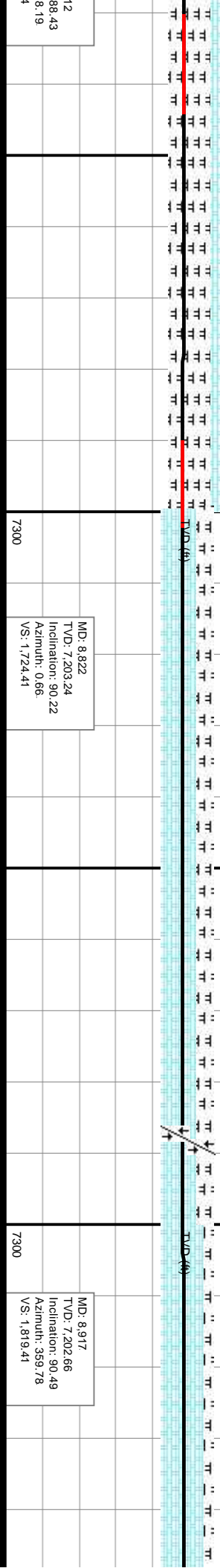
MR.LST: dk gy-blk, sb blk-ly-sb
ply, sft-mod frm, mod fri, mod
strd, c grs, tr CHK: med-dk gy
brn, sl mot, sb blk-ly-sb ply,
sft-mod frm, mod fri, mod strd,
c grs, ooc pyr, tr bent, sting bl
cut, bri bl ring

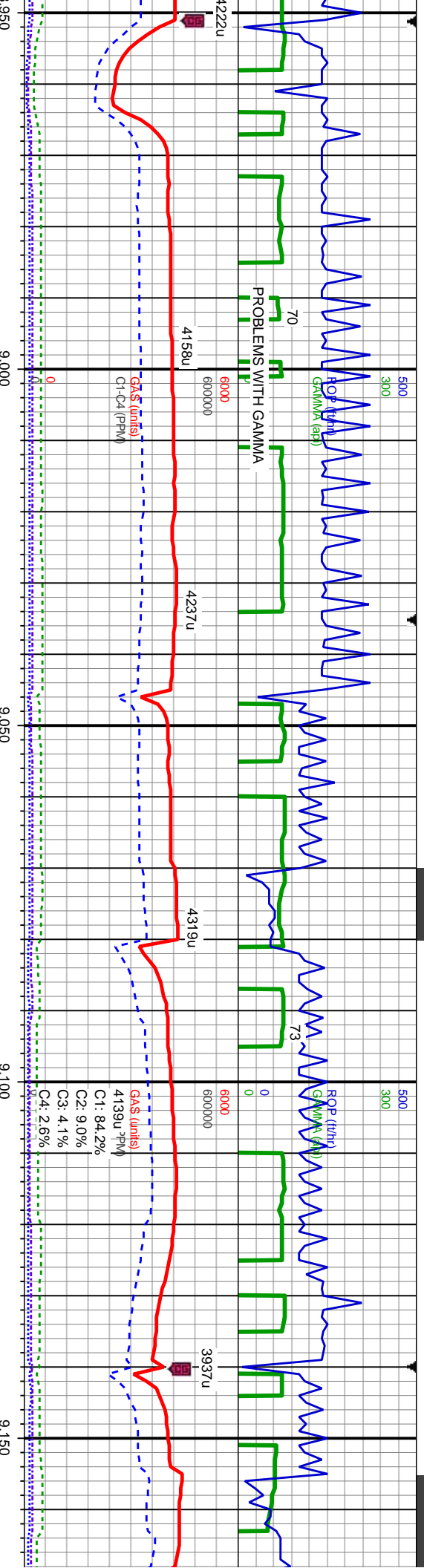
7100

CHK: lt-med gy brn, sl mot, sb
blk-ly-sb ply, sft-mod frm, mod
fri, mod strd, c grs, MR.LST: dk
gy-blk, sb blk-ly-sb ply, sft-mod
frm, mod fri, mod strd, c grs, tr
pyr, tr fos frags, tr bent, sting
bl cut, bri bl ring

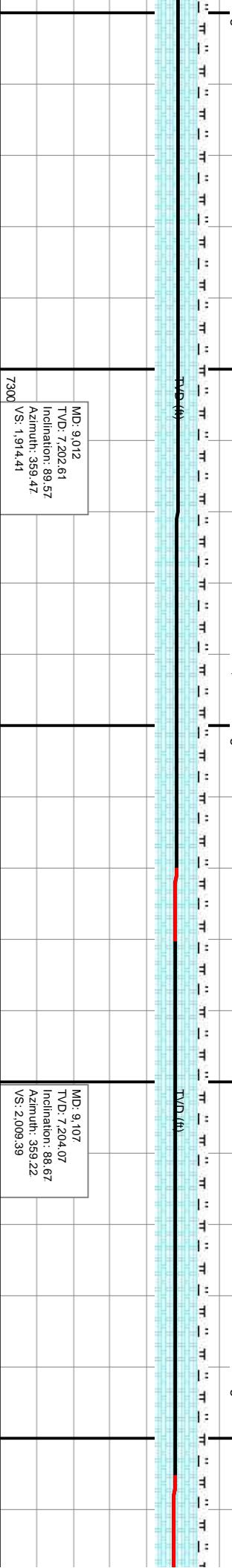
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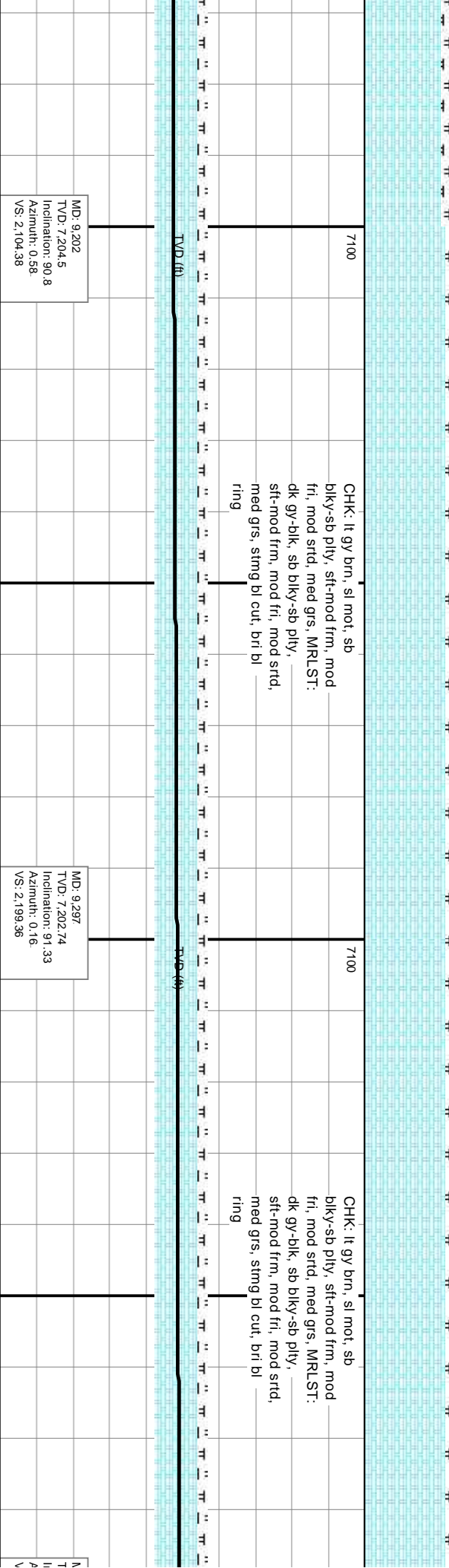
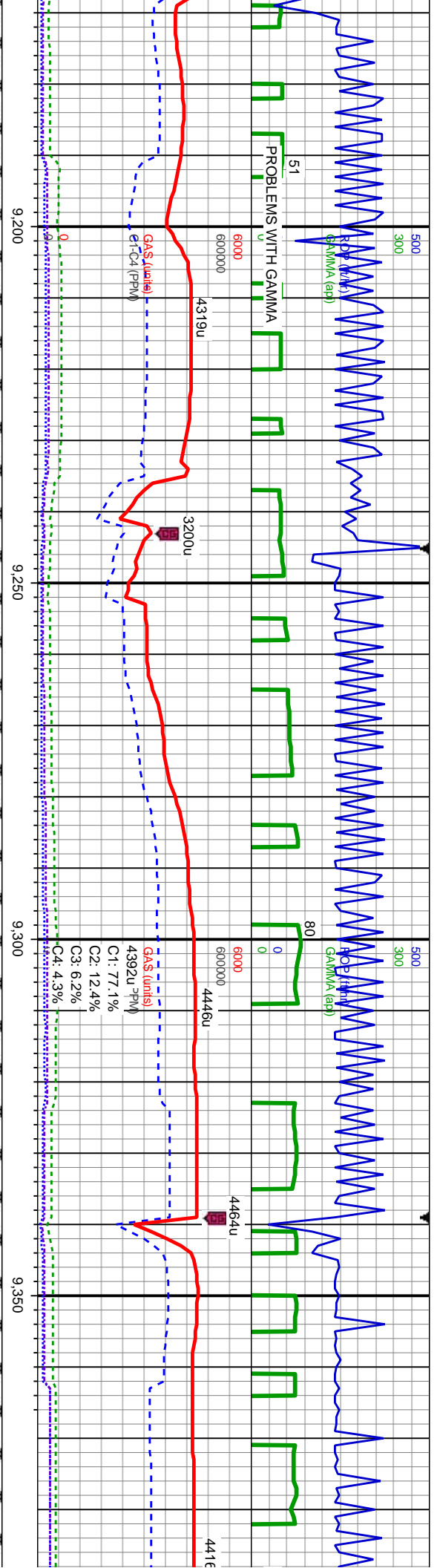
CHK: med-d
blk-ly-sb ply,
fri, mod strd,
gy-blk, sb bl
frm, mod fri,
pyr, tr fos fra
bl cut, bri bl

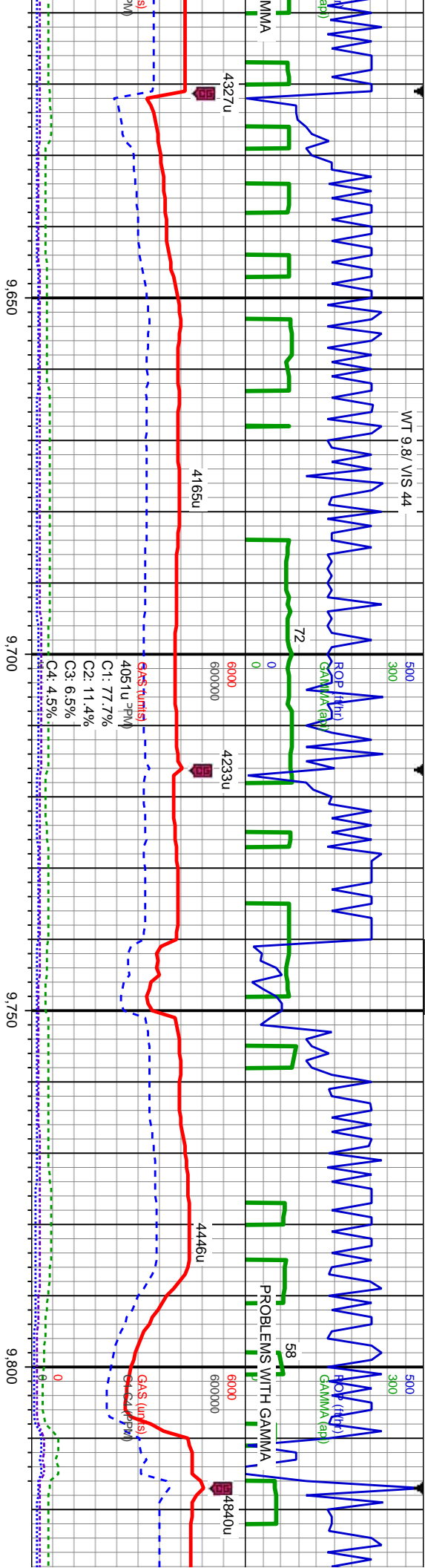




Depth (ft)	Log Description
9,050	CHK: med gy brn, sl mot, sb biky-sb pty, sft-mod frm, mod fri, mod strd, c grs, MRLST: dk gy-blk, sb biky-sb pty, sft-mod frm, mod fri, mod strd, c grs, tr pyr, tr fos frags, rr bent, sting bl cut, bri bl ring
9,100	CHK: med gy brn, sl mot, sb biky-sb pty, sft-mod frm, mod fri, mod strd, c grs, MRLST: dk gy-blk, sb biky-sb pty, sft-mod frm, mod fri, mod strd, c grs, tr pyr, tr fos frags, sting bl cut, bri bl ring





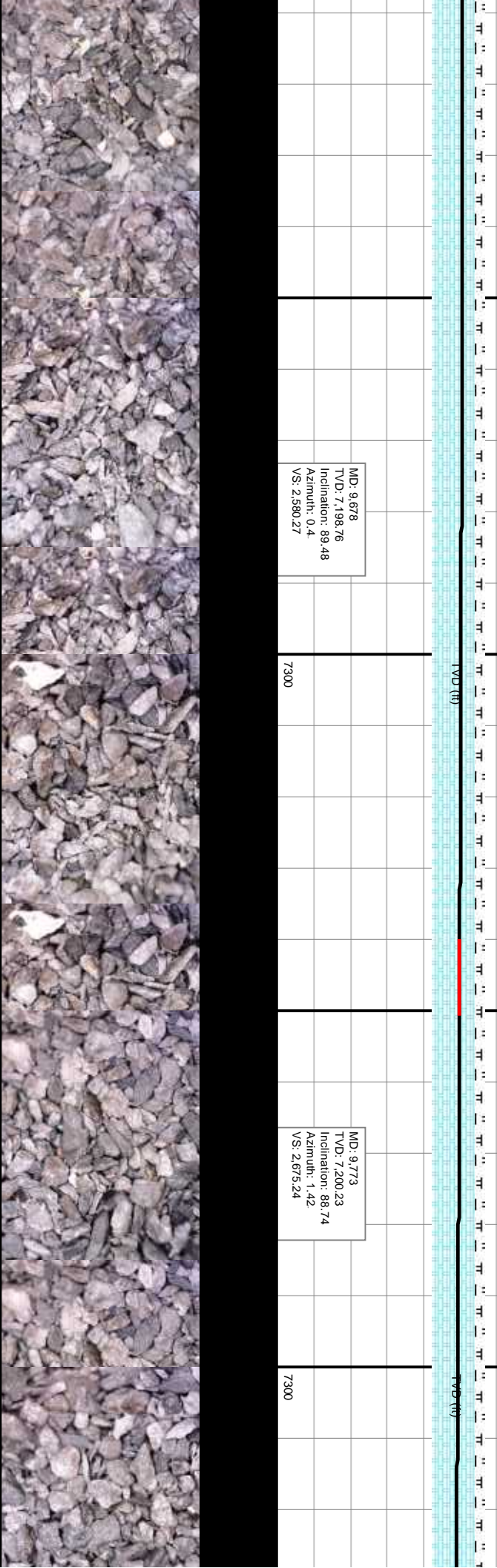


CHK: lt-med gy brn, sl mot, sb
blky-sb ply, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb blky-sb ply,
sft-mod frm, mod fri, mod strd,
med grs, tr calc incl, tr cal,
sting bl cut, bri bl ring

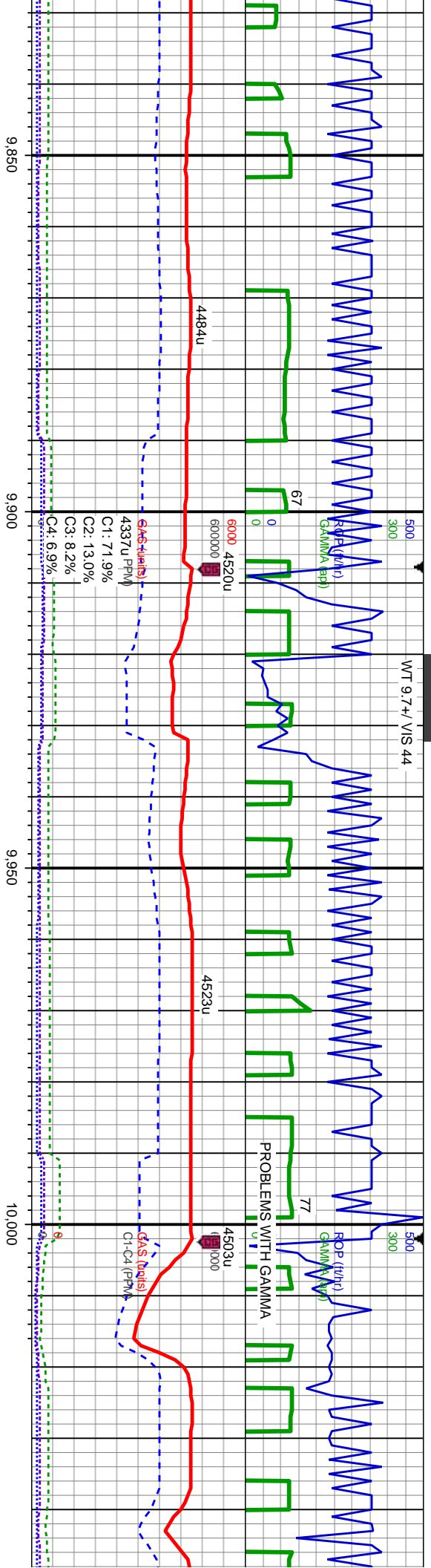
CHK: lt gy brn, sl mot, sb
blky-sb ply, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb blky-sb ply,
sft-mod frm, mod fri, mod strd,
med grs, tr cal, sting bl cut, bri
bl ring

MD: 9.678
TVD: 7,198.76
Inclination: 89.48
Azimuth: 0.4
VS: 2.580.27

MD: 9.773
TVD: 7,200.23
Inclination: 88.74
Azimuth: 1.42
VS: 2.675.24



WFT 9.7+ / VIS 44



CHK: lt gy brn, sl mot, sb
biky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb biky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr cal, sting bl cut, bri
bl ring

CHK: lt-dk gy brn, sl mot, sb
biky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb biky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr cal, sting bl cut, bri
bl ring

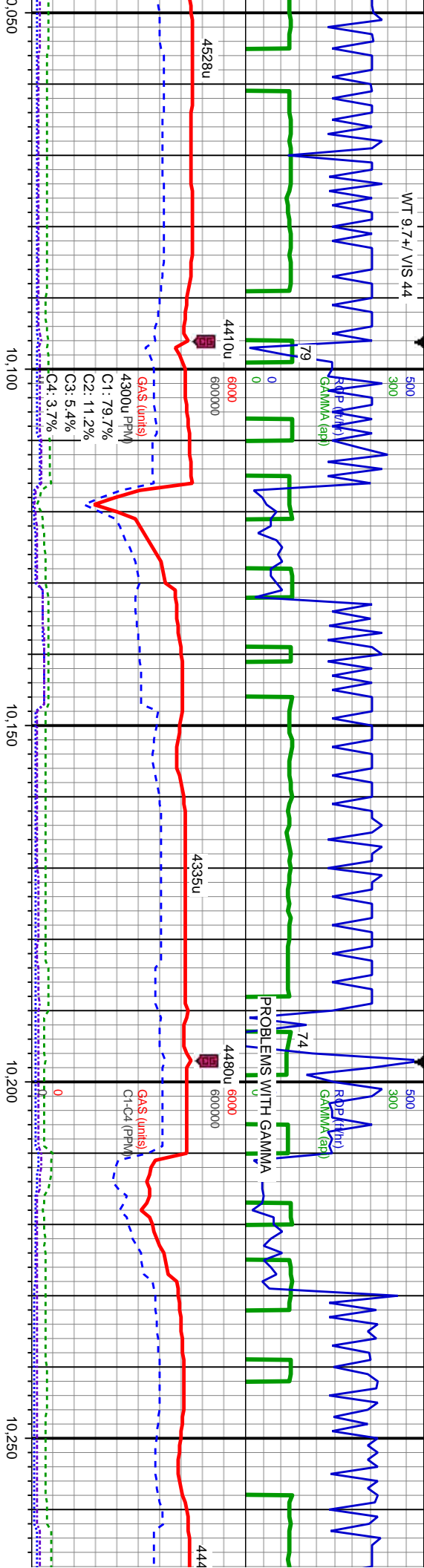
CHK: lt-dk gy
biky-sb pily,
fri, mod strd,
dk gy-blk, sb
sft-mod frm,
med grs, occ
bri bl ring

MD: 9.869
TVD: 7.202.48
Inclination: 86.58
Azimuth: 0.81
VS: 2.771.2

MD: 9.964
TVD: 7.203.91
Inclination: 89.69
Azimuth: 1.21
VS: 2.866.17



WT 9.7+/- VIS 44



brn, sl mot, sb
sft-mod frm, mod
med grs, MRLST:
biky-sb pily,
mod fri, mod strd,
cal, sting bl cut,

CHK: lt-dk gy brn, sl mot, sb
biky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb biky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, tr cal, sting bl cut, bri
bl ring

CHK: lt-med gy brn, sl mot, sb
biky-sb pily, sft-mod frm, mod
fri, mod strd, med grs, MRLST:
dk gy-blk, sb biky-sb pily,
sft-mod frm, mod fri, mod strd,
med grs, occ cal, sting bl cut,
bri bl ring

TVD (ft)

TVD (ft)

MD: 10.059
TVD: 7.204.22
Inclination: 89.94
Azimuth: 358.02
VS: 2.961.16

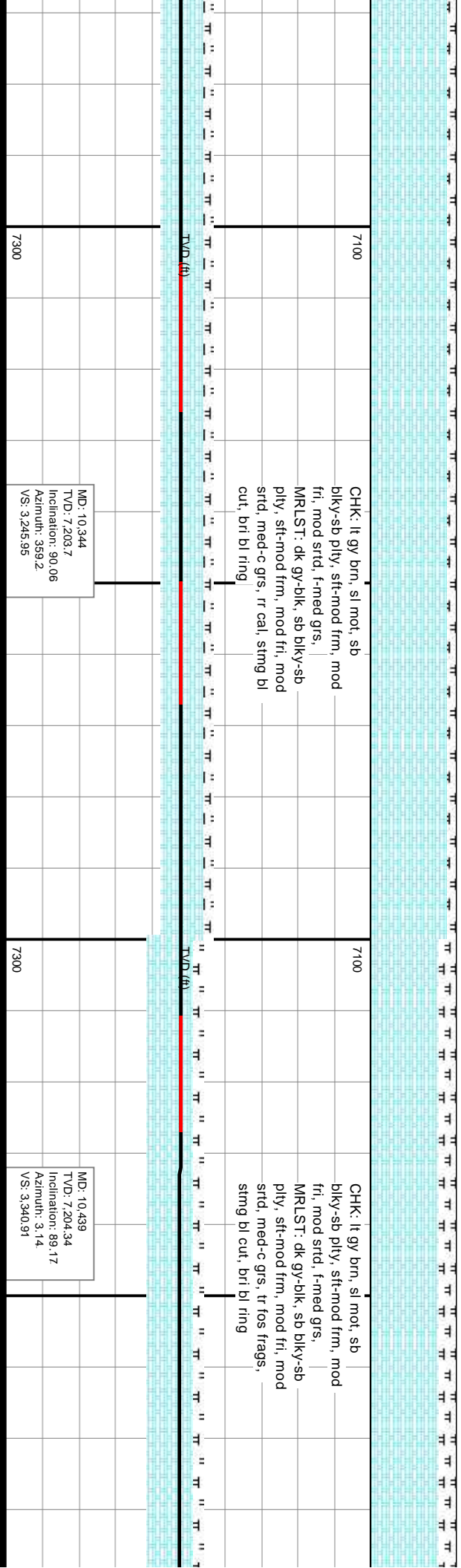
MD: 10.154
TVD: 7.204.27
Inclination: 90
Azimuth: 357.45
VS: 3.056.08

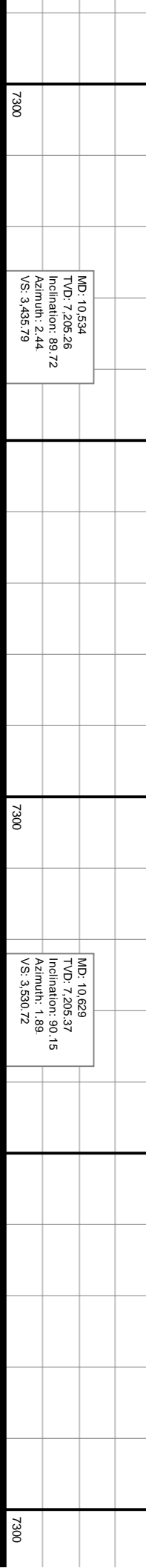
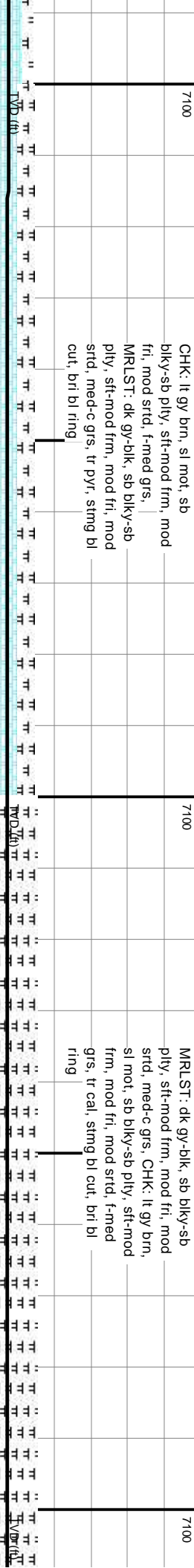
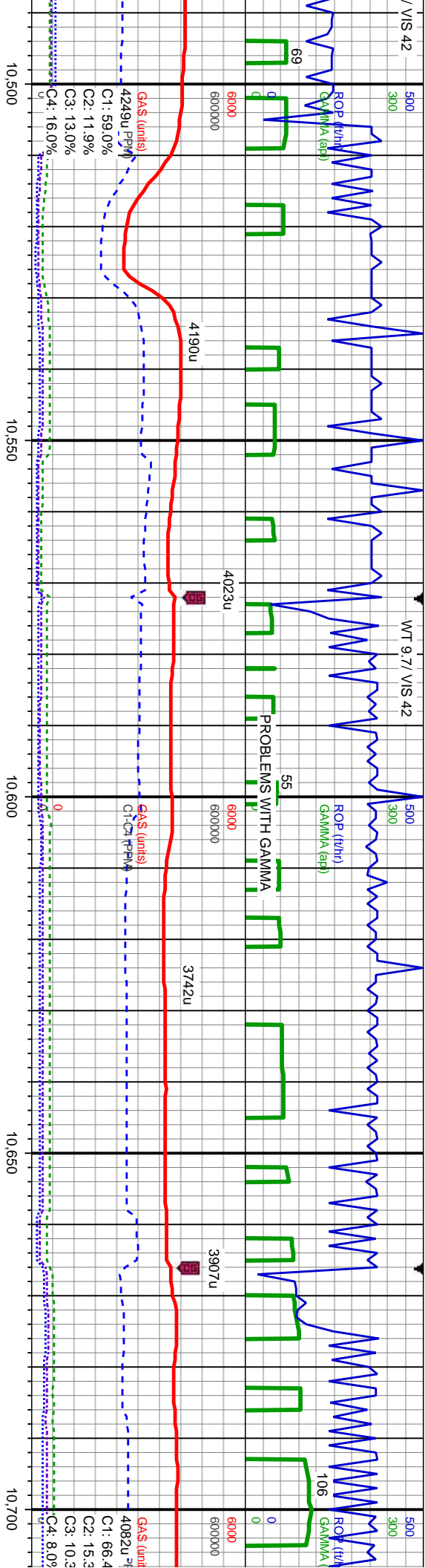
MD: 10.249
TVD: 7.204.01
Inclination: 90.31
Azimuth: 357.56
VS: 3.150.99

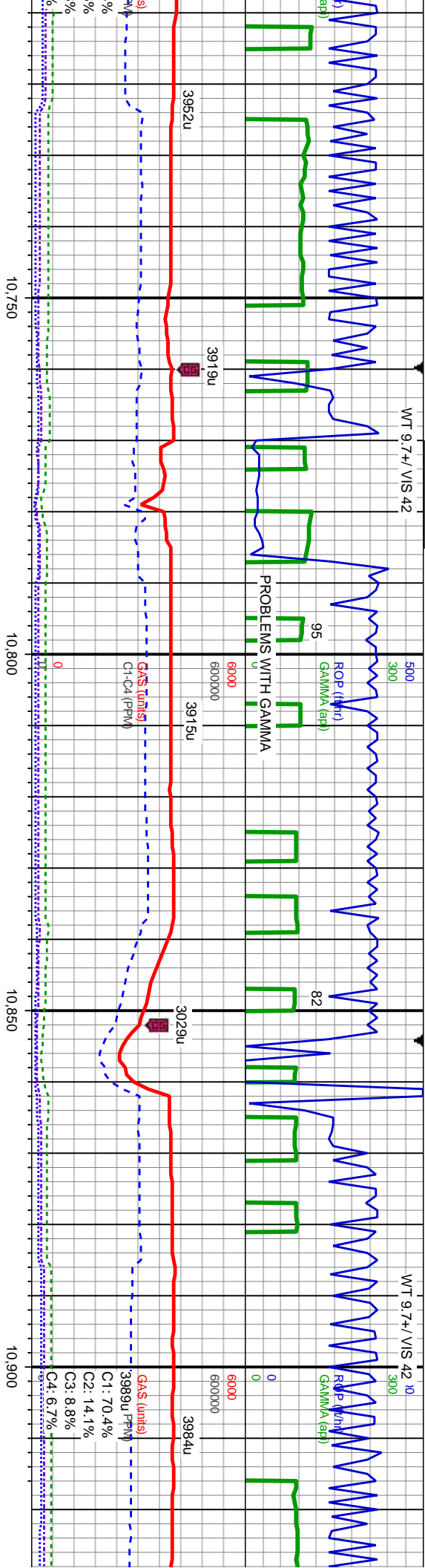
7300

7300









MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
strd, med-c grs, CHK: lt gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod strd, f-med
grs, tr cal, sting bl cut, bri bl
ring

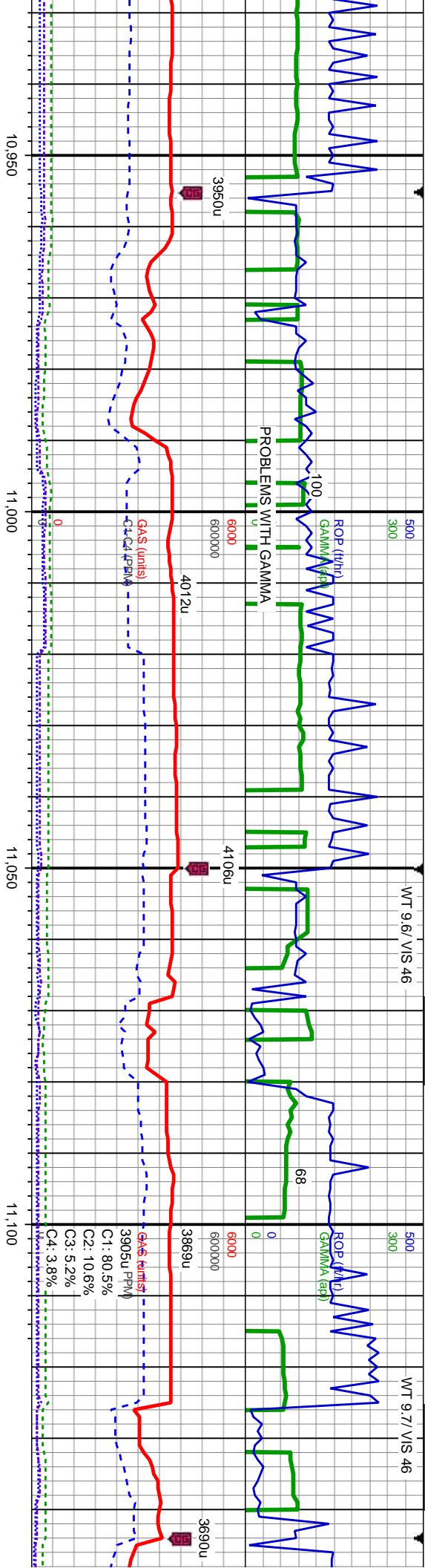
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ply, sft-mod frm, mod fri, mod
strd, med-c grs, CHK: lt gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod strd, med-c
grs, sting bl cut, bri bl ring

MD: 10.724
TVD: 7,205.3
Inclination: 89.94
Azimuth: 1.09
VS: 3.625.69

MD: 10.819
TVD: 7,204.89
Inclination: 90.55
Azimuth: 3.75
VS: 3.720.59

MD: 10.913
TVD: 7,204.51
Inclination: 89.91
Azimuth: 3.62
VS: 3.814.4





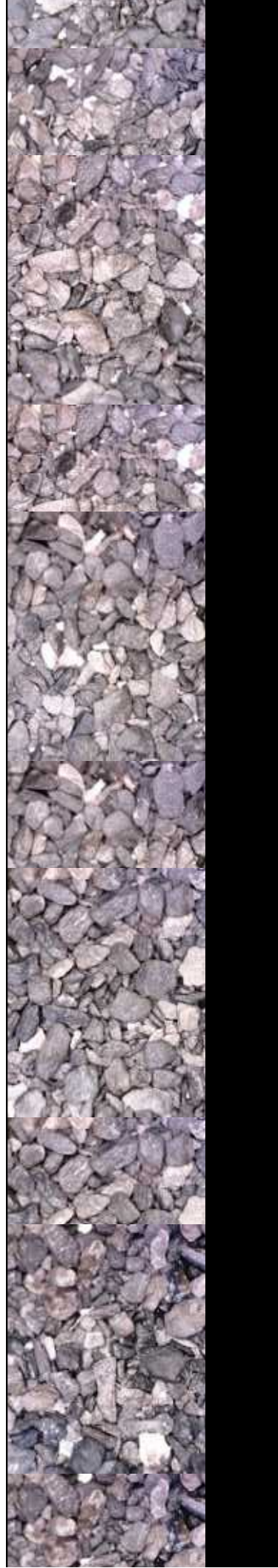
MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
srt'd, med-c grs, CHK: lt gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod srt'd, med
grs, stmg bl cut, bri bl ring

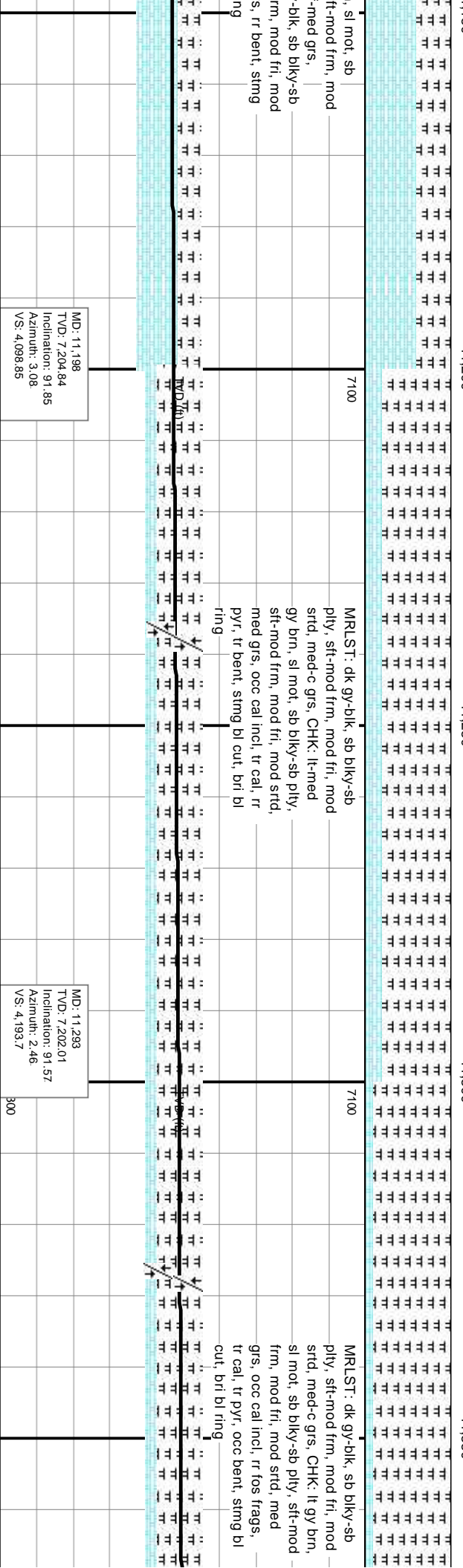
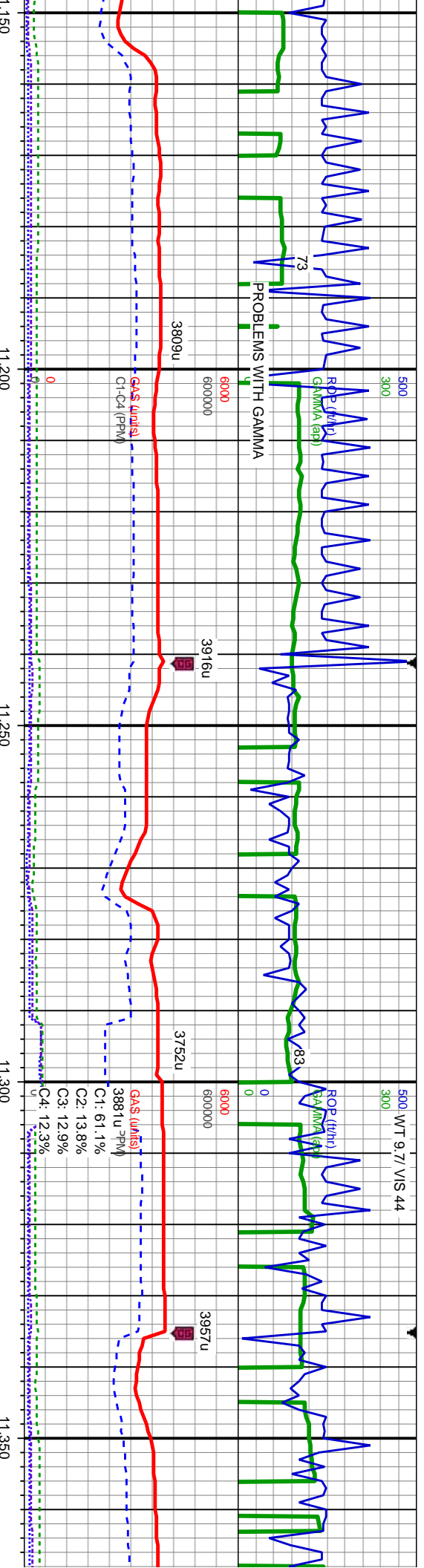
MRLST: dk gy-blk, sb blk-y-sb
ply, sft-mod frm, mod fri, mod
srt'd, med-c grs, CHK: lt gy brn,
sl mot, sb blk-y-sb ply, sft-mod
frm, mod fri, mod srt'd, f-med
grs, stmg bl cut, bri bl ring

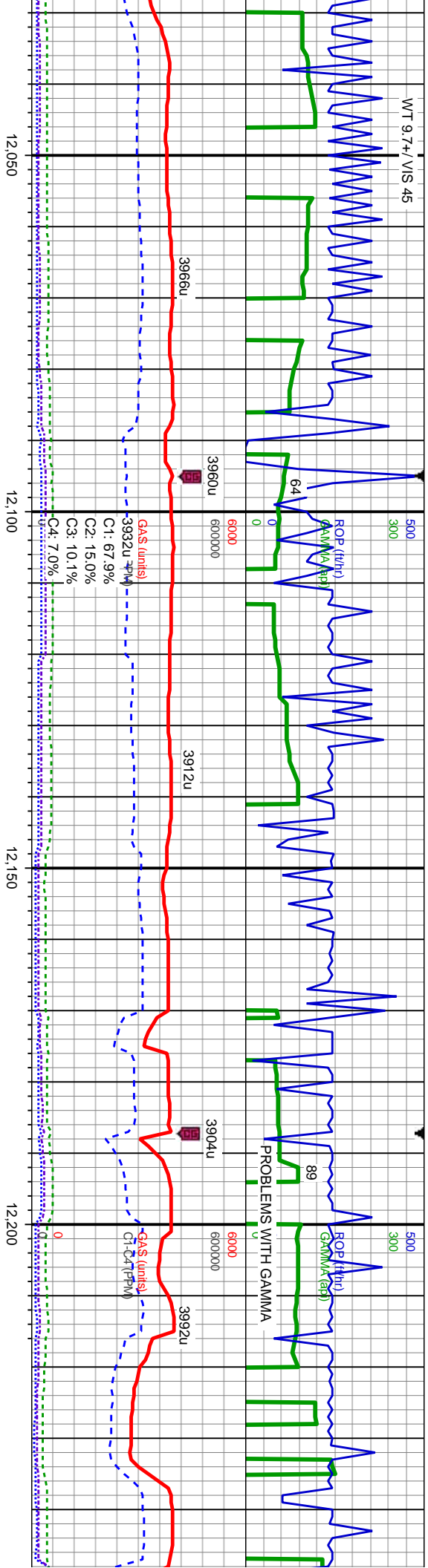
CHK: lt gy brn
blk-y-sb ply, s
fri, mod srt'd, f
MRLST: dk gy
ply, sft-mod f
srt'd, med-c gr
bl cut, bri bl r

MD: 11.008
TVD: 7,205.05
Inclination: 89.44
Azimuth: 2.87
VS: 3,909.24

MD: 11.103
TVD: 7,205.95
Inclination: 89.48
Azimuth: 4.18
VS: 4,004.06







MRLT: dk gy-blk, sb blkly-sb ply, sft-mod frm, mod fri, mod strd, med-c grs, CHK: lt-med gy brn, sl mot, sb blkly-sb ply, sft-mod frm, mod fri, mod strd, med grs, tr cal, sting bl cut, bri bl ring

MRLST: dk gy-blk, sb blkly-sb ply, sft-mod frm, mod fri, mod strd, med-c grs, CHK: lt-med gy brn, sl mot, sb blkly-sb ply, sft-mod frm, mod fri, mod strd, med grs, tr cal, stmg bl cut, brl bl ring

MD: 12,052
TVD: 7,203.84
Inclination: 90.65
Azimuth: 356.72
VS: 4,951.81

MD: 12,146
TVD: 7,203.08
Inclination: 90.28
Azimuth: 356.65
VS: 5,045.65

MD: 12,241
TVD: 7,203.22
Inclination: 89.5
Azimuth: 355.76
VS: 5,140.44

