

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name NCLP AA06-62-1AHNC(HORZ)

Location SEC5-T6N-R63W

State COLORADO

County WELD

Country USA

Rig Number H&P 322

API Number 05-123-39106

AFE # 141151

Region DJ BASIN

Field WATTENBERG

Spud Date 7/1/2014

Drilling Completed 7/10/2014

Surface Coordinates

LAT: 40.51048°N

LONG: 104.45086°W

535' FSL

780' FEL

Bottom Hole Coordinates

PROJECTED:

535' FSL

2360' FEL

Ground Elevation 4709'

K.B. Elevation 4733'

Logged Interval 6082' To 14502

Total Depth 14502'

Formation NIOBRARA "C" CHALK

Type of Drilling Fluid MUD;WATER;POLY

Operator

Company Noble Energy Inc

Address 1625 Broadway Suite 2200
Denver, CO 80202

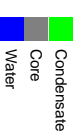
Geologist

Name MIKE GREENE,JERED KARR

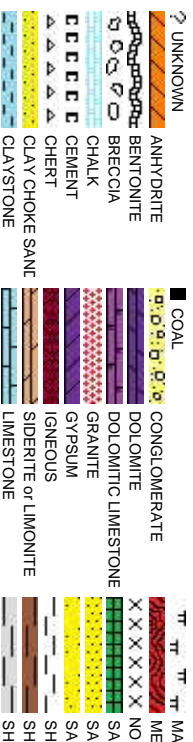
Company COLUMBINE LOGGING INC.

Address 2385 S. LIPAN ST
DENVER, COLORADO 80223
(303) 289-7764

Zone Color Coding



Rock Types

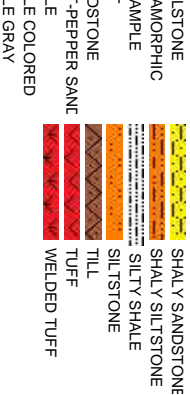


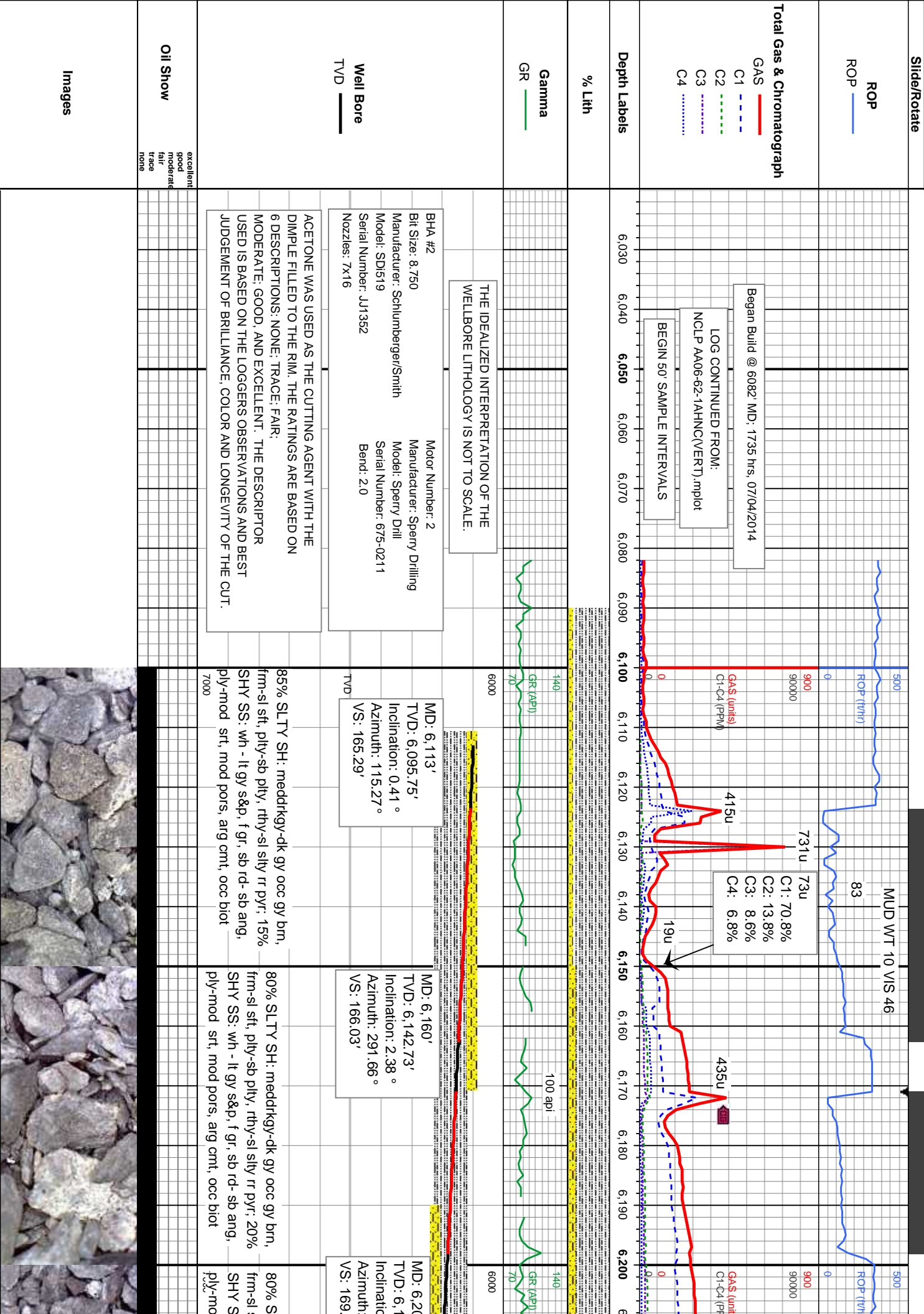
Accessories

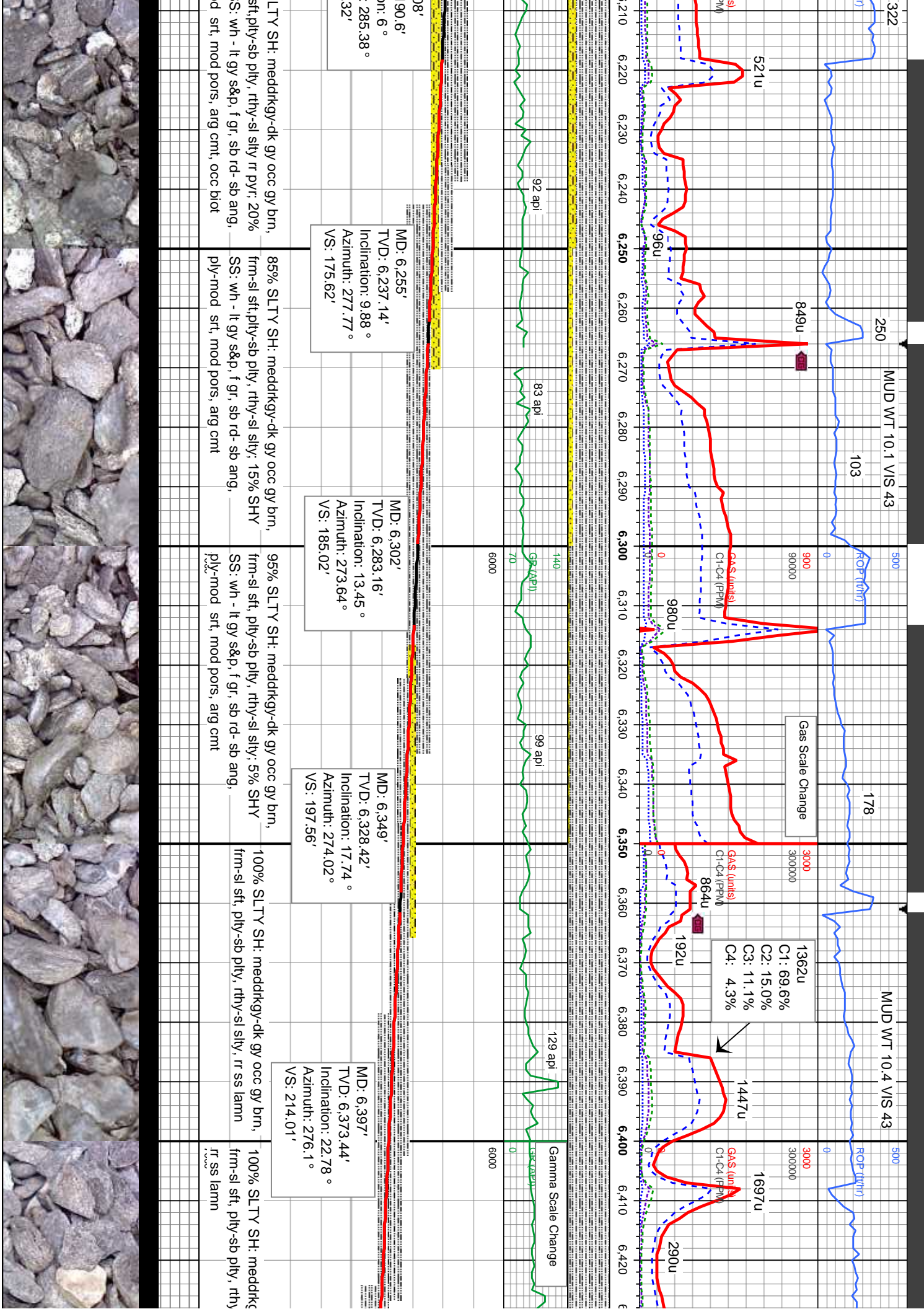
GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	ANHYDRITE STRINGER
INOCERAMUS	B BENTONITE	K KAOLIN	BENTONITE STRINGER
ALGAE	BITUMENOUS SUBSTANCE	M MARLSTONE	COAL STRINGER
AMPHIPORA	BRECCIA FRAGMENTS	MICACEOUS	DOLOMITE STRINGER
BELEMNITE	CALCAREOUS	MINERAL CRYSTALS	GYPSUM STRINGER
BIOCLASTIC	CARBONACEOUS FLAKES	NODULES	LIMESTONE STRINGER
BRACHIOPOD	CHERT	PHOSPHATE PELLETS	MARLSTONE (CALC) STRG
BRYOZOA	CHERT	P PYRITE	MARLSTONE (DOL) STRG
CEPHALOPOD	COAL - THIN BEDS	S SALT CAST	SANDSTONE STRINGER
CORAL	DOLOMITIC	SANDY	SHALE STRINGER
CRINOID	FELDSPAR	SILICEOUS	SILTSTONE STRINGER
ECHINOID	FERRUGINOUS PELLET	SILTY	
FISH	FERRUGINOUS	TUFFACEOUS	
FORAMINIFERA	ANHYDRITIC		
F FOSSIL	ARGILLACEOUS	GYPSIFEROUS	
		Stringer	

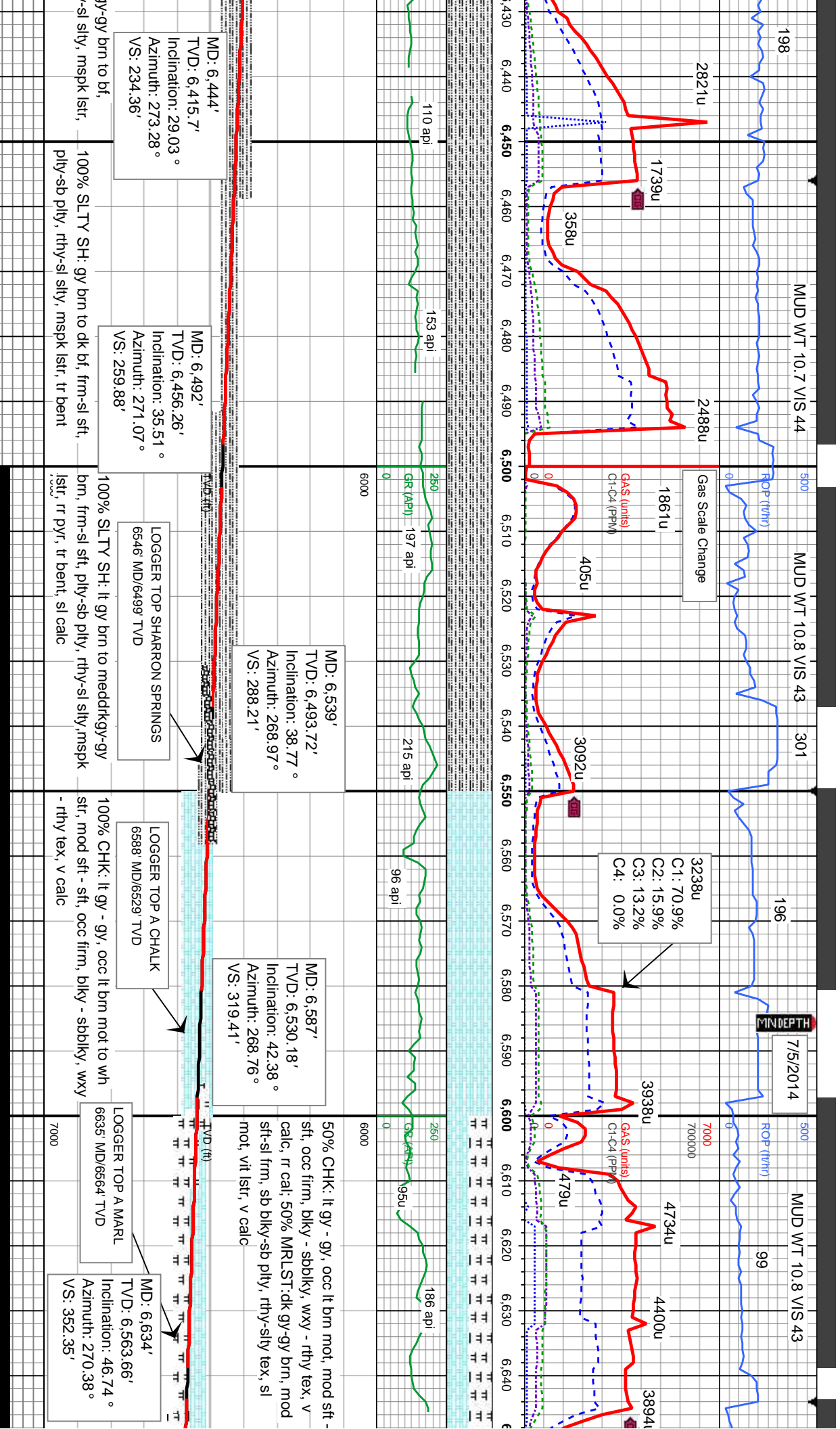
Other Symbols

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









MUD WT 10.8 VIS 43

MUD WT 10.8 VIS 42

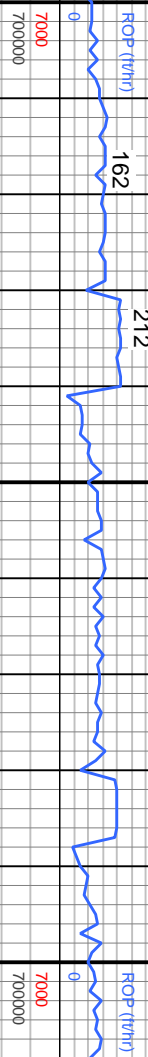
MUD WT 10.8 \

116

162

212

143



3669u

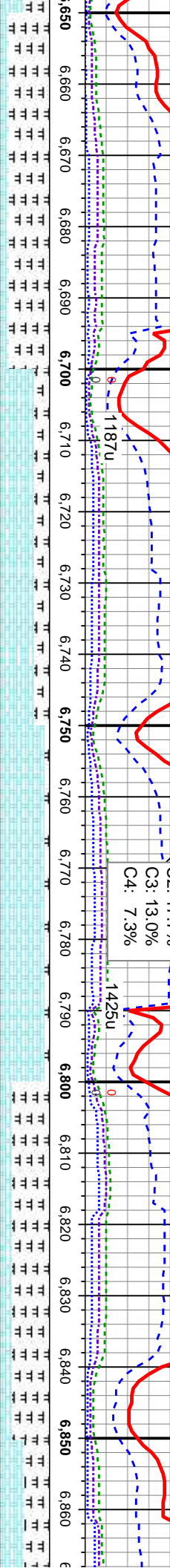
3919u

3916u

3965u
C1: 62.0%
C2: 17.7%
C3: 13.0%
C4: 7.3%

4292u

3754u



211 api

185 api

107 api

3669u

3919u

3916u

3965u

4292u

3754u

80% MRLST:dk gy-gy brn, mod sft-sl frm, sb bly-sb ply, rthy-sly tex, sl mot, vit lstr, v calc; 20% CHK: lt gy - gy, occ lt brn mot, mod sft - sft, occ firm, bly - sbly, wxy - rthy tex, v calc, r cal

70% CHK: lt gy - gy, occ lt brn mot, mod sft - sft, occ firm, bly - sbly, wxy - rthy tex, v calc, r cal; 30% MRLST:dk gy-gy brn, mod sft-sl frm, sb bly-sb ply, rthy-sly tex, sl mot, vit lstr, v calc

90% CHK: lt gy - gy, occ lt brn mot, mod sft - sft, occ firm, bly - sbly, wxy - rthy tex, v calc, r cal; 10% MRLST:dk gy-gy brn, mod sft-sl frm, sb bly-sb ply, rthy-sly tex, sl mot, vit lstr, v calc

75% MRLST:dk gy-gy brn, mod sft-sl frm, sb bly-sb ply, rthy-sly tex, sl mot, vit lstr, v calc; 25% CHK: lt gy - gy, occ lt brn mot, mod sft - sft, occ firm, bly - sbly, wxy - rthy tex, v calc, r cal

50% MRLST:dk bly-sb ply, rthy

50% CHK: lt gy -

50% MRLST:dk bly-sb ply, rthy

50% CHK: lt gy -

MD: 6,682'
TVD: 6,595.17'
Inclination: 51.18°
Azimuth: 270.74°
VS: 388.48'

MD: 6,729'
TVD: 6,622.93'
Inclination: 56.38°
Azimuth: 271.33°
VS: 426.3'

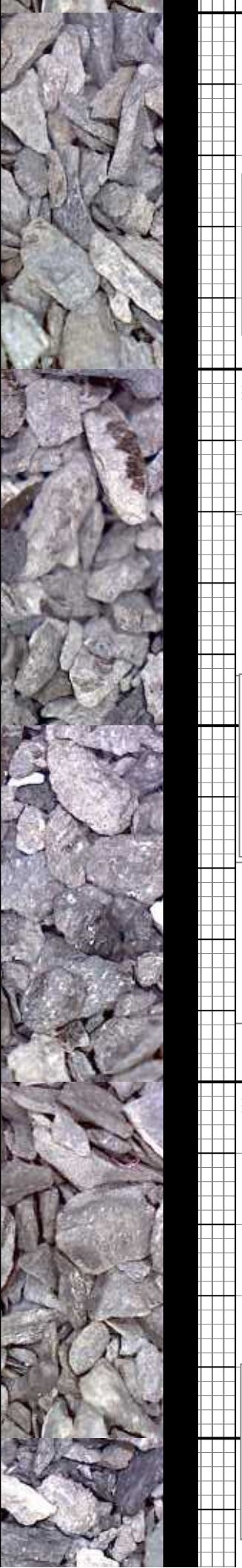
MD: 6,777'
TVD: 6,647.6'
Inclination: 61.73°
Azimuth: 270.87°
VS: 467.35'

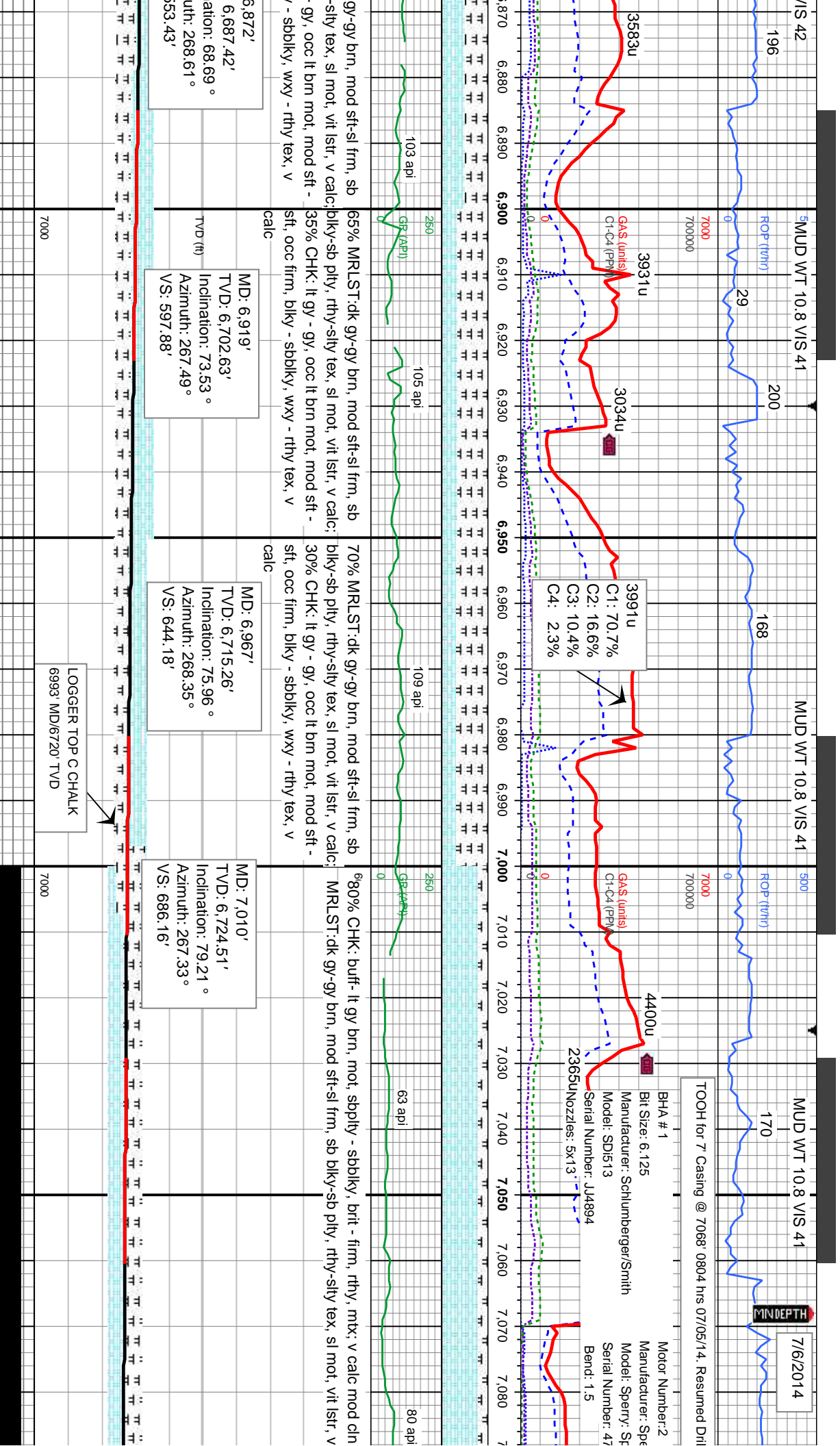
MD: 6,824'
TVD: 6,668.61'
Inclination: 65.16°
Azimuth: 270.23°
VS: 509.31'

MD: 6,860'
TVD: 6,694.61'
Inclination: 65.16°
Azimuth: 270.23°
VS: 509.31'

LOGGER TOP B CHALK
6762 MD/6639' TVD

LOGGER TOP B MARL
6839 MD/674' TVD





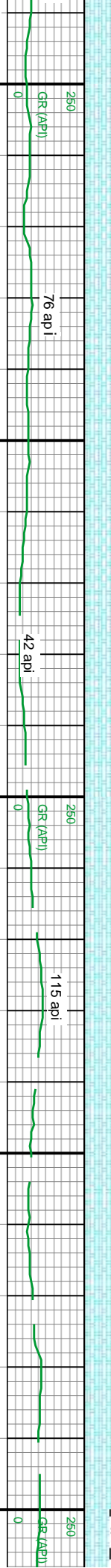
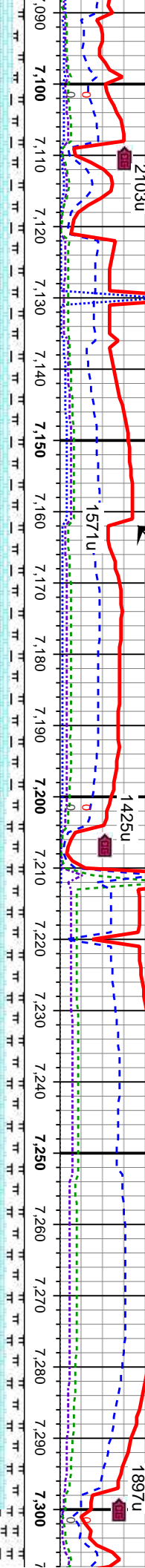
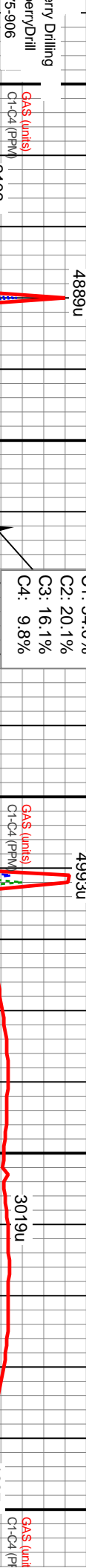
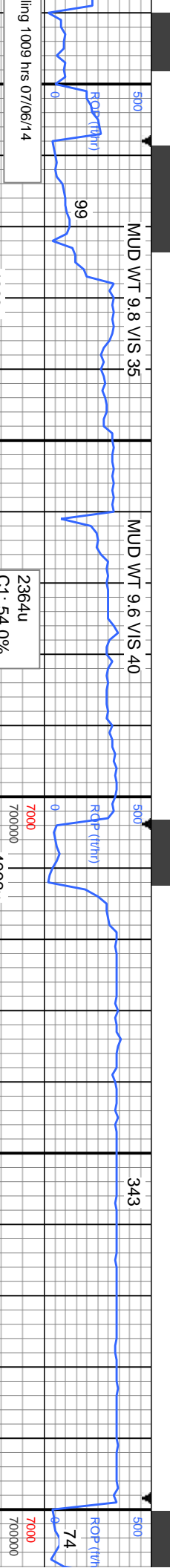


fig: 20% calc

75% CHK: buff- lt gy brn, mot, sbply - sbbkly, brit - firm, rthy, mtx; v calc mod cln fiz: 25% MRLST: dk gy-gy brn, mod sft-sl frm, sb bkly-sb ply, rthy-slty tex, sl mot, vit istr, v calc

60% 65% CHK: buff- lt gy brn, mot, sbply - sbbkly, brit - firm, rthy, mtx; v calc mod cln fiz: 35% MRLST: dk gy-gy brn, mod sft-sl frm, sb bkly-sb ply, rthy-slty tex, sl mot, vit istr, v calc

50% C MRLS

TVD (ft)

MD: 7,140'

TVD: 6,740.13'

Inclination: 86.98 °

Azimuth: 271.11 °

VS: 815.01'

TVD (ft)

MD: 7,235'

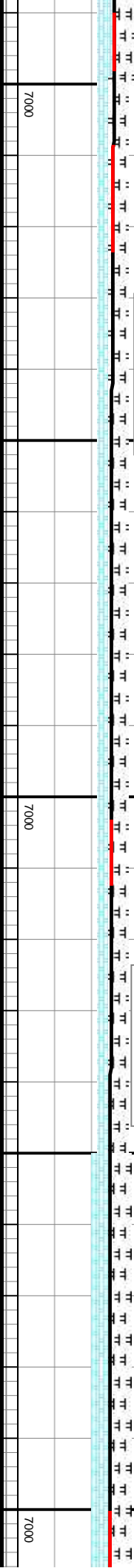
TVD: 6,744.09'

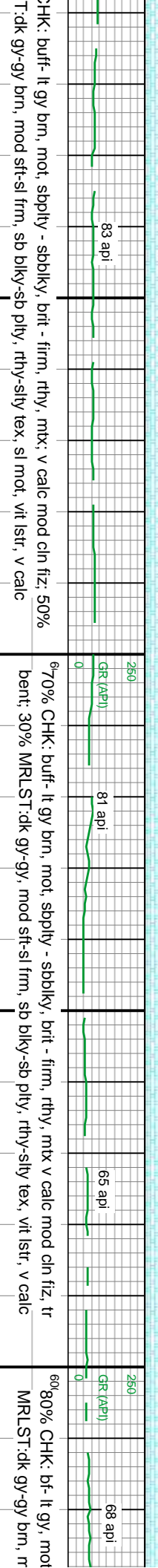
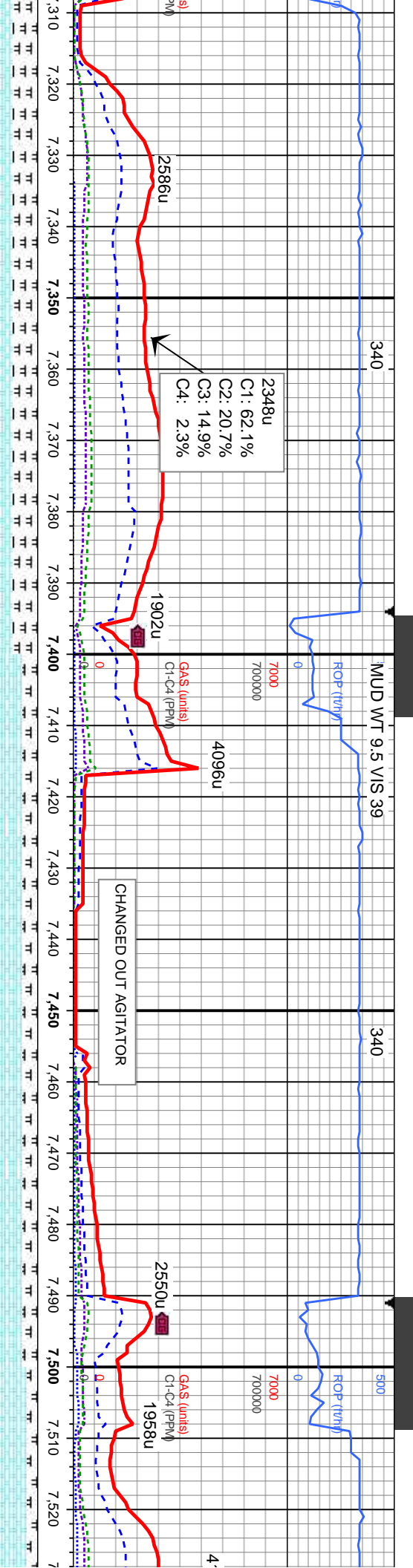
Inclination: 88.24 °

Azimuth: 269.81 °

VS: 909.77'

TVD (ft)





MD: 7,329'
TVD: 6,745.46'
Inclination: 90.09°
Azimuth: 270.12°
VS: 1,003.64'

MD: 7,424'
TVD: 6,744.93'
Inclination: 90.55°
Azimuth: 272.2°
VS: 1,098.4'

MD: 7,519'
TVD: 6,743.55'
Inclination: 91.11°
Azimuth: 271.51°
VS: 1,193.06'

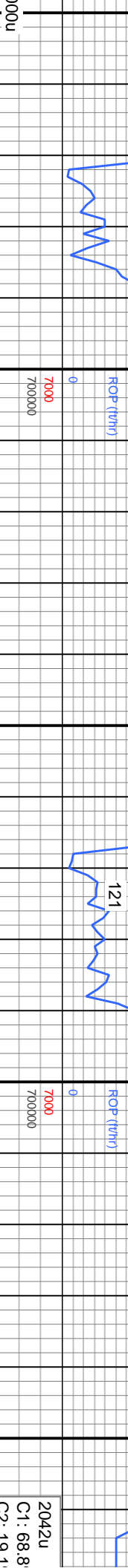
CHK: buff- lt gy brn, mot, sbply - sbblky, brit - firm, rthy, mtx: v calc mod cln fiz: 50%
T:dk gy-gy brn, mod sft-sl frm, sb blkysb ply, rthy-sily tex, sl mot, vit istr, v calc

60 70% CHK: buff- lt gy brn, mot, sbply - sbblky, brit - firm, rthy, mtx v calc mod cln fiz, tr bent, 30% MRLST:dk gy-gy, mod sft-sl frm, sb blkysb ply, rthy-sily tex, vit istr, v calc

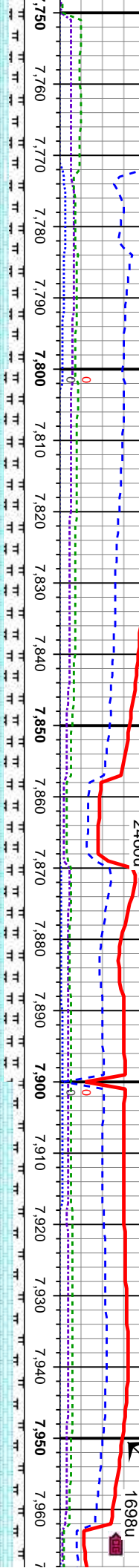
60 80% CHK: bf- lt gy, mot MRLST:dk gy-gy brn, r



MUD WT 9.5 VIS 38



2042u
C1: 68.8
C2: 19.1
C3: 12.1
C4: 0.0



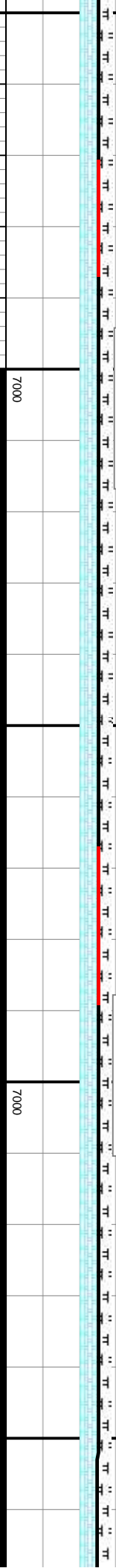
- frm, rthy, mtx v calc mod clin fiz; 30%
pity, rthy-sily tex, vit lstr, v calc

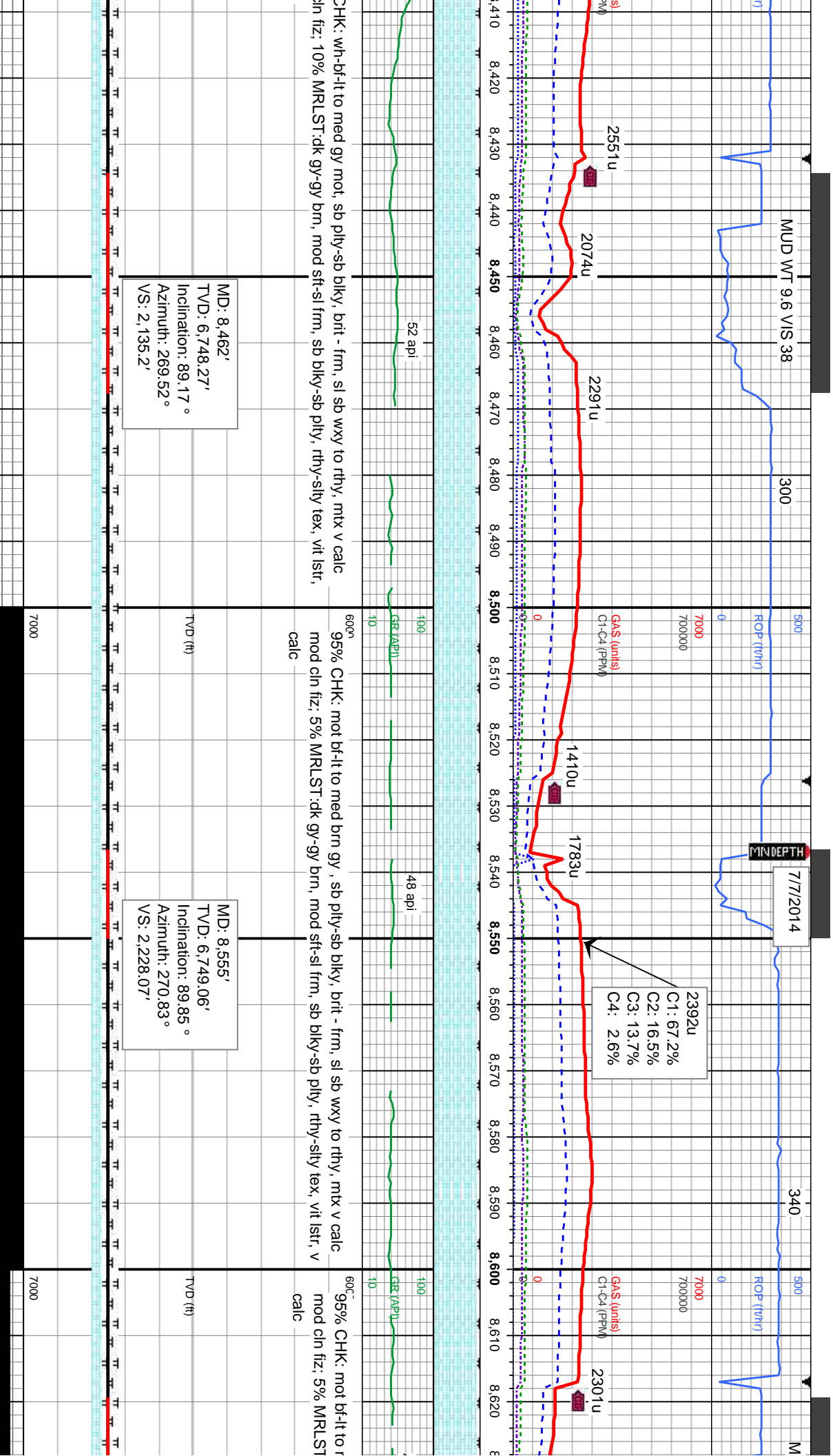
60% CHK: bf- lt gy, mot, sb pity-sb blkly, brit - frm, rthy, mtx v calc mod clin fiz, tr cal; 40%
MRLST: dk gy-gy brn, mod sft-sl frm, sb blkly-sb pity, rthy-sily tex, vit lstr, v calc, rr inoc

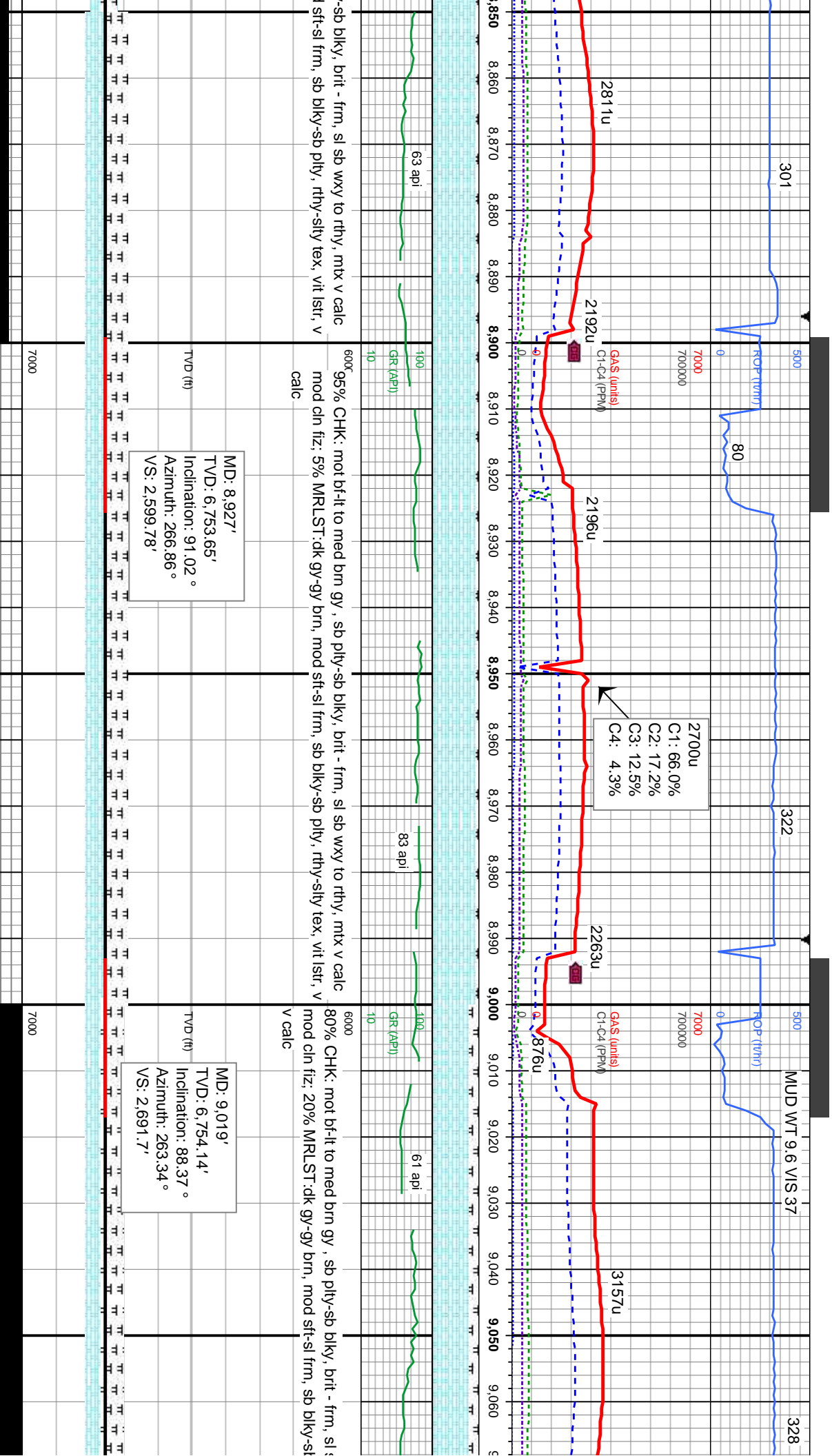
60% CHK: bf- lt gy, sb pity-sb blkly, brit - frm, sl sb wxy to rthy
MRLST: dk gy-gy brn, mod sft-sl frm, sb blkly-sb pity, rthy-sily tex, vit lstr, v calc, rr inoc

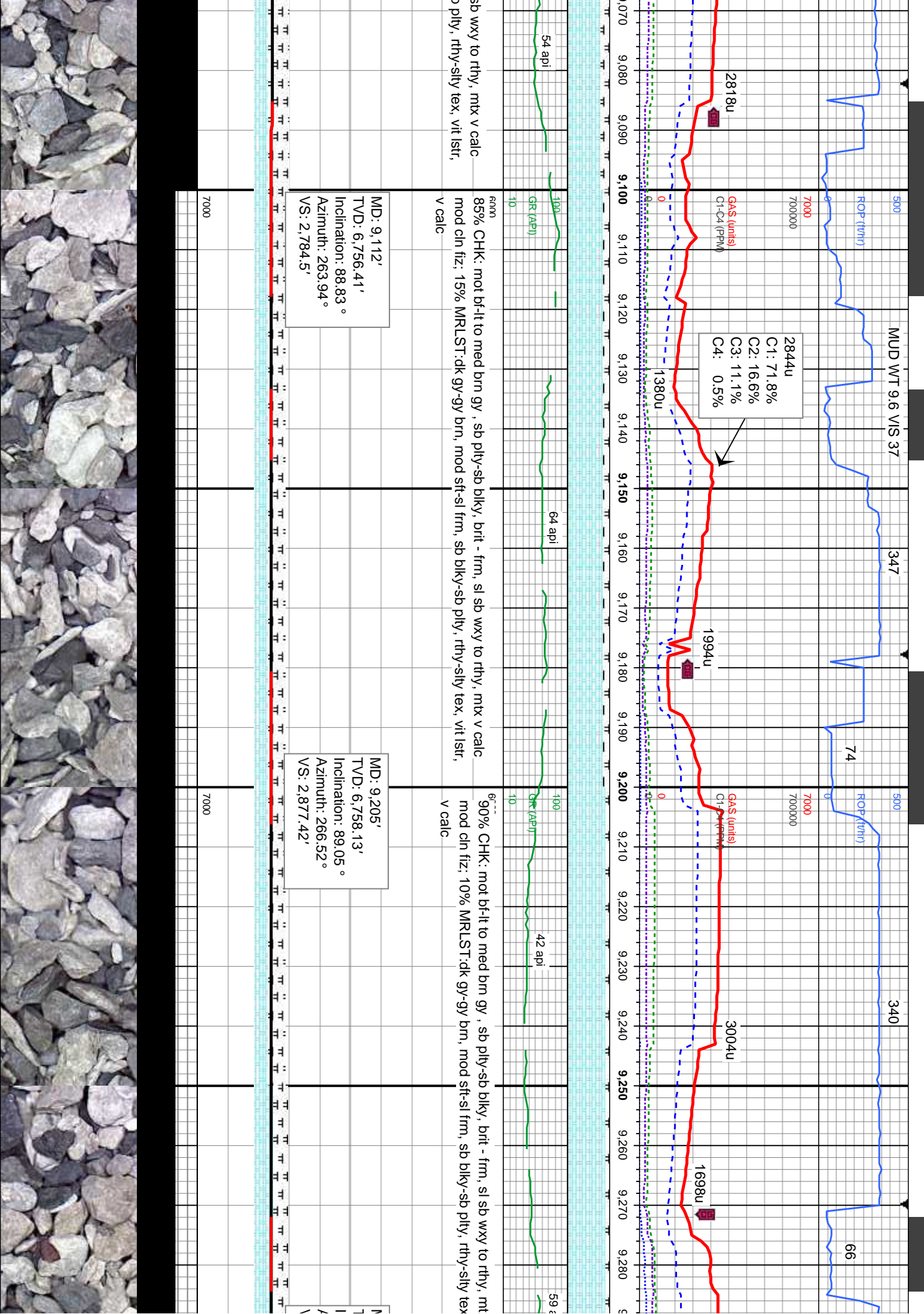
MD: 7,804'
TVD: 6,745.94'
Inclination: 88.61 °
Azimuth: 265.28 °
VS: 1,477.84'

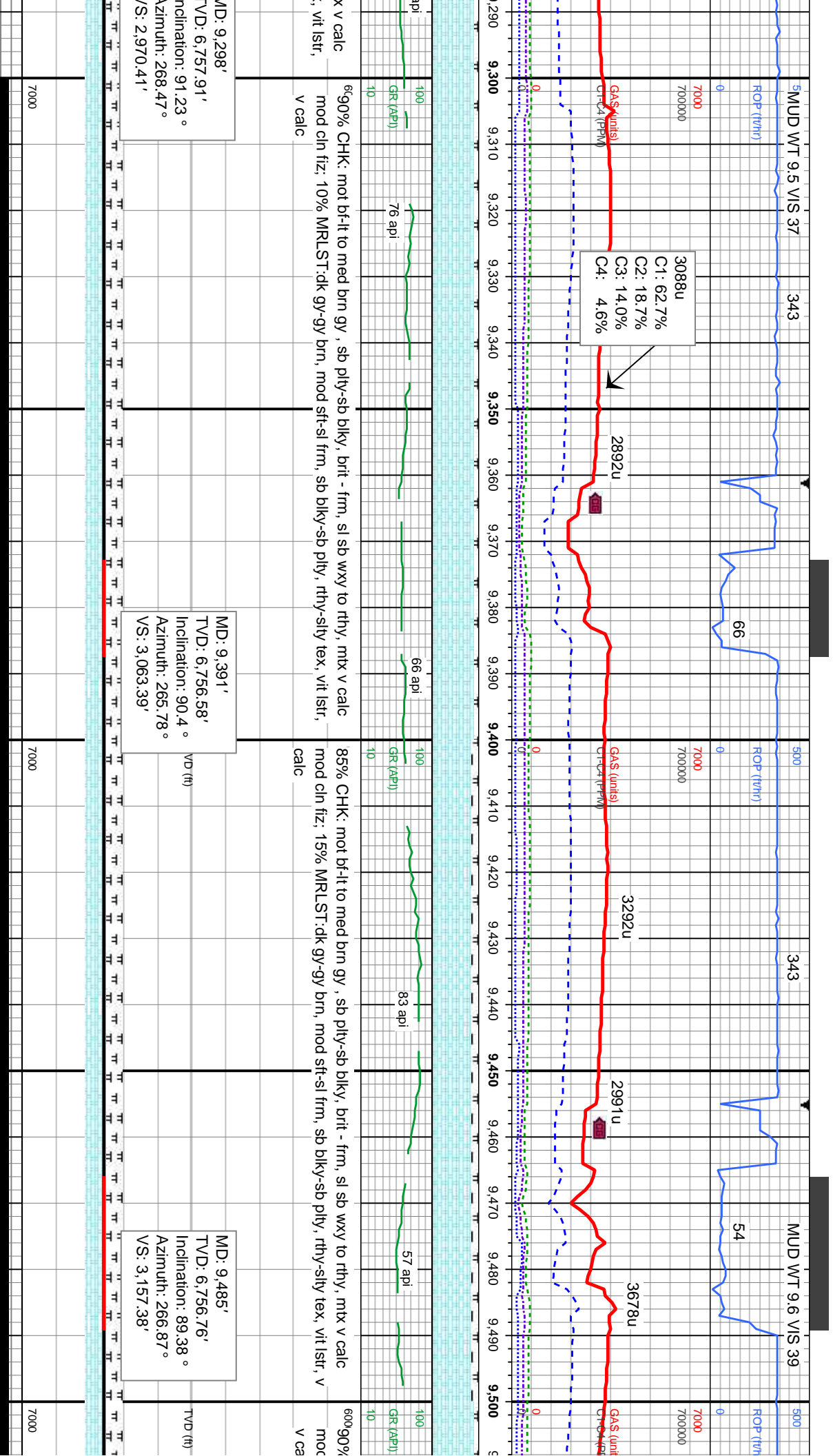
MD: 7,899'
TVD: 6,747.45'
Inclination: 89.57 °
Azimuth: 265.22 °
VS: 1,572.78'

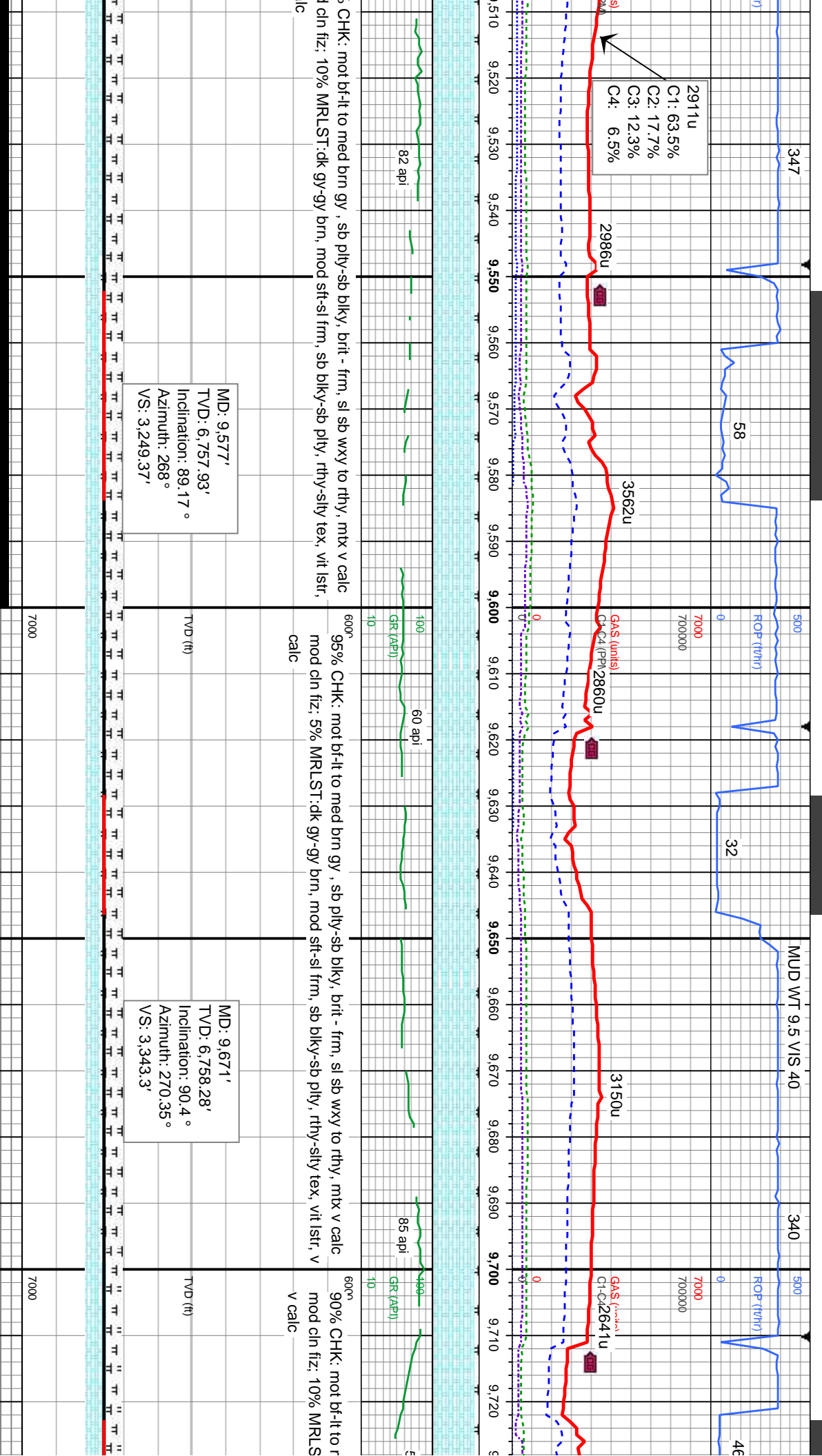








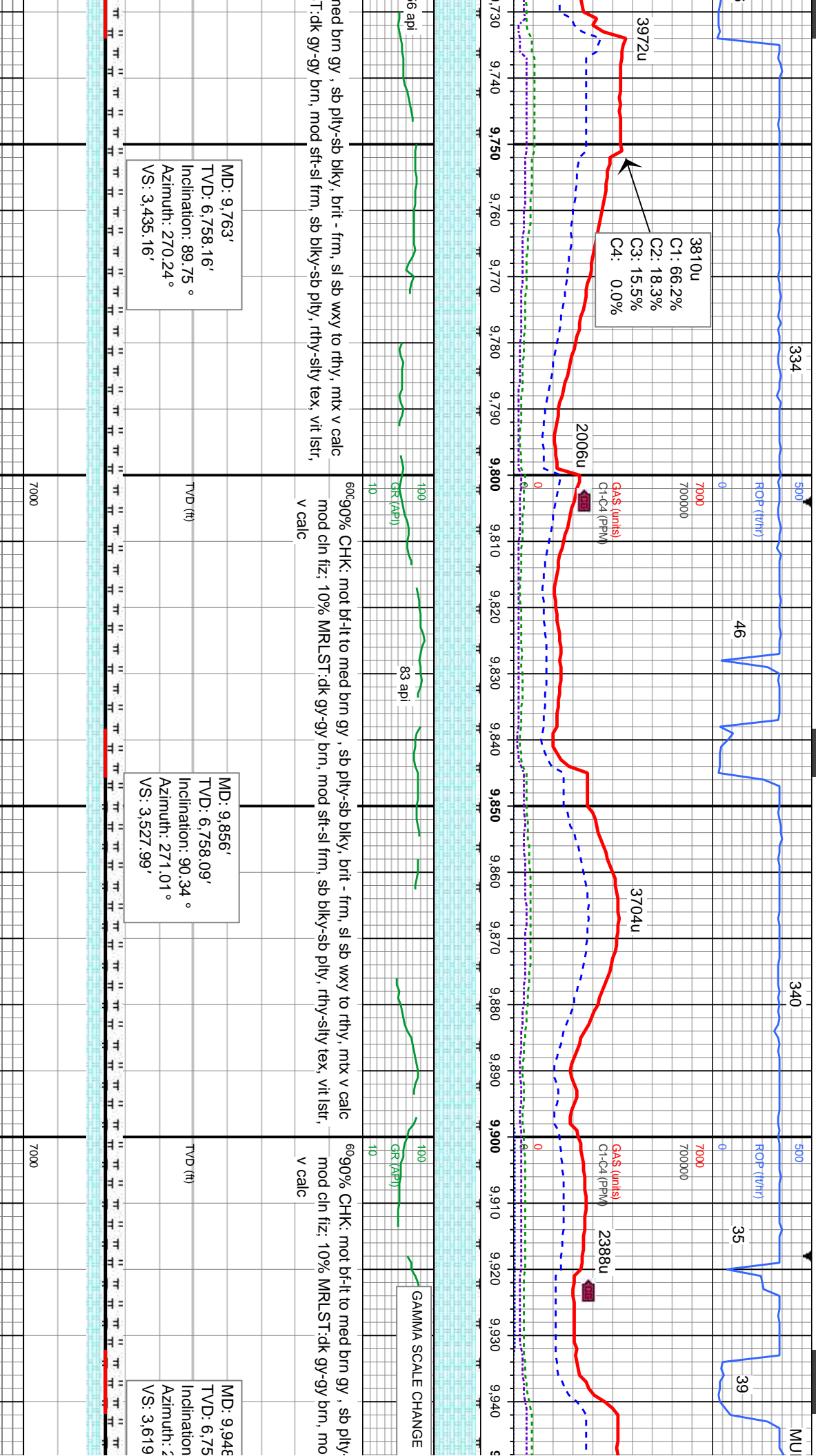


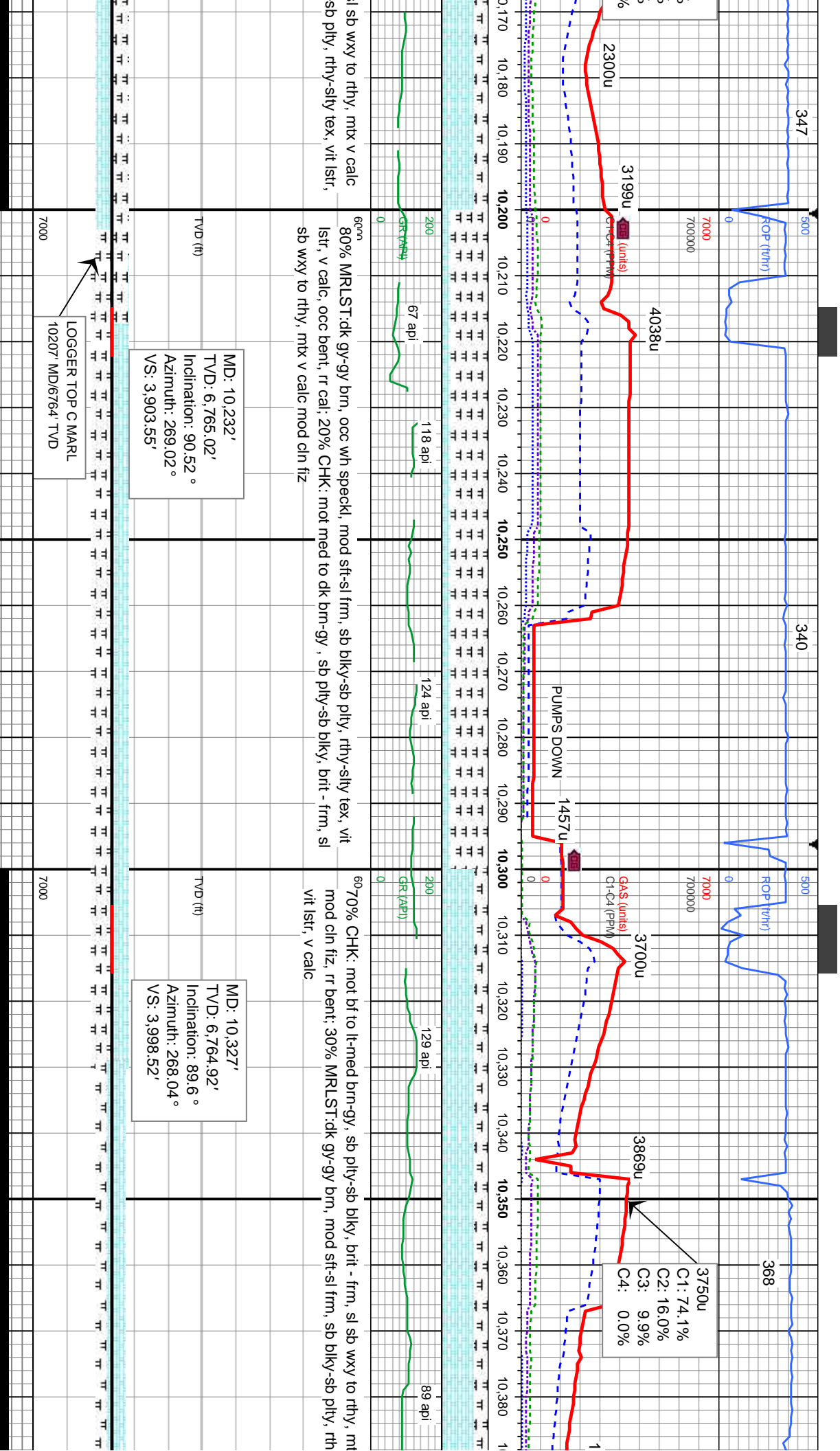


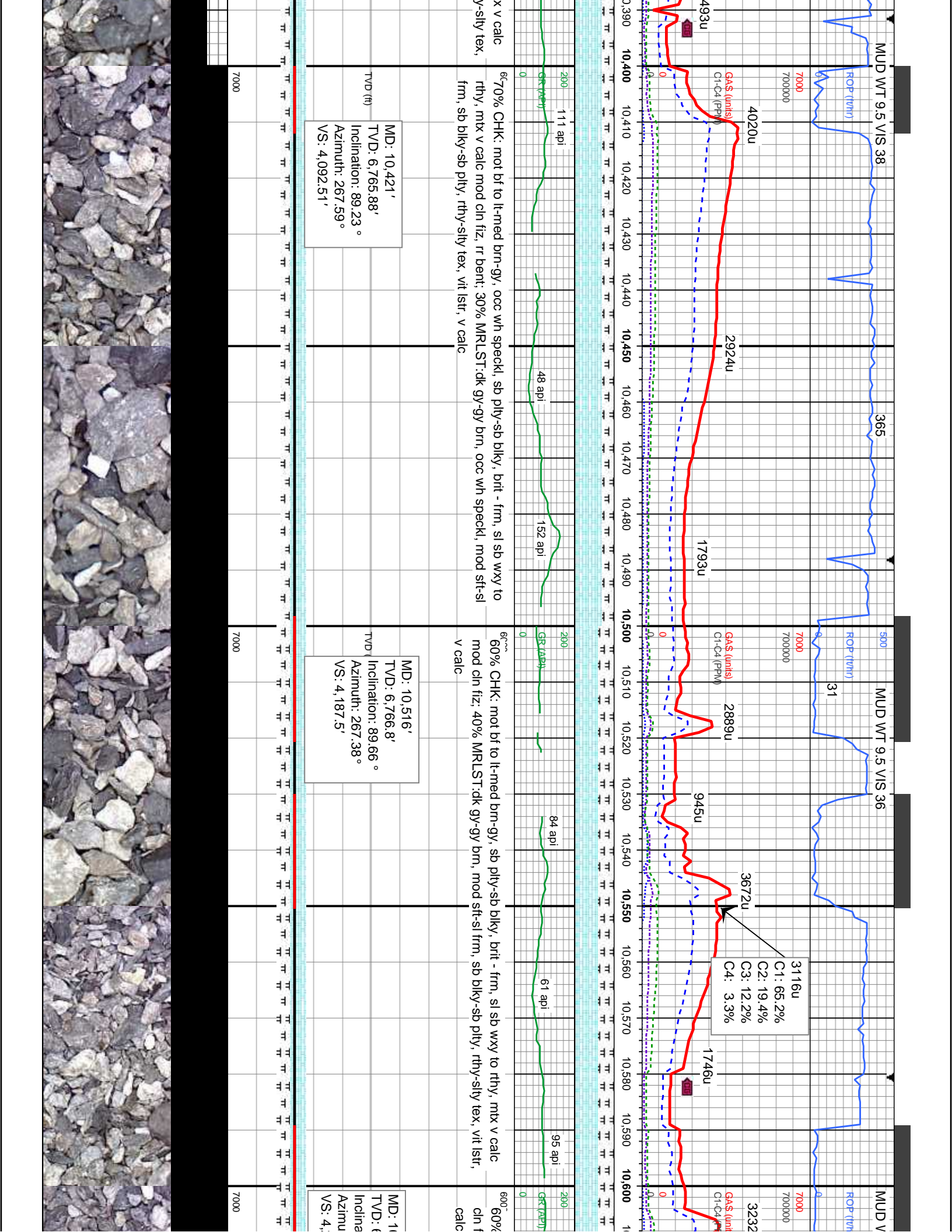
MD: 9,577'
TVD: 6,757.93'
Inclination: 89.17°
Azimuth: 268°
VS: 3,249.37'

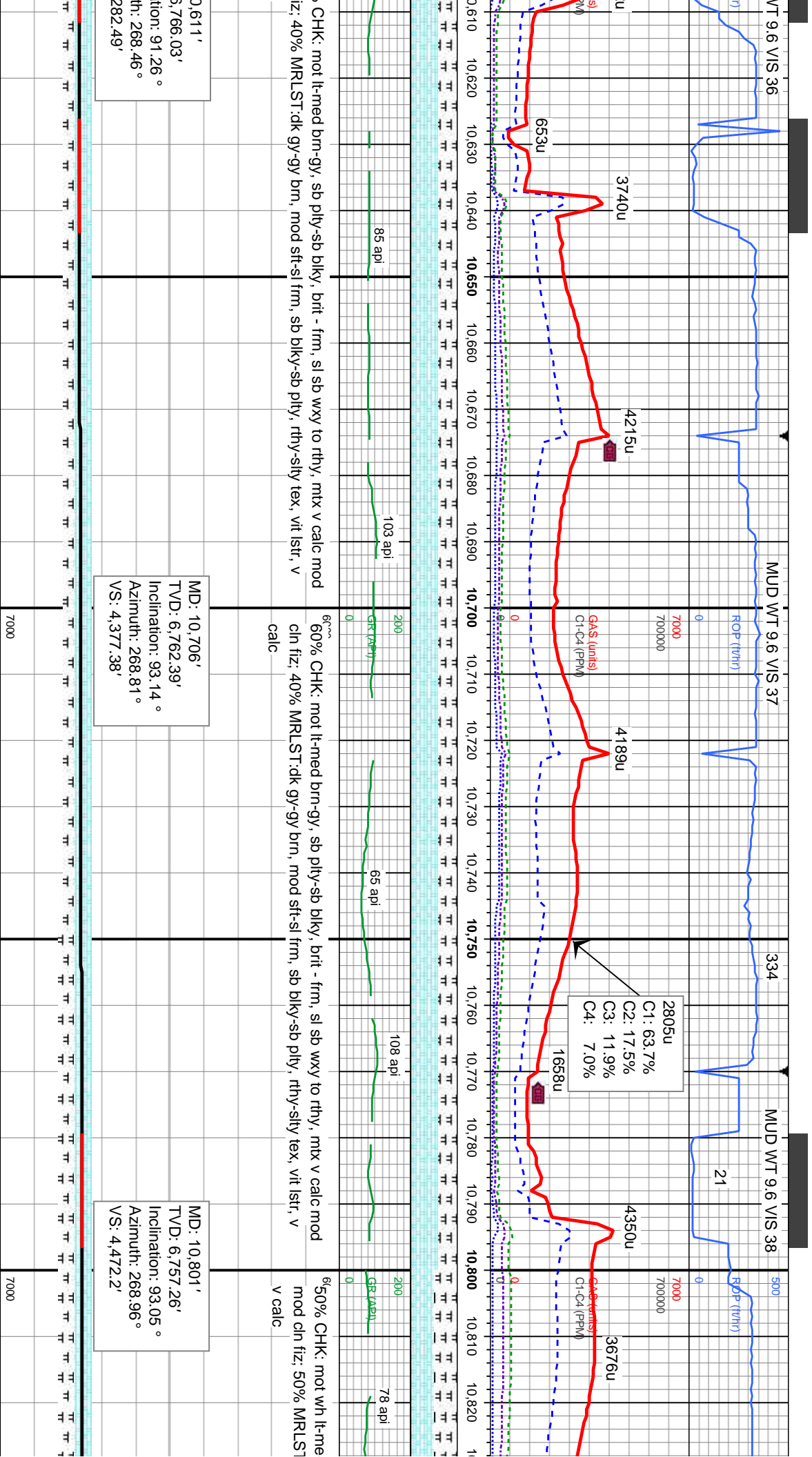
MD: 9,671'
TVD: 6,758.28'
Inclination: 90.4°
Azimuth: 270.35°
VS: 3,343.3'











CHK: mot lt-med brn-gy, sb ply-sb blkly, brit - frm, sl sb wxy to rthy, mix v calc mod
cln fiz: 40% MRLST:dk gy-gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-slty tex, vit lsir, v

60% CHK: mot lt-med brn-gy, sb ply-sb blkly, brit - frm, sl sb wxy to rthy, mix v calc mod
cln fiz: 40% MRLST:dk gy-gy brn, mod sft-sl frm, sb blkly-sb ply, rthy-slty tex, vit lsir, v

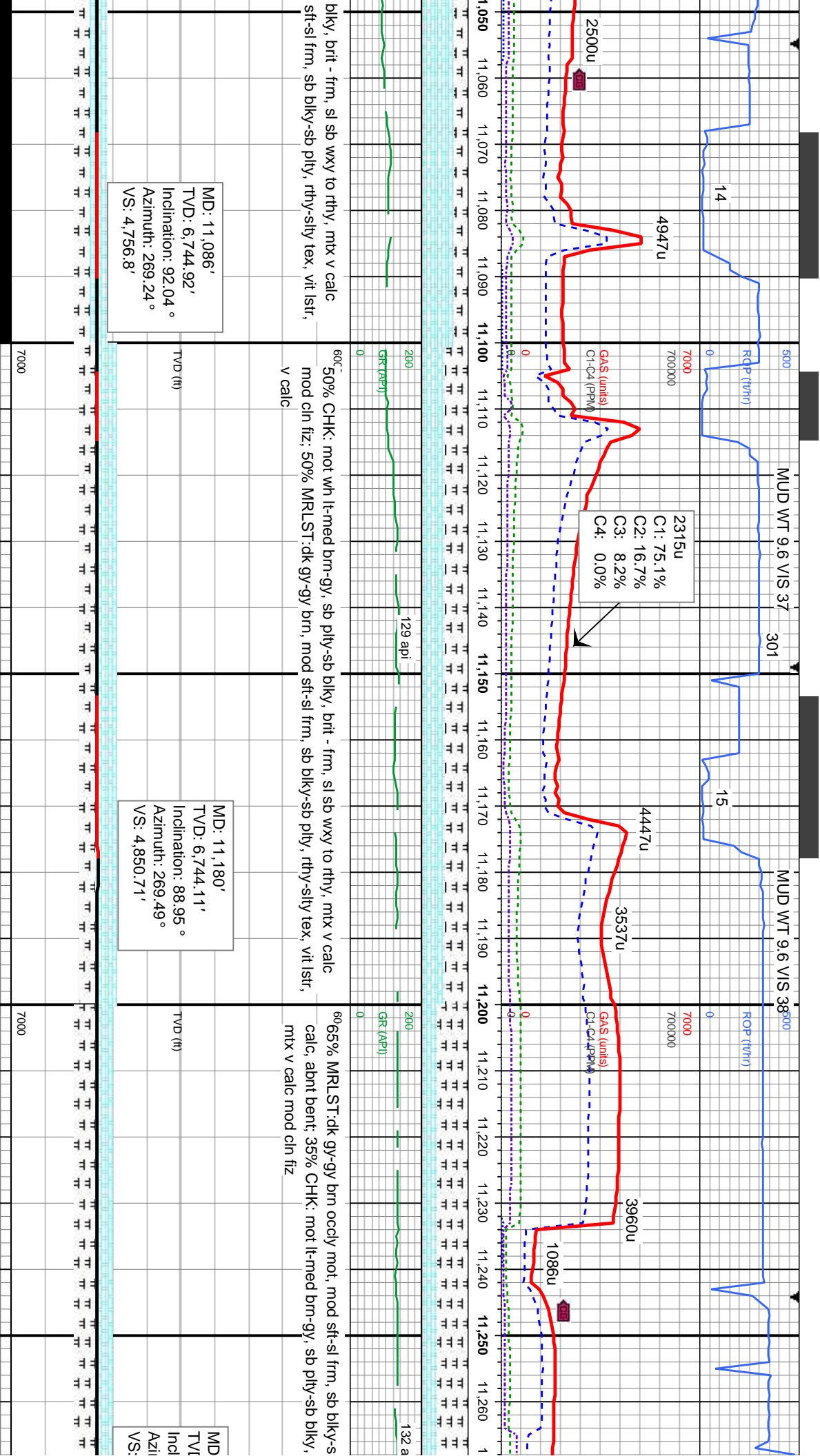
65% CHK: mot wh lt-me
mod cln fiz: 50% MRLST
v calc

0.611'
3,766.03'
ation: 91.26°
th: 268.46°
282.49'

MD: 10,706'
TVD: 6,762.39'
Inclination: 93.14°
Azimuth: 268.81°
VS: 4,377.38'

MD: 10,801'
TVD: 6,757.26'
Inclination: 93.05°
Azimuth: 268.96°
VS: 4,472.2'



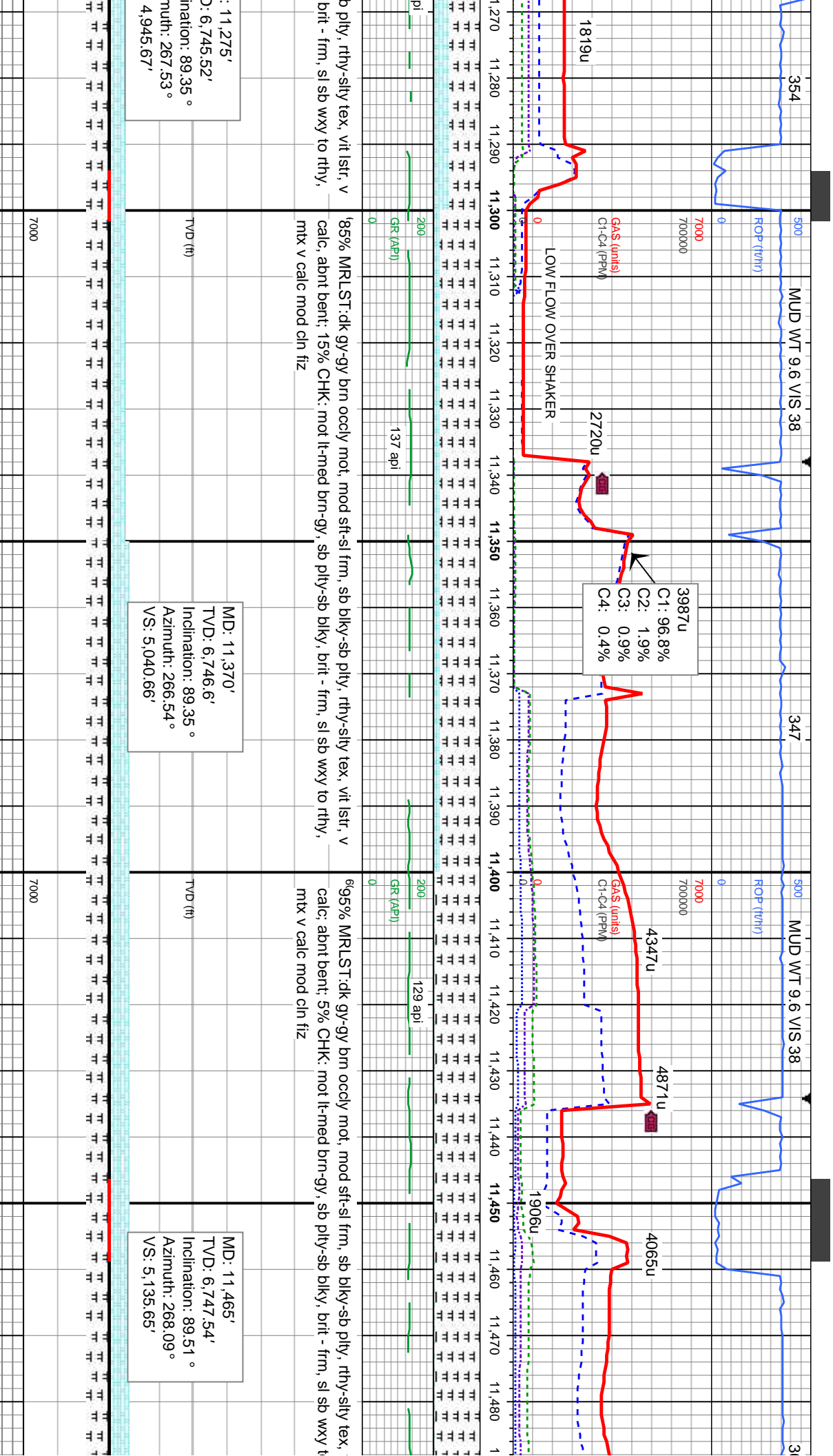


MD: 11,086'
TVD: 6,744.92'
Inclination: 92.04 °
Azimuth: 269.24 °
VS: 4,756.8'

2315u
C1: 75.1%
C2: 16.7%
C3: 8.2%
C4: 0.0%

MD: 11,180'
TVD: 6,744.11'
Inclination: 88.95 °
Azimuth: 269.49 °
VS: 4,850.71'

MD
TVD
Incl
Azim
VS



MD: 11,275'
TVD: 6,745.52'
Inclination: 89.35°
Azimuth: 267.53°
VS: 4,945.67'

MD: 11,370'
TVD: 6,746.6'
Inclination: 89.35°
Azimuth: 266.54°
VS: 5,040.66'

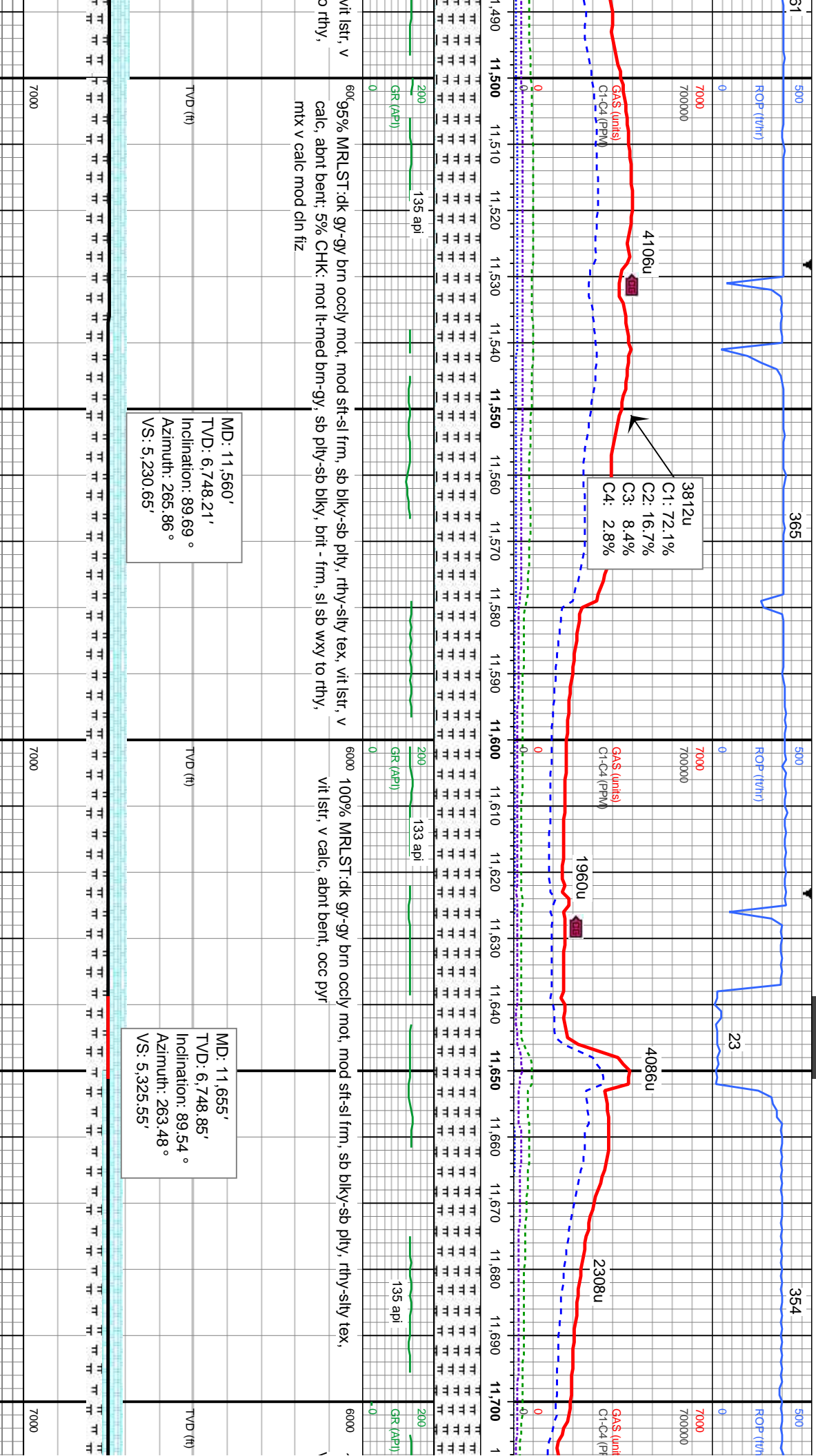
MD: 11,465'
TVD: 6,747.54'
Inclination: 89.51°
Azimuth: 268.09°
VS: 5,135.65'

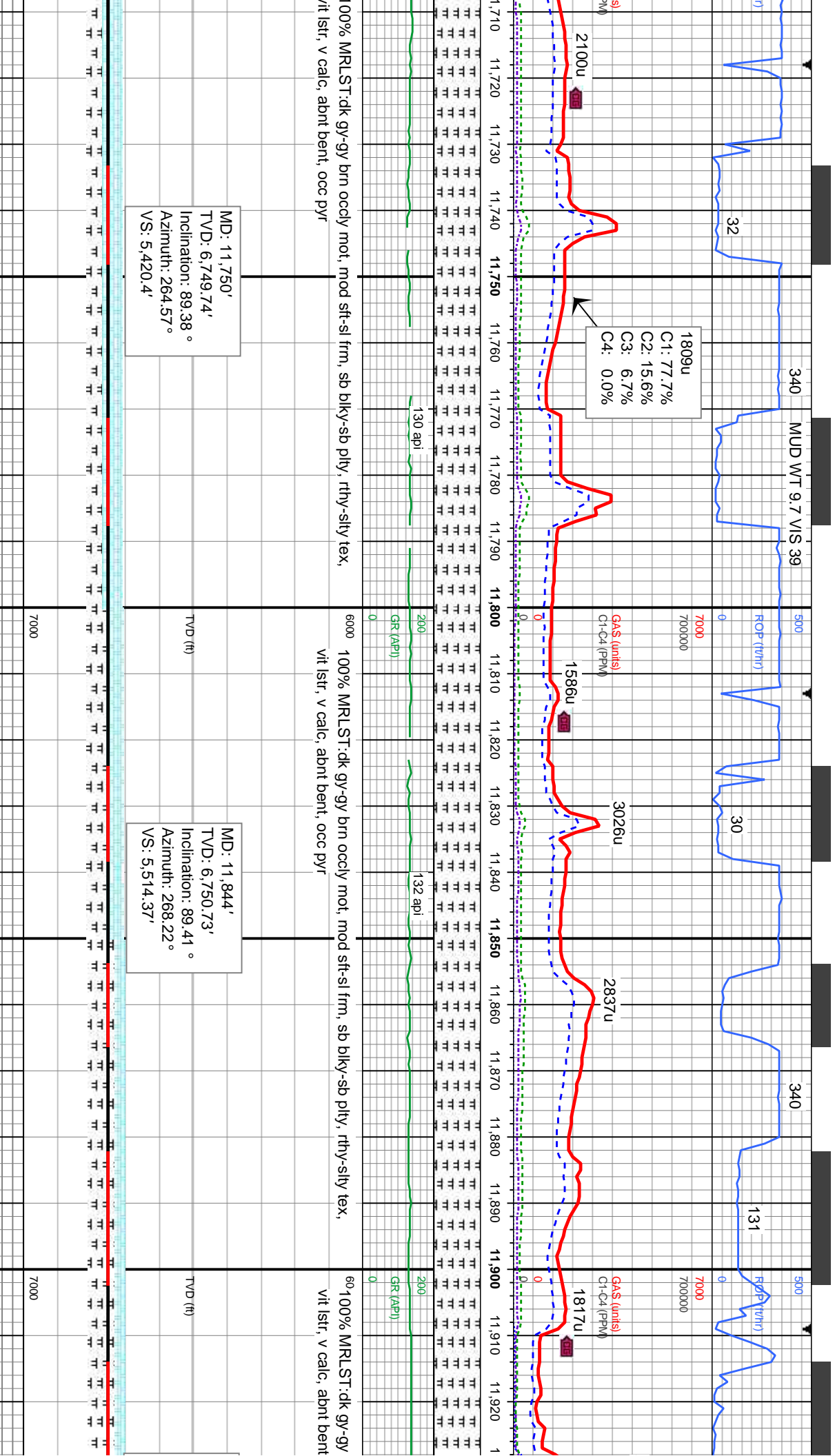
65% MRLST:dk gy-gy brn occy mot, mod sft-sl frm, sb blkly-sb ply, rthy-slty tex, v
calc; abnt bent; 15% CHK: mot lt-med brn-gy, sb ply-sb blkly, brt - frm, sl sb wxy to rthy,
mtx v calc mod cin fiz

65% MRLST:dk gy-gy brn occy mot, mod sft-sl frm, sb blkly-sb ply, rthy-slty tex, v
calc; abnt bent; 5% CHK: mot lt-med brn-gy, sb ply-sb blkly, brt - frm, sl sb wxy to rthy,
mtx v calc mod cin fiz

65% MRLST:dk gy-gy brn occy mot, mod sft-sl frm, sb blkly-sb ply, rthy-slty tex, v
calc; abnt bent; 5% CHK: mot lt-med brn-gy, sb ply-sb blkly, brt - frm, sl sb wxy to rthy,
mtx v calc mod cin fiz







100% MRLST:dk gy-gy brn occly mot, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, vit lstr, v calc, abnt bent, occ pyr

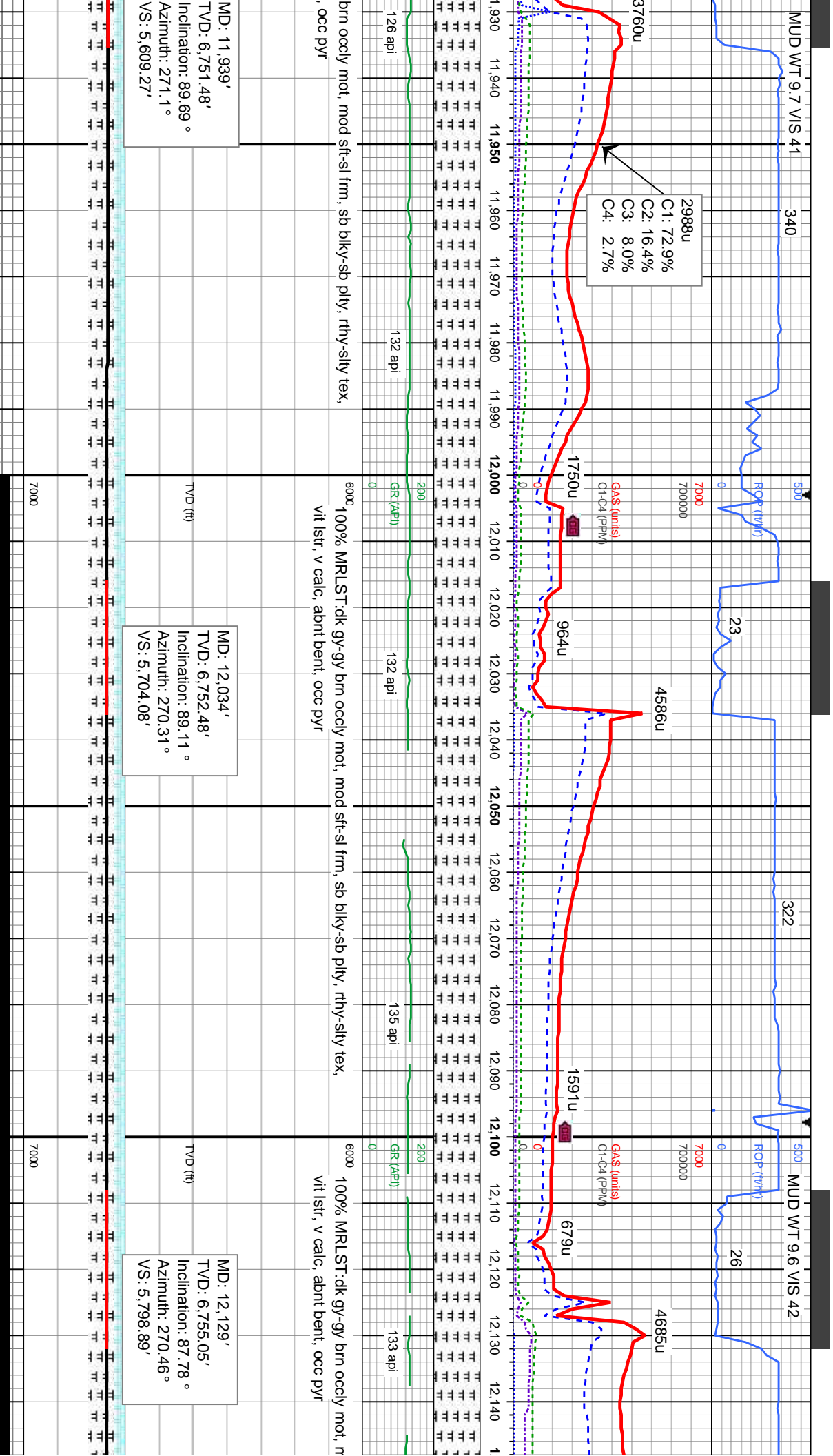
100% MRLST:dk gy-gy brn occly mot, mod sft-sl frm, sb blkly-sb ply, rthy-sily tex, vit lstr, v calc, abnt bent, occ pyr

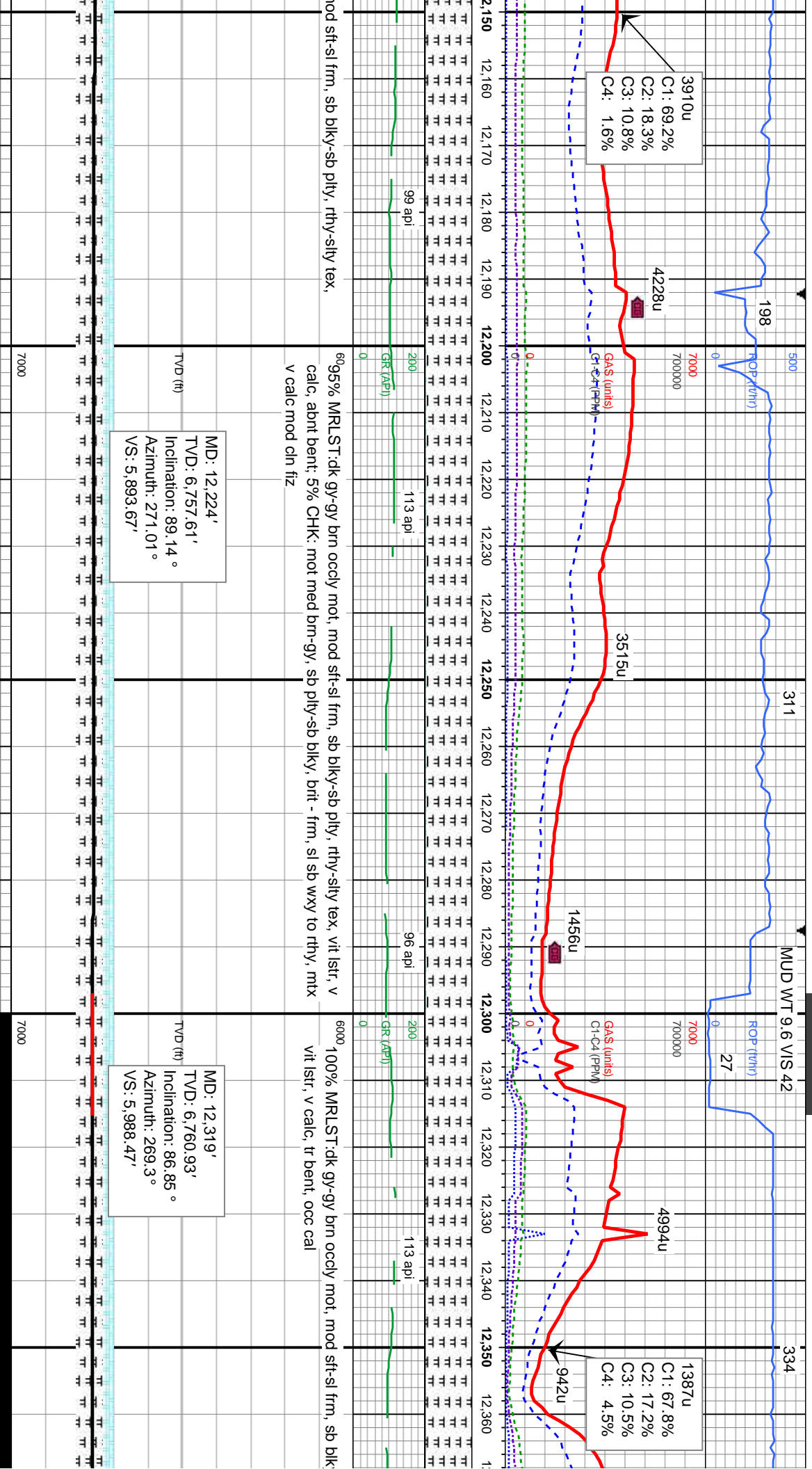
60 100% MRLST:dk gy-gy vit lstr, v calc, abnt bent

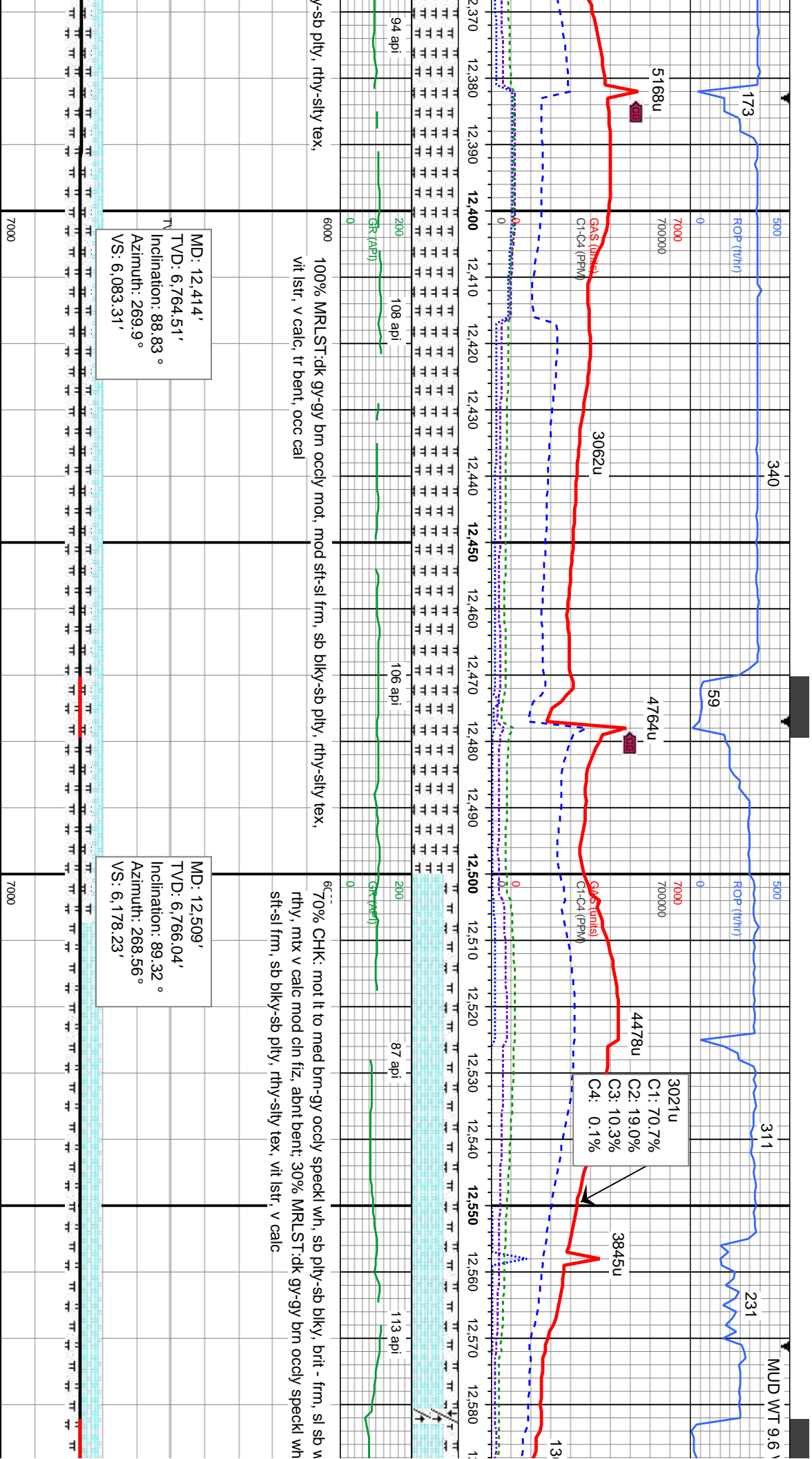
MD: 11,750'
TVD: 6,749.74'
Inclination: 89.38 °
Azimuth: 264.57°
VS: 5,420.4'

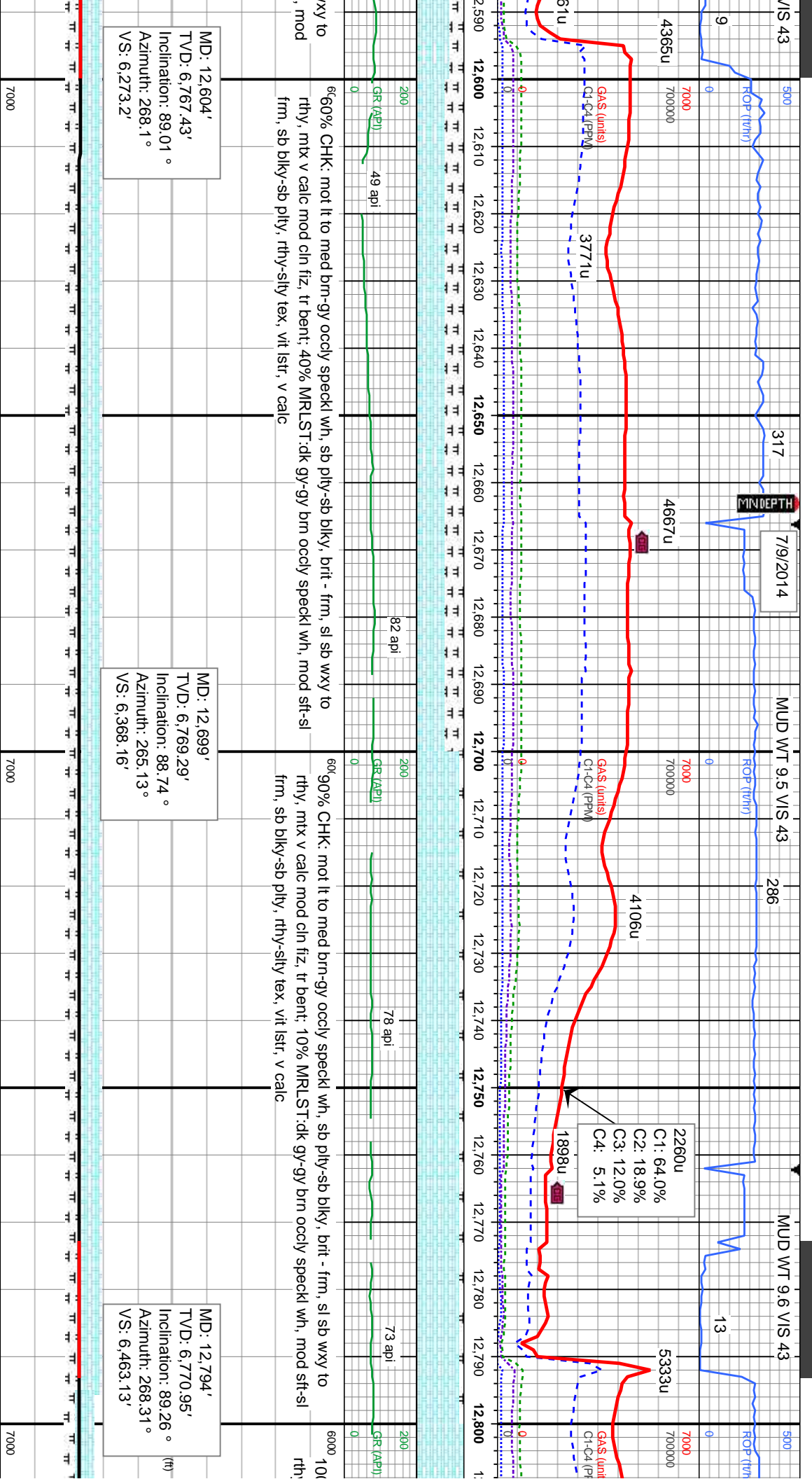
MD: 11,844'
TVD: 6,750.73'
Inclination: 89.41 °
Azimuth: 268.22°
VS: 5,514.37'









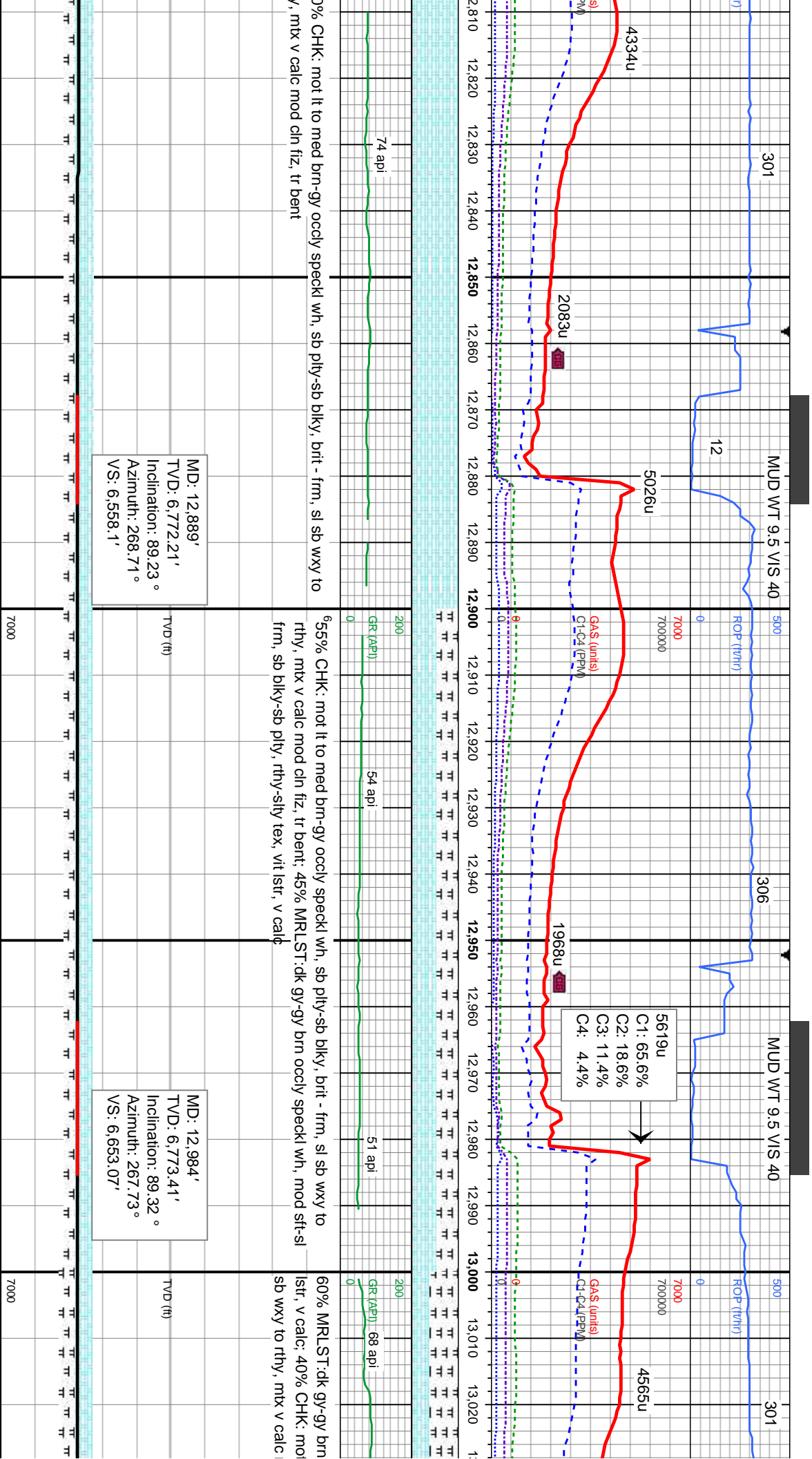


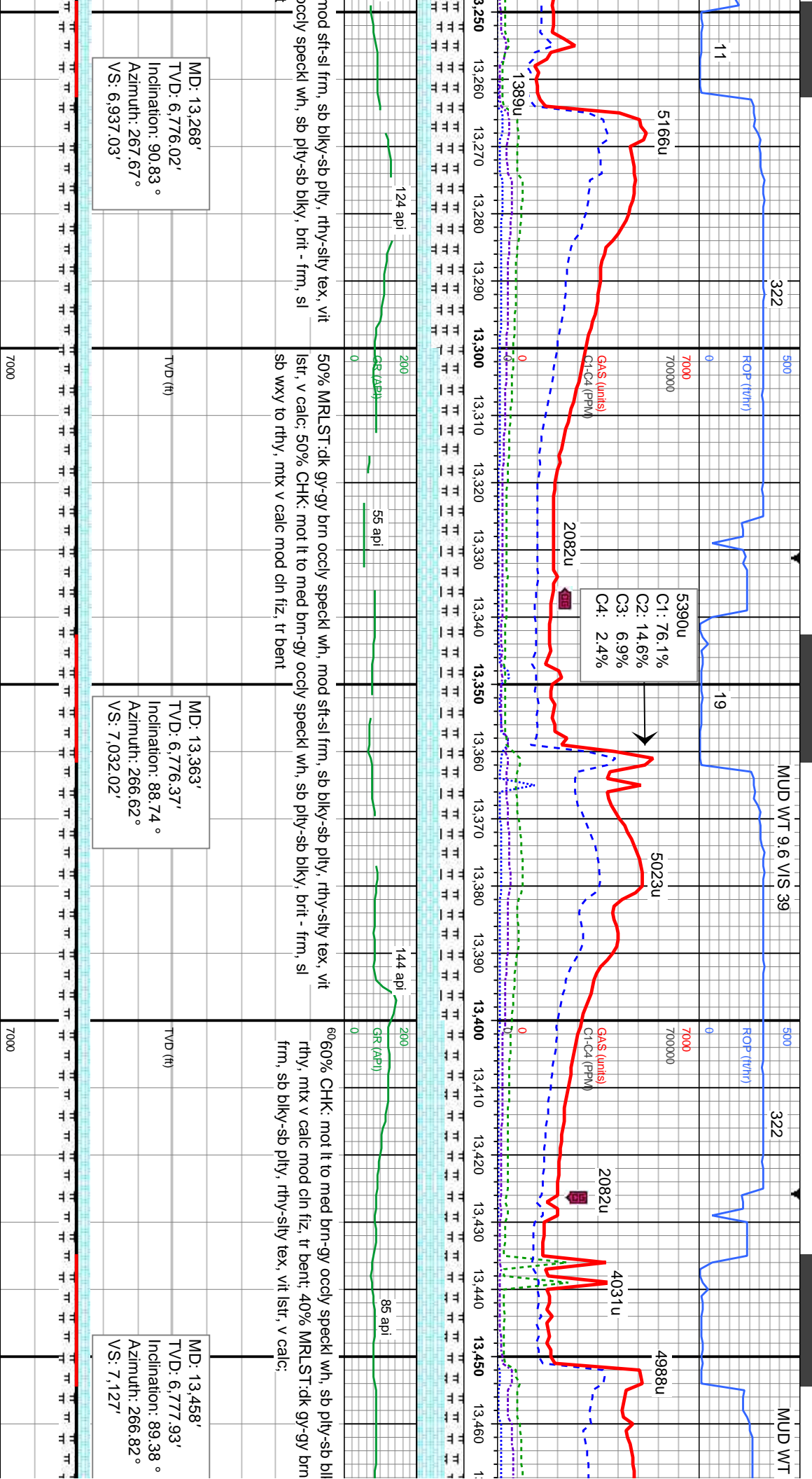
MD: 12,604'
TVD: 6,767.43'
Inclination: 89.01 °
Azimuth: 268.1 °
VS: 6,273.2'

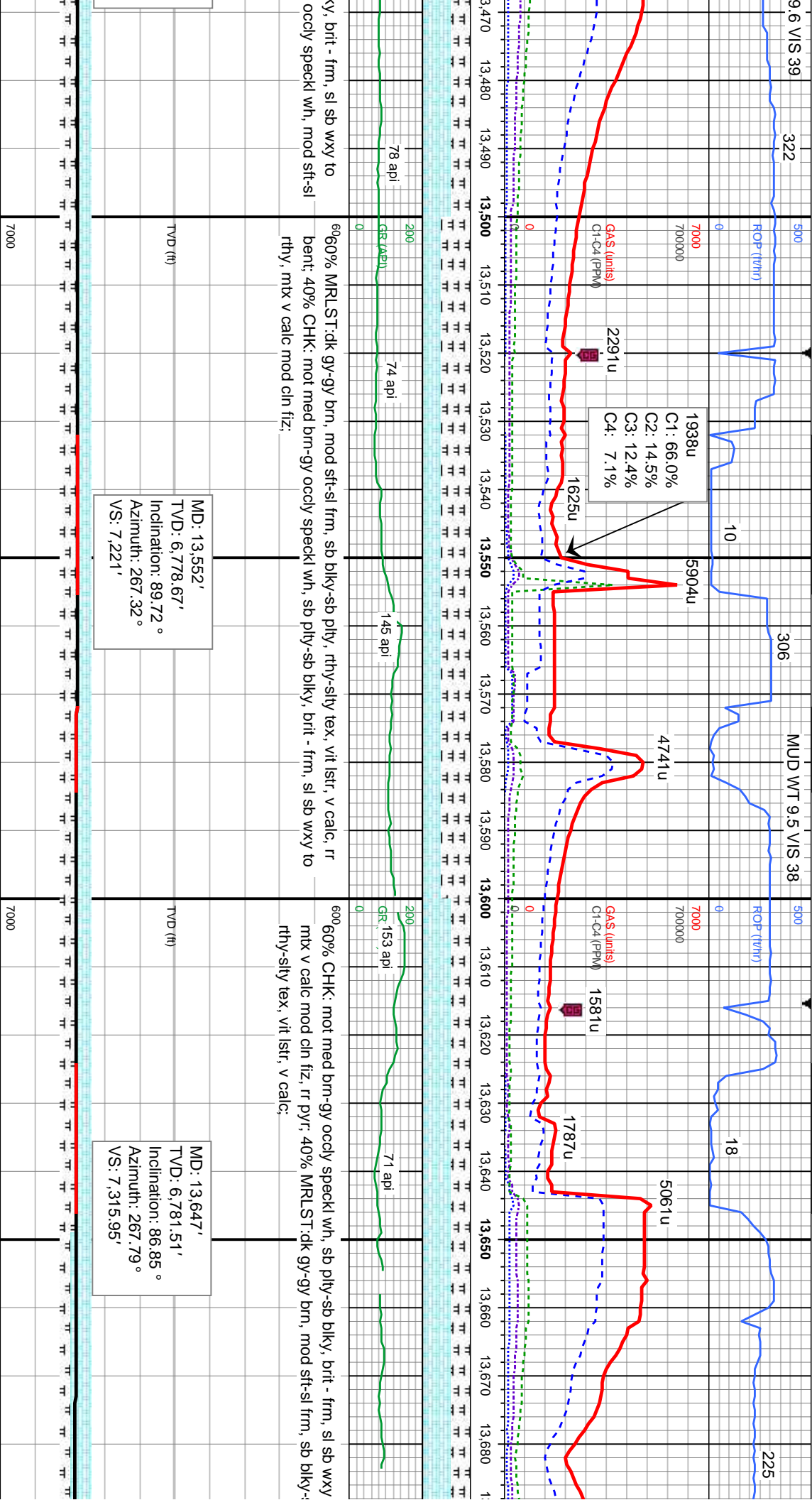
MD: 12,699'
TVD: 6,769.29'
Inclination: 88.74 °
Azimuth: 265.13 °
VS: 6,368.16'

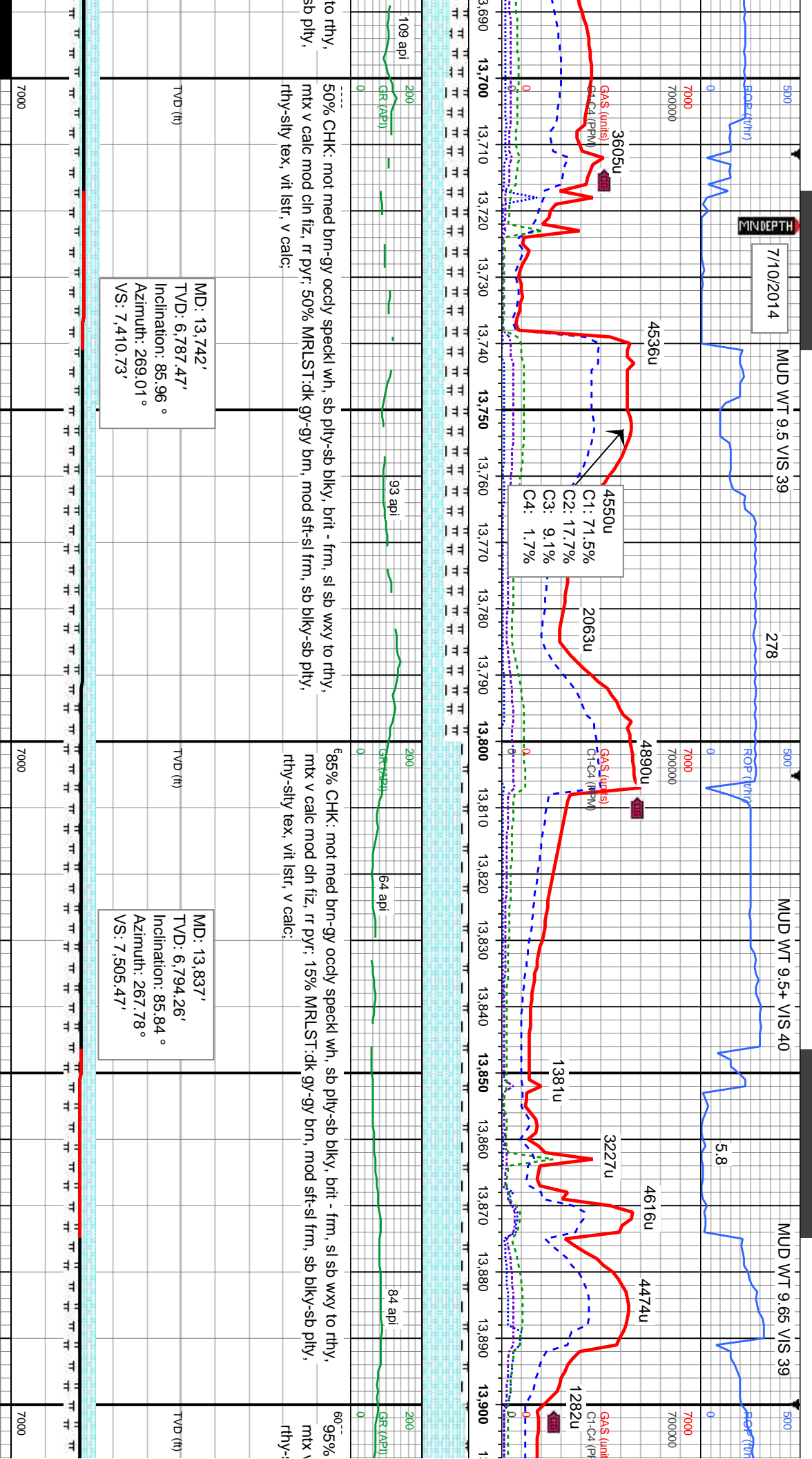
MD: 12,794'
TVD: 6,770.95'
Inclination: 89.26 °
Azimuth: 268.31 °
VS: 6,463.13'

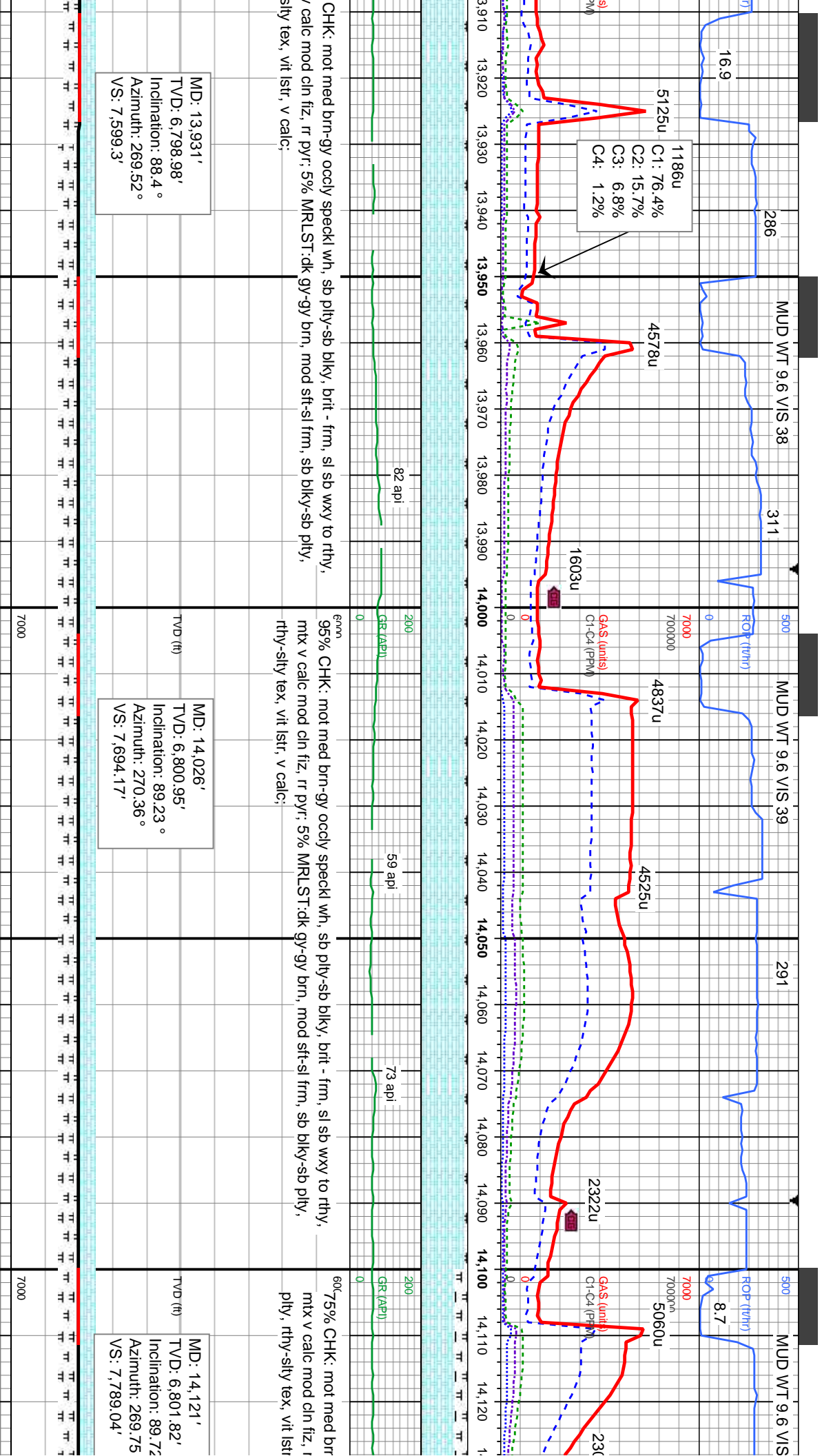










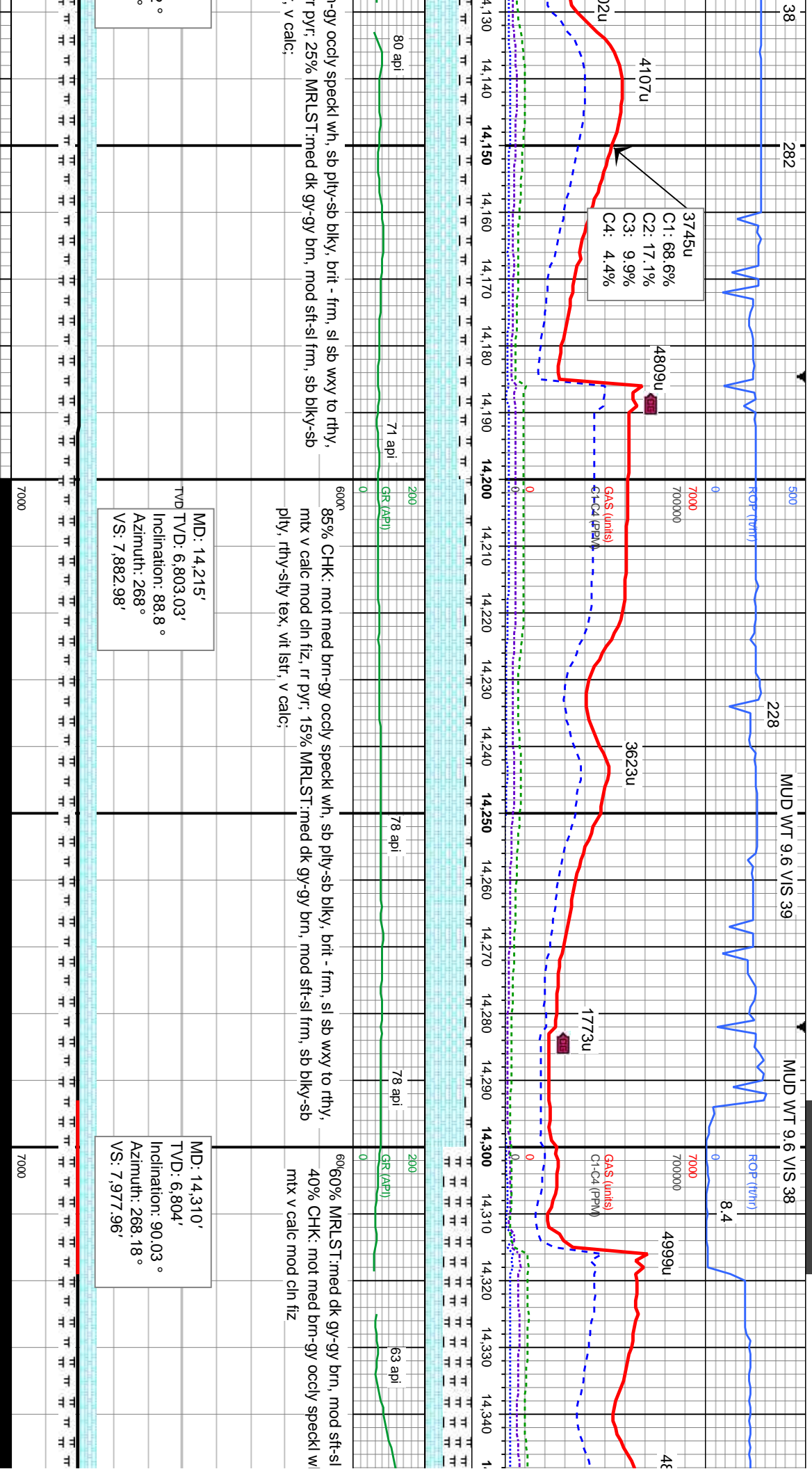


CHK: mot med brn-gy occlly speckl wh, sb ply-sb blkly, brit - frm, sl sb wxy to rthy, rthy-sltly tex, vit lst, v calc;

95% CHK: mot med brn-gy occlly speckl wh, sb ply-sb blkly, brit - frm, sl sb wxy to rthy, rthy-sltly tex, vit lst, v calc;

60% 75% CHK: mot med brn-gy occlly speckl wh, sb ply-sb blkly, brit - frm, sl sb wxy to rthy, rthy-sltly tex, vit lst, v calc;





gy-occlly speckl wh, sb plty-sb blkly, brit - frm, sl sb wxy to rthy,
r pyr, 25% MRLST:med dk gy-gy brn, mod sft-sl frm, sb blkly-sb
; v calc;

600°
85% CHK: mot med brn-gy occlly speckl wh, sb plty-sb blkly, brit - frm, sl sb wxy to rthy,
mtx v calc mod cin fiz, r pyr, 15% MRLST:med dk gy-gy brn, mod sft-sl frm, sb blkly-sb
plty, rthy-slty tex, vit lstr, v calc;

60°
60% MRLST:med dk gy-gy brn, mod sft-sl
40% CHK: mot med brn-gy occlly speckl wh
mtx v calc mod cin fiz



