



Scale: 5" / 100'  
Measured Depth Log

Well Name SHOOK 3-10-2NCH\_LATERAL

Location SECTION 3 T1S R67W

State COLORADO

County ADAMS

Country USA

Rig Number ENSIGN 145

API Number 05-001-09980

AFE # 1700011

Geographic Region DJ BASIN

Field WATTENBERG

Spud Date 4/15/2017

Drilling Completed 8/10/2017

Surface Coordinates Section 3, 2058' FSL x 2169' FEL  
39.99222, -104.87317

Bottom Hole Coordinates Section 10, 369' FSL x 1915' FEL  
39.973498, -104.872340

Ground Elevation 5098'

K.B. Elevation 5111'

Logged Interval 7400' To 13843'

Total Depth 6443'

Formation SHARON SPRINGS thru NIOBRARA C CHALK

Type of Drilling Fluid OBM - OIL BASED MUD

Operat

Company PetroShare Corporation

Address 9635 Maroon Circle, Suite 400  
Englewood, CO 80112



Geolog

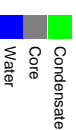
Name JOEY LUCE, SAGE BETTS

Company Terra Guidance

Address 1298 O Road  
Loma CO 81524  
(970) 260-5408



Color Co



or

SHARE











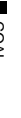







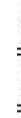










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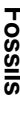






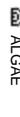


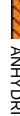



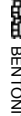
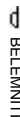






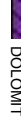
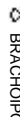







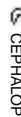

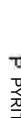
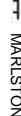
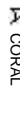


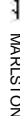
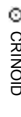


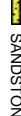



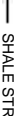




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## Rock Types

	LIMESTONE		SANDSTONE		DOLOMITE		BRECCIA
	Chalk		BENTONITE		CHERT		TILL
	Marl		CEMENT		COAL		TUFF
	SHALE		? UNKNOWN		MARLSTONE		IGNEOUS
	Silty Shale		ANHYDRITE		CLAYSTONE		METAMORPHIC
	Shaly Siltstone		GYPSUM		SHALE GRAY		
	SILTSTONE		SALT		SHALE COLORED		
	Shaly Sandstone		SIDERITE or LIMONITE		CONGLOMERATE		

## Accessories

	F FOSSIL		ARGILLACEOUS		GLAUCONITE		
	GASTROPOD		ARGILLITE GRAIN		GYPSIFEROUS		
	ALGAE		OOLITE		HEAVY MINERAL		ANHYDRITE STRINGER
	AMPHIPORA		OSTRACOD		BITUMENOUS SUBSTANCE		BENTONITE STRINGER
	BELEMNITE		PELECYPOD		BRECCIA FRAGMENTS		COAL STRINGER
	BIOCLASTIC		PELLET		CALCAREOUS		DOLOMITE STRINGER
	BRACHIOPOD		PISOLITE		CARBONACEOUS FLAKES		GYPSUM STRINGER
	BRYOZOA		PLANT REMAINS		CHERT		PHOSPHATE PELLETS
	CEPHALOPOD		PLANT SPORES		CHERT		PYRITE
	CORAL		SCAPHOPOD		COAL - THIN BEDS		SALT CAST
	CRINOID		STROMATOPOROID		DOLOMITIC		SANDY
	ECHINOID		FELDSPAR		SILICEOUS		SHALE STRINGER
	FISH		FERRUGINOUS PELLET		SILTY		SILTSTONE STRINGER
	FORAMINIFERA		ANHYDRITIC		FERRUGINOUS		TUFFACEOUS

## Oil Show

ORGANIC  
PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

Engin

SPOTTED STAINING

BIT

## Porosity

CONNE

E EARTHY

CONNE

FENESTRAL

CONNI

F FRACTURE

↑ CORE -

INTERCRYSTALLINE

CORE -

INTEROOLITIC

DST IN

MOLDIC

FAULT

Other Symbols

IC FORMATION TOP

L LITHOGRAPHIC

Rounding

NT GAS SHOW

MX MICROXLN

MN DEPTH

A ANGULAR

MS MUDSTONE

NORMAL FAULT

R ROUNDED

PS PACKSTONE

OIL SHOW

a SUBANG

WS WACKESTONE

OVERTURNED STRATA

r SUBRND

REVERSE FAULT

SIDEWALL CORE (LEFT)

M MODERATE

CTION (DOWN) SIDEWALL CORE (RIGHT) BS BOUNDSTONE P POOR

SLIDE

C CHALKY

W WELL

SURVEY

CX CRYPTOXLN

TRIP GAS

E EARTHY

WIRELINE TESTED - LEFT FX FINELYXLN

WIRELINE TESTED - RT BS GRAINSTONE

Textures

Sorting

ConnectionGas(Vert)

Curve/Survey Data  
ROP  
Gamma

Gaps in Gamma Data due to Rapid Drilling Rate

GAS SCALE: 0-5000 units

KOP, 7230' MD, 14:06 MDT, 08/08/2017

Continued from Vertical Mudlog

Sharon Springs Top 7442' MD / 7379' TVD  
Niobrara Top 7461' MD / 7396' TVD  
Niobrara A Chalk Top 7469' MD / 7403' TVD  
Niobrara A Marl Top 7508' MD / 7436' TVD

GAS (units)  
C1-C4 (PPM)

WOB: 20 Klbs  
ROP: 146 ft/hr  
RPM: 101  
SPP: 3,925 psi  
Diff Press: 368 psi  
SPM#1: 84  
SPM#2: 85

GAS (units)  
C1-C4 (PPM)

Depth

% Lithology

TVD SCALE: 7000'-8800'

MD: 7,437'  
INC: 27.66°  
AZIM: 180.68°  
TVD: 7,374.78'  
VS: 700.05'

MD: 7,527'  
INC: 35.58°  
AZIM: 176.91°  
TVD: 7,451.36'  
VS: 747.17'

Well Bore  
TVD

70% SLTY SH: med dk gy-dk gy brn, frm-hd, brit, sb blk-ang, rthy-silty, arg mtx, mod calc; 30% MRLST: dk gy-med dk gy brn, frm-hd, blk-ang, rthy, sl silty, v arg, mod incr calc

50% SLTY SH: med dk gy-dk gy brn, v frm-hd, sb blk-ang, mnrd, rthy-silty, arg mtx, mod calc; 50% MRLST: dk gy-med dk gy brn, frm-hd, blk-ang, rthy, sl silty, v arg, incr calc, mnrd bent w/lt org flr

100% MRLST: dk gy-med dk gy brn, frm-hd, blk-ang, rthy, sl silty, v calc, rr blk bent w/lt org flr

Images





MW 10.3+ / VIS 70 IN  
MW 10.4 / VIS 70 OUT

148 api

ROP (ft/hr)  
Gamma (API)

149 ft/hr

188 api

ROP (ft/hr)  
Gamma (API)

249 ft/hr

MW 10.4 / VIS 70 IN  
MW 10.4 / VIS 70 OUT

Niobrara B Chal  
7751' MD / 7600

841u

GA\$ (units)  
C1-C4 (PPM)

626u

GA\$ (units)  
C1-C4 (PPM)

1084u

MD: 7.616'  
INC: 45.45°  
AZM: 177.17°  
TVD: 7.518.94'  
VS: 804.91'

MD: 7.706'  
INC: 55.4°  
AZM: 179.78°  
TVD: 7.576.21'  
VS: 874.18'

TVD (ft)

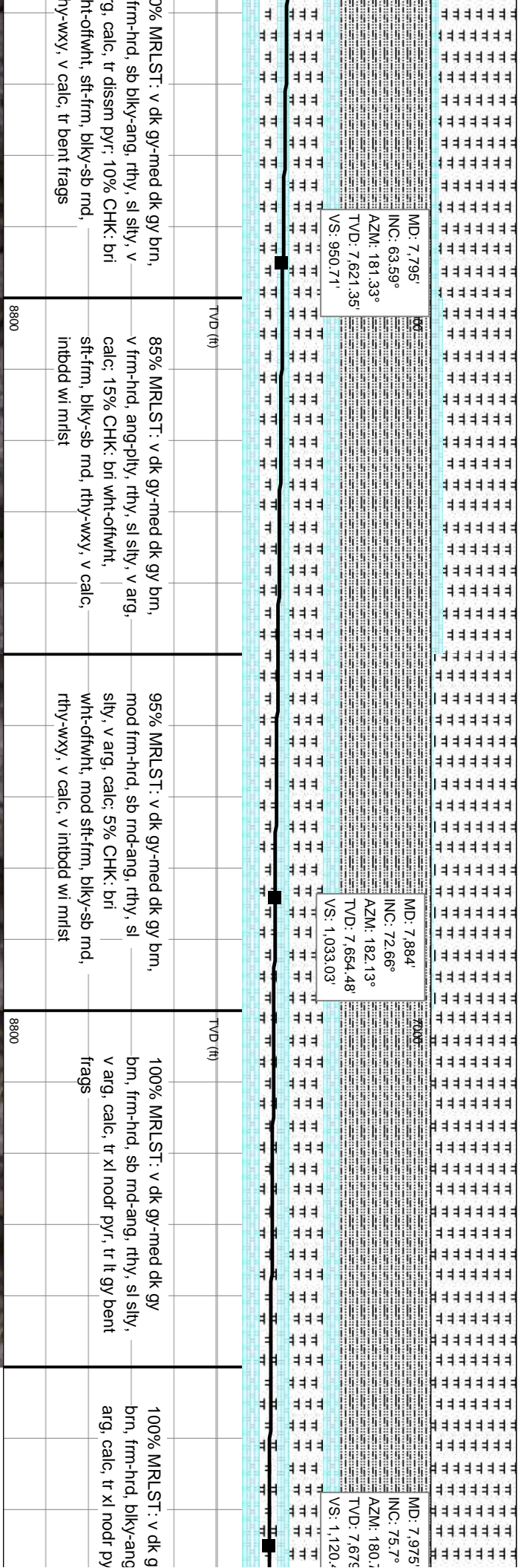
TVD (ft)

100% MRLST : dk gy-med dk gy brn,  
frm-hrd, sl fis, sb blk-y-ang, rthy, sl  
sily, v arg, calc, tr blk-y bent wi lt orng  
flor

100% MRLST : v dk gy-med dk gy  
brn, v frm-hrd, sl fis, sb blk-y-ang,  
rthy, sl sily, v arg, calc, tr lam-dissm  
pyr

100% MRLST : v dk gy-med dk gy  
brn, v frm-hrd, mnor pily, sb blk-y-ang,  
rthy, sl sily, v arg, calc, tr lam-dissm  
pyr, tr chk frags

100% MRLST : v dk gy-med dk gy  
brn, v frm-hrd, sb blk-y-ang, rthy, sl  
sily, v arg, calc, tr dissim pyr





+ / VIS 58 IN  
+ / VIS 58 OUT

600 MW 10.4 / VIS 55 IN  
300 MW 10.3+ / VIS 56 OUT

171 api

261 ft/hr

193 api

ROP (ft/hr)  
Gamma (API)

ROP (ft/hr)  
Gamma (API)

153 ft/hr

Niobara C Chalk Top  
8058' MD / 7694' TVD

Curve Landing Point Reached  
8103' MD, 03:05 MDT, 08/09/2017  
Resume 100' Sample Collection

691u  
C1: 74.8%  
C2: 15.6%  
C3: 4.9%  
C4: 4.7%

GA\$ (units)  
C1-C4 (PPM)

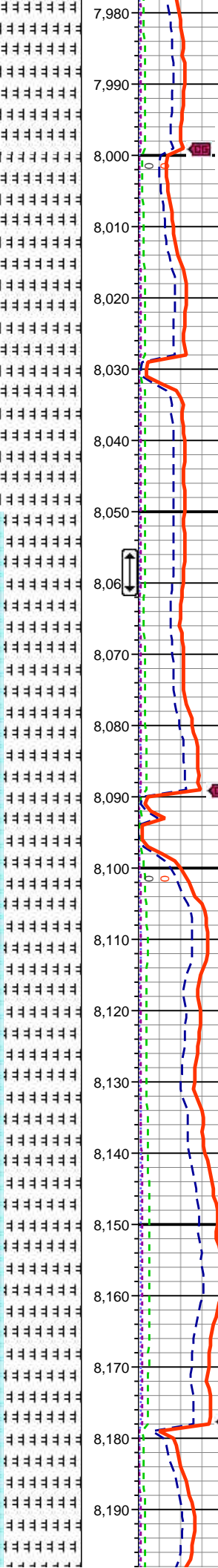
GA\$ (units)  
C1-C4 (PPM)

GA\$ (units)  
C1-C4 (PPM)

1677u

1083u

1481u



7000

7000

MD: 8,065'  
INC: 85.26°  
AZM: 180.33°  
TVD: 7,694.15'  
VS: 1,208.96'

MD: 8,154'  
INC: 89.72°  
AZM: 180.31°  
TVD: 7,698.05'  
VS: 1,297.77'

Lateral Interpreted Lithology Exaggerated



TVD (ft)

TVD(ft)

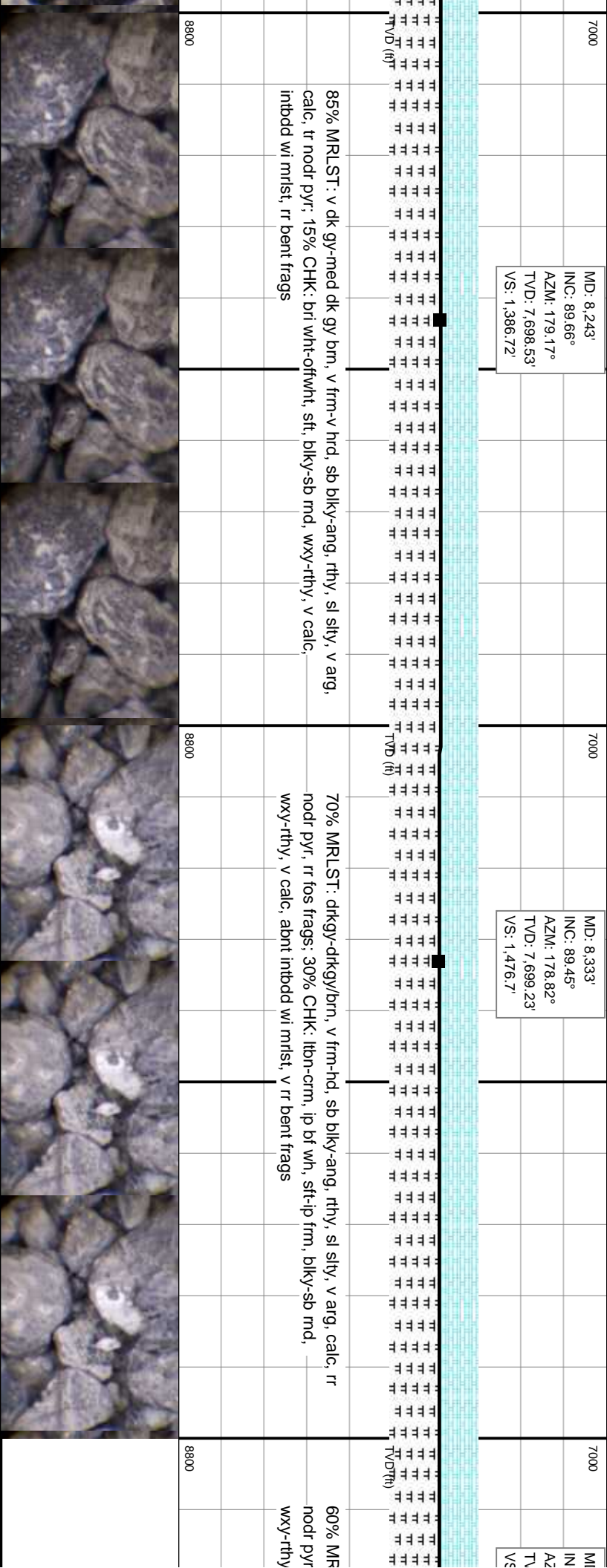
95% MRLST: v dk gy-med dk gy brn, frm-hrd, blk-ang, rthy, sl sily, v arg, calc, tr xl nodr pyr; 5% CHK: bri wht-offwht, v sft-frm, blk-ymd, wxy, v calc, inbddd wi mlst

90% MRLST: v dk gy-med dk gy brn, v frm-hrd, blk-ang, rthy, sl sily, v arg, calc, tr nodr pyr; 10% CHK: bri wht-offwht, sft-frm, blk-sb rnd, wxy-rthy, v calc, inbddd wi mlst, mnr lt yel gy bent

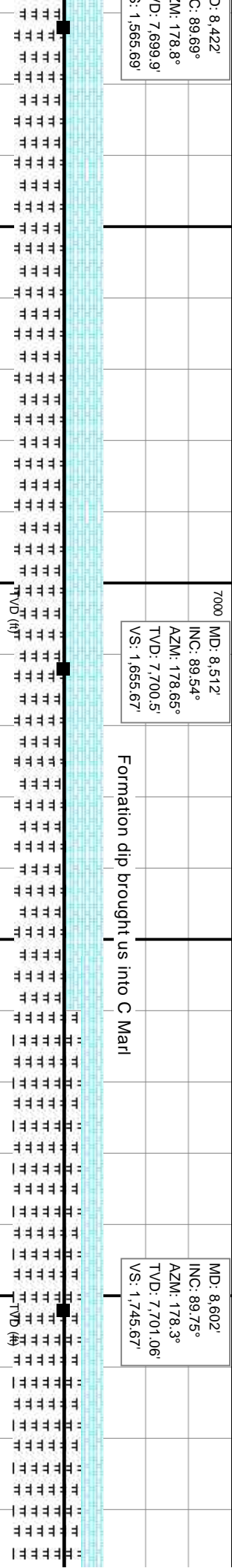
90% MRLST: v dk gy-med dk gy brn, v frm-hrd, sb blk-ang, rthy, sl sily, v arg, calc, tr nodr pyr; 10% CHK: bri wht-offwht, sft, blk-sb rnd, wxy-rthy, v calc, inbddd wi mlst, rr bent frags

8800

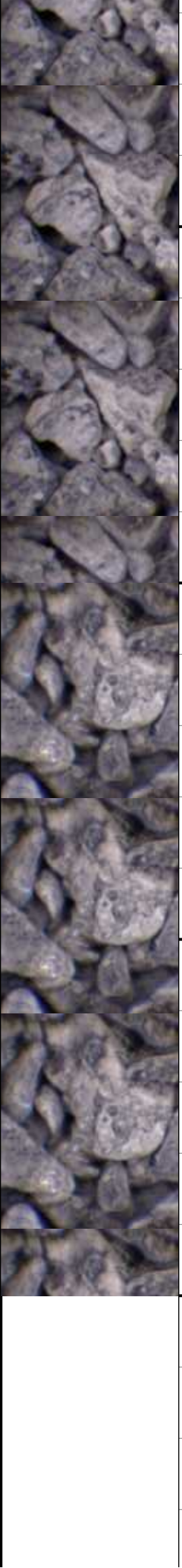
8800

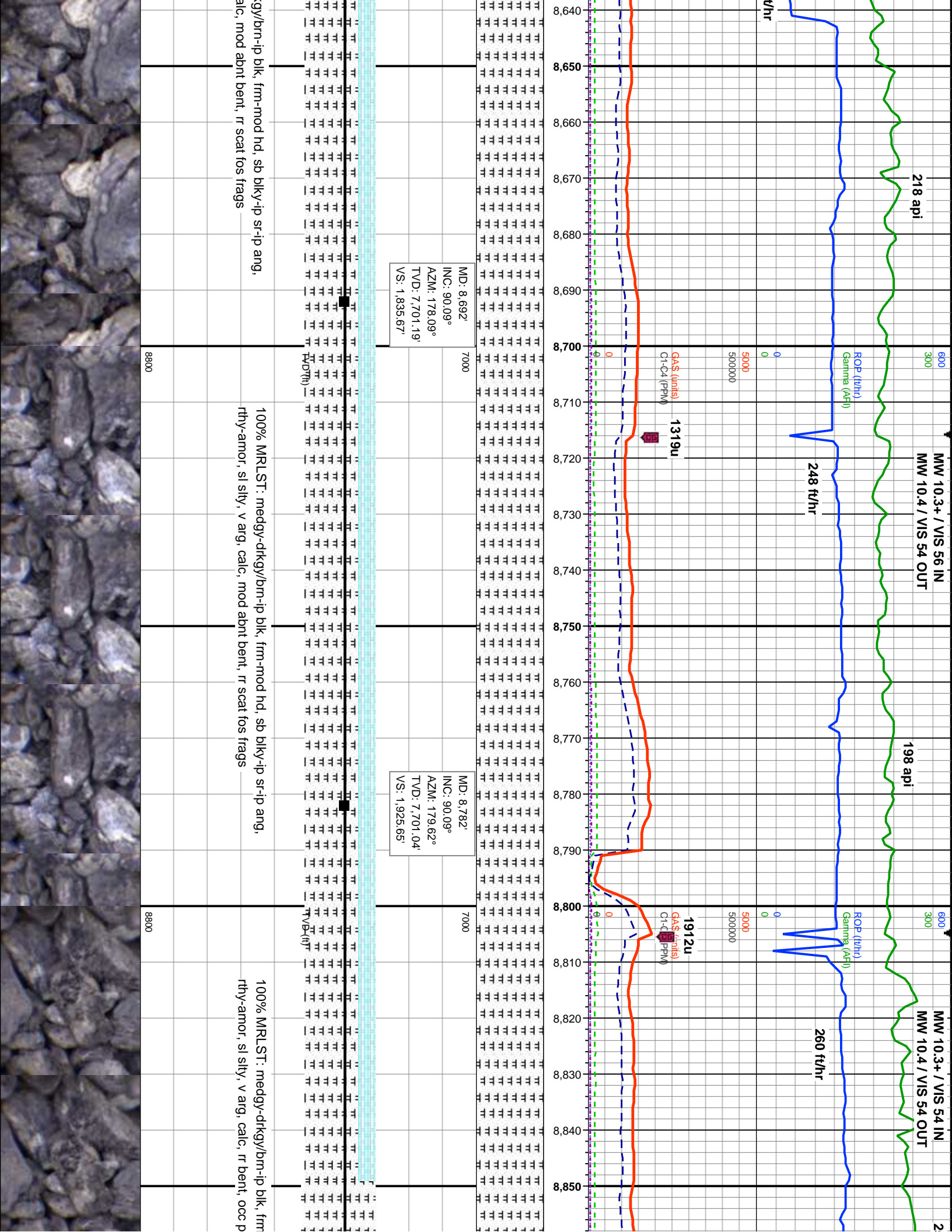






100% MRLST: medgy-drk  
rthy-amor, sl silty, v arg, ci

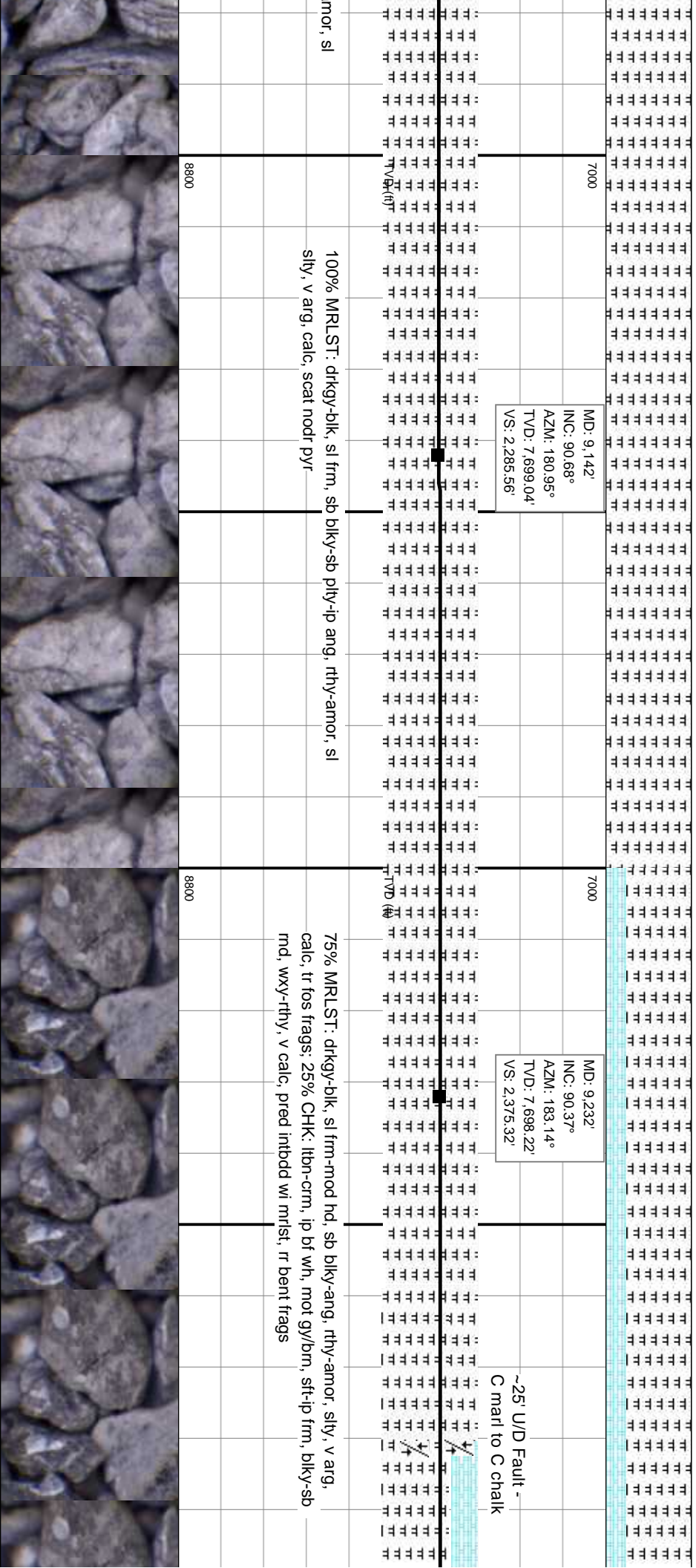












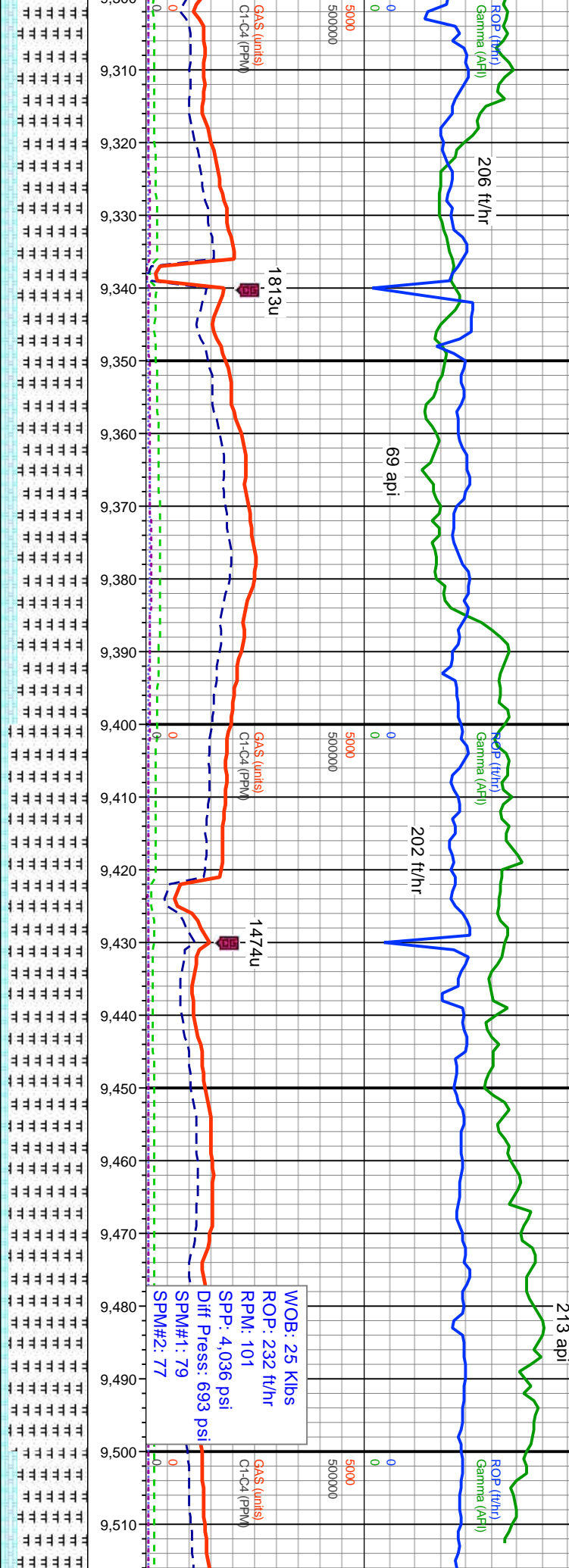
MW 10.4 / VIS 53 IN

MW 10.4 / VIS 53 OUT

MW 10.4 / VIS 52 IN

MW 10.4 / VIS 52 OUT

2 13 api

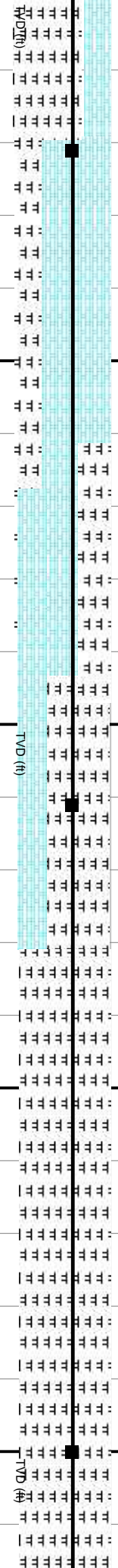


MD: 9,321'  
INC: 90.58°  
AZM: 181.99°  
TVD: 7,697.48'  
VS: 2,464.01'

700 MD: 9,411'  
INC: 90.43°  
AZM: 181.44°  
TVD: 7,696.69'  
VS: 2,553.81'

MD: 9,500'  
INC: 90.37°  
AZM: 180.71°  
TVD: 7,696.06'  
VS: 2,642.67'

C chalk stringer



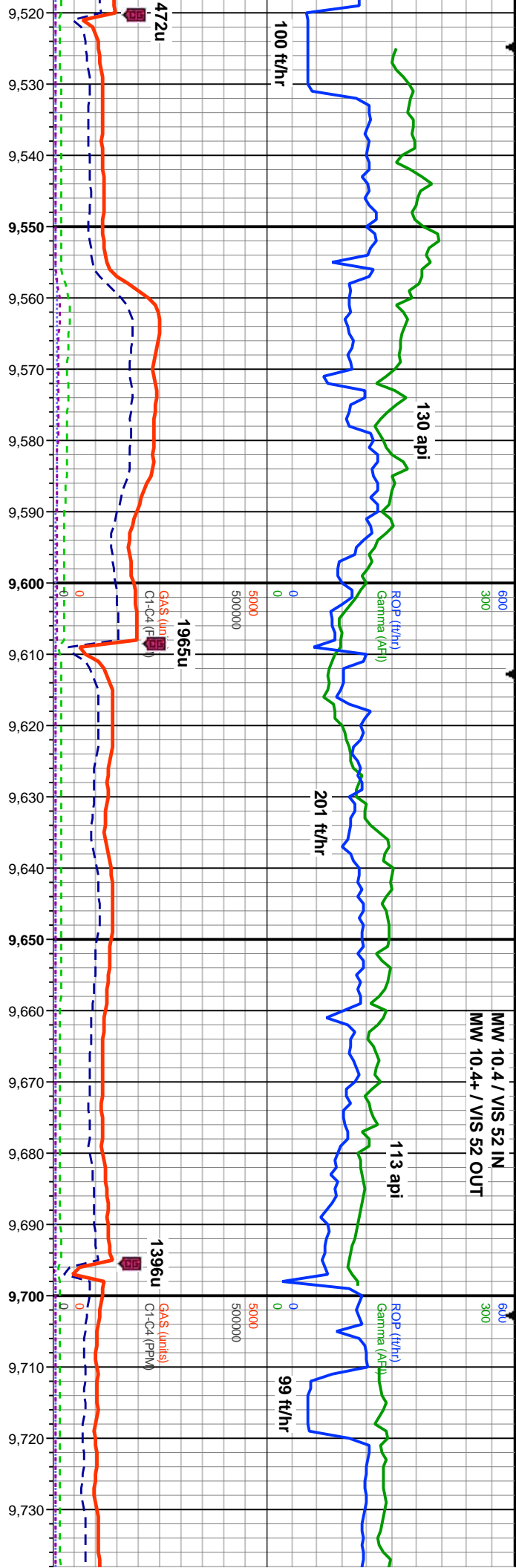
80% MRLST: drkgy-blk, sl frm-mod hd, sb blkly-ang, rthy-amor, slty, v arg, calc, tr fos frags; 20% CHK: lbm-crm, ip bt wh, mot gy/bm, sft-ip frm, blkly-sb md, wxy-rthy, v calc, pred intbdd wi mlst, rr bent frags

90% MRLST: drkgy-blk, sl frm-mod hd, sb blkly-ang, rthy-amor, slty, v arg, calc, rr fos frags, mod abnt bent; 10% CHK: lbm-crm, mot gy/bm, sft-ip frm, blkly-ireg, wxy-rthy, v calc, pred intbdd wi mlst

80% MRLST: drkgy-blk, sl frm-mod hd, sb blkly-ang, rthy-amor, slty, v arg, calc, tr fos frags; 20% CHK: lbm-crm, ip bt wh, mot gy/bm, sft-ip frm, blkly-sb md, wxy-rthy, v calc, pred intbdd wi mlst, rr bent frags



MW 10.4 / VIS 52 IN  
MW 10.4+ / VIS 52 OUT



MD: 9,590'  
INC: 90.74°  
AZM: 180.41°  
TVD: 7,695.19'  
VS: 2,732.56'

MD: 9,679'  
INC: 90.65°  
AZM: 178.59°  
TVD: 7,694.11'  
VS: 2,821.52'

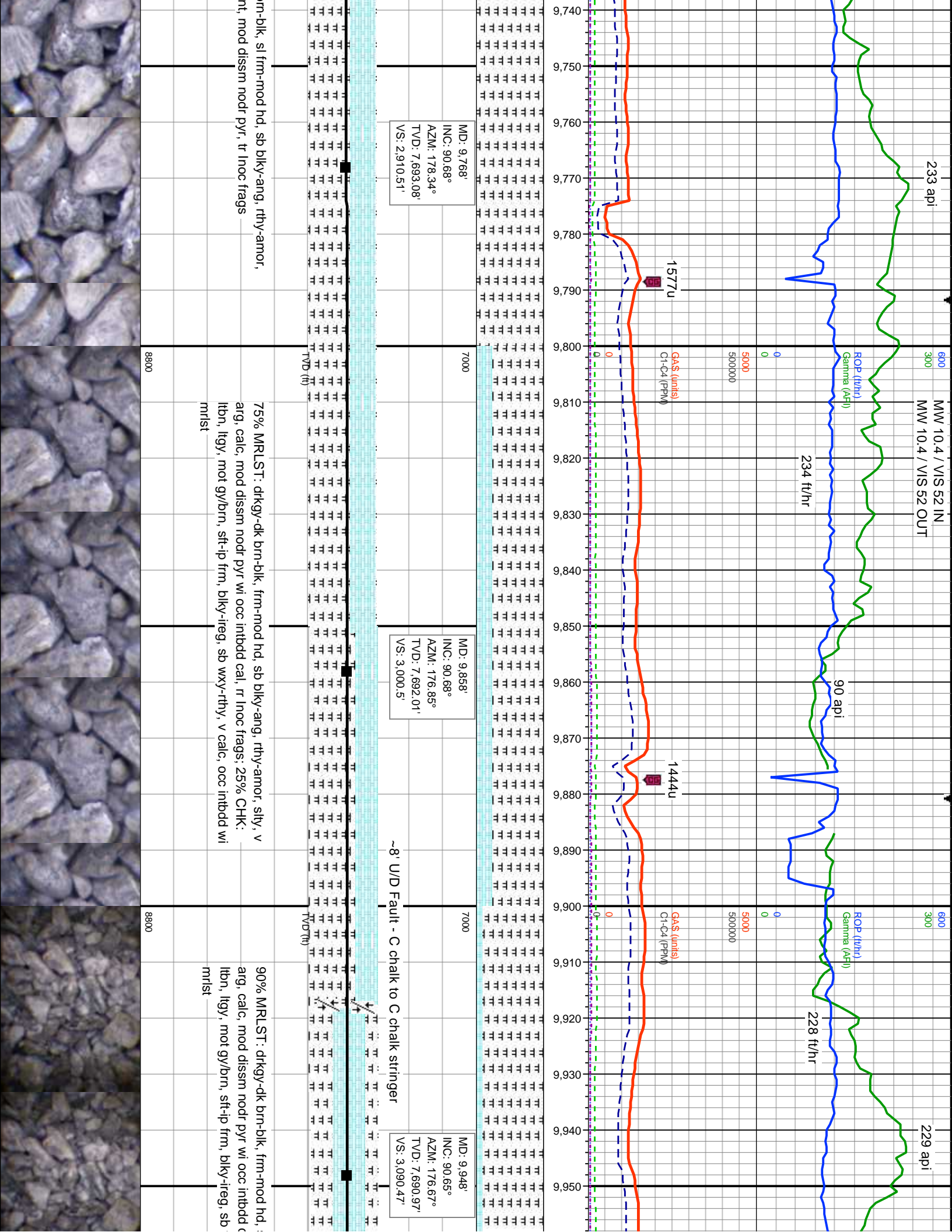
RLST: drkgy-dk brn-blk, sl frm-mod hd, sb blk-ang, rthy-amor, slrg, calc, tr scat bent, mod dissim nodr pyr, rr inoc frags; 20% CHK: n, mot gy/brn, sft-ip frm, blk-ireg, wxy-rthy, v calc, pred intbdd wi

85% MRLST: drkgy-dk brn-blk, sl frm-mod hd, sb blk-ang, rthy-amor, slty, v arg, calc, tr scat bent, mod dissim nodr pyr, rr inoc frags; 15% CHK: lbn-crm, mot gy/brn, sft-ip frm, blk-ireg, wxy-rthy, v calc, pred intbdd wi mlst

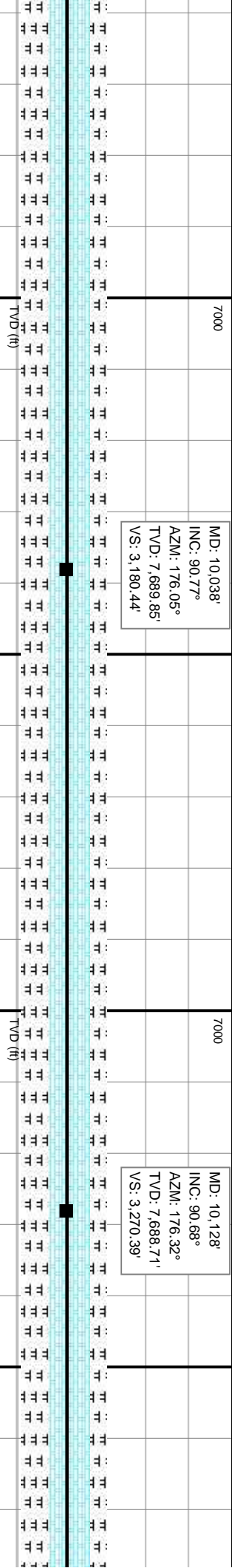
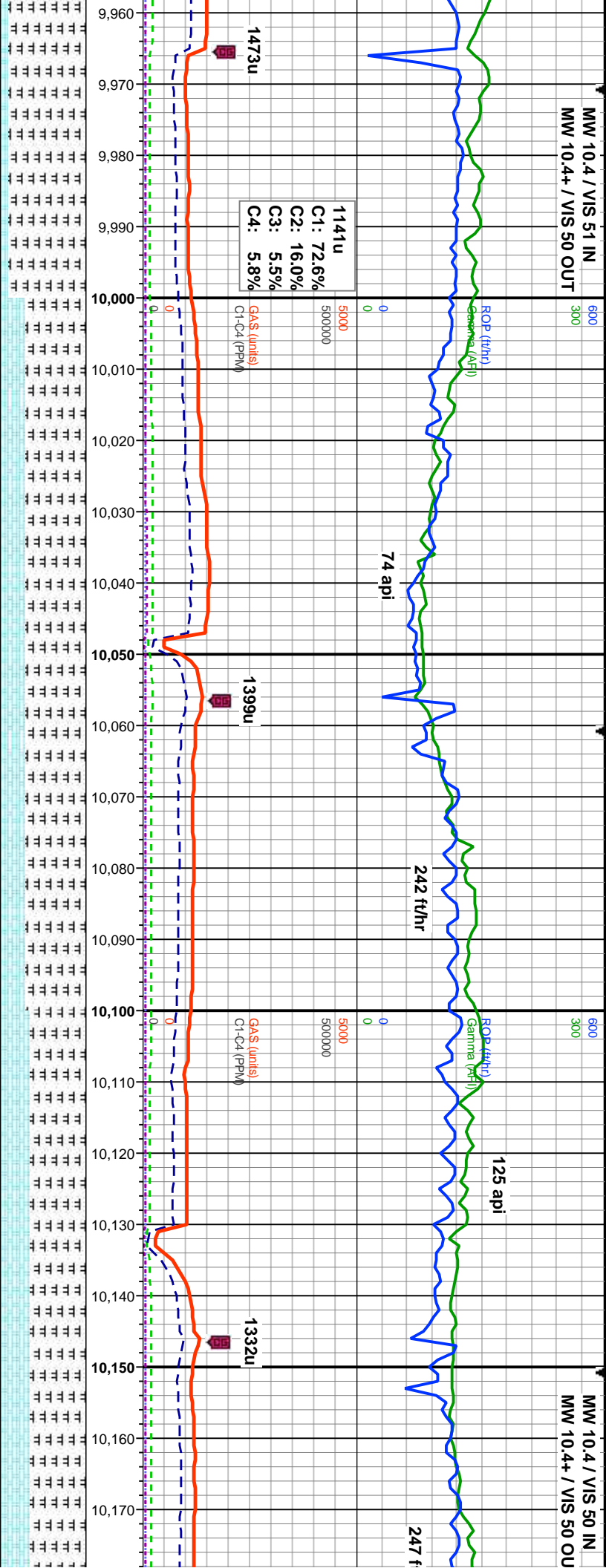
100% MRLST: drkgy-dk t  
slty, v arg, calc, tr scat be







MW 10.4 / VIS 51 IN  
MW 10.4+ / VIS 50 OUT



sb blk-y-ang, rthy-amor, silty, v  
cal, r lnoc frags; 10% CHK:  
wxy-rthy, v calc, occ intbdd wi

70% MRLST: drky-dk brn-blk, frm-mod hd, sb blk-y-ang, rthy-amor, silty, v  
arg, calc, r lnoc frags; 30% CHK: lbn, lgy, mot gy/brn, sft-ip frm,  
blk-y-ireg-pty, sb wxy-rthy, v calc, sme intbdd wi mrlst

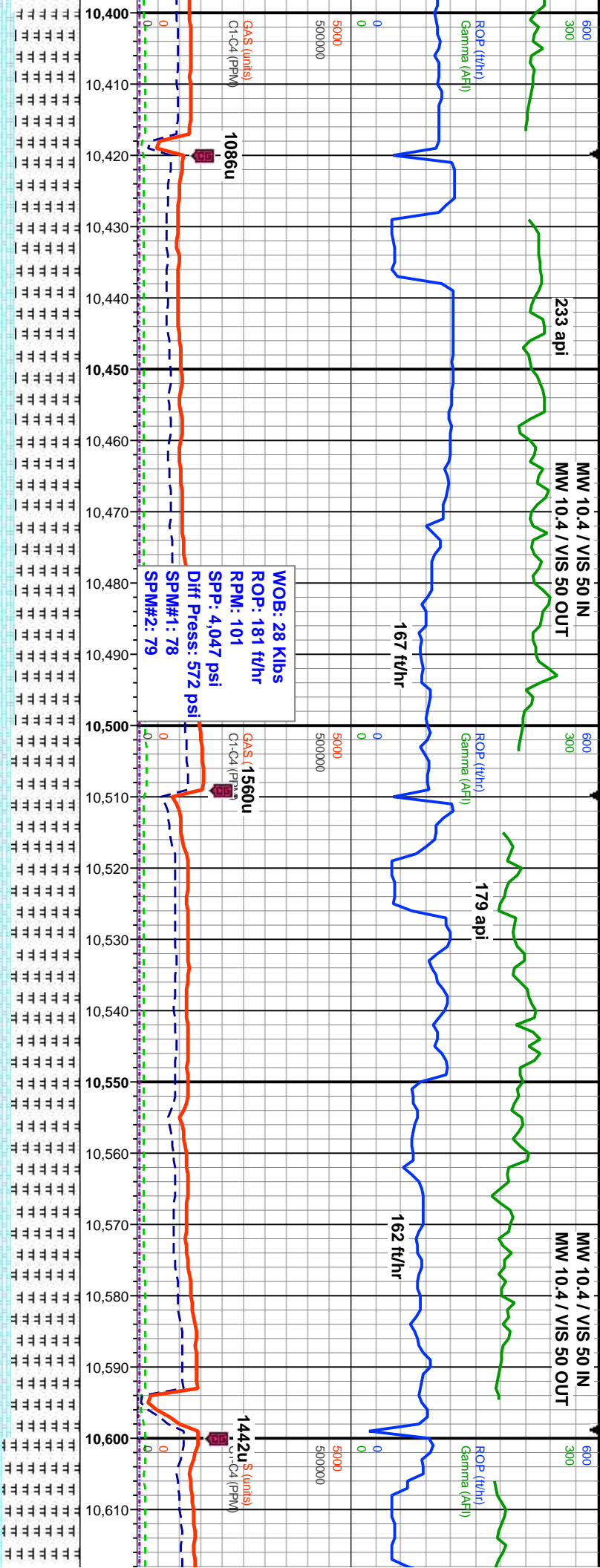
65% MRLST: drky-dk brn-blk, frm-mod hd, sb blk-y-ang, rthy-ai  
arg, calc, r lnoc frags; 35% CHK: lbn, lgy, mot gy/brn, sft-ip frm  
blk-y-ireg-pty, sb wxy-rthy, v calc, sme intbdd wi mrlst











398'  
42°  
5.01°  
687.03'  
40.26'

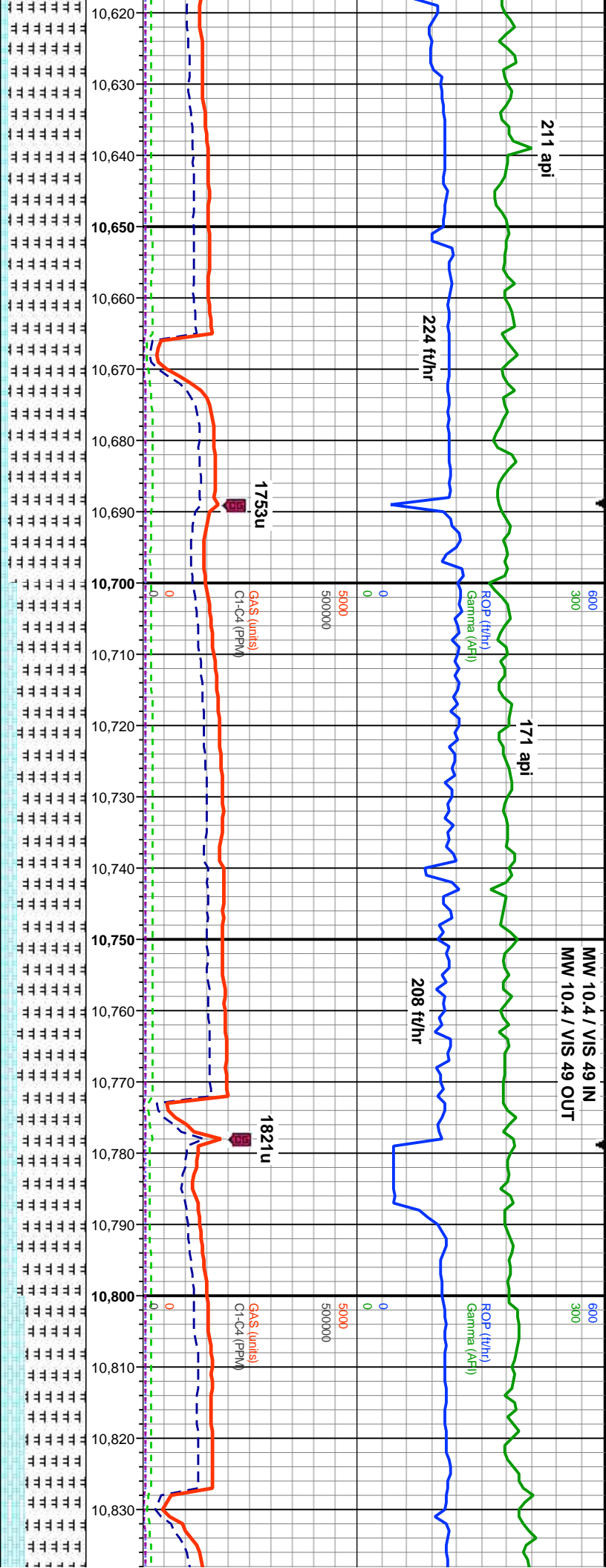
MD: 10.488'  
INC: 90.12°  
AZM: 173.4°  
TVD: 7.687.39'  
VS: 3.630.07'

MD: 10.577'  
INC: 90.09°  
AZM: 176.52°  
TVD: 7.687.23'  
VS: 3.718.95'

TVD (ft)	TVD (ft)	TVD (ft)
75% MRLST: v dk gy grdg blk-v dk gy brn, frm-v hd, sb blk-y-ang, rthy-amor, sl silty, v arg, calc; 25% CHK: bri wht-v lt brn, frm, blk-y-pltly, sb wxy-rthy, v calc, intbdd wi mlst, tr lam pyr	80% MRLST: v dk gy grdg blk-v dk gy brn, frm-hd, sb ang-sb pltly, rthy-amor, sl silty, v arg, calc; 20% CHK: bri wht-v lt brn, mot, frm, blk-y-sb mnd, sb wxy-rthy, v calc, intbdd wi mlst, tr lam-nodr pyr	90% MRLST: v dk gy grdg blk-v dk gy brn, frm-hd, sb ang-sb pltly, rthy-amor, sl silty, v arg, calc; 20% CHK: bri wht-v lt brn, mot, frm, blk-y-sb mnd, sb wxy-rthy, v calc, intbdd wi mlst, tr lam-nodr pyr

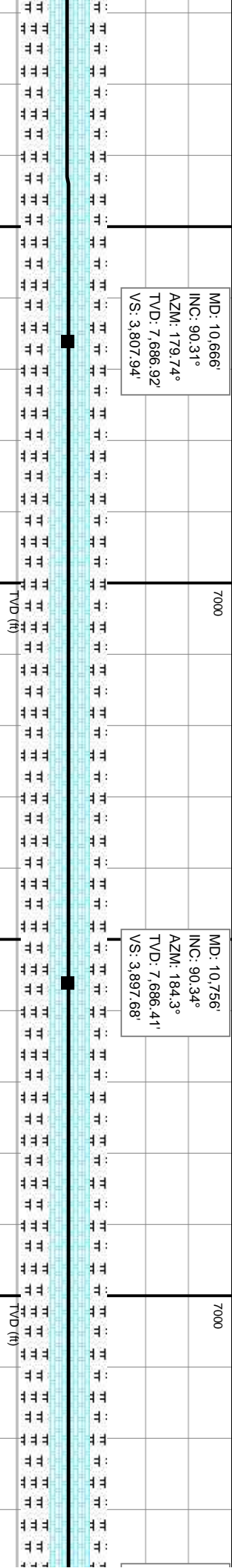
211 api

MW 10.4 / VIS 49 IN  
MW 10.4 / VIS 49 OUT



MD: 10,666'  
INC: 90.31°  
AZM: 179.74°  
TVD: 7,686.92'  
VS: 3,807.94'

MD: 10,756'  
INC: 90.34°  
AZM: 184.3°  
TVD: 7,686.41'  
VS: 3,897.68'



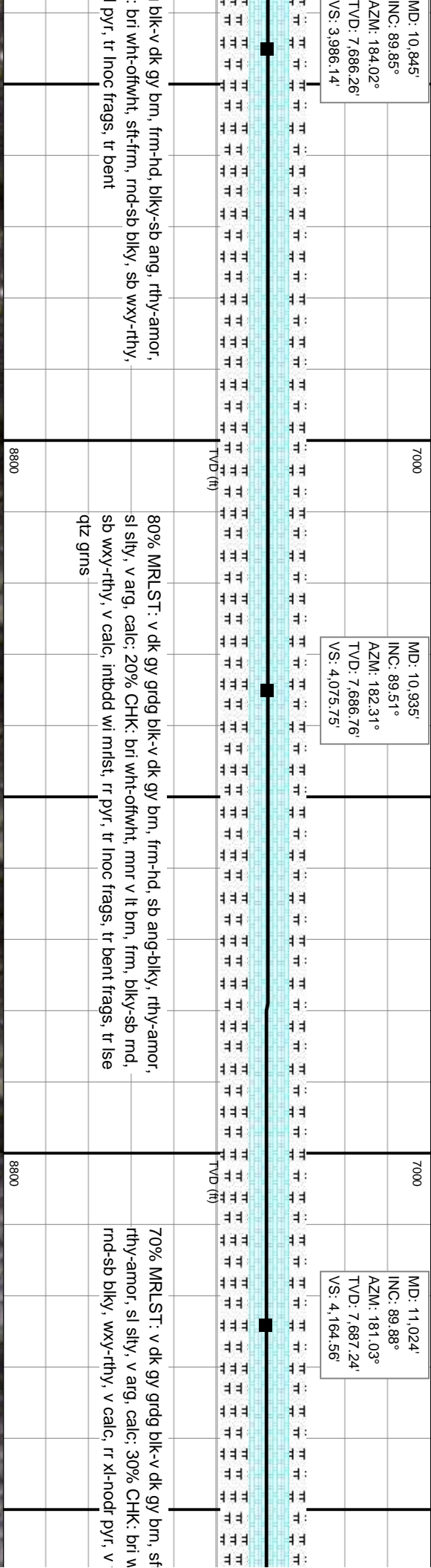
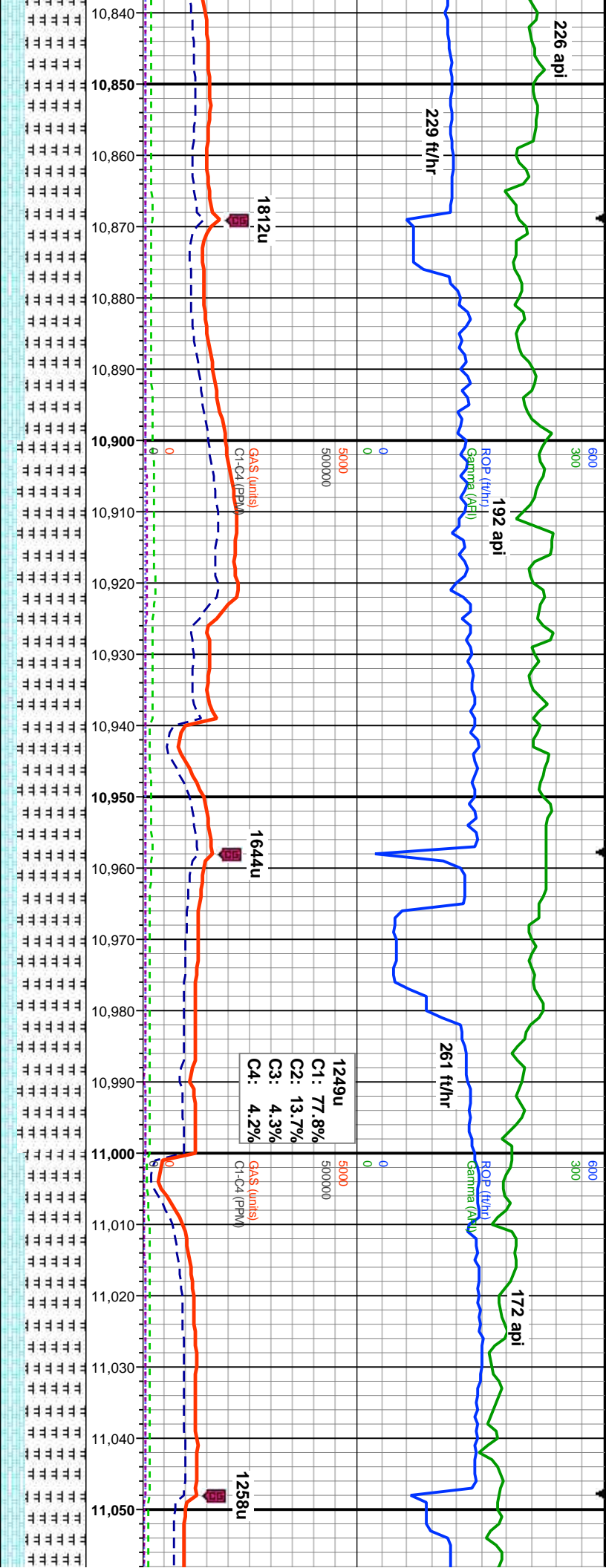
R.LST: v dk gy grdg blk-v dk gy bn, frm-hd, sb ang-bkly, rthy-amor, v arg, calc; 10% CHK: bri wht-ofwht, frm, bkly-sb md, sb wxy-rthy, v ntr intbdd wi mlst, rr nodr-dlssm pyr, tr lnoc frags, tr sft bent frags metal shavings

80% MRLST: v dk gy grdg blk-v dk gy bn, frm-hd, sb ang-bkly, rthy-amor, sl silty, v arg, calc; 20% CHK: bri wht-ofwht, frm, bkly-sb md, sb wxy-rthy, v calc, mnr intbdd wi mlst, rr nodr-dlssm pyr, tr lnoc frags intbdd wi chk

70% MRLST: v dk gy grdg slty, v arg, calc; 30% CHK v calc, intbdd wi mlst, rr x

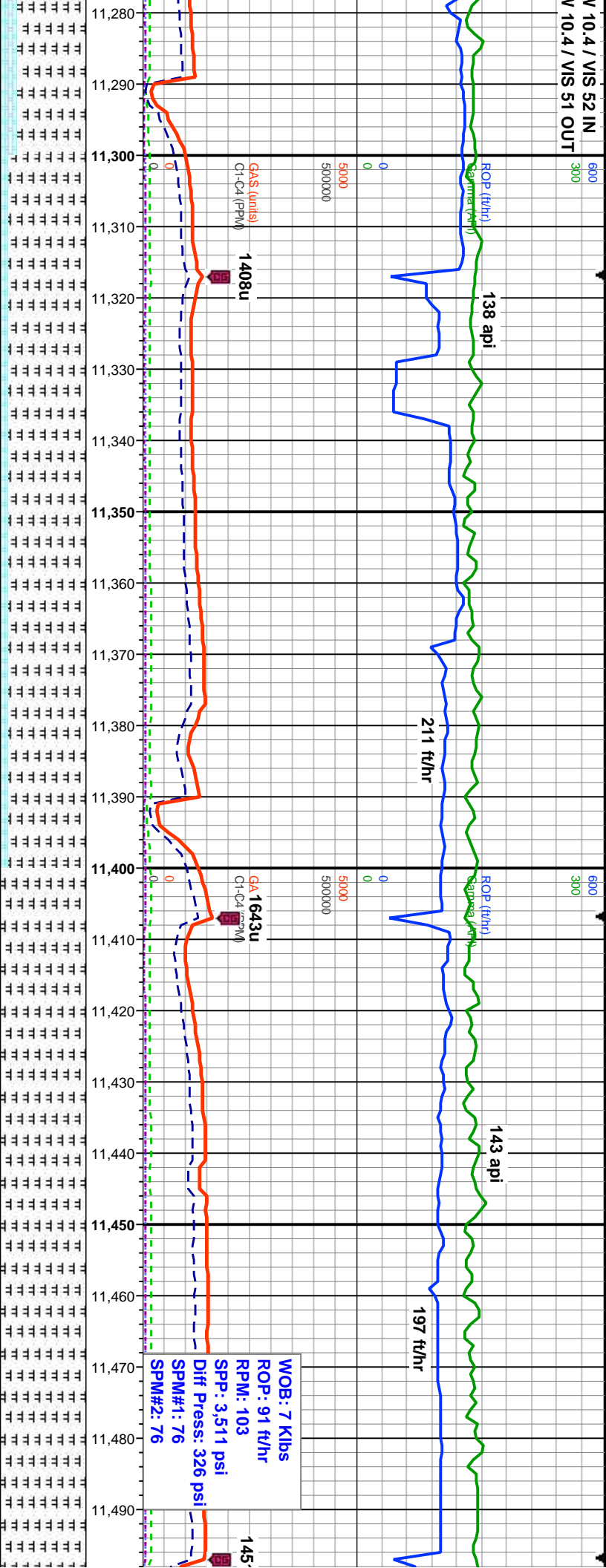








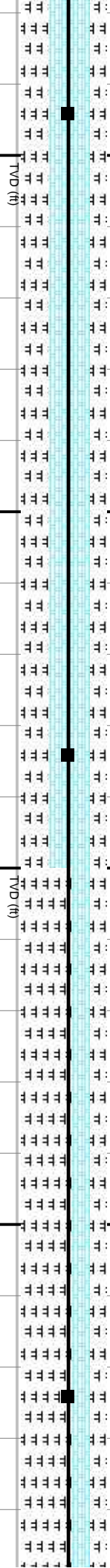




MD: 11,294'  
INC: 90.06°  
AZM: 187.78°  
TVD: 7,686.96'  
VS: 4,432.73'

MD: 11,384'  
INC: 90.09°  
AZM: 186.01°  
TVD: 7,686.84'  
VS: 4,521.62'

MD: 11,474'  
INC: 90.15°  
AZM: 181.8°  
TVD: 7,686.65'  
VS: 4,611.1'



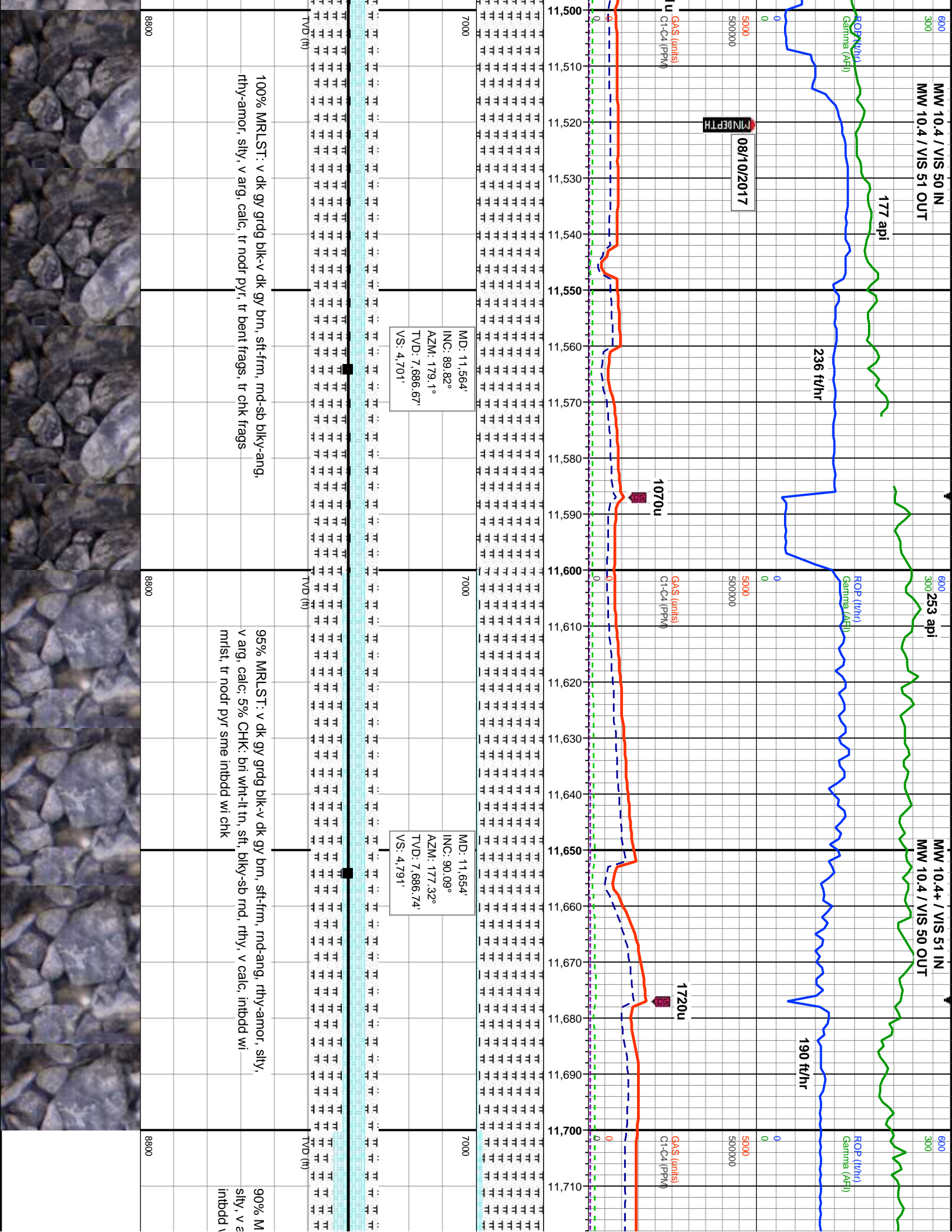
ang, stf-firm, nt

90% MRLST: v dk gy grdg blk-v dk gy brn, stf-firm, sb rnd-ang, rthy-amor, v sl silty, v arg, calc; 10% CHK: bri wht-ofwht, stf-firm, rnd-sb blk, sl wxy-rthy, v calc, tr nodr pyr

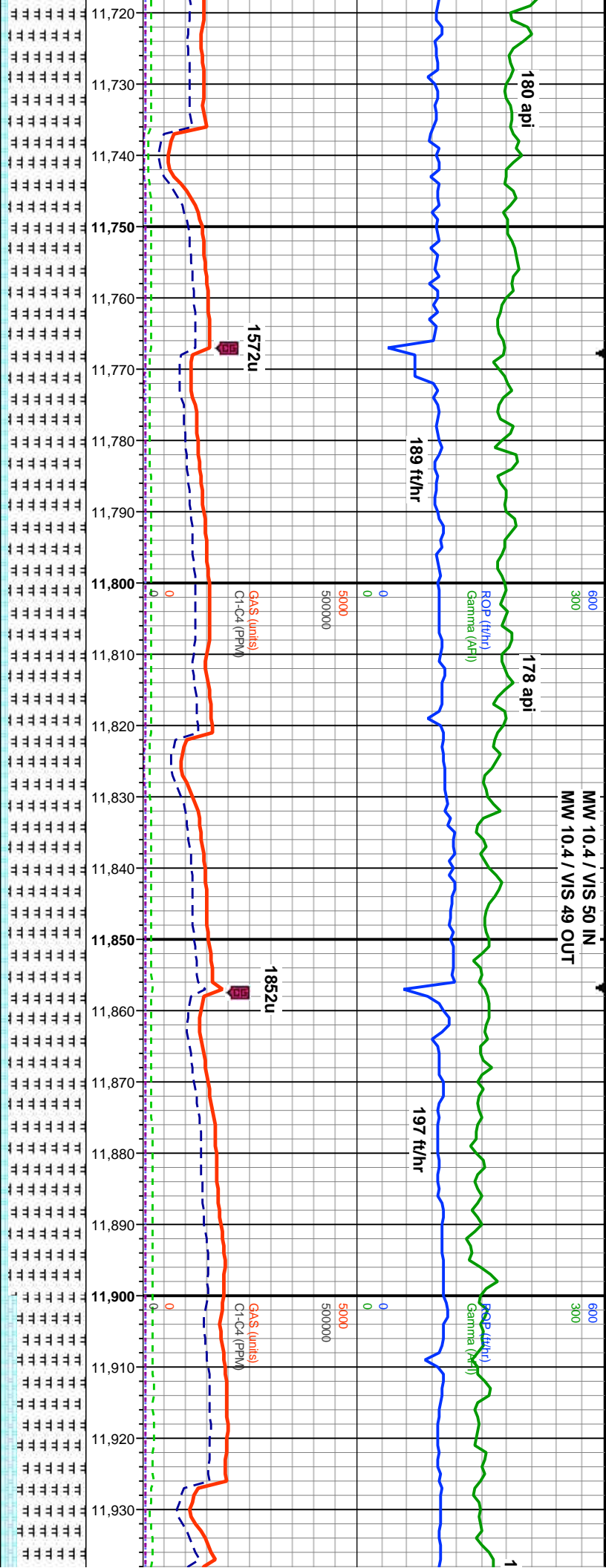
100% MRLST: v dk gy grdg blk-v dk gy brn, stf-firm, rnd-ang, rthy-amor, slty, v arg, calc, tr nodr pyr







MW 10.4 / VIS 50 IN  
MW 10.4 / VIS 49 OUT



MD: 11,744'  
INC: 90.31°  
AZM: 176.7°  
TVD: 7,686.43'  
VS: 4,880.99'

MD: 11,833'  
INC: 90.25°  
AZM: 177.14°  
TVD: 7,686'  
VS: 4,969.97'

MD: 11,923'  
INC: 90.22°  
AZM: 175.62°  
TVD: 7,685.63'  
VS: 5,059.94'

RLST: v dk gy grdg blk-v dk gy brn, v frm-v hrd, blk-y-ang, rthy-amor, arg, calc: 10% CHK: bri wht-offwht, sft-frm, blk-y-sb rnd, rthy, v calc, wi mlst, tr-tr bent, tr nodr pyr

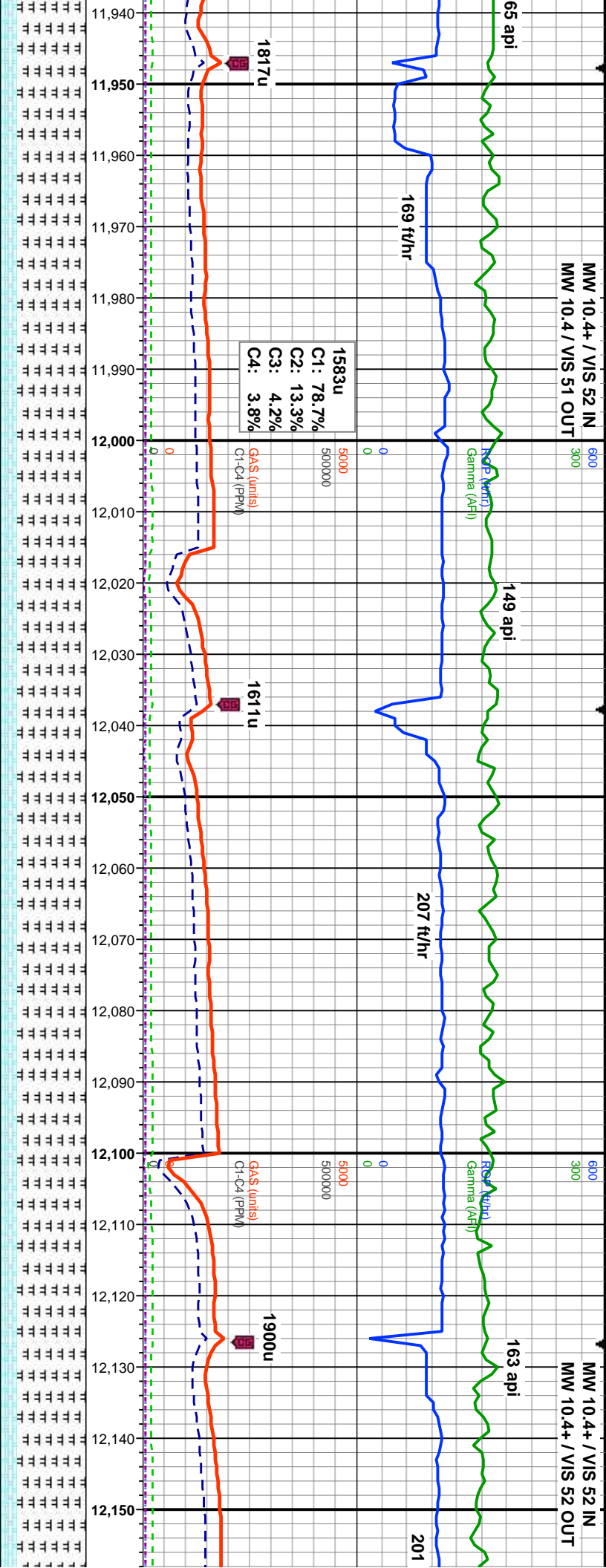
90% MRLST: v dk gy grdg blk-v dk gy brn, frm-hrd, blk-y-ang, rthy-amor, silty, v arg, calc: 10% CHK: bri wht-offwht, sft-frm, blk-y-sb rnd, amor-rthy, v calc, sme inbdd wi mlst, tr bent, tr xl-dissm pyr

80% MRLST: v dk gy grdg silty, v arg, calc: 20% CHK amor-rthy, sl silty, v calc, ir





MW 10.4+ / VIS 52 IN  
MW 10.4 / VIS 51 OUT



7000

MD: 12.014'  
INC: 90.31°  
AZM: 176.02°  
TVD: 7.685.21'  
VS: 5.150.86'

TVD (ft)

blk-v dk gy brn, frm-v hrd, blk-y-ang, rthy-amor,  
: bri wht-offwht, sft-frm, splt, blk-y-sb ang,  
intbdd wi mlst, tr bent

80% MRLST: v dk gy grdg blk-v dk gy brn, frm-hrd, blk-y-sb ang, rthy-amor,  
sfty, v arg, calc: 20% CHK: bri wht-offwht, sft-frm, blk-y-sb ang, amor-rthy,  
sl sfty, v calc, intbdd wi mlst

8800

MD: 12.104'  
INC: 90.22°  
AZM: 177.97°  
TVD: 7.684.79'  
VS: 5.240.86'

TVD (ft)

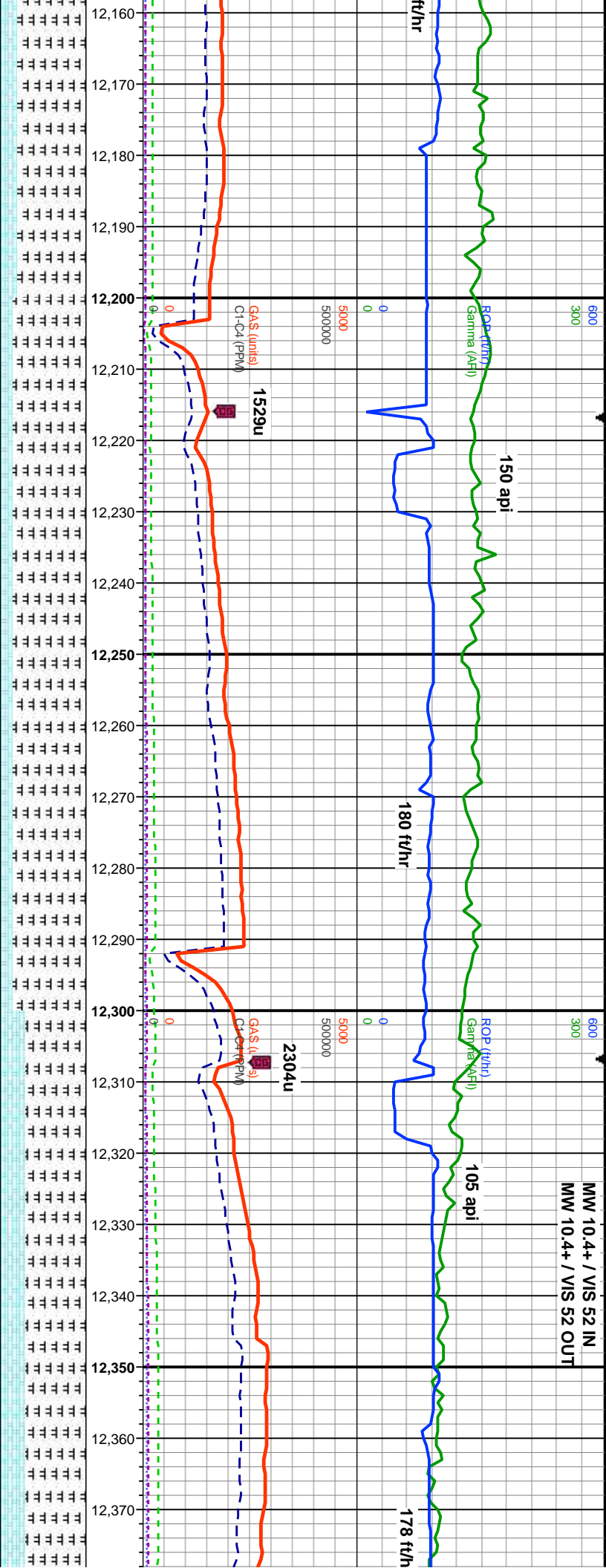
80% MRLST: drkgy-blk, gy/brn, frm-hd, blk-y-  
calc: 20% CHK: lbn-bf wh, mot lgy/brn, sft-fr  
sfty, v calc, intbdd wi mlst

8800

MW 10.4+ / VIS 52 IN  
MW 10.4+ / VIS 52 OUT



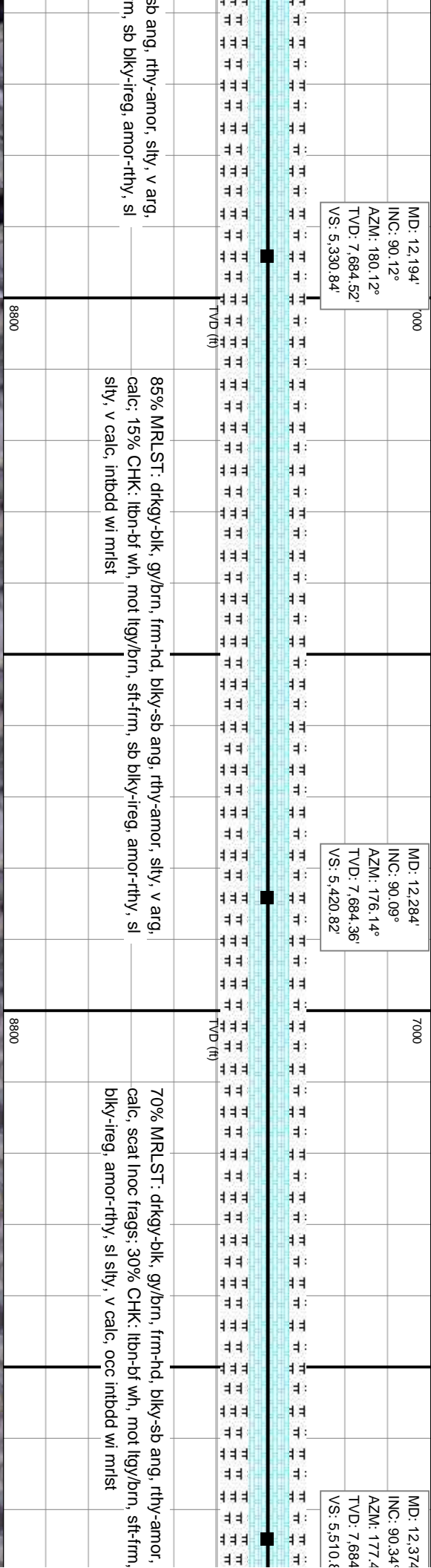
MW 10.4+ / VIS 52 IN  
MW 10.4+ / VIS 52 OUT



MD: 12.194'  
INC: 90.12°  
AZM: 180.12°  
TVD: 7.684.52'  
VS: 5.330.84'

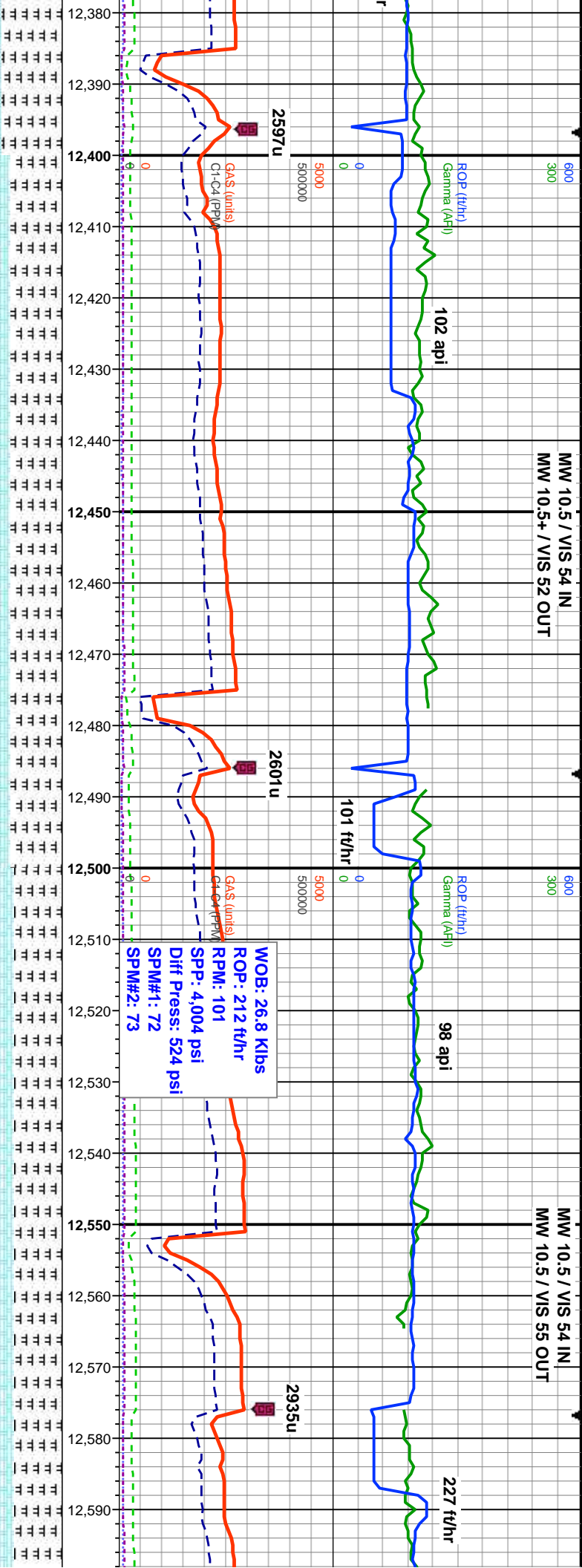
MD: 12.284'  
INC: 90.09°  
AZM: 176.14°  
TVD: 7.684.36'  
VS: 5.420.82'

MD: 12.374'  
INC: 90.34°  
AZM: 177.4°  
TVD: 7.684°  
VS: 5.510.8°





MW 10.5 / VIS 54 IN  
MW 10.5+ / VIS 52 OUT



MD: 12,464'  
INC: 90.18°  
AZM: 181.19°  
TVD: 7,683.61'  
VS: 5,600.75'

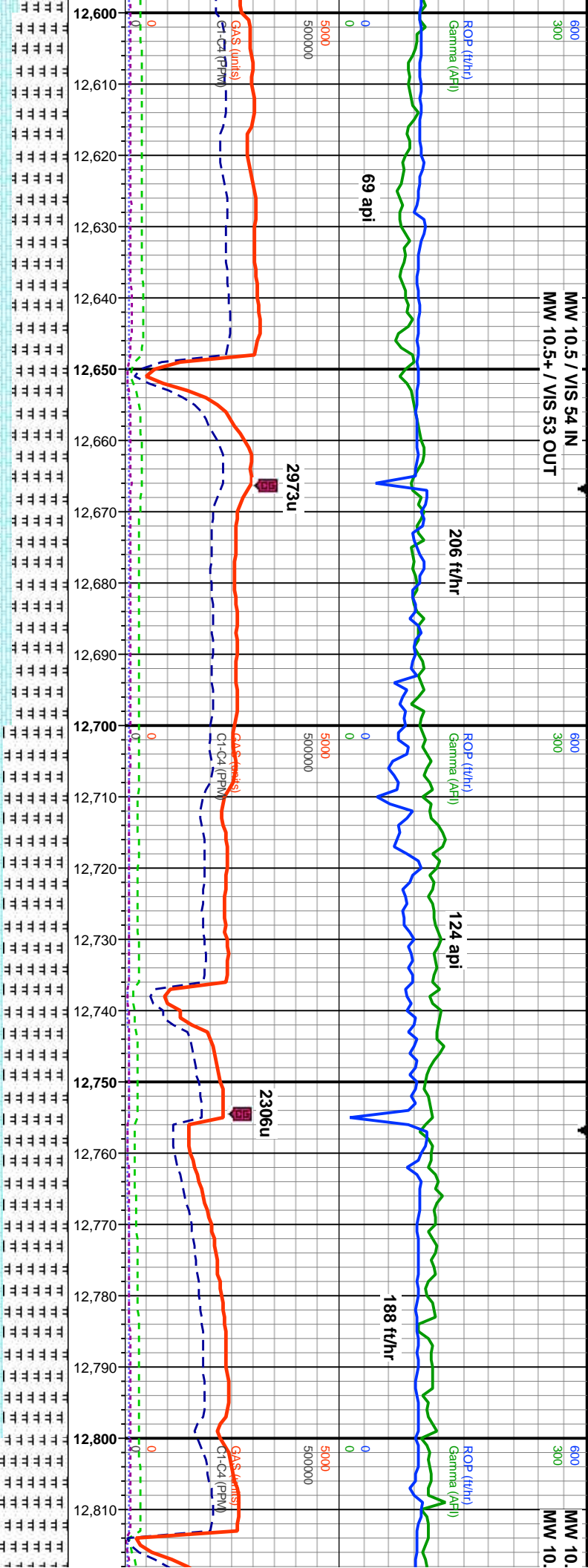
MD: 12,554'  
INC: 90.43°  
AZM: 183.66°  
TVD: 7,683.13'  
VS: 5,690.46'

60% MRLST: drkgy-blk, gy/brn, frm-hd, blkly-sb ang, rthy-amor, slty, v arg, calc, scat inoc frags; 40% CHK: lbn-bf wh, mot lgy/brn, stf-fm, sb blkly-ireg, amor-rthy, sl slty, v calc, occ intbdd wi mrlst

55% MRLST: drkgy-blk, gy/brn, frm-hd, blkly-sb ang, rthy-amor, slty, v arg, calc, scat inoc frags, occ pvr; 45% CHK: lbn-bf wh, mot lgy/brn, sme cin wh, stf-fm, sb blkly-ireg, amor-rthy, sl slty, v calc, occ intbdd wi mrlst



MW 10.5 / VIS 54 IN  
MW 10.5+ / VIS 53 OUT



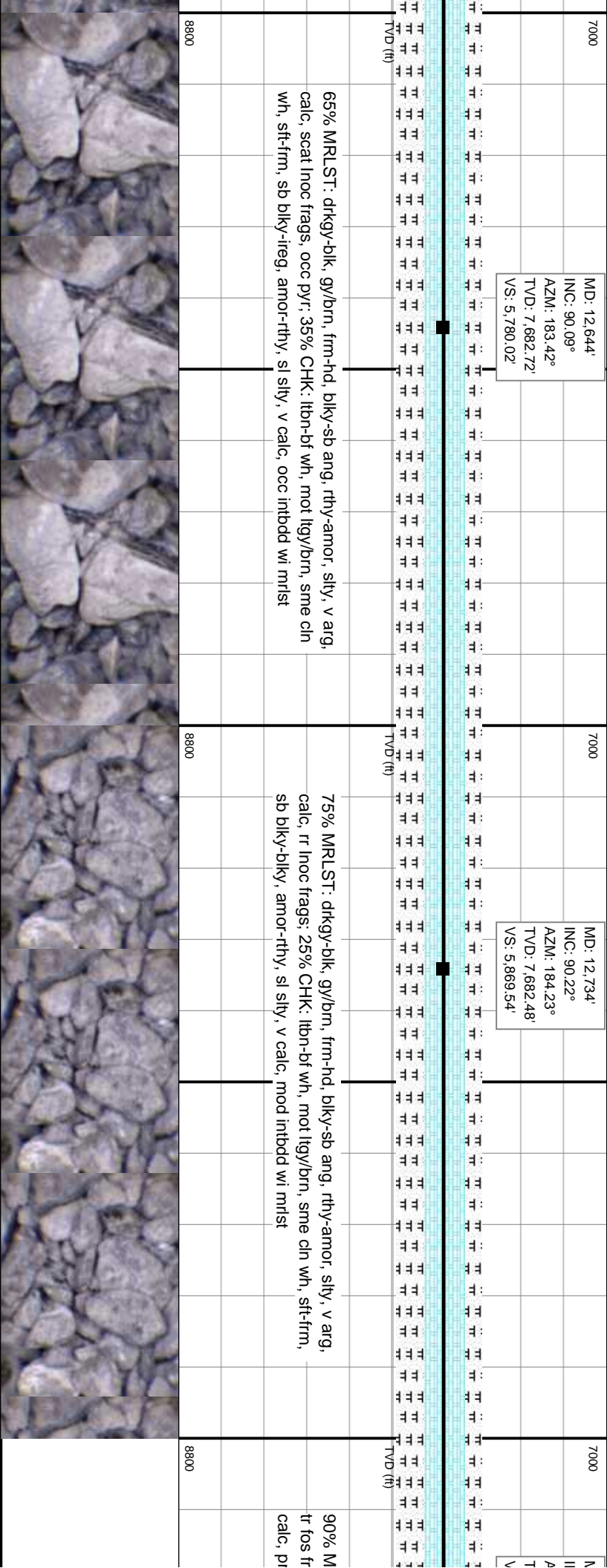
MD: 12,644'  
INC: 90.09°  
AZM: 183.42°  
TVD: 7,682.72'  
VS: 5,780.02'

MD: 12,734'  
INC: 90.22°  
AZM: 184.23°  
TVD: 7,682.48'  
VS: 5,869.54'

65% MRLST: drkgv-blk, gy/brn, frm-hd, blk-y-sb ang, rthy-amor, silty, v arg, calc, scat inoc frags, occ pyr; 35% CHK: lbn-bf wh, mot lgy/brn, sme cin wh, sft-fm, sb blk-y-ieg, amor-rthy, sl silty, v calc, occ intbdd wi mrlst

75% MRLST: drkgv-blk, gy/brn, frm-hd, blk-y-sb ang, rthy-amor, silty, v arg, calc, rr inoc frags, 25% CHK: lbn-bf wh, mot lgy/brn, sme cin wh, sft-fm, sb blk-y-biky, amor-rthy, sl silty, v calc, mod intbdd wi mrlst

90% MRLST: drkgv-blk, gy/brn, frm-hd, blk-y-sb ang, rthy-amor, silty, v arg, calc, rr inoc frags, 25% CHK: lbn-bf wh, mot lgy/brn, sme cin wh, sft-fm, sb blk-y-biky, amor-rthy, sl silty, v calc, mod intbdd wi mrlst





6 / VIS 54 IN  
5+ / VIS 55 OUT

MW 10.6 / VIS 54 IN  
MW 10.6+ / VIS 55 OUT

Maintenance on Pump #1

113 api

193 ft/hr

176 api

170 ft/hr

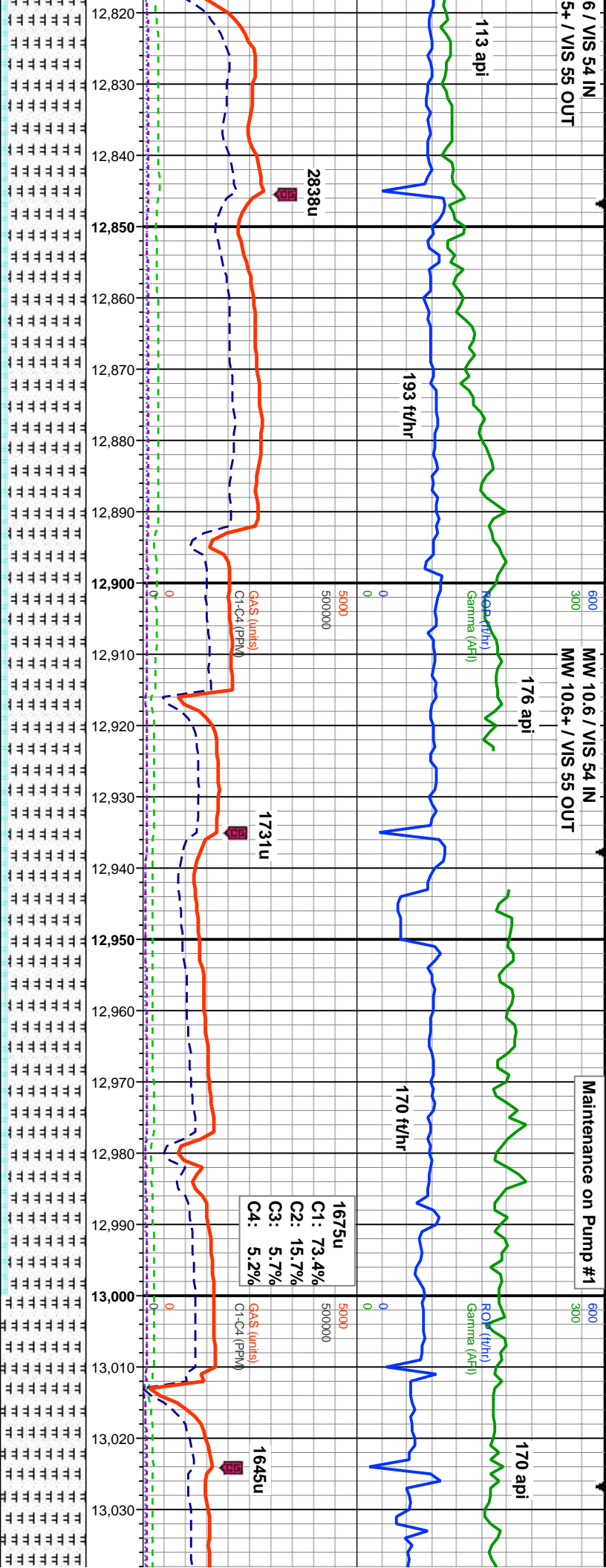
170 api

2838u

1675u

C1: 73.4%  
C2: 15.7%  
C3: 5.7%  
C4: 5.2%

1645u



ID: 12.824'  
NC: 90°  
ZM: 184.01°  
VD: 7.682.31'  
S: 5.959

MD: 12.914'  
INC: 90.09°  
AZM: 185.04°  
TVD: 7.682.24'  
VS: 6.048.4'

MD: 13.004'  
INC: 90.15°  
AZM: 184.43°  
TVD: 7.682.05'  
VS: 6.137.76'

TVD (ft)

TVD (ft)

TVD (ft)

RLST: drkgv-drkgv/brn, v frm-hd, sb blk-ang, rthy, sl slty, v arg, calc, ags; 10% CHK: lbn-crm, ip bf wh, sft-ip frm, blk-sb md, wxy-rthy, v bed intbd wi mlst, v rr bent frags

90% MRLST: drkgv/brn-blk, v frm-hd, sb blk-ang, rthy, sl slty, v arg, calc, scat fos frags, dissm pyr; 10% CHK: brn-lbn, llyg-ip bf wh, sft-ip frm, blk-sr, wxy-rthy, v calc, pred intbd wi mlst

100% MRLST: drkgv/brn-t scat lroc frags, v rr pyr, ip



MW 10.6+ / VIS 54 IN  
MW 10.7 / VIS 55 OUT

160 api

197 api

ROP (ft/hr)  
Gamma (API)

ROP (ft/hr)  
Gamma (API)

122 ft/hr

89 ft/hr

5000  
5000000

5000  
5000000

GA\$ (units)  
C1-C4 (PPM)  
1164u

GA\$ (units)  
C1-C4 (PPM)  
1063u

MD: 13.094'  
INC: 90.12°  
AZM: 183.59°  
TVD: 7.681.84'  
VS: 6.227.24'

MD: 13.184'  
INC: 90.15°  
AZM: 183.34°  
TVD: 7.681.62'  
VS: 6.316.81'

TVD (ft)

TVD (ft)

blk, v frm-hd, sb blk-y-ang, rthy, sl silty, v arg, calc,  
chky-tr intbdd chk

100% MRLST: drkgy/brn-blk, v frm-hd, sb blk-y-ang, rthy, sl silty, v arg, calc,  
scat lnoc frags, ip chky-tr intbdd chk

100% MRLST: drkgy/brn-blk, v frm-hd, sb blk  
scat lnoc frags, ip chky-tr intbdd chk

8800

8800



Back on two Pumps

MW 10.6+ / VIS 54 IN  
MW 10.6 / VIS 52 OUT

198 api

MW 10.6+ / VIS 54 IN  
MW 10.6+ / VIS 53 OUT

178 api

600  
300  
0

ROP (ft/hr)  
Gamma (API)

600  
300  
0

ROP (ft/hr)  
Gamma (API)

138 ft/hr

1261u

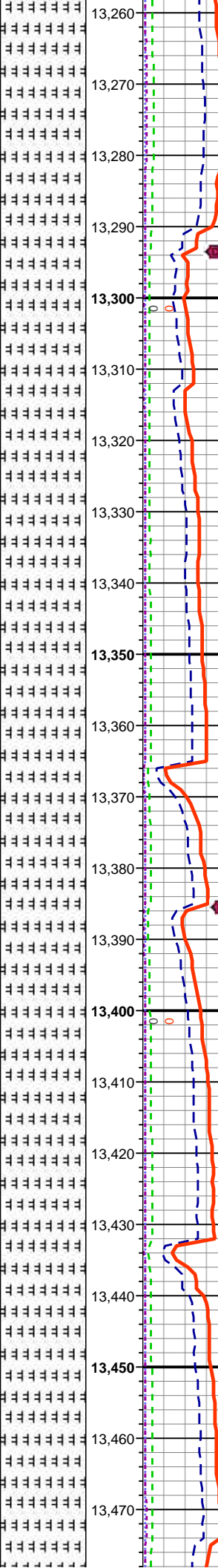
GA\$ (units)  
C1-C4 (PPM)

187 ft/hr

1532u

GA\$ (units)  
C1-C4 (PPM)

1845u



MD: 13,274'  
INC: 89.82°  
AZM: 182.94°  
TVD: 7,681.65'  
VS: 6,406.43'

MD: 13,364'  
INC: 89.69°  
AZM: 181.7°  
TVD: 7,682.03'  
VS: 6,496.16'

MD: 13,454'  
INC: 89.82°  
AZM: 183.16°  
TVD: 7,682.42'  
VS: 6,585.87'

TVD (ft)

TVD (ft)

100% MRLST: drky/bm-blk, v frm-hd, sb blk-ang, rthy, sl slty, v arg, calc,

scat lnoc frags, occ nodr pyr, ip chky-tr intbdd chk

100% MRLST: drky/bm-blk, v frm-hd, sb blk-ang, rthy, sl slty,

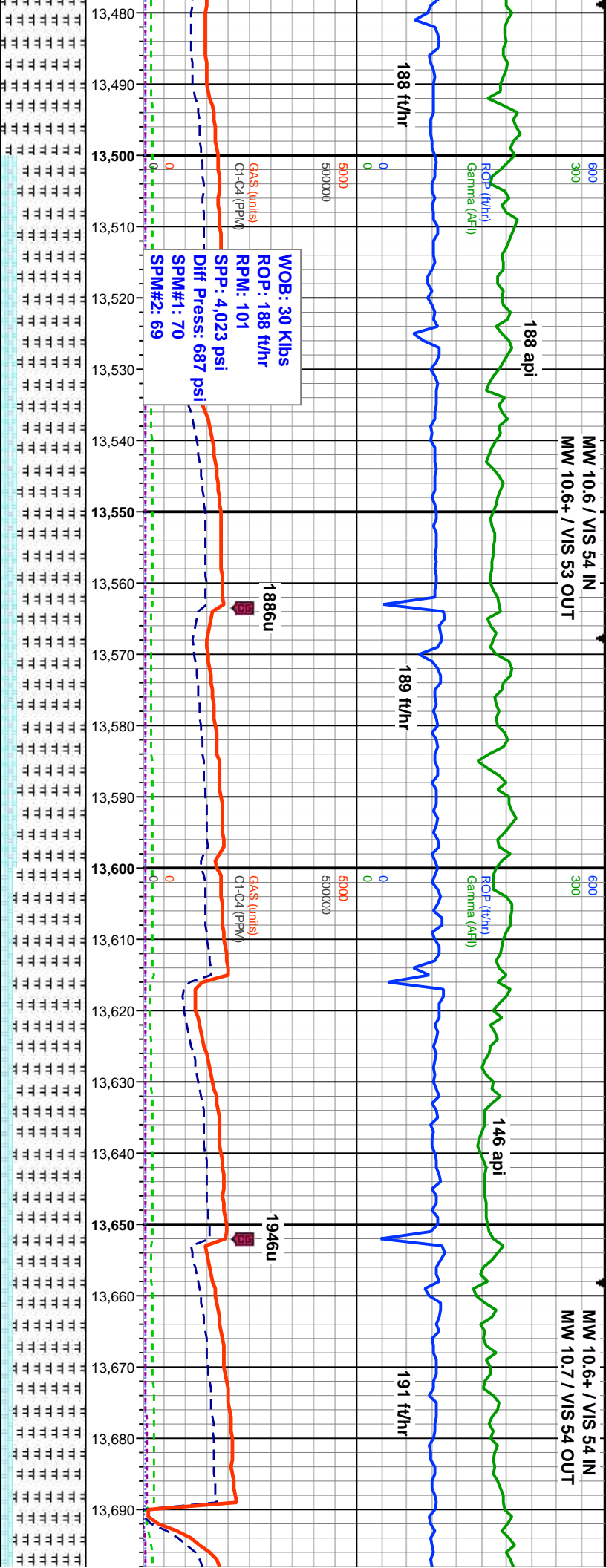
scat lnoc frags, occ nodr pyr, ip chky-tr intbdd chk

8800

8800



MW 10.6 / VIS 54 IN  
MW 10.6+ / VIS 53 OUT  
MW 10.6+ / VIS 54 IN  
MW 10.7 / VIS 54 OUT



MD: 13.544'  
INC: 89.82°  
AZM: 183.86°  
TVD: 7.682.7'  
VS: 6.675.44'

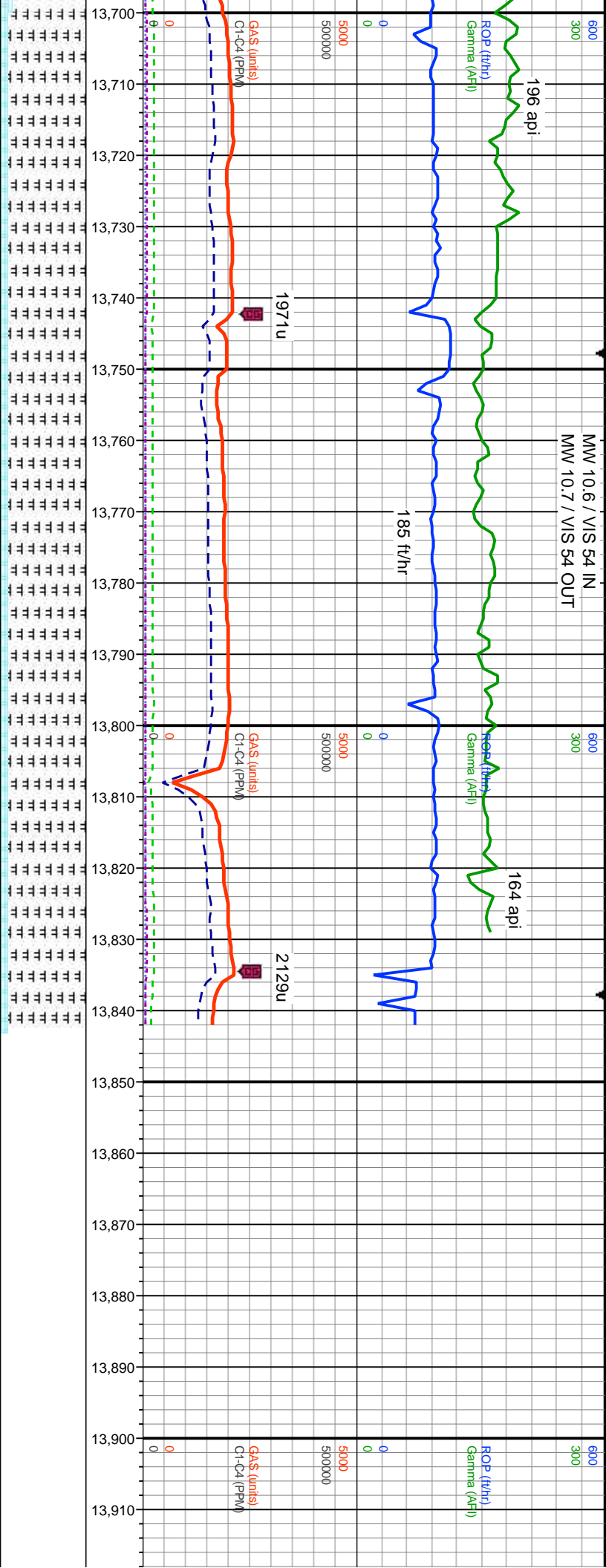
MD: 13.634'  
INC: 89.29°  
AZM: 183.13°  
TVD: 7.683.4'  
VS: 6.764.92'

80% MRLST: dk brn gy-v dk gy grdg blk, v frm-hd, sb blk-ang, rthy, sl slty, v  
arg, calc; 20% CHK: brt wht-offwht, frm-hd, sb md-blky, wxy-rthy, v calc,  
intbdd wi mrst & inoc frags, mnr inoc foss

85% MRLST: dk brn gy-v dk gy grdg blk, v frm-hd, sb blk-ang, rthy, sl slty, v  
arg, calc; 15% CHK: brt wht-offwht, lgy-ltbn, frm-hd, sr-blky, wxy-rthy, v  
calc, intbdd wi mrst & inoc frags, mnr inoc foss







MW 10.6 / VIS 54 IN  
MW 10.7 / VIS 54 OUT

MD: 13,724'  
INC: 89.42°  
AZM: 180.82°  
TVD: 7,684.41'  
VS: 6,854.64'

MD: 13,814'  
INC: 89.05°  
AZM: 178.68°  
TVD: 7,685.61'  
VS: 6,944.56'

MD: 13,843'  
INC: 89.05°  
AZM: 178.68°  
TVD: 7,686.09'  
VS: 6,973.55'

Projection to Bit:

TD Reached, 13,843' MD, 18:18 MDT, 08/10/2017  
Thank you for using Terra Guidance, LLC.

90% MRLST: dk brn gy-v dk gy grdg blk, v frm-hd, sb blk-y-ang, rthy, sl slty, v  
arg, calc; 10% CHK: bri wht-offwht, ltgy-lbwn, frm-hd, sr-blky, wxy-rthy, v  
calc, intbodd wi mlst & inoc frags, mntr inoc foss

