



COLUMBINE CORPORATION

Scale: 5" = 100'
Measured Depth Log

Well Name Prince Albert 7-66-3-10C

Location S3 T7N 66W 591' FSL 1109' FEL 40.612999/-104.757907

State Colorado

County Weld

Country USA

Rig Number Cyclone 37

API Number 05-123-46147

AFE # DRL 190174

Geographic Region DJ Basin

Field Wattenberg

Spud Date 1/8/2020

Drilling Completed 1/27/2020

Surface Coordinates S3 T7N 66W

521' FSL 1108' FEL

40.612807/-104.757902

NAD83

Bottom Hole Coordinates S10 T7N 66N

500' FSL 1925' FEL

40.583884/ -104.761252

Ground Elevation 4993

K.B. Elevation 5020

Logged Interval 8000 **To** 17442

Formation Codell

Type of Drilling Fluid OBM

Operator

Company Enerplus Resources Corporation

Address 333 7th Avenue SW, Suite 3000
Calgary, AB T2P 2Z1

enerPLUS

Geologist

Name Jeff Kiernan

Company Enerplus Resources Corporation

Address 950 17th Street, Suite 2200
Denver, CO 80202-2805

Other

Wellsite Geologists Jared Gerard / Kyle Matthew

Rock Types



LIMESTONE



SANDSTONE

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Accessories

Minerals

- ARGILLACEOUS
- P PYRITE

S

Other Symbols

Engineering

- ▼ CONNECTION (DOWN)
- ↕ CONNECTION GAS
- ⚡ FAULT
- MINDEPTH MN DEPTH

/S

SILTY SHALE

Columbine Corporation 2-Person Logging

Rigged Up: 01/24/2020
Begin Logging: 01/24/2020

Bloodhound Gas Detector #5311

ROP/Gamma
ROP
Gamma

Gas data from Bloodhound unit
#5311 imported from IBall Gas Chart

Bit Data
Bit #: 1
Type: HCC ATD505T
Size: 8.5
Depth In: 1.638
Depth Out: 0'
Hours: 0 hrs
Avg FV/Hr: 0 'hr
Jets: 6x15 s
S/N: 5292878

ROP and Gamma provided
by Baker Hughes MWD

Codell OBS at
7906' MD / 7543' TVD

Log continued from
Prince Albert 7-66-3-10C VRT illog

TG (units)
C1-C5 (units)

1,572 u

702 u

WOB: 24klbs
SPR: 3929psi
Rot: 100rpm
SPM1: 78
SPM2: 78

TG (units)
C1-C5 (units)

1,459 u

1,613 u

Depth Labels

% Lith

Landed Curve 8,001' MD,
7544' TVD @ 11:30am.

Survey Data
MD: 8,096'
Inc: 91.69°
Azim: 181.3°
TVD: 7,555.97'
VS: 1,235.17'

Well Bore
TVD

Survey Data

MD: 8,001'
Inc: 86.95°
Azim: 181.0°
TVD: 7,554.85'
VS: 1,140.42'

SS: med gy- occ lt gy, v-f gr, occ med grs, sb ang-sb rnd, mod srd, v
arg, sl calc, fri- frm.

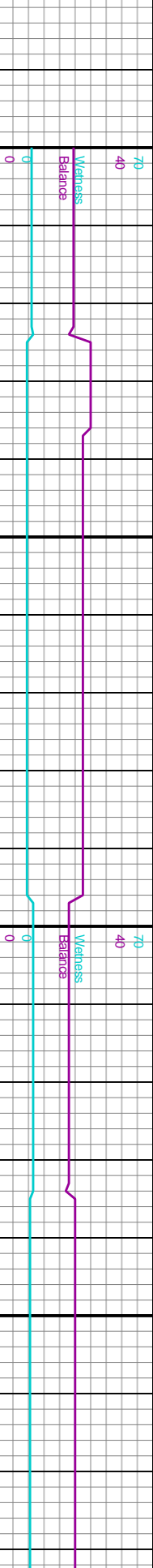
SS: med gy- occ lt gy, dk gy, v-f gr, occ med grs, sb ang-sb rnd, mod
srd, v arg, sl calc, fri- frm.

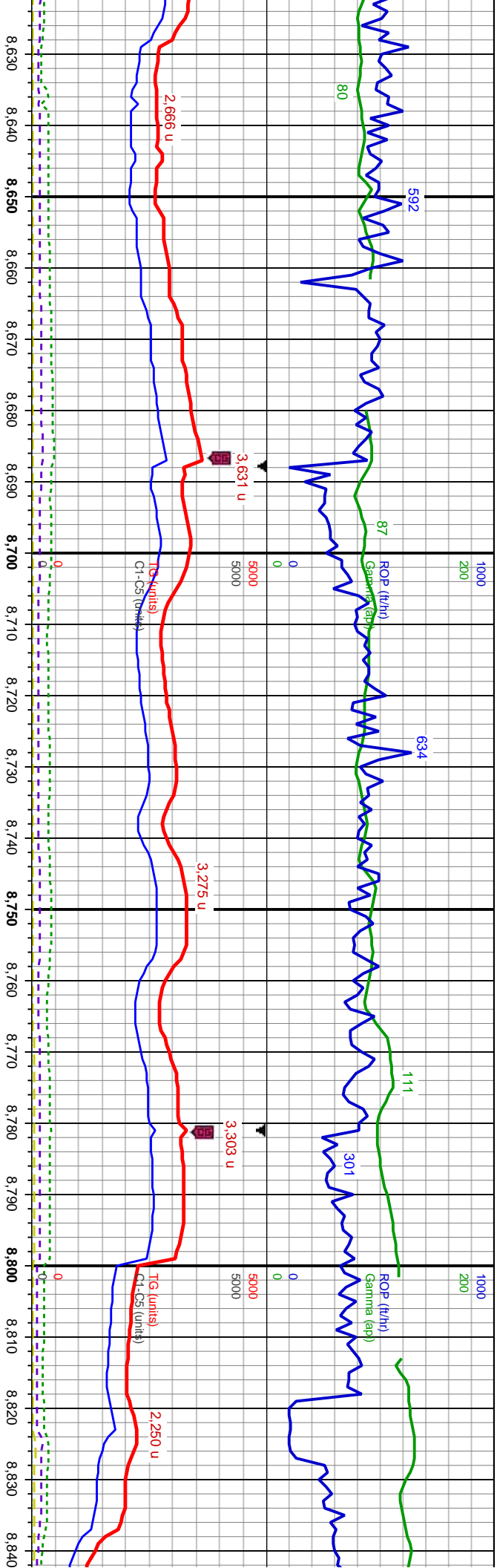
Images



Gas Ratios

Wetness
Balance





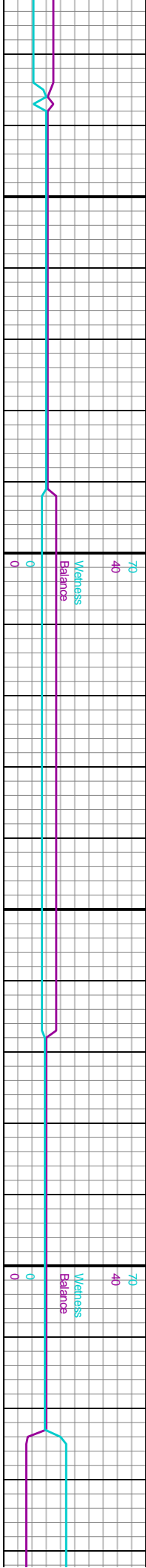
Survey Data
MD: 8,663'
Inc: 89.17°
Azrn: 180.0°
TVD: 7,554.12'
VS: 1,800.24'

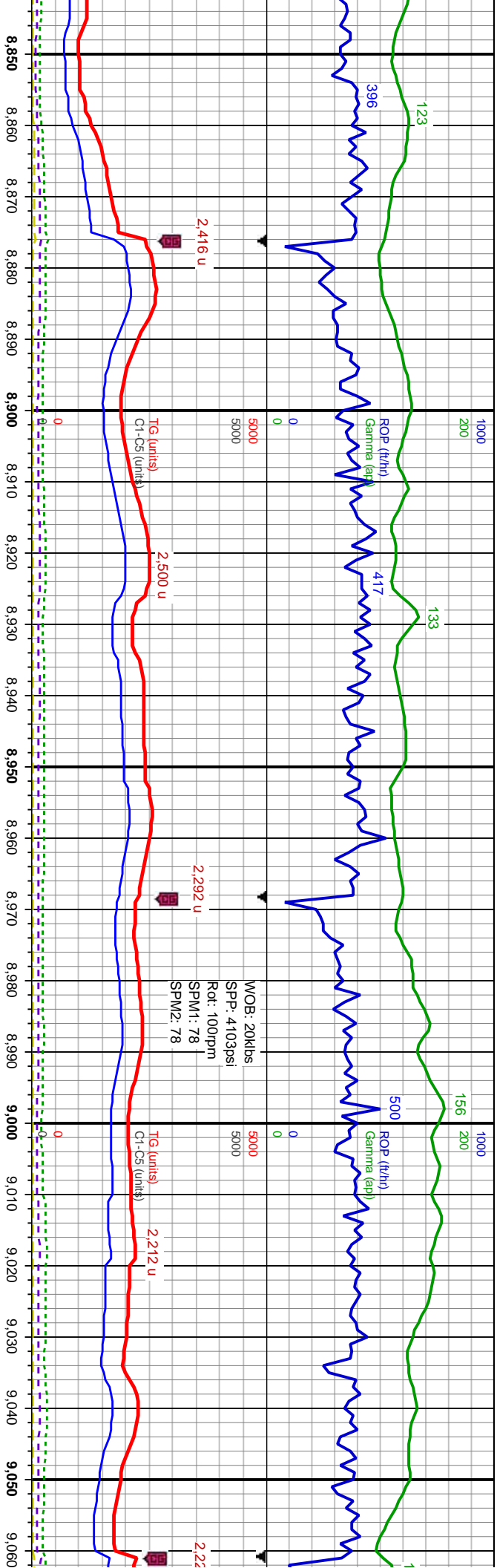
Survey Data
MD: 8,757'
Inc: 89.88°
Azrn: 180.2°
TVD: 7,554.90'
VS: 1,893.88'

med gy- dk gy, occ lt gy, vf- f gr, occ med grs, sb ang-sb md, mod strd, v arg, sl
frm- occ hd.

SS: med gy- dk gy, occ lt gy, vf- f gr, occ med grs, sb ang-sb md, mod strd,
arg-slt, sl calc, frm- occ hd.

SS: med gy- dk gy, occ lt gy, vf- f gr, occ m
fr-frm, occ hd.



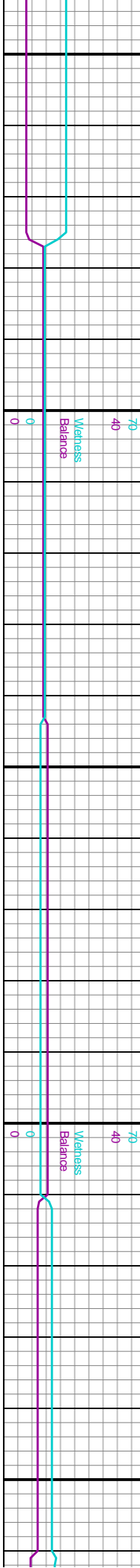


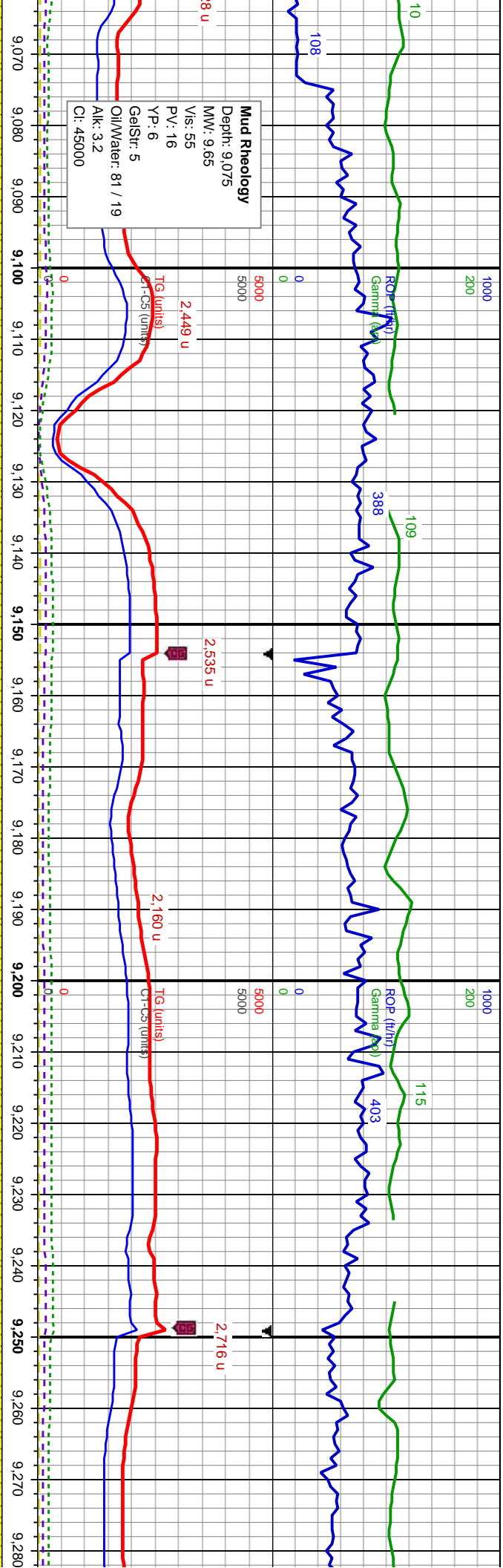
Survey Data
MD: 8,850'
Inc: 89.48°
Az: 181.4°
TVD: 7,555.42'
VS: 1,986.63'

Survey Data
MD: 8,943'
Inc: 89.38°
Az: 180.4°
TVD: 7,556.35'
VS: 2,079.37'

Survey Data
MD: 9,038'
Inc: 89.48°
Az: 180.9°
TVD: 7,557.29'
VS: 2,174.08'

med grs, sb ang-sb md, mod srt, arg-sily, sl calc, SS: med gy- dk gy, occ lt gy, vf- f gr, occ med grs, sb ang-sb md, mod srt, arg-sily, sl calc, frm, occ hd.



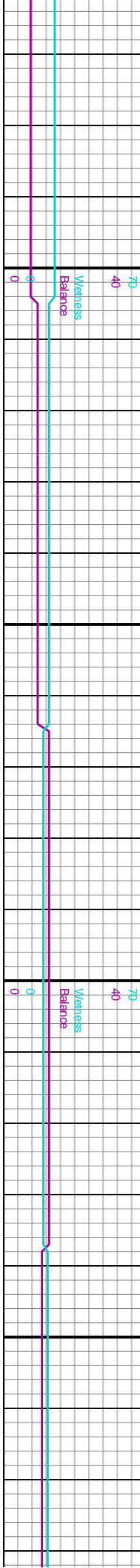


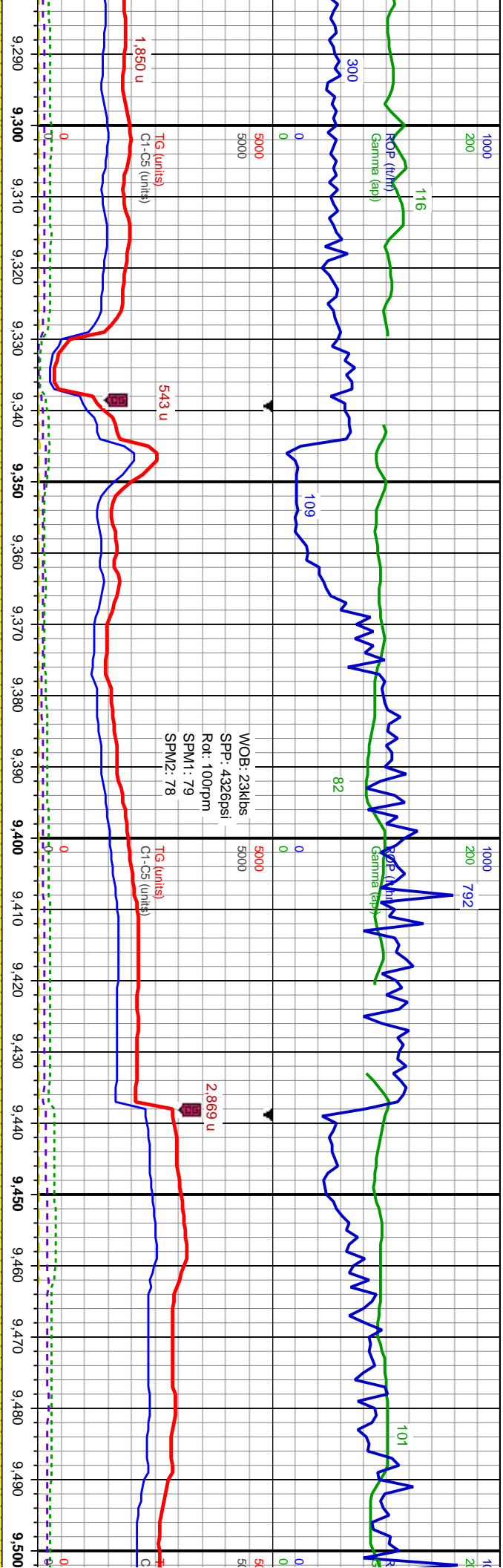
Survey Data
MD: 9.131'
Inc: 89.29°
Azim: 179.3°
TVD: 7.558.29'
VS: 2,266.73'

Survey Data
MD: 9.226'
Inc: 90.28°
Azim: 182.6°
TVD: 7.558.65'
VS: 2,361.45'

SS, med gy- dk gy, v-f, f gr, occ med grs, sb ang-sb md, mod- w srt, arg-sily, sl calc, fri- frm, occ hd.

SS, med gy- dk gy, v-f, f gr, occ med grs, sb ang-sb md, mod- w srt, arg-sily, sl calc, fri- frm, occ hd.



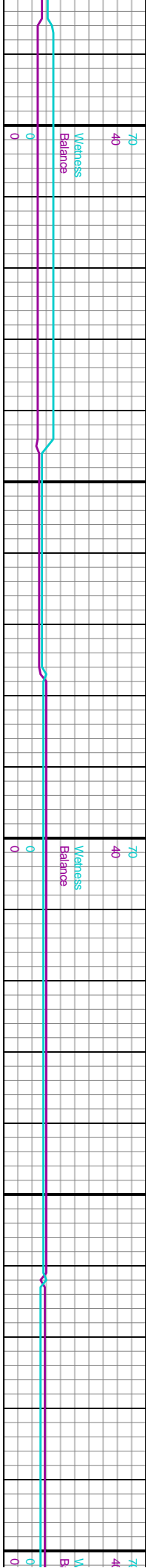


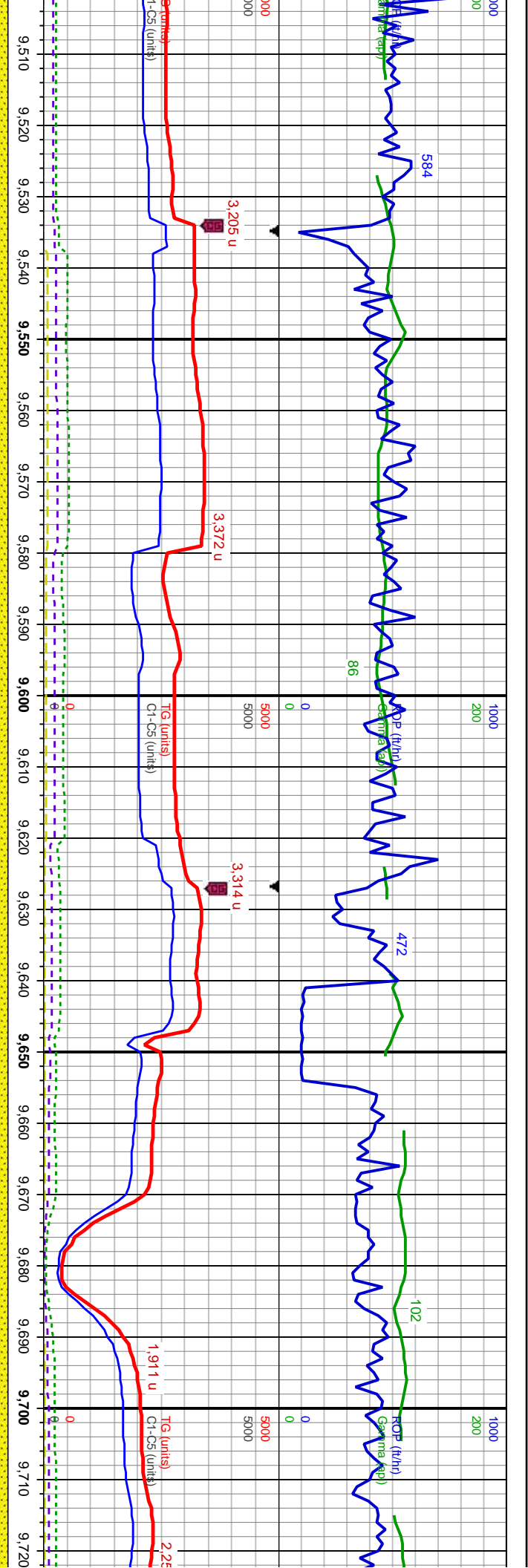
Survey Data
MD: 9.320°
Inc: 90.34°
Azim: 181.1°
TVD: 7.558.14'
VS: 2.455.30'

Survey Data
MD: 9.414°
Inc: 90.68°
Azim: 180.1°
TVD: 7.557.31'
VS: 2.549.02'

SS: med gy- dk gy, v-f gr, occ med grs, sb ang-sb md, mod- w strd, arg-slt, sl calc, fir- frm, occ hd.

SS: med gy, v-f gr, occ med grs, sb ang-sb md, mod strd, arg-slt, sl calc, fir- frm, occ hd.





Survey Data
MD: 9.509'
Inc: 90.34°
Azim: 181.8°
TVD: 7.556.46'
VS: 2.643.77'

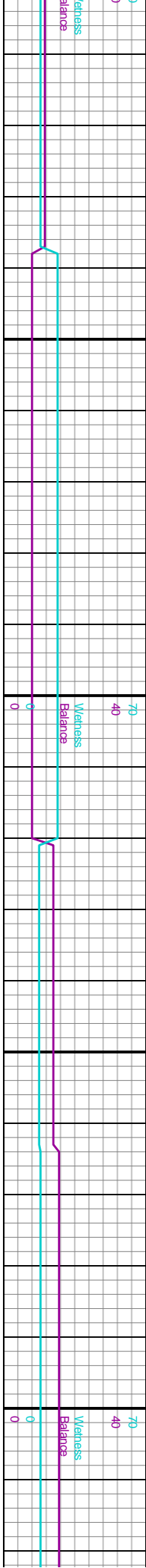
Survey Data
MD: 9.603'
Inc: 91.11°
Azim: 179.0°
TVD: 7.555.27'
VS: 2.737.44'

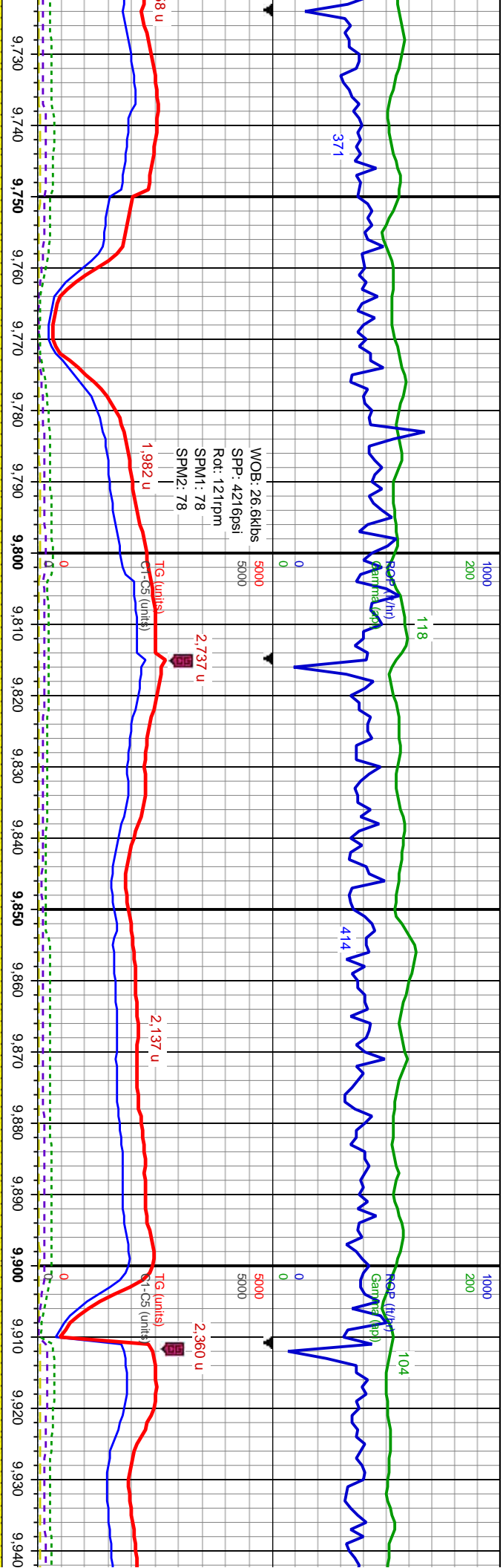
Survey Data
MD: 9.697'
Inc: 89.14°
Azim: 179.2°
TVD: 7.555.07'
VS: 2.830.93'

SS: med gy, v/- f gr, ooc med grs, sb ang-sb md, mod strd, arg-sily, sl calc, fir- frm, ooc hd.

SS: med gy, v/- f gr, ooc med grs, sb ang-sb md, mod strd, arg-sily, sl calc, fir- frm, ooc hd.

SS: med gy, v/- f





WOB: 26.6klbs
SPP: 4216psi
Rot: 121rpm
SPM1: 78
SPM2: 78

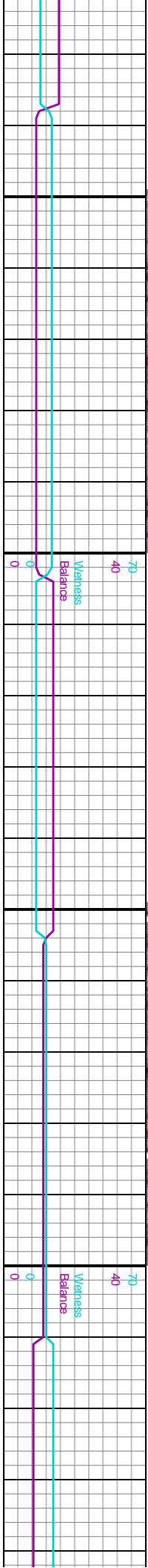
Survey Data
MD: 9,791'
Inc: 90.22°
Azim: 179.6°
TVD: 7,555.59'
VS: 2,924.47'

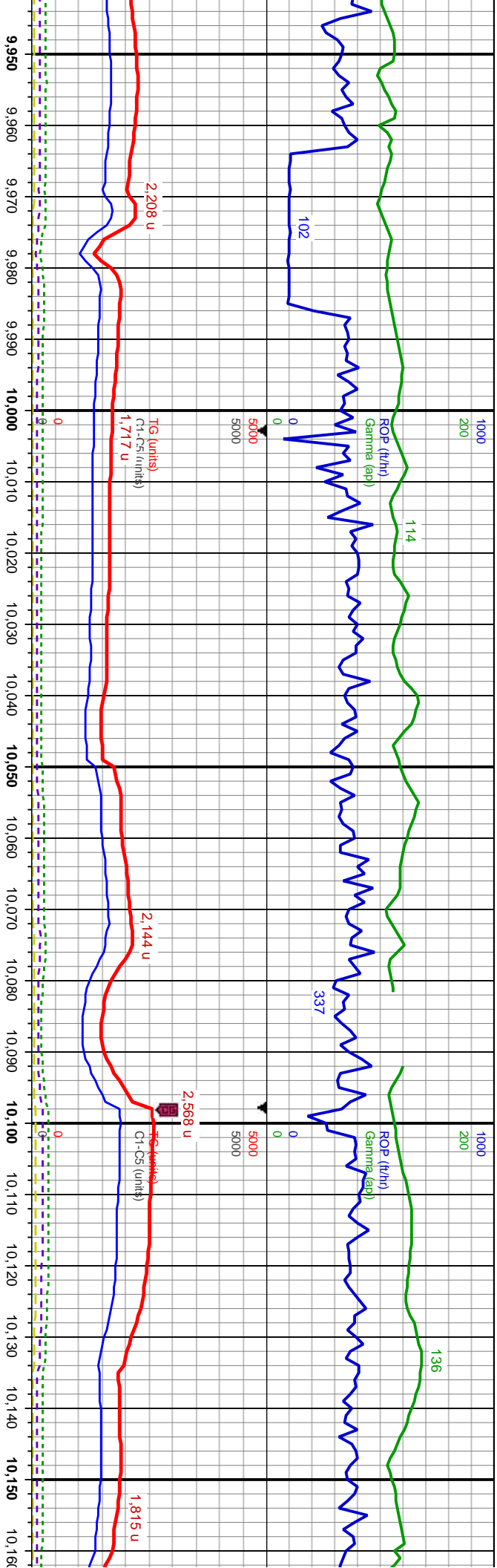
Survey Data
MD: 9,885'
Inc: 90.74°
Azim: 180.7°
TVD: 7,554.80'
VS: 3,018.12'

gr, ooc med grs, sd ang-sb md, mod strd, arg-sily, sl calc, fir-frm, ooc hd.

SS: med gy, v-f- f gr, ooc med grs, sd ang-sb md, mod strd, arg-sily, sl calc, fir-frm, ooc hd.

SS: med gy, v-f- f gr, ooc med grs, sd an



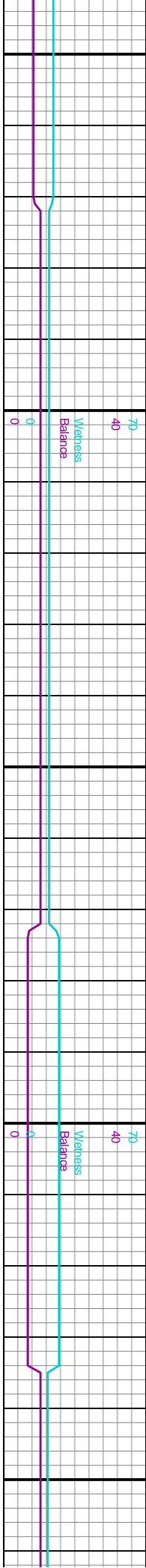


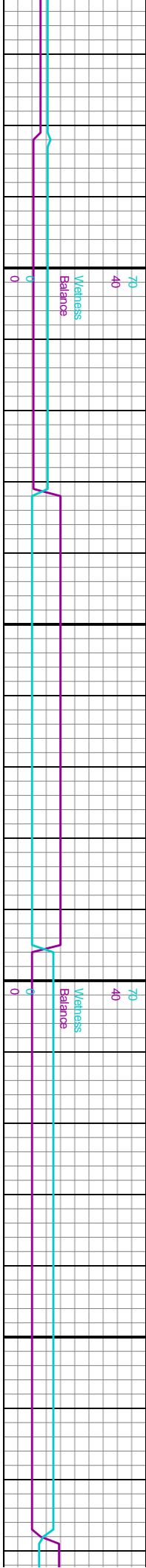
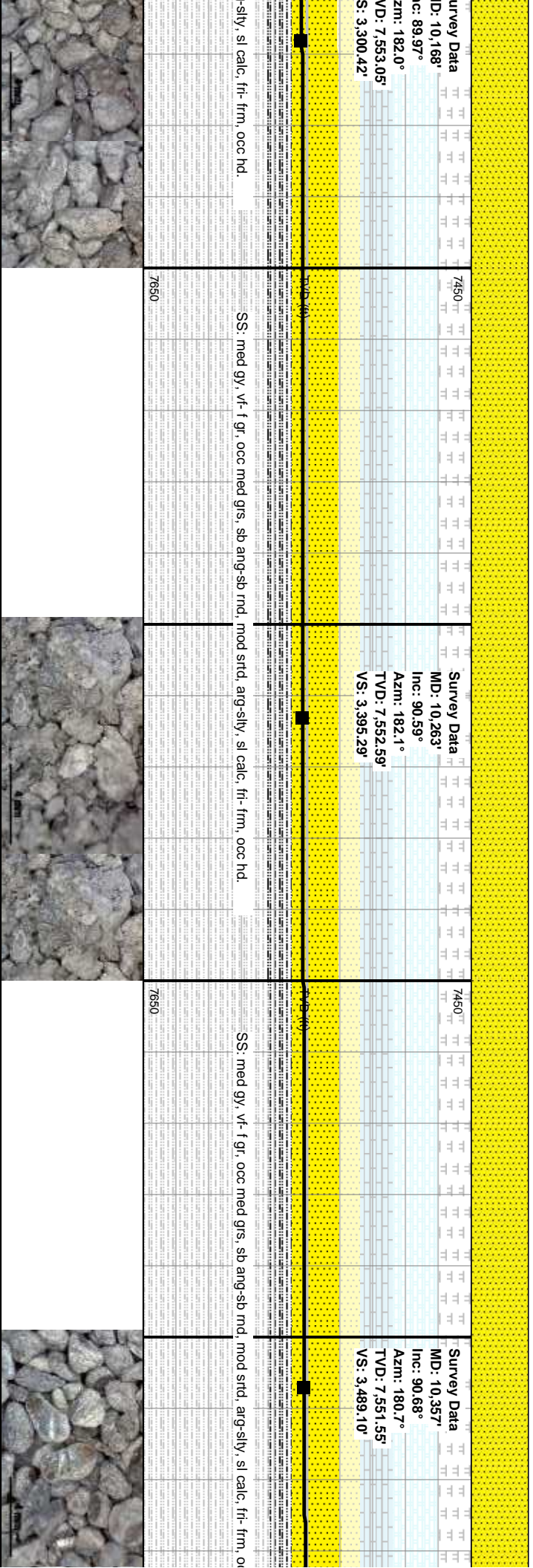
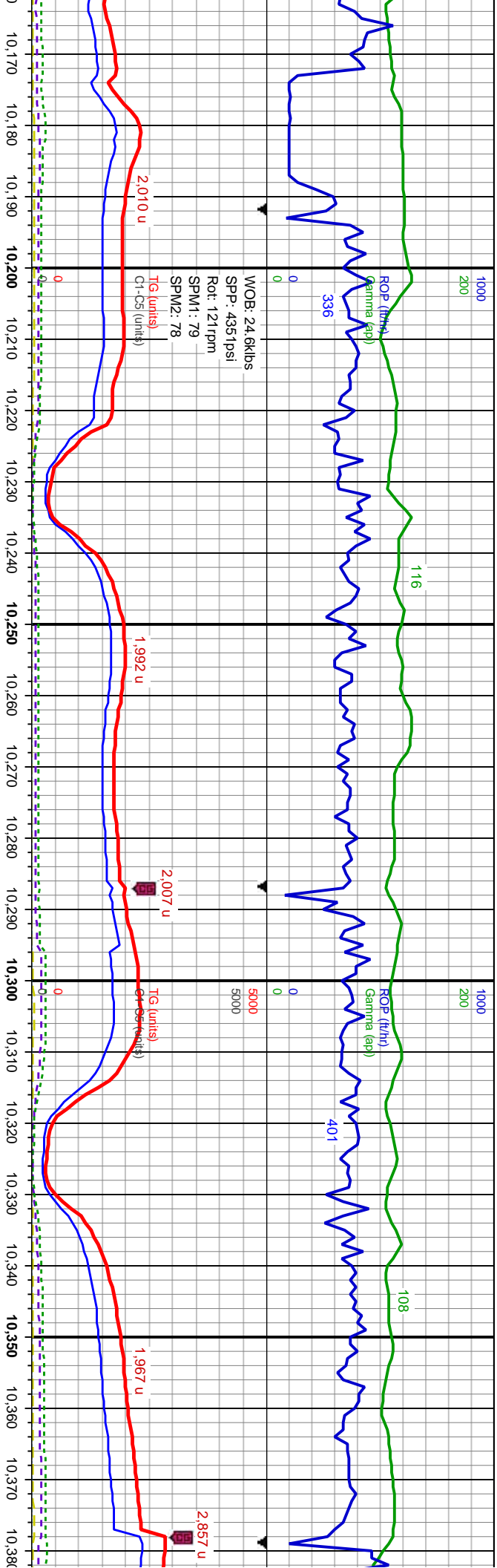
Survey Data
MD: 9.980°
Inc: 89.94°
Azim: 181.1°
TVD: 7,554.24'
VS: 3,112.86'

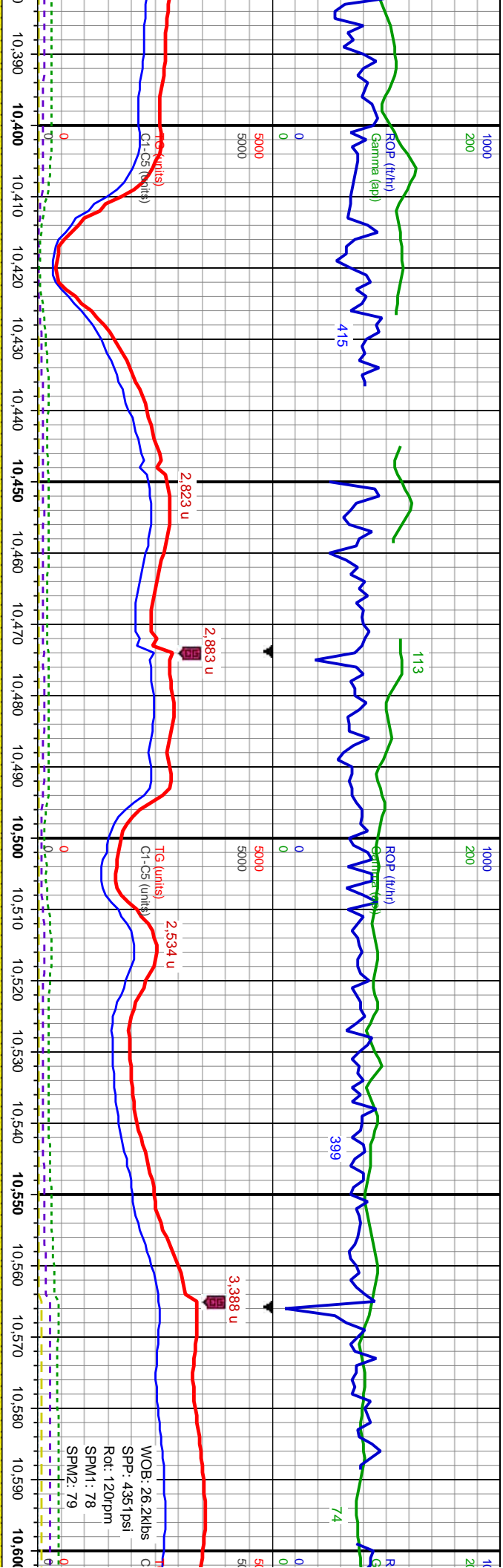
Survey Data
MD: 10.074°
Inc: 90.77°
Azim: 180.8°
TVD: 7,553.66'
VS: 3,206.62'

SS: med gy, v-f f gr, ooc med grs, sb ang-sb md, mod strd, arg-sily, sl calc, fir-frm, ooc hd.

SS: med gy, v-f f gr, ooc med grs, sb ang-sb md, mod strd, arg





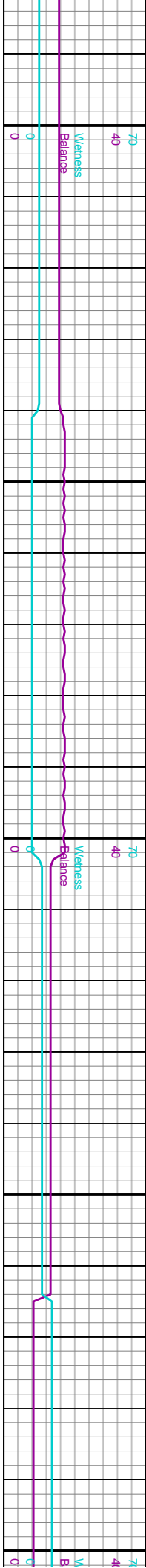


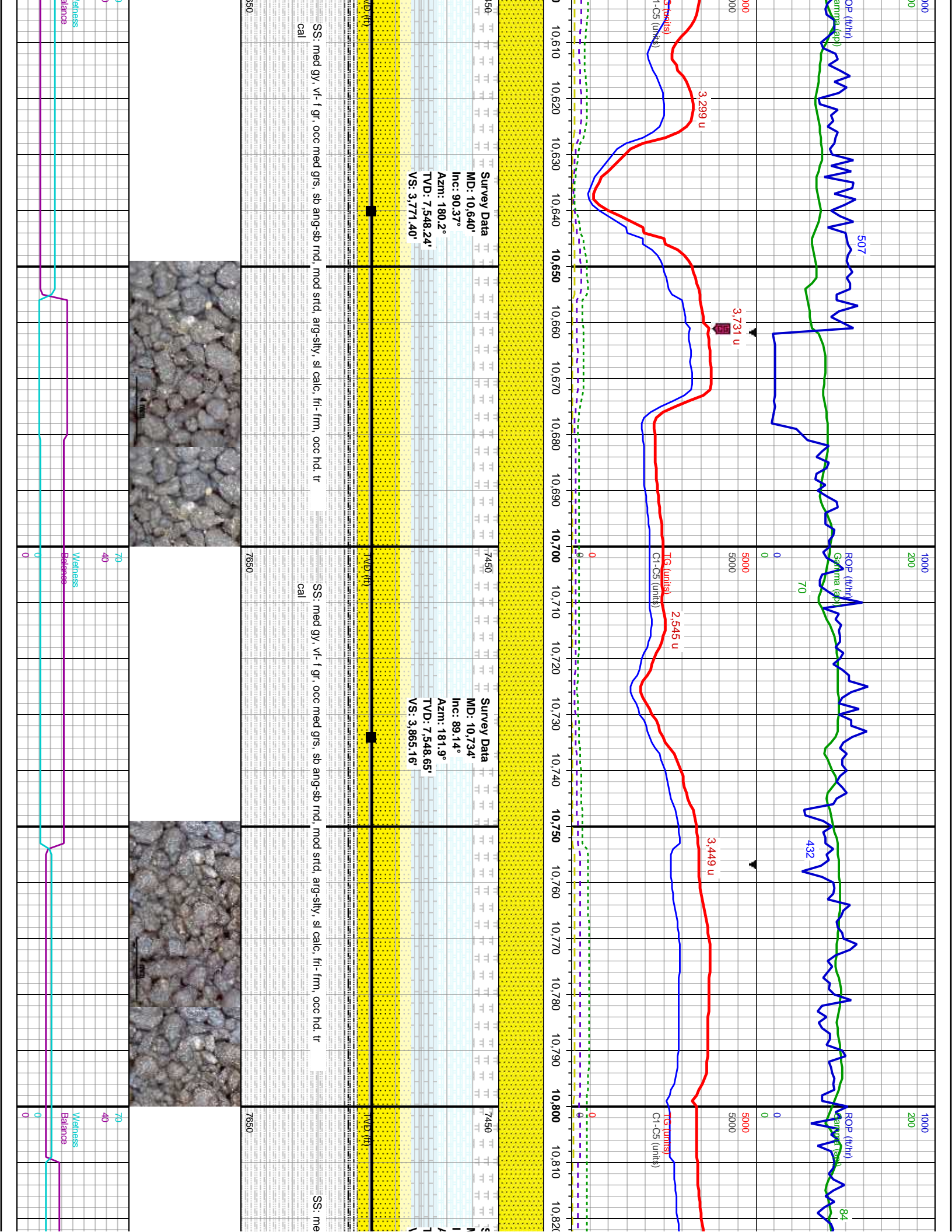
Survey Data
MD: 10.451'
Inc: 90.8°
Azim: 182.7°
TVD: 7,550.33'
VS: 3,582.93'

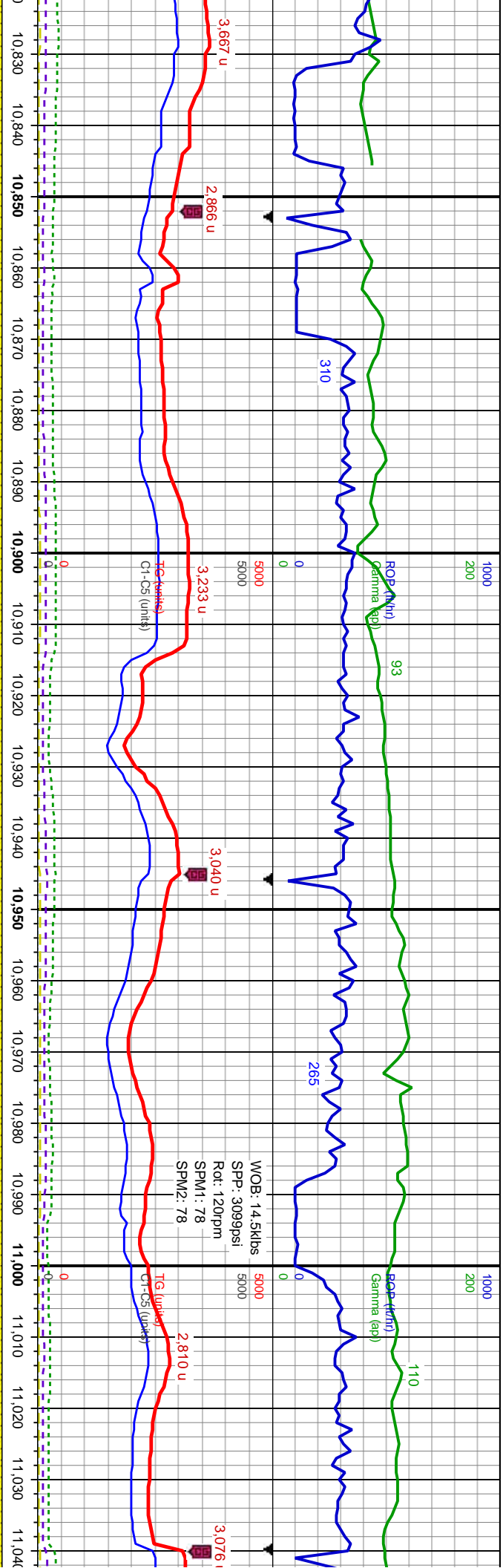
Survey Data
MD: 10.546'
Inc: 90.68°
Azim: 180.3°
TVD: 7,549.10'
VS: 3,677.73'

SS: med gy, v-f gr, ooc med grs, sb ang-sb md, mod strd, arg-sily, sl calc, fir-frm, ooc hd.

SS: med gy, v-f gr, ooc med grs, sb ang-sb md, mod strd, arg-sily, sl calc, fir-frm, ooc hd.

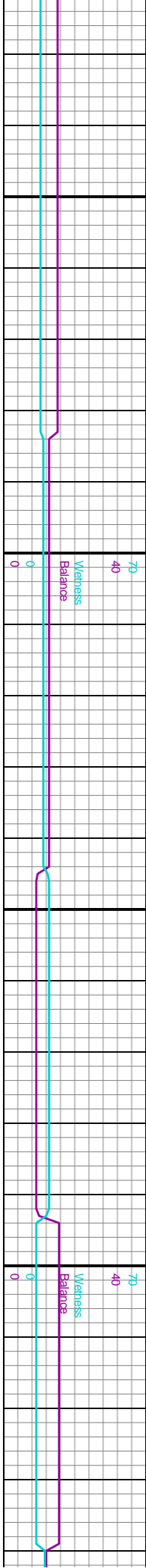






Survey Data
MD: 10.828'
Inc: 91.05°
Azm: 181.8°
TVD: 7,548.49'
VS: 3,959.00'

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p srt, arg cnt, sl calc



1000
200
1/25/2020
1/26/2020
MINDDEPTH

ROP (ft/hr)
Gamma (api)

109

ROP (ft/hr)
Gamma (api)

110

340

266

0
5000
5000

0
5000
5000

2,912 u

2,503 u

2,748 u

2,062 u

RG (lbms)
Cl-OS (lbms)

RG (lbms)
Cl-OS (lbms)

11,050 11,060 11,070 11,080 11,090 11,100 11,110 11,120 11,130 11,140 11,150 11,160 11,170 11,180 11,190 11,200 11,210 11,220 11,230 11,240 11,250 11,260

Survey Data
MD: 11,108'
Inc: 89.35°
Azim: 181.7°
TVD: 7,551.68'
VS: 4,238.50'

Survey Data
MD: 11,202'
Inc: 89.11°
Azim: 181.3°
TVD: 7,552.94'
VS: 4,332.31'

occ med gr, sb ang, p srt, arg cmt, sl calc

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p srt, arg cmt, sl calc

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p



70

40

Wellness
Balance

70

40

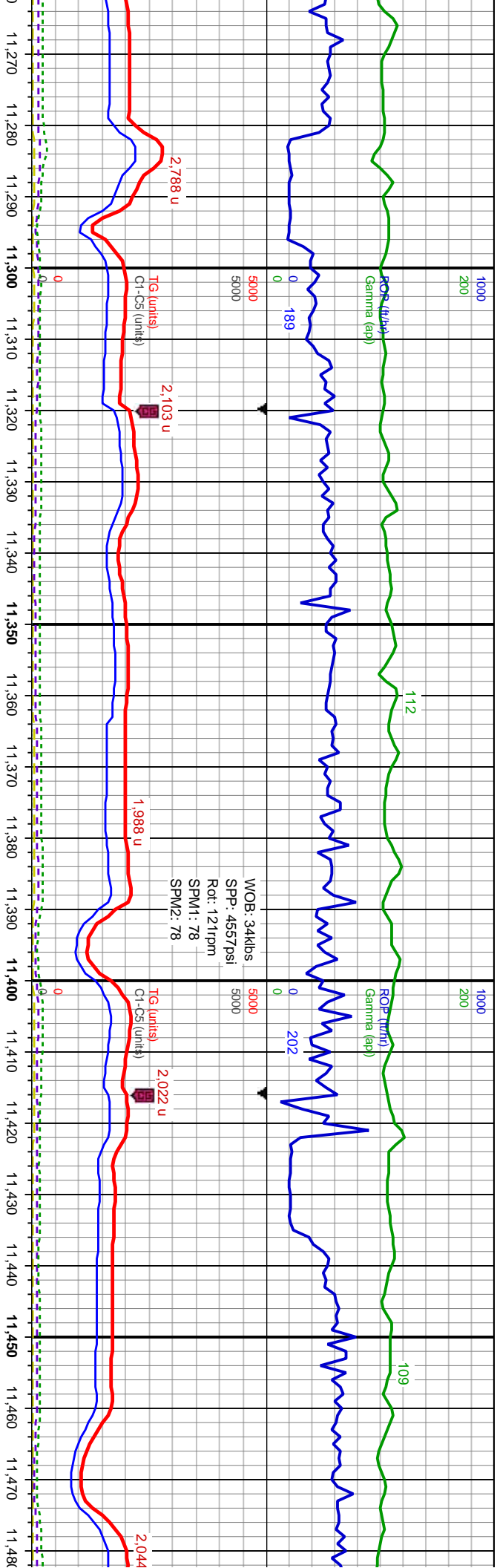
Wellness
Balance

0

0

0

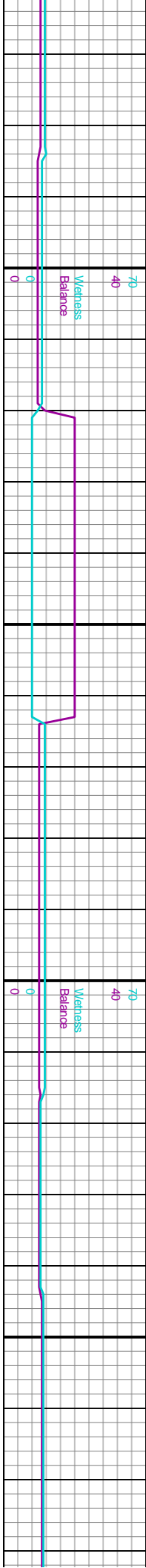
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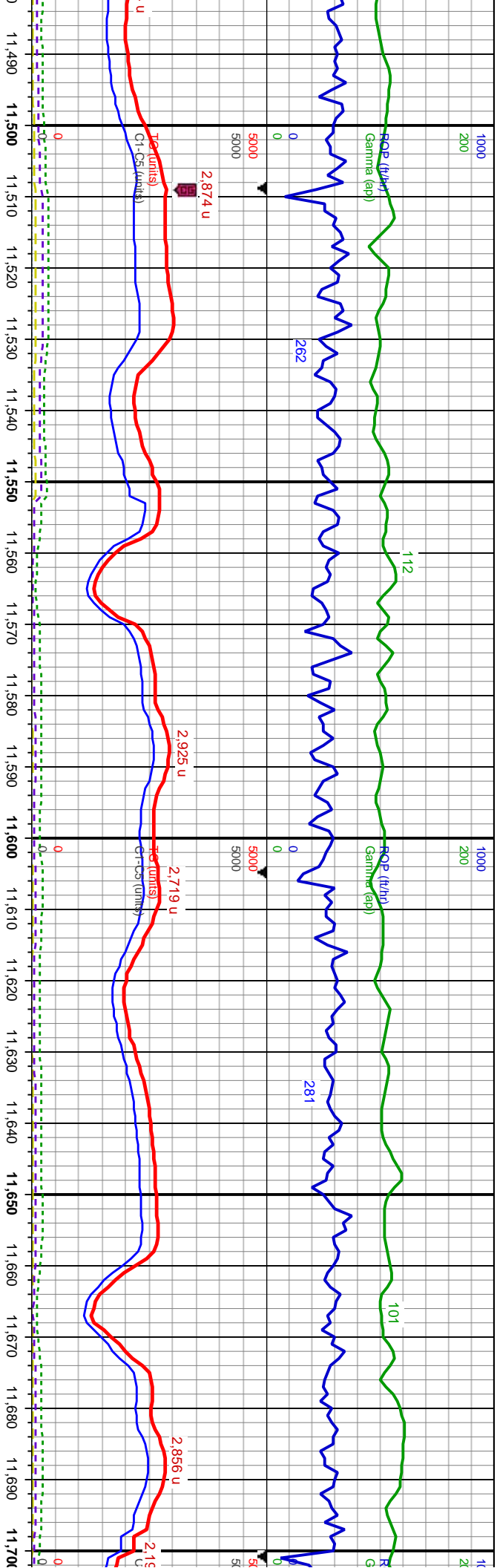


Survey Data
MD: 11,297'
Inc: 89.82°
Az: 181.9°
TVD: 7,553.83'
VS: 4,427.14'

Survey Data
MD: 11,391'
Inc: 90.0°
Az: 181.3°
TVD: 7,553.97'
VS: 4,520.97'

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p srt, arg cmt, sl calc



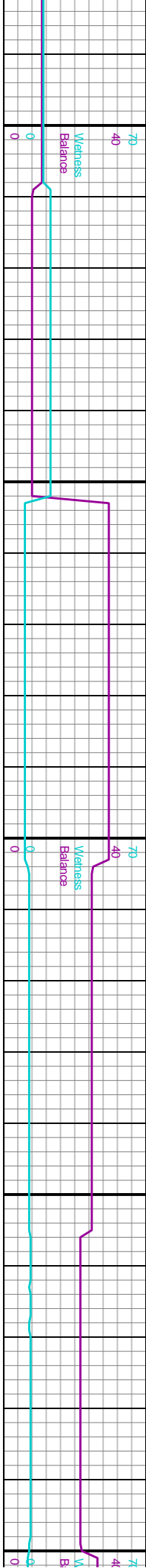
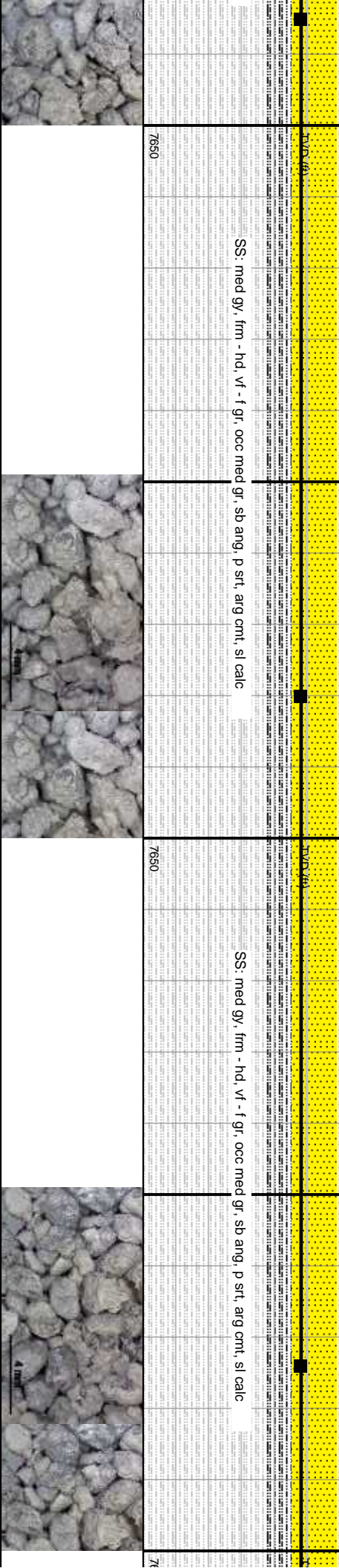


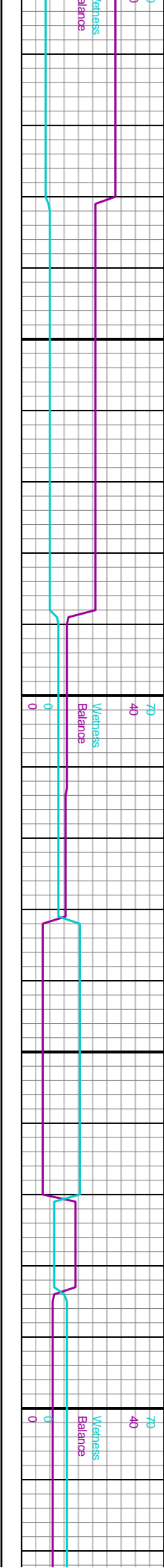
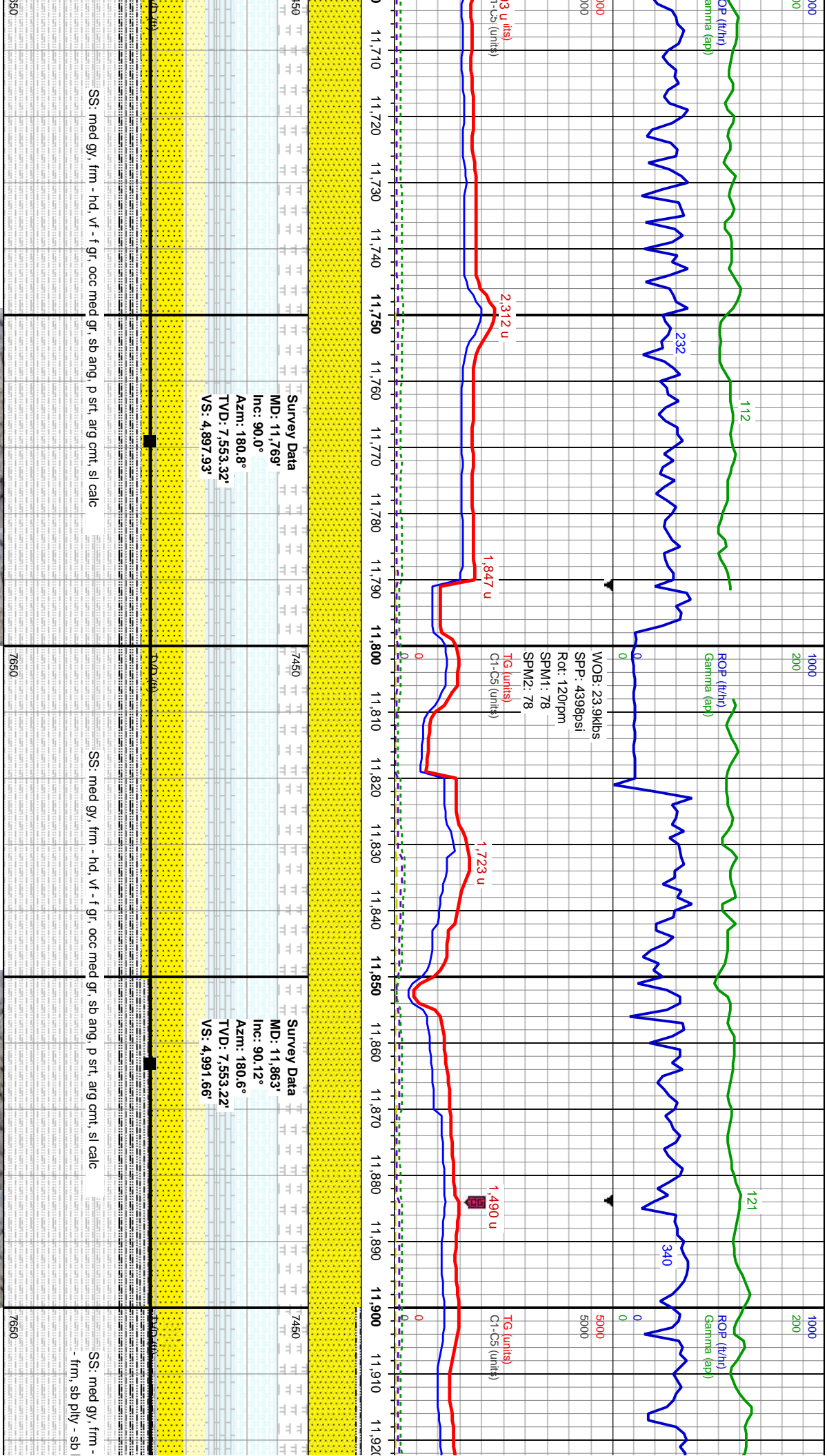
Survey Data
MD: 11.580'
Inc: 90.06°
Azim: 180.9°
TVD: 7.553.12'
VS: 4.709.45'

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p srt, arg cmt, sl calc

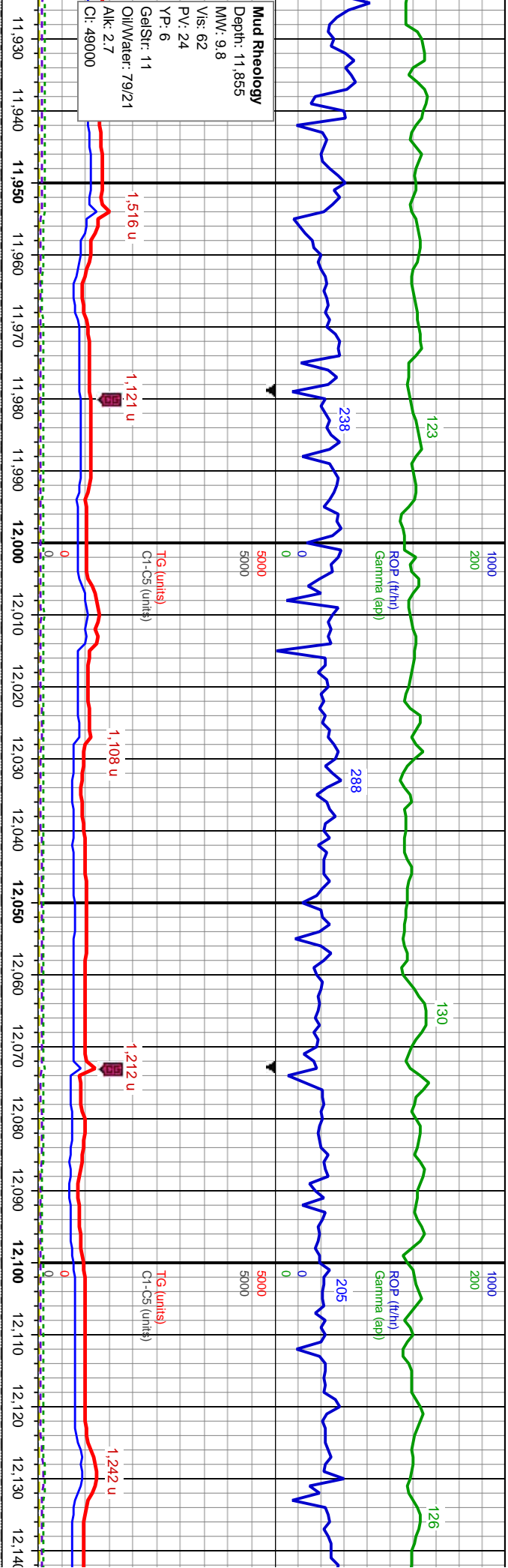
SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p srt, arg cmt, sl calc

Survey Data
MD: 11.674'
Inc: 89.85°
Azim: 180.8°
TVD: 7.553.19'
VS: 4.803.20'





Mud Rheology
Depth: 11.855
MW: 9.8
Vis: 62
PV: 24
YP: 6
GelStr: 11
Oil/Water: 79/21
Alk: 2.7
Cl: 49000

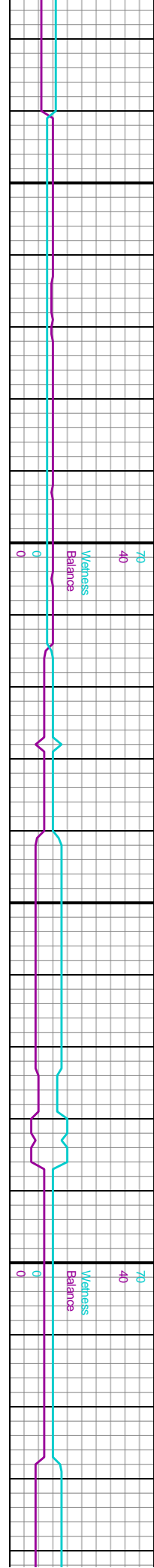


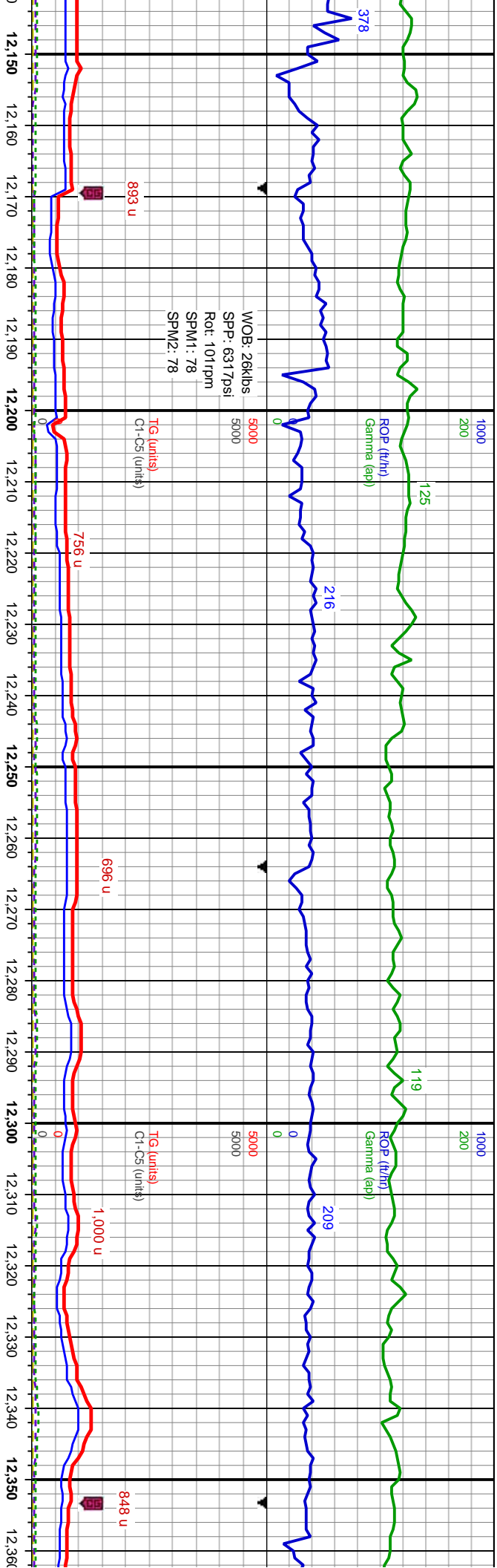
Survey Data
MD: 11.958°
Inc: 89.8°
Azim: 178.8°
TVD: 7,553.22'
VS: 5,086.25'

hd, vf - f gr, occ med gr, sb ang, p str, aig cmt, sl calc; SLTY SH: dk gy, sft
olity, stly - sm tex, sl calc;

SS: med gy, frm - hd, vf - f gr, occ med gr, sb ang, p str, aig cmt, sl calc; SLTY SH: dk gy, sft
- frm, sb ply - sb blk, stly - sm tex, sl calc;

SLTY SH: dk gy- med gy, occ blk, blk-
med gy-lt gy, vf- f gr, occ med gr, sb an

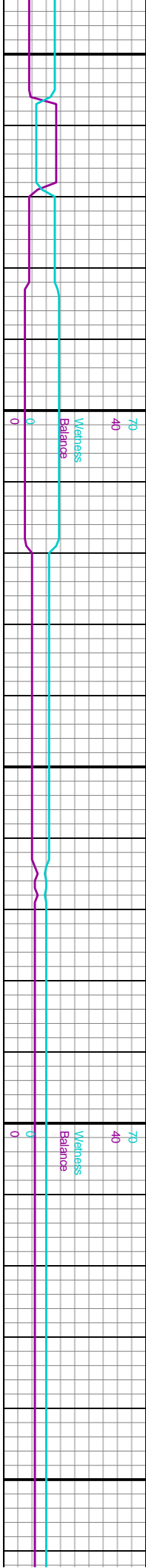


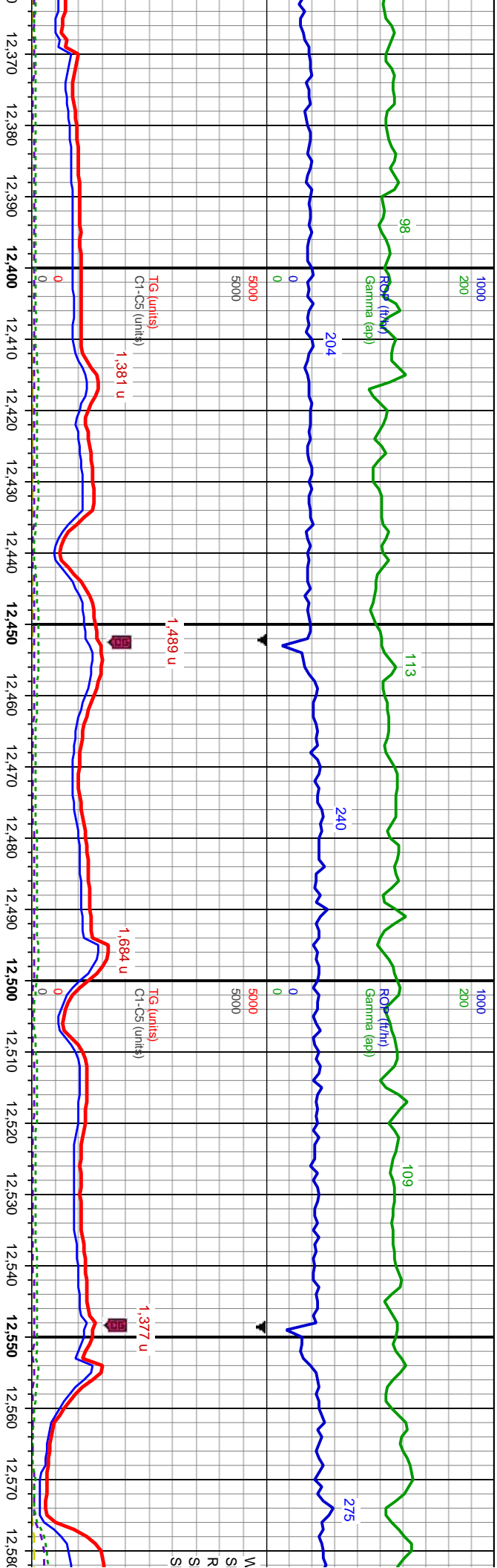


Survey Data	
MD: 12,241'	MD: 12,335'
Inc: 90.92°	Inc: 91.45°
Azm: 180.2°	Azm: 179.8°
TVD: 7,550.94'	TVD: 7,549.00'
VS: 5,368.13'	VS: 5,461.74'

sb ply, rthy, sily-arg in pt, sl- non calc, stf-fm. SS:
g- sb rd, mod strd, v arg- cly fl, sl calc, fri.

SLTY SH: dk gy- med gy, occ blk, blk- sb ply, rthy, sily-arg in pt, sl- non calc, stf-fm. SS:
med gy- lt gy, v- f gr, occ med gr, sb ang- sb rd, mod strd, v arg- cly fl, sl calc, fri.





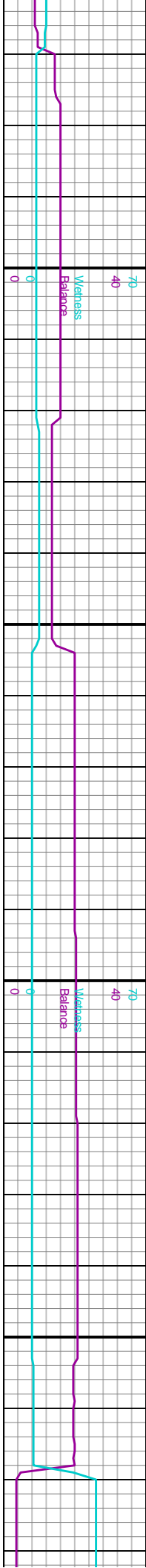
Survey Data
MD: 12,429'
Inc: 91.69°
Azrn: 180.3°
TVD: 7,546.42'
VS: 5,555.35'

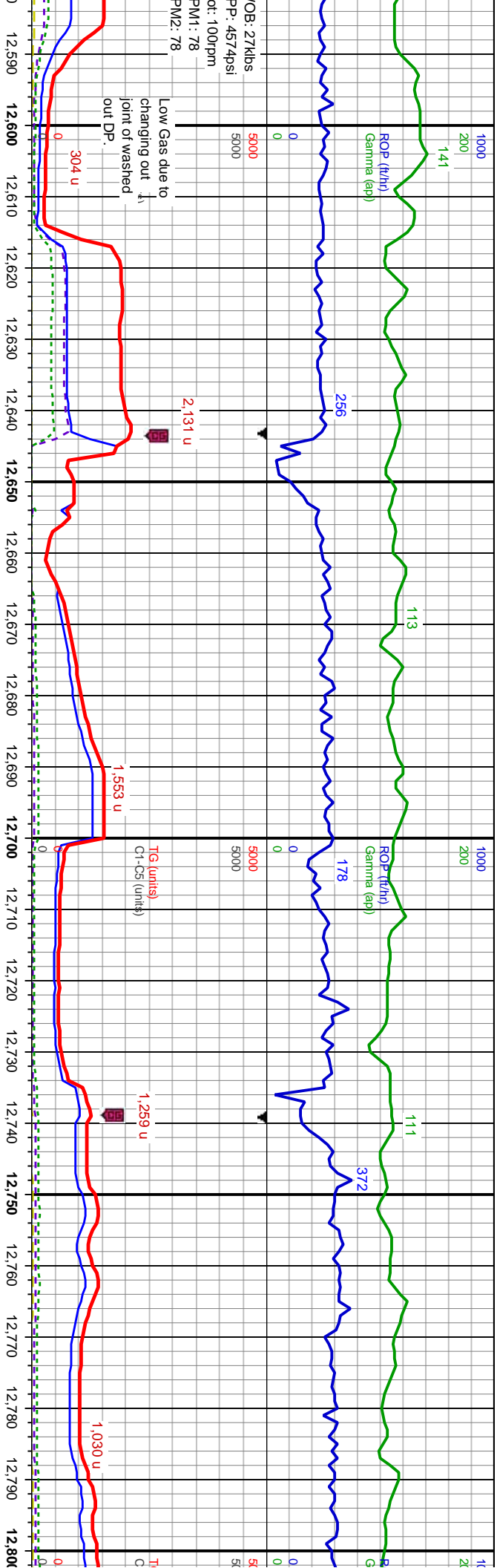
Survey Data
MD: 12,524'
Inc: 91.57°
Azrn: 180.3°
TVD: 7,543.72'
VS: 5,649.98'

arg in pt, sl- non calc, st-frn. SS: v arg- cly fl, sl calc, fri.

SS: med gy-lt gy, vt- f gr, occ med gr, sb ang- sb rd, mod srt, v arg- cly fl, sl calc, fri.

SS: med gy- occ lt gy, sme dk brn, vt- f gr, occ med gr, sb ang- sb rd, mod srt, v arg- cly fl, sl calc, fri.



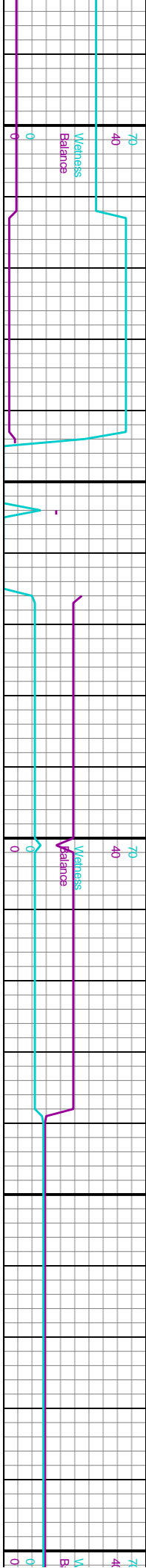


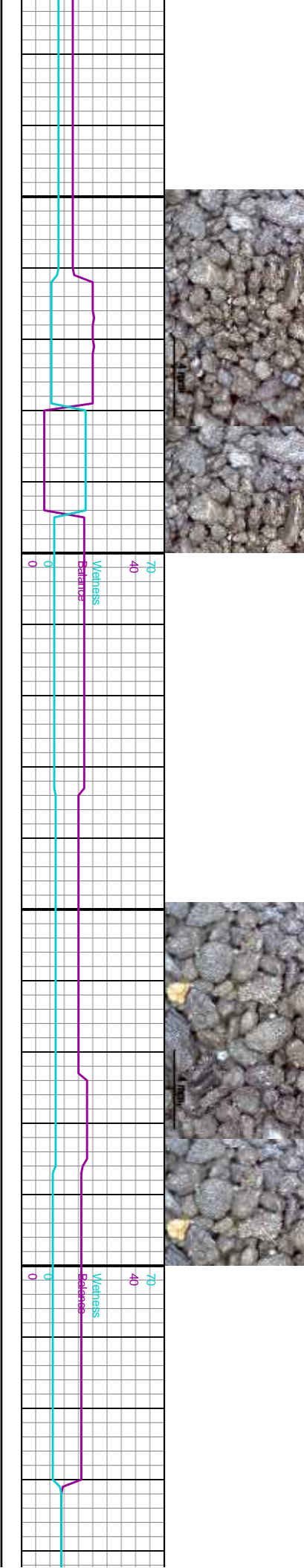
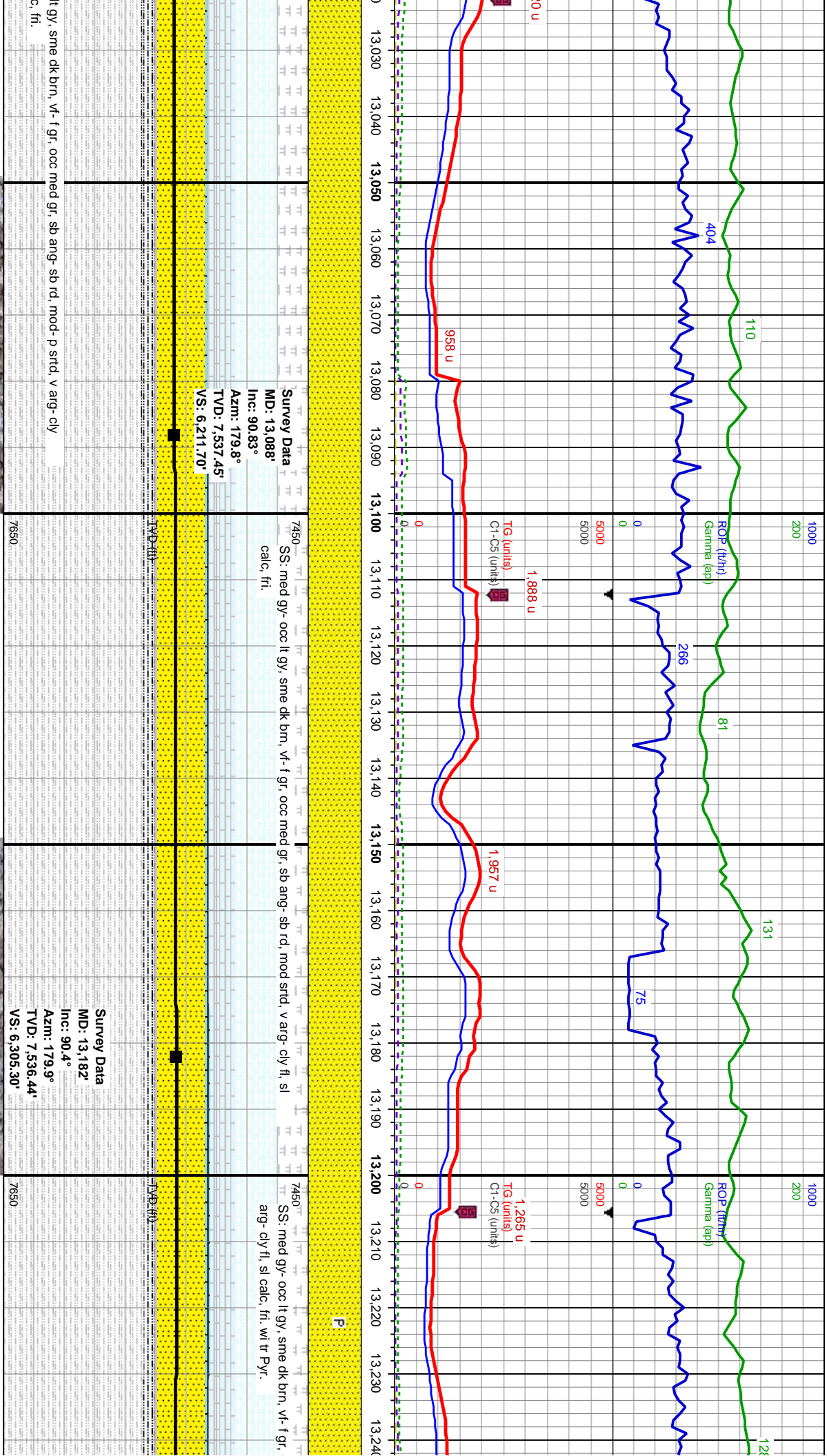
Survey Data
MD: 12,618'
Inc: 91.57°
Azim: 179.6°
TVD: 7,541.14'
VS: 5,743.57'

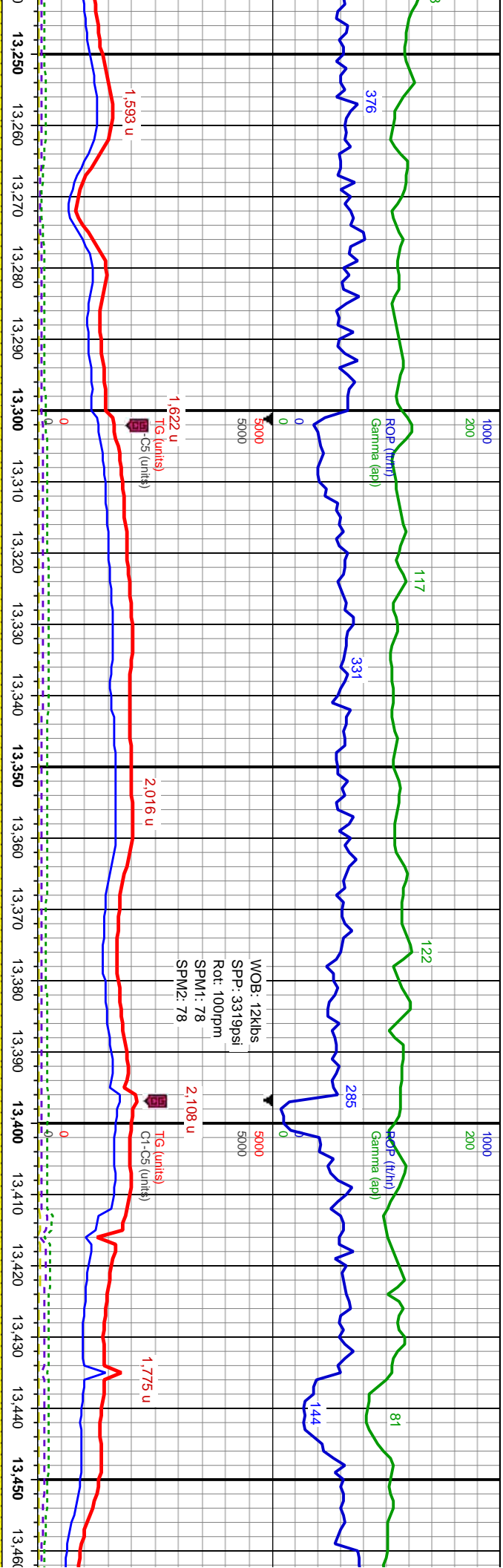
Survey Data
MD: 12,712'
Inc: 90.95°
Azim: 179.7°
TVD: 7,539.08'
VS: 5,837.13'

SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr- sb ang- sb rd, mod srt'd, v arg- cly fl, sl calc, fri.

SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr- sb ang- sb rd, mod srt'd, v arg- cly fl, sl calc, fri, wi tr Pyr.





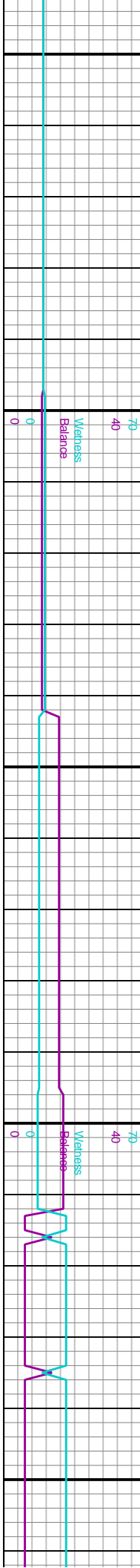


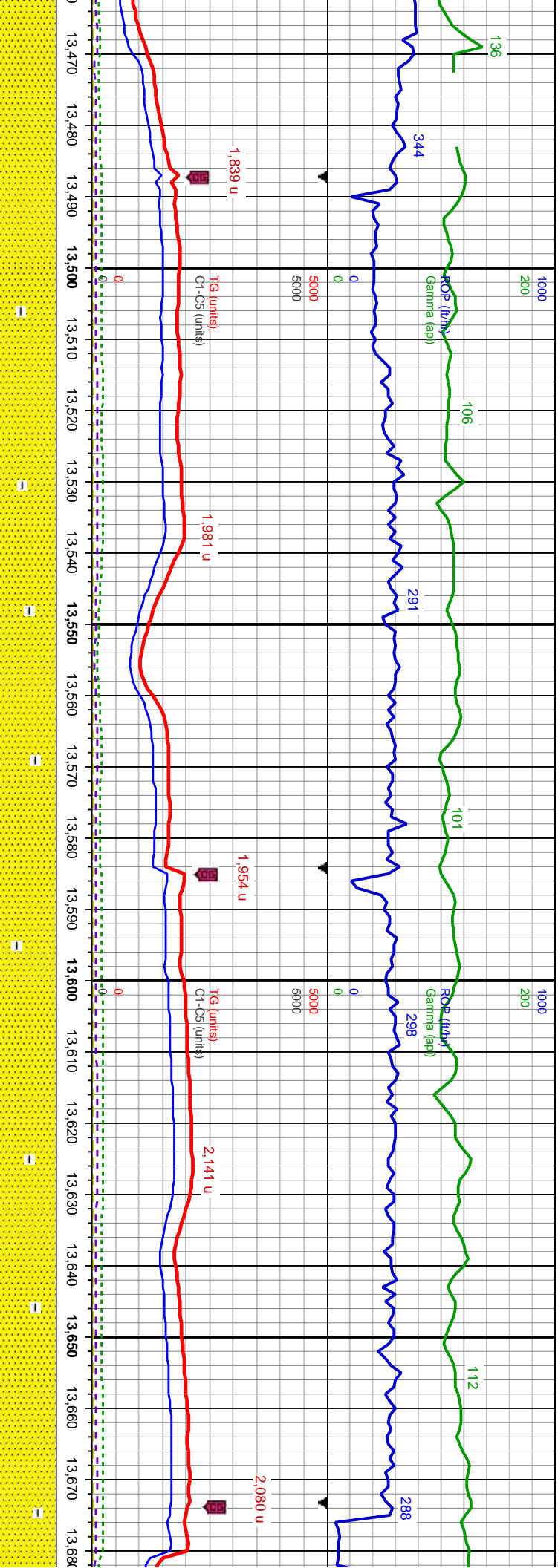
occ med gr, sb ang-sb rd, mod-p strd, occ glau, v

SS: med gy- occ lt gy, sme dk brn, vf-f gr, occ med gr, sb ang-sb rd, mod-p strd, v arg-cl y

fl, occ glau, sl calc, fri.

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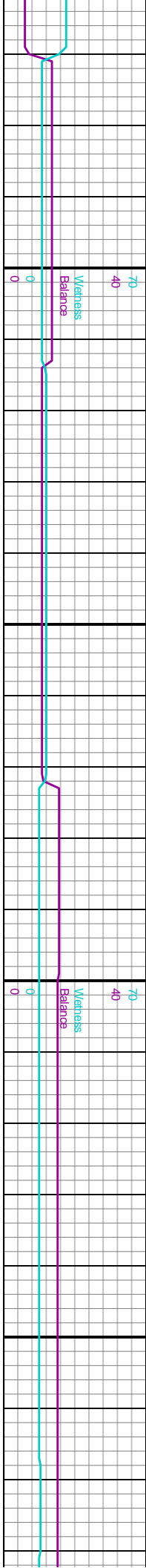


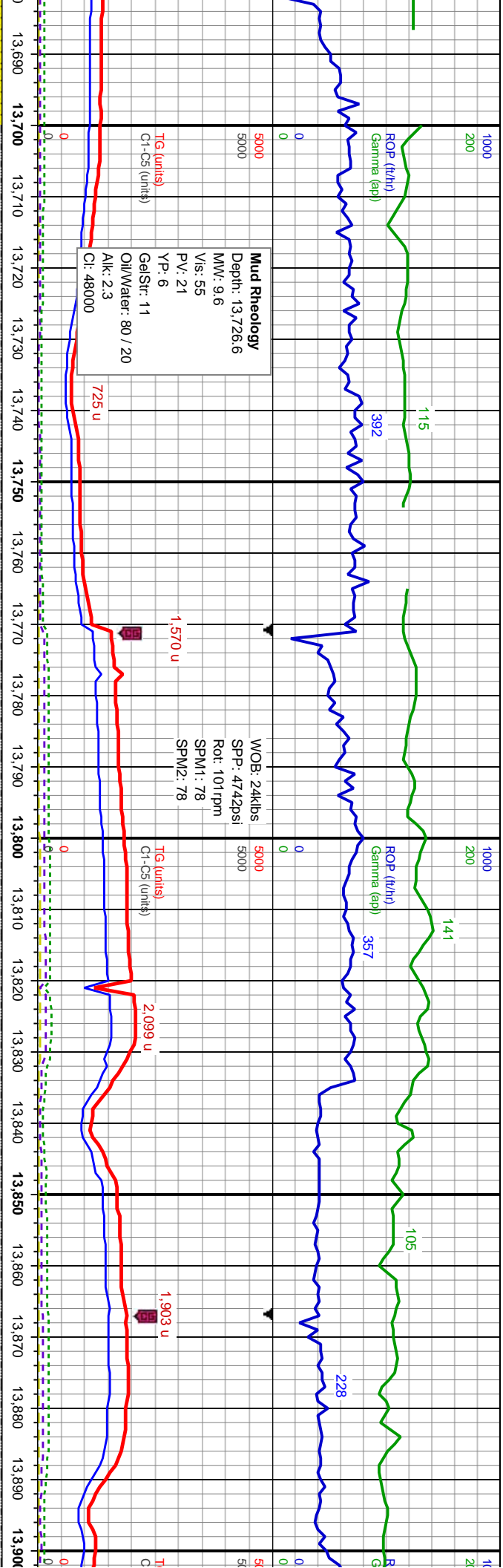


sb rd, mod-p strd, v arg- cly

SS: med gy- occ ll gy, sme dk gy, vf- f gr, occ med gr- sb ang- sb rd, mod- p strd, v arg- cly fl, occ glau, sl calc, fri.

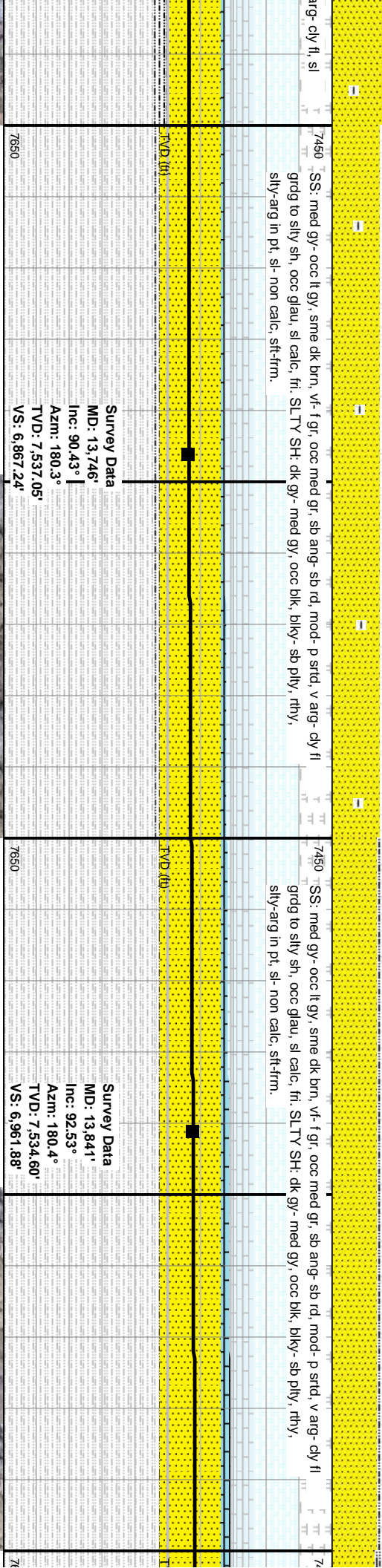
Survey Data	
MD: 13,465'	MD: 13,558'
Inc: 90.65°	Inc: 89.78°
n: 180.3°	Azm: 179.9°
TVD: 7,537.06'	TVD: 7,536.71'
VS: 6,587.30'	VS: 6,679.95'





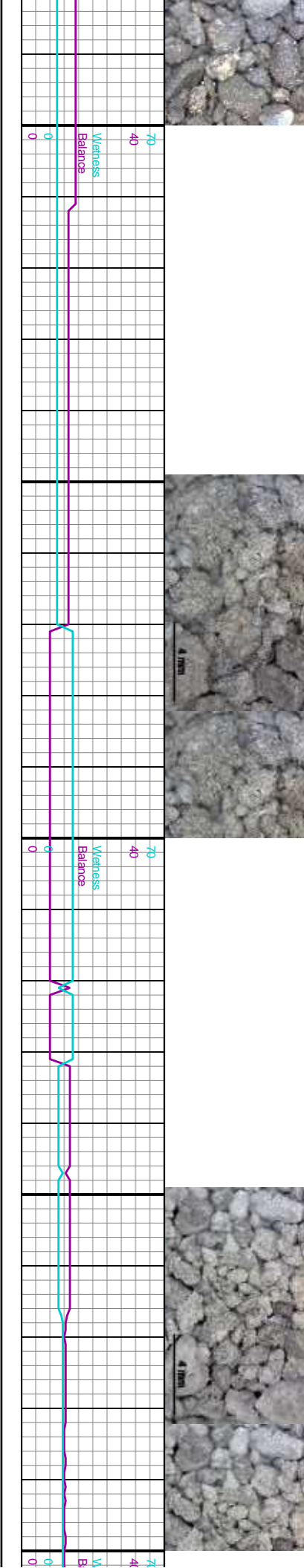
7450 -SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr, sb ang- sb rd, mod- p strd, v arg- cly fl
grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.

7450 -SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr, sb ang- sb rd, mod- p strd, v arg- cly fl
grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.



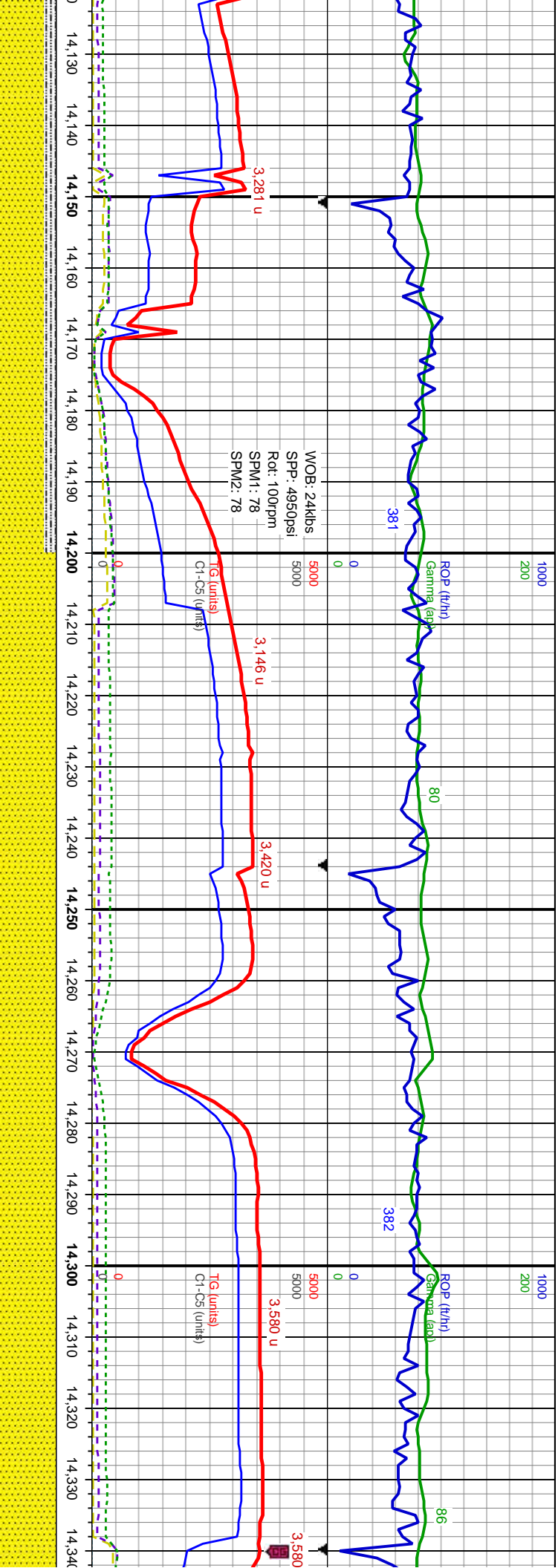
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grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.

7450 -SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr, sb ang- sb rd, mod- p strd, v arg- cly fl
grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.

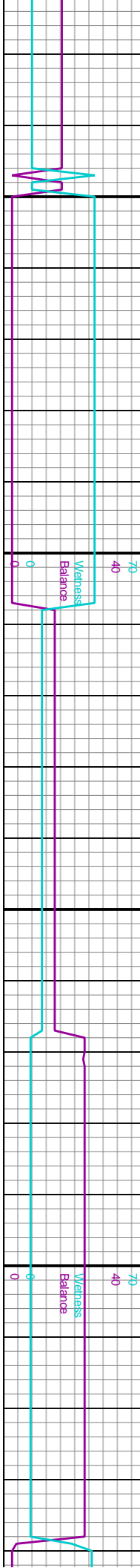
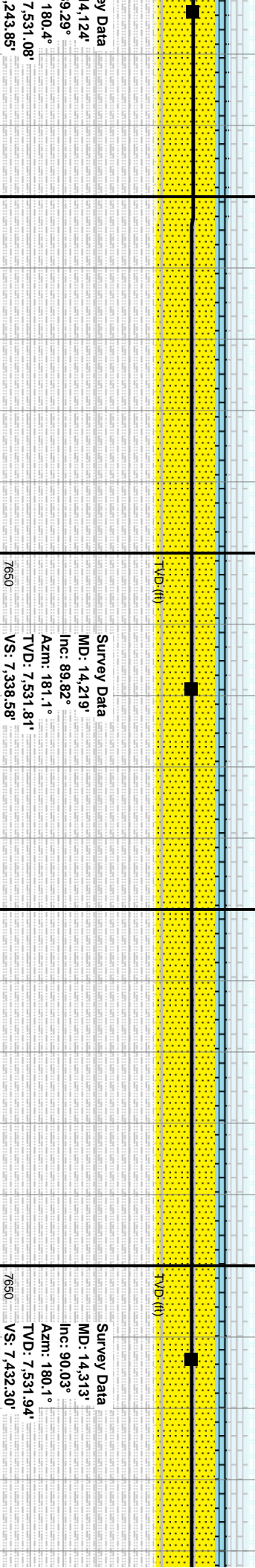


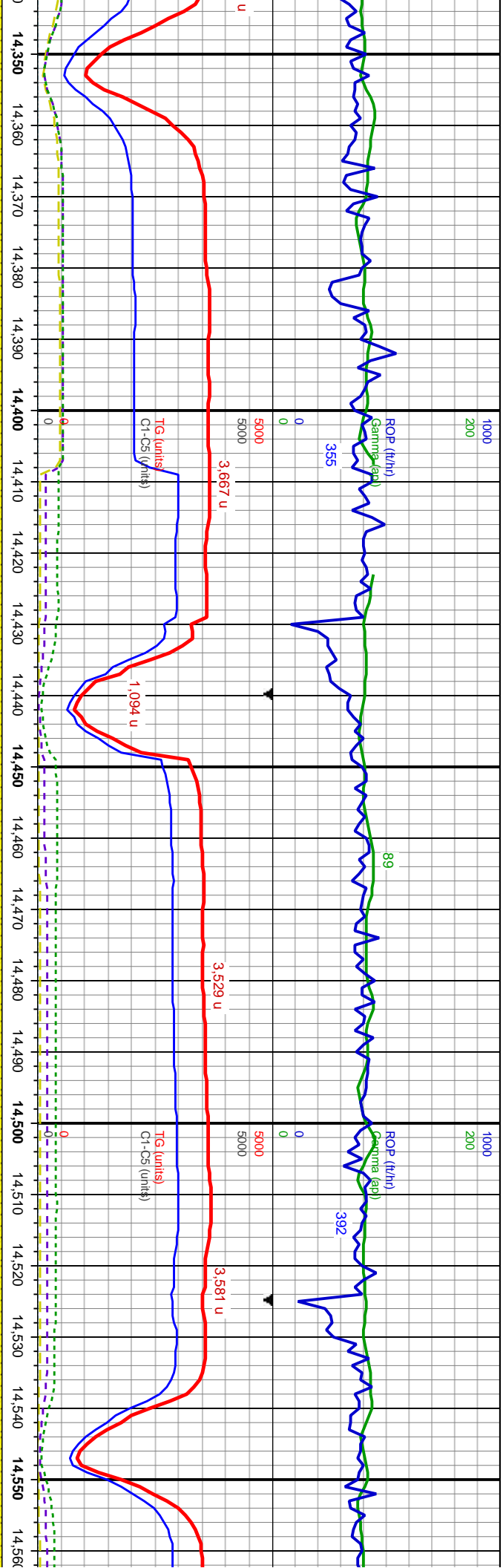
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grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.

7450 -SS: med gy- occ lt gy, sme dk brn, vf- f gr, occ med gr, sb ang- sb rd, mod- p strd, v arg- cly fl
grdg to stly sh, occ glau, sl calc, fri, SLTY SH: dk gy- med gy, occ blk, bly- sb ply, rthy,
stly-arg in pt, sl- non calc, st-frm.



occ dk brn, frm - hd, vf - f gr, occ med gr, sb ang - sb rd, mod - p strd, v arg -
h, occ glau, sl calc, SLTY SH: dk - med gy, occ blk, sft - frm, silty tex, blk y -
n pt, sl - non calc.

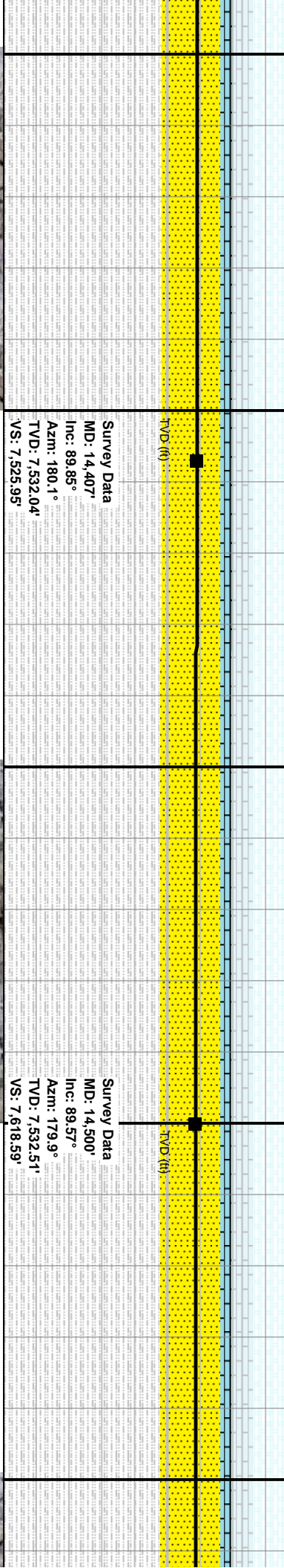




14,350 14,360 14,370 14,380 14,390 14,400 14,410 14,420 14,430 14,440 14,450 14,460 14,470 14,480 14,490 14,500 14,510 14,520 14,530 14,540 14,550 14,560

f gr, occ med gr, sb ang - sb rd, mod - p strd, arg cly

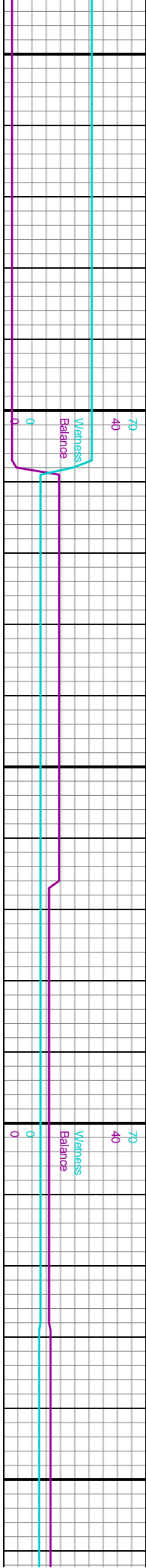
fl, sl calc.

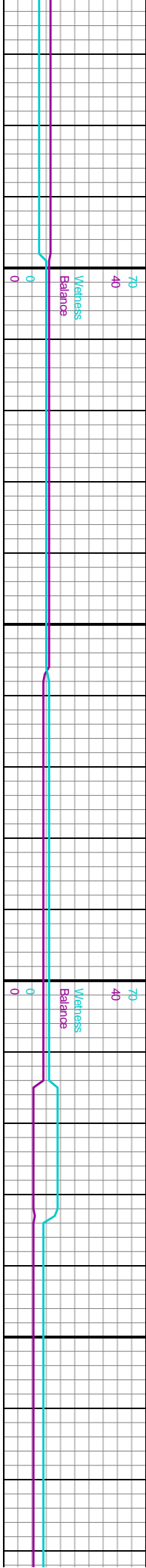
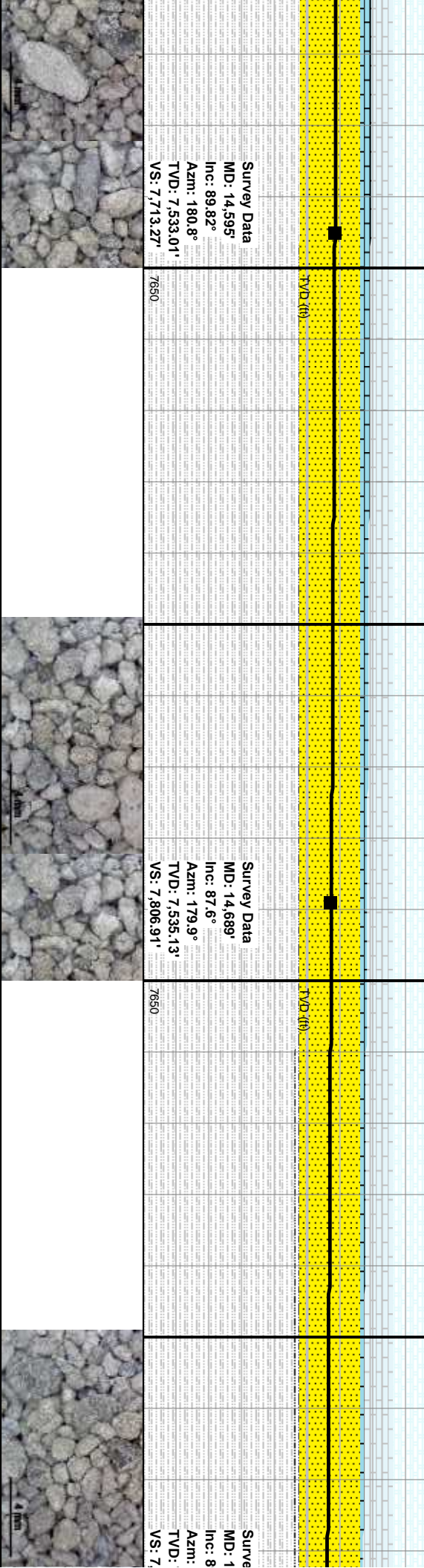
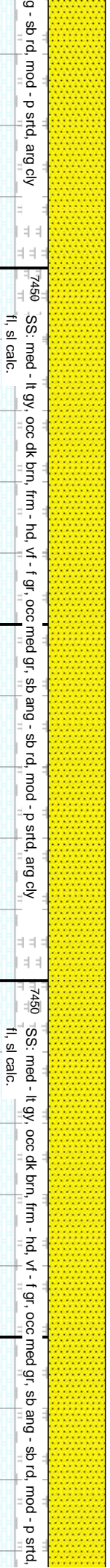
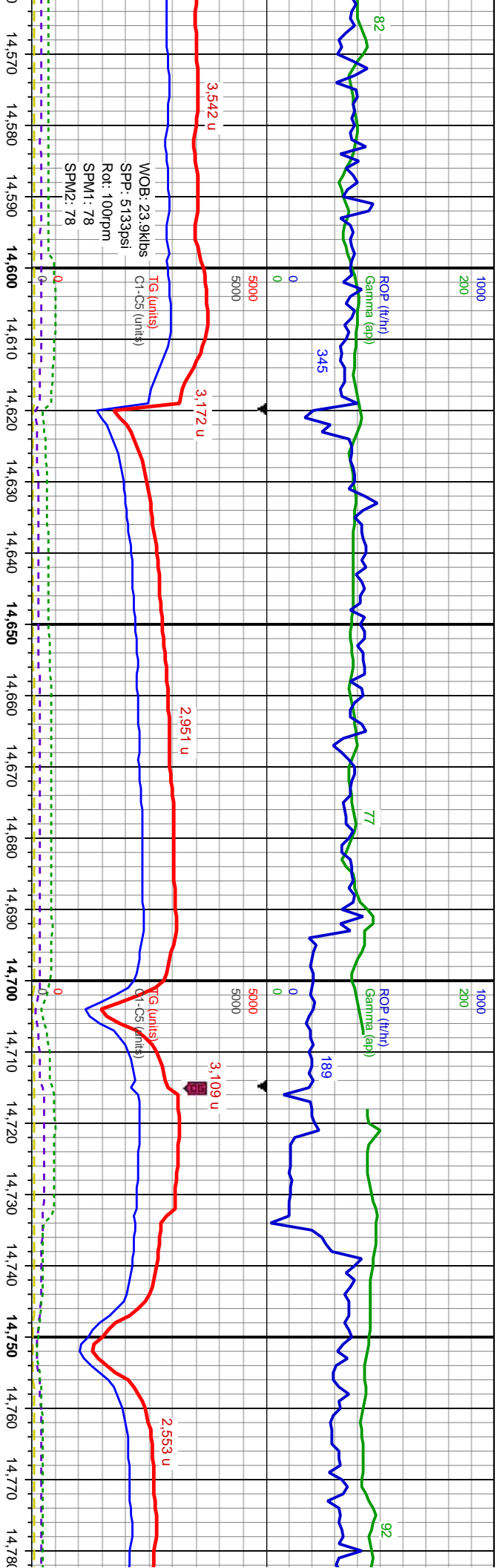


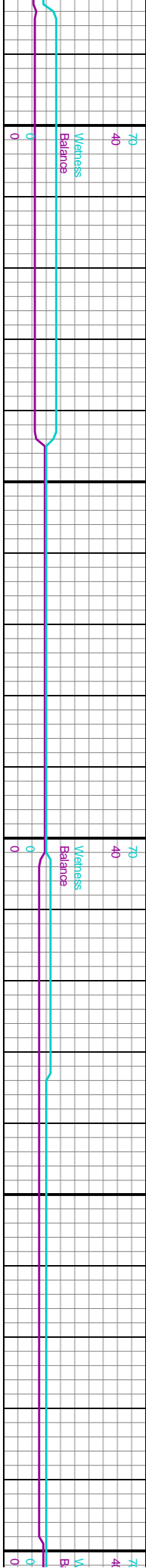
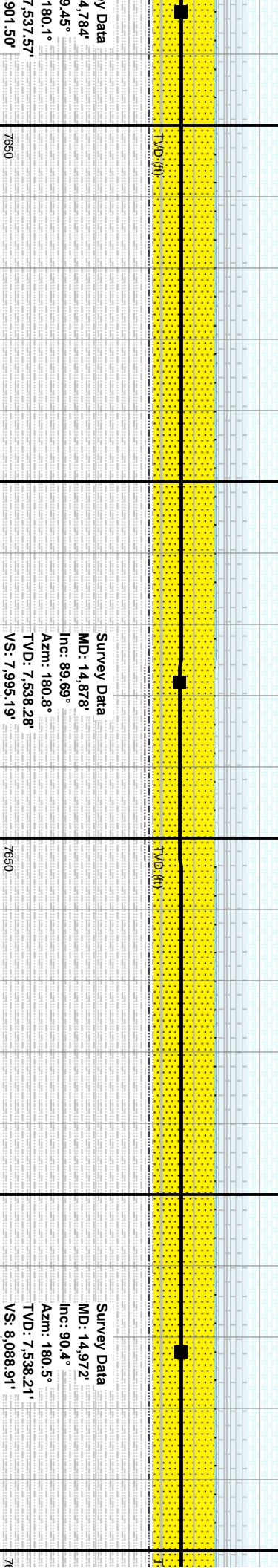
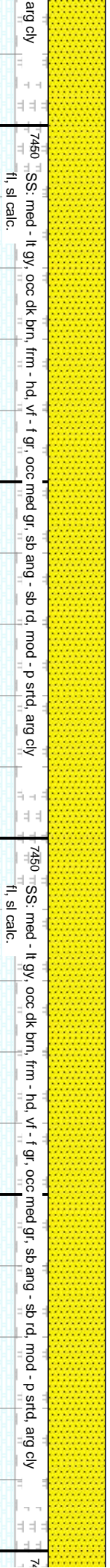
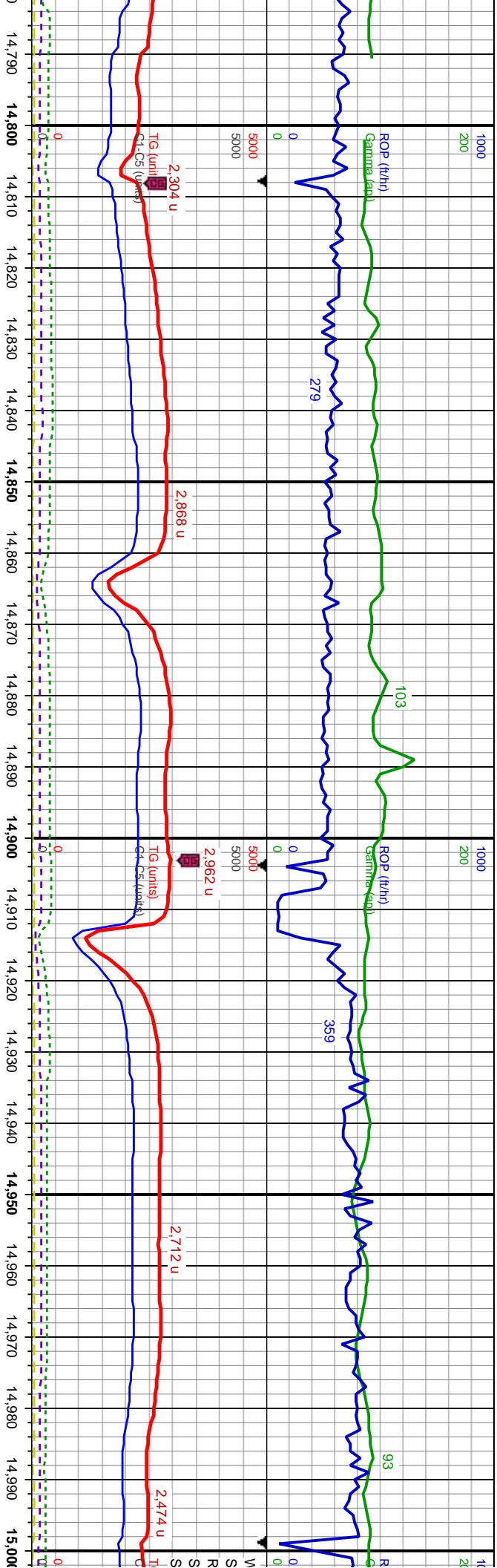
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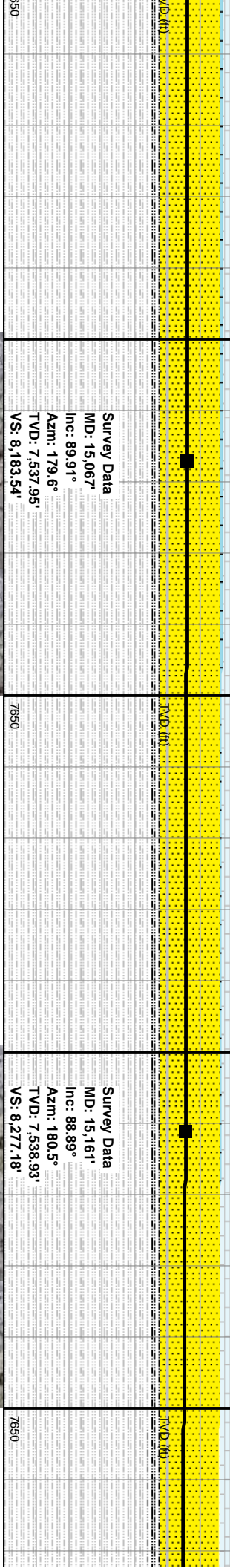
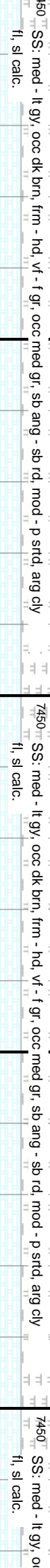
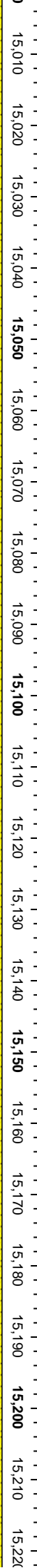
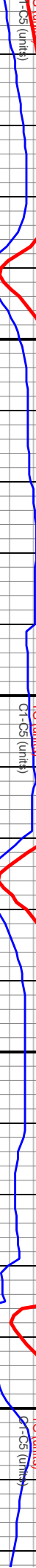
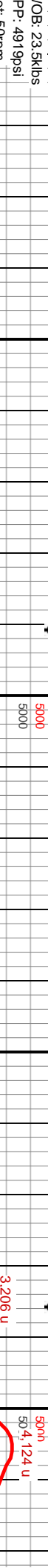
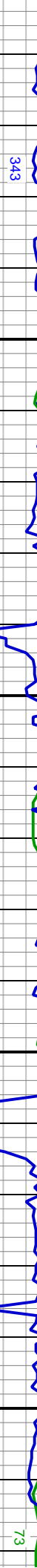
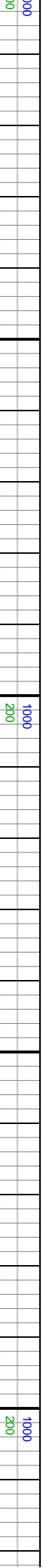
f gr, occ med gr, sb ang - sb rd, mod - p strd, arg cly

fl, sl calc.

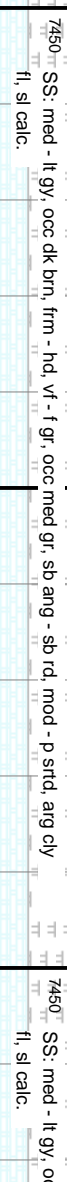
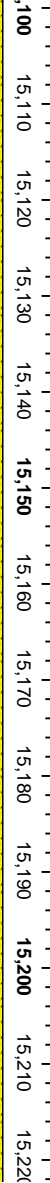
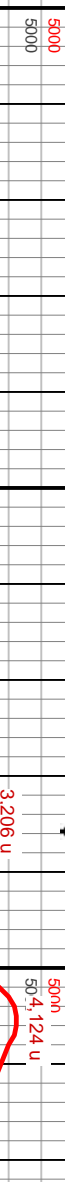
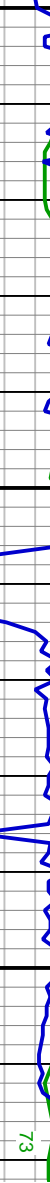
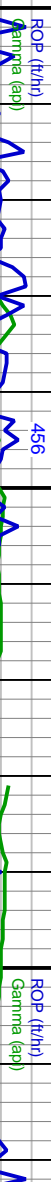
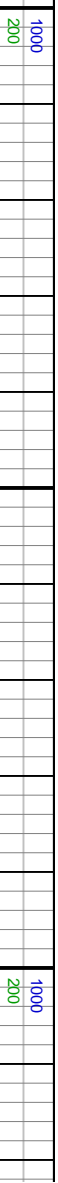




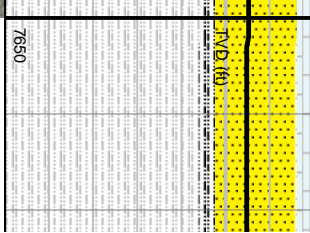
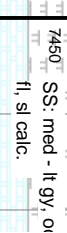
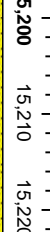
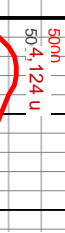
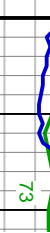
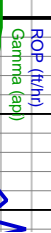




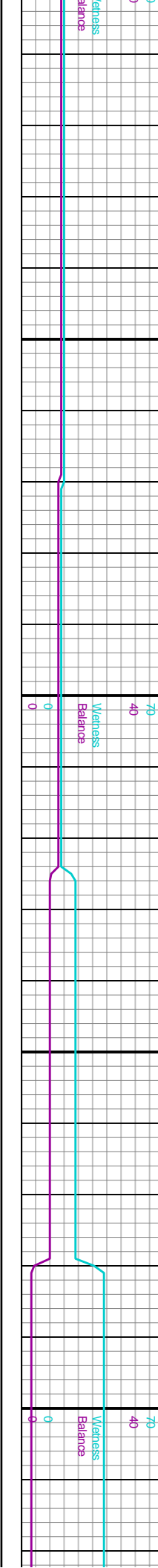
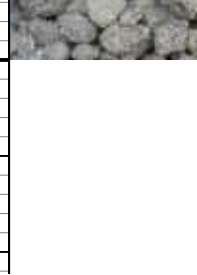
Survey Data
MD: 15,067'
Inc: 89.91°
Azm: 179.6°
TVD: 7,537.95'
VS: 8,183.54'

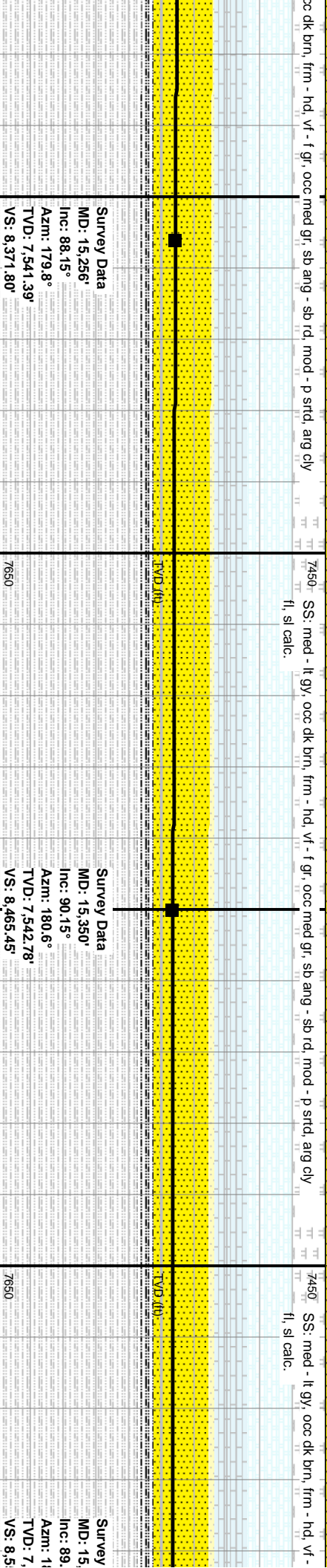
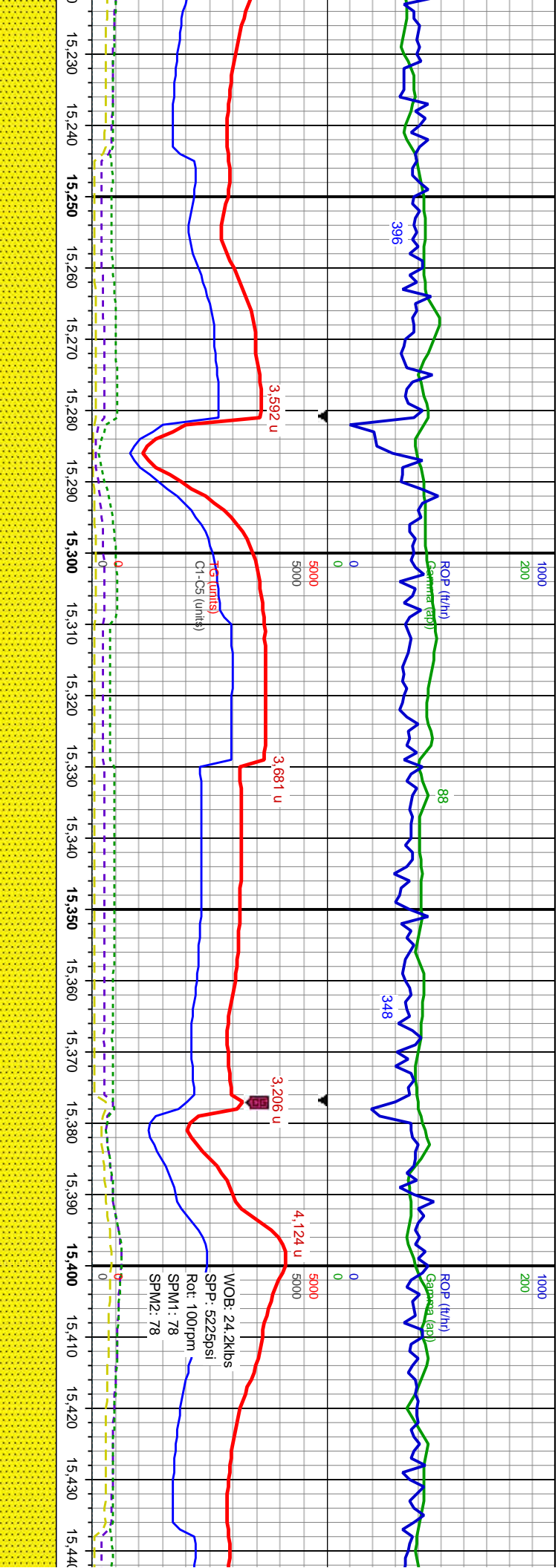


Survey Data
MD: 15,161'
Inc: 88.89°
Azm: 180.5°
TVD: 7,538.93'
VS: 8,277.18'



Survey Data
MD: 15,161'
Inc: 88.89°
Azm: 180.5°
TVD: 7,538.93'
VS: 8,277.18'

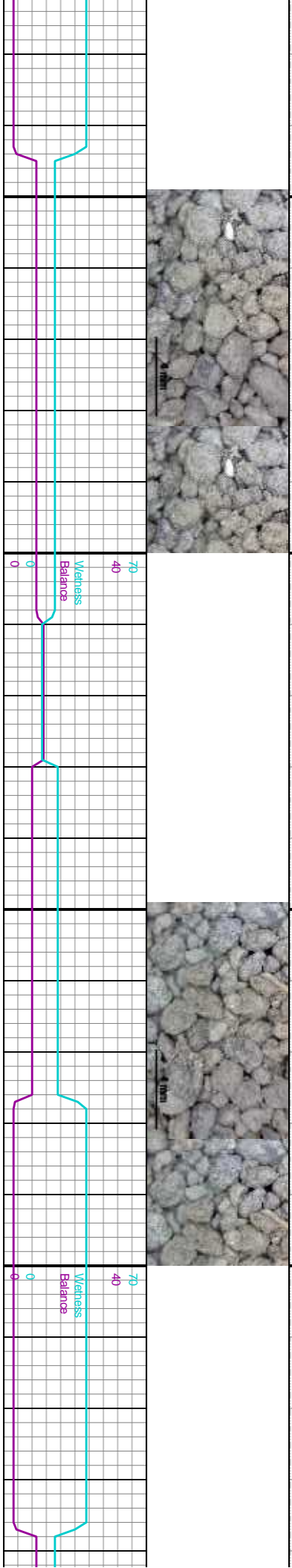




Survey Data
MD: 15,256'
Inc: 88.15°
Azim: 179.8°
TVD: 7,541.39'
VS: 8,371.80'

Survey Data
MD: 15,350'
Inc: 90.15°
Azim: 180.6°
TVD: 7,542.78'
VS: 8,465.45'

Survey
MD: 15
Inc: 89
Azim: 11
TVD: 7
VS: 8.5



1/26/2020

1/27/2020 00

MIN DEPTH

1000

1000

200

88 ROP (ft/hr)

81

ROP (ft/hr)

86

288

421

0

0

5000

5000

5000

5000

3,703 u

3,455 u

3,709 u

2,510 u

TG (units)

TG (units)

WOB: 28.2klbs
SPP: 5477psi
Rot: 101rpm
SPM1: 78
SPM2: 78

C1-C5 (units)

C1-C5 (units)

15,670 15,680 15,690 15,700 15,710 15,720 15,730 15,740 15,750 15,760 15,770 15,780 15,790 15,800 15,810 15,820 15,830 15,840 15,850 15,860 15,870 15,880

g - sb rd, mod - p strd, arg cly

SS: med - lt gy, occ dk brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, arg cly, sl

SS: med - lt gy, occ dk brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, arg cly

calc.

calc.

TVD (ft)

TVD (ft)

Survey Data

MD: 15,728'

Inc: 89.66°

Azm: 180.4°

TVD: 7,545.53'

VS: 8,942.23'

Survey Data

MD: 15,822'

Inc: 89.54°

Azm: 180.5°

TVD: 7,546.19'

VS: 8,935.92'



4 ft

4 ft

4 ft

70

40

Wellness

Balance

0

0

70

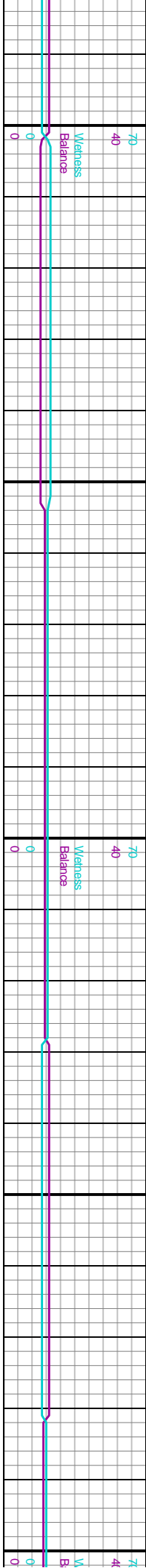
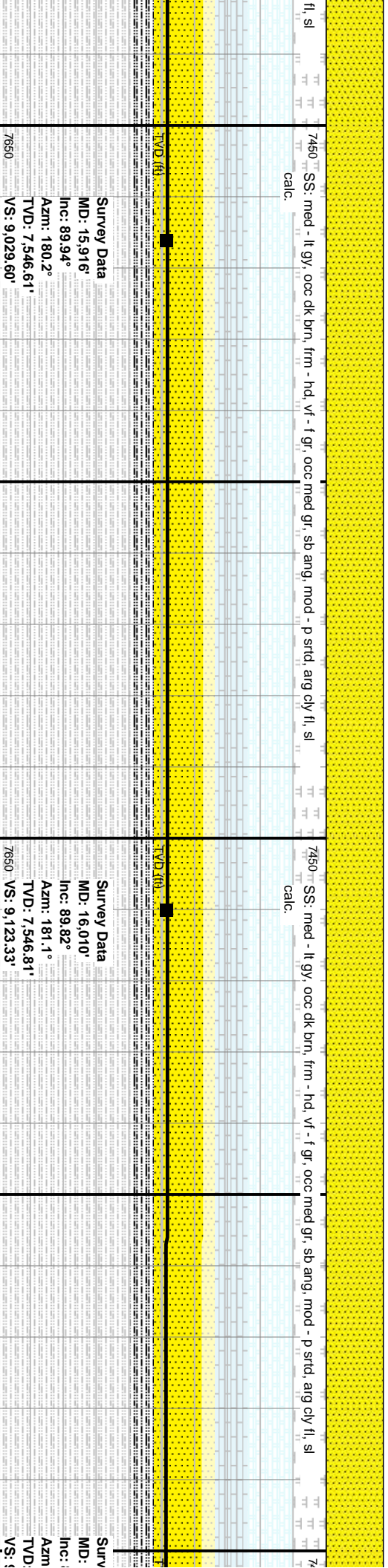
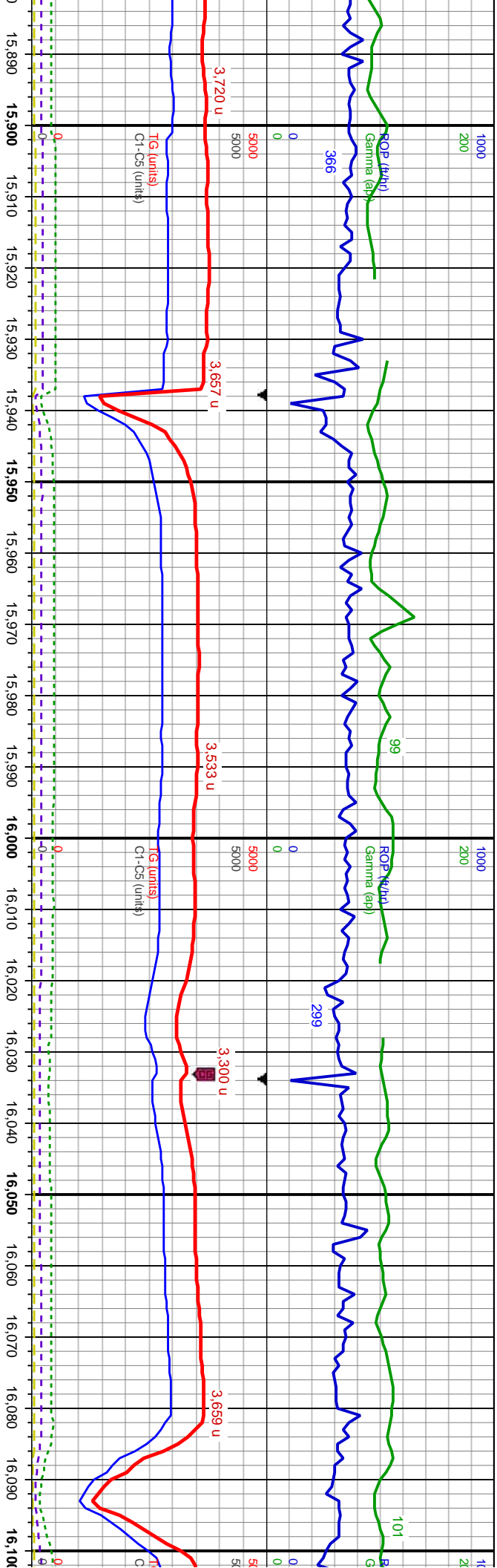
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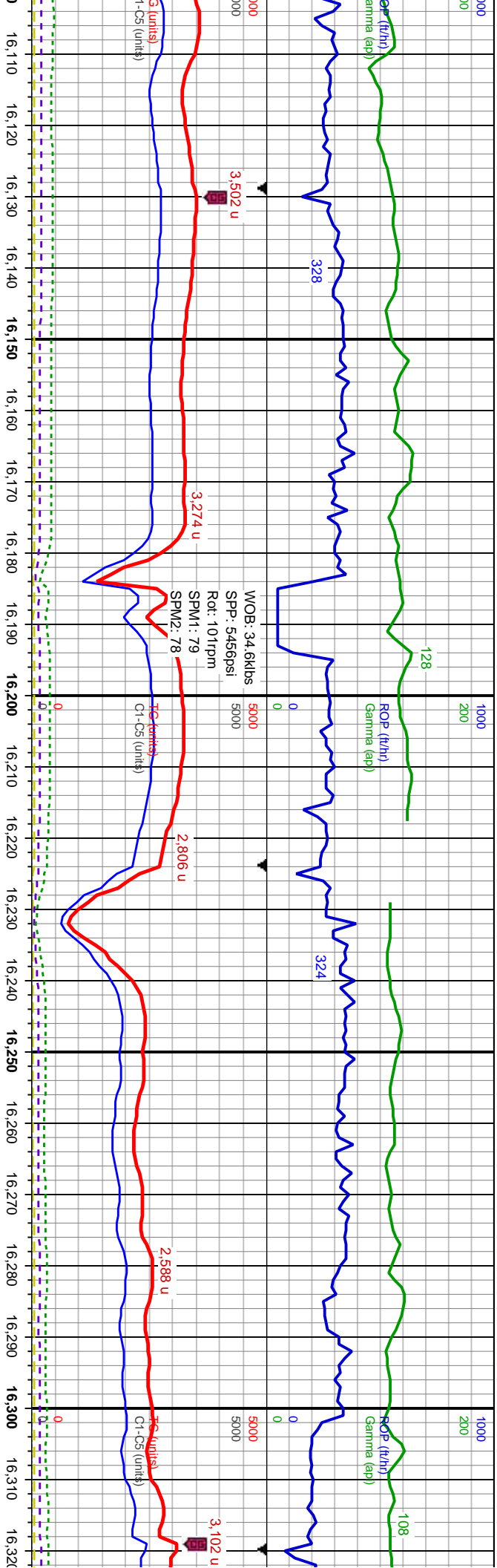
Wellness

Balance

0

0





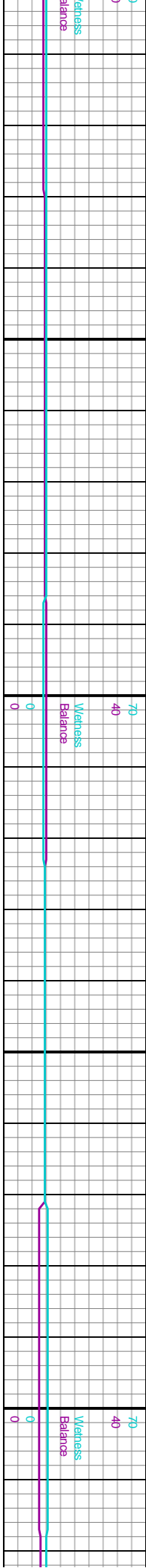
SS: med - lt gy, occ brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, occ arg cly fl, sl
calc.

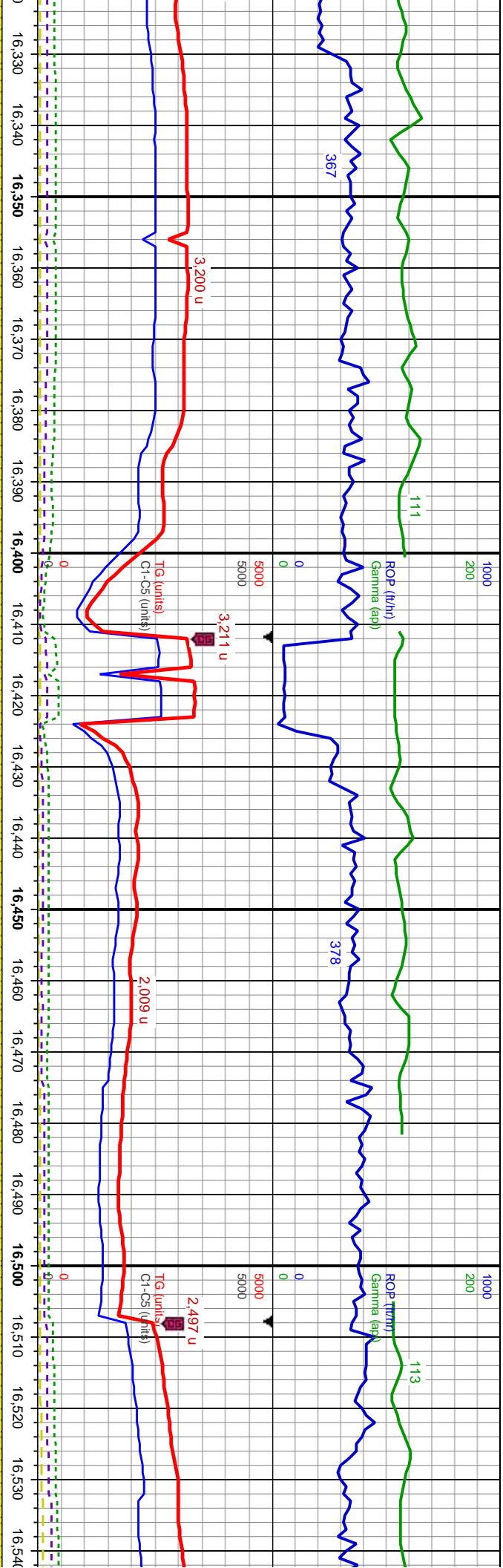
SS: med - lt gy, occ brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, occ arg cly fl, sl
calc.

SS: med - lt gy, occ brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, occ arg cly fl, sl
calc.

Survey Data	
MD: 16,105'	MD: 16,199'
Inc: 89.82°	Inc: 89.75°
Azm: 180.3°	Azm: 180.5°
TVD: 7,547.11'	TVD: 7,547.46'
VS: 2,218.05'	VS: 9,311.75'

Survey Data	
MD: 16,199'	MD: 16,293'
Inc: 89.75°	Inc: 91.2°
Azm: 180.5°	Azm: 179.7°
TVD: 7,547.46'	TVD: 7,546.68'
VS: 9,311.75'	VS: 9,405.39'





occ brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, occ arg cly fl, sl
7450 SS: med - lt gy, occ brn, frm - hd, vf - f gr, occ med gr, sb ang, mod - p strd, occ arg cly fl, sl
calc.

