



Scale: 5" / 100'

Measured Depth Log

Well Name Independence D30-711

Location SHL SEC 19 T3N R64W

State CO

Country USA

API Number 05-123-47706

Rig Number H&P 517

AFE # 205956

Geographic Region Denver Julesburg Basir

Field DJ Basin

Spud Date 12/9/2018

Drilling Completed 12/13/2018

Surface Coordinates 300 FNL 1045 FEL
SEC 30 T3N R64W
LAT/LONG: 40.1891, -104.58818

Bottom Hole Coordinates 34 FSL 2 FEL SEC 31
LAT/LONG: 40.2208, -102.08267

Ground Elevation 4768'

K.B. Elevation 4798'

Logged Interval 6440' **To** 17754'

Total Depth 17754'

Formation Codell

Type of Drilling Fluid OBM

Operator

Company Noble Energy, Inc

Address 1625 Broadway,
Denver, CO 80223



Geologist

Name Gary Myers, Mark Sowinski

Company Terra Guidance

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





Other


Mudlogging Start Date: 10/25/18


Mudlogging End Date: 10/27/18


Color Coding


 Oil


 Note


 Error


 Condensate

 Core


 Water


 Gas


 Pressure


 Seal


Rock Types


 LIMESTONE


 Chalk


 Marl


 SHALE

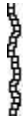
 Silty Shale


 Shaly Siltstone


 SILTSTONE


 Shaly Sandston


 SANDSTONE


 BENTONITE


 CEMENT


 UNKNOWN


 ANHYDRITE

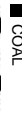
 GYPSUM


 SALT


 SIDERITE or LIMONITE


 DOLOMITE


 CHERT


 COAL


 MARLSTONE


 CLAYSTONE


 SHALE GRAY


 SHALE COLORED


 CONGLOMERATE

 BRECCIA


 TILL


 TUFF


 IGNEOUS


 METAMORPHIC


Accessories


 F FOSSIL


 GASTROPOD


 OOLITE


 OSTRACOD


 PELECYPOD


 PELLET


 PISOLUTE


 PLANT REMAINS


 SCAPHOPOD


 STROMATOPOROID


 FISH


 FORAMINIFERA


 ARGILLACEOUS


 ARGILLITE GRAIN


 B BENTONITE


 BITUMENOUS SUBSTANCE


 BRECCIA FRAGMENTS


 CALCAREOUS


 CARBONACEOUS FLAKES


 CHTDK


 COAL - THIN BEDS


 DOLOMITIC


 FELDSPAR


 FERRUGINOUS PELLET


 FERRUGINOUS


 GLAUCONITE


 GYPSIFEROUS


 HEAVY MINERAL


 KAOLIN


 MARLSTONE


 MINERAL CRYSTALS


 NODULES


 PHOSPHATE PELLETS


 PYRITE


 SALT CAST


 SANDY


 SUCCIOUS


 SILTY


 TUFFACEOUS


 ANHYDRITE STRINGER


 BENTONITE STRINGER


 COAL STRINGER


 DOLOMITE STRINGER


 GYPSUM STRINGER


 LIMESTONE STRINGER

 MARLSTONE (CALC) STRG

 MARLSTONE (DOL) STRG

 SANDSTONE STRINGER

 SHALE STRINGER

 SILTSTONE STRINGER

Oil Show

 ORGANIC

 PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

Engineering

SPOTTED STAINING BIT

CASING

Porosity

CONNECTION (LEFT)

E EARTHY

CONNECTION (DOWN)

FENESTRAL

CONNECTION GAS

F FRACTURE

CORE - LOST

INTERCRYSTALLINE CORE - RECOVERED

INTEROOLITIC DST INTERVAL

MOLDIC

FAULT

O

P

MINDEPTH

Even

Casing

Porosity

F

X

M

Other Symbols

 FORMATION TOP L LITHOGRAPHIC

Rounding

GAS SHOW  MICROXLN

MN DEPTH  ANGULAR  MUDSTONE

NORMAL FAULT  ROUNDED  PACKSTONE

OIL SHOW  SUBANG  WACKESTONE

OVERTURNED STRATA  SUBRND

Sorting

REVERSE FAULT

Textures

SIDEWALL CORE (LEFT)  MODERATE

SIDEWALL CORE (RIGHT)  BOUNDSTONE  POOR

LIDE  CHALKY  WELL

SURVEY  CRYPTOXLN

TRIP GAS  EARTHY

ConnectionGas(Vert)

WIRELINE TESTED - LEFT  FINELYXLN

WIRELINE TESTED - RT  GRAINSTONE

Curve/Survey Data

ROP —
Gamma —

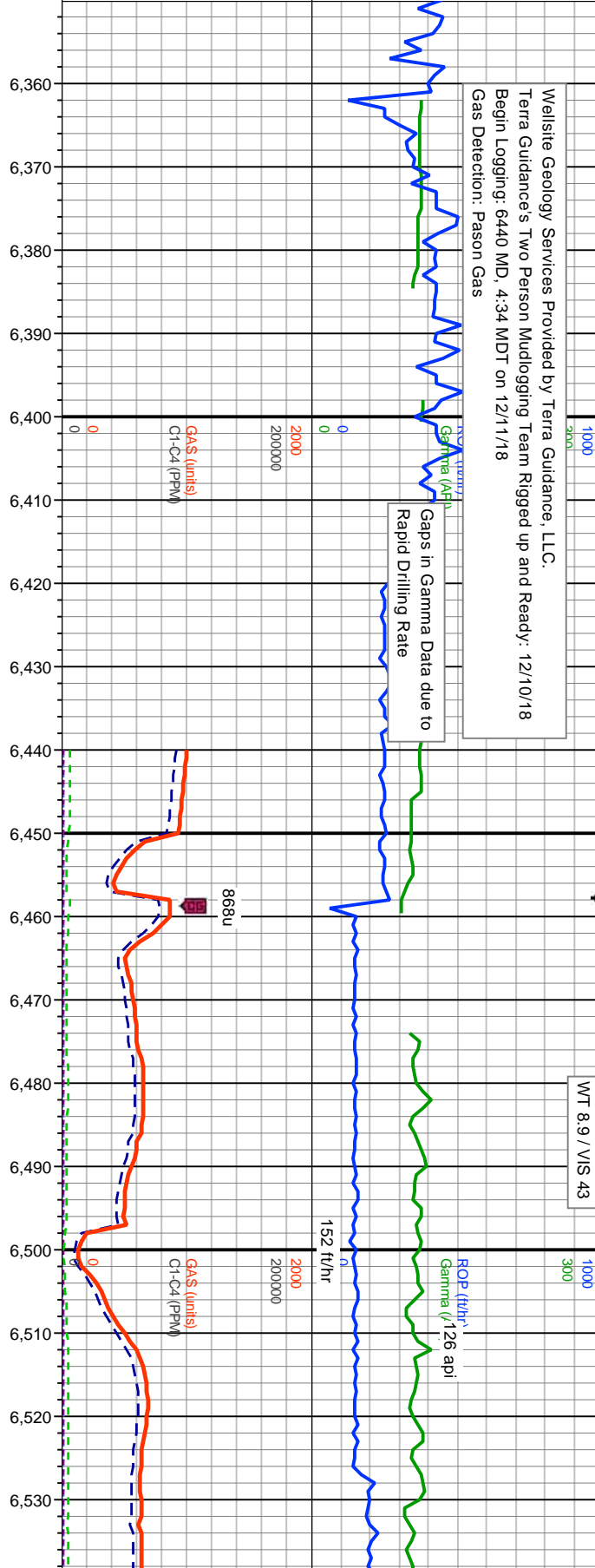
Wellsite Geology Services Provided by Terra Guidance, LLC.
Terra Guidance's Two Person Mudlogging Team Rigged up and Ready: 12/10/18
Begin Logging: 6440 MD, 4:34 MDT on 12/11/18
Gas Detection: Pason Gas

WT 8.9 / VIS 43

Total Gas & Chromatograph

GAS —
C1 - - -
C2 - - -
C3 - - -
C4 · · · · ·

Depth



% Lithology

6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200 6210 6220 6230 6240 6250 6260 6270 6280 6290 6300 6310 6320 6330 6340 6350 6360 6370 6380 6390 6400 6410 6420 6430 6440 6450 6460 6470 6480 6490 6500 6510 6520 6530

Well Bore
TVD —

Bit #: 2
Type: PDC
Size: 8.5
Depth In: 1,956'
Jets: 5 x 15
S/N: 5290867

KOP
6440' MD
4:45 MDT

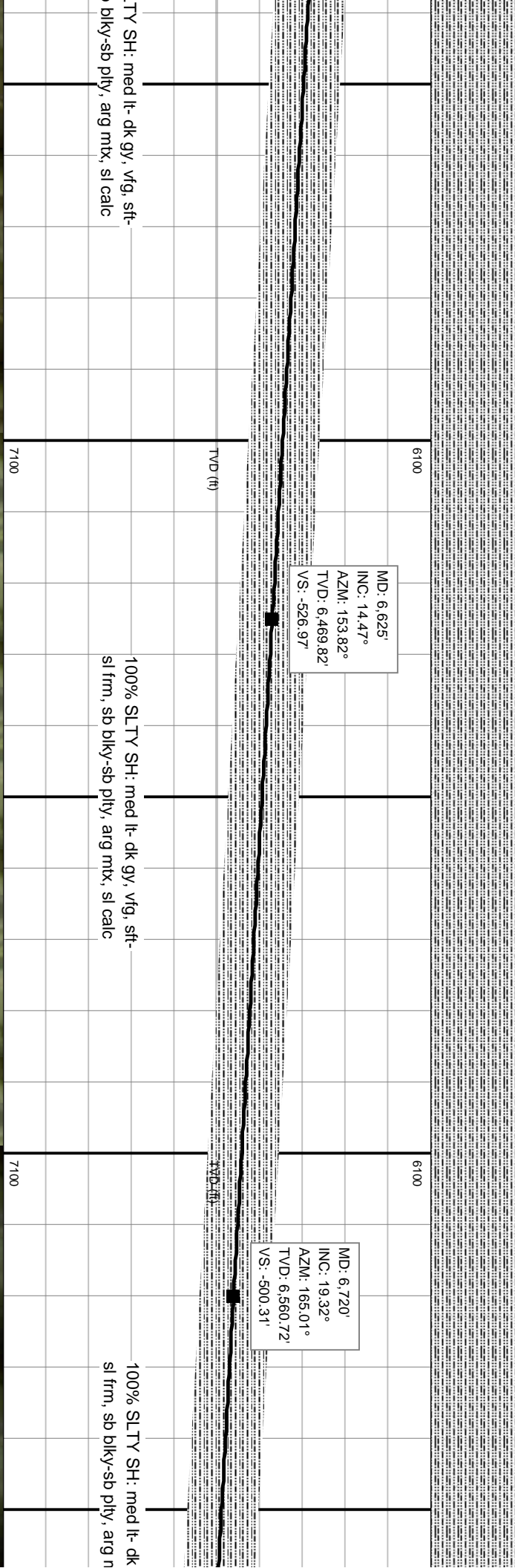
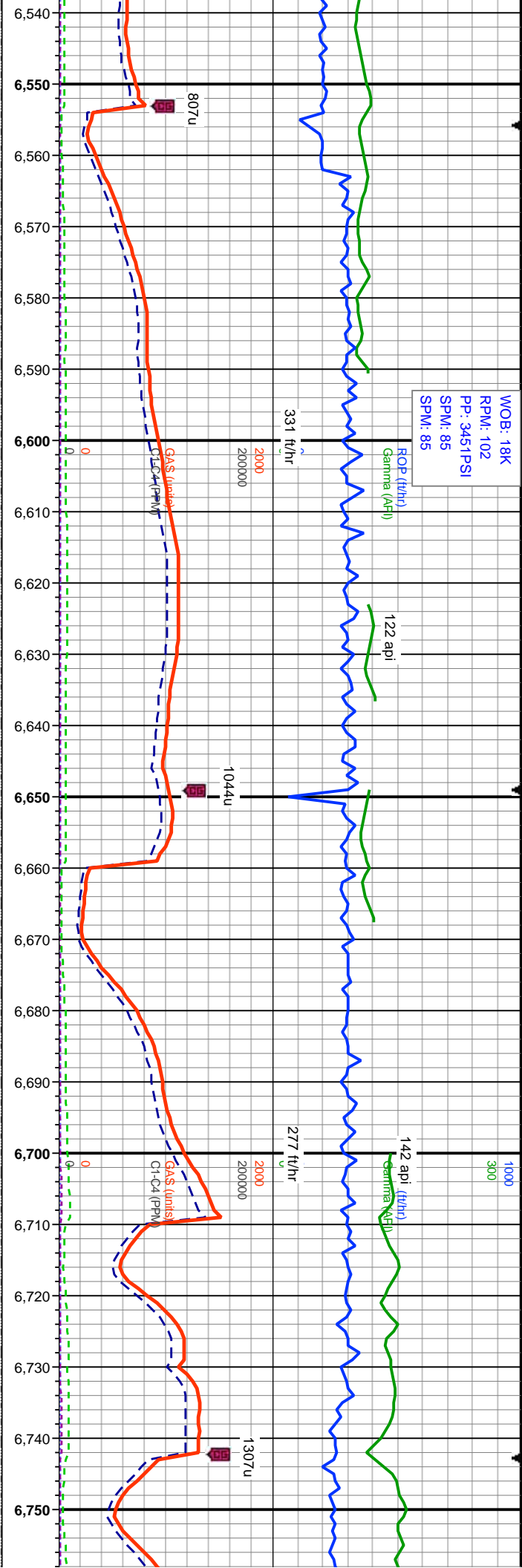
100% SLTY SH: med lt- dk gy, vfg, sft-
sl frm, sb blk-y-sb pily, arg mtx, sl calc

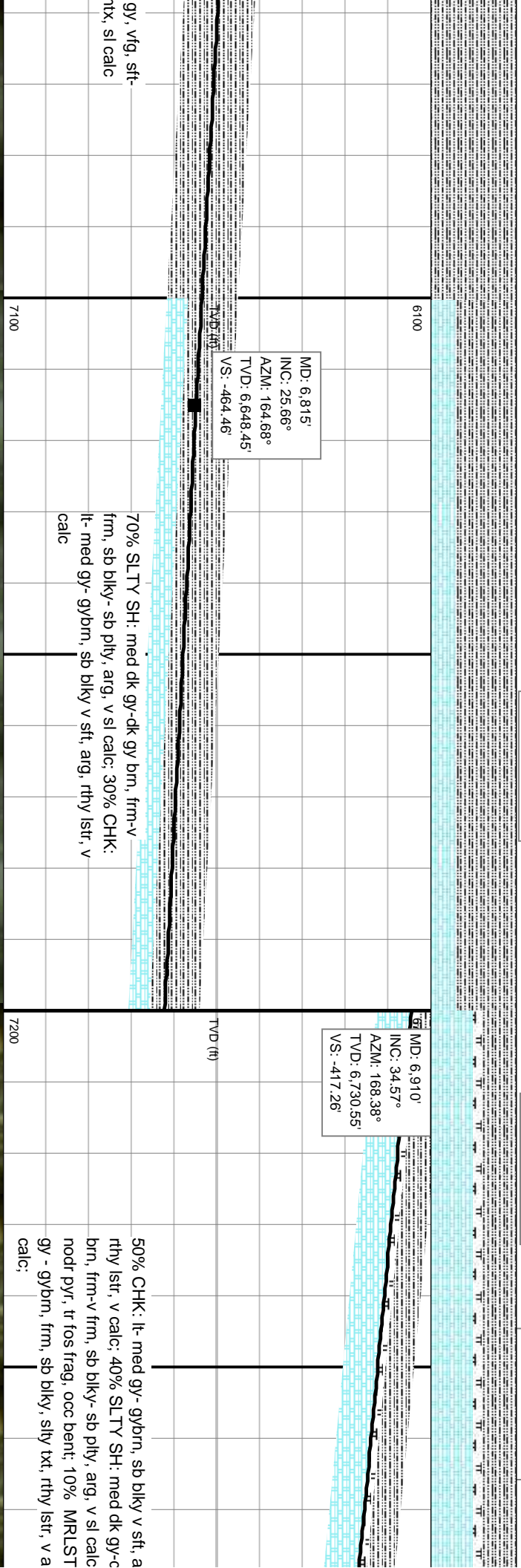
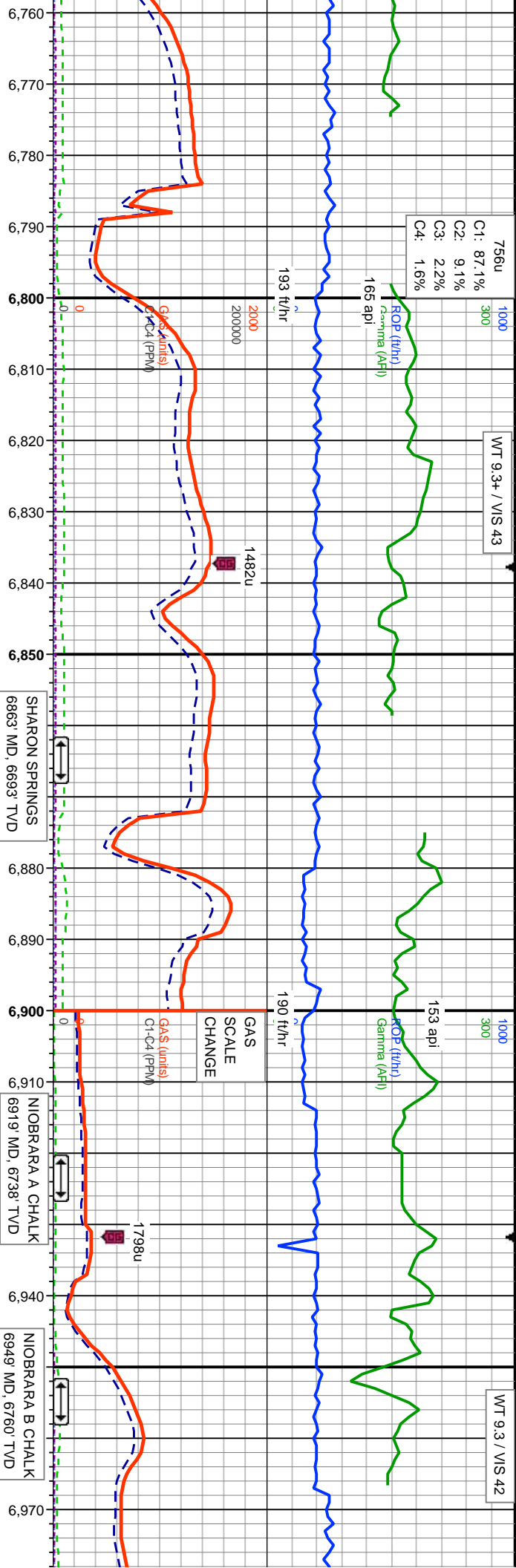
MD: 6,530'
INC: 12.77°
AZM: 103.74°
TVD: 6,377.19'
VS: -541.68'

100% SL
sl frm, sb

Images





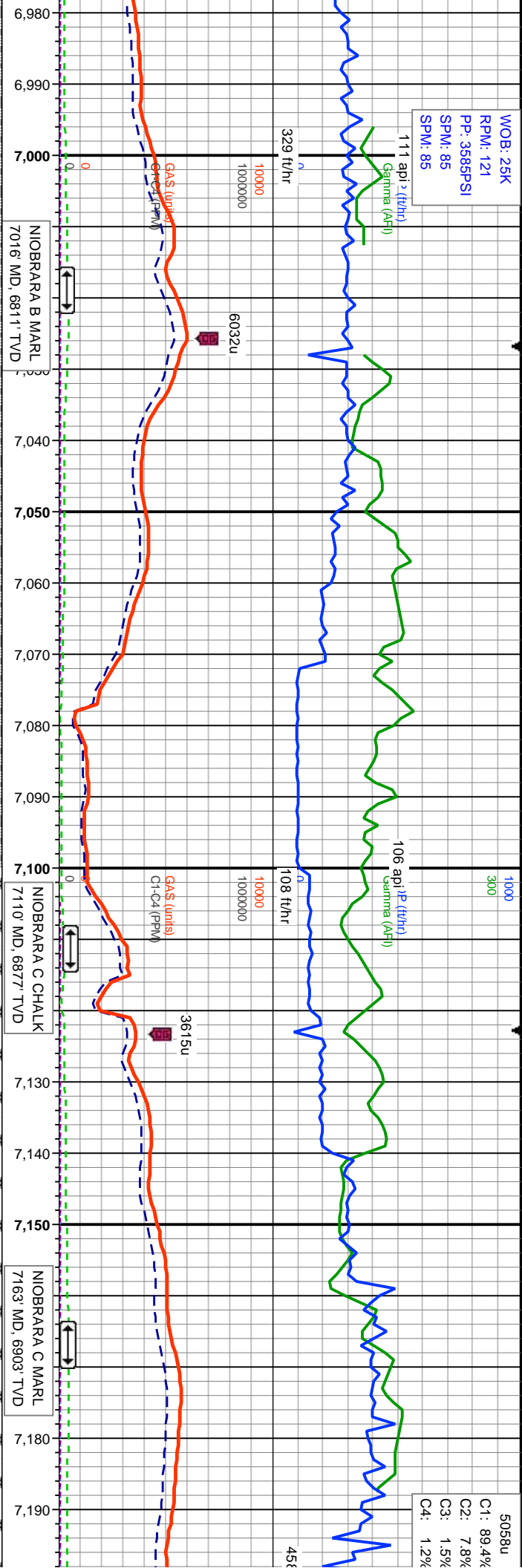


WOB: 25K
RPM: 121
PP: 3585PSI
SPM: 85

111 api 2 (ft/hr)
Gamma (API)

106 api 2 (ft/hr)
Gamma (API)

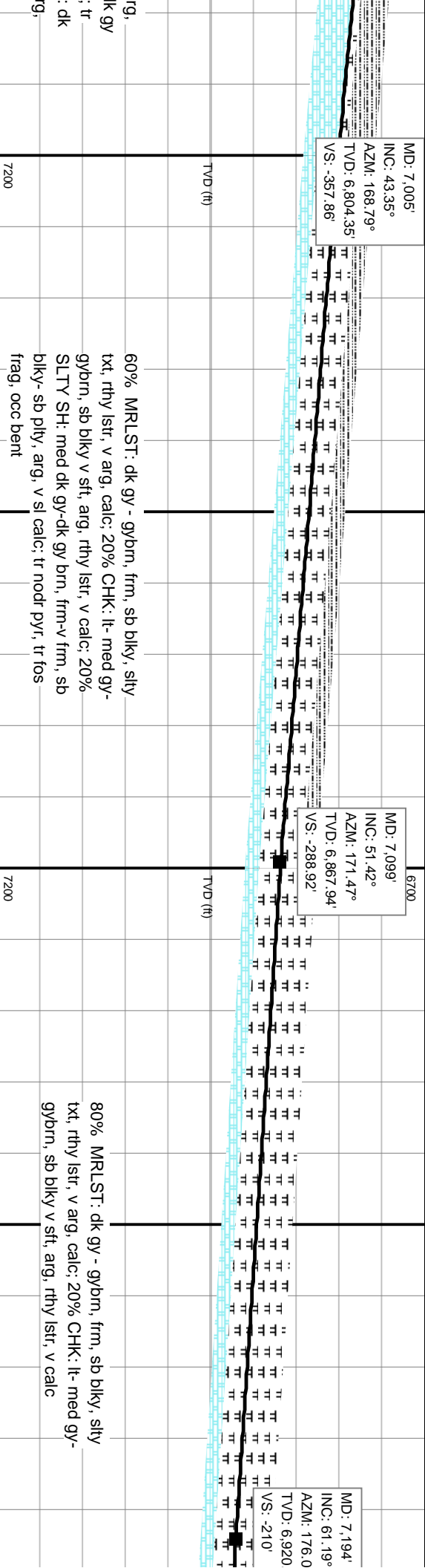
5058u
C1: 89.4%
C2: 7.8%
C3: 1.5%
C4: 1.2%

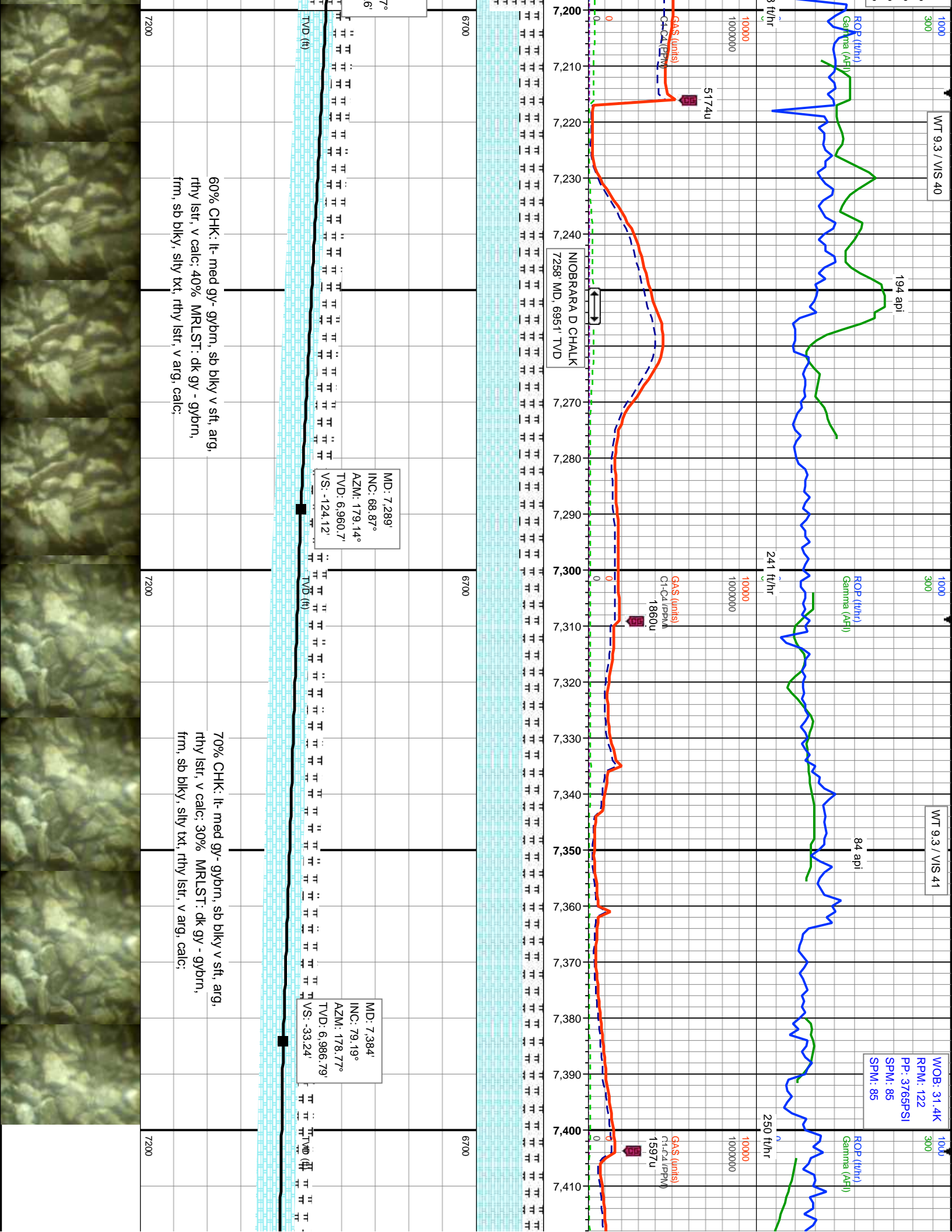


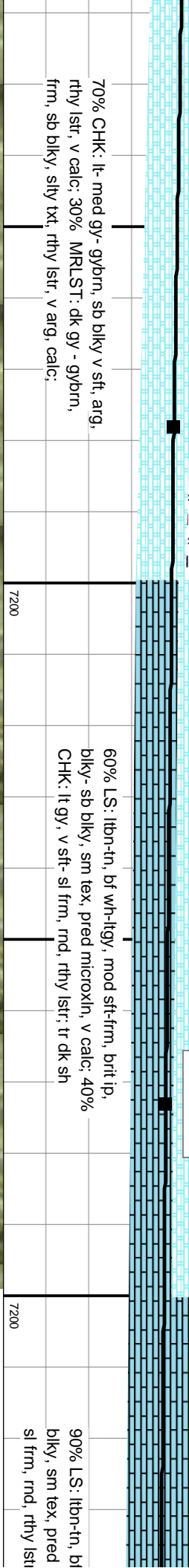
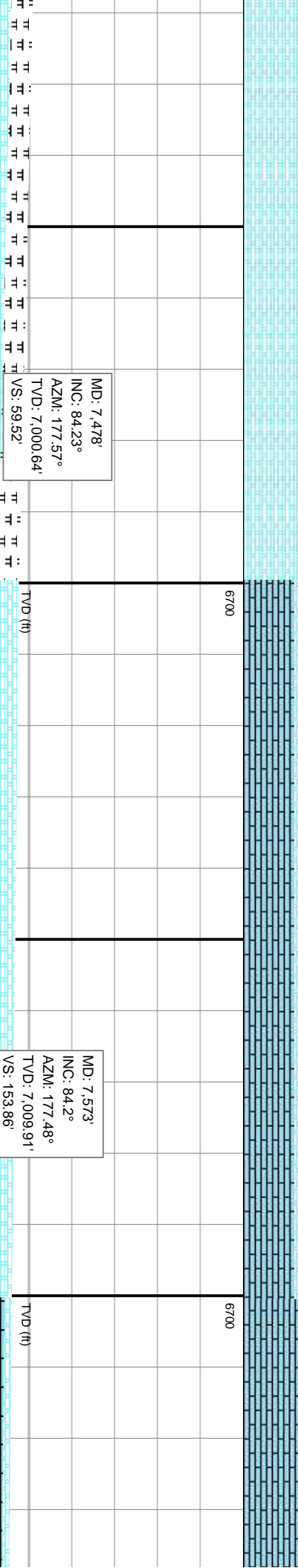
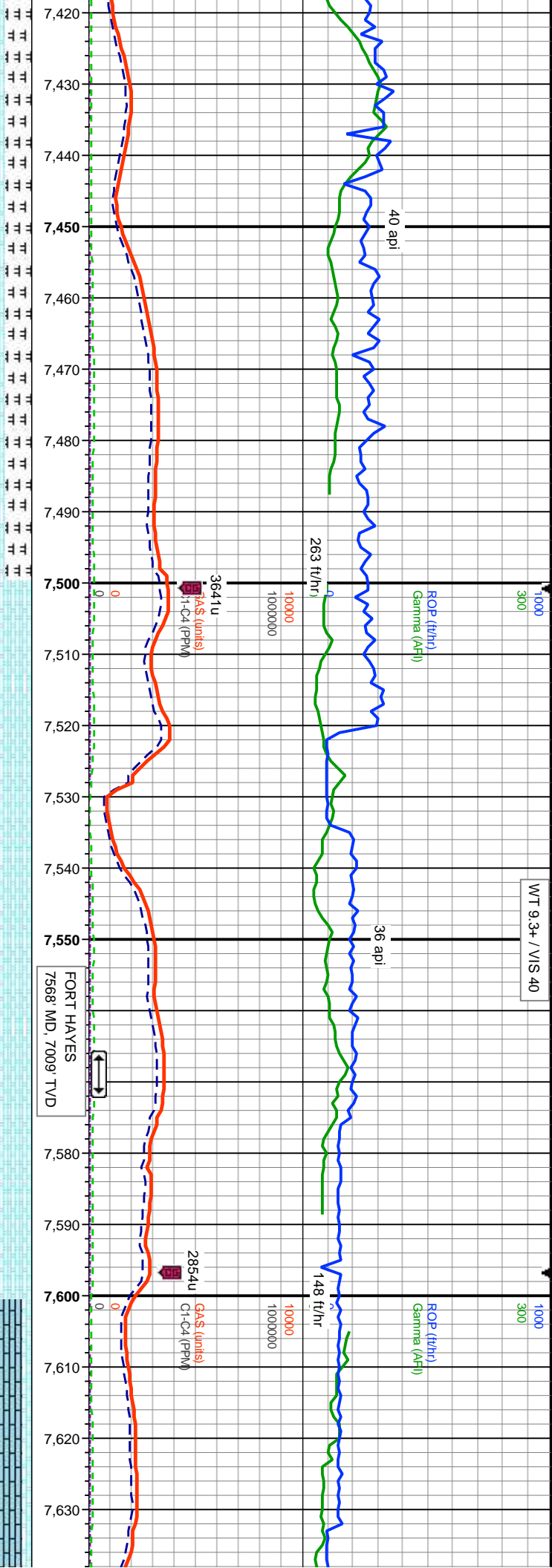
MD: 7,005'
INC: 43.35°
AZM: 168.79°
TVD: 6,804.35'
VS: -357.86'

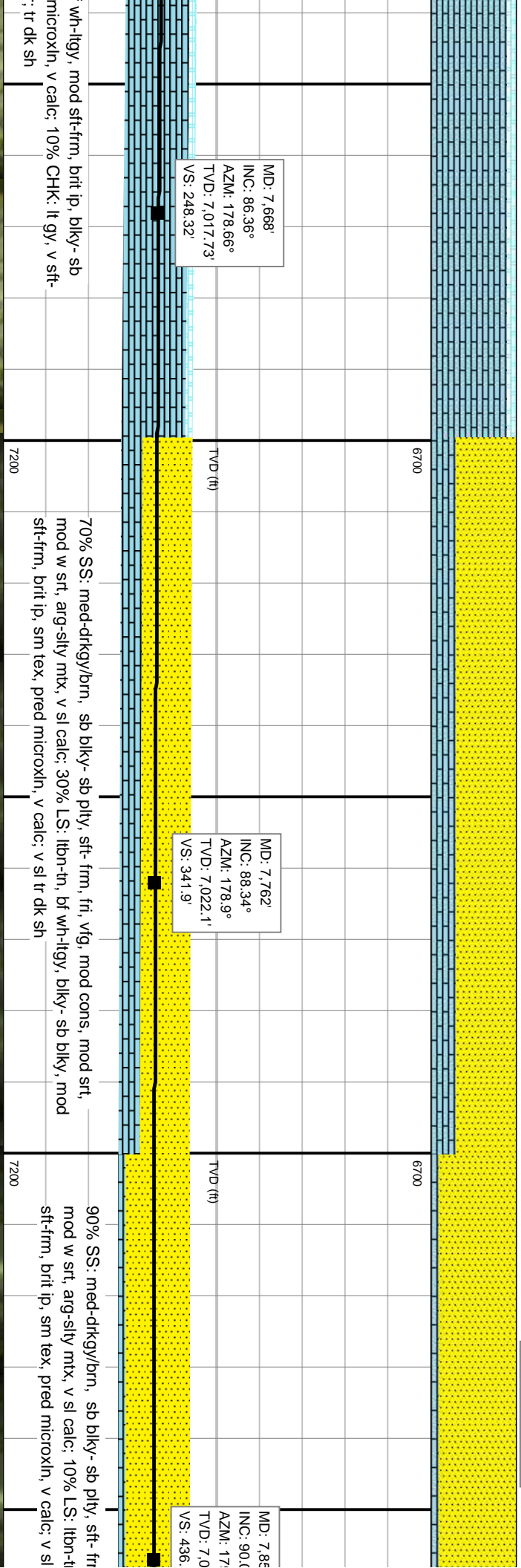
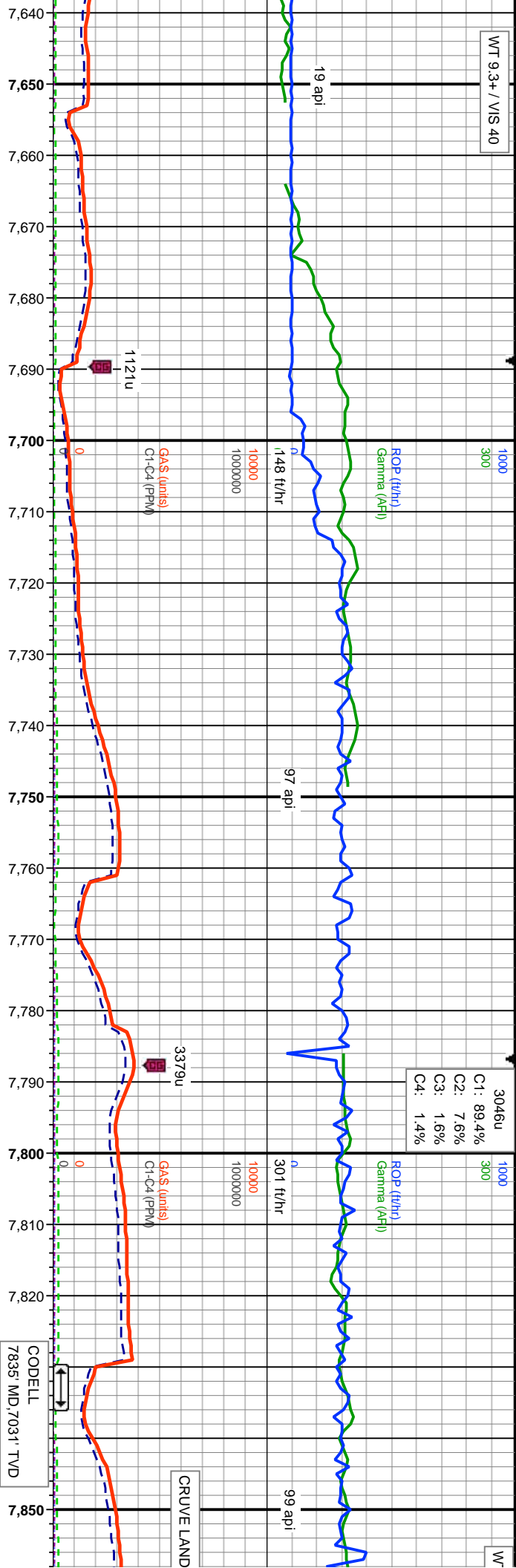
MD: 7,099'
INC: 51.42°
AZM: 171.47°
TVD: 6,867.94'
VS: -288.92'

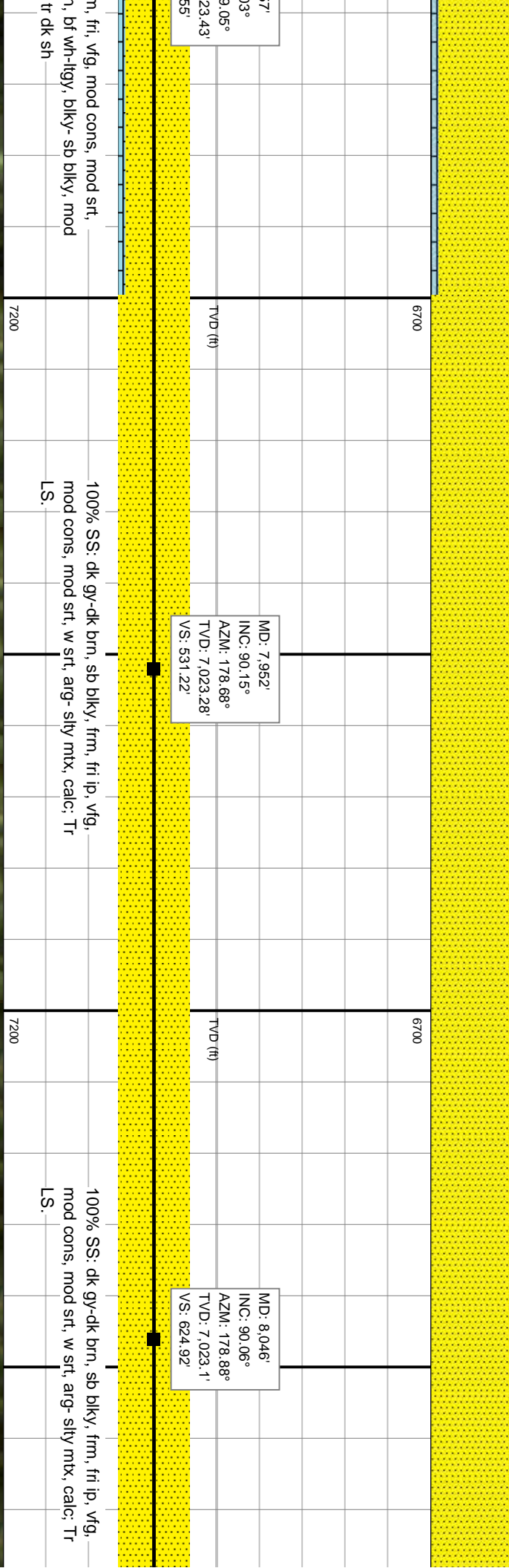
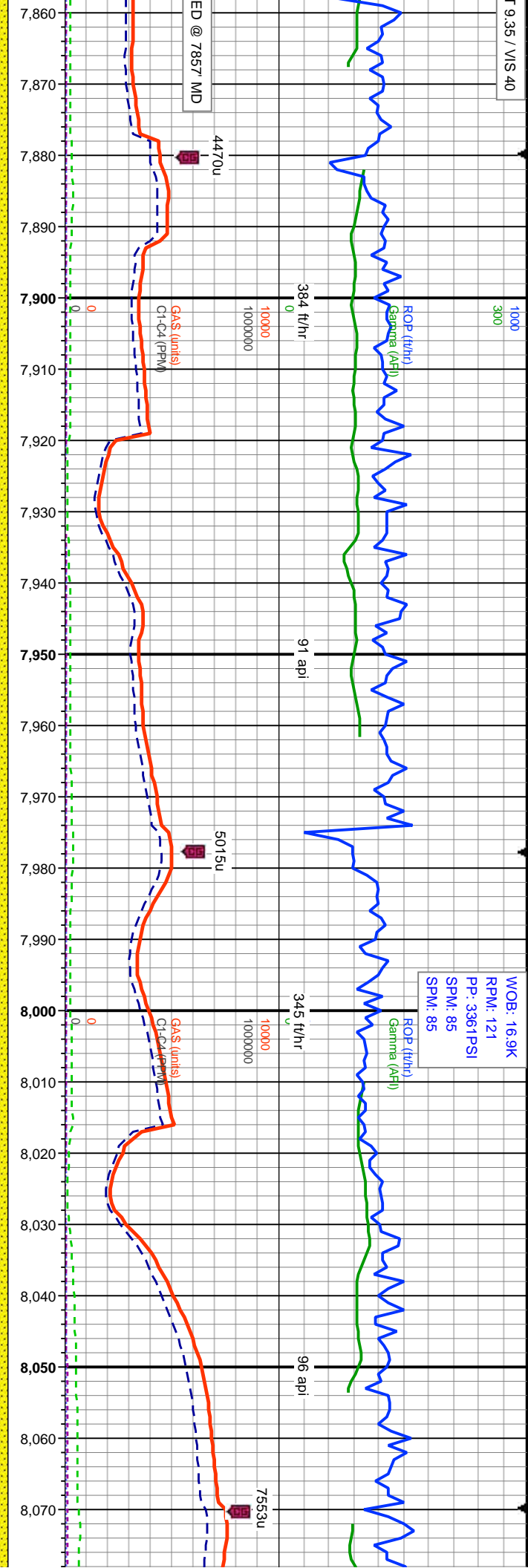
MD: 7,194'
INC: 61.19°
AZM: 176.0°
TVD: 6,920'
VS: -210'

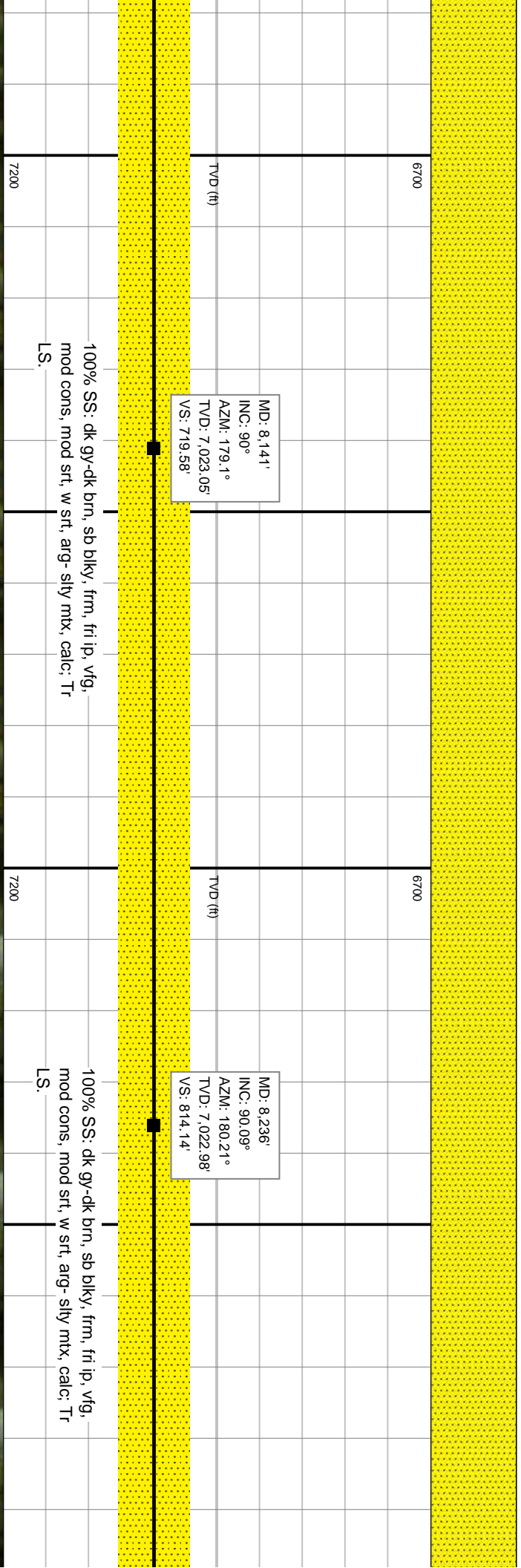
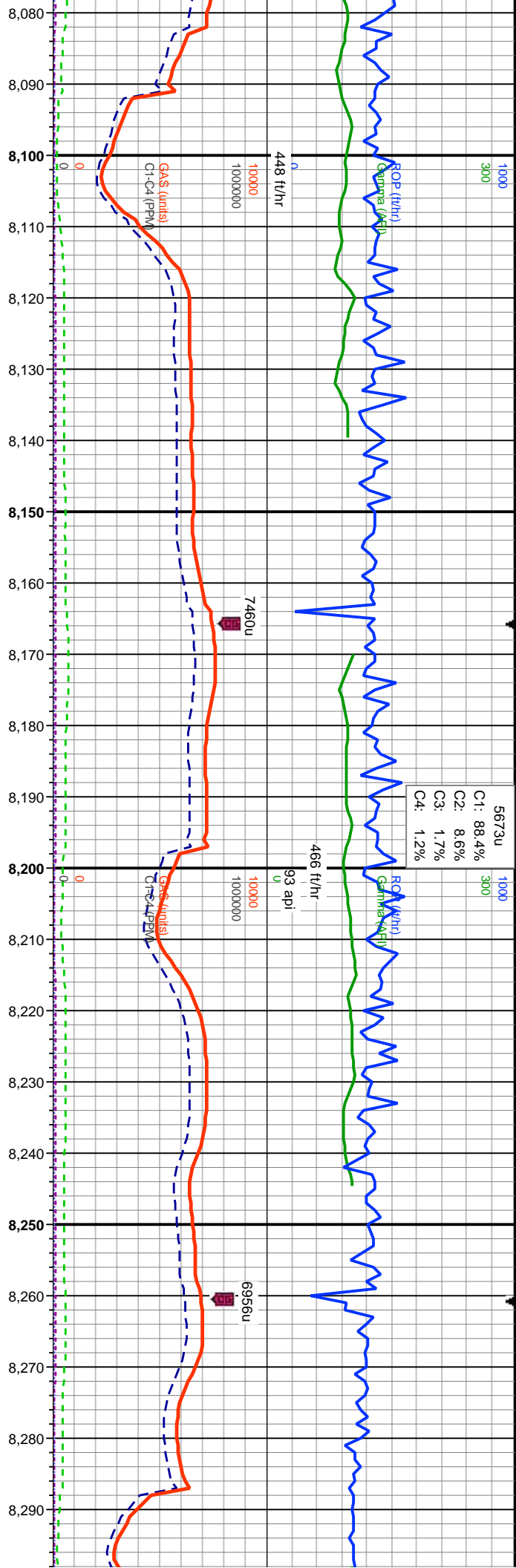


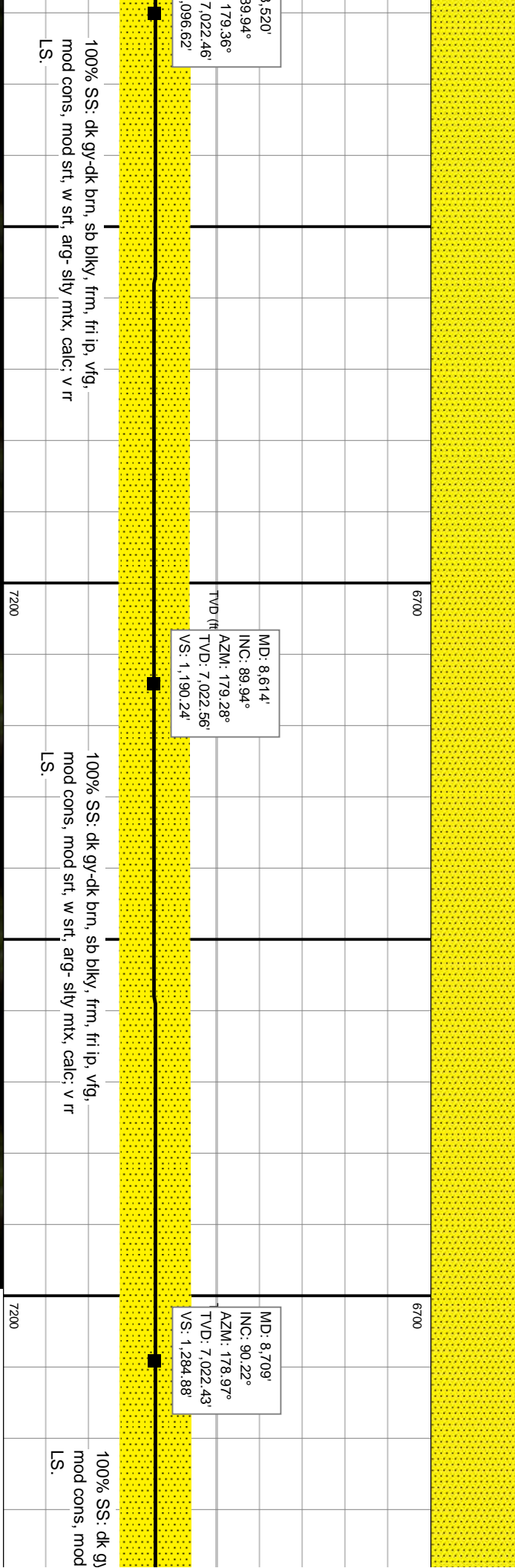
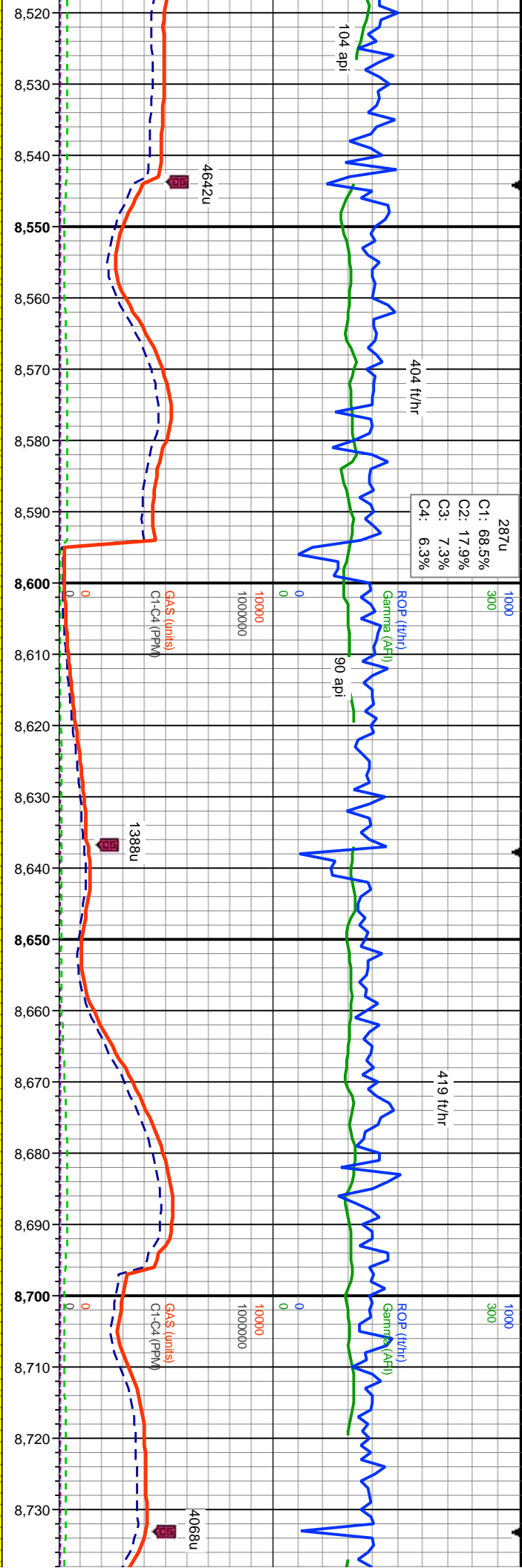


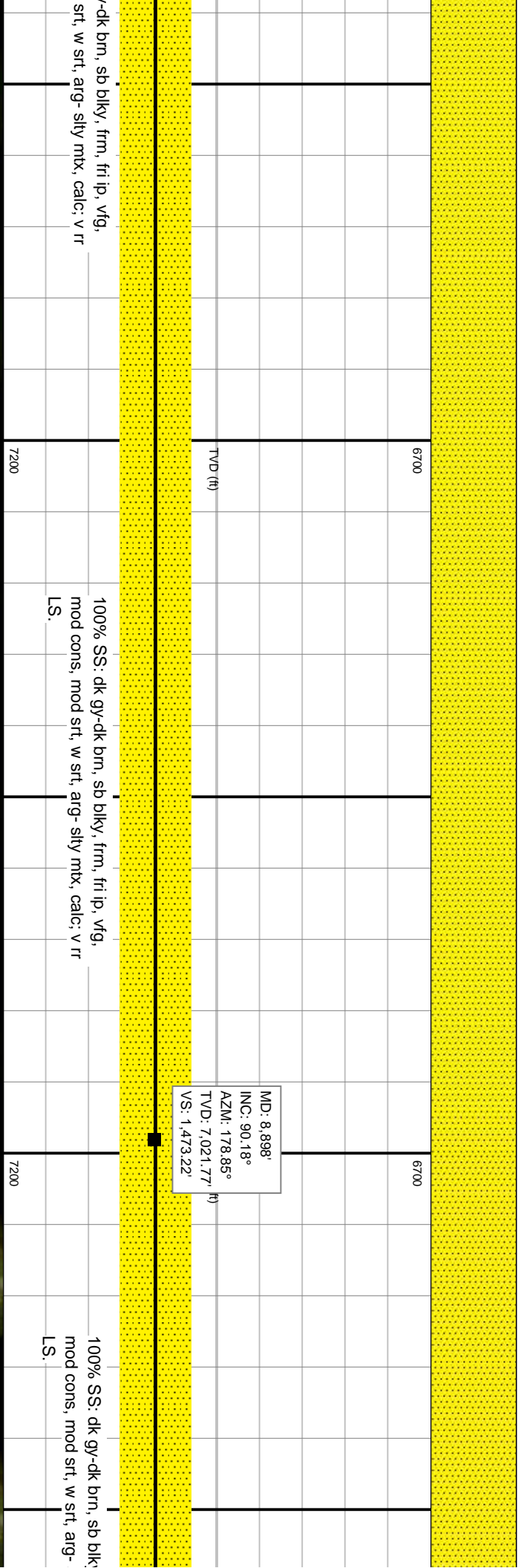
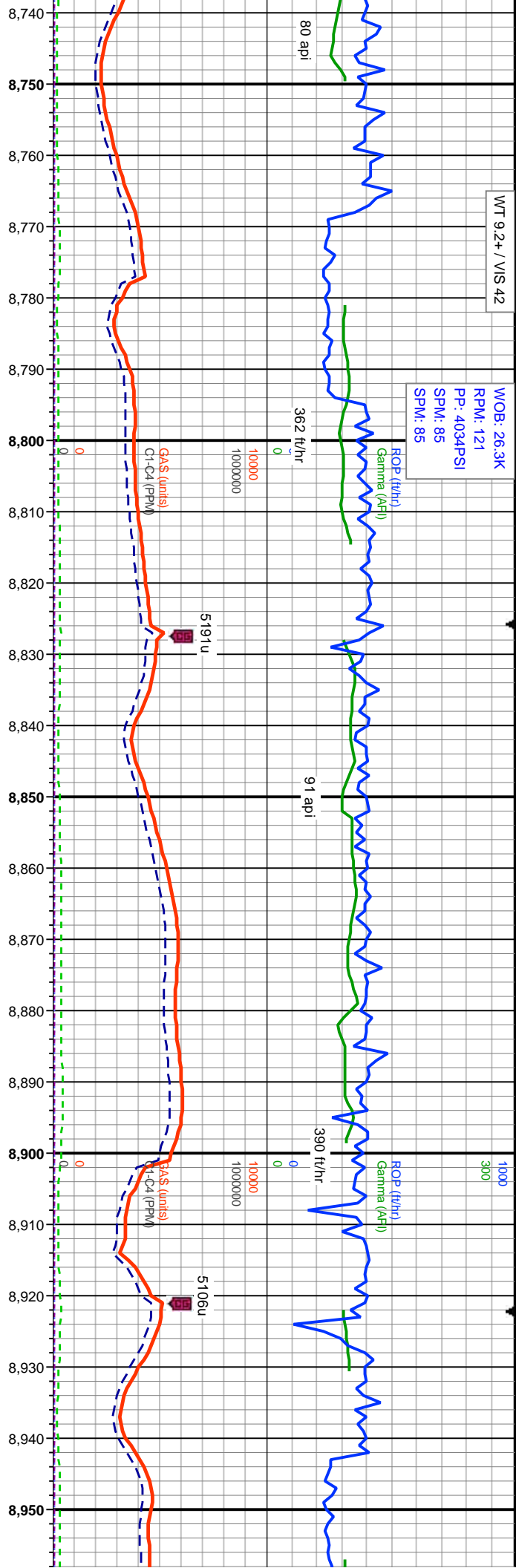


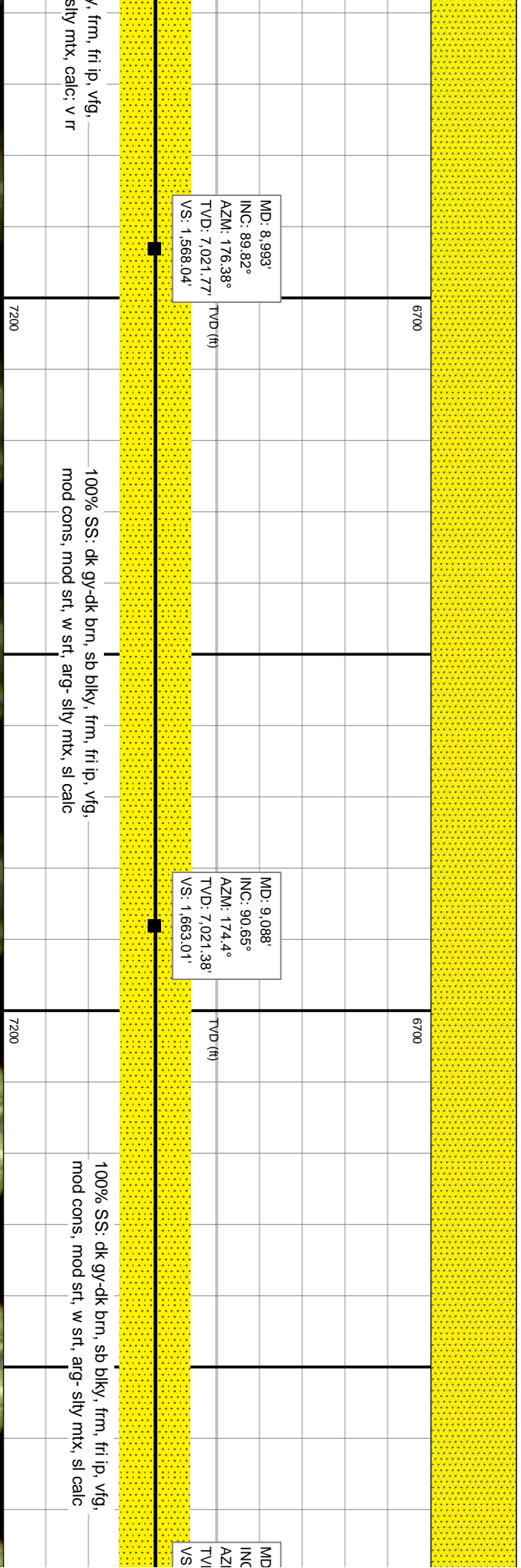
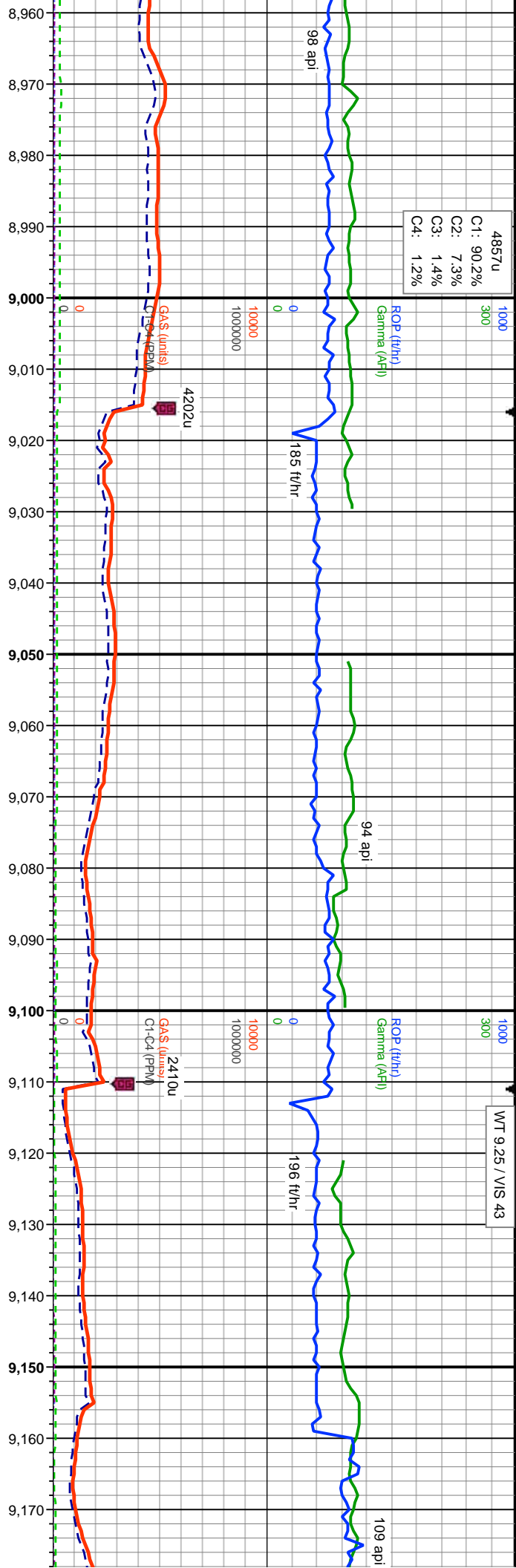


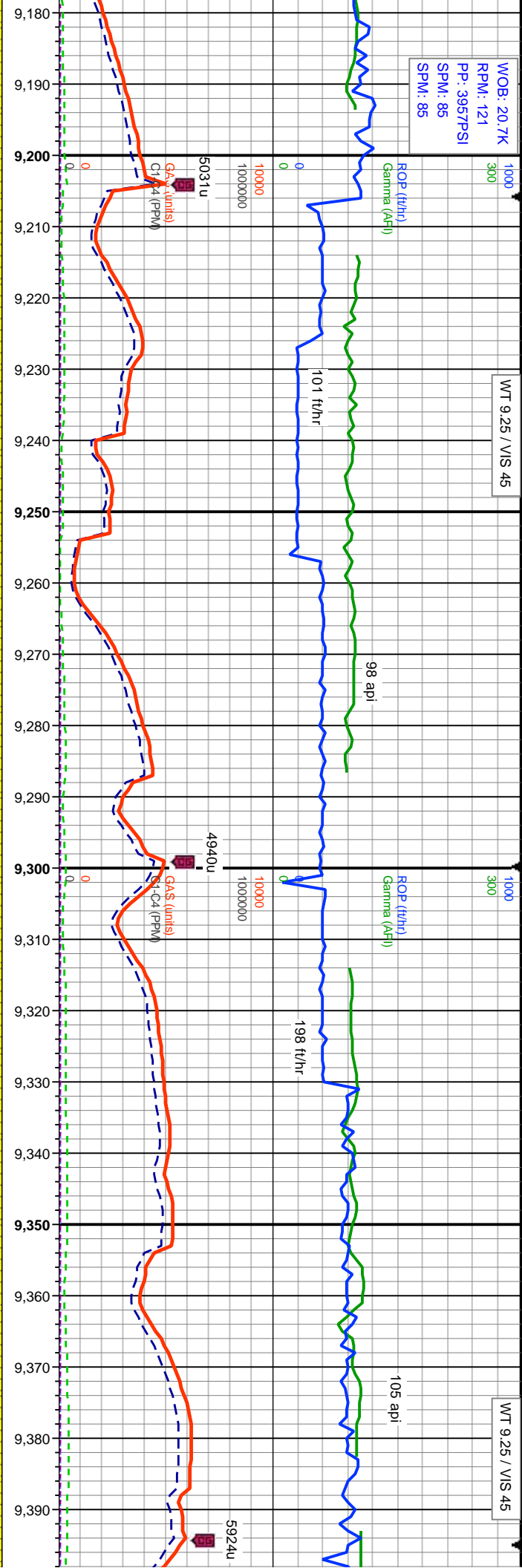




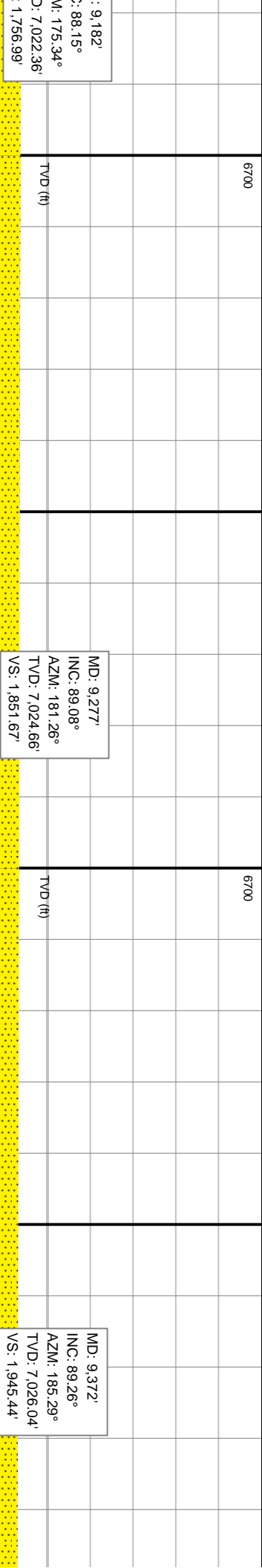




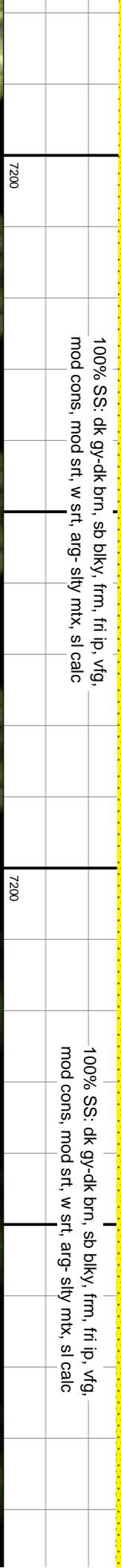


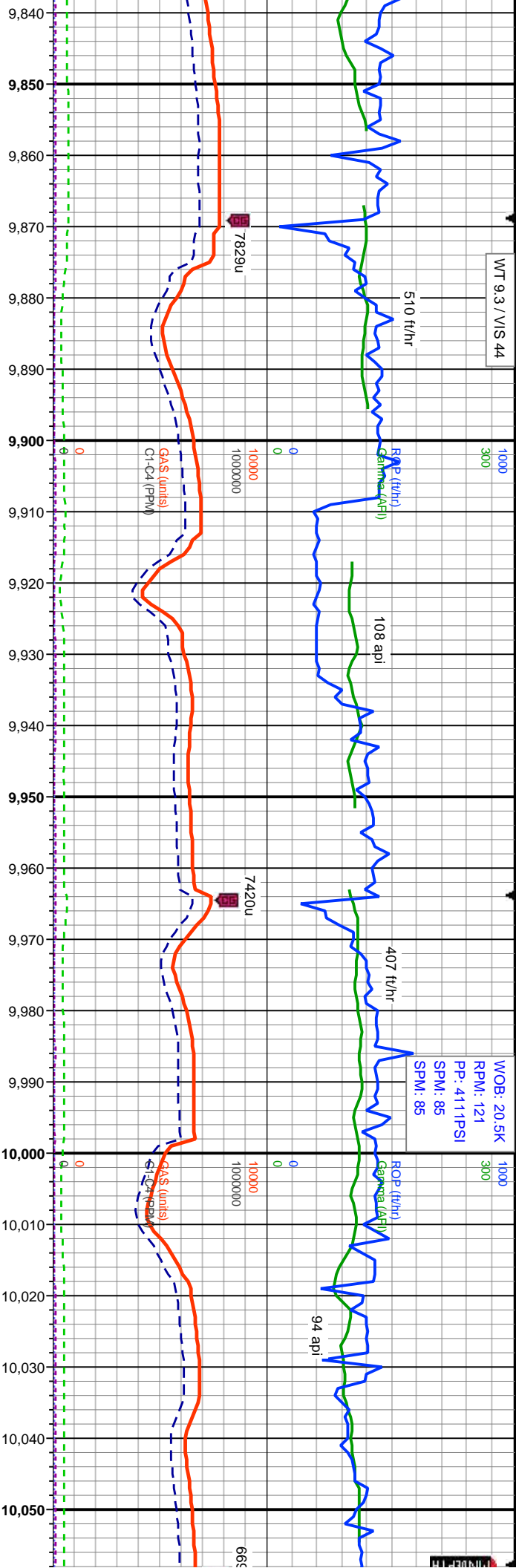


WOB: 20.7K
RPM: 121
PP: 3957PSI
SPM: 85
SPM: 85



: 9.182'
: 88.15°
M: 175.34°
D: 7,022.36'
1,756.99'





MD: 9.845'
INC: 89.45°
AZM: 183.55°
TVD: 7.032.09'
VS: 2.410.49'

TVD (ft)

TVD (ft)

MD: 10.034'
INC: 90.4°
AZM: 182.51°
TVD: 7.032.33'
VS: 2.597.22'

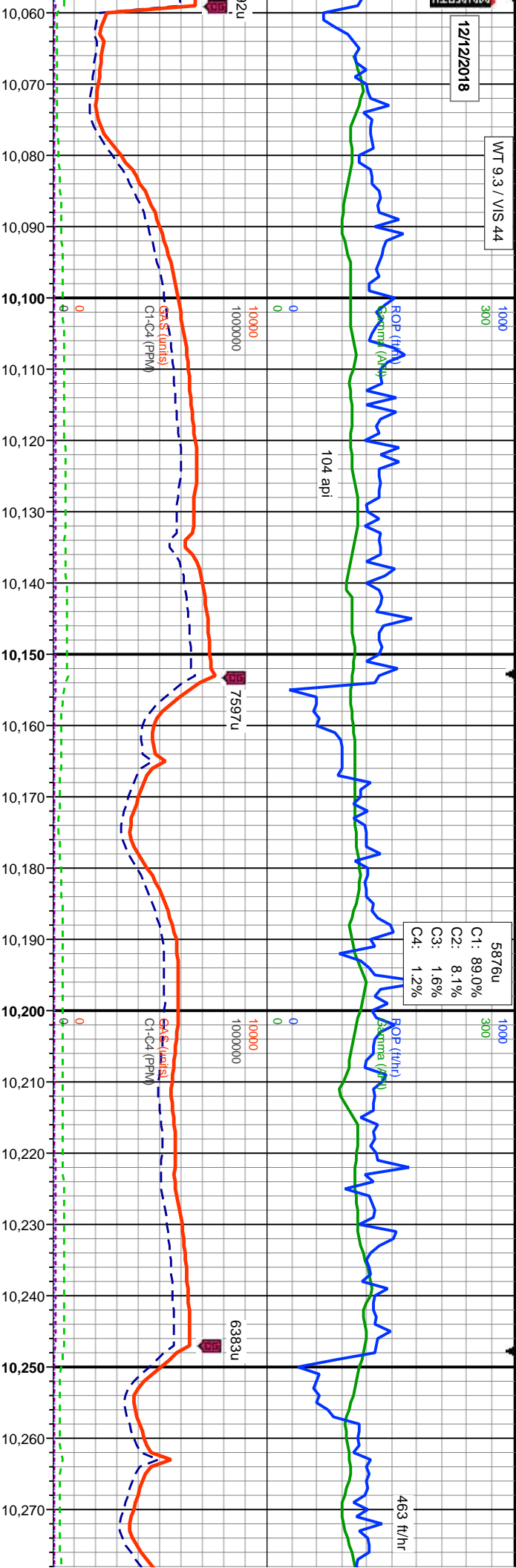
gy-dk brn, sb blkly, frm, fri ip, vfg,
d srt, w srt, arg- silty mtx, v sl
h

100% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, v sl
calc; tr silty sh

100% SS: dk gy-dk brn, sb blkly, frm
mod cons, mod srt, w srt, arg- silty r
calc; tr silty sh



12/12/2018
WT 9.3 / VIS 44

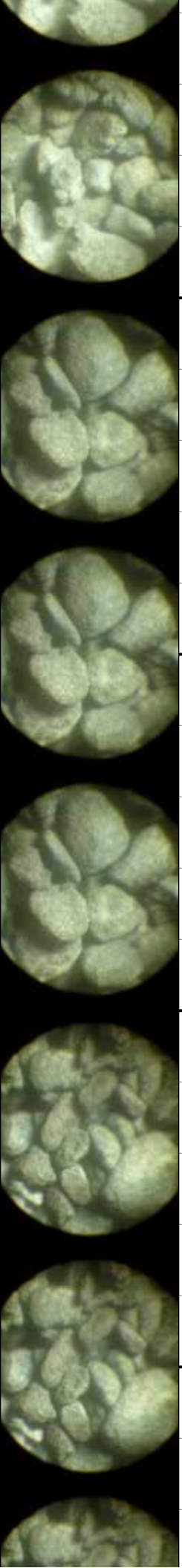


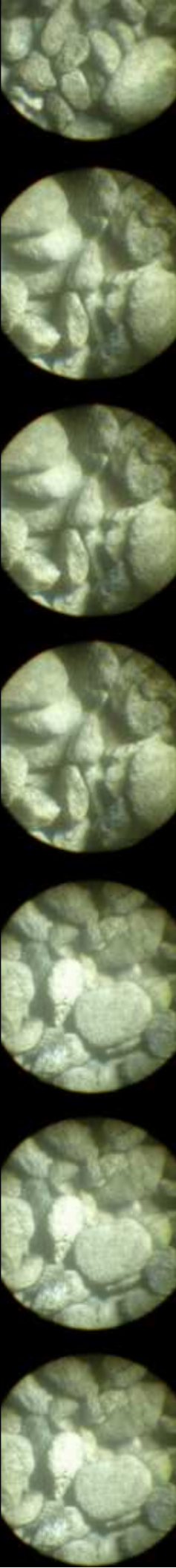
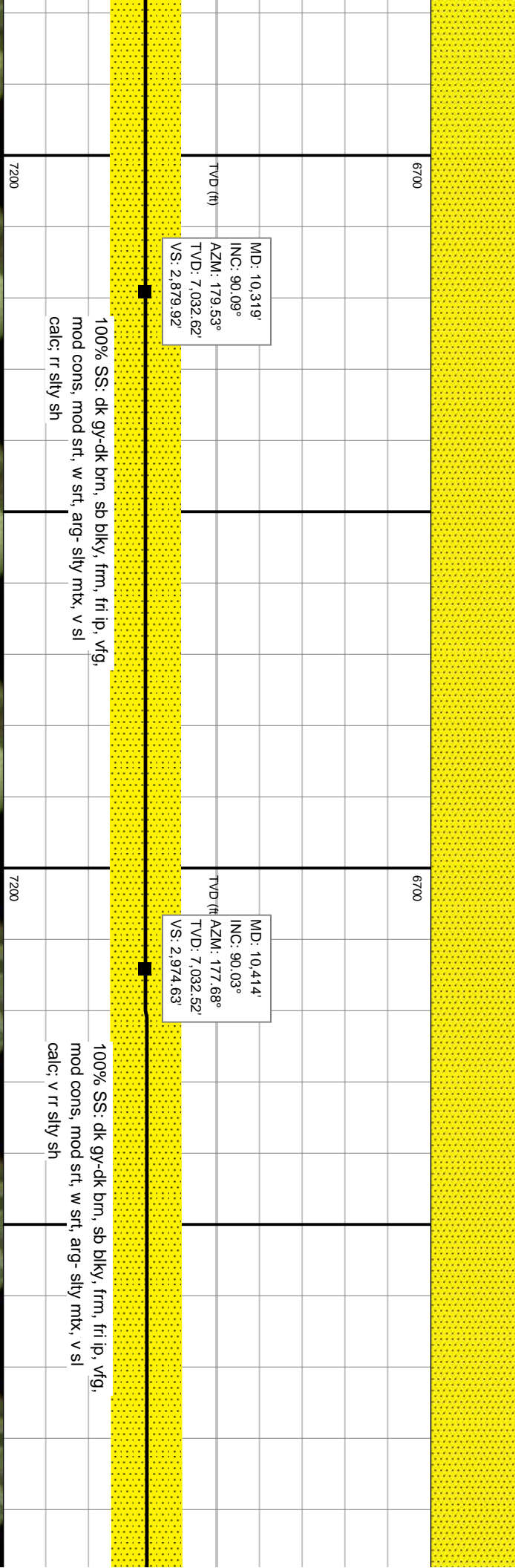
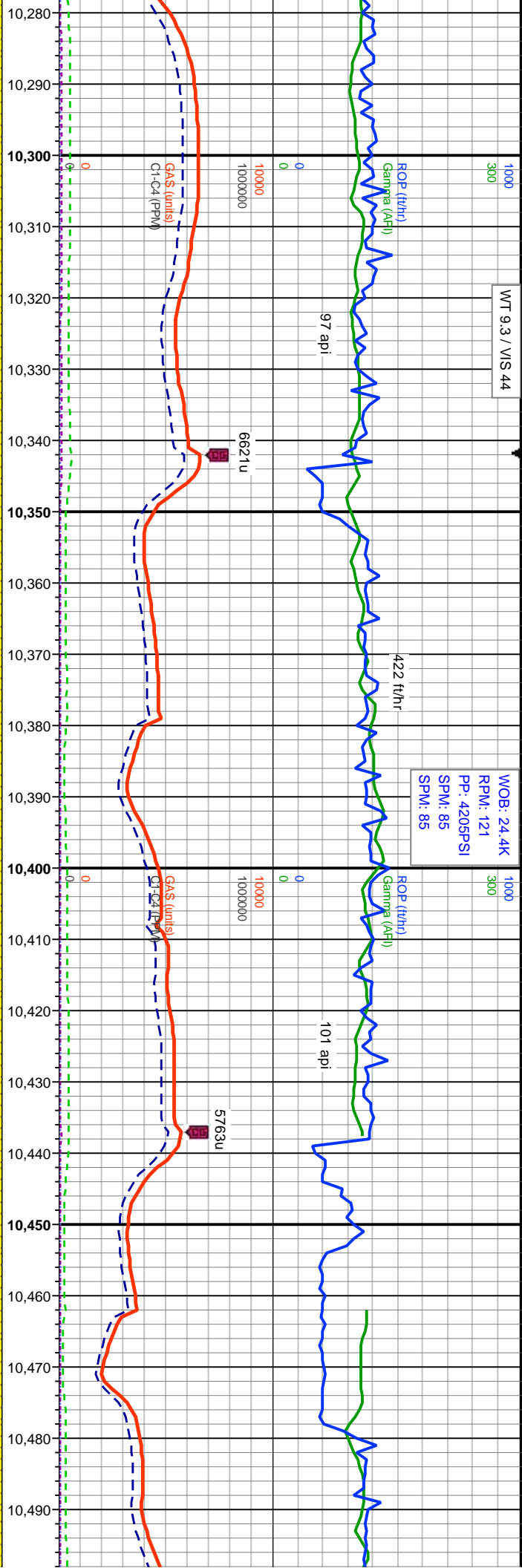
5876u
C1: 89.0%
C2: 8.1%
C3: 1.6%
C4: 1.2%

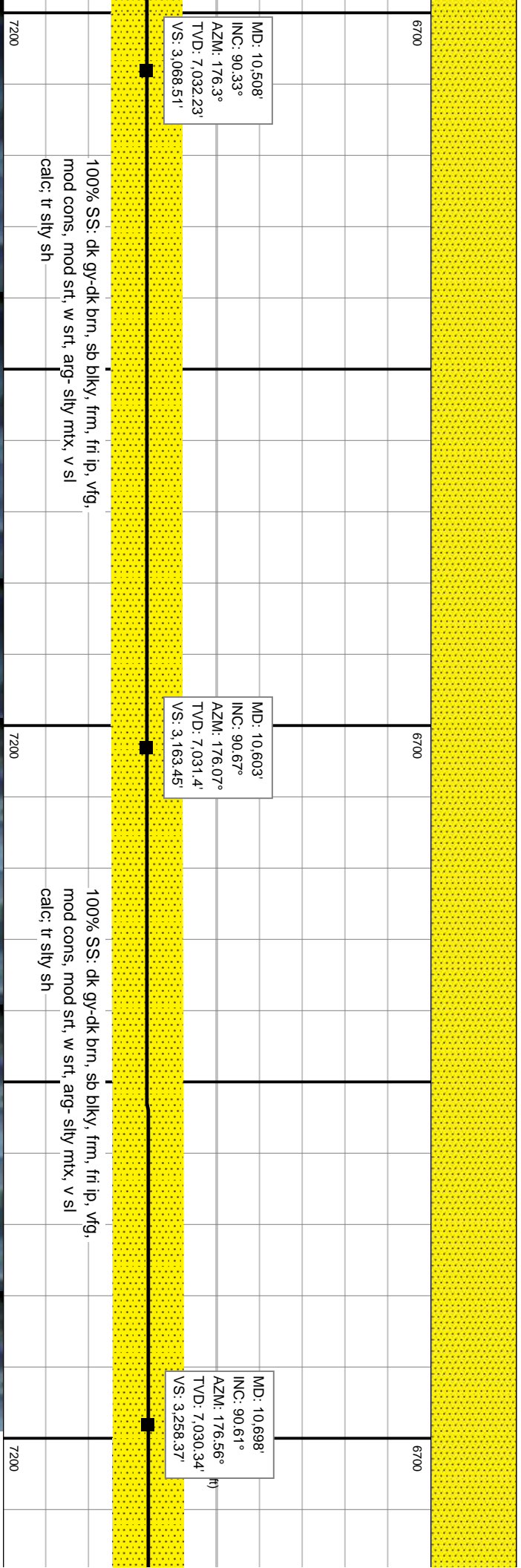
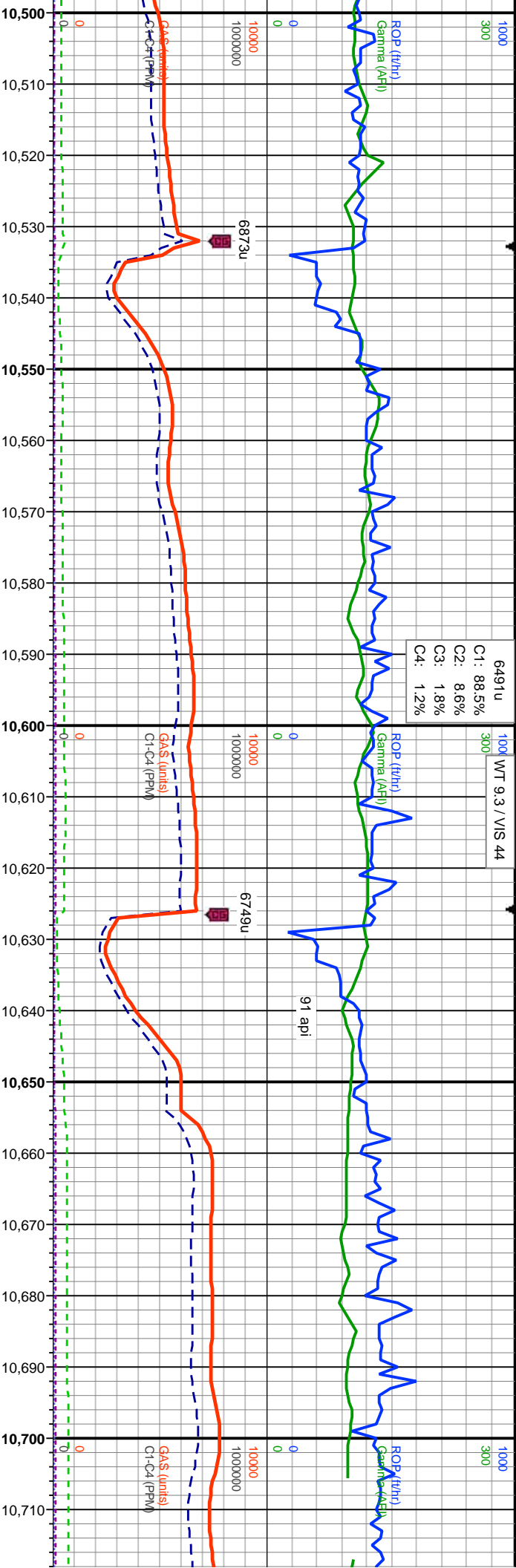
MD: 10,129'
INC: 89.69°
AZM: 182.18°
TVD: 7,032.26'
VS: 2,691.24'

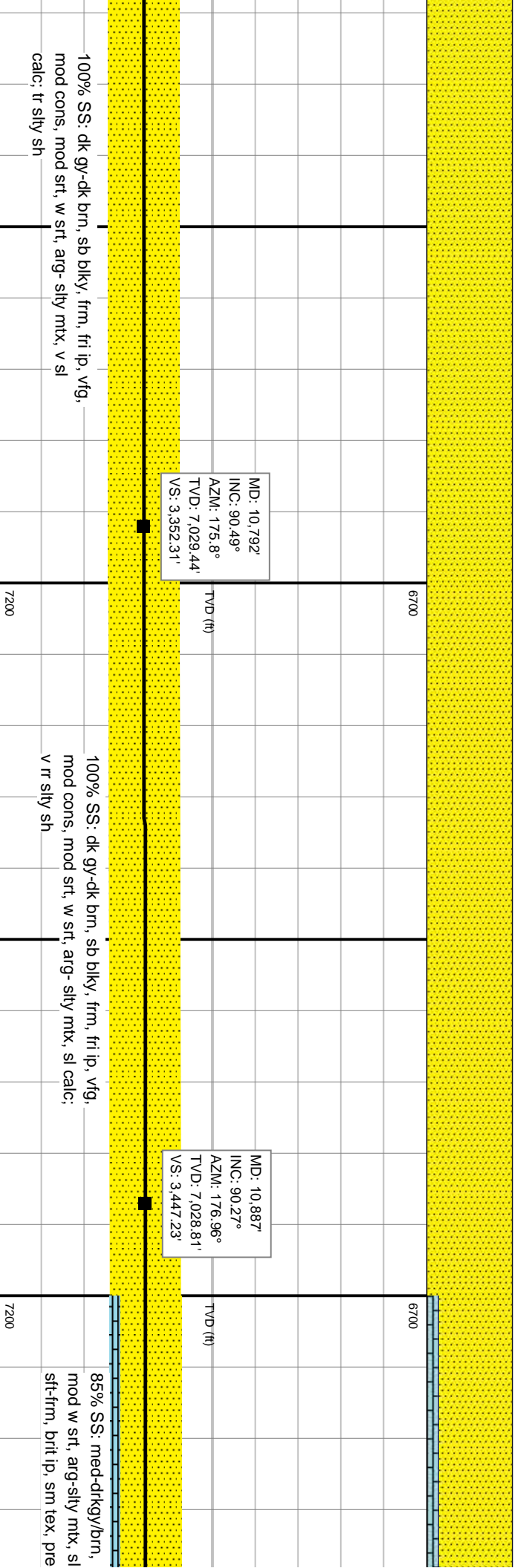
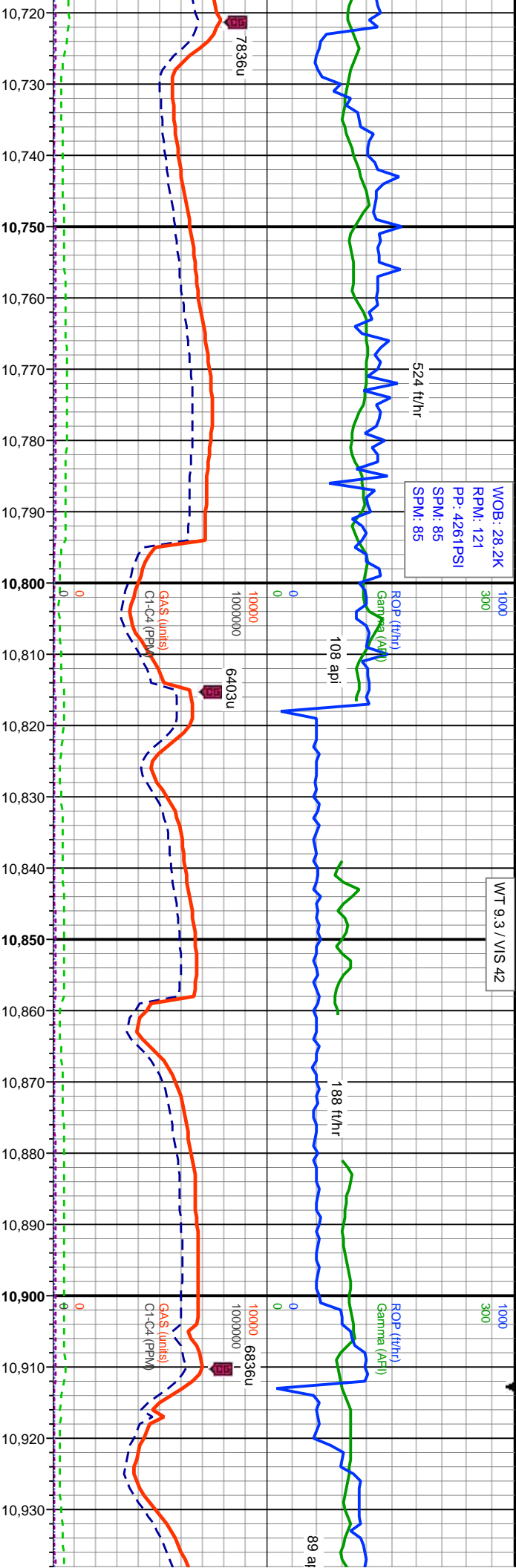
100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg- silty mtb, v sl calc; tr silty sh

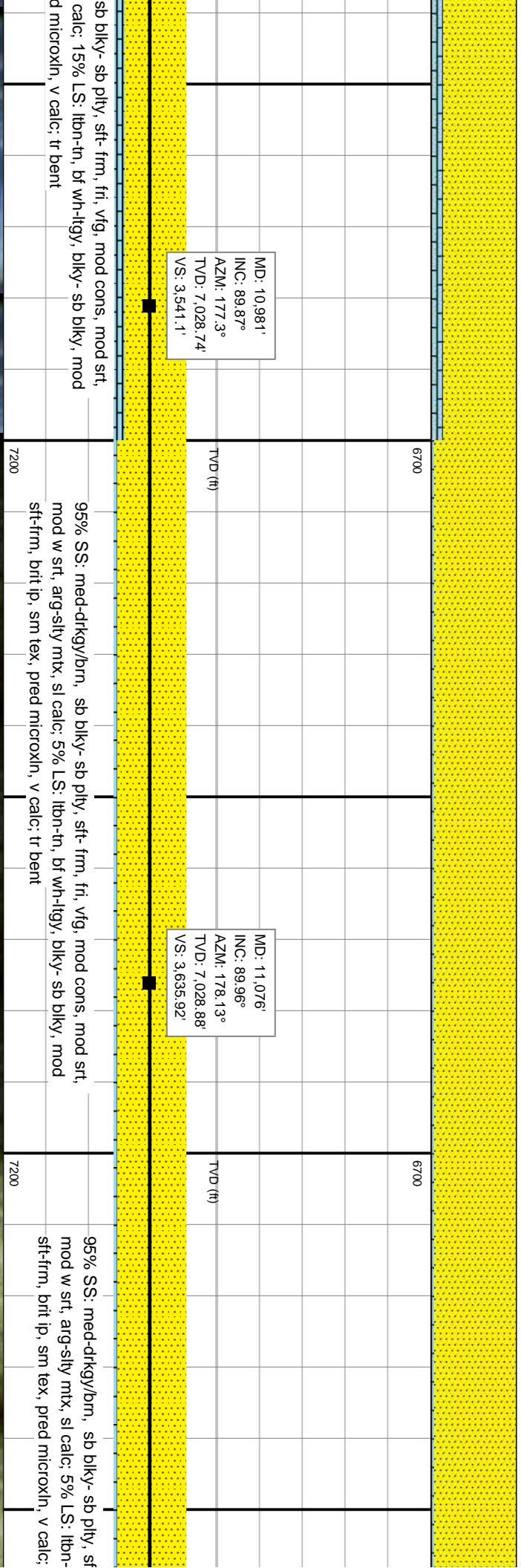
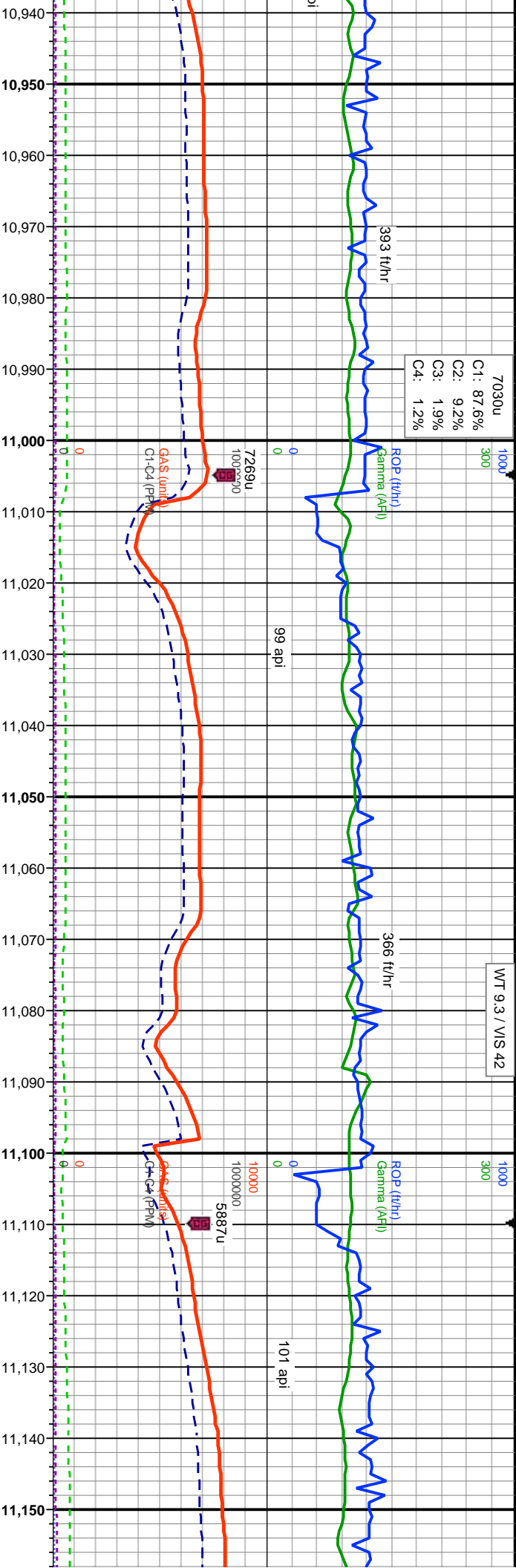
100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg- silty mtb, v sl calc; rr silty sh

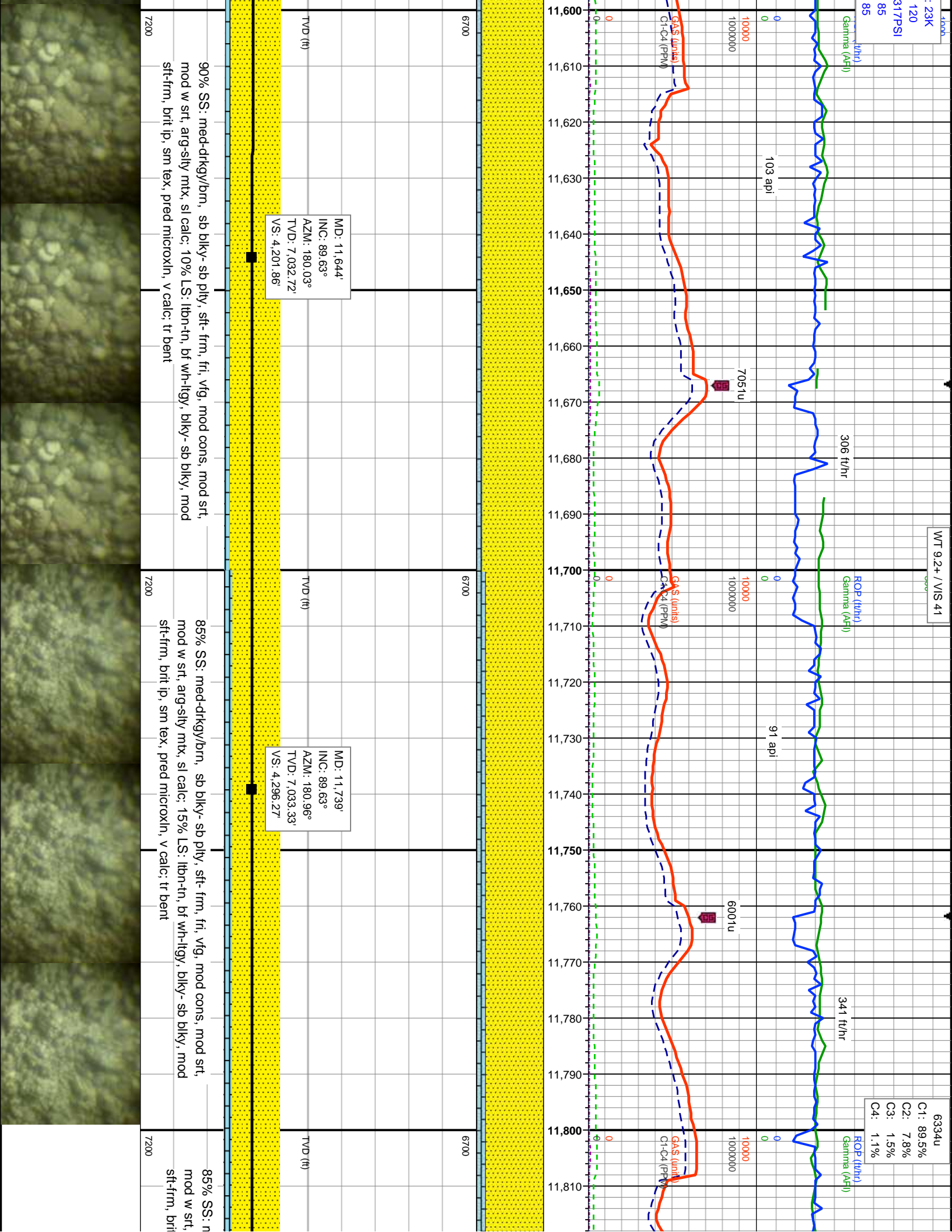


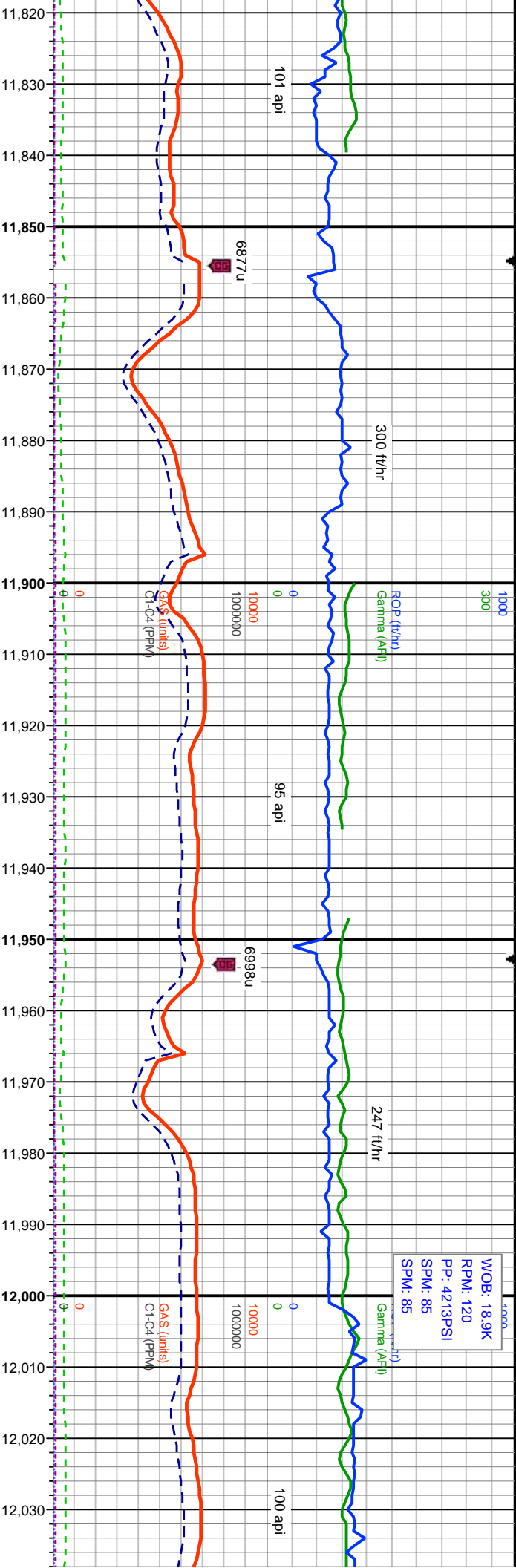












MD: 11,834'
INC: 89.63°
AZM: 181.48°
TVD: 7,033.96'
VS: 4,390.54'

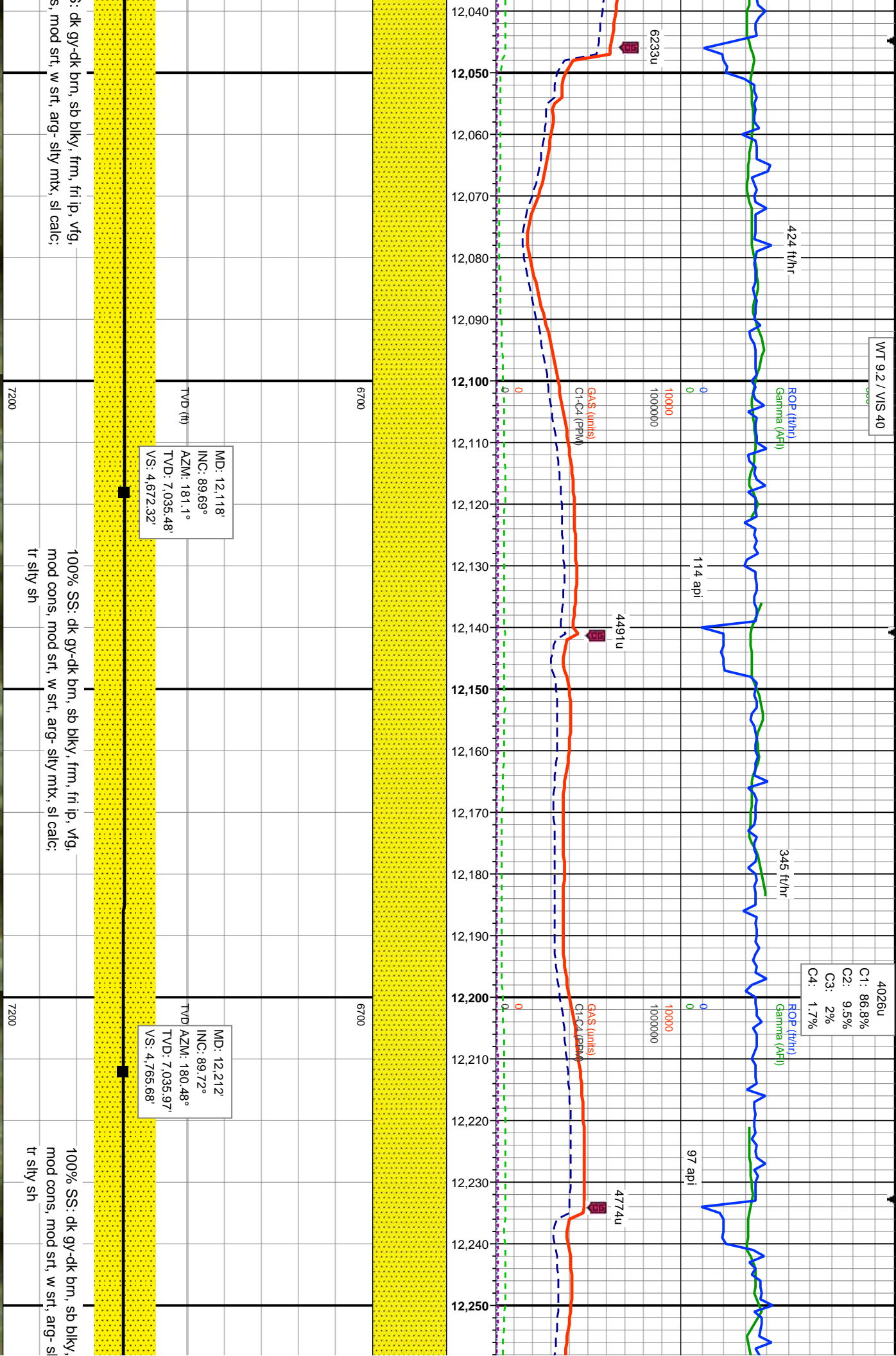
MD: 11,928'
INC: 89.69°
AZM: 181.79°
TVD: 7,034.5'
VS: 4,483.74'

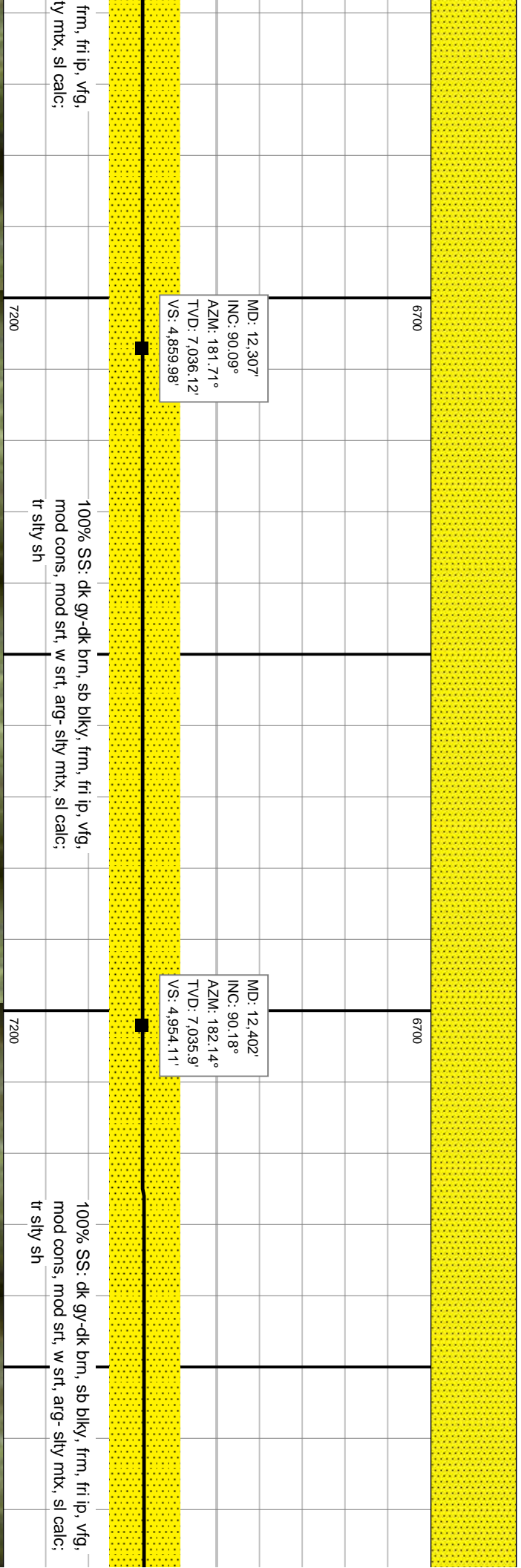
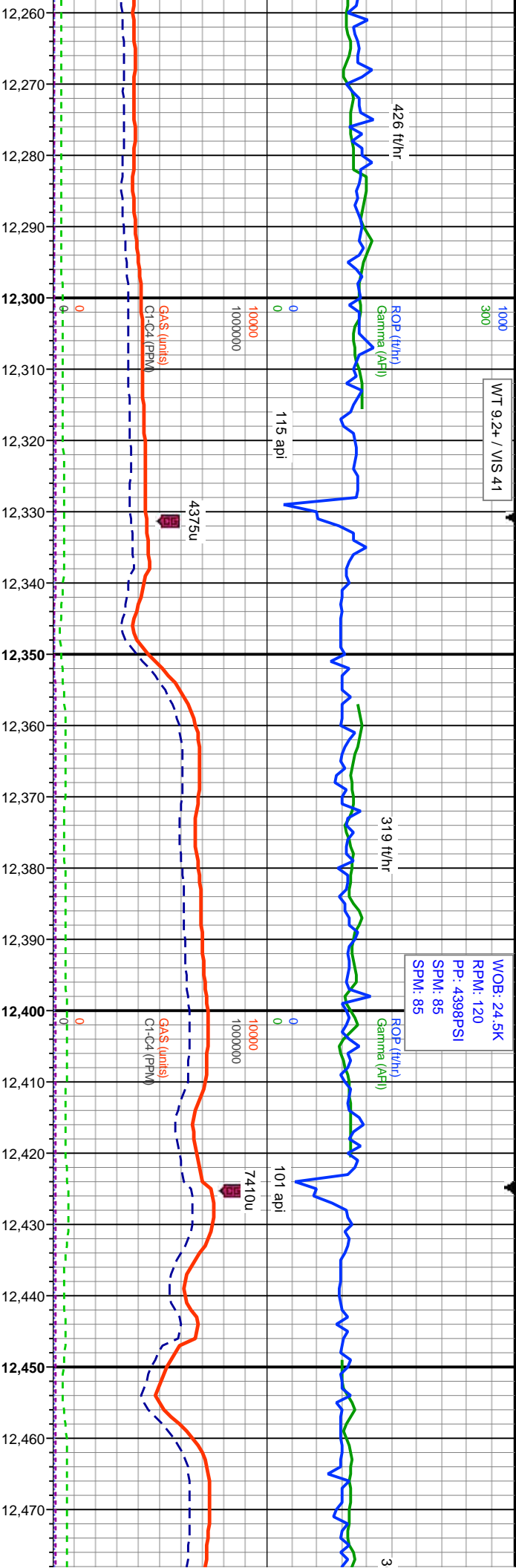
MD: 12,023'
INC: 89.72°
AZM: 180.83°
TVD: 7,034.99'
VS: 4,577.99'

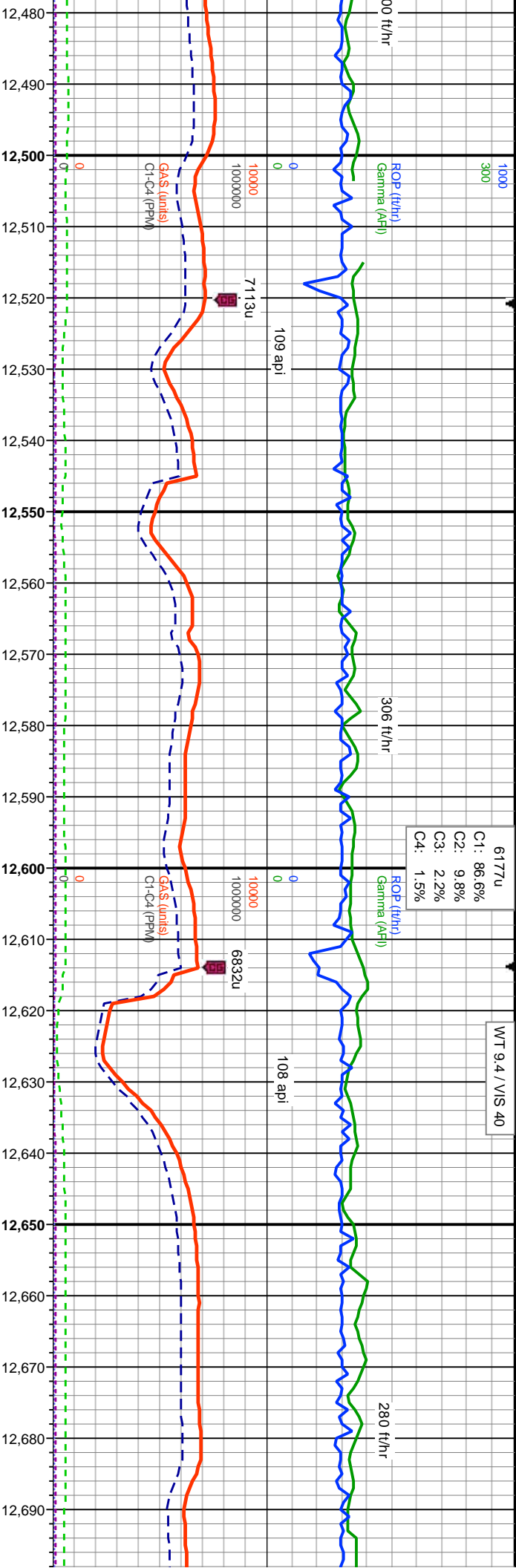
med-dkgy/brn, sb blk- sb pty, sft- frm, fri, vfg, mod cons, mod srt, arg-sily mtz, sl calc; 15% LS: lbrn-trn, bf wh-llgy, blk- sb blk, mod ip, sm tex, pred microxn, v calc; tr bent

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-sily mtz, sl calc; tr ls

100% SS: mod con tr sily sh







C1: 86.6%
C2: 9.8%
C3: 2.2%
C4: 1.5%

MD: 12,496'
INC: 90.15°
AZM: 181.5°
TVD: 7,035.63'
VS: 5,047.26'

MD: 12,591'
INC: 90°
AZM: 180.24°
TVD: 7,035.5'
VS: 5,141.61'

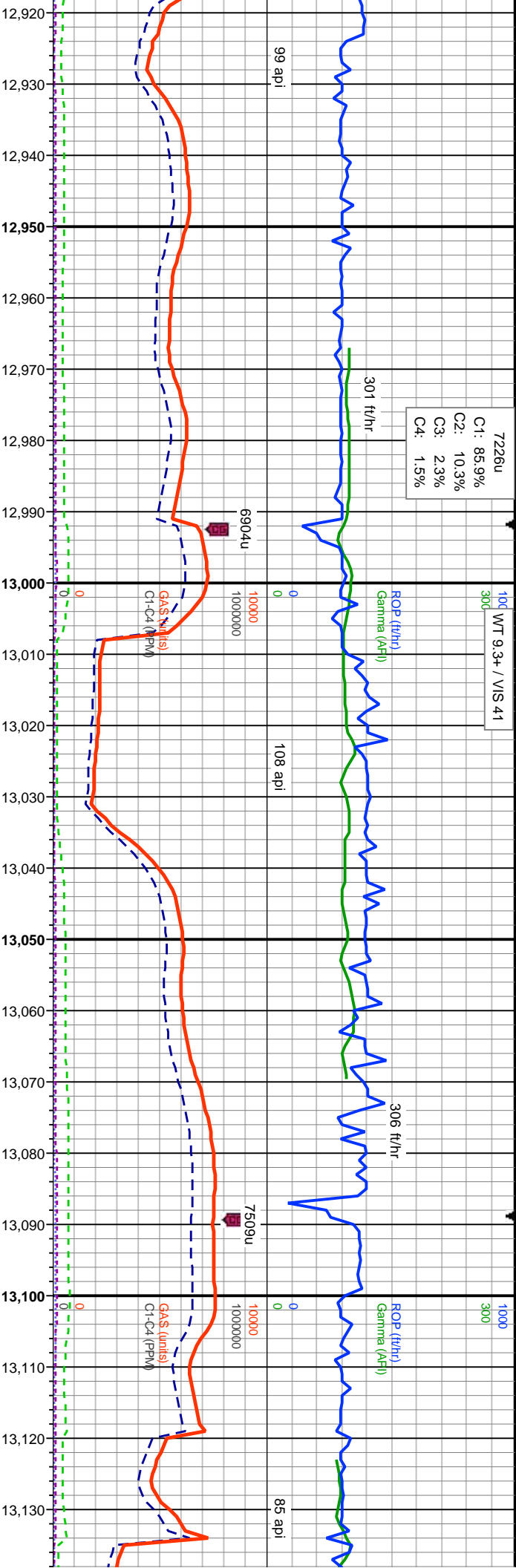
MD: 12,686'
INC: 90.18°
AZM: 179.12°
TVD: 7,035.36'
VS: 5,236.16'

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtb, sl calc;
tr silty sh

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtb, sl calc;
tr silty sh

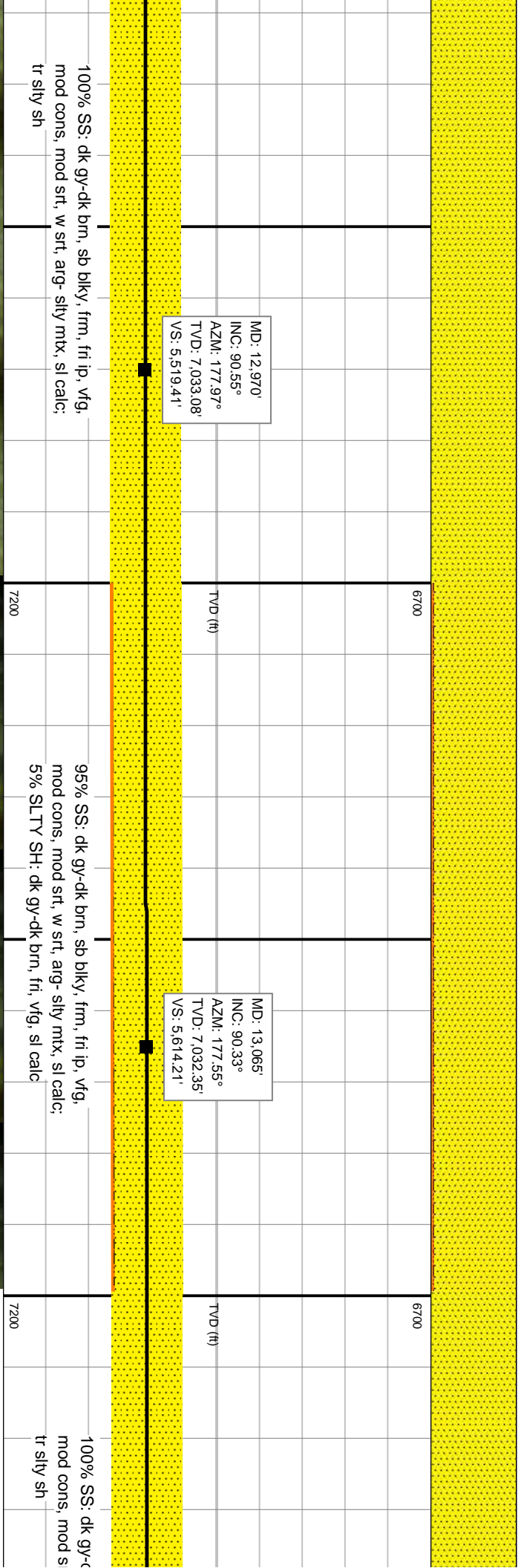
7200

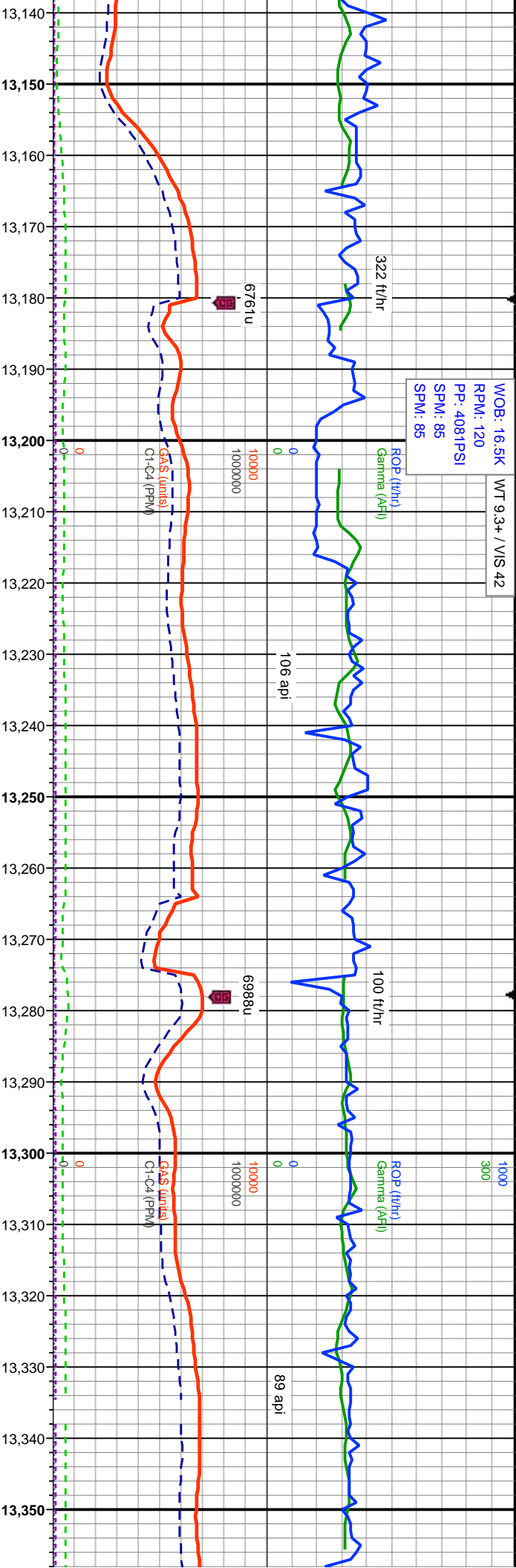
7200



MD: 12,970'
INC: 90.55°
AZM: 177.97°
TVD: 7,033.08'
VS: 5,519.41'

MD: 13,065'
INC: 90.33°
AZM: 177.55°
TVD: 7,032.35'
VS: 5,614.21'

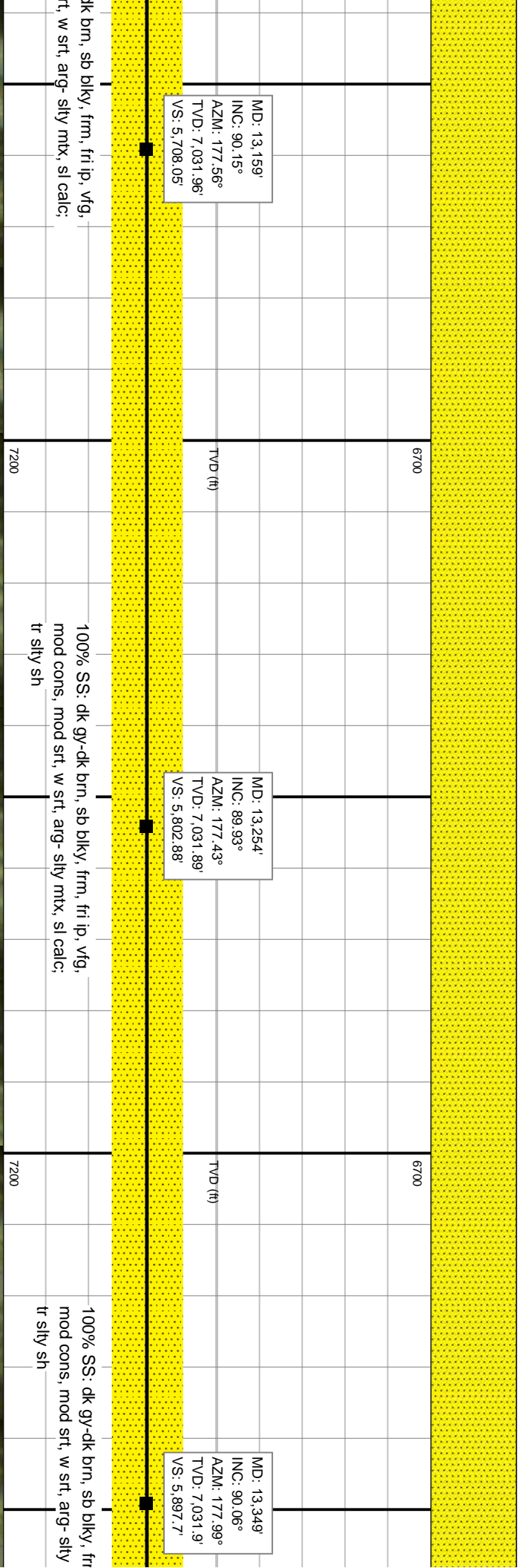


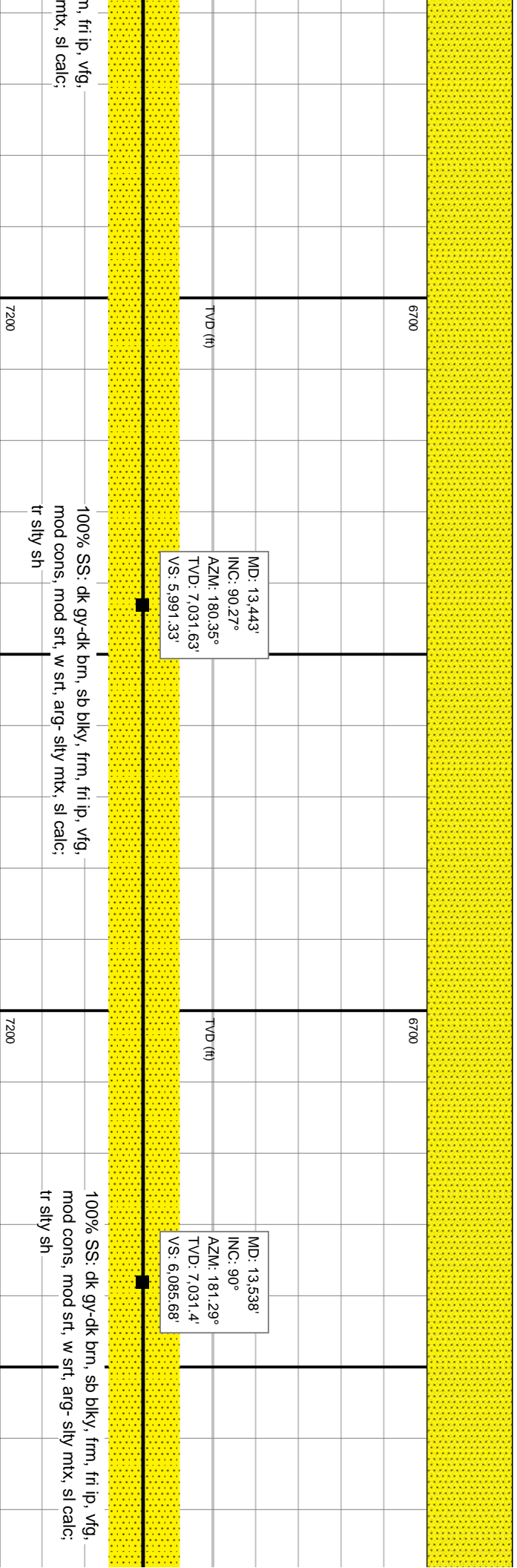
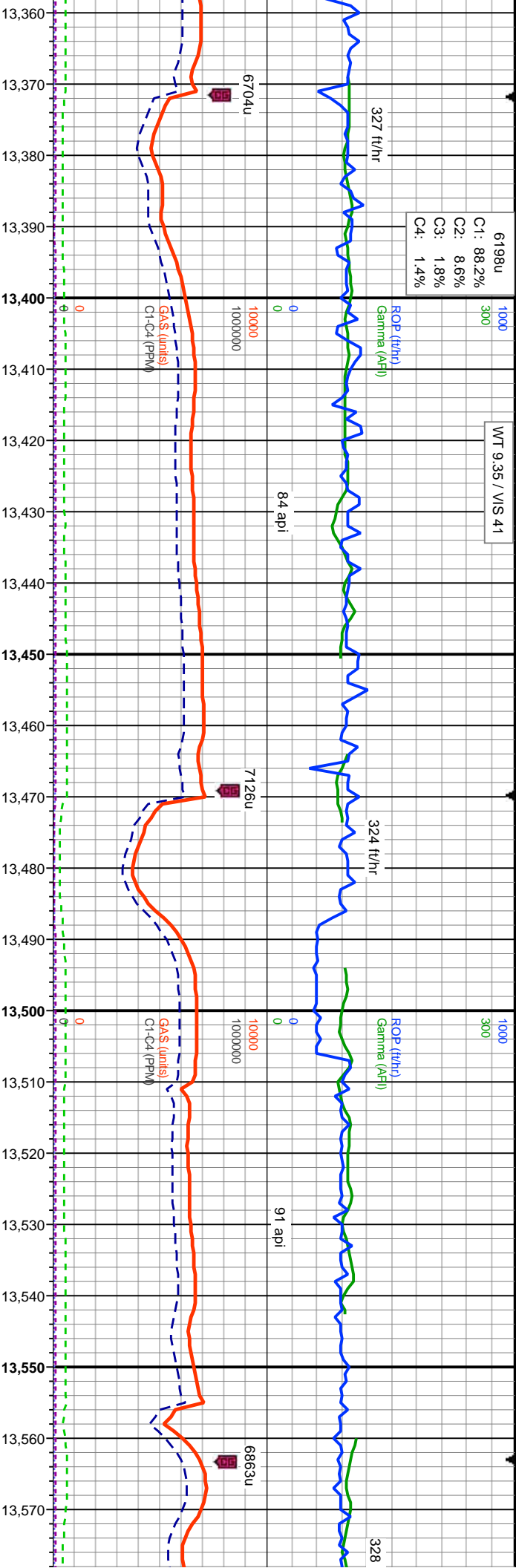


MD: 13,159'
INC: 90.15°
AZM: 177.56°
TVD: 7,031.96'
VS: 5,708.05'

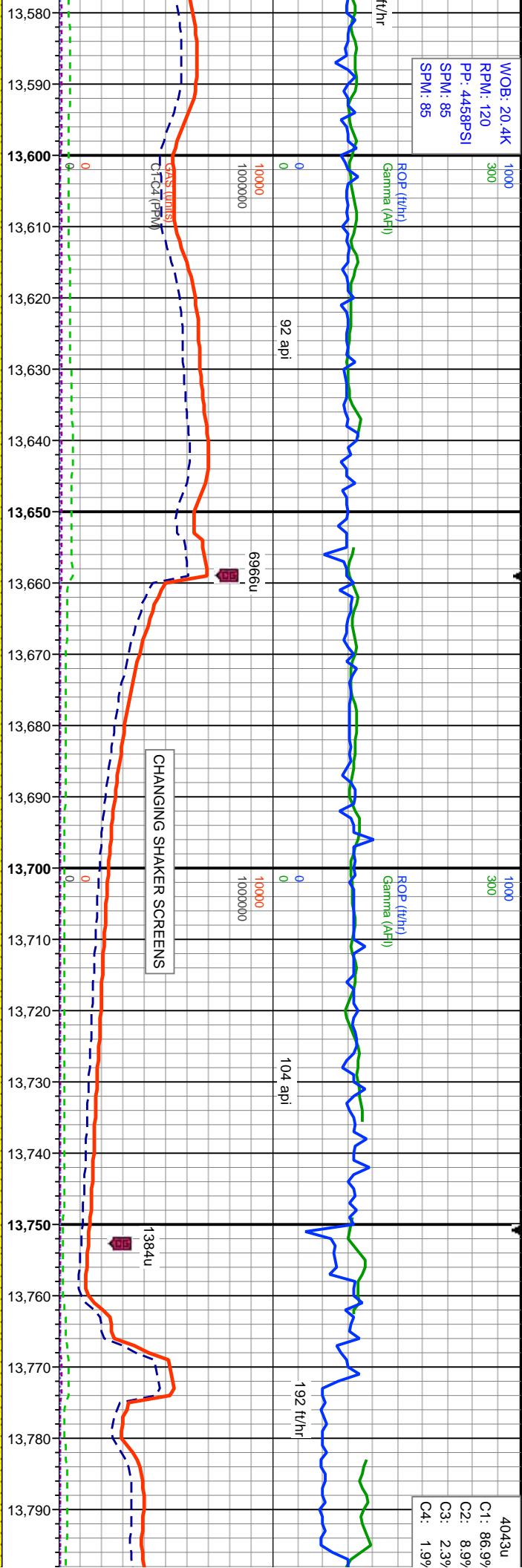
MD: 13,254'
INC: 89.93°
AZM: 177.43°
TVD: 7,031.89'
VS: 5,802.88'

MD: 13,349'
INC: 90.06°
AZM: 177.99°
TVD: 7,031.9'
VS: 5,897.7'





WOB: 20.4K
RPM: 120
PP: 4458PSI
SPM: 85
SPM: 85



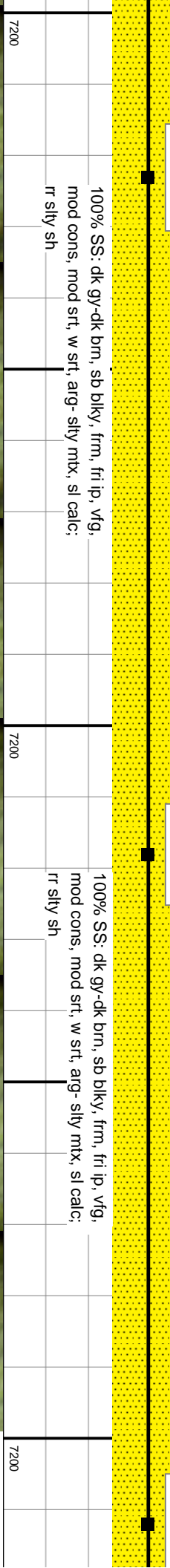
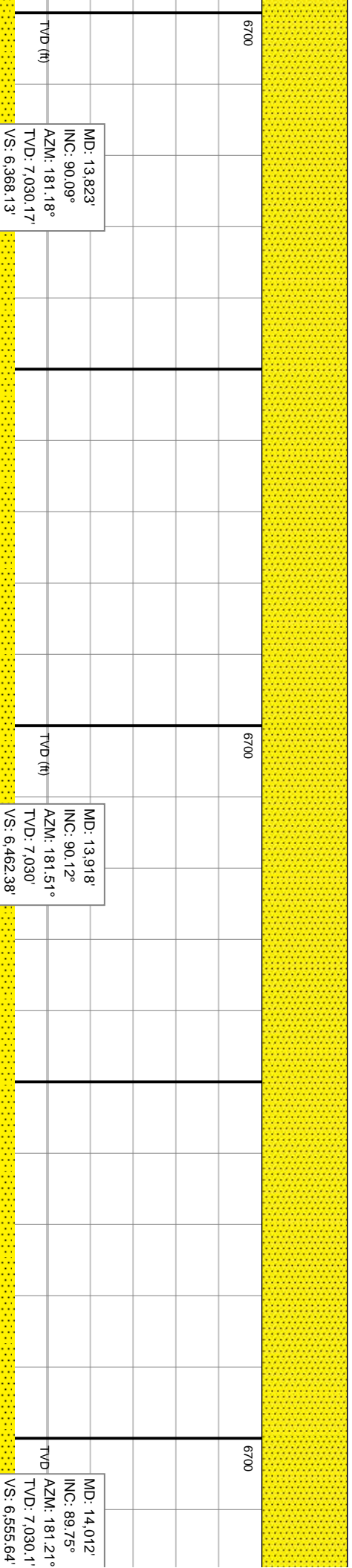
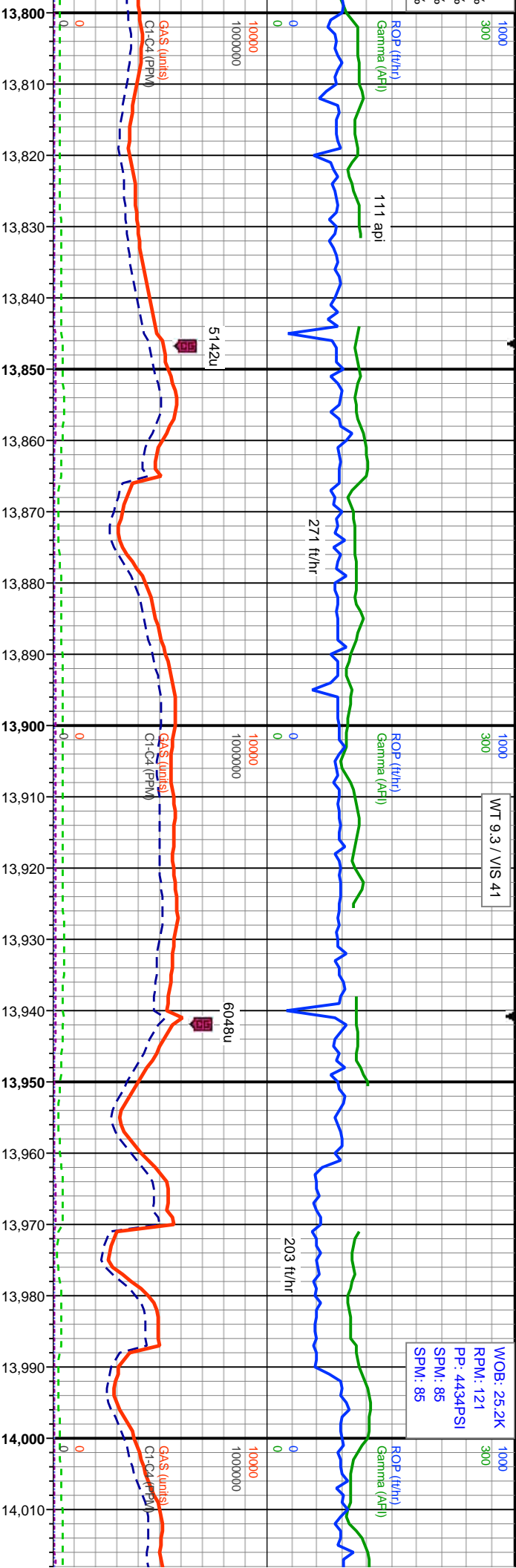
4043u
C1: 86.9%
C2: 8.9%
C3: 2.3%
C4: 1.9%

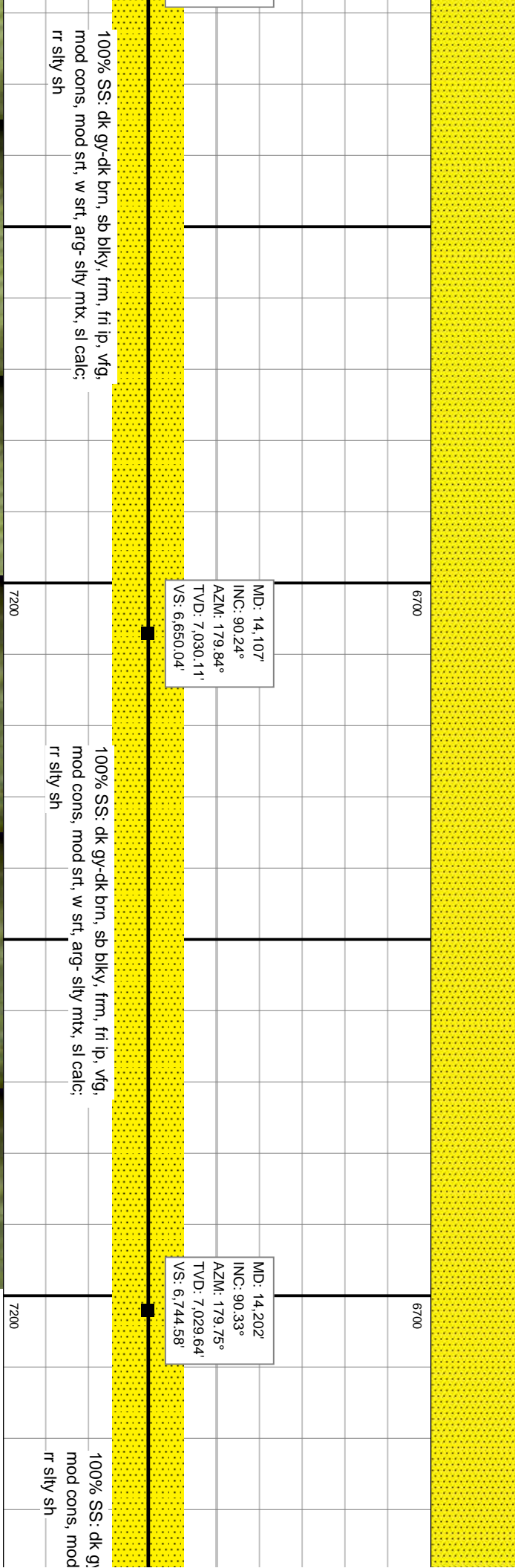
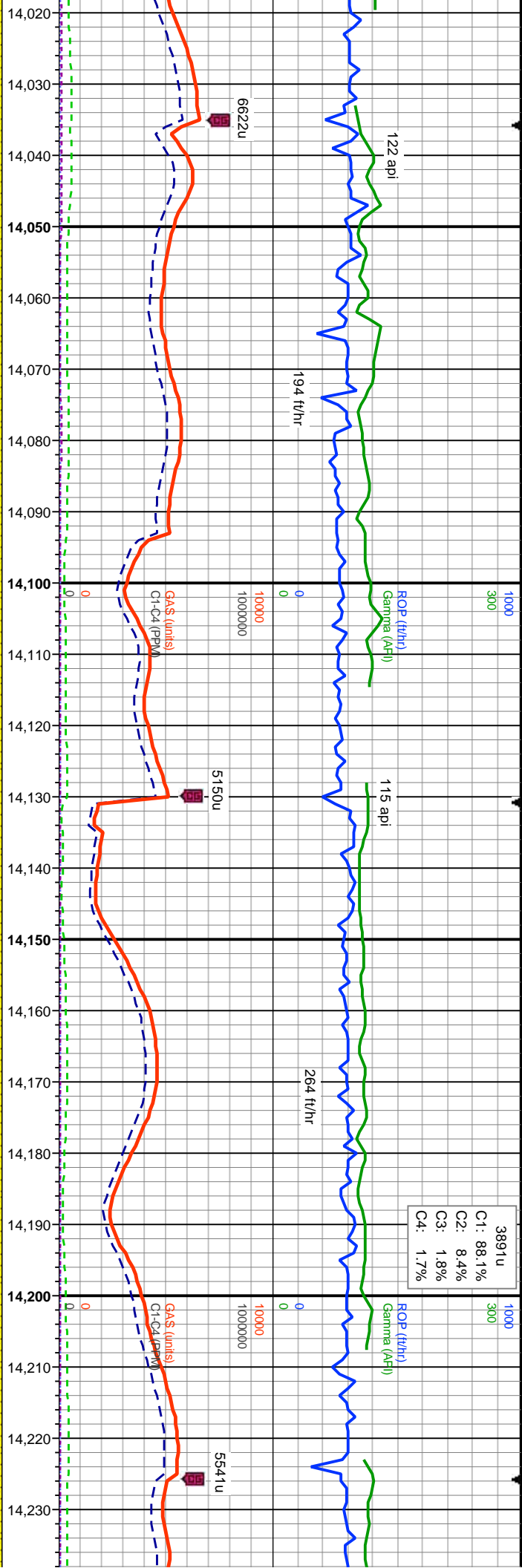
MD: 13,633'
INC: 90.3°
AZM: 182.18°
TVD: 7,031.16'
VS: 6,179.85'

MD: 13,728'
INC: 90.4°
AZM: 181.99°
TVD: 7,030.58'
VS: 6,273.93'

100% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
tr silty sh

100% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
rr silty sh

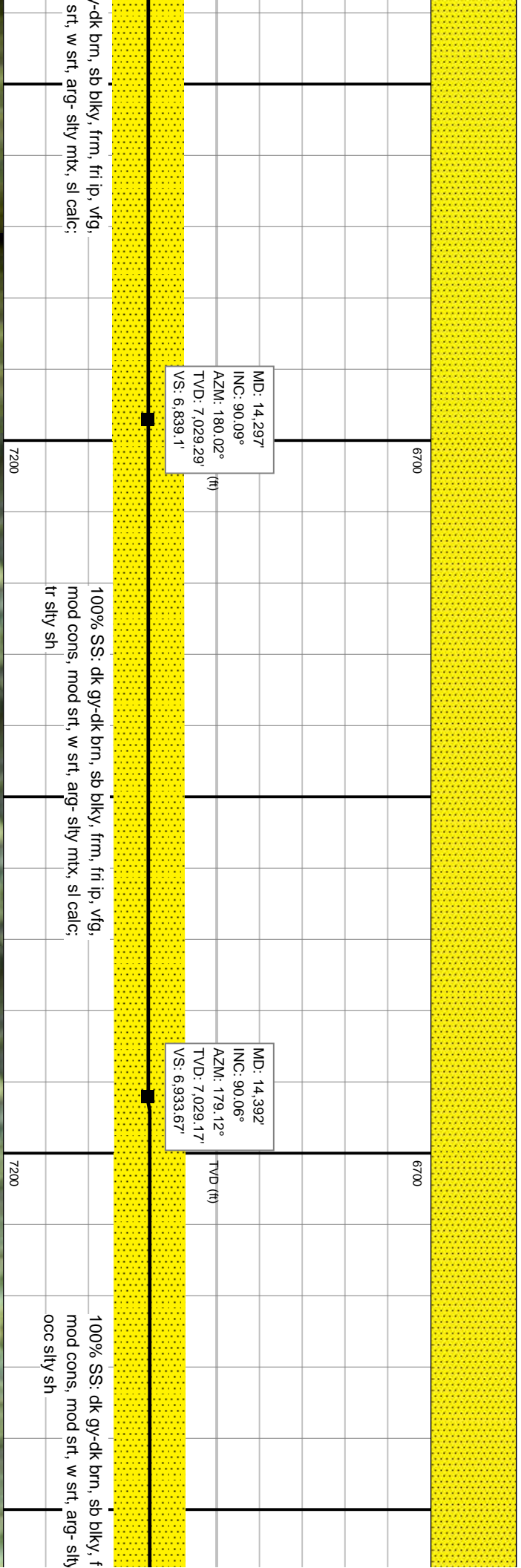
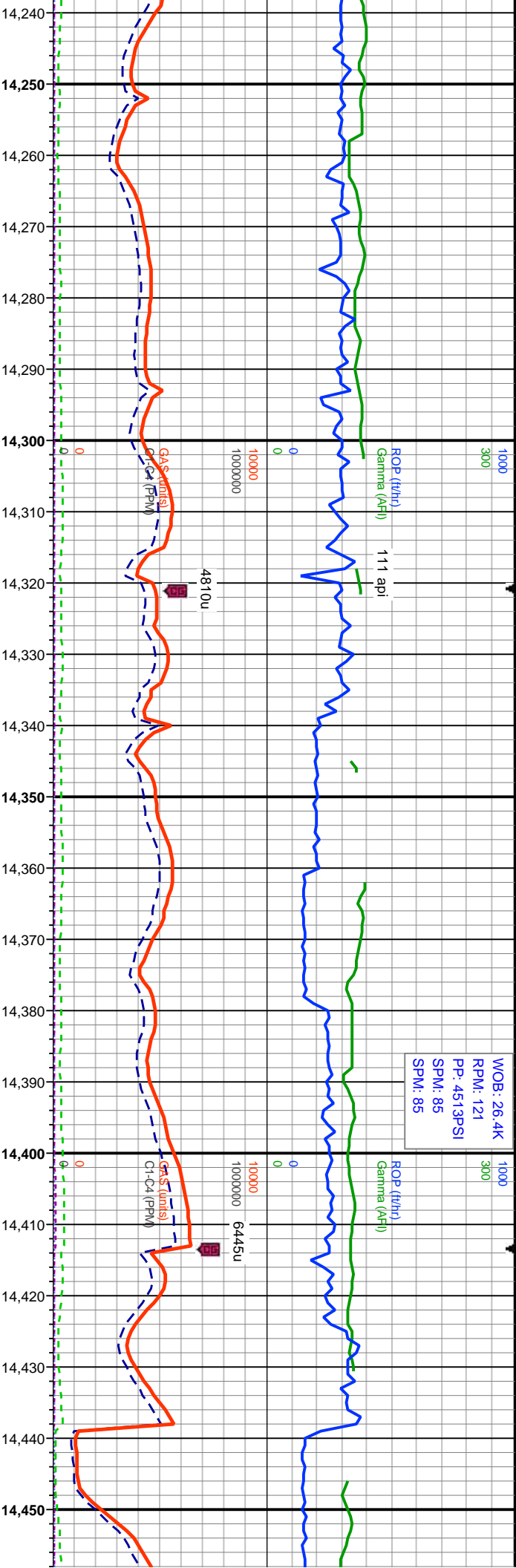


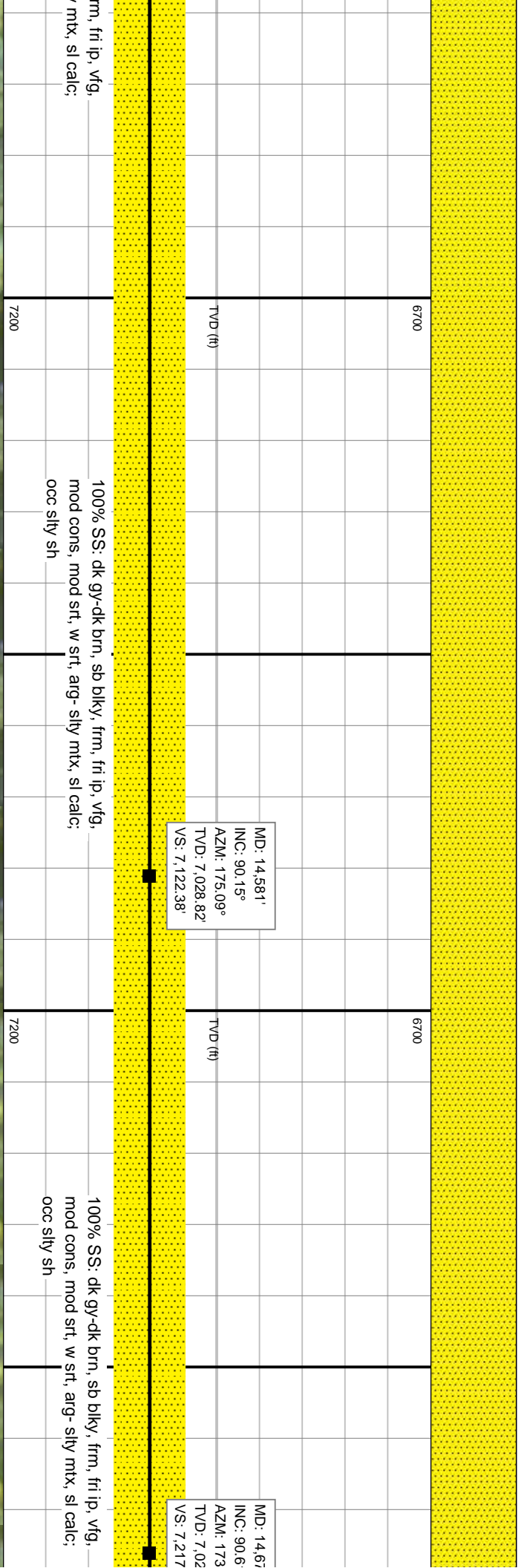
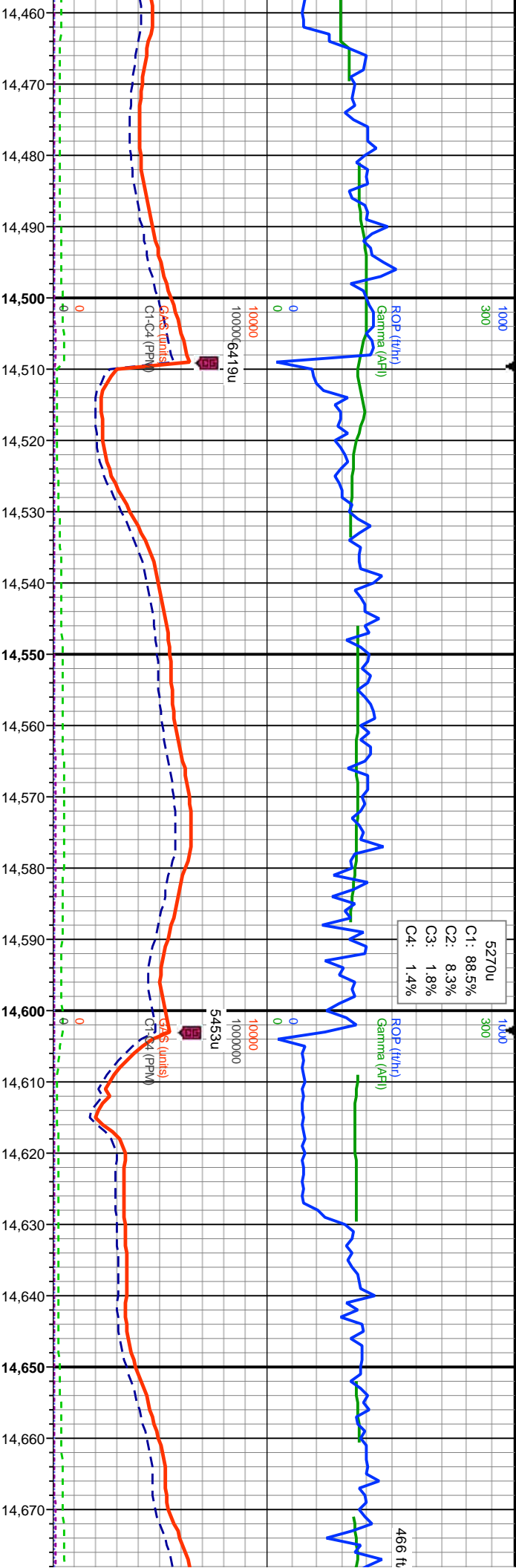


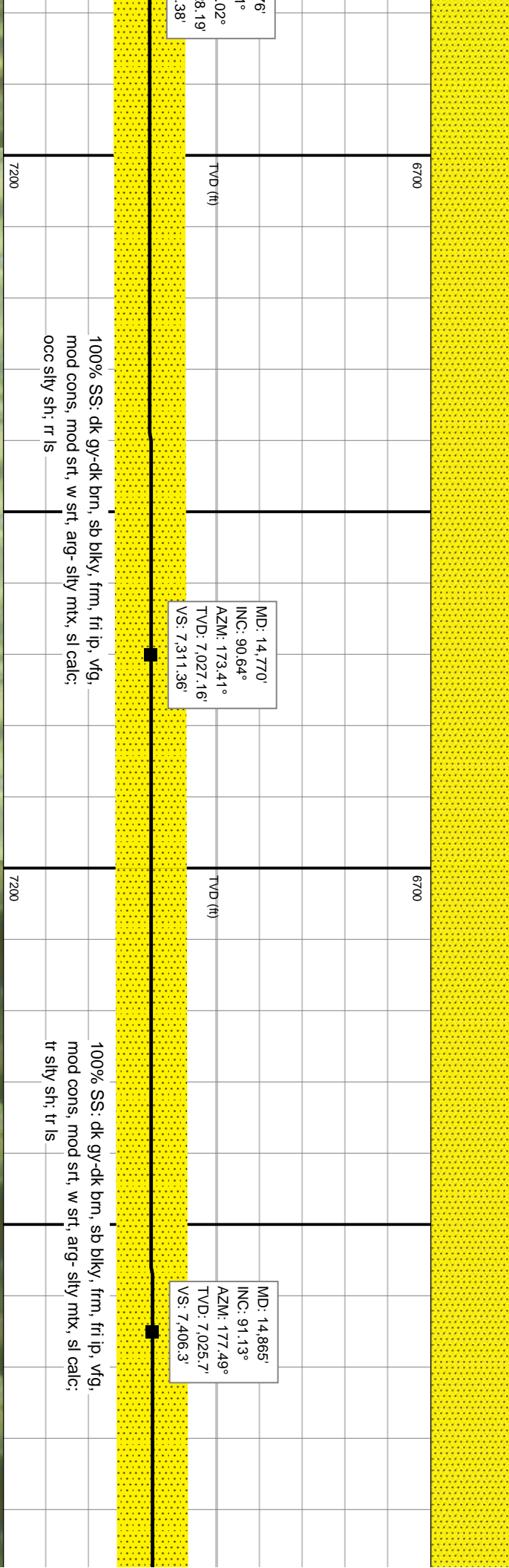
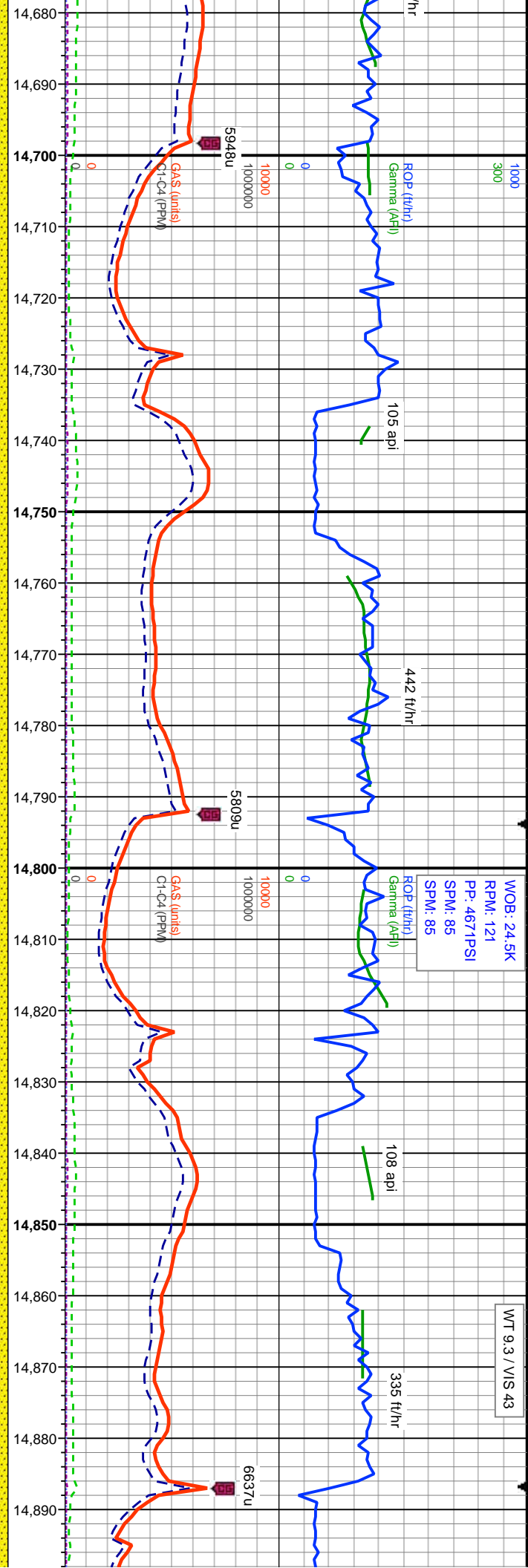
100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-sily mtx, sl calc, rr sily sh

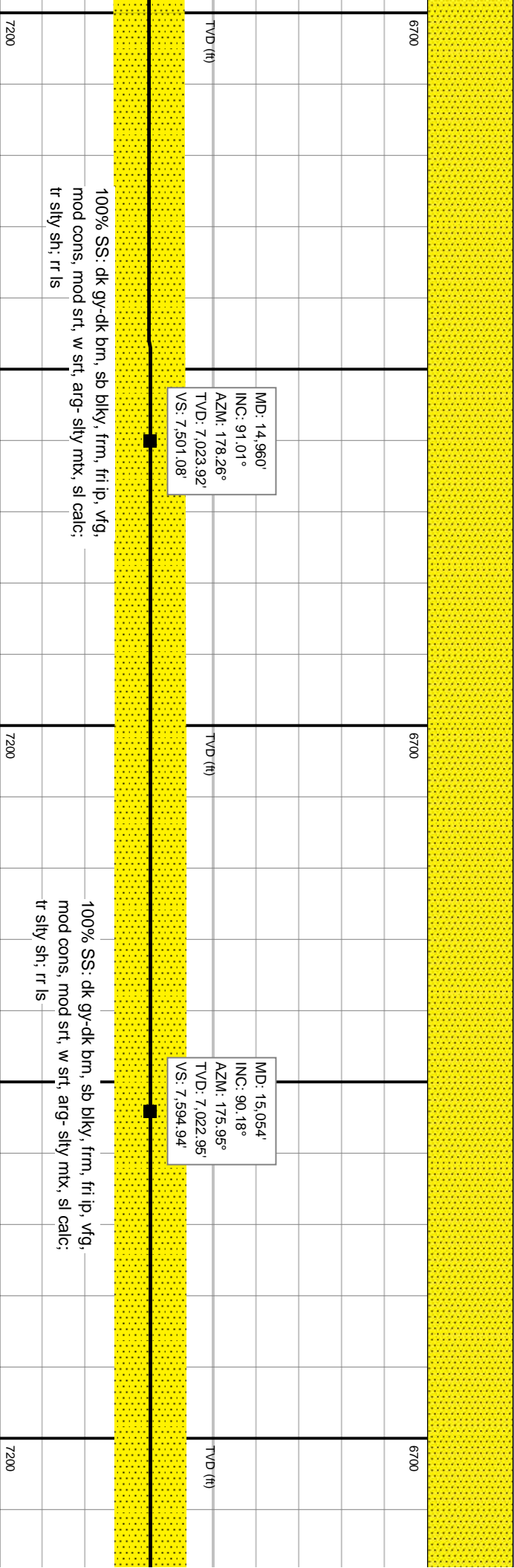
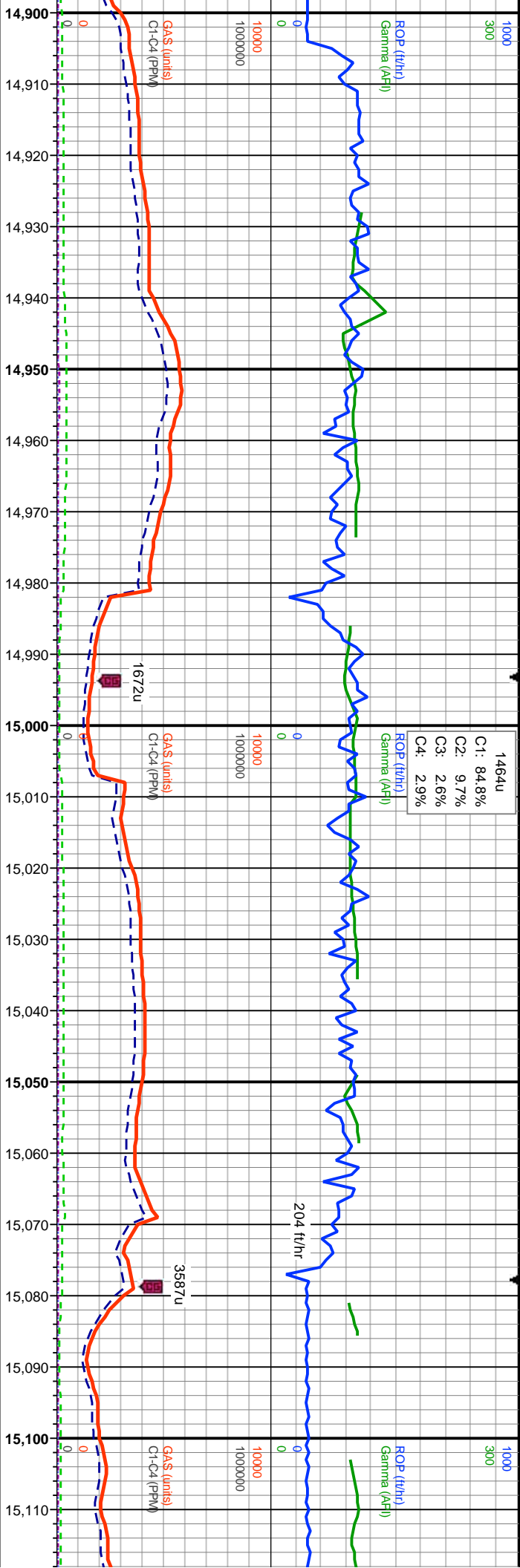
100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-sily mtx, sl calc, rr sily sh

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-sily mtx, sl calc, rr sily sh





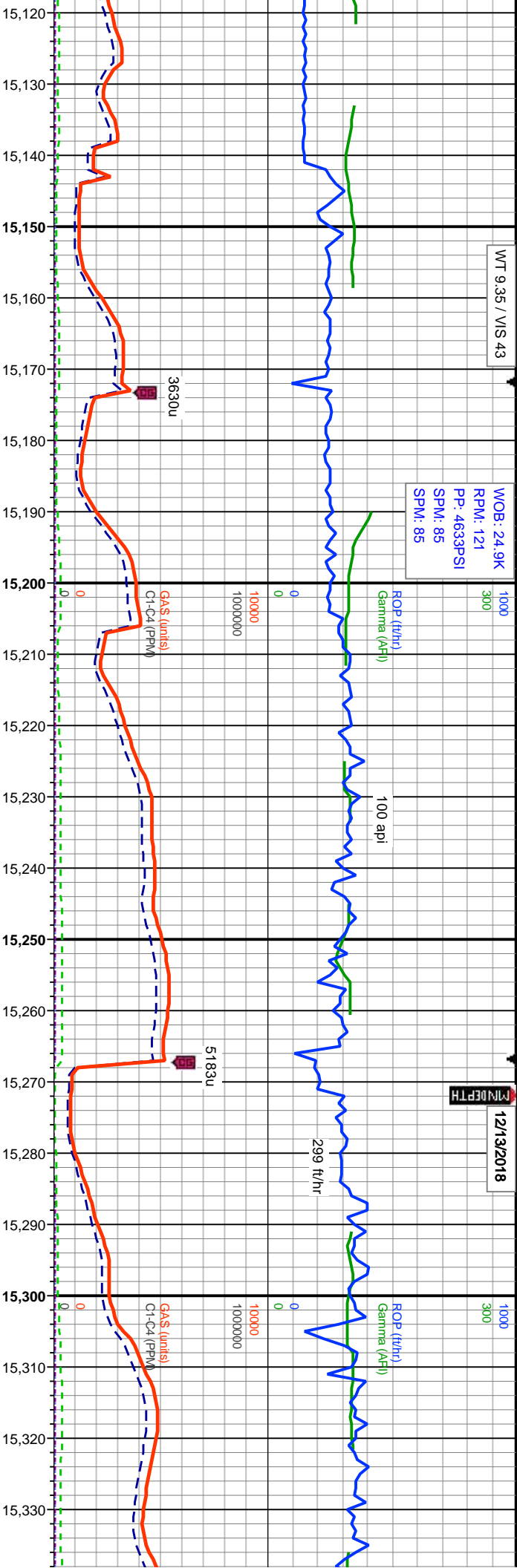




WT 9.35 / VIS 4.3

WOB: 24.9K
RPM: 121
PP: 4633PSI
SPM: 85
SPM: 85

12/13/2018
MNDEPTH



MD: 15,149'
INC: 89.63°
AZM: 175.51°
TVD: 7,023.1'
VS: 7.669.91'

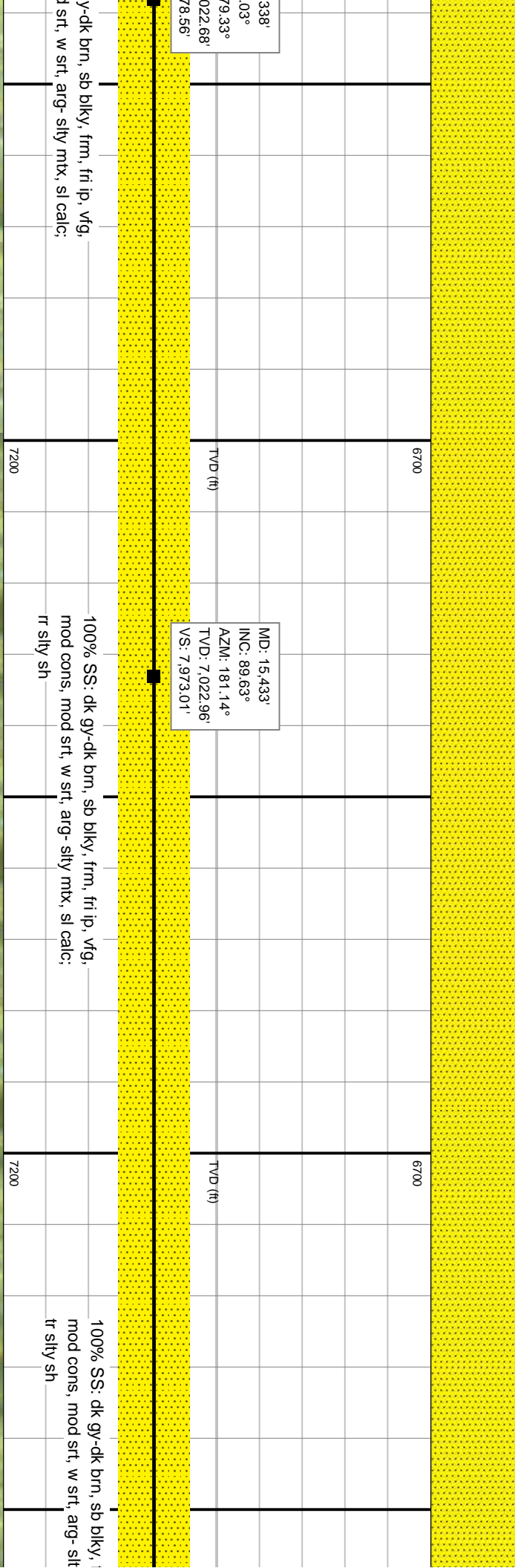
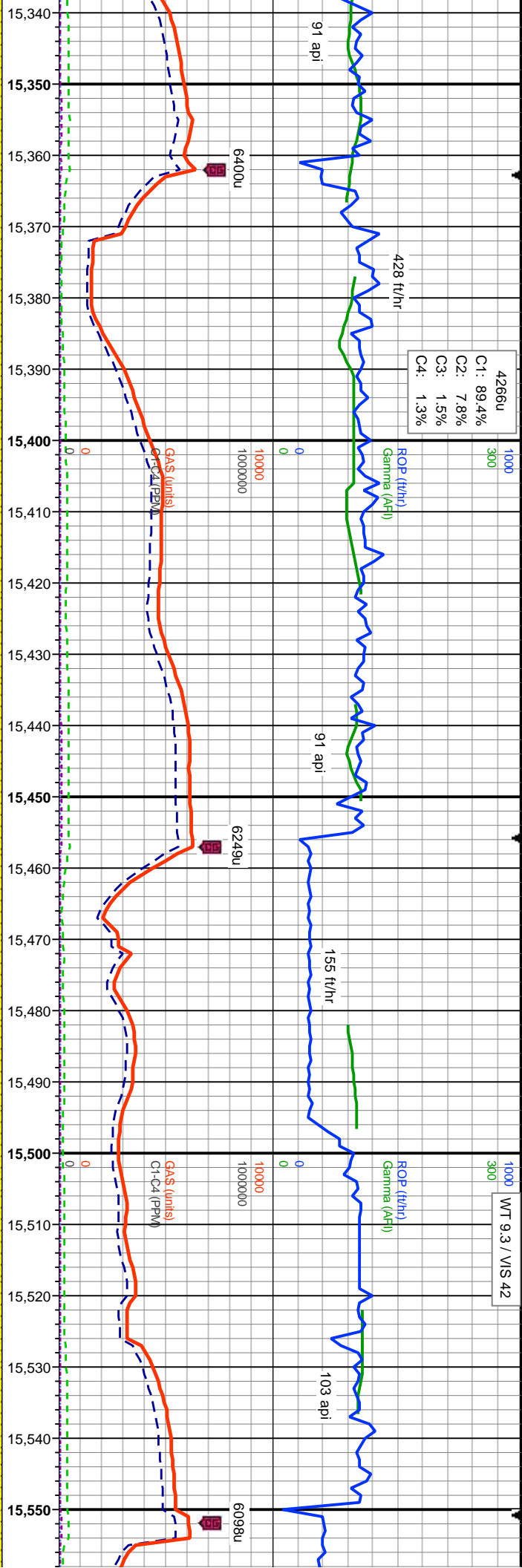
MD: 15,244'
INC: 90.43°
AZM: 177.47°
TVD: 7,023.05'
VS: 7.784.82'

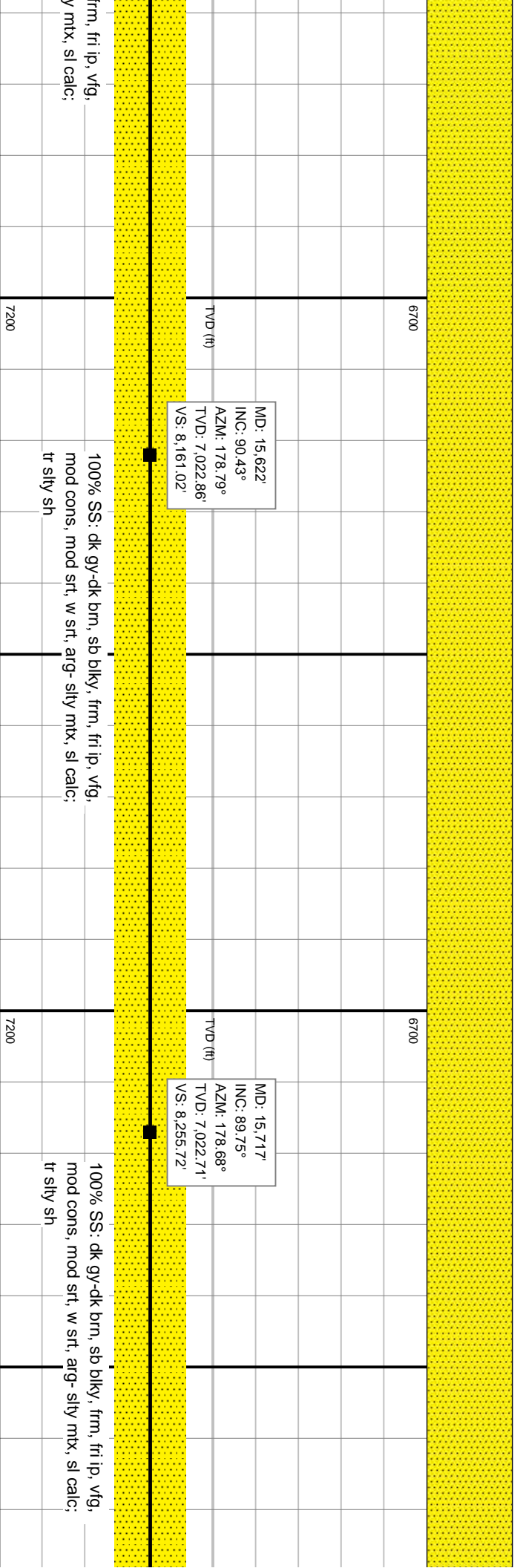
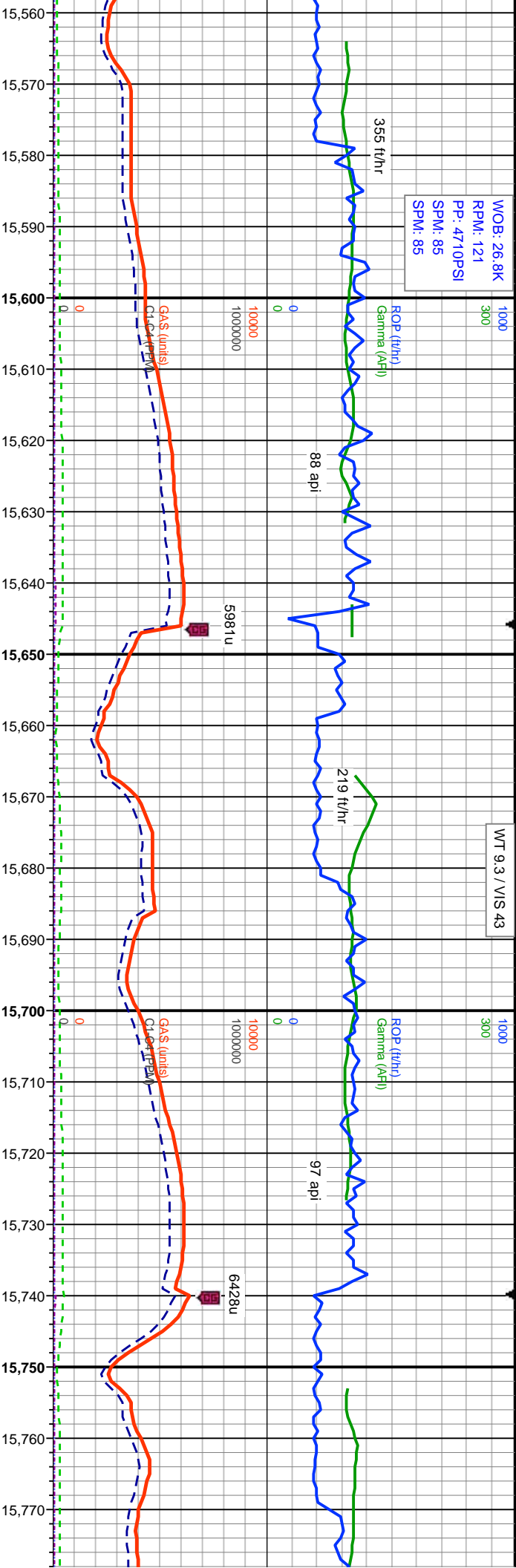
MD: 15,
INC: 90
AZM: 1
TVD: 7,
VS: 7.8

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mt, sl calc;
tr silty sh; v rr ls

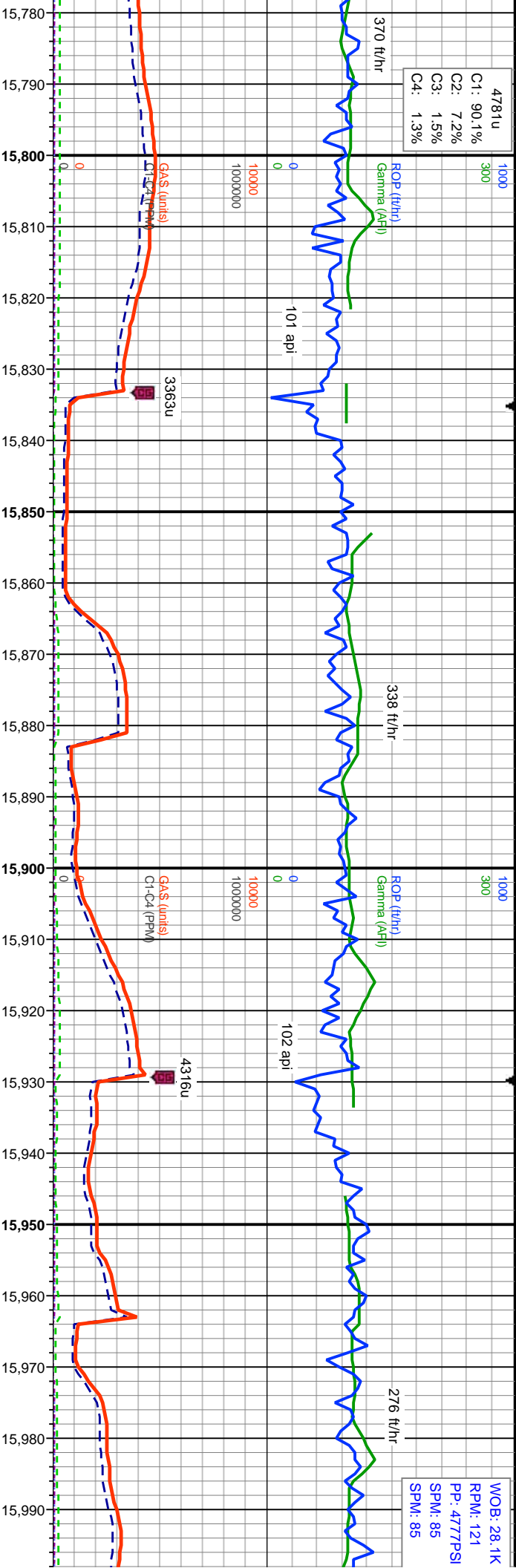
100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mt, sl calc;
tr silty sh

100% SS: dk g
mod cons, moc
tr silty sh





4781u
C1: 90.1%
C2: 7.2%
C3: 1.5%
C4: 1.3%



WOB: 28.1K
RPM: 121
PP: 4777PSI
SPM: 85
SPM: 85

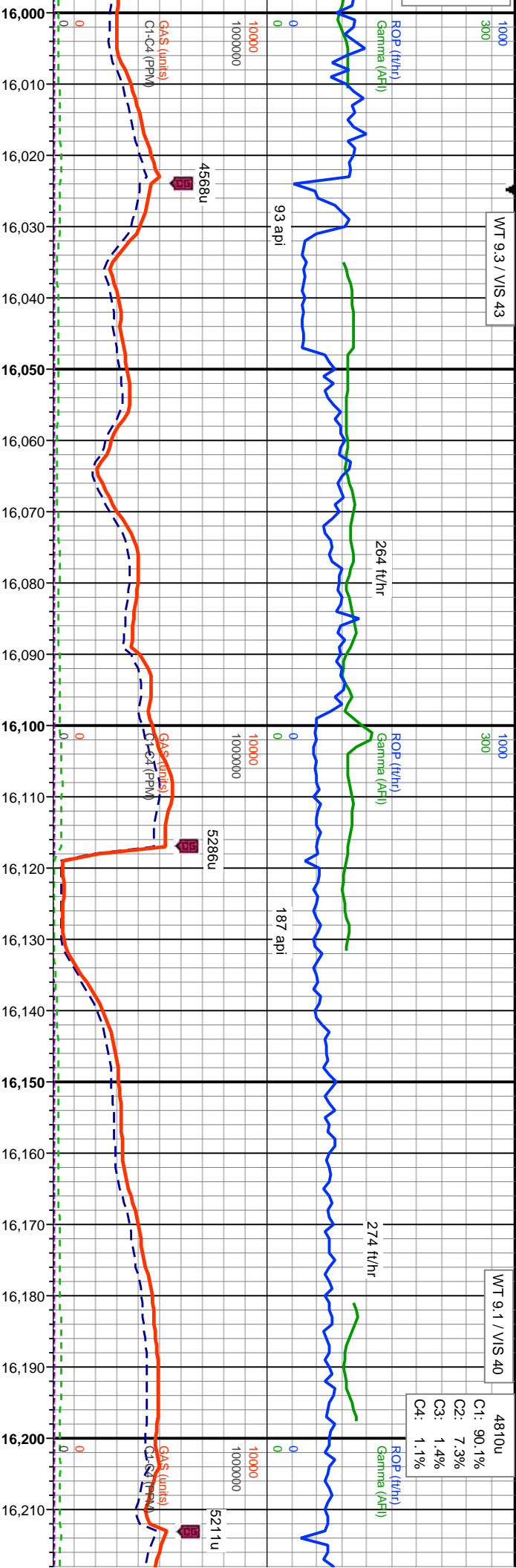
MD: 15,811'
INC: 90.15°
AZM: 179.71°
TVD: 7,022.79'
VS: 8,349.35'

MD: 15,906'
INC: 89.5°
AZM: 181.61°
TVD: 7,023.28'
VS: 8,443.71'

MD:
INC:
AZM:
TVD:
VS:

100% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
tr silty sh

100% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
tr silty sh



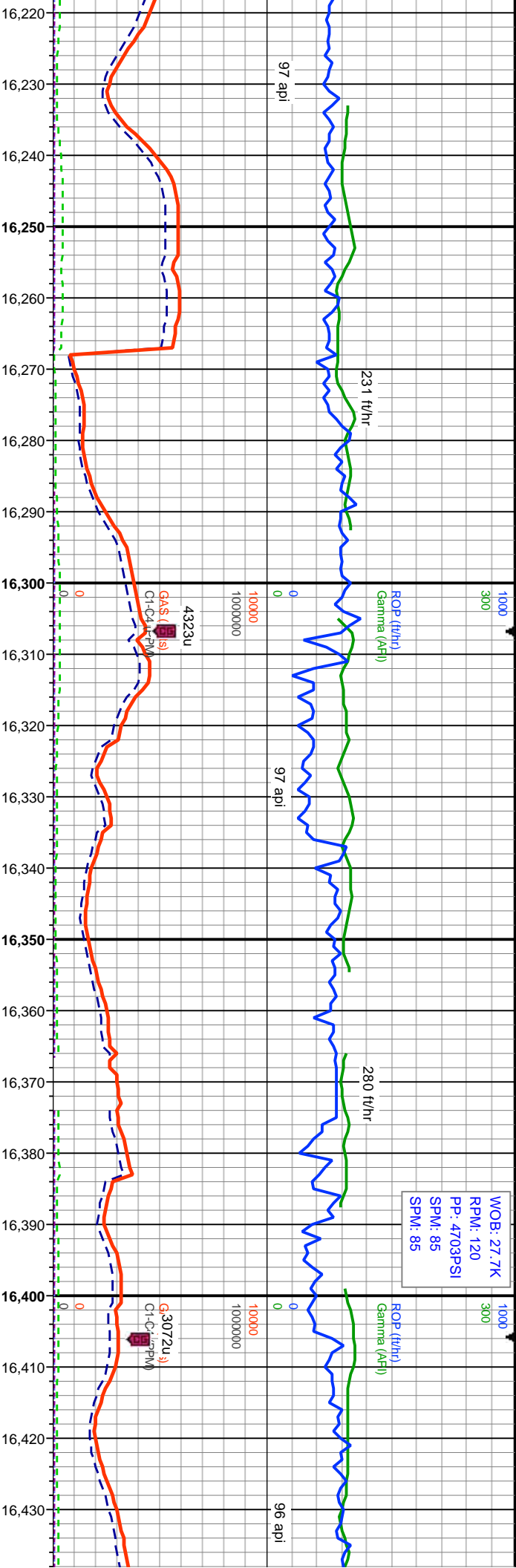
16,001'
90.46°
I: 184.6°
: 7,023.31'
8,537.54'

MD: 16,096'
INC: 89.38°
AZM: 183.7°
TVD: 7,023.45'
VS: 8,631.09'

MD: 16,191'
INC: 90.12°
AZM: 182.09°
TVD: 7,023.86'
VS: 8,724.98'

95% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
5% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl calc

95% SS: dk gy-dk brn, sb blkly, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg- silty mtx, sl calc;
5% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl calc



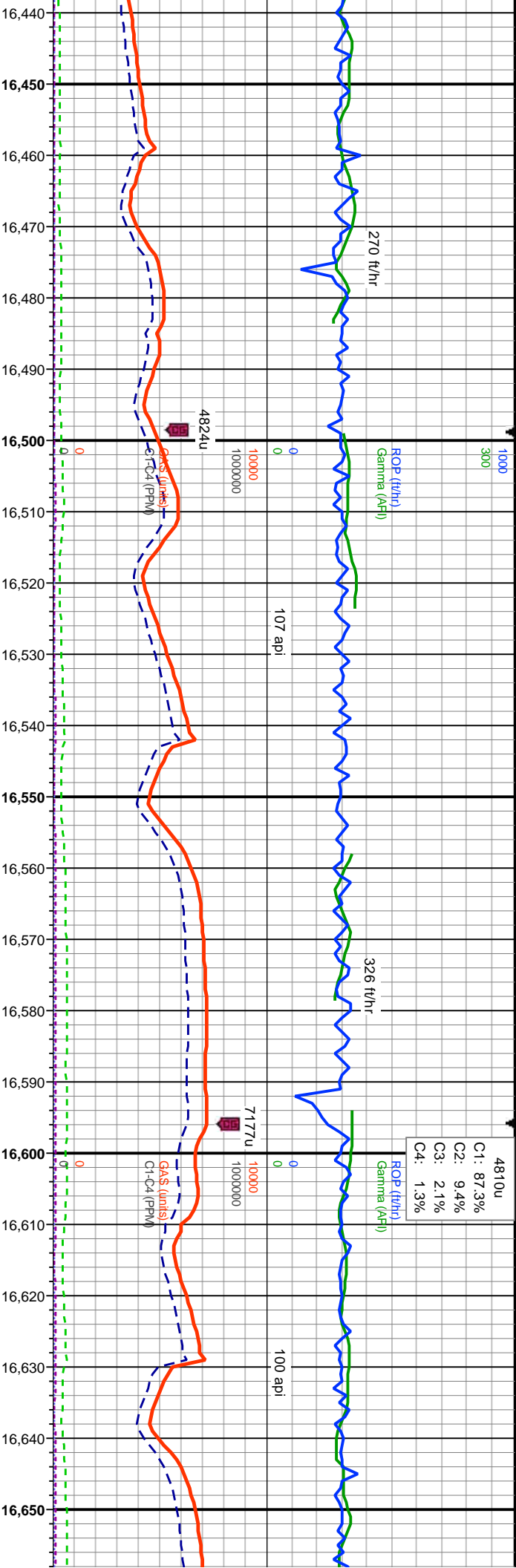
MD: 16,285'
INC: 90.09°
AZM: 181.24°
TVD: 7,023.69'
VS: 8,818.17'

MD: 16,380'
INC: 90.03°
AZM: 181.83°
TVD: 7,023.59'
VS: 8,912.38'

95% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-sltly mtz, sl calc; 5% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl calc

95% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg-silty mtx, sl calc;
5% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl calc

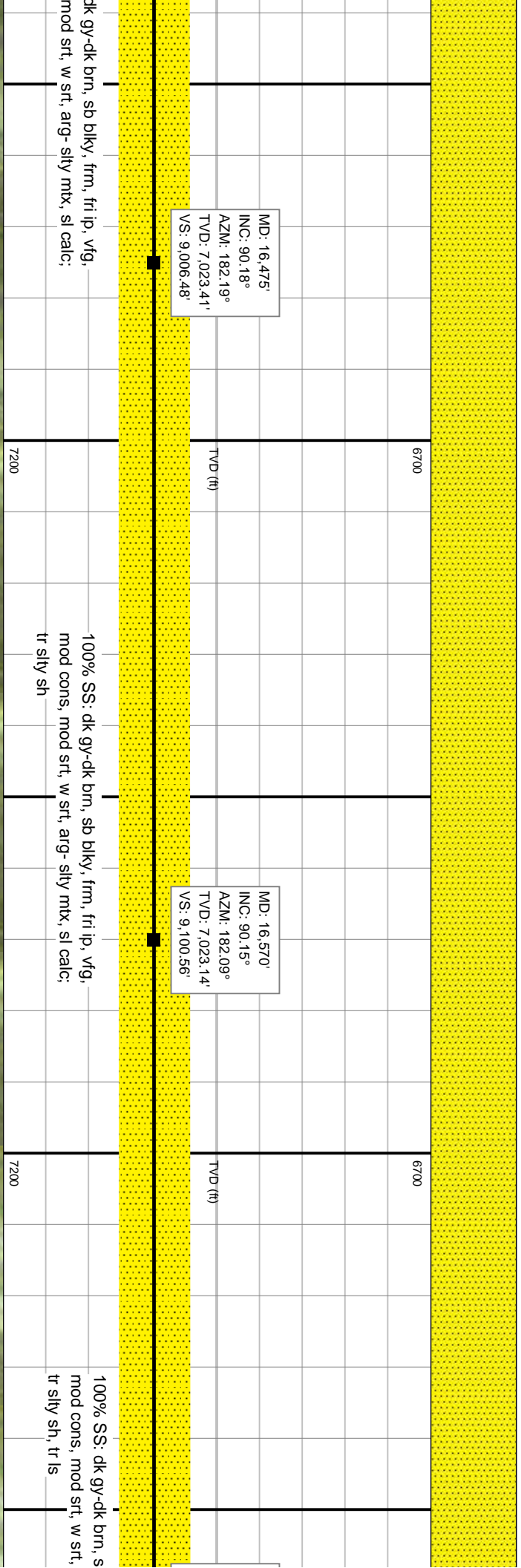
100% SS: (mod cons, tr silty sh

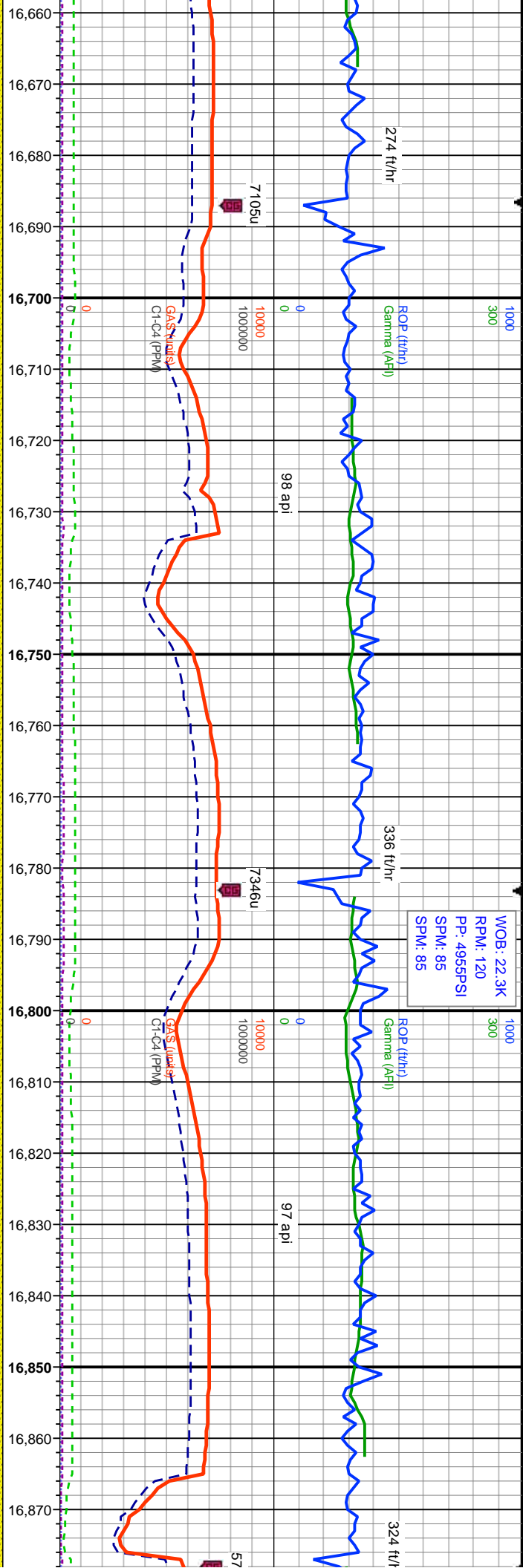


4810u
C1: 87.3%
C2: 9.4%
C3: 2.1%
C4: 1.3%

MD: 16,475'
INC: 90.18°
AZM: 182.19°
TVD: 7,023.41'
VS: 9,006.48'

MD: 16,570'
INC: 90.15°
AZM: 182.09°
TVD: 7,023.14'
VS: 9,100.56'



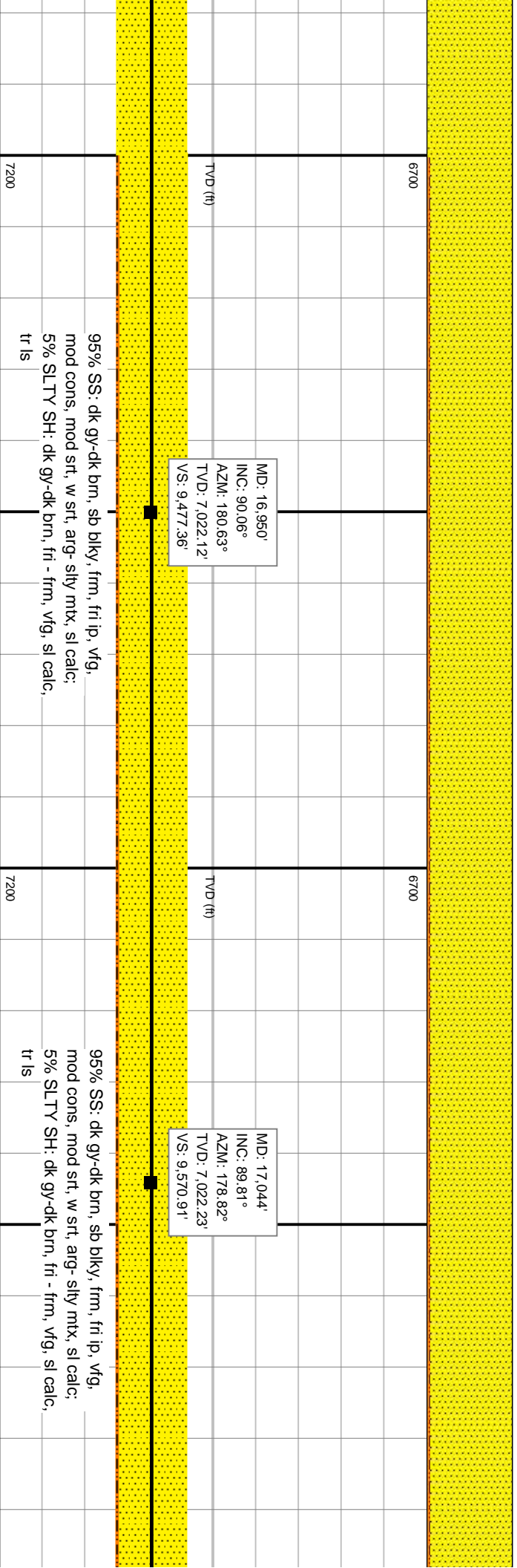


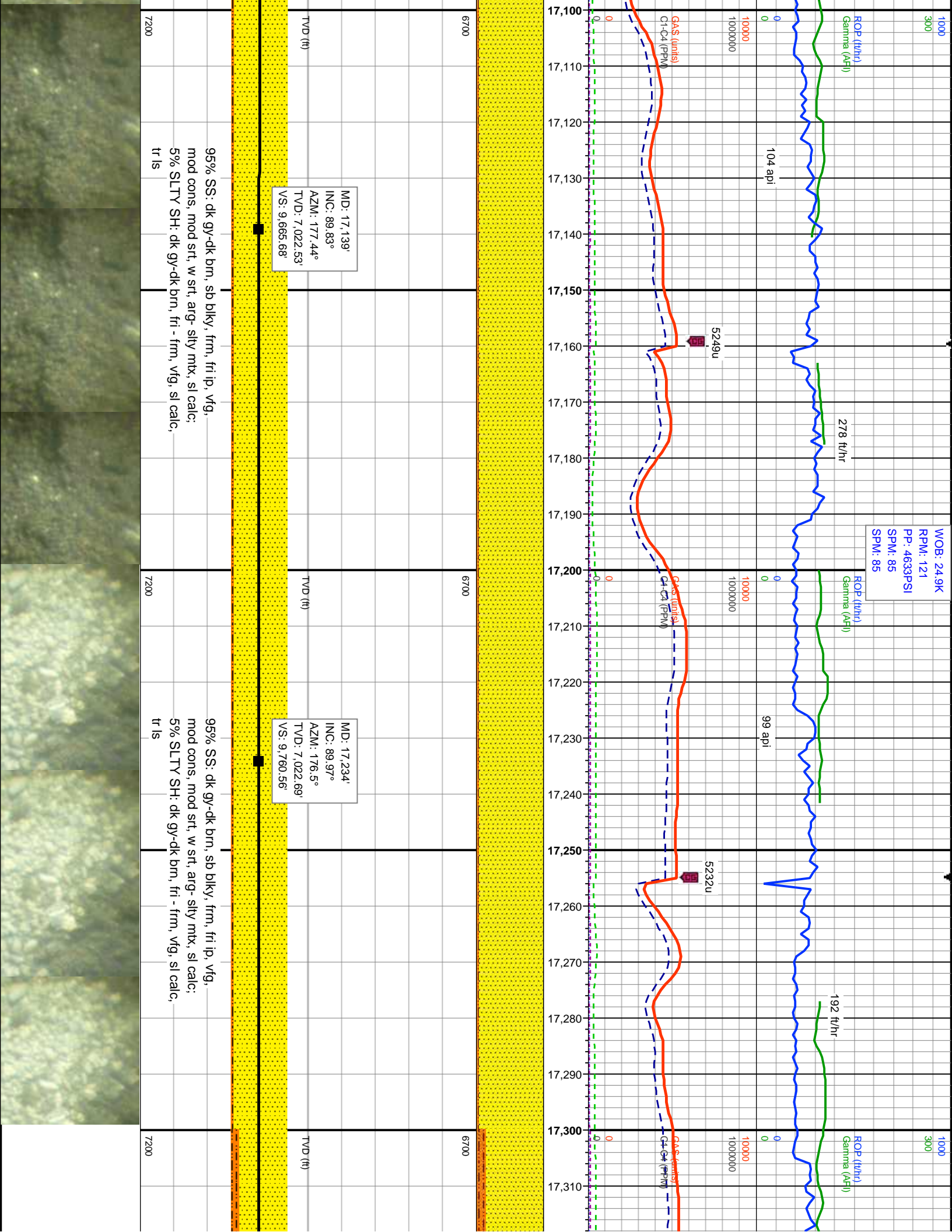
MD: 16,665'
INC: 90.21°
AZM: 181.98°
TVD: 7,022.84'
VS: 9,194.66'

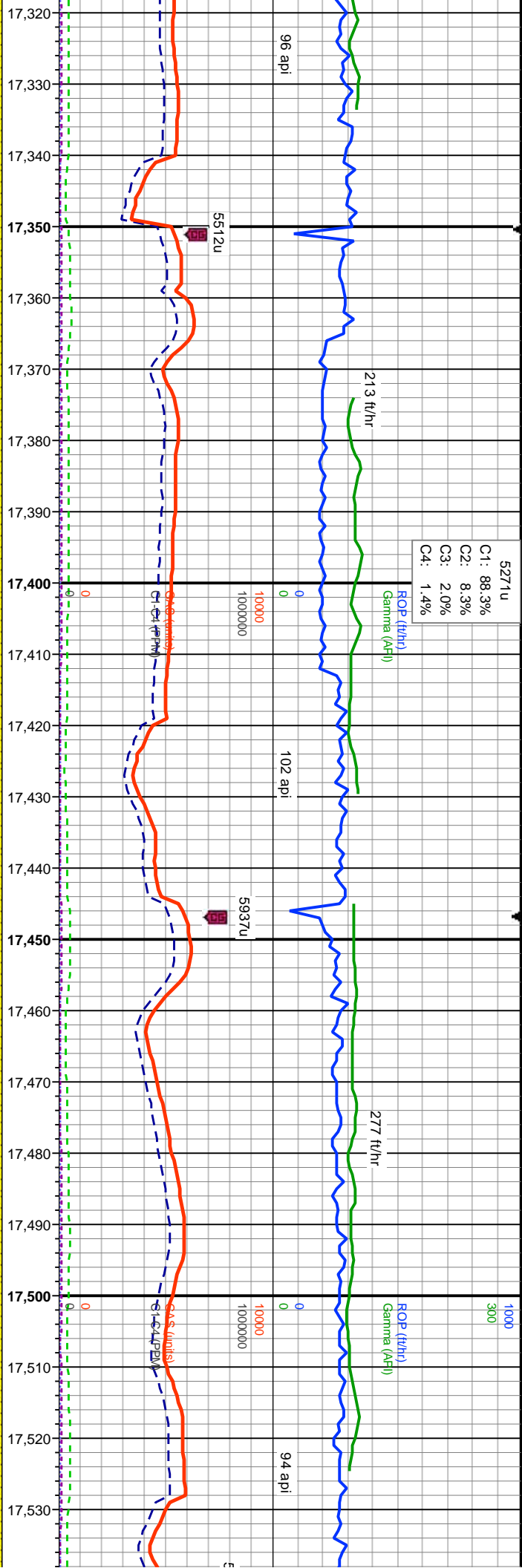
MD: 16,760'
INC: 90.09°
AZM: 181.35°
TVD: 7,022.59'
VS: 9,288.84'

MD: 16,855'
INC: 90.21°
AZM: 181.58°
TVD: 7,022.34'
VS: 9,383.06'

100% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg, mod cons, mod srt, w srt, arg- silty mtx, sl calc; tr silty sh, tr ls





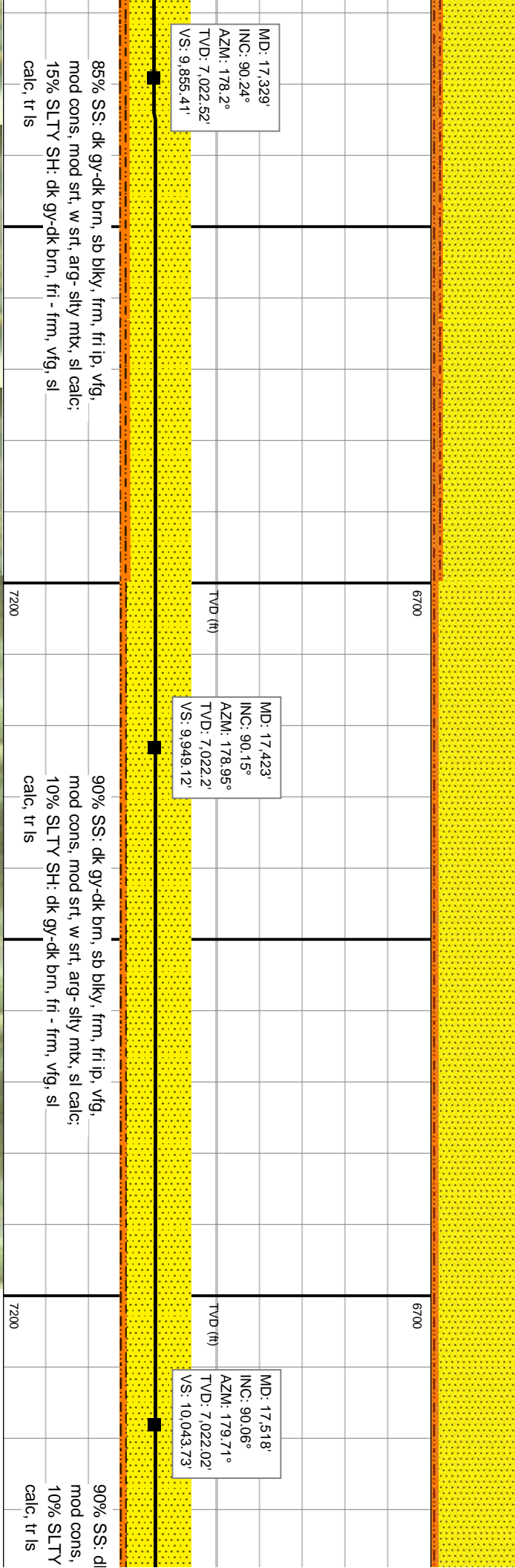


5271u
C1: 88.3%
C2: 8.3%
C3: 2.0%
C4: 1.4%

MD: 17,329'
INC: 90.24°
AZM: 178.2°
TVD: 7,022.52'
VS: 9,855.41'

MD: 17,423'
INC: 90.15°
AZM: 178.95°
TVD: 7,022.2'
VS: 9,949.12'

MD: 17,518'
INC: 90.06°
AZM: 179.71°
TVD: 7,022.02'
VS: 10,043.73'



85% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg-silty mtx, sl calc;
15% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl
calc, tr ls

90% SS: dk gy-dk brn, sb blk, frm, fri ip, vfg,
mod cons, mod srt, w srt, arg-silty mtx, sl calc;
10% SLTY SH: dk gy-dk brn, fri - frm, vfg, sl
calc, tr ls

90% SS: dk
mod cons,
10% SLTY
calc, tr ls

