



Scale: 5" / 100'
Measured Depth Log

Well Name Raindance 20-362HN

Location NENE SEC 30 T6N R67W

State COLORADO

County WELD

Country USA

Rig Number PRECISION 460

API Number 05-123-44982-0000

AFE # 17DC0065

Geographic Region DJ BASIN

Field WATTENBERG

Spud Date 8/20/2017

Drilling Completed 8/22/2017

Ground Elevation 4789'

K.B. Elevation 4809'

Logged Interval 6000 To 12390'

Total Depth 12390'

Formation NIOBRARA C CHALK

Type of Drilling Fluid OIL BASED MUD

Operator

Company Great Western Oil and Gas

Address 1801 Broadway, Ste 500
Denver, CO 80202



Geologist










Name Mark Sowinski & Alec Walker

Company Terra Guidance





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



Color Coding

| | | | |
|---|------------|---|----------|
|  | Oil |  | Gas |
|  | Note |  | Pressure |
|  | Error |  | Seal |
|  | Condensate |  | Core |
|  | Water | | |

Other Sy

| | | | |
|---|----------|---|--------|
|  | ORGANIC |  | FO |
|  | PINPOINT |  | GAS SH |

DEAD VUGGY

EVEN

QUESTIONABLE

Engineering

OIL SH

SPOTTED STAINING BIT

OVERT

CASING

REVERS

Porosity

CONNECTION (LEFT)

SIDEWA

E EARTHY CONNECTION (RIGHT)

SIDEWA

FENESTRAL CONNECTION GAS SLIDE

F FRACTURE CORE - LOST

SURV

INTERCRYSTALLINE CORE - RECOVERED










TRIP

INTEROOLITIC DST INTERVAL






























WIRELIN

MOLDIC FAULT












































WIRELIN

| | | | |
|---|------------|---|----------|
|  | Oil |  | Gas |
|  | Note |  | Pressure |
|  | Error |  | Seal |
|  | Condensate |  | Core |
|  | Water | | |












Rock Types

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

Accessories

| | | | | | |
|---|--------------|---|----------------------|---|--------------------|
|  | F FOSSIL |  | ARGILLACEOUS |  | GLAUCONITE |
|  | GASTROPOD |  | ARGILLITE GRAIN |  | GYPSIFEROUS |
|  | ALGAE |  | B BENTONITE |  | HEAVY MINERAL |
|  | AMPHIPORA |  | BITUMINOUS SUBSTANCE |  | KAOLIN |
|  | BELEMNITE |  | BRECCIA FRAGMENTS |  | MARLSTONE |
|  | BIOCLASTIC |  | CALCAREOUS |  | MINERAL CRYSTALS |
|  | BRACHIOPOD |  | CARBONACEOUS FLAKES |  | NODULES |
|  | BRYOZOA |  | CHTDK |  | PHOSPHATE PELLETS |
|  | CEPHALOPOD |  | COAL - THIN BEDS |  | PYRITE |
|  | CORAL |  | DOLOMITIC |  | SALT CAST |
|  | CRINOID |  | FELDSPAR |  | SANDY |
|  | ECHINOID |  | FERRUGINOUS PELLET |  | SILICEOUS |
|  | FISH |  | FERRUGINOUS |  | SILTY |
|  | FORAMINIFERA |  | TUFFACEOUS |  | SILTSTONE STRINGER |
|  | ANHYDRITIC | | | | |

Stringer

| | |
|---|-----------------------|
|  | ANHYDRITE STRINGER |
|  | BENTONITE STRINGER |
|  | COAL STRINGER |
|  | DOLOMITE STRINGER |
|  | GYPSUM STRINGER |
|  | LIMESTONE STRINGER |
|  | MARLSTONE (CALC) STRG |
|  | MARLSTONE (DOL) STRG |
|  | SANDSTONE STRINGER |
|  | SHALE STRINGER |
|  | SILTSTONE STRINGER |

ymbols

FORMATION TOP L LITHOGRAPHIC

Rounding

LOW MX MICROXLN

MIN DEPTH AN ANGULAR MS MUDSTONE

FL FAULT R ROUNDED PS PACKSTONE

DW SUBANG WS WACKESTONE

TURNED STRATA R SUBRND

Sorting

SE FAULT

Textures

ALL CORE (LEFT) M MODERATE

ALL CORE (RIGHT) BS BOUNDSTONE P POOR

C CHALKY W WELL

KEY CX CRYPTOXLN

3AS E EARTHY

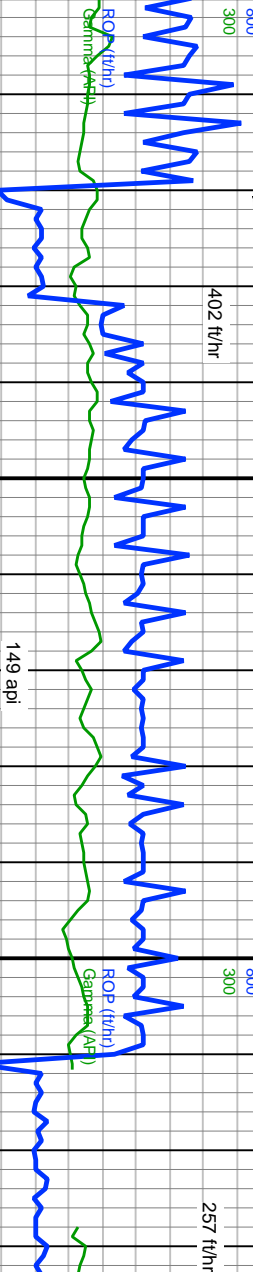
NE TESTED - LEFT FX FINELYXLN

NE TESTED - RT GS GRAINSTONE

TERRA GUIDANCE
BEGAN LOGGING @ 21:15 hrs MST 08/20/2017
BLOODHOUND GAS CHROMATOGRAPH #5098

ROP
ROP
Gamma

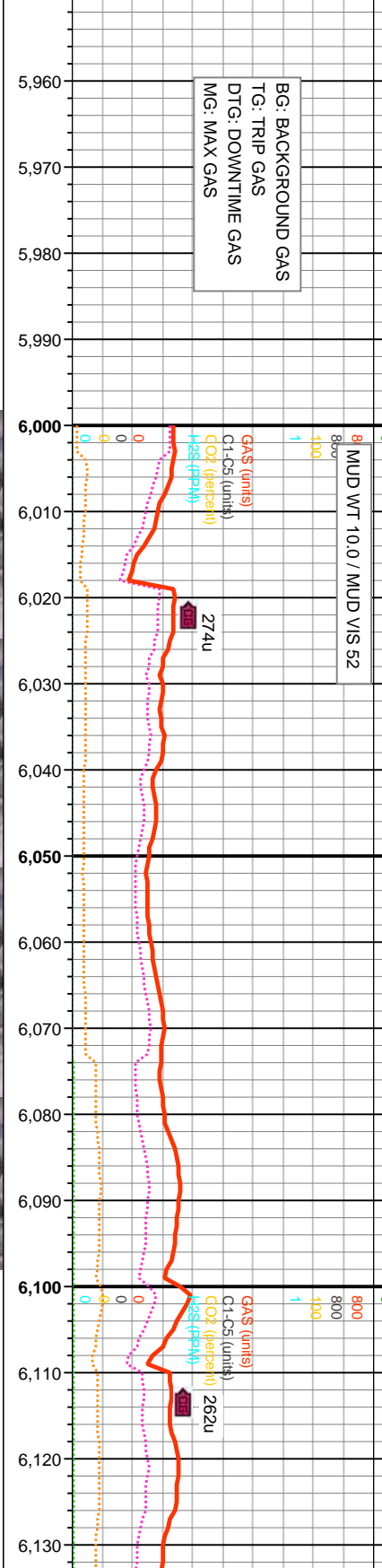
GAPS IN GAMMA DATA DUE
TO RAPID DRILLING RATE



Total Gas & Chromatograph

GAS
C1
C2
C3
C4
C5
CO2
H2S

BG: BACKGROUND GAS
TG: TRIP GAS
DTG: DOWNTIME GAS
MG: MAX GAS



Images



% Lithology



MD: 5,998'
INC: 30.1°
AZM: 350.35°
TVD: 5,868.03'
VS: 64.66'

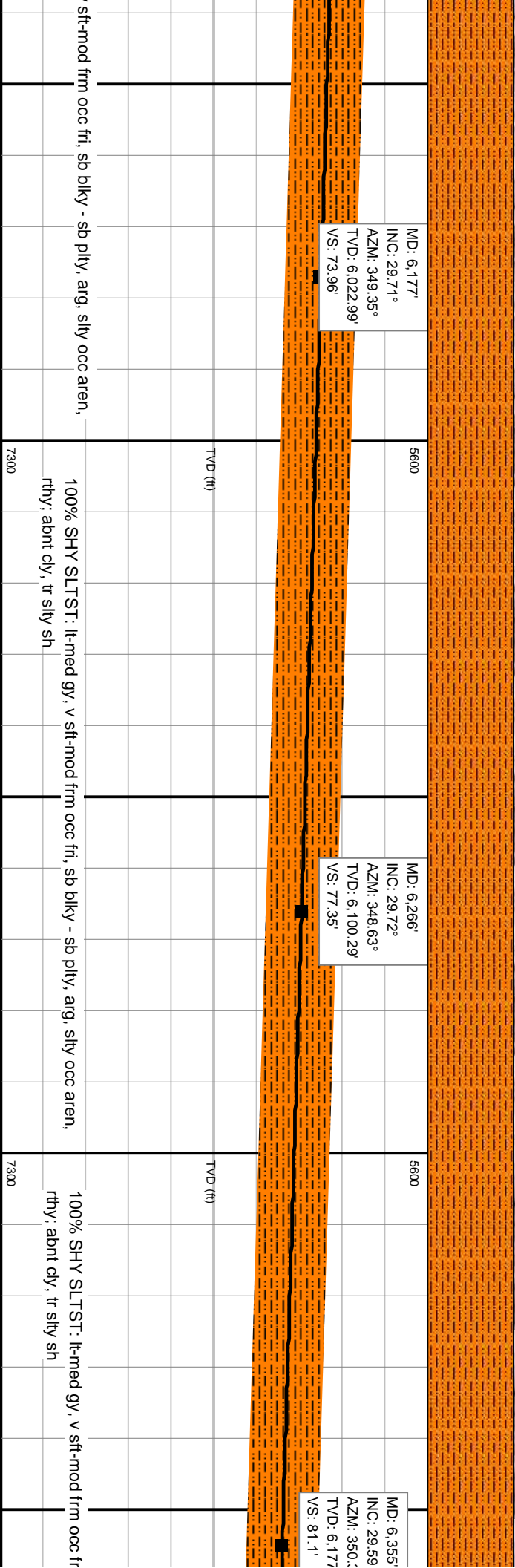
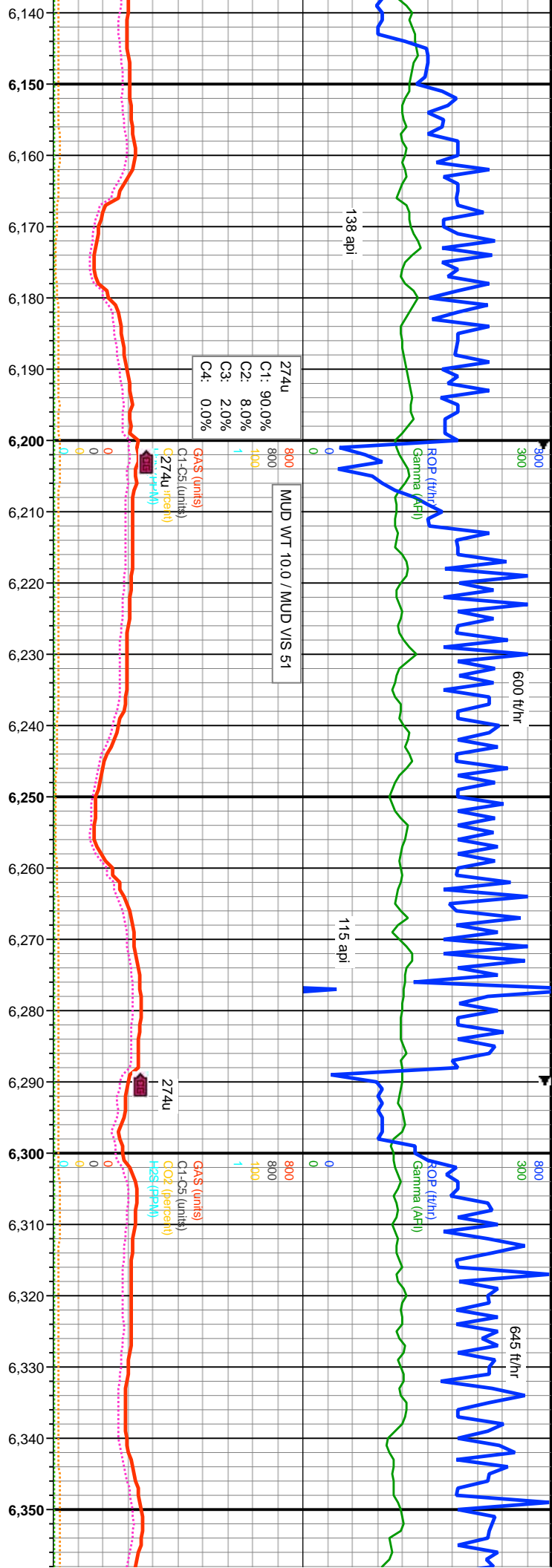
MD: 6,087'
INC: 30.17°
AZM: 351.24°
TVD: 5,945'
VS: 69.49'

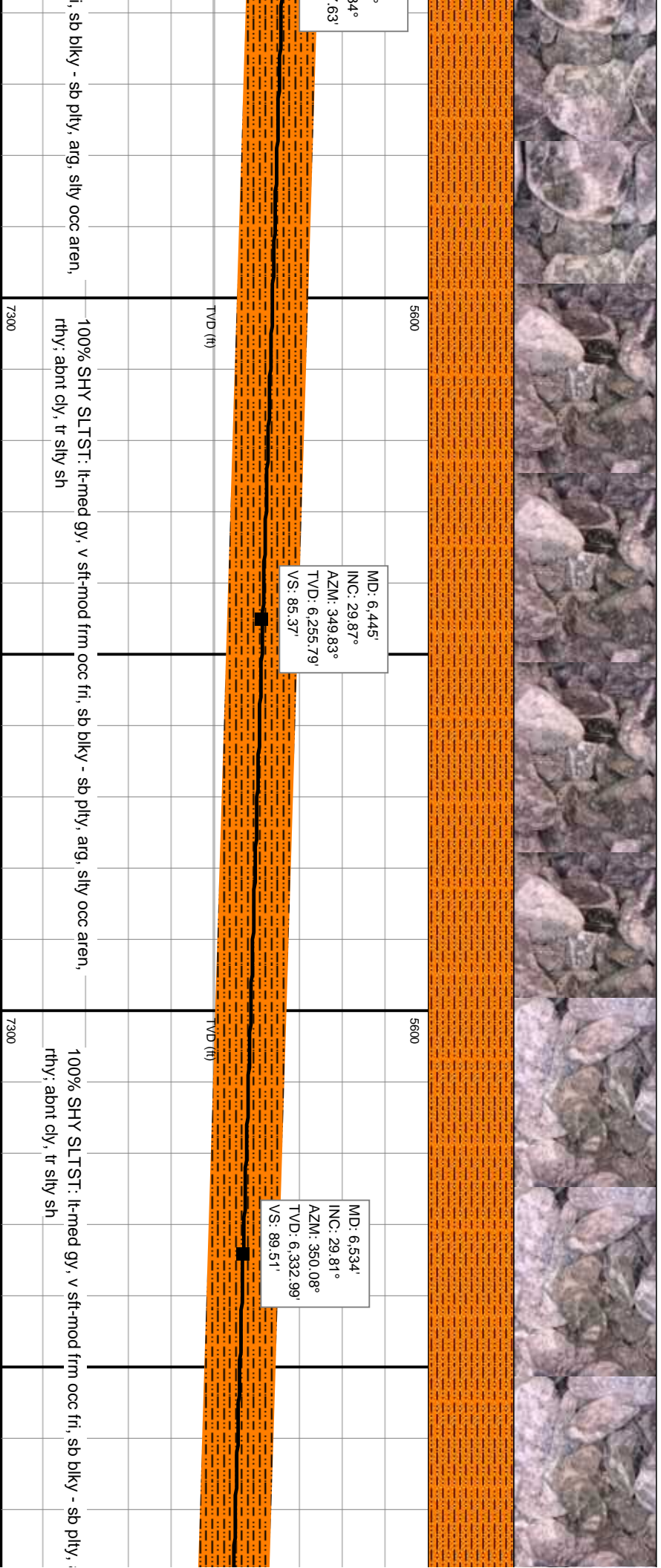
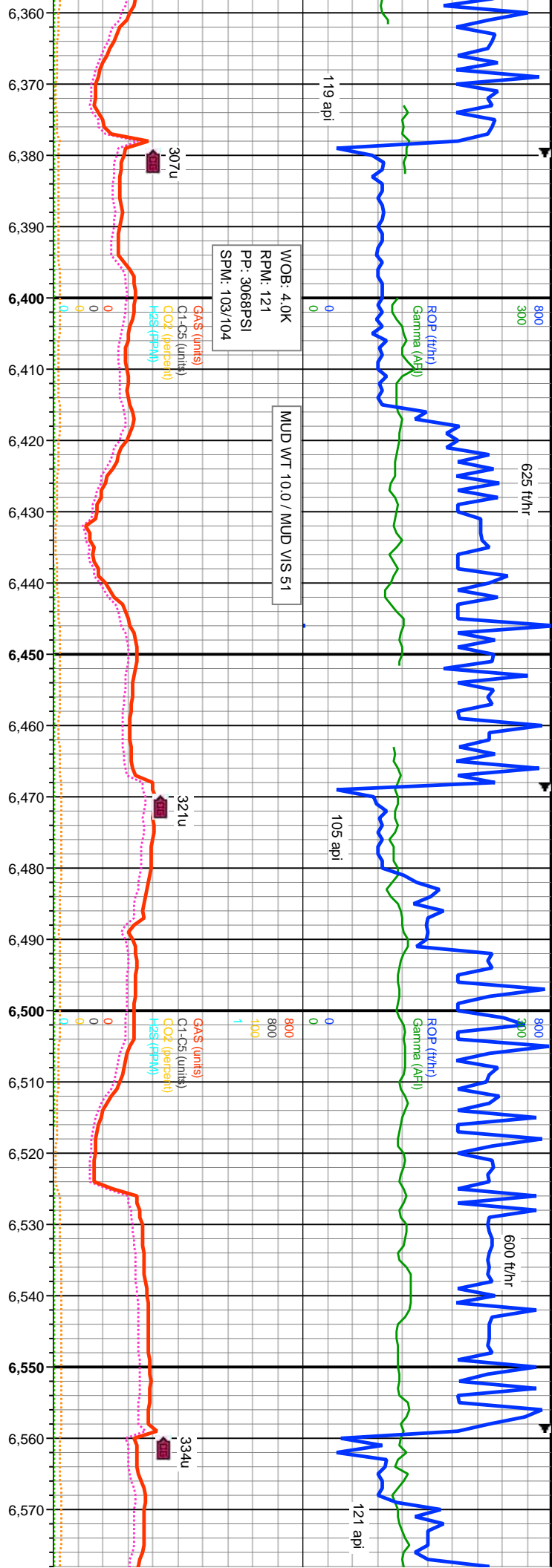
Well Bore
TVD

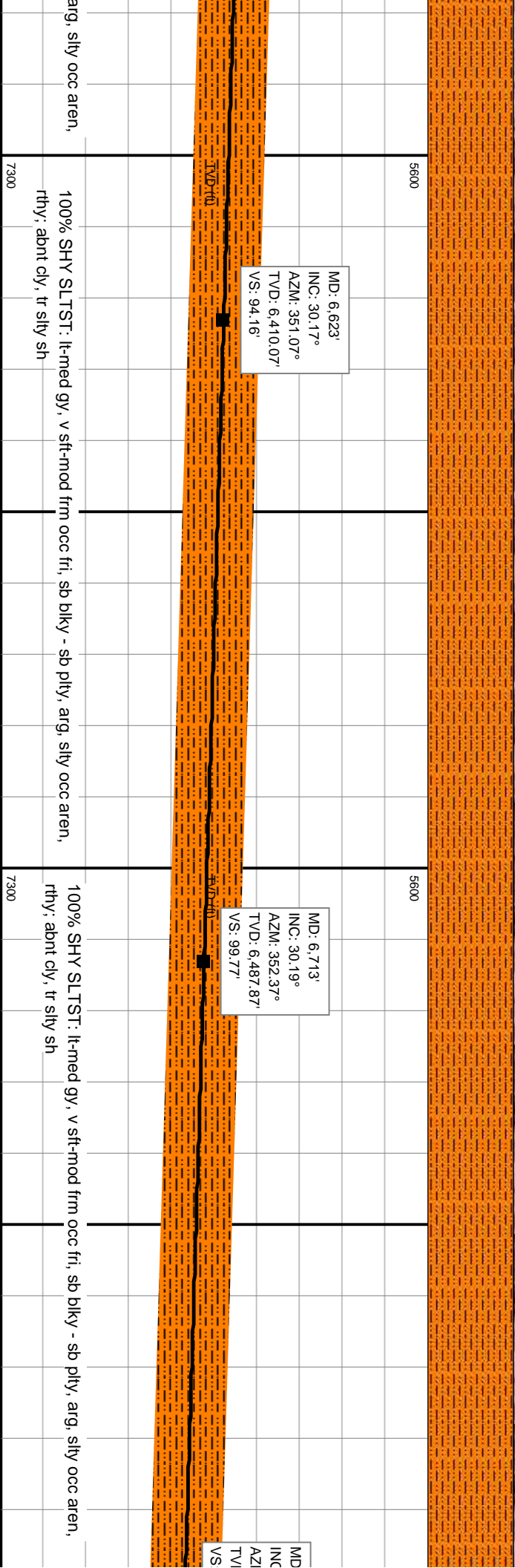
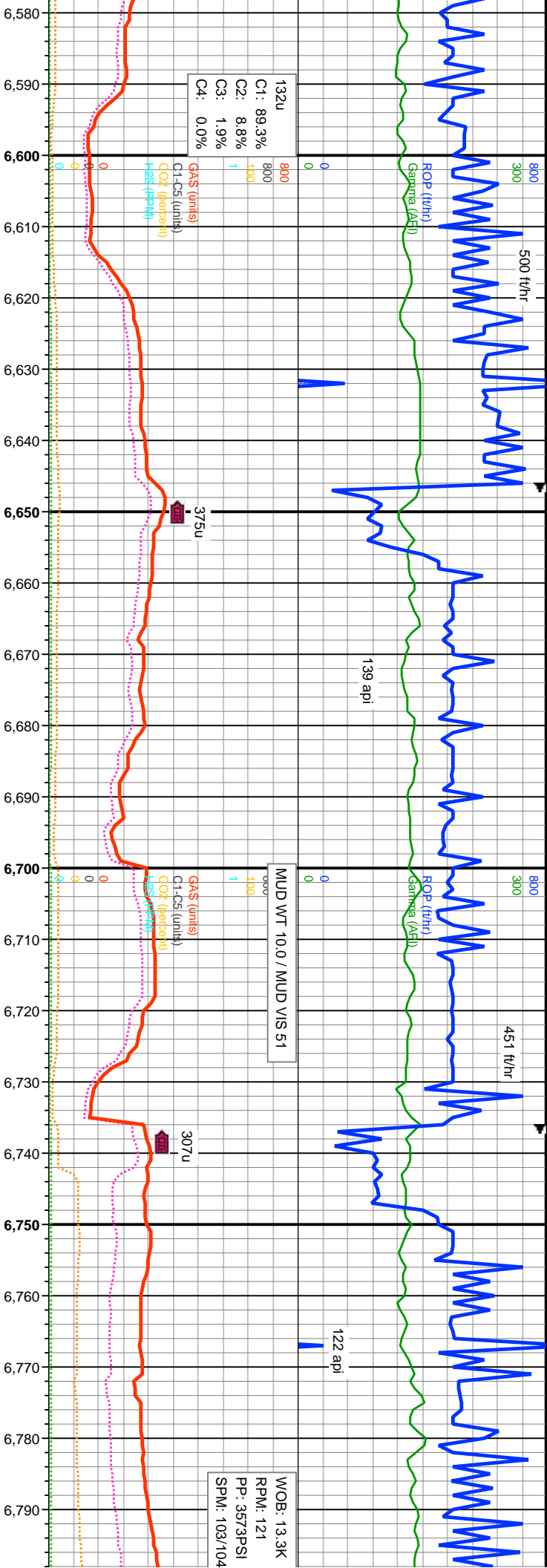
Bit #: 2
Type: AT505F
Size: 8.5
Depth In: 1,537'
Depth Out: 12,390'
Hours: 33.91 hrs
Avg Ft/Hr: 320.05 /hr
Jets: 5X15
S/N: 7164004

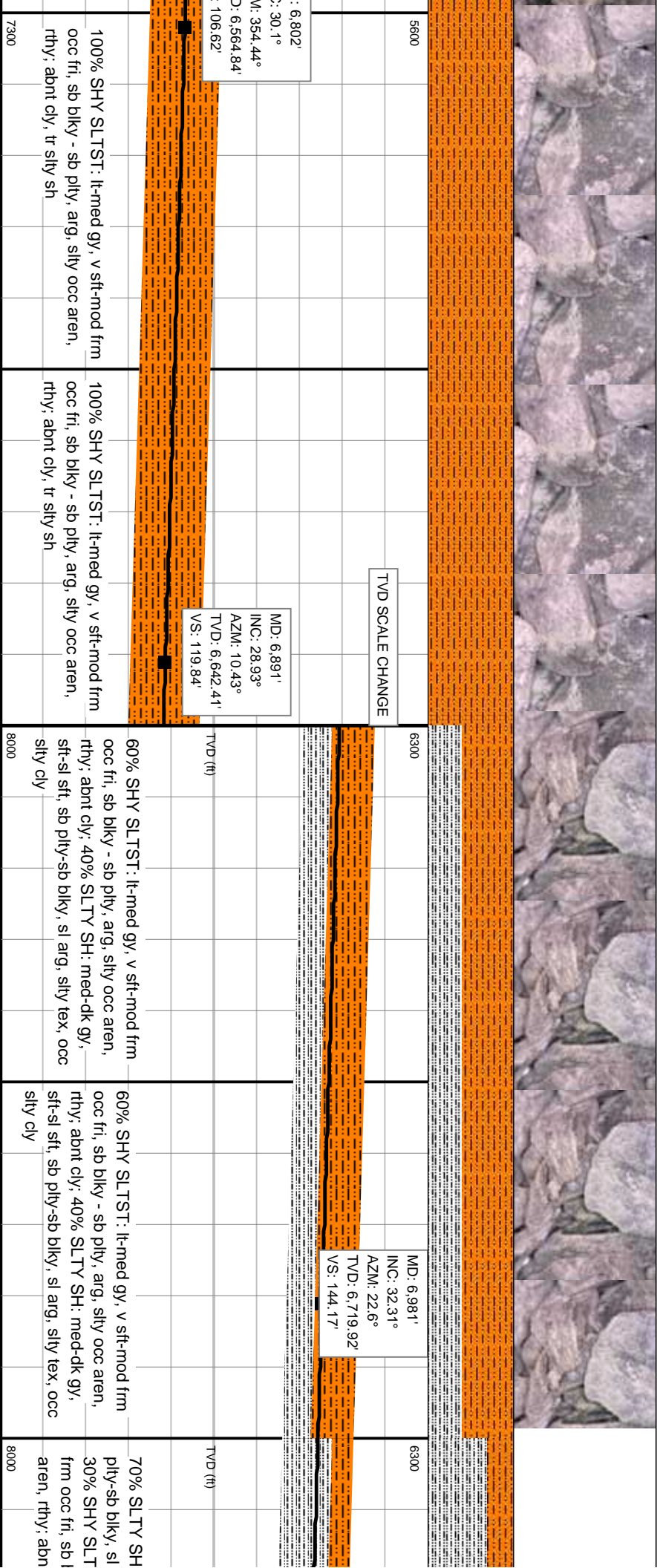
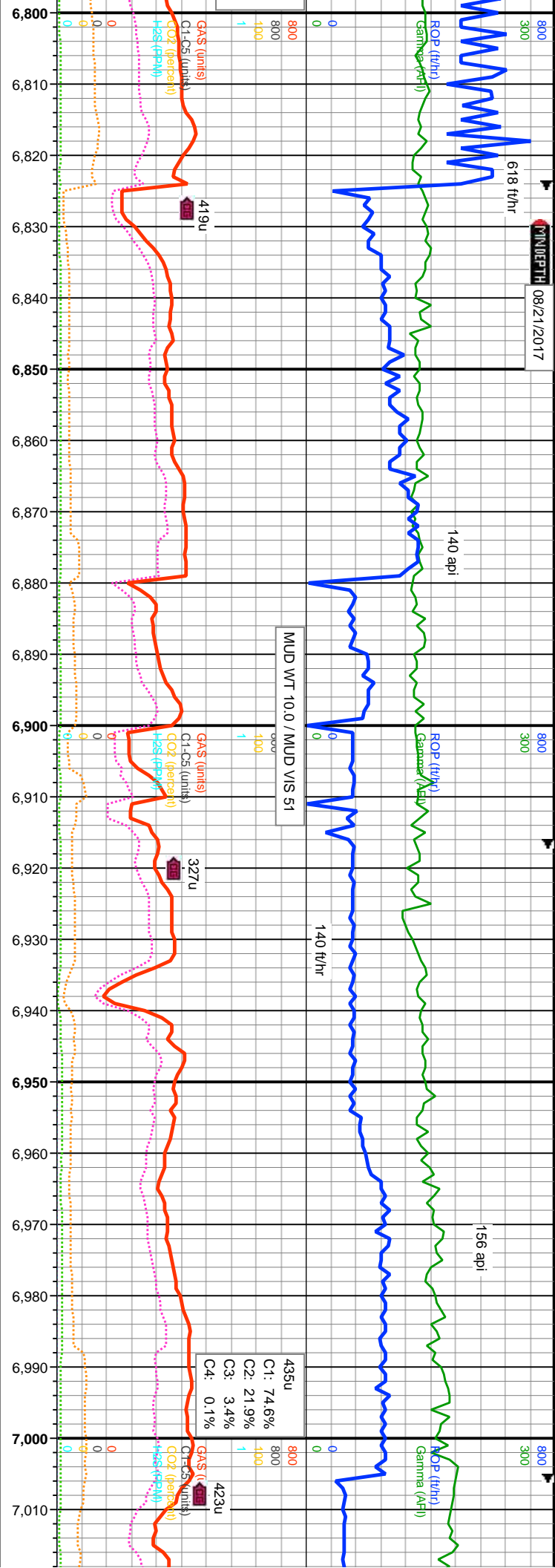
100% SHY SLTST: lt-med gy, v sft-mud frm occ fri, sb blkly - sb plty, arg, slty occ aren,
rthy; abnt cly, tr slty sh

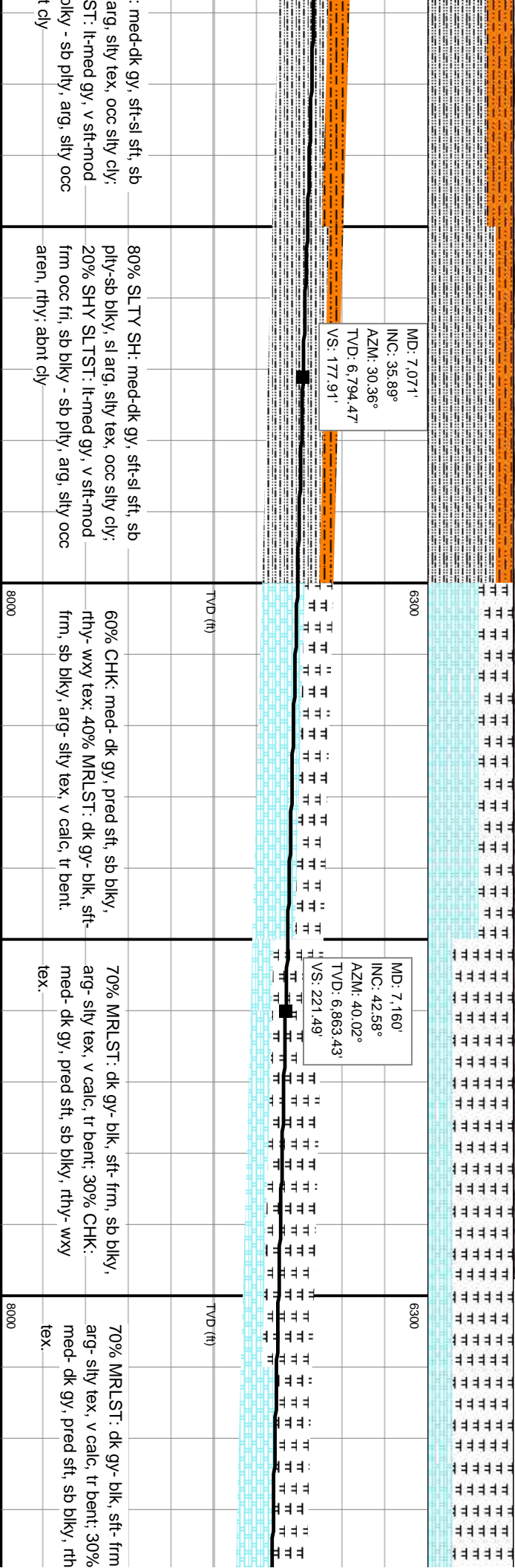
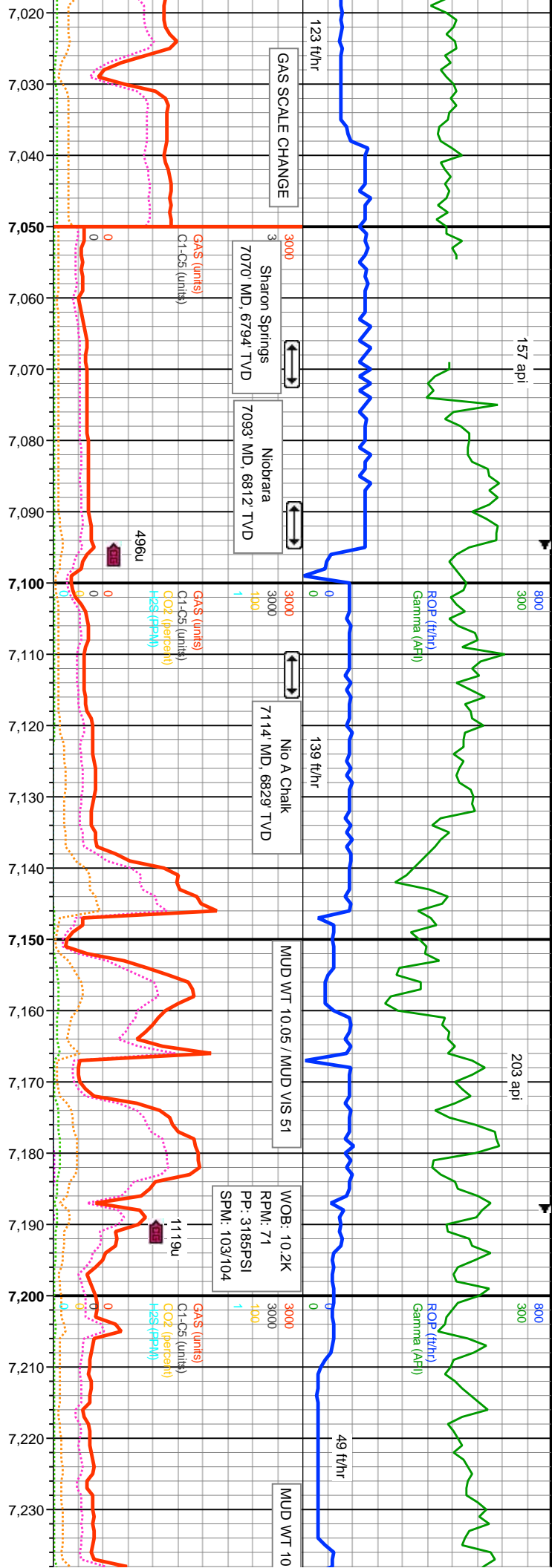
100% SHY SLTST: lt-med gy, v
rthy; abnt cly, tr slty sh

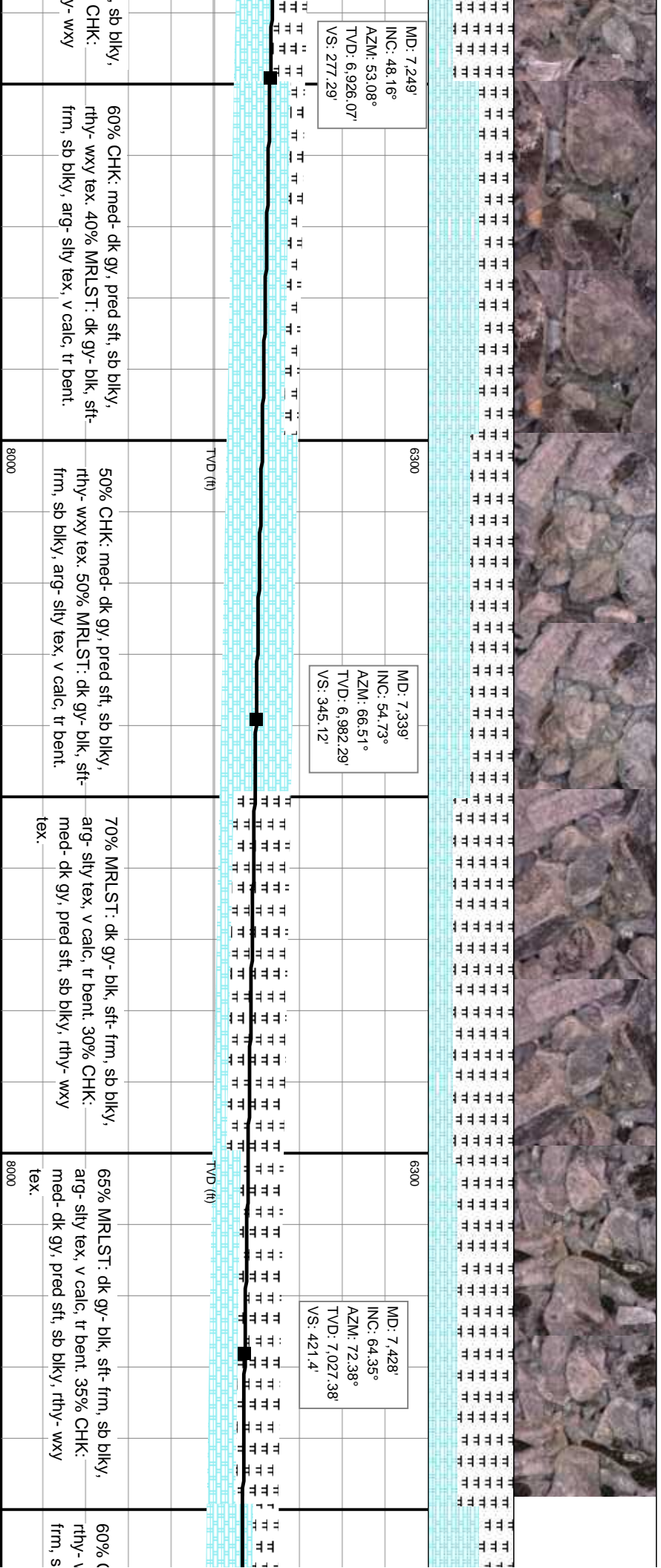
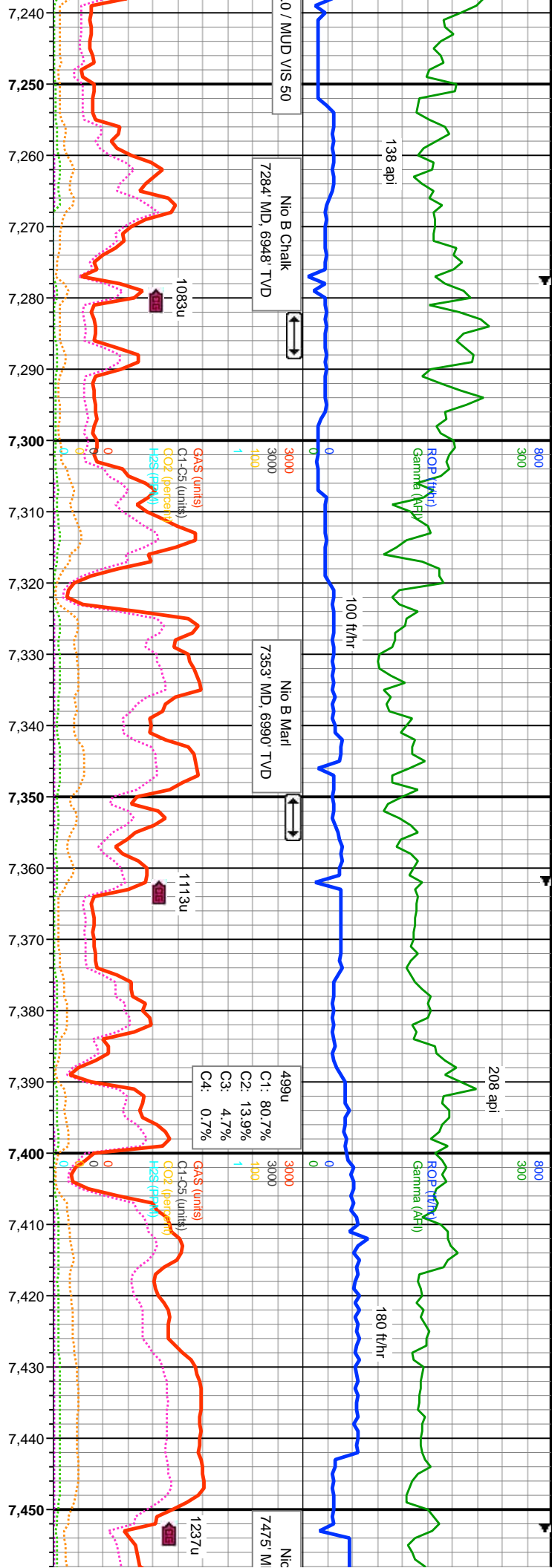


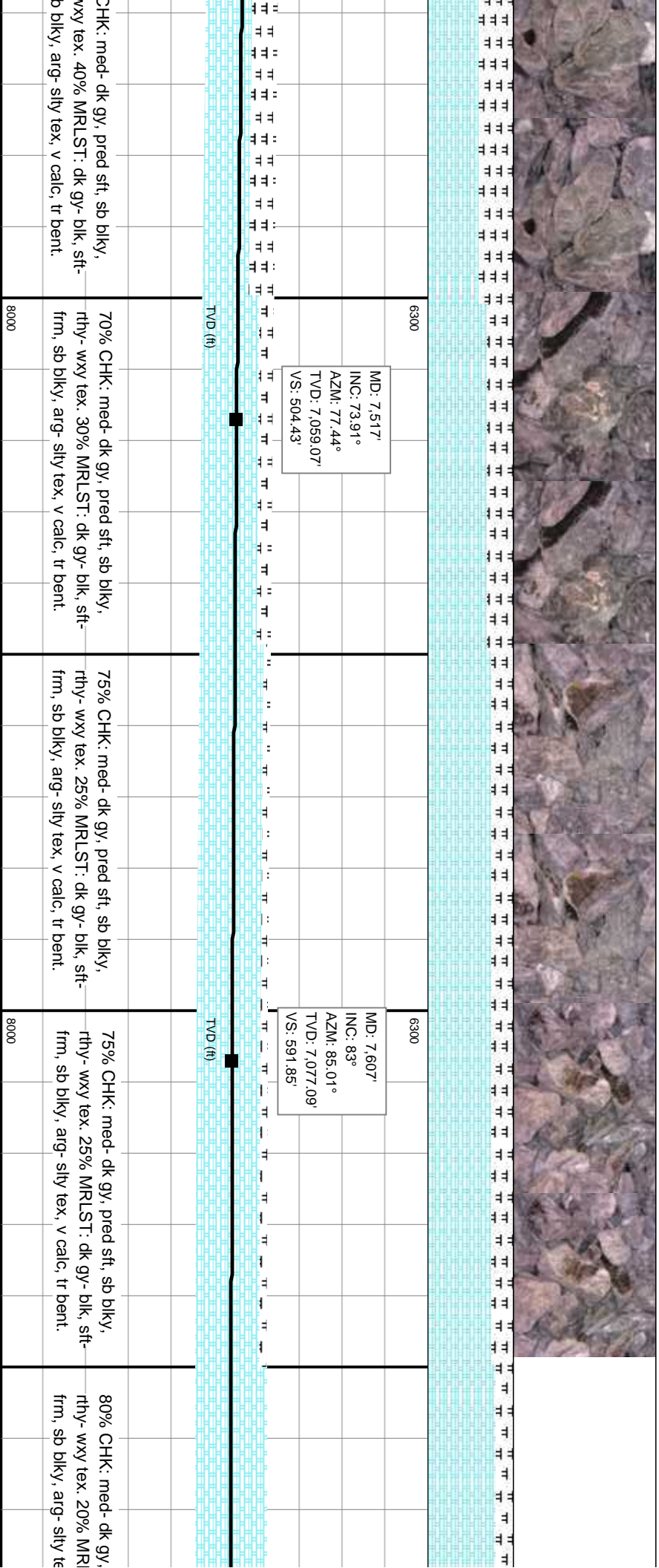
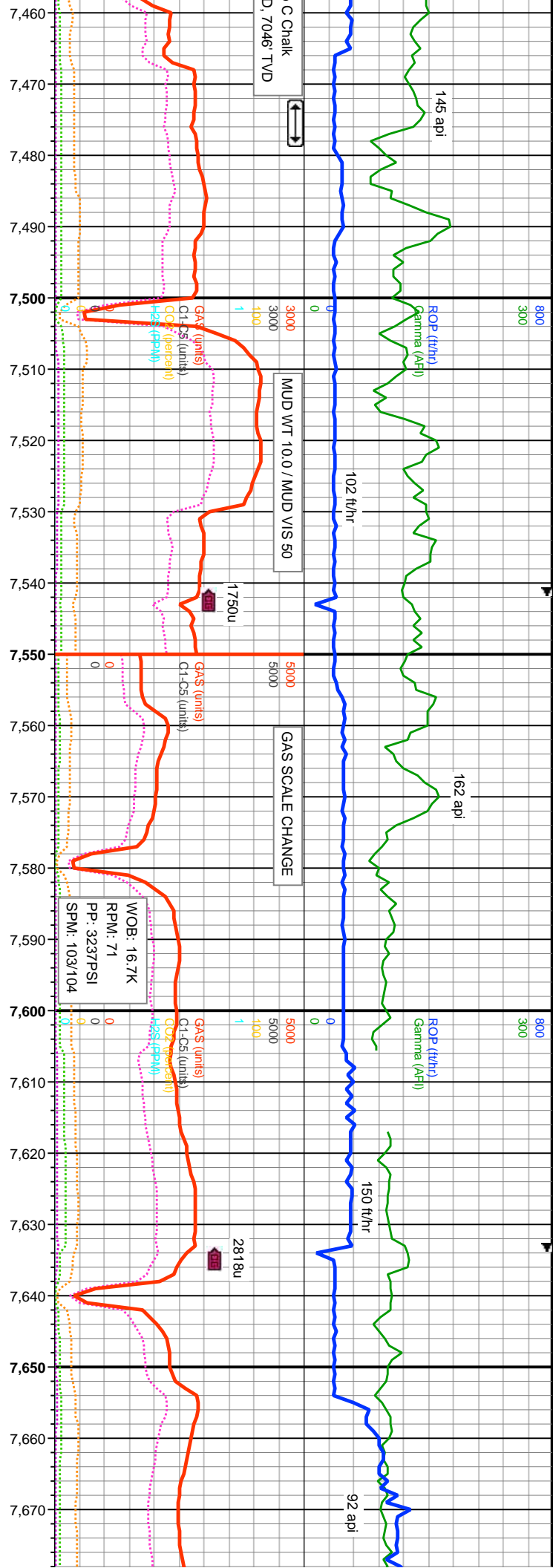


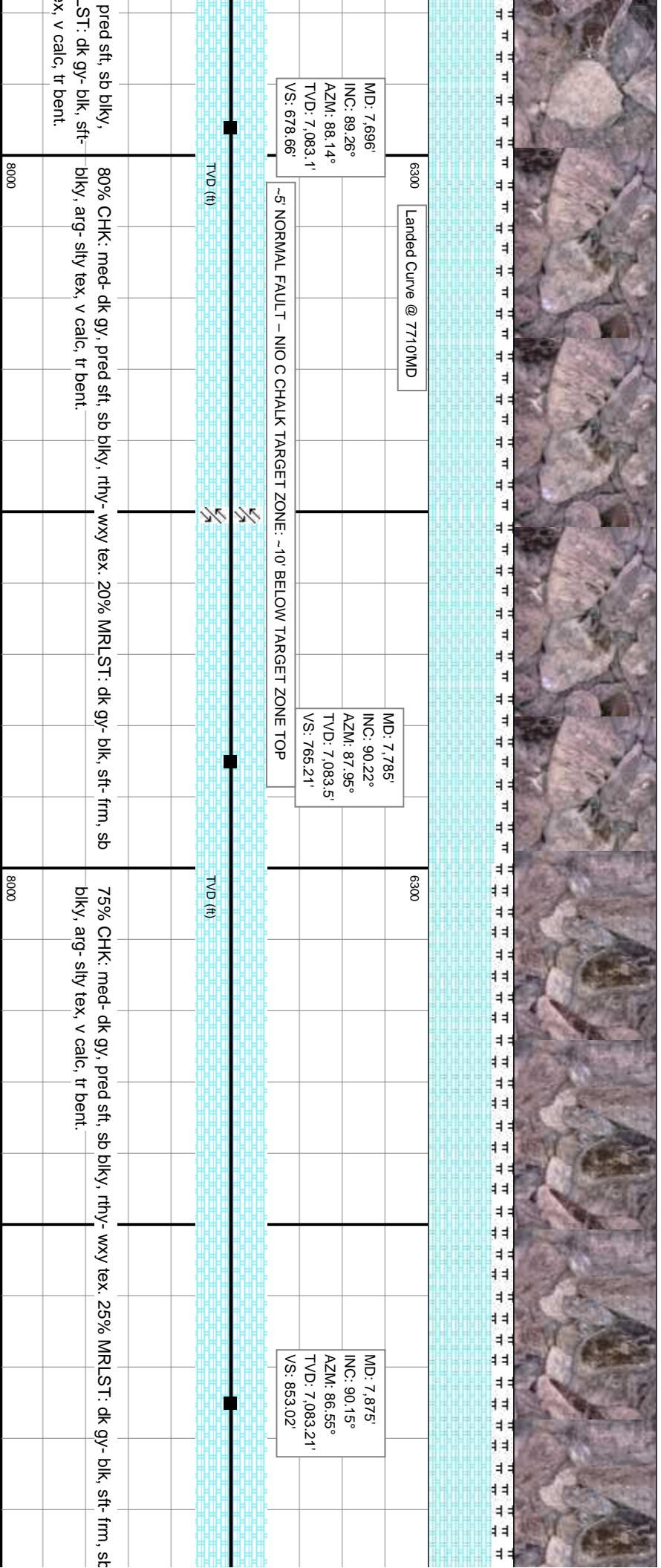
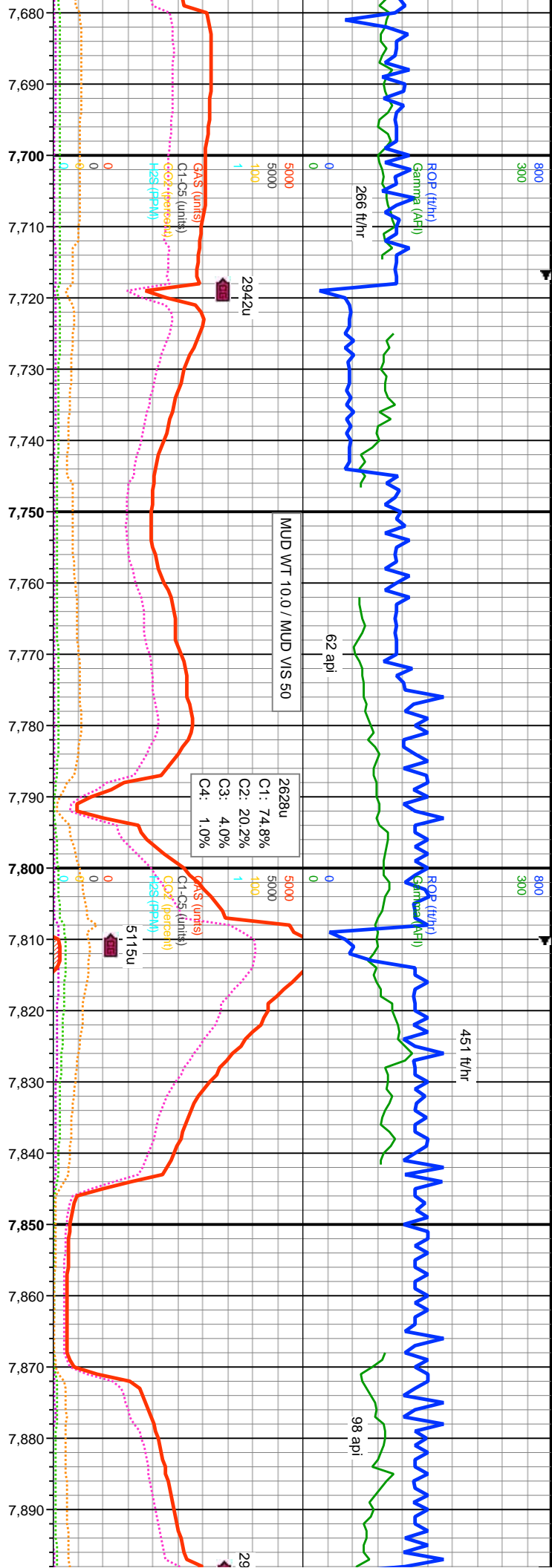


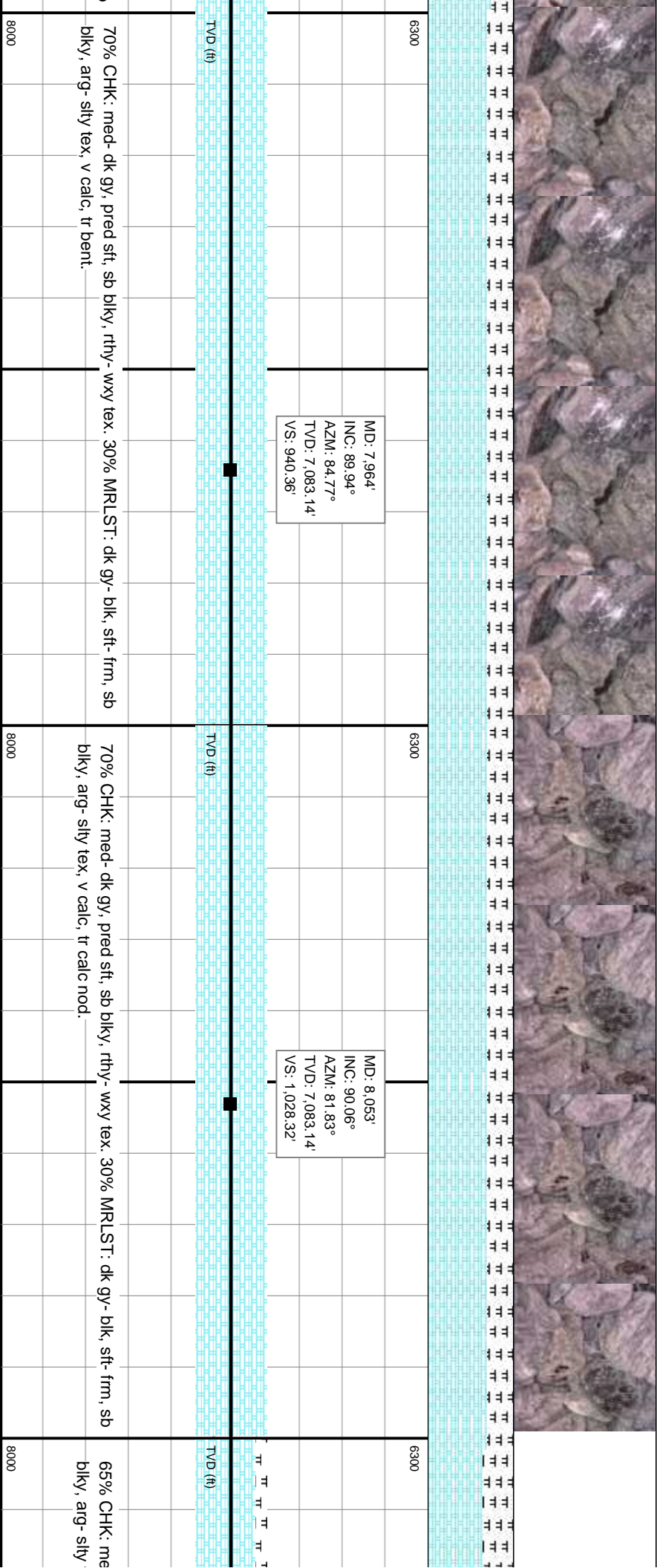
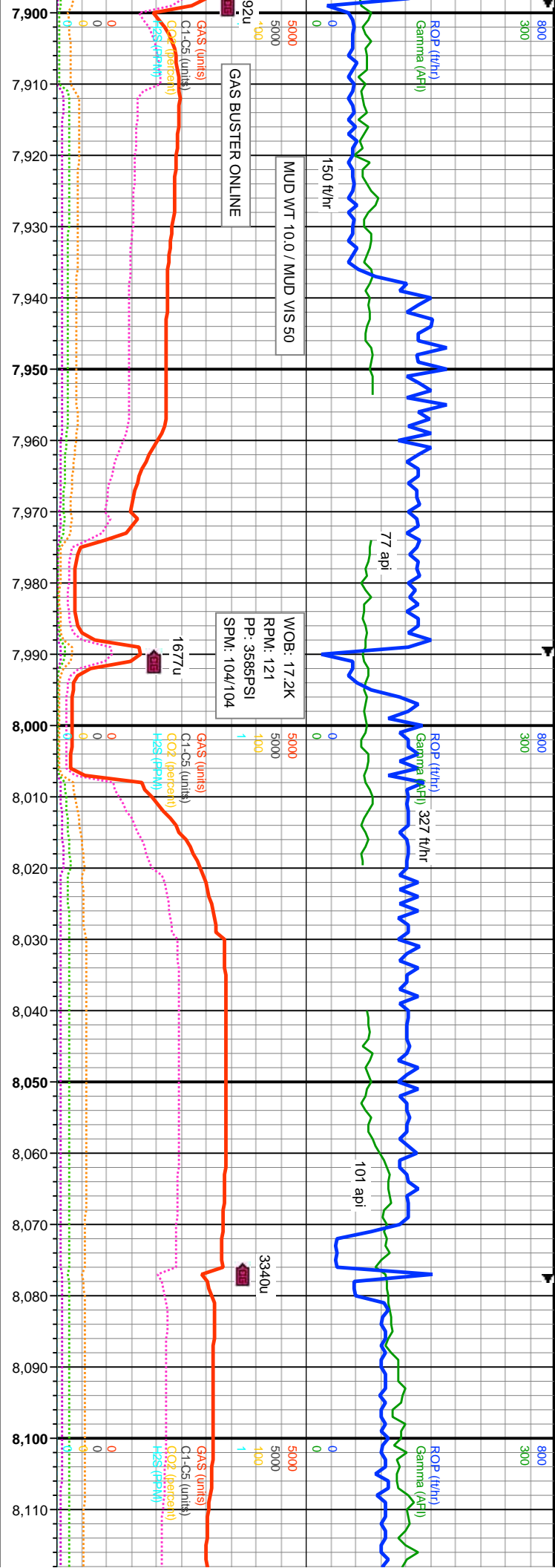


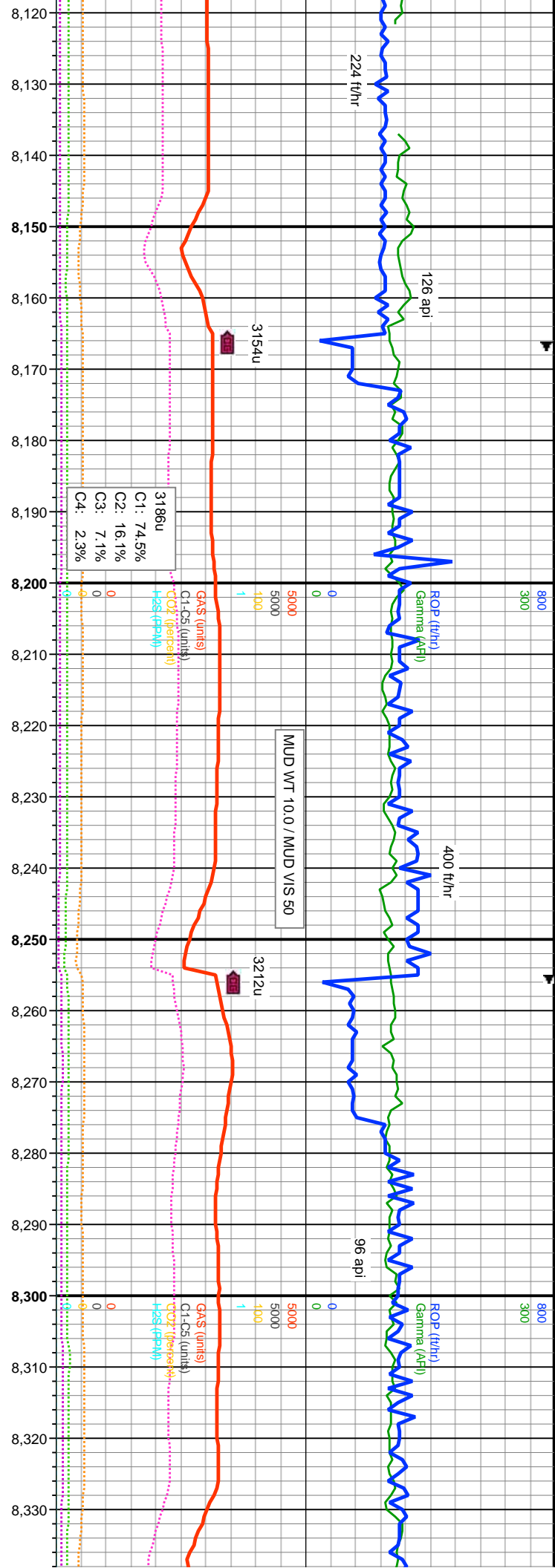












MD: 8.142'
INC: 90.15°
AZM: 82.59°
TVD: 7,082.98'
VS: 1,116.54'

MD: 8.232'
INC: 90.09°
AZM: 88°
TVD: 7,082.79'
VS: 1,204.94'

MD: 8.321'
INC: 90.18°
AZM: 89.91°
TVD: 7,082.58'
VS: 1,291.15'

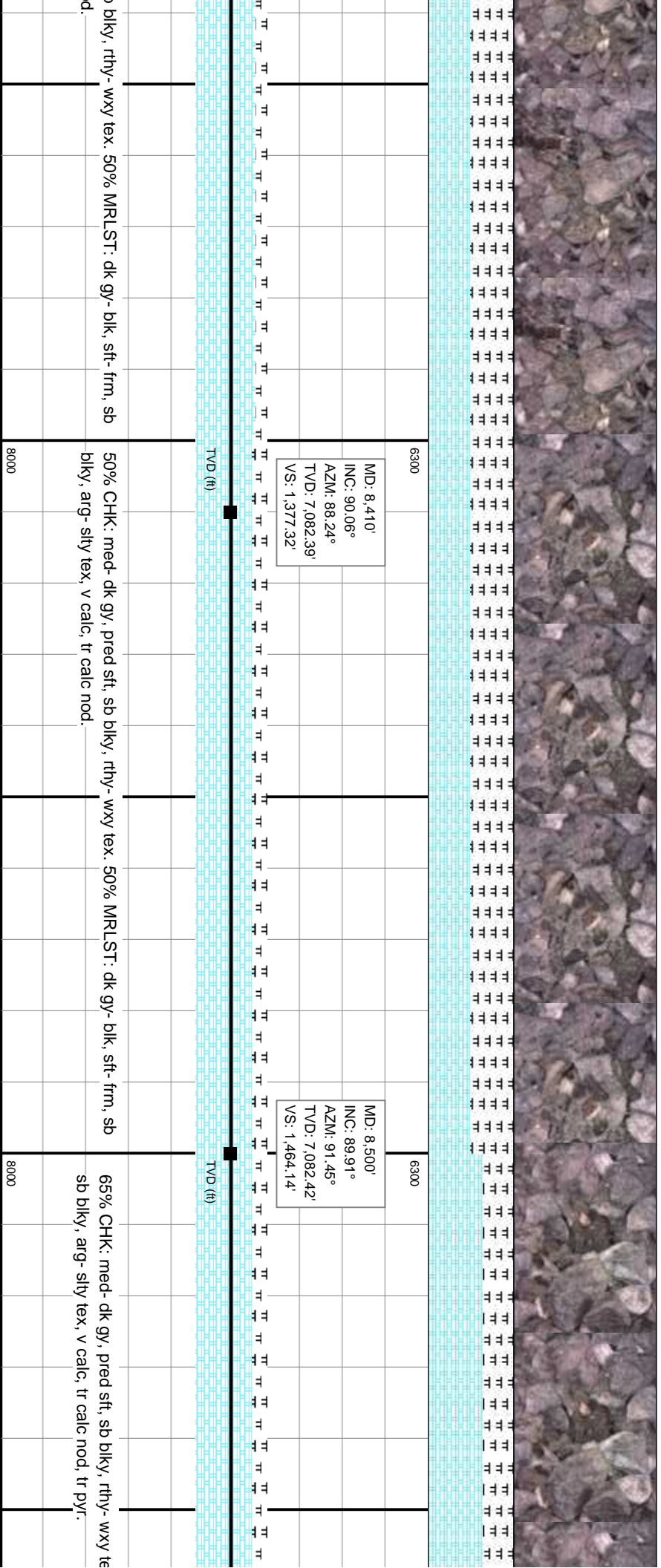
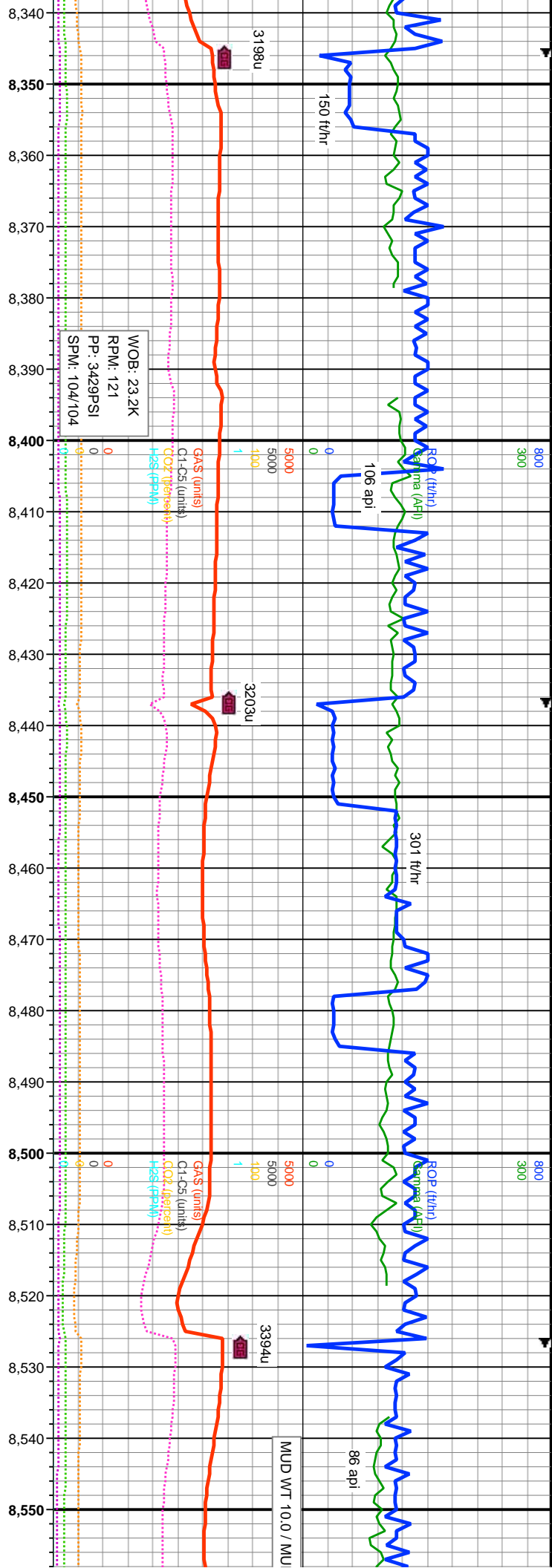
TVD (ft)

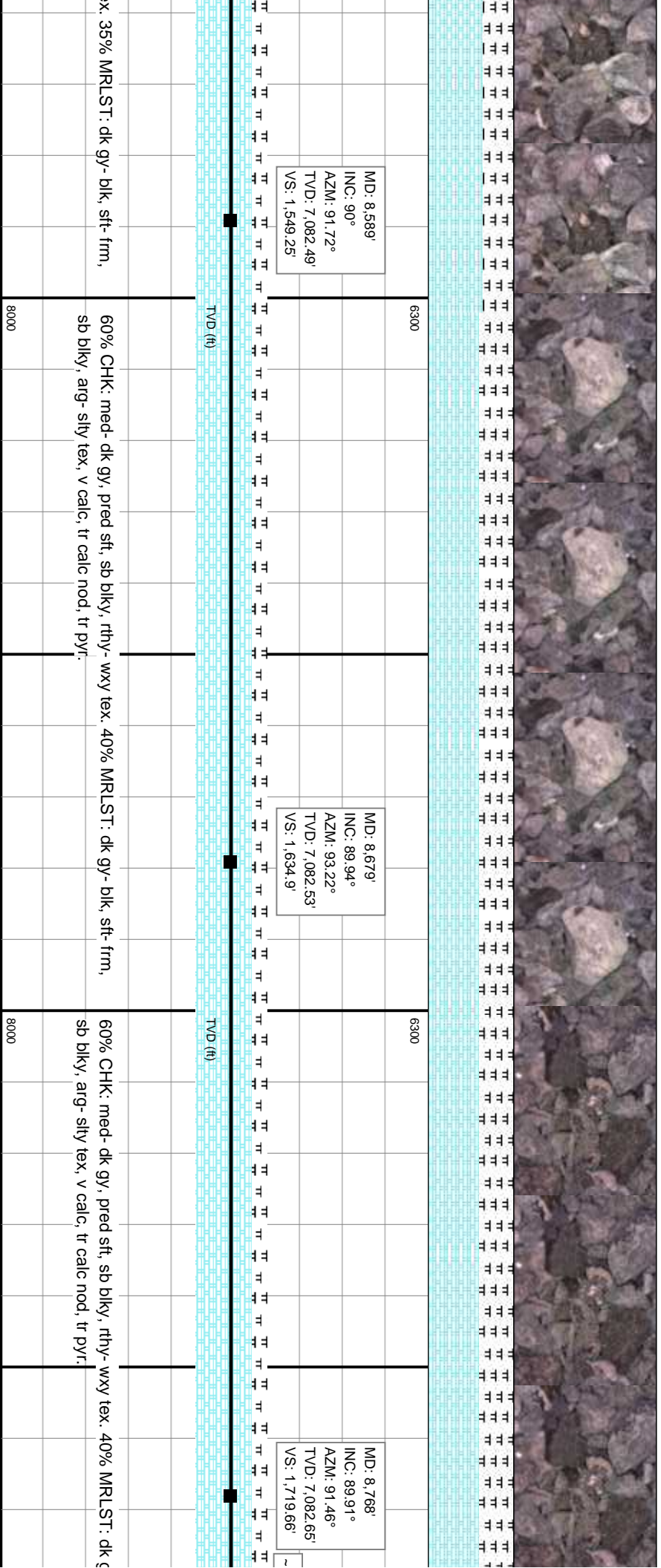
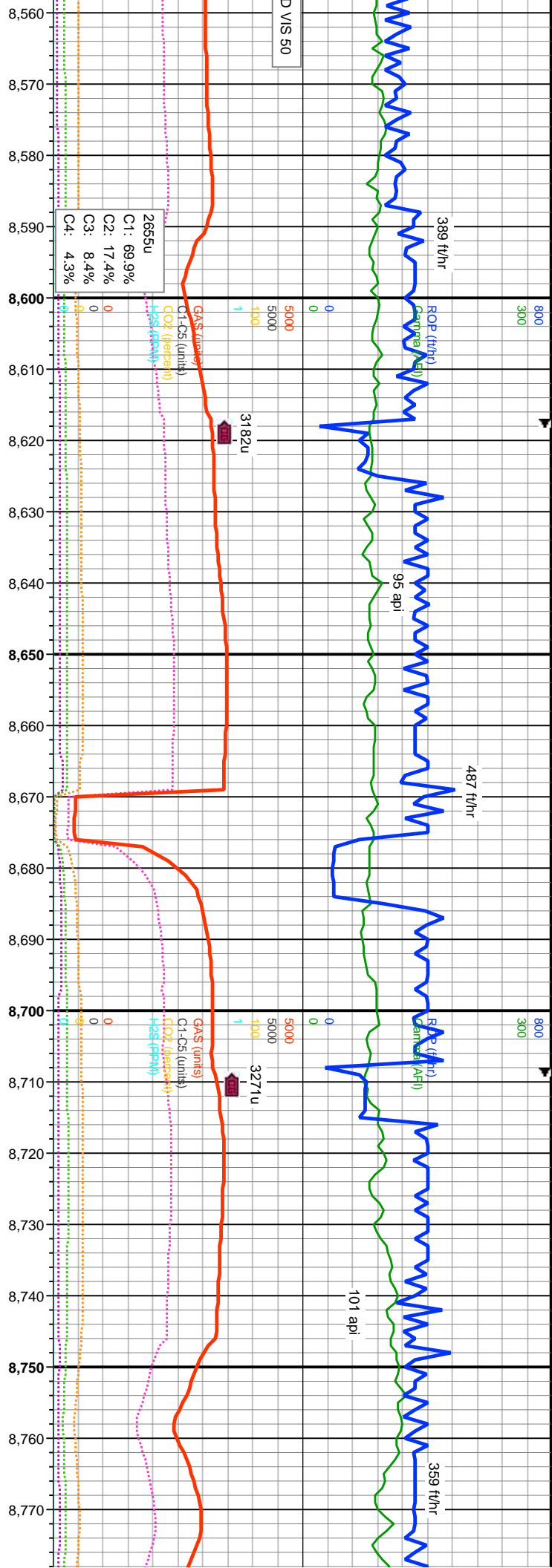
TVD (ft)

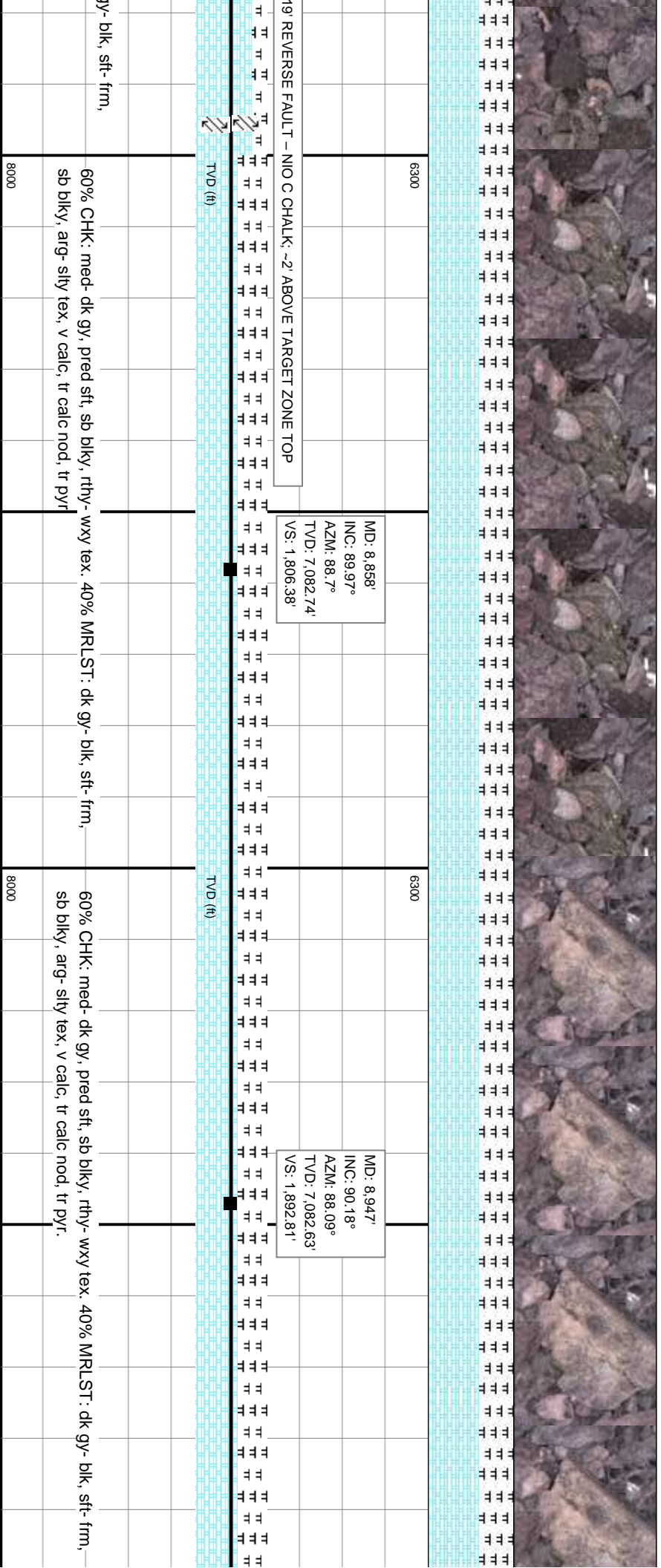
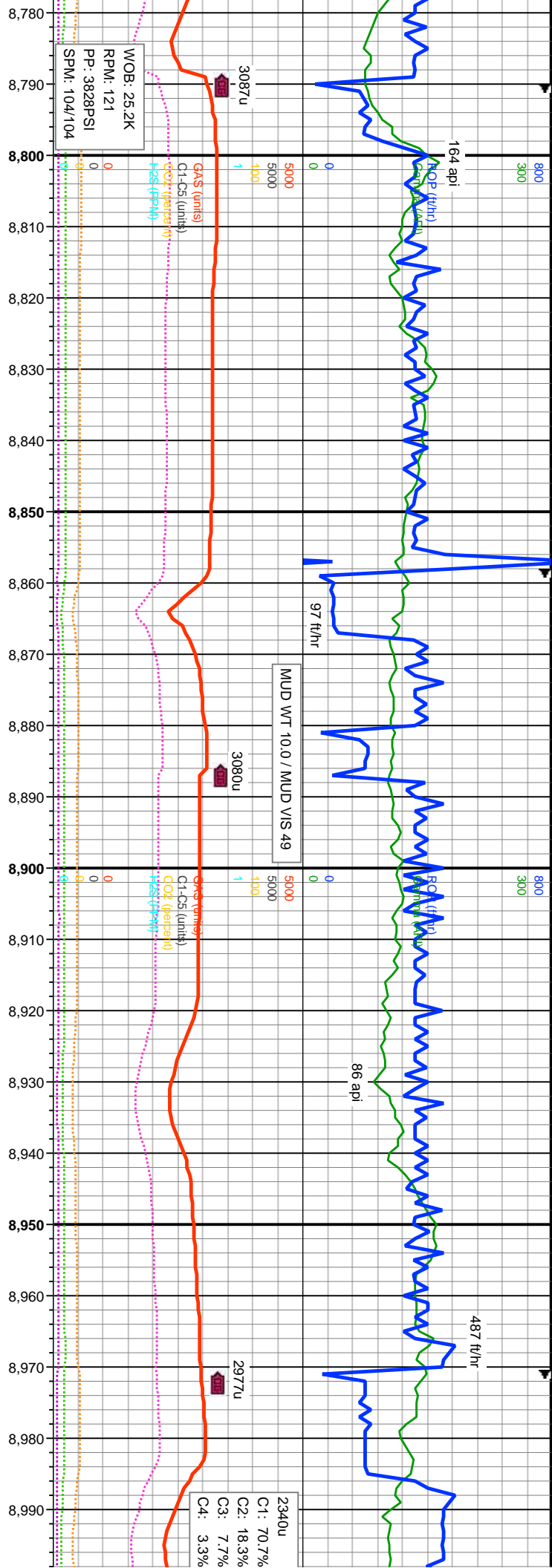
dk gy, pred sft, sb blk, rthy- wxy tex. 25% MRLST: dk gy- blk, sft- frm, sb

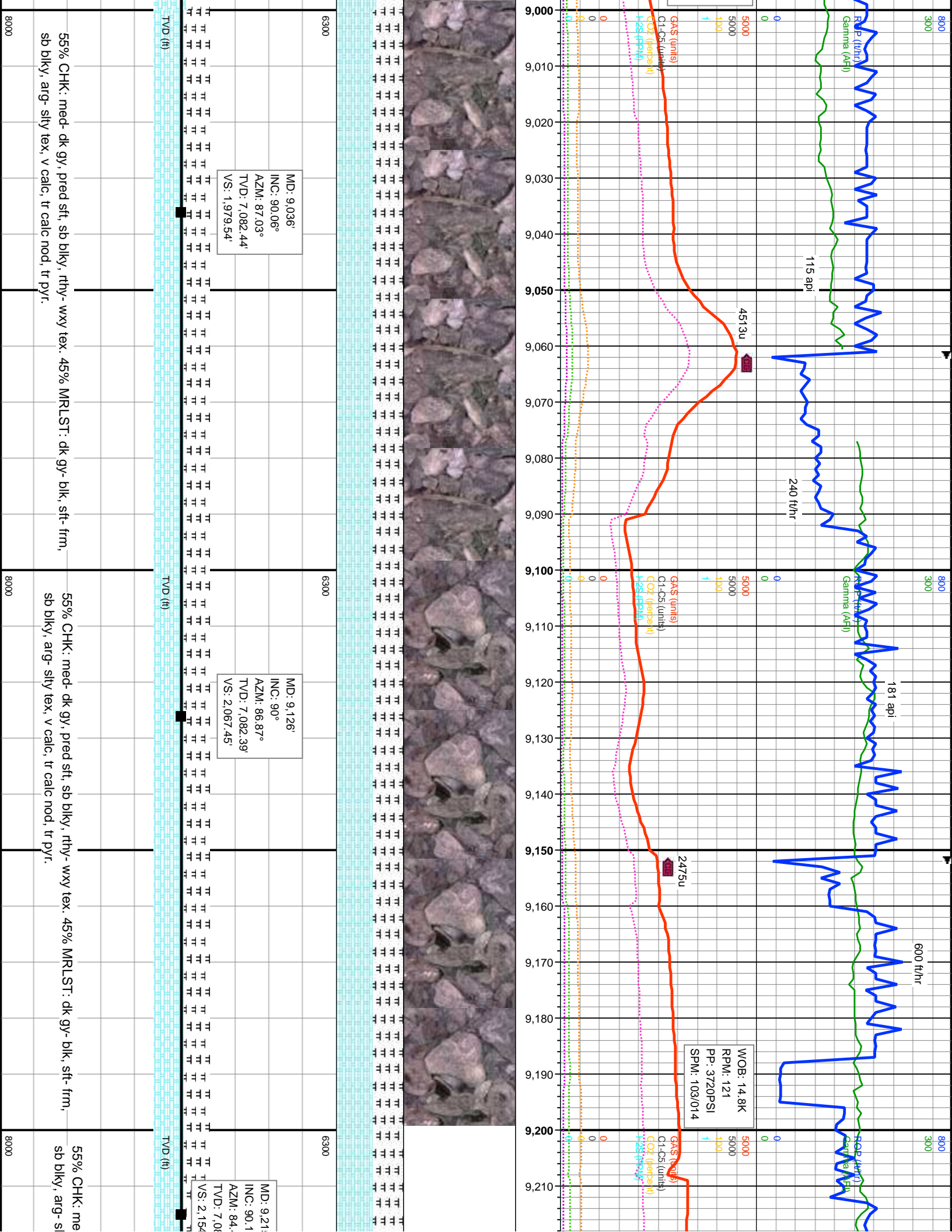
60% CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex. 40% MRLST: dk gy- blk, sft- frm, sb

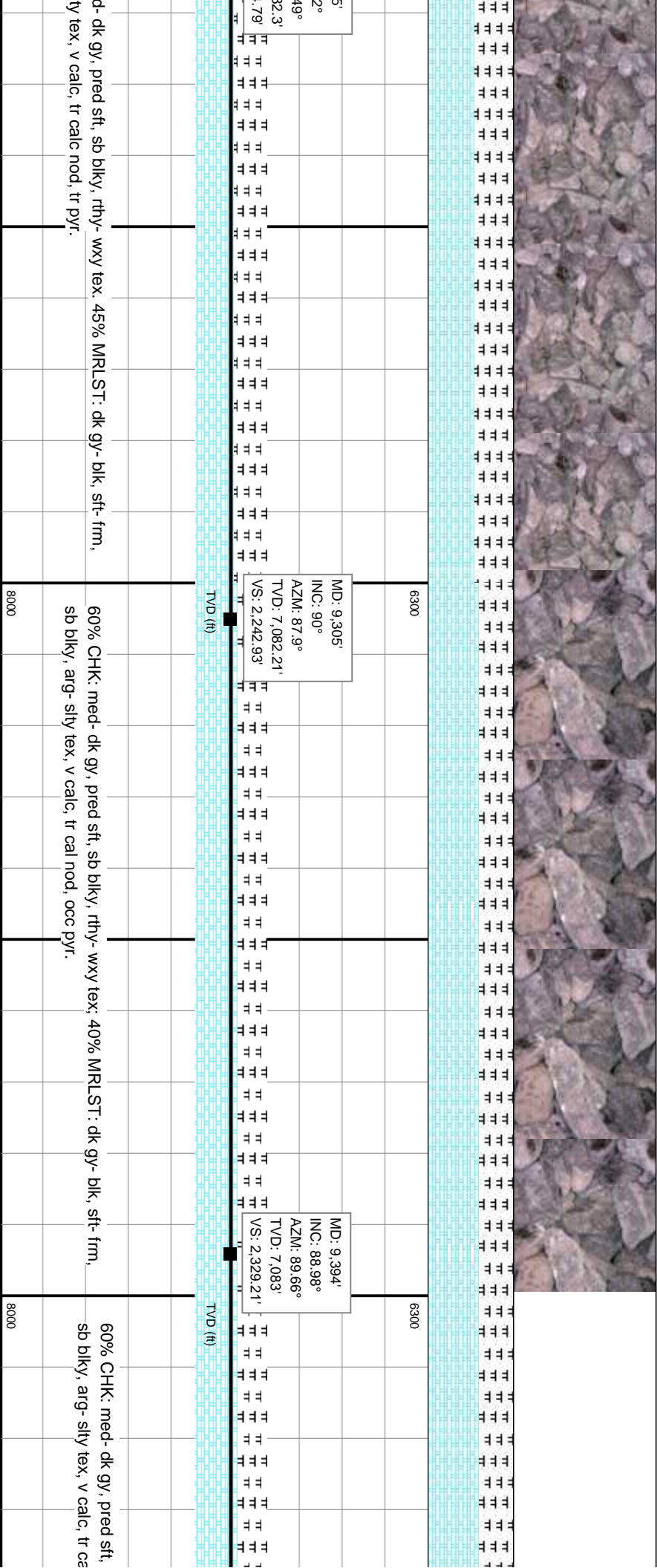
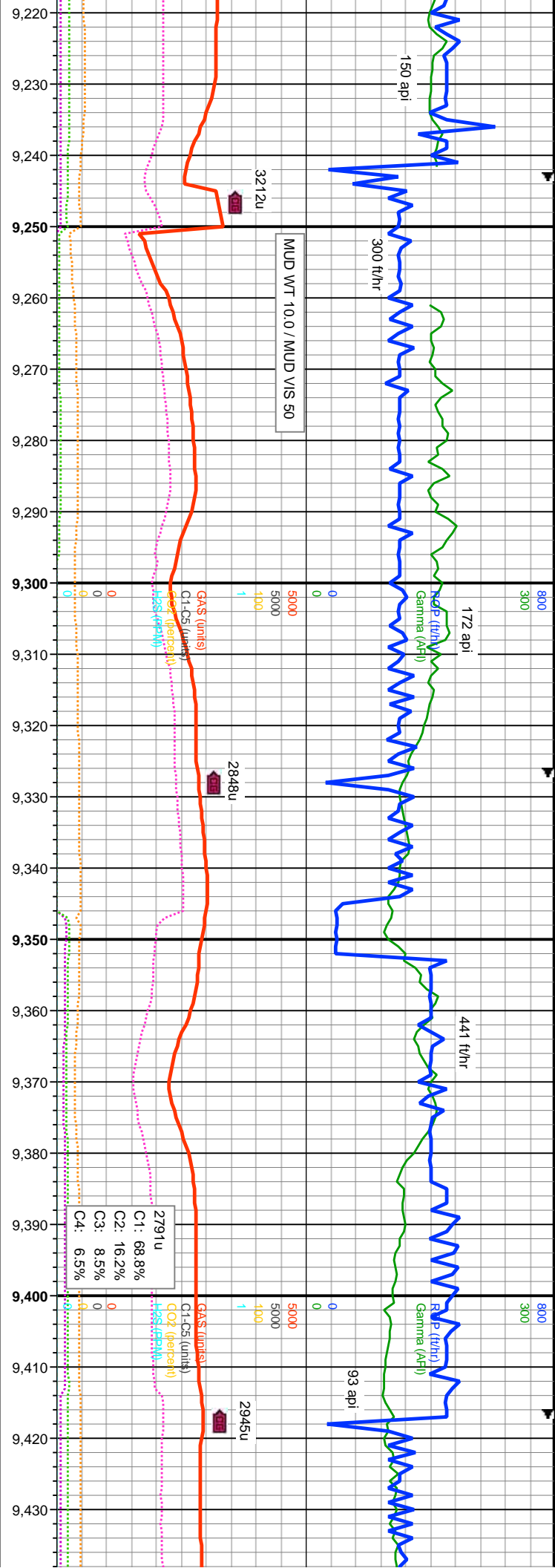
50% CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex. 40% MRLST: dk gy- blk, sft- frm, sb

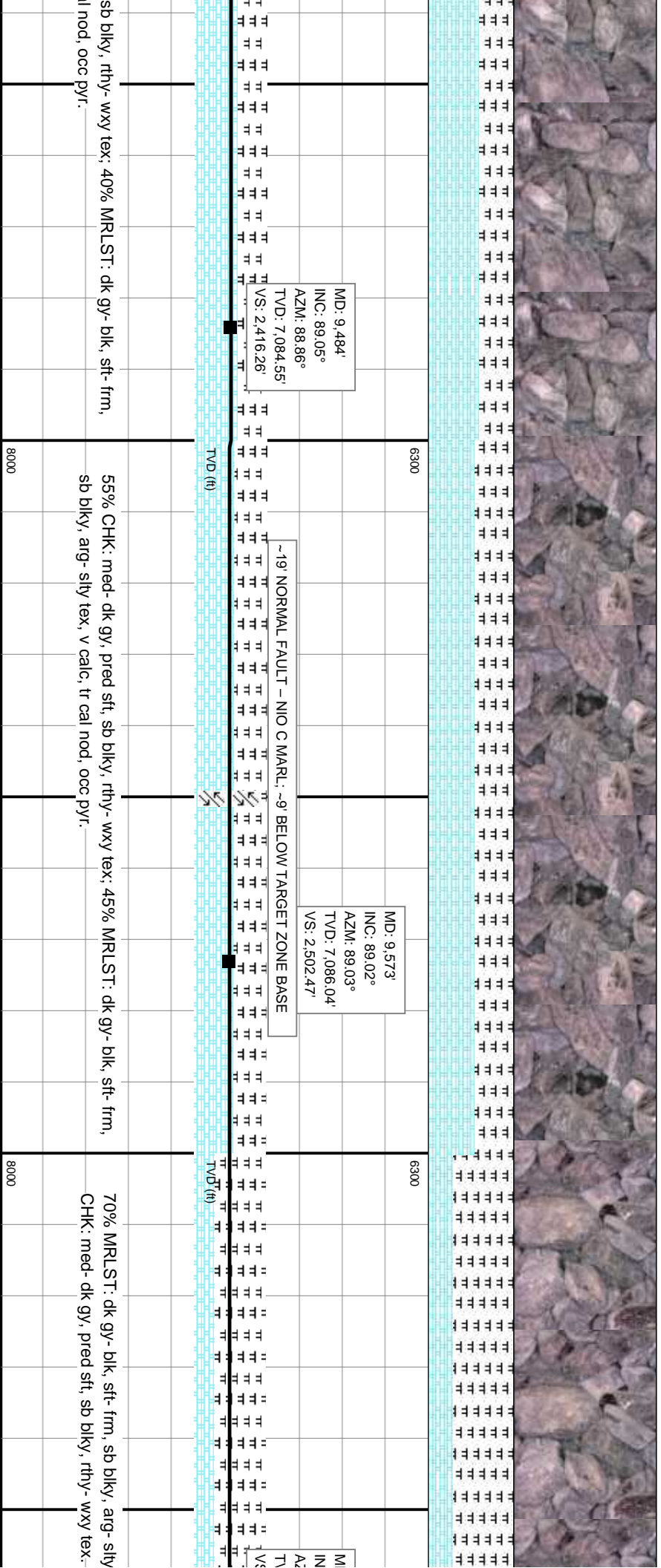
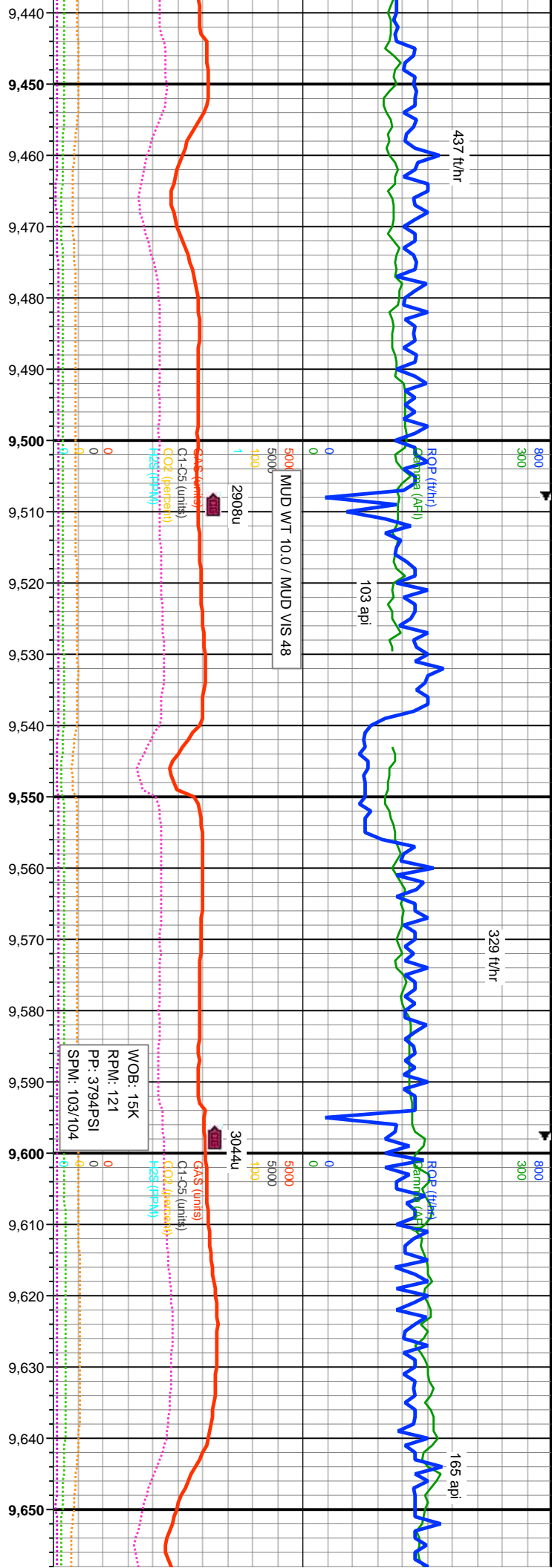


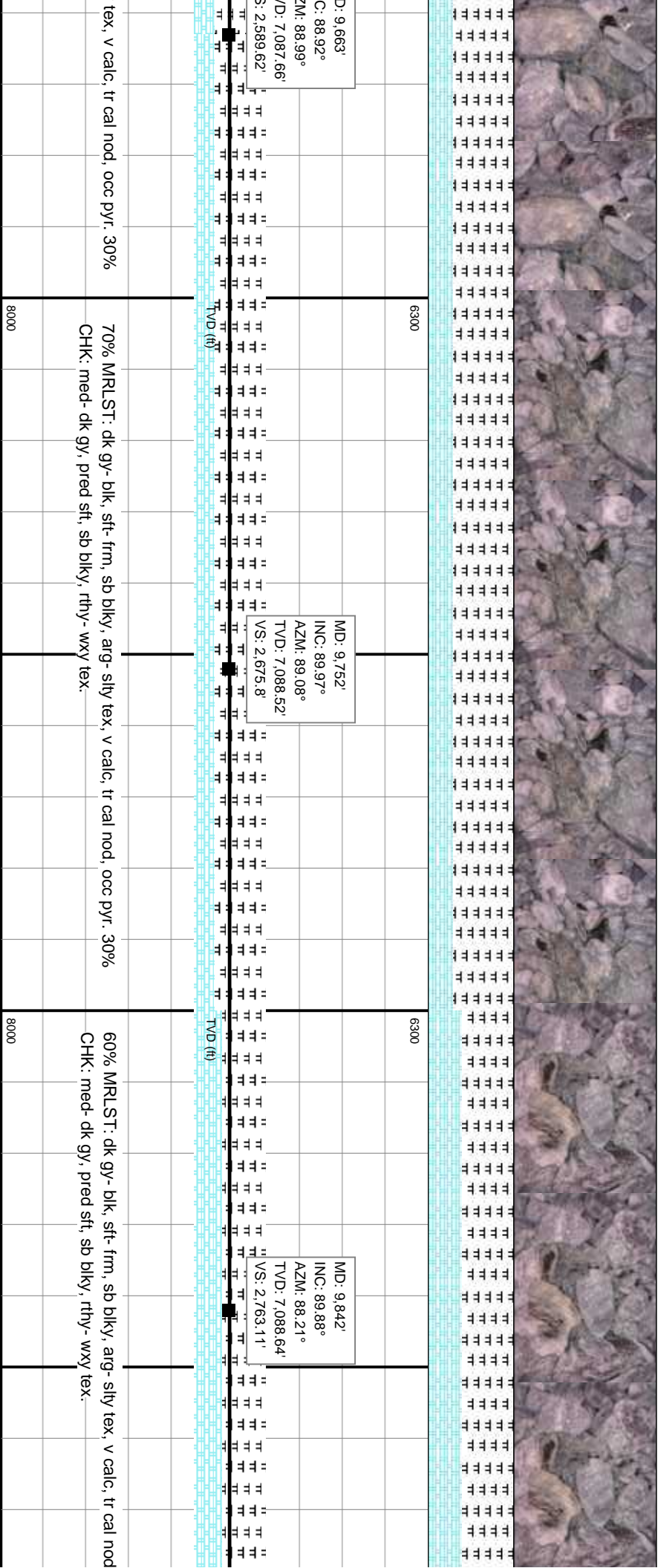
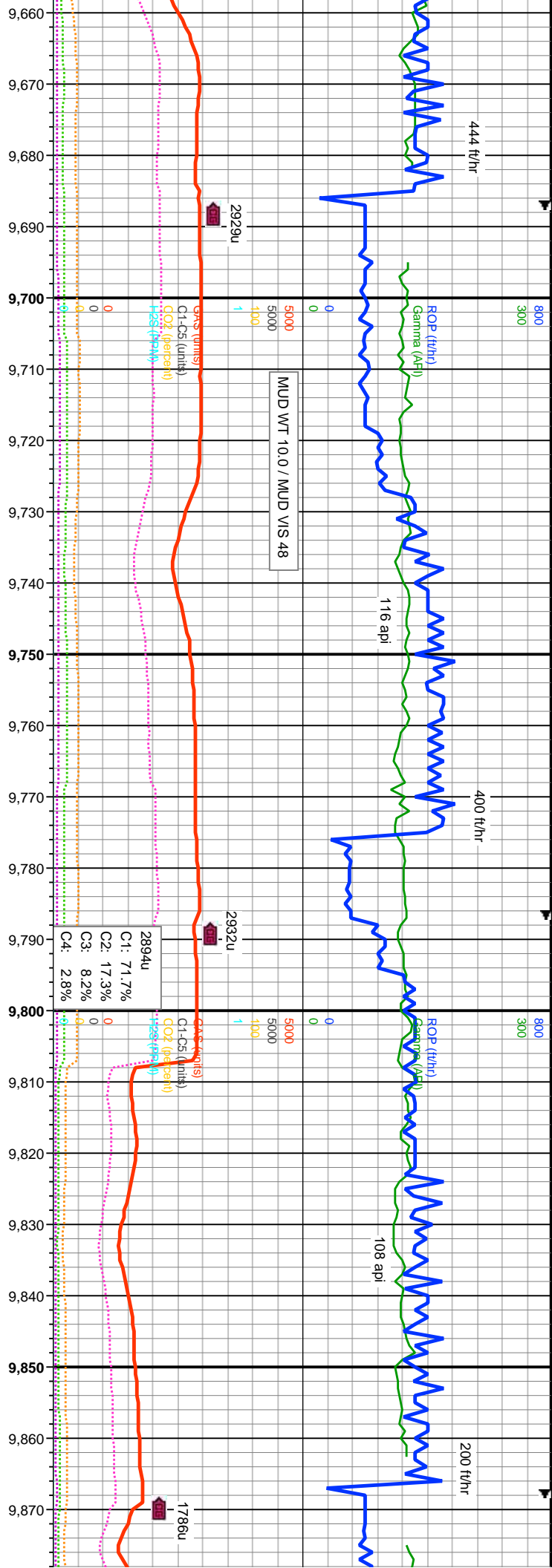




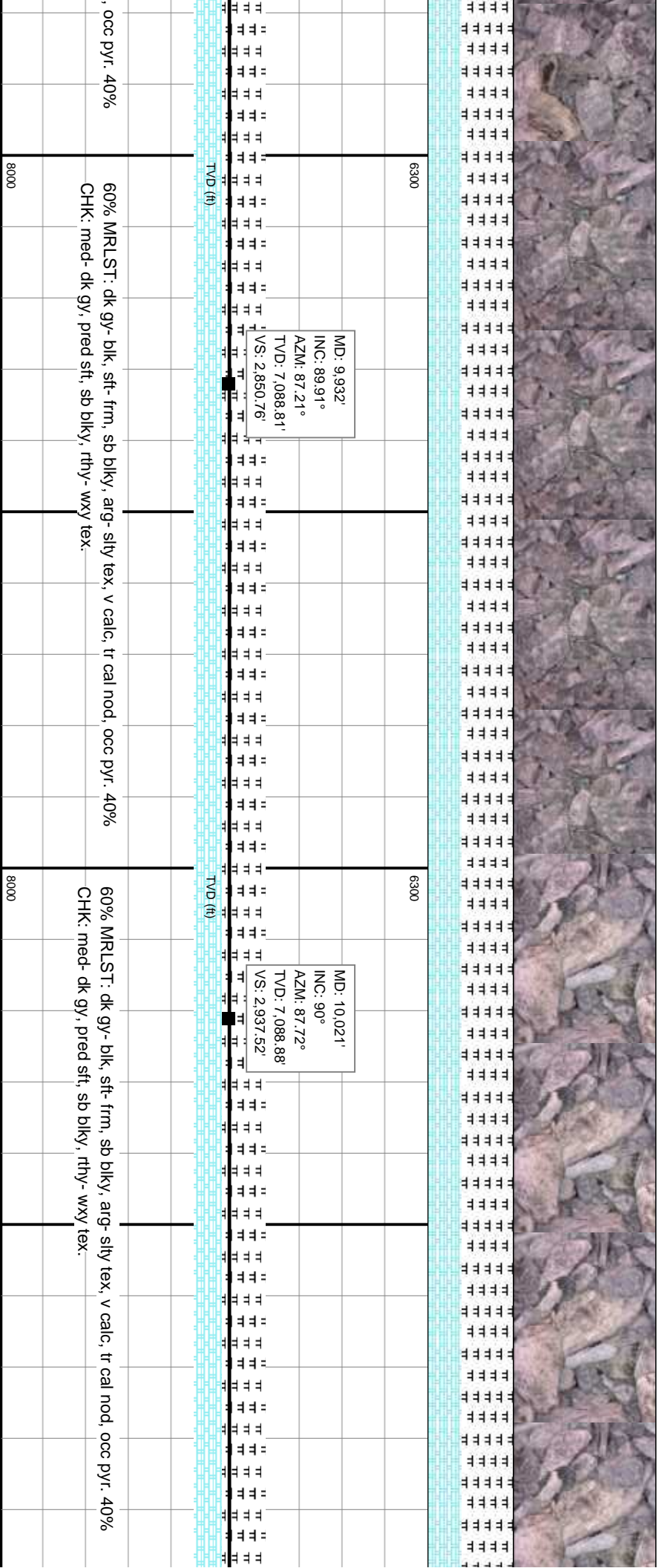
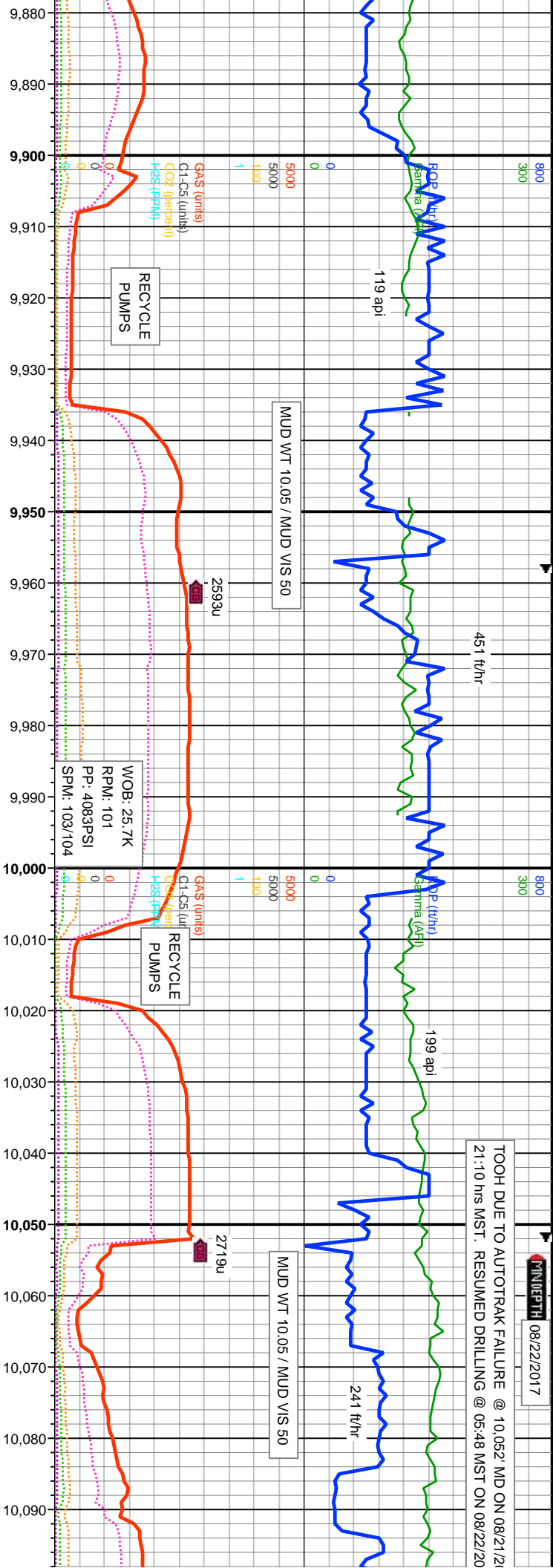








TOOH DEEP TO AUTOTRAK FAILURE @ 10,052 MD ON 08/21/2017
21:10 hrs MST. RESUMED DRILLING @ 05:48 MST ON 08/22/2017

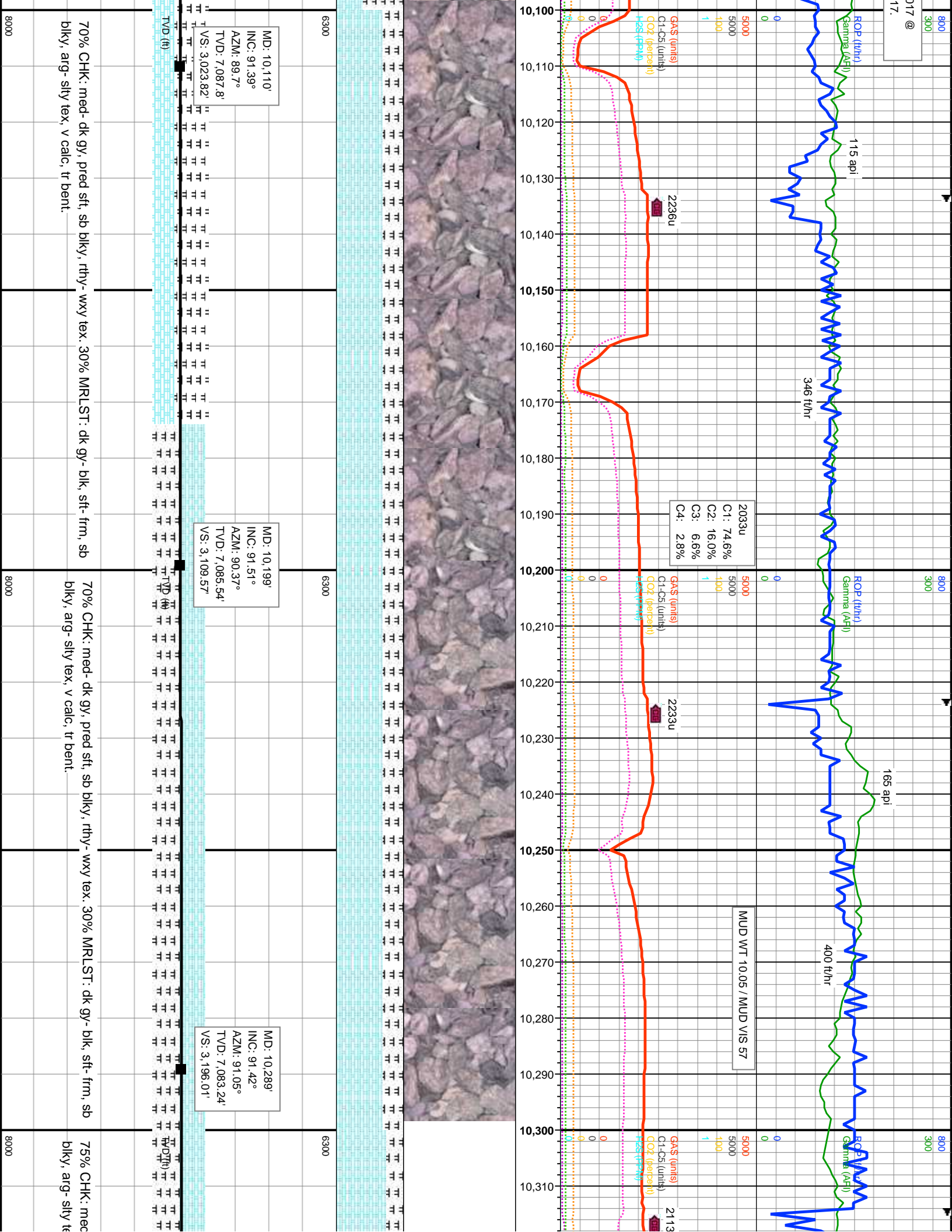


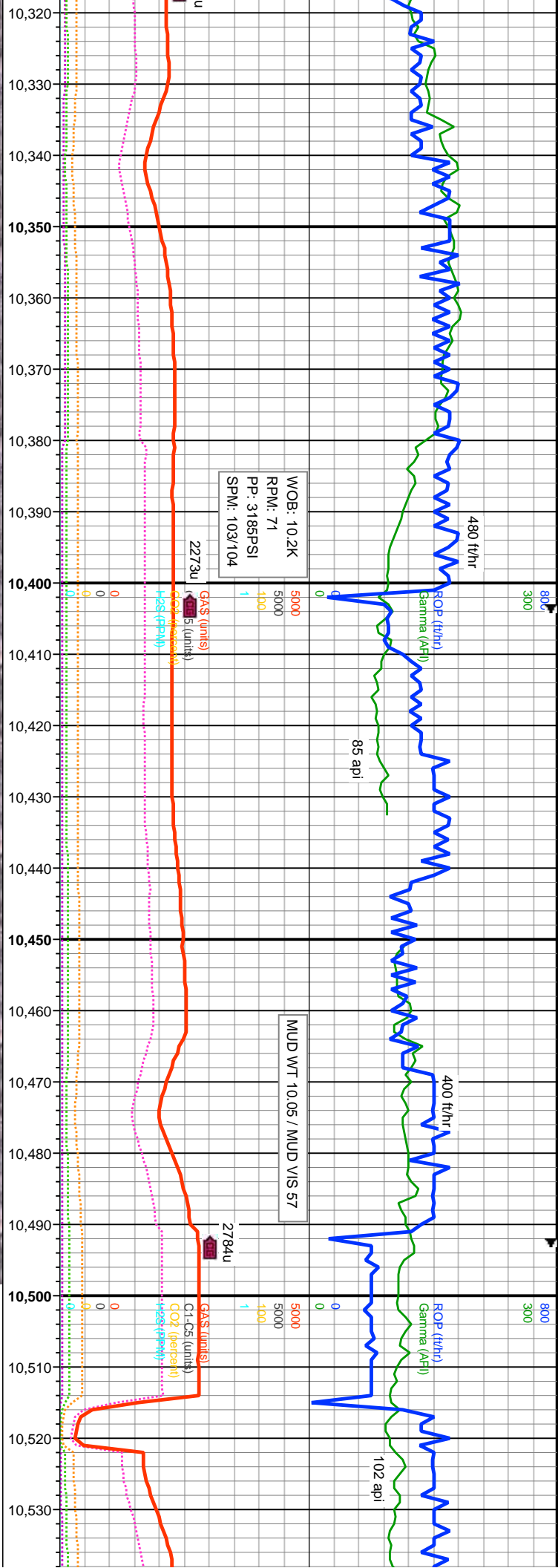
MD: 9.932'
INC: 89.91°
AZM: 87.21°
TVD: 7.088,81'
VS: 2.850,76'

MD: 10.021'
INC: 90°
AZM: 87.72°
TVD: 7.088,88'
VS: 2.937,52'

60% MRLST: dk gy- blk, sft- frm, sb blk, arg- sily tex, v calc, tr cal nod, occ pyr. 40%
CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex.

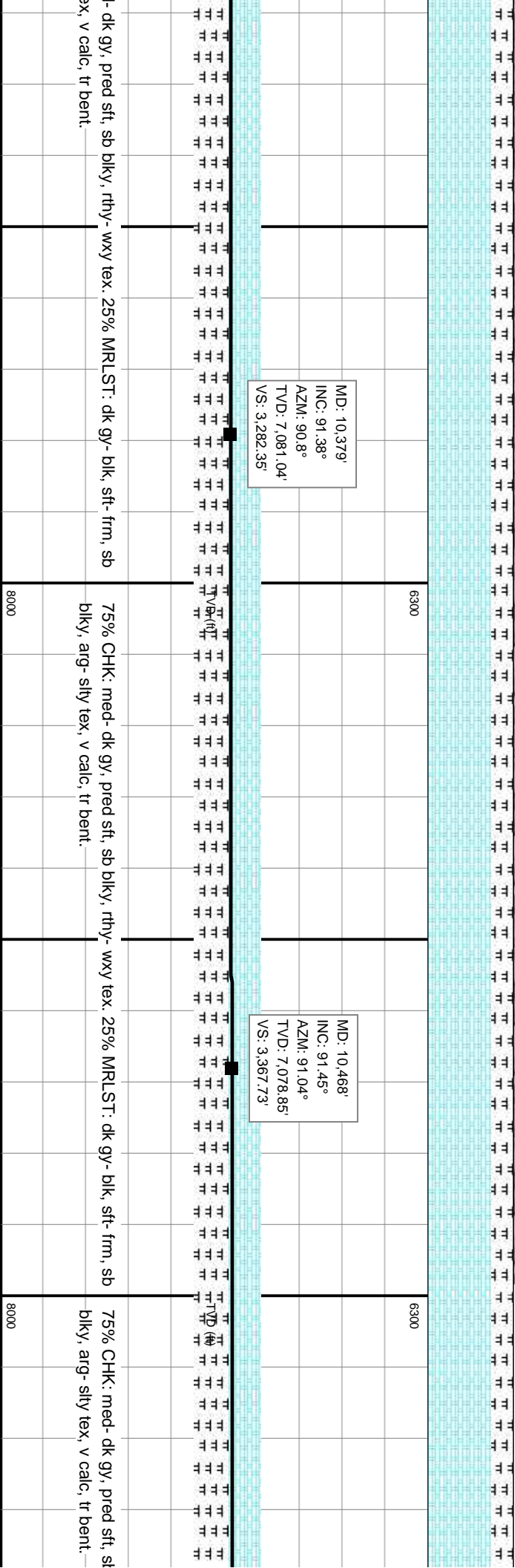
60% MRLST: dk gy- blk, sft- frm, sb blk, arg- sily tex, v calc, tr cal nod, occ pyr. 40%
CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex.

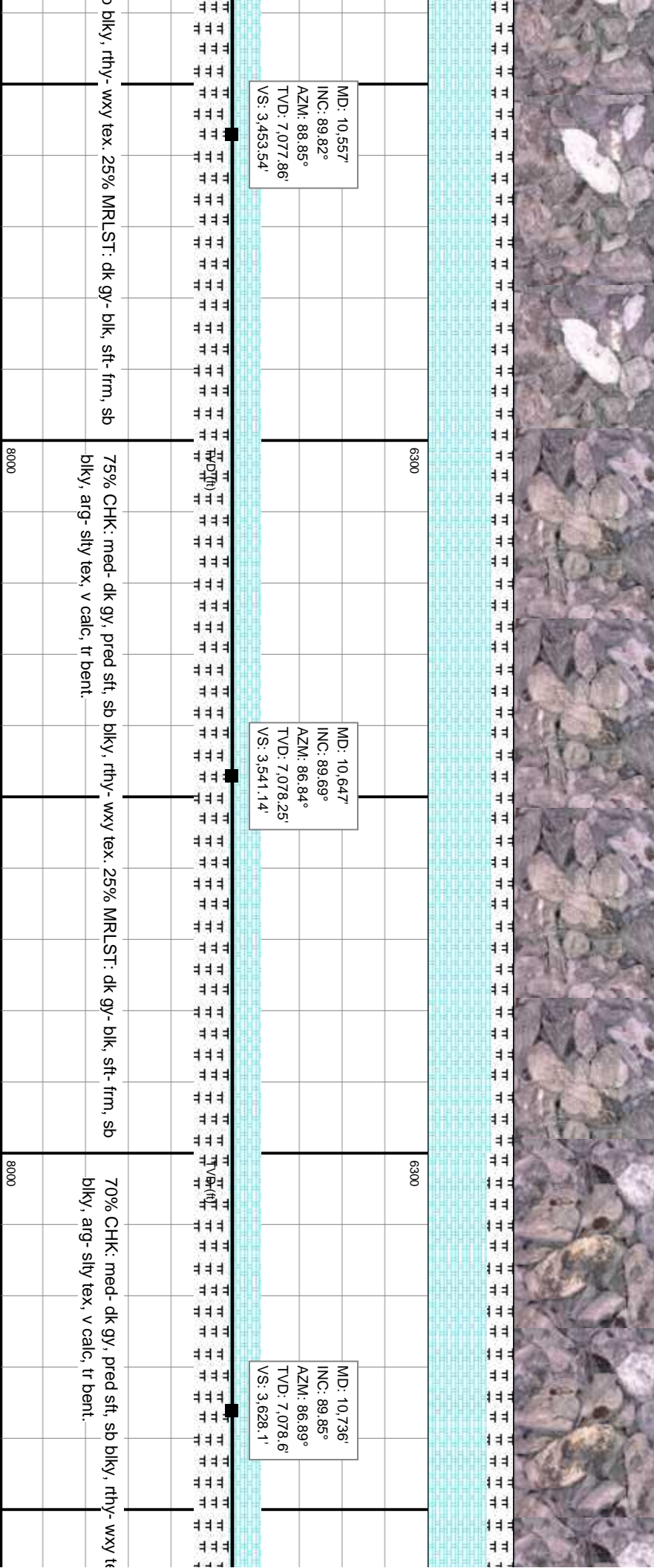
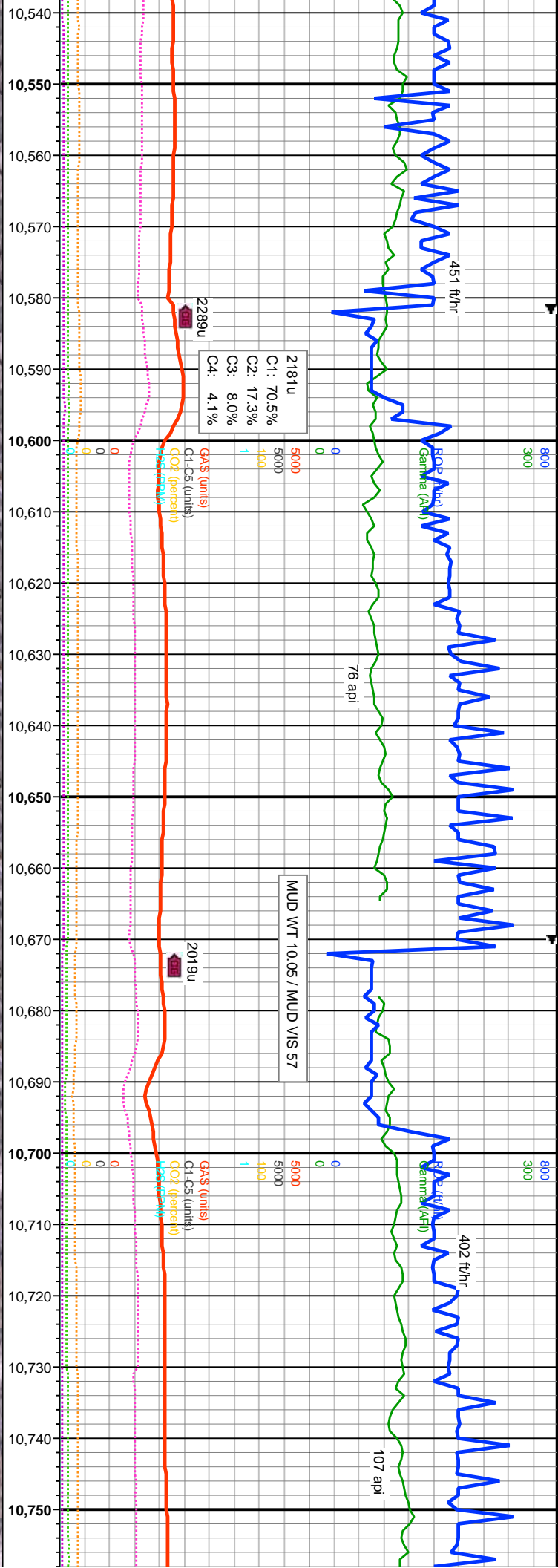


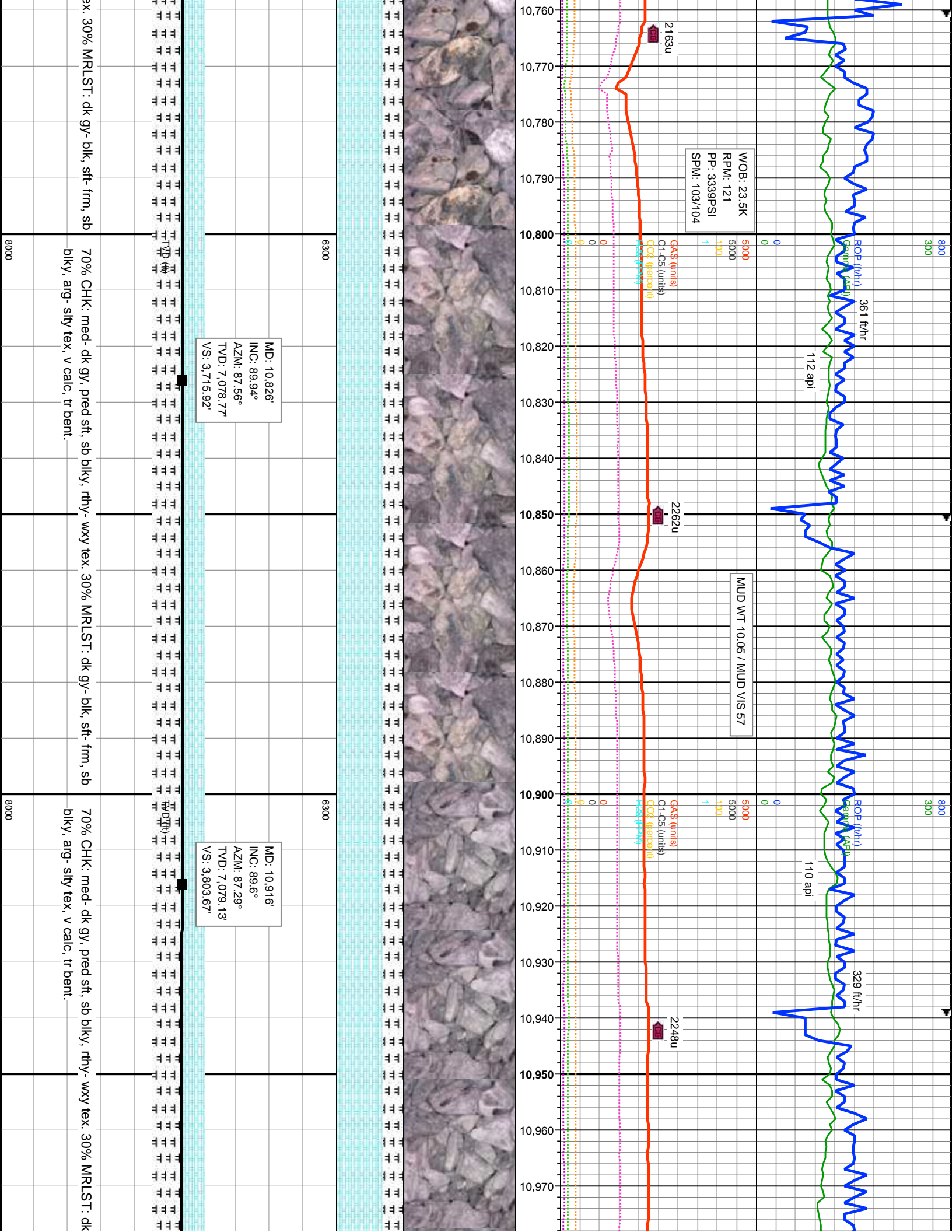


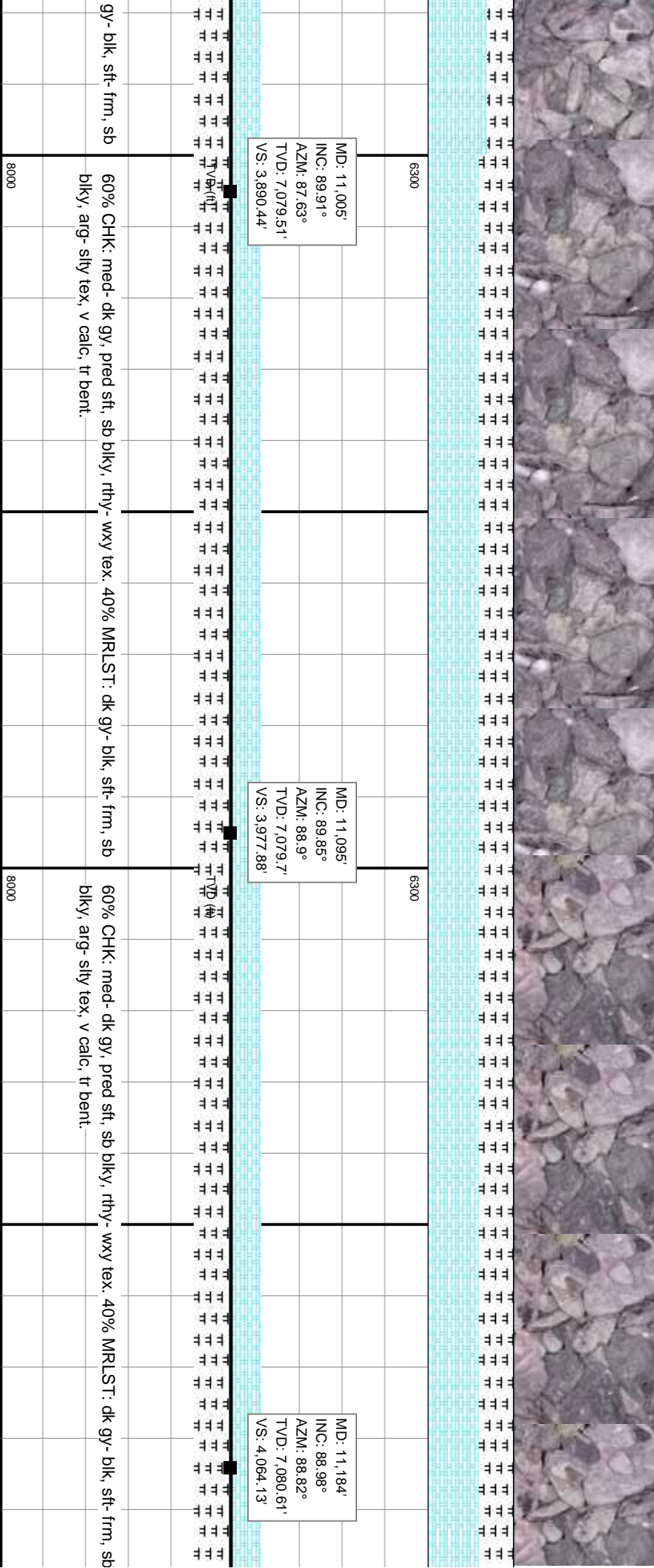
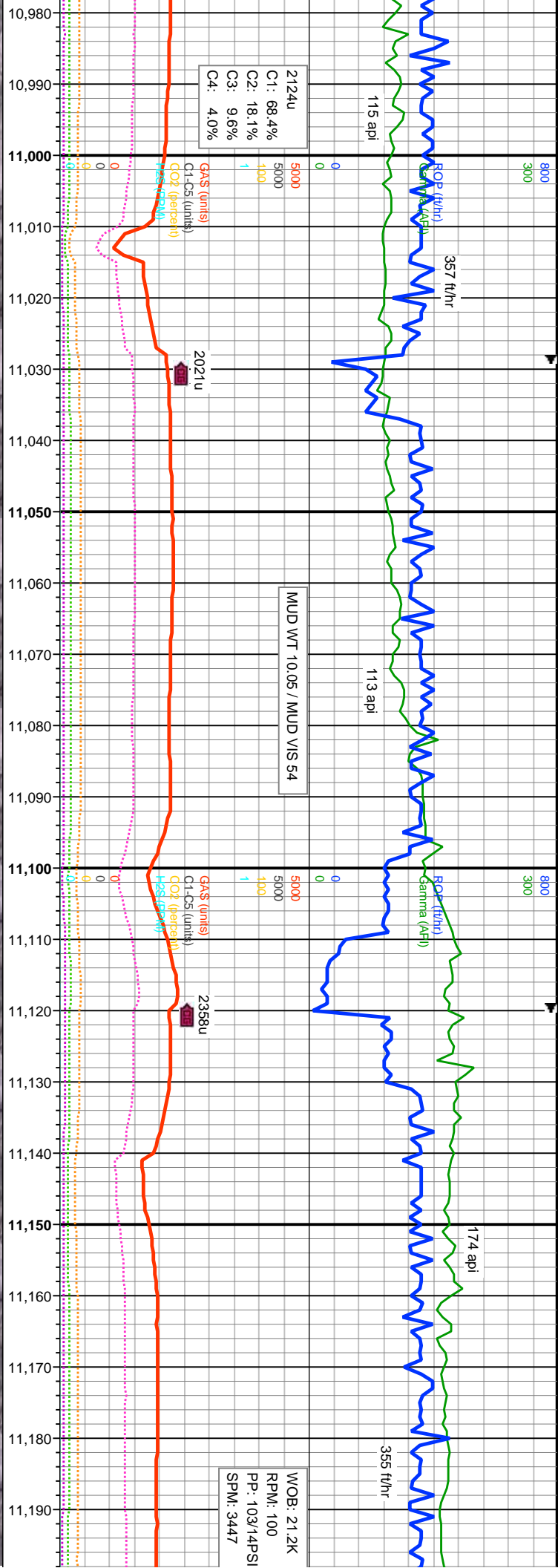
MD: 10.379'
INC: 91.38°
AZM: 90.8°
TVD: 7.081.04'
VS: 3.282.35'

MD: 10.468'
INC: 91.45°
AZM: 91.04°
TVD: 7.078.85'
VS: 3.367.73'









MD: 11,005'
INC: 89.91°
AZM: 87.63°
TVD: 7,079.51'
VS: 3,890.44'

MD: 11,095'
INC: 89.85°
AZM: 88.9°
TVD: 7,079.7'
VS: 3,977.88'

MD: 11,184'
INC: 88.98°
AZM: 88.82°
TVD: 7,080.61'
VS: 4,064.13'

gy- blk, sft- frm, sb

60% CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex. 40% MRLST: dk gy- blk, sft- frm, sb blk, arg- sily tex, v calc, tr bent.

60% CHK: med- dk gy, pred sft, sb blk, rthy- wxy tex. 40% MRLST: dk gy- blk, sft- frm, sb blk, arg- sily tex, v calc, tr bent.

