



Scale: 5" / 100'  
Measured Depth Log

**Well Name** Schneider HD 11-022HN

**Location** SECTION 7, T4N, R66W

**State** COLORADO

**County** WELD

**Country** UNITED STATES

**Rig Number** PRECISION 460

**API Number** 051234641600

**AFE #** 19DC0217

**Geographic Region** DJ BASIN

**Field** WATTENBERG

**Ground Elevation** 4735.0'

**K.B. Elevation** 4755.0'

**Logged Interval** 6000' MD To 17986' MD

**Total Depth** 17986' MD

**Formation** NIOBRARA B CHALK

**Type of Drilling Fluid** OIL BASED MUD

## Operator

**Company** Great Western Operating Company, LLC

**Address** 1001 17th Street, Suite 2000  
Denver, CO 80202



## Geologist

**Name** Joey Luce, Zac Olds, Hunter Newman

**Company** Terra Guidance


























































**Address** 67 W. Floyd Ave. Ste 105  
Englewood, CO 80110  
(970) 260-5408



Other

MUDLOG START DATE 09/26/2019  
MUDLOG END DATE 09/28/2019

Accessories






















 GASTROPOD	 B BENTONITE	 K KAOLIN	 COAL STRINGER
 O OOLITE	 BITUMENOUS SUBSTANCE	 M MARLSTONE	 DOLOMITE STRINGER
 ALGAE	 BRECIA FRAGMENTS	 M MINERAL CRYSTALS	 GYPSUM STRINGER
 AMPHIPORA	 P PELECYPOD	 N NODULES	 LIMESTONE STRINGER
 BELEMNITE	 P PELLET	 C CARBONACEOUS FLAKES	 P PHOSPHATE PELLETS
 BIOCLASTIC	 P PISOLITE	 C CHTDK	 P PYRITE
 BRACHIOPOD	 P PLANT REMAINS	 C CHTLT	 S SALT CAST
 BRYOZOA	 S PLANT SPORES	 C COAL - THIN BEDS	 S SANDY
 CEPHALOPOD	 S SCAPHOPOD	 D DOLOMITIC	 S SILICEOUS
 CORAL	 S STROMATOPOROID	 F FELDSPAR	 S SILTY
 CRINOID	 F FERRUGINOUS PELLET	 T TUFFACEOUS	 C CHALK
 ECHINOID	 F FERRUGINOUS		
 FISH	 A ANHYDRITIC	 G GLAUCONITE	
 FORAMINIFERA	 A ARGILLACEOUS	 G GYPSIFEROUS	
 F FOSSIL	 A ARGILLITE GRAIN	 H HEAVY MINERAL	 A ANHYDRITE STRINGER
		 B BENTONITE STRINGER	

Minerals

Stringer

Oil Show

Engineering



 O ORGANIC	 P PINPOINT	 D DEAD	 V VUGGY	 E EVEN	 Q QUESTIONABLE	 S SPOTTED STAINING	 B BIT
 CASING	 C CONNECTION (LEFT)	 C CONNECTION (RIGHT)	 F FENESTRAL	 F FRACTURE	 I INTERCRYSTALLINE	 I INTEROOLITIC	 M MOLDIC
 C CORE - LOST	 C CONNECTION GAS	 C CORE - RECOVERED	 D DST INTERVAL	 F FAULT			

# Other Symbols

 FORMATION TOP      L LITHOGRAPHIC


## Rounding

GAS SHOW       MICROXLN

 MIN 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

SLIDE       CHALKY       WELL


 SURVEY       CRYPTOXLN

## CALCARIUOS SHALE

 TRIP GAS       EARTHY

WIRELINE TESTED - LEFT       FINELYXLN

## CALCARIOUS SHALE

WIRELINE TESTED - RT       GRAINSTONE

TERRA GUIDANCE  
BEGAN LOGGING @ 00:33 MDT 09/26/2019  
BLOODHOUND GAS CHROMATOGRAPH #5927  
100' Sample Collection

ROP  
ROP  
Gamma

GAPS IN GAMMA DATA DUE TO  
HIGH RATES OF PENETRATION

Gas Scale  
0 - 2000 Units

MW 10.55 / VIS 68

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

Total Gas & Chromatograph  
GAS  
C1  
C2  
C3  
C4  
CO2

Depth

5,960  
5,970  
5,980  
5,990  
6,000  
6,010  
6,020  
6,030  
6,040  
6,050  
6,060  
6,070  
6,080  
6,090  
6,100  
6,110  
6,120  
6,130

Images



% Lithology

TVD Scale  
5300' - 8500'

MD: 6.004'  
INC: 31.15°  
AZM: 344.48°  
TVD: 5,435.67'  
VS: 1,118.24'

MD: 6.094'  
INC: 31.24°  
AZM: 344.29°  
TVD: 5,512.65'  
VS: 1,142.42'

Well Bore  
TVD

Bit #: 1  
Size: 8.5"  
Make: HCC  
Model: ATD505T  
Jets: 5x15  
S/N: 5302327  
Depth In: 1612'

TVD (ft)

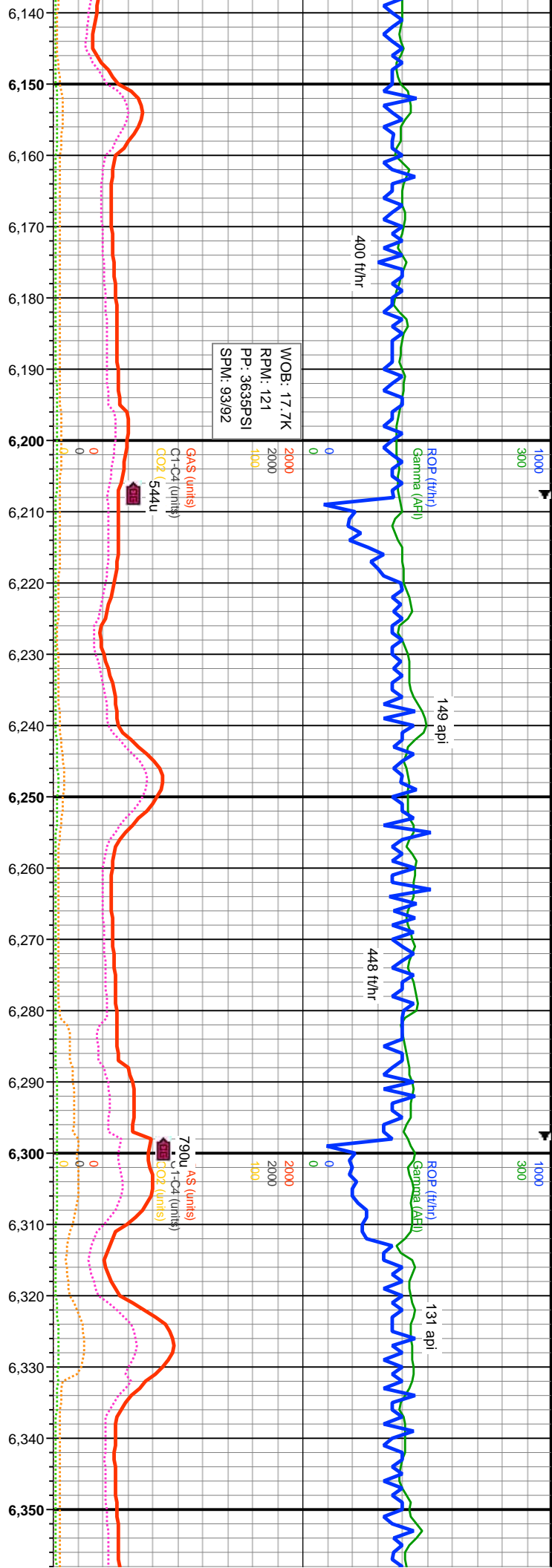
TVD (ft)

100% SHY SLTST: ltgy, sme medgy, lt gysbhn, sft, lp frm-fri, sb blkly-plty, com fis, arg,  
sfty, rthy, mod cly rch mtb, sl calc

100% SHY SLTST: ltgy, sme medgy, lt gysbhn, sft, lp frm-fri, sb blkly-plty, com fis, arg,  
sfty, rthy, mod cly rch mtb, sl calc

8500

8500



MD: 6,183'  
INC: 31.27°  
AZM: 344.37°  
TVD: 5,588.74'  
VS: 1,166.42'

MD: 6,272'  
INC: 31.25°  
AZM: 344.98°  
TVD: 5,664.82'  
VS: 1,190.18'

MD  
INC  
AZI  
TVI  
VS

TVD (ft)

TVD (ft)

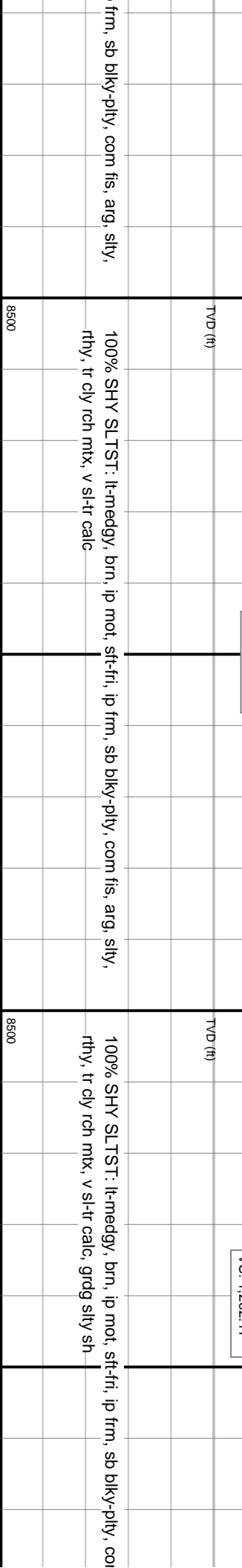
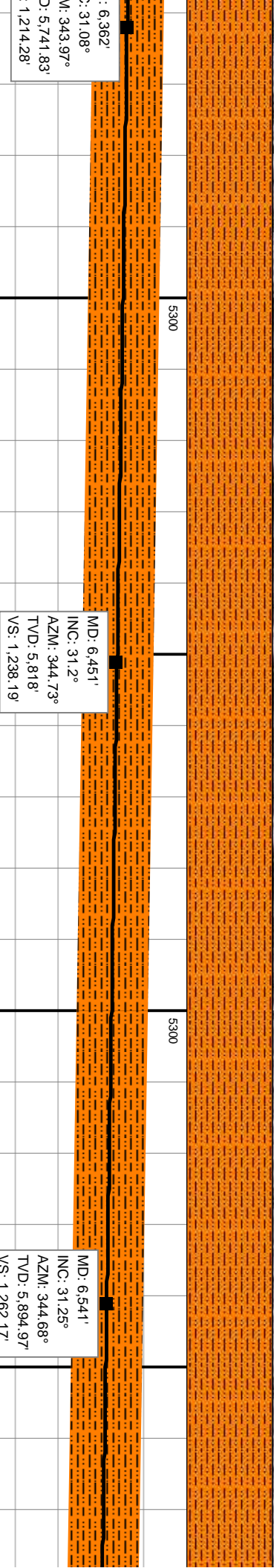
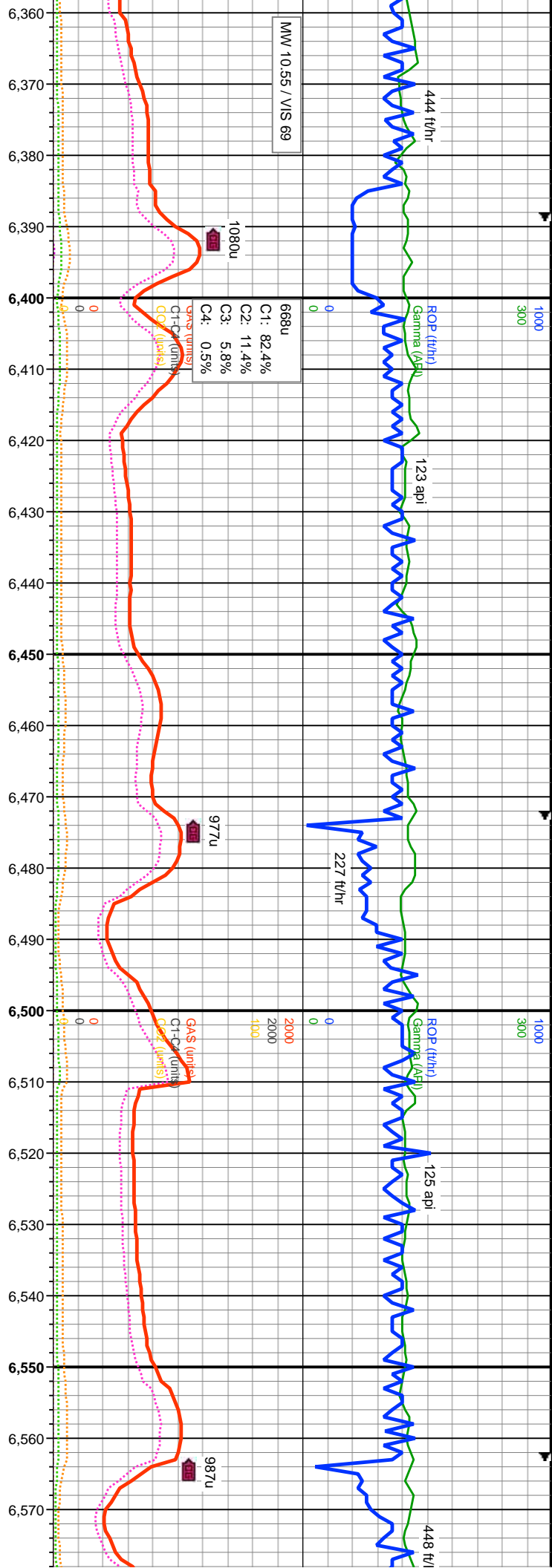
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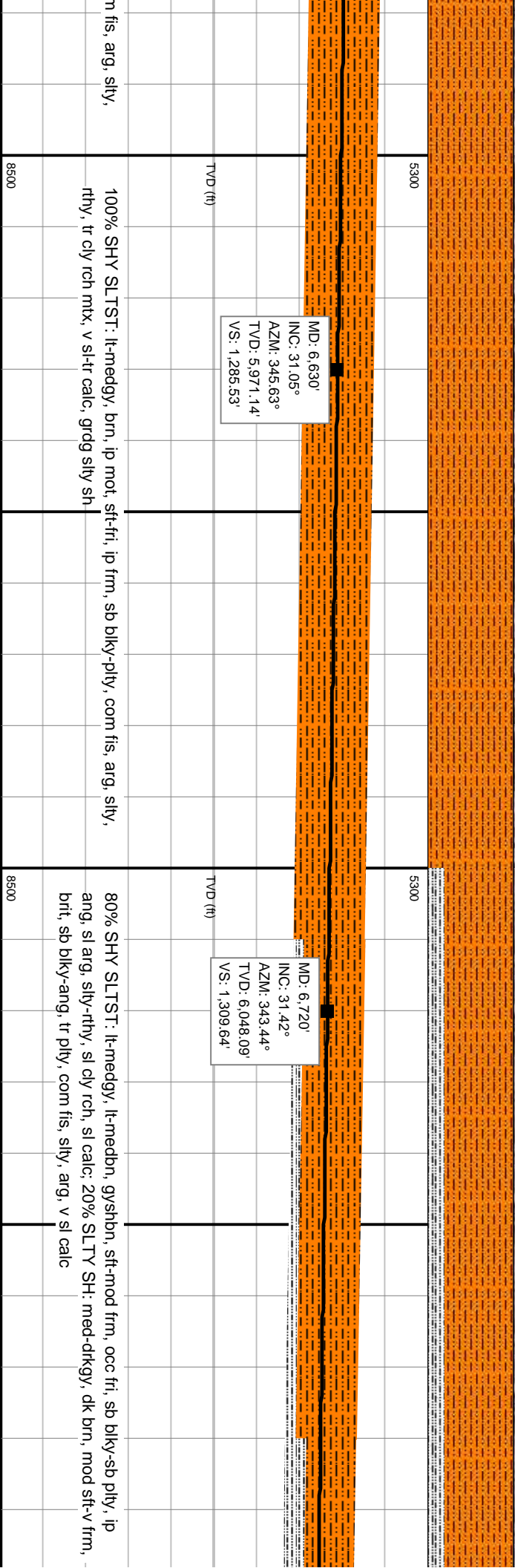
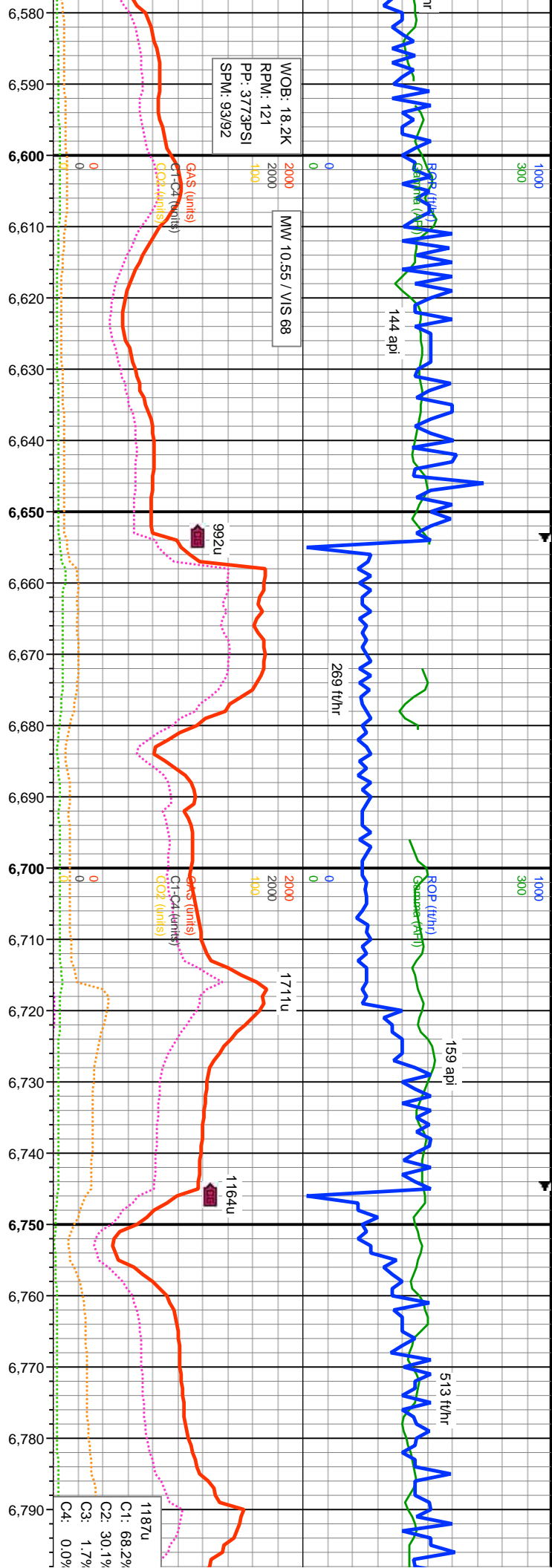
100% SHY SLTST: lt-medgy, brn, ip mot, sft-fri, ip rthy, tr cly rch mtb, v sl-tr calc

8500

8500



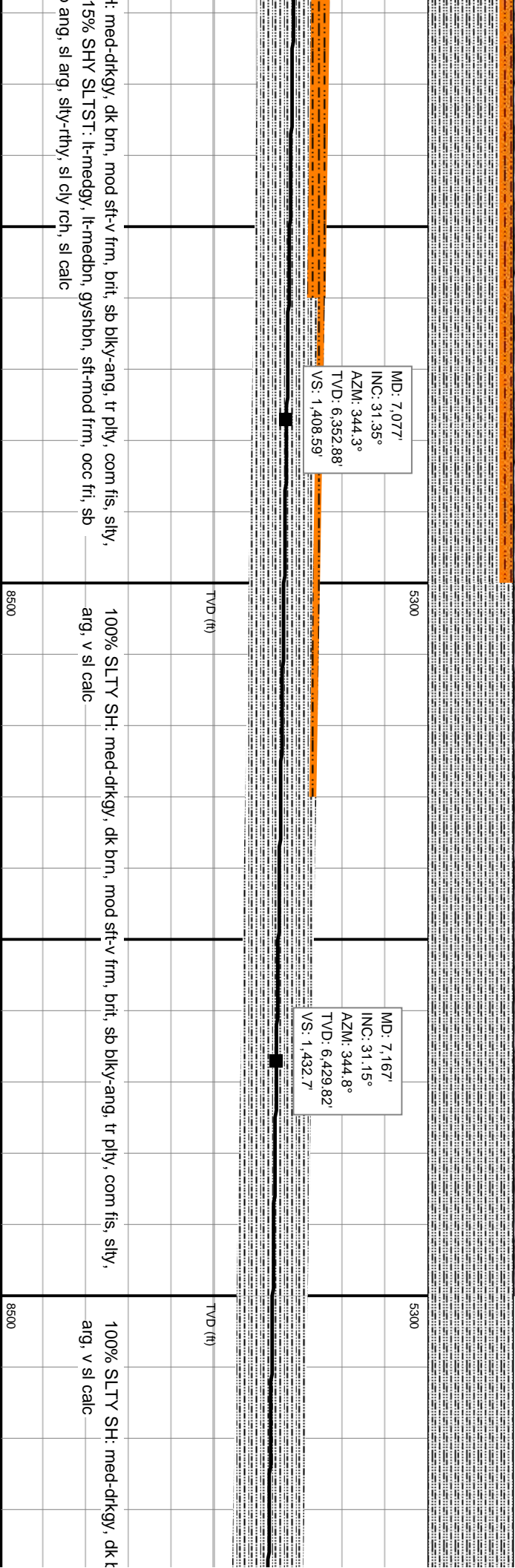
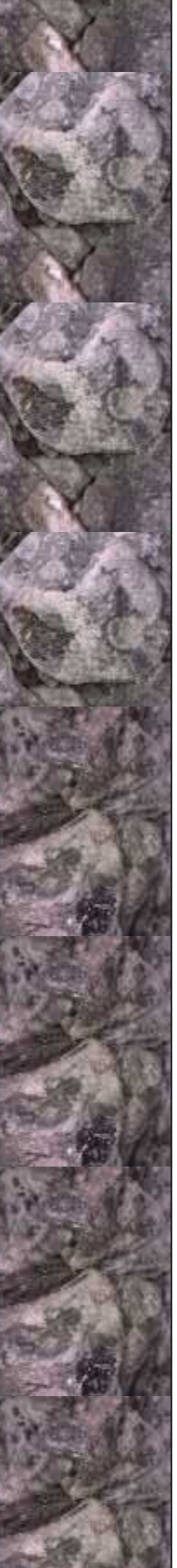
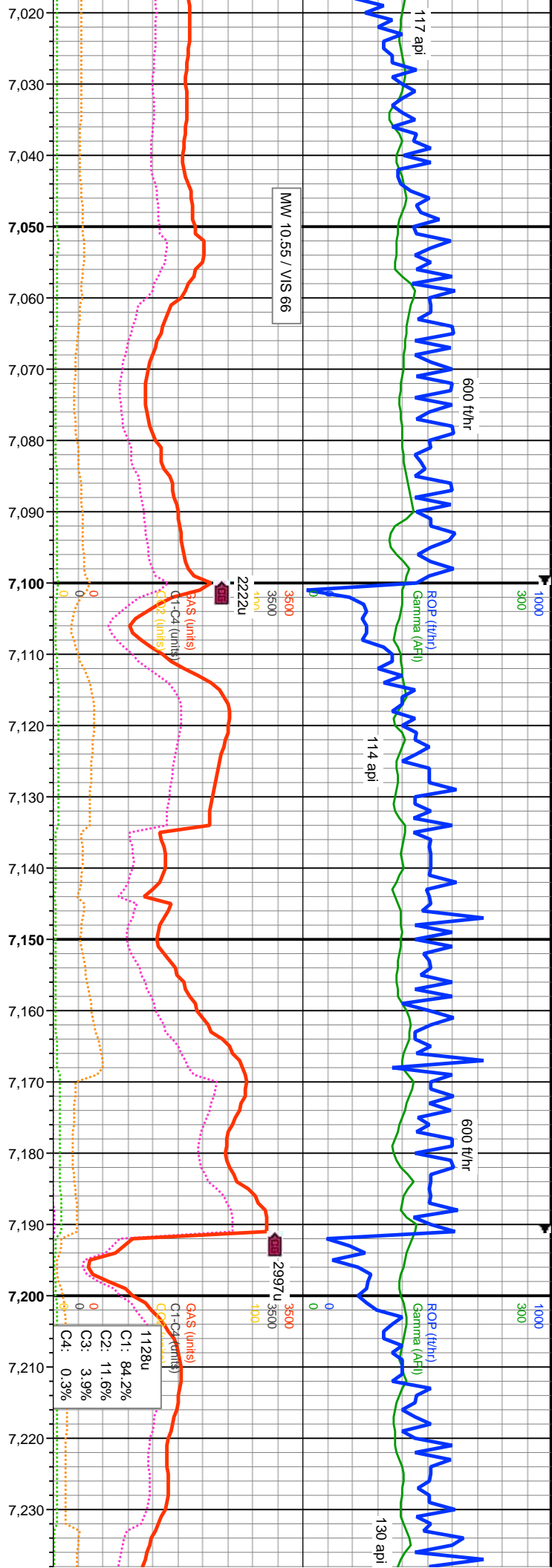






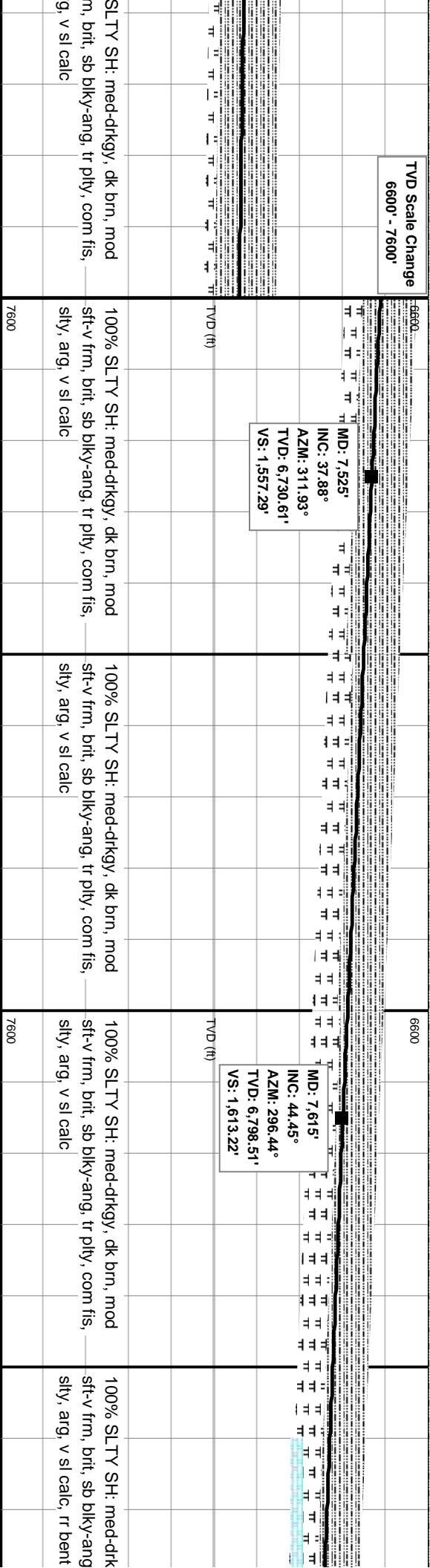
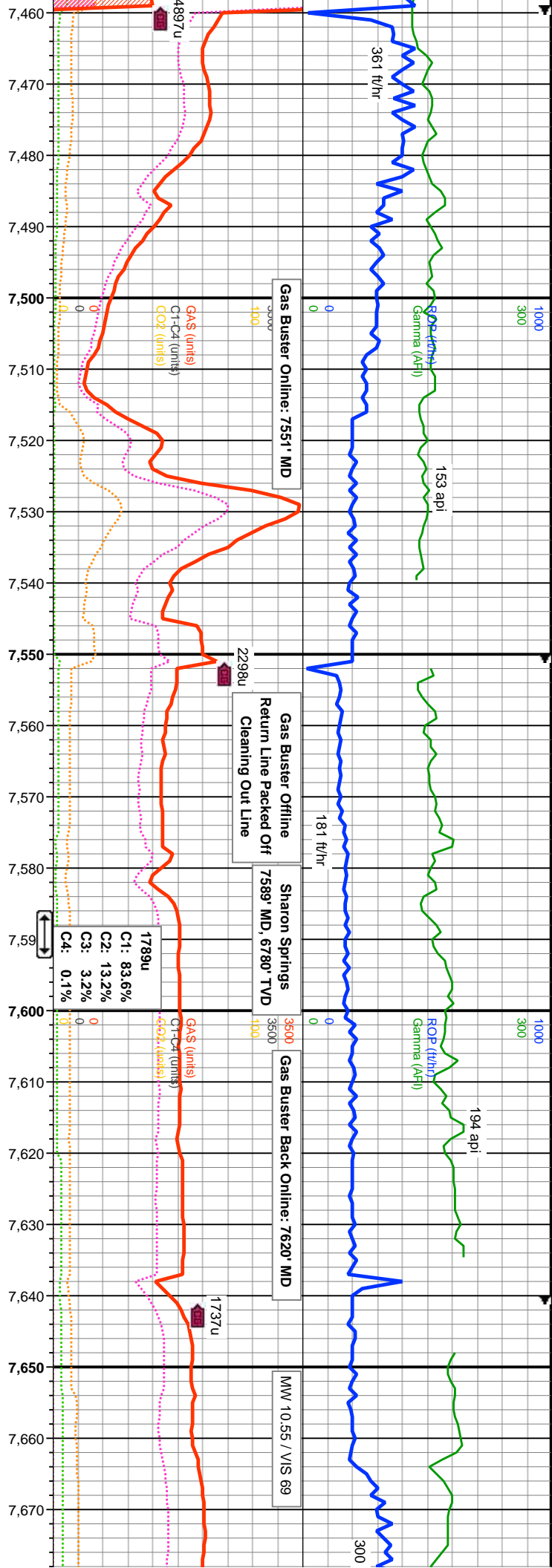




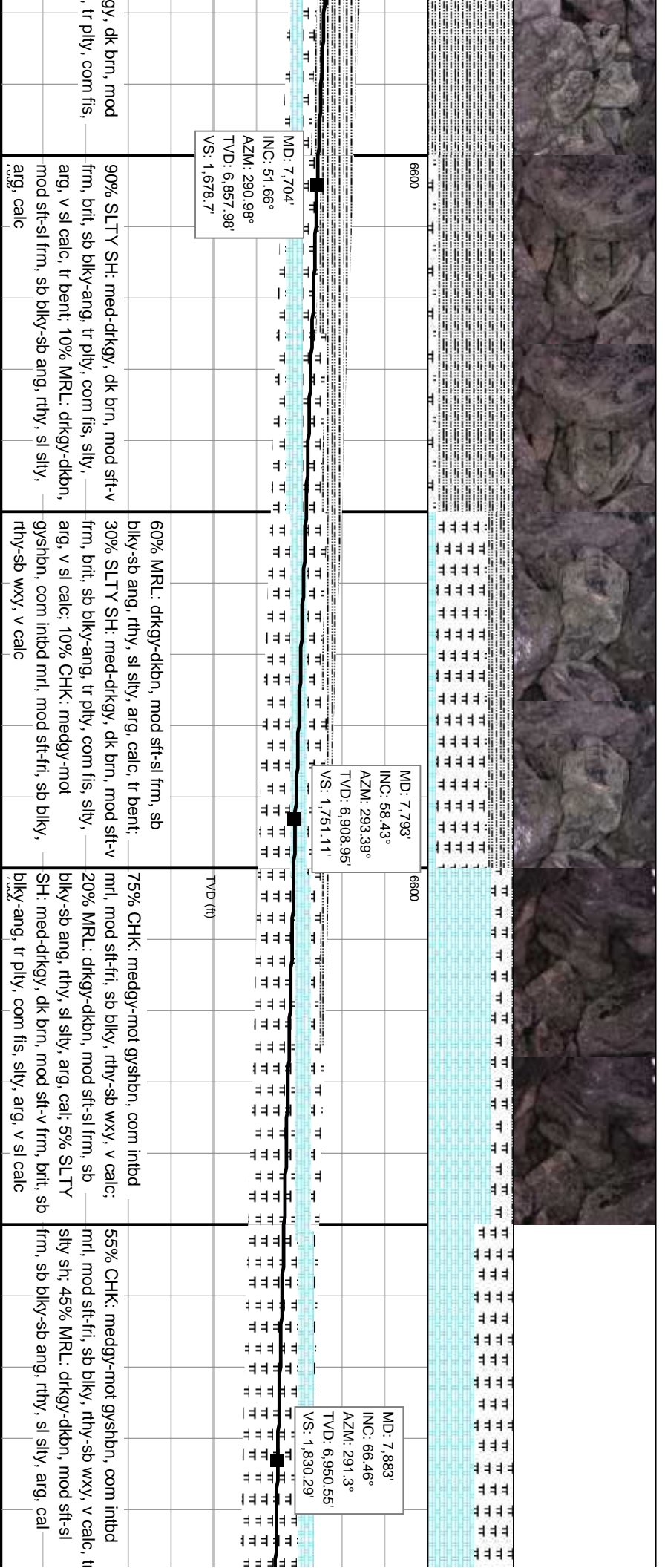
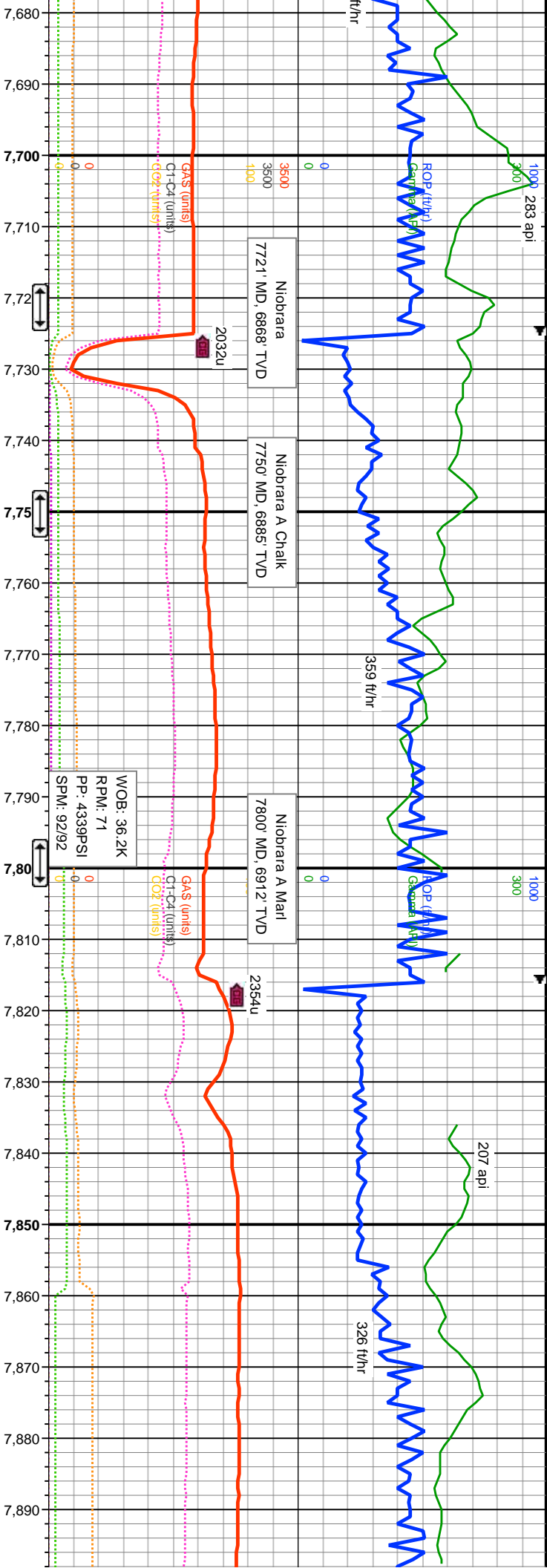


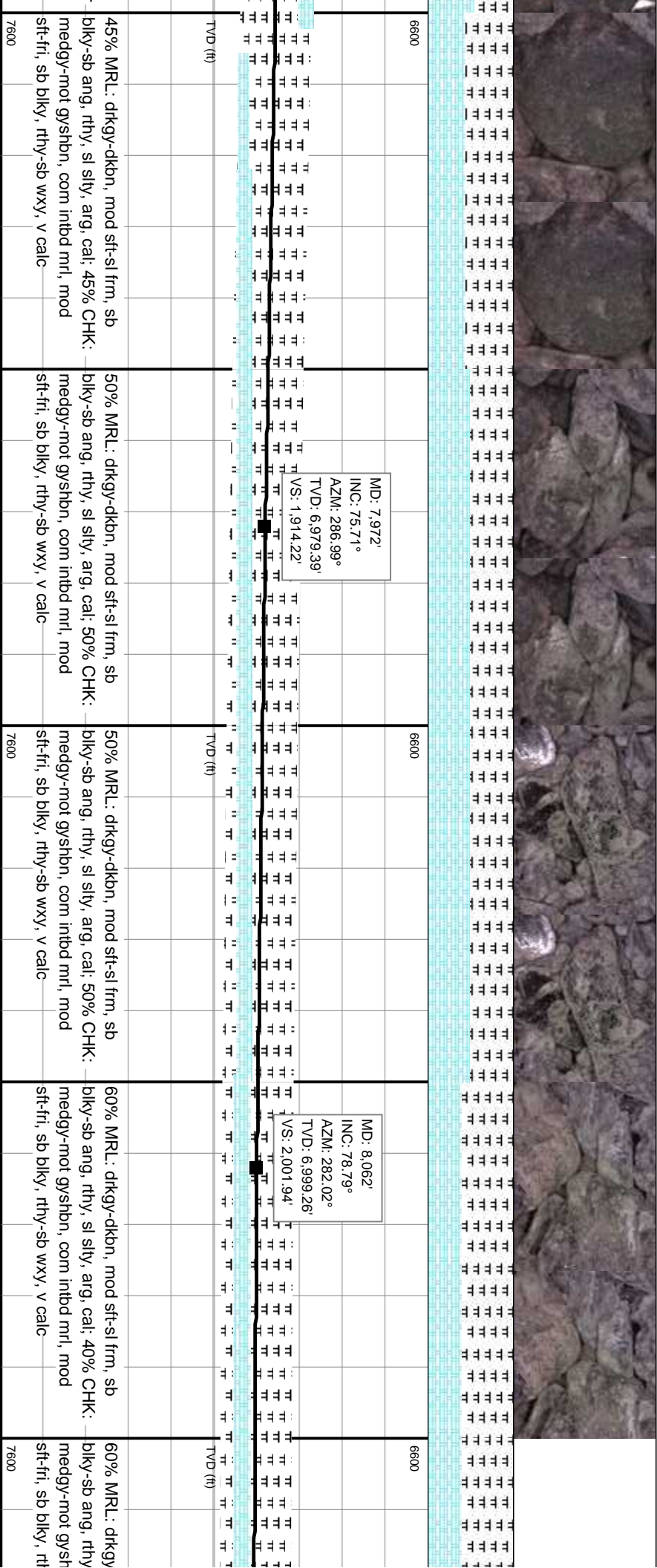
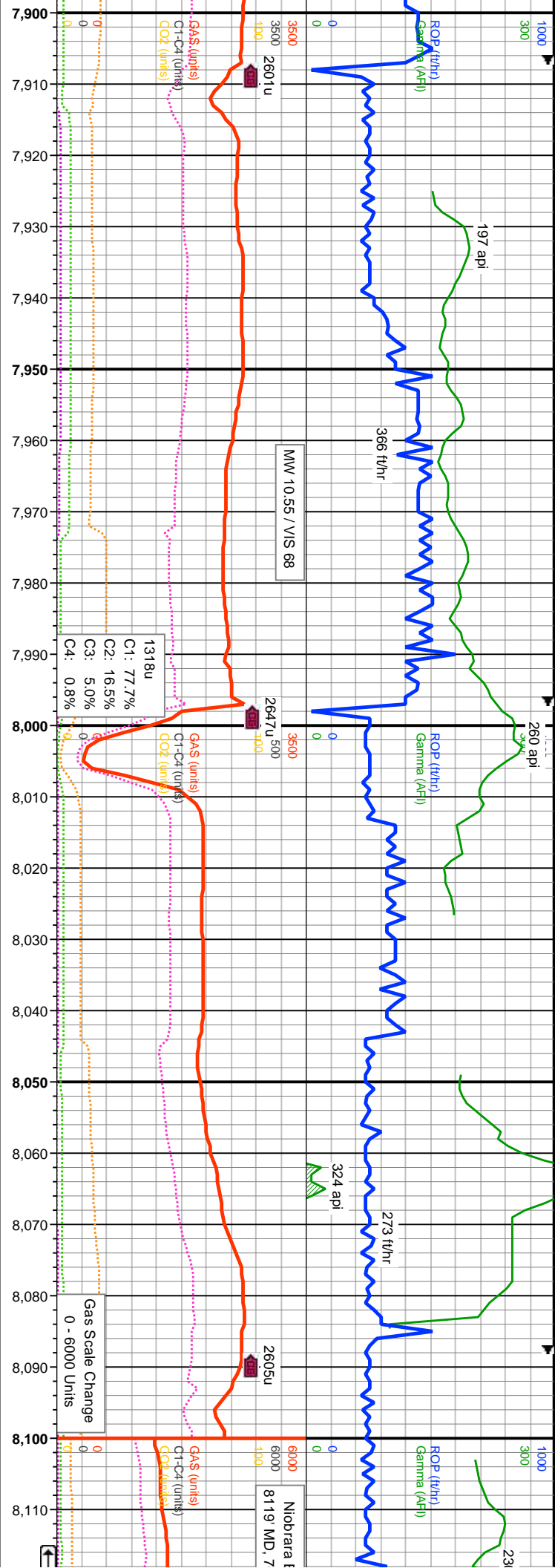




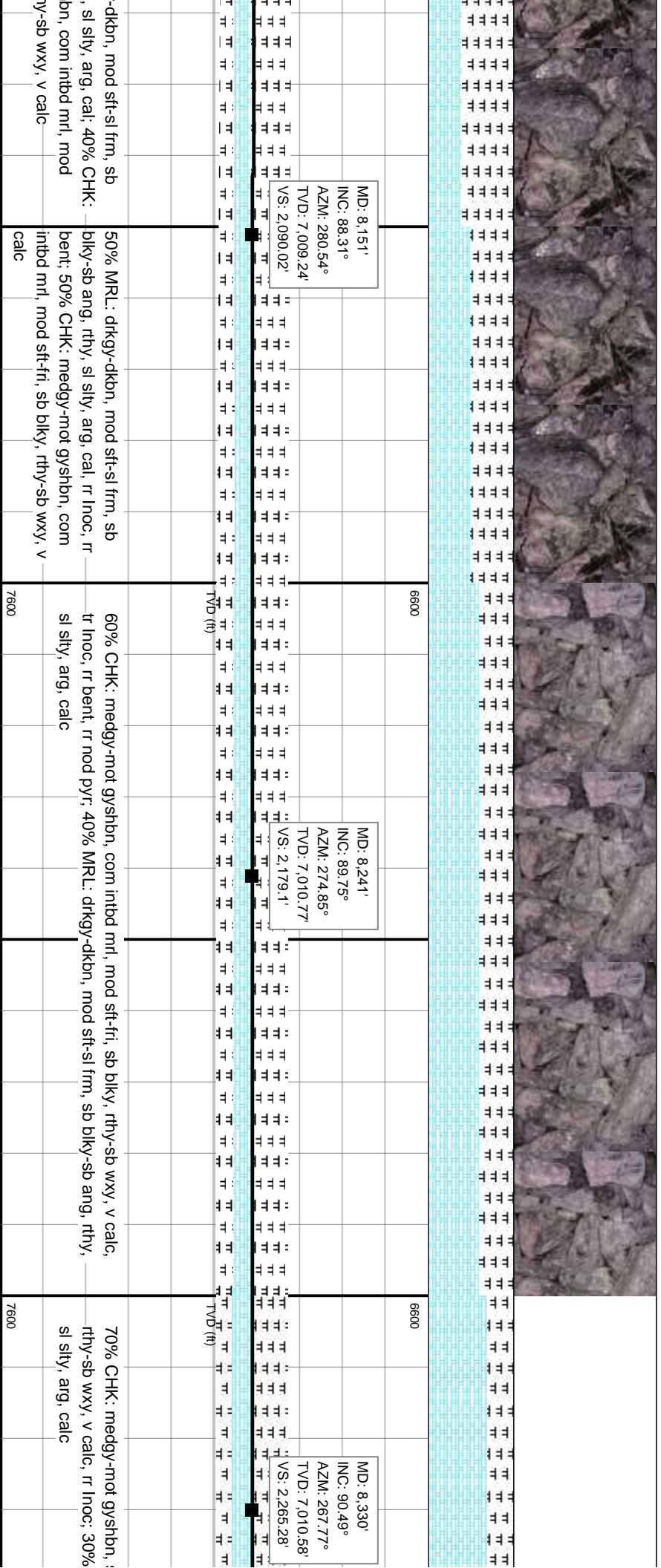
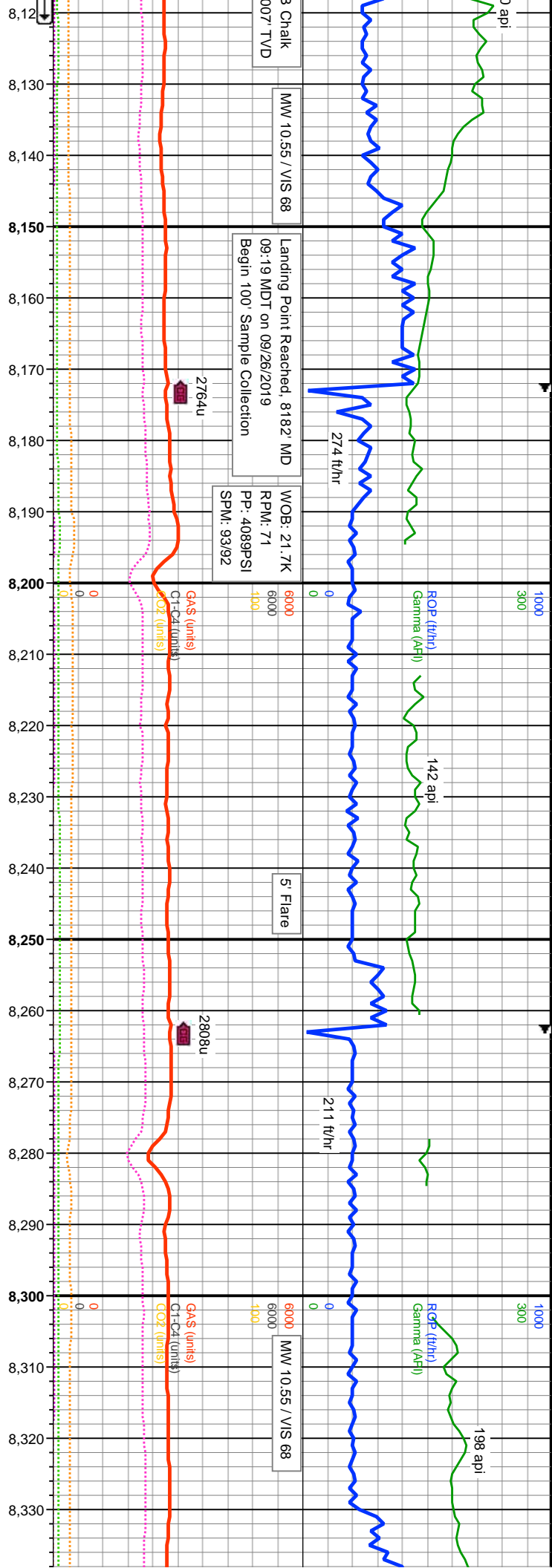




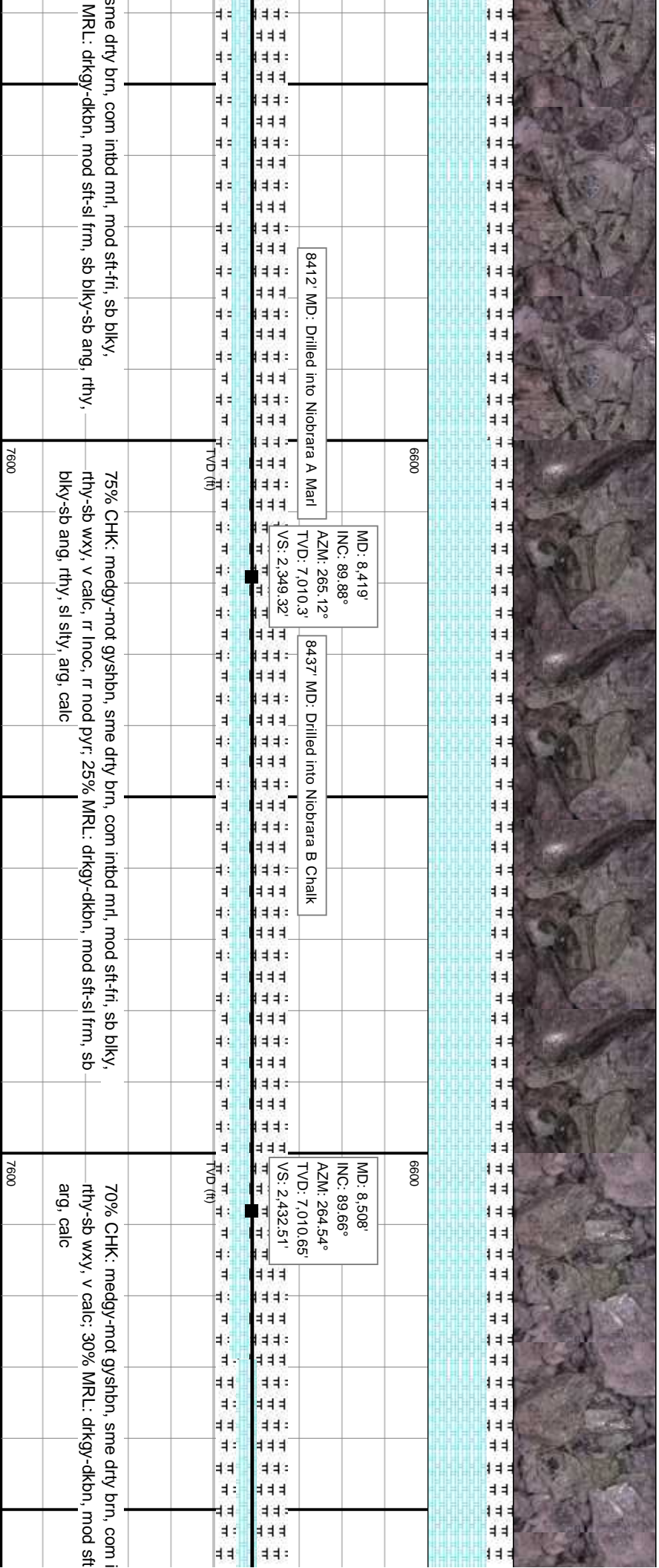
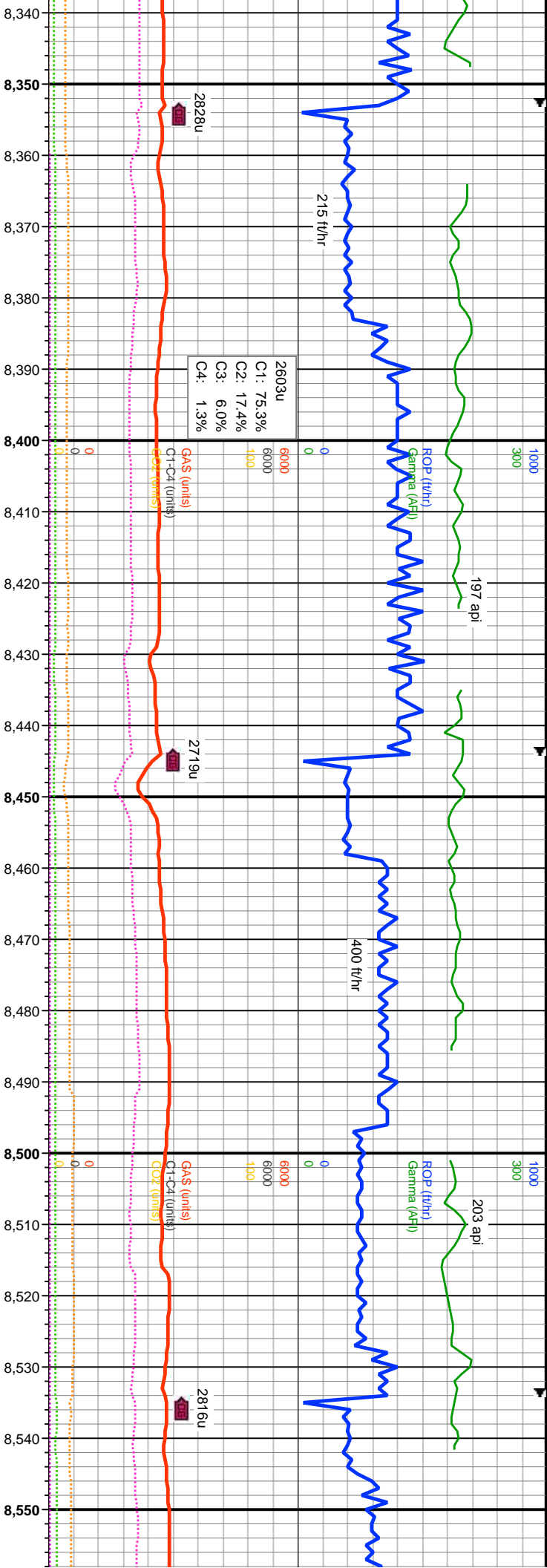


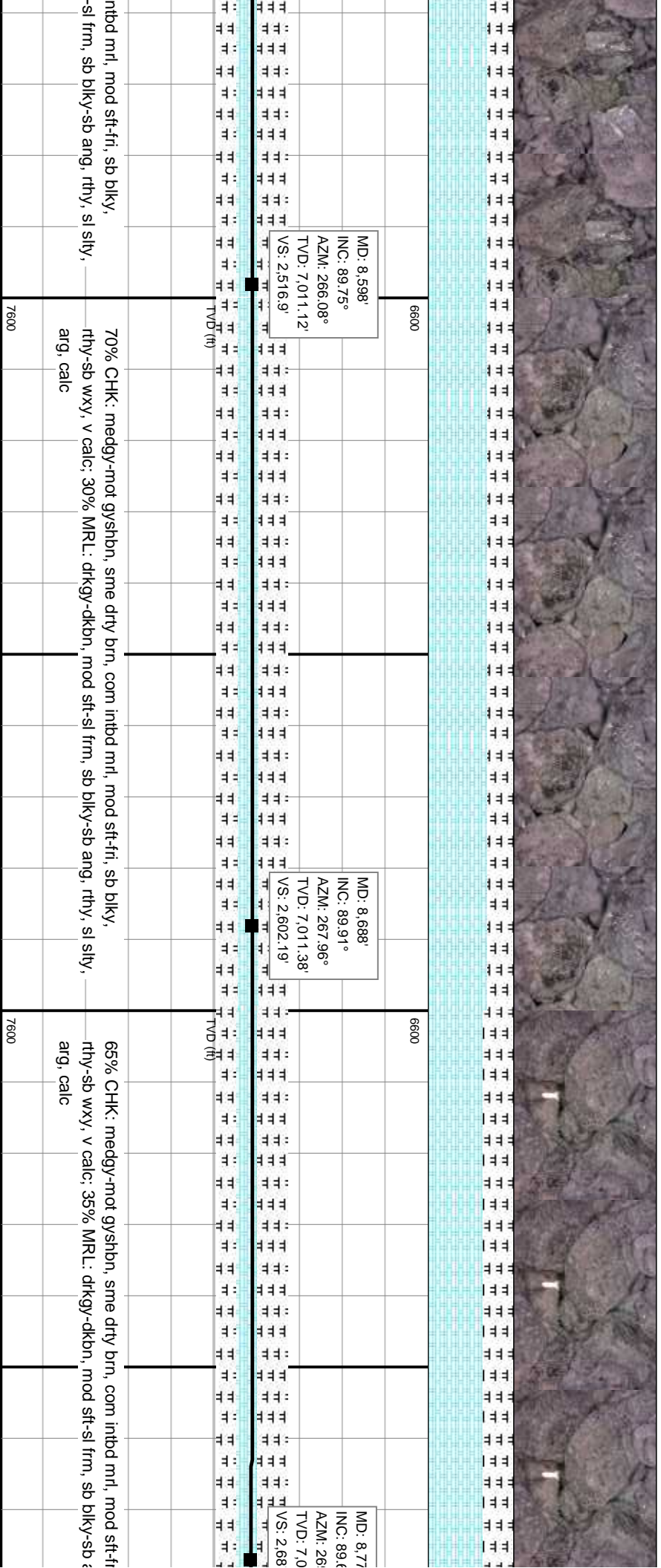
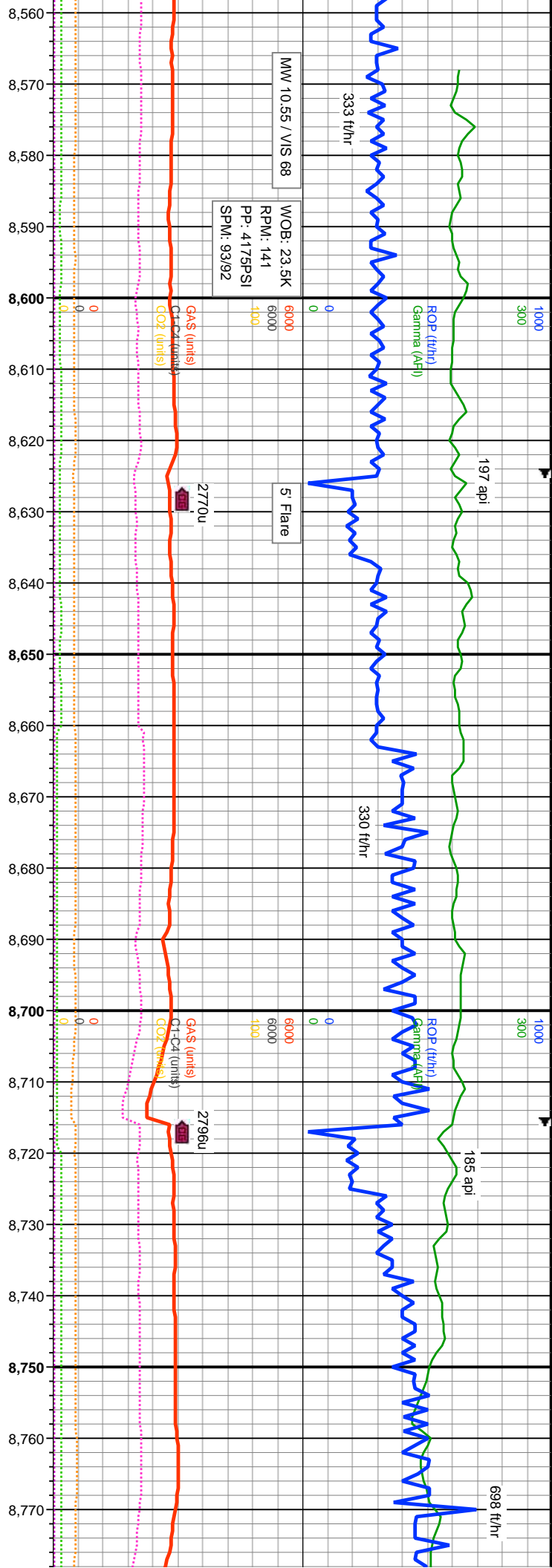




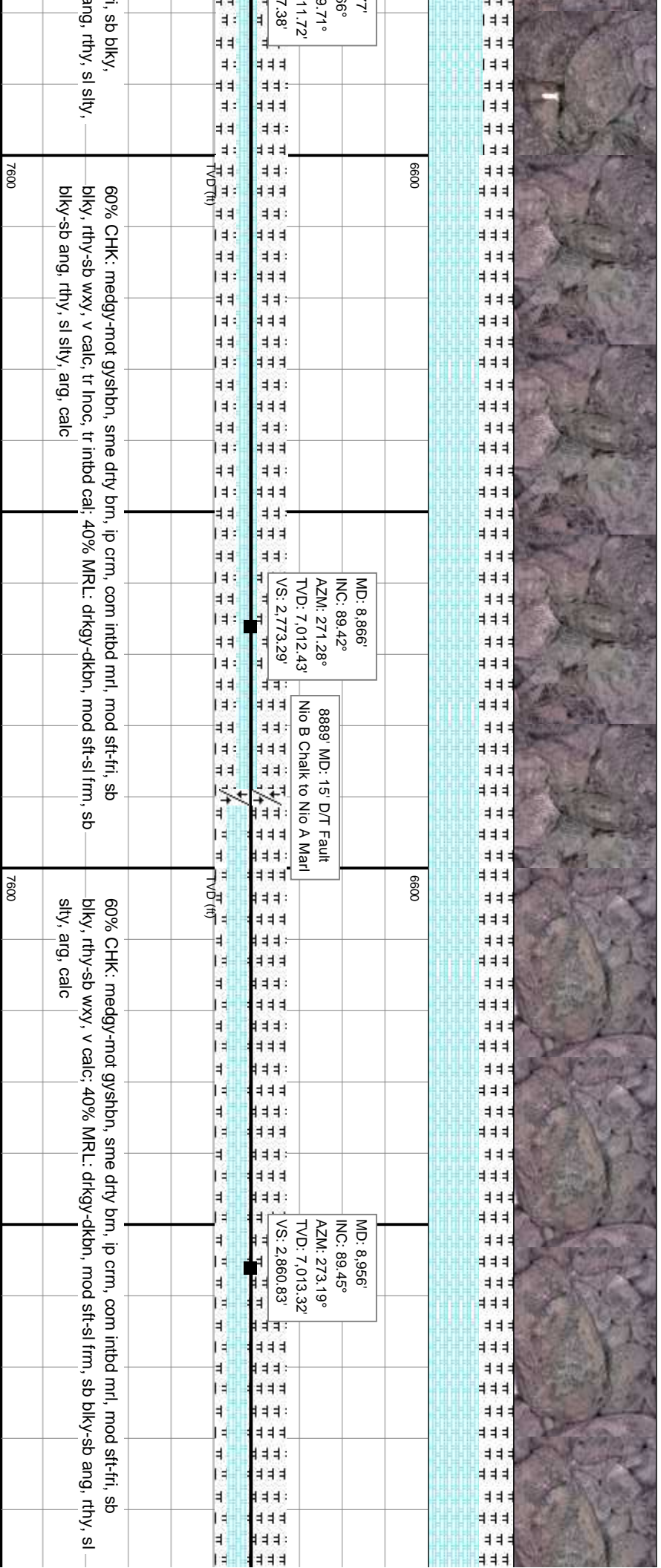
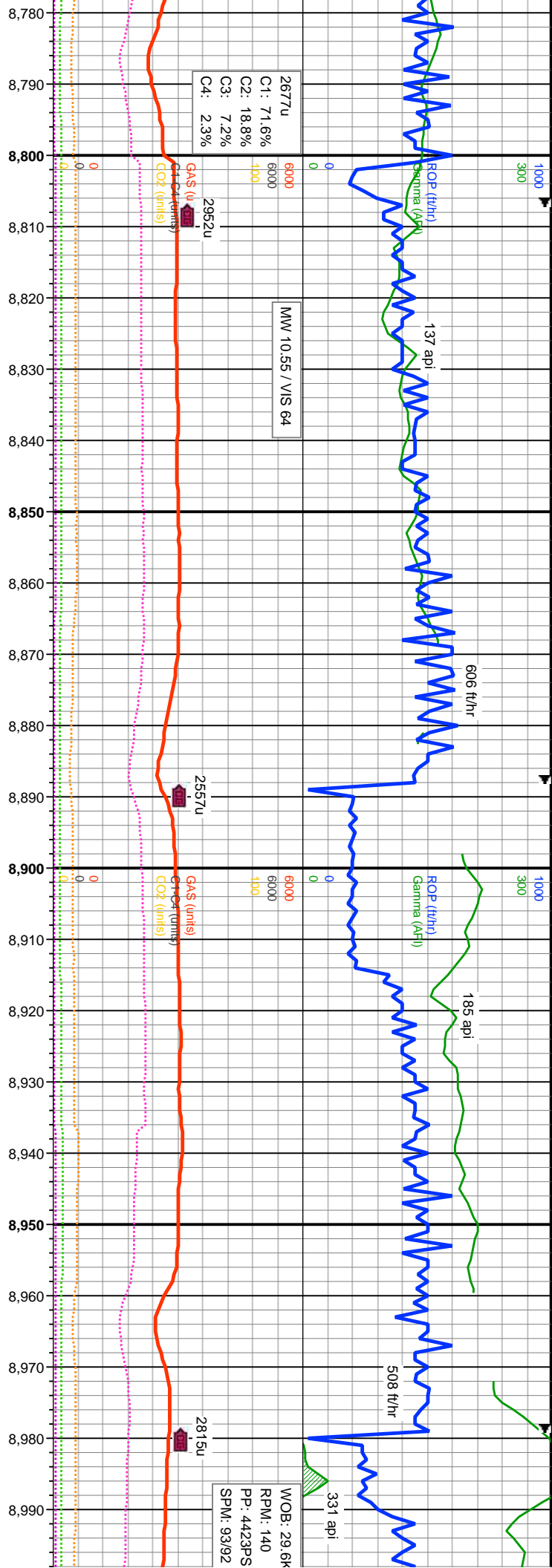




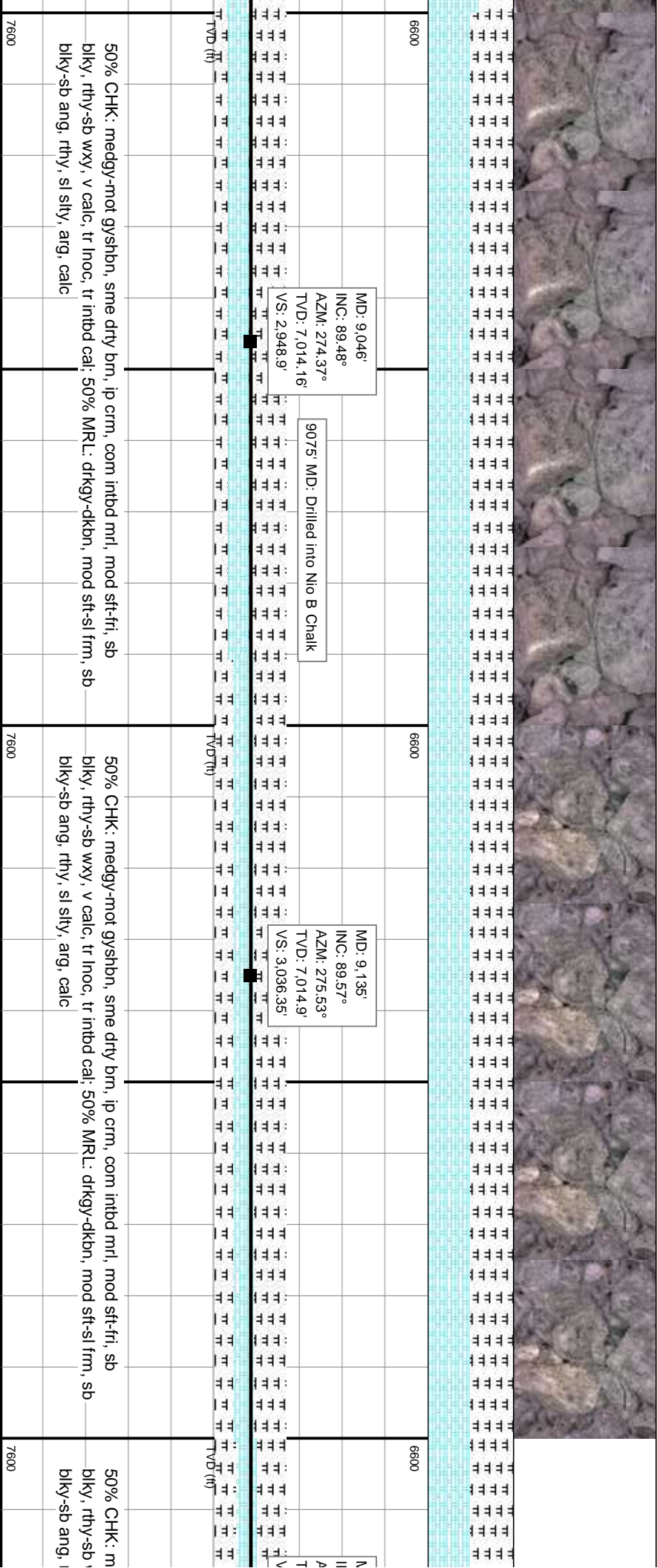
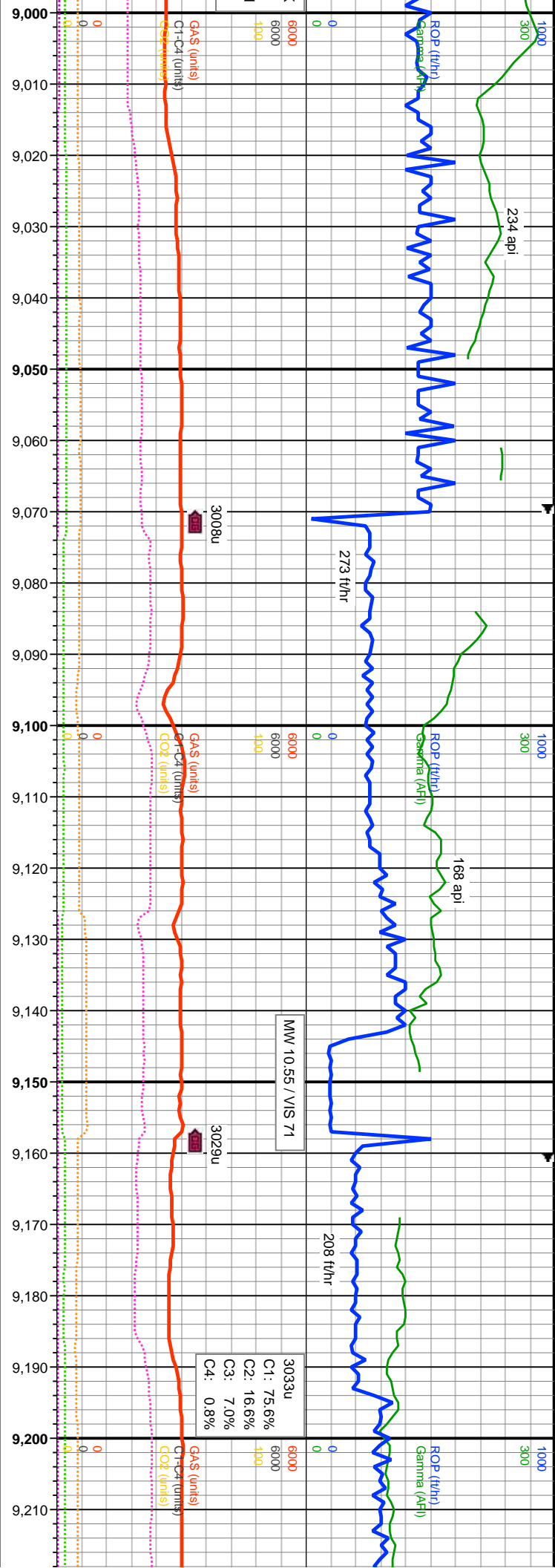


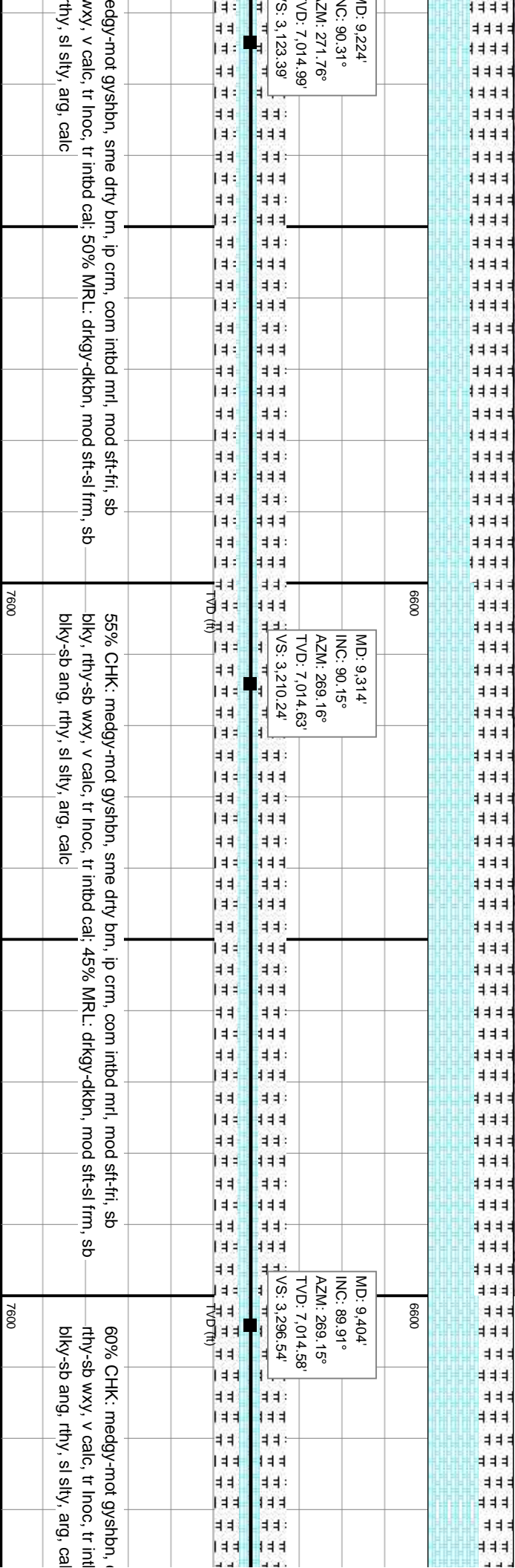
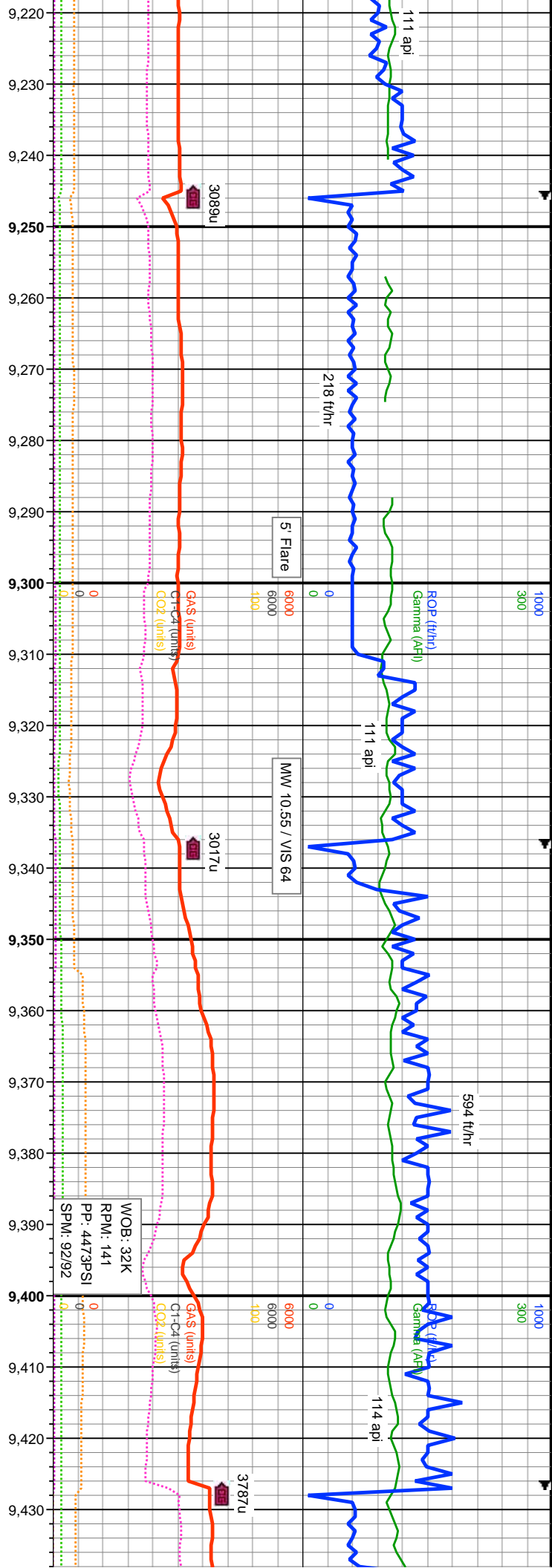




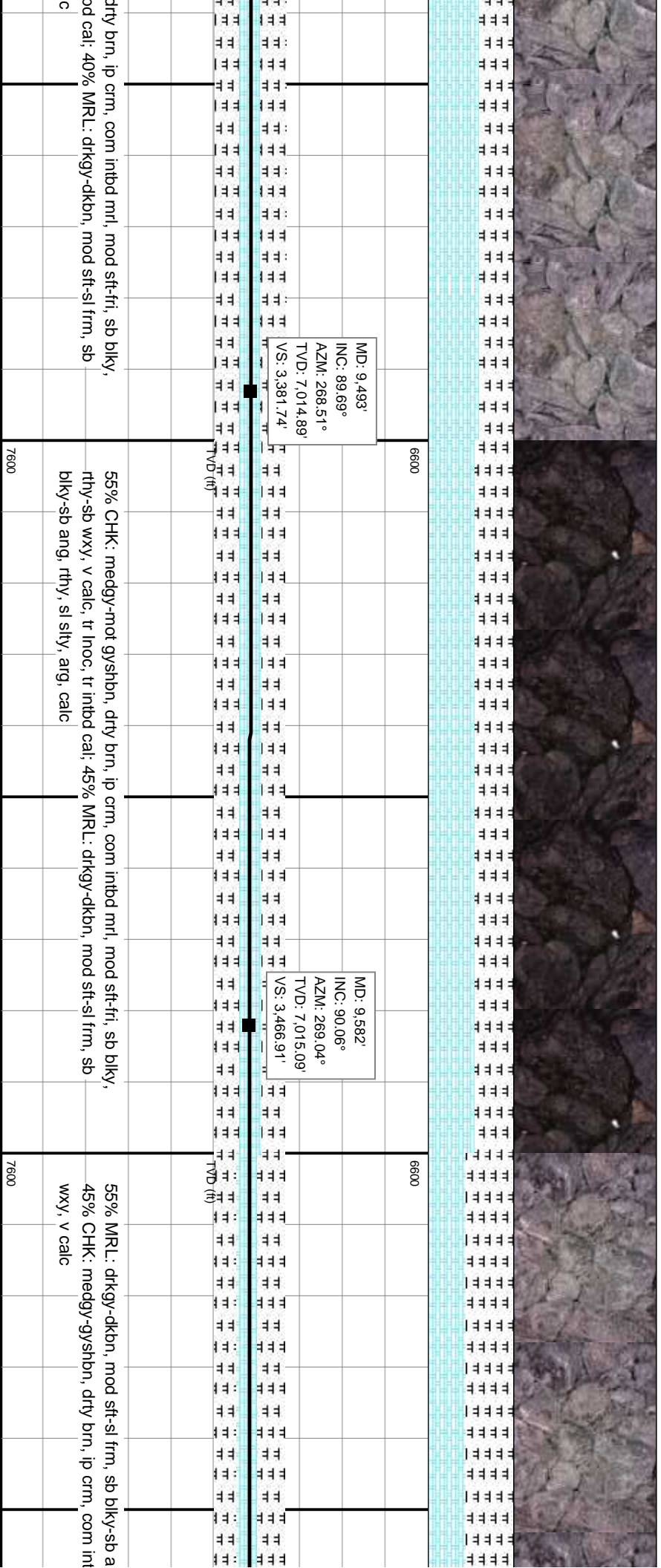
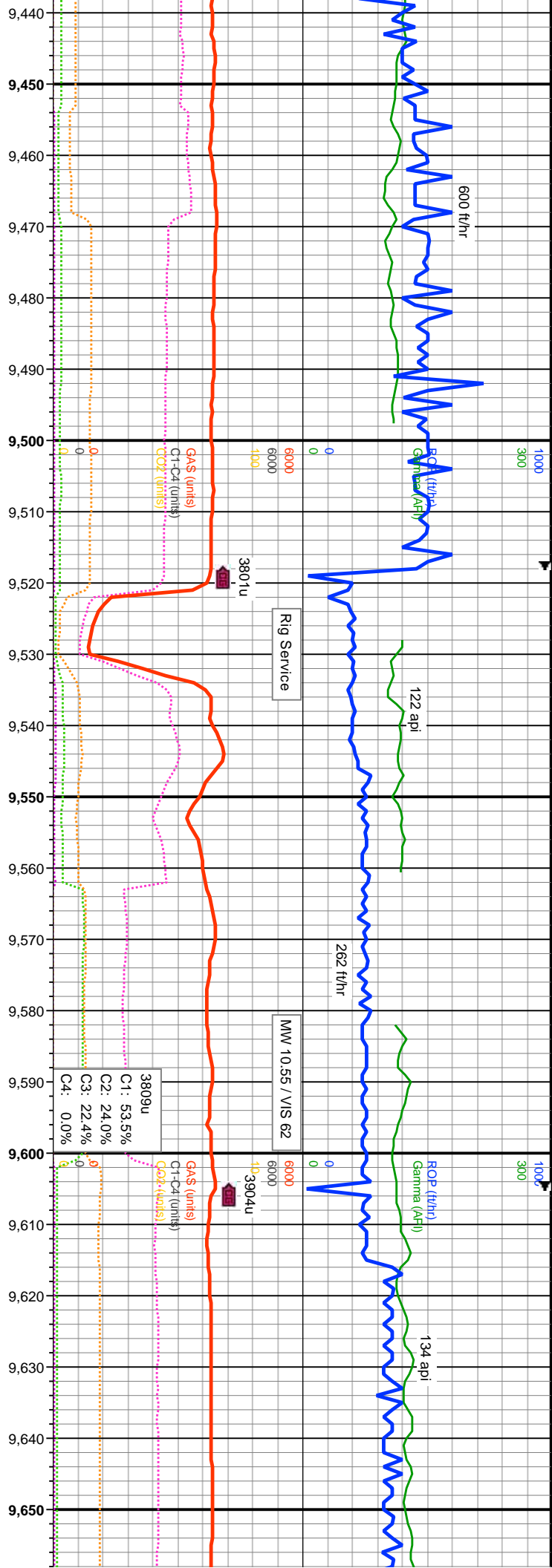




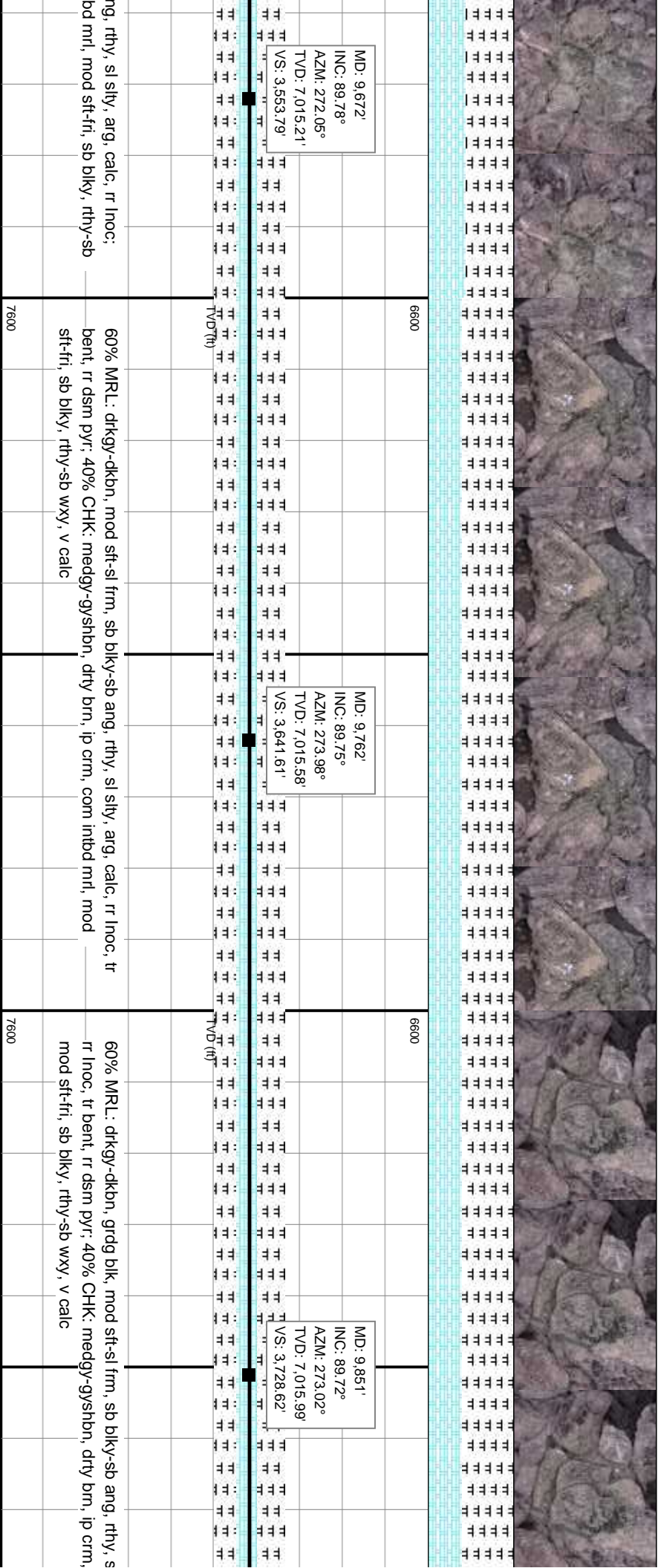
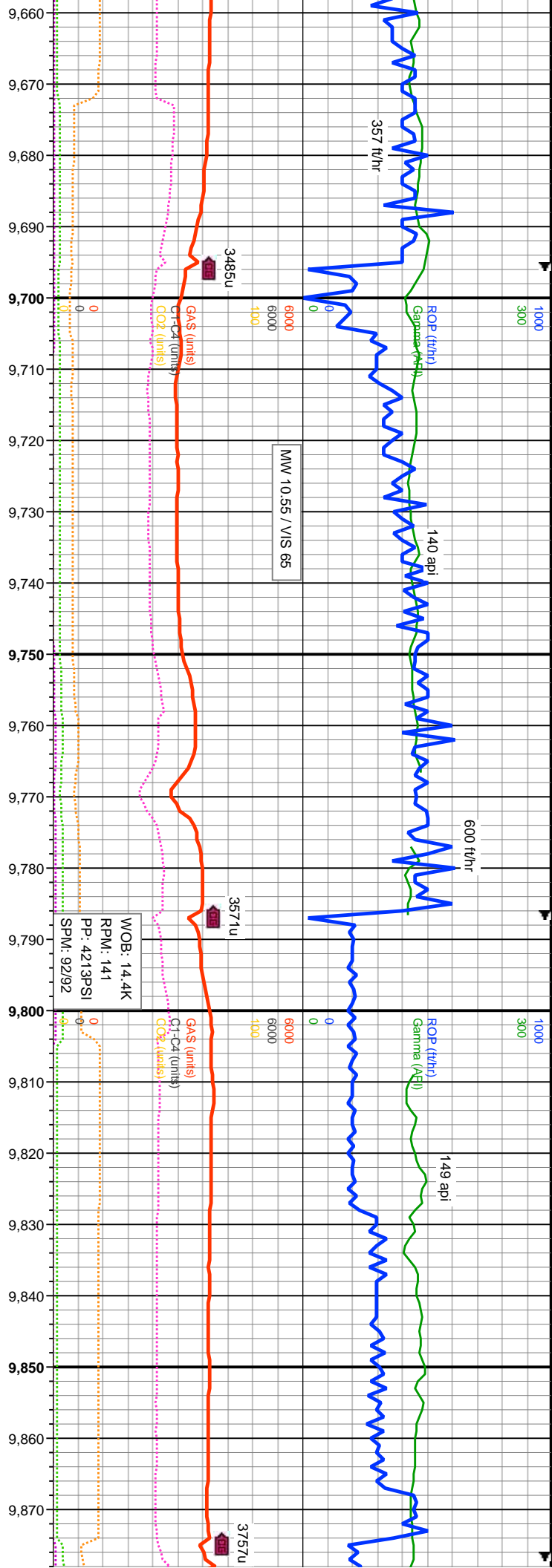


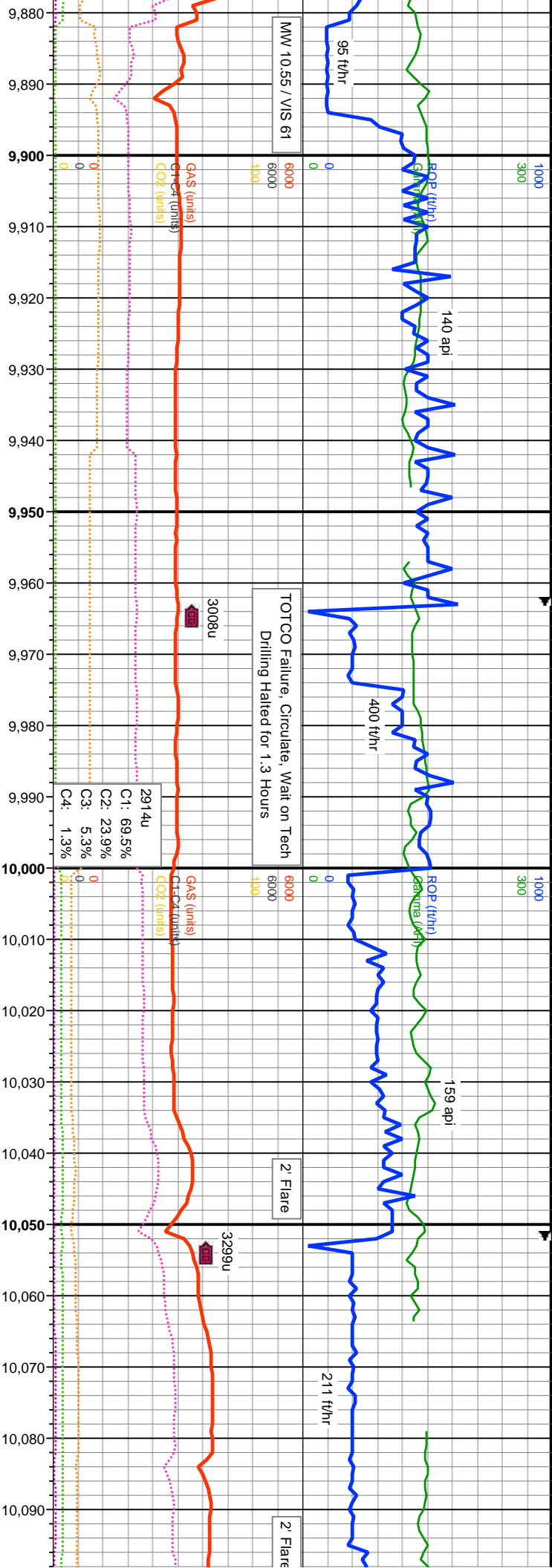






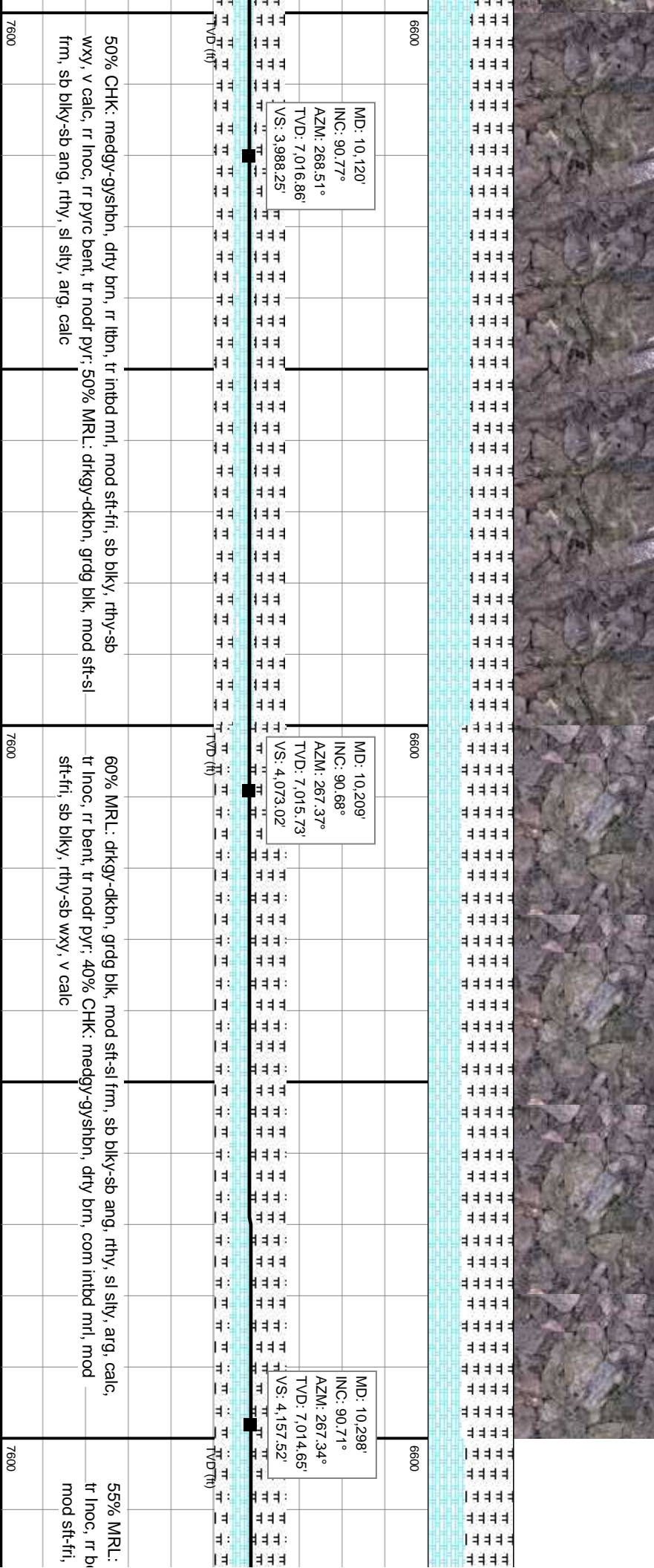
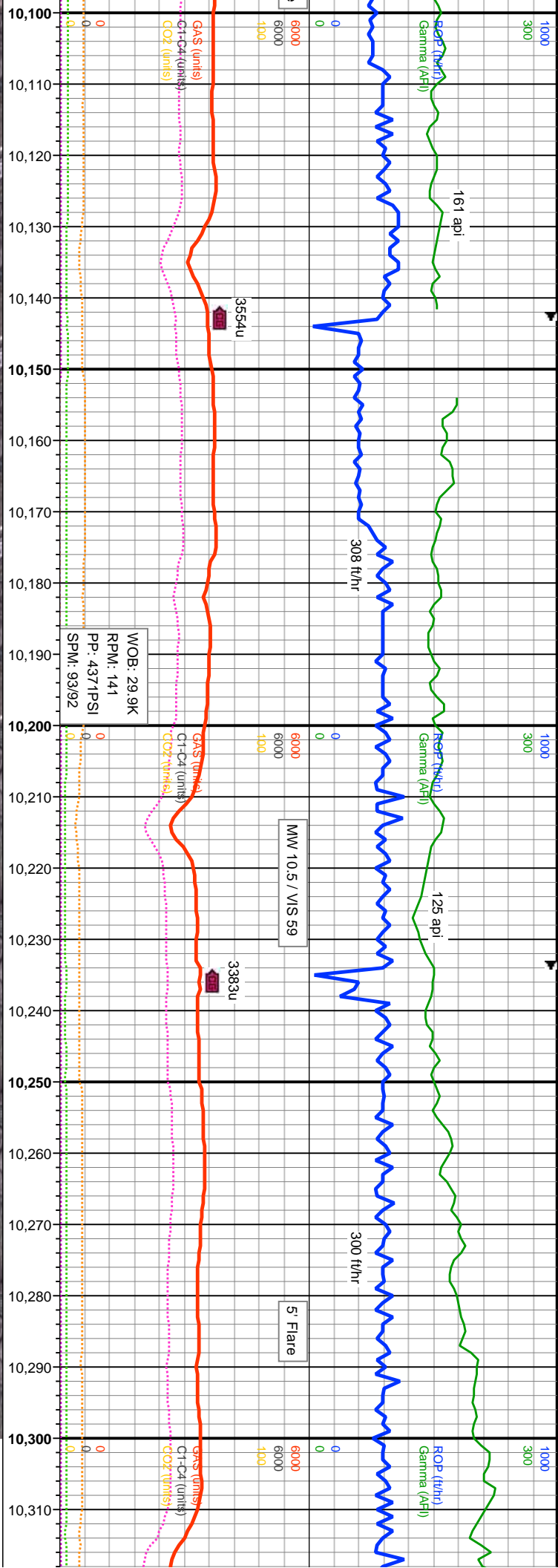






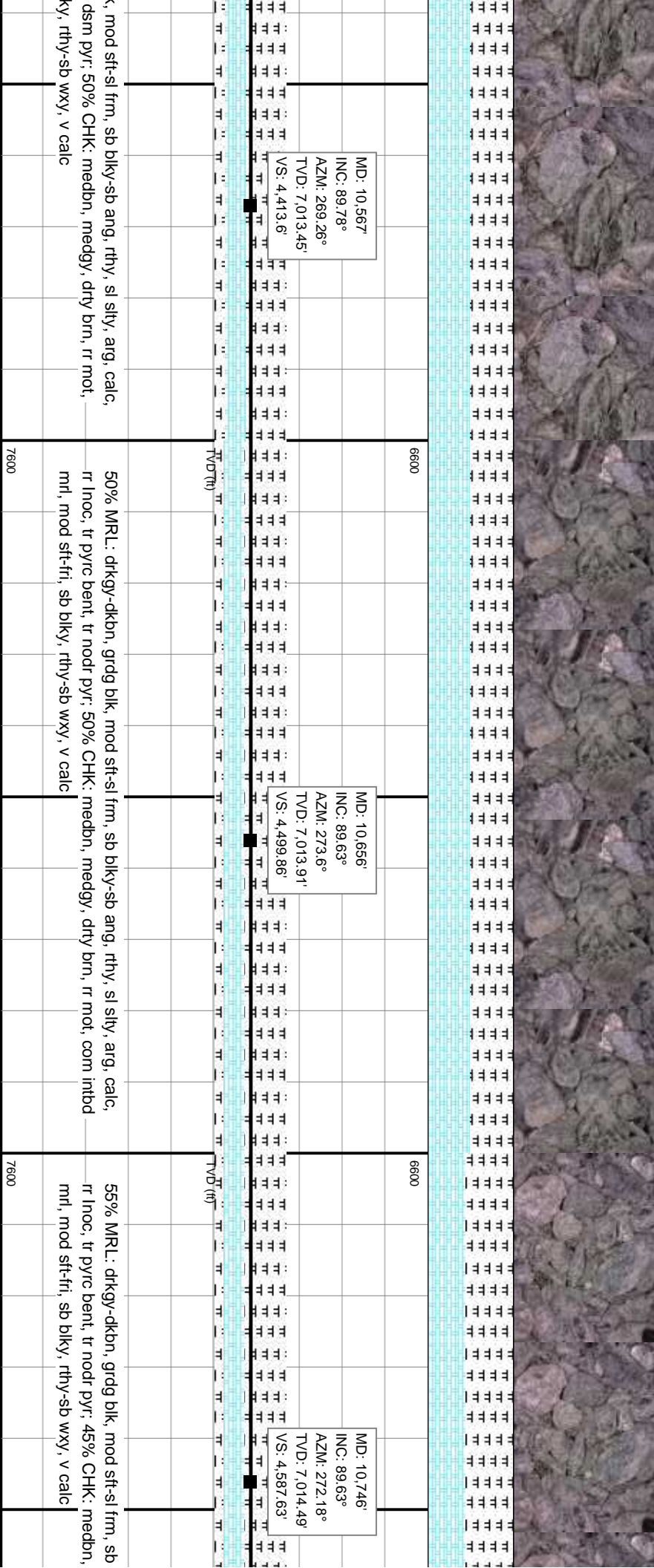
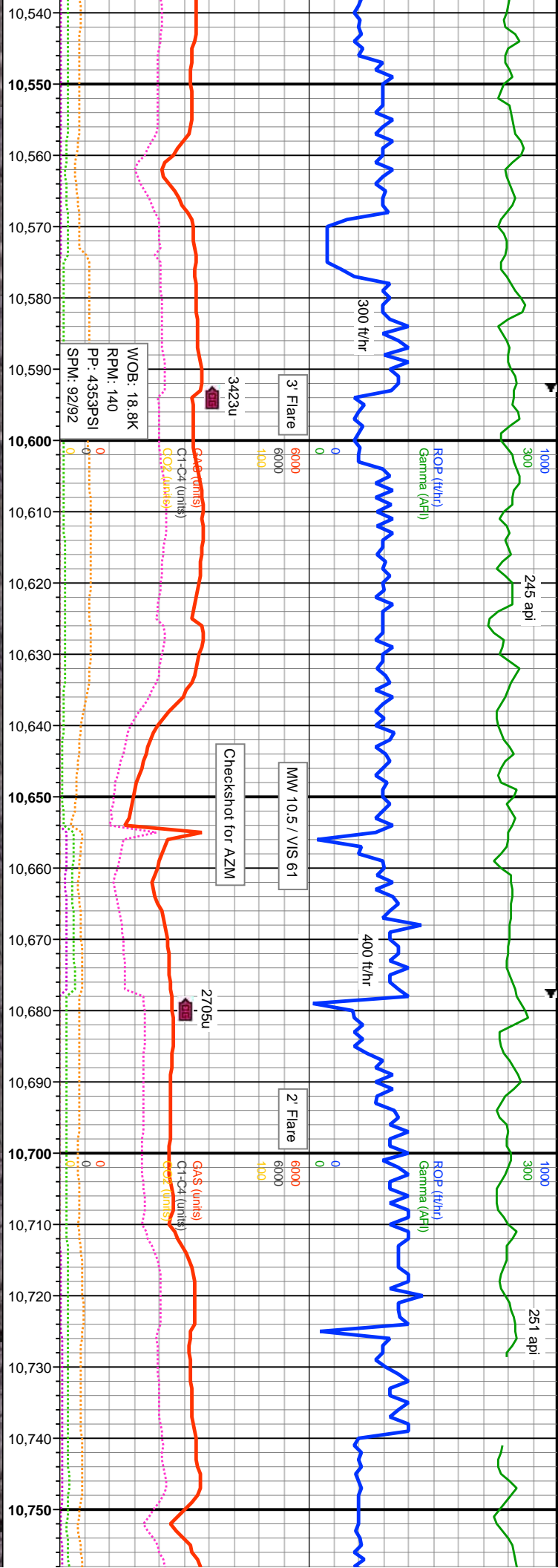
6600		MD: 9,941' INC: 89.45° AZM: 271.6° TVD: 7,016.65' VS: 3,816.19'		6600		MD: 10,030' INC: 89.75° AZM: 269.27° TVD: 7,017.27' VS: 3,902.07'		7600	
6600		TVD (ft)		6600		TVD (ft)		7600	
50% MRL: drkgy-dkbn, grdg blk, mod sft-sl frm, sb blk-ang, rthy, sl sily, arg, calc, tr inoc, tr pyrc bent, tr nodr pyr; 50% CHK: medgy-gyshbn, drty brn, rr cm, tr inbd mrl, mod sft-fri, sb blk-ang, rthy-sb wxy, v calc		50% MRL: drkgy-dkbn, grdg blk, mod sft-sl frm, sb blk-ang, rthy, sl sily, arg, calc, tr inoc, tr pyrc bent, tr nodr pyr; 50% CHK: medgy-gyshbn, drty brn, rr cm, tr inbd mrl, mod sft-fri, sb blk-ang, rthy-sb wxy, v calc		55% CHK: medgy-gyshbn, drty brn, sme lbn, tr inbd mrl, mod sft-fri, sb blk-ang, rthy-sb wxy, v calc, rr inoc, tr pyrc bent, tr nodr pyr; 45% MRL: drkgy-dkbn, grdg blk, mod sft-sl frm, sb blk-ang, rthy, sl sily, arg, calc		55% CHK: medgy-gyshbn, drty brn, sme lbn, tr inbd mrl, mod sft-fri, sb blk-ang, rthy-sb wxy, v calc, rr inoc, tr pyrc bent, tr nodr pyr; 45% MRL: drkgy-dkbn, grdg blk, mod sft-sl frm, sb blk-ang, rthy, sl sily, arg, calc			



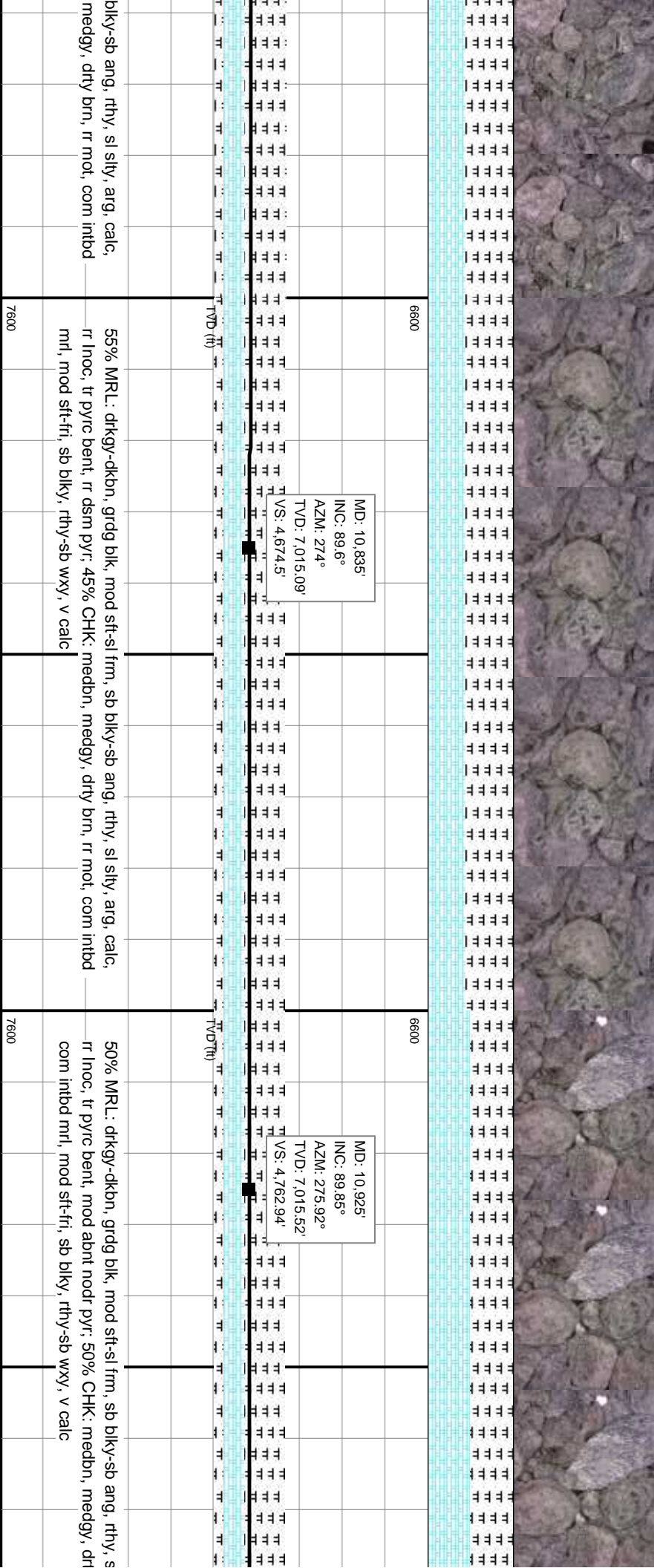
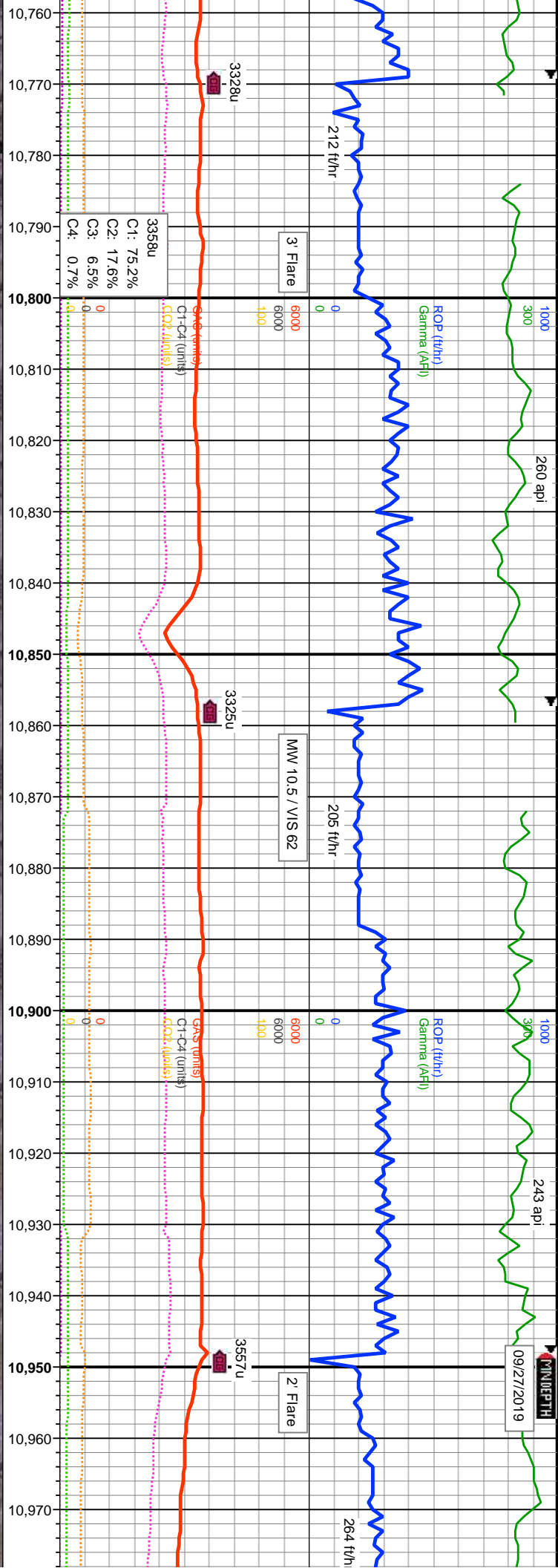




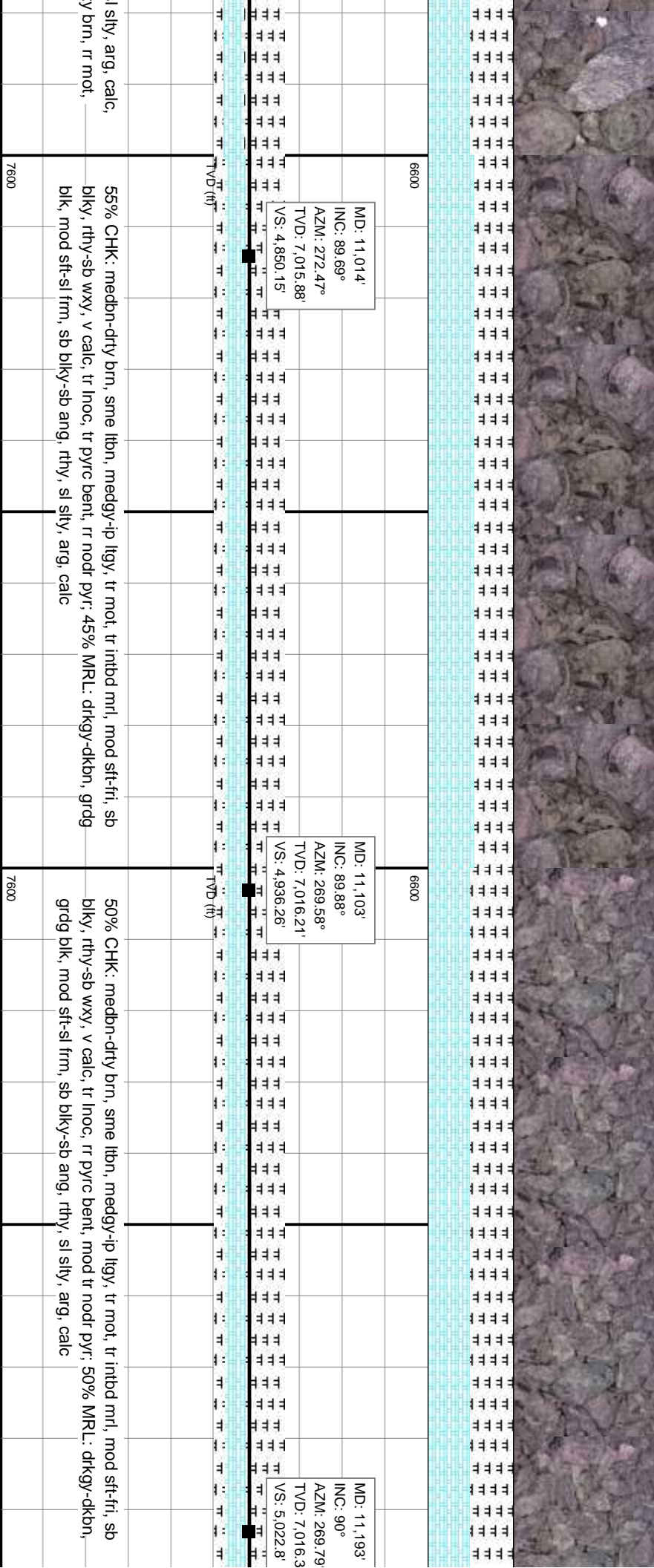
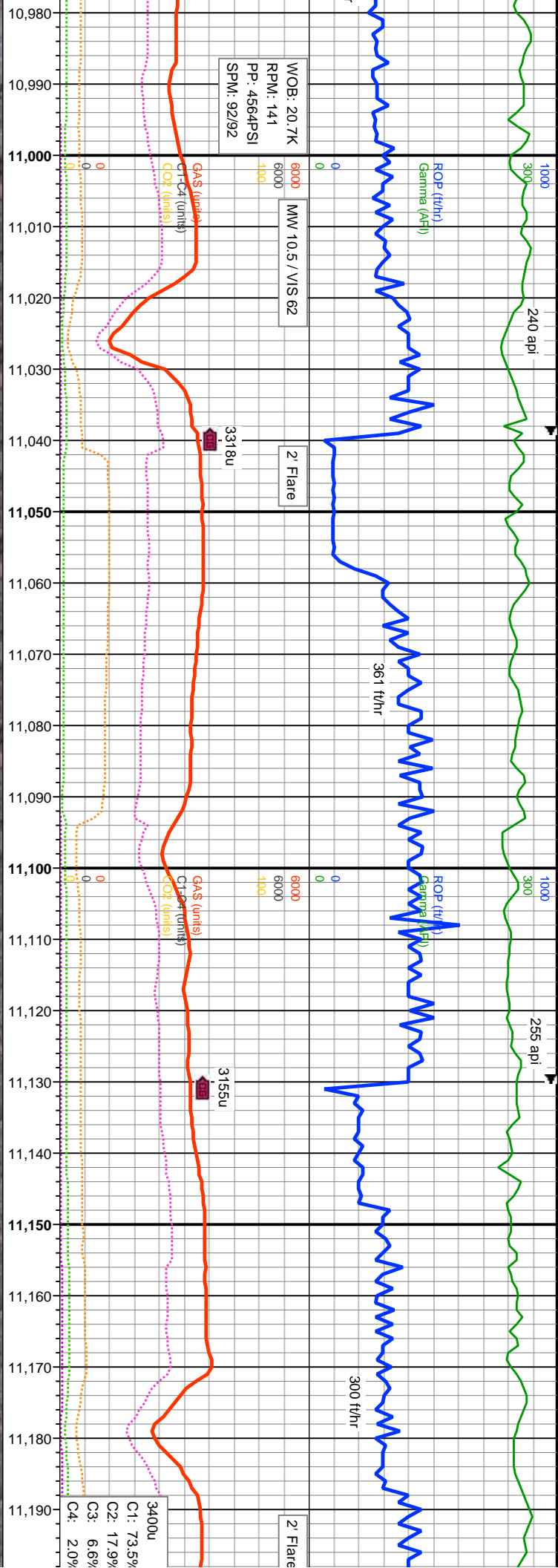


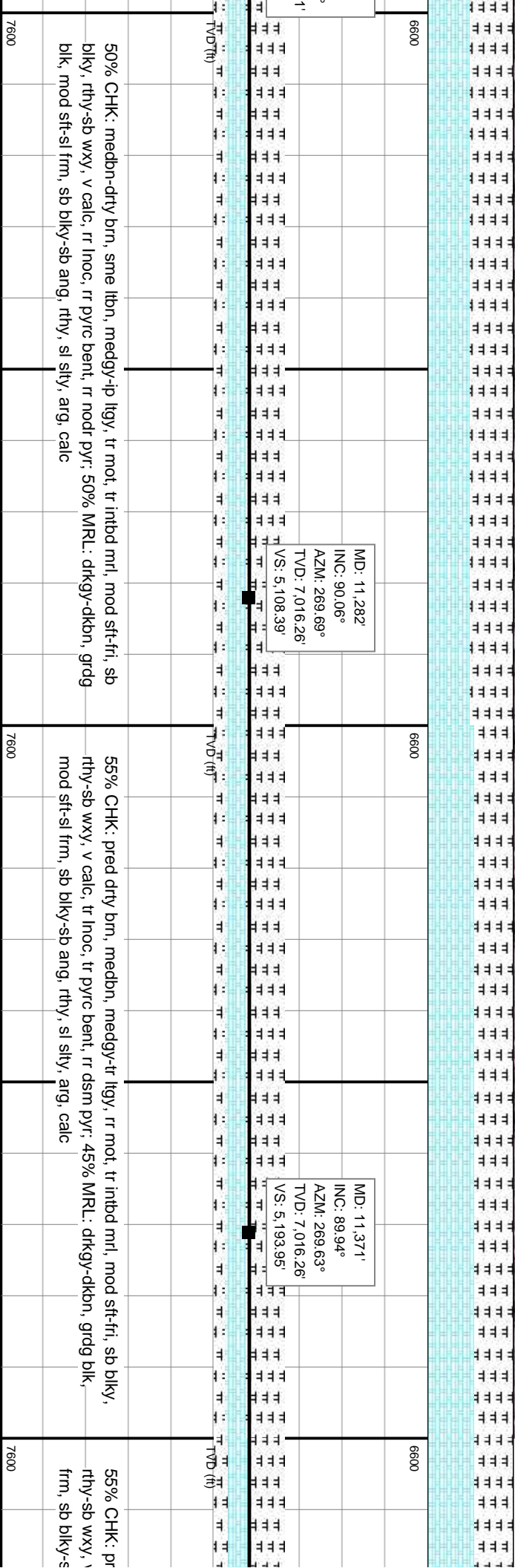
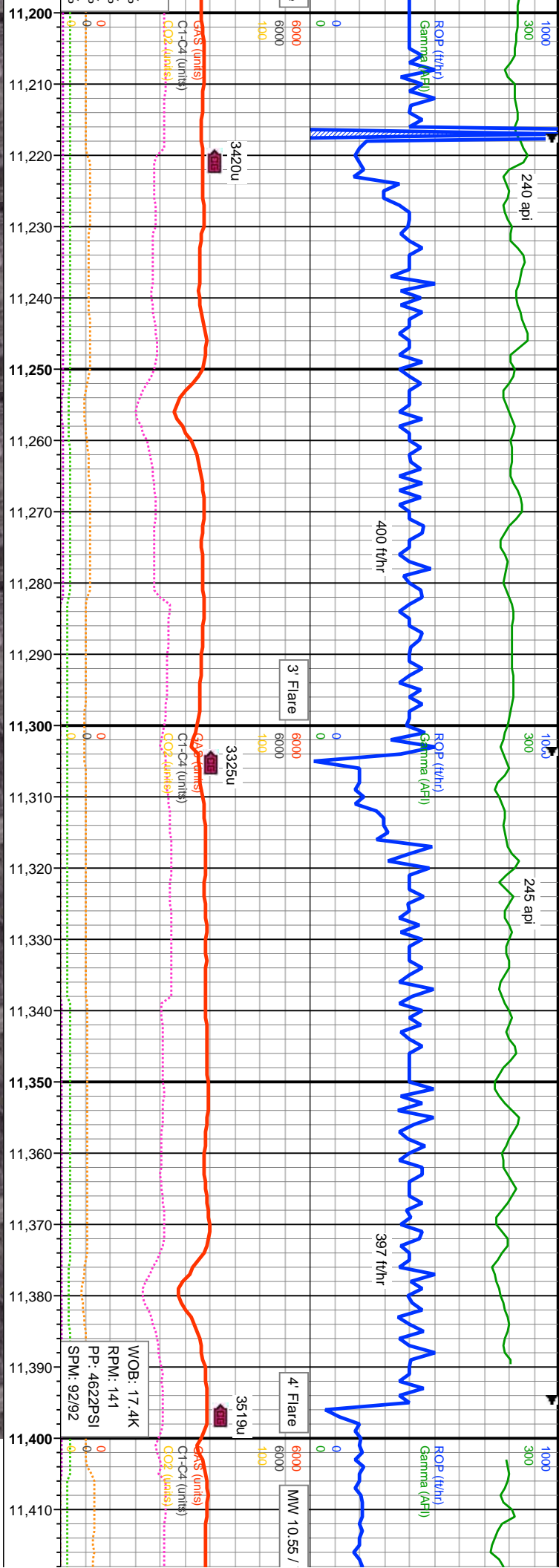










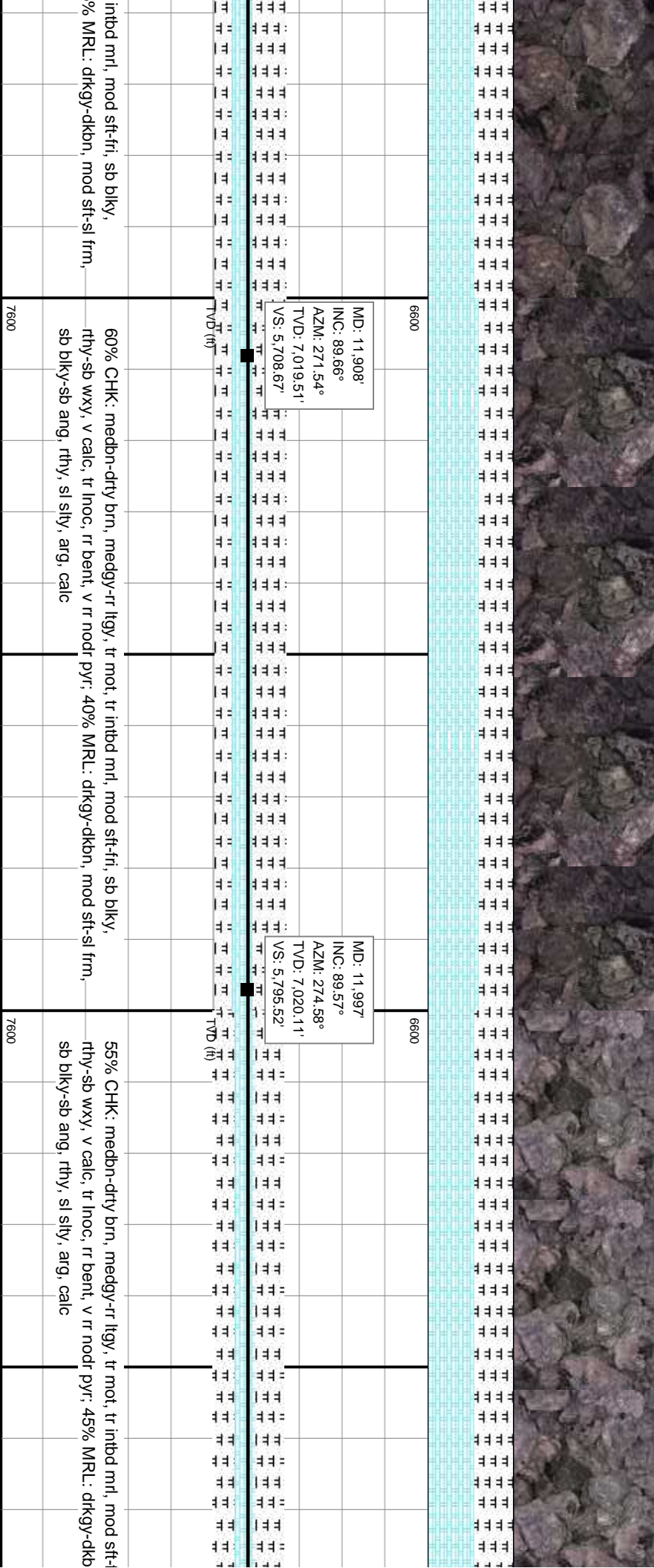
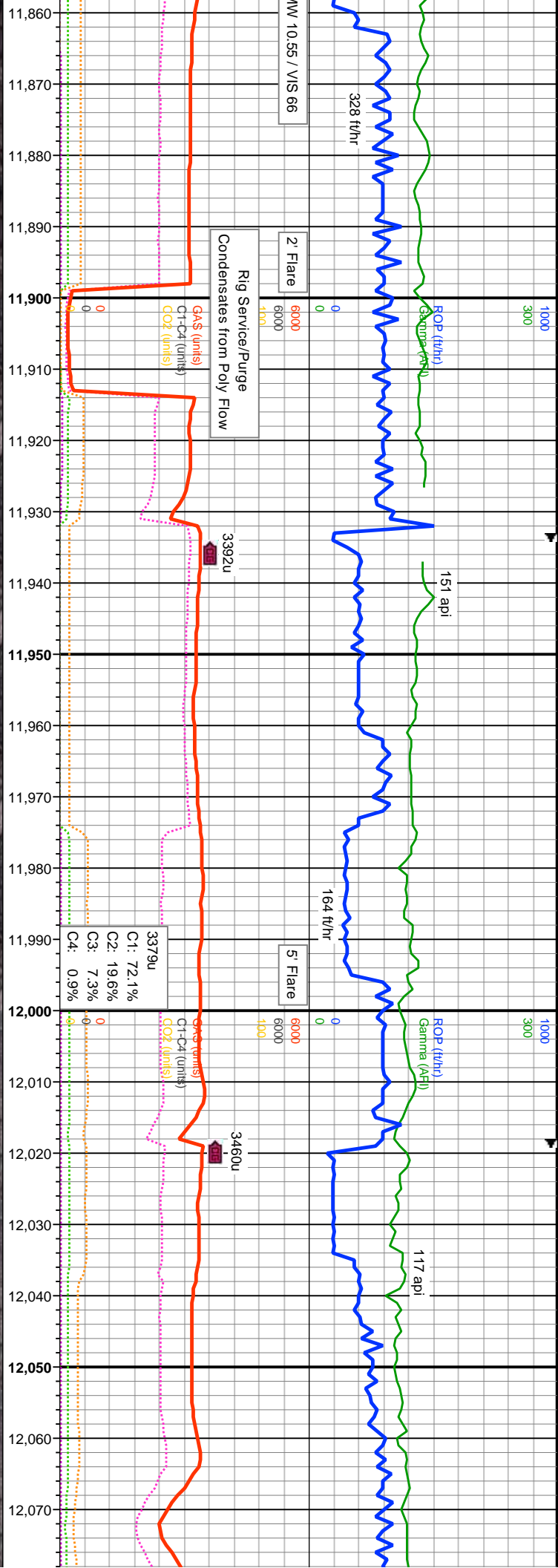




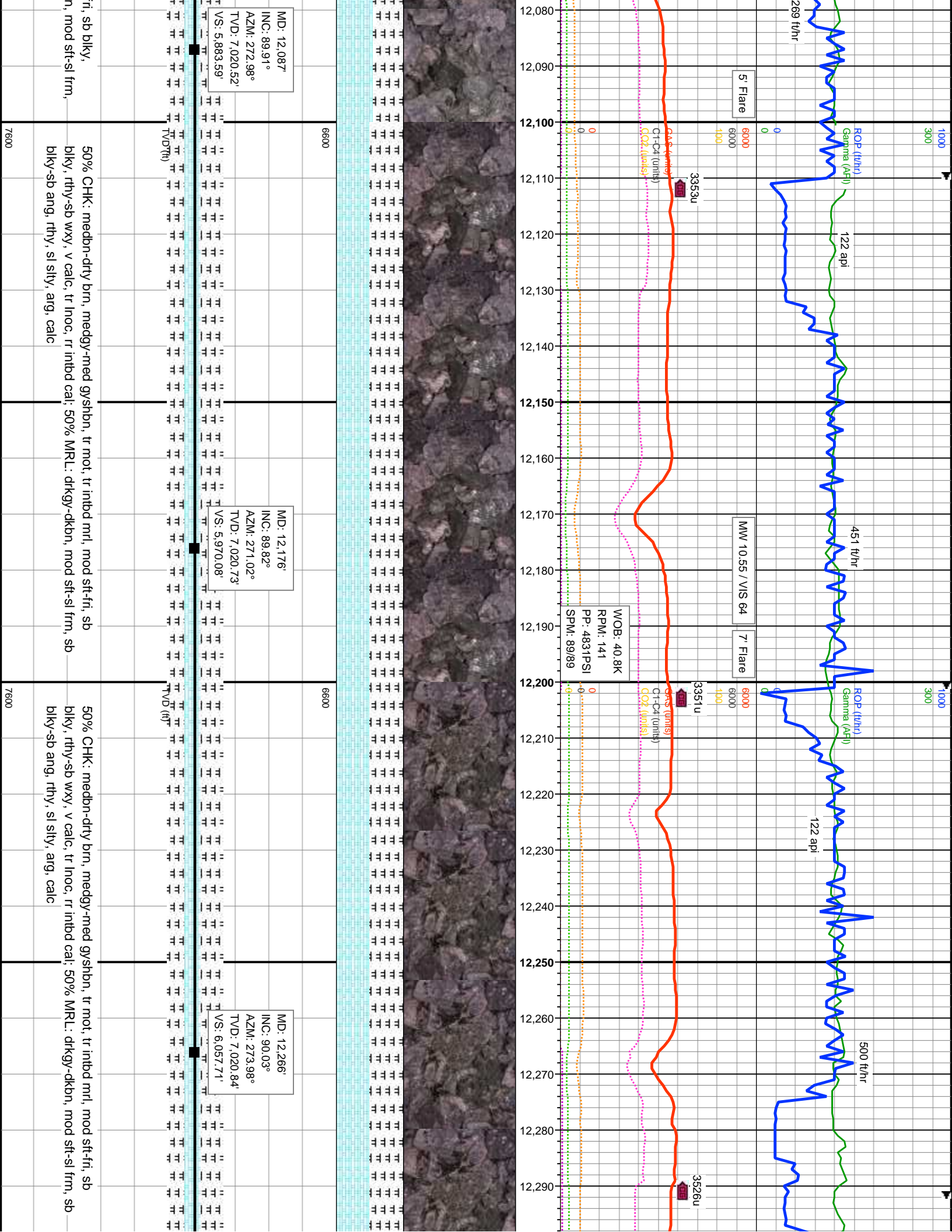






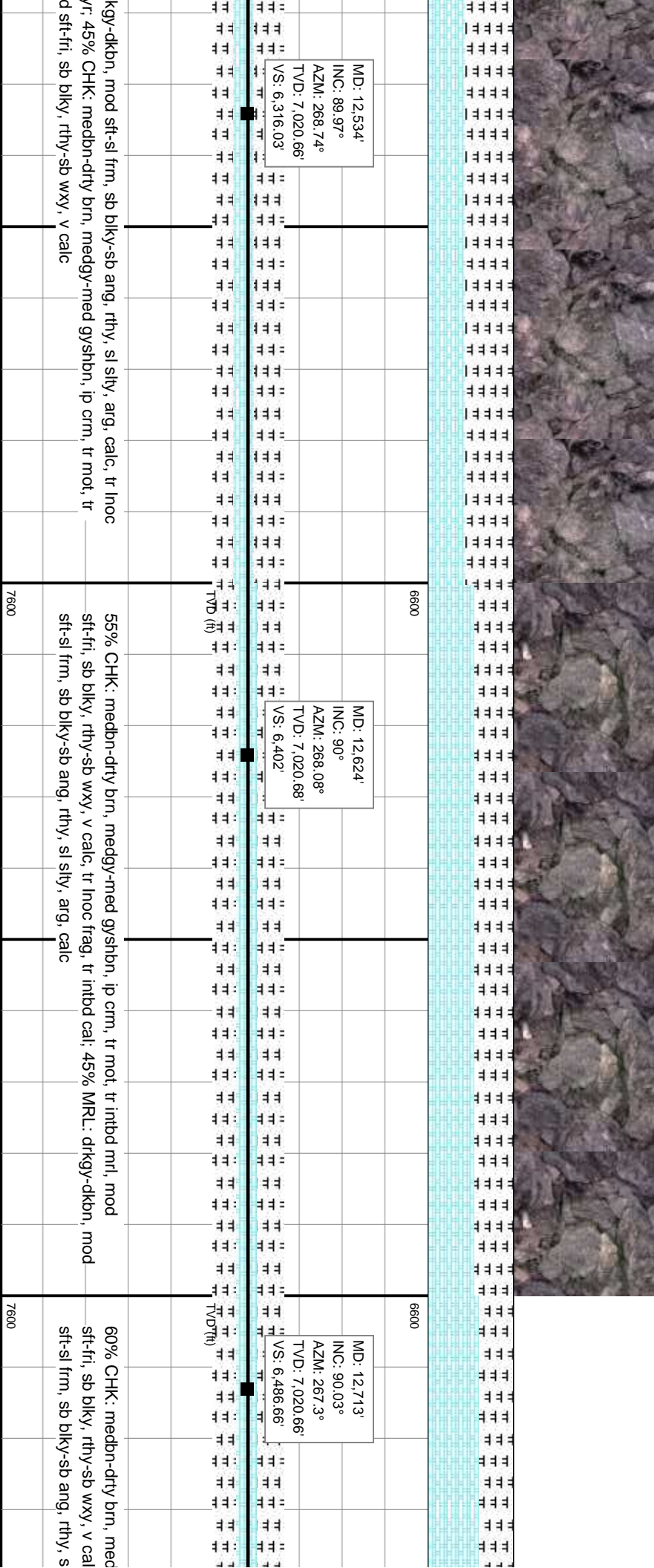
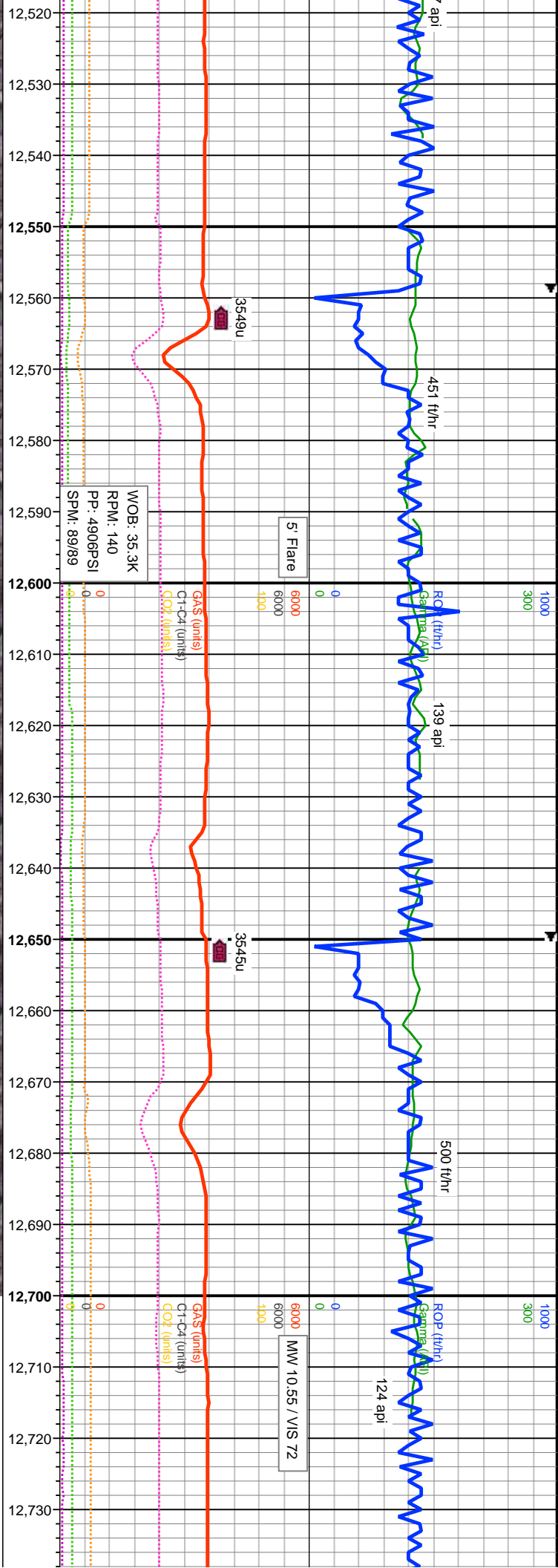




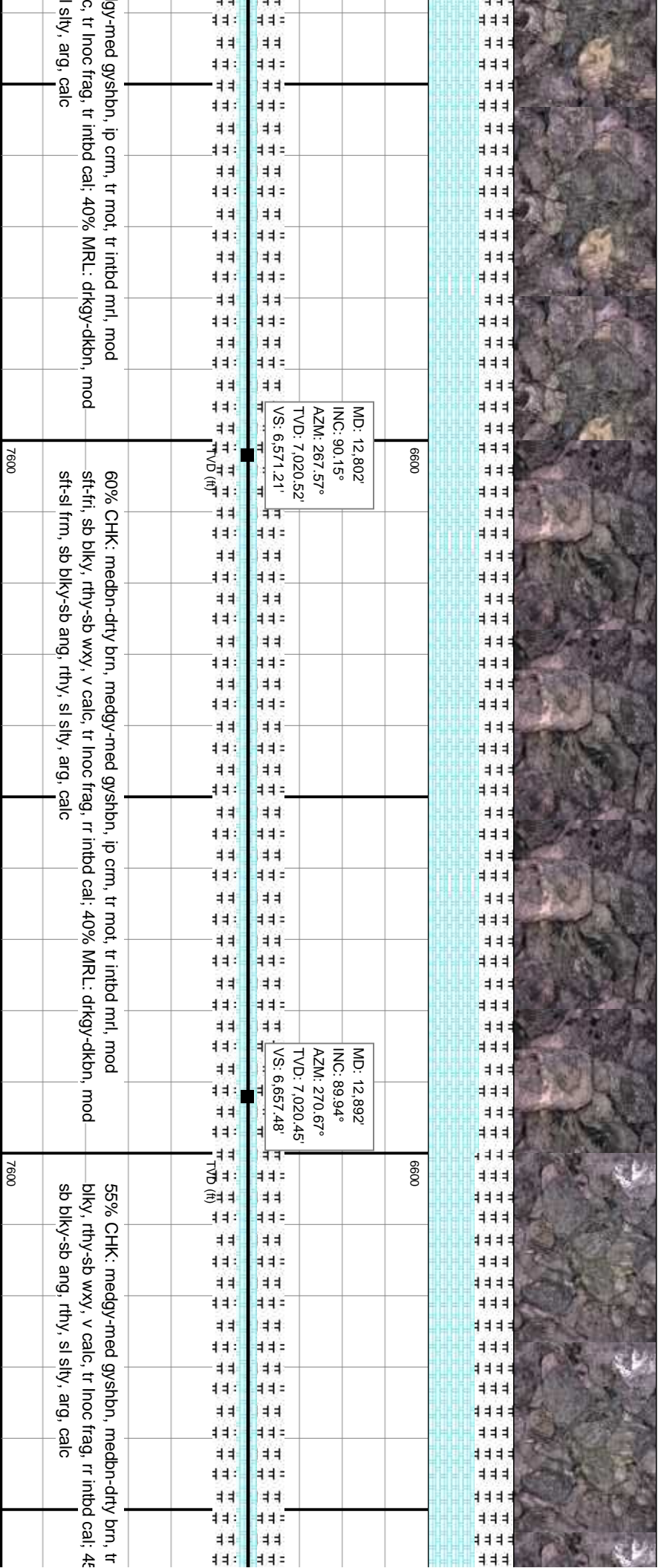
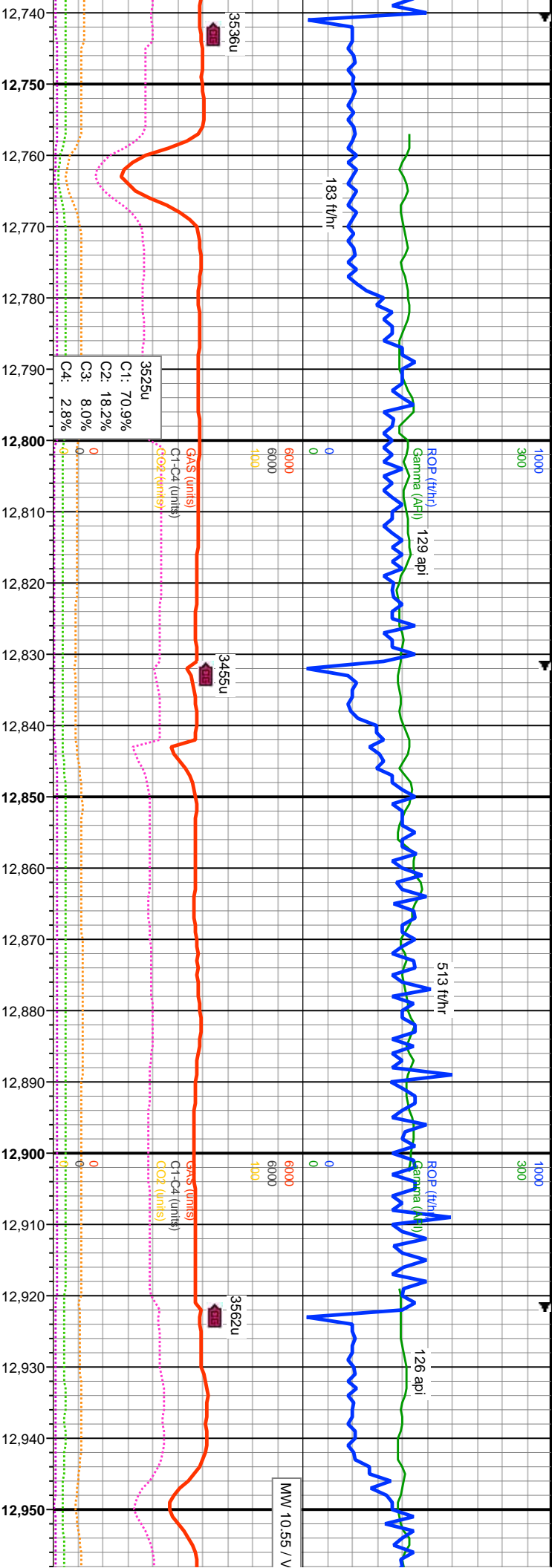


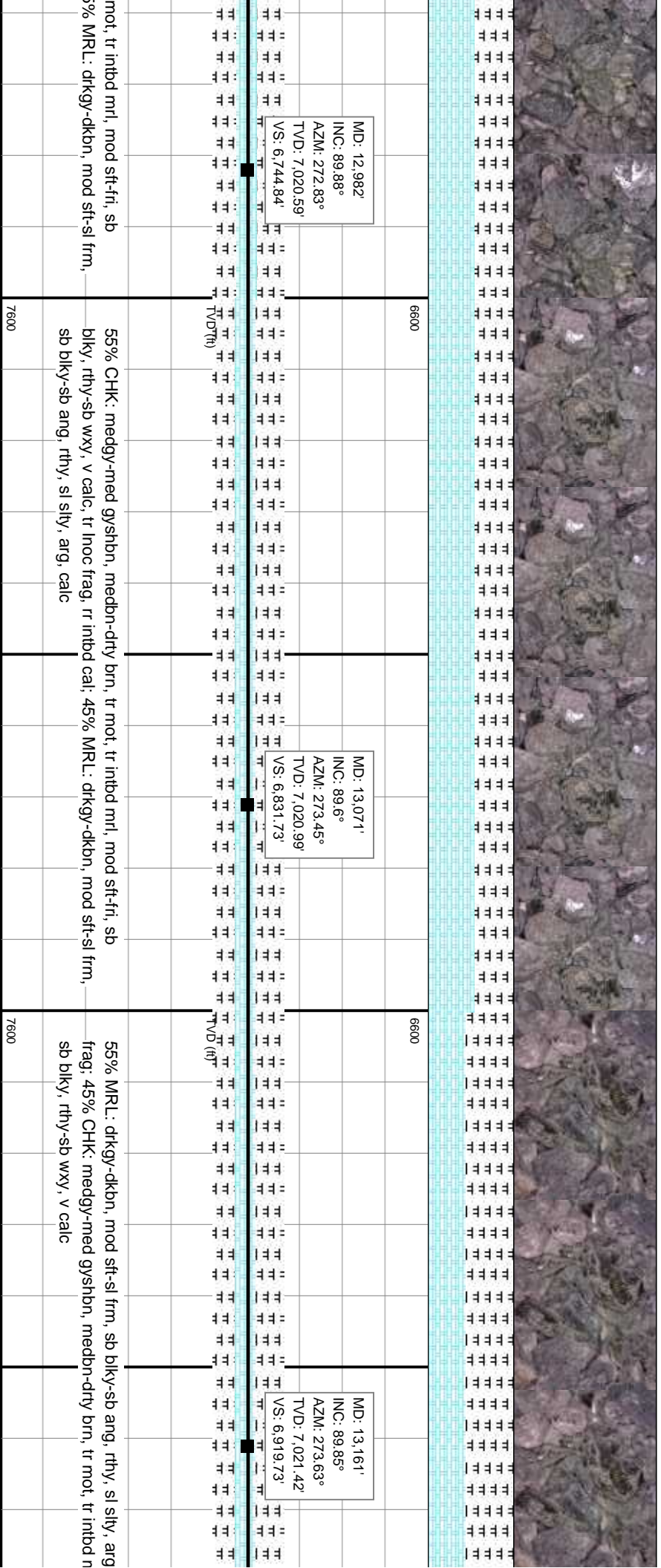
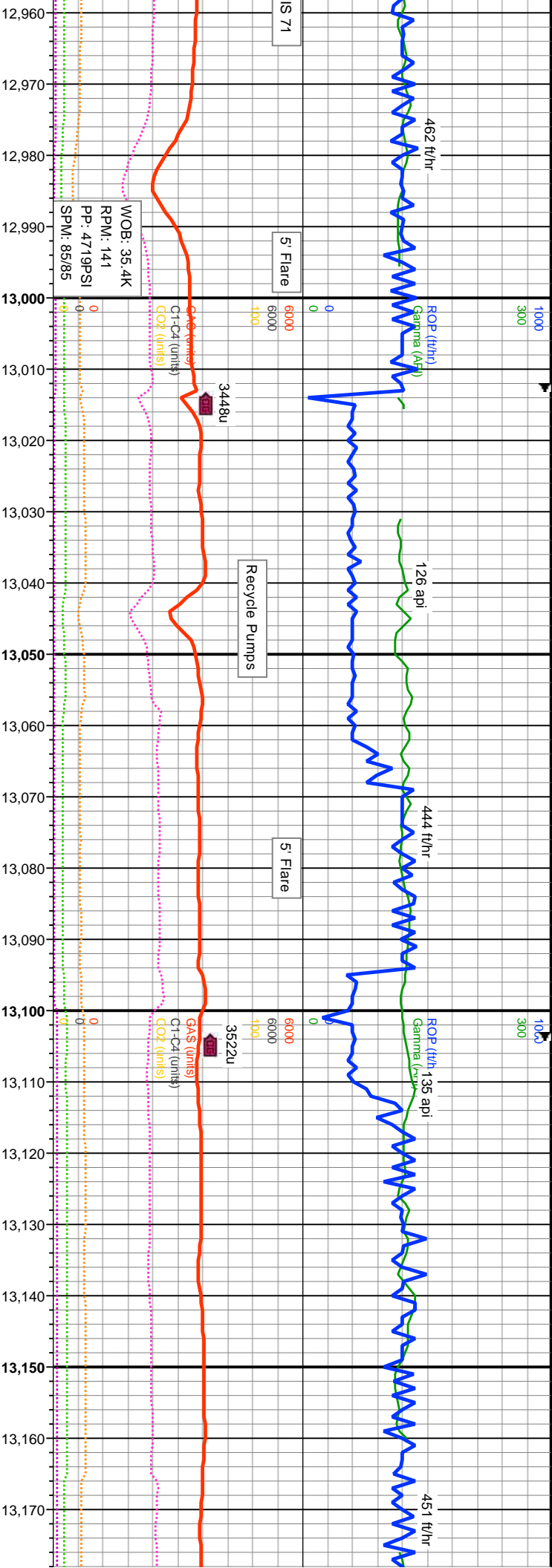






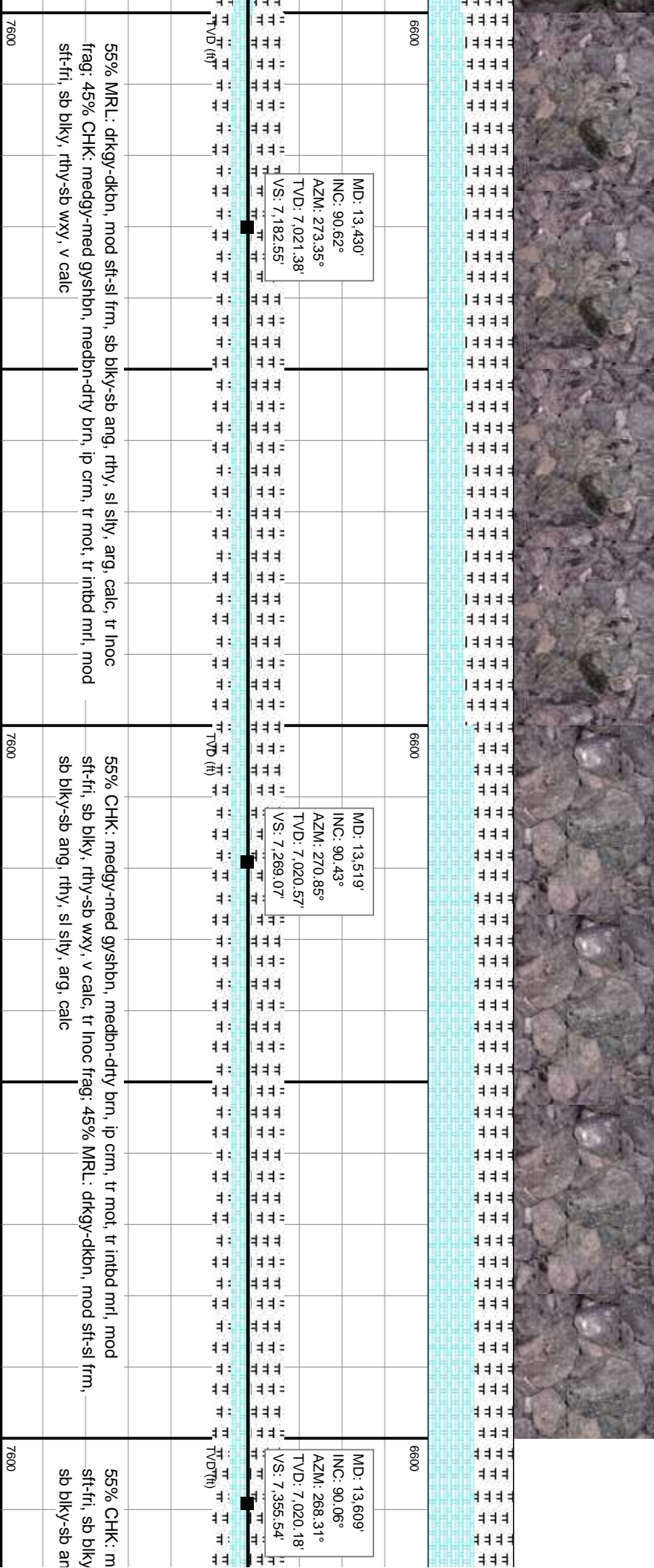
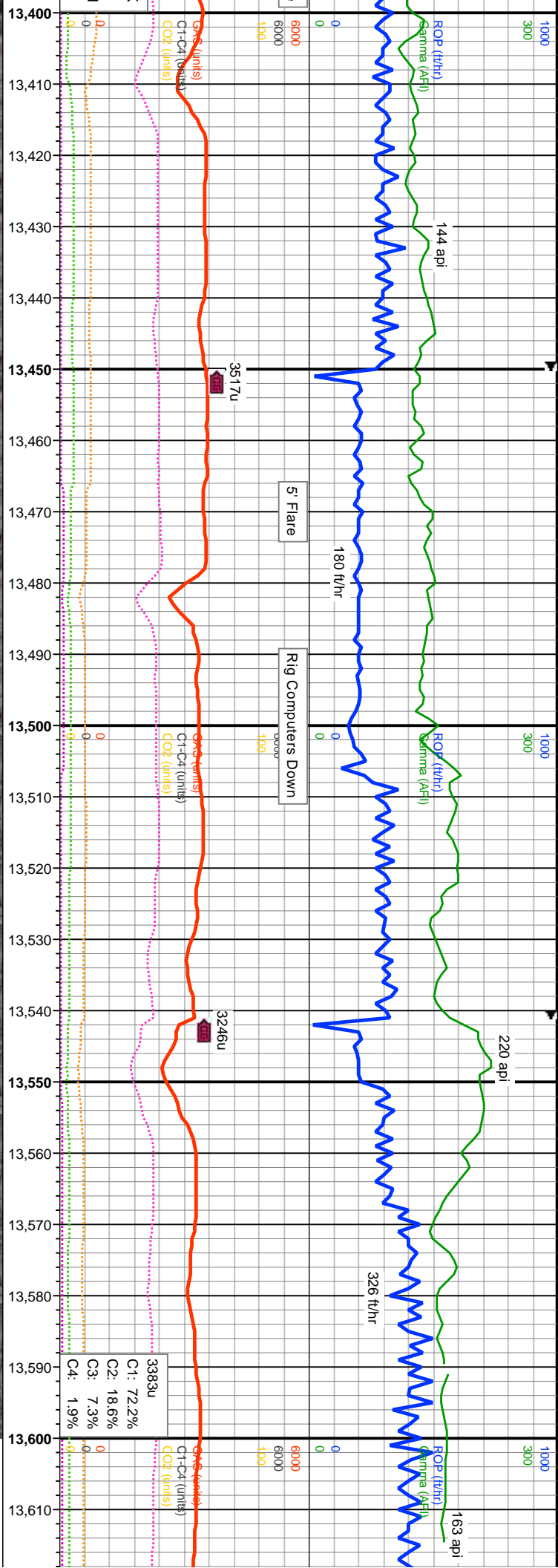




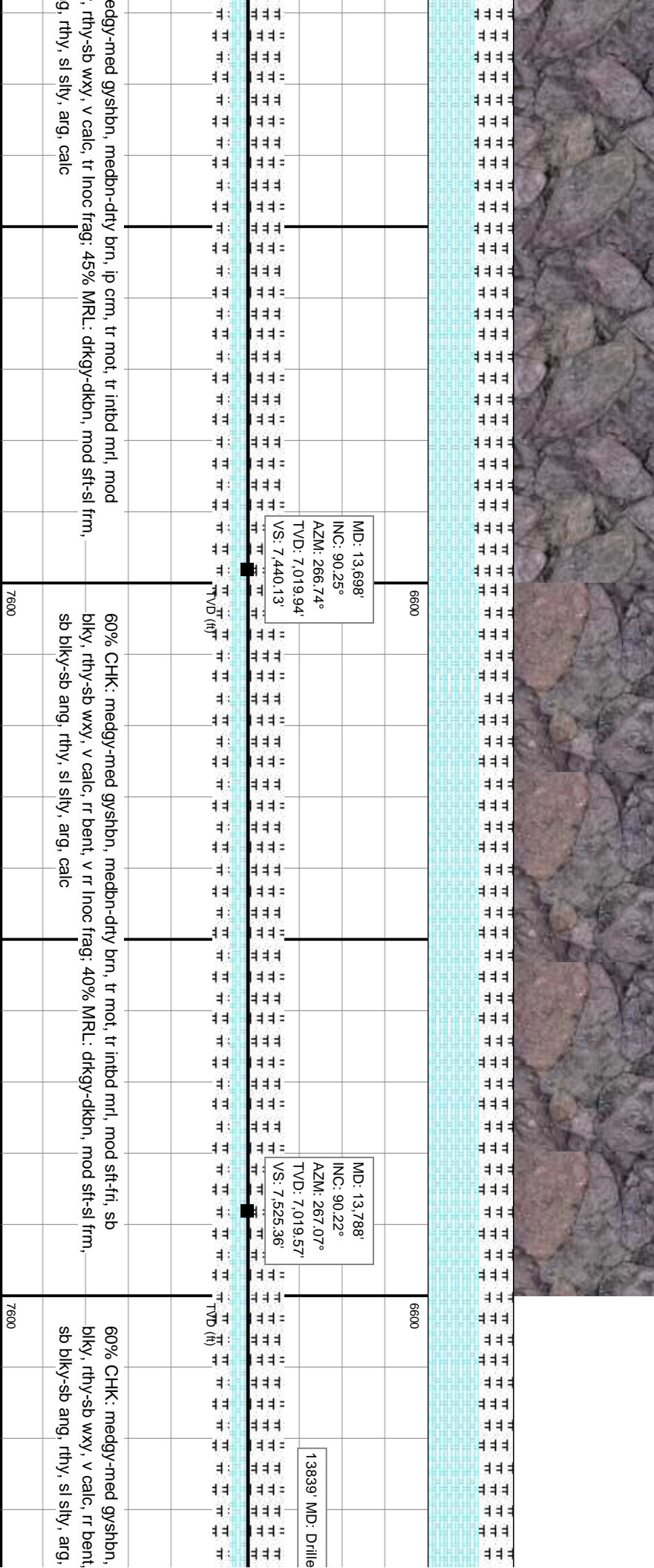
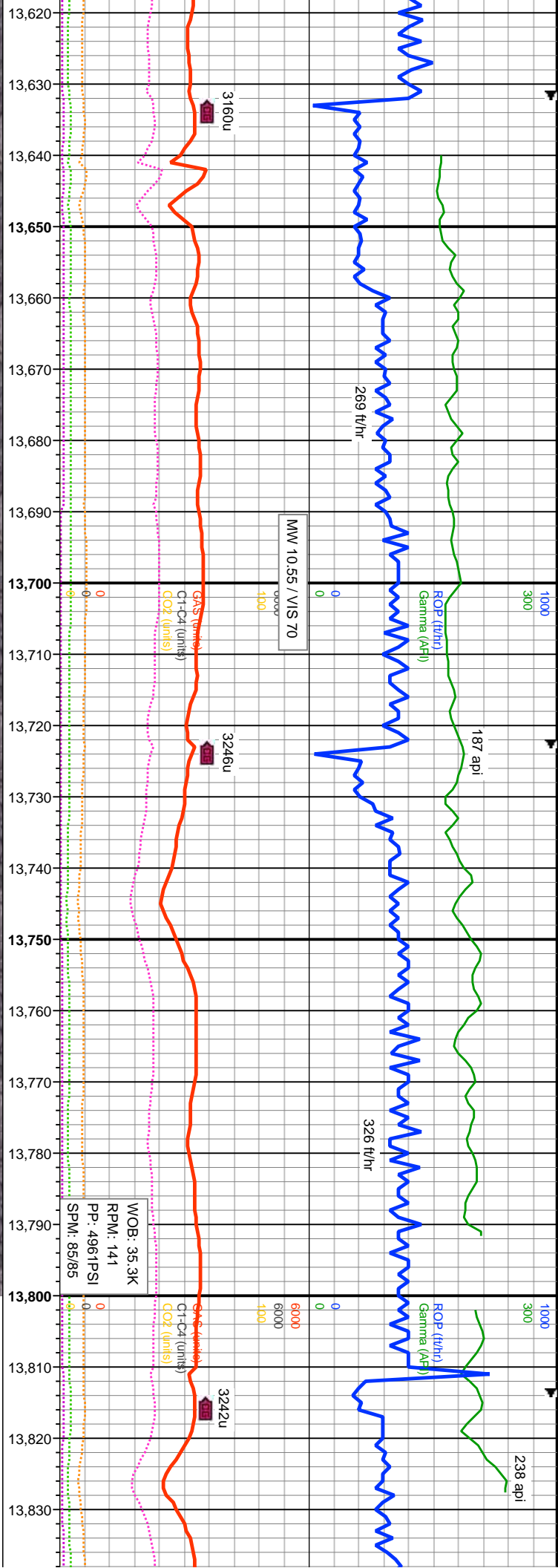


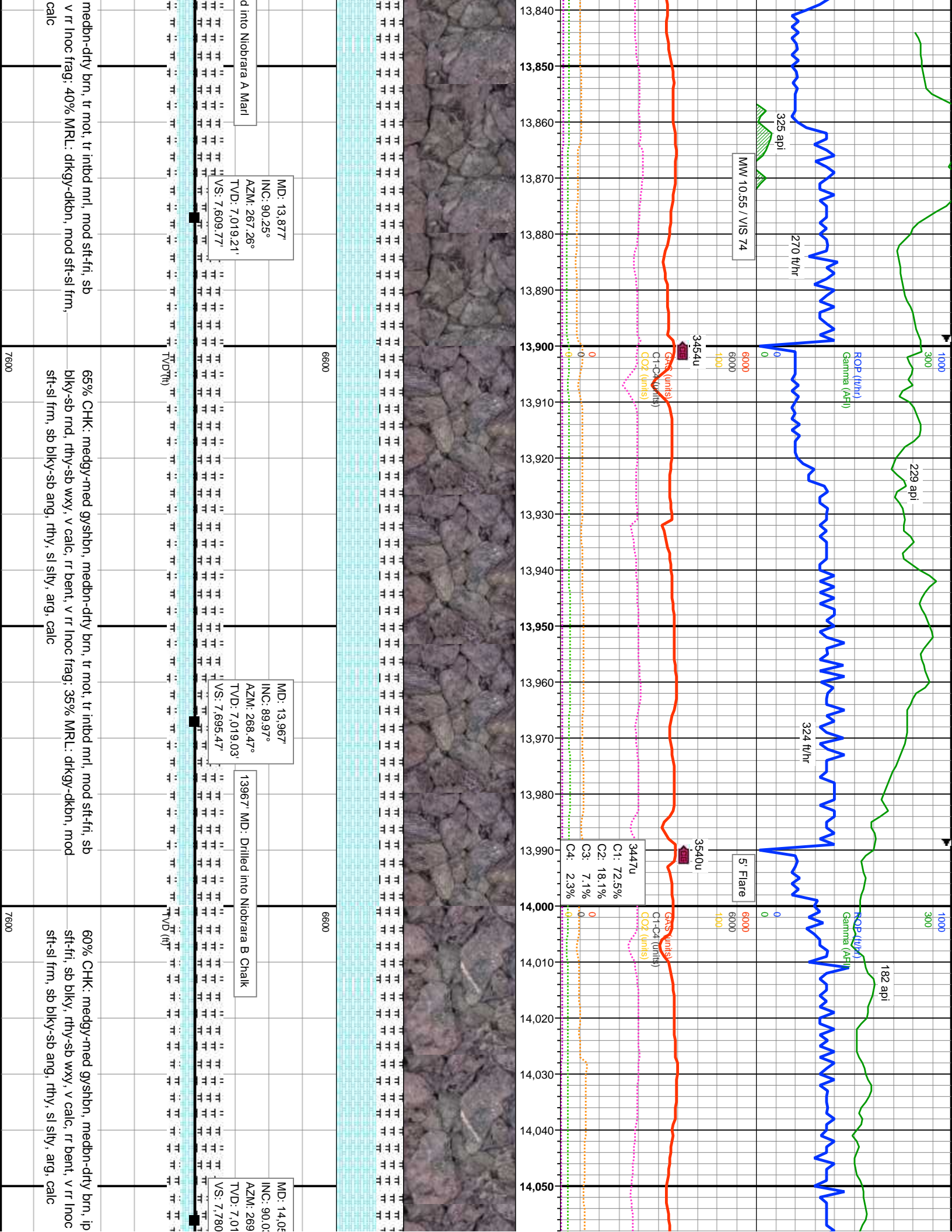






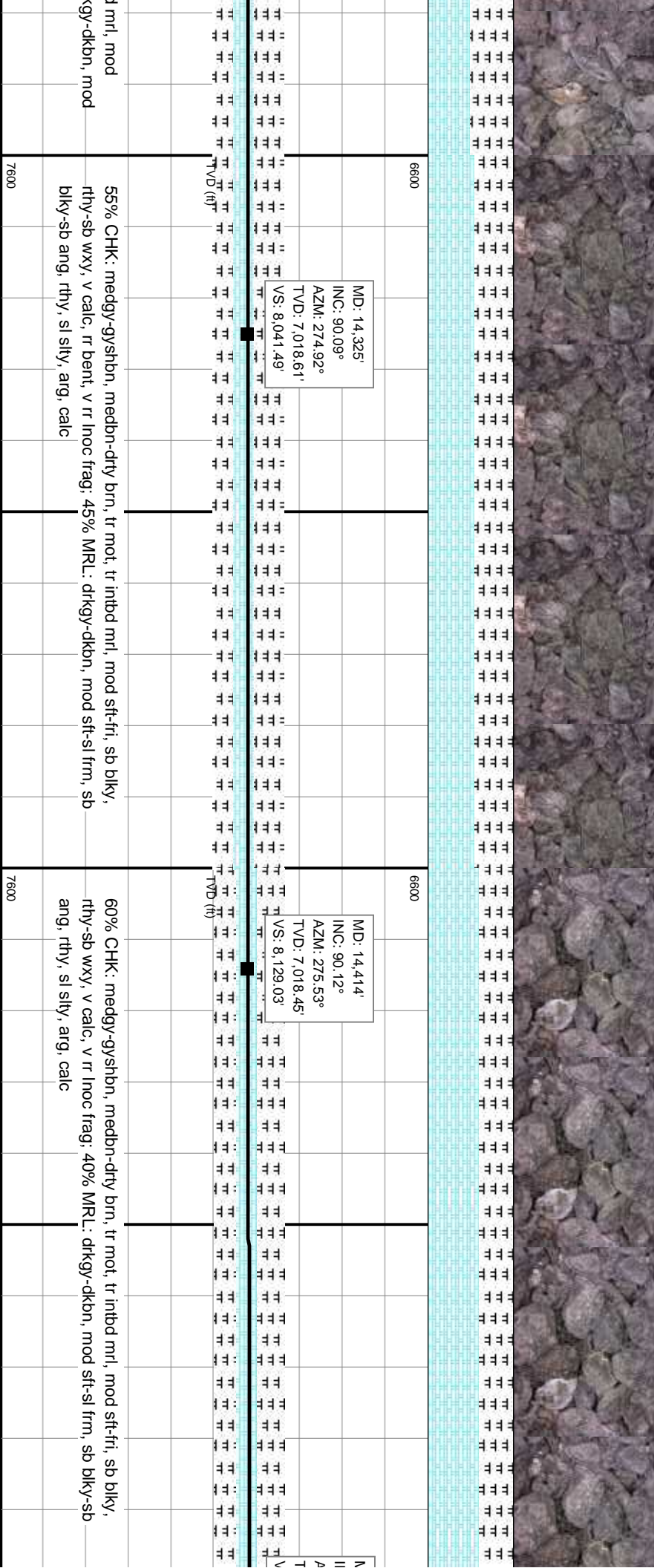
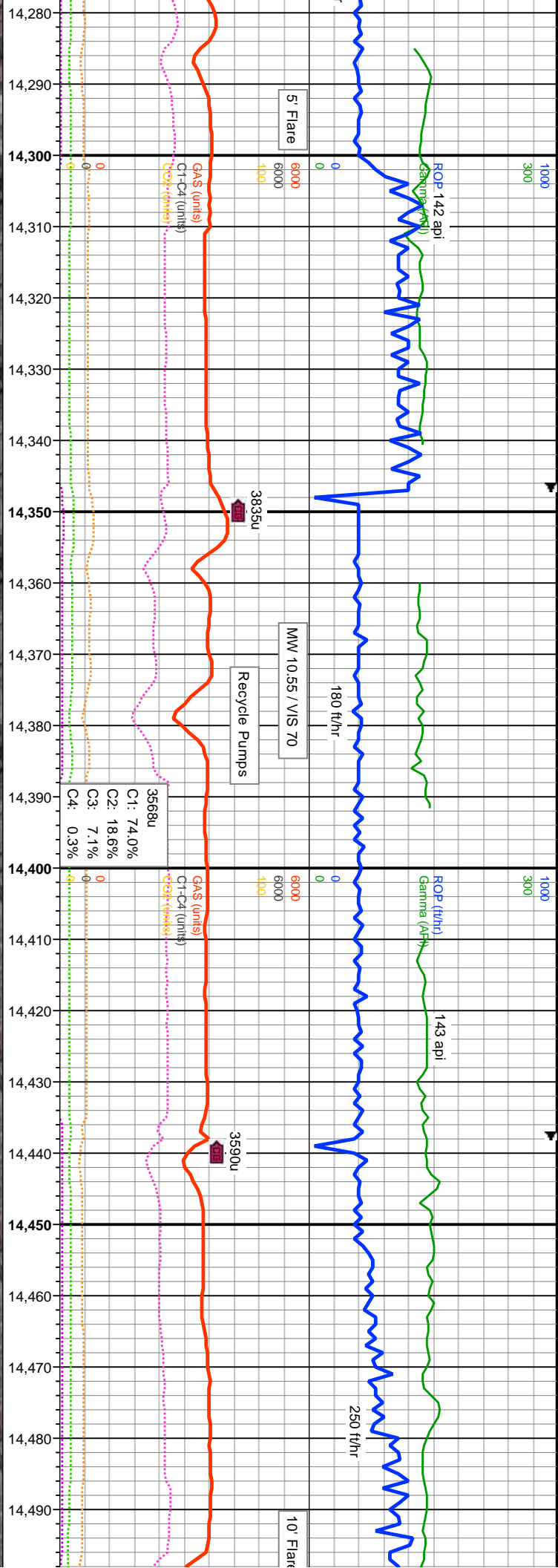






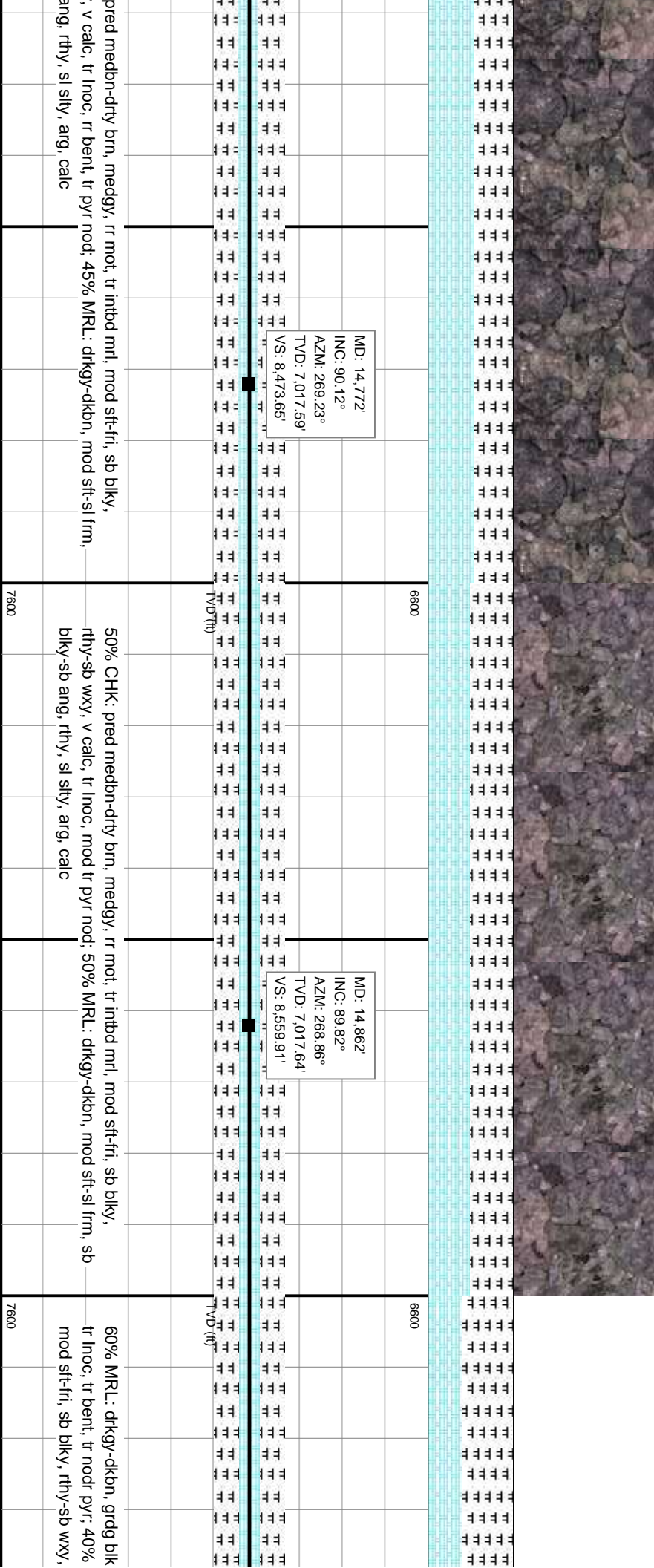
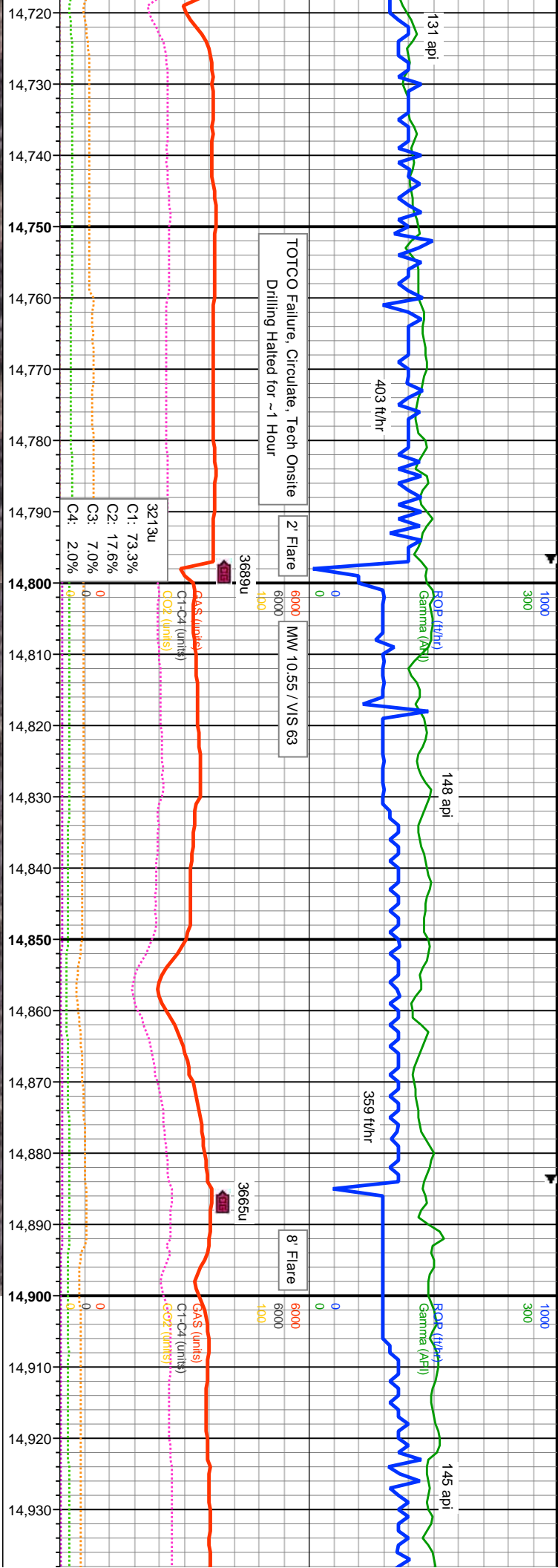




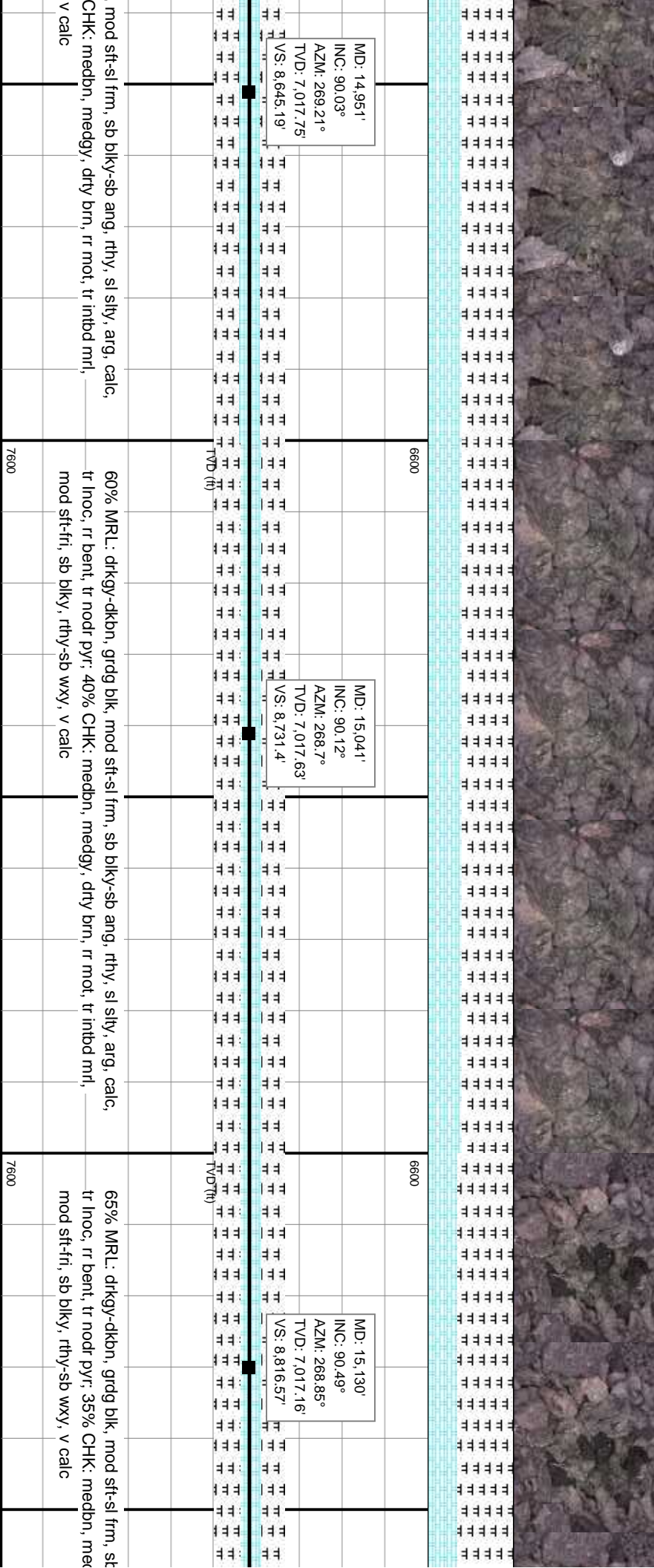
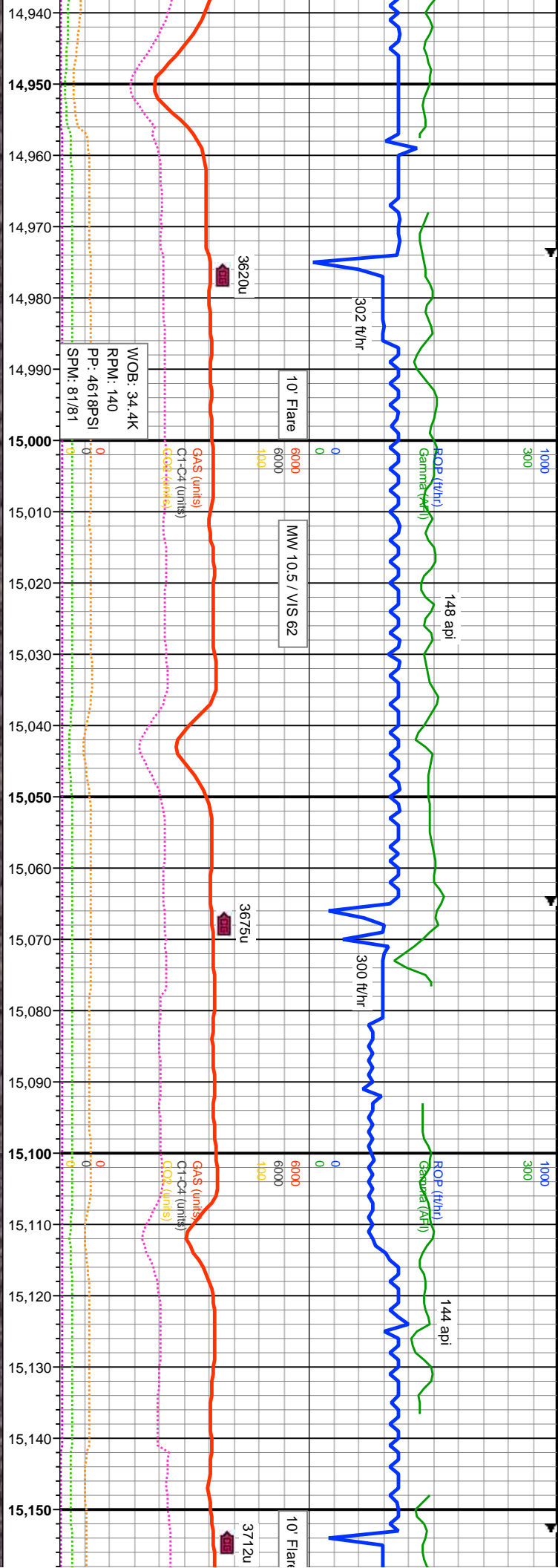


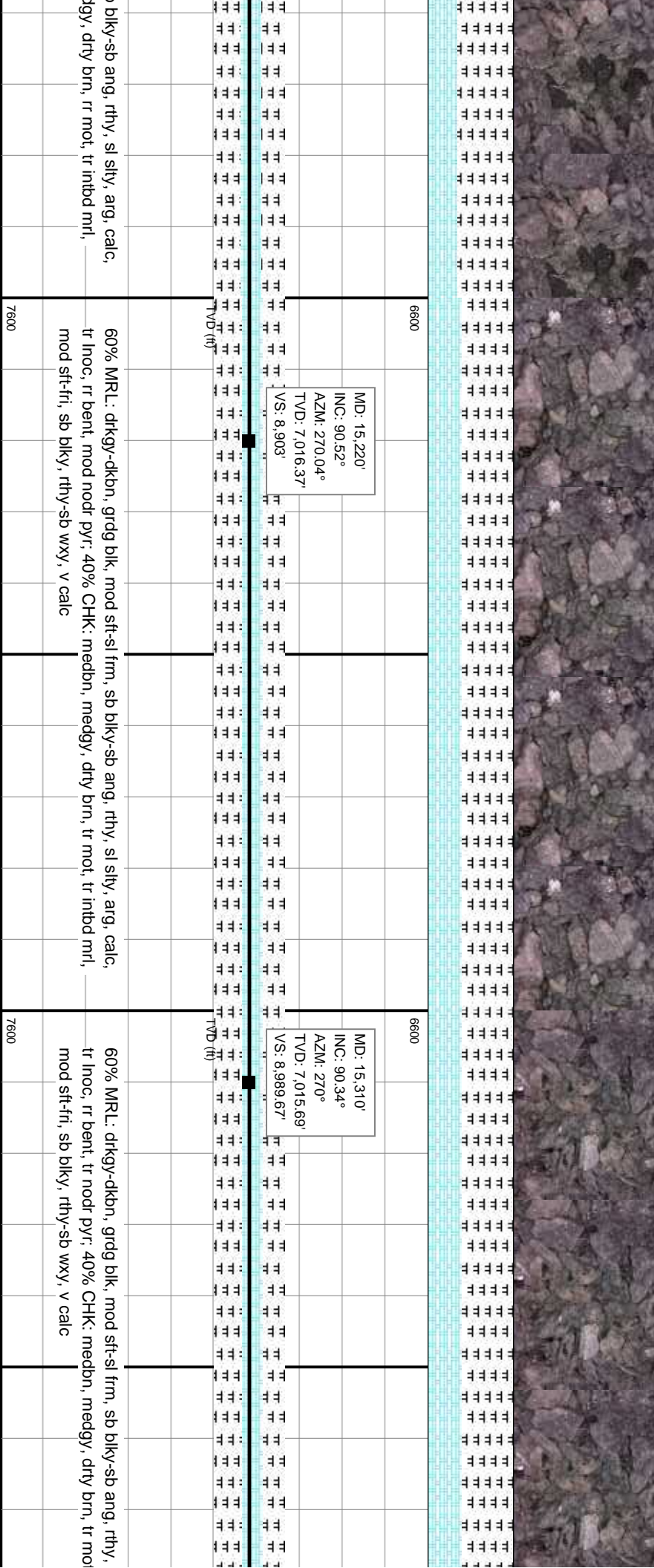
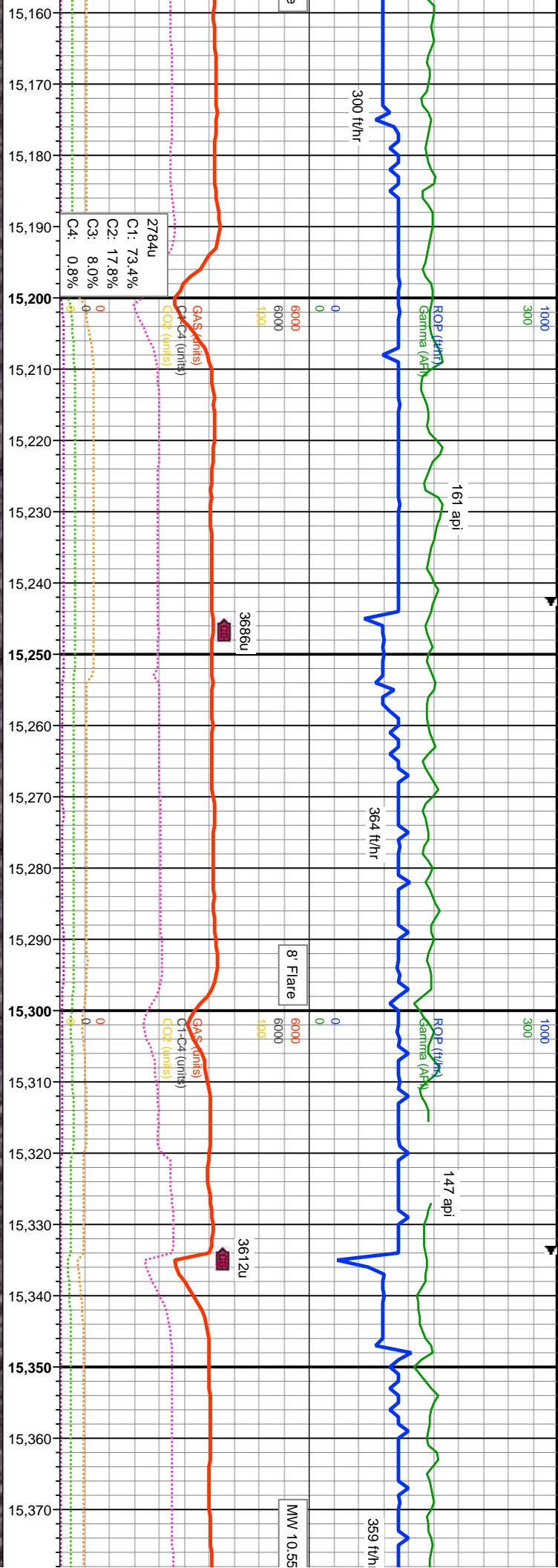




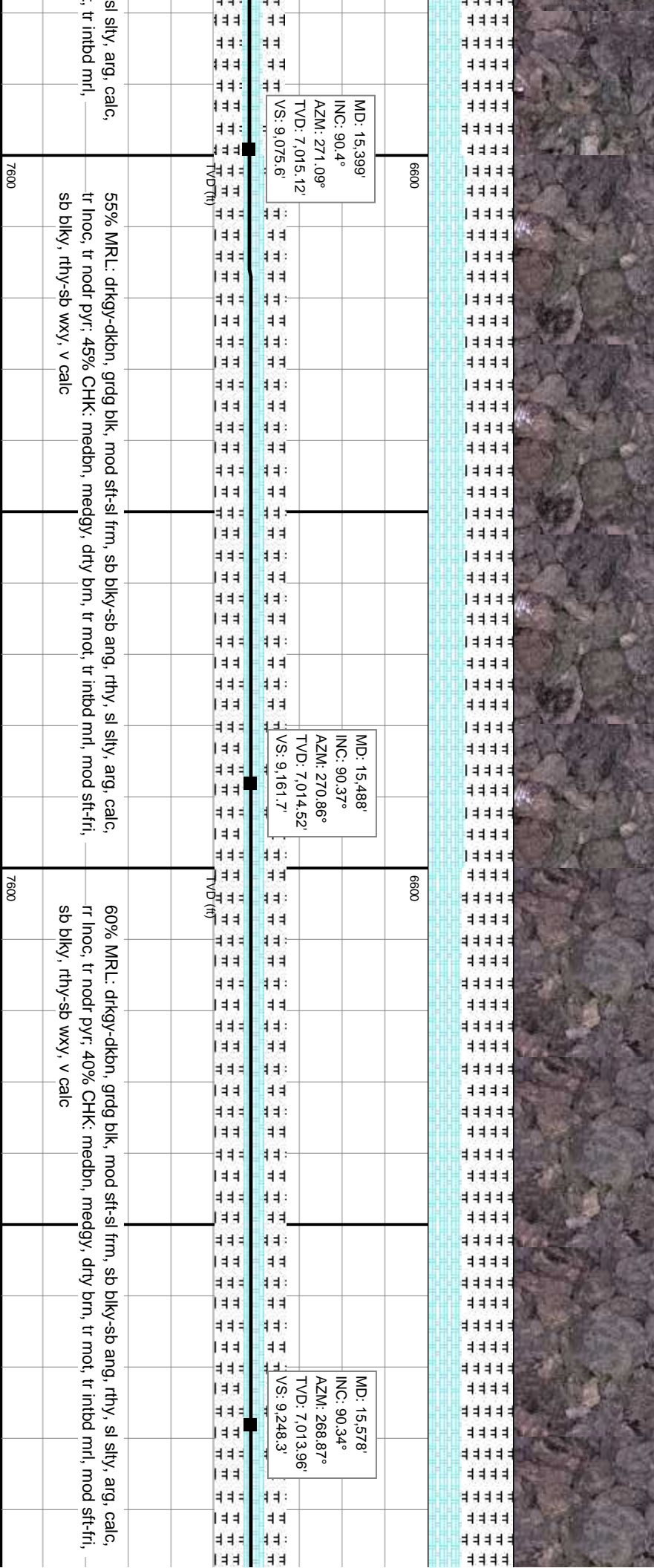
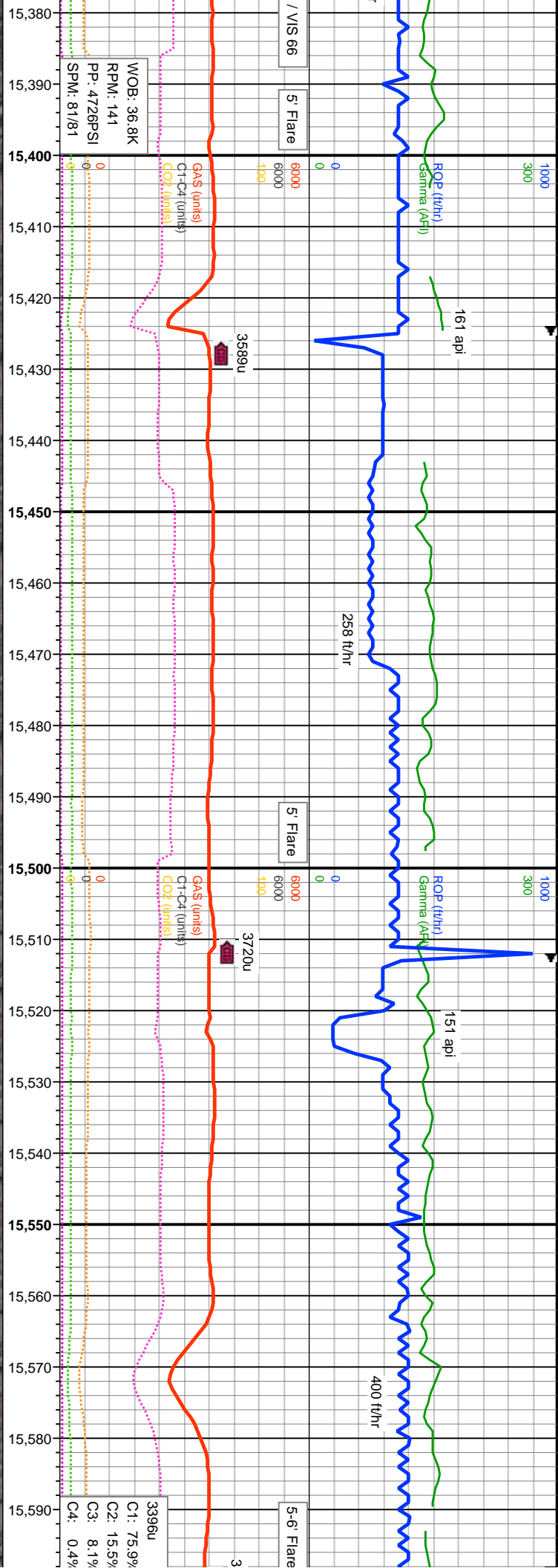


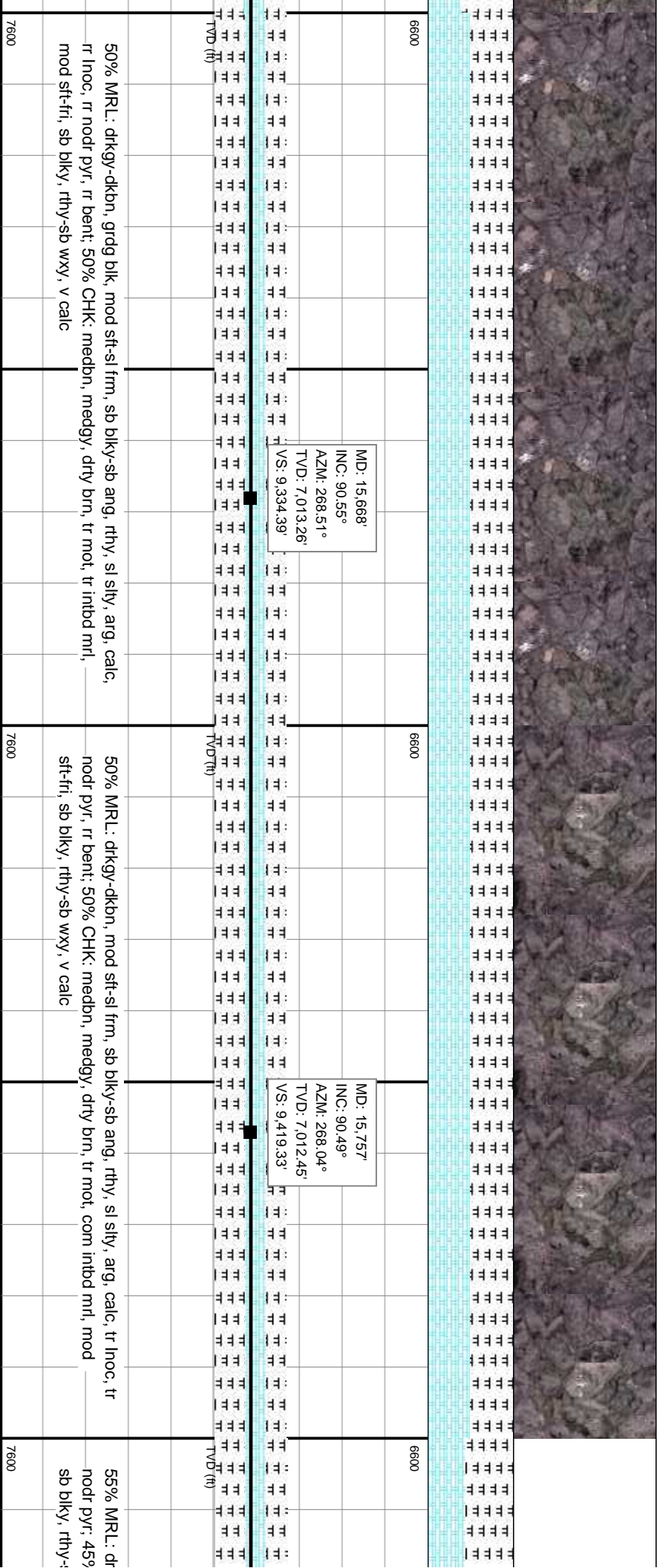
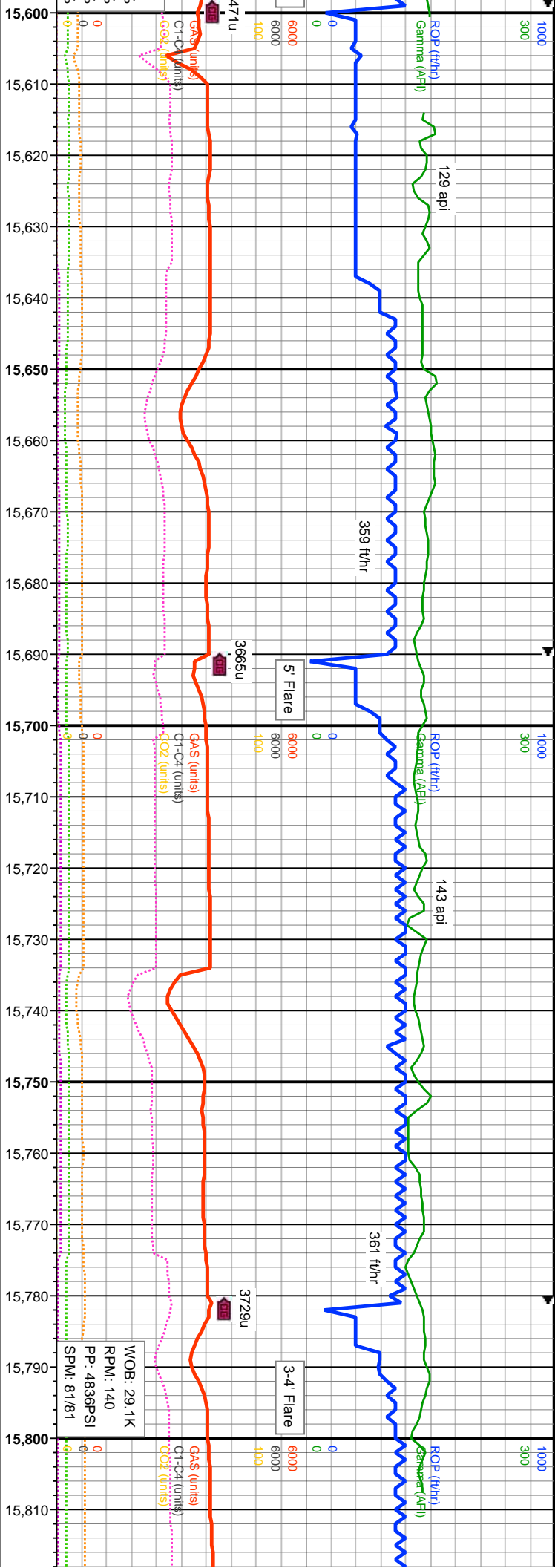




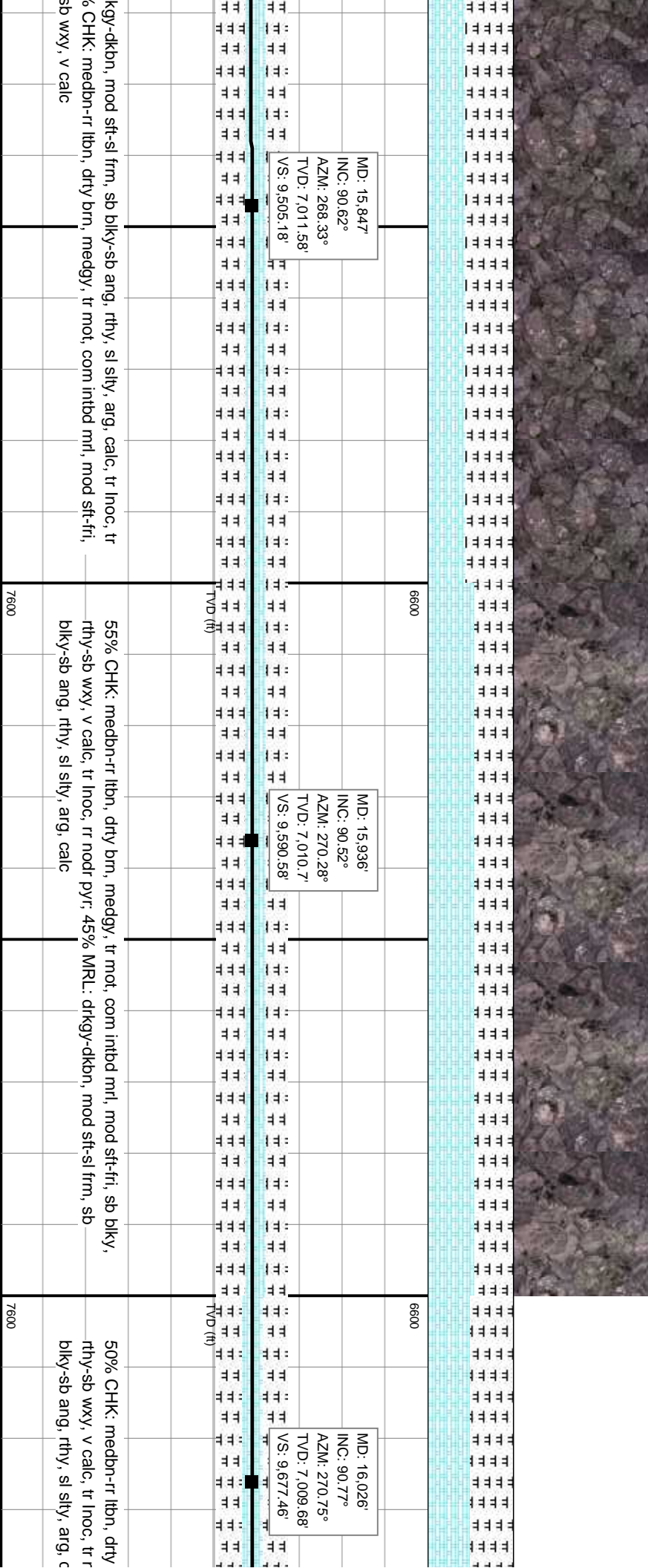
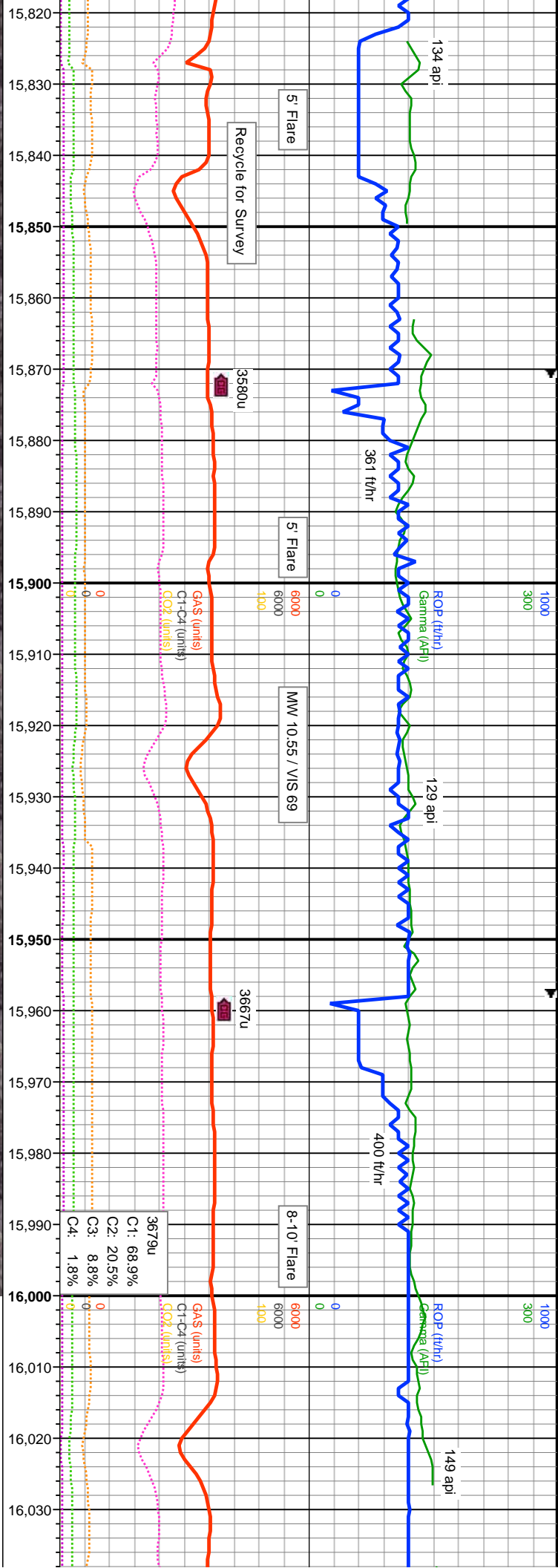


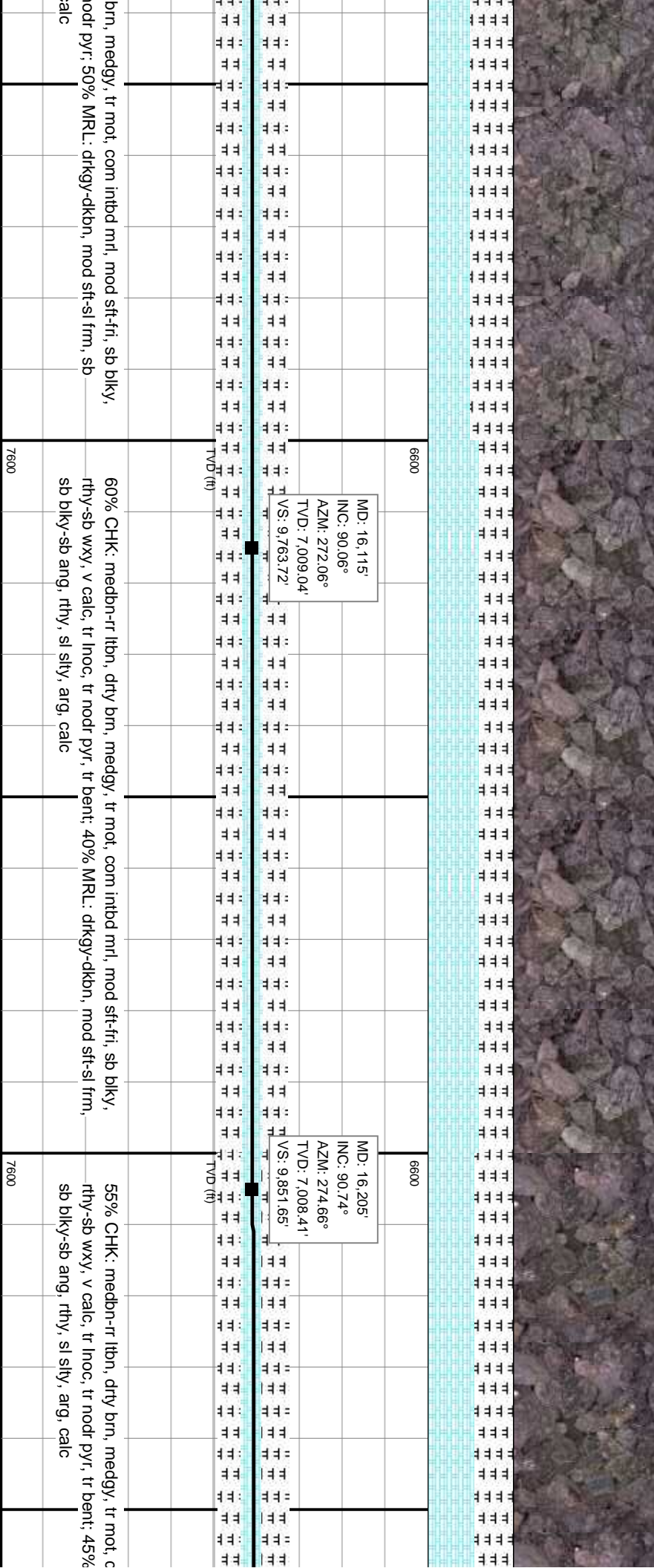
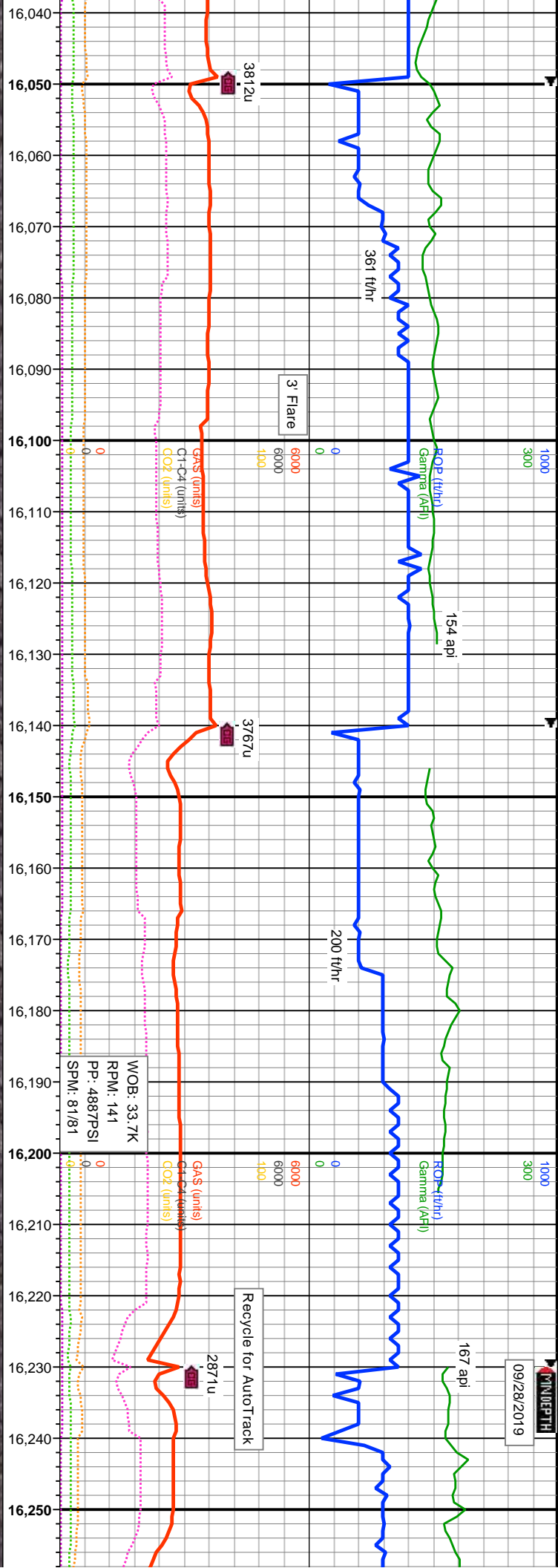




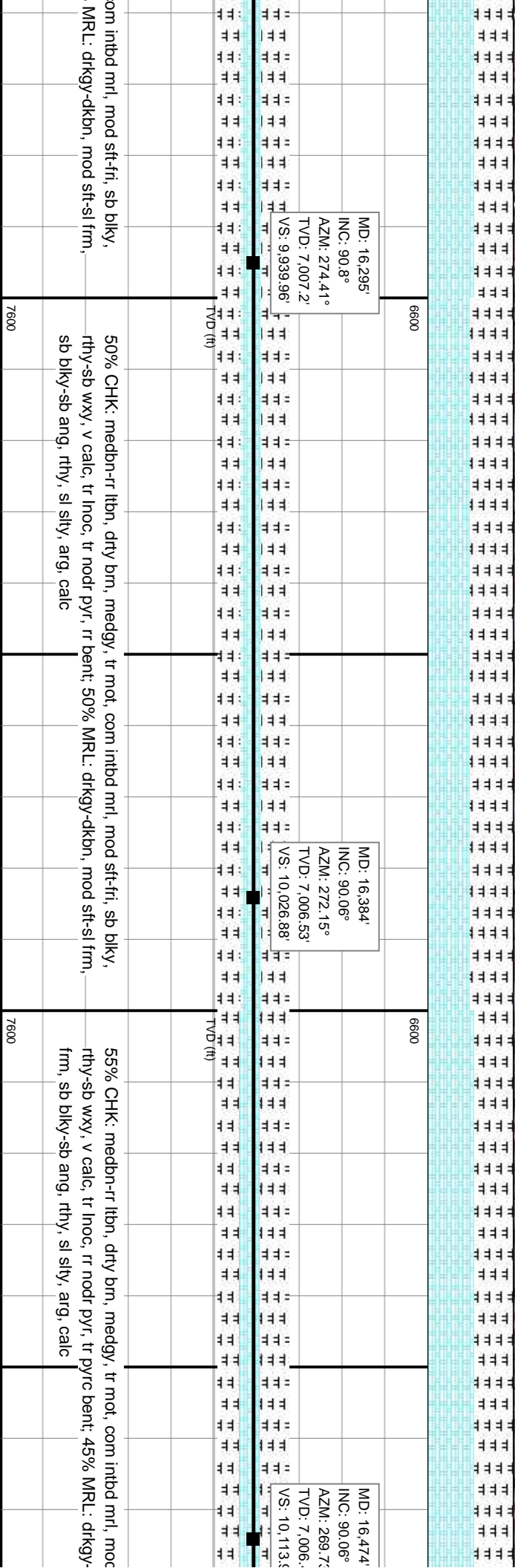


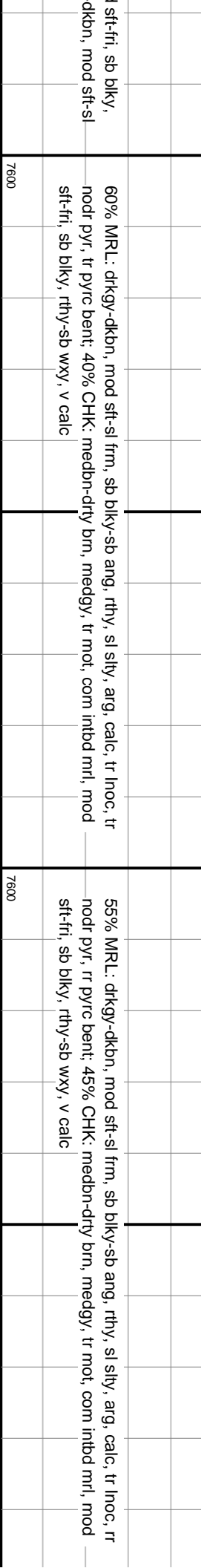




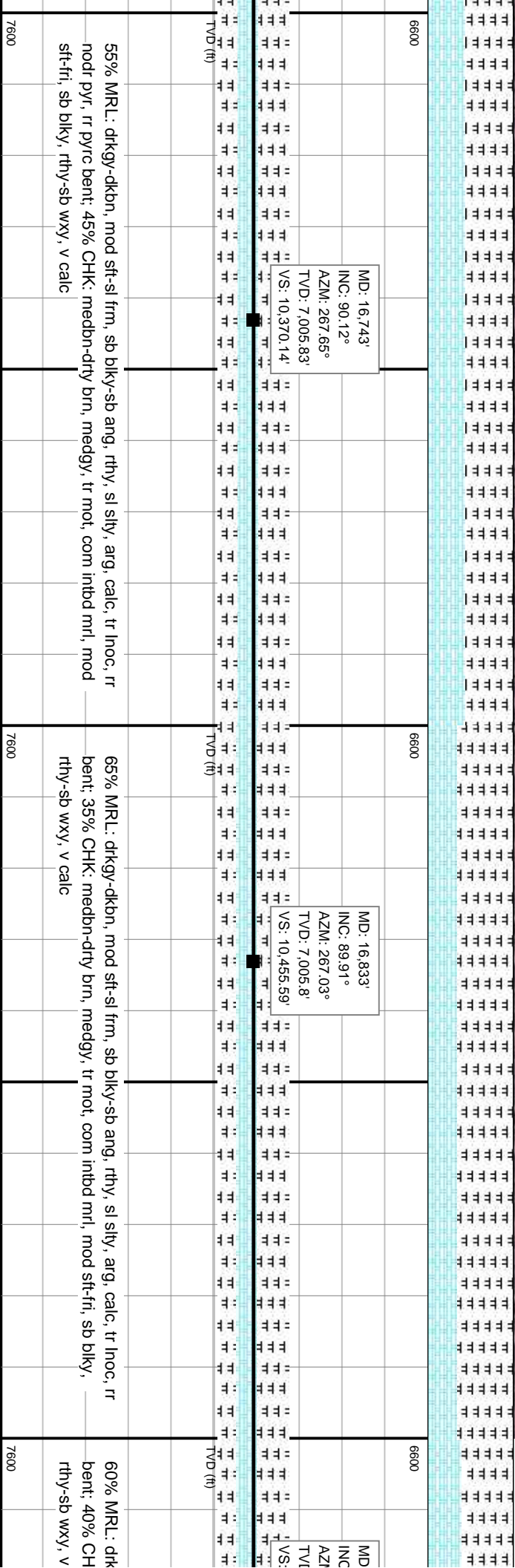
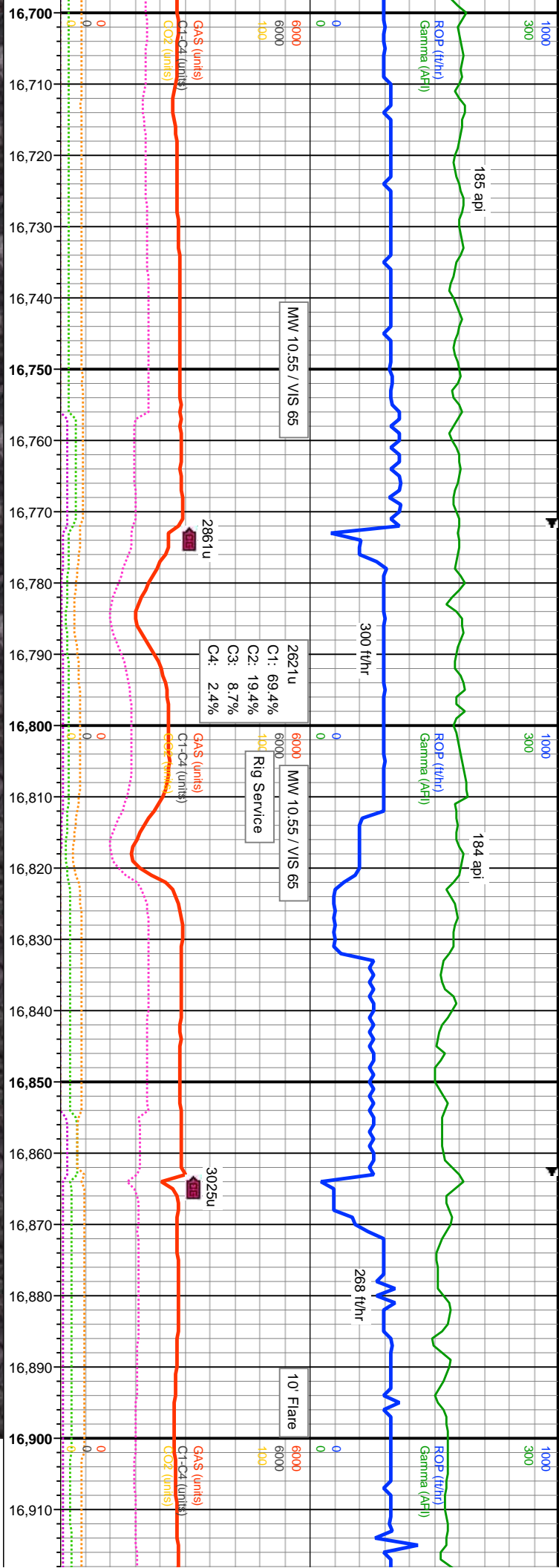


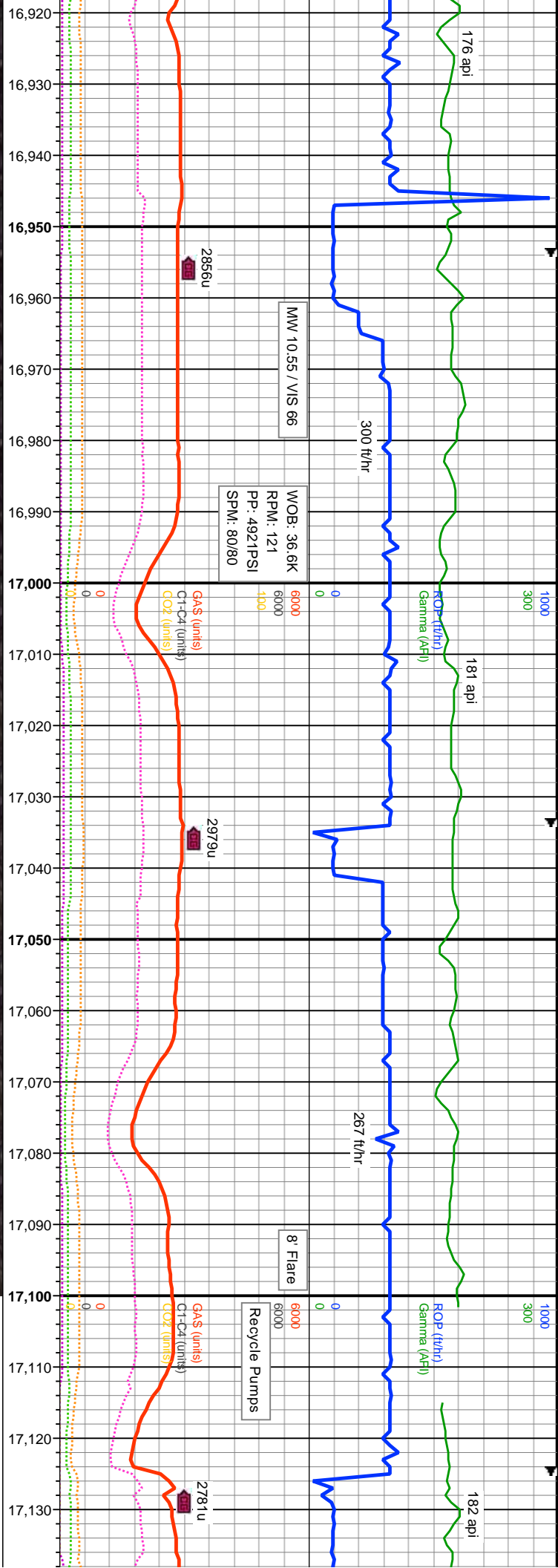






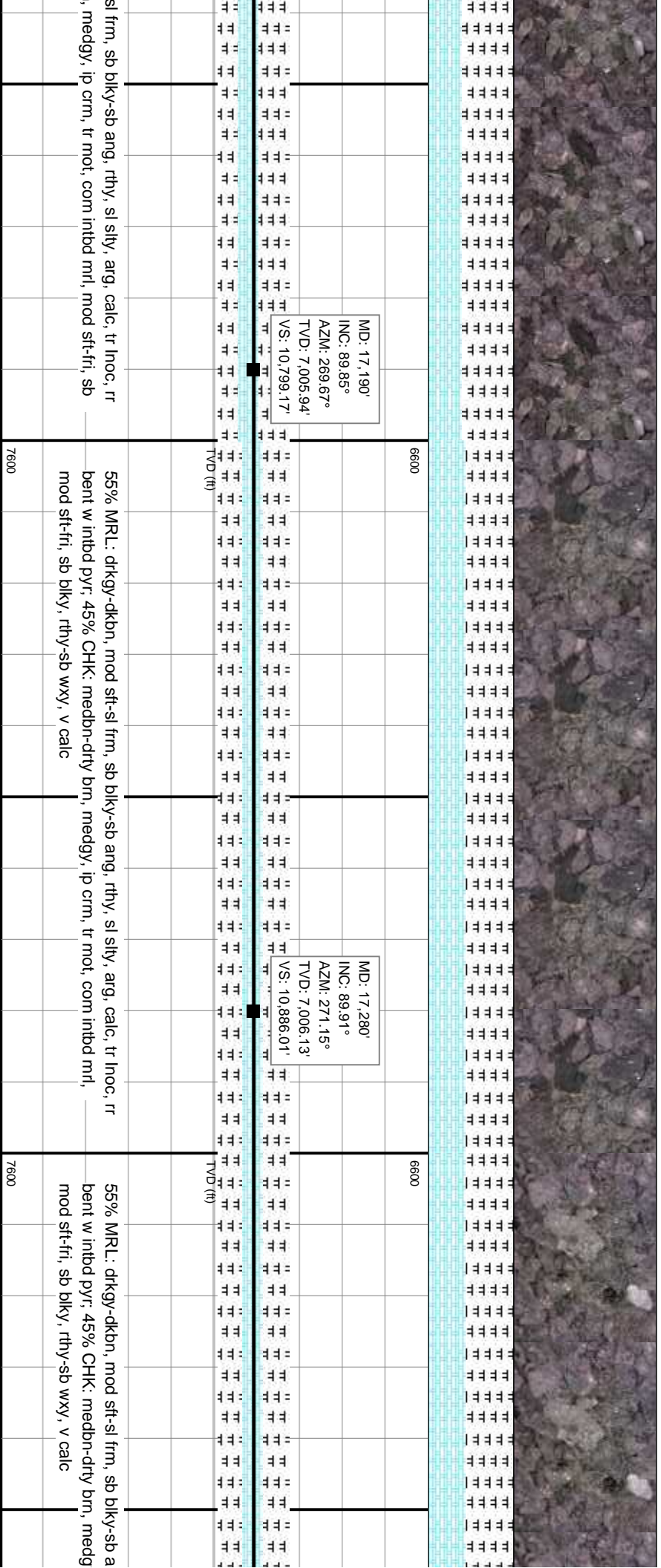
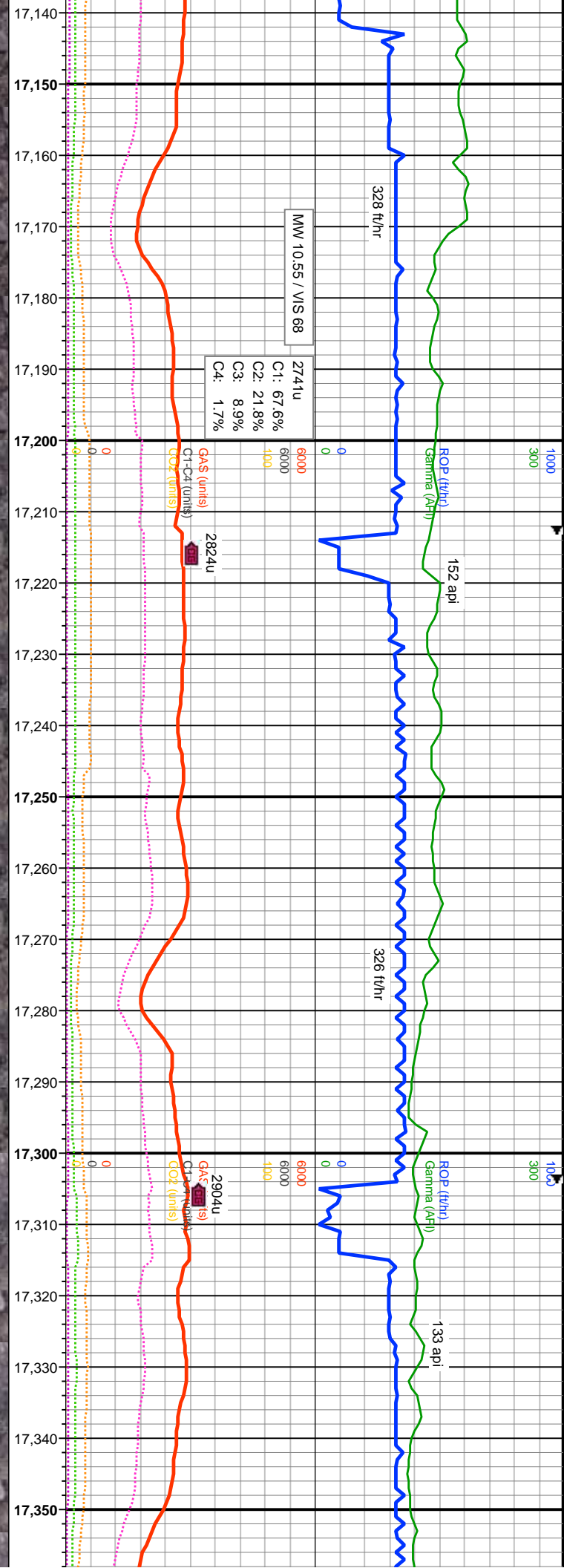


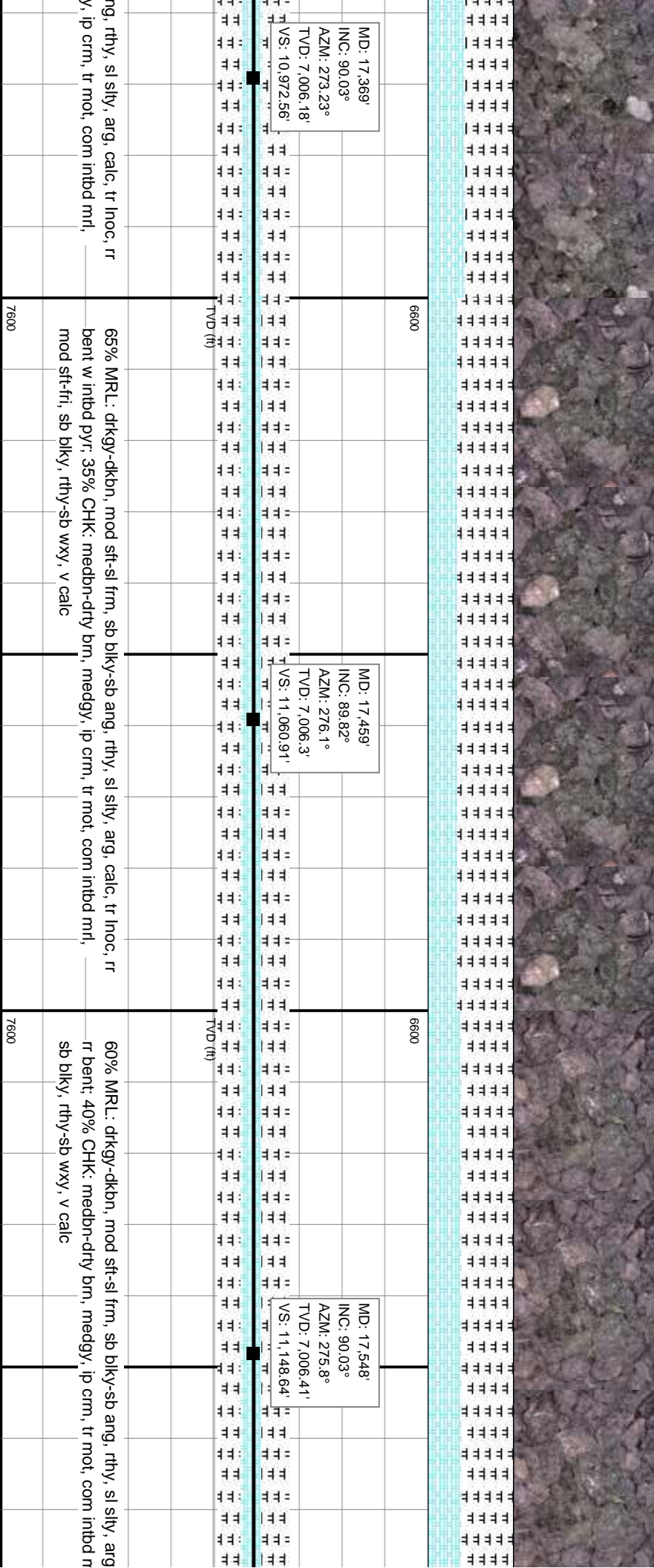
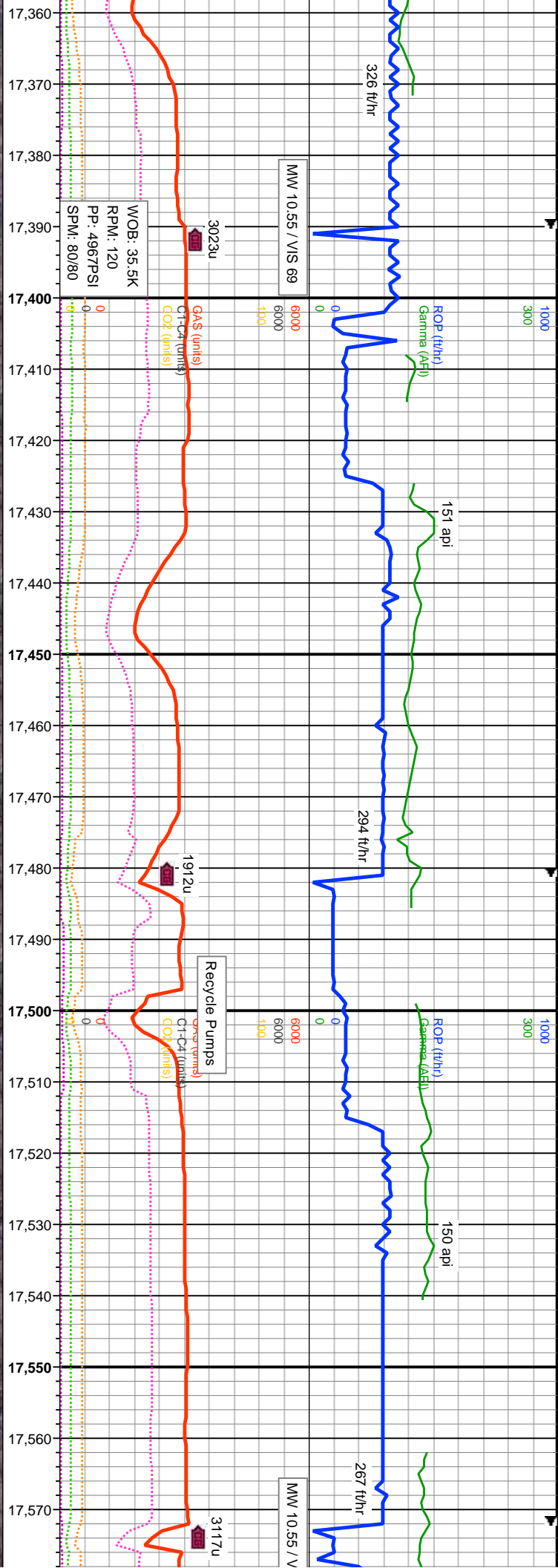




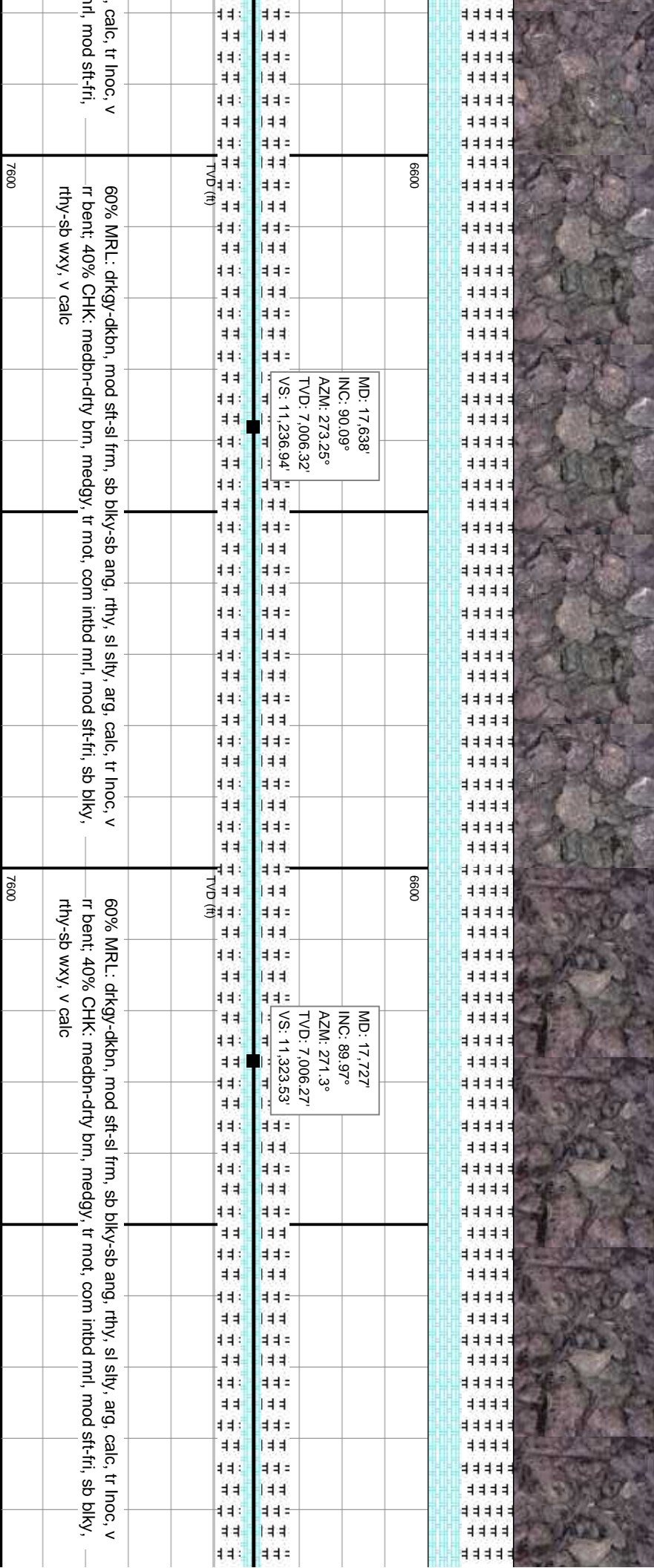
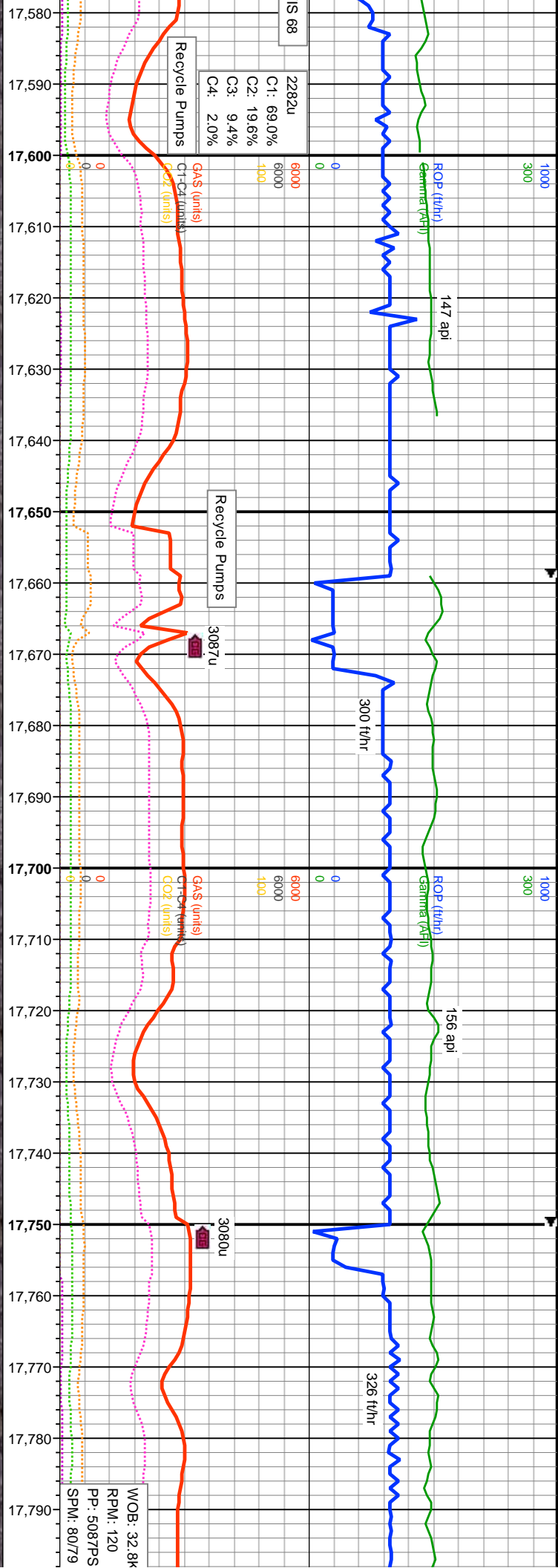
gy-dkbn, mod sft-sl frm, sb blkly-sb ang, rthy, sl silty, arg, calc, tr lnoc, rr	MD: 16.922'	INC: 90.15°	AZM: 270.15°	TVD: 7.005.76'	VS: 10.540.67'	TVD (ft)
K: medbn-dtry brn, medgy, tr mot, com intbd mrl, mod sft-fri, sb blkly, calc	MD: 17.012'	INC: 89.88°	AZM: 271.18°	TVD: 7.005.73'	VS: 10.627.61'	TVD (ft)
65% MRL: drkgy-dkbn, mod sft-sl frm, sb blkly-sb ang, rthy, sl silty, arg, calc, tr lnoc, rr bent, 35% CHK: medbn-dtry brn, medgy, lp crm, tr mot, com intbd mrl, mod sft-fri, sb blkly, rthy-sb wxy, v calc	MD: 17.101'	INC: 90°	AZM: 269.95°	TVD: 7.005.83'	VS: 10.713.55'	TVD (ft)
60% MRL: drkgy-dkbn, mod sft-sl frm, sb blkly-sb ang, rthy, sl silty, arg, calc, tr lnoc, rr bent, 40% CHK: medbn-dtry brn, medgy, lp crm, tr mot, com intbd mrl, mod sft-fri, sb blkly, rthy-sb wxy, v calc	MD: 17.101'	INC: 90°	AZM: 269.95°	TVD: 7.005.83'	VS: 10.713.55'	TVD (ft)





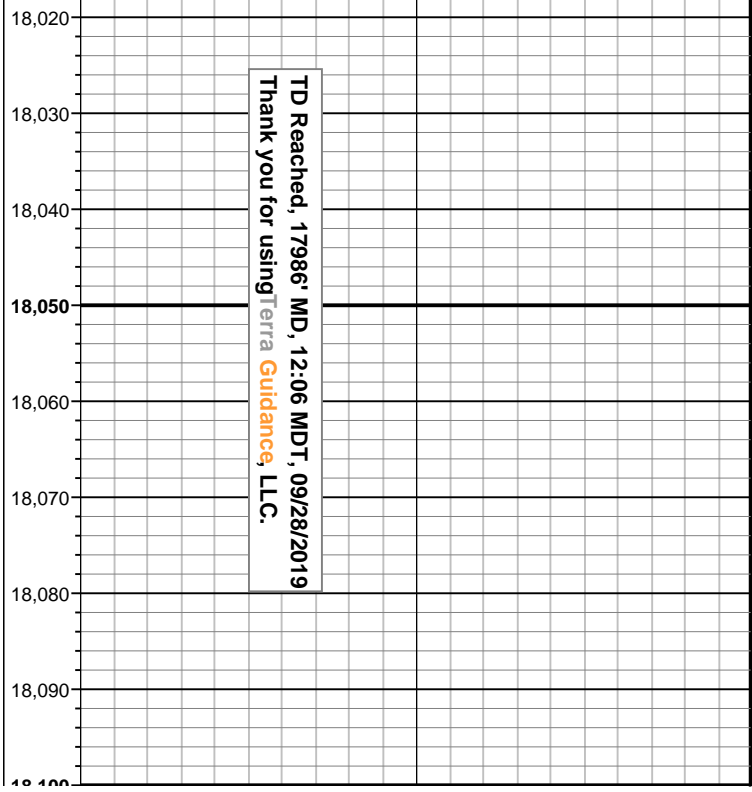












FM Name	Excursion Depths ('MD)
Sharon Springs	7589
Niobrara	7721