



**EMPIRICA**  
*The Surface Logging Company*

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Frye Farms #13

**Location** 1246FSL & 1166FEL, Sec 32

**State** Colorado

**Country** U.S.A

**API Number** #05-123-34960-00

**Region** DJ Basin

**Spud Date** 10-30-13 (Curve) / 11-04-13 (Lateral)

**Surface Coordinates** Lat: 40.439430

Long: -104.9107

**Bottom Hole Coordinates** Lat: 40.44288899

Long: -104.8901802

**County** Weld

**Rig Number** Frontier 10

**Field** Wattenberg

**Drilling Completed** 11-02-13 (Curve) / 11-07-13 (Lateral)

**Ground Elevation** 4,880'

**K.B. Elevation** 4,902.5'

**Logged Interval** 5,000' **To** 11,903'

**Total Depth** 11,903'

**Formation** Sharon Springs- Codell

**Type of Drilling Fluid** Fresh Water

**Company** Tektok Windsor

**Address** 640 PLAZA DRIVE  
HIGHLANDS RANCH

**Name** Dominic Pitre / Director  
**Company** Empirica

**Address** 6741 Satsuma Drive  
Houston, TX 77057  
(713)-466-7400

**Equipment** ML-2  
**Comments** 2 ML-2

**Sta** 2 ML-2

Operator

LLC

VE, SUITE 290,  
NCH, CO 80129

Geologist

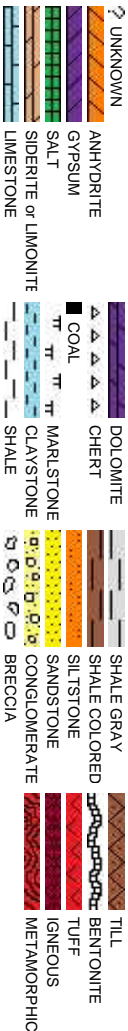
an Scott

10/30/2013

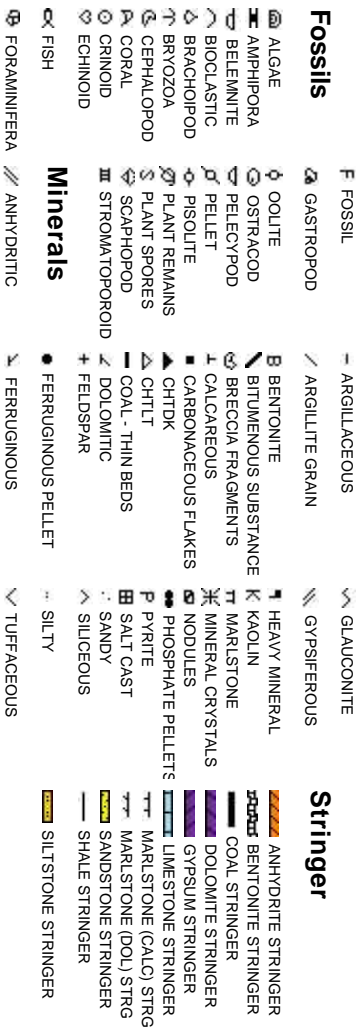
Other

an Logging Service  
rt Date: 10-30-2013  
ndby: 10-03-13

Rock Types



Accessories



Oil

DE  
EV  
OL  
ST  
FE  
FR  
IN  
IN

Poi

FE  
FR  
IN  
IN

Other Symbols

Show

- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

QUESTIONABLE

NOTTED STAINING

osity

- BIT
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL

Engineering

- FAULT
- FORMATION TOP
- GAS SHOW
- MINDEPTH MN DEPTH
- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDEWALL CORE (LEFT)
- SIDEWALL CORE (RIGHT)
- SLIDE
- SURVEY
- TRIP GAS

Rounding

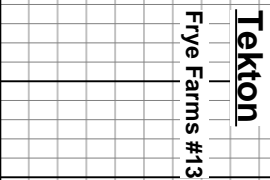
- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND
- FINELYXLN
- GRAINSTONE
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN

Sorting

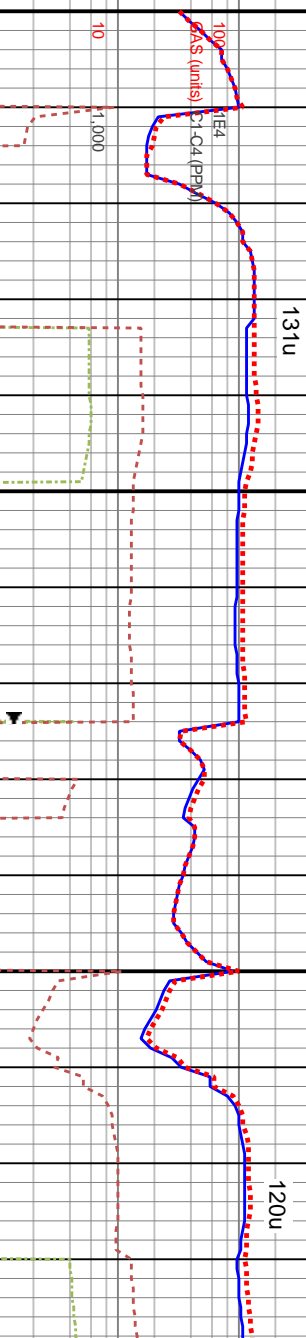
- MODERATE
- POOR
- WELL



## Depth Labels



GAS



Type: Smith/SDI611

Depth In: 925'

Jets: 6X15

5000-5060 SS: pred It gy-gy, sme bf-off wh, sme

translcius, mod srt, sb ang grs, mod frm- mod hd,

blky, v f ar, pred slty, occ arq, w cmt d, pred clus, sli

[illegible]

100  
 90  
 80  
 70  
 60  
 50  
 40  
 30  
 20  
 10  
 0

5060-5120 SS: pred It gy-gy, sme bf-off wh, sme

translcius, mod srt, sb ang grs, mod frm- mod hd,

blky, v f gr, pred slty, occ arg, w cmttd, pred clus, sli

calc. smelth frags. tr pvr. tr cal. tr pp por

—

5120-5180 SS: pred it gy- gy, sme bl- off wh  
trnsf clus, mod srt, sb ang grs, mod frm- mo  
biky, v f gr, pred slty, occ arg, w cmtid, pred  
calc, sme lth frags, tr pyr, tr cal, tr pp por

	-
	C
	S
	-
	-
	-

TVD: 4,952.78'

Inclination:  $12^\circ$

Azimuth:  $46.4^\circ$ 

VS: 568.96'

TVD: 5,045.69'

Inclination:  $12.1^\circ$

Azimuth:  $47.5^\circ$ 

VS: 585.12'

2040

5800

MD: 5,023'  
TVD: 4,952.78'  
Inclination: 12 °  
Azimuth: 46.4 °  
VS: 568.96'

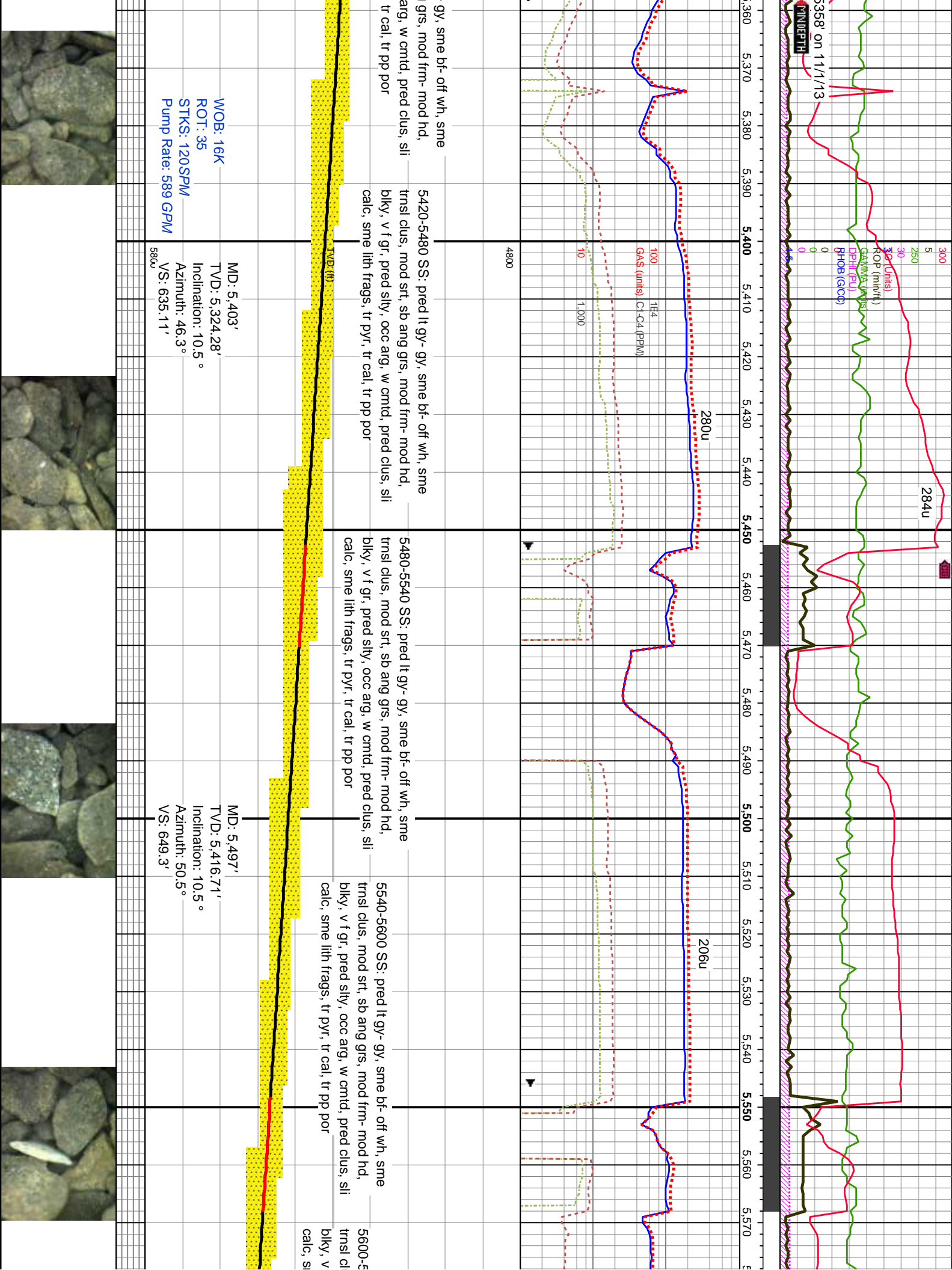
MD: 5,118'  
TVD: 5,045.69'  
Inclination: 12.1 °  
Azimuth: 47.5 °  
VS: 585.12'



A close-up photograph of a stone wall, showing irregularly shaped stones in shades of grey and brown, held together by a dark mortar. The texture is rough and uneven.





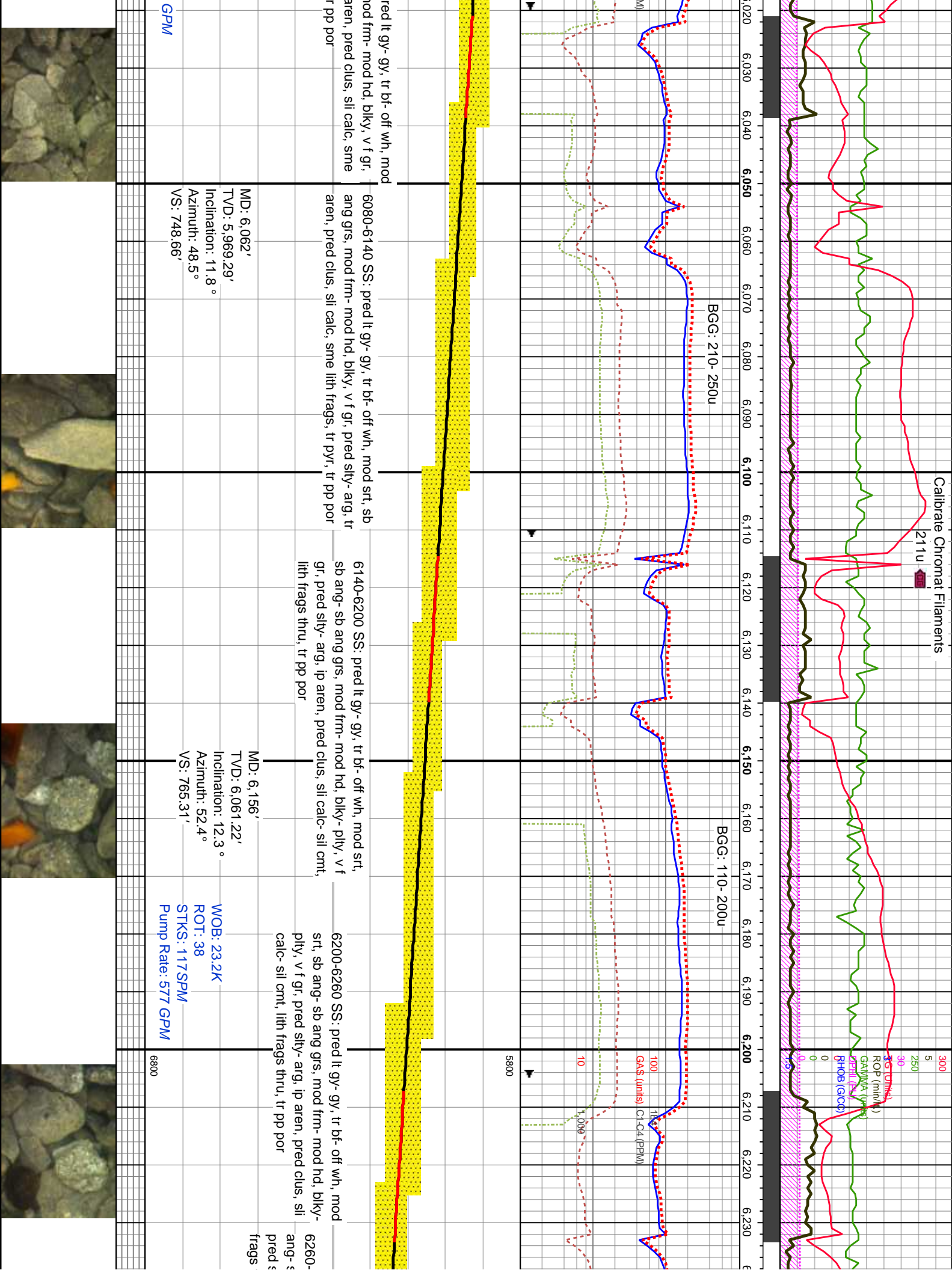


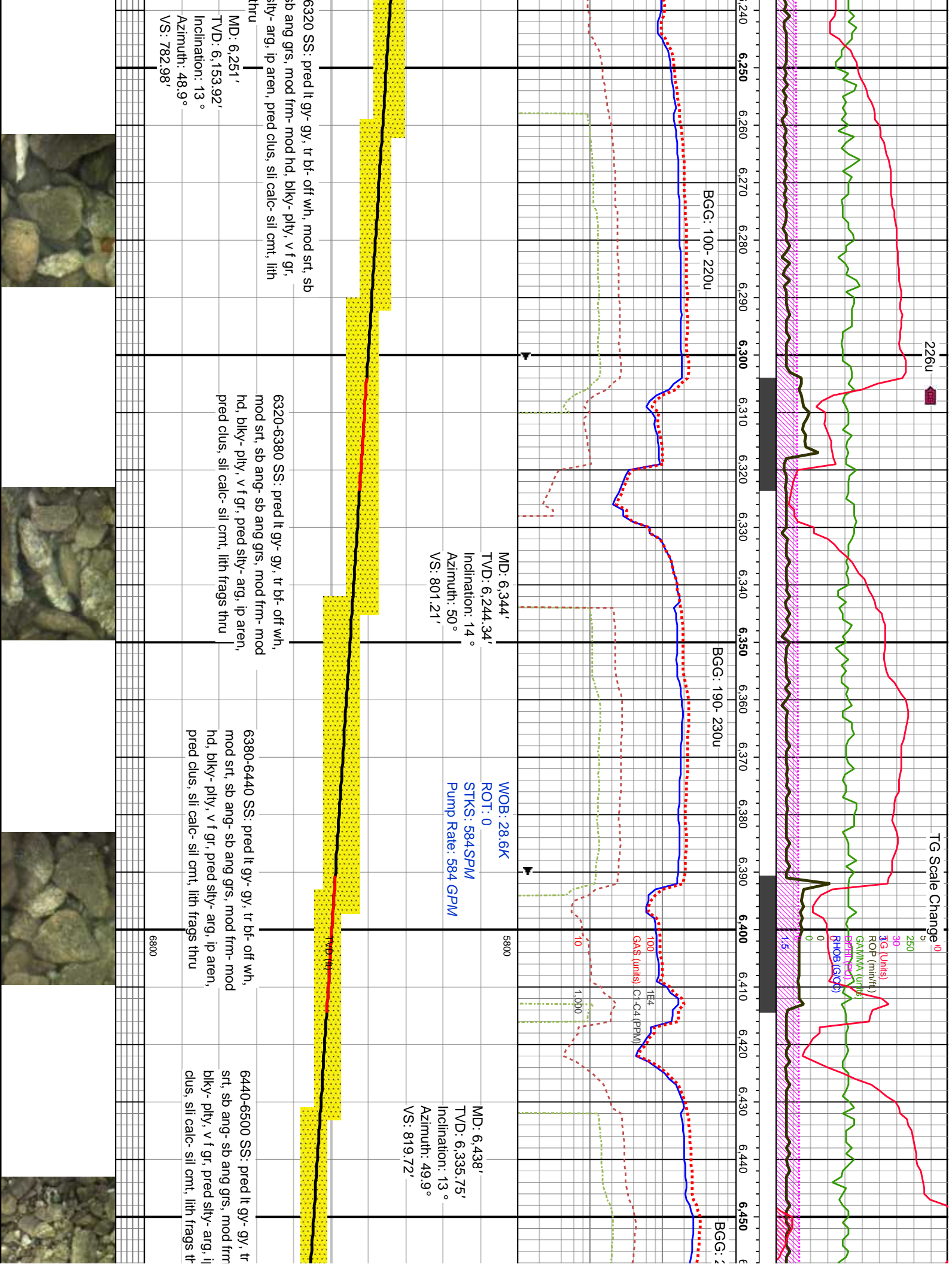








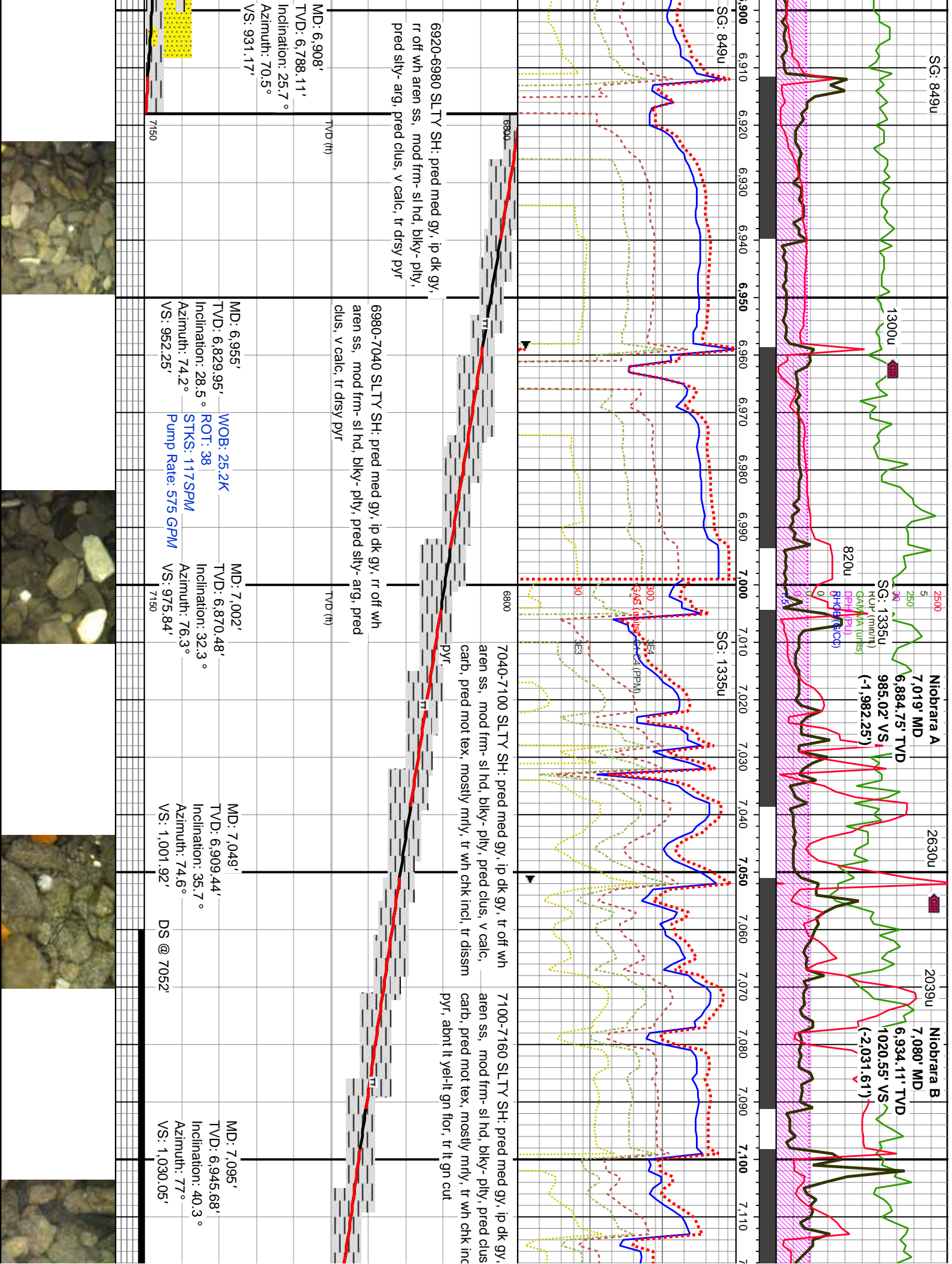




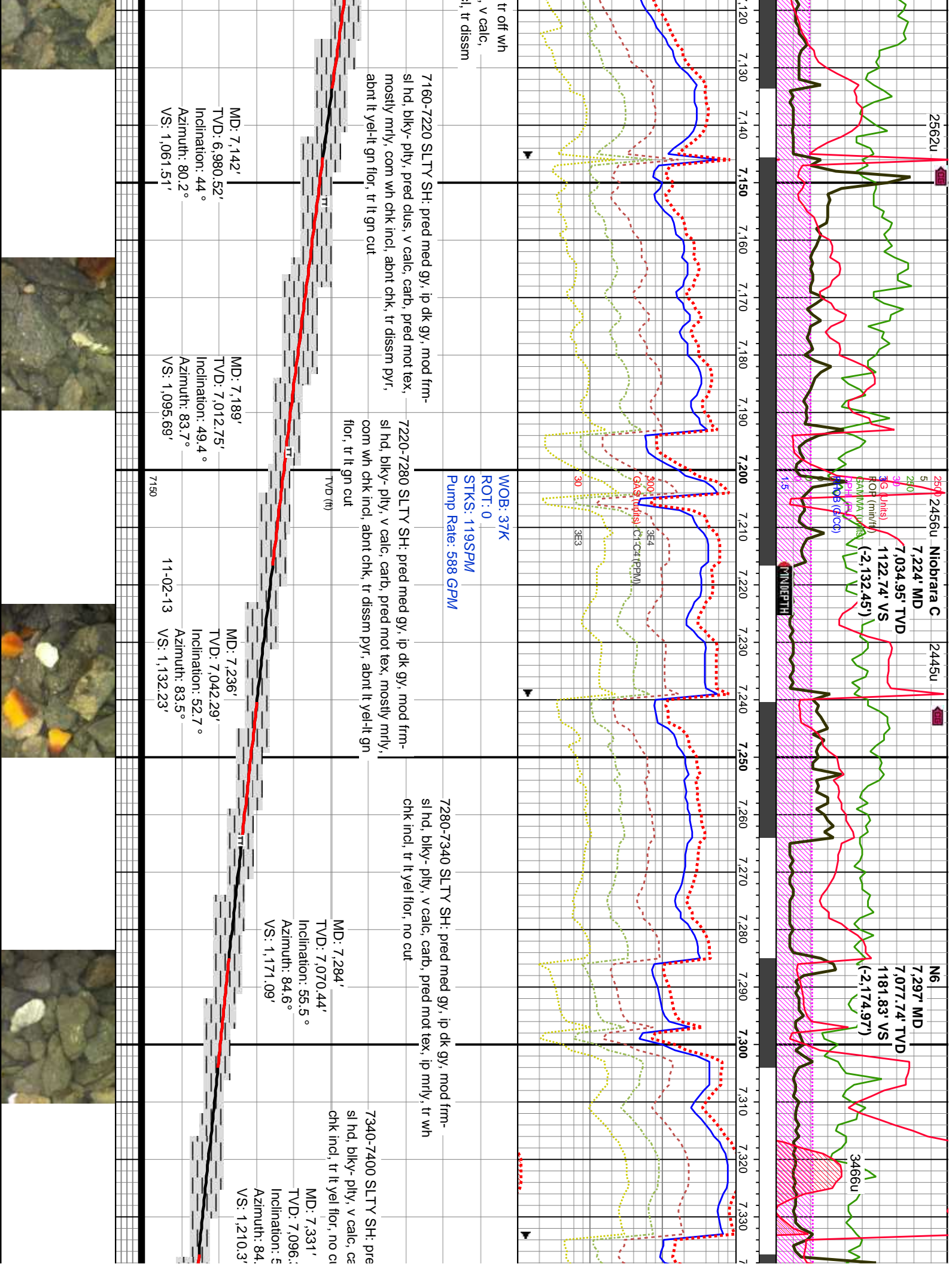


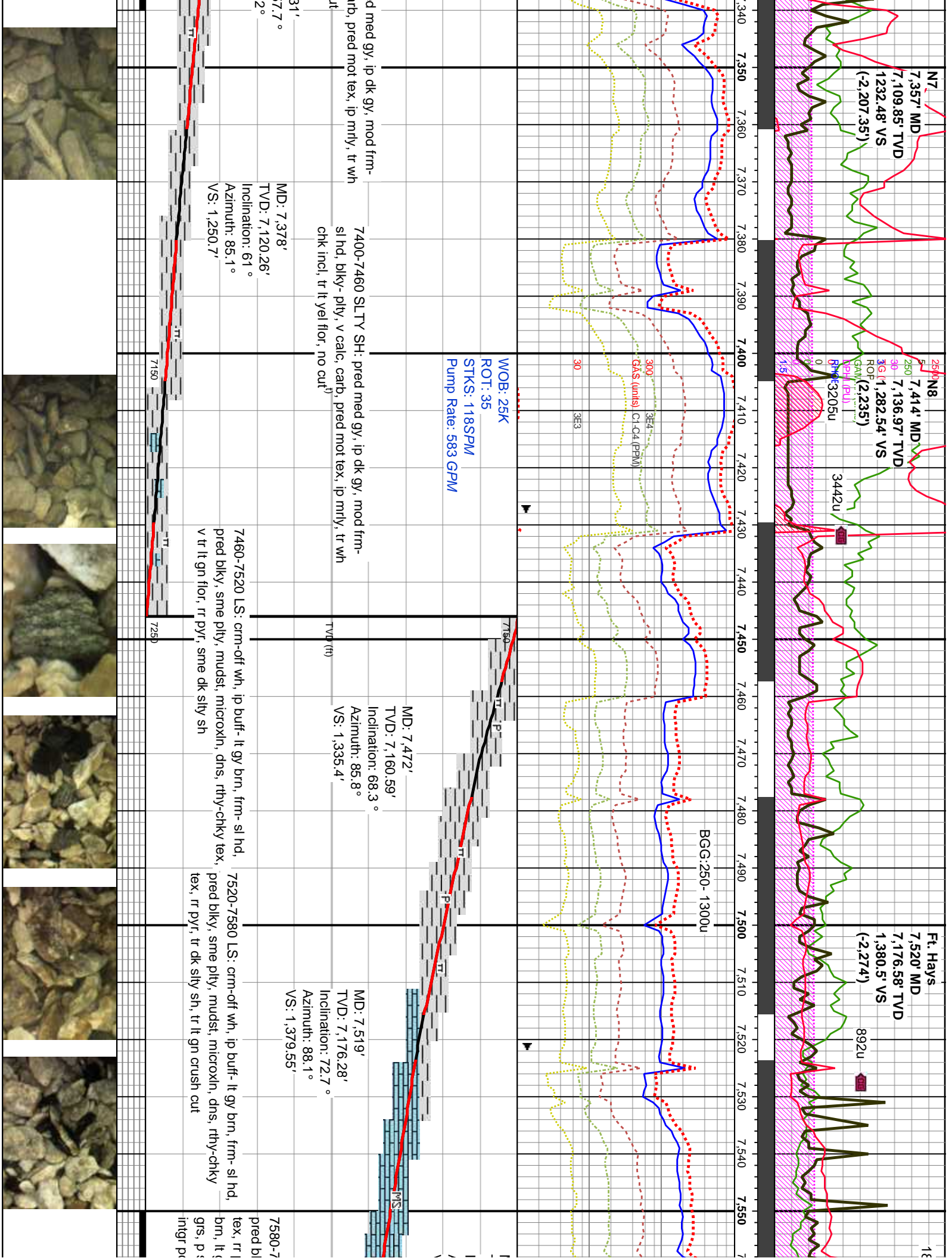


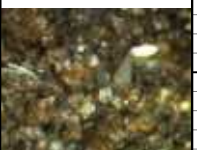
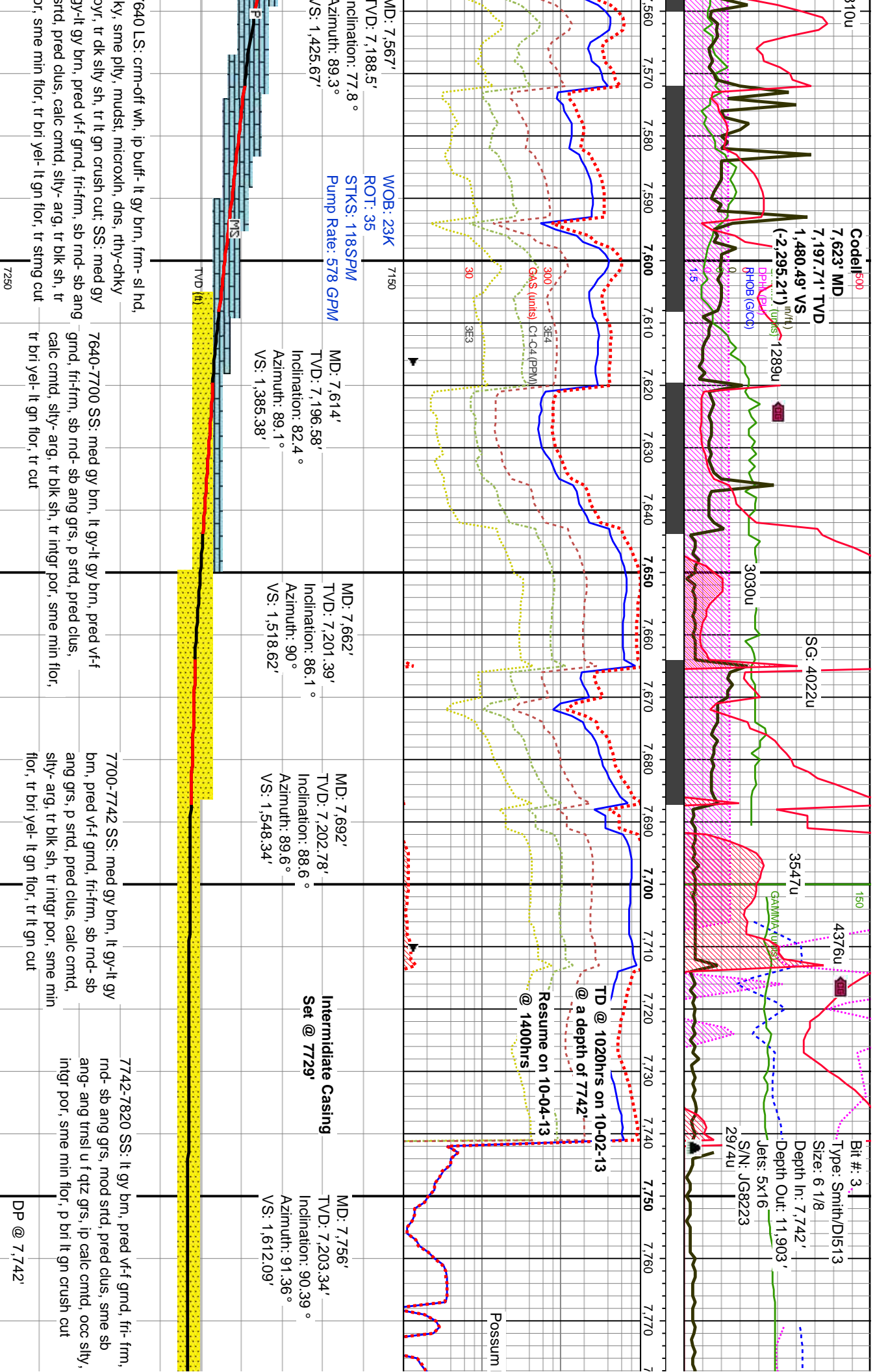




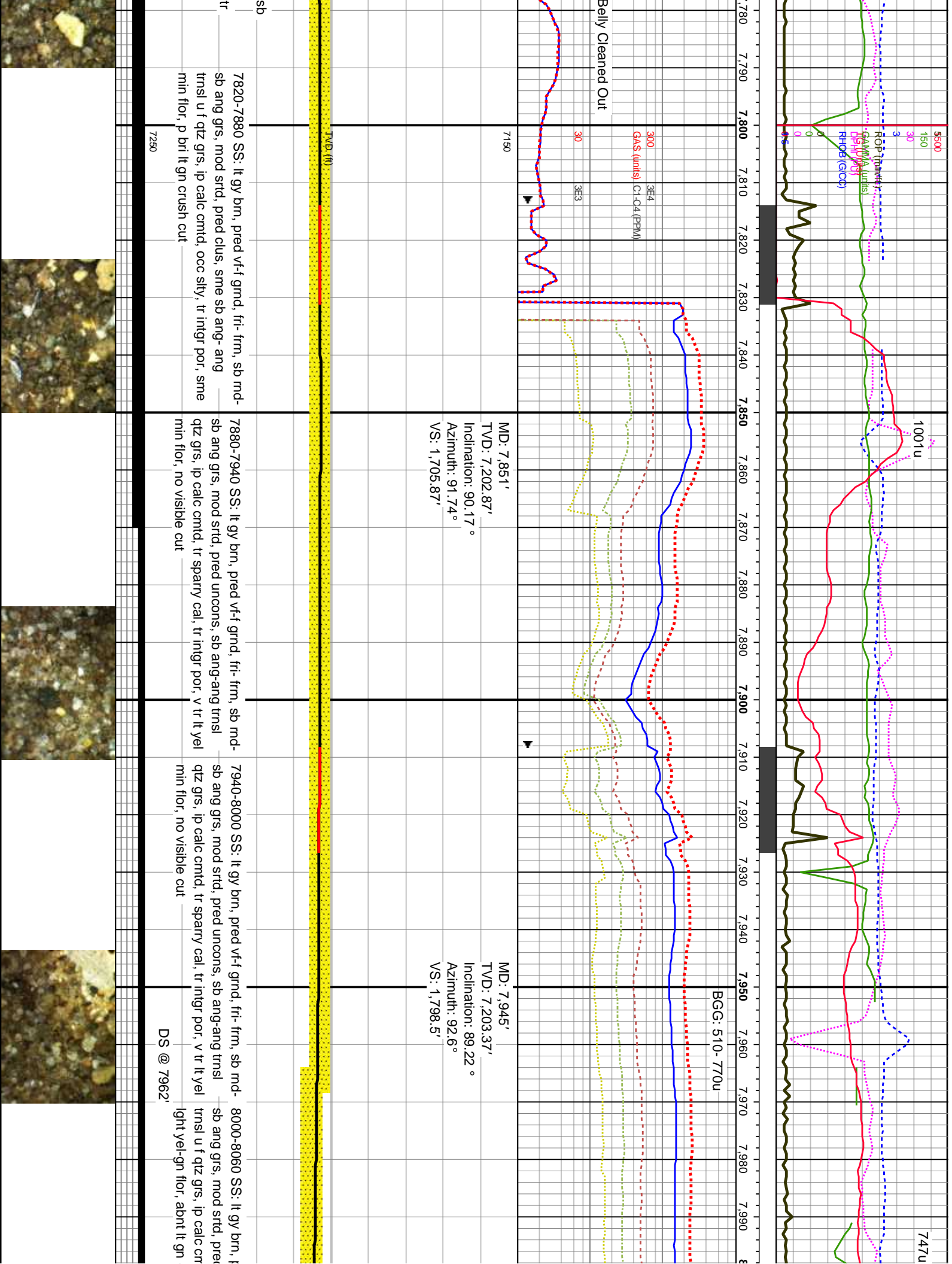


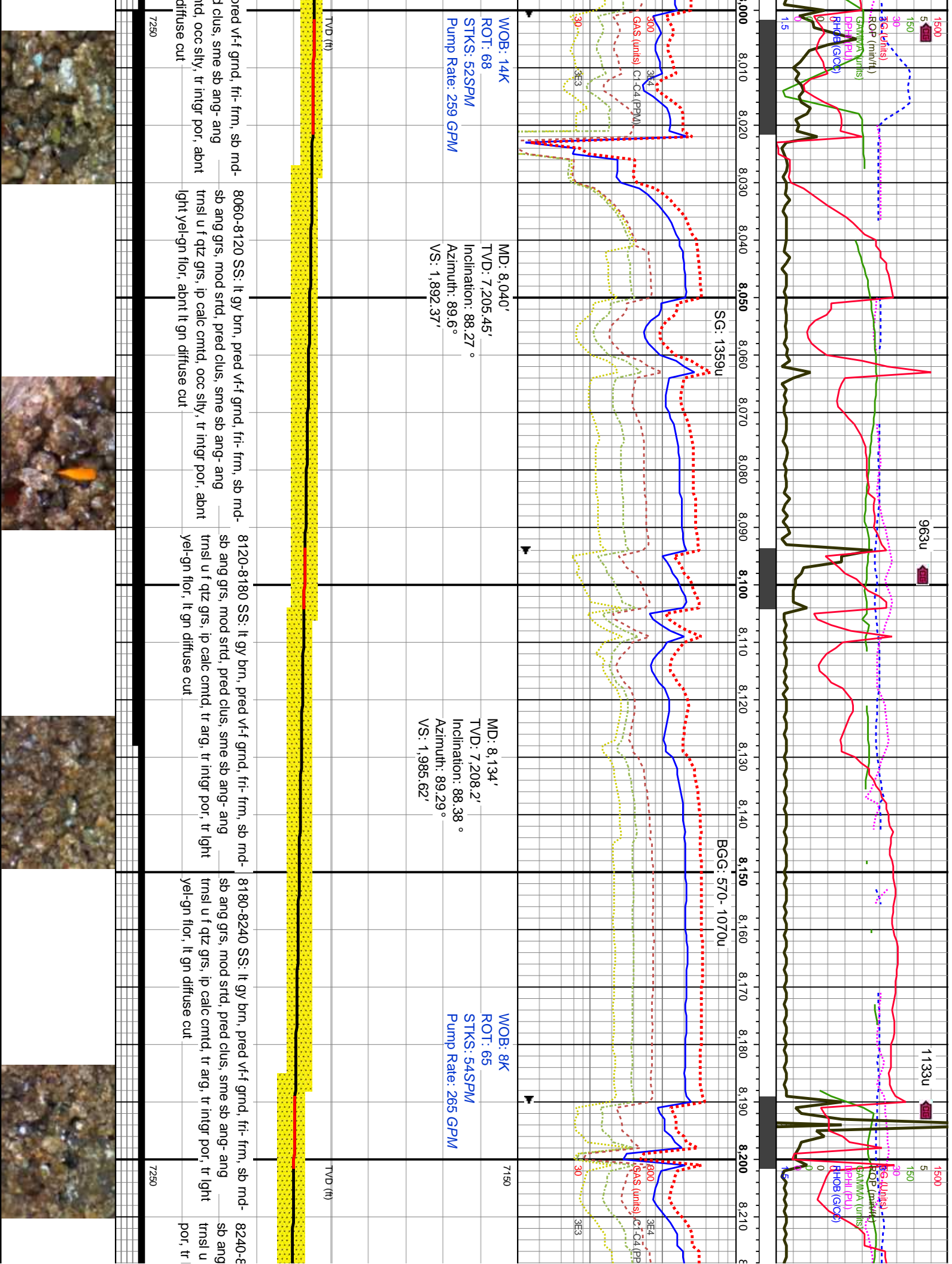








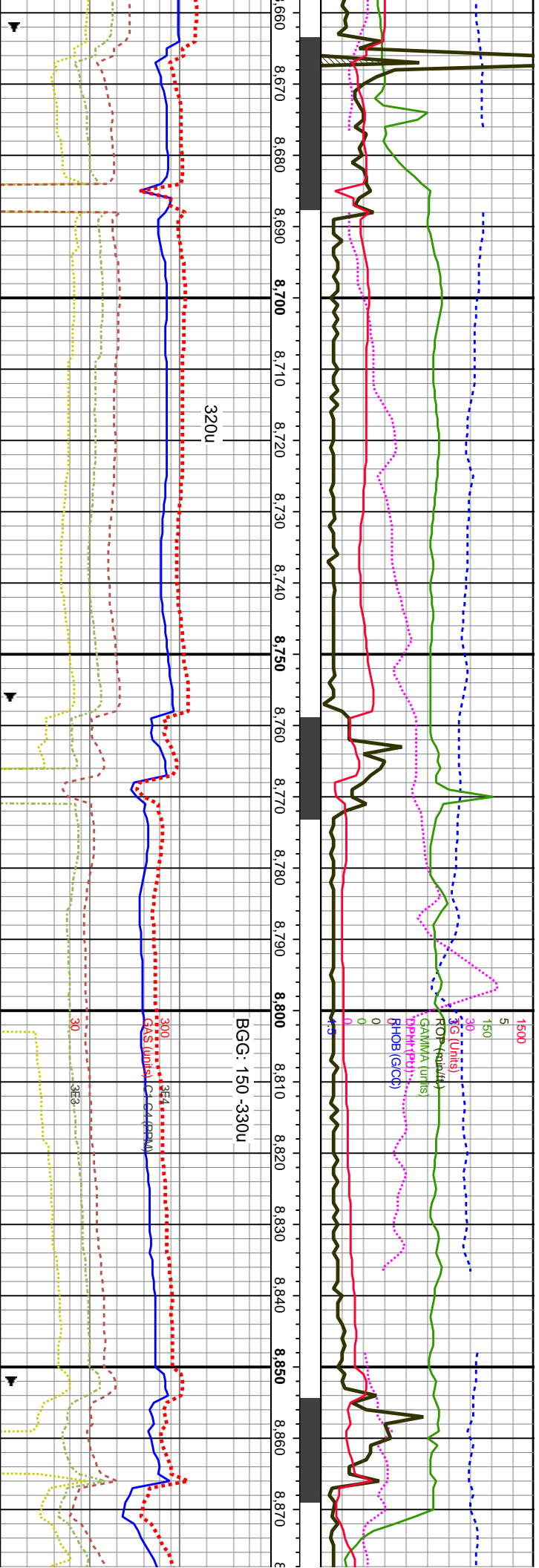












MD: 8,700'  
TVD: 7,214.41'  
Inclination: 86.86°  
Azimuth: 88.41°  
VS: 2,548.44'

8720-8780 SS: lt gy brn, fri-frm, vf-f grnd, me sb  
md-sb ang grs, mod strd, unconcs, sme clus, sme  
sb ang-ang trns l u f qtz grs, ip calc cmtd, occ slty,  
tr intgr por, sme cal, sme ls, sme min flor, p bri lt  
gn crush cut

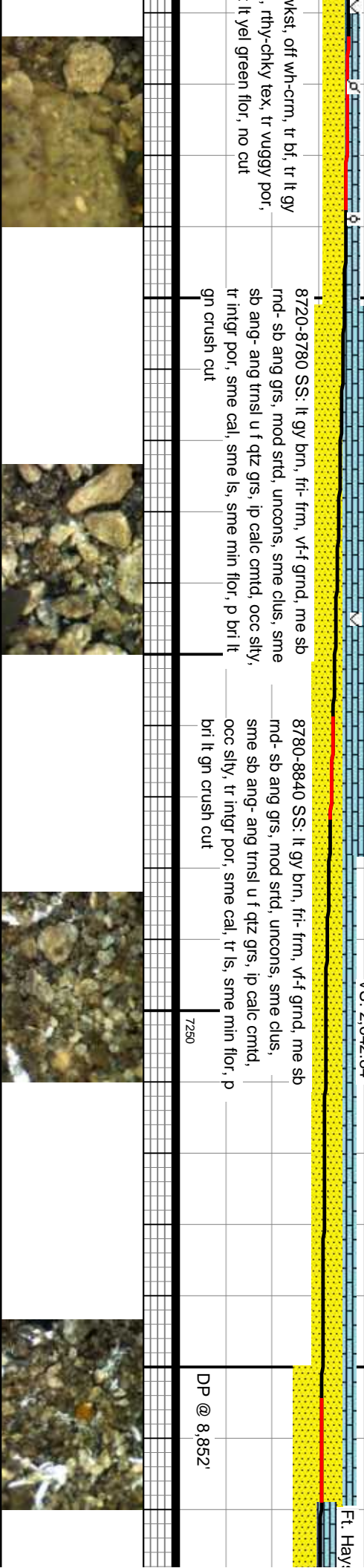
8780-8840 SS: lt gy brn, fri-frm, vf-f grnd, me sb  
md-sb ang grs, mod strd, unconcs, sme clus,  
sme sb ang-ang trns l u f qtz grs, ip calc cmtd,  
occ slty, tr intgr por, sme cal, tr ls, sme min flor, p  
bri lt gn crush cut

MD: 8,795'  
TVD: 7,218.36'  
Inclination: 88.38°  
Azimuth: 88.35°  
VS: 2,642.84'

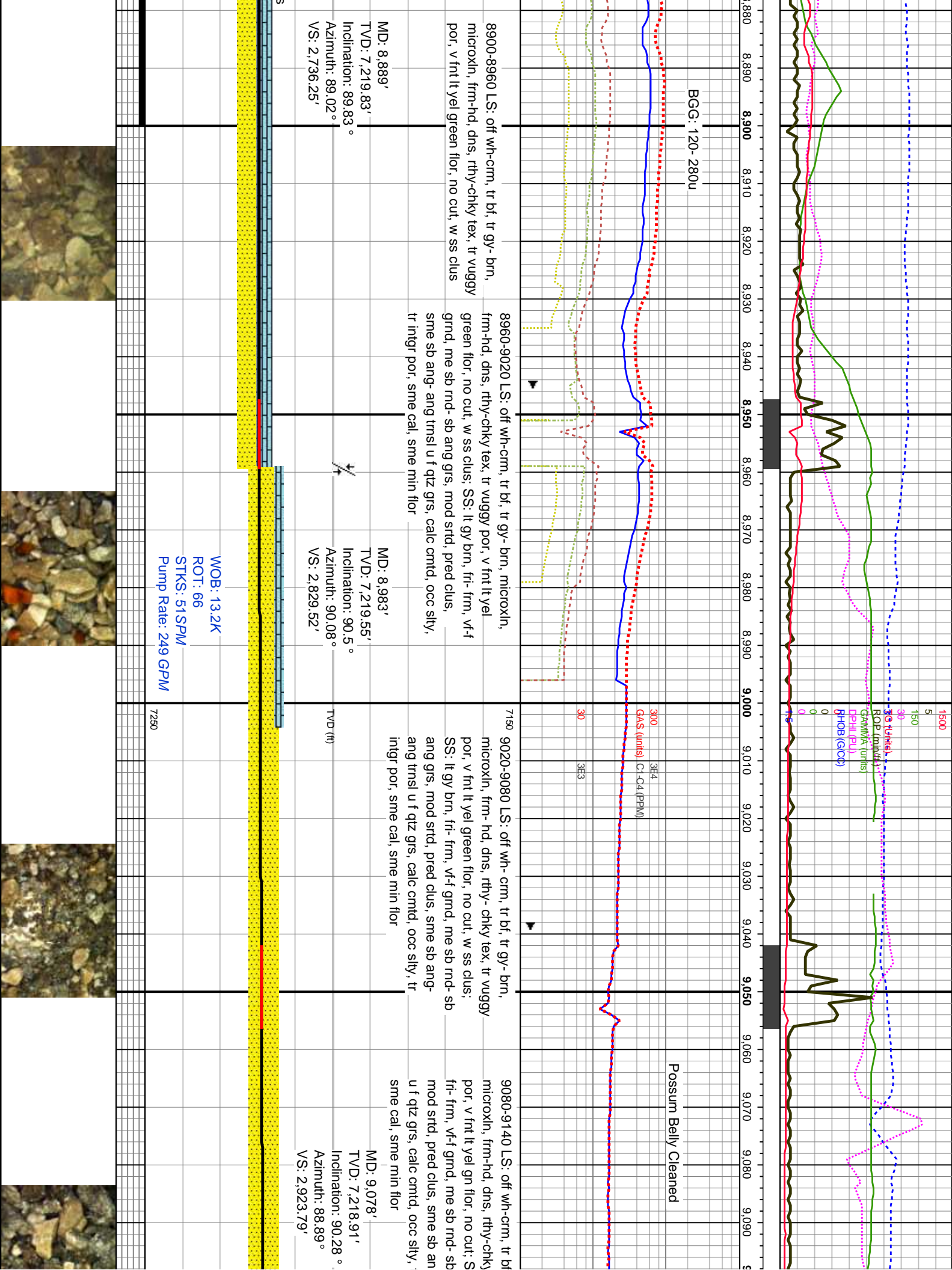
8840-8900 SS: lt gy brn, fri-frm, vf-f grnd, me sb  
md-sb ang grs, mod strd, unconcs, sme clus, sme  
sb ang-ang trns l u f qtz grs, ip calc cmtd, occ slty,  
tr intgr por, sme cal, tr ls, sme min flor, p bri lt gn  
crush cut

4' Displacement

DP @ 8,852'

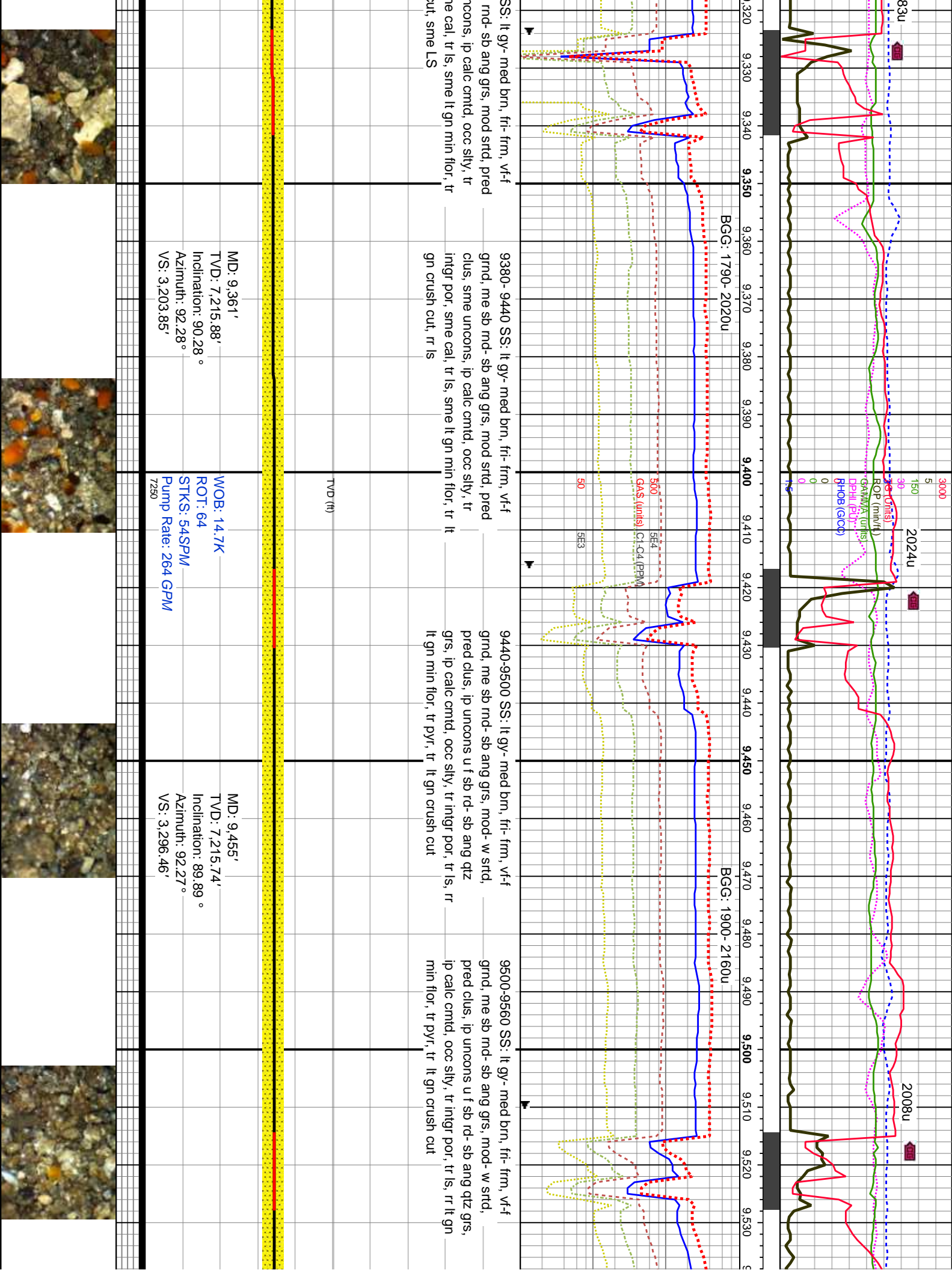




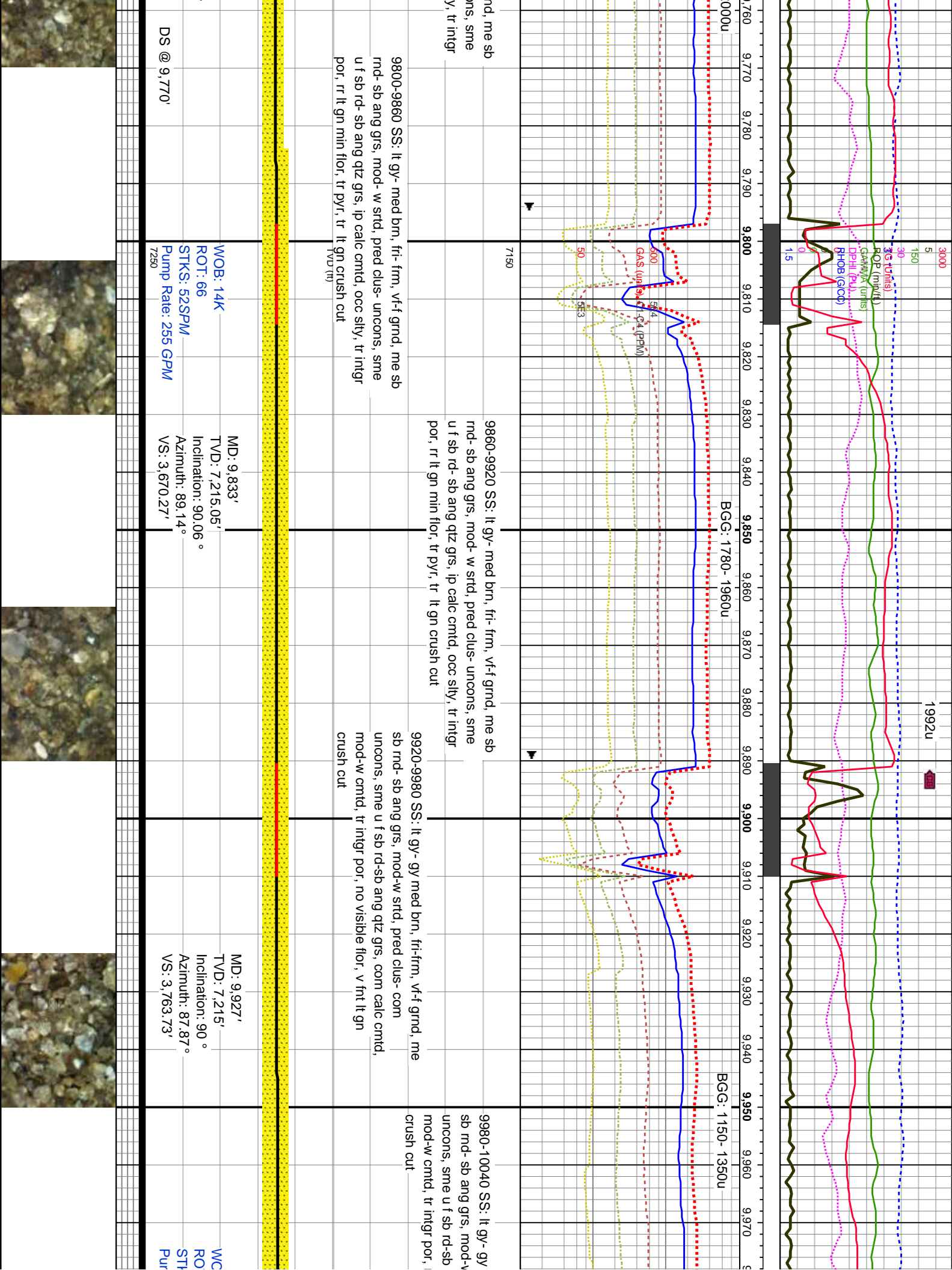






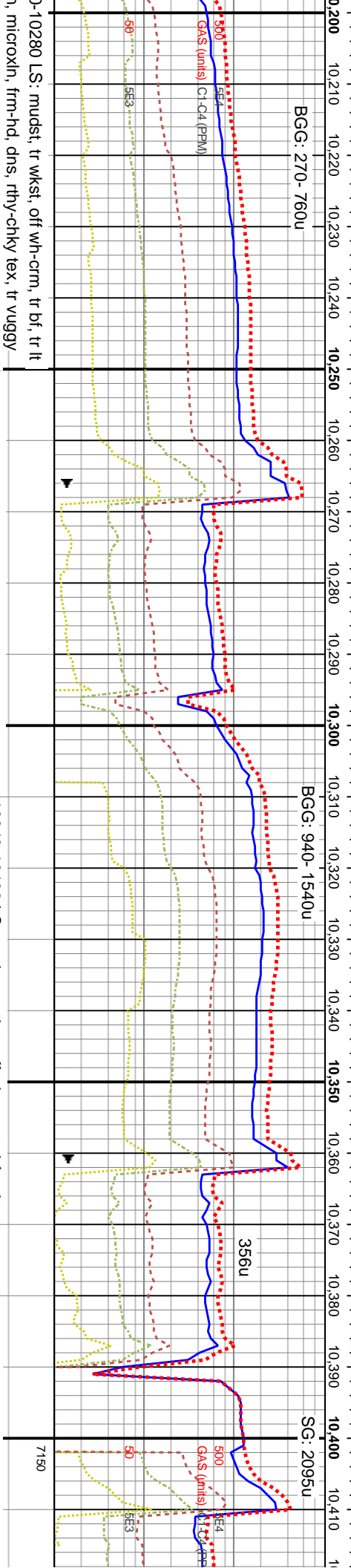












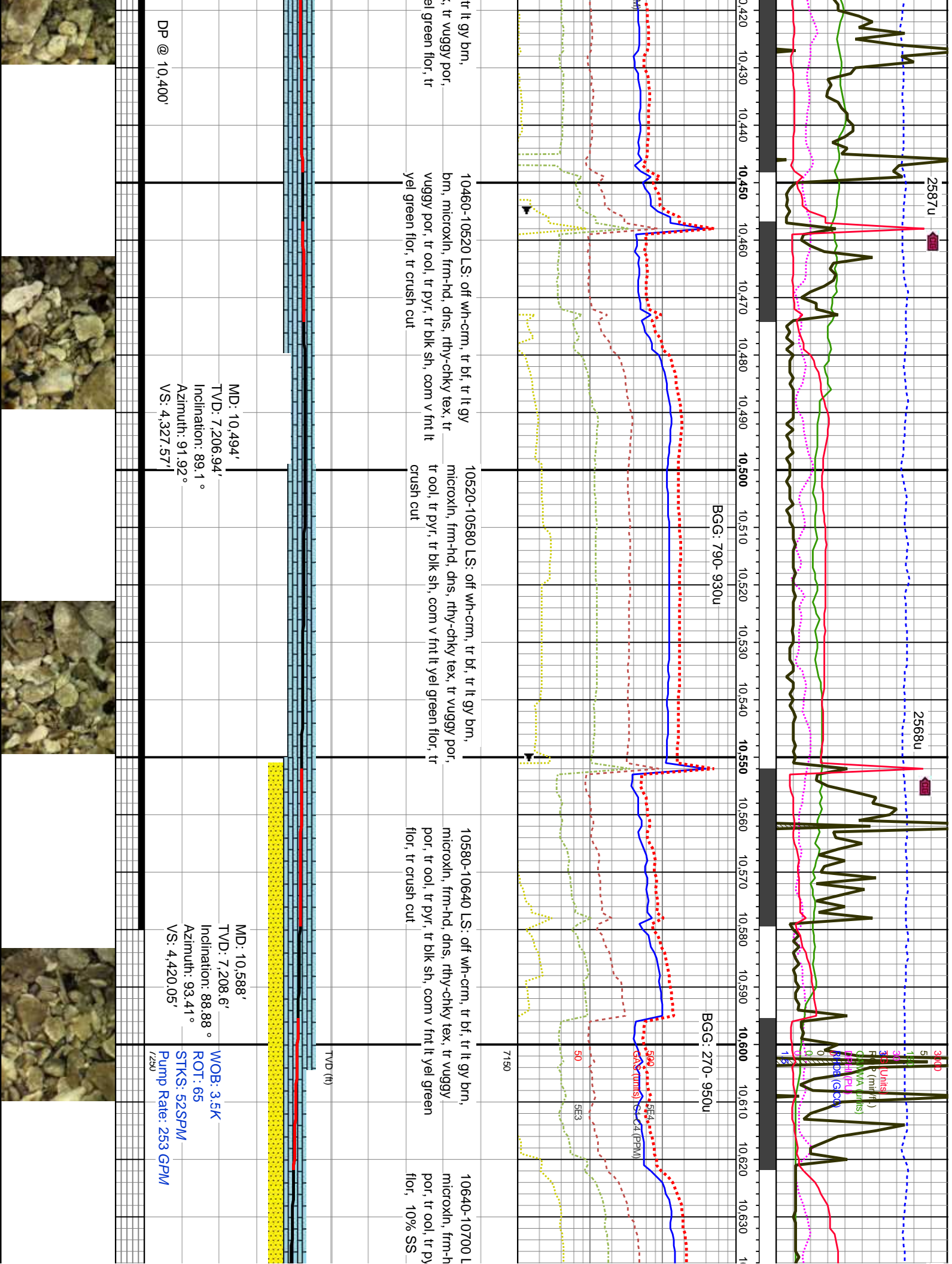
10400-10460 LS: off wh-crm, tr bf, microxln, frm-hd, dns, rthy-chky tex tr ool, tr pyr, tr blk sh, com v fnt lt y crush cut

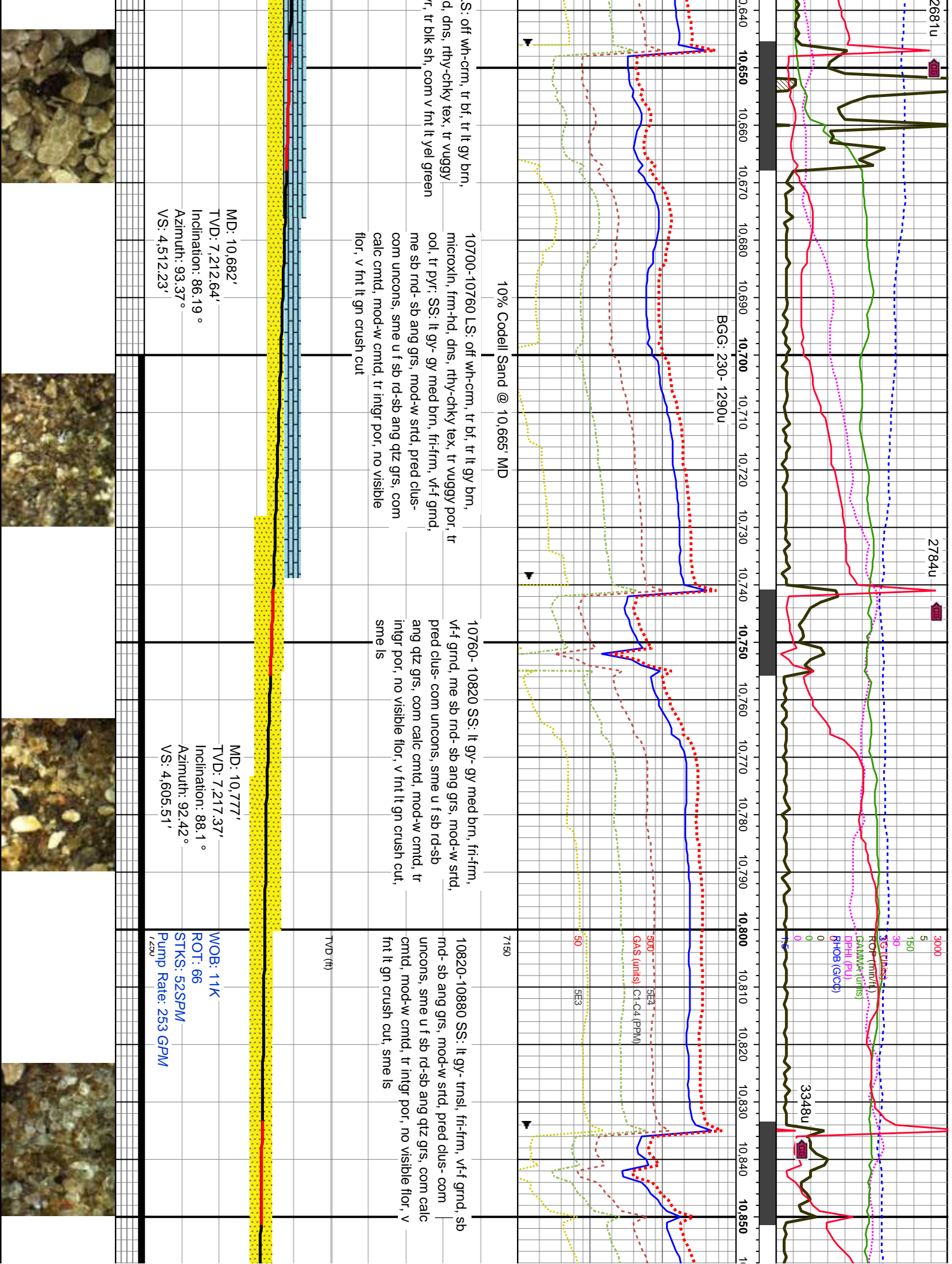
Cut  
MD: 10,399'  
TVD: 7,208.7'  
Inclination: 92.75  
Azimuth: 89.83°  
VS: 4,234.01' (m)

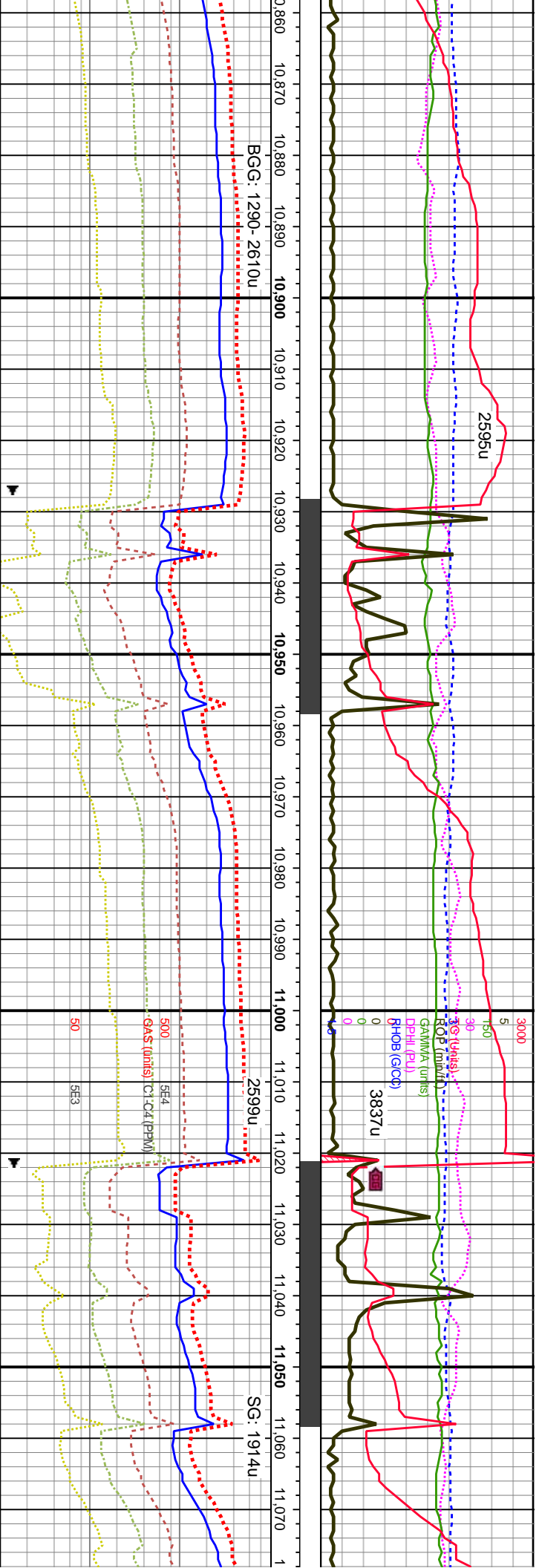
WOB: 20.5K  
ROT: 55  
STKS: 52SPM  
Pump Rate: 262 GPM











10880- 10940 SS: lt gy- tnsl, fri-firm, vf- f  
grnd, sb rnd- sb ang grs, mod-w strd,  
pred uncon, ip clus sme u f sb rd-sb  
ang qtz grs, com calc cmtd, tr intgr por, tr  
pyr

10940-11000 SS: lt gy- tnsl, fri-firm, vf- f grnd, sb rnd-  
sb ang grs, mod-w strd, pred uncon, ip clus sme u f  
sb rd-sb ang qtz grs, com calc cmtd, tr intgr por, tr pyr

11000- 11060 SS: lt gy- tnsl, fri-firm, vf- f grnd, sb  
rnd- sb ang grs, mod-w strd, pred fri-uncons, pred  
clus some u f sb rd-sb ang qtz grs, com calc cmtd,  
ply cmtd, tr intgr por, tr pyr, very fnt yellow flor, no  
visible cut

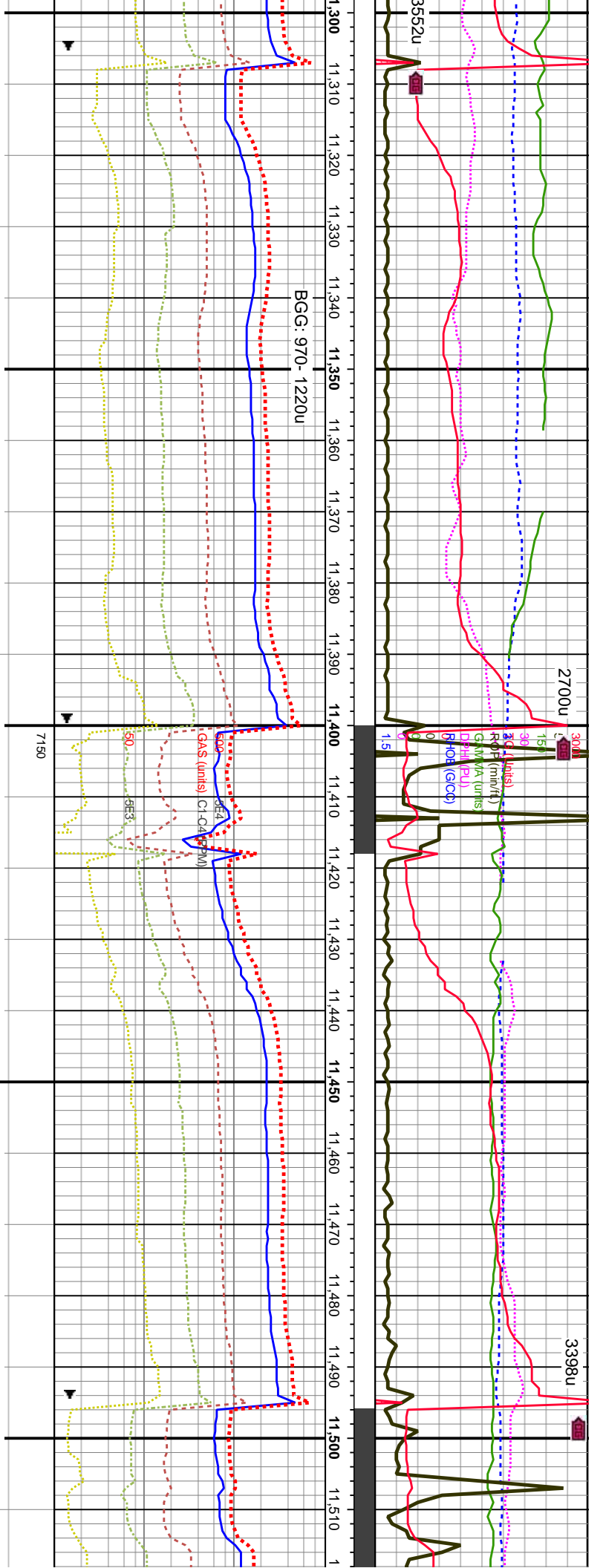
11060-11120 SS: lt gy- tnsl, fri-firm, vf- f grs  
sb ang grs, mod-w strd, pred fri-uncons, pred  
some u f sb rd-sb ang qtz grs, com calc cmtd,  
cmtd, tr intgr por, tr pyr, very fnt yellow flor,  
cut

MD: 10,871' TVD: 7,219.3' Inclination: 89.55 ° Azimuth: 90.9 ° VS: 4,698.26'		MD: 10,965' TVD: 7,219.53' Inclination: 90.17 ° Azimuth: 90.63 ° VS: 4,791.26'		MD: 11,060' TVD: 7,219.38' Inclination: 90.28 ° Azimuth: 90.52 ° VS: 4,885.65'	
WOB: 14.2K ROT: 65 STKS: 50SPM Pump Rate: 247 GPM DS @ 11,060'		TVD (ft)			

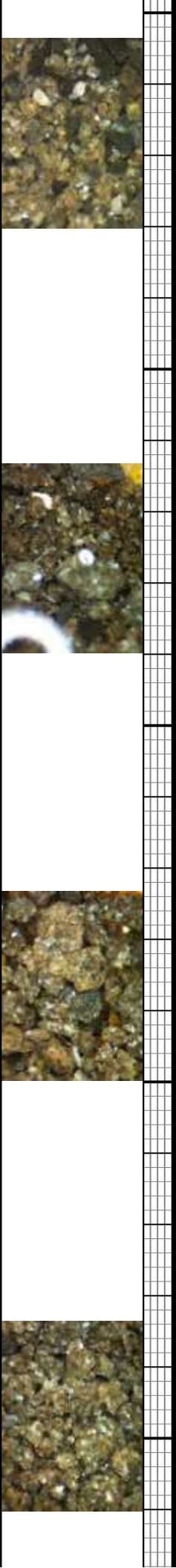


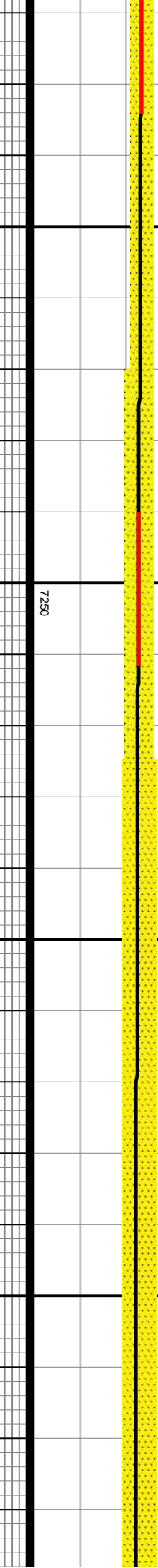
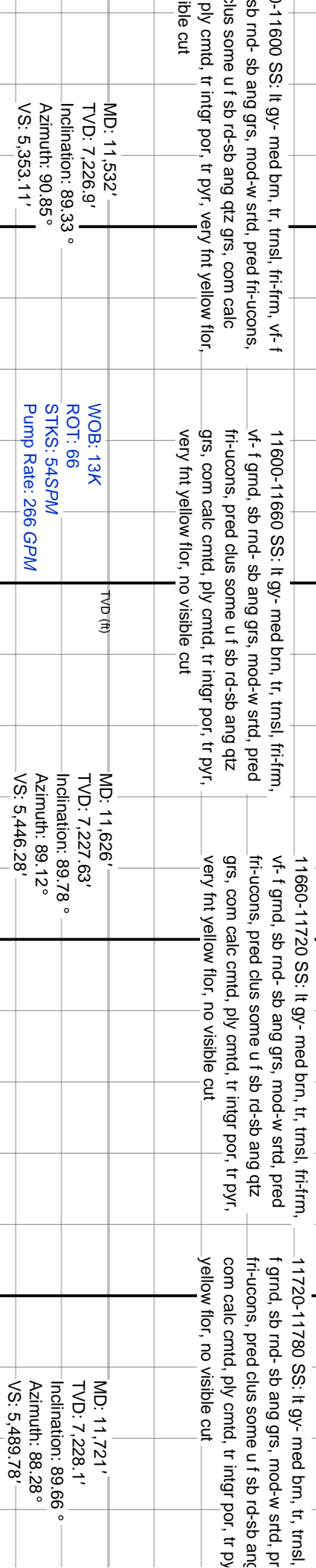
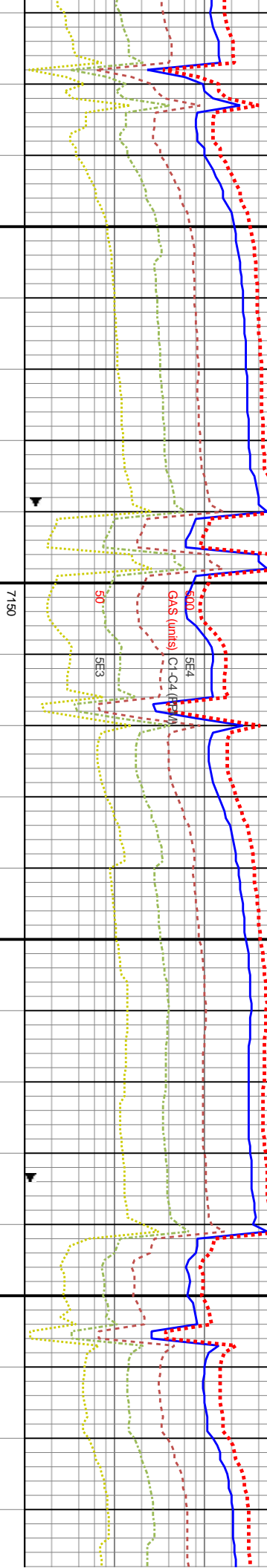
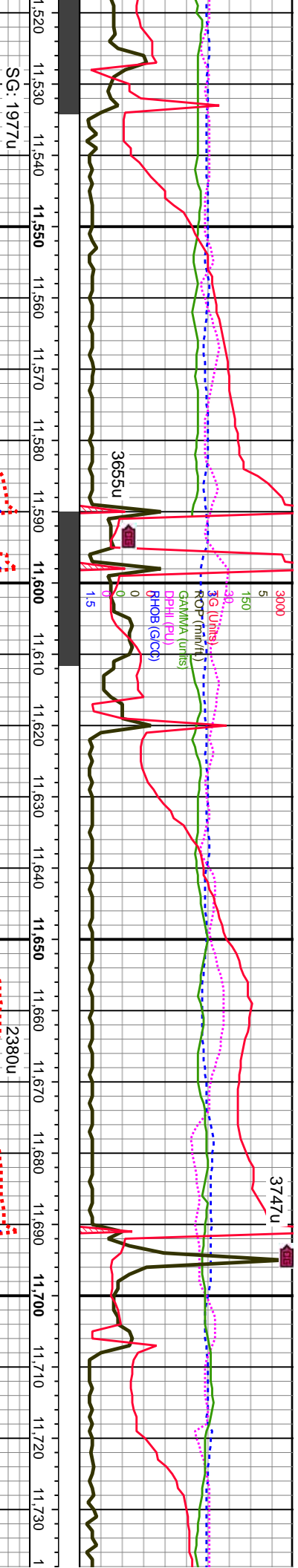




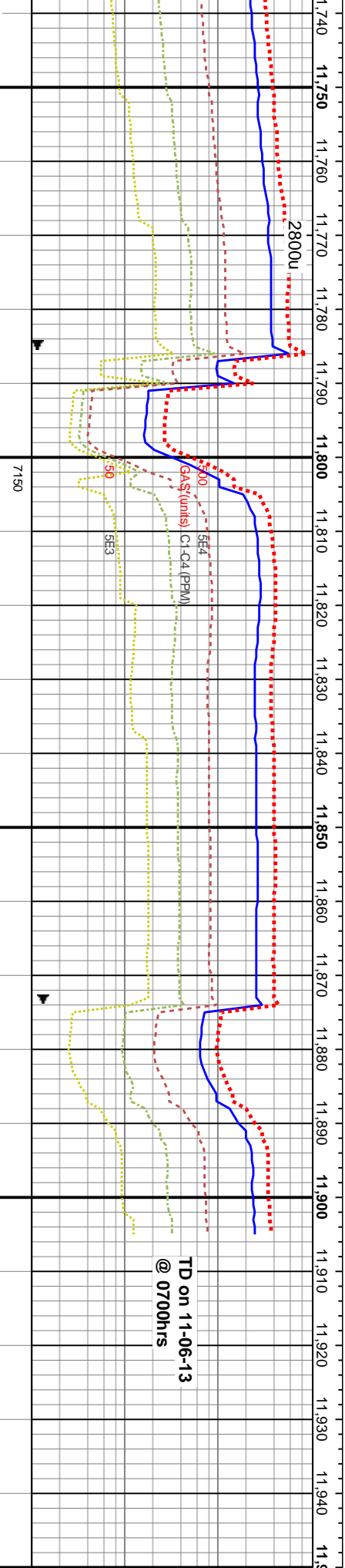
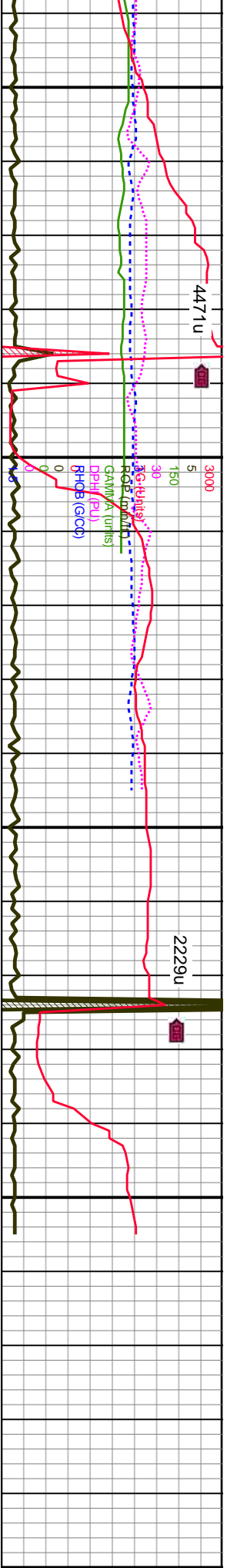


11,300	11,310	11,320	11,330	11,340	11,350	11,360	11,370	11,380	11,390	11,400	11,410	11,420	11,430	11,440	11,450	11,460	11,470	11,480	11,490	11,500	11,510
BGC: 970- 1220u																					
MD: 11,343'																					
TVD: 7,225.98'																					
Inclination: 89.33 °																					
Azimuth: 90.46 °																					
VS: 5,166.08'																					
WOB: 10K																					
ROT: 64																					
STKS: 49SPM																					
Pump Rate: 241 GPM																					
7250																					







fri-frm, vfr  
ed  
qtz grs,  
r, very fnt

11780-11840 SS: *pred med bñr- tñsl bñr- tñsl, fir-firm, vf- f grnd, sb md- sb ang grs, mod-w stfd, pred fir-ucons, pred clus, sme u f sb rd-sb ang qtz grs, com calc cmtd, ply cmtd, tr intrgr por, tr pyr, v fnt yel flor*

11840-11900 SS: *pred* *med* *brn*-*trnsl* *bm*-*trnsl*, *frn*-*frm*, *vf*-*f* *gmnd*, *sb* *md*-*sb* *ang* *grs*, *mod*-*w* *strd*, *pred* *frn*-*ucons*, *pred* *clvs*, *sme* *u* *f* *sb* *rd*-*sb* *ang* *qlz* *grs*, *com* *calc* *cmtd*, *ply* *cmtd*, *tr* *ingr* *por*, *tr* *pyr*, *v* *frnt* *yel* *flor*

MD: 11,815'	
TVD: 7,227.69'	
Inclination: 90.84 °	
Azimuth: 87.11 °	
VS: 5,583.7'	
TVD (ft)	

MD: 11,903'
TVD: 7,225.8'
Inclination: 91.62 °
Azimuth: 87.69 °
VS: 5,671.59'

DP @ 11,800'

7250