



Scale: 5" / 100'
Measured Depth Log

Well Name

STRIKER 3 SWD 1

Location

472' FSL & 897' FEL, UNIT P, SEC 33, T23S, R28E, NMPM

State

NEW MEXICO

County

EDDY

Country

USA

Rig Number

LATSHAW 21

API Number

30-015-44407

AFE #

1161

Geographic Region

DELAWARE BASIN

Field

CULEDRA BLUFF

Spud Date

11/16/2017

Drilling Completed

1/4/2018

Surface Coordinates

Y=456728.7 N, X=576375.1 E (NAD27)
32.255422°, -104.086271° (NAD27)

Bottom Hole Coordinates

N/A: VERTICAL WELL.

Ground Elevation

3,069'

K.B. Elevation

3,097'

Logged Interval

545'

To

15,068'

Total Depth

15,068'

Formation

VERTICAL INJECTION: DEVONIAN, FUSSELMAN, MONTOYA TARGET

Type of Drilling Fluid

WBM

Operator

Company

NGL WATER SOLUTIONS PERMIAN, LLC

Address

3773 CHERRY CREEK N DRIVE, SUITE 1000
DENVER, CO 80209

Geologist

Name

MIKE SEIDENSTICKER, MAURY CAMPBELL, CHARLES JOHNSON

Company

FIELD GEO SERVICES, INC.

Address

533 BOGART LANE, UNIT A
GRAND JUNCTION CO 81505
O: (970) 424-5163
F: (970) 424-5164

Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

FREE QUARTZ

GYPSUM

SALT

SIDERITE or LIMONITE

LIMESTONE

DOLOMITIC LIMESTONE

LIMESTONE SHALY

DOLOMITE

CHERT

COAL

MARLSTONE

CLAYSTONE

SHALE

SHALE GRAY

SHALE COLORED

SHALE CARB

SHALE CALC

SILTSTONE

SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

NO SPL

NO SAMPLE

Accessories

Fossils

ALGAE

AMPHIPORA

BELEMNITE

BIOCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

GASTROPOD

OOOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMATOPOROID

Minerals

ANHYDRITIC

ARGILLACEOUS

BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CALCITE VEIN

CARBONACEOUS FLAKES

CHTDK

CHTLT

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLETT

FERRUGINOUS

GLAUCONITE

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PYRITE

QUARTZ

SALT CAST

SANDY

SILICEOUS

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

TUFF

F FOSSIL

ARGILLITE GRAIN

GYPSIFEROUS

Stringer

Other Symbols

Oil Show

- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Porosity

- E EARTHY
- F FENESTRAL
- F FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC

- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY

Engineering

- BIT
- CASING
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- DOWN TIME GAS
- TRIP GAS

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

- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT

Rounding

- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN

- E EARTHY
- FINELYXLN
- GRAINSTONE
- L LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL

WOB (lb) 50
ROP (ft/min) 100
PUMP PRESSURE (psi) 5000
FLOW-IN RATE (galUS/min) 1000
TOP DRIVE TORQUE (ft-lbf) 20000
MUD VOLUME (bb) 1000

Rosa?
695'

Rustler?
Anhydrite
764'

MD: 774'
INC: 1.0°
AZM: 195.9°
TVD: 773.95'
VS: -8'

Pump #1
offline.

WOB: 10
RPM: 68
SPM: 88/88
PP: 767
GPM: 427

MD: 865'
INC: 1.1°
AZM: 202.5°
TVD: 864.93'
VS: -9'

Driller reset
bit position.

Top Salt
870'

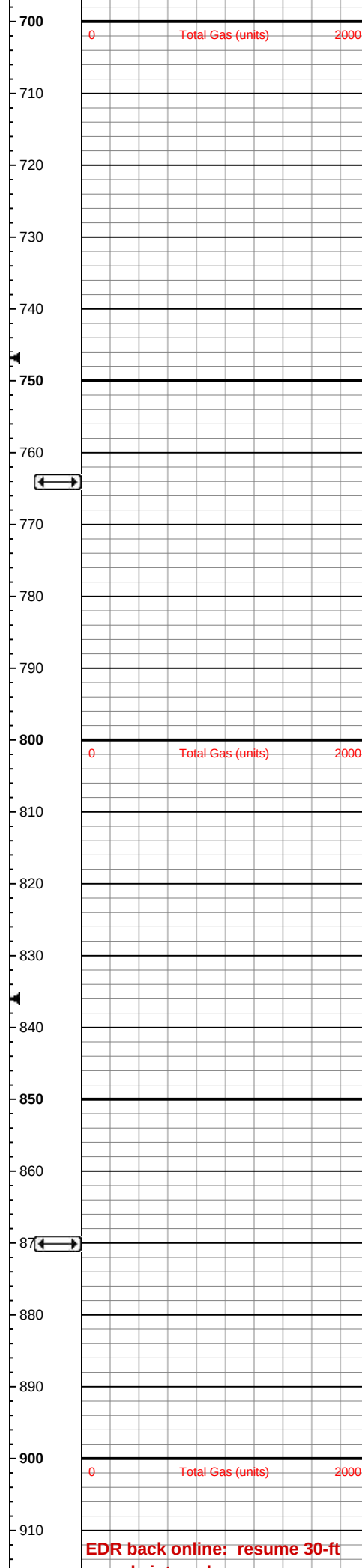
WOB (lb) 50
ROP (ft/min) 100
PUMP PRESSURE (psi) 5000
FLOW-IN RATE (galUS/min) 1000
TOP DRIVE TORQUE (ft-lbf) 20000
MUD VOLUME (bb) 1000

Pump 20

ROP (ft/min) 5
Gamma Ray-MWD (API) 150
Gamma Ray-Wireline (API) 150
Density Caliper (in) 22
DST Uphole Tension (pounds) 0
Spontaneous Potential (millivolts) -100

ROP (ft/min) 5
Gamma Ray-MWD (API) 150
Gamma Ray-Wireline (API) 150
Density Caliper (in) 22
DST Uphole Tension (pounds) 0
Spontaneous Potential (millivolts) -100

ROP (ft/min) 5
Gamma Ray-MWD (API) 150
Gamma Ray-Wireline (API) 150
Density Caliper (in) 22
DST Uphole Tension (pounds) 0
Spontaneous Potential (millivolts) -100



730-760 MD. ANHY: Wh -
trnsI - medItGy - paYlshOr
- modPk, subblky to
subsplt, v/fxln to micxln,
hd to frm, tt por. SS:
medItGy - modRdBn -
ItGy, mod cons, v/fn grn,
occ grdg to SLTST,
subang to subrnd, mody
srtd, arg to fe to calc cmt,
scat imbd rk frags, intrgr
por. No cut, no rng.

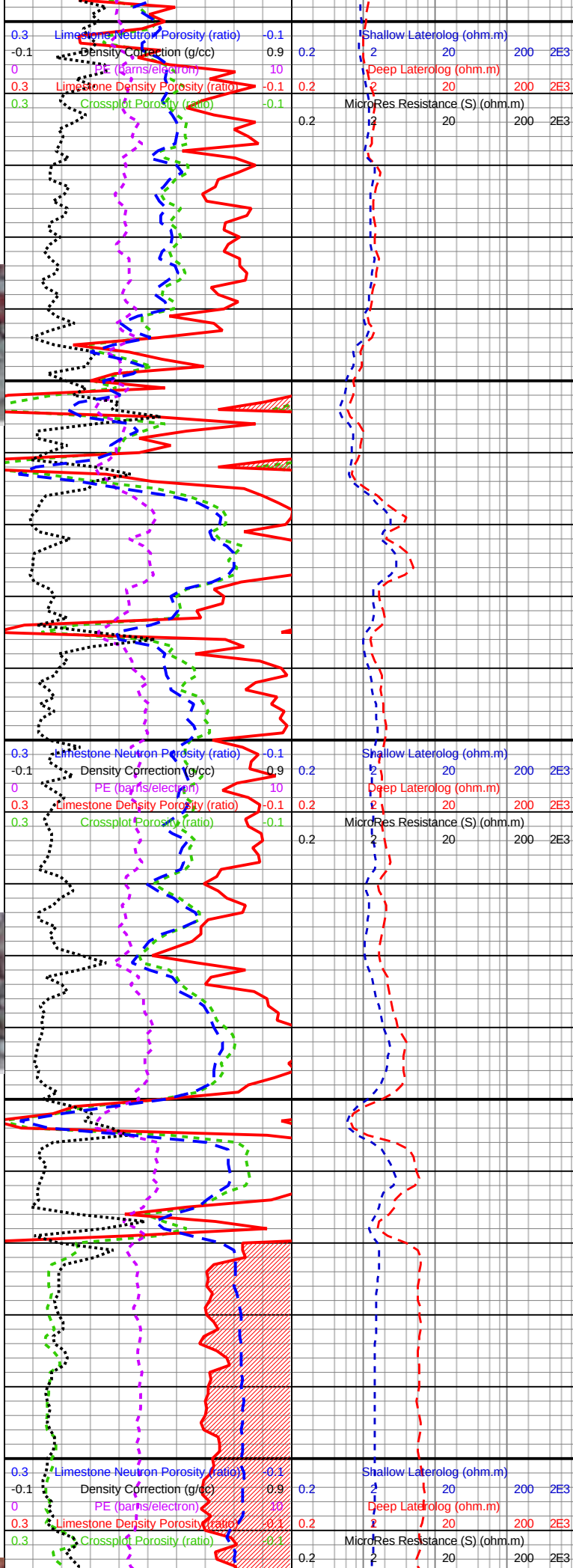


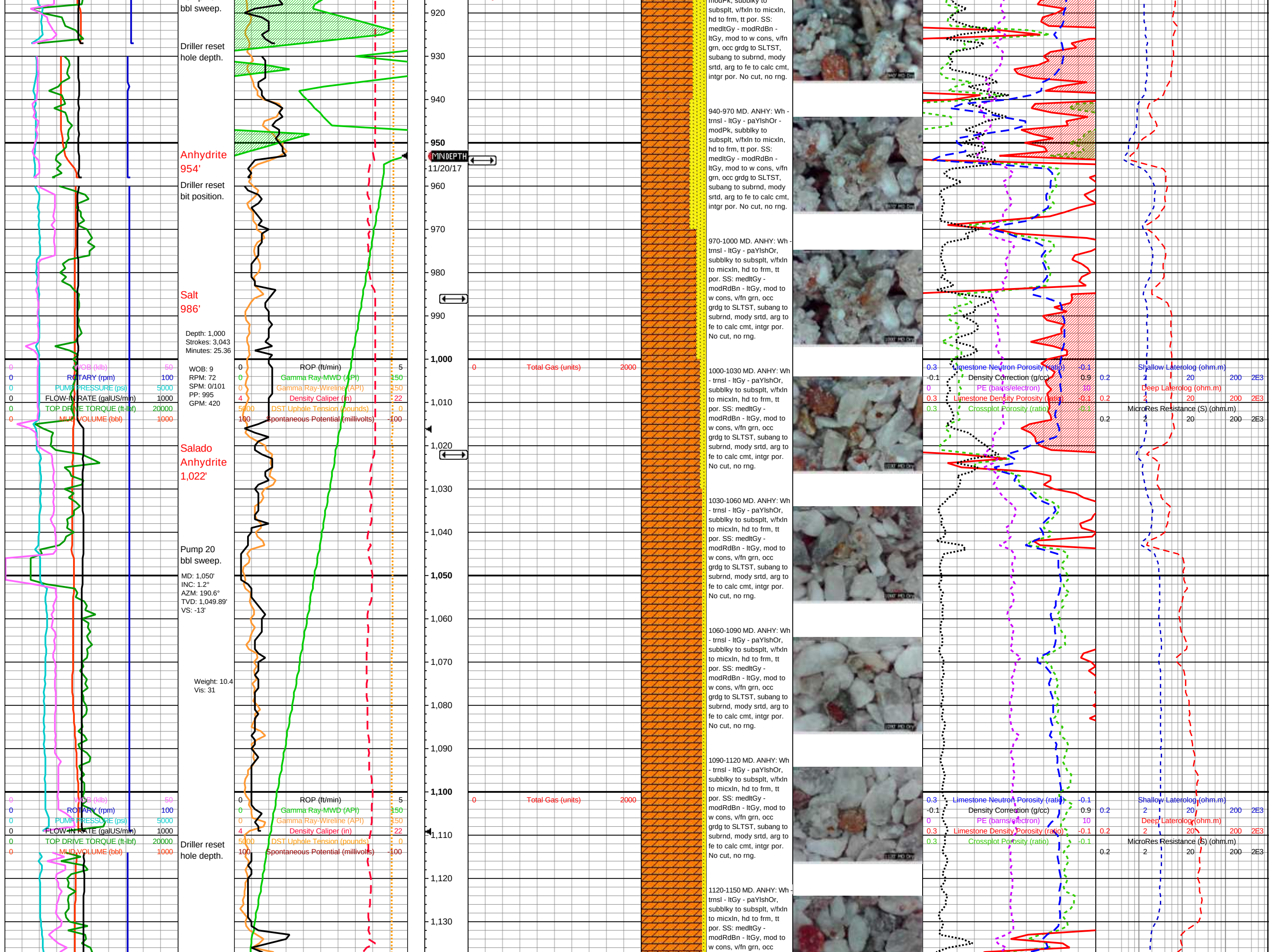
820-850 MD. ANHY: Wh -
trnsI - medItGy - paYlshOr
- modPk, subblky to
subsplt, v/fxln to micxln,
hd to frm, tt por. SS:
medItGy - modRdBn -
ItGy, lse cons, v/fn grn,
occ grdg to SLTST,
subang to subrnd, mody
srtd, arg to fe to calc cmt,
intrgr por. No cut, no rng.

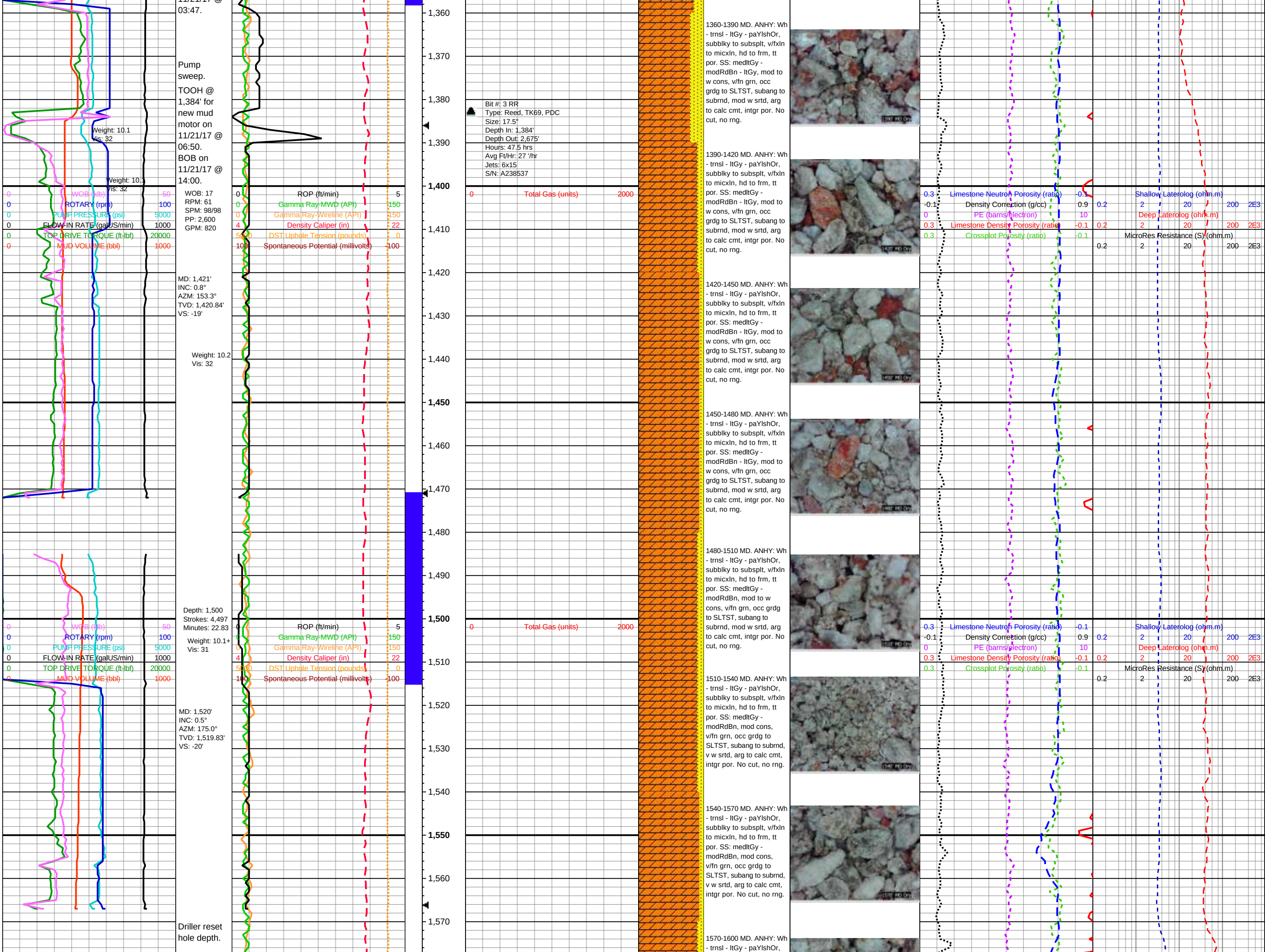


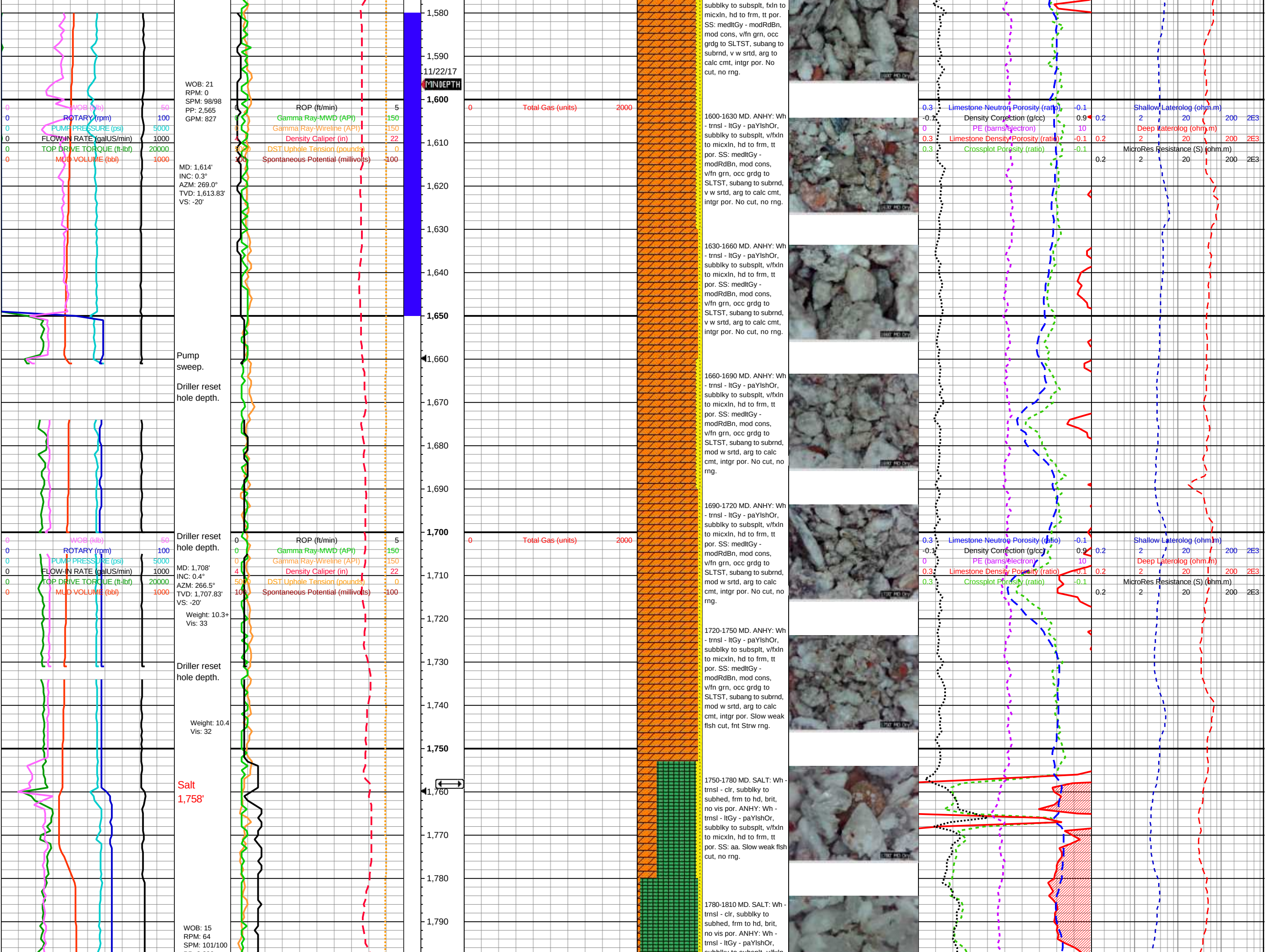
EDR back online: resume 30-ft
sample interval.

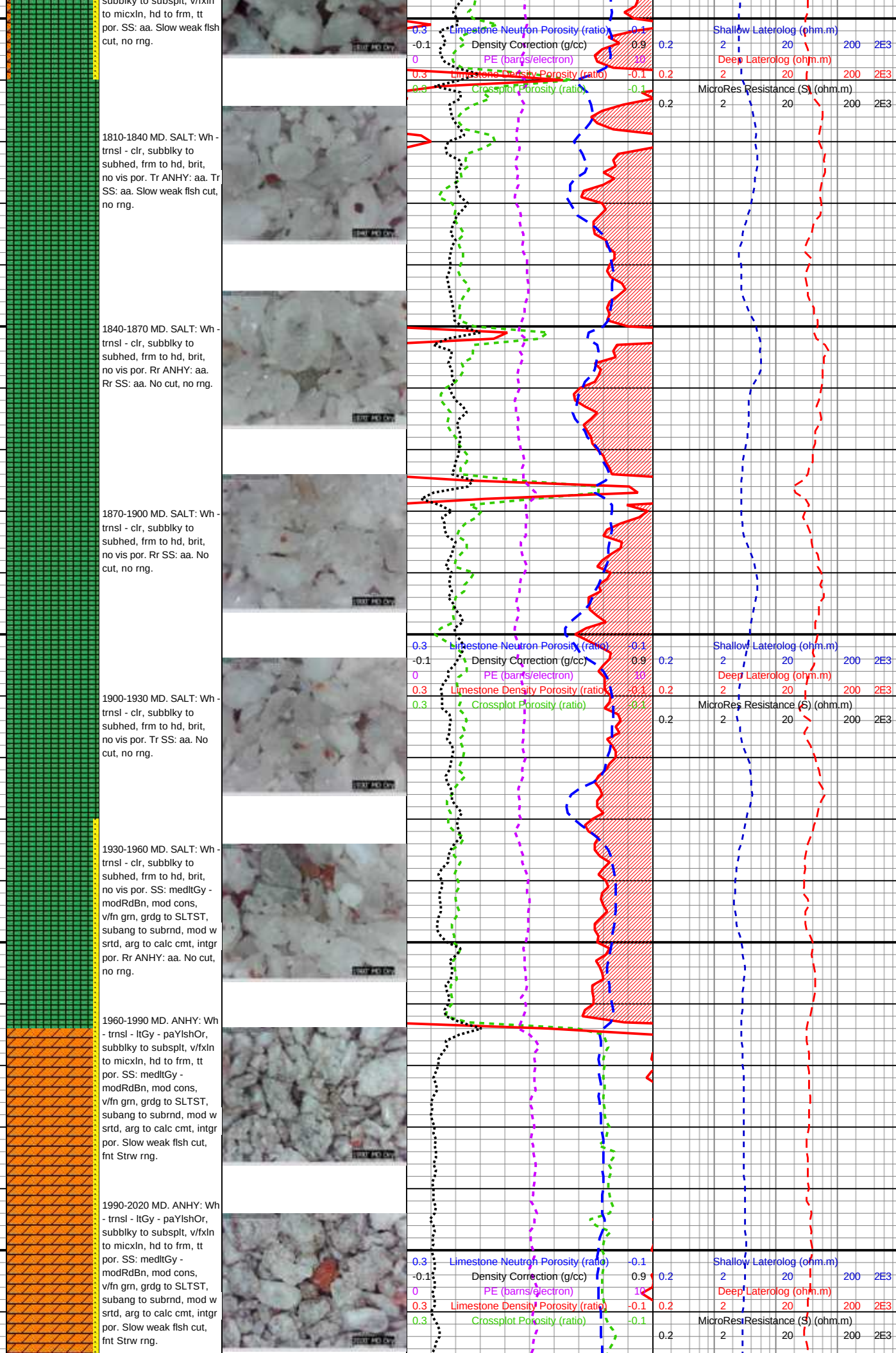
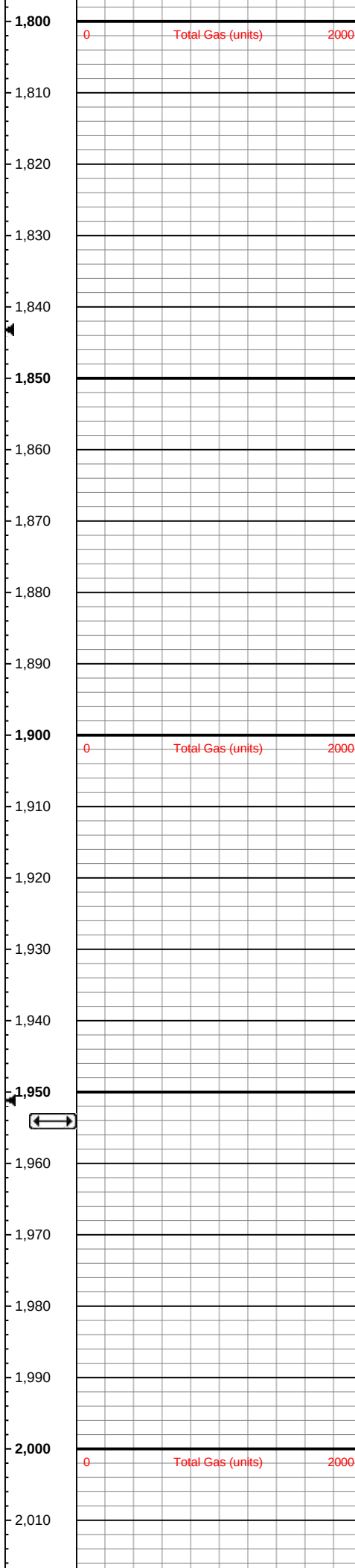
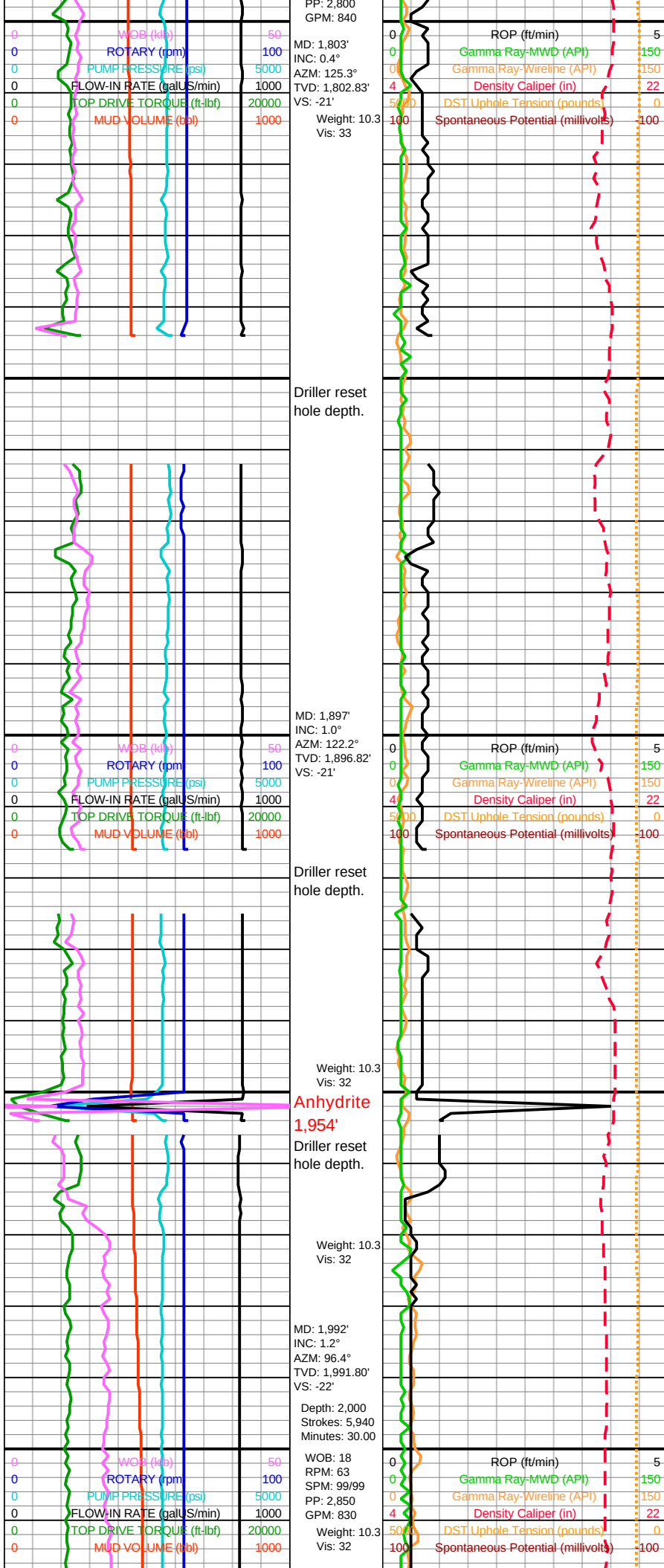
910-940 MD. ANHY: Wh -
trnsI - ItGy - paYlshOr -
modPk, subblky to

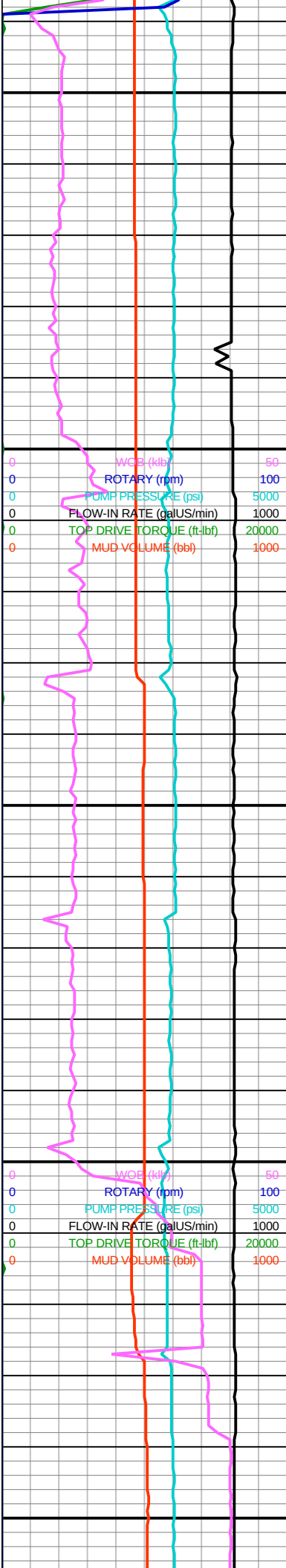












MD: 2,275'
INC: 3.4°
AZM: 101.7°
TVD: 2,274.63'
VS: -24'

Pump 20
bbl sweep.

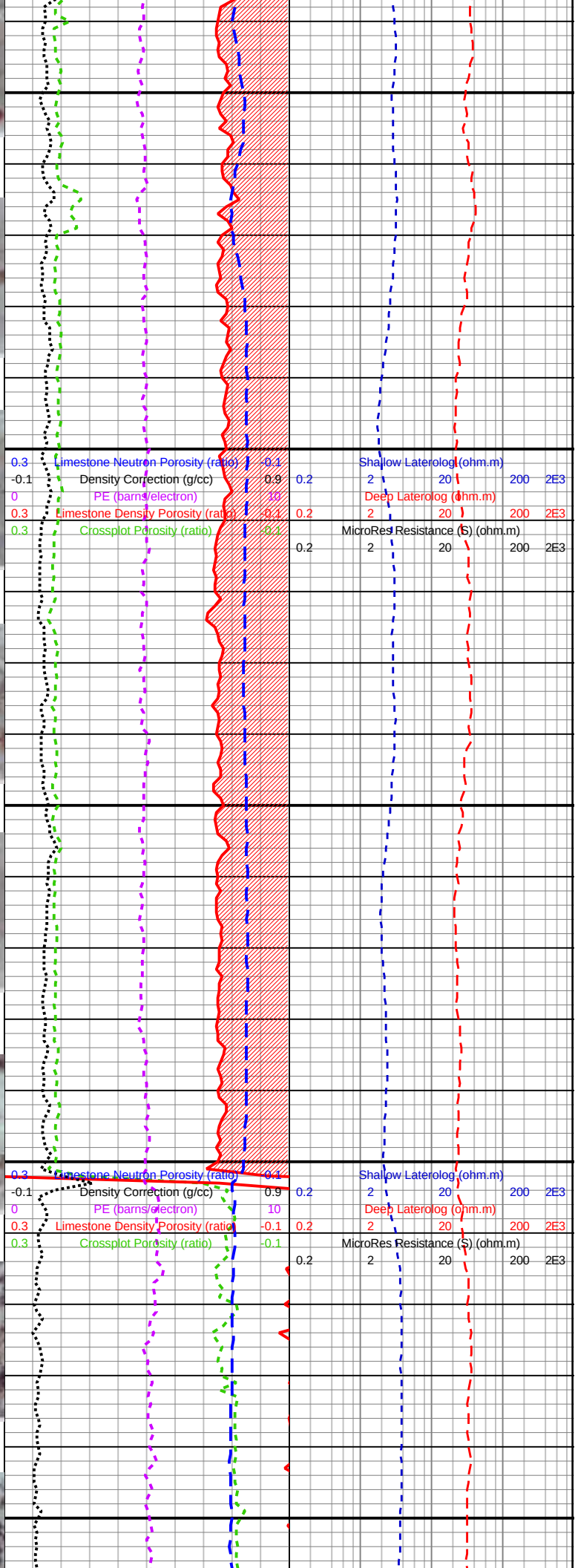
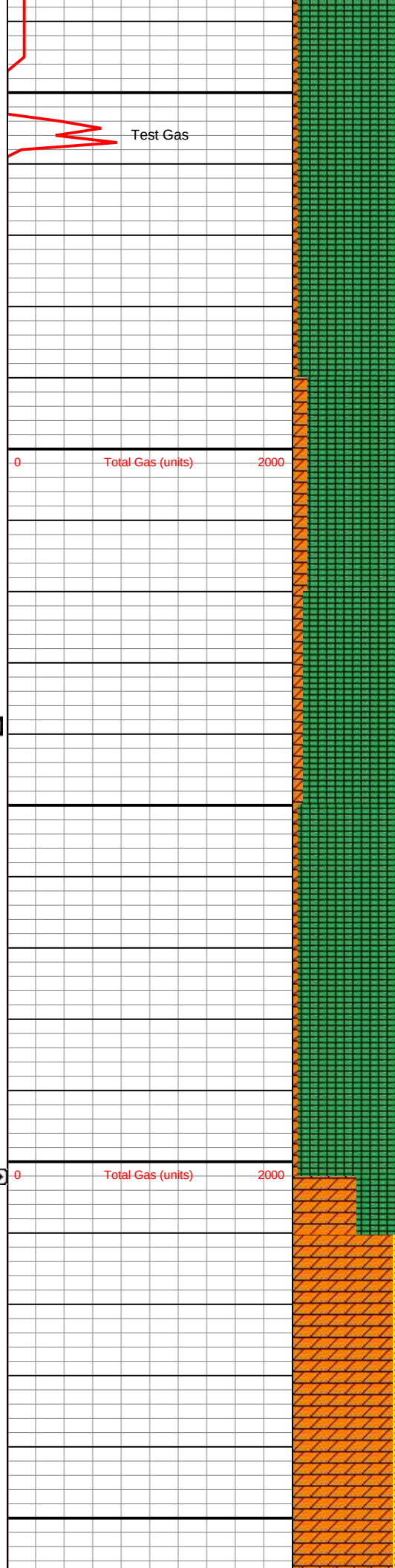
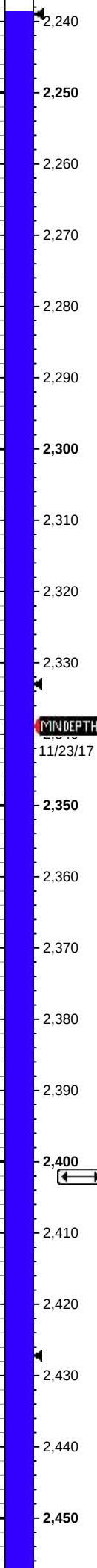
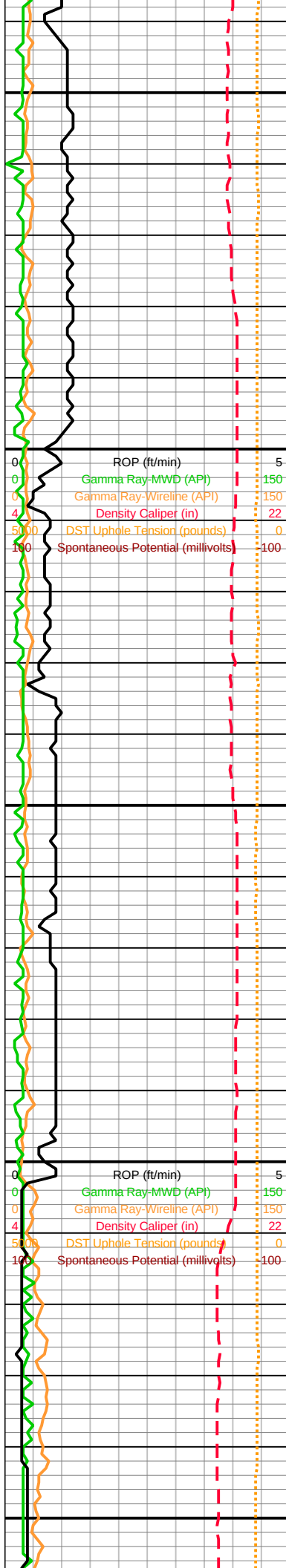
MD: 2,370'
INC: 4.1°
AZM: 92.8°
TVD: 2,369.43'
VS: -24'

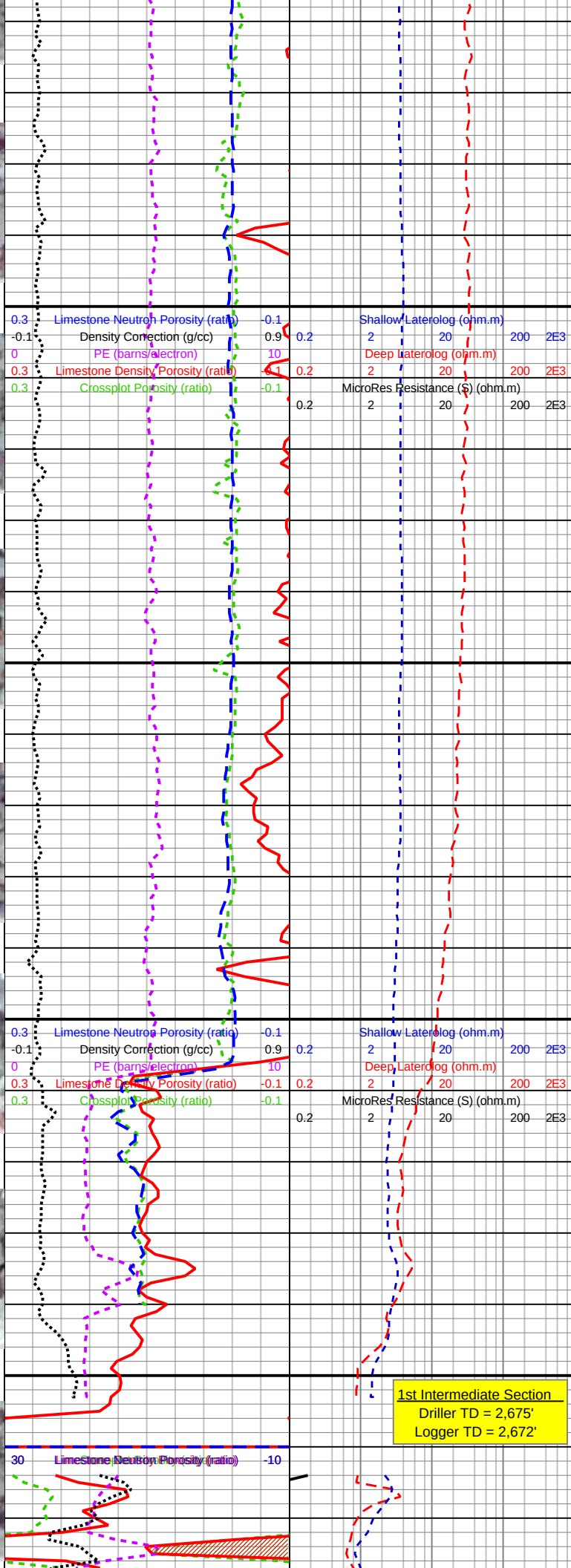
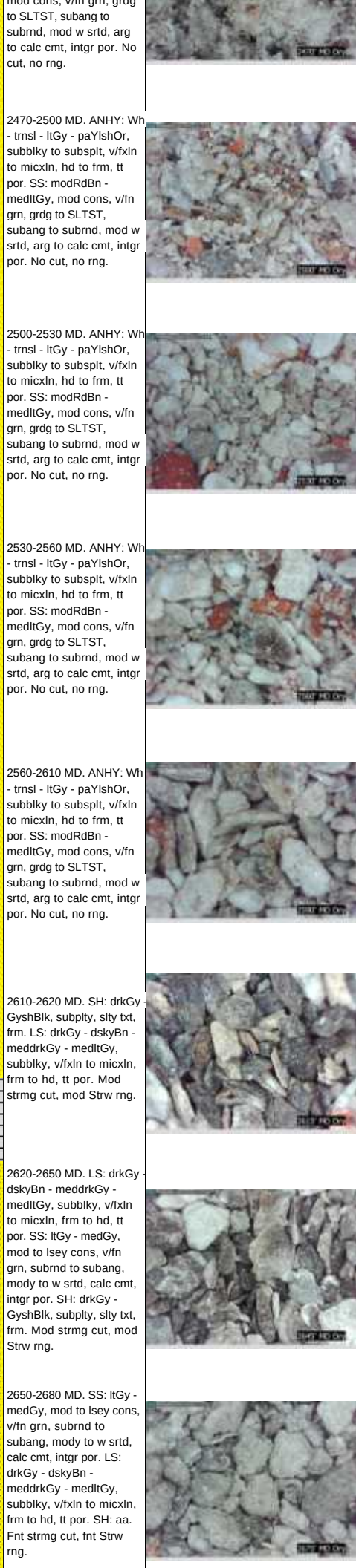
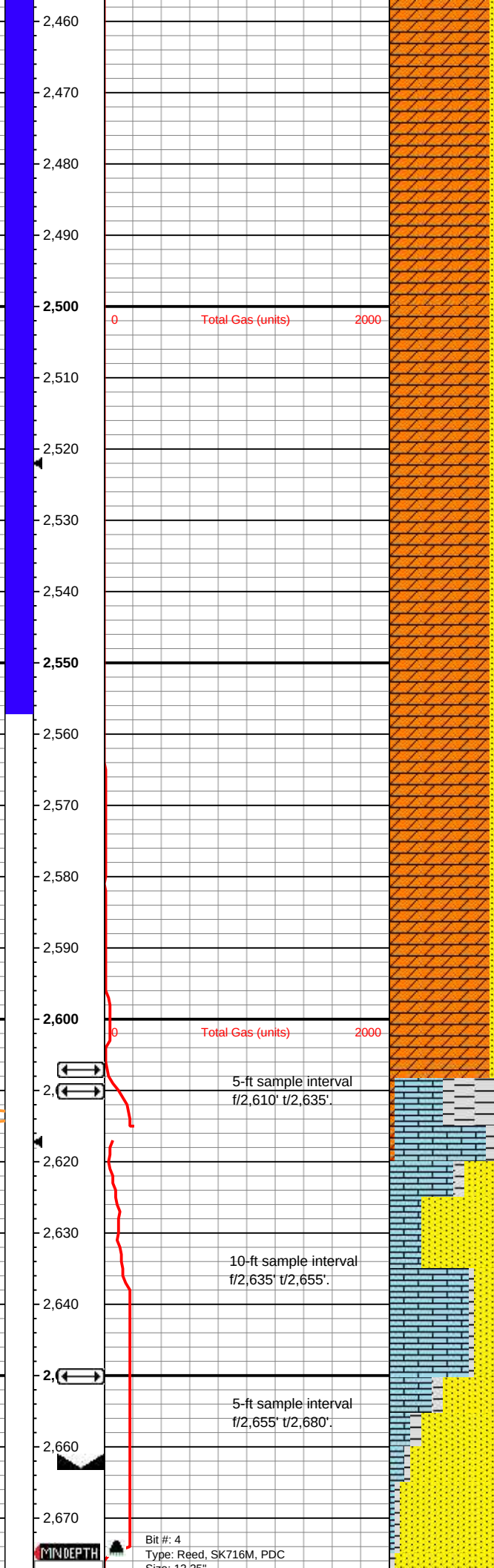
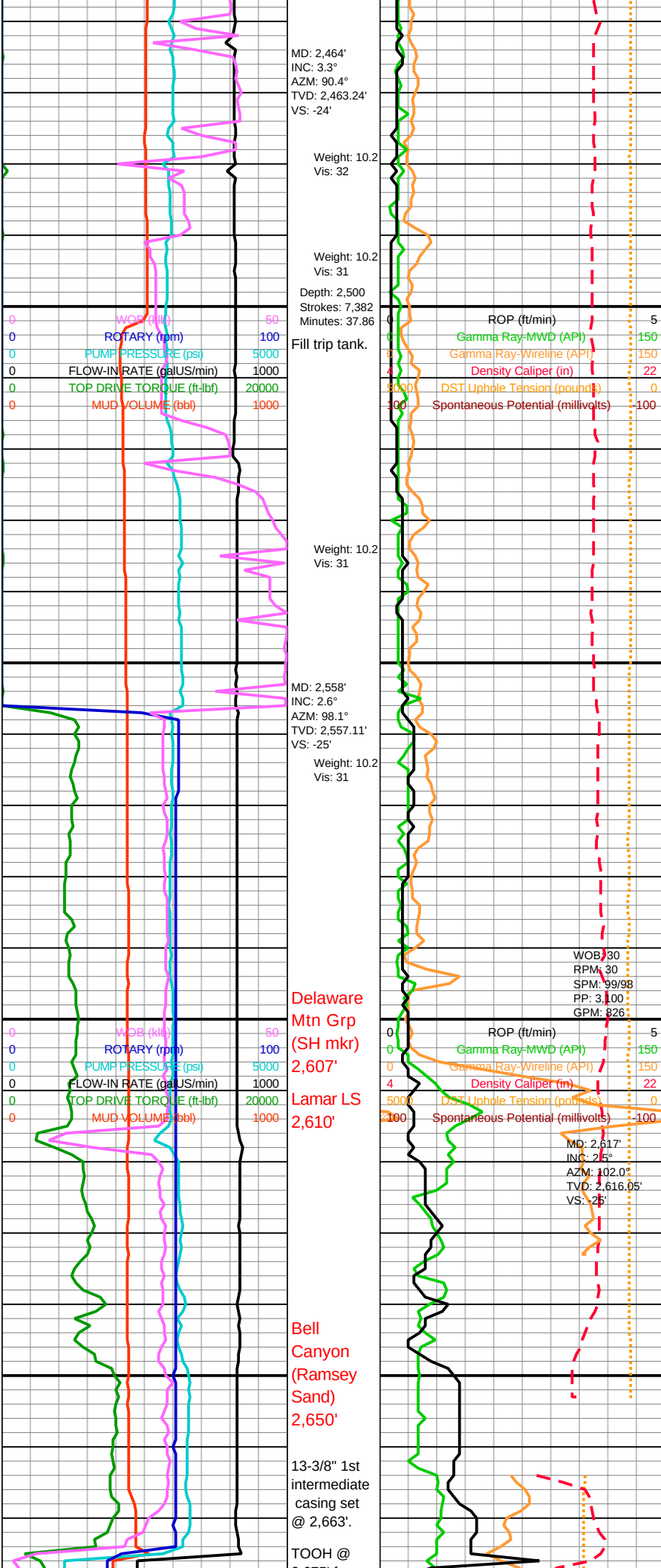
WOB: 11
RPM: 0
SPM: 97/96
PP: 2,722
GPM: 808

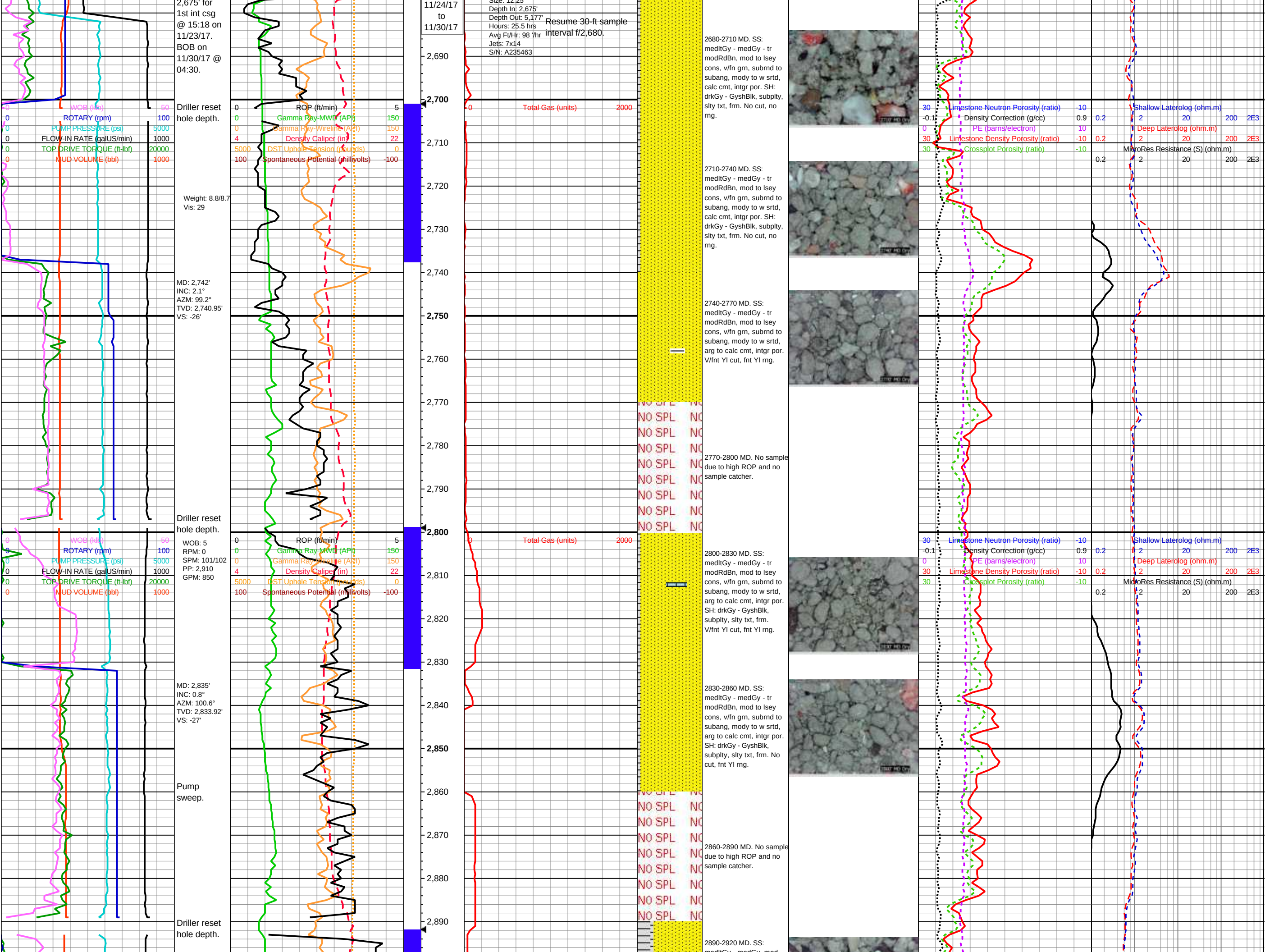
Base Salt
2,402'

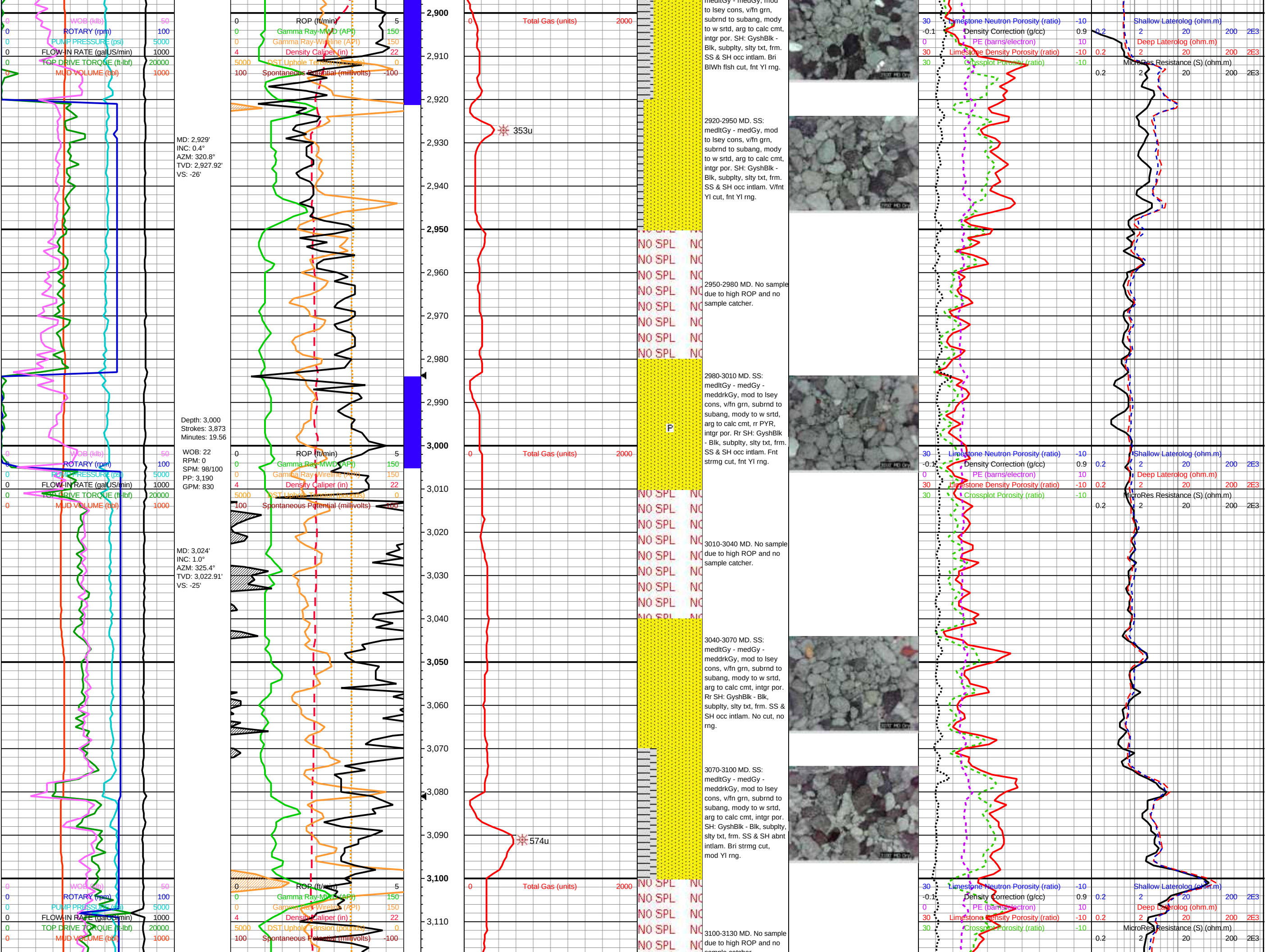
Transfer
f/active
t/slug:
build sweep.

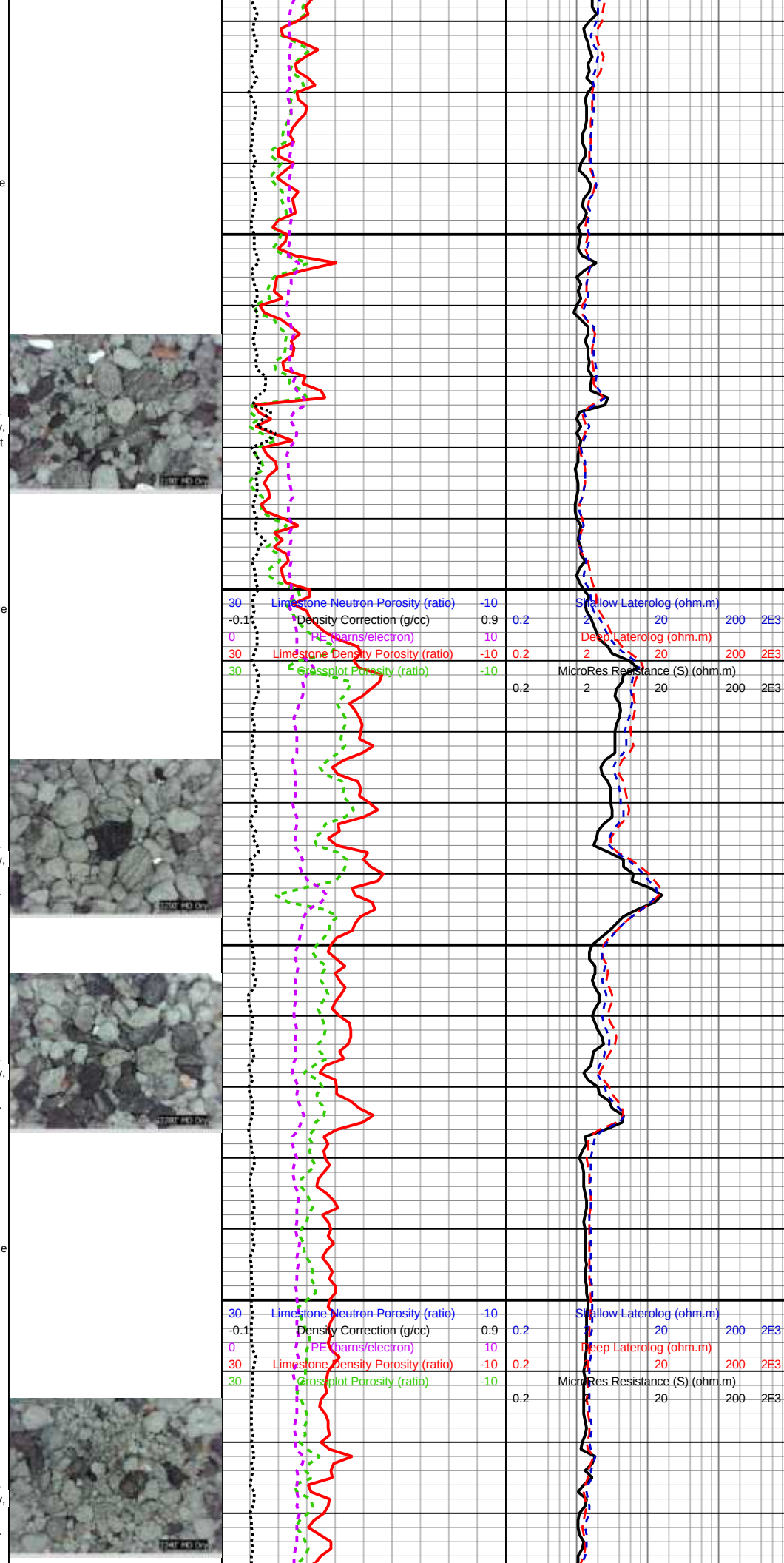
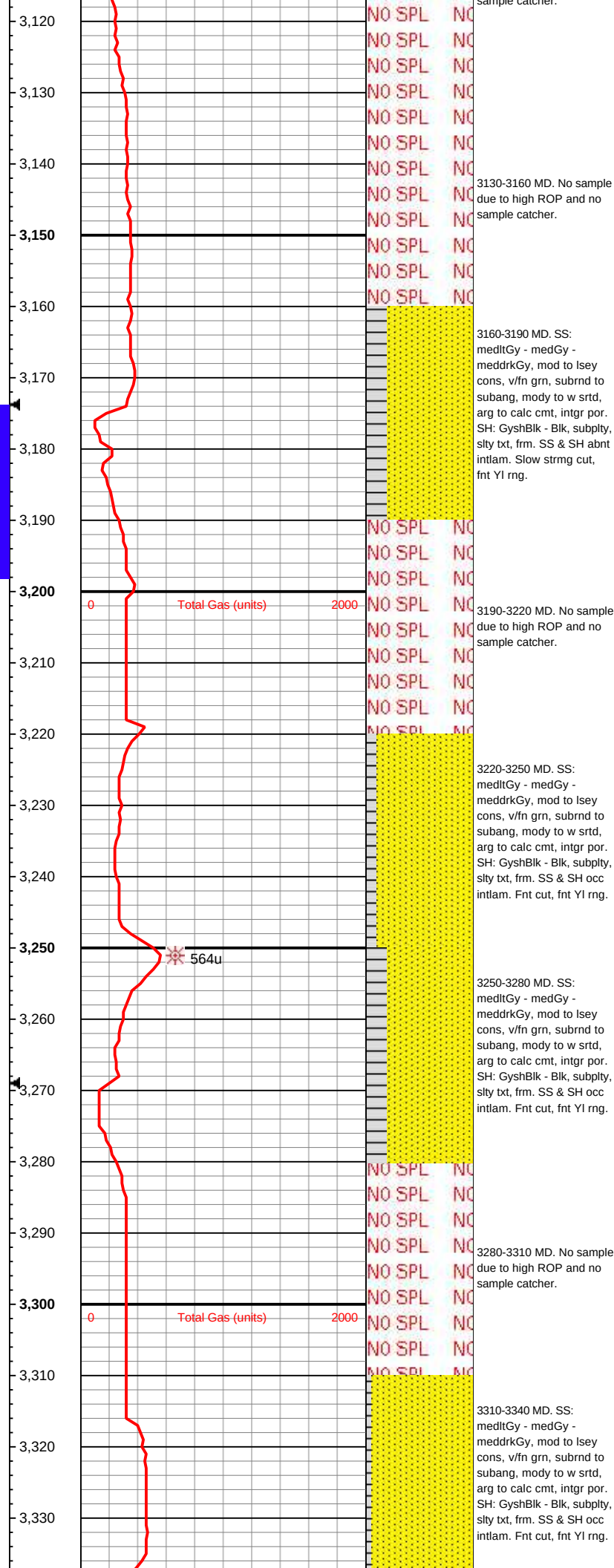
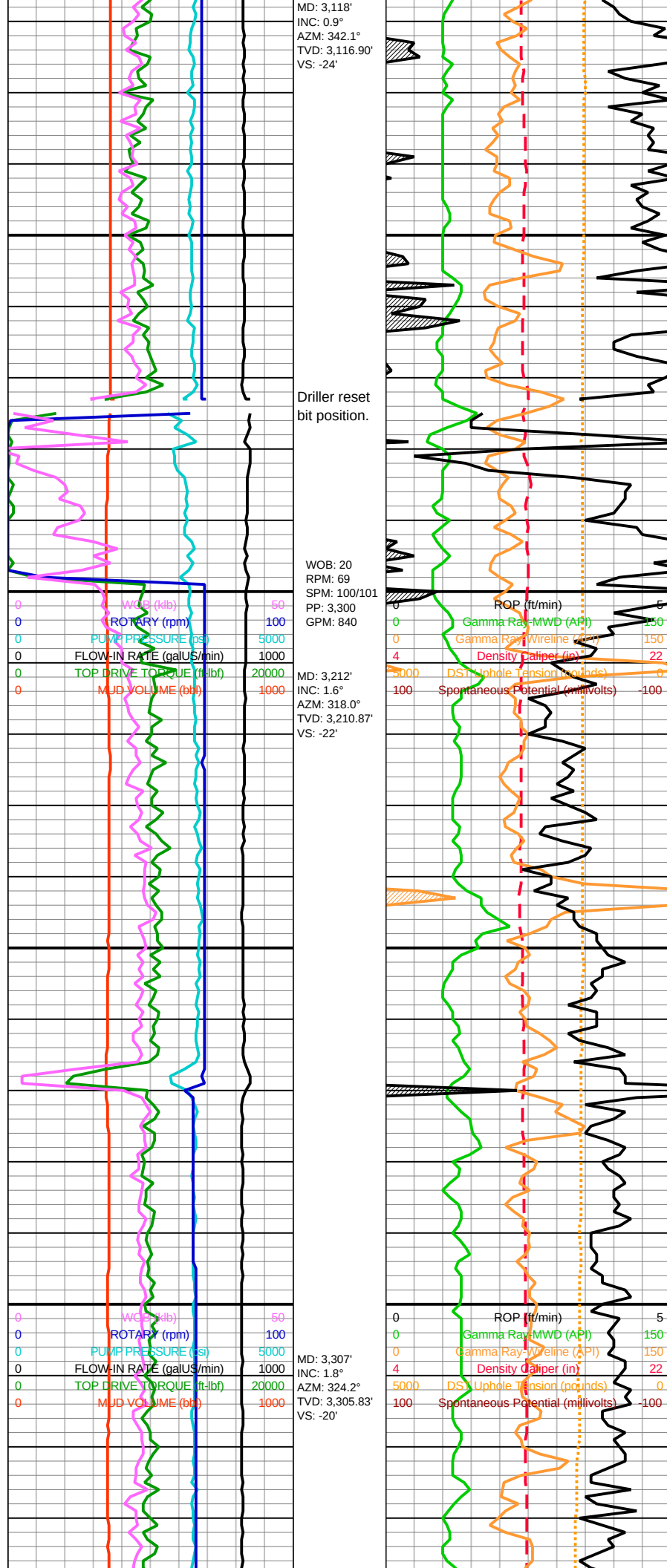
Pump 20
bbl sweep.

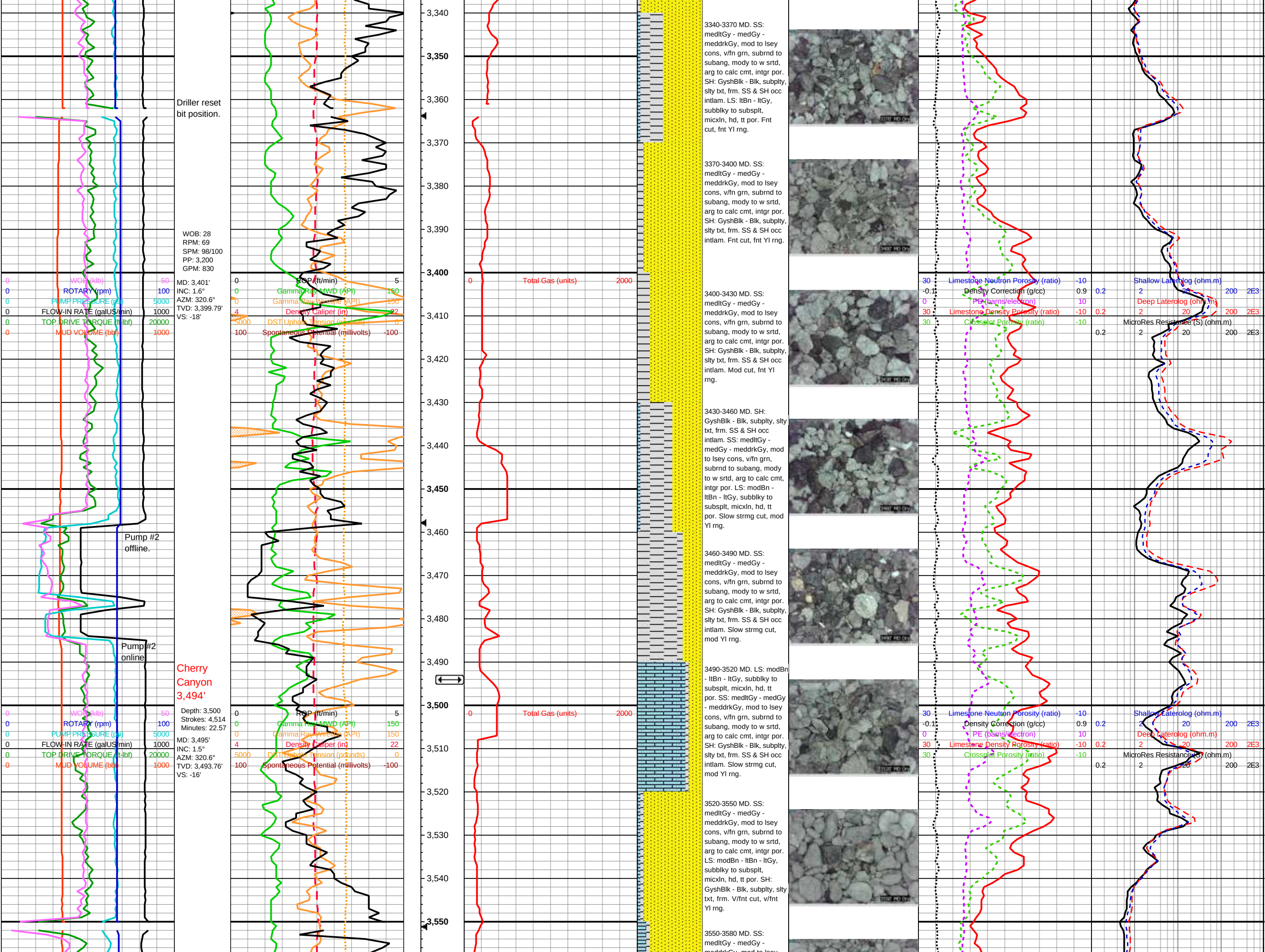


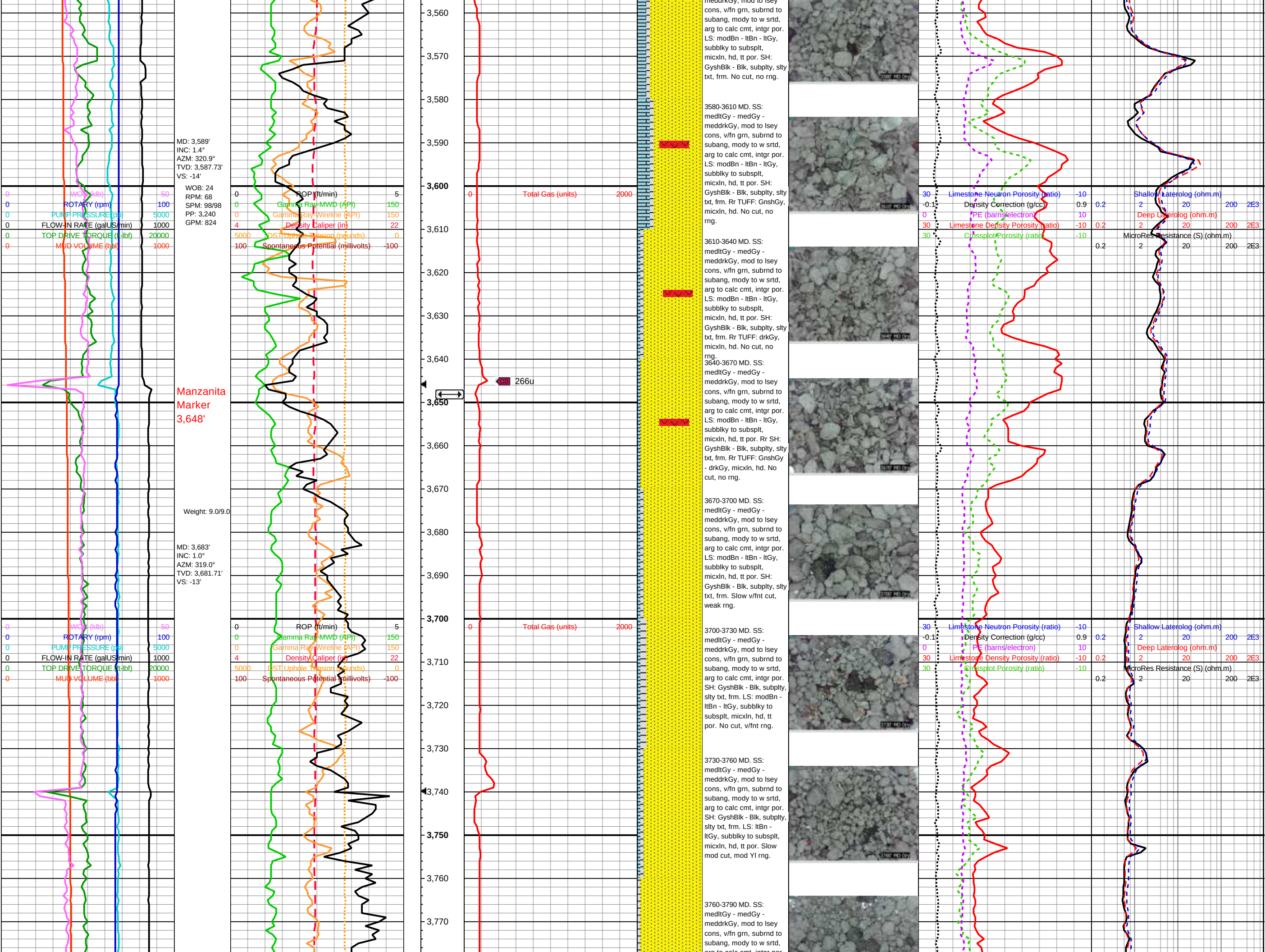


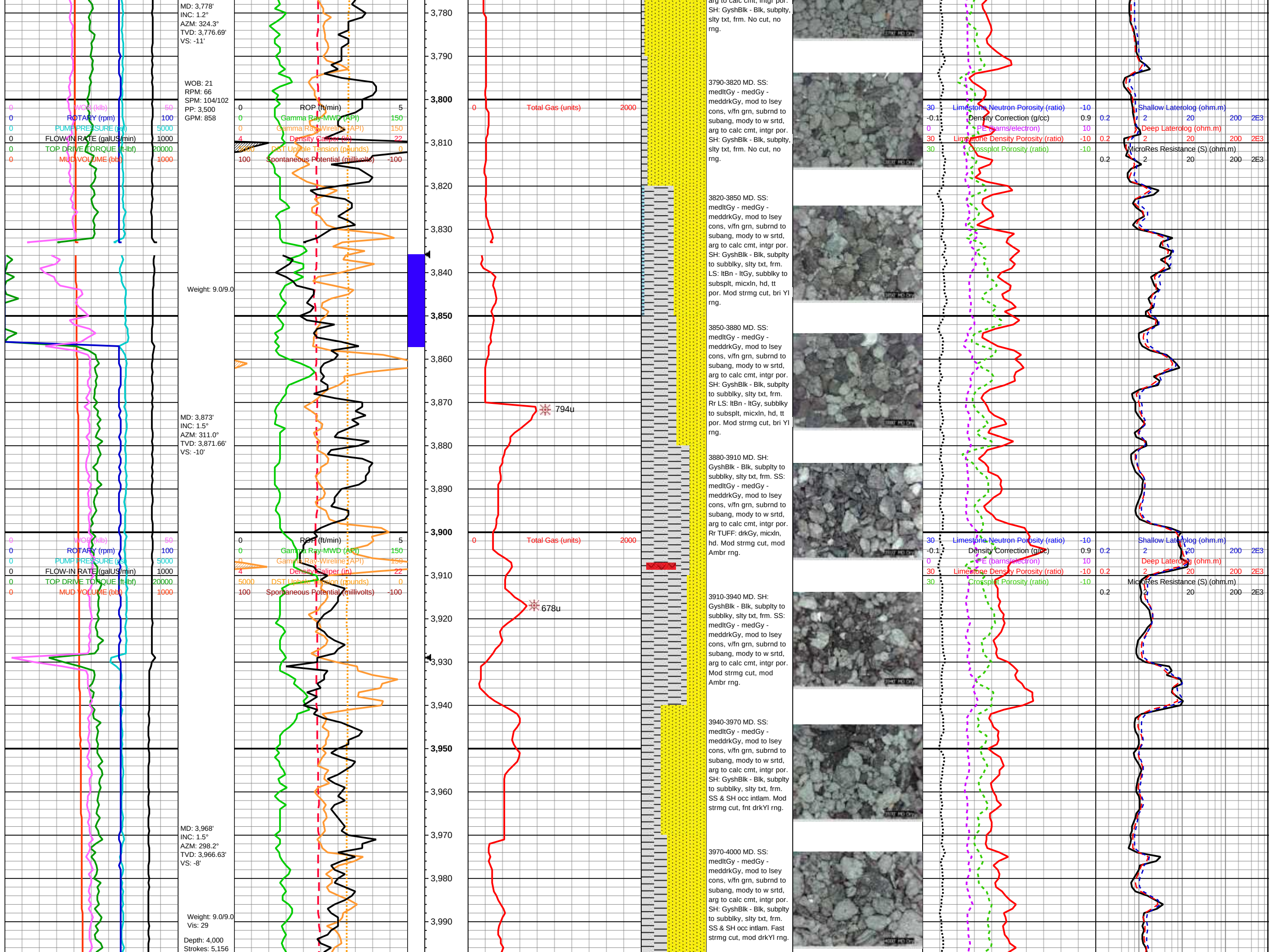


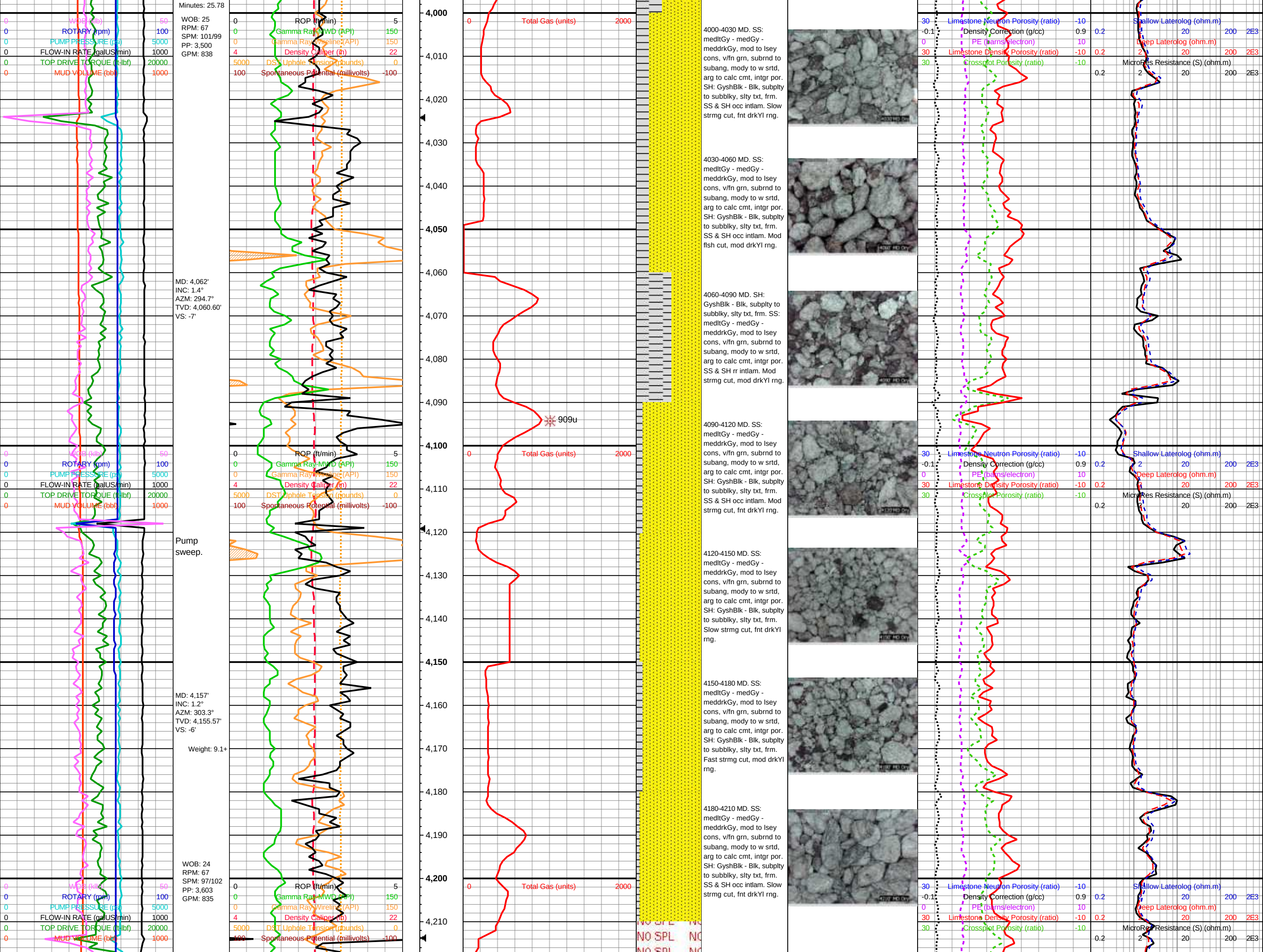


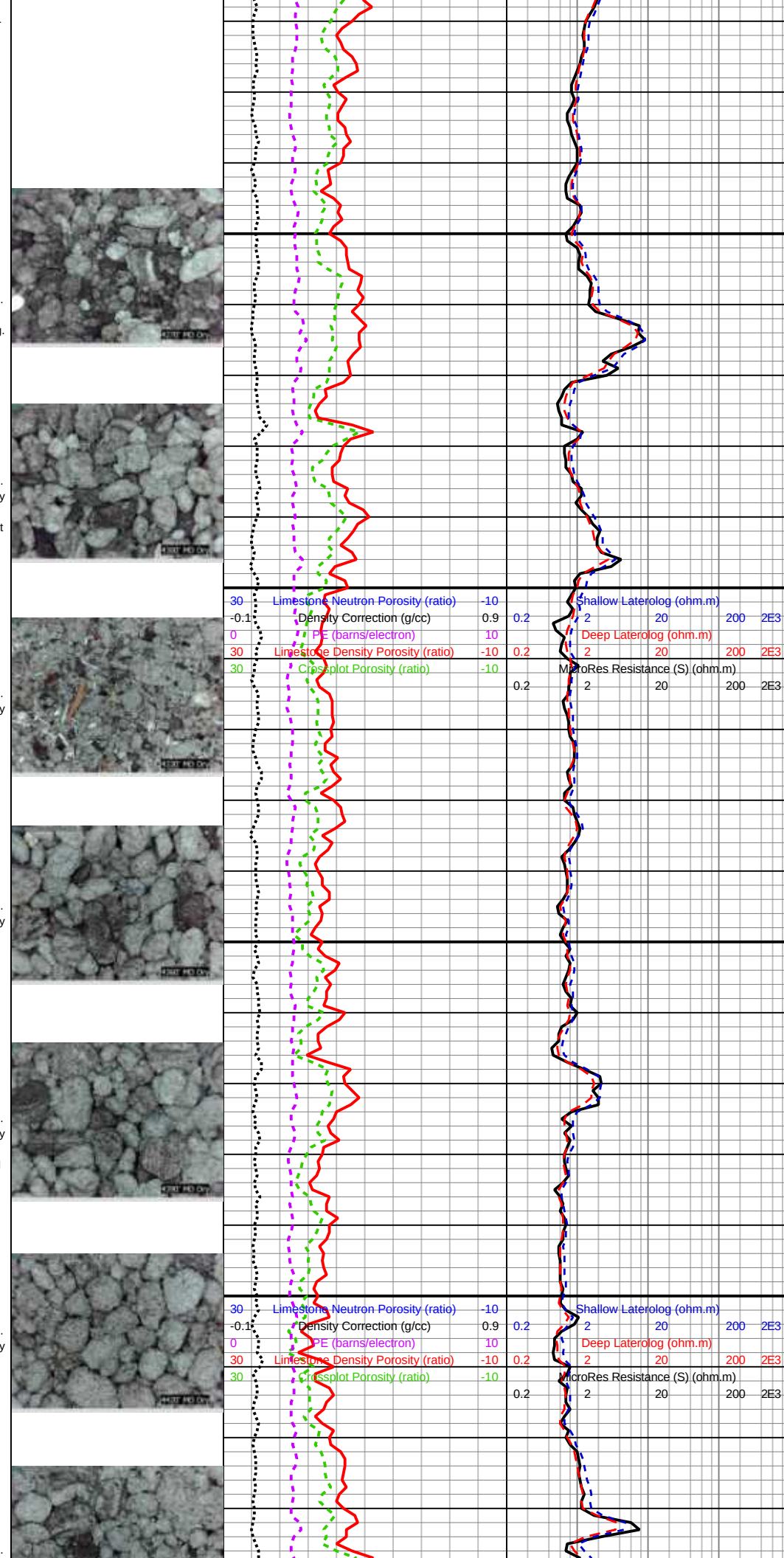
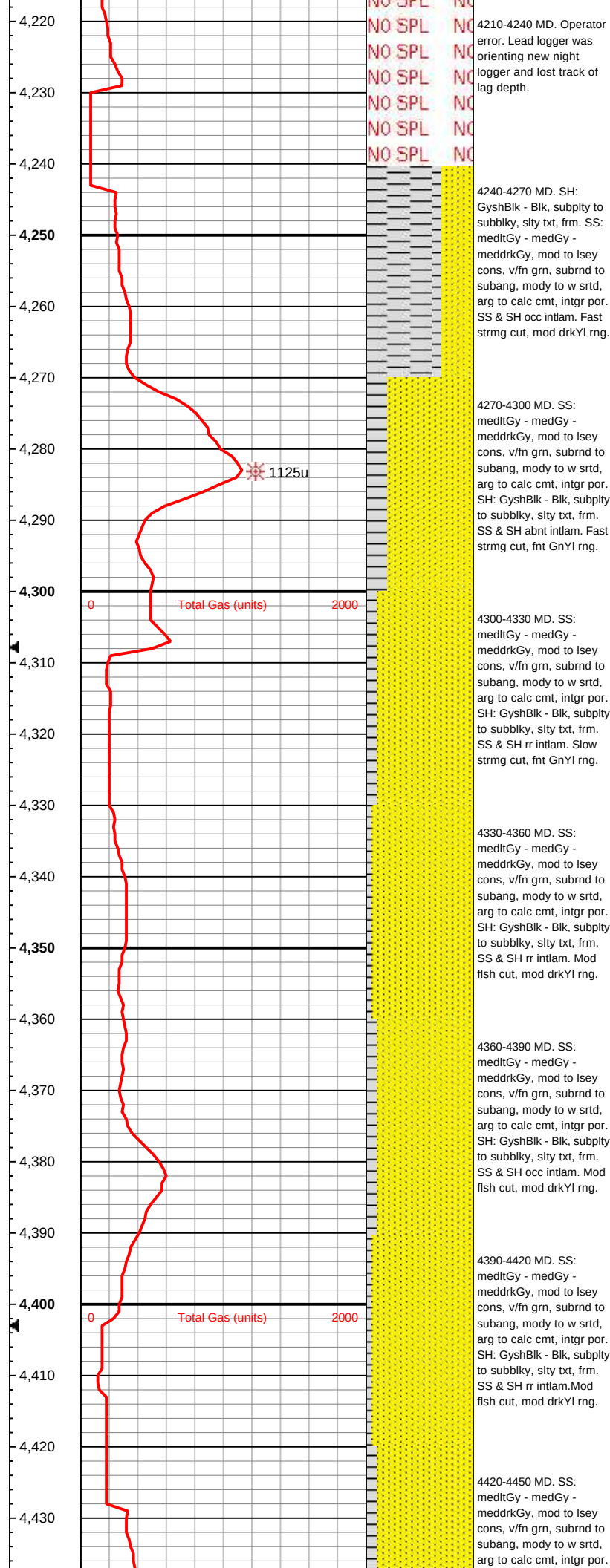
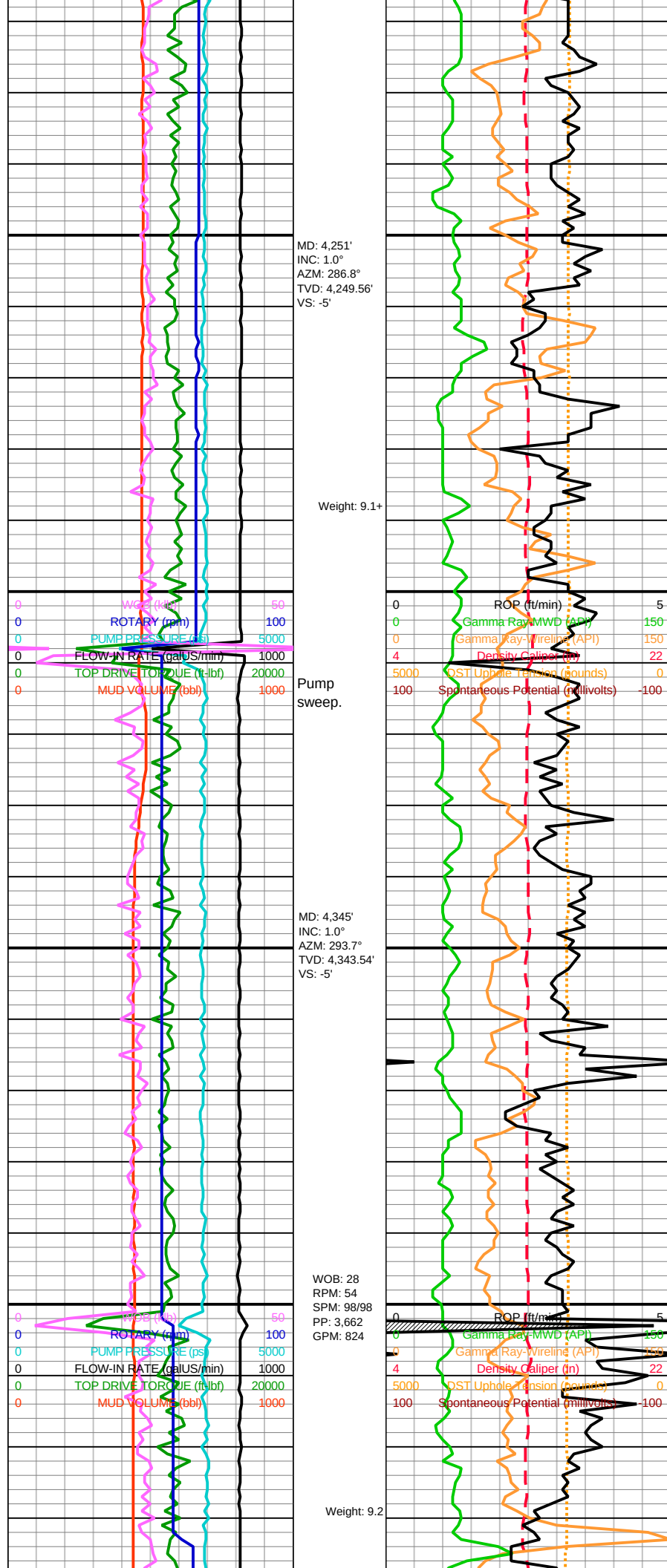


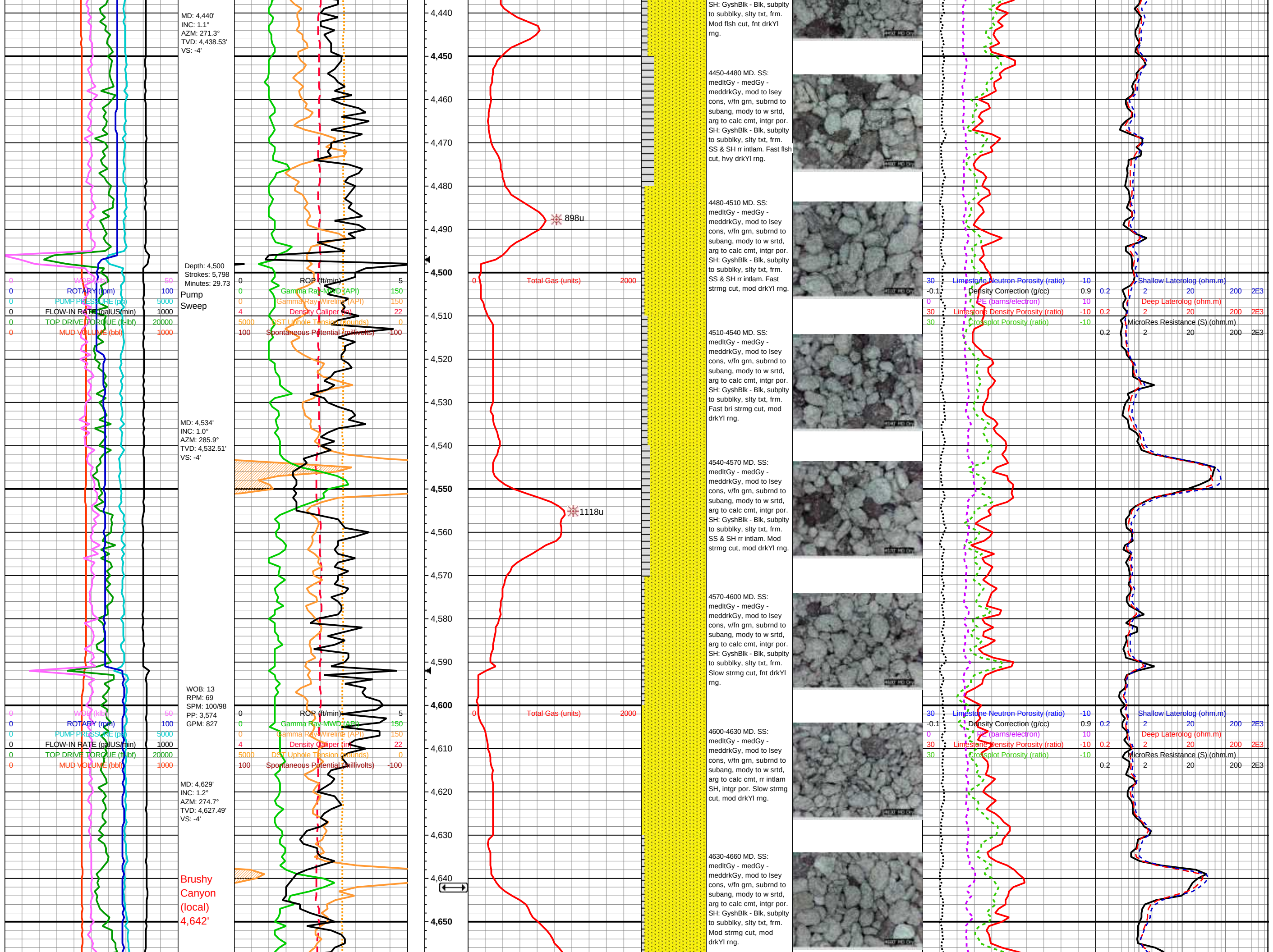


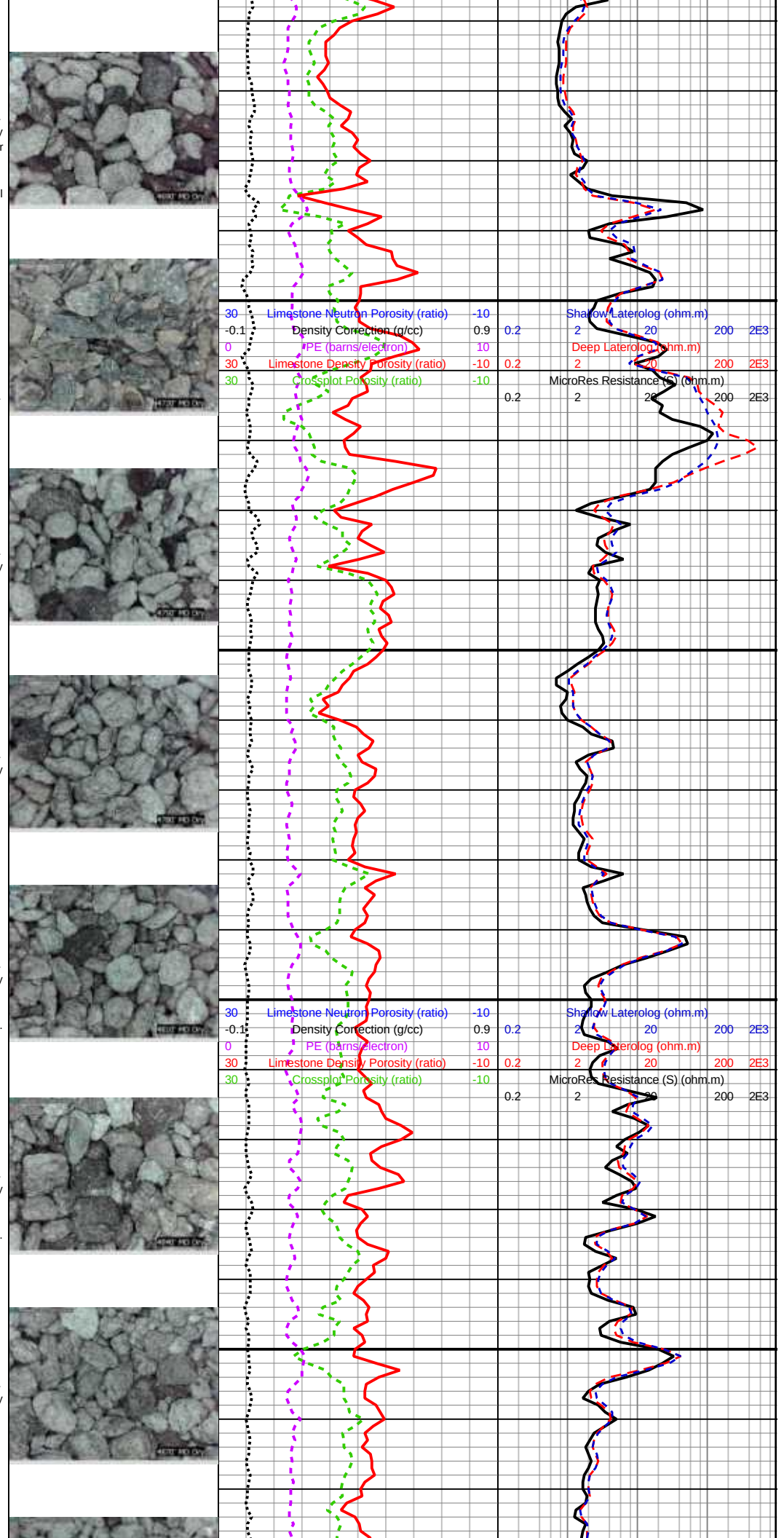
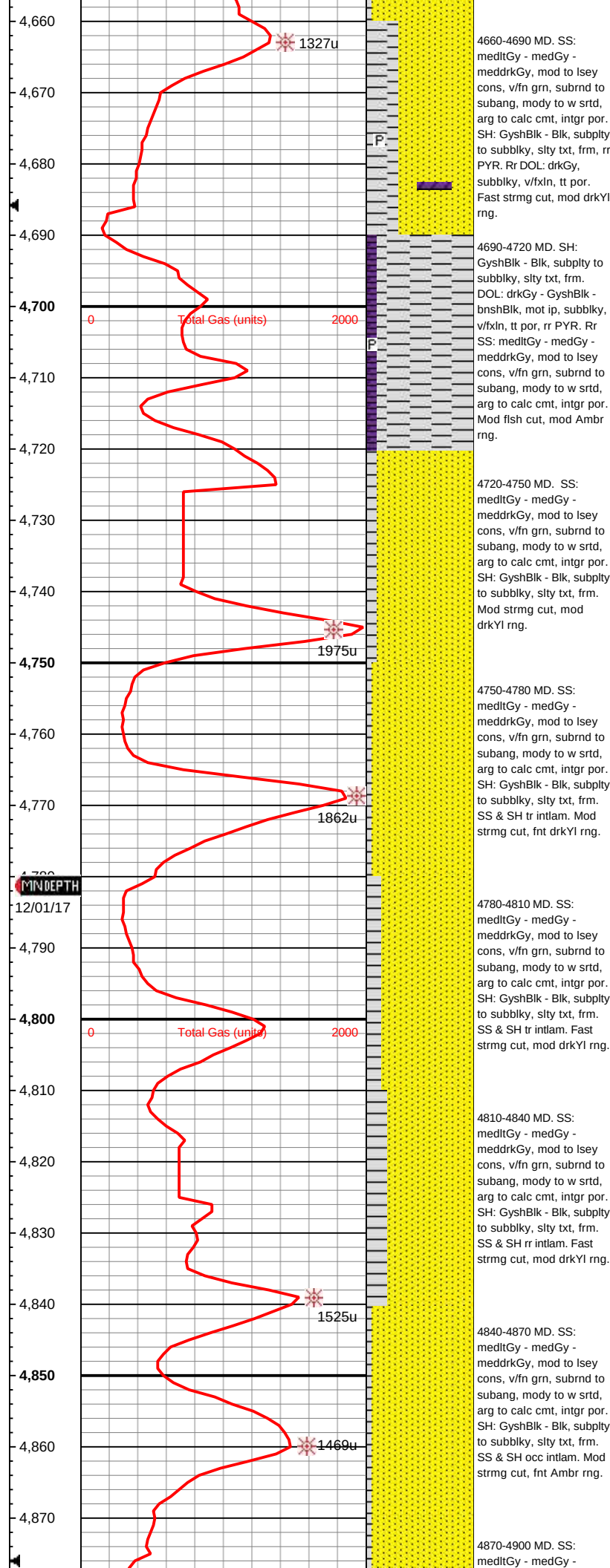
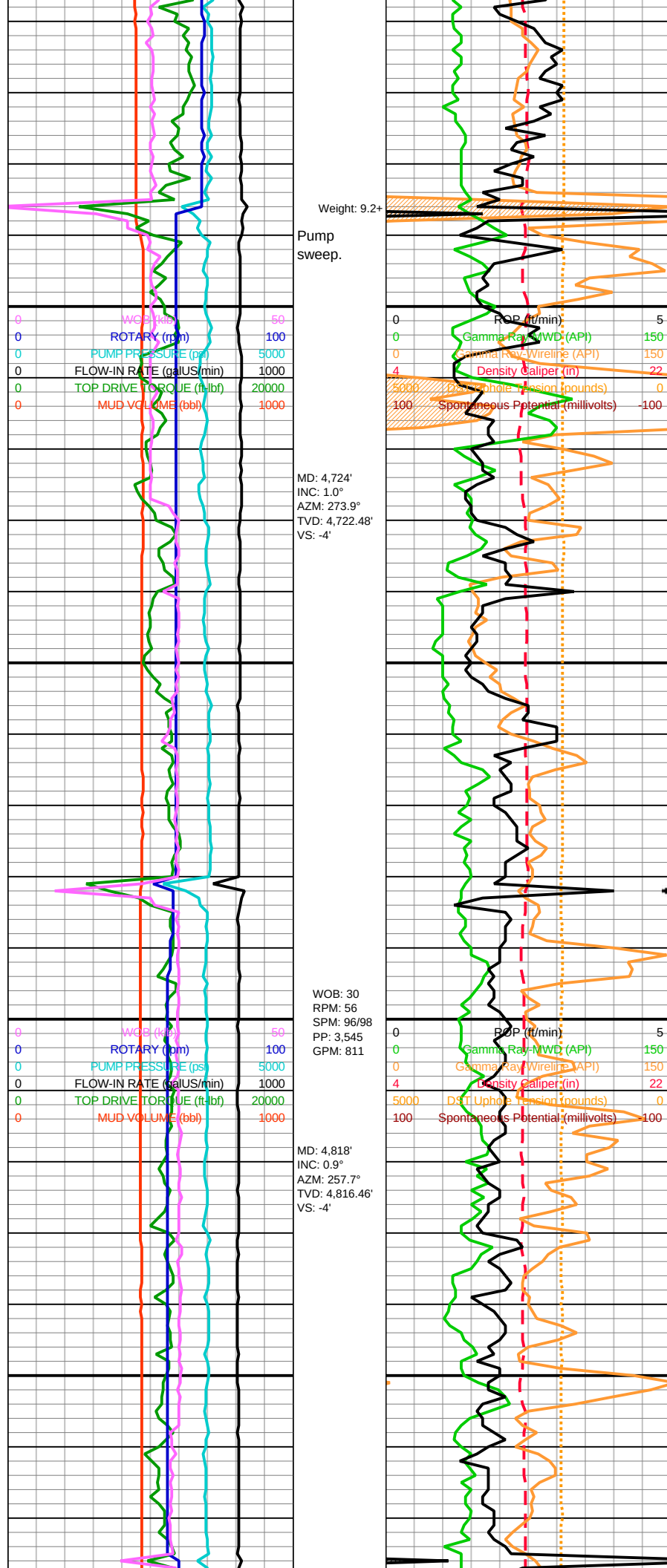


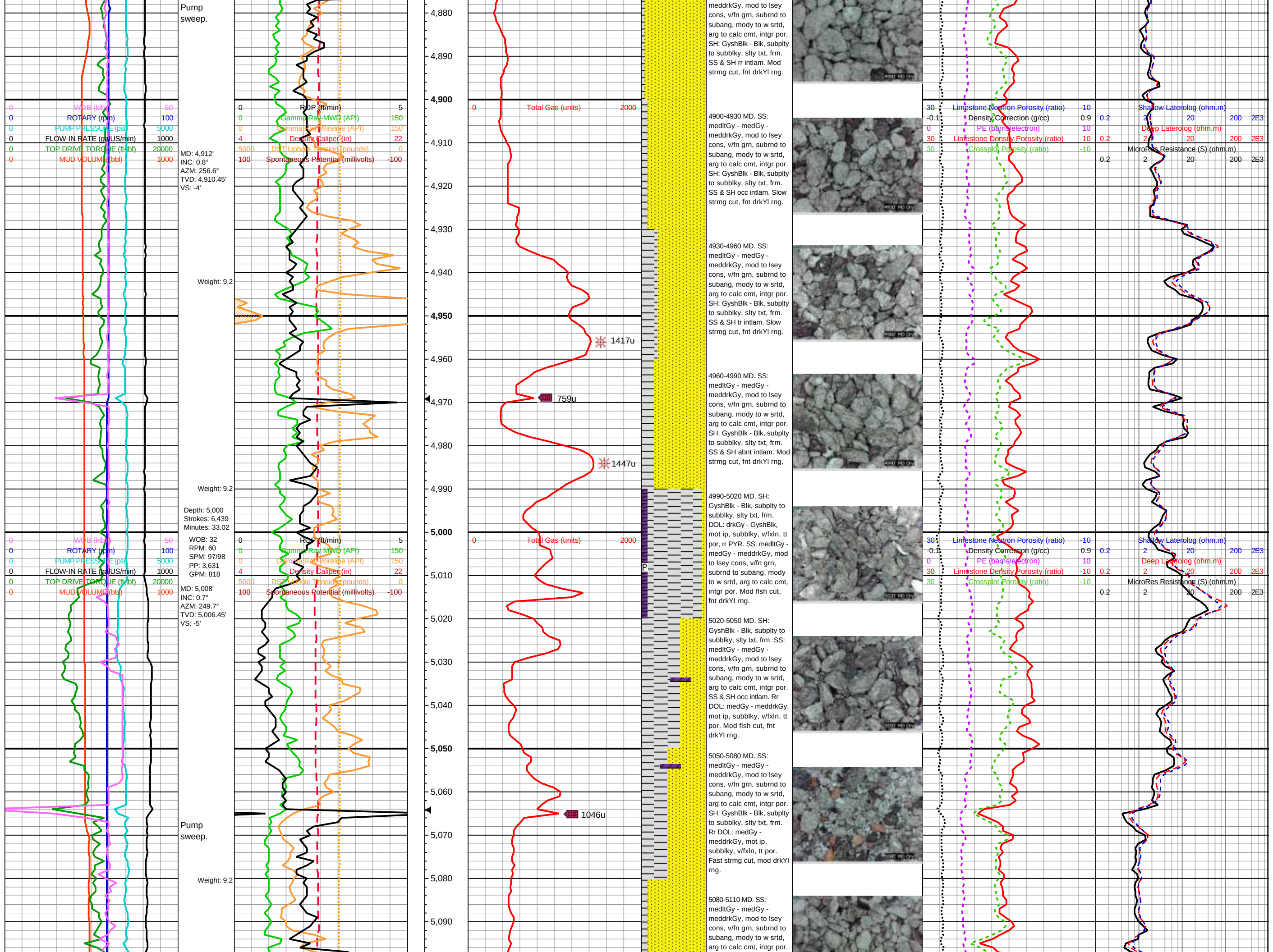


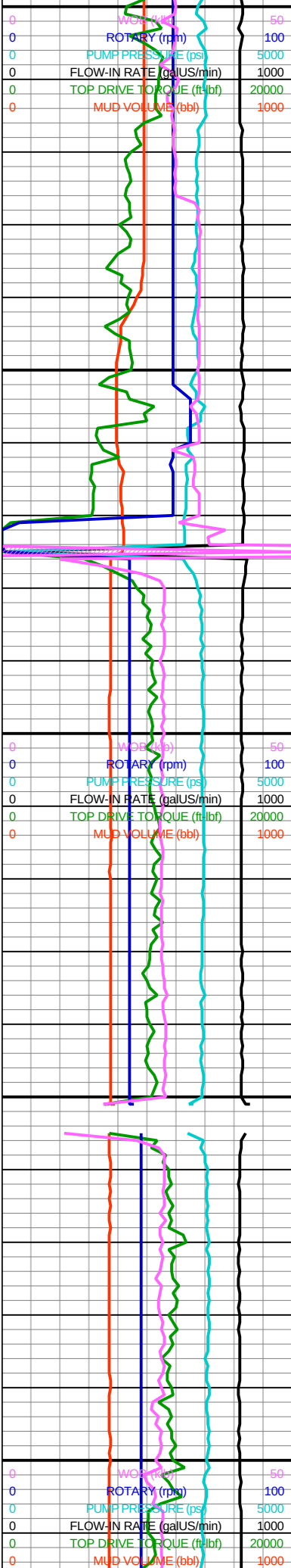












MD: 5,103'
INC: 0.8°
AZM: 272.8°
TVD: 5,101.44'
VS: -5'

Transfer
880 bbl
f/active
t/storage.

Pump
sweep.

Weight: 9.1+

TOOH @
5,177' for
new bit on
12/01/17
@ 06:10.
BOB on
12/01/17
@ 13:46.

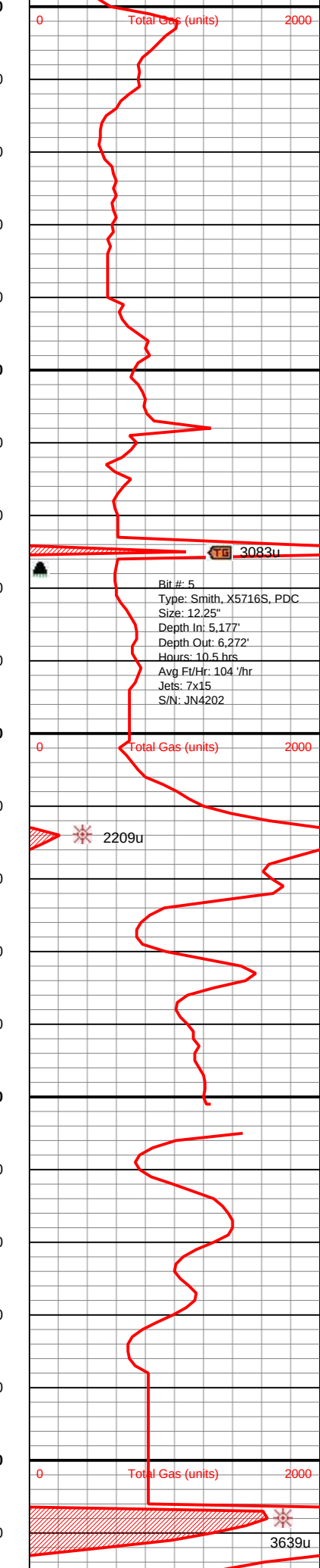
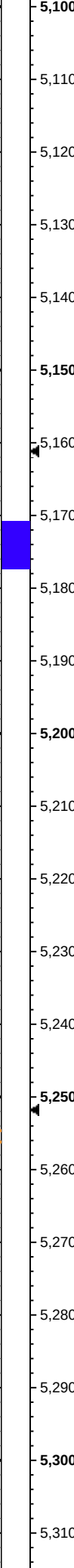
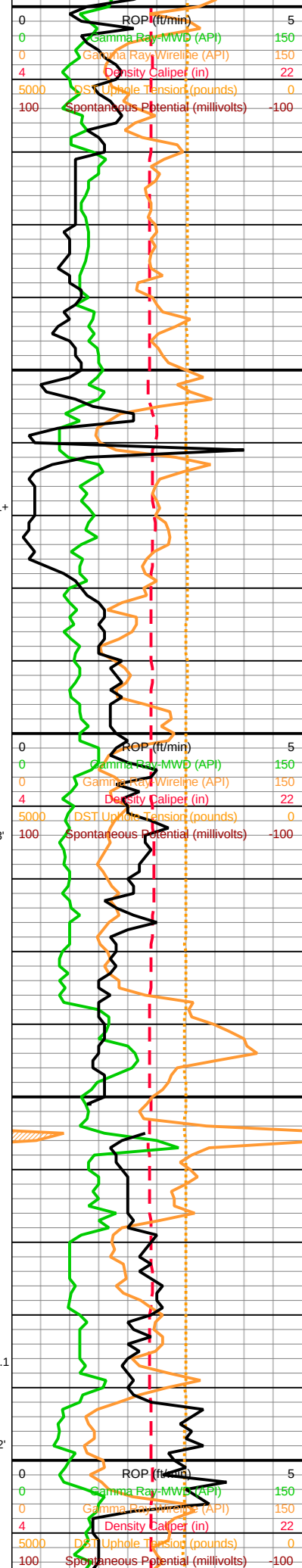
WOB: 29
RPM: 44
SPM: 99/100
PP: 3,500
GPM: 830

MD: 5,198'
INC: 0.9°
AZM: 267.0°
TVD: 5,196.43'
VS: -5'

Driller reset
hole depth.

Weight: 9.1
Vis: 28

MD: 5,292'
INC: 0.7°
AZM: 250.5°
TVD: 5,290.42'
VS: -5'



5110-5140 MD. SS:
medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SH: GyshBlk
- Blk, subply to subblky,
slyt txt, frm. Fast strmg
cut, mod drkYl rng.

5140-5170 MD. SS:
medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SH: GyshBlk
- Blk, subply to subblky,
slyt txt, frm. SS & SH
rr intlam. Fast strmg
cut, mod drkYl rng.

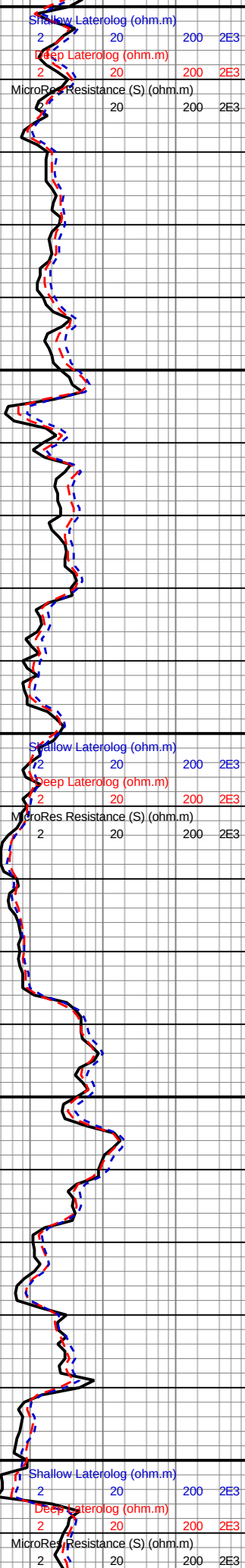
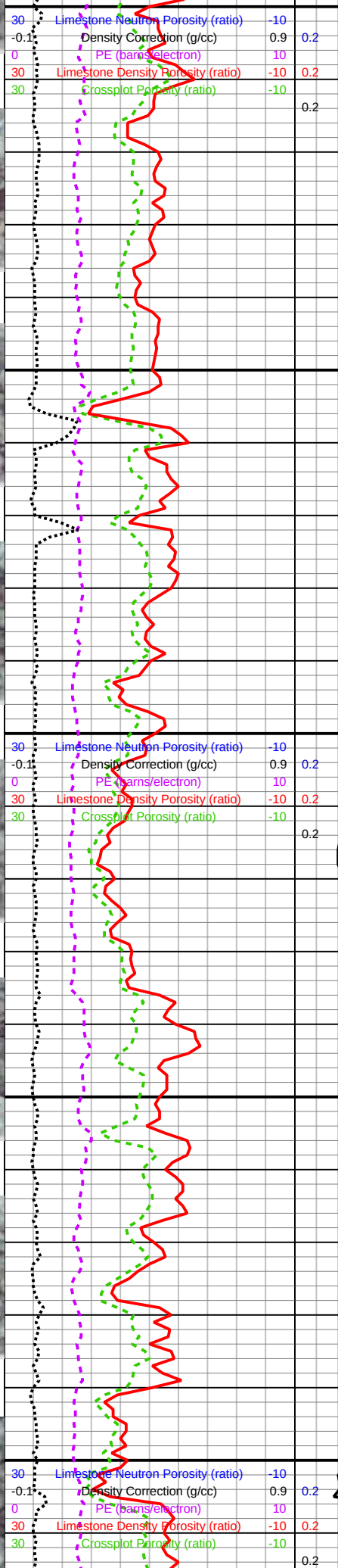
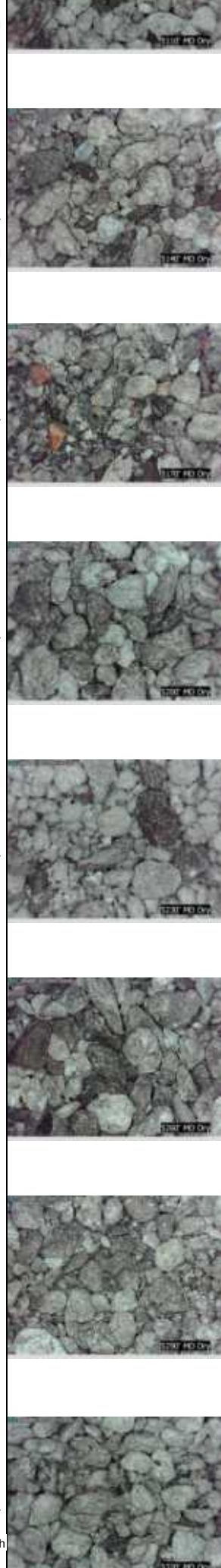
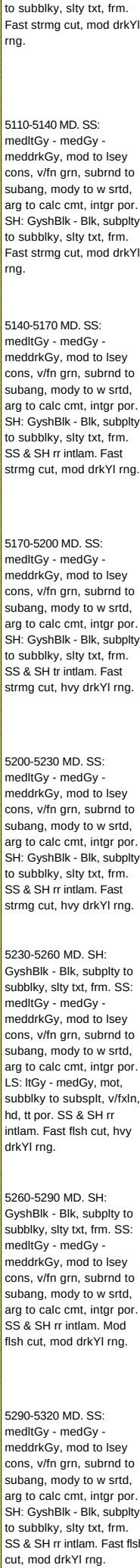
5170-5200 MD. SS:
medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SH: GyshBlk
- Blk, subply to subblky,
slyt txt, frm. SS & SH
rr intlam. Fast strmg
cut, hvy drkYl rng.

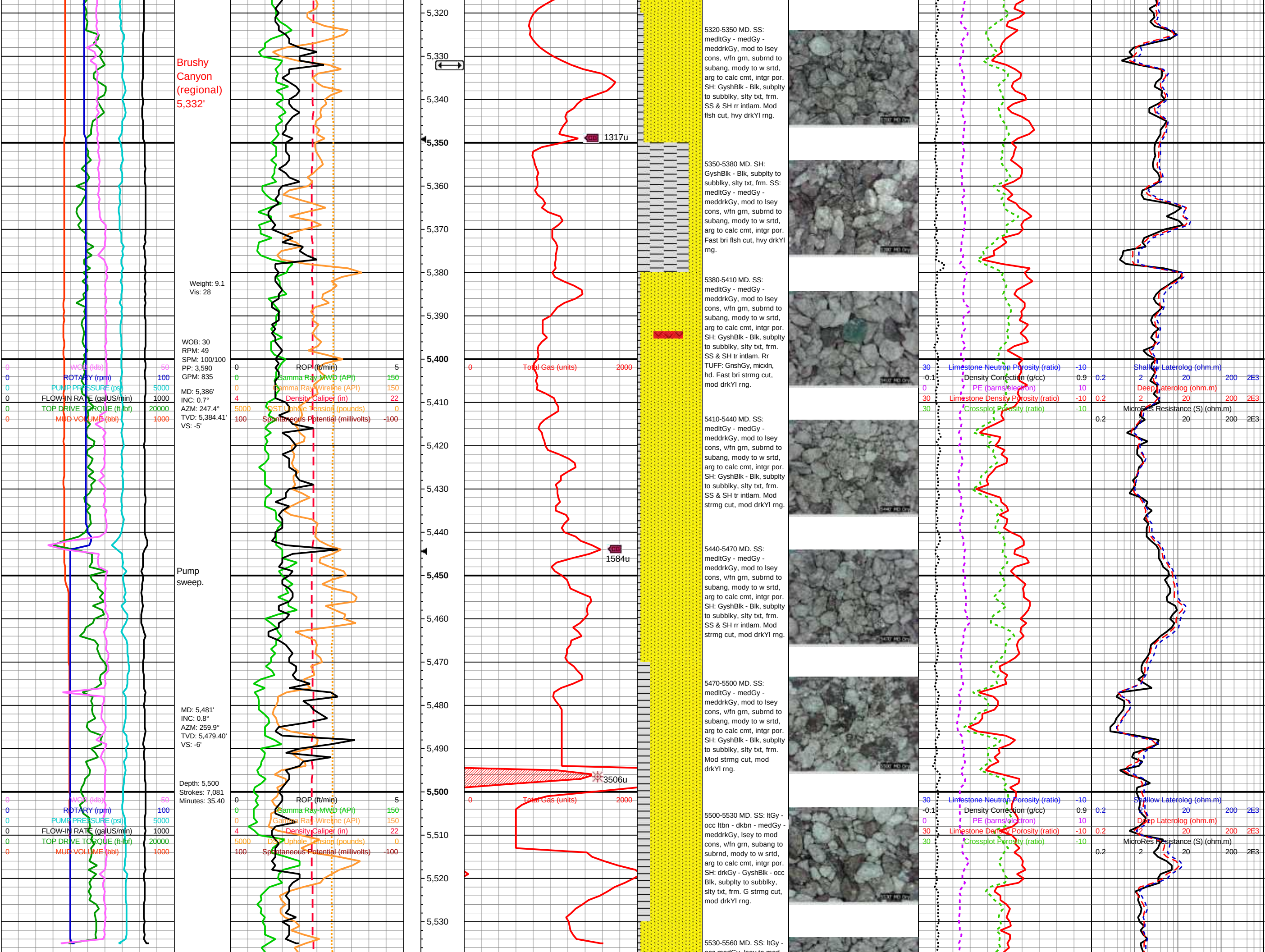
5200-5230 MD. SS:
medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SH: GyshBlk
- Blk, subply to subblky,
slyt txt, frm. SS & SH
rr intlam. Fast strmg
cut, hvy drkYl rng.

5230-5260 MD. SH:
GyshBlk - Blk, subply
to subblky, slyt txt, frm.
SS: medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. LS: ItGy -
medGy, mot, subblky
to subsplt, v/fxln, hd,
tt por. SS & SH rr
intlam. Fast fish cut,
hvy drkYl rng.

5260-5290 MD. SH:
GyshBlk - Blk, subply
to subblky, slyt txt, frm.
SS: medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SS & SH rr
intlam. Mod fish cut,
mod drkYl rng.

5290-5320 MD. SS:
medItGy - medGy -
meddrkGy, mod to lsey
cons, v/fn grn, subrnd
to subang, mody to w
srtd, arg to calc cmt,
intgr por. SH: GyshBlk
- Blk, subply to subblky,
slyt txt, frm. SS & SH
rr intlam. Fast fish
cut, mod drkYl rng.





0

Limestone Neutron Porosity (ratio)

-10

-0.1

Density Correction (g/cc)

0.9

0.2

0

PE (barns/electron)

10

30

Limestone Density Porosity (ratio)

-10

0.2

30

Crossplot Porosity (ratio)

-10

0.2

Shallow Laterolog (ohm.m)

2

20

200

2E3

Deep Laterolog (ohm.m)

2

20

200

2E3

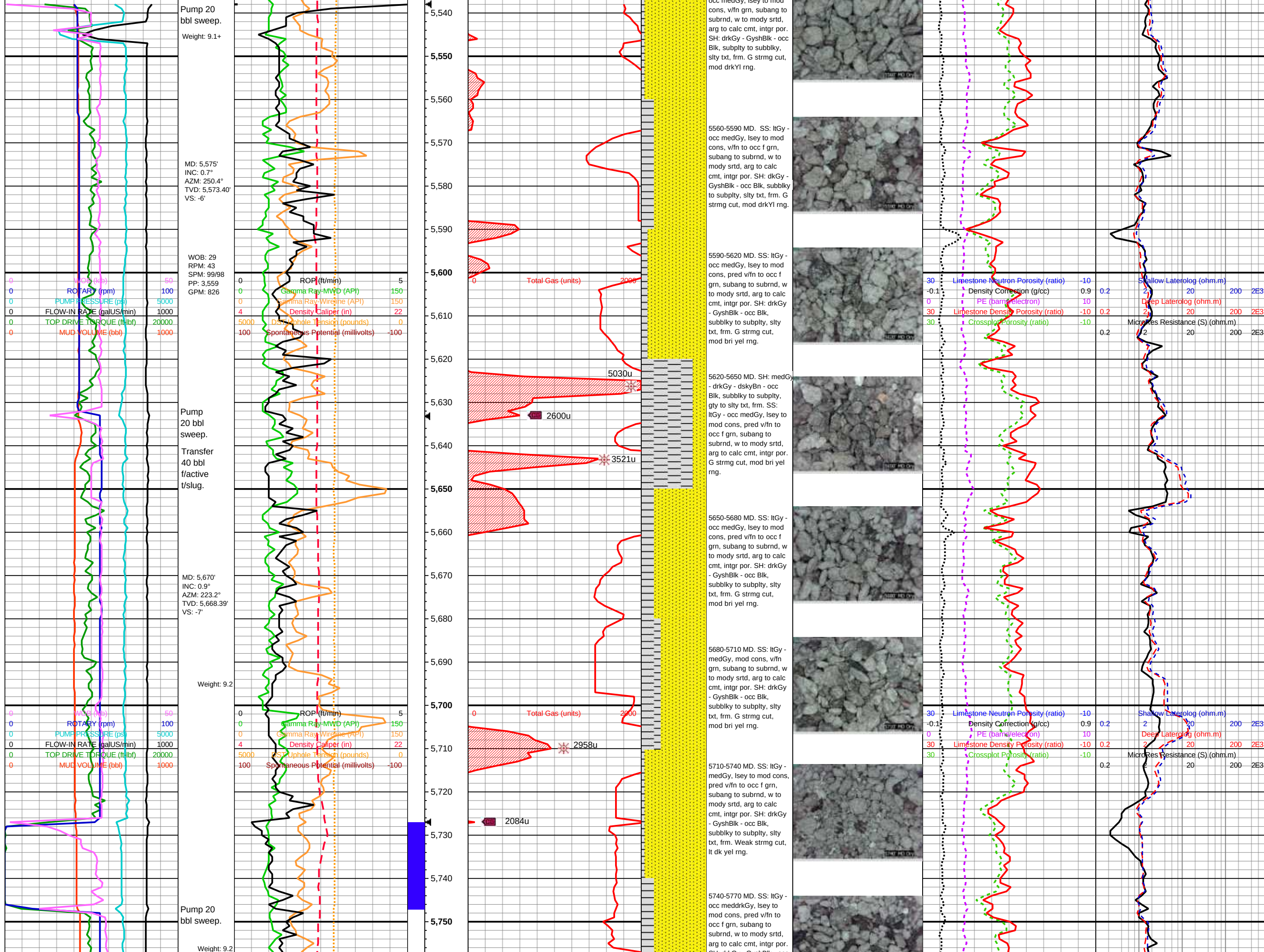
MicroRes Resistance (S) (ohm.m)

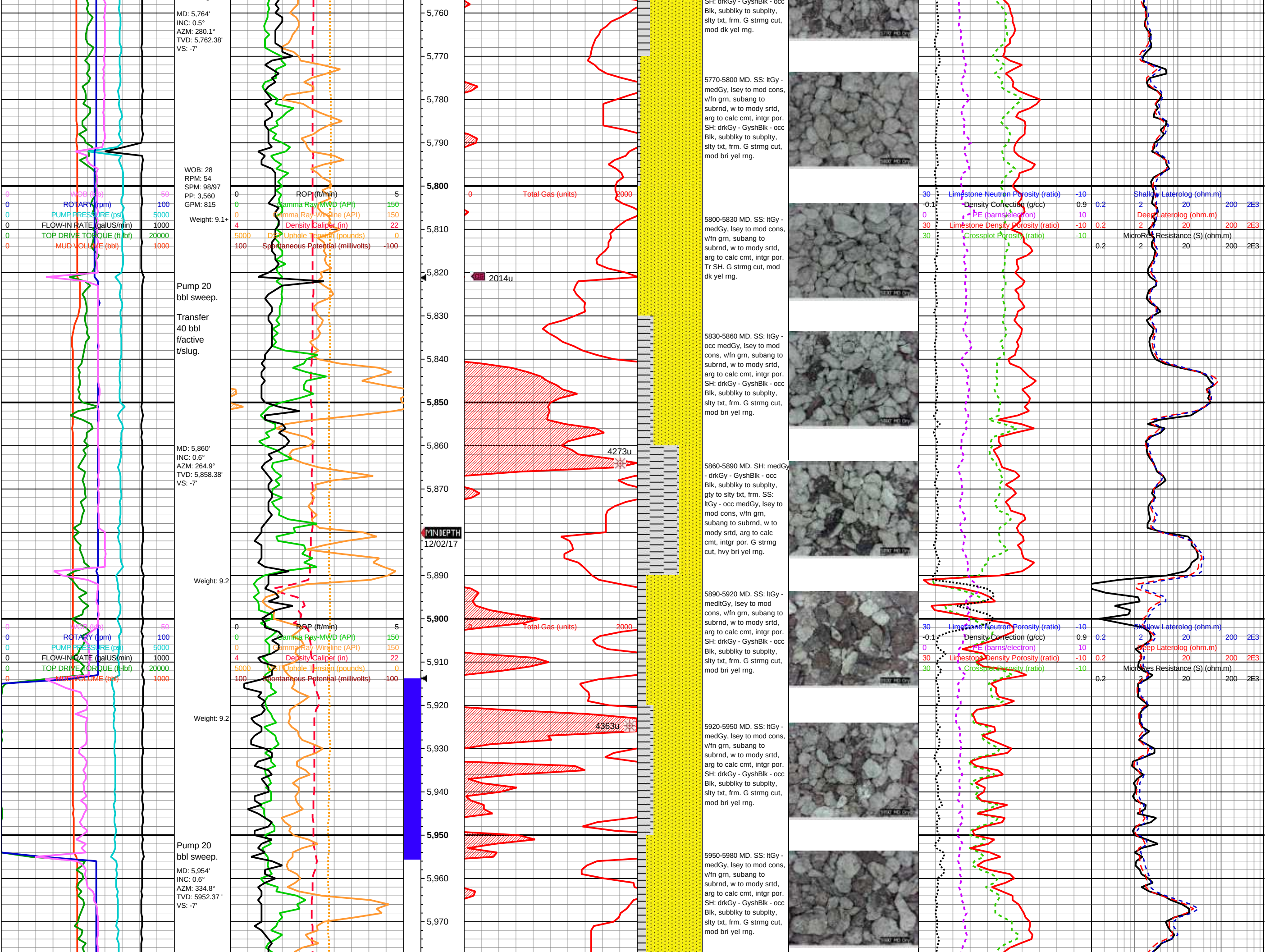
2

20

200

2E3





5,760

5,770

5,780

5,790

5,800

5,810

5,820

5,830

5,840

5,850

5,860

5,870

5,880

5,890

5,900

5,910

5,920

5,930

5,940

5,950

5,960

5,970

2014u

4273u

4363u

5770-5800 MD. SS: ltGy - medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. SH: drkGy - GyshBlk - occ Blk, subblky to subply, slty txt, frm. G strmg cut, mod bri yel rng.

5800-5830 MD. SS: ltGy - medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. Tr SH. G strmg cut, mod dk yel rng.

5830-5860 MD. SS: ltGy - occ medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. SH: drkGy - GyshBlk - occ Blk, subblky to subply, slty txt, frm. G strmg cut, mod bri yel rng.

5860-5890 MD. SH: medGy - drkGy - GyshBlk - occ Blk, subblky to subply, gty to slty txt, frm. SS: ltGy - occ medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. G strmg cut, hvy bri yel rng.

5890-5920 MD. SS: ltGy - medltGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. SH: drkGy - GyshBlk - occ Blk, subblky to subply, slty txt, frm. G strmg cut, mod bri yel rng.

5920-5950 MD. SS: ltGy - medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. SH: drkGy - GyshBlk - occ Blk, subblky to subply, slty txt, frm. G strmg cut, mod bri yel rng.

5950-5980 MD. SS: ltGy - medGy, lsey to mod cons, v/fn grn, subang to subrnd, w to mody srtd, arg to calc cmt, intgr por. SH: drkGy - GyshBlk - occ Blk, subblky to subply, slty txt, frm. G strmg cut, mod bri yel rng.

30

Limestone Neutron Porosity (ratio)

-10

-0.1

Density Correction (g/cc)

0.9

0.2

0

PE (barns/electron)

10

30

Limestone Density Porosity (ratio)

-10

0.2

30

Crossplot Porosity (ratio)

-10

0.2

Shallow Laterolog (ohm.m)

2

20

200

2E3

Deep Laterolog (ohm.m)

2

20

200

2E3

MicroRes Resistance (S) (ohm.m)

2

20

200

2E3

30

Limestone Neutron Porosity (ratio)

-10

-0.1

Density Correction (g/cc)

0.9

0.2

0

PE (barns/electron)

10

30

Limestone Density Porosity (ratio)

-10

0.2

30

Crossplot Porosity (ratio)

-10

0.2

Shallow Laterolog (ohm.m)

2

20

200

2E3

Deep Laterolog (ohm.m)

2

20

200

2E3

MicroRes Resistance (S) (ohm.m)

2

20

200

2E3

30

Limestone Neutron Porosity (ratio)

-10

-0.1

Density Correction (g/cc)

0.9

0.2

0

PE (barns/electron)

10

30

Limestone Density Porosity (ratio)

-10

0.2

30

Crossplot Porosity (ratio)

-10

0.2

Shallow Laterolog (ohm.m)

2

20

200

2E3

Deep Laterolog (ohm.m)

2

20

200

2E3

MicroRes Resistance (S) (ohm.m)

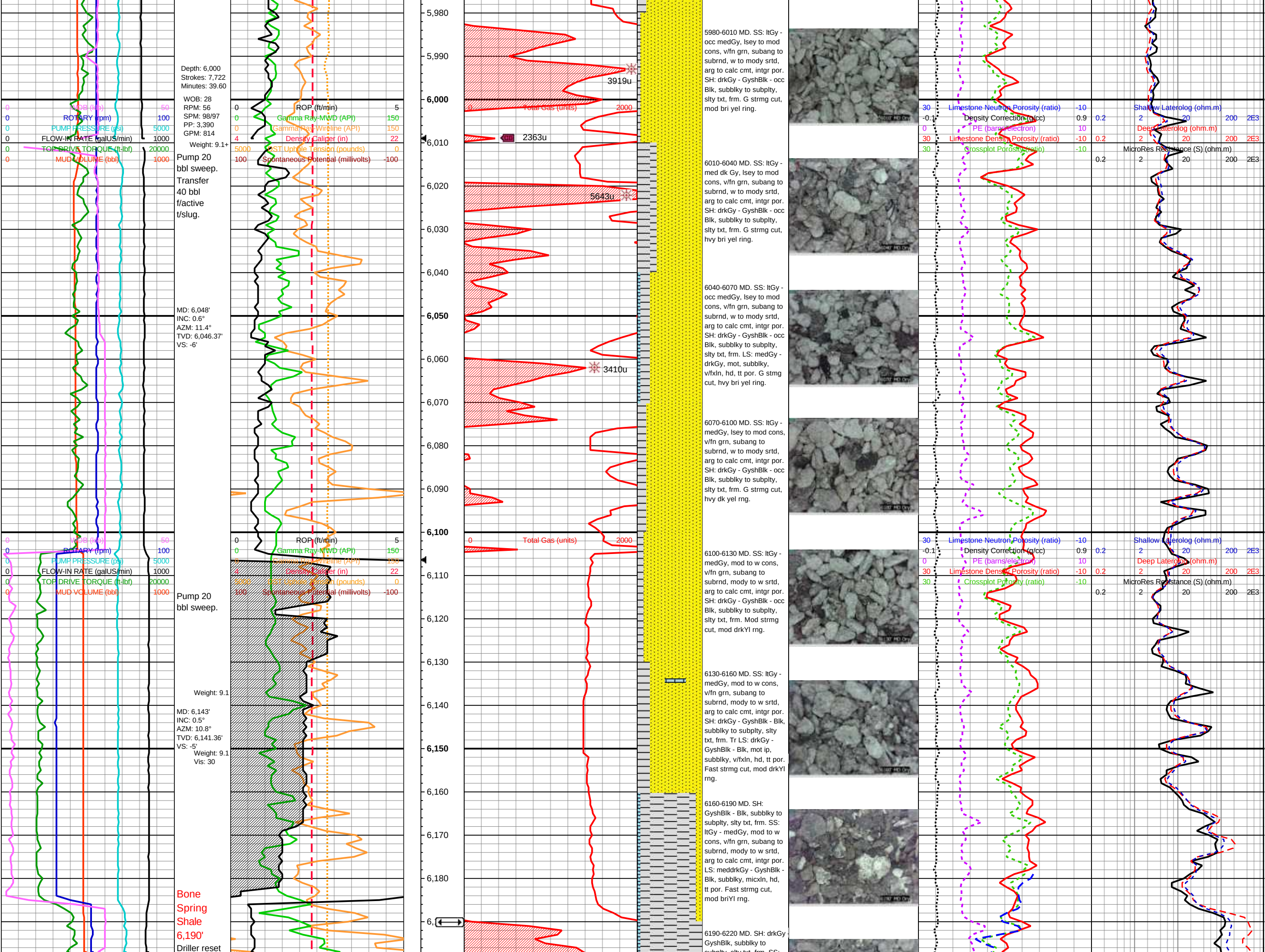
2

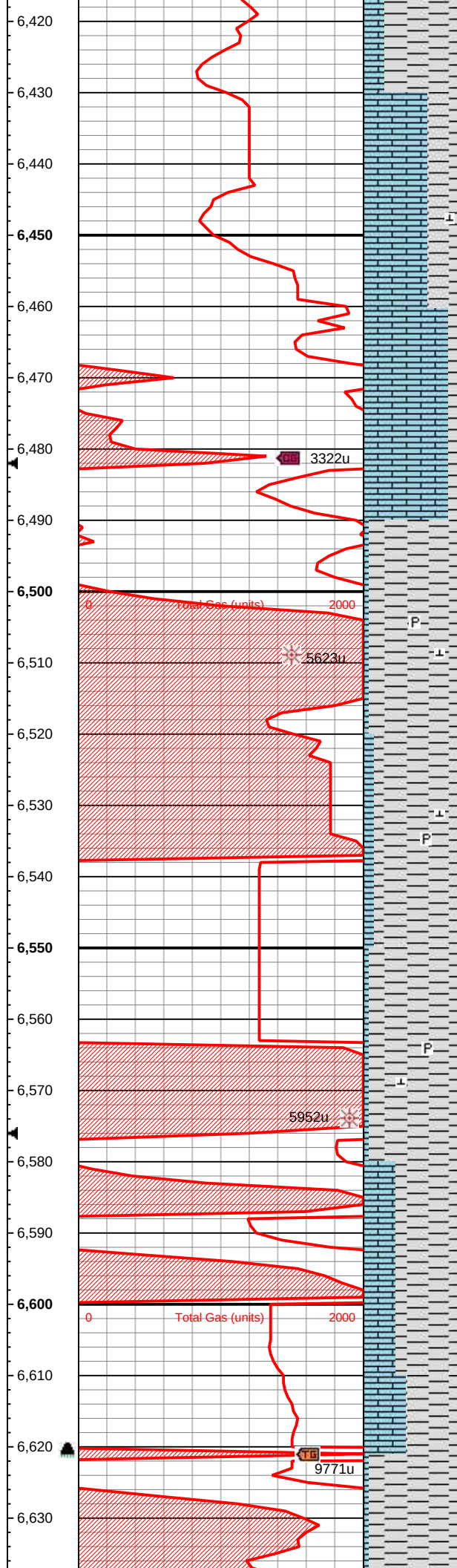
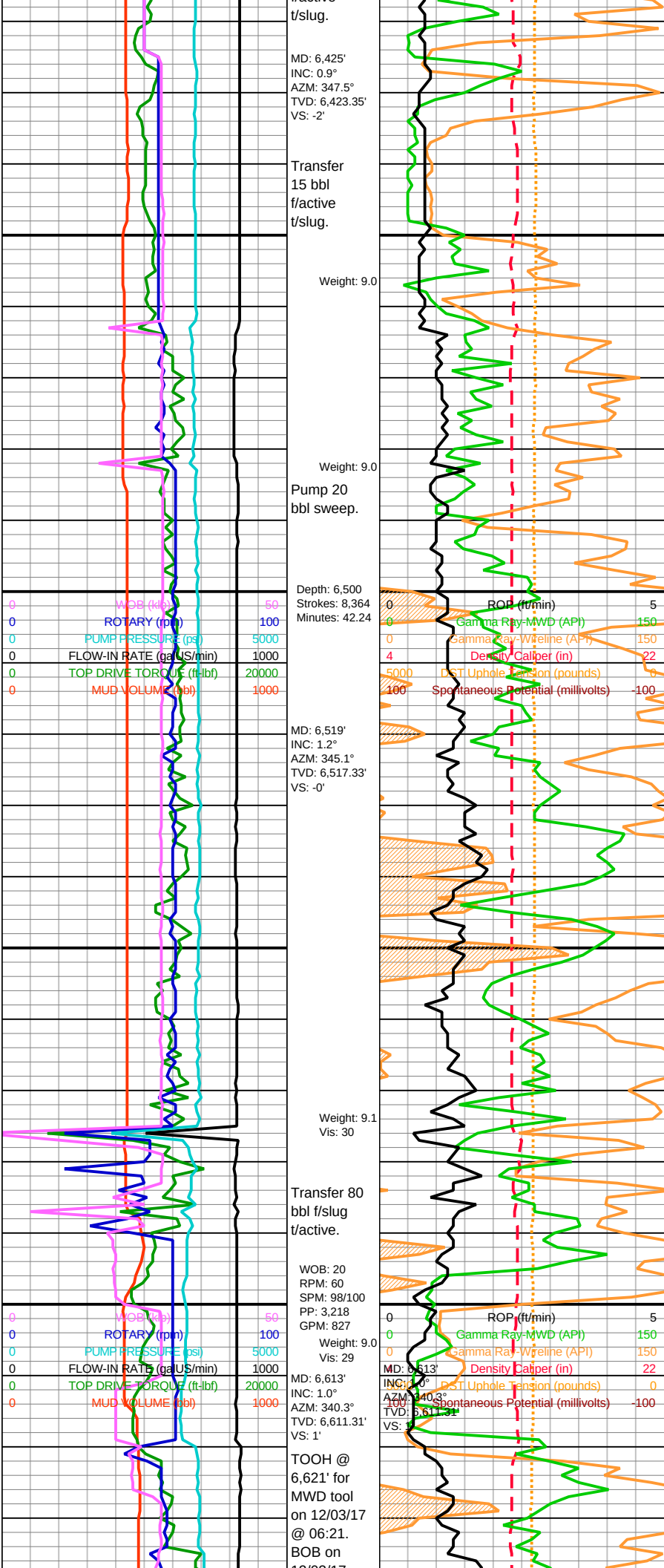
20

200

2E3

MINDEPTH
12/02/17





hd, tt por, pos bcm shy LS
to v calc SH ip, rr imbd
PYR. Fast stmg cut, weak
briYI rng.

6430-6460 MD. LS: drkGy
- GyshBlk - occ Blk, sub
blky to split, micxln, hd, tt
por, pos bcm shy LS to v
calc SH ip. SH: drkGy -
GyshBlk - occ Blk, subblky
to subply to occ split, slty
txt, frm to hd, abnt imbd
calc flk, mod to v calc.
Fast stmg cut, mod briYI
rng.

6460-6490 MD. LS: drkGy
- GyshBlk - occ Blk,
subblky to split, micxln,
hd, tt por, pos bcm shy LS
to v calc SH ip. SH: drkGy
- GyshBlk - occ Blk,
subblky to subsplt to occ
split, slty txt, frm to hd,
abnt imbd calc flk, mod
to v calc. Fast stmg cut,
mod briYI rng.

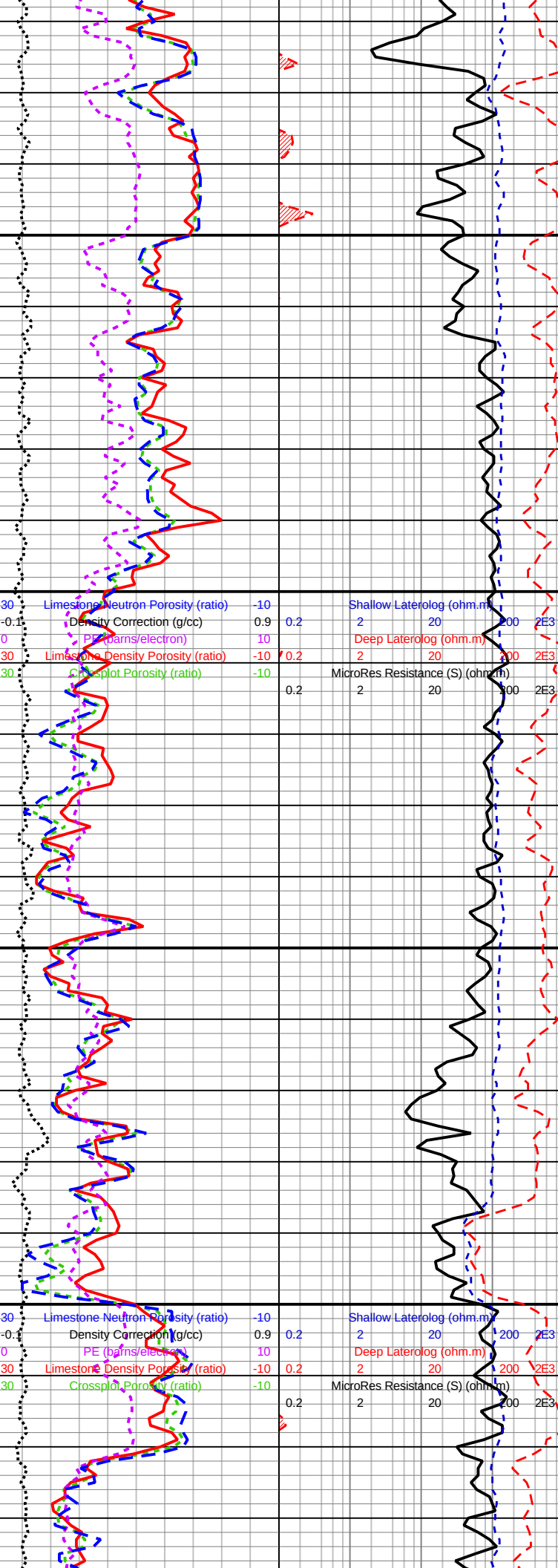
6490-6520 MD. SH:
medGy - drkGy, subblky
to subsplt to occ split, slty
txt, brit to frm, imbd calc
flk & PYRC spec & scat
PYRC lamn, occ sl calc. LS:
drkGy - GyshBlk, subblky
to split, micxln, hd, tt por.
Fast stmg cut, hvy briYI
rng.

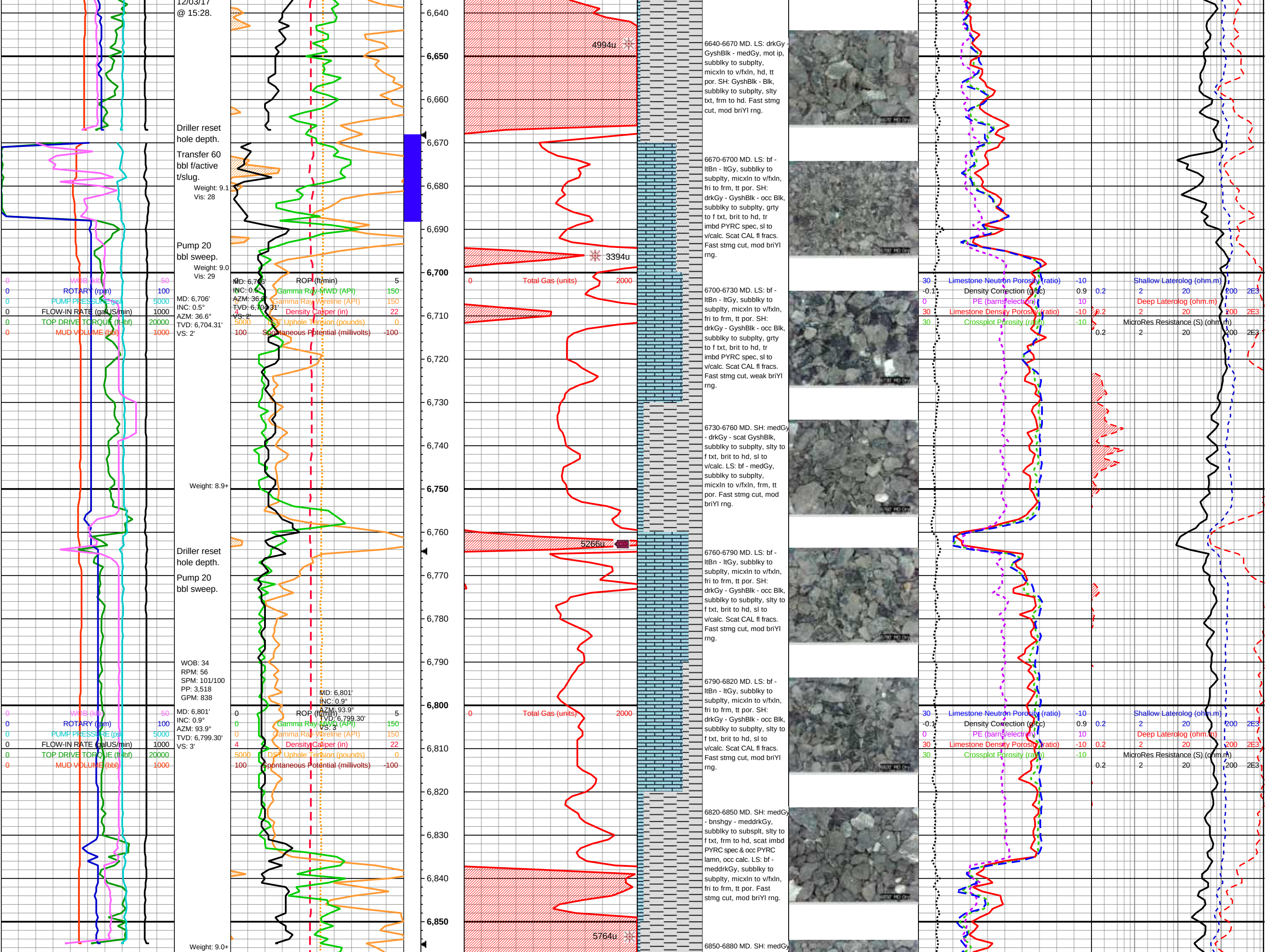
6520-6550 MD. SH: medgy
- dk gy, sub blky to sub
split to occ split, slty txt,
brit to frm, imbd calc flk
& PYRC spec & scat PYRC
lamn, occ sl calc. LS: dk gy
- gyshBlk, sub blky to split,
micxln, hd, tt por. Fast
stmg cut, hvy briYI rng.

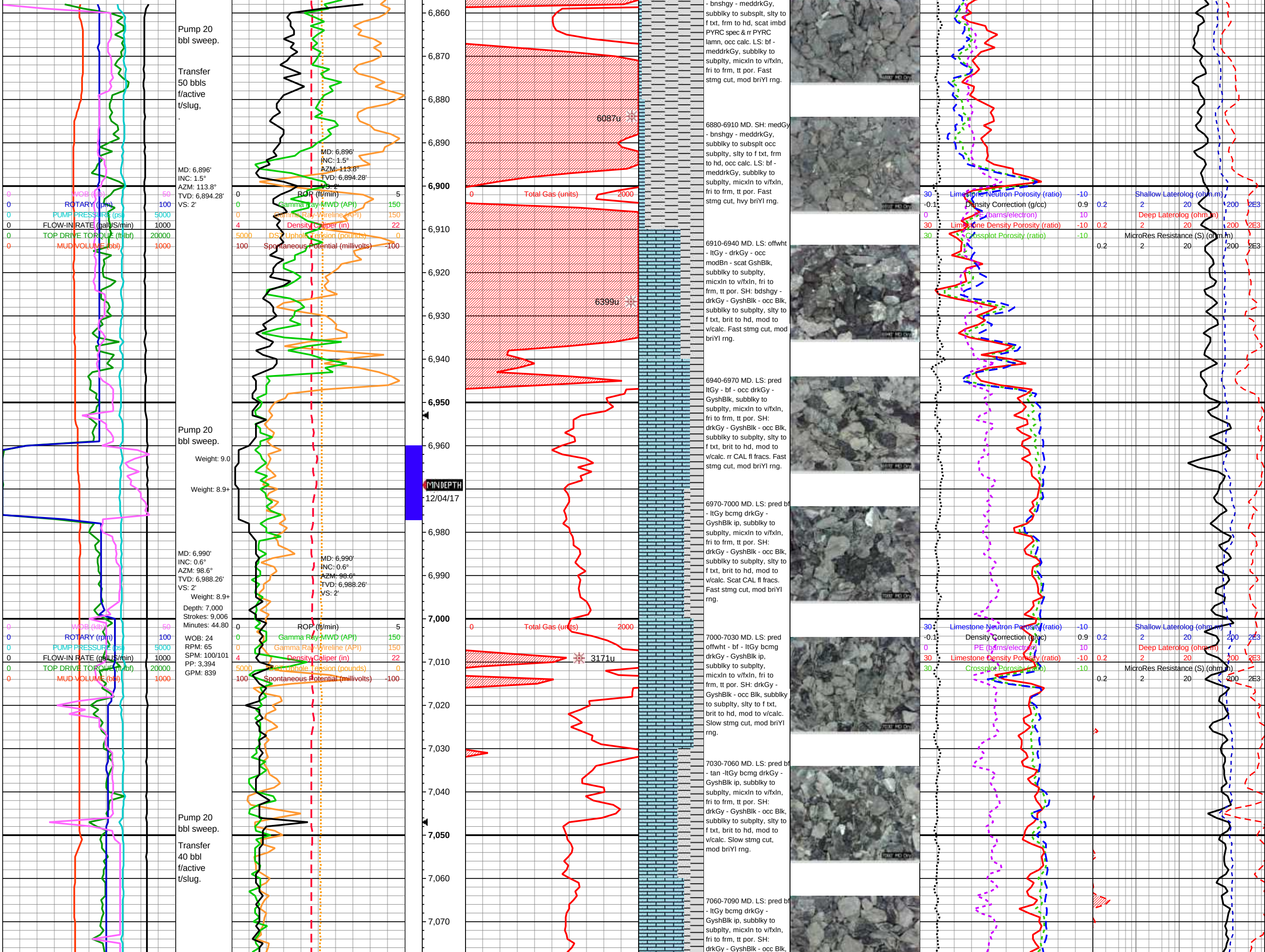
6550-6580 MD. SH: medgy
- dk gy, sub blky to sub
split to occ split, slty txt,
brit to frm, imbd calc flk
& PYRC spec & scat PYRC
lamn, occ sl calc. LS: dk gy
- gyshBlk, sub blky to split,
micxln, hd, tt por. Fast
stmg cut, hvy briYI rng.

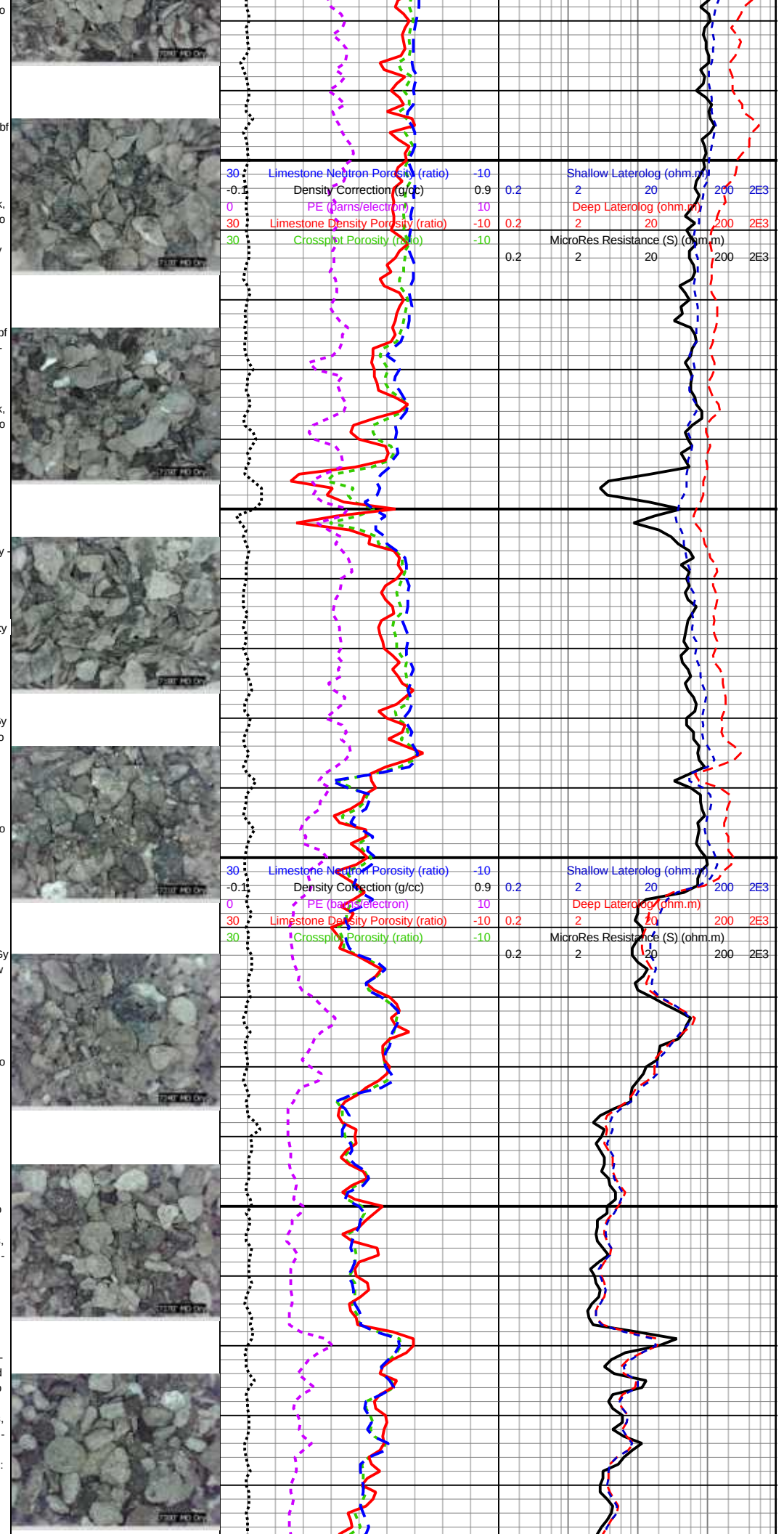
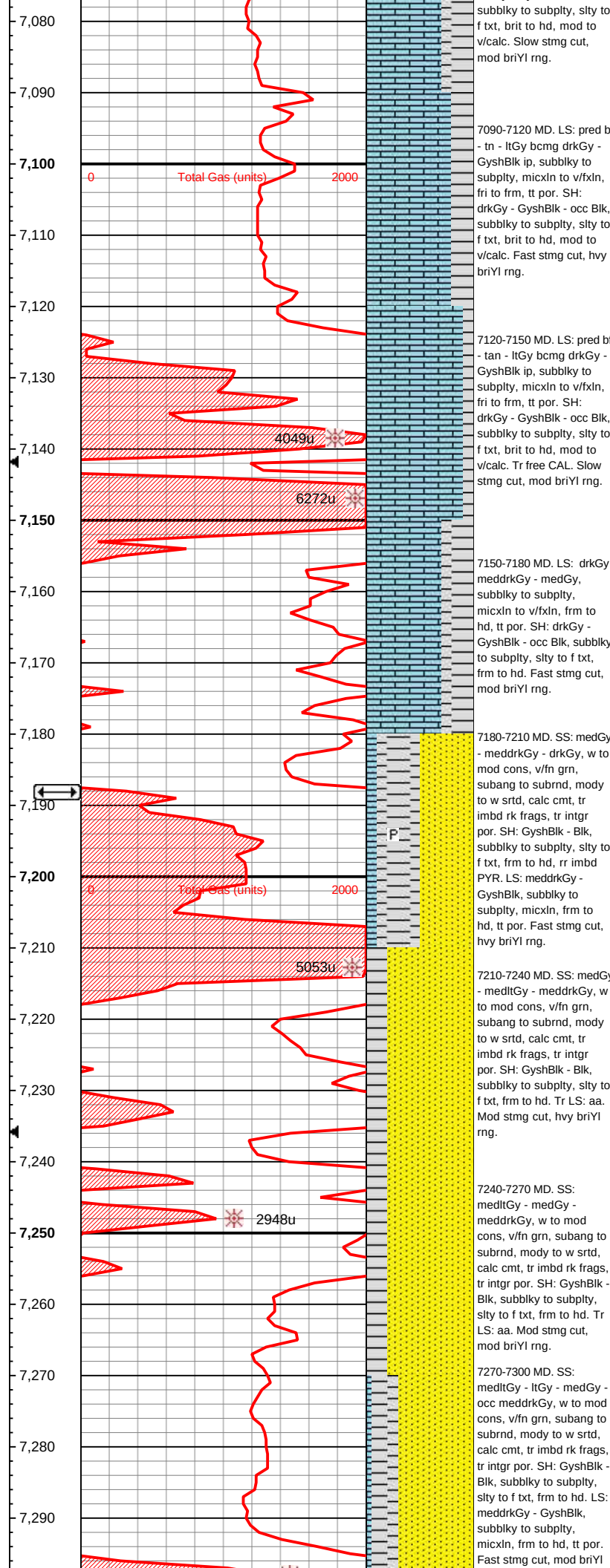
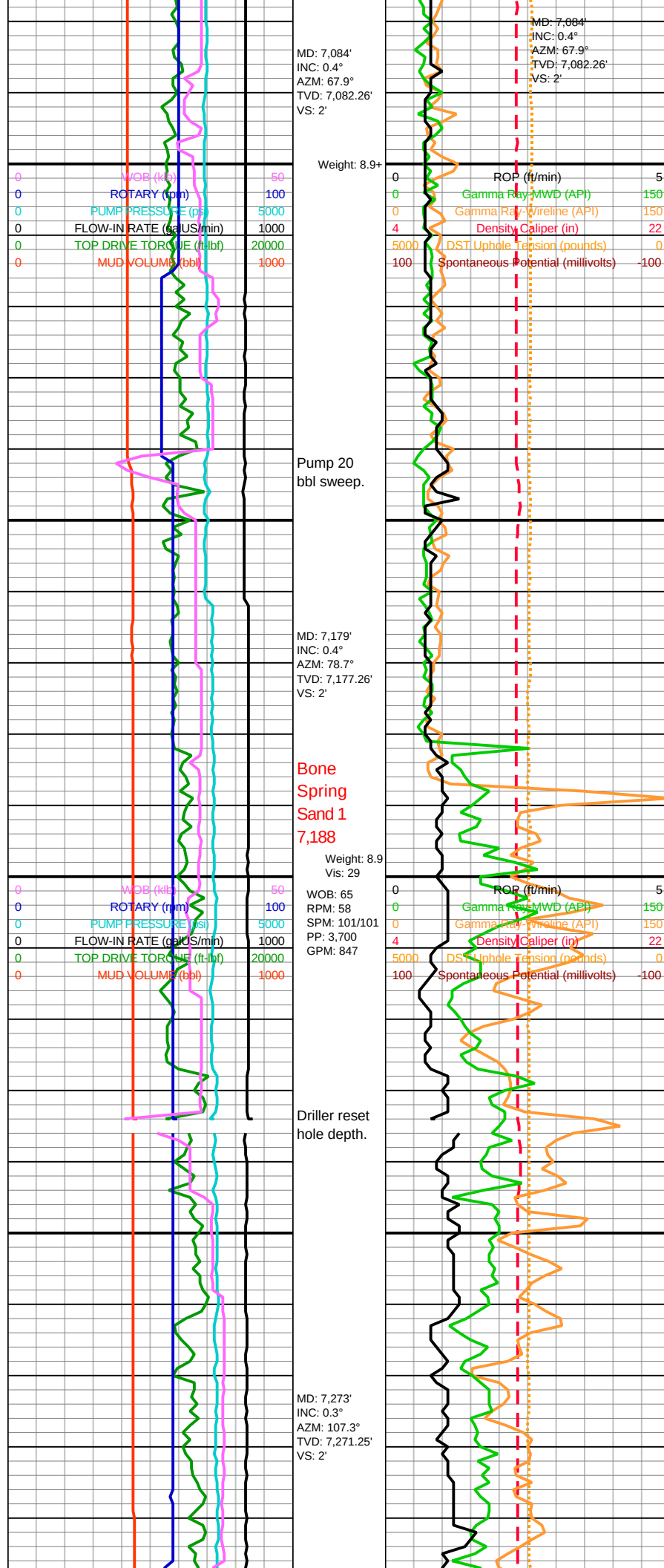
6580-6610 MD. LS: medGy
- drkGy - ltBn, mot ip,
subblky to subply, v/fxln,
hd, tt por. SH: GyshBlk -
Blk, subblky to subply,
slty txt, frm to hd. Fast
stmg cut, mod briYI rng.

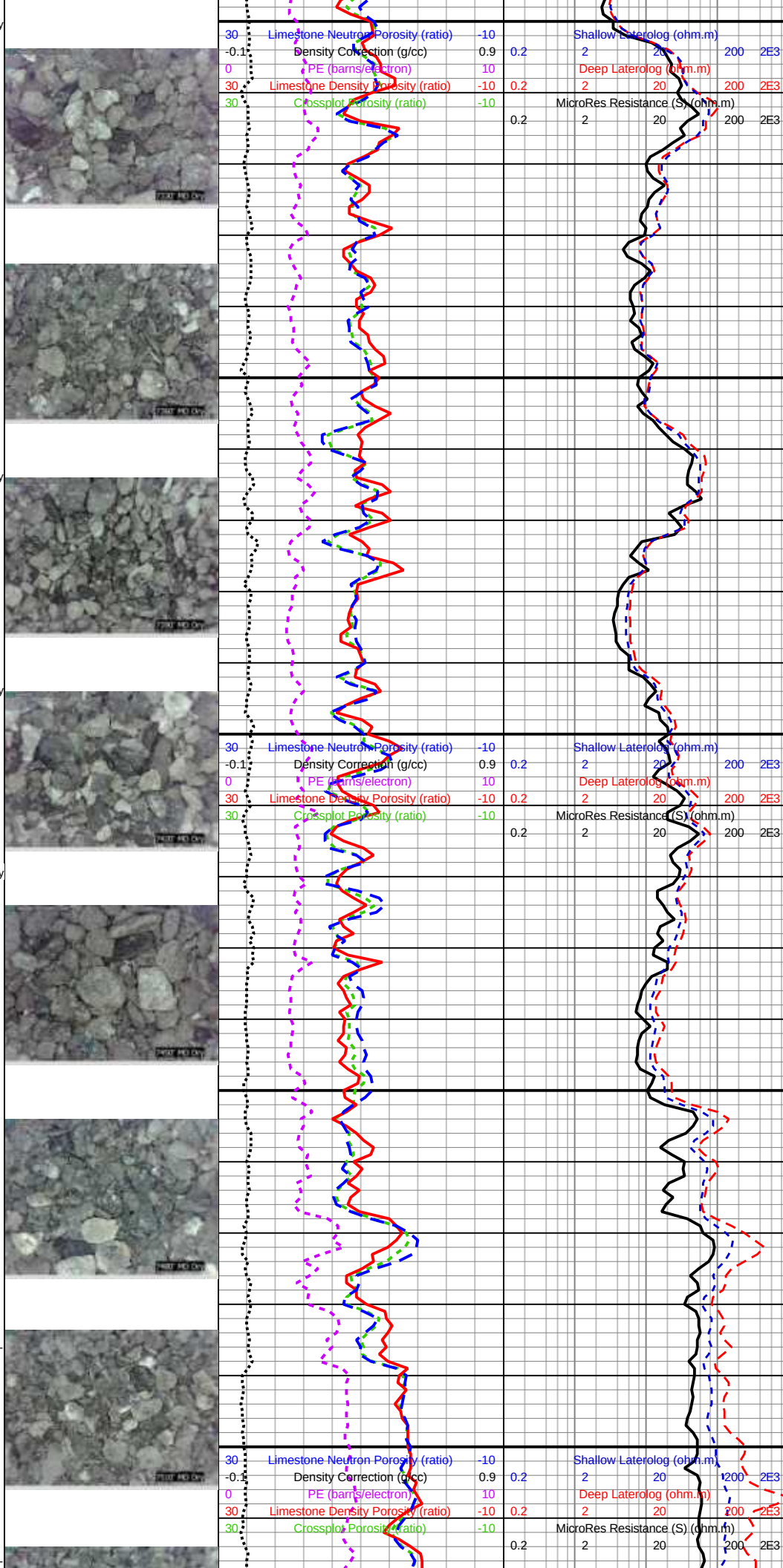
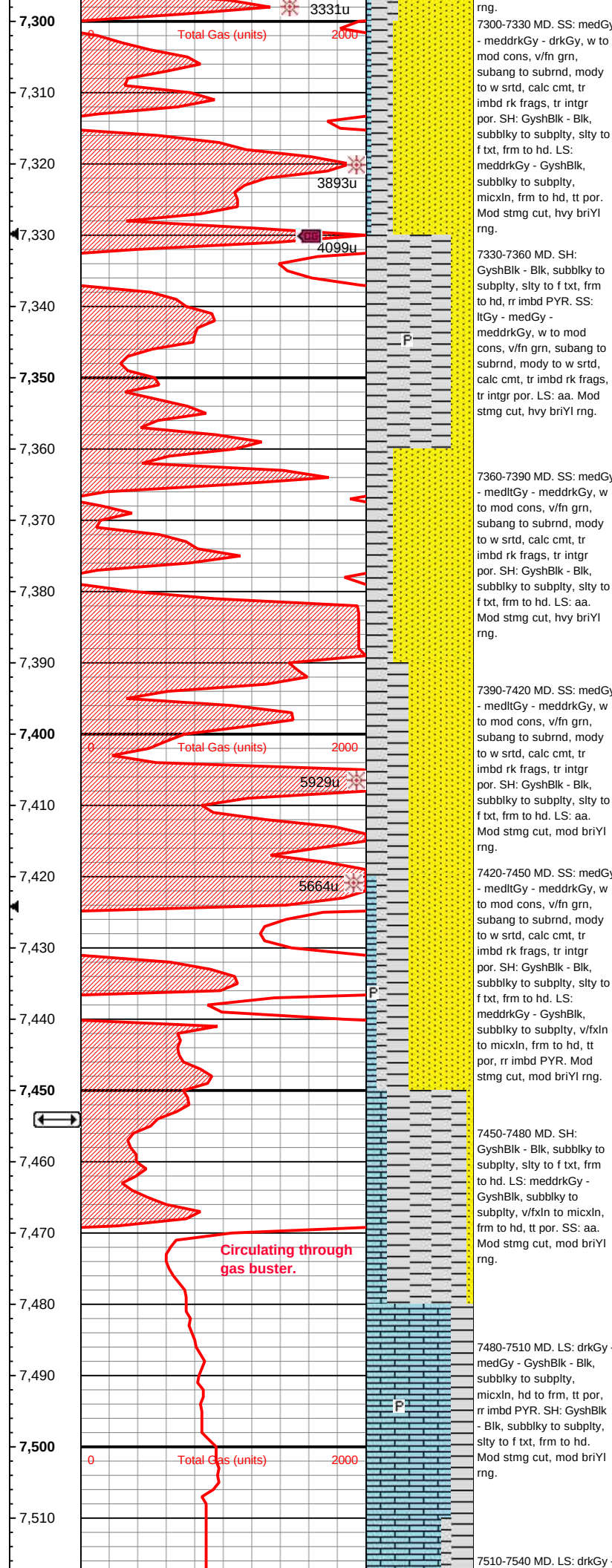
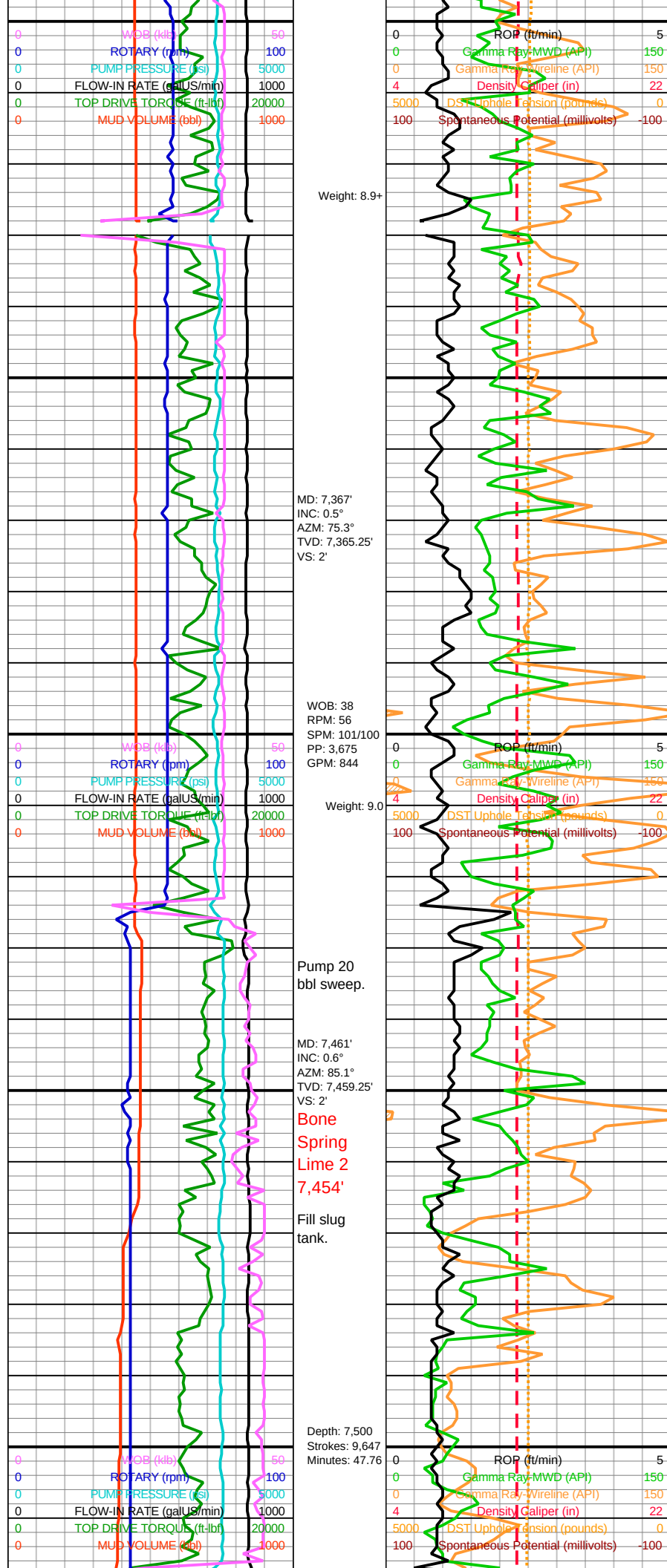
6610-6640 MD. LS: medGy
- drkGy - ltBn, mot ip,
subblky to subply, v/fxln,
hd, tt por. SH: GyshBlk -
Blk, subblky to subply,
slty txt, frm to hd. Fast
stmg cut, mod briYI rng.

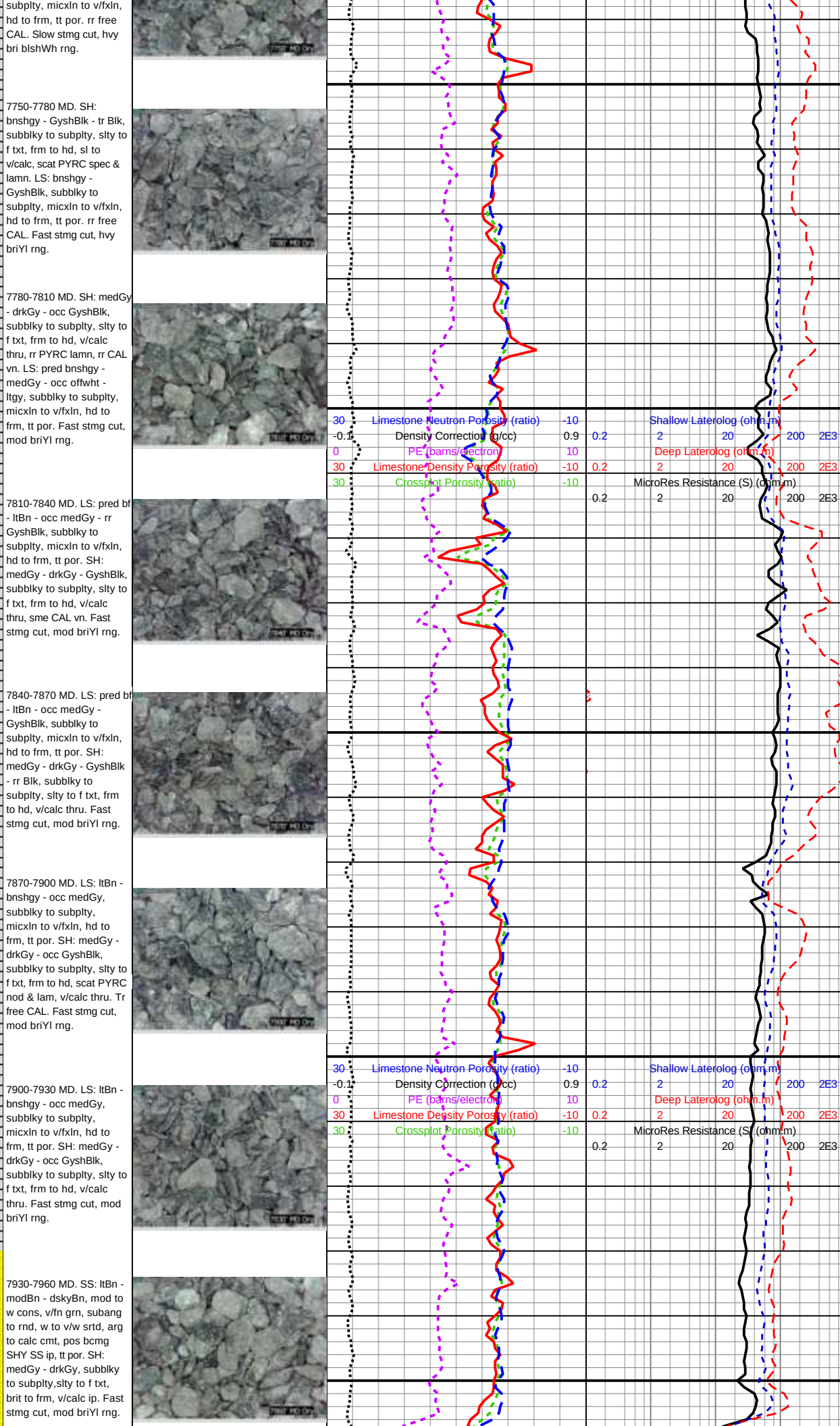
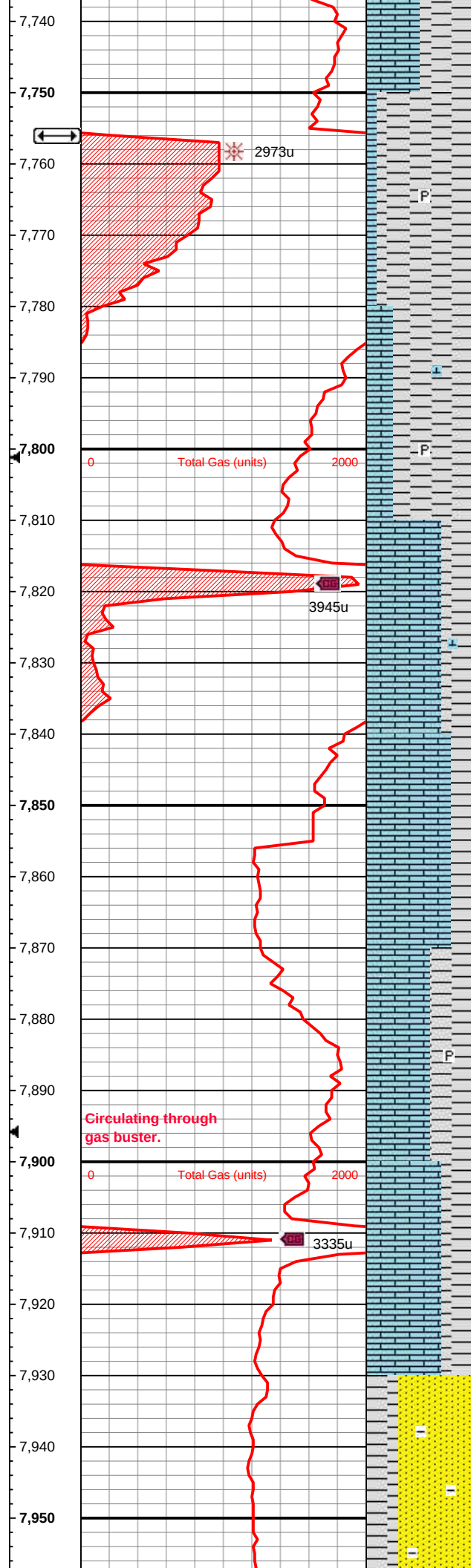
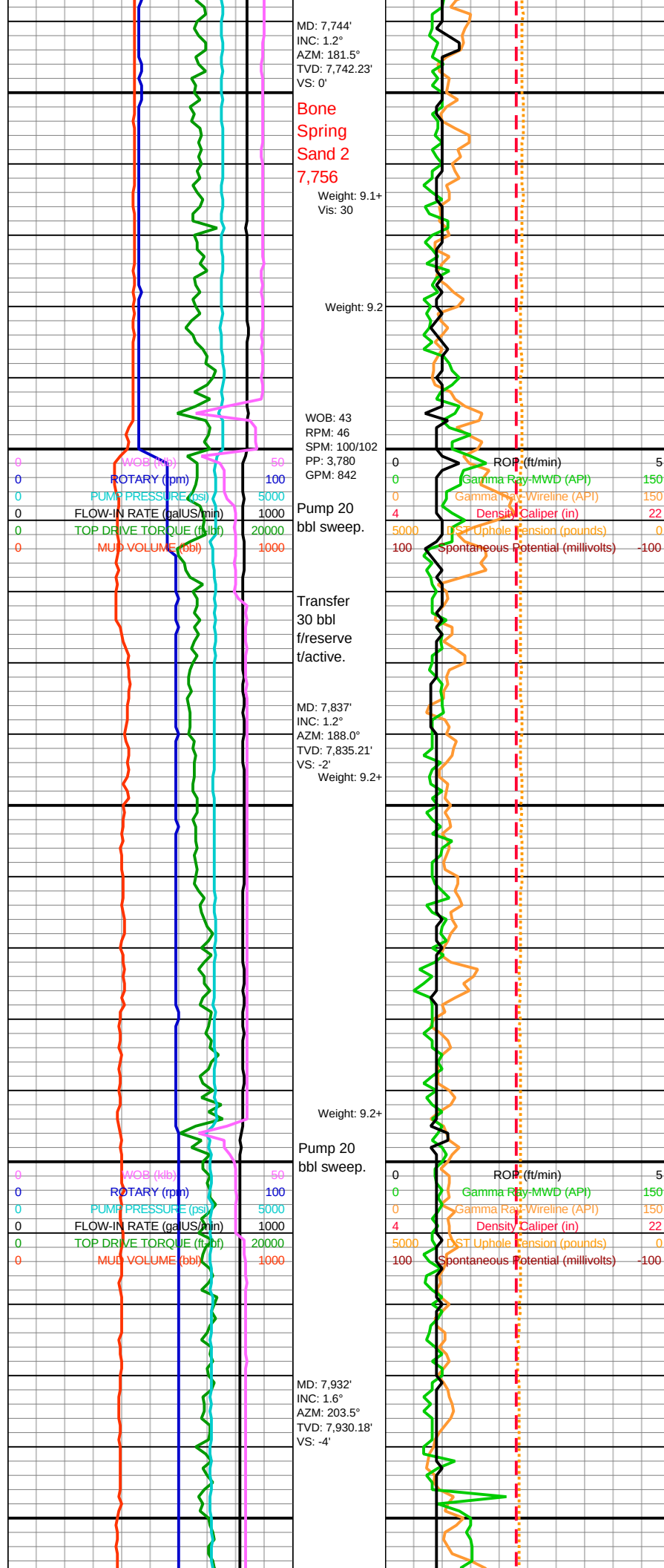


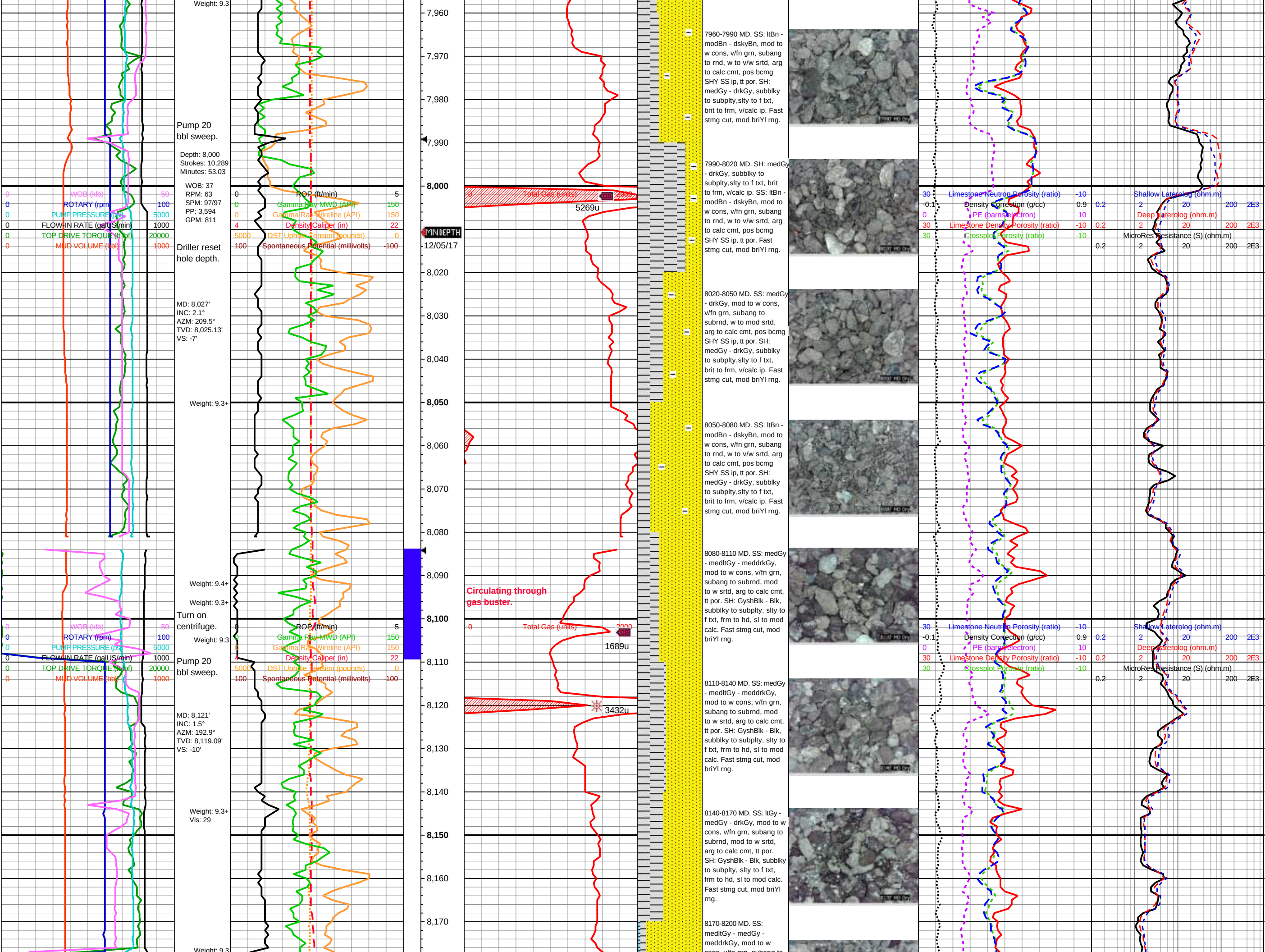


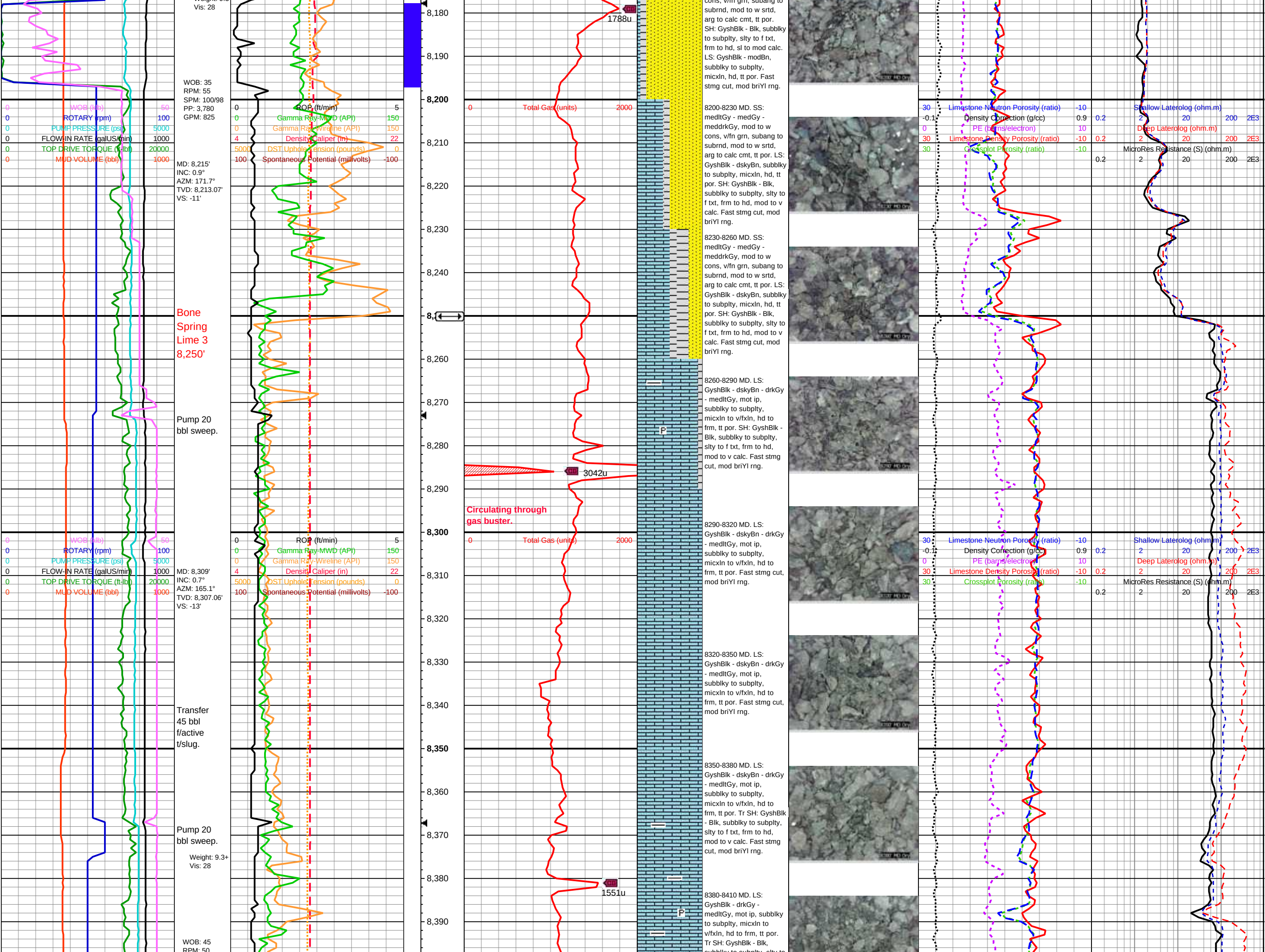


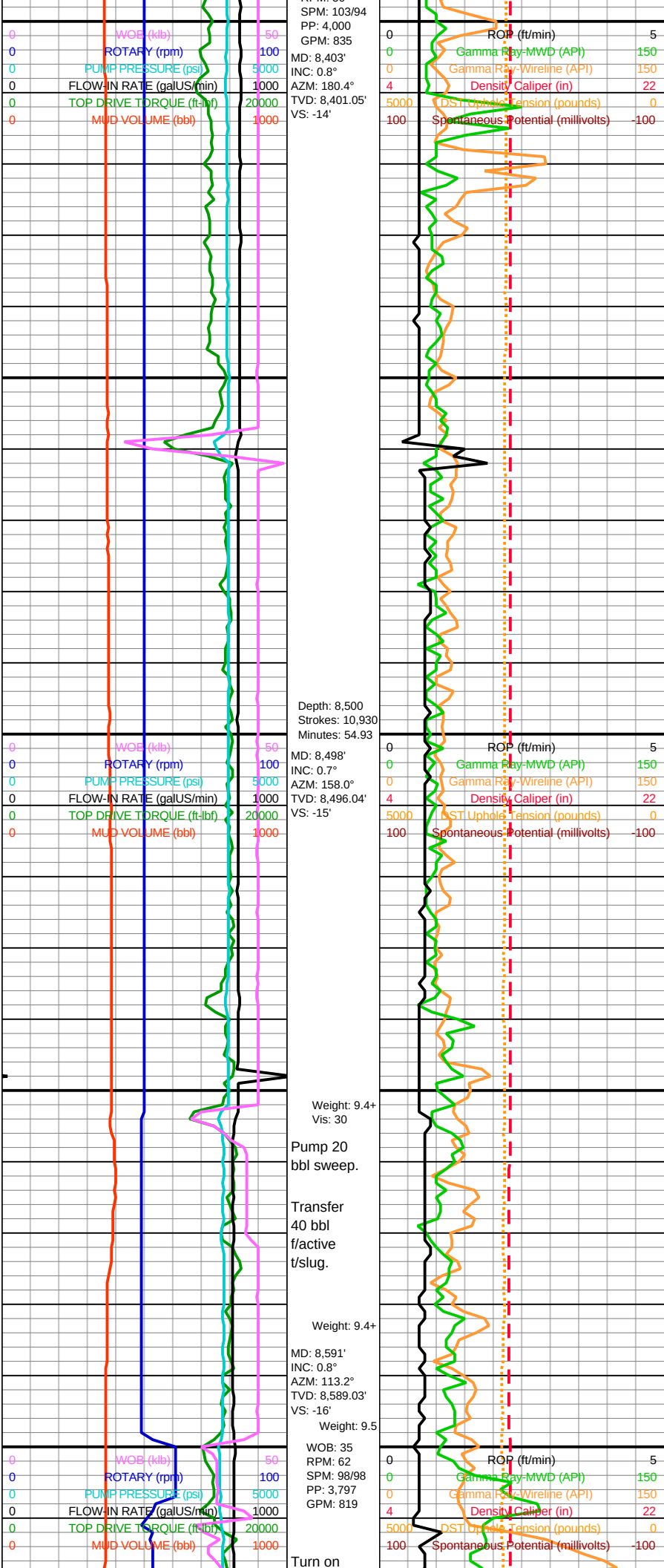




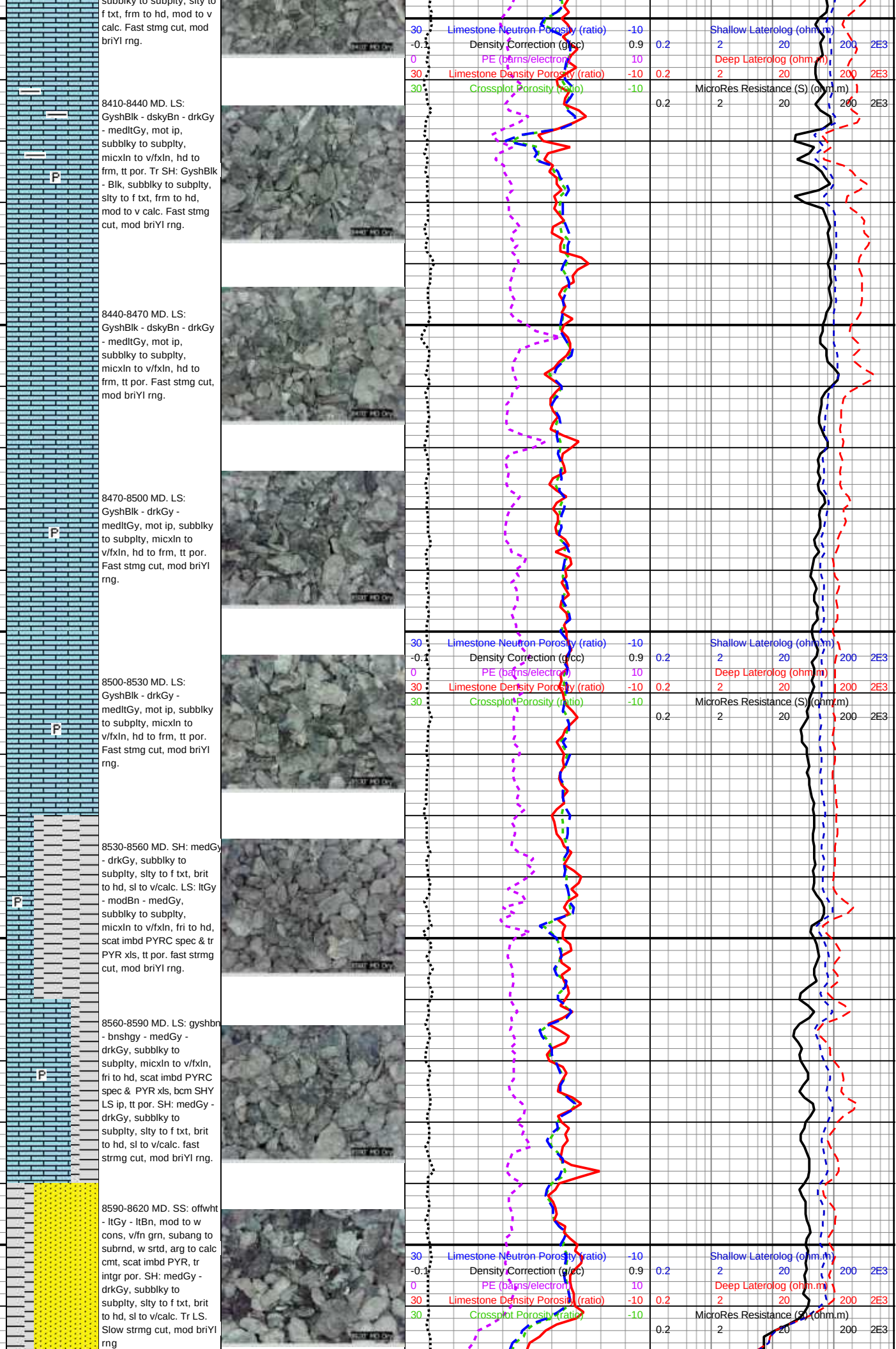
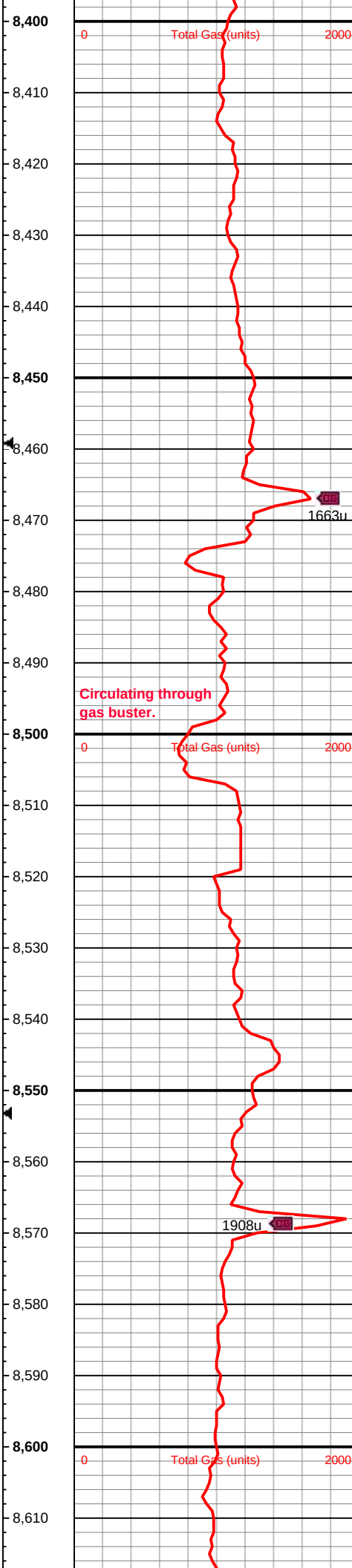








Turn on



8410-8440 MD. LS: GyshBlk - dskyBn - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Tr SH: GyshBlk - Blk, subblky to subply, slty to f txt, frm to hd, mod to v calc. Fast stmg cut, mod briYI rng.

8440-8470 MD. LS: GyshBlk - dskyBn - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

8470-8500 MD. LS: GyshBlk - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

8500-8530 MD. LS: GyshBlk - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

8530-8560 MD. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. LS: ItGy - modBn - medGy, subblky to subply, micxln to v/fxln, fri to hd, scat imbd PYRC spec & tr PYR xls, tt por. fast strmg cut, mod briYI rng.

8560-8590 MD. LS: gysbbr - bnshgy - medGy - drkGy, subblky to subply, micxln to v/fxln, fri to hd, scat imbd PYRC spec & PYR xls, bcm SHY LS ip, tt por. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. fast strmg cut, mod briYI rng.

8590-8620 MD. SS: offwht - ItGy - ItBn, mod to w cons, v/fn grn, subang to subrnd, w srtd, arg to calc cmt, scat imbd PYR, tr intgr por. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. Tr LS. Slow strmg cut, mod briYI rng

8410-8440 MD. LS: GyshBlk - dskyBn - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Tr SH: GyshBlk - Blk, subblky to subply, slty to f txt, frm to hd, mod to v calc. Fast stmg cut, mod briYI rng.

8440-8470 MD. LS: GyshBlk - dskyBn - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

8470-8500 MD. LS: GyshBlk - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

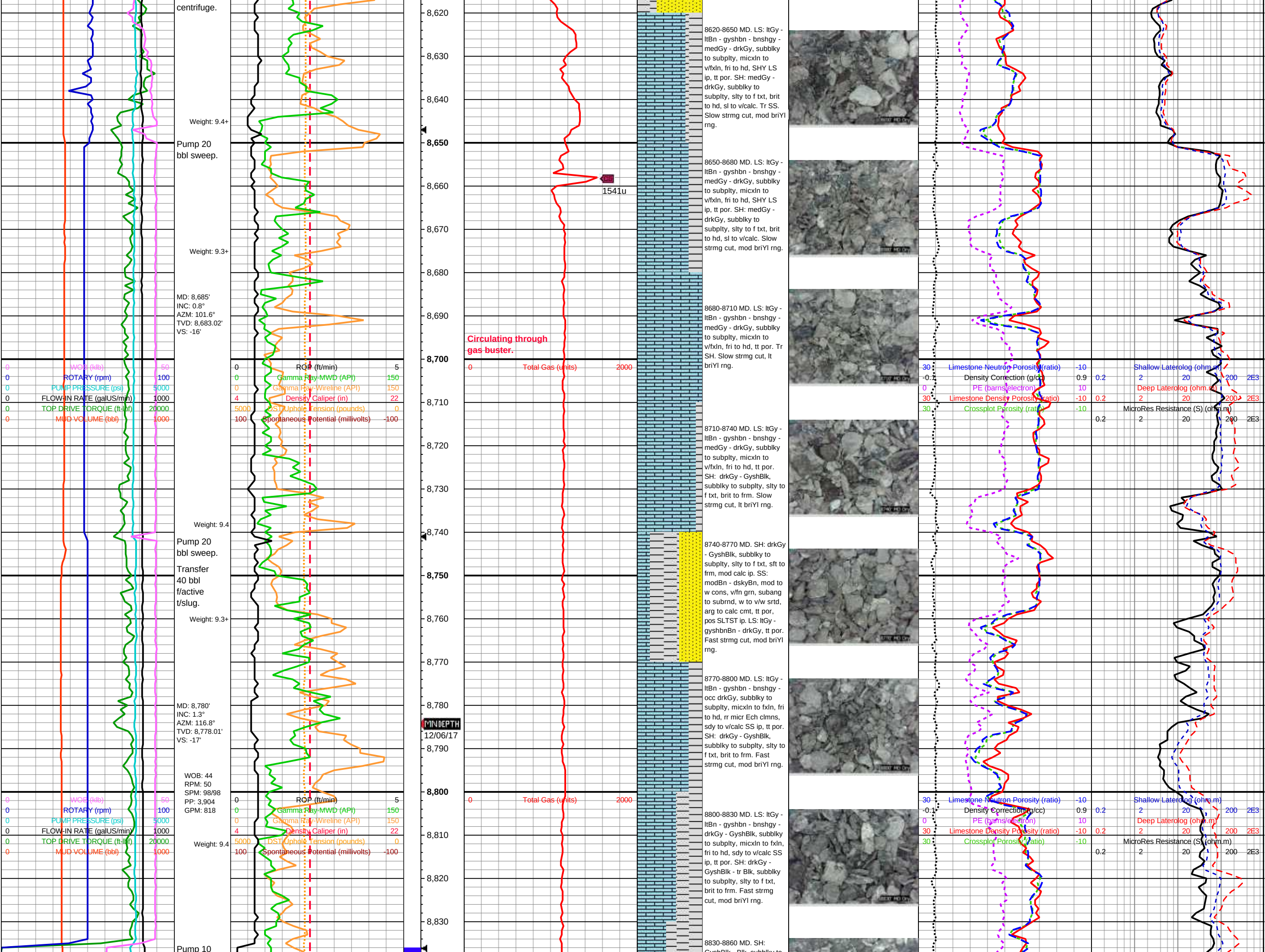
8500-8530 MD. LS: GyshBlk - drkGy - medItGy, mot ip, subblky to subply, micxln to v/fxln, hd to frm, tt por. Fast stmg cut, mod briYI rng.

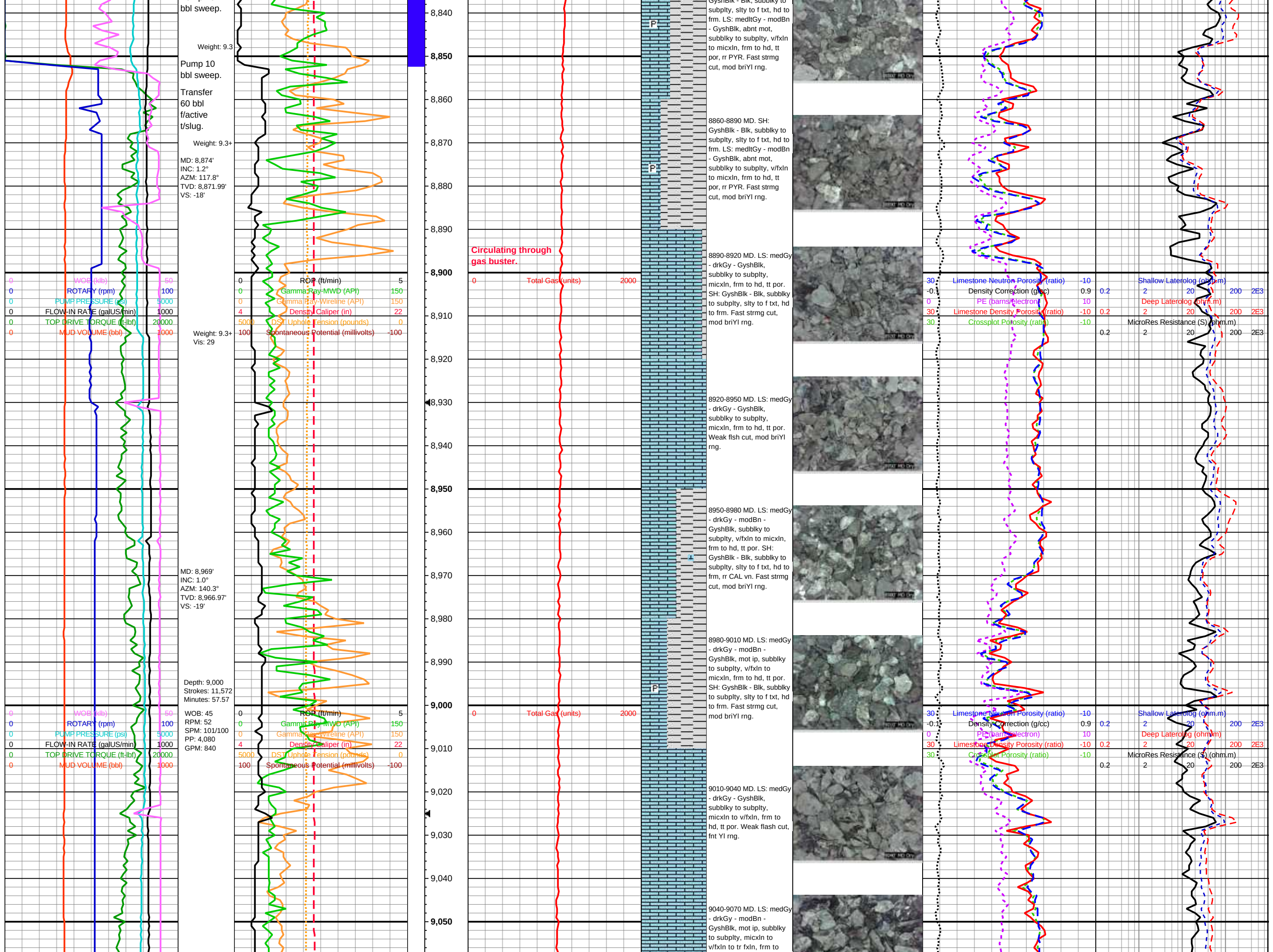
8530-8560 MD. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. LS: ItGy - modBn - medGy, subblky to subply, micxln to v/fxln, fri to hd, scat imbd PYRC spec & tr PYR xls, tt por. fast strmg cut, mod briYI rng.

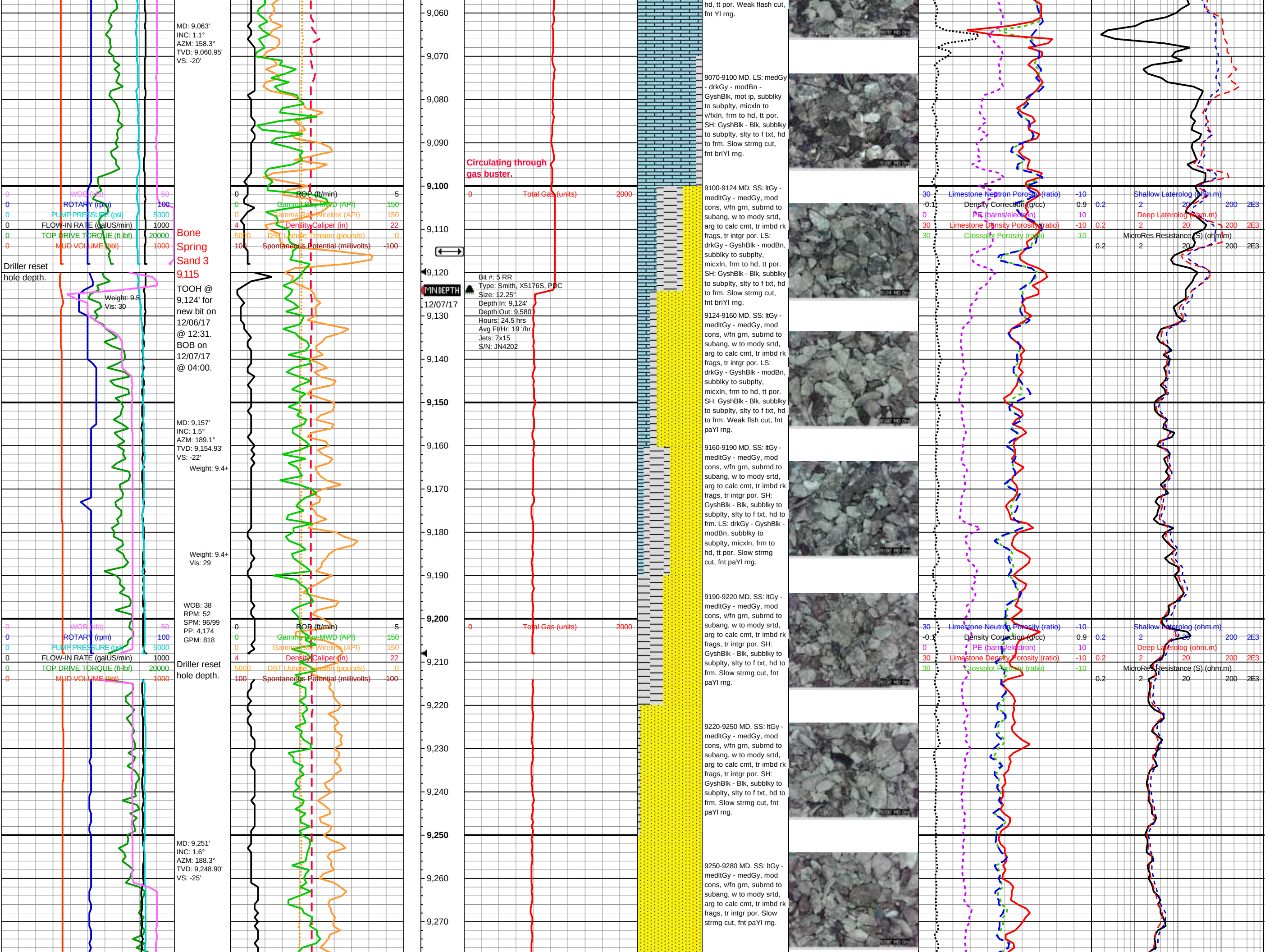
8560-8590 MD. LS: gysbbr - bnshgy - medGy - drkGy, subblky to subply, micxln to v/fxln, fri to hd, scat imbd PYRC spec & PYR xls, bcm SHY LS ip, tt por. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. fast strmg cut, mod briYI rng.

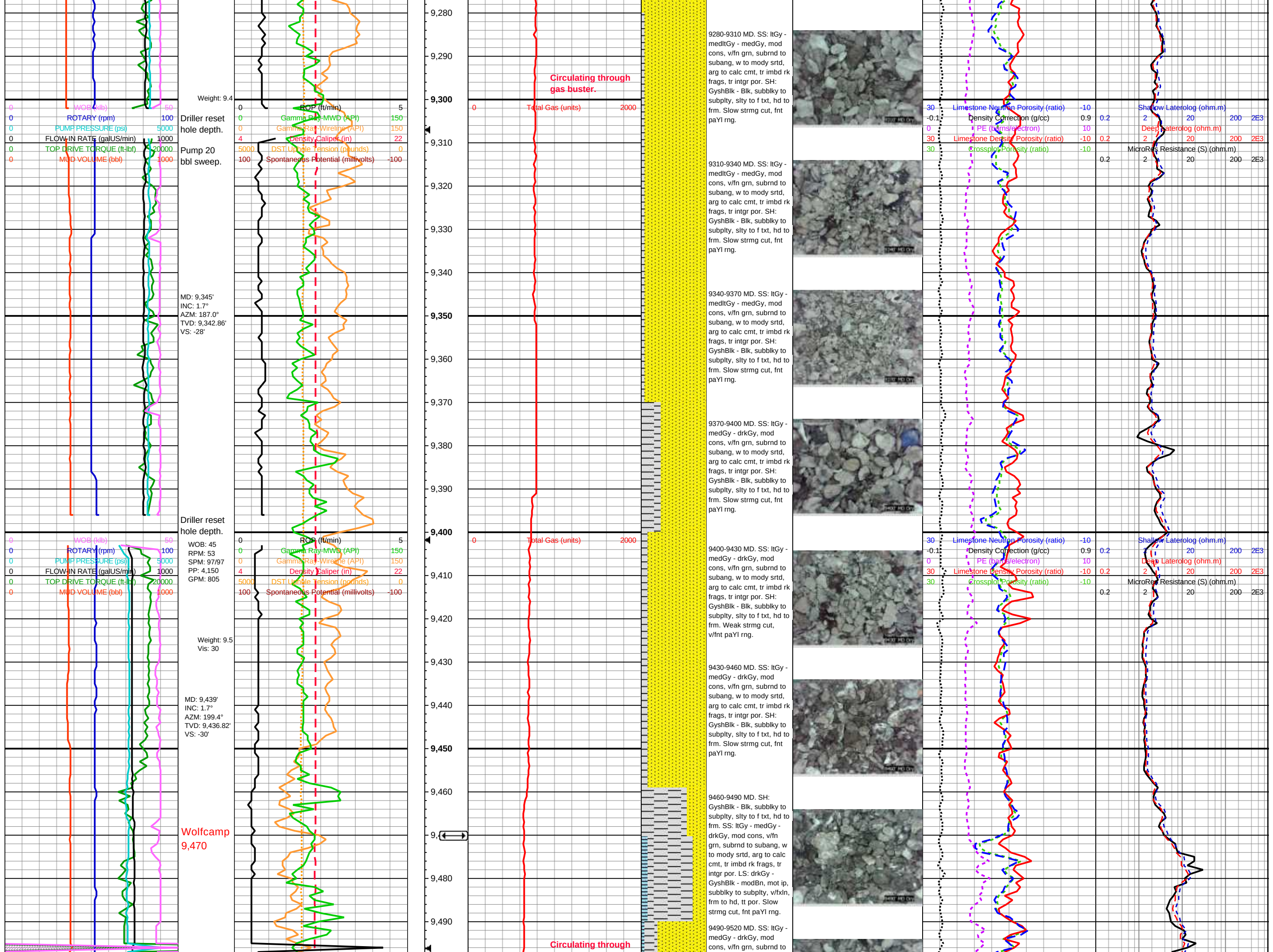
8590-8620 MD. SS: offwht - ItGy - ItBn, mod to w cons, v/fn grn, subang to subrnd, w srtd, arg to calc cmt, scat imbd PYR, tr intgr por. SH: medGy - drkGy, subblky to subply, slty to f txt, brit to hd, sl to v/calc. Tr LS. Slow strmg cut, mod briYI rng

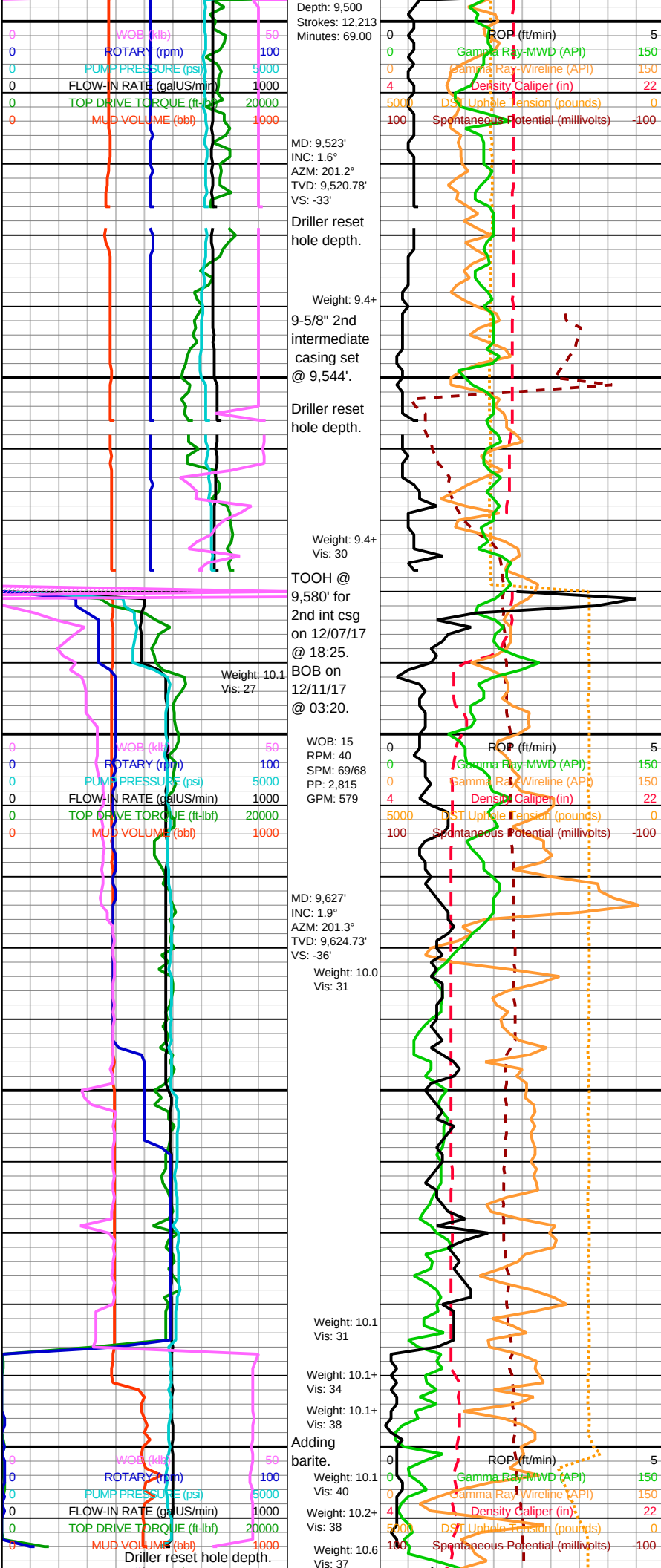
Circulating through gas buster.

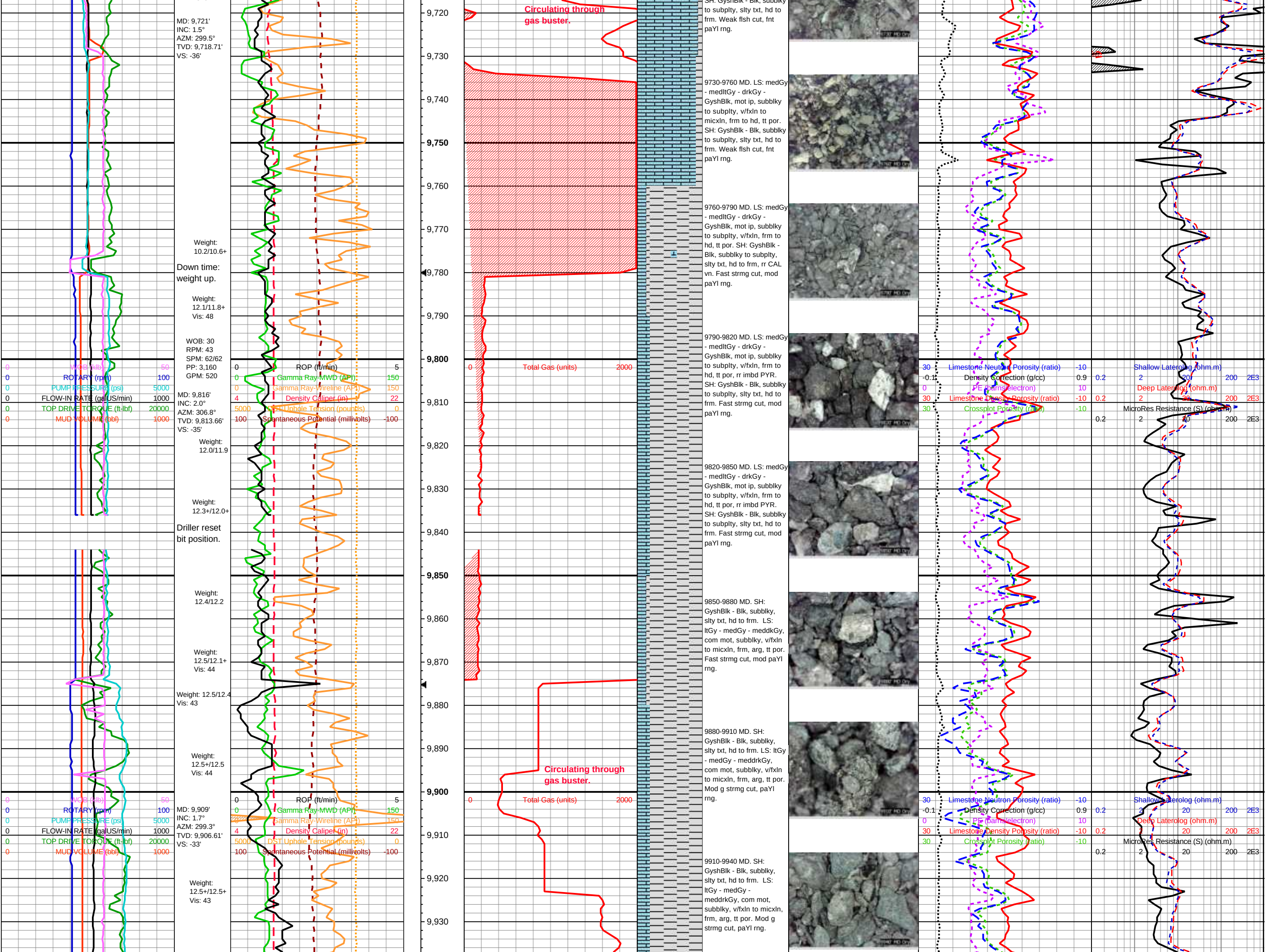


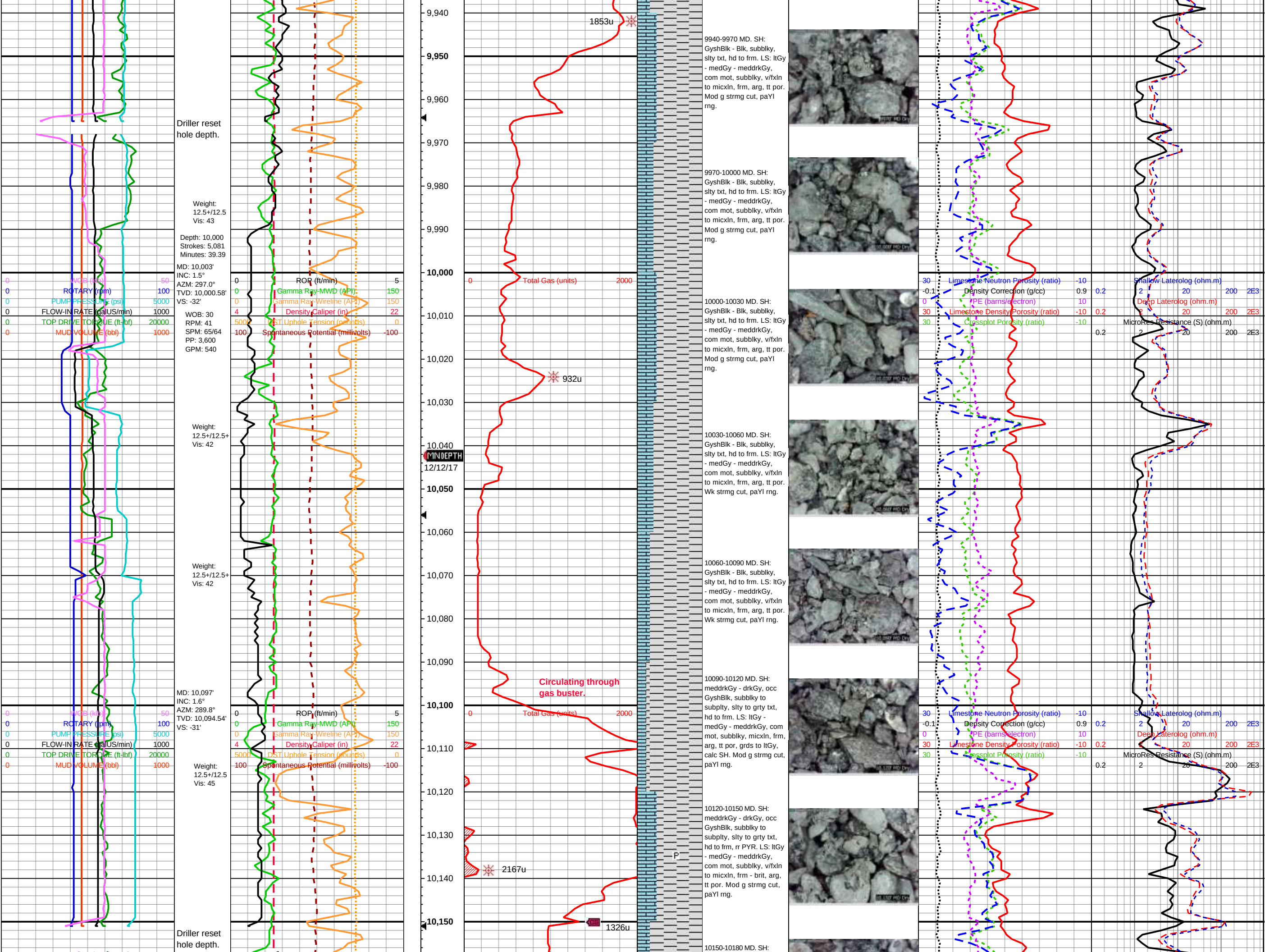


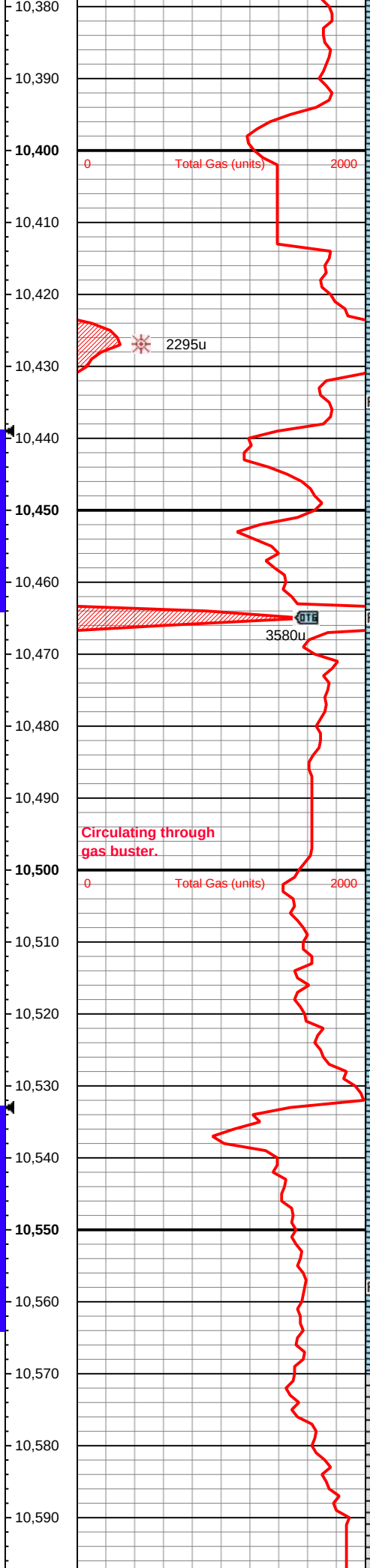
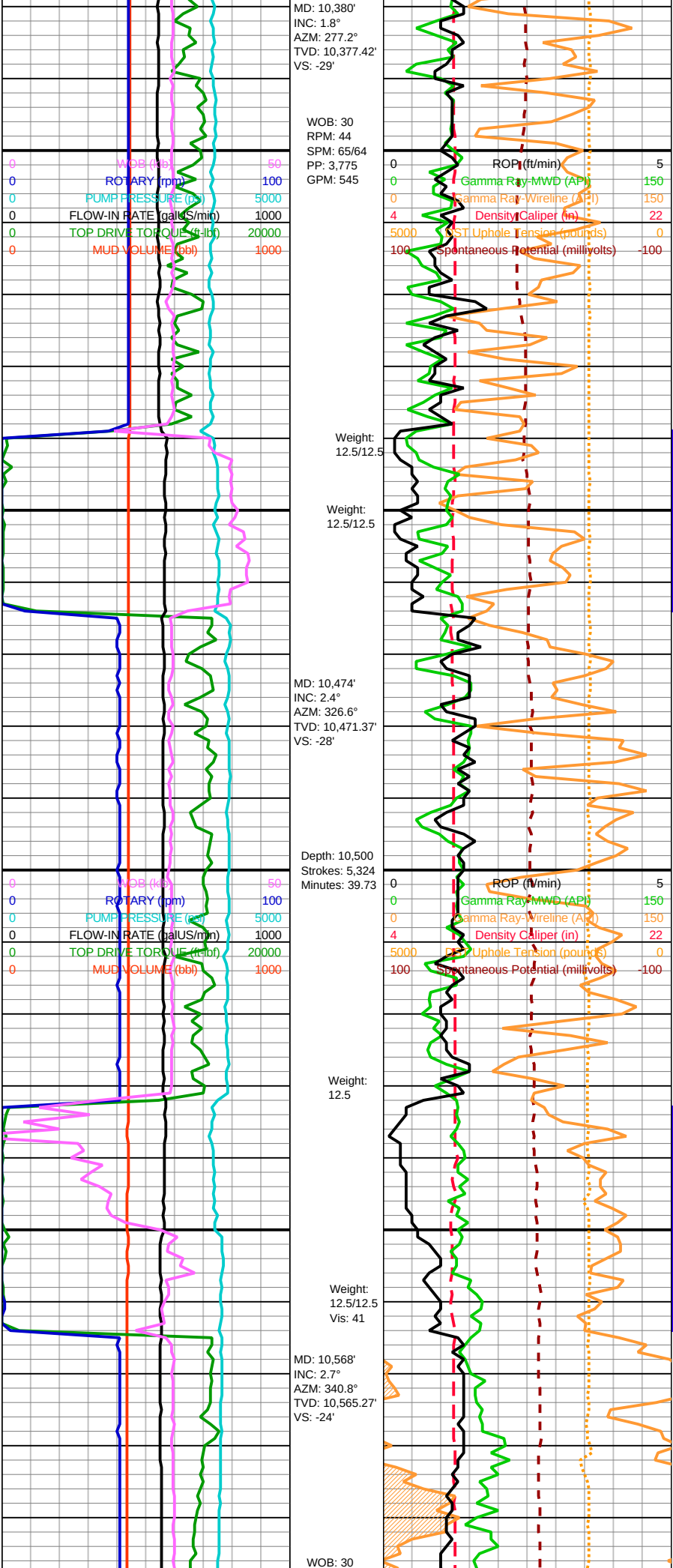












GyshBlk - Blk, subbly to hd. Weak strmg cut, mod Strw rng.

10390-10420 MD. LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxn to fxln, frm to hd, tt por, rr PYR. SH: GyshBlk - Blk, subbly to subply, slty txt, frm to hd. Weak strmg cut, mod Strw rng.

10420-10450 MD. SH: Blk - GyshBlk, subbly to subply, smth to slty txt, frm to hd. LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxln to fxln, frm to hd, tt por, rr PYR. Weak strmg cut, mod Strw rng.

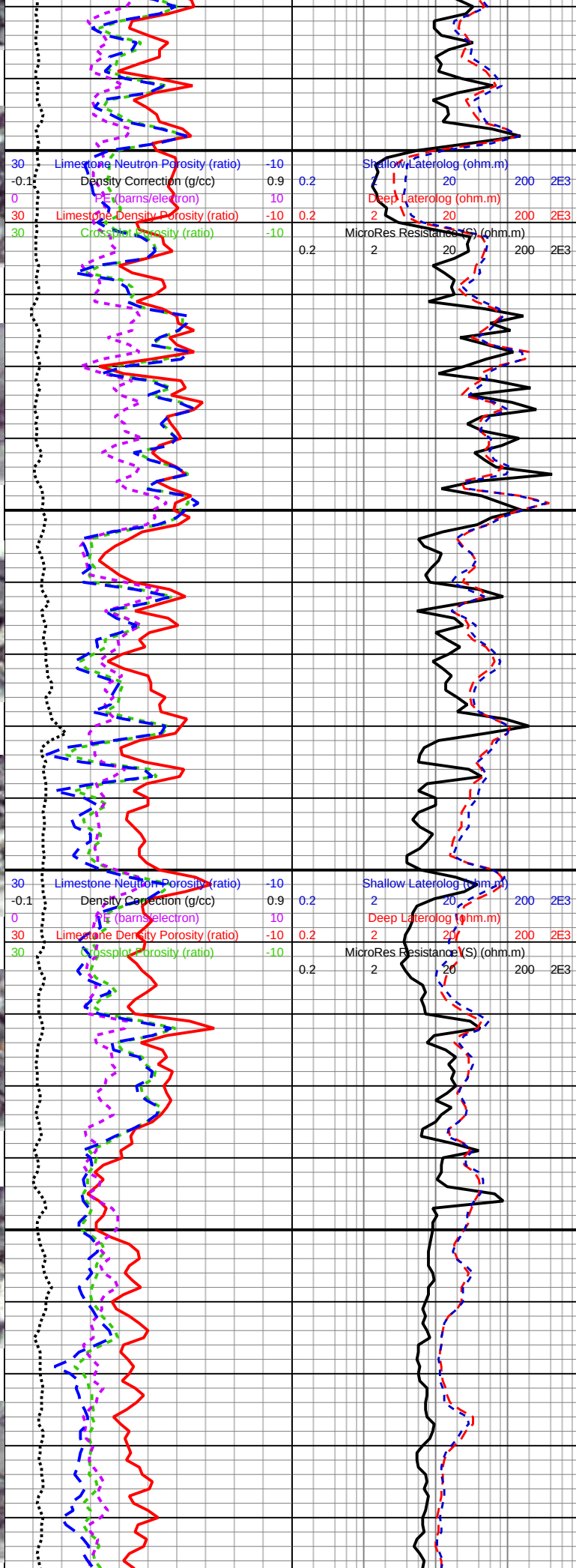
10450-10480 MD. SH: Blk - GyshBlk, subbly to subply, smth to slty txt, frm to hd. LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxln to fxln, frm to hd, tt por, rr PYR. Weak strmg cut, mod Strw rng.

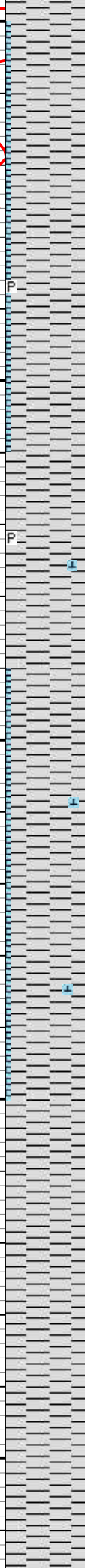
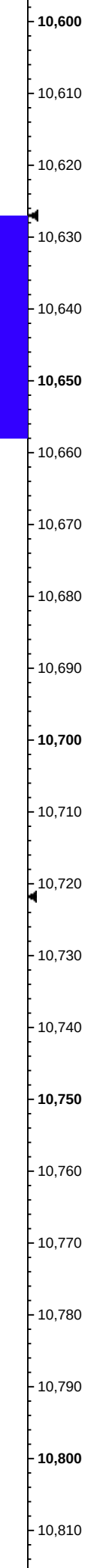
10480-10510 MD. SH: GyshBlk - Blk, subbly to subply, smth to slty txt, frm to hd, rr CAL vn. LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxln to fxln, frm to hd, tt por. Weak strmg cut, mod Strw rng.

10510-10540 MD. SH: Blk - GyshBlk, subbly to subply, smth to slty txt, frm to hd, rr CAL vn. LS: medltGy - meddrkGy - modBn - GyshBlk - Blk, com mot, subbly to subply, v/fxln to fxln to micxln, frm to hd, tt por, tr PYR. Weak strmg cut, mod Strw rng.

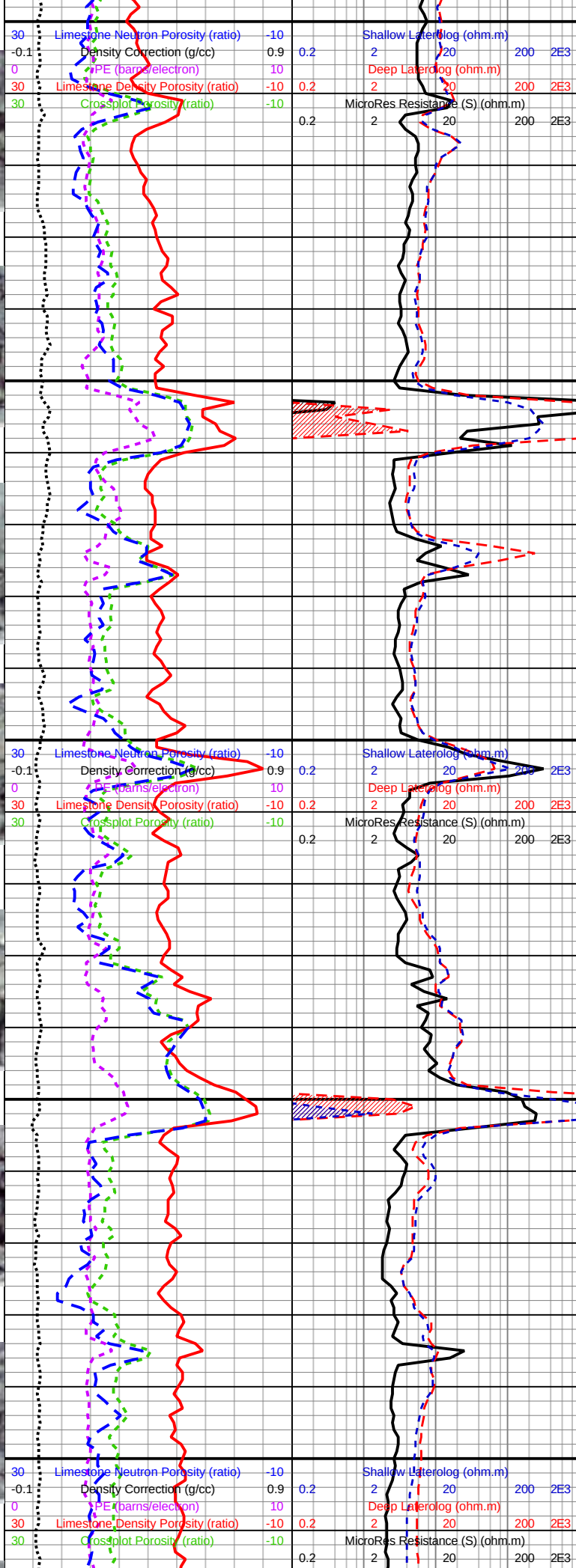
10540-10570 MD. SH: Blk - GyshBlk, subbly to subply, smth to slty txt, frm to hd, rr CAL vn. LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxln to fxln to micxln, frm to hd, tt por, tr PYR. Weak strmg cut, mod Strw rng.

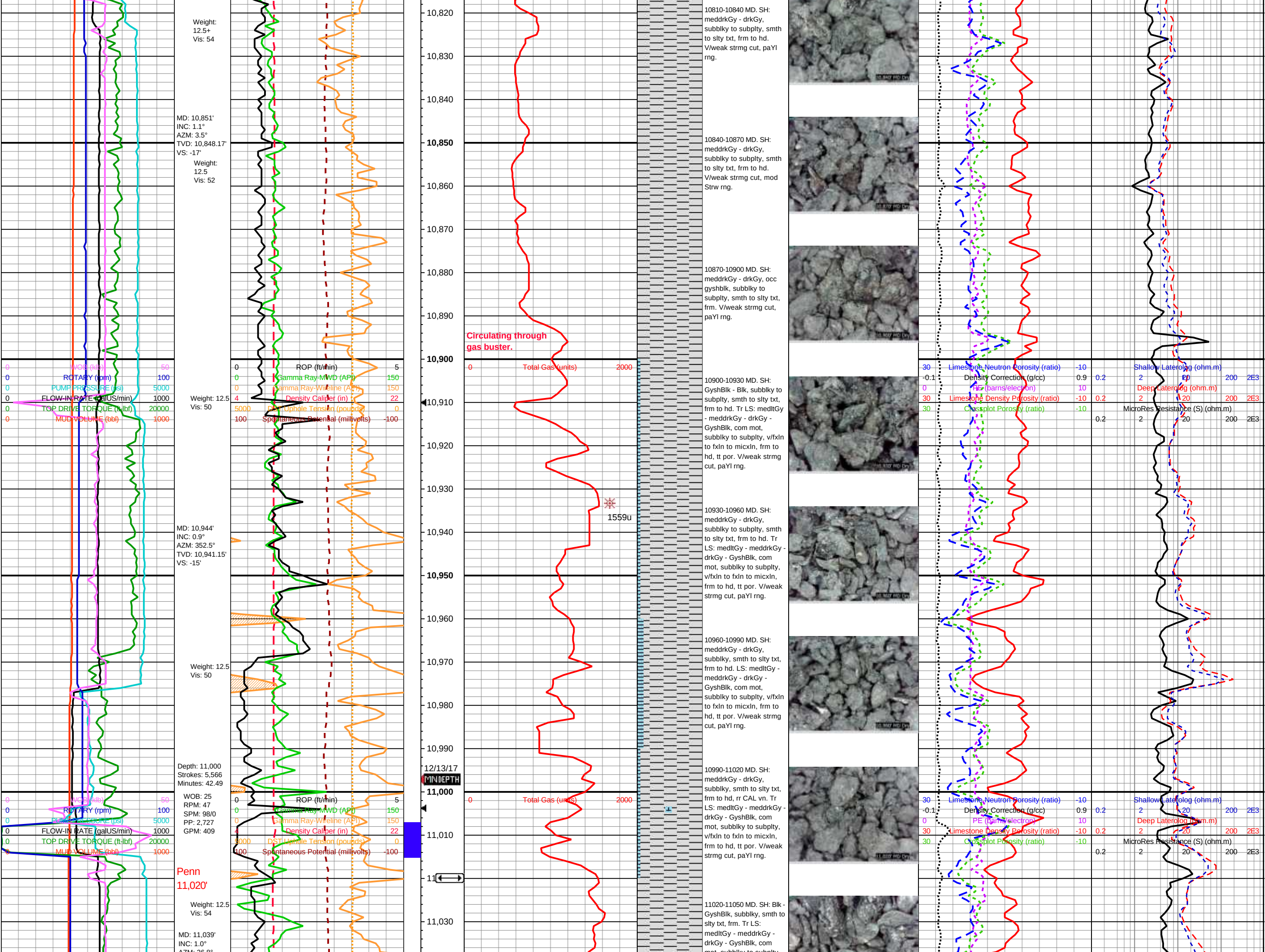
10570-10600 MD. SH: Blk - GyshBlk, subbly to subply, smth to slty txt, frm to hd, rr CAL vn. Tr LS: medltGy - meddrkGy - modBn - GyshBlk, com mot, subbly to subply, v/fxln to fxln to micxln, frm to hd, tt por. Weak strmg cut, mod Strw rng.

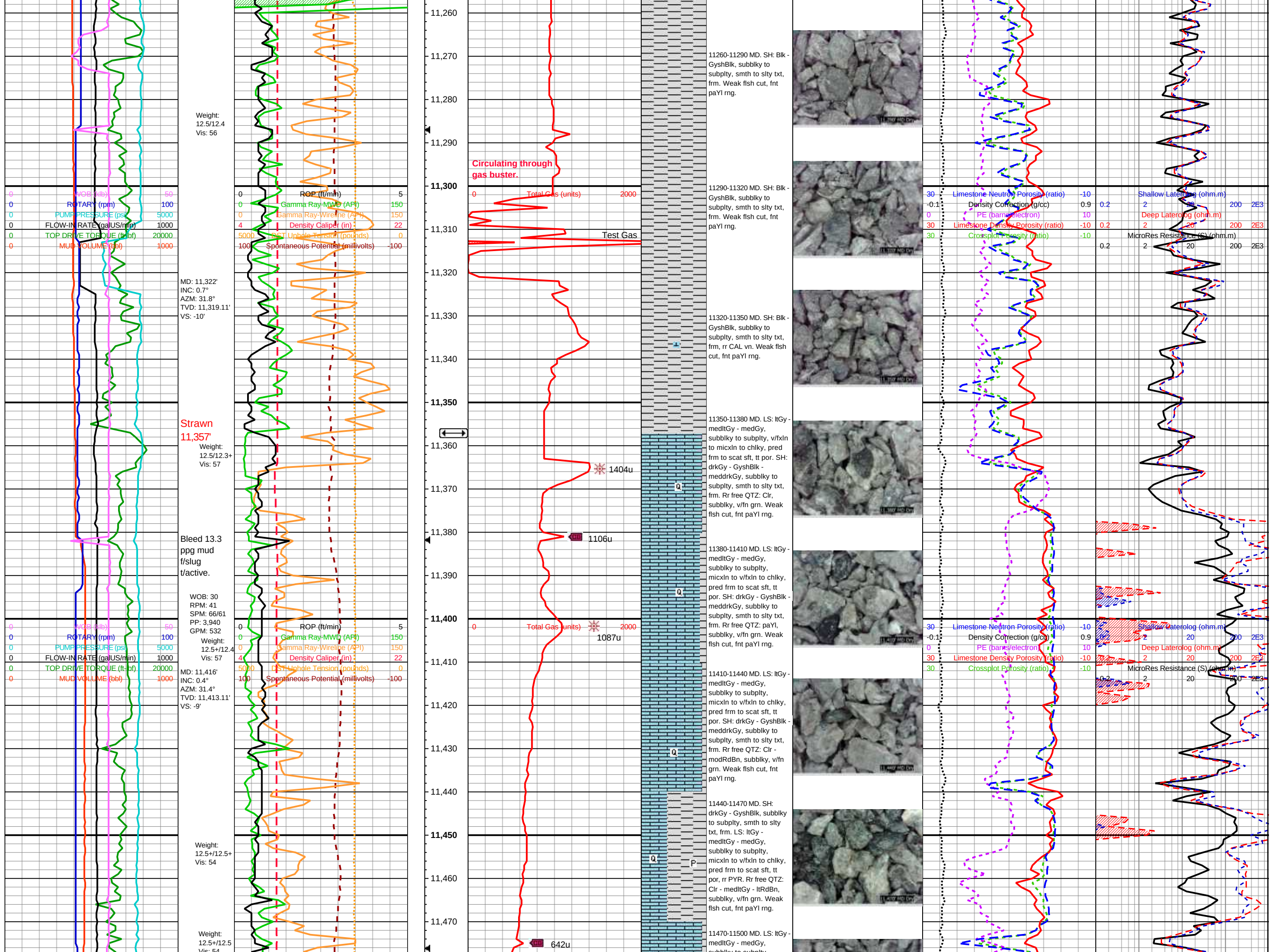


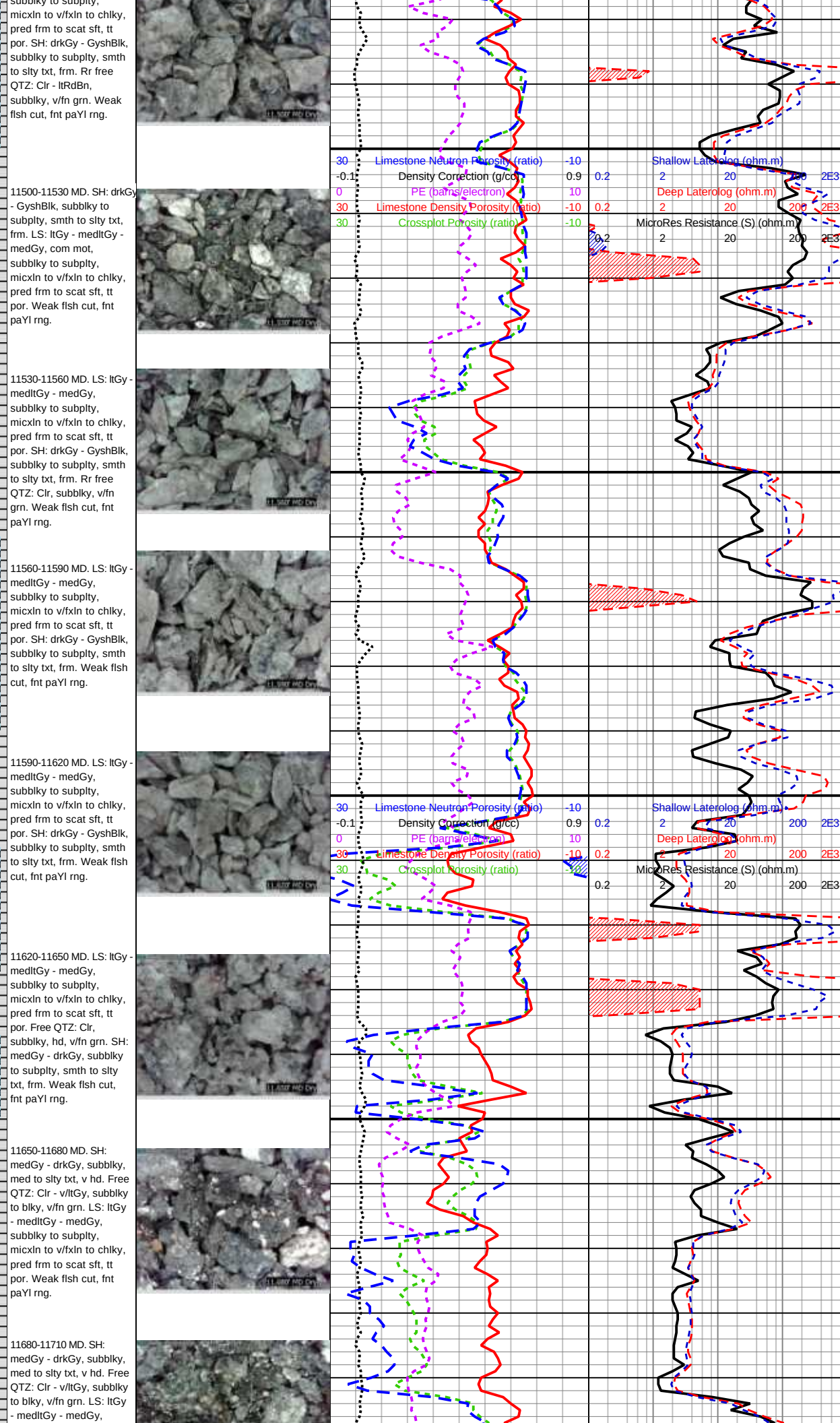
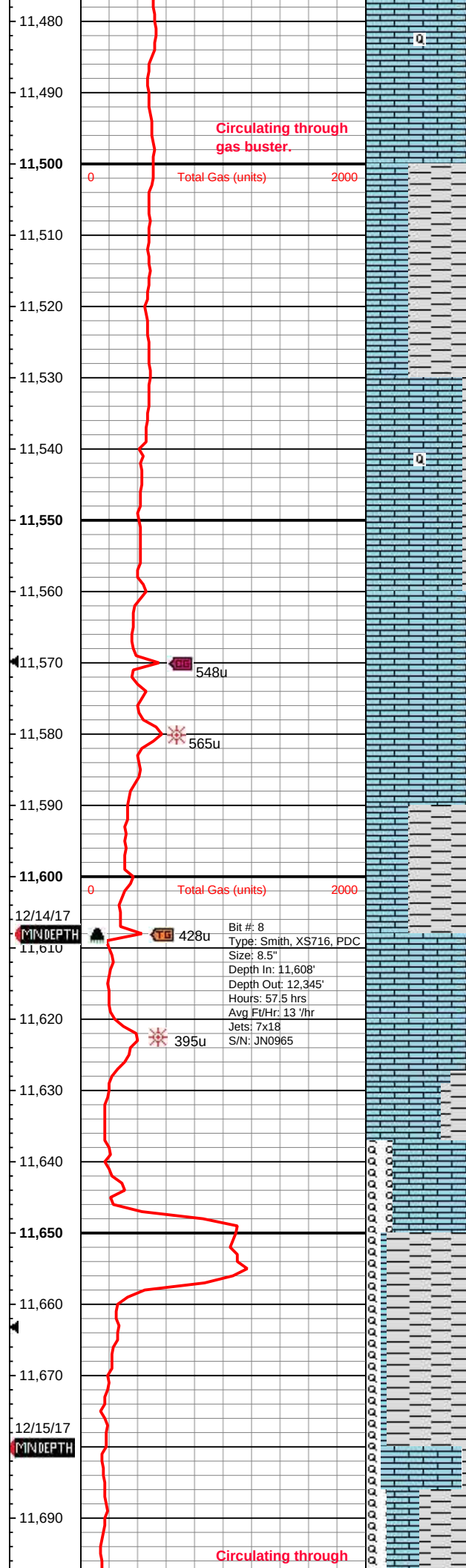
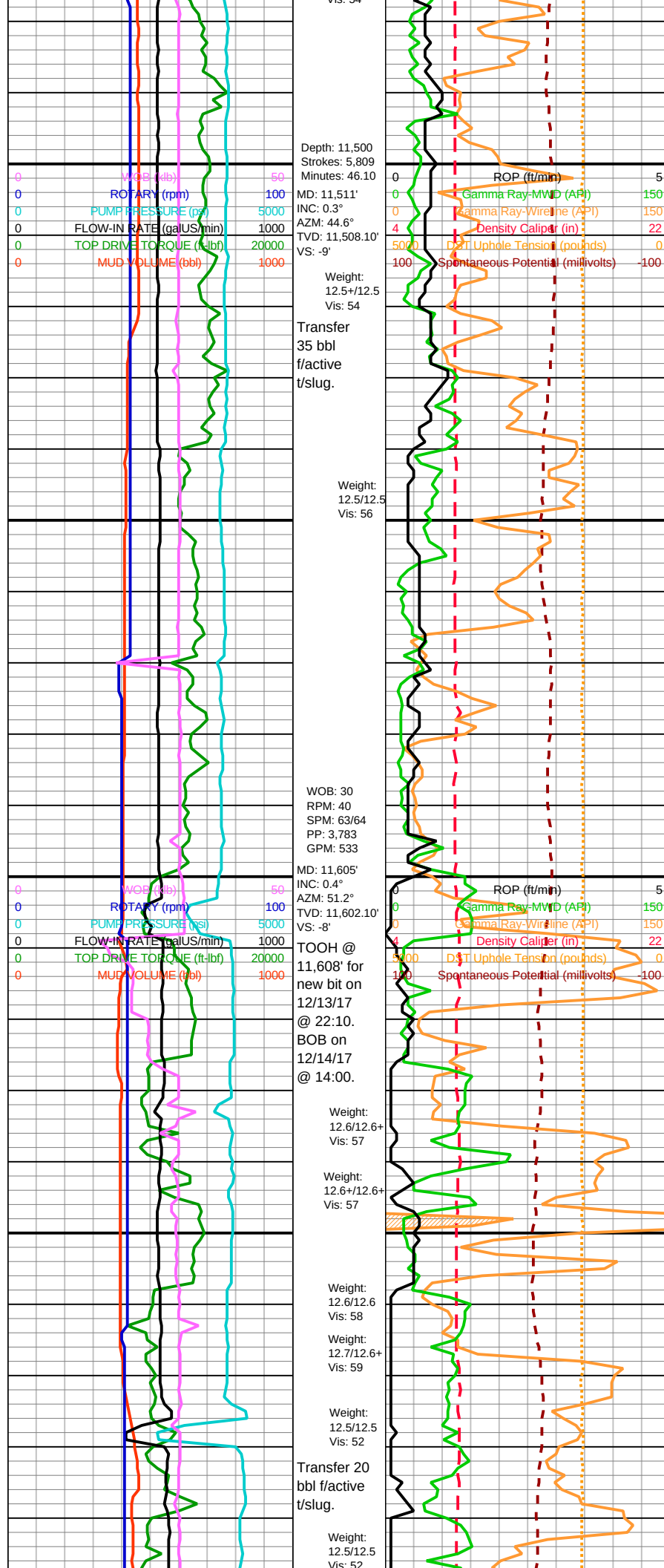


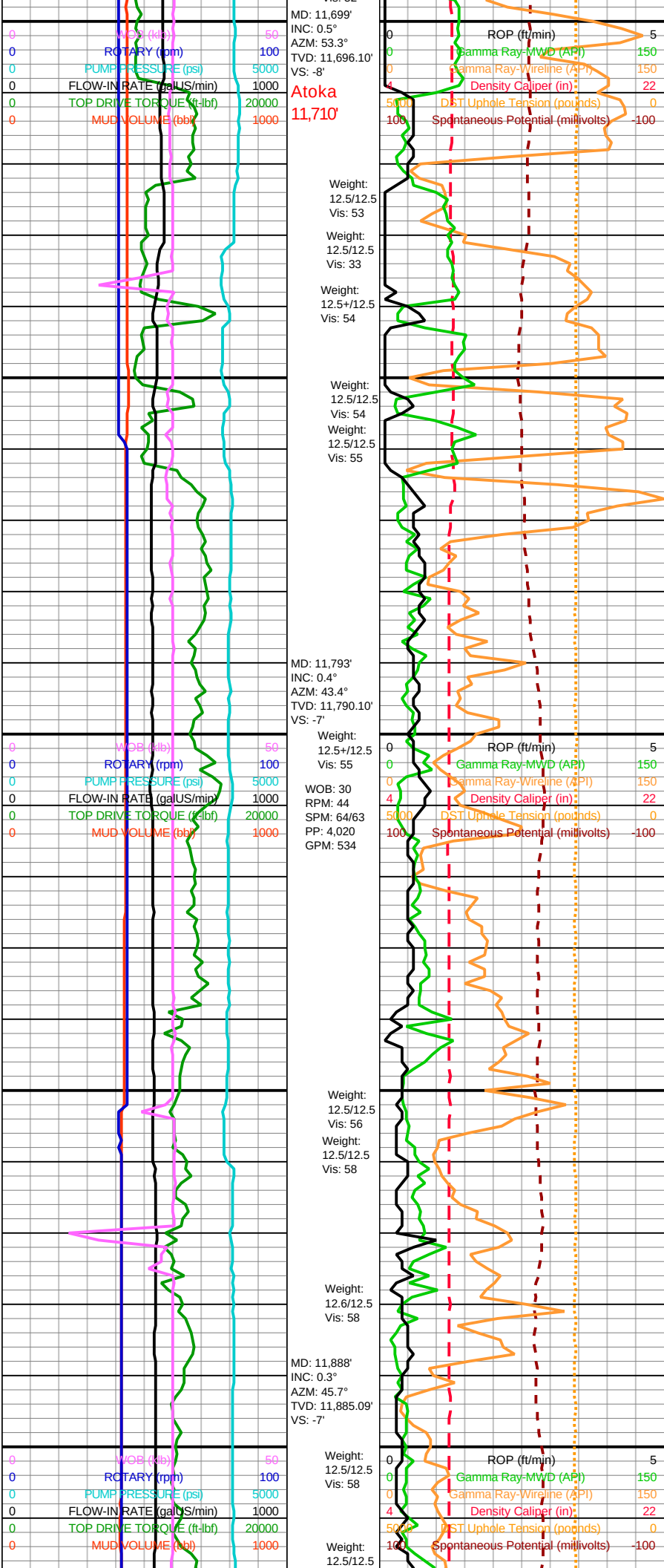
10780-10810 MD. SH:
meddrkGy - drkGy,
subblky to subply, smth
to slty txt, frm to hd. Tr
LS: medltGy - meddrkGy -
drkGy - GyshBlk, com
mot, subblky to subply,
v/fxln to fxln to micxln,
frm to hd, tt por. V/weak
strmg cut, mod Strw rng.

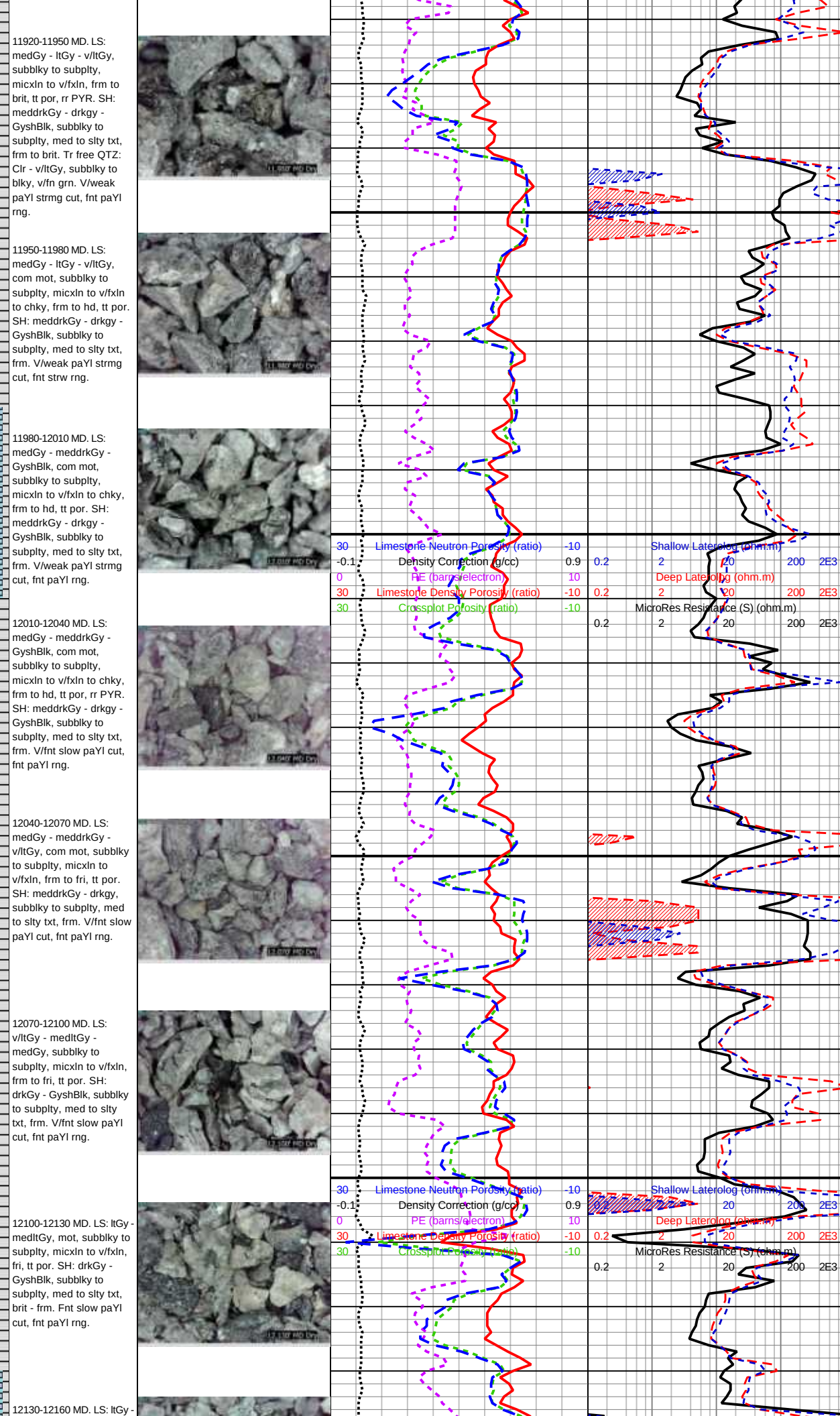
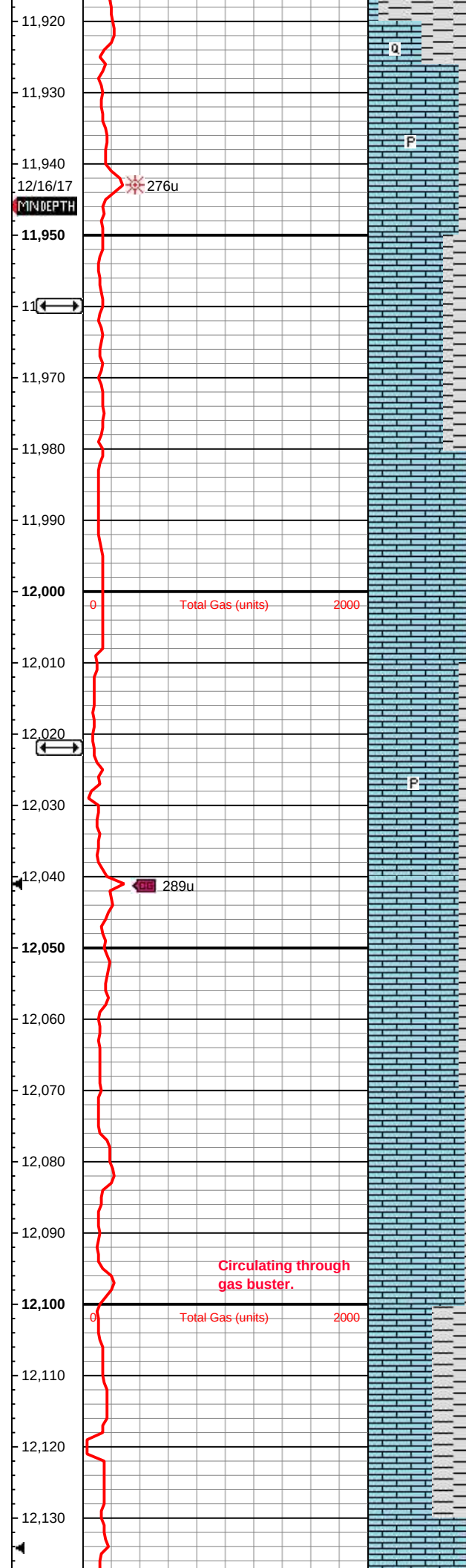
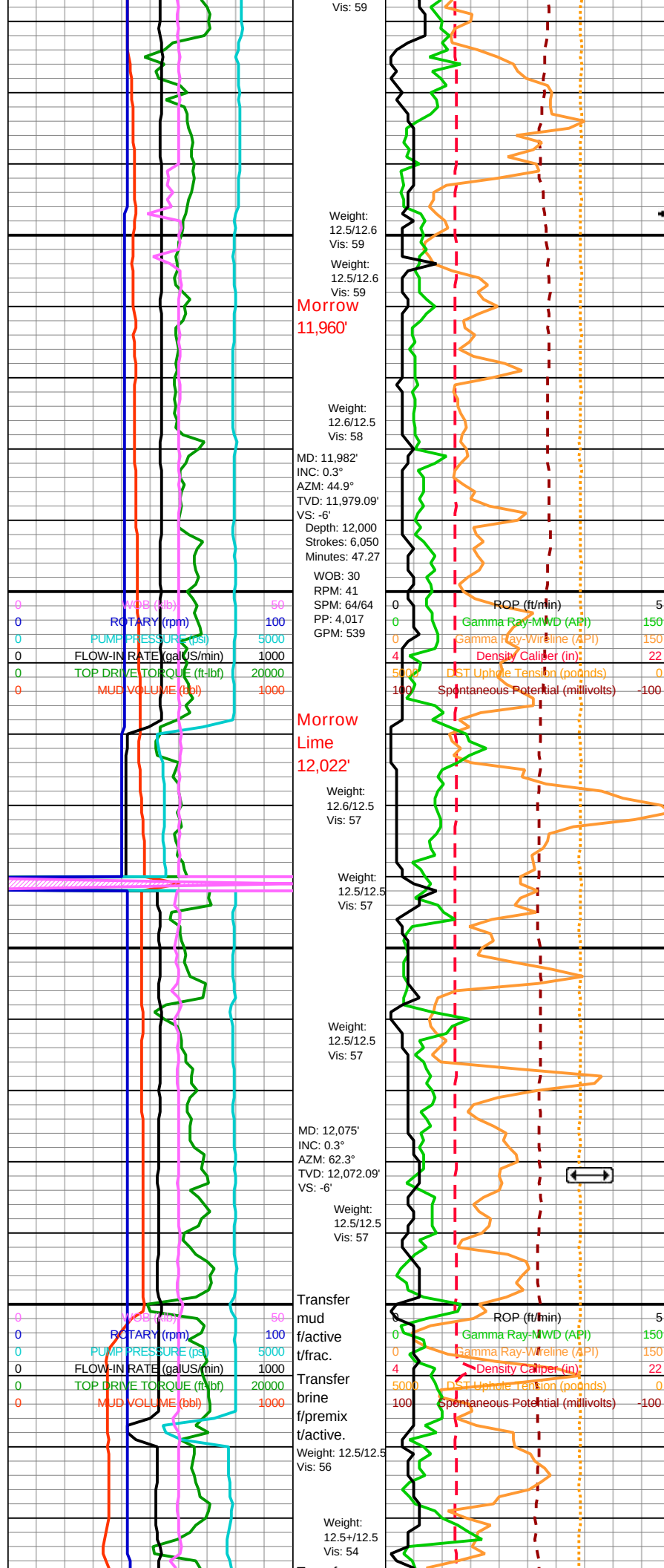


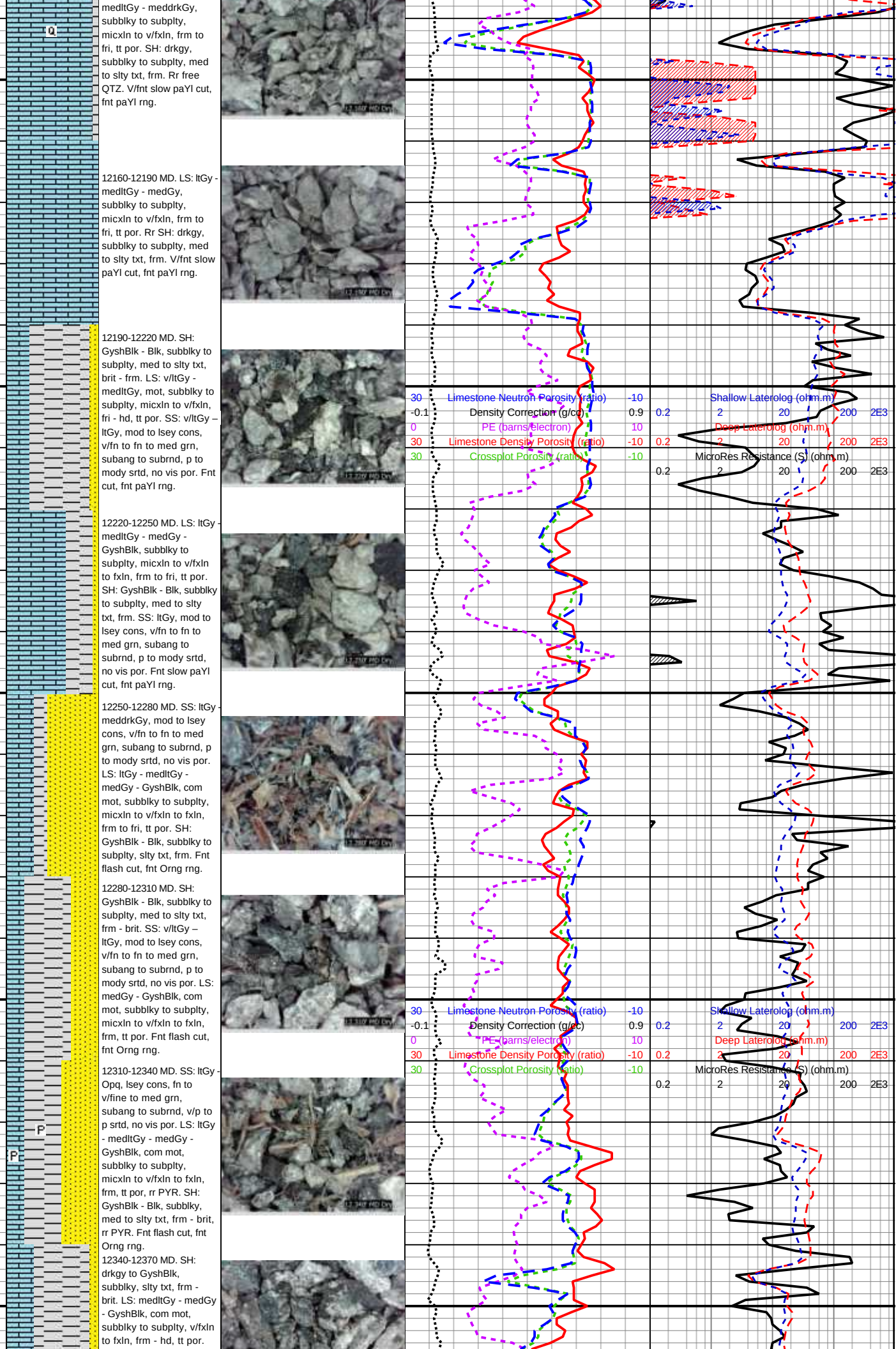
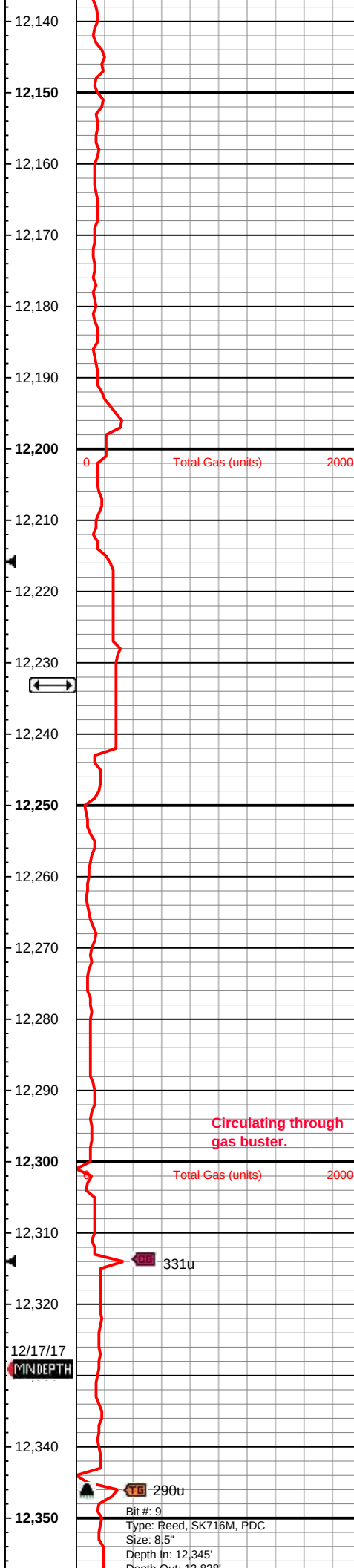
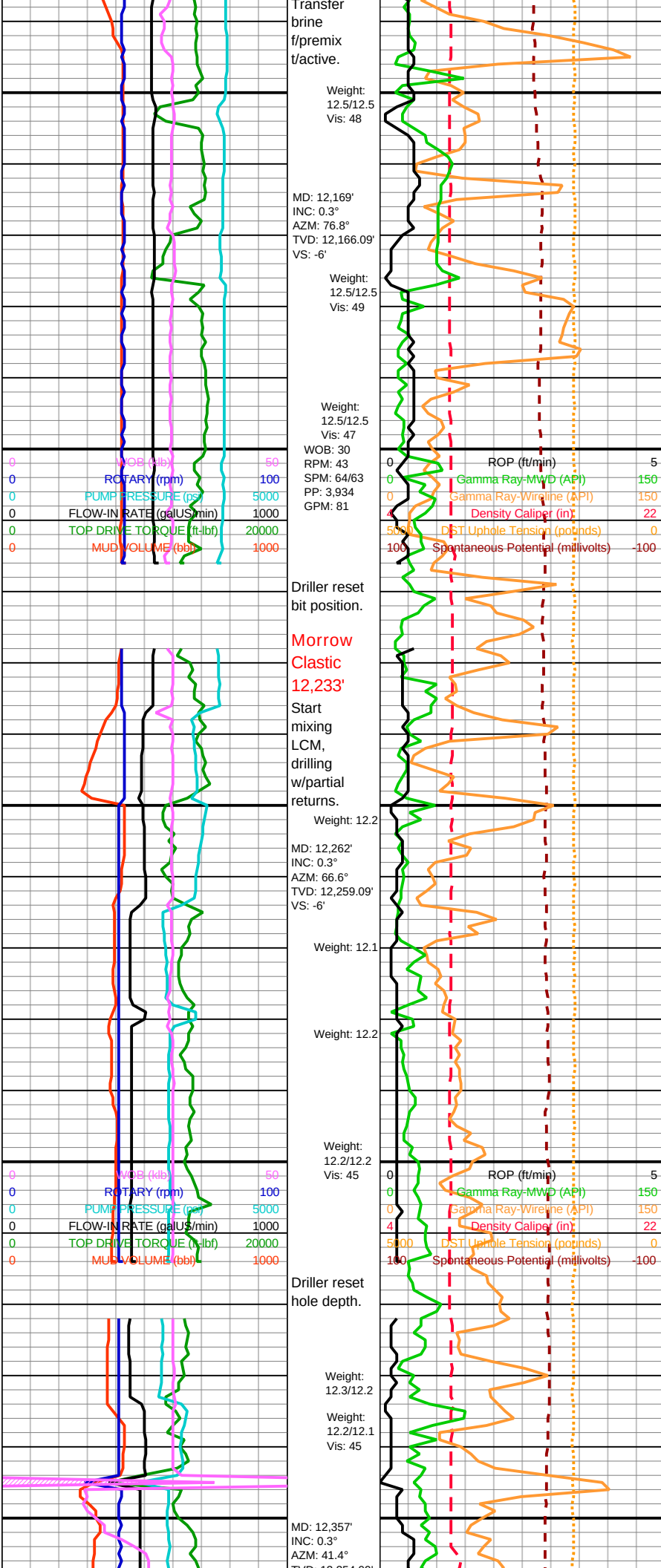


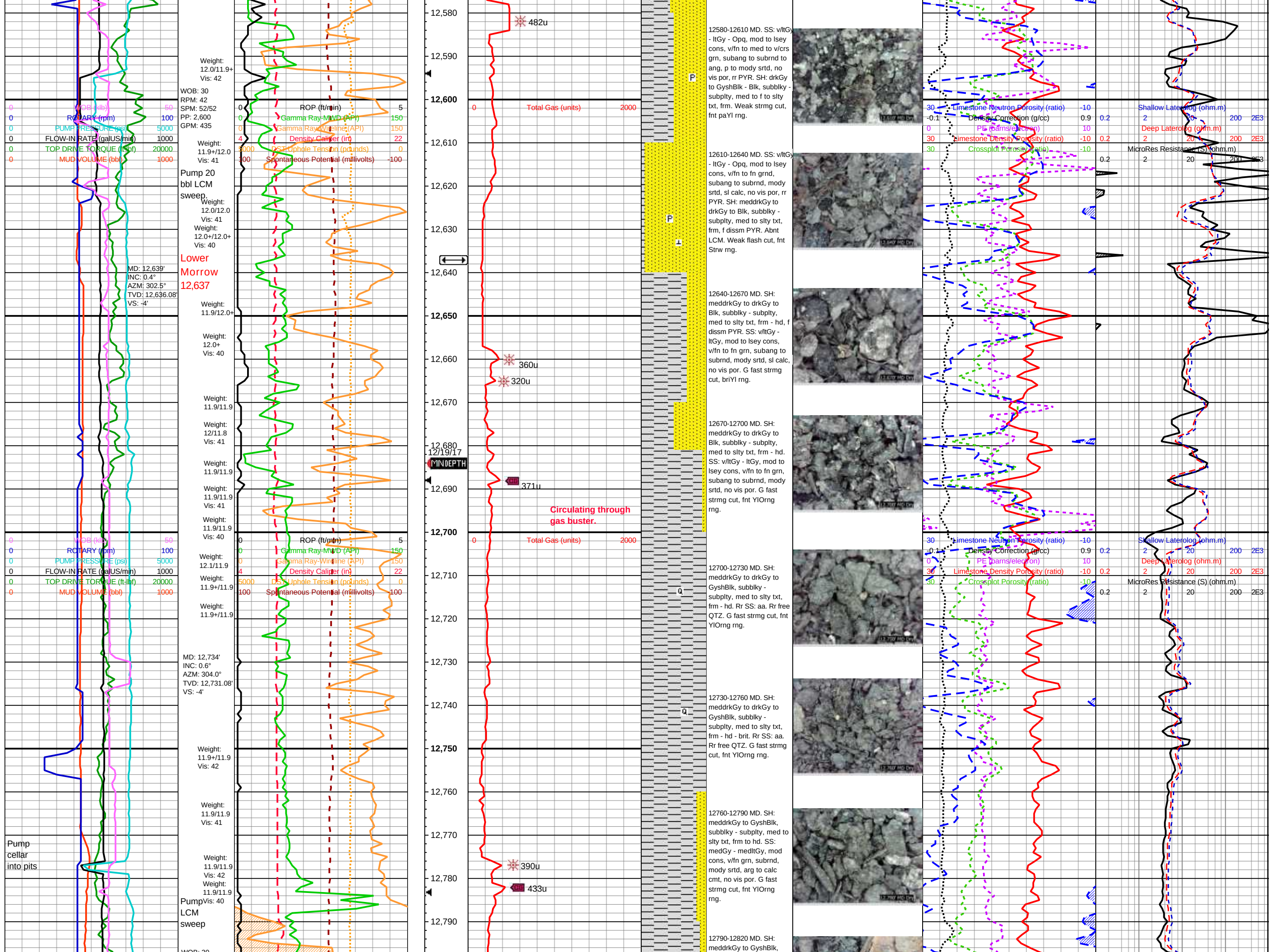


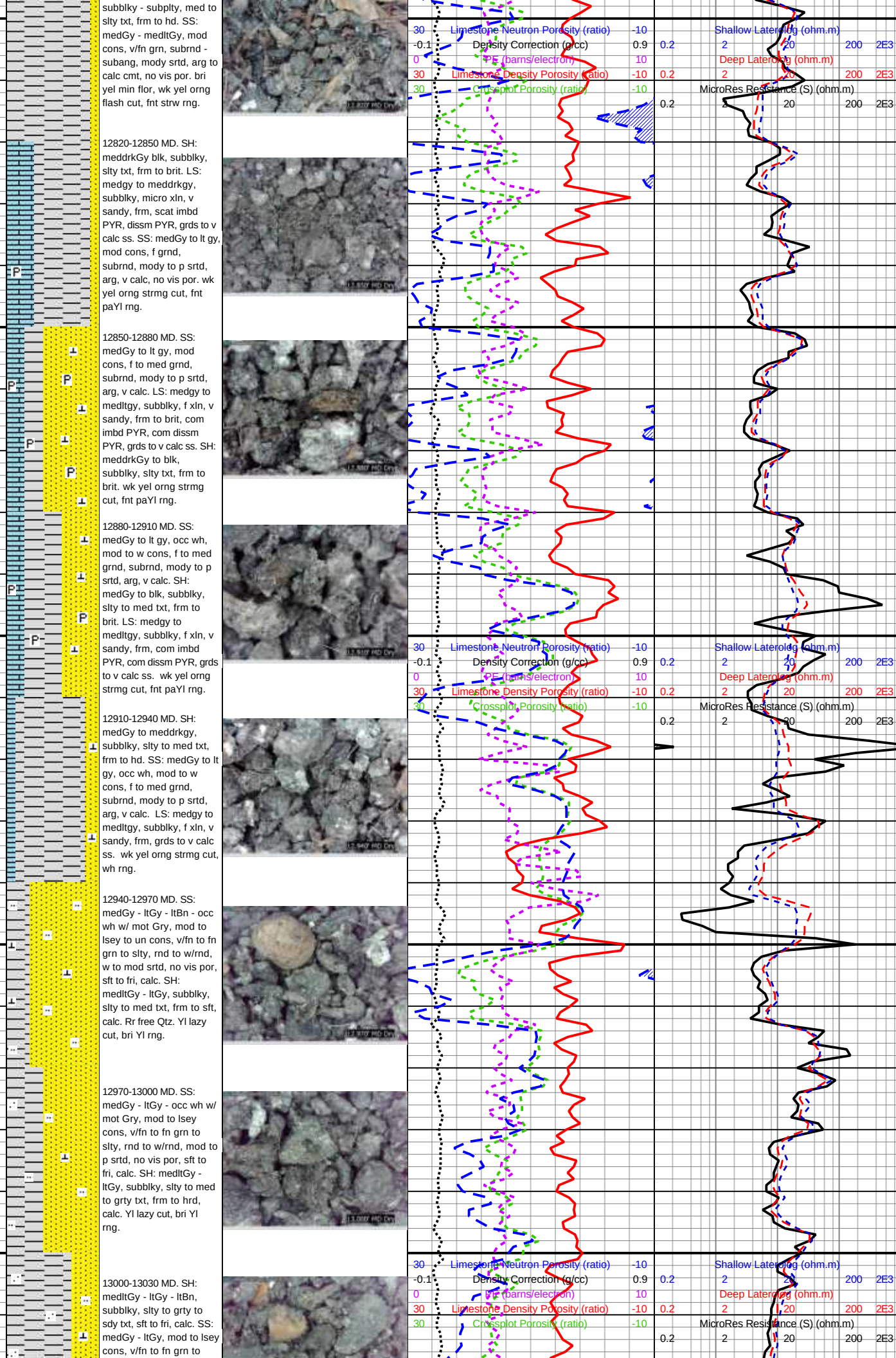
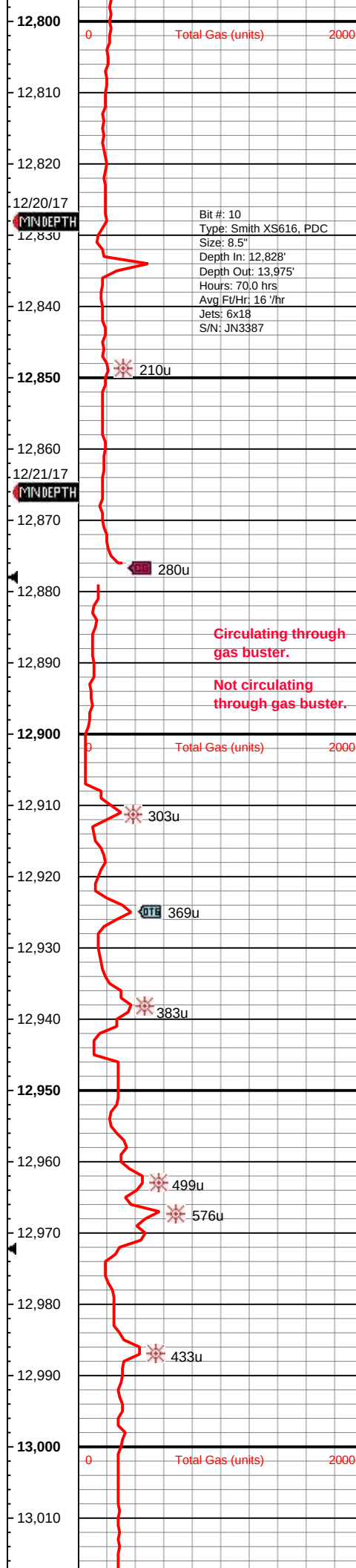
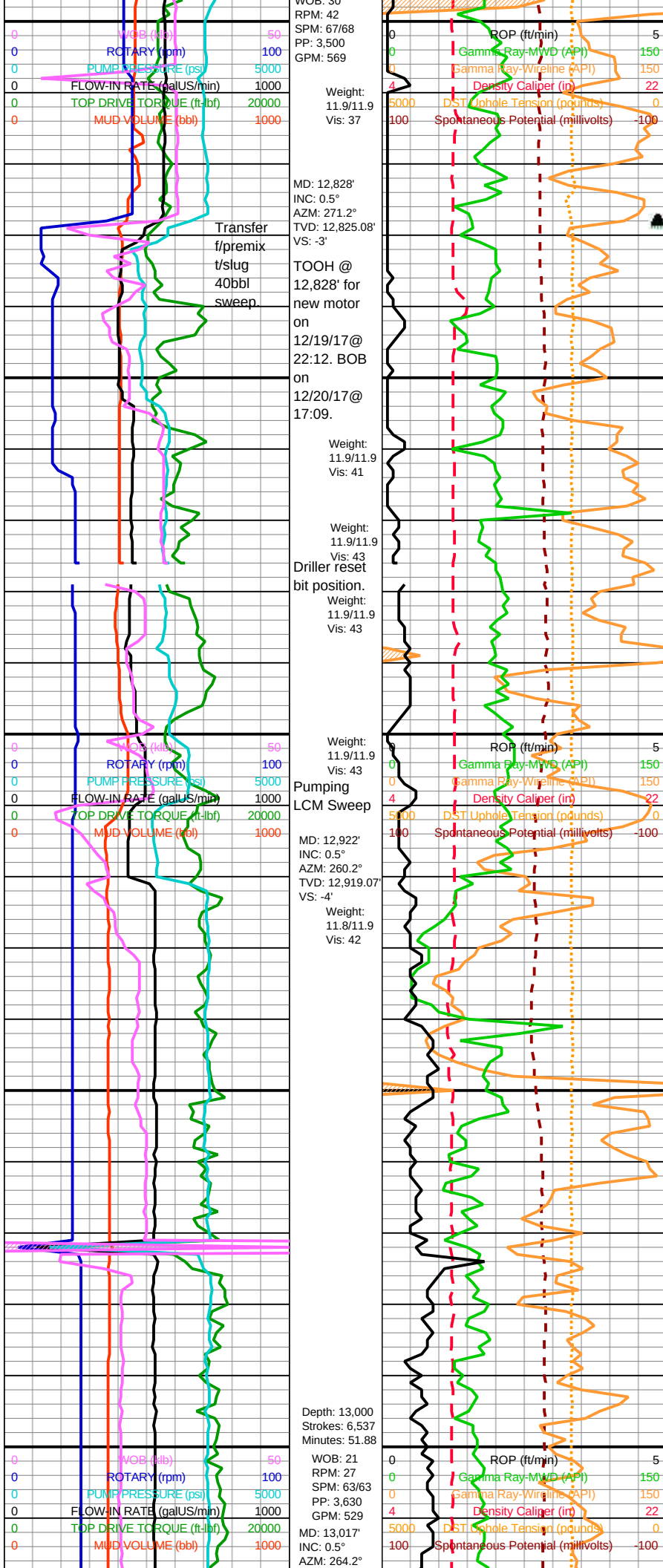


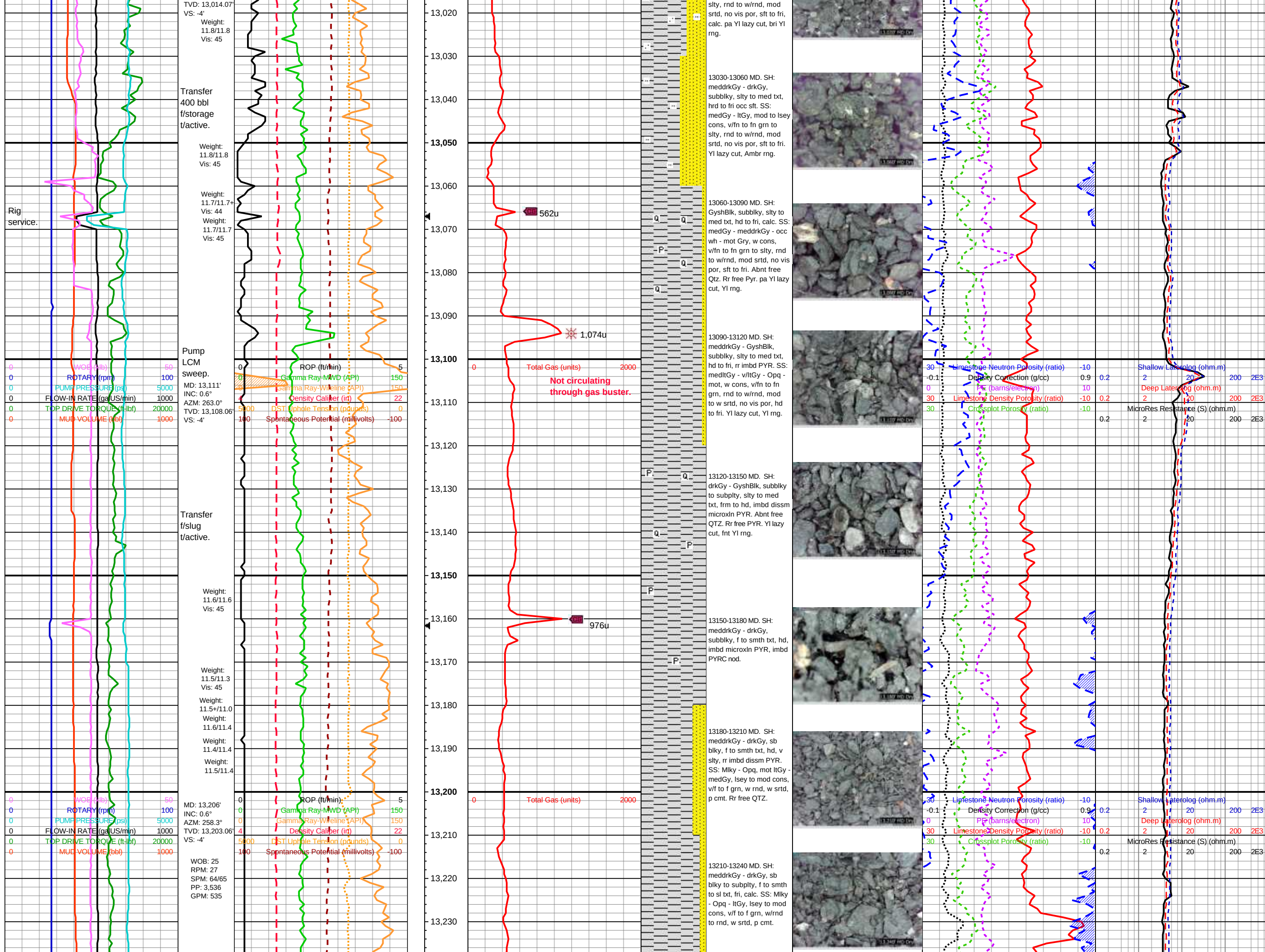


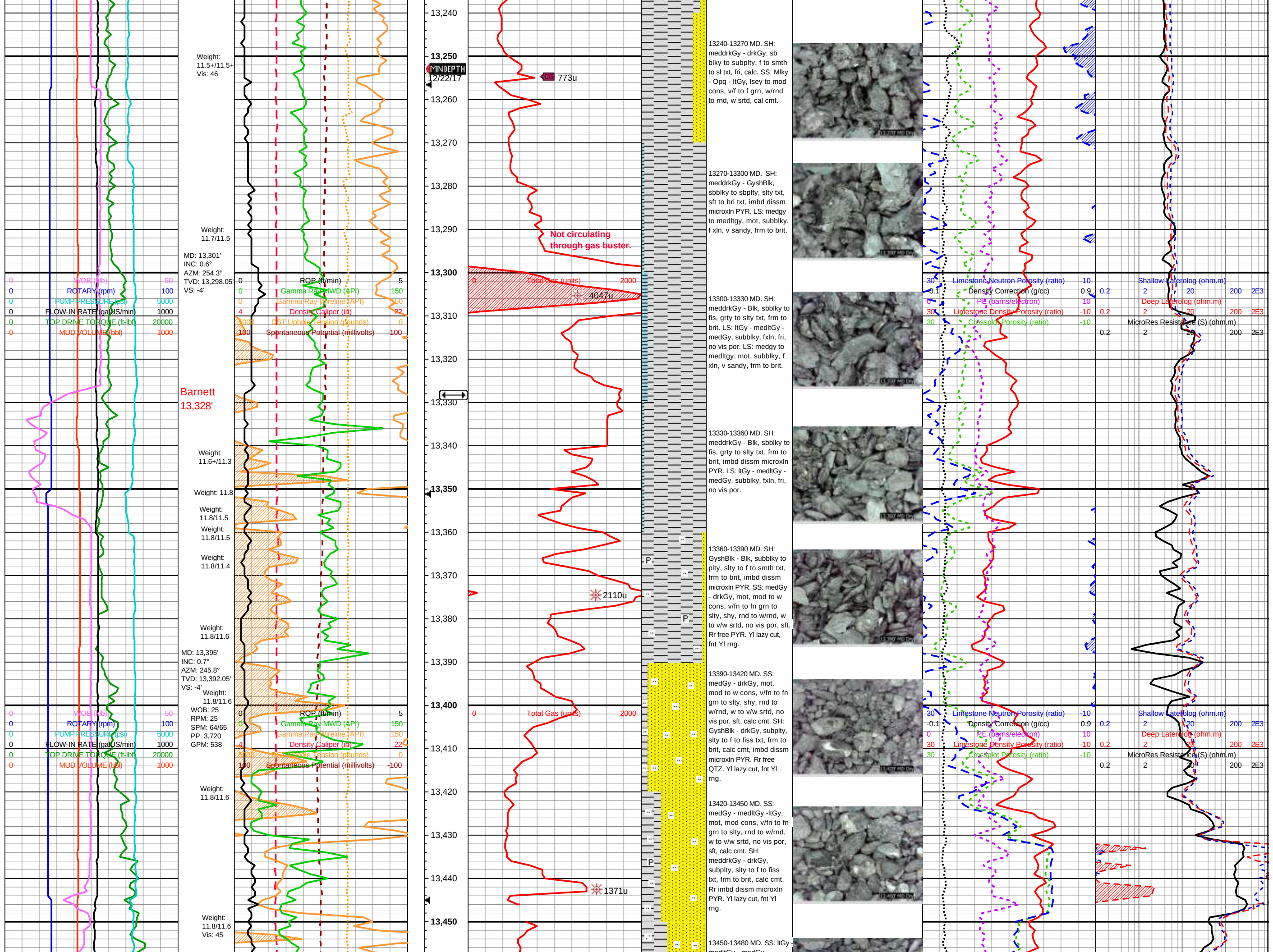


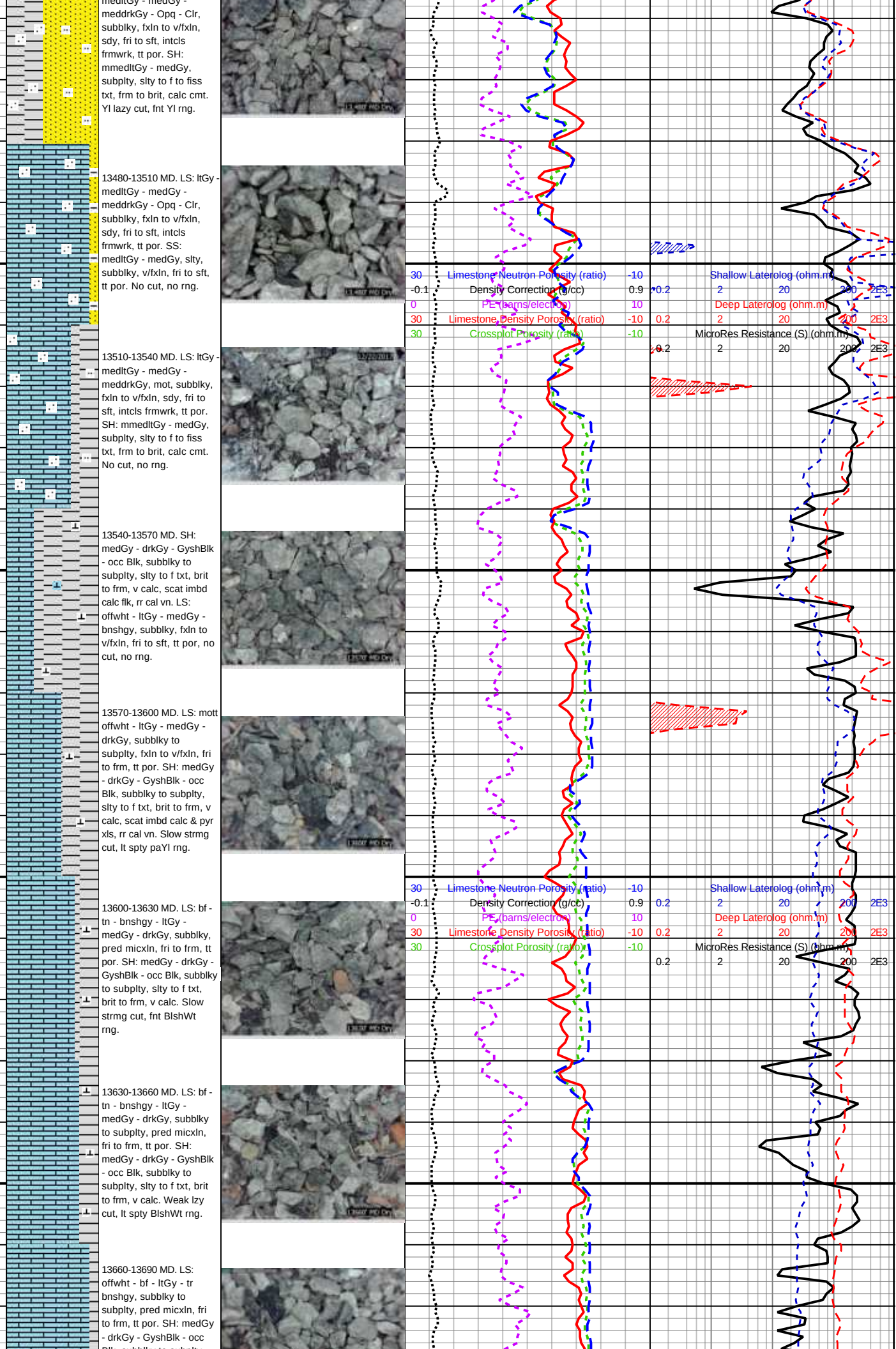
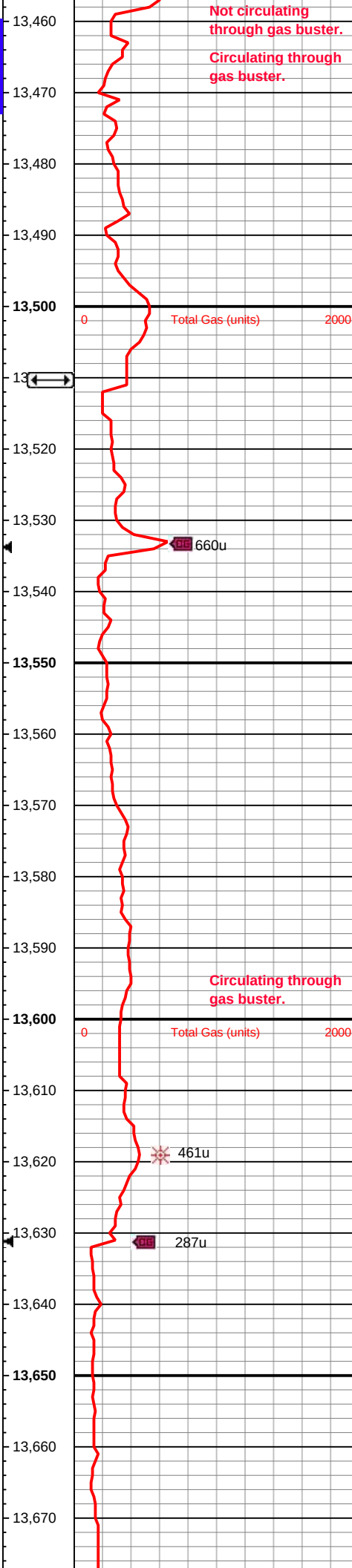
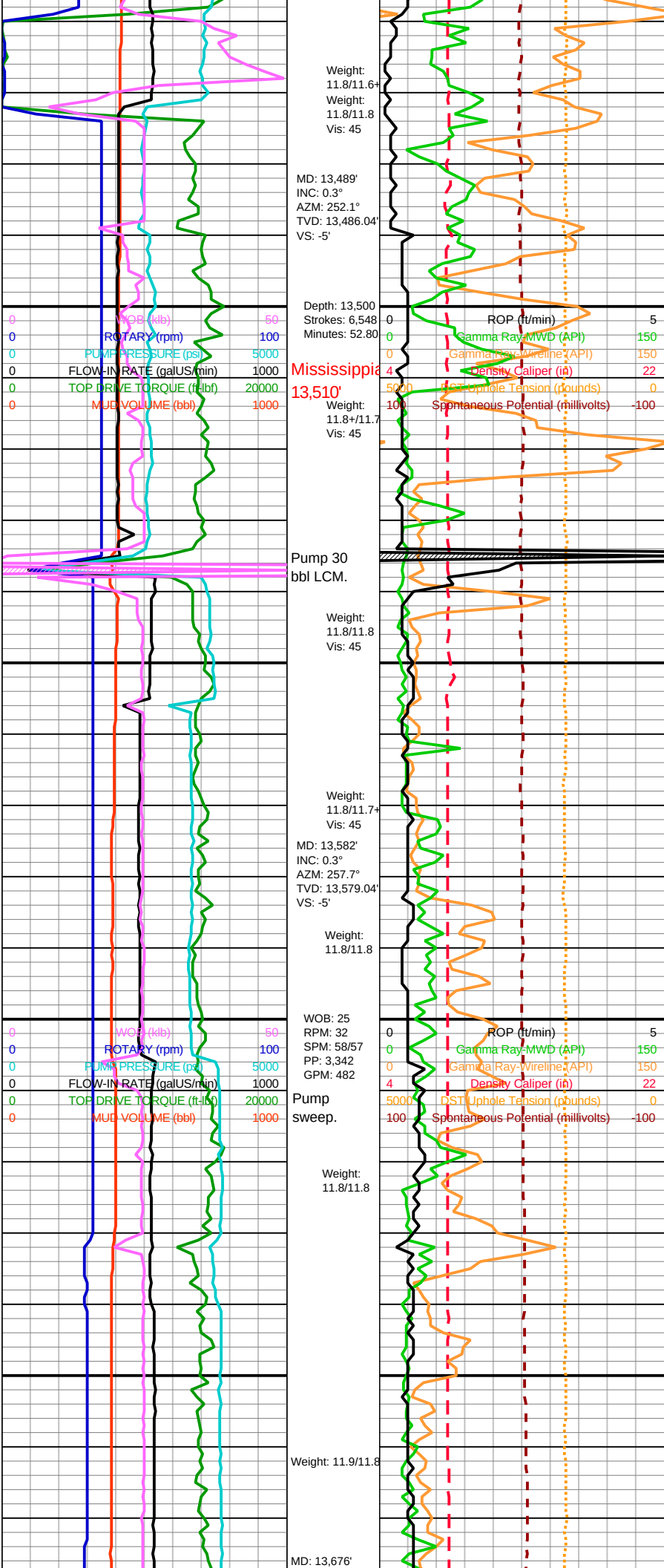


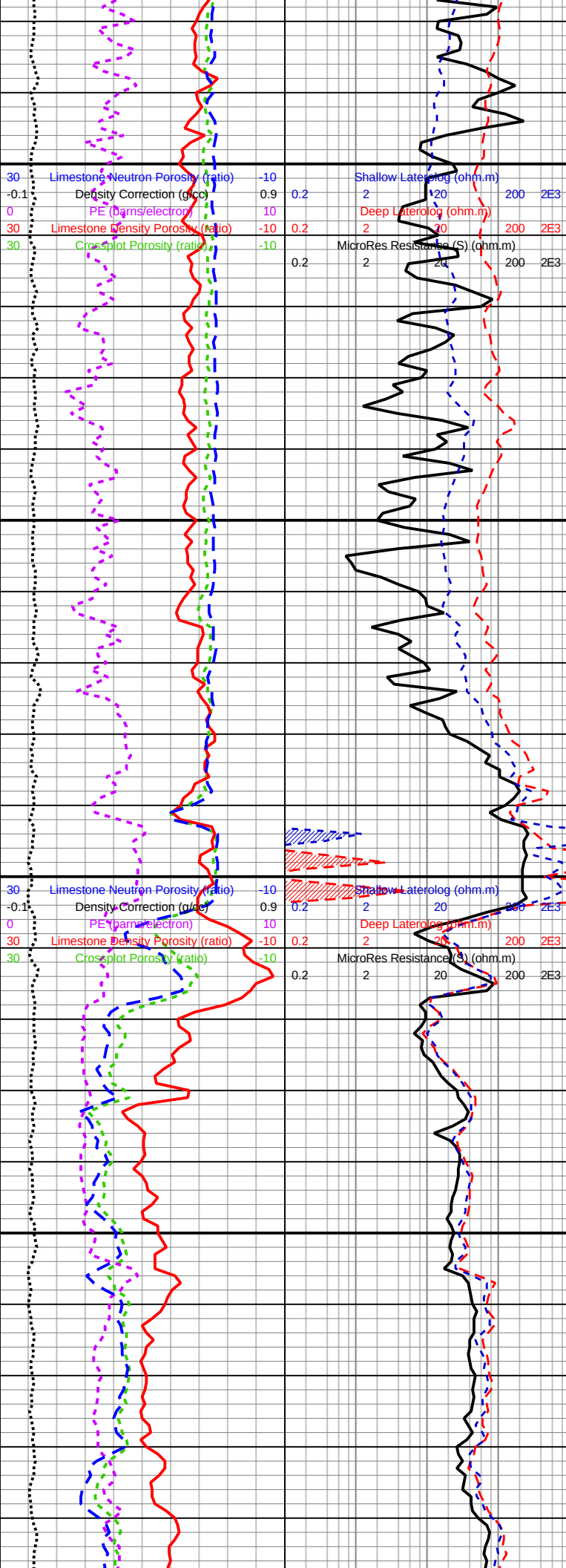
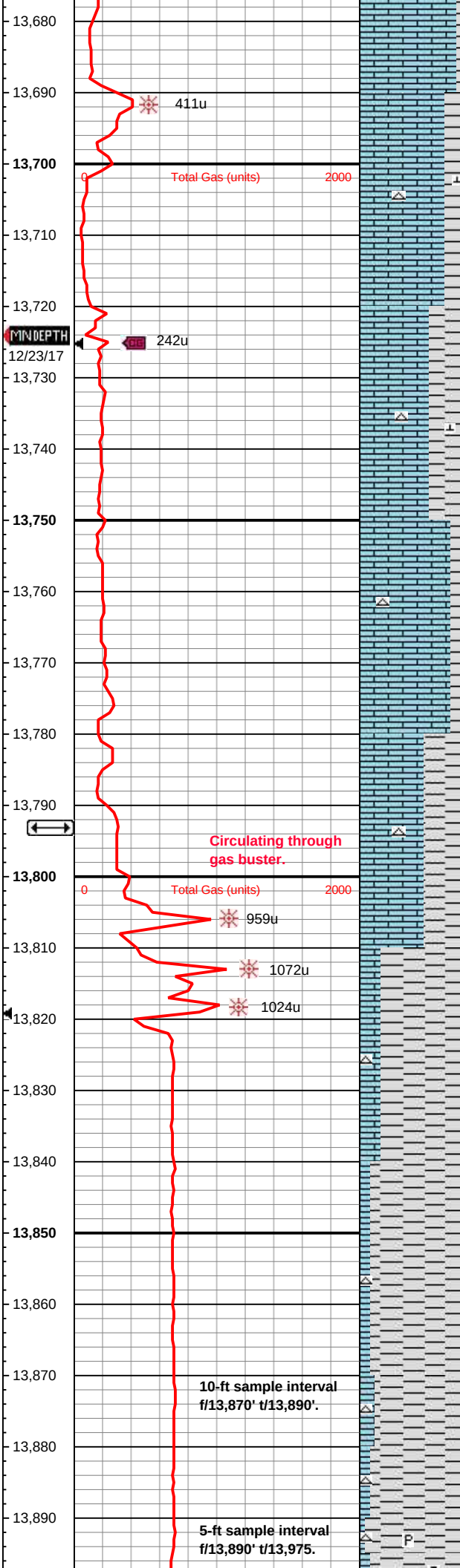
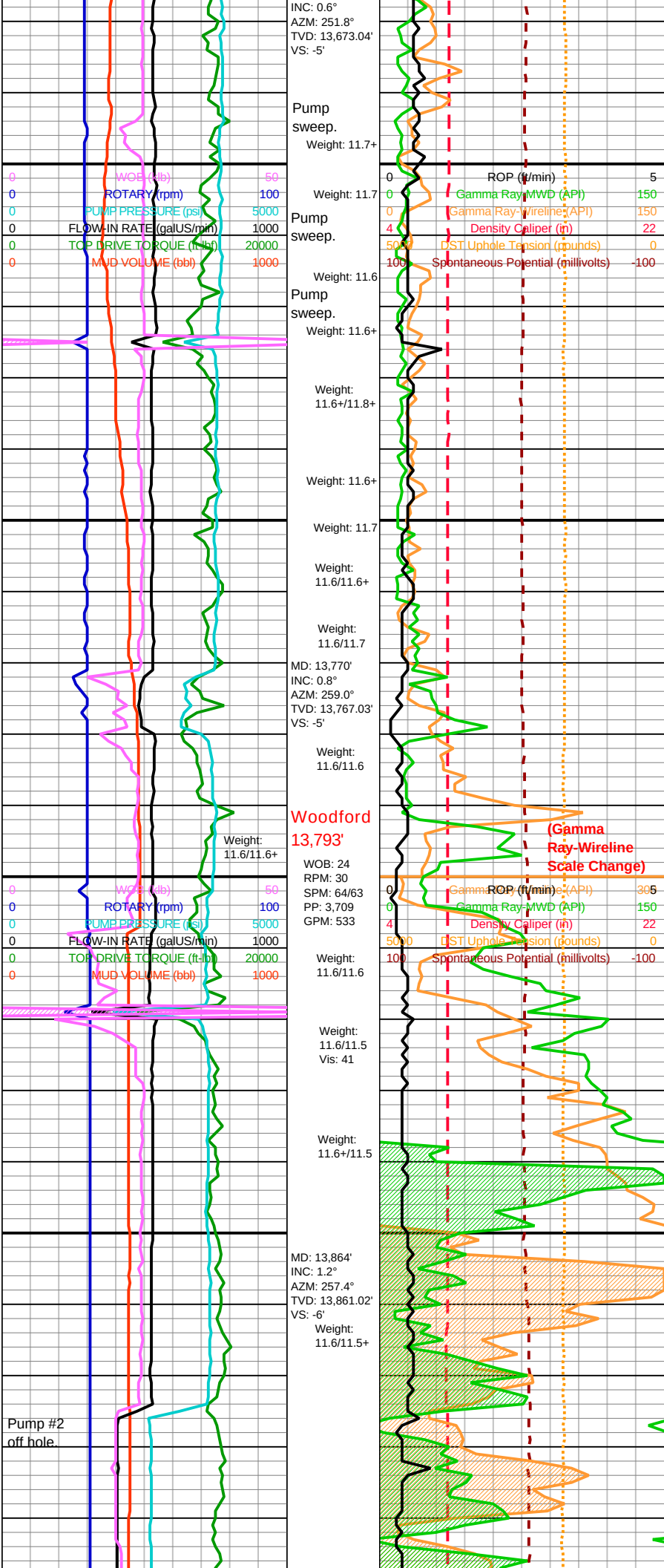


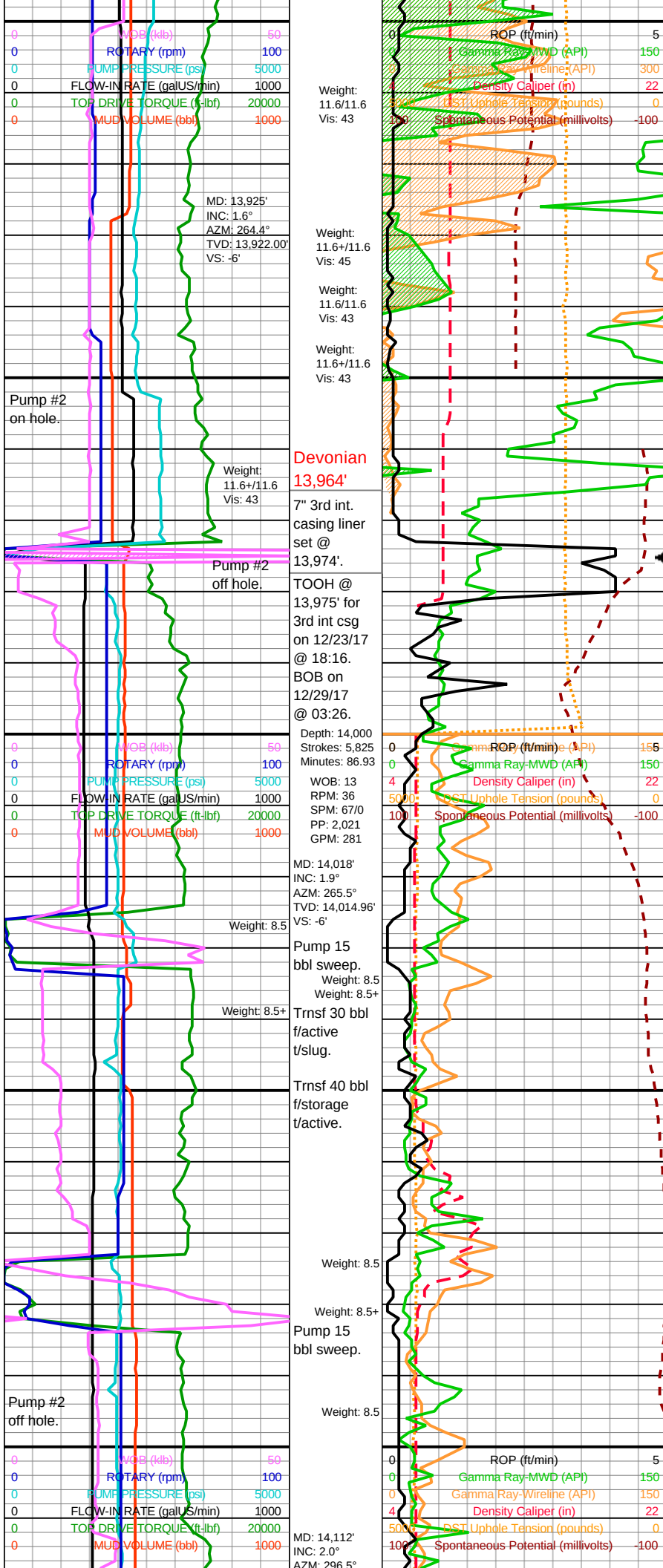












Devonian

13,964'

7" 3rd int. casing liner set @ 13,974'.

TOOH @ 13,975' for 3rd int csg on 12/23/17 @ 18:16. BOB on 12/29/17 @ 03:26.

Depth: 14,000
Strokes: 5,825
Minutes: 86.93
WOB: 13
RPM: 36
SPM: 67/0
PP: 2,021
GPM: 281

MD: 14,018'
INC: 1.9°
AZM: 265.5°
TVD: 14,014.96'
VS: -6'

Weight: 8.5

Pump 15 bbl sweep.

Weight: 8.5

Trnsf 30 bbl f/active t/slug.

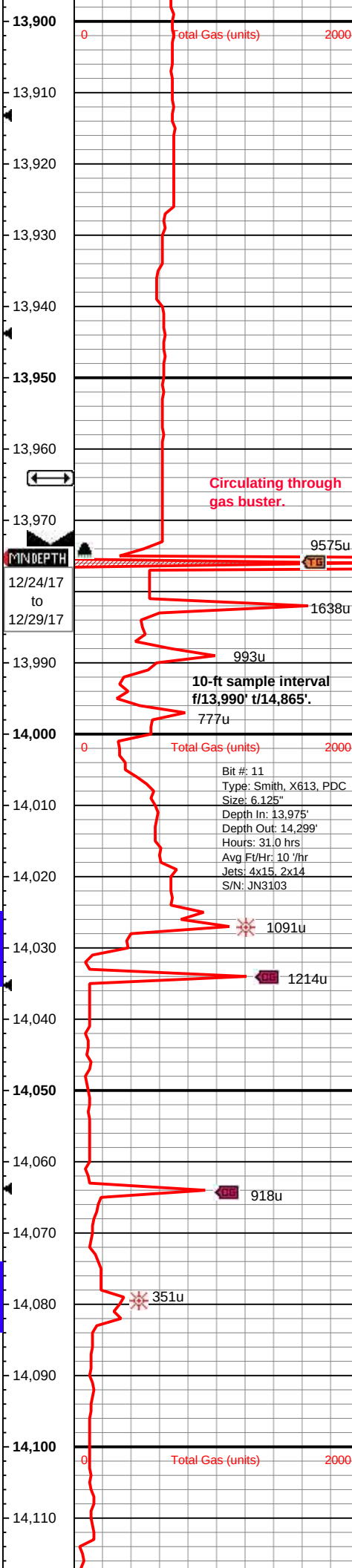
Trnsf 40 bbl f/storage t/active.

Weight: 8.5

Weight: 8.5+

Pump 15 bbl sweep.

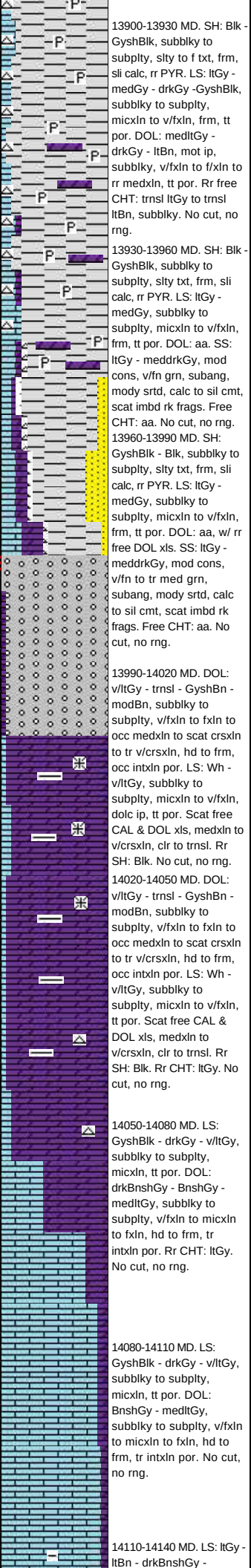
Weight: 8.5



Circulating through gas buster.

10-ft sample interval f/13,990' t/14,865'.

Bit #: 11
Type: Smith, X613, PDC
Size: 6.125"
Depth In: 13,975'
Depth Out: 14,299'
Hours: 31.0 hrs
Avg F/Hr: 10' /hr
Jets: 4x15, 2x14
S/N: JN3103



13900-13930 MD. SH: Blk - GyshBlk, subbly to subbly, slty to f txt, frm, sli calc, rr PYR. LS: ltGy - medGy - drkGy - GyshBlk, subbly to subbly, micxln to v/fxln, frm, tt por. DOL: medltGy - drkGy - ltBn, mot ip, subbly, v/fxln to f/xln to rr medxln, tt por. Rr free CHT: trnsl ltGy to trnsl ltBn, subbly. No cut, no rng.

13930-13960 MD. SH: Blk - GyshBlk, subbly to subbly, slty txt, frm, sli calc, rr PYR. LS: ltGy - medGy, subbly to subbly, micxln to v/fxln, frm, tt por. DOL: aa. SS: ltGy - meddrkGy, mod cons, v/frn grn, subang, mody strtd, calc to sil cmt, scat imbd rk frags. Free CHT: aa. No cut, no rng.

13960-13990 MD. SH: GyshBlk - Blk, subbly to subbly, slty txt, frm, sli calc, rr PYR. LS: ltGy - medGy, subbly to subbly, micxln to v/fxln, frm, tt por. DOL: aa, w/ rr free DOL xls. SS: ltGy - meddrkGy, mod cons, v/frn to tr med grn, subang, mody strtd, calc to sil cmt, scat imbd rk frags. Free CHT: aa. No cut, no rng.

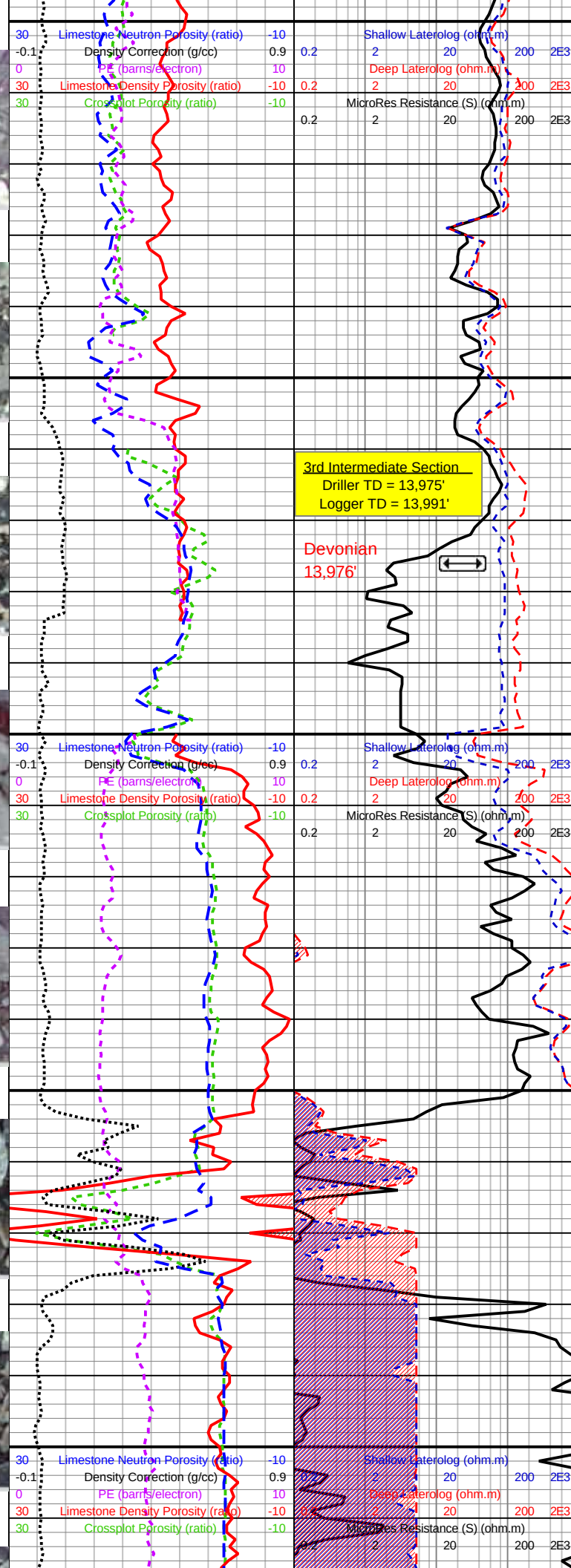
13990-14020 MD. DOL: v/ltGy - trnsl - GyshBn - modBn, subbly to subbly, v/fxln to fxln to occ medxln to scat crsxn to tr v/crsxln, hd to frm, occ intxln por. LS: Wh - v/ltGy, subbly to subbly, micxln to v/fxln, dolc ip, tt por. Scat free CAL & DOL xls, medxln to v/crsxln, clr to trnsl. Rr SH: Blk. No cut, no rng.

14020-14050 MD. DOL: v/ltGy - trnsl - GyshBn - modBn, subbly to subbly, v/fxln to fxln to occ medxln to scat crsxn to tr v/crsxln, hd to frm, occ intxln por. LS: Wh - v/ltGy, subbly to subbly, micxln to v/fxln, tt por. Scat free CAL & DOL xls, medxln to v/crsxln, clr to trnsl. Rr SH: Blk. Rr CHT: ltGy. No cut, no rng.

14050-14080 MD. LS: GyshBlk - drkGy - v/ltGy, subbly to subbly, micxln to subbly, micxln, tt por. DOL: drkBnshGy - BnshGy - medltGy, subbly to subbly, v/fxln to micxln to fxln, hd to frm, tr intxln por. Rr CHT: ltGy. No cut, no rng.

14080-14110 MD. LS: GyshBlk - drkGy - v/ltGy, subbly to subbly, micxln, tt por. DOL: BnshGy - medltGy, subbly to subbly, v/fxln to micxln to fxln, hd to frm, tr intxln por. No cut, no rng.

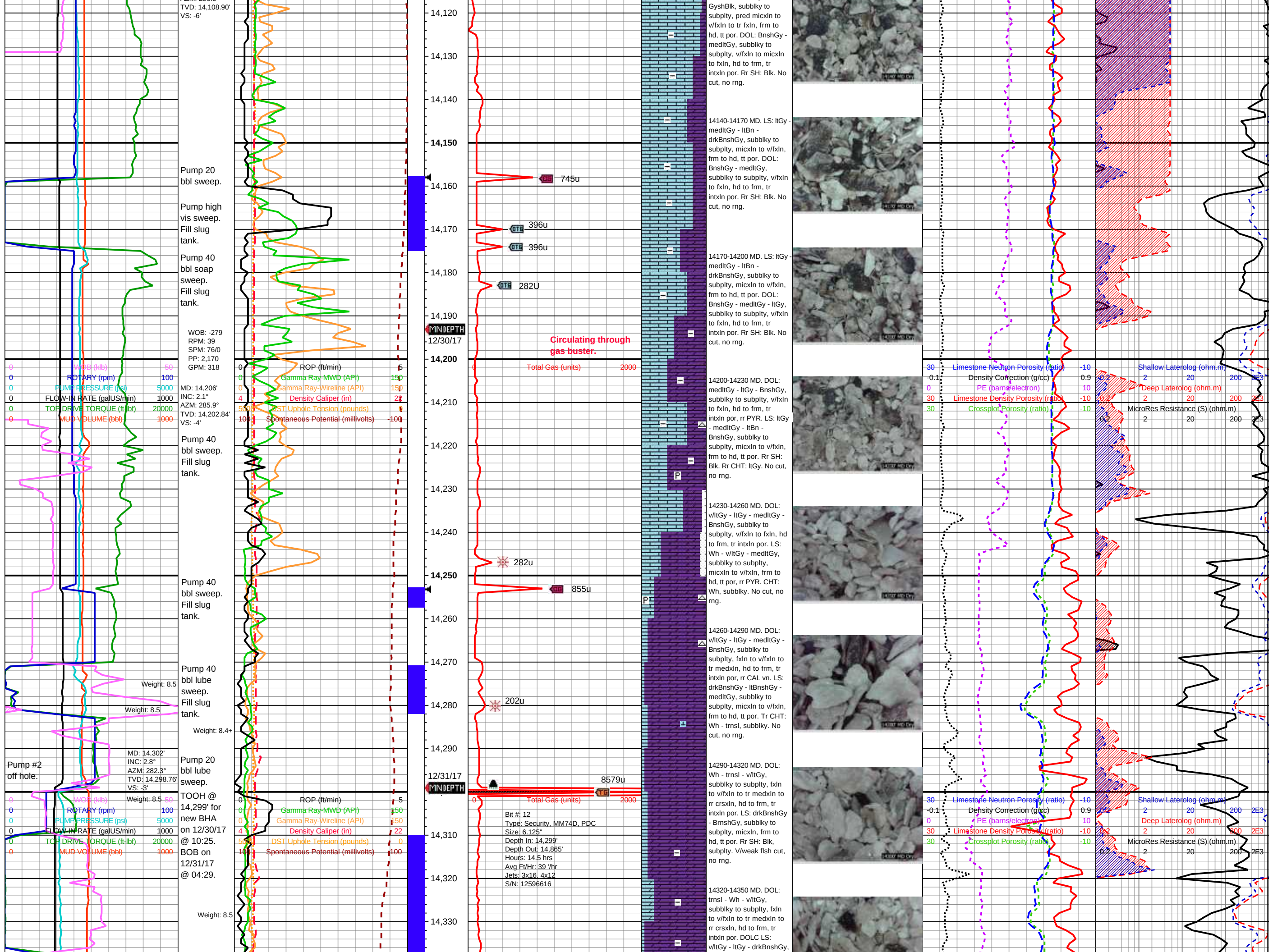
14110-14140 MD. LS: ltGy - ltBn - drkBnshGy -



3rd Intermediate Section
Driller TD = 13,975'
Logger TD = 13,991'

Devonian

13,976'



Transfer 50
bbl f/active
t/reserve.

Transfer 25 bl
f/active t/trip
tank.

WOB: 23
RPM: 0
SPM: 69/0
PP: 1,830
GPM: 290

MD: 14,491'
NC: 0.5°
AZM: 47.2°
VD: 14,487.72'
S: -3'

Depth: 14,500
Strokes: 5,888
Minutes: 84.12

Fusselman
14,518'

Weight: 8.5

Transfer 50
tbl f/active
/reserve.

0	ROP (ft/min)	5
0	Gamma Ray-MWD (API)	150
0	Gamma Ray-Wireline (API)	150
4	Density Caliper (in)	22
500	DST Uphole Tension (pounds)	0
100	Spontaneous Potential (millivolts)	-100

0	ROP (ft/min)	5
6	Gamma Ray-MWD (API)	150
0	Gamma Ray-Wireline (API)	150
4	Density Caliper (in)	22
500	DST Uphole Tension (pounds)	0
100	Spontaneous Potential (millivolts)	-100

794

432u

Circulating through
gas buster.

825u

0	Total Gas (units)	200
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2820u

511t

subbly to subply,
micxln to v/fxln to tr fxln
frm to hd, tt por. Rr SH:
Blk, subply. V/weak flsh
cut, no rng.

14350-14380 MD. DOL:
Wh - trnsl - v/lTgY,
subblky to subply, fxln
to v/fxln to tr medxln to
rr crsxltn, hd to frm, tr
intxln por. DOLC LS:
v/lTgY - lTgY, subblky to
subply, mixcxltn to v/fxln
to tr fxln, frm to hd, tt
por. V/weak flsh cut, no
rng.

14380-14410 MD. DOLC
LS: v/ltGy - ltGy, subblky
to subpty, mixcxl to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsln - v/ltGy, subblky to
subpty, fxln to v/fxln to
tr medxln to rr crsxln, hd
to frm, tr intxln por.
V/weak flsh cut, no rng.

14410-14440 MD. DOLC
LS: v/lTgy - ltGy, subblky
to subplty, micxln to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsf - v/lTgy, subblky to
subplty, fxln to v/fxln to
tr medxln to rr crsxn, hd
to frm, tr intxn por.
V/weak flsh cut, no rng.

14440-14470 MD. DOLC
LS: v/lTgY - ltGy, subblky
to subplty, micxln to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsf - v/lTgY, subblky to
subplty, fxln to v/fxln to
tr medxln to rr crsxn, hd
to frm, tr intxn por.
V/weak flsh cut, no rng.

14470-14500 MD. DOLC
LS: v/lItGy - ItGy, subblky
to subptly, micxln to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsf - v/lItGy, subblky to
subptly, fxln to v/fxln to
tr medxln to rr crsxln, hd
to frm, tr intxln por. Rr
free ANHY: clr, euhed.
V/weak flsh cut, no rng.

14500-14530 MD. DOLC
LS: v/lTgY - ltGy, subblky
to subplty, micxln to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsl - v/lTgY, subblky to
subplty, fxln to v/fxln to
tr medxln to rr crsxln, hd
to frn, tr intxln por. Rr
free ANHY: clr, euhed.
V/weak flsh cut, no rng.

14530-14560 MD. DOLC
LS: v/lTgY - lTgY, subblky
to subplty, micxln to
v/fxln to tr fxln, frm to
hd, tt por. DOL: Wh -
trnsl - v/lTgY, subblky to
subplty, fxln to v/fxln to
tr medxln to rr v/crsxln,
hd to frm, tr intxn por.
Rr free ANHY: clr, euhd.
V/weak flsh cut, no rng.

30	Limestone Neutron Porosity (ratio)	-10		Shallow Laterolog (ohm.m)	
-0.1	Density Correction (g/cc)	0.9	0.2	2	20
0	PE (barns/electron)	10		Deep Laterolog (ohm.m)	200
30	Limestone Density Porosity (ratio)	-10	0.2	2	20
					200
30	Crossplot Porosity (ratio)	-10		MicroRes Resistance (S) (ohm.m)	

-30	Limestone Neutron Porosity (ratio)	-10			Shallow Laterolog (ohm.m)		
-0.1	Density Correction (g/cc)	0.9	0.2	2	20	200	2E3
0	PE (barns/electron)	10			Deep Laterolog (ohm.m)		
30	Limestone Density Porosity (ratio)	-10	0.2	2	20	200	2E3
30	Crossplot Porosity (ratio)	-10			MicroRes Resistance (S) (ohm.m)		

Fusselman	14,494'
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