



Scale: 5" / 100'
Measured Depth Log

Well Name Winder South 7

Location Sec. 9-T6N-R67W

State Colorado

County Weld

Country USA

Rig Number Patterson 346

API Number 05-123-43401-00

Field Wattenberg

Geographic Region DJ Basin

Drilling Completed 9/29/2016

Spud Date 9/26/2016

Surface Coordinates SHL: 2306'FNL, 408' FEL, Sec. 9 T6N R67W

Lat: 40.502673 / 40° 30' 9.6228"
Long: -104.890339 / -104° 53' 25.2198"

Bottom Hole Coordinates PBHL: 1376'FSL, 460' FWL, Sec. 8 T6N R67W

Ground Elevation 4,856'

K.B. Elevation 4,880.5'

Logged Interval 5,000' MD To 6,920'

Total Depth 17,155'

Formation Niobrara C Chalk

Type of Drilling Fluid Oil Based Mud

Operator

Company Extaction Oil & Gas




Address 1888 Sherman St., Suite 200
Denver, CO 80203

Geologist

Name Jared Rouse

Company Extraction Oil & Gas

Zone Color Coding

 Oil	 Condensate	 Gas
 Note	 Core	 Pressure
 Error	 Water	 Seal

Address 1888 Sherman St., Suite 200
Denver, CO 80203

Other

Equipment ML-589

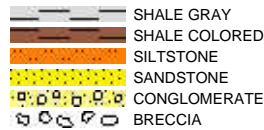
Comments Start: 9-26-16
TD: 9-29-16

Services Provided 2-man Logging
On Site Geosteering

Logger Names Dominic Pitre/ Nicholas Watkins

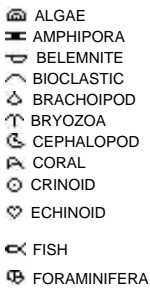
Address ALS Empirica
6510 Guhn Road
Houston, Texas 77040

Rock Types



Accessories

Fossils



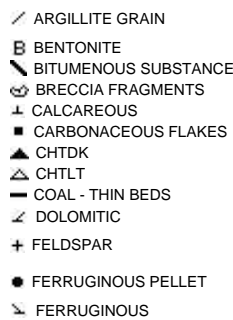
Fossil



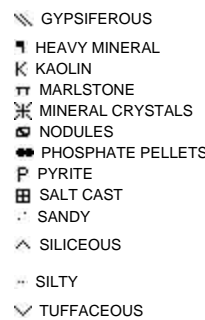
Minerals



ARGILLACEOUS



GLAUCONITE

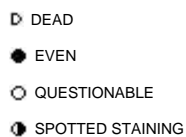


Stringer

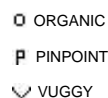
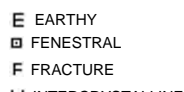


Other Symbols

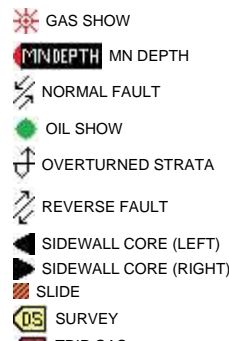
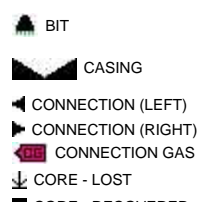
Oil Show



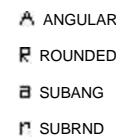
Porosity



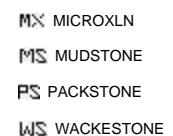
Engineering



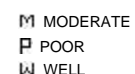
Rounding



Textures



Sorting



✕ INTERCRYSTALLINE

⊕ INTEROOLITIC

↗ MOLDIC

■ CORE - RECOVERED

⋮ DST INTERVAL

↗ FAULT

🔴 TRIP GAS

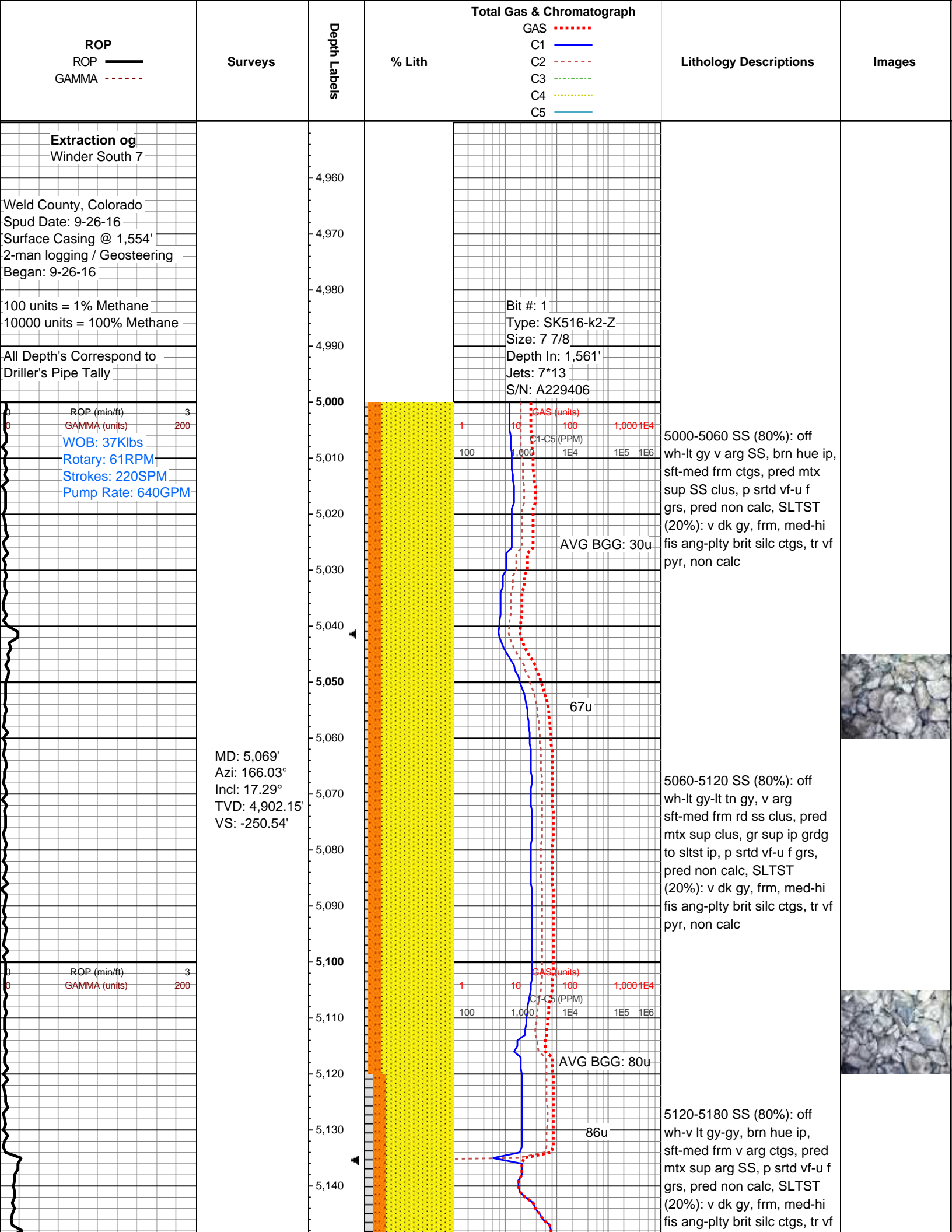
◀ WIRELINE TESTED - LEFT

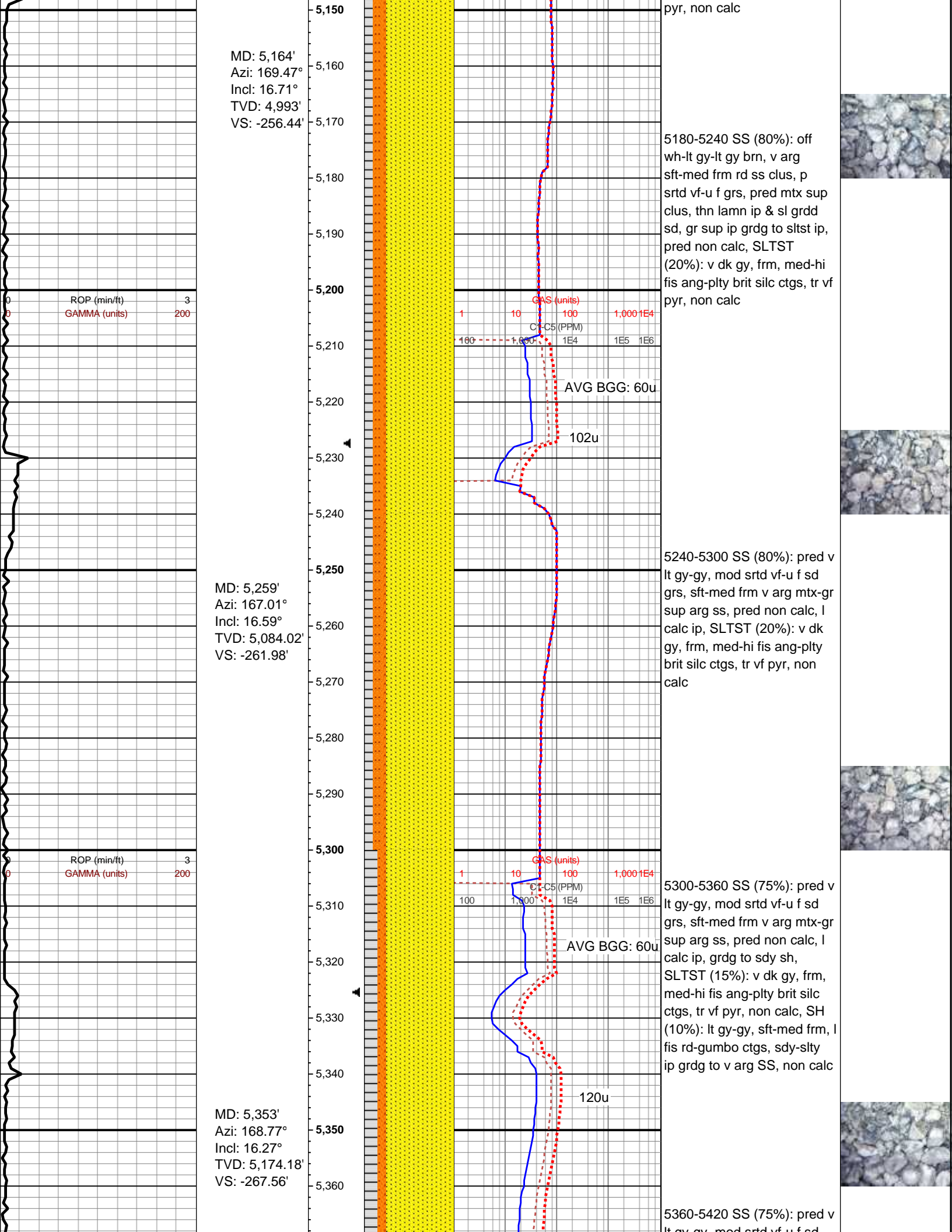
▶ WIRELINE TESTED - RT

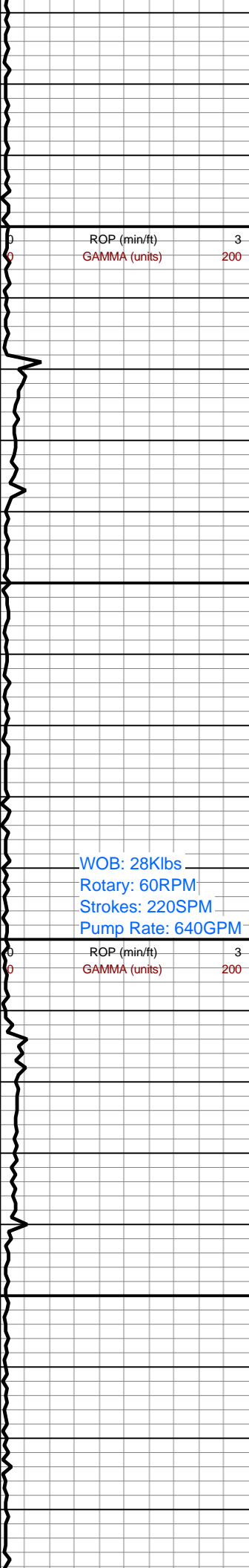
⚡ EARTHY

FX FINELYXLN

SS GRAINSTONE

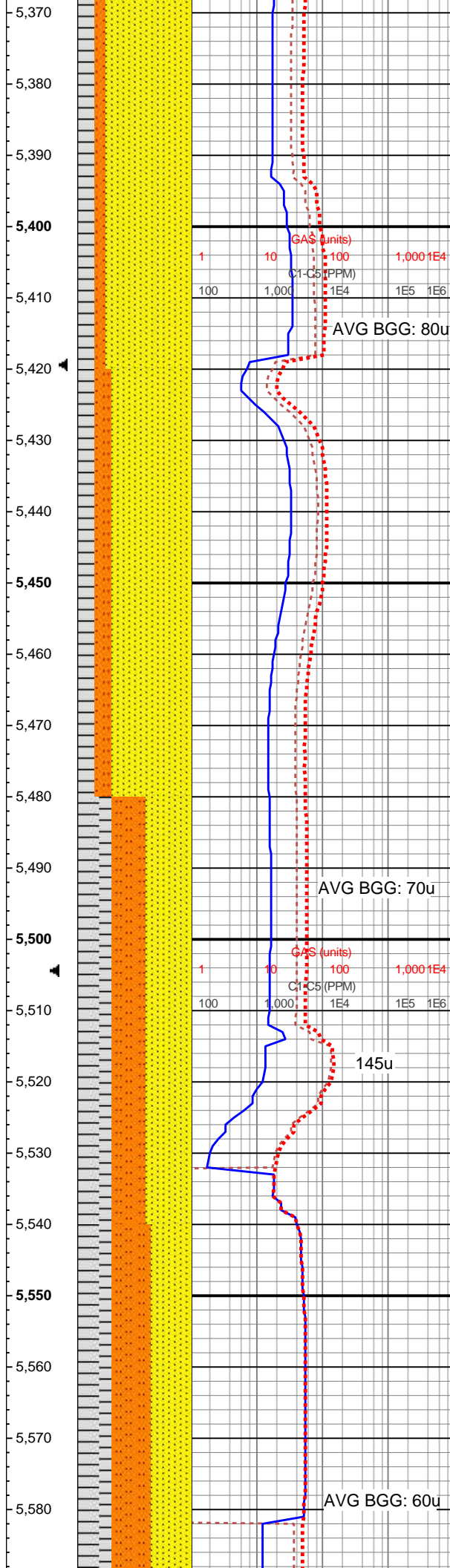






MD: 5,448'
Azi: 166.05°
Incl: 15.46°
TVD: 5,265.56'
VS: -273.2'

MD: 5,543'
Azi: 170.47°
Incl: 16.12°
TVD: 5,356.98'
VS: -278.44'

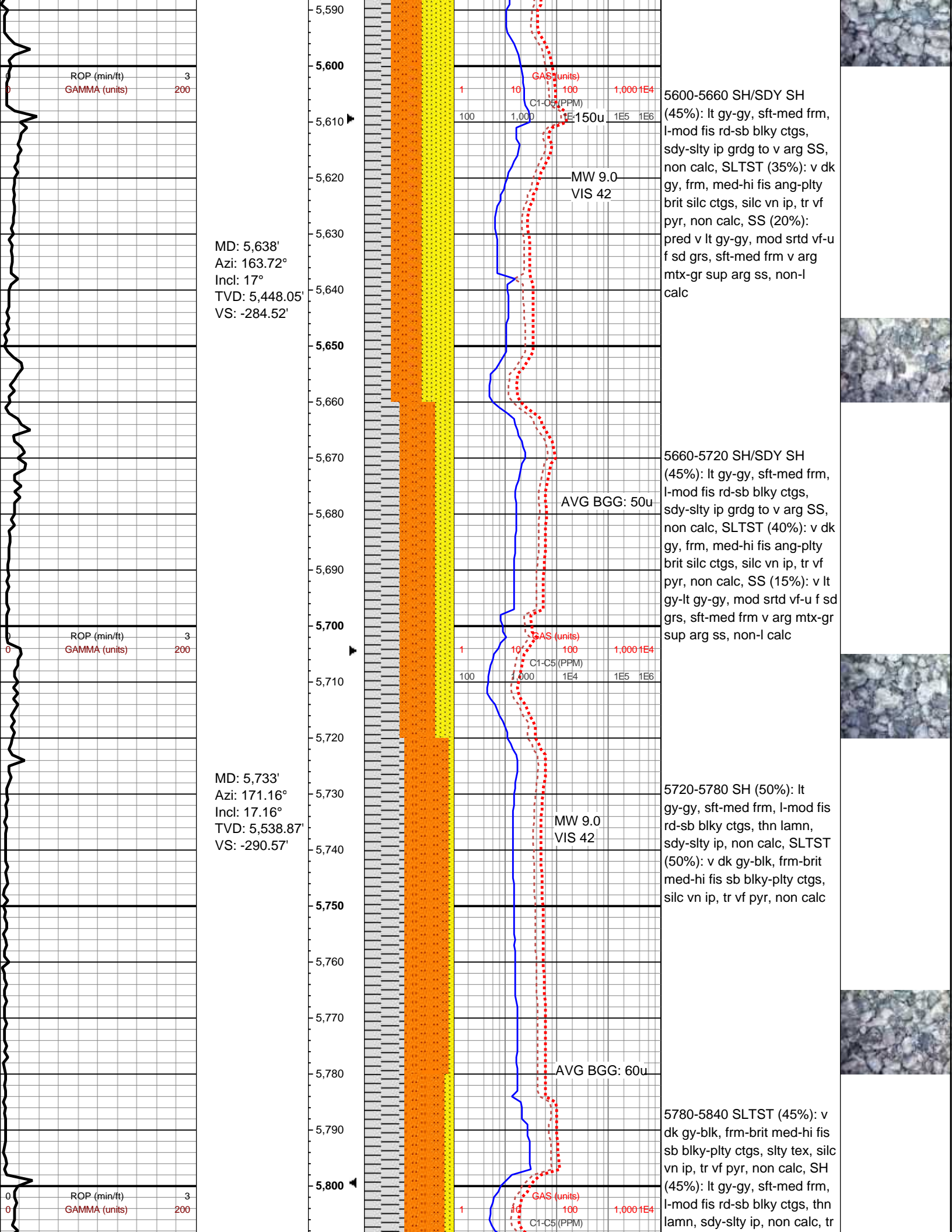


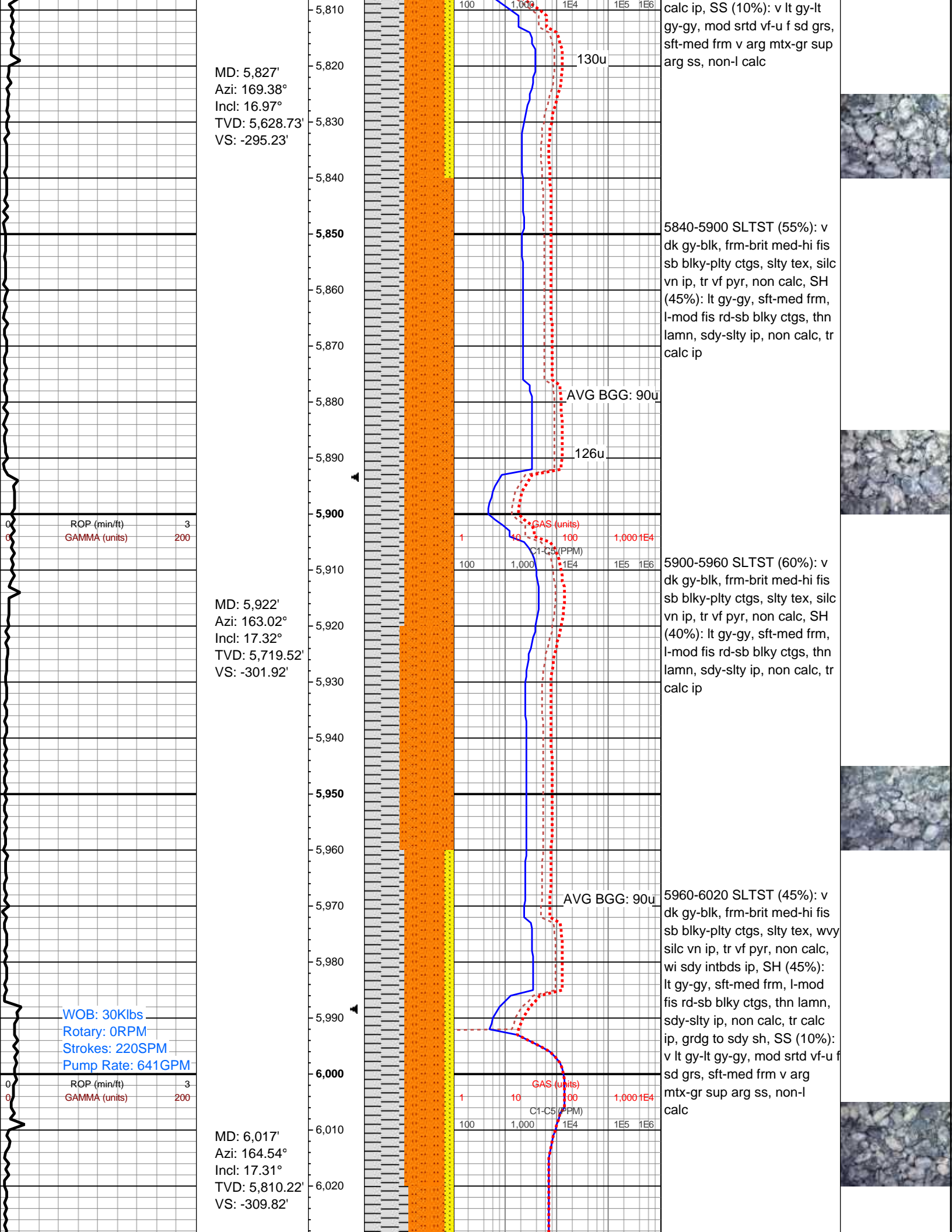
lt gy-gy, mod srted vf-u f sd
grs, sft-med frm v arg mtx-gr
sup arg ss, pred non calc, l
calc ip, SLTST (15%): v dk
gy, frm, med-hi fis ang-plty
brit silc ctgs, tr vf pyr, non
calc, SH (10%): lt gy-gy,
sft-med frm, l fis rd-gumbo
ctgs, sdy-slty ip grdg to v arg
SS, non calc

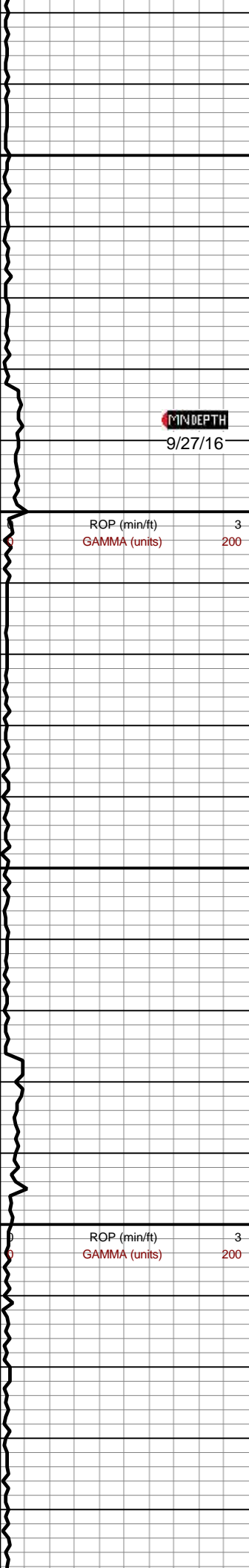
5420-5480 SS (70%): pred v
lt gy-gy, mod srted vf-u f sd
grs, sft-med frm v arg mtx-gr
sup arg ss, pred non calc, l
calc ip, wi decr sd grdg to
SH/SDY SH (10%): lt gy-gy,
sft-med frm, l fis rd-gumbo
ctgs, sdy-slty ip grdg to v arg
SS, non calc, SLTST (20%):
v dk gy, frm, med-hi fis
ang-plty brit silc ctgs, tr vf
pyr, non calc

5480-5540 SS (40%): pred v
lt gy-gy, mod srted vf-u f sd
grs, sft-med frm v arg mtx-gr
sup arg ss, pred non calc, l
calc ip, wi decr sd grdg to
SH/SDY SH (30%): lt gy-gy,
sft-med frm, l fis rd-gumbo
ctgs, sdy-slty ip grdg to v arg
SS, non calc, SLTST (30%):
v dk gy, frm, med-hi fis
ang-plty brit silc ctgs, silc vn
ip, tr vf pyr, non calc

5540-5600 SH/SDY SH
(35%): lt gy-gy, sft-med frm,
l-mod fis rd-sb blkty ctgs,
sdy-slty ip grdg to v arg SS,
non calc, SLTST (35%): v dk
gy, frm, med-hi fis ang-plty
brit silc ctgs, silc vn ip, tr vf
pyr, non calc, SS (30%):
pred v lt gy-gy, mod srted vf-u
f sd grs, sft-med frm v arg
mtx-gr sup arg ss, non-l
calc

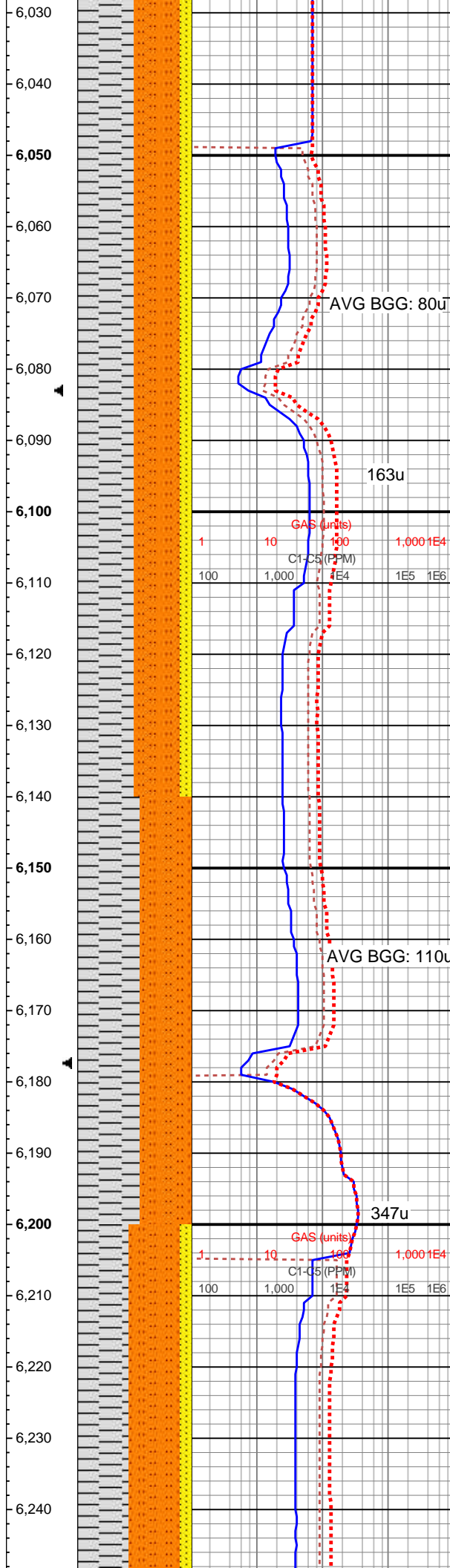






MD: 6,111'
Azi: 165.7°
Incl: 17.11°
TVD: 5,900.01'
VS: -316.96'

MD: 6,206'
Azi: 163.43°
Incl: 17.34°
TVD: 5,990.75'
VS: -324.45'

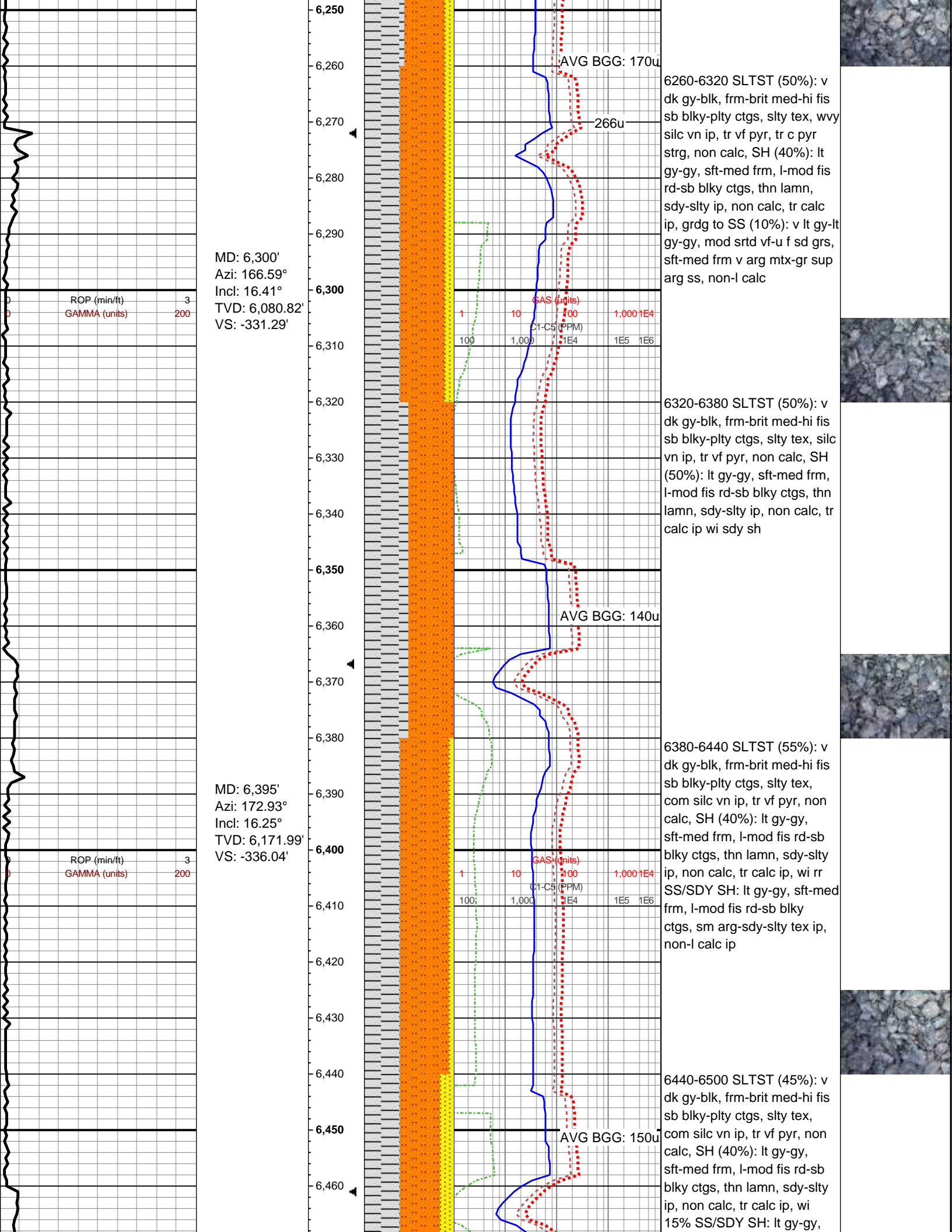


6020-6080 SH/SDY SH (60%): lt gy-gy, sft-med frm, l-mod fis rd-sb blkly ctgs, sm arg-sdy-slty tex ip, wi 10% sdy intbds, non calc, SLTST (40%): v dk gy, frm, med-hi fis ang-pty brit silc ctgs, silc vn ip, tr vf pyr, sdy lamn ip, non calc

6080-6140 SH/SDY SH (60%): lt gy-gy, sft-med frm, l-mod fis rd-sb blkly ctgs, sm arg-sdy-slty tex ip, wi 10% sdy sh intbds, non calc, SLTST (40%): v dk gy, frm, med-hi fis ang-pty brit silc ctgs, silc vn ip, tr vf pyr, sdy lamn ip, non calc

6140-6200 SH (55%): lt gy-gy, sft-med frm, l-mod fis rd-sb blkly ctgs, thn lamn, mod slty thru, non calc, SLTST (45%): v dk gy-blk, frm-brit med-hi fis sb blkly-pty ctgs, slty tex, rr silc vn ip, tr vf pyr, non calc

6200-6260 SLTST (45%): v dk gy-blk, frm-brit med-hi fis sb blkly-pty ctgs, slty tex, wvy silc vn ip, tr vf pyr, tr c pyr strg, non calc, SH (45%): lt gy-gy, sft-med frm, l-mod fis rd-sb blkly ctgs, thn lamn, sdy-slty ip, non calc, tr calc ip, grd to SS (10%): v lt gy-lt gy-gy, mod srtd vf-u f sd grs, sft-med frm v arg mtx-gr sup arg ss, non-l calc



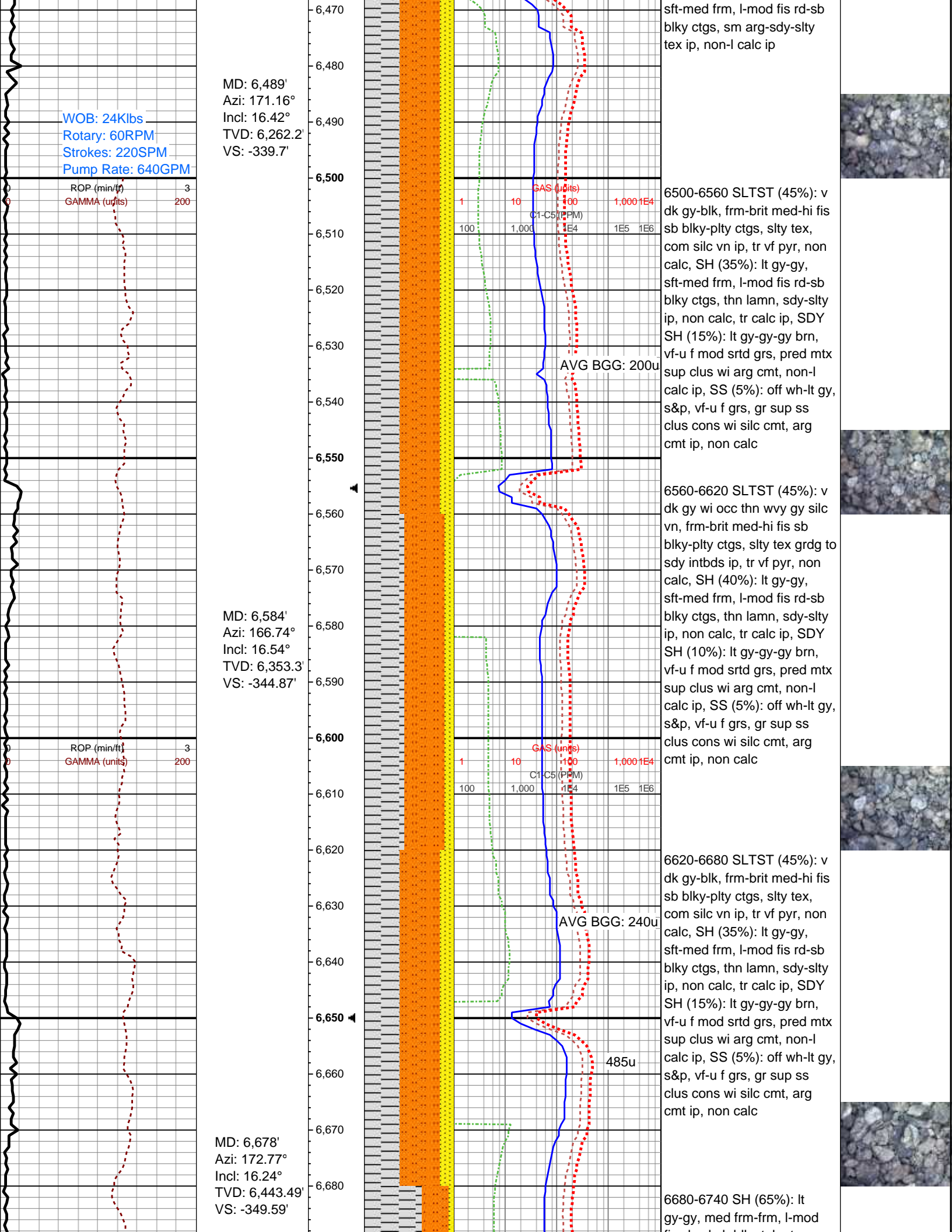
MD: 6,300'
Azi: 166.59°
Incl: 16.41°
TVD: 6,080.82'
VS: -331.29'

6260-6320 SLTST (50%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex, wvy
silc vn ip, tr vf pyr, tr c pyr
strg, non calc, SH (40%): lt
gy-gy, sft-med frm, l-mod fis
rd-sb blkly ctgs, thn lamn,
sdy-slty ip, non calc, tr calc
ip, grdg to SS (10%): v lt gy-lt
gy-gy, mod srtd vf-u f sd grs,
sft-med frm v arg mtx-gr sup
arg ss, non-l calc

6320-6380 SLTST (50%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex, silc
vn ip, tr vf pyr, non calc, SH
(50%): lt gy-gy, sft-med frm,
l-mod fis rd-sb blkly ctgs, thn
lamn, sdy-slty ip, non calc, tr
calc ip wi sdy sh

6380-6440 SLTST (55%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex,
com silc vn ip, tr vf pyr, non
calc, SH (40%): lt gy-gy,
sft-med frm, l-mod fis rd-sb
blkly ctgs, thn lamn, sdy-slty
ip, non calc, tr calc ip, wi rr
SS/SDY SH: lt gy-gy, sft-med
frm, l-mod fis rd-sb blkly
ctgs, sm arg-sdy-slty tex ip,
non-l calc ip

6440-6500 SLTST (45%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex,
com silc vn ip, tr vf pyr, non
calc, SH (40%): lt gy-gy,
sft-med frm, l-mod fis rd-sb
blkly ctgs, thn lamn, sdy-slty
ip, non calc, tr calc ip, wi
15% SS/SDY SH: lt gy-gy,



WOB: 24Klbs
Rotary: 60RPM
Strokes: 220SPM
Pump Rate: 640GPM

ROP (min/ft) 3
GAMMA (units) 200

MD: 6,489'
Azi: 171.16°
Incl: 16.42°
TVD: 6,262.2'
VS: -339.7'

ROP (min/ft) 3
GAMMA (units) 200

MD: 6,584'
Azi: 166.74°
Incl: 16.54°
TVD: 6,353.3'
VS: -344.87'

ROP (min/ft) 3
GAMMA (units) 200

MD: 6,678'
Azi: 172.77°
Incl: 16.24°
TVD: 6,443.49'
VS: -349.59'

AVG BGG: 200u

AVG BGG: 240u

485u

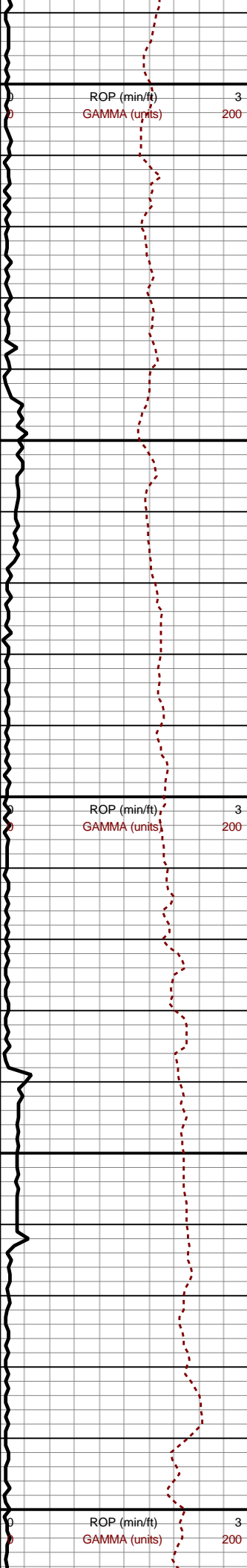
sft-med frm, l-mod fis rd-sb
blkly ctgs, sm arg-sdy-sltly
tex ip, non-l calc ip

6500-6560 SLTST (45%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex,
com silc vn ip, tr vf pyr, non
calc, SH (35%): lt gy-gy,
sft-med frm, l-mod fis rd-sb
blkly ctgs, thn lamn, sdy-sltly
ip, non calc, tr calc ip, SDY
SH (15%): lt gy-gy-gy brn,
vf-u f mod srted grs, pred mtx
sup clus wi arg cmt, non-l
calc ip, SS (5%): off wh-lt gy,
s&p, vf-u f grs, gr sup ss
clus cons wi silc cmt, arg
cmt ip, non calc

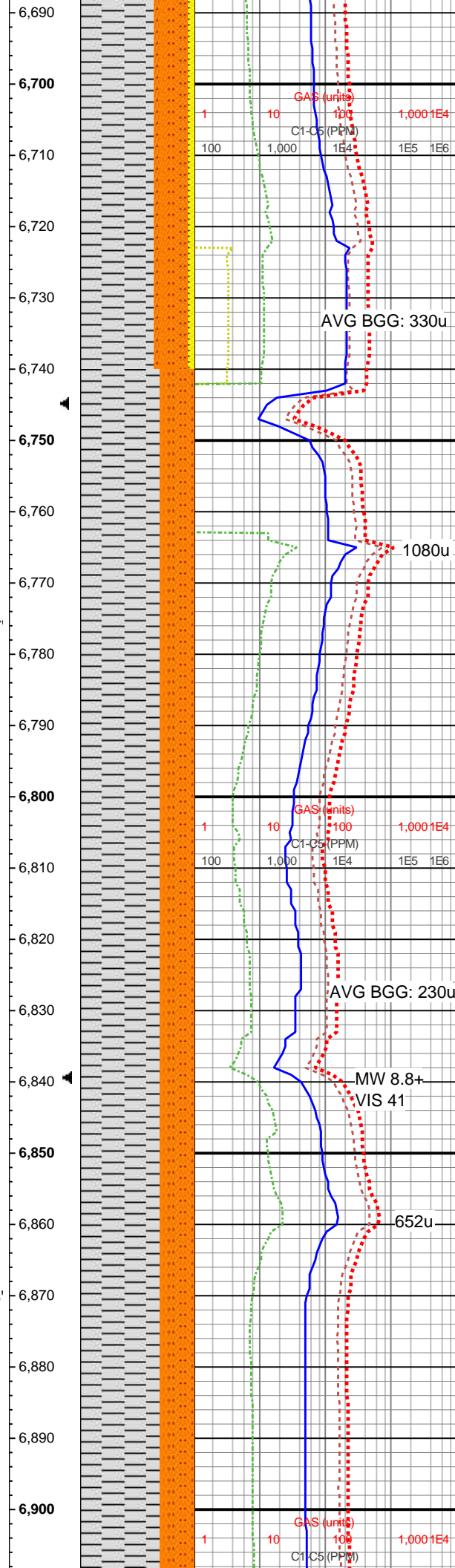
6560-6620 SLTST (45%): v
dk gy wi occ thn wvy gy silc
vn, frm-brit med-hi fis sb
blkly-pty ctgs, slty tex grdgd
to sdy intbds ip, tr vf pyr, non
calc, SH (40%): lt gy-gy,
sft-med frm, l-mod fis rd-sb
blkly ctgs, thn lamn, sdy-sltly
ip, non calc, tr calc ip, SDY
SH (10%): lt gy-gy-gy brn,
vf-u f mod srted grs, pred mtx
sup clus wi arg cmt, non-l
calc ip, SS (5%): off wh-lt gy,
s&p, vf-u f grs, gr sup ss
clus cons wi silc cmt, arg
cmt ip, non calc

6620-6680 SLTST (45%): v
dk gy-blk, frm-brit med-hi fis
sb blkly-pty ctgs, slty tex,
com silc vn ip, tr vf pyr, non
calc, SH (35%): lt gy-gy,
sft-med frm, l-mod fis rd-sb
blkly ctgs, thn lamn, sdy-sltly
ip, non calc, tr calc ip, SDY
SH (15%): lt gy-gy-gy brn,
vf-u f mod srted grs, pred mtx
sup clus wi arg cmt, non-l
calc ip, SS (5%): off wh-lt gy,
s&p, vf-u f grs, gr sup ss
clus cons wi silc cmt, arg
cmt ip, non calc

6680-6740 SH (65%): lt
gy-gy, med frm-frn, l-mod



MD: 6,773'
Azi: 174.05°
Incl: 16.22°
TVD: 6,534.7'
VS: -352.64'



AVG BGG: 330u

fis sb rd-sb biky tab ctgs,
 pred sm tex, occ sdy-sltly ip,
 non calc, SLTST (30%): v dk
 gy, frm-brit, med-hi fis
 ang-pty ctgs, tr vf pyr, silc, rr
 sdy intbds & lamn, non calc,
 wi rr SS (5%): off wh-lt gy,
 mod strd vf-u f sd grs, med
 frm-sli fri pred mtx sup ss
 clus cons wi arg cmt grdg to
 sh ip, gr sup ip, non-l calc

6740-6800 SH (70%): lt
gy-gy-gy brn, med frm-frm,
l-mod fis sb rd-sb blkly ctgs,
sm arg-sltly tex wi thn lamn,
tr vf pyr, non calc, SLTST
(30%): v dk gy-blk, frm-brit,
med-hi fis ang-plty silc
ctgs, rr wvy silc vn, tr vf pyr,
non calc

6800-6860 SH (70%): lt
gy-gy-gy brn, med frm-frm,
l-mod fis sb rd-sb blkly tab
ctgs, sm-slty tex wi thn
lamn, tr vf pyr, non calc,
SLTST (30%): v dk gy,
frm-brit, med-hi fis ang-plty
ctgs, tr vf pyr, silc, rr sdy
intbds & lamn, tr silc vn, non
calc

6860-6920 SH (70%): lt
gy-gy-gy brn, med frm-frm,
l-mod fis sb rd-sb blkly ctgs,
sm arg-slty tex wi thn lamn,
tr vf pyr, non calc, SLTST
(30%): v dk gy-blk, frm-brit,
med-hi fis ang-plty silc
ctgs, rr wvy silc vn, tr vf pyr,
non calc

Continued on horizontal log

