

LOG created using L PLOT VH Version 3.0, October 25, 2010, Copyright (C) 1999-2009 Pason Systems Corp.

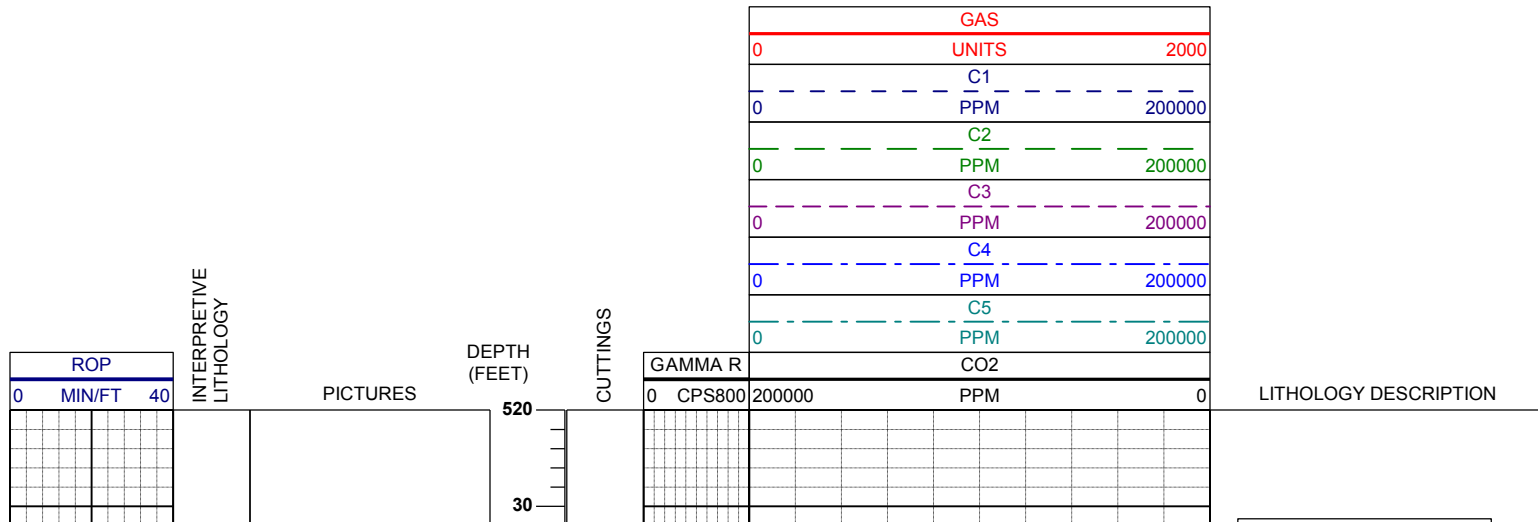
OPERATOR: El Paso Exploration & Production Co.
WELL: CDOW 11-13-10-76
LOCATION: Qtr. NE-SW, Sec 13, T 10S, R 76W
COUNTY: Park
STATE: Colorado
SPOT:
ELEVATION: 9176'
FIELD: South Park Basin
SPUD DATE: 08/24/2010
TD DATE: 10/13/2010
DATES LOGGED: 08/29/2010 - 10/13/2010
DEPTHS LOGGED: 600' - 8836'
LOGGERS: Trent Nelson, Tyler Berry, Brad Wilson
DRILLING FLUID: Water Based Mud
DRILLING RIG: Precision #404
API:
LOG TYPE:
SCALE: 1:240 (5 inches per 100 feet)
REMARKS:

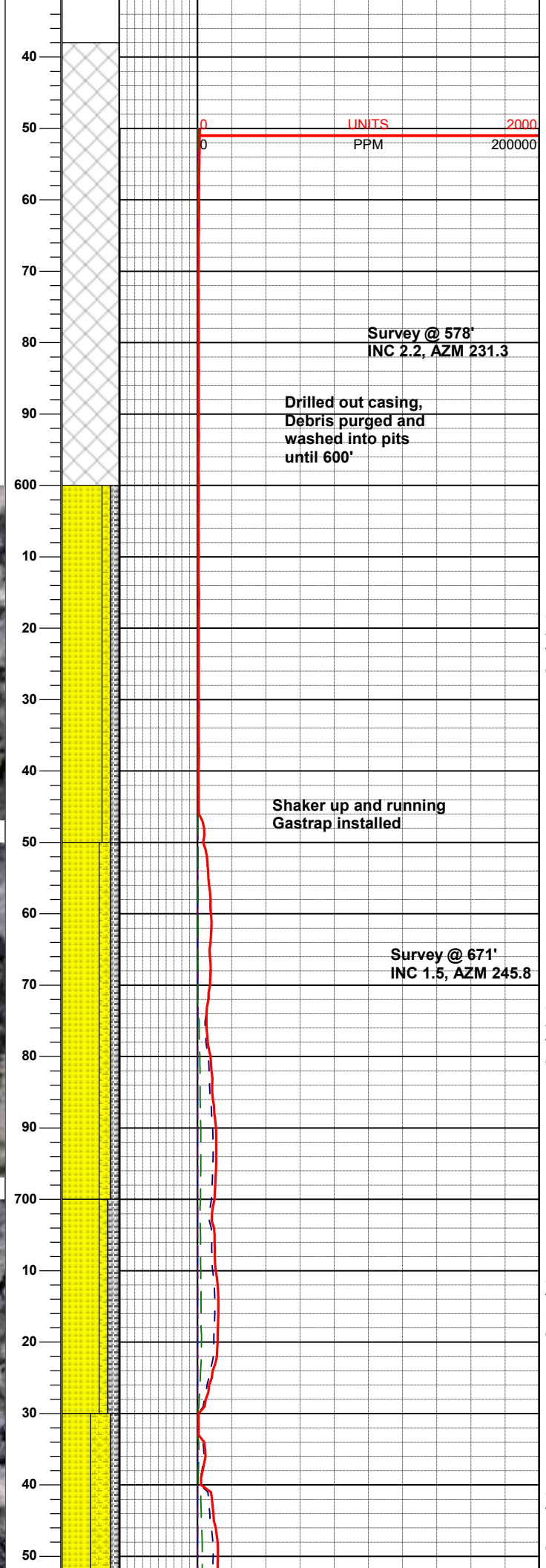
LITHOLOGIES

	Breccia		Chalk		Coal		Colored Claystone
	Gray Claystone		Gray Shale		Limestone		Marl
	No Sample		Sandstone		Shale		Shaly Sandstone
	Shaly Siltstone		Siltstone		Silty Shale		

ENGINEERING SYMBOLS

Midnight Depth





Pierre Shale

Survey @ 578'
INC 2.2, AZM 231.3

Drilled out casing,
Debris purged and
washed into pits
until 600'

Shaker up and running
Gastrap installed

Survey @ 671'
INC 1.5, AZM 245.8

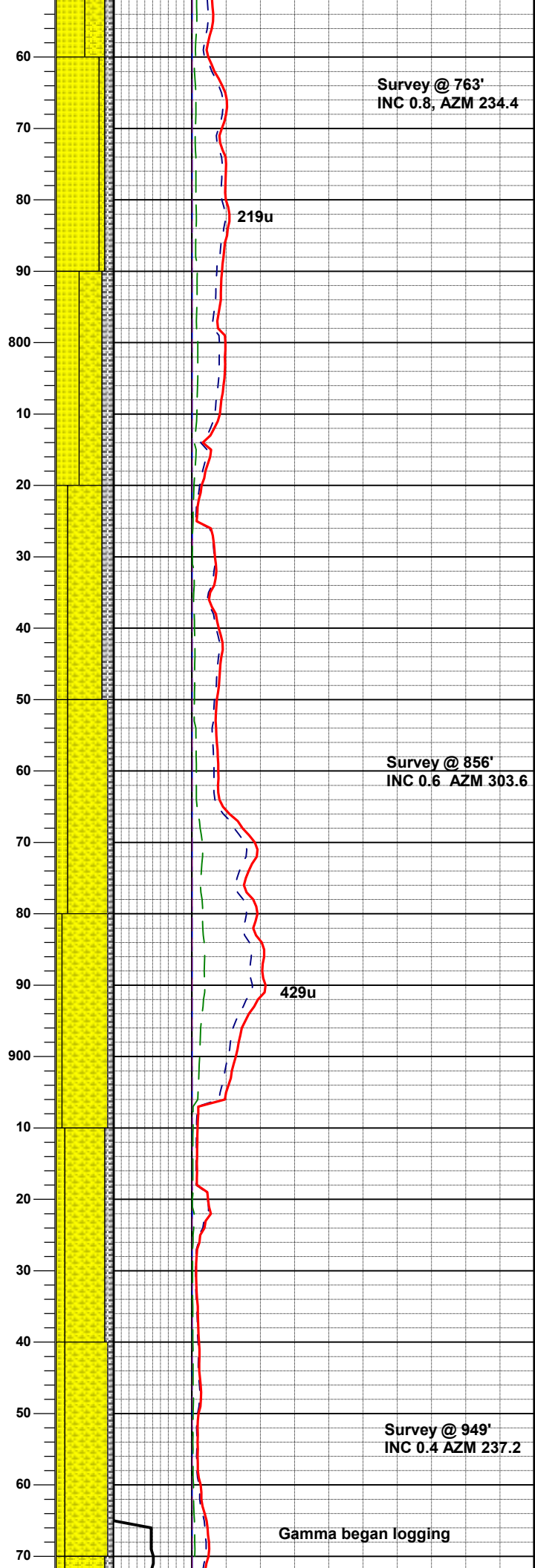
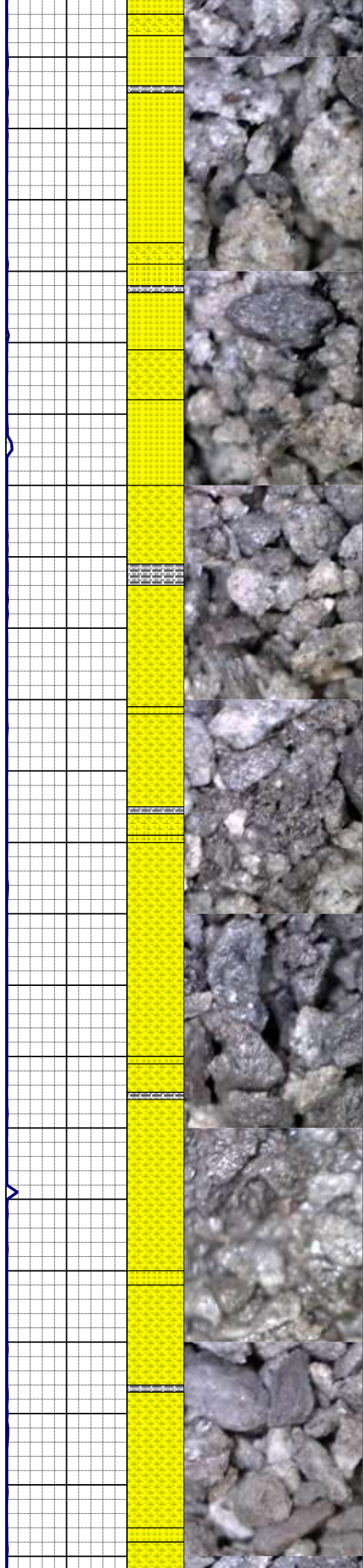
SS: wht, lt gy, drty -cln, trnsl, vf
- f gr, sb rnd - sbang, p-m srt ,
tgt irreg - blkly clus, mtx ; calc/arg
cmt w/ wht cly

SS: wht, lt gy, drty -cln, trnsl, vf
- f gr, sb rnd - sbang, p-m srt ,
tgt irreg - blkly clus, mtx ; calc/arg
cmt w/ wht cly, occ iron staining

SS: clr, wht, lt gy, drty -cln ,
trnsl, vf - f gr, sb rnd - sbang,
p-m srt , tgt irreg - blkly clus, mtx ;
calc/arg cmt w/ wht cly

SS: clr, wht, lt gy, drty -cln ,
trnsl, vf - f gr, sb rnd - sbang, p-
m srt , tgt irreg - blkly clus, mtx ;
calc/arg cmt w/ wht cly clearing
mtx with occ shale clasts





Survey @ 763'
INC 0.8, AZM 234.4

SS: clr, wht, lt gy, drty -cln ,
trnsl, vf - f gr, sb rnd - sbang, p-
m srt , tgt irreg - blkly clus, mtx ;
calc/arg cmt w/ wht cly

SS: clr, wht, lt gy, drty -cln ,
trnsl, vf - f gr, sb rnd - sbang, p-
m srt , tgt irreg - blkly clus, mtx:
calc/arg, gragdng - SHLYSS

SHLYSS: lt gybrn - offwht, ltgy,
trnsl - clr, drty s&p, cf -fm gr,
sbrnd - sbang, fri-brit tgt clus, p-
m srt, mtx ; sl -m calc, arg- cly -
wht cly

Survey @ 856'
INC 0.6 AZM 303.6

SHLYSS: lt gybrn - offwht, ltgy,
trnsl - clr, drty s&p, cf -fm gr,
sbrnd - sbang, fri-brit tgt clus, p-
m srt, mtx ; sl -m calc, arg- cly -
wht cly

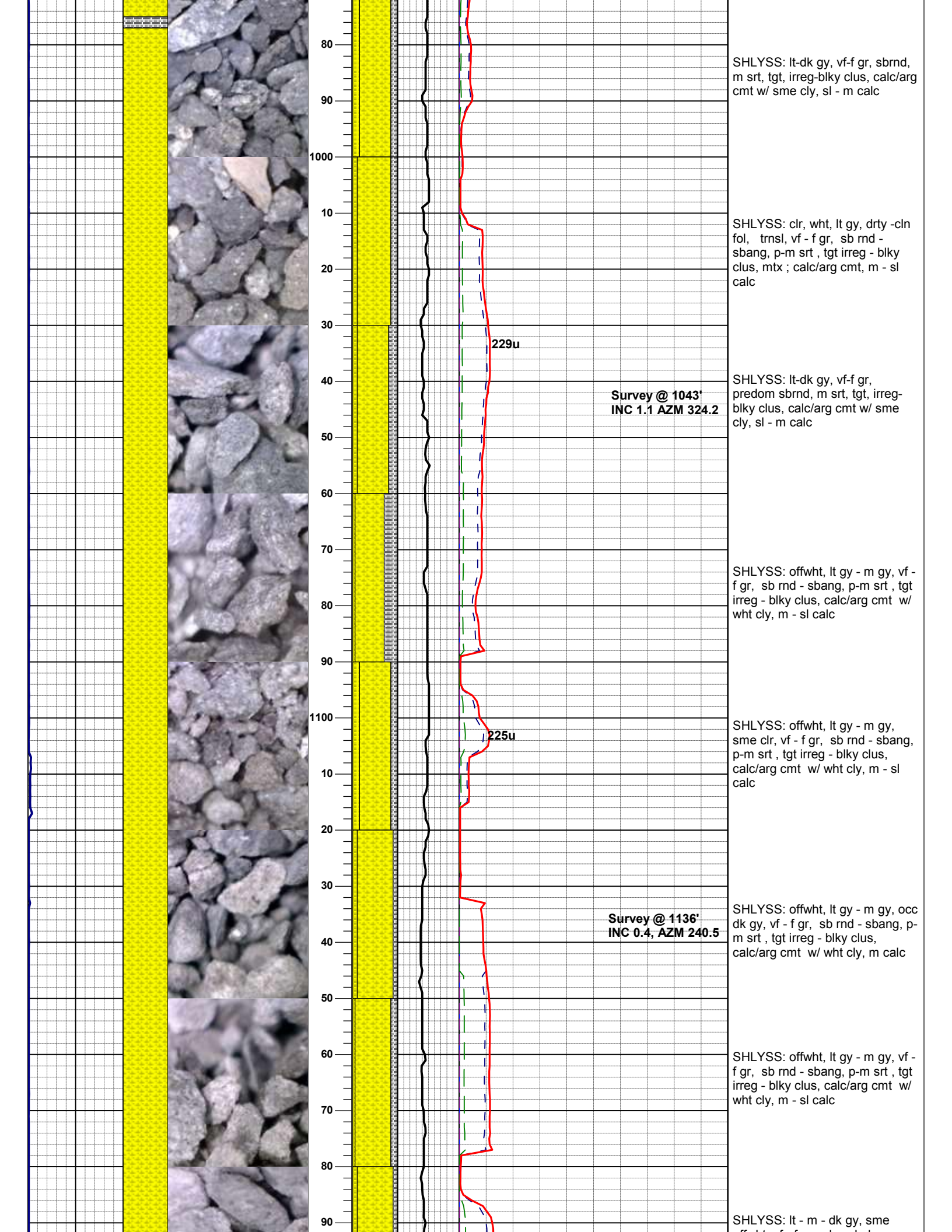
SHLYSS: lt-dk gy, vf-f gr, sbrnd,
m srt, tgt, irreg-blky clus, mtx;
arg - cly, sl - non calc

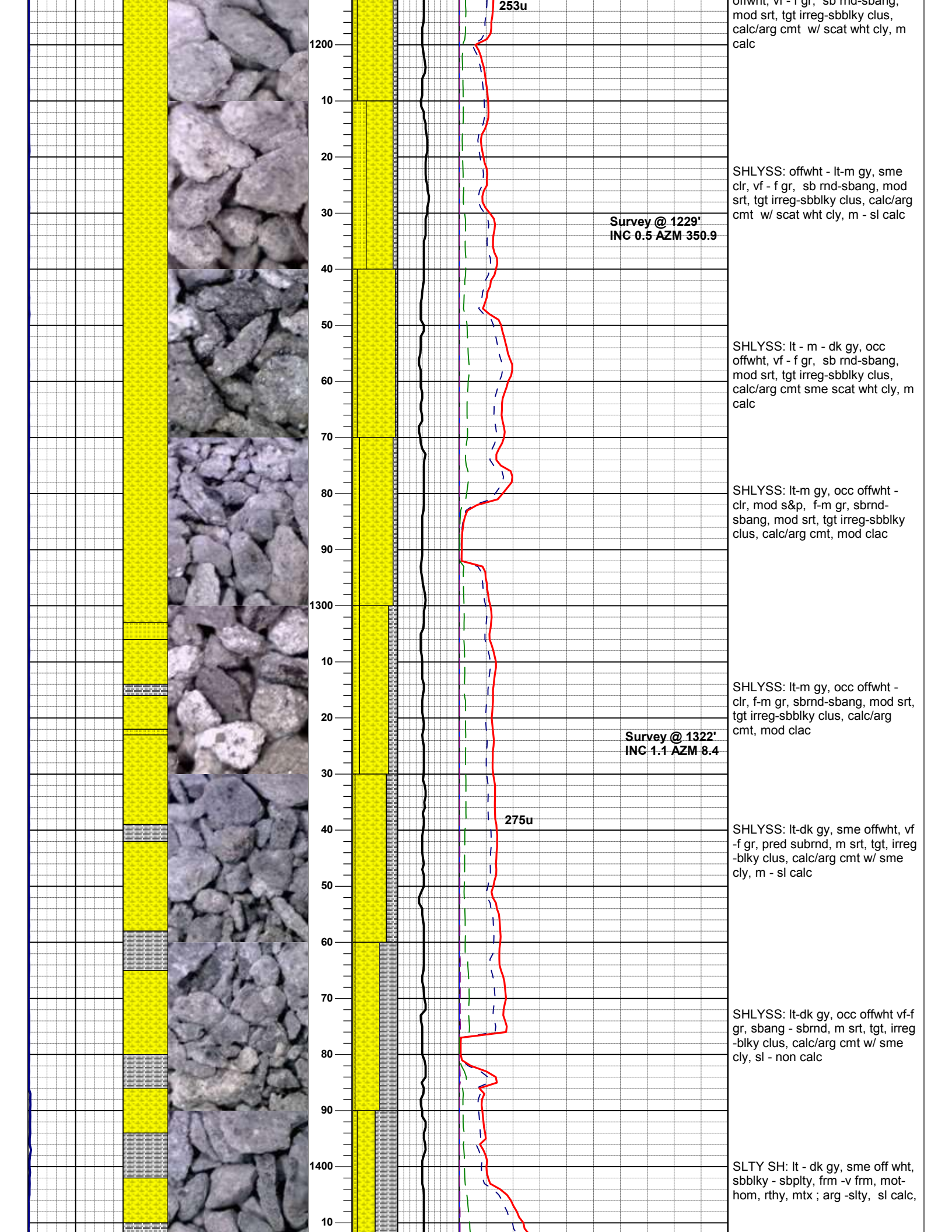
SHLYSS: lt-dk gy, vf-f gr, sbrnd,
m srt, tgt, irreg-blky clus, calc/arg
cmt w/ sme cly

Survey @ 949'
INC 0.4 AZM 237.2

SHLYSS: clr, wht, lt gy, drty -cln
fol, trnsl, vf - f gr, sb rnd -
sbang, p-m srt , tgt irreg - blkly
clus, mtx ; calc/arg cmt w/ wht
cly

Gamma began logging





253u

offwht, vf - f gr, sb rnd-sbang, mod srt, tgt irreg-sbblky clus, calc/arg cmt w/ scat wht cly, m calc

1200

10

20

30

40

50

60

70

80

90

1300

10

20

30

40

50

60

70

80

90

1400

10

Survey @ 1229'
INC 0.5 AZM 350.9

SHLYSS: offwht - lt-m gy, sme clr, vf - f gr, sb rnd-sbang, mod srt, tgt irreg-sbblky clus, calc/arg cmt w/ scat wht cly, m - sl calc

SHLYSS: lt - m - dk gy, occ offwht, vf - f gr, sb rnd-sbang, mod srt, tgt irreg-sbblky clus, calc/arg cmt sme scat wht cly, m calc

SHLYSS: lt-m gy, occ offwht - clr, mod s&p, f-m gr, sbrnd-sbang, mod srt, tgt irreg-sbblky clus, calc/arg cmt, mod clac

Survey @ 1322'
INC 1.1 AZM 8.4

SHLYSS: lt-m gy, occ offwht - clr, f-m gr, sbrnd-sbang, mod srt, tgt irreg-sbblky clus, calc/arg cmt, mod clac

275u

SHLYSS: lt-dk gy, sme offwht, vf -f gr, pred subrnd, m srt, tgt, irreg -blky clus, calc/arg cmt w/ sme cly, m - sl calc

SHLYSS: lt-dk gy, occ offwht vf-f gr, sbang - sbrnd, m srt, tgt, irreg -blky clus, calc/arg cmt w/ sme cly, sl - non calc

SLTY SH: lt - dk gy, sme off wht, sbblky - sbpty, frm -v frm, mot-hom, rthy, mtx ; arg -sly, sl calc,

Survey @ 1416'
INC 0.7 AZM 329.5

20
30
40
50
60
70
80
90
1500
10
20
30
40
50
60
70
80
90
1600
10
20
30



SLTY SH: m - dk gy, occ lt brn - tan, sbply - sbbly, frm -v frm, hom, rthy, mtx; arg -sly, sl - non calc

SLTY SH: m - dk gy, blkly - sbbly, occ sbply, frm, hom, rthy, mtx; arg -sly, sl - non calc

SLTY SH: m - dk gy, occ lt brn, blkly - sbbly, sme sbply, frm - brit, rthy, mtx; arg - sly, sl - non calc, sme aren

Survey@1509'
INC 0.9 AZM 311.5

569u

SLTY SH: gy - dk gy, occ gybrn, sbbly - sbply, firm, rthy-grty, mtx; arg - sly, non calc, intbd w/ ss

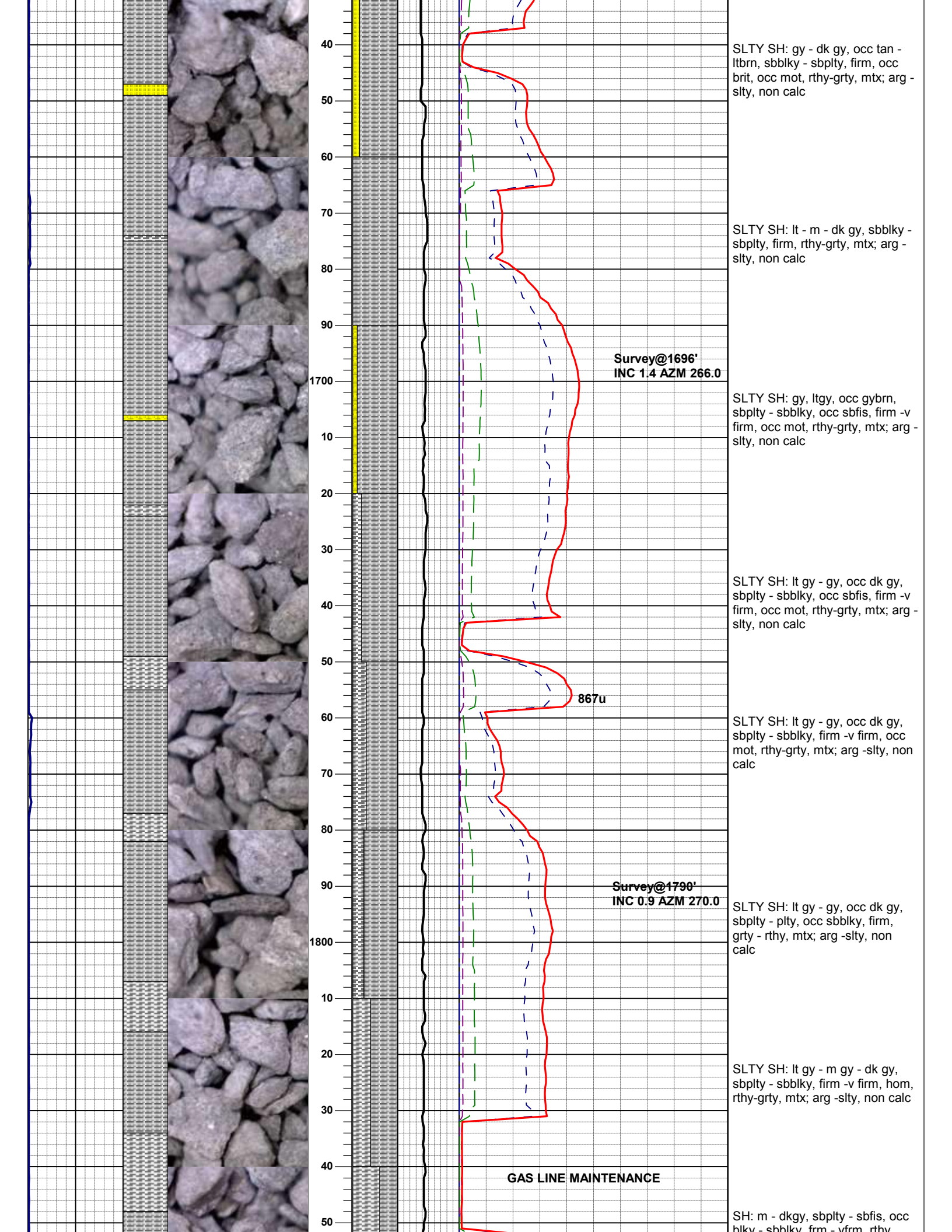
SLTY SH: gy - dk gy, occ gybrn, sbbly - sbply, firm, rthy-grty, mtx; arg - sly, non - sl calc

SLTY SH: gy - dk gy, sbbly - sbply, firm, occ brit, occ mot, rthy-grty, mtx; arg - sly, non - sl calc

Survey@1602'
INC 1.5 AZM 299.3

628u

SLTY SH: gy - dk gy, occ gybrn, sbbly - sbply, firm, occ v firm, rthy-grty, mtx; arg - sly, non calc



SLTY SH: gy - dk gy, occ tan - lbrn, sbbkly - sbply, firm, occ brit, occ mot, rthy-grty, mtx; arg - slty, non calc

SLTY SH: lt - m - dk gy, sbbkly - sbply, firm, rthy-grty, mtx; arg - slty, non calc

Survey@1696'
INC 1.4 AZM 266.0

SLTY SH: gy, ltgy, occ gybrn, sbply - sbbkly, occ sbfis, firm -v firm, occ mot, rthy-grty, mtx; arg - slty, non calc

SLTY SH: lt gy - gy, occ dk gy, sbply - sbbkly, occ sbfis, firm -v firm, occ mot, rthy-grty, mtx; arg - slty, non calc

867u

SLTY SH: lt gy - gy, occ dk gy, sbply - sbbkly, firm -v firm, occ mot, rthy-grty, mtx; arg -slty, non calc

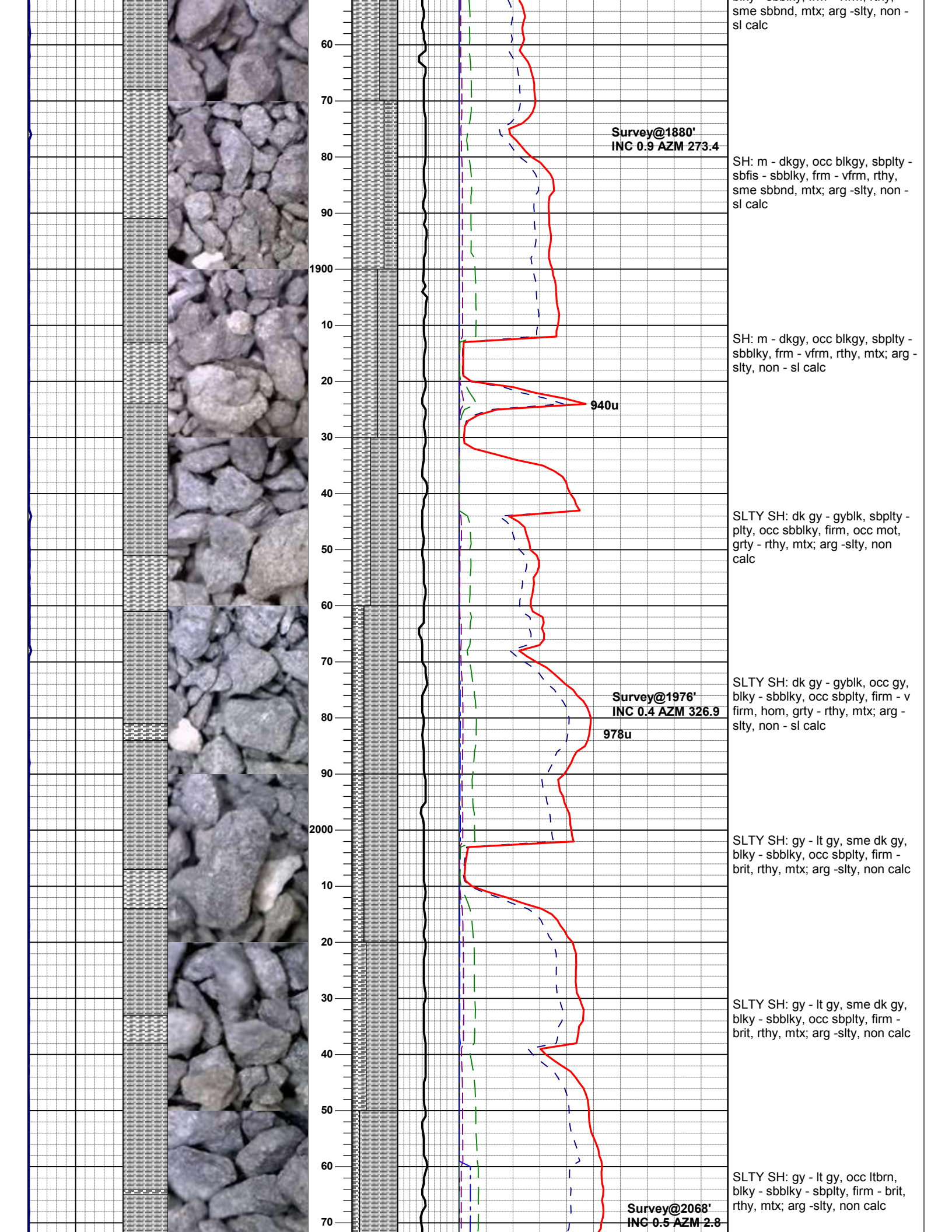
Survey@1790'
INC 0.9 AZM 270.0

SLTY SH: lt gy - gy, occ dk gy, sbply - ply, occ sbbkly, firm, grty - rthy, mtx; arg -slty, non calc

SLTY SH: lt gy - m gy - dk gy, sbply - sbbkly, firm -v firm, hom, rthy-grty, mtx; arg -slty, non calc

GAS LINE MAINTENANCE

SH: m - dkgy, sbply - sbfis, occ blkv - sbbkly, frm - vfrm, rthy



Survey@1880'
INC 0.9 AZM 273.4

SH: m - dkgy, occ blkgy, sbply - sbfbs - sbbkly, frm - vfrm, rthy, sme sbbnd, mtx; arg -silty, non - sl calc

SH: m - dkgy, occ blkgy, sbply - sbbkly, frm - vfrm, rthy, mtx; arg -silty, non - sl calc

940u

SLTY SH: dk gy - gyblk, sbply - pply, occ sbbkly, firm, occ mot, grty - rthy, mtx; arg -silty, non calc

Survey@1976'
INC 0.4 AZM 326.9

SLTY SH: dk gy - gyblk, occ gy, blkly - sbbkly, occ sbply, firm - v firm, hom, grty - rthy, mtx; arg -silty, non - sl calc

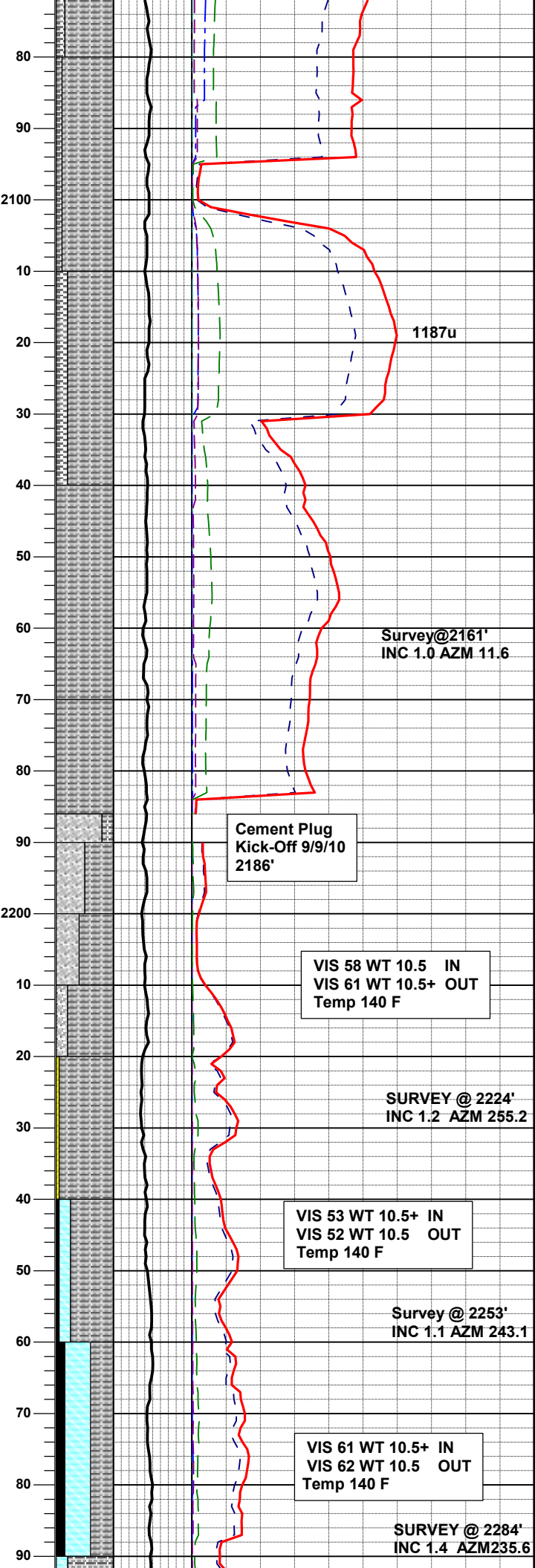
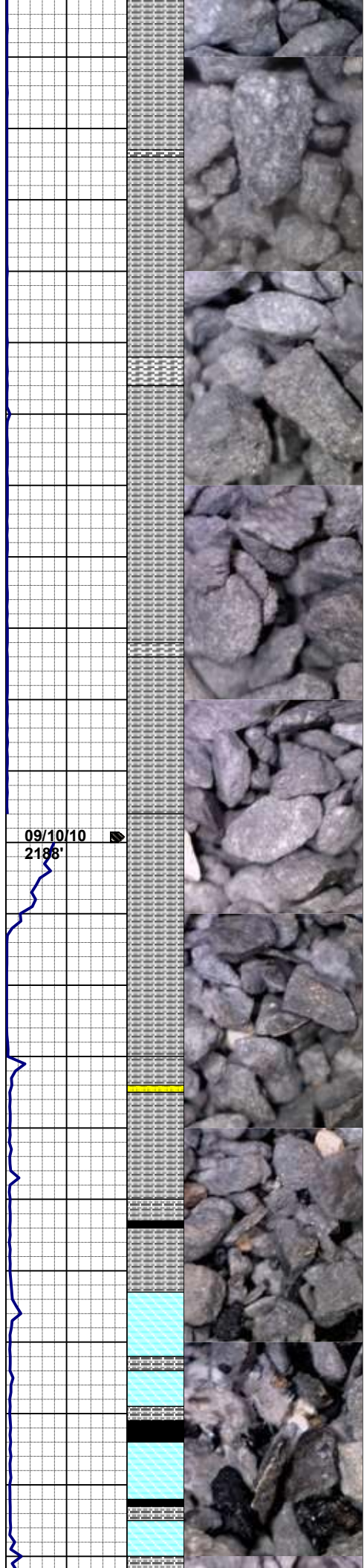
978u

SLTY SH: gy - lt gy, sme dk gy, blkly - sbbkly, occ sbply, firm - brit, rthy, mtx; arg -silty, non calc

SLTY SH: gy - lt gy, sme dk gy, blkly - sbbkly, occ sbply, firm - brit, rthy, mtx; arg -silty, non calc

Survey@2068'
INC 0.5 AZM 2.8

SLTY SH: gy - lt gy, occ ltbrn, blkly - sbbkly - sbply, firm - brit, rthy, mtx; arg -silty, non calc



SLTY SH: gy - lt gy, occ ltbrn, sbbkly - sbply, firm, rthy - grty, mtx; arg -sity, non calc

SLTY SH: gy - lt gy, occ ltbrn, sbbkly - sbply, firm - brit, rthy, mtx; arg -sity, non calc

SLTY SH: dk gy - gyblk, occ ltbrn, blkly - sbbkly, occ sbply, firm - v firm, hom, grty - rthy, mtx; arg -sity, non calc

SLTY SH: dk gy - gyblk, occ ltbrn, blkly - sbbkly, occ sbply, firm - v firm, hom, grty - rthy, mtx; arg -sity, non calc

Cement Labeled as Breccia

SLTY SH: gy - dk gy - gyblk, occ ltbrn, blkly - sbbkly, occ sbply, firm - sft, hom, grty - rthy, mtx; arg -sity, non calc

SLTY SH: gy - dk gy - gyblk, occ ltbrn, blkly - sbbkly, occ sbply, firm - sft, hom, grty - rthy, mtx; arg -sity, non calc

SLTY SH: gy - dk gy - gyblk, occ ltbrn, blkly - sbbkly, occ sbply, firm - sft, hom, grty - rthy, mtx; arg -sity, non calc

CLYST ltgy-gy, vsft-sft, earthy, mtx ; arg, sity, sme cyy, sme f aren

1187u

Survey@2161'
INC 1.0 AZM 11.6

Cement Plug
Kick-Off 9/9/10
2186'

VIS 58 WT 10.5 IN
VIS 61 WT 10.5+ OUT
Temp 140 F

SURVEY @ 2224'
INC 1.2 AZM 255.2

VIS 53 WT 10.5+ IN
VIS 52 WT 10.5 OUT
Temp 140 F

Survey @ 2253'
INC 1.1 AZM 243.1

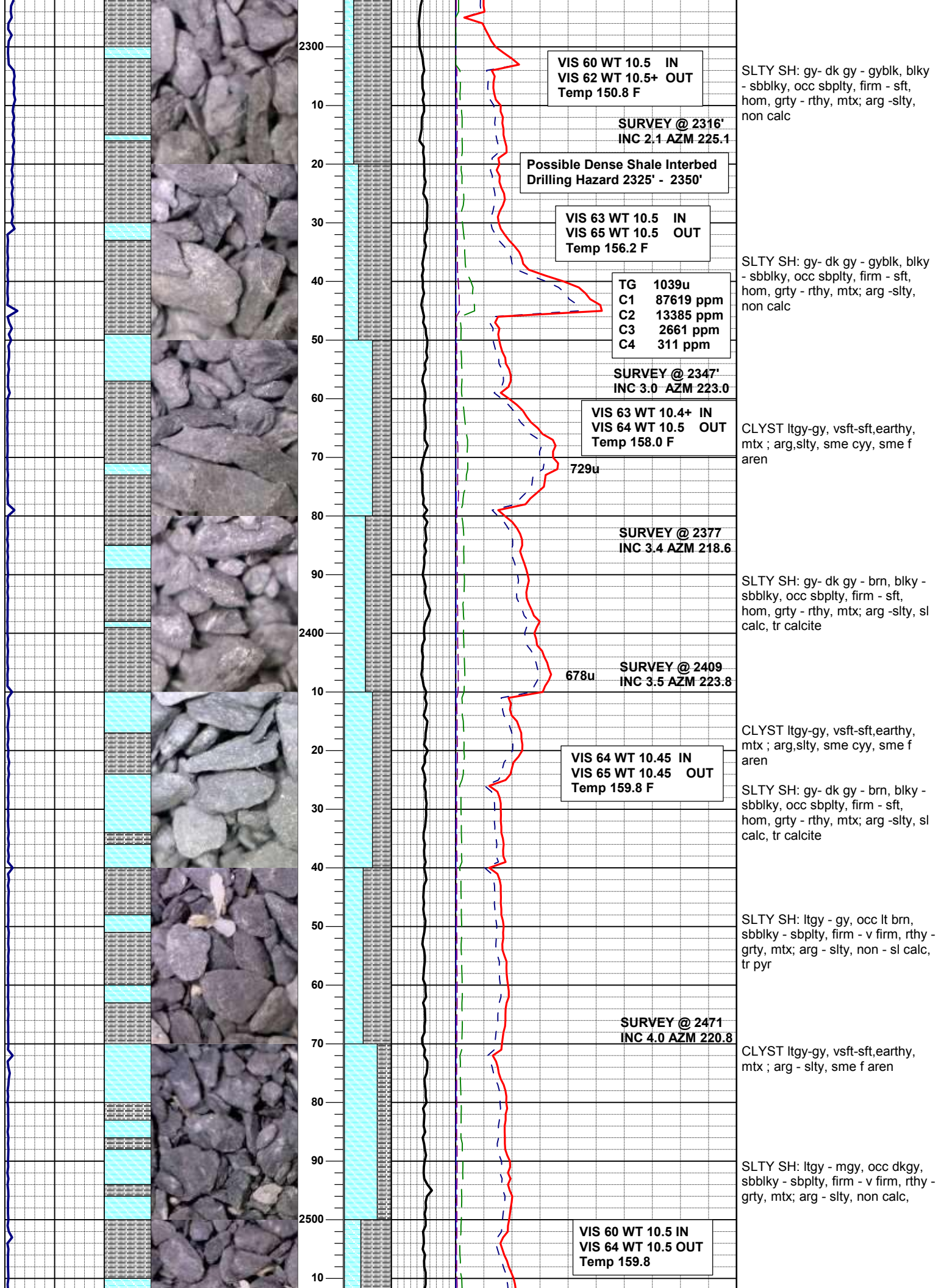
VIS 61 WT 10.5+ IN
VIS 62 WT 10.5 OUT
Temp 140 F

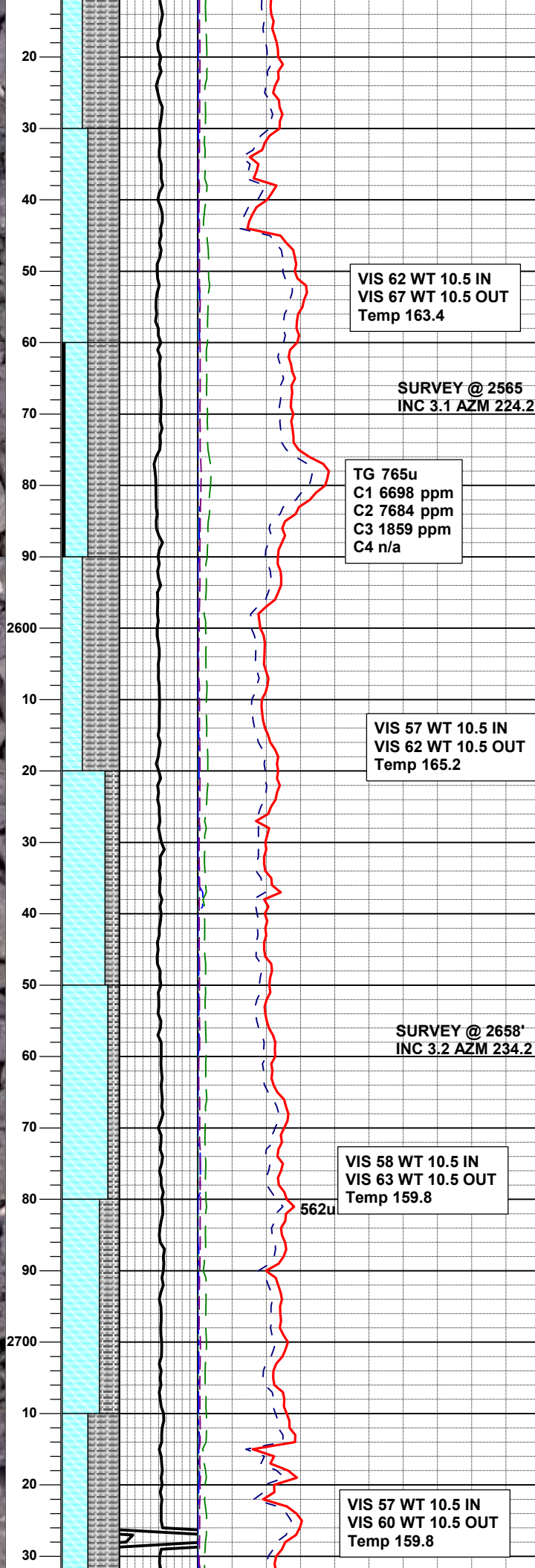
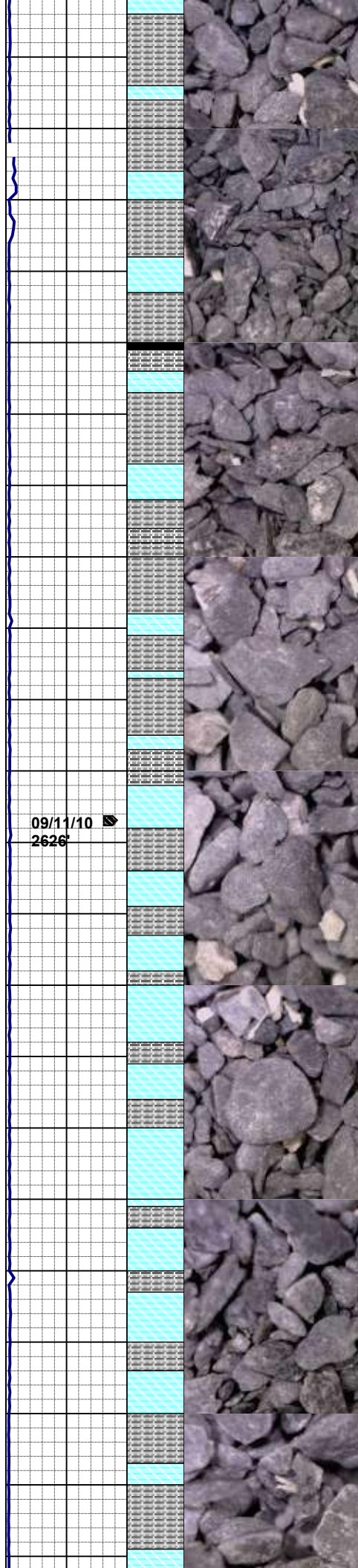
SURVEY @ 2284'
INC 1.4 AZM 235.6

Iso Tube #1
2249'

Iso Tube #2
Iso Jar #1
2270'

09/10/10
2186'





SLTY SH: mgy - dkgy, sme ltgy, sbply - sbbly, firm, rthy - grty, mtx; arg - slty, sl calc

SLTY SH: mgy - dkgy, sme ltbrngy, sbply - sbbly, firm, rthy - grty, mtx; arg - slty, sl calc

**VIS 62 WT 10.5 IN
VIS 67 WT 10.5 OUT
Temp 163.4**

CLYST ltgy-gy, vsft-sft, earthy, mtx; arg - slty, sme f aren

**SURVEY @ 2565
INC 3.1 AZM 224.2**

**TG 765u
C1 6698 ppm
C2 7684 ppm
C3 1859 ppm
C4 n/a**

SLTY SH: ltgy - mgy, sme ltbrngy, sbply - sbbly, firm, rthy - grty, mtx; arg - slty, sl - m calc, tr calcite

SLTY SH: ltgy - gy, sme ltbrn, ply - sbply, occ blk - sbbly, firm, grty - rthy, mtx; arg - slty, sl - m calc, tr calcite, tr pyr

**VIS 57 WT 10.5 IN
VIS 62 WT 10.5 OUT
Temp 165.2**

09/11/10
2626

SLTY SH: ltgy - gy, sme ltbrn, sbfiss - ply, occ sbply - sbbly, firm, occ brit, grty - rthy, mtx; arg - slty, m - sl calc,

**SURVEY @ 2658
INC 3.2 AZM 234.2**

CLYST ltgy-gy, vsft-sft, earthy, mtx; arg - slty, sme f aren

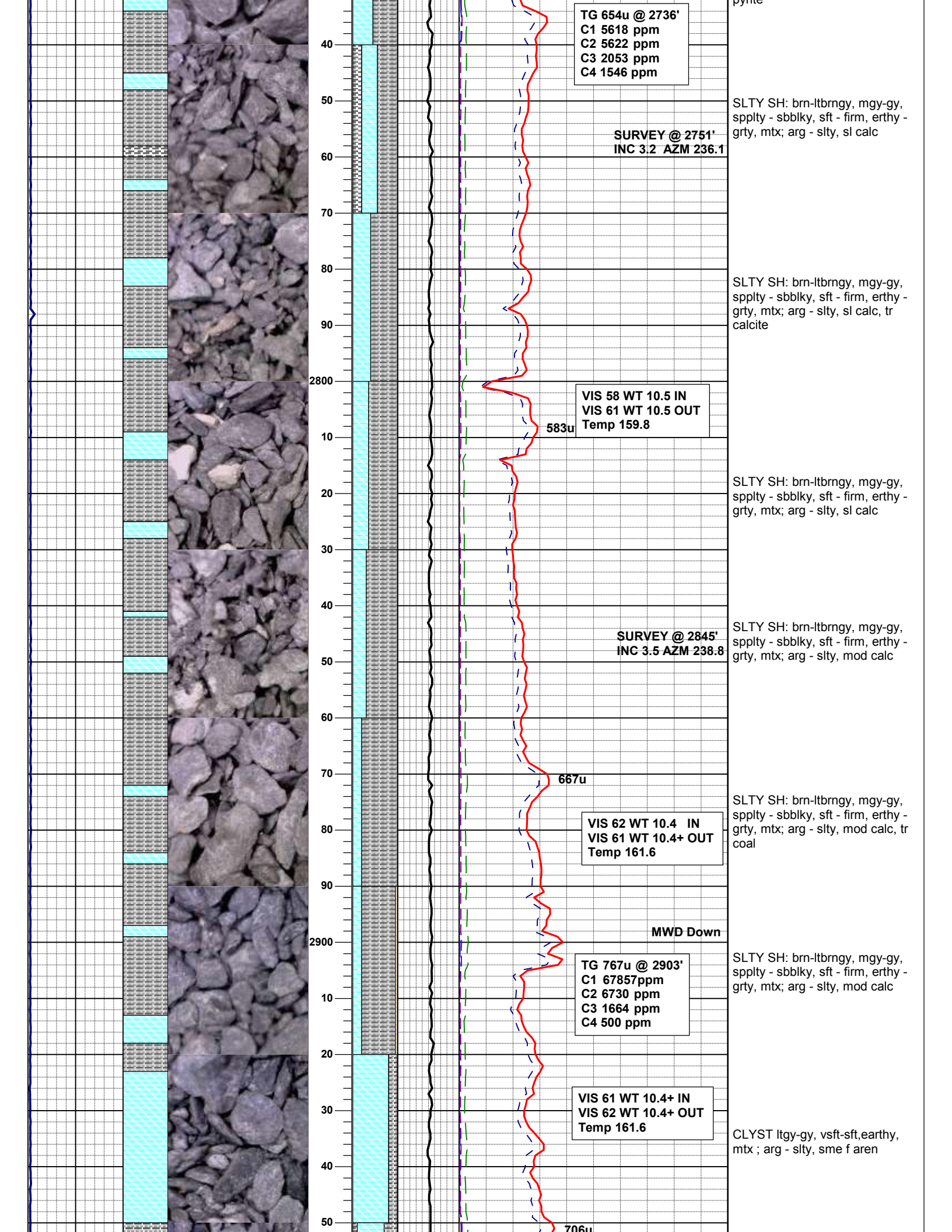
**VIS 58 WT 10.5 IN
VIS 63 WT 10.5 OUT
Temp 159.8**

562u

SLTY SH: ltgy - mgy, blk - sbbly, sme sbply, firm - v firm, erthy - grty, mtx; arg - slty, m - sl calc,

**VIS 57 WT 10.5 IN
VIS 60 WT 10.5 OUT
Temp 159.8**

SLTY SH: gy - mgy, occ ltbrn, spply - sbbly, firm - v firm, erthy - grty, mtx; arg - slty, sl calc, tr calcite



TG 654u @ 2736'
 C1 5618 ppm
 C2 5622 ppm
 C3 2053 ppm
 C4 1546 ppm

SURVEY @ 2751'
 INC 3.2 AZM 236.1

SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, sl calc

SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, sl calc, tr calcite

VIS 58 WT 10.5 IN
 VIS 61 WT 10.5 OUT
 Temp 159.8

583u

SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, sl calc

SURVEY @ 2845'
 INC 3.5 AZM 238.8

SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, mod calc

667u

VIS 62 WT 10.4 IN
 VIS 61 WT 10.4+ OUT
 Temp 161.6

SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, mod calc, tr coal

MWD Down

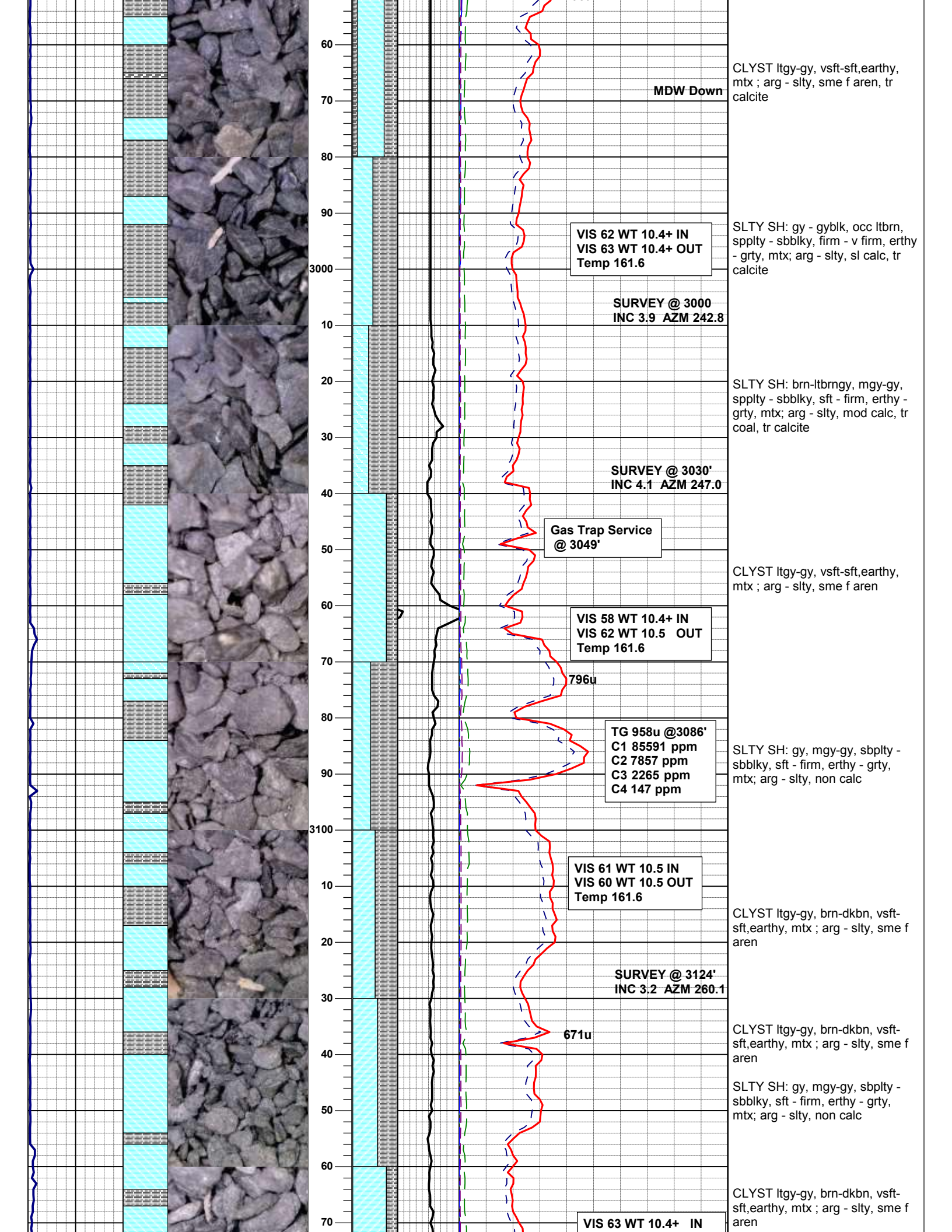
TG 767u @ 2903'
 C1 67857ppm
 C2 6730 ppm
 C3 1664 ppm
 C4 500 ppm

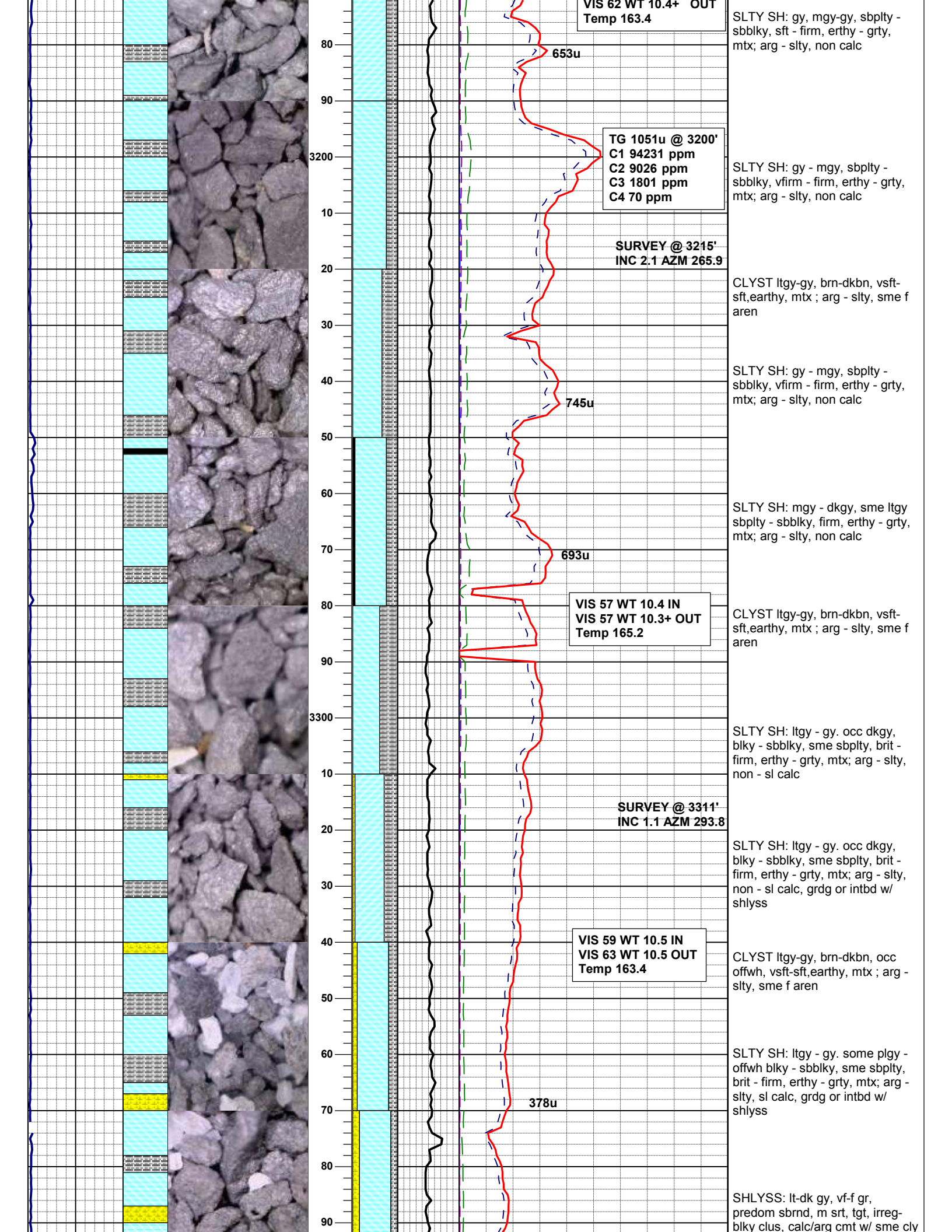
SLTY SH: brn-ltbrngy, mgy-gy, sppty - sbbkly, sft - firm, erthy - grty, mtx; arg - slty, mod calc

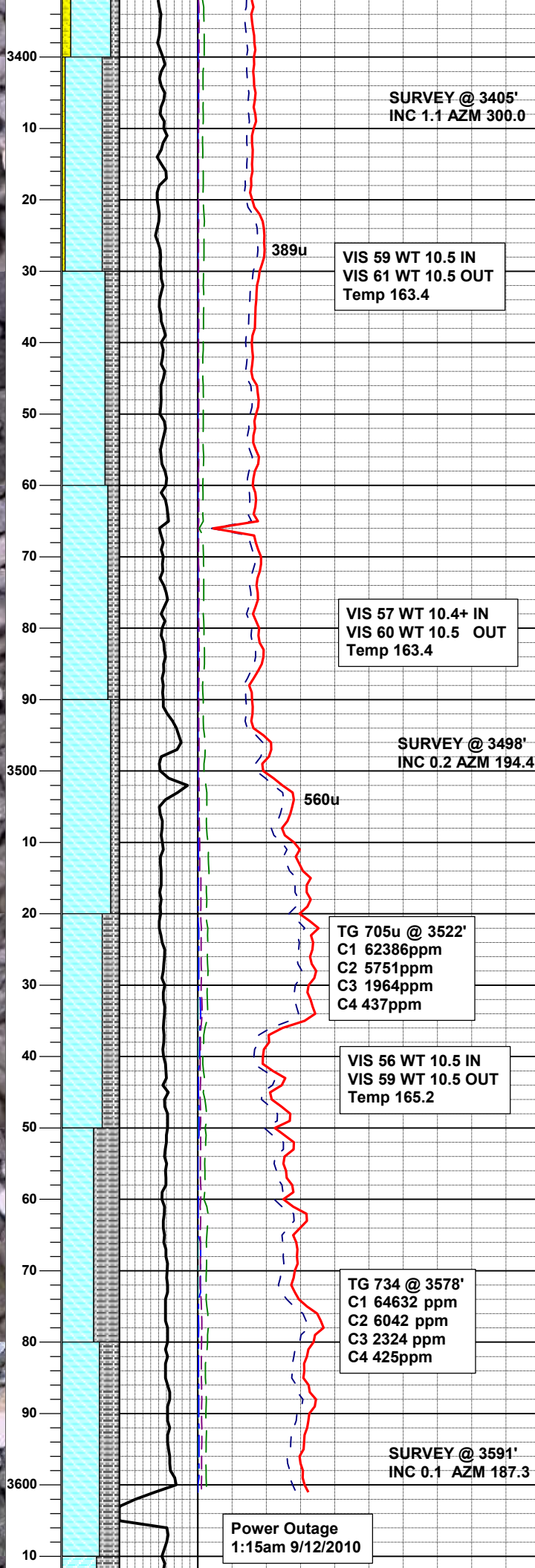
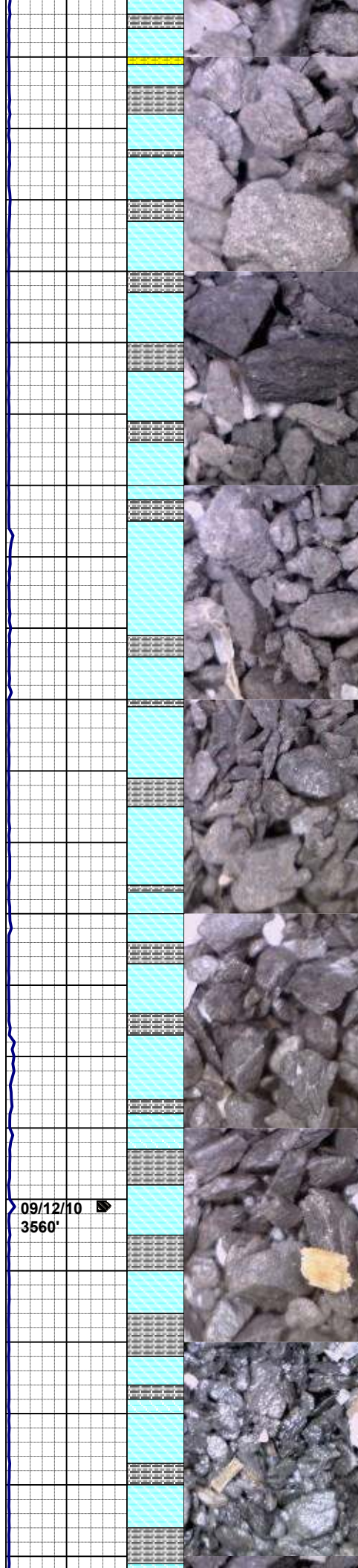
VIS 61 WT 10.4+ IN
 VIS 62 WT 10.4+ OUT
 Temp 161.6

CLYST ltgy-gy, vsft-sft, earthy, mtx; arg - slty, sme f aren

706u







SURVEY @ 3405'
INC 1.1 AZM 300.0

SLTY SH: gy - mgy. occ ltgy
 sbply - sbblky, sme plty, firm -
 brit, grty - erthy, mtx; arg - slty, sl
 - non calc

389u

VIS 59 WT 10.5 IN
VIS 61 WT 10.5 OUT
Temp 163.4

CLYST ltgy-gy, brn-dkbn, occ
 offwh, vsft-sft,earthy, mtx ; arg -
 slty, sme f aren

SLTY SH: ltgy - gy, plgy - offwh,
 sbply - sbblky, sme plty, firm -
 brit, grty - erthy, mtx; arg - slty,
 non - sl calc

CLYST ltgy-gy, brn-dkbn, vsft-
 sft,earthy, mtx ; arg - slty, sme f
 aren

VIS 57 WT 10.4+ IN
VIS 60 WT 10.5 OUT
Temp 163.4

SLTY SH: ltgy - gy, sbblky - blk,
 sme sbply, firm , grty - erthy,
 mtx; arg - slty, non calc

SURVEY @ 3498'
INC 0.2 AZM 194.4

SLTY SH: gy - mgy, sbblky -
 sbply, firm - vfirm , erthy, mtx;
 arg - slty, sl calc

560u

TG 705u @ 3522'
C1 62386ppm
C2 5751ppm
C3 1964ppm
C4 437ppm

CLYST ltgy-gy, brn-dkbn, vsft-
 sft,earthy, mtx ; arg - slty, sme f
 aren

VIS 56 WT 10.5 IN
VIS 59 WT 10.5 OUT
Temp 165.2

SLTY SH: mgy - dkgy, sme gy,
 sbblky - blk, occ sbply, firm,
 erthy, mtx; arg - slty, sl calc

SLTY SH: mgy - dkgy, sme gy,
 sbblky - blk, occ sbply, firm,
 erthy, mtx; arg - slty, sl calc

TG 734 @ 3578'
C1 64632 ppm
C2 6042 ppm
C3 2324 ppm
C4 425ppm

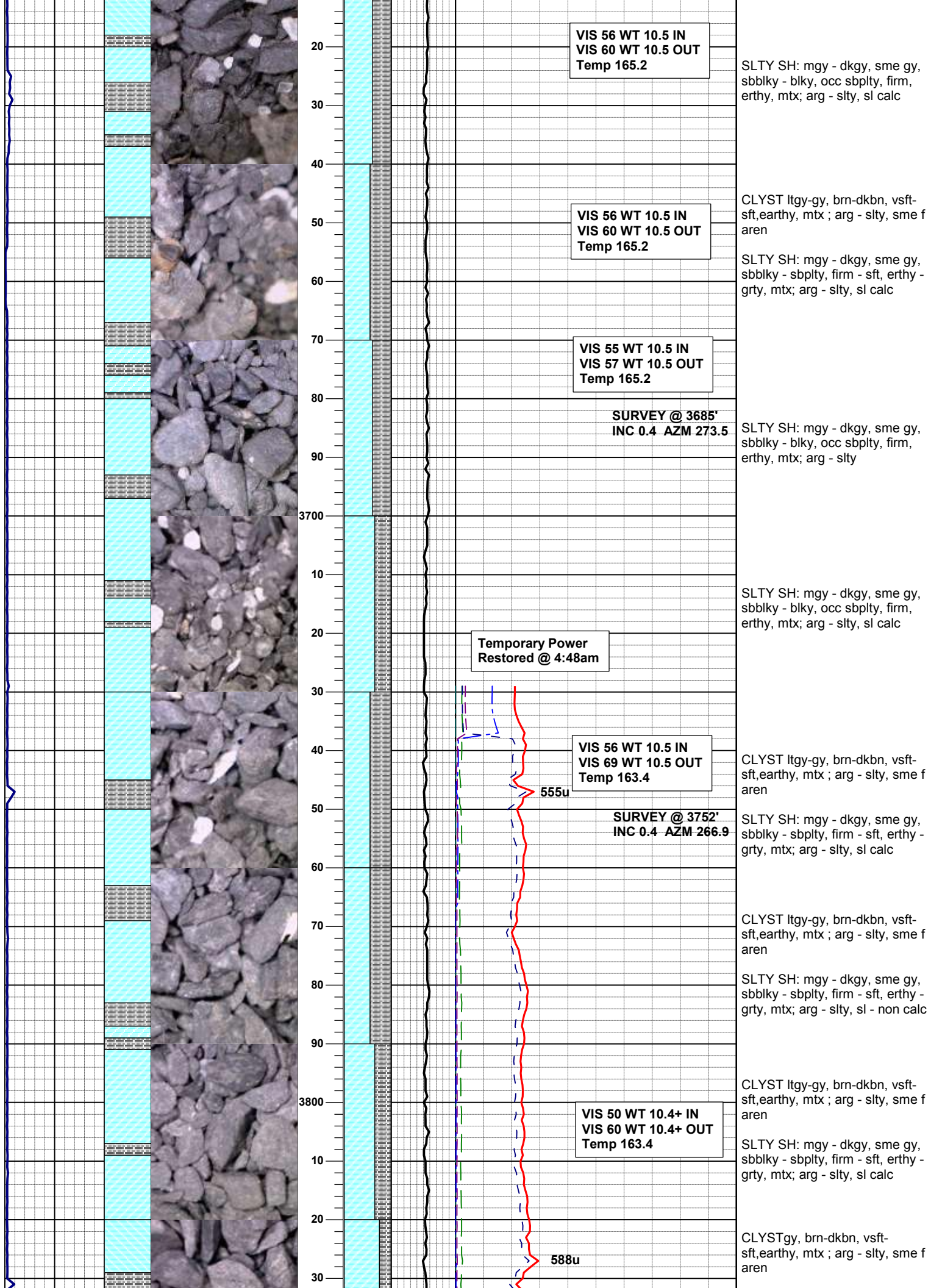
CLYST ltgy-gy, brn-dkbn, vsft-
 sft,earthy, mtx ; arg - slty, sme f
 aren

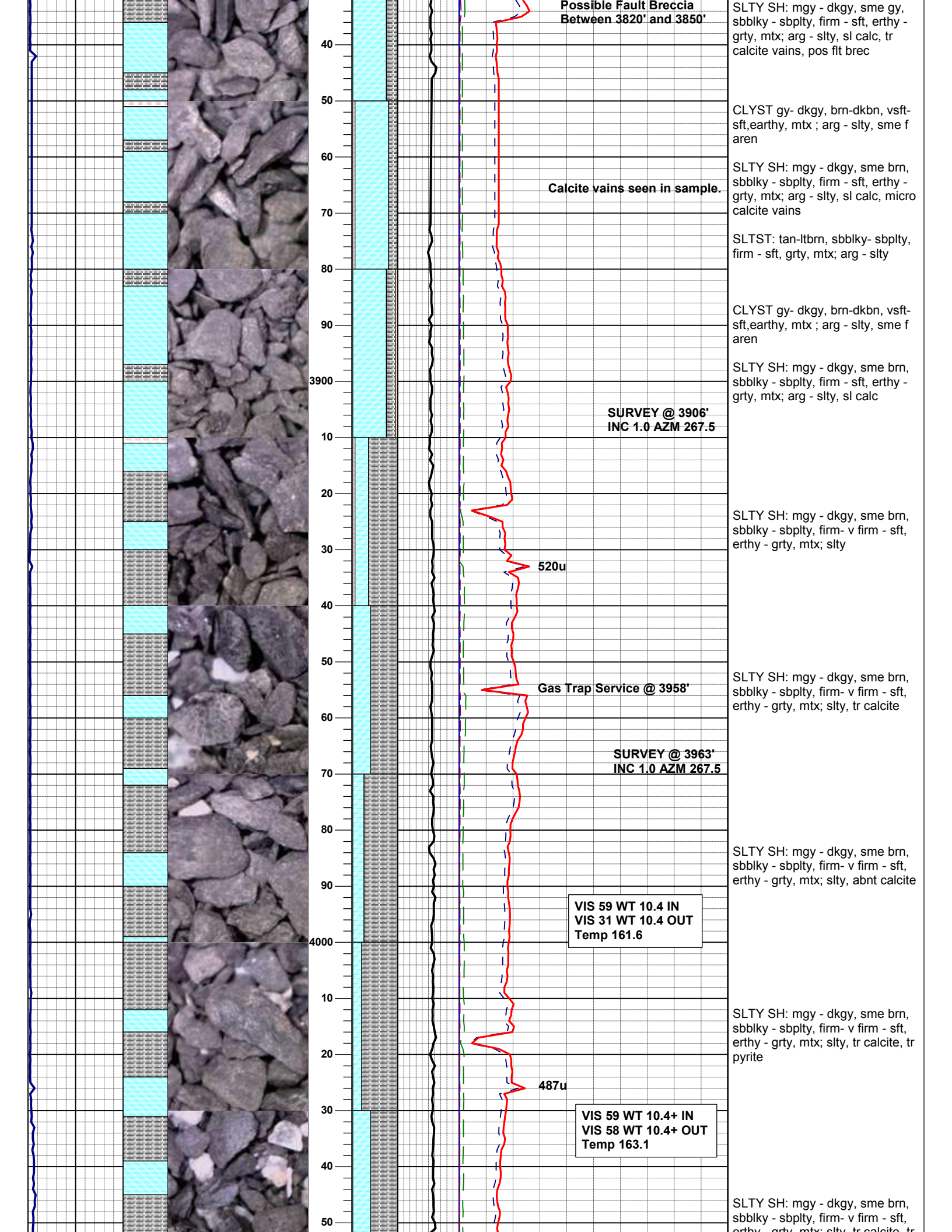
SURVEY @ 3591'
INC 0.1 AZM 187.3

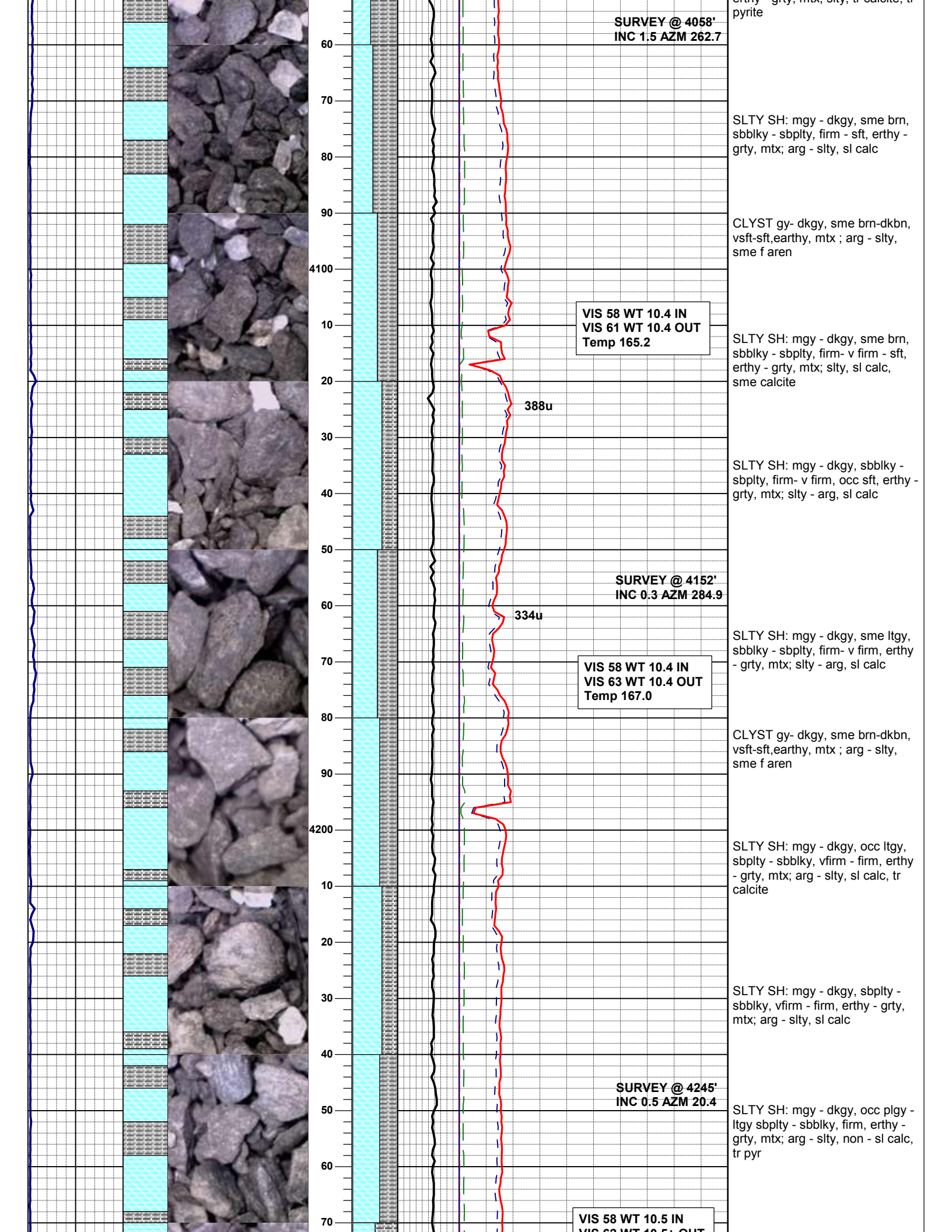
SLTY SH: mgy - dkgy, sme gy,
 sbblky - sbply, firm - sft, erthy -
 grty, mtx; arg - slty, sl - non calc

Power Outage
1:15am 9/12/2010

09/12/10
 3560'







SURVEY @ 4058'
INC 1.5 AZM 262.7

SLTY SH: mgy - dkgy, sme brn, sbblky - sbply, firm - sft, erthy - grty, mtx; arg - slty, sl calc

CLYST gy- dkgy, sme brn-dkbn, vsft-sft, earthy, mtx ; arg - slty, sme f aren

VIS 58 WT 10.4 IN
VIS 61 WT 10.4 OUT
Temp 165.2

SLTY SH: mgy - dkgy, sme brn, sbblky - sbply, firm- v firm - sft, erthy - grty, mtx; slty, sl calc, sme calcite

388u

SLTY SH: mgy - dkgy, sbblky - sbply, firm- v firm, occ sft, erthy - grty, mtx; slty - arg, sl calc

SURVEY @ 4152'
INC 0.3 AZM 284.9

SLTY SH: mgy - dkgy, sme ltgy, sbblky - sbply, firm- v firm, erthy - grty, mtx; slty - arg, sl calc

VIS 58 WT 10.4 IN
VIS 63 WT 10.4 OUT
Temp 167.0

CLYST gy- dkgy, sme brn-dkbn, vsft-sft, earthy, mtx ; arg - slty, sme f aren

334u

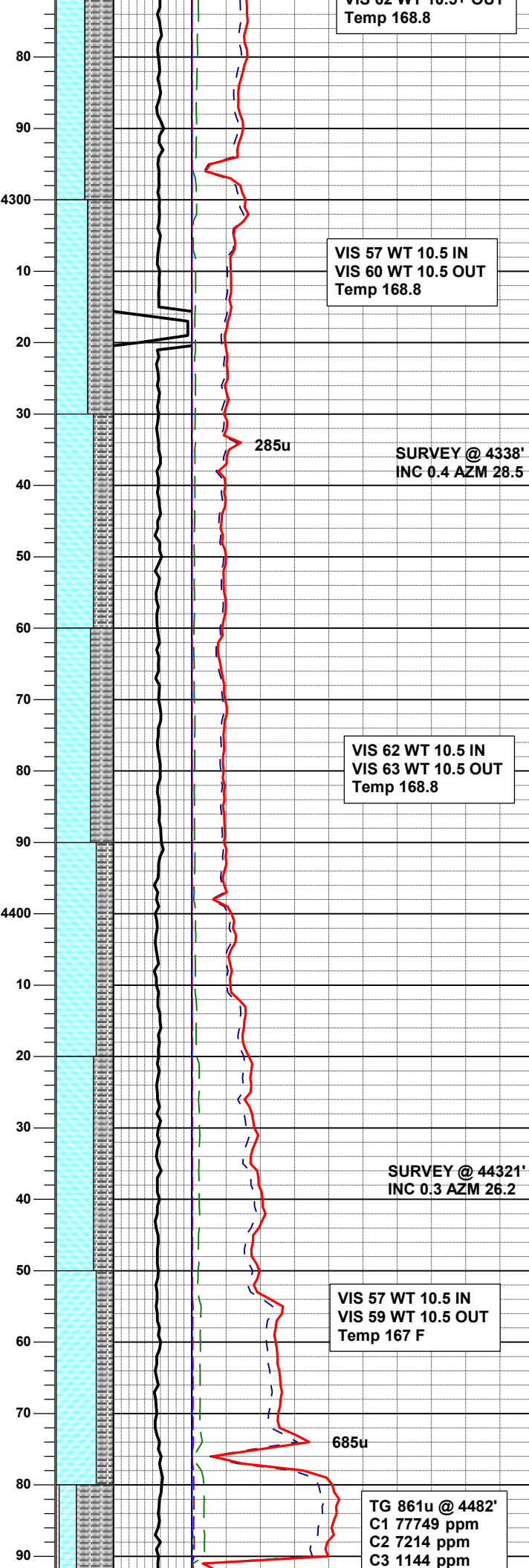
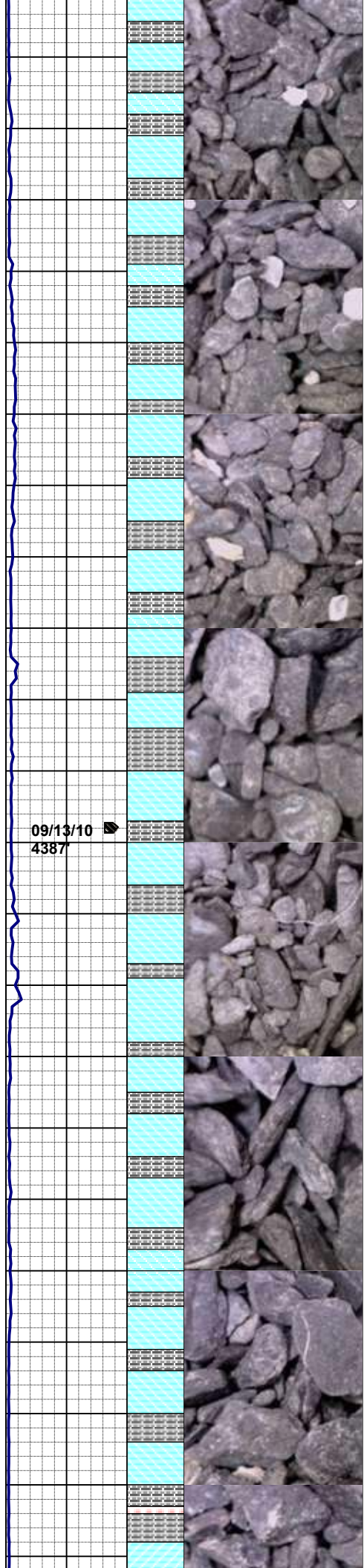
SLTY SH: mgy - dkgy, occ ltgy, sbply - sbblky, vfirm - firm, erthy - grty, mtx; arg - slty, sl calc, tr calcite

SLTY SH: mgy - dkgy, sbply - sbblky, vfirm - firm, erthy - grty, mtx; arg - slty, sl calc

SURVEY @ 4245'
INC 0.5 AZM 20.4

SLTY SH: mgy - dkgy, occ plgy - ltgy sbply - sbblky, firm, erthy - grty, mtx; arg - slty, non - sl calc, tr pyr

VIS 58 WT 10.5 IN
VIS 63 WT 10.5 OUT



VIS 62 WT 10.5 IN
VIS 63 WT 10.5 OUT
Temp 168.8

CLYST gy- dkgy, sme brn-dkbn,
vsft-sft, earthy, mtx ; arg - slty,
sme f aren

SLTY SH: mgy - dkgy, occ ltbrn,
ply - sbply, occ sbbkly, firm,
erthy - grty, mtx; arg - slty, non
sl calc, tr pyr

VIS 57 WT 10.5 IN
VIS 60 WT 10.5 OUT
Temp 168.8

SLTY SH: gy - mgy, sbply -
sbbkly, firm - vfirm, erthy - grty,
mtx; arg - slty, non calc

SURVEY @ 4338'
INC 0.4 AZM 28.5

CLYST gy- dkgy, vsft-sft, earthy,
mtx ; arg - slty, sme f aren

SLTY SH: mgy - dkgy, sbply -
sbbkly, firm - vfirm, erthy - grty,
mtx; arg - slty, non calc

VIS 62 WT 10.5 IN
VIS 63 WT 10.5 OUT
Temp 168.8

SLTY SH: mgy - dkgy, sbply -
sbbkly, firm - vfirm, erthy - grty,
mtx; arg - slty, non calc

09/13/10
4387

CLYST gy- dkgy, vsft-sft, earthy,
mtx ; arg - slty, sme f aren

SLTY SH: gy - mgy, occ ltgy,
sbply - sbbkly, firm, occ brit,
erthy - grty, mtx; arg - slty, non
calc

SURVEY @ 44321'
INC 0.3 AZM 26.2

SLTY SH: mgy - dkgy, occ ltgy,
ply - sbply, occ sbbkly, firm,
erthy - grty, mtx; arg - slty, non
sl calc, tr calcite

Iso Tube #3
4455'

VIS 57 WT 10.5 IN
VIS 59 WT 10.5 OUT
Temp 167 F

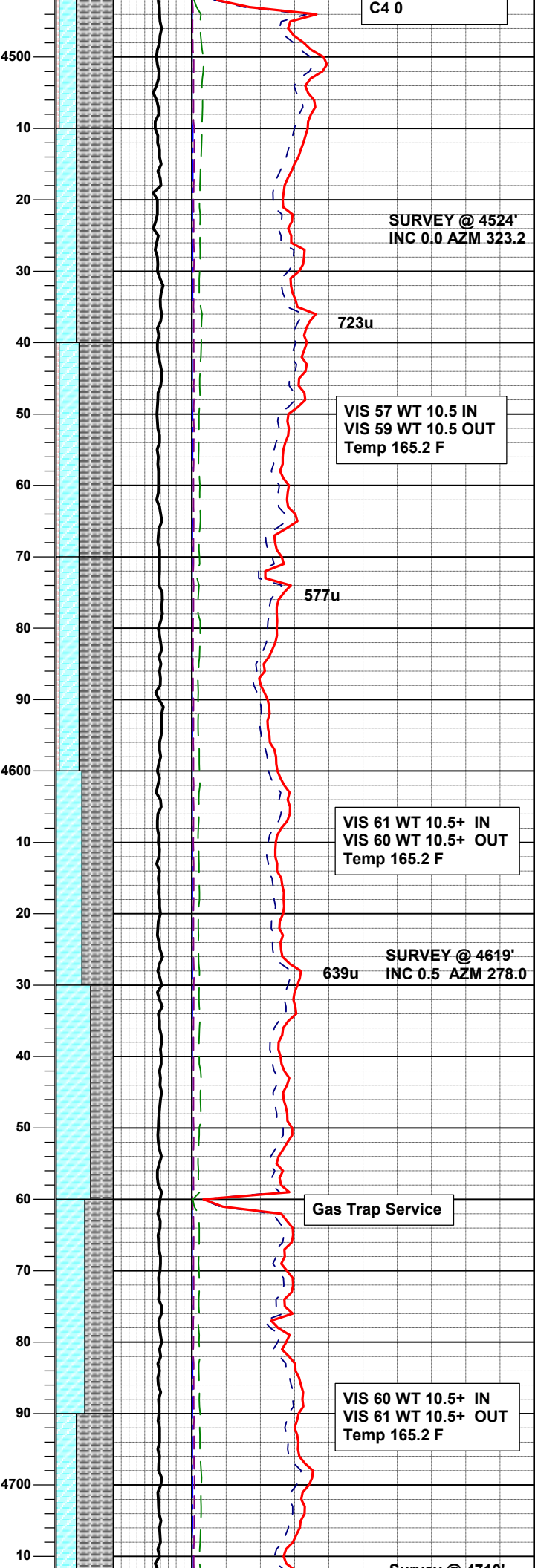
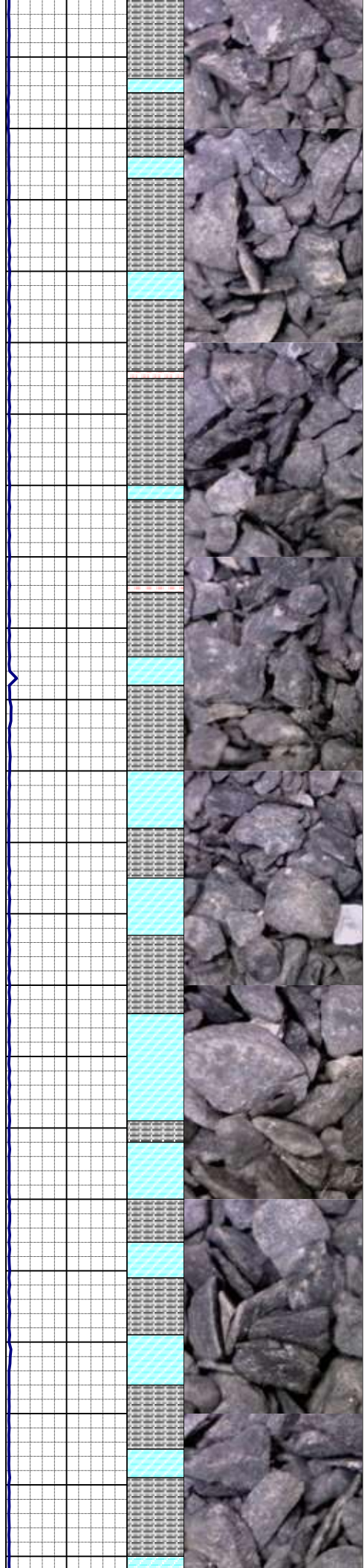
CLYST gy- dkgy, sme brn-dkbn,
vsft-sft, earthy, mtx ; arg - slty,
sme f aren

Iso Tube #4
4467'

SLTY SH: mgy - dkgy, occ ltgy,
ply - sbply, occ sbbkly, firm,
erthy - grty, mtx; arg - slty, non
calc

TG 861u @ 4482'
C1 77749 ppm
C2 7214 ppm
C3 1144 ppm

Iso Tube #5
4474'
Iso Tube #6
Iso Jar #2
4481'



SLTY SH: mgly - dkgy, occ ltgy, plty - sbplty, occ sbbkly, firm, erthy - grty, mtx; arg - slty, non calc, tr pyrite, tr calcite

SLTY SH: mgly - dkgy, occ ltgy, sbplty -subblky, occ plty, firm, erthy - grty, mtx; arg - slty, non calc

SLTY SH: mgly - dkgy, occ ltgy, plty -subblky, firm occ sft, erthy - grty, mtx; arg - slty, non-sl calc, tr pyrite

SLTY SH: mgly - dkgy, occ ltgy, plty -subblky, firm occ sft, erthy - grty, mtx; arg - slty, non-sl calc, tr calcite

SLTY SH: mgly - dkgy, occ ltgy, plty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, non-sl calc, occ mic pyrite

SLTY SH: mgly - dkgy, occ ltgy-ltbrn, subplty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, non-sl calc, tr mic pyrite

SLTY SH: mgly - dkgy, occ ltgy-ltbrn, subplty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc

SLTY SH: mgly - dkgy, occ ltgy-ltbrn, subplty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg -

SURVEY @ 4719'
INC 0.7 AZM 279.7

TG 794u @ 4719u
C1 71190 ppm
C2 6210 ppm
C3 1667 ppm
C4 359 ppm

SLTY SH: mgy - dkgy, occ ltgy-ltbrn, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, calcite vn xls growth, pos calcite breccia

689u

VIS 60 WT 10.5+ IN
VIS 61 WT 10.5 OUT
Temp 165.2 F

SLTY SH: mgy - dkgy, occ ltgy-ltbrn, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc

VIS 60 WT 10.5 IN
VIS 61 WT 10.5 OUT
Temp 165.2 F

SLTY SH: mgy - dkgy, occ ltgy-ltbrn, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr pryite

SURVEY @ 4804'
INC 1.2 AZM 260.1

SLTY SH: mgy - dkgy, occ ltgy-ltbrn, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr calcite

VIS 59 WT 10.5+ IN
VIS 62 WT 10.5 OUT
Temp 165.2 F

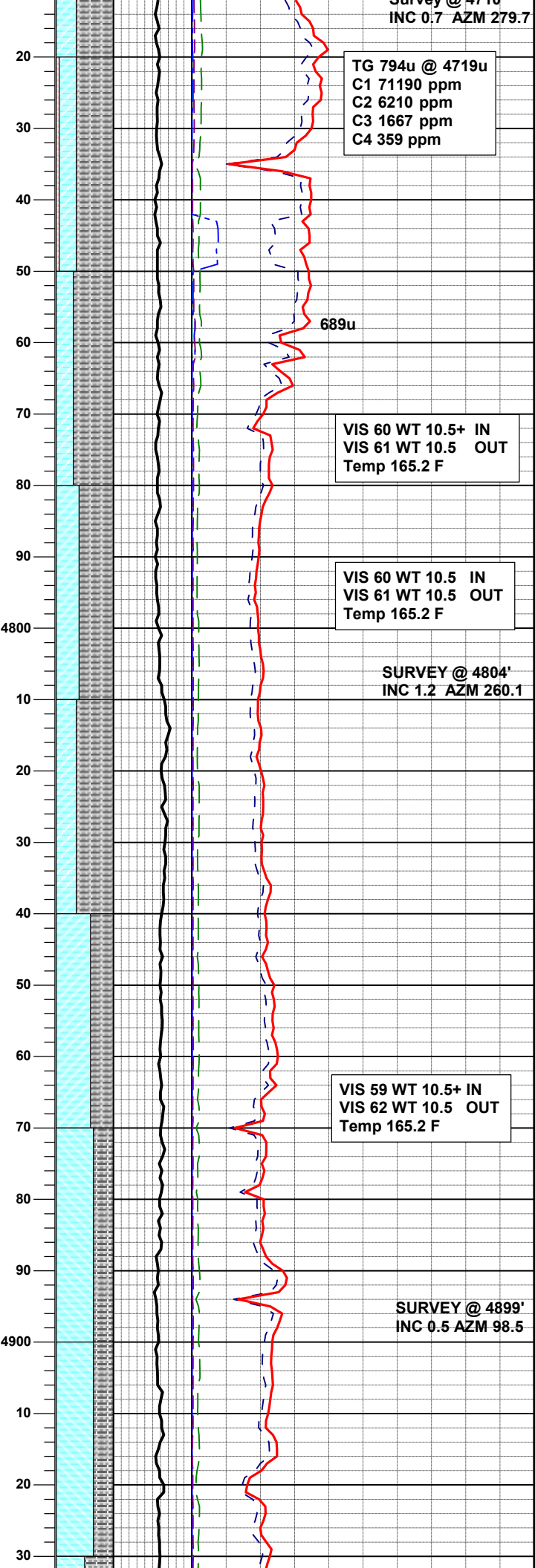
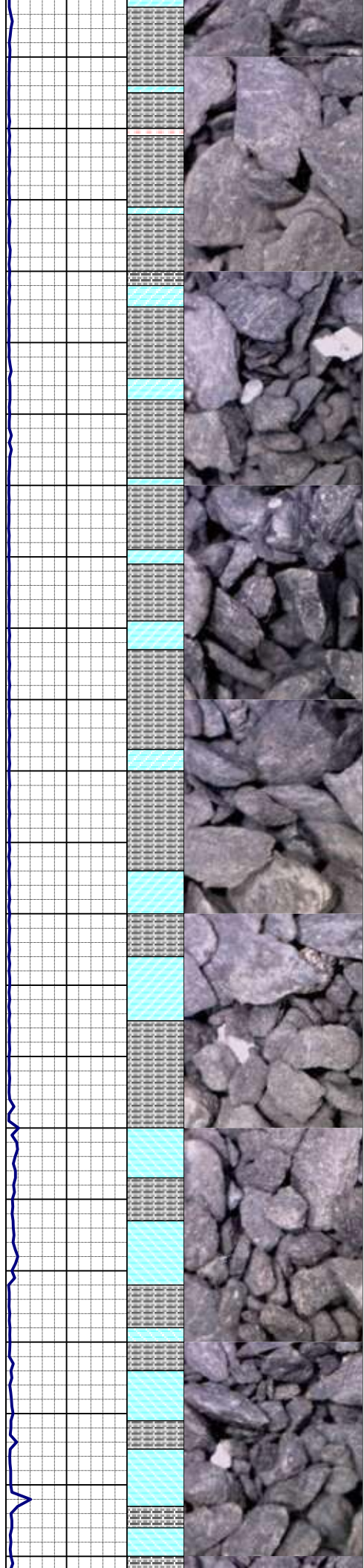
SLTY SH: mgy - dkgy, occ ltgy-ltbrn, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr calcite

SURVEY @ 4899'
INC 0.5 AZM 98.5

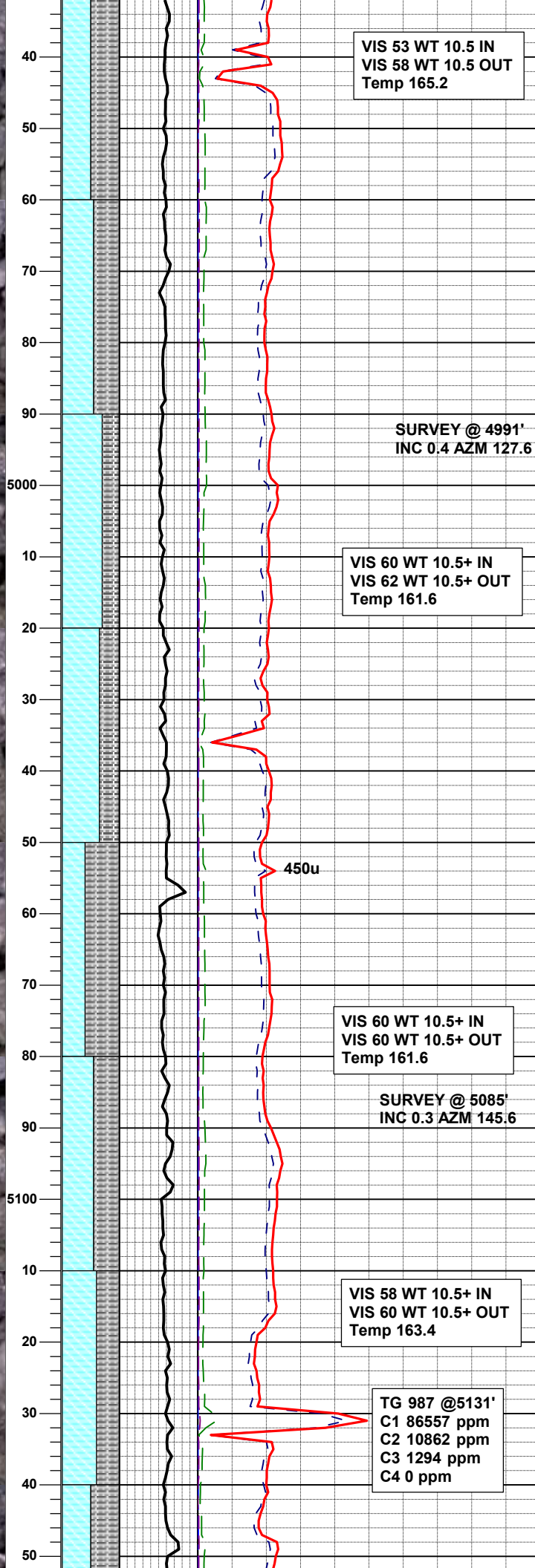
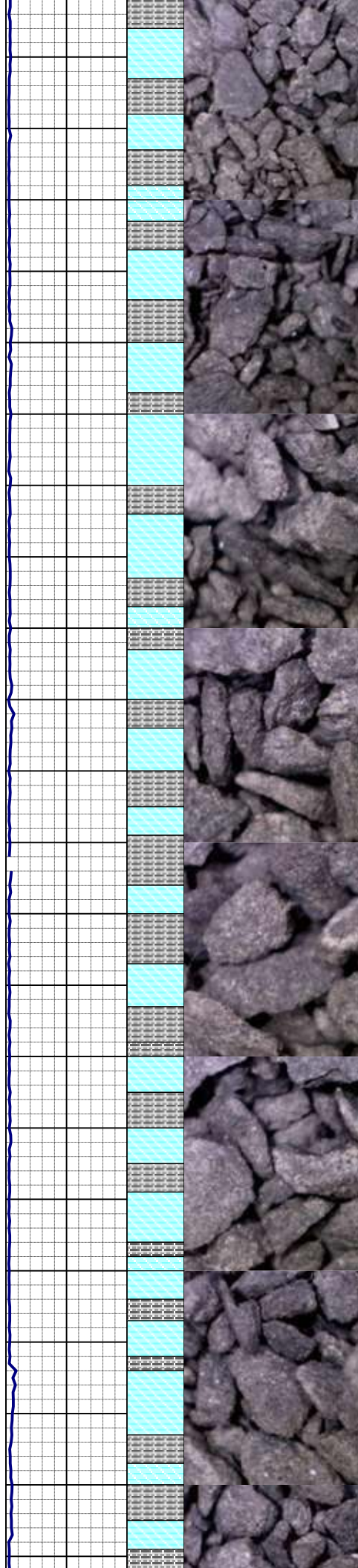
SLTY SH: mgy - dkgy, subpty -subblky, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr calcite

CLYST gy- dkgy, sme brn-dkbn, vsft-sft, earthy, mtx ; arg - slty, sme f aren

SLTY SH: mgy - dkgy, sme gy, pty - sbpty, occ sbblky - blky, firm, grty - erthy, mtx; arg - slty, sl - non calc



Vertical text descriptions of rock types and mineral content corresponding to the log sections.



VIS 53 WT 10.5 IN
VIS 58 WT 10.5 OUT
Temp 165.2

SLTY SH: mgy - dkgy, sme gy, plty - sbplty, occ sbbkly - blkly, firm, grty - erthy, mtx; arg - slty, sl - non calc

SLTY SH: mgy - dkgy, sbplty - sbbkly, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr calcite

SURVEY @ 4991'
INC 0.4 AZM 127.6

CLYST gy- dkgy, sme brn-dkbn, vsft-sft,earthy, mtx ; arg - slty, sme f aren

VIS 60 WT 10.5+ IN
VIS 62 WT 10.5+ OUT
Temp 161.6

SLTY SH: mgy - dkgy, sbplty - sbbkly, firm -brit, occ sft, erthy - grty, mtx; arg - slty, sl calc, tr calcite

SLTY SH: mgy - dkgy, occ ltgy, blkly - sbbkly, sme sbplty, firm -brit, occ sft, grty - erthy, mtx; arg - slty, mod - sl calc, calcite veins

450u

SLTY SH: mgy - dkgy, sbbkly - sbplty, sme blkly, firm -brit, grty - erthy, mtx; arg - slty, sl calc, tr calcite

VIS 60 WT 10.5+ IN
VIS 60 WT 10.5+ OUT
Temp 161.6

SLTY SH: mgy - dkgy, sbbkly - sbplty, sme blkly, firm -brit, grty - erthy, mtx; arg - slty, sl calc, tr calcite

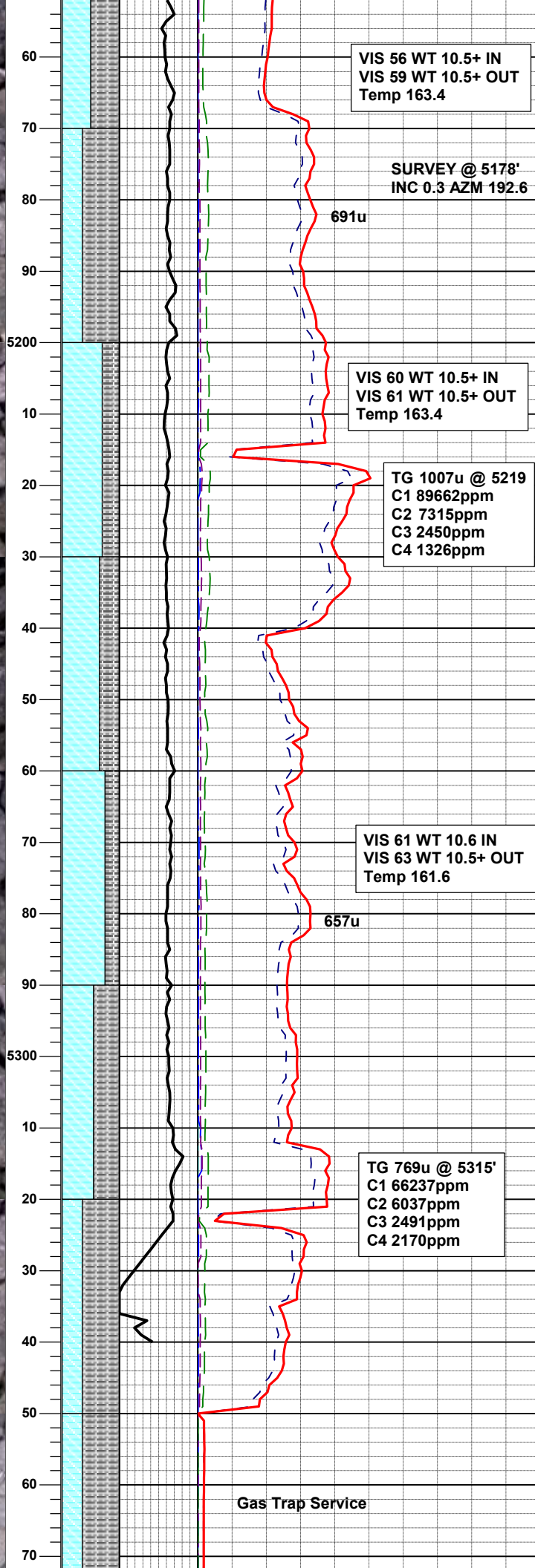
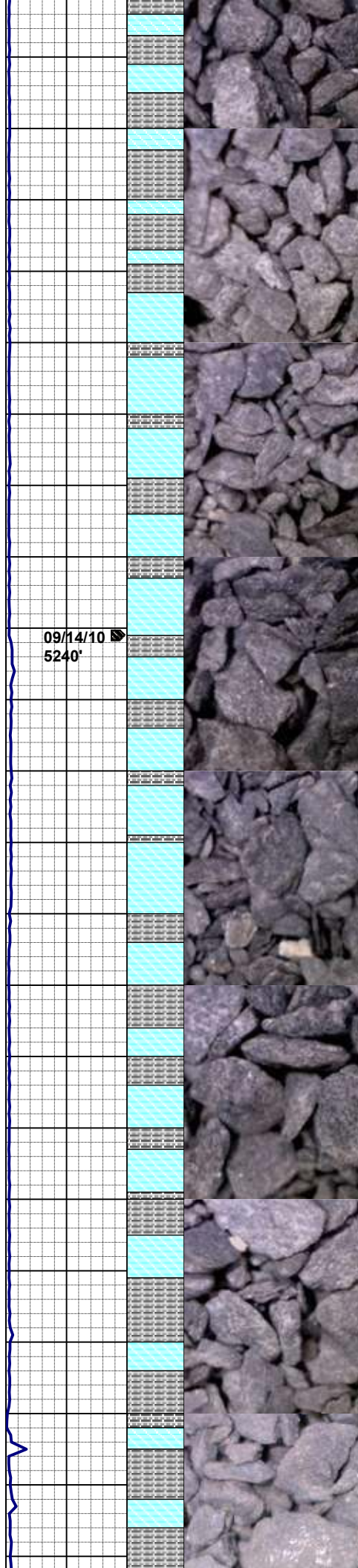
SURVEY @ 5085'
INC 0.3 AZM 145.6

VIS 58 WT 10.5+ IN
VIS 60 WT 10.5+ OUT
Temp 163.4

CLYST gy- dkgy, sme brn-dkbn, vsft-sft,earthy, mtx ; arg - slty, sme f aren

TG 987 @5131'
C1 86557 ppm
C2 10862 ppm
C3 1294 ppm
C4 0 ppm

SLTY SH: mgy - dkgy, occ ltgy, sbplty - sbfis, sme sbbkly, firm -brit, occ vfirm, grty - erthy, mtx; arg - slty, sl calc, tr calcite



SLTY SH: gy - mgy - dkgy, sbply - sbbly, firm, erthy - grty, mtx; arg - slty, non calc

SLTY SH: gy - mgy - dkgy, sbply - sbbly, sme blk, firm, erthy - grty, mtx; arg - slty, non calc

CLYST gy- dkgy, sme brn-dkbn, vsft-sft,earthy, mtx ; arg - slty, sme f aren

SLTY SH: mgy - dkgy, occ ltbrn, occ ltgy, ply - sbply, sme sbbly, vfirm - firm, erthy - grty, mtx; arg - slty, sl calc, tr pyr, tr calcite

SLTY SH: gyblk-dkgy, ply - sbply, occ sbfis, firm -v firm, rthy-grty, mtx; arg -slty, sl -m calc

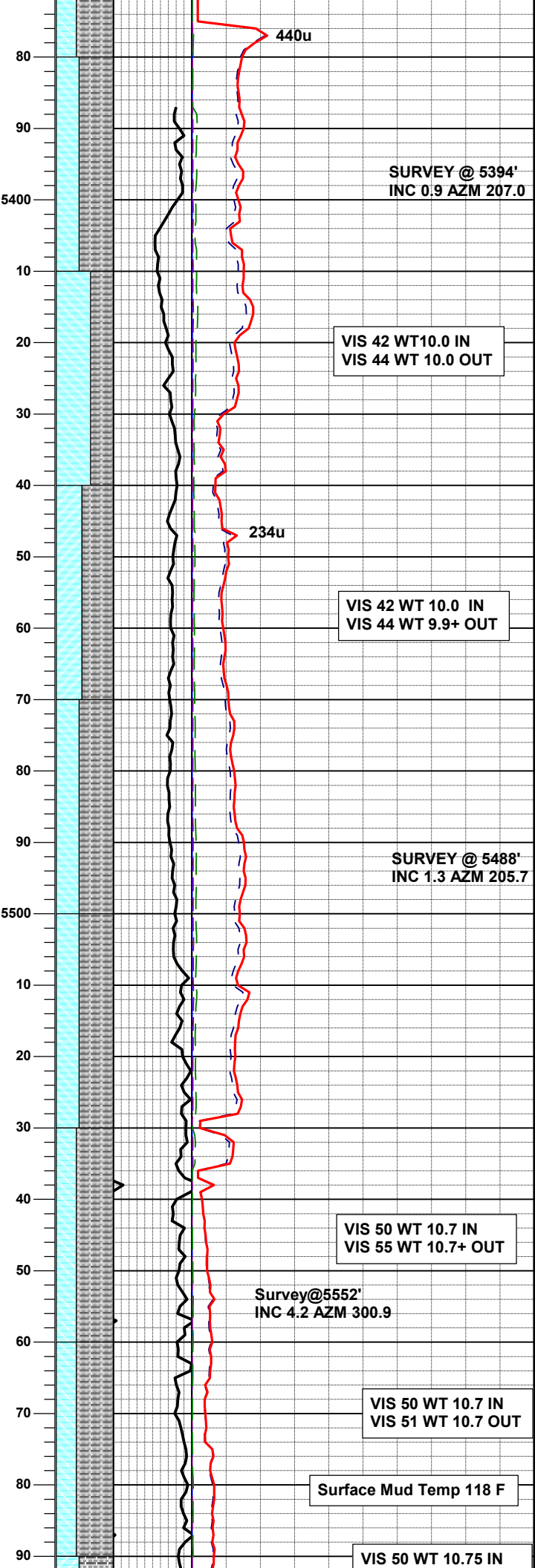
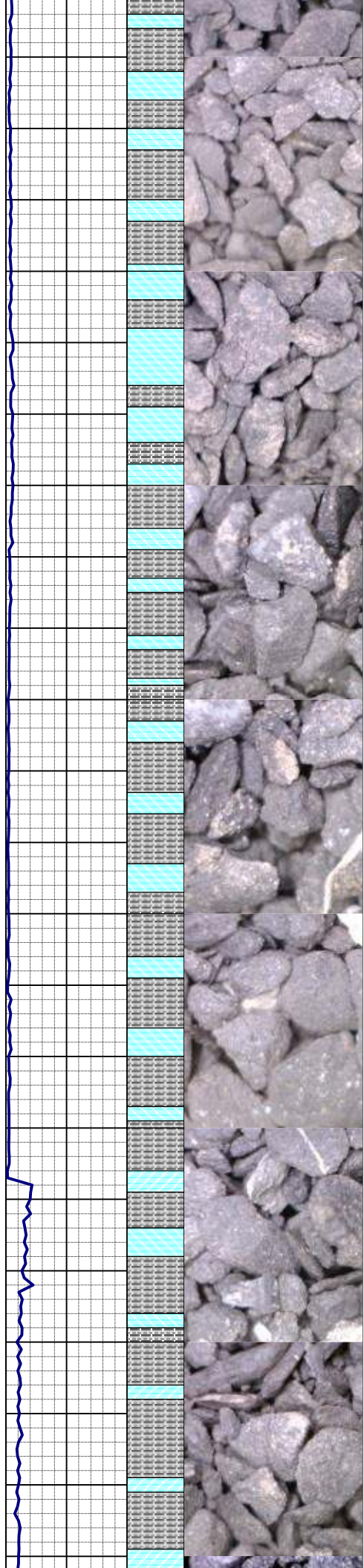
CLYST gy- dkgy, sme brn-dkbn, vsft-sft,earthy, mtx ; arg - slty, sme f aren

SLTY SH: gyblk-dkgy, sbply - sbbly, firm -v firm, rthy-grty, mtx; arg -slty, sl -m calc

SLTY SH: gyblk-dkgy, sbply - ply, sme sbbly, firm -v firm, rthy-grty, mtx; arg -slty, non calc

SLTY SH: gyblk-dkgy, sbply - ply, sme sbbly, firm -v firm, rthy-grty, mtx; arg -slty, non calc

SLTY SH: mgy - dkgy, occ ltbrn, sbply - sbbly, firm, erthy - grty, mtx; arg - slty, sl calc



SLTY SH: mgy - dkgy, occ ltbrn, sbply - sbbky, firm, erthy - grty, mtx; arg - slty, sl calc

SURVEY @ 5394'
INC 0.9 AZM 207.0

CLYST gy- dkgy, sme brn-dkbn, vsft-sft, earthy, mtx; arg - slty, sme f aren

VIS 42 WT 10.0 IN
VIS 44 WT 10.0 OUT

SLTY SH: mgy - dkgy, occ ltbrn, sbply - sbbky, firm, erthy - grty, mtx; arg - slty, sl calc

234u

VIS 42 WT 10.0 IN
VIS 44 WT 9.9+ OUT

SLTY SH: gy - dkgy, sme ltbrn, sbbky - sbply, sme blk, frm - vfirm, rthy, mtx; arg -slty, sl calc

SLTY SH: gy - dkgy, sme ltbrn, sbbky - sbply, sme blk, frm - vfirm, rthy - grty, mtx; arg -slty, sl - non calc

SURVEY @ 5488'
INC 1.3 AZM 205.7

SLTY SH: gy - dkgy, sme pl gy - offwht, sbply, sme sbbky, frm, grty -rthy mtx; arg -slty, sl - non calc

VIS 50 WT 10.7 IN
VIS 55 WT 10.7+ OUT

SLTY SH: gy - dkgy, sbply, sme sbbky, frm - vfrm, grty -rthy mtx; arg -slty, sl - non calc

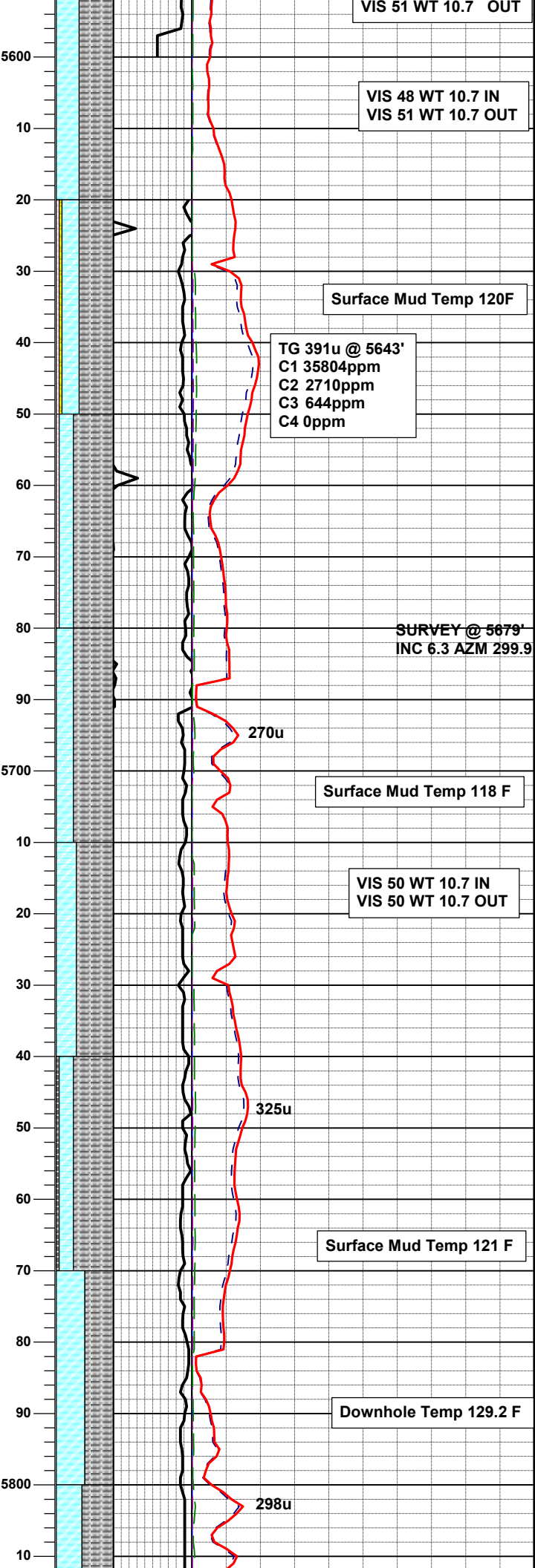
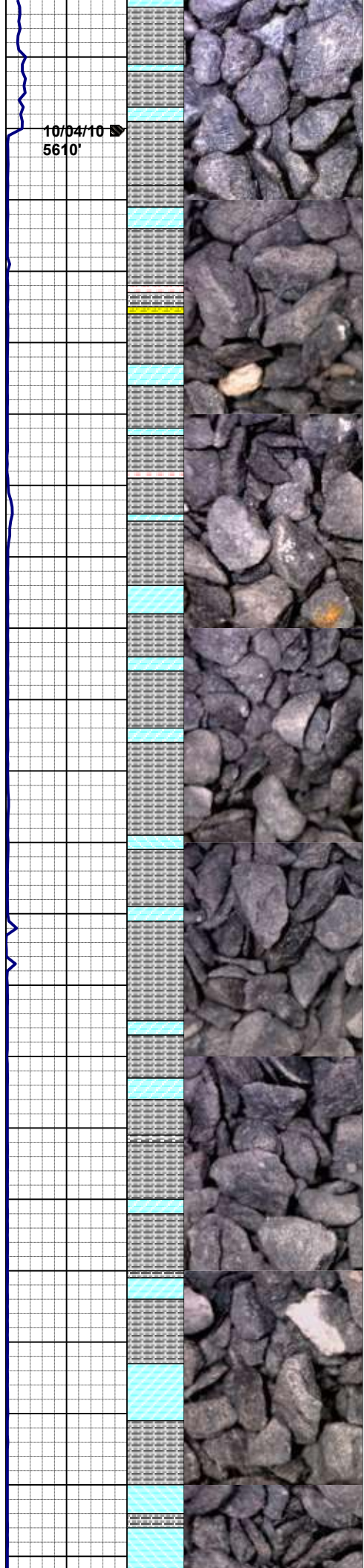
Survey@5552'
INC 4.2 AZM 300.9

VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: gy - dkgy, pl gy - offwht, sbply, sme sbbky, frm - vfrm, grty -rthy mtx; arg -slty, sl - non calc

Surface Mud Temp 118 F

VIS 50 WT 10.75 IN



VIS 51 WT 10.7 OUT

VIS 48 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: gy - dkgy, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc

Surface Mud Temp 120F

SLTY SH: gy - dkgy, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr calcite

TG 391u @ 5643'
C1 35804ppm
C2 2710ppm
C3 644ppm
C4 0ppm

SLTY SH: gy - dkgy, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc

SURVEY @ 5679'
INC 6.3 AZM 299.9

SLTY SH: gy - dkgy, occ blk, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc

Surface Mud Temp 118 F

VIS 50 WT 10.7 IN
VIS 50 WT 10.7 OUT

SLTY SH: gy - dkgy, occ blk, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc

325u

SLTY SH: gy - dkgy, occ blk, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

Surface Mud Temp 121 F

Downhole Temp 129.2 F

SLTY SH: gy - dkgy, sbply, sme sbbly, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

298u

10/04/10
5610'

5600

10

20

30

40

50

60

70

80

90

5700

10

20

30

40

50

60

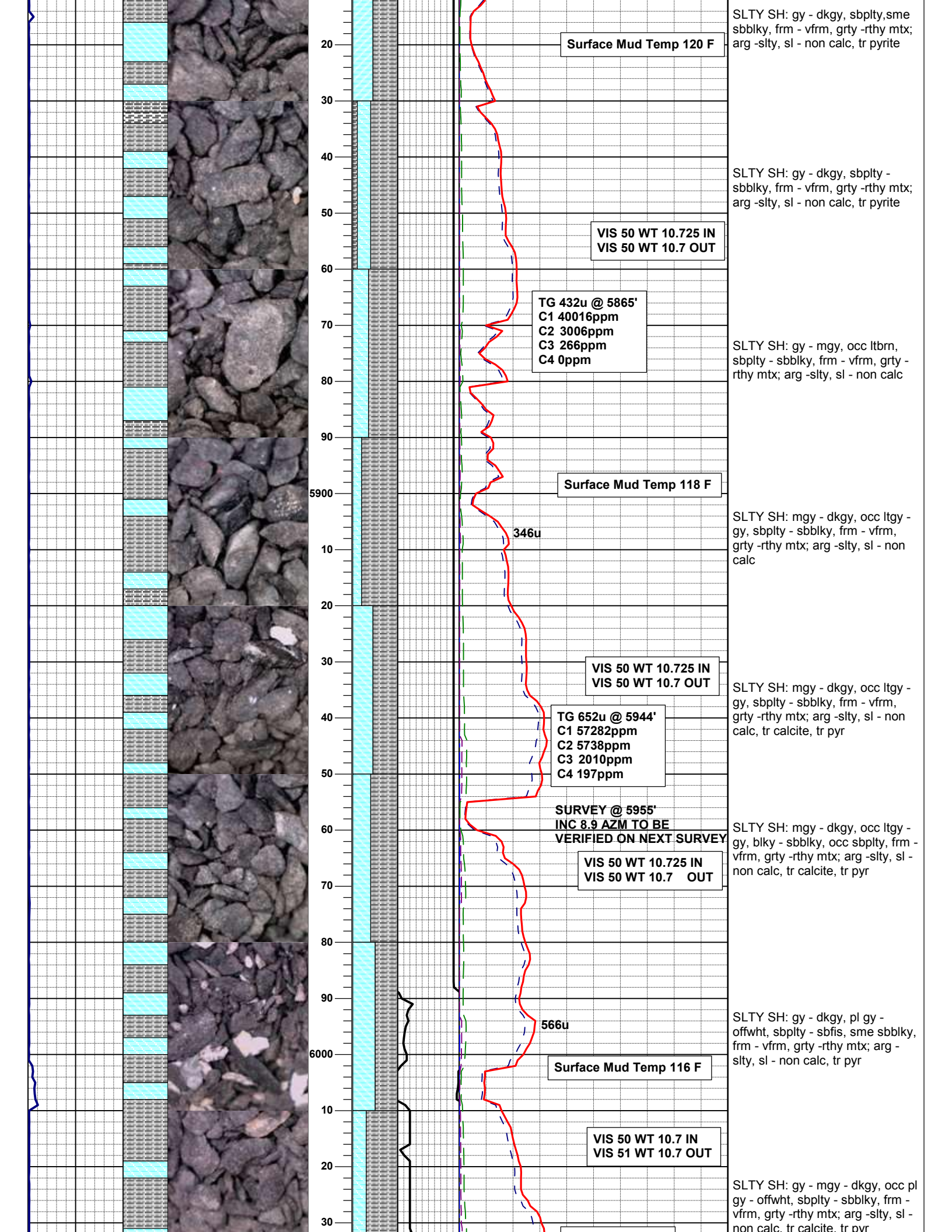
70

80

90

5800

10



Surface Mud Temp 120 F

SLTY SH: gy - dkgy, sbply, sme
sbbly, frm - vfrm, grty -rthy mtx;
arg -sly, sl - non calc, tr pyrite

VIS 50 WT 10.725 IN
VIS 50 WT 10.7 OUT

SLTY SH: gy - dkgy, sbply -
sbbly, frm - vfrm, grty -rthy mtx;
arg -sly, sl - non calc, tr pyrite

TG 432u @ 5865'
C1 40016ppm
C2 3006ppm
C3 266ppm
C4 0ppm

SLTY SH: gy - mg, occ ltbrn,
sbply - sbbly, frm - vfrm, grty -
rthy mtx; arg -sly, sl - non calc

Surface Mud Temp 118 F

SLTY SH: mg - dkgy, occ ltgy -
gy, sbply - sbbly, frm - vfrm,
grty -rthy mtx; arg -sly, sl - non
calc

346u

VIS 50 WT 10.725 IN
VIS 50 WT 10.7 OUT

SLTY SH: mg - dkgy, occ ltgy -
gy, sbply - sbbly, frm - vfrm,
grty -rthy mtx; arg -sly, sl - non
calc, tr calcite, tr pyr

TG 652u @ 5944'
C1 57282ppm
C2 5738ppm
C3 2010ppm
C4 197ppm

SURVEY @ 5955'
INC 8.9 AZM TO BE
VERIFIED ON NEXT SURVEY

SLTY SH: mg - dkgy, occ ltgy -
gy, blk - sbbly, occ sbply, frm -
vfrm, grty -rthy mtx; arg -sly, sl -
non calc, tr calcite, tr pyr

VIS 50 WT 10.725 IN
VIS 50 WT 10.7 OUT

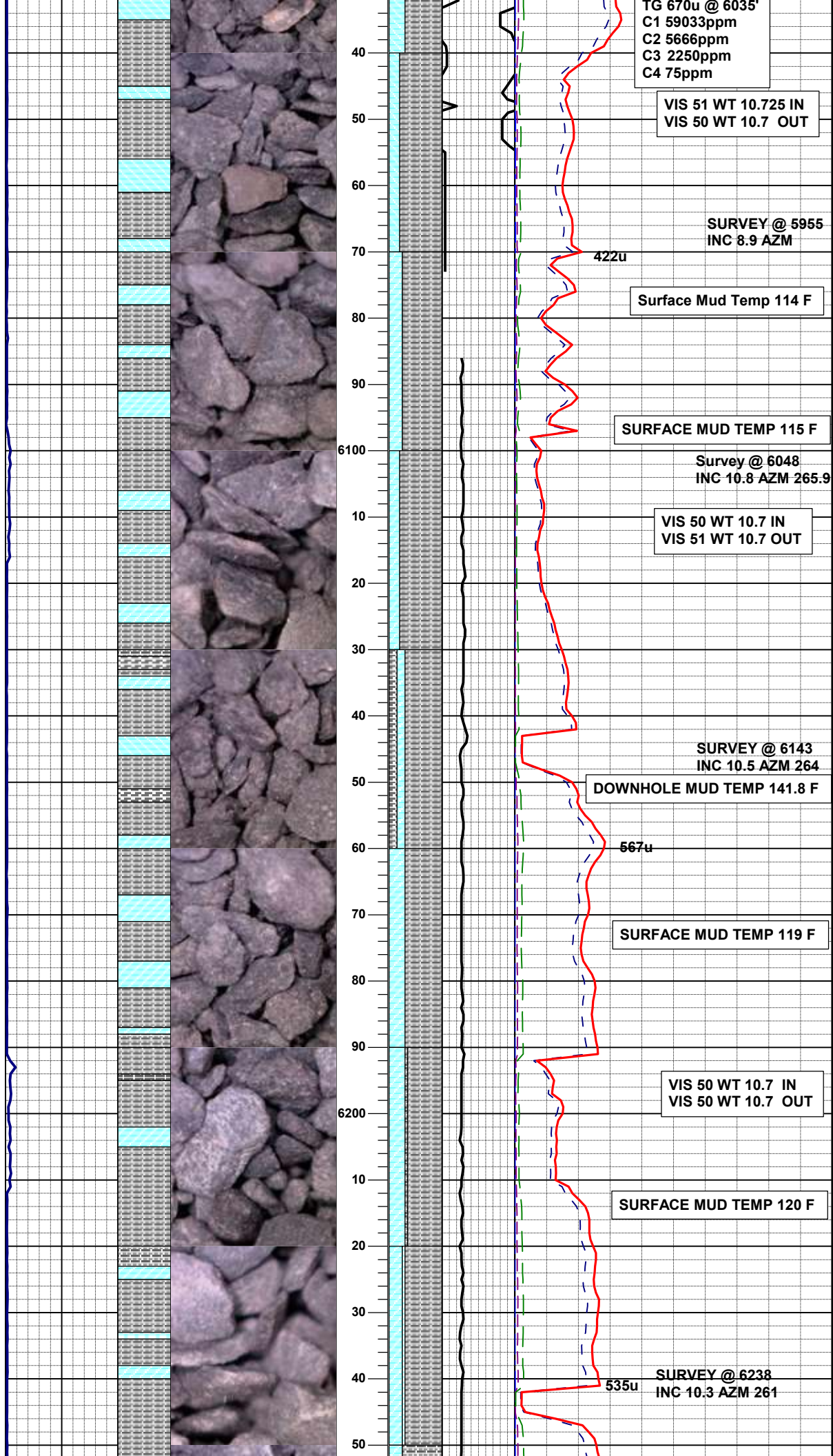
566u

Surface Mud Temp 116 F

SLTY SH: gy - dkgy, pl gy -
offwh, sbply - sbf, sme sbbly,
frm - vfrm, grty -rthy mtx; arg -
sly, sl - non calc, tr pyr

VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: gy - mg - dkgy, occ pl
gy - offwh, sbply - sbbly, frm -
vfrm, grty -rthy mtx; arg -sly, sl -
non calc, tr calcite, tr pyr



SLTY SH: gy - mgy - dkgy, sbply - sbblky, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyr

SLTY SH: mgy - dkgy, sbply - sbblky, occ sbfiss - fiss, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyr

SLTY SH: mgy - dkgy, sbply - sbblky, occ sbfiss - fiss, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyr

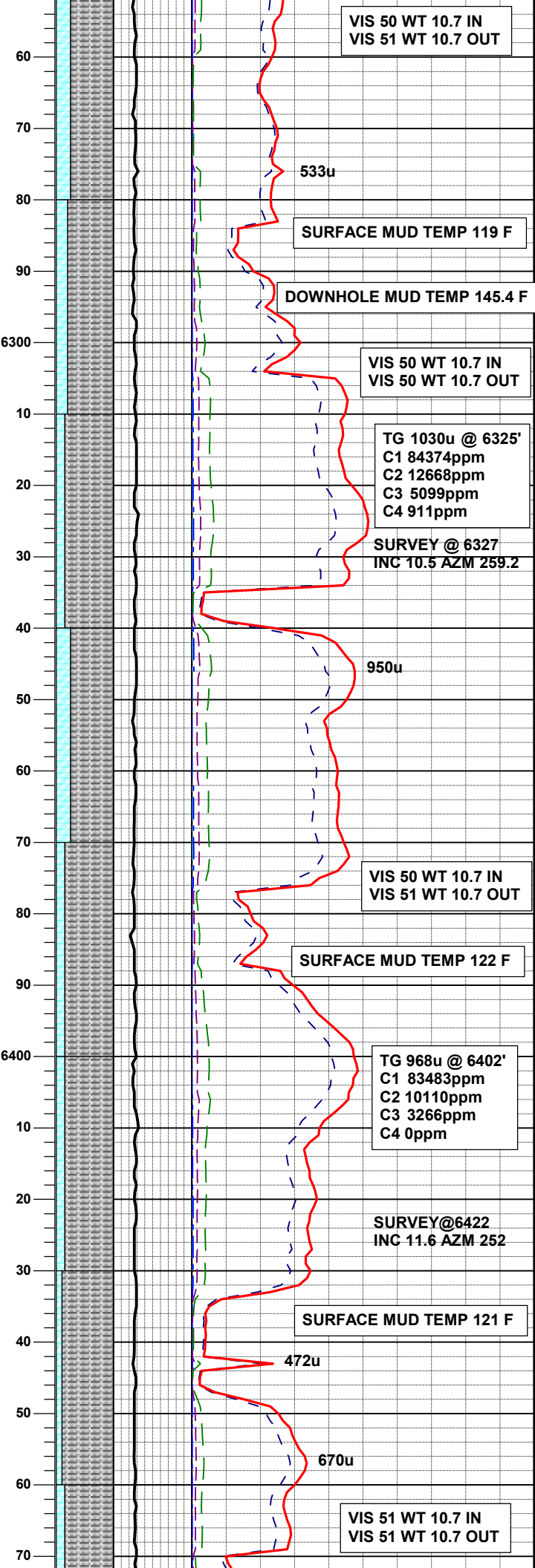
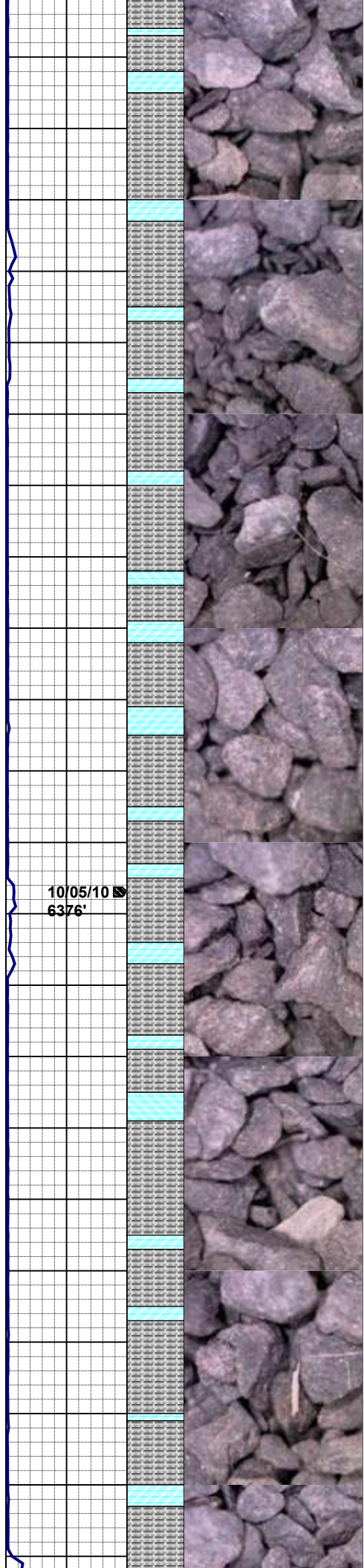
SLTY SH: mgy - dkgy, sbply - sbblky, occ fiss, frm - vfrm, grty -rthy mtx; arg -sly, sl - non calc, tr pyr

SLTY SH: mgy - dkgy, sbply - sbblky, frm, grty -rthy mtx; arg -sly, sl - non calc, sme pyr

SLTY SH: mgy - dkgy, occ gysh, sbply - sbblky, frm, grty -rthy mtx; arg -sly, sl - non calc, tr calcite

SLTY SH: mgy - dkgy, occ gysh, sbply - sbblky, frm, grty -rthy mtx; arg -sly, sl - non calc

CHK: buff - wht, sme orange, vsft, rthy - sl sbwxy, vcalc



VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: mgy - dkgy, occ gysh, sbply - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr calcite xl

533u

SURFACE MUD TEMP 119 F

DOWNHOLE MUD TEMP 145.4 F

SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

VIS 50 WT 10.7 IN
VIS 50 WT 10.7 OUT

TG 1030u @ 6325'
C1 84374ppm
C2 12668ppm
C3 5099ppm
C4 911ppm

SURVEY @ 6327
INC 10.5 AZM 259.2

SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

Iso Tube #10
6330'

950u

SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr calcite

VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SURFACE MUD TEMP 122 F

SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

TG 968u @ 6402'
C1 83483ppm
C2 10110ppm
C3 3266ppm
C4 0ppm

SURVEY@6422
INC 11.6 AZM 252

SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

SURFACE MUD TEMP 121 F

472u

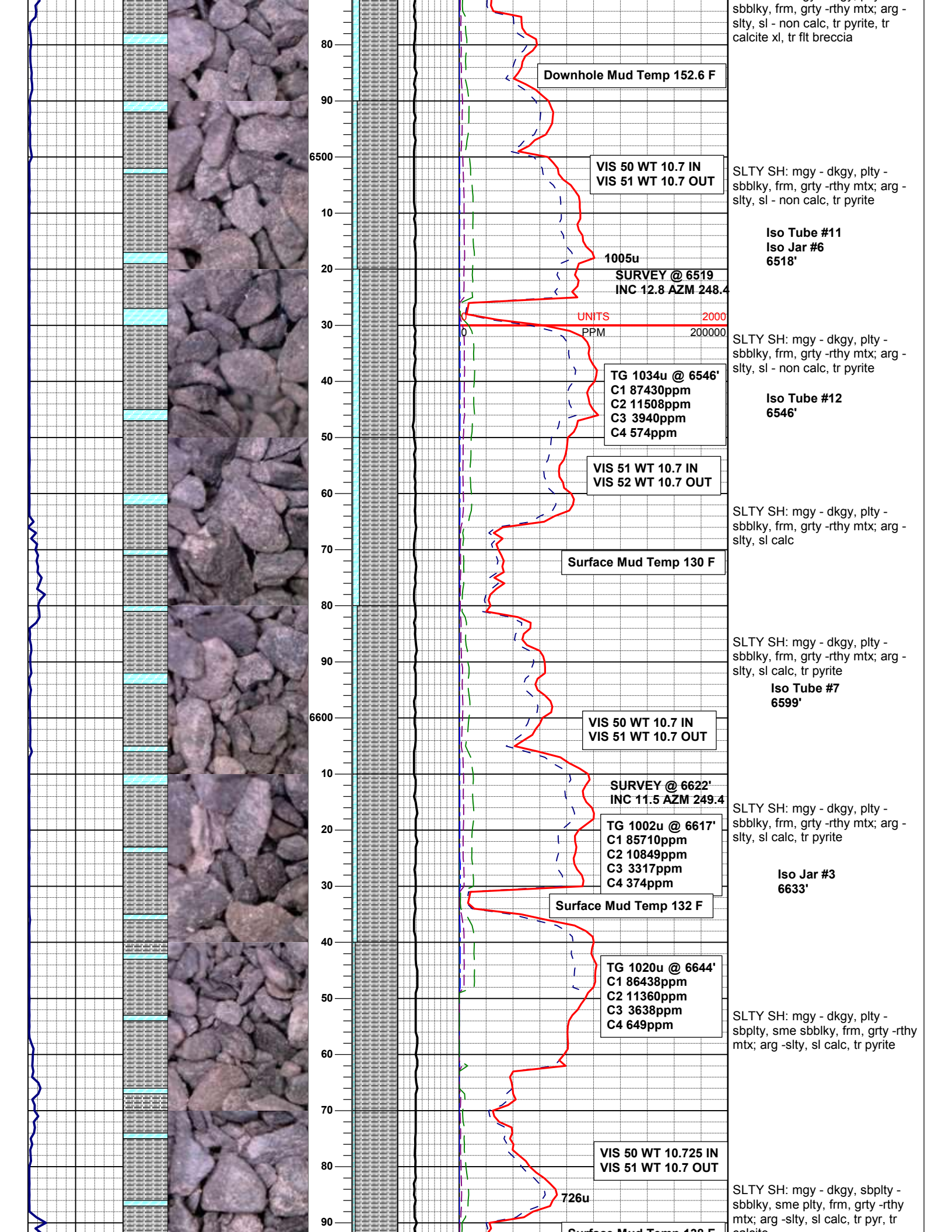
SLTY SH: mgy - dkgy, plty - sbbly, frm, grty -rthy mtx; arg -sly, sl - non calc, tr pyrite

670u

VIS 51 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: mav - dkay, plty -

10/05/10
6376'



sbbkly, frm, grty -rthy mtx; arg -silty, sl - non calc, tr pyrite, tr calcite xl, tr flt breccia

Downhole Mud Temp 152.6 F

VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SLTY SH: mgy - dkgy, plty - sbbkly, frm, grty -rthy mtx; arg -silty, sl - non calc, tr pyrite

Iso Tube #11
Iso Jar #6
6518'

1005u
SURVEY @ 6519
INC 12.8 AZM 248.4

UNITS 2000
PPM 200000

SLTY SH: mgy - dkgy, plty - sbbkly, frm, grty -rthy mtx; arg -silty, sl - non calc, tr pyrite

TG 1034u @ 6546'
C1 87430ppm
C2 11508ppm
C3 3940ppm
C4 574ppm

Iso Tube #12
6546'

VIS 51 WT 10.7 IN
VIS 52 WT 10.7 OUT

SLTY SH: mgy - dkgy, plty - sbbkly, frm, grty -rthy mtx; arg -silty, sl calc

Surface Mud Temp 130 F

SLTY SH: mgy - dkgy, plty - sbbkly, frm, grty -rthy mtx; arg -silty, sl calc, tr pyrite

Iso Tube #7
6599'

VIS 50 WT 10.7 IN
VIS 51 WT 10.7 OUT

SURVEY @ 6622'
INC 11.5 AZM 249.4

SLTY SH: mgy - dkgy, plty - sbbkly, frm, grty -rthy mtx; arg -silty, sl calc, tr pyrite

TG 1002u @ 6617'
C1 85710ppm
C2 10849ppm
C3 3317ppm
C4 374ppm

Iso Jar #3
6633'

Surface Mud Temp 132 F

TG 1020u @ 6644'
C1 86438ppm
C2 11360ppm
C3 3638ppm
C4 649ppm

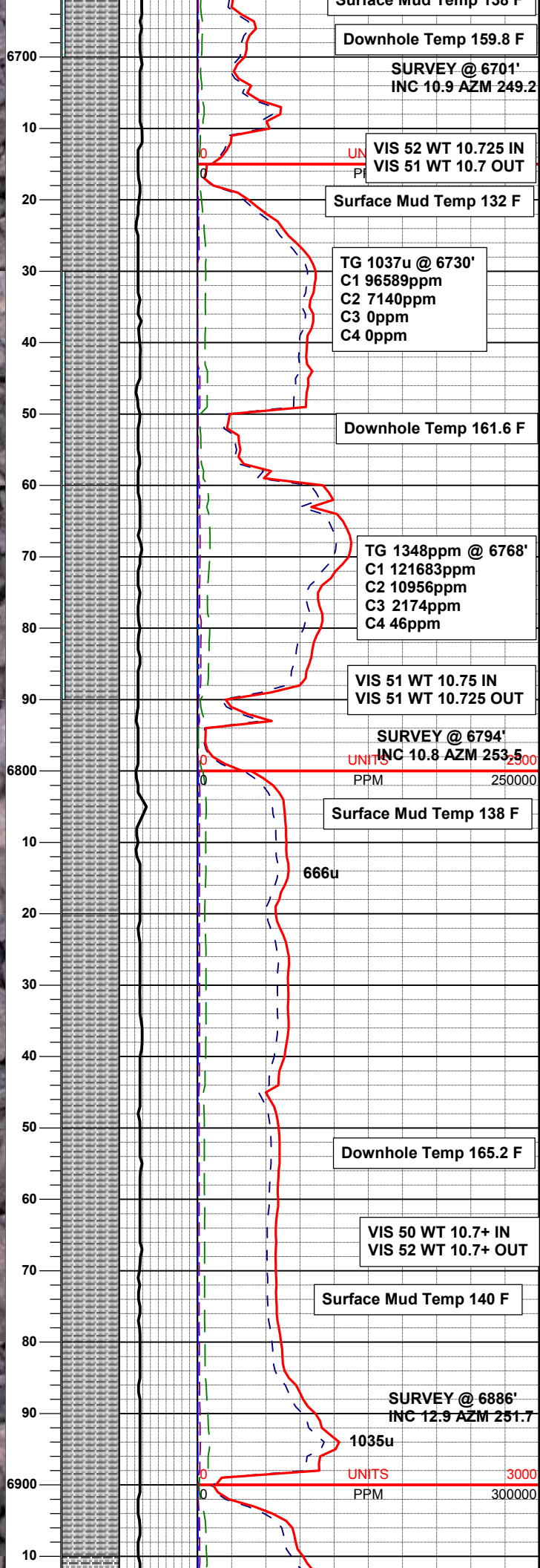
SLTY SH: mgy - dkgy, plty - sbply, sme sbbkly, frm, grty -rthy mtx; arg -silty, sl calc, tr pyrite

VIS 50 WT 10.725 IN
VIS 51 WT 10.7 OUT

SLTY SH: mgy - dkgy, sbply - sbbkly, sme plty, frm, grty -rthy mtx; arg -silty, sl calc, tr pyr, tr calcite

726u

Surface Mud Temp 132 F



Surface Mud Temp 138 F

SURVEY @ 6701'
INC 10.9 AZM 249.2

VIS 52 WT 10.725 IN
VIS 51 WT 10.7 OUT

Surface Mud Temp 132 F

TG 1037u @ 6730'
C1 96589ppm
C2 7140ppm
C3 0ppm
C4 0ppm

Downhole Temp 161.6 F

TG 1348ppm @ 6768'
C1 121683ppm
C2 10956ppm
C3 2174ppm
C4 46ppm

VIS 51 WT 10.75 IN
VIS 51 WT 10.725 OUT

SURVEY @ 6794'
INC 10.8 AZM 253.5

Surface Mud Temp 138 F

666u

Downhole Temp 165.2 F

VIS 50 WT 10.7+ IN
VIS 52 WT 10.7+ OUT

Surface Mud Temp 140 F

SURVEY @ 6886'
INC 12.9 AZM 251.7

1035u

UNITS 3000
PPM 300000

calcite
SLTY SH: mgy - dkgy, sme ltgy, sbply - sbbky, sme pty, frm, grty -rthy mtx; arg -sity, sl - mod calc, abnt calcite xls

SLTY SH: mgy - dkgy, blkly - sbbky, sme sbply - pty, frm, grty -rthy mtx; arg -sity, sl calc, tr pyr, sme calcite

**Iso Tube #13
6768'**

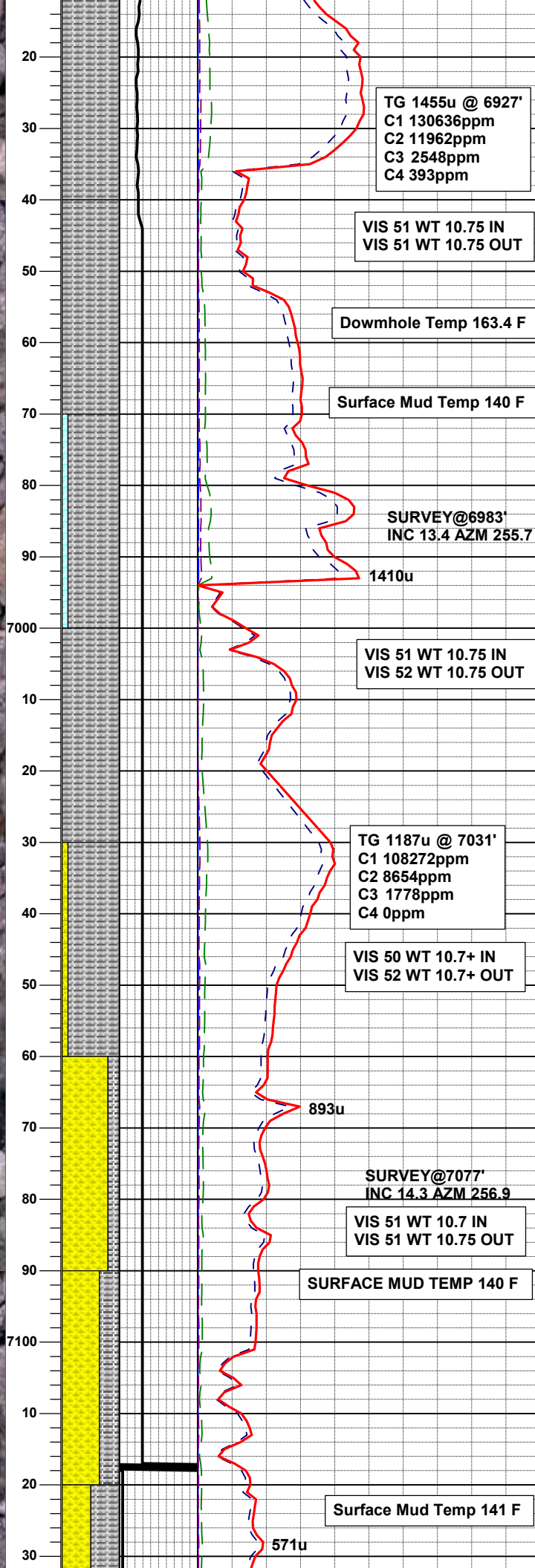
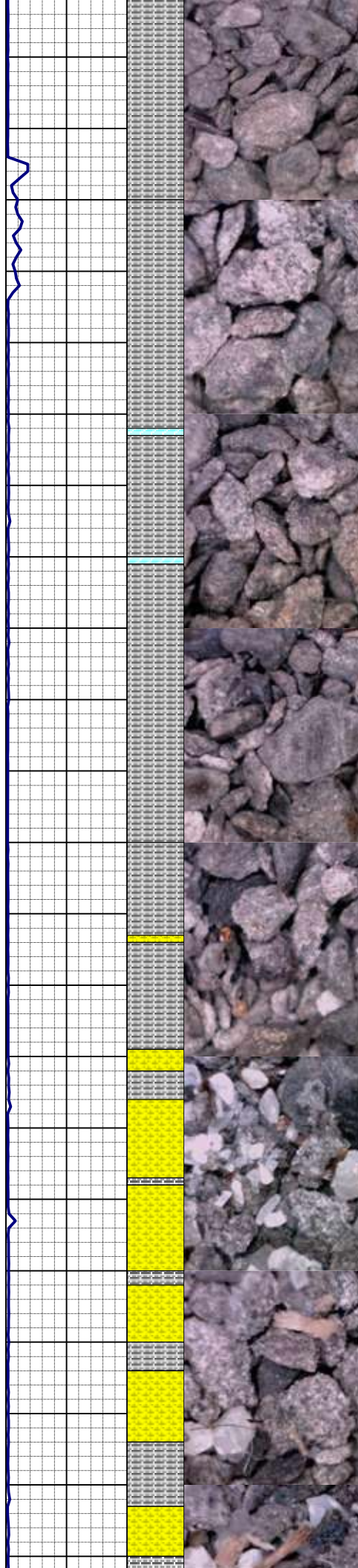
SLTY SH: mgy - dkgy, blkly - sbbky, sme sbply - pty, frm, grty -rthy mtx; arg -sity, sl calc, tr pyr, tr calcite

SLTY SH: mgy - dkgy, sbply - sbbky, occ pty - sbfis, frm, occ vfrm, grty -rthy mtx; arg -sity, sl calc, tr pyr, sme calcite

SLTY SH: mgy - dkgy, sbply - sbbky, occ pty , frm, occ vfrm, grty -rthy mtx; arg -sity, sl calc, sme pyr, sme calcite

SLTY SH: mgy - dkgy, sbply - sbbky, occ pty , frm, occ vfrm, grty -rthy mtx; arg -sity, sl calc, tr pyr, sme calcite

SLTY SH: gy - mgy, occ dkgy, sbply - sbbky, occ pty , frm, grty -rthy mtx; arg -sity, sl calc, tr pyr, tr calcite



**Iso Tube #14
6927'**

SLTY SH: gy - mgy - dkgy, sbplty - sbbly, frm, grty -rthy mtx; arg - slty, sl calc, tr pyr, tr calcite

SLTY SH: gy - mgy - dkgy, sbplty - sbbly, frm, grty -rthy mtx; arg - slty, sl calc, tr pyr, tr calcite

SLTY SH: gy - mgy - dkgy, sbplty - sbbly, frm, grty -rthy mtx; arg - slty, sl calc, grd - SHLYSS, increased clay

**Iso Tube #8
Iso Jar #4
7003'**

SLTY SH: gy - mgy - dkgy, sbplty - sbbly, frm, grty -rthy mtx; arg - slty, sl calc, grd - SHLYSS

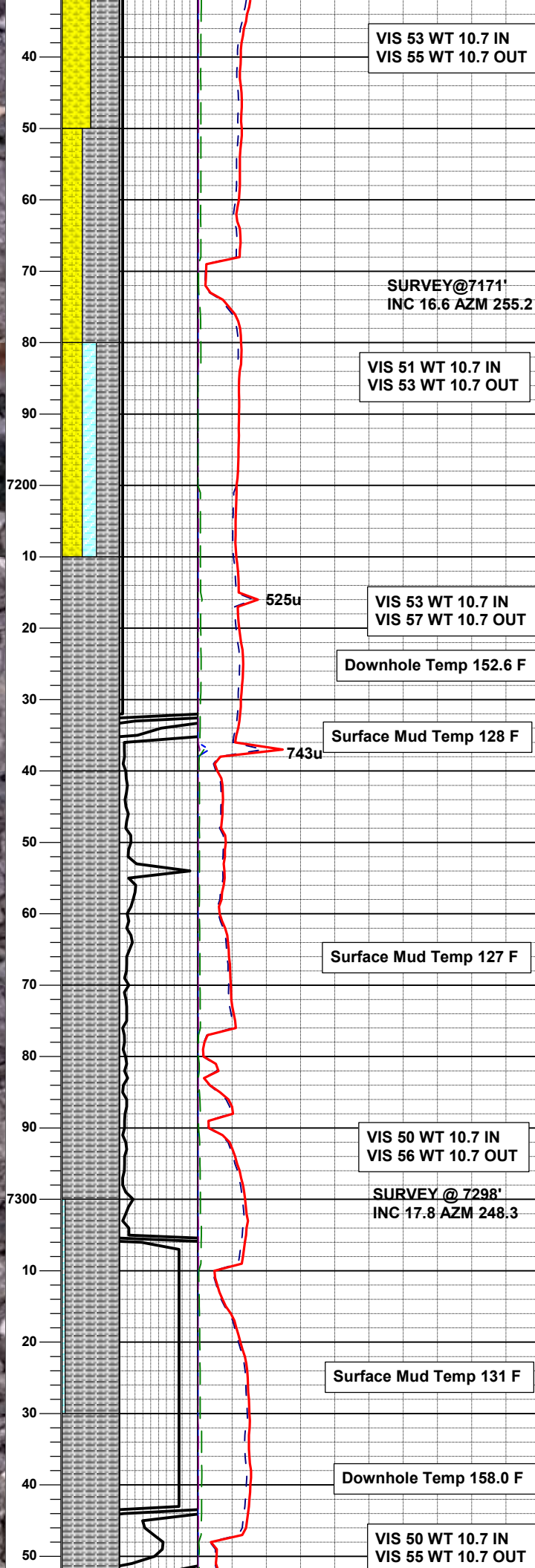
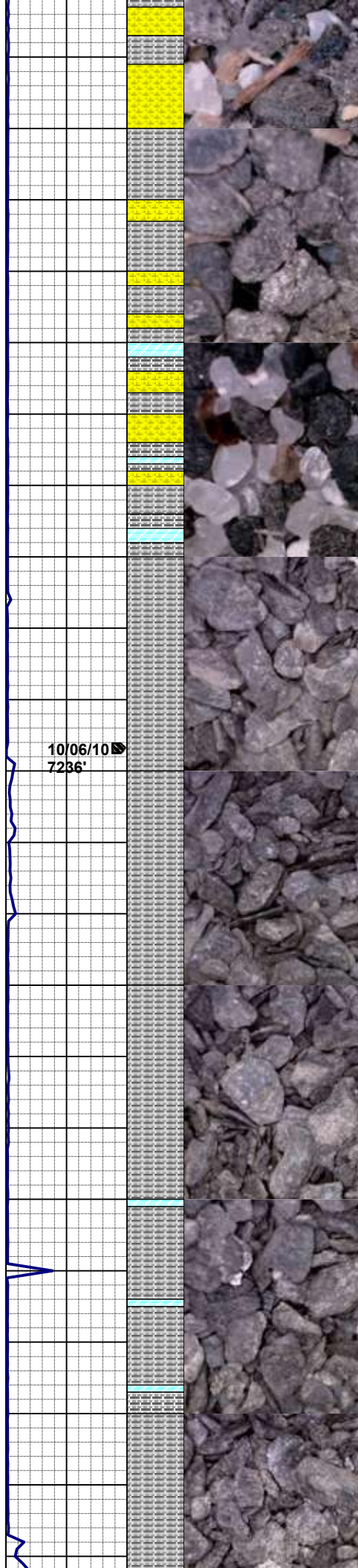
SLTY SH: gy - mgy - dkgy, sbplty - sbbly, frm, grty -rthy mtx; arg - slty, sl calc, grd - SHLYSS

SHLYSS: lt-dk gy, vf-f gr,sbrnd, m srt, tgt, irreg-blky clus, calc/arg cmt w/ sme cly, sl - m calc, grd - SHLYSLTST

SHLYSS: lt-dk gy, vf-f gr,sbrnd, m srt, tgt, irreg-blky clus, calc/arg cmt w/ sme cly, sl - calc, grd - SHLYSLTST

**Iso Tube #9
Iso Jar #5
7115'**

SHLYSS: lt-dk gy, vf-f gr,sbrnd



m srt, tgt, irreg-blky clus, calc/arg
cmt w/ sme cly, sl - calc, grdg -
SHLYSLTST

SLTYSH: mgy - dkgy, occ ltgy,
blky - sbbkly, firm - brit, grty -
rthy, mtX; arg - slty, non - sl calc

SLTYSH: mgy - dkgy, occ ltgy,
blky - sbbkly, firm - brit, grty -
rthy, mtX; arg - slty, non - sl calc

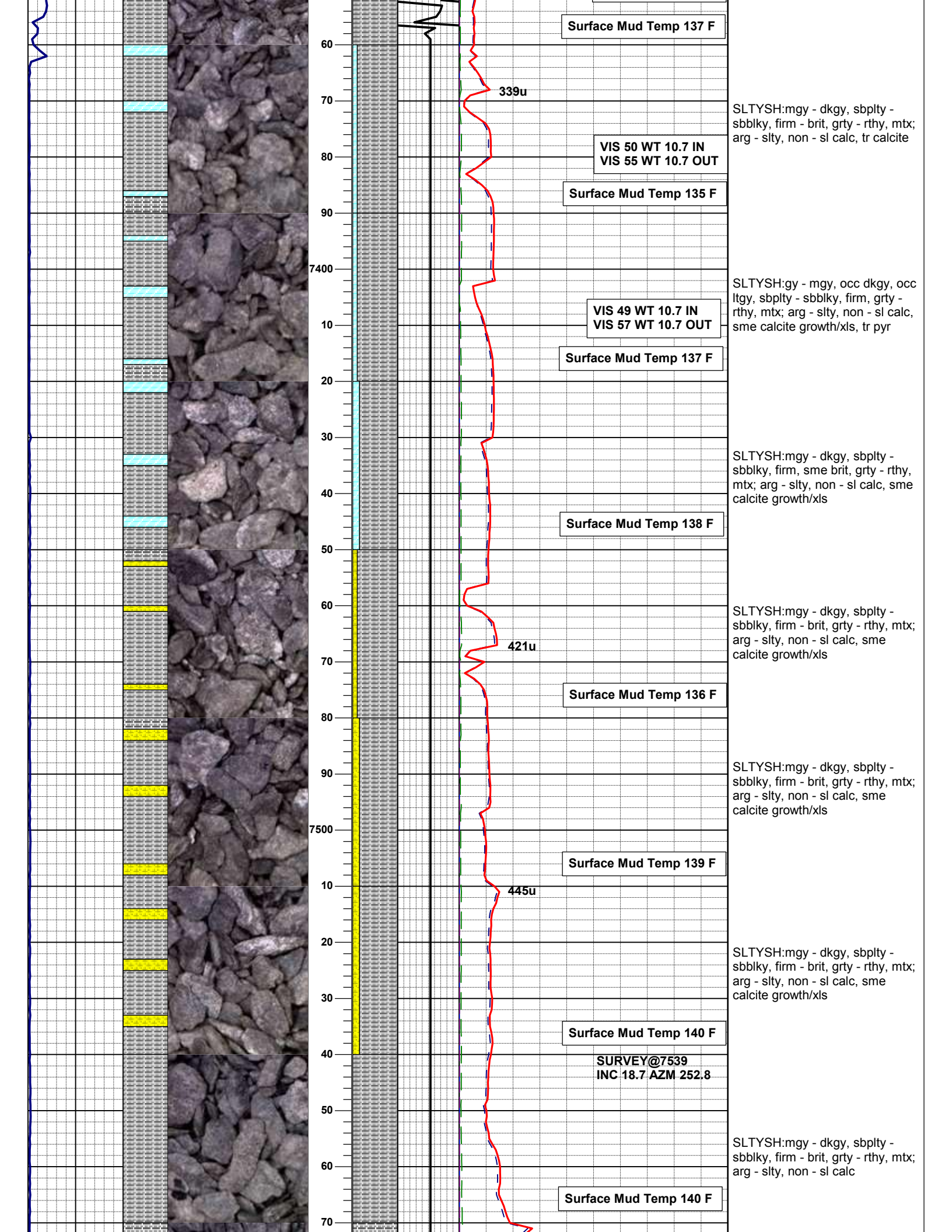
SLTYSH:gy - mgy, occ dkgy,
blky - sbbkly, sme plty, firm, grty
- rthy, mtX; arg - slty, non - sl calc

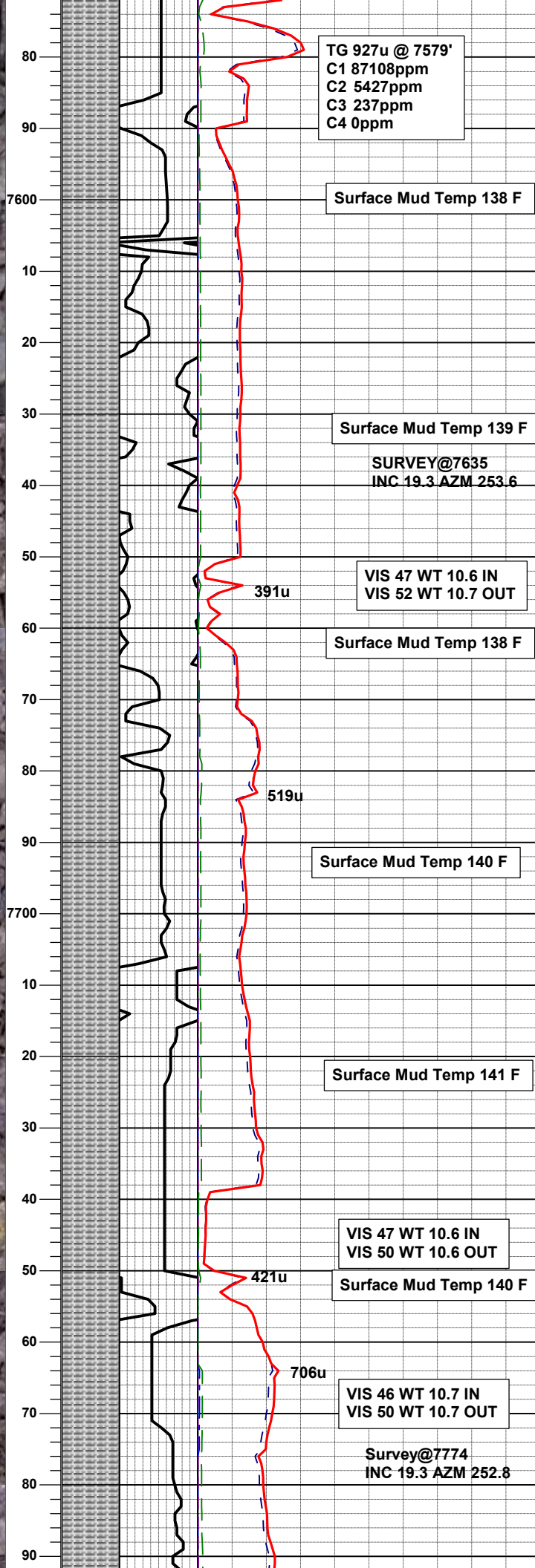
SLTYSH:gy - mgy - dkgy, occ
ltgy, plty - sbplty, occ sbfis, sme
blky - sbbkly, firm, grty - rthy,
mtX; arg - slty, non - sl calc, tr pyr

SLTYSH:gy - mgy, occ dkgy, plty -
sbplty, occ sbfis, sme blky -
sbbkly, firm, grty - rthy, mtX; arg -
slty, non - sl calc, tr pyr

SLTYSH:gy - mgy, occ dkgy, occ
ltgy, sbplty - sbbkly, firm, grty -
rthy, mtX; arg - slty, non - sl calc,
sme calcite growth/xls, tr pyr

SLTYSH:mgy - dkgy, sbplty -
sbbkly, firm, sme brit, grty - rthy,
mtX; arg - slty, non - sl calc, sme
calcite growth/xls





TG 927u @ 7579'
 C1 87108ppm
 C2 5427ppm
 C3 237ppm
 C4 0ppm

SLTYSH: mgy-dkgy, sbply -
 subblky, sbang - sbrd, subfirm -
 brit, grty - rthy carb mtx, arg -
 slty, non - sl calc

Surface Mud Temp 138 F

SLTYSH: mgy-dkgry, plty to
 sbply, subfirm-brit, gt-rthy carb
 mtx, arg-sity, non-sl calc

Surface Mud Temp 139 F

SURVEY@7635
 INC 19.3 AZM 253.6

SLTYSH: mgy-dkgry, plty-sbply,
 subfirm -brit, gt-rthy carb mtx,
 arg-sity, non-sl calc

VIS 47 WT 10.6 IN
 VIS 52 WT 10.7 OUT

Surface Mud Temp 138 F

SLTYSH: mgy-dkgry, sbply-
 sbbly, firm-brit, gt-rthy carb mtx,
 arg-sity, sl calc -calc, occ coal

Surface Mud Temp 140 F

SLTYSH: mgy-dkgy, sbply-
 sbbly, occ bly, firm-brit, gt-rthy
 carb mtx, arg-sity, sl calc-calc,
 occ coal

Surface Mud Temp 141 F

SLTYSH: mgy-dkgry, plty-sbply,
 subfirm -brit, gt-rthy carb mtx,
 arg-sity, non-sl calc

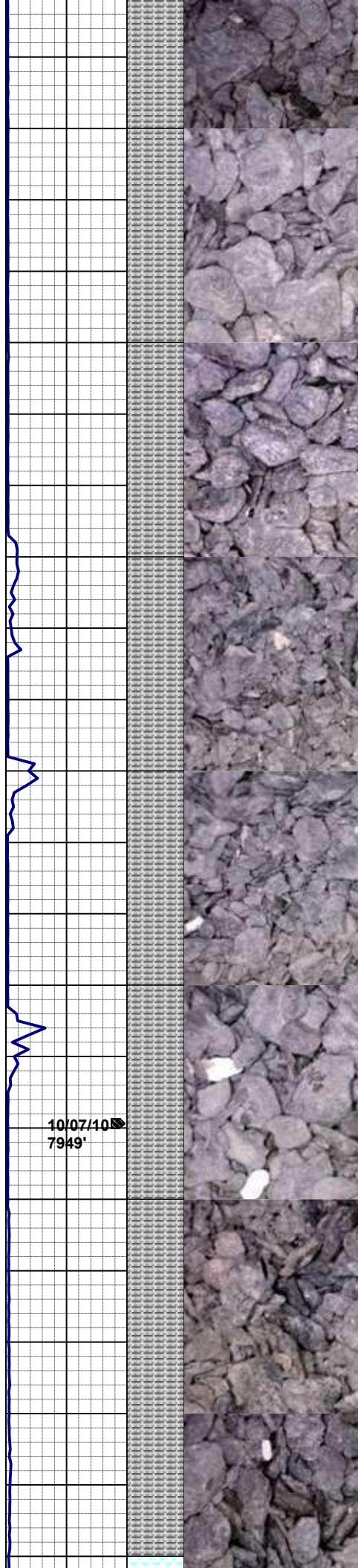
VIS 47 WT 10.6 IN
 VIS 50 WT 10.6 OUT

Surface Mud Temp 140 F

SLTYSH: mgy-dkgry, plty-sbply,
 subfirm-brit, gt-rthy carb mtx, arg
 -sity, non-sl calc

VIS 46 WT 10.7 IN
 VIS 50 WT 10.7 OUT

Survey@7774
 INC 19.3 AZM 252.8



7800
10
20
30
40
50
60
70
80
90
7900
10
20
30
40
50
60
70
80
90
8000
10

Surface Mud Temp 140 F

633u
SURVEY@7820
INC 21.2 AZM 274.7

Surface Mud Temp 141 F

Surface Mud Temp 143 F

VIS 46 WT 10.7 IN
VIS 50 WT 10.7 OUT

Downhole Mud Temp 172.4 F

VIS 46 WT 10.7 IN
VIS 49 WT 10.7 OUT

TG 972u @ 7914
C1 91196ppm
C2 5997ppm
C3 94ppm
C4 0ppm

SURVEY @ 7915
INC 20.3 AZM 339

Surface Mud Temp 144 F

Surface Mud Temp 144 F

VIS 46 WT 10.7 IN
VIS 49 WT 10.7 OUT

Surface Mud Temp 145 F

VIS 46 WT 10.7 IN
VIS 49 WT 10.7 OUT

SURVEY @ 8008

SLTYSH: mgy-dkgry, plty-sbply,
subfirm-brit, gt-rthy carb mtx, arg
-sity,sl calc-calc, occ cal growth

SLTYSH: mgy-dkgry, plty-sbply,
subfirm-brit, gt-rthy carb mtx, arg
-sity,sl calc-calc, occ cal growth

SLTYSH: mgy- dkgy, sbply-
sbbkly, sbfirm- brit, gt- rthy carb
mtx, arg- sity, sl calc- calc

SLTYSH: mgy- dkgy, sbang-
sbbkly, sbfirm- brit, gt- rthy carb
mtx, arg- sity, sl calc- calc

**Iso Tube #24
7889' (Trip Gas)**

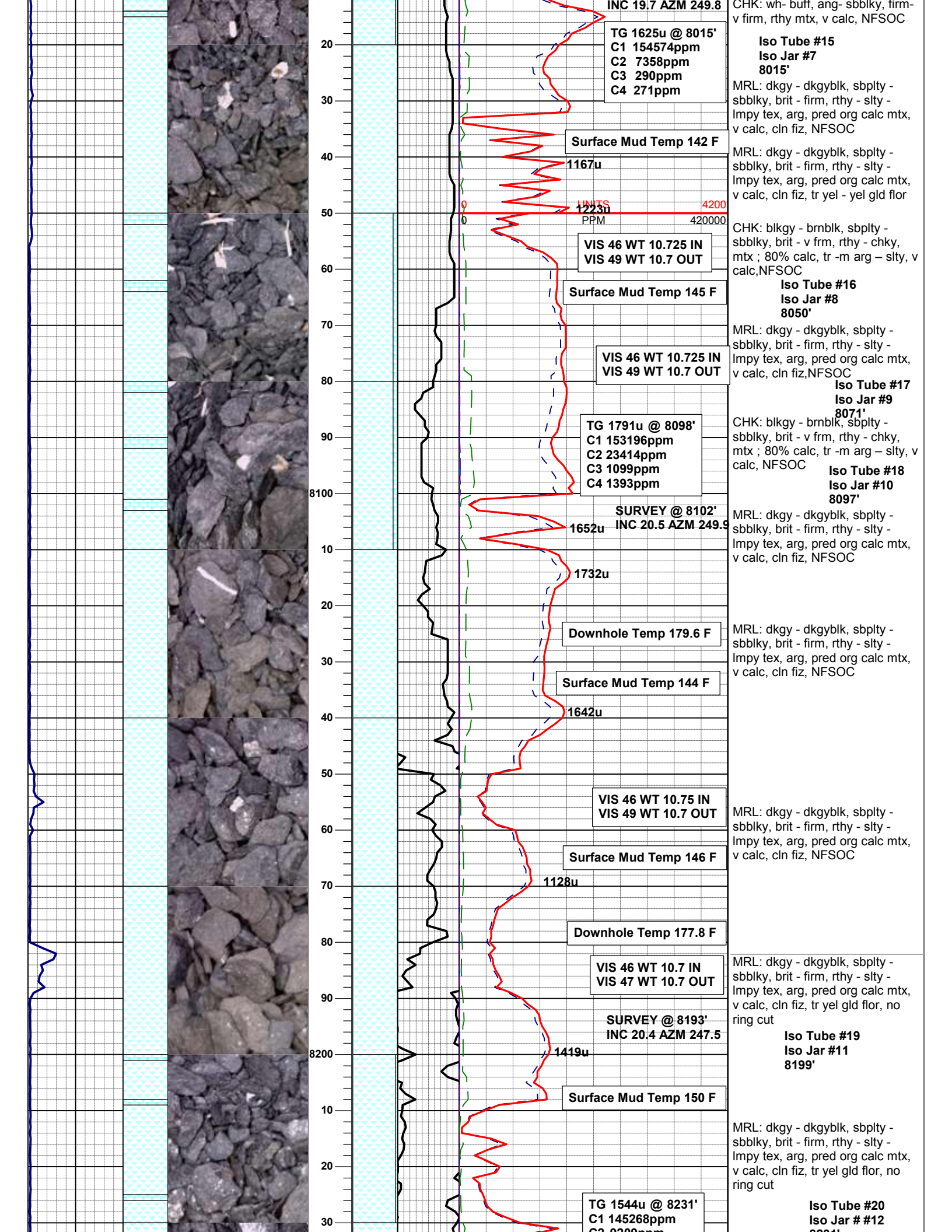
SLTYSH: mgy-dkgy, sbang-
sbbkly, sbfirm- brit, gt-rthy carb
mtx, arg-sity, non- sl calc

SLTYSH: mgy- dkgy, sbang-
ang, firm -sbfirm, gt-rthy carb
mtx, arg- sity, sl calc- calc

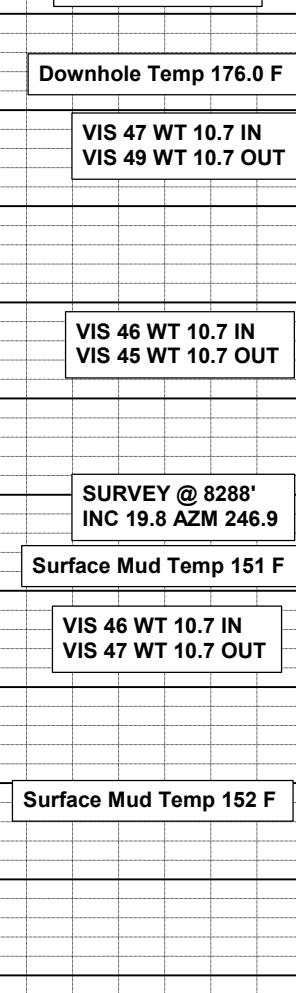
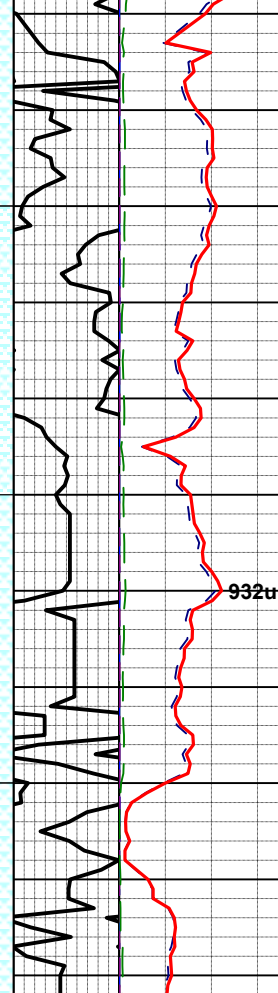
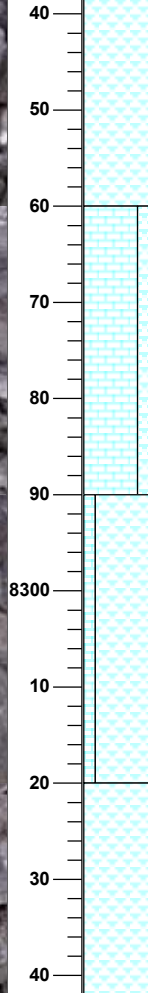
SLTYSH: mgy- dkgy, sbang- ang
- bkly, firm -sbfirm, gt-rthy carb
mtx, arg- sity, sl calc- calc,

10/07/10
7949'

8010' Loggers Top Niobrara



C2 9205ppm
C3 0ppm
C4 0ppm



MRL: dkgy - dkgyblk, sbply - sbbkly, brit - firm, rthy - slty - lmpy tex, arg, pred org calc mtx, v calc, cln fiz, NFSOC

Downhole Temp 176.0 F

VIS 47 WT 10.7 IN
VIS 49 WT 10.7 OUT

Iso Tube #21
Iso Jar #13
8260'

8260' Loggers Top Ft Hayes

VIS 46 WT 10.7 IN
VIS 45 WT 10.7 OUT

LS: ltgy - gybl, sbply, irreg to sbbkly, mtx; calc - fos, v calc, calcite viens and growth seen (microIn calcite), NFSOC

SURVEY @ 8288'
INC 19.8 AZM 246.9

Iso Tube #22
Iso Jar #14
8299'

Surface Mud Temp 151 F

8300

VIS 46 WT 10.7 IN
VIS 47 WT 10.7 OUT

MRL: dkgy - dkgyblk, sbply - sbbkly, brit - firm, rthy - slty - lmpy tex, arg, pred org calc mtx, v calc, cln fiz, tr yel gld flor, no ring cut

Surface Mud Temp 152 F

10

VIS 46 WT 10.7
VIS 47 WT 10.7

MRL: dkgy - dkgyblk, sbply - sbbkly, brit - firm, rthy - slty - lmpy tex, arg, pred org calc mtx, v calc, cln fiz, NFSOC

20

510u

SLTYSH: dkgy- blk, sbply- pty, firm- vfirm, rthy-gt carb mtx, arg- slty, calc- v calc

Surface Mud Temp 150 F

30

522u

SLTYSH: dkgy- blk, sbply- blk, firm- brit, rthy- gt carb mtx, arg- slty, calc-vcalc

SURVEY @ 8390
INC 20.5 AZM 247.6

Possible calcite vein, abundant calcite growth

8400

VIS 45 WT 10.7 IN
VIS 47 WT 10.7 OUT

SLTYSH: dkgy- blk, sbply- blk, firm- brit, rthy- gt carb mtx, arg- slty, calc-vcalc

10

VIS 45 WT 10.7 IN
VIS 48 WT 10.725 OUT

SLTYSH: dkgy- blk, sbply- blk, firm- brit, rthy- gt carb mtx, arg- slty, calc-vcalc

20

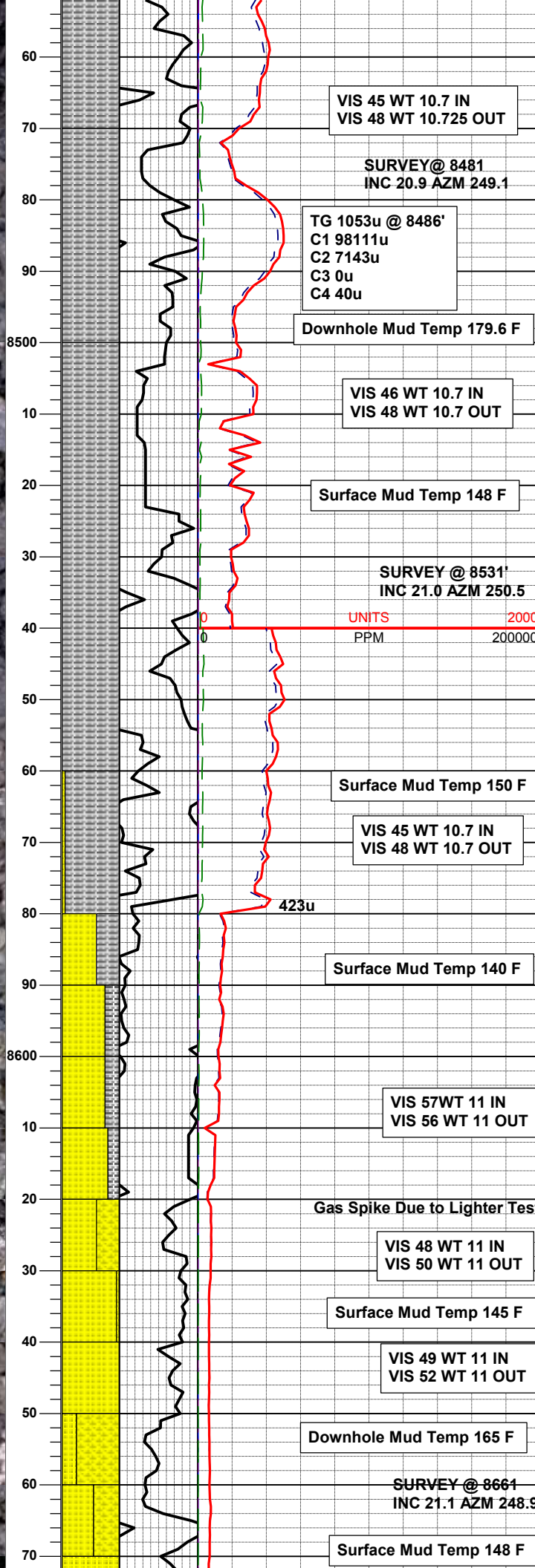
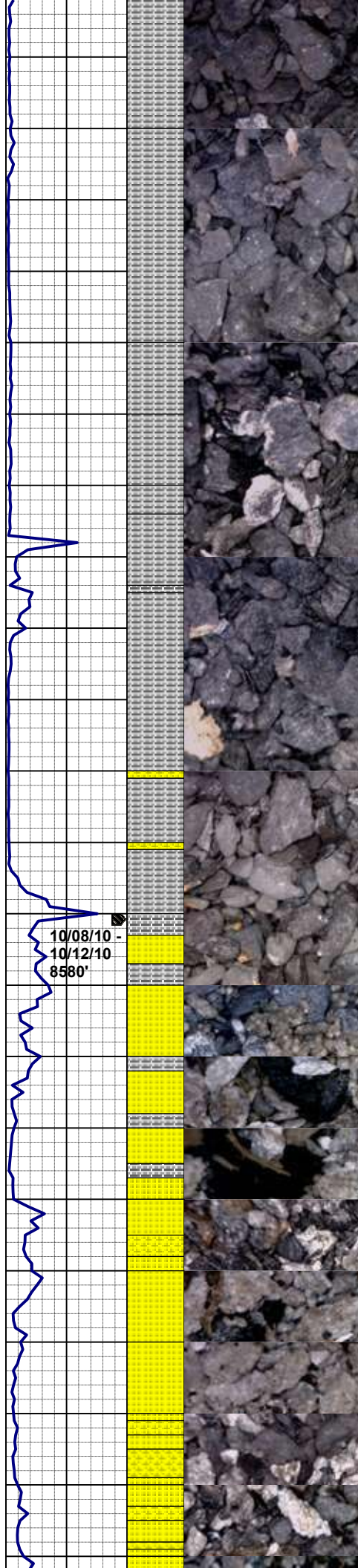
990u

Surface Mud Temp 150 F

30

40

50



SLTYSH: dkgy- blk, sbpity- blk, sme fis, firm- brit, rthy-gt mtx, arg - slty, calc- v calc, sme calcite growth

Iso Tube #1 (Second Box) 8486'

SLTYSH: dkgy- blk, sbpity- blk, firm- brit, rthy- gy carb mtx, arg- slty, sl calc- calc

Iso Tube #23 8489'

SLTYSH: gy- dkgy, w srt, sbblky- blk form , sbang- sbrd, firm- brit, rthy-gy mtx, arg-slty, non- sl calc, pos grd- c sh

SLTYSH: gy- dkgy, w srt, sbblky- blk form , sbang- sbrd, firm- brit, rthy-gy mtx, arg-slty, non- sl calc

SLTYSH: gy- dkgy, w srt, sbblky- blk form , sbang- sbrd, firm- brit, rthy-gy mtx, arg-slty, non- sl calc. pos grd- c SHLYSS

8580' Loggers Top Dakota

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; occ sil conc, yel - yelgn flor, ring cut sky bl, oil stn, shw, resd ring

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; yel - yelgn flor, no ring cut

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; smesil conc, NFSOC

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; yel - yelgn flor, no ring cut

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; smesil conc, NFSOC

SS:clr, trnsl, cf - m gr, sbrd - rd, brit, tgt clus, m - sme w srt, sil cmt; smesil conc, NFSOC

VIS 45 WT 10.7 IN
VIS 48 WT 10.725 OUT

SURVEY @ 8481
INC 20.9 AZM 249.1

TG 1053u @ 8486'
C1 98111u
C2 7143u
C3 0u
C4 40u

Downhole Mud Temp 179.6 F

VIS 46 WT 10.7 IN
VIS 48 WT 10.7 OUT

Surface Mud Temp 148 F

SURVEY @ 8531'
INC 21.0 AZM 250.5

UNITS 2000
PPM 200000

Surface Mud Temp 150 F

VIS 45 WT 10.7 IN
VIS 48 WT 10.7 OUT

423u

Surface Mud Temp 140 F

VIS 57WT 11 IN
VIS 56 WT 11 OUT

Gas Spike Due to Lighter Test

VIS 48 WT 11 IN
VIS 50 WT 11 OUT

Surface Mud Temp 145 F

VIS 49 WT 11 IN
VIS 52 WT 11 OUT

Downhole Mud Temp 165 F

SURVEY @ 8664
INC 21.1 AZM 248.9

Surface Mud Temp 148 F

