

OPERATOR: **Extraction Oil & Gas**
WELL NAME: **TC Hiland Knolls C7-9-11**
FIELD NAME: DJ Basin - Wattenberg
DRILLING RIG: Patterson 341
API #: 05-123-43513

LAT/LONG: 40.41398, -104.79866
SURFACE HOLE: NESE S8-T5N-R66W, 2600' FSL, 1189' FEL
BOTTOM HOLE: S11-T5N-R66W, 825' FSL, 2516' FWL

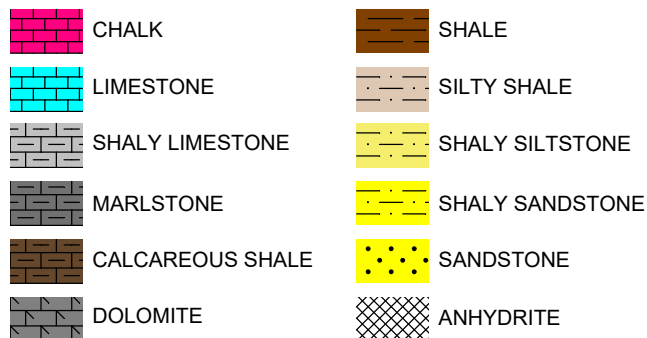


Earth Science Agency, LLC

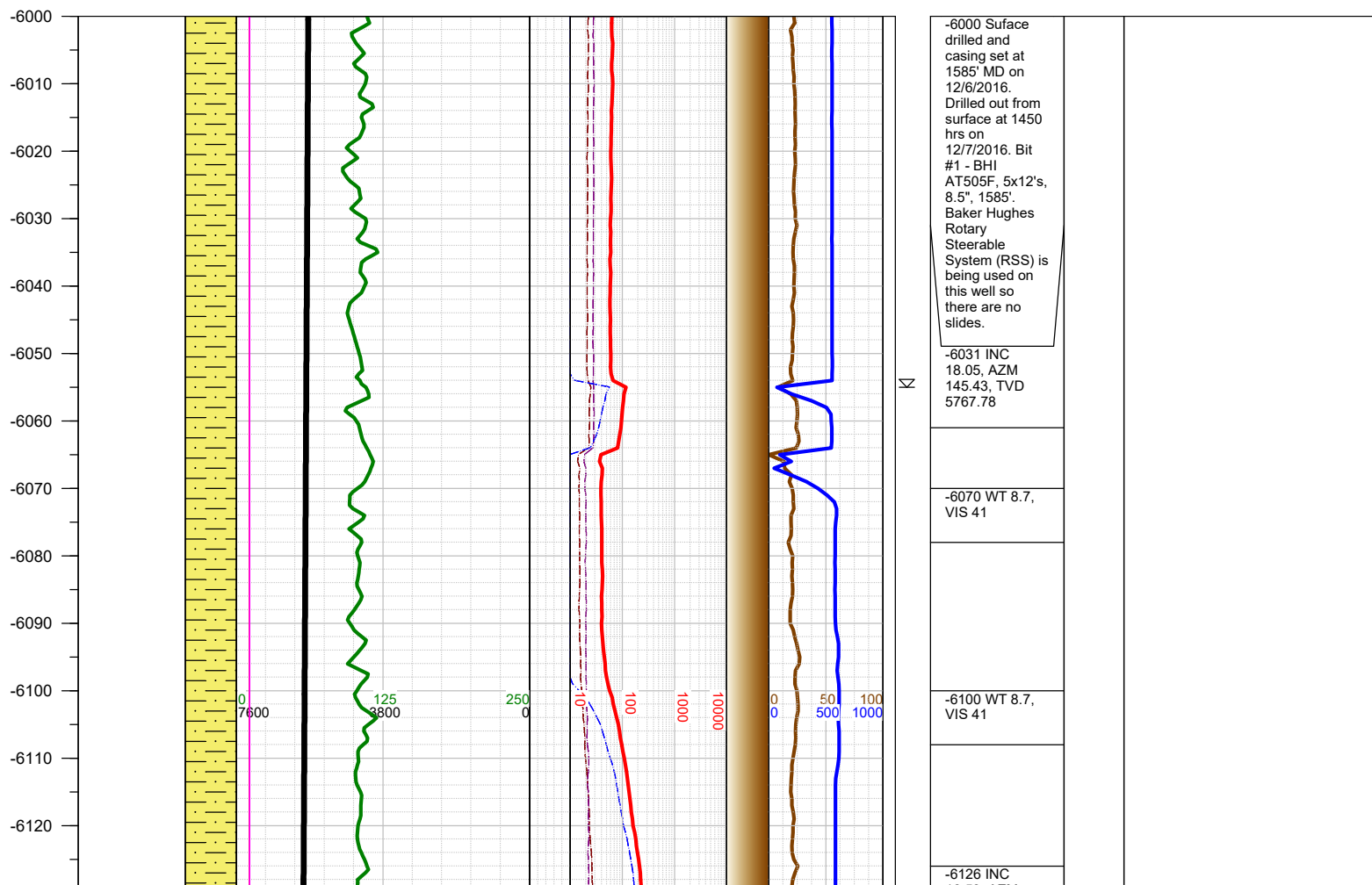
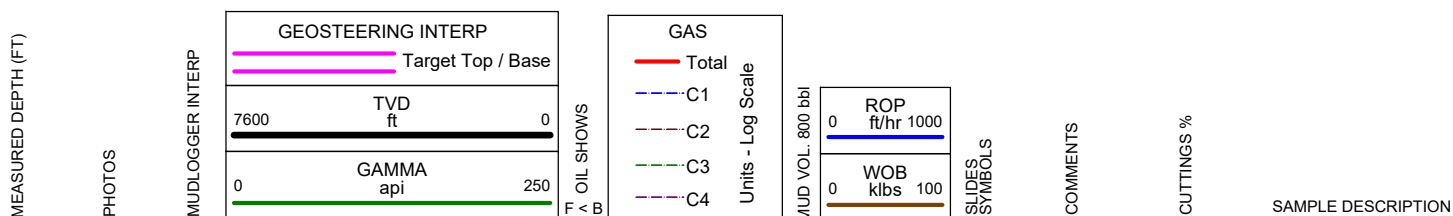
COUNTY: Weld
STATE: Colorado
GROUND ELEVATION: 4792'
KELLY BUSHING: 4817'
DRILLING FLUID: OBM
TVD VS. MD: 7260' / 20525'
SPUD DATE: December 6, 2016
TD DATE: December 13, 2016

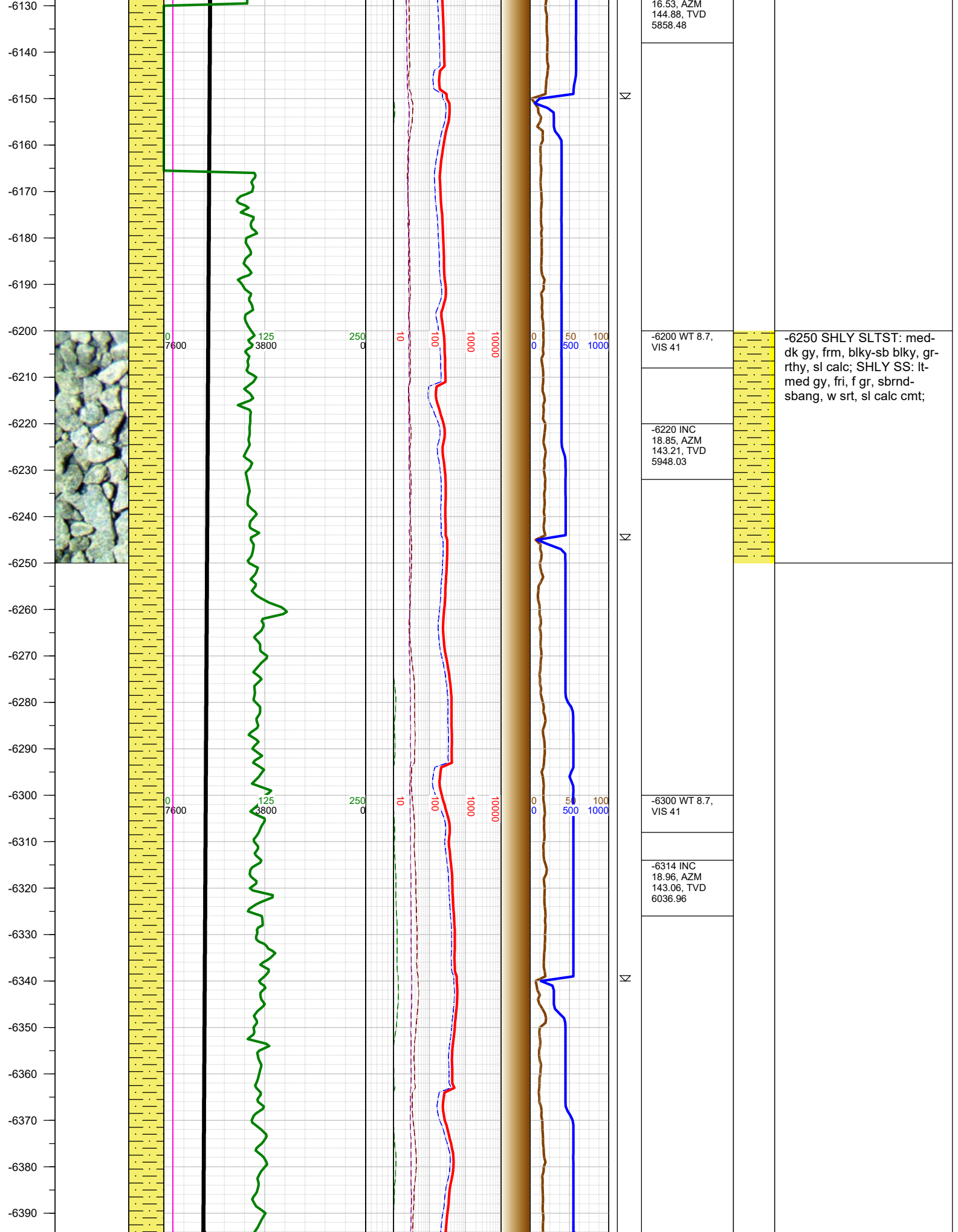
DEPTHS LOGGED: 6000' - 20525'
DATES LOGGED: December 7, 2016 - December 13, 2016
GEOLOGISTS: Blake Eatherton, Jared Gerard
SCALE: 5" = 100'

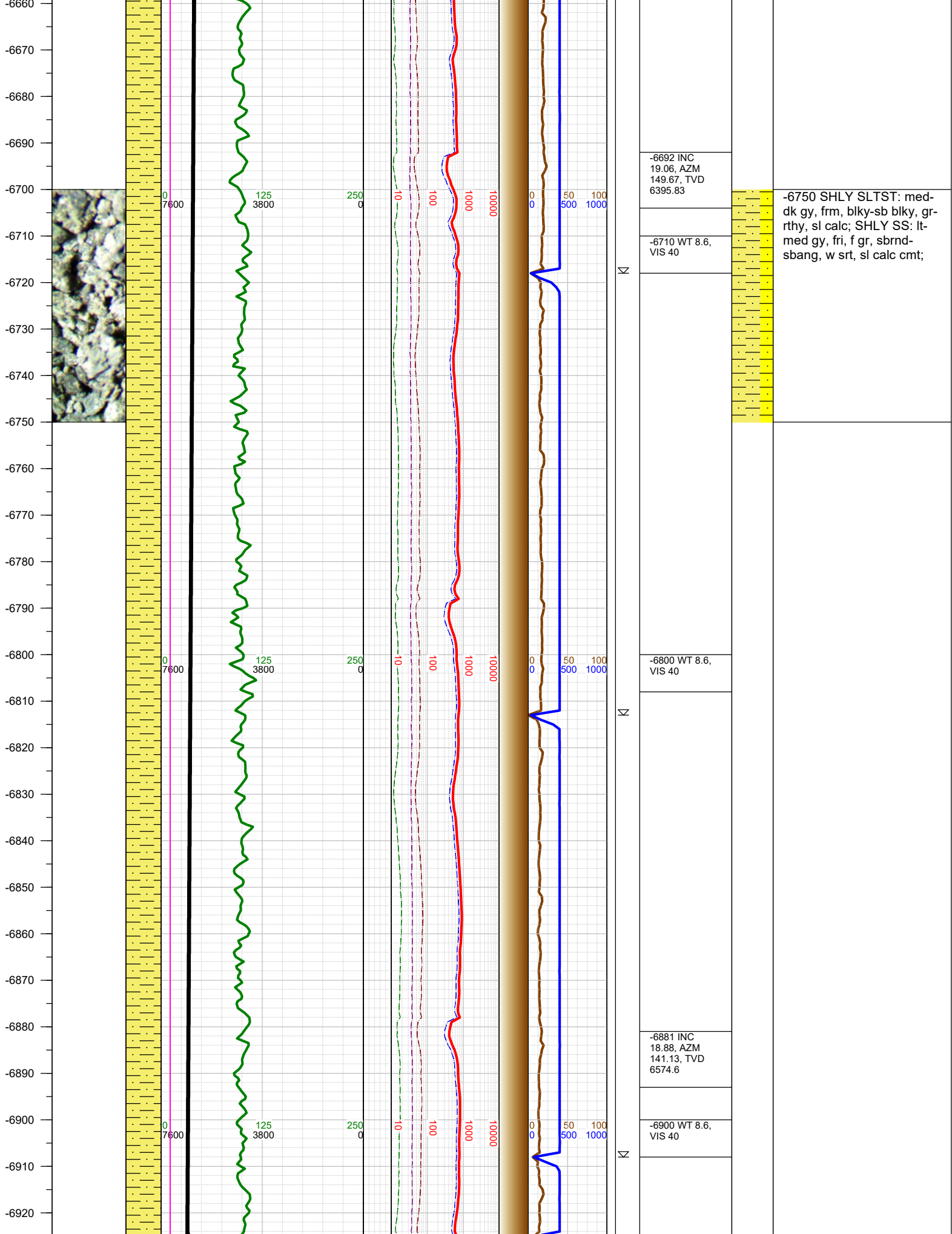
LEGEND

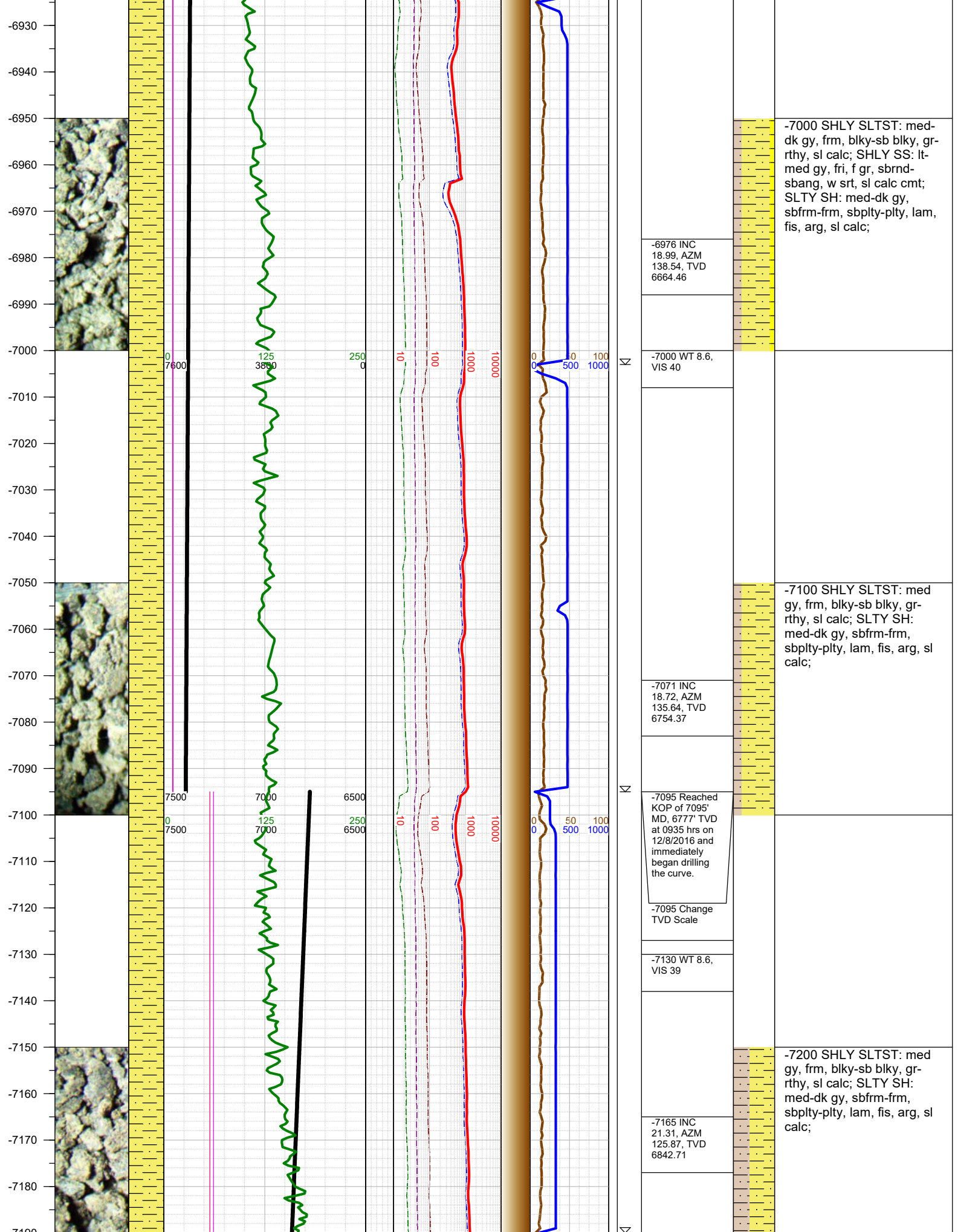


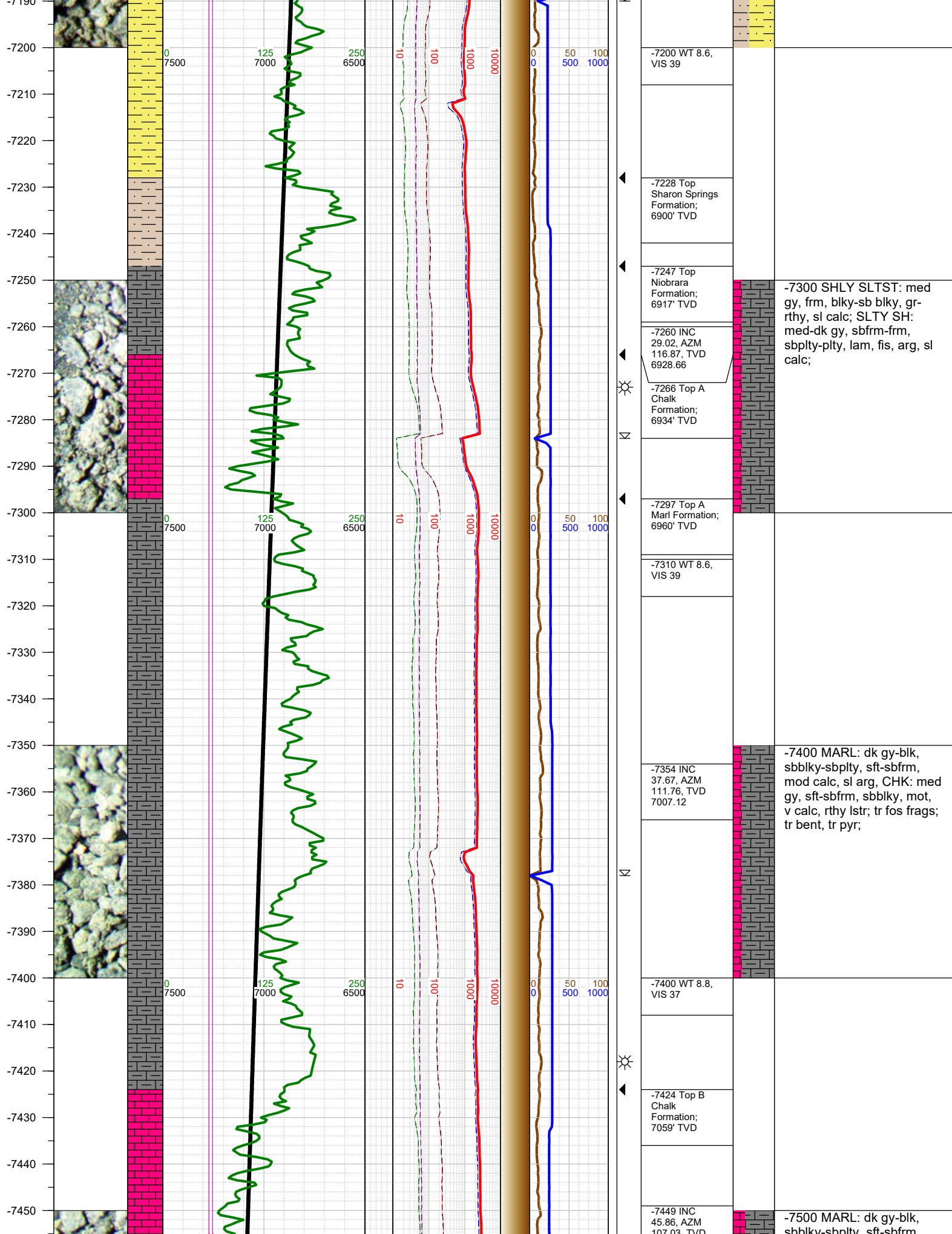
FORMATION CONNECTION MIDNIGHT NEW BIT GAS SHOW FAULT

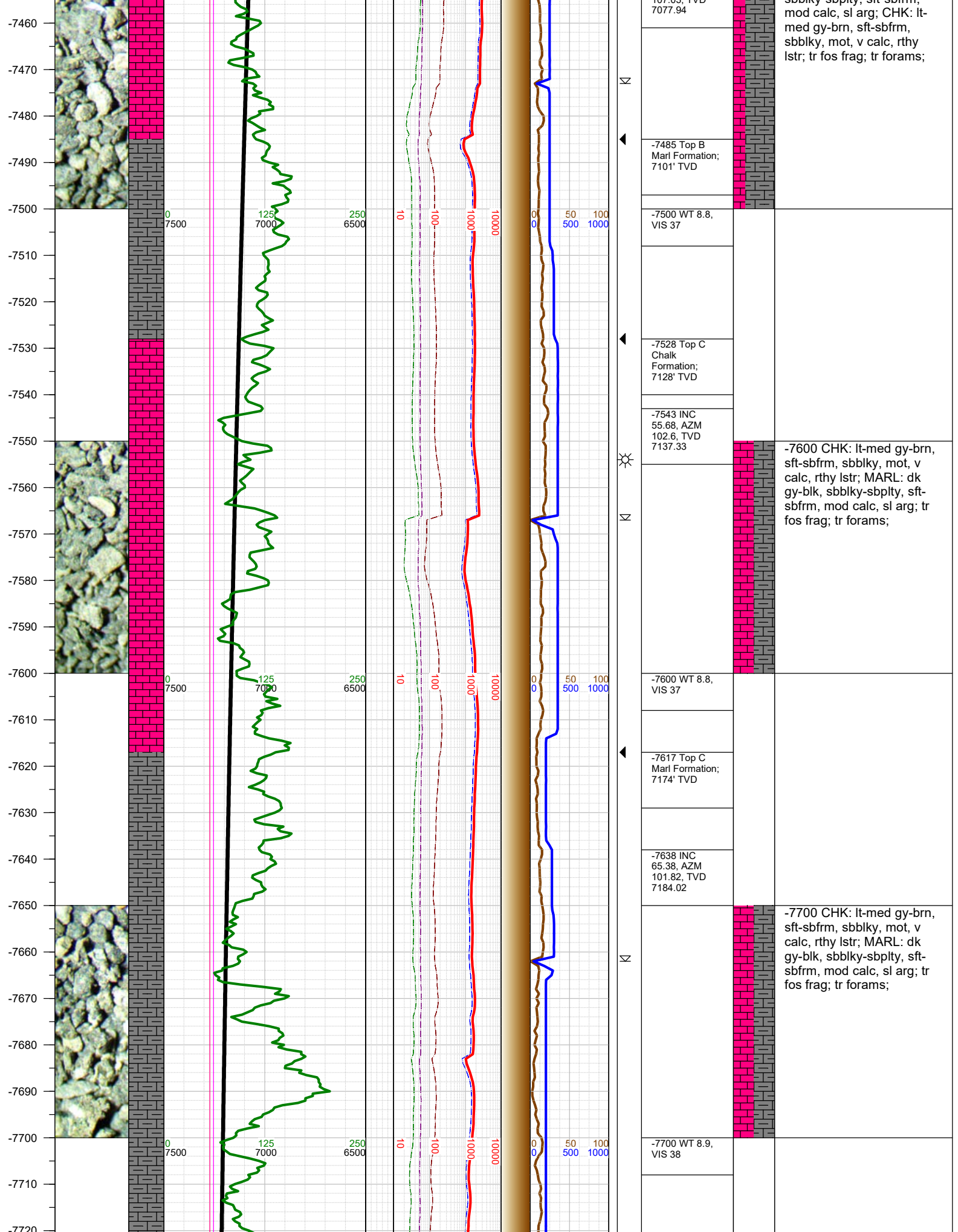


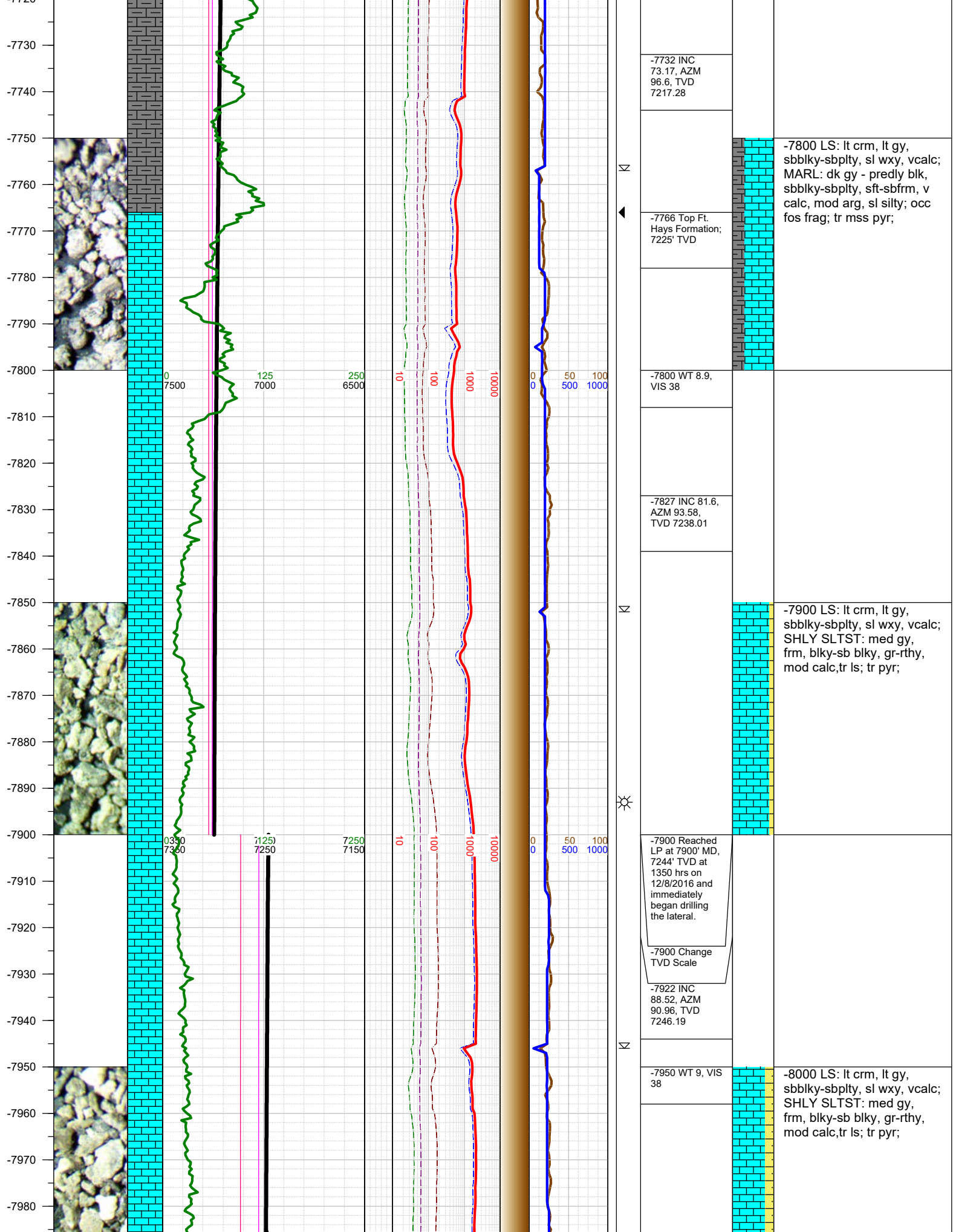


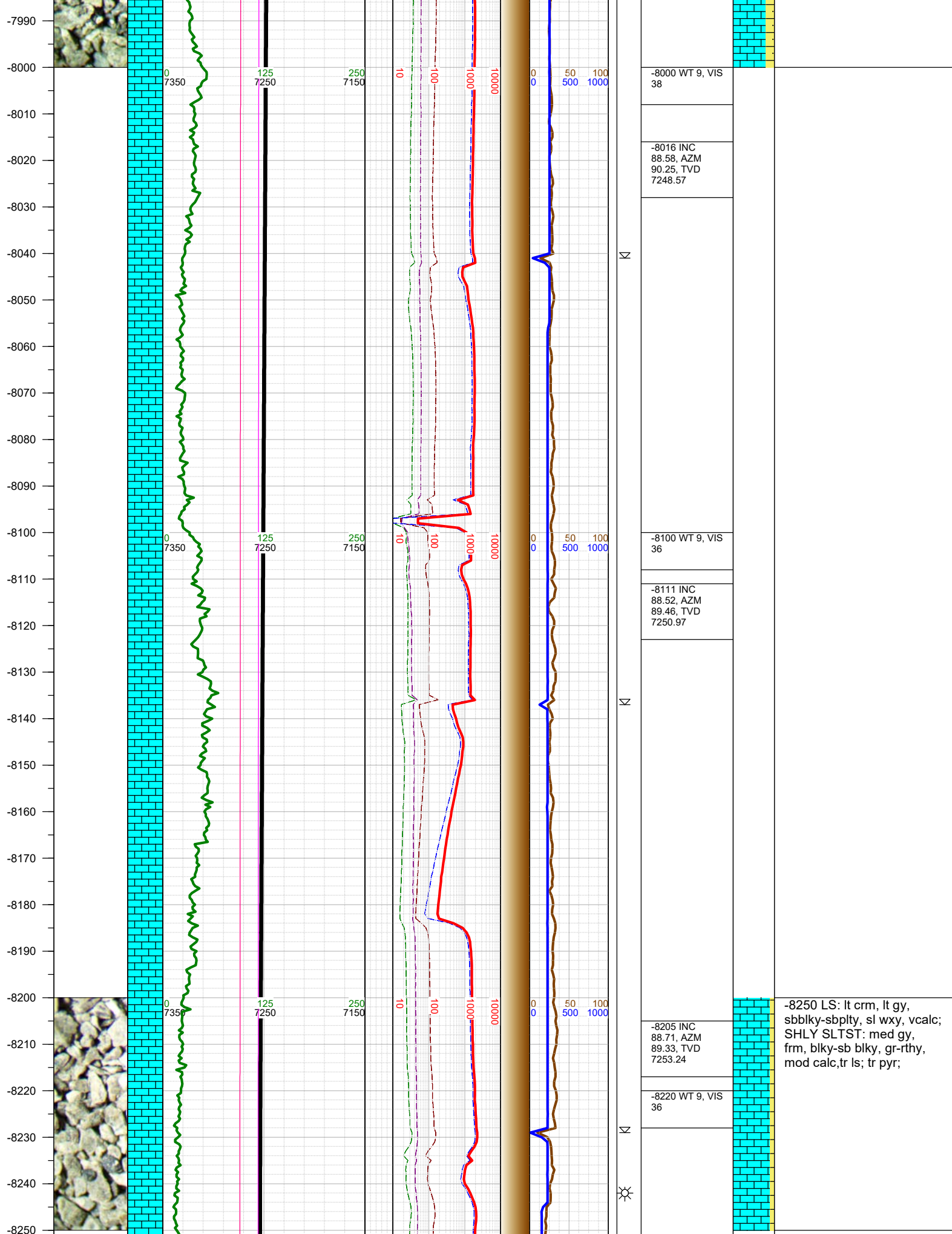


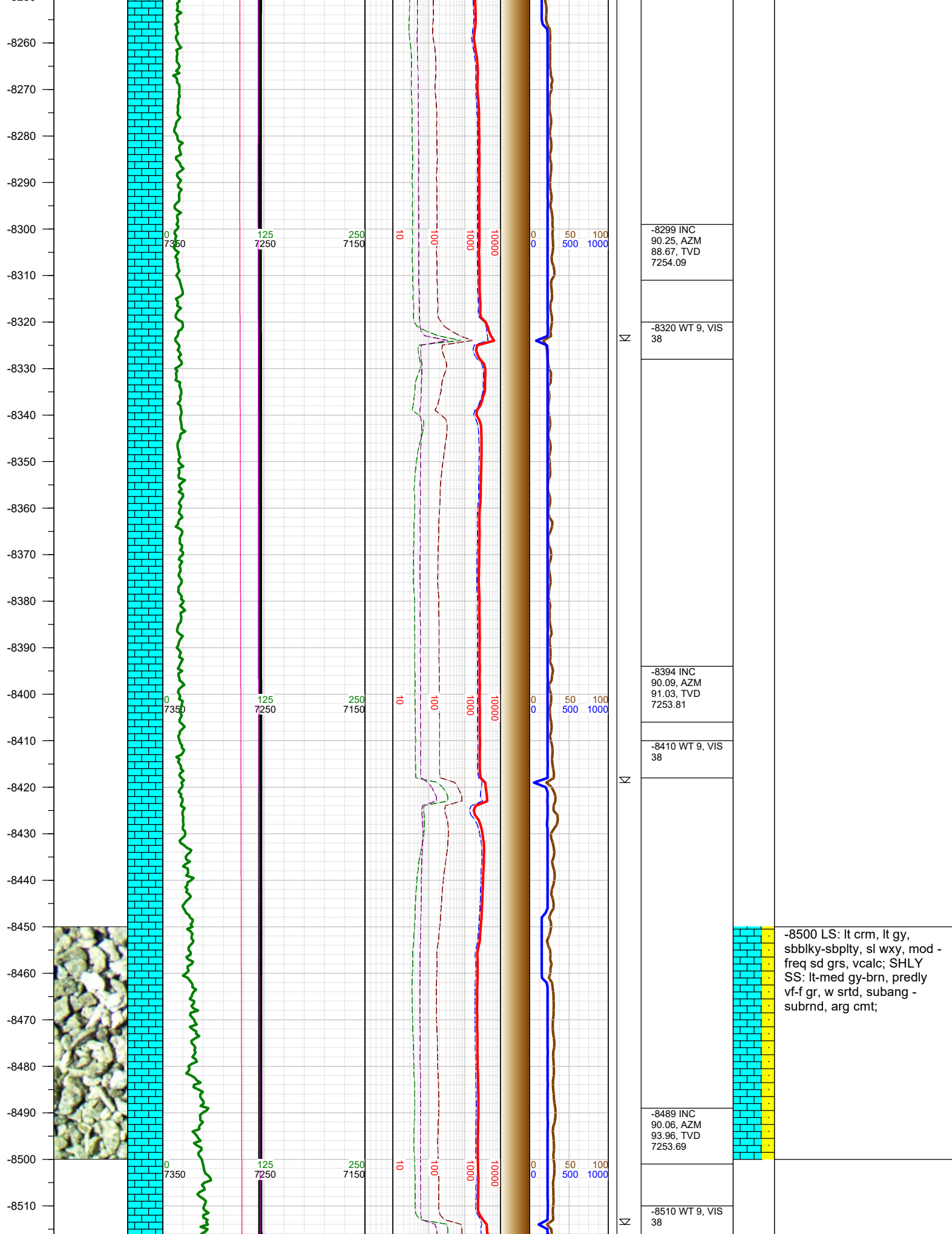




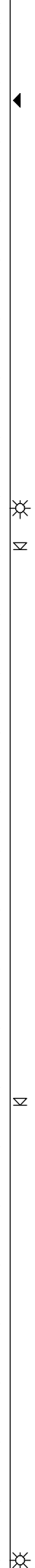
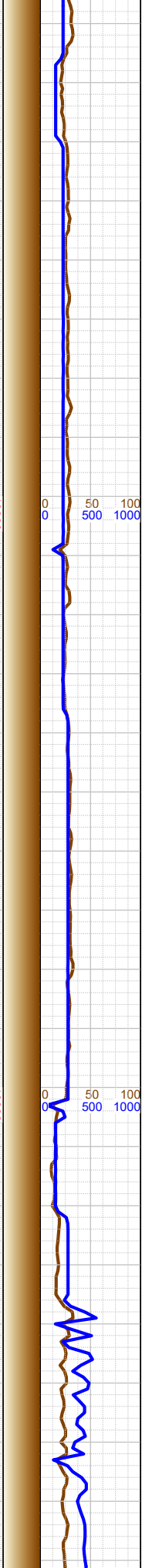
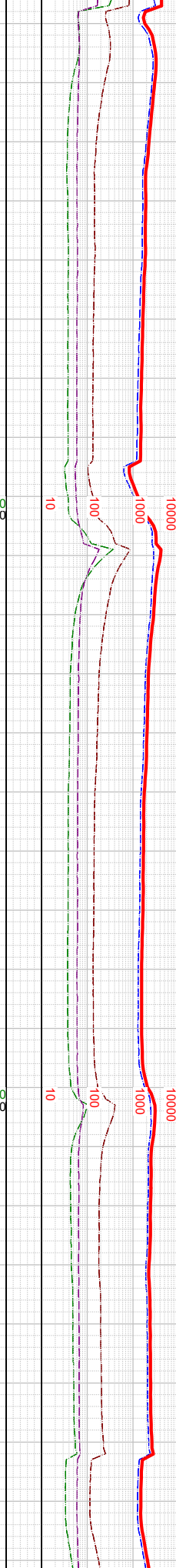
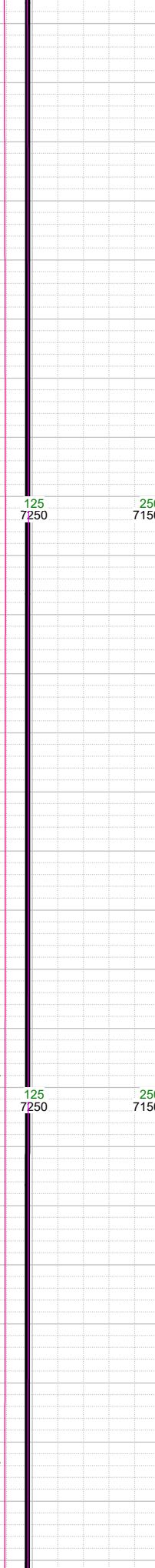
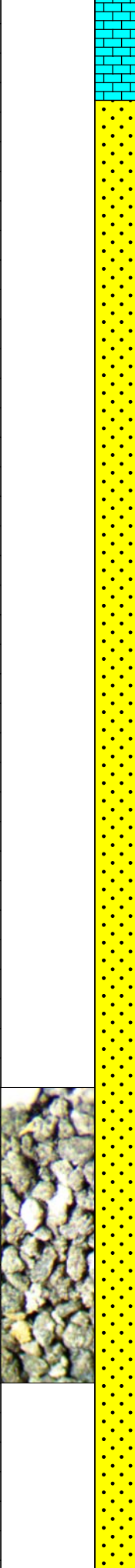








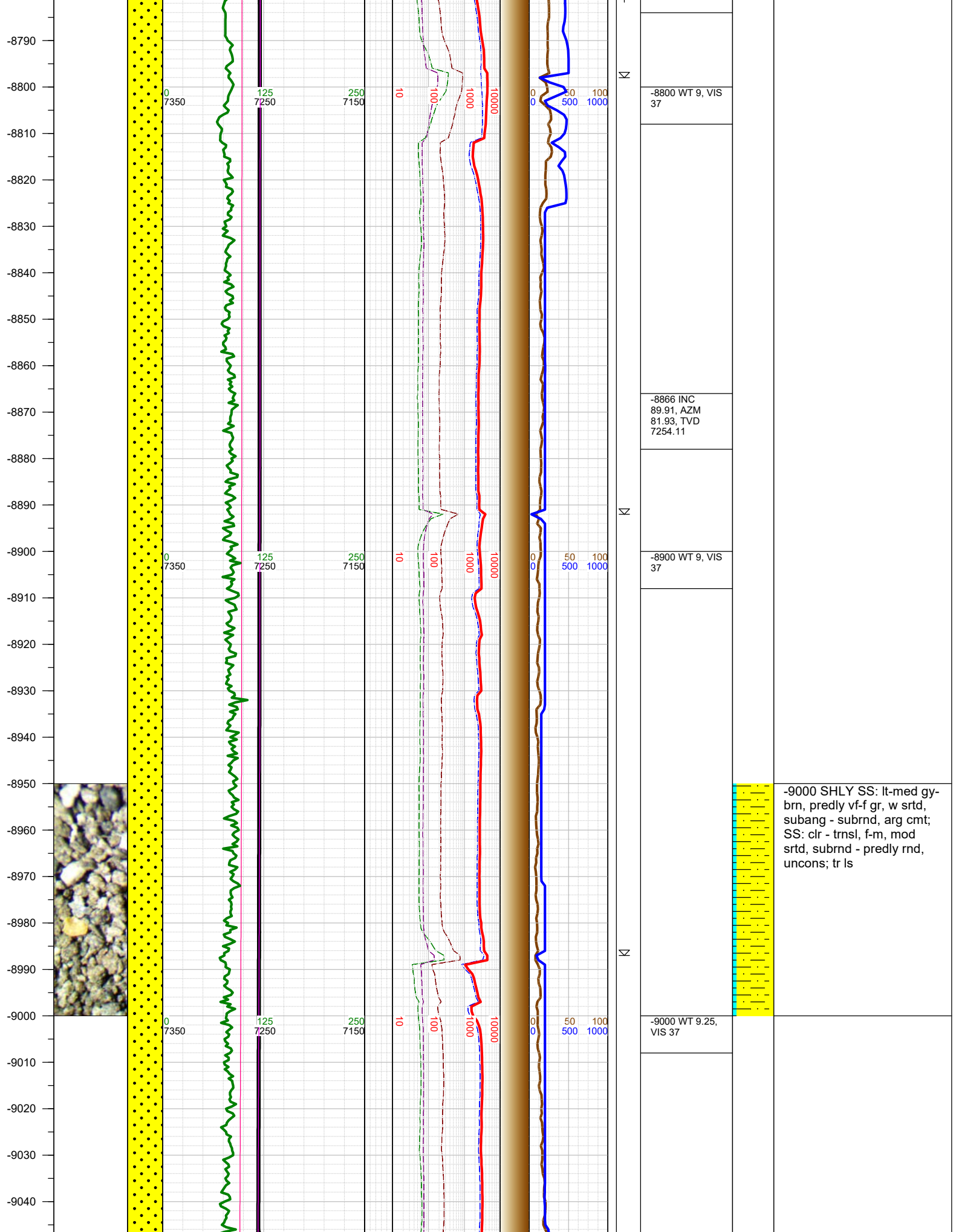
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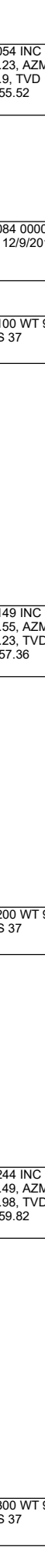
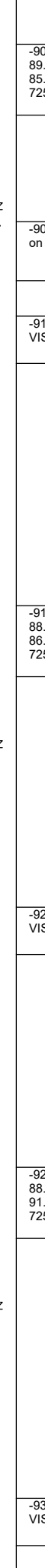
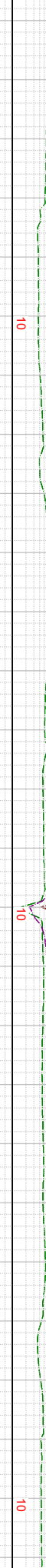
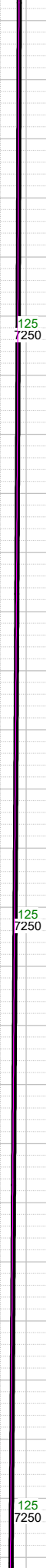
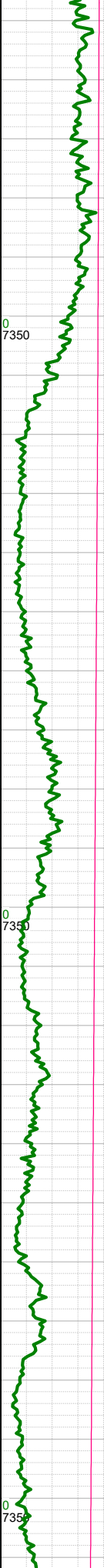
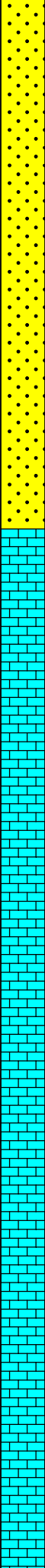
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|---|---|
| | -8533 Top Payzone - Codell Formation; 7254' TVD |
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| | -8583 INC 90, AZM 92.91, TVD 7253.64 |
| ☀ | -8600 WT 9, VIS 38 |
| ☀ | |
| | |
| | -8677 INC 89.88, AZM 90.02, TVD 7253.74 |
| ☀ | -8700 WT 9, VIS 37 |
| | |
| ☀ | -8772 INC 89.88, AZM 84.71, TVD 7253.94 |



-8750 SHLY SS: lt-med gy-brn, predly vf-f gr, w srtd, subang - subrnd, arg cmt; SS: clr - trnsl, f-m, mod srtd, subrnd - predly rnd, uncons; tr ls



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-9054 INC
89.23, AZM
85.9, TVD
7255.52

-9084 0000 hrs
on 12/9/2016

-9100 WT 9.25,
VIS 37

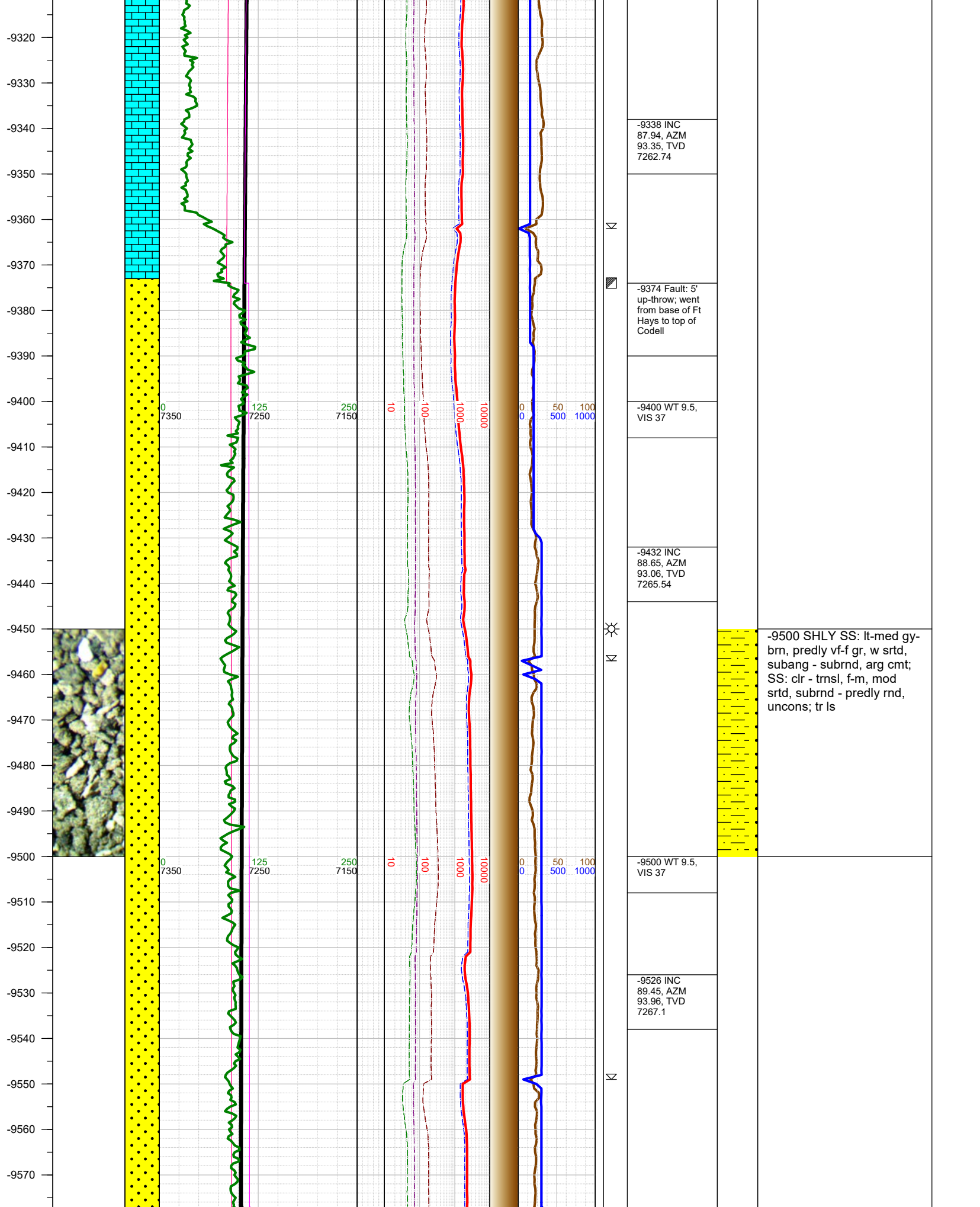
-9149 INC
88.55, AZM
86.23, TVD
7257.36

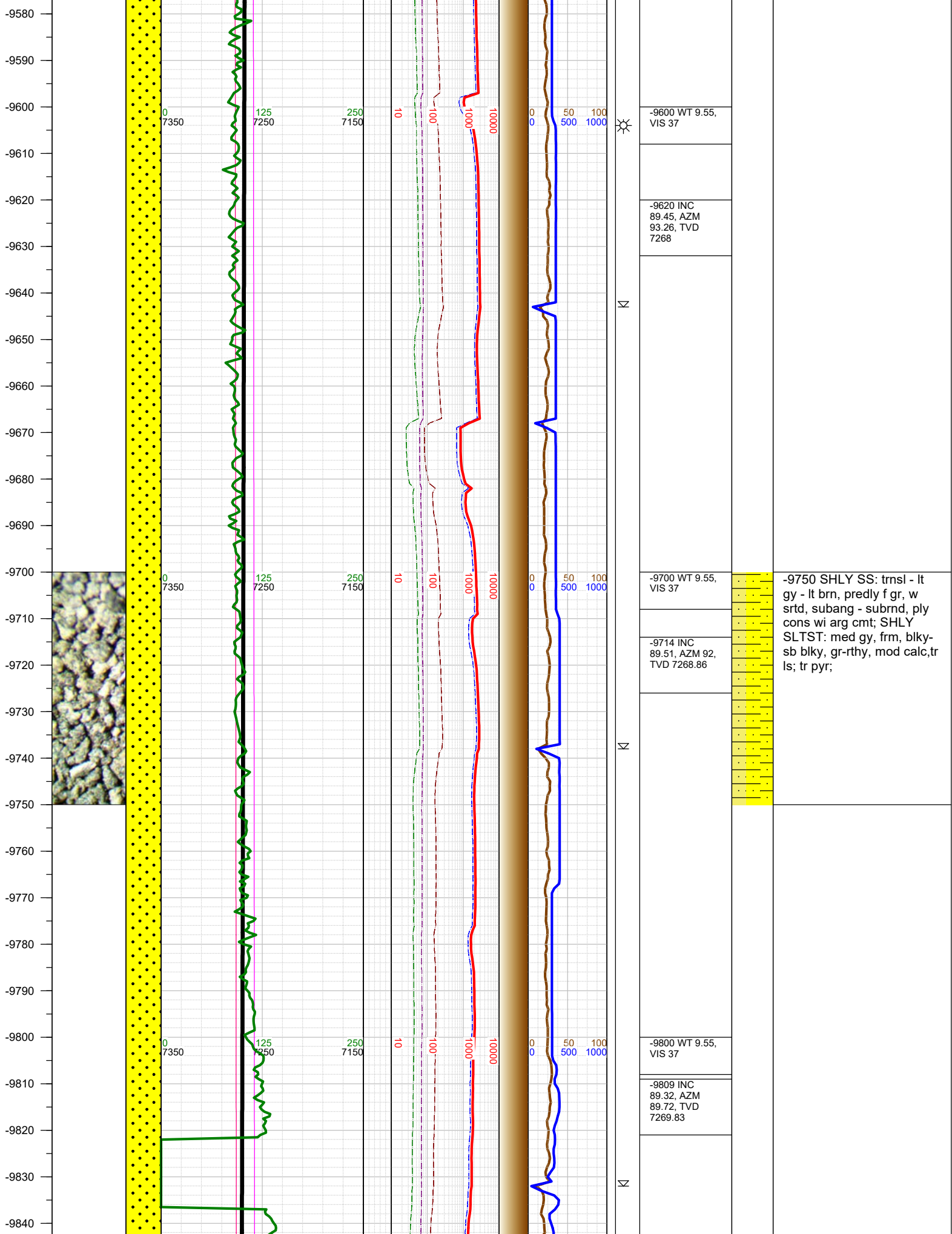
-9200 WT 9.3,
VIS 37

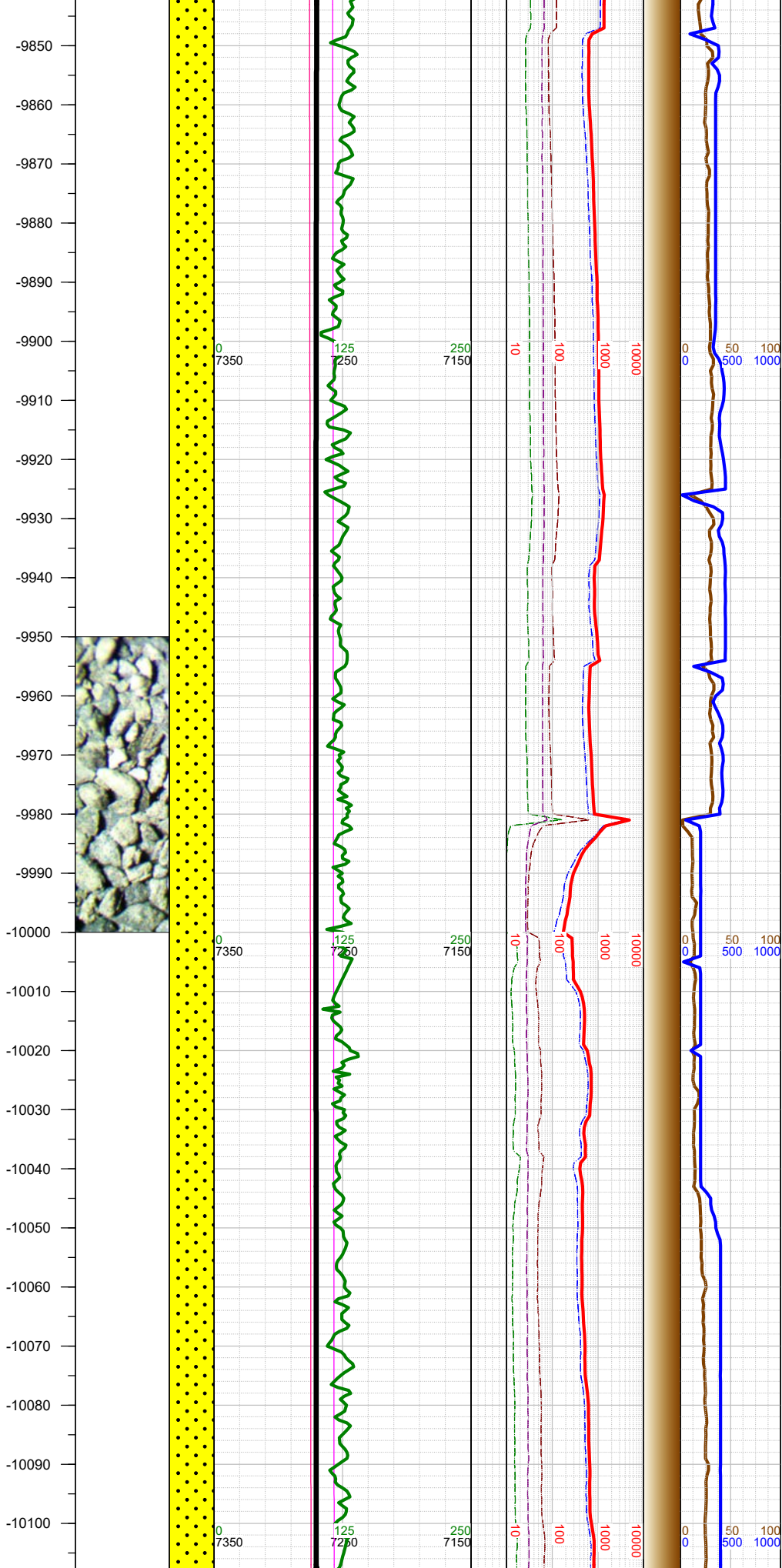
-9244 INC
88.49, AZM
91.98, TVD
7259.82

-9300 WT 9.3,
VIS 37

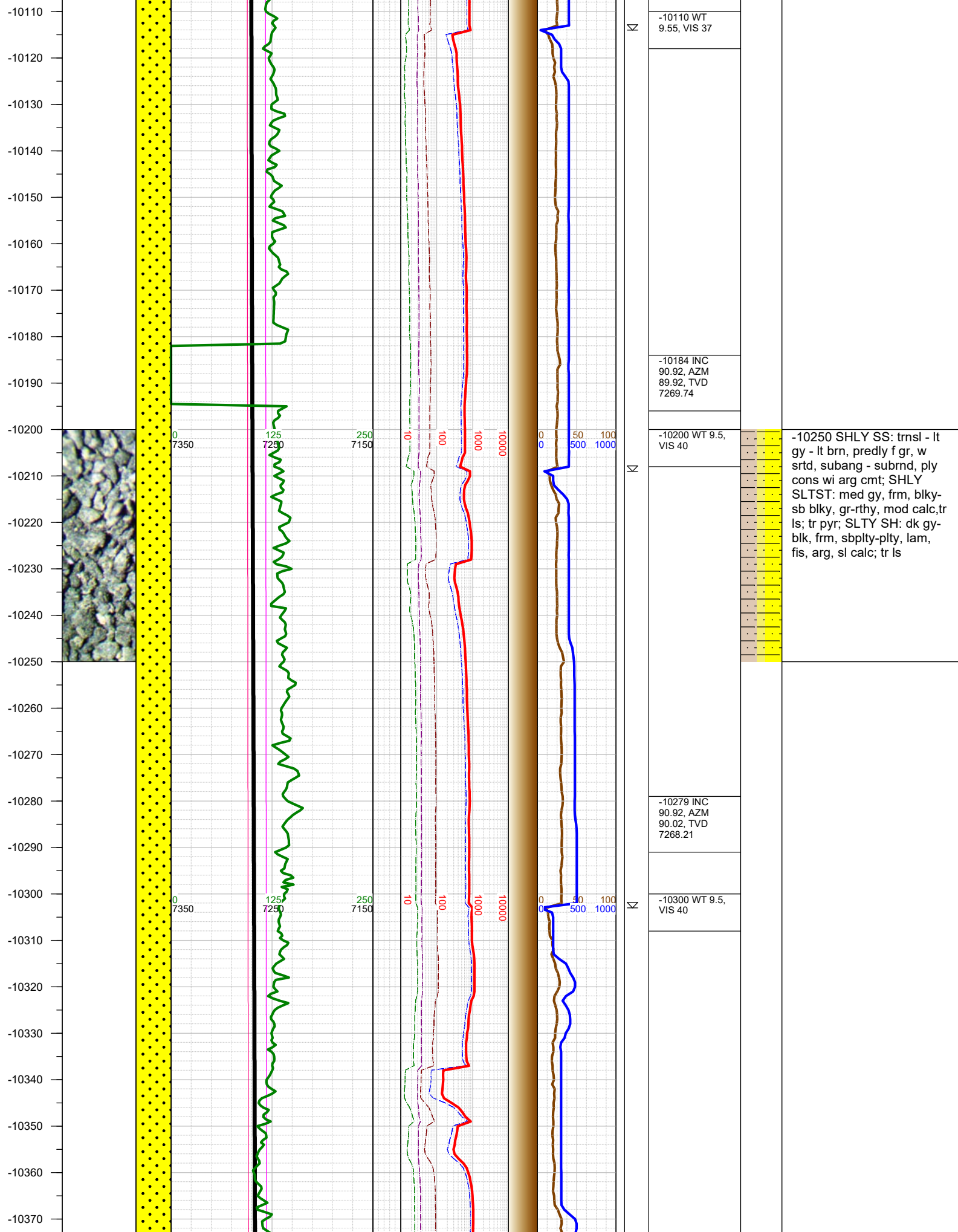
-9250 LS: lt crm, lt gy,
sbbky-sbplty, sl wxy, vcalc;
SHLY SLTST: med gy,
frm, blk-sb blk, gr-rthy,
mod calc, tr ls; tr pyr;

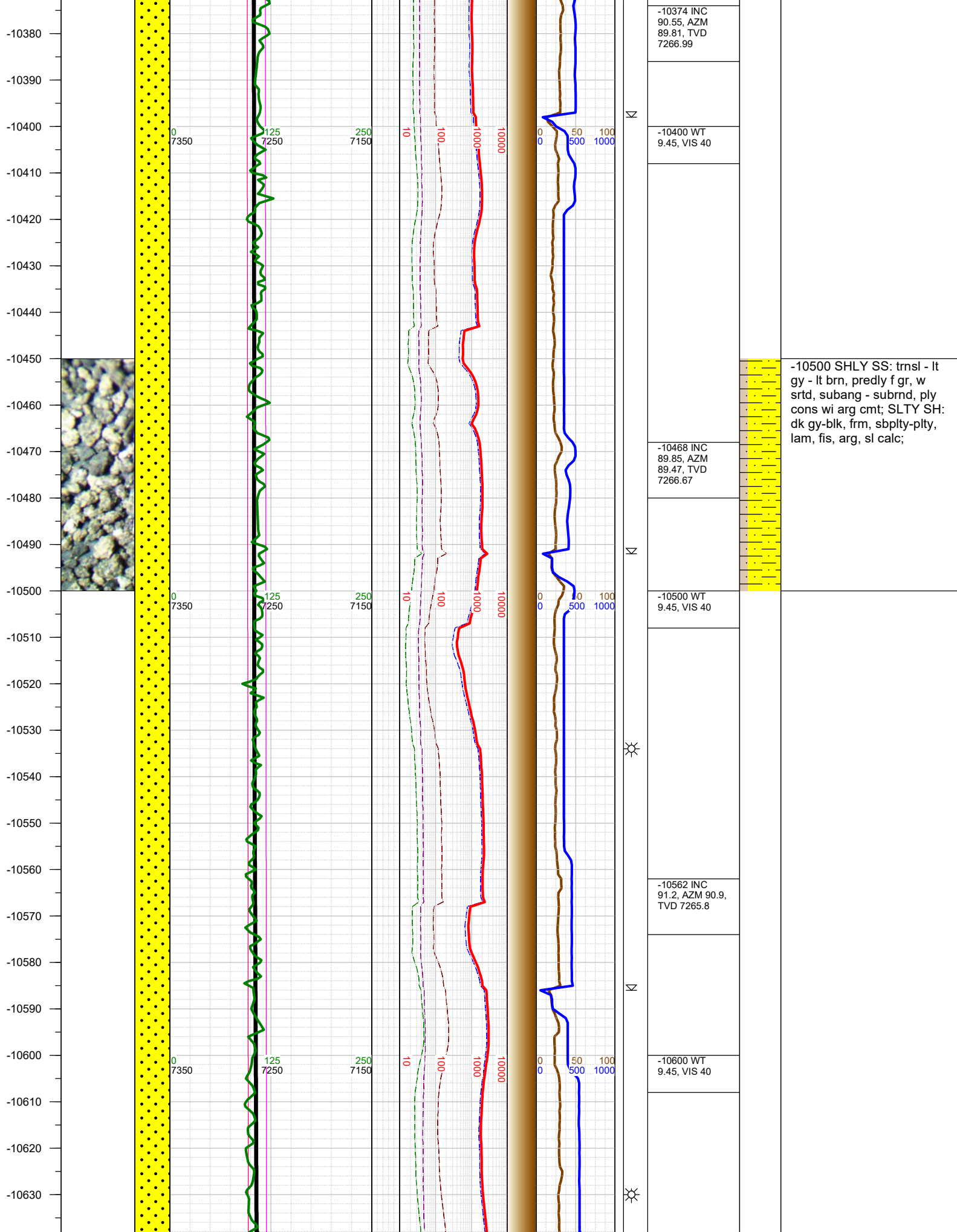


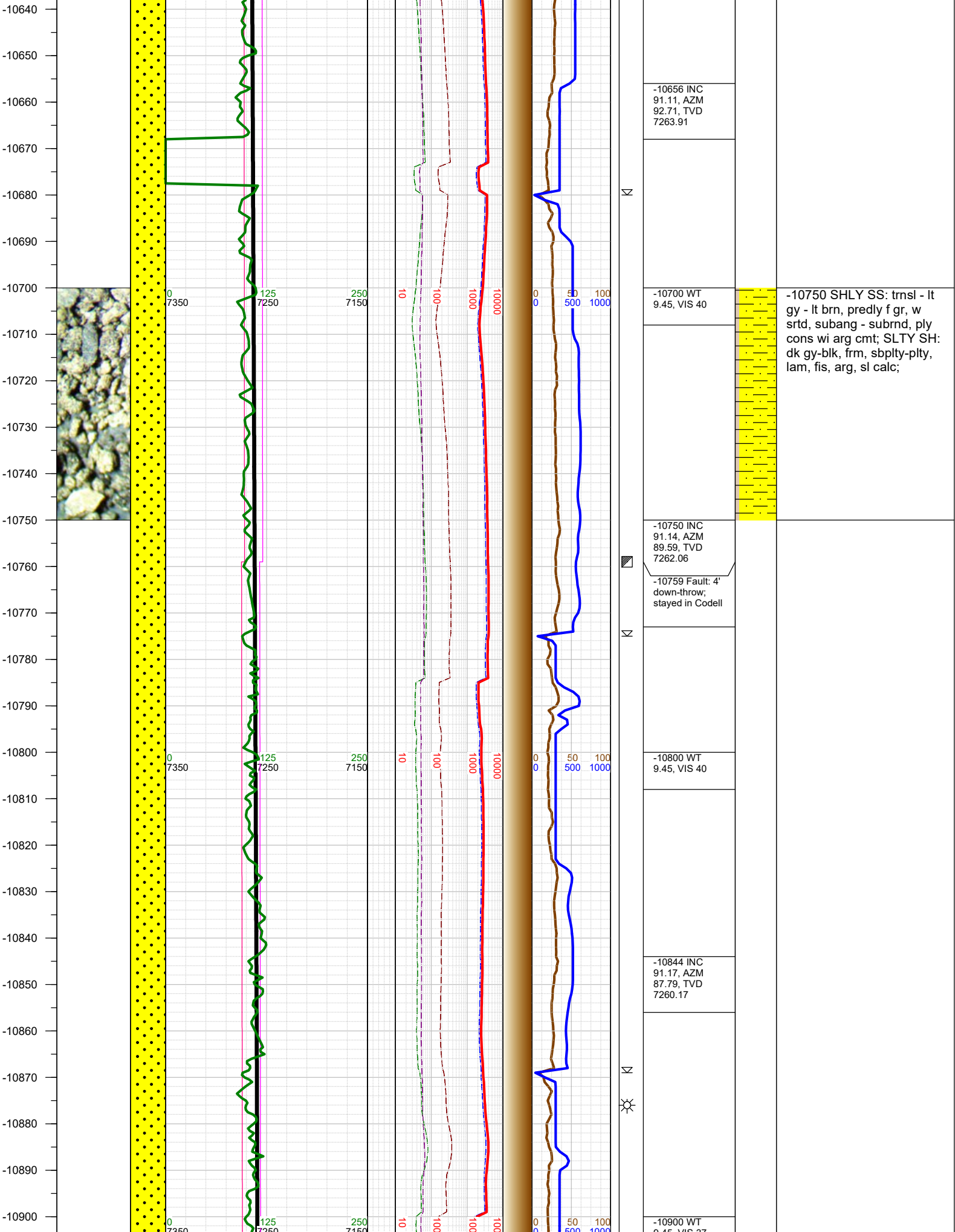


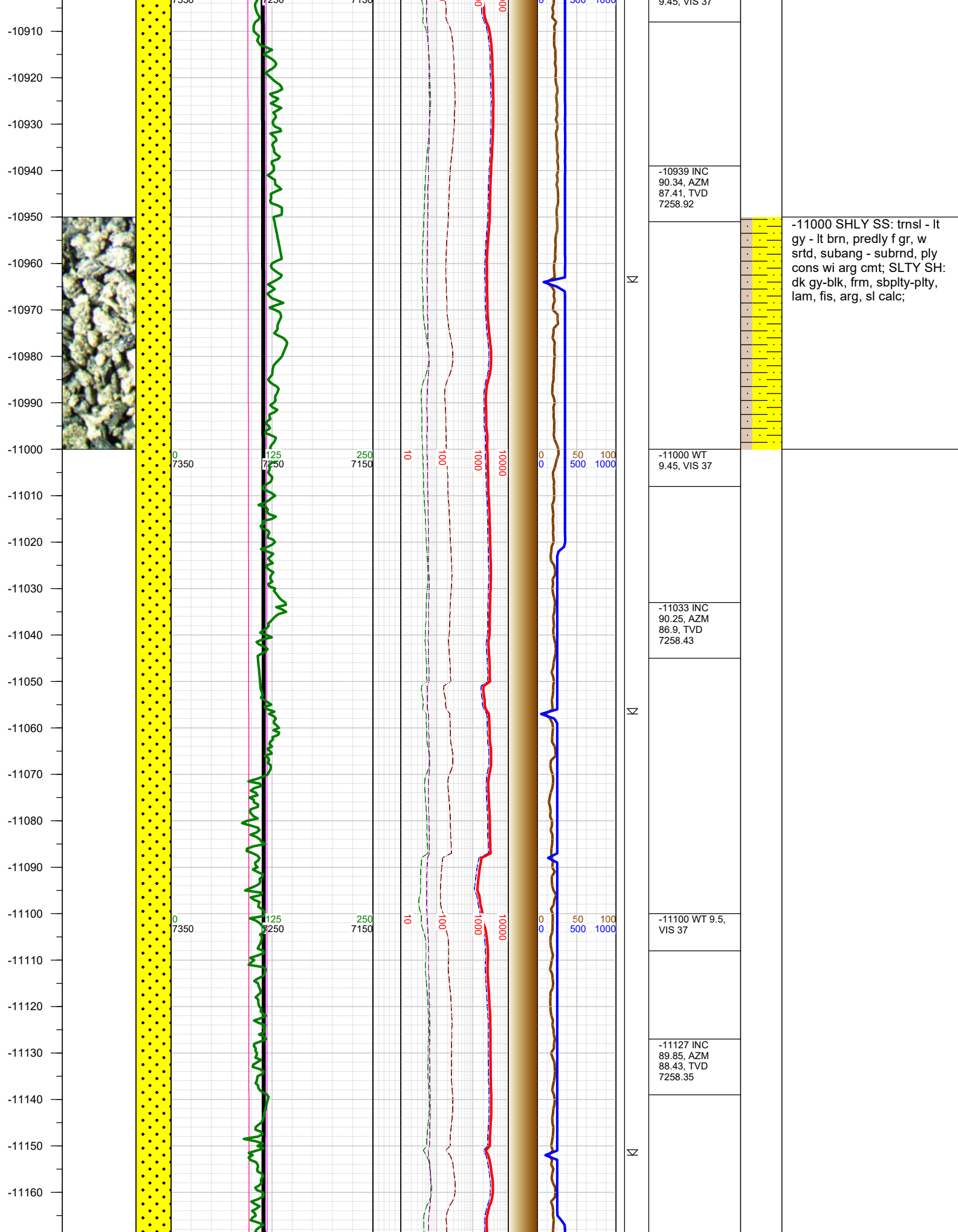


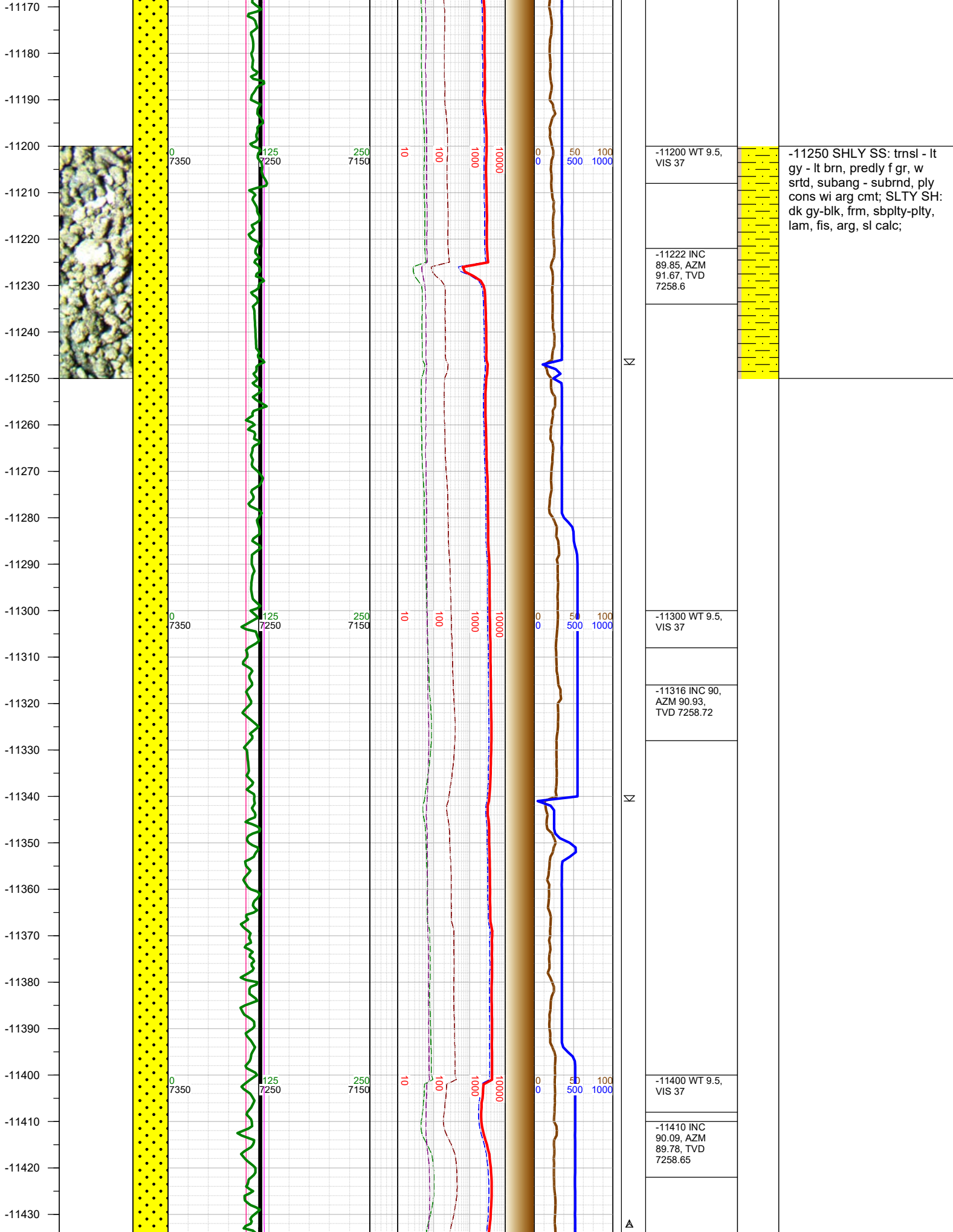
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|---|--|--|
| Σ | -9900 WT 9.55, VIS 37 | |
| | | |
| Σ | -9980 TOOH for MWD. Resumed drilling at 1740 hrs on 12/9/2016. Bit #2 - HCC AT505F, 5x15, 8.5" | -10000 SHLY SS: trnsl - lt gy - lt brn, predly f gr, w srted, subang - subrnd, ply cons wi arg cmt; SHLY SLTST: med gy, frm, blkysb blk, gr-rthy, mod calc, tr ls; tr pyr; SLTY SH: dk gy-blk, frm, sbply-pty, lam, fis, arg, sl calc; |
| | -9996 INC 90.12, AZM 89.13, TVD 7270.74 | |
| Σ | -10020 WT 9.55, VIS 37 | |
| | | |
| | -10090 INC 90.09, AZM 88.69, TVD 7270.57 | |

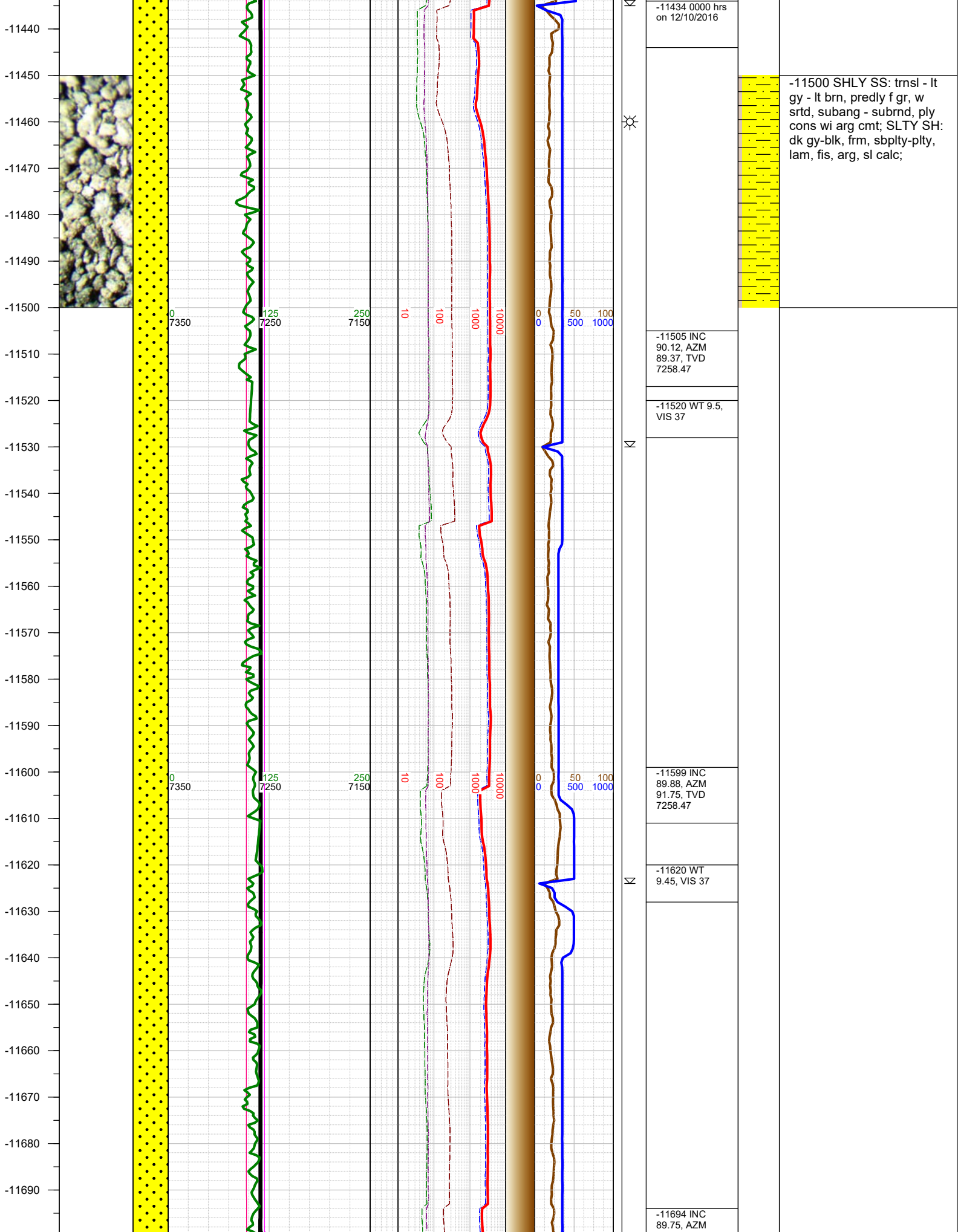


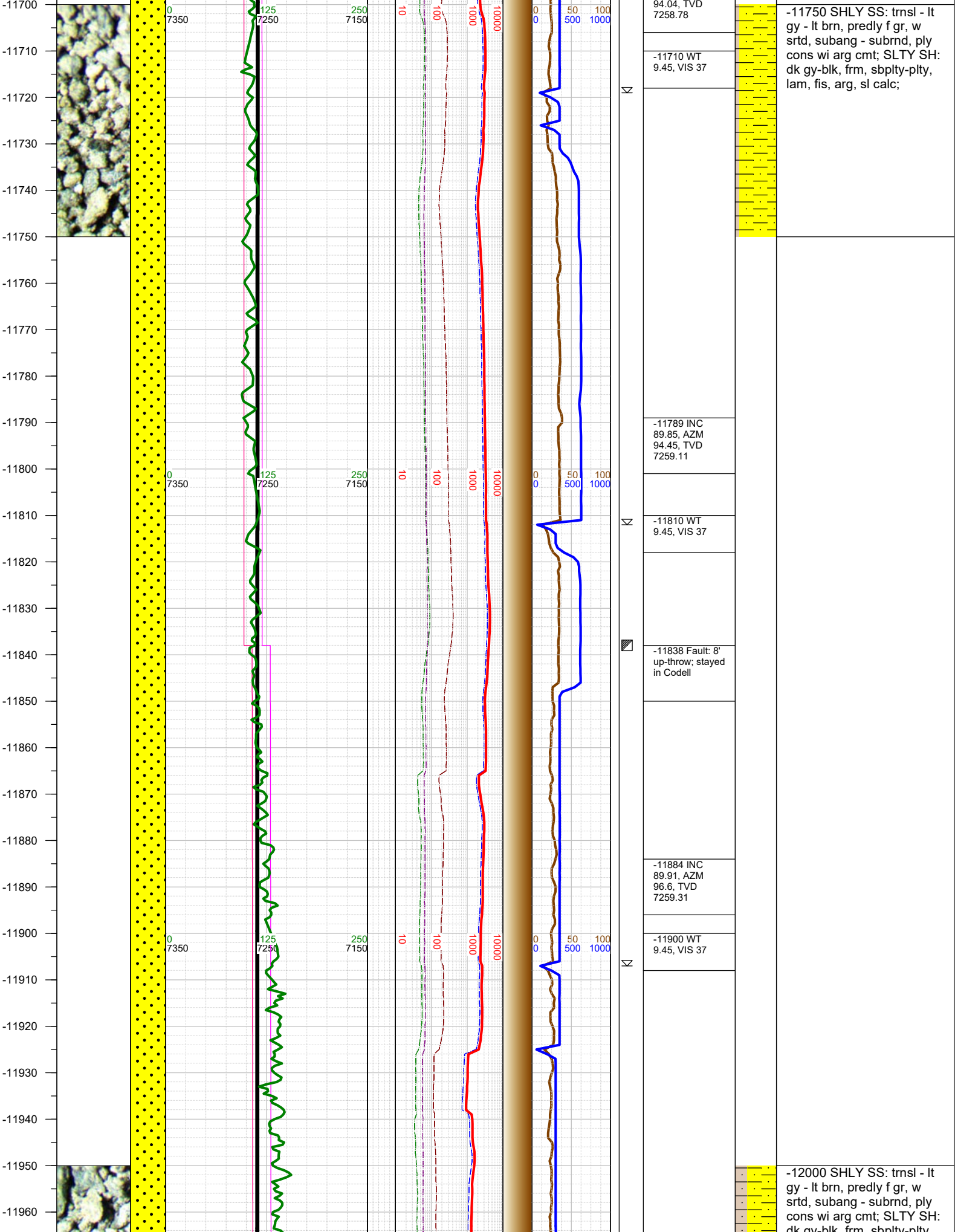




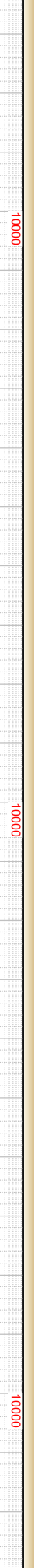
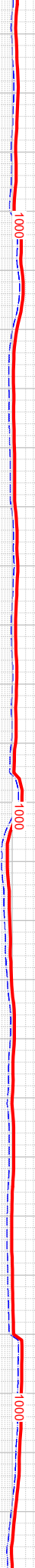
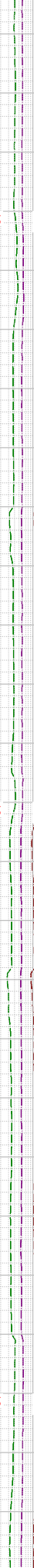
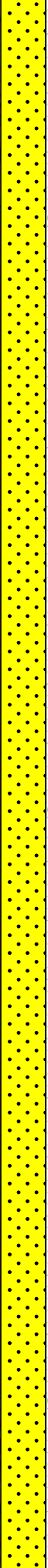








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-11978 INC
90.15, AZM
95.24, TVD
7259.26

-12000 WT
9.45, VIS 37

-12073 INC
90.18, AZM
93.03, TVD
7258.99

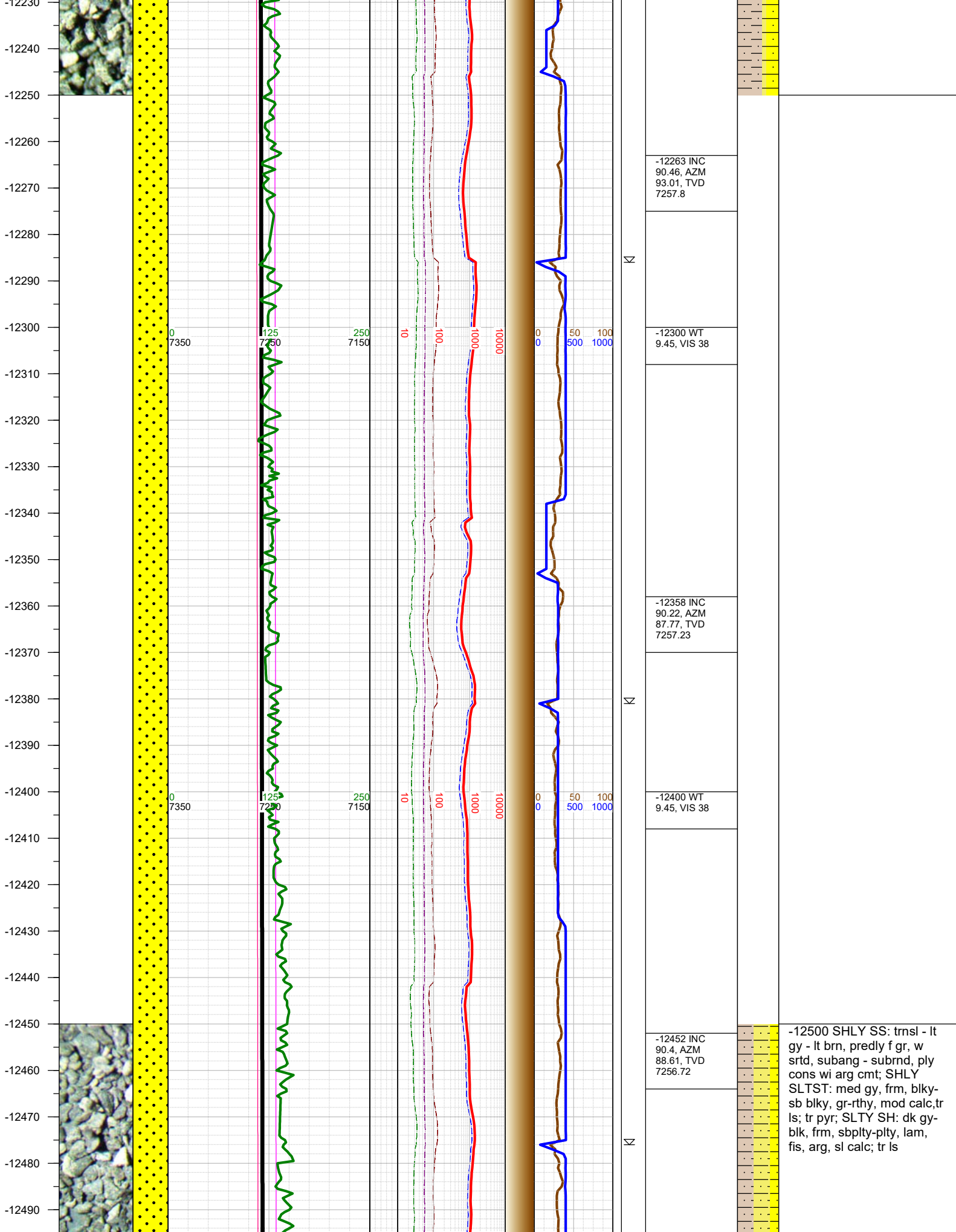
-12100 WT
9.45, VIS 37

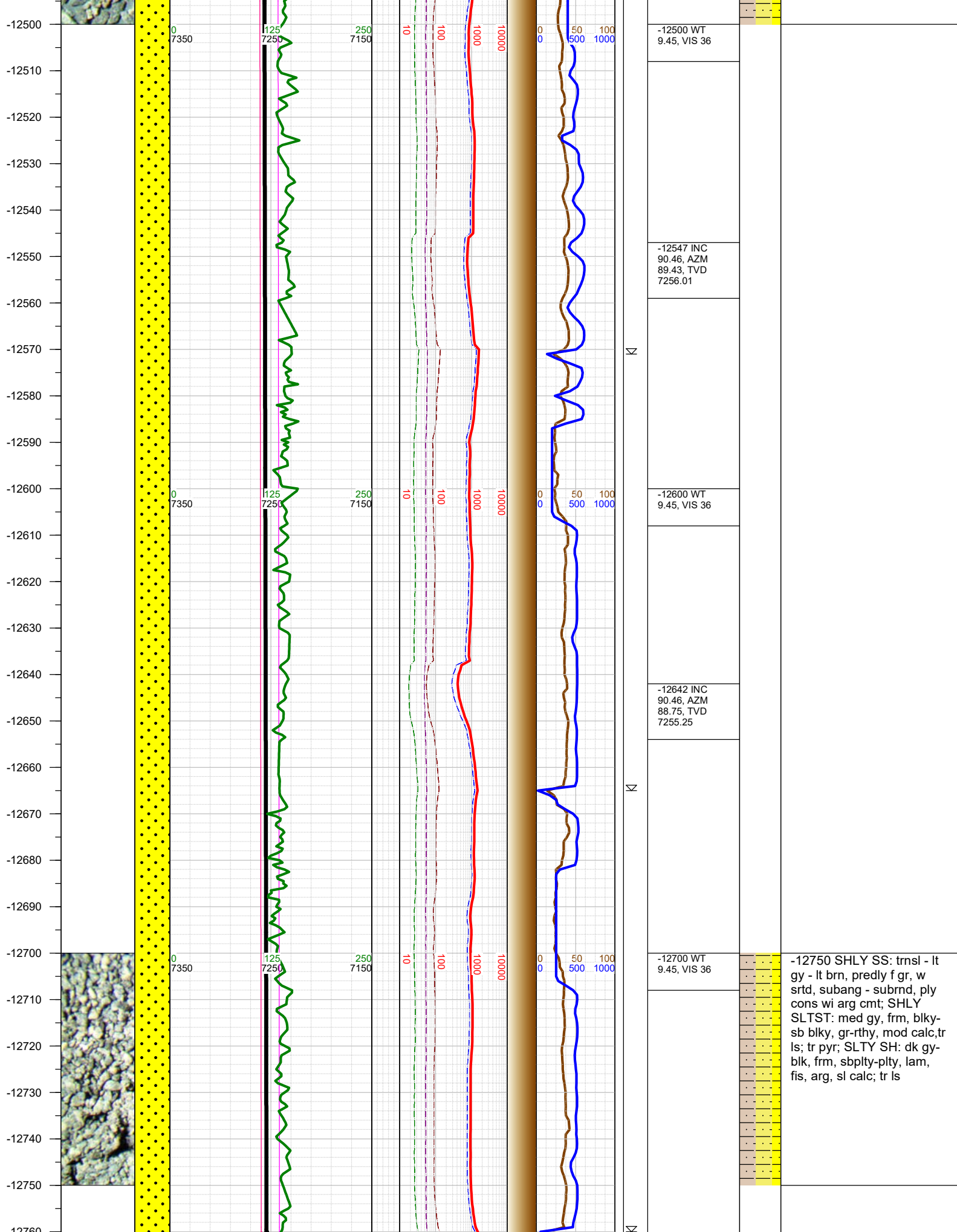
-12168 INC
90.4, AZM
92.37, TVD
7258.51

-12200 WT
9.45, VIS 37

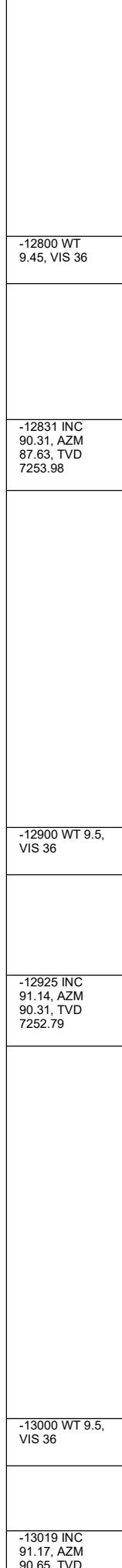
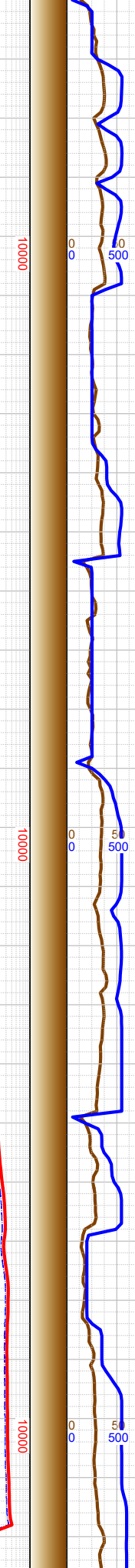
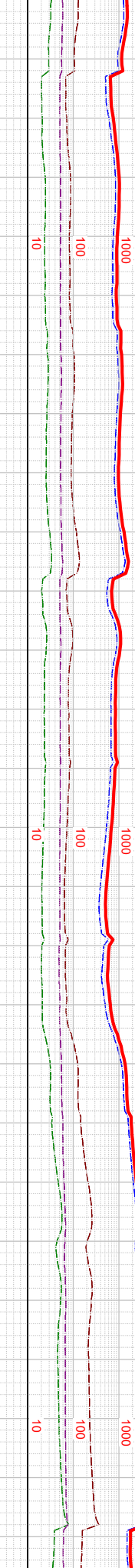
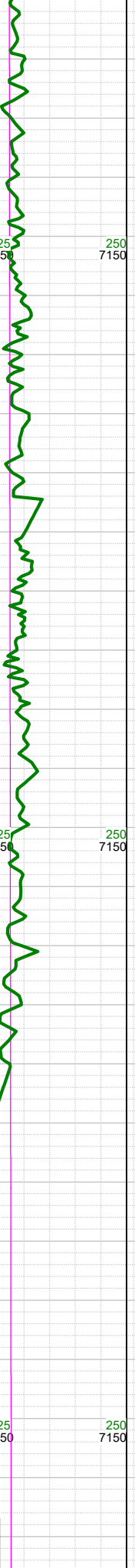
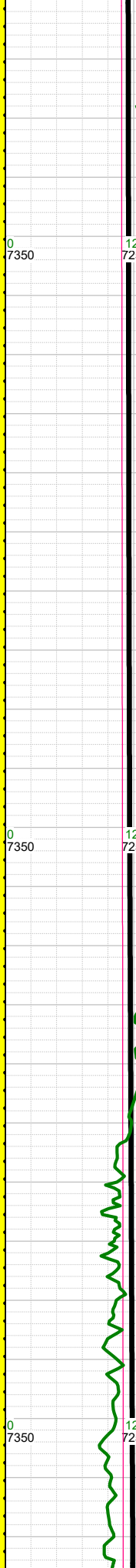
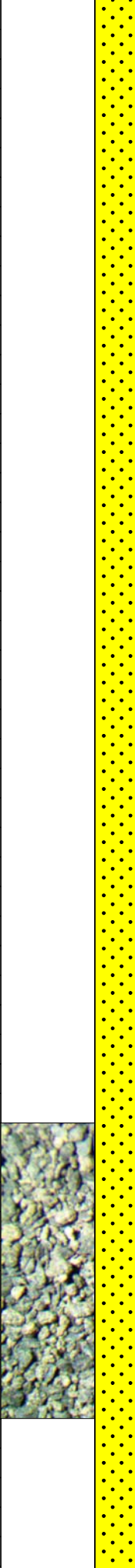
dk gy-blk, frm, sbply-pty,
lam, fis, arg, sl calc;

-12250 SHLY SS: trns l - lt
gy - lt brn, predly f gr, w
srtd, subang - subrnd, ply
cons wi arg cmt; SHLY
SLTST: med gy, frm, blk-
sb blk, gr-rthy, mod calc, tr
ls; tr pyr; SLTY SH: dk gy-
blk, frm, sbply-pty, lam,
fis, arg, sl calc; tr ls

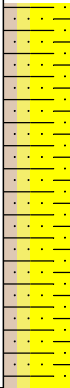
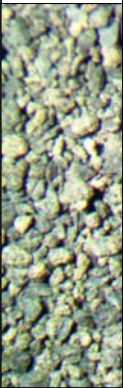




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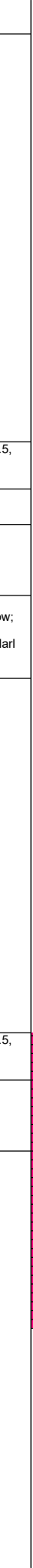
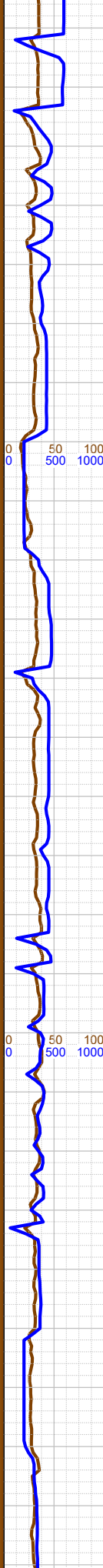
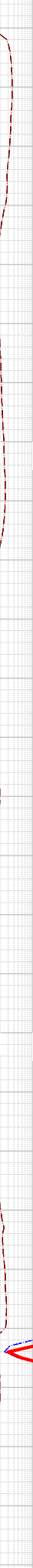
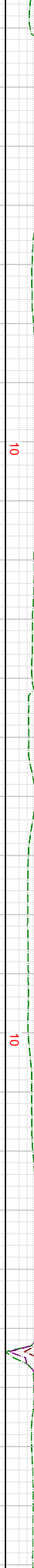
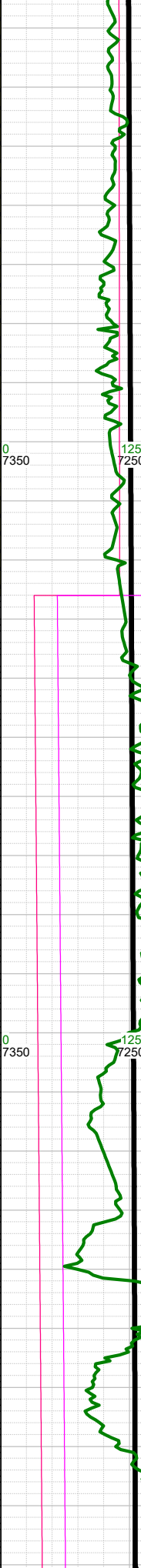
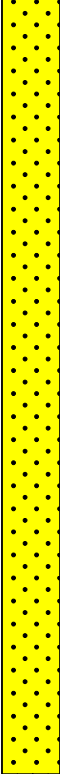
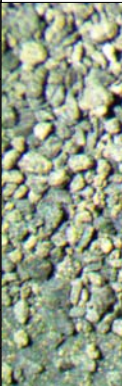


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| -12800 WT 9.45, VIS 36 | |
| -12831 INC 90.31, AZM 87.63, TVD 7253.98 | |
| -12900 WT 9.5, VIS 36 | |
| -12925 INC 91.14, AZM 90.31, TVD 7252.79 | |
| -13000 WT 9.5, VIS 36 | |
| -13019 INC 91.17, AZM 90.65, TVD | |



-13000 SHLY SS: trns l - lt gy - lt brn, predly f gr, w srtd, subang - subrnd, ply cons wi arg cmt; SHLY SLTST: med gy, frm, blkysb blk, gr-rthy, mod calc, tr ls; tr pyr; SLTY SH: dk gy-blk, frm, sbply-plty, lam, fis, arg, sl calc; tr ls

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-13100 WT 9.5,
VIS 36

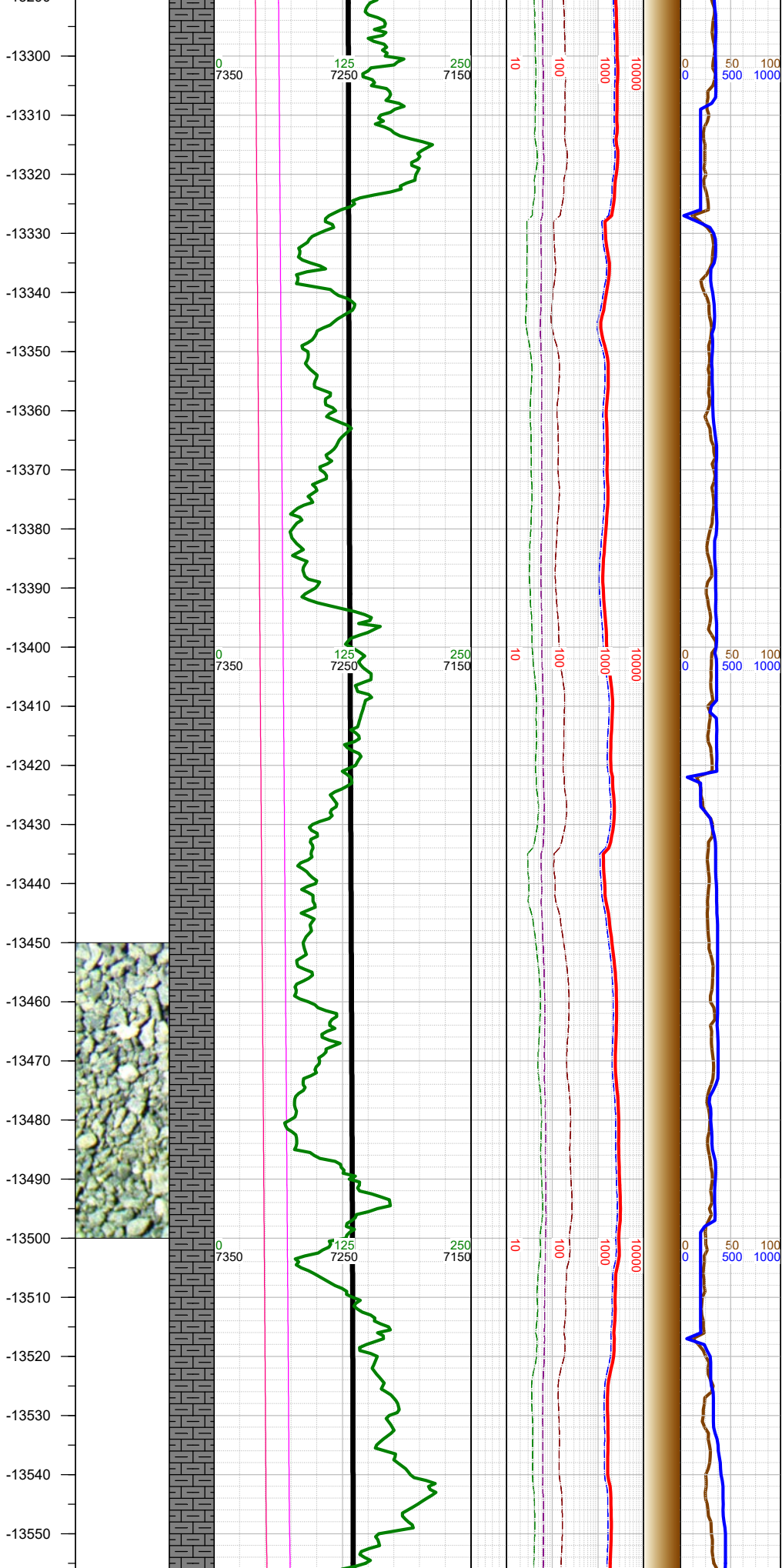
-13114 INC
91.23, AZM
88.86, TVD
7248.9

-13126 Fault:
66' down-throw;
went from
Codell to C Marl

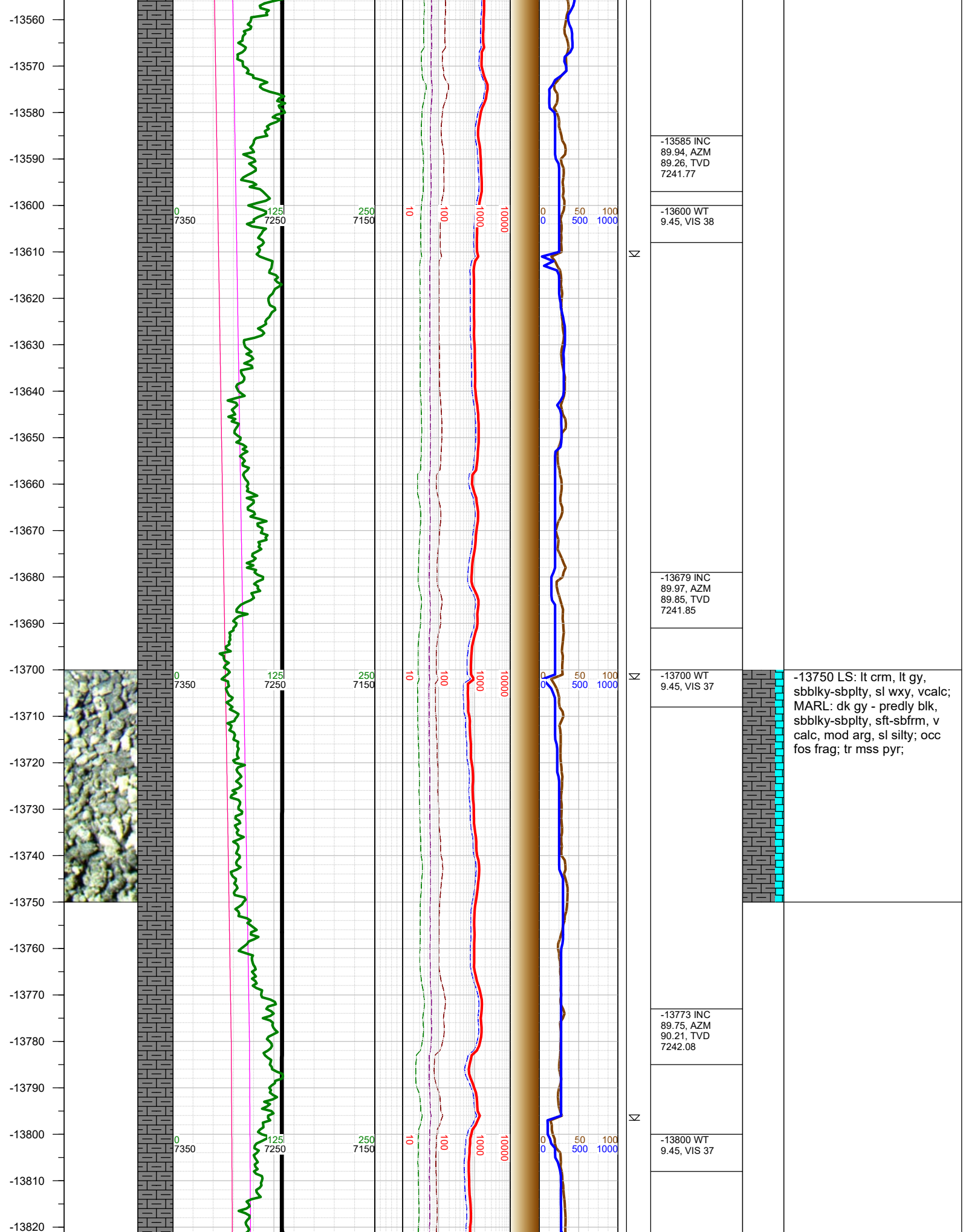
-13200 WT 9.5,
VIS 36

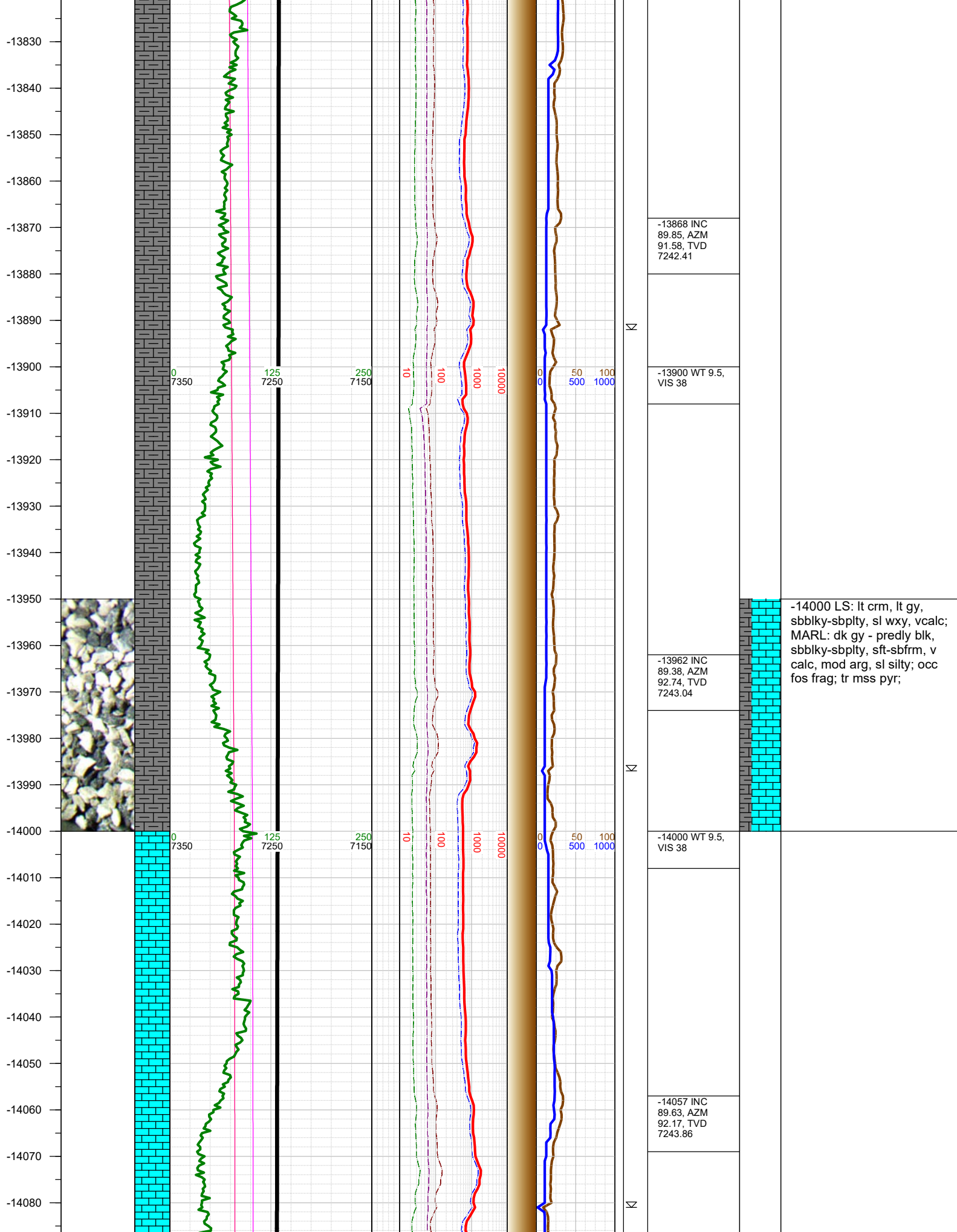
-13208 INC
91.29, AZM
88.69, TVD
7246.84

-13250 MARL: dk gy-blk,
sbbiky-sbplty, sft-sbfrm,
mod calc, sl arg; CHK: lt-
med gy-brn, sft-sbfrm,
sbbiky, mot, v calc, rthy
lstr; tr fos frag; tr forams; tr
pyr;

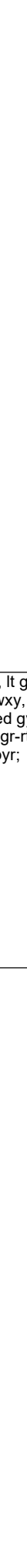
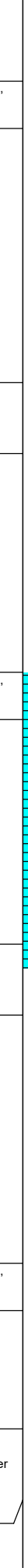
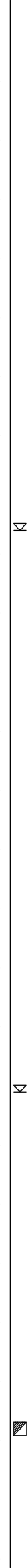
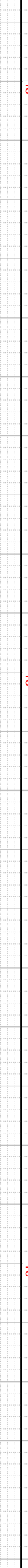
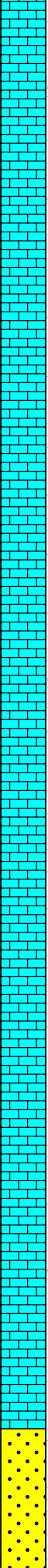


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|---|---------------------------|---|
| -13302 INC 90.28, AZM 88.07, TVD 7245.55 | | |
| | -13320 WT 9.5, VIS 36 | |
| | | |
| -13396 INC 91.17, AZM 88.32, TVD 7244.36 | | |
| | -13410 WT 9.5, VIS 36 | |
| | | |
| | | -13500 MARL: dk gy-blk, sbbkly-sbplty, sft-sbfrm, mod calc, sl arg; CHK: lt- med gy-brn, sft-sbfrm, sbbkly, mot, v calc, rthy lstr; tr fos frag; tr forams; tr pyr; |
| -13491 INC 91.01, AZM 89.25, TVD 7242.55 | | |
| | -13510 WT 9.45, VIS 38 | |
| | | |





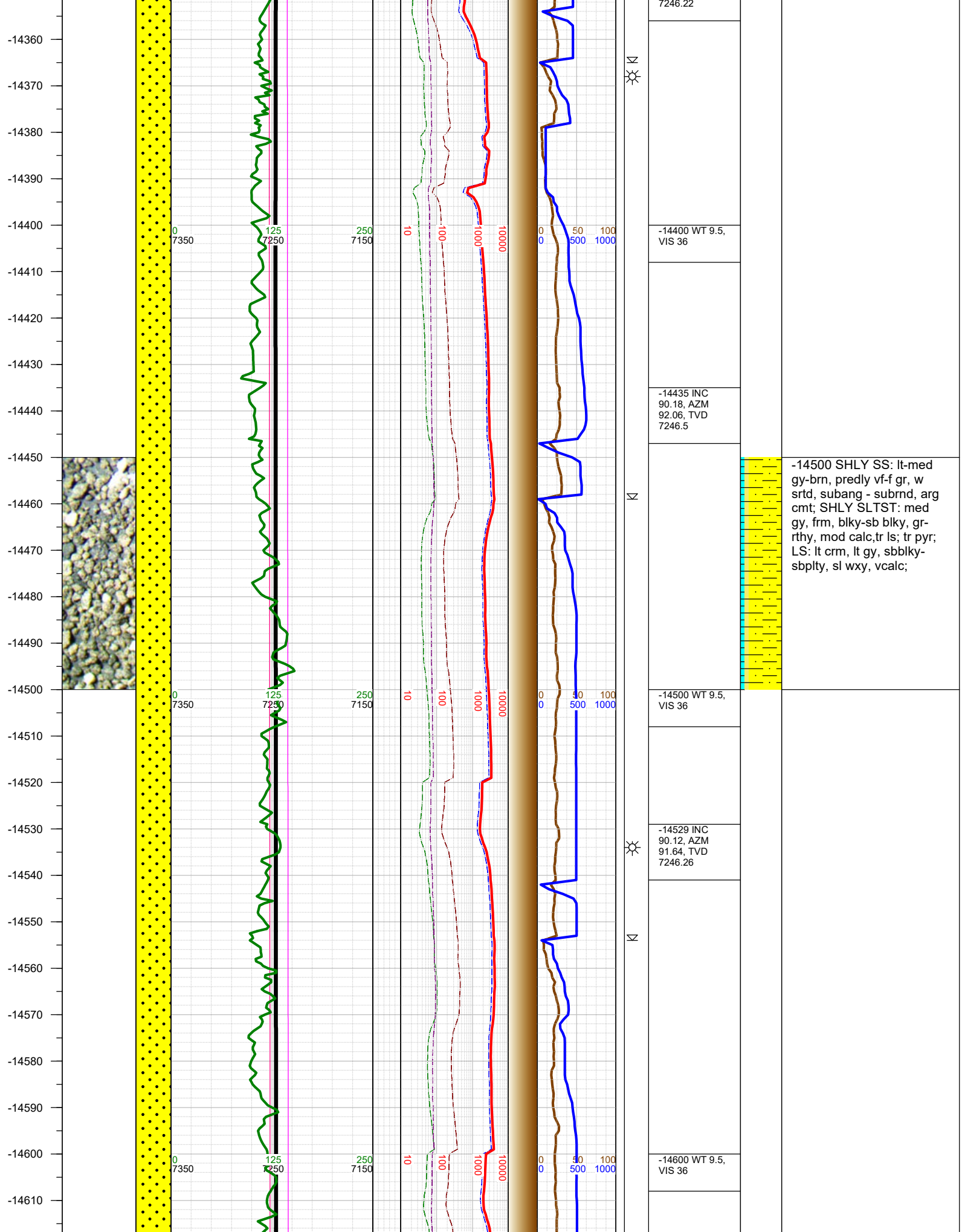
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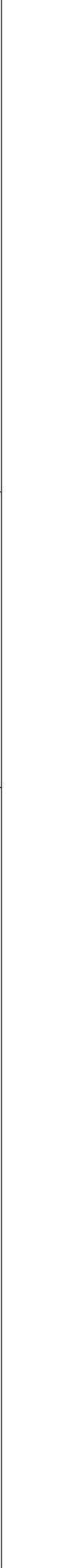
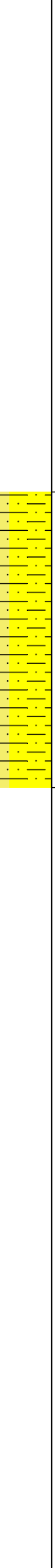
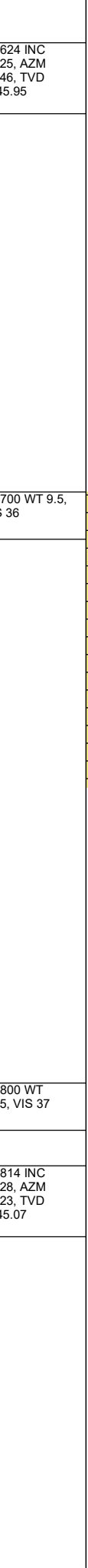
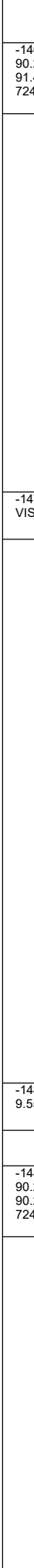
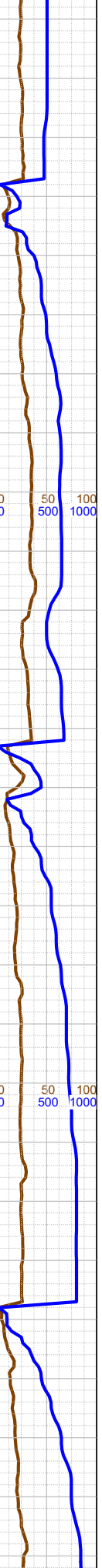
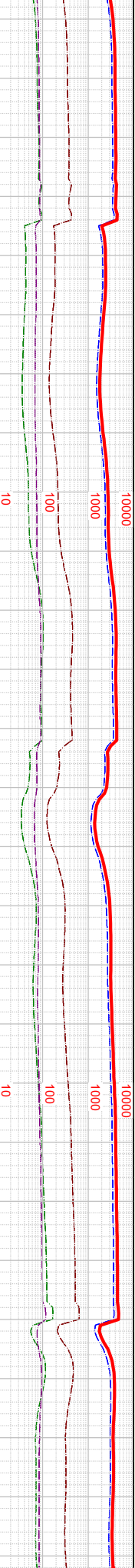
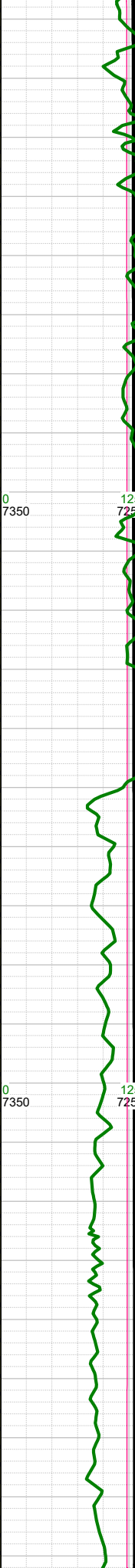
| |
|---|
| -14100 WT 9.4, VIS 36 |
| -14151 INC 89.35, AZM 90.84, TVD 7244.7 |
| -14200 WT 9.4, VIS 35 |
| -14246 INC 89.66, AZM 91.19, TVD 7245.52 |
| -14300 WT 9.5, VIS 36 |
| -14328 Fault: 30' up-throw; went from upper Ft Hays to Codell |
| -14340 INC 89.48, AZM 91.5, TVD |



-14250 LS: lt crm, lt gy,
sbbiky-sbpity, sl wxy, vcalc;
SHLY SLTST: med gy,
frm, blkly-sb blkly, gr-rthy,
mod calc,tr ls; tr pyr;



-14620
-14630
-14640
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-14680
-14690
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-14850
-14860
-14870
-14880



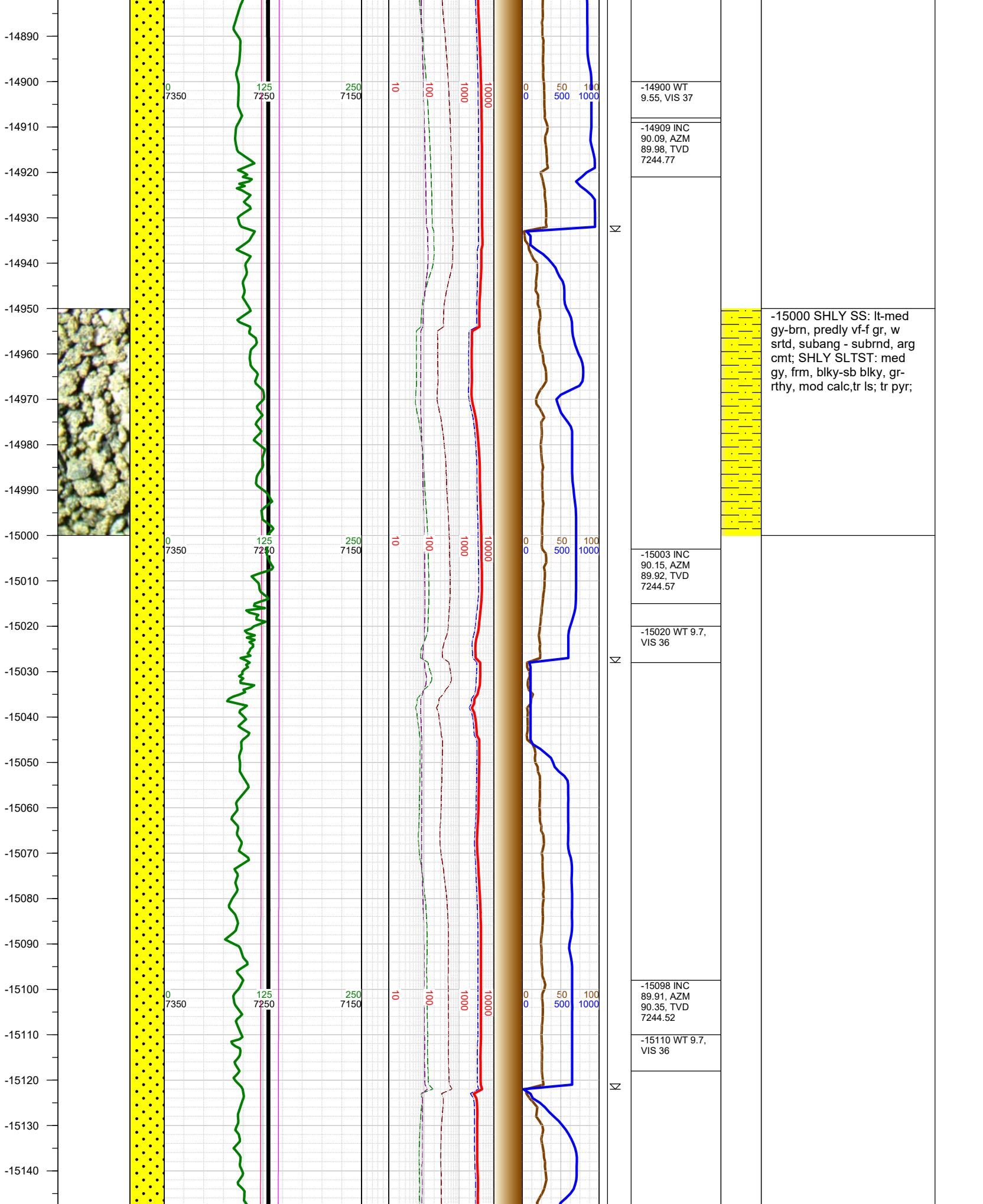
-14624 INC
90.25, AZM
91.46, TVD
7245.95

-14700 WT 9.5,
VIS 36

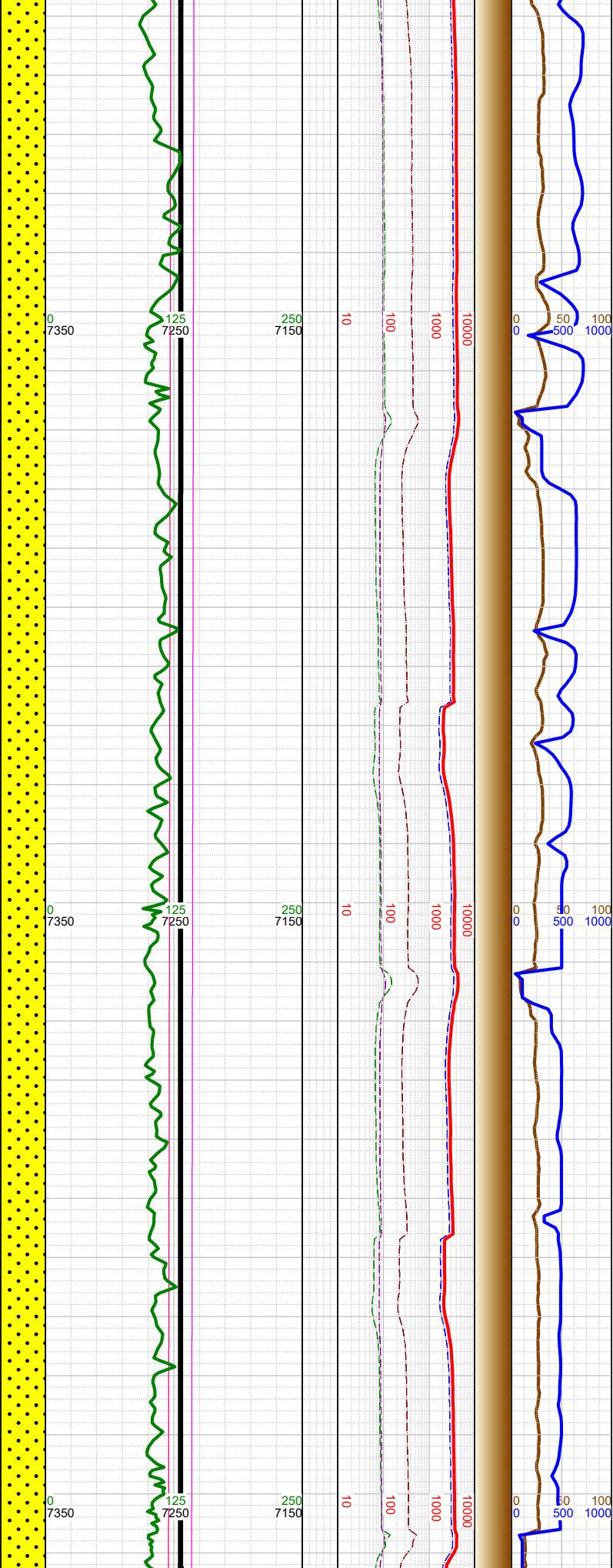
-14800 WT
9.55, VIS 37

-14814 INC
90.28, AZM
90.23, TVD
7245.07

-14750 SHLY SS: lt-med
gy-brn, predly vf-f gr, w
srtd, subang - subrnd, arg
cmt; SHLY SLTST: med
gy, frm, blk-y-sb blk-y, gr-
rthy, mod calc, tr ls; tr pyr;



-15150
-15160
-15170
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-15190
-15200
-15210
-15220
-15230
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-15250
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-15280
-15290
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-15380
-15390
-15400
-15410

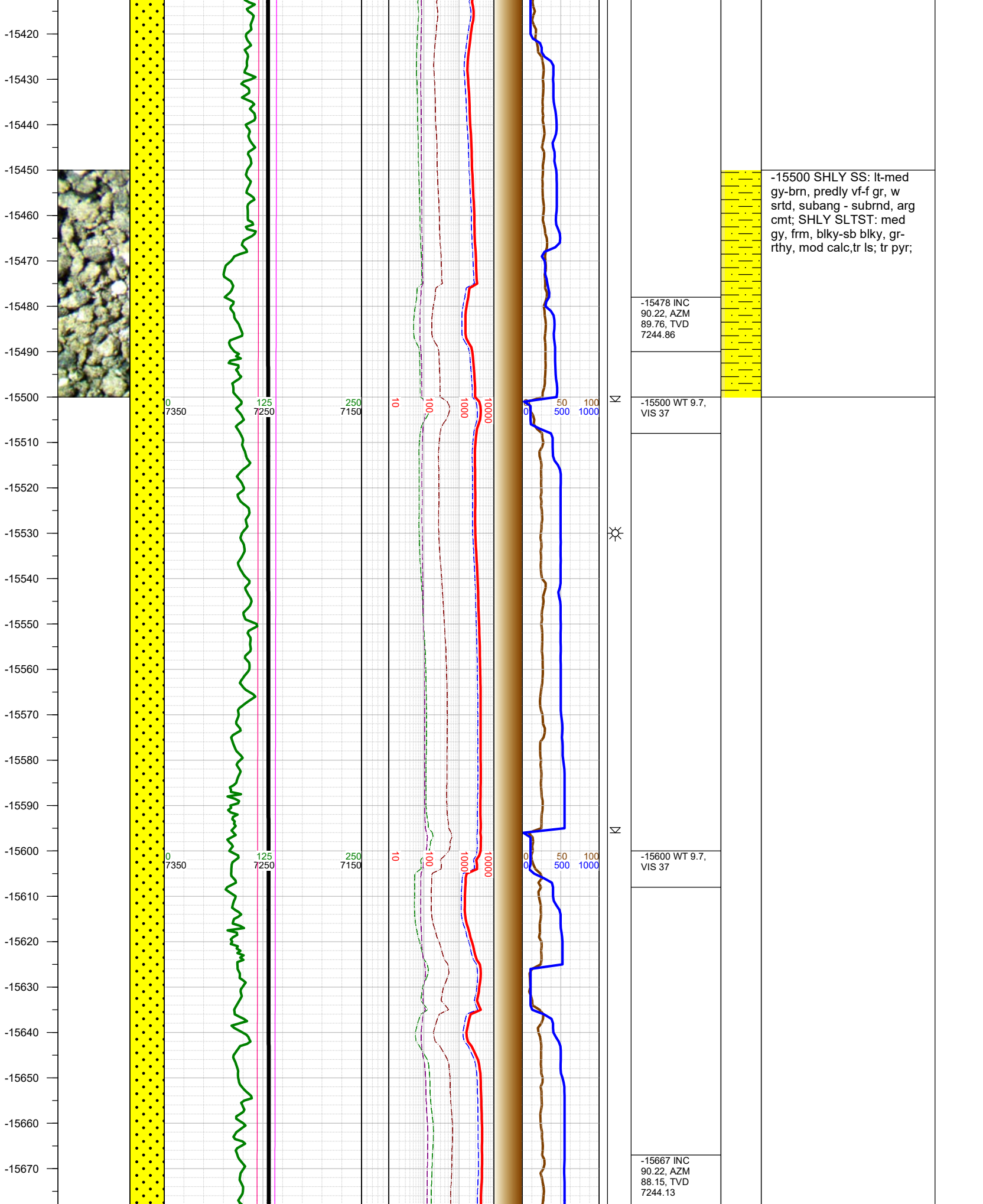


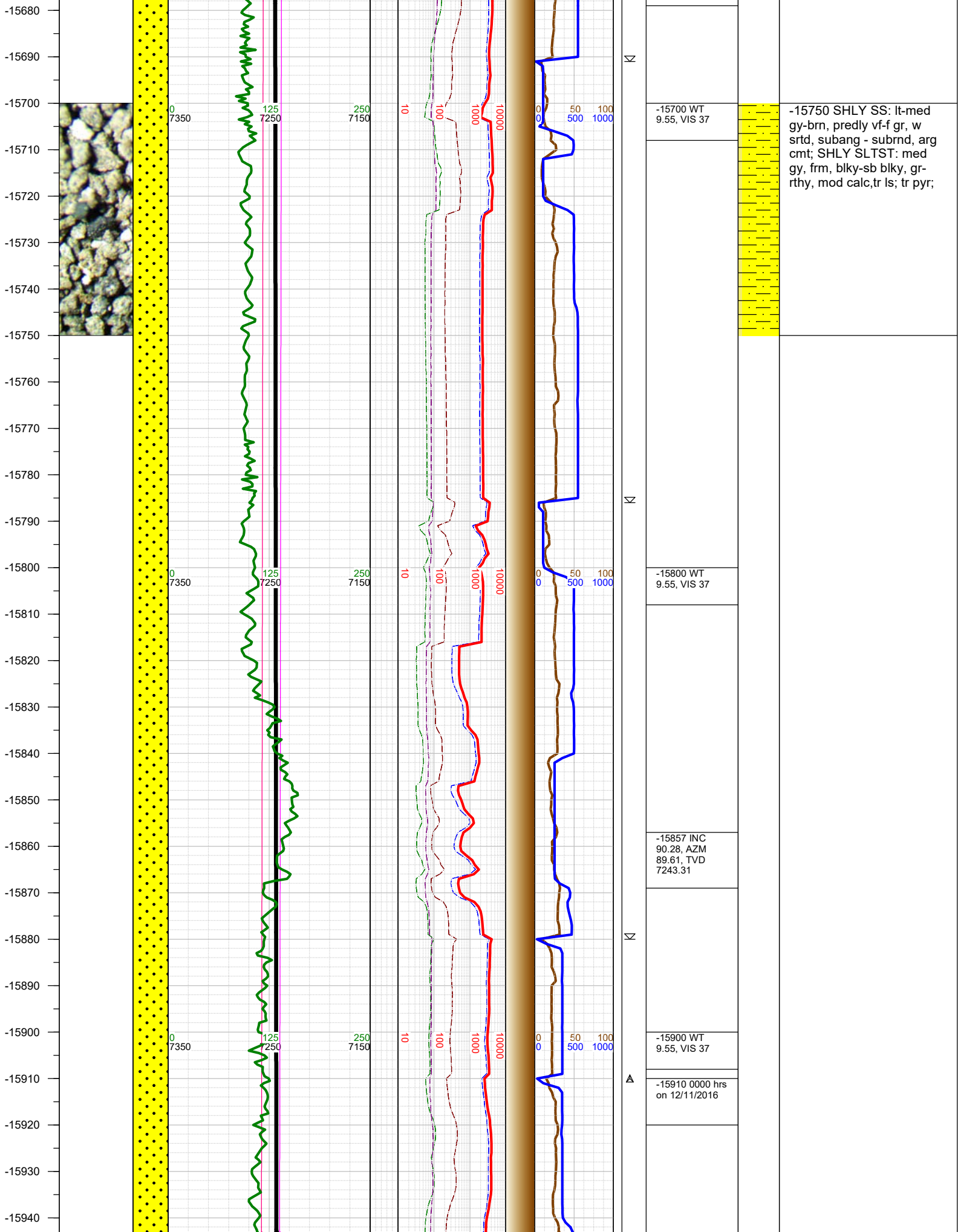
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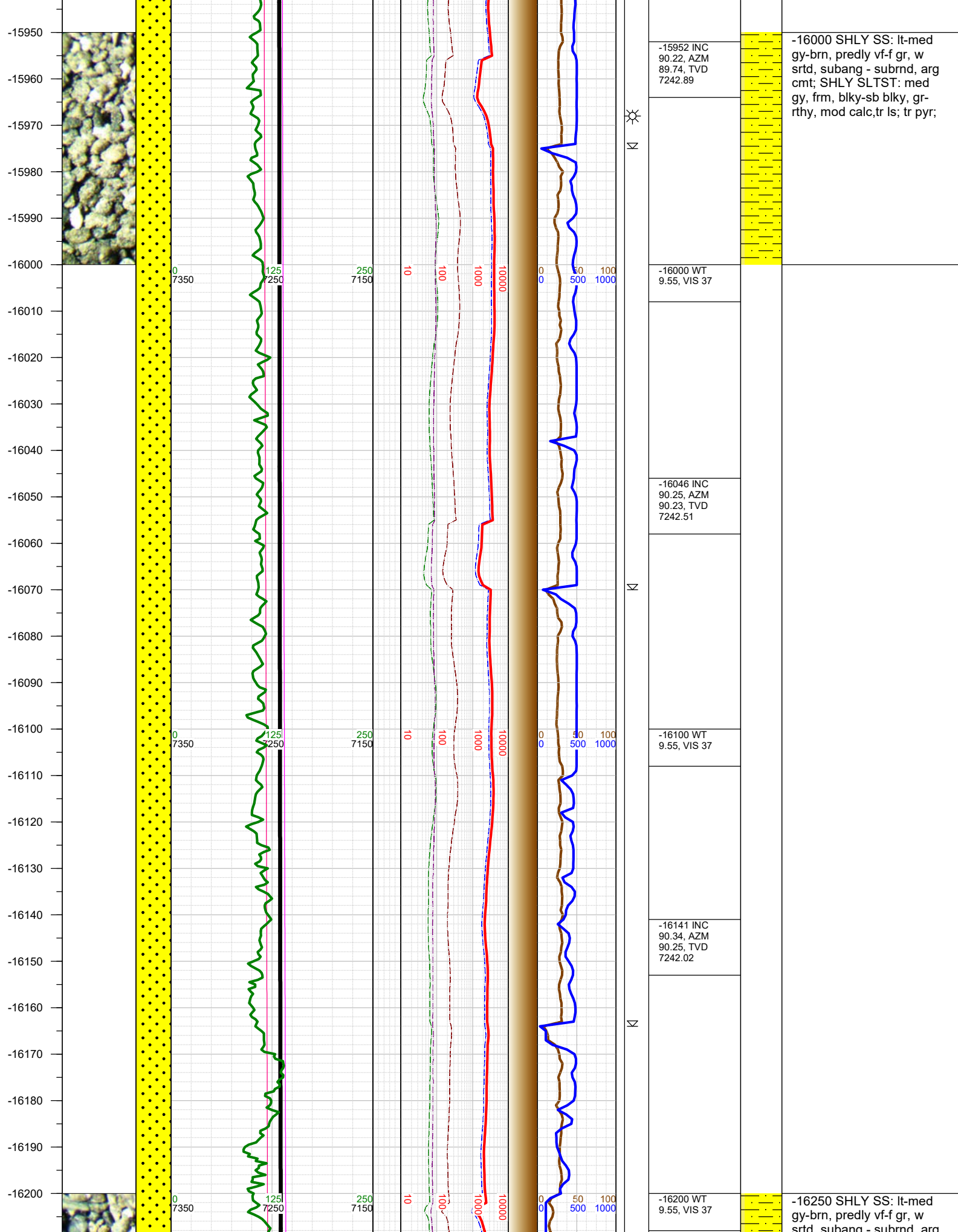
| |
|---|
| -15194 INC 89.85, AZM 90.21, TVD 7244.72 |
| -15210 WT 9.7, VIS 36 |
| -15288 INC 89.97, AZM 89.96, TVD 7244.87 |
| -15300 WT 9.7, VIS 36 |
| -15383 INC 89.91, AZM 90.38, TVD 7244.97 |
| -15400 WT 9.7, VIS 36 |

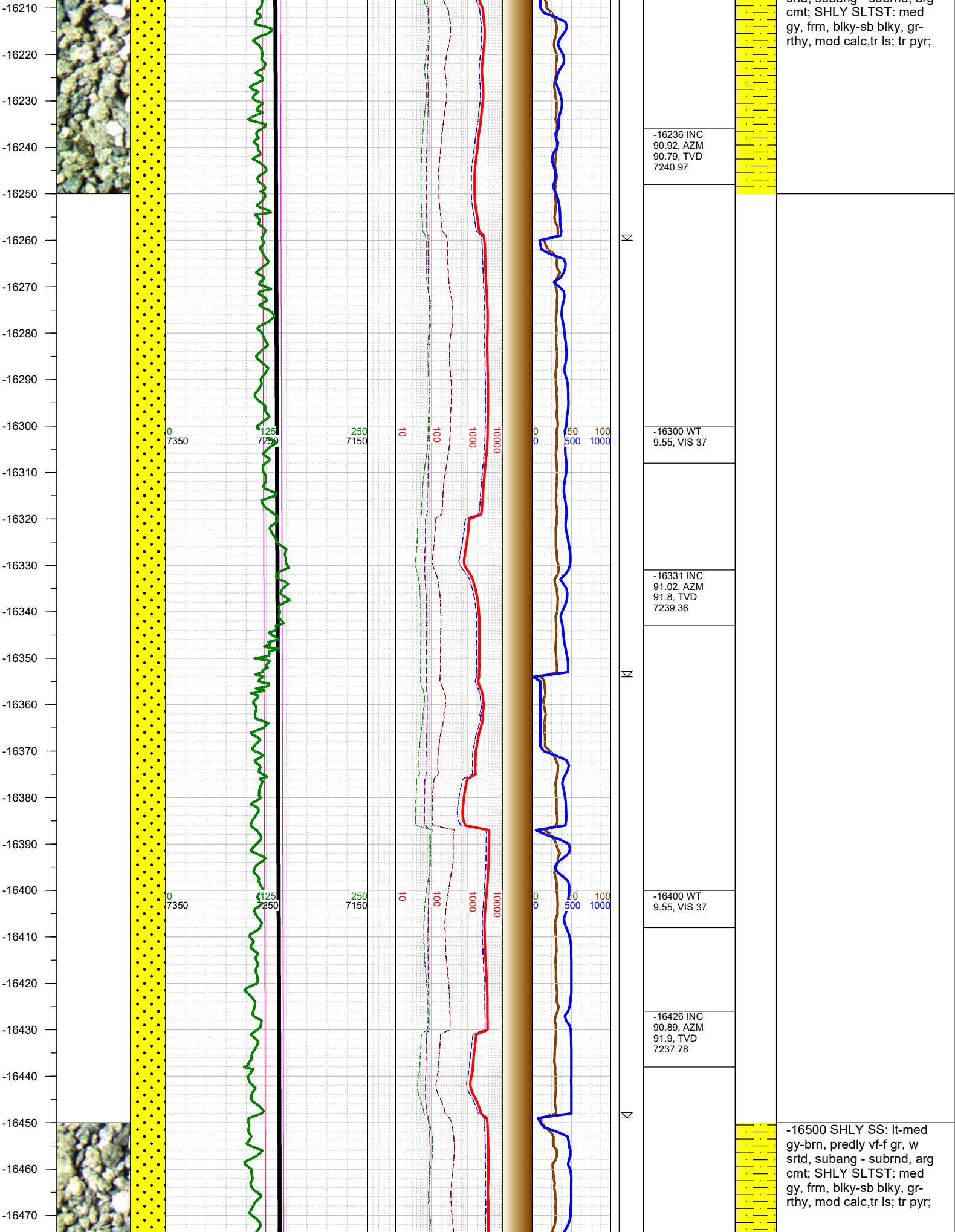


-15250 SHLY SS: lt-med
gy-brn, predly vf-f gr, w
srtd, subang - subrnd, arg
cmt; SHLY SLTST: med
gy, frm, blkly-sb blkly, gr-
rthy, mod calc,tr ls; tr pyr;

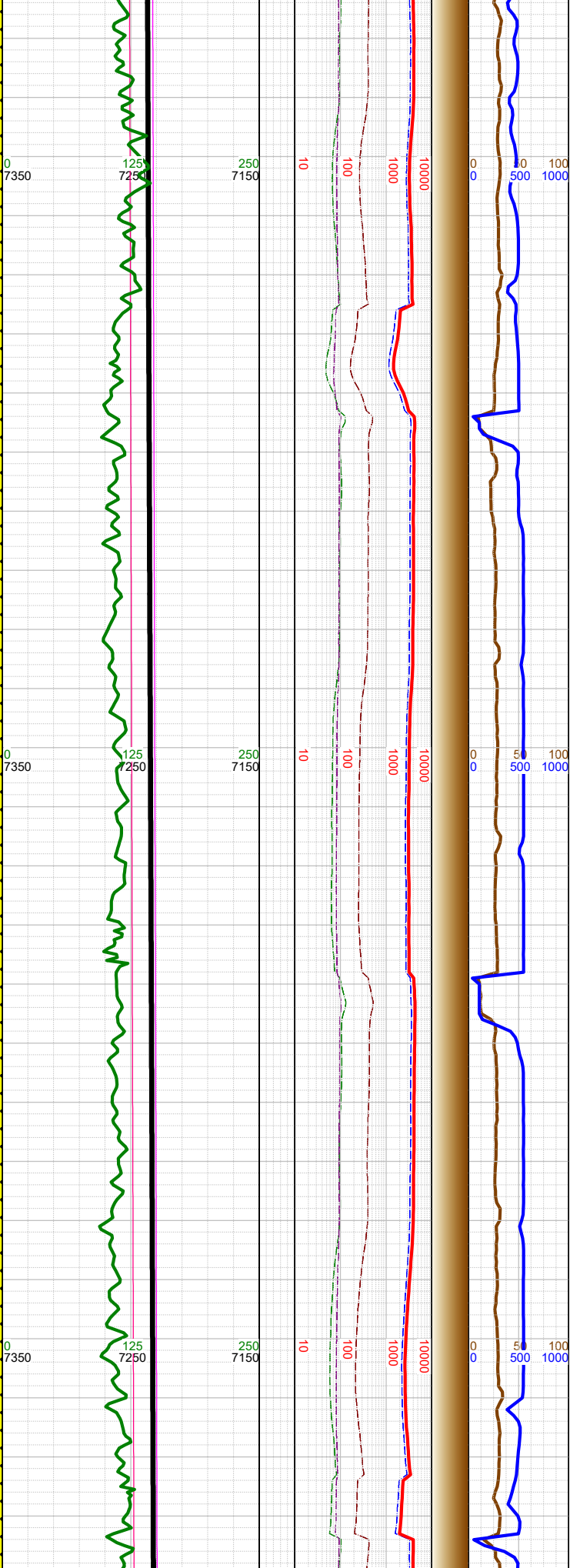
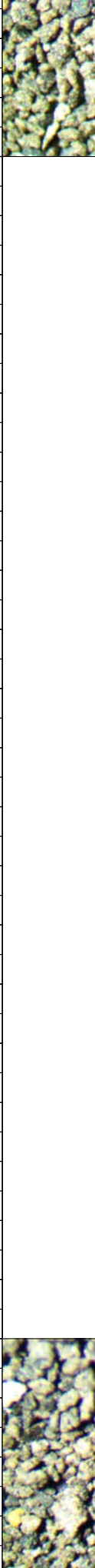








-16480
-16490
-16500
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-16720
-16730

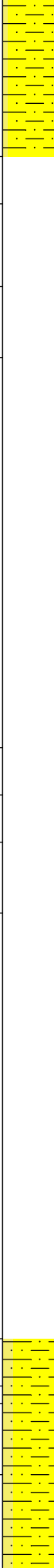


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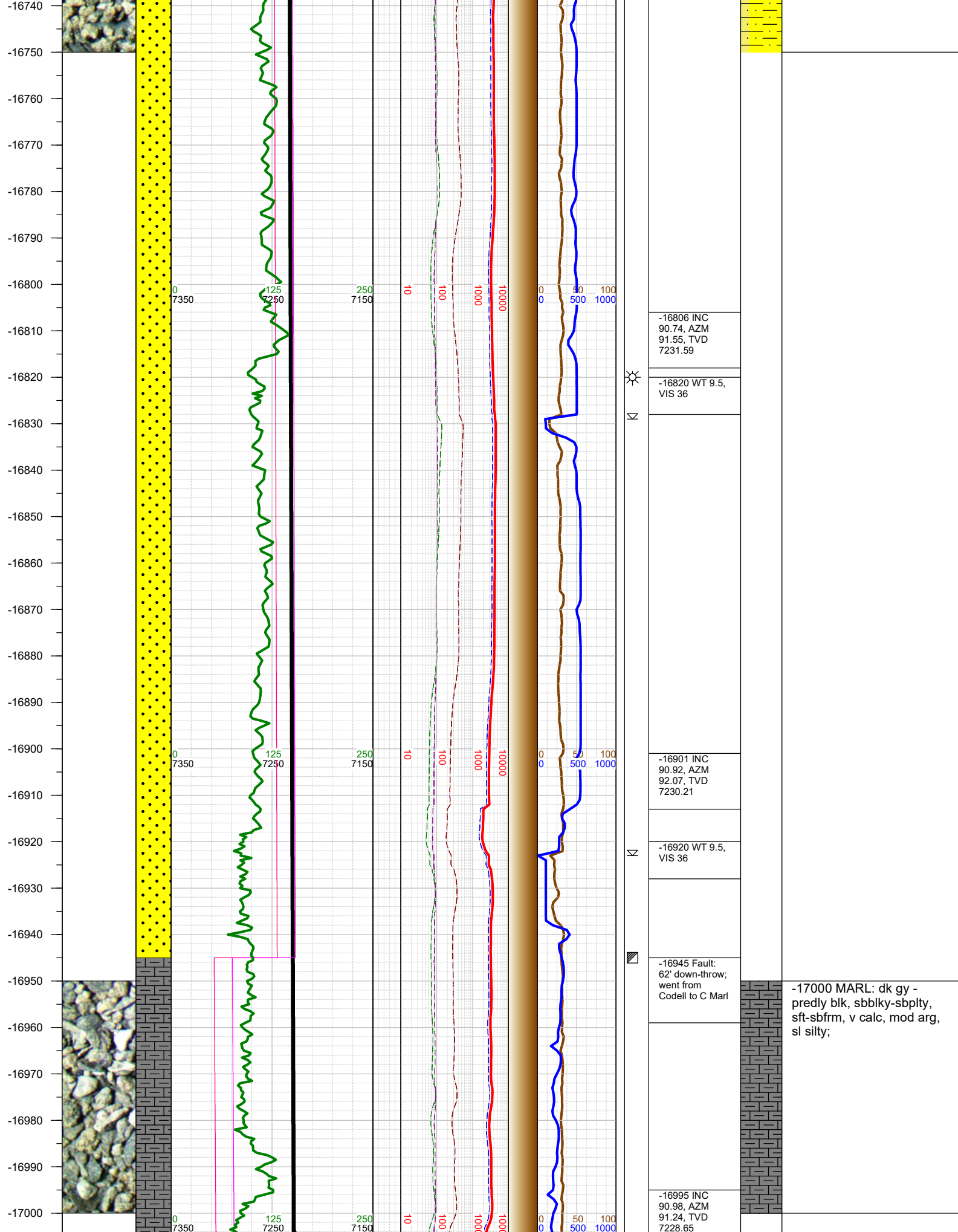
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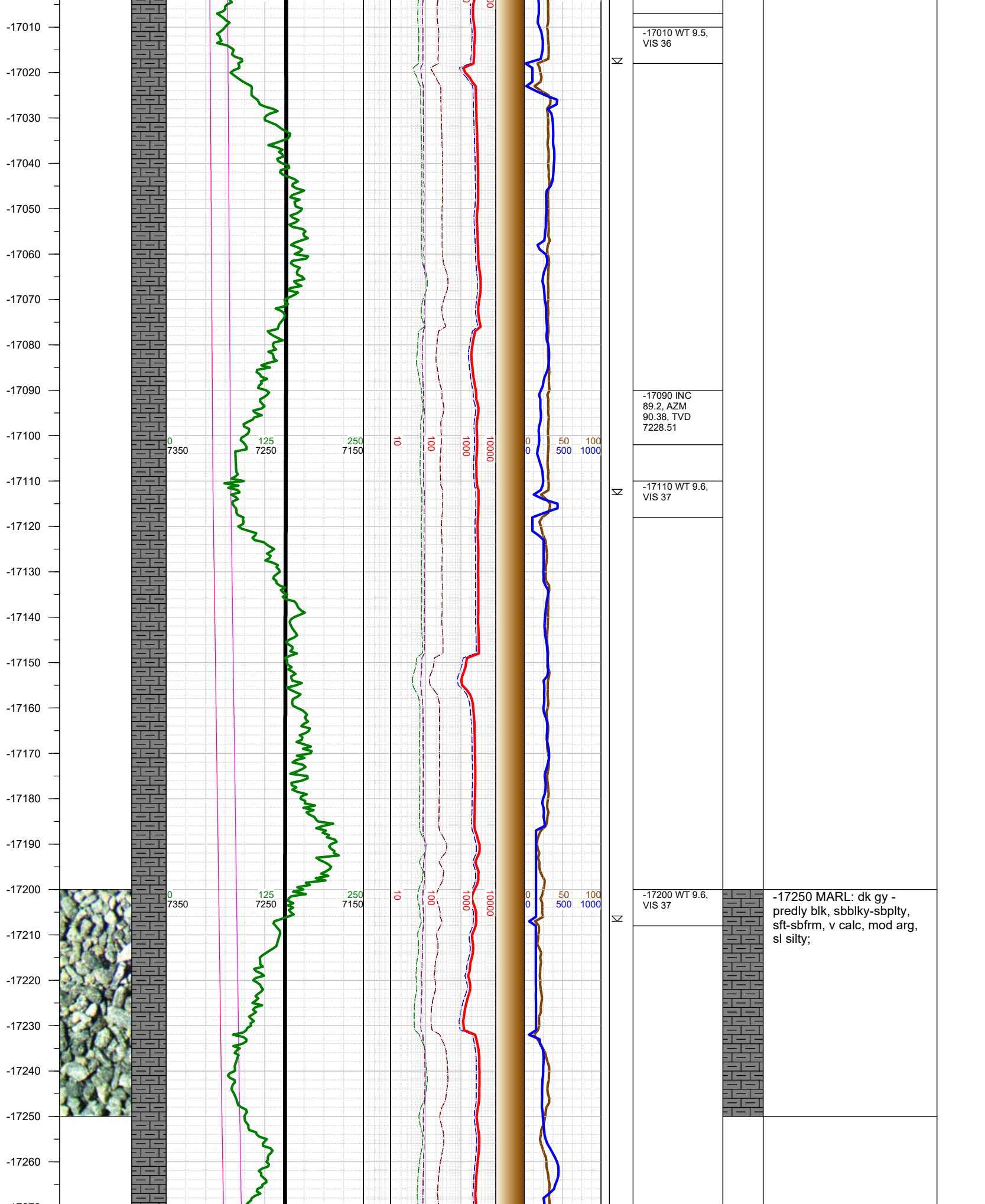
⌵

| |
|---|
| -16500 WT 9.55, VIS 37 |
| -16522 INC 90.95, AZM 91.13, TVD 7236.24 |
| -16600 WT 9.55, VIS 37 |
| -16616 INC 91.08, AZM 90.82, TVD 7234.57 |
| -16700 WT 9.55, VIS 37 |
| -16711 INC 90.89, AZM 91.42, TVD 7232.94 |

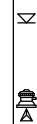
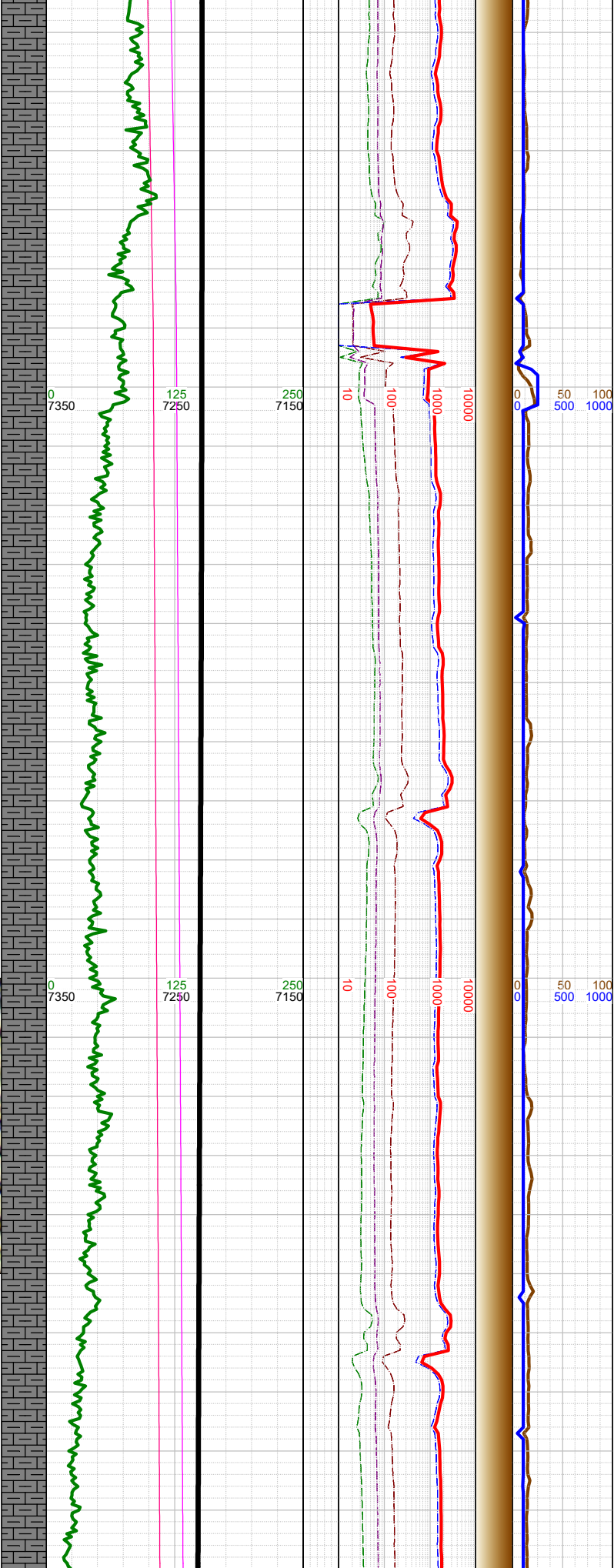


-16750 SHLY SS: lt-med
gy-brn, predly vf-f gr, w
srtd, subang - subrnd, arg
cmt; SHLY SLTST: med
gy, frm, blk-y-sb blk-y, gr-
rthy, mod calc, tr ls; tr pyr;





-17540
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-17670
-17680
-17690
-17700
-17710
-17720
-17730
-17740
-17750
-17760
-17770
-17780
-17790
-17800



-17563 INC
89.94, AZM
87.65, TVD
7228.84

-17596 TOO
for MWD.
Resumed
drilling at 0600
hrs on
12/12/2016. Bit
#3 - HCC
AT505F, 5x15,
8.5"

-17596 0000 hrs
on 12/12/2016

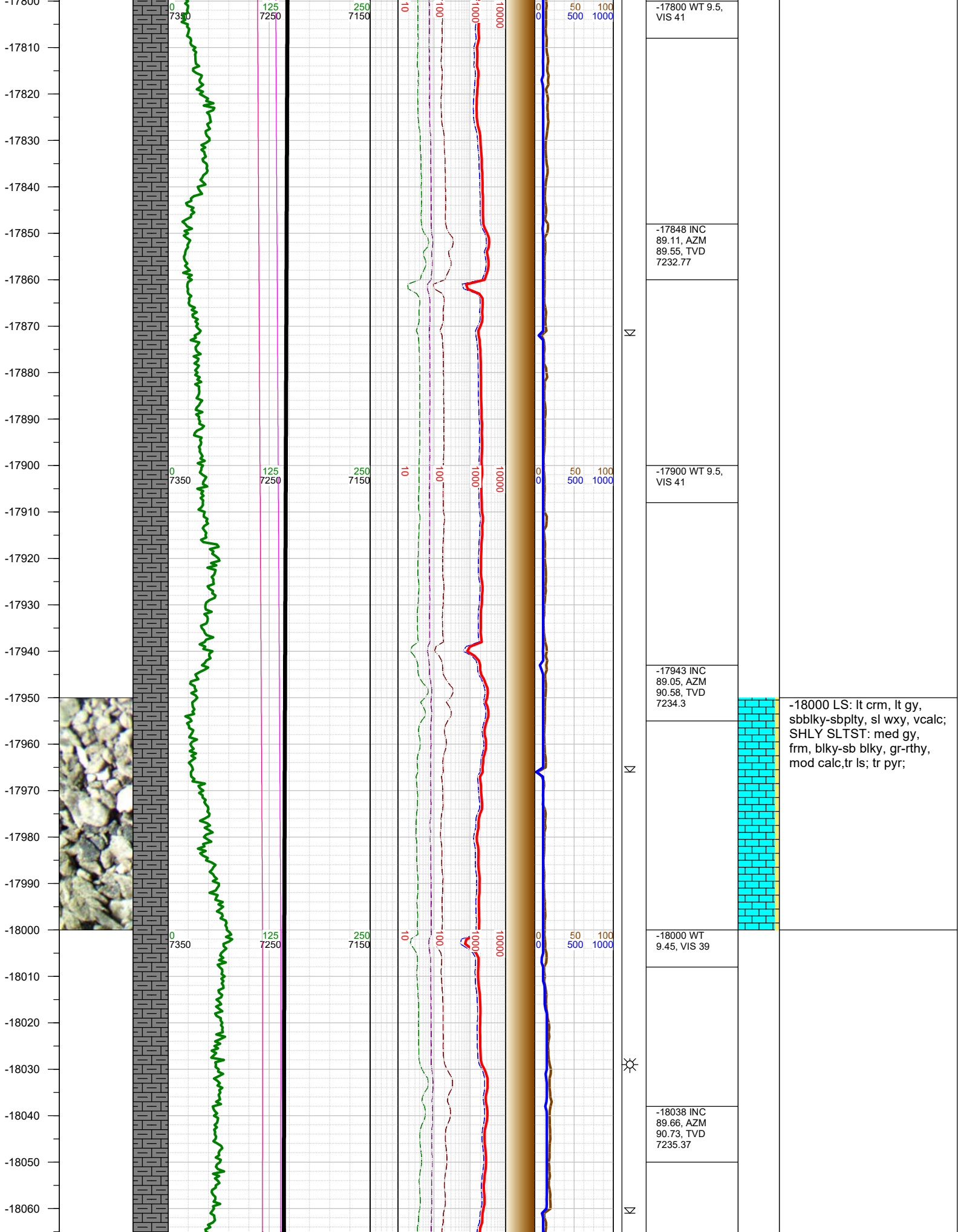
-17630 WT 9.5,
VIS 38

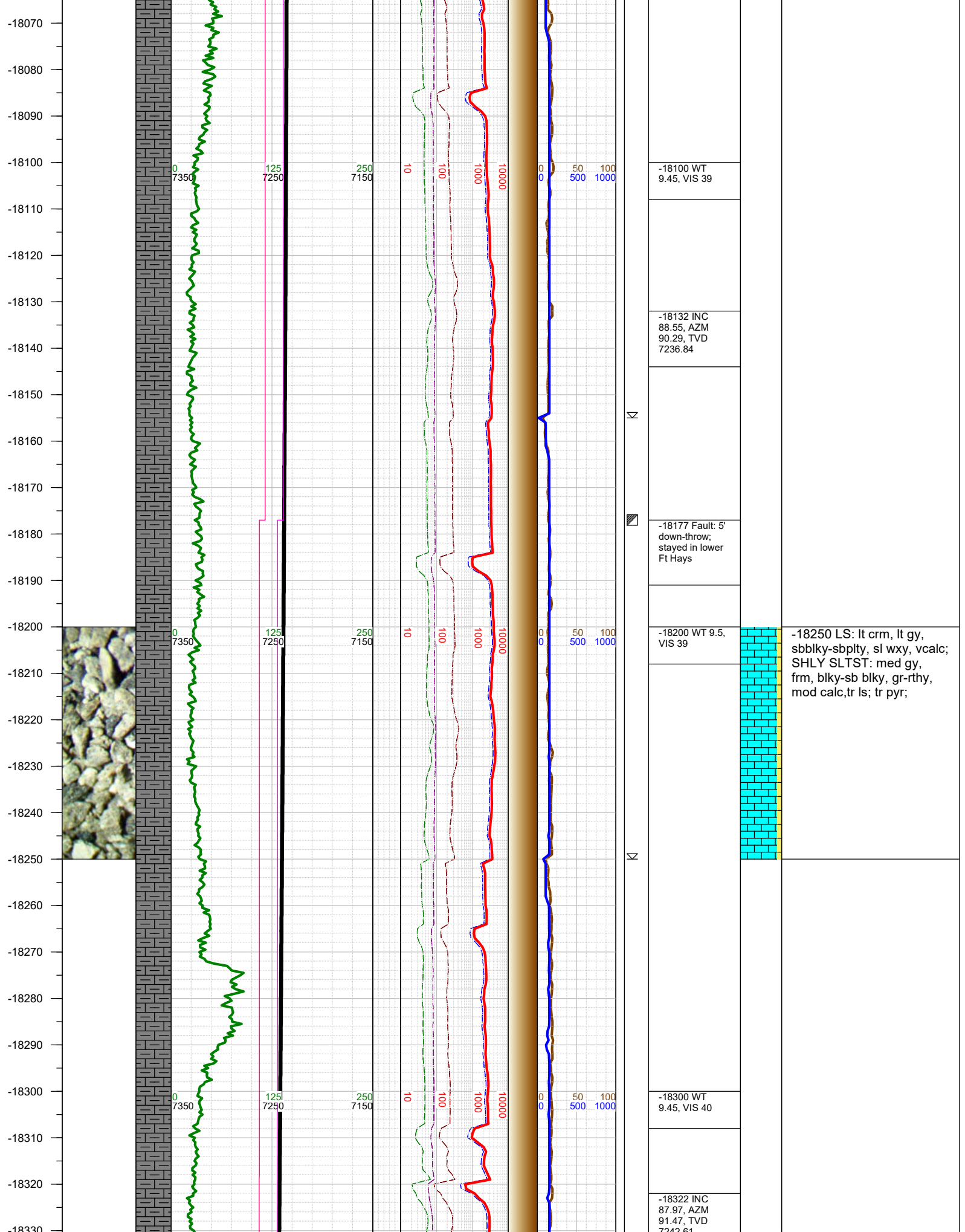
-17659 INC
89.08, AZM
88.31, TVD
7229.66

-17700 WT
9.55, VIS 45

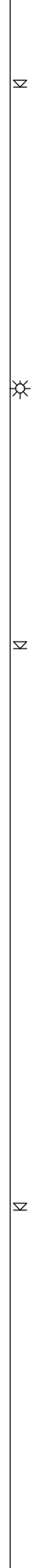
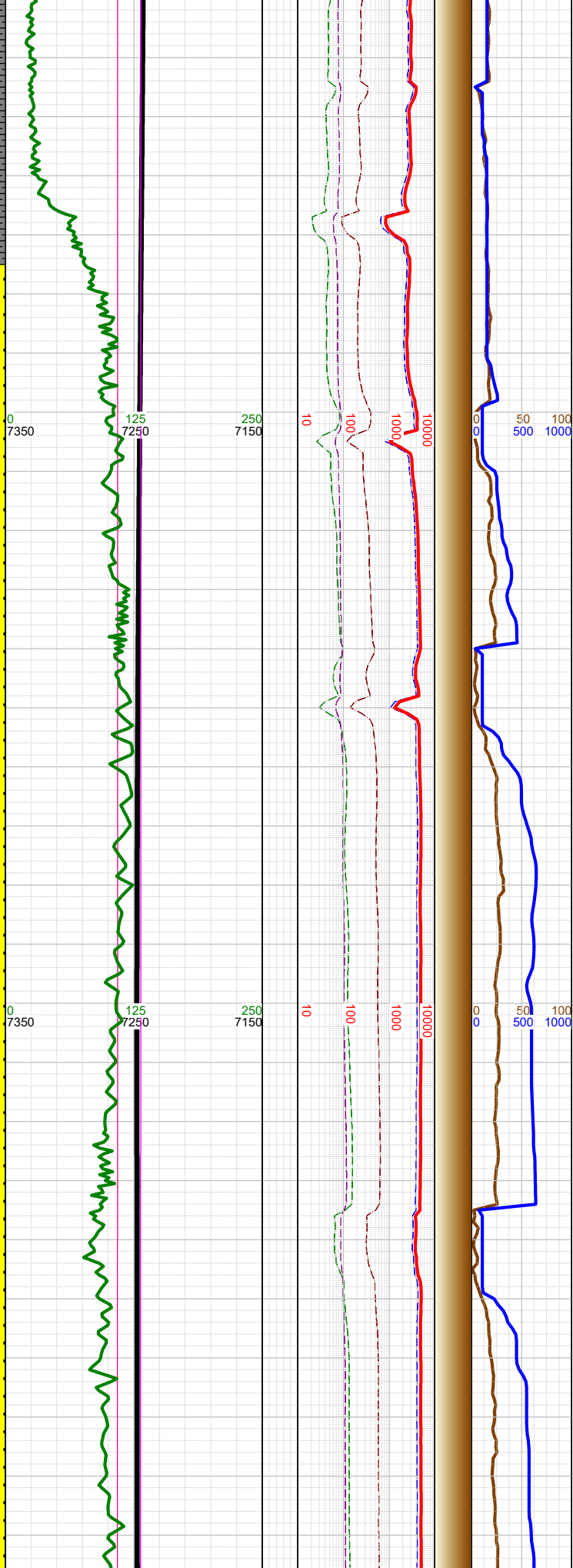
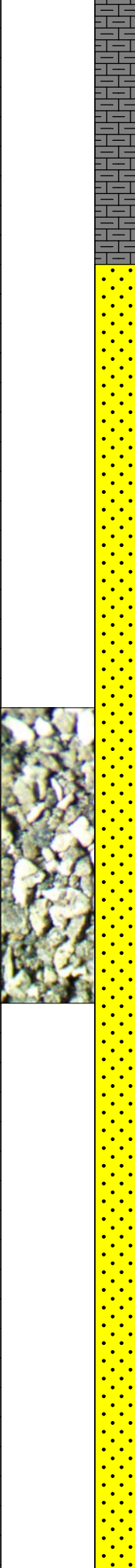
-17754 INC
89.02, AZM
89.04, TVD
7231.24

-17750 LS: lt crm, lt gy,
sbbiky-sbplty, sl wxy, vcalc;
MARL: dk gy - predly blk,
sbbiky-sbplty, sft-sbfrm, v
calc, mod arg, sl silty; occ
fos frag; tr mss pyr;





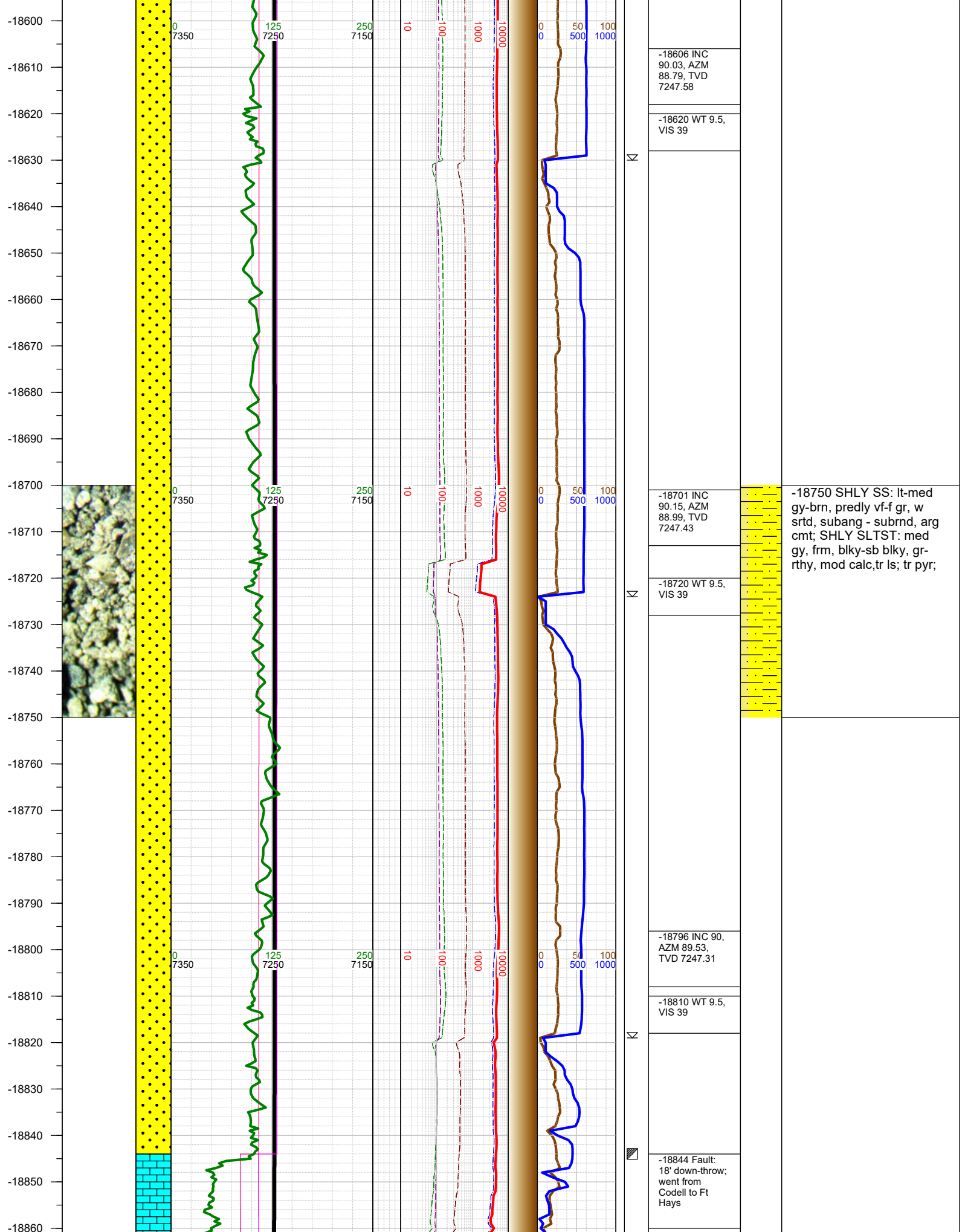
-18340
-18350
-18360
-18370
-18380
-18390
-18400
-18410
-18420
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-18450
-18460
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-18580
-18590



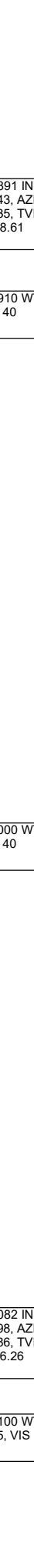
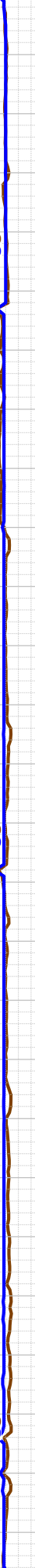
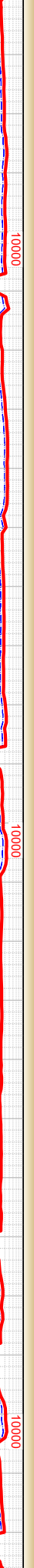
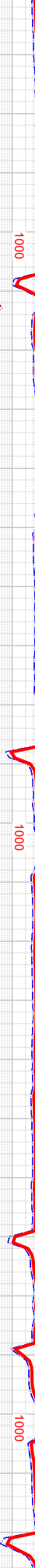
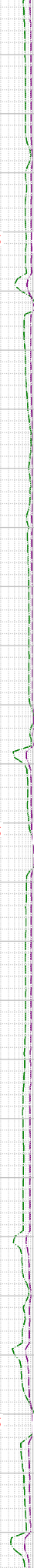
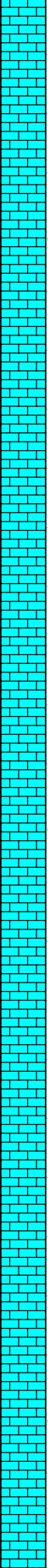
| | |
|---|---------|
| | 7242.01 |
| -18400 WT 9.45, VIS 40 | |
| -18417 INC 87.88, AZM 91.05, TVD 7246.05 | |
| -18500 WT 9.5, VIS 39 | |
| -18512 INC 90.12, AZM 88.97, TVD 7247.7 | |



-18500 SHLY SS: lt-med
gy-brn, predly vf-f gr, w
srtd, subang - subrnd, arg
cmt; SHLY SLTST: med
gy, frm, blk-y-sb blk-y, gr-
rthy, mod calc, tr ls; tr pyr;



-18870
-18880
-18890
-18900
-18910
-18920
-18930
-18940
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-18960
-18970
-18980
-18990
-19000
-19010
-19020
-19030
-19040
-19050
-19060
-19070
-19080
-19090
-19100
-19110
-19120



-18891 INC
88.43, AZM
90.35, TVD
7248.61

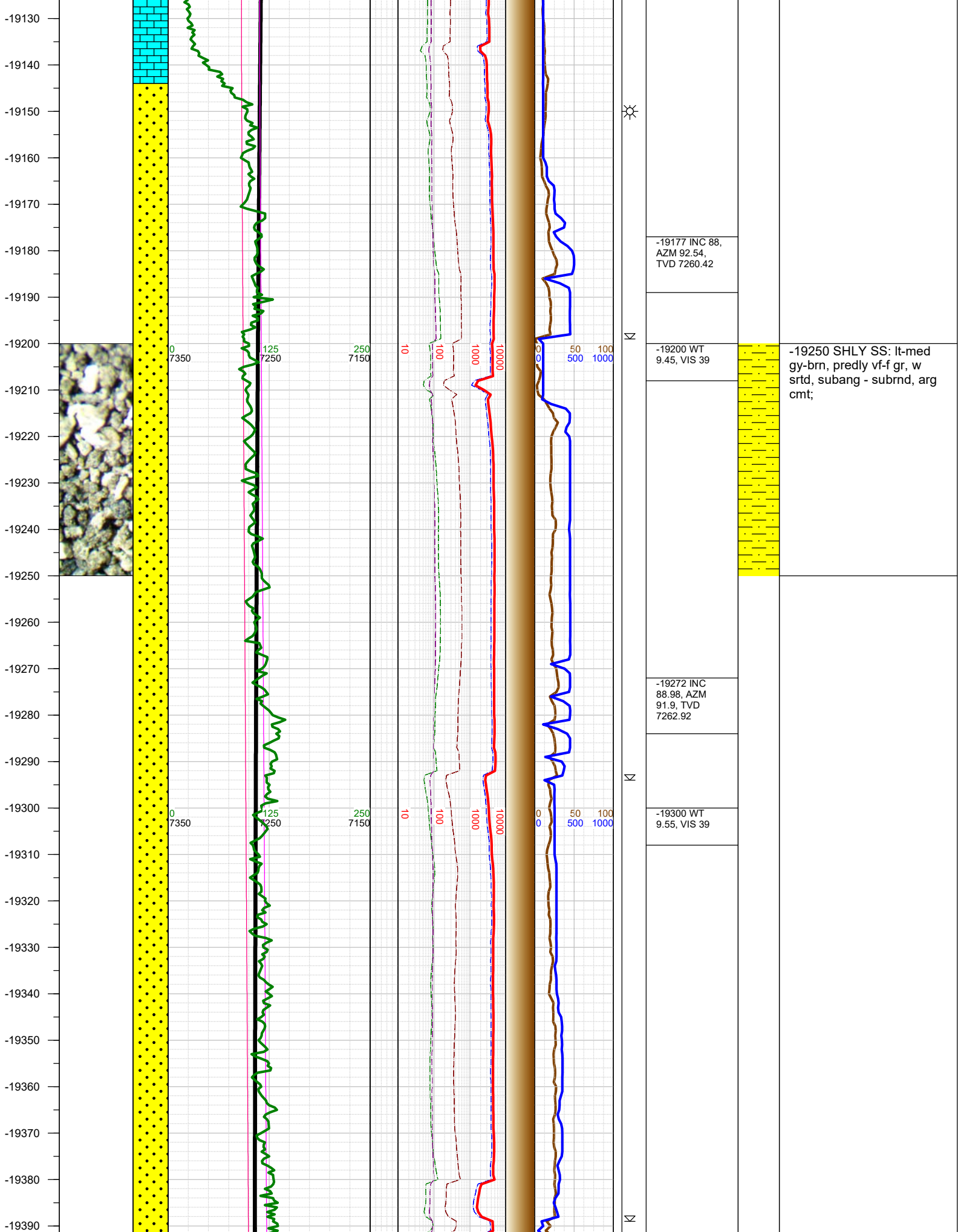
-18910 WT 9.7,
VIS 40

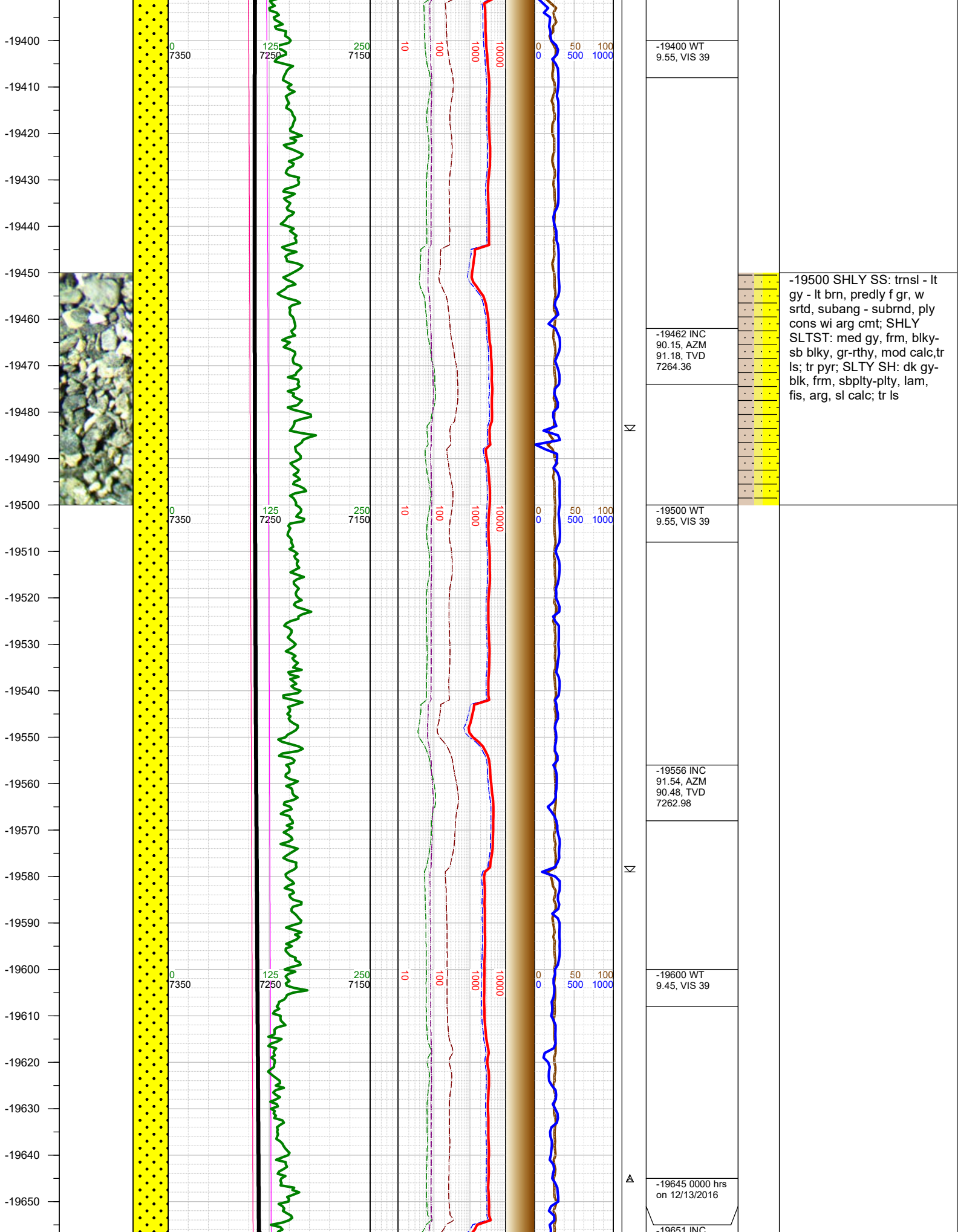
-19000 WT 9.7,
VIS 40

-19082 INC
86.98, AZM
92.86, TVD
7256.26

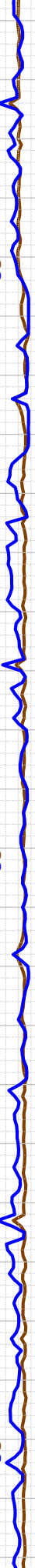
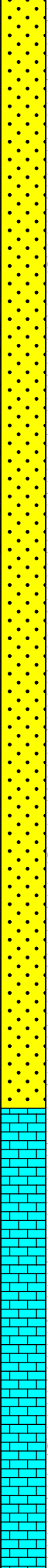
-19100 WT
9.55, VIS 39

-19000 LS: lt crm, lt gy,
sbbkly-sbplty, sl wxy, vcalc;
MARL: dk gy - predly blk,
sbbkly-sbplty, sft-sbfrm, v
calc, mod arg, sl silty; occ
fos frag; tr mss pyr;





-19660
-19670
-19680
-19690
-19700
-19710
-19720
-19730
-19740
-19750
-19760
-19770
-19780
-19790
-19800
-19810
-19820
-19830
-19840
-19850
-19860
-19870
-19880
-19890
-19900
-19910
-19920



91.57, AZM
88.96, TVD
7260.4

-19700 WT
9.45, VIS 39

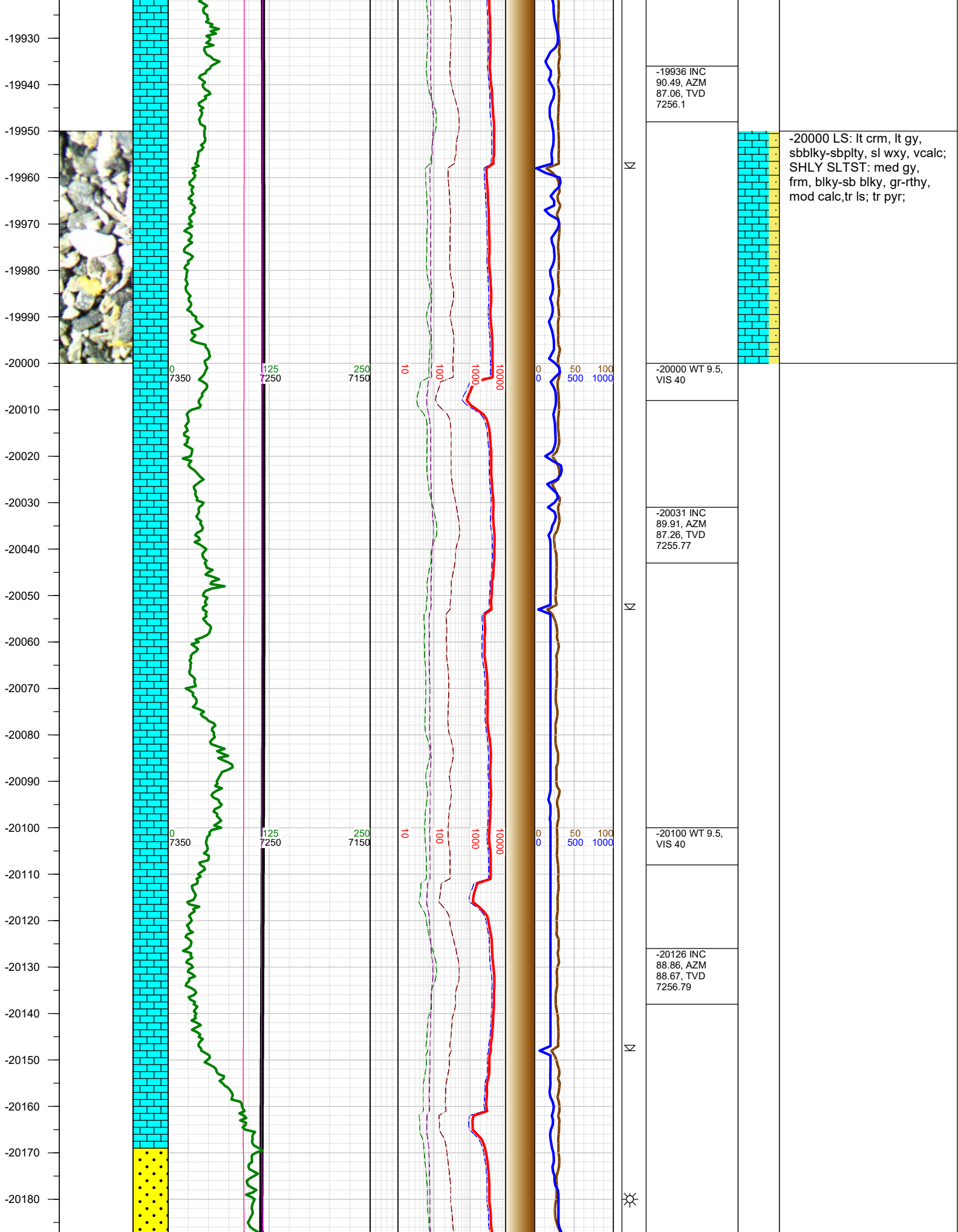
-19800 WT
9.45, VIS 39

-19841 INC
90.52, AZM
87.33, TVD
7256.93

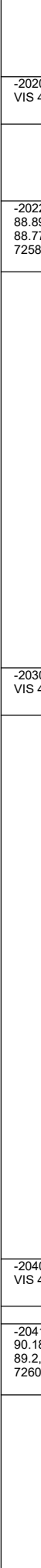
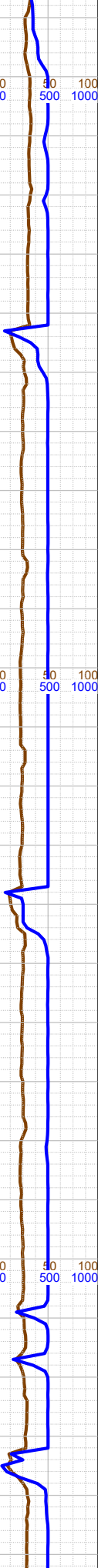
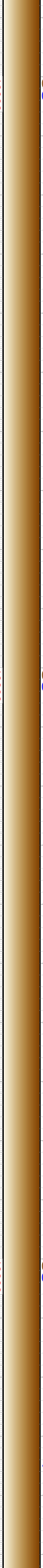
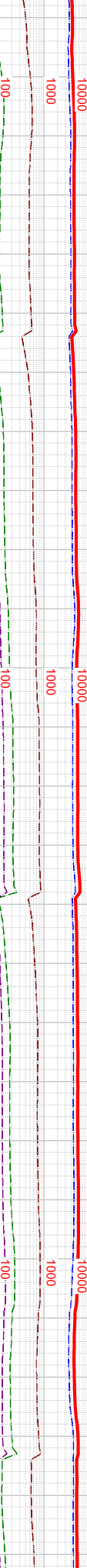
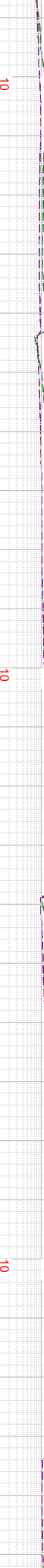
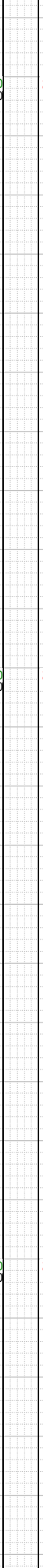
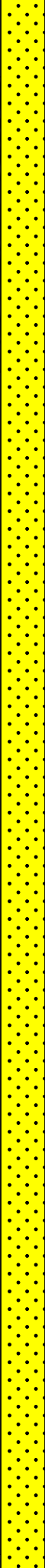
-19844 Fault:
11' down-throw;
went from
Codell to Ft
Hays

-19900 WT 9.5,
VIS 40

-19750 SHLY SS: trnsl - lt
gy - lt brn, predly f gr, w
srtd, subang - subrnd, ply
cons wi arg cmt; SHLY
SLTST: med gy, frm, blk-
sb blk, gr-rthy, mod calc, tr
ls; tr pyr; SLTY SH: dk gy-
blk, frm, sbply-plty, lam,
fis, arg, sl calc; tr ls



-20190
-20200
-20210
-20220
-20230
-20240
-20250
-20260
-20270
-20280
-20290
-20300
-20310
-20320
-20330
-20340
-20350
-20360
-20370
-20380
-20390
-20400
-20410
-20420
-20430
-20440
-20450



-20200 WT 9.5,
VIS 40

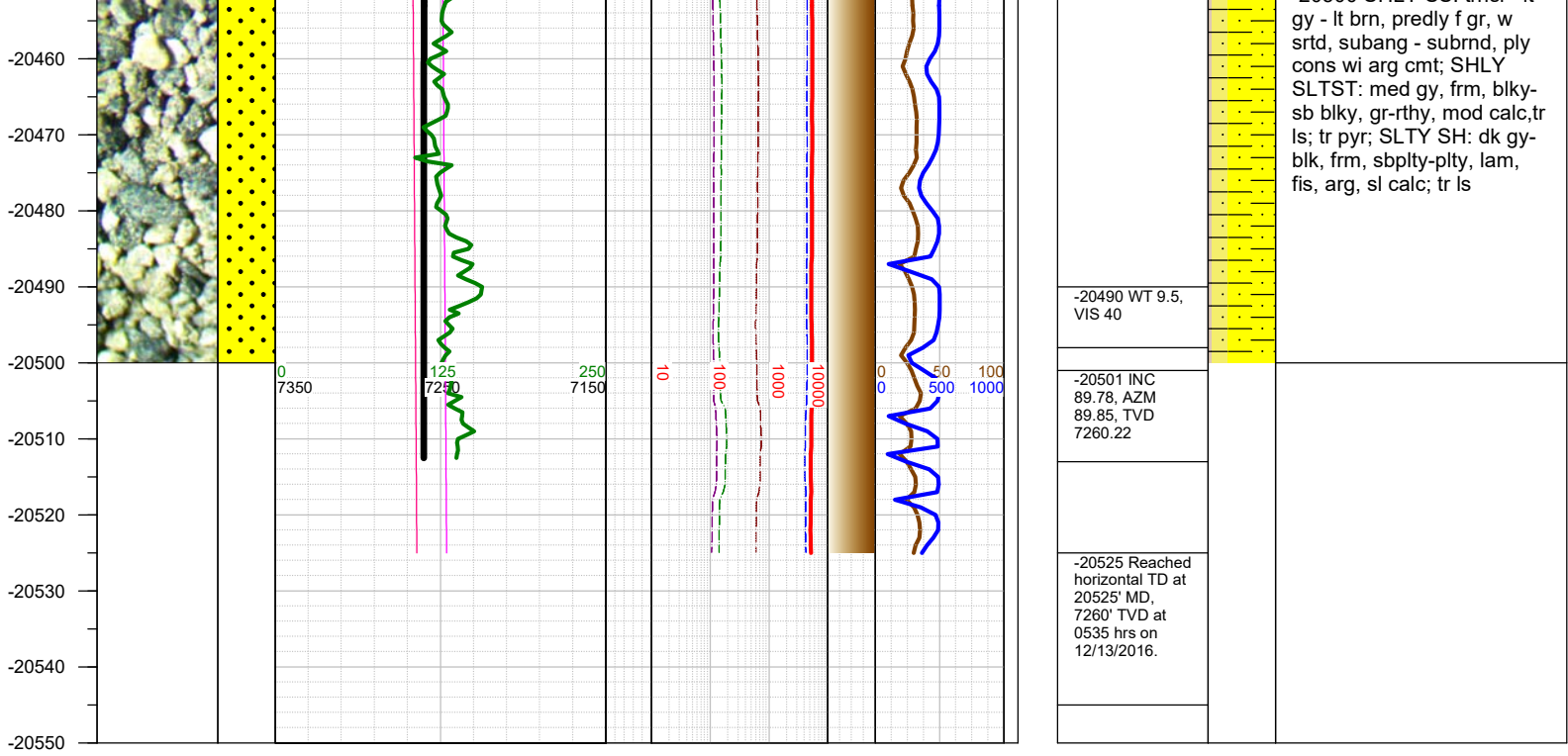
-20221 INC
88.89, AZM
88.77, TVD
7258.65

-20300 WT 9.5,
VIS 40

-20400 WT 9.5,
VIS 40

-20411 INC
90.18, AZM
89.2, TVD
7260.19

-20500 SHLY SS: trns l - lt
gy - lt brn, predly f gr, w
srtd, subang - subrnd, ply
cons wi arg cmt; LS: lt crm,
lt gy, sbblky-sbply, sl wxy,
vcalc; SHLY SLTST: med
gy, frm, blkly-sb blkly, gr-
rthy, mod calc, tr ls; tr pyr;



TOTAL DEPTH = 20525'

Thank you for using Earth Science Agency