

OPERATOR: **Extraction Oil & Gas**

WELL NAME: **Leonard 4N**

FIELD NAME: DJ Basin - Wattenberg

DRILLING RIG: Cyclone 37

API #: 05-123-45046

LAT/LONG: 40.121646, -104.903281

SURFACE HOLE: NWSW S21-T2N-R67W, 1880' FSL, 494' FWL

BOTTOM HOLE: S21-T2N-R67W, 1750' FSL, 460' FEL



Earth Science Agency, LLC

COUNTY: Weld

STATE: Colorado

GROUND ELEVATION: 5003'

KELLY BUSHING: 5031'

DRILLING FLUID: OBM

TVD VS. MD: 7506' / 12170'

SPUD DATE: September 15, 2017

TD DATE: September 17, 2017

DEPTHS LOGGED: 6000' - 12170'

DATES LOGGED: September 15, 2017 - September 17, 2017

GEOLOGISTS: Kyle Welty, Levi Heintzelman

SCALE: 5" = 100'

LEGEND

CHALK

LIMESTONE

SHALY LIMESTONE

MARLSTONE

CALCAREOUS SHALE

DOLOMITE

SHALE

SILTY SHALE

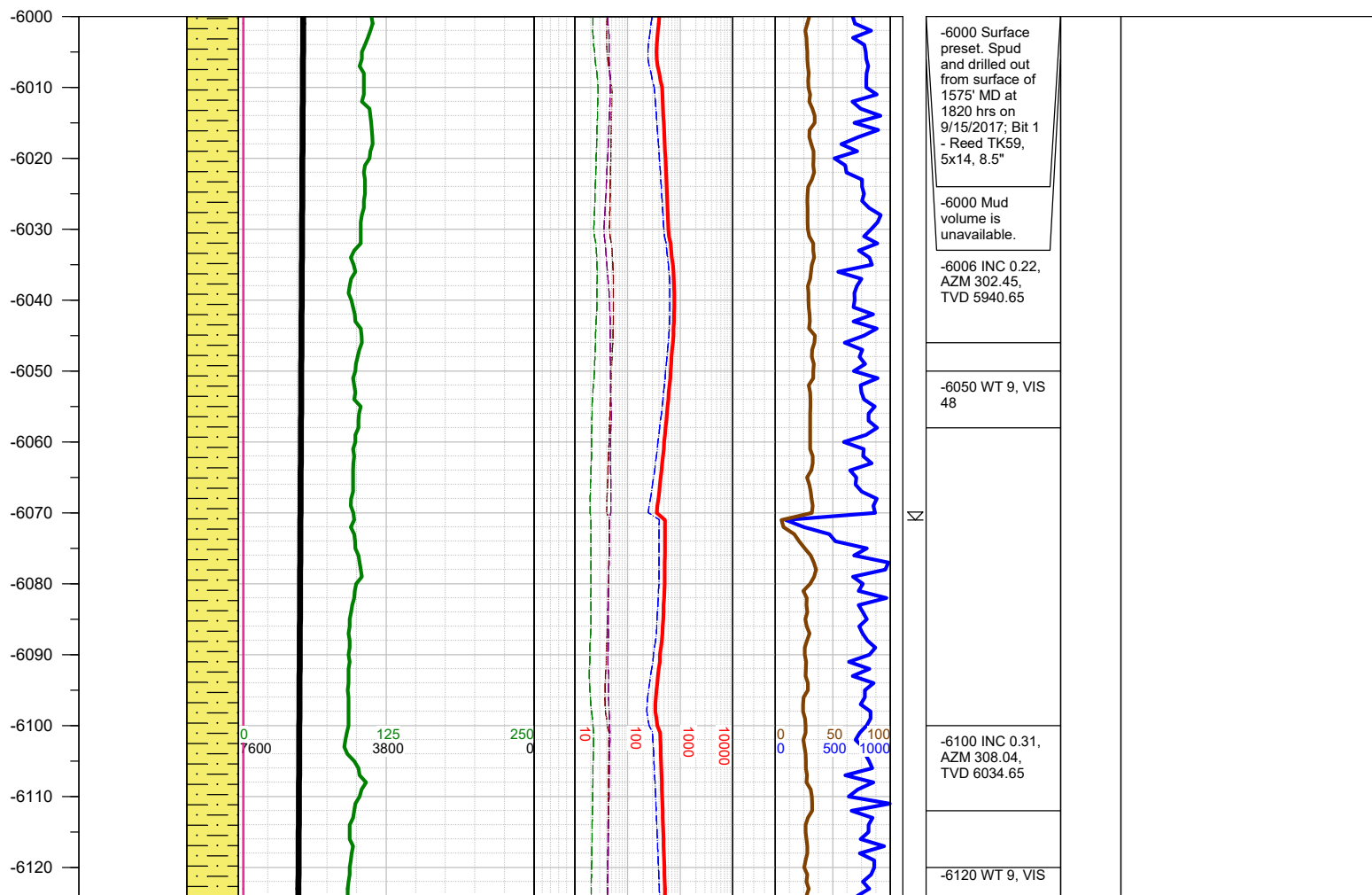
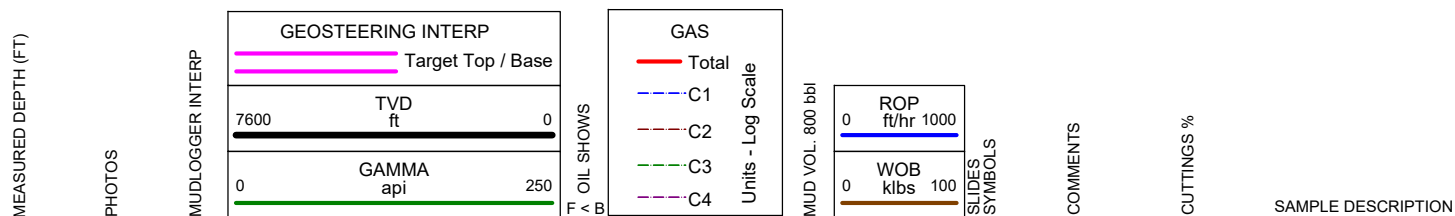
SHALY SILTSTONE

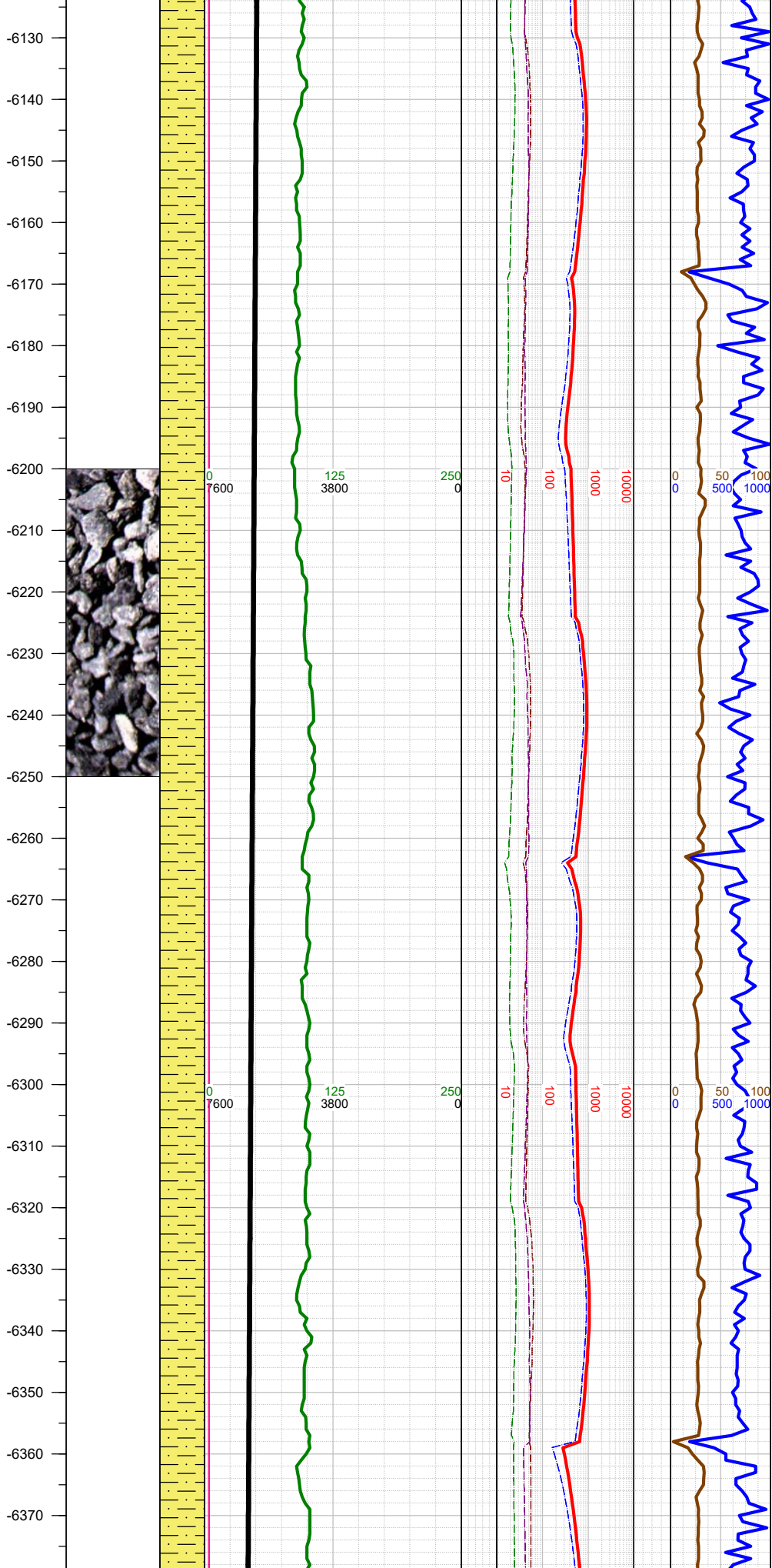
SHALY SANDSTONE

SANDSTONE

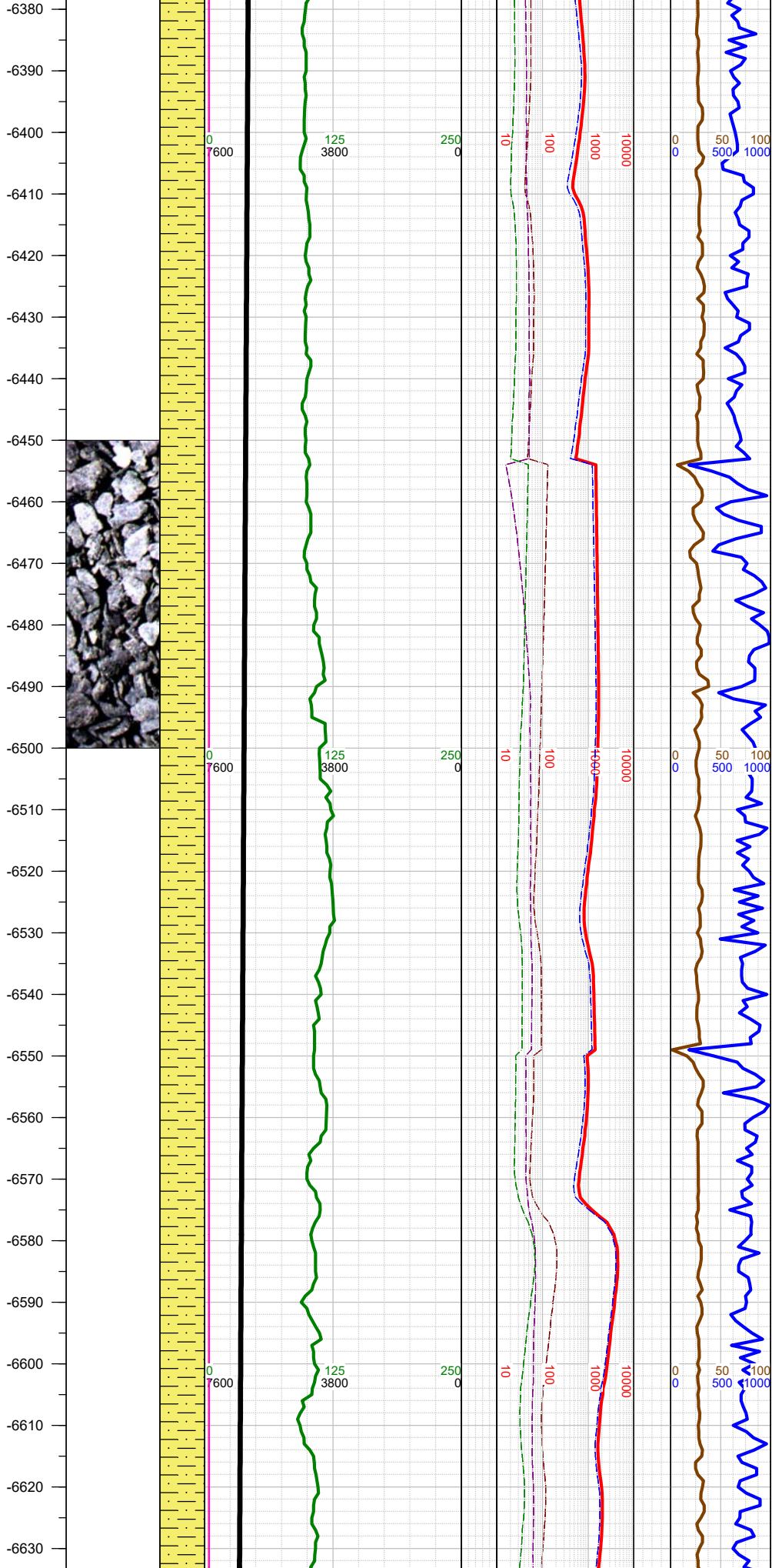
ANHYDRITE


FORMATION \approx CONNECTION Δ MIDNIGHT NEW BIT GAS SHOW FAULT

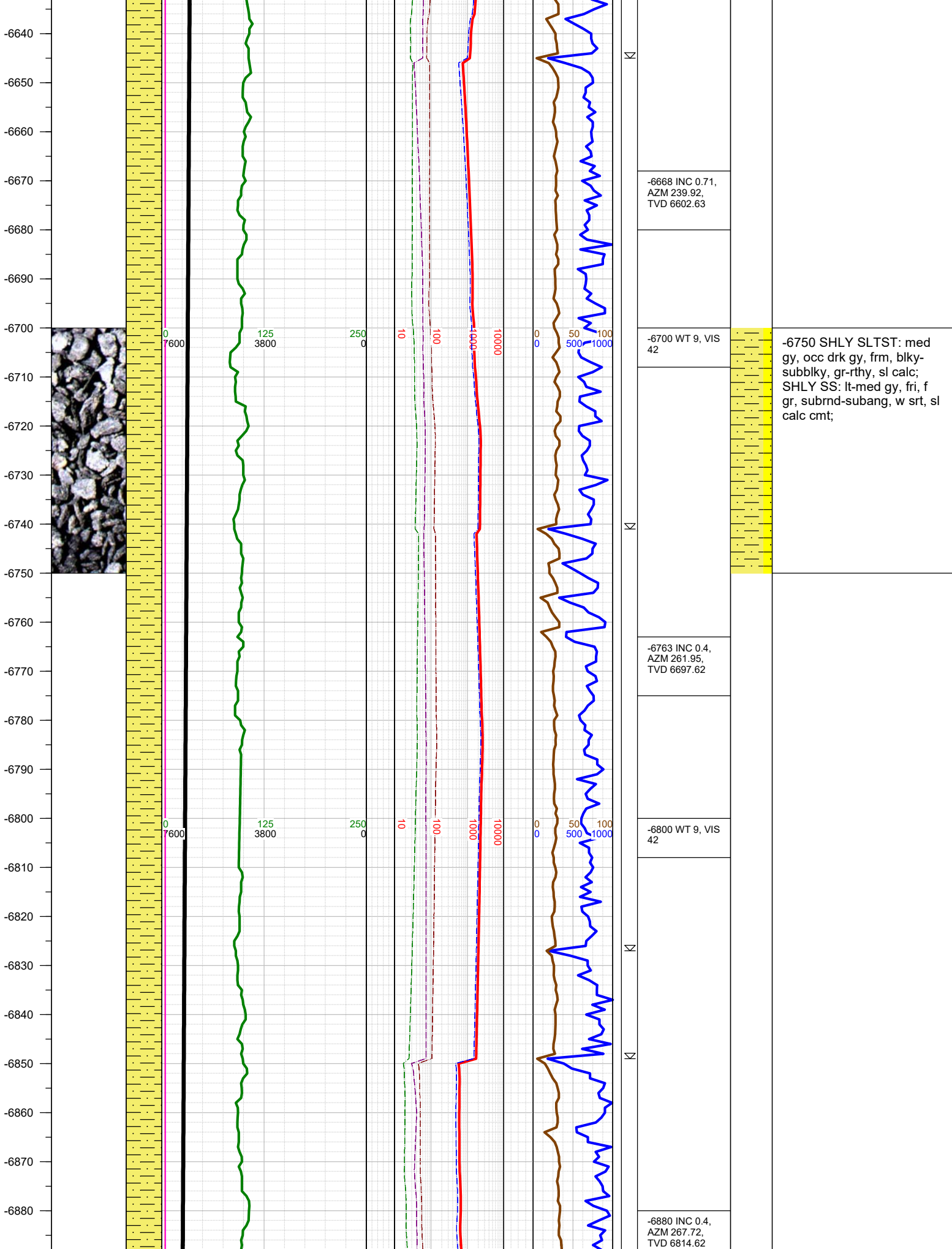


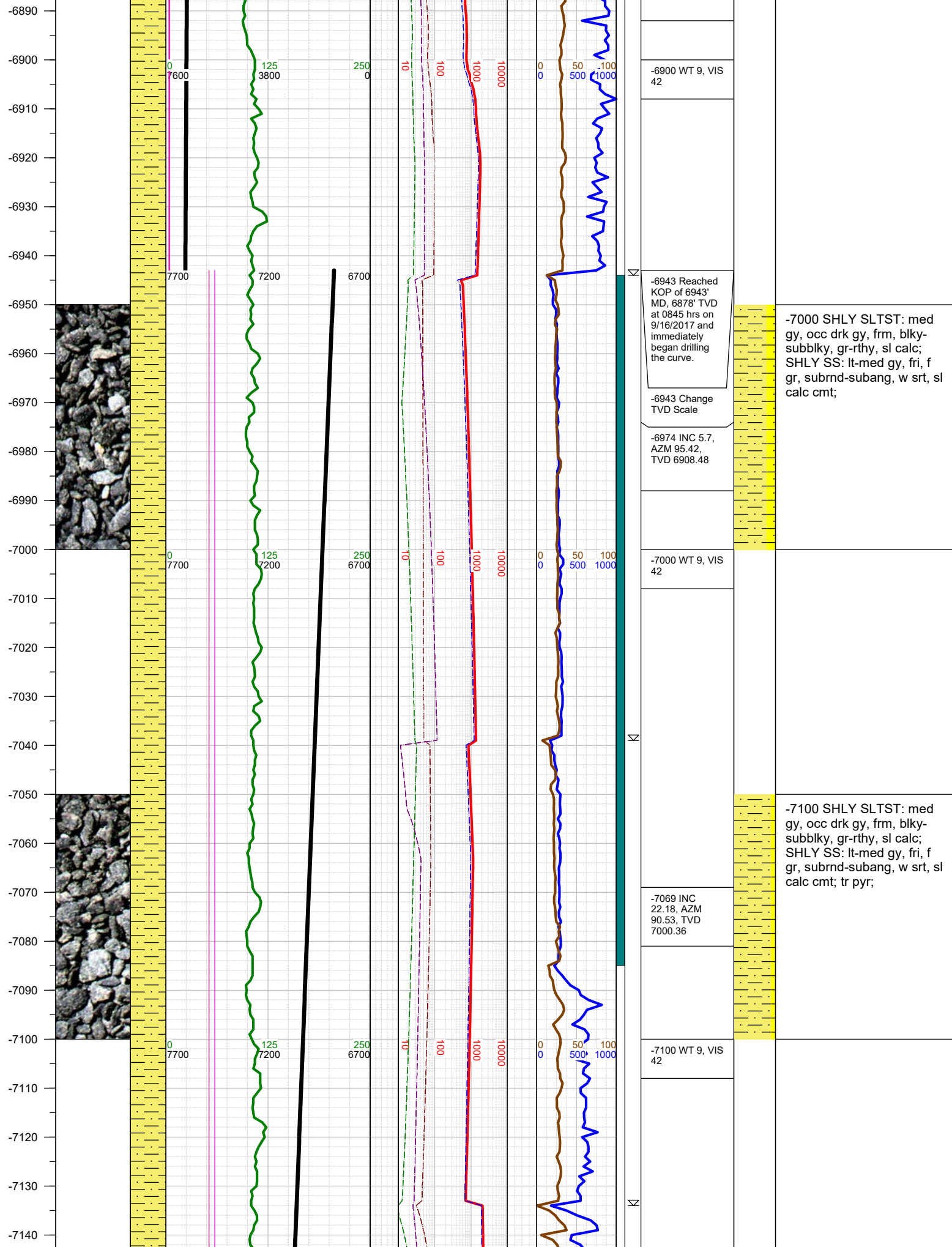


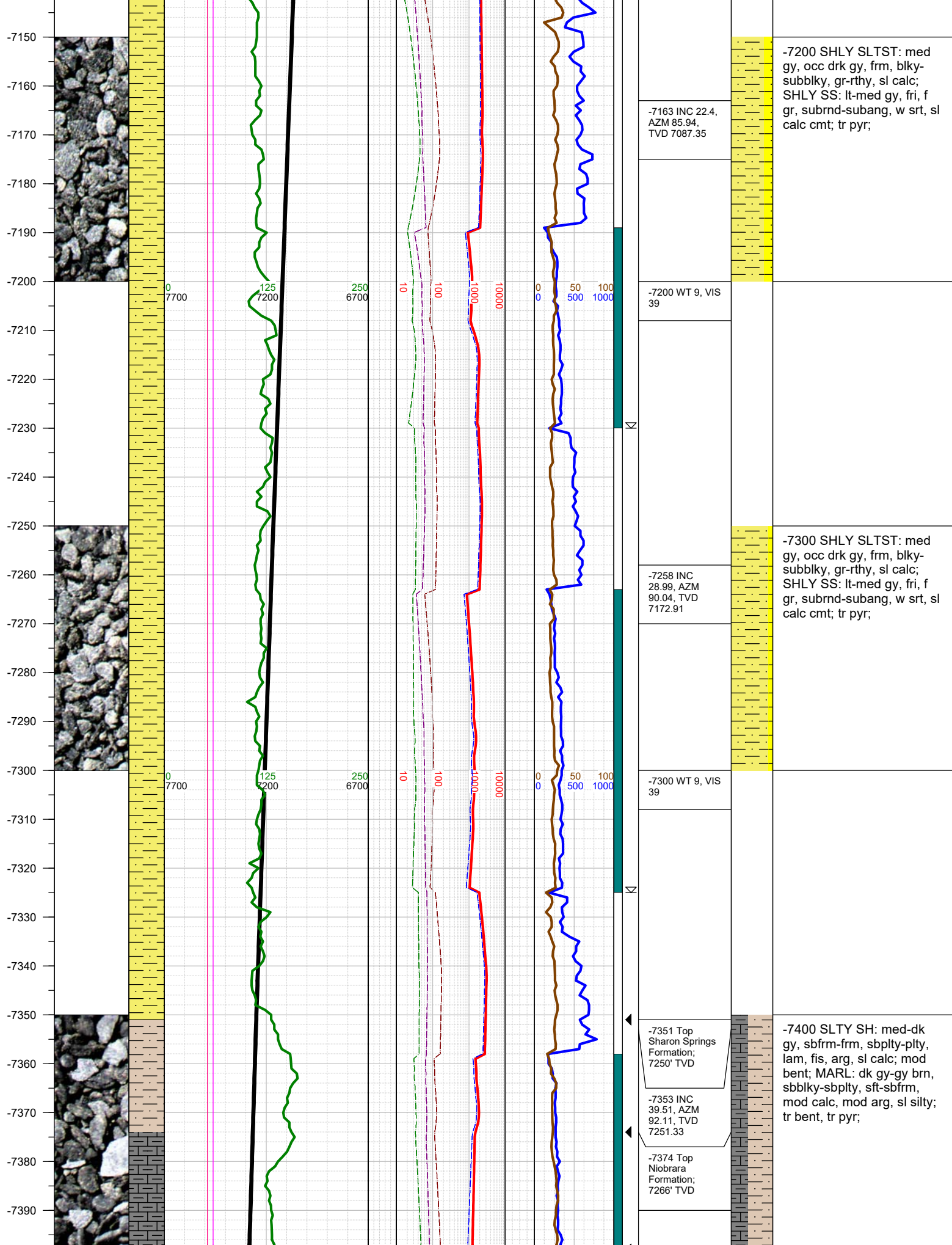
48		
	-6194 INC 0.22, AZM 291.92, TVD 6128.65	-6250 SHLY SLTST: med gy, occ drk gy, frm, blk- subblk, gr-rthy, sl calc; SHLY SS: lt-med gy, fri, f gr, subrnd-subang, w srt, sl calc cmt;
	-6210 WT 9, VIS 48	
	-6289 INC 0.4, AZM 239.43, TVD 6223.65	
	-6310 WT 9, VIS 48	

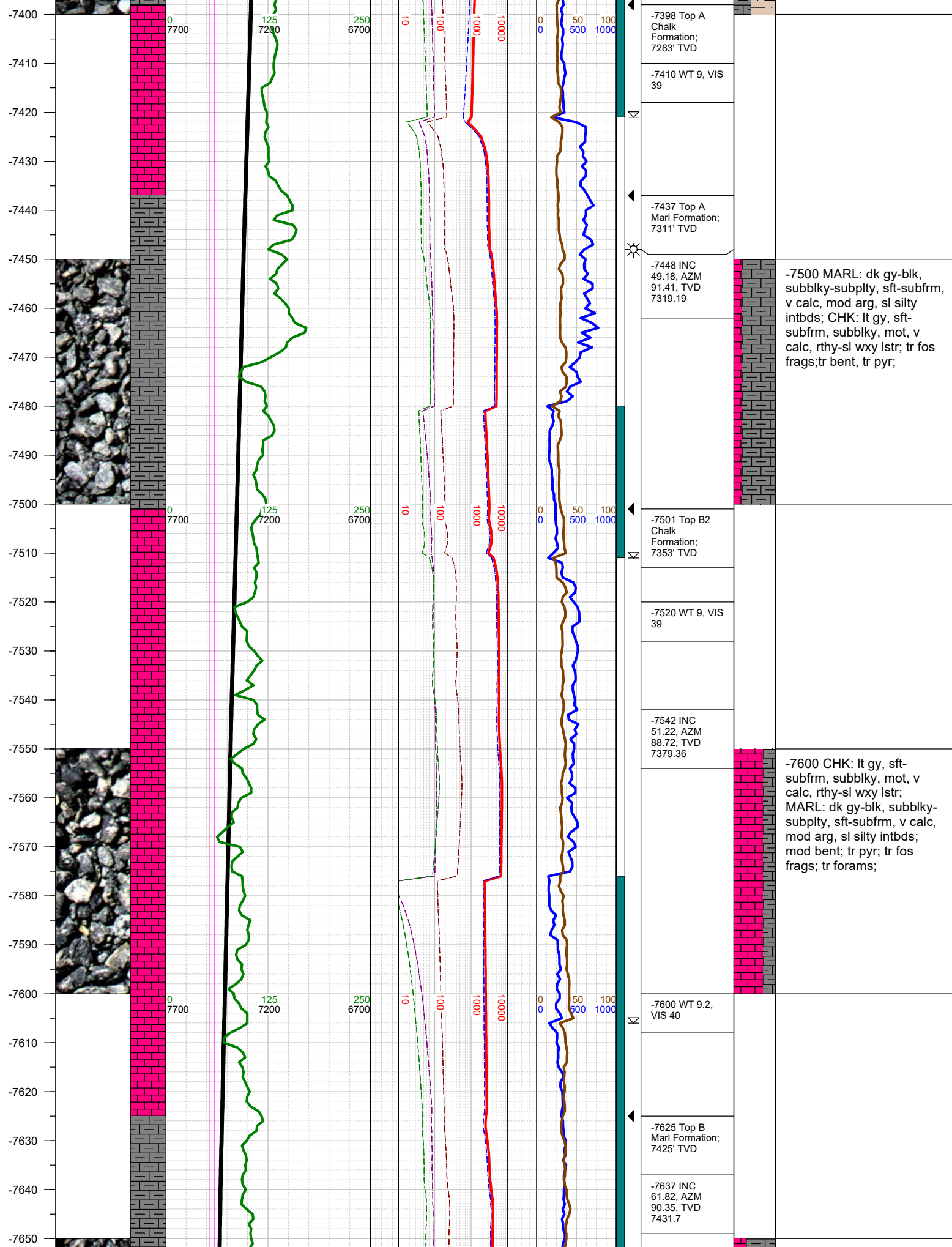


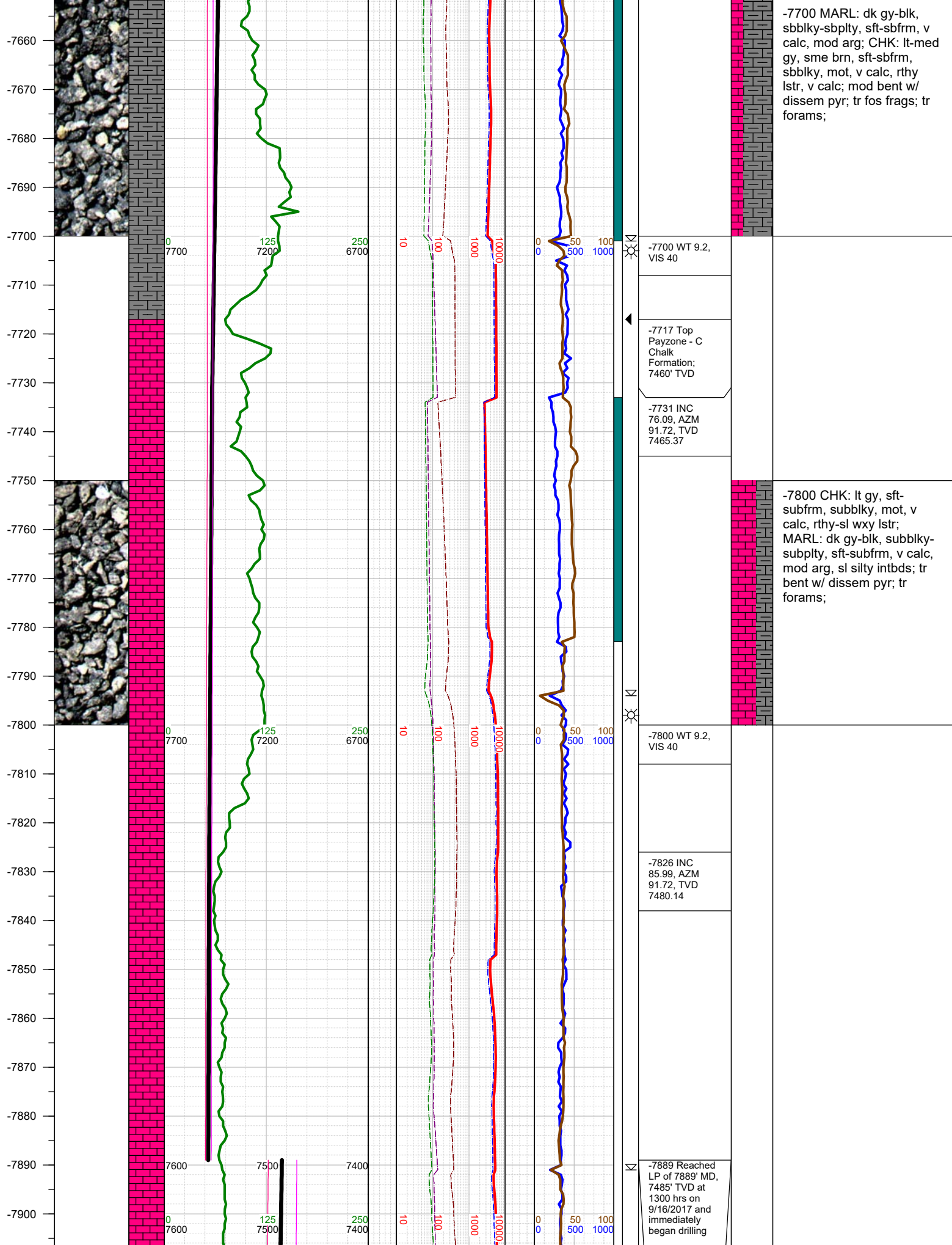
<p>-6384 INC 0.31, AZM 283.15, TVD 6318.65</p>		
<p>-6400 WT 8.9, VIS 43</p>		
<p>☀</p>		<p>-6500 SHLY SLTST: med gy, occ drk gy, frm, blk- subblk, gr-rthy, sl calc; SHLY SS: lt-med gy, fri, f gr, subrnd-subang, w srt, sl calc cmt;</p>
<p>-6478 INC 0.71, AZM 242.34, TVD 6412.64</p>		
<p>-6500 WT 8.9, VIS 43</p>		
<p>☀</p>		
<p>-6573 INC 0.62, AZM 245.34, TVD 6507.64</p>		
<p>-6600 WT 8.9, VIS 43</p>		



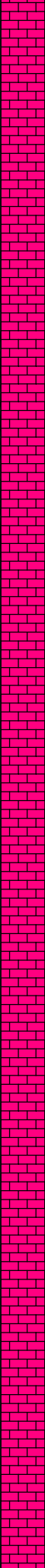




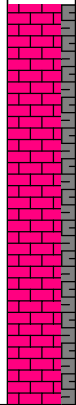




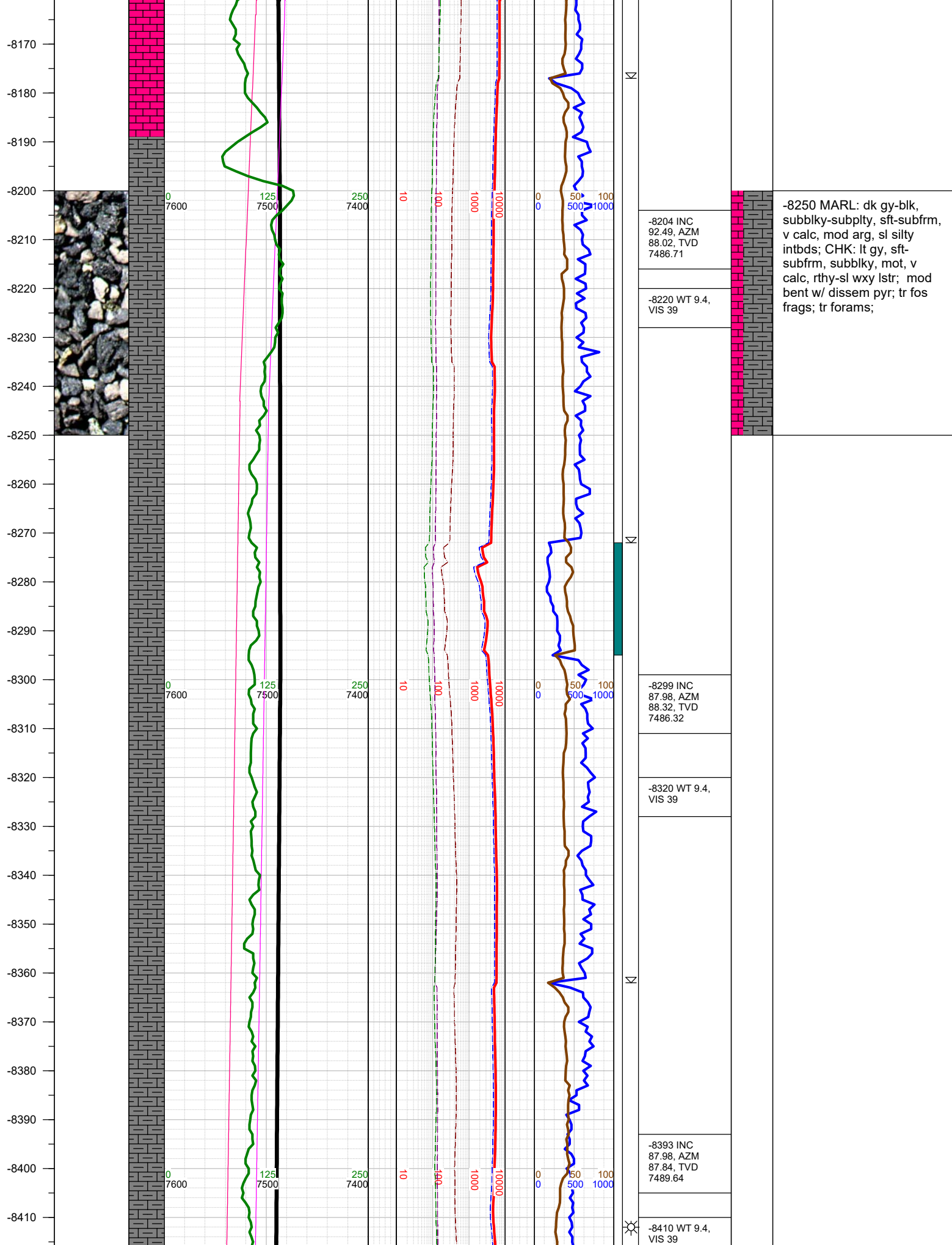
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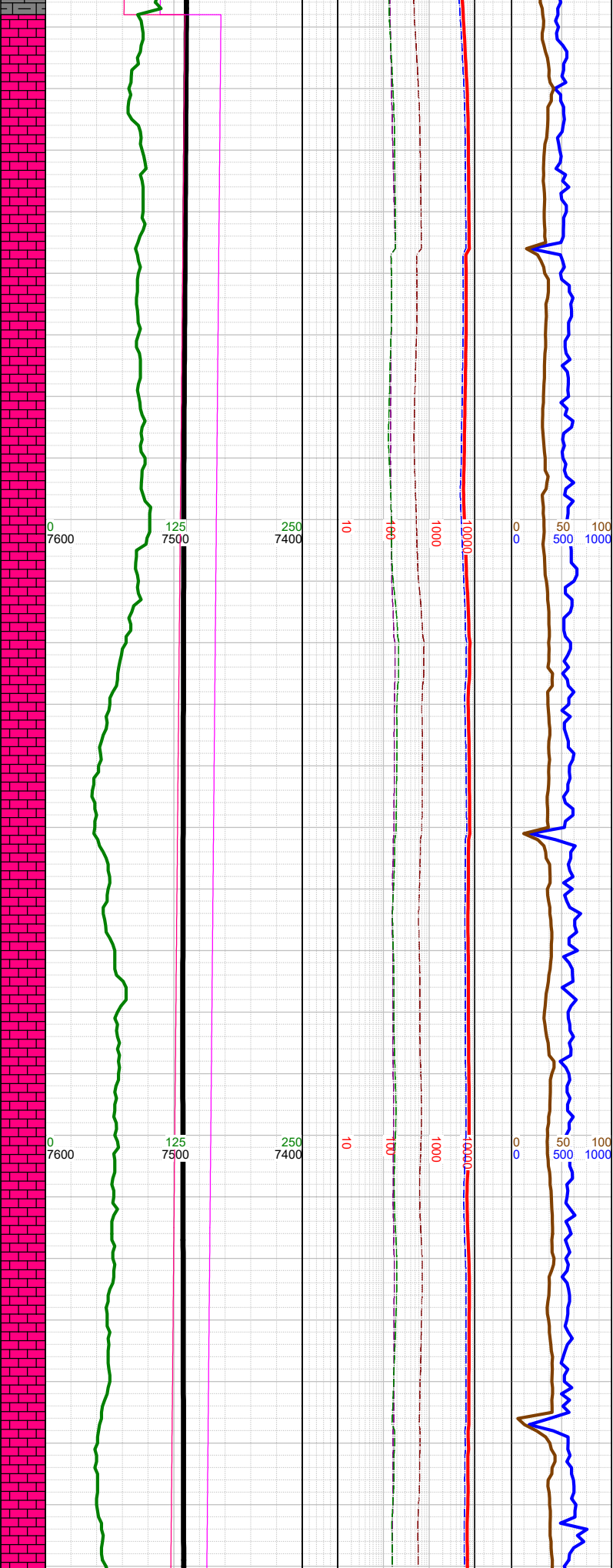
the lateral.
-7889 Change TVD Scale
-7920 INC 85.59, AZM 91.01, TVD 7487.04
-7940 WT 9.2, VIS 40
-8000 WT 9.2, VIS 40
-8015 INC 89.88, AZM 89.51, TVD 7490.8
-8100 WT 9.4, VIS 39
-8110 INC 91.3, AZM 88.24, TVD 7489.82



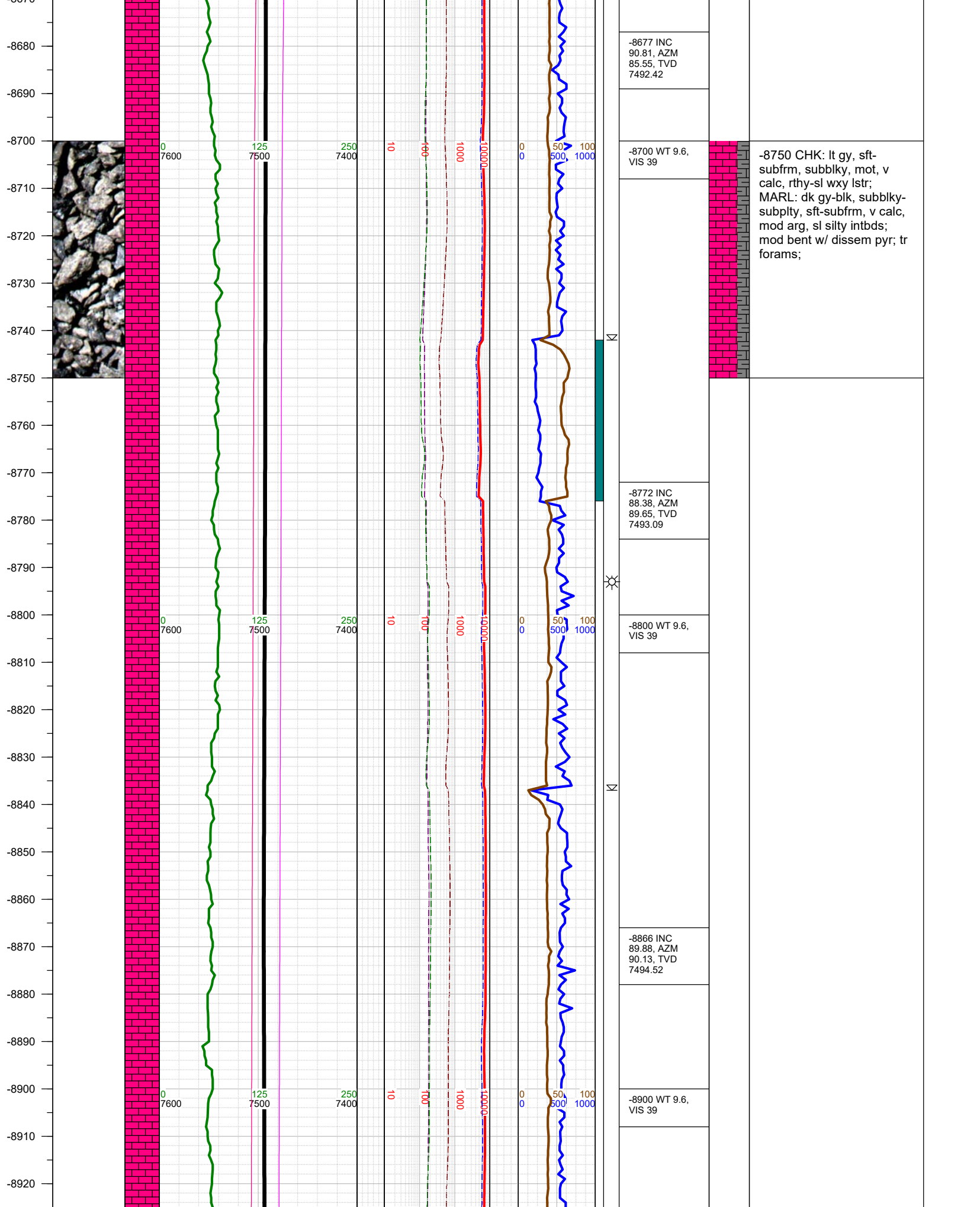
-8000 CHK: lt gy, sft-subfrm, subblky, mot, v calc, rthy-sl wxy lstr; MARL: dk gy-blk, subblky-subply, sft-subfrm, v calc, mod arg, sl silty intbds; mod bent; tr pyr;

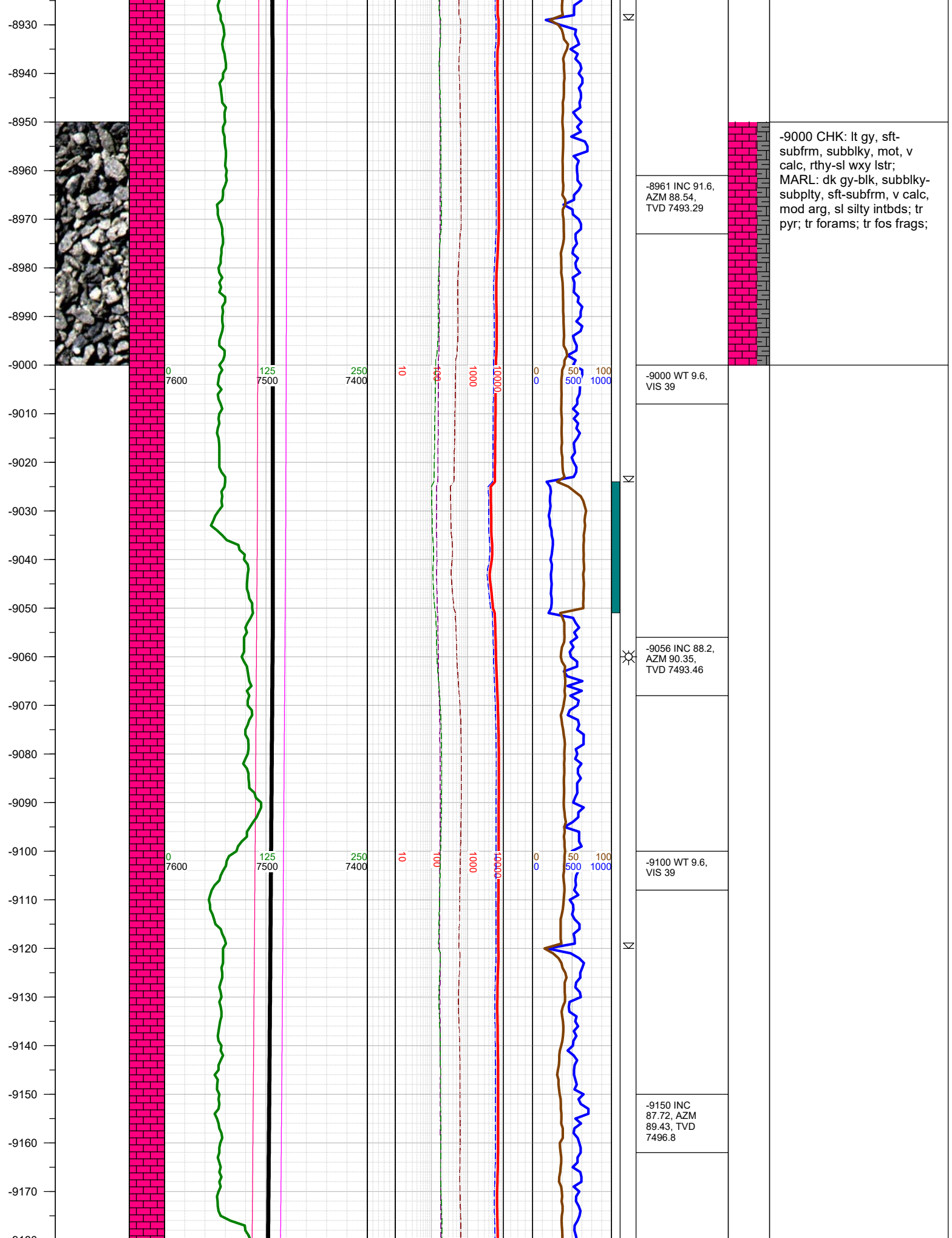


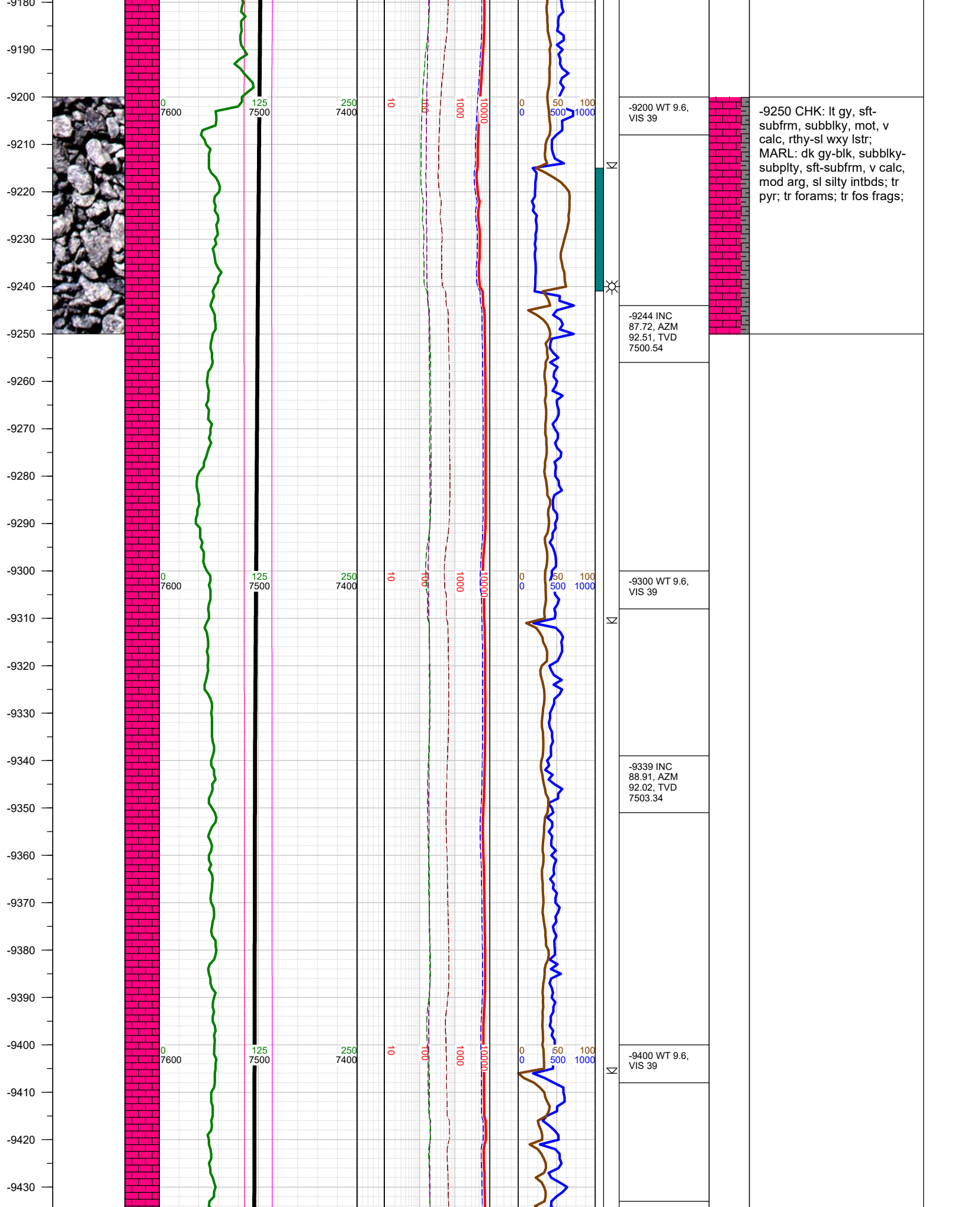
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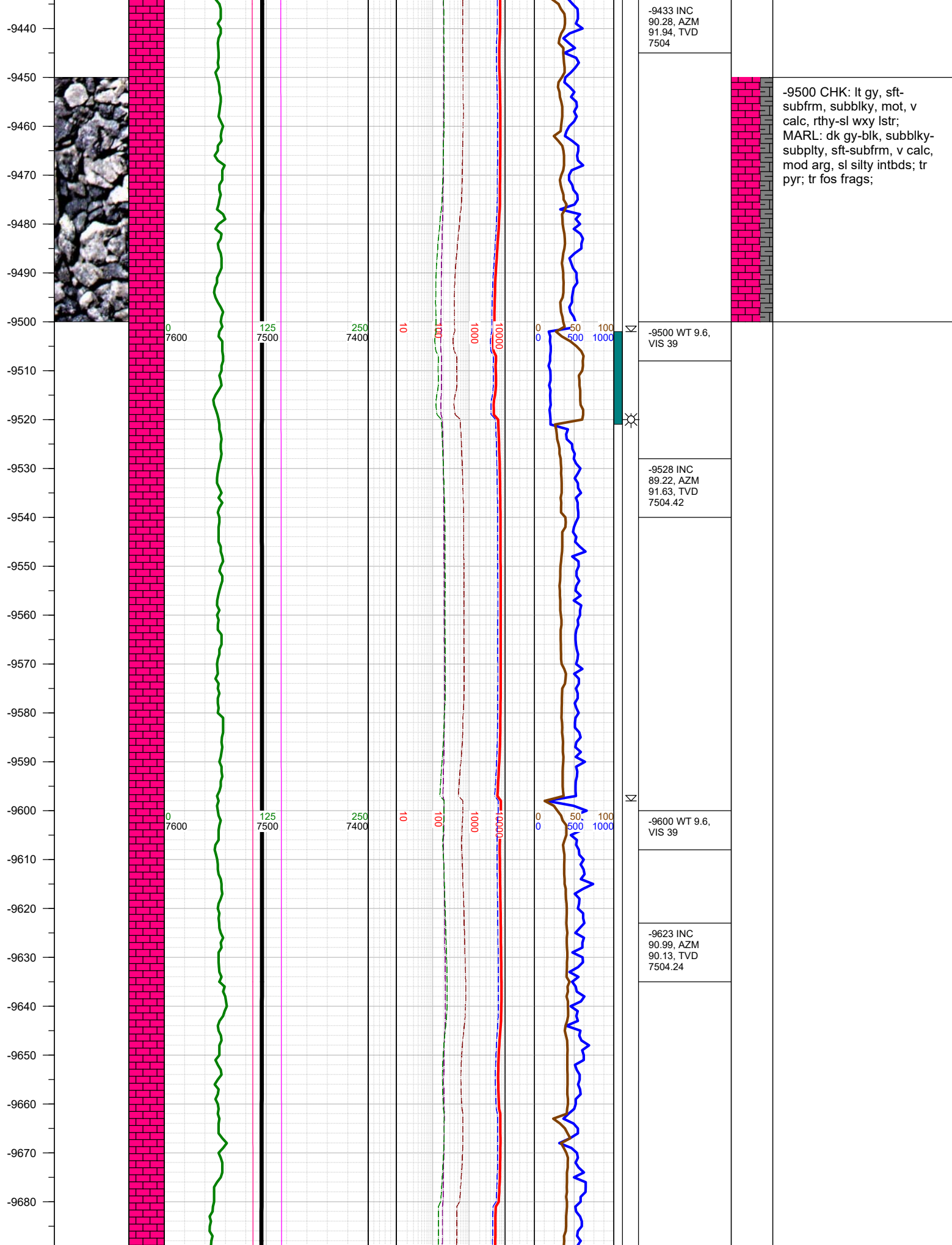


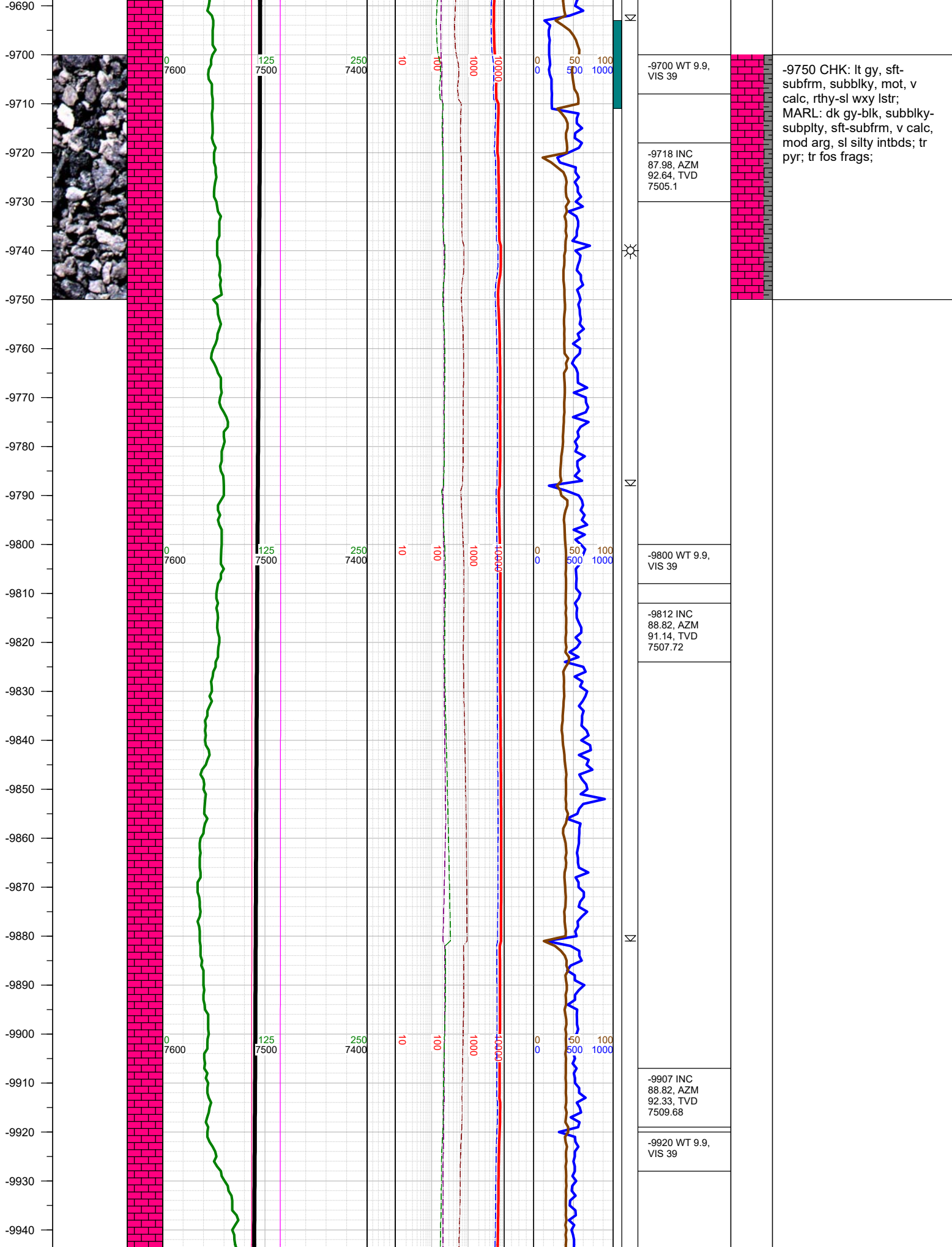
-8418 Fault: 47' up-throw; B Marl into C Chalk		
-8488 INC 88.82, AZM 87.53, TVD 7492.29	-8500 CHK: lt gy, sft-subfrm, subblky, mot, v calc, rthy-sl wxy lstr; MARL: dk gy-blk, subblky-subplty, sft-subfrm, v calc, mod arg, sl silty intbds; tr bent w/ dissem pyr; tr forams;	
-8500 WT 9.6, VIS 39		
-8582 INC 90.1, AZM 85.42, TVD 7493.17		
-8600 WT 9.6, VIS 39		











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-10002 INC
88.11, AZM
92.25, TVD
7512.22

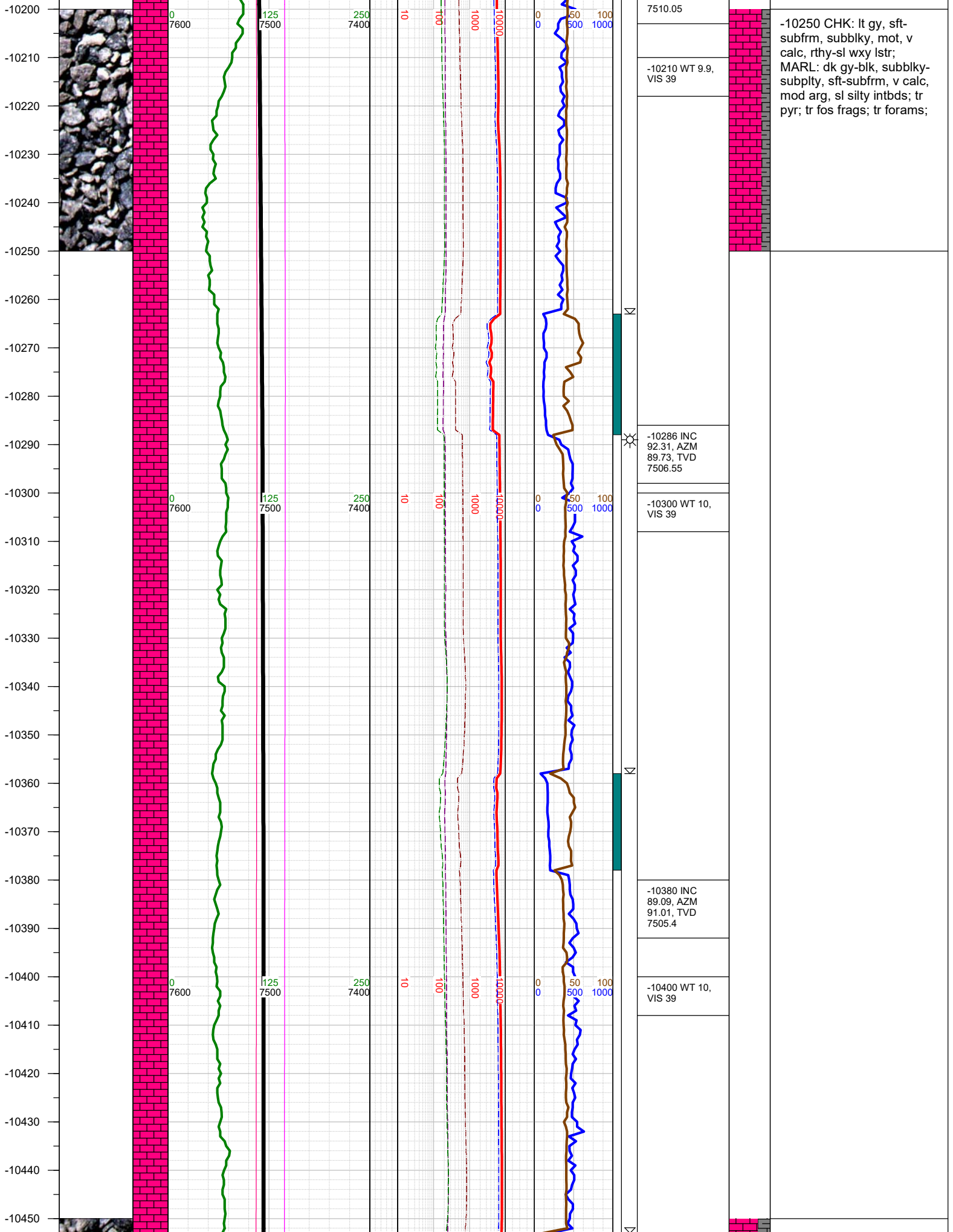
-10020 WT 9.9,
VIS 39

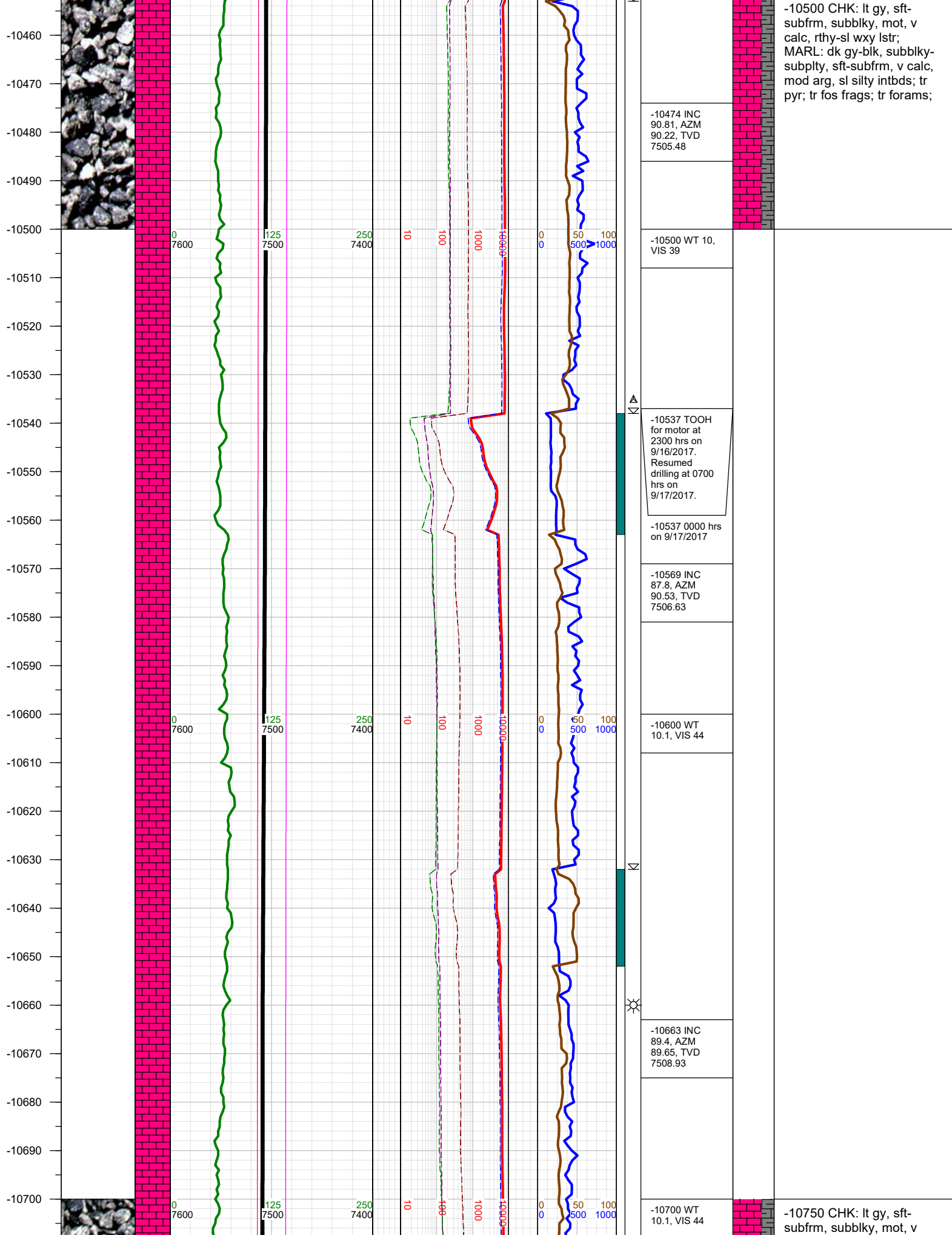
-10096 INC
91.3, AZM
90.84, TVD
7512.71

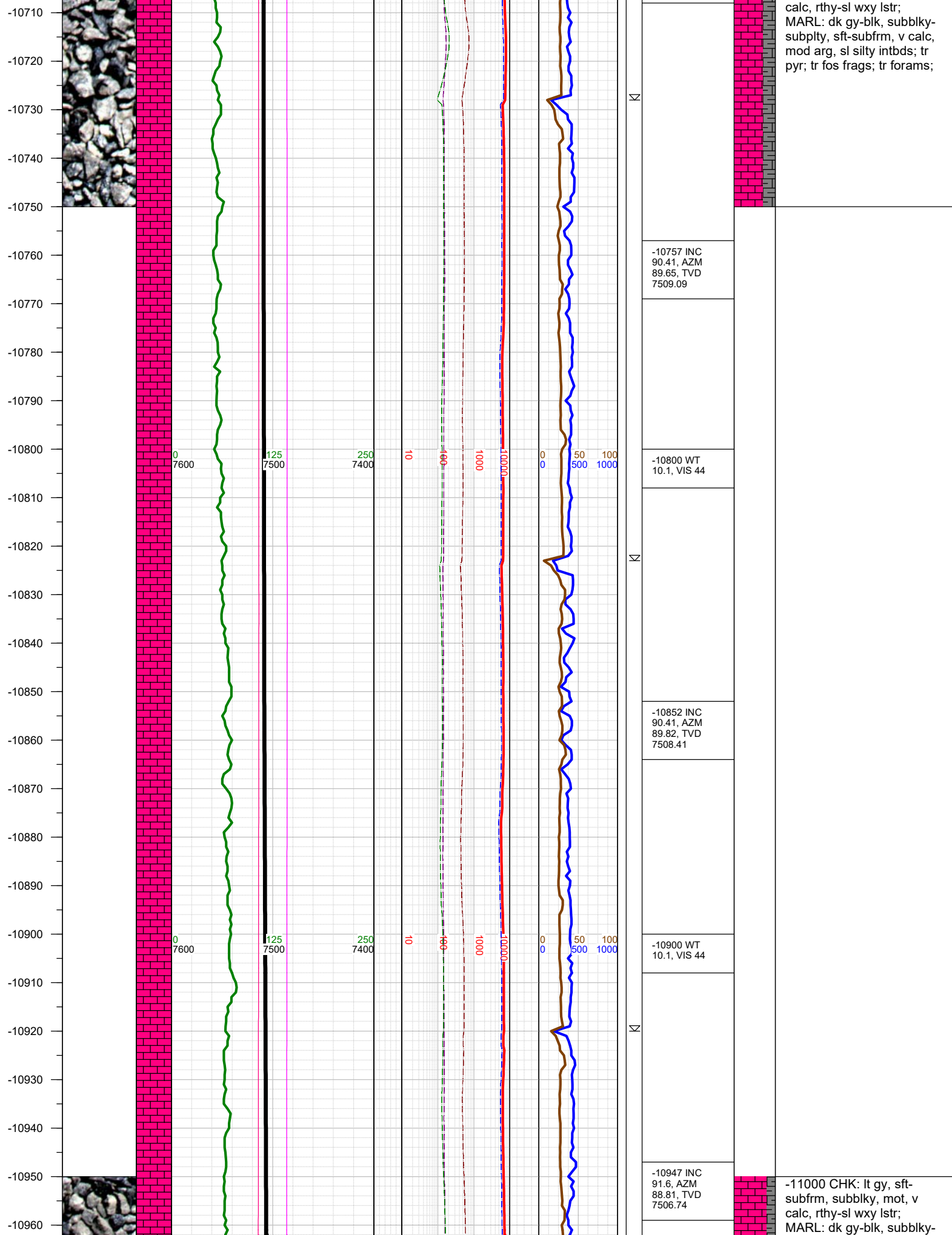
-10110 WT 9.9,
VIS 39

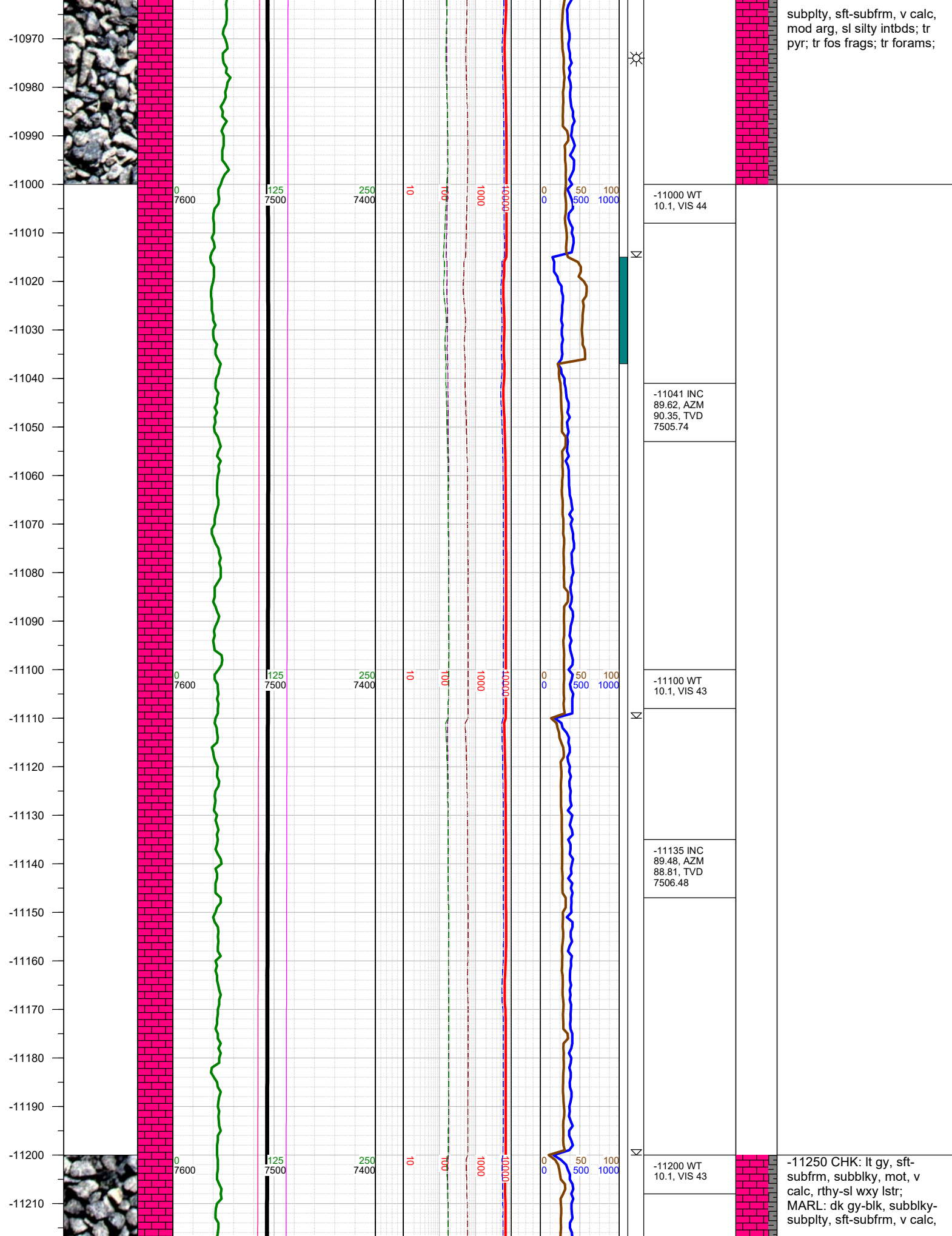
-10191 INC
91.91, AZM
90.04, TVD

-10000 CHK: lt gy, sft-
subfrm, subblky, mot, v
calc, rthy-sl wxy lstr;
MARL: dk gy-blk, subblky-
subplty, sft-subfrm, v calc,
mod arg, sl silty intbds; tr
pyr; tr fos frags;









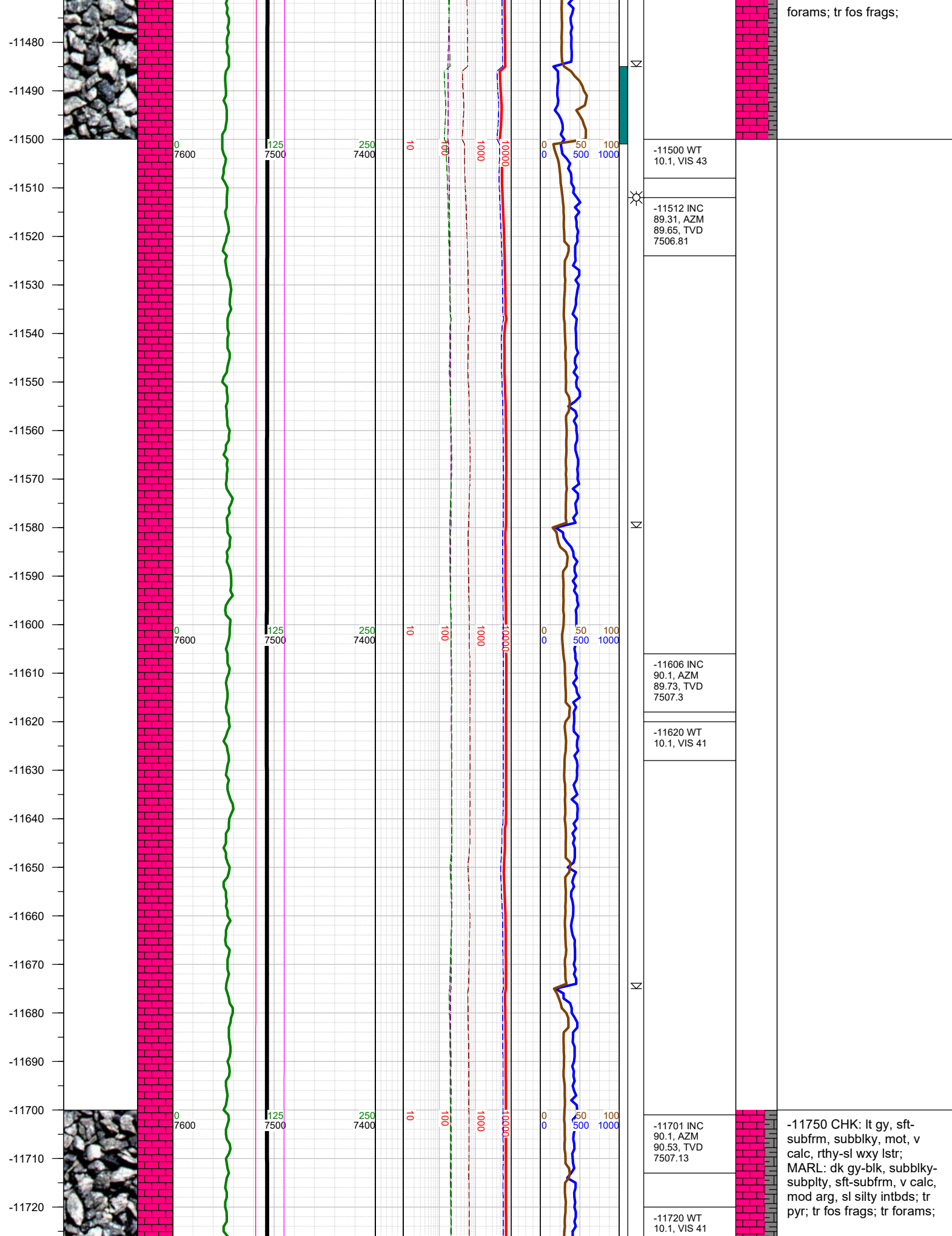
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-11229 INC 89.62, AZM 86.52, TVD 7507.22
-11300 WT 10.1, VIS 43
-11324 INC 90.5, AZM 85.94, TVD 7507.12
-11400 WT 10.1, VIS 43
-11418 INC 90.28, AZM 89.65, TVD 7506.48

mod arg, sl silty intbds; tr
bent w/ dissem pyr; tr
forams; tr fos frags;

-11500 CHK: lt gy, sft-
subfrm, subblky, mot, v
calc, rthy-sl wxy lstr;
MARL: dk gy-blk, subblky-
subpty, sft-subfrm, v calc,
mod arg, sl silty intbds; tr
bent w/ dissem pyr; tr



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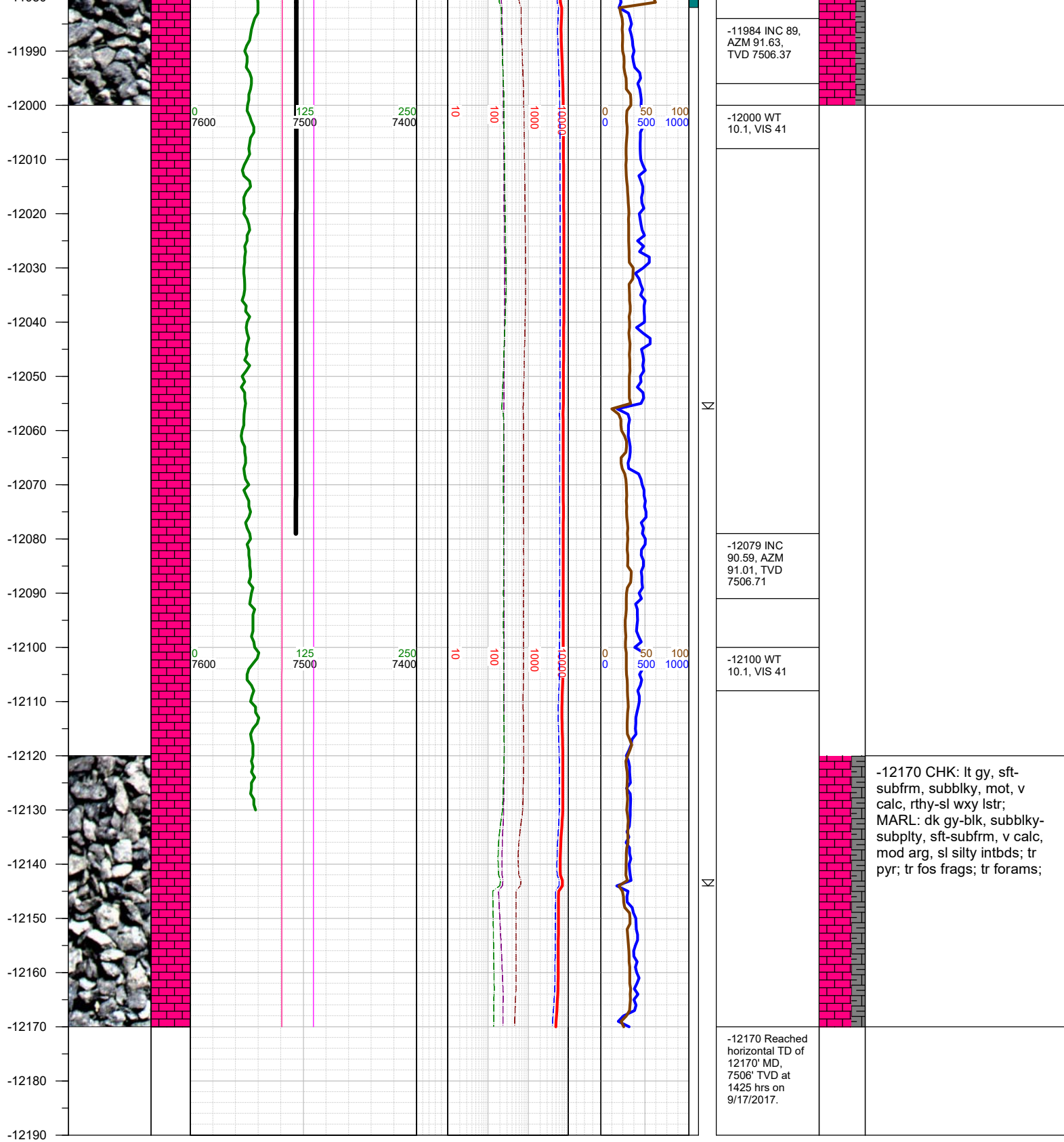
-11795 INC
90.72, AZM
90.62, TVD
7506.46

-11810 WT
10.1, VIS 41

-11890 INC
90.19, AZM
90.92, TVD
7505.7

-11910 WT
10.1, VIS 41

-12000 CHK: lt gy, sft-
subfrm, subblky, mot, v
calc, rthy-sl wxy lstr;
MARL: dk gy-blk, subblky-
subply, sft-subfrm, v calc,
mod arg, sl silty intbds; tr
pyr; tr fos frags; tr forams;



TOTAL DEPTH = 12170'

Thank you for using Earth Science Agency