



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Rubyanna_13NB-31W_Build_Lateral

Location Sec. 13, T6N-R67W

State Colorado

Country United States of America

Region DJ Basin

Spud Date 4/30/2014

Surface Coordinates Sec. 13
500' FSL
460' FEL

County Weld

Rig Number H&P # 319

Field Wattenburg

Ground Elevation 4829'

K.B. Elevation 4853'

Logged Interval 6363'

Formation Shannon, Sharon Springs, Niobrara

Type of Drilling Fluid Fresh Water Based Mud

Company Extraction Oil & Gas

Address 1888 Sherman St, S
Denver, Colorado 80

Name Anthony Cox & Just

Company ALS Empirica

Address 600 17th Street, Suite
Denver, CO 80202
(303) 228-7034

Start Logging Date, (Build Lateral
Release Date
Equipment

Operator

Suite 200
2203

Geologist

in Perry

te 725S

Other

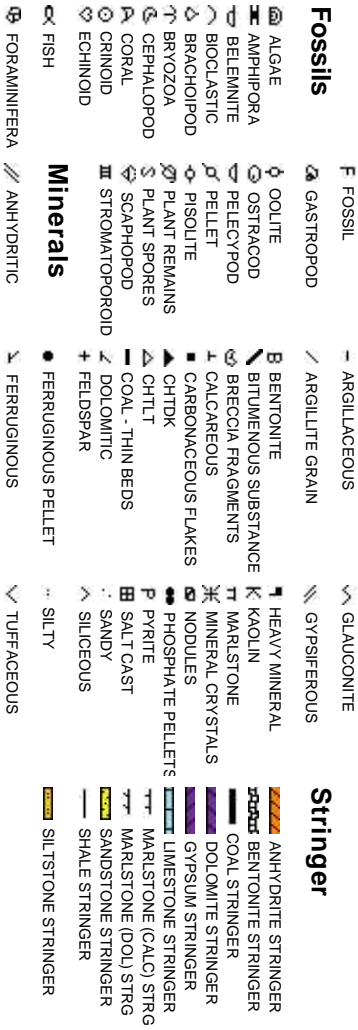
Section) 05/02/2014

2 Man Logging Service
Mlogger Red Box #142
Calibration: Standard Calibration of Mlogger

Rock Types



Accessories



Other Symbols

ORGANIC SURVEY CORE - RECOVERED CORE - LOST E EARTHY CRYPTOXLN

Oil Show P PINPOINT TRIP GAS WIRELINE TESTED - LEFT WIRELINE TESTED - RT F FINELYXLN G GRAINSTONE

D DEAD V VUGGY DTG CASING BIT

E EVEN Q QUESTIONABLE Engineering

S SPOTTED STAINING CONNECTION (LEFT) CONNECTION (RIGHT) CONNECTION GAS DST INTERVAL FAULT GAS SHOW NORMAL FAULT SUBANG SUBRND W WACKESTONE

E EARTHY MINDEPTH MINDEPTH MINDEPTH OIL SHOW SUBANG SUBRND W WACKESTONE

Porosity CONNECTION (LEFT) CONNECTION (RIGHT) CONNECTION GAS DST INTERVAL FAULT GAS SHOW NORMAL FAULT SUBANG SUBRND W WACKESTONE

E EARTHY MINDEPTH MINDEPTH MINDEPTH OIL SHOW SUBANG SUBRND W WACKESTONE

F FENESTRAL MINDEPTH MINDEPTH MINDEPTH OIL SHOW SUBANG SUBRND W WACKESTONE

F FRACTURE MINDEPTH MINDEPTH MINDEPTH OIL SHOW SUBANG SUBRND W WACKESTONE

Textures

X INTERCRYSTALLINE FORMATION TOP REVERSE FAULT SIDEVALL CORE (LEFT) B BOUNDSTONE M MODERATE

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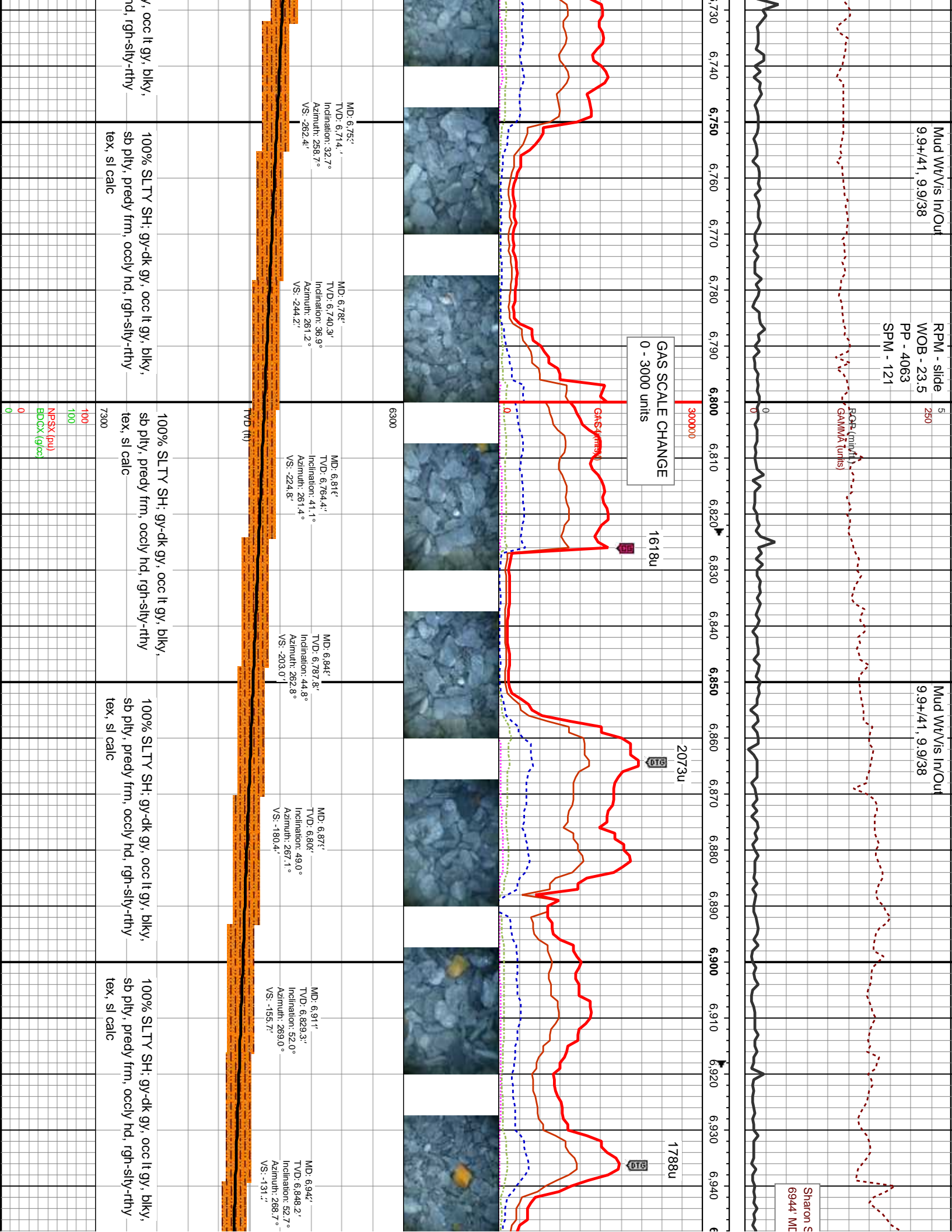
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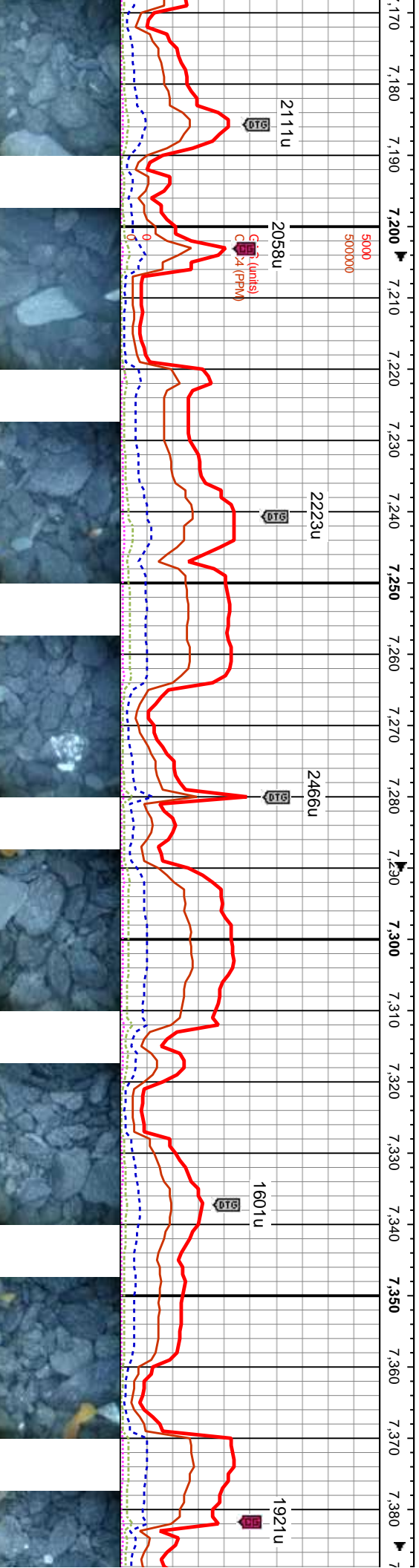
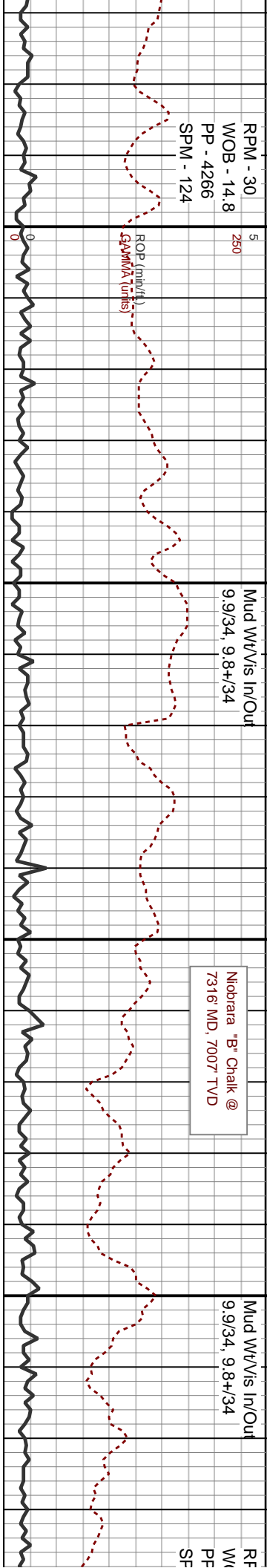
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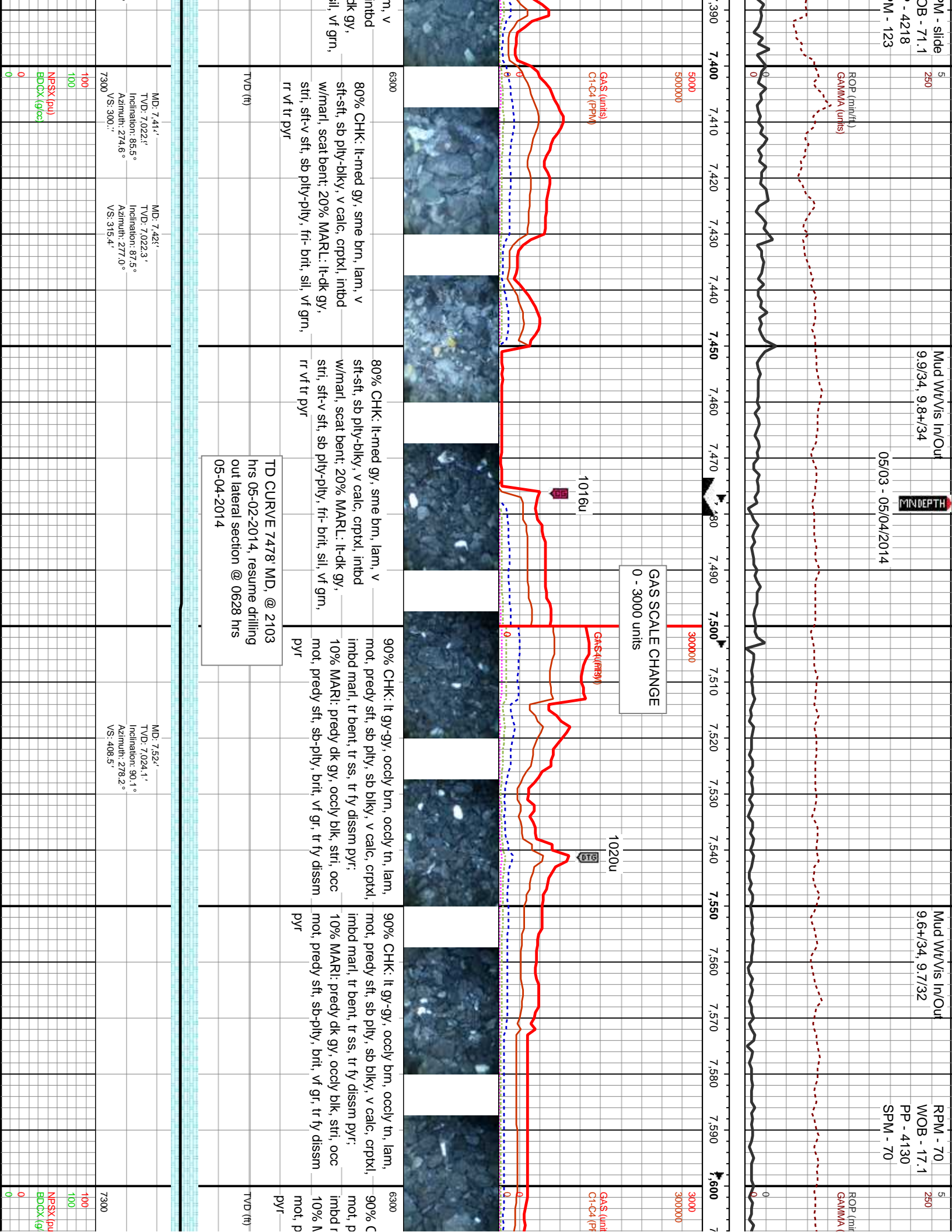
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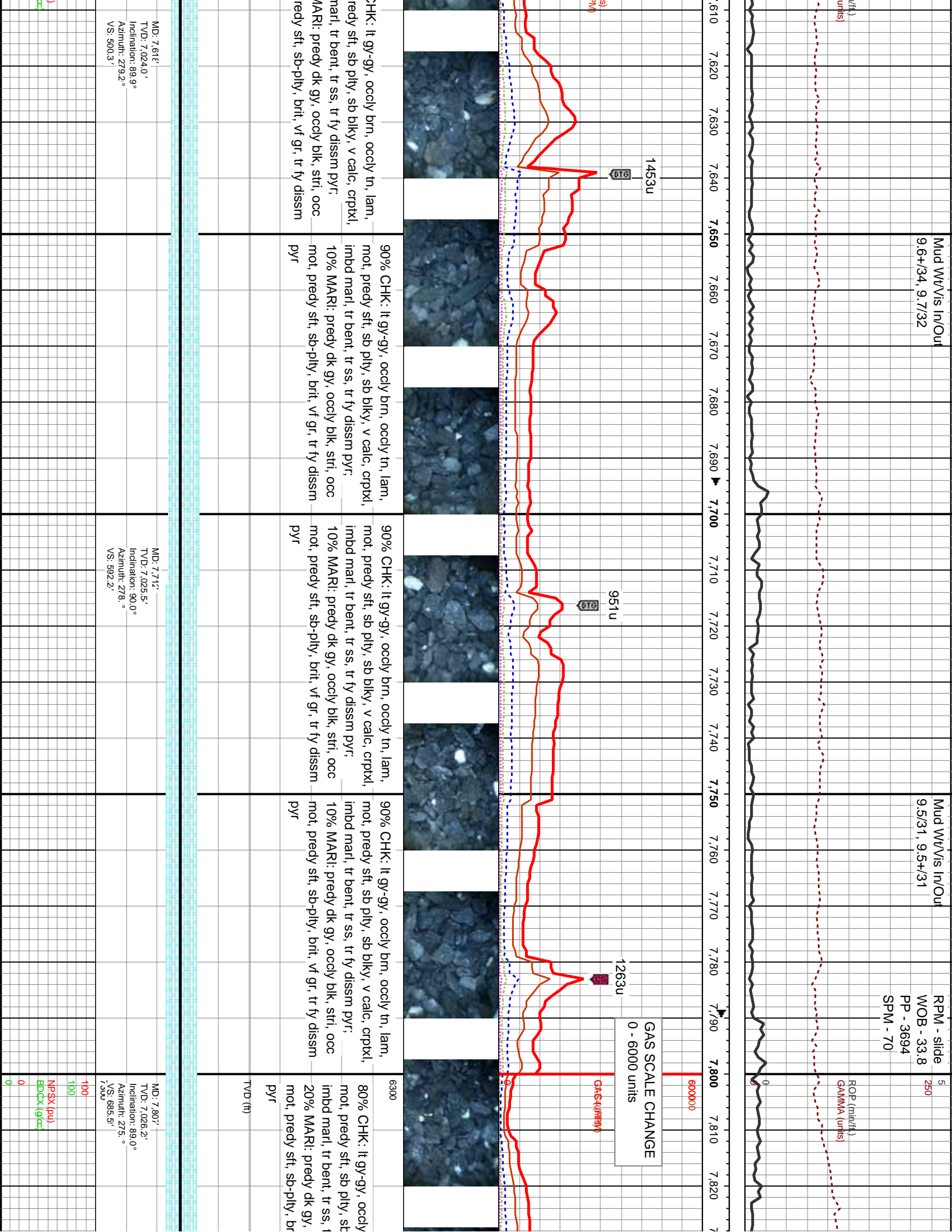
ROP ROF GAMMA	Extraction O&G										RPM - 61 WOB - 33.6 PP - 4423 SPM - 111										Mud Wt/Vis In/Out 10.0+/33, 9.9/32																												
	Rubyanna 13NB-31W Build / Lateral										Rate of Penetration = 0 - 5 min/foot Gamma Scale = 0 - 250 api										ROP (min/ft) GAMMA (units)																												
Slide/Rotate																																																	
Depth Labels	6,330 6,340 6,350 6,360 6,370 6,380 6,390 6,400 6,410 6,420 6,430 6,440 6,450 6,460 6,470 6,480 6,490 6,500																																																
Total Gas & Chromatograph	GAS C1 C2 C3 C4																																																
	Gas Scale = 0 - 1000 units										Red Box # 142 Calibrated with 1% test gas										GAS (units) C1-C4 (PPM)										560u																		
Images																																																	
Well Bore TVD	BUILD LATERAL SECTION DRILLING WITH FRESH WATER IN BUILD LATERAL HOLEKICK-OFF POINT @ 6,363' MD																																																
	70% SLTY SH; gy-dk gy, occ lt gy, blk, sb ply, predy frm, occly hd, rgh-sily-rthy tex, sl calc; 30% SHY SS; offwht-wht, occly lt gy, sl trnsl incl, predy f gr, occ lse med gr, sb rnd, sb ang, ply-mod srt, mod cons, occly fri clus, sl calc cnt										MD: 6,403' TVD: 6,385.6' Inclination: 0.5° Azimuth: 240.2° VS: -351.6'										MD: 6,431' TVD: 6,416.6' Inclination: 2.9° Azimuth: 255.0° VS: -350.7'										MD: 6,471' TVD: 6,447.5' Inclination: 6.0° Azimuth: 263.8° VS: -348.3'										MD: 6,507' TVD: 6,479.2' Inclination: 9.1° Azimuth: 262.8° VS: -344.0'								
Density/Porosity	NPSX BDGX																																																
	100 100 0 0																																																

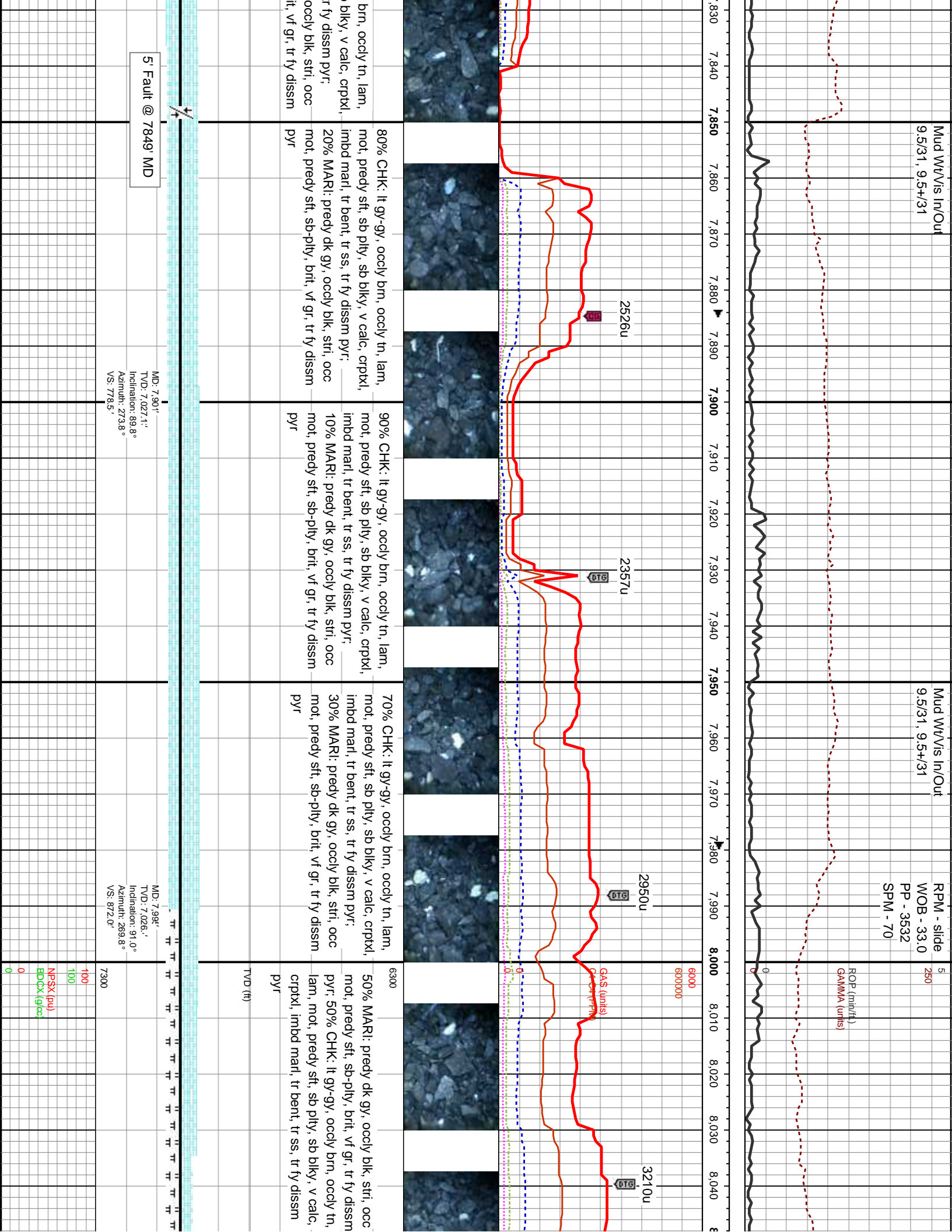


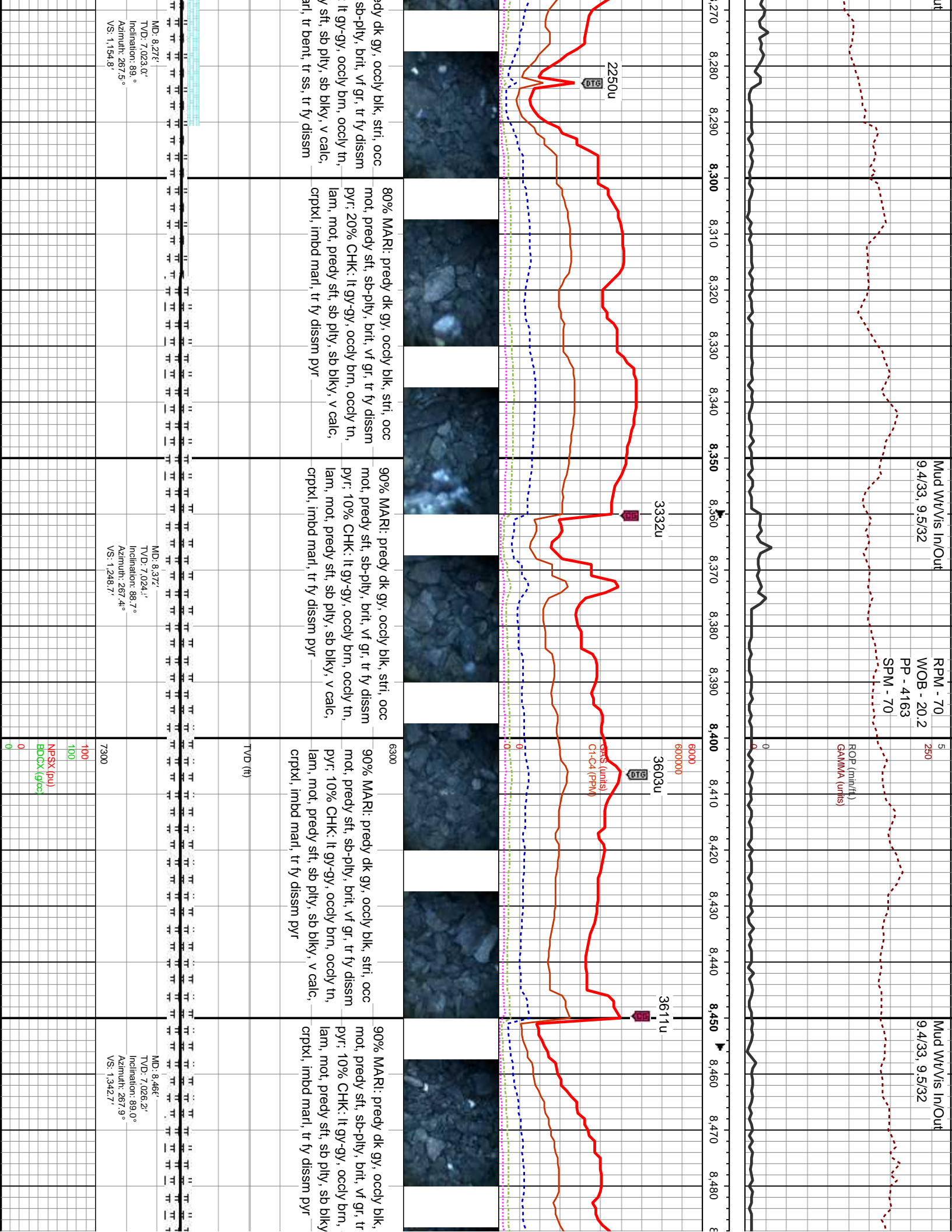


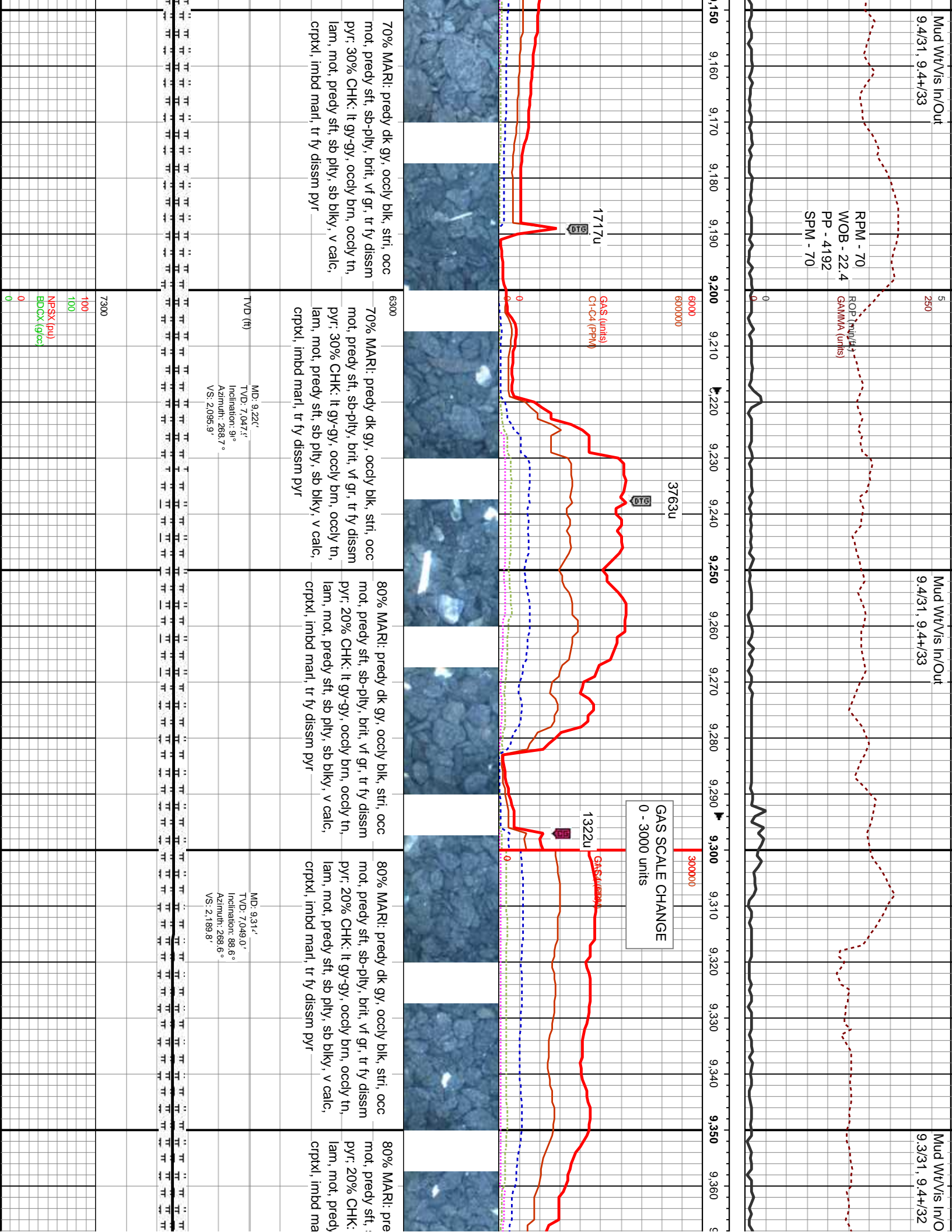
dk gy, stri, sft-v sft, sb sil, vf grn, rr vf tr pyr	6300	100% MARL: lt-dk gy, stri, sft-v sft, sb pfty-pfty, fri- brit, sil, vf gm, rr vf tr pyr	80% MARL: lt-dk gy, stri, sft-v sft, sb pfty-pfty, fri- brit, sil, vf gm, rr vf tr pyr; 20% CHK: lt-med gy, sme brn, lam, v sft-sft, sb pfty-bkly, v calc, crptxl, intbd w/marl, scat bent	60% CHK: lt-med gy, sme brn, lam, v sft-sft, sb pfty-bkly, v calc, crptxl, intbd w/marl, scat bent; 40% MARL: lt-dk gy, stri, sft-v sft, sb pfty-pfty, fri- brit, sil, vf gm, rr vf tr pyr	80% CHK: lt-med gy, sme brn, la sft-sft, sb pfty-bkly, v calc, crptxl, w/marl, scat bent; 20% MARL: lt-d stri, sft-v sft, sb pfty-pfty, fri- brit, s rr vf tr pyr	
MD: 7.194' TVD: 6.970.7' Inclination: 88.° Azimuth: 270.0° VS: 88.4°	7300	MD: 7.226' TVD: 6.981.2' Inclination: 70.5° Azimuth: 269.9° VS: 117.3°	MD: 7.257' TVD: 6.991.8' Inclination: 72.° Azimuth: 269.4° VS: 147.6°	MD: 7.320' TVD: 7.000.4' Inclination: 75.° Azimuth: 269.1° VS: 177.4°	MD: 7.361' TVD: 7.014.3' Inclination: 79.1° Azimuth: 270.4° VS: 238.7°	MD: 7.382' TVD: 7.019.5' Inclination: 8° Azimuth: 272.9° VS: 270.1°
100 100 NPSSX (pu) BDCX (g/cc) 0 0	7300	100 100 NPSSX (pu) BDCX (g/cc) 0 0	7300	100 100 NPSSX (pu) BDCX (g/cc) 0 0	7300	100 100 NPSSX (pu) BDCX (g/cc) 0 0

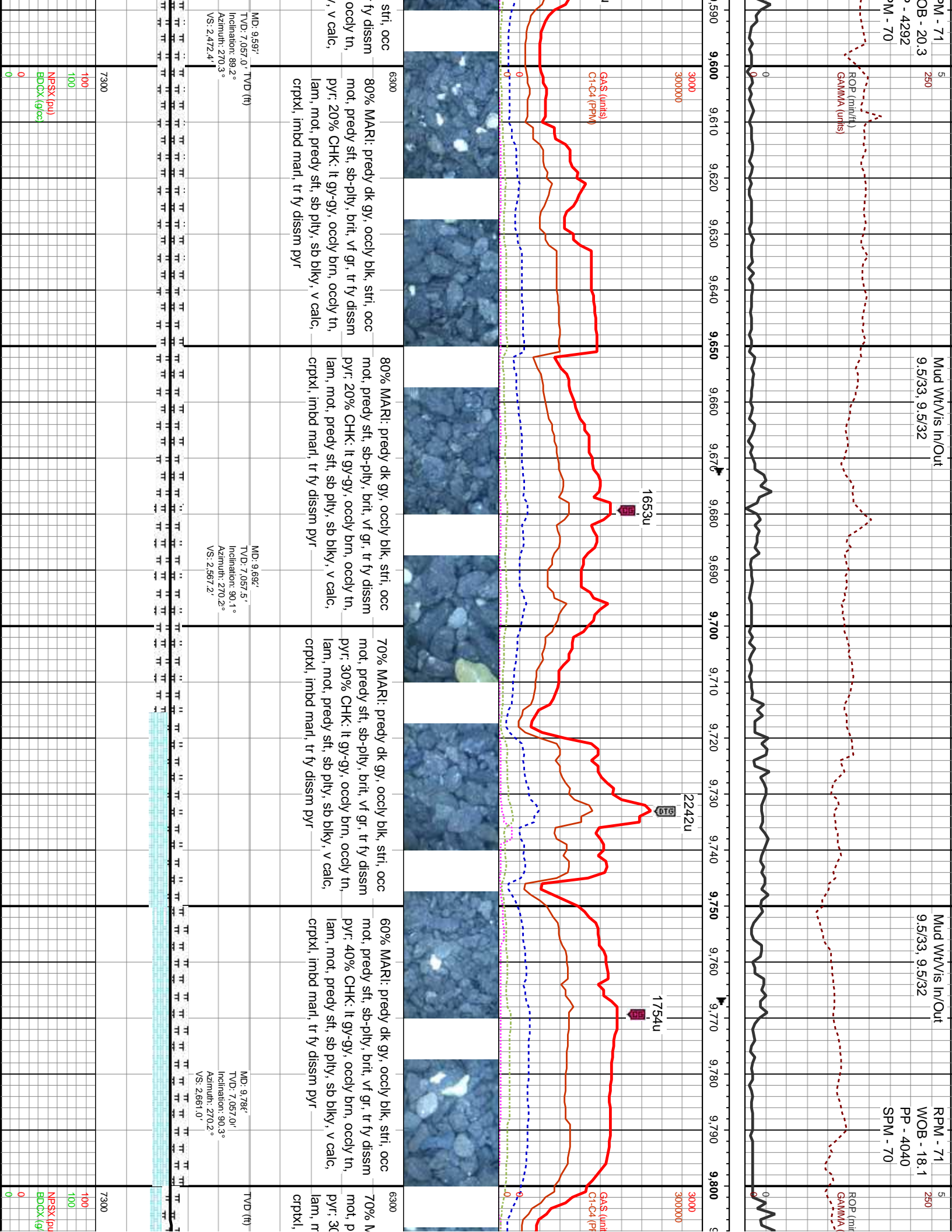


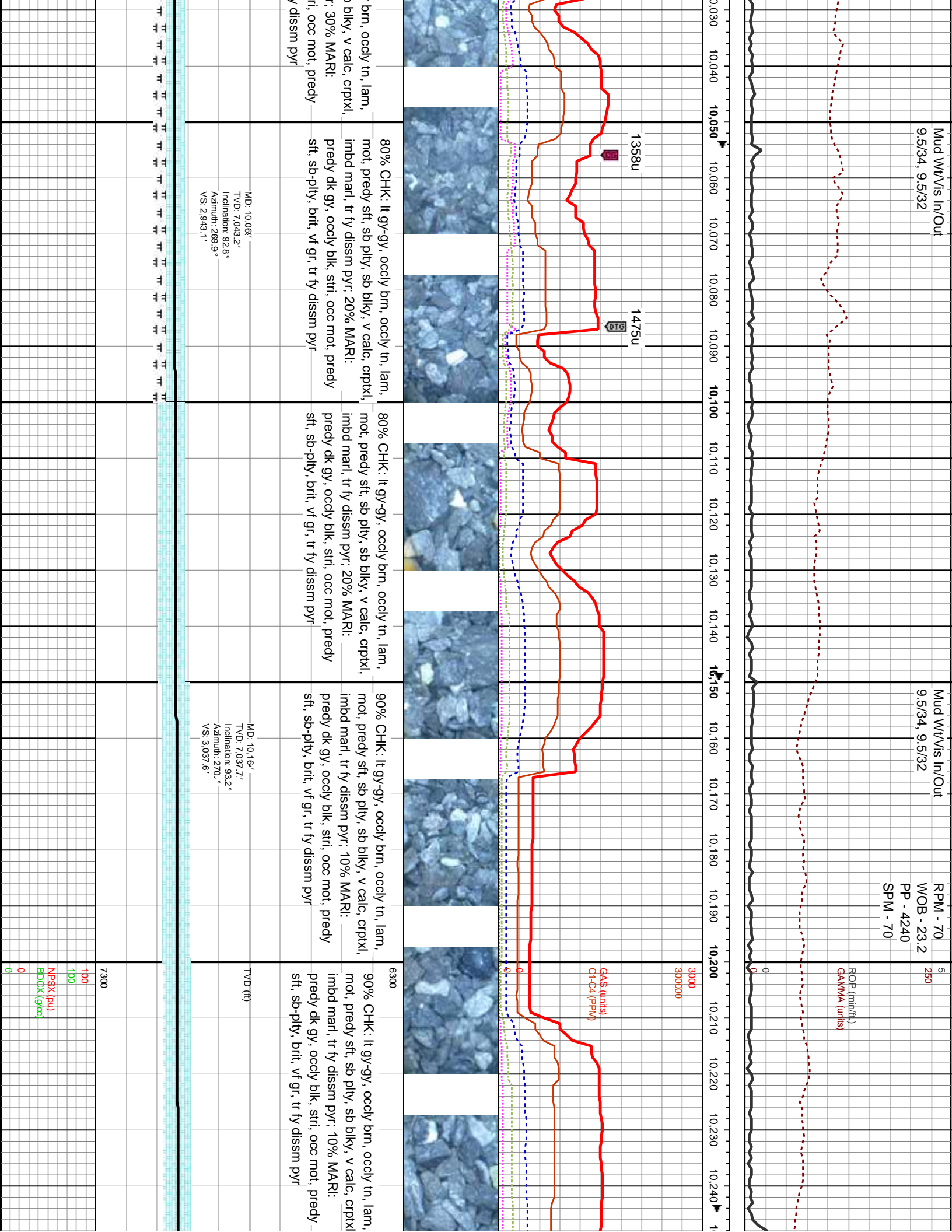


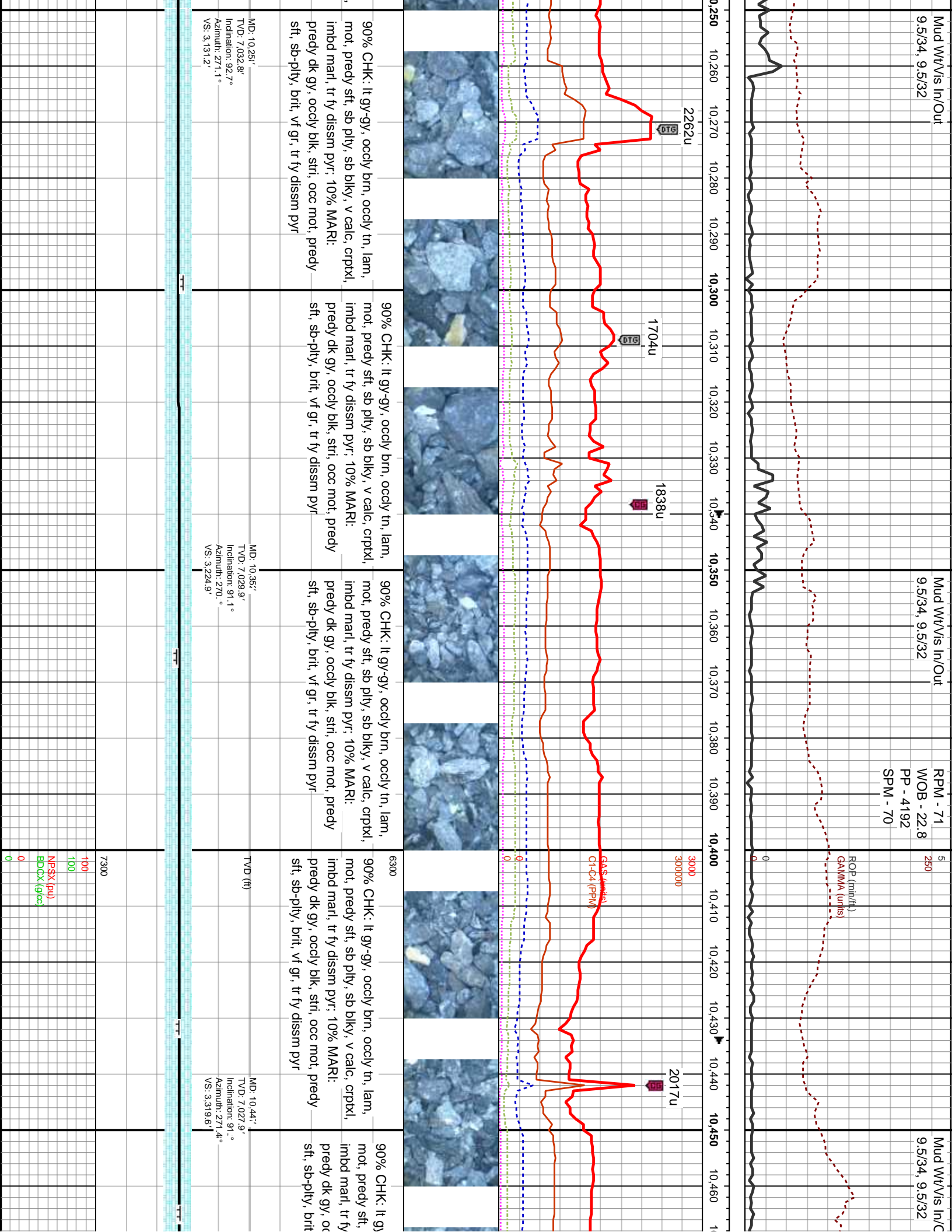


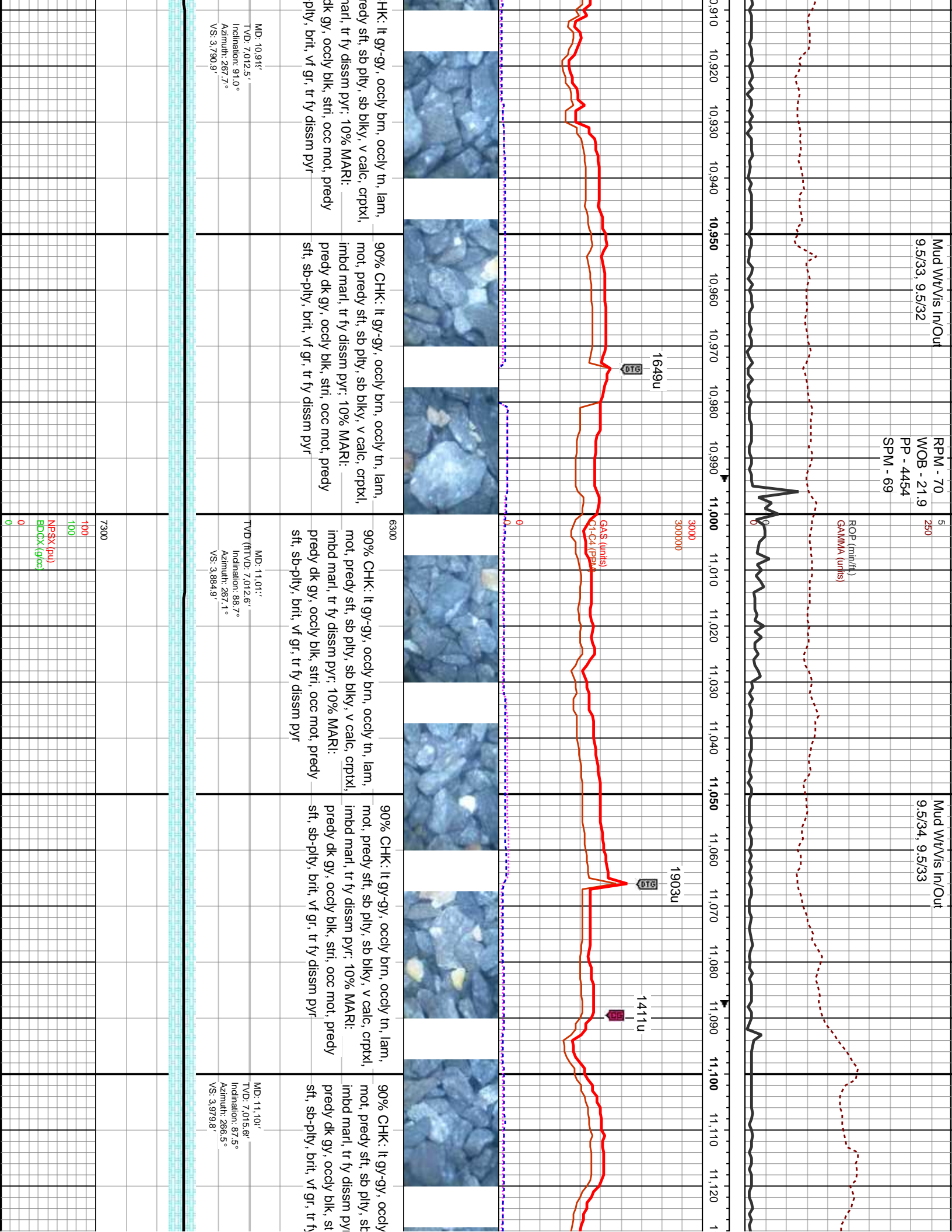


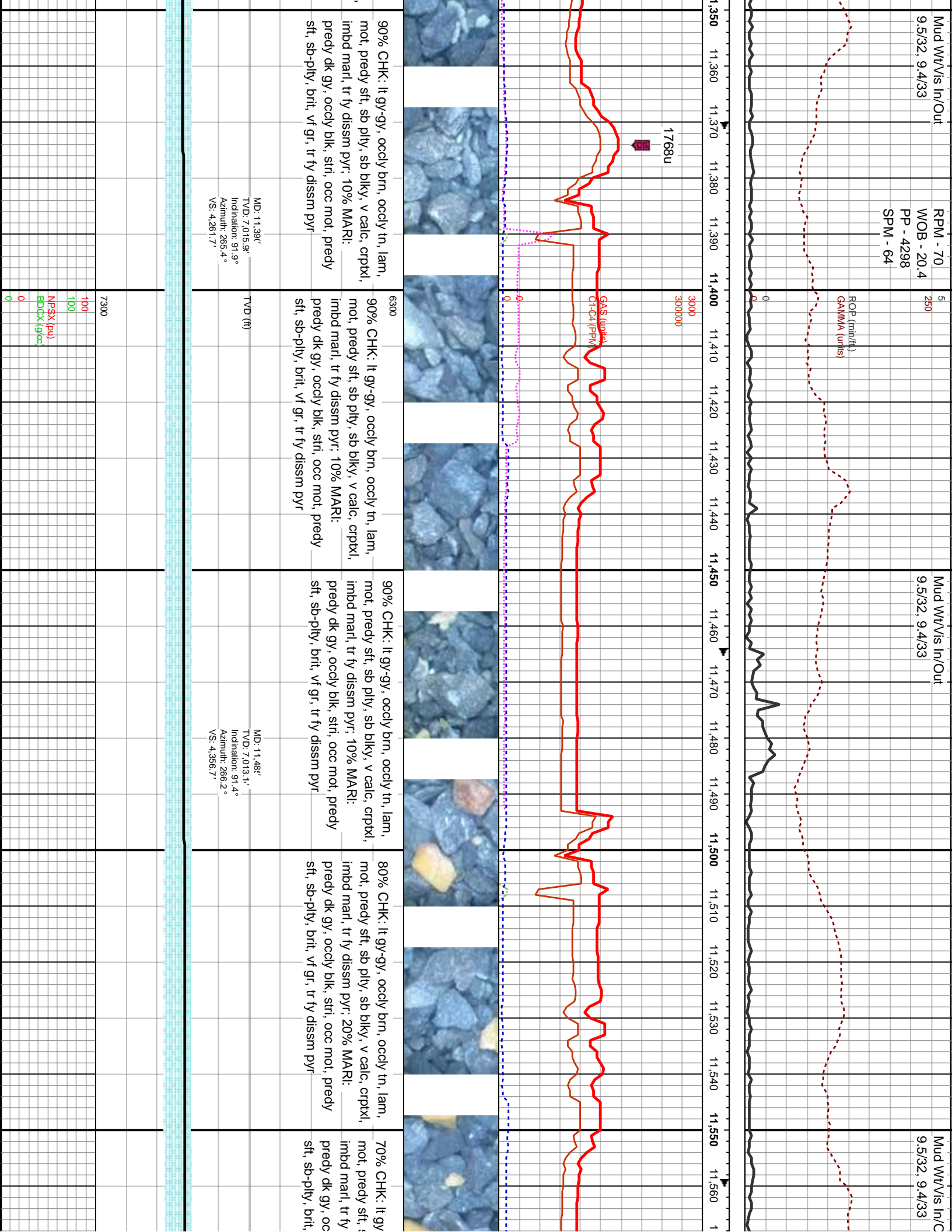


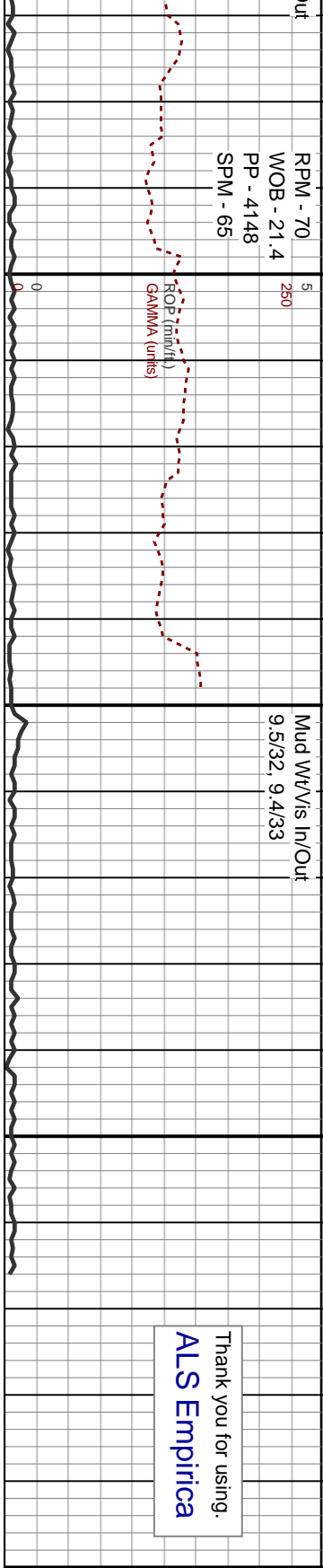




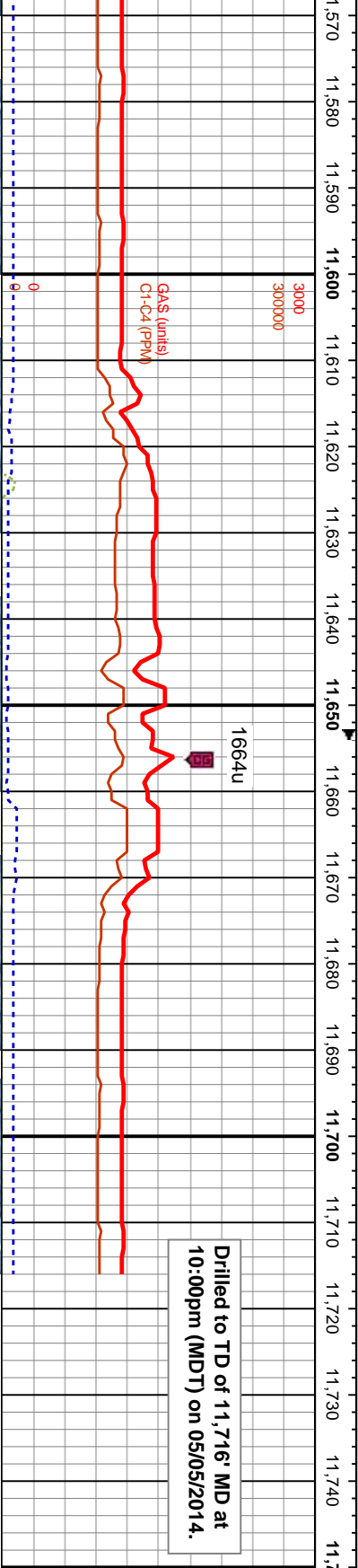








Thank you for using.
ALS Empirica



gy, occly brn, occly tn, lam, sb ply, sb blk, v calc, crptl, diss pyr; 30% MARI: cly blk, sti, occ mot, predy vf gr, tr fy diss pyr	6300	60% CHK: lt gy-gy, occly brn, occly tn, lam, mot, predy sft, sb ply, sb blk, v calc, crptl, imbd marl, tr fy diss pyr; 40% MARI: predy dk gy, occly blk, sti, occ mot, predy sft, sb-ply, brit, vf gr, tr fy diss pyr	60% CHK: lt gy-gy, occly brn, occly tn, lam, mot, predy sft, sb ply, sb blk, v calc, crptl, imbd marl, tr fy diss pyr; 40% MARI: predy dk gy, occly blk, sti, occ mot, predy sft, sb-ply, brit, vf gr, tr fy diss pyr
MD: 11,57' TVD: 7,010.3' Inclination: 91.9° Azimuth: 266.4° VS: 4,450.6'	TVD (ft)	MD: 11,64.6' TVD: 7,007.9' Inclination: 92.3° Azimuth: 266.5° VS: 4,514.6'	TD @ 11,716' MD. We reached TD at 2200hrs 05-05-2014.
100 100 NP&X (pu) BDCX (g/cc)	7300		