



Scale: 5" / 100'
Measured Depth Log

Well Name Pronghorn O-K-15HNC

Location SESW SECTION 15, T5N, R61W

State COLORADO

County WELD

Country USA

Rig Number CADE 25

API Number 05-123-41160

AFE # 15107

Region DJ BASIN

Field WATTENBERG

Spud Date 3/2/2015

Drilling Completed 3/9/2015

Surface Coordinates 250' FSL x 1418' FWL

Bottom Hole Coordinates 397' FNL x 2700' FWL

Ground Elevation 4669'

K.B. Elevation 4686'

Logged Interval 5800' To 10943'

Total Depth 10943'

Formation NIOBRARA C CHALK

Type of Drilling Fluid FW LSND

Operator

Company Bonanza Creek Energy Inc.

Address 410 17th STREET, SUITE 1500
DENVER, CO 80202

Geologist

Name BRANT LOGAN

Company BONANZA CREEK ENERGY INC.

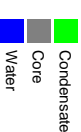
Address 410 17th STREET, SUITE 1500
DENVER, CO 80202

Other

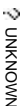

































COLUMBINE LOGGING, INC. 602 S LIPAN STREET
DENVER, COLORADO 80

WELL SITE GEOLOGISTS JOEY LUCE
JEFF LACY



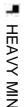


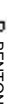
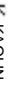



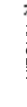


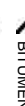
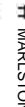

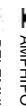
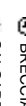
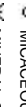

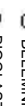
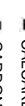
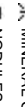

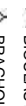
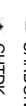
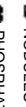

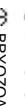
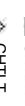
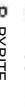

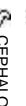
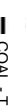
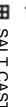

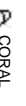
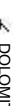

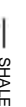
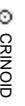

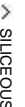

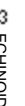
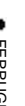
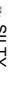



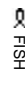





Zone Color Coding



Rock Types

 UNKNOWN	 COAL	 MARLSTONE	 SHALY SANDSTONE
 ANHYDRITE	 CONGLOMERATE	 METAMORPHIC	 SHALY SILTSTONE
 BENTONITE	 DOLOMITE	 NO SAMPLE	 SILTY SHALE
 BRECCIA	 DOLOMITIC LIMESTONE	 SALT	 SILTSTONE
 CHALK	 GRANITE	 SANDSTONE	 TILL
 CEMENT	 GYPSUM	 SALT-PEPPER SANC	 TUFF
 CHERT	 IGNEOUS	 SHALE	 WELDED TUFF
 CLAY CHOKE SANC	 SIDERITE or LIMONITE	 SHALE COLORED	
 CLAYSTONE	 LIMESTONE	 SHALE GRAY	

Accessories

 GASTROPOD	 ARGILLITE GRAIN	 HEAVY MINERAL	 ANHYDRITE STRINGER
 INOCERAMUS	 B BENTONITE	 K KAOLIN	 BENTONITE STRINGER
 OOLITE	 BITUMENOUS SUBSTANCE	 M MARLSTONE	 COAL STRINGER
 OSTRACOD	 BRECCIA FRAGMENTS	 M MICACEOUS	 DOLOMITE STRINGER
 PELECYPOD	 CALCAREOUS	 M MINERAL CRYSTALS	 GYPSUM STRINGER
 BIOCLASTIC	 CARBONACEOUS FLAKES	 N NODULES	 LIMESTONE STRINGER
 BRACHIOPOD	 P PISOLITE	 P PHOSPHATE PELLETS	 MARLSTONE (CALO) STRG
 BRYOZOA	 P PLANT REMAINS	 P PYRITE	 MARLSTONE (DOL) STRG
 CEPHALOPOD	 COAL - THIN BEDS	 B SALT CAST	 SANDSTONE STRINGER
 CORAL	 D DOLOMITIC	 S SANDY	 SHALE STRINGER
 CRINOID	 F FELDSPAR	 S SILICEOUS	 SILTSTONE STRINGER
 ECHINOID	 F FERRUGINOUS PELLET	 S SILTY	
 FISH	 F FERRUGINOUS	 T TUFFACEOUS	
 FORAMINIFERA	 A ANHYDRITIC	 G GLAUCONITE	
 F FOSSIL	 A ARGILLACEOUS	 G GYPSIFEROUS	

Stringer

Oil Show

 P PINPOINT
 V VUGGY

Engineering

	EVEN		QUESTIONABLE		BIT
	SPOTTED STAINING		CONNECTION (UP)		

Porosity

 C CONNECTION (DOWN)	 C CONNECTION GAS
 E EARTHY	 C CONNECTION GAS (L)
 F FENESTRAL	 T TRIP GAS
 F FRACTURE	 T TRIP GAS (LEFT)
 I INTERCRYSTALLINE	 D DOWN TIME GAS
 I INTEROOLITIC	 D DOWN TIME GAS (L)
 M MOLDIC	 C CORE - LOST
 O ORGANIC	 C CORE - RECOVERED

Other Symbols

 DST INTERVAL  WIRELINE TESTED - LEFT **E** EARTHY

 FAULT  WIRELINE TESTED - RT **FX** FINELYXLN

 FORMATION TOP  DRILL STEM TEST **GS** GRAINSTONE

 GAS SHOW  MINDEPTH MN DEPTH **L** LITHOGRAPHIC


 OIL SHOW **MX** MICROXLN


 MINDEPTH UP MN DEPTH UP **MS** MUDSTONE

Rounding

 MN DEPTH (DOWN) **A** ANGULAR **PS** PACKSTONE

 NORMAL FAULT **R** ROUNDED **WS** WACKSTONE

 OVERTURNED STRATA **B** SUBANG

 REVERSE FAULT **R** SUBRND

Sorting

 CASING **M** MODERATE

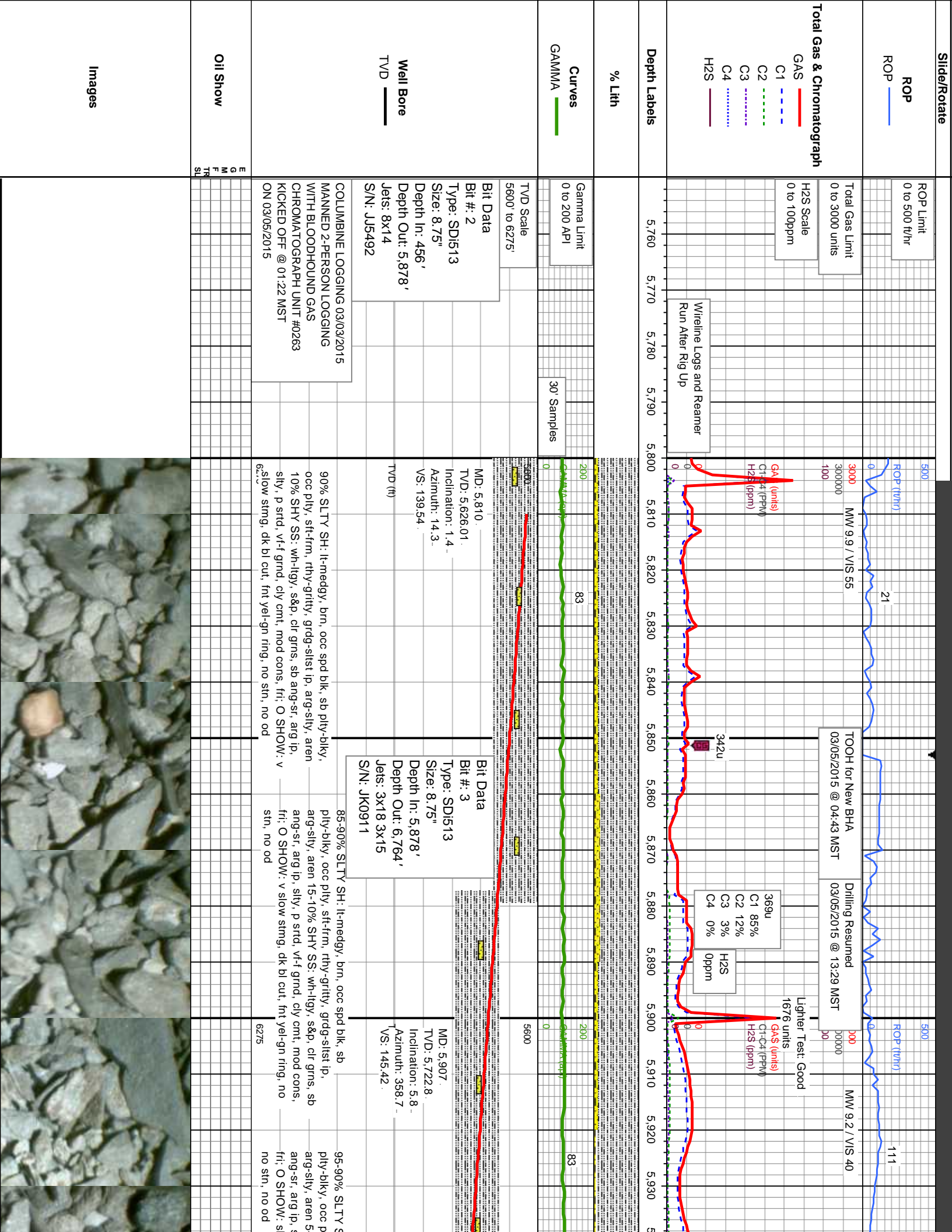
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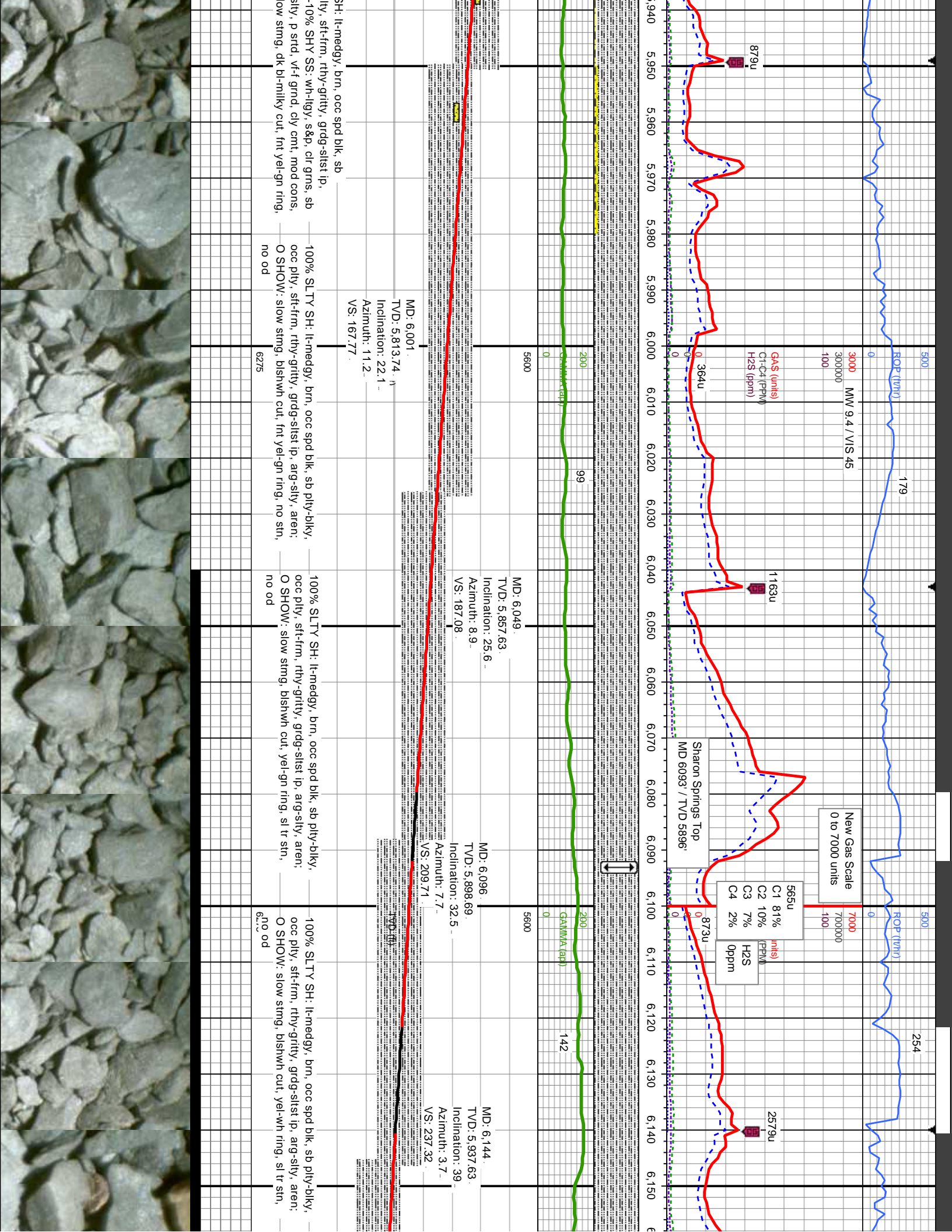
 SIDEWALL CORE (LEFT) **P** POOR

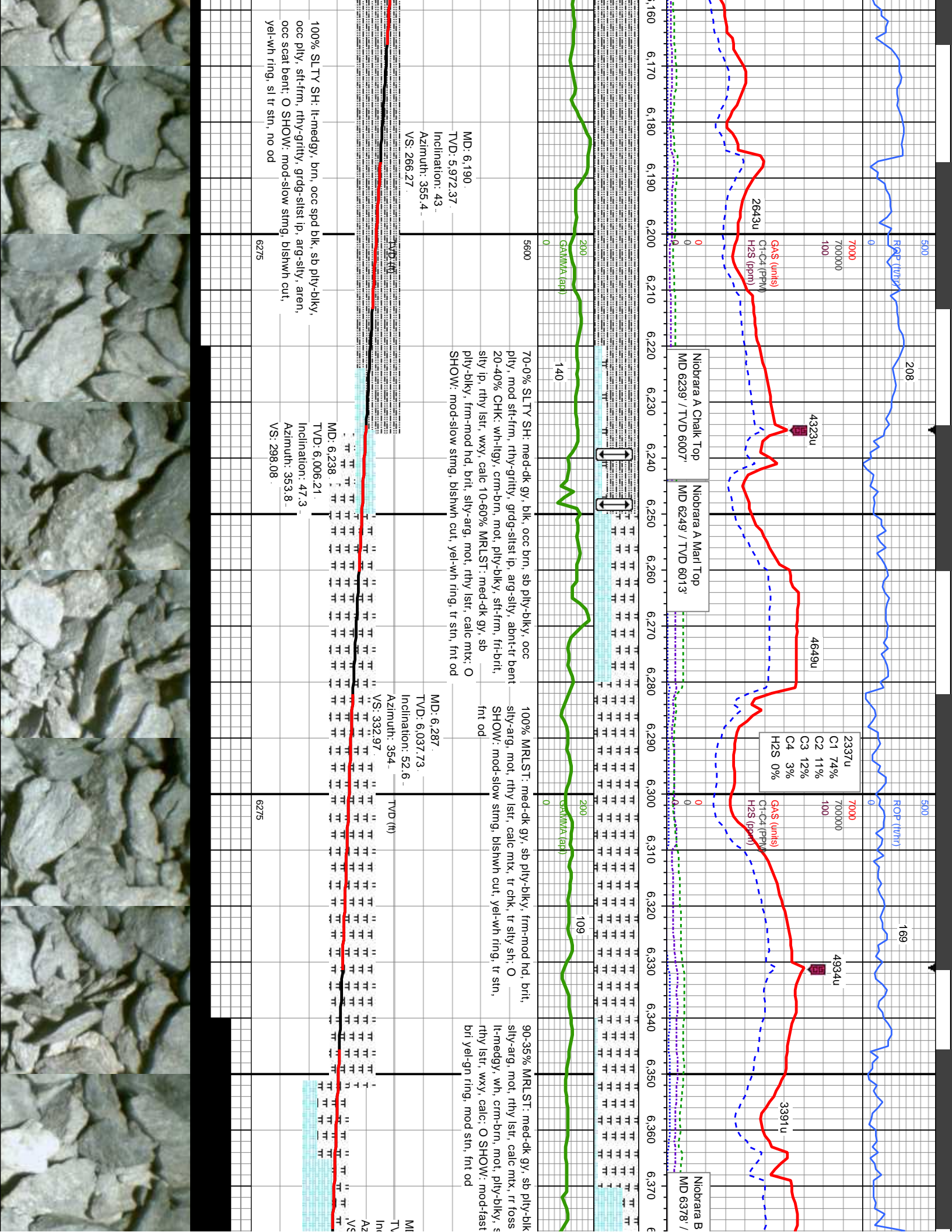
 SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

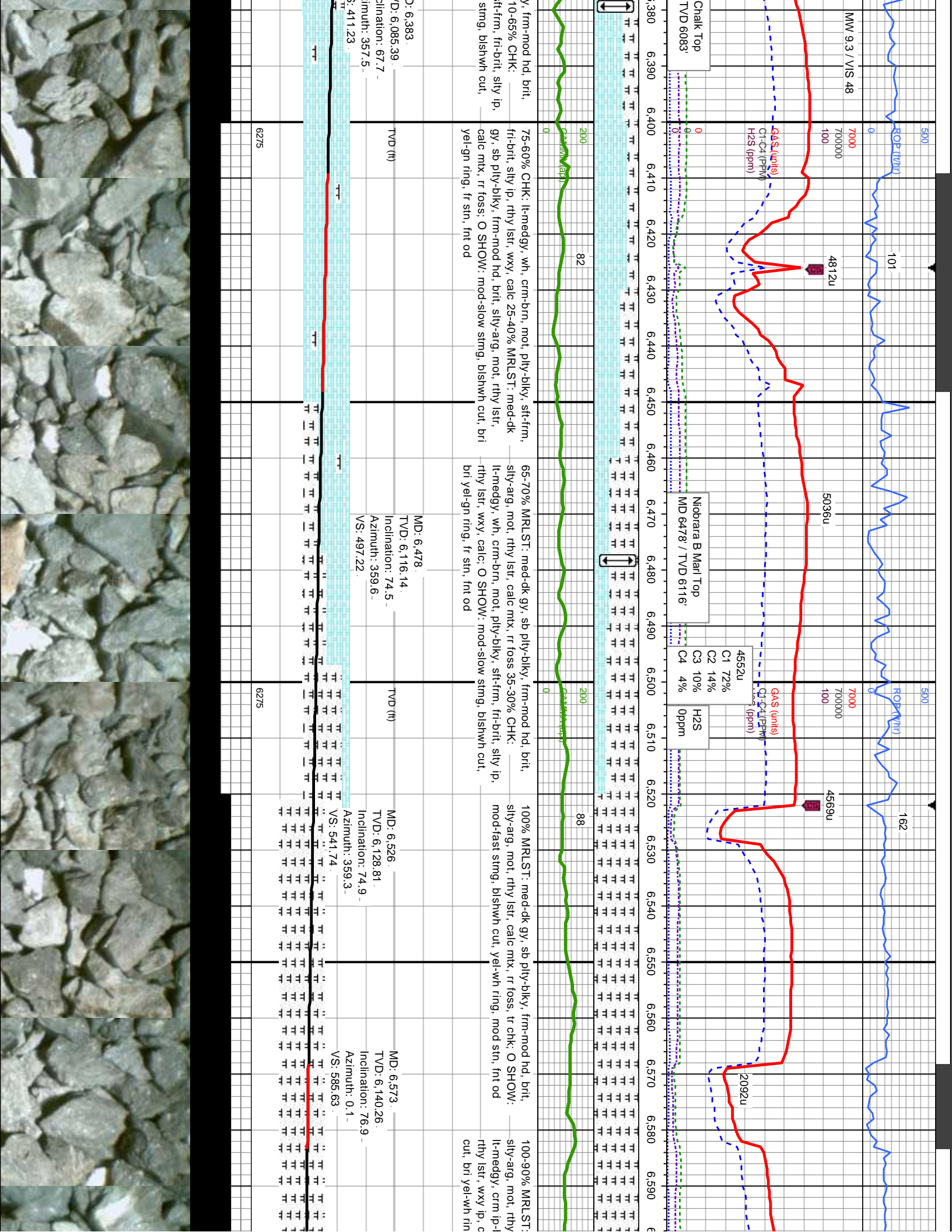
 SLIDE **C** CHALKY

 SURVEY **CX** CRYPTOXLN



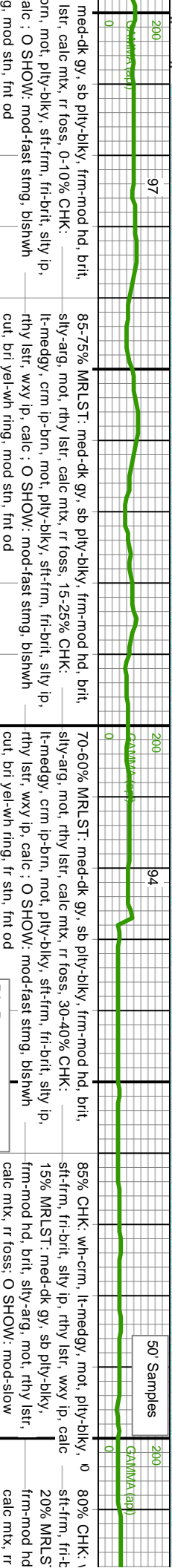
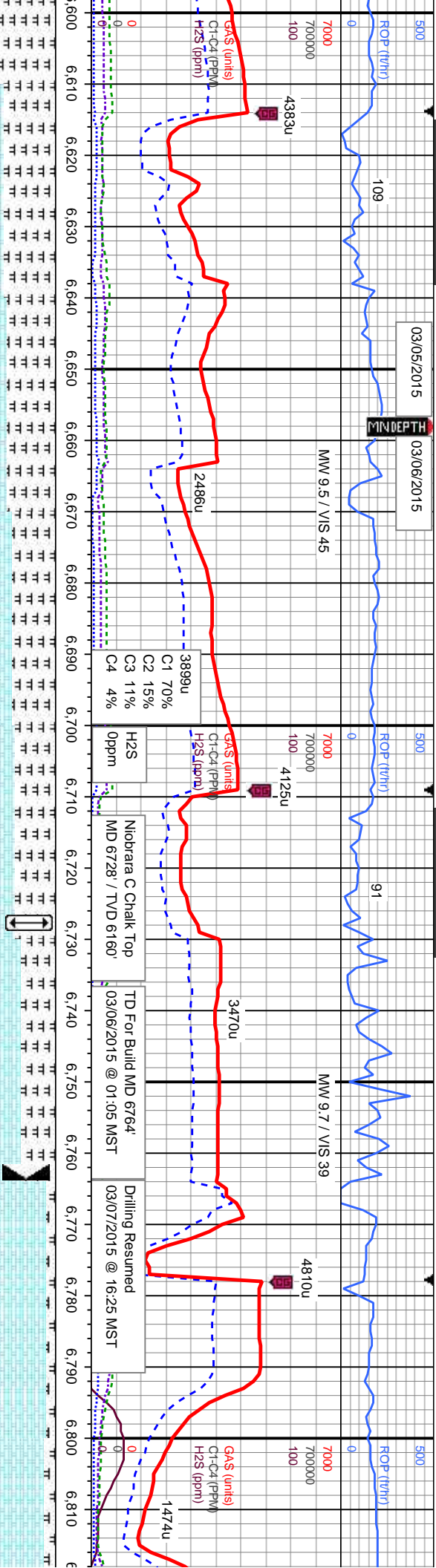






03/05/2015 03/06/2015

MINDEPTH



med-dk gy, sb ply-biky, frm-mod hd, brit, 85-75% MRLST: med-dk gy, sb ply-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mix, r foss, 15-25% CHK: sily-arg, mot, rthy lstr, calc mix, r foss, 30-40% CHK: ltr-medgy, crm ip-brn, mot, ply-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc ; O SHOW: mod-fast stmg, blshwh cut, bri yel-wh ring, mod str, fnt od

70-60% MRLST: med-dk gy, sb ply-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mix, r foss, 30-40% CHK: ltr-medgy, crm ip-brn, mot, ply-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc ; O SHOW: mod-fast stmg, blshwh cut, bri yel-wh ring, fr str, fnt od

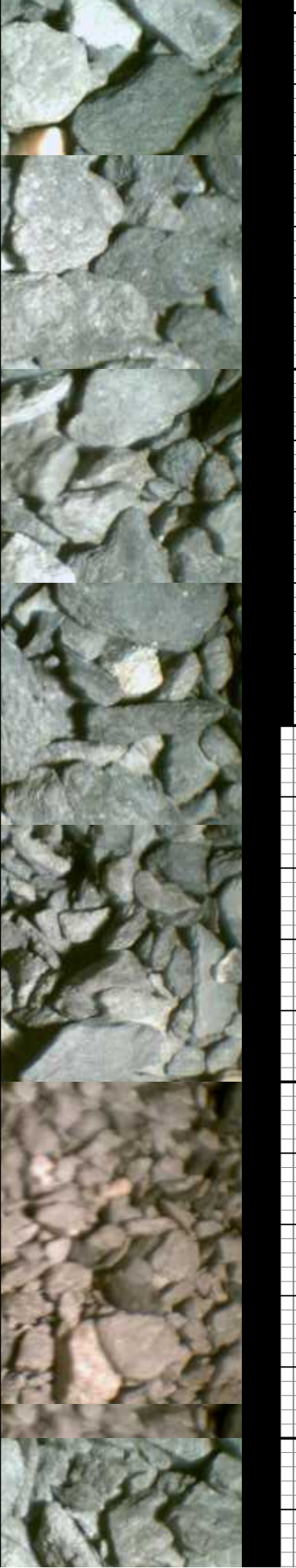
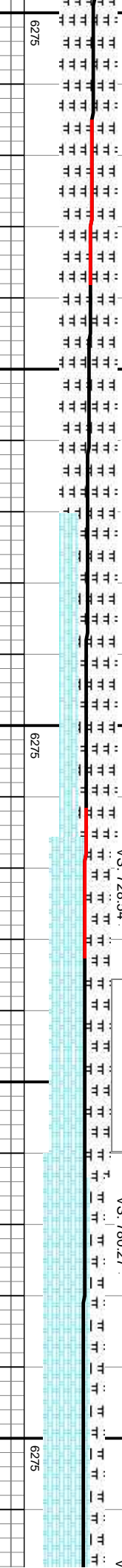
85% CHK: wh-crm, ltr-medgy, mot, ply-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc 15% MRLST: med-dk gy, sb ply-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mix, r foss, O SHOW: mod-slow stmg, blshwh cut, gn-yel ring, fr str, fnt od

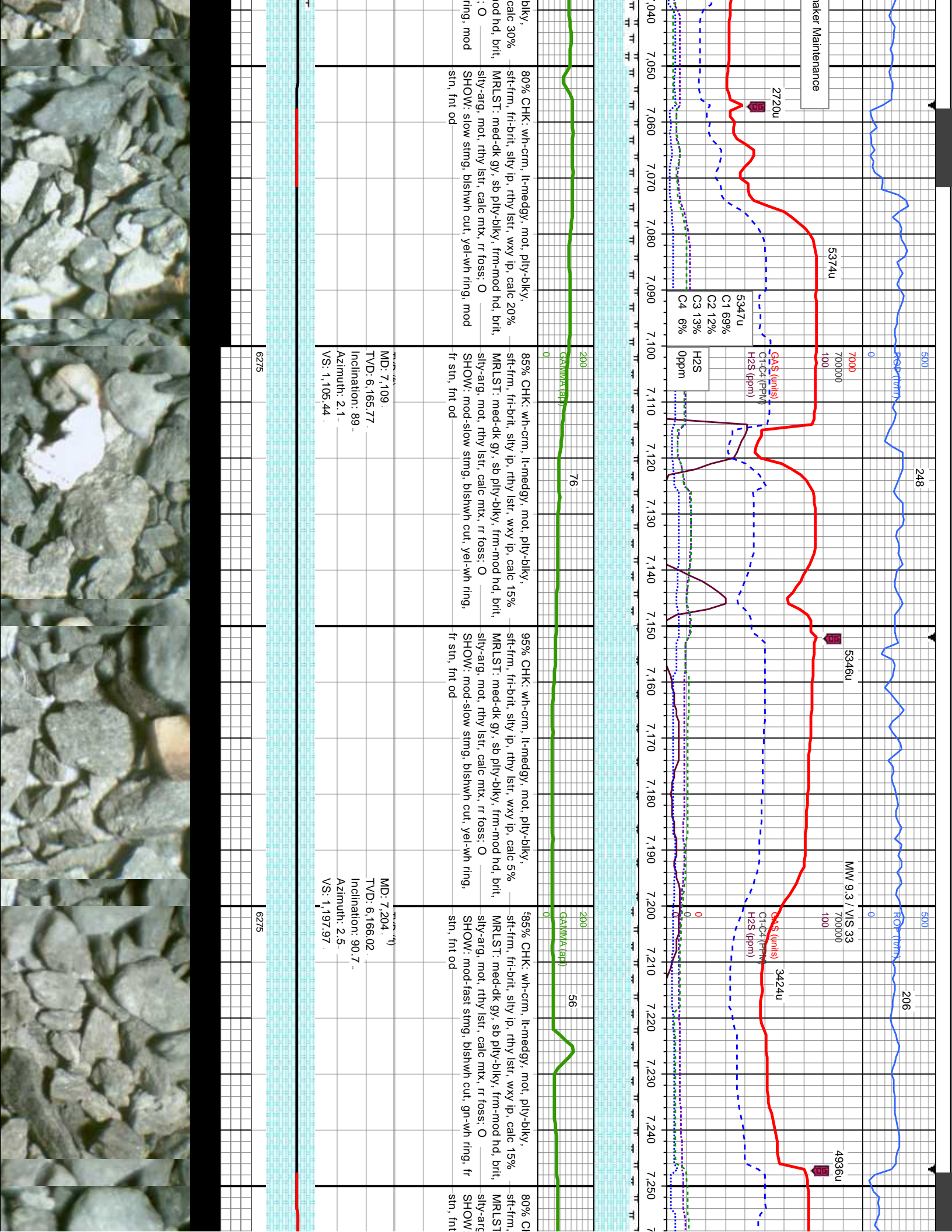
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TVD: 6,156.09
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Azimuth: 1.4
VS: 676.22

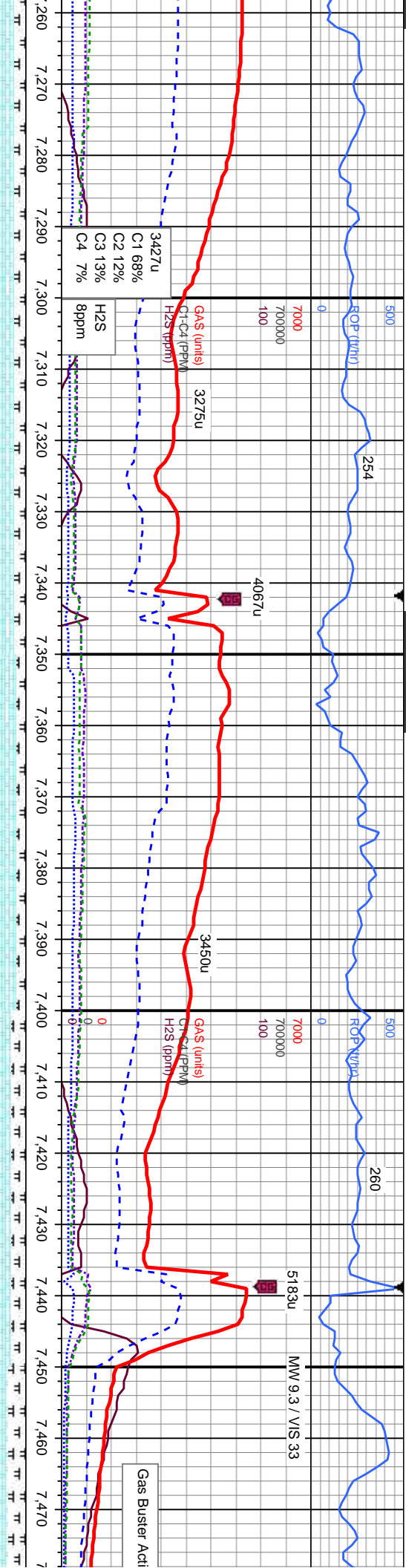
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TVD: 6,160.57
Inclination: 86.6
Azimuth: 2.3
VS: 728.54

MD: 6,775
TVD: 6,162.76
Inclination: 88.1
Azimuth: 2.5
VS: 780.27

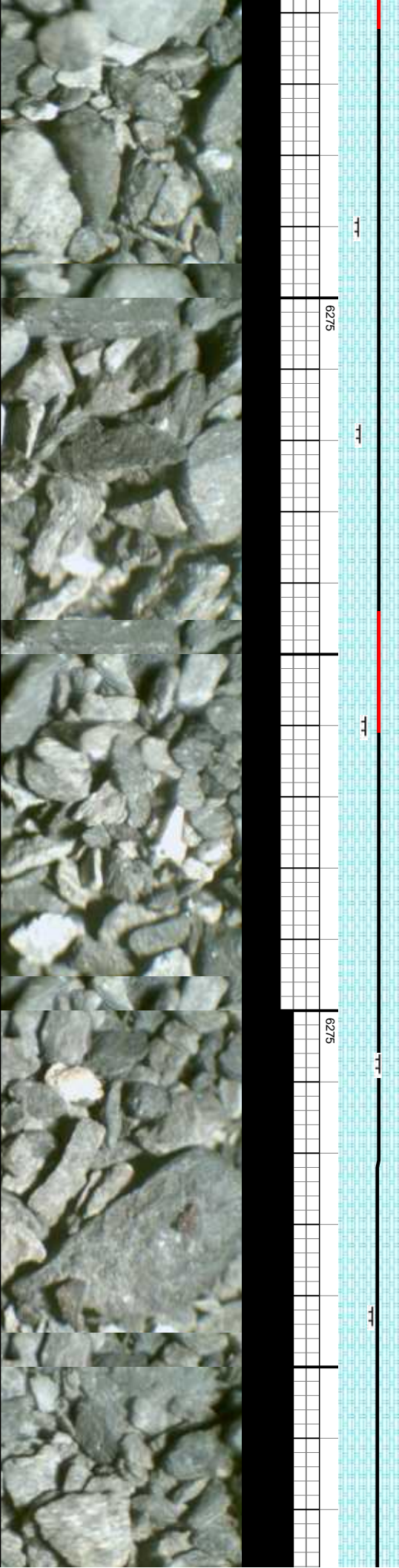
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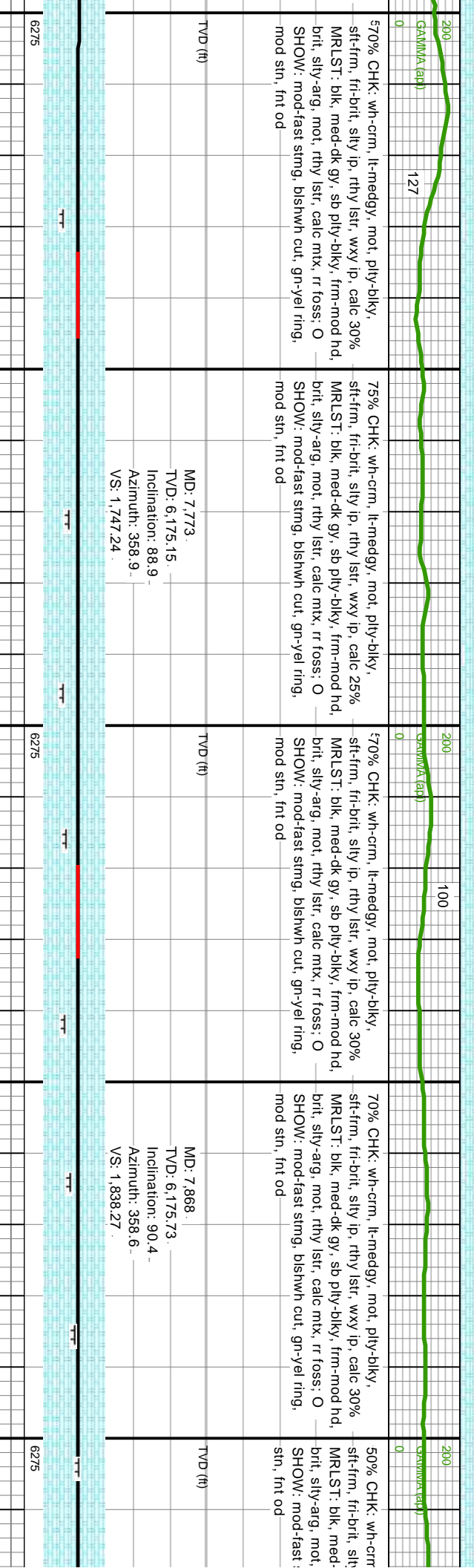
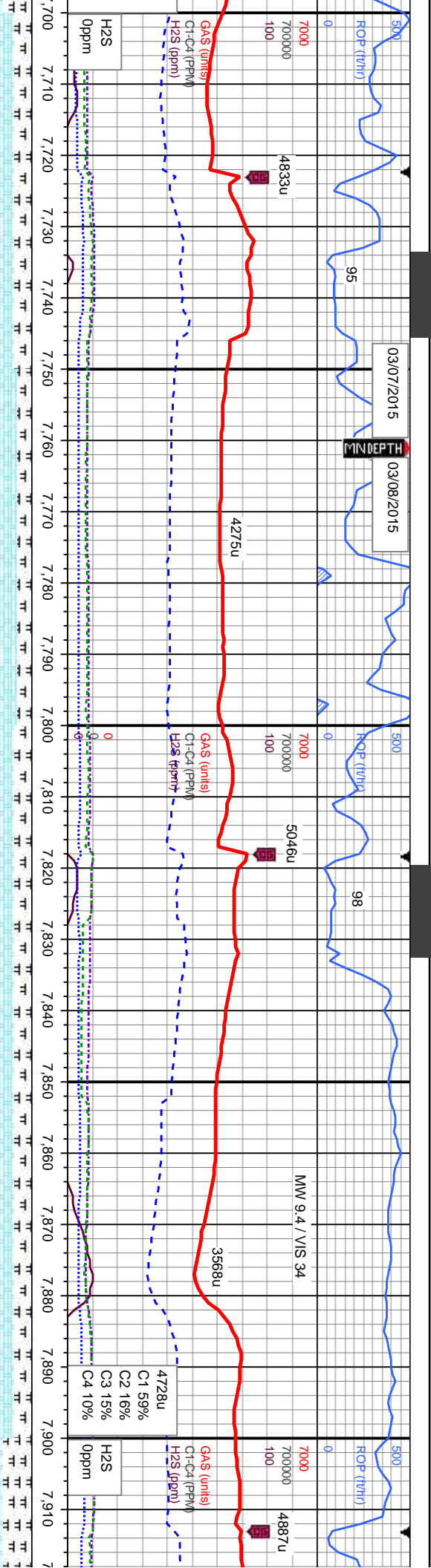


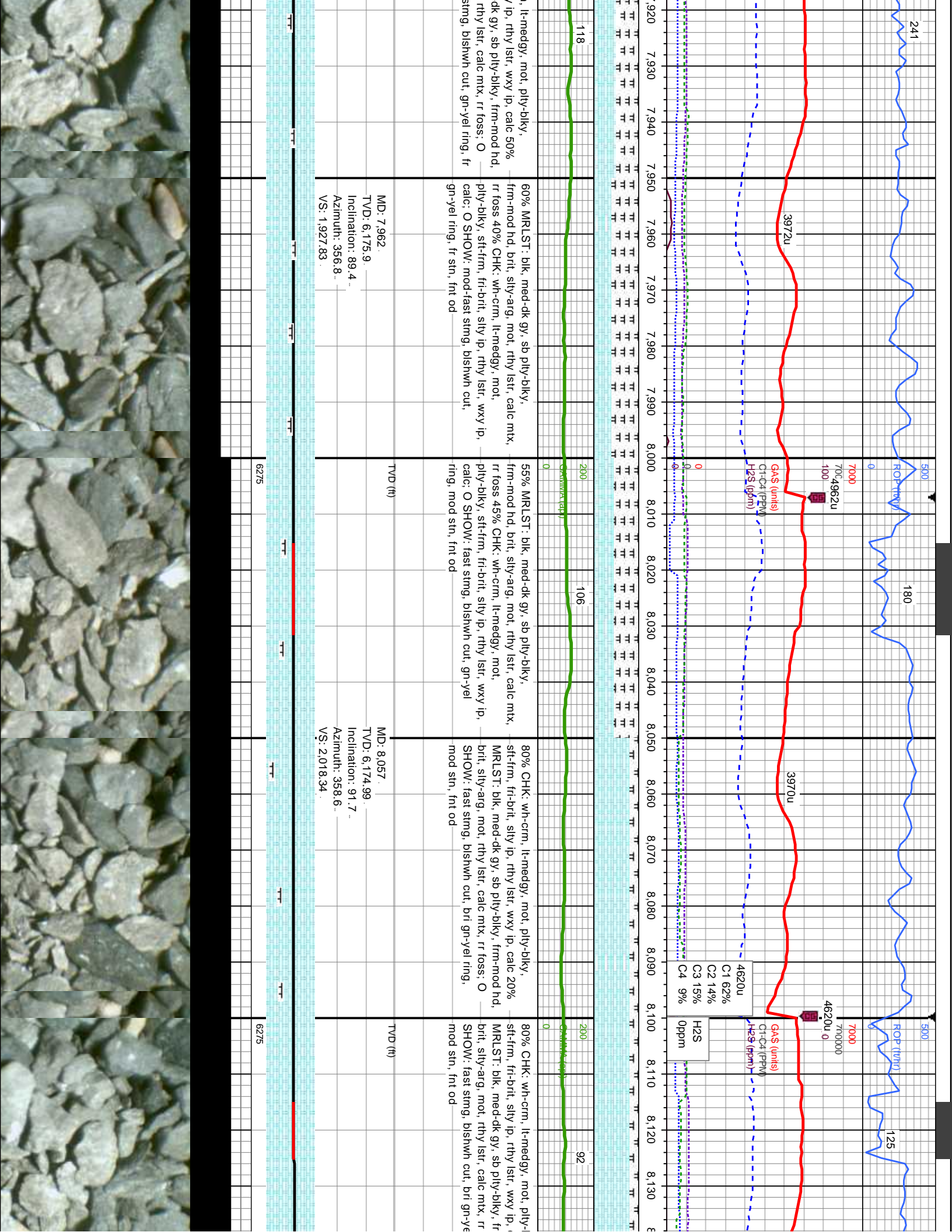


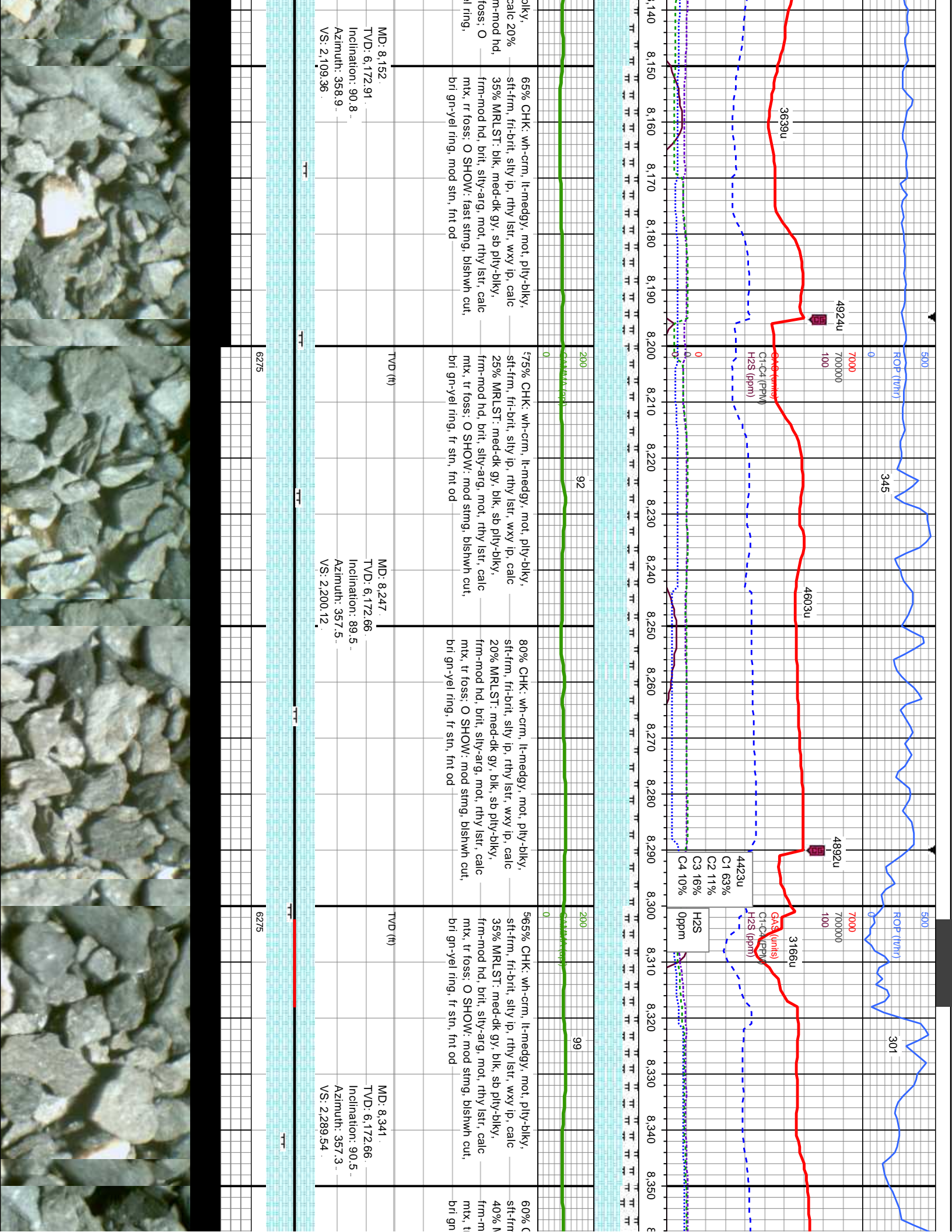


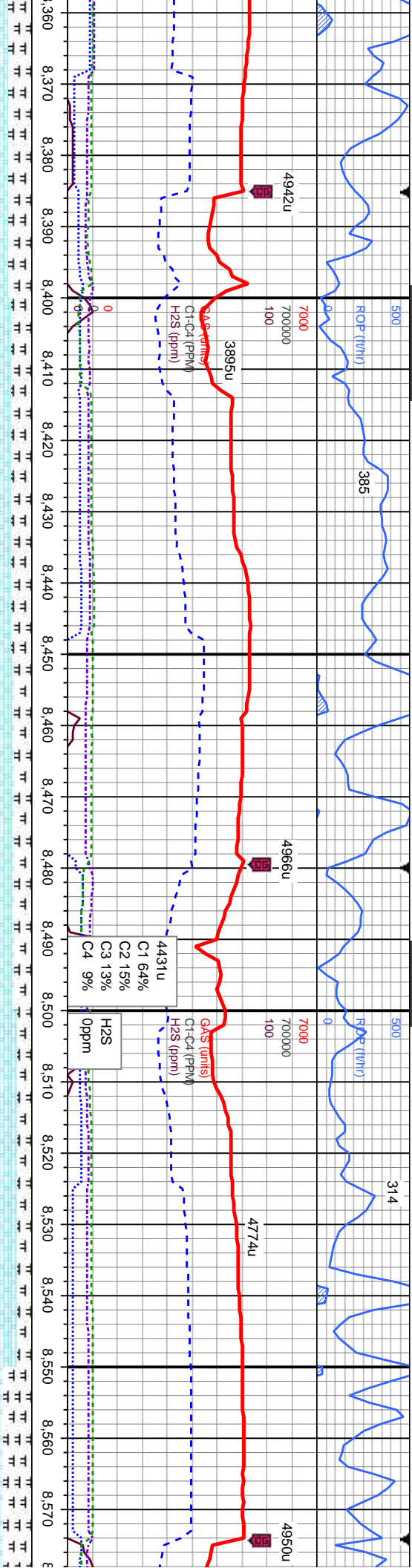
HK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 20% med-dk gy, sb pily-biky, frm-mod hd, brit, i, mot, rthy lstr, calc mtx, rr foss; O mod-fast stimg, blshwh cut, gn-wh ring, fr od	80% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 20% MRLST: med-dk gy, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-fast stimg, blshwh cut, gn-yl ring, fr stn, fnt od	85% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 15% MRLST: med-dk gy, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-fast stimg, blshwh cut, gn-yl ring, fr stn, fnt od	75% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 25% MRLST: med-dk gy, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-fast stimg, blshwh cut, gn-yl ring, fr mod stn, fnt od	70% CHK: wh-crm, lt-medgy, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 25% MRLST: med-dk gy, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc n SHOW: mod-fast stimg, blshwh mod stn, fnt od
MD: 7,298. TVD: 6,165.2 Inclination: 90.3 Azimuth: 2.2 VS: 1,289.56	MD: 7,393. TVD: 6,165.2 Inclination: 89.7 Azimuth: 0.4 VS: 1,381.71	MD: 7,393. TVD: 6,165.2 Inclination: 89.7 Azimuth: 0.4 VS: 1,381.71	MD: 7,393. TVD: 6,165.2 Inclination: 89.7 Azimuth: 0.4 VS: 1,381.71	MD: 7,393. TVD: 6,165.2 Inclination: 89.7 Azimuth: 0.4 VS: 1,381.71











CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 35% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtz, tr foss, O SHOW: mod stmg, blshwh cut, wh ring, fr stn, fnt od

565% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 35% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtz, tr foss, O SHOW: mod stmg, blshwh cut, bri gn-yel ring, fr stn, fnt od

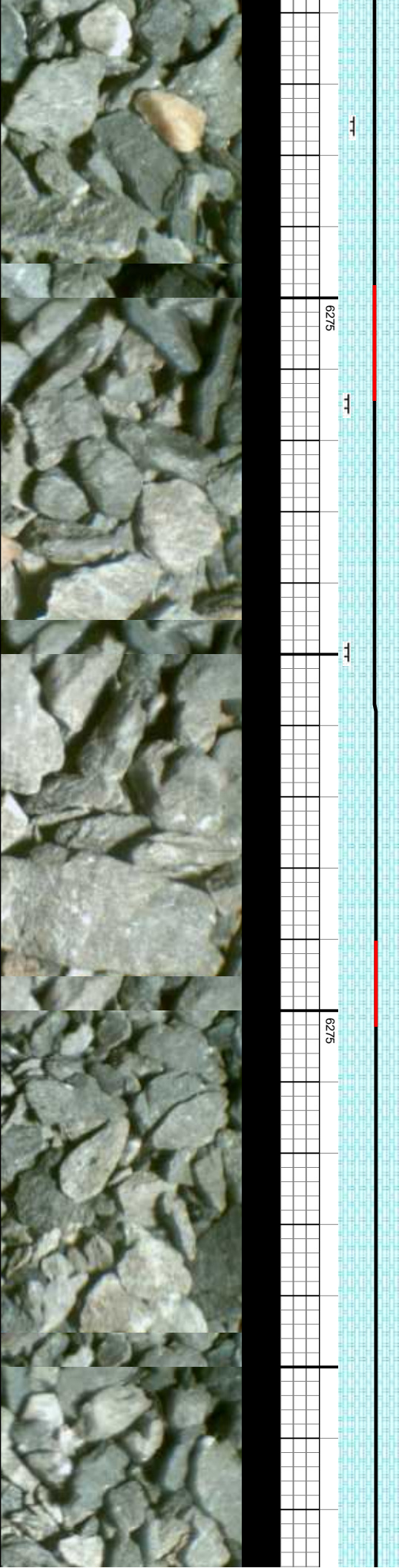
70% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 30% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtz, tr foss, O SHOW: mod stmg, blshwh cut, bri yel-gn ring, fr stn, fnt od

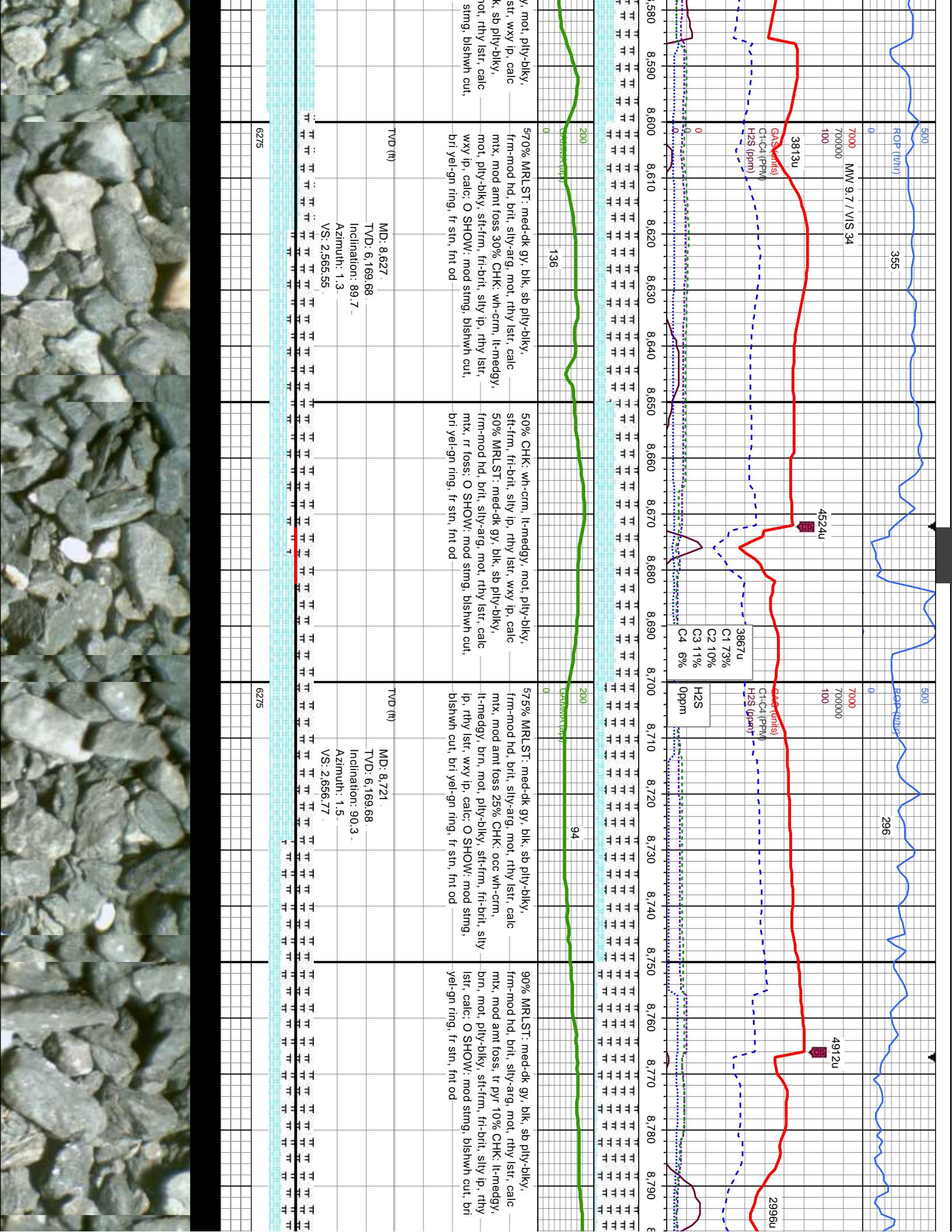
75% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 25% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtz, tr foss, O SHOW: mod stmg, blshwh cut, bri yel-gn ring, fr stn, fnt od

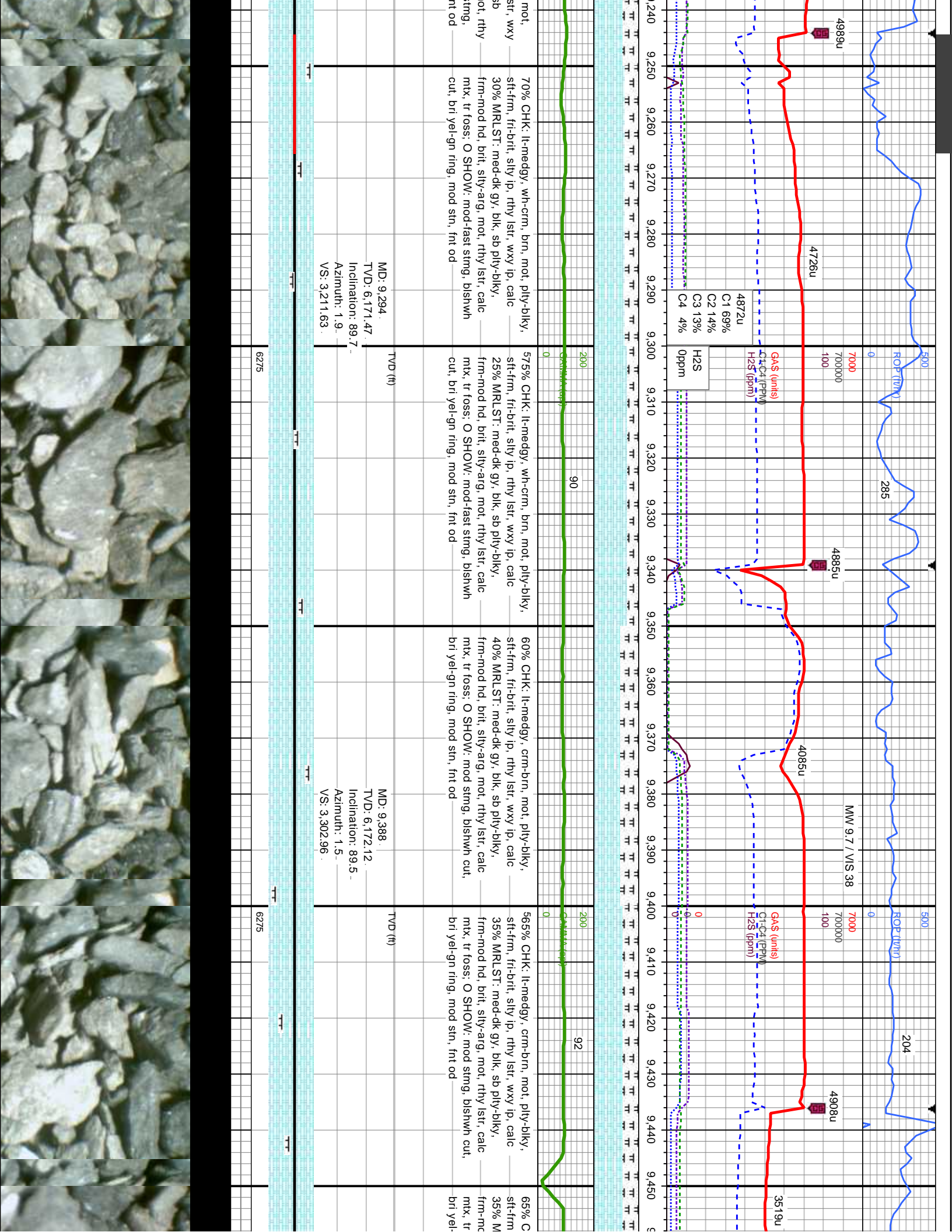
50% CHK: wh-crm, lt-medgy, mot, pily-biky, sft-frm, frt-brit, silty ip, rthy lstr, wxy ip, calc 50% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtz, tr foss, O SHOW: mod stmg, blshwh cut, bri yel-gn ring, fr stn, fnt od

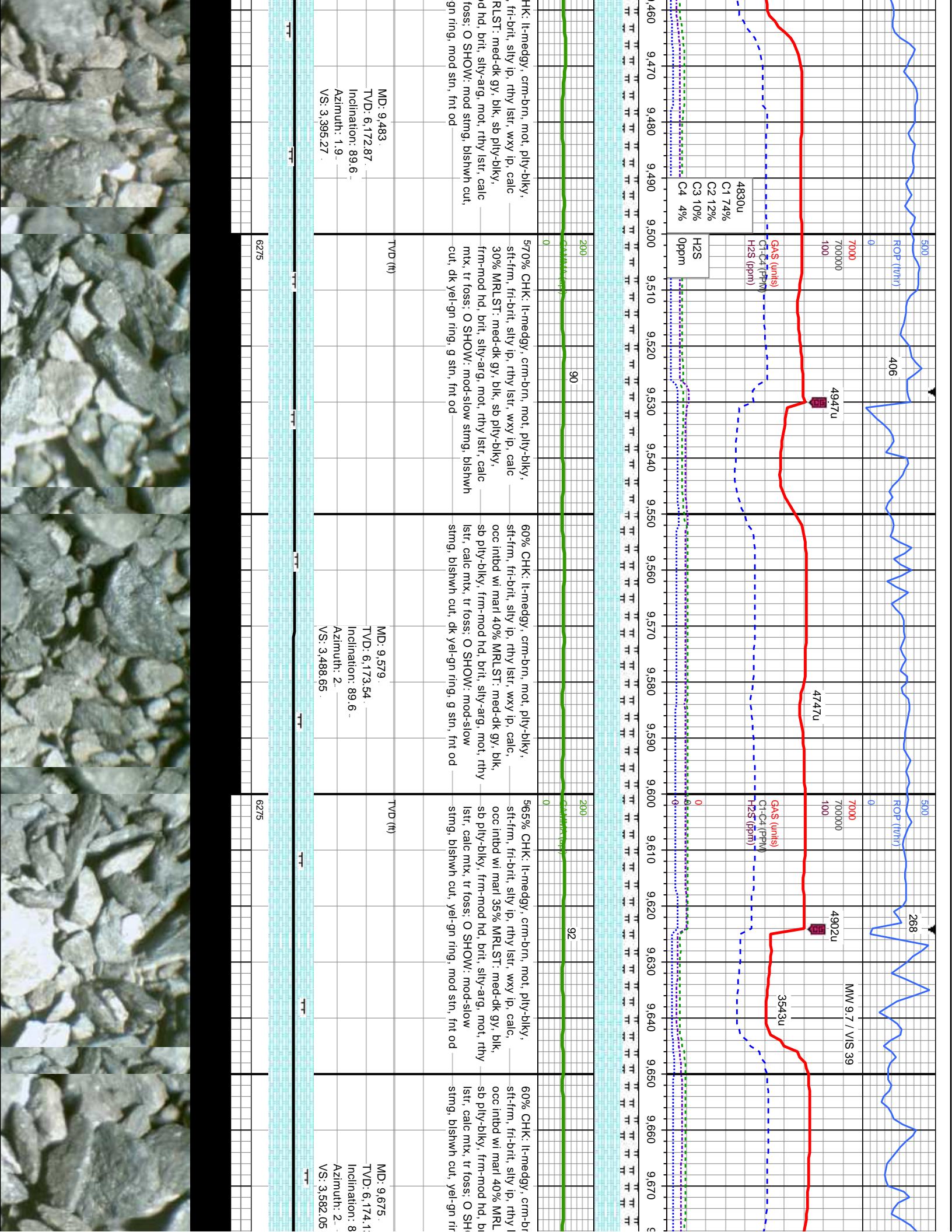
TVD (ft) MD: 8,436
TVD: 6,171.17
Inclination: 91.3
Azimuth: 0
VS: 2,380.51

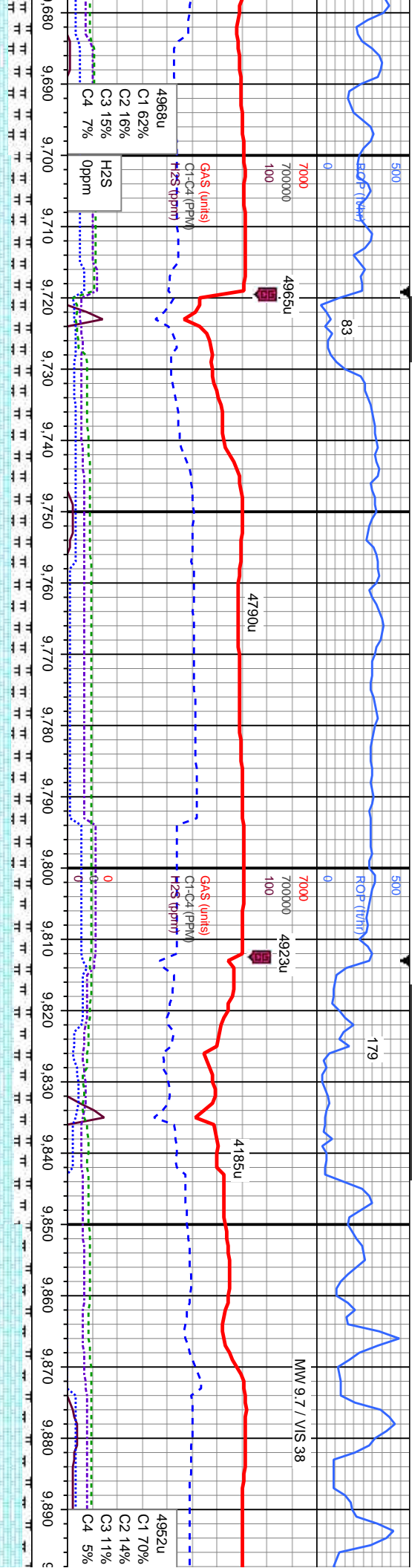
TVD (ft) MD: 8,531
TVD: 6,169.76
Inclination: 90.4
Azimuth: 1.4
VS: 2,472.4



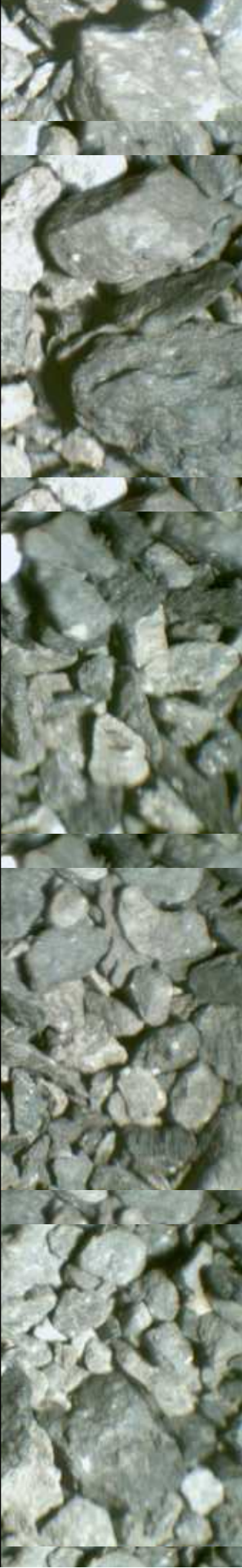


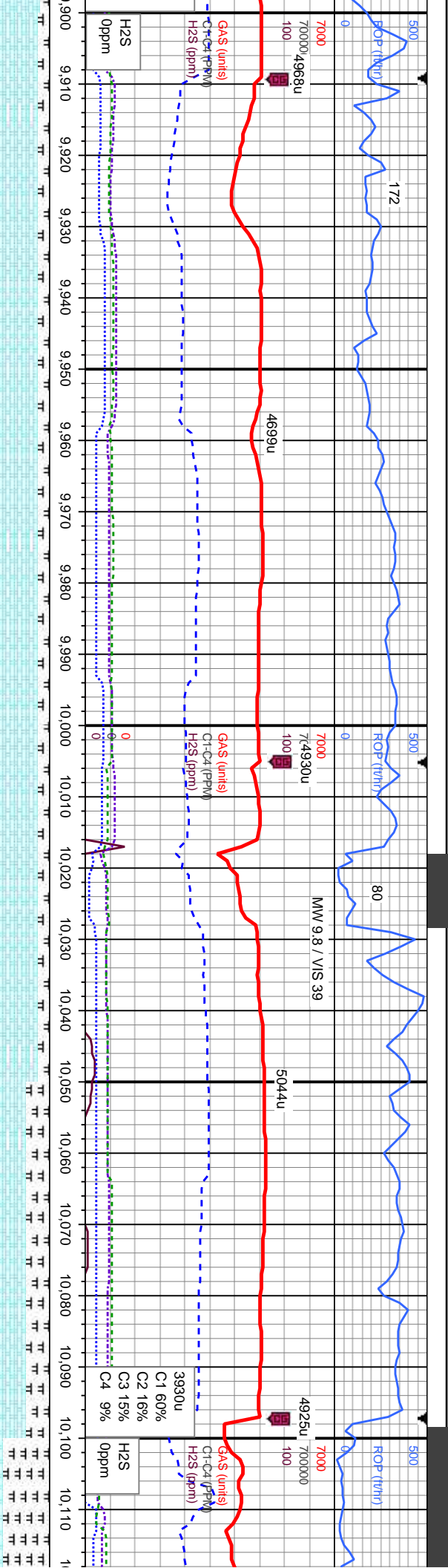






n, not, pily-biky, str, wxy ip, calc, ST: med-dk gy, blk, it, sily-arg, mot, rthy OW: mod-slow stng, mod stn, fnt od	65% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc, occ inbnd wi marl 35% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stng, bl-gn cut, dk yel-oring ring, g stn, fnt od	65% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc, occ inbnd wi marl 35% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stng, bl-gn cut, dk yel-oring ring, g stn, fnt od	570% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc, occ inbnd wi marl 30% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stng, blshwh cut, bri yel-gn ring, mod stn, fnt od	85% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, sily ip, rthy lstr, wxy ip, calc, occ inbnd wi marl 15% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, sily-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stng, blshwh cut, bri yel-gn ring, mod stn, fnt od
3 - 9.7 -	TVD (ft)	MD: 9.770 TVD: 6.174.29 Inclination: 90.1 Azimuth: 1.8 VS: 3.674.44	TVD (ft)	MD: 9.866 TVD: 6.175.3 Inclination: 88.7 Azimuth: 359.5 VS: 3.767.28

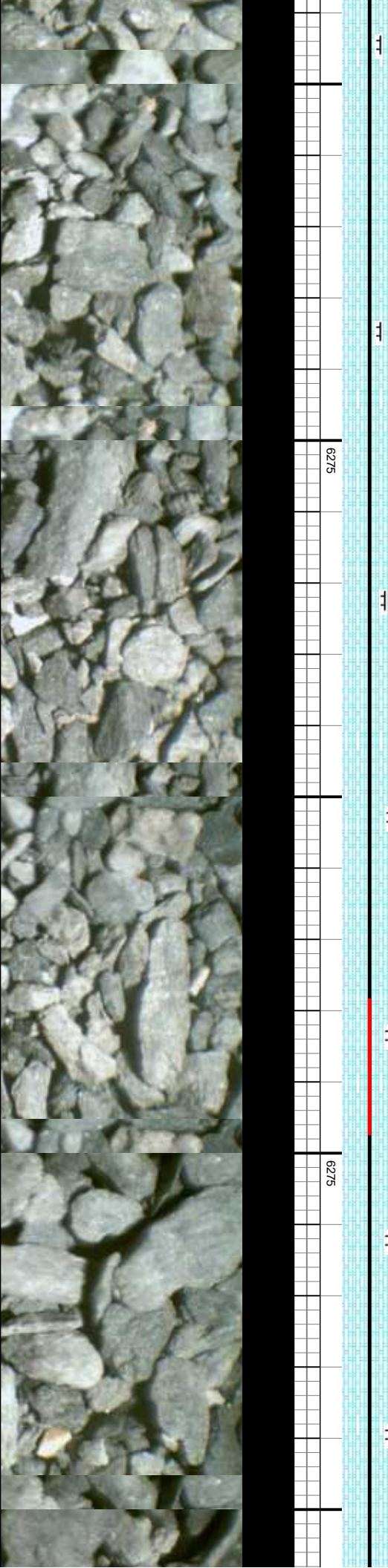
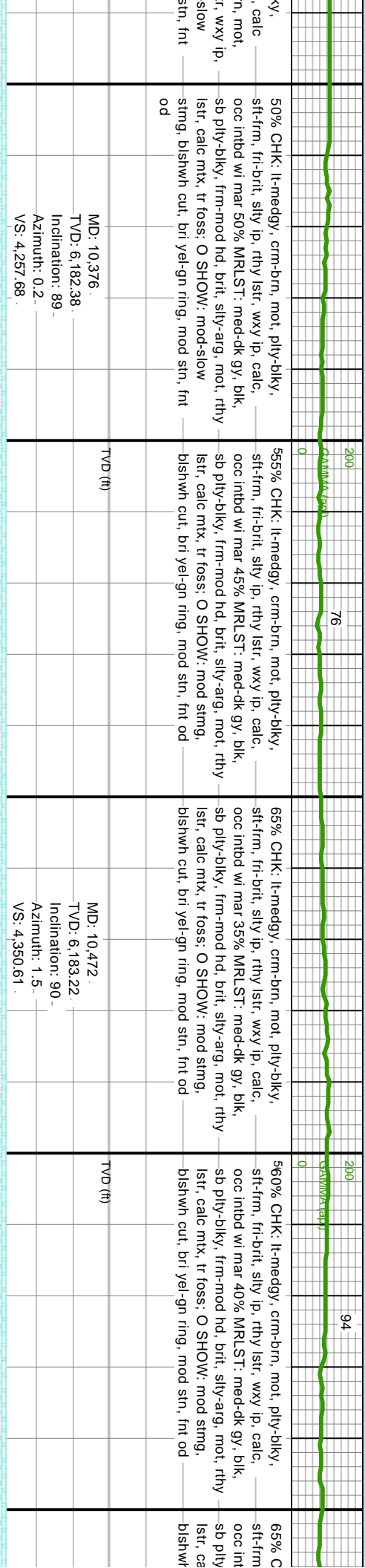
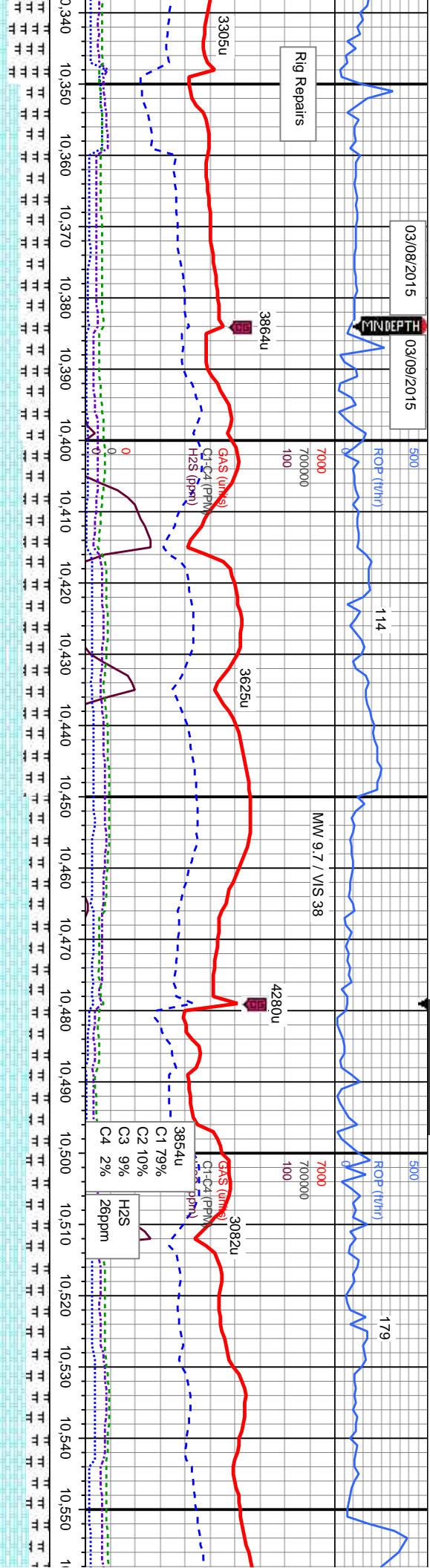


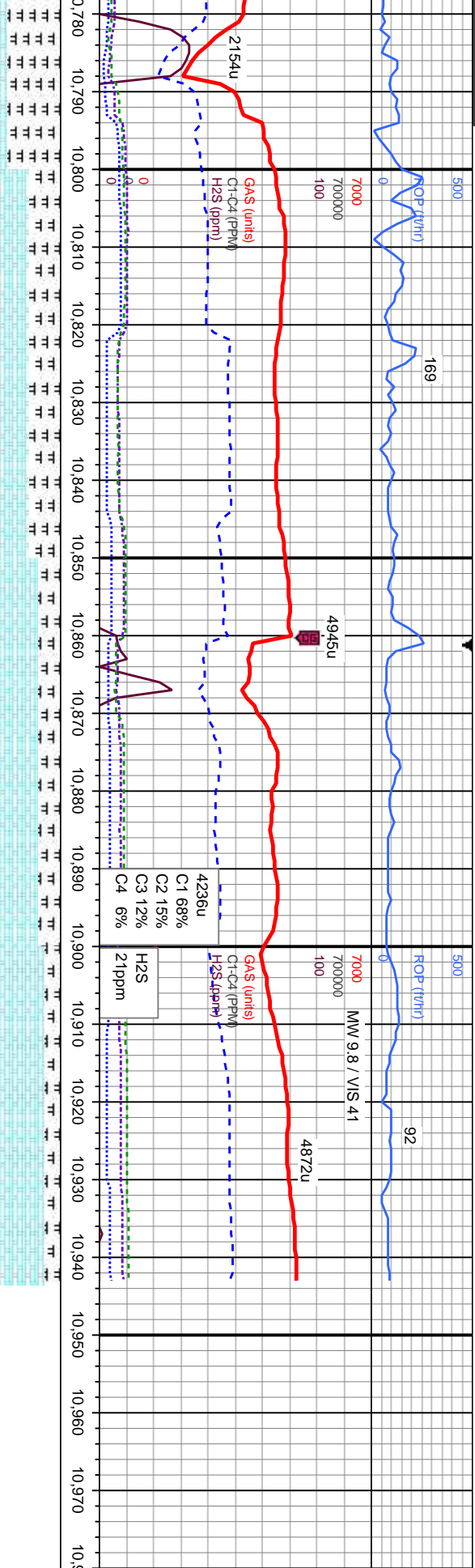


80% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, silty ip, rthy lstr, wxy ip, calc, occ intbd wi marl 20% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stimg, blshwh cut, yel-gn ring, mod sin, fnt od	80% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, silty ip, rthy lstr, wxy ip, calc, occ intbd wi marl 20% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stimg, blshwh cut, yel-gn ring, mod sin, fnt od	580% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, silty ip, rthy lstr, wxy ip, calc, occ intbd wi marl 20% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stimg, bl-gn cut, yel-oring ring, g stn, fnt od	60% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brit, silty ip, rthy lstr, wxy ip, calc, occ intbd wi marl 40% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brit, silty-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod-slow stimg, bl-gn cut, yel-oring ring, g stn, fnt od	80% MRLST: med frm-mod hd, brit, s mtx, tr foss 20% C pily-biky, sft-frm, f calc, occ intbd wi tr foss, blshwh cut,
103	67	67	67	67
200	200	200	200	200
GAMMA (api)	GAMMA (api)	GAMMA (api)	GAMMA (api)	GAMMA (api)
0	0	0	0	0

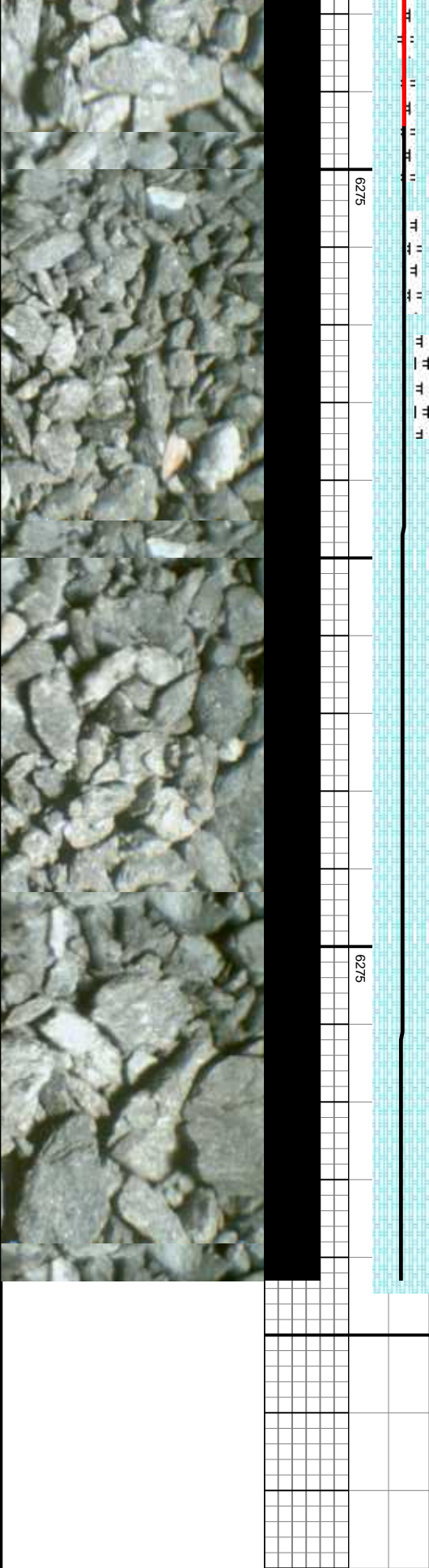
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)
MD: 9,962 TVD: 6,177.89 Inclination: 88.2 Azimuth: 359.1 VS: 3,859.5	MD: 10,055 TVD: 6,180.73 Inclination: 88.3 Azimuth: 359.1 VS: 3,948.74			
6275	6275	6275	6275	6275







550% CHK: lt-medgy, crm-brn, mot, pily-biky, sft-frm, fri-brlt, sily ip, rthy lstr, wxy ip, calc, occ intbd w/ mar 50% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brlt, sily-arg, mot, rthy lstr, calc mtx, tr foss: O SHOW: mod stmg, blshwh cut, bri yel-gn ring, mod stn, frt od	575% CHK: lt-medgy, wh-crm, brn, mot, pily-biky, sft-frm, fri-brlt, sily ip, rthy lstr, wxy ip, calc 25% MRLST: med-dk gy, blk, sb pily-biky, frm-mod hd, brlt, sily-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr: O SHOW: mod stmg, blshwh cut, bri yel-gn ring, mod stn, frt od
MD: 10,836 TVD: 6,180.96 Inclination: 87.67 Azimuth: 359.66 VS: 4,704.26	MD: 10,943 TVD: 6,185.31 Inclination: 87.67 Azimuth: 359.66 VS: 4,807.19



TD @ MD 10943'
03/09/2015 @ 08:004 MST

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