



Scale: 5" / 100'
Measured Depth Log

Well Name Wells Ranch AA26-62-1HN (HORZ)

Location SEC25 T6N R63W

State COLORADO

Country USA

API Number 05-123-37567

Region DJ BASIN

Spud Date 11/7/2013

Surface Coordinates 1637' FSL x 153' FWL

Bottom Hole Coordinates 330' FSL x 150' FWL

Ground Elevation 4792'

Logged Interval 6153' To 11808'

Formation NIOBRARA C CHALK

Type of Drilling Fluid FW LSND

County WELD

Rig Number H&P 322

Field WATTENBERG

Drilling Completed 11/15/2013

K.B. Elevation 4816'

Total Depth 11808'

Company Noble Energy Inc
Address 1625 BROADWAY
DENVER, CO 8
(303) 228-4000

Name SARAH COMP
Company NOBLE ENERGY
Address 1625 BROADWAY
DENVER, CO 8
(303) 228-4000

COLUMBINE LOGGING, INC
WELL SITE GEOLOGISTS

Operator

IC
AY
0202

Geologist

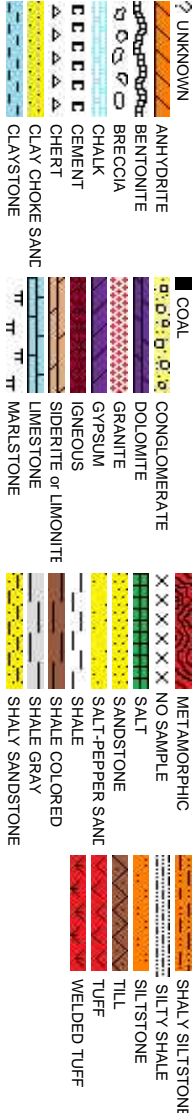
TON
AY
0202

Other

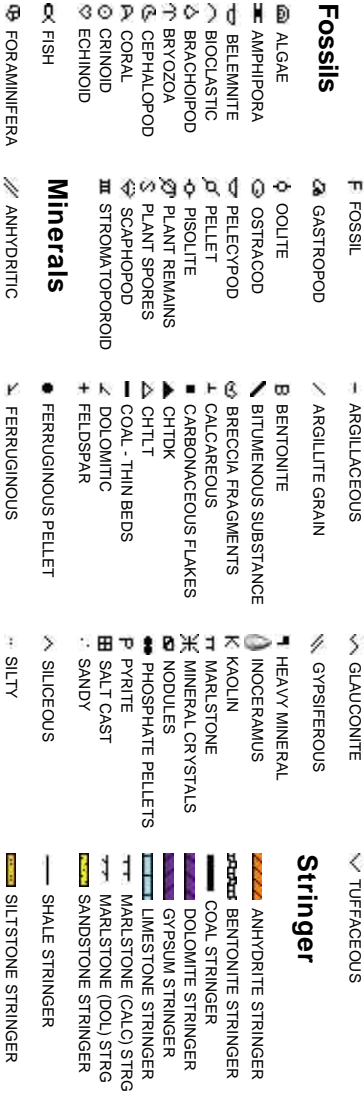
2385 S. LIPAN ST
DENVER, COLORADO 80223
(303) 289-7764

JOEY LUCE
MIKE GREENE

Rock Types



Accessories



Other Symbols

Oil Show

- MOLDIC
- ORGANIC
- PINPOINT
- VUGGY
- DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Engineering

- NORMAL FAULT
- OIL SHOW
- OVERTURNED STRATA
- REVERSE FAULT
- SIDE WALL CORE (LEFT)
- CONNECTION (LEFT)
- CONNECTION (RIGHT)
- CONNECTION GAS
- CORE - LOST
- CORE - RECOVERED
- DST INTERVAL
- FAULT
- FORMATION TOP
- GAS SHOW
- MINDEPTH MN DEPTH
- BIT
- SLIDE
- SURVEY
- TRIP GAS

Rounding

- WIRELINE TESTED - LEFT
- WIRELINE TESTED - RT
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND
- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- E EARTHY
- FINELYXLN
- GRAINSTONE
- L LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Porosity

- E EARTHY
- FENESTRAL
- F FRACTURE
- INTERCRYSTALLINE
- INTEROOLITIC

Textures

- SLIDE
- SURVEY
- TRIP GAS
- BOUNDSTONE
- CHALKY
- CRYPTOXLN

Sorting

- M MODERATE
- P POOR
- W WELL

Slide/Rotate

ROP
ROF
Gamma

Began Build @ 6153 MD
@ 20:08 hrs, 11/10/2013

Begin 50' Sample Intervals

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

COLUMBINE LOGGING INC.
RIGGED UP ON 11/8/2013
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0315

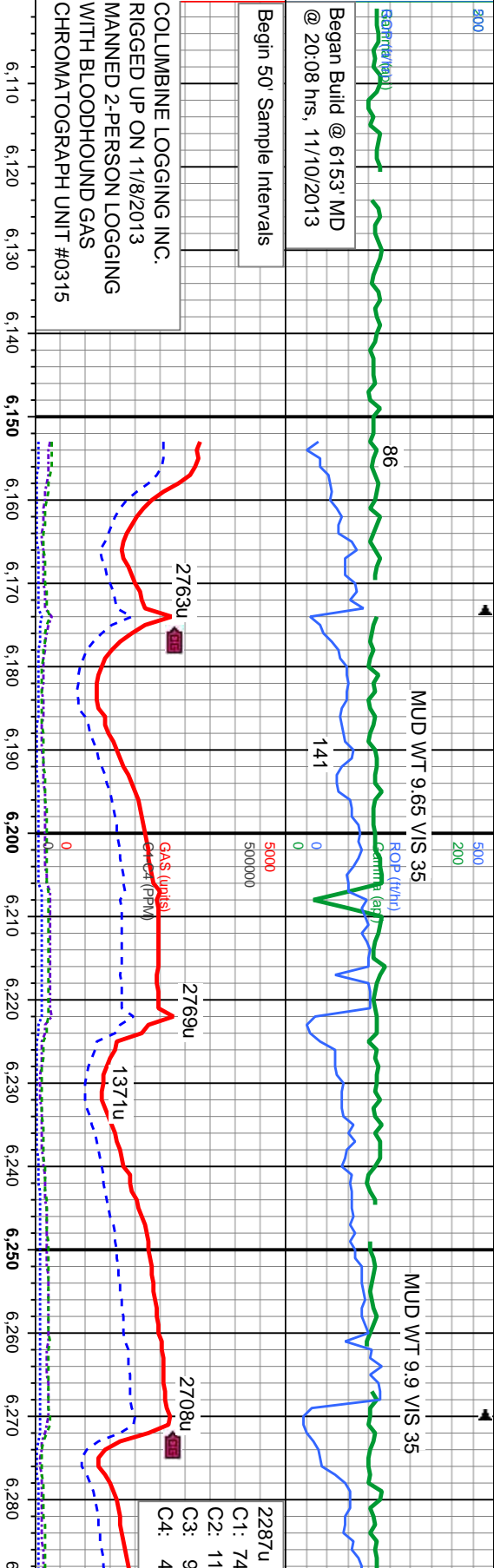
Depth Labels

% Lith

Well Bore
TVD
BHA #2
Size: 8.75"
Manufacturer: Schlumberger/Smith
Model: SD1611
Serial #: JH2299
Nozzles: 6x14
Motor #2
Manufacturer: Sperry Drilling
Model: Sperry Drilling
Serial #675-1051
Bend: 2.0

Oil Show

Images



BHA #2

Size: 8.75"
Manufacturer: Schlumberger/Smith
Model: SD1611
Serial #: JH2299
Nozzles: 6x14
Motor #2
Manufacturer: Sperry Drilling
Model: Sperry Drilling
Serial #675-1051
Bend: 2.0

5900

100% SLTY SH: lt-med gy, dk gy-gy brn,
frm-sft, fri-brit, sb pily-blky, rthy-sl silty tex, sl
calc, tr pyr

MD: 6,165
TVD: 6,059.71
Inclination: 10.98 °
Azimuth: 181.11 °
VS: 285.99 '

100% SLTY SH: lt-med gy, dk gy-gy brn,
frm-sft, fri-brit, sb pily-blky, rthy-sl silty tex, sl
calc, tr pyr

MD: 6,213
TVD: 6,106.4
Inclination: 15.79 °
Azimuth: 190.08 °
VS: 289.88 '

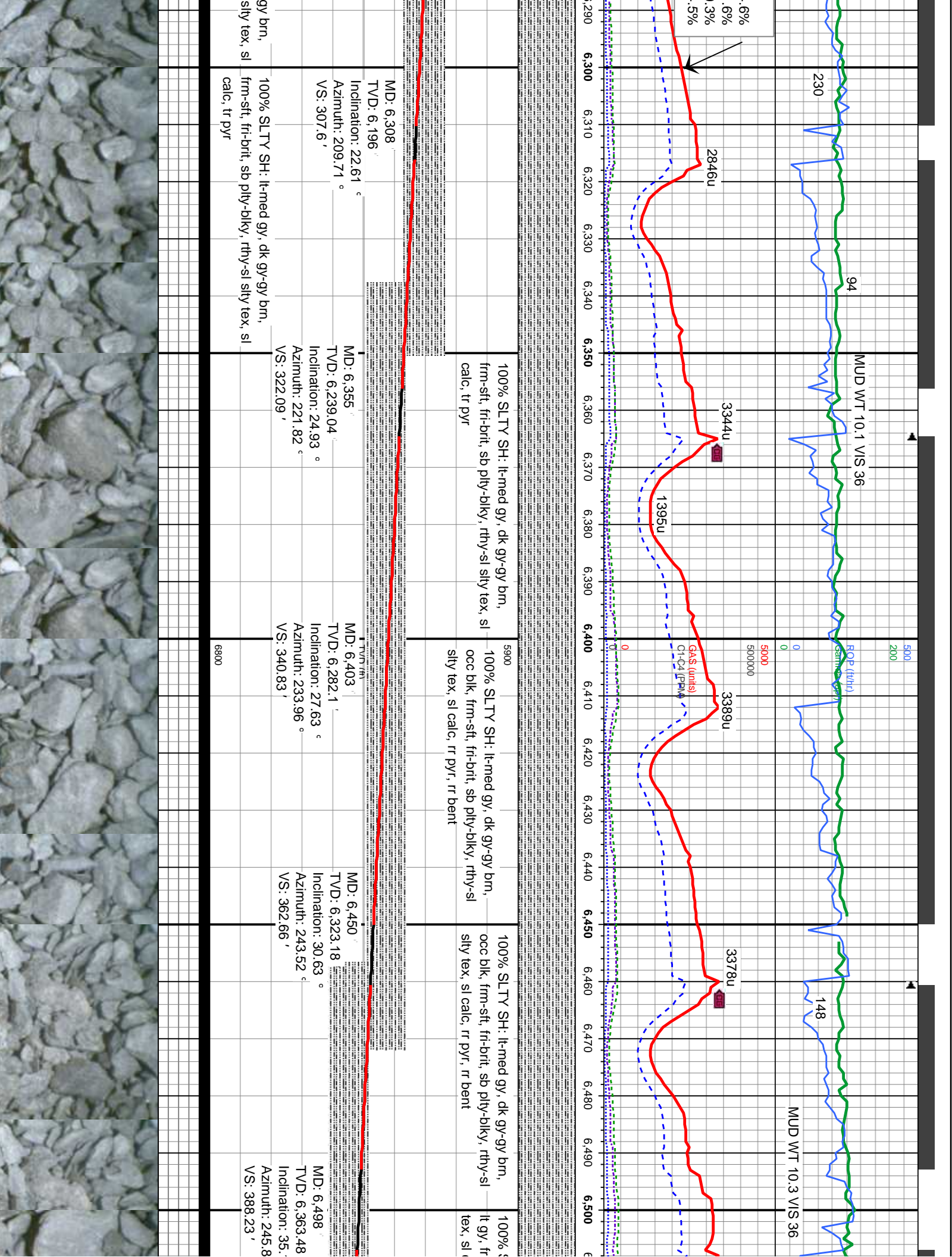
100% SLTY SH: lt-med gy, dk gy-gy
frm-sft, fri-brit, sb pily-blky, rthy-sl
calc, tr pyr

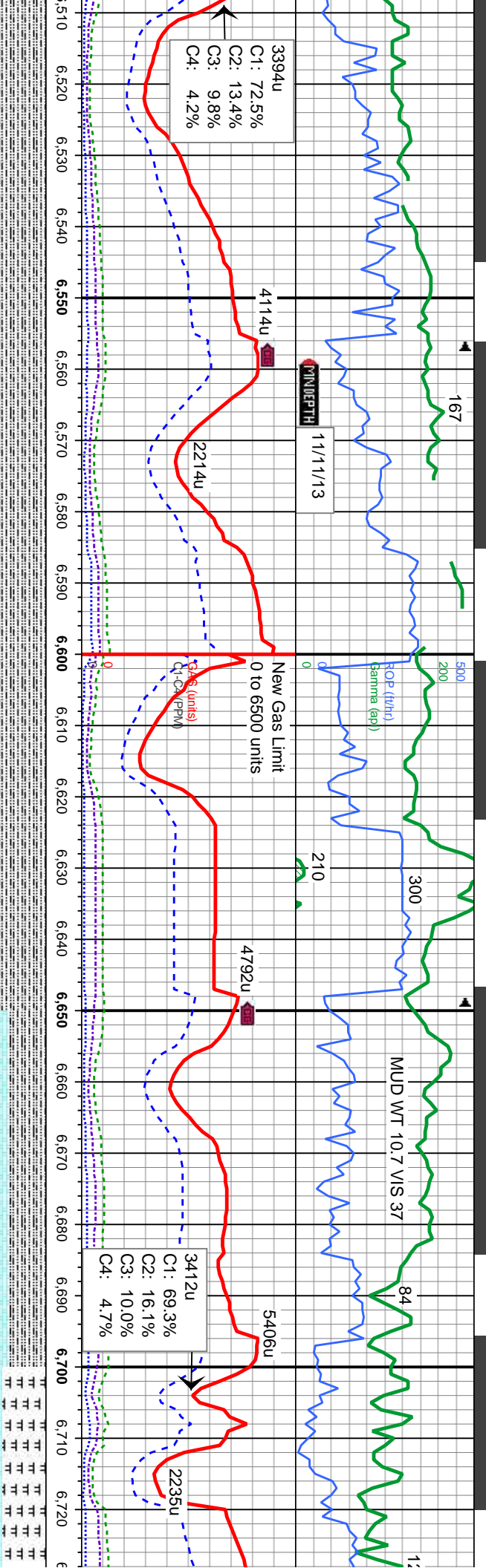
MD: 6,260
TVD: 6,151.19
Inclination: 19.47 °
Azimuth: 199.08 °
VS: 296.81 '

TR
FM
GE

6800







SLTY SH: med-dk gy, gy brn-blk, occ
m-sft, fri-brit, sb pty-blky, rthy-sl sily
calc, tr pyr, rr bent

100% SLTY SH: med-dk gy, gy brn-blk, occ
lt gy, frm-sft, fri-brit, sb pty-blky, rthy-sl sily
tex, sl calc, tr pyr, rr bent

5900
100% SLTY SH: med-dk gy, gy brn-blk, occ
lt gy, frm-sft, fri-brit, sb pty-blky, rthy-sl sily
tex, sl calc, tr pyr, rr bent

50% SLTY SH: lt-med gy, occ dk gy, mod
sft - frm, sb pty - sb blky, shy - sily tex, rthy
lst, mod calc, rr bent
50% CHK: lt gy, gy brn, sft, occ mod frm, sb
blky-sb pty, rthy-sb wxy, v calc

60% MRL: med-dk gy, mc
blky-sb pty, rthy-sily tex, v
calc, dissim pyr
40% CHK: wh-it gy, gy br
sb blky-sb pty, rthy-sb wxy

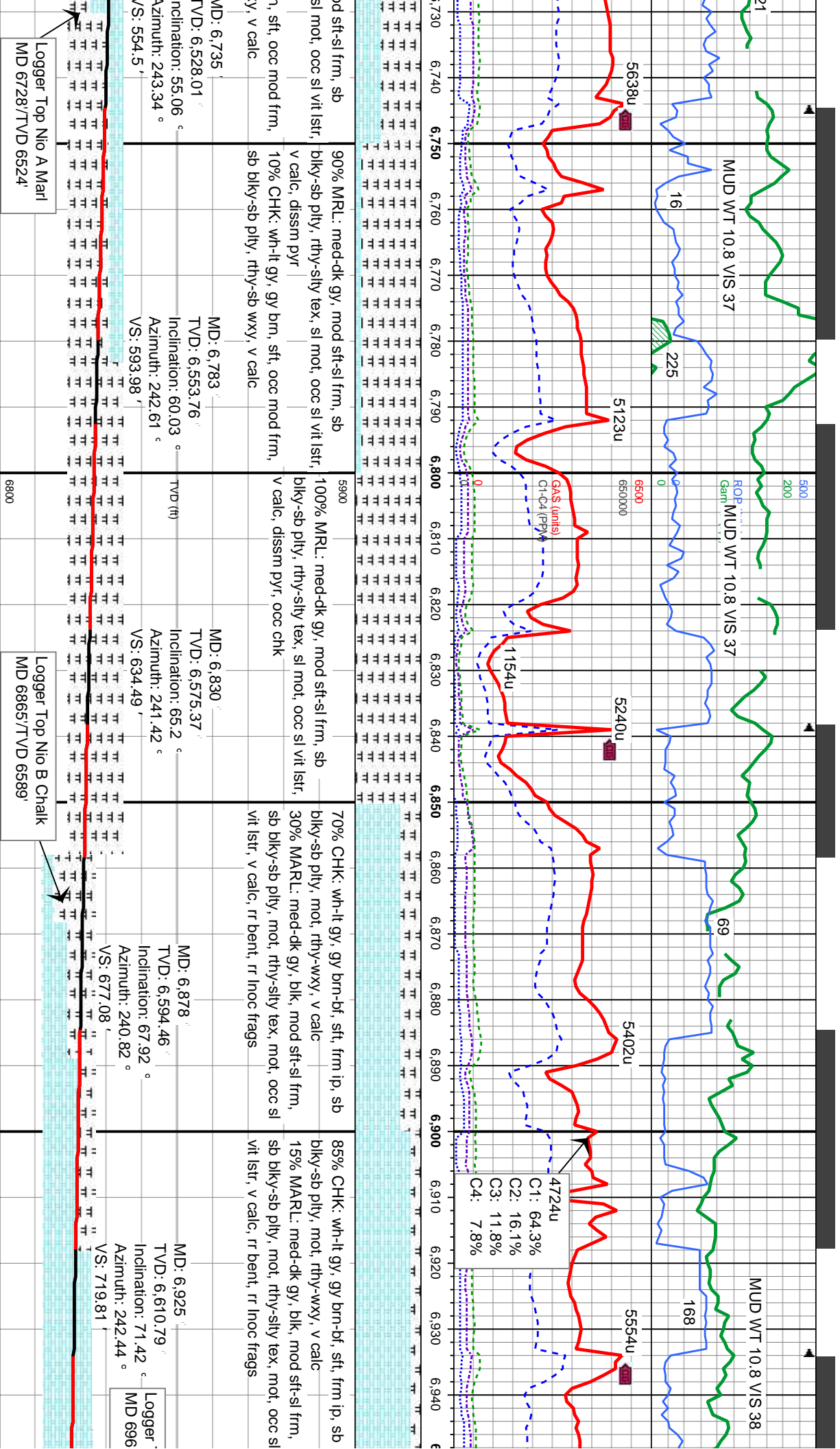
Logger Top Sharon Springs
MD 6566/TVD 6416'

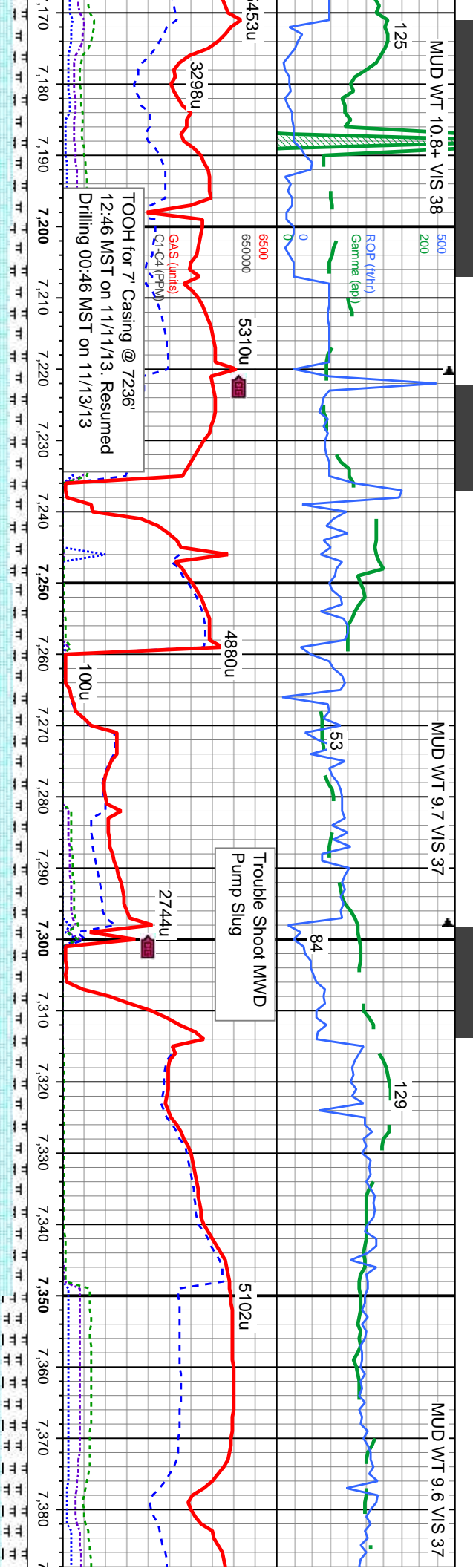
Logger Top Niobrara
MD 6682/TVD 6496'

Logger Top Nio A Chalk
MD 6688/TVD 6500'

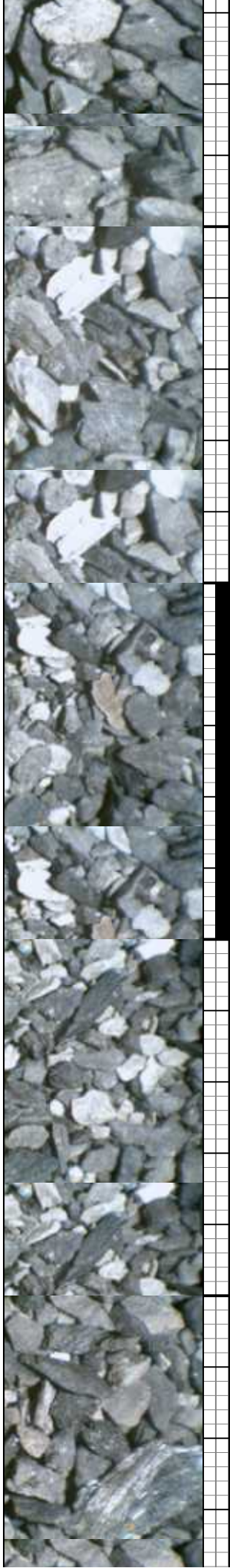
MD: 6,545 TVD: 6,400.63 Inclination: 40.36 ° Azimuth: 246.68 ° VS: 416.59	MD: 6,593 TVD: 6,436.15 Inclination: 44.12 ° Azimuth: 246.73 ° VS: 448.45	MD: 6,640 TVD: 6,468.98 Inclination: 47.25 ° Azimuth: 246.97 ° VS: 481.66	MD: 6,688 TVD: 6,500.07 Inclination: 52 ° Azimuth: 243.54 ° VS: 517.59
---	---	---	--

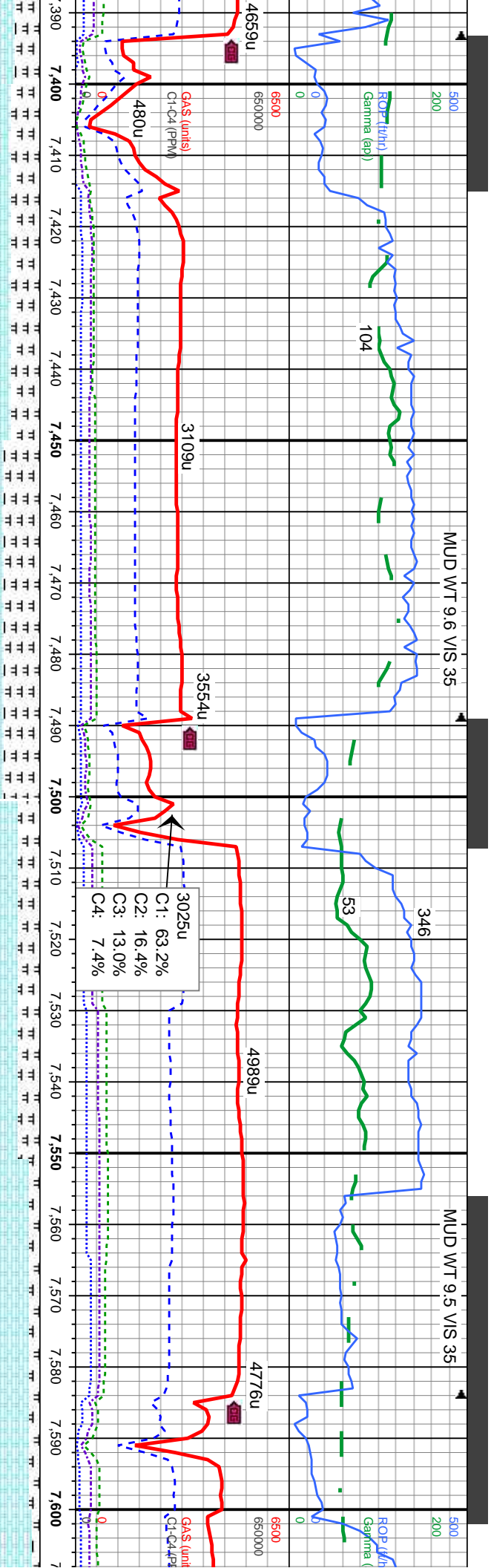




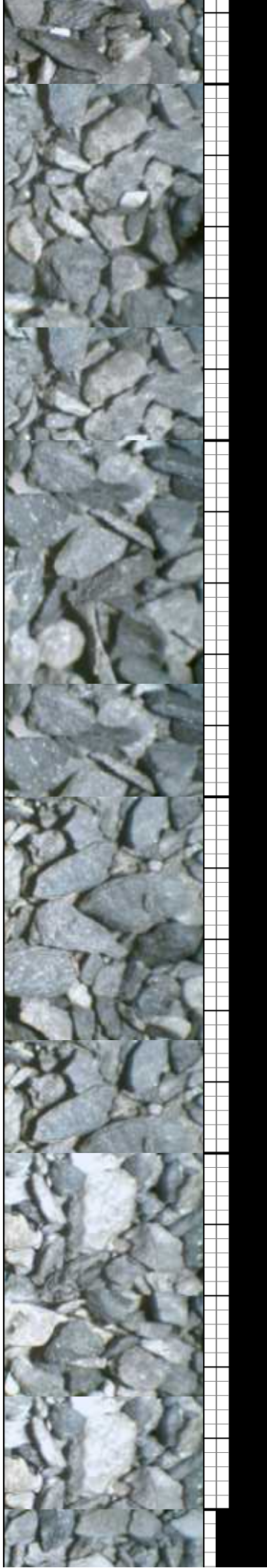


gy, crm-bf, occ med gy-brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy, v	5900	75% CHK: wh-lt gy, crm-bf, occ med gy-brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy, v	calc	25% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, rr pyr	80% CHK: wh-lt gy, crm-bf, occ med gy-brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy, v	calc	20% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, rr pyr	80% CHK: wh-lt gy, crm-bf, occ med gy-brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy, v	calc	20% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, rr pyr	65% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy, v	calc	35% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, intbd ip wi
d-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit frags, rr pyr													
MD: 7,180' TVD: 6,666.88' Inclination: 83.25° Azimuth: 259.98° VS: 966.35'	TVD (ft)	BHA #3 Bit Size: 6.125 Manufacturer: Schlumberger/Smith Model: MDi513 Serial Number: JH4688 Nozzles: 5x15			Motor Number: 3 Manufacturer: Sperry Drilling Model: Sperry Drill Serial Number: 475-558 Bend: 1.5			MD: 7,332' TVD: 6,679.34' Inclination: 87.35° Azimuth: 264.55° VS: 1,116.81'					
6800													

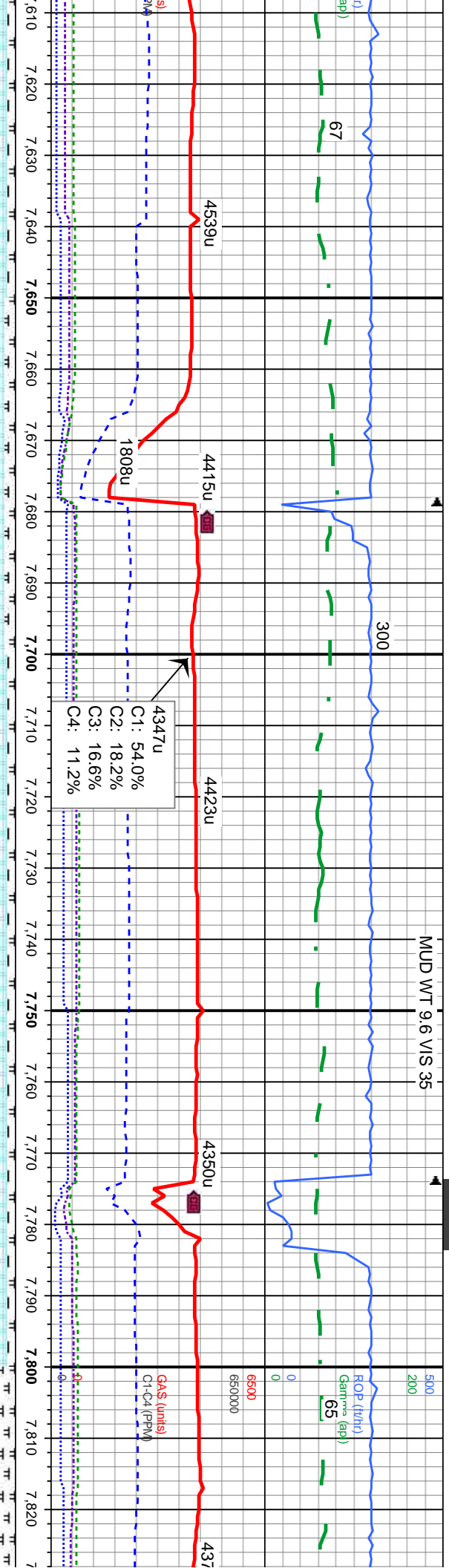




60% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blkly-sb pily, mot, rthy-wxy, v calc 40% MARL: med-dk gy, blk, mod sft-frm, sb blkly-sb pily, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, intbd ip wi chk	5900	TVD (ft) MD: 7.426 TVD: 6,683.08 Inclination: 88.09 ° Azimuth: 266.97 ° VS: 1,209.31'
50% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blkly-sb pily, mot, rthy-wxy ip, v calc 50% MARL: med-dk gy, blk, mod sft-frm, sb blkly-sb pily, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags, intbd ip wi chk	5900	TVD (ft) MD: 7.521 TVD: 6,685.94 Inclination: 88.46 ° Azimuth: 268.55 ° VS: 1,302.21'
70% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blkly-sb pily, mot, rthy-wxy, v calc 30% MARL: med-dk gy, blk, mod sft-frm, sb blkly-sb pily, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags	5900	TVD (ft) MD: 7.521 TVD: 6,685.94 Inclination: 88.46 ° Azimuth: 268.55 ° VS: 1,302.21'
85% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blkly-sb pily, mot, rthy-wxy, v calc 15% MARL: med-dk gy, blk, mod sft-frm, sb blkly-sb pily, mot, rthy-sily tex, mot, occ sl vit lsir, v calc, rr inoc frags	5900	TVD (ft) MD: 7.521 TVD: 6,685.94 Inclination: 88.46 ° Azimuth: 268.55 ° VS: 1,302.21'

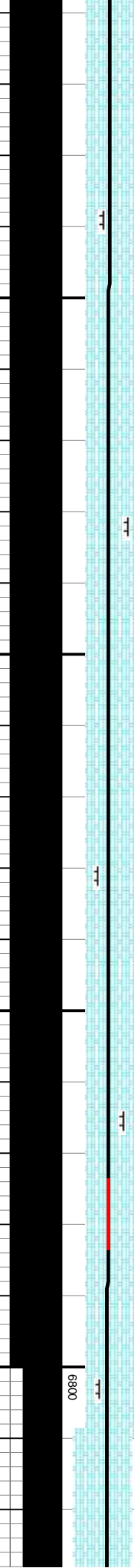


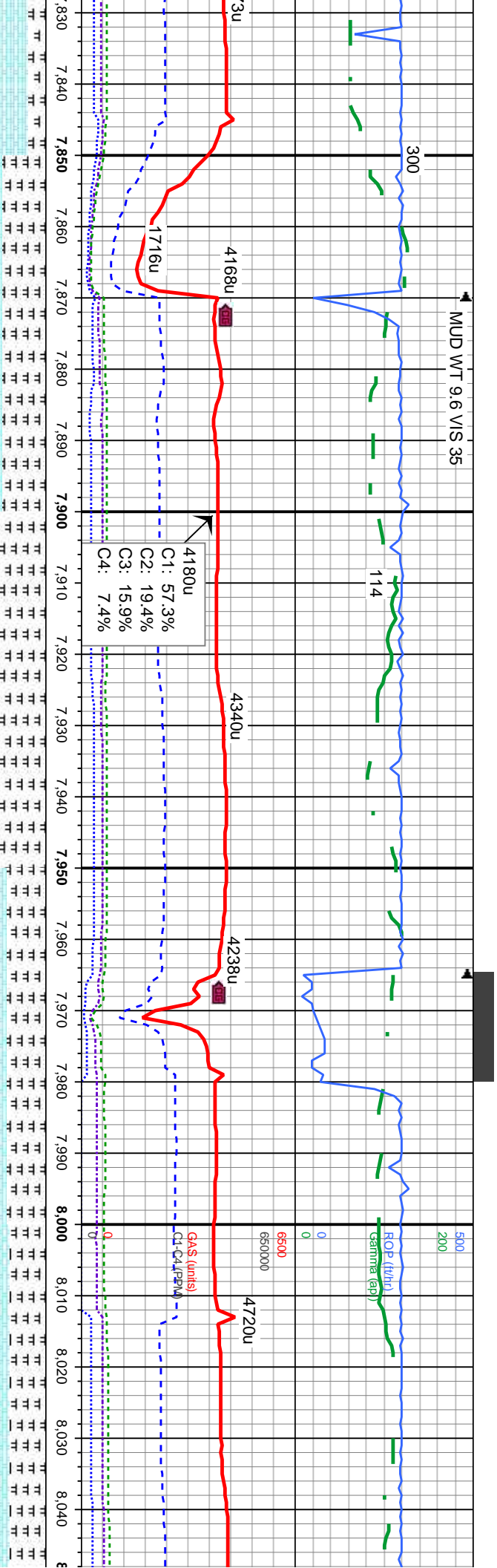
MUD WT 9.6 VIS 35



HK: wh-lt gy, med gy-brn, crm, sft, sb blk-ly-sb pily, mot, rthy-wxy, v calc	85% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-ly-sb pily, mot, rthy-wxy, v calc 15% MARL: med-dk gy, blk, mod sft-frm, sb blk-ly-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr inoc frags	90% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-ly-sb pily, mot, rthy-wxy, v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-ly-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr inoc frags	90% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-ly-sb pily, mot, rthy-wxy, v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-ly-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr inoc frags	5900 75% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-ly-sb pily, mot, rthy-wxy, v calc 25% MARL: med-dk gy, blk, mod sft-frm, sb blk-ly-sb pily, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr inoc frags
--	---	---	---	--

D: 7.616' D: 6,689.09' Inclination: 87.75° Azimuth: 270.28° VS: 1,394.49'	MD: 7.711' TVD: 6,691.77' Inclination: 89.01° Azimuth: 270.28° VS: 1,486.43'	MD: 7.807' TVD: 6,693.71' Inclination: 88.68° Azimuth: 270.9° VS: 1,579.24'
---	--	---



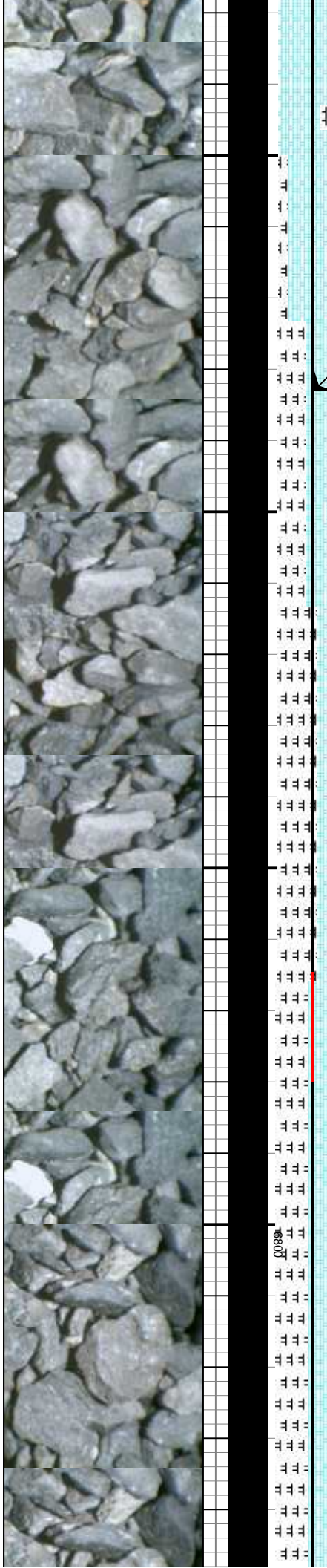


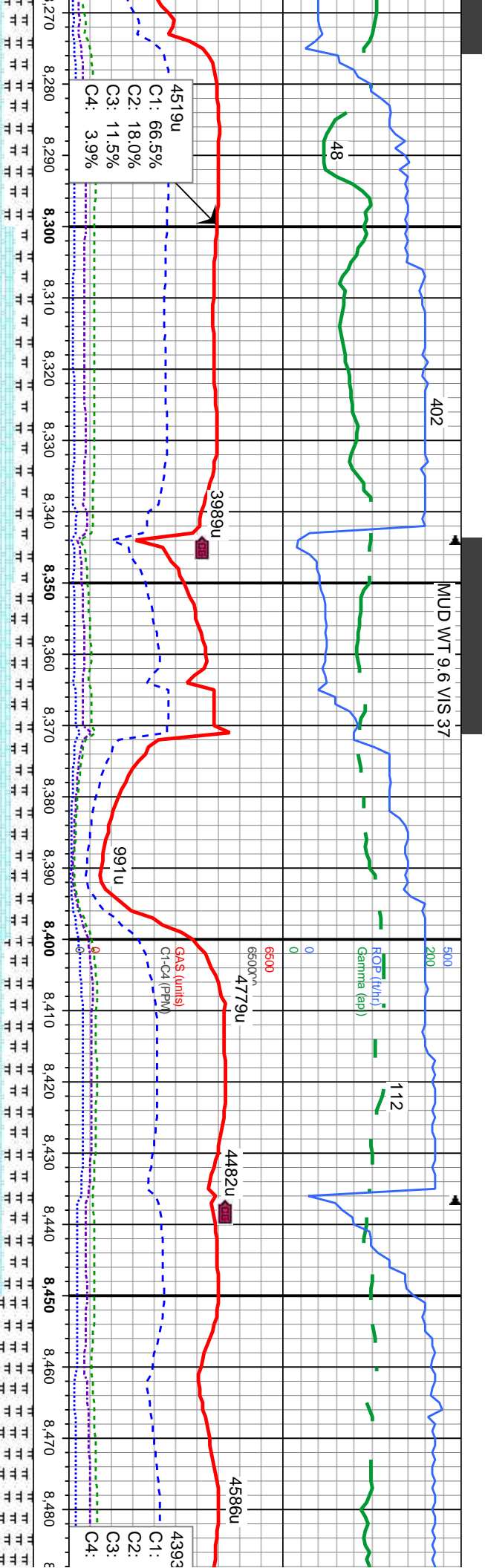
60% MARL: med-dk gy, blk, mod sft-frm, sb blk-ly-sb pty, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr lnoc frags	65% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-ly-sb pty, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr lnoc frags	55% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-ly-sb pty, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr lnoc frags	50% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-ly-sb pty, mot, rthy-wxy ip, v calc, intbd ip wi marl
40% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-ly-sb pty, mot, rthy-wxy ip, v calc, intbd ip wi marl	35% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-ly-sb pty, mot, rthy-wxy ip, v calc, intbd ip wi marl	45% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-ly-sb pty, mot, rthy-wxy ip, v calc, intbd ip wi marl	50% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-ly-sb pty, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr lnoc frags

Logger Top Nio C Marl
MD 7882/TVD 6694'

MD: 7,901'
TVD: 6,694.44'
Inclination: 90.43 °
Azimuth: 270.61 °
VS: 1,670.05'

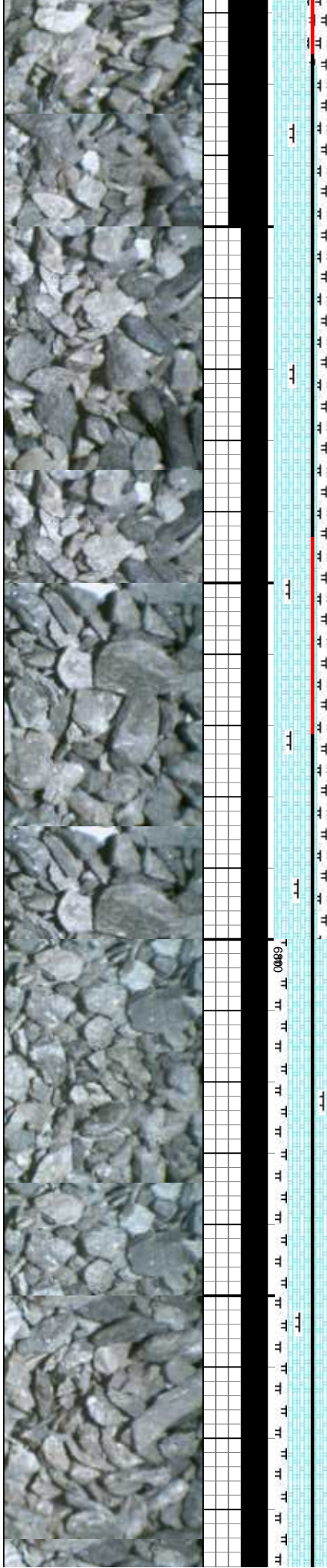
MD: 7,995'
TVD: 6,693.78'
Inclination: 90.37 °
Azimuth: 272.19 °
VS: 1,760.59'

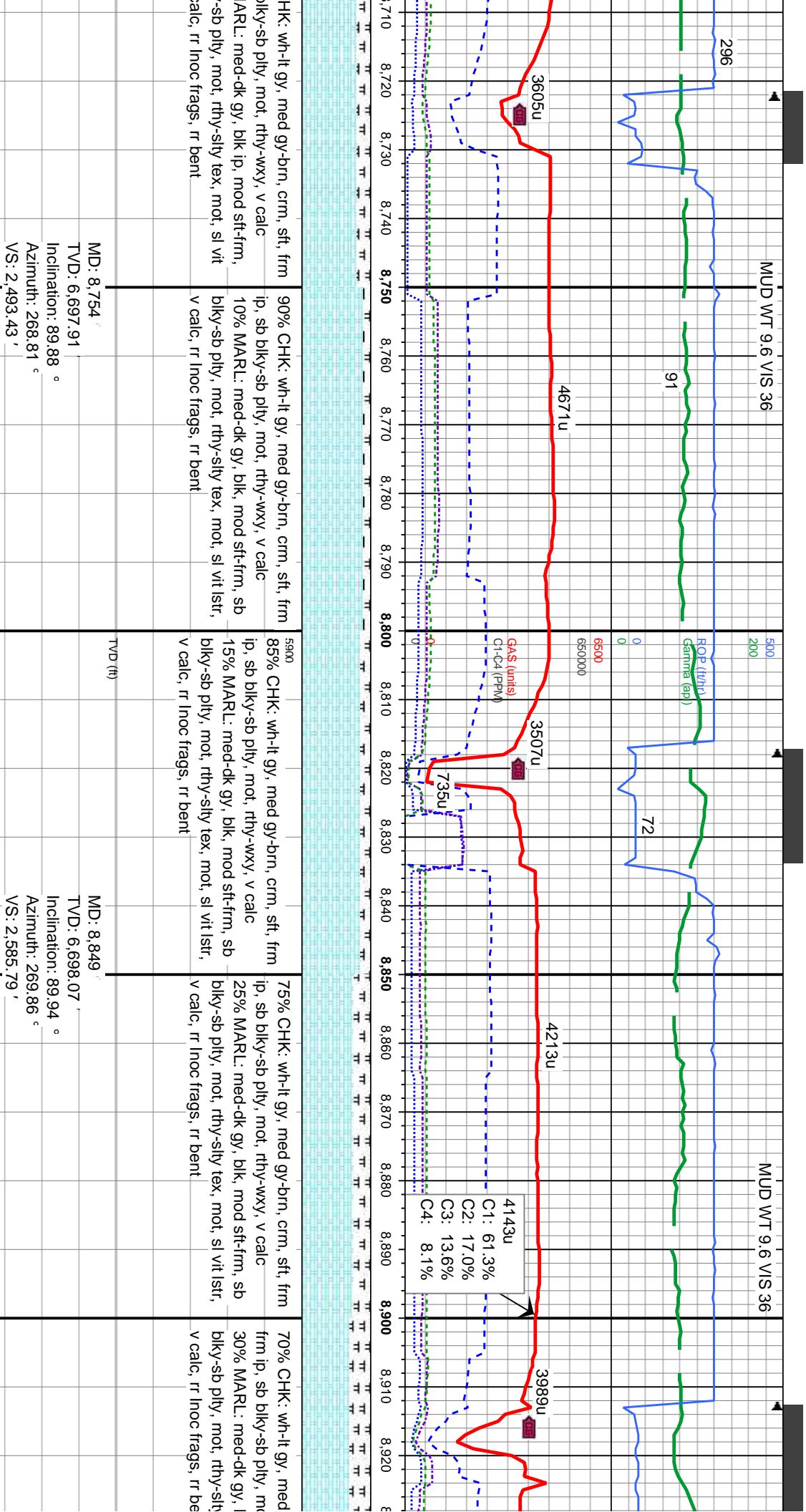




gy, med gy-brn, crm ip, sft, b pily, mot, rthy-wxy, v calc	75% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pily, mot, rthy-wxy, v calc	70% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blk-y-sb pily, mot, rthy-wxy ip, v calc	5900 60% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blk-y-sb pily, mot, rthy-wxy ip, v calc	50% CHK: wh-lt gy, med gy-brn, sft, frm ip, sb blk-y-sb pily, mot, rthy-wxy ip, v calc
mod-dk gy, blk ip, mod sft-frm, mot, rthy-sily tex, mot, sl vit frac frags, rr bent	25% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags, rr bent	30% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags, rr bent, intbd ip wi chk	40% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-y-sb pily, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags, rr bent, intbd ip wi chk	50% MARL: med-dk gy, blk ip, mod sft-frm, sb blk-y-sb pily, mot, rthy-sily tex, rr lstr, v calc, rr inoc frags, intbd ip wi

MD: 8,280 TVD: 6,693.42 Inclination: 90.43 ° Azimuth: 271.8 ° VS: 2,035.62 '	MD: 8,375 TVD: 6,694.42 Inclination: 88.36 ° Azimuth: 271.95 ° VS: 2,126.9 '	MD: 8,469 TVD: 6,695.81 Inclination: 89.94 ° Azimuth: 273.4 ° VS: 2,216.84 '
--	--	--

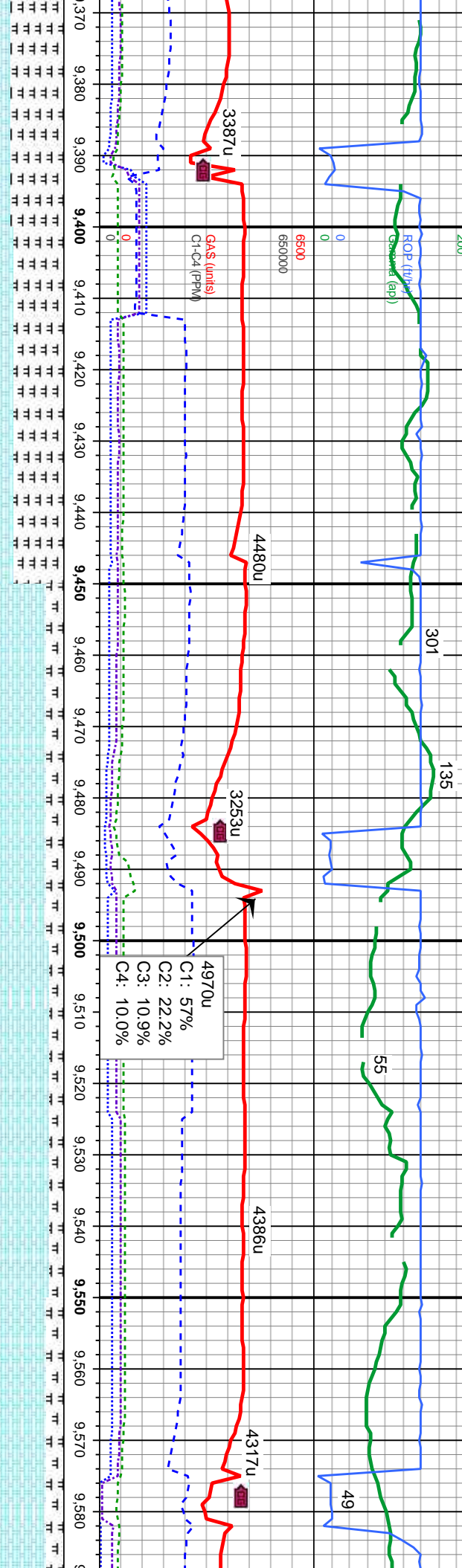




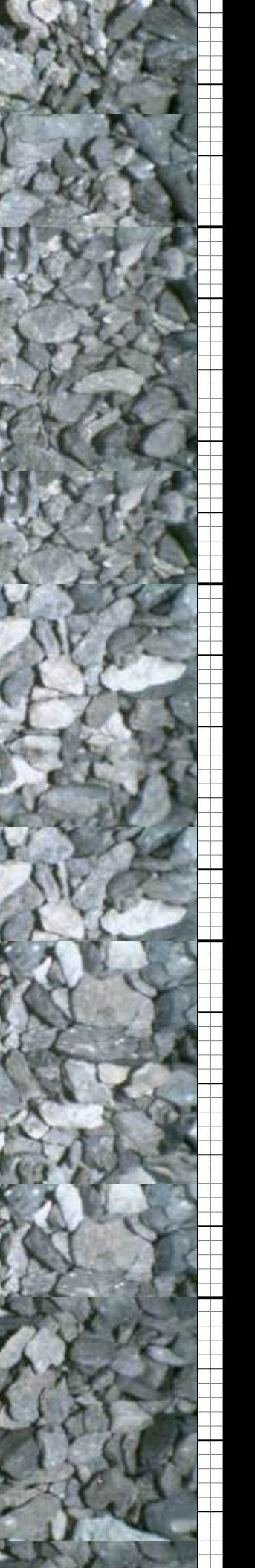
MD: 8,754'
TVD: 6,697.91'
Inclination: 89.88°
Azimuth: 268.81°
VS: 2,493.43'

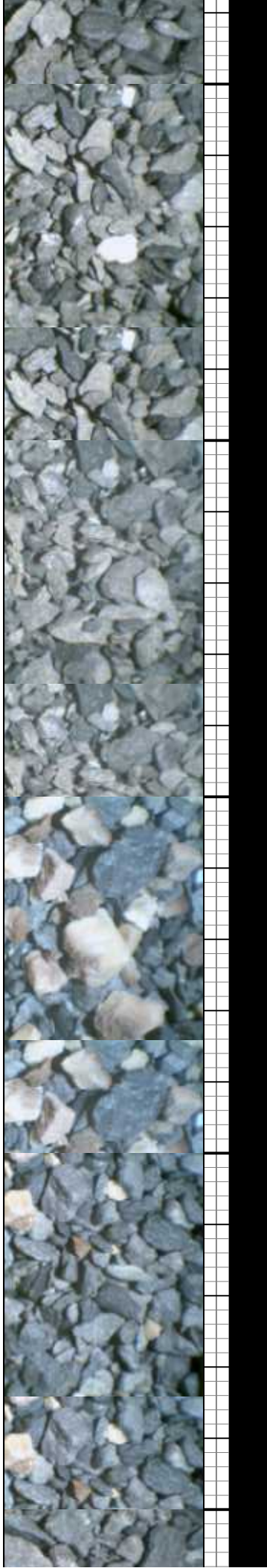
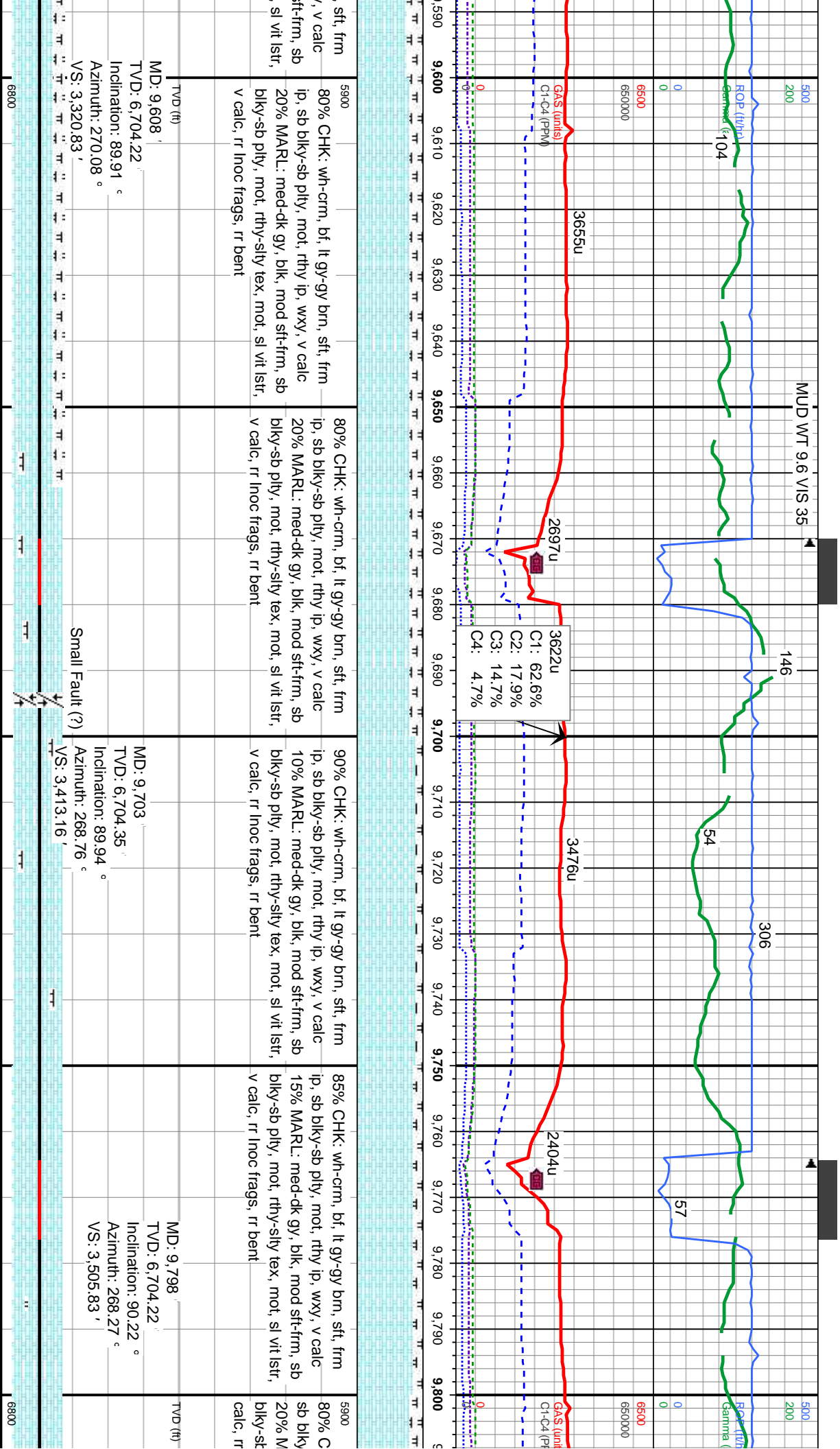
MD: 8,849'
TVD: 6,698.07'
Inclination: 89.94°
Azimuth: 269.86°
VS: 2,585.79'

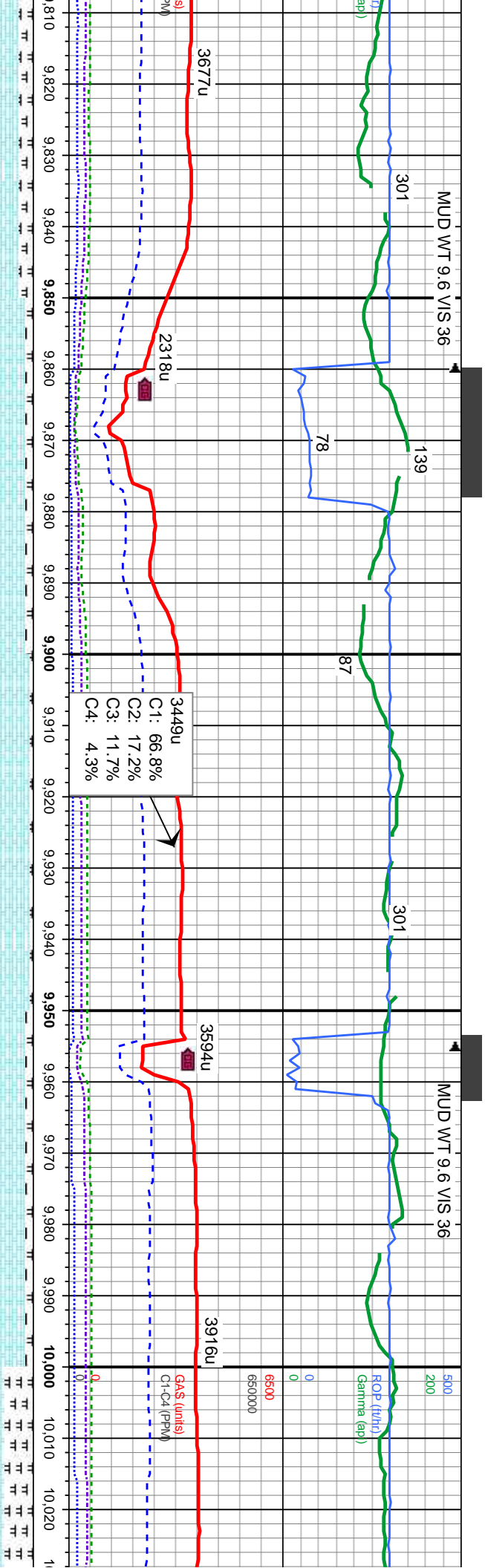
8,710	8,720	8,730	8,740	8,750	8,760	8,770	8,780	8,790	8,800	8,810	8,820	8,830	8,840	8,850	8,860	8,870	8,880	8,890	8,900	8,910	8,920
HK: wh-lt gy, med gy-brn, crm, sft, frm																					
biky-sb ply, mot, rthy-wxy, v calc																					
MARL: med-dk gy, blk ip, mod sft-frm, sb																					
-sb ply, mot, rthy-sily tex, mot, sl vit																					
calc, rr inoc frags, rr bent																					
90% CHK: wh-lt gy, med gy-brn, crm, sft, frm										5900											
ip, sb biky-sb ply, mot, rthy-wxy, v calc										85% CHK: wh-lt gy, med gy-brn, crm, sft, frm											
10% MARL: med-dk gy, blk, mod sft-frm, sb										ip, sb biky-sb ply, mot, rthy-wxy, v calc											
biky-sb ply, mot, rthy-sily tex, mot, sl vit lstr,										15% MARL: med-dk gy, blk, mod sft-frm, sb											
v calc, rr inoc frags, rr bent										biky-sb ply, mot, rthy-sily tex, mot, sl vit lstr,											
										v calc, rr inoc frags, rr bent											
75% CHK: wh-lt gy, med gy-brn, crm, sft, frm																					
ip, sb biky-sb ply, mot, rthy-wxy, v calc										25% MARL: med-dk gy, blk, mod sft-frm, sb											
biky-sb ply, mot, rthy-sily tex, mot, sl vit lstr,										v calc, rr inoc frags, rr bent											
70% CHK: wh-lt gy, med																					
frm ip, sb biky-sb ply, mot																					
30% MARL: med-dk gy, blk																					
biky-sb ply, mot, rthy-sily																					
v calc, rr inoc frags, rr bent																					



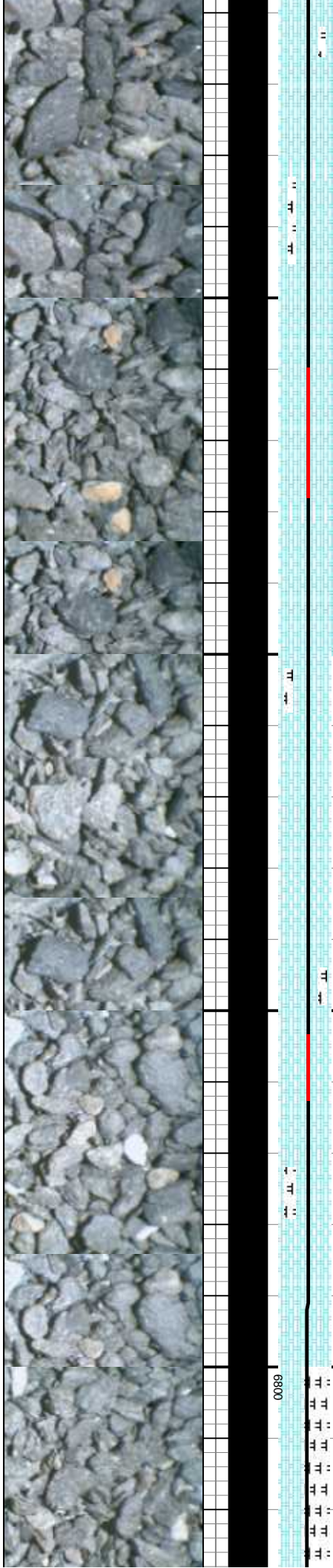
d-dk gy, blk, mod sft-frm, mot, rthy-silty tex, mot, sl vit oc frags, rr bent gy-brn, occ wh-crm, sft, b pty, mot, rthy-wxy ip, v	5900 70% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-silty tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent 30% CHK: med gy-brn, occ wh-crm, sft, frm ip, sb blk-y-sb pty, mot, rthy, occ wxy, v calc, intbd ip wi marl	75% CHK: wh-crm, bf, lt gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy ip, wxy, v calc 25% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-silty tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	80% CHK: wh-crm, bf, lt gy-gy brn, sft, frm ip, sb blk-y-sb pty, mot, rthy ip, wxy, v calc 20% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-silty tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	75% CHK: wh-crm, bf, lt gy-gy brn ip, sb blk-y-sb pty, mot, rthy ip, wxy 25% MARL: med-dk gy, blk, mod s
	TVD (ft) MD: 9,418 ' TVD: 6,702.89 ' Inclination: 89.17 ° Azimuth: 269.9 ° VS: 3,136.64 '			
		D/U Fault		

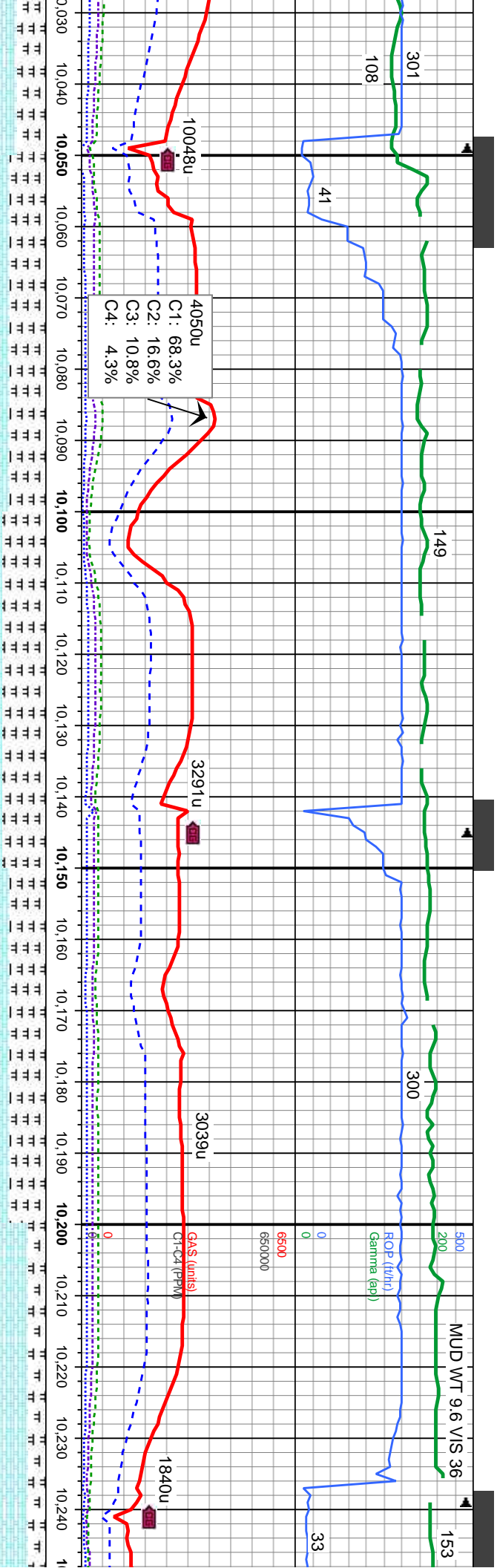




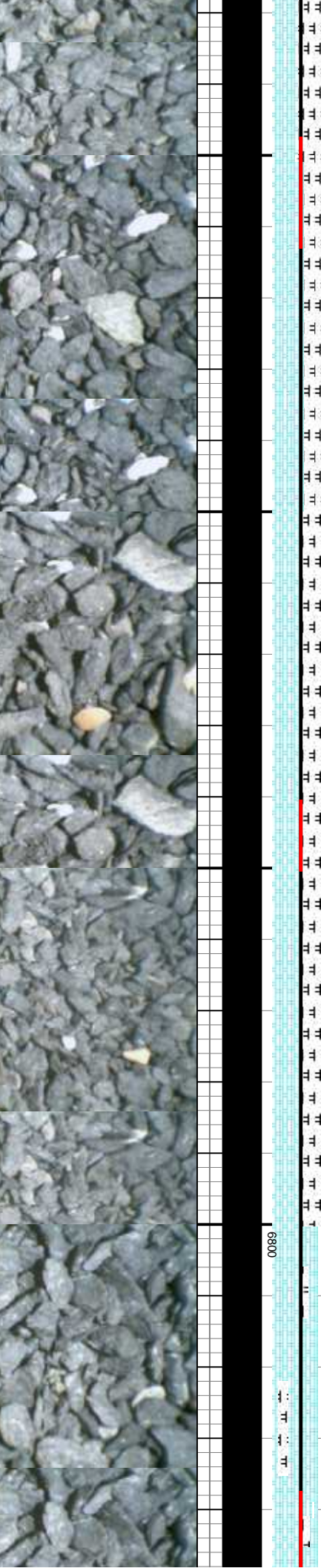


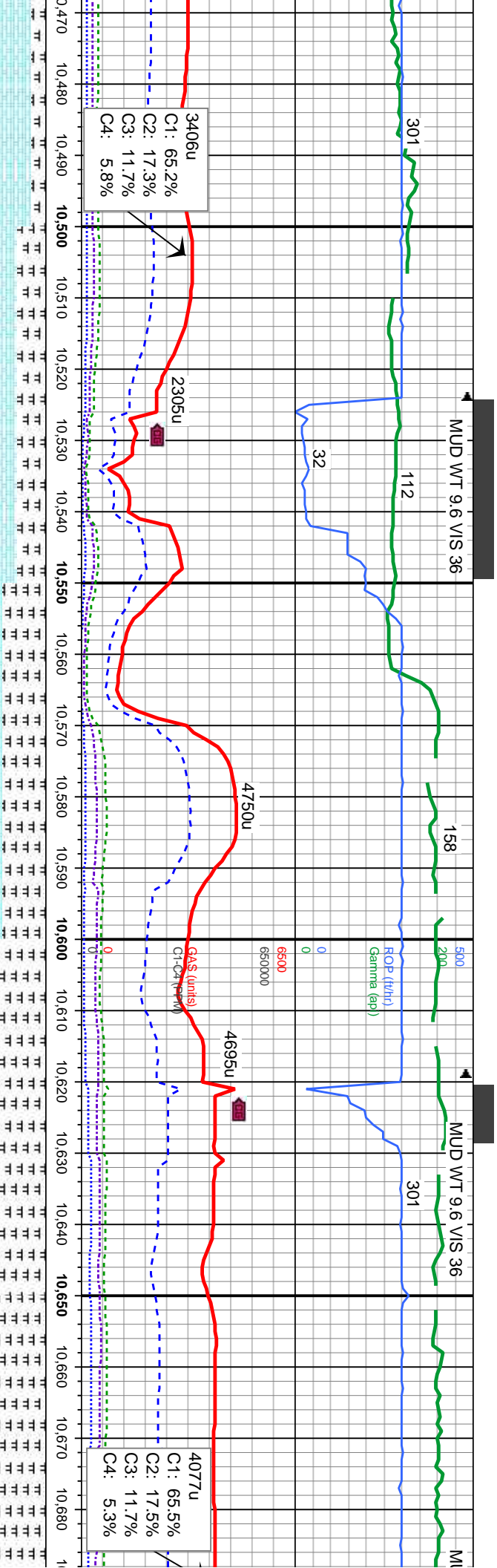
CHK: wh-crm, bf, lt gy-gy brn, sft, frm ip, -sb pty, mot, rthy ip, wxy, v calc MARL: med-dk gy, blk, mod sft-frm, sb pty, mot, rthy-sily tex, mot, sl vit lstr, v inoc frags, rr bent	90% CHK: wh-crm, bf, lt gy-gy brn, sft, sb blk-y-sb pty, mot, rthy, wxy, v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags	95% CHK: wh-crm, bf, lt gy-gy brn, sft, sb blk-y-sb pty, mot, rthy, wxy, v calc 5% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags	90% CHK: wh-crm, bf, lt gy-gy brn, sft, sb blk-y-sb pty, mot, rthy, wxy, v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr inoc frags	5900 60% CHK: wh-lt gy, med frm ip, sb blk-y-sb pty, mod calc 40% MARL: med-dk gy, blk-y-sb pty, mot, rthy-sily v calc, tr inoc frags, rr bent
	MD: 9,893 ' TVD: 6,705.17 ' Inclination: 88.64 ° Azimuth: 268.74 ° VS: 3,598.5 '		MD: 9,988 ' TVD: 6,706.62 ' Inclination: 89.6 ° Azimuth: 269.19 ° VS: 3,690.99 '	TVD (ft)





gy-brn, crm, sft, it, rthy-wxy ip, v	50% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-y-sb pty, mot, rthy-wxy ip, v calc 50% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	60% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, occ sl vit lstr, v calc, rr inoc frags 40% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pty, mot, v calc	50% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-y-sb pty, mot, v calc 50% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	5900 75% CHK: wh-crm, bf, lt gy-gy bm, sft, frm ip sb blk-y-sb pty, mot, rthy ip, wxy, v calc 25% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, calc, rr inoc frags, rr bent
			MD: 10,083' TVD: 6,707.93' Inclination: 88.83° Azimuth: 269.1° VS: 3,783.42'	MD: 10,177' TVD: 6,709.02' Inclination: 89.85° Azimuth: 269.22° VS: 3,874.87'

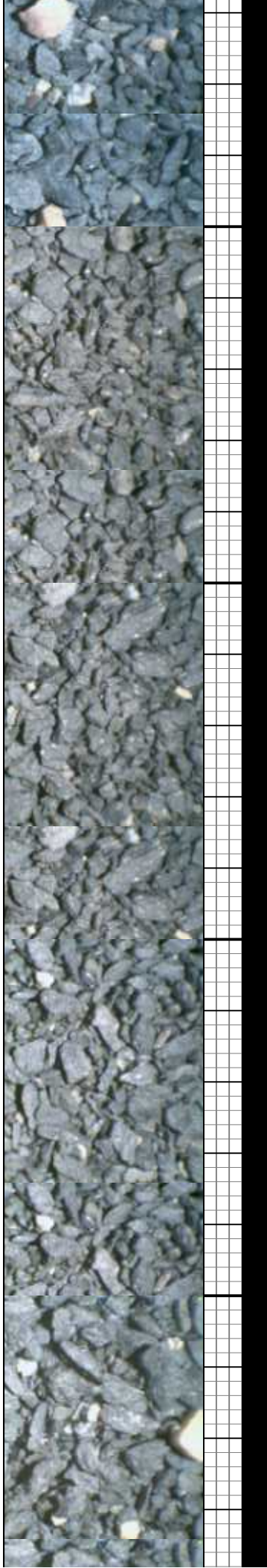




60% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb blk-y-sb pfty, mot, v calc	60% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pfty, mot, rthy-slty tex, mot, occ sl vit lstr, v calc	5900	65% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pfty, mot, rthy-slty tex, mot, occ sl vit lstr, v calc	70% MARL: med-dk gy, blk, mod s blk-y-sb pfty, mot, rthy-slty tex, mot, lstr, v calc
40% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pfty, mot, rthy-slty tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	40% CHK: wh-lt gy, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pfty, mot, v calc		35% CHK: wh-lt gy, med gy-brn, crm ip, sft, sb blk-y-sb pfty, mot, v calc	30% CHK: wh-lt gy, med gy-brn, cr sb blk-y-sb pfty, mot, v calc
frm, bf, lt gy-gy bm, sft, frm ip, mot, rthy ip, wxy, v calc				
, rthy-slty gy, blk, mod sft-frm, sb , rthy-slty tex, mot, sl vit lstr, v s, rr bent				

MD: 10,557'
TVD: 6,710.11'
Inclination: 88.95 °
Azimuth: 269.49 °
VS: 4,244.33'

MD: 10,651'
TVD: 6,710.9'
Inclination: 90.09 °
Azimuth: 269.39 °
VS: 4,335.68'



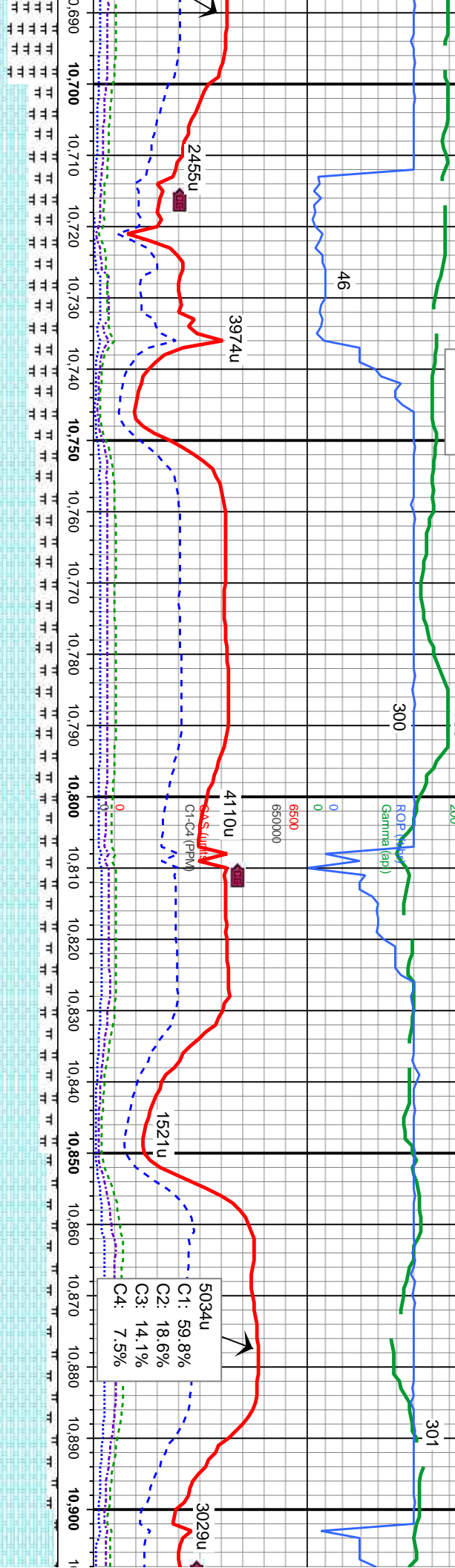
JD WT 9.6 VIS 36

156

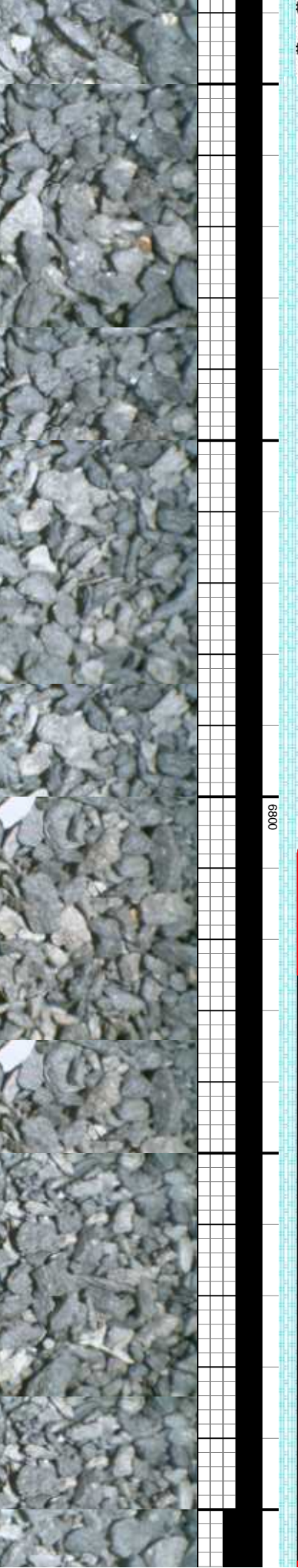
11/15/2013

MUD WT 9.6 VIS 36

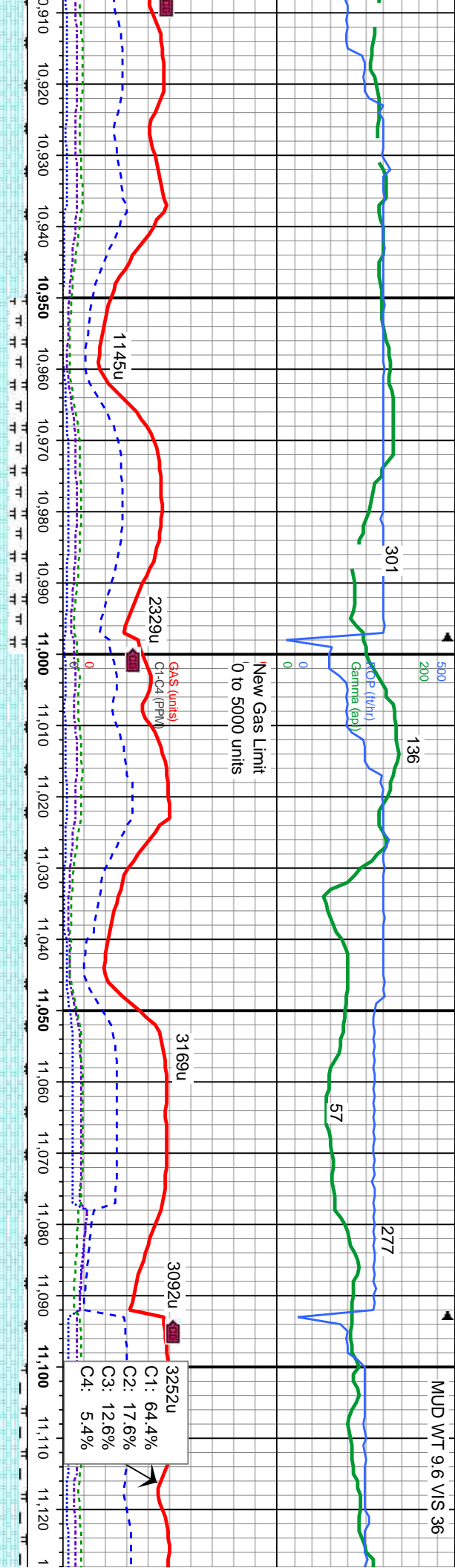
301



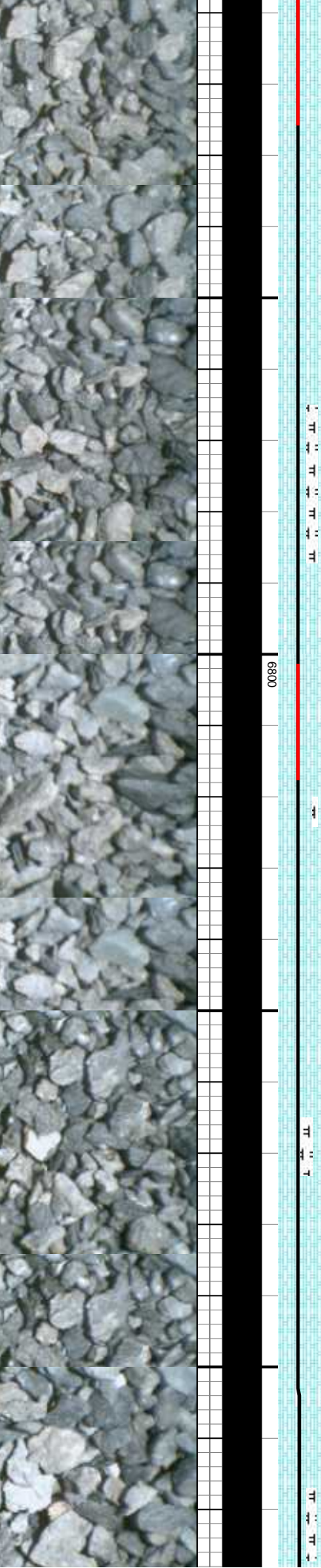
ip, sb blk-y-sb pty, mot, v calc	60% CHK: wh-lt gy, med gy-brn, crm, sft, frm	70% CHK: wh-lt gy, med gy-brn, crm, sft, frm	75% CHK: wh-lt gy, med gy-brn, crm, sft, frm	85% CHK: wh-lt gy, med gy-brn, crm, sft, frm	95% CHK: wh-lt gy, med gy-brn, crm, sft, frm
40% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	30% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	25% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	15% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	5% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	
MD: 10,746 TVD: 6,712.1 Inclination: 88.46 Azimuth: 271.1 VS: 4,427.66	MD: 10,841 TVD: 6,714.02 Inclination: 89.23 Azimuth: 271.45 VS: 4,519.2				

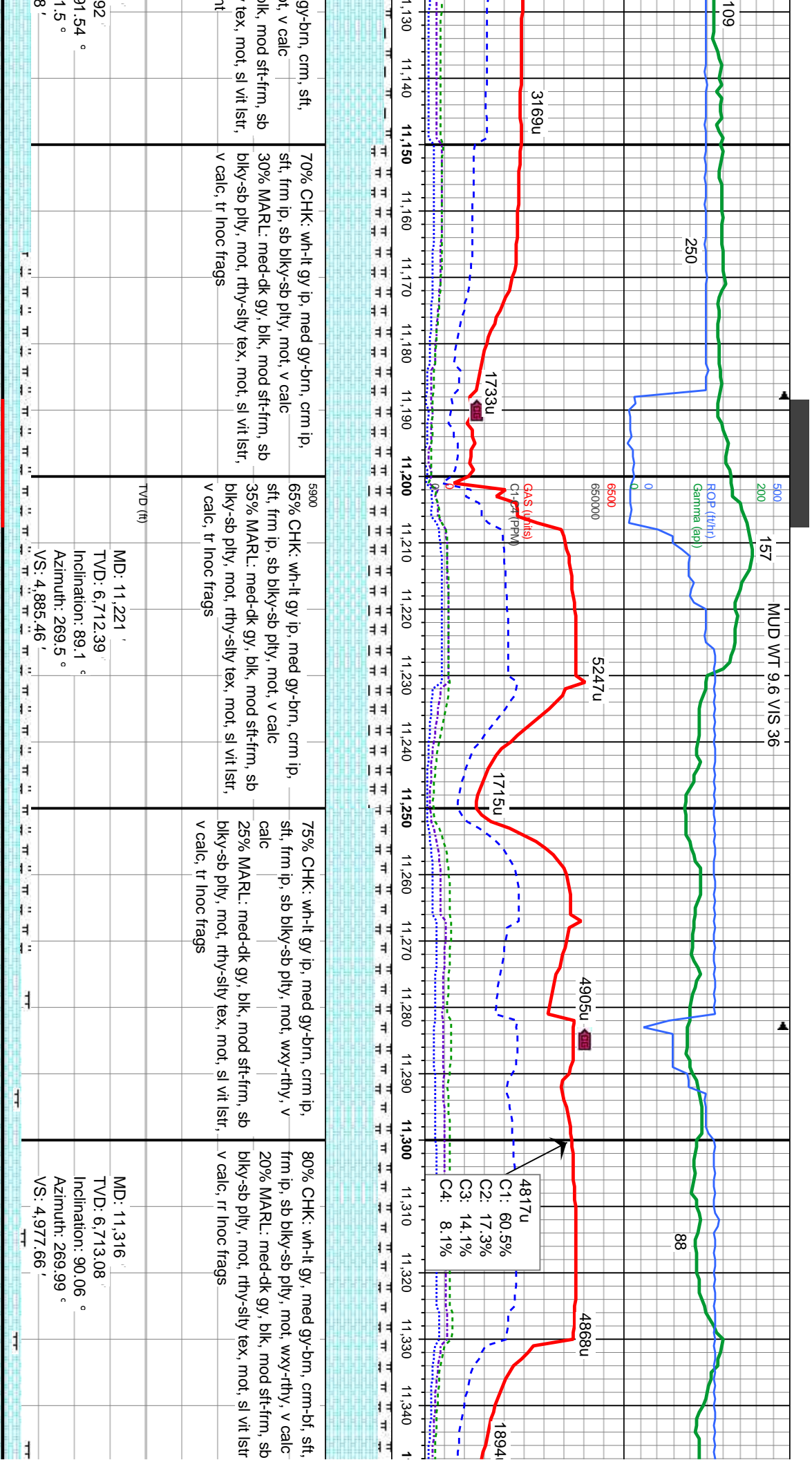


MUD WT 9.6 VIS 36

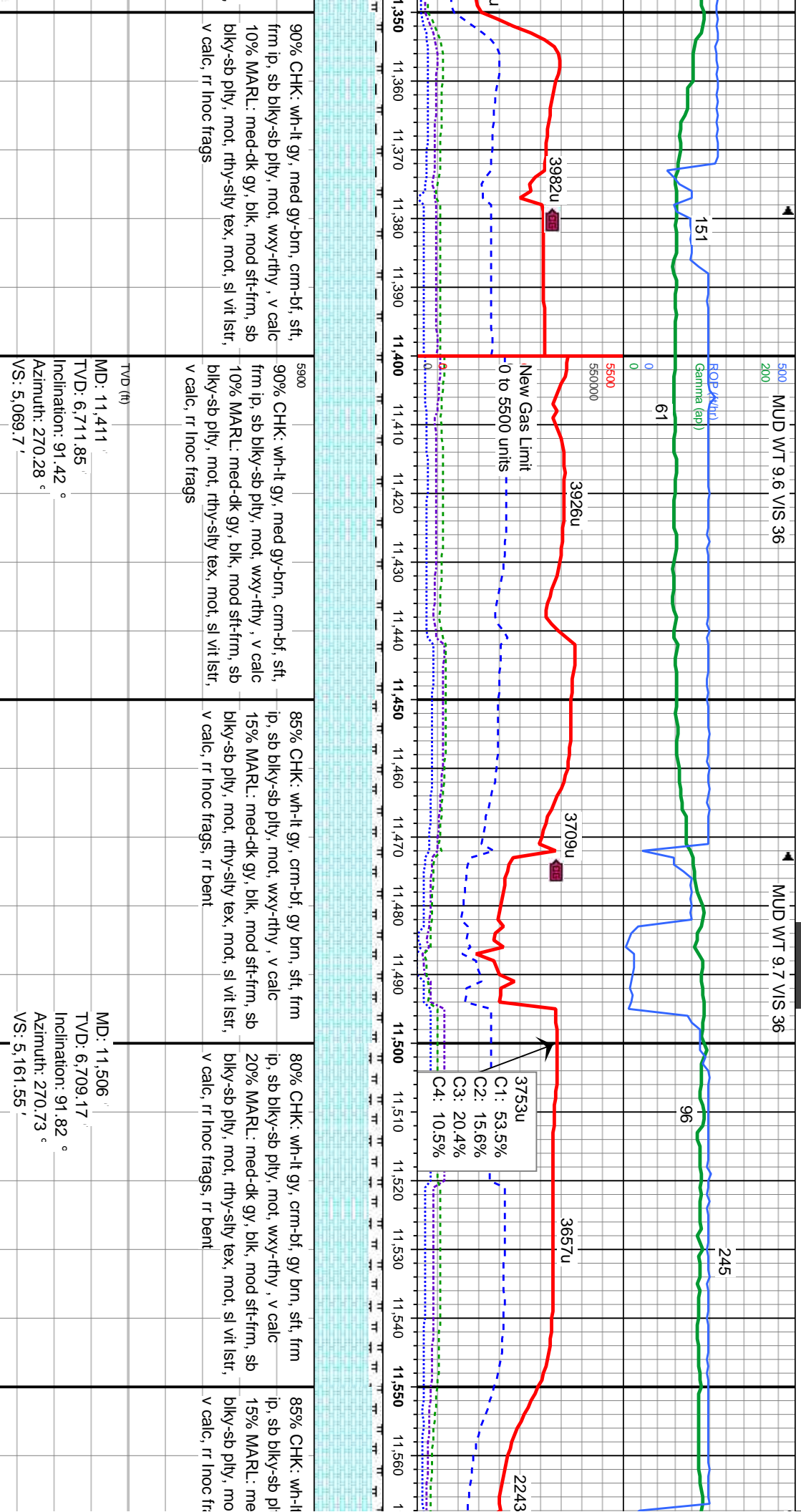


CHK: wh-lt gy, med gy-brn, crm, sft, sb biky-sb pty, mot, v calc	75% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb biky-sb pty, mot, v calc	95% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb biky-sb pty, mot, v calc	95% CHK: wh-lt gy, med gy-brn, crm, sft, frm ip, sb biky-sb pty, mot, v calc	90% CHK: wh-lt gy, med frm ip, sb biky-sb pty, mot
MARL: med-dk gy, blk, mod sft-frm, sb b pty, mot, rthy-sily tex, mot, sl vit lstr, tr inoc frags, rr bent	25% MARL: med-dk gy, blk, mod sft-frm, sb biky-sb pty, mot, rthy-sily tex, mot, sl vit lstr, calc, tr inoc frags, rr bent	5% MARL: med-dk gy, blk, mod sft-frm, sb biky-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	5% MARL: med-dk gy, blk, mod sft-frm, sb biky-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, tr inoc frags, rr bent	10% MARL: med-dk gy, blk biky-sb pty, mot, rthy-sily v calc, tr inoc frags, rr bent
MD: 10,936 TVD: 6,714.87 Inclination: 89.75 ° Azimuth: 271.44 ° VS: 4,610.69 '		MD: 11,031 TVD: 6,714.64 Inclination: 90.52 ° Azimuth: 271.56 ° VS: 4,702.15 '		MD: 11,126 TVD: 6,712. Inclination: 8 Azimuth: 27 VS: 4,793.5

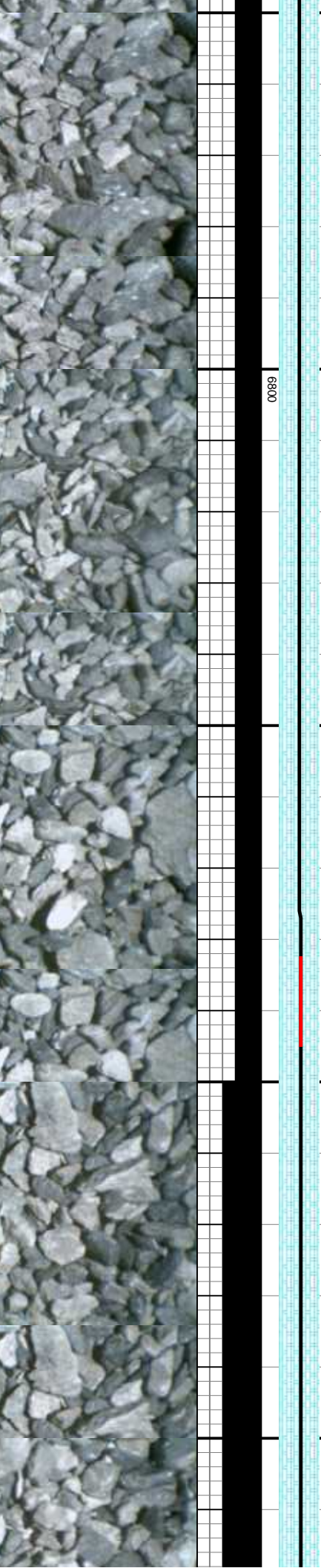




gy-brn, crm, sft, it, v calc	70% CHK: wh-lt gy ip, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pty, mot, v calc	5900	65% CHK: wh-lt gy ip, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pty, mot, v calc	75% CHK: wh-lt gy ip, med gy-brn, crm ip, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy, v calc	80% CHK: wh-lt gy, med gy-brn, crm-bf, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy, v calc
blk, mod sft-frm, sb tex, mot, sl vit lstr, v calc, tr inoc frags	30% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-slty tex, mot, sl vit lstr, v calc, tr inoc frags		35% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-slty tex, mot, sl vit lstr, v calc, tr inoc frags	25% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-slty tex, mot, sl vit lstr, v calc, tr inoc frags	20% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-slty tex, mot, sl vit lstr, v calc, tr inoc frags
		TVD (ft)			
		MD: 11,221			MD: 11,316
		TVD: 6,712.39			TVD: 6,713.08
		Inclination: 89.1 °			Inclination: 90.06 °
		Azimuth: 269.5 °			Azimuth: 269.99 °
		VS: 4,885.46			VS: 4,977.66

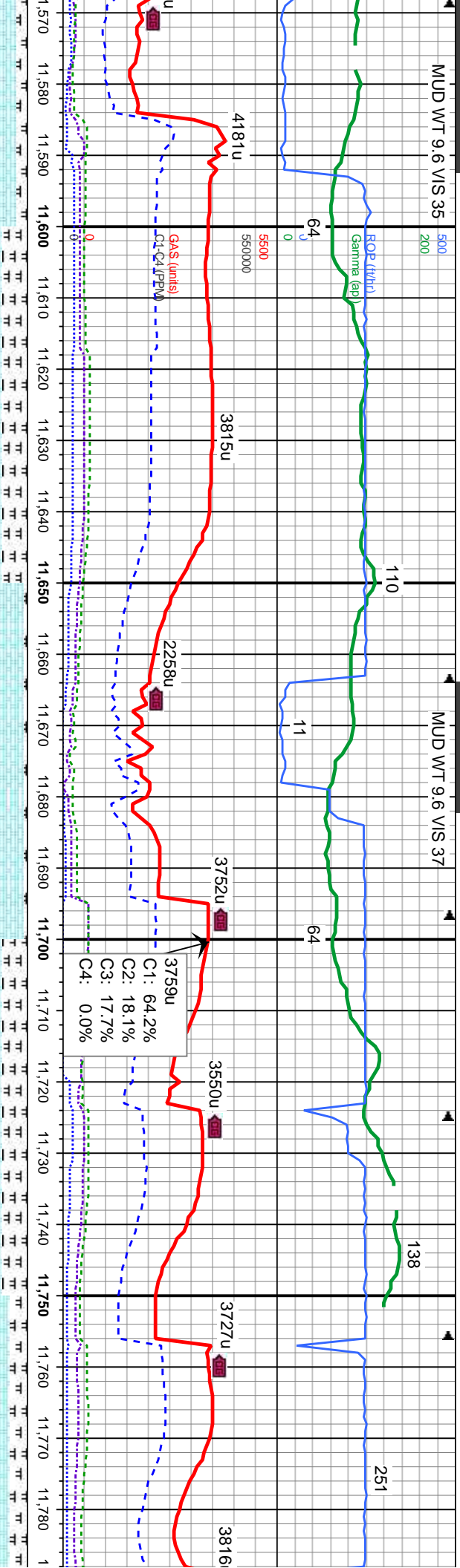


90% CHK: wh-lt gy, med gy-brn, crm-bf, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy , v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr lnoc frags	5900 90% CHK: wh-lt gy, med gy-brn, crm-bf, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy , v calc 10% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr lnoc frags	85% CHK: wh-lt gy, crm-bf, gy brn, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy , v calc 15% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr lnoc frags, rr bent	80% CHK: wh-lt gy, crm-bf, gy brn, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy , v calc 20% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr lnoc frags, rr bent	85% CHK: wh-lt gy, crm-bf, gy brn, sft, frm ip, sb blk-y-sb pty, mot, wxy-rthy , v calc 15% MARL: med-dk gy, blk, mod sft-frm, sb blk-y-sb pty, mot, rthy-sily tex, mot, sl vit lstr, v calc, rr lnoc frags
TVD (ft) MD: 11,411 TVD: 6,711.85 Inclination: 91.42 ° Azimuth: 270.28 ° VS: 5,069.7'				
TVD (ft) MD: 11,506 TVD: 6,709.17 Inclination: 91.82 ° Azimuth: 270.73 ° VS: 5,161.55'				



MUD WT 9.6 VIS 35

MUD WT 9.6 VIS 37



gy, crm-bf, gy brn, sft, frm
y, mot, wxy-rthy, v calc
d-dk gy, blk, mod sft-frm, sb
t, rthy-sily tex, mot, sl vit lstr,
ags, rr bent

5900
65% CHK: wh-lt gy, crm-bf, gy brn, sft, frm
ip, sb blk-y-sb ply, mot, wxy-rthy, v calc
35% MARL: med-dk gy, blk, mod sft-frm, sb
blk-y-sb ply, mot, rthy-sily tex, mot, sl vit lstr,
v calc, rr inoc frags, rr bent, occly intbod

95% CHK: wh-lt gy, crm-bf, gy brn, sft, frm
ip, sb blk-y-sb ply, mot, wxy-rthy, v calc
5% MARL: med-dk gy, blk, mod sft-frm, sb
blk-y-sb ply, mot, rthy-sily tex, mot, sl vit lstr,
v calc, rr inoc frags, rr bent

65% CHK: wh-lt gy, crm-bf, gy brn, sft, frm
ip, sb blk-y-sb ply, mot, wxy-rthy, v calc
35% MARL: med-dk gy, blk, mod sft-frm, sb
blk-y-sb ply, mot, rthy-sily tex, mot, sl vit lstr,
v calc, rr inoc frags

75% CHK: wh-lt gy, crm-bf, gy brn
ip, sb blk-y-sb ply, mot, wxy-rthy, v
25% MARL: med-dk gy, blk, mod s
blk-y-sb ply, mot, rthy-sily tex, mot
v calc, rr inoc frags

MD: 11,601
TVD: 6,707.78
Inclination: 89.85 °
Azimuth: 271.19 °
VS: 5,253.24'

MD: 11,696
TVD: 6,708.58
Inclination: 89.2 °
Azimuth: 270.81 °
VS: 5,344.92'

MD: 11,747
TVD: 6,709.22
Inclination: 89.35 °
Azimuth: 270.83 °
VS: 5,394.17'

6800

