

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Pappenheim 6-62-23-0461BH Horiz

Location NENW S23-T6N-R62W

State COLORADO

Country USA

API Number 05-123-37263

Region DJ BASIN

Spud Date 6/24/2013

Surface Coordinates 250' FNL 1954' FWL

Bottom Hole Coordinates SESW S23-T6N-R62W
650' FSL 2300' FWL

Ground Elevation 4698

Logged Interval 5650 To 10664

Formation NIOBRARA B2 CHALK

Type of Drilling Fluid SPUD

County WELD

Rig Number CADE 24

AFE # 18310D

Field WILDCAT

Drilling Completed 7/4/2013

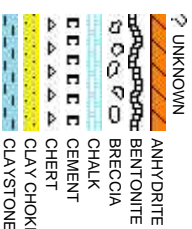
K.B. Elevation 4715

Total Depth 5014

Company BILL BARRETT
Address 1099 18TH ST
DENVER, CO 80202

Name JASON BRAND
Company BILL BARRETT
Address 1099 18TH ST
DENVER, CO 80202

WELLSITE GEOLOGISTS



Operator

CORPORATION

REET, SUITE 2300
80202

Geologist

CORPORATION

REET, SUITE 2300
80202

Other

CHARLES TRODICK
FRANK KORFANTTA

Rock Types

	CONGLOMERATE		NO SAMPLE
	DOLOMITE		SALT
	GRANITE		SANDSTONE
	GYPSUM		SALT-PEPPER SANDSTONE
	IGNEOUS		SHALE
	SIDERITE or LIMONITE		SHALE COLORED
	LIMESTONE		SHALE GRAY
	MARLSTONE		SHALY SANDSTONE
	SHALY SILTSTONE		SILTY SHALE
	SILTSTONE		TILL
	TUFF		WELDED TUFF

Accessories

	F FOSSIL		ARGILLACEOUS		GLAUCONITE		TUFFACEOUS
	GASTROPOD		ARGILLITE GRAIN		GYPSIFEROUS		HEAVY MINERAL
	OOLITE		B BENTONITE		INOCERAMUS		ANHYDRITE STRINGER
	OSTRACOD		BITUMINOUS SUBSTANCE		KAOLIN		BENTONITE STRINGER
	PELECYPOD		BRECCIA FRAGMENTS		MARLSTONE		COAL STRINGER
	BIOCLASTIC		CALCAREOUS		CARBONACEOUS FLAKES		DOLOMITE STRINGER
	BRACHIOPOD		CHTDK		NODULES		GYPSUM STRINGER
	PISOLITE		COAL - THIN BEDS		PHOSPHATE PELLETS		LIMESTONE STRINGER
	PLANT REMAINS		CHERT		PYRITE		MARLSTONE (CALC) STRG
	BRYOZOA		DOLOMITIC		SALT CAST		MARLSTONE (DOL) STRG
	CEPHALOPOD		FELDSPAR		SANDY		SANDSTONE STRINGER
	CORAL		FERRUGINOUS PELLET		SILTACEOUS		SHALE STRINGER
	CRINOID		FERRUGINOUS		SILTY		SILTSTONE STRINGER
	ECHINOID		FORAMINIFERA		ANHYDRITIC		

Other Symbols

	MOLDIC		FAULT		WIRELINE TESTED - LEFT		E EARTHY
	ORGANIC		FORMATION TOP		WIRELINE TESTED - RT		FX FINELY SILTY
	PINPOINT		GAS SHOW		L LITHOGRAPHIC		ES GRAINSTONE
	VUGGY		MINDEPTH MN DEPTH		A ANGULAR		MX MICRO SILTY
	QUESTIONABLE		NORMAL FAULT		R ROUNDED		MS MUDSTONE
	SPOTTED STAINING		OIL SHOW		B SUBANG		PS PACKSTONE
	Porosity		OVERTURNED STRATA		S SUBRND		WS WACKESTONE
	E EARTHY		REVERSE FAULT		Textures		Sorting
	FENESTRAL		SIDEWALL CORE (LEFT)		B\$ BOUNDSTONE		M MODERATE
	F FRACTURE		SIDEWALL CORE (RIGHT)		C CHALKY		P POOR
	INTERCRYSTALLINE		TRIP GAS		CX CRYPTOXLN		W WELL
	INTEROOLITIC		DST INTERVAL				

ROP
 ROF
 GAMMA

COLUMBINE LOGGING INC.
 RIGGED UP ON 6/25/13
 MANNED 2-PERSON LOGGING
 WITH BLOODHOUND GAS
 CHROMATOGRAPH UNIT

Total Gas & Chromatograph
 GAS
 C1
 C2
 C3
 C4
 CO2

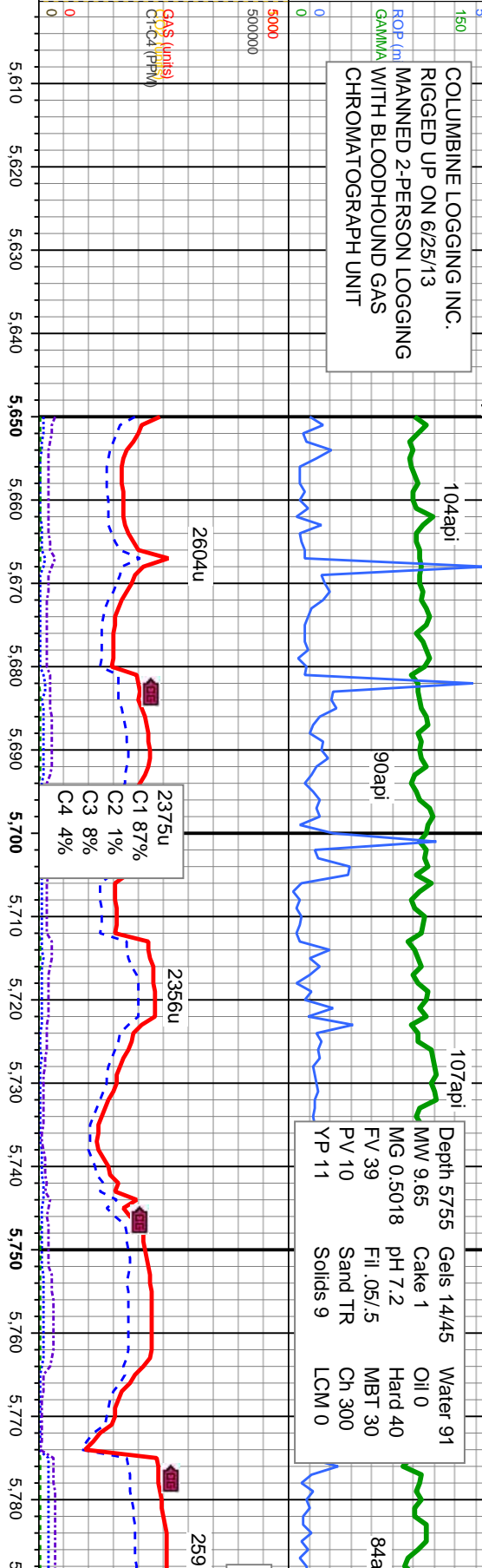
Depth Labels

% Lith

Well Bore
 TVD

Oil Show

Images



Depth 5755	Gels 14/45	Water 91
MW 9.65	Cake 1	Oil 0
MG 0.5018	pH 7.2	Hard 40
FV 39	Fl .05/.5	MBT 30
PV 10	Sand TR	Ch 300
YP 11	Solids 9	LCM 0

2604u
 2375u
 C1 87%
 C2 1%
 C3 8%
 C4 4%

Bit Data
 Bit #: 1
 Type: REED E1202
 Size: 8.75
 Depth In: 835 '
 Depth Out: 5,838 '
 Hours: 26.4 hrs
 Avg Ft/Hr: 9.5/hr
 Jets: 5X16
 S/N: E168014

MD: 5,658 '
 TVD: 5,638.65 '
 Inclination: 1.1 °
 Azimuth: 30.3 °
 VS: -157.32 '

MD: 5,690 '
 TVD: 5,670.64 '
 Inclination: 1.2 °
 Azimuth: 82.3 °
 VS: -157.6 '

MD: 5,721 '
 TVD: 5,701.62 '
 Inclination: 2.7 °
 Azimuth: 127.4 °
 VS: -157.13 '

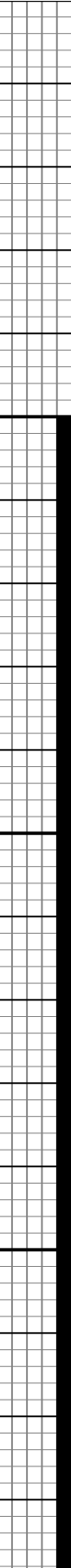
MD: 5,753 '
 TVD: 5,733.55 '
 Inclination: 4.9 °
 Azimuth: 146.7 °
 VS: -155.43 '

MD: 5,784 '
 TVD: 5,764.39 '
 Inclination: 6.9 °
 Azimuth: 156.1 °
 VS: -152.52 '

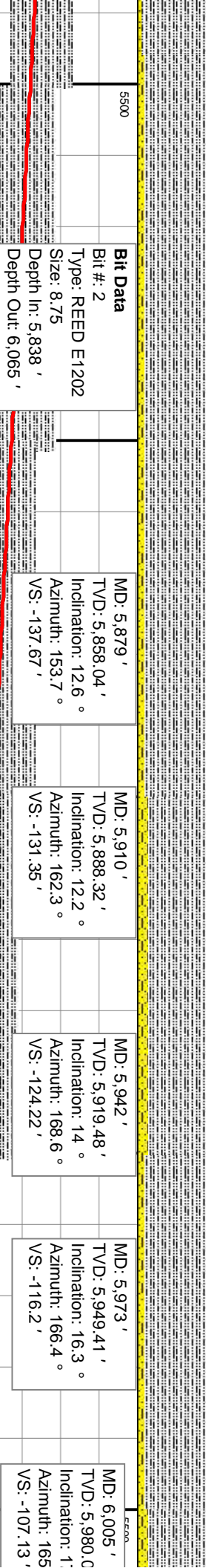
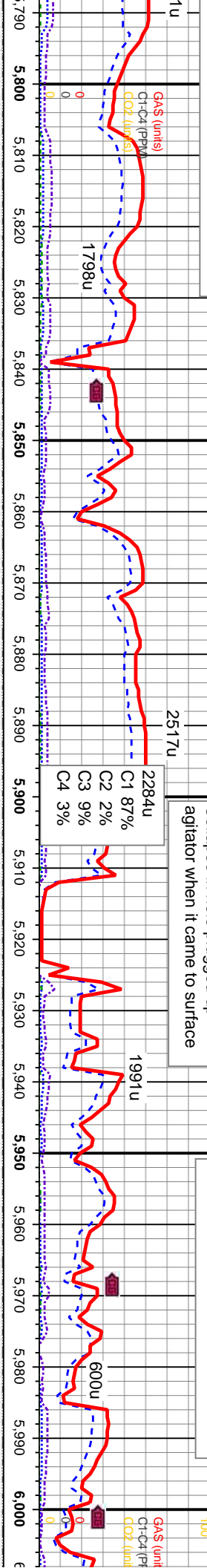
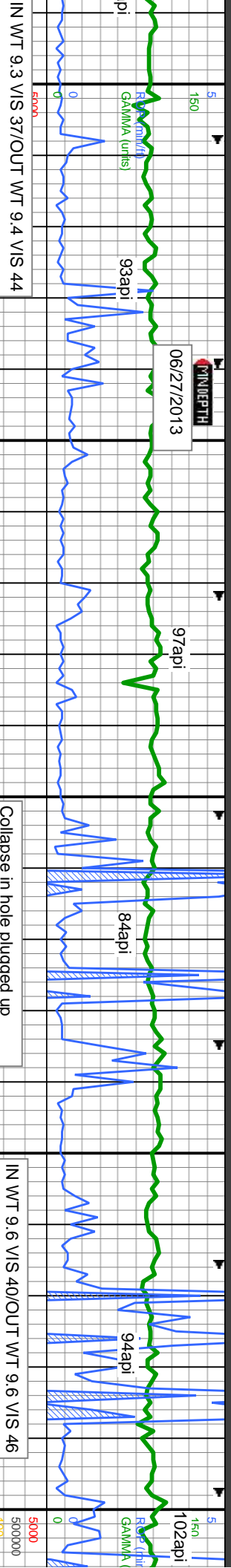
SLTY SH: It gy-gy, sub frm-frm, silty rthy tex, arg, sub pily-sub blkly,
 SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SLTY SH: It gy-gy, sub frm-frm, silty rthy tex, arg, sub pily-sub blkly,
 SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SLTY SH: It gy-gy, sub frm-frm, silty rthy tex, arg, sub pily-sub blkly,
 SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc



TR
 PR
 G
 E



MD	TVD	Inclination	Azimuth	VS
5500	5,815'	5,795.1°	157.6°	-148.56'
5500	5,847'	5,826.67°	156.9°	-143.6'
5500	5,879'	5,858.04°	12.6°	-137.67'
5500	5,910'	5,888.32°	12.2°	-131.35'
5500	5,942'	5,919.48°	14°	-124.22'
5500	5,973'	5,949.41°	16.3°	-116.2'
5500	6,005'	5,980.0°	1°	-107.13'

SLTY SH: It gy-gy, sub frm-frm, sily rthy tex, arg, sub pily-sub blkly, SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

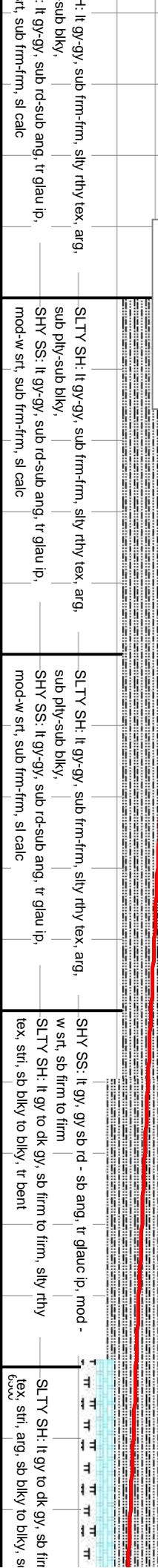
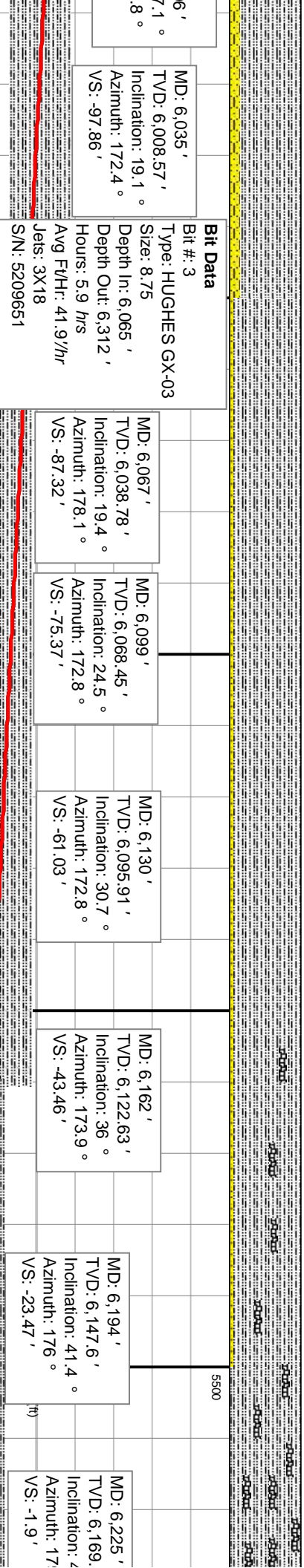
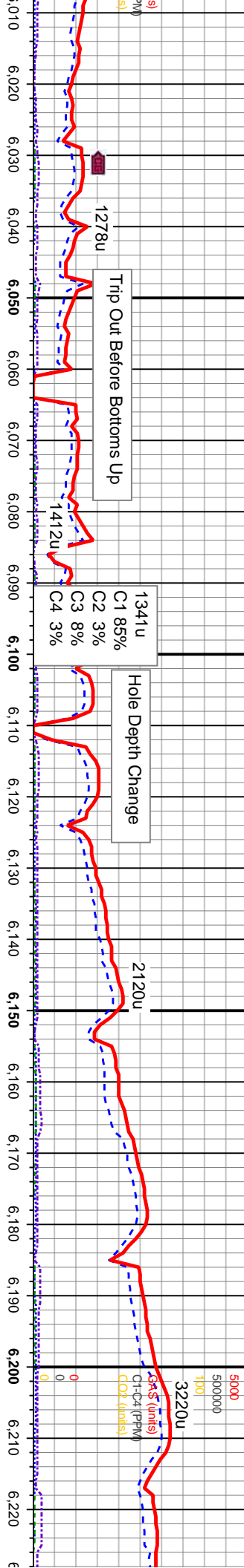
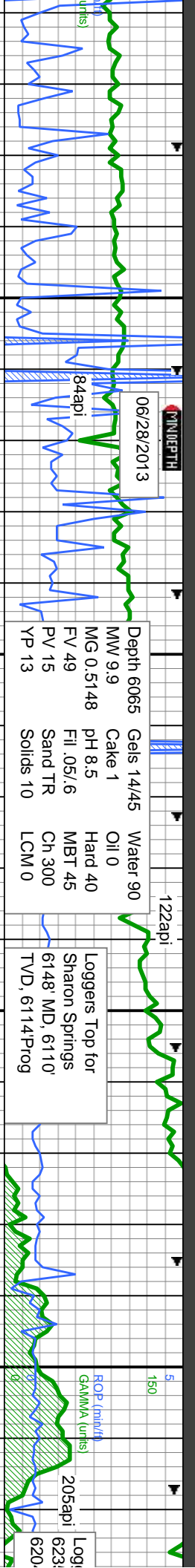
SLTY SH: It gy-gy, sub frm-frm, sily rthy tex, arg, sub pily-sub blkly, SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SLTY SH: It gy-gy, sub frm-frm, sily rthy tex, arg, sub pily-sub blkly, SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SLTY SH: It gy-gy, sub frm-frm, sily rthy tex, arg, sub pily-sub blkly, SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SLTY SH: It gy-gy, sub frm-frm, sily rthy tex, arg, sub pily-sub blkly, SHY SS: It gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc





MD: 6.035'
 TVD: 6.008.57'
 Inclination: 19.1°
 Azimuth: 172.4°
 VS: -97.86'

Bit Data
 Bit #: 3
 Type: HUGHES GX-03
 Size: 8.75
 Depth In: 6.065'
 Depth Out: 6.312'
 Hours: 5.9 hrs
 Avg FV/HR: 41.9'/hr
 Jets: 3X18
 S/N: 5209651

MD: 6.067'
 TVD: 6.038.78'
 Inclination: 19.4°
 Azimuth: 178.1°
 VS: -87.32'

MD: 6.099'
 TVD: 6.068.45'
 Inclination: 24.5°
 Azimuth: 172.8°
 VS: -75.37'

MD: 6.130'
 TVD: 6.095.91'
 Inclination: 30.7°
 Azimuth: 172.8°
 VS: -61.03'

MD: 6.162'
 TVD: 6.122.63'
 Inclination: 36°
 Azimuth: 173.9°
 VS: -43.46'

MD: 6.194'
 TVD: 6.147.6'
 Inclination: 41.4°
 Azimuth: 176°
 VS: -23.47'

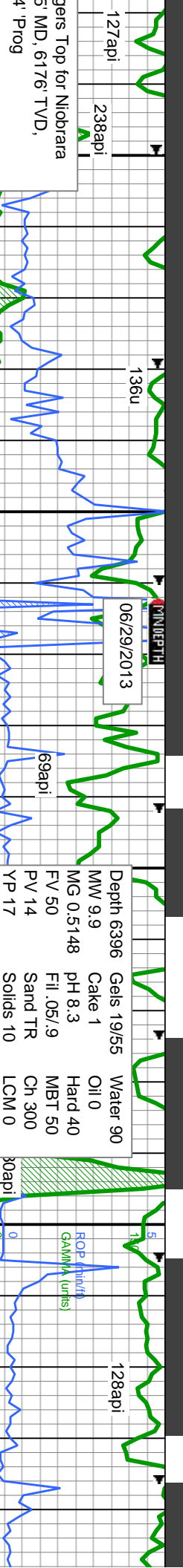
MD: 6.225'
 TVD: 6.169'
 Inclination: 47°
 Azimuth: 17°
 VS: -1.9'

SLTY SH: lt gy-gy, sub frm-frm, silty rthy tex, arg, sub pily-sub blkly, SHY SS: lt gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

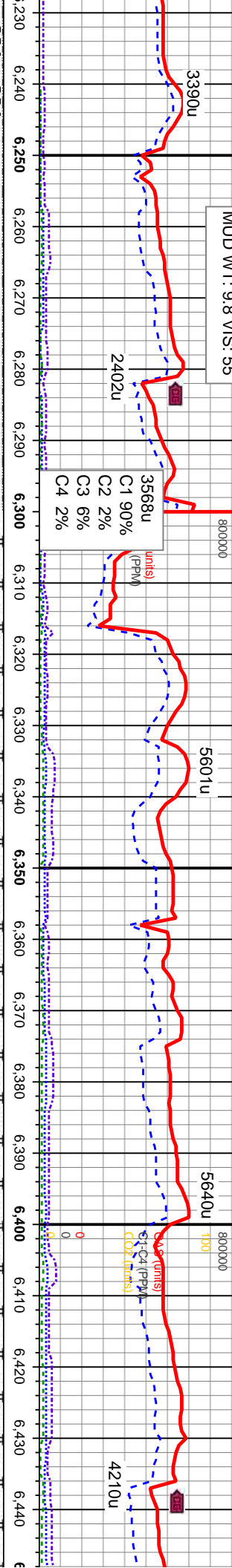
SLTY SH: lt gy-gy, sub frm-frm, silty rthy tex, arg, sub pily-sub blkly, SHY SS: lt gy-gy, sub rd-sub ang, tr glau ip, mod-w srt, sub frm-frm, sl calc

SHY SS: lt gy, gy, sb rd - sb ang, tr glauc ip, mod-w srt, sb firm to firm
 SLTY SH: lt gy to dk gy, sb firm to firm, silty rthy tex, srt, sb blkly to blkly, tr bent

SLTY SH: lt gy to dk gy, sb firm to firm, silty rthy tex, srt, arg, sb blkly to blkly, srt



Depth 6396	Gels 19/55	Water 90
MW 9.9	Cake 1	Oil 0
MG 0.5148	pH 8.3	Hard 40
FV 50	Fill .05/.9	MBT 50
PV 14	Sand TR	Ch 300
YP 17	Solids 10	LCM 0



CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb pily-biky, v calc, cpxxl, intbd w/marl, seat bent
MARL: lt-dk gy, strf, stf-v stf, sb pily-pty, fri- brt, sil, vf grn, rr vf tr pyr,
SLTY SH: dk gy- blk, some brn-gy, stf-nod stf, p-mod ind, fri-brt, fs, some sl brnd, sb pily-pty

CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb pily-biky, v calc, cpxxl, intbd w/marl, seat bent
MARL: lt-dk gy, strf, stf-v stf, sb pily-pty, fri- brt, sil, vf grn, rr vf tr pyr,

CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb pily-biky, v calc, cpxxl, intbd w/marl, seat bent
MARL: lt-dk gy, strf, stf-v stf, sb pily-pty, fri- brt, sil, vf grn, rr vf tr pyr,

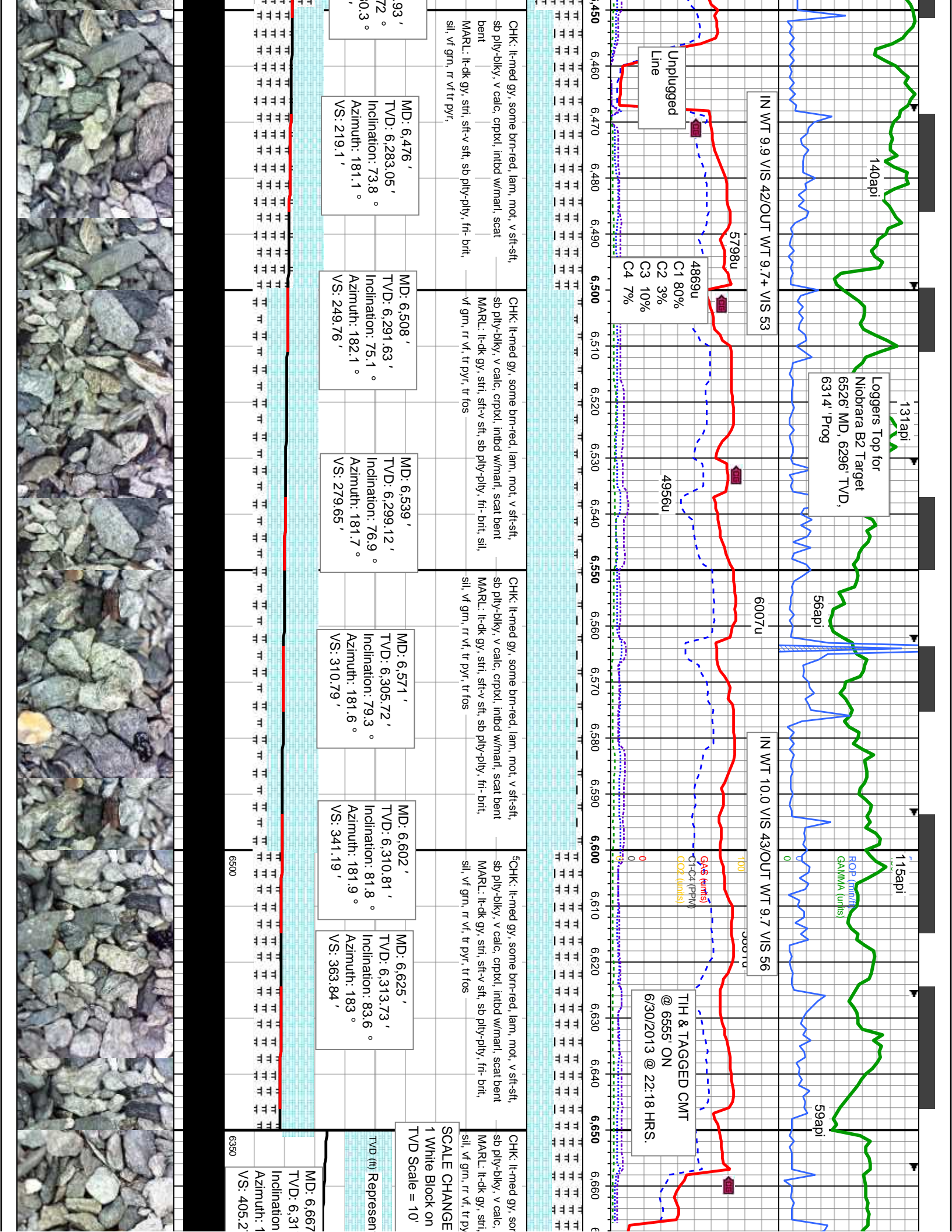
CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb pily-biky, v calc, cpxxl, intbd w/marl, seat bent
MARL: lt-dk gy, strf, stf-v stf, sb pily-pty, fri- brt, sil, vf grn, rr vf tr pyr,

MD: 6.257'	TVD: 6.190.5'	Inclination: 52.6°	Azimuth: 180.4°	VS: 22.45'
MD: 6.287'	TVD: 6.207.68'	Inclination: 57.5°	Azimuth: 179.9°	VS: 46.96'
MD: 6.319'	TVD: 6.223.92'	Inclination: 61.5°	Azimuth: 180.6°	VS: 74.43'
MD: 6.350'	TVD: 6.238.04'	Inclination: 64.3°	Azimuth: 180.3°	VS: 101.93'
MD: 6.382'	TVD: 6.251.44'	Inclination: 66.2°	Azimuth: 179°	VS: 130.91'
MD: 6.413'	TVD: 6.263.25'	Inclination: 69°	Azimuth: 179.6°	VS: 159.51'
MD: 6.445'	TVD: 6.273	Inclination:	Azimuth: 18	VS: 189.59

Bit Data
Bit #: 4
Type: REED E1202-A1E
Size: 8.75
Depth In: 6.312'
Depth Out: 6.680'
Hours: 5.1 hrs
Avg FV/Hr: 69.8/hr
Jets: 5X16
S/N: E11068013

6500





Loggers Top for
Niobrara B2 Target
6526' MD, 6296' TVD,
6314' Prog

TIH & TAGGED CMT
@ 6555' ON
6/30/2013 @ 22:18 HRS.

MD: 6,476 '
TVD: 6,283.05 '
Inclination: 73.8 °
Azimuth: 181.1 °
VS: 219.1 '

MD: 6,508 '
TVD: 6,291.63 '
Inclination: 75.1 °
Azimuth: 182.1 °
VS: 249.76 '

MD: 6,539 '
TVD: 6,299.12 '
Inclination: 76.9 °
Azimuth: 181.7 °
VS: 279.65 '

MD: 6,571 '
TVD: 6,305.72 '
Inclination: 79.3 °
Azimuth: 181.6 °
VS: 310.79 '

MD: 6,602 '
TVD: 6,310.81 '
Inclination: 81.8 °
Azimuth: 181.9 °
VS: 341.19 '

MD: 6,625 '
TVD: 6,313.73 '
Inclination: 83.6 °
Azimuth: 183 °
VS: 363.84 '

MD: 6,667 '
TVD: 6,31 '
Inclination
Azimuth: 1
VS: 405.2

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb pily-biky, v calc, crpxl, inbd w/marl, scat
bent
MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brt,
sil, vf grn, rr vf, tr pyr,

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb pily-biky, v calc, crpxl, inbd w/marl, scat bent
MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brt, sil,
vf grn, rr vf, tr pyr, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb pily-biky, v calc, crpxl, inbd w/marl, scat bent
MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brt,
sil, vf grn, rr vf, tr pyr, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb pily-biky, v calc, crpxl, inbd w/marl, scat bent
MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brt,
sil, vf grn, rr vf, tr pyr, tr fos

CHK: lt-med gy, sor
sb pily-biky, v calc,
MARL: lt-dk gy, stri,
sil, vf grn, rr vf, tr py

SCALE CHANGE
1 White Block on
TVD Scale = 10'

TVD (ft) Represen

Unplugged
Line

5798u
4869u
C1 80%
C2 3%
C3 10%
C4 7%

4956u

6007u

IN WT 10.0 VIS 43/OUT WT 9.7 VIS 56

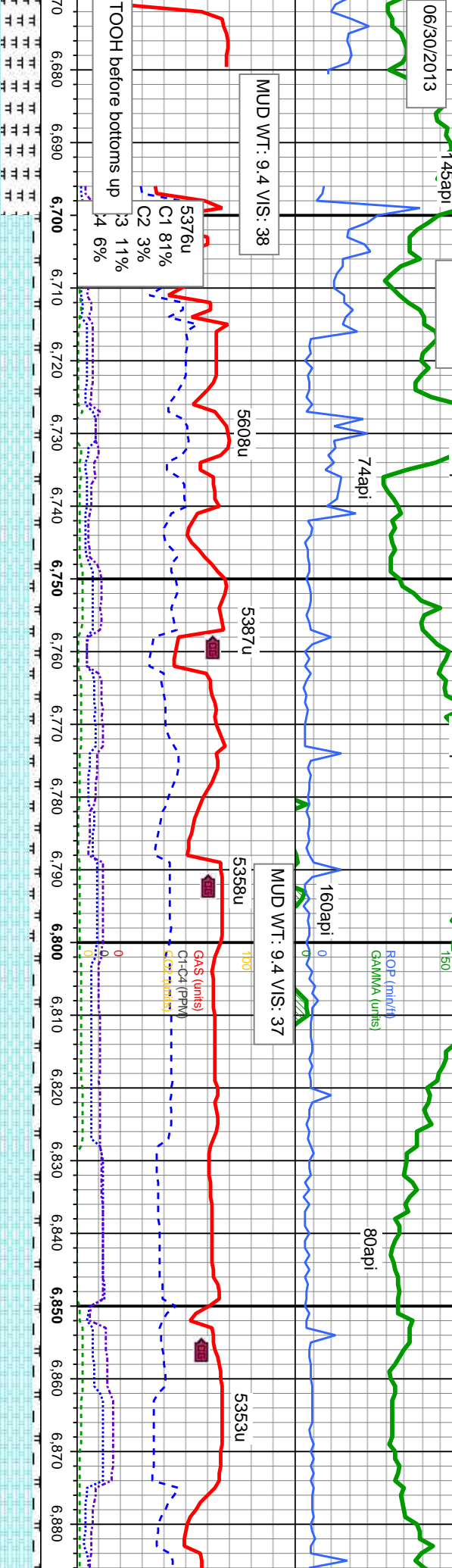
100
000 TU

GAS (turns)
C1-C4 (PPM)
C02 (turns)

6500

6360

MINDEPTH 06/30/2013 07/01/2013



CHK: It-med gy, some br-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, intbd w/marl, MARL: It-ck gy, stri, sft-v sft, sb pily-pily, fr- brt, sil, vf grn, rr vf, tr fos

CHK: It-med gy, some br-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, intbd w/marl, MARL: It-ck gy, stri, sft-v sft, sb pily-pily, fr- brt, sil, vf grn, rr vf, tr fos

CHK: It-med gy, some br-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, intbd w/marl, MARL: It-ck gy, stri, sft-v sft, sb pily-pily, fr- brt, sil, vf grn, rr vf, tr fos

CHK: It-med gy, some br-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, intbd w/marl, MARL: It-ck gy, stri, sft-v sft, sb pily-pily, fr- brt, sil, vf grn, rr vf, tr fos

Bit Data
 Bit #: 5
 Type: HALLI FXD54
 Size: 6.12
 Depth In: 6,680 '
 Depth Out: 7,293 '
 Hours: 5.6 hrs
 Avg Ft/Hr: 109.5'/hr
 Jets: 5X16
 S/N: 12025995

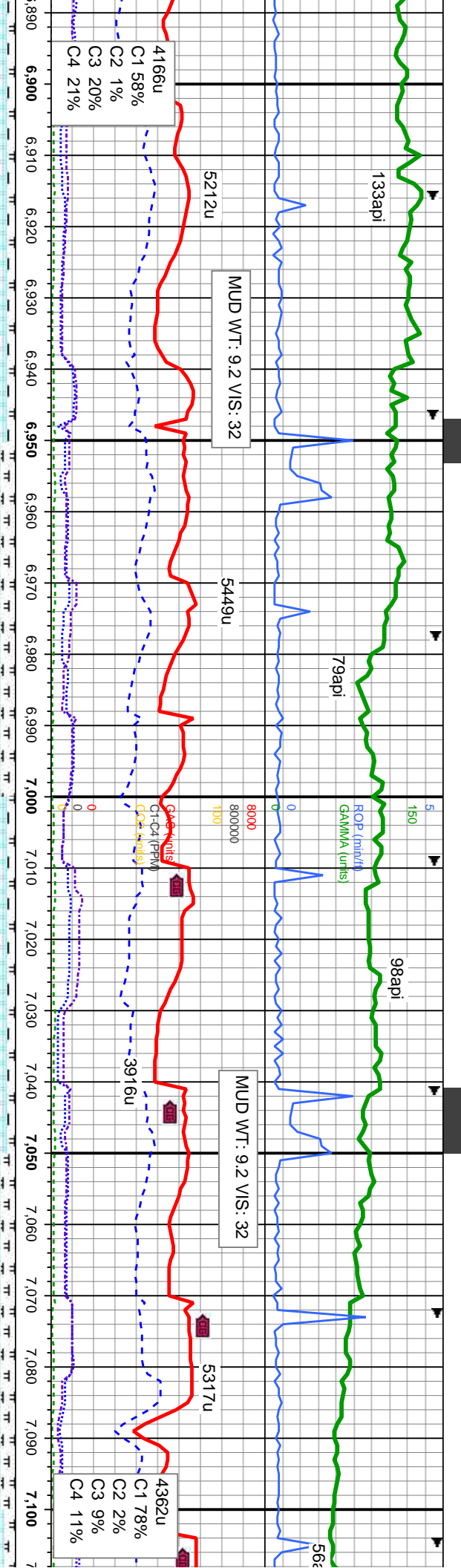
MD: 6,759 '
 TVD: 6,321.09 '
 Inclination: 90.3 °
 Azimuth: 183.5 °
 VS: 496.38 '

MD: 6,855 '
 TVD: 6,319.75 '
 Inclination: 91.3 °
 Azimuth: 183.7 °
 VS: 591.44 '

7.73' 85.5 °
 7' 83.1 °

6360





4166u
 C1 58%
 C2 1%
 C3 20%
 C4 21%

MUD WT: 9.2 V/S: 32

MUD WT: 9.2 V/S: 32

4362u
 C1 78%
 C2 2%
 C3 9%
 C4 11%

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-biky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-ply, fr- brt,
 sil, vf grn, rr vf, tr fos

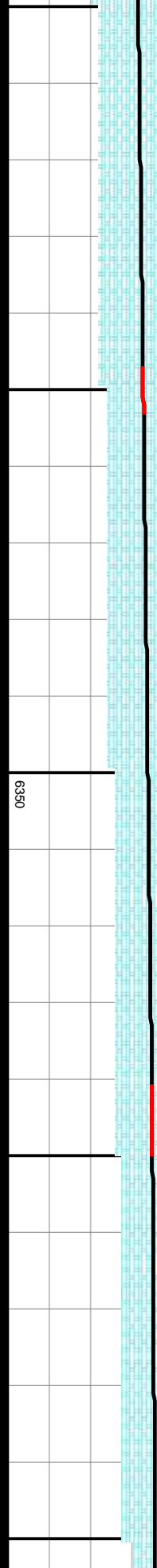
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 sb pily-biky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-ply, fr- brt,
 sil, vf grn, rr vf, tr fos

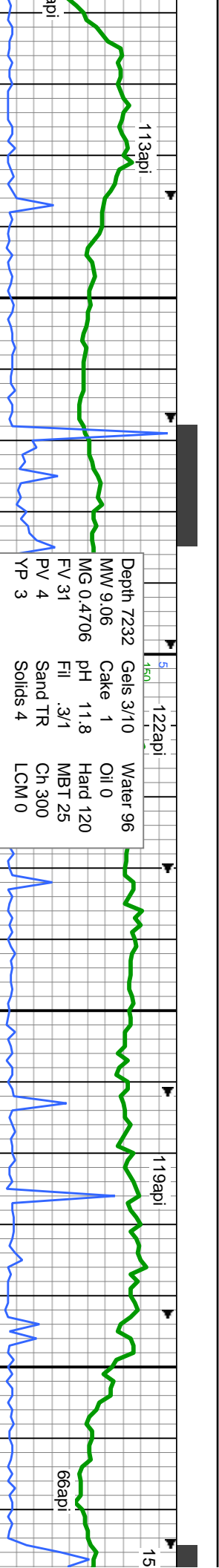
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 sb pily-biky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-ply, fr- brt,
 sil, vf grn, rr vf, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-biky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-ply, fr- brt,
 sil, vf grn, rr vf, tr fos

MD: 6,949 '
 TVD: 6,317.46 '
 Inclination: 91.5 °
 Azimuth: 183.3 °
 VS: 684.52 '

MD: 7,044 '
 TVD: 6,315.3 '
 Inclination: 91.1 °
 Azimuth: 182.3 °
 VS: 778.75 '





Depth 7232	Gels 3/10	Water 96
MW 9.06	Cake 1	Oil 0
MG 0.4706	pH 11.8	Hard 120
FV 31	Fill .3/1	MBT 25
PV 4	Sand TR	Ch 300
YP 3	Solids 4	LCM 0

C1	73%
C2	0%
C3	15%
C4	12%

MD: 7,139 '
 TVD: 6,314.06 '
 Inclination: 90.4 °
 Azimuth: 182 °
 VS: 873.12 '

MD: 7,233 '
 TVD: 6,313.16 '
 Inclination: 90.7 °
 Azimuth: 181 °
 VS: 966.62 '

Bit Data
 Bit #: 6
 Type: HALLI FXD54
 Size: 6.12
 Depth In: 7,293 '
 Depth Out: 10,664 '
 Hours: 30.7 hrs
 Avg Ft/Hr: 109.8"/hr
 Jets: 5X16
 S/N: 12031711

MD: 7,327
 TVD: 6,31
 Inclination
 Azimuth: 1
 VS: 1,060



med gy, some brn-red, lam, mot, v stf-stf, v calc, cpxxl, intbd w/marl, l-dk gy, stri, stf-v stf, sb ply-pty, fr- bnt, n, rr vf, tr fos

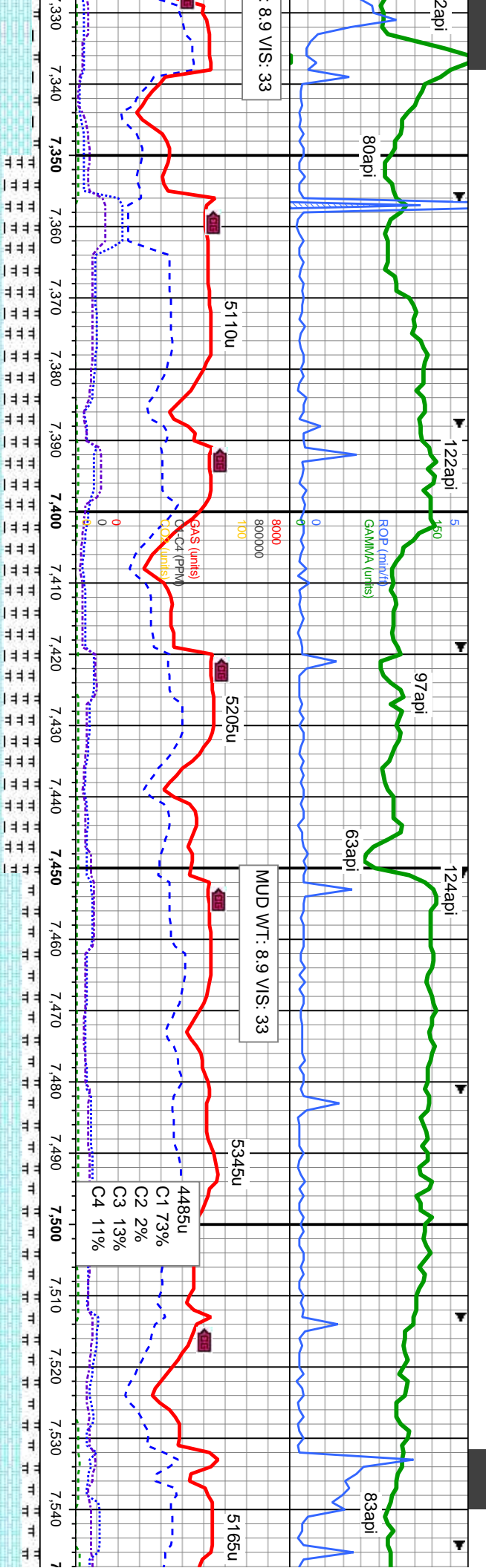
CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb ply-biky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, stf-v stf, sb ply-pty, fr- bnt, sil, vf grn, rr vf, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb ply-biky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, stf-v stf, sb ply-pty, fr- bnt, sil, vf grn, rr vf, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v stf-stf, sb ply-biky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, stf-v stf, sb ply-pty, fr- bnt, sil, vf grn, rr vf, tr fos

6360

TVD (ft)



lam, mot, v sft-sft, w/marl, pty-pty, fr- brt.

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, rr vf, mod fos

(CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, rr vf, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, rr vf, tr fos

MD	TVD	Inclination	Azimuth	VS
7,421'	6,312.42'	89.8°	178.8°	1,154.08'
7,517'	6,311.66'	91.1°	178.4°	1,249.94'



DATE: 07/02/2013

101api

157api

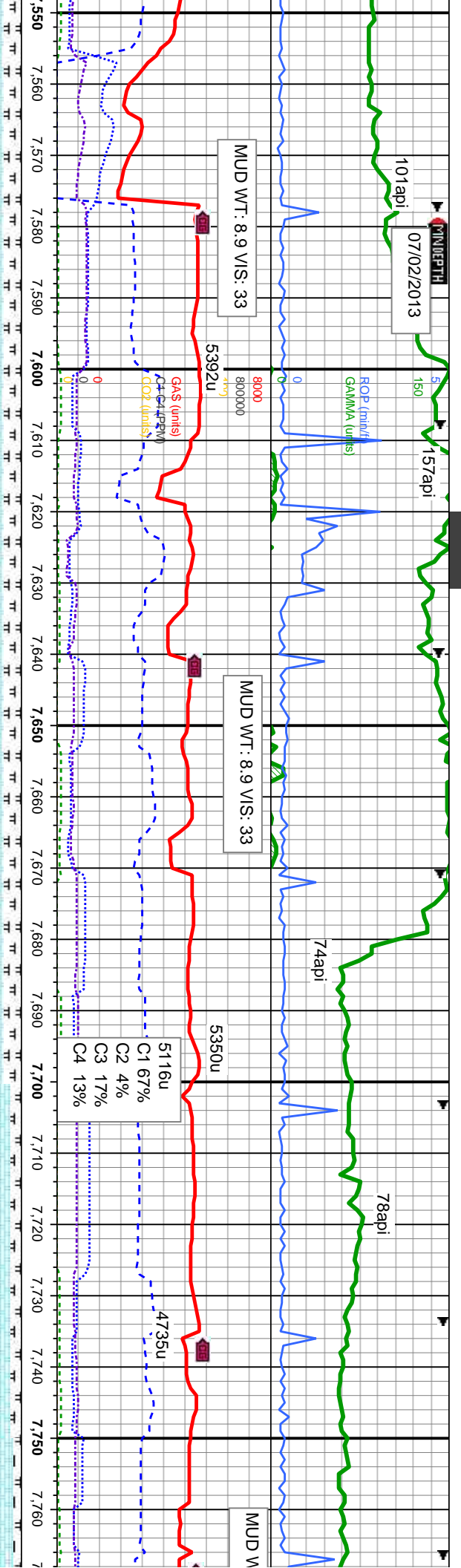
74api

78api

MUD WT: 8.9 V/S: 33

MUD WT: 8.9 V/S: 33

MUD W



CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- bnt, sil, vf grn, tr vf, tr fos

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- bnt, sil, vf grn, tr vf, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- bnt, sil, vf grn, tr vf, tr fos, tr bent

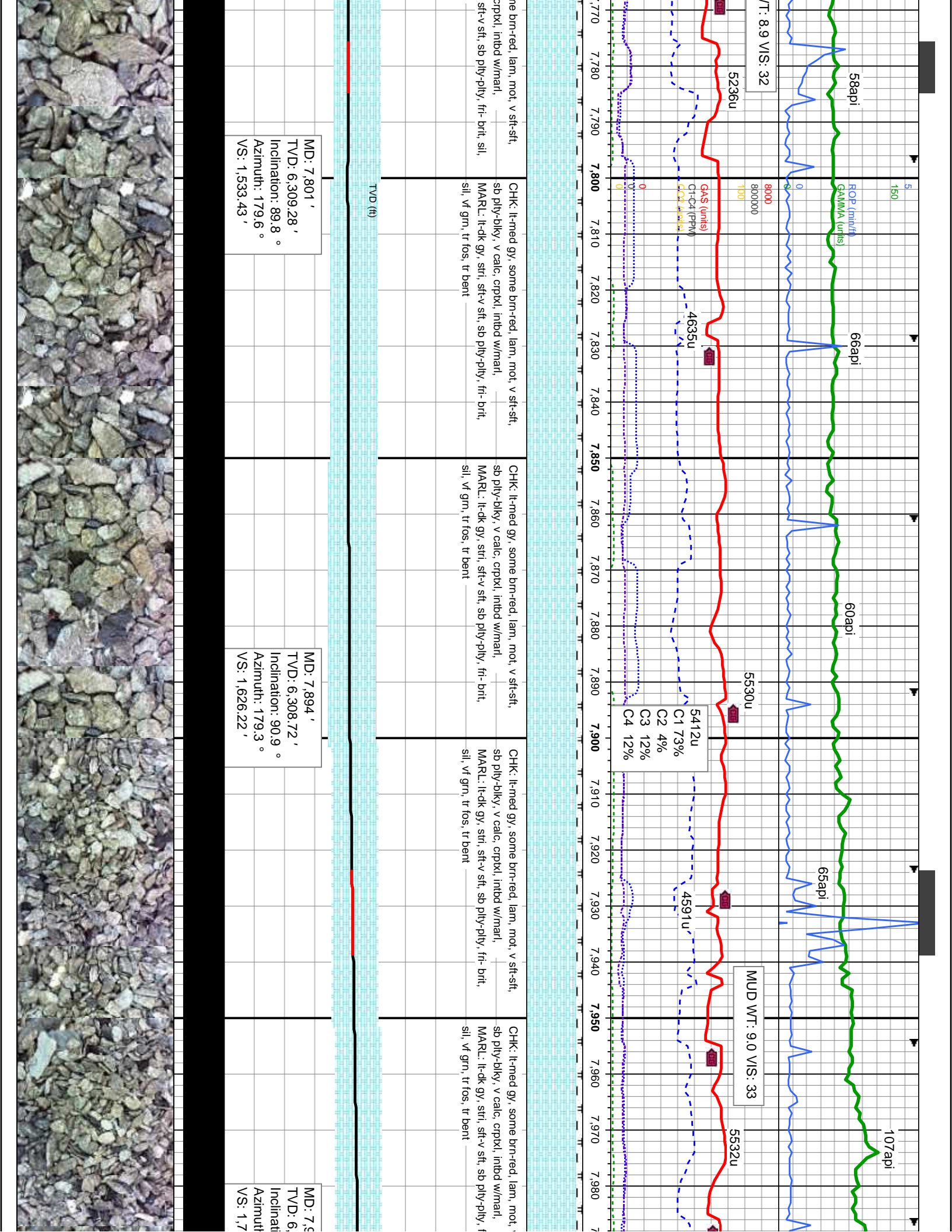
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- bnt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- bnt, sil, vf grn, tr fos, tr bent

MD: 7,611 '
 TVD: 6,309.45 '
 Inclination: 91.6 °
 Azimuth: 178.9 °
 VS: 1,343.78 '

MD: 7,706 '
 TVD: 6,308.62 '
 Inclination: 89.4 °
 Azimuth: 178.8 °
 VS: 1,438.62 '





107api

58api

66api

60api

65api

8.9 VIS: 32

MUD WT: 9.0 VIS: 33

5530u

5532u

MUD WT: 9.0 VIS: 33

5412u

C1 73%
C2 4%
C3 12%
C4 12%

4591u

4635u

5236u

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fri- brt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fri- brt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fri- brt, sil, vf grn, tr fos, tr bent

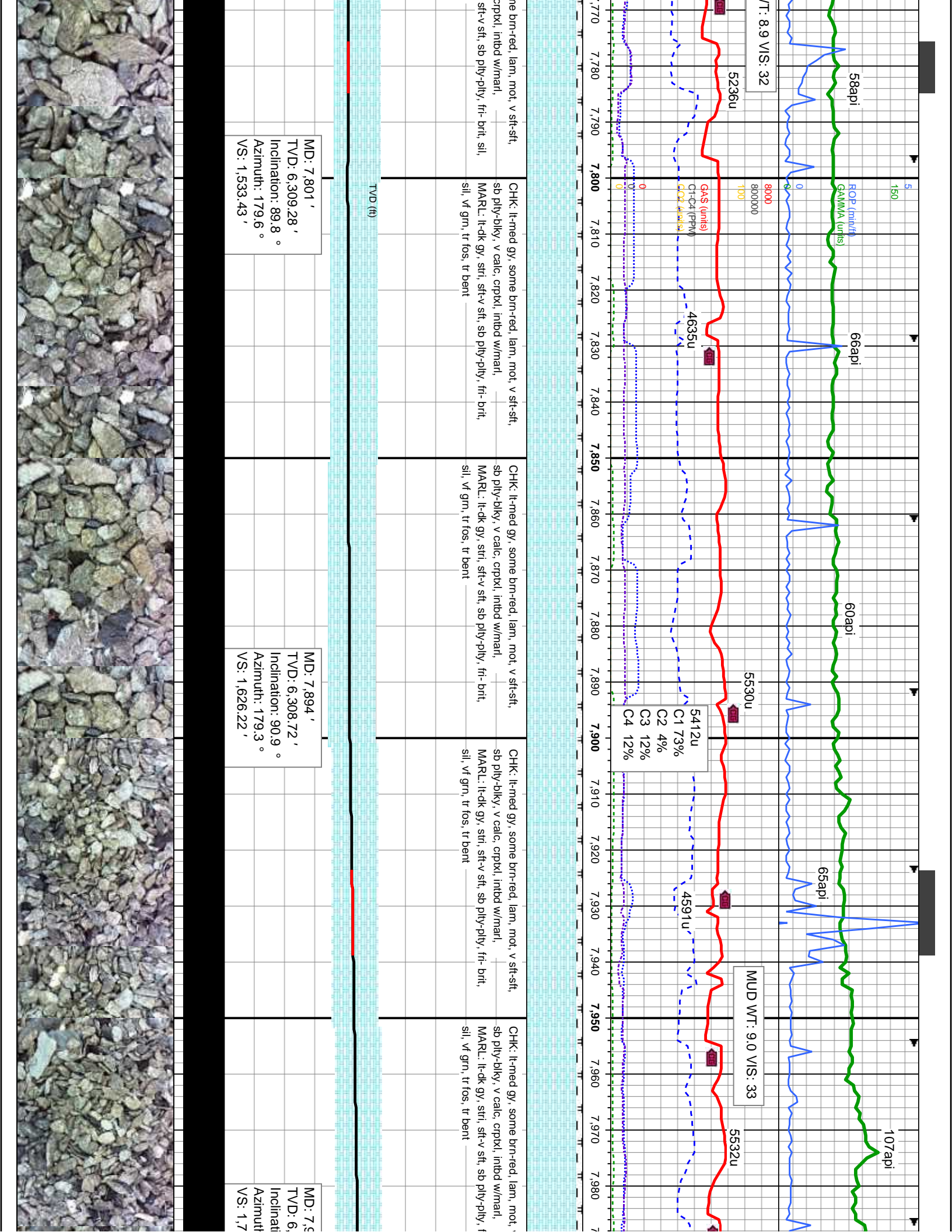
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fri- brt, sil, vf grn, tr fos, tr bent

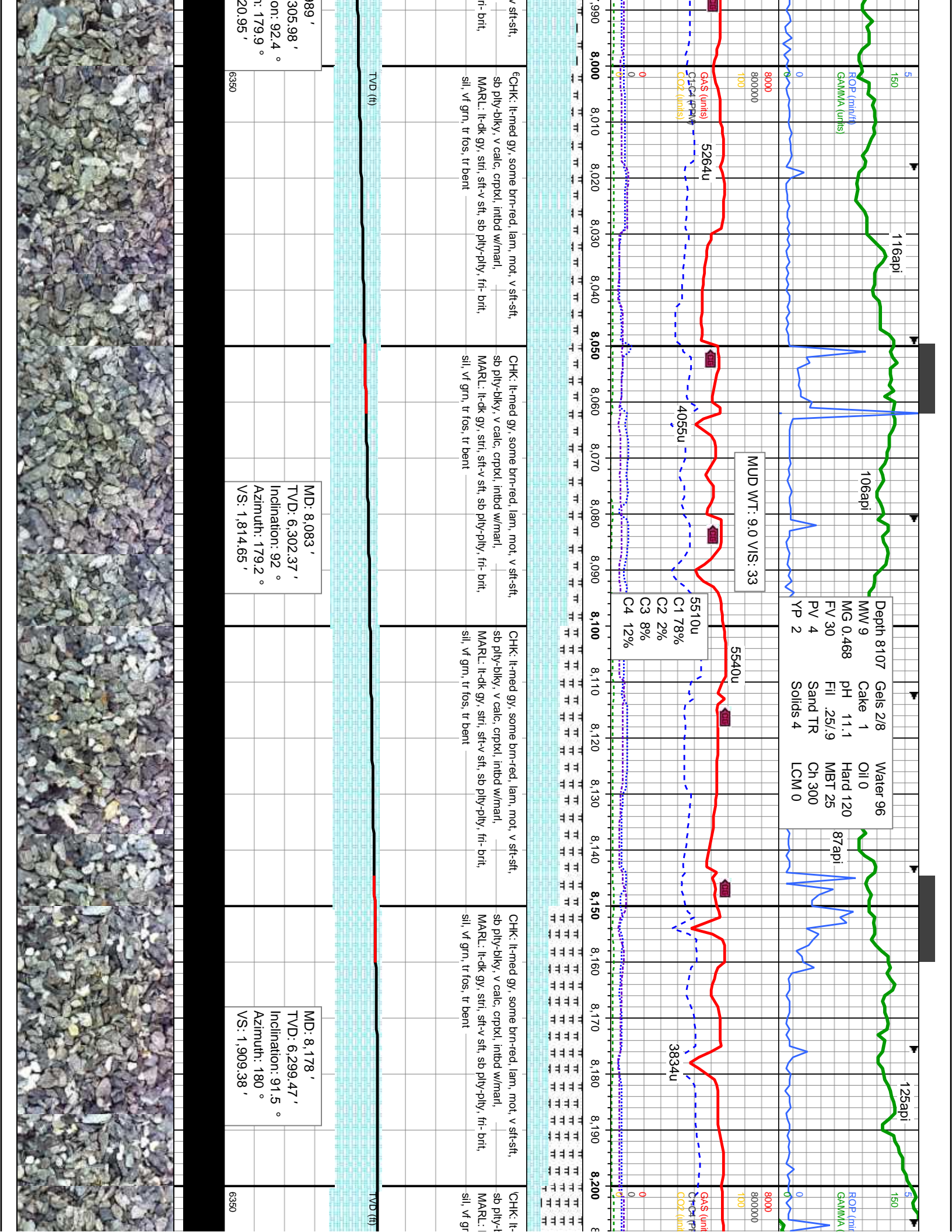
MD: 7.5
TVD: 6.308.72'
Inclination: 89.8°
Azimuth: 179.3°
VS: 1.7

MD: 7.894'
TVD: 6.308.72'
Inclination: 90.9°
Azimuth: 179.3°
VS: 1.626.22'

MD: 7.801'
TVD: 6.309.28'
Inclination: 89.8°
Azimuth: 179.6°
VS: 1.533.43'

TVD (ft)





Depth 8107	Gels 2/8	Water 96
MW 9	Cake 1	Oil 0
MG 0.468	pH 11.1	Hard 120
FV 30	Fill .25/.9	MBT 25
PV 4	Sand TR	Ch 300
YP 2	Solids 4	LCM 0

MUD WT: 9.0 VIS: 33

5510u
C1 78%
C2 2%
C3 8%
C4 12%

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, tr fos, tr bent

889' 305.98' on: 92.4° i: 179.9° 220.95'

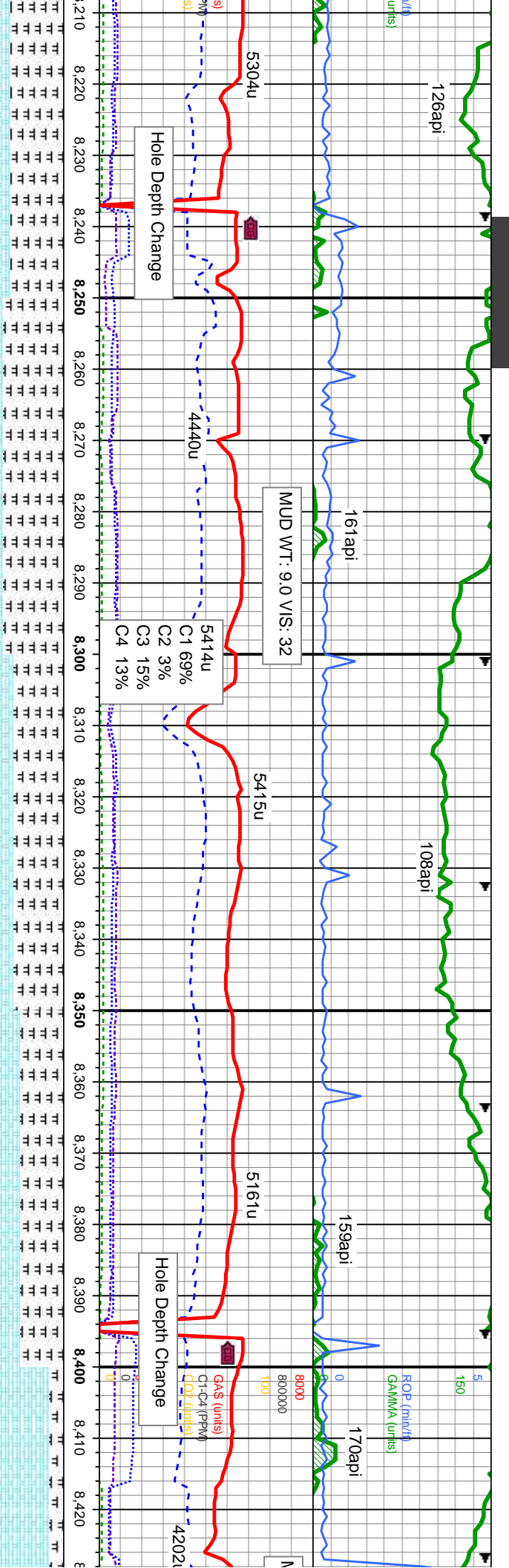
MD: 8,083' TVD: 6,302.37' Inclination: 92° Azimuth: 179.2° VS: 1,814.65'

MD: 8,178' TVD: 6,299.47' Inclination: 91.5° Azimuth: 180° VS: 1,909.38'

6330

6330





med gy, some br-red, lam, mot, v sft-sft,
 sb ply-dlky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, strf, sft-v sft, sb ply-pty, fr- brt,
 sil, v/ grn, tr fos, tr bent

CHK: lt-med gy, some br-red, lam, mot, v sft-sft,
 sb ply-dlky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, strf, sft-v sft, sb ply-pty, fr- brt,
 sil, v/ grn, tr fos, tr bent

CHK: lt-med gy, some br-red, lam, mot, v sft-sft,
 sb ply-dlky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, strf, sft-v sft, sb ply-pty, fr- brt,
 sil, v/ grn, tr fos, tr bent

CHK: lt-med gy, some br-red, lam, mot, v sft-sft,
 sb ply-dlky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, strf, sft-v sft, sb ply-pty, fr- brt,
 sil, v/ grn, tr fos, tr bent

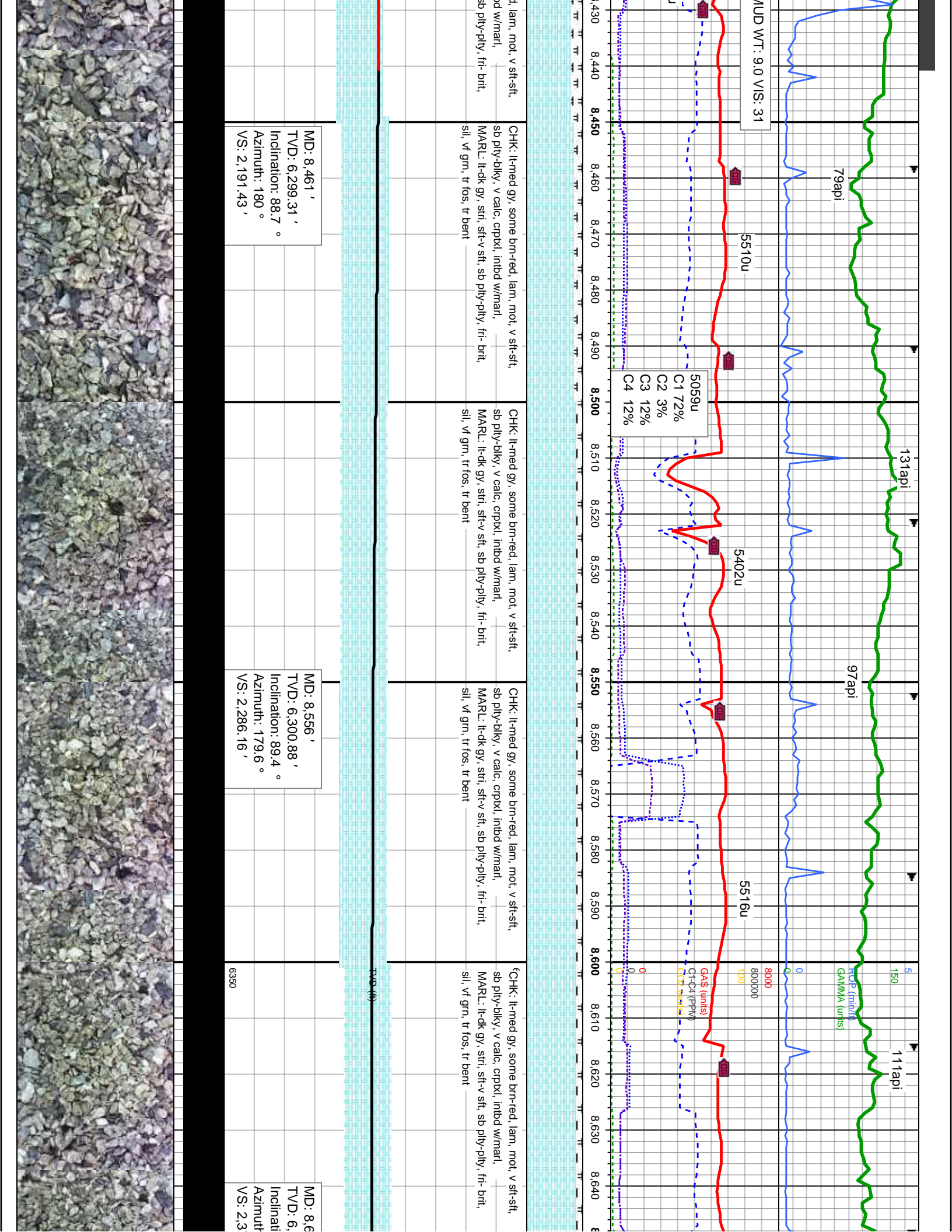
6CHK: lt-med gy, some br-red,
 sb ply-dlky, v calc, crpxl, intbd w/marl,
 MARL: lt-dk gy, strf, sft-v sft, sb ply-pty, fr- brt,
 sil, v/ grn, tr fos, tr bent

MD: 8,272 '
 TVD: 6,298.9 '
 Inclination: 89.2 °
 Azimuth: 180.1 °
 VS: 2,003.09 '

MD: 8,367 '
 TVD: 6,298.9 '
 Inclination: 90.8 °
 Azimuth: 180.7 °
 VS: 2,097.75 '

TVD (ft)
 6330





NUD WT: 9.0 VIS: 31

79api

5510u

5059u
 C1 72%
 C2 3%
 C3 12%
 C4 12%

131api

5402u

97api

5516u

111api

CHK: l-m med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-dlky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, strl, sft-v sft, sb pily-pily, fr- brt,
 sil, vf grn, tr fos, tr bent

CHK: l-m med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-dlky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, strl, sft-v sft, sb pily-pily, fr- brt,
 sil, vf grn, tr fos, tr bent

CHK: l-m med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-dlky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, strl, sft-v sft, sb pily-pily, fr- brt,
 sil, vf grn, tr fos, tr bent

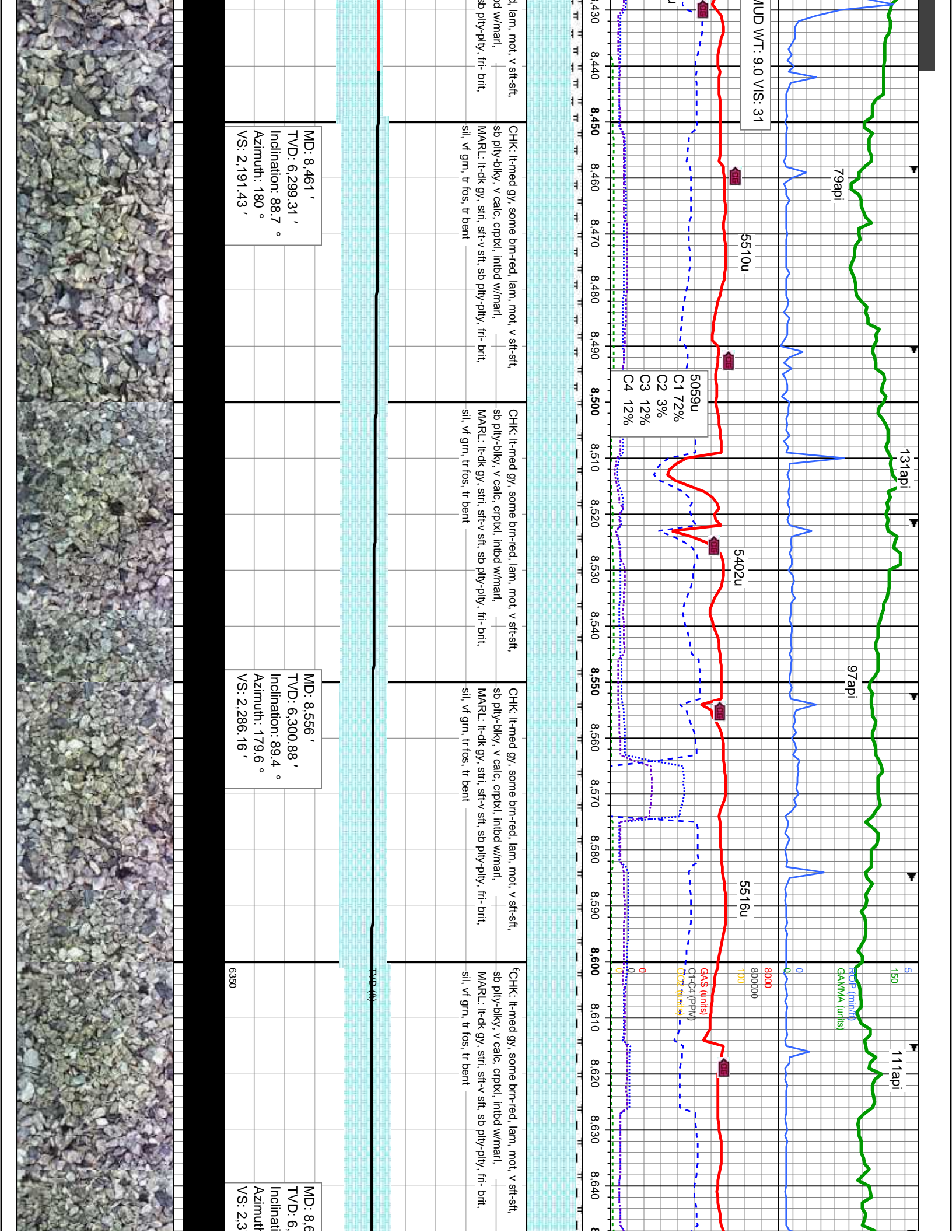
CHK: l-m med gy, some brn-red, lam, mot, v sft-sft,
 sb pily-dlky, v calc, cpxxl, intbd w/marl,
 MARL: lt-dk gy, strl, sft-v sft, sb pily-pily, fr- brt,
 sil, vf grn, tr fos, tr bent

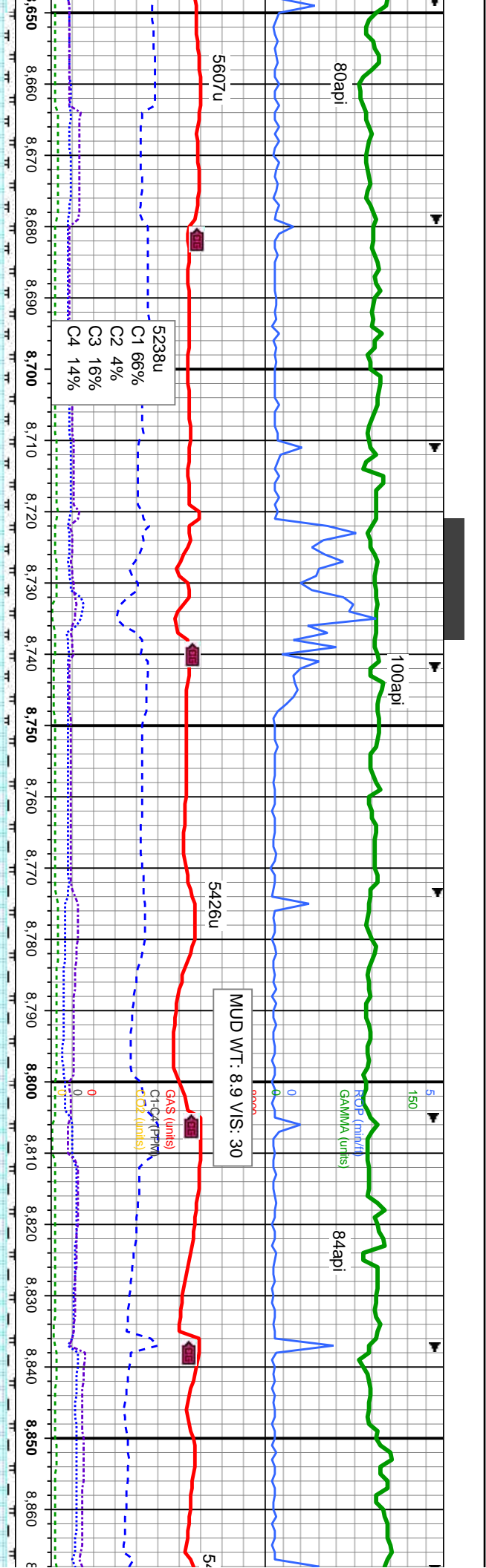
MD: 8,461 '
 TVD: 6,299.31 '
 Inclination: 88.7 °
 Azimuth: 180 °
 VS: 2,191.43 '

MD: 8,556 '
 TVD: 6,300.88 '
 Inclination: 89.4 °
 Azimuth: 179.6 °
 VS: 2,286.16 '

6330

MD: 8,6
 TVD: 6,
 Inclinati
 Azimuth
 VS: 2.3





CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, strl, sft-v sft, sb pily-ply, fr- brt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, strl, sft-v sft, sb pily-ply, fr- brt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, strl, sft-v sft, sb pily-ply, fr- brt, sil, vf grn, tr fos, tr bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, strl, sft-v sft, sb pily-ply, fr- brt, sil, vf grn, tr fos, abndt bent intbd wi pyr, scat cal

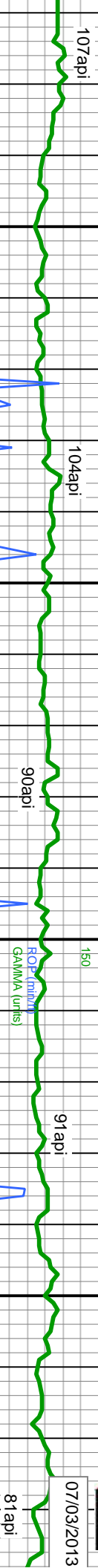
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-dlky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, strl, sft-v sft, sb pily-ply, fr- brt, sil, vf grn, tr fos, abndt bent intbd wi pyr, scat cal

MD: 8,745'
TVD: 6,301.28'
Inclination: 90.3°
Azimuth: 181.6°
VS: 2,474.61'

6330

MD: 8,838'
TVD: 6,299.66'
Inclination: 91.7°
Azimuth: 181.6°
VS: 2,567.09'



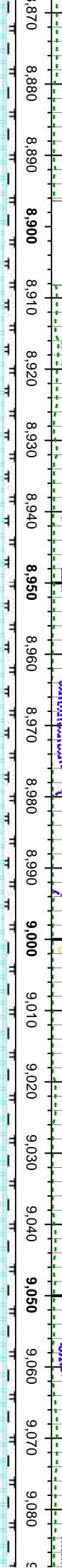


MUD WT: 8.9 VIS: 30

MUD WT: 8.9 VIS: 30

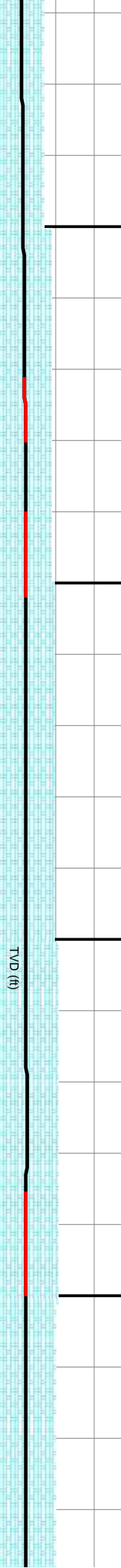
5481u
 C1 53%
 C2 4%
 C3 23%
 C4 21%

GAS (mls)
 C1-C4 (PPM)
 C02 (mls)



143u
 5403u
 5442u
 5619u

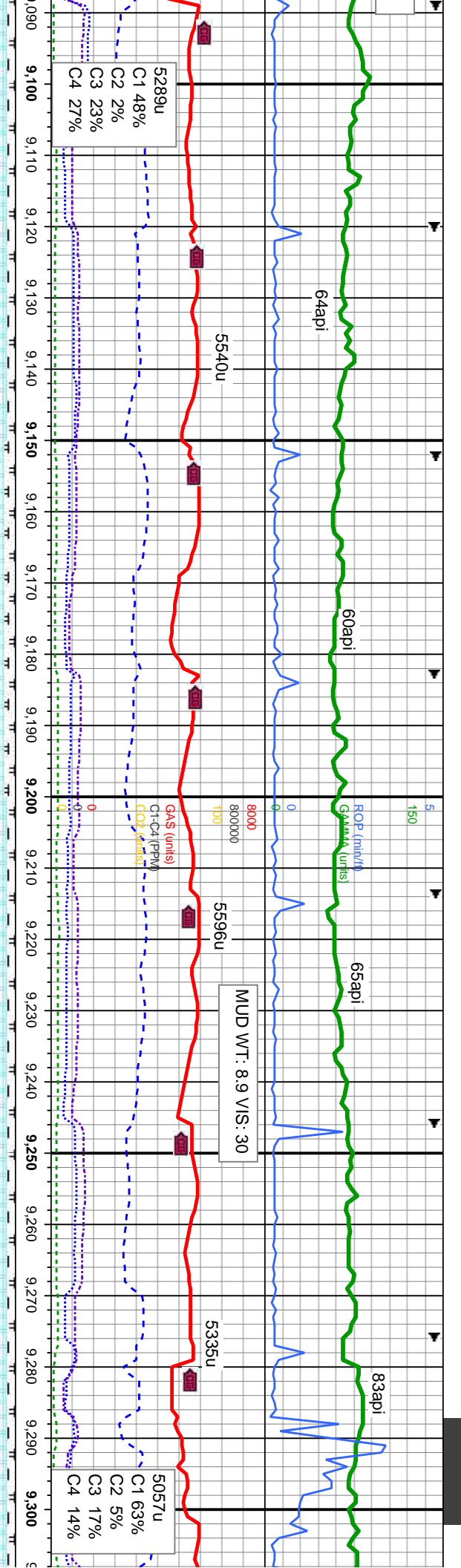
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-blky, v calc, crpxl, intbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pily-pty, fr- brt, sil, v/ grn, tr fos, abndt bent intbd wi pyr, scat cal



MD: 8,933 '
 TVD: 6,298 '
 Inclination: 90.3 °
 Azimuth: 180.4 °
 VS: 2,661.65 '

MD: 9,028 '
 TVD: 6,297.75 '
 Inclination: 90 °
 Azimuth: 180.5 °
 VS: 2,756.31 '





CHK: lt-med gy, some brn-red, lam, mot, v stf-sft, sb pily-bilky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, strf, stf-v sft, sb pily-pty, fr- brt, sil, v/ grn, tr fos, abndnt bent intbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v stf-sft, sb pily-bilky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, strf, stf-v sft, sb pily-pty, fr- brt, sil, v/ grn, tr fos, abndnt bent intbd w/ pyr, scat cal

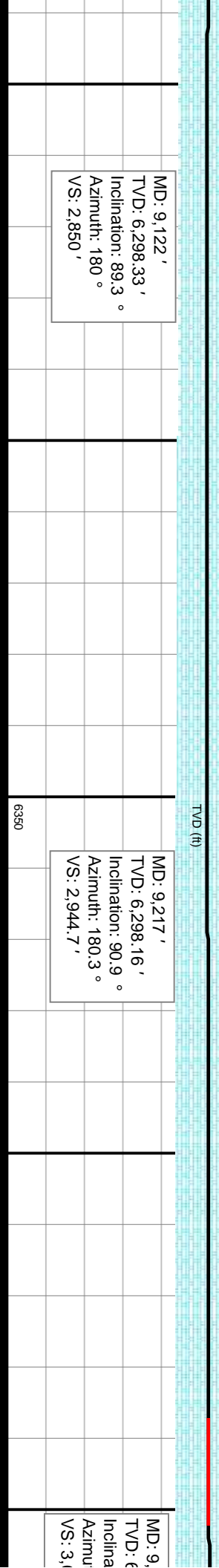
CHK: lt-med gy, some brn-red, lam, mot, v stf-sft, sb pily-bilky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, strf, stf-v sft, sb pily-pty, fr- brt, sil, v/ grn, tr fos, abndnt bent intbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v stf-sft, sb pily-bilky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, strf, stf-v sft, sb pily-pty, fr- brt, sil, v/ grn, tr fos, abndnt bent intbd w/ pyr, scat cal

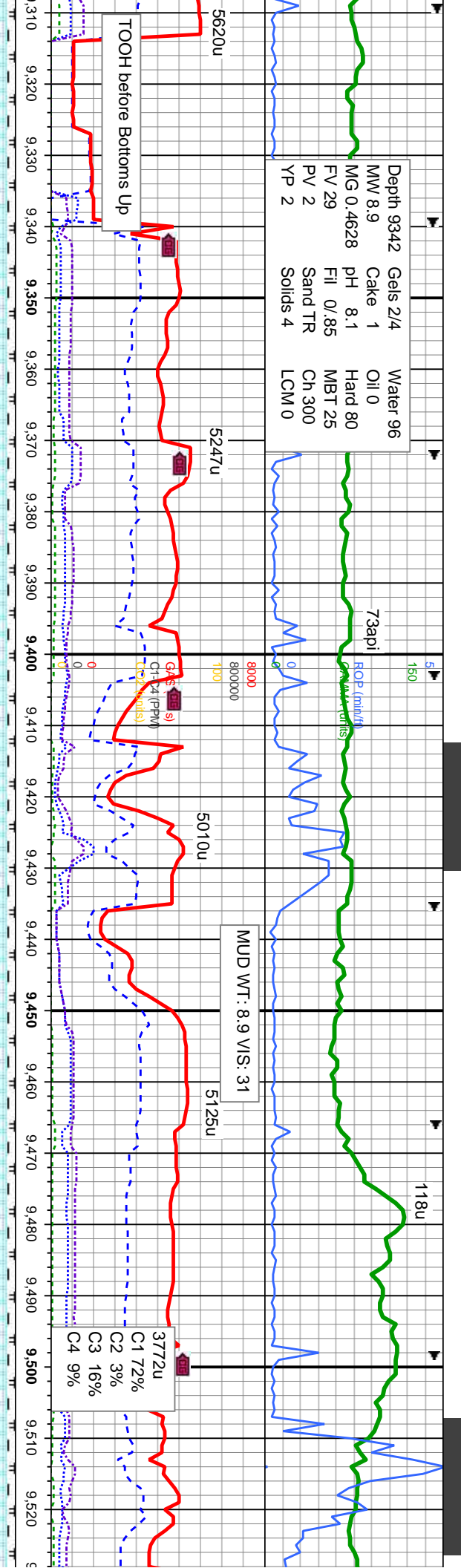
MD: 9,122' TVD: 6,298.33' Inclination: 89.3° Azimuth: 180° VS: 2,850'

MD: 9,217' TVD: 6,298.16' Inclination: 90.9° Azimuth: 180.3° VS: 2,944.7'

MD: 9,312' TVD: 6,298.16' Inclination: 90.9° Azimuth: 180.3° VS: 3,100'



Depth 9342	Gels 2/4	Water 96
MW 8.9	Cake 1	Oil 0
MG 0.4628	pH 8.1	Hard 80
FV 29	Fill 0/85	MBT 25
PV 2	Sand TR	Ch 300
YP 2	Solids 4	LCM 0



med gy, some brn-red, lam, mot, v sft-sft, blkly, v calc, cpxxl, intbd w/marl, l-dk gy, stri, sft-v sft, sb pty-pty, fri- bnt, sil, fos, abndt bent intbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fri- bnt, sil, v/ grn, tr fos, abndt bent intbd w/ pyr, scat cal

6250
 CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fri- bnt, sil, v/ grn, tr fos, abndt bent intbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fri- bnt, sil, v/ grn, tr fos, abndt bent intbd w/ pyr, scat cal

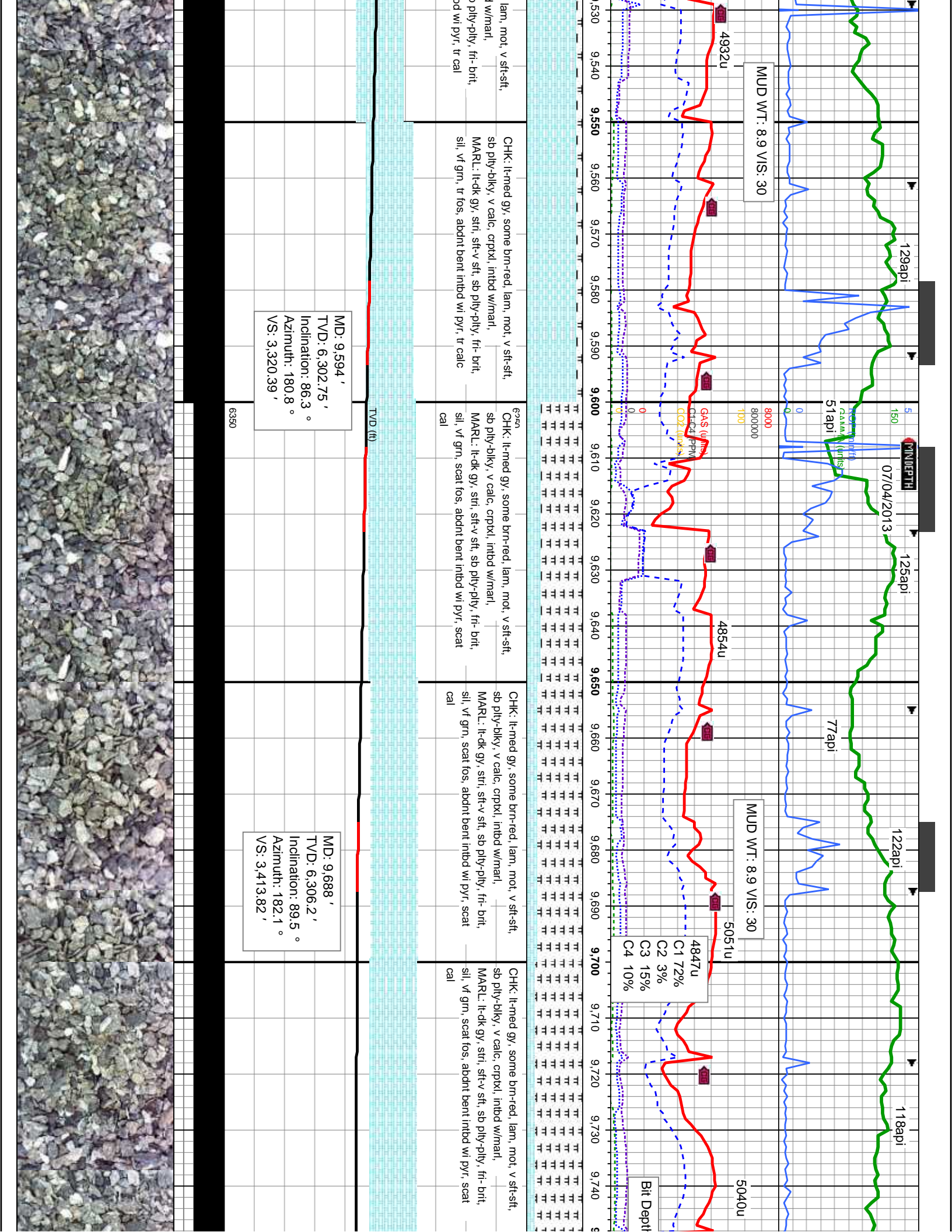
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-blky, v calc, cpxxl, intbd w/marl, MARL: lt-dk gy, stri, sft-v sft, sb pty-pty, fri- bnt, sil, v/ grn, tr fos, abndt bent intbd w/ pyr, scat cal

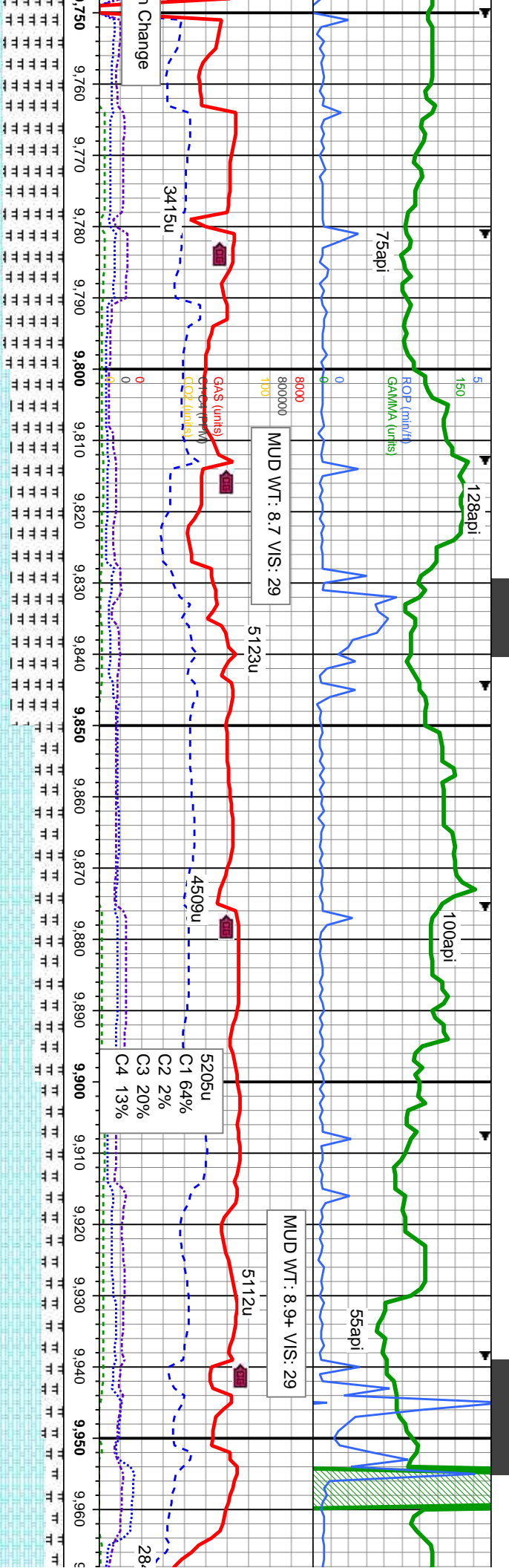
311' MD: 9,297.75' TVD: 6,297.67' Inclination: 90.5° Azimuth: 179.7° VS: 3,133.08'

6360

311' MD: 9,500' TVD: 6,298.49' Inclination: 88.5° Azimuth: 180° VS: 3,226.82'







CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, scat fos, abndt bent inbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, scat fos, abndt bent inbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, scat fos, abndt bent inbd w/ pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pty-biky, v calc, cpxxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb pty-pty, fr- brt, sil, vf grn, scat fos, abndt bent inbd w/ pyr, scat cal

CHK: lt-med gy, sc sb pty-biky, v calc, MARL: lt-dk gy, str sil, vf grn, scat fos, cal

MD: 9,784 '
TVD: 6,306.53 '
Inclination: 90.1 °
Azimuth: 181.8 °
VS: 3,509.23 '

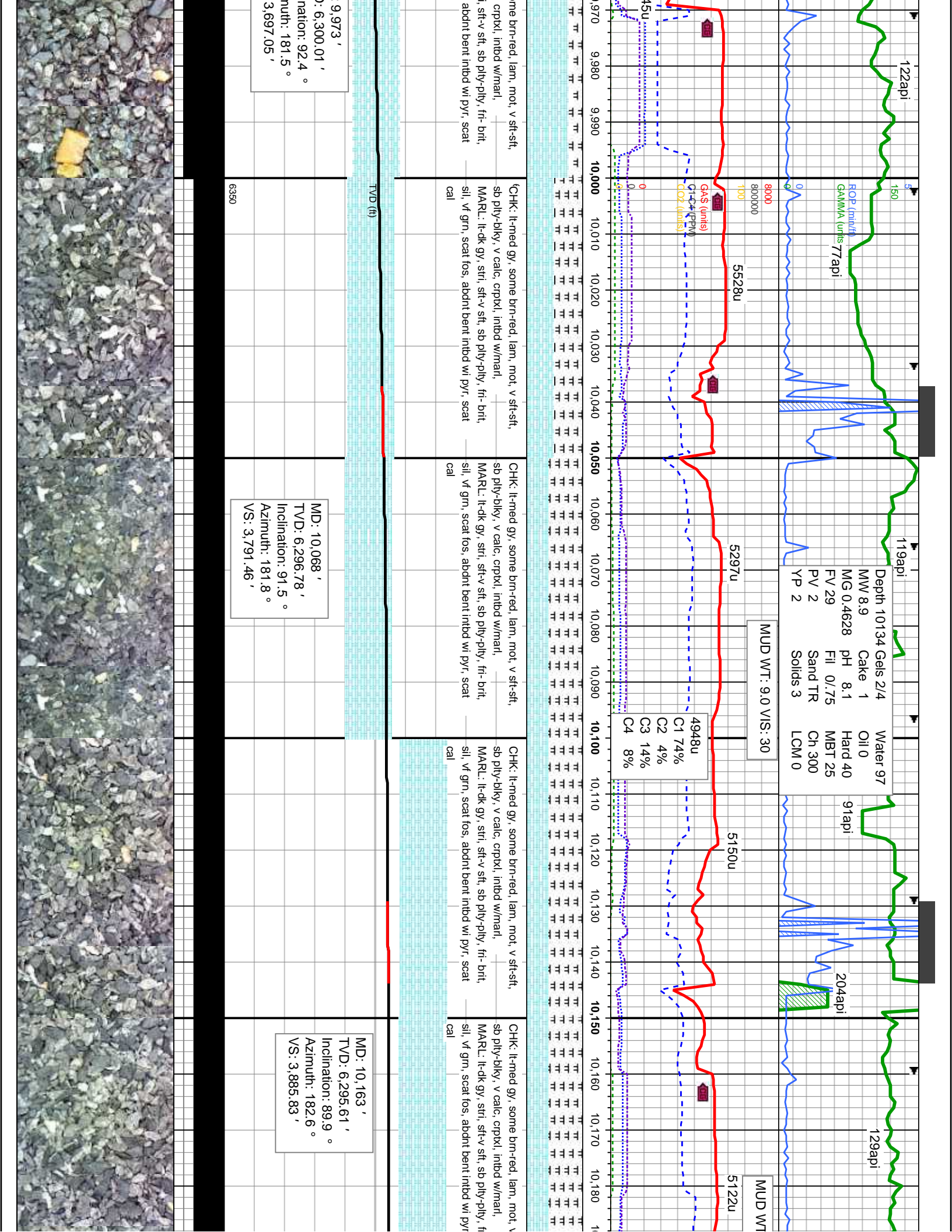
MD: 9,878 '
TVD: 6,304.23 '
Inclination: 92.7 °
Azimuth: 181.7 °
VS: 3,602.66 '

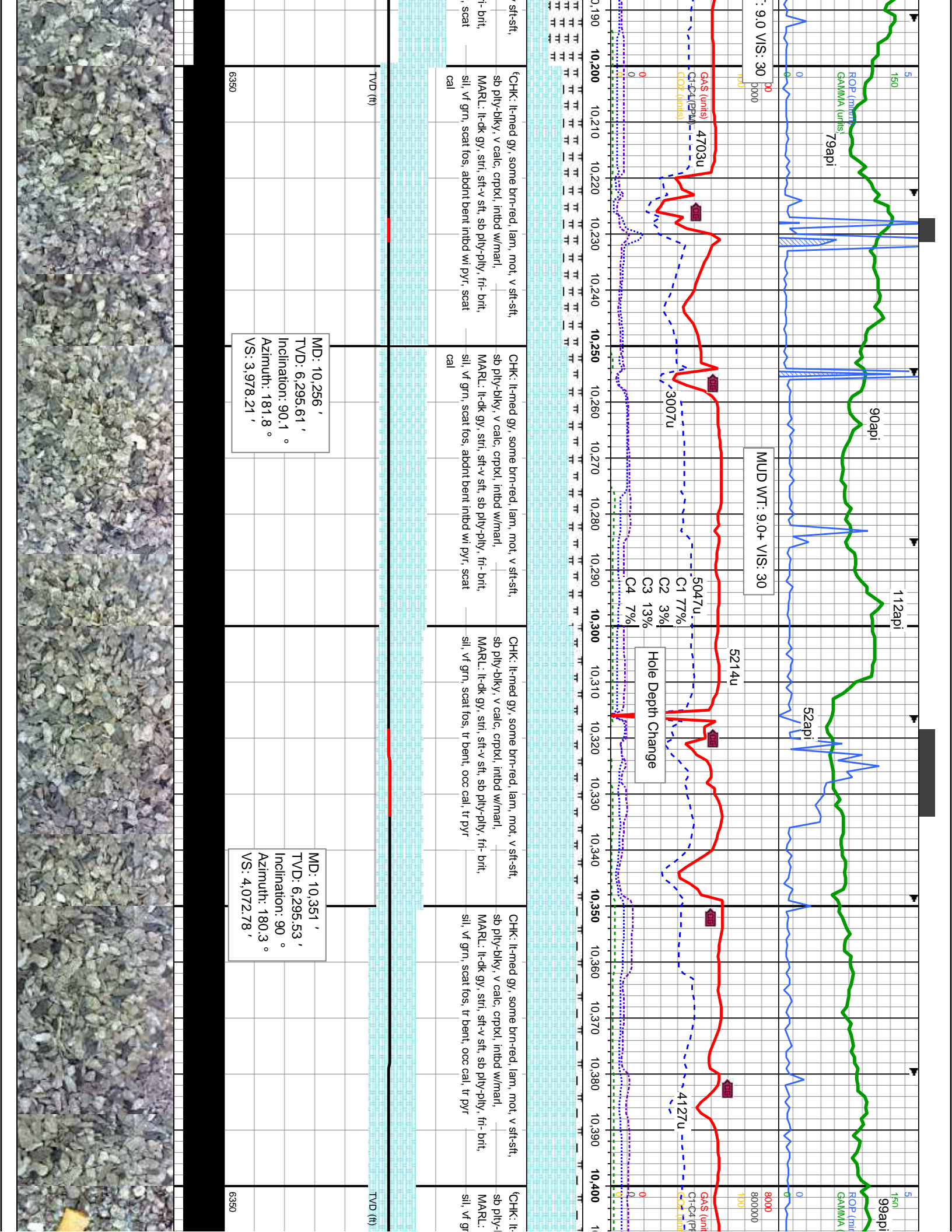
MD: TVE
Incl
Azir
VS:

6330

TVD (ft)







MD: 10,256 '
 TVD: 6,295.61 '
 Inclination: 90.1 °
 Azimuth: 181.8 °
 VS: 3,978.21 '

MD: 10,351 '
 TVD: 6,295.53 '
 Inclination: 90 °
 Azimuth: 180.3 °
 VS: 4,072.78 '

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, inthd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, scat fos, abdnrt bent inthd wi pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, inthd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, scat fos, abdnrt bent inthd wi pyr, scat cal

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, inthd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, scat fos, tr bent, occ cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb pily-bily, v calc, cpxxl, inthd w/marl,
 MARL: lt-dk gy, stri, sft-v sft, sb pily-pily, fr- brit, sil, vf grn, scat fos, tr bent, occ cal, tr pyr

Hole Depth Change

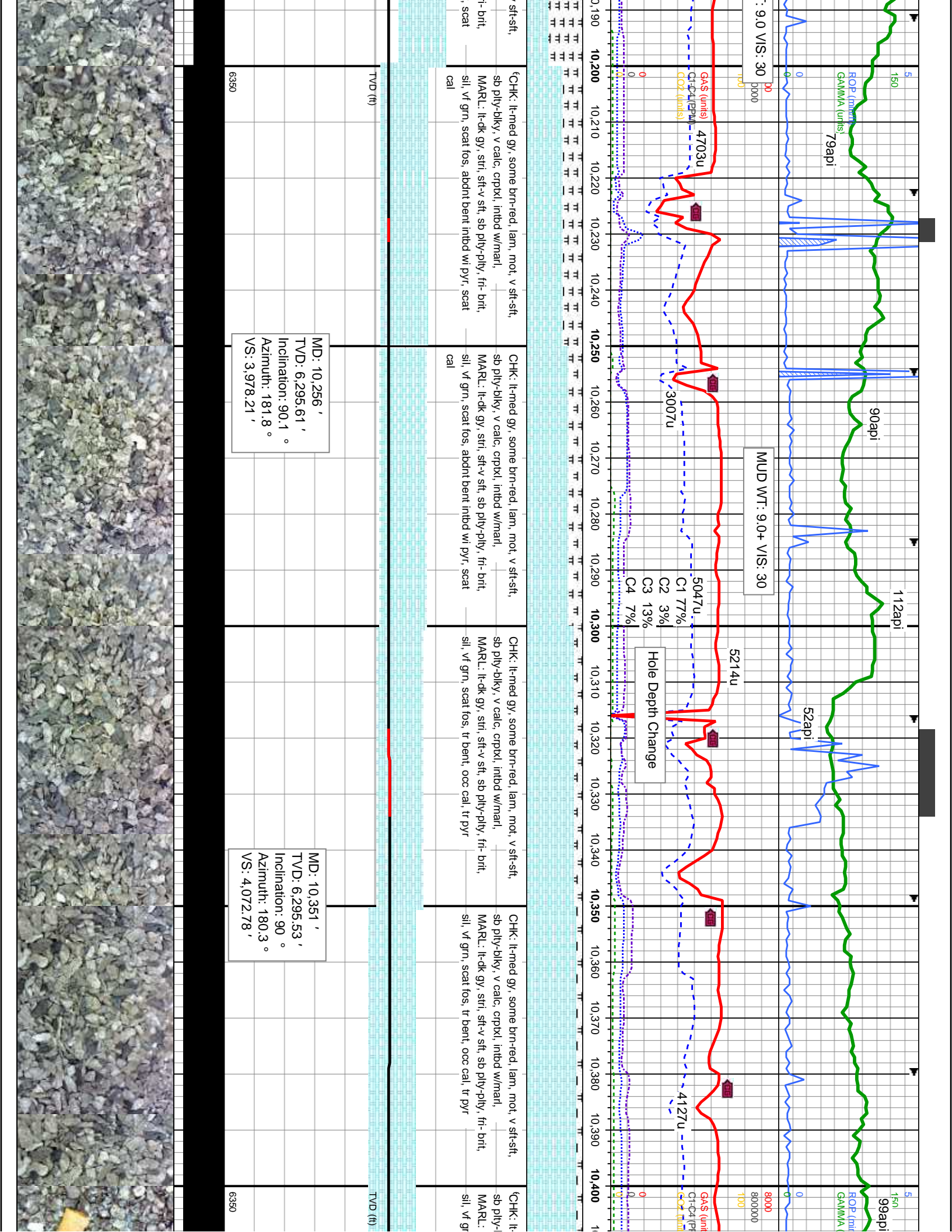
MUD WT: 9.0+ VIS: 30

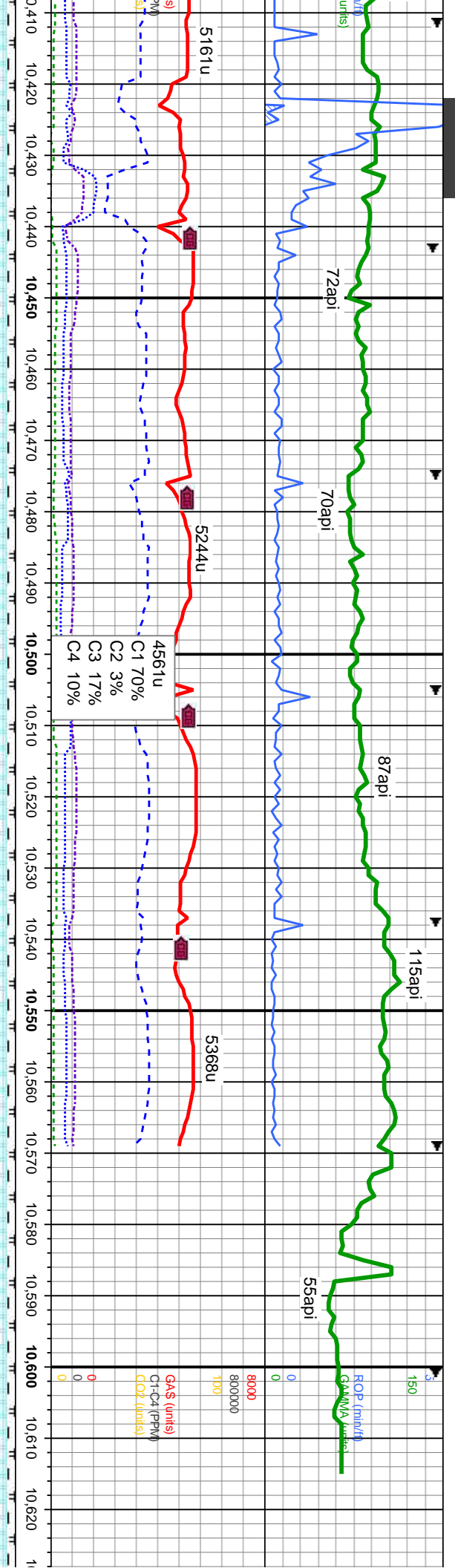
TVD (ft)

TVD (ft)

6360

6360





med gy, some brn-red, lam, mot, v sft-sft, silty, v calc, crpxl, inbd w/marl, lt-dk gy, str, sft-v sft, sb ply-pty, fr- brit, n, scat fos, tr bent, occ cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb ply-biky, v calc, crpxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb ply-pty, fr- brit, sil, vf grn, scat fos, tr bent, occ cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb ply-biky, v calc, crpxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb ply-pty, fr- brit, sil, vf grn, scat fos, tr bent, occ cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb ply-biky, v calc, crpxl, inbd w/marl, MARL: lt-dk gy, str, sft-v sft, sb ply-pty, fr- brit, sil, vf grn, scat fos, tr bent, occ cal, tr pyr

CHK: lt-med gy, some brn-red, sb ply-biky, v calc, crpxl, inbd MARL: lt-dk gy, str, sft-v sft, s sil, vf grn, scat fos, tr bent, occ

MD: 10,446 '
TVD: 6,295.61 '
Inclination: 89.9 °
Azimuth: 178.7 °
VS: 4,167.56 '

MD: 10,540 '
TVD: 6,294.71 '
Inclination: 91.2 °
Azimuth: 178.4 °
VS: 4,261.43 '

MD: 10,603 '
TVD: 6,293.34 '
Inclination: 91.3 °
Azimuth: 178.5 °
VS: 4,324.33 '

6330

TVD (ft)



