

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name Tina LC29_73_1HNA

Location SESE SEC 29, T9N, R59W

State COLORADO

Country USA

API Number 05-123-38618

Region DJ BASIN

Spud Date 6/10/2014

Surface Coordinates 440 FSL, 992 FEL

SE SEC 29, T9N, R59W
10.71523 / -103.99598

County WELD

Rig Number H&P 326

Field WILDCAT

Drilling Completed 6/20/2014

Ground Elevation 4865

K.B. Elevation 4895

Logged Interval 645' To 15462'

Total Depth 15462'

Formation NIOBRARA, A MARL

Type of Drilling Fluid LSND

Company Noble Energy Inc

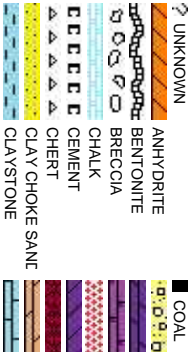
Address 1625 Broadway Suite
Denver, CO 80202

Name EVAN HOWELL

Company NOBLE ENERGY INC

Address 1625 Broadway Suite
Denver, CO 80202

COLUMBINE LOGGING



Operator

2000

Geologist

2000

Other

MIKE KERSCHEN
TED STOCKWELL

Rock Types

CONGLOMERATE

DOLOMITE

DOLOMITIC LIMESTONE

GRANITE

GYPSUM

IGNEOUS

SIDERITE or LIMONITE

LIMESTONE

MARLSTONE

METAMORPHIC

NO SAMPLE

SALT

SANDSTONE

SALT-PEPPER SANI

SHALE

SHALE COLORED

SHALE GRAY

SHALY SANDSTONE

SHALY SILTSTONE

SILTY SHALE

SILTSTONE

TILL

WELDED TUFF

Accessories

GASTROPOD

INOCERAMUS

OOLITE

OSTRACOD

PELECYPOD

PELLET

PISOLITE

PLANT REMAINS

PLANT SPORES

SCAPHOPOD

STROMA TOPOROID

ECHINOID

FISH

FORAMINIFERA

F FOSSIL

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHITL

CHITDK

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSEFEROUS

HEAVY MINERAL

K KAOLIN

MARLSTONE

MICACEOUS

MINERAL CRYSTALS

MINODULES

PHOSPHATE PELLETS

P PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITIC STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other Symbols

OIL SHOW

QUESTIONABLE

SPOTTED STAINING

DEAD

EVEN

BIT

CONNECTION (UP)

CONNECTION (DOWN)

CONNECTION GAS (LEFT)

TRIP GAS

TRIP GAS (LEFT)

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

ORGANIC

DST INTERVAL

FAULT

FORMATION TOP

GAS SHOW

OIL SHOW

MN DEPTH UP

MN DEPTH (DOWN)

MN DEPTH (DOWN)

NORMAL FAULT

OVERTURNED STRATA

REVERSE FAULT

CASING

SIDEWALL CORE (LEFT)

SIDEWALL CORE (RIGHT)

SLIDE

SURVEY

WIRELINE TESTED - LEFT

WIRELINE TESTED - RT

DRILL STEM TEST

MN DEPTH

MN DEPTH UP

ANGULAR

ROUNDED

SUBANG

SUBRND

E EARTHY

FX FINELYXLN

BS GRAINSTONE

L LITHOGRAPHIC

MX MICROXLN

MS MUDSTONE

PS PACKSTONE

WSS WACKSTONE

Sorting

M MODERATE

P POOR

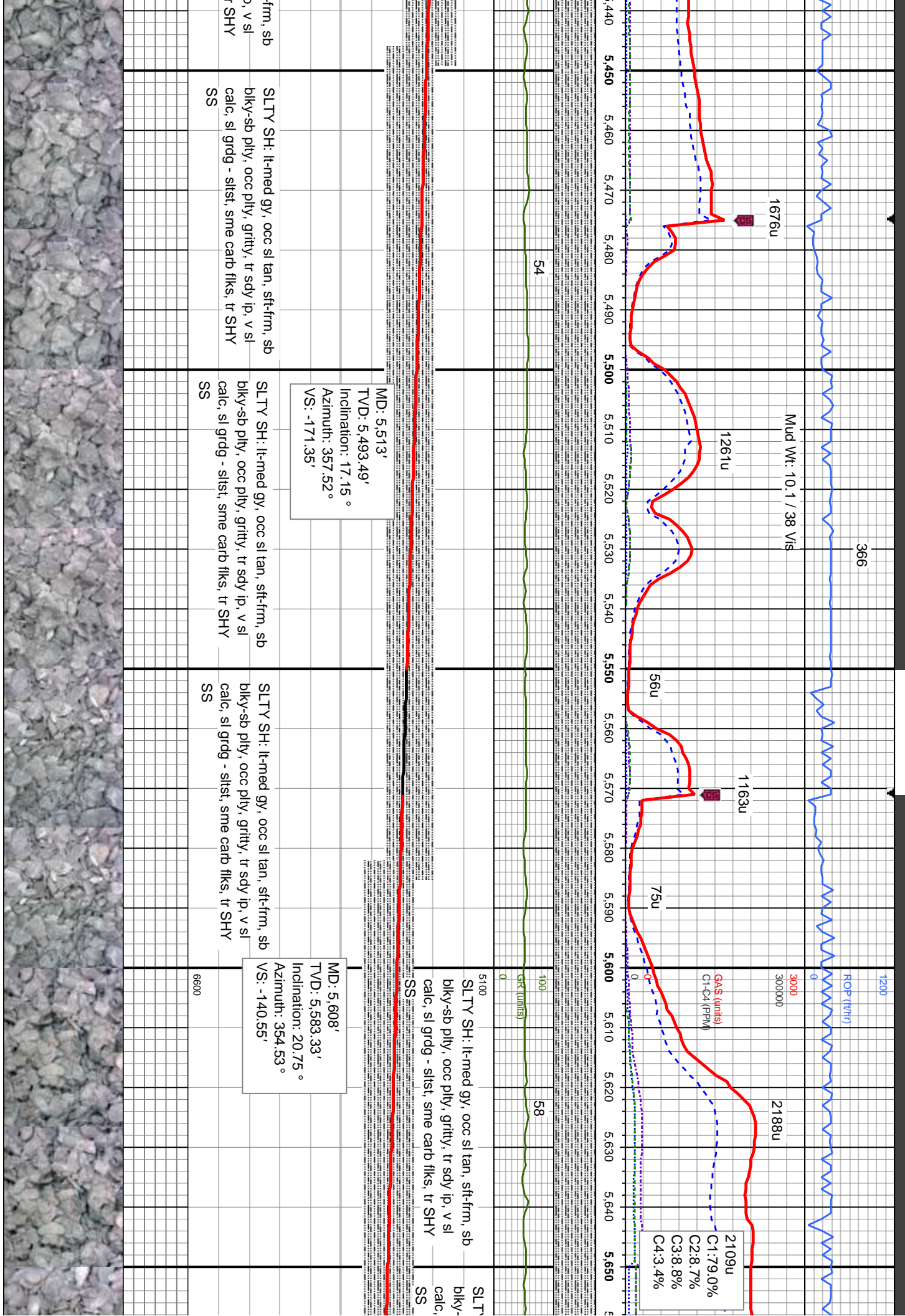
W WELL

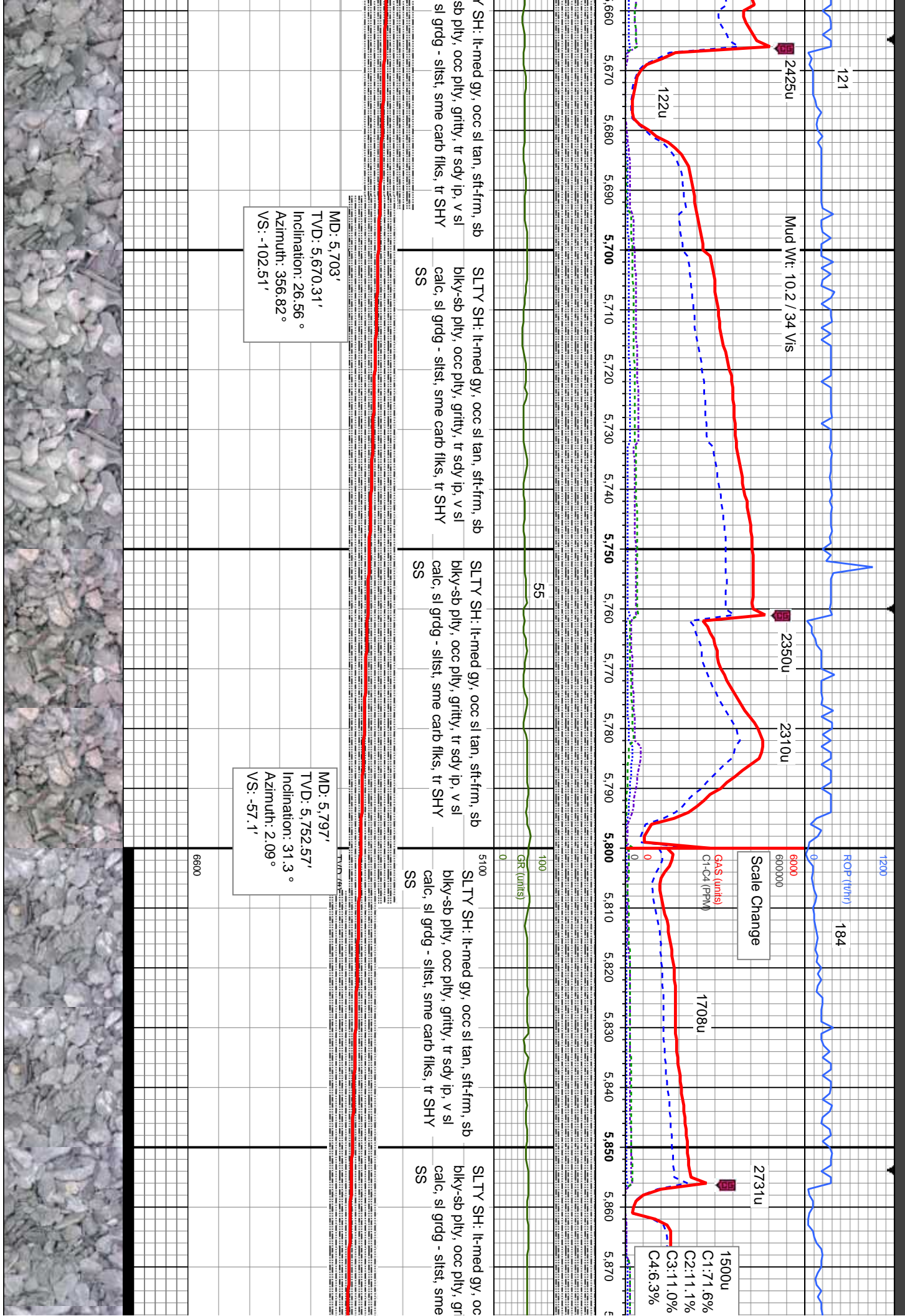
Textures

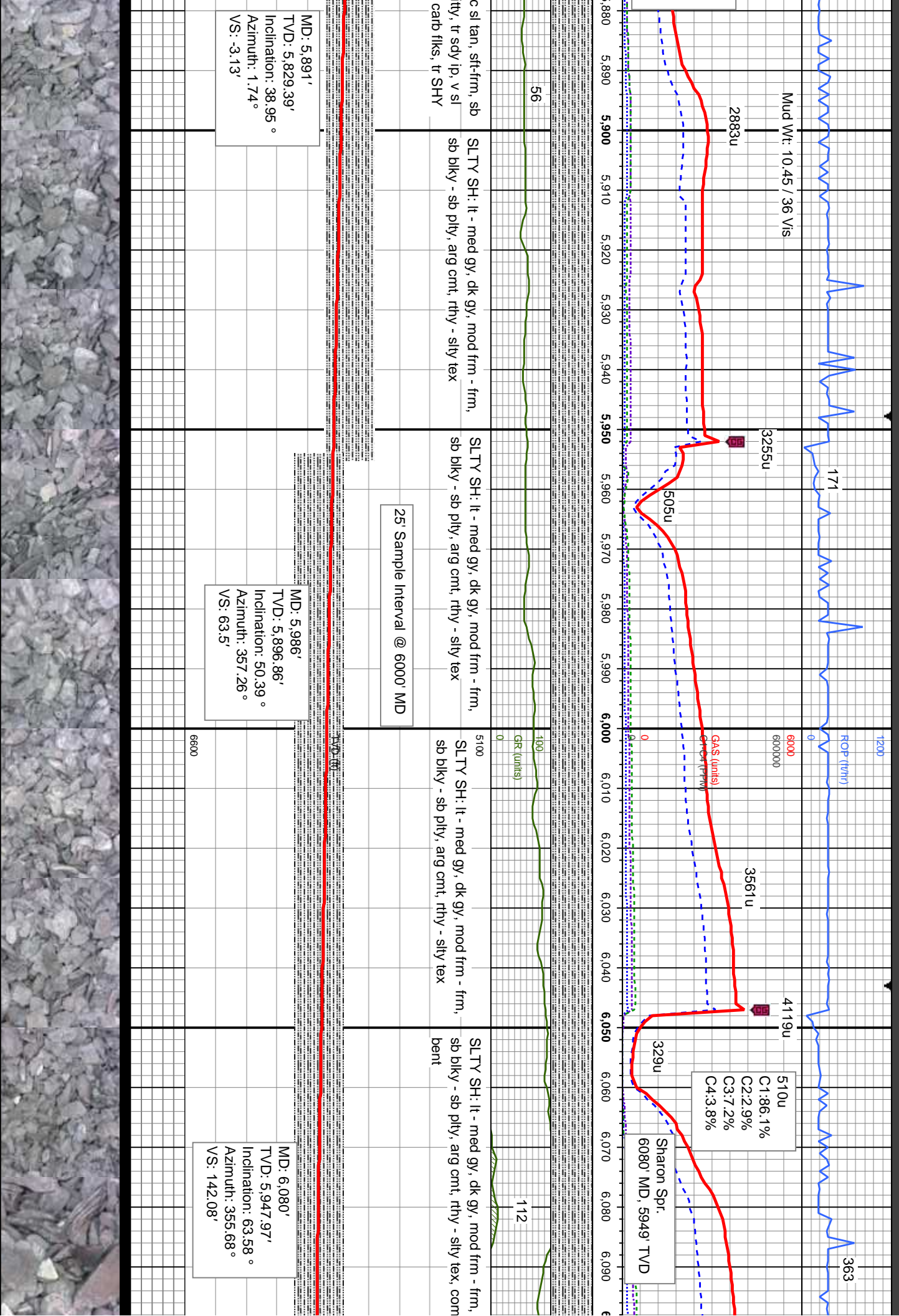
BS BOUNDSTONE

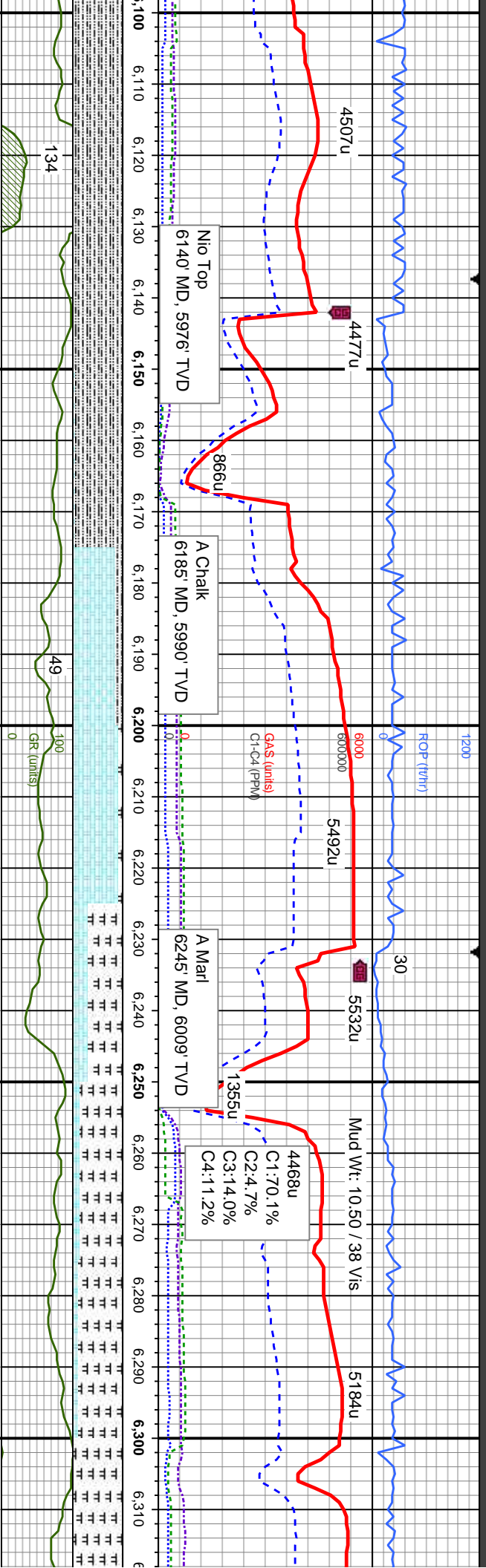
CHALKY

CRYPTOXLN









SLTY SH: lt - med gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, rthy - silty tex, com bent

SLTY SH: lt - med gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, gritty - silty tex, about bent CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc

CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc, MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex

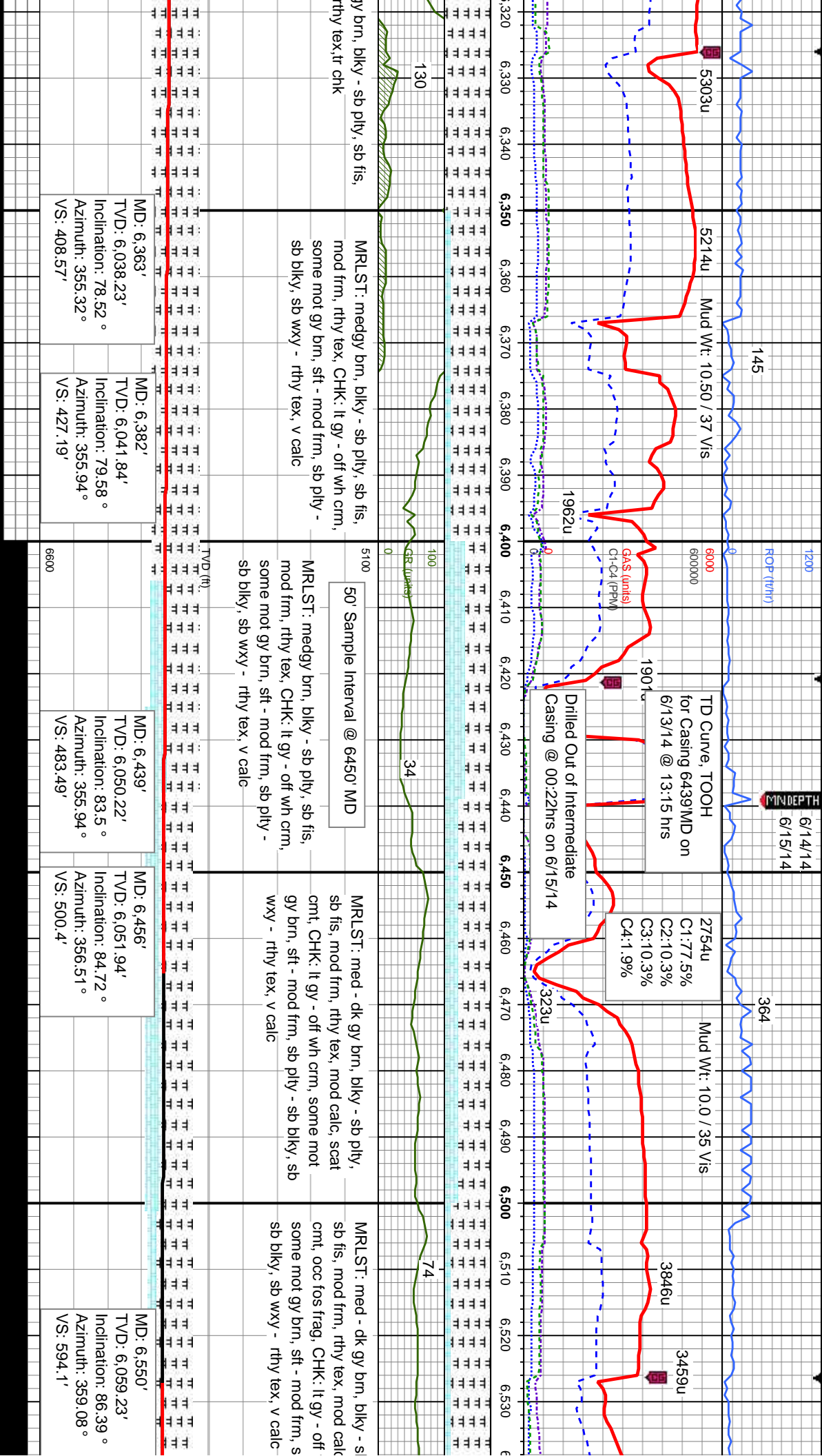
MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc

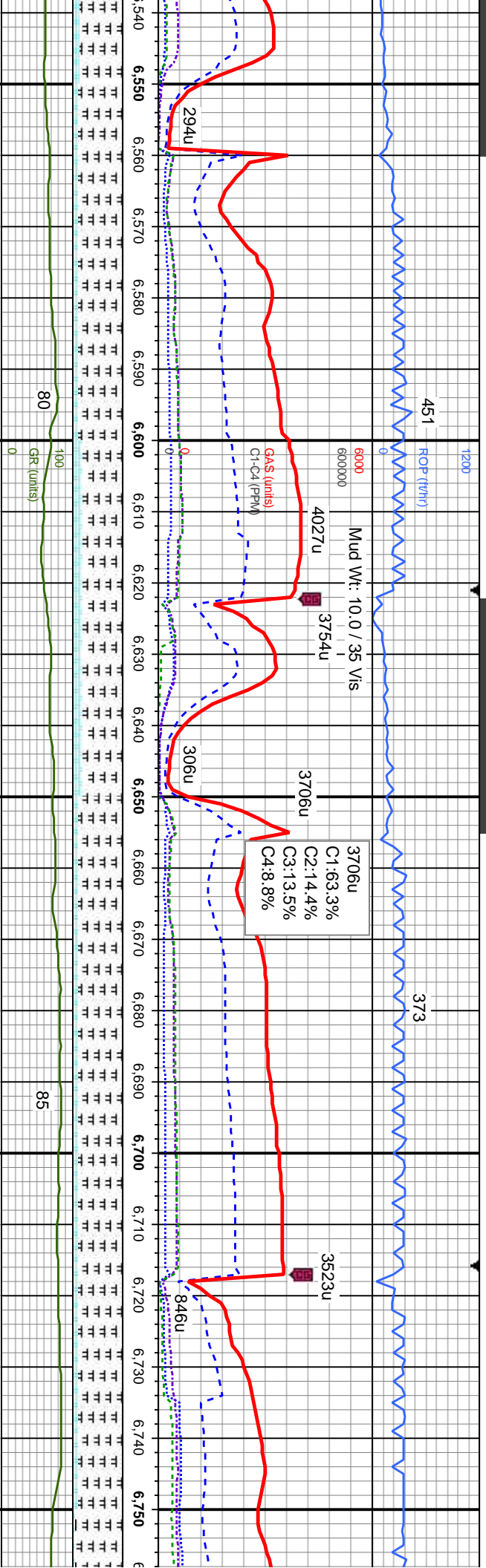
MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex

MD: 6,174'
TVD: 5,985.99'
Inclination: 68.68 °
Azimuth: 353.74 °
VS: 227.79'

MD: 6,269'
TVD: 6,016.14'
Inclination: 74.3 °
Azimuth: 353.48 °
VS: 317.48'







MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, occ cnt, tr fos frag, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc

MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr cnt, tr fos frag, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc

MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr fos frag, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc

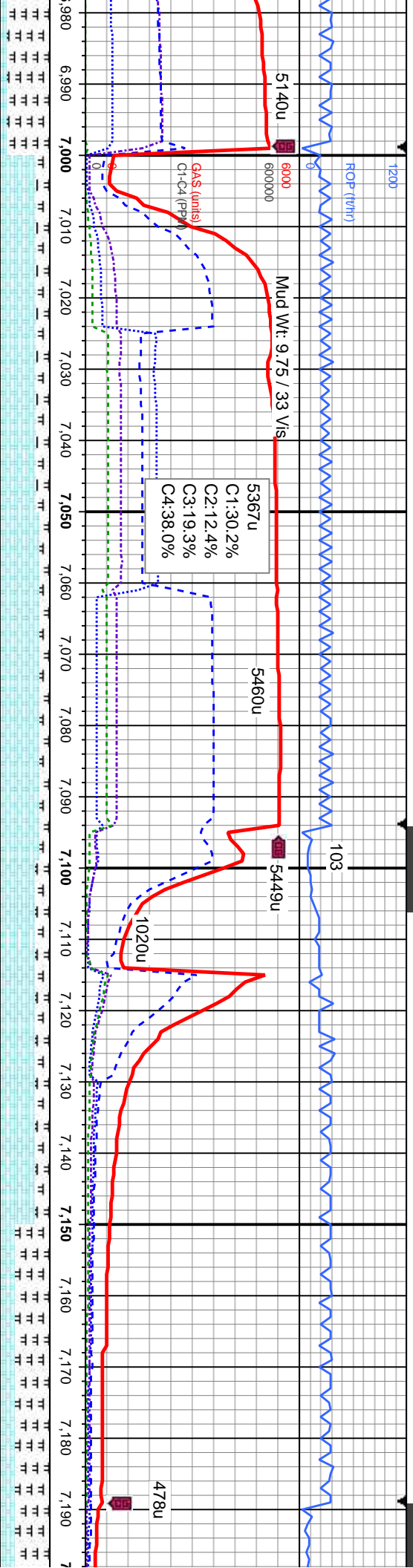
MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr fos frag, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc

MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr fos frag, CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc

MD: 6,645'
TVD: 6,063.17'
Inclination: 88.85 °
Azimuth: 0.91 °
VS: 688.98'

MD: 6,740'
TVD: 6,064.72'
Inclination: 89.28 °
Azimuth: 1.01 °
VS: 783.9'





blky - sb ply,
mod calc, tr
sft wh crm, some
sb ply - sb
calc

510°
CHK: It gy - oft wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blky, sb wxy -
rthy tex, v calc MRLST: med - dk gy brn,
blky - sb ply, sb fis, mod frm, rthy tex,
mod calc, tr pyr,

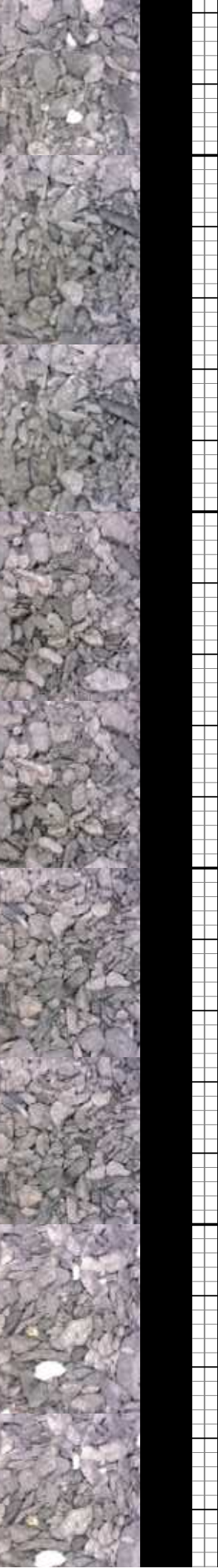
CHK: It gy - oft wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blky, sb wxy - rthy
tex, v calc MRLST: med - dk gy brn, blky - sb
ply, sb fis, mod frm, rthy tex, mod calc, tr
pyr,

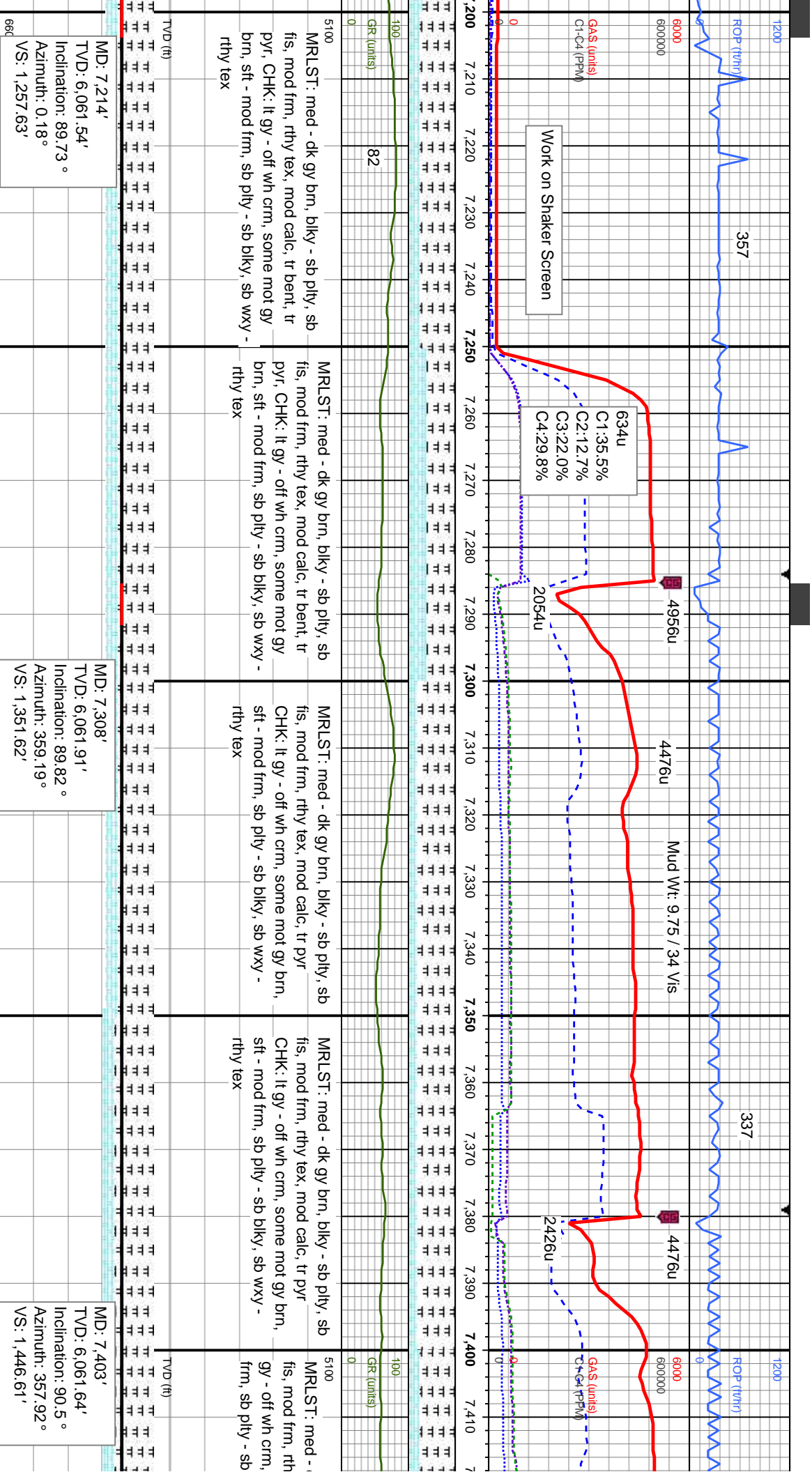
CHK: It gy - oft wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blky, sb wxy -
rthy tex, v calc MRLST: med - dk gy brn,
blky - sb ply, sb fis, mod frm, rthy tex,
mod calc, tr pyr,

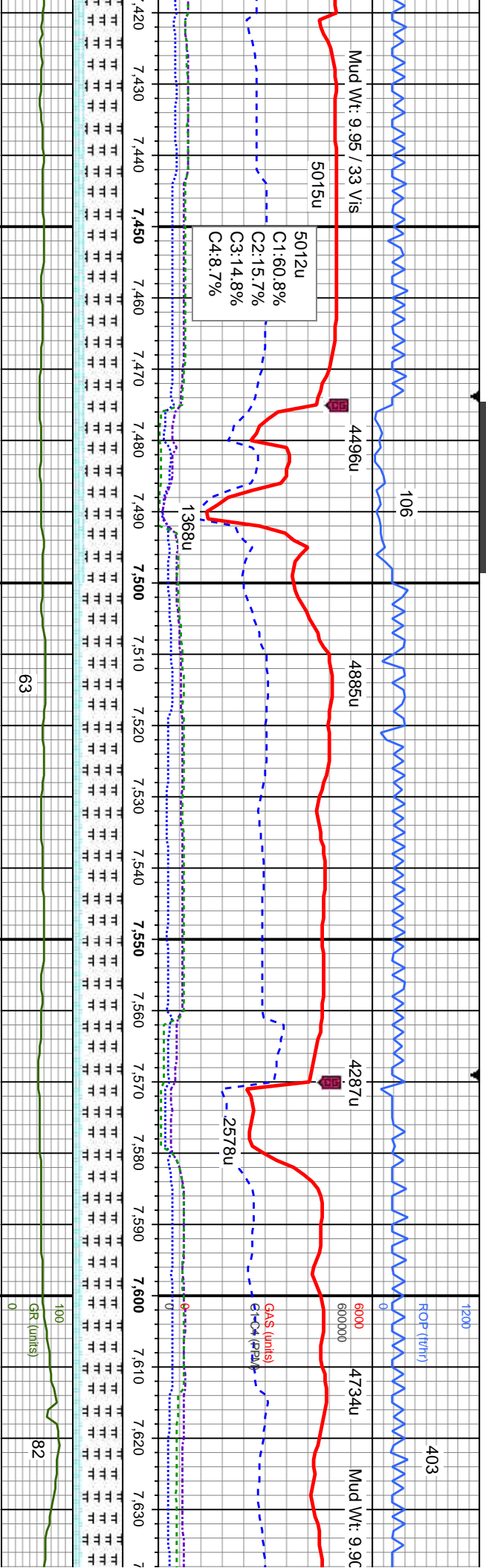
MRLST: med - dk gy brn, blky - sb ply, sb
fis, mod frm, rthy tex, mod calc, tr bent, tr
pyr, CHK: It gy - oft wh crm, some mot gy
brn, sft - mod frm, sb ply - sb blky, sb wxy -
rthy tex

MD: 7,024'
TVD: 6,063.59'
Inclination: 91.28 °
Azimuth: 0.09 °
VS: 1,067.72'

MD: 7,119'
TVD: 6,061.92'
Inclination: 90.73 °
Azimuth: 0.57 °
VS: 1,162.67'







dk gy brn, blkly - sb pily, sb
y tex, mod calc, tr pyr CHK: It
some mot gy brn, sft - mod
blkly, sb wxy - rthy tex

MRSLT: med - dk gy brn, blkly - sb pily, sb
fis, mod frm, rthy tex, mod calc, tr pyr
CHK: It gy - off wh crm, some mot gy brn,
sft - mod frm, sb pily - sb blkly, sb wxy -
rthy tex

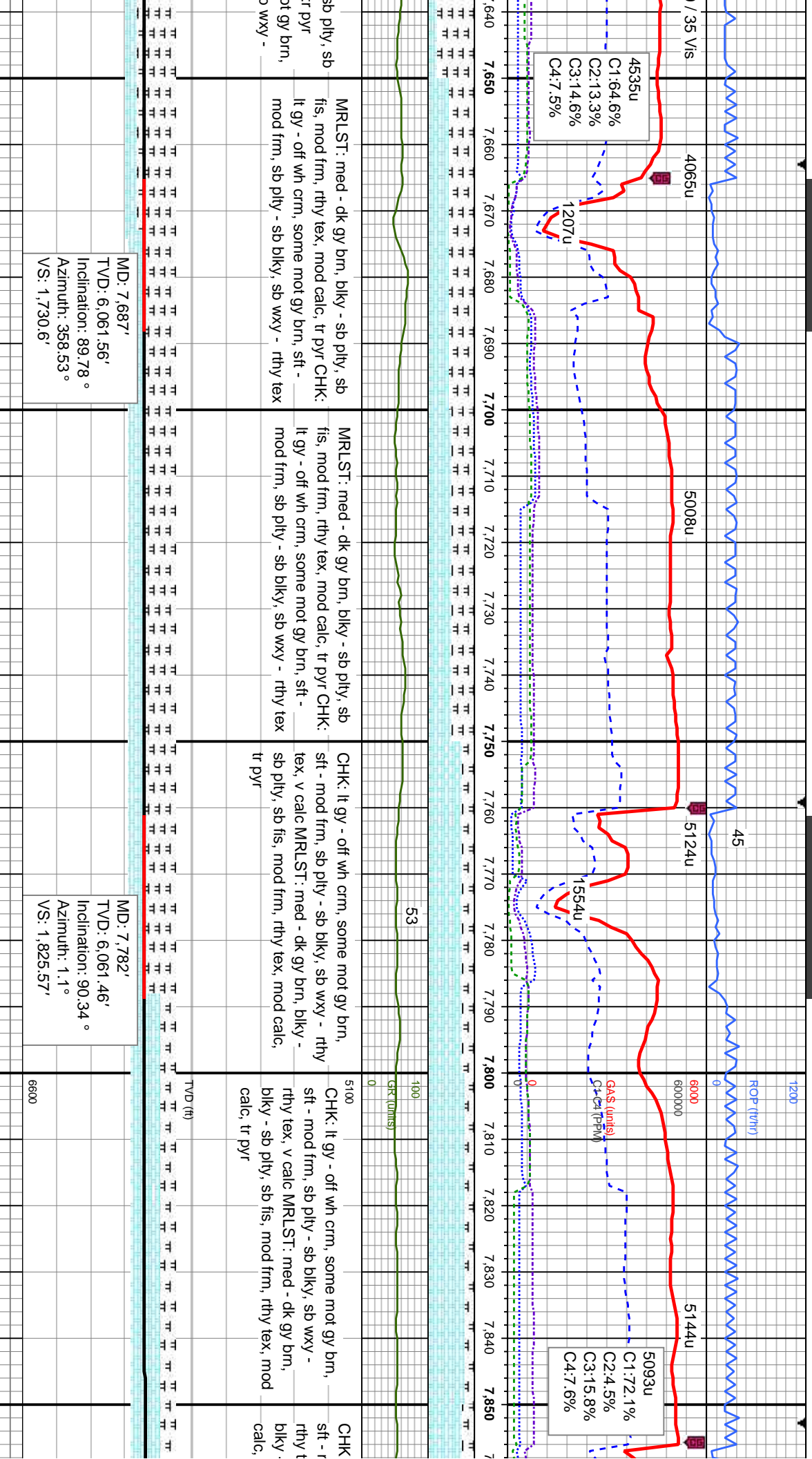
MRSLT: med - dk gy brn, blkly - sb pily, sb
fis, mod frm, rthy tex, mod calc, tr pyr CHK:
It gy - off wh crm, some mot gy brn, sft -
mod frm, sb pily - sb blkly, sb wxy - rthy tex

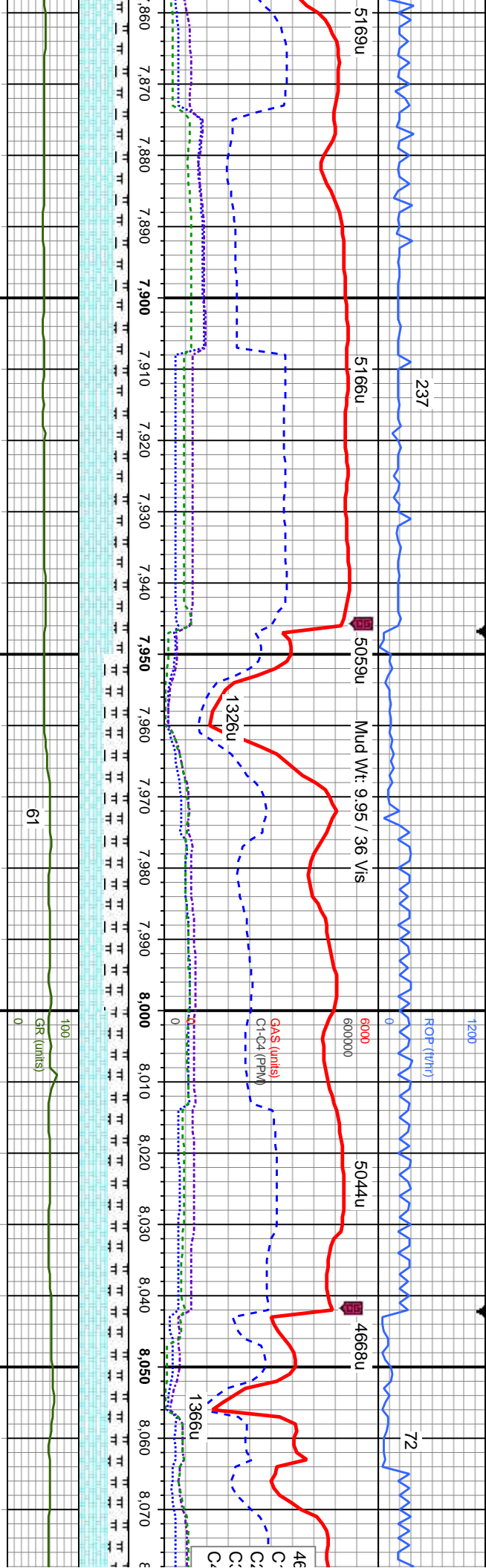
MRSLT: med - dk gy brn, blkly - sb pily, sb
fis, mod frm, rthy tex, mod calc, tr pyr CHK:
It gy - off wh crm, some mot gy brn, sft -
mod frm, sb pily - sb blkly, sb wxy - rthy tex

MD: 7,498'
TVD: 6,061.54'
Inclination: 89.62°
Azimuth: 358.49°
VS: 1,541.61'

MD: 7,593'
TVD: 6,061.62'
Inclination: 90.29°
Azimuth: 357.86°
VS: 1,636.6'







It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr

CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr

CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr

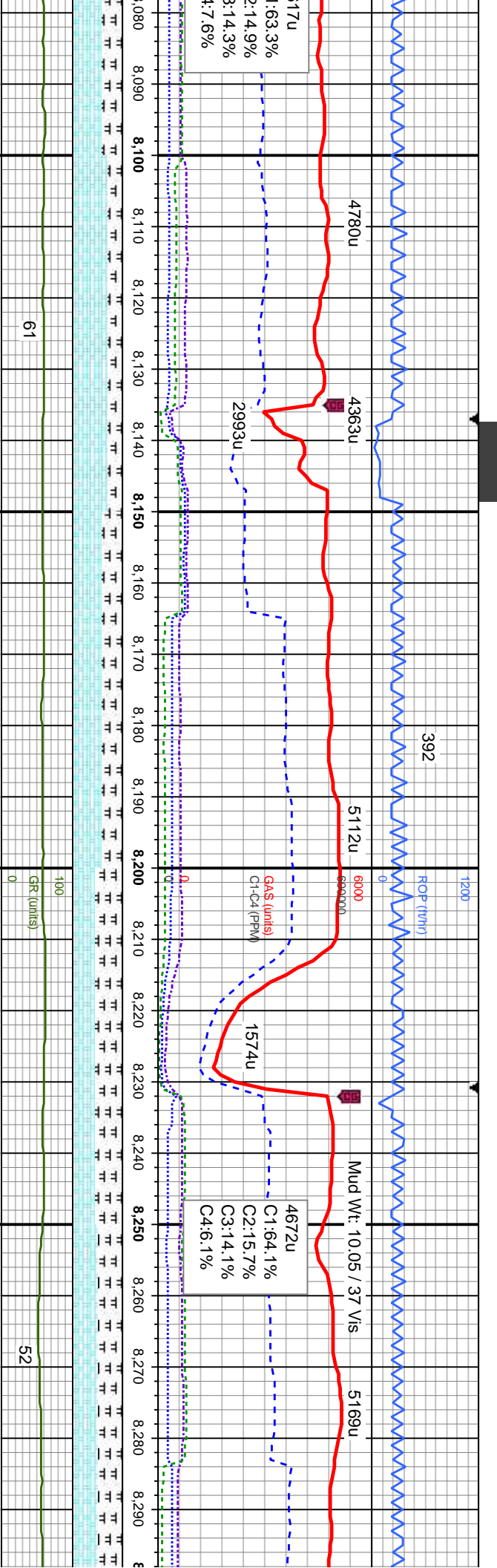
CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr

MD: 7,877'
TVD: 6,060.68'
Inclination: 90.6°
Azimuth: 0.08°
VS: 1,920.52'

MD: 7,972'
TVD: 6,060.27'
Inclination: 89.89°
Azimuth: 1.53°
VS: 2,015.45'

MD: 8,066'
TVD: 6,060.57'
Inclination: 89.75°
Azimuth: 2.25°
VS: 2,109.31'





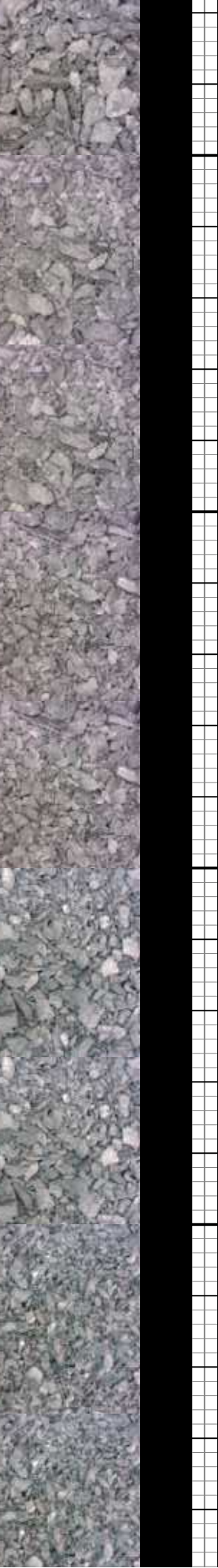
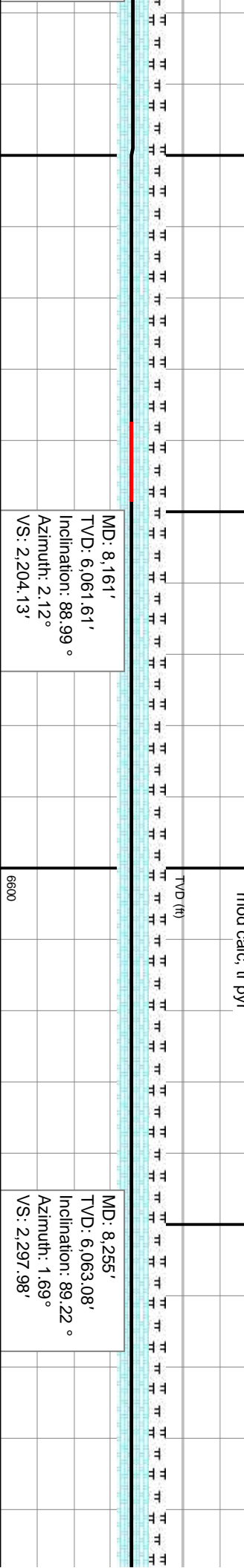
some mot gy brn, blkly, sb wxy - rthy
- dk gy brn, blkly - rthy tex, mod calc,
tr pyr

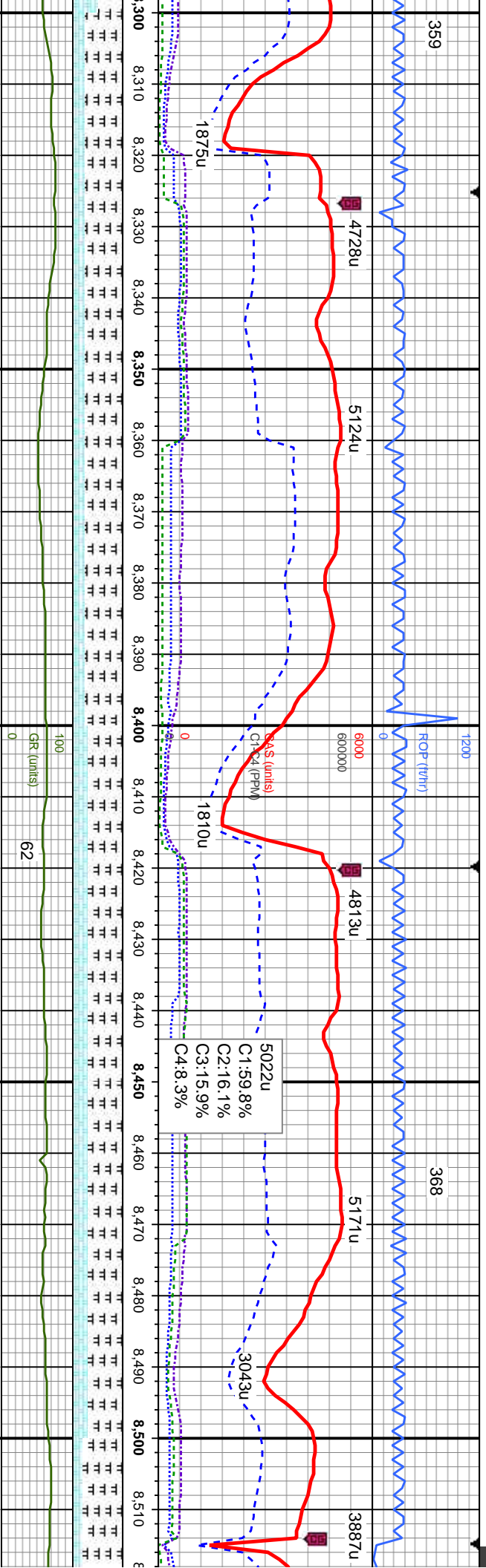
CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr pyr

CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr pyr

CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr pyr

CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, v calc MRLST: med - dk gy brn, blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr pyr

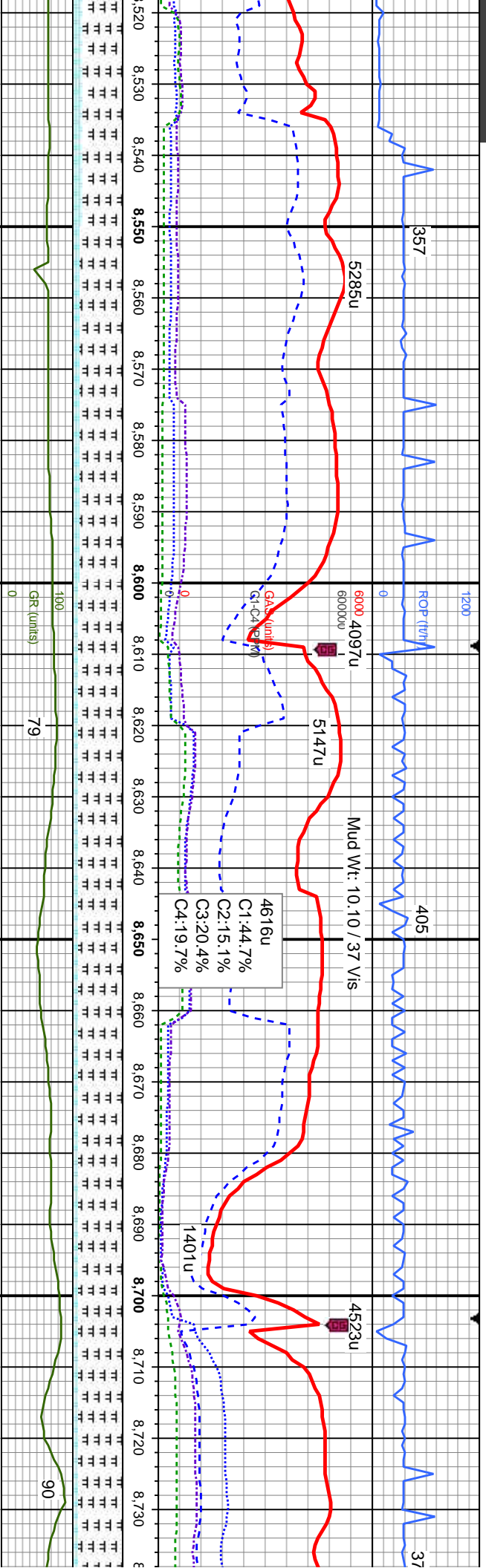




MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex	MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex	MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex	MRLST: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex
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MD: 8,349' TVD: 6,064.41' Inclination: 89.16 ° Azimuth: 0.96° VS: 2,391.87'	MD: 8,444' TVD: 6,065.84' Inclination: 89.12 ° Azimuth: 359.95° VS: 2,486.82'
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sb blkly, sb wxy - rthy tex

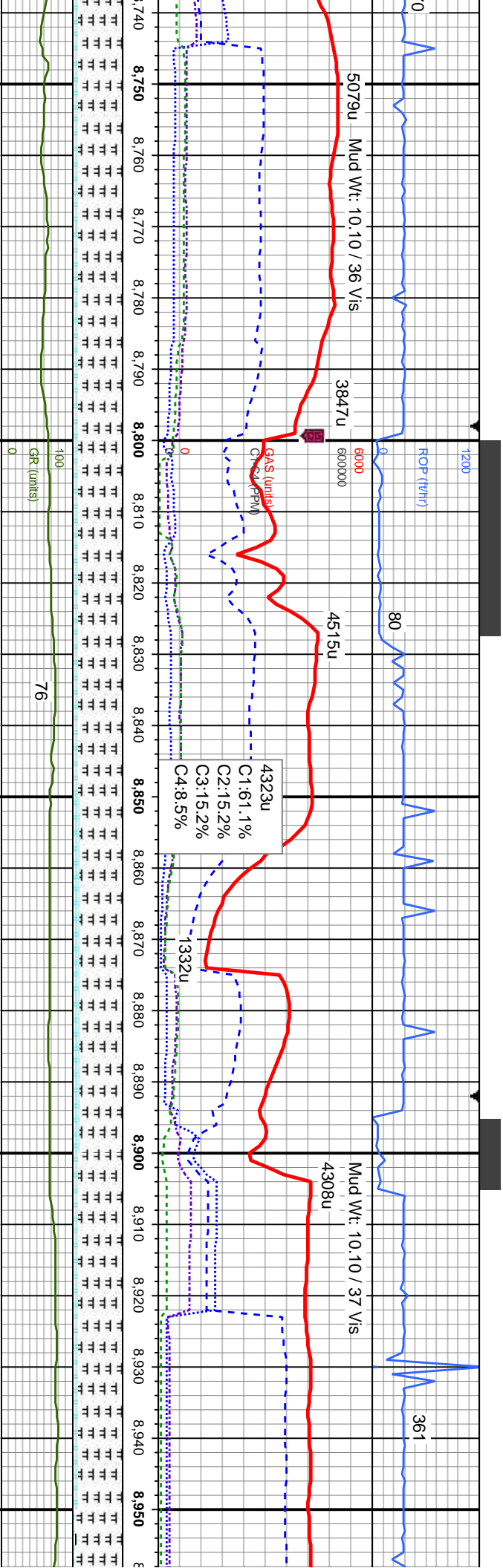
MRSLT: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex

MRSLT: med - dk gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, wxy - rthy tex

MRSLT: med - dk gy brn, sb blkly pily, sb fis, mod frm, rthy tex, mod calc, tr pyr, tr fos frag, CHK: It gy - off wh some mot gy brn, sft - mod frm, sb blkly, sb wxy - rthy tex

MD: 8,539'	MD: 8,633'	MD: 8,728'
TVD: 6,066.17'	TVD: 6,065.86'	TVD: 6,066.49'
Inclination: 90.48 °	Inclination: 89.9 °	Inclination: 89.34 °
Azimuth: 358.93 °	Azimuth: 358.04 °	Azimuth: 357.37 °
VS: 2,581.81'	VS: 2,675.8'	VS: 2,770.78'





- sb
calc,
with crm,
b ply -

MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr pyr, tr fos frag, CHK: lt gy - off wh crm,
some mot gy brn, sft - mod frm, sb ply -
sb blkly, sb wxy - rthy tex

51m
MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blkly, sb wxy - rthy tex

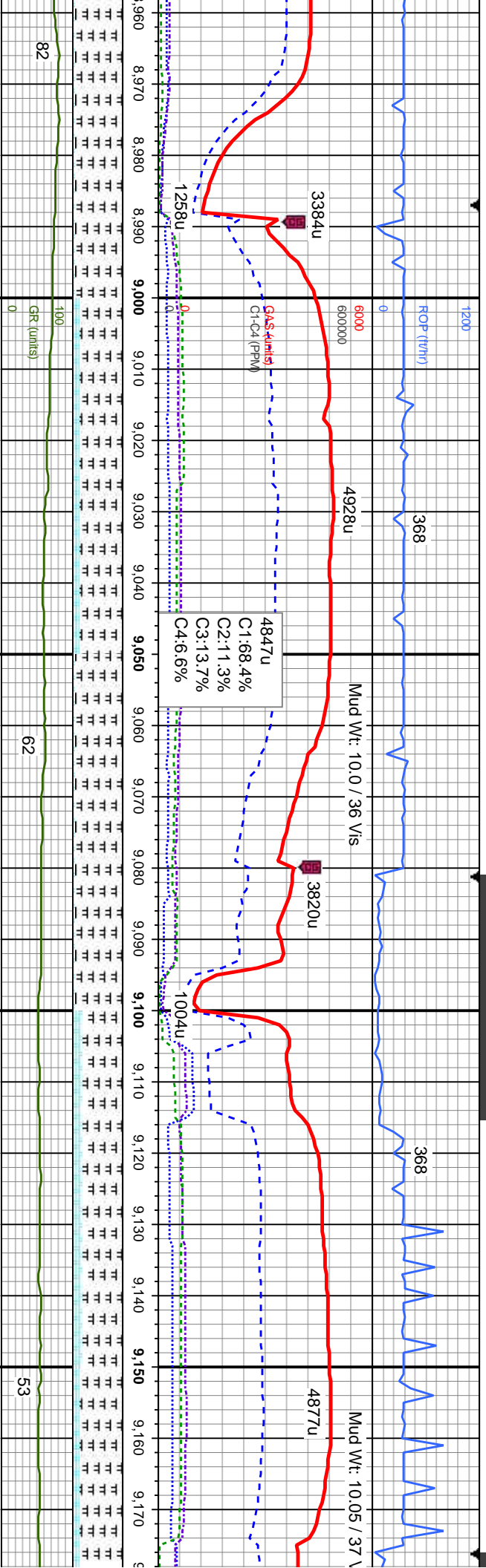
MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr fos frag, tr pyr, CHK: lt gy - off wh crm,
some mot gy brn, sft - mod frm, sb ply -
sb blkly, sb wxy - rthy tex

MRL
ply,
tr fos
some
some
sb bl

TVD (ft)		MD: 8,822'		MD: 8,916'	
		TVD: 6,065.76'		TVD: 6,064.31'	
		Inclination: 91.55°		Inclination: 90.22°	
		Azimuth: 357.53°		Azimuth: 355.94°	
		VS: 2,864.75'		VS: 2,958.68'	
		6600			





ST: med - dk gy brn, sb blkly - sb
sb fis, mod frm, rthy tex, mod calc,
frag, tr pyr, CHK: lt gy - off wh crm,
mot gy brn, sft - mod frm, sb ply -
blkly, sb wxy - rthy tex

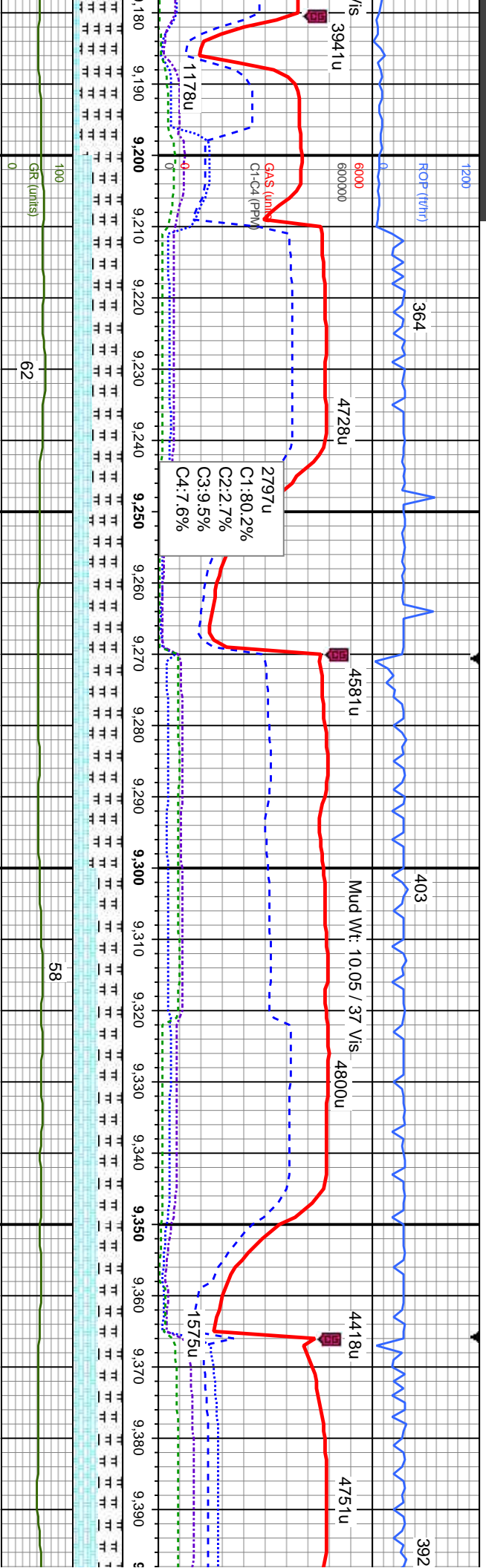
MRSLT: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blkly, sb wxy - rthy tex

MRSLT: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
tr fos frag, scat bent, CHK: lt gy - off wh
crm, some mot gy brn, sft - mod frm, sb
ply - sb blkly, sb wxy - rthy tex

MD: 9,011'
TVD: 6,064.45'
Inclination: 89.6°
Azimuth: 355.73°
VS: 3,053.55'

MD: 9,105'
TVD: 6,064.65'
Inclination: 90.16°
Azimuth: 356.34°
VS: 3,147.45'





rn, sb blkly - sb
hy tex, mod calc,
CHK: lt gy - off wh
sft - mod frm, sb
rthy tex

5100

MRLST: med gy brn, tr dk gy brn, sb blkly
- sb ply, sb fis, mod frm, rthy tex, mod
calc, tr fos frag, abnt bent, CHK: lt gy -
off wh crm, some mot gy brn, sft - mod
frm, sb ply - sb blkly, sb wxy - rthy tex

MRLST: med gy brn, tr dk gy brn, sb blkly
- sb ply, sb fis, mod frm, rthy tex, mod
calc, tr fos frag, abnt bent, CHK: lt gy -
off wh crm, some mot gy brn, sft - mod
frm, sb ply - sb blkly, sb wxy - rthy tex

MRLST: med gy brn, tr dk gy brn, sb blkly
- sb ply, sb fis, mod frm, rthy tex, mod
calc, tr fos frag, scat bent, CHK: lt gy - off
wh crm, some mot gy brn, sft - mod frm,
sb ply - sb blkly, sb wxy - rthy tex

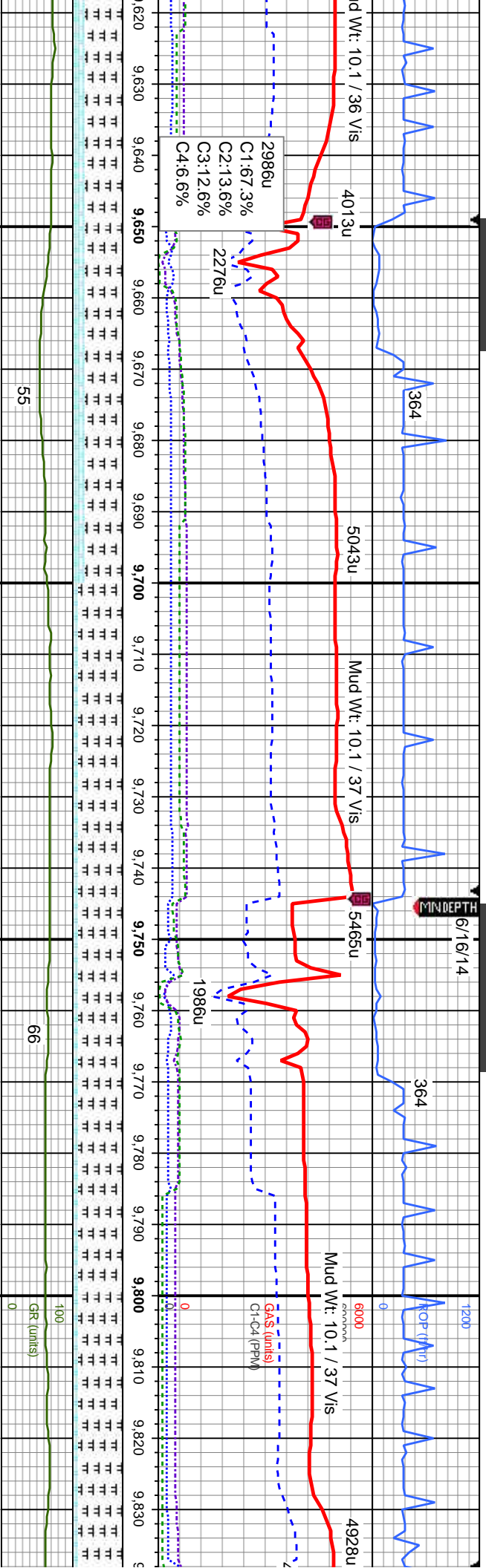
MRLST: med gy brn, tr dk gy brn, sb blkly
- sb ply, sb fis, mod frm, rthy tex, mod
calc, tr fos frag, scat bent, CHK: lt gy - off
wh crm, some mot gy brn, sft - mod frm,
sb ply - sb blkly, sb wxy - rthy tex

MD: 9,200'
TVD: 6,063.92'
Inclination: 90.72 °
Azimuth: 2.42°
VS: 3,242.4'

MD: 9,295'
TVD: 6,062.74'
Inclination: 90.71 °
Azimuth: 2.8°
VS: 3,337.17'

MD: 9,389'
TVD: 6,061.99'
Inclination: 90.2 °
Azimuth: 1.67°
VS: 3,430.99'



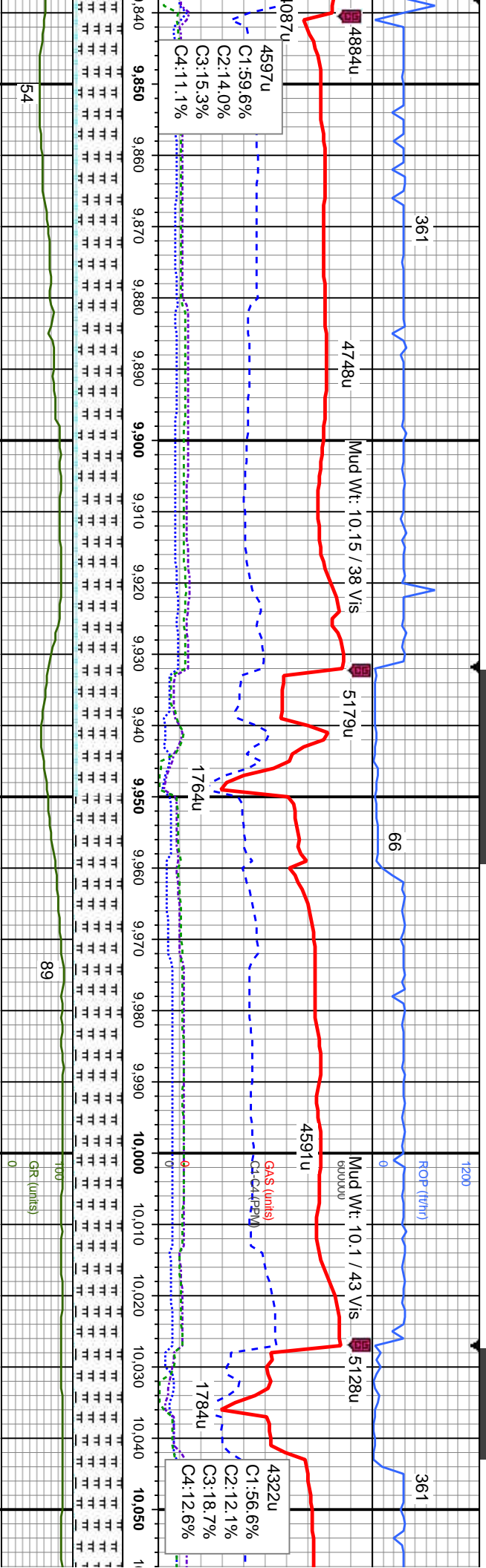


dk gy brn, sb biky - sb	MR.LST: med - dk gy brn, sb biky - sb	MR.LST: med - dk gy brn, sb biky - sb	MR.LST: med - dk gy brn, sb biky - sb	510 ⁰ MR.LST: med - dk gy brn, sb biky
d frm, rthy tex, mod calc,	ply, sb fis, mod frm, rthy tex, mod calc,	ply, sb fis, mod frm, rthy tex, mod calc,	ply, sb fis, mod frm, rthy tex, mod calc,	ply, sb fis, mod frm, rthy tex, mod calc,
K: lt gy - off wh crm, some	tr fos frag, CHK: lt gy - off wh crm, some	tr fos frag, CHK: lt gy - off wh crm, some	tr fos frag, CHK: lt gy - off wh crm, some	tr fos frag, CHK: lt gy - off wh crm, some
- mod frm, sb ply - sb	mot gy brn, sft - mod frm, sb ply - sb	mot gy brn, sft - mod frm, sb ply - sb	mot gy brn, sft - mod frm, sb ply - sb	mot gy brn, sft - mod frm, sb ply - sb
rthy tex	biky, sb wxy - rthy tex	ply - sb biky, sb wxy - rthy tex	ply - sb biky, sb wxy - rthy tex	ply - sb biky, sb wxy - rthy tex

MD: 9,673'
TVD: 6,063.12'
Inclination: 90.6 °
Azimuth: 3.09 °
VS: 3,714.35'

MD: 9,767'
TVD: 6,063.55'
Inclination: 88.55 °
Azimuth: 359.38 °
VS: 3,808.22'

6600



sb - dk gy brn, sb blk - sb
ply, sb fis, mod frm, rthy tex, mod calc.
occ fos frag, tr bent, CHK: lt gy - off wh
crm, some mot gy brn, sft - mod frm, sb
ply - sb blk, sb wxy - rthy tex

sb - dk gy brn, sb blk - sb
ply, sb fis, mod frm, rthy tex, mod calc.
tr fos frag, tr bent, CHK: lt gy - off wh
crm, some mot gy brn, sft - mod frm, sb
ply - sb blk, sb wxy - rthy tex

sb - dk gy brn, sb blk - sb
ply, sb fis, mod frm, rthy tex, mod calc.
tr bent, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blk, sb wxy - rthy tex

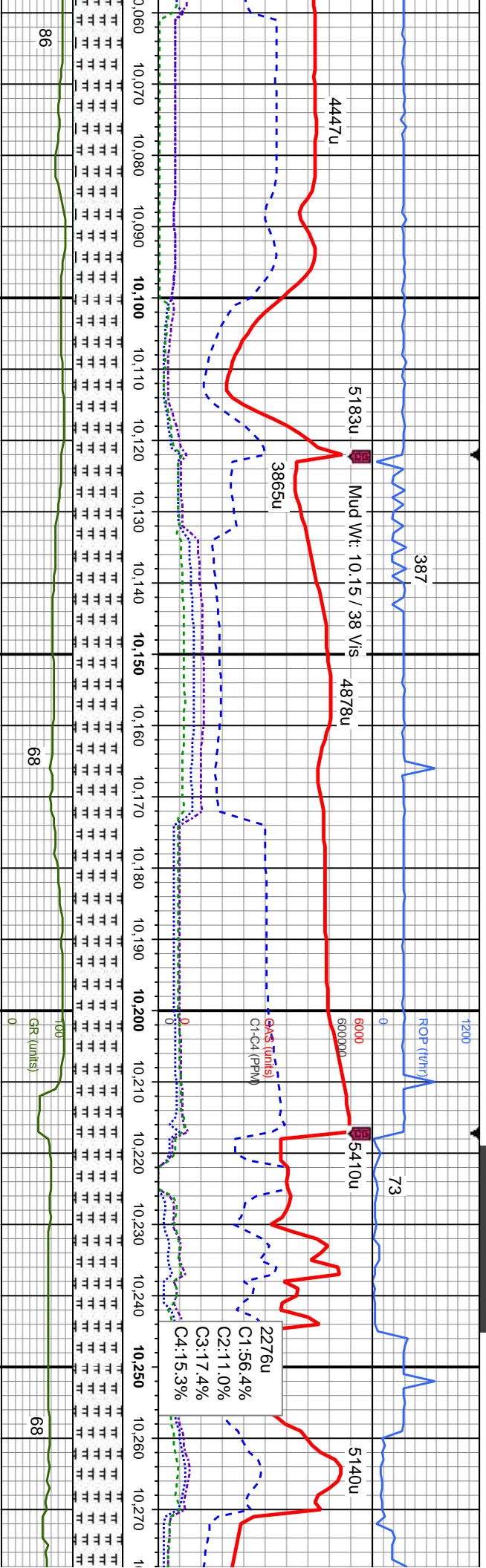
sb - dk gy brn, sb blk - sb
ply, sb fis, mod frm, rthy tex, mod calc.
tr bent, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blk, sb wxy - rthy tex

MD: 9.862'
TVD: 6.066.65'
Inclination: 87.71 °
Azimuth: 358.15 °
VS: 3.903.17'

MD: 9.956'
TVD: 6.068.87'
Inclination: 89.58 °
Azimuth: 356.04 °
VS: 3.997.09'

MD: 10.051'
TVD: 6.068.54'
Inclination: 90.82 °
Azimuth: 355.08 °
VS: 4.091.94'





ST: med - dk gy brn, sb blkly - sb
sb fis, mod frm, rthy tex, mod calc,
bent, CHK: lt gy - off wh crm, some
gy brn, sft - mod frm, sb ply - sb
, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod
calc, occ bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
occ bent, tr chk

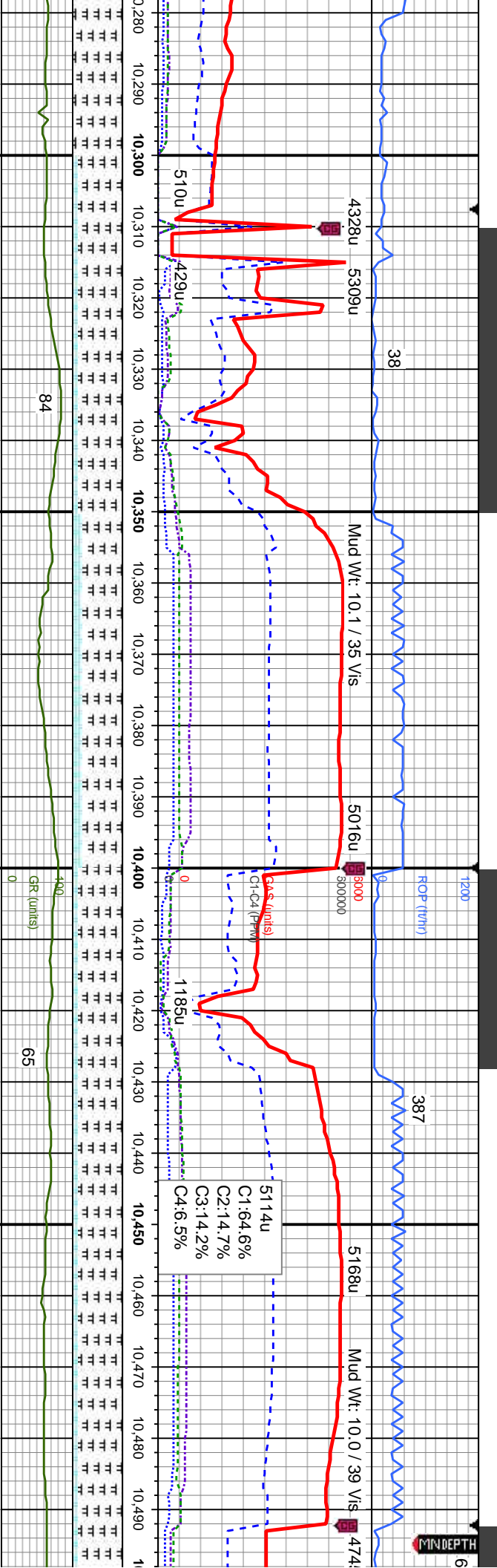
MRLST: med - dk gy brn, sb blkly - sb
sb fis, mod frm, rthy tex, mod calc, occ
bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb
sb fis, mod frm, rthy tex, mod calc, occ
bent, tr chk

MD: 10,146'
TVD: 6,067.52'
Inclination: 90.41°
Azimuth: 354.1°
VS: 4,186.68'

MD: 10,238'
TVD: 6,066.15'
Inclination: 91.3°
Azimuth: 354.7°
VS: 4,278.41'





1, sb blkly - sb ply,
mod calc, occ

MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc,
scat bent, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb ply - sb
blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, scat
bent, CHK: lt gy - off wh crm, some mot gy
brn, sft - mod frm, sb ply - sb blkly, sb wxy
- rthy tex

51 MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, occ
bent, CHK: lt gy - off wh crm, some mot gy
brn, sft - mod frm, sb ply - sb blkly, sb wxy
- rthy tex

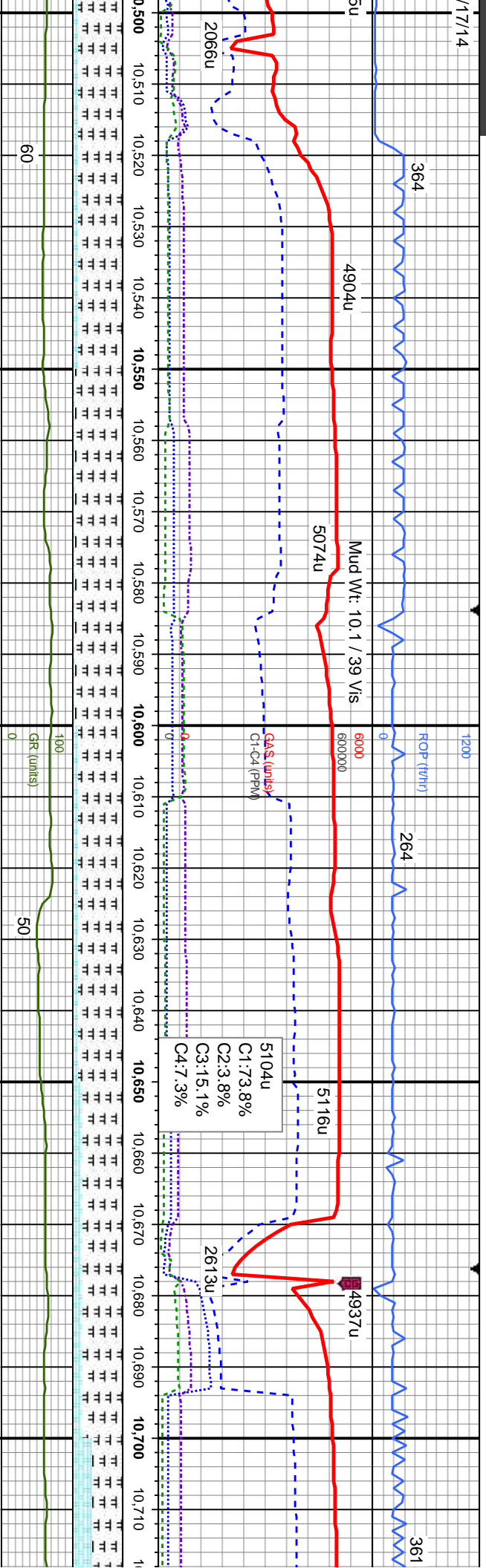
MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, occ
bent, CHK: lt gy - off wh crm, some mot gy
brn, sft - mod frm, sb ply - sb blkly, sb wxy
- rthy tex

MD: 10,330'
TVD: 6,062.4'
Inclination: 93.37°
Azimuth: 357.42°
VS: 4,370.22'

MD: 10,422'
TVD: 6,058.38'
Inclination: 91.64°
Azimuth: 359.33°
VS: 4,462.12'



1/7/14



MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr bent,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb pily - sb blkly,
sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr bent,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb pily - sb blkly,
sb wxy - rthy tex

5 MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr bent,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb pily - sb blkly,
sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr bent,
tr fos frag, CHK: lt gy - off wh crm, some
mot gy brn, sft - mod frm, sb pily - sb blkly,
sb wxy - rthy tex

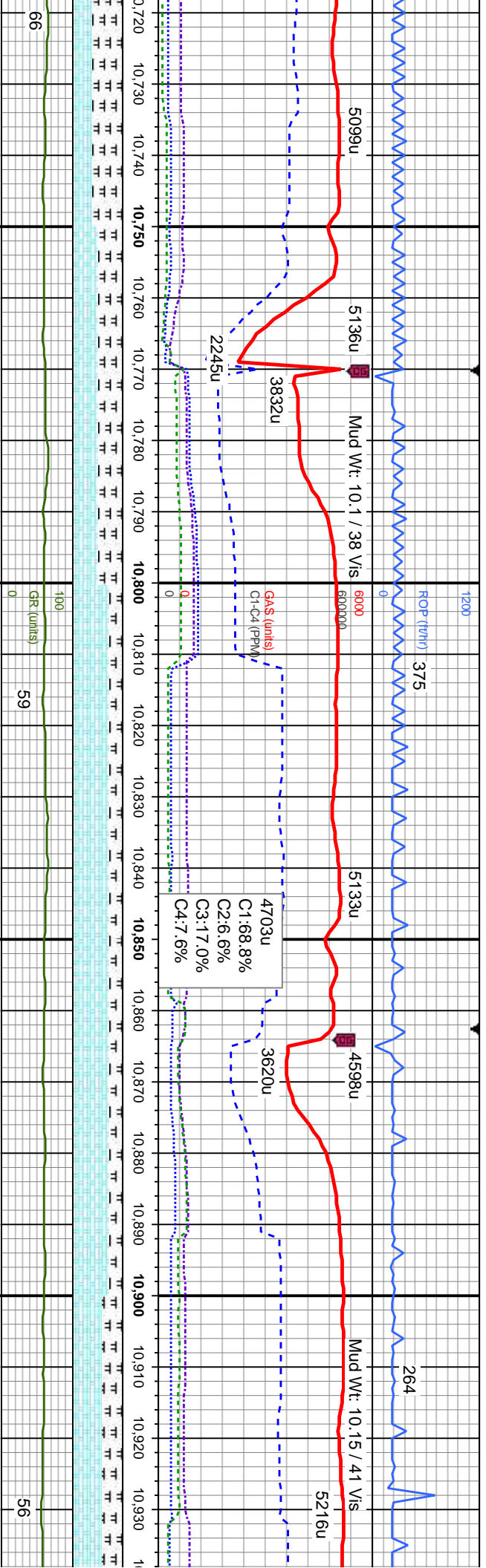
MRLST: med -
sb fis, mod frm
tr fos frag, CHK
mot gy brn, sft
sb wxy - rthy t

MD: 10,513'
TVD: 6,057.17'
Inclination: 89.88°
Azimuth: 359.85°
VS: 4,553.1'

MD: 10,606'
TVD: 6,057.5'
Inclination: 89.71°
Azimuth: 359.45°
VS: 4,646.09'

MD: 10,699'
TVD: 6,057.9'
Inclination: 89.8°
Azimuth: 358.42°
VS: 4,739.09'



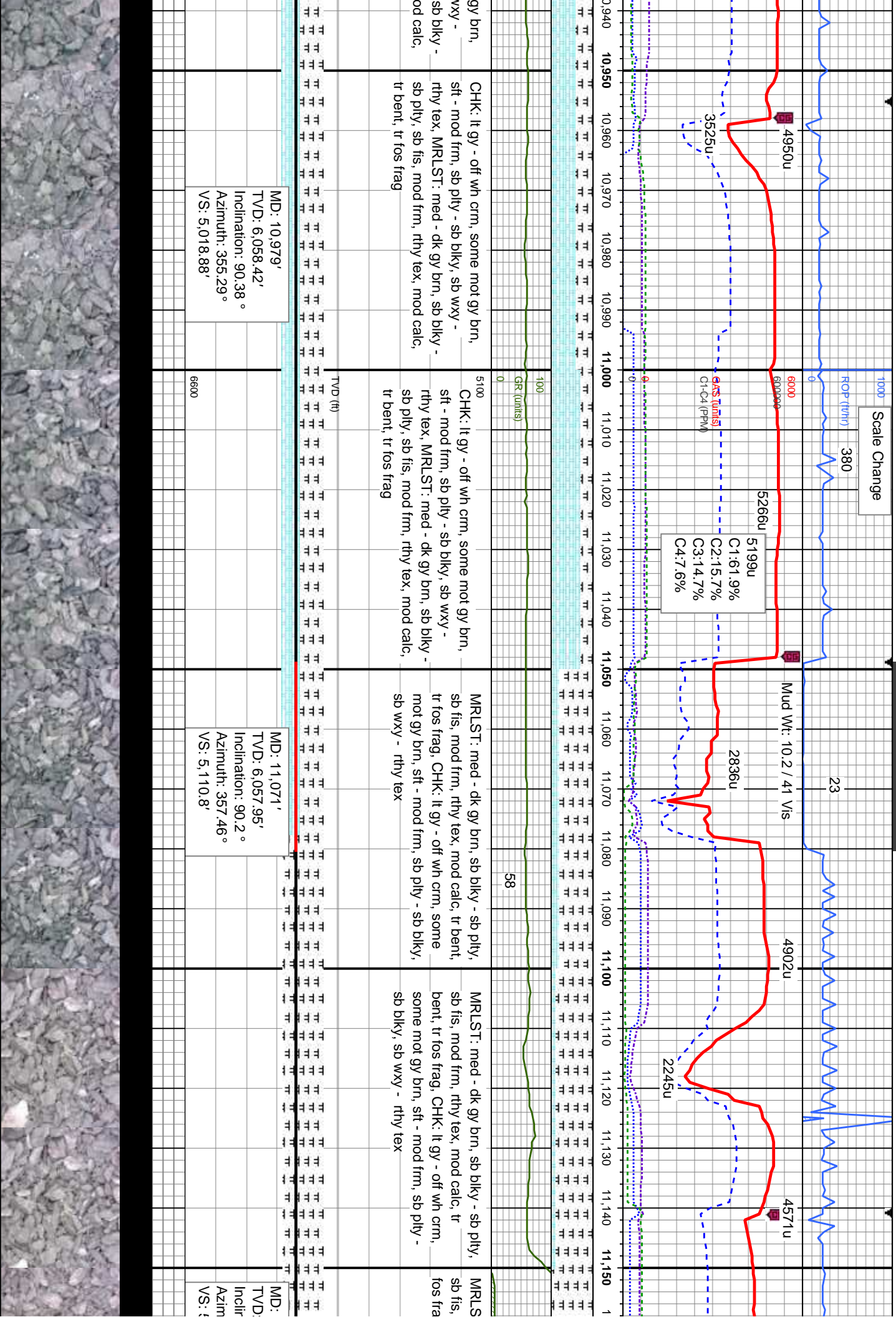


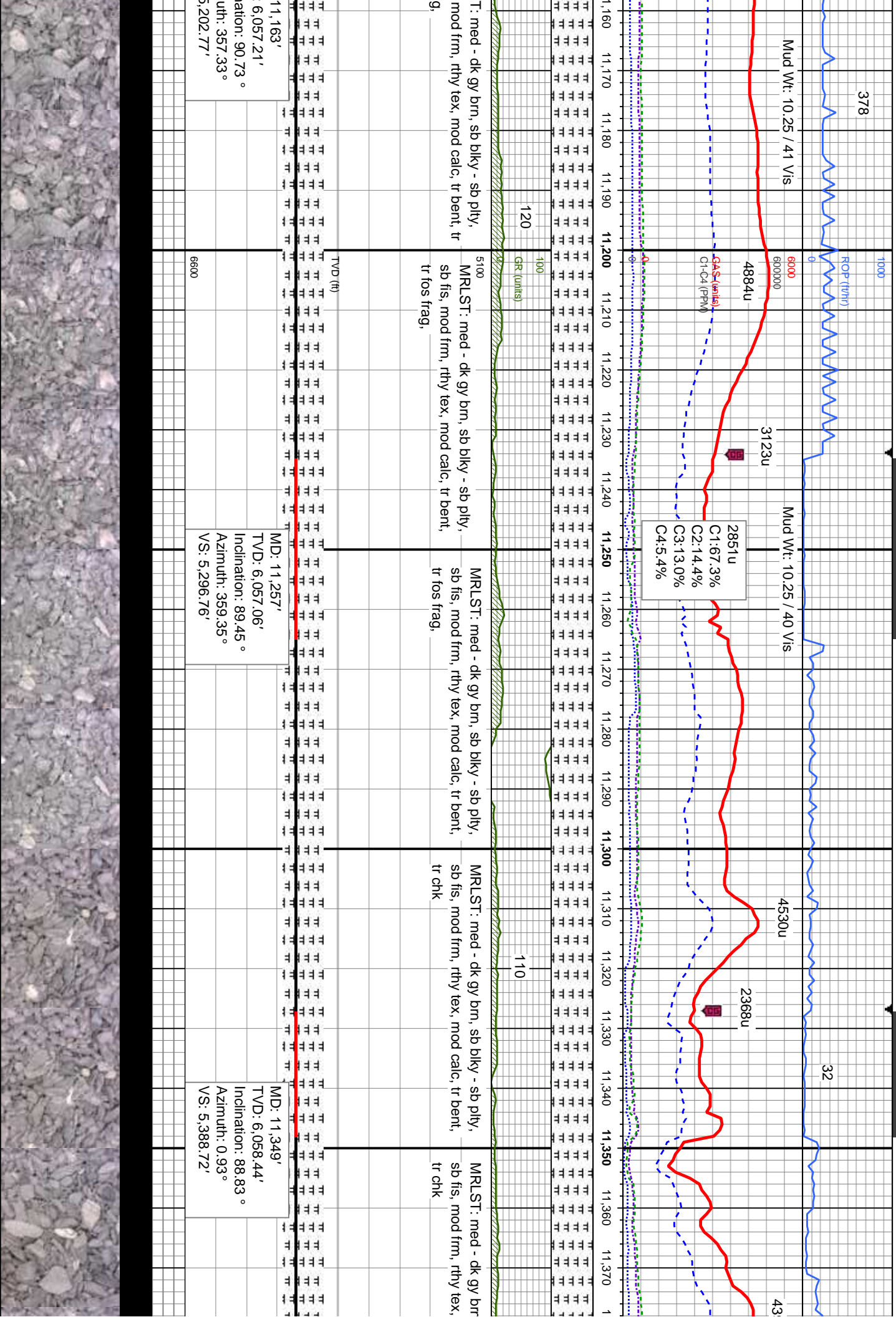
Depth (ft)	Description
10,720 - 10,750	dk gy brn, sb blkly - sb ply, rthy tex, mod calc, tr bent, it gy - off wh crm, some - mod frm, sb ply - sb blkly, ex
10,750 - 10,800	MRLST: med - dk gy brn, sb blkly, sb fis, mod frm, rthy tex, mod calc, tr bent, it fos frag, CHK: it gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex
10,800 - 10,850	5'CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, MRLST: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, tr fos frag
10,850 - 10,900	CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex, MRLST: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, tr fos frag
10,900 - 10,930	CHK: It gy - off wh crm, some mot sft - mod frm, sb ply - sb blkly, sb rthy tex, MRLST: med - dk gy brn, sb ply, sb fis, mod frm, rthy tex, m

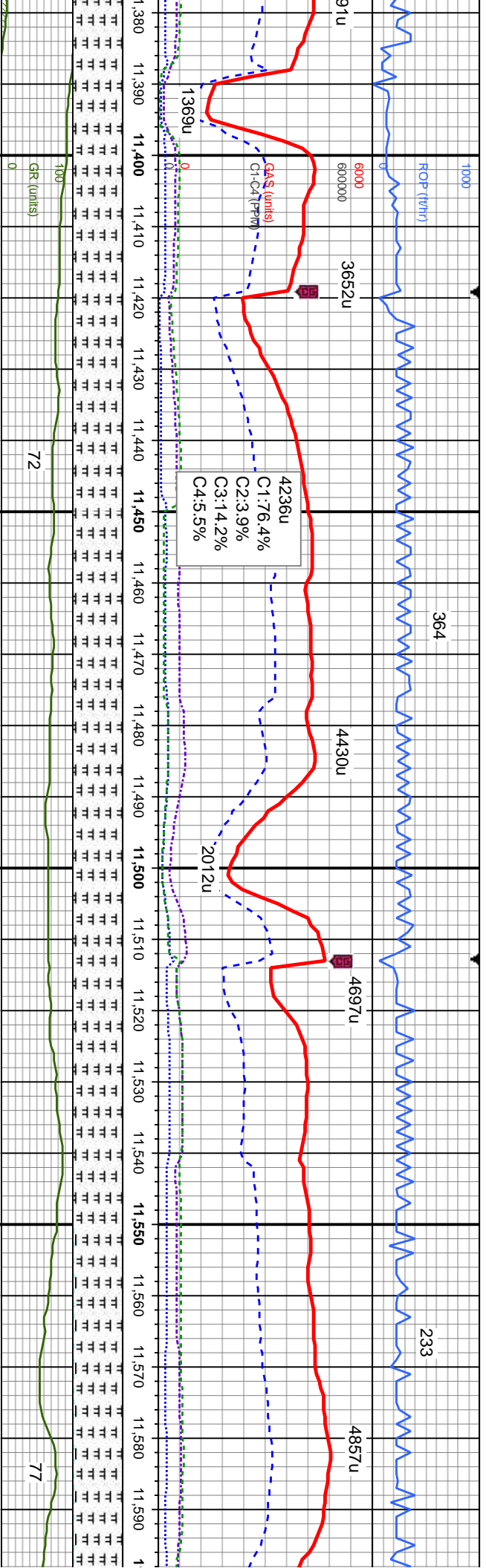
MD: 10,792'
TVD: 6,058.17'
Inclination: 89.87°
Azimuth: 357.61°
VS: 4,832.08'

MD: 10,885'
TVD: 6,058.5'
Inclination: 89.72°
Azimuth: 355.99°
VS: 4,925.02'









sb blkly - sb ply,
mod calc, tr bent,

5100

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, tr
chk

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, tr
bent, tr chk

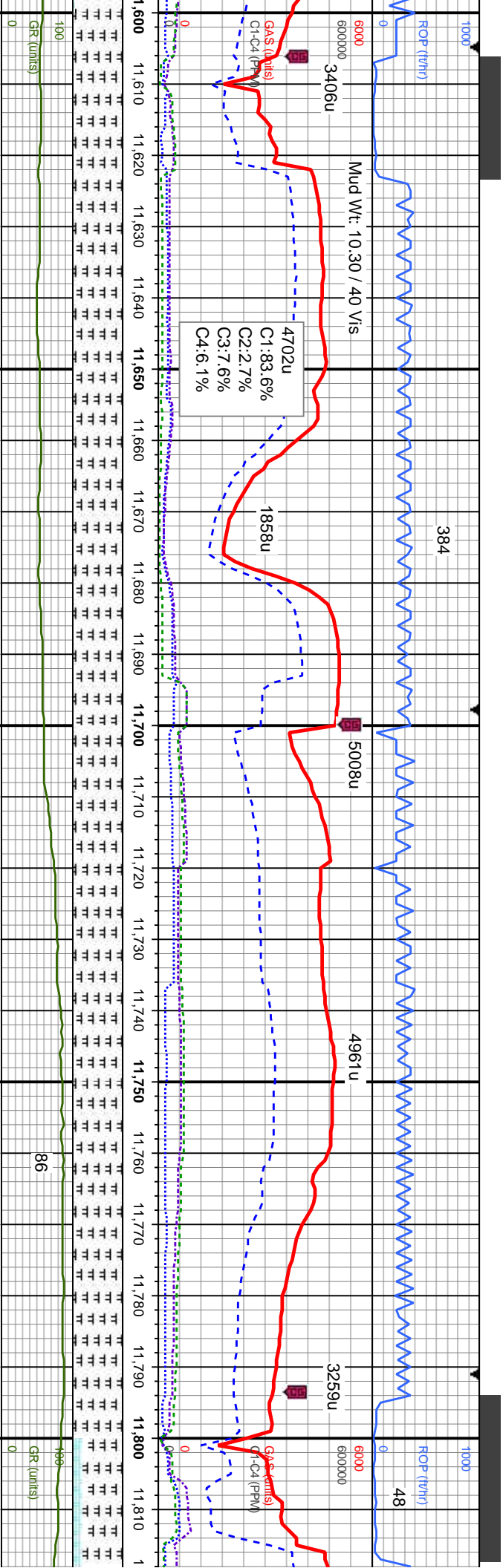
MRLST: med - dk gy brn, sb blkly - sb
ply, sb fis, mod frm, rthy tex, mod calc, tr
bent, CHK: lt gy - off wh crm, some mot
gy brn, sft - mod frm, sb ply - sb blkly, sb
wxy - rthy tex

TVD (ft)

MD: 11,442'
TVD: 6,059.99'
Inclination: 89.26°
Azimuth: 359.97°
VS: 5,481.66'

MD: 11,535'
TVD: 6,061.55'
Inclination: 88.82°
Azimuth: 359.74°
VS: 5,574.63'





MRLST: med - dk gy brn, sb blkly - sb
pity, sb fis, mod frm, rthy tex, mod
calc, tr bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb
pity, sb fis, mod frm, rthy tex, mod
calc, tr bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb
pity, sb fis, mod frm, rthy tex, mod calc, tr
bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb
pity, sb fis, mod frm, rthy tex, mod calc, tr bent,
tr chk

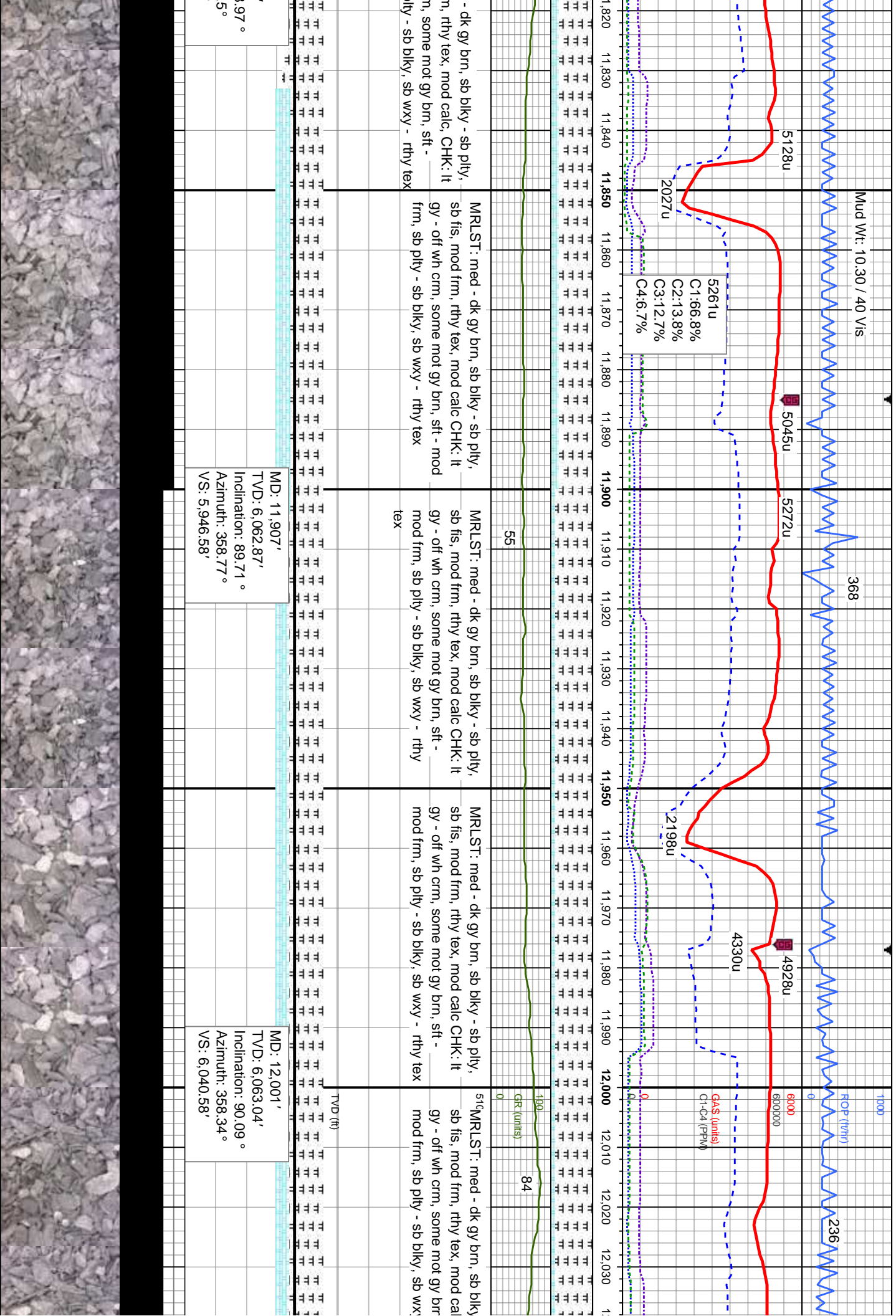
MRLST: med
sb fis, mod frm
gy - off wh cr
mod frm, sb f

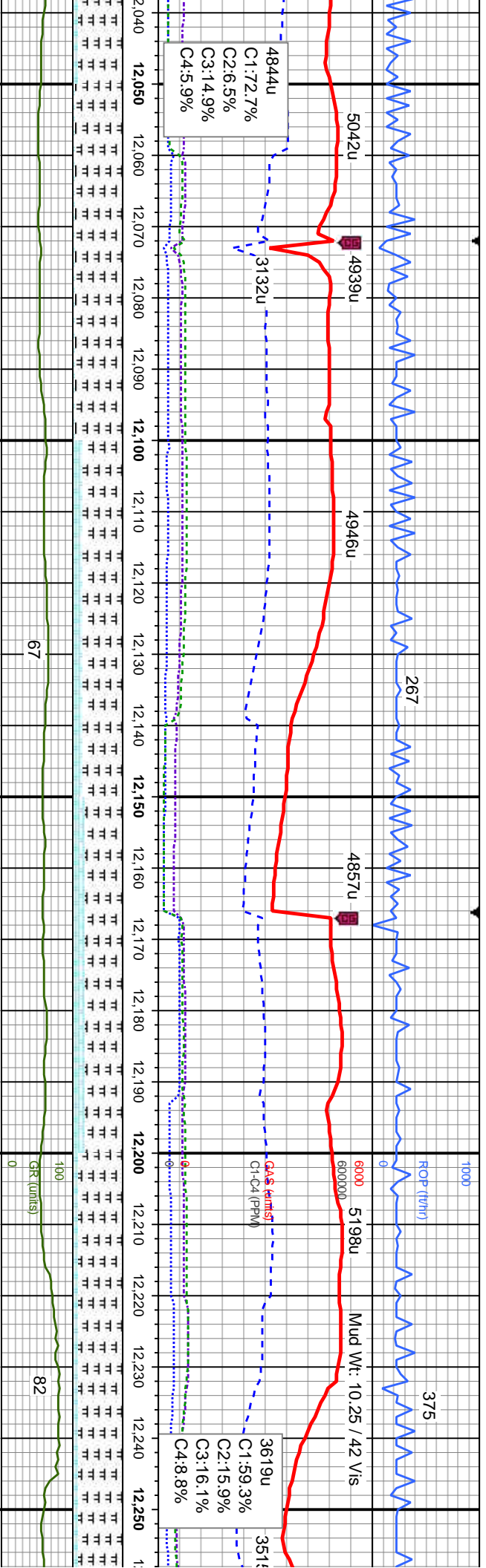
MD: 11,627'
TVD: 6,062.25'
Inclination: 90.3°
Azimuth: 359.84°
VS: 5,666.61'

MD: 11,719'
TVD: 6,061.64'
Inclination: 90.83°
Azimuth: 359.06°
VS: 5,758.6'

MD: 11,814'
TVD: 6,061.8
Inclination: 88
Azimuth: 359
VS: 5,853.59







4844u
C1:72.7%
C2:6.5%
C3:14.9%
C4:5.9%

3619u
C1:59.3%
C2:15.9%
C3:16.1%
C4:8.8%

MD: 12,096'
TVD: 6,062.6'
Inclination: 90.44°
Azimuth: 357.79°
VS: 6,135.57'

MD: 12,191'
TVD: 6,061.45'
Inclination: 90.94°
Azimuth: 357.34°
VS: 6,230.54'

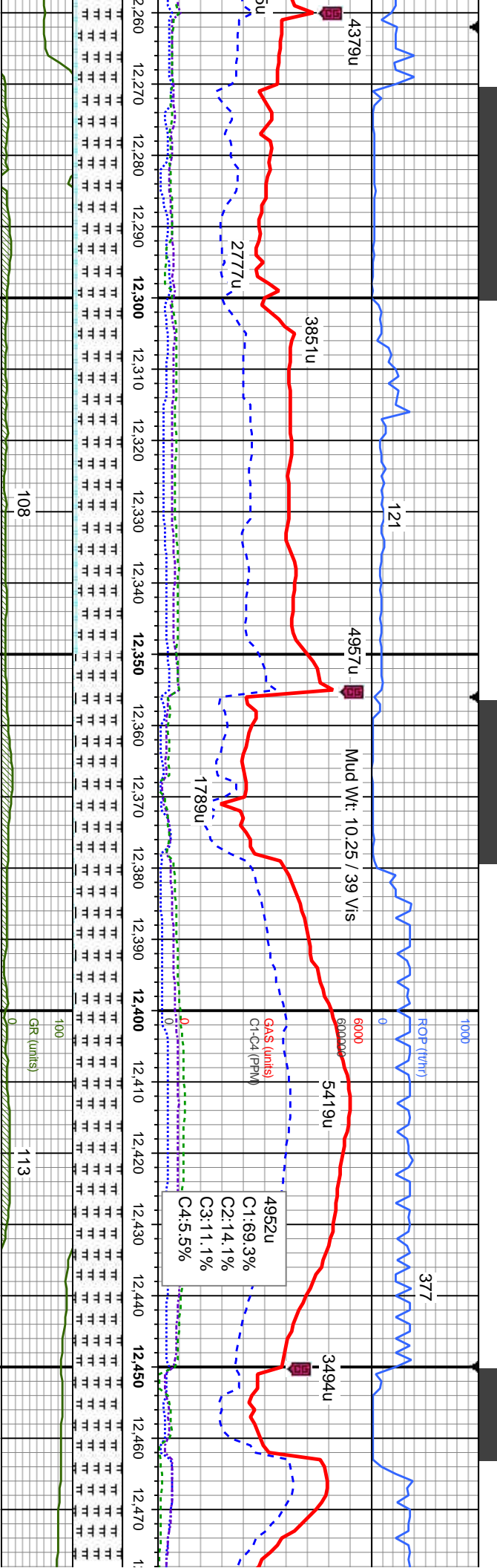
sb pily, c CHK: It gy - rthy tex
MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly - sb wxy - rthy tex
MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly - sb wxy - rthy tex
MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr pyr, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly - sb wxy - rthy tex
5 MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly - sb wxy - rthy tex
MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly - sb wxy - rthy tex

GR (units)

82

TVD (ft)

3600



ST: med - dk gy brn, sb blkly - sb pily, mod frm, rthy tex, mod calc, CHK: it off wh crm, some mot gy brn, sft - frm, sb pily - sb blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: it gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: it gy - off wh crm, some mot gy brn, sft - mod frm, sb pily - sb blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, mod calc, tr bent, tr chk

MRLST: med - dk gy brn, sb blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

MD: 12,285'
TVD: 6,060.27'
Inclination: 90.5°
Azimuth: 357.97°
VS: 6.324.52'

MD: 12,380'
TVD: 6,061.93'
Inclination: 87.5°
Azimuth: 0.24°
VS: 6.419.49'

MD: 12,474'
TVD: 6,065.
Inclination: {
Azimuth: 0.0
VS: 6.513.4



6/18/14

MINDEPTH

ROP (ft/hr)

361

366

Mud Wt: 10.25 / 39 Vis

Mud Wt: 10.25 / 41 Vis

5171u

5536u

4742u

4887u

600000

5302u

5155u

C1:61.6%

C2:16.6%

C3:14.9%

C4:6.9%

GAS (units)

Cl-C4 (PPM)

0

2622u

1841u

GR (units)

0

77

78

sb blkly - sb ply,
mod calc, tr bent,

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, tr chk

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, tr chk

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, CHK: It
gy - off wh crm, some mot gy brn, sft -
mod frm, sb ply - sb blkly, sb wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb ply,
sb fis, mod frm, rthy tex, mod calc, CHK: It
gy - off wh crm, some mot gy brn, sft -
mod frm, sb ply - sb blkly, sb wxy - rthy tex

TVD (ft)

MD: 12,569'

TVD: 6,067.95'

Inclination: 88.1°

Azimuth: 359.89°

VS: 6,608.34'

MD: 12,664'

TVD: 6,069'

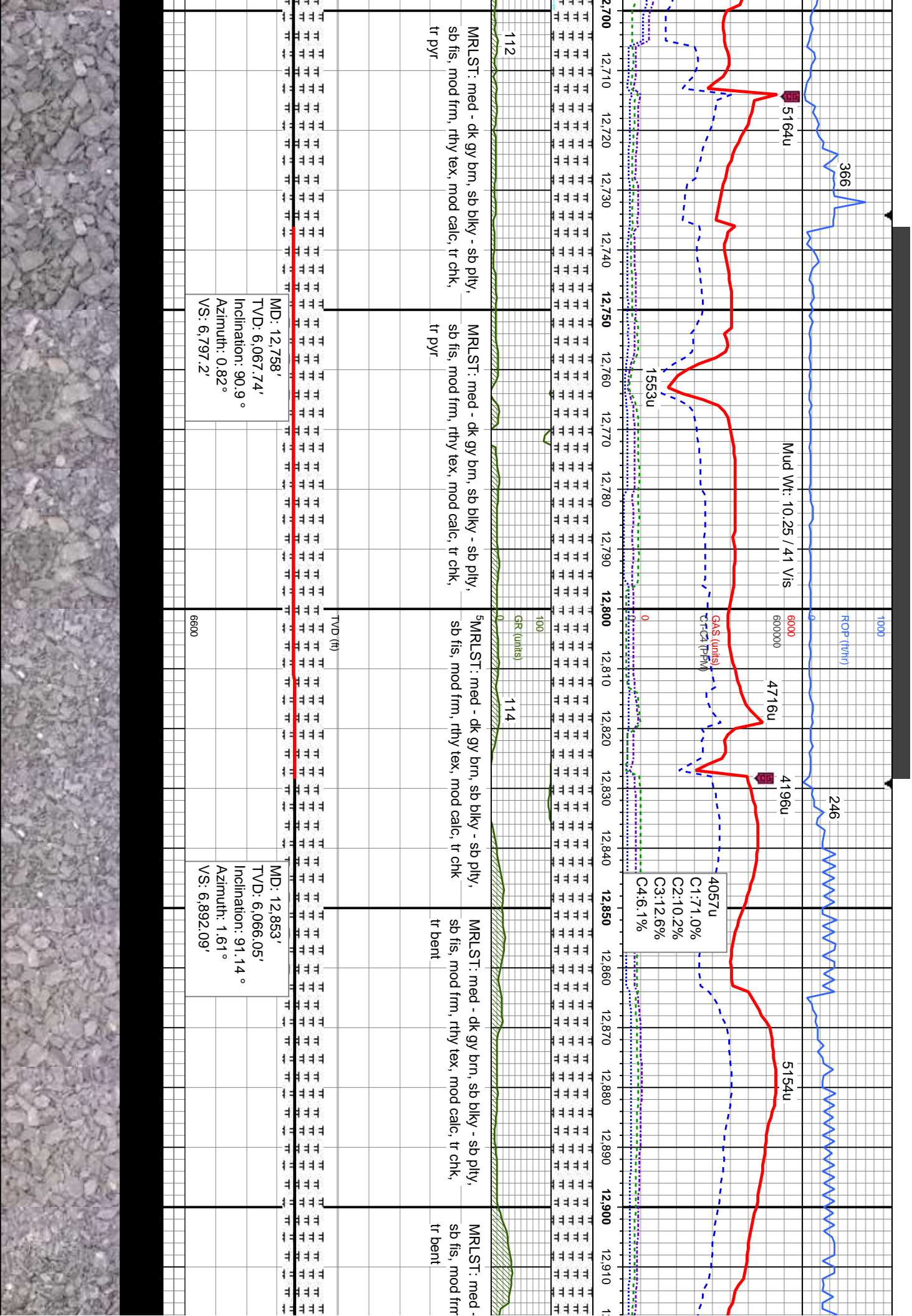
Inclination: 90.63°

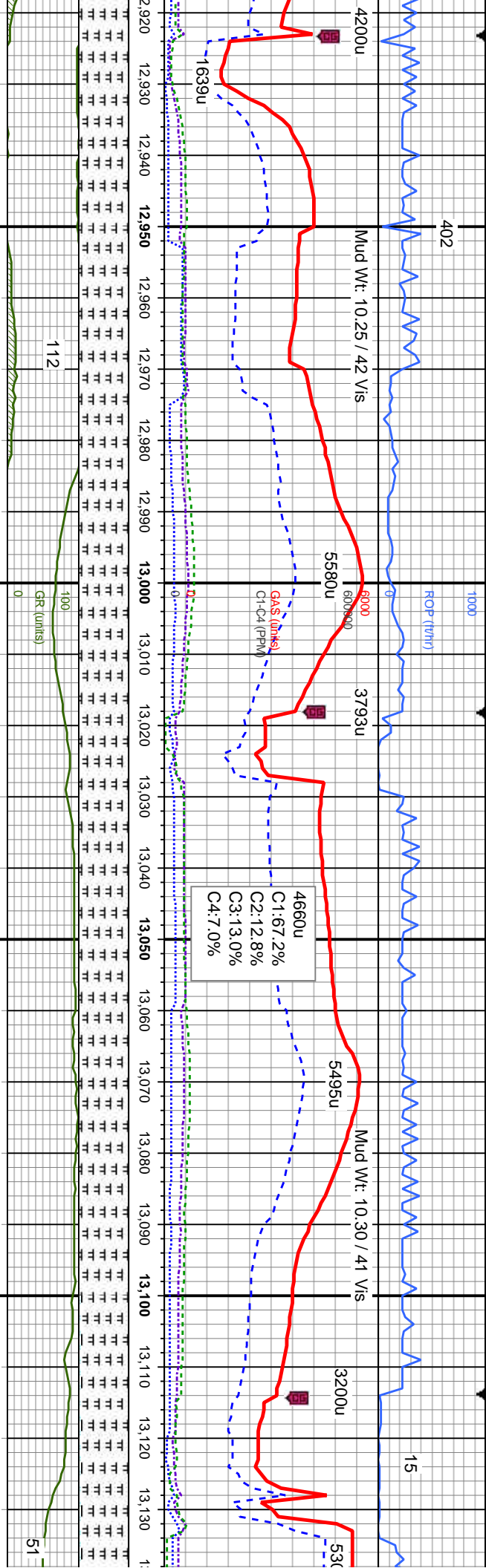
Azimuth: 1.16°

VS: 6,703.28'

17',
8.55°
14°







dk gy brn, sb blkly - sb plty,
rthy tex, mod calc, tr chk,
MRLST: med - dk gy brn, sb blkly - sb plty,
sb fis, mod frm, rthy tex, mod calc, tr chk, tr bent

5100
MRLST: med - dk gy brn, sb blkly - sb plty, sb fis, mod frm, rthy tex, mod calc, tr bent

MRLST: med - dk gy brn, sb blkly - sb plty, sb fis, mod frm, rthy tex, mod calc, tr bent

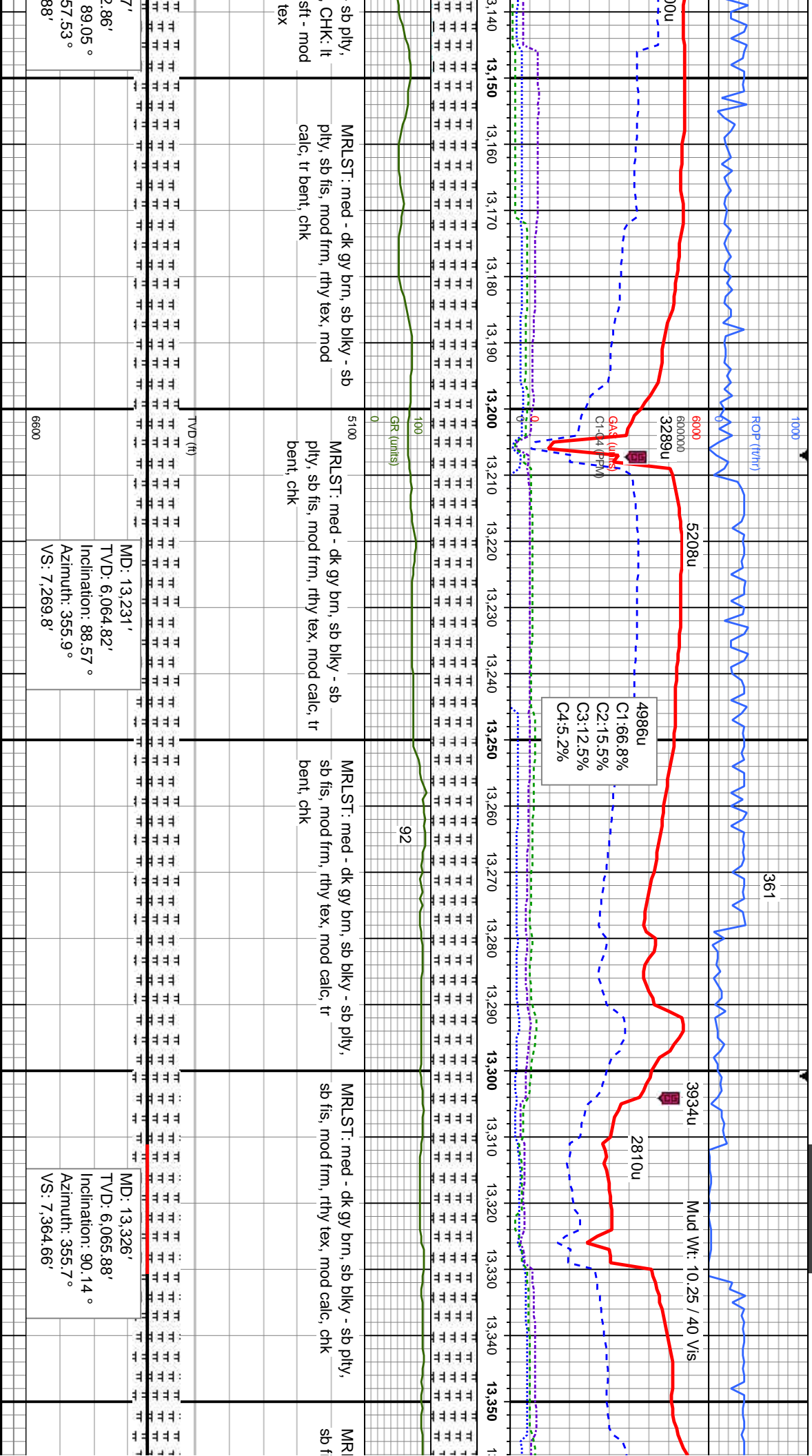
MRLST: med - dk gy brn, sb blkly - sb fis, mod frm, rthy tex, mod calc gy - off wh crm, some mot gy brn, frm, sb plty - sb blkly, sb wxy - rthy

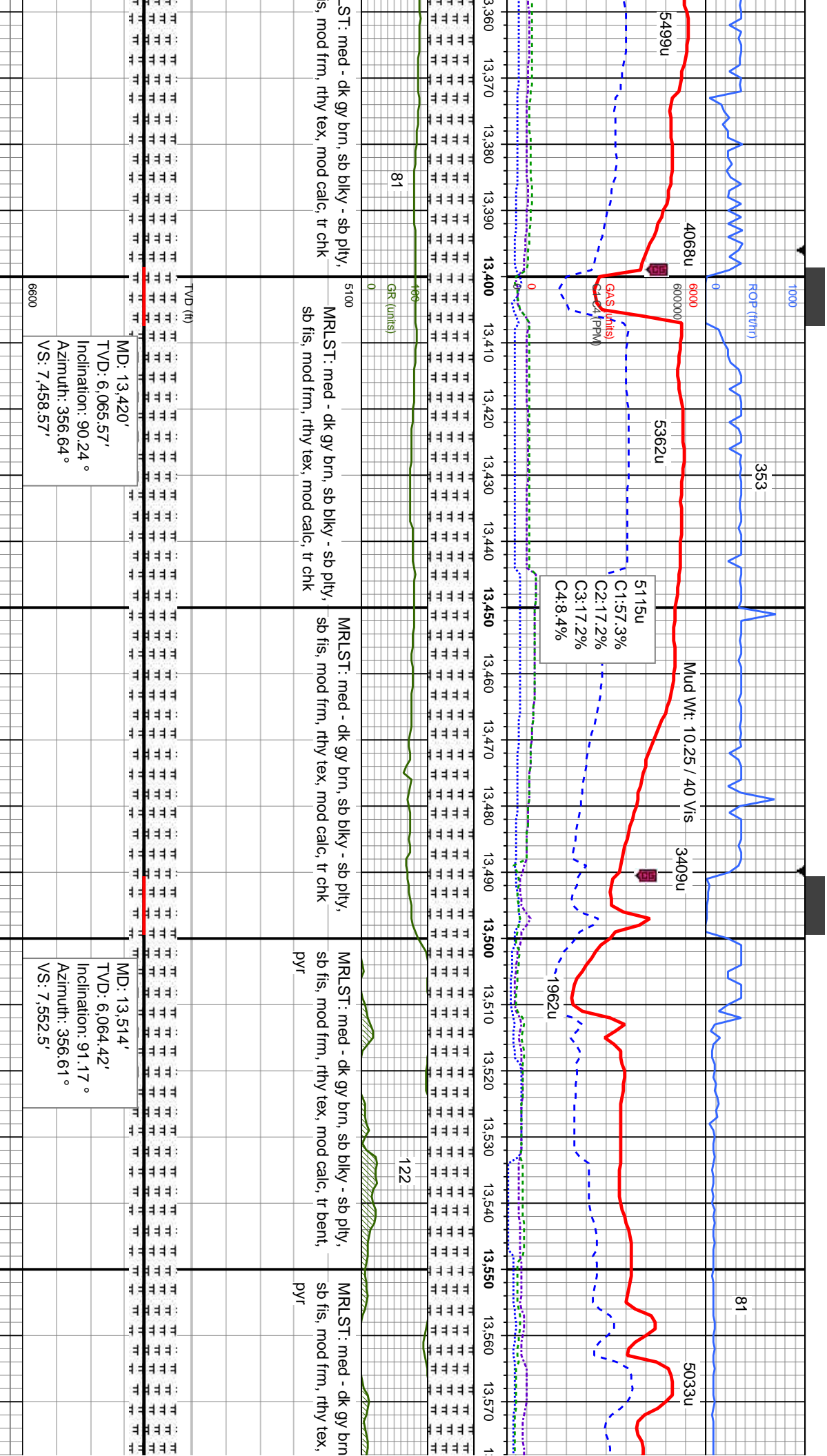
MD: 12,947'
TVD: 6,064.35'
Inclination: 90.94°
Azimuth: 1.29°
VS: 6.985.97'

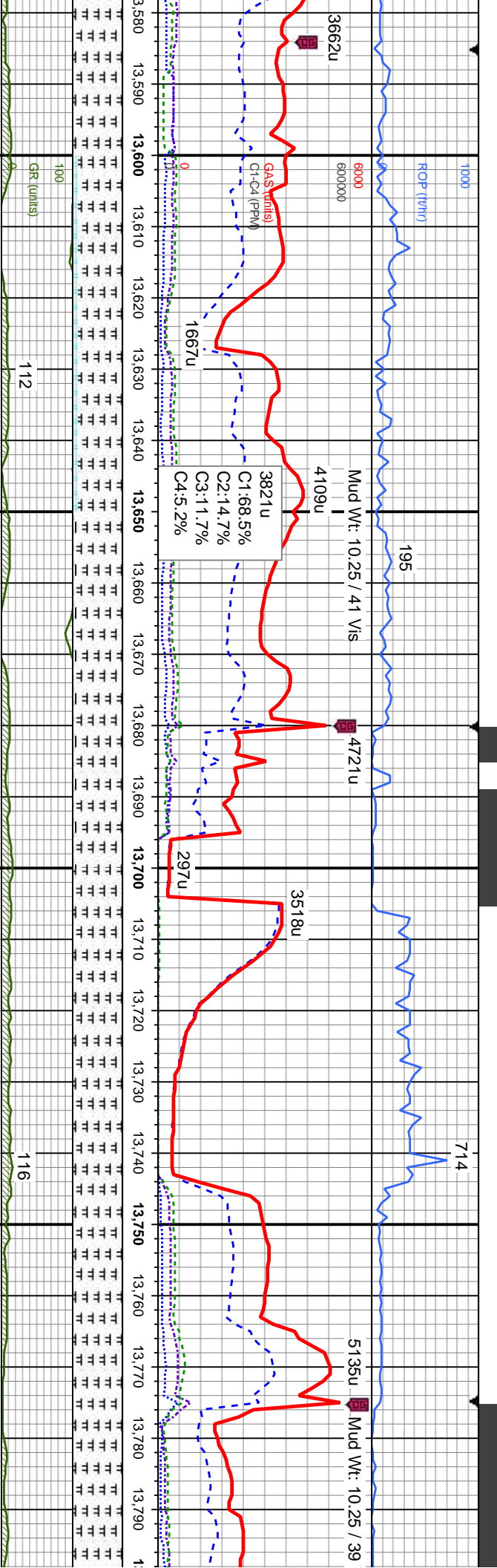
MD: 13,042'
TVD: 6,062.82'
Inclination: 90.9°
Azimuth: 0.33°
VS: 7.080.89'

MD: 13,130'
TVD: 6,062.82'
Inclination: 90.9°
Azimuth: 0.33°
VS: 7.175.00'









51 MRLST: med - dk gy brn, sb blkly - sb plty,
sb fis, mod frm, rthy tex, mod calc, tr bent,
CHK: lt gy - off wh crm, some mot gy brn,
sft - mod frm, sb blkly - sb wxy -
rthy tex

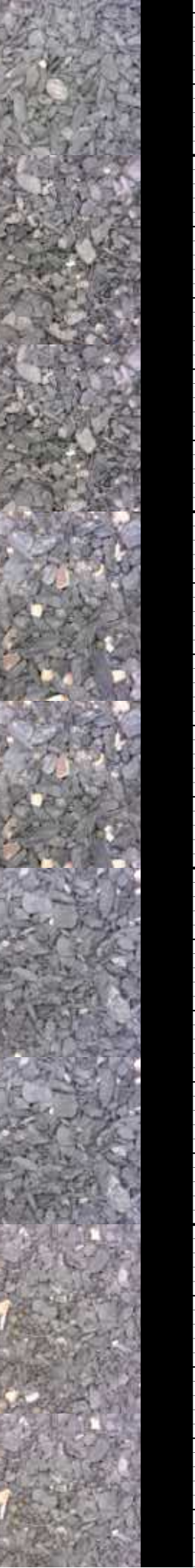
MRLST: med - dk gy brn, sb blkly - sb plty,
sb fis, mod frm, rthy tex, mod calc, tr bent

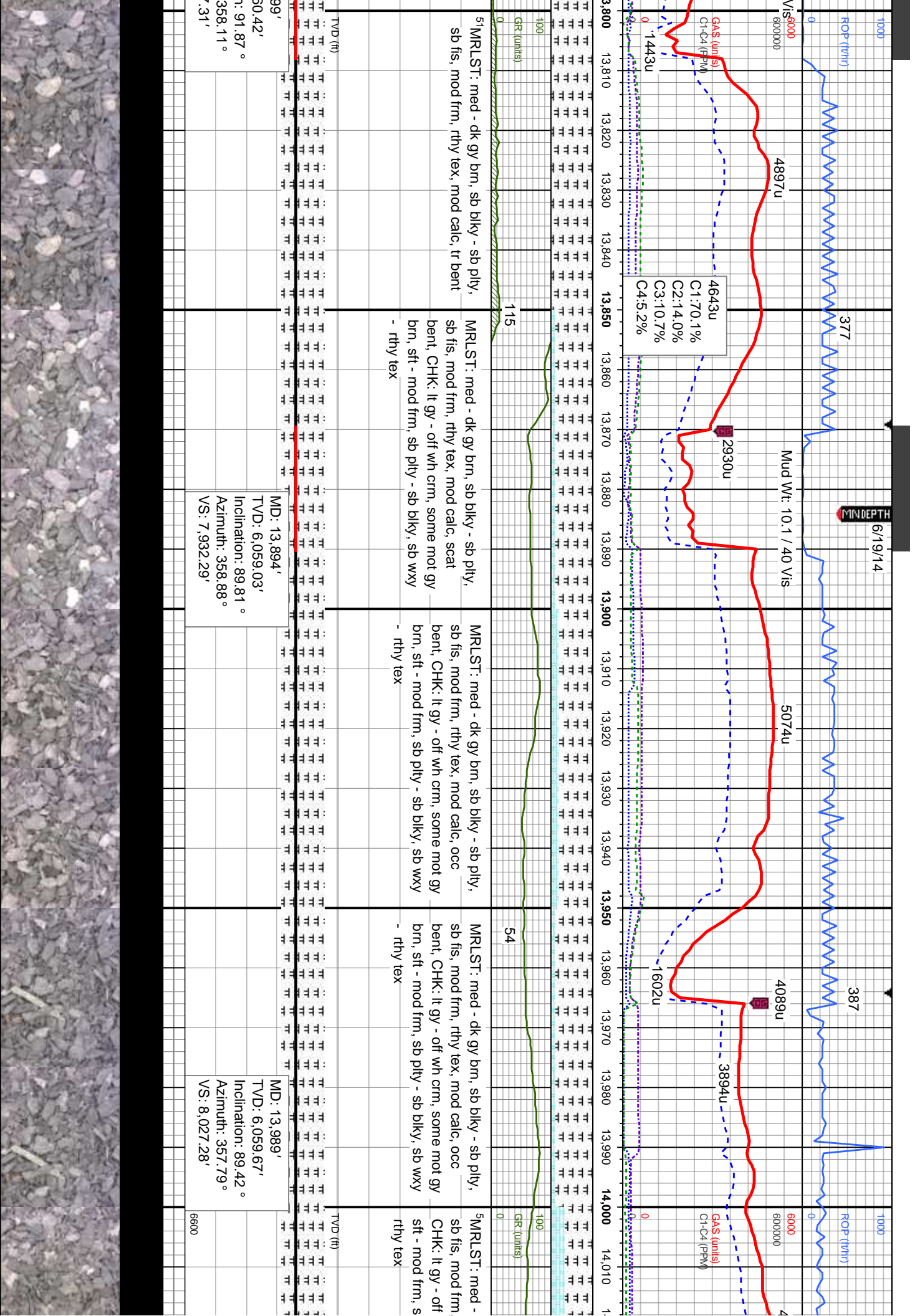
MRLST: med - dk gy brn, sb blkly - sb plty,
sb fis, mod frm, rthy tex, mod calc, tr bent

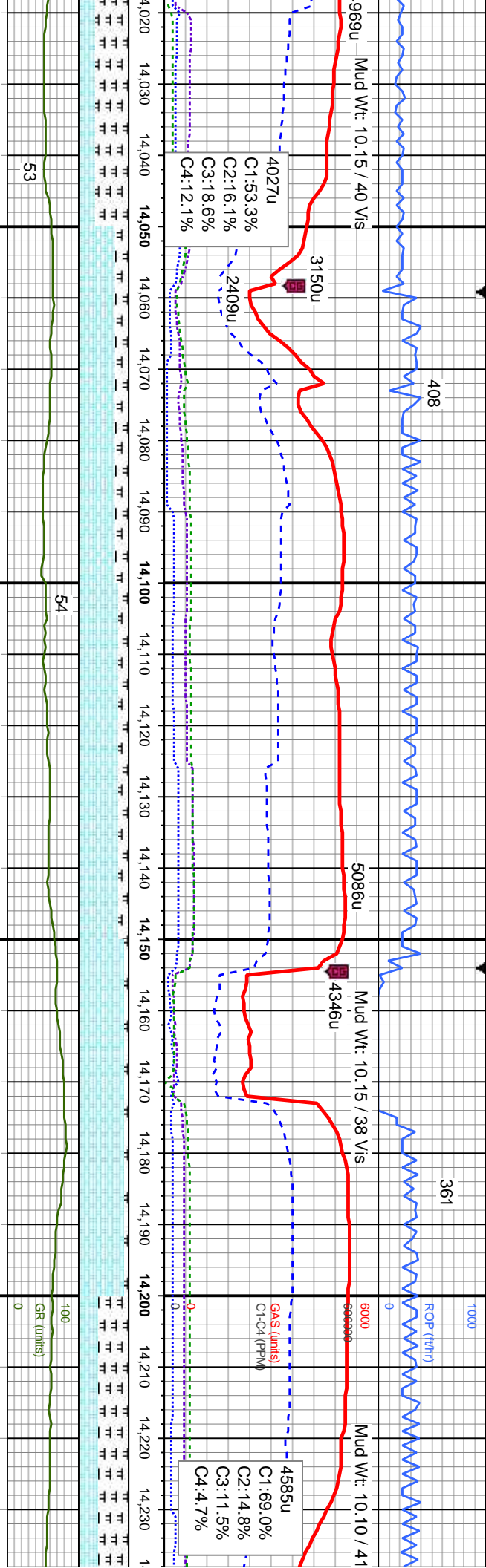
MD: 13,609'
TVD: 6,062.63'
Inclination: 90.99°
Azimuth: 356.61°
VS: 7,647.41'

MD: 13,704'
TVD: 6,061.89'
Inclination: 89.9°
Azimuth: 356.77°
VS: 7,742.35'

MD: 13,7
TVD: 6,0
Inclination:
Azimuth:
VS: 7,83







dk gy brn, sb blkly - sb ply,
rthy tex, mod calc, tr bent,
wh crm, some mot gy brn,
sb ply - sb blkly, sb wxy -

CHK: lt gy - off wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blkly, sb wxy -
rthy tex, MRLST: med - dk gy brn, sb blkly -
sb ply, sb fis, mod frm, rthy tex, mod calc,
tr bent, tr pyr

CHK: lt gy - off wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blkly, sb wxy -
rthy tex, MRLST: med - dk gy brn, sb blkly -
sb ply, sb fis, mod frm, rthy tex, mod calc,
tr bent, tr pyr

CHK: lt gy - off wh crm, some mot gy brn,
sft - mod frm, sb ply - sb blkly, sb wxy -
rthy tex, MRLST: med - dk gy brn, sb blkly -
sb ply, sb fis, mod frm, rthy tex, mod calc

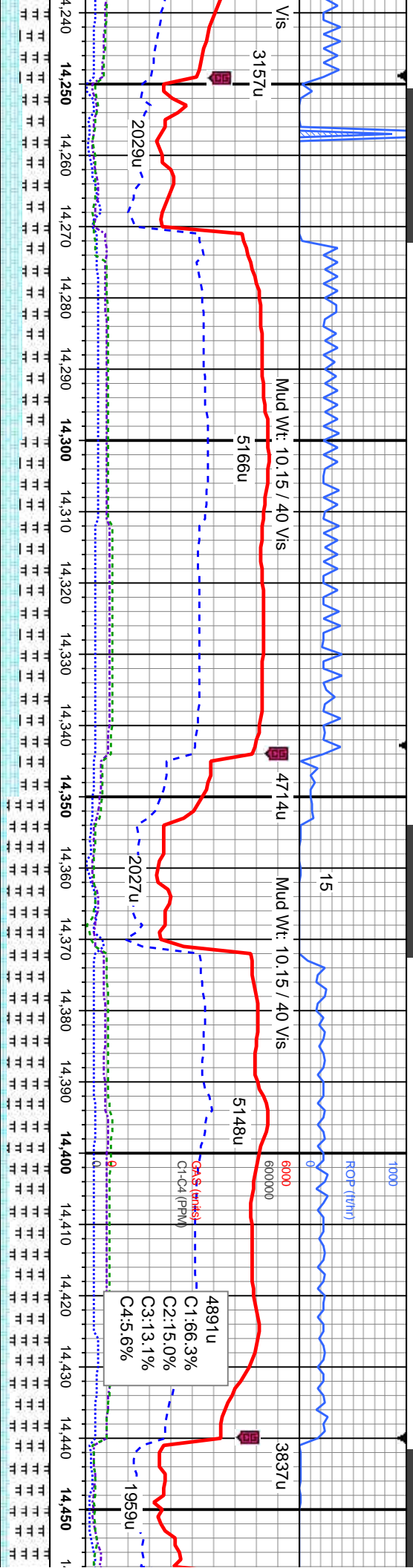
5100
MRLST: med - dk gy brn, sb blkly -
sb fis, mod frm, rthy tex, mod calc,
CHK: lt gy - off wh crm, some mot
sft - mod frm, sb ply - sb blkly, sb v
tex

MD: 14,083'
TVD: 6,059.93'
Inclination: 90.26 °
Azimuth: 357.59 °
VS: 8,121.27'

MD: 14,178'
TVD: 6,060.31'
Inclination: 89.28 °
Azimuth: 358.29 °
VS: 8,216.25'

6600





sb ply, - t bent, gy brn, wxy - rthy	MRSLT: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly, sb wxy - rthy tex	MRSLT: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly, sb wxy - rthy tex	MRSLT: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly, sb wxy - rthy tex	MRSLT: med - dk gy brn, sb blkly - sb ply, sb fis, mod frm, rthy tex, mod calc, tr bent, CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb blkly, sb wxy - rthy tex
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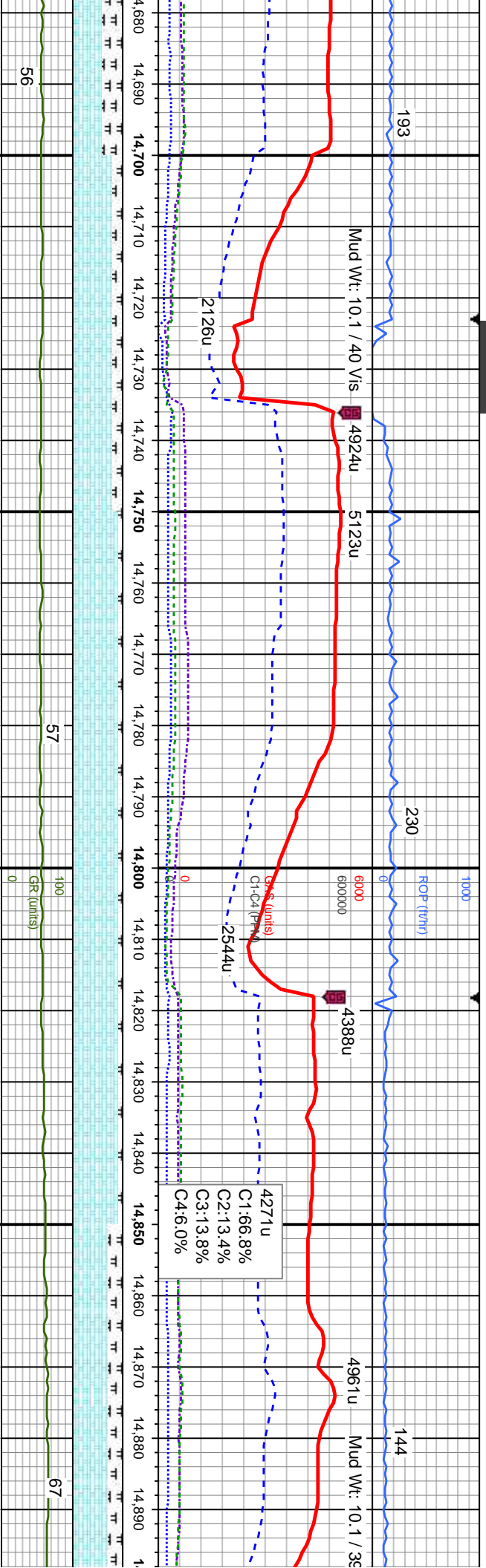
MD: 14,273'
TVD: 6,060.31'
Inclination: 90.72°
Azimuth: 358.29°
VS: 8,311.25'

MD: 14,368'
TVD: 6,058.98'
Inclination: 90.89°
Azimuth: 358.9°
VS: 8,406.24'

6600







Depth (ft)	Log Description
14,680	some mot gy brn, sb blk, sb wxy -
14,690	dk gy brn, sb blk -
14,700	rthy tex, mod calc,
14,710	CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk, sb wxy -
14,720	rthy tex, tr pyr, tr bent, MRLST: med - dk gy brn, sb blk - sb pty, sb fis, mod frm, rthy tex, mod calc
14,730	
14,740	
14,750	CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk, sb wxy -
14,760	rthy tex, tr pyr, tr bent, MRLST: med - dk gy brn, sb blk - sb pty, sb fis, mod frm, rthy tex, mod calc
14,770	
14,780	
14,790	
14,800	5 CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk, sb wxy -
14,810	rthy tex, tr pyr, tr bent, MRLST: med - dk gy brn, sb blk - sb pty, sb fis, mod frm, rthy tex, mod calc
14,820	
14,830	
14,840	
14,850	CHK: It gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk, sb wxy -
14,860	rthy tex, tr pyr, tr bent, MRLST: med - dk gy brn, sb blk - sb pty, sb fis, mod frm, rthy tex, mod calc
14,870	
14,880	
14,890	

MD: 14,747'
TVD: 6,058.06'
Inclination: 89.73 °
Azimuth: 1.01°
VS: 8,785.03'

MD: 14,842'
TVD: 6,057.93'
Inclination: 90.43 °
Azimuth: 0.35°
VS: 8,879.97'



6/20/14
MINDEPTH

1000
ROP (ft/hr)

89

6000
60000:3920u

Mud Wt: 10.2 / 38 Vis

4594u

2524u

GAS (units)
C1-C4 (ft/hr)

1812u

4362u
C1:51.6%
C2:14.6%
C3:18.0%
C4:15.8%

5418u

2448u

14,900 14,910 14,920 14,930 14,940 14,950 14,960 14,970 14,980 14,990 15,000 15,010 15,020 15,030 15,040 15,050 15,060 15,070 15,080 15,090 15,100 15,110

CHK: It gy - off wh crm, some mot gy brn,
sft - mod frm, sb pily - sb blkly, sb wxy -
rthy tex, tr bent, MRLST: med - dk gy brn,
sb blkly - sb pily, sb fis, mod frm, rthy tex,
mod calc

MRLST: med - dk gy brn, sb blkly - sb
pily, sb fis, mod frm, rthy tex, mod calc,
tr bent, CHK: It gy - off wh crm, some
mot gy brn, sft - mod frm, sb pily - sb
blkly, sb wxy - rthy tex

5100
MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr
bent, CHK: It gy - off wh crm, some mot
gy brn, sft - mod frm, sb pily - sb blkly, sb
wxy - rthy tex

MRLST: med - dk gy brn, sb blkly - sb pily,
sb fis, mod frm, rthy tex, mod calc, tr bent,
CHK: It gy - off wh crm, some mot gy brn,
sft - mod frm, sb pily - sb blkly, sb wxy -
rthy tex

MRLST: med -
sb fis, mod frm
CHK: It gy - off
sft - mod frm, s
rthy tex

GR (units)

76

TVD (ft)

MD: 14,937'
TVD: 6,057.53'
Inclination: 90.05°
Azimuth: 1.27°
VS: 8,974.91'

MD: 15,032'
TVD: 6,057'
Inclination: 90.59°
Azimuth: 0.57°
VS: 9,069.84'

ME
TV
Inc
Az
VS



