



Scale: 5" / 100'
Measured Depth Log

Well Name Rico LC29-76-1HNA(HOZ)

Location SEC 29, T9N, R59W

State COLORADO

Country USA

API Number 05-123-38776

Region DJ BASIN

Spud Date 5/9/2014

Surface Coordinates SESW, SEC 29, T9N, R59W
40.71492 -104.00408

County WELD

Rig Number H&P 326

Field WILDCAT

Drilling Completed 5/18/2014

Ground Elevation 4878'

Logged Interval 5366' To 11506'

Formation NIOBRARA, A MARL

Type of Drilling Fluid LSND

K.B. Elevation 4908'

Total Depth 11506'

Company Noble Energy Inc

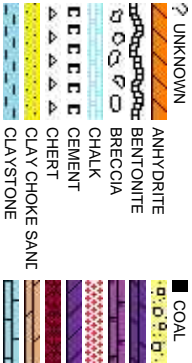
Address 1625 Broadway Suite
Denver, CO 80202

Name EVAN HOWELL

Company NOBLE ENERGY INC

Address 1625 Broadway Suite
Denver, CO 80202

Columbine Logging



Operator

Operator
e 2200

Geologist

Geologist
e 2200

Other

Other
Mike Kerschen
Matt Hopkins

Rock Types

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

Accessories

	GASTROPOD		ARGILLITE GRAIN		HEAVY MINERAL		ANHYDRITE STRINGER
	INOCERAMUS		B BENTONITE		K KAOLIN		BENTONITE STRINGER
	ALGAE		O OOLITE		BITUMENOUS SUBSTANCE		MARLSTONE
	AMPHIPORA		O OSTRACOD		BRECCIA FRAGMENTS		MICACEOUS
	BELEMNITE		P PELECYPOD		C CALCAREOUS		MINERAL CRYSTALS
	BIOCLASTIC		P PELLET		C CARBONACEOUS FLAKES		NODULES
	BRACHIOPOD		P PISOLITE		C CHTL		PHOSPHATE PELLETS
	BRYOZOA		P PLANT REMAINS		C COAL - THIN BEDS		P PYRITE
	CEPHALOPOD		P PLANT SPORES		D DOLOMITIC		SALT CAST
	CORAL		S SCAPHOPOD		F FELDSPAR		S SANDY
	CRINOID		S STROMATOPOROID		F FERRUGINOUS PELLETT		S SILTY
	ECHINOID				F FERRUGINOUS		TUFACEOUS
	FISH				A ANHYDRITIC		
	FORAMINIFERA		A ANHYDRITIC		G GLAUCONITE		
	F FOSSIL		A ARGILLACEOUS		G GYPSIFEROUS		STRINGER

Other Symbols

	P PINPOINT		DST INTERVAL		E EARTHY
	V VUGGY		FAULT		FX FINELYXLN
	D DEAD		FORMATION TOP		DS DRILL STEM TEST
	E EVEN		GAS SHOW		MN DEPTH
	Q QUESTIONABLE		OIL SHOW		L LITHOGRAPHIC
	S SPOTTED STAINING		C CONNECTION (UP)		MX MICROXLN
			C CONNECTION (DOWN)		M MUDSTONE
			MN DEPTH (DOWN)		A ANGULAR
			NORMAL FAULT		R ROUNDED
			OVERTURNED STRATA		S SUBANG
			REVERSE FAULT		S SUBRND
			CASING		
			SIDEWALL CORE (LEFT)		
			SIDEWALL CORE (RIGHT)		
			SLIDE		
			SURVEY		
					C CRYPTOXLN
					P POOR
					W WELL
					M MODERATE
					W WACKESTONE

Slide/Rotate

ROP

ROF

ROP (t/min)
ROF (t/min)

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

1 COLUMBINE LOGGING INC.
1 RIGGED UP ON 05/09/2014
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0684

Began curve at 01:30 hrs on 5/12/2014

Depth Labels

% Lith

GAMMA

GR

200
GR (units)

0

200
GR (units)

0

68

50' Sample Intervals

SLTY SH: lt - med gy, dk gy, mod frm -
frm, sb blkly - sb plty, arg cnt, rthy - slty
tex

Well Bore
TVD

TVD (ft)

MD: 5,423'
TVD: 5,394.38'
Inclination: 4.7°
Azimuth: 329.5°
VS: -94.64'

SLTY SH: lt - med gy, dk gy, mod frm -
frm, sb blkly - sb plty, arg cnt, rthy - slty
tex

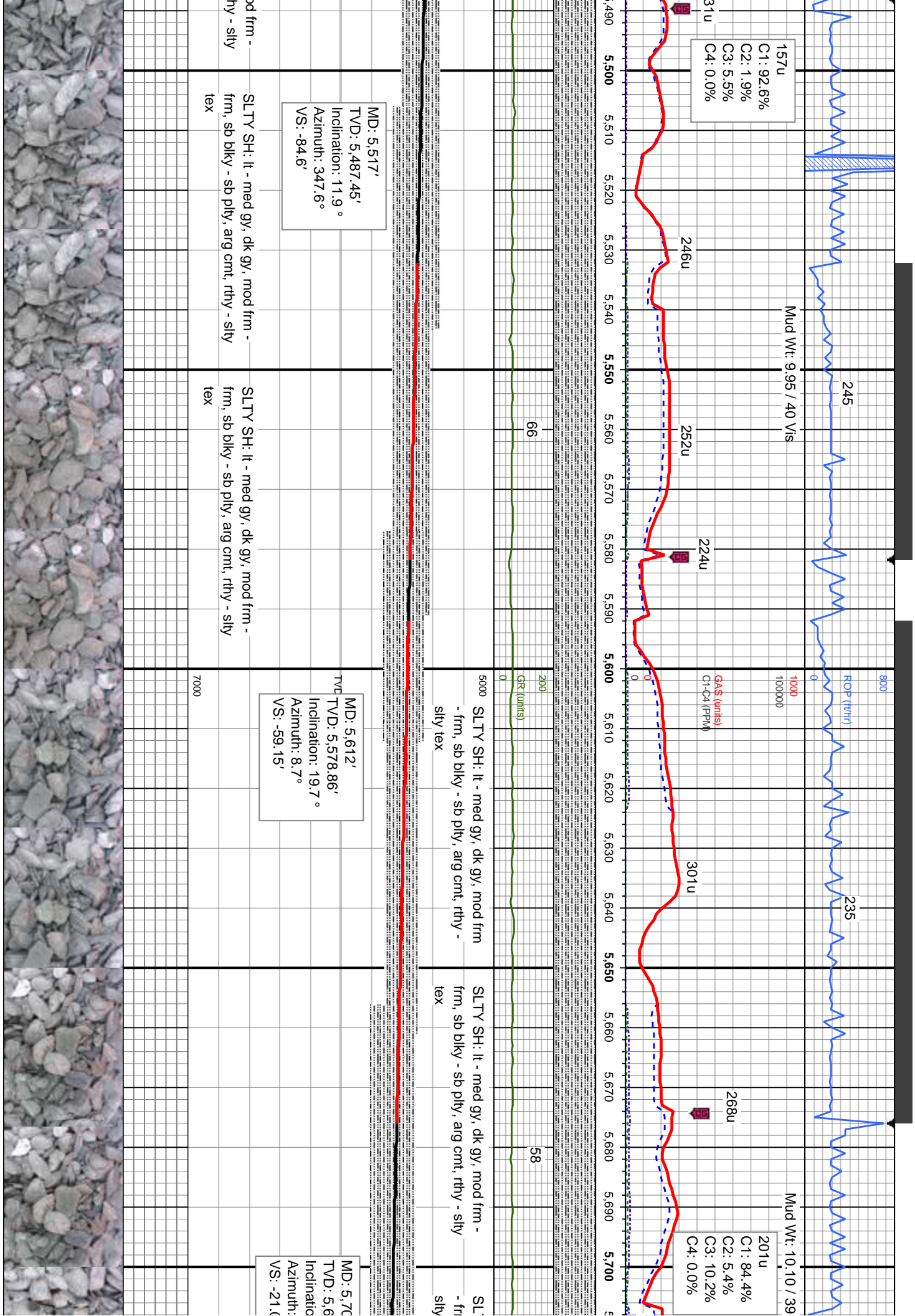
SLTY SH: lt - med gy, dk gy, mod frm -
frm, sb blkly - sb plty, arg cnt, rthy - slty
tex

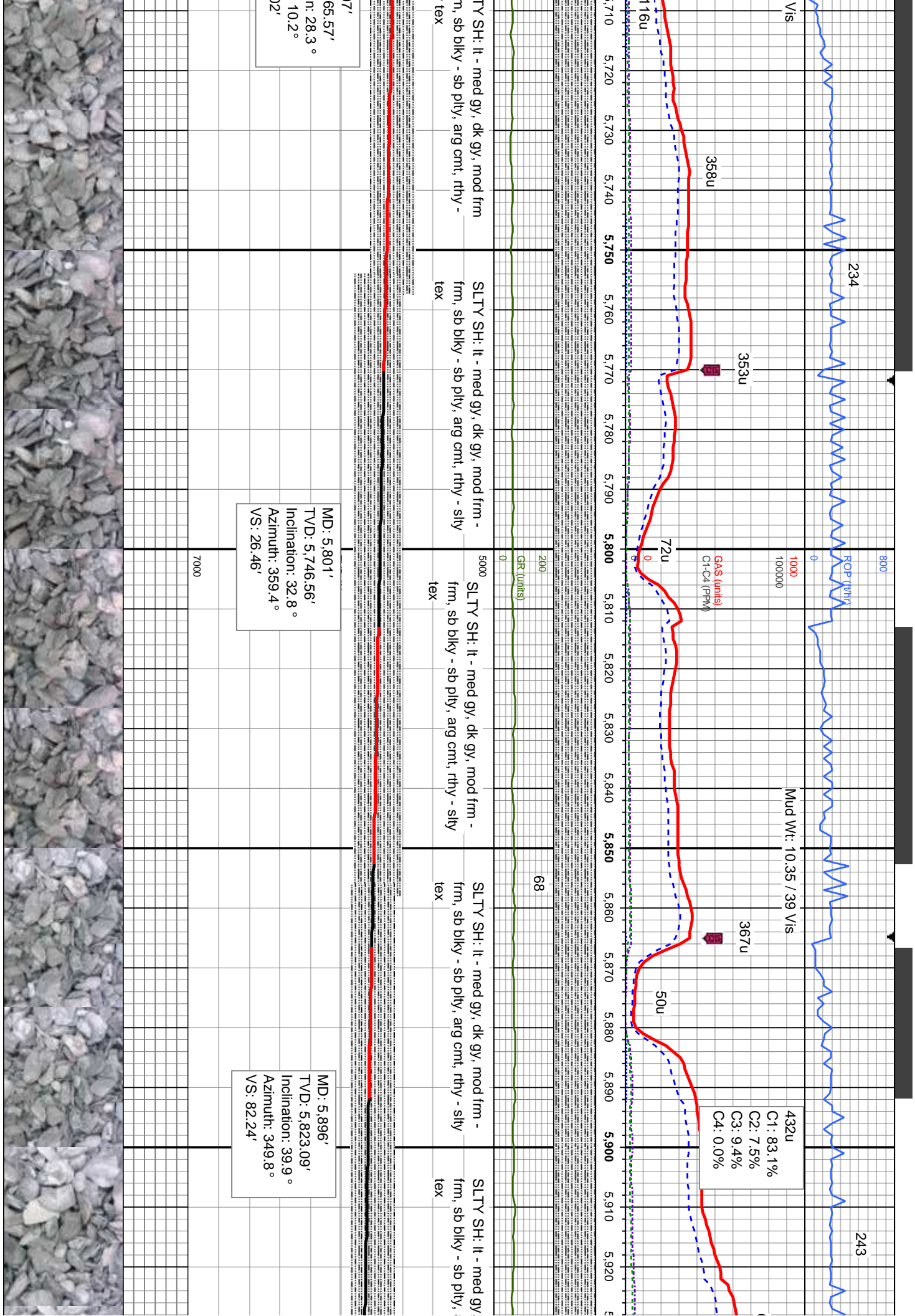
Oil Show

Oil Show

Images







65.57'
n: 28.3°
10.2°
22'

MD: 5,801'
TVD: 5,746.56'
Inclination: 32.8°
Azimuth: 359.4°
VS: 26.46'

MD: 5,896'
TVD: 5,823.09'
Inclination: 39.9°
Azimuth: 349.8°
VS: 82.24'

358u

353u

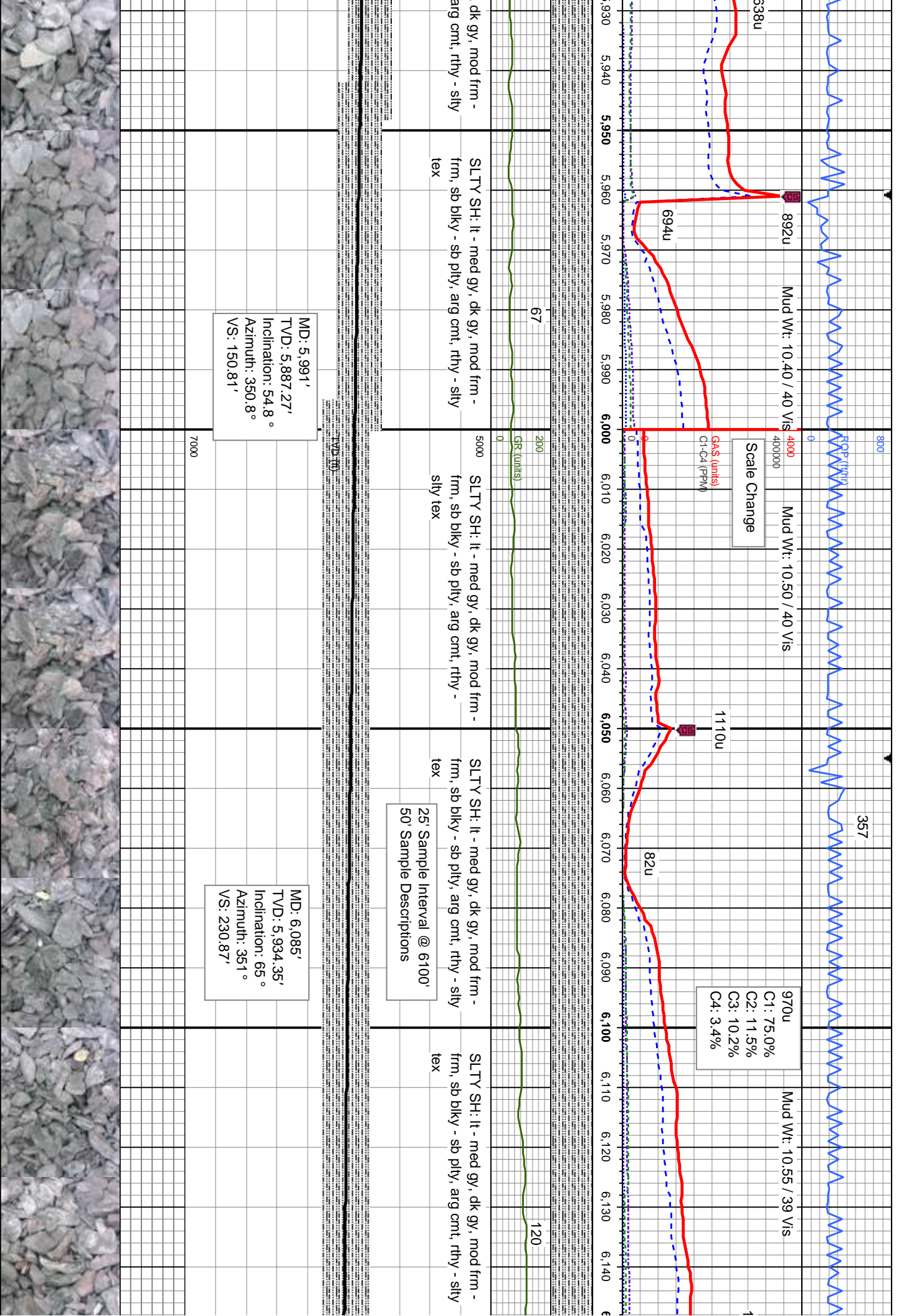
72u

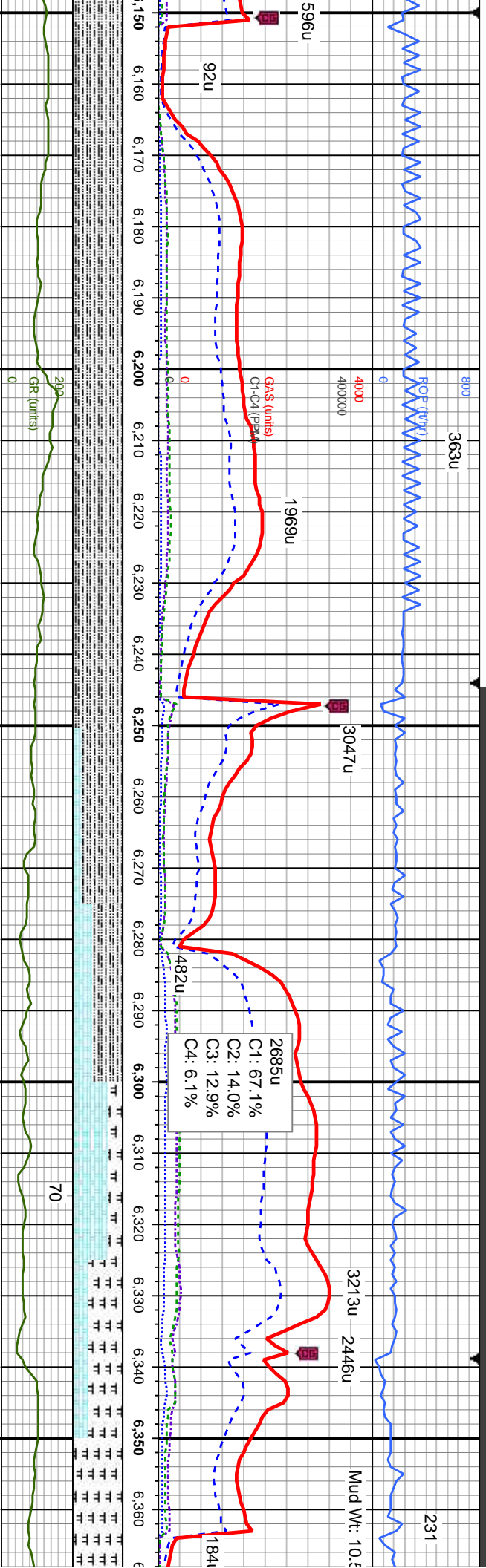
367u

50u

432u
C1: 83.1%
C2: 7.5%
C3: 9.4%
C4: 0.0%

Mud Wt: 10.35 / 39 Vis





SLTY SH: lt - med gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, rthy - slty tex, sl calc, abnt bent

Sharon Spr.
5977' MD, 5970' TVD

5000 SLTY SH: lt - med gy, dk gy, mod frm - frm, sb blkly - sb ply, arg cnt, rthy - slty tex, sl calc, abnt bent

Nio Top
6226' MD 5994' TVD

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

A Chalk
6265' MD 6011' TVD

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

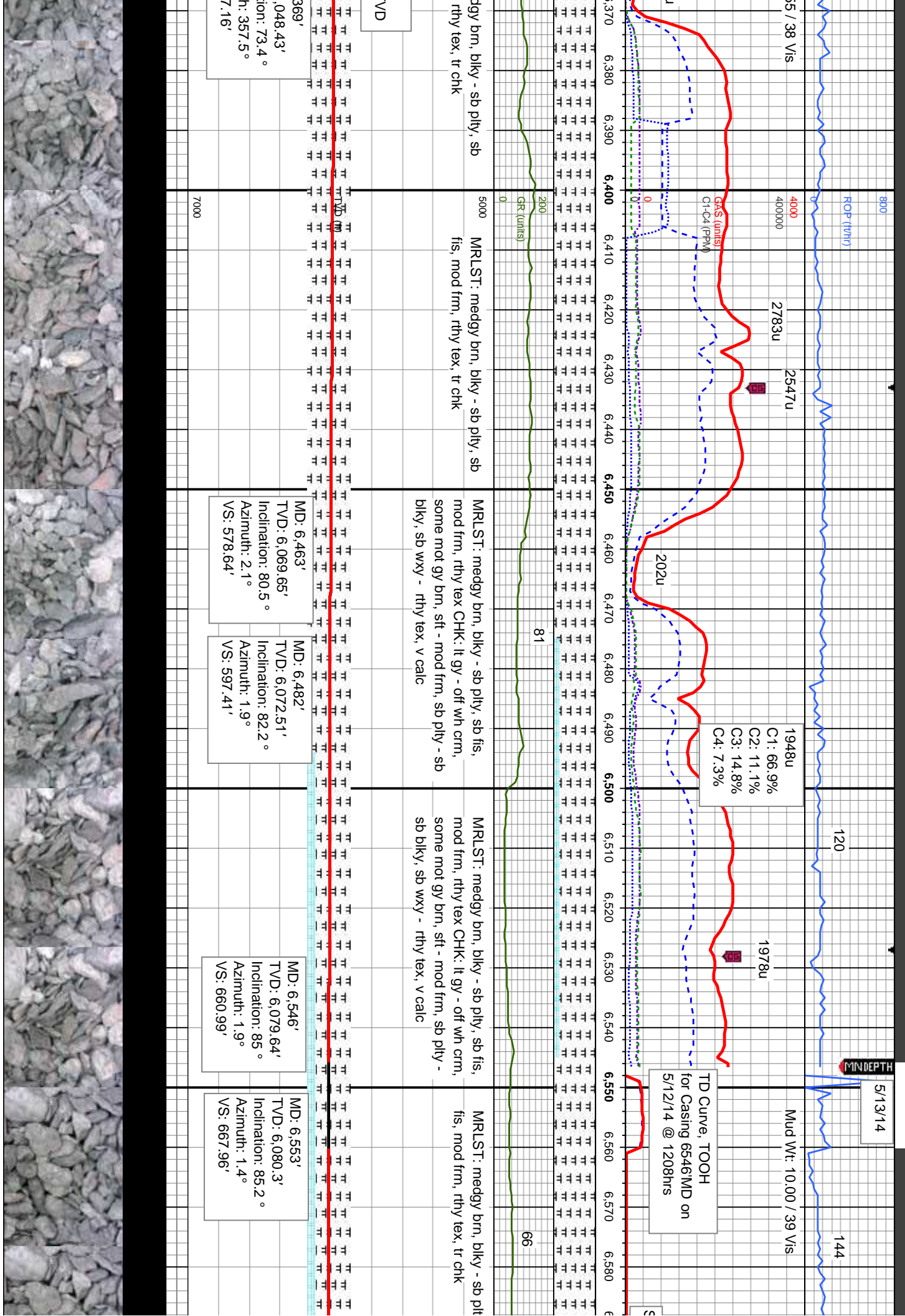
MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex

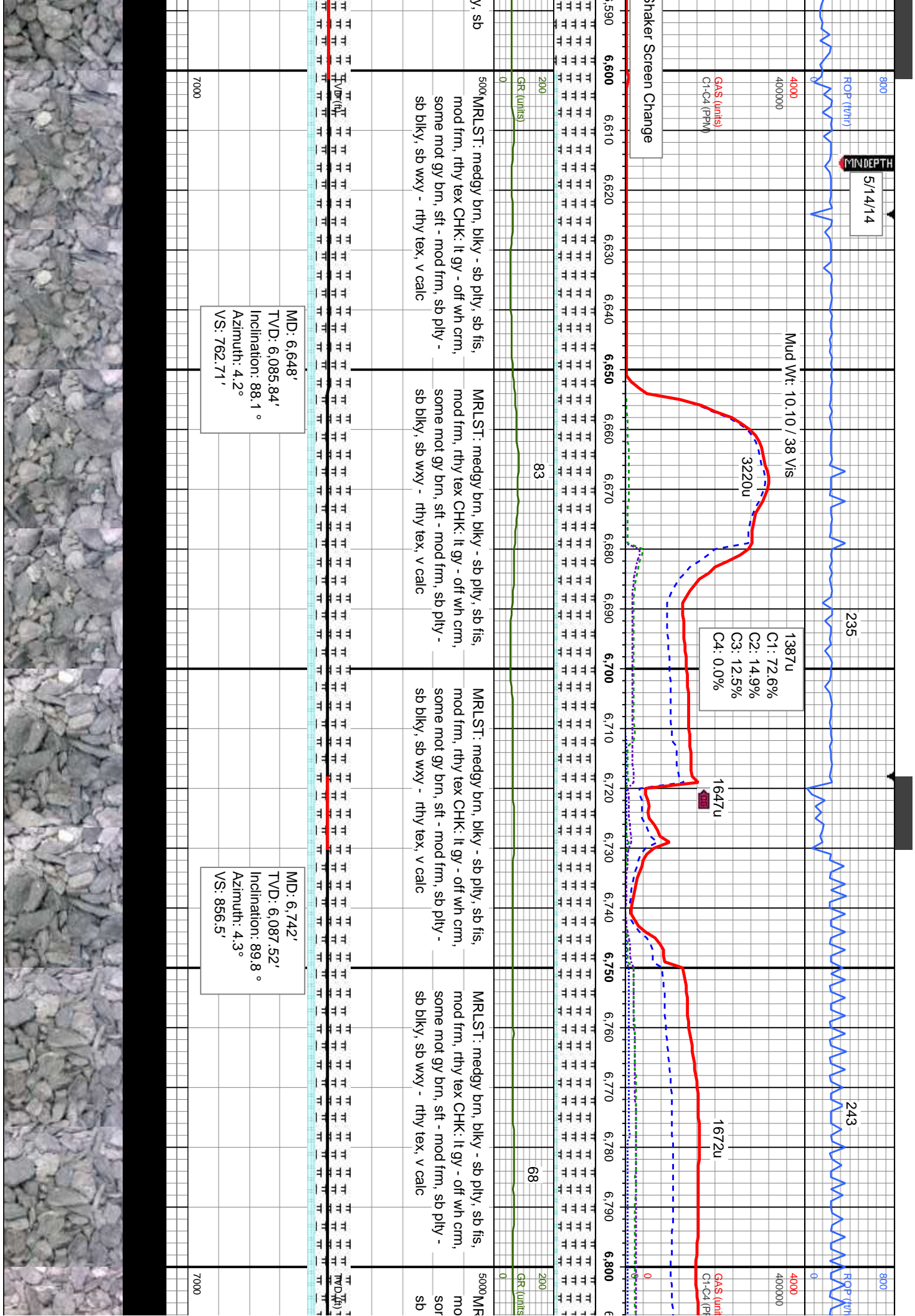
A Marl
6360' MD 6045' TVD

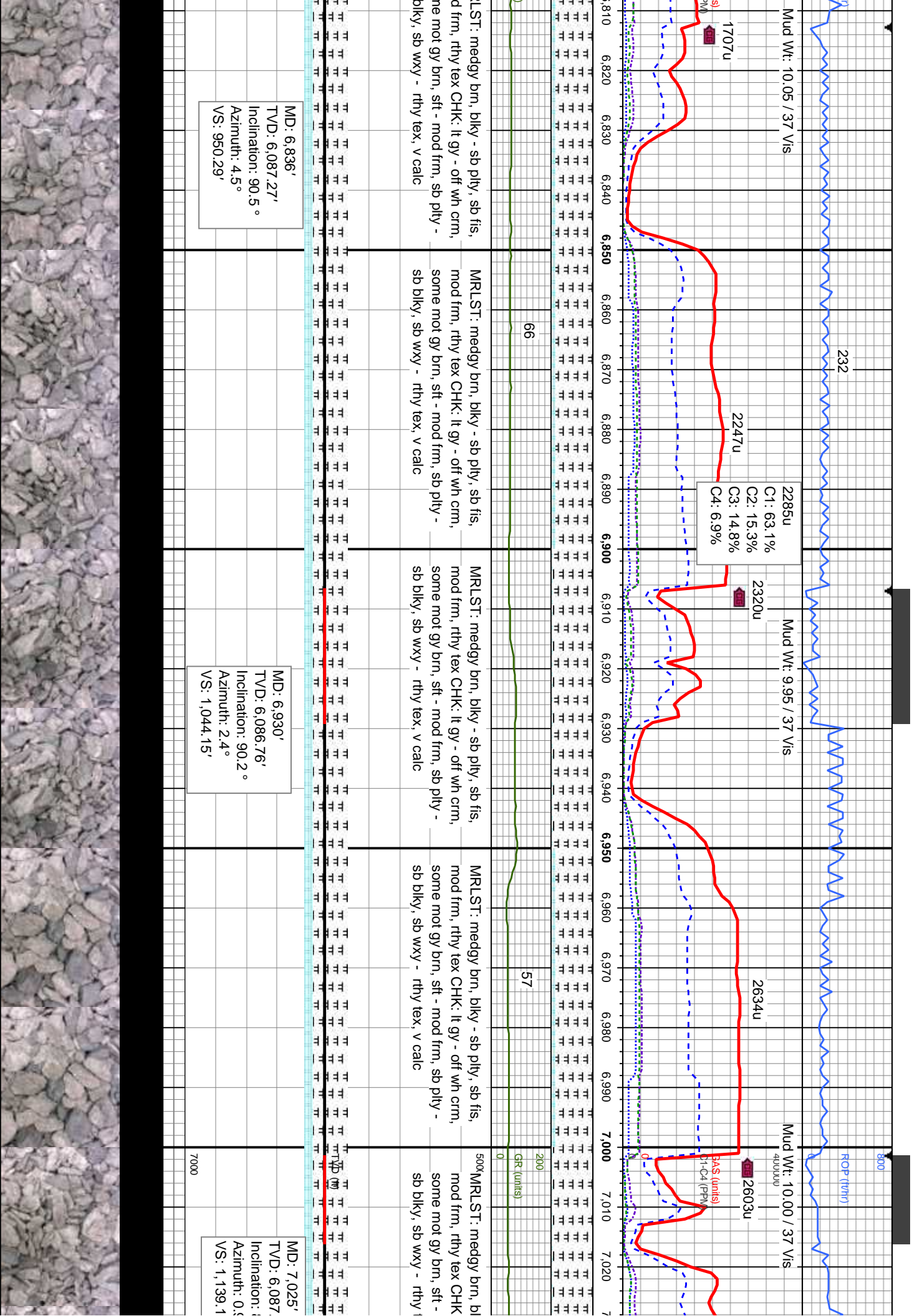
MD: 6,180'
TVD: 5,974.65'
Inclination: 64.8°
Azimuth: 350.1°
VS: 315.59'

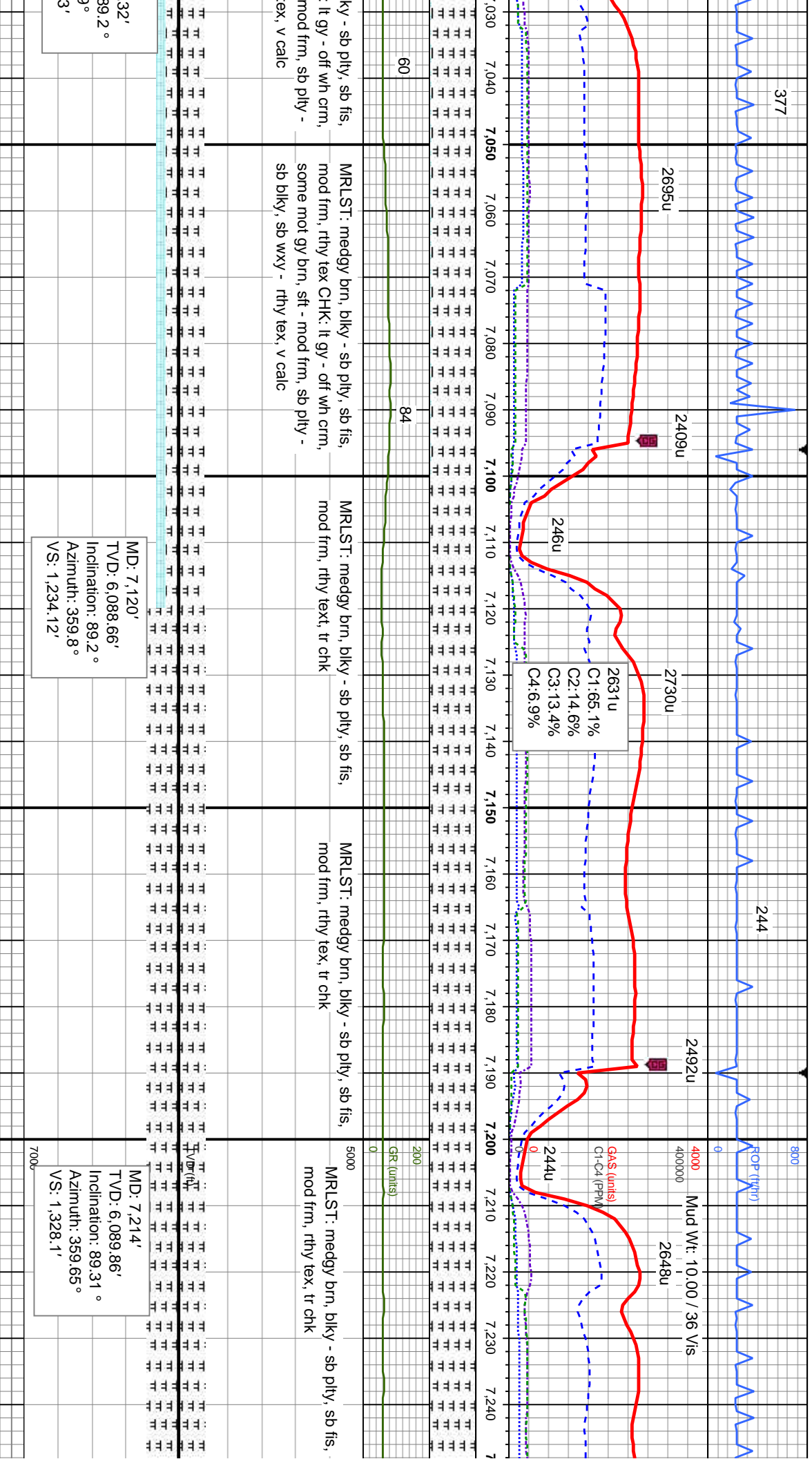
MD: 6,274'
TVD: 6,014.6'
Inclination: 64.9°
Azimuth: 349.6°
VS: 399.19'

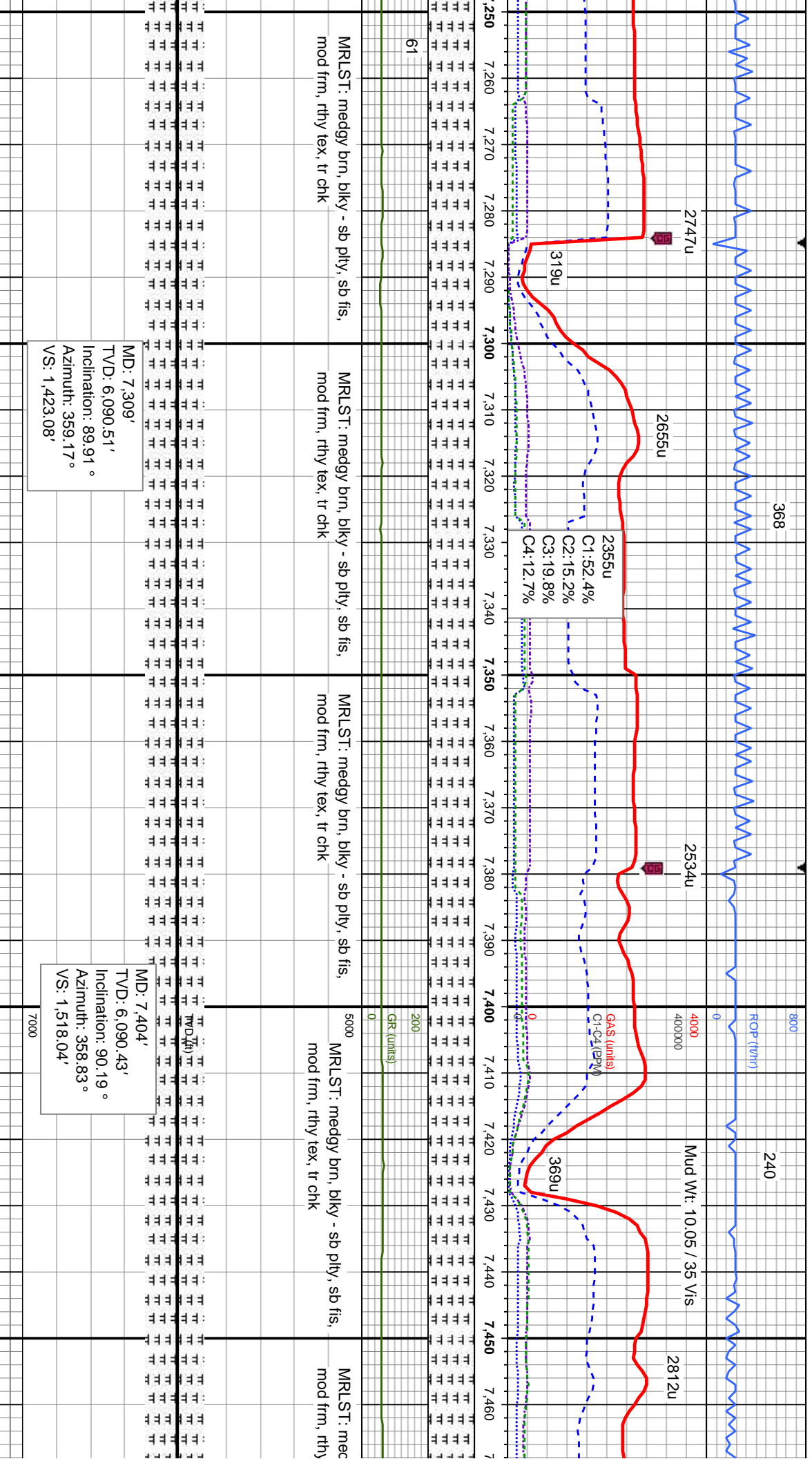
MD: 6,360'
TVD: 6,104.6'
Inclination: 64.9°
Azimuth: 349.6°
VS: 399.19'

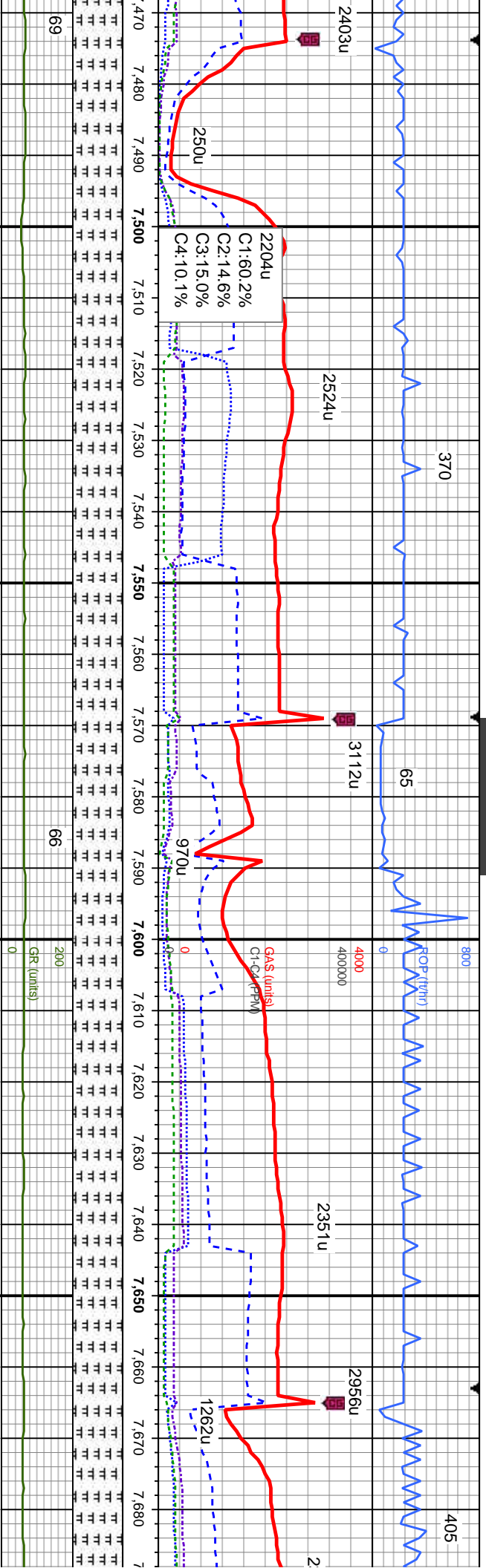












gy brn, blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

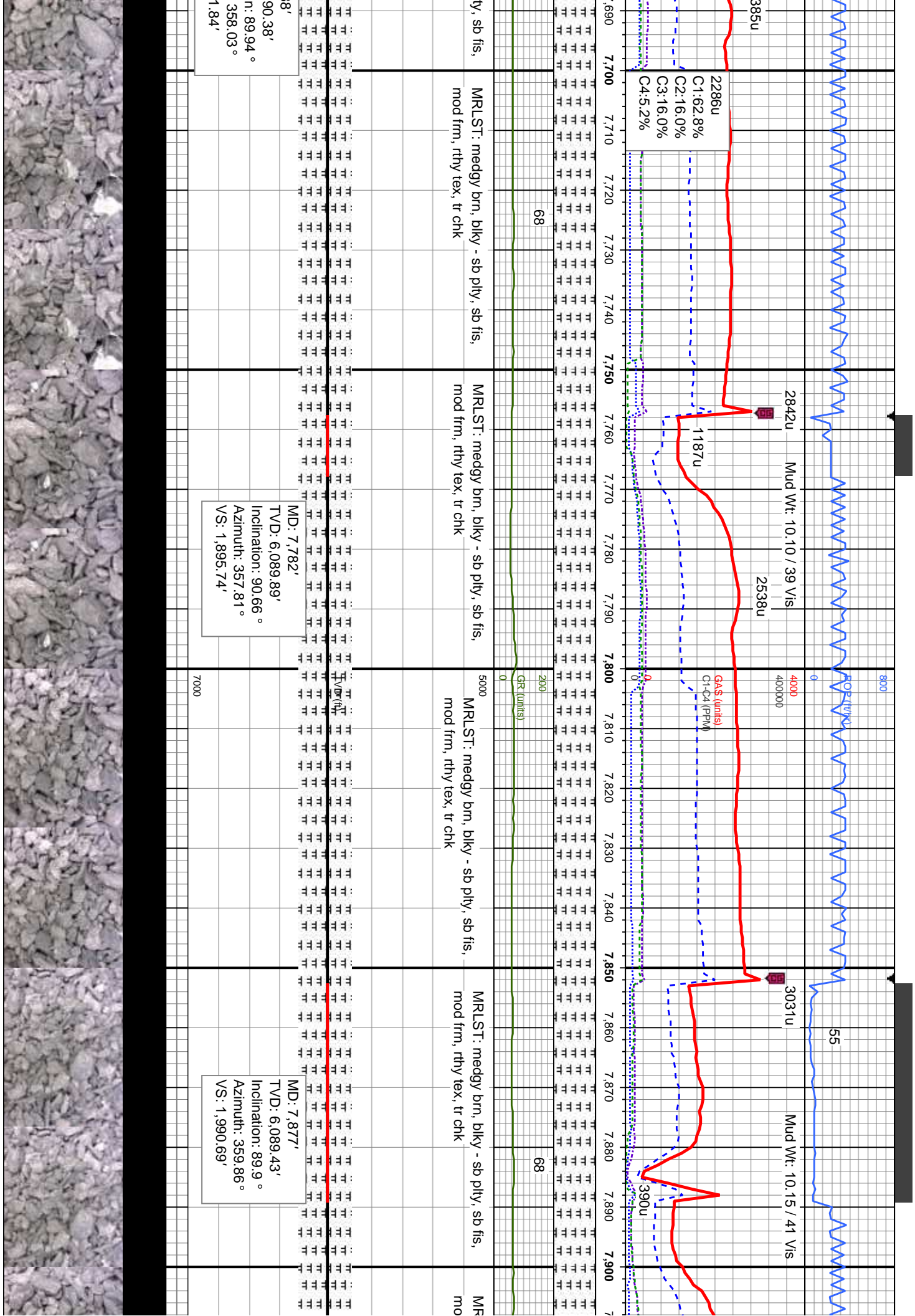
MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex, tr chk

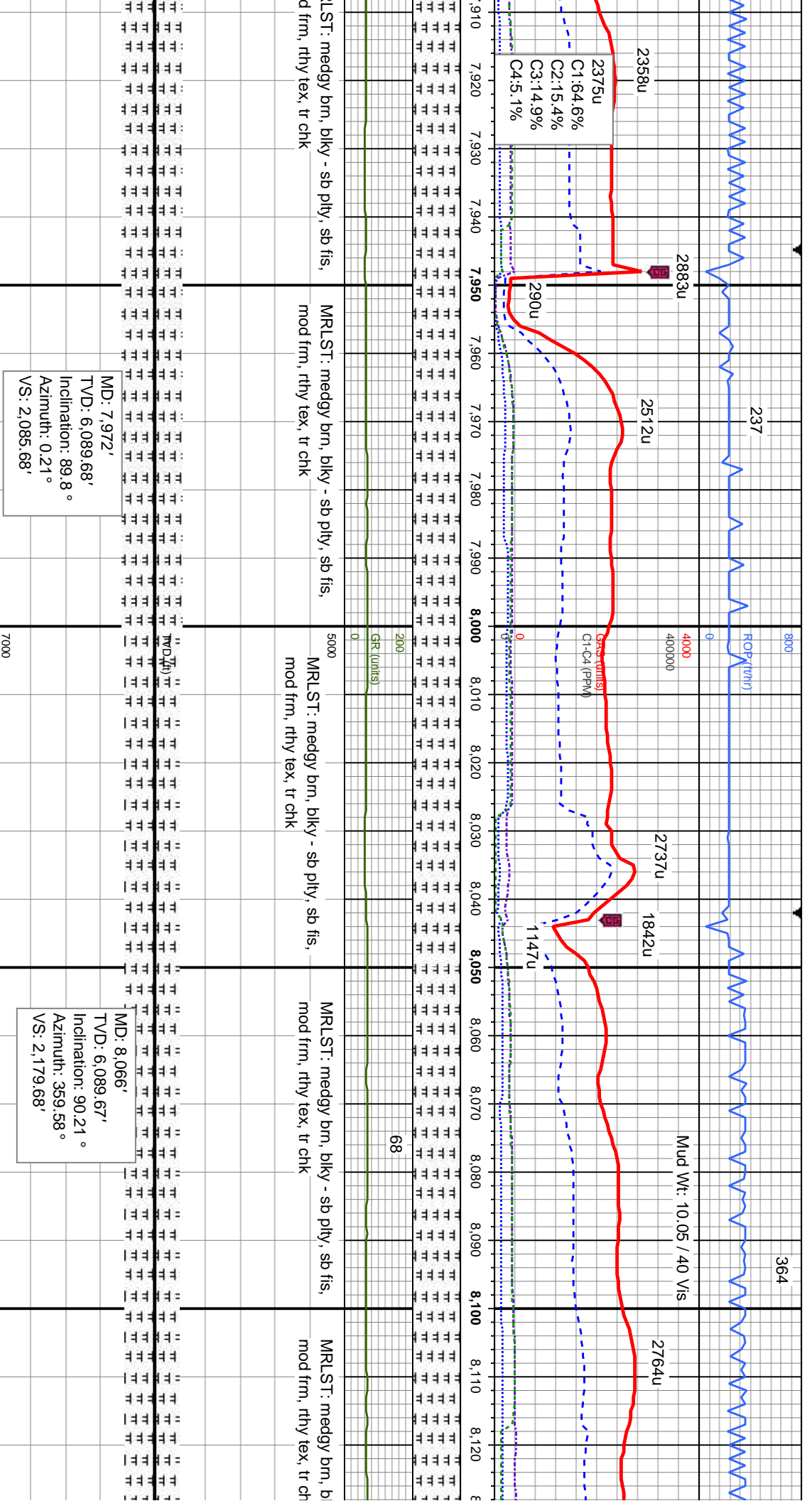
MD: 7,499'
TVD: 6,089.93'
Inclination: 90.41°
Azimuth: 357.92°
VS: 1,612.97'

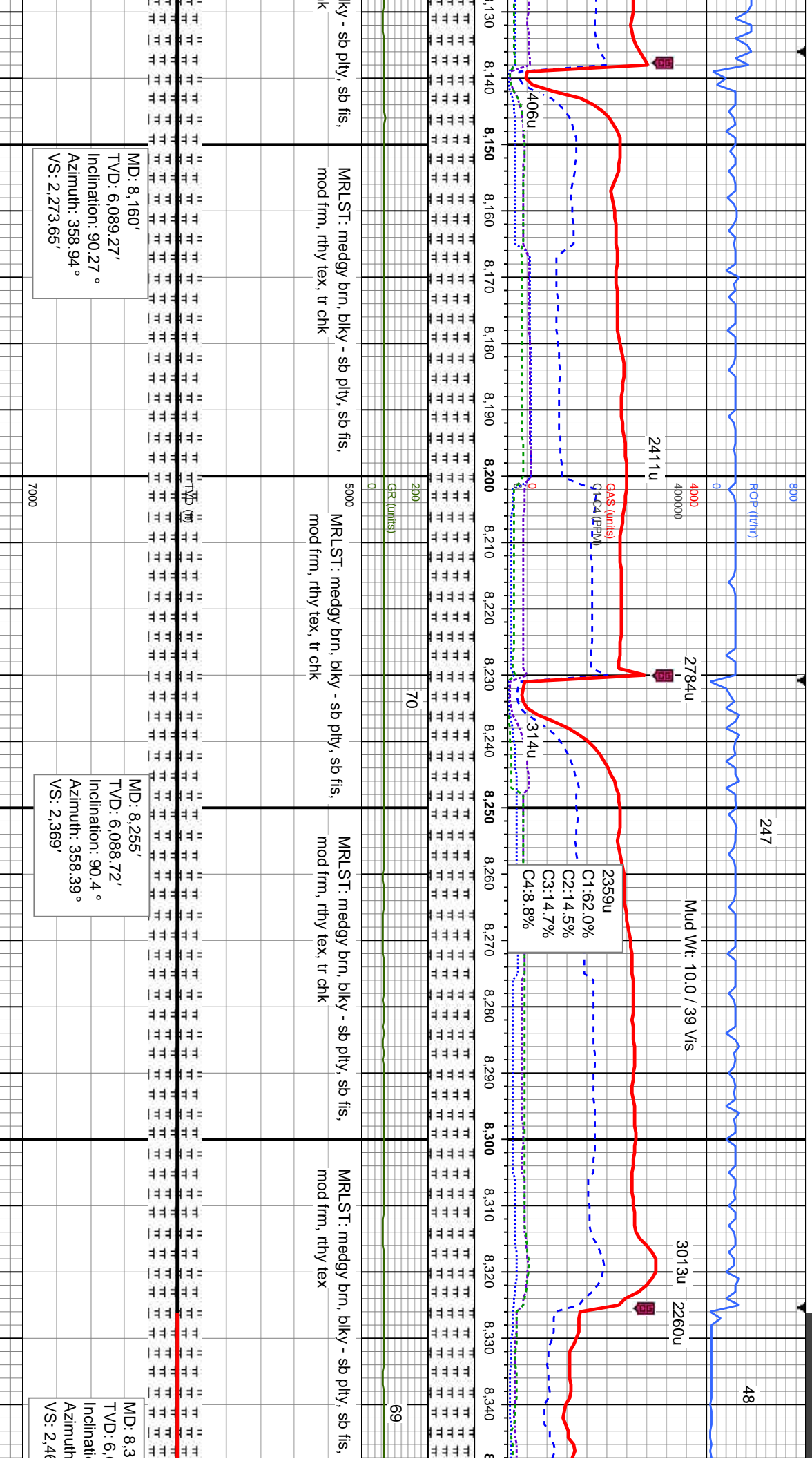
MD: 7,593'
TVD: 6,089.96'
Inclination: 89.55°
Azimuth: 358.98°
VS: 1,706.91'

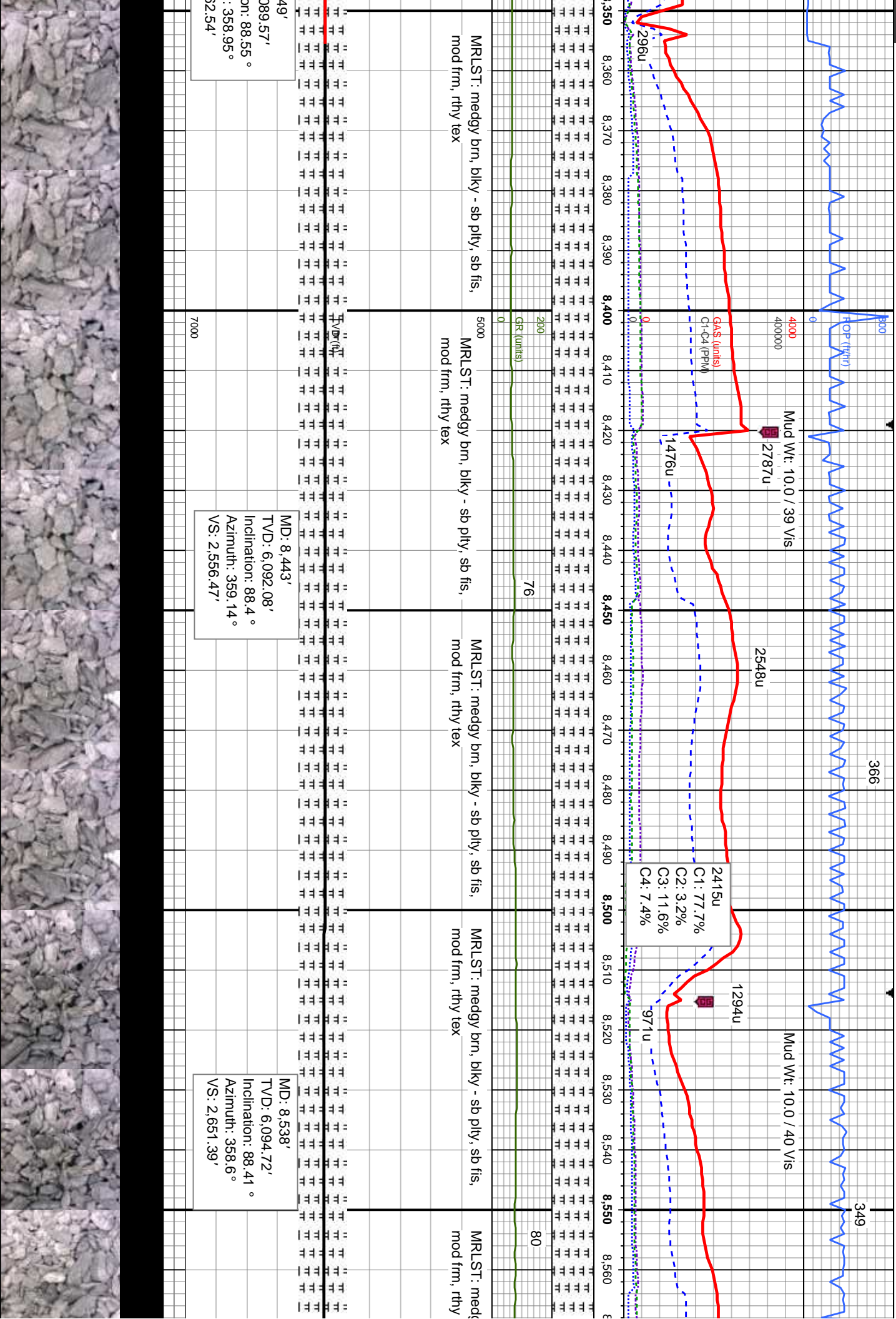
MD: 7,686'
TVD: 6,089.96'
Inclination: 89.55°
Azimuth: 358.98°
VS: 1,706.91'

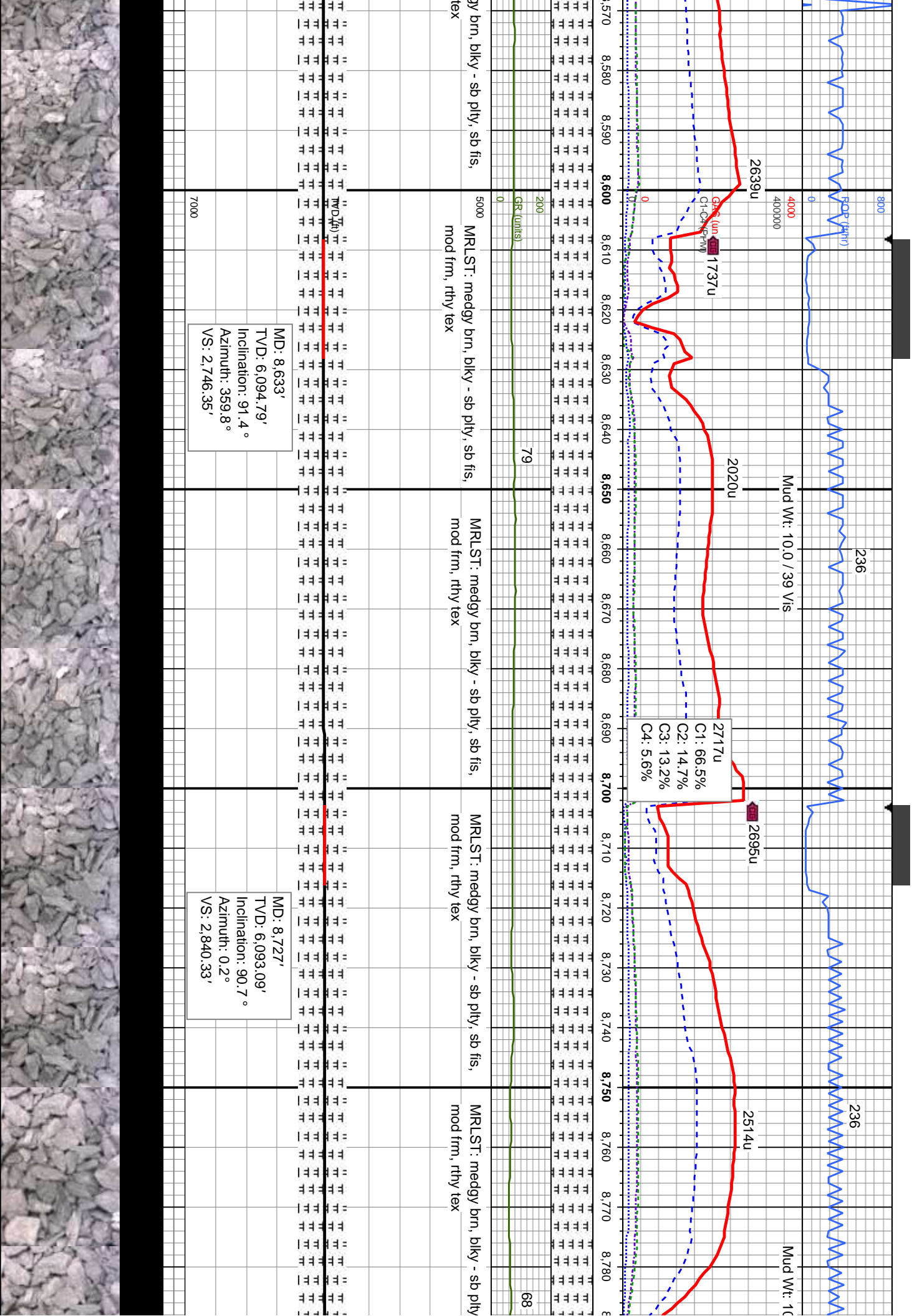


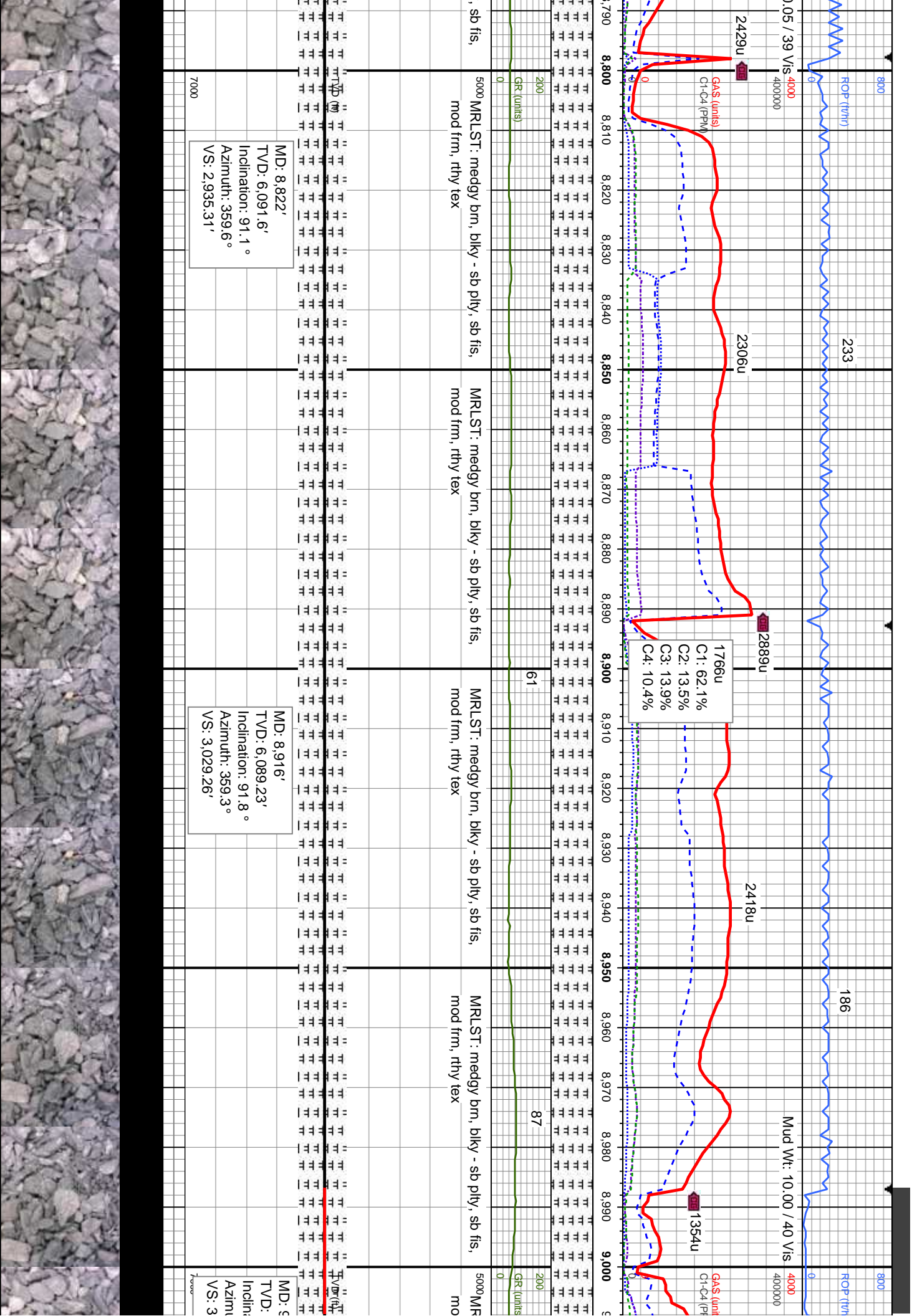


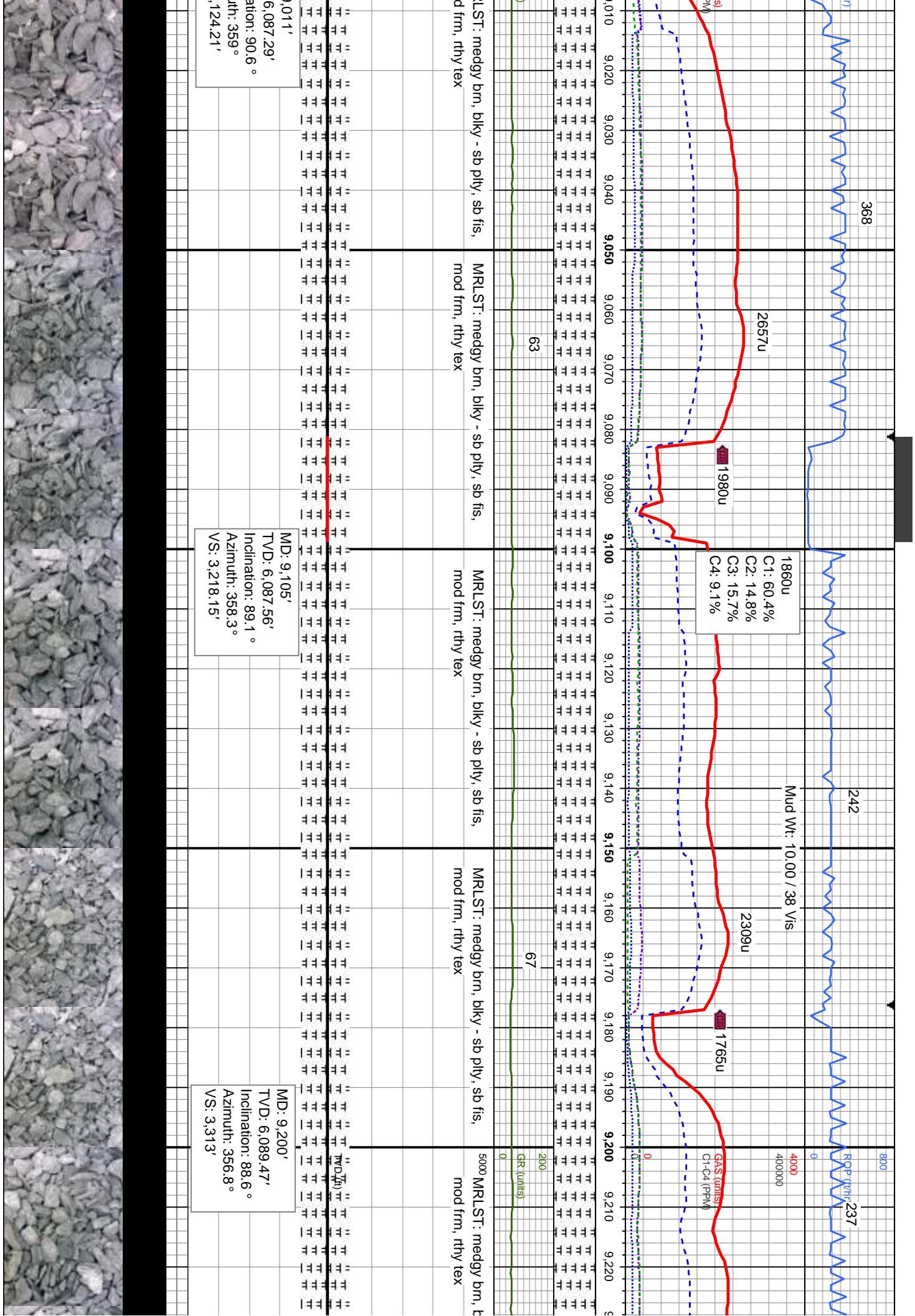


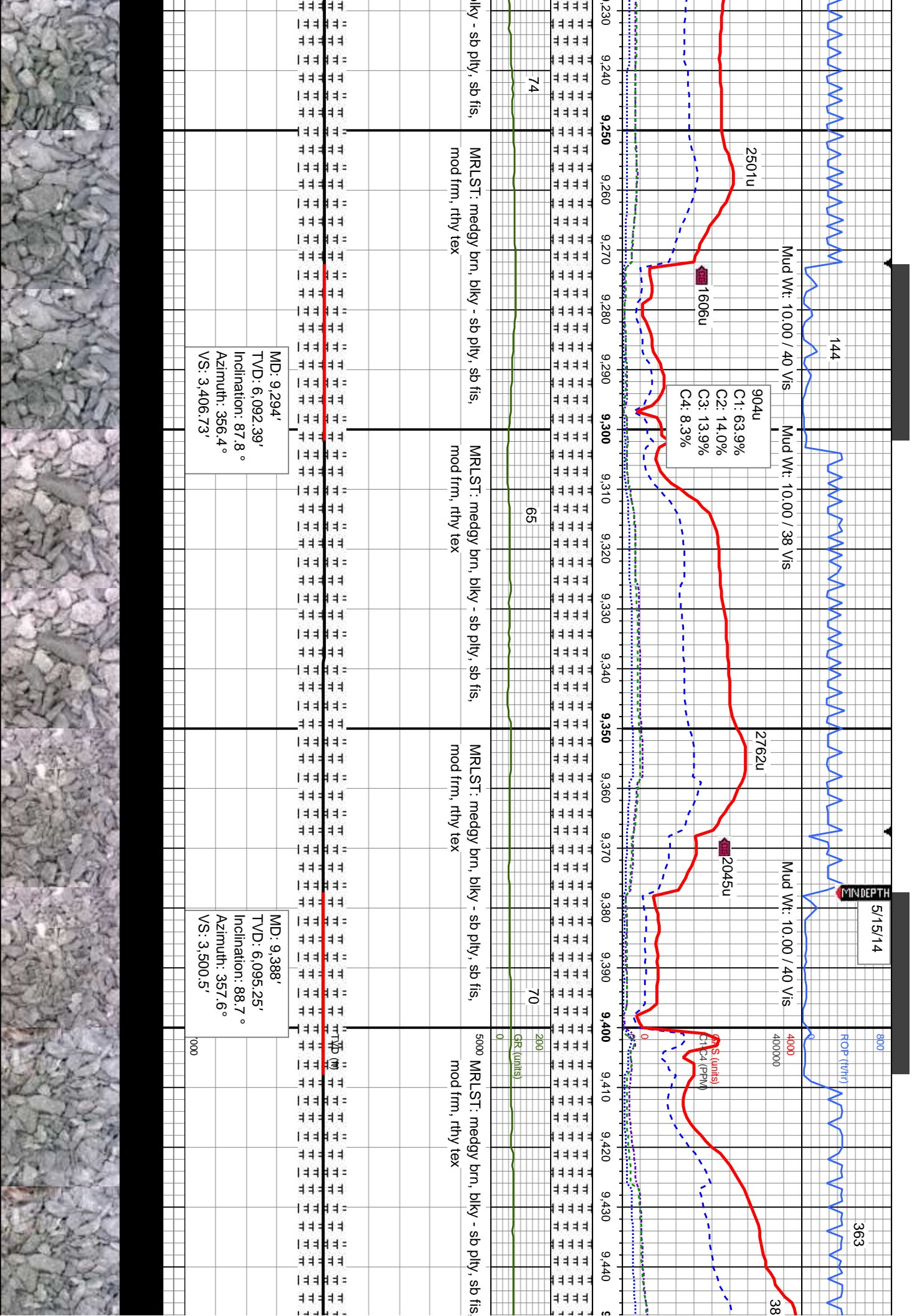


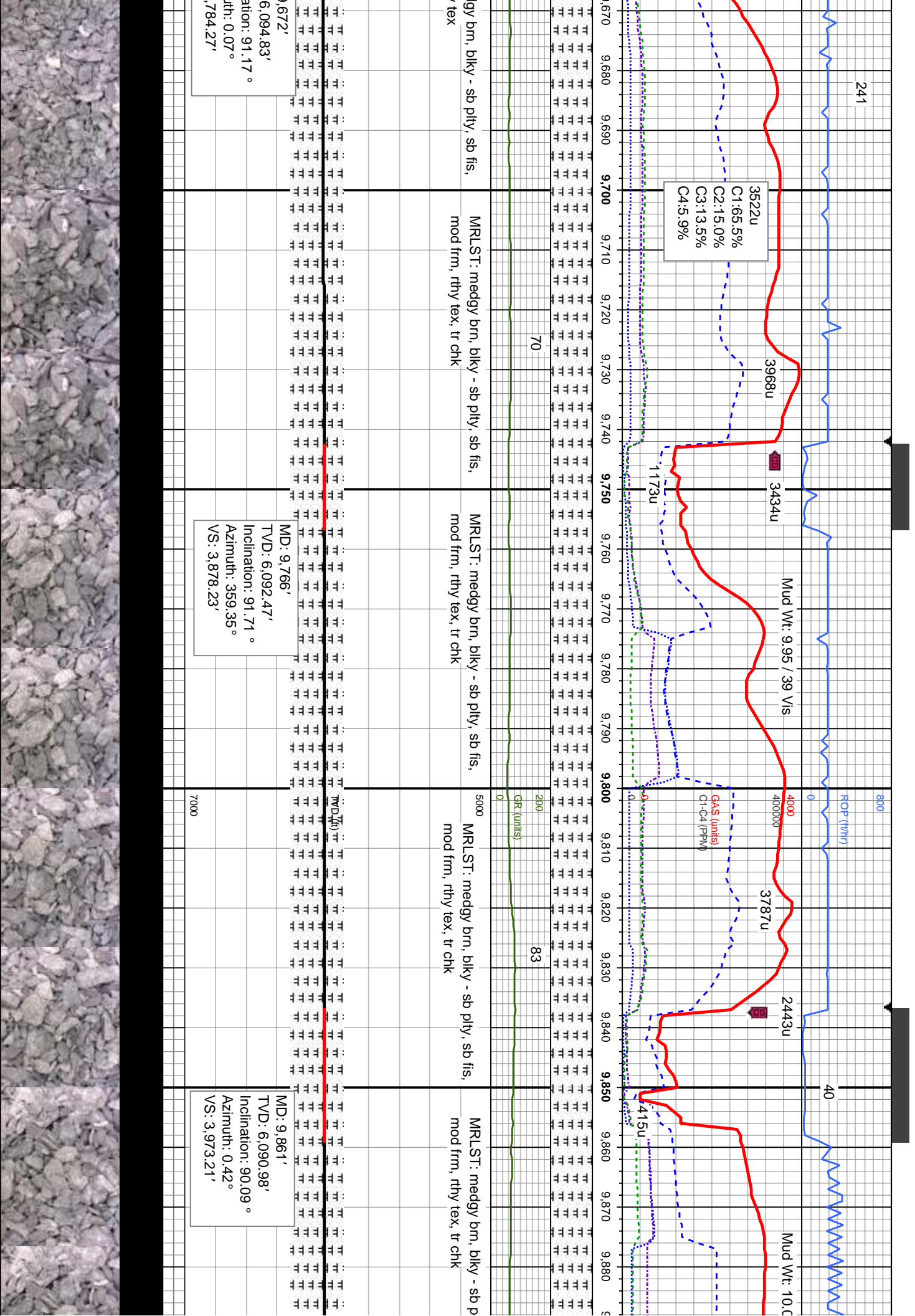


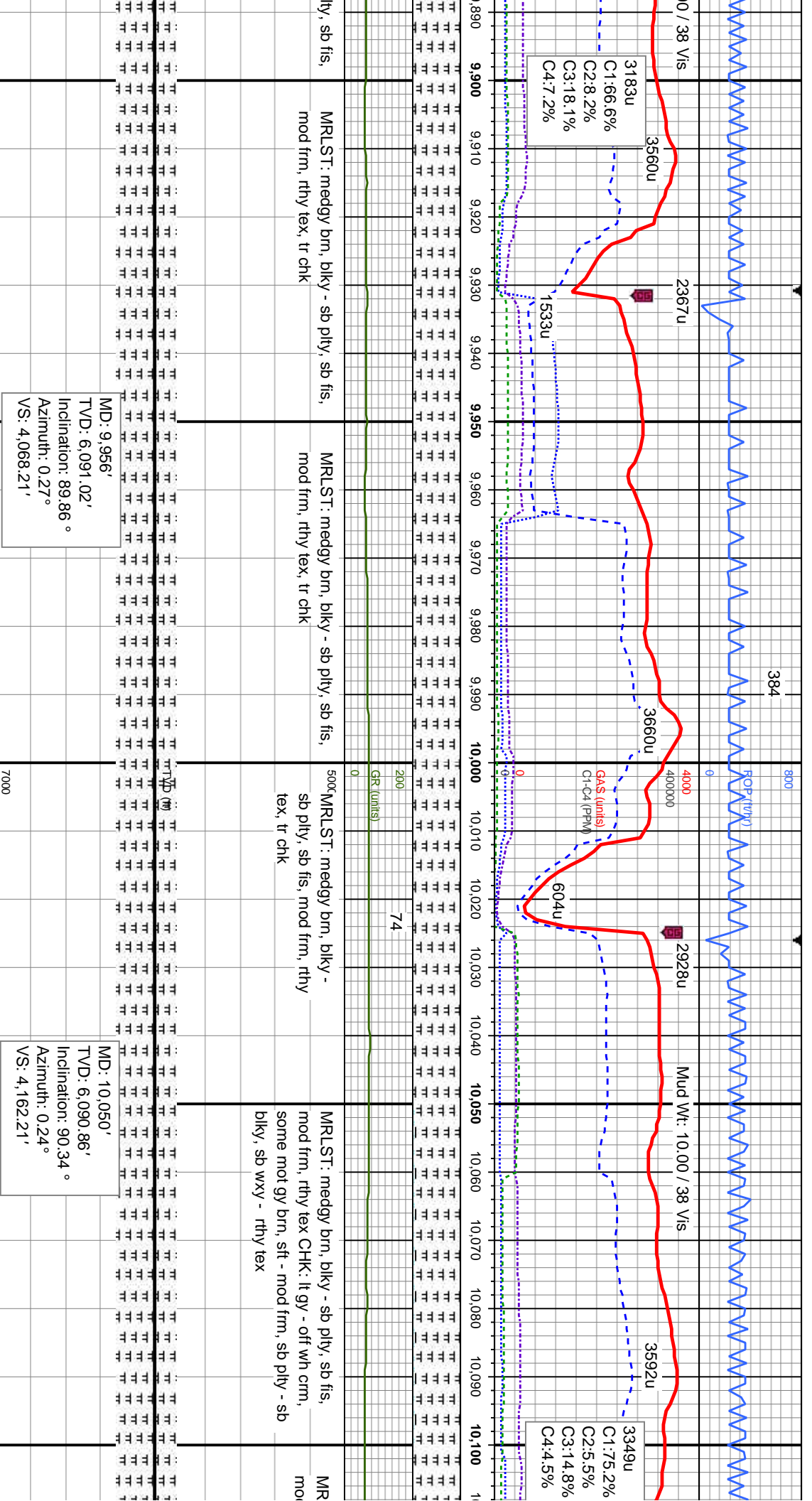


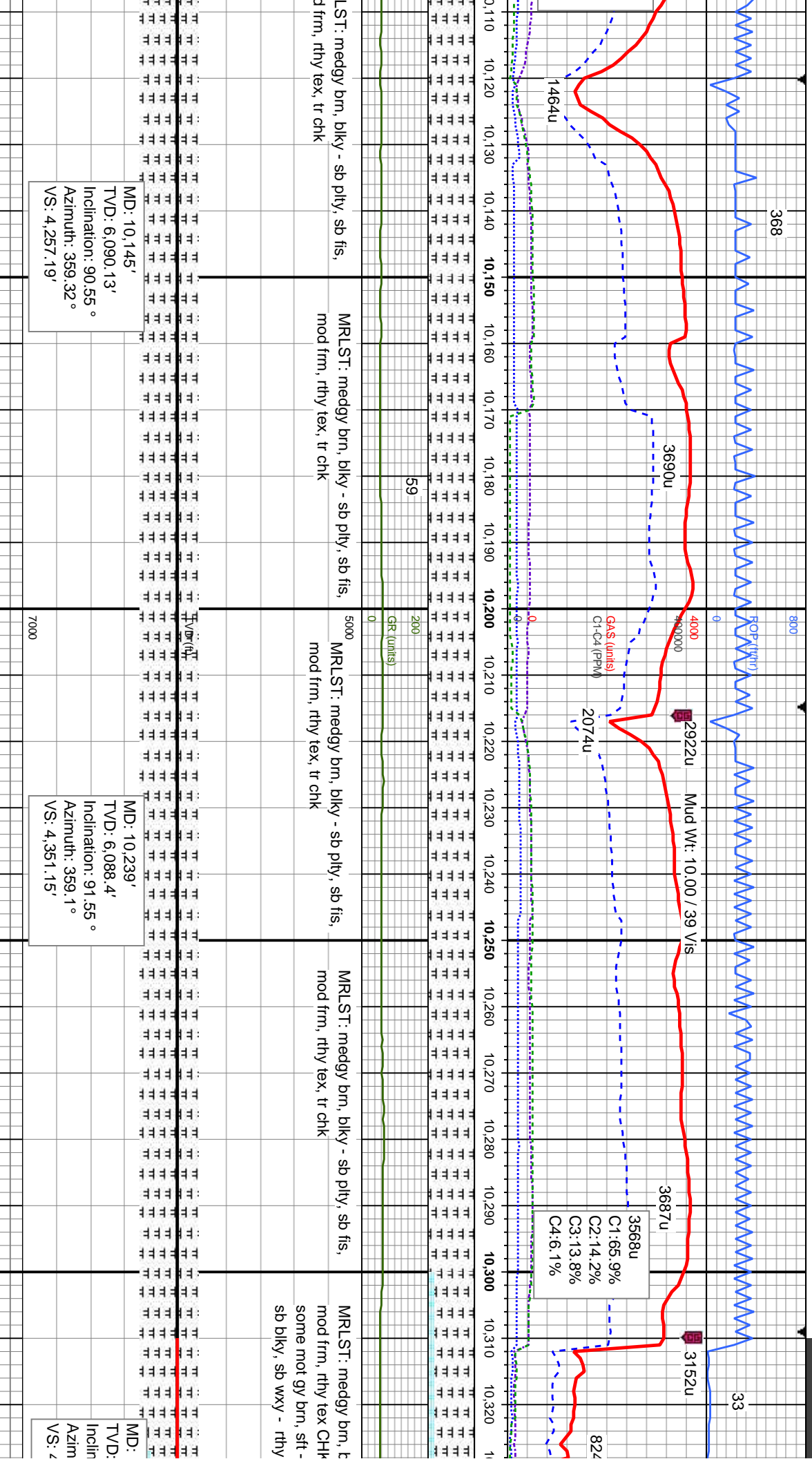


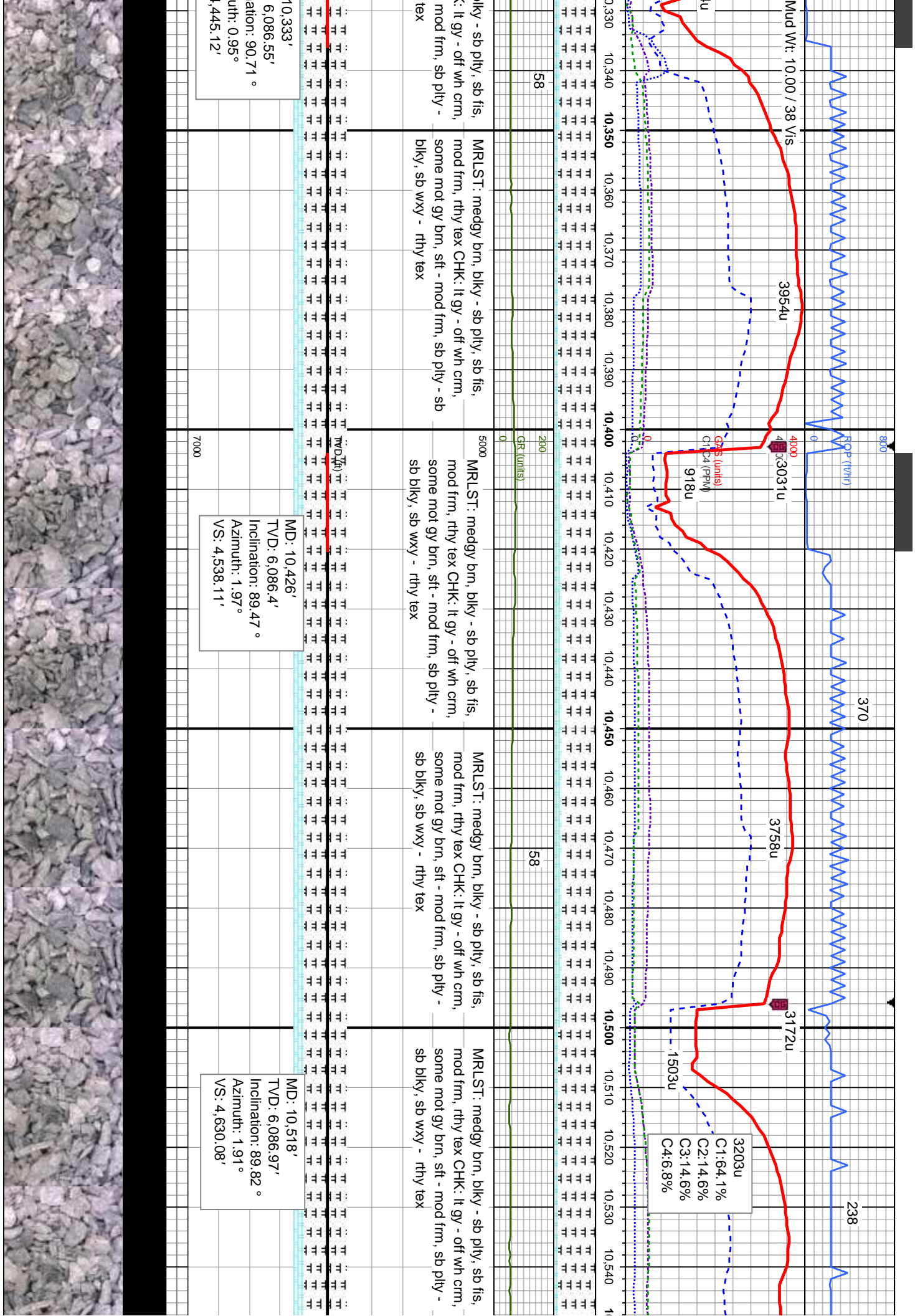


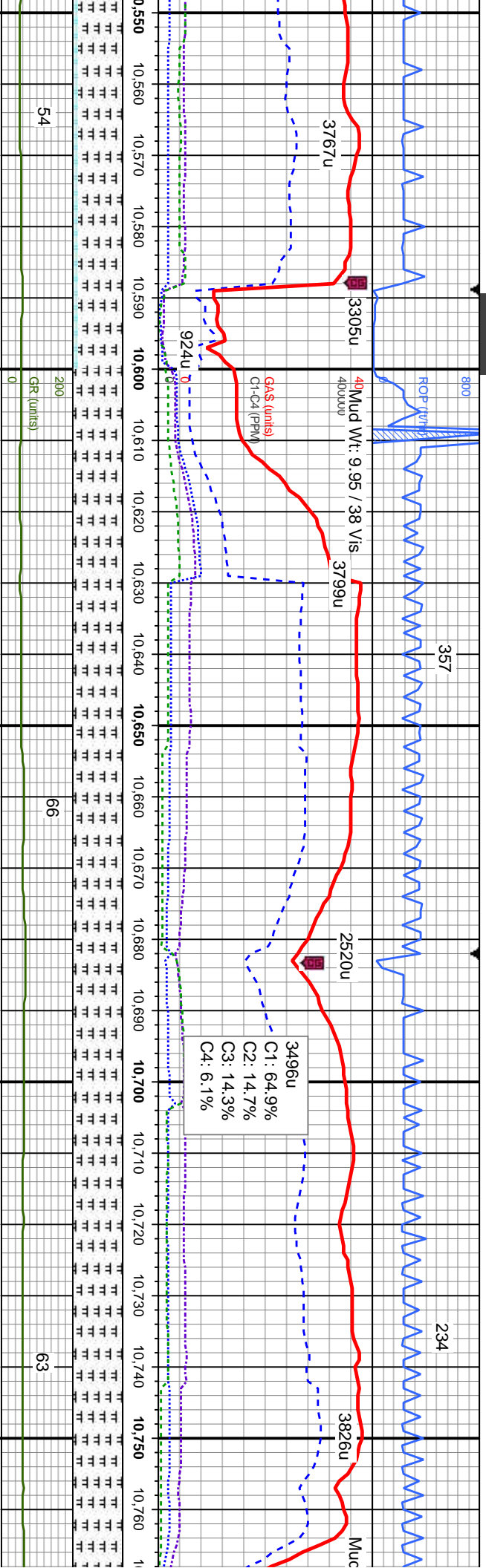












MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex CHK: It gy - off wh crm,
some mot gy brn, sft - mod frm, sb pty -
sb blkly, sb wxy - rthy tex

5000 MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex

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

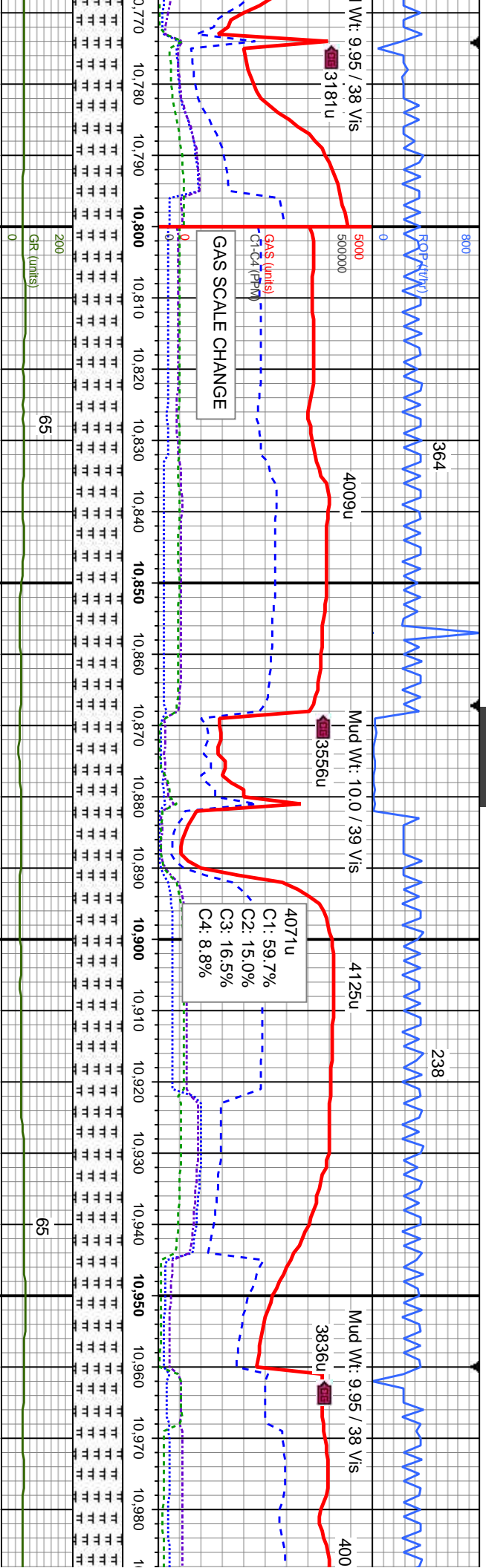
MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex

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

MD: 10,612'
TVD: 6,087.89'
Inclination: 89.06°
Azimuth: 1.96°
VS: 4,724.05'

MD: 10,703'
TVD: 6,089.24'
Inclination: 89.2°
Azimuth: 1.4°
VS: 4,815.02'



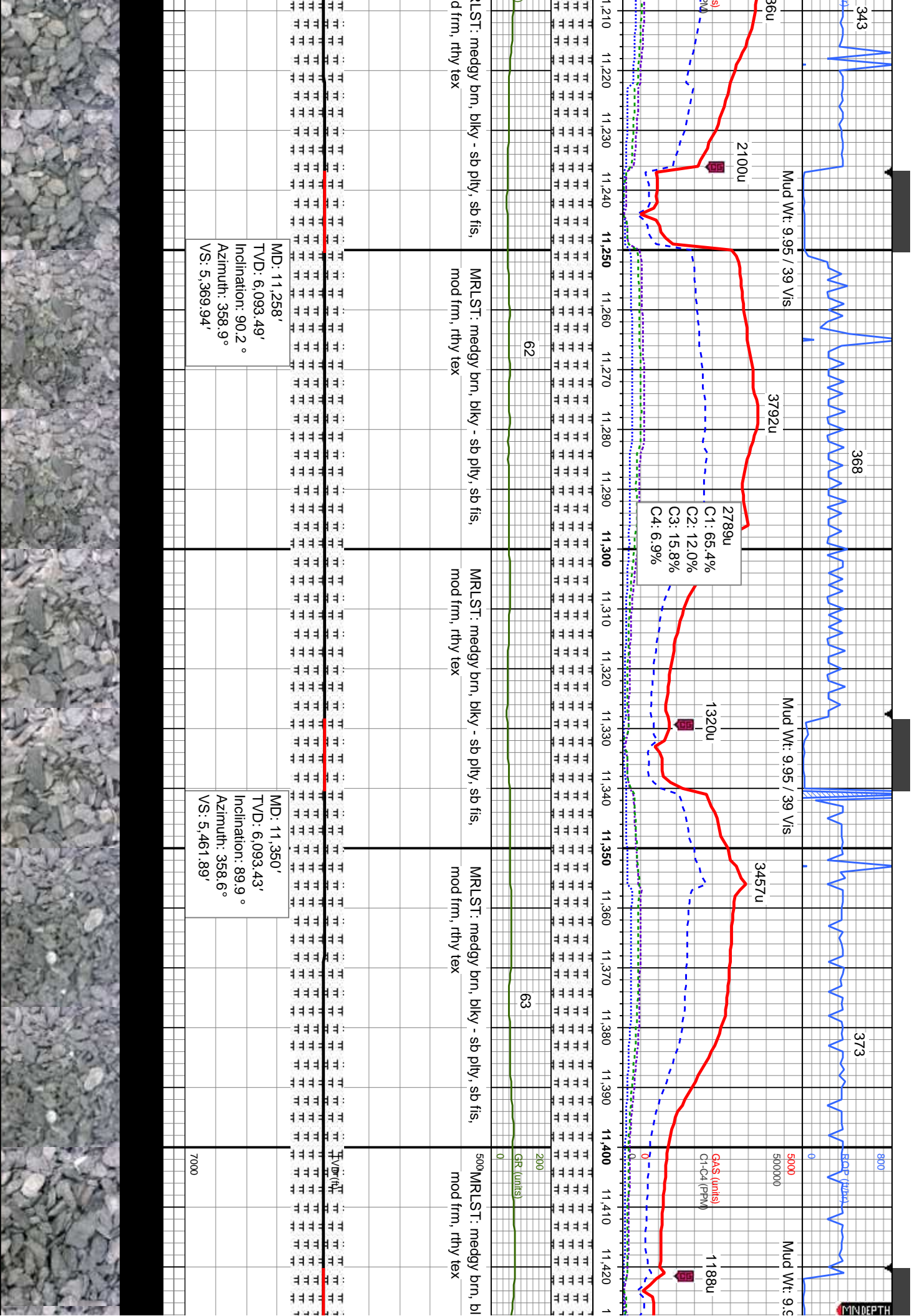


MD: 10,797'
TVD: 6,089.91'
Inclination: 90 °
Azimuth: 1.4 °
VS: 4,909.01'

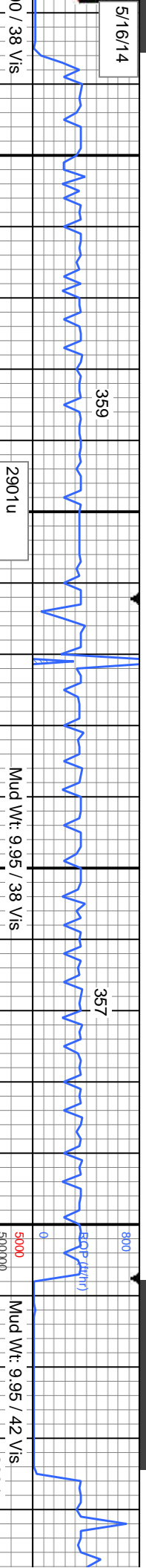
MD: 10,890'
TVD: 6,090.61'
Inclination: 89.2 °
Azimuth: 0.9 °
VS: 5,002'

MD: 10,982'
TVD: 6,091.88'
Inclination: 89 °
Azimuth: 0 °
VS: 5,093.99'





5/16/14



2901u
C1: 59.2%
C2: 15.0%
C3: 16.9%
C4: 8.9%

3208u

3228u

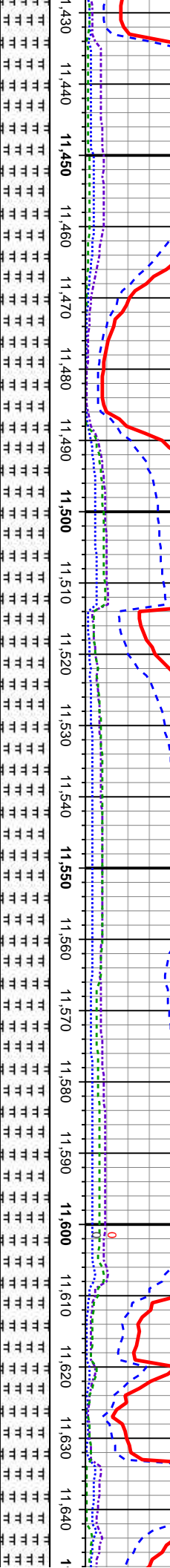
Mud Wt: 9.95 / 38 Vis

3452u

3026u

Mud Wt: 9.95 / 42 Vis

3804u



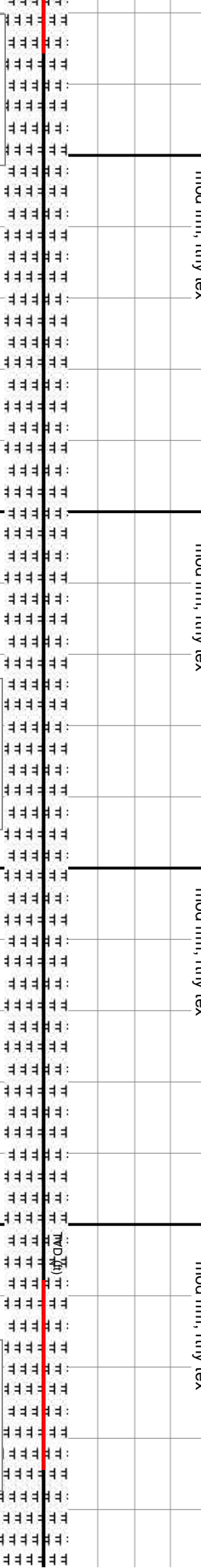
Ky - sb pty, sb fis, MRLST: medgy brn, blkly - sb pty, sb fis, mod frm, rthy tex

94

83

200

GR (units)



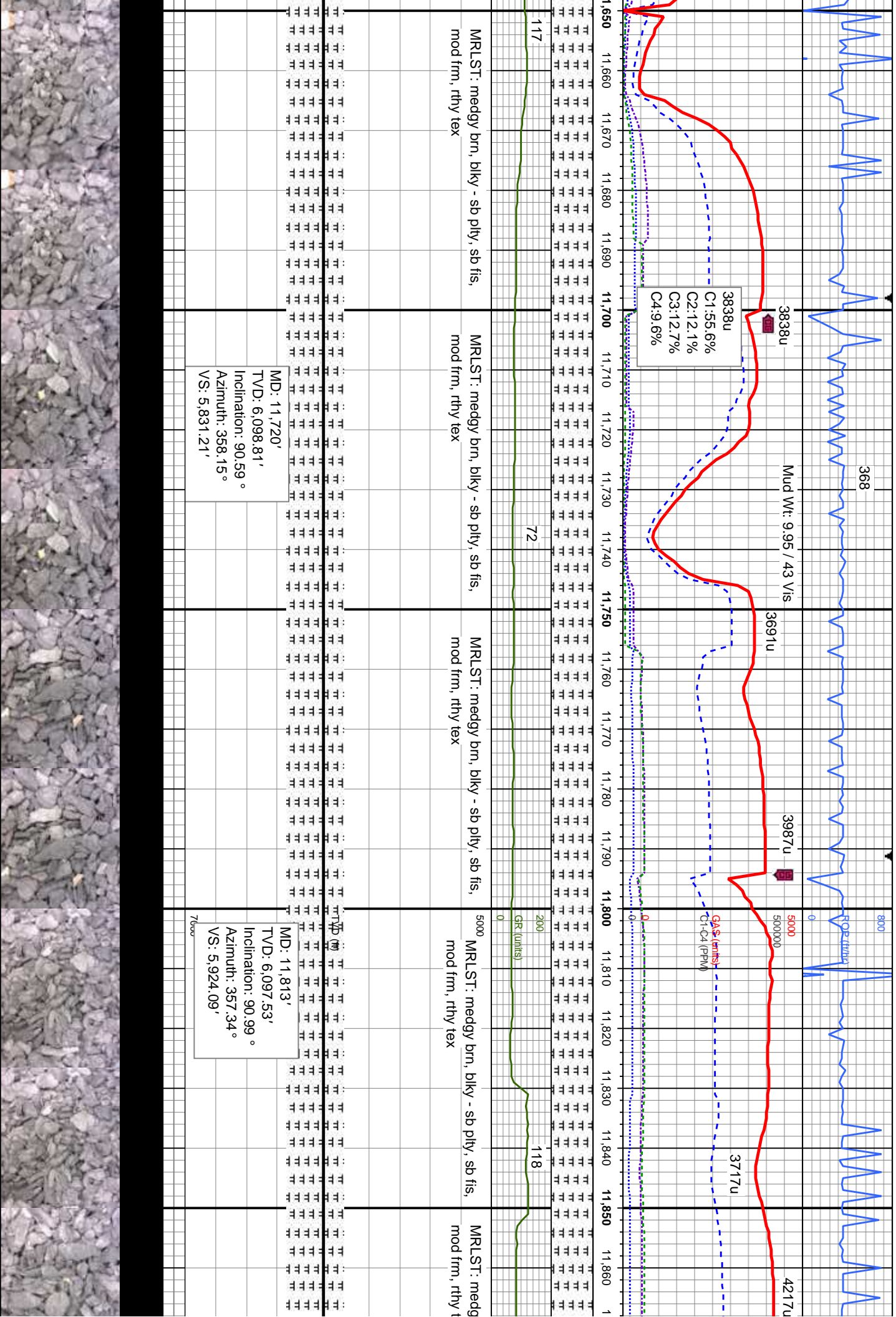
MD: 11,442'
TVD: 6,095'
Inclination: 88.2°
Azimuth: 357°
VS: 5,553.77'

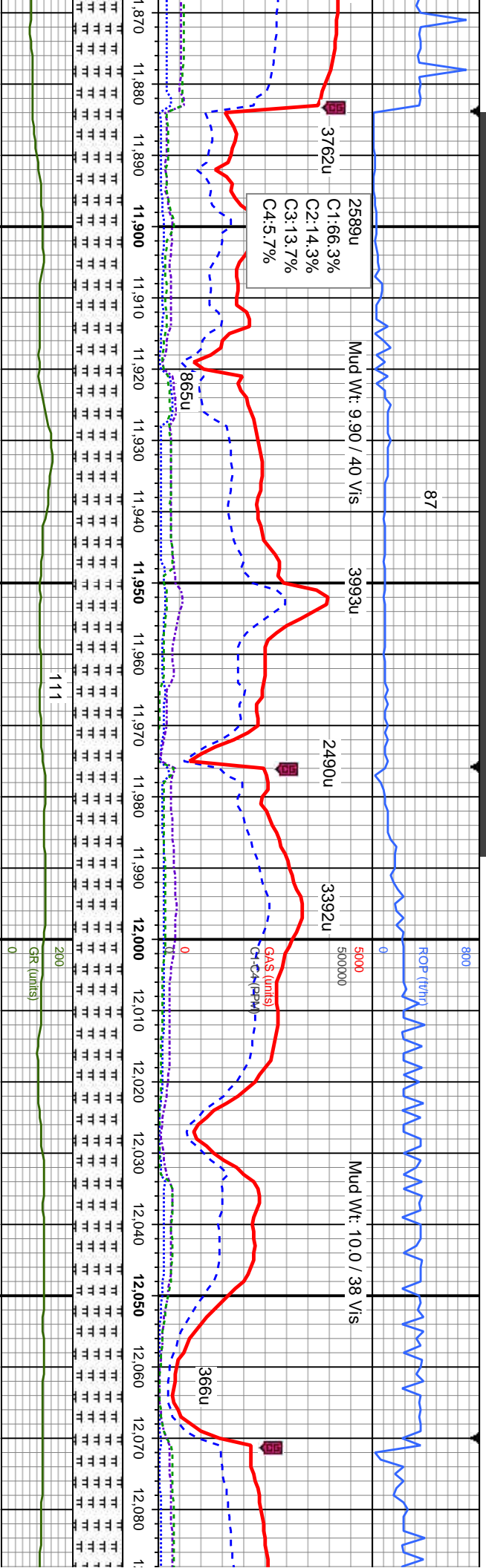
MD: 11,534'
TVD: 6,098.24'
Inclination: 87.8°
Azimuth: 356.9°
VS: 5,645.52'

7000

MD: 11,627'
TVD: 6,099.66'
Inclination: 90.5°
Azimuth: 357.2°
VS: 5,738.33'





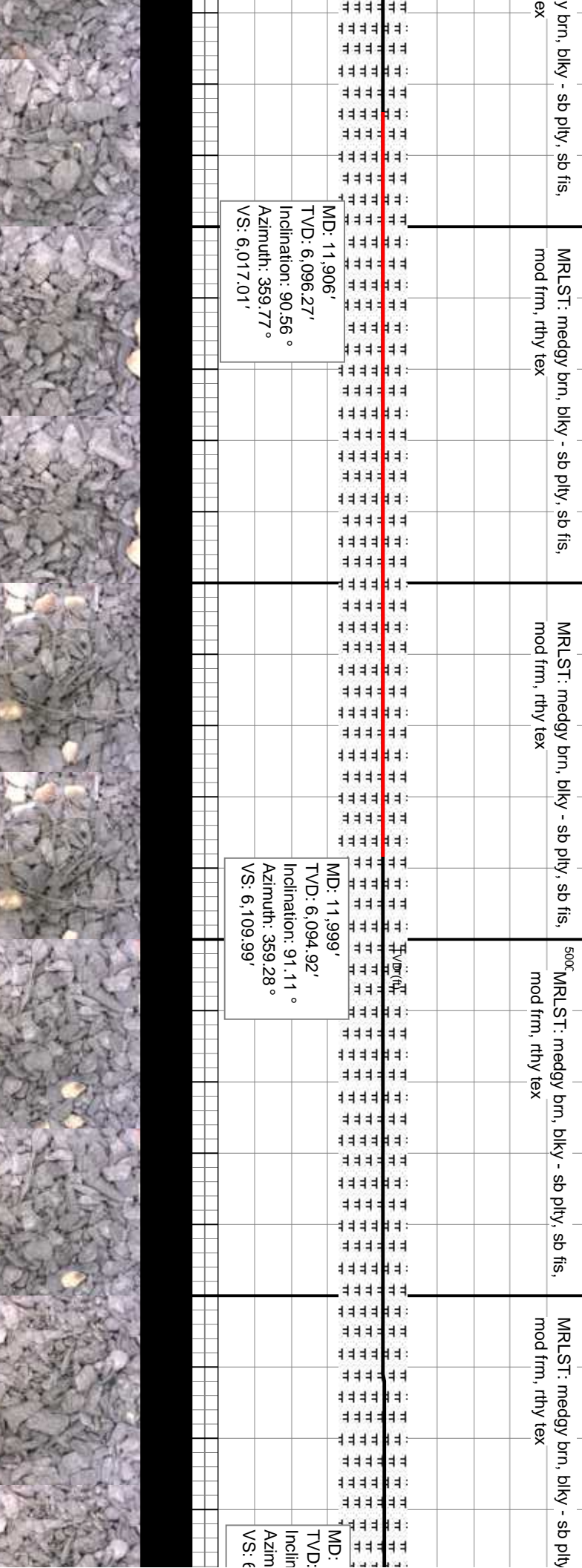


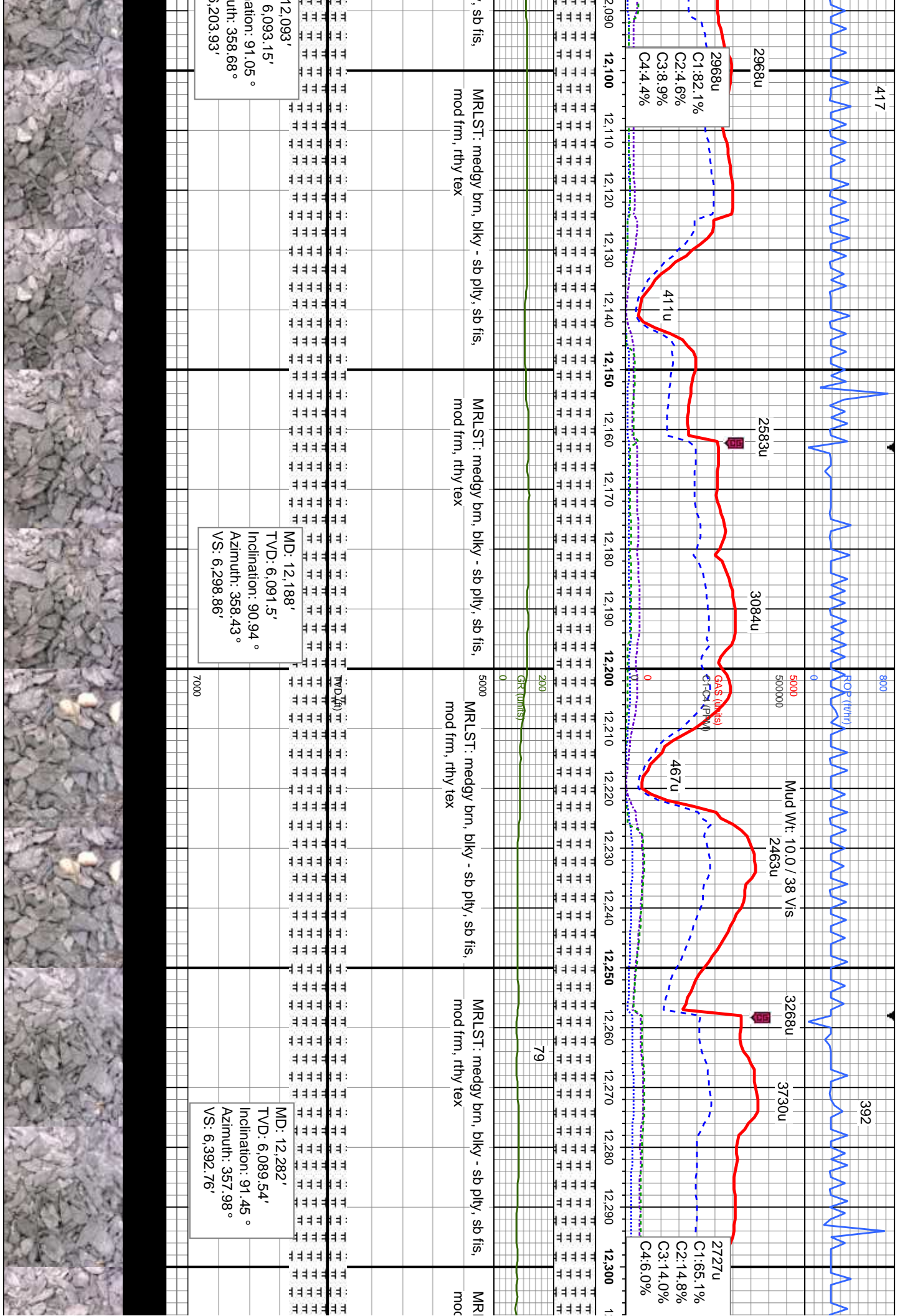
2589u
C1:66.3%
C2:14.3%
C3:13.7%
C4:5.7%

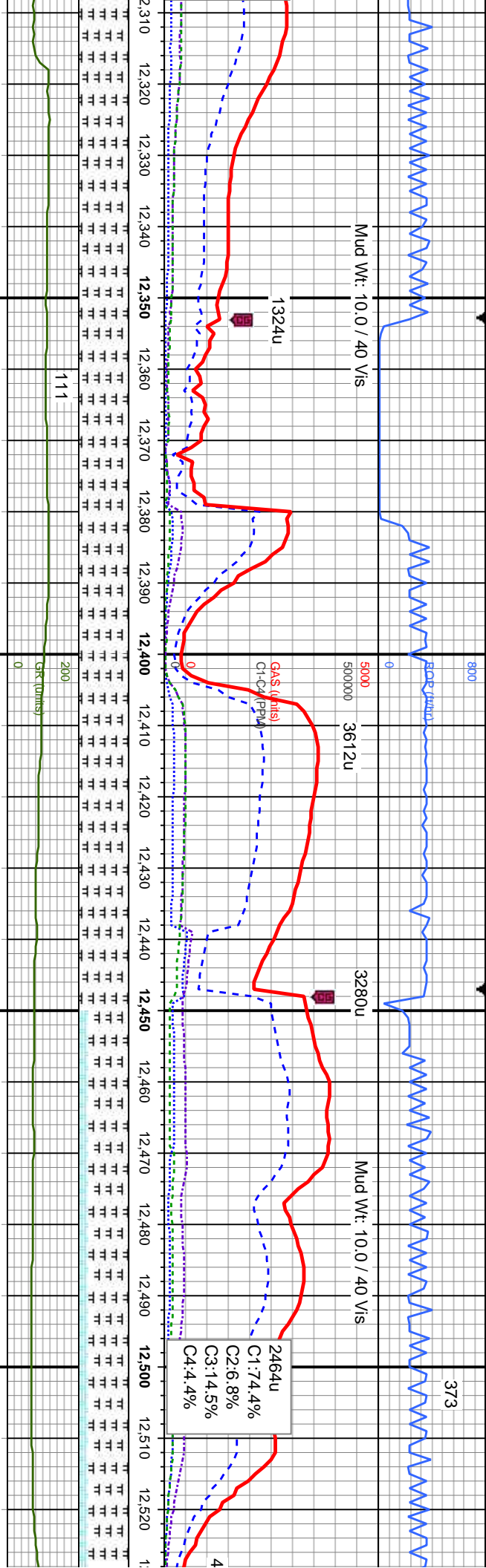
MD: 11,906'
TVD: 6,096.27'
Inclination: 90.56°
Azimuth: 359.77°
VS: 6,017.01'

MD: 11,999'
TVD: 6,094.92'
Inclination: 91.11°
Azimuth: 359.28°
VS: 6,109.99'

MD:
TVD:
Inclin:
Azim:
VS: 6







ST: medgy brn, blk y - sb pty, sb fis, mod frm, rthy tex

MRLST: medgy brn, blk y - sb pty, sb fis, mod frm, rthy tex

5000 MRLST: medgy brn, blk y - sb pty, sb fis, mod frm, rthy tex

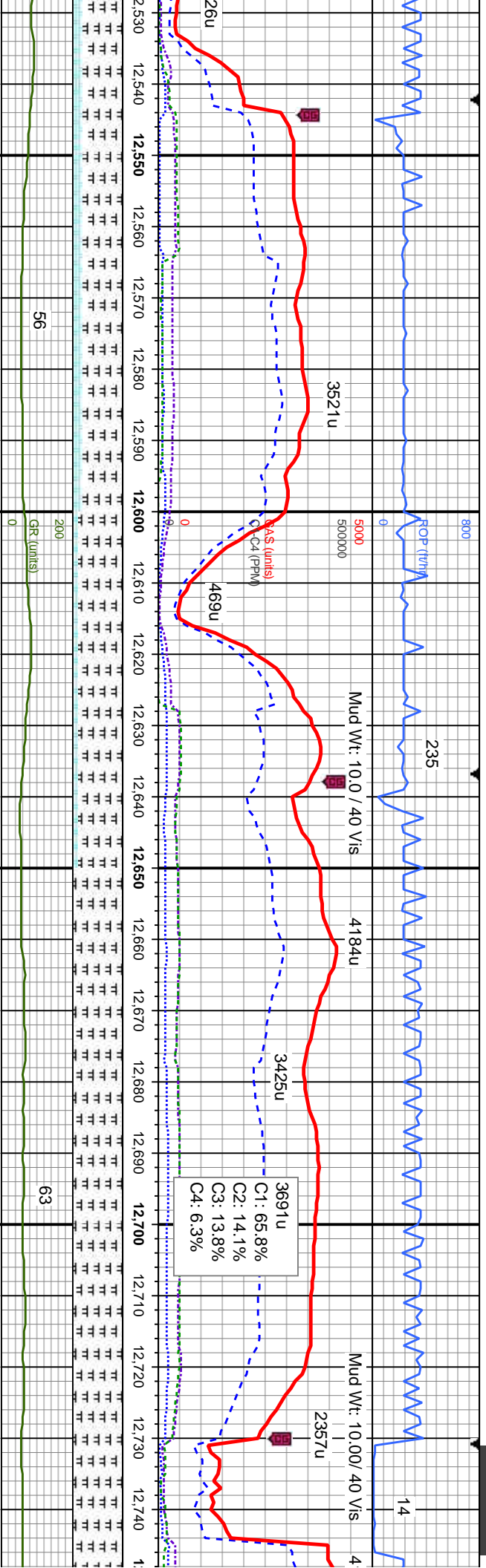
MRLST: medgy brn, blk y - sb pty, sb fis, mod frm, rthy tex CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk y, sb wxy - rthy tex

MRLST: medgy brn, blk y - sb pty, sb fis, mod frm, rthy tex CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blk y, sb wxy - rthy tex

MD: 12,377'
TVD: 6,088.81'
Inclination: 89.43 °
Azimuth: 0°
VS: 6,487.71'

MD: 12,471'
TVD: 6,089.77'
Inclination: 89.39 °
Azimuth: 0.06°
VS: 6,581.7'



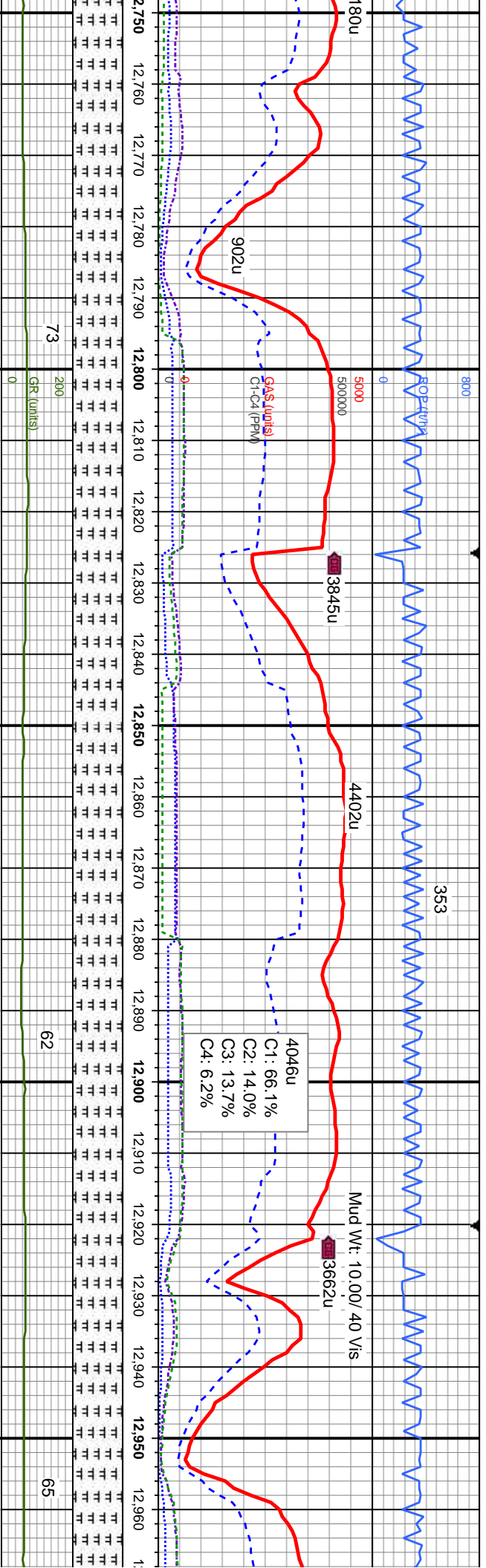


MD: 12,566'
TVD: 6,090.96'
Inclination: 89.18 °
Azimuth: 359.32 °
VS: 6,676.68'

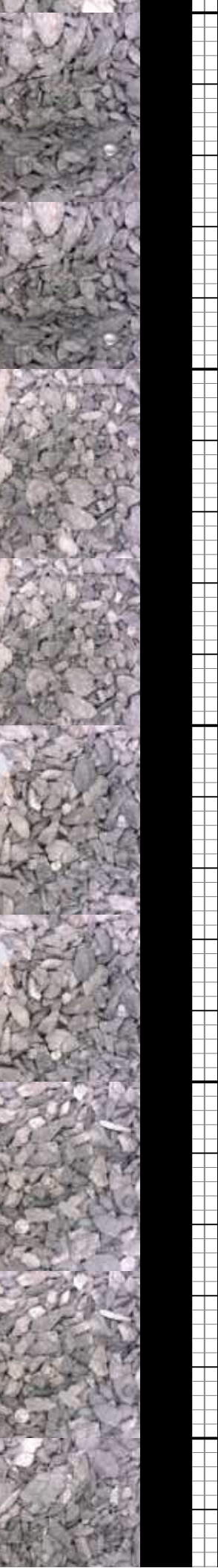
MD: 12,661'
TVD: 6,092.6'
Inclination: 88.84 °
Azimuth: 358.69 °
VS: 6,771.63'

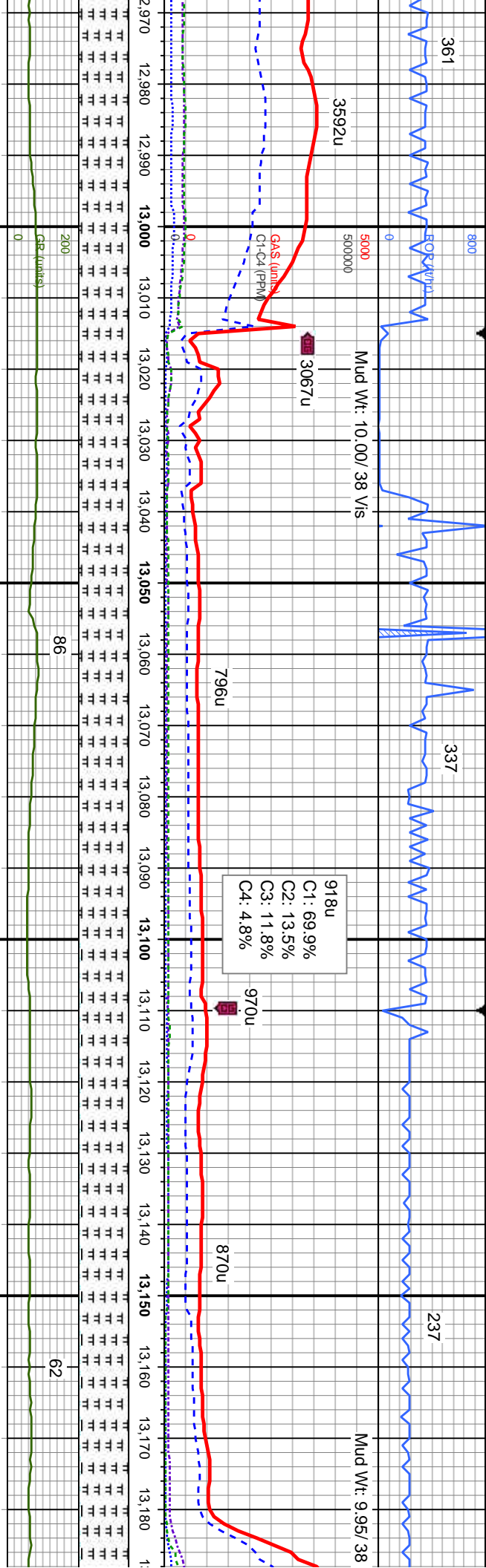
MD: 12,661'
TVD: 6,092.6'
Inclination: 88.84 °
Azimuth: 358.69 °
VS: 6,771.63'





MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex		5000 MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex		MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex		MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex		MRLST: medgy brn, blkly - sb pily, sb fis, mod frm, rthy tex	
12,755'		12,755'		12,755'		12,755'		12,755'	
6,093.32'		6,093.32'		6,093.32'		6,093.32'		6,093.32'	
ation: 90.3°		ation: 90.3°		ation: 90.3°		ation: 90.3°		ation: 90.3°	
uth: 358.6°		uth: 358.6°		uth: 358.6°		uth: 358.6°		uth: 358.6°	
3,865.57'		3,865.57'		3,865.57'		3,865.57'		3,865.57'	
7000		7000		7000		7000		7000	
MD: 12,850'		MD: 12,850'		MD: 12,850'		MD: 12,850'		MD: 12,850'	
TVD: 6,092.72'		TVD: 6,092.72'		TVD: 6,092.72'		TVD: 6,092.72'		TVD: 6,092.72'	
Inclination: 90.5°		Inclination: 90.5°		Inclination: 90.5°		Inclination: 90.5°		Inclination: 90.5°	
Azimuth: 358.6°		Azimuth: 358.6°		Azimuth: 358.6°		Azimuth: 358.6°		Azimuth: 358.6°	
VS: 6,960.51'		VS: 6,960.51'		VS: 6,960.51'		VS: 6,960.51'		VS: 6,960.51'	
MD: 12,945'		MD: 12,945'		MD: 12,945'		MD: 12,945'		MD: 12,945'	
TVD: 6,092.03'		TVD: 6,092.03'		TVD: 6,092.03'		TVD: 6,092.03'		TVD: 6,092.03'	
Inclination: 90.4°		Inclination: 90.4°		Inclination: 90.4°		Inclination: 90.4°		Inclination: 90.4°	
Azimuth: 357.1°		Azimuth: 357.1°		Azimuth: 357.1°		Azimuth: 357.1°		Azimuth: 357.1°	
VS: 7,055.4'		VS: 7,055.4'		VS: 7,055.4'		VS: 7,055.4'		VS: 7,055.4'	



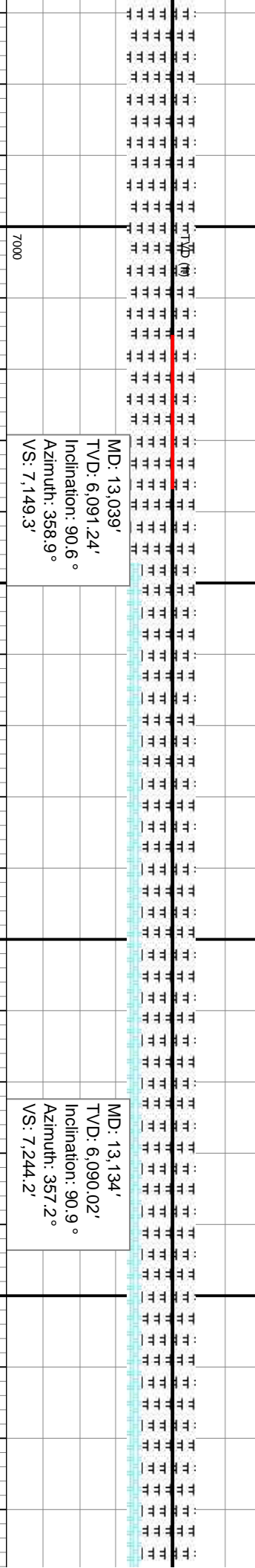


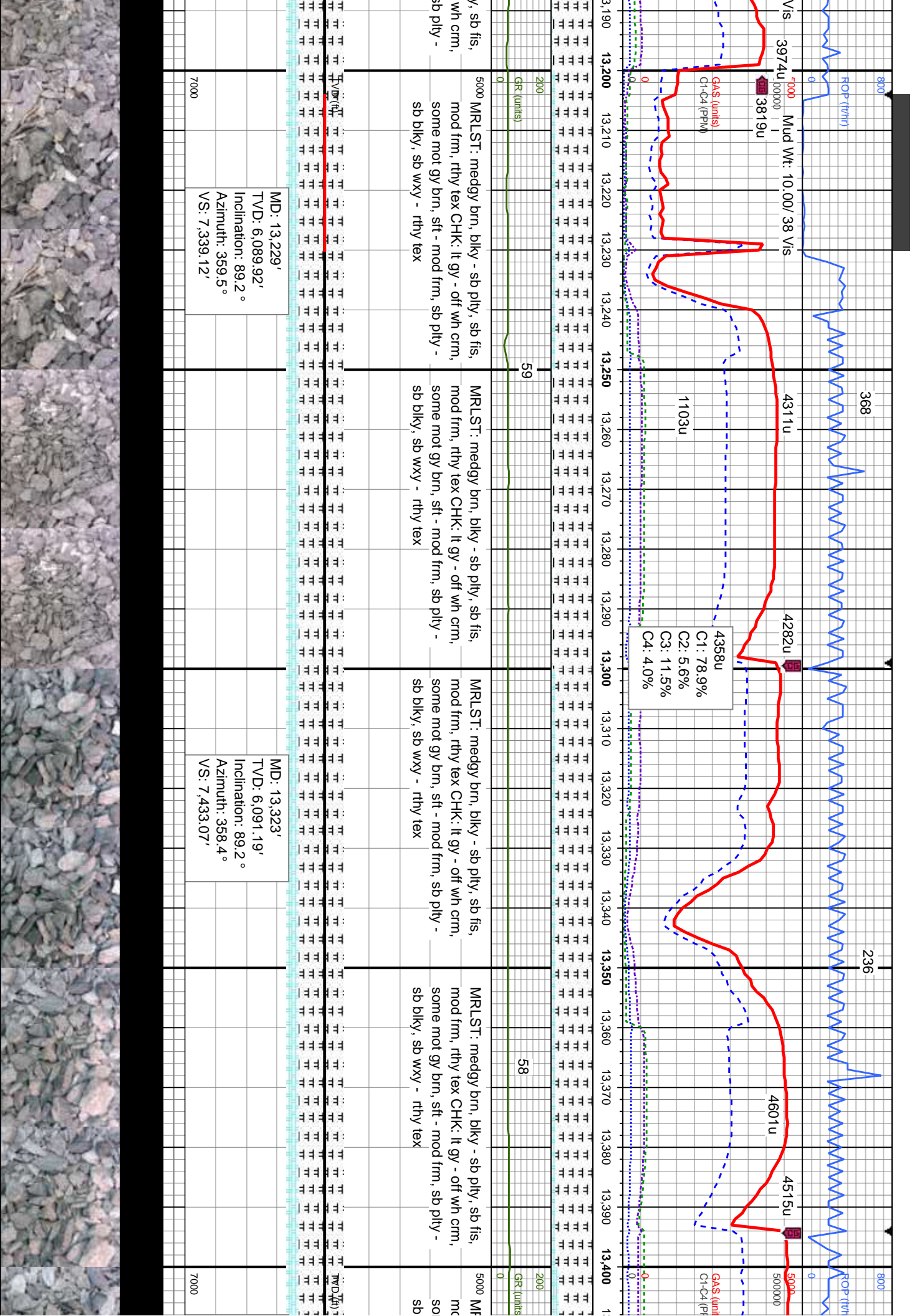
500' MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex

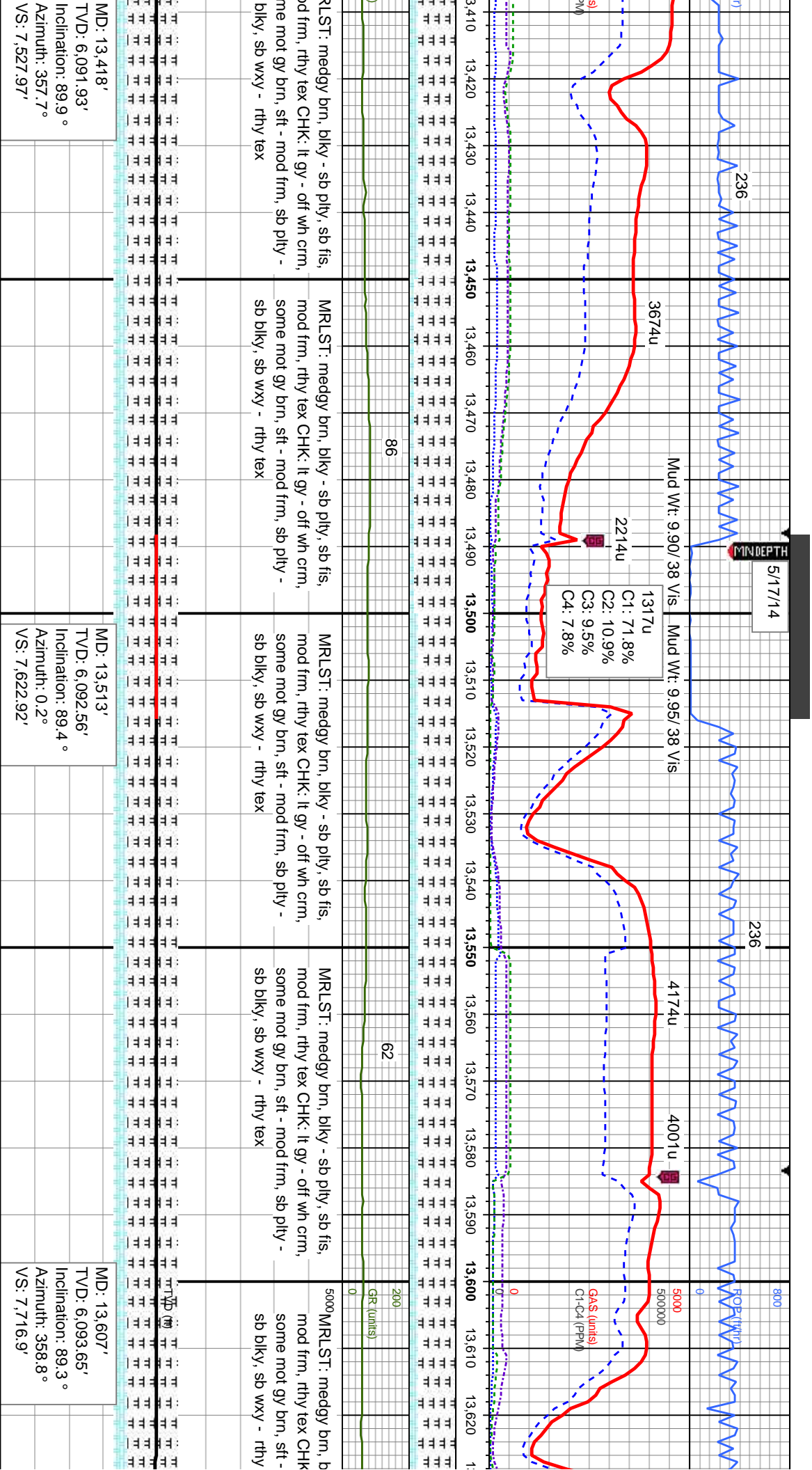
MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex

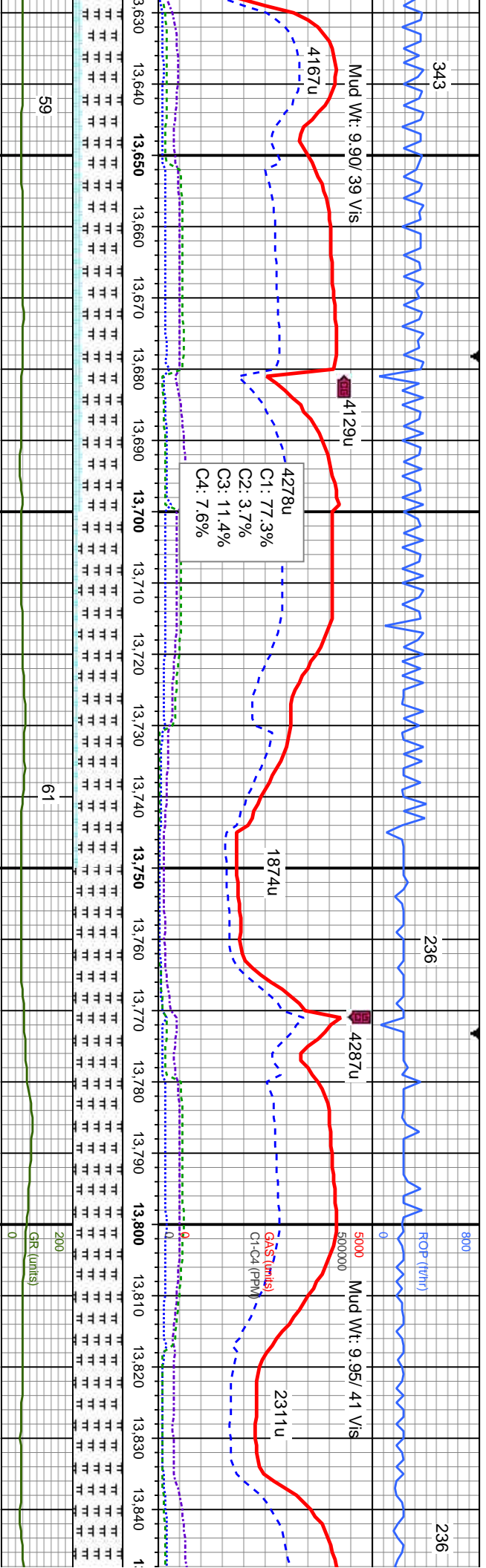
MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex CHK: lt gy - off wh crm, some mot gy brn, sft - mod frm, sb ply - sb blkly, sb wxy - rthy tex

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







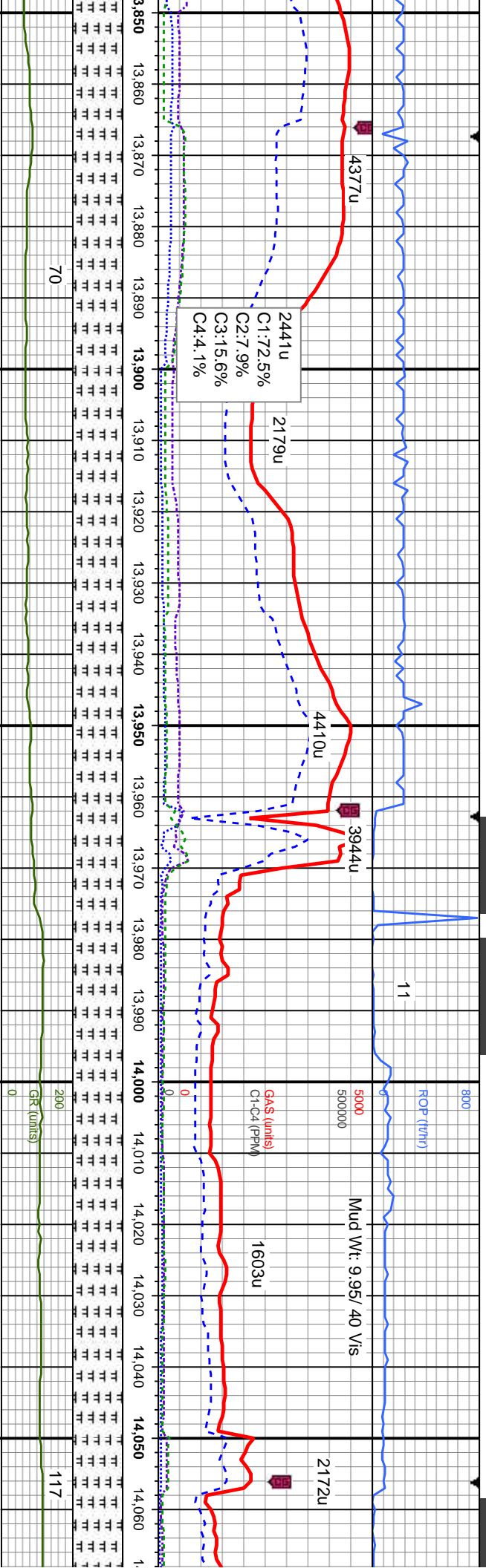


59	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex
61	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex	mod frm, rthy tex

MD: 13,702'
TVD: 6,094.14'
Inclination: 90.1 °
Azimuth: 358.6 °
VS: 7,811.84'

MD: 13,796'
TVD: 6,093.2'
Inclination: 91.04 °
Azimuth: 358.33 °
VS: 7,905.77'





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

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

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

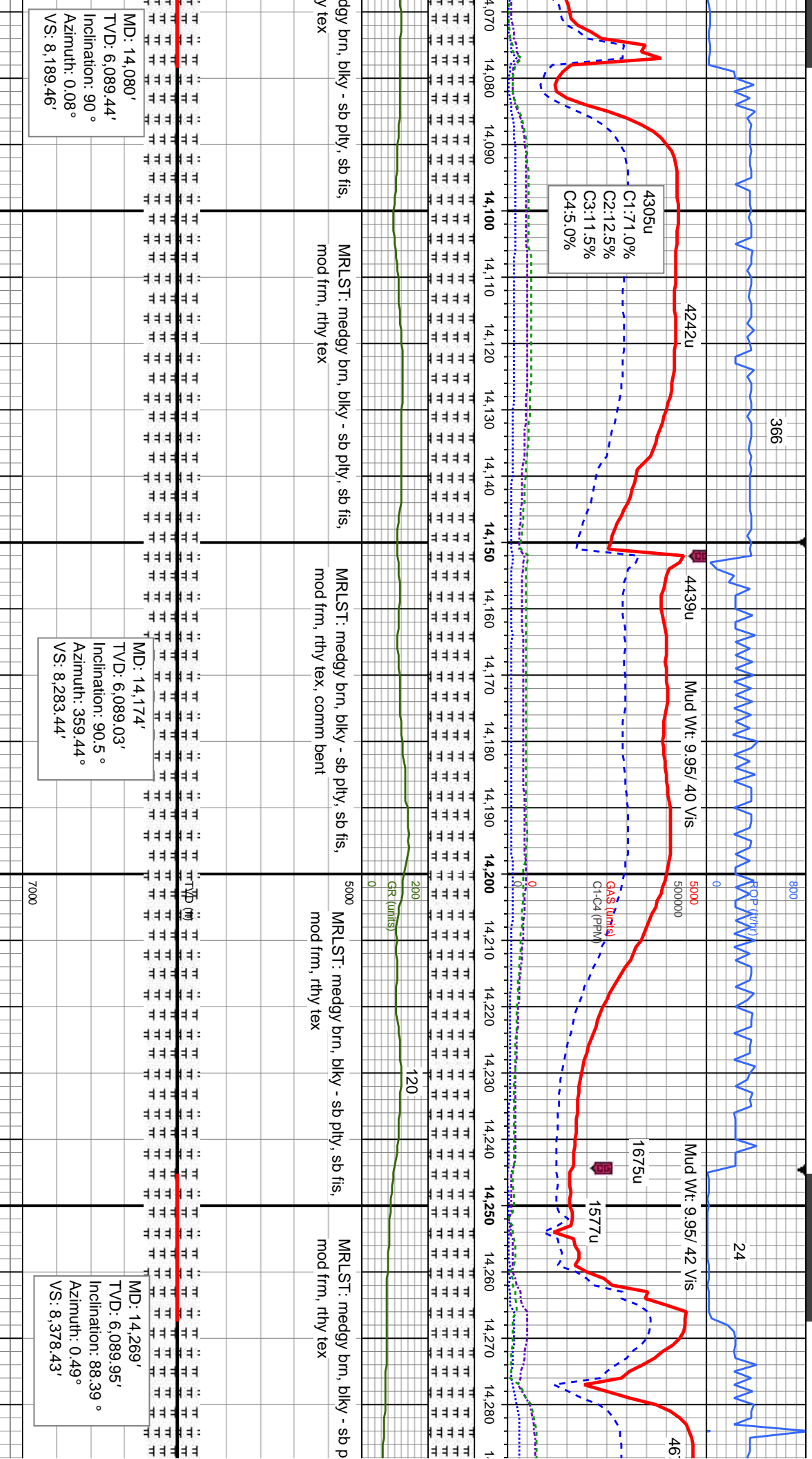
MRLST: medgy brn, blkly - sb pty, sb fis,
mod frm, rthy tex

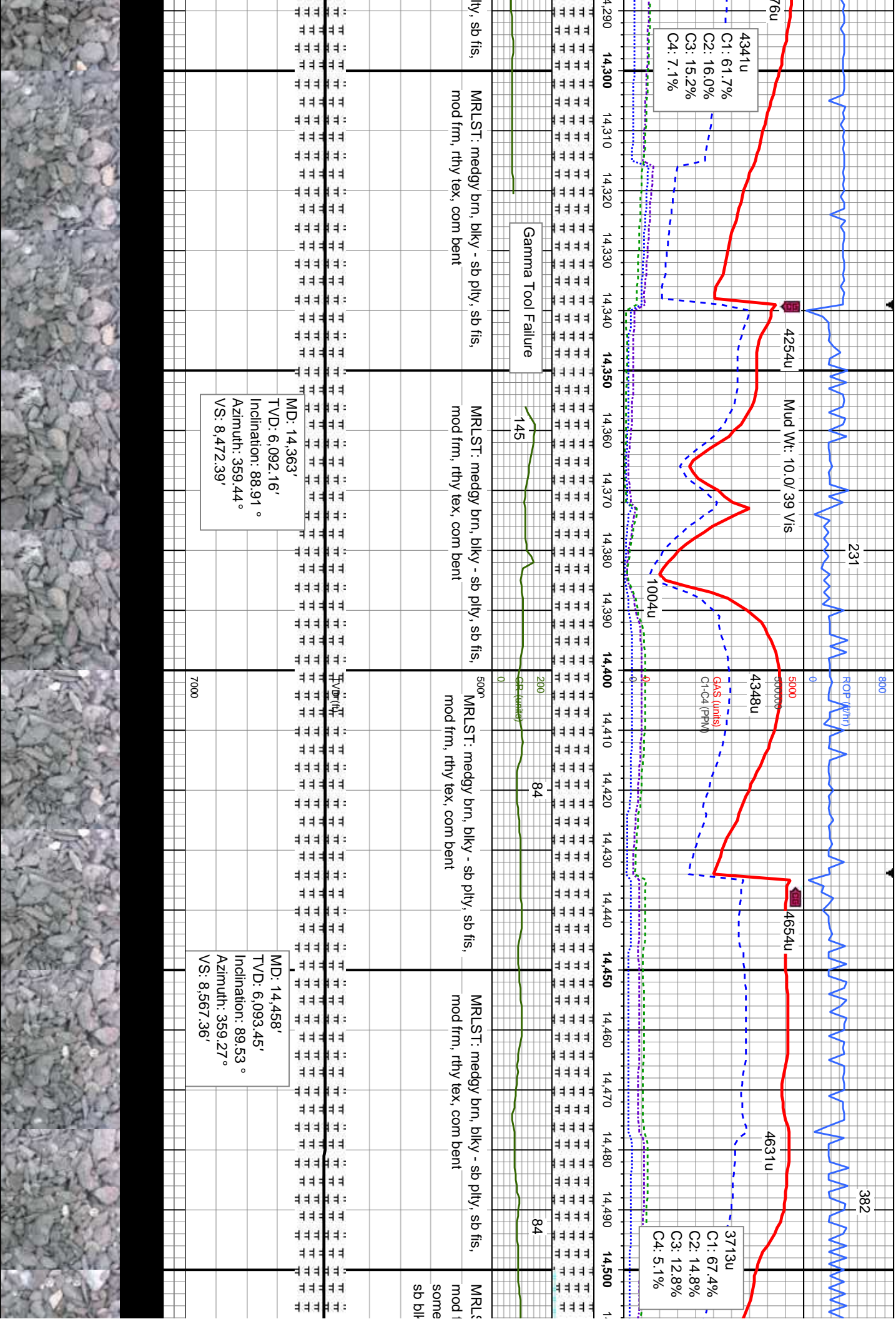
MRLST: me
mod frm, rth

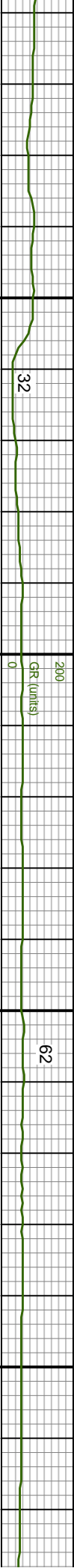
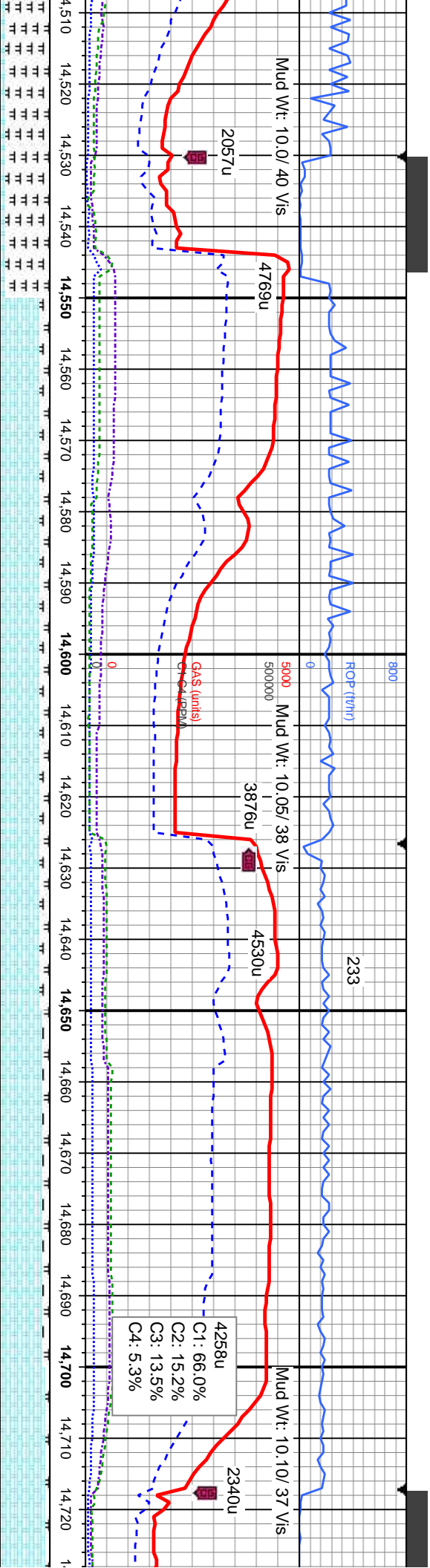
MD: 13,891'
TVD: 6,091'
Inclination: 91.61 °
Azimuth: 356.5°
VS: 8,000.6'

MD: 13,985'
TVD: 6,089.56'
Inclination: 90.15 °
Azimuth: 359.19°
VS: 8,094.47'









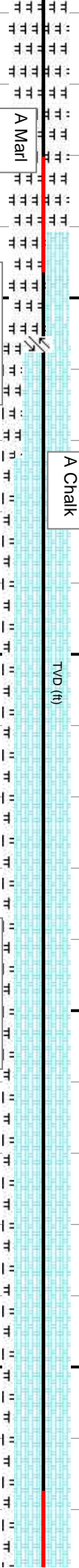
ST: meagy brn, blkly - sb pty, sb fis,
firm, rthy tex CHK: lt gy - off wh crm,
mot gy brn, sft - mod frm, sb pty -
gy, sb wxy - rthy tex

CHK: It gy - off wh crm, some mot gy brn,
sft - mod frm, sb pty - sb blyk, sb wxy -
rthy tex, MRLST - medgy brn, blyk - sb pty,
sb fls, mod frm, rthy tex

⁵⁰CHK: it gy - off wh crm, some mot gy brn, sft - mod frm, sb pty - sb blkly, sb wxy - rthy tex, MRLST: medgy brn, blkly - sb pty, sb fis, mod frm, rthy tex

CHK: It gy - off wh crm, some mot gy brn,
sft - mod frm, sb pty - sb bky, sb wxy -
rthy tex, MRLST: medgy brn, bky - sb pty,
sb fis, mod frm, rthy tex

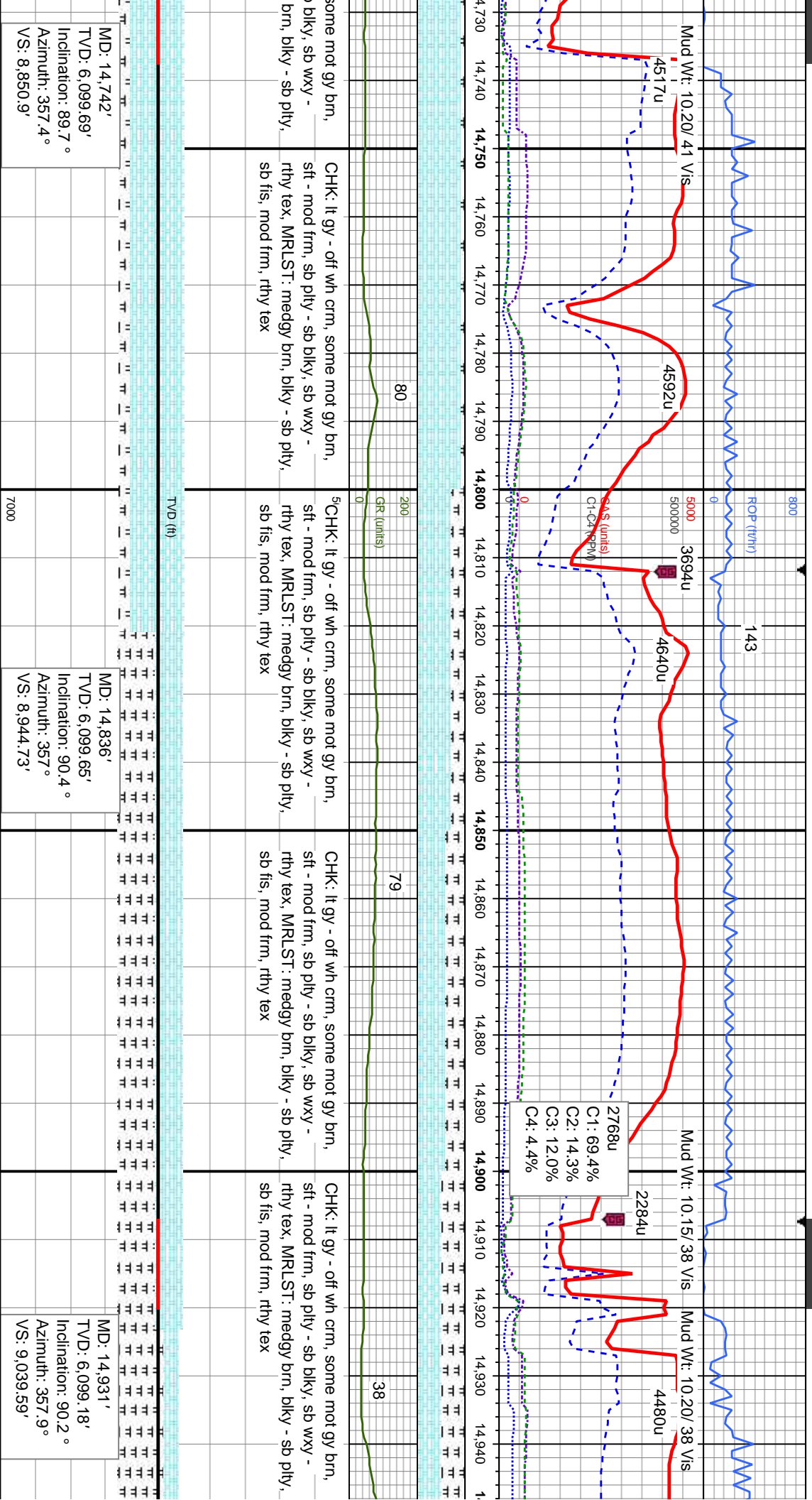
CHK: It gy - off wh crm, s
sft - mod frm, sb plty - st
rthy tex, MRLST: medgy
sb fis, mod frm, rthy tex



MD: 14,553'
TVD: 6,094.71'
Inclination: 89 °
Azimuth: 358.4 °
VS: 8,662.31'

MD: 14,647'
TVD: 6,097.49'
Inclination: 87.7°
Azimuth: 356.6°
VS: 8,756.12'





5/18/14

MINDEPTH

ROP (ft/hr)

402

Mud Wt: 10.20/ 41 Vis Mud Wt: 10.20/ 38 Vis

2107u

5000

500000

4512u

C3 (units)

C4 (PPM)

C1: 62.0%
C2: 13.7%
C3: 13.8%
C4: 10.5%

3552u

3737u

4344u

Mud Wt: 1



200

GR (units)

82

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

5MRLST: medgy brn, blk - sb ply, sb fis,
mod frm, rthy tex CHK: lt gy - off wh crm,
some mot gy brn, sft - mod frm, sb ply -
sb blk, sb wxy - rthy tex

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

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

MRLST: medgy
mod frm, rthy t
some mot gy t
sb blk, sb wx

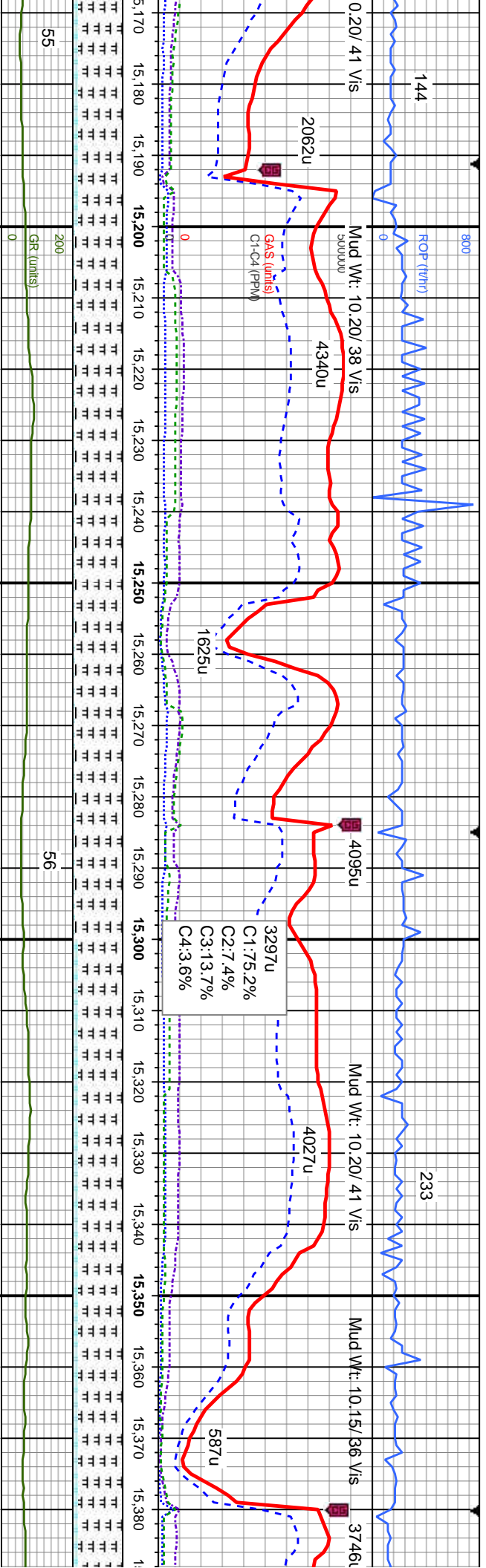
TVD (ft)

MD: 15,026'
TVD: 6,099.13'
Inclination: 89.9°
Azimuth: 357°
VS: 9,134.45'

MD: 15,120'
TVD: 6,098.84'
Inclination: 90.5°
Azimuth: 356.3°
VS: 9,228.23'

7000





y brn, blkly - sb ply, sb fis,
ex CHK: It gy - off wh crm,
rn, sft - mod frm, sb ply -
y - rthy tex

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

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

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

MD: 15,215'
TVD: 6,097.29'
Inclination: 91.39°
Azimuth: 354.58°
VS: 9,322.83'

MD: 15,310'
TVD: 6,094.75'
Inclination: 91.68°
Azimuth: 354.28°
VS: 9,417.25'



