



Scale: 5" / 100'
Measured Depth Log

Well Name DUGITE 13N-35HZ

Location SEC.23-T2N-R67W

State COLORADO County WELD

Country USA Rig Number H&P 307

API Number 05123393290000 AFE # 2089193

Region DJ BASIN Field WATTENBERG

Spud Date 6/5/2014 Drilling Completed 6/16/2014

Surface Coordinates 1020FSL & 590FWL, SEC.23
40°07'09.131"N, 104°51'55.289"W

Bottom Hole Coordinates 920FSL & 900FWL, SEC.35
40°05'24.119"N, 104°51'52.007"W

Ground Elevation 4969' K.B. Elevation 5019'

Logged Interval 6700 To 17782 Total Depth 17782

Formation NIOBRARA

Type of Drilling Fluid Fresh Water for Curve

Operator

Company ANADARKO PETROLEUM INC
Address 1099 18th St, Suite 1800
Denver , CO 80202

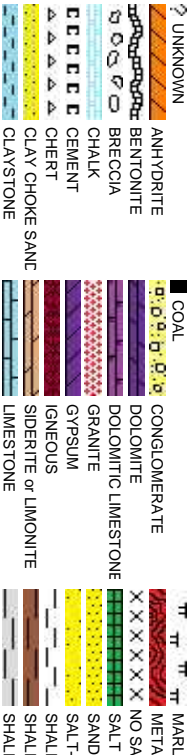
Geologist

Name TRAVIS GREGORY
Company COLUMBINE LOGGING INC
Address 2385 S. Lipan St.
Denver, CO 80223

Zone Color Coding



Rock Types



Accessories

Fossils	Stringer
GASTROPOD	ARGILLITE GRAIN
INOCERAMUS	HEAVY MINERAL
OOLITE	KAOLIN
OSTRACOD	MARCASITE
BELEMNITE	MARLSTONE
BIOCLASTIC	MICACEOUS
BRACHIOPOD	MINERAL CRYSTALS
PISOLUTE	NODULES
PLANT REMAINS	PHOSPHATE PELLETS
CEPHALOPOD	PYRITE
CORAL	SALT CAST
CRINOID	SANDY
ECHINOID	SIDERITE
Minerals	SILICEOUS
FISH	SILTY
FORAMINIFERA	TUFFACEOUS
FOSSIL	
ANHYDRITIC	
ARGILLACEOUS	
	SHALE STRINGER
	SILTSTONE STRINGER

Other Symbols

Oil Show	Engineering	Rounding	Sorting
PINPOINT	DST INTERVAL	WIRELINE TESTED - LEFT	E EARTHY
VUGGY	FAULT	WIRELINE TESTED - RT	Fx FINELYXLN
DEAD	FORMATION TOP	DRILL STEM TEST	GS GRAINSTONE
EVEN	GAS SHOW	MIN DEPTH	L LITHOGRAPHIC
QUESTIONABLE	OIL SHOW		Mx MICROXLN
BIT			
SPOTTED STAINING	CONNECTION (UP)	MIN DEPTH UP	MS MUDSTONE
	CONNECTION (DOWN)	MIN DEPTH (DOWN)	A ANGULAR
Porosity	CONNECTION GAS	NORMAL FAULT	R ROUNDED
E EARTHY	CONNECTION GAS (LEFT)	OVERTURNED STRATA	B SUBANG
FENESTRAL	TRIP GAS	REVERSE FAULT	M SUBRAND
F FRACTURE	TRIP GAS (LEFT)	CASING	
INTERCRYSTALLINE	DOWN TIME GAS	SIDEWALL CORE (LEFT)	
INTEROOLITIC	DOWN TIME GAS (LEFT)	SIDEWALL CORE (RIGHT)	
MOLDIC	CORE - LOST	SLIDE	
ORGANIC	CORE - RECOVERED	SURVEY	
		Cx CRYPTOXLN	
			P POOR
			W WELL

Gas
Pressure
Seal

STONE
MORPHIC
MPLE
STONE
PEPPER SANC
E COLORED
E GRAY

SHALY SANDSTONE
SHALY SILTSTONE
SILTY SHALE
SILTSTONE
TILL
TUFF
WELDED TUFF

Slide/Rotate

ROP
ROP
GAMMA

Columbine Logging One Person
Rigged Up 1900hrs 06/07/2014
Logging Started @
0720hrs on 06/08/2014
at 6700' MD

Total Gas & Chromatograph

GAS
C1
C3

ROP & GAS DATA PROVIDED BY TOTCO
- GAMMA & SURVEY DATA PROVIDED BY
BAKER HUGHES

DRLG 8.75" HOLE W/ BIT #1
SMITH SD513
IN @ 1341' MD

Depth Labels

% Lith

Begin in Sussex Formation

MD: 6.633
TVD: 6.607.44
Inclination: 0.26
Azimuth: 353.79
VS: -2.34

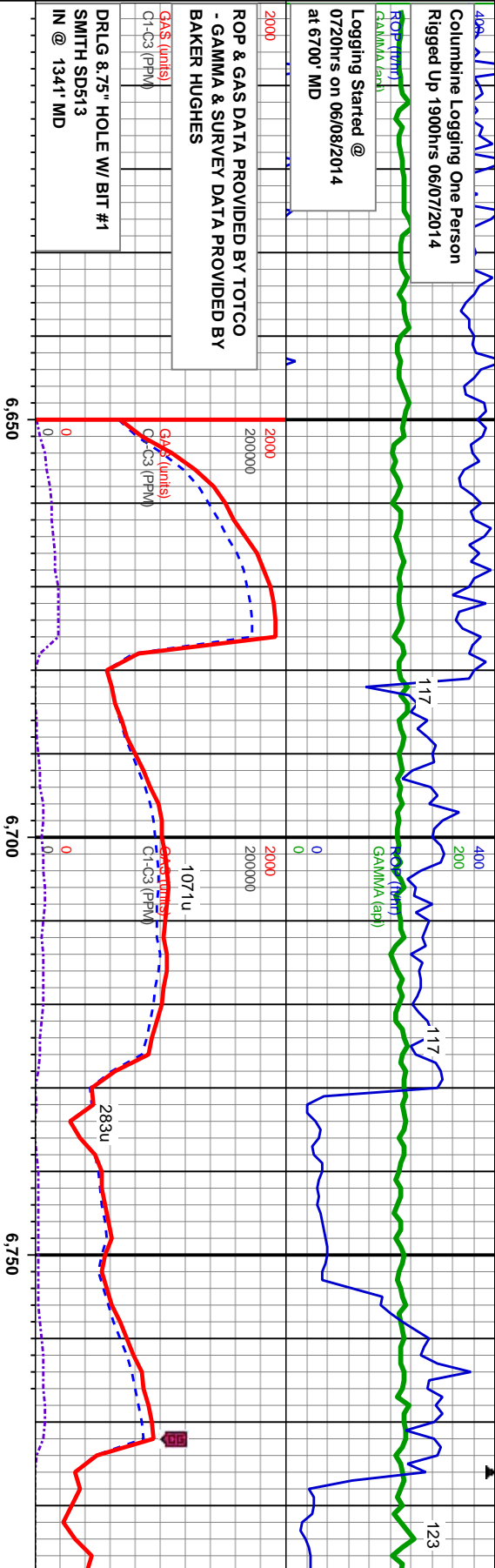
Well Bore
TVD

Acetone was used as the cutting
agent with the dimple filled to the rim
The ratings are based on 7 descriptors:
None, Slight trace, Trace, Fair, Moderate,
Good, and Excellent. The descriptor used
is based on the loggers observations and
best judgement of brilliance, color and
longevity of the cut.

Oil Show

E
G
M
F
T
ST

Images



KOP @ 6776 MD

MD: 6.727
TVD: 6.701.44
Inclination: 0.4
Azimuth: 166.85
VS: -2.24

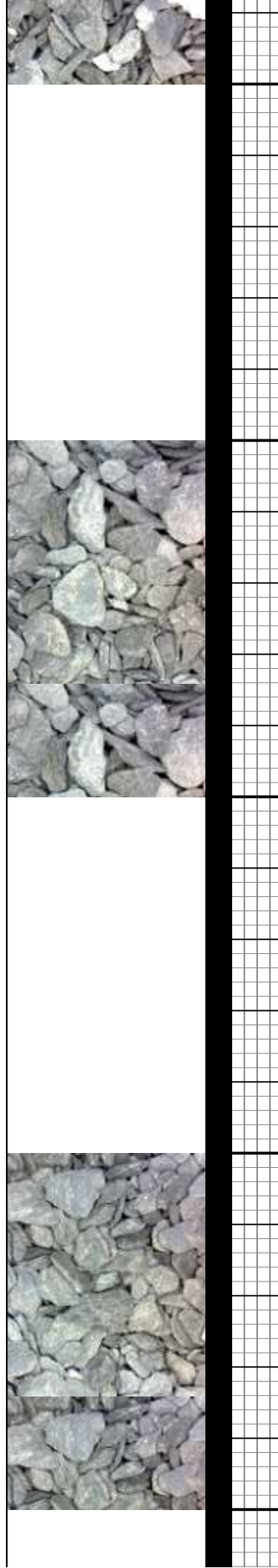
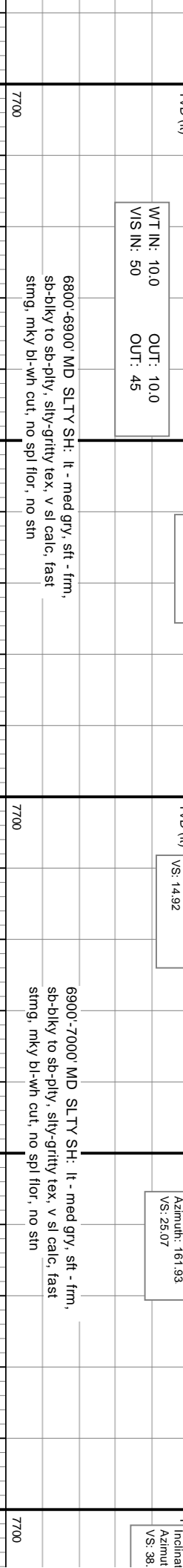
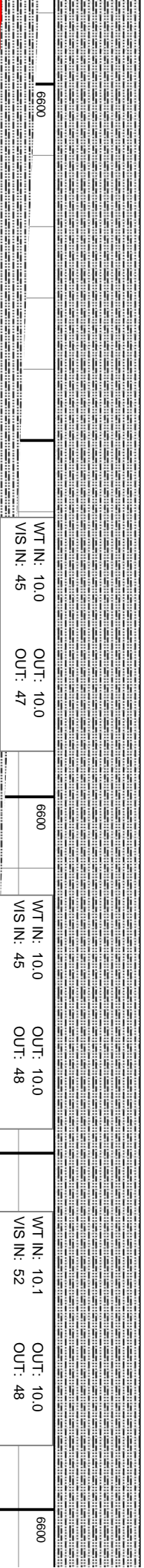
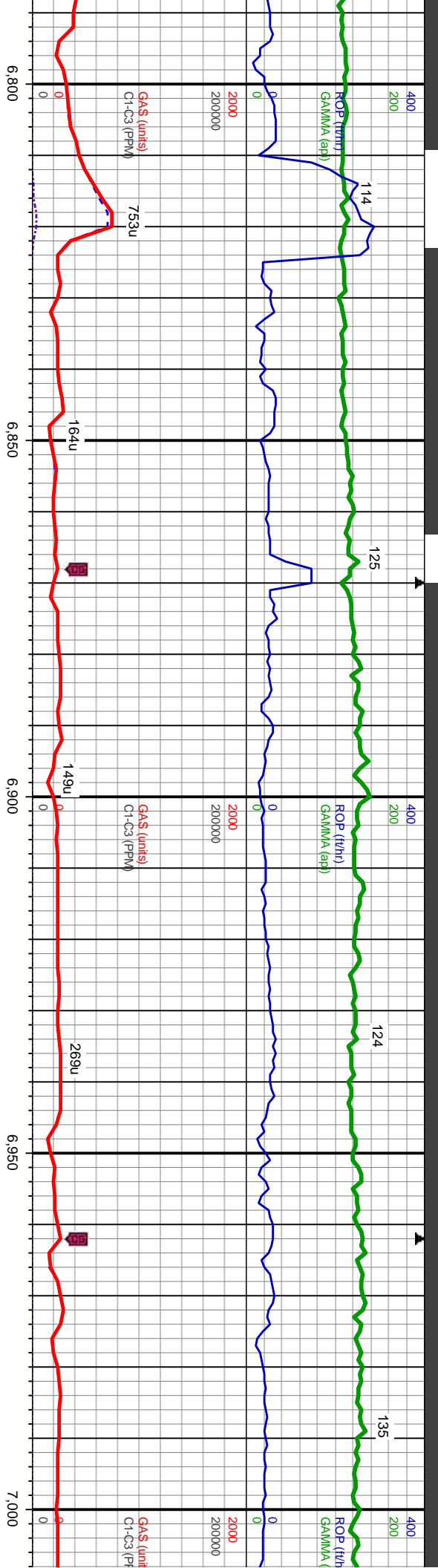
MD: 6.774
TVD: 6.746.43
Inclination: 2.11
Azimuth: 161.65
VS: -1.26

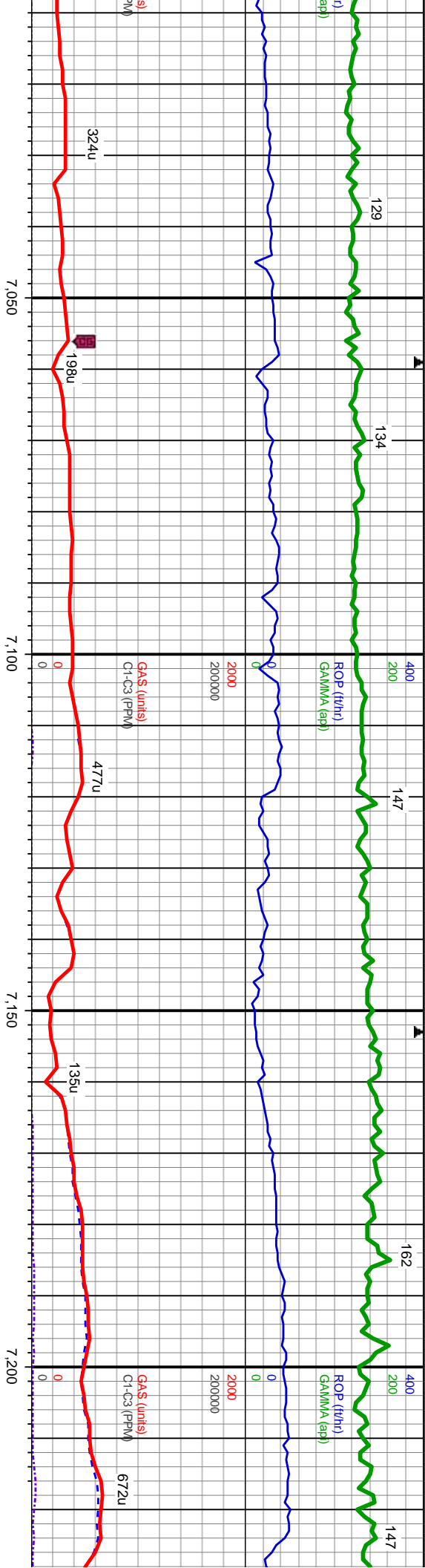
WT IN: 10.1 OUT: 10.1
VIS IN: 47 OUT: 46

6600'-6700' MD SLTY SH: lt - med gry, sft - frm,
sb-bkly to sb-pty, silty-gritty tex, v sl calc, fast
string, mky bl-wh cut, no spl flor, no str

6700'-6800' MD SLTY SH: lt - med gry, sft - frm,
sb-bkly to sb-pty, silty-gritty tex, v sl calc, fast
string, mky bl-wh cut, no spl flor, no str







WT IN: 10.1+	OUT: 10.2
VIS IN: 44	OUT: 49

WT IN: 10.2	OUT: 10.1+
VIS IN: 50	OUT: 48

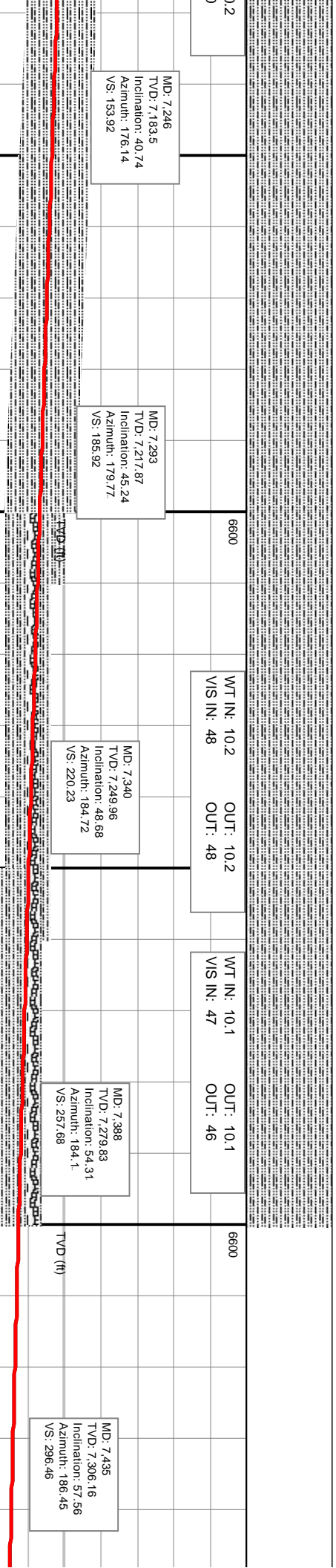
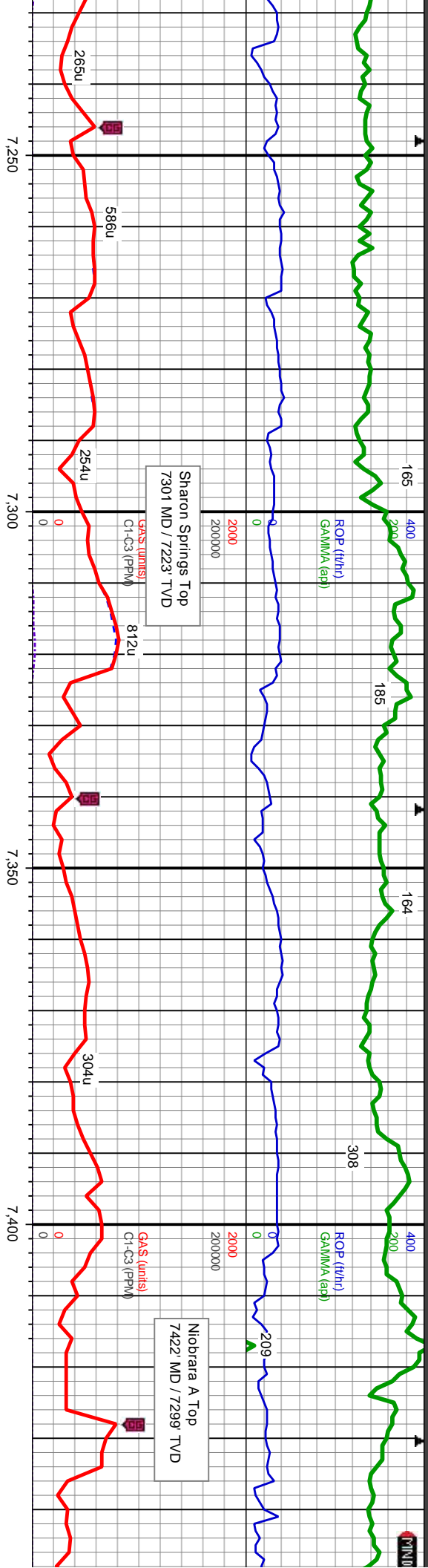
WT IN: 10.2	OUT: 10.2
VIS IN: 50	OUT: 51

MD: 7.199 TVD: 7.146.66 Inclination: 35.99 Azimuth: 173.66 VS: 124.89	WT IN: 10.2 OUT: 10.2	VIS IN: 49 OUT: 50
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MD: 7.057 TVD: 7.023.44 Inclination: 24.27 Azimuth: 168.29 VS: 55.59	MD: 7.105 TVD: 7.066.47 Inclination: 28.29 Azimuth: 170.33 VS: 76.45	MD: 7.152 TVD: 7.107.39 Inclination: 30.64 Azimuth: 172.65 VS: 99.29
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7000'-7100' MD SLTY SH: lt - med gry, sft - frm, sb-bkly to sb-plty, silty-grity tex, v sl calc, fast sting, mky bl-wh cut, no spl floor, no stm	7700
7100'-7200' MD SLTY SH: lt - med gry, sft - frm, sb-bkly to sb-plty, silty-grity tex, v sl tr pyr, tr bent, fast sting, mky bl-wh cut, no spl floor, no stm	7700
7200' to sb occ t	7700

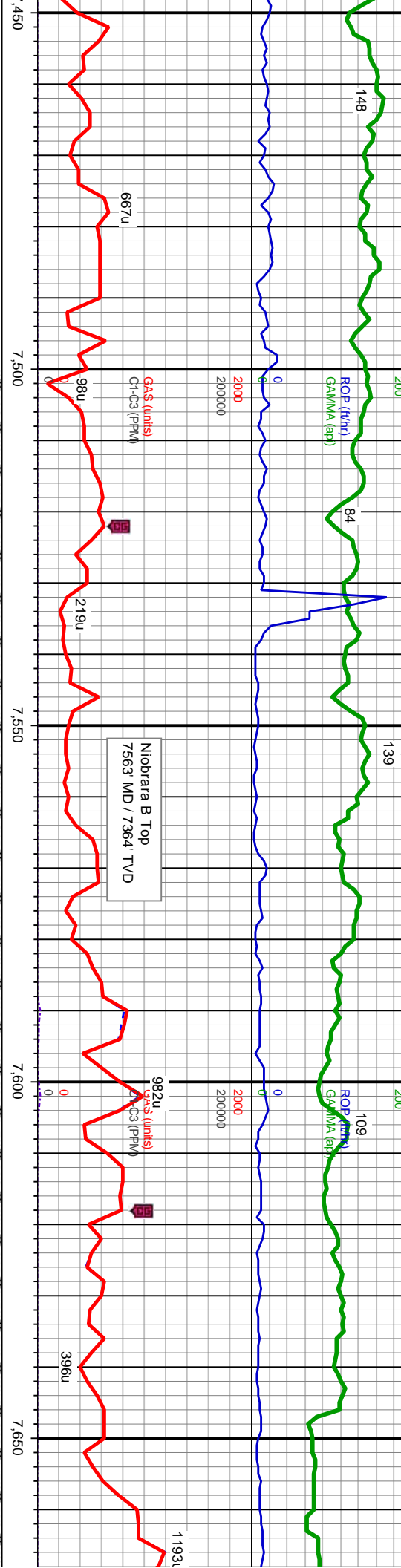




-7300' MD SLTY SH: lt - med gry, sft - frm, sb-biky
 plty, slty-gritty tex, v sl calc, v sl tr pyr, occ bent,
 rryel min flor, wk stmg mky bl-wh cut, no str

7300'-7400' MD SLTY SH: lt - dk gry, mod sft - hd, sb-blky to sb-pty, silty-gritty tex, v sl calc, v sl tr pyr, abnt bent, abnt bri yel min flor, wk stmg mky bl-wh cut, no stn





WT IN: 10.3 OUT: 10.3
VIS IN: 49 OUT: 49

WT IN: 10.2 OUT: 10.2
VIS IN: 50 OUT: 51

WT IN
VIS IN

MD: 7.483
TVD: 7.330.63
Inclination: 61.11
Azimuth: 187.17
VS: 337.48

TVD (ft)

MD: 7.533
TVD: 7.362.83
Inclination: 66.17
Azimuth: 186.31
VS: 381.99

MD: 7.577
TVD: 7.368.34
Inclination: 72.52
Azimuth: 182.7
VS: 423.02

MD: 7.609
TVD: 7.376.52
Inclination: 77.86
Azimuth: 180.77
VS: 453.94

MD: 7.640
TVD: 7.381.53
Inclination: 83.55
Azimuth: 180.71
VS: 484.52

SAMPLE

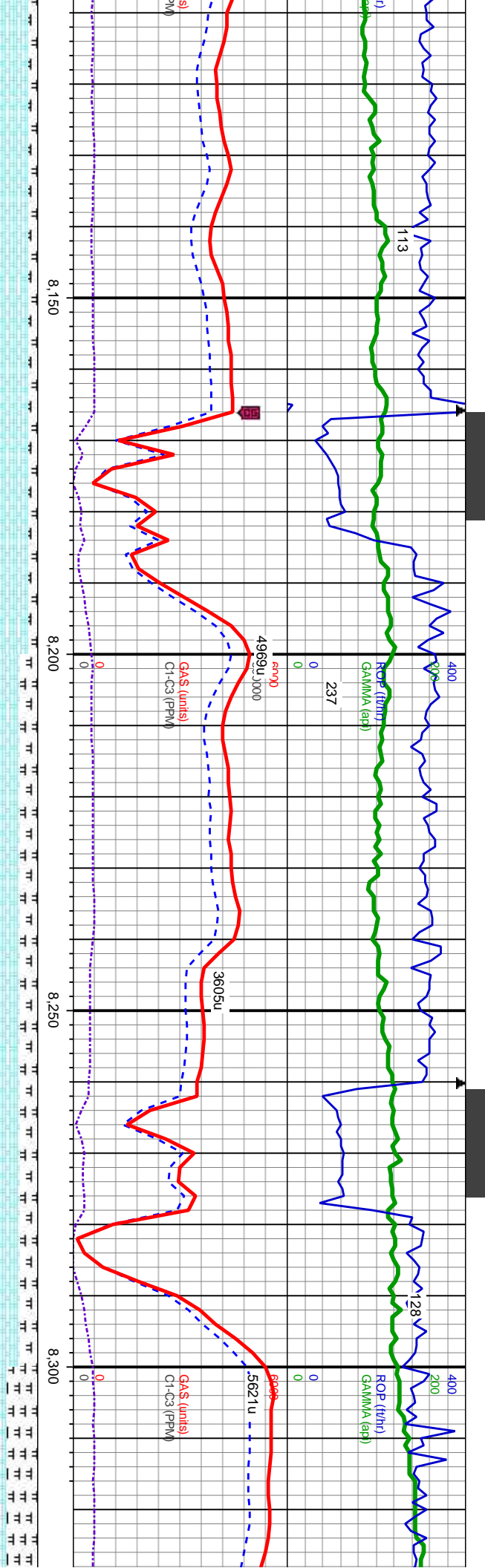
7700

7500'-7600' MD: CHK: lt-med gy, mot, sb blk-y-sb pily, sft-sl frm, fri, chky-sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, sily, calc, fast stimg mky bl-wh cut, no spl flor, no sin

7700

7600'-7700' MD: CHK: lt-med gy-gy brn, mo blk-y-sb pily, sft-sl frm, fri, chky-sb wxy, v - calc, fast stimg mky bl-wh cut, no spl flor, no





WT IN: 9.3+
VIS IN: 38

OUT: 9.3
OUT: 38

MD: 8,206
TVD: 7,377.15
Inclination: 90.83
Azimuth: 179.33
VS: 1,050.03

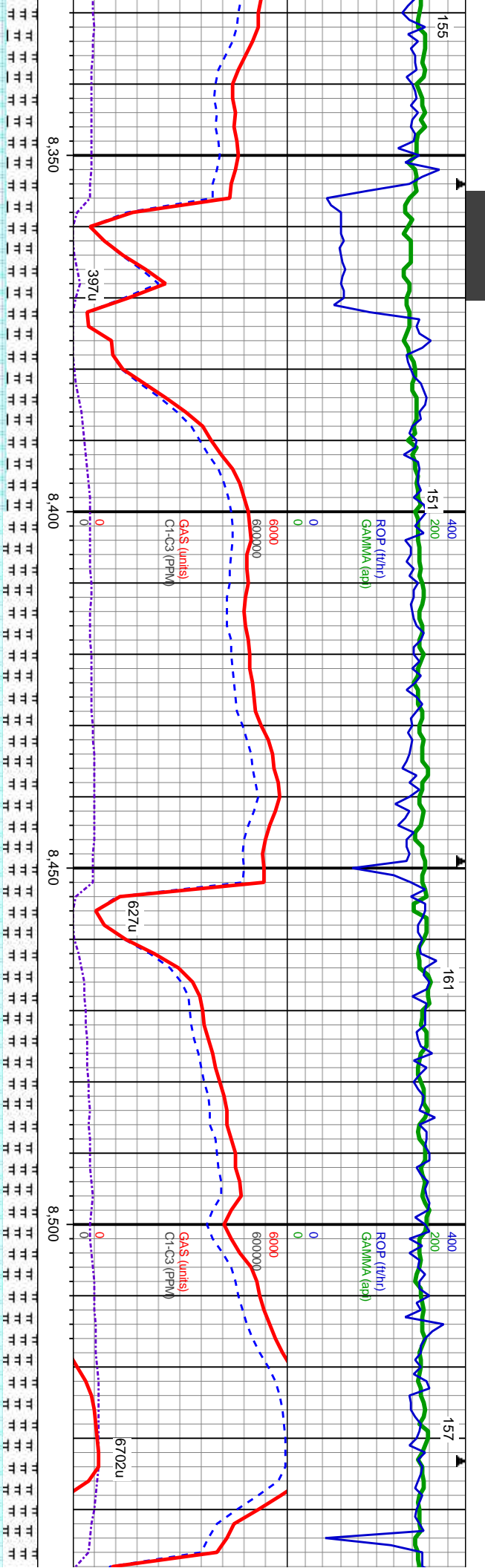
MD: 8,300
TVD: 7,376.1
Inclination: 90.46
Azimuth: 180.17
VS: 1,144.02

8100'-8200' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, occ mlst, v calc, fast sting mky bl-wh cut, no spl flor, no sin

8200'-8300' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ calc incl, fast sting mky bl-wh cut, no spl flor, no sin

8300'-8400' MD: chky, sb wxy, v c silty, calc, occ cal





OUT: 9.4
OUT: 39

WT IN: 9.3+
VIS IN: 41

OUT: 9.4
OUT: 42

CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri,
alc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm,
e incl, fast stimg mky bl-wh cut, no spl flr, no str

8400'-8500' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri,
chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod
sft-frm, silty, calc, occ calc incl, fast stimg mky bl-wh cut, no spl flr, no sin

8500'-8600' MD: CHK: lt-med gy-gy
fri, chky, sb wxy, v calc, MRLST: me
sft-frm, silty, calc, occ calc incl, fast s

MD: 8.395
TVD: 7.376.08
Inclination: 89.56
Azimuth: 180.27
VS: 1.239.02

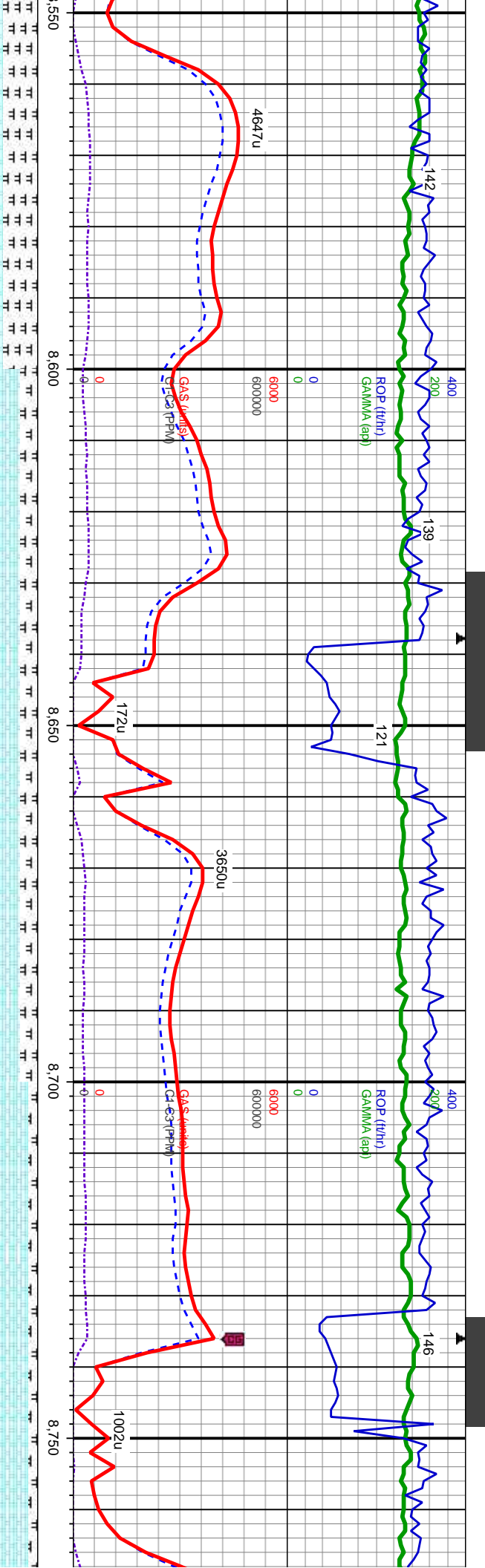
D (ft)

TVD (ft)

7700

7700





brn, mot, sb blk-y-sb ply, sft-mod frm,
d-dk gy-gy brn, sb ply-sb blk-y, mod
ing mky bl-wh cut, no spl flr, no str

8600'-8700' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri,
chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm,
sily, calc, occ calc incl, fast sting mky bl-wh cut, no spl flr, no str

8700'-8800' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, ;
sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod
occ calc incl, rr pyr, tr foss, fast rad sting cir bl-wh cut, no spl

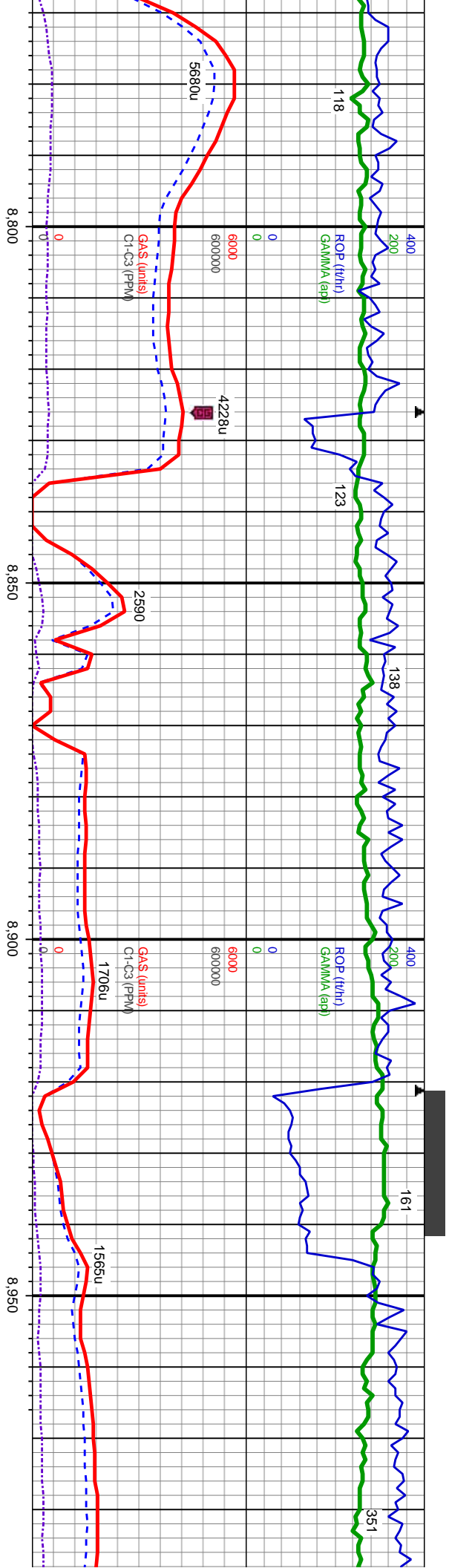
MD: 8.583
TVD: 7.376
Inclination: 90.49
Azimuth: 180.46
VS: 1.427102

MD: 8.678
TVD: 7.375.11
Inclination: 90.58
Azimuth: 181.38
VS: 1.522.01

MD:
TVD:
Incl:
Azir
VS:

WT IN: 9.4 VIS IN: 43	OUT: 9.4+	42
TVD (ft)		
7700		





9.3+ OUT: 9.4
43 OUT: 42

6600

6600

WT IN: 9.3+ OUT: 9.3+
VIS IN: 42 OUT: 41

sft-mod frm, fri, chky,
d sft-frm, silty, calc,
flor, no stn

8800'-8900' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky,
sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc,
occ calc incl; rr pyr, rr foss; fast rad sting clr bl-wh cut, no spl flor, no stn

8900'-9000' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri,
chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm,
silty, calc, occ calc incl; rr foss; fast rad sting clr bl-wh cut, no spl flor, no stn

8.772
7.374.84
ation: 89.75
uth: 181.36
.615.99

TVD (ft)

MD: 8.866
TVD: 7.374.19
Inclination: 91.04
Azimuth: 181.24
VS: 1.709.97

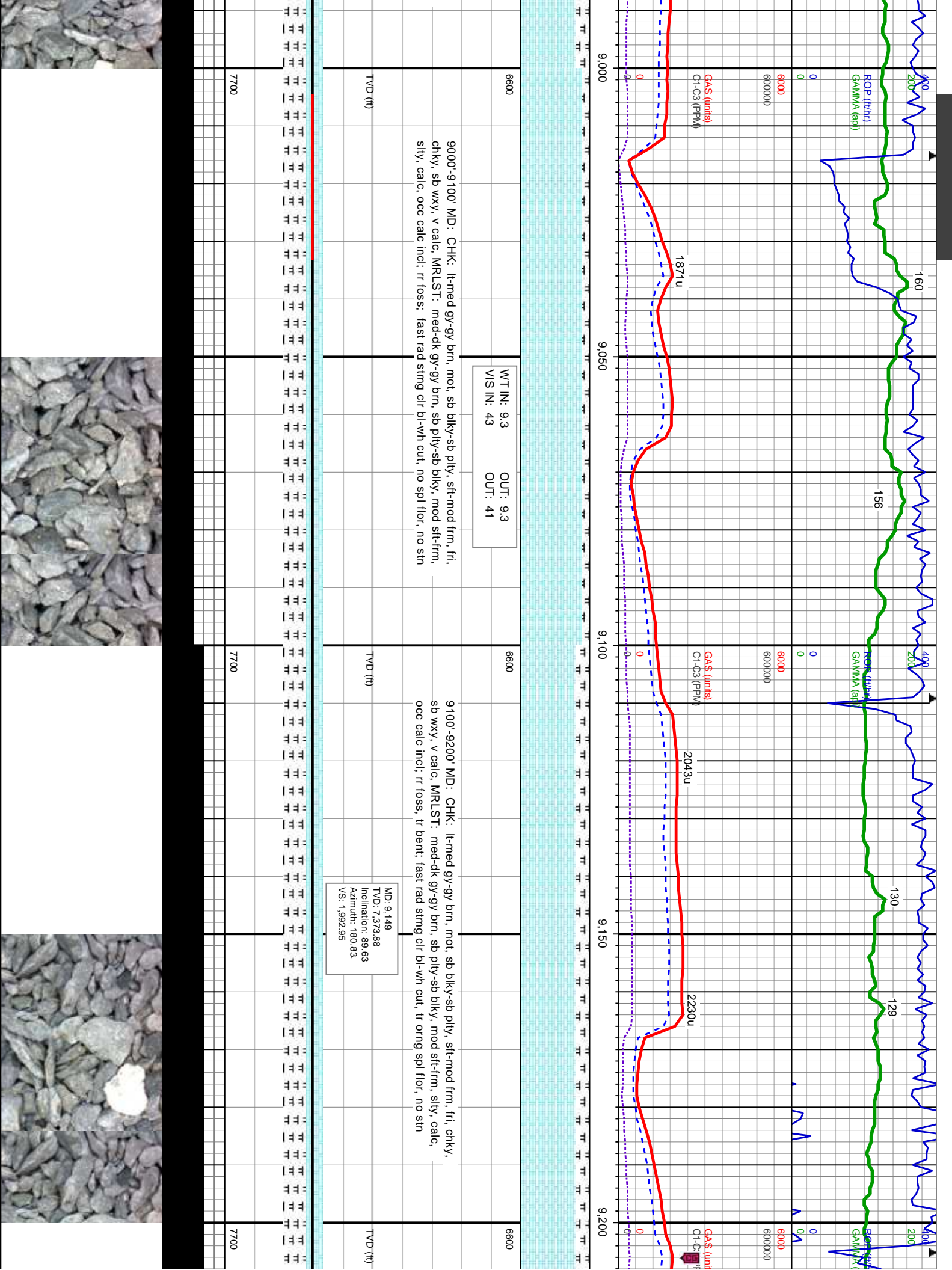
TVD (ft)

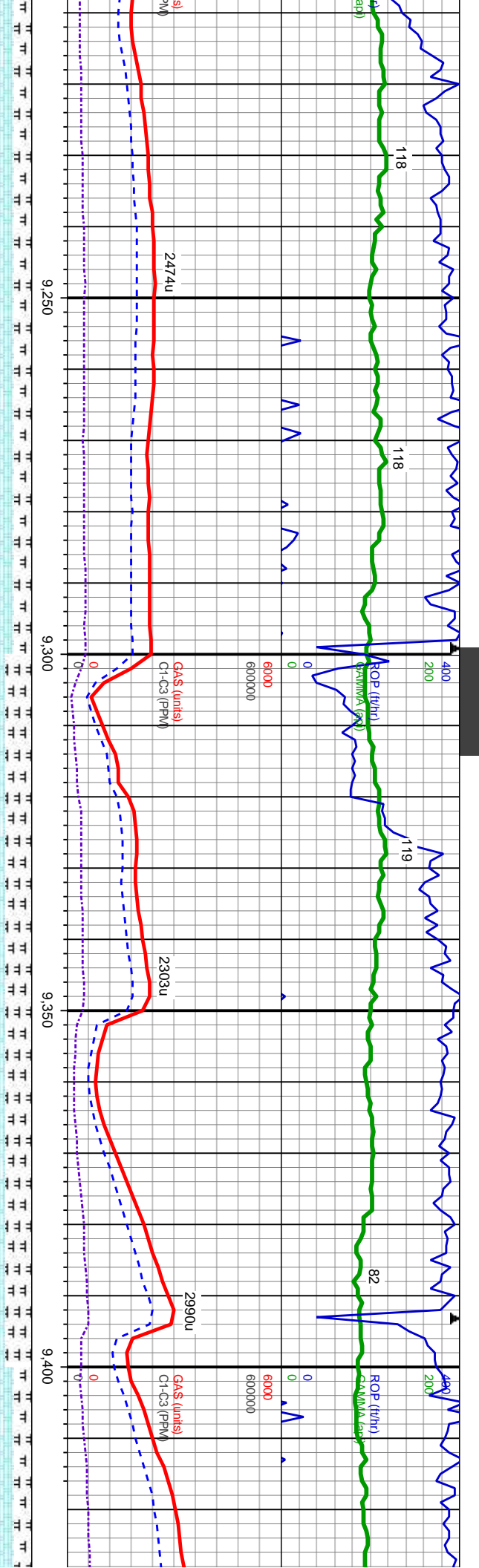
MD: 8.960
TVD: 7.373.31
Inclination: 90.03
Azimuth: 180.86
VS: 1.803.96

7700

7700







WT IN: 9.3
VIS IN: 43

OUT: 9.3
OUT: 41

MD: 9.244
TVD: 7.374.95
Inclination: 89.07
Azimuth: 179.97
VS: 2.087.94

9200'-9300' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, rr bent; fast rad sting cl bl-wh cut, rr orng spl flor, no stn

TVD (ft)

MD: 9.338
TVD: 7.375.85
Inclination: 89.84
Azimuth: 181.4
VS: 2.181.93

9300'-9400' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, rr bent; fast rad sting cl bl-wh cut, rr orng spl flor, no stn

TVD (ft)

MD: 9.338
TVD: 7.375.85
Inclination: 89.84
Azimuth: 181.4
VS: 2.181.93

9400'-9500' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, rr bent; fast rad sting cl bl-wh cut, rr orng spl flor, no stn



200



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1

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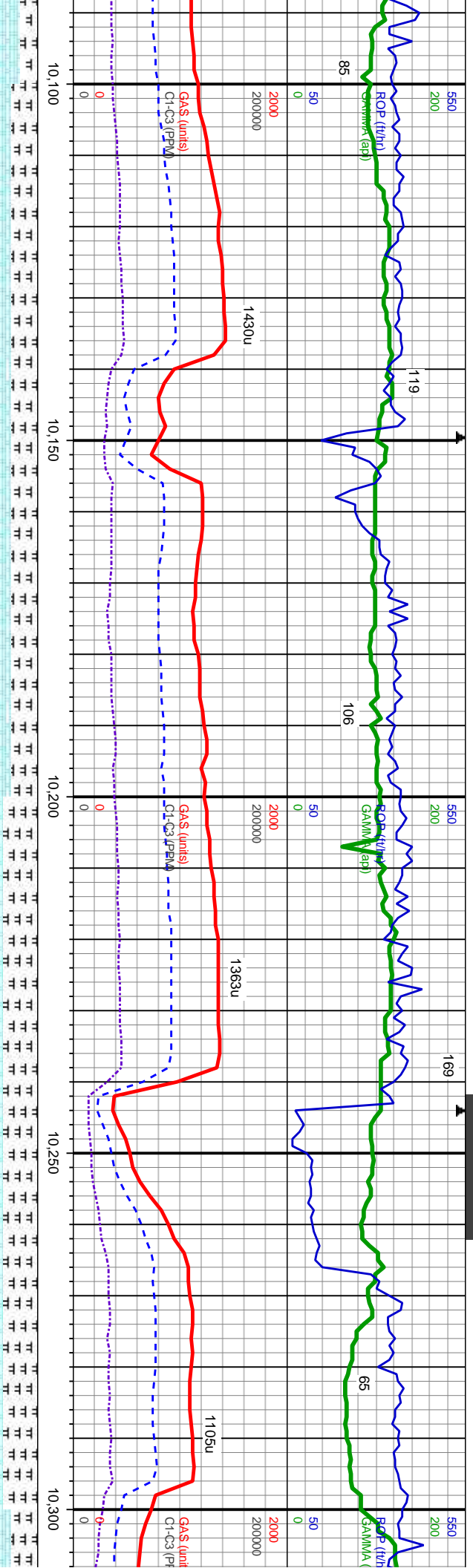
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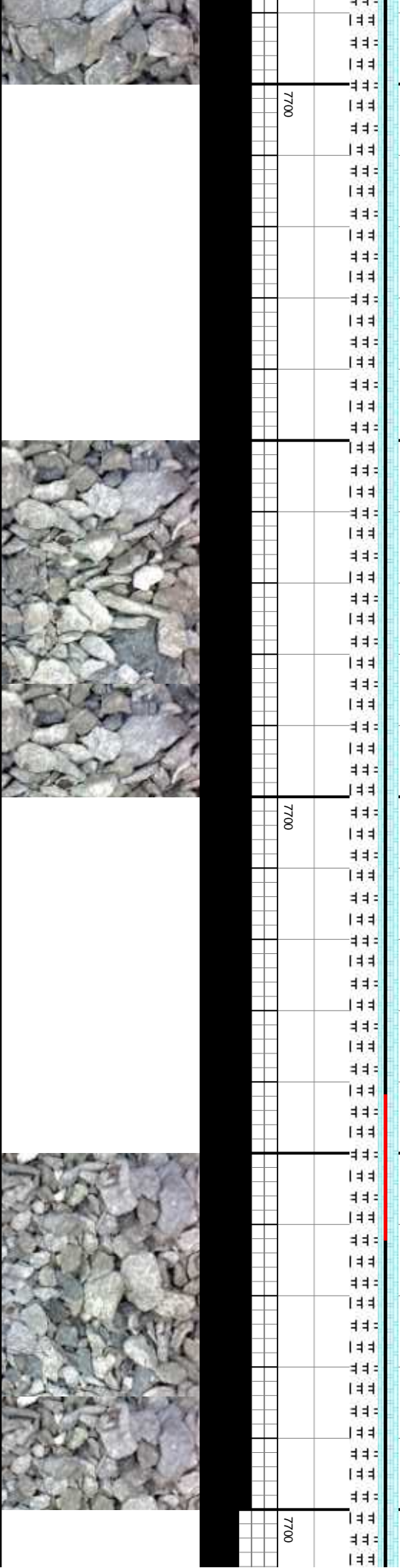
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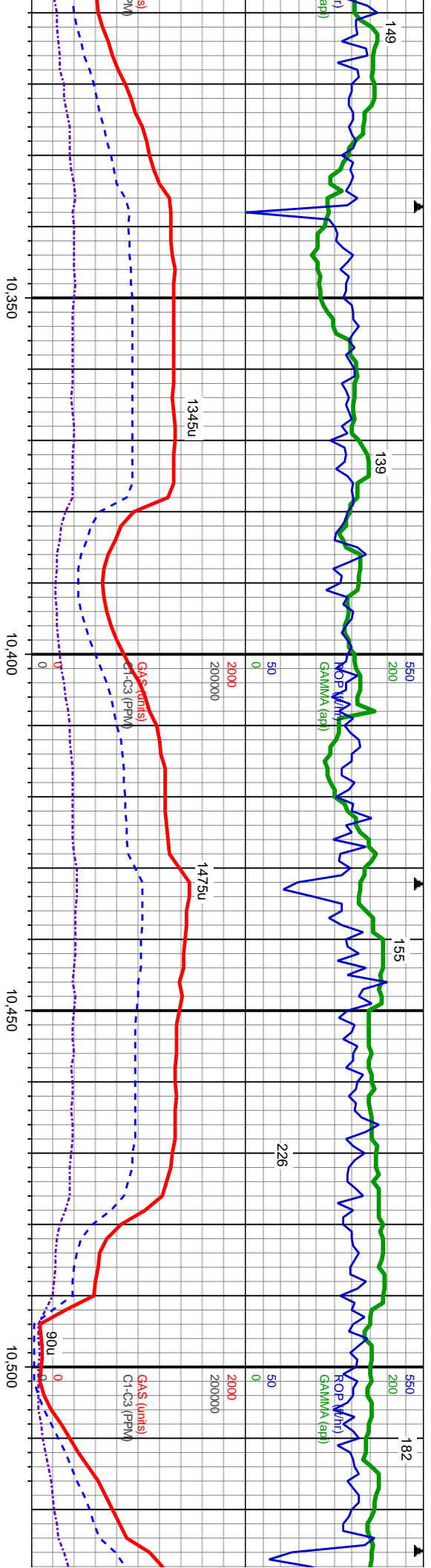




WT IN: 9.3
VIS IN: 43
OUT: 9.3

6600	10100'-10200' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pty, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pty-sb blk-y, mod sft-frm, silty, calc, occ calc incl; tr foss, rr pyr; tr bri yel min flr, fast radg string clr bl-wh cut, no stain	6600	10200'-10300' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pty, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pty-sb blk-y, mod sft-frm, silty, calc, occ calc incl; tr foss, fast radg string clr bl-wh cut, no spl flr, no stain	6600
TVD (ft)		TVD (ft)		TVD (ft)
10,093		10,187		10,281
D: 7.374.68		TVD: 7.373.95		TVD: 7.373.98
Inclination: 90.15		Inclination: 90.74		Inclination: 89.22
muhr: 180.24		Azimuth: 179.65		Azimuth: 180.15
2.936.83		VS: 3.030.82		VS: 3.124.82





0300'-10400' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb
xy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc
incl, tr foss, rr bent, rr bri yel min flor, mod fast stmg bl-wh cut, no spl flor, no stain

MD: 10,376
TVD: 7,374.94
Inclination: 89.63
Azimuth: 180.45
VS: 3.219.81

10400'-10500' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri,
chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty,
calc, occ calc incl, tr foss, tr bri yel min flor, mod fast stmg bl-wh cut, no stain

MD: 10,470
TVD: 7,375.24
Inclination: 90
Azimuth: 179.83
VS: 3.313.81

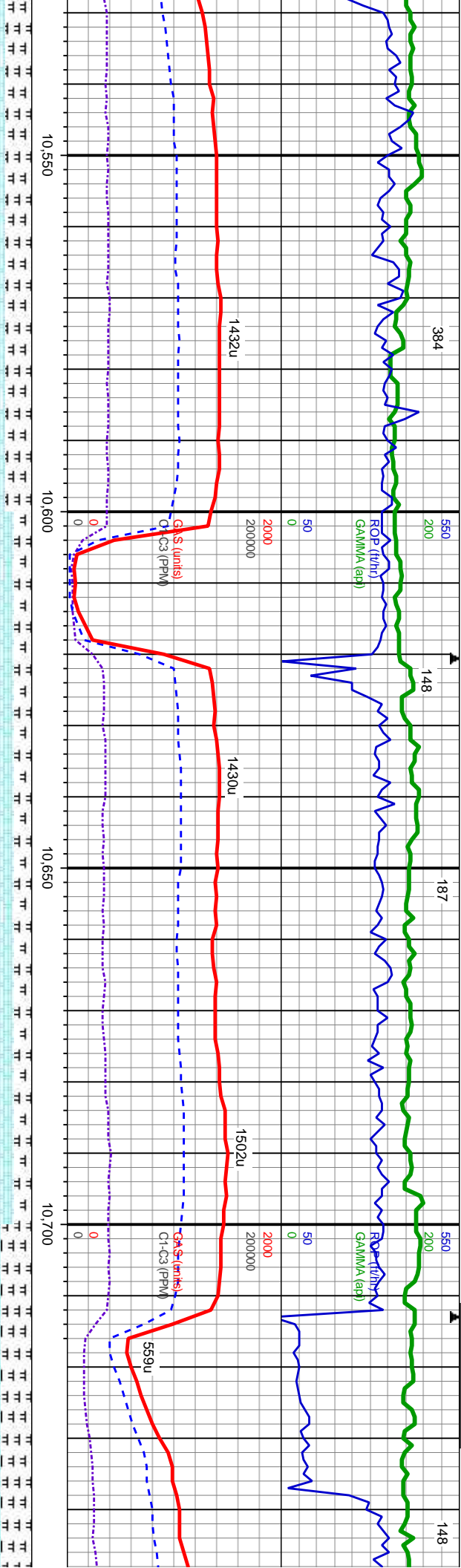
10500'-10600' MD: C
sb wxy, v calc, MRLST
calc incl, tr foss, rr b

TVD (ft)

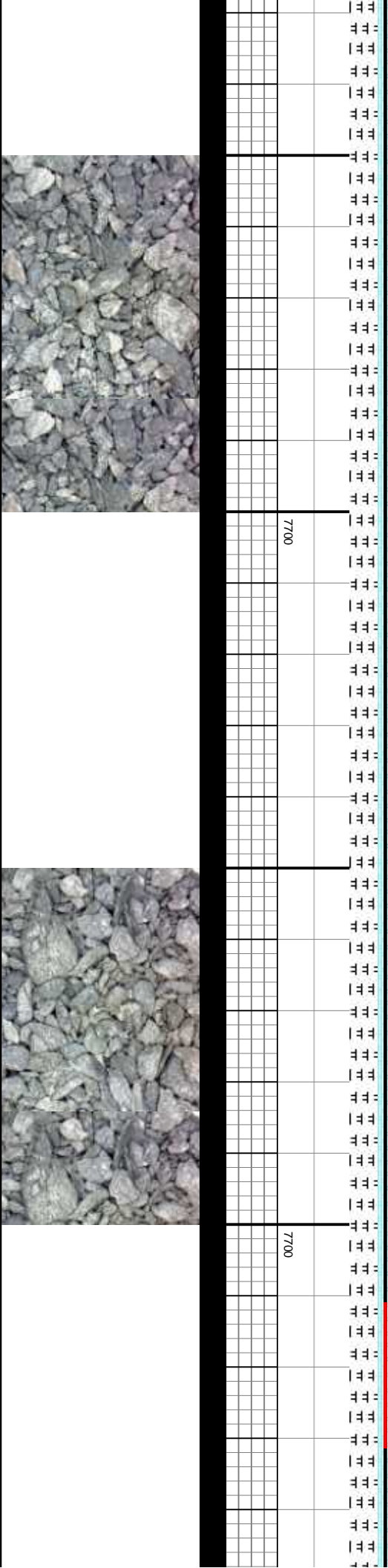
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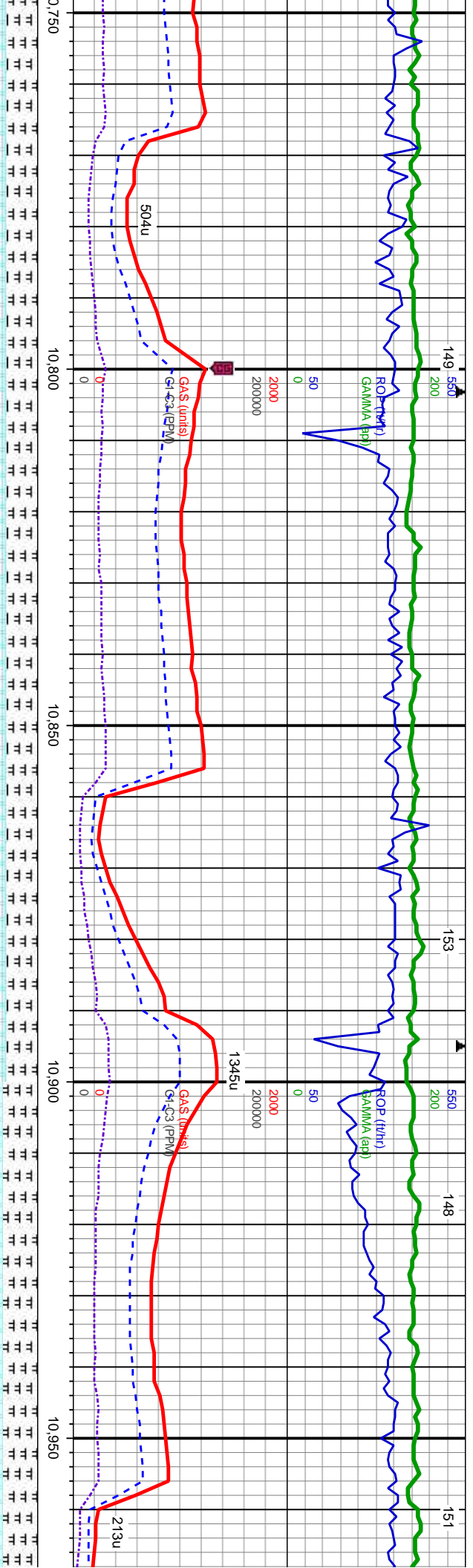
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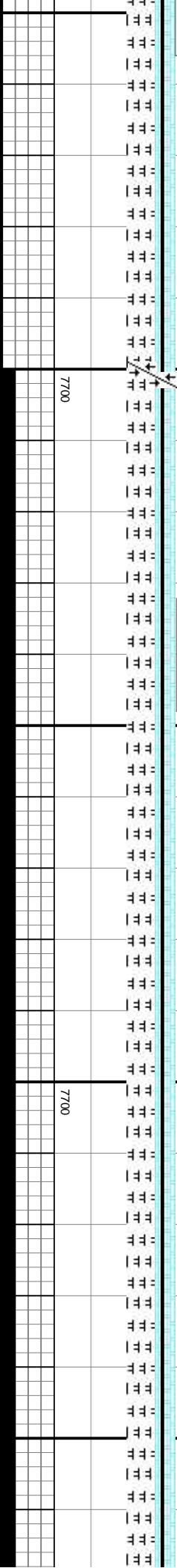


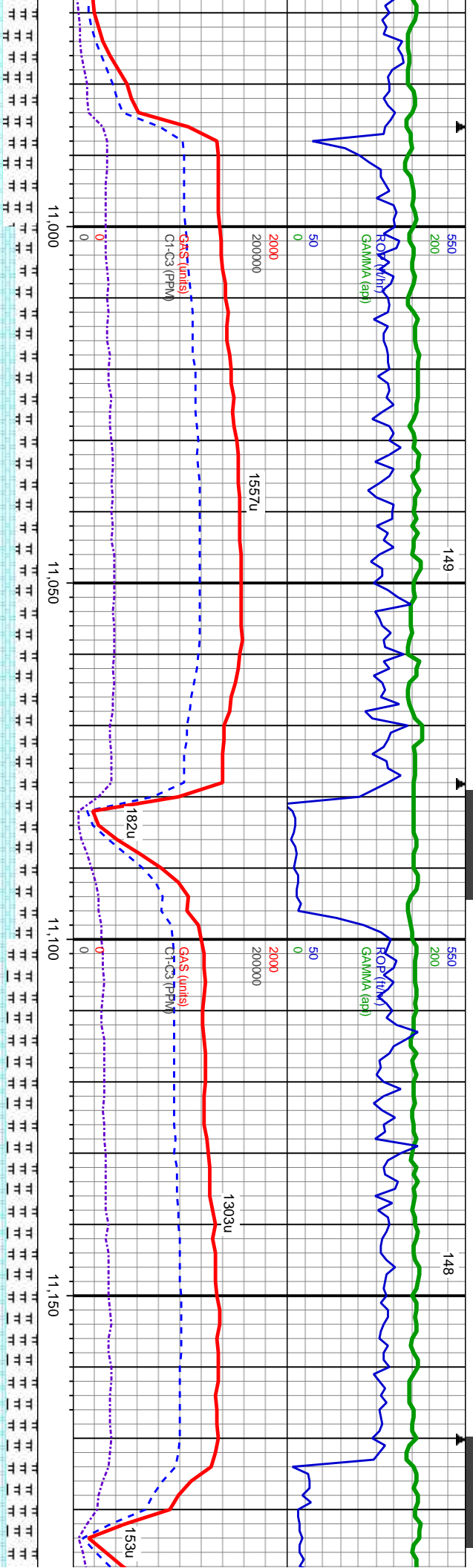
CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ incl; rr foss, tr bent, tr bri yel min flor, mod wk stimg bl-wh cut, no stain		MD: 10.564 TVD: 7.375.09 Inclination: 90.18 Azimuth: 179.86 VS: 3.407.81	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 42	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 42	10700'-10800' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, tr bent, tr bri yel min flor, mod wk stimg bl-wh cut, no stain	MD: 10.656 TVD: 7.374.14 Inclination: 91.01 Azimuth: 180.06 VS: 3.499.8	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 42	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 42	MD: 10.74 TVD: 7.37 Inclination: 91.01 Azimuth: 180.06 VS: 3.591
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mot, sb blk-y-sb ply, sft-mot frm, fri, chky, sb		10800'-10900' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mot frm, fri, chky, wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr foss, tr bent, tr bri yel min flor, fast bri stmg bl-wh cut, no stain	
8	8	MD: 10.840	MD: 10.932
1: 89.59	1: 89.59	TVD: 7.374.14	TVD: 7.374.32
180.27	180.27	Inclination: 89.81	Inclination: 89.96
		Azimuth: 179.84	Azimuth: 179.24
		VS: 3.683.79	VS: 3.775.78





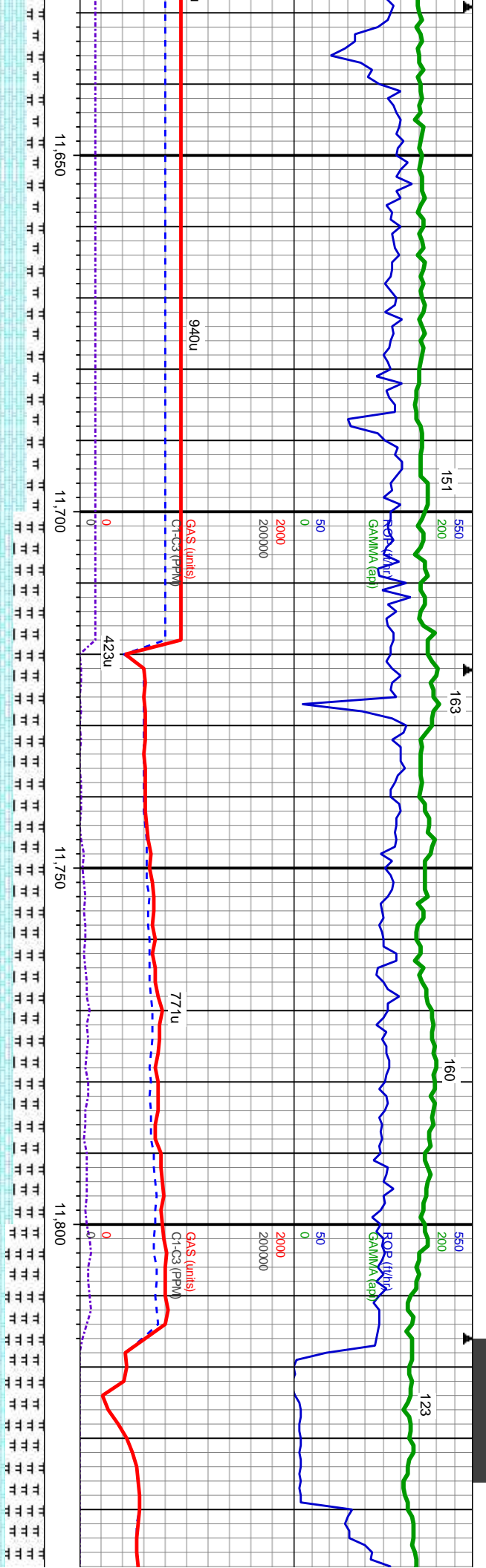
11000-11100 MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, sily, calc, occ calc inci: rr foss, lt bent, tr bri yel min flor, fast bri string bl-wh cut, no stain		6600	WT IN: 9.4+ VIS IN: 45	OUT: 9.6 OUT: 46	6600	WT IN: 9.5 VIS IN: 43	OUT: 9.6 OUT: 45
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MD: 11.024
TVD: 7.374.63
Inclination: 89.66
Azimuth: 178.5
VS: 3.867.75

MD: 11.115
TVD: 7.375.02
Inclination: 89.84
Azimuth: 179.74
VS: 3.958.73

11100-11200 MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod sft-frm, sily, calc, occ calc inci: rr foss, abnt bent, abnt bri yel min flor, mod fast dul sting bl-wh cut, no stain		7700			7700		
--	--	------	--	--	------	--	--





WT IN: 9.6
VIS IN: 43
OUT: 9.5
OUT: 42

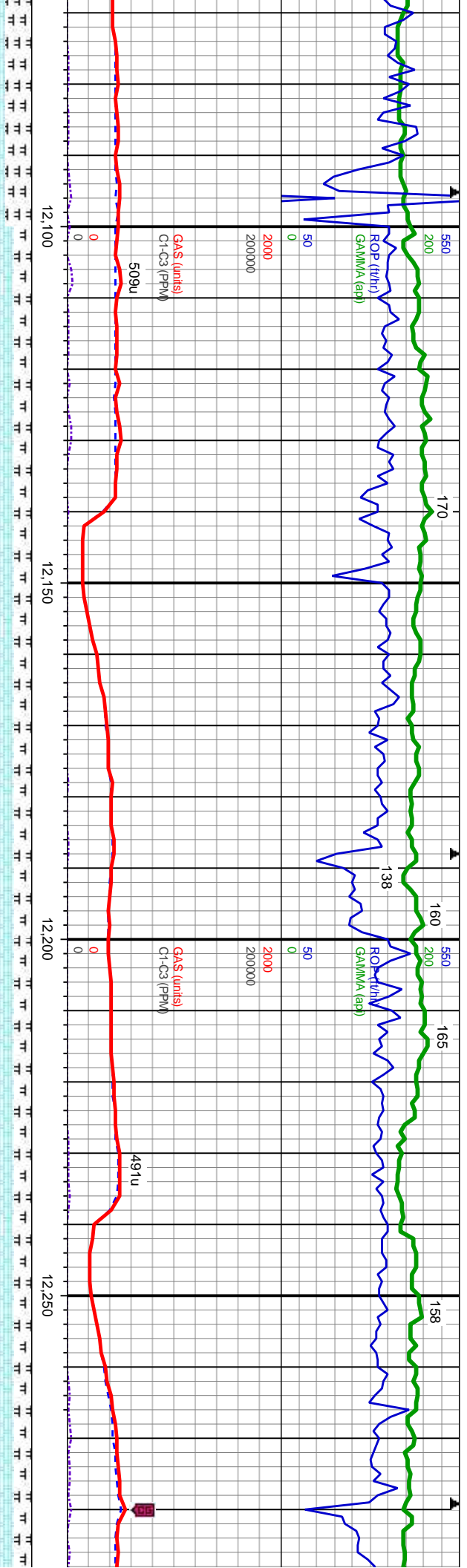
MD: 11.668
TVD: 7.375.5
Inclination: 90.09
Azimuth: 181.92
VS: 4.511.65

TVD (ft)

MD: 11.761
TVD: 7.374.52
Inclination: 91.11
Azimuth: 181.37
VS: 4.604.62

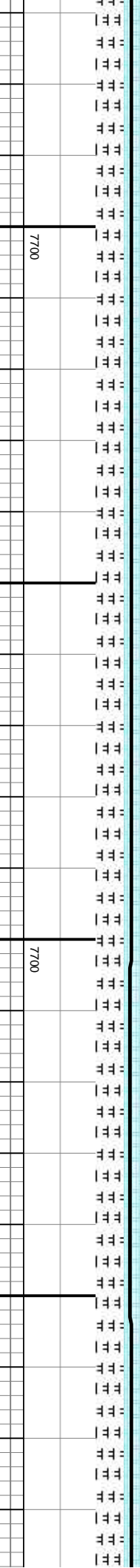
TVD (ft)

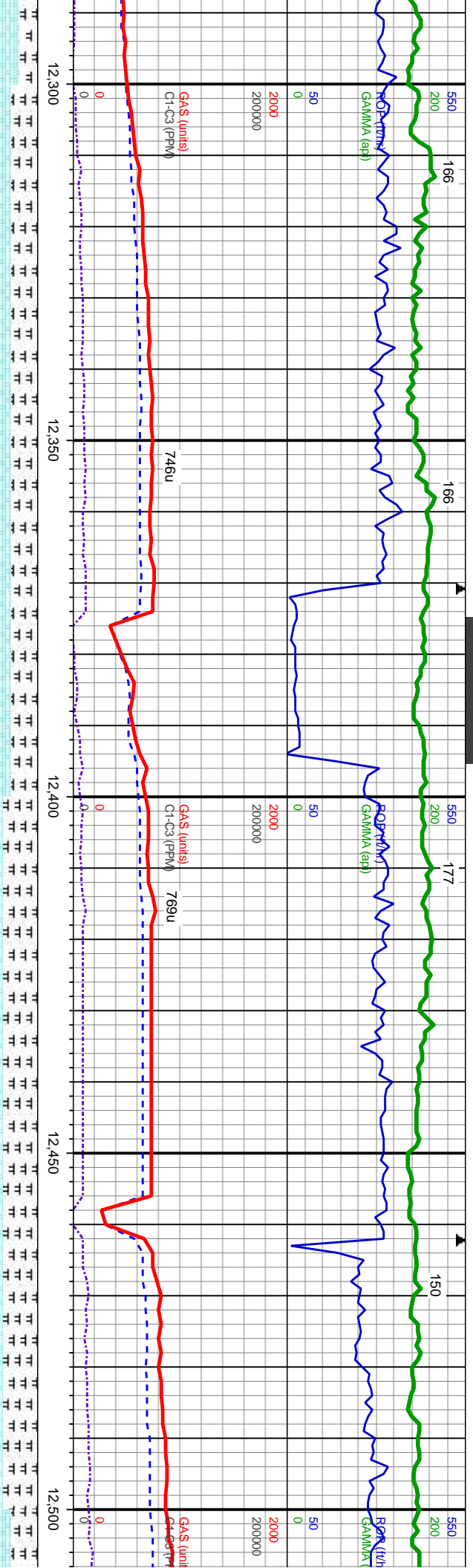




12100-12200 MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pty, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pty-sb blk-y, mod sft-frm, sily, calc, occ calc inci: rr foss, rr bent, rr orng spl flor, fast rad sting bl-wh cut, no str

TVD (ft)





WT IN: 9.5 OUT: 9.6
VIS IN: 43 OUT: 41

MD: 12,320
TVD: 7,374.91
Inclination: 90.89
Azimuth: 180.56
VS: 5.163.5

MD: 12,414
TVD: 7,374.94
Inclination: 89.07
Azimuth: 179.33
VS: 5.287.5

MD: 12,500
TVD: 7,374.94
Inclination: 89.07
Azimuth: 179.33
VS: 5.357

12300-12400 MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pty, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pty-sb blk-y, mod sft-frm, silty, calc, occ calc inci: tr foss, tr bent, tr orng spl flor, fast rad stmg bl-wh cut, no str

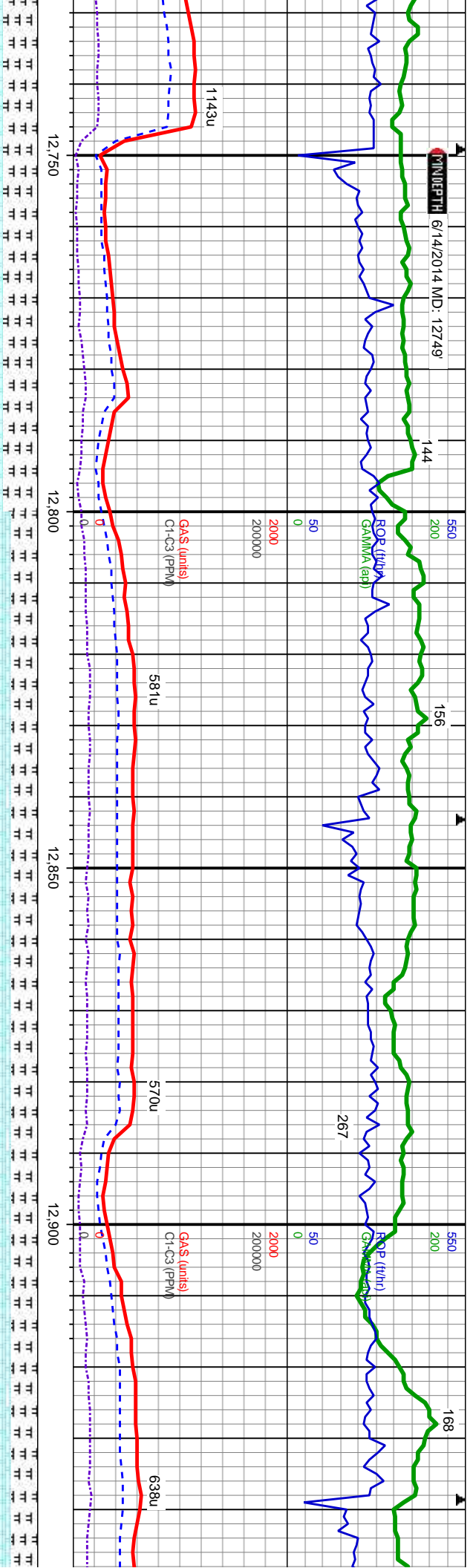
12400-12500 MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pty, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pty-sb blk-y, mod sft-frm, silty, calc, occ calc inci: rr foss, tr bent, tr orng spl flor, fast rad stmg bl-wh cut, no str

7700

7700

7700





med-hk: lt-med gy-gy brn, mot, sb blk-y-sb plty, sft-mod frm, fri, chky, sb med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, sfty, calc, occ calc scat orng spl flr, fast rad stmg bl-wh cut, no stn

MD: 12,791
TVD: 7,377.69
Inclination: 89.35
Azimuth: 179.15
VS: 5,634.41

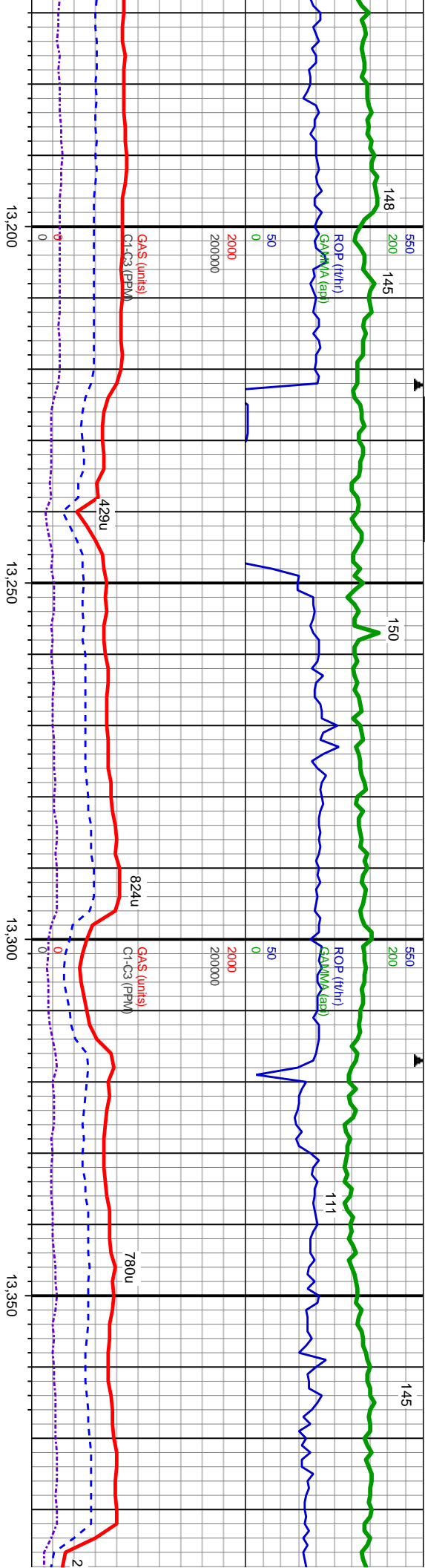
12800-12900 MD: CHK: lt-med gy-gy brn, mod, sb biky-sb ply, stfm-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb biky, mod stf-frm, stly, calc, occ calc inci, rr foss, scat bent, scat orng spl flwr, fast rad stmg bl-wh cut, no sin

WT IN: 9.5	OUT: 9.5
VIS IN: 44	OUT: 42

MD: 12,886
TVD: 7,378.36
Inclination: 89.84
Azimuth: 178.73
VS: 5,729.37

12900-13000° MD: CHK: lt-med gy-gy br
wxy, v calc, MRLST: med-dk gy-gy brn, sl
incl; rr foss, scat bent, scat orng spl flor, f





WT IN: 9.5 OUT: 9.6
VIS IN: 43 OUT: 41

WT IN: 9.5 OUT: 9.6
VIS IN: 44 OUT: 42

sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, mod sft-frm, sily, calc, occ
13200'-13300' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, mod sft-frm, sily, calc, occ
calc inci: rr foss, rr pyr, tr bent, tr orng-yl spl flor, fast stmg bl-wh cut, no stn

69
76.57
on: 90.55
179.39
2.23

MD: 13.263
TVD: 7.376.12
Inclination: 90
Azimuth: 180.96
VS: 6.106.29

MD: 13.357
TVD: 7.375.75
Inclination: 90.46
Azimuth: 180.95
VS: 6.200.29

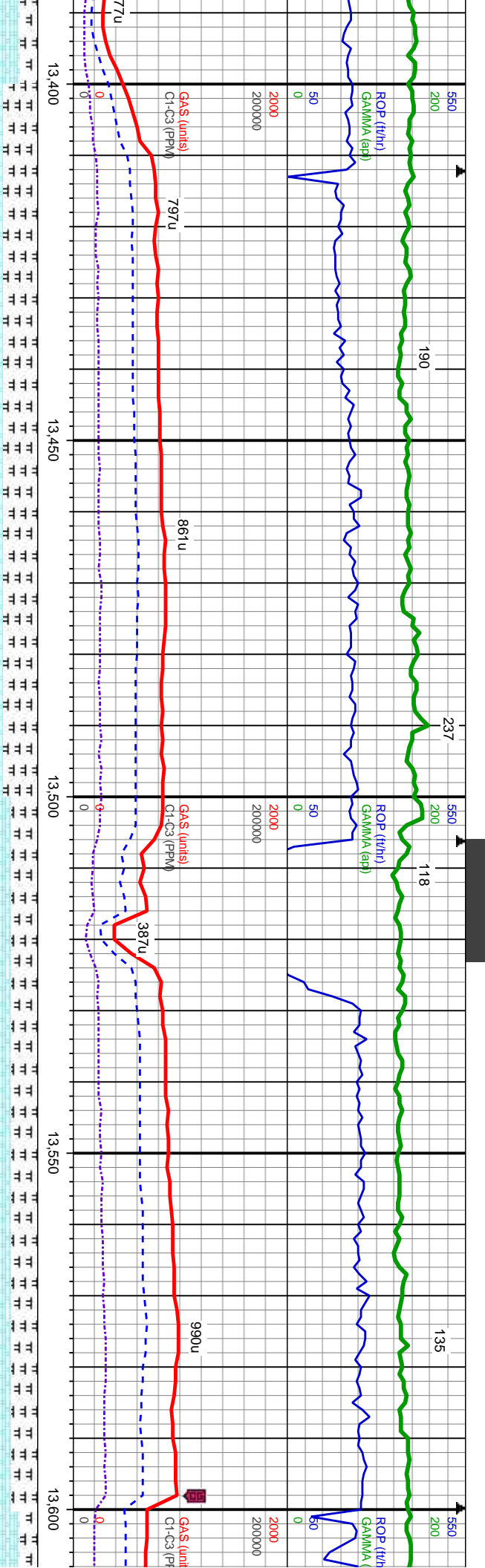
TVD (ft)

TVD (ft)

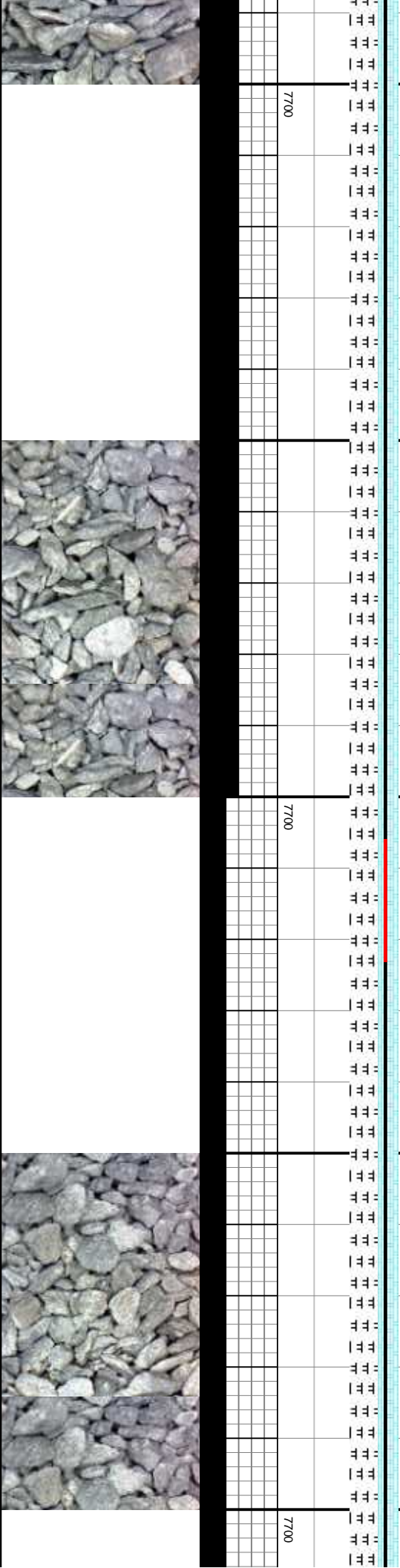
7700

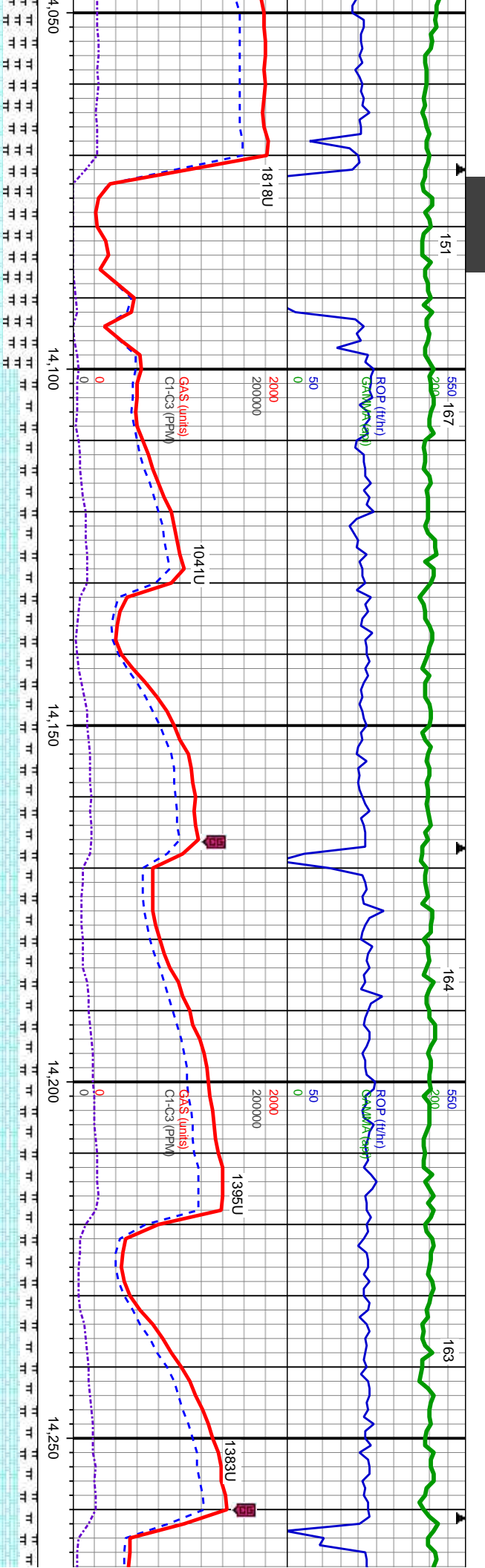
7700





13400'-13500' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr foss, rr pyr, tr bent, tr orng-yel spl flor, mod fast stmg bl-wh cut, no sin		6600	
TVD (ft)		6600	
MD: 13.451 TVD: 7.374.74 Inclination: 90.77 Azimuth: 180.89 VS: 6.294.28			
13500'-13600' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr foss, rr pyr, tr bent, tr orng-yel spl flor, wk stmg mky bl-wh cut, no sin		6600	
TVD (ft)		6600	
MD: 13.546 TVD: 7.374.36 Inclination: 89.69 Azimuth: 180.38 VS: 6.389.27			
TVD (ft)		6600	





WT IN: 9.5 OUT: 9.4
VIS IN: 40 OUT: 44

6600

6600

WT IN: 9
VIS IN: 4

14,050-14,075' MD: CHK: lt-med gy-gy brn, mod sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, tr pyr, tr bent, tr org-yel spl flwr, fast rad sting bl-wh cut, no stn

14100'-14200' MD: CHK: lt-med gy-gy brn, mod sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, tr pyr, tr bent, tr org-yel spl flwr, fast rad sting bl-wh cut, no stn

14200'-14300' MD: CHK: lt-med gy-gy brn, mod sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, tr pyr, tr bent, tr org-yel spl flwr, fast rad sting bl-wh cut, no stn

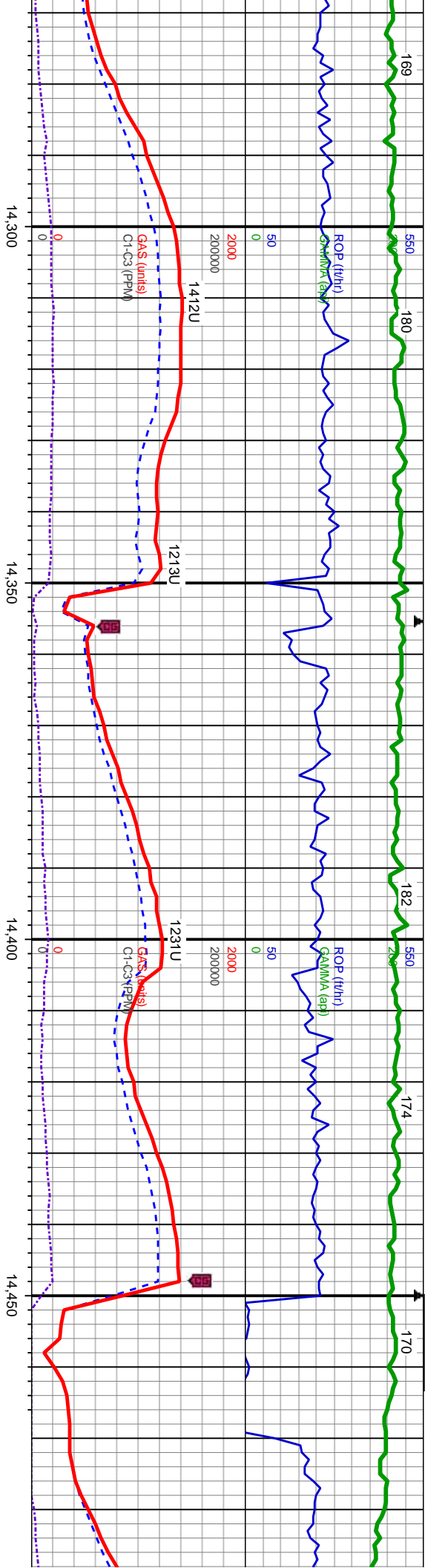
MD: 14,112
TVD: 7,372.53
Inclination: 88.98
Azimuth: 180.94
VS: 6.9552

MD: 14,207
TVD: 7,373.79
Inclination: 89.5
Azimuth: 181.25
VS: 7.05018

7700

7700





4+	OUT: 9.5	6600	WT IN: 9.5	OUT: 9.4
1	OUT: 43		VIS IN: 42	OUT: 42

ft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blkly, mod sft-frm, silty, calc, occ calc incl; r
foss, scat bent, 10% orng-yel spl flor, fast rad sting bl-wh cut, no sin

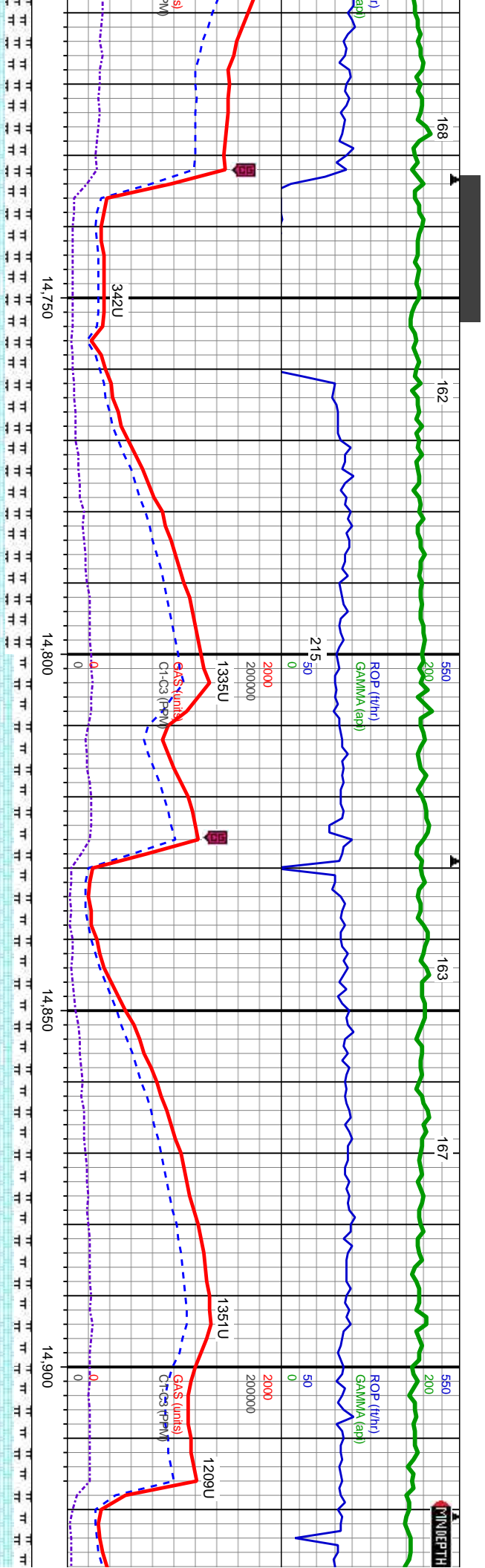
MD: 14,301
TVD: 7,374.38
Inclination: 89.78
Azimuth: 180.93
VS: 7,144.17

MD: 14,396
TVD: 7,374.56
Inclination: 90
Azimuth: 180.5
VS: 7,239.17

MD: 14
TVD: 7
Inclination
Azimut
VS: 7.3

14300'-14400'	MD: CHK: lt-med gy-gy brn, mot, sb blkly-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blkly, mod sft-frm, silty, calc, occ calc incl; r	14400'-14500'	MD: CHK: lt-med gy-gy brn, mot, sb blkly-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blkly, mod sft-frm, silty, calc, occ calc incl; r
7700		7700	





WT IN: 9.5 OUT: 9.5
VIS IN: 43 OUT: 42

MD: 14.772
TVD: 7.375.69
Inclination: 88.48
Azimuth: 180.25
VS: 7.618.13

TVD (ft)

MD: 14.866
TVD: 7.377.99
Inclination: 88.7
Azimuth: 180.3
VS: 7.709.11

TVD (ft)

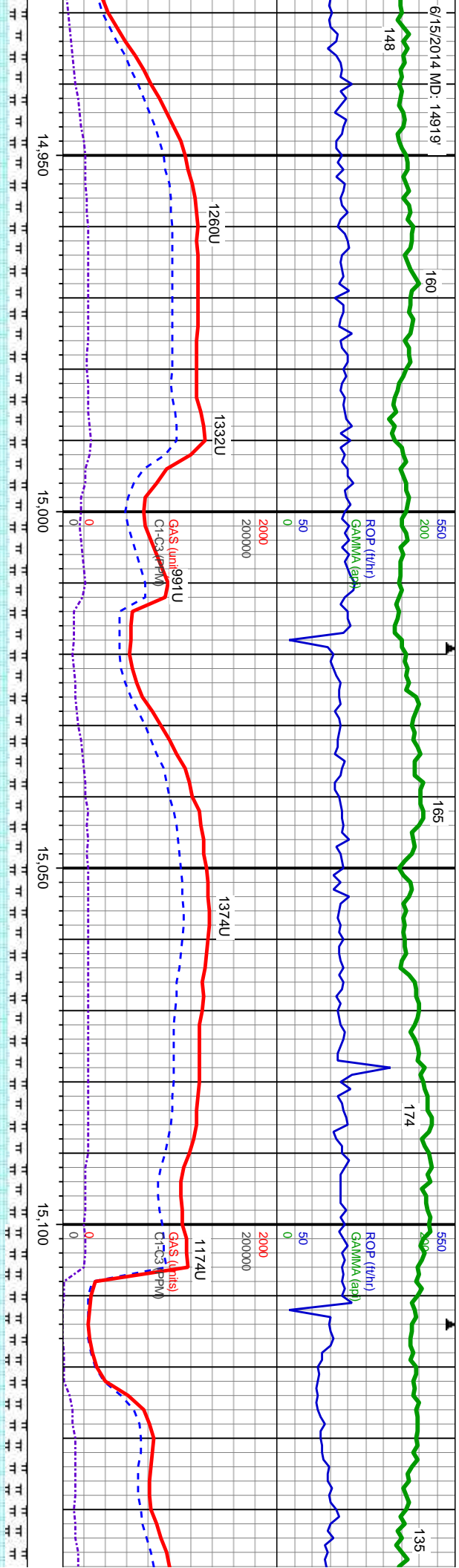
00-14800' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr, scat bent, scat org-yel spl flor, fast rad sting bl-wh cut, no stn

14800-14900' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr, foss, tr bent, tr org-yel spl flor, fast rad sting bl-wh cut, no stn

14900-15000' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr, foss, tr bent, tr org-yel spl flor, fast rad sting bl-wh cut, no stn



6/15/2014 MD: 14919



T: 9.5
T: 41

WT IN: 9.5	OUT: 9.5
VIS IN: 42	OUT: 41

VIS IN: 42 OUT: 41

It-med gy-gy brn, mot, sb blk-y-sb ply, sft-med frm, fri, chky, sb wxy,
gy-gy brn, sb ply-sb blk-y, mod sft-frim, silty, calc, occ calc incl; r
pl flor, fast stmg bl-wh cut, no sin

15000'-15100' MD: CHK: lt-med gy-gy brn, mot. sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl; rr foss, lt bent, tr org-yet spl flor, mod fast string bl-w cut, no stn

15100'-15200' MD: CHK: It-med gy-gy brn, med
v calc, MRLST: med-dk gy-gy brn, sb ply-sb t
foss, abnt bent, abnt orng-yeel spl flor, mod slo

MD: 14,960
TVD: 7,380.05
Inclination: 88.79
Azimuth: 180.17
VS: 7,803.08

TVD: 7,380.05

Inclination: 88.79

Azimuth: 180.17

VS: 7,803.08

TVD (ft)

MD: 15,055
TVD: 7,381.87
Inclination: 89.01
Azimuth: 180.03
VS: 7,898.06

TVD: 7,381.87

Inclination: 89.01

Azimuth: 180.03

VS: 7,898.06

TV D (ft)

MD: 15,1
TVD: 7,3
Inclination:
Azimuth:
VS: 7,99.

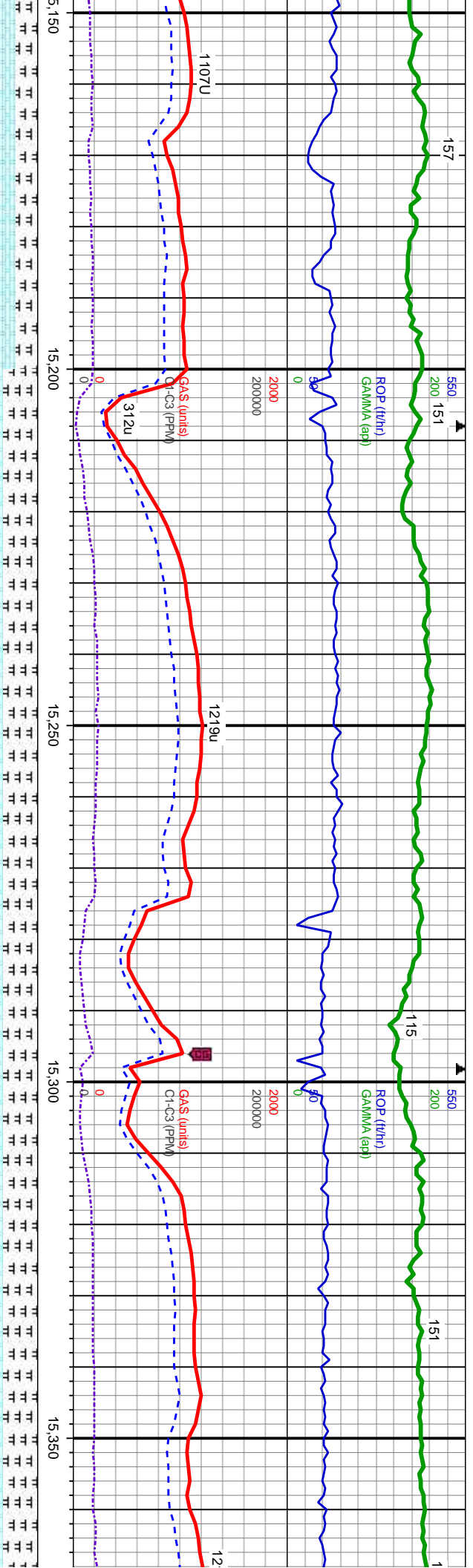
TVĐ: 7,3

Inclination

Azimuth:

VS: 7,99





15,150 15,200 15,250 15,300 15,350

1107U

312u

1219u

12

ROP (ft/hr)

GAMMA (app)

GAS (units)

CI-C3 (PPM)

15200'-15300' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr foss, abnt bent, abnt org-yel spl flr, slow string bl-wh cut, no str

15300'-15400' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr foss, abnt bent, abnt org-yel spl flr, slow string bl-wh cut, no str

49

83.02

89.59

180.14

2.06

TVD (ft)

MD: 15,243

TVD: 7,383.28

Inclination: 90.09

Azimuth: 179.93

VS: 8.08605

TVD (ft)

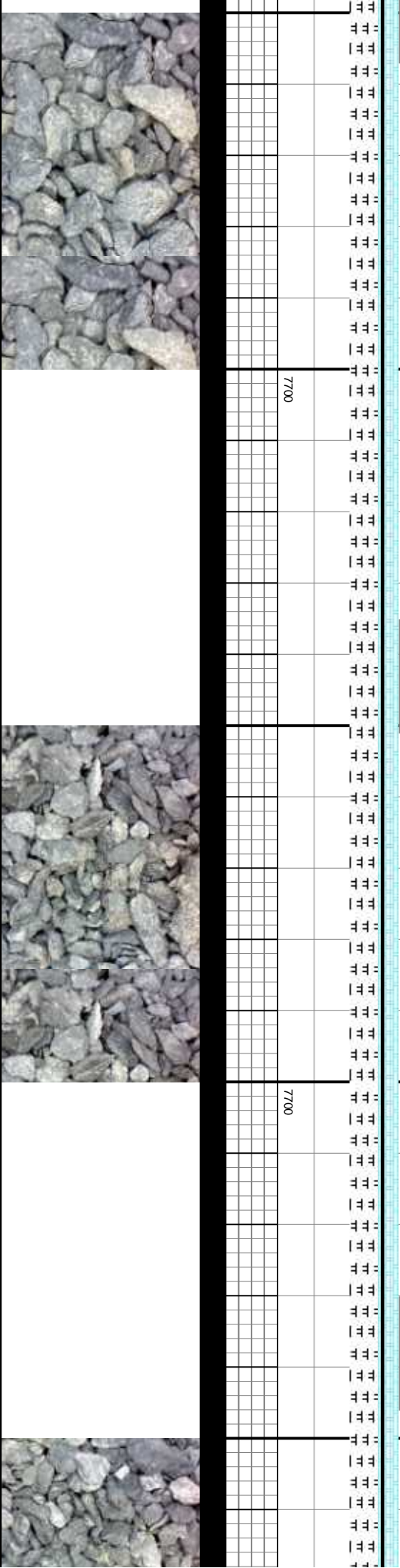
MD: 15,338

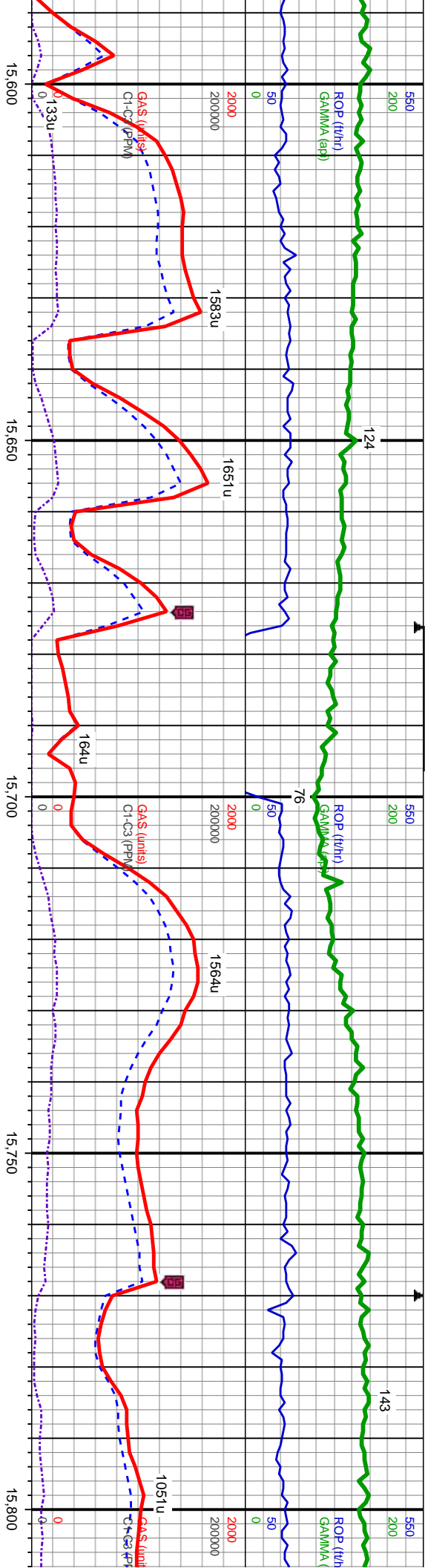
TVD: 7,382.7

Inclination: 90.61

Azimuth: 179.97

VS: 8.18105





WT IN: 9.5
VIS IN: 40
OUT: 9.5
OUT: 42

MD: 15.621
TVD: 7.383.57
Inclination: 90.58
Azimuth: 180.31
VS: 8.464.04

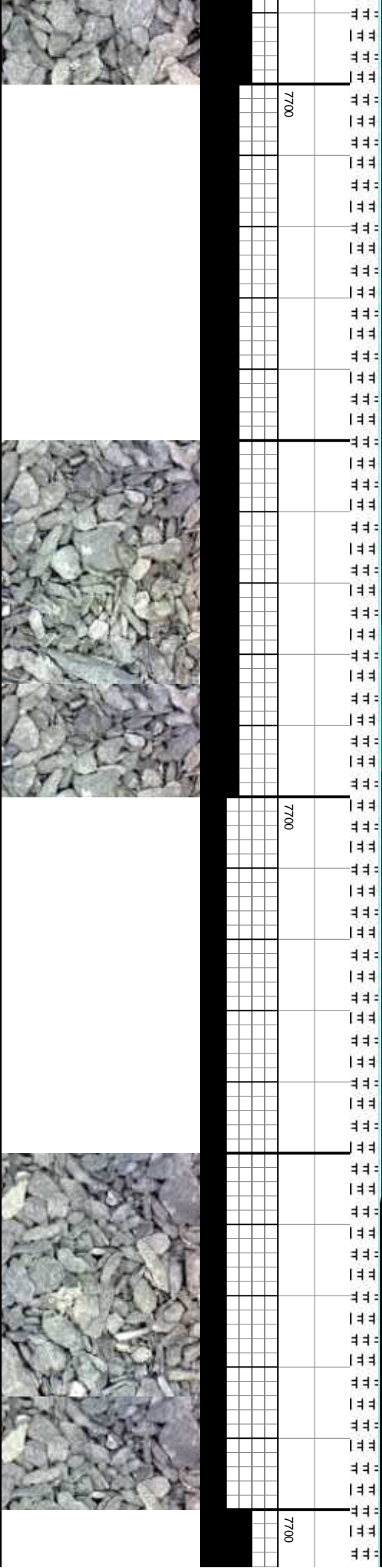
MD: 15.716
TVD: 7.383.84
Inclination: 89.1
Azimuth: 180.61
VS: 8.559.03

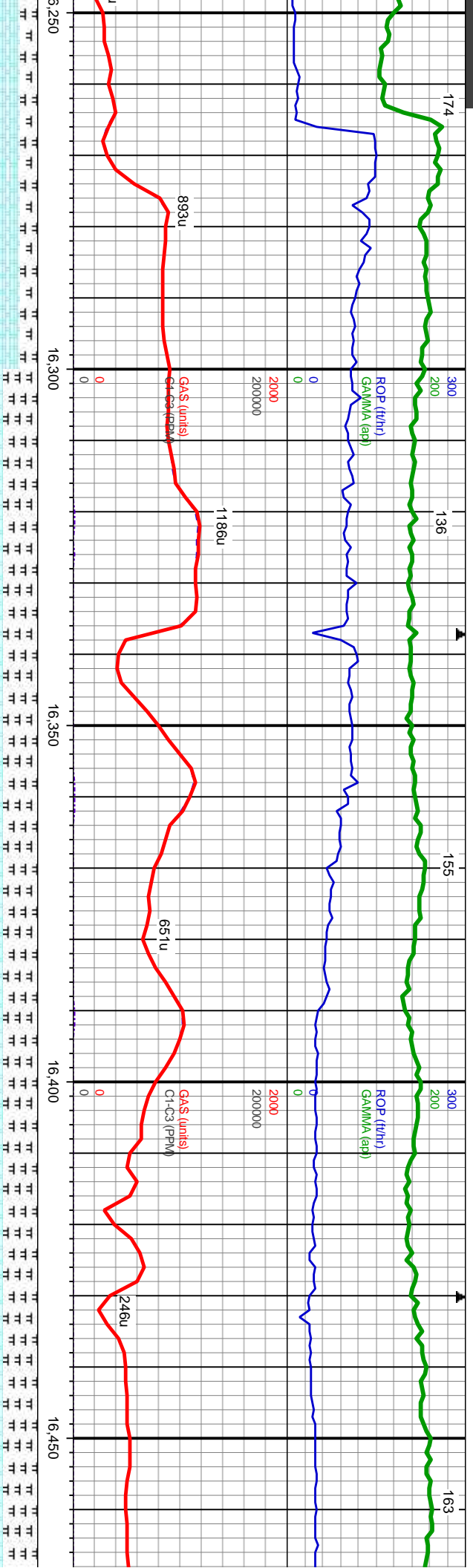
MD: 15
TVD: 7
Inclina
Azimut
VS: 8.6

15600 -15700' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy,
v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr
foss, abnt bent, abnt org-yel spl flr, mod fast sting bl-wh cut, no sin

15700 -15800' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy,
v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr
foss, abnt bent, abnt org-yel spl flr, slow sting mky bl-wh cut, no sin

15800 -15900' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy,
v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr
foss, abnt bent, abnt org-yel spl flr, mod fast sting bl-wh cut, no sin





WT IN: 9.3+ OUT: 9.3+
VIS IN: 45 OUT: 45

ot, sb blkly-sb ply, sft-mod frm, fri, chky, sb wxy,
ply, mod sft-frm, silty, calc, occ calc incl, rr
simg bl-wh cut, no sin

MD: 16.283
TVD: 7.387.17
Inclination: 87.9
Azimuth: 182.12
VS: 9.125.84

TVD (ft)

7700

WT IN: 9.3+ OUT: 9.3+
VIS IN: 45 OUT: 45

16300'-16400' MD: CHK: lt-med gy-gy brn, mot, sb blkly-sb ply, sft-mod frm, fri, chky, sb wxy,
v calc, MRLST: med-dk gy-gy brn, sb ply-sb blkly, mod sft-frm, silty, calc, occ calc incl, rr
foss, abnt bent, abnt ong-yel spl flor, fast rad simg bl-wh cut, no sin

MD: 16.377
TVD: 7.390.01
Inclination: 88.64
Azimuth: 182.07
VS: 9.219.75

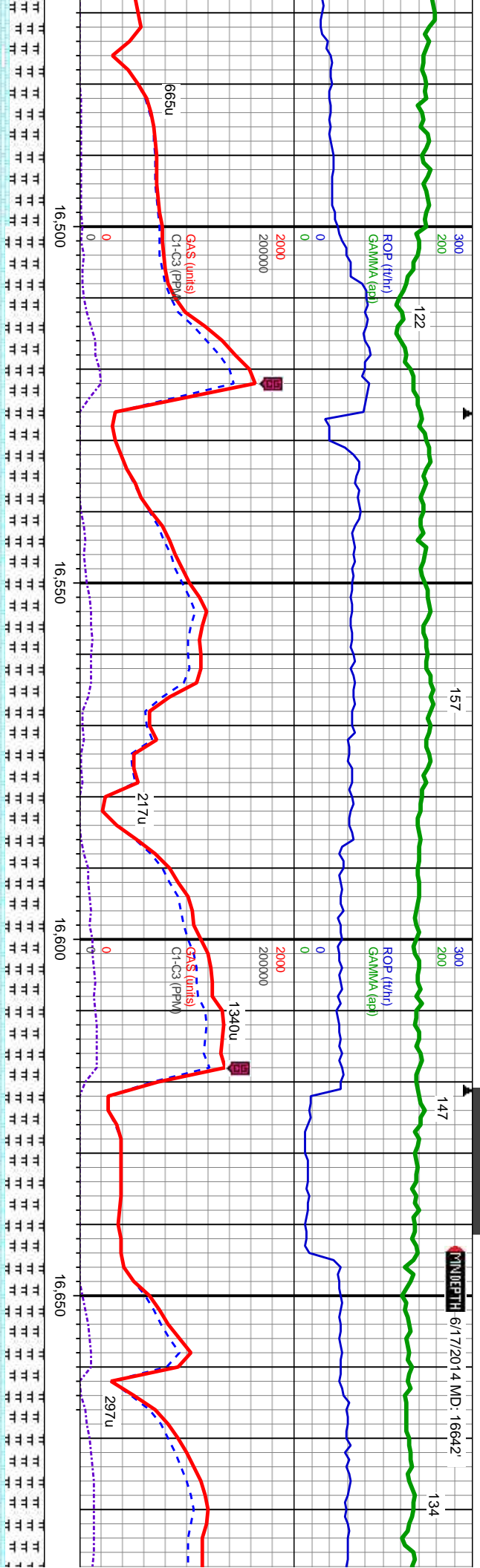
TVD (ft)

7700

16400'-16500' MD: CHK: lt-med gy-gy lt brn, mot, sb blkly-sb ply,
wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blkly, mod sft-frm
incl, rr foss, abnt bent, abnt lt bl-lyt spl flor, fast rad simg bl-wh

MD: 1
TVD: 1
Inclination: 1
Azimuth: 1
VS: 9





VT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 41	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 41	6600	WT IN: 9.4 VIS IN: 43	OUT: 9.4 OUT: 41
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sft-mod frm, fri, chky, sb
n, silty, sec cal, occ calc
cut, no sin

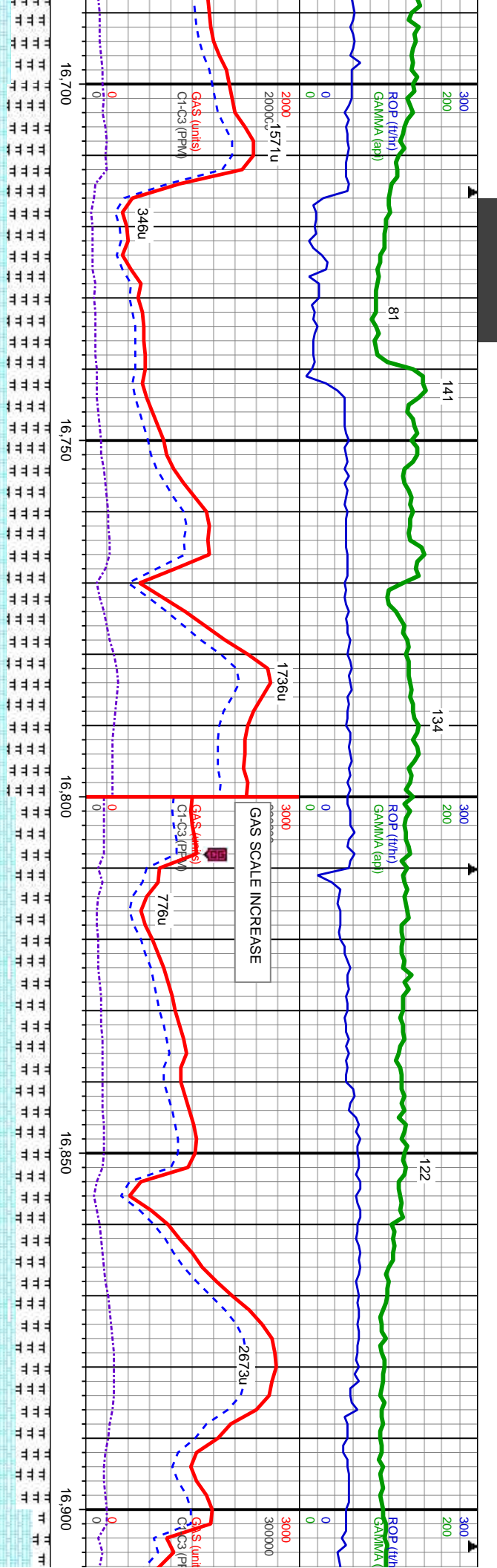
16500'-16600' MD: CHK: lt-med gy-gy lt brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sl wxy,
v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, sec cal, occ calc incl, rr
foss, tr pyr, abnt bent, abnt lt bl-lt yel spl flr, fast rad sting bl-wh cut, no sin

16600'-16700' MD: CHK: dk-med gy - sl brn, mot, sb blk-y-sb ply, mod frm, fri, chky, m
gry - wxy, v calc: MRLST: med-dk gy - brn, sb ply-sb blk-y, mod sft-frm, gry-silty, sec
rr foss, abnt bent, abnt lt bl-lt yel spl flr, fast rad sting bl-wh cut, no sin

MD: 16,566 TVD: 7,392.64 Inclination: 89.84 Azimuth: 182.5 VS: 9.408.61	TVD (ft)	7700
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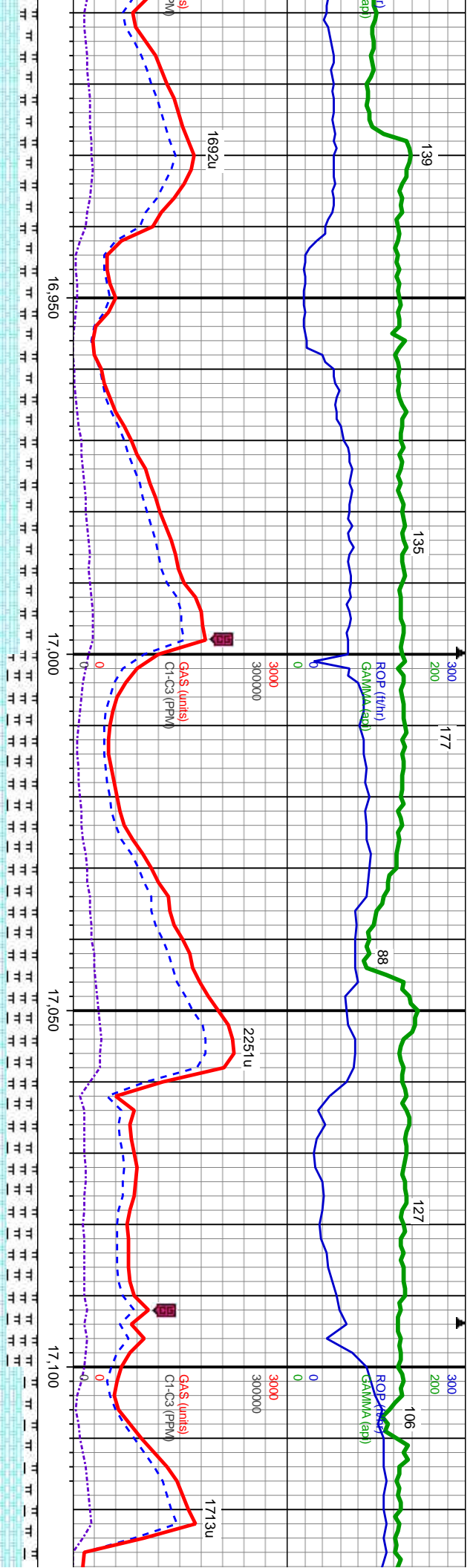
6,471 3,391.82 ation: 89.16 th: 182.36 313.68	TVD (ft)	7700
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9.3 41	6600	16700'-16800' MD: CHK: dk-med brn, mot, sb blk-y-sb pily, mod frm, fri, chky, mod grty - wxy, v calc; MRLST: med-dk gy - brn, sb pily-sb blk-y, sl frm, grty-sily, sec cal, rr foss, tr pyr, abnt bent, abnt lt bl-lt yel spl flr, fast rad sting bl-wh cut, no sin	6600	16800'-16900' MD: CHK: dk-med gy, lt-med brn, mot, sb blk-y-sb pily, mod frm, fri, chky, v calc; MRLST: med-dk gy, sb pily-sb blk-y, sl frm, grty-sily, sec cal, rr foss, tr pyr, occ bent, occ onng-yel min flr, fast rad bl-wh sting cut, no sin	6600	16900'-17000' MD: CHK: dk-med brn, mot, sb blk-y-sb pily, mod frm, fri, chky, mod wxy, v calc; MRLST: med-dk gy, sb pily-sb blk-y, sl frm, grty-sily, sec cal, rr foss, tr pyr, abnt bent, abnt lt bl-lt yel spl flr, fast rad sting bl-wh cut, no sin
TVD (ft)			TVD (ft)		TVD (ft)	
	7700			7700		7700
MD: 16,756 TVD: 7,396.24 Inclination: 87.99 Azimuth: 179.61 VS: 9.598.54						
MD: 16,850 TVD: 7,399.03 Inclination: 88.61 Azimuth: 179.91 VS: 9.692.49						





WT IN: 9.3+ OUT: 9.3
VIS IN: 44 OUT: 45

16900'-17000' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr, occ bent, occ orng-yel spl flr, fast rad sting bl-wh cut, no sin

MD: 16.945
TVD: 7,400.77
Inclination: 89.29
Azimuth: 179.69
VS: 9.78747

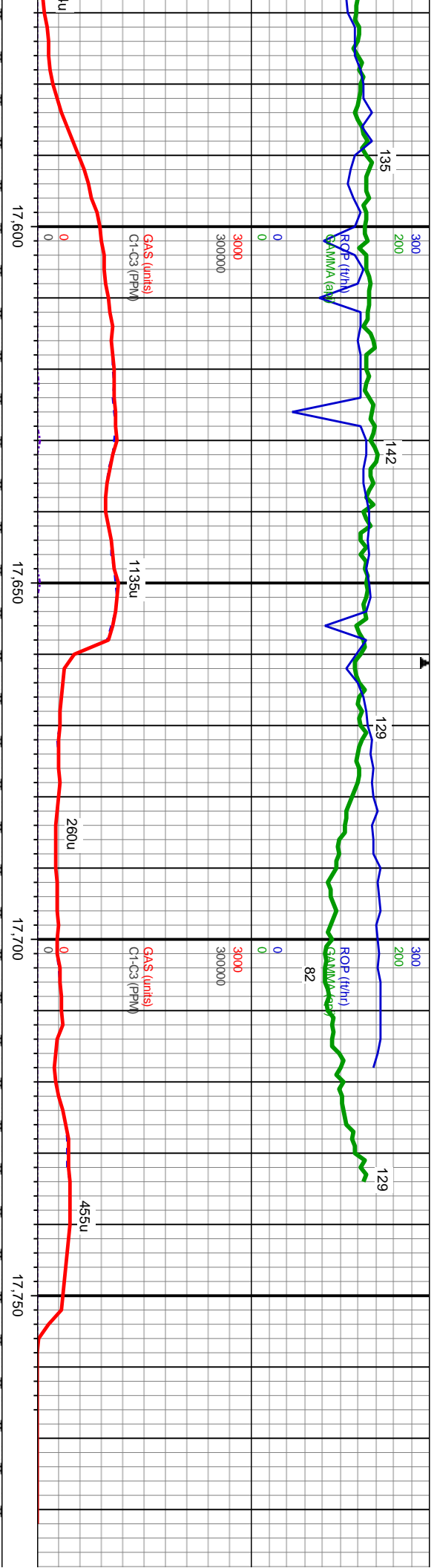
17000'-17100' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr, foss, occ bent, occ orng-yel min flr, fast rad bl-wh sting cut, no str

MD: 17.040
TVD: 7,401.95
Inclination: 89.29
Azimuth: 179.28
VS: 9.88245

17100'-17200' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb ply, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb ply-sb blk-y, mod sft-frm, silty, calc, occ calc incl, rr, foss, occ bent, occ orng-yel min flr, fast rad bl-wh sting cut, no str

MD: 17.130
TVD: 7,403.10
Inclination: 89.29
Azimuth: 179.28
VS: 9.88245





mod frm, fri, chky, sb wxy, calc, occ calc incl, rr	6600	WT IN: 9.3+ VIS IN: 43	OUT: 9.4 OUT: 43	
17600'-17700' MD: CHK: lt-med gy-gy brn, mot, sb blk-y-sb pily, sft-mod frm, fri, chky, sb wxy, v calc, MRLST: med-dk gy-gy brn, sb pily-sb blk-y, mod frm, silty, calc, occ calc incl, rr foss, tr bent, tr org-yel spl flor, fast sting nky bl-wh cut, no sin	6600			

MD: 17.607
TVD: 7,400.39
Inclination: 90.77
Azimuth: 179.1
VS: 10.449.33

MD: 17.727
TVD: 7,397.91
Inclination: 91.6
Azimuth: 179.2
VS: 10.589.28

PROJECTION TO BIT

MD: 17.782
TVD: 7396.57
Inclination: 91.60
Azimuth: 179.20
VS: -10624.25

	7700			
	7700			



