



Scale: 5" / 100'
Measured Depth Log

Well Name Steward 13N-6HZ

Location SEC.07-T1N-R65W

State COLORADO

County WELD

Country USA

Rig Number XTREME 8

API Number 05123395950000

AFE # 2080656

Region DJ BASIN

Field WATTENBERG

Spud Date 12/5/2014

Drilling Completed 12/11/2014

Surface Coordinates 442FSL & 1479FWL

Bottom Hole Coordinates RELATIVE TO WELLHEAD:
5279.86' N & 750.6' W

Ground Elevation 5004'

K.B. Elevation 5021'

Logged Interval 6532' To 13337'

Total Depth 13337'

Formation NIOBRARA

Type of Drilling Fluid LSND

Operator

Company ANADARKO PETROLEUM INC

Address 1099 18th St, Suite 1800
Denver , CO 80202

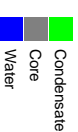
Geologist

Name MICHAEL CHISAM

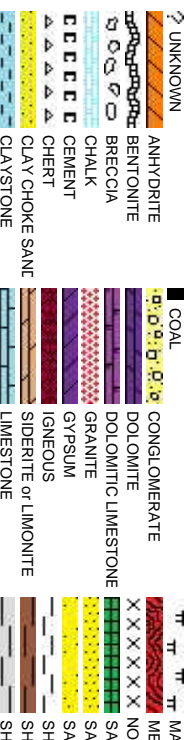
Company ANADARKO PETROLEUM INC

Address 1099 18th St, Suite 1800
Denver , CO 80202

Zone Color Coding



Rock Types



Accessories

Fossils

	GASTROPOD
	INOCERAMUS
	OOOLITE
	AMPHIPORA
	OSTRACOD
	BELEMNITE
	BIOCLASTIC
	BRACHIOPOD
	BRYOZOA
	CEPHALOPOD
	CORAL
	CRINOID
	ECHINOID
	FISH
	FORAMINIFERA
	F FOSSIL

Minerals

	ARGILLITE GRAIN
	B BENTONITE
	H HEAVY MINERAL
	K KAOLIN
	M MARCASITE
	BRECCIA FRAGMENTS
	C CALCAREOUS
	CARBONACEOUS FLAKES
	CHERT
	CHTLT
	COAL - THIN BEDS
	D DOLOMITIC
	F FELDSPAR
	FERRUGINOUS PELLET
	F FERRUGINOUS
	G GLAUCONITE
	G GYPSIFEROUS
	S SILICEOUS
	S SILTY
	T TUFFACEOUS

Stringer

	ANHYDRITE STRINGER
	BENTONITE STRINGER
	COAL STRINGER
	DOLOMITE STRINGER
	GYPSUM STRINGER
	LIMESTONE STRINGER
	MARLSTONE (CALC) STRG
	MARLSTONE (DOL) STRG
	SANDSTONE STRINGER
	SHALE STRINGER
	SILTSTONE STRINGER

Other Symbols

Oil Show

	P PINPOINT
	V VUGGY
	D DEAD
	E EVEN
	Q QUESTIONABLE
	BIT
	SPOTTED STAINING
	CONNECTION (UP)

Engineering

	DST INTERVAL
	FAULT
	FORMATION TOP
	GAS SHOW
	OIL SHOW
	MN DEPTH UP

	WIRELINE TESTED - LEFT
	WIRELINE TESTED - RT
	DRILL STEM TEST
	MN DEPTH
	G GRAINSTONE
	L LITHOGRAPHIC
	MX MICROXLN
	M MUDSTONE

Rounding

CONNECTION (DOWN)

MN DEPTH (DOWN)

A ANGULAR

PS PACKSTONE

Porosity

	CONNECTION GAS
	CONNECTION GAS (LEFT)
	TRIP GAS
	TRIP GAS (LEFT)
	F FRACTURE
	INTERCRYSTALLINE
	INTEROOLITIC
	M MOLDIC
	O ORGANIC

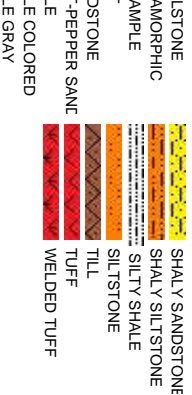
	NORMAL FAULT
	OVERTURED STRATA
	REVERSE FAULT
	CASING
	SIDEWALL CORE (LEFT)
	SIDEWALL CORE (RIGHT)
	SLIDE
	SURVEY

Textures

	P POOR
	W WELL
	B BOUNDSTONE
	C CHALKY
	CX CRYPTOXLN

Sorting

M MODERATE



Slide/Rotate

ROP
ROP (ft/hr)
GAMMA (api)

600
200

ROP (ft/hr)
GAMMA (api)

0

0

250

Total Gas & Chromatograph
GAS (units)

0

Depth Labels

6,410 6,420 6,430 6,440 6,450 6,460 6,470 6,480 6,490 6,500 6,510 6,520 6,530 6,540 6,550 6,560 6,570 6,580 6

6390

BEGIN DRLG IN
SUSSEX FM

50' SAMPLES

Well Bore
TVD (ft)

TVD (ft)

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 judgment of brilliance, color and longevity of the cut.

TVD (ft)

KOP= 6532' MD

MD: 6,531'
TVD: 6,382.54
Inclination: 13.38 -
Azimuth: 220.1 -
VS: -965.88

MD: 6,575'
TVD: 6,425.06
Inclination: 16.54 -
Azimuth: 235.31 -
VS: -973.49

100% SLTY SH: lt-med gy, brn, sb ply-blky, occ ply, sft-firm, rthy-gritty, arg-slty, v sl calc

100% SLTY SH: lt-med gy, brn, sb ply, sft-firm, rthy-gritty, arg-slty, tos, v sl calc.

Oil Show

E
G
M
F
T
S

Images



COLUMBINE LOGGING 2 MAN RIGGED
UP @ 14:00 HRS 12/6/2014 BEGAN
LOGGING @ 21:10 HRS 12/06/2014

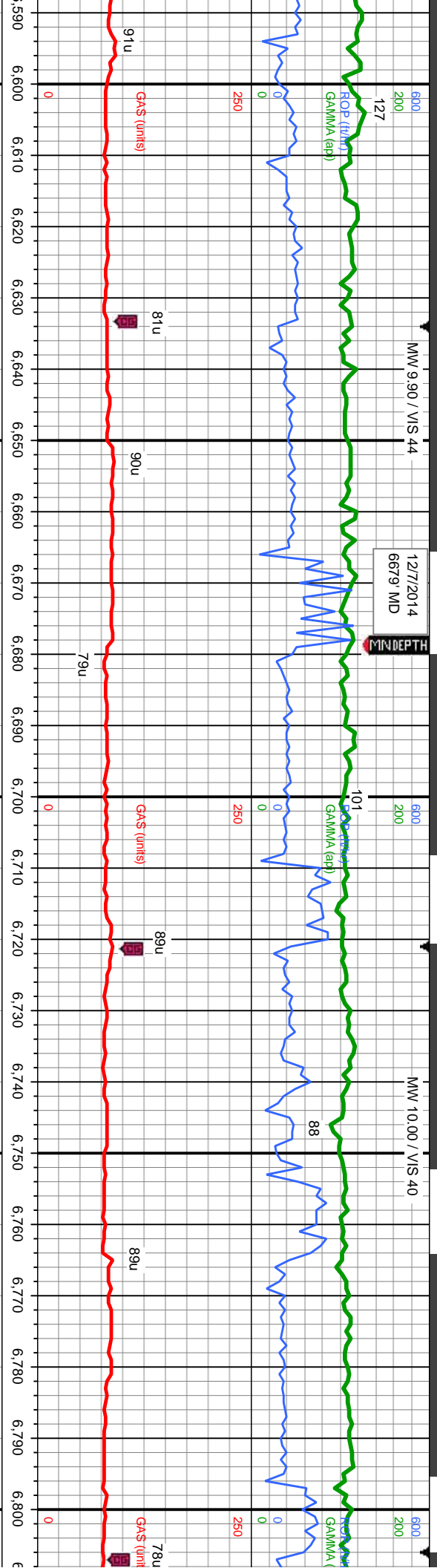
DRLG 8.75' HOLE W/ BIT #1,
SMITH SD1611, IN @ 1634 MD

ROP & GAS DATA PROVIDED BY PASON
GAMMA & SURVEY DATA PROVIDED BY
BAKER HUGHES

MW 10.00 / VIS 47

82u

77u



MD: 6,618.
TVD: 6,465.89.
Inclination: 20.1.
Azimuth: 248.6.
VS: -979.89.

MD: 6,662.
TVD: 6,506.7.
Inclination: 23.64.
Azimuth: 258.92.
VS: -982.6.

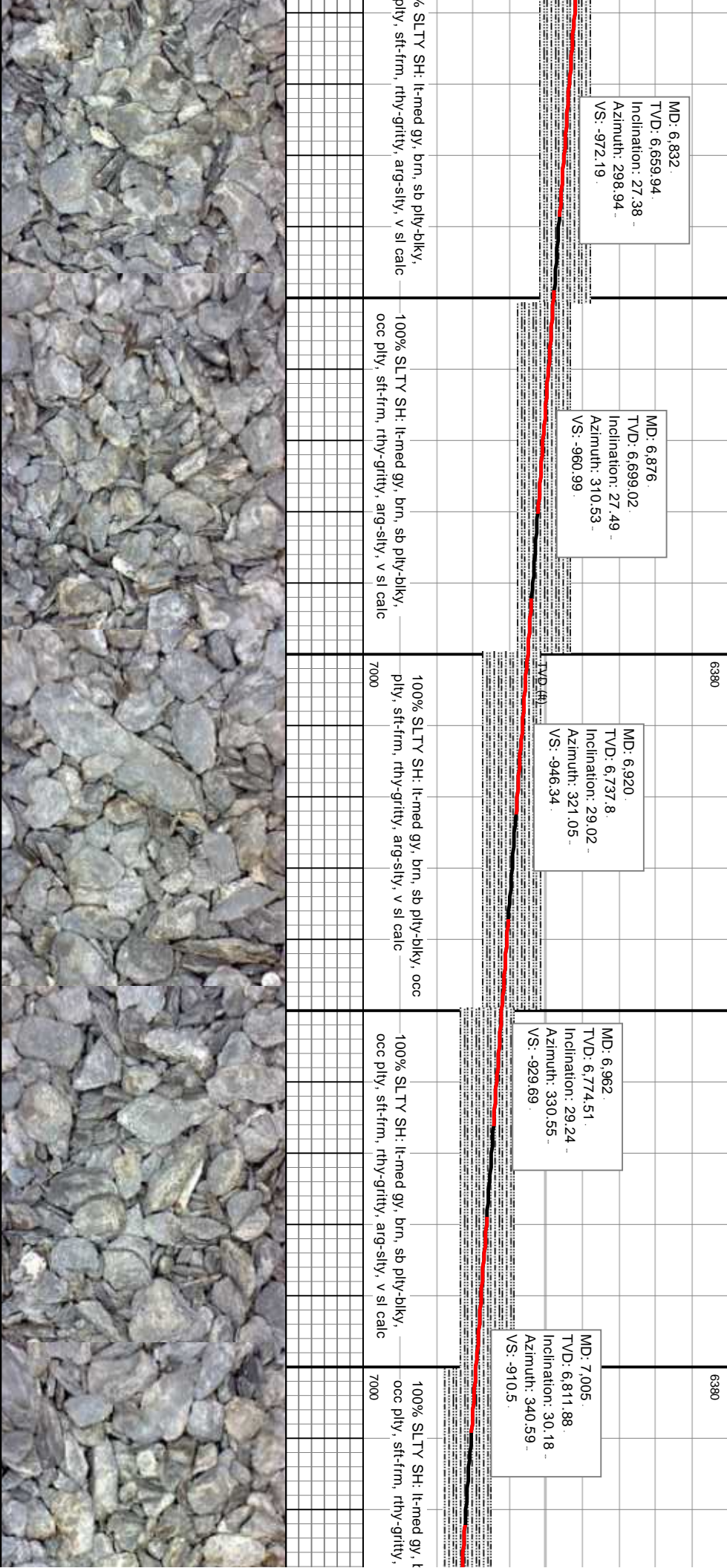
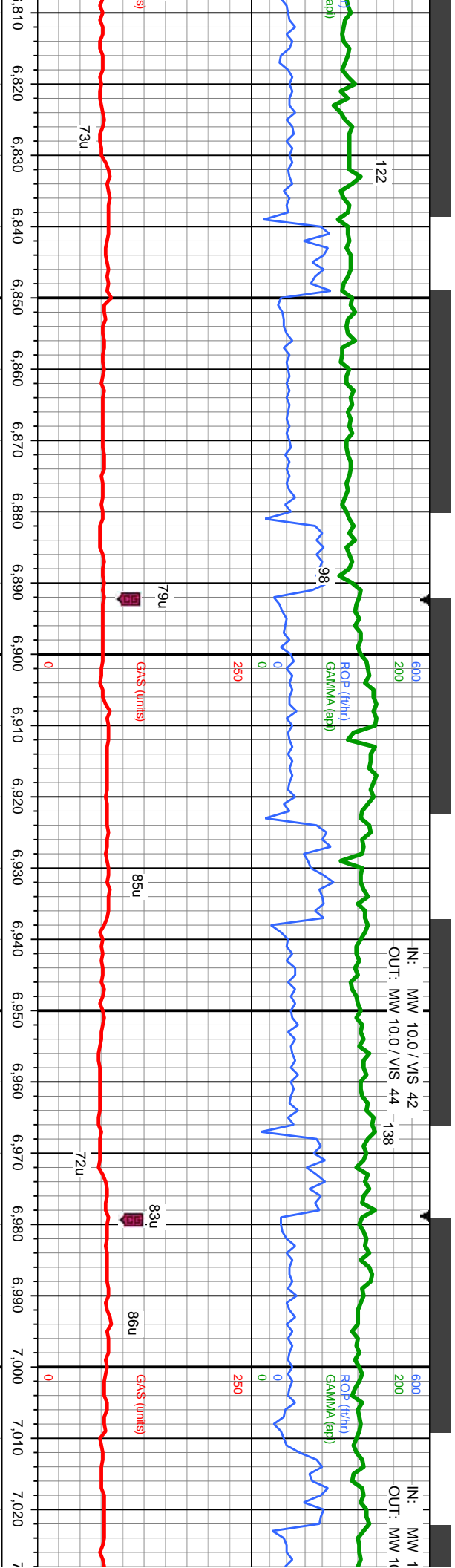
MD: 6,705.
TVD: 6,545.95.
Inclination: 24.71.
Azimuth: 269.4.
VS: -984.67.

MD: 6,747.
TVD: 6,583.95.
Inclination: 25.78.
Azimuth: 278.49.
VS: -983.73.

MD: 6,790.
TVD: 6,622.53.
Inclination: 26.79.
Azimuth: 288.64.
VS: -979.58.

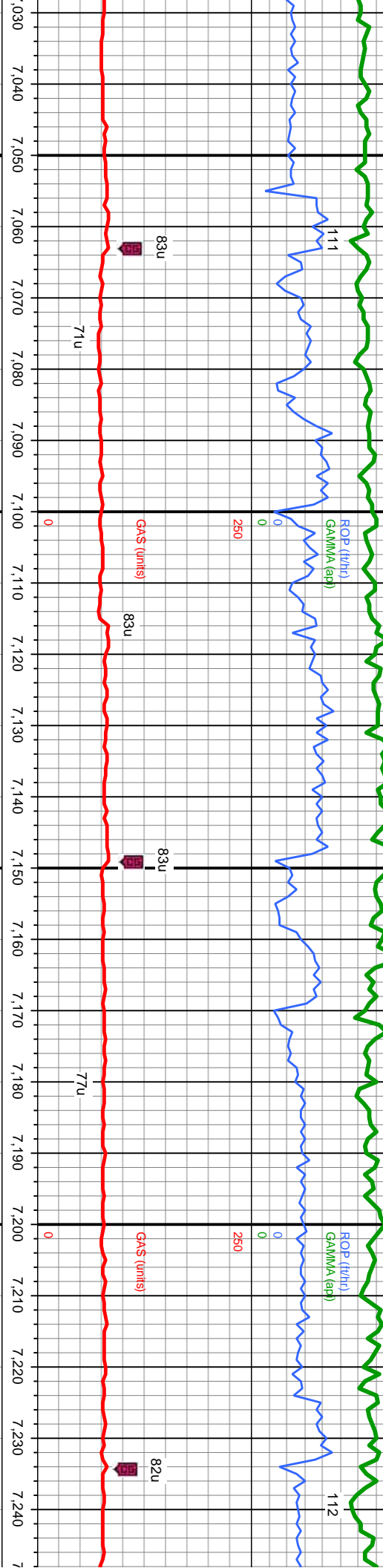
ty-bkly,
t inoc
100% SLTY SH: lt-med gy, brn, sb pily-bkly, occ
pily, sft-frn, rthy-gritty, arg-sily, v sl calc
7000
100% SLTY SH: lt-med gy, brn, sb pily-bkly,
occ pily, sft-frn, rthy-gritty, arg-sily, v sl calc
7000
100% SLTY SH: lt-med gy, brn, sb pily-bkly,
occ pily, sft-frn, rthy-gritty, arg-sily, v sl calc
7000
100% SLTY SH: lt-med gy, brn, sb pily-bkly,
occ pily, sft-frn, rthy-gritty, arg-sily, v sl calc
7000





0.0 / VIS 42
0.0 / VIS 44

MW 10.0 /



SCALE CHANGE

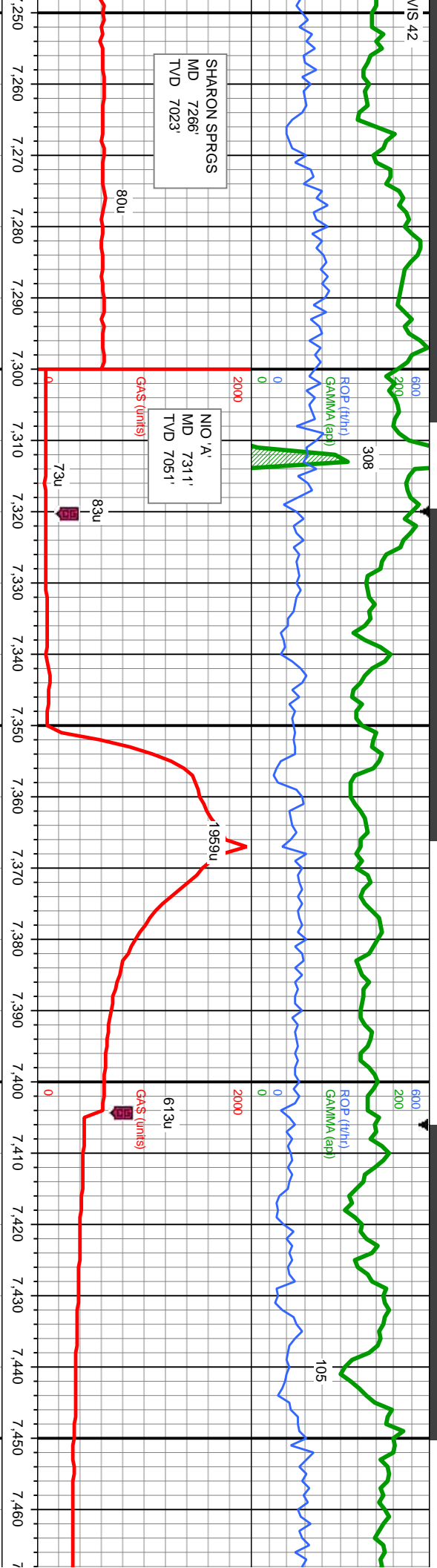
MD: 7,090.
TVD: 6,884.67.
Inclination: 32.11 -
Azimuth: 350.63 -
VS: -868.22.

MD: 7,176.
TVD: 6,955.89.
Inclination: 36.07 -
Azimuth: 348.15 -
VS: -821.04.

TVD (ft)	100% SLTY SH: lt-med gy, brn, sb pily-blky, occ pily, sft-frm, rthy-gritty, arg-sily, v sl calc
7600	



VIS 42



SHARON SPRGS
MD 7266'
TVD 7023'

NIO A'
MD 7311'
TVD 7051'

MD: 7,261.
TVD: 7,019.17.
Inclination: 47.48 -
Azimuth: 346.48 -
VS: -766.14.

MD: 7,346.
TVD: 7,069.7.
Inclination: 59.43 -
Azimuth: 348.53 -
VS: -699.85.

MD: 7,432.
TVD: 7,108.27.
Inclination: 67.23 -
Azimuth: 350.22 -
VS: -624.64.

65% SLTY SH: lt-med gy, brn, sb pty-biky, occ pty, sft-firm, rthy-gritty, arg-sily, v sl calc; 35% SLTST: lt gybrn-lt brn, biky-pty, m-v frm, sl arg ip, sl calc, abnt bent, nosfc

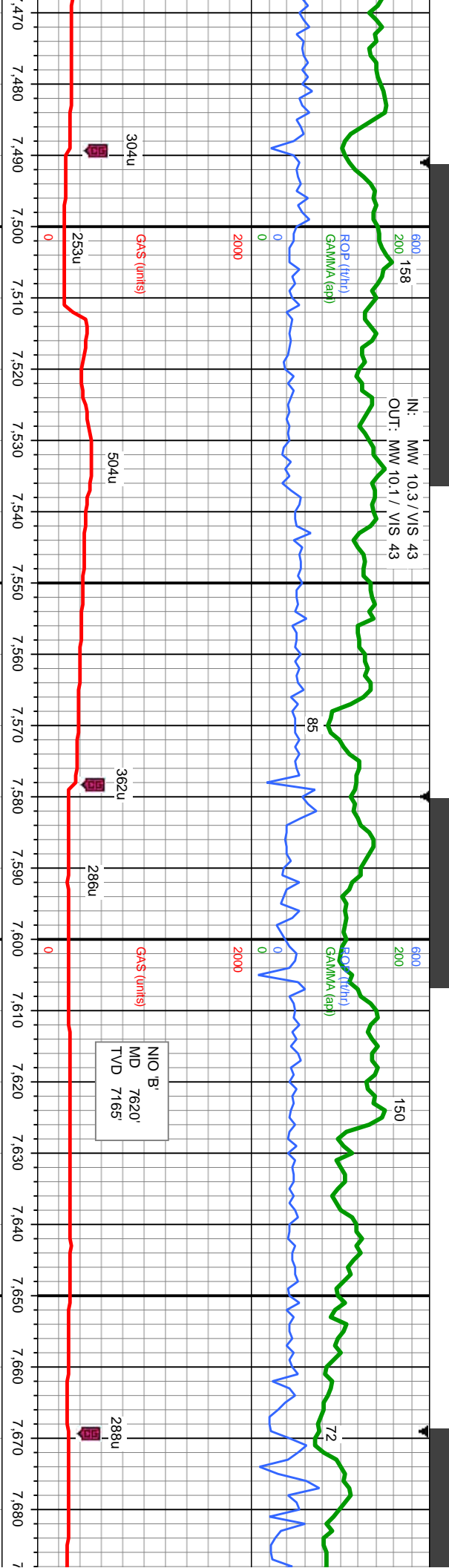
75% MRLST: med-dk gy-blk, sb biky-sb pty, frm, mod arg, sl sily, v calc, tr cal frags, abnt bent; 15% SLTY SH: lt-med gy, brn, sb pty-biky, occ pty, sft-firm, rthy-gritty, arg-sily, v sl calc; 10% SLTST: lt gybrn-lt brn, biky-pty, m-v frm, sl arg ip, sl calc, abnt bent, sl tr lt bluyel flr w/ slw milky halo cut

85% MRLST: med-dk gy-blk, sb biky-sb pty, frm, mod arg, sl sily, v calc, tr cal frags, rr bent; 15% CHK: med gy-lt gy, rthy tex, sb biky-sb pty, sft-sl frm, sl arg, v calc; sl tr lt bluyel flr w/ slw milky halo cut

95% MRLST: med-dk gy-blk, sb biky-sb pty, frm, mod arg, sl sily, v calc, tr cal frags, rr bent; 5% CHK: med gy-lt gy, rthy tex, sb biky-sb pty, sft-sl frm, sl arg, v calc; tr lt bluyel flr w/ slw milky halo cut

95% MRLST: med-dk gy-blk, sb biky-sb pty, frm, mod arg, sl sily, v calc, tr cal frags, rr bent; 5% CHK: med gy-lt gy, rthy tex, sb biky-sb pty, sft-sl frm, sl arg, v calc; tr lt bluyel flr w/ slw milky halo cut





MD: 7.521
TVD: 7,139.03
Inclination: 72.37 -
Azimuth: 357.67 -
VS: -541.84

MD: 7.610
TVD: 7,162.49
Inclination: 77.08 -
Azimuth: 3.71 -
VS: -456.06

MD:
TVD
Incl
Azim
VS:

6600	7.500	7.510	7.520	7.530	7.540	7.550	7.560	7.570	7.580	7.590	7.600	7.610	7.620	7.630	7.640	7.650	7.660	7.670	7.680	7.690	7.700
7600	7.500	7.510	7.520	7.530	7.540	7.550	7.560	7.570	7.580	7.590	7.600	7.610	7.620	7.630	7.640	7.650	7.660	7.670	7.680	7.690	7.700

med-dk gy-blk, sb blk-
silty, v calc, tr cal frags, r
med gy-lt gy, rthy tex, sb
sl frm, sl arg, v calc; sl tr lt
w milky halo cut

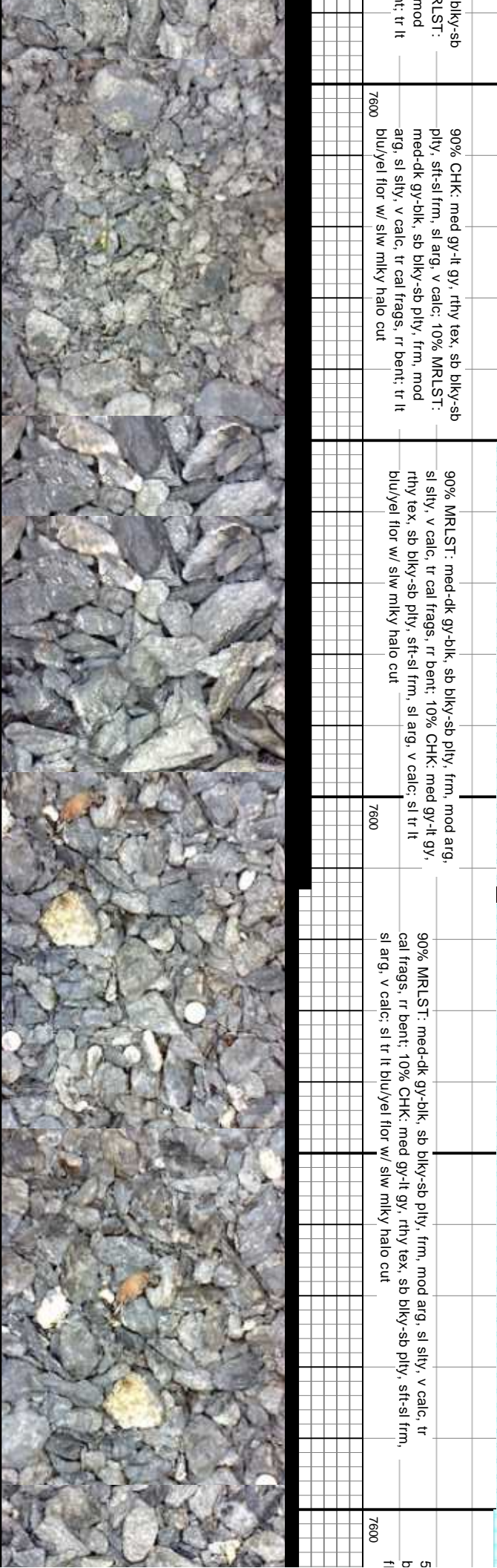
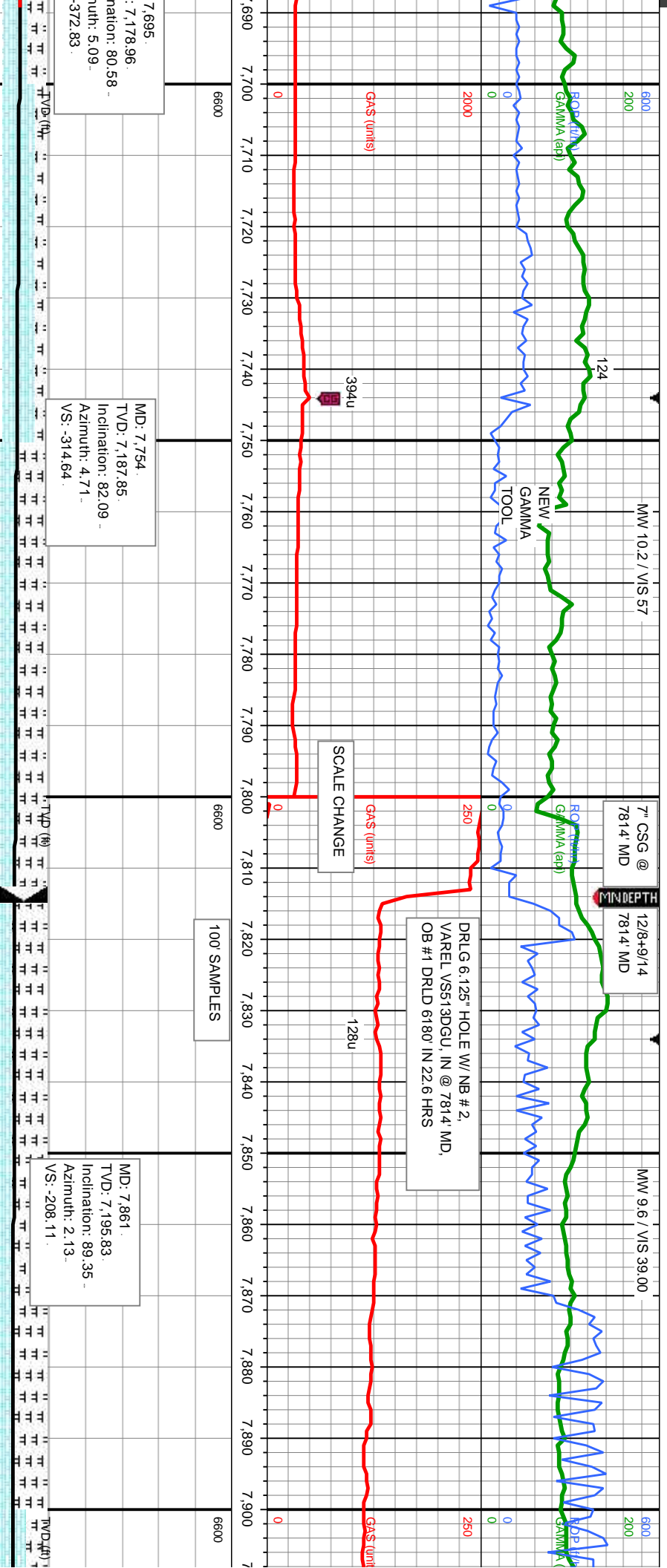
95% MRLST: med-dk gy-blk, sb blk-
frm, mod arg, sl silty, v calc, tr cal frags, r
bent; 5% CHK: med gy-lt gy, rthy tex, sb
blk-
blu/yel flr w/ slw milky halo cut

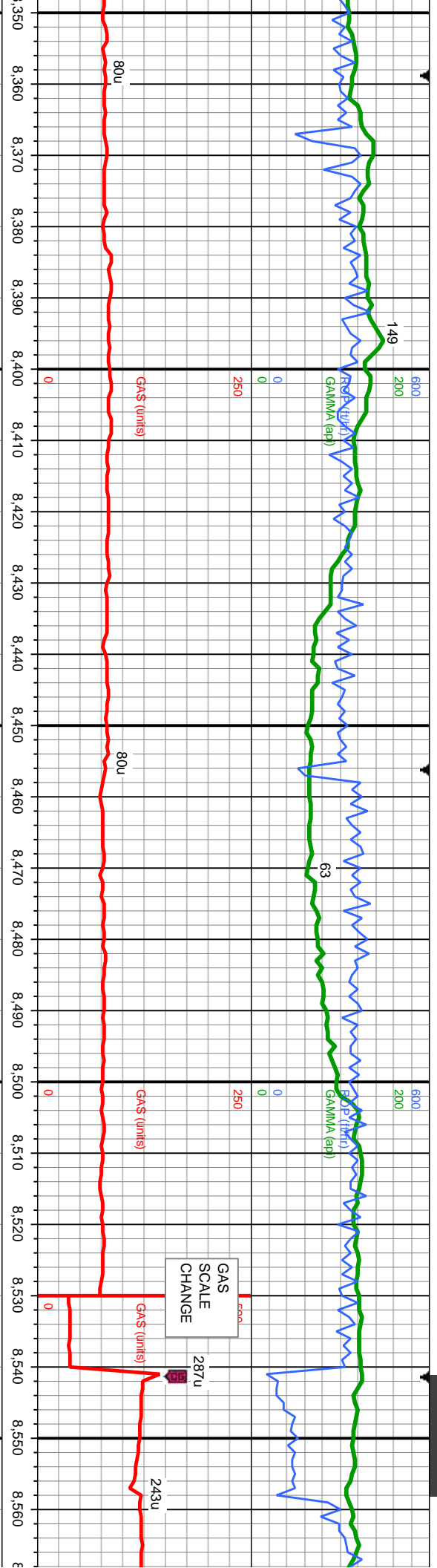
95% MRLST: med-dk gy-blk, sb blk-
frm, mod arg, sl silty, v calc, tr cal frags, r
bent; 5% CHK: med gy-lt gy, rthy tex, sb
blk-
blu/yel flr w/ slw milky halo cut

65% CHK: med gy-lt gy, rthy tex, sb blk-
pity, sft-sl frm, sl arg, v calc; 35% MRLST:
med-dk gy-blk, sb blk-
arg, sl silty, v calc, tr cal frags, r bent; tr lt
blu/yel flr w/ slw milky halo cut

85% CHK: med gy-lt gy, rthy tex, sb
pity, sft-sl frm, sl arg, v calc; 15% MRLST:
med-dk gy-blk, sb blk-
arg, sl silty, v calc, tr cal frags, r bent; tr ber
blu/yel flr w/ slw milky halo cut





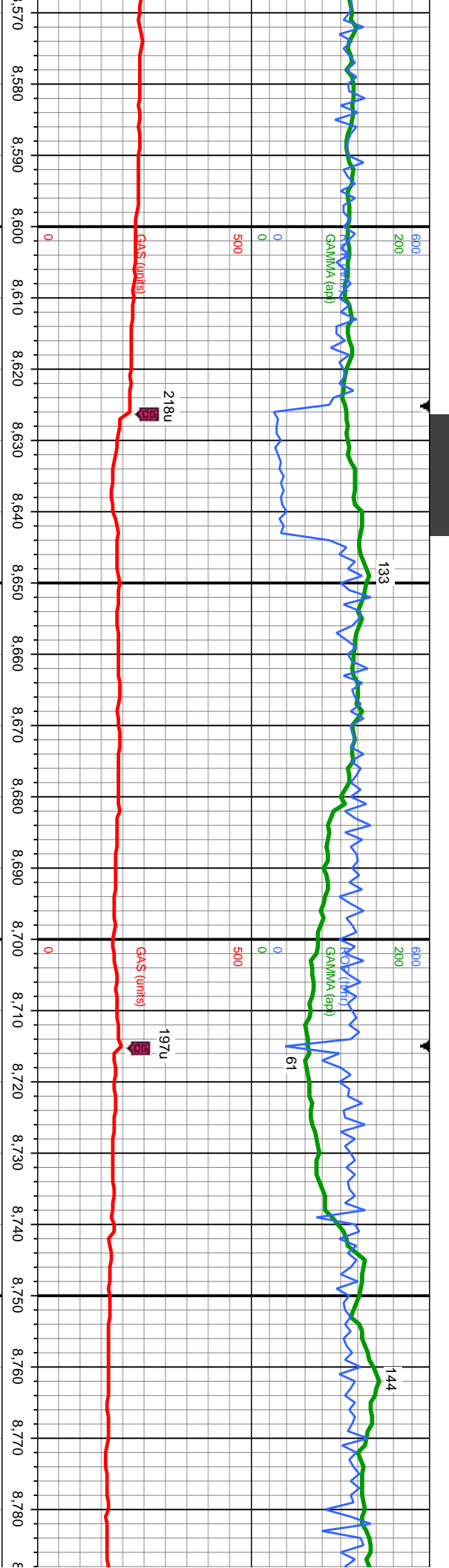


MD: 8.477.
TVD: 7,199.82
Inclination: 88.54
Azimuth: 0.22
VS: 407.76.

MD: 8.563.
TVD: 7,201.11
Inclination: 89.7
Azimuth: 0.02
VS: 493.74.

6600	8,350	8,360	8,370	8,380	8,390	8,400	8,410	8,420	8,430	8,440	8,450	8,460	8,470	8,480	8,490	8,500	8,510	8,520	8,530	8,540	8,550	8,560
6600	8,350	8,360	8,370	8,380	8,390	8,400	8,410	8,420	8,430	8,440	8,450	8,460	8,470	8,480	8,490	8,500	8,510	8,520	8,530	8,540	8,550	8,560
6600	8,350	8,360	8,370	8,380	8,390	8,400	8,410	8,420	8,430	8,440	8,450	8,460	8,470	8,480	8,490	8,500	8,510	8,520	8,530	8,540	8,550	8,560

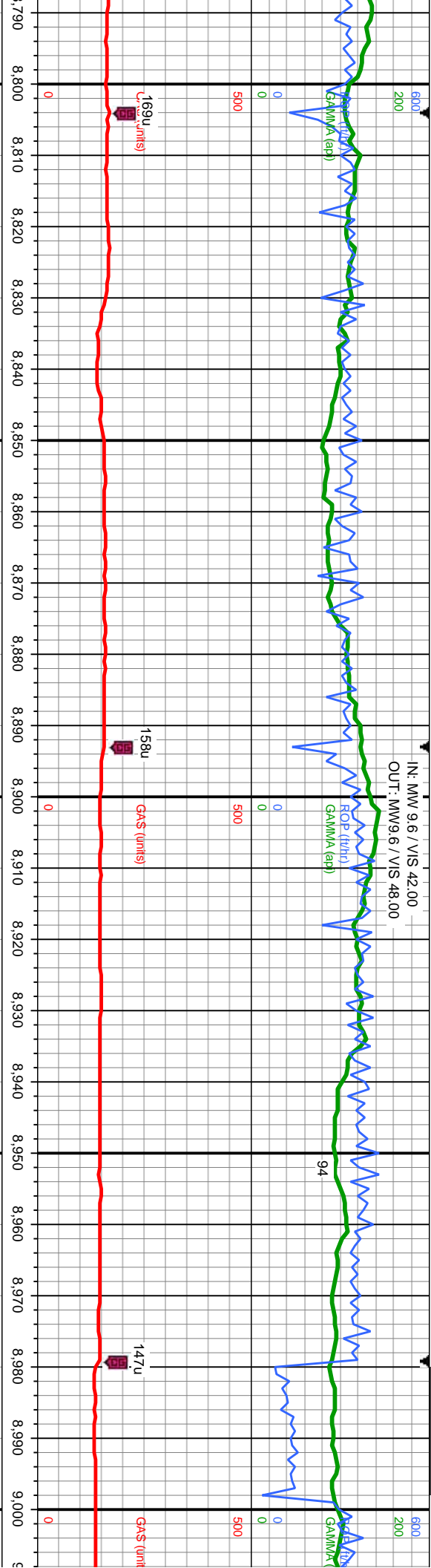




6600		MD: 8.652 TVD: 7,200.34 Inclination: 91.24 Azimuth: 359.54 VS: 582.71	6600	
8,570	8,580	8,590	8,600	8,610
8,620	8,630	8,640	8,650	8,660
8,670	8,680	8,690	8,700	8,710
8,720	8,730	8,740	8,750	8,760
8,770	8,780	8,790	8,800	8,810

7600		90% MRLST: med-dk gy-blk, sb blk-y-sb ply, frm, mod arg, sl sily, v calc, tr cal frags, rr bent: 10% CHK: med gy-it gy, rthy tex, sb blk-y-sb ply, sft-sl frm, sl arg, v calc; sl tr lt blu/yel flwr w/ slw milky halo cut	7600	
8,570	8,580	8,590	8,600	8,610
8,620	8,630	8,640	8,650	8,660
8,670	8,680	8,690	8,700	8,710
8,720	8,730	8,740	8,750	8,760
8,770	8,780	8,790	8,800	8,810





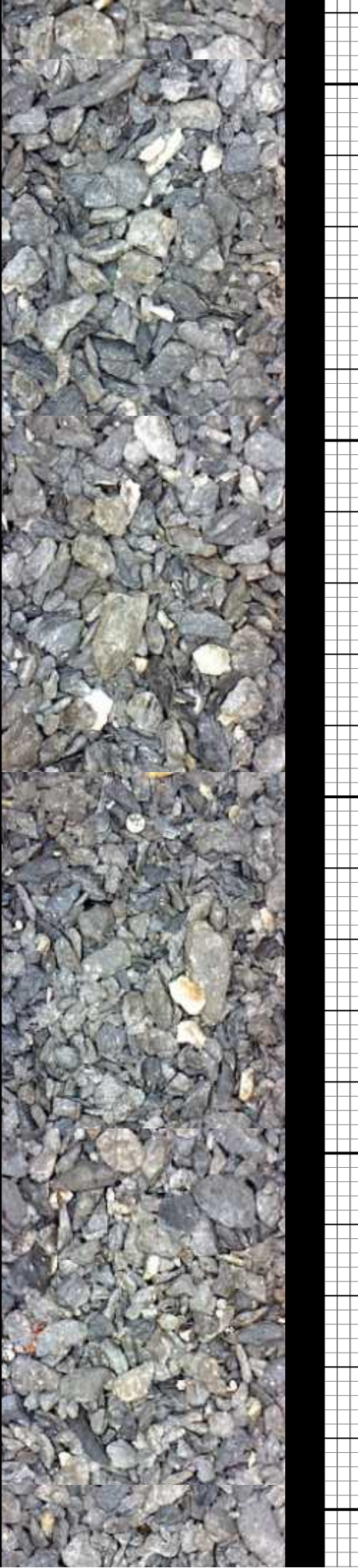
MD: 8,830.
TVD: 7,196.25.
Inclination: 91.39 -
Azimuth: 359.35 -
VS: 760.6.

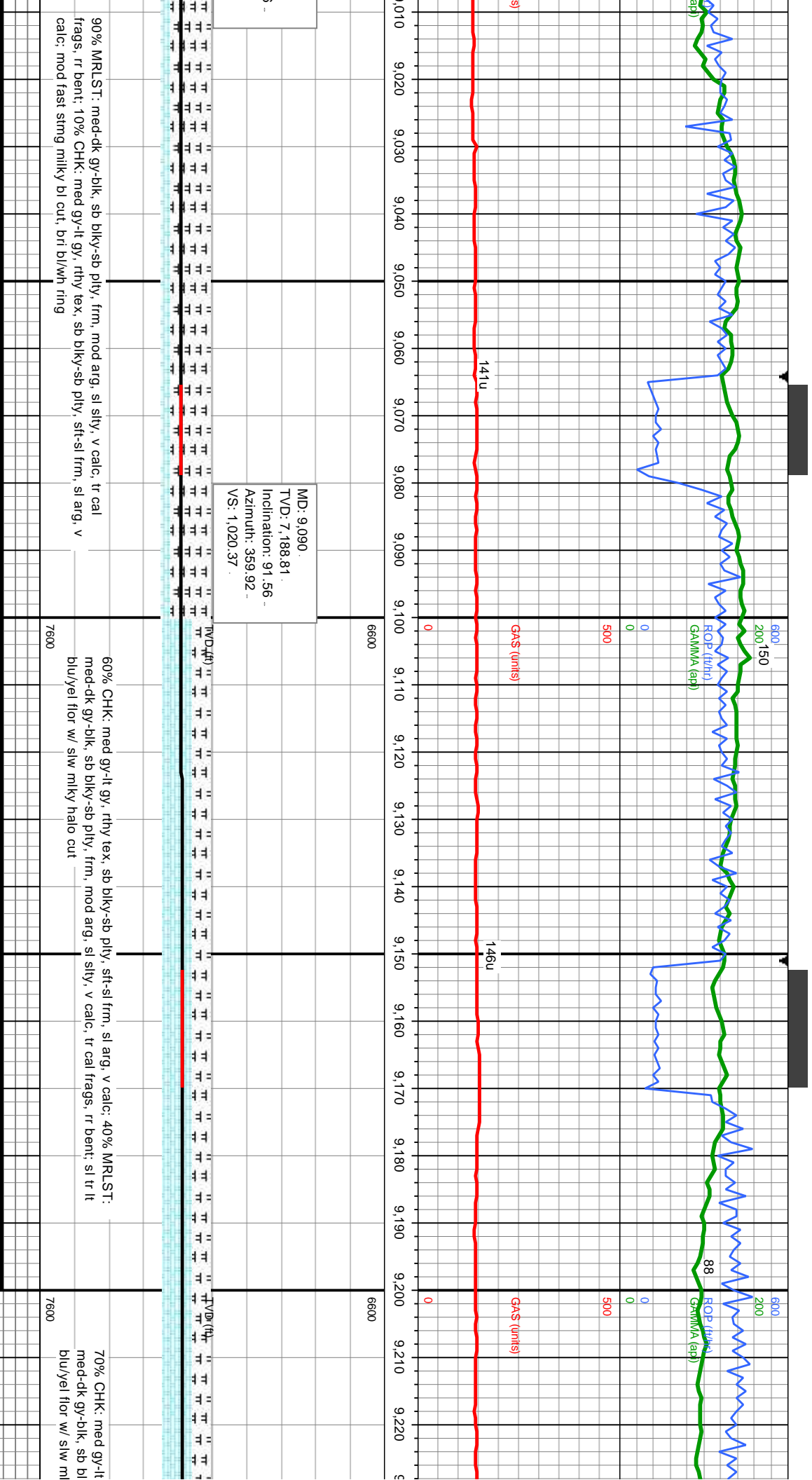
MD: 8,917.
TVD: 7,193.84.
Inclination: 91.79 -
Azimuth: 358.39 -
VS: 847.5.

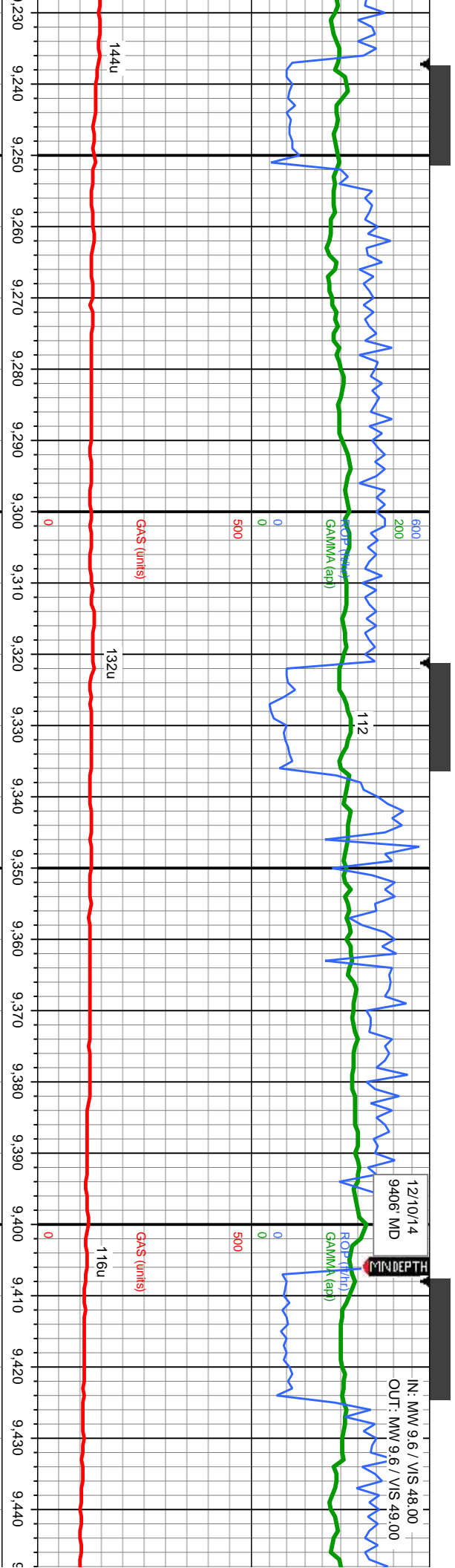
MD: 9,002.
TVD: 7,191.28.
Inclination: 91.66
Azimuth: 0.19 -
VS: 932.42.

TVD (ft)		TVD (ft)		TVD (ft)	
8,790	8,800	8,810	8,820	8,830	8,840
8,850	8,860	8,870	8,880	8,890	8,900
8,910	8,920	8,930	8,940	8,950	8,960
8,970	8,980	8,990	9,000		

95% MRLST: med-dk gy-blk, sb blk- bent; 5% CHK: med gy-blk, rthy sting milky bl cut, bri bl/wh ring	95% MRLST: med-dk gy-blk, sb blk- bent; 5% CHK: med gy-blk, rthy fast sting milky bl cut, bri bl/wh ring	95% MRLST: med-dk gy-blk, sb blk- bent; 5% CHK: med gy-blk, rthy fast sting milky bl cut, bri bl/wh ring
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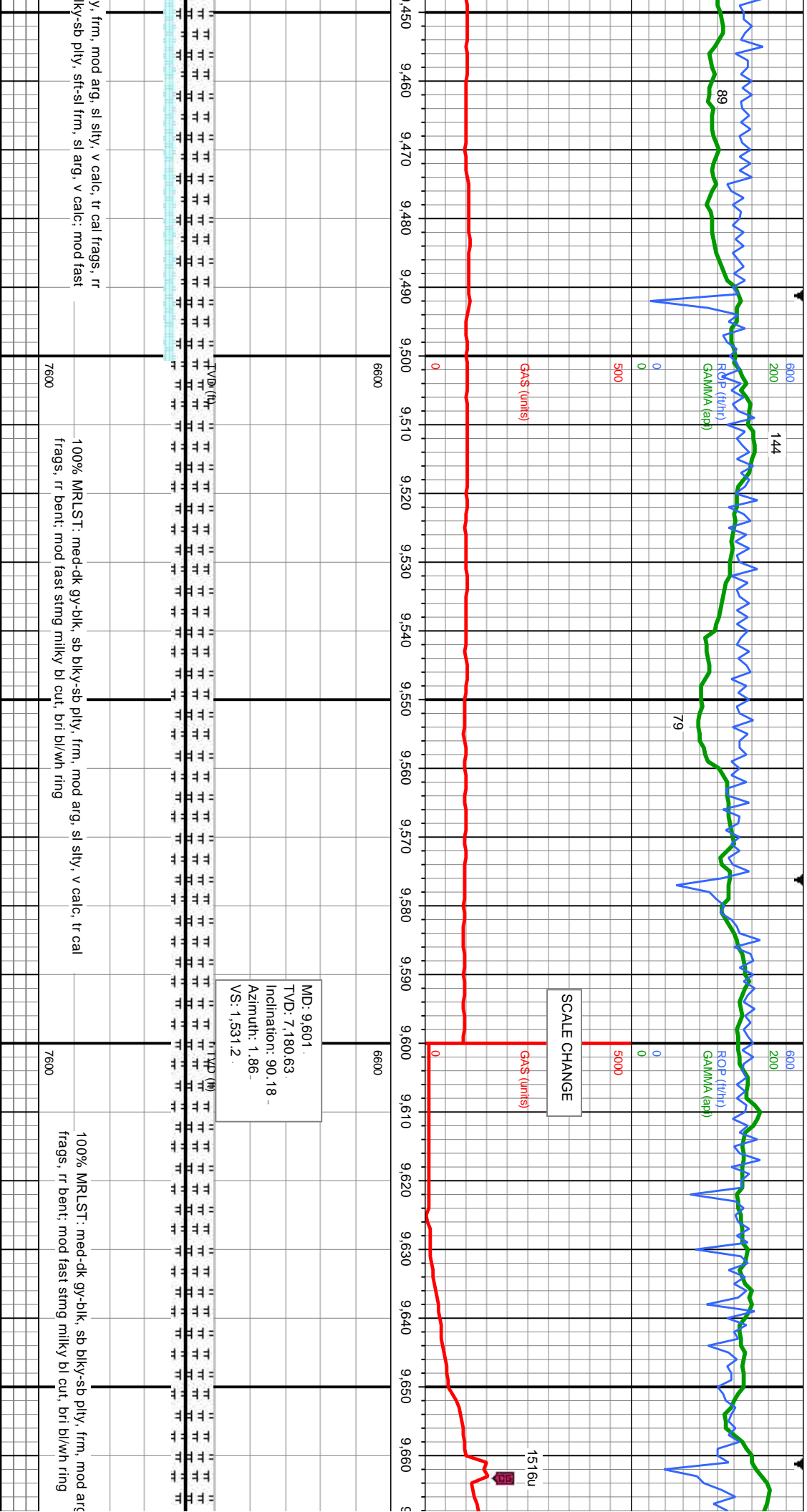
MD: 9,260
TVD: 7,184.21
Inclination: 91.54
Azimuth: 2.62
VS: 1,190.29

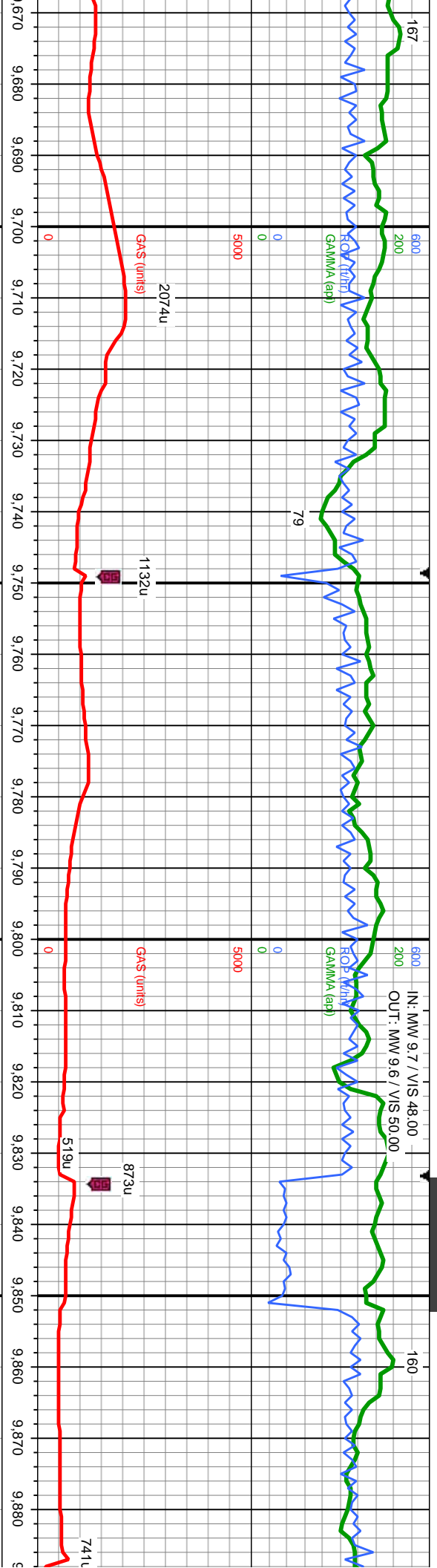
MD: 9,345
TVD: 7,182.16
Inclination: 91.23
Azimuth: 2.26
VS: 1,275.24

MD: 9,431
TVD: 7,181.12
Inclination: 90.15
Azimuth: 1.86
VS: 1,361.22

gy, rthy tex, sb blk-arg, v calc, 30% MRST:	90% MRST: med-dk gy-blk, sb blk-arg, v calc, tr cal	95% MRST: med-dk gy-blk, sb blk-arg, v calc, tr cal
frags, rr bent, 10% CHK: med gy-blk, rthy tex, sb blk-arg, v calc, sl tr lt blu/yel flr w/ slw milky halo cut	frags, rr bent, 10% CHK: med gy-blk, rthy tex, sb blk-arg, v calc, sl tr lt blu/yel flr w/ slw milky halo cut	frags, rr bent, 10% CHK: med gy-blk, rthy tex, sb blk-arg, v calc, sl tr lt blu/yel flr w/ slw milky halo cut
7600	7600	7600







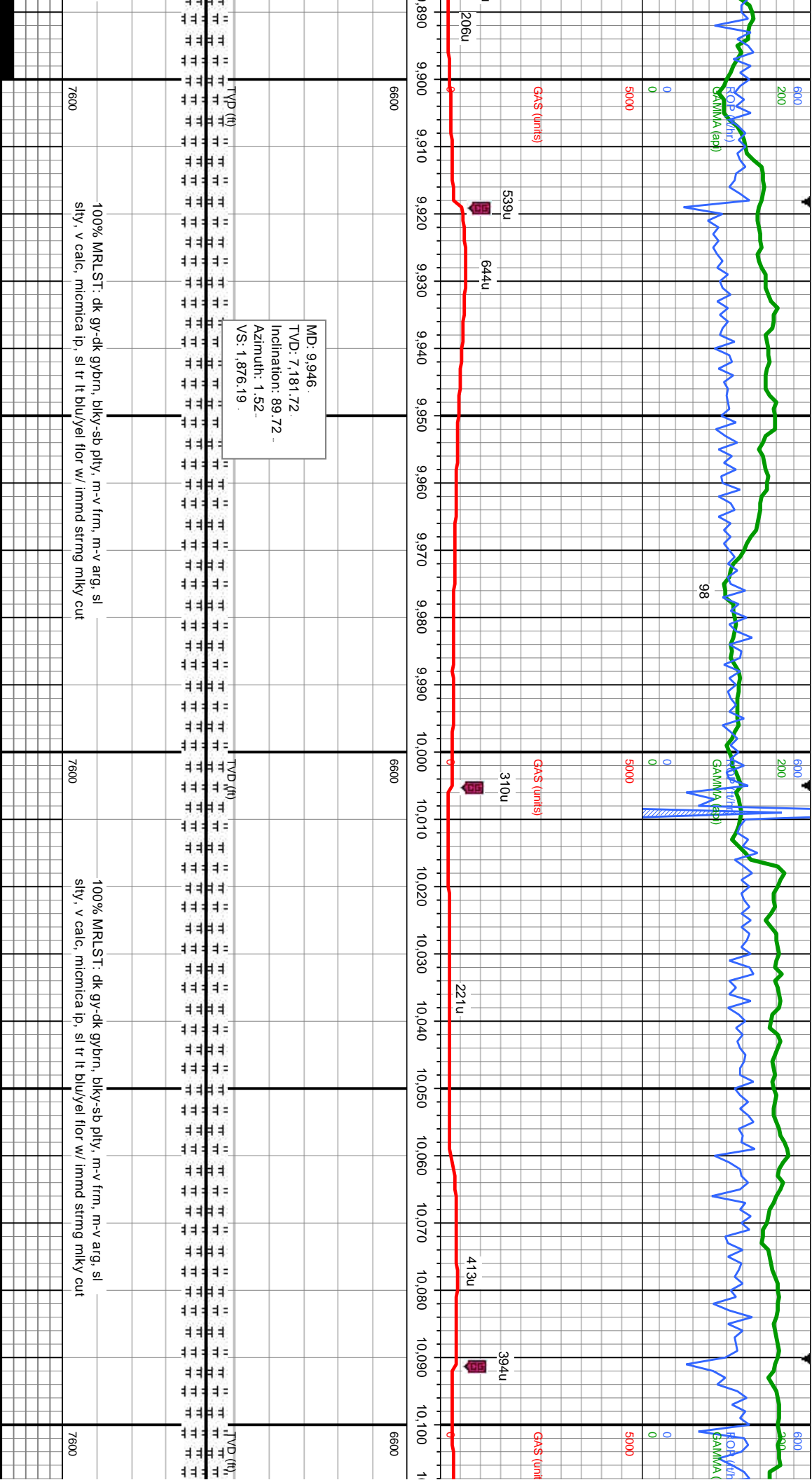
MD: 9.773.
TVD: 7.180.83.
Inclination: 89.69
Azimuth: 0.83
VS: 1.703.2

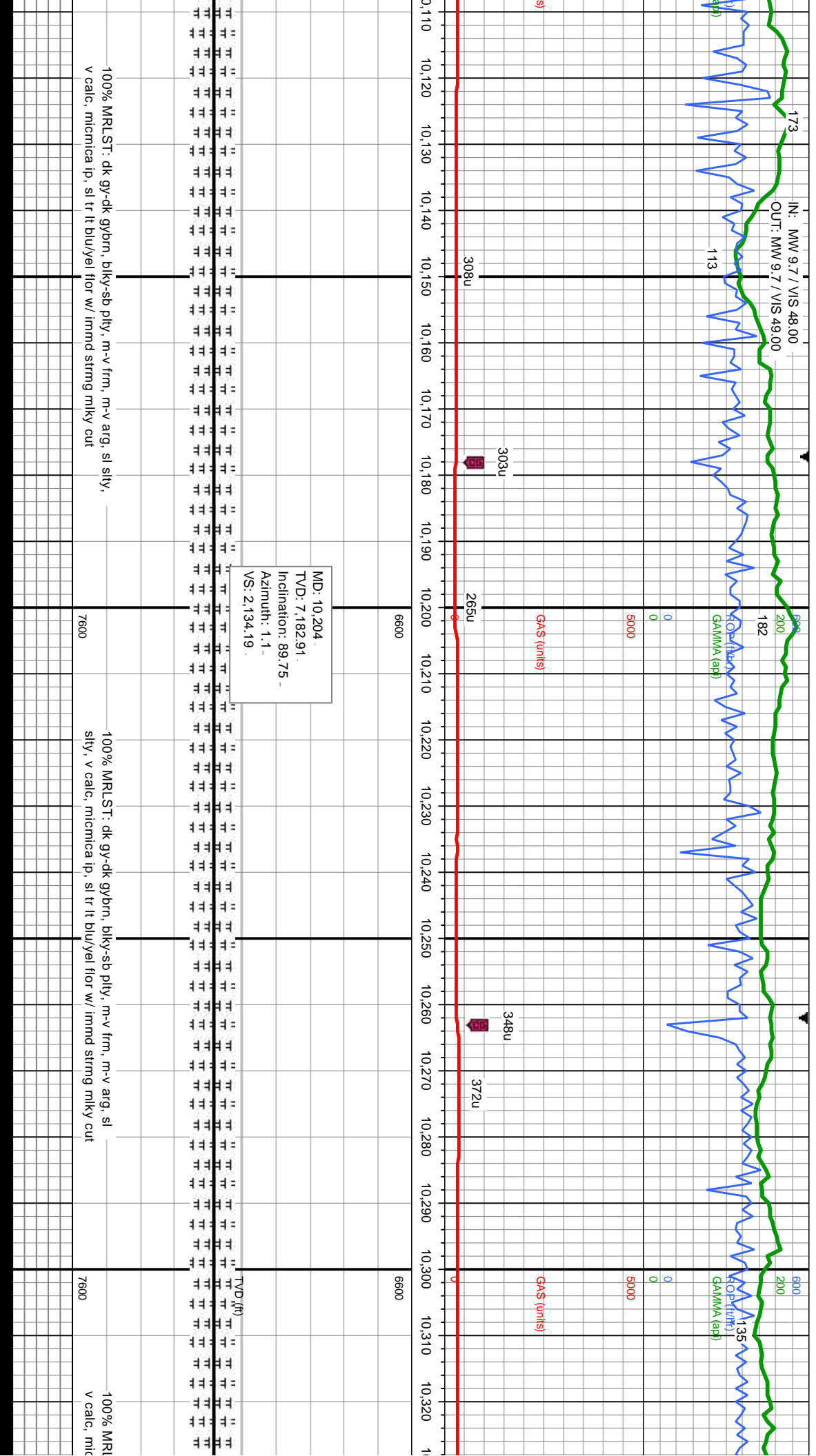
Depth (ft)	9,670	9,680	9,690	9,700	9,710	9,720	9,730	9,740	9,750	9,760	9,770	9,780	9,790	9,800	9,810	9,820	9,830	9,840	9,850	9,860	9,870	9,880	9,890
ROF (ft/hr)	167	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
GAMMA (api)	167	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
GAS (units)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

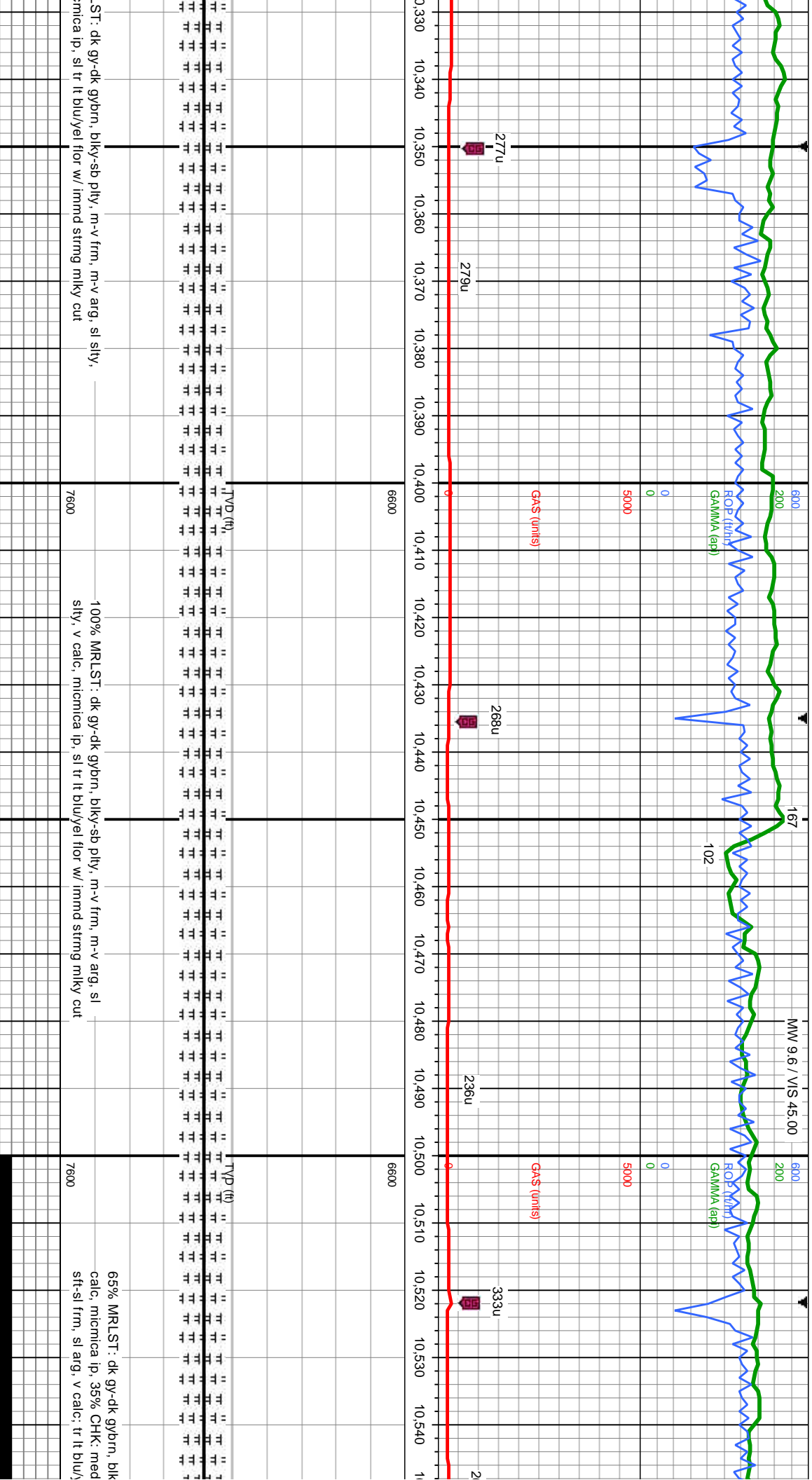
90% MRLST: med-dk gy-blk, sb blk-y-sb ply, frm, mod arg, sl slty, v calc, tr cal frags, rr bent, 10% CHK: med gy-lt gy, rthy tex, sb blk-y-sb ply, sft-sl frm, sl arg, v calc, tr lt blu/yel flr w/ immd strmg mlky wh cut

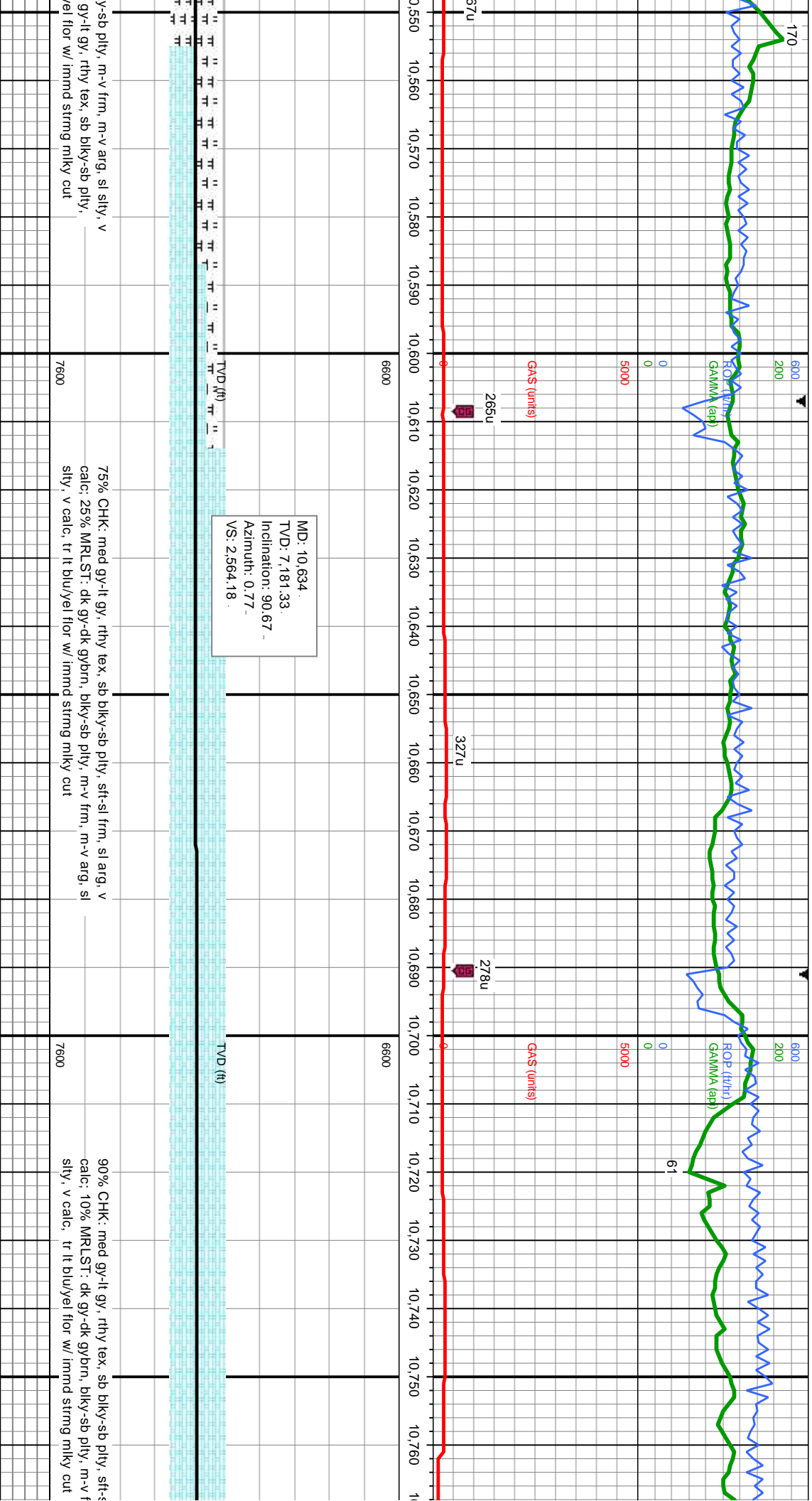
95% MRLST: med-dk gy-blk, sb blk-y-sb ply, frm, mod arg, sl slty, v calc, tr cal frags, rr bent, 5% CHK: med gy-lt gy, rthy tex, sb blk-y-sb ply, sft-sl frm, sl arg, v calc, tr lt blu/yel flr w/ immd strmg mlky wh cut

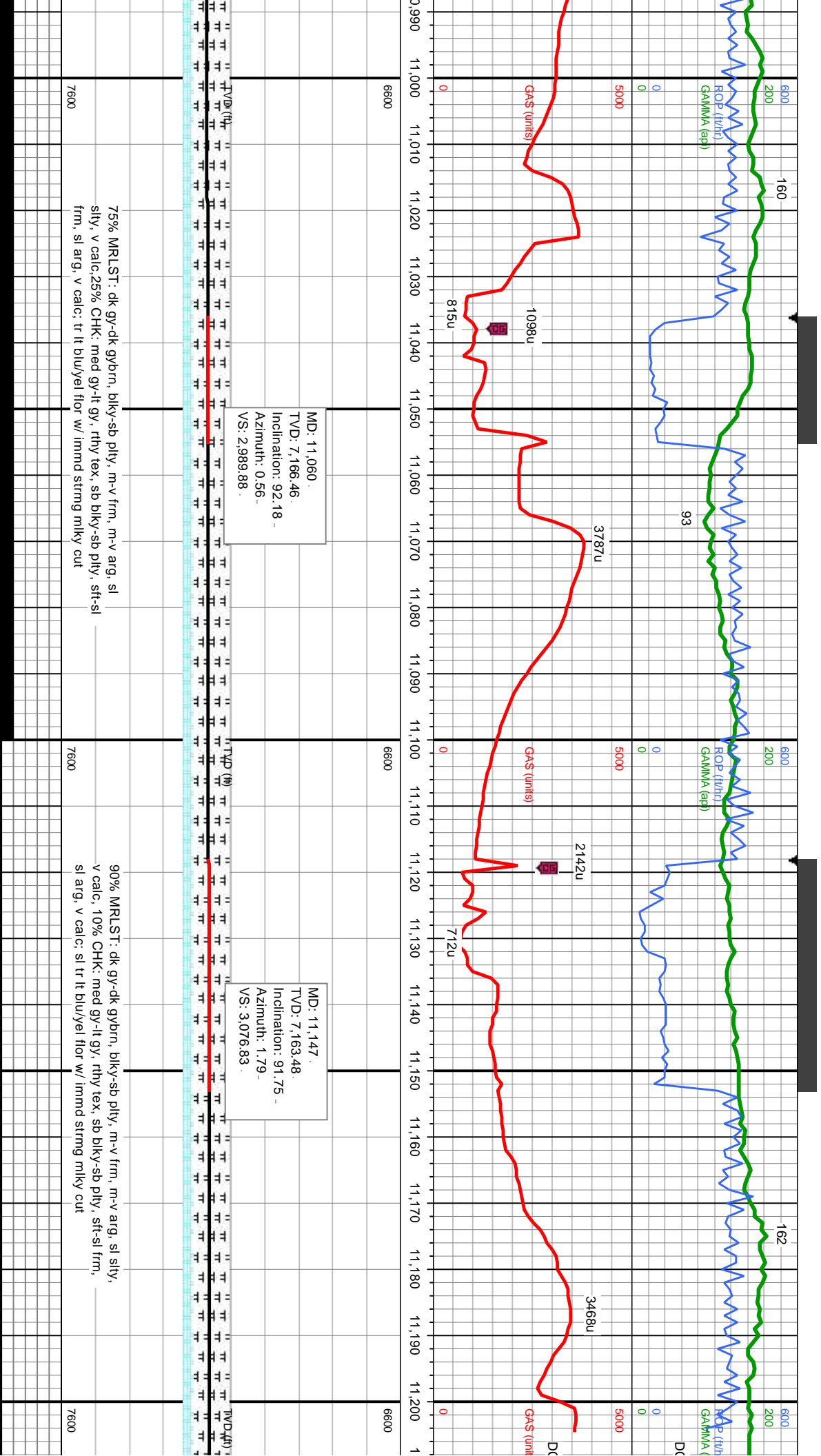


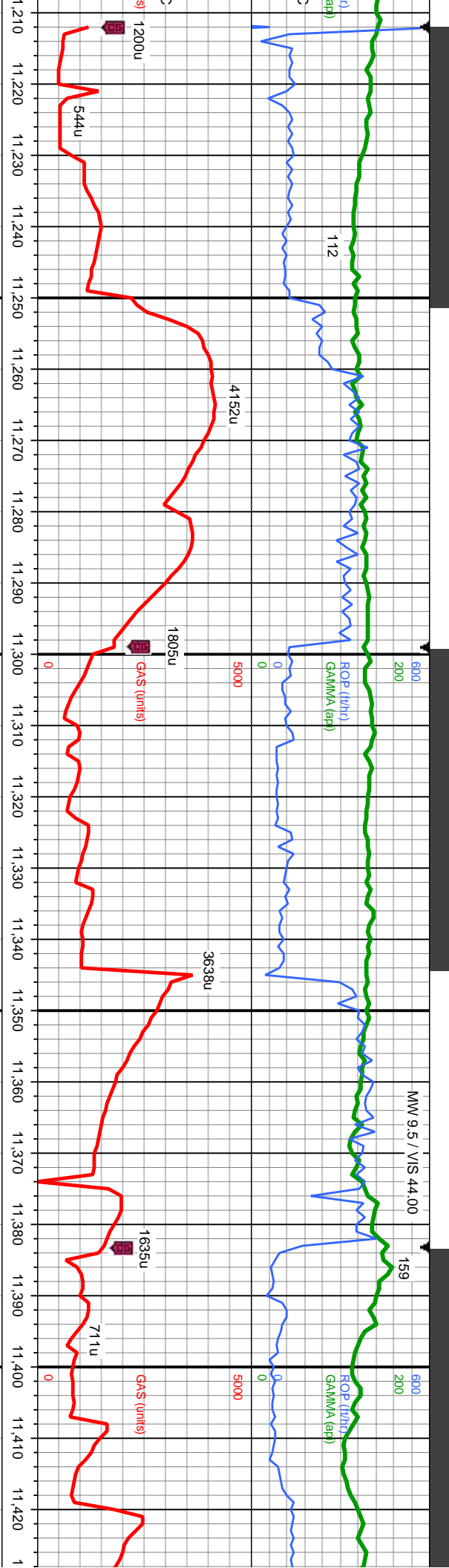












MD: 11,236.
TVD: 7,161.19.
Inclination: 91.2.
Azimuth: 2.57.
VS: 3,165.78.

MD: 11,323.
TVD: 7,159.53.
Inclination: 90.98.
Azimuth: 2.1.
VS: 3,252.74.

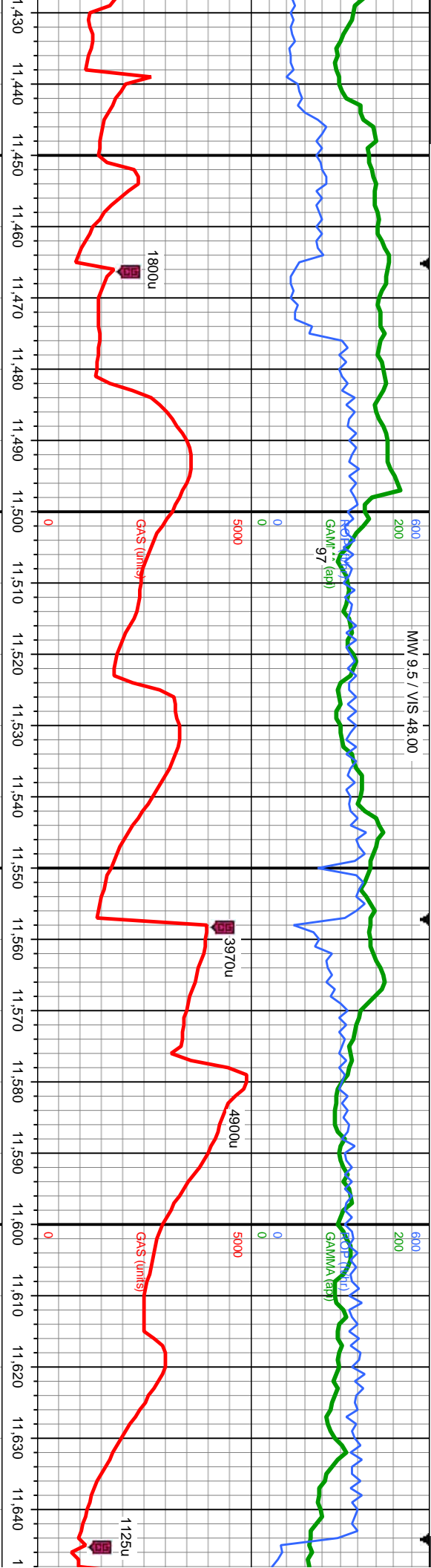
MD: 11,409.
TVD: 7,159.75.
Inclination: 88.73.
Azimuth: 0.96.
VS: 3,338.73.

95% MRLST: dk gy-dk gybrn, blk-y-sb pily, m-v frm, m-v arg, sl
sily, v calc, 5% CHK: med gy-lt gy, rthy tex, sb blk-y-sb pily, sft-sl
frm, sl arg, v calc; sl tr lt blu/yel flr w/ immd strng mlky cut

95% MRLST: dk gy-dk gybrn, blk-y-sb pily, m-v frm, m-v arg, sl sily, v calc, 5%
CHK: med gy-lt gy, rthy tex, sb blk-y-sb pily, sft-sl frm, sl arg, v calc; sl tr lt
blu/yel flr w/ immd strng mlky cut

85% MRLST: dk
15% CHK: med
blu/yel flr w/ tr

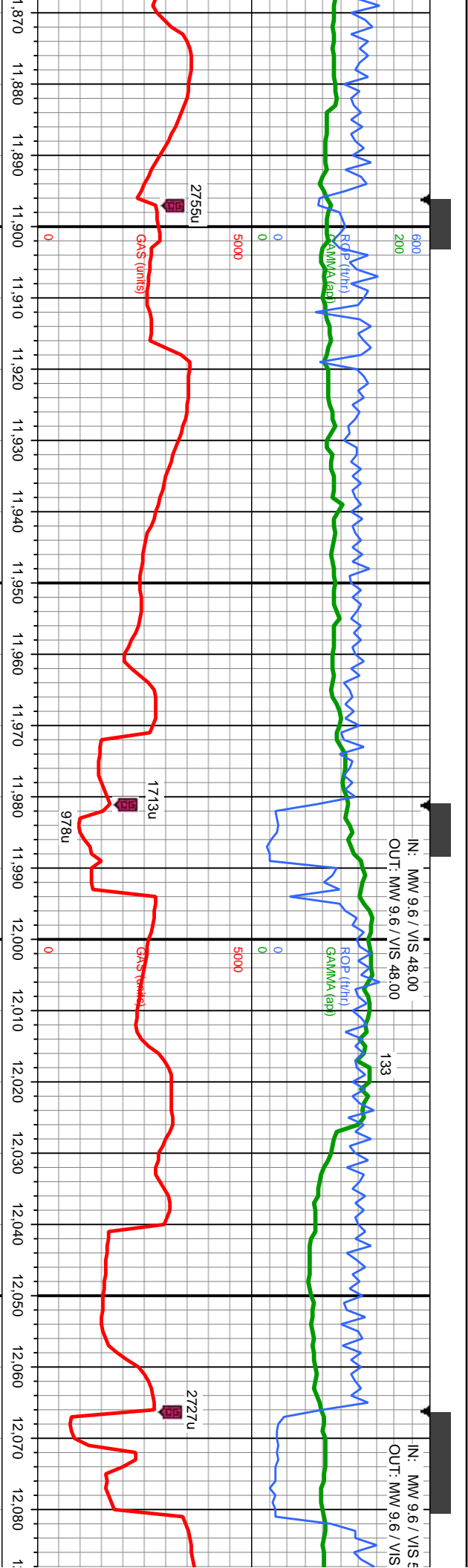




MD: 11,581
TVD: 7,167.33
Inclination: 86.22
Azimuth: 1.16
VS: 3,510.55

gy-dk gy-brn, blk-y-sb pty, m-v frm, m-v arg, sl slty, v calc, gy-lt gy, rthy tex, sb blk-y-sb pty, sft-sl frm, sl arg, v calc; sl tr lt	6600	TVD (ft)	gy-dk gy-brn, blk-y-sb pty, mod-v frm, mod-v arg, sl slty, v calc, 40% CHK; med gy-lt gy, rthy tex, sb blk-y-sb pty, sft-sl frm, sl arg, v calc; sl tr lt	7600	60% MRLST: dk gy-dk gy-brn, blk-y-sb pty, mod-v frm, mod-v arg, sl slty, v calc, 40% CHK; med gy-lt gy, rthy tex, sb blk-y-sb pty, sft-sl frm, sl arg, v calc; sl tr lt	7600	50% MRLST: dk gy-dk gy-brn, blk-y-sb pty, CHK; med gy-lt gy, rthy tex, sb blk-y-sb pty, immed sting mky cut	7600
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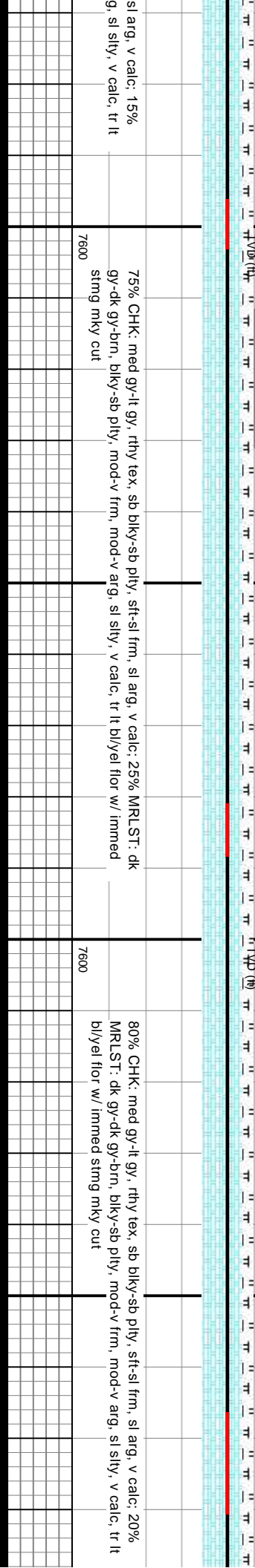




MD: 11,922.
TVD: 7,174.77.
Inclination: 90.4.
Azimuth: 1.81.
VS: 3,851.4.

MD: 12,007.
TVD: 7,173.81.
Inclination: 90.89.
Azimuth: 1.02.
VS: 3,936.39.

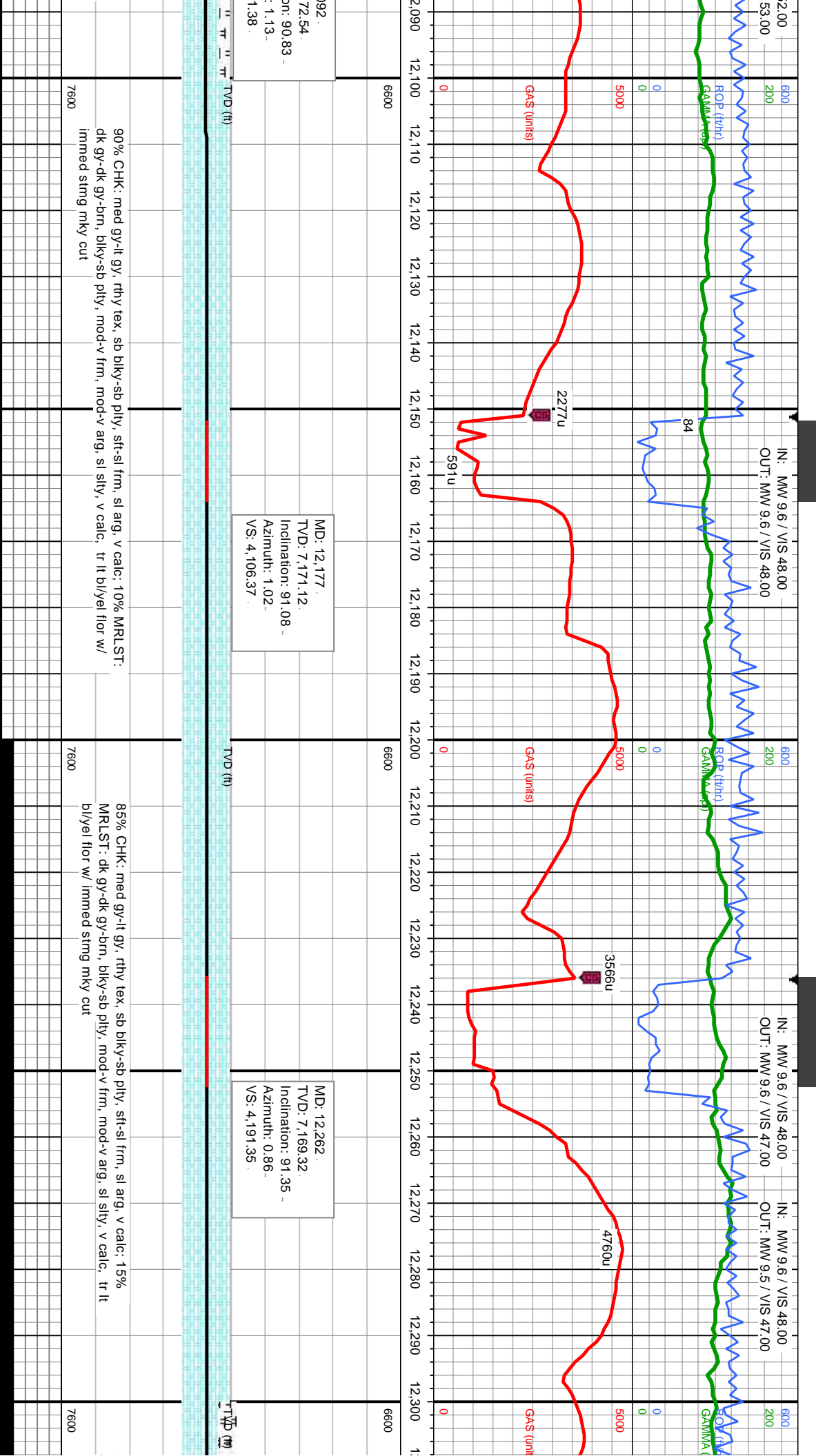
MD: 12,007.
TVD: 7,173.81.
Inclination: 90.89.
Azimuth: 1.02.
VS: 3,936.39.

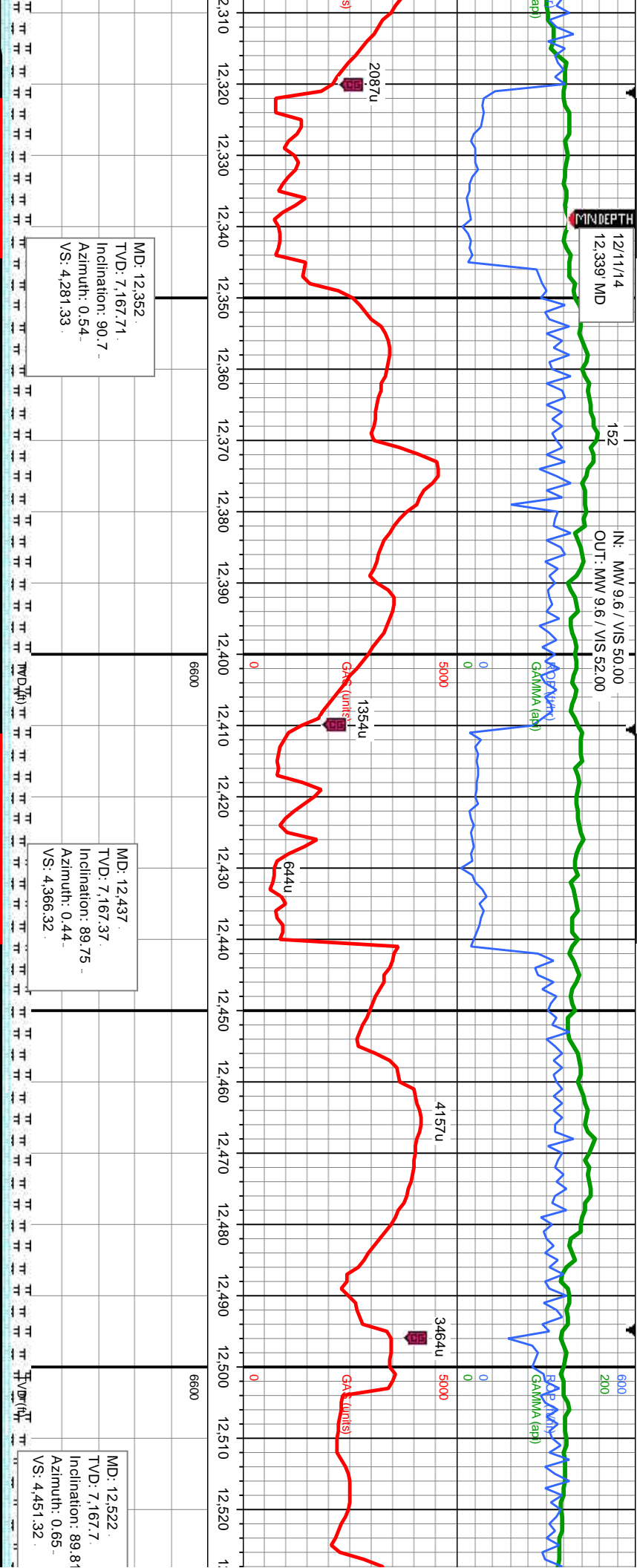


75% CHK: med gy-lt gy, rthy tex, sb biky-sb pily, sft-sl frm, sl arg, v calc, 25% MRLST: dk gy-dk gy-brn, biky-sb pily, mod-v frm, mod-v arg, sl slty, v calc, tr lt bl/yel flr w/ immed string mky cut

80% CHK: med gy-lt gy, rthy tex, sb biky-sb pily, sft-sl frm, sl arg, v calc, 20% MRLST: dk gy-dk gy-brn, biky-sb pily, mod-v frm, mod-v arg, sl slty, v calc, tr lt bl/yel flr w/ immed string mky cut







55% CHK: med gy-lt gy, rthy tex, sb bly-sb pily, sft-sl frm, sl arg, v calc: 45% MRLST: dk gy-dk gybrn, bly-sb pily, mod-v frm, mod-v arg, sl stly, v calc, tr lt blue/yel floor w/ immed stmg mky cut

7600

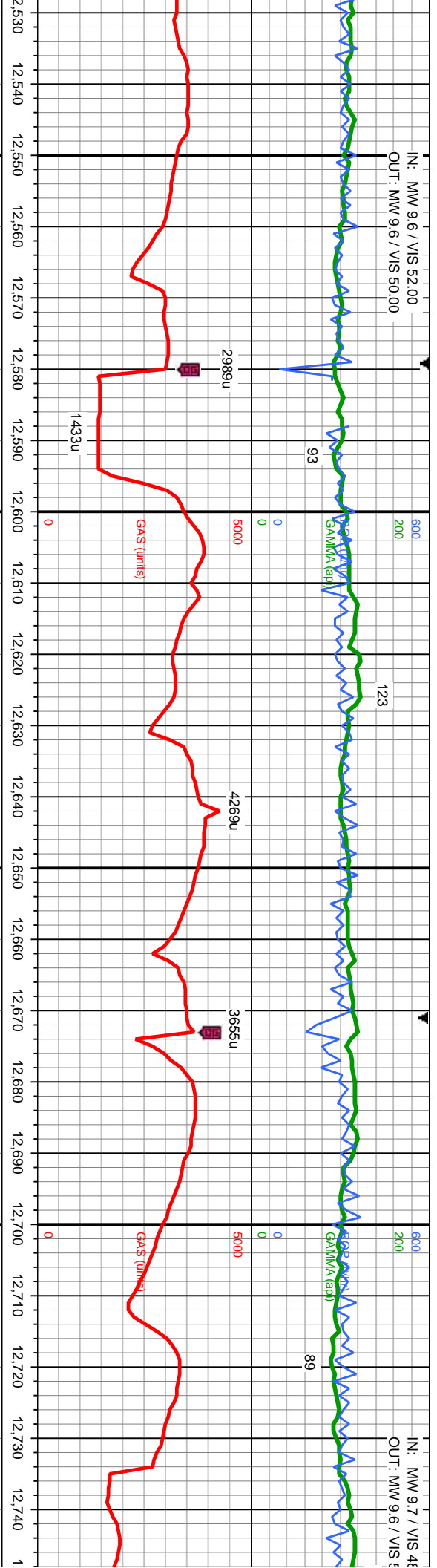
65% CHK: med gy-lt gy, rthy tex, sb bly-sb pily, sft-sl frm, sl arg, v calc, 35% MRLST: dk gy-dk gybrn, bly-sb pily, mod-v frm, mod-v arg, sl stly, v calc, tr lt blue/yel floor w/ immed stmg mky cut

7600

75% CHK: calc, 25% f arg, sl stly,



IN: MW 9.6 / VIS 52.00
OUT: MW 9.6 / VIS 50.00



MD: 12.695.
TVD: 7,167.72.
Inclination: 90.18 -
Azimuth: 0.36 -
VS: 4.624.31.

med gy-lt gy, rthy tex, sb blk-y-sb pily, sft-sl frm, sl arg, v
MRLST: dk gy-dk gybrn, blk-y-sb pily, mod-v frm, mod-v
v calc, tr lt blue/yel flr w/ immed sting mky cut

80% CHK: med gy-lt gy, rthy tex, sb blk-y-sb pily, sft-sl frm, sl arg, v
calc, 20% MRLST: dk gy-dk gybrn, blk-y-sb pily, mod-v frm, mod-v
arg, sl stly, v calc, tr lt blue/yel flr w/ immed sting mky cut

75% CHK: med gy-lt gy, rthy tex,
calc, 25% MRLST: dk gy-dk gybr
arg, sl stly, v calc, tr lt blue/yel f



