

# COLUMBINE LOGGING

Scale: 5" / 100'  
Measured Depth Log

Well Name BERRY FARMS 30N-8HZ

Location SEC 8 T3N R67W

State COLORADO

County WELD

Country UNITED STATES OF AMERICA

Rig Number ENSIGN 145

API Number 051233891100

AFE # 2091187

Region DJ BASIN

Field WATTENBERG

Spud Date 4/5/2014

Drilling Completed 6/16/2014

Surface Coordinates

LAT/LONG: 40.244018/-104.905895  
FNL: 1307' FEL: 300'

Bottom Hole Coordinates

FFNLL: 350' FFWLL: 460'

Ground Elevation 4,822'

Logged Interval 6,900' To 11,400'

Total Depth 11,400'

Formation SUSSEX, SHARON SPRINGS, NIOBRARA A, NIOBRARA B

Type of Drilling Fluid FWLSND

Operator

Company Anadarko

Address 1099 18TH ST.  
DENVER, CO. 80202

Geologist

Name RHEAD CANNON

Company ANADARKO PETROLEUM CORPORATI

Address 1099 18TH ST.  
Denver, CO 80202

Other

SENIOR WELLSITE GEOLOGIST MOHAMME

WELLSITE GEOLOGIST BEN KATK

Zone Color Co

Oil  
Nole  
Error

Condensate  
Core  
Water

## Rock Types

UNKNOWN	COAL	MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILTY SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSUM	SALT-PEPPER SANC	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKE SANC	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

## Accessories

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

### Minerals

### Stringer

## Oil Show

DEAD  
EVEN

QUESTIONABLE

SPOTTED STAINING

## Porosity

EARTHY  
FENESTRAL

FRACTURE

INTERCRYSTALLINE

INTEROOLITIC


MOLDIC

ORGANIC

## ding

Gas  
Pressure  
Seal

# Other Symbols

PINPOINT  DST INTERVAL  WIRELINE TESTED - LEFT **E** EARTHY


VUGGY  FAULT  WIRELINE TESTED - RT **FX** FINELYXLN

## Engineering

 FORMATION TOP  DRILL STEM TEST **GS** GRAINSTONE

 GAS SHOW  **MINDEPTH** MN DEPTH **L** LITHOGRAPHIC

BIT  OIL SHOW **MX** MICROXLN

CONNECTION (UP)  **MINDEPTH** MN DEPTH UP **MS** MUDSTONE

## Rounding

CONNECTION (DOWN)  **MINDEPTH** MN DEPTH (DOWN) **AS** ANGULAR **PS** PACKSTONE

CONNECTION GAS  NORMAL FAULT **R** ROUNDED **WS** WACKSTONE

 CONNECTION GAS (LEFT)  OVERTURNED STRATA **S** SUBANG

TRIP GAS  REVERSE FAULT **R** SUBRND

## Sorting

 TRIP GAS (LEFT)  CASING **M** MODERATE

## Textures

DOWN TIME GAS  SIDEWALL CORE (LEFT) **P** POOR

 DOWN TIME GAS (LEFT)  SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

CORE - LOST  SLIDE **C** CHALKY

CORE - RECOVERED  SURVEY **CS** CRYPTOXLN

Slide/Rotate

ROP  
ROP (t/h)

ROP (t/h)

ROP (t/h)

MMWT: 10 IN /OUT 10  
VIS: 42 IN/ OUT 43

MMWT: 10 IN /OUT 10  
VIS: 42 IN/ OUT 43

MMWT: 10 IN /OUT 1  
VIS: 42 IN/ OUT 43

Total Gas & Chromatograph

GAS  
C1  
C2  
C3  
C4

Oil Shows Every 100'

C1: 80%  
C2: 13%  
C3: 7%  
C4: 0%

GAS (unls)  
C1: 80%  
C2: 13%  
C3: 7%  
C4: 0%

Logger Top Sharon Springs  
MD 7,008' /TVD 6,813'

Depth Labels

% Lith

Curves  
GAMMA

250  
GAMMA (api)

155  
GAMMA (api)

250  
GAMMA (api)

210  
GAMMA (api)

201  
GAMMA (api)

Bit Data

Bit #: 2  
Type: SD16513  
Size: 8.75  
Depth In: 820'  
Jets: 8 - 16  
S/N: JU0512

MD: 6,921  
TVD: 6,761.45  
Inclination: 47.65  
Azimuth: 269.16

MD: 6,966  
TVD: 6,789.65  
Inclination: 54.68  
Azimuth: 267.48

MD: 7,011  
TVD: 6,814.17  
Inclination: 59.27  
Azimuth: 266.09

MD: 7,056  
TVD: 6,836.34  
Inclination: 61.7  
Azimuth: 266.02

COLUMBINE LOGGING 06/11/14  
1-MAN LOGGING - CURVE  
2-MAN LOGGING - LATERAL  
CHROMATOGRAPH UNIT #314

100% SLTY SH: lt - dk gy/brn, sb pty - pty, stly  
tex, v f grn, st - mod frm, v sl calc, abnt bent;  
O SHW: thk mod bl/w cut, slow thk bl/w  
stng, mod stn, fr o

100% SLTY SH: lt - dk gy/brn, sb pty - pty, stly  
tex, v f grn, st - mod frm, v sl calc, abnt bent;  
O SHW: thk mod bl/w cut, slow thk bl/w  
stng, mod stn, fr o

80% SLTY SH: dk gy/brn, sb pty - pty, stly tex, v  
f grn, st - mod frm, v sl calc; 20% MRLST: med -  
dk gy/brn, stly tex, arg, fr, sl mod, st - mod, calc,  
sb pty - sb rnd, abnt bent; O SHW: thk mod bl/w  
cut, slow thk bl/w stng, mod stn, fr o

55% MRLST: dk gy, mod - fr  
sb pty - sb blk, v f grn, calc,  
gy - gy/w, st - mod, arg, st,  
calc, v f grn; O SHW: thk mod  
bl/w stng, g stn, mod o

Oil Show

Images

E  
G  
M  
FR  
TR  
SL

7300

6000

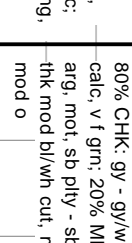
6000

3304u

3304u

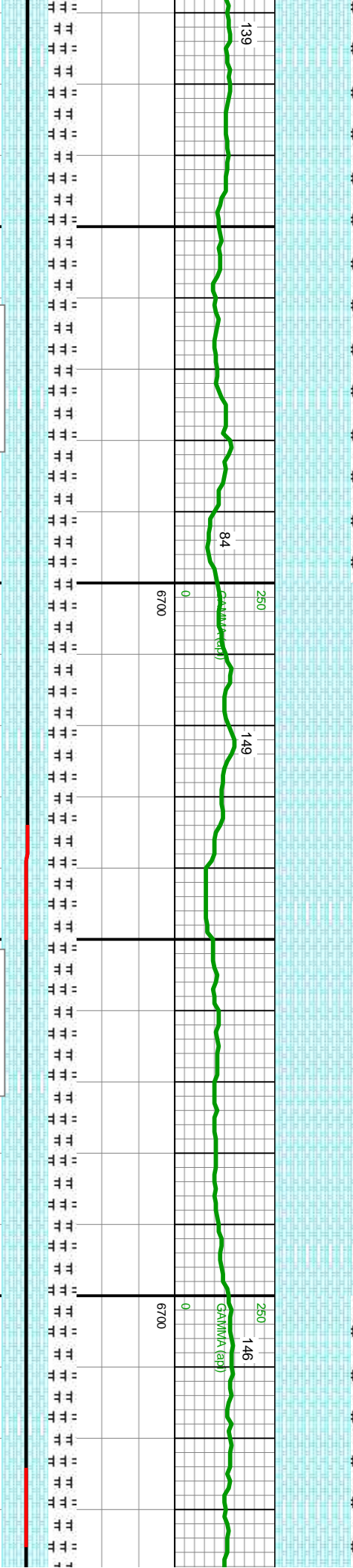
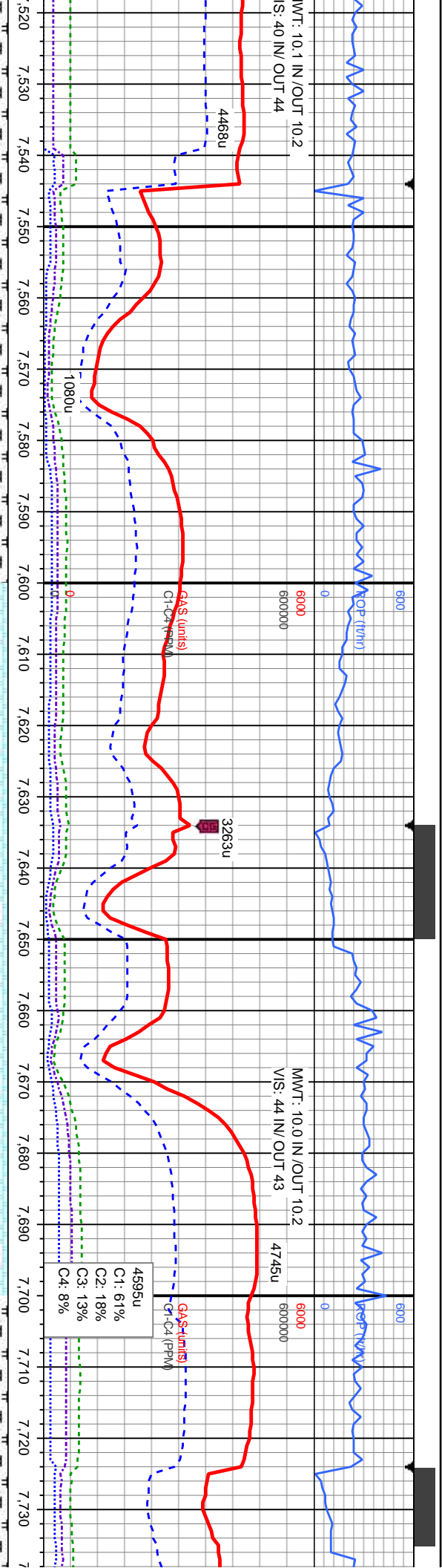


ROP (1/4 hr)









MD: 7.569  
TVD: 6.941.81  
Inclination: 89.07  
Azimuth: 272.2

MD: 7.659  
TVD: 6.942.81  
Inclination: 89.65  
Azimuth: 271.57

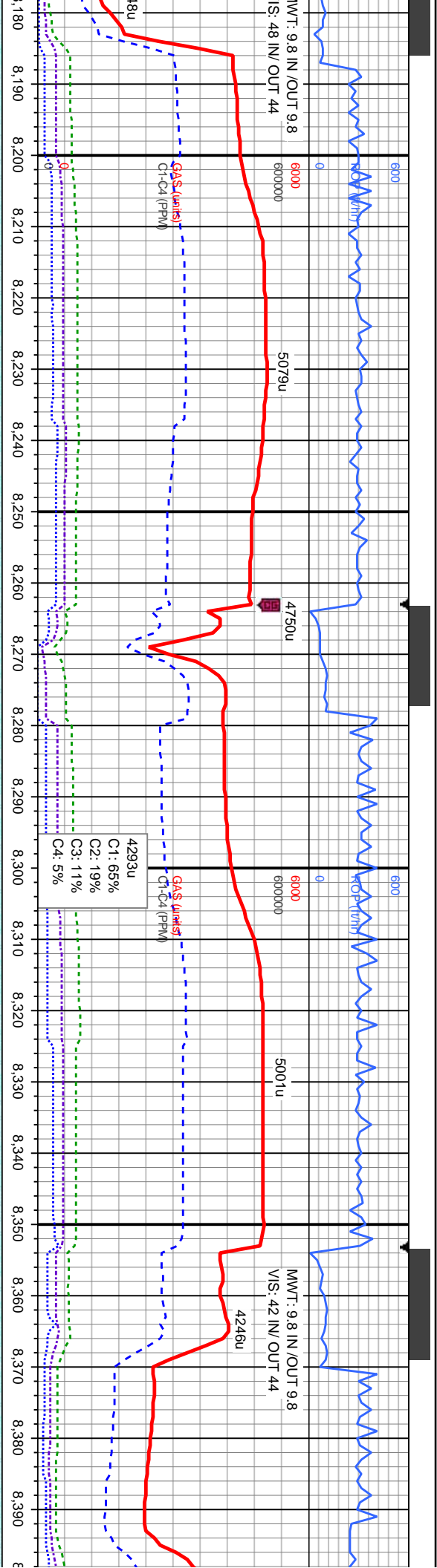
d gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, 10% MRLST: med - dk gy, frm,	TVD (ft)	MD: 7.569 TVD: 6.941.81 Inclination: 89.07 Azimuth: 272.2	90% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, 10% MRLST: med - dk gy, frm,	TVD (ft)
ly - sb blk, v f grn, calc, tr cnt, tr bent; O SHW: thk mod bl/wh cut, fast thk bl/wh			90% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, 10% MRLST: med - dk gy, frm,	
o			90% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, 10% MRLST: med - dk gy, frm,	











MD: 8,199  
TVD: 6,938.41  
Inclination: 89.66  
Azimuth: 271.13

MD: 8,289  
TVD: 6,939.43  
Inclination: 89.04  
Azimuth: 269.99

MD: 8,379  
TVD: 6,939.84  
Inclination: 90.43  
Azimuth: 270.04

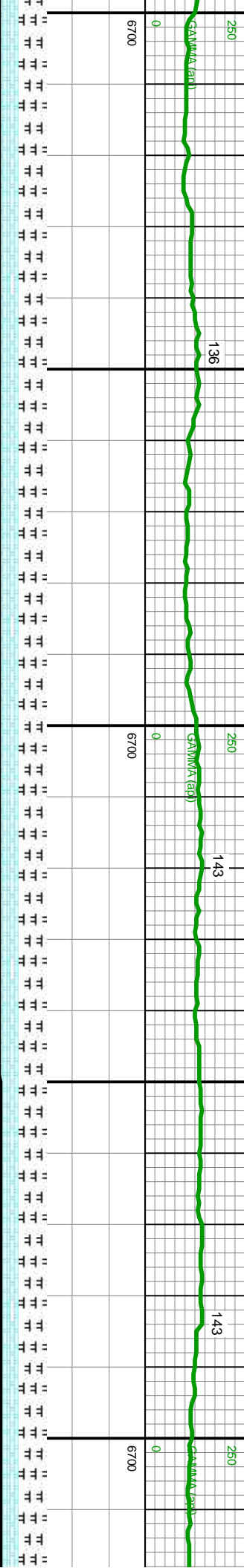
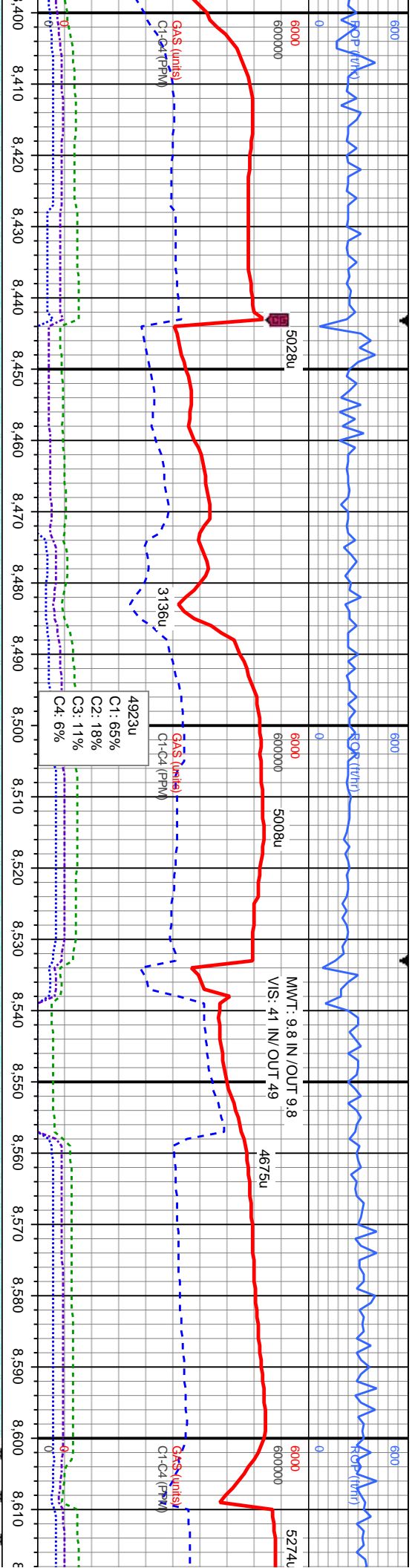
O SHW: v thk mod  
100% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, mot, tr mlst; O SHW: v thk mod  
b/w cut, mod thk b/w stmg, g str, g o

7300

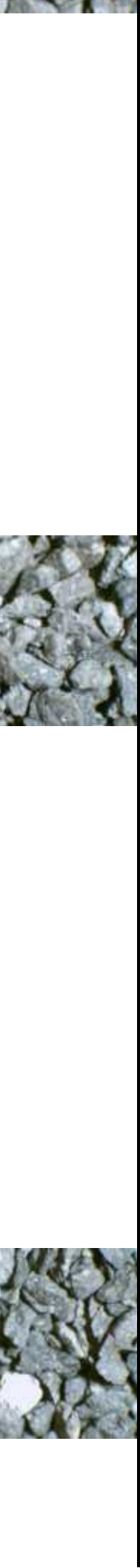
TVD (ft)  
100% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, mot, tr mlst, tr bent; O SHW: v thk mod b/w cut, mod thk b/w stmg, g str, g o

7300

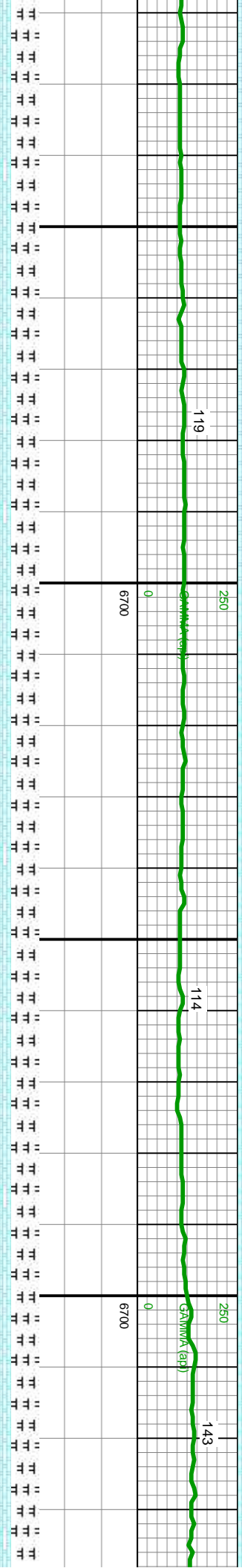
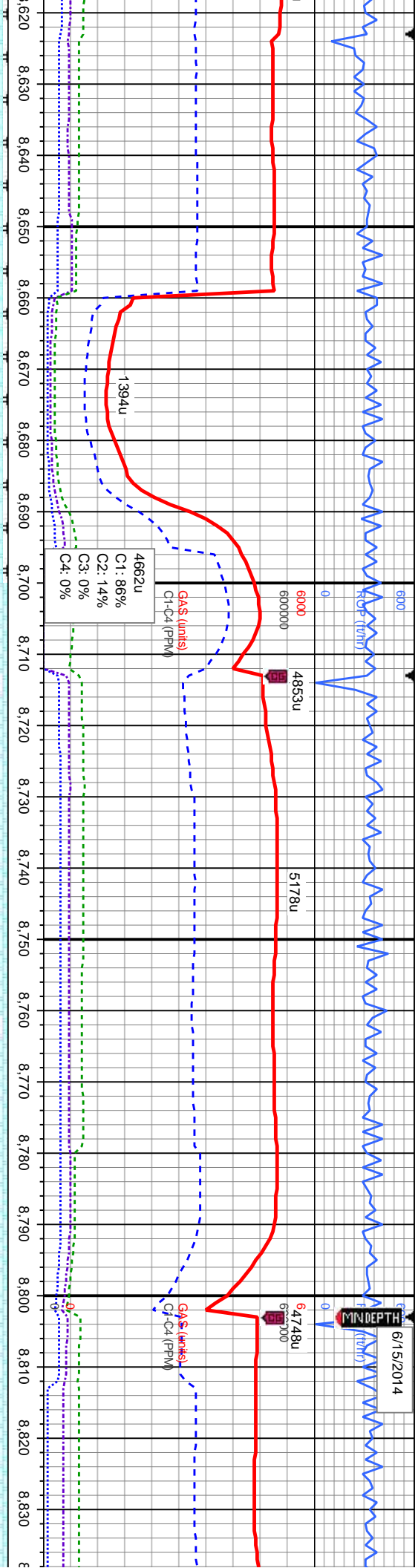




TVD (ft)	MD: 8,469. TVD: 6,938.97. Inclination: 90.67 - Azimuth: 269.43.	TVD (ft)	MD: 8,559. TVD: 6,937.77. Inclination: 90.86 - Azimuth: 269.57.	TVD (ft)	95% CHK: lt - me frm, fri, arg, sb pl 7300
100% CHK: lt - med gy - gy/wh, sft - mod, arg, sb bkly, v calc, v f grn, mod, tr mlst, tr bent, O SHW: thk mod bl/wh cut, mod thk bl/wh stmg, g stn, g o		100% CHK: lt - med gy - gy/wh, sft - mod, arg, sb bkly, v calc, v f grn, mod, occ mlst, O SHW: v thk mod bl/wh cut, v thk bl/wh stmg, g stn, g o			
7300		7300			







MD: 8.649.  
TVD: 6,936.57.  
Inclination: 90.67 -  
Azimuth: 269.51 -

d gy - gy/wh, stf - mod, arg, sb biky, v calc, v f gm, mot, 5% MRLST: med - dk gy,  
ty - sb biky, v f gm, calc, O SHW: v thk mod bl/wh cut, v thk bl/wh string, g sin, g

TVD (ft)

MD: 8.739.  
TVD: 6,936.66.  
Inclination: 89.22 -  
Azimuth: 269.28 -

100% CHK: lt - med gy - gy/wh, stf - mod, arg, sb biky - biky, v calc, v f gm, mot, tr mlst, O SHW: thk  
mod bl/wh cut, mod thk bl/wh string, g sin, g o

TVD (ft)

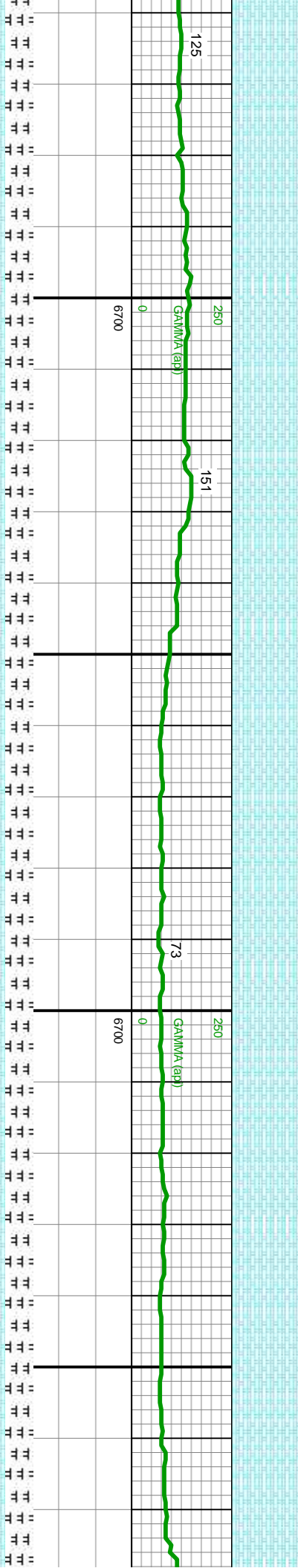
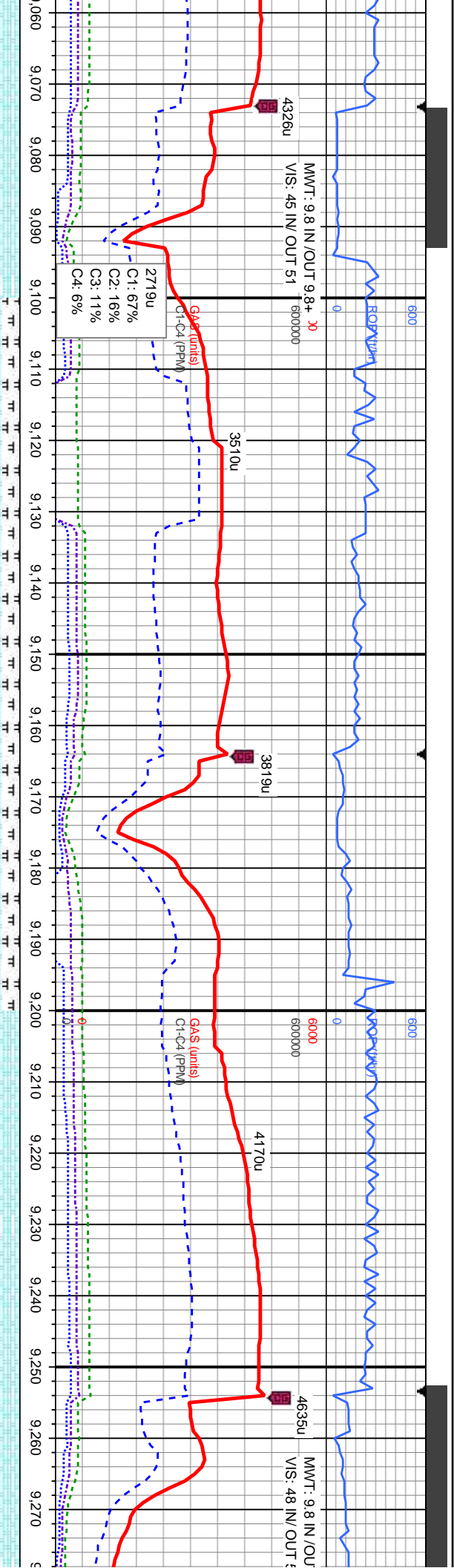
MD: 8.829.  
TVD: 6,938.17.  
Inclination: 88.85  
Azimuth: 269.87 -

100% CHK: lt - med gy - gy/wh, stf - mod  
thk mod bl/wh cut, mod thk bl/wh string,  
/300









MD: 9.099.  
TVD: 6,944.15.  
Inclination: 89.16 -  
Azimuth: 270.65 -

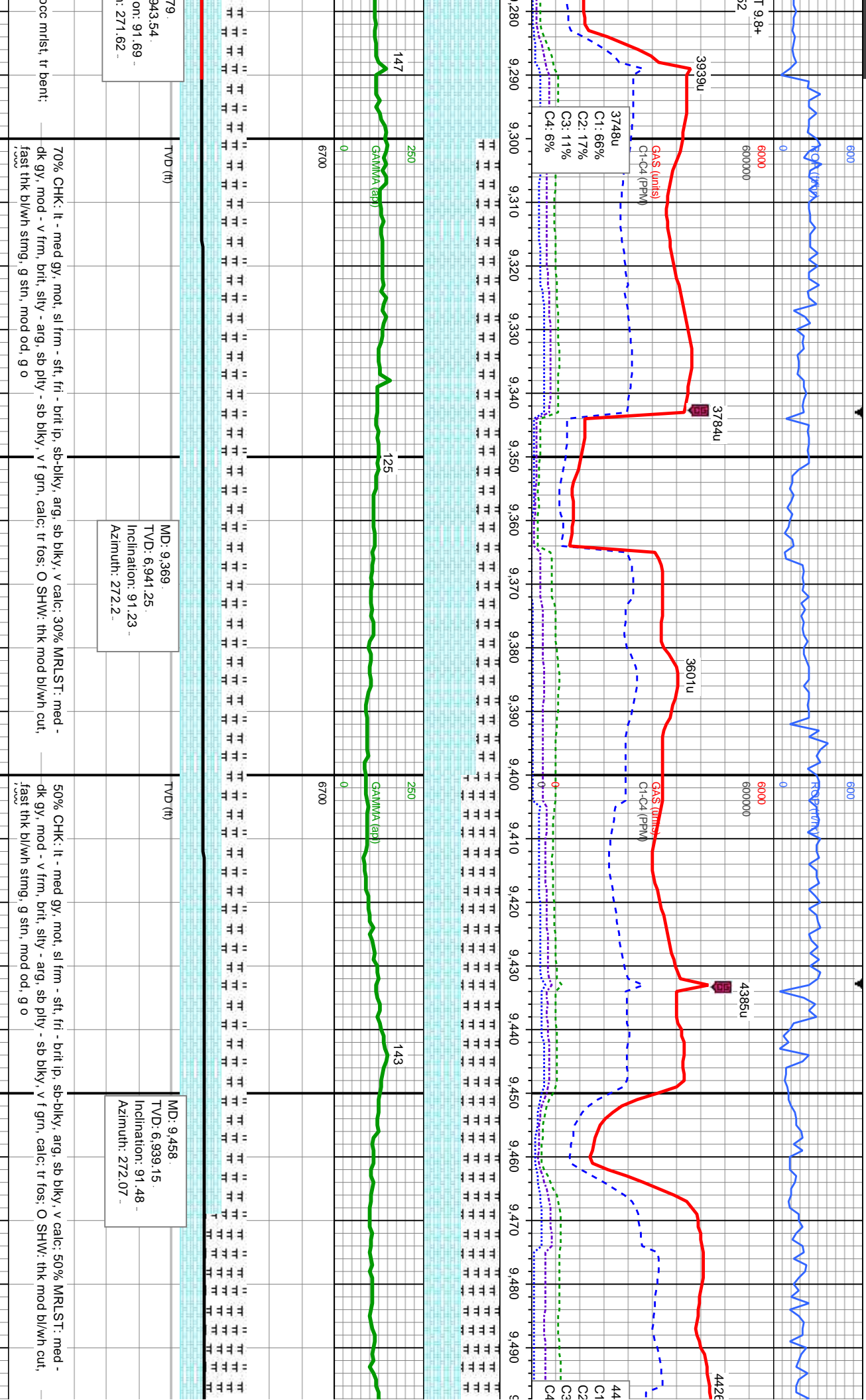
MD: 9.189  
TVD: 6,944.84.  
Inclination: 89.96 -  
Azimuth: 270.81 -

MD: 9.2  
TVD: 6.  
Inclination:  
Azimuth:

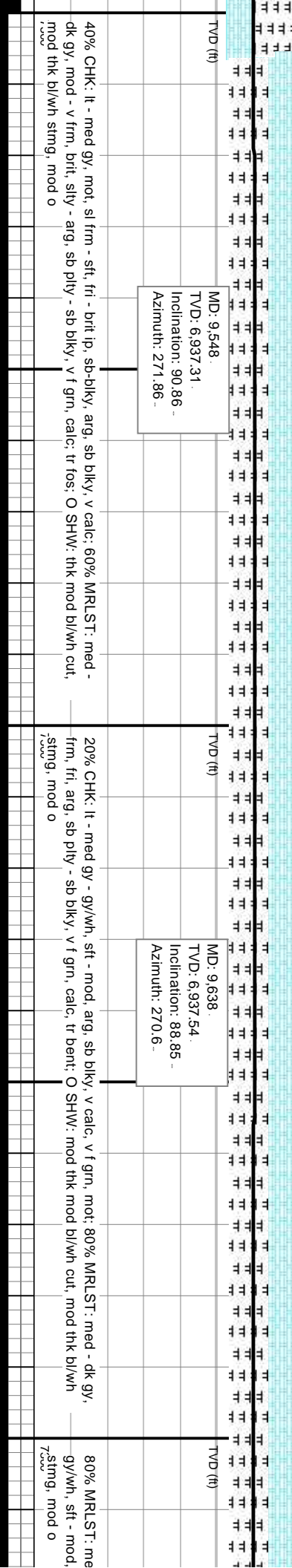
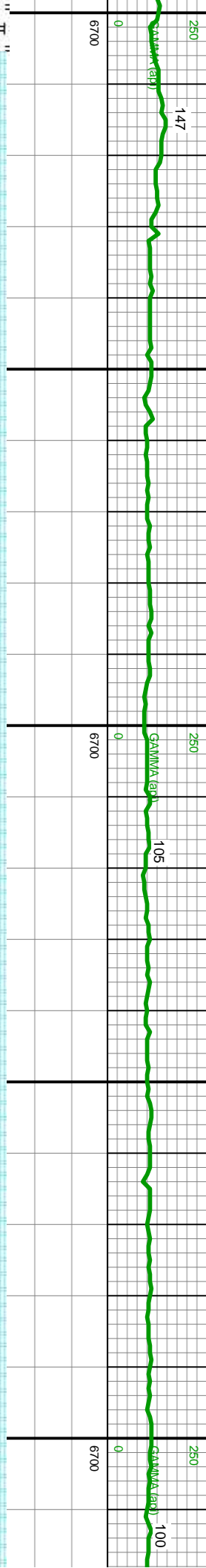
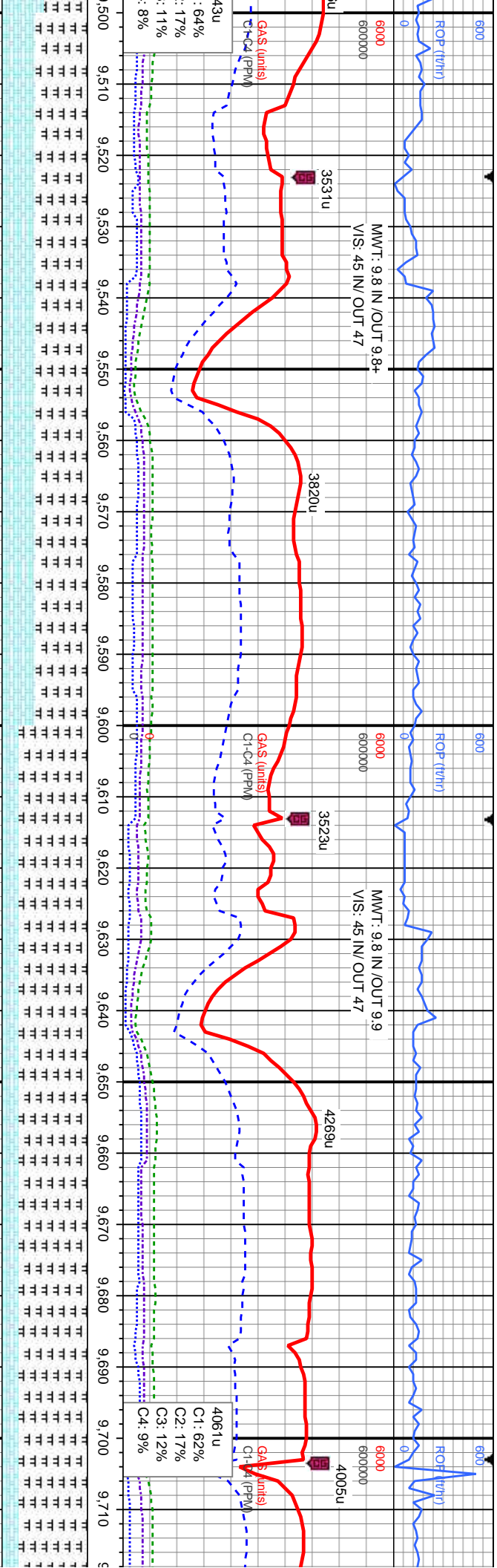
v calc, v f grn, mot, occ mrlst, tr bent;  
80% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk, v calc, v f grn, mot; 20% MRLST: med - dk gy, frm, fri, arg, sb ply - sb blk, v f grn, calc, tr bent; O SHW: thk mod bl/wh cut, mod thk bl/wh strng, mod o

100% CHK: lt - med gy - gy/wh, sft - mod, arg, sb blk - blk, v calc, v f grn, mot, v f grn, mod od, g o

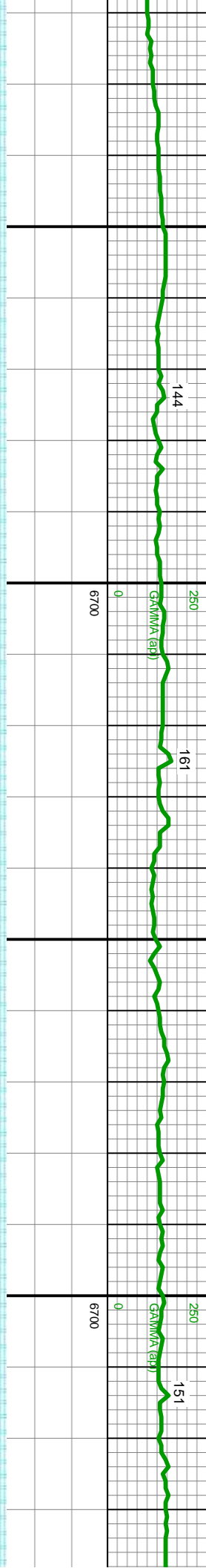
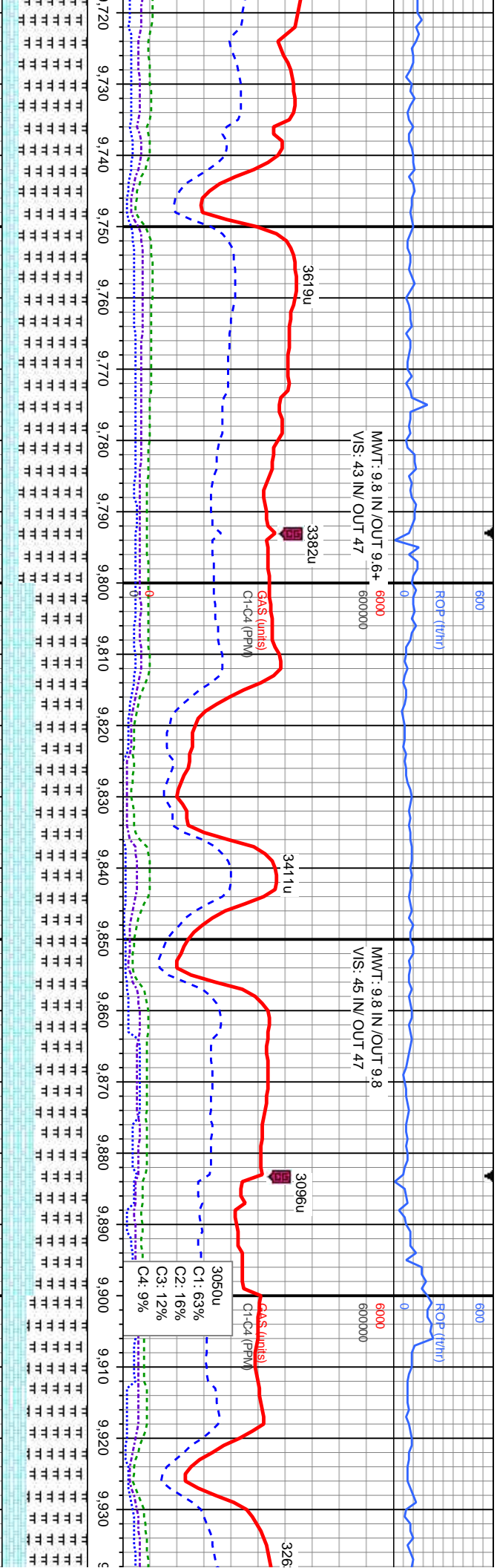












MD: 9,728.  
TVD: 6,939.34.  
Inclination: 88.85 -  
Azimuth: 270.84 -

MD: 9,818.  
TVD: 6,941.07.  
Inclination: 88.95 -  
Azimuth: 271.25 -

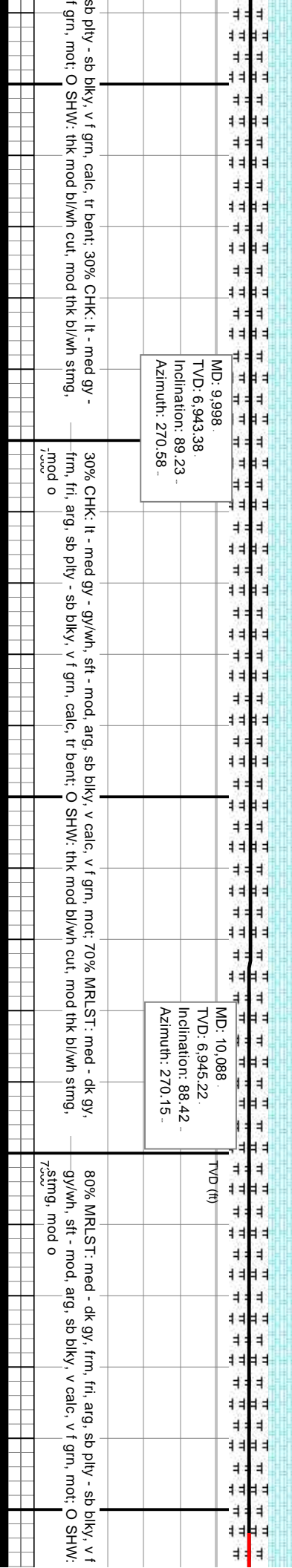
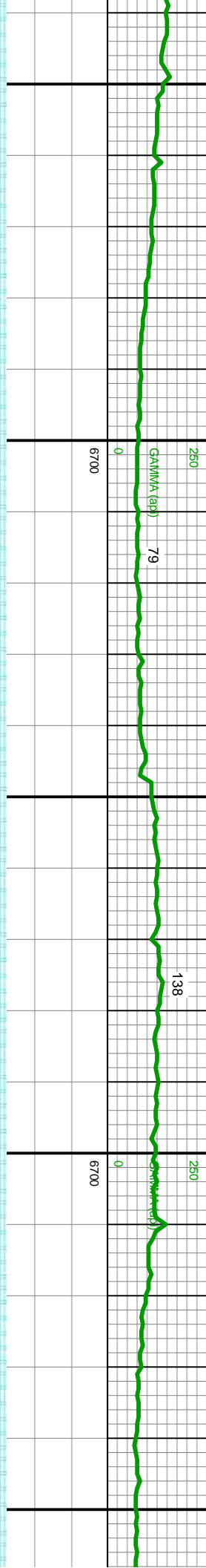
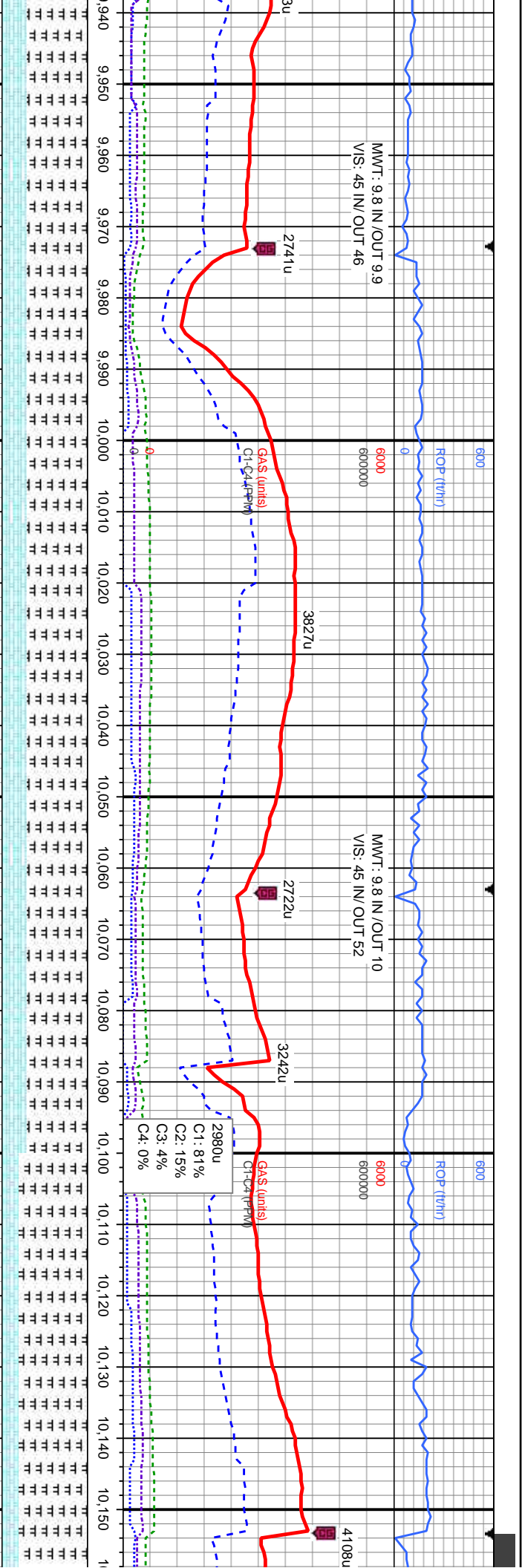
MD: 9,908.  
TVD: 6,942.33.  
Inclination: 89.44 -  
Azimuth: 270.93 -

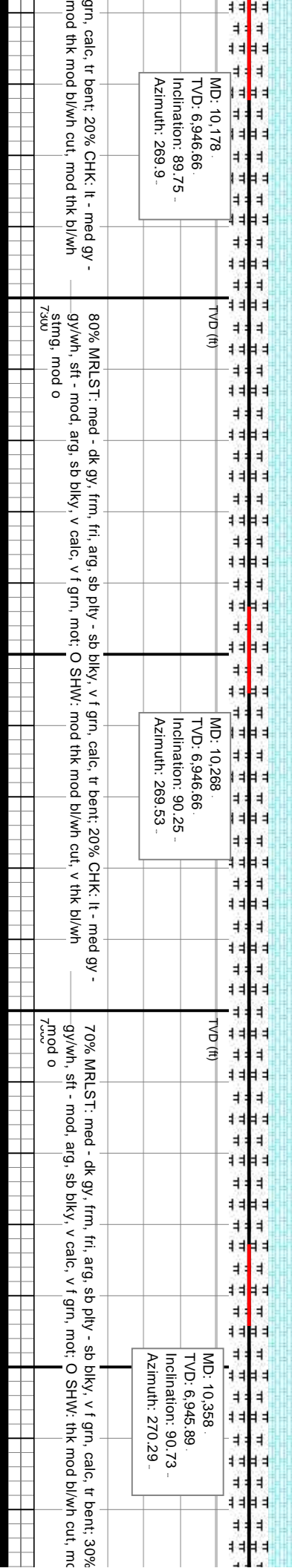
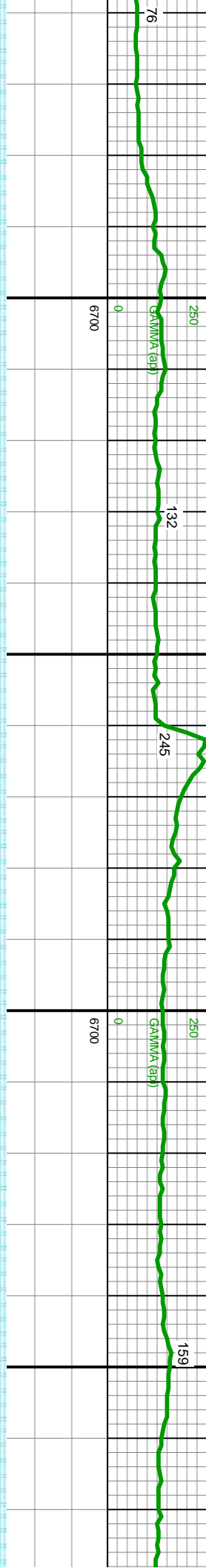
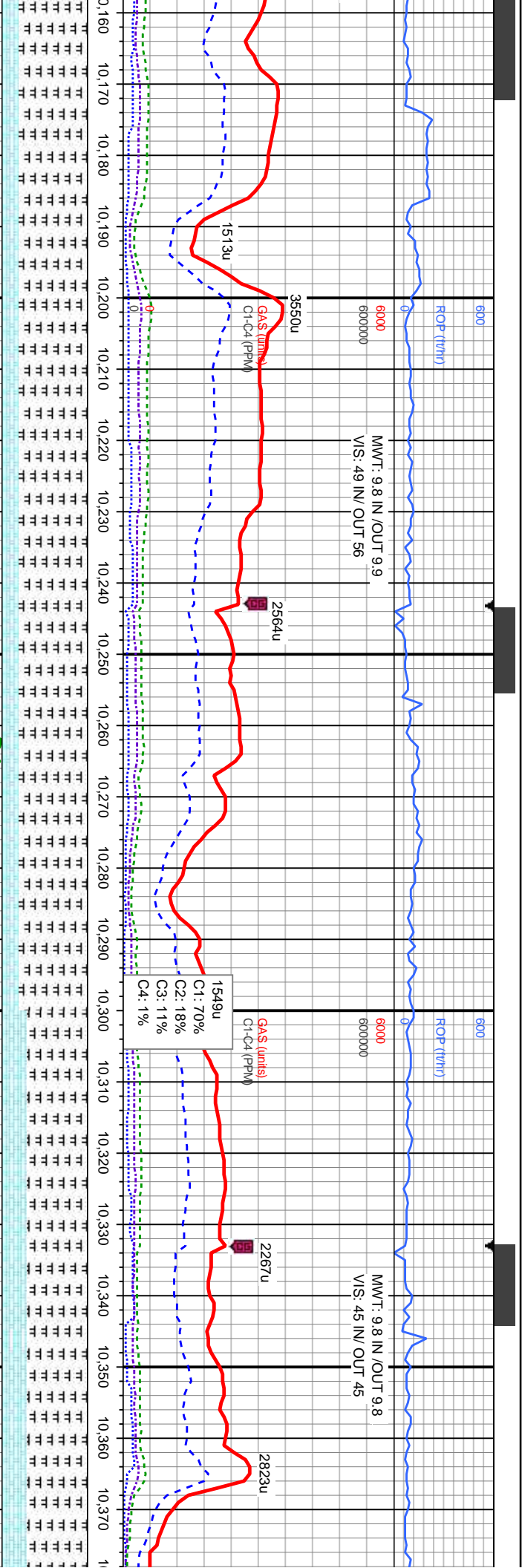
d - dk gy, frm, fri, arg, sb ply - sb bly, v f grn, calc, tr bent; 20% CHK: lt - med gy -  
arg, sb bly, v calc, v f grn, mot; O SHW: mod thk mod blwh cut, mod thk blwh

40% CHK: lt - med gy - gy/wh, sft - mod, arg, sb bly, v calc, v f grn, mot; 60% MRLST: med - dk gy,  
frm, fri, arg, sb ply - sb bly, v f grn, calc, tr bent; O SHW: thk mod blwh cut, mod thk blwh stmg,  
rmod o

70% MRLST: med - dk gy, frm, fri, arg,  
gy/wh, sft - mod, arg, sb bly, v calc, v  
rmod o







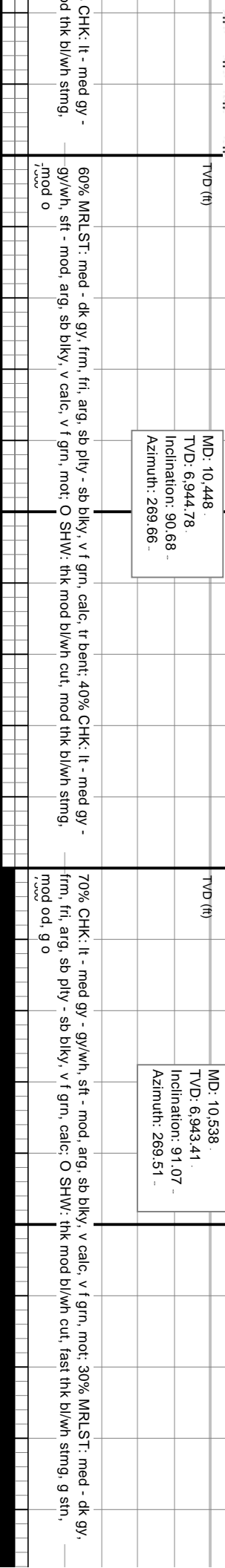
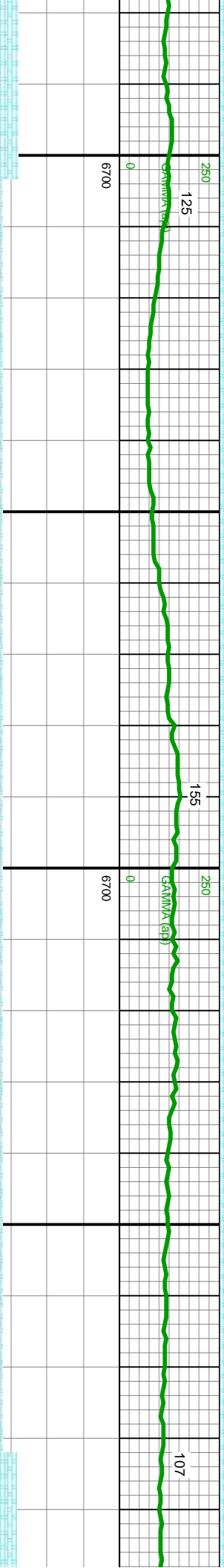
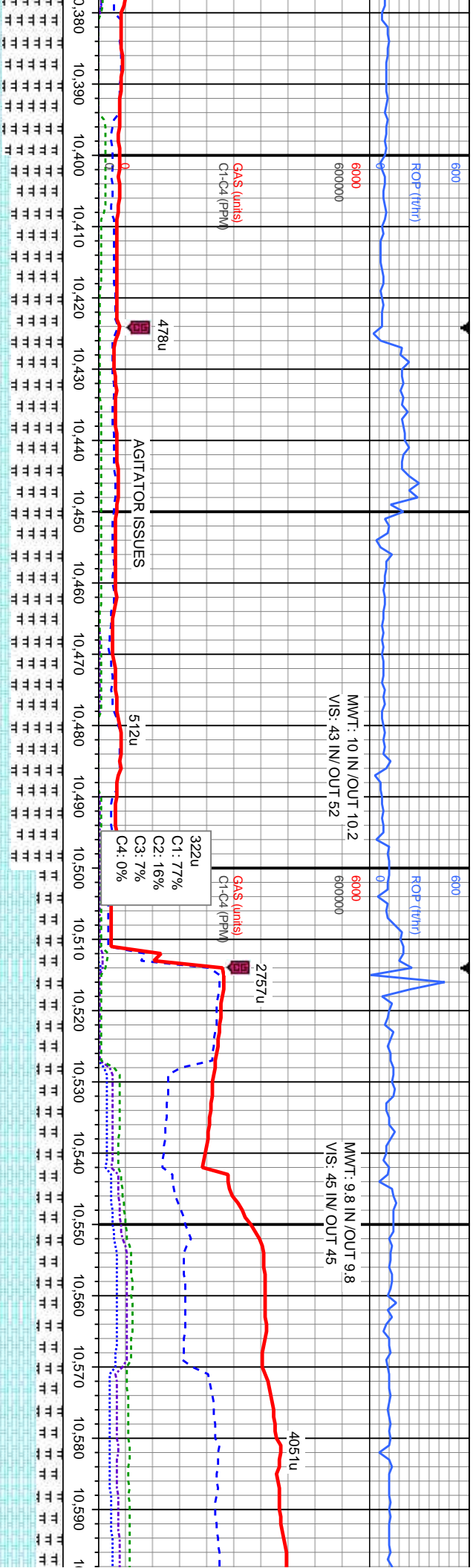
MD: 10,178.  
TVD: 6,946.66  
Inclination: 89.75 -  
Azimuth: 269.9 -

MD: 10,268.  
TVD: 6,946.66  
Inclination: 90.25 -  
Azimuth: 269.53 -

MD: 10,358.  
TVD: 6,945.89  
Inclination: 90.73 -  
Azimuth: 270.29 -







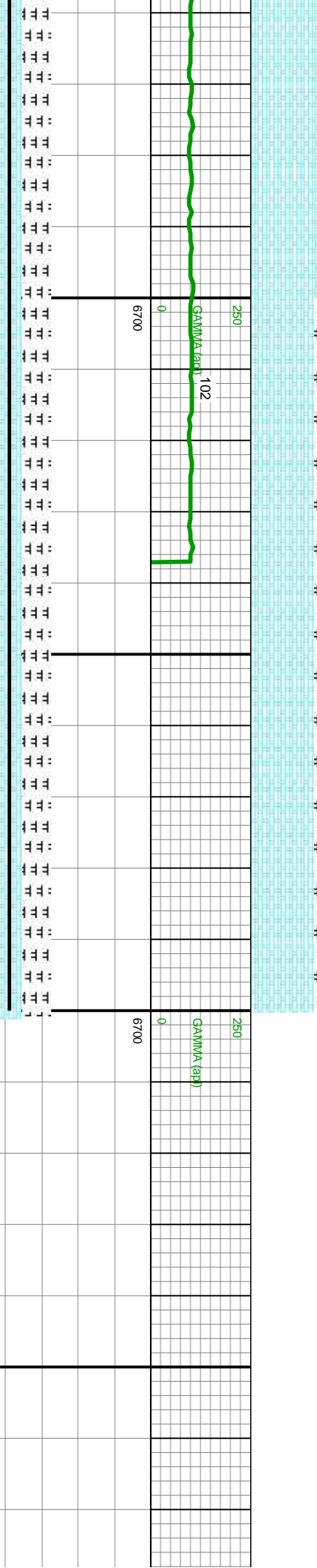
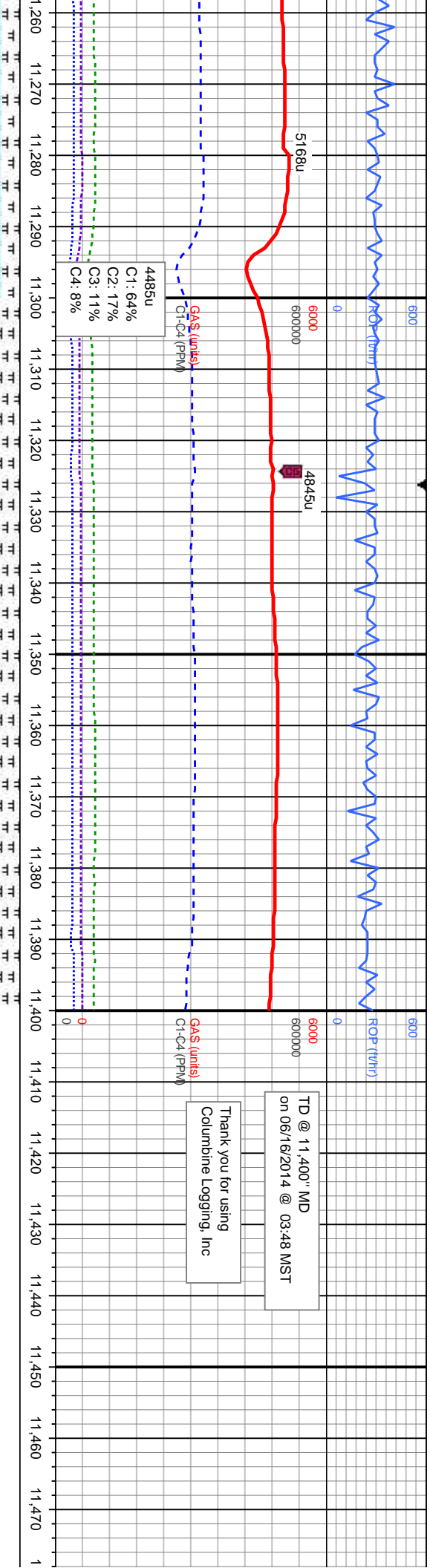












MD: 11,332.  
TVD: 6,931.67.  
Inclination: 89.81 -  
Azimuth: 270.24 -

MD: 11,400.  
TVD: 6,931.9.  
Inclination: 89.81 -  
Azimuth: 270.24 -





